FCC AND ISED CERTIFICATION TEST REPORT

Applicant	:	Roadway Smart Technologies Co., Ltd
Address of Applicant	:	Room 1118, Jinao International Apartment, No.19 Madian East Road, Haidian District, Beijing, China
Manufacturer	:	Roadway Smart Technologies Co., Ltd
Address of Manufacturer	:	Room 1118, Jinao International Apartment, No.19 Madian East Road, Haidian District, Beijing, China
Equipment under Test	:	AIoT Edge Controller
Model No.	:	MB41
FCC ID	:	2BECT-MB41
IC	:	31883-MB41
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 3 August 2023, ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01, RSS-Gen Issue 5 April 2018
Report No.	:	DDT-RE23111537-2E10
Issue Date	:	2024/02/06
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd.
Address of Laboratory	:	Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

Table of Contents

Test report declares....4
1. Summary of Test Results.... 7
2. General Test Information 8
2.1. Description of EUT 8
2.2. Accessories of EUT.... 10
2.3. Assistant equipment used for test.... 10
2.4. Block diagram of EUT configuration for test 10
2.5. Deviations of test standard.... 12
2.6. Test environment conditions 12
2.7. Test laboratory 12
2.8. Measurement uncertainty.... 13
3. Equipment Used During Conductive Test.... 14
4. 26dB Bandwidth 15
4.1. Block diagram of test setup.... 15
4.2. Limits 15
4.3. Test procedure 15
4.4. Test result.... 16
4.5. Test graphs 19
5. 6dB Bandwidth 63
5.1. Block diagram of test setup.... 63
5.2. Limits 63
5.3. Test procedure 63
5.4. Test result B4 64
5.5. Test graphs B4.... 65
6. 99% Bandwidth 75
6.1. Block diagram of test setup.... 75
6.2. Limits 75
6.3. Test procedure 75
6.4. Test result.... 76
6.5. Test graphs 79
7. Duty Cycle 123
7.1. Block diagram of test setup.... 123
7.2. Limit 123
7.3. Test procedure 123
7.4. Test result.... 123
7.5. Test graphs 126
8. Maximum Output Power.... 170

8.1. Block diagram of test setup 170
8.2. Limits 170
8.3. Test procedure 170
8.4. Test result channel power 170
9. Power Spectral Density 174
9.1. Block diagram of test setup 174
9.2. Limits 174
9.3. Test procedure 174
9.4. Test result 175
9.5. Test graphs 179
10. Frequency Stability Measurement 227
10.1. Limit of Frequency Stability 227
10.2. Measuring Instruments 227
10.3. Test procedures 227
10.4. Test setup 227
10.5. Test result 228
11. Dynamic Frequency Selection 240
11.1. Applicability of DFS requirements 240
11.2. Limit 241
11.3. Parameters of radar test waveforms 241
11.4. Calibration of radar waveform 242
11.5. Channel closing transmission time, channel move time and non-occupancy period 245
11.6. Test setup 246
11.7. Test result 246
11.8. Test Graphs 246
12. Emissions in Restricted Frequency Bands 248
12.1. Test equipment 248
12.2. Block diagram of test setup 248
12.3. Limit 250
12.4. Test Procedure 252
12.5. Test result 253
13. Band Edge Compliance 282
13.1. Test equipment 282
13.2. Block diagram of test setup 282
13.3. Limit 282
13.4. Test Procedure 283
13.5. Test result 283
14. Power Line Conducted Emission 388

14.1. Test equipment 388
14.2. Block diagram of test setup 388
14.3. Power Line Conducted Emission Limits 388
14.4. Test Procedure 388
14.5. Test Result 390
15. Antenna Requirements 393
15.1. Limit 393
15.2. Result 393
16. Test Setup Photograph 394
17. Photos of the EUT 397

Test Report Declare

Applicant	:	Roadway Smart Technologies Co., Ltd
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Equipment under Test	:	AIoT Edge Controller
Model No.	:	MB41
Manufacturer	:	Roadway Smart Technologies Co., Ltd
Address of Manufacturer	:	Room 1118, Jinao International Apartment, No.19 Madian East Road, Haidian District, Beijing, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 3 August 2023.

Test procedure used:

ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01, RSS-Gen Issue 5 April 2018

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above standards.

Report No.:	DDT-RE23111537-2E10		
Date of Receipt:	2023/12/25	**Date of Test:**	2023/12/25 ~ 2024/02/06

Prepared By:	***Approved By:***
Tiger Mo	Damon Hu
Tiger Mo/Engineer	***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2024/02/06	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Results**
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e) RSS-247 Clause 6.2	PASS
Maximum Conducted Output Power	FCC 15.407 (a) RSS-247 Clause 6.2	PASS
Power Spectral Density	FCC 15.407 (a) RSS-247 Clause 6.2	PASS
Frequency Stability Measurement	FCC 15.407 (g) RSS-247 Clause 6.2 RSS-GEN Clause 8.9	PASS
Emissions in restricted frequency bands	FCC 15.407 (b) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	PASS
Band Edge Compliance	FCC 15.407 (b) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	PASS
Power Line Conducted Emission	FCC 15.207 RSS-GEN Clause 8.8	PASS
Antenna requirement	FCC 15.203 RSS-GEN Clause 8.3	PASS
Dynamic Frequency Selection	FCC 15.407 (h) RSS-247 Clause 6.8	PASS

2. General Test Information

2.1. Description of EUT

EUT Name	:	AIoT Edge Controller
Model Number	:	MB41
EUT function description	:	Please reference user manual of this device
Power Supply	:	DC 5V from external Power supply
Radio Technology	:	Bluetooth V5.0 (BR/EDR/LE), WLAN(2.4 GHz): IEEE 802.11b/g/n, WLAN(5 GHz): IEEE 802.11a/n/ac
Operation frequency	:	Bluetooth (BR/EDR/LE): 2402 MHz-2480 MHz IEEE 802.11b/g/n: 2412 MHz to 2462 MHz, IEEE 802.11a/n/ac: 5180 MHz to 5240 MHz, 5260 MHz to 5320 MHz, 5500 MHz to 5720 MHz, 5745 MHz to 5825 MHz
Modulation	:	Bluetooth BR/EDR: GFSK, π/4-DQPSK, 8DPSK Bluetooth LE: GFSK IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	:	Bluetooth BR/EDR: 1 Mbps, 2 Mbps, 3 Mbps Bluetooth LE: 1 Mbps, 2 Mbps IEEE 802.11b: up to 11 Mbps IEEE 802.11a/g: up to 54 Mbps IEEE 802.11n HT20: up to 144.4 Mbps IEEE 802.11n HT40: up to 300 Mbps IEEE 802.11ac VHT20: up to 173.4 Mbps IEEE 802.11ac VHT40: up to 400 Mbps IEEE 802.11ac VHT80: up to 866.6 Mbps
Operating mode		□ Master ☒ Client Without Radar Detection □ Client with Radar Detection
TPC function		□With TPC ☒Without TPC

Note 1: EUT is the abbreviation of equipment under test.

Note 2: "☒" means to be chosen or applicable; "☐" means don't to be chosen or not applicable; This note applies to entire report.

Note 3: Band 5600-5650MHz will be disabled when shipped to Canada

Note 4: Antenna information:

Antenna Type	/	Dual band fan-shaped rubber rod omnidirectional	FPC
Max Antenna Gain (dBi)	/	Ant1 Gain	Ant2 Gain
	IEEE 802.11a	4.56	5.3
	IEEE 802.11n HT20	4.56	5.3
	IEEE 802.11n HT40	4.56	5.3
	IEEE 802.11ac VHT20	4.56	5.3
	IEEE 802.11ac VHT40	4.56	5.3

	IEEE 802.11ac VHT80	4.56	5.3
Note: This EUT MIMO 2X2, any transmit signals are correlated with each other. So the Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] =7.39dBi			

Note 5: Channel information

Channel information					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (VHT20)		IEEE 802.11n (HT40) IEEE 802.11ac (VHT40)		IEEE 802.11ac (VHT80)	
UNII-1					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/
UNII-2A					
52	5260	54	5270	58	5290
56	5280	62	5310		/
60	5300	/	/	/	/
64	5320	/	/	/	/
UNII-2C					
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630	/	/
116	5580	134	5670	/	/
120	5600	142	5710	/	/
124	5620	/	/	/	/
128	5640	/	/	/	/
132	5660	/	/	/	/
136	5680	/	/	/	/
140	5700	/	/	/	/
144	5720				
UNII-3					
149	5745	151	5755	155	5775
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/
Note: Band 5600-5650MHz will be disabled when shipped to Canada					

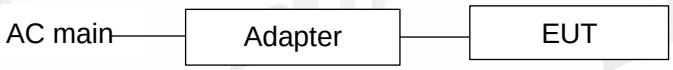
2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
N/A	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
NoteBook	Lenovo	I7-4810MQ	N/A	00331-1000-00001-AA816
AC ADAPTER	SUNUN	SA182V-050300U	INPUT:100-240V-50/60Hz 0.4A OUTPUT: 5V/3A	A182-548

2.4. Block diagram of EUT configuration for test



Test software: adb.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 2 dB (According to the manufacturer's claims)

Tested mode, channel, and data rate information					
Mode	Setting Tx Power		Data rate (Mpbs) (see Note)	Channel	Frequency (MHz)
	ANT1	ANT2			
IEEE 802.11a	80	80	6	Low: CH36	5180
	80	80	6	Middle: CH40	5200
	80	80	6	High: CH48	5240
	70	70	6	Low: CH52	5260
	70	70	6	Middle: CH56	5280
	70	70	6	High: CH64	5320
	65	65	6	Low: CH100	5500
	65	65	6	Middle: CH116	5580
	65	65	6	High: CH140	5700
	65	65	6	Straddle:CH144	5720
	65	65	6	Low: CH149	5745
	65	65	6	Middle: CH157	5785
	65	65	6	High: CH165	5825
IEEE	65	65	MCS 8	Low: CH36	5180

802.11n HT20	65	65	MCS 8	Middle: CH40	5200
	65	65	MCS 8	High: CH48	5240
	65	65	MCS 8	Low: CH52	5260
	65	65	MCS 8	Middle: CH56	5280
	65	65	MCS 8	High: CH64	5320
	65	65	MCS 8	Low: CH100	5500
	65	65	MCS 8	Middle: CH116	5580
	65	65	MCS 8	High: CH140	5700
	65	65	MCS 8	Straddle:CH144	5720
	65	65	MCS 8	Low: CH149	5745
	65	65	MCS 8	Middle: CH157	5785
	65	65	MCS 8	High: CH165	5825
IEEE 802.11n HT40	65	65	MCS 8	Low: CH38	5190
	65	65	MCS 8	Middle: CH46	5230
	65	65	MCS 8	High: CH54	5270
	65	65	MCS 8	Low: CH62	5310
	65	65	MCS 8	Middle: CH102	5510
	65	65	MCS 8	High: CH110	5550
	65	65	MCS 8	Low: CH134	5670
	65	65	MCS 8	Middle: CH151	5755
	65	65	MCS 8	High: CH159	5795
IEEE 802.11ac VHT20	65	65	MCS 0	Low: CH36	5180
	65	65	MCS 0	Middle: CH40	5200
	65	65	MCS 0	High: CH48	5240
	65	65	MCS 0	Low: CH52	5260
	65	65	MCS 0	Middle: CH56	5280
	65	65	MCS 0	High: CH64	5320
	65	65	MCS 0	Low: CH100	5500
	65	65	MCS 0	Middle: CH116	5580
	65	65	MCS 0	High: CH140	5700
	65	65	MCS 0	Straddle:CH144	5720
	65	65	MCS 0	Low: CH149	5745
	65	65	MCS 0	Middle: CH157	5785
	65	65	MCS 0	High: CH165	5825
IEEE 802.11 ac VHT40	65	65	MCS 0	Low: CH38	5190
	65	65	MCS 0	Middle: CH46	5230
	65	65	MCS 0	High: CH54	5270
	65	65	MCS 0	Low: CH62	5310
	65	65	MCS 0	Middle: CH102	5510

	65	65	MCS 0	High: CH110	5550
	65	65	MCS 0	Low: CH134	5670
	65	65	MCS 0	Straddle: CH142	5710
	65	65	MCS 0	Middle: CH151	5755
	65	65	MCS 0	High: CH159	5795
IEEE 802.11ac VHT80	65	65	MCS 0	CH42	5210
	65	65	MCS 0	CH58	5290
	65	65	MCS 0	CH106	5530
	65	65	MCS 0	CH122	5610
	65	65	MCS 0	CH138	5690
	65	65	MCS 0	CH155	5775
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.					

2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

Temperature range:	+15℃ to +35 ℃
Humidity range:	20% to 75%
Pressure range:	86 kPa to106 kPa

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No.17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China 523808

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

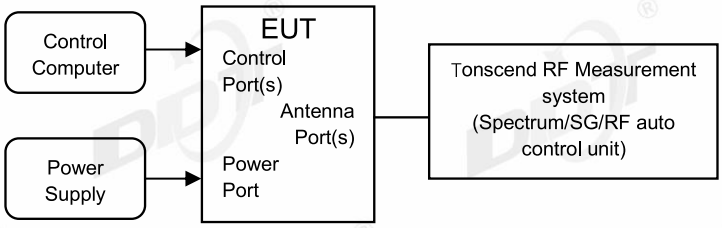
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 x 10^{-8} (Antenna couple method)
	5.5 x 10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 ℃
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz)
	3.72dB (9KHz-150KHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Conductive Test

Equipment	Manufacturer	Model No.	Serial Number	Due Date
☒RF Connected Test (RF Measurement System 4#)				
Signal &Spectrum Analyzer	R&S	FSV3044	101173	2024/04/22
Wideband Radio Communication Tester	R&S	CMW500	168801	2024/04/26
MXG Vector Signal Generator	Agilent	N5182A	MY48180737	2024/04/26
PSG Vector Signal Generator	Agilent	E8267D	US49060192	2024/09/05
RF Control Unit	Tonsend	JS0806-2	21I8060485	2024/04/26
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2024/05/14
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A

4. 26dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
26 dB Bandwidth	---	5150 - 5250
	---	5250 - 5350
	---	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725

4.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	approximately 1% of the emission bandwidth.
VBW	> RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize, 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 26 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

Test Engineer:	Haofeng CHEN	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃,51.2%RH	Test Date:	2024.01.22-2024.01.31
Test Power Supply:	DC 5V	EUT:	AIoT Edge Controller
Sample Number:	S23111537-05	Model No.:	MB41

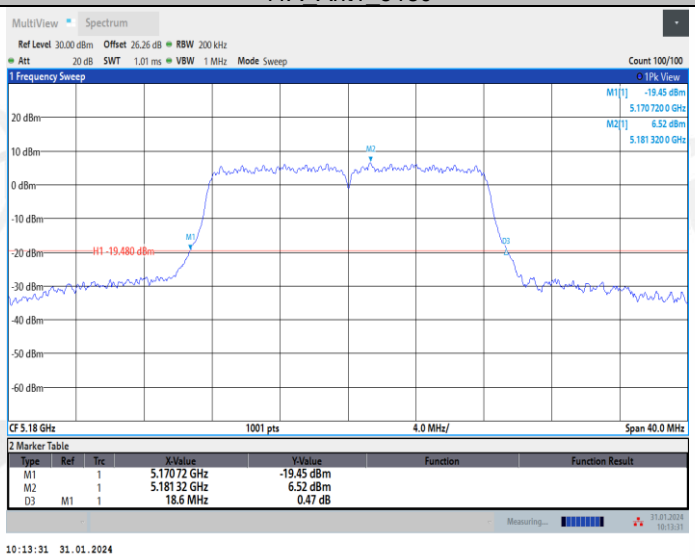
Test Mode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	18.60	5170.72	5189.32	---	---
	Ant2	5180	18.56	5170.76	5189.32	---	---
	Ant1	5200	18.48	5190.80	5209.28	---	---
	Ant2	5200	18.48	5190.76	5209.24	---	---
	Ant1	5240	18.40	5230.92	5249.32	---	---
	Ant2	5240	18.48	5230.84	5249.32	---	---
	Ant1	5260	18.44	5250.80	5269.24	---	---
	Ant2	5260	18.48	5250.76	5269.24	---	---
	Ant1	5280	18.52	5270.68	5289.20	---	---
	Ant2	5280	18.48	5270.84	5289.32	---	---
	Ant1	5320	18.52	5310.76	5329.28	---	---
	Ant2	5320	18.52	5310.76	5329.28	---	---
	Ant1	5500	18.40	5490.80	5509.20	---	---
	Ant2	5500	18.56	5490.76	5509.32	---	---
	Ant1	5580	18.40	5570.84	5589.24	---	---
	Ant2	5580	18.44	5570.80	5589.24	---	---
	Ant1	5700	18.32	5690.88	5709.20	---	---
	Ant2	5700	19.08	5690.80	5709.88	---	---
	Ant1	5720	18.48	5710.76	5729.24	---	---
	Ant2	5720	18.48	5710.76	5729.24	---	---
	Ant1	5720_UNII-2C	14.24	5710.76	5725	---	---
	Ant2	5720_UNII-2C	14.24	5710.76	5725	---	---
	Ant1	5720_UNII-3	4.24	5725	5729.24	---	---
	Ant2	5720_UNII-3	4.24	5725	5729.24	---	---
	Ant1	5745	18.96	5735.84	5754.80	---	---
	Ant2	5745	18.32	5735.88	5754.20	---	---
	Ant1	5785	19.32	5775.56	5794.88	---	---
	Ant2	5785	20.32	5775.68	5796.00	---	---
	Ant1	5825	19.52	5815.44	5834.96	---	---
	Ant2	5825	24.24	5813.96	5838.20	---	---
11N20MIMO	Ant1	5180	19.16	5170.48	5189.64	---	---
	Ant2	5180	19.40	5170.36	5189.76	---	---
	Ant1	5200	19.20	5190.44	5209.64	---	---
	Ant2	5200	19.36	5190.40	5209.76	---	---
	Ant1	5240	19.24	5230.44	5249.68	---	---
	Ant2	5240	19.20	5230.48	5249.68	---	---
	Ant1	5260	19.16	5250.48	5269.64	---	---
	Ant2	5260	19.28	5250.48	5269.76	---	---
	Ant1	5280	19.28	5270.36	5289.64	---	---
	Ant2	5280	19.40	5270.36	5289.76	---	---
	Ant1	5320	19.20	5310.48	5329.68	---	---
	Ant2	5320	19.44	5310.36	5329.80	---	---
	Ant1	5500	19.24	5490.44	5509.68	---	---
	Ant2	5500	19.24	5490.48	5509.72	---	---
	Ant1	5580	19.20	5570.48	5589.68	---	---
	Ant2	5580	19.28	5570.40	5589.68	---	---
	Ant1	5700	19.16	5690.52	5709.68	---	---
	Ant2	5700	19.40	5690.36	5709.76	---	---
	Ant1	5720	19.20	5710.44	5729.64	---	---
	Ant2	5720	19.36	5710.40	5729.76	---	---
	Ant1	5720_UNII-2C	14.56	5710.44	5725	---	---
	Ant2	5720_UNII-2C	14.6	5710.40	5725	---	---
	Ant1	5720_UNII-3	4.64	5725	5729.64	---	---
	Ant2	5720_UNII-3	4.76	5725	5729.76	---	---
	Ant1	5745	19.20	5735.44	5754.64	---	---

	Ant2	5745	19.36	5735.40	5754.76	---	---
	Ant1	5785	19.20	5775.52	5794.72	---	---
	Ant2	5785	19.44	5775.40	5794.84	---	---
	Ant1	5825	19.20	5815.48	5834.68	---	---
	Ant2	5825	19.40	5815.48	5834.88	---	---
11N40MIMO	Ant1	5190	40.96	5169.44	5210.40	---	---
	Ant2	5190	41.20	5169.60	5210.80	---	---
	Ant1	5230	40.96	5209.36	5250.32	---	---
	Ant2	5230	42.00	5209.20	5251.20	---	---
	Ant1	5270	40.96	5249.52	5290.48	---	---
	Ant2	5270	42.40	5249.04	5291.44	---	---
	Ant1	5310	41.04	5289.20	5330.24	---	---
	Ant2	5310	41.68	5289.04	5330.72	---	---
	Ant1	5510	40.80	5489.60	5530.40	---	---
	Ant2	5510	41.52	5489.44	5530.96	---	---
	Ant1	5550	40.32	5529.68	5570.00	---	---
	Ant2	5550	41.68	5529.20	5570.88	---	---
	Ant1	5670	41.12	5649.44	5690.56	---	---
	Ant2	5670	42.16	5648.72	5690.88	---	---
	Ant1	5710	40.88	5689.52	5730.40	---	---
	Ant2	5710	41.28	5689.44	5730.72	---	---
	Ant1	5710_UNII-2C	35.48	5689.52	5725	---	---
	Ant2	5710_UNII-2C	35.56	5689.44	5725	---	---
	Ant1	5710_UNII-3	5.4	5725	5730.40	---	---
	Ant2	5710_UNII-3	5.72	5725	5730.72	---	---
	Ant1	5755	40.72	5734.60	5775.32	---	---
	Ant2	5755	42.32	5734.04	5776.36	---	---
	Ant1	5795	40.80	5774.68	5815.48	---	---
	Ant2	5795	41.20	5774.68	5815.88	---	---
11AC20MIMO	Ant1	5180	19.40	5170.40	5189.80	---	---
	Ant2	5180	19.40	5170.44	5189.84	---	---
	Ant1	5200	19.32	5190.36	5209.68	---	---
	Ant2	5200	19.28	5190.40	5209.68	---	---
	Ant1	5240	19.40	5230.36	5249.76	---	---
	Ant2	5240	19.44	5230.36	5249.80	---	---
	Ant1	5260	19.32	5250.44	5269.76	---	---
	Ant2	5260	19.28	5250.44	5269.72	---	---
	Ant1	5280	19.36	5270.40	5289.76	---	---
	Ant2	5280	19.36	5270.36	5289.72	---	---
	Ant1	5320	19.36	5310.36	5329.72	---	---
	Ant2	5320	19.32	5310.40	5329.72	---	---
	Ant1	5500	19.32	5490.44	5509.76	---	---
	Ant2	5500	19.36	5490.44	5509.80	---	---
	Ant1	5580	19.40	5570.36	5589.76	---	---
	Ant2	5580	19.36	5570.36	5589.72	---	---
	Ant1	5700	19.28	5690.44	5709.72	---	---
	Ant2	5700	19.28	5690.48	5709.76	---	---
	Ant1	5720	19.24	5710.44	5729.68	---	---
	Ant2	5720	19.32	5710.44	5729.76	---	---
	Ant1	5720_UNII-2C	14.56	5710.44	5725	---	---
	Ant2	5720_UNII-2C	14.56	5710.44	5725	---	---
	Ant1	5720_UNII-3	4.68	5725	5729.68	---	---
	Ant2	5720_UNII-3	4.76	5725	5729.76	---	---
	Ant1	5745	19.32	5735.44	5754.76	---	---
	Ant2	5745	19.36	5735.44	5754.80	---	---
	Ant1	5785	19.32	5775.44	5794.76	---	---
	Ant2	5785	19.44	5775.40	5794.84	---	---
	Ant1	5825	19.44	5815.36	5834.80	---	---
	Ant2	5825	19.52	5815.32	5834.84	---	---
11AC40MIMO	Ant1	5190	41.44	5169.20	5210.64	---	---
	Ant2	5190	41.60	5169.20	5210.80	---	---
	Ant1	5230	41.28	5209.52	5250.80	---	---
	Ant2	5230	41.84	5209.20	5251.04	---	---
	Ant1	5270	41.36	5249.44	5290.80	---	---

	Ant2	5270	41.76	5249.12	5290.88	---	---
	Ant1	5310	42.24	5289.04	5331.28	---	---
	Ant2	5310	42.24	5288.96	5331.20	---	---
	Ant1	5510	42.08	5489.04	5531.12	---	---
	Ant2	5510	42.40	5488.80	5531.20	---	---
	Ant1	5550	41.20	5529.28	5570.48	---	---
	Ant2	5550	41.36	5529.20	5570.56	---	---
	Ant1	5670	41.76	5649.20	5690.96	---	---
	Ant2	5670	42.08	5649.12	5691.20	---	---
	Ant1	5710	41.44	5689.20	5730.64	---	---
	Ant2	5710	41.76	5689.04	5730.80	---	---
	Ant1	5710_UNII-2C	35.8	5689.20	5725	---	---
	Ant2	5710_UNII-2C	35.96	5689.04	5725	---	---
	Ant1	5710_UNII-3	5.64	5725	5730.64	---	---
	Ant2	5710_UNII-3	5.8	5725	5730.80	---	---
	Ant1	5755	41.44	5734.36	5775.80	---	---
	Ant2	5755	41.92	5734.12	5776.04	---	---
	Ant1	5795	41.60	5774.44	5816.04	---	---
	Ant2	5795	41.60	5774.36	5815.96	---	---
11AC80MIMO	Ant1	5210	81.76	5169.20	5250.96	---	---
	Ant2	5210	82.08	5169.04	5251.12	---	---
	Ant1	5290	82.40	5248.72	5331.12	---	---
	Ant2	5290	82.24	5248.88	5331.12	---	---
	Ant1	5530	81.76	5489.36	5571.12	---	---
	Ant2	5530	81.92	5489.36	5571.28	---	---
	Ant1	5610	81.76	5569.36	5651.12	---	---
	Ant2	5610	81.76	5569.36	5651.12	---	---
	Ant1	5690	81.60	5649.20	5730.80	---	---
	Ant2	5690	81.76	5649.04	5730.80	---	---
	Ant1	5690_UNII-2C	75.8	5649.20	5725	---	---
	Ant2	5690_UNII-2C	75.96	5649.04	5725	---	---
	Ant1	5690_UNII-3	5.8	5725	5730.80	---	---
	Ant2	5690_UNII-3	5.8	5725	5730.80	---	---
	Ant1	5775	82.88	5734.20	5817.08	---	---
	Ant2	5775	87.52	5734.04	5821.56	---	---

4.5. Test graphs

11A_Ant1_5180



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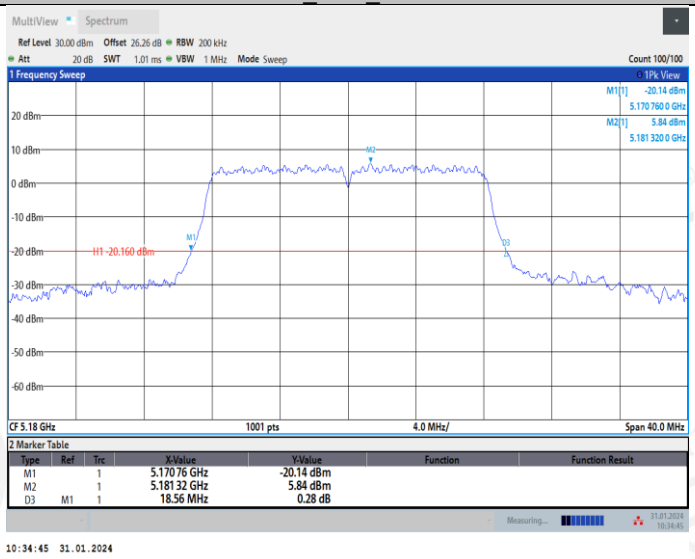

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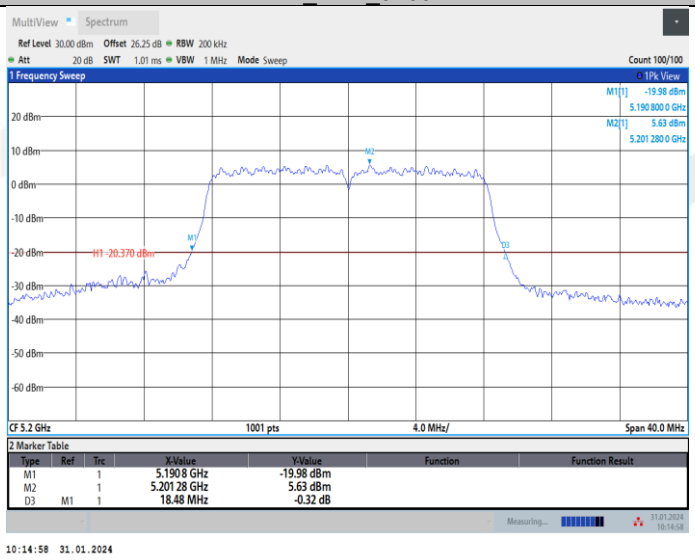

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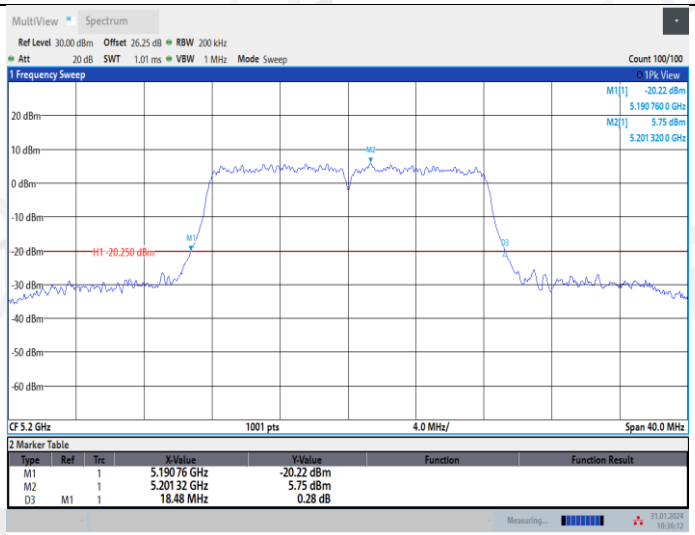

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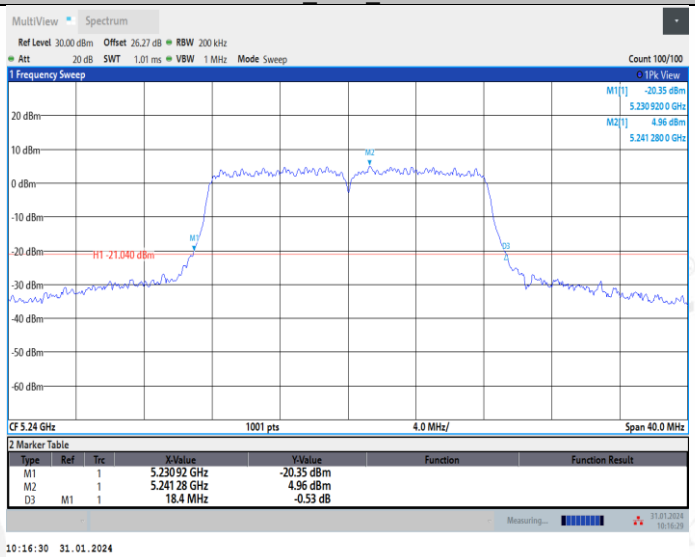

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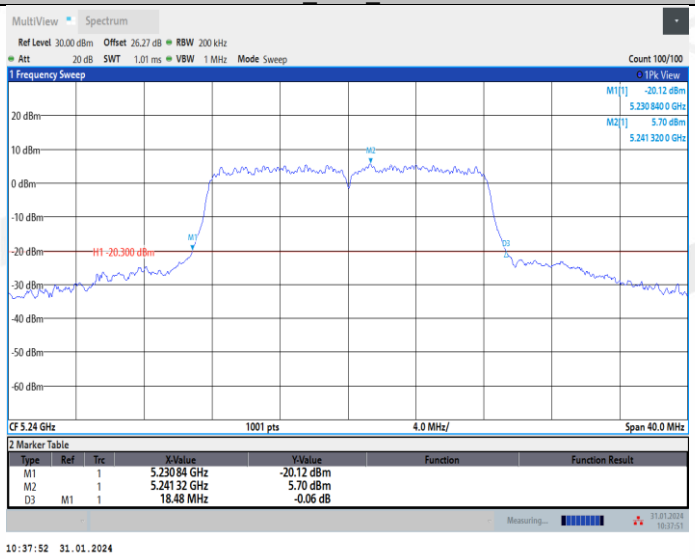

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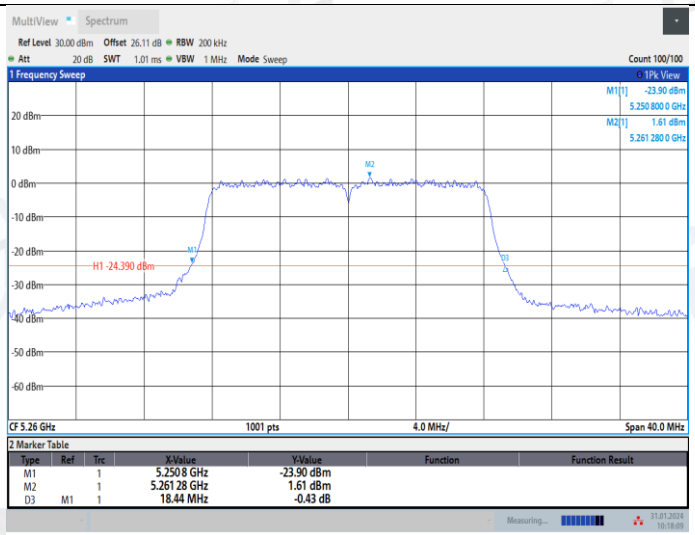

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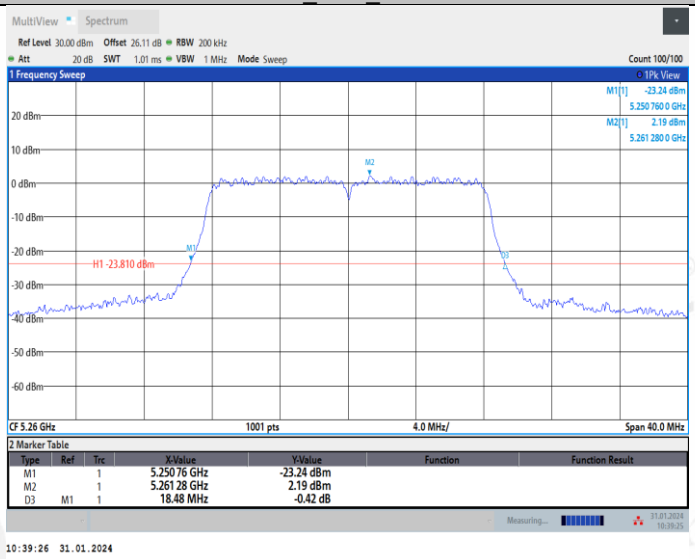

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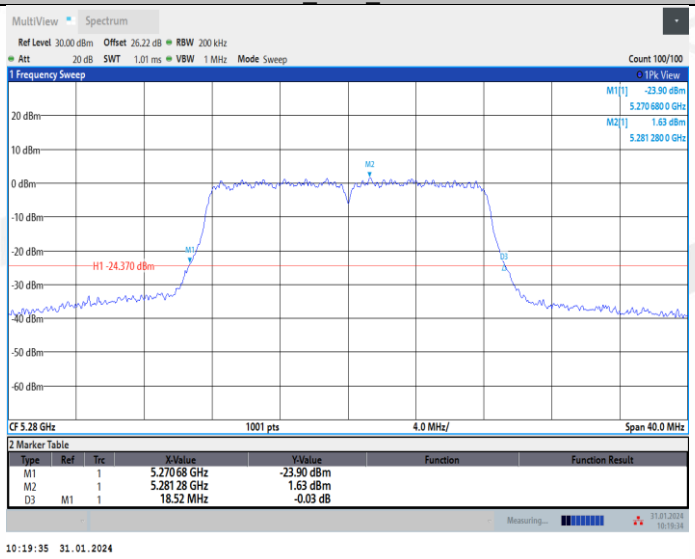

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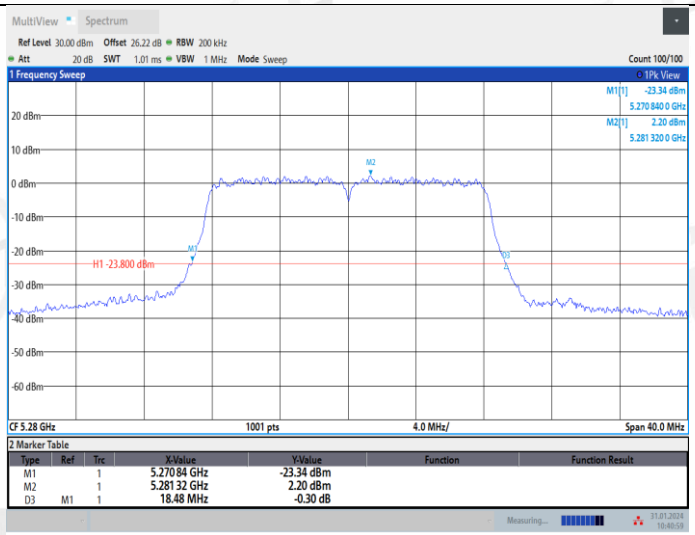

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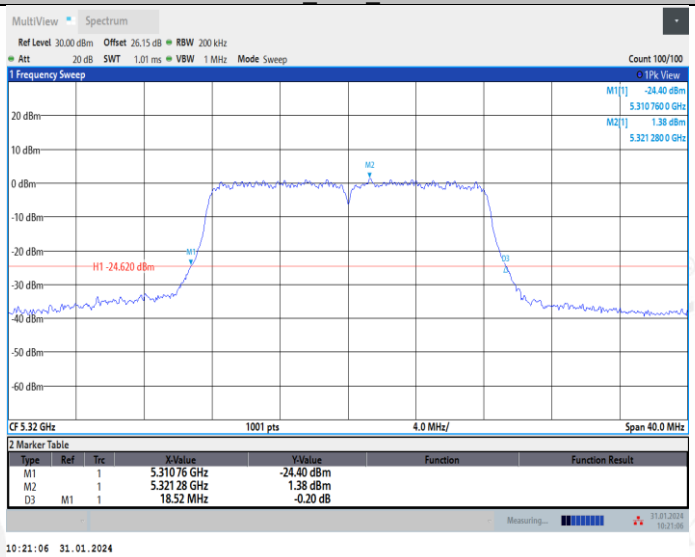

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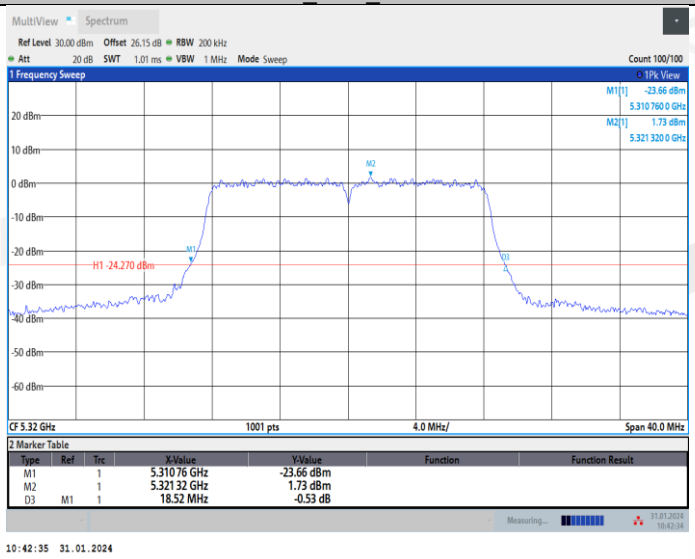

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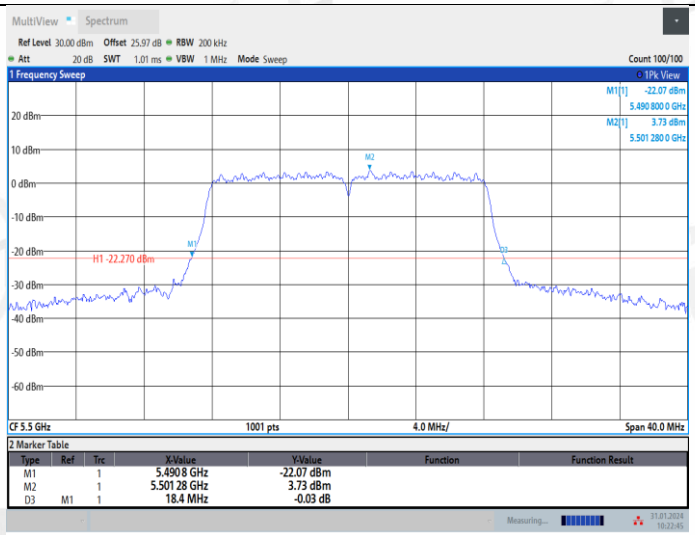

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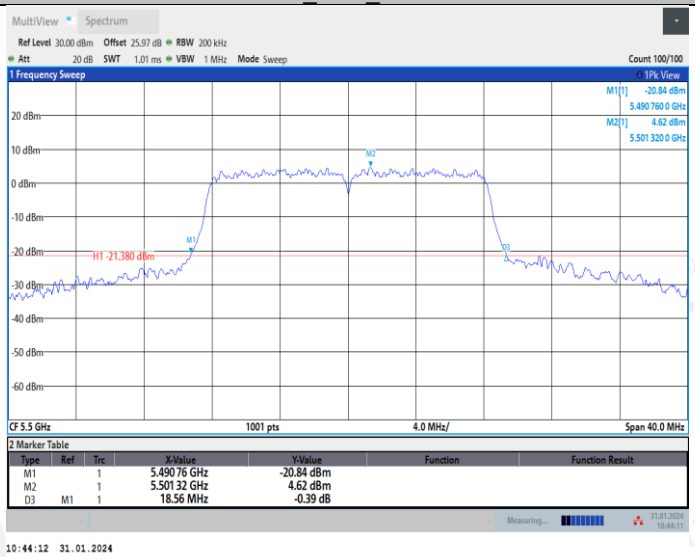

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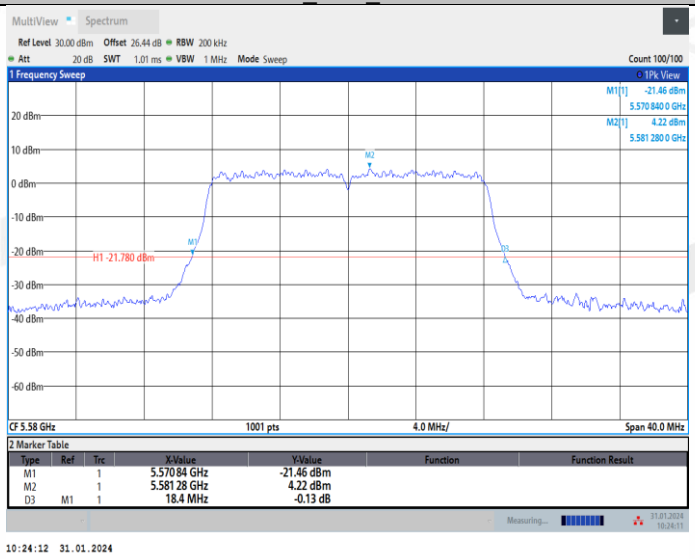

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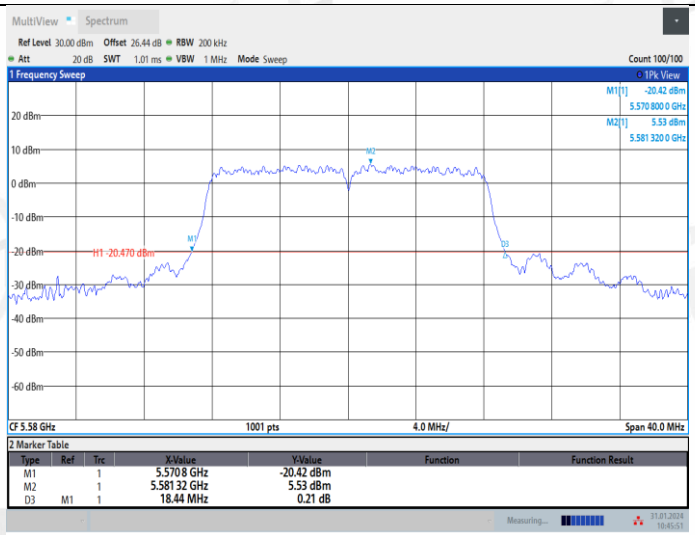

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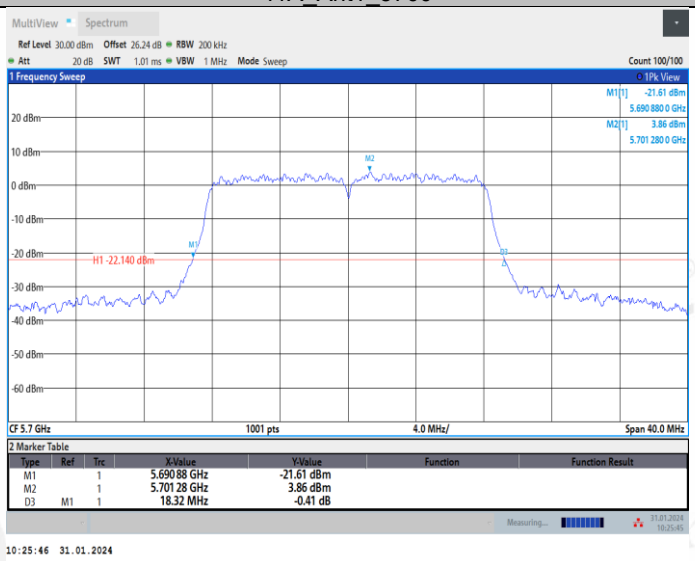

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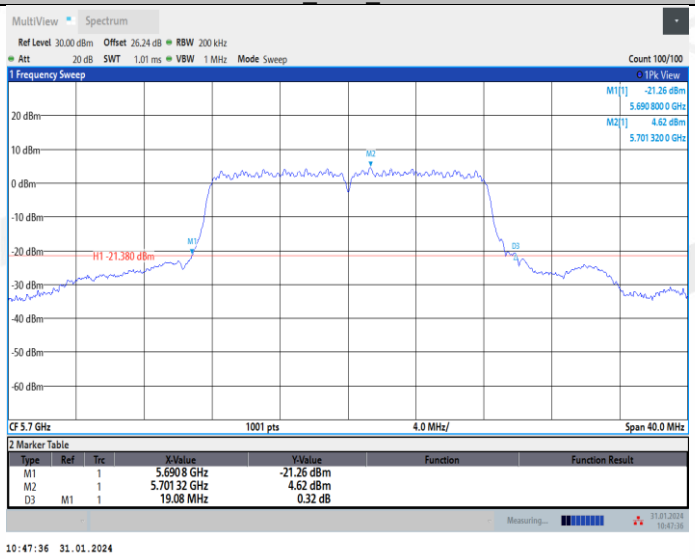

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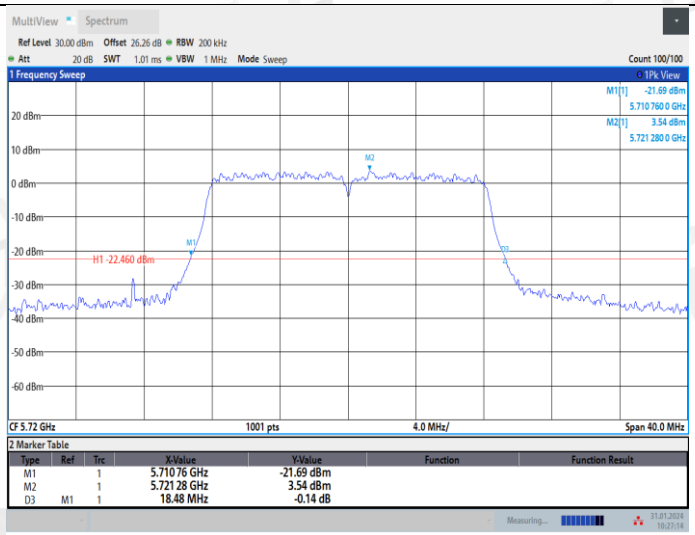

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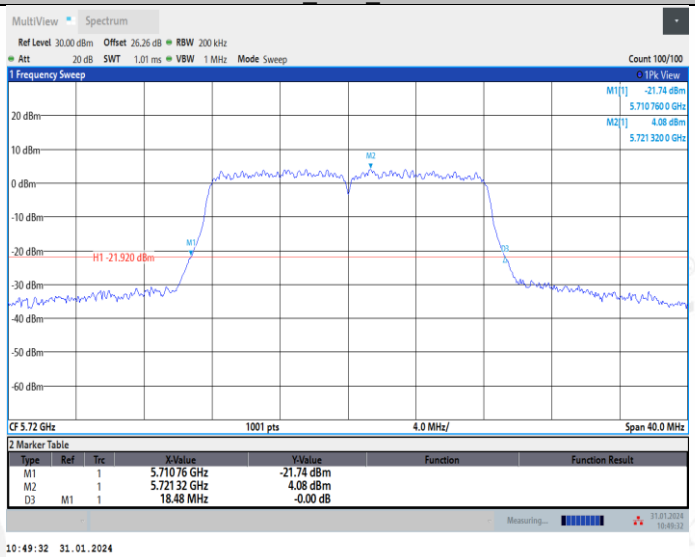

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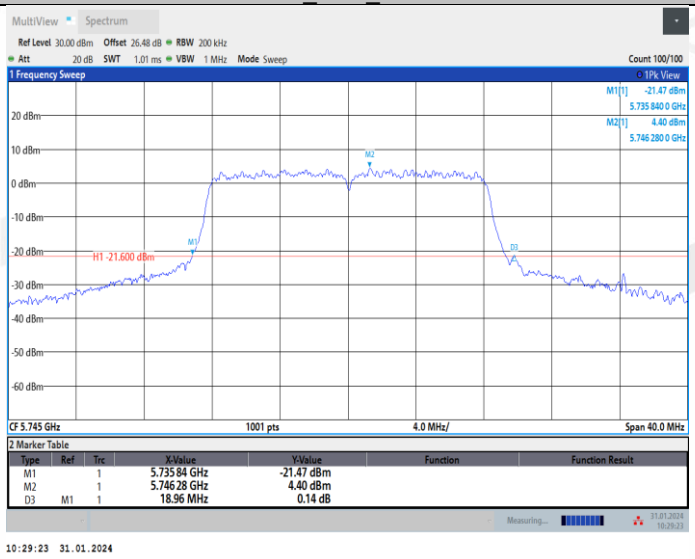

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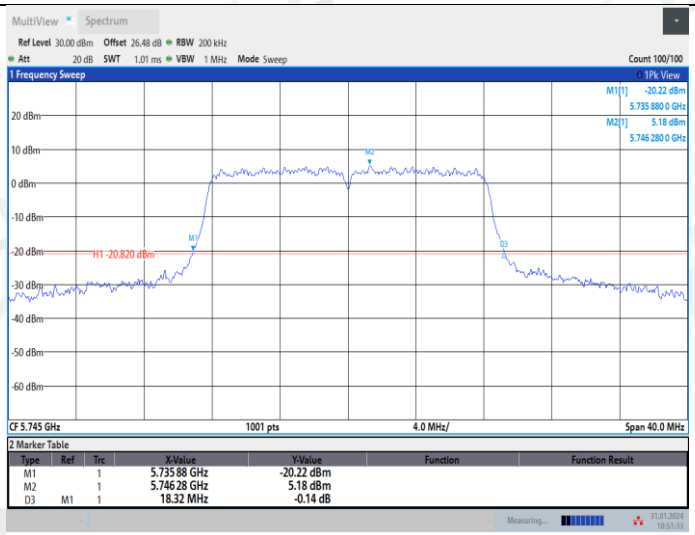

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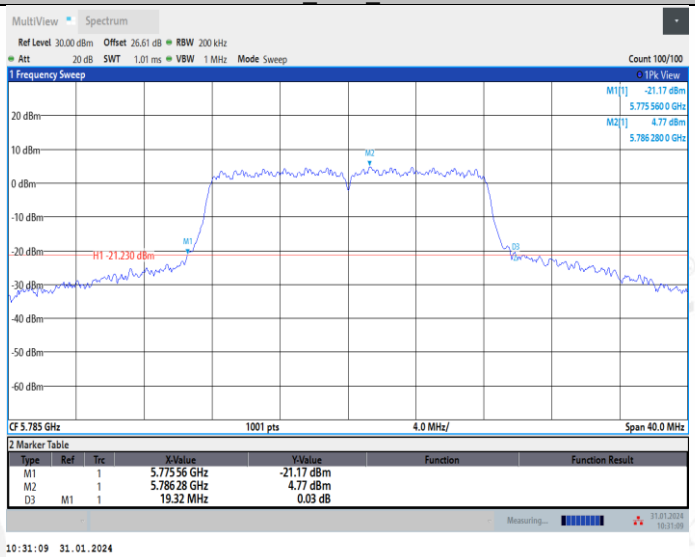

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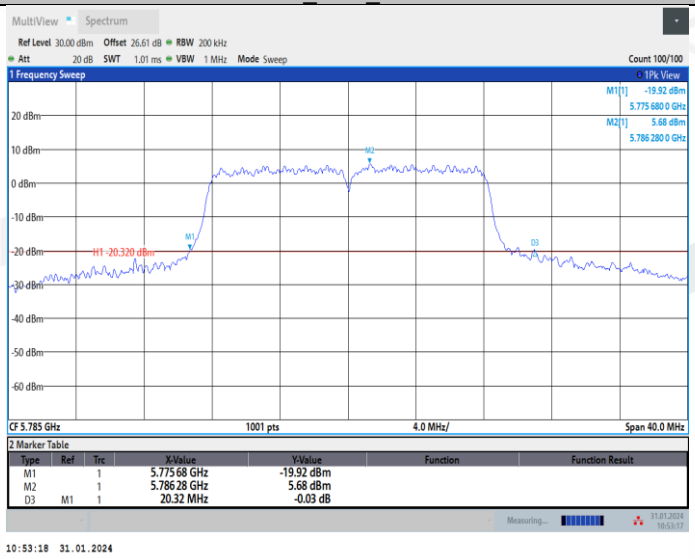

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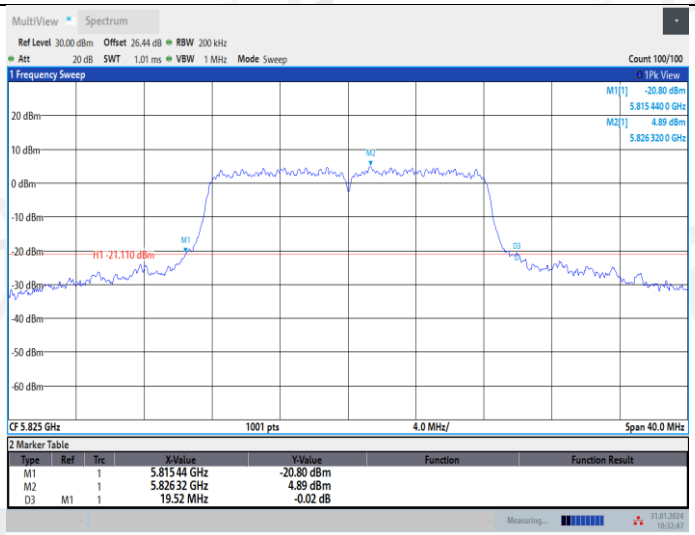

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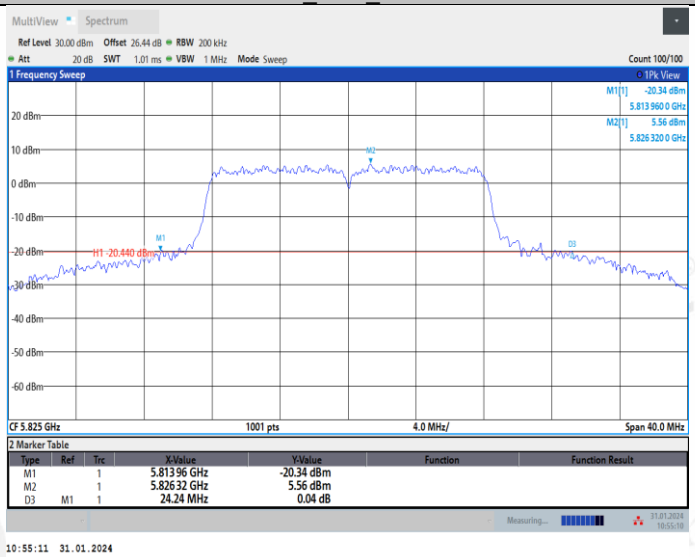

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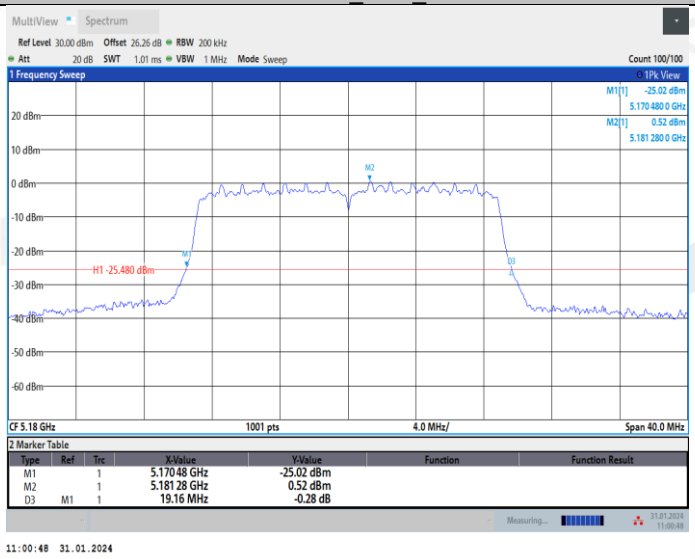

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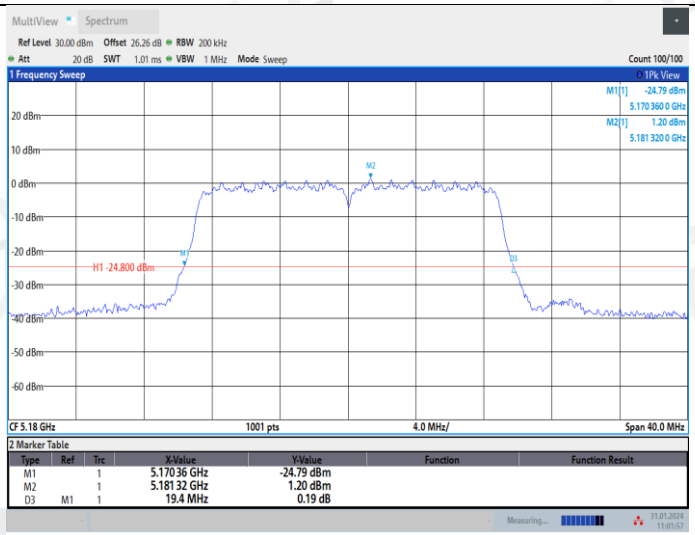

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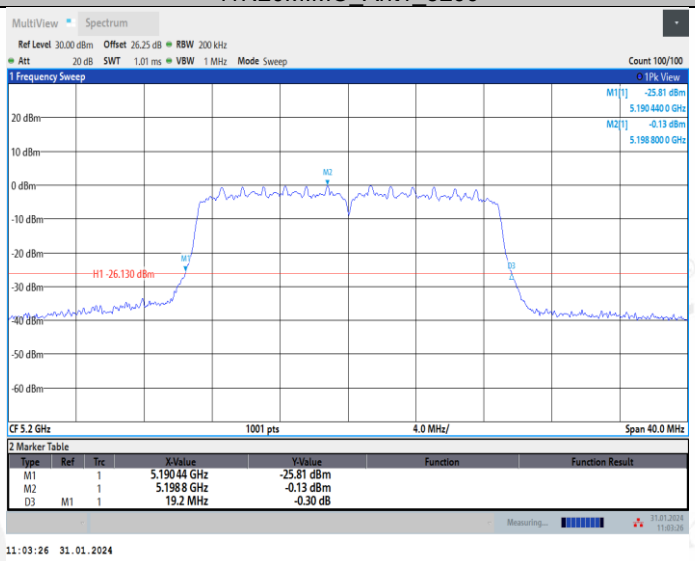

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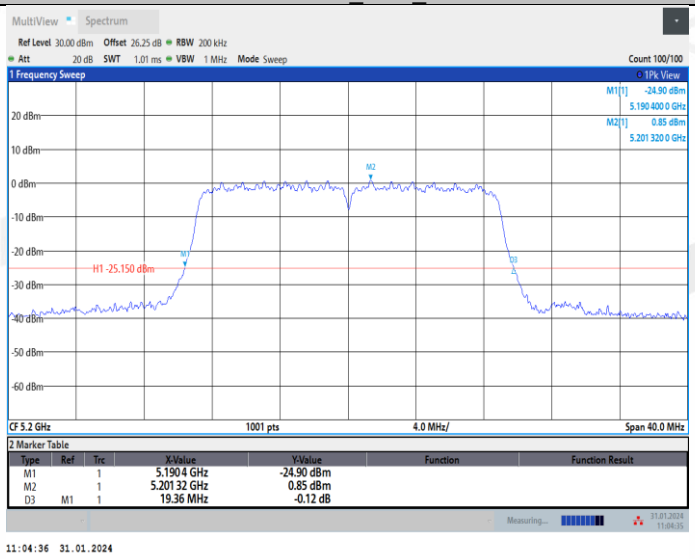

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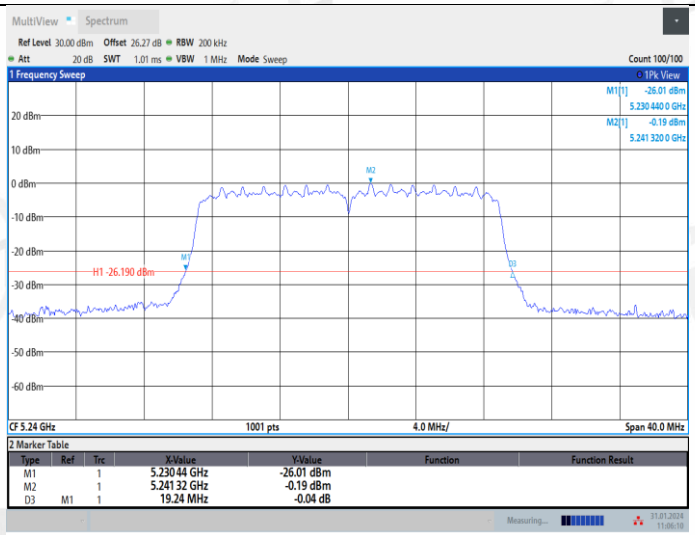

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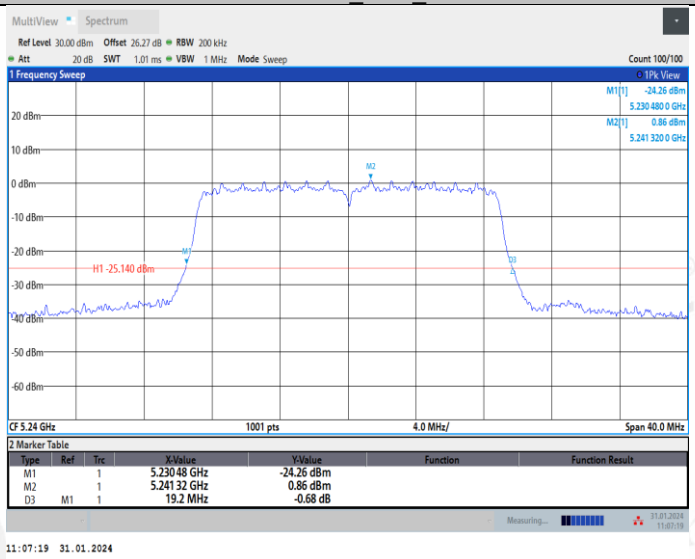

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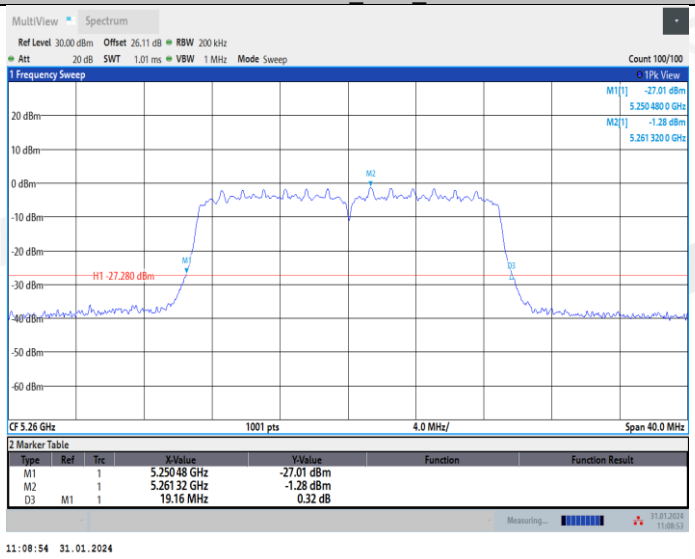

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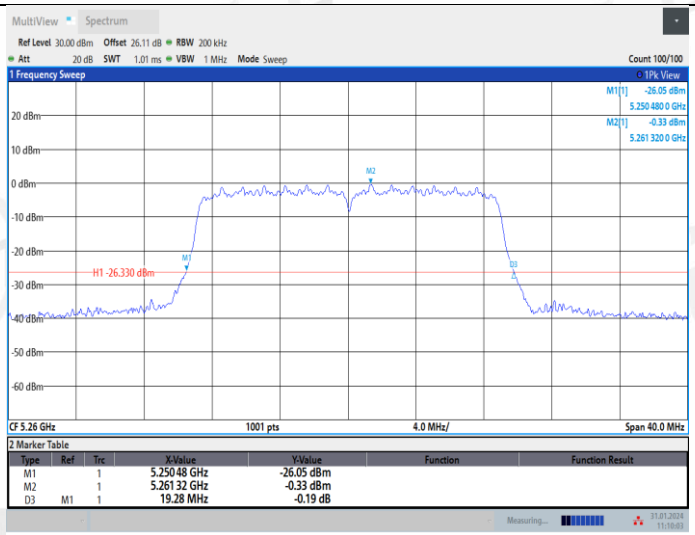

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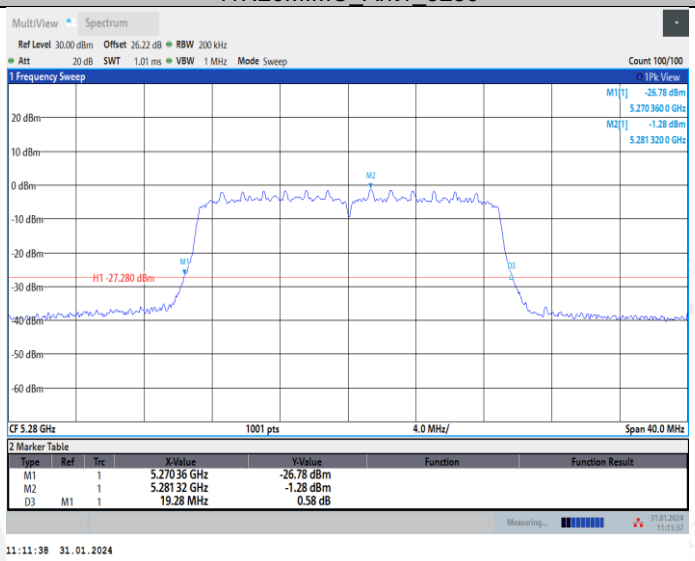

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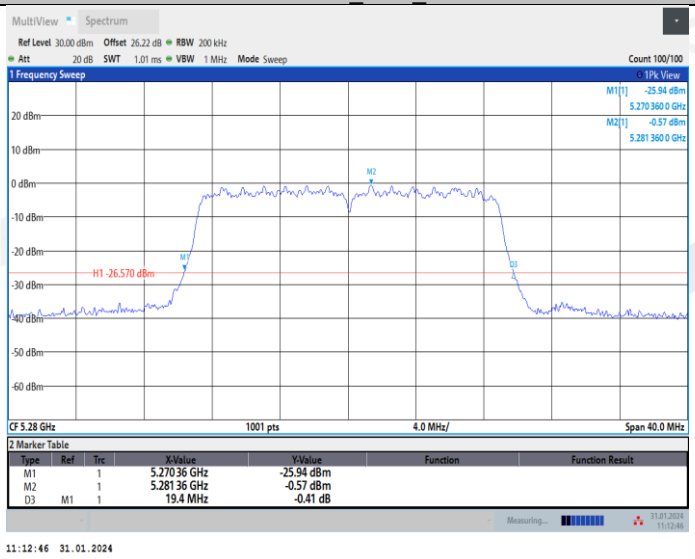

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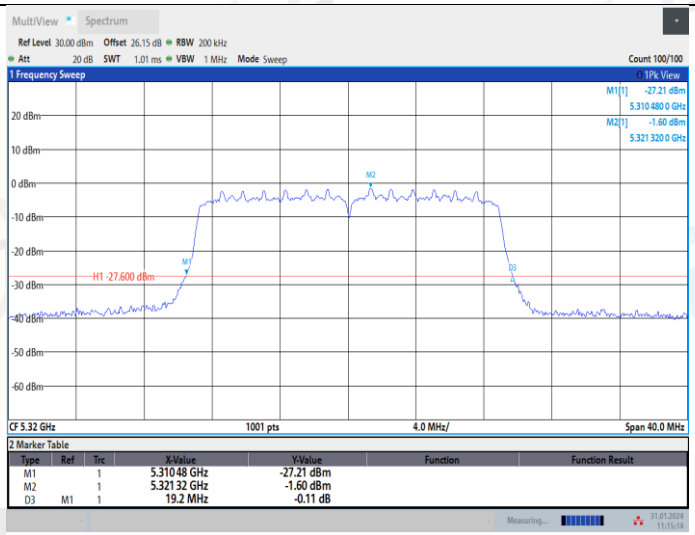
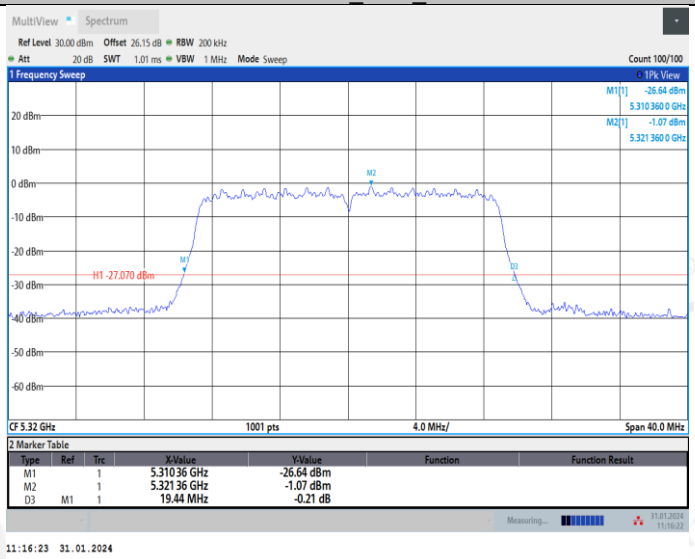
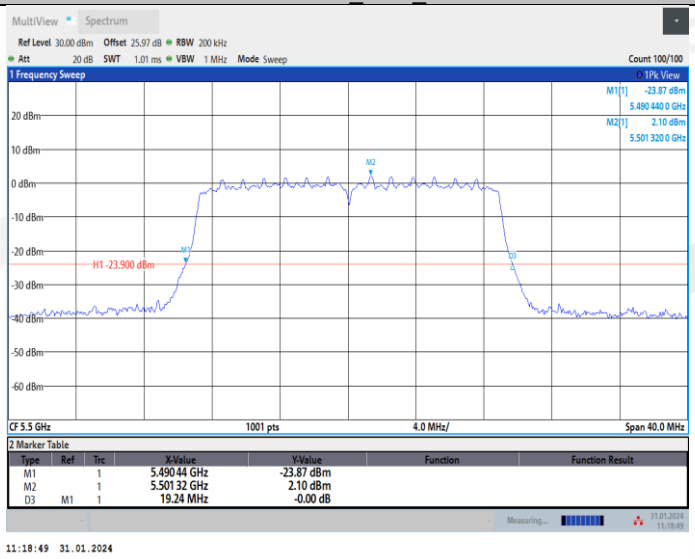


11N20MIMO_Ant2_5320



11N20MIMO_Ant1_5500



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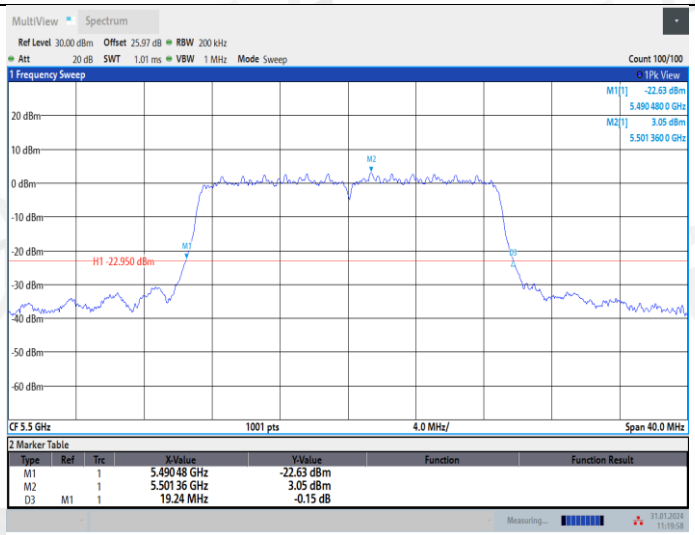

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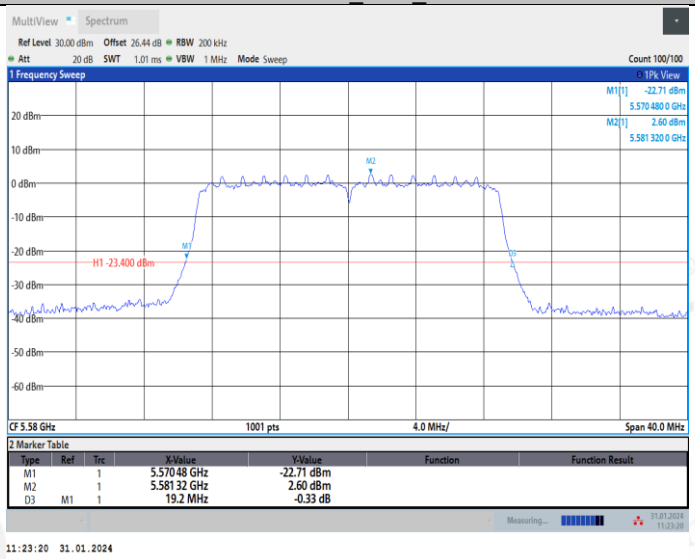

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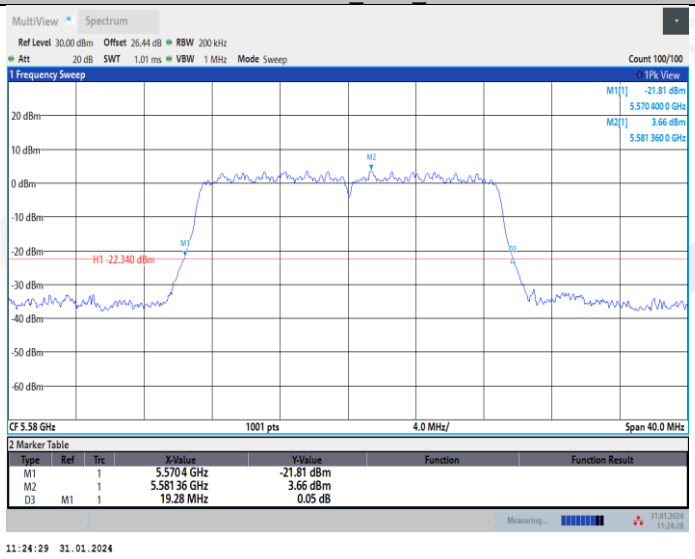

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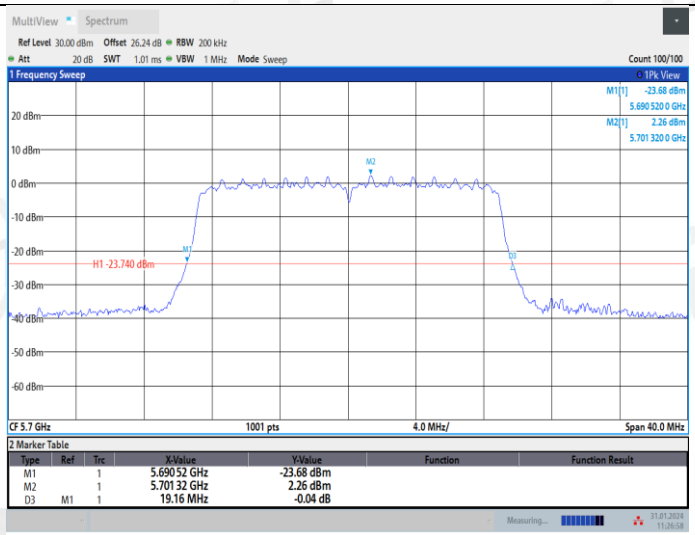

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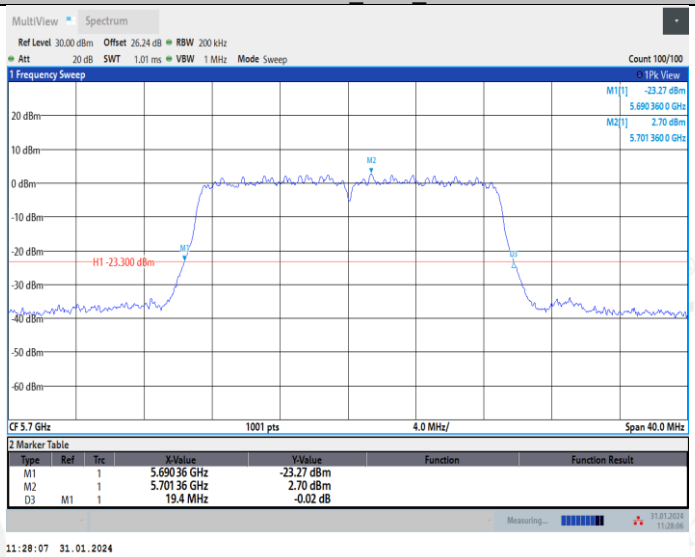

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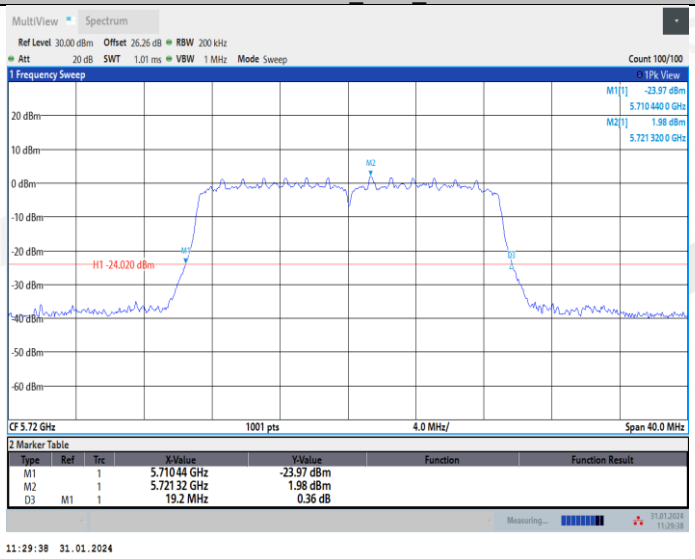

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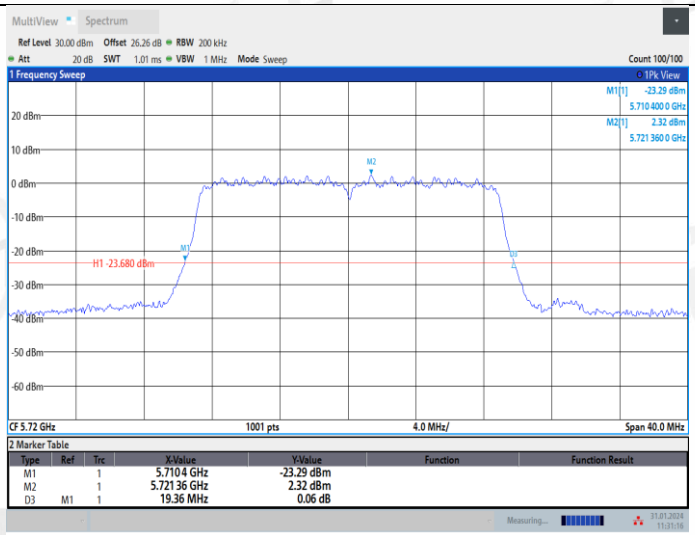
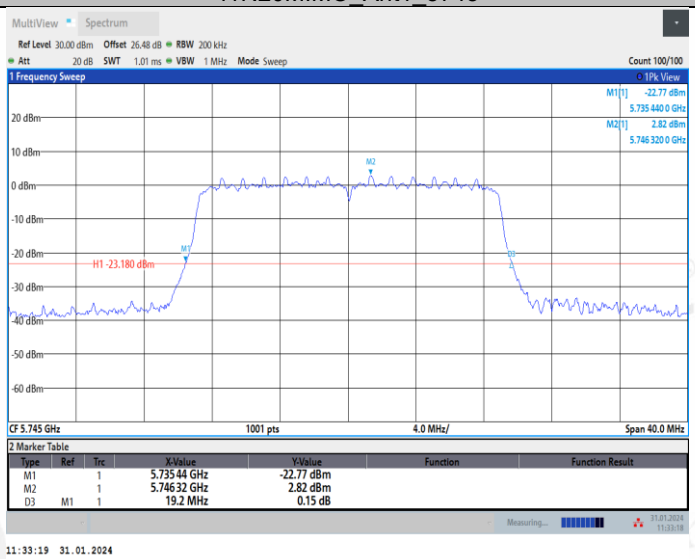


11N20MIMO_Ant1_5745



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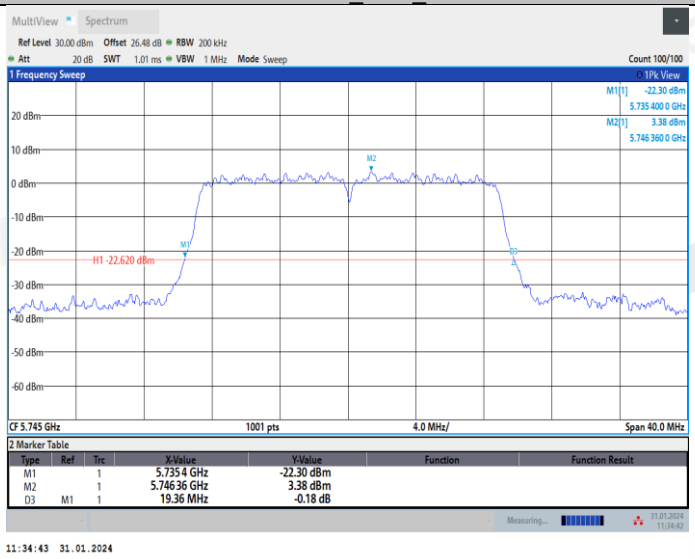

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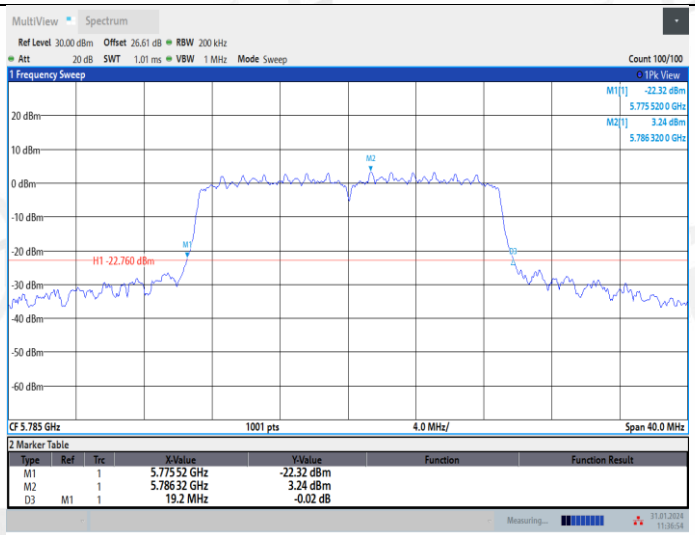

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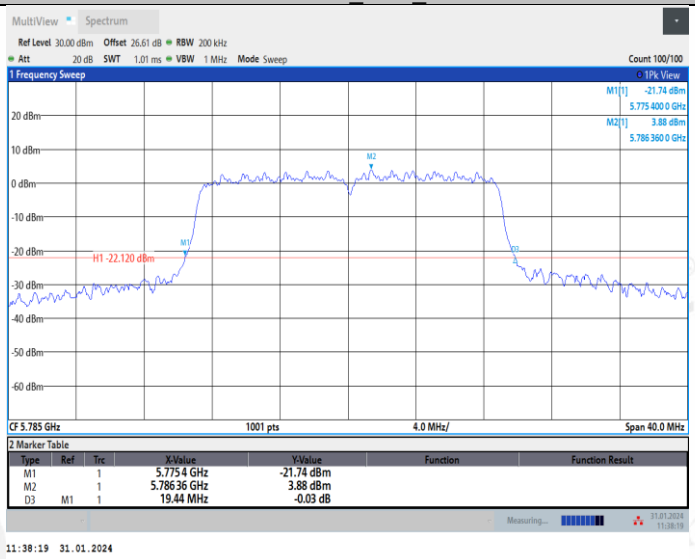

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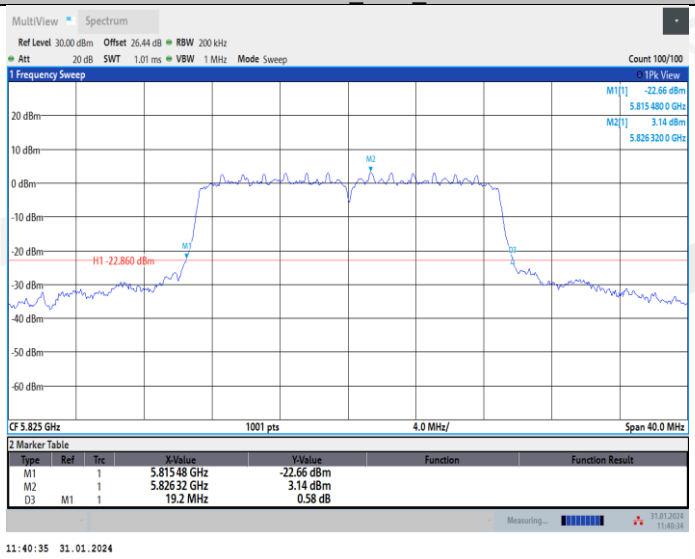

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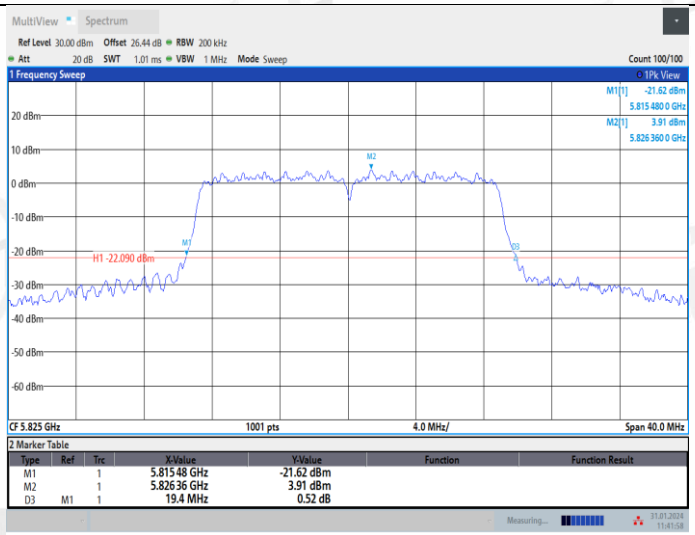

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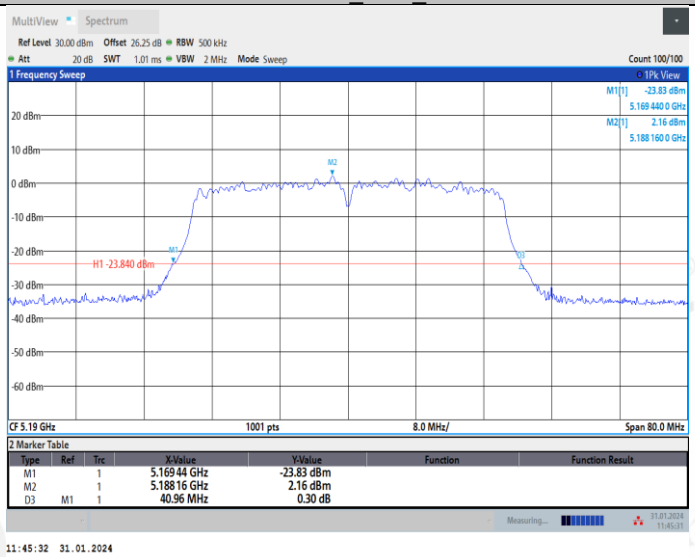

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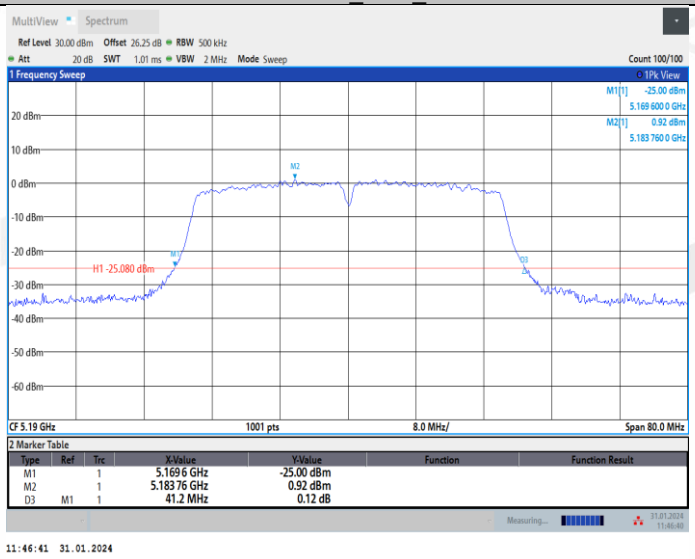

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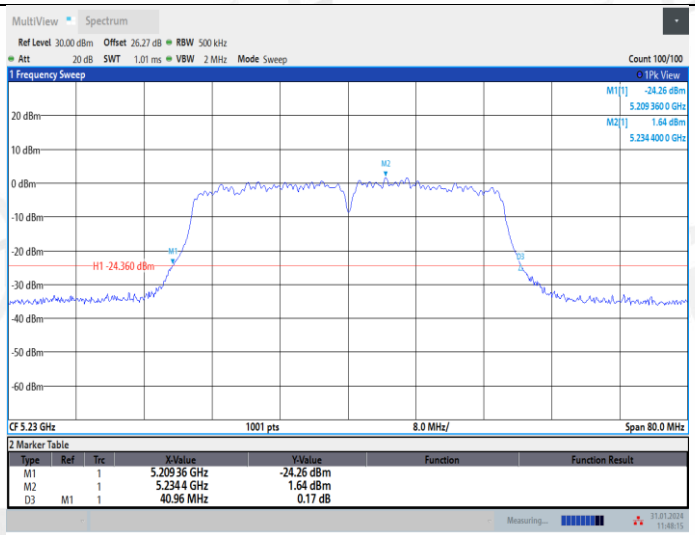

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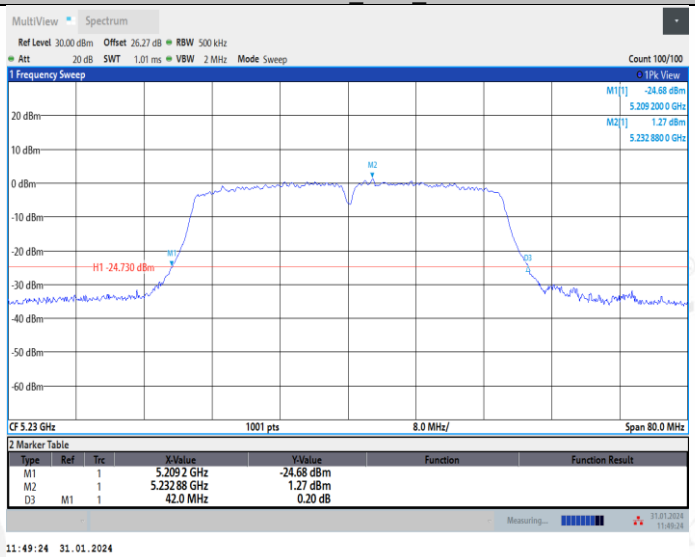

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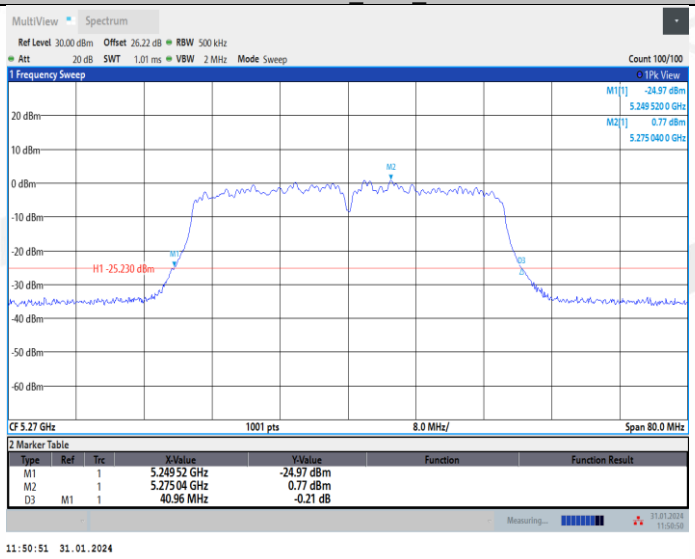

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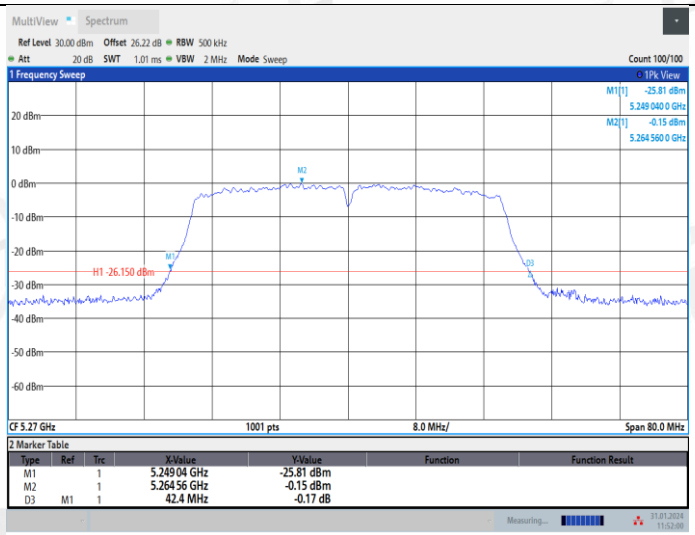

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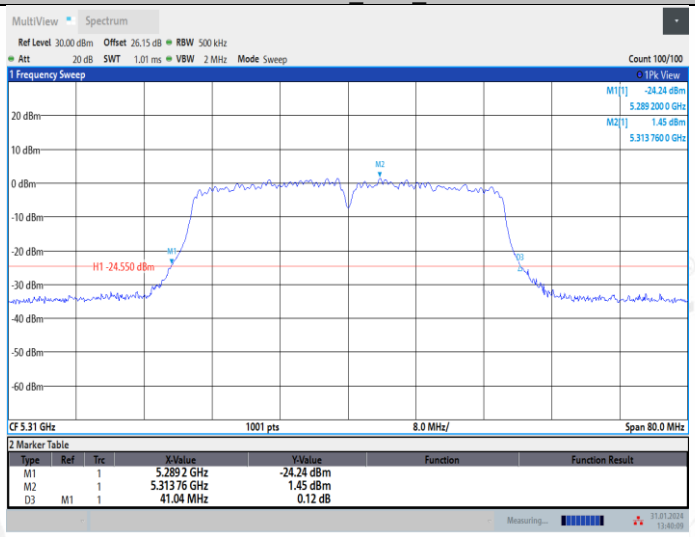

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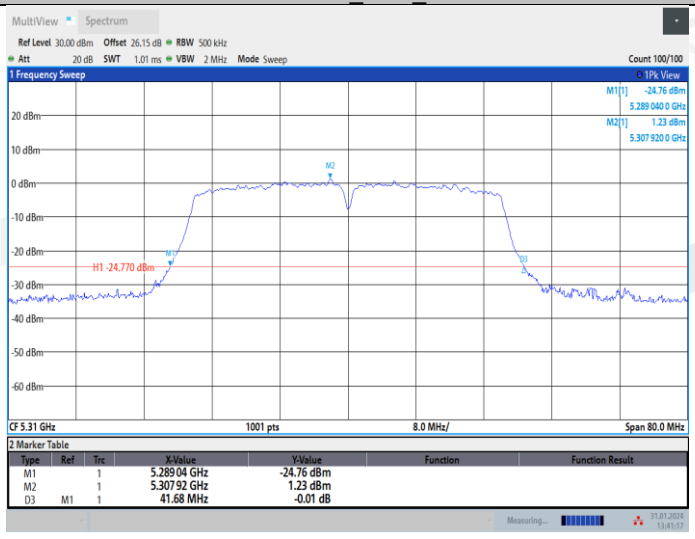

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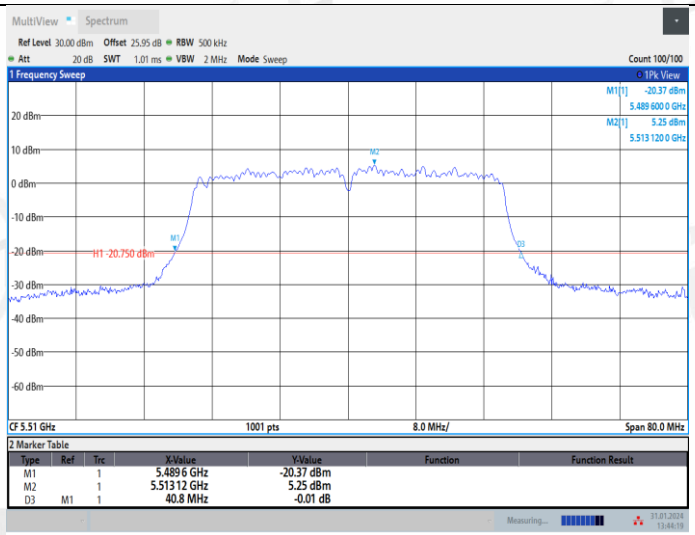

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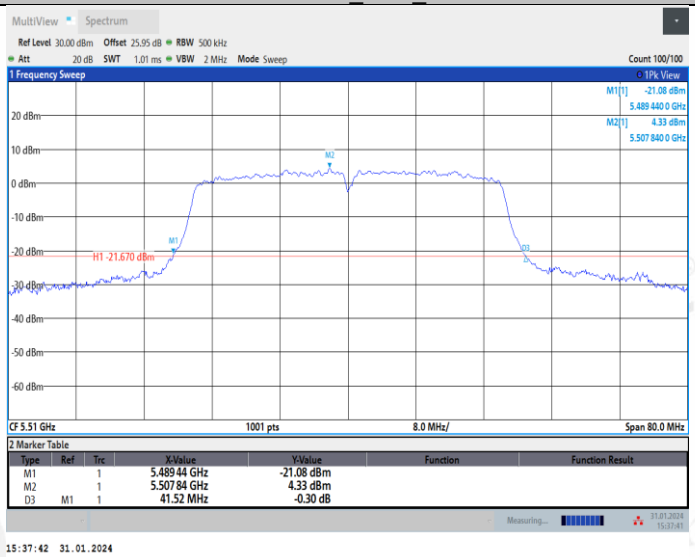

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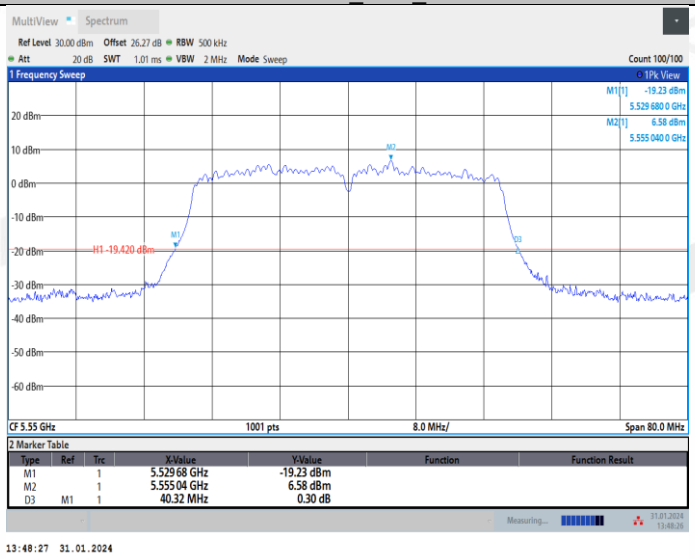

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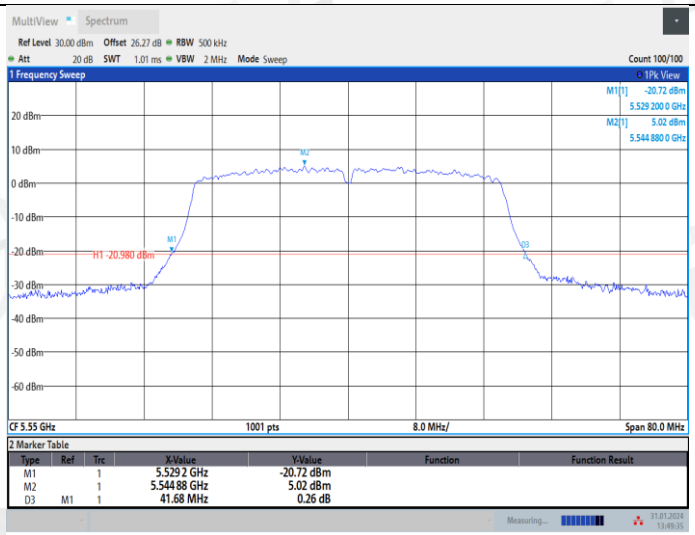

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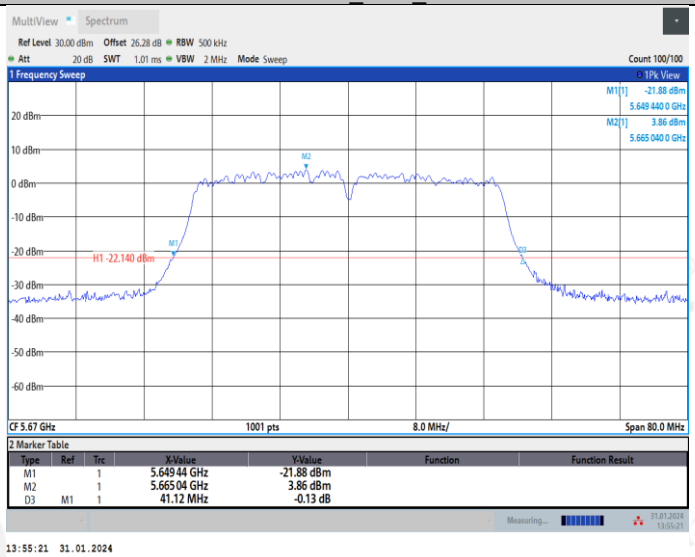

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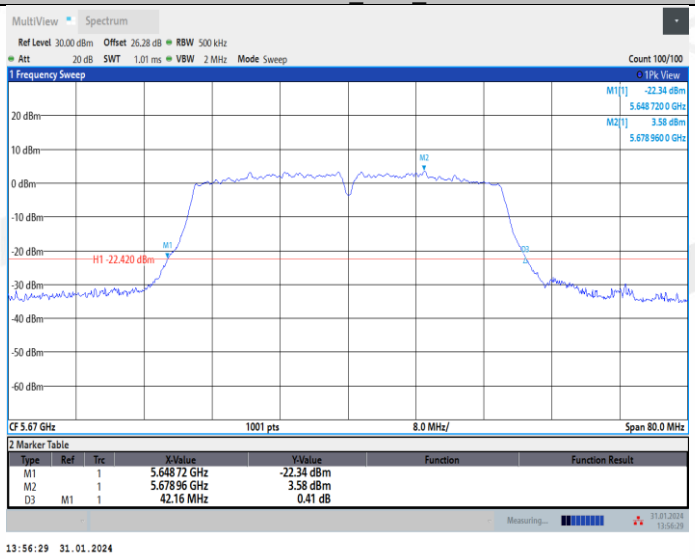

11N40MIMO_Ant1_5710