FCC RF Test Report

APPLICANT	:	Sonim Technologies, Inc.
EQUIPMENT	:	Smartphone
BRAND NAME	:	Sonim
MODEL NAME	:	X802
FCC ID	:	WYPS3111
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	15E 6 GHz Low Power Indoor Client (6XD)
TEST DATE(S)	:	Jan. 14, 2025 ~ May 22, 2025

We, Sporton International Inc. (ShenZhen), 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. (ShenZhen), the test report shall not be reproduced except in full.

Fly Liang

Approved by: Fly Liang

ACCREDITED
Cert #5145.01

Sporton International Inc. (ShenZhen)

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People's Republic of China

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History of this test report

Report No.	Version	Description	Issued Date
FR4O2403F	01	Initial issue of report	May 22, 2025

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(a)(11)	26dB Emission Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Pass	-
3.2	15.407(a)(8)	Maximum Conducted Output Power	Reporting only	-
3.2	15.407(a)(8)	Fundamental Maximum EIRP	Pass	-
3.3	15.407(a)(8)	Fundamental Power Spectral Density	Pass	-
3.4	15.407(b)(7)	In-Band Emissions (Channel Mask)	Pass	-
3.5	15.407(d)(6)	Contention Based Protocol	Pass	
3.6	15.407(b)	Unwanted Emissions	Pass	Under limit 0.35 dB at 5924.970 MHz
3.7	15.207	AC Conducted Emission	Pass	Under limit 9.86 dB at 0.510 MHz
3.8	15.203 15.407(a)	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Sonim Technologies, Inc.
4445 Eastgate Mall,Suite200,San Diego,CA92121,USA

1.2 Manufacturer

Sonim Technologies, Inc.
4445 Eastgate Mall,Suite200,San Diego,CA92121,USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smartphone
Brand Name	Sonim
Model Name	X802
FCC ID	WYPS3111
HW Version	V1.0
SW Version	X80.0-01-14.0-42.18.00
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.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	U-NII-5: 5925 MHz ~ 6425 MHz U-NII-6: 6425 MHz ~ 6525 MHz U-NII-7: 6525 MHz ~ 6875 MHz U-NII-8: 6875 MHz ~ 7125 MHz
Maximum EIRP	**<MIMO Ant.10+11>** **<5925 MHz ~ 7125 MHz >** 802.11ax HE20 : 11.85 dBm / 0.0153 W 802.11ax HE40 : 14.49 dBm / 0.0281 W 802.11ax HE80 : 17.04 dBm / 0.0506 W 802.11ax HE160 : 19.45 dBm / 0.0881 W
99% Occupied Bandwidth	802.11ax HE20 : 19.314 MHz 802.11ax HE40 : 38.860 MHz 802.11ax HE80 : 78.712 MHz 802.11ax HE160 : 159.920 MHz
Antenna Type / Gain	**<5925 MHz ~ 6425 MHz >** <Ant. 10> : PIFA Antenna with gain 1.77 dBi <Ant. 11> : PIFA Antenna with gain -6.81 dBi **<6425 MHz ~ 6525 MHz >** <Ant. 10> : PIFA Antenna with gain -0.28 dBi <Ant. 11> : PIFA Antenna with gain -6.82 dBi **<6525 MHz ~ 6875 MHz >** <Ant. 10> : PIFA Antenna with gain -0.44 dBi <Ant. 11> : PIFA Antenna with gain -7.08 dBi **<6875 MHz ~ 7125 MHz >** <Ant. 10> : PIFA Antenna with gain -2.11 dBi <Ant. 11> : PIFA Antenna with gain -7.29 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)

Remark:

1. WLAN MIMO only support STBC mode, for WLAN SISO & MIMO (STBC) mode, the whole testing has assessed only MIMO mode to cover SISO mode.
2. 802.11ax support full RU tone and partial RU 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. For RSE, the worse cases of partial RU are verified
3. The EUT does not support channel puncturing mode.
4. The EUT support CH02 (5935MHz) and CH233 (7115MHz) by manufacturer declared.
5. CBP test with antenna path of minimum gain (Antenna 11, Minimum gain= -7.29 dBi).

1.5 Modification of EUT

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

1.6 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ; DFS01-SZ; CO02-SZ ; 03CH04-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH04-SZ	AUDIX	E3	6.2009-8-24
2.	CO02-SZ	AUDIX	E3	6.120613b

1.8 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 987594 D02 U-NII 6 GHz EMC Measurement v03
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- 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 (Z 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, 6, 7, 8>

BW 20M	**Channel**	2	1	5	9	13	17	21	25	29
	Freq. (MHz)	5935	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							

BW 20M	Channel	97	101	105	109	113	117	121	125
	Freq. (MHz)	6435	6455	6475	6495	6515	6535	6555	6575
BW 40M	Channel	99		107		115		123	
	Freq. (MHz)	6445		6485		6525		6565	
BW 80M	Channel	103				119			
	Freq. (MHz)	6465				6545			
BW 160M	Channel	111							
	Freq. (MHz)	6505							

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	185	189
	Freq. (MHz)	6755	6775	6795	6815	6835	6855	6875	6895
BW 40M	Channel	163		171		179		187	
	Freq. (MHz)	6765		6805		6845		6885	
BW 80M	Channel	167				183			
	Freq. (MHz)	6785				6865			
BW 160M	Channel	175							
	Freq. (MHz)	6825							

BW 20M	Channel	193	197	201	205	209	213	217	221
	Freq. (MHz)	6915	6935	6955	6975	6995	7015	7035	7055
BW 40M	Channel	195		203		211		219	
	Freq. (MHz)	6925		6965		7005		7045	
BW 80M	Channel	199				215			
	Freq. (MHz)	6945				7025			
BW 160M	Channel	207							
	Freq. (MHz)	6985							

BW 20M	Channel	225	229	233
	Freq. (MHz)	7075	7095	7115
BW 40M	Channel	227		
	Freq. (MHz)	7085		

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11ax HE20	MCS8
802.11ax HE40	MCS8
802.11ax HE80	MCS8
802.11ax HE160	MCS8

Test Cases	
AC Conducted Emission	Mode 1 : WCDMA B5 Idle + BT Link + WLAN(6G) Link + USB Cable(Charging From Adapter)+ Battery
Remark: For Radiated Test Cases, the tests were performed with Adapter and USB Cable.	

Co-location
LTE B48 Link + WLAN 6G 802.11ax HE20 CH02 TX
LTE B48 Link + WLAN 6G 802.11ax HE20 CH02 TX + Bluetooth LE (2Mbps) CH00 TX

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE20	802.11ax HE20	802.11ax HE20	802.11ax HE20
L	Low	001/002	097	117	189
M	Middle	045	105	149	209
H	High	093	113	181	229/233
Straddle		-	-	-	185

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE40	802.11ax HE40	802.11ax HE40	802.11ax HE40
L	Low	003	099	123	195
M	Middle	043	-	147	203
H	High	091	107	179	227
Straddle		-	115	-	187

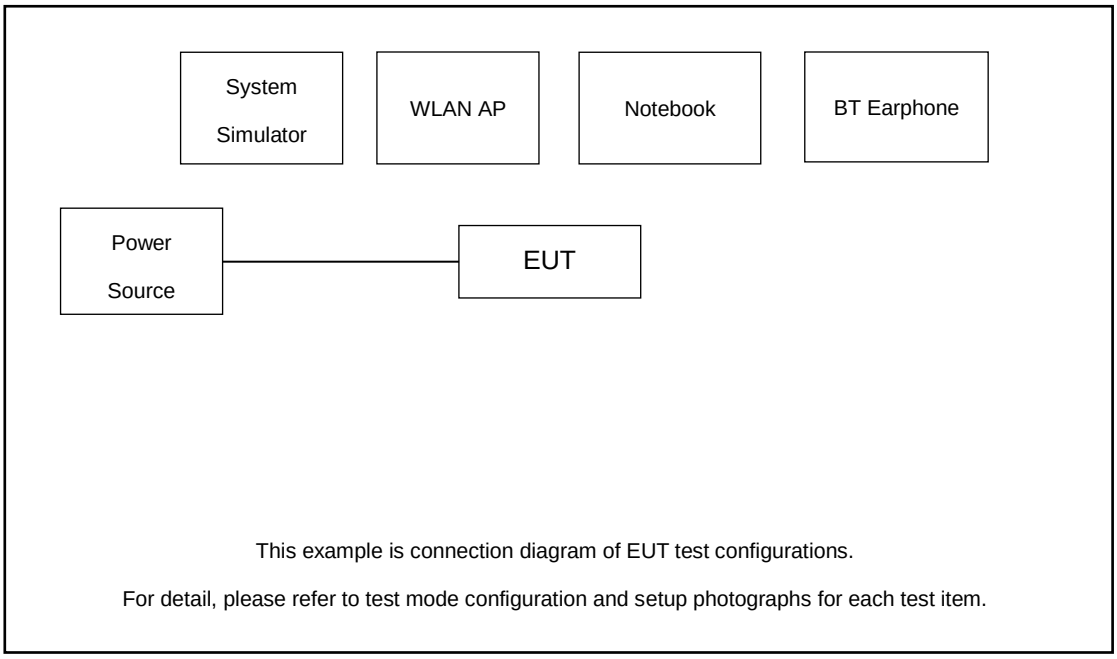
Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE80	802.11ax HE80	802.11ax HE80	802.11ax HE80
L	Low	007	103	135	199
M	Middle	039		151	-
H	High	087		167	215
Straddle		-	119	183	-

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE160	802.11ax HE160	802.11ax HE160	802.11ax HE160
L	Low	015	-	143	207
M	Middle	047			
H	High	079			
Straddle		-	111	175	-

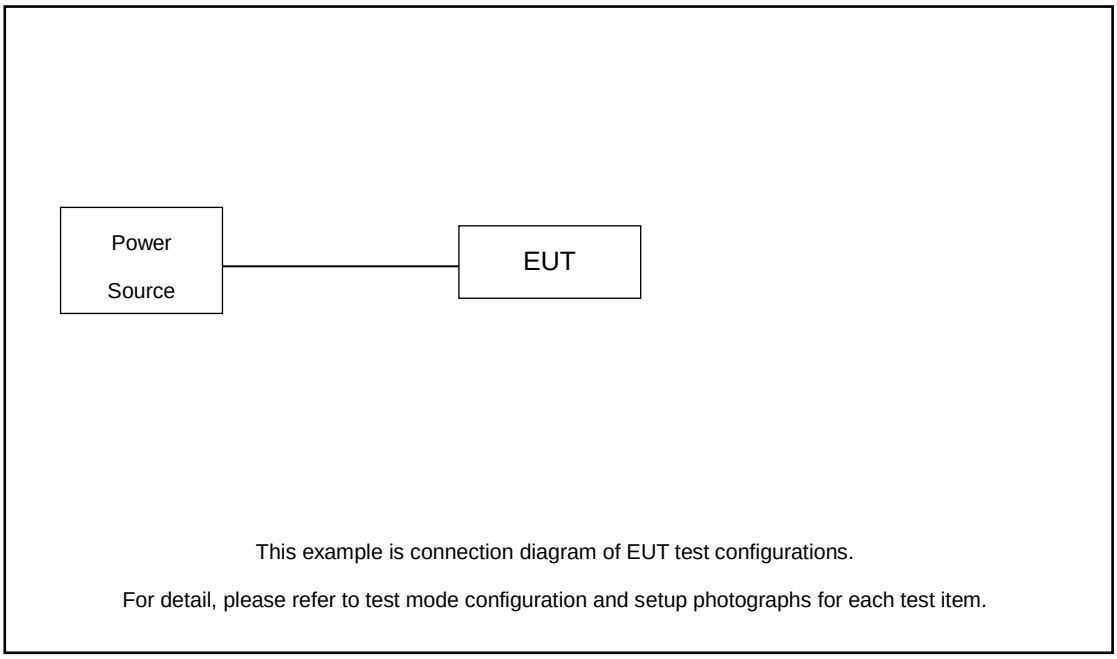
Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System

For AC 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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Notebook	DELL	Latiude 3400	N/A	N/A	Unshielded,1.8m
4.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	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 5.99 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 5.99 + 10 = 15.99 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 CFR 15.407 (a)(11)

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

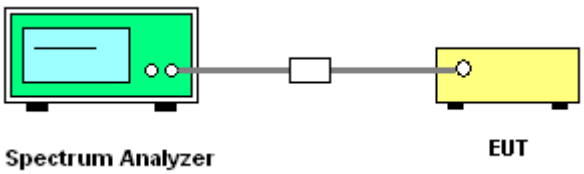
3.1.2 Measuring Instruments

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) ≥ 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)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

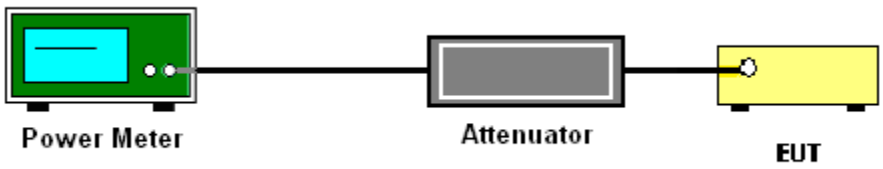
3.2.3 Test Procedures

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)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed −1 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).

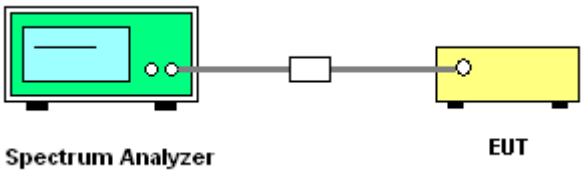
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), 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 PSD 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)(7) 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.

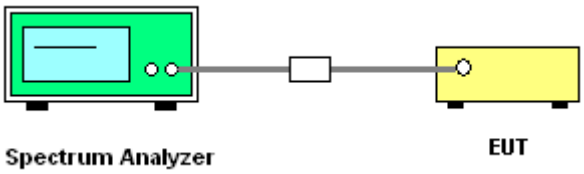
Section J) In-Band Emissions.

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 ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / 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 Contention Based Protocol

3.5.1 Limit of Contention Based Protocol

<FCC 14-30 CFR 15.407>

(d)(6) All U-NII transmitters, except for standard power access points and fixed client devices, operating in the 5.925-7.125 GHz band must employ a contention-based protocol.

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain. To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel. For example, an 802.11 device that plans to transmit a 40 MHz- wide signal (on a primary 20 MHz channel and a secondary 20 MHz channel) must detect energy throughout the entire 40 MHz channel. Additionally, low-power indoor devices must detect co-channel energy with 90% or greater certainty.

Table 1. Criteria to determine number of times detection threshold test may be performed

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Tune incumbent and EUT transmissions ($f_{c1} = f_{c2}$)
$BW_{Inc} < BW_{EUT} \leq 2BW_{Inc}$	Once	Incumbent transmission is contained within BW_{EUT}
$2BW_{Inc} < BW_{EUT} \leq 4BW_{Inc}$	Twice. Incumbent transmission is contained within BW_{EUT}	Incumbent transmission is located as closely as possible to the lower edge and upper edge, respectively, of the EUT channel
$BW_{EUT} > 4BW_{Inc}$	Three times	Incumbent transmission is located as closely as possible to the lower edge of the EUT channel, in the middle of EUT channel, and as closely as possible to the upper edge of the EUT channel

where:
$BWEUT$: Transmission bandwidth of EUT signal
$BWInc$: Transmission bandwidth of the simulated incumbent signal (10 MHz wide AWGN signal)
$fc1$: Center frequency of EUT transmission
$fc2$: Center frequency of simulated incumbent signal

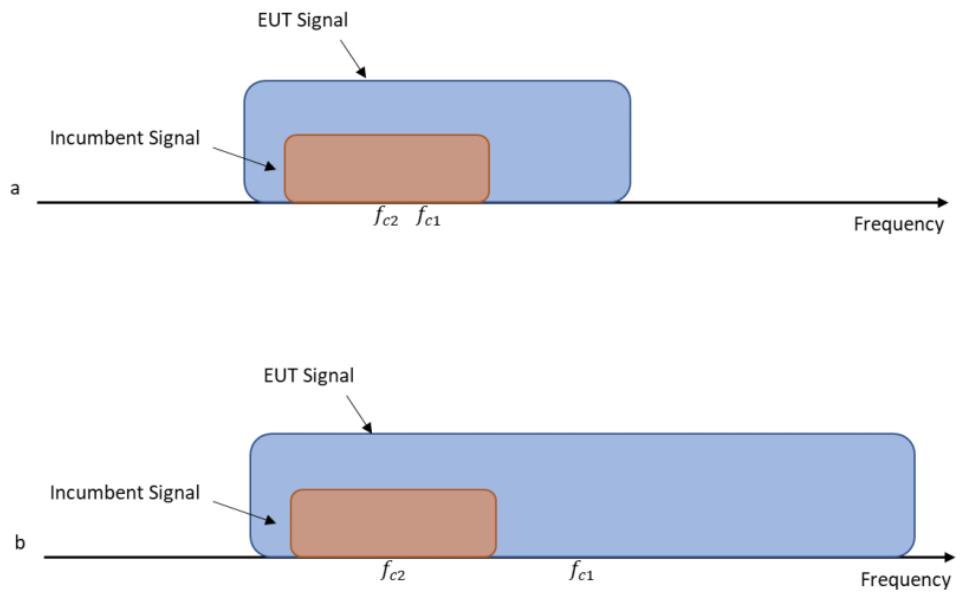


Figure 1. Two possible scenarios where a) center frequency of EUT transmission falls within incumbent's bandwidth, or b) outside of it

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

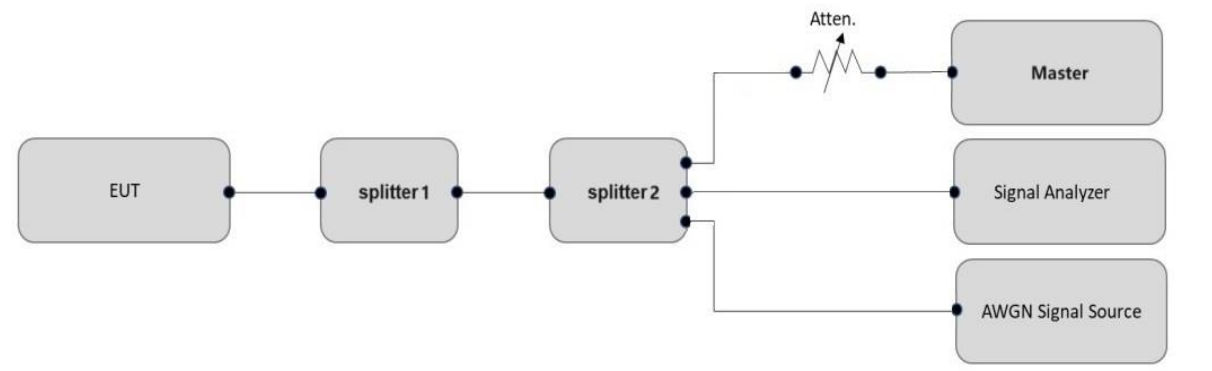
1. To ensure EUT reliably detects an incumbent signal in both scenarios shown in Figure 1, the detection threshold test may be repeated more than once with the incumbent signal (having center frequency $fc2$) tuned to different center frequencies within the UT transmission bandwidth. The criteria specified in Table 1 determines how many times the detection threshold test must be performed
2. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
3. Monitor the signal analyzer to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
4. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
5. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 2, choose a different center

frequency for the AWGN signal and repeat the process.

6. EUT was driven in MIMO mode, the interferer signal was injected to both chains to monitor the performance, while the interferer level is determined according to the lowest antenna gain among both antennas.

3.5.4 Test Setup

Conducted Setup



3.5.5 Support Unit used in test configuration and system

Instrument	Brand Name	Model No.	Characteristics
Signal Generator	Keysight	5182B/5182BX07	9KHz~7.2GHz
Spectrum Analyzer	R&S	FSV40	10kHz~40GHz
Terminal (NB Server)	DELL	P78G	LAN
Combiner (splitter1)	Tojoin	N/A	2G~8GHz
Combiner (splitter2)	MTJ Cooperation	MTJ7144-M	0.5GHz~18GHz
Attenuator	Keysight	8494B	0-110dBm
WLAN AP	ASUS	GT-AXE11000	Dual Band AP

3.5.6 Test Summary of Contention Based Protocol Test

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 5	6135	20	6135	-84.35	100	-62	-77.06	15.06
					Result: Stop Transmission			
				-85.35	<90	-62	-78.06	16.06
					Result: Minimal Operation			
				-86.35	=0	-62	-79.06	17.06
					Result: Normal Operation			
	6185	160	6110	-84.04	100	-62	-76.75	14.75
					Result: Stop Transmission			
				-85.04	<90	-62	-77.75	15.75
					Result: Minimal Operation			
				-86.04	=0	-62	-78.75	16.75
					Result: Normal Operation			
			6185	-79.74 **(worst)**	100	-62	-72.45	10.45
					Result: Stop Transmission			
				-80.74	<90	-62	-73.45	11.45
					Result: Minimal Operation			
				-81.74	=0	-62	-74.45	12.45
					Result: Normal Operation			
			6260	-85.97	100	-62	-78.68	16.68
					Result: Stop Transmission			
				-86.97	<90	-62	-79.68	17.68
					Result: Minimal Operation			
				-87.97	=0	-62	-80.68	18.68
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (Antenna 11, gain = -7.29dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 6	6455	20	6455	-84.26	100	-62	-76.97	14.97
					Result: Stop Transmission			
				-85.26	<90	-62	-77.97	15.97
					Result: Minimal Operation			
				-86.26	=0	-62	-78.97	16.97
					Result: Normal Operation			
	6505	160	6430	-86.31	100	-62	-79.02	17.02
					Result: Stop Transmission			
				-87.31	<90	-62	-80.02	18.02
					Result: Minimal Operation			
				-88.31	=0	-62	-81.02	19.02
					Result: Normal Operation			
			6505	-82.51	100	-62	-75.22	13.22
					Result: Stop Transmission			
				-83.51	<90	-62	-76.22	14.22
					Result: Minimal Operation			
				-84.51	=0	-62	-77.22	15.22
					Result: Normal Operation			
			6580	-86.61	100	-62	-79.32	17.32
					Result: Stop Transmission			
				-87.61	<90	-62	-80.32	18.32
					Result: Minimal Operation			
				-88.61	=0	-62	-81.32	19.32
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (Antenna 11, gain = -7.29dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 7	6695	20	6695	-84.96	100	-62	-77.67	15.67
					Result: Stop Transmission			
				-85.96	<90	-62	-78.67	16.67
					Result: Minimal Operation			
				-86.96	=0	-62	-79.67	17.67
					Result: Normal Operation			
	6665	160	6590	-88.44	100	-62	-81.15	19.15
					Result: Stop Transmission			
				-89.44	<90	-62	-82.15	20.15
					Result: Minimal Operation			
				-90.44	=0	-62	-83.15	21.15
					Result: Normal Operation			
			6665	-83.84	100	-62	-76.55	14.55
					Result: Stop Transmission			
				-84.84	<90	-62	-77.55	15.55
					Result: Minimal Operation			
				-85.84	=0	-62	-78.55	16.55
					Result: Normal Operation			
			6740	-88.74	100	-62	-81.45	19.45
					Result: Stop Transmission			
				-89.74	<90	-62	-82.45	20.45
					Result: Minimal Operation			
				-90.74	=0	-62	-83.45	21.45
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (Antenna 11, gain = -7.29dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

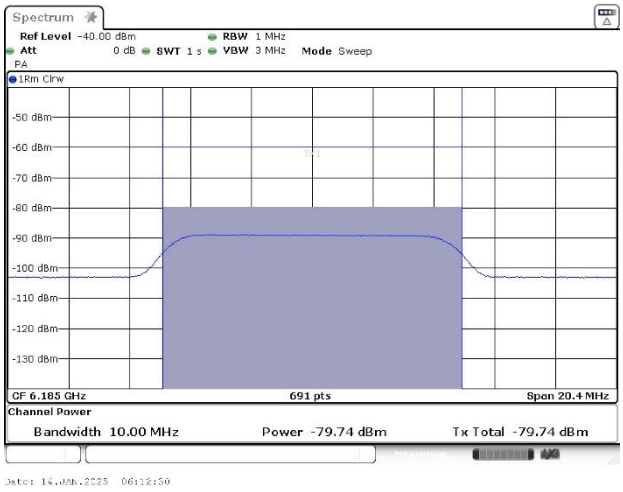
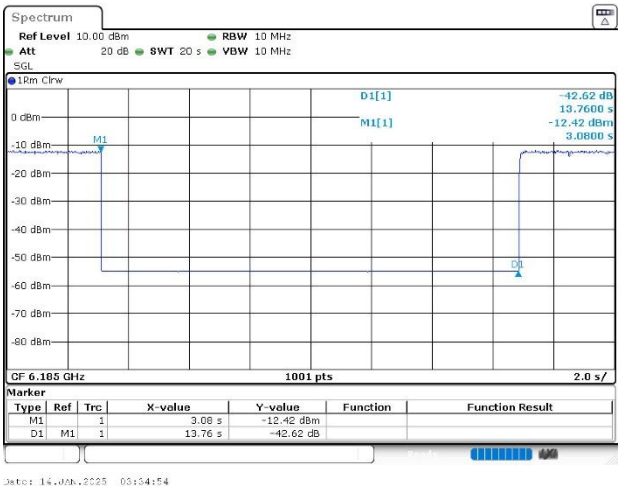
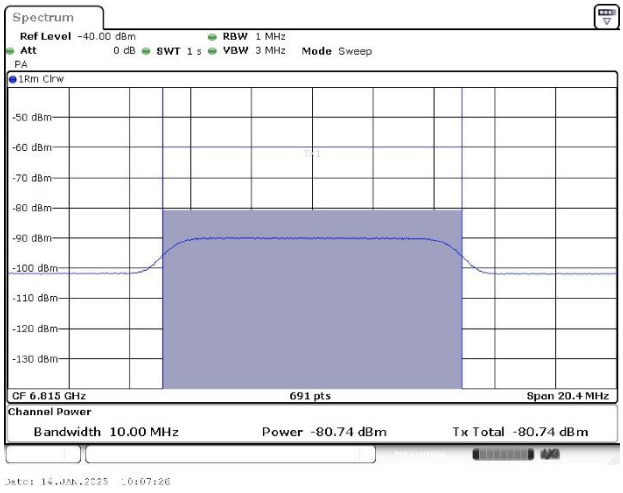
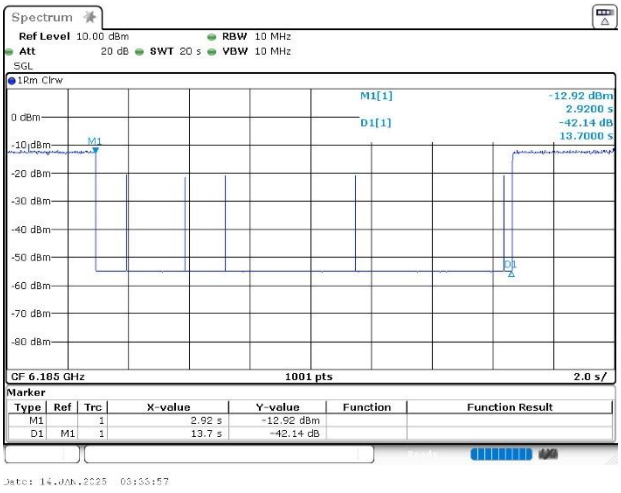
Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 8	7015	20	7015	-90.26	100	-62	-82.97	20.97
					Result: Stop Transmission			
				-91.26	<90	-62	-83.97	21.97
					Result: Minimal Operation			
				-92.26	=0	-62	-84.97	22.97
					Result: Normal Operation			
	6985	160	6910	-87.28	100	-62	-79.99	17.99
					Result: Stop Transmission			
				-88.28	<90	-62	-80.99	18.99
					Result: Minimal Operation			
				-89.28	=0	-62	-81.99	19.99
					Result: Normal Operation			
			6985	-85.42	100	-62	-78.13	16.13
					Result: Stop Transmission			
				-86.42	<90	-62	-79.13	17.13
					Result: Minimal Operation			
				-87.42	=0	-62	-80.13	18.13
					Result: Normal Operation			
			7060	-88.63	100	-62	-81.34	19.34
					Result: Stop Transmission			
				-89.63	<90	-62	-82.34	20.34
					Result: Minimal Operation			
				-90.63	=0	-62	-83.34	21.34
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (Antenna 11, gain = -7.29dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

3.5.7 Worst Case Plots of Contention Based Protocol

Contention Based Protocol Result Plots on U-NII 5 (AWGN Interference)	
802.11ax (HE160) / 6185MHz (Middle) Threshold Level (TL) = -79.74 dBm	802.11ax (HE160) / CH47 (Middle) Test result is pass due to no transmission occur.
	
802.11ax (HE160) / 6185MHz (Middle) Threshold Level (TL) = -80.74 dBm	802.11ax (HE160) / CH47 (Middle) Transmit when the interferer is 1dB lower.
	

Remark: M1: Injection of AWGN signal, D1: Removal of AWGN signal

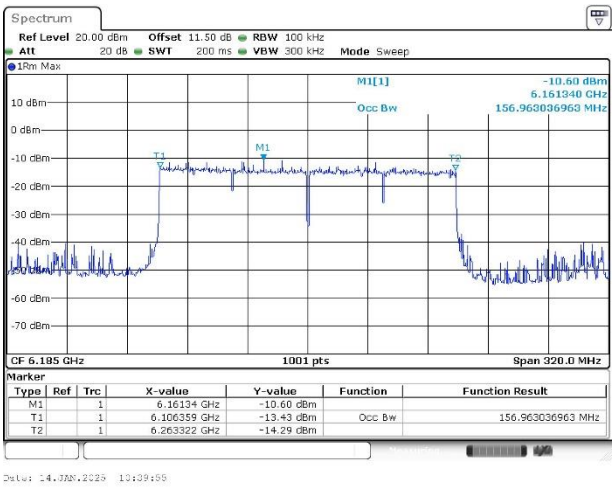
3.5.8 Worst Case of Contention Based Protocol Transmission Bandwidth

Verify transmission absence when Incumbent signal at different frequency (frequency domain plots).

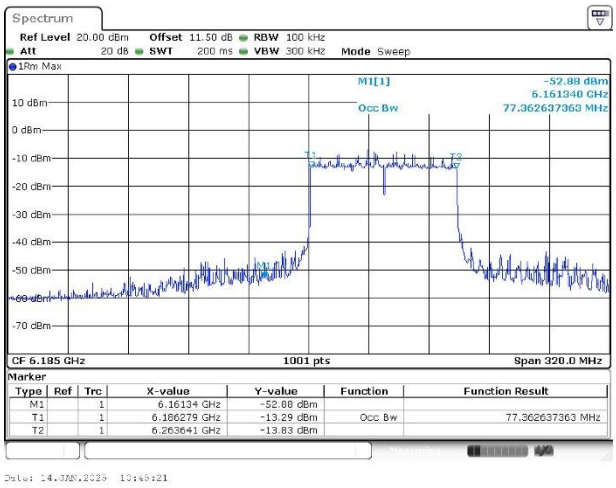
1. When Incumbent Signal inject at lowest frequency, the transmission bandwidth reduced to 80MHz;
2. When Incumbent Signal inject at middle frequency, the whole 160MHz bandwidth stop transmission;
3. When Incumbent Signal inject at highest frequency, the transmission bandwidth reduced to 40MHz;
4. This device does not support channel puncturing mode for incumbent avoidance but bandwidth reduction mechanism is supported.

UNII Band 5_CH47 (6185MHz / BW=160MHz)

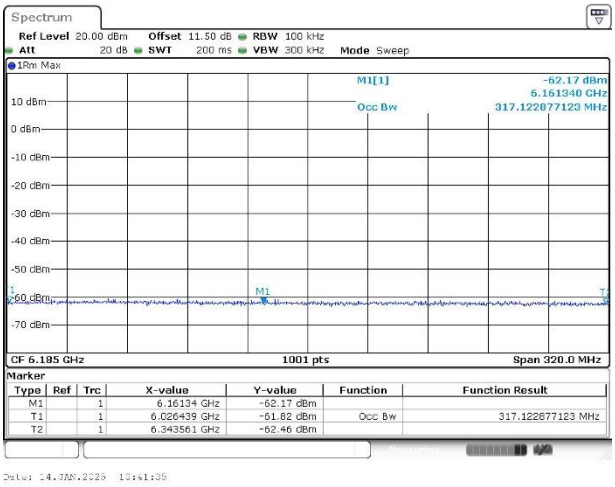
Non-Incumbent Signal



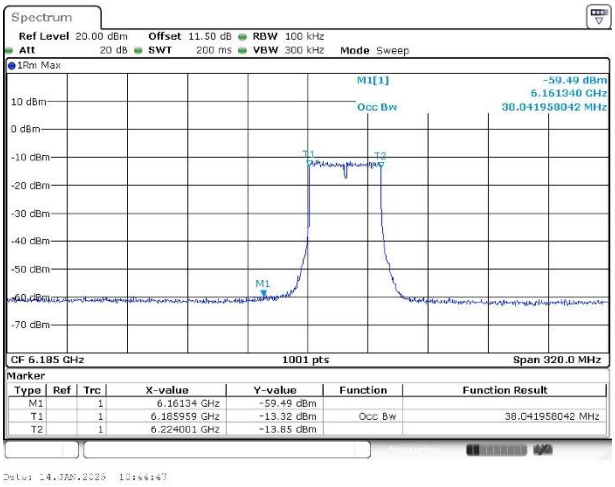
Incumbent freq @ 6110MHz



Incumbent freq @ 6185MHz



Incumbent freq @ 6260 MHz



3.6 Unwanted Emissions Measurement

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

3.6.1 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)	68.2
- 7 (Peak)	88.2

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.

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

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 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 ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

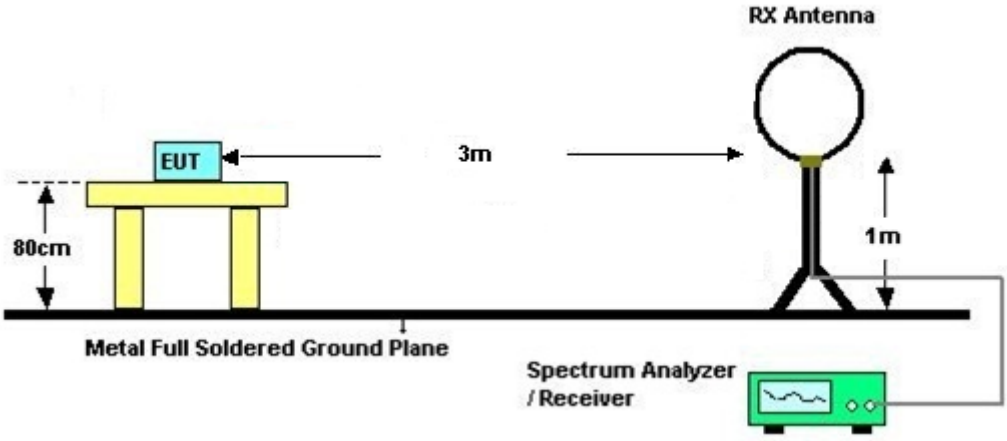
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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.

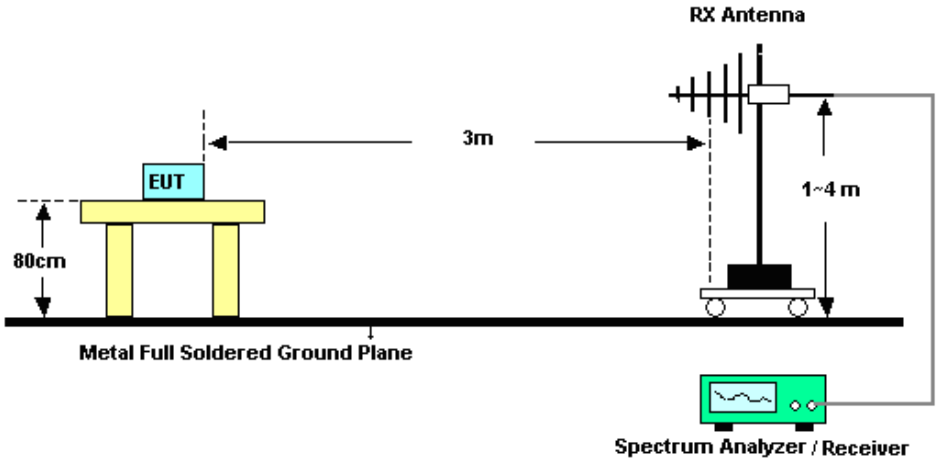
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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.

3.6.4 Test Setup

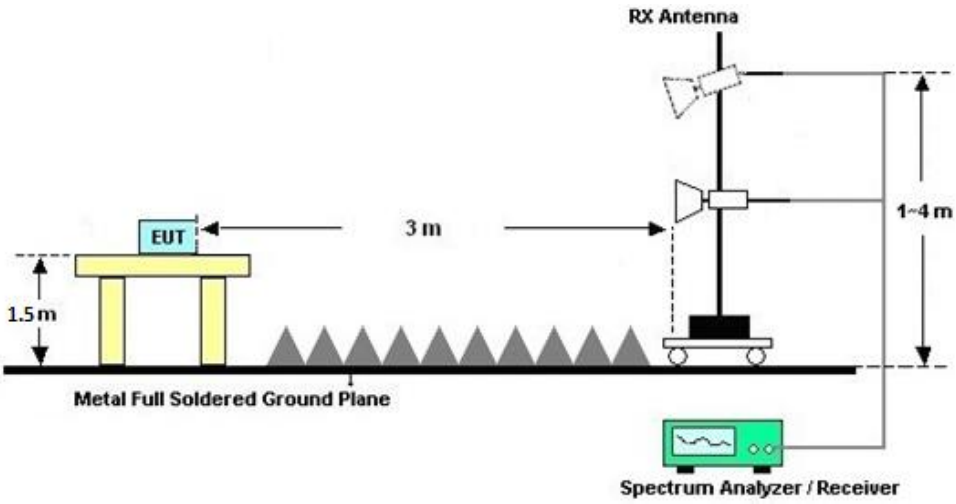
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.6.5 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.

3.6.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C

3.6.7 Duty Cycle

Please refer to Appendix D.

3.6.8 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.

3.7 AC Conducted Emission Measurement

3.7.1 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.

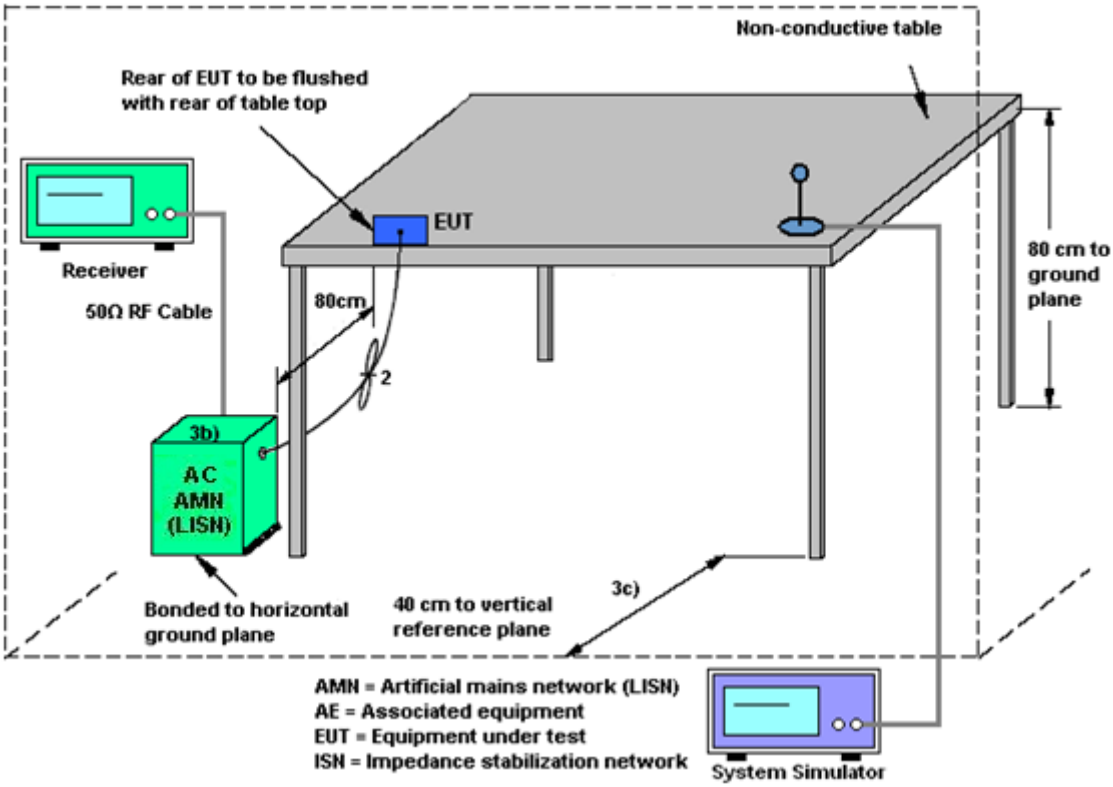
3.7.2 Measuring Instruments

See list of measuring equipment of this test report.

3.7.3 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.

3.7.4 Test Setup



3.7.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Anti-Replacement Construction

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

3.8.3 Antenna Gain

<STBC Modes>

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e.,

Directional gain = $G_{ANT\ MAX}$(Ant.1 Gain, Ant.2 Gain,…) + Array Gain, as following table for Power,

where Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

For PSD, the directional gain calculation is following,

For completely uncorrelated transmissions, directional gain is calculated as,

Directional gain = $G_{ANT\ MAX}$(Ant.1 Gain, Ant.2 Gain,…), as following table

<STBC Modes>

	Ant. 11 (dBi)	Ant. 10 (dBi)	DG for Power (dBi)	DG for PSD (dBi)
UNII-1	-6.81	1.77	1.77	1.77
UNII-2A	-6.82	-0.28	-0.28	-0.28
UNII-2C	-7.08	-0.44	-0.44	-0.44
UNII-3	-7.29	-2.11	-2.11	-1.50

This device supports STBC mode, not support CDD (Cyclic Delay Diversity) mode which controlled by chipset software. This chipset support WIFI MIMO(2*2), and support STBC mode by manufacturer declared.

Space time block coding (STBC) transmits multiple copies of one data flow in wireless communication. STBC uses two antennas (Ant 11 and Ant 10) to produce multiple receive versions of data, improving data transmission reliability. Among these data copies, optimal copies are combined to provide most reliable data. This redundancy increases the chance of using one or more copies of received data to correctly decode the received data. STBC combines all the copies of received signals to produce the useful data.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Jan. 19, 2025~ May 22, 2025	Apr. 08, 2025	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 08, 2025		Apr. 07, 2026	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 25, 2024	Jan. 19, 2025~ May 22, 2025	Dec. 24, 2025	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 14, 2024	Feb. 23, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 03, 2024	Feb. 23, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Feb. 23, 2025	Dec. 27, 2025	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	May 09, 2024	Feb. 23, 2025	May 08, 2025	Radiation (03CH04-SZ)
Double Ridge Guide Antenna	ETS-Lindgren	Burgeon-3117	00240057	1GHz~18GHz	Jul. 13, 2024	Feb. 23, 2025	Jul. 12, 2025	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBECK	BBHA9170	9170#679	15GHz~40GHz	Jul. 04, 2024	Feb. 23, 2025	Jul. 03, 2025	Radiation (03CH04-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2024	Feb. 23, 2025	Oct. 17, 2025	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 14, 2024	Feb. 23, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 03, 2024	Feb. 23, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
Amplifier	Agilent Technologies	83017A	MY57280136	500MHz~26.5GHz	Jul. 03, 2024	Feb. 23, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
AC Power Source	APC	AFV-S-600B	F119050019	N/A	Oct. 14, 2024	Feb. 23, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Feb. 23, 2025	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Feb. 23, 2025	NCR	Radiation (03CH04-SZ)
EMI Receiver	R&S	ESR7	102297	9kHz~7GHz;	Jul. 03, 2024	Feb. 11, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC LISN	R&S	ENV216	101499	9kHz~30MHz	Jul. 03, 2024	Feb. 11, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC Power Source	CHROMA	61601	616010002470	100Vac~250Vac	Dec. 25, 2024	Feb. 11, 2025	Dec. 24, 2025	Conduction (CO02-SZ)
Signal Analyzer	R&S	FSV7	101473	10Hz~7GHz	Dec. 25, 2024	Jan. 14, 2025	Dec. 24, 2025	CBP (DFS01-SZ)
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200424	9kHz~6GHz	Apr. 09, 2024	Jan. 14, 2025	Apr. 08, 2025	CBP (DFS01-SZ)
Combiner	TOJOIN	PS-2AM-0460	SZE14011007	0.4~6GHz	Sep. 05, 2024	Jan. 14, 2025	Sep. 04, 2025	CBP (DFS01-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Conducted Power Spectral Density	±1.32 dB
Frequency	±1.3 Hz
Conducted Generated signal Levels	±0.62 dB
Conducted Time	0.38%

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5 dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.8dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1dB

---------- THE END ----------

Appendix A. Conducted Test Results

A1. Conducted Test Results

Test Engineer:	Chen ZhiQiang	Temperature:	21~25	°C
Test Date:	2025/1/19~2025/1/23	Relative Humidity:	51~54	%

Report NumHEr : FR4O2403F

TEST RESULTS DATA
EIRP Power Table

Band V MIMO																
Mod.	Data Rate	NTX	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 11	Ant 10	Ant 11	Ant 10	SUM	Ant 11	Ant 10	SUM			Ant 11	Ant 10
HE20	MCS8	2	5955	Full	0.00	0.00	6.48	6.42	9.46	1.77		11.23	24.00	Pass	7.5	
HE20	MCS8	2	5935	Full	0.00	0.00	-3.72	-4.07	-0.88	1.77		0.89	24.00	Pass	-3.5	
HE20	MCS8	2	6175	Full	0.00	0.00	6.48	6.77	9.64	1.77		11.41	24.00	Pass	7.5	
HE20	MCS8	2	6415	Full	0.00	0.00	6.87	6.42	9.66	1.77		11.43	24.00	Pass	7.5	
HE40	MCS8	2	5965	Full	0.00	0.00	9.50	9.36	12.44	1.77		14.21	24.00	Pass	10.5	
HE40	MCS8	2	6165	Full	0.00	0.00	8.85	9.33	12.11	1.77		13.88	24.00	Pass	10	
HE40	MCS8	2	6405	Full	0.00	0.00	9.32	8.84	12.10	1.77		13.87	24.00	Pass	10	
HE80	MCS8	2	5985	Full	0.00	0.00	12.34	11.45	14.93	1.77		16.70	24.00	Pass	13	
HE80	MCS8	2	6145	Full	0.00	0.00	11.98	11.46	14.74	1.77		16.51	24.00	Pass	12.5	
HE80	MCS8	2	6385	Full	0.00	0.00	12.12	10.61	14.44	1.77		16.21	24.00	Pass	12.5	
HE160	MCS8	2	6025	Full	0.00	0.00	15.06	14.23	17.68	1.77		19.45	24.00	Pass	15.5	
HE160	MCS8	2	6185	Full	0.00	0.00	14.61	14.43	17.53	1.77		19.30	24.00	Pass	15	
HE160	MCS8	2	6345	Full	0.00	0.00	14.74	13.59	17.21	1.77		18.98	24.00	Pass	15	

Report Number : FR4O2403F

TEST RESULTS DATA
EIRP Power Table

Band VI 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 11	Ant 10	Ant 11	Ant 10	SUM	Ant 11	Ant 10	SUM			Ant 11	Ant 10
HE20	MCS8	2	097	6435	Full	0.00	0.00	8.85	8.43	11.66	-0.28		11.38	24.00	Pass	9.5	
HE20	MCS8	2	105	6475	Full	0.00	0.00	8.27	7.95	11.12	-0.28		10.84	24.00	Pass	9	
HE20	MCS8	2	113	6515	Full	0.00	0.00	8.52	7.93	11.25	-0.28		10.97	24.00	Pass	9.5	
HE40	MCS8	2	099	6445	Full	0.00	0.00	11.55	11.23	14.40	-0.28		14.12	24.00	Pass	12	
HE40	MCS8	2	107	6485	Full	0.00	0.00	11.39	11.13	14.27	-0.28		13.99	24.00	Pass	12	
HE40	MCS8	2	115	6525	Full	0.00	0.00	11.59	11.11	14.37	-0.28		14.09	24.00	Pass	12.5	
HE80	MCS8	2	103	6465	Full	0.00	0.00	14.15	13.21	16.72	-0.28		16.44	24.00	Pass	14.5	
HE80	MCS8	2	119	6545	Full	0.00	0.00	14.64	13.46	17.10	-0.28		16.82	24.00	Pass	15.5	
HE160	MCS8	2	111	6505	Full	0.00	0.00	15.21	14.28	17.78	-0.28		17.50	24.00	Pass	15.5	

Report Number : FR4O2403F

TEST RESULTS DATA
EIRP Power Table

Band VII MIMO																
Mod.	Data Rate	NTX	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 11	Ant 10	Ant 11	Ant 10	SUM	Ant 11	Ant 10	SUM			Ant 11	Ant 10
HE20	MCS8	2	6535	Full	0.00	0.00	8.95	8.43	11.71	-0.44		11.27	24.00	Pass	10	
HE20	MCS8	2	6695	Full	0.00	0.00	8.68	8.41	11.56	-0.44		11.12	24.00	Pass	10	
HE20	MCS8	2	6855	Full	0.00	0.00	8.75	8.78	11.78	-0.44		11.34	24.00	Pass	10	
HE40	MCS8	2	6565	Full	0.00	0.00	11.35	11.11	14.24	-0.44		13.80	24.00	Pass	12.5	
HE40	MCS8	2	6685	Full	0.00	0.00	11.40	11.20	14.31	-0.44		13.87	24.00	Pass	12.5	
HE40	MCS8	2	6845	Full	0.00	0.00	11.85	11.98	14.93	-0.44		14.49	24.00	Pass	13	
HE80	MCS8	2	6625	Full	0.00	0.00	15.07	13.77	17.48	-0.44		17.04	24.00	Pass	16	
HE80	MCS8	2	6705	Full	0.00	0.00	14.56	13.63	17.13	-0.44		16.69	24.00	Pass	15.5	
HE80	MCS8	2	6785	Full	0.00	0.00	13.74	13.30	16.54	-0.44		16.10	24.00	Pass	15	
HE80	MCS8	2	6865	Full	0.00	0.00	14.66	14.24	17.47	-0.44		17.03	24.00	Pass	15.5	
HE160	MCS8	2	6665	Full	0.00	0.00	15.02	14.11	17.60	-0.44		17.16	24.00	Pass	15.5	
HE160	MCS8	2	6825	Full	0.00	0.00	14.85	14.48	17.68	-0.44		17.24	24.00	Pass	15.5	

Report Number : FR4O2403F

TEST RESULTS DATA
EIRP Power Table

Band VIII MIMO																
Mod.	Data Rate	NTX	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 11	Ant 10	Ant 11	Ant 10	SUM	Ant 11	Ant 10	SUM			Ant 11	Ant 10
HE20	MCS8	2	6875	Full	0.00	0.00	8.78	8.77	11.79	-0.44		11.35	24.00	Pass	10	
HE20	MCS8	2	6895	Full	0.00	0.00	10.15	10.33	13.25	-2.11		11.14	24.00	Pass	11.5	
HE20	MCS8	2	6995	Full	0.00	0.00	8.88	9.99	12.48	-2.11		10.37	24.00	Pass	12	
HE20	MCS8	2	7095	Full	0.00	0.00	10.92	10.97	13.96	-2.11		11.85	24.00	Pass	13	
HE20	MCS8	2	7115	Full	0.00	0.00	1.86	1.69	4.79	-2.11		2.68	24.00	Pass	4.5	
HE40	MCS8	2	6885	Full	0.00	0.00	11.51	11.67	14.60	-0.44		14.16	24.00	Pass	12.5	
HE40	MCS8	2	6925	Full	0.00	0.00	13.14	13.71	16.44	-2.11		14.33	24.00	Pass	14.5	
HE40	MCS8	2	6965	Full	0.00	0.00	12.64	13.34	16.01	-2.11		13.90	24.00	Pass	14.5	
HE40	MCS8	2	7085	Full	0.00	0.00	12.12	12.87	15.52	-2.11		13.41	24.00	Pass	14	
HE80	MCS8	2	6945	Full	0.00	0.00	14.58	14.56	17.58	-2.11		15.47	24.00	Pass	16	
HE80	MCS8	2	7025	Full	0.00	0.00	11.83	12.42	15.15	-2.11		13.04	24.00	Pass	14.5	
HE160	MCS8	2	6985	Full	0.00	0.00	14.12	14.65	17.40	-2.11		15.29	24.00	Pass	16	

Emission Bandwidth

Test Result

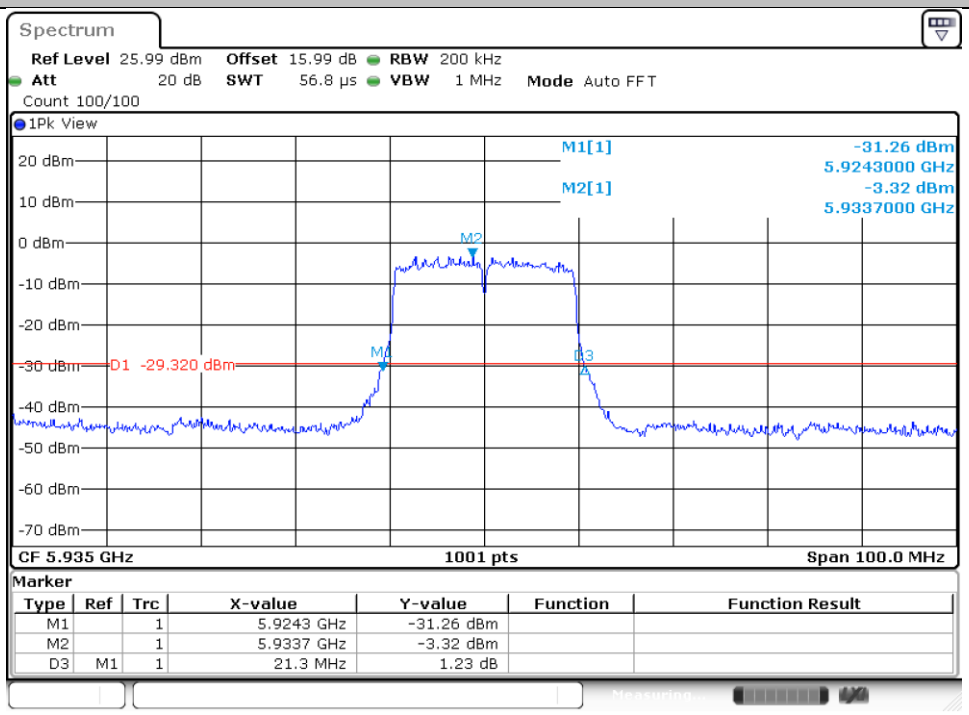
TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11AX20MIMO	Ant11	5935	21.30	5924.30	5945.60	≤320	PASS
	Ant10	5935	21.50	5924.30	5945.80	≤320	PASS
	Ant11	5955	22.30	5943.50	5965.80	≤320	PASS
	Ant10	5955	22.40	5943.50	5965.90	≤320	PASS
	Ant11	6175	21.20	6164.40	6185.60	≤320	PASS
	Ant10	6175	21.60	6164.10	6185.70	≤320	PASS
	Ant11	6415	21.80	6403.90	6425.70	≤320	PASS
	Ant10	6415	21.50	6404.20	6425.70	≤320	PASS
	Ant11	6435	21.20	6424.40	6445.60	≤320	PASS
	Ant10	6435	21.40	6424.40	6445.80	≤320	PASS
	Ant11	6475	21.30	6464.30	6485.60	≤320	PASS
	Ant10	6475	21.50	6464.30	6485.80	≤320	PASS
	Ant11	6515	20.90	6504.70	6525.60	≤320	PASS
	Ant10	6515	21.20	6504.30	6525.50	≤320	PASS
	Ant11	6535	21.70	6524.00	6545.70	≤320	PASS
	Ant10	6535	21.50	6524.00	6545.50	≤320	PASS
	Ant11	6695	21.50	6684.20	6705.70	≤320	PASS
	Ant10	6695	21.20	6684.30	6705.50	≤320	PASS
	Ant11	6855	21.40	6844.40	6865.80	≤320	PASS
	Ant10	6855	21.90	6843.80	6865.70	≤320	PASS
	Ant11	6875	21.10	6864.40	6885.50	≤320	PASS
	Ant10	6875	21.60	6864.20	6885.80	≤320	PASS
	Ant11	6895	21.30	6884.20	6905.50	≤320	PASS
	Ant10	6895	21.20	6884.20	6905.40	≤320	PASS
	Ant11	6995	21.40	6984.30	7005.70	≤320	PASS
	Ant10	6995	21.60	6984.20	7005.80	≤320	PASS
	Ant11	7095	21.40	7084.40	7105.80	≤320	PASS
	Ant10	7095	21.90	7084.10	7106.00	≤320	PASS
	Ant11	7115	21.10	7104.50	7125.60	≤320	PASS
	Ant10	7115	21.20	7104.40	7125.60	≤320	PASS
11AX40MIMO	Ant11	5965	43.00	5943.40	5986.40	≤320	PASS
	Ant10	5965	42.40	5943.80	5986.20	≤320	PASS
	Ant11	6165	43.00	6143.20	6186.20	≤320	PASS

	Ant10	6165	44.20	6142.80	6187.00	≤320	PASS
	Ant11	6405	43.40	6383.40	6426.80	≤320	PASS
	Ant10	6405	43.80	6383.20	6427.00	≤320	PASS
	Ant11	6445	43.20	6424.00	6467.20	≤320	PASS
	Ant10	6445	44.40	6422.80	6467.20	≤320	PASS
	Ant11	6485	42.80	6463.60	6506.40	≤320	PASS
	Ant10	6485	43.80	6463.40	6507.20	≤320	PASS
	Ant11	6525	42.60	6503.80	6546.40	≤320	PASS
	Ant10	6525	42.80	6503.60	6546.40	≤320	PASS
	Ant11	6565	42.80	6543.40	6586.20	≤320	PASS
	Ant10	6565	44.20	6542.80	6587.00	≤320	PASS
	Ant11	6685	42.60	6664.00	6706.60	≤320	PASS
	Ant10	6685	43.20	6663.40	6706.60	≤320	PASS
	Ant11	6845	43.40	6823.60	6867.00	≤320	PASS
	Ant10	6845	44.20	6823.20	6867.40	≤320	PASS
	Ant11	6885	43.40	6863.20	6906.60	≤320	PASS
	Ant10	6885	44.00	6862.60	6906.60	≤320	PASS
	Ant11	6925	43.40	6903.00	6946.40	≤320	PASS
	Ant10	6925	43.80	6903.20	6947.00	≤320	PASS
	Ant11	6965	44.40	6942.80	6987.20	≤320	PASS
	Ant10	6965	44.20	6943.00	6987.20	≤320	PASS
	Ant11	7085	43.80	7063.00	7106.80	≤320	PASS
	Ant10	7085	44.00	7062.80	7106.80	≤320	PASS
11AX80MIMO	Ant11	5985	85.20	5942.20	6027.40	≤320	PASS
	Ant10	5985	84.00	5942.20	6026.20	≤320	PASS
	Ant11	6145	86.40	6101.40	6187.80	≤320	PASS
	Ant10	6145	86.80	6101.80	6188.60	≤320	PASS
	Ant11	6385	86.80	6341.00	6427.80	≤320	PASS
	Ant10	6385	87.20	6341.80	6429.00	≤320	PASS
	Ant11	6465	86.80	6421.00	6507.80	≤320	PASS
	Ant10	6465	86.40	6421.40	6507.80	≤320	PASS
	Ant11	6545	88.00	6500.20	6588.20	≤320	PASS
	Ant10	6545	85.60	6501.80	6587.40	≤320	PASS
	Ant11	6625	85.60	6581.40	6667.00	≤320	PASS
	Ant10	6625	86.80	6580.20	6667.00	≤320	PASS
	Ant11	6705	86.00	6662.20	6748.20	≤320	PASS
	Ant10	6705	86.40	6661.80	6748.20	≤320	PASS
	Ant11	6785	86.40	6740.60	6827.00	≤320	PASS
	Ant10	6785	87.20	6742.60	6829.80	≤320	PASS

	Ant11	6865	90.00	6820.20	6910.20	≤320	PASS
	Ant10	6865	90.80	6818.20	6909.00	≤320	PASS
	Ant11	6945	87.60	6901.00	6988.60	≤320	PASS
	Ant10	6945	88.40	6900.60	6989.00	≤320	PASS
	Ant11	7025	90.00	6980.20	7070.20	≤320	PASS
	Ant10	7025	89.20	6979.80	7069.00	≤320	PASS
11AX160MIMO	Ant11	6025	168.80	5941.00	6109.80	≤320	PASS
	Ant10	6025	164.00	5943.40	6107.40	≤320	PASS
	Ant11	6185	167.20	6101.80	6269.00	≤320	PASS
	Ant10	6185	164.00	6103.40	6267.40	≤320	PASS
	Ant11	6345	168.00	6261.00	6429.00	≤320	PASS
	Ant10	6345	165.60	6262.60	6428.20	≤320	PASS
	Ant11	6505	167.20	6421.80	6589.00	≤320	PASS
	Ant10	6505	164.00	6423.40	6587.40	≤320	PASS
	Ant11	6665	168.00	6581.00	6749.00	≤320	PASS
	Ant10	6665	164.80	6582.60	6747.40	≤320	PASS
	Ant11	6825	167.20	6741.00	6908.20	≤320	PASS
	Ant10	6825	166.40	6741.80	6908.20	≤320	PASS
	Ant11	6985	166.40	6902.60	7069.00	≤320	PASS
	Ant10	6985	164.80	6901.80	7066.60	≤320	PASS

Test Graphs

11AX20MIMO_Ant11_5935



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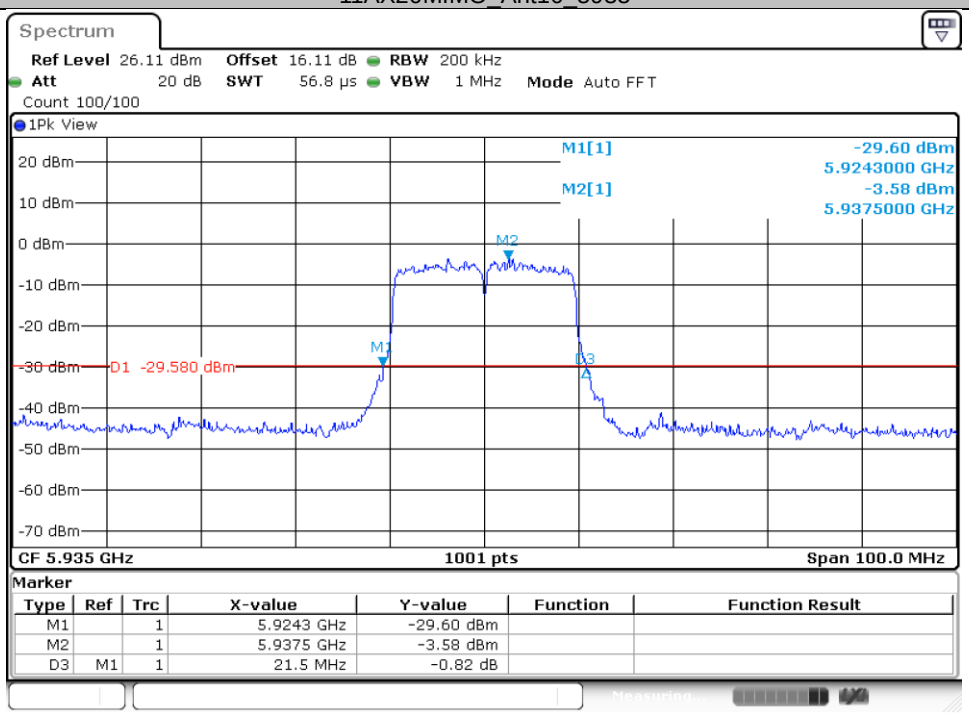
11AX20MIMO_Ant10_5935



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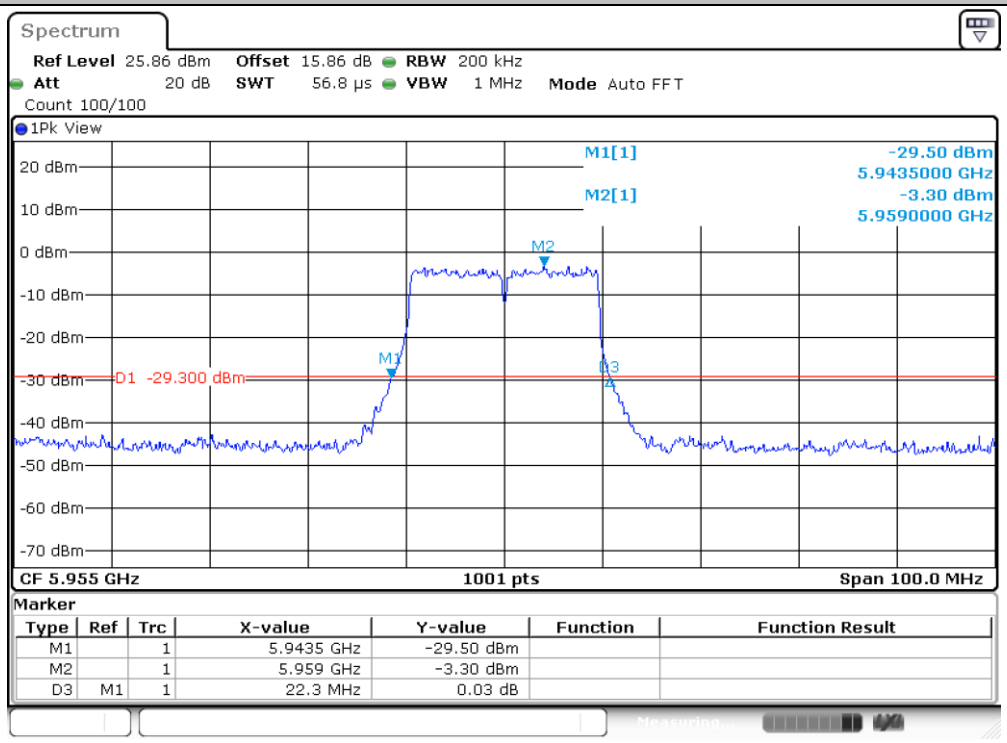

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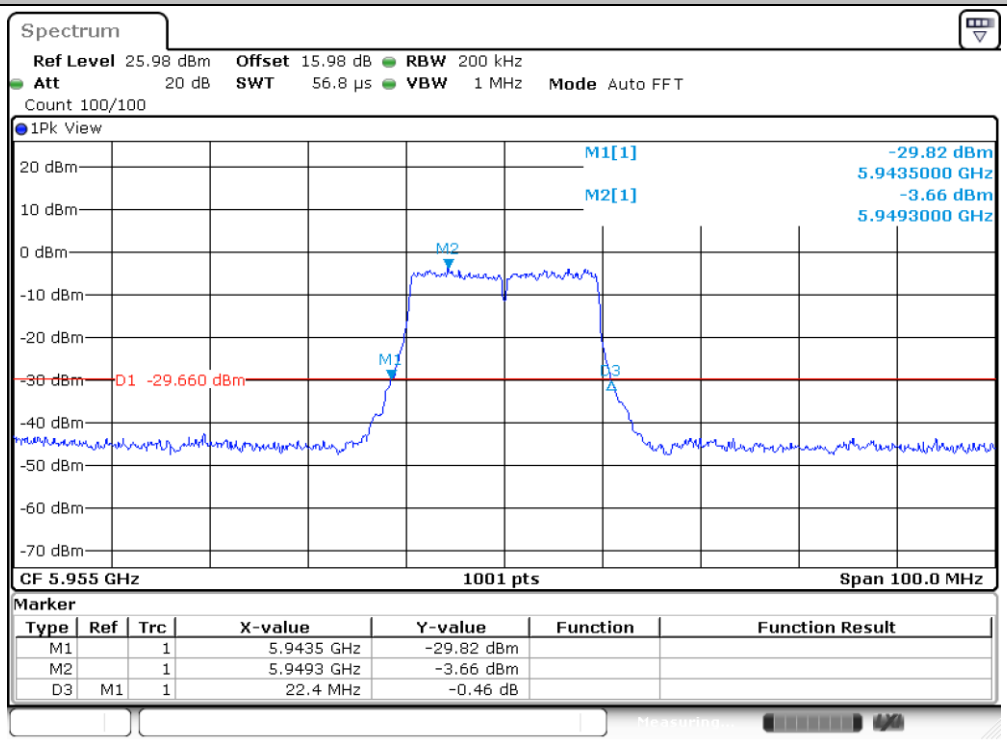

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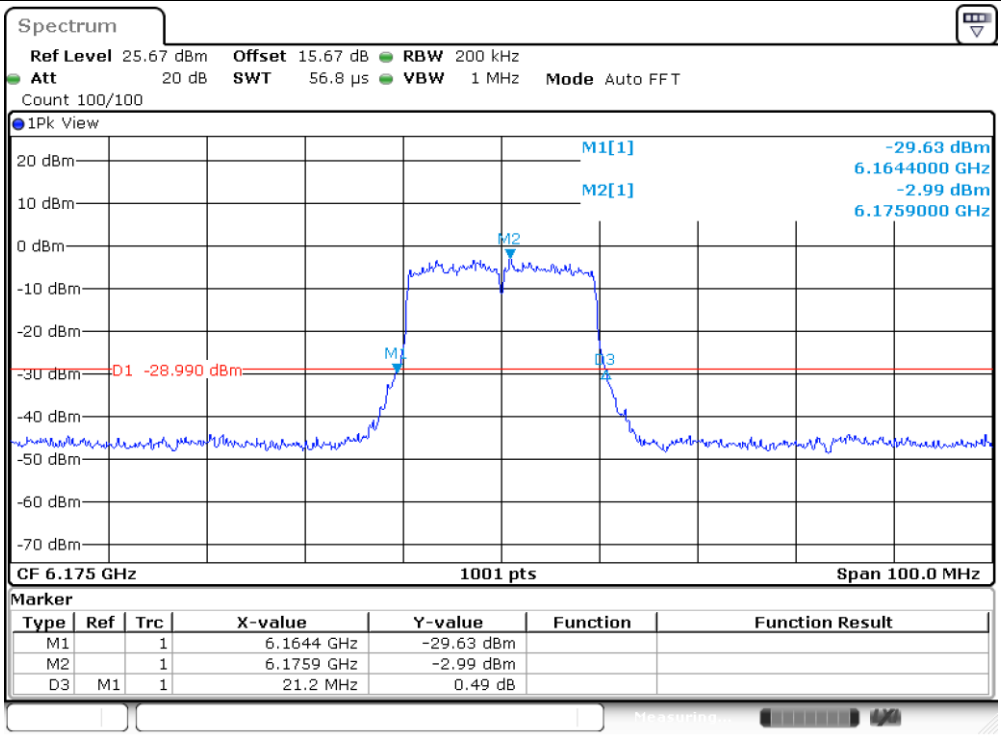

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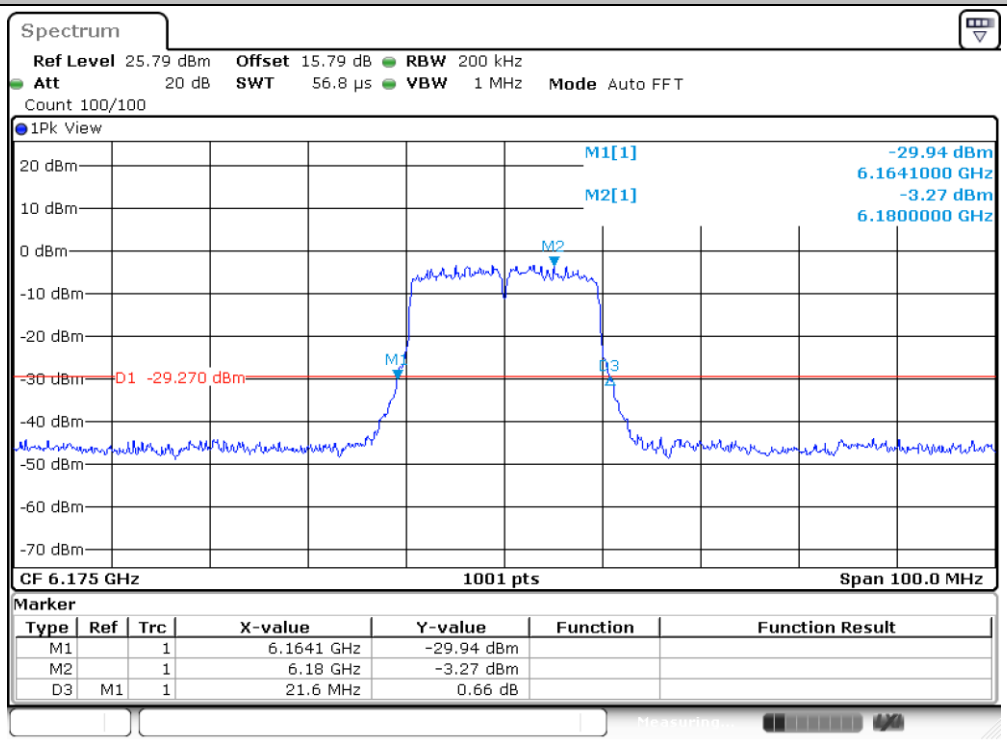

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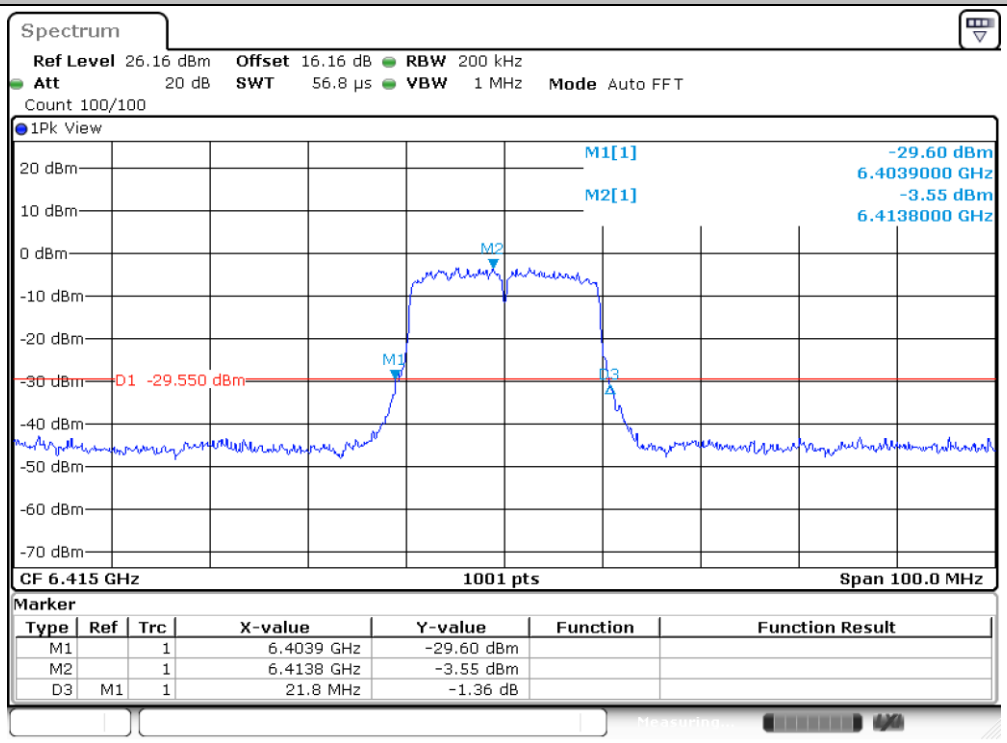

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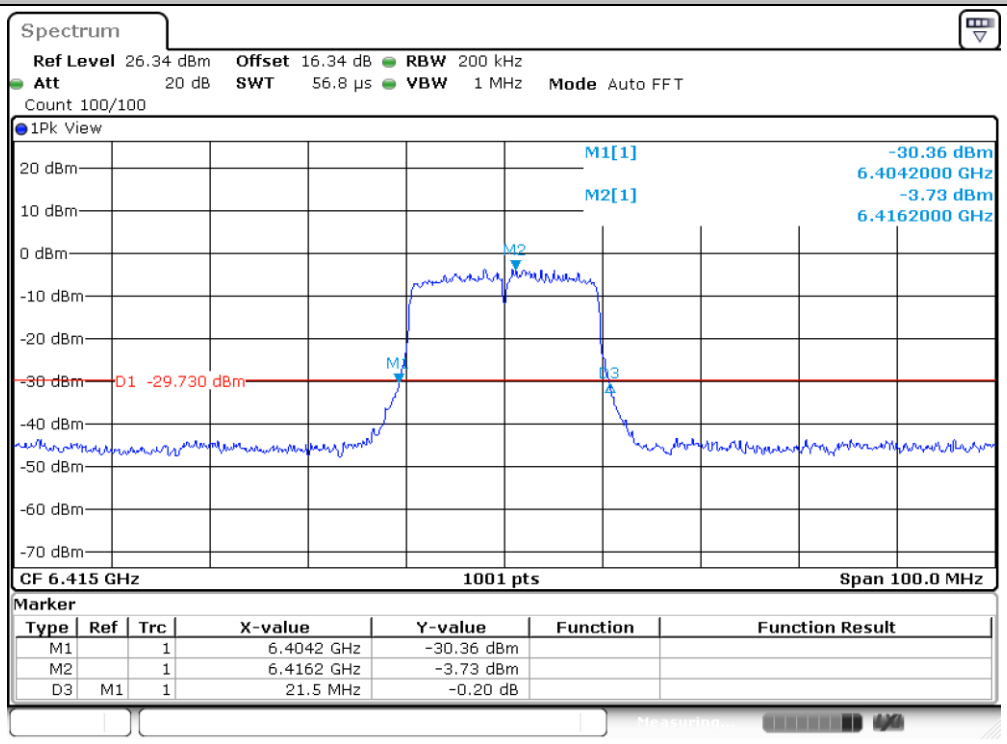
11AX20MIMO_Ant10_6415



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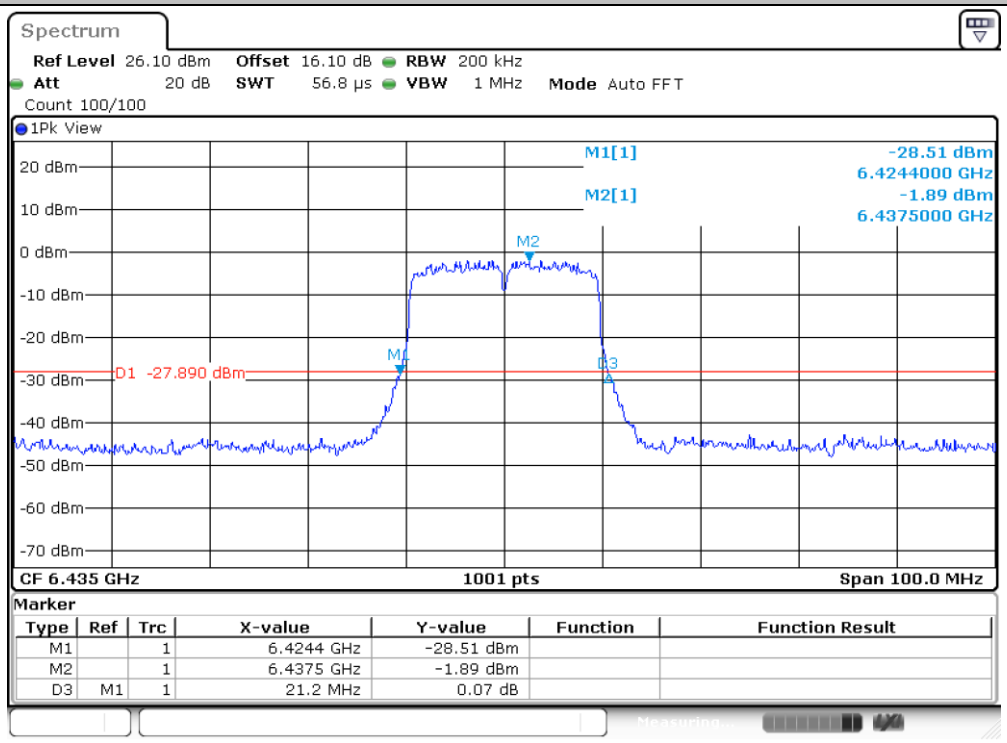
11AX20MIMO_Ant11_6435



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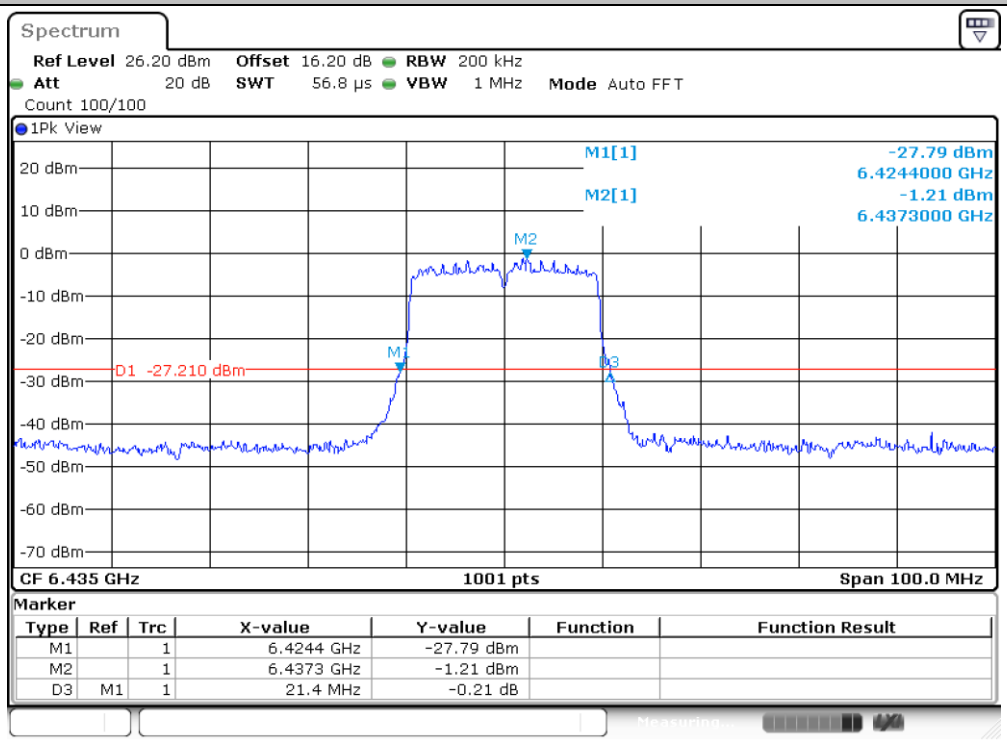

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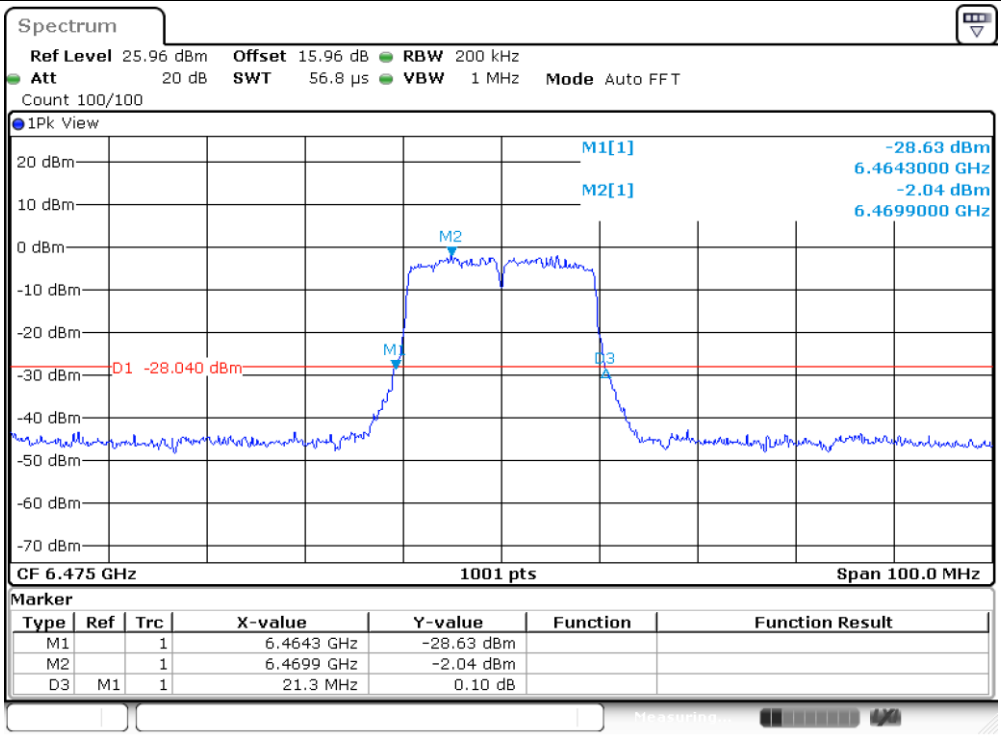
11AX20MIMO_Ant11_6475



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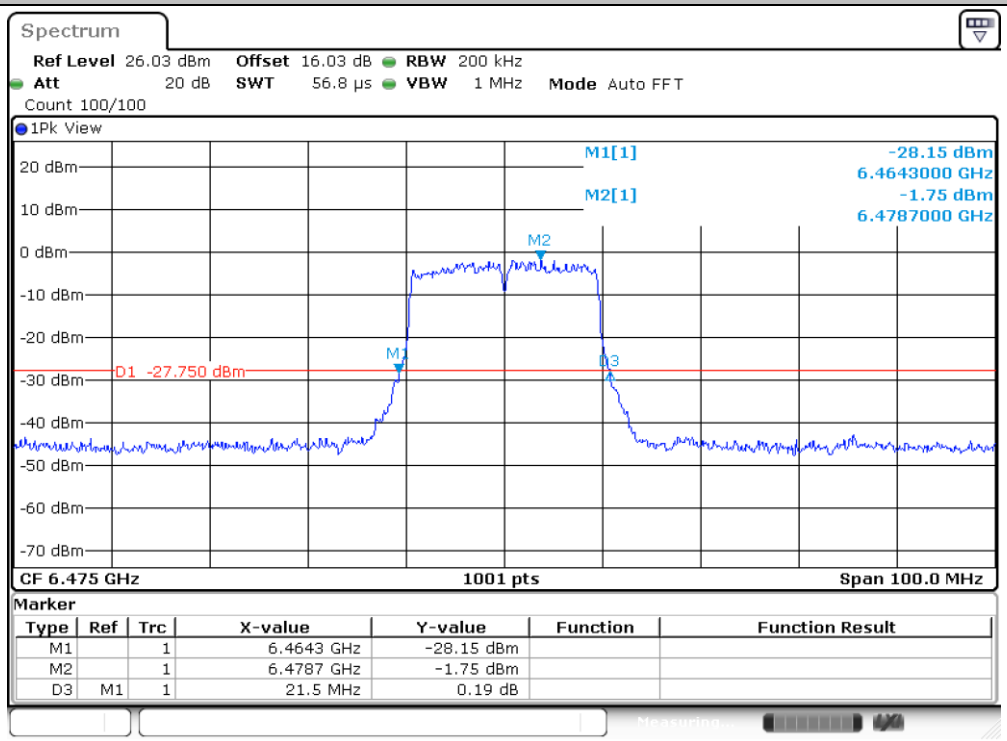

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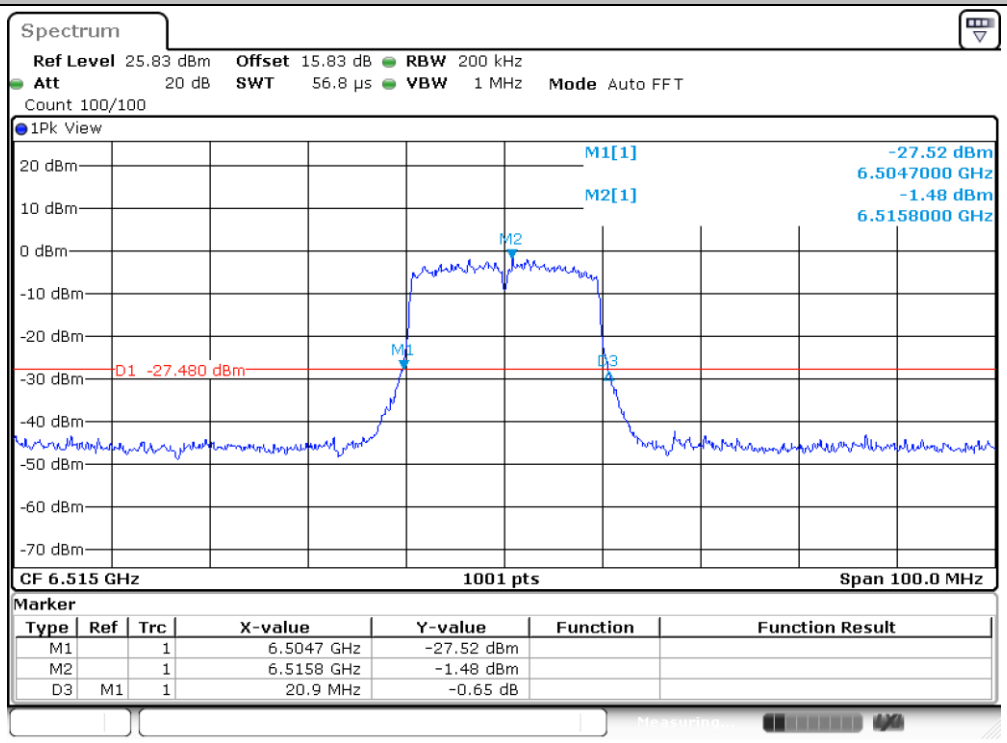

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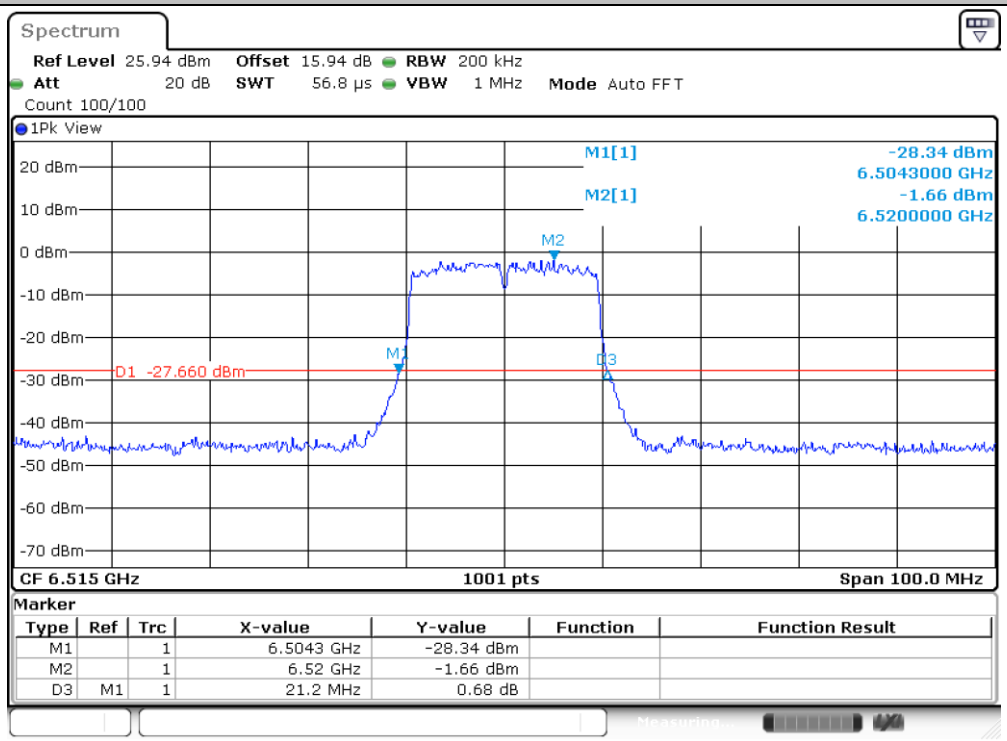

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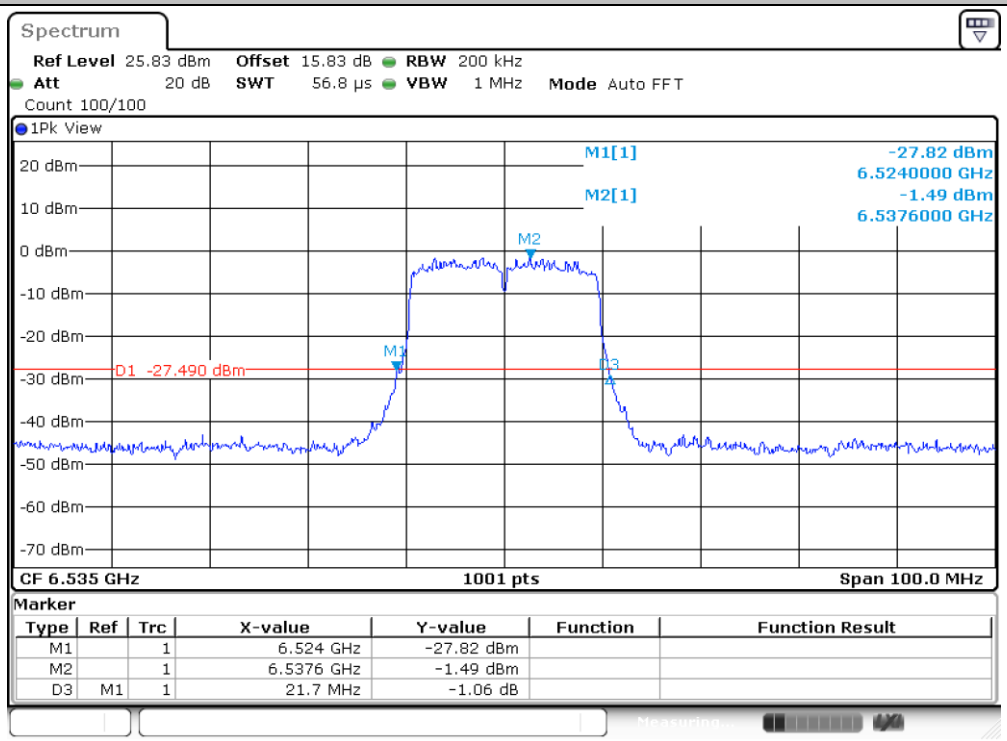

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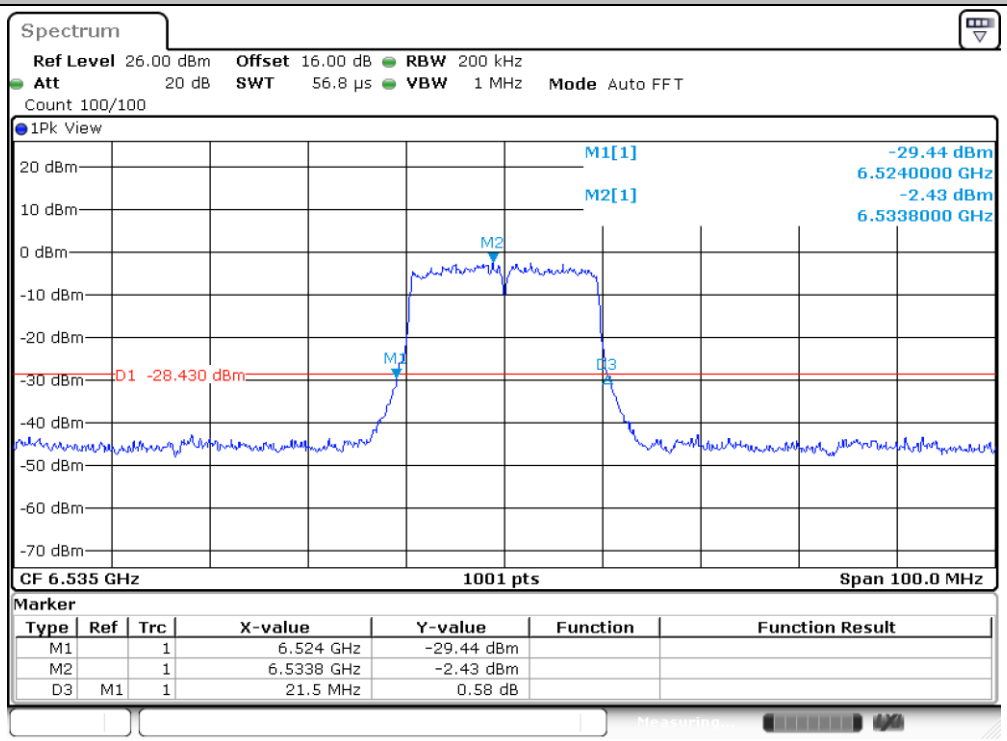

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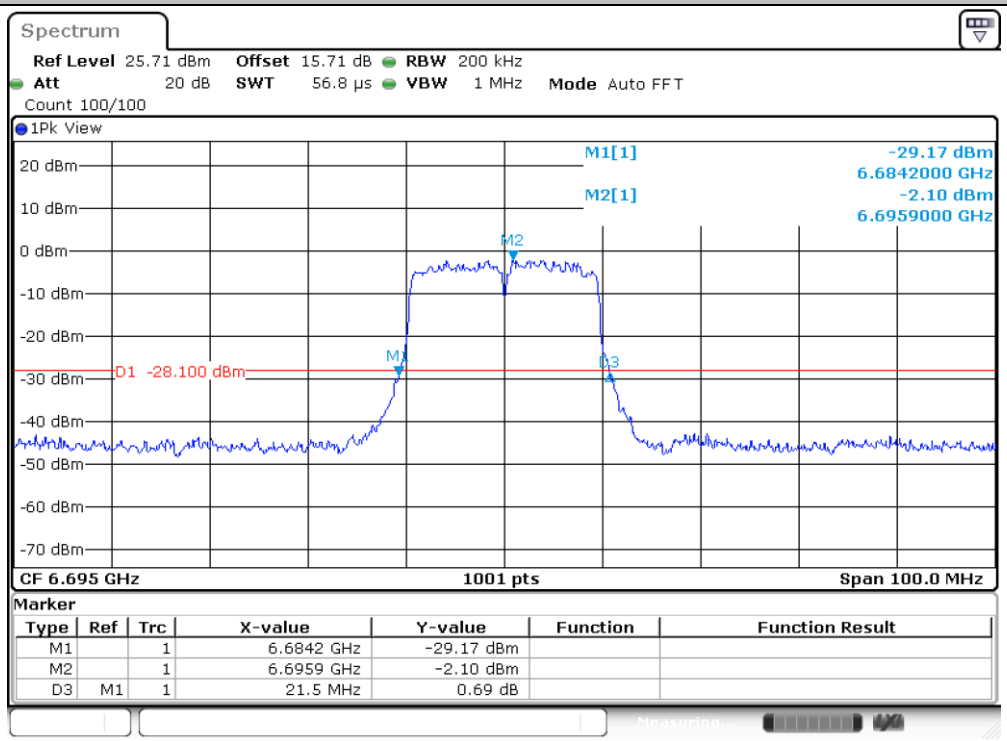

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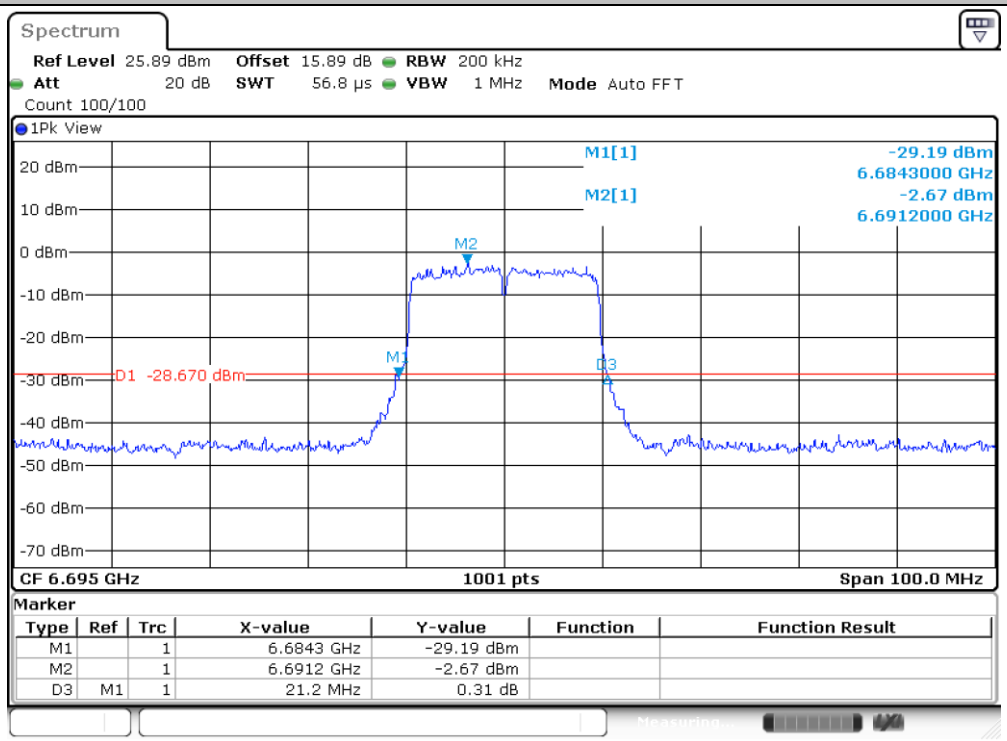

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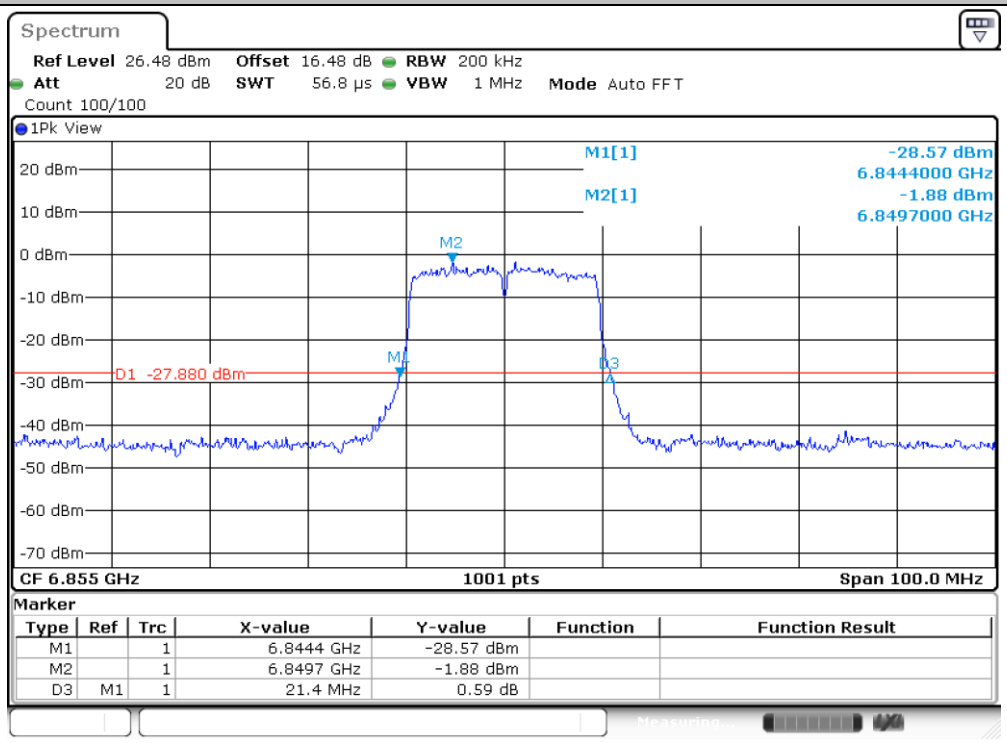

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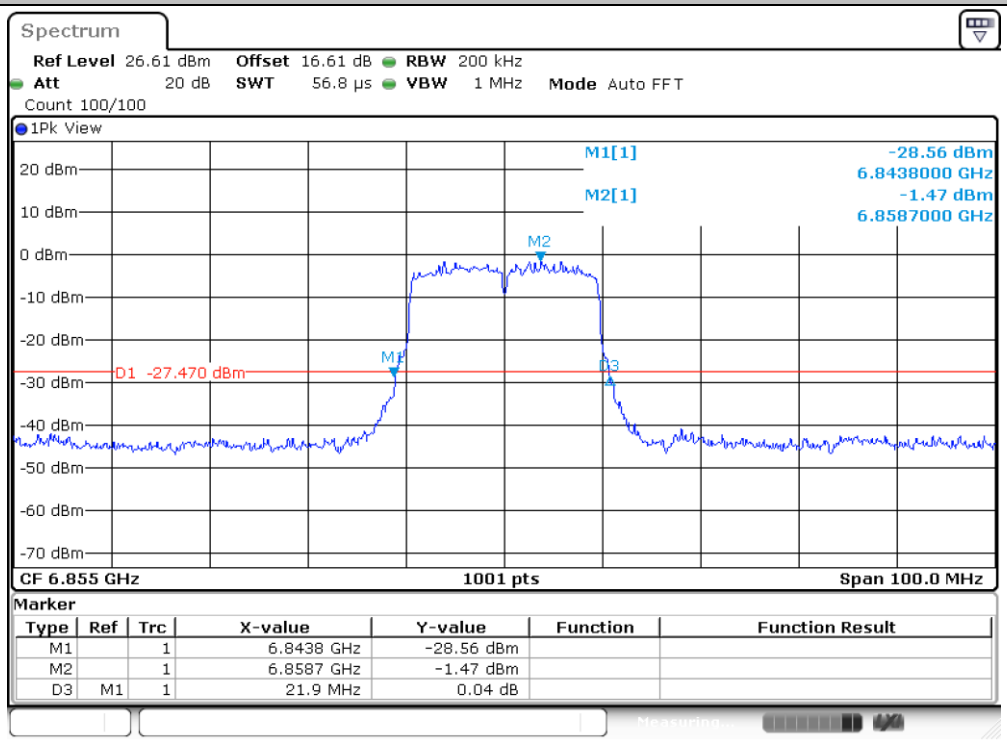

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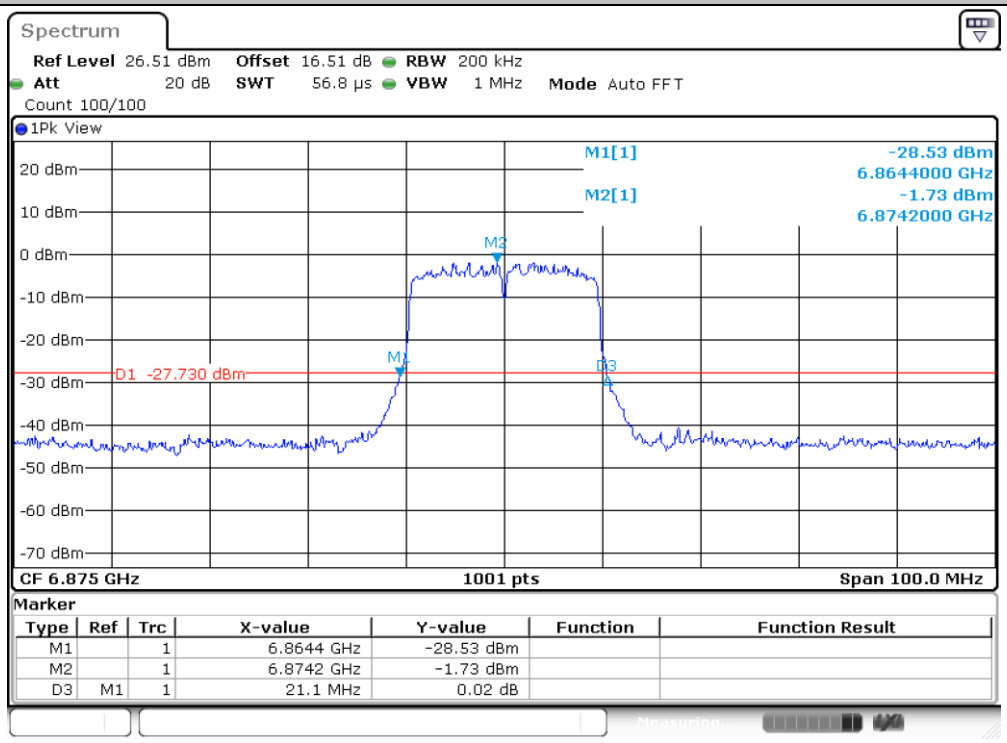

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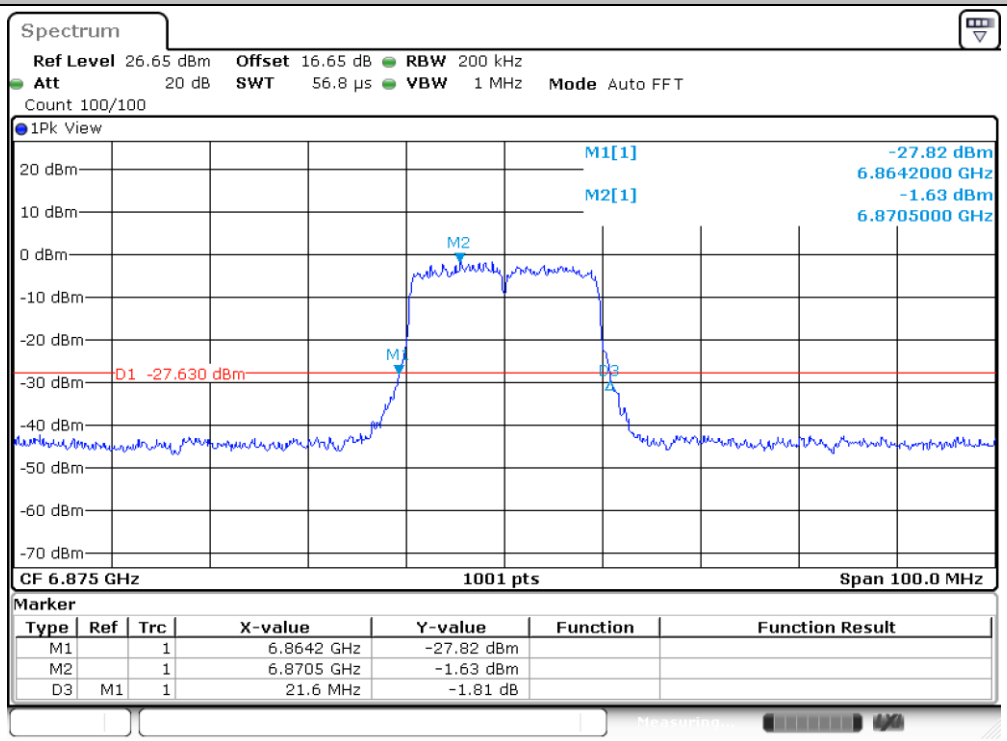

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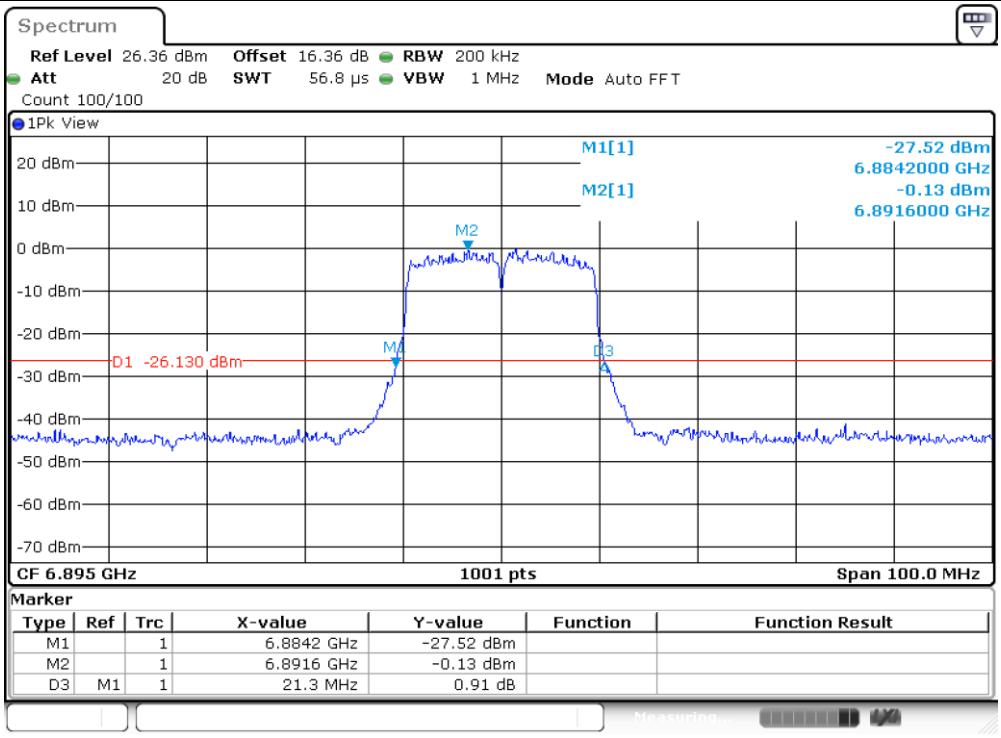

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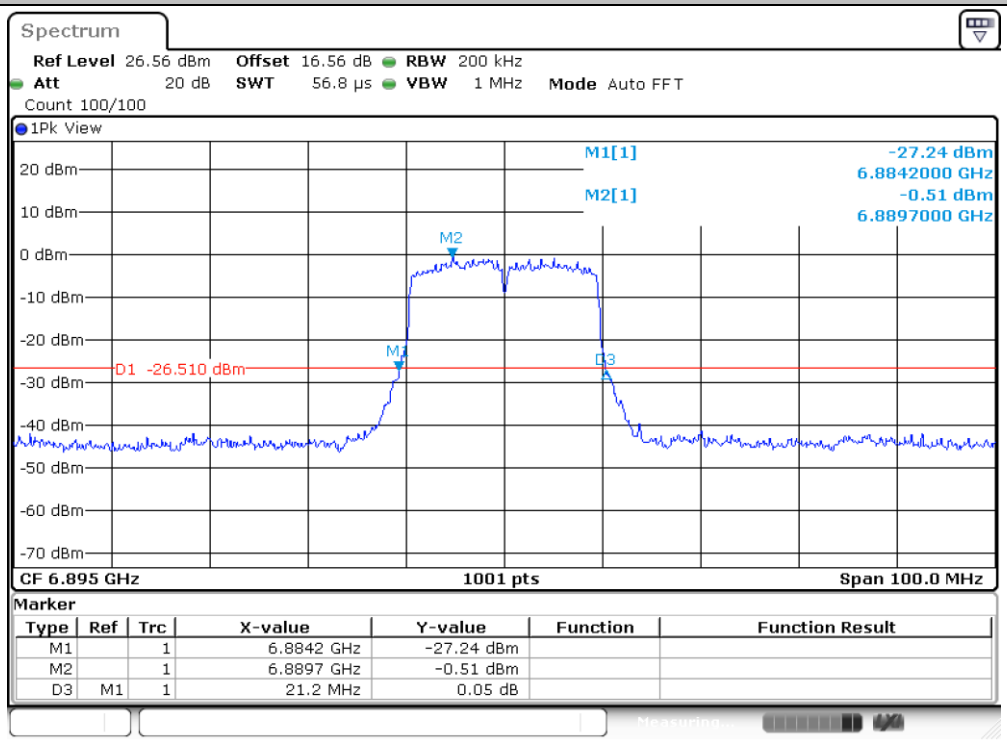

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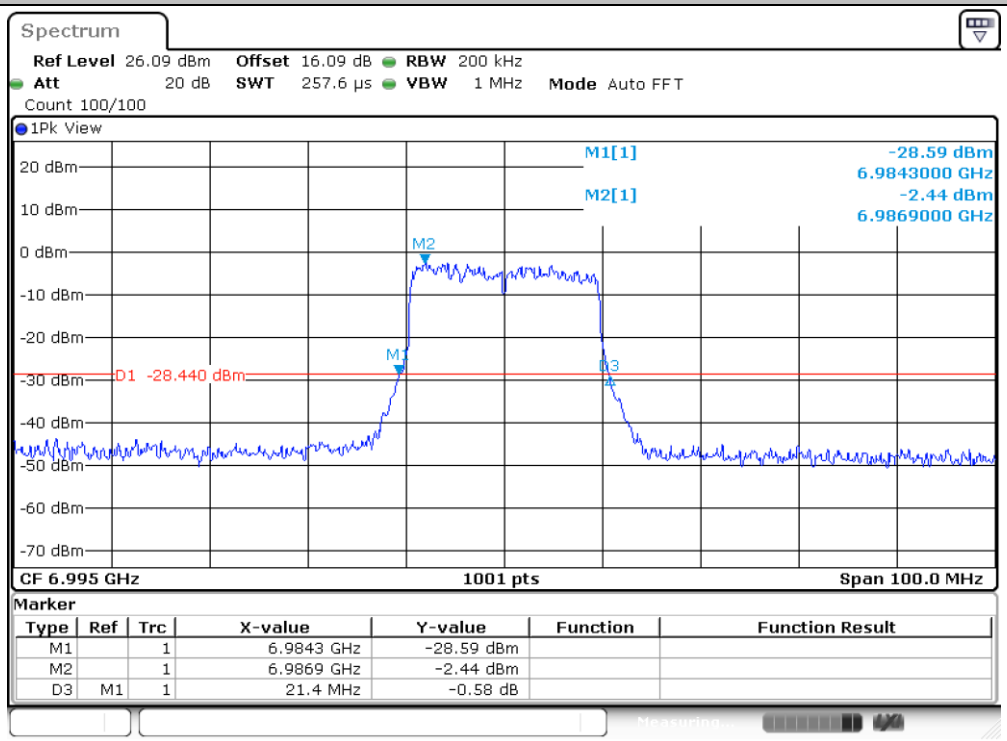

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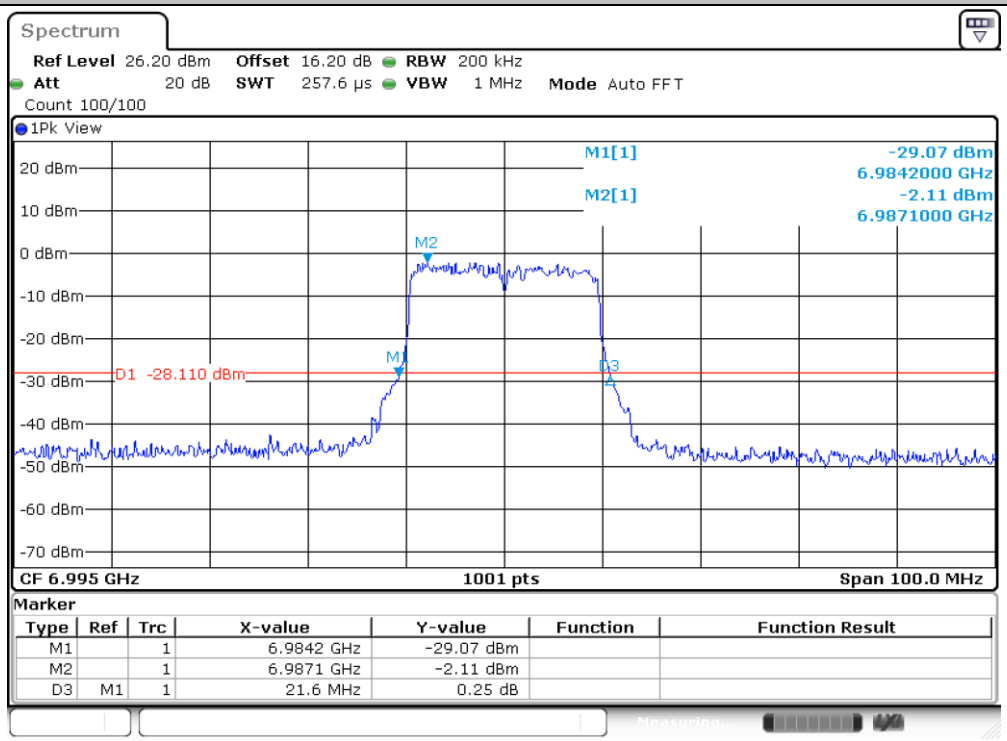

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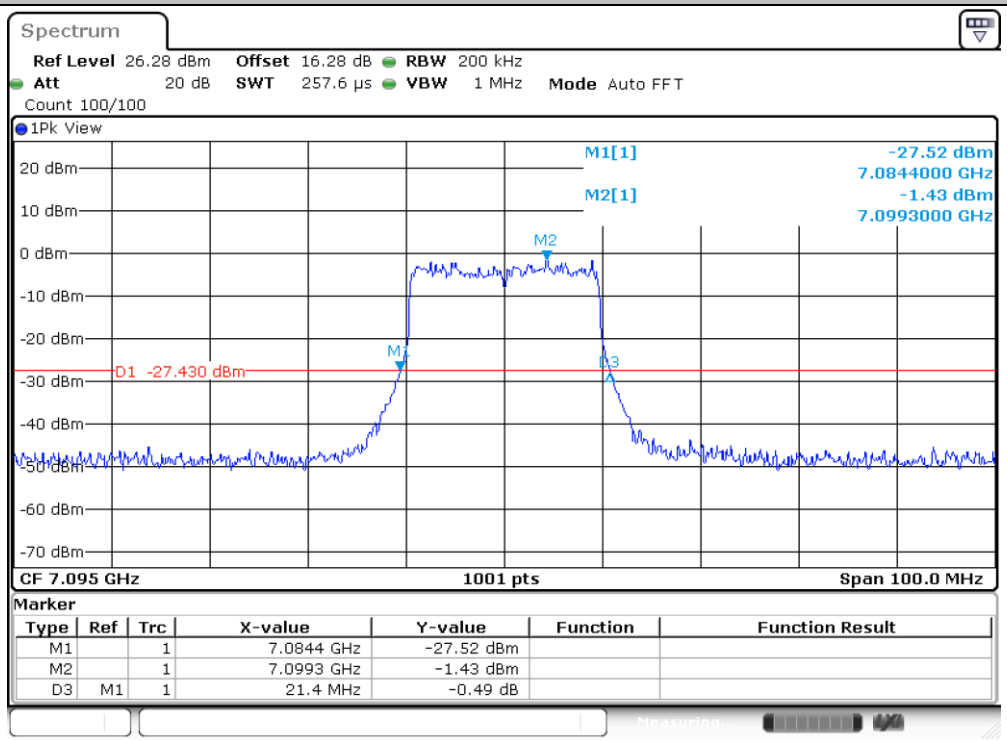

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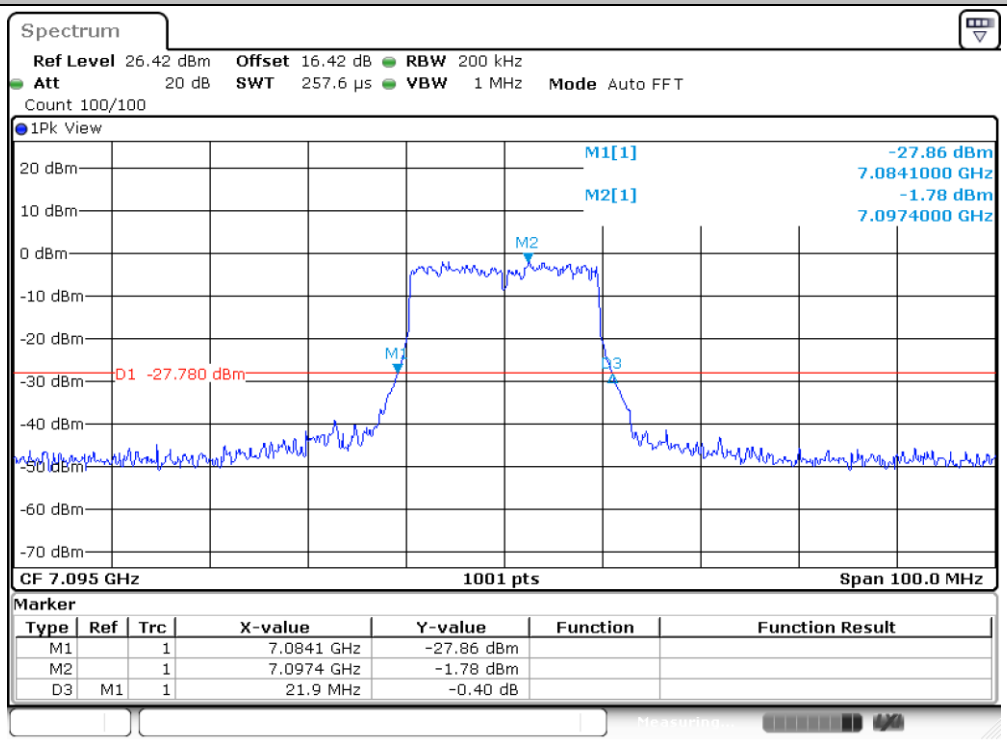

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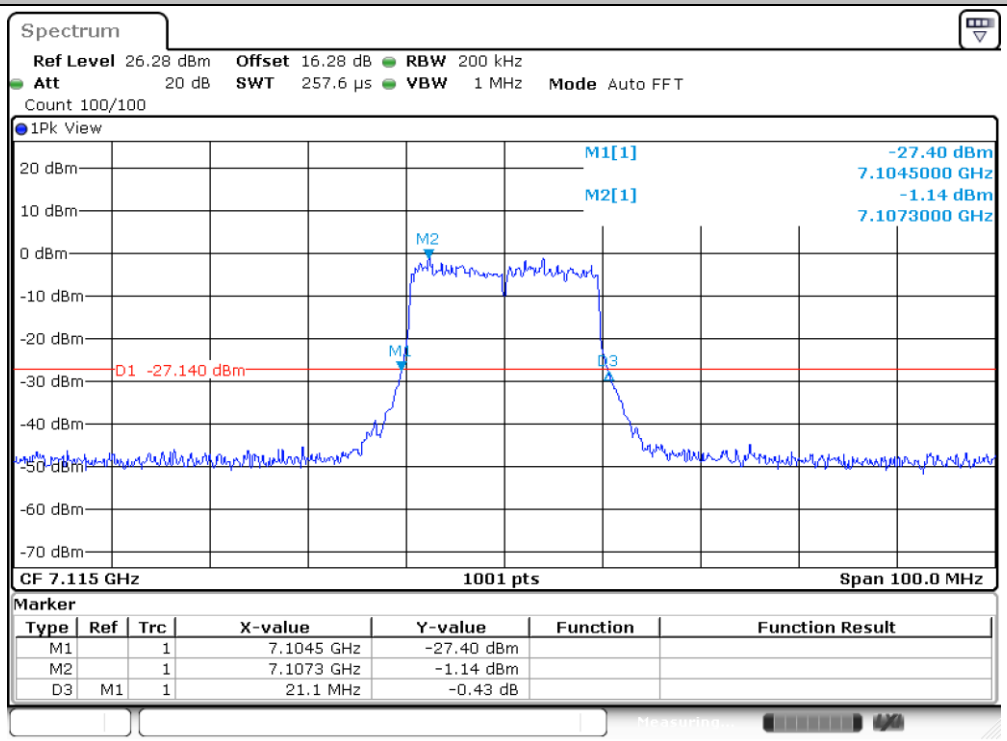

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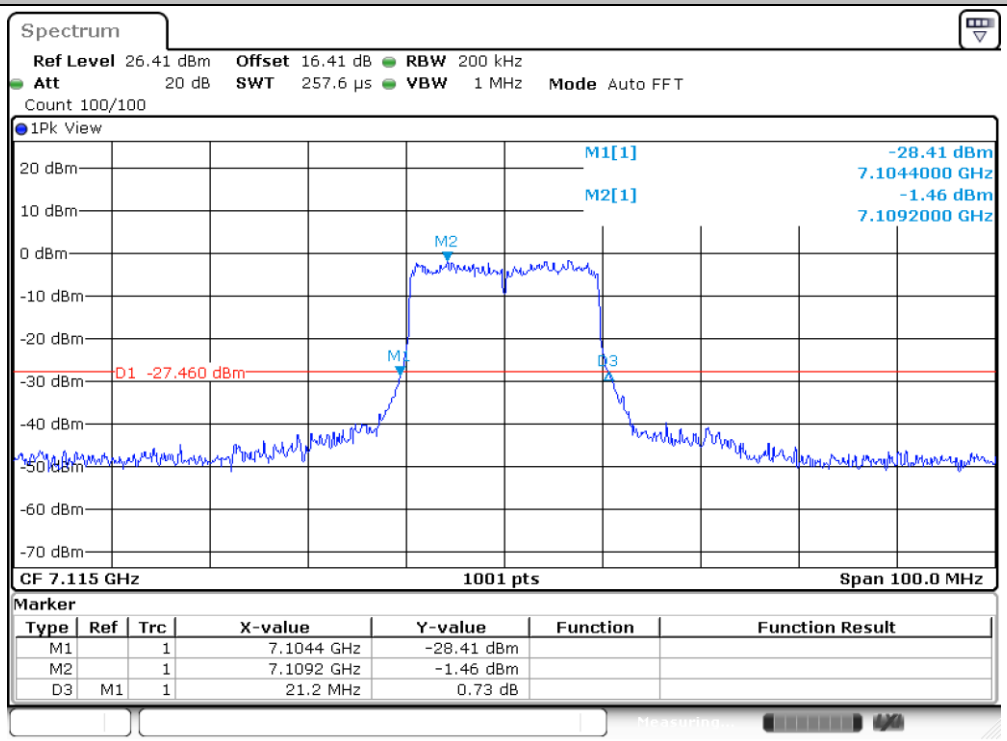

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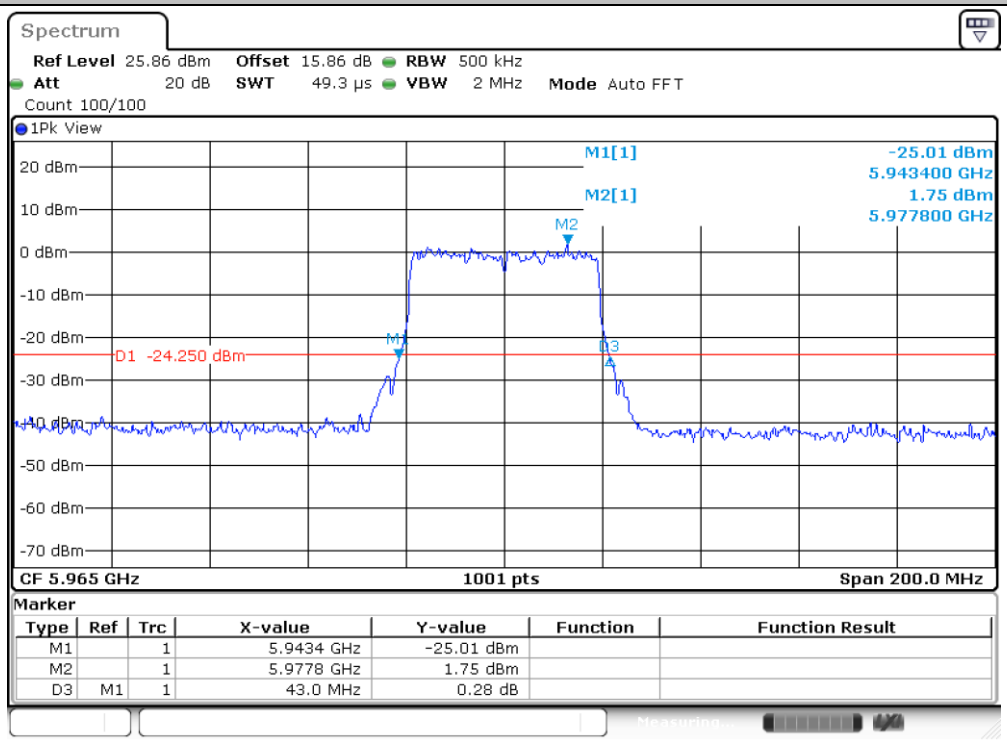
11AX40MIMO_Ant11_5965



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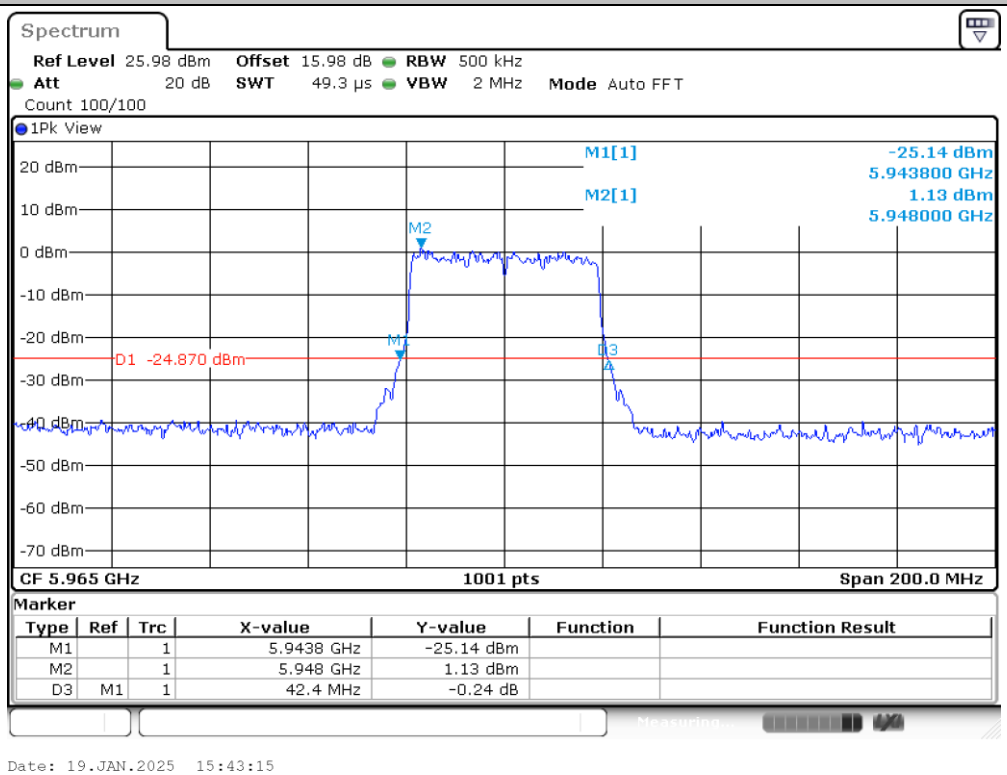

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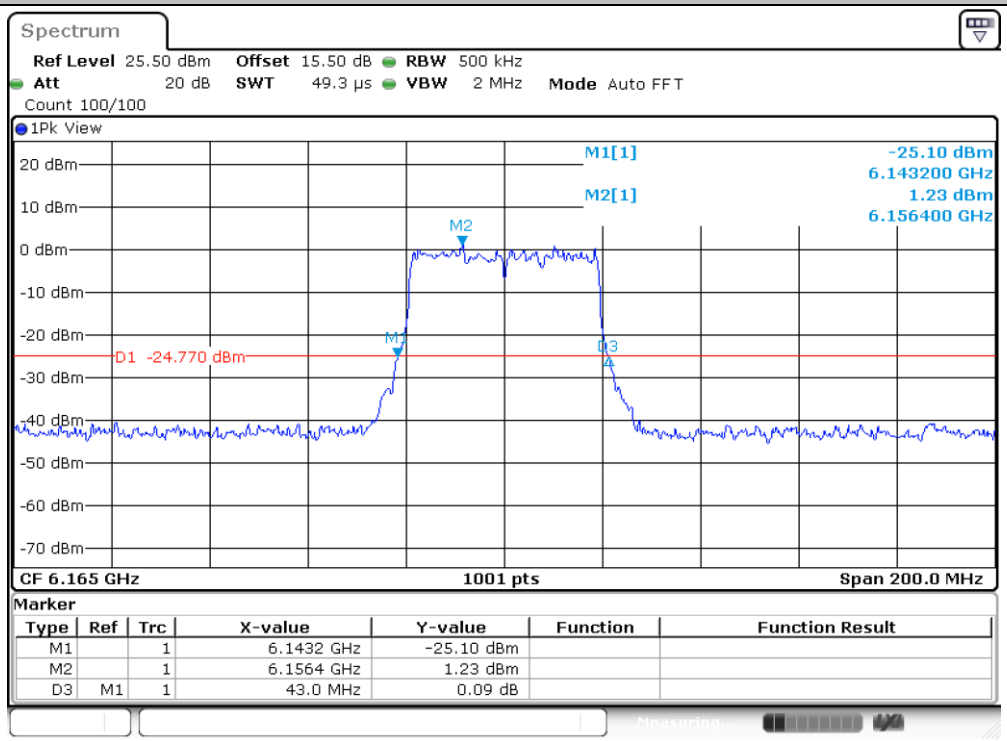

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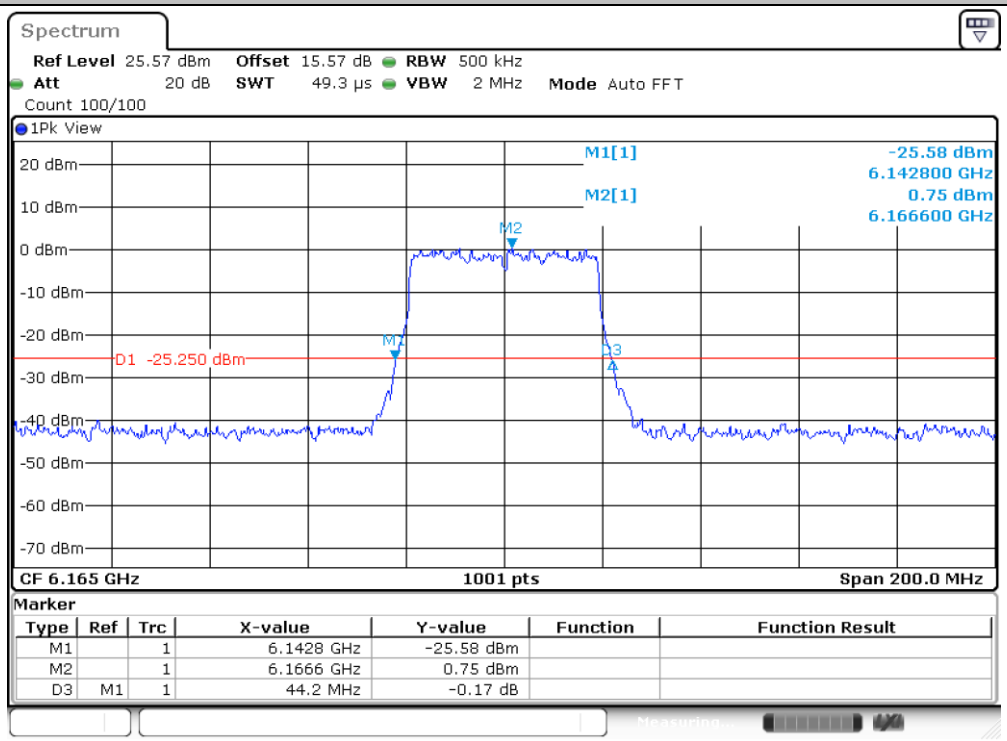

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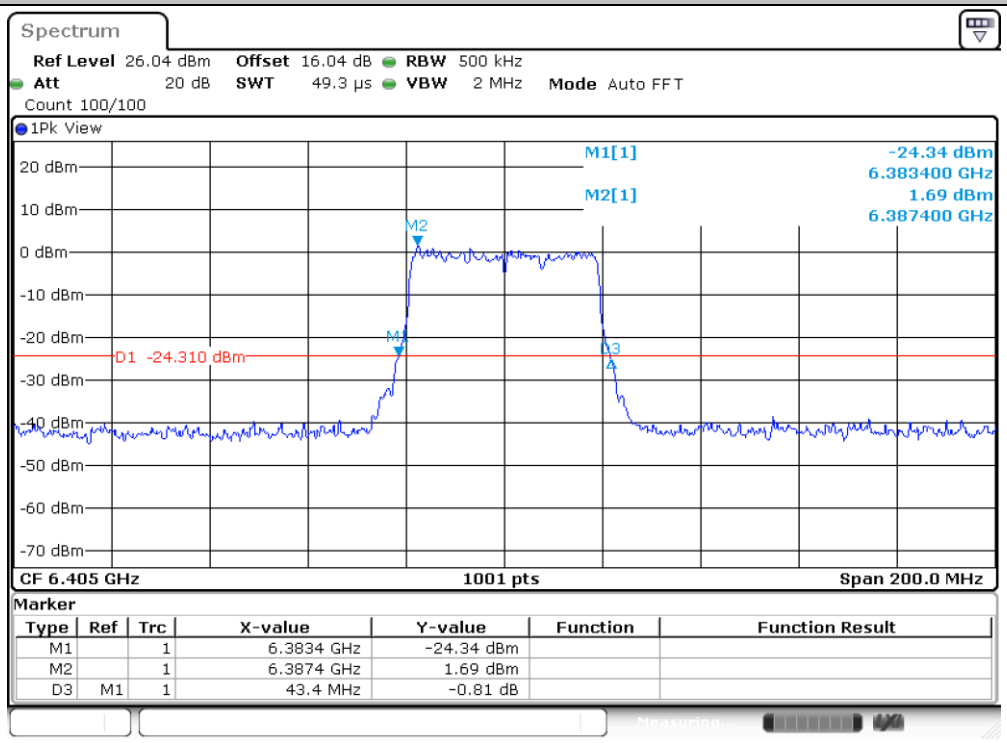

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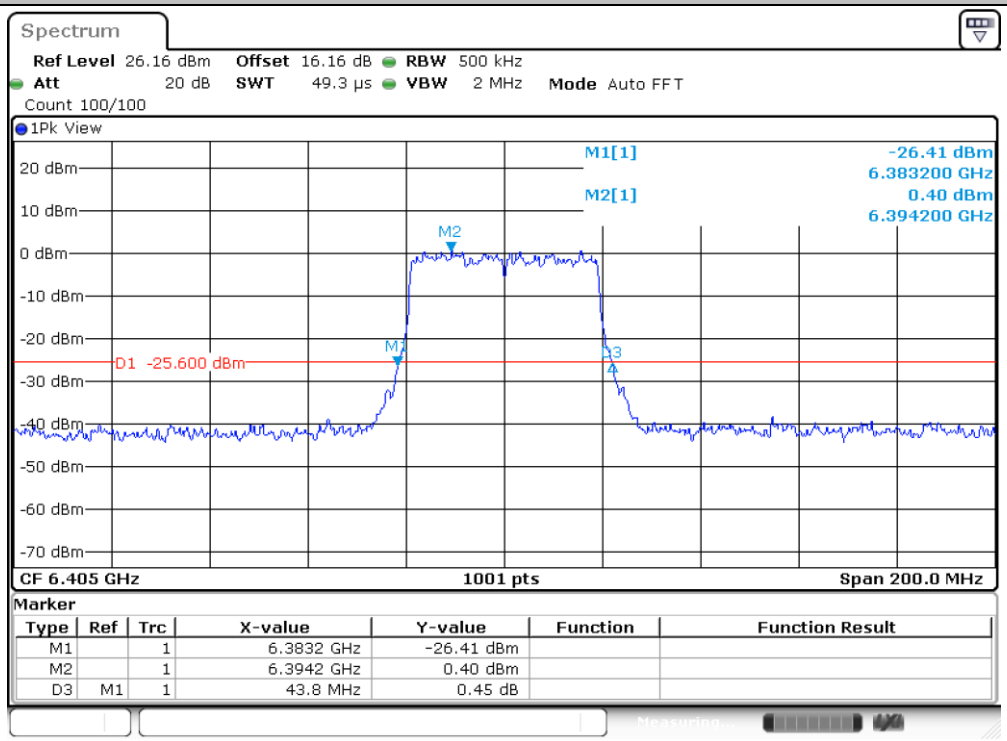

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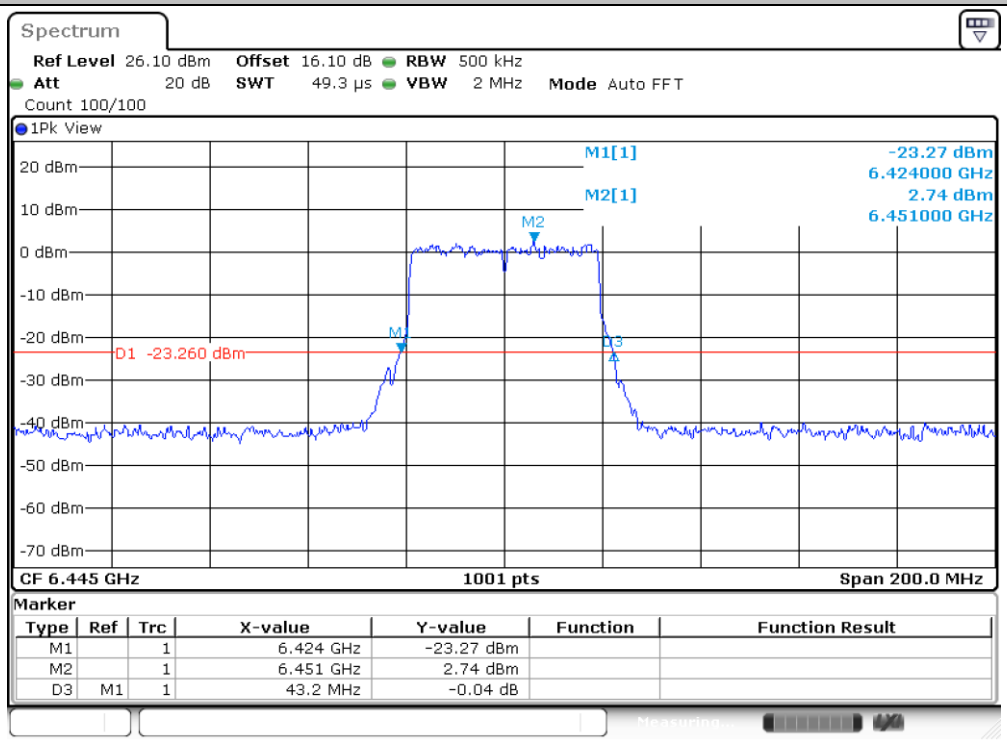

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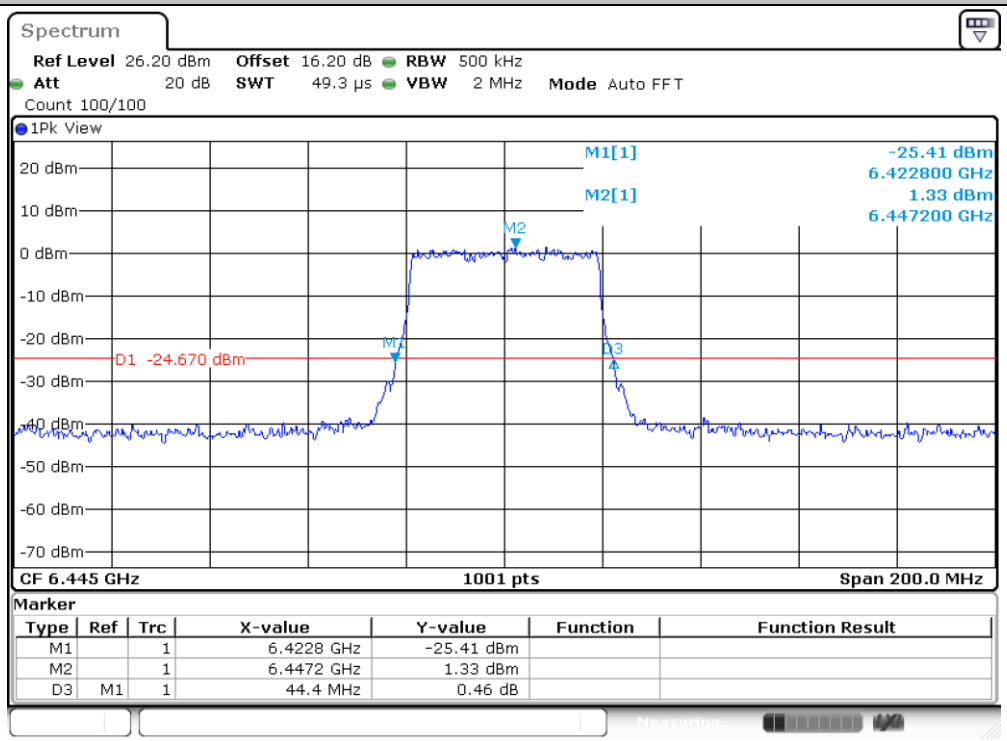

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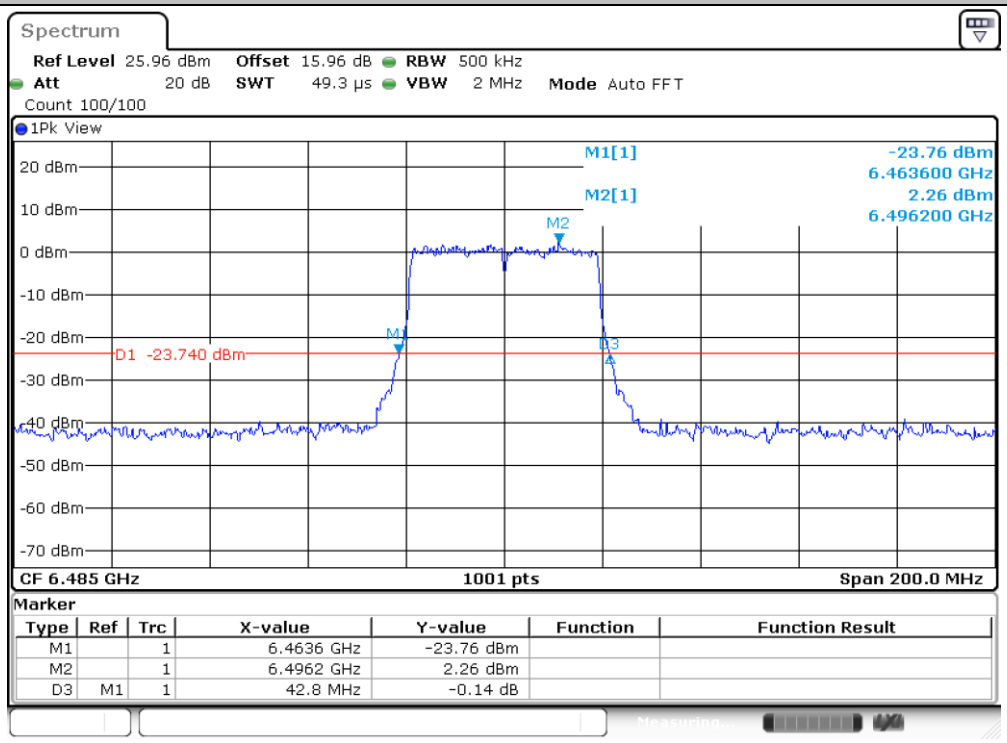

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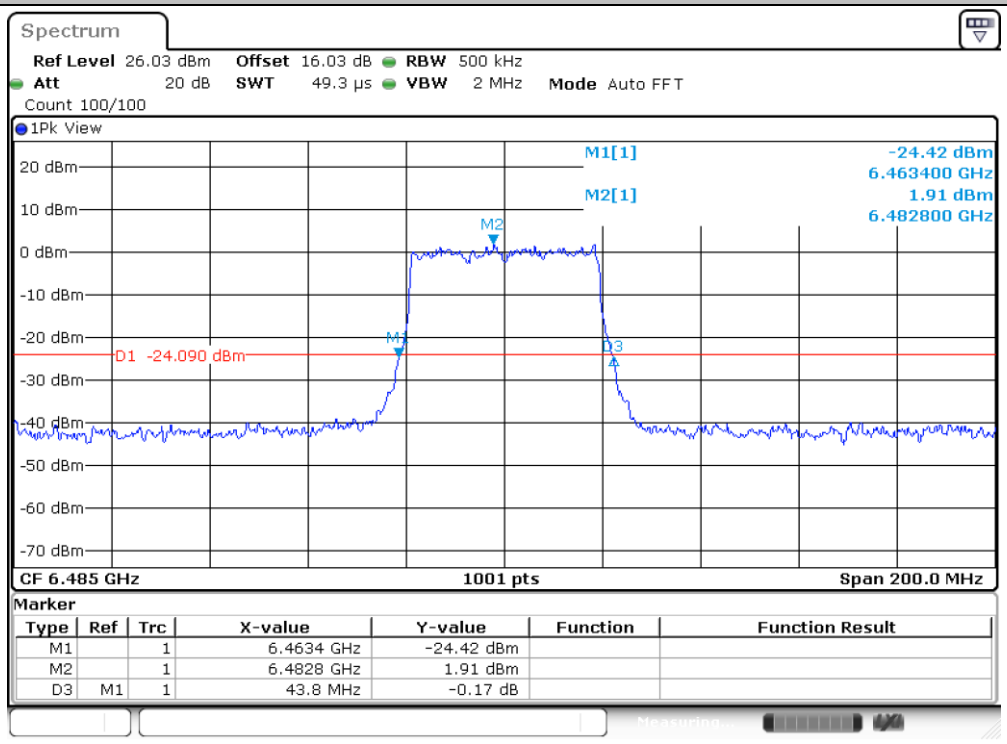

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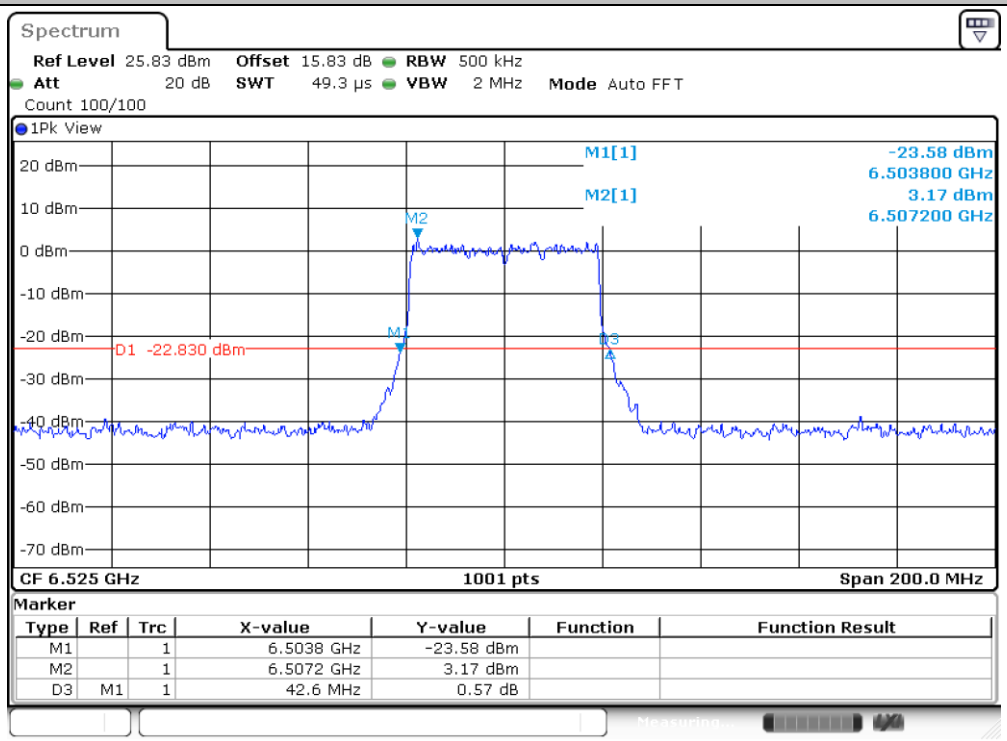

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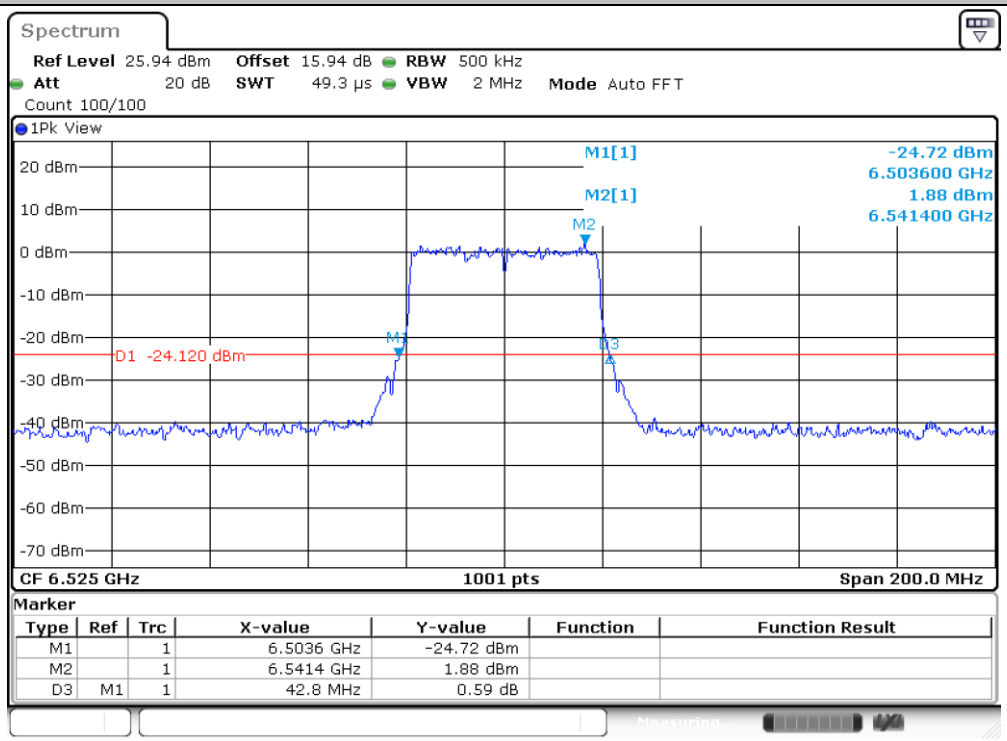

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