

TEST REPORT

Product Name : Pos Terminal
Model Number : M1, M1s, M1B, M1K
FCC ID : 2AJ2B-M1

Prepared for : Telepower Communication Co., Ltd.
Address : 5 Bld, Zone A, Hantian Technology Town No.17 ShenHai
RD, Nanhai District, Foshan, China

Prepared by : EMTEK (SHENZHEN) CO., LTD.
Address : Bldg 69, Majialong Industry Zone, Nanshan District,
Shenzhen, Guangdong, China

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Report Number : ENS2204150045W00205R
Date(s) of Tests : April 18, 2022 to July 20, 2022
Date of issue : July 21, 2022

1 TEST RESULT CERTIFICATION

Applicant : Telepower Communication Co., Ltd.
 Address : 5 Bld, Zone A, Hantian Technology Town No.17 ShenHai RD, Nanhai District, Foshan, China
 Manufacturer : Telepower Communication Co., Ltd.
 Address : 5 Bld, Zone A, Hantian Technology Town No.17 ShenHai RD, Nanhai District, Foshan, China
 EUT : Pos Terminal
 Model Name : M1, M1s, M1B, M1K
 (Note: all models are different for color and silk screen, the others are the same.)
 Trademark : **Telpo**

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2 and Part 15.407


The test results of this report relate only to the tested sample identified in this report.

Date of Test : April 18, 2022 to July 20, 2022

Prepared by : Una Yu
Una Yu/Editor

Reviewer : Joe Xia
Joe Xia/Supervisor

Approved & Authorized Signer : Lisa Wang
Lisa Wang/Manager



Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2204150045W00205R	/	Original Report

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2 EUT TECHNICAL DESCRIPTION

Characteristics	Description	
Product	Pos Terminal	
Model Number	M1, M1s, M1B, M1K (Note: all models are different for color and silk screen, the others are the same.)	
Wifi Type	<input checked="" type="checkbox"/> UNII-1: 5150MHz-5250MHz Band <input checked="" type="checkbox"/> UNII-2A: 5250MHz-5350MHz Band <input checked="" type="checkbox"/> UNII-2C: 5470MHz-5725MHz Band <input checked="" type="checkbox"/> UNII-3: 5725MHz-5850MHz Band	
WLAN Supported	<input checked="" type="checkbox"/> 802.11a <input checked="" type="checkbox"/> 802.11n(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11n(40MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(40MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(80MHz channel bandwidth)	
Data Rate	802.11a:54/48/36/24/18/12/9/6Mbps 802.11n:up to 600 Mbps 802.11ac:up to 1.733Gbps	
Modulation	<input checked="" type="checkbox"/> OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n <input checked="" type="checkbox"/> OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac	
Frequency Range	<input checked="" type="checkbox"/> UNII-1: 5150MHz-5250MHz Band	
	<input checked="" type="checkbox"/> 5180-5240MHz for 802.11a	<input checked="" type="checkbox"/> 5190-5230MHz for 802.11n(HT40)
	<input checked="" type="checkbox"/> 5180-5240MHz for 802.11n(HT20)	<input checked="" type="checkbox"/> 5190-5230MHz for 802.11ac(HT40)
	<input checked="" type="checkbox"/> 5180-5240MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5210MHz for 802.11ac(HT80)
	<input checked="" type="checkbox"/> UNII-2A: with 5250MHz-5350MHz Band	
	<input checked="" type="checkbox"/> 5260-5320MHz for 802.11a	<input checked="" type="checkbox"/> 5270-5310MHz for 802.11n(HT40)
	<input checked="" type="checkbox"/> 5260-5320MHz for 802.11n(HT20)	<input checked="" type="checkbox"/> 5270-5310MHz for 802.11ac(HT40)
	<input checked="" type="checkbox"/> 5260-5320MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5290MHz for 802.11ac(HT80)
TPC Function	<input checked="" type="checkbox"/> UNII-2C: with 5470MHz-5725MHz Band	
	<input checked="" type="checkbox"/> 5500-5700MHz for 802.11a	<input checked="" type="checkbox"/> 5510-5670MHz for 802.11n(HT40)
	<input checked="" type="checkbox"/> 5500-5700MHz for 802.11n(HT20)	<input checked="" type="checkbox"/> 5510-5670MHz for 802.11ac(HT40)
Antenna Type	<input checked="" type="checkbox"/> 5500-5700MHz for 802.11ac(HT20)	
	<input checked="" type="checkbox"/> UNII-3 with 5725MHz-5850MHz Band	
	<input checked="" type="checkbox"/> 5745-5825MHz for 802.11a	<input checked="" type="checkbox"/> 5755-5795MHz for 802.11n(HT40)
	<input checked="" type="checkbox"/> 5745-5825MHz for 802.11n(HT20)	<input checked="" type="checkbox"/> 5755-5795MHz for 802.11ac(HT40)
Antenna Gain	<input checked="" type="checkbox"/> 5745-5825MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5775MHz for 802.11ac(HT80)
	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	
Antenna Type	Integrated Antenna	
Antenna Gain	2.5 dBi	
Transmit Power	Output Power (Max.) for UNII-1	802.11a: 15.61dBm
		802.11n(HT 20 MHz): 15.45dBm

	(1TX)	802.11n(HT 40 MHz): 16.11dBm 802.11ac (HT 20 MHz): 14.99dBm 802.11ac (HT 40 MHz): 15.36dBm 802.11ac (HT 80 MHz): 14.98dBm
	Output Power (Max.) for UNII-2A (1TX)	802.11a: 15.33dBm 802.11n(HT 20 MHz): 15.16dBm 802.11n(HT 40 MHz): 14.39dBm 802.11ac (HT 20 MHz): 14.34dBm 802.11ac (HT 40 MHz): 14.71dBm 802.11ac (HT 80 MHz): 13.95dBm
	Output Power (Max.) for UNII-2C (1TX)	802.11a: 15.07dBm 802.11n(HT 20 MHz): 14.89dBm 802.11n(HT 40 MHz): 14.84dBm 802.11ac (HT 20 MHz): 14.09dBm 802.11ac (HT 40 MHz): 14.61dBm 802.11ac (HT 80 MHz): 14.30dBm
	Output Power (Max.) for UNII-3 (1TX)	802.11a: 15.72dBm 802.11n(HT 20 MHz): 15.55dBm 802.11n(HT 40 MHz): 15.10dBm 802.11ac (HT 20 MHz): 14.87dBm 802.11ac (HT 40 MHz): 15.17dBm 802.11ac (HT 80 MHz): 15.00dBm
Power Supply	7.6V/2500mAH,Li-ion(Non-removable) Adapter: Model: SOY-131QC3.0EU Input: 100~240V, 50/60Hz, 0.5A Output: 3.6-6.5V, 3A; 6.5-9V, 2A; 9.0-12V, 1.5A; 18W	

Note: for more details, please refer to the user's manual of the EUT.

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407(g)	Frequency Stability	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	
NOTE1: N/A (Not Applicable).			
NOTE2: According to FCC OET KDB 789033 D2 General UNII Test Procedures New Rules v02r01, In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2AJ2B-M1 filing to comply with Section 15.247 of the FCC Part 15, Subpart E Rules.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart E

FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

For Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2021/5/15	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2021/5/15	1Year
AMN	Rohde & Schwarz	ESH3-Z5	100191	2021/5/15	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100011	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100253	2021/5/16	1Year

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2022/5/14	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2022/5/14	1Year
AMN	Rohde & Schwarz	ESH3-Z5	100191	2022/5/15	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2022/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100011	2022/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100253	2022/5/15	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2021/5/15	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2021/5/15	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2021/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2020/7/4	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J1011131010 001	2021/5/15	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2021/6/12	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2021/6/12	2 Year

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2022/5/14	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2022/5/14	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2021/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2020/7/4 2022/7/3	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J1011131010 001	2022/5/14	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2022/5/14	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2021/6/12	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2021/6/12	2 Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2021/5/16	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Power Meter	\	PS-X10-100	\	2021/5/15	1Year

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2022/5/14	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2022/5/14	1Year
Power Meter	\	PS-X10-100	\	2022/5/15	1Year
Temp/ Humidity Chamber	ESPEC	EL-02KA	12107166	2021/7/3 2022/7/2	1Year



4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Wifi 5G with U-NII - 1

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220		
40	5200	48	5240		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190				
46	5230				

Frequency and Channel list for 802.11ac Wave2 (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	48	5240

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

Test Frequency and channel for 802.11ac Wave2 (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	N/A	N/A	N/A	N/A

Wifi 5G with U-NII -2A

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300		
56	5280	64	5320		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270				
62	5310				

Frequency and Channel list for 802.11ac (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	56	5280	64	5320

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	N/A	N/A	62	5310

Test Frequency and channel for 802.11ac (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

Wifi 5G with U-NII -2C

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	132	5660
104	5520	120	5600	136	5680
108	5540	124	5620	140	5700
112	5560	128	5640		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	118	5590	134	5670
110	5550	126	5630		

Frequency and Channel list for 802.11ac (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610		

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	140	5700

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510			134	5670

Test Frequency and channel for 802.11ac (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530				

Wifi 5G with U-NII -3

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755				
159	5795				

Frequency and Channel list for 802.11ac (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	N/A	N/A	159	5795

Test Frequency and channel for 802.11ac (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L2291

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

Accredited by FCC

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by A2LA

The Certificate Number is 4321.01

Accredited by Industry Canada

The Conformity Assessment Body Identifier is CN0008

Name of Firm

: EMTEK (SHENZHEN) CO., LTD.

Site Location

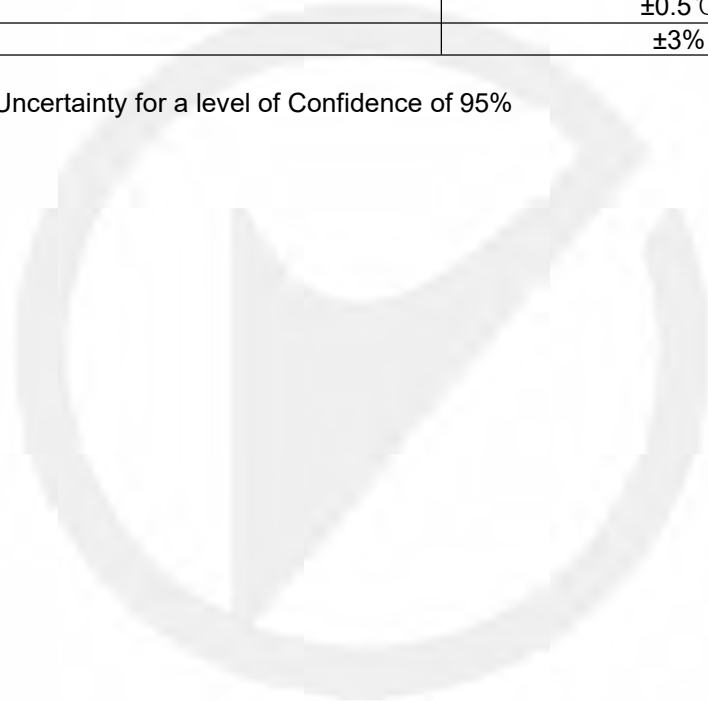
: Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^\circ\text{C}$
Humidity	$\pm 3\%$

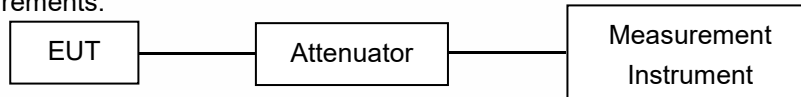
Measurement Uncertainty for a level of Confidence of 95%



7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz:

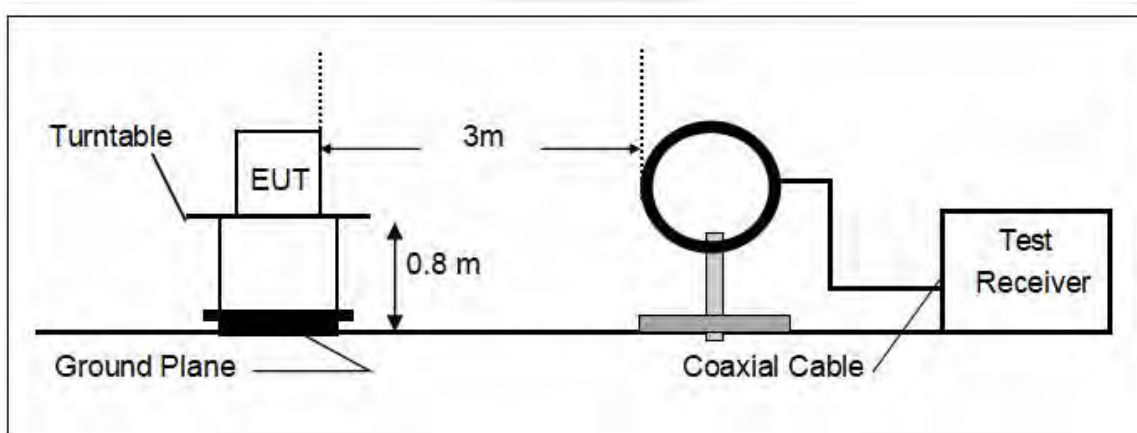
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz:

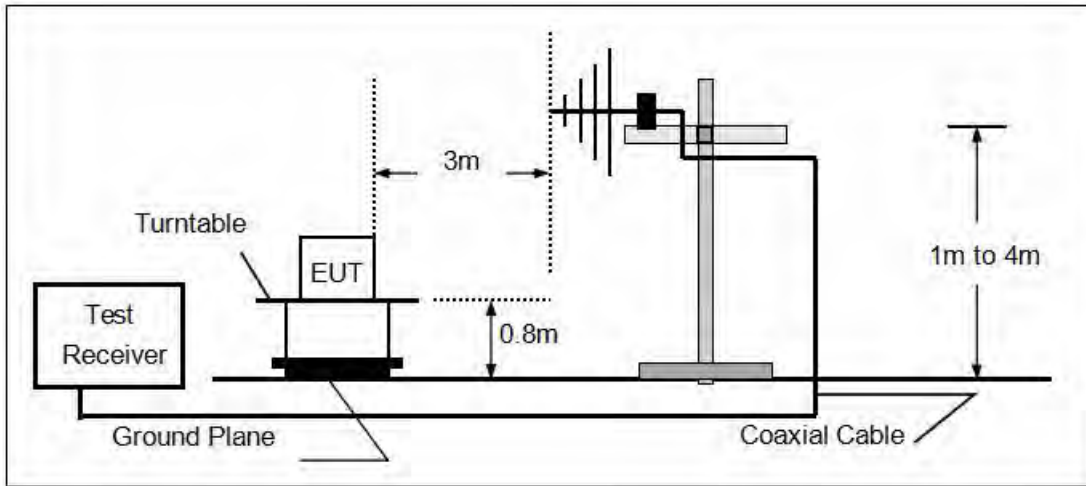
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

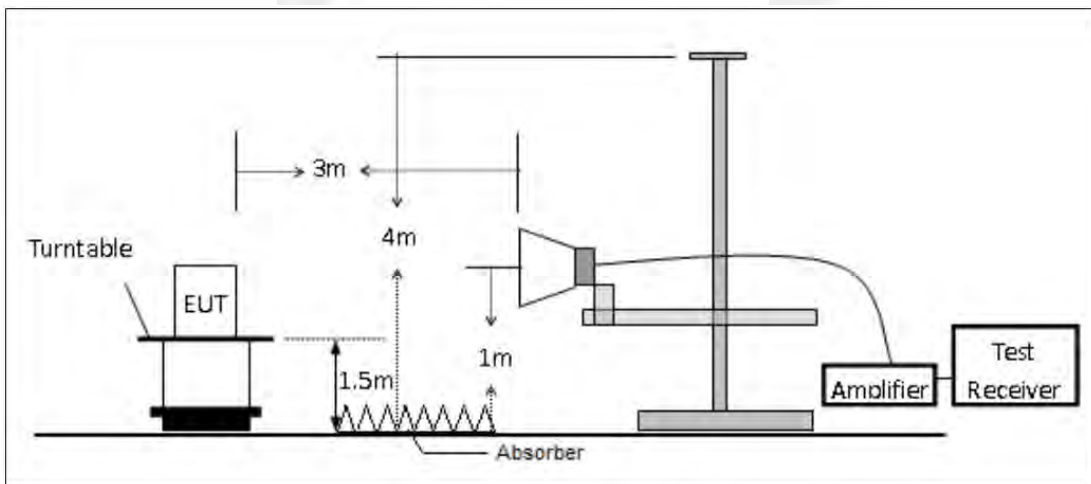
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

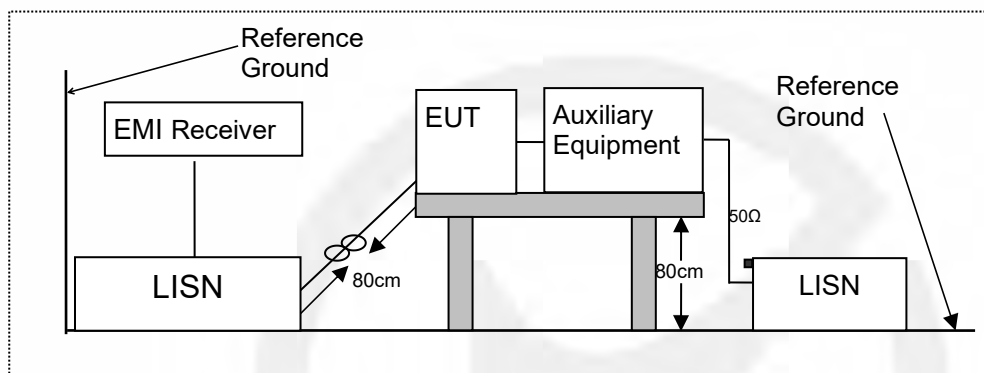


7.3 CONDUCTED EMISSION TEST SETUP

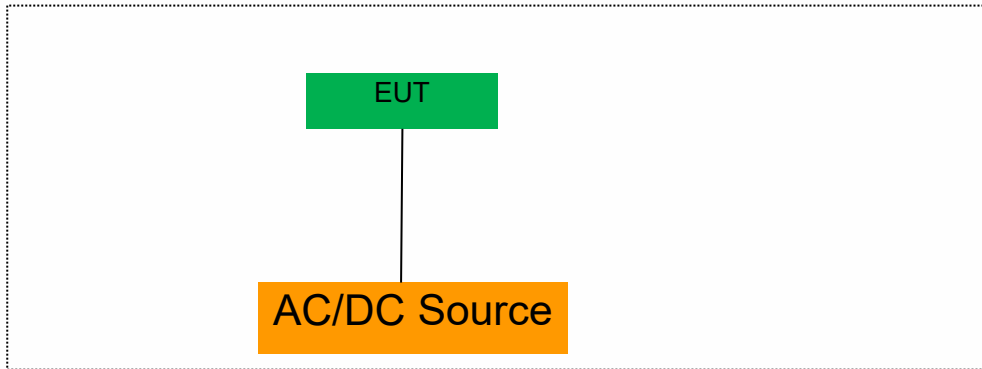
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH MEASUREMENT

8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to FCC Part 15.407(e) for UNII Band III
According to 789033 D02 Section II(C)
According to 789033 D02 Section II(D)

8.1.2 Conformance Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

8.1.5 Test Results

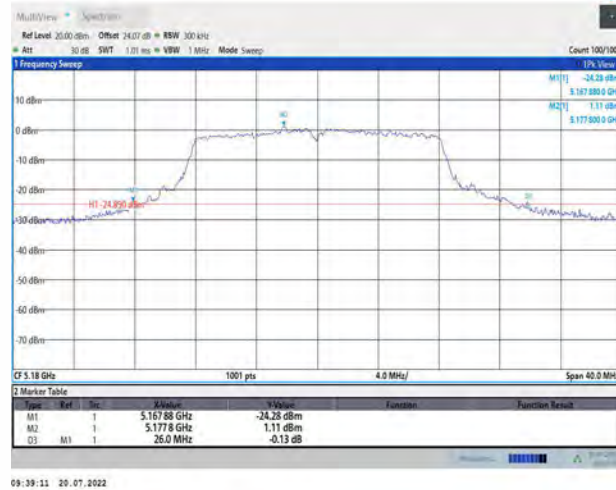
26dB

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	26.00	5167.88	5193.88	---	---
		5220	28.96	5207.68	5236.64	---	---
		5240	27.96	5227.60	5255.56	---	---
		5260	29.04	5247.64	5276.68	---	---
		5300	27.80	5287.00	5314.80	---	---
		5320	26.36	5307.64	5334.00	---	---
		5500	26.84	5487.08	5513.92	---	---
		5580	27.52	5566.24	5593.76	---	---
		5700	24.36	5687.96	5712.32	---	---
		5745	22.64	5733.64	5756.28	---	---
		5785	23.96	5772.12	5796.08	---	---
5825	23.48	5813.64	5837.12	---	---		
11N20SISO	Ant1	5180	27.76	5167.04	5194.80	---	---
		5220	25.76	5208.08	5233.84	---	---
		5240	27.68	5227.20	5254.88	---	---
		5260	27.56	5247.36	5274.92	---	---
		5300	28.16	5286.84	5315.00	---	---
		5320	28.08	5306.72	5334.80	---	---
		5500	27.76	5486.36	5514.12	---	---
		5580	27.56	5566.08	5593.64	---	---
		5700	26.00	5686.84	5712.84	---	---
		5745	26.32	5731.68	5758.00	---	---
		5785	26.16	5771.80	5797.96	---	---
5825	25.92	5812.16	5838.08	---	---		
11N40SISO	Ant1	5190	42.96	5168.64	5211.60	---	---
		5230	42.64	5208.72	5251.36	---	---
		5270	42.48	5249.12	5291.60	---	---
		5310	42.96	5288.32	5331.28	---	---
		5510	43.52	5488.00	5531.52	---	---
		5550	55.20	5516.40	5571.60	---	---
		5670	43.36	5648.16	5691.52	---	---
		5755	42.48	5733.40	5775.88	---	---
5795	47.04	5769.32	5816.36	---	---		
11AC20SISO	Ant1	5180	26.16	5167.16	5193.32	---	---
		5220	27.00	5207.08	5234.08	---	---
		5240	27.48	5227.40	5254.88	---	---
		5260	28.00	5246.72	5274.72	---	---
		5300	28.00	5286.88	5314.88	---	---
		5320	28.12	5306.76	5334.88	---	---
		5500	27.92	5486.36	5514.28	---	---
		5580	27.92	5565.68	5593.60	---	---
		5700	25.76	5687.12	5712.88	---	---
		5745	26.12	5731.84	5757.96	---	---
5785	26.52	5771.68	5798.20	---	---		
5825	25.64	5812.40	5838.04	---	---		
11AC40SISO	Ant1	5190	62.16	5166.24	5228.40	---	---
		5230	65.36	5202.64	5268.00	---	---
		5270	54.96	5247.92	5302.88	---	---
		5310	53.12	5288.08	5341.20	---	---
		5510	46.96	5488.48	5535.44	---	---
		5550	52.16	5519.60	5571.76	---	---
		5670	50.16	5647.68	5697.84	---	---
		5755	42.48	5733.48	5775.96	---	---
5795	43.20	5773.24	5816.44	---	---		

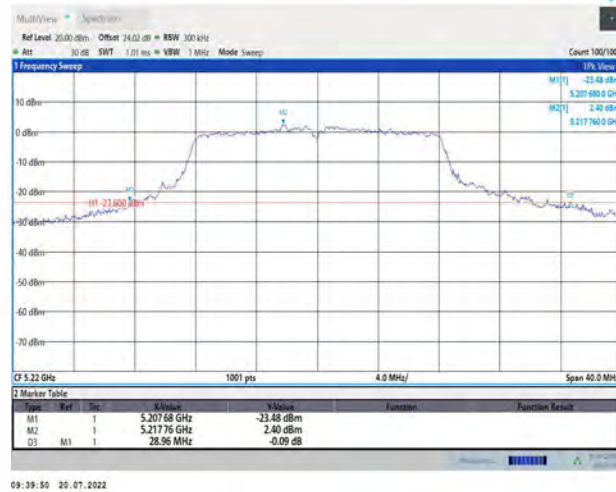
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		5530	92.48	5484.40	5576.88	---	---
		5610	100.00	5559.44	5659.44	---	---
		5775	116.96	5708.28	5825.24	---	---



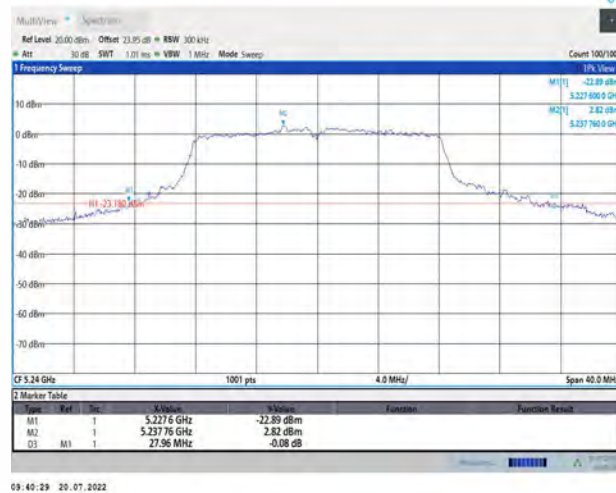
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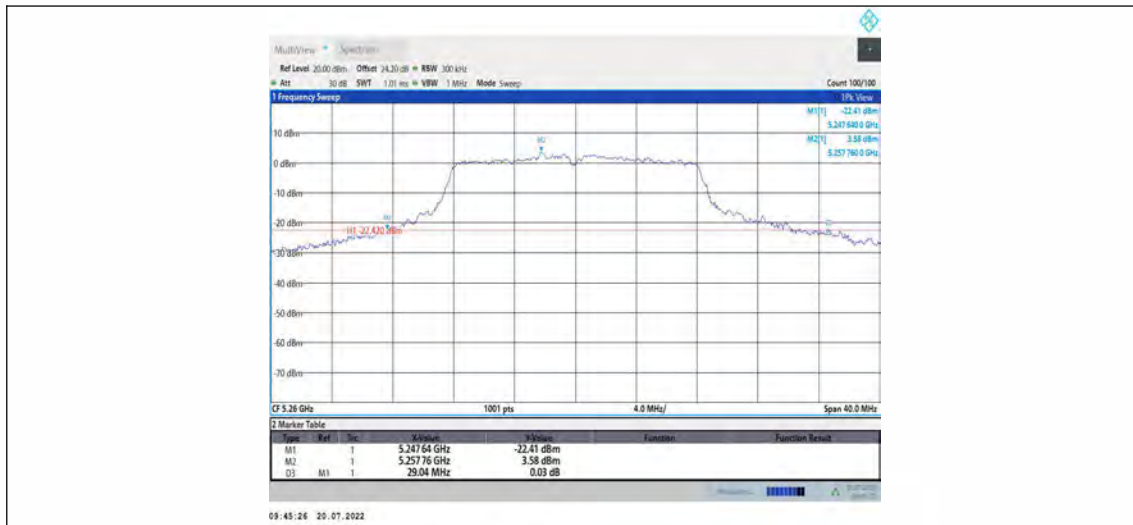
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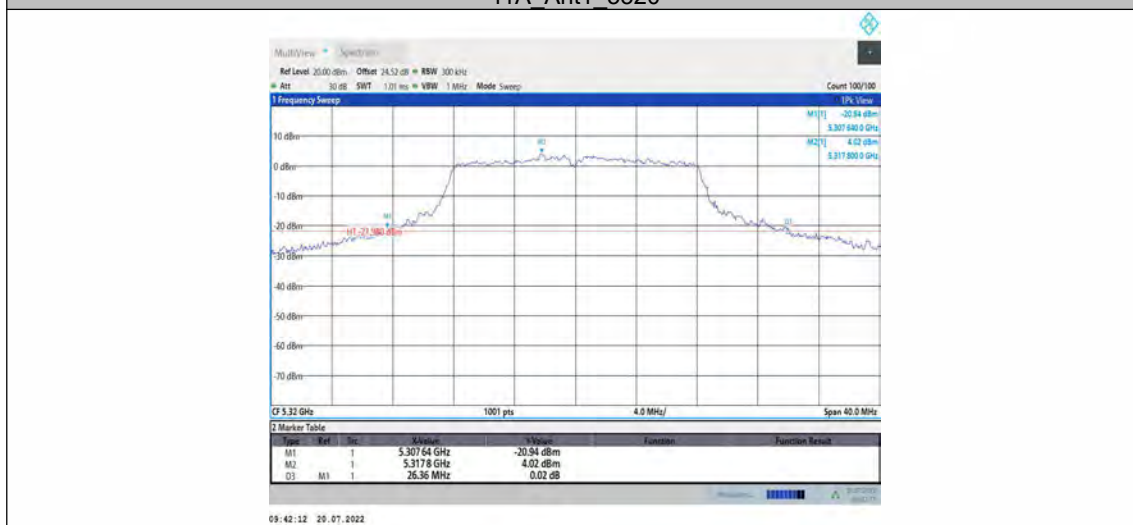
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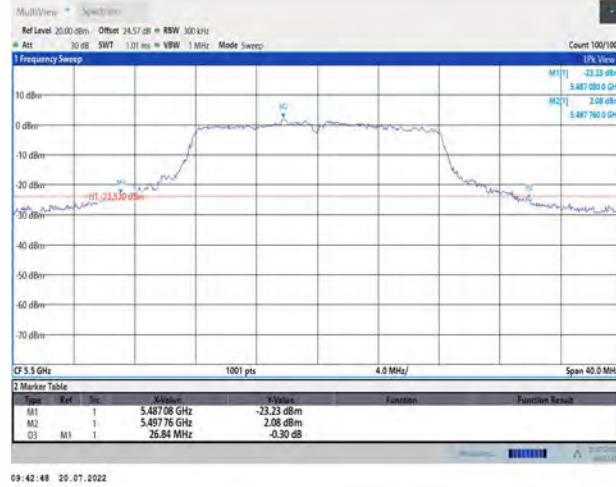
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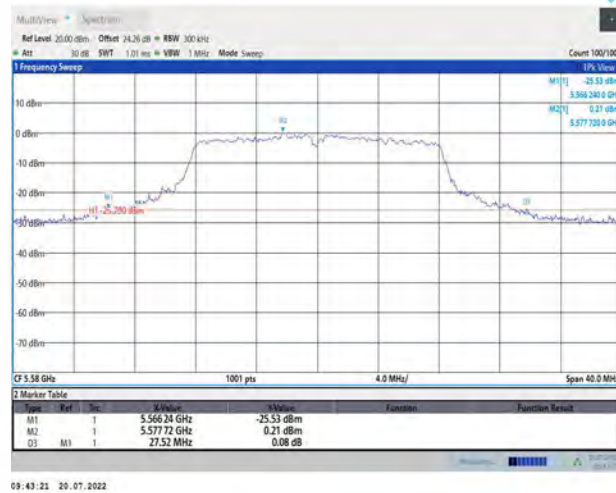
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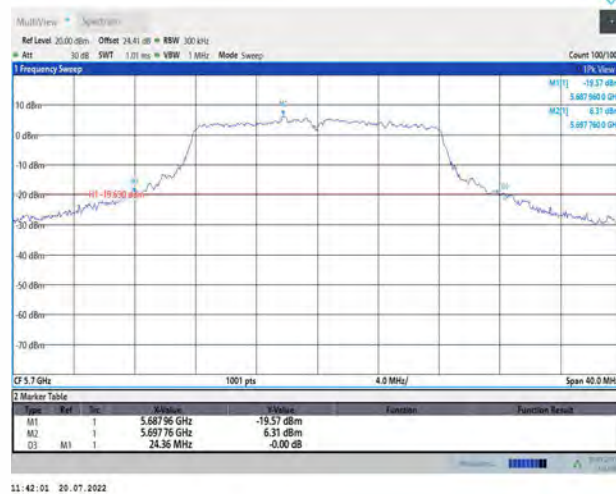
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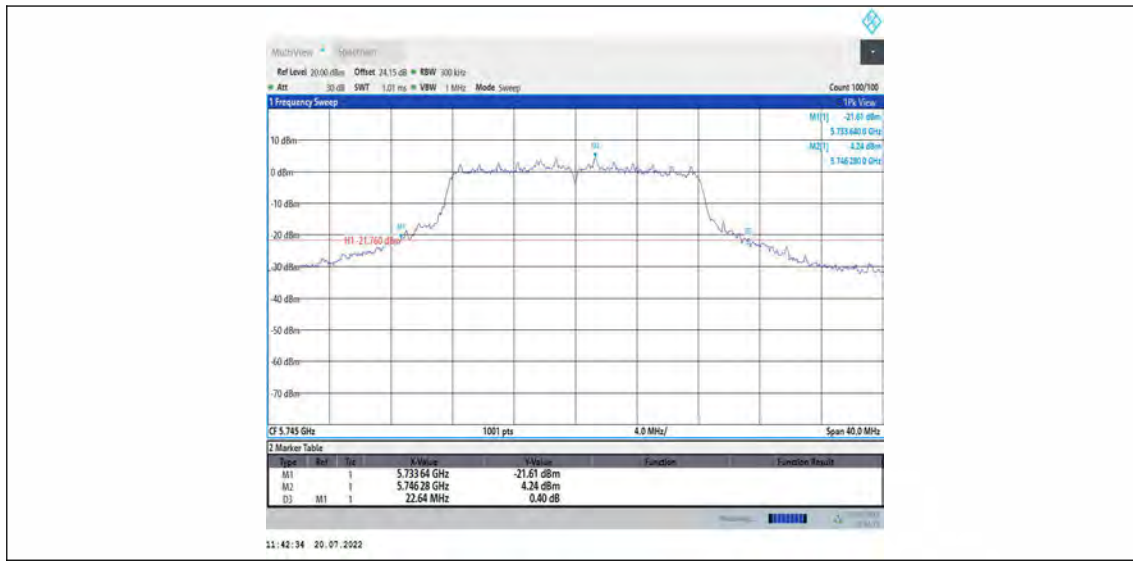
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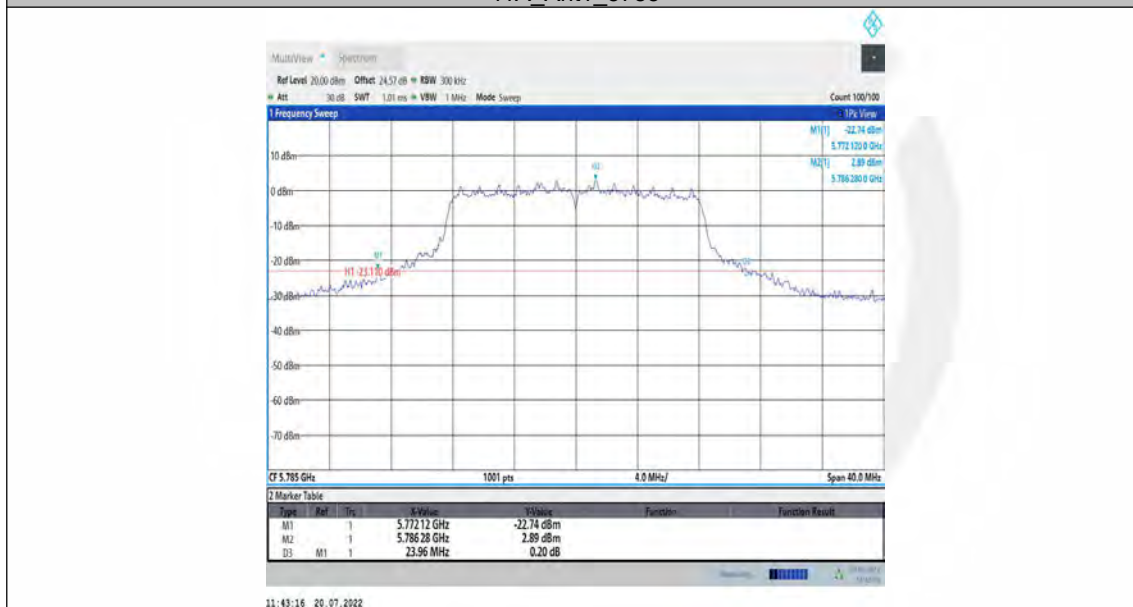
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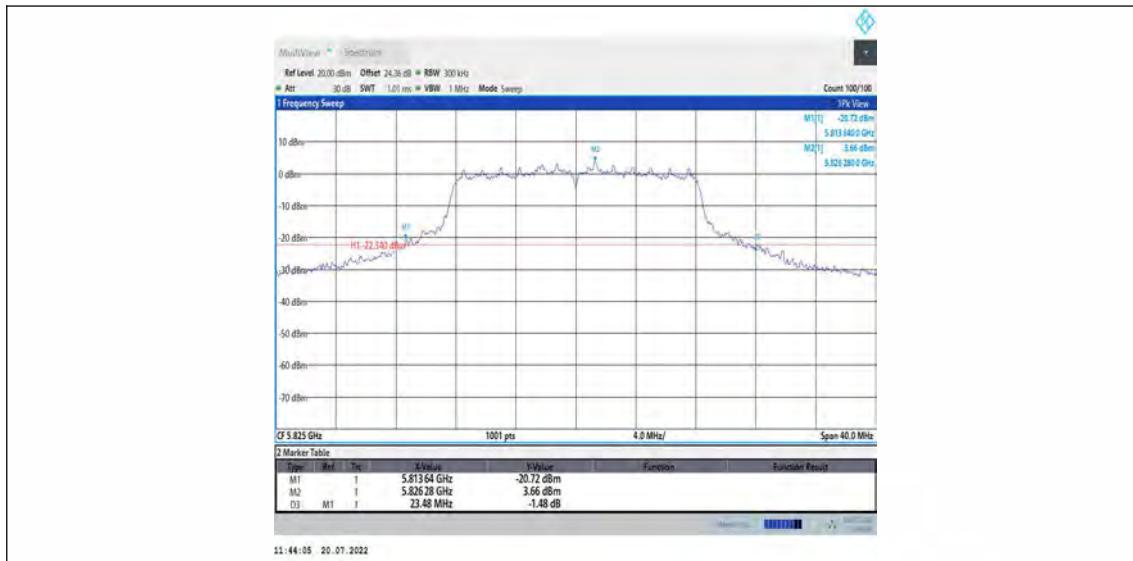
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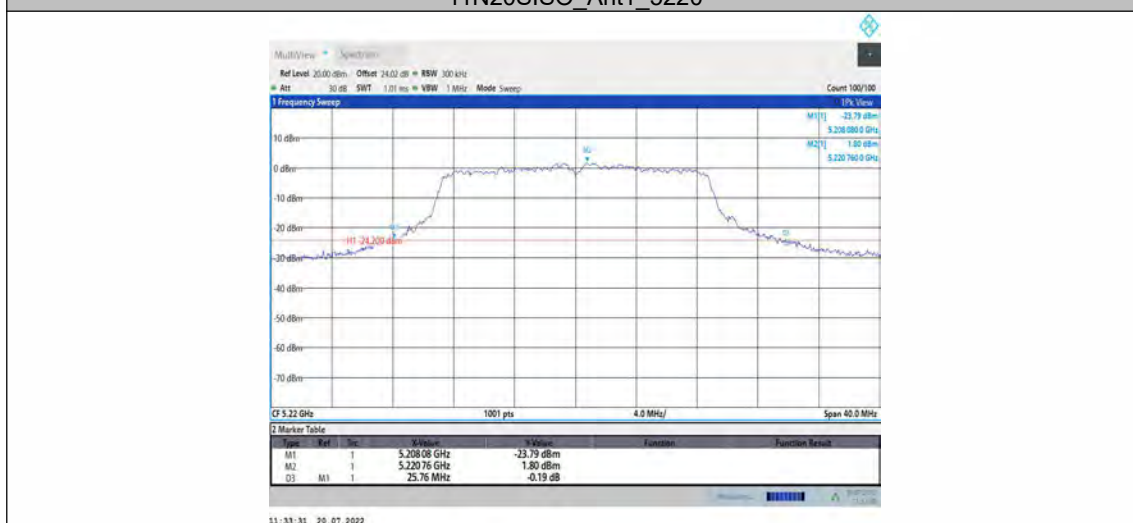
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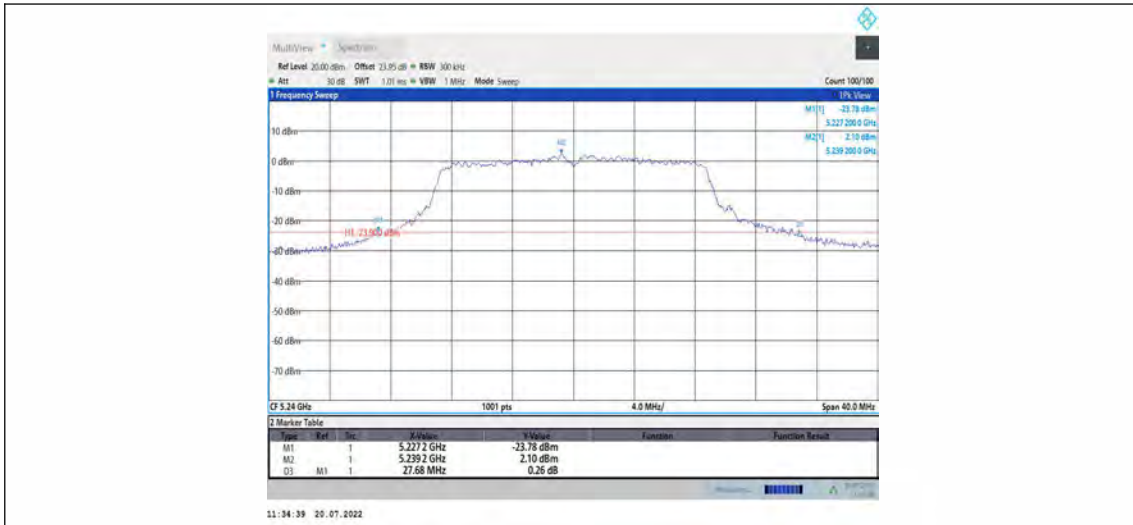
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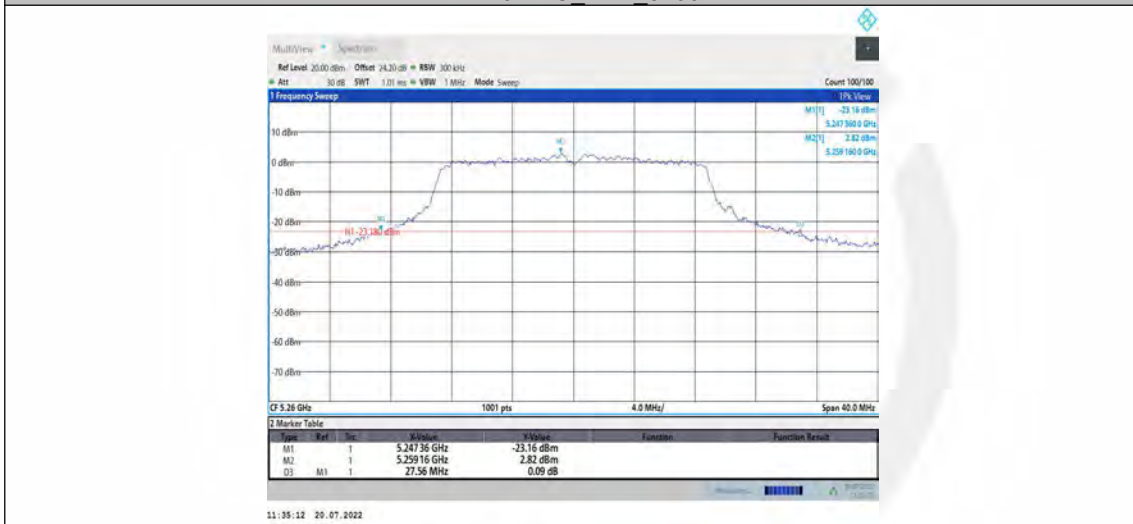
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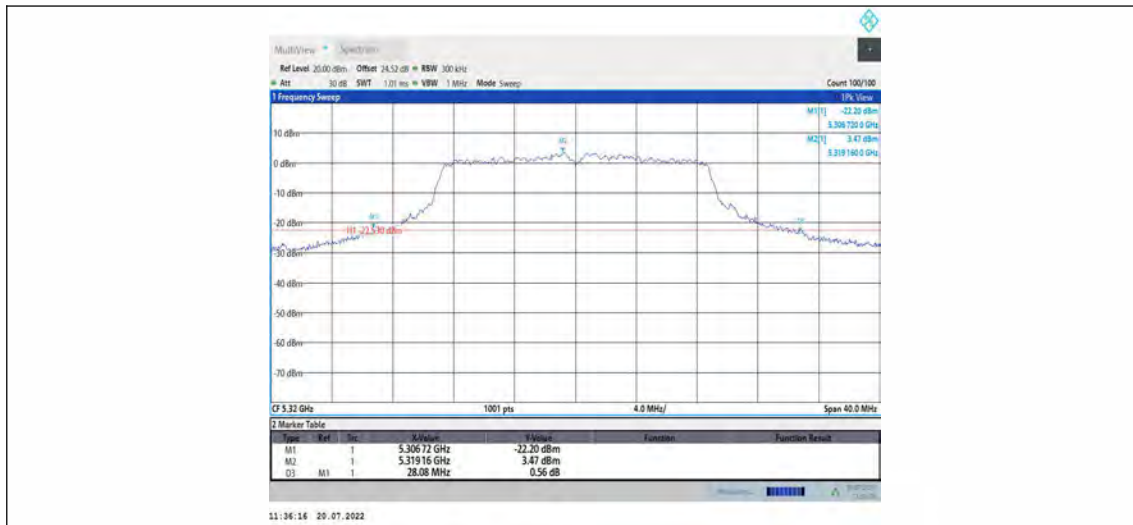
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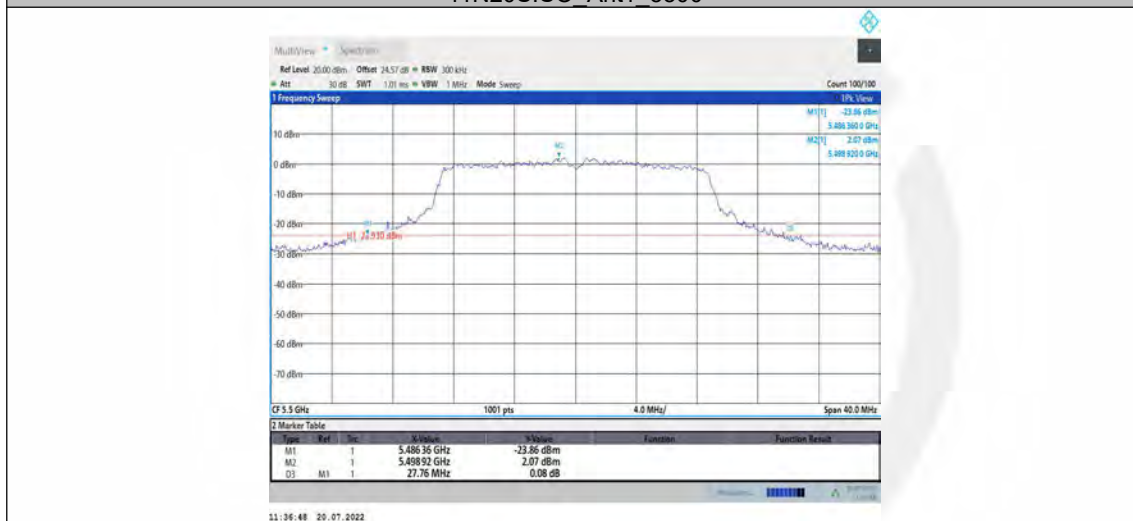
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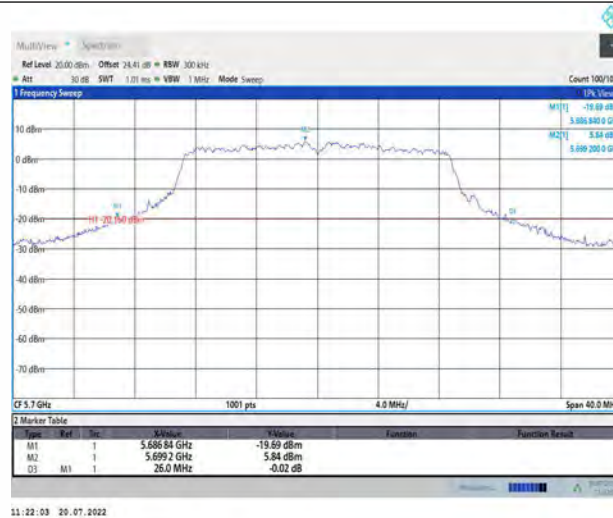
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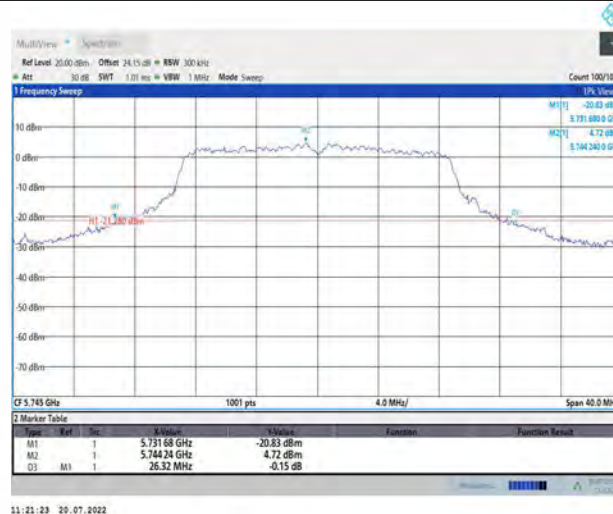


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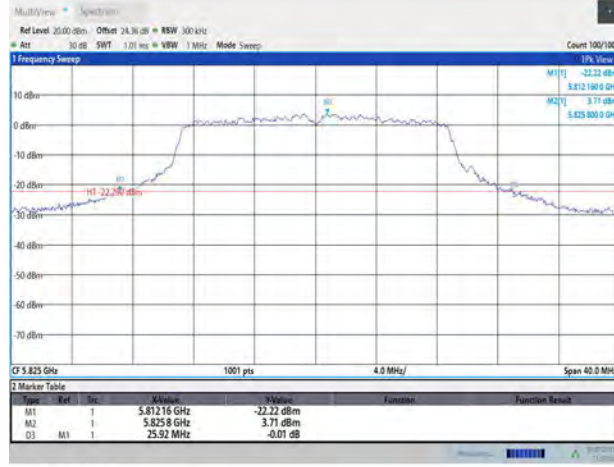
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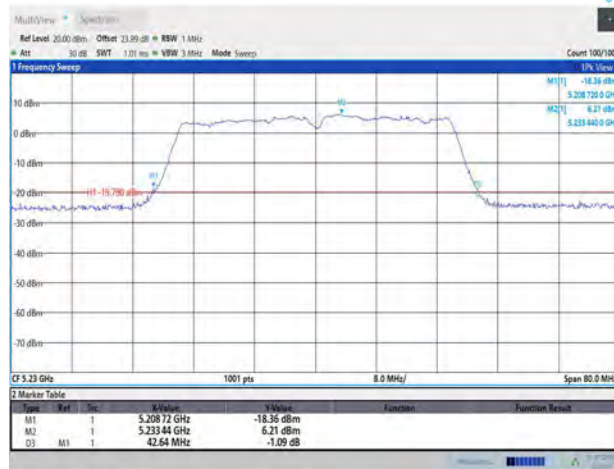
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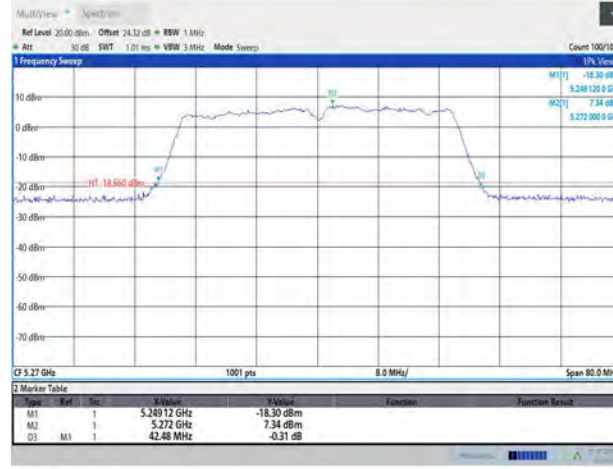
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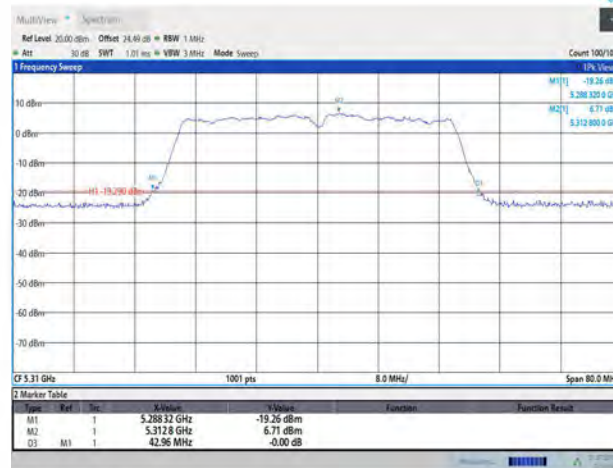
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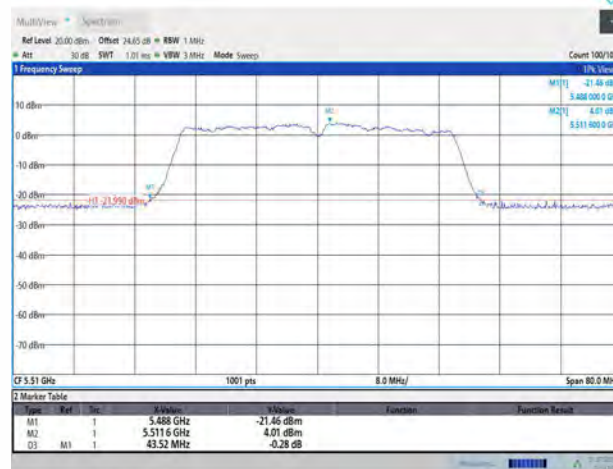
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02:36:46 21.07.2022

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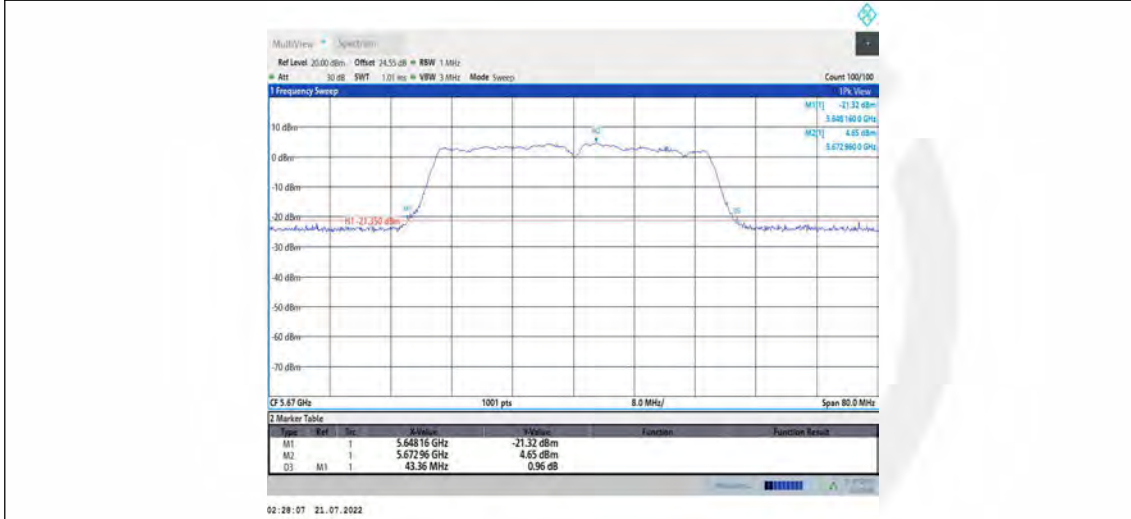


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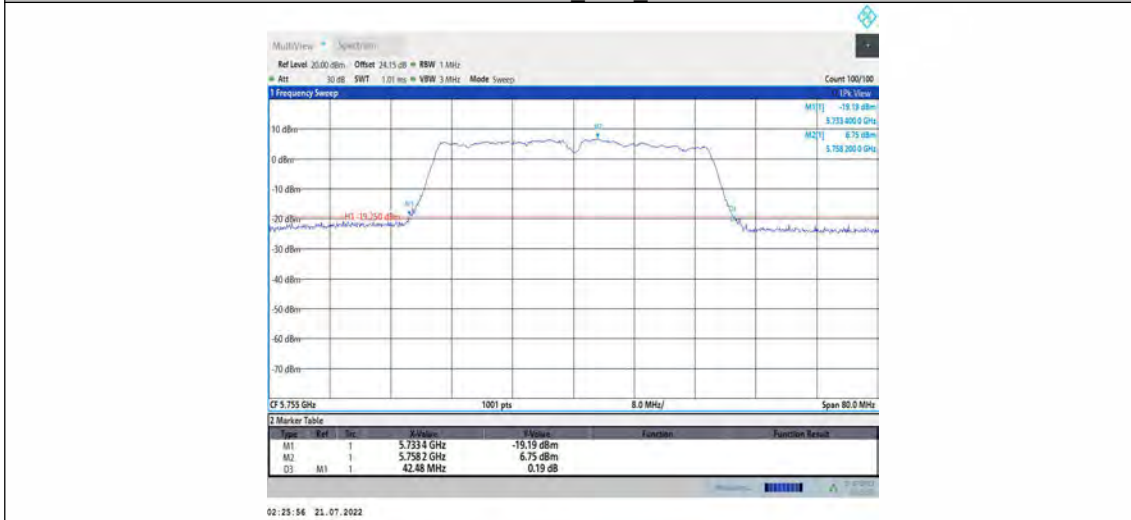
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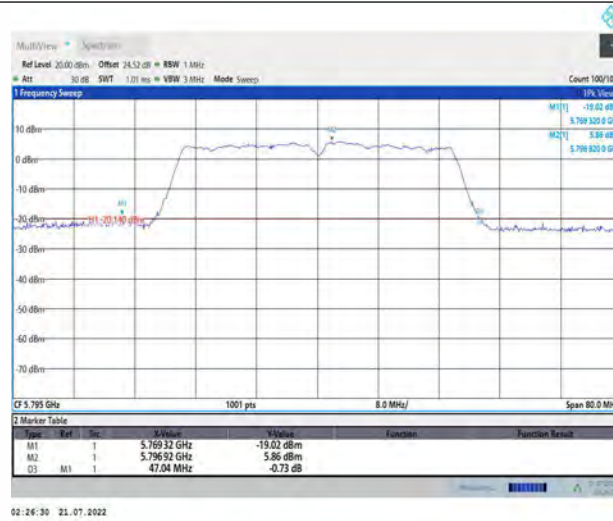
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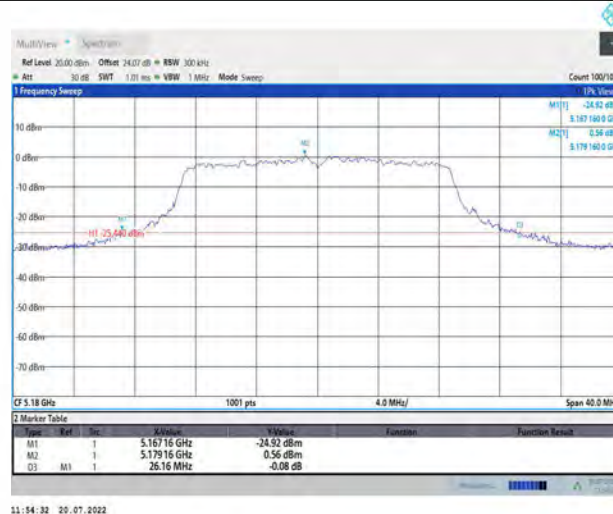


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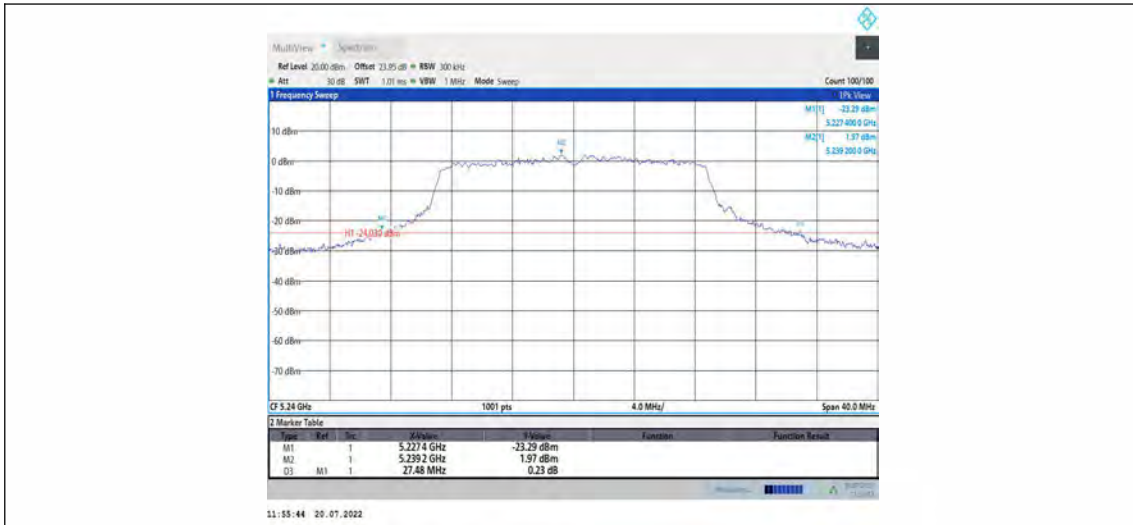
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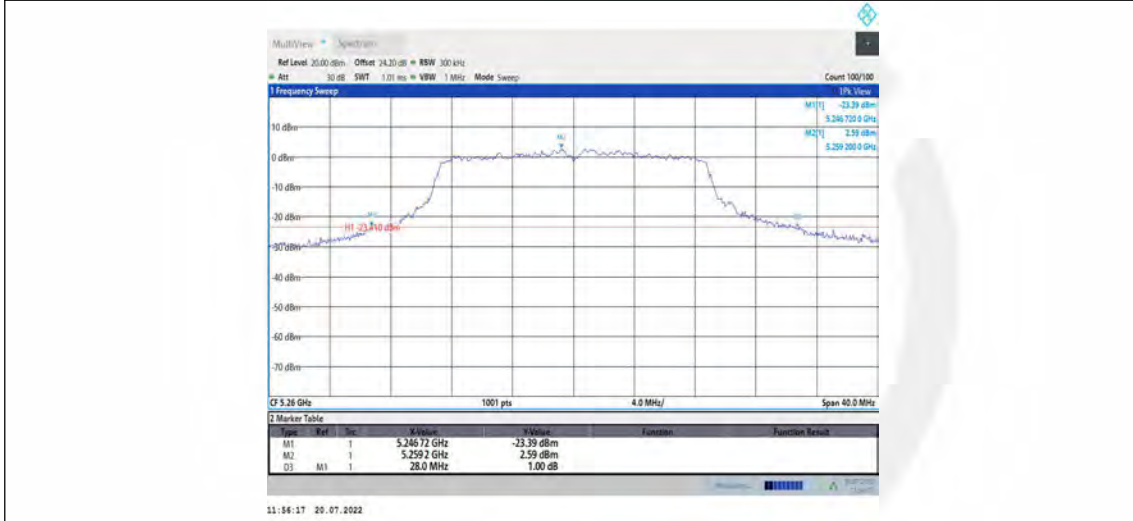


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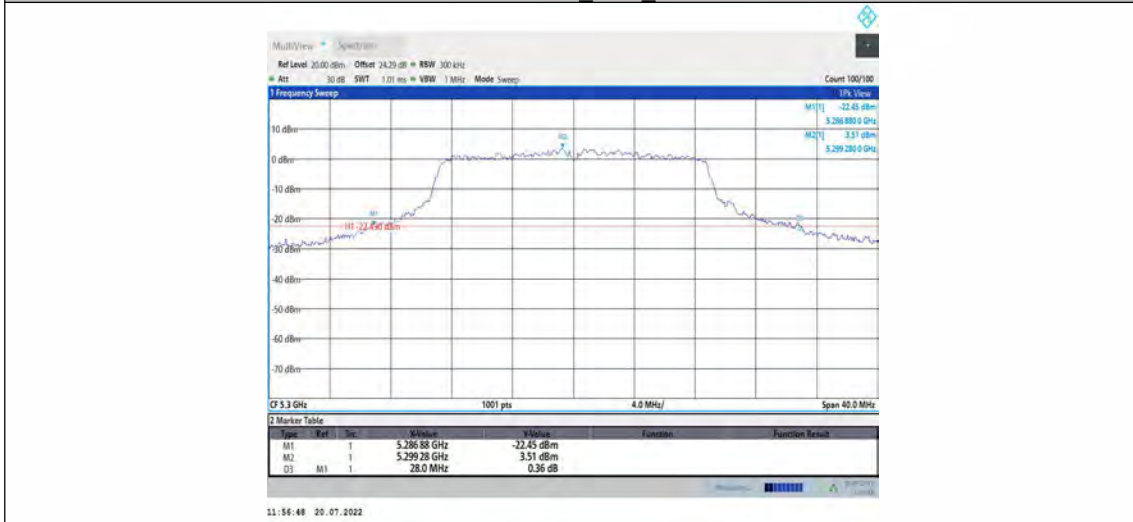
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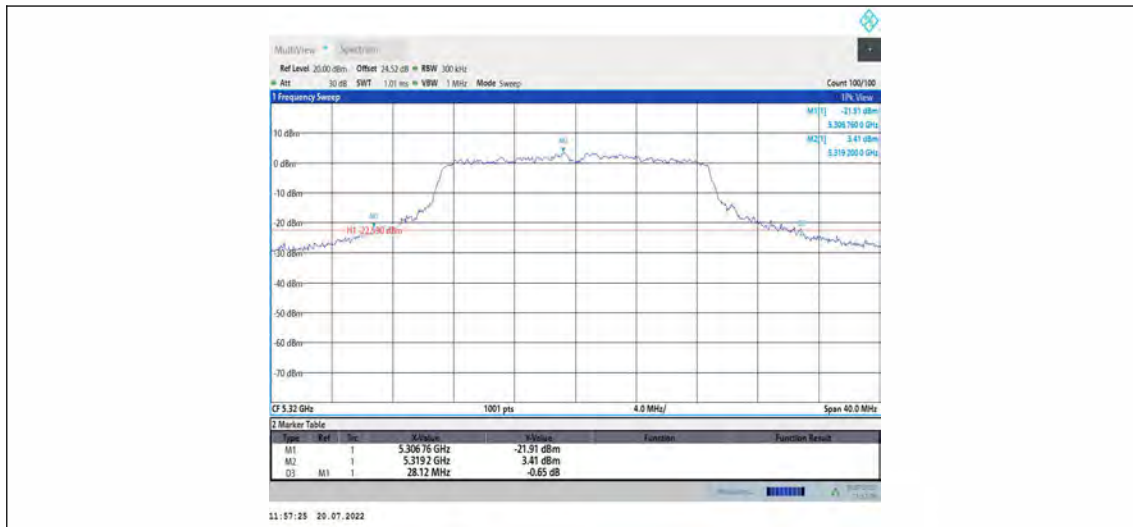
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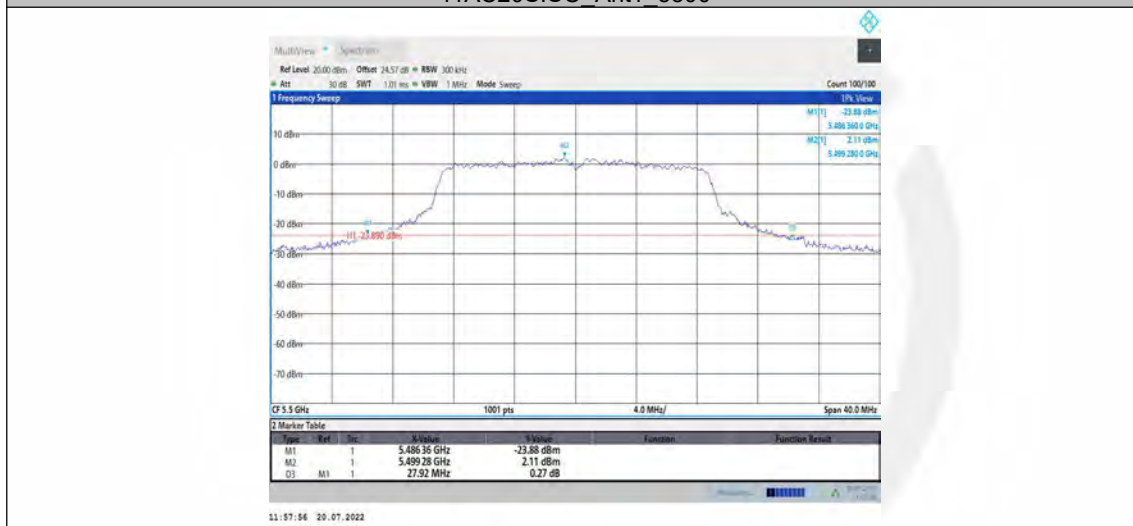
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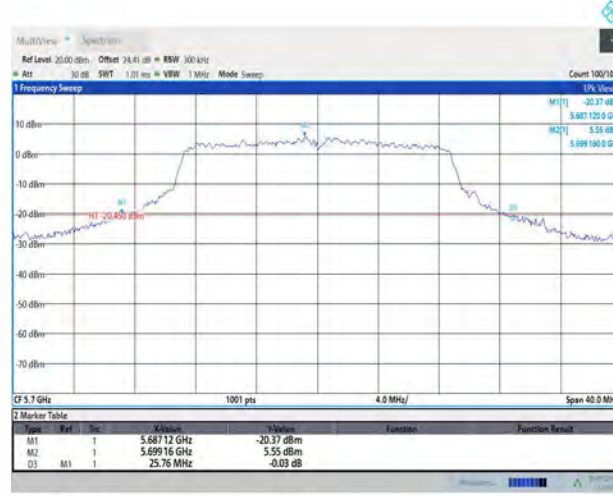
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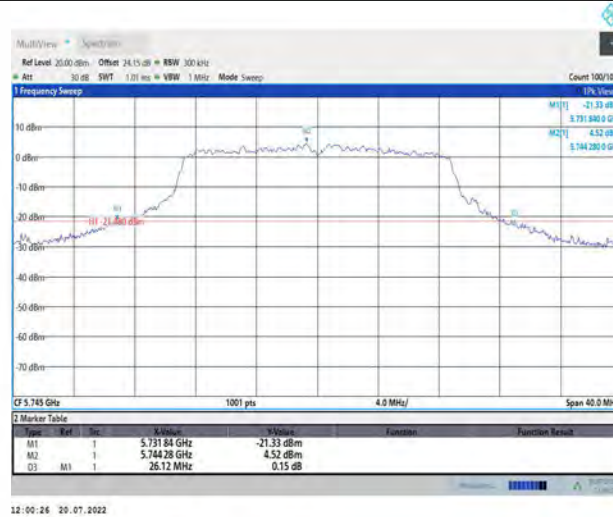


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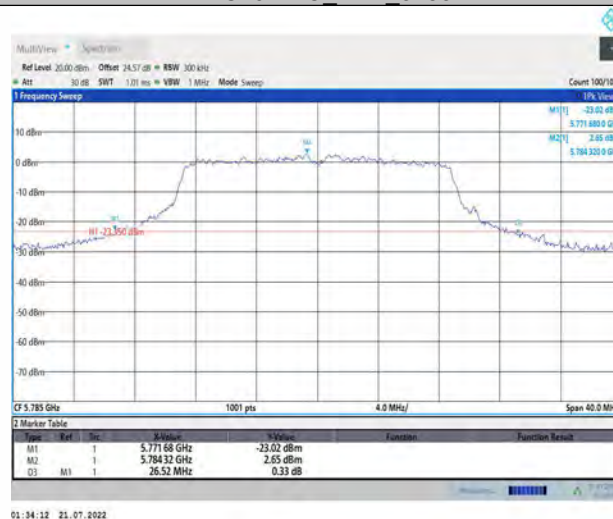
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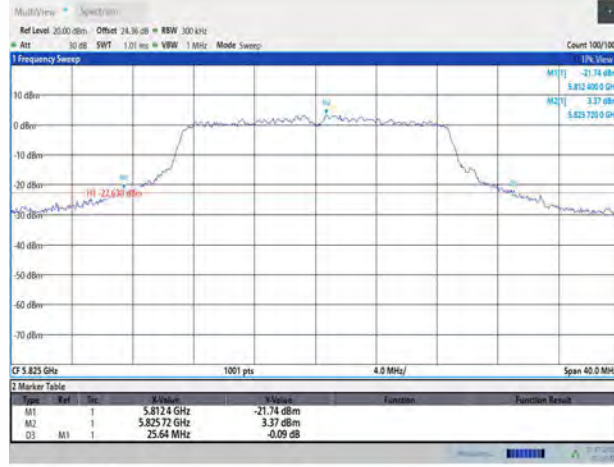
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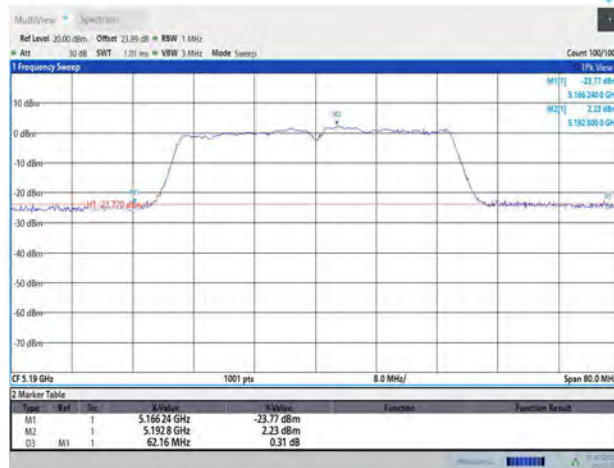
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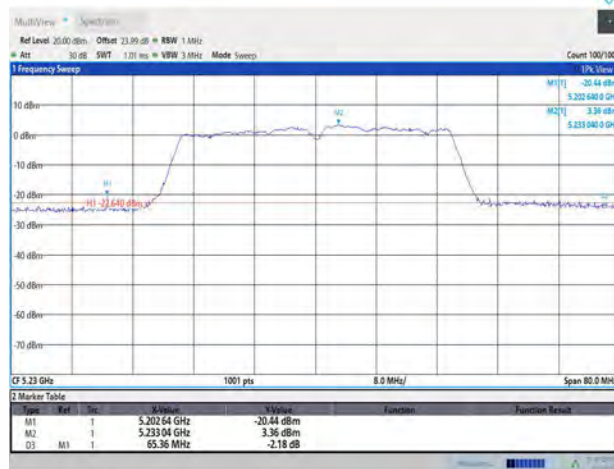
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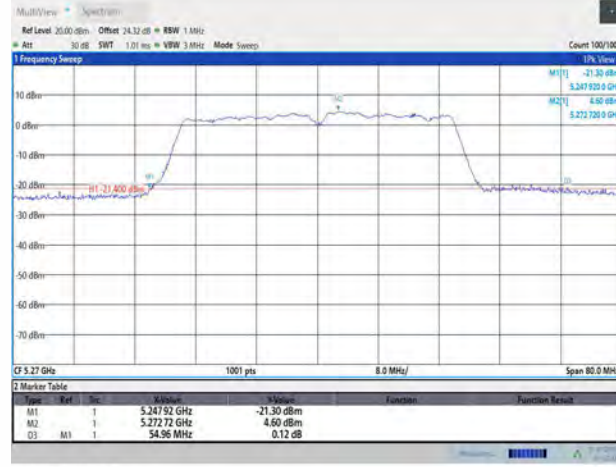
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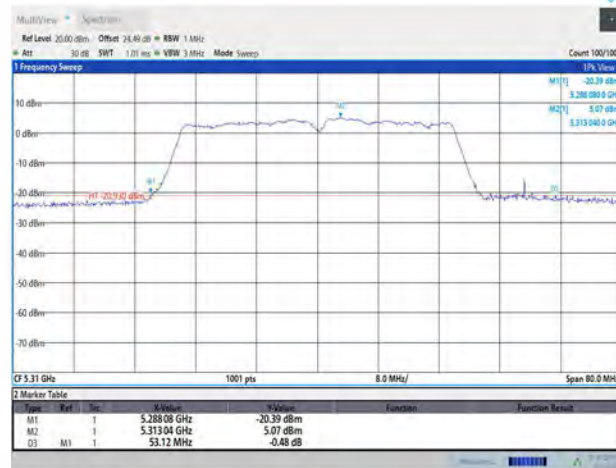
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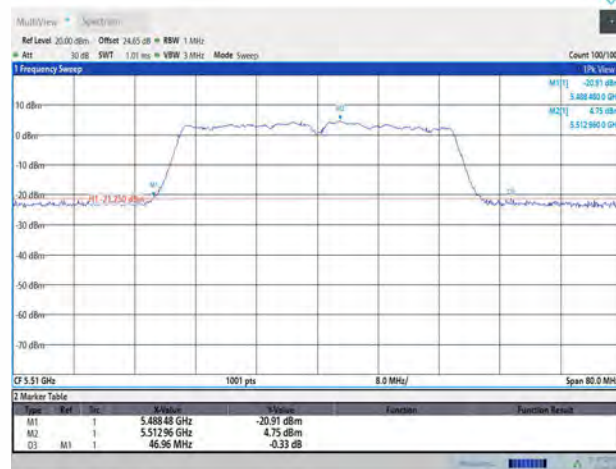
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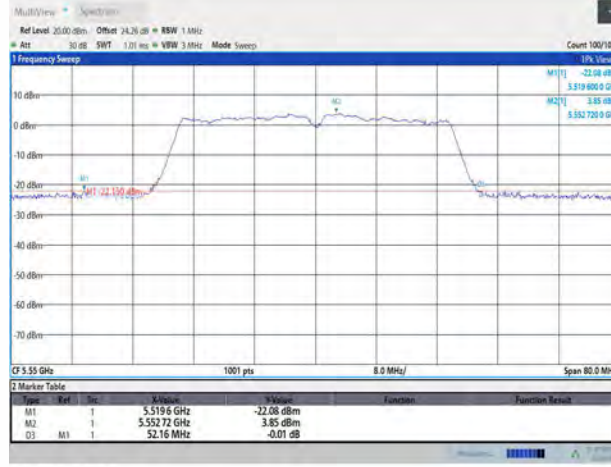
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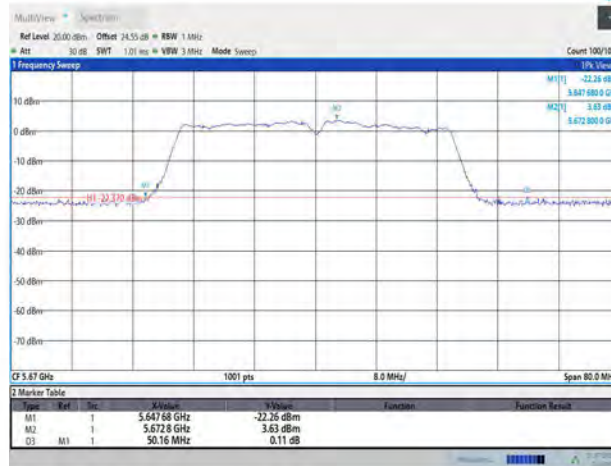
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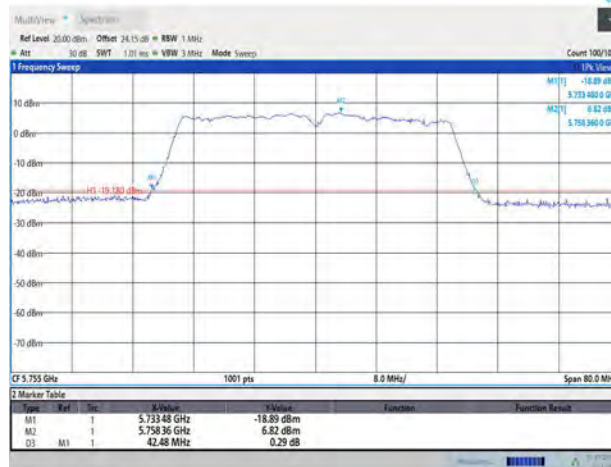
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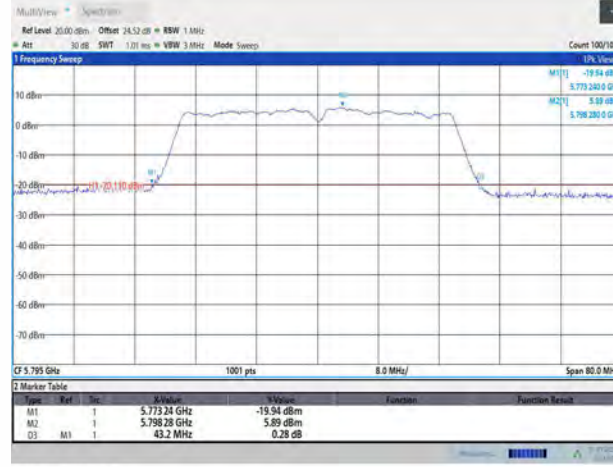
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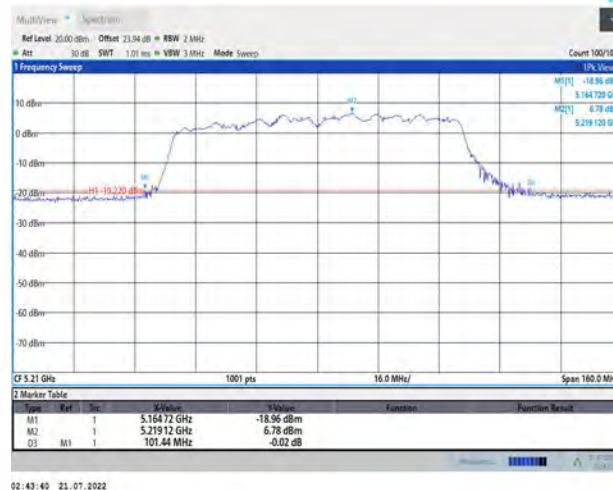


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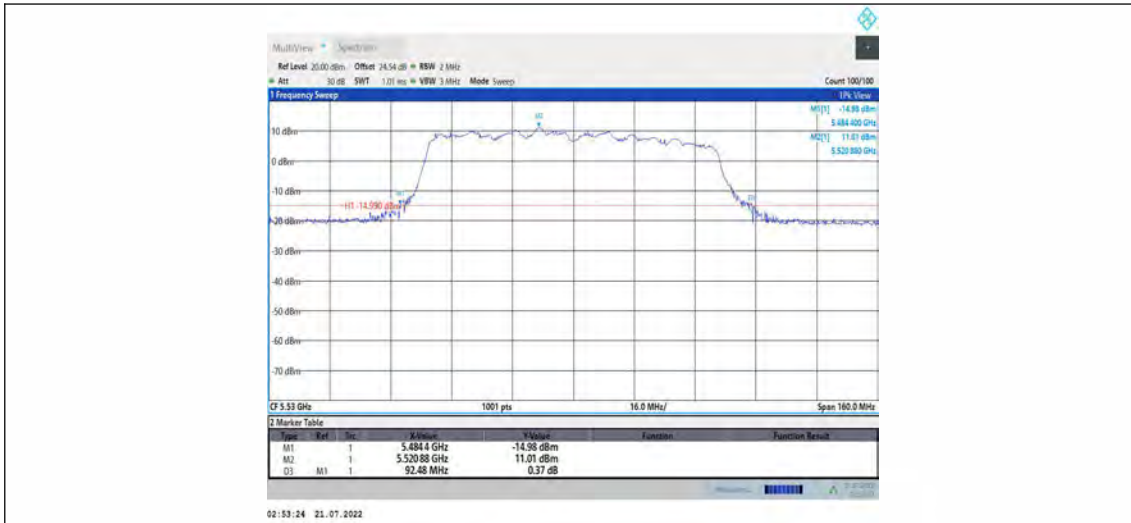
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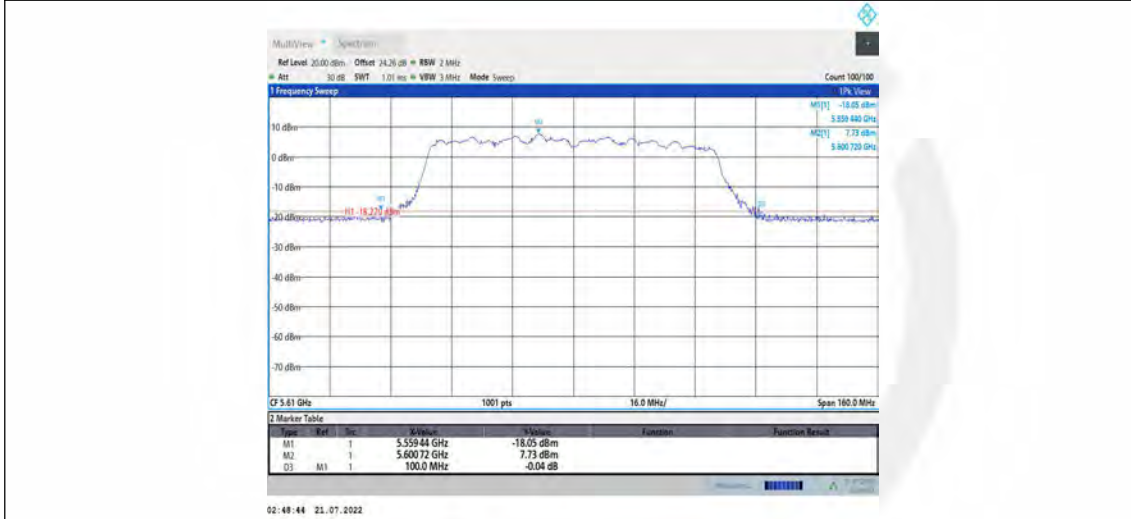
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11AC80SISO_Ant1_5530



11AC80SISO_Ant1_5610



11AC80SISO_Ant1_5775



OCB (99%)

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.983	5171.522	5188.505	---	---
		5220	17.243	5211.393	5228.636	---	---
		5240	17.228	5231.433	5248.661	---	---
		5260	17.316	5251.358	5268.674	---	---
		5300	17.127	5291.411	5308.538	---	---
		5320	17.040	5311.443	5328.483	---	---
		5500	16.903	5491.544	5508.447	---	---
		5580	16.945	5571.452	5588.397	---	---
		5700	16.978	5691.500	5708.478	---	---
		5745	17.063	5736.466	5753.529	---	---
		5785	16.994	5776.484	5793.478	---	---
		5825	16.930	5816.521	5833.451	---	---
11N20SISO	Ant1	5180	18.331	5170.864	5189.195	---	---
		5220	18.361	5210.827	5229.188	---	---
		5240	18.509	5230.779	5249.288	---	---
		5260	18.428	5250.783	5269.211	---	---
		5300	18.286	5290.820	5309.106	---	---
		5320	18.180	5310.868	5329.048	---	---
		5500	18.141	5490.915	5509.056	---	---
		5580	18.099	5570.878	5588.977	---	---
		5700	18.138	5690.937	5709.075	---	---
		5745	18.139	5735.906	5754.045	---	---
		5785	18.186	5775.883	5794.069	---	---
		5825	18.214	5815.874	5834.088	---	---
11N40SISO	Ant1	5190	36.797	5171.669	5208.466	---	---
		5230	36.798	5211.565	5248.363	---	---
		5270	36.650	5251.624	5288.274	---	---
		5310	36.584	5291.664	5328.248	---	---
		5510	36.389	5491.767	5528.156	---	---
		5550	36.538	5531.633	5568.171	---	---
		5670	36.521	5651.785	5688.306	---	---
		5755	36.466	5736.731	5773.197	---	---
11AC20SISO	Ant1	5180	18.435	5170.884	5189.319	---	---
		5220	18.507	5210.779	5229.286	---	---
		5240	18.741	5230.668	5249.409	---	---
		5260	18.607	5250.734	5269.341	---	---
		5300	18.382	5290.775	5309.157	---	---
		5320	18.236	5310.845	5329.081	---	---
		5500	18.106	5490.928	5509.034	---	---
		5580	18.102	5570.898	5589.000	---	---
		5700	18.118	5690.959	5709.077	---	---
		5745	18.173	5735.907	5754.080	---	---
		5785	18.212	5775.909	5794.121	---	---
		5825	18.243	5815.889	5834.132	---	---
11AC40SISO	Ant1	5190	37.049	5171.592	5208.641	---	---
		5230	37.174	5211.369	5248.543	---	---
		5270	37.026	5251.422	5288.448	---	---
		5310	36.628	5291.592	5328.220	---	---
		5510	36.503	5491.714	5528.217	---	---
		5550	36.452	5531.669	5568.121	---	---
		5670	36.572	5651.755	5688.327	---	---

		5755	36.484	5736.727	5773.211	---	---
		5795	36.449	5776.716	5813.165	---	---
11AC80SISO	Ant1	5210	76.548	5171.701	5248.249	---	---
		5290	76.523	5251.529	5328.052	---	---
		5530	76.349	5491.575	5567.924	---	---
		5610	76.645	5571.395	5648.040	---	---
		5775	76.346	5736.770	5813.116	---	---





11A_Ant1_5240





11A_Ant1_5320



11A_Ant1_5500



11A_Ant1_5580



11A_Ant1_5700



11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



11N20SISO_Ant1_5180



11N20SISO_Ant1_5220



11N20SISO_Ant1_5240





















11AC20SISO_Ant1_5180



11AC20SISO_Ant1_5220





11AC20SISO_Ant1_5300



11AC20SISO_Ant1_5320



11AC20SISO_Ant1_5500



11AC20SISO_Ant1_5580



11AC20SISO_Ant1_5700



11AC20SISO_Ant1_5745



11AC20SISO_Ant1_5785



11AC20SISO_Ant1_5825



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC40SISO_Ant1_5270



11AC40SISO_Ant1_5310



11AC40SISO_Ant1_5510



11AC40SISO_Ant1_5550



11AC40SISO_Ant1_5670



11AC40SISO_Ant1_5755





11AC80SISO_Ant1_5290



11AC80SISO_Ant1_5530



11AC80SISO_Ant1_5610



11AC80SISO_Ant1_5775



6db

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.320	5736.800	5753.120	0.5	PASS
		5785	16.320	5776.800	5793.120	0.5	PASS
		5825	15.920	5816.800	5832.720	0.5	PASS
11N20SISO	Ant1	5745	15.920	5736.560	5752.480	0.5	PASS
		5785	17.560	5776.200	5793.760	0.5	PASS
		5825	17.600	5816.160	5833.760	0.5	PASS
11N40SISO	Ant1	5755	34.480	5738.040	5772.520	0.5	PASS
		5795	35.280	5777.240	5812.520	0.5	PASS
11AC20SISO	Ant1	5745	17.520	5736.200	5753.720	0.5	PASS
		5785	16.000	5776.560	5792.560	0.5	PASS
		5825	17.320	5816.200	5833.520	0.5	PASS
11AC40SISO	Ant1	5755	34.160	5737.400	5771.560	0.5	PASS
		5795	35.360	5777.080	5812.440	0.5	PASS
11AC80SISO	Ant1	5775	75.040	5737.400	5812.440	0.5	PASS





11A_Ant1_5825



