TEST REPORT

Product Name : quadcopter
Model Number : HS360S, HS360E, HS360G, HS360D, HS360, DE22G, DE22R, DE22S, F11, F22, F7, F5, HS600, HS600D, HS600R, HS600G, HS110G, HS120S, HS270D, HS270S, F7, HS100G, D65, D75, D80, D90, D11, D100, HT40, HT50, HT60, HT65, HT70, HT300, HS290, HS320, HS390, HS410, HS460, HS480, HS490, HS520, HS530, HS540, HS560, HS570, HS580, HS590, HS610, HS620, HS630, HS640, HS650, HS660, HS670, HS680, HS690, HS730, HS740, HS750, HS760, HS770, HS780, HS790, HS810, HS820, HS900, HS176, HS101, HS155, HS176, D85, 2452EFK
FCC ID : 2AJ55HOLYSTONEOT

Prepared for	:	Xiamen Huoshiquan Import & Export CO., LTD
Address	:	Unit 1, Room 501, Hongxiang Building, No.258 Hubin Nan Road, Siming District, Xiamen, China
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China
		Tel: (0755) 26954280 Fax: (0755) 26954282

Report Number	:	ENS2302130030W00701R
Date(s) of Tests	:	February 13, 2023 to April 8, 2023
Date of issue	:	April 8, 2023

1 TEST RESULT CERTIFICATION

Applicant	:	Xiamen Huoshiquan Import & Export CO., LTD
Address	:	Unit 1, Room 501, Hongxiang Building, No.258 Hubin Nan Road, Siming District, Xiamen, China
Manufacturer	:	Xiamen Huoshiquan Import & Export CO., LTD
Address	:	Unit 1, Room 501, Hongxiang Building, No.258 Hubin Nan Road, Siming District, Xiamen, China
EUT	:	quadcopter
Model Name	:	HS360S, HS360E, HS360G, HS360D, HS360, DE22G, DE22R, DE22S, F11, F22, F7, F5, HS600, HS600D, HS600R, HS600G, HS110G, HS120S, HS270D, HS270S, F7, HS100G, D65, D75, D80, D90, D11, D100, HT40, HT50, HT60, HT65, HT70, HT300, HS290, HS320, HS390, HS410, HS460, HS480, HS490, HS520, HS530, HS540, HS560, HS570, HS580, HS590, HS610, HS620, HS630, HS640, HS650, HS660, HS670, HS680, HS690, HS730, HS740, HS750, HS760, HS770, HS780, HS790, HS810, HS820, HS900, HS176, HS101, HS155, HS176, D85, 2452EFK
Trademark	:	Holy Stone

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 : February 13, 2023 to April 8, 2023

Prepared by : Luo peiye /Editor

Reviewer : Joe Xia /Supervisor

Approve & Authorized Signer : Lisa Wang/Manager

Modified History

Version	Report No.	Revision Date	Summary
V1.0	ENS2302130030W00701R	/	Original Report

TABLE OF CONTENTS

2 EUT TECHNICAL DESCRIPTION

Characteristics	Description	
Product:	quadcopter	
Model Number:	HS360S, HS360E, HS360G, HS360D, HS360, DE22G, DE22R, DE22S, F11, F22, F7, F5, HS600, HS600D, HS600R, HS600G, HS110G, HS120S, HS270D, HS270S, F7, HS100G, D65, D75, D80, D90, D11, D100, HT40, HT50, HT60, HT65, HT70, HT300, HS290, HS320, HS390, HS410, HS460, HS480, HS490, HS520, HS530, HS540, HS560, HS570, HS580, HS590, HS610, HS620, HS630, HS640, HS650, HS660, HS670, HS680, HS690, HS730, HS740, HS750, HS760, HS770, HS780, HS790, HS810, HS820, HS900, HS176, HS101, HS155, HS176, D85, 2452EFK (These models are identical in circuitry and electrical, mechanical and physical construction; The differences among them are model name and the color of appearance. Only indicates for different market purposes; We chose HS360S as the final test prototype)	
Sample Number:	2#	
Wifi Type:	☒Wifi 5G with 5150MHz-5250MHz Band ☒Wifi 5G with 5725MHz-5850MHz Band	
WLAN Supported:	☒802.11a ☒802.11n(20MHz channel bandwidth)	
Data Rate :	☒802.11a:54/48/36/24/18/12/9/6Mbps ☒802.11n:up to 300 Mbps	
Modulation:	☒OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n	
Frequency Range:	☒UNII-1: 5150MHz-5250MHz Band	
	☒5180-5240MHz for 802.11a; ☒5180-5240MHz for 802.11n(HT20);	
	☒UNII-3 with 5725MHz-5850MHz Band	
	☒5745-5805MHz for 802.11a; ☒5745-5805MHz for 802.11n(HT20);	
TPC Function:	☐ Applicable	☒Not Applicable
Antenna Port:	☒Antenna port 1 ☒Antenna port 2	
Antenna Type:	Copper Tube Antenna	
Antenna Gain:	☒ANT 1: 2.16 dBi ☒ANT 2: 2.16 dBi	

Transmit Power:	5150MHz-5250MHz : 15.25 dBm 5725MHz-5850MHz : 17.79dBm
Power Supply :	DC 3.7V from Internal battery
Date of Received:	February 13, 2023
Temperature Range:	Refer to manufacturer user manusal/operating manual

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: 2AJ55HOLYSTONEOT** filing to comply with Section 15.407 of the FCC Part 15, Subpart 15E 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 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2022/5/14	1Year
AMN	Rohde & Schwarz	ENV216	101161	2022/5/14	1Year
AMN	Kyoritsu	KNW-407	8-1492-9	2022/5/15	1Year

For Spurious Emissions Test

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	2022/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2022/7/4	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J101113101000 1	2022/5/15	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
Band reject Filter(50dB)	WI/DE	WRCGV-2400(2400-2485MHz)	2	2022/5/15	1 Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2022/5/14	1Year
Vector Signal Generater	Agilent	N5182B	MY53050878	2022/5/14	1Year
Analog Signal Generator	Agilent	N5171B	MY53050553	2022/5/14	1Year
Power Meter	Agilent	PS-X10-100	\	2022/5/15	1Year
Blocking Box	THEDA	AD211	TW5451140	2022/5/14	1Year
Switchgroup	THEDA	ETF-025(VASC6)	TW5451008	N/A	N/A
MIMO Matrix Switch	THEDA	4P5TM18	TW5451009	N/A	N/A
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2022/7/3	1 Year

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, 802.11n (HT20):

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

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

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

☒ Wifi 5G with U-NII -3
Frequency and Channel list for 802.11a, 802.11n (HT20):

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

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

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	161	5805

The 5G WIFI has two antennas and support Multiple Outputs for 802.11n mode for this report; Antenna 1 Gain is 2.16 dBi; Antenna 2 Gain is 2.16 dBi; for this function is belong to Correlated Categorization equipment

According to KDB 662911, for Equal antenna gains,

Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi=5.50 dBi

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

EMTEK (Shenzhen) Co., Ltd.
Building 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 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:

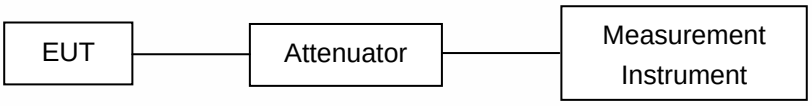
Parameter	Uncertainty
Radio Frequency	±1x10^-5
Maximum Peak Output Power Test	±1.0dB
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Power Density	±2.0dB
Occupied Bandwidth Test	±1.0dB
Band Edge Test	±3dB
All emission, radiated	±3dB
Antenna Port Emission	±3dB
Temperature	±0.5℃
Humidity	±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

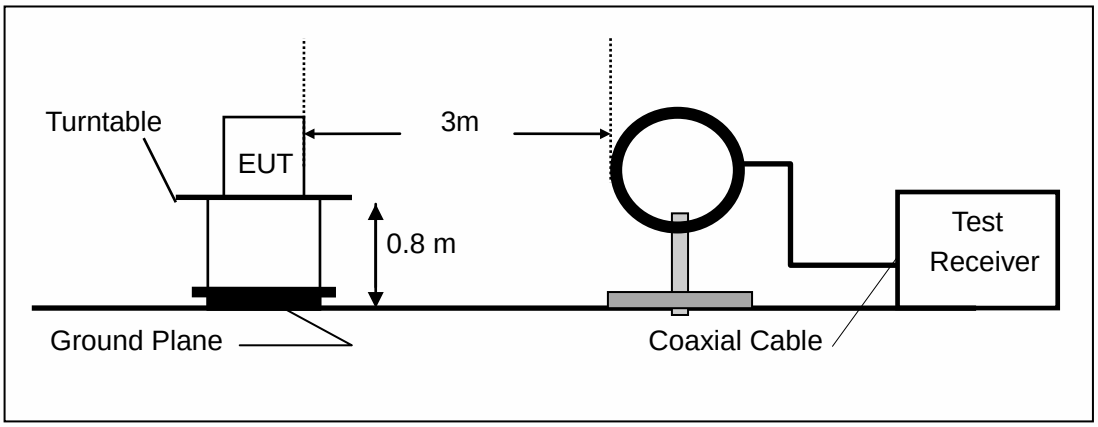
The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

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.

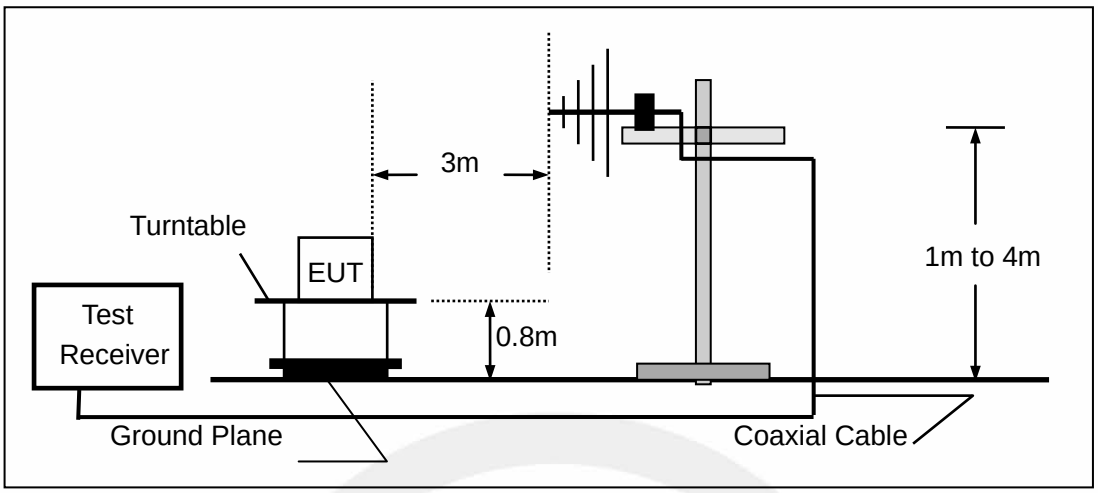
Above 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of 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).

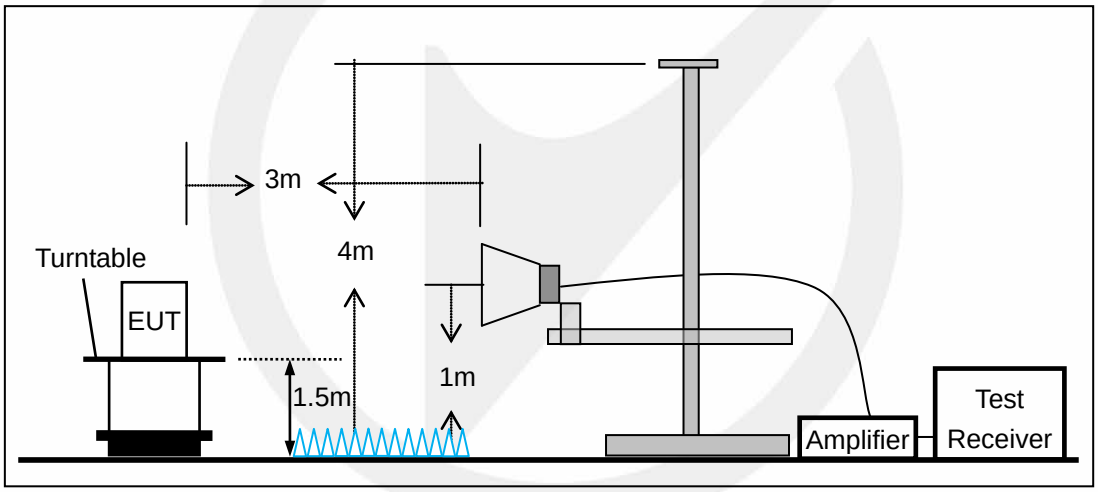
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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

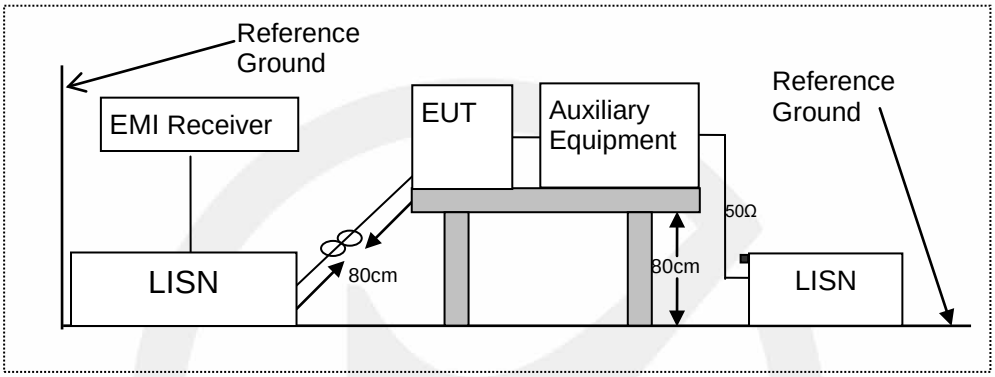


7.3 CONDUCTED EMISSION TEST SETUP

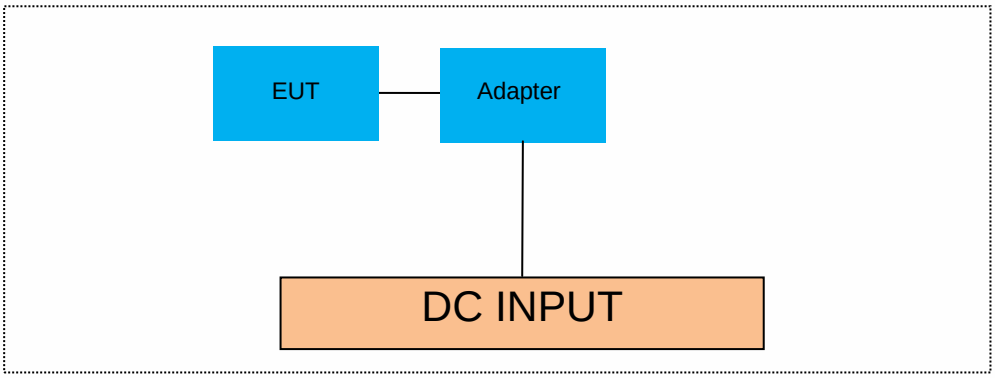
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All 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
Notebook	Lenove	M713A	SA12582190

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 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 7.1 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)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) 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%.

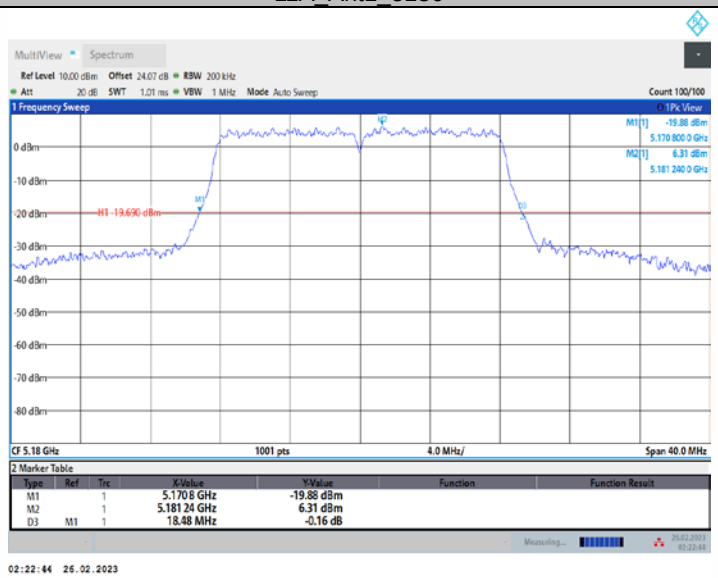
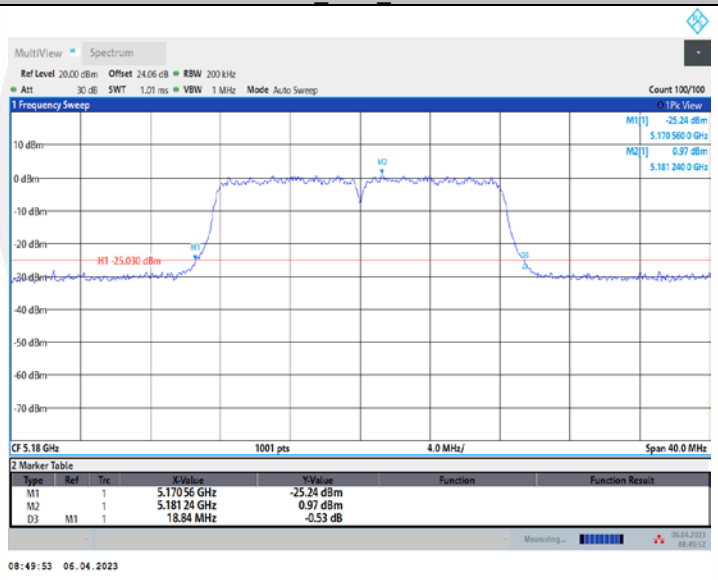
2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
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.

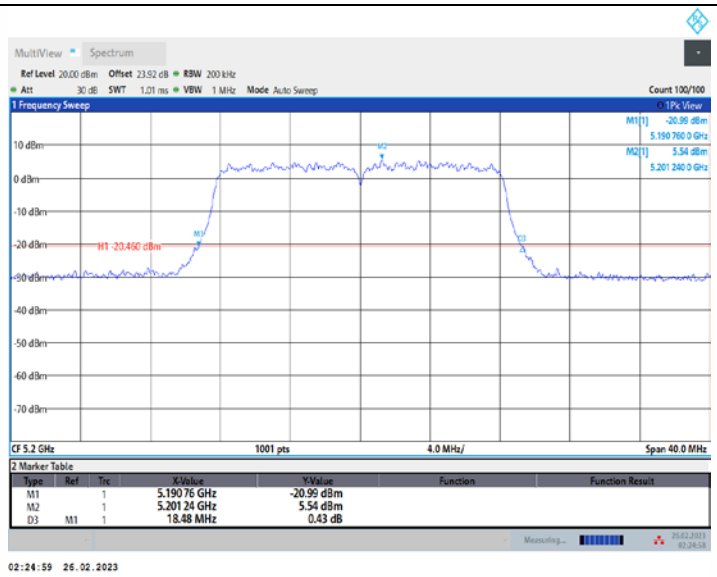
D. 99 Percent Occupied Bandwidth
The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required 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 ≥ 3 • 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.

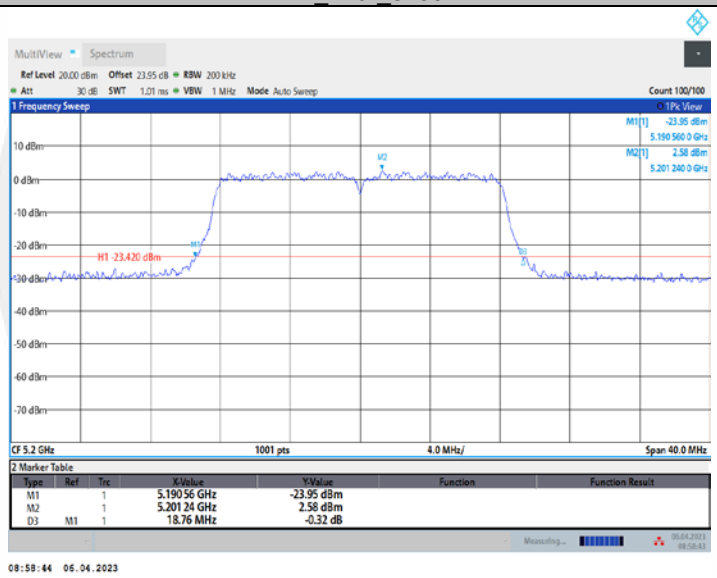
8.1.5 Test Results

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	18.48	5170.80	5189.28	---	---
	Ant2	5180	18.84	5170.56	5189.40	---	---
	Ant1	5200	18.48	5190.76	5209.24	---	---
	Ant2	5200	18.76	5190.56	5209.32	---	---
	Ant1	5240	18.72	5230.68	5249.40	---	---
	Ant2	5240	18.76	5230.60	5249.36	---	---
	Ant1	5745	18.52	5735.72	5754.24	---	---
	Ant2	5745	18.84	5735.64	5754.48	---	---
	Ant1	5785	18.88	5775.48	5794.36	---	---
	Ant2	5785	19.52	5775.48	5795.00	---	---
	Ant1	5805	19.00	5795.48	5814.48	---	---
	Ant2	5805	18.68	5795.72	5814.40	---	---
11N20MIMO	Ant1	5180	19.60	5170.20	5189.80	---	---
	Ant2	5180	19.72	5170.16	5189.88	---	---
	Ant1	5200	19.64	5190.12	5209.76	---	---
	Ant2	5200	19.64	5190.20	5209.84	---	---
	Ant1	5240	19.52	5230.24	5249.76	---	---
	Ant2	5240	19.68	5230.20	5249.88	---	---
	Ant1	5745	19.48	5735.24	5754.72	---	---
	Ant2	5745	19.56	5735.36	5754.92	---	---
	Ant1	5785	19.48	5775.28	5794.76	---	---
	Ant2	5785	20.04	5775.20	5795.24	---	---
	Ant1	5805	19.48	5795.28	5814.76	---	---
	Ant2	5805	19.52	5795.32	5814.84	---	---

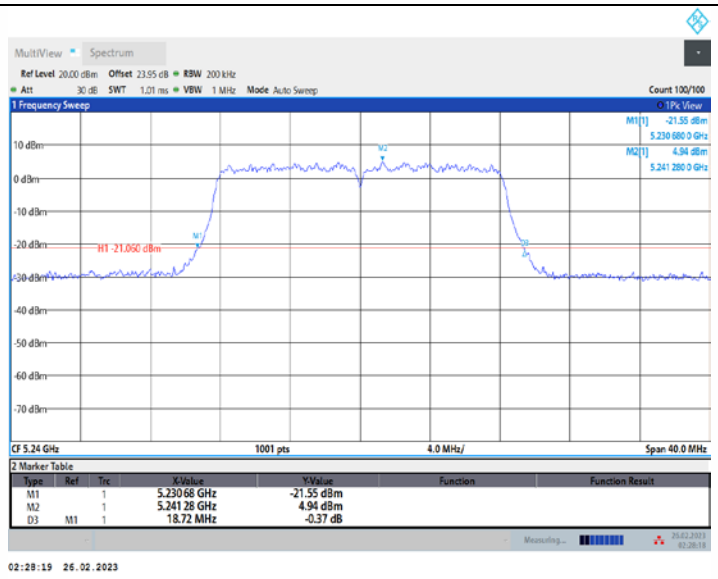
11A_Ant1_5180

11A_Ant2_5180

11A_Ant1_5200



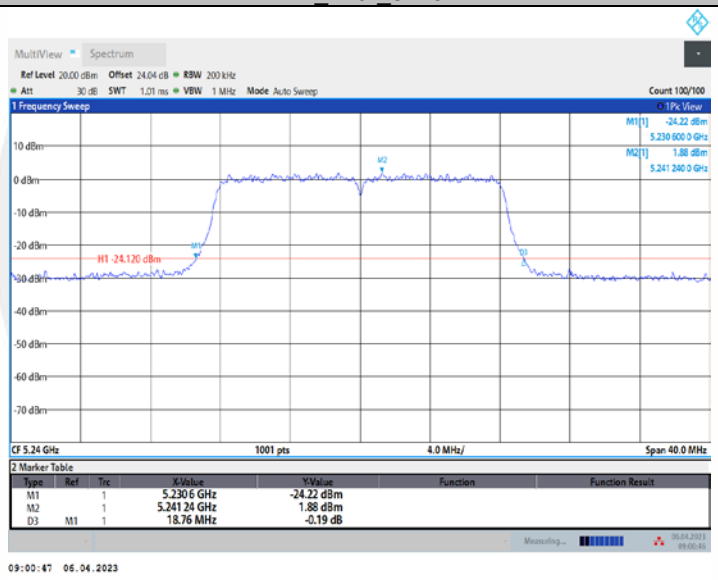
11A_Ant2_5200



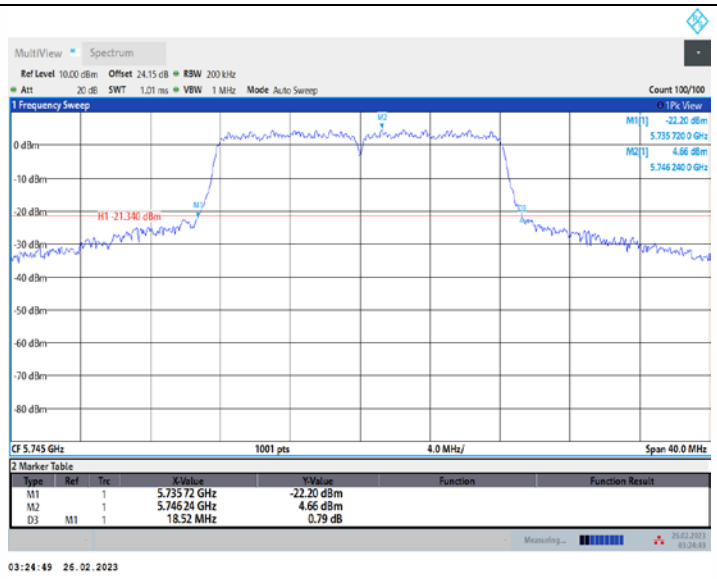
11A_Ant1_5240



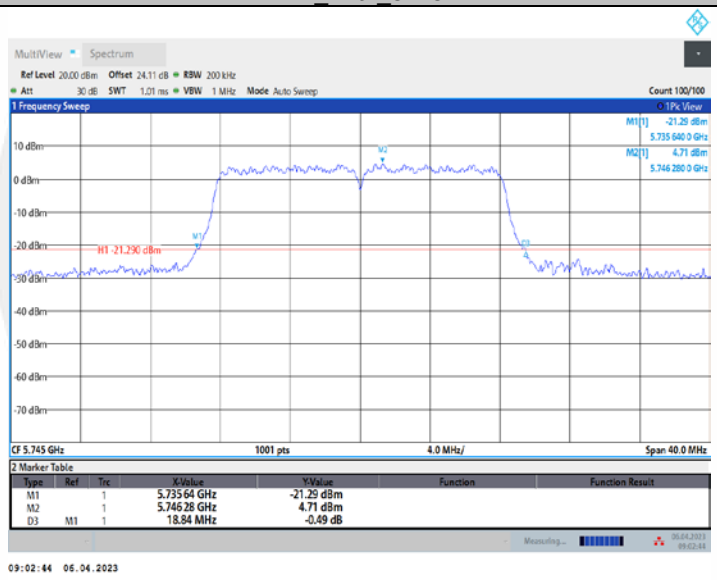
11A_Ant2_5240



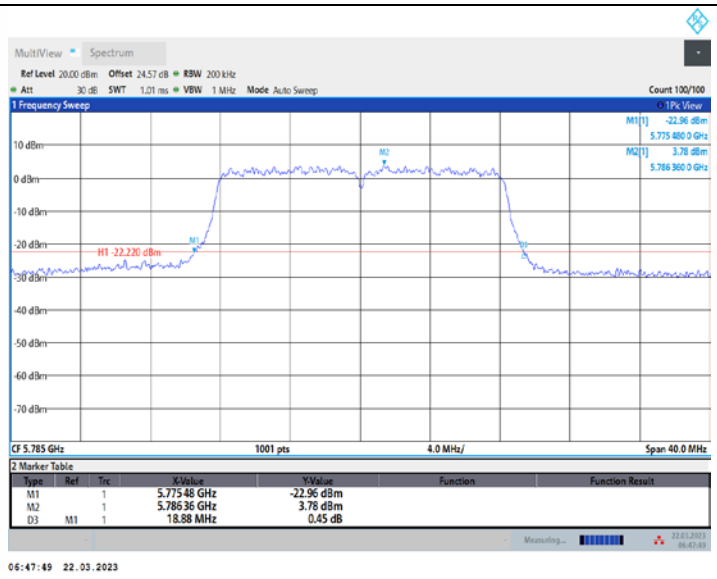
11A_Ant1_5745



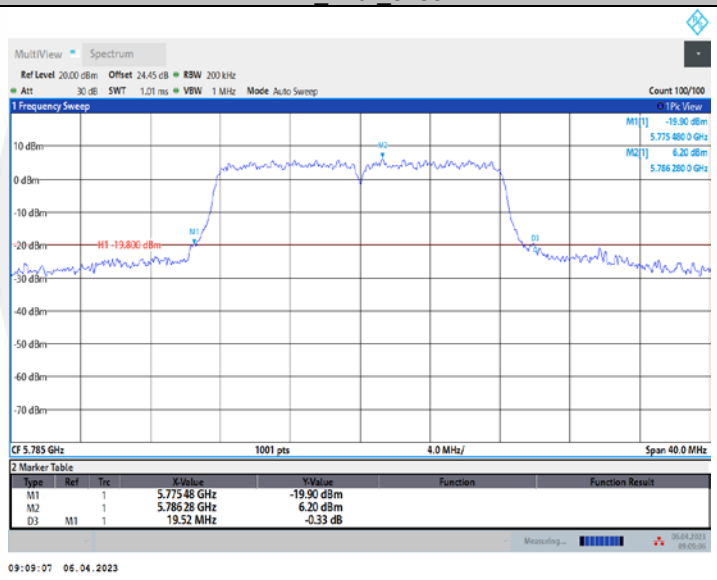
11A_Ant2_5745



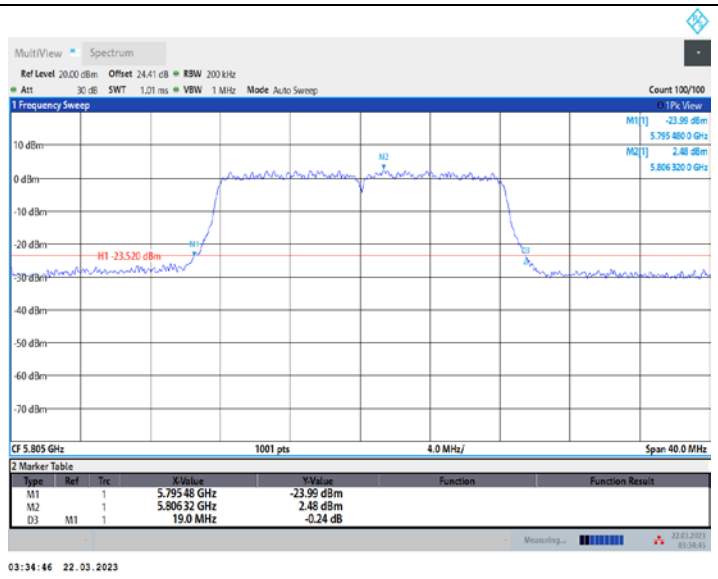
11A_Ant1_5785



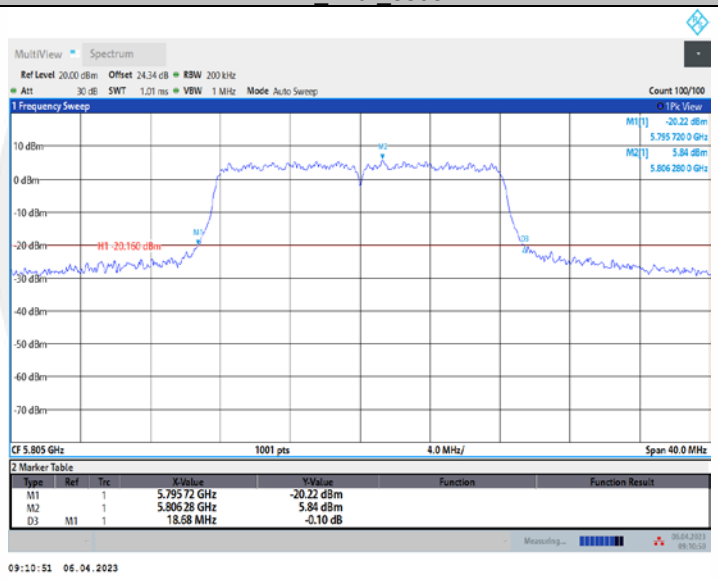
11A_Ant2_5785



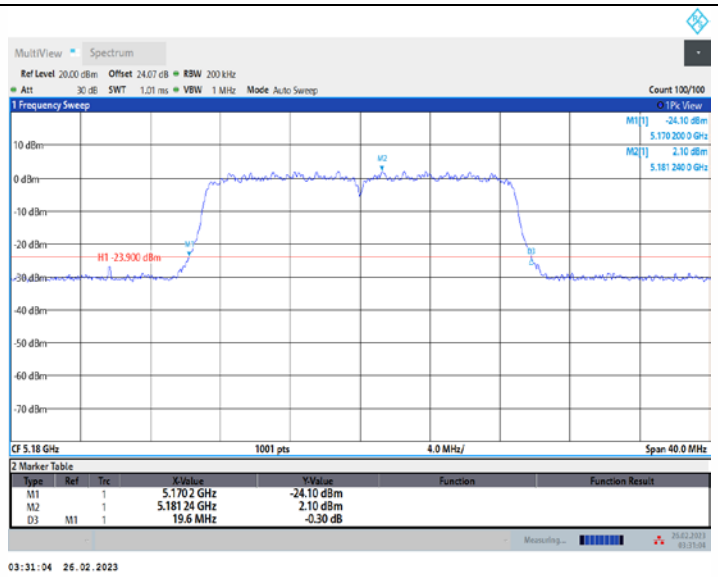
11A_Ant1_5805



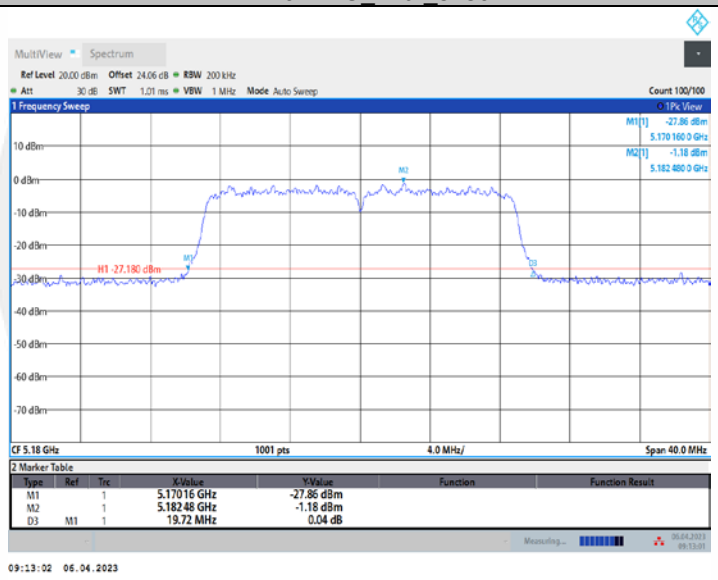
11A_Ant2_5805



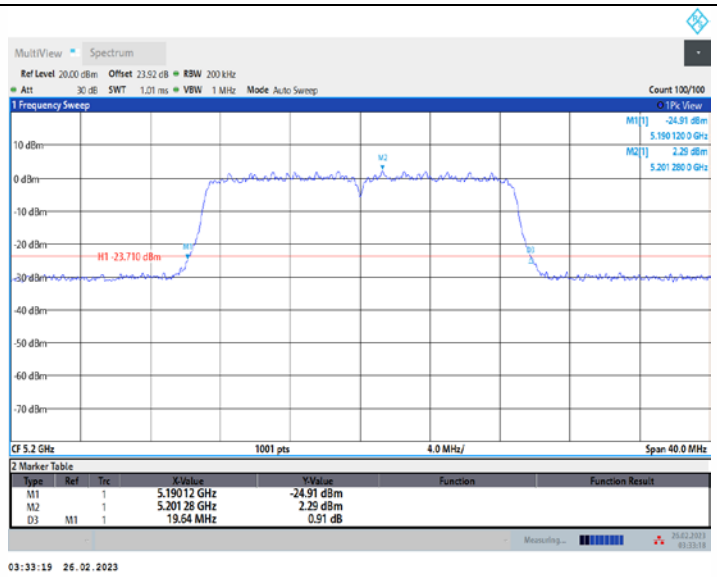
11N20MIMO_Ant1_5180



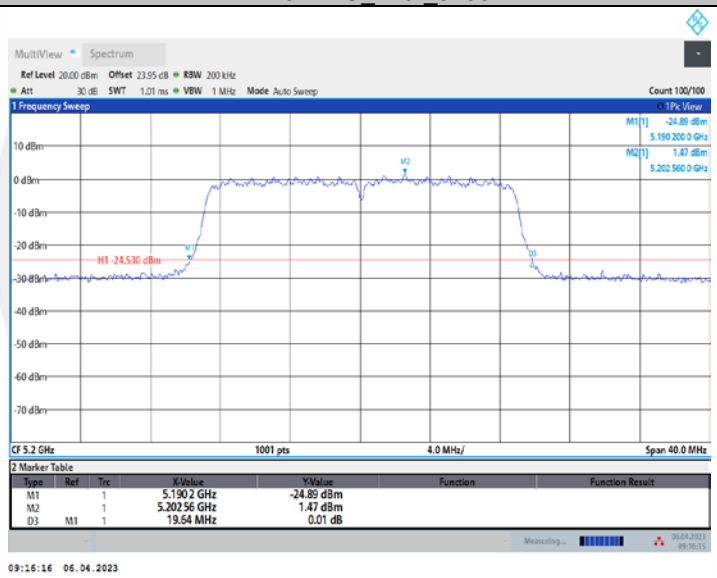
11N20MIMO_Ant2_5180



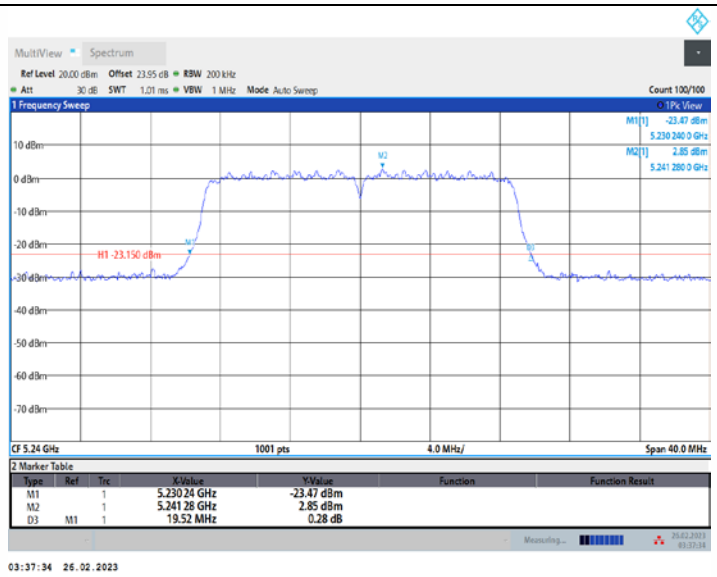
11N20MIMO_Ant1_5200



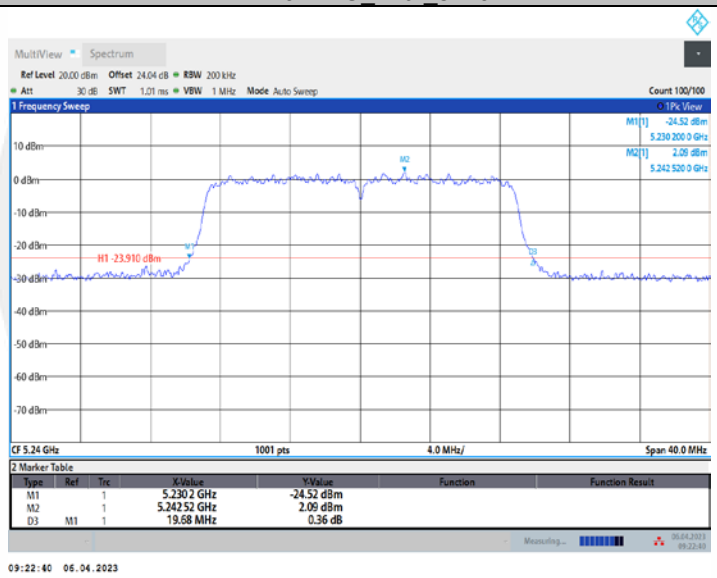
11N20MIMO_Ant2_5200



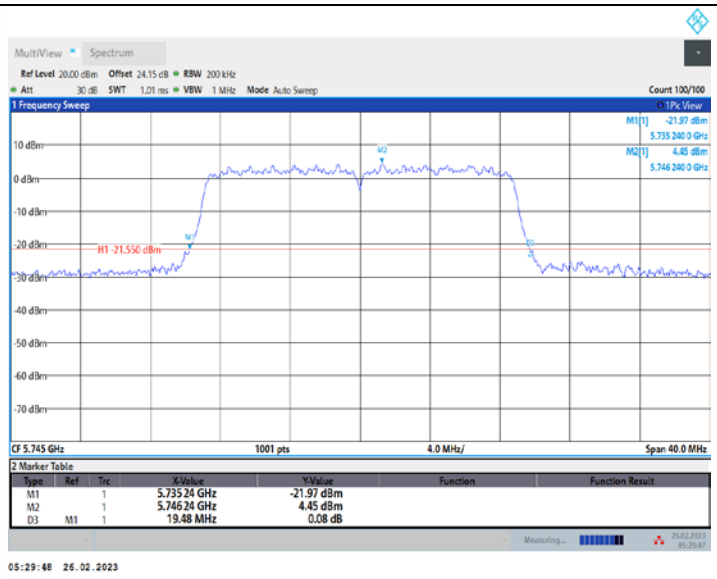
11N20MIMO_Ant1_5240



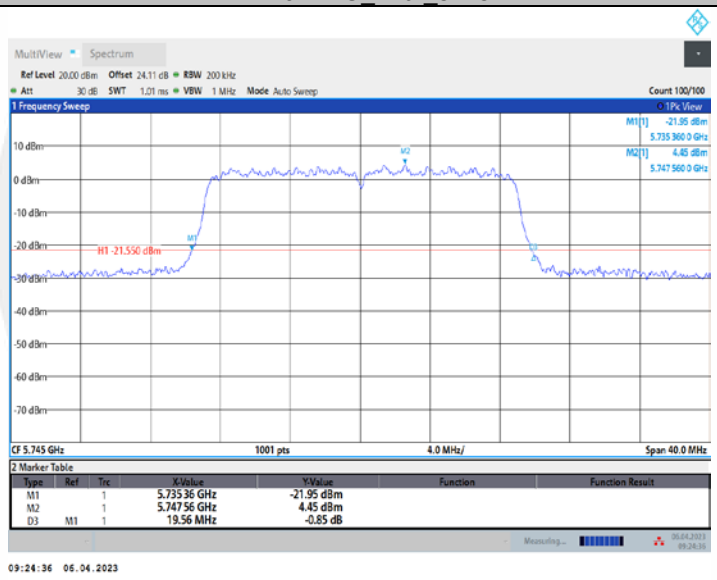
11N20MIMO_Ant2_5240



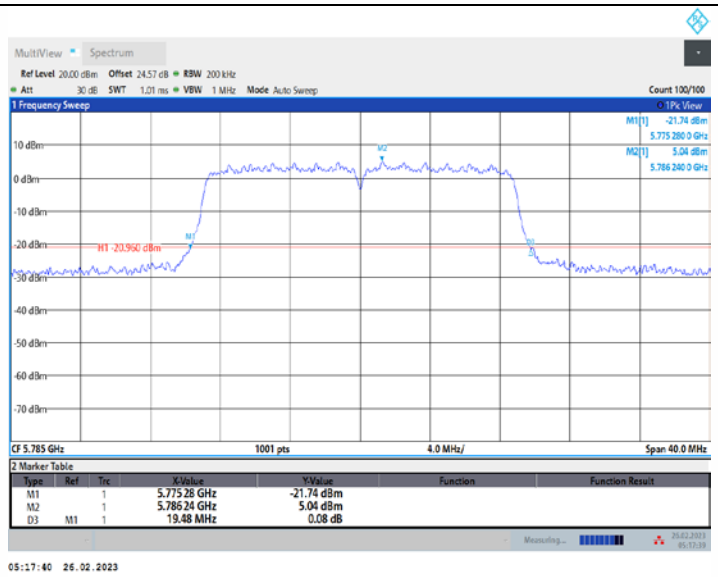
11N20MIMO_Ant1_5745



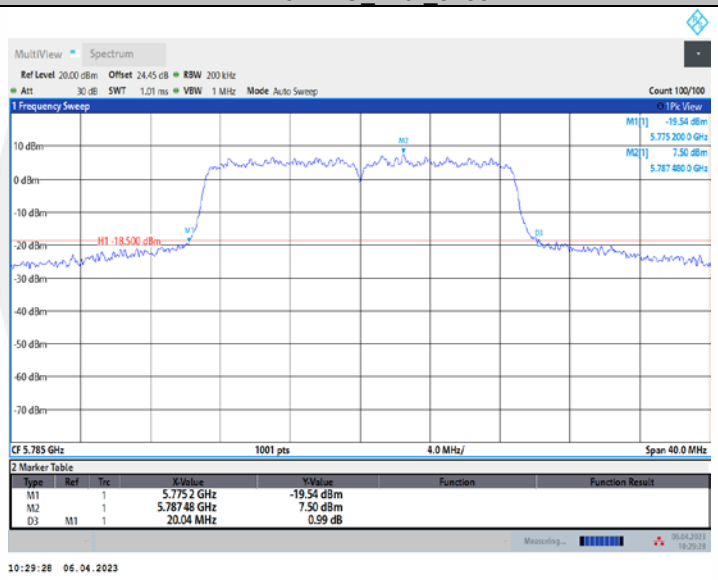
11N20MIMO_Ant2_5745



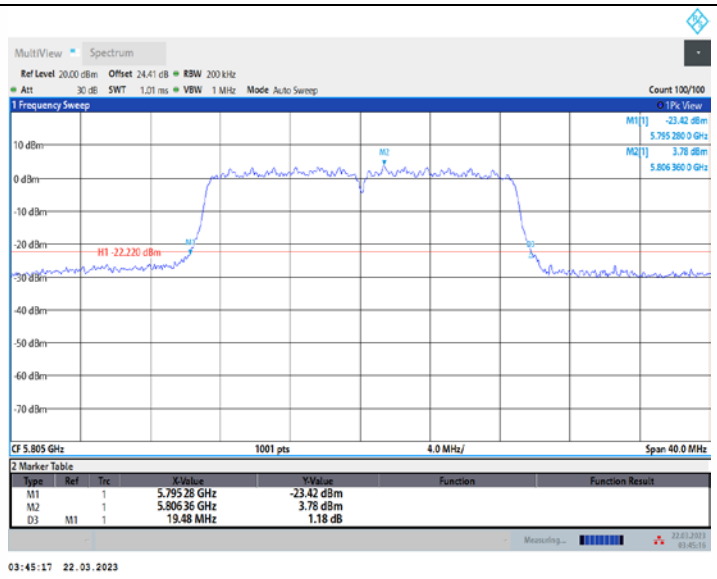
11N20MIMO_Ant1_5785



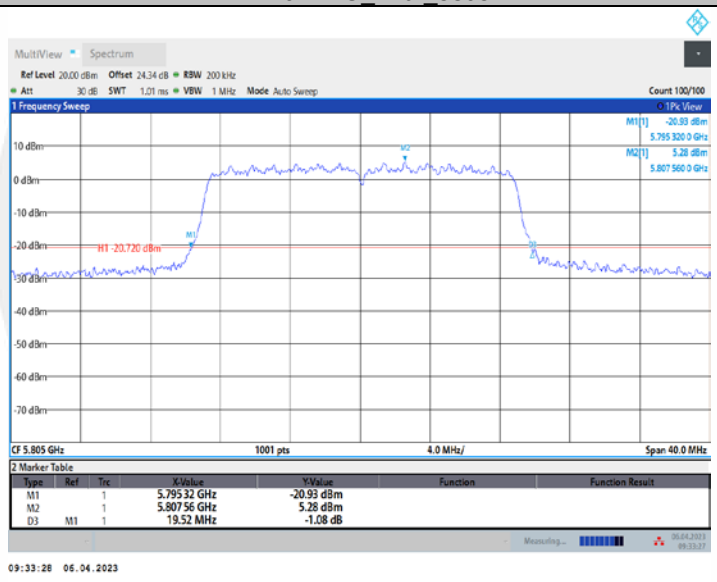
11N20MIMO_Ant2_5785



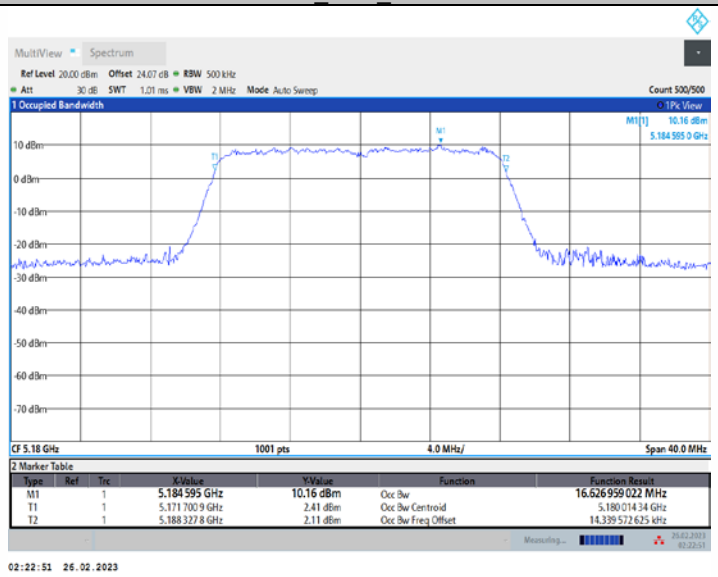
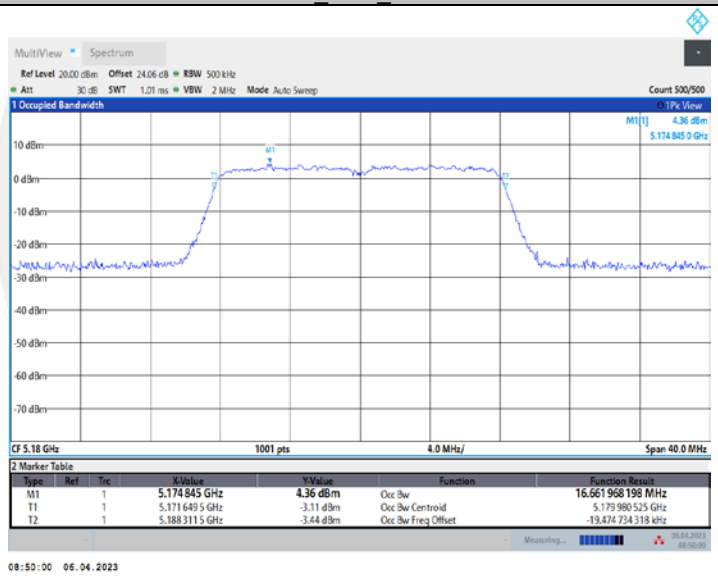
11N20MIMO_Ant1_5805

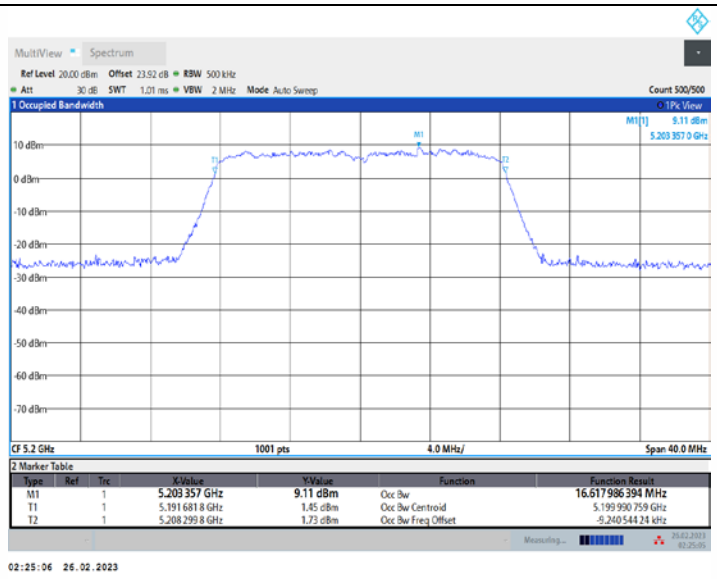


11N20MIMO_Ant2_5805

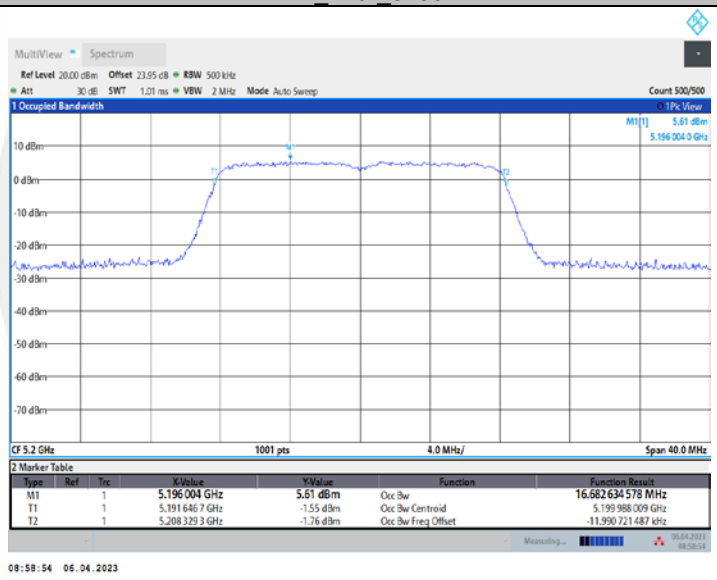


TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.627	5171.7009	5188.3278	---	---
	Ant2	5180	16.662	5171.6495	5188.3115	---	---
	Ant1	5200	16.618	5191.6818	5208.2998	---	---
	Ant2	5200	16.683	5191.6467	5208.3293	---	---
	Ant1	5240	16.64	5231.7008	5248.3410	---	---
	Ant2	5240	16.672	5231.6535	5248.3255	---	---
	Ant1	5745	16.749	5736.6148	5753.3634	---	---
	Ant2	5745	16.64	5736.6777	5753.3180	---	---
	Ant1	5785	16.923	5776.5615	5793.4848	---	---
	Ant2	5785	16.707	5776.6336	5793.3403	---	---
	Ant1	5805	16.683	5796.7102	5813.3928	---	---
	Ant2	5805	16.684	5796.6788	5813.3627	---	---
11N20MIMO	Ant1	5180	17.757	5171.1279	5188.8847	---	---
	Ant2	5180	17.838	5171.1121	5188.9496	---	---
	Ant1	5200	17.748	5191.1183	5208.8665	---	---
	Ant2	5200	17.768	5191.1851	5208.9535	---	---
	Ant1	5240	17.774	5231.1153	5248.8891	---	---
	Ant2	5240	17.786	5231.1661	5248.9526	---	---
	Ant1	5745	17.752	5736.1223	5753.8744	---	---
	Ant2	5745	17.719	5736.2423	5753.9609	---	---
	Ant1	5785	17.758	5776.1237	5793.8818	---	---
	Ant2	5785	17.859	5776.0853	5793.9443	---	---
	Ant1	5805	17.729	5796.1925	5813.9219	---	---
	Ant2	5805	17.773	5796.2183	5813.9910	---	---

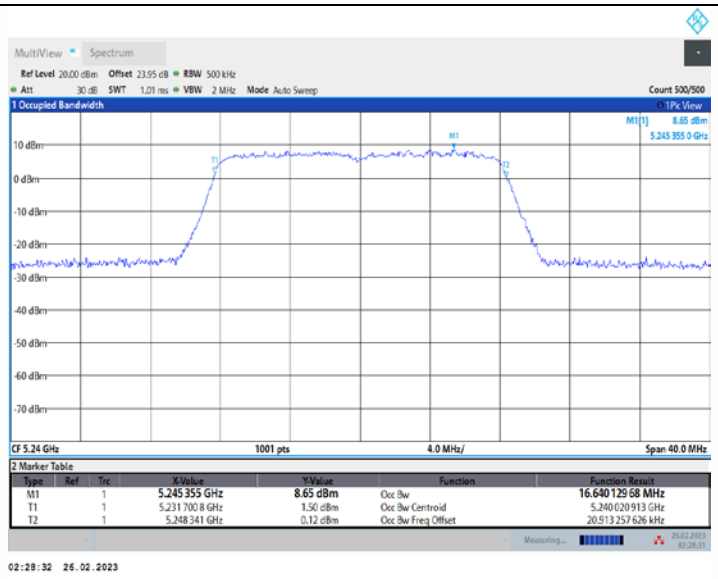
11A_Ant1_5180

11A_Ant2_5180

11A_Ant1_5200



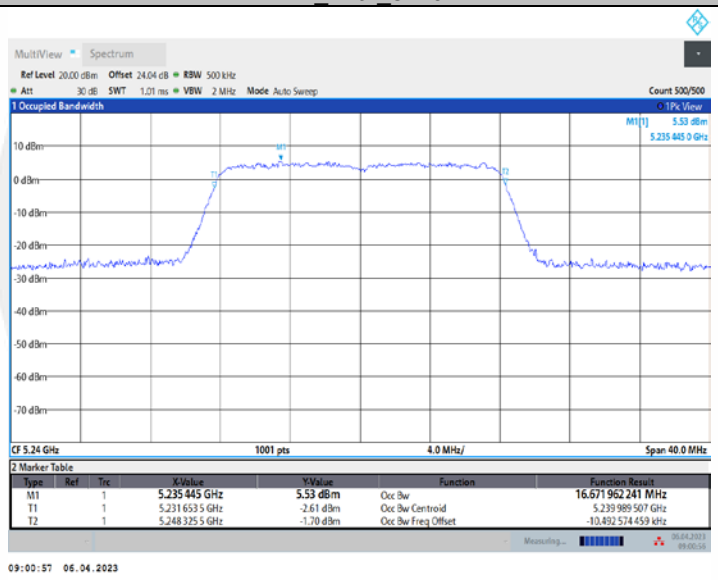
11A_Ant2_5200



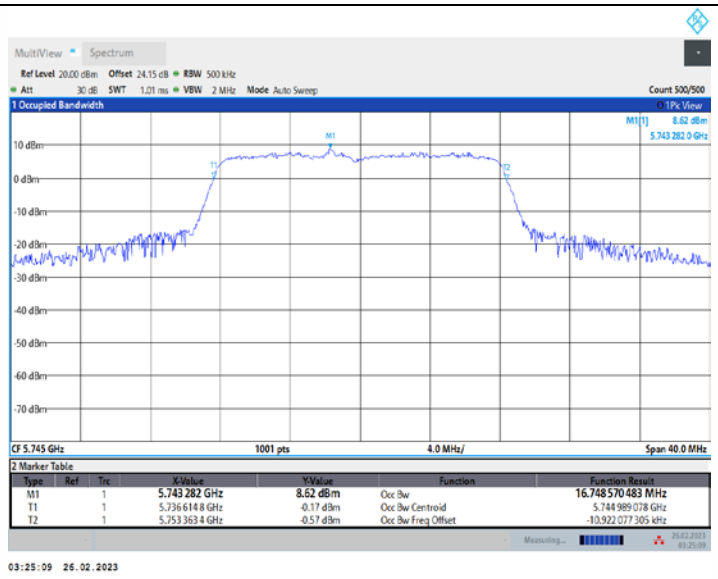
11A_Ant1_5240



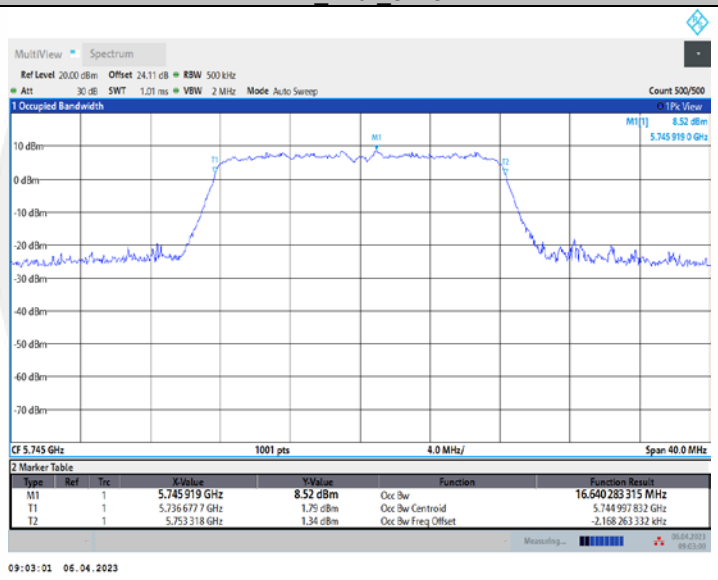
11A_Ant2_5240



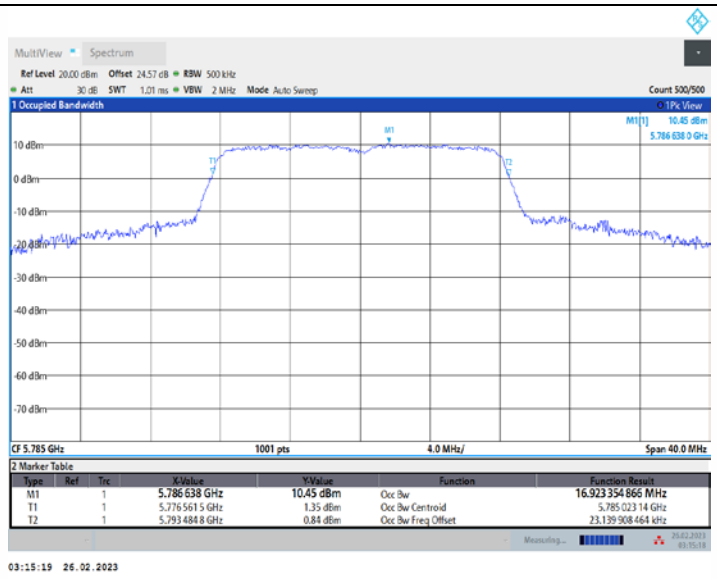
11A_Ant1_5745



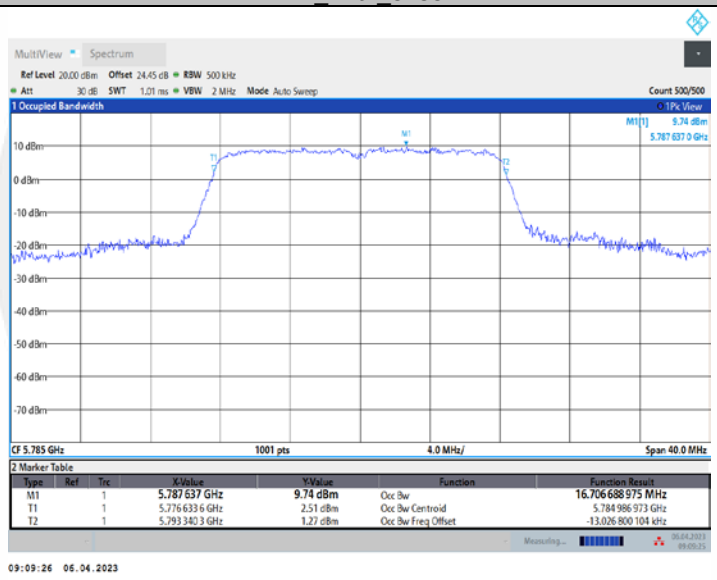
11A_Ant2_5745



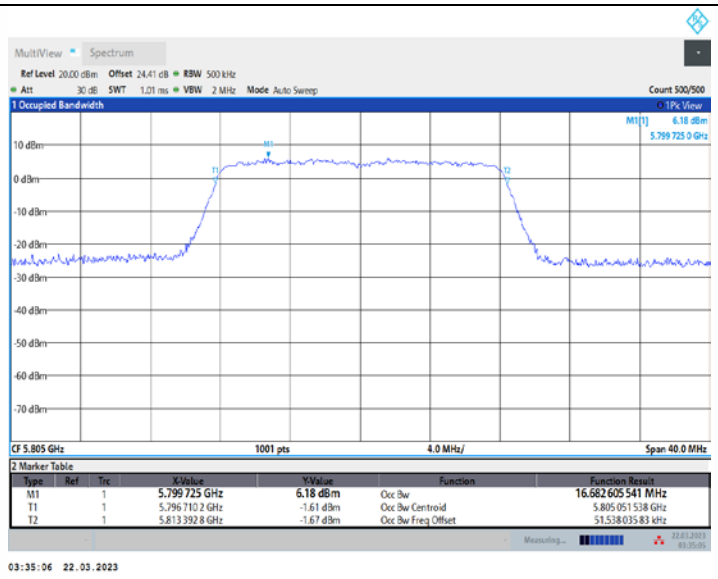
11A_Ant1_5785



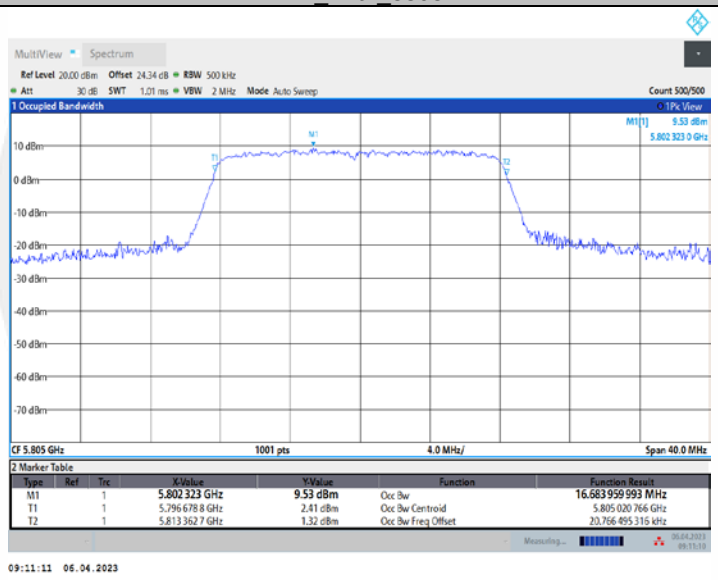
11A_Ant2_5785



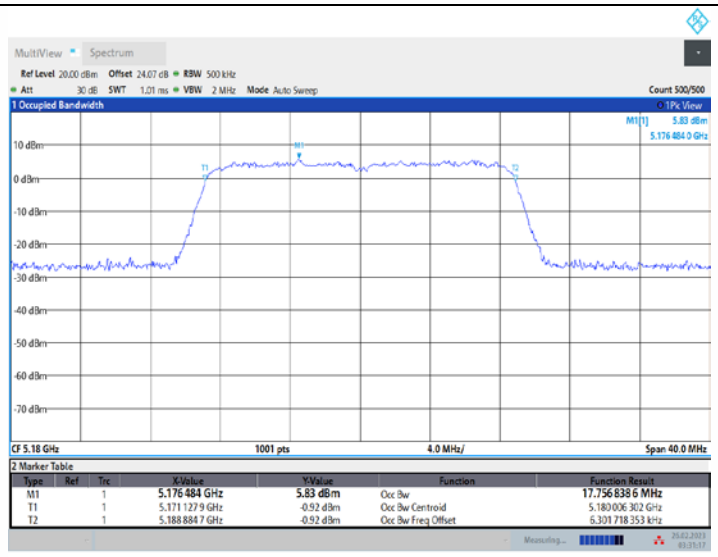
11A_Ant1_5805



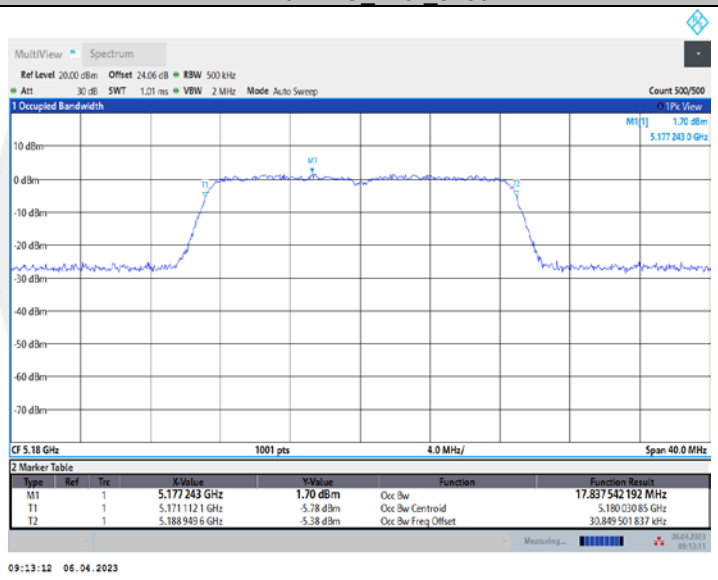
11A_Ant2_5805



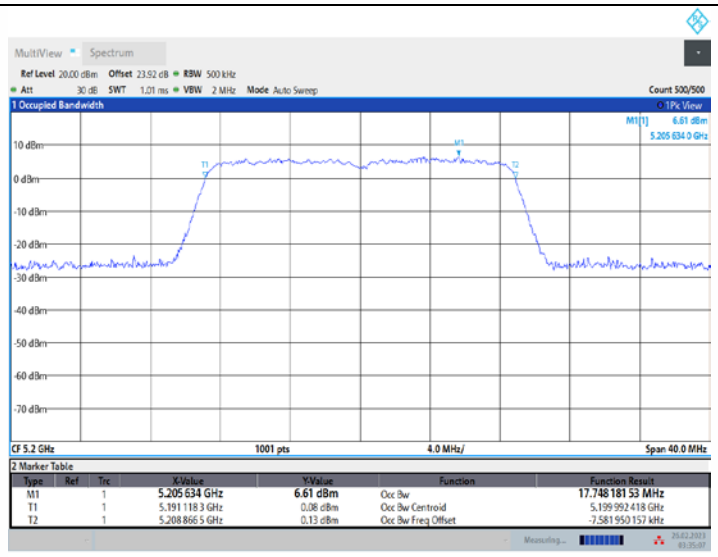
11N20MIMO_Ant1_5180



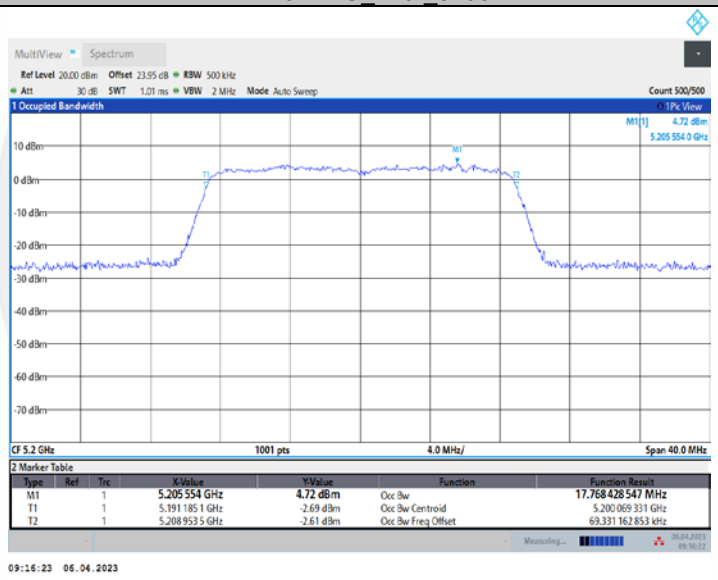
11N20MIMO_Ant2_5180



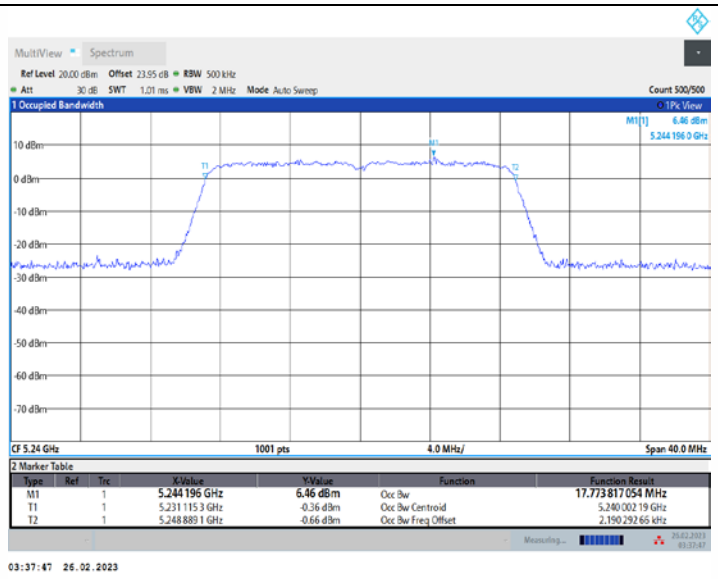
11N20MIMO_Ant1_5200



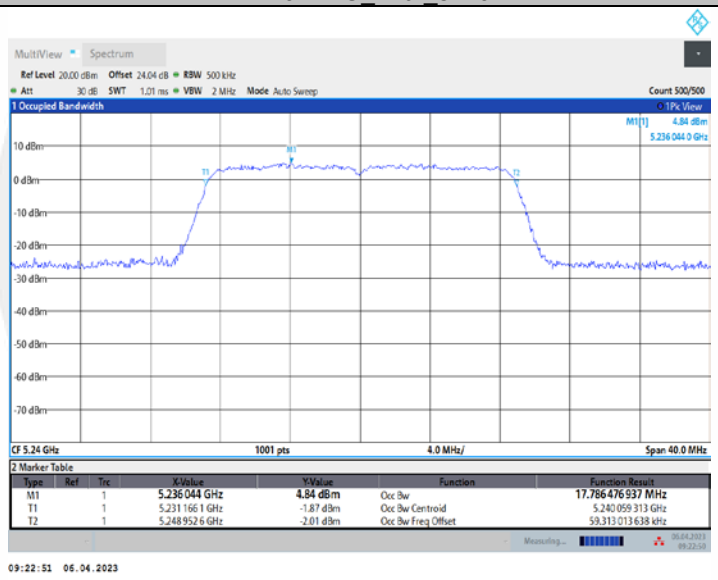
11N20MIMO_Ant2_5200



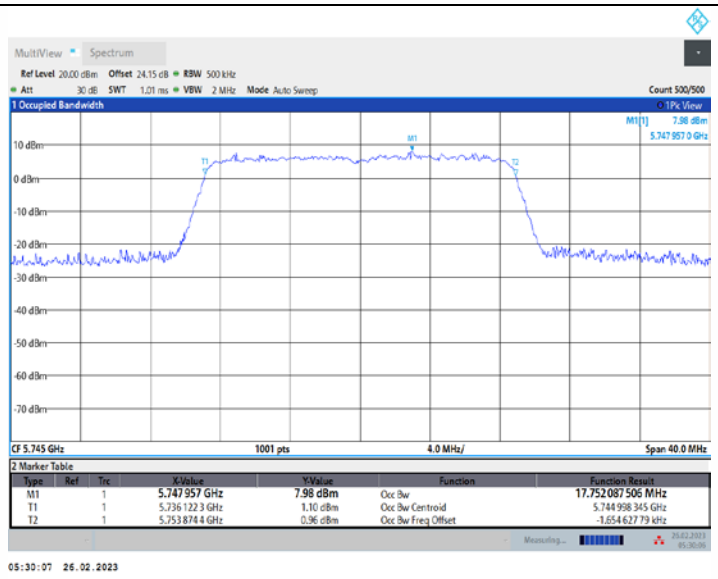
11N20MIMO_Ant1_5240



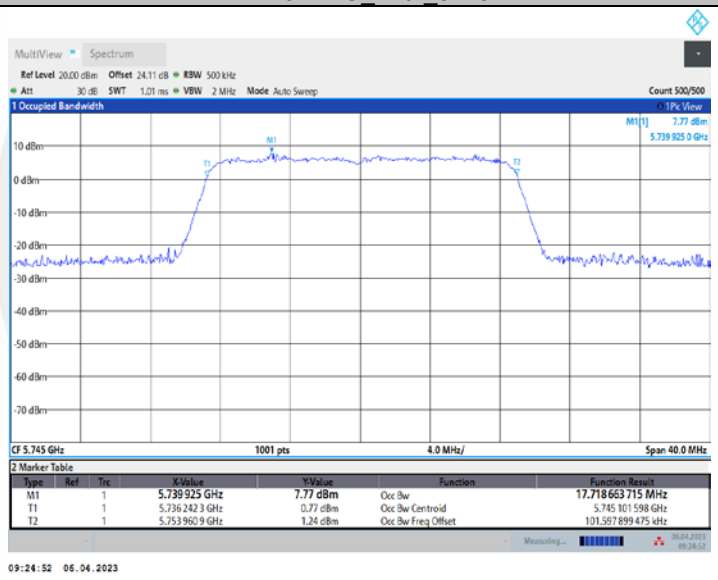
11N20MIMO_Ant2_5240



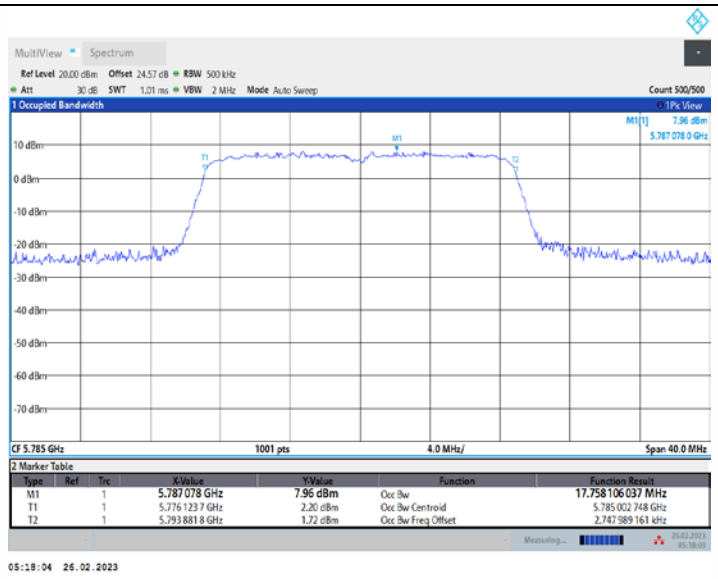
11N20MIMO_Ant1_5745



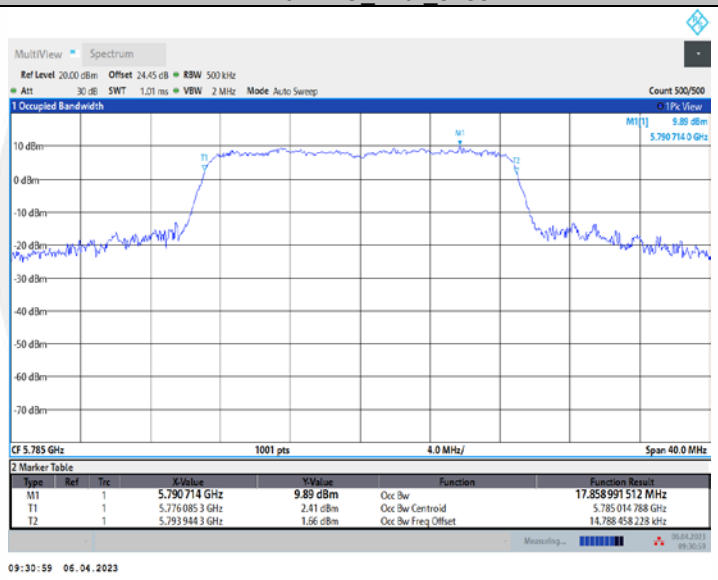
11N20MIMO_Ant2_5745



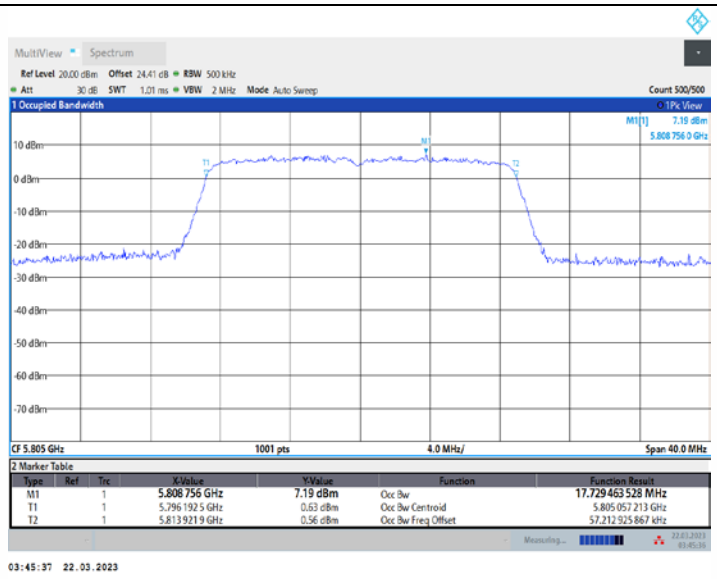
11N20MIMO_Ant1_5785



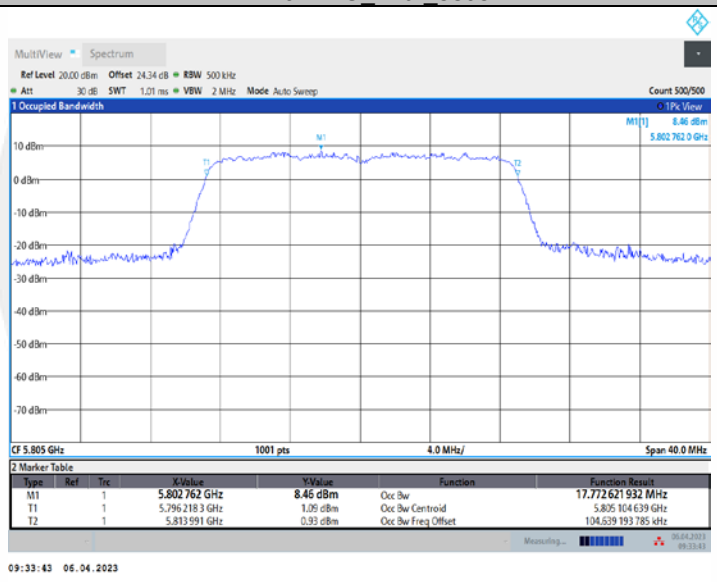
11N20MIMO_Ant2_5785



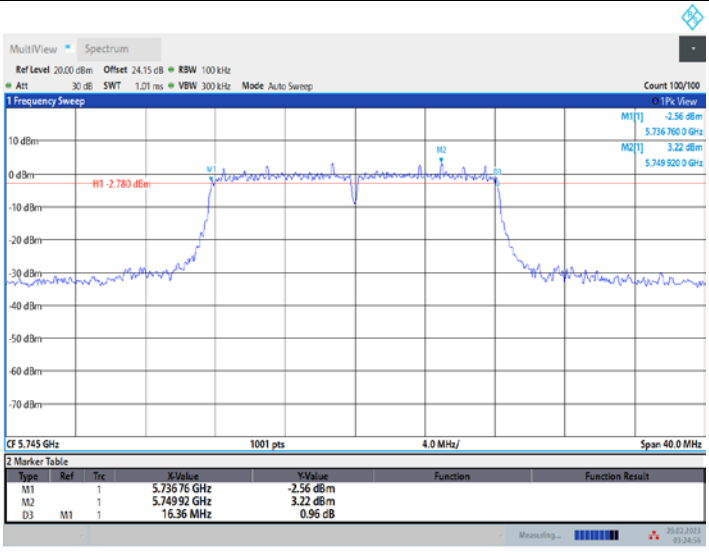
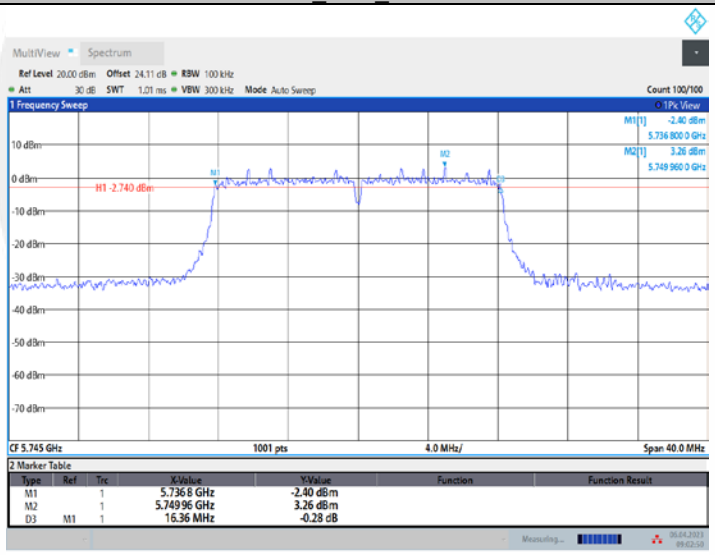
11N20MIMO_Ant1_5805

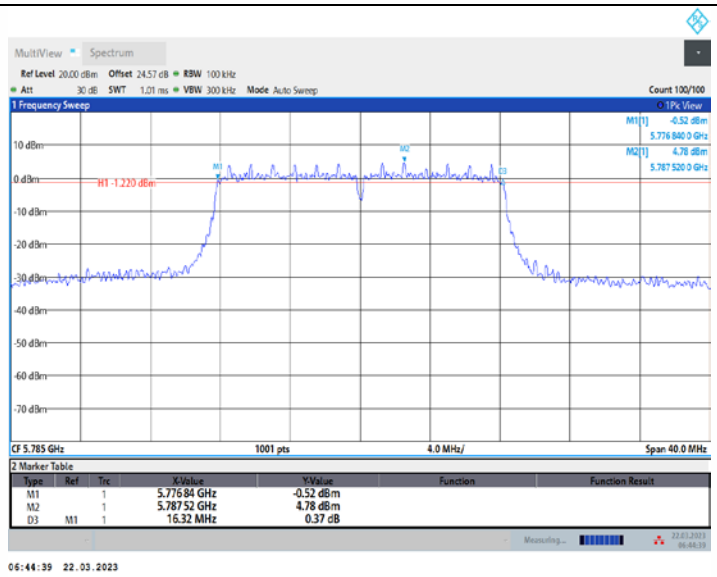


11N20MIMO_Ant2_5805



TestMode	Antenna	Frequency[MHz]	6db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.36	5736.76	5753.12	0.5	PASS
	Ant2	5745	16.36	5736.80	5753.16	0.5	PASS
	Ant1	5785	16.32	5776.84	5793.16	0.5	PASS
	Ant2	5785	16.32	5776.80	5793.12	0.5	PASS
	Ant1	5805	16.32	5796.88	5813.20	0.5	PASS
	Ant2	5805	16.32	5796.80	5813.12	0.5	PASS
11N20MIMO	Ant1	5745	17.56	5736.16	5753.72	0.5	PASS
	Ant2	5745	17.32	5736.52	5753.84	0.5	PASS
	Ant1	5785	17.56	5776.16	5793.72	0.5	PASS
	Ant2	5785	17.56	5776.20	5793.76	0.5	PASS
	Ant1	5805	17.56	5796.24	5813.80	0.5	PASS
	Ant2	5805	17.56	5796.28	5813.84	0.5	PASS

11A_Ant1_5745

11A_Ant2_5745

11A_Ant1_5785



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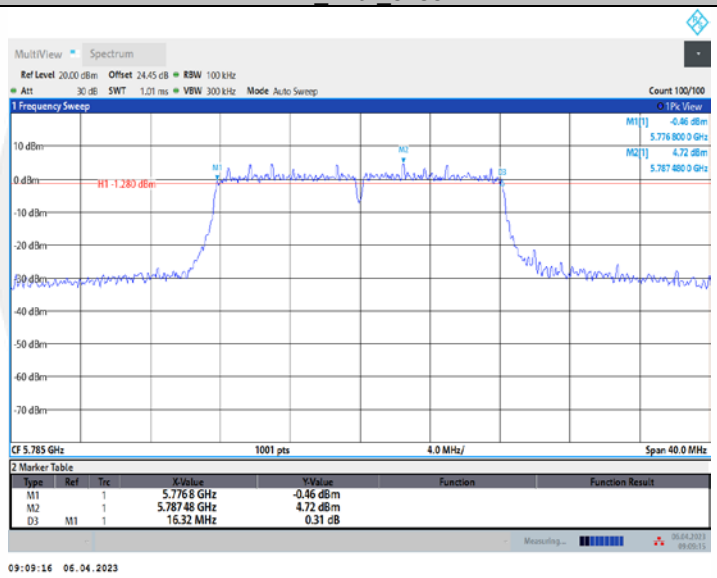

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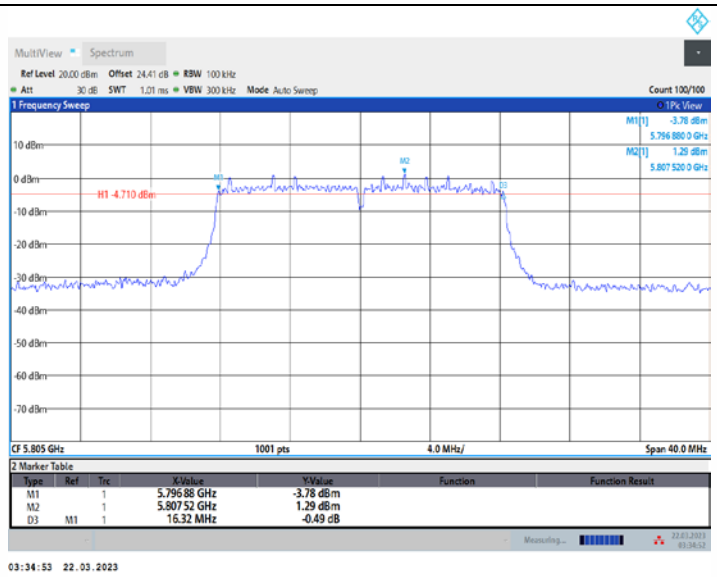

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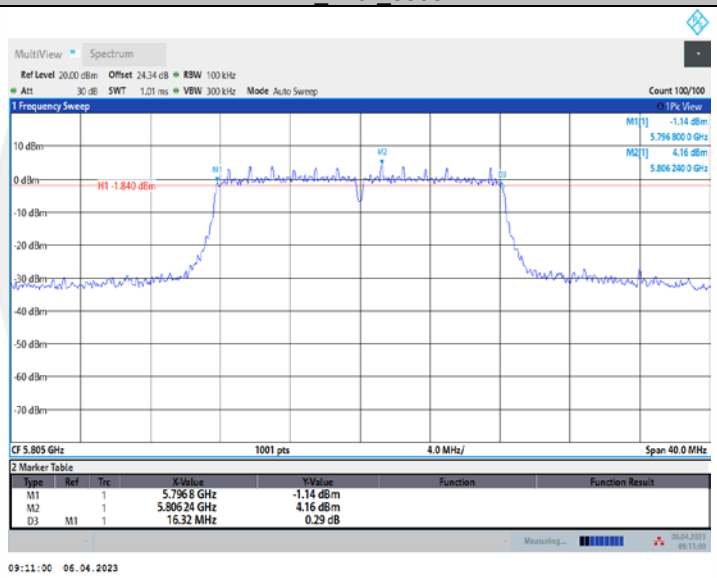

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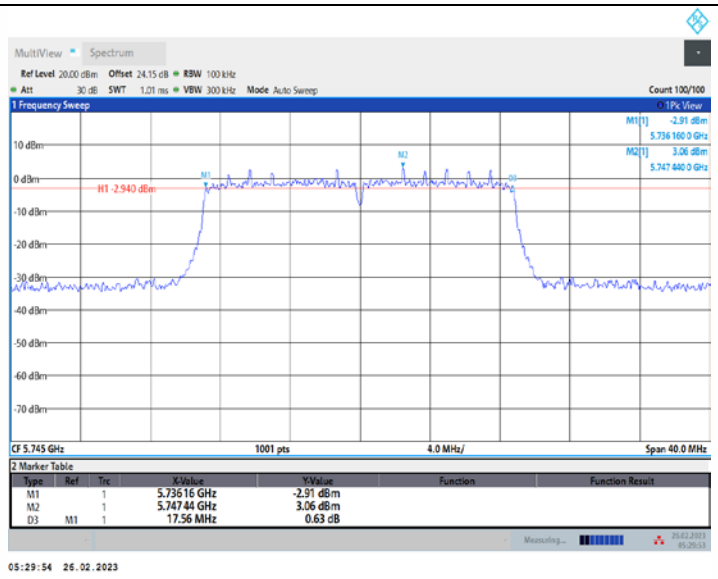

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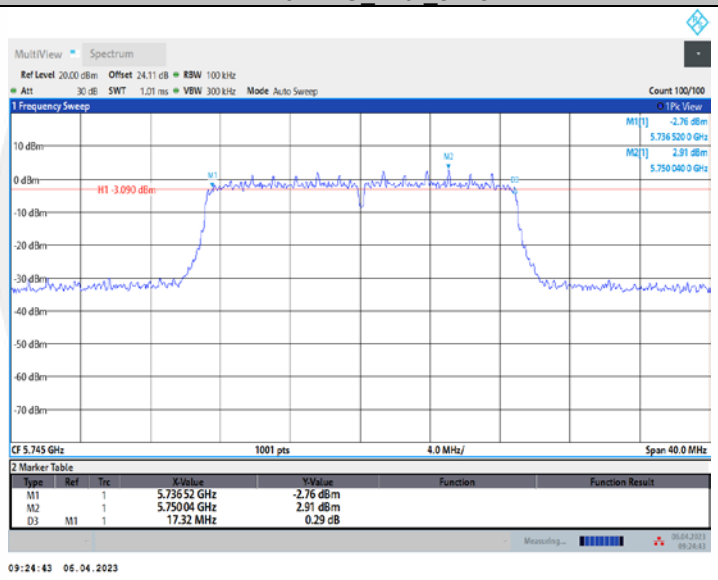

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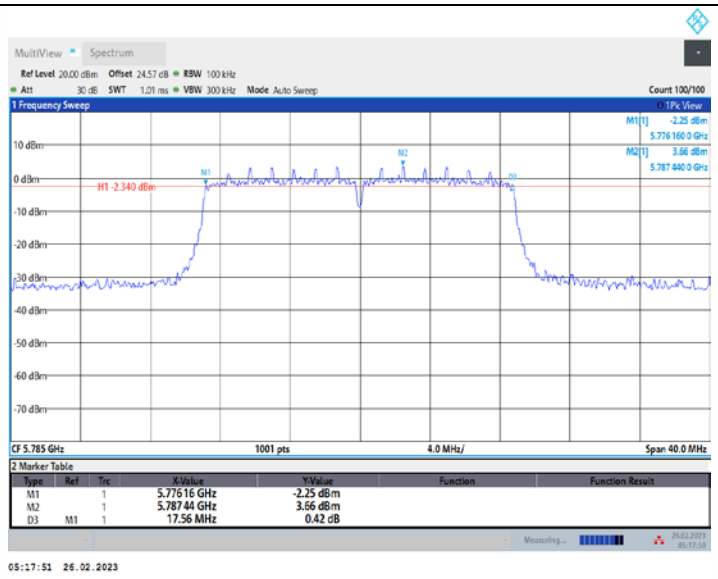

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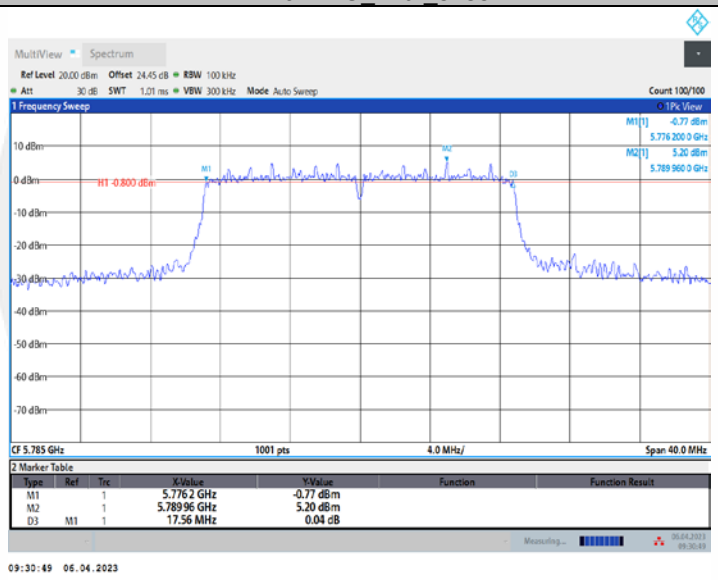

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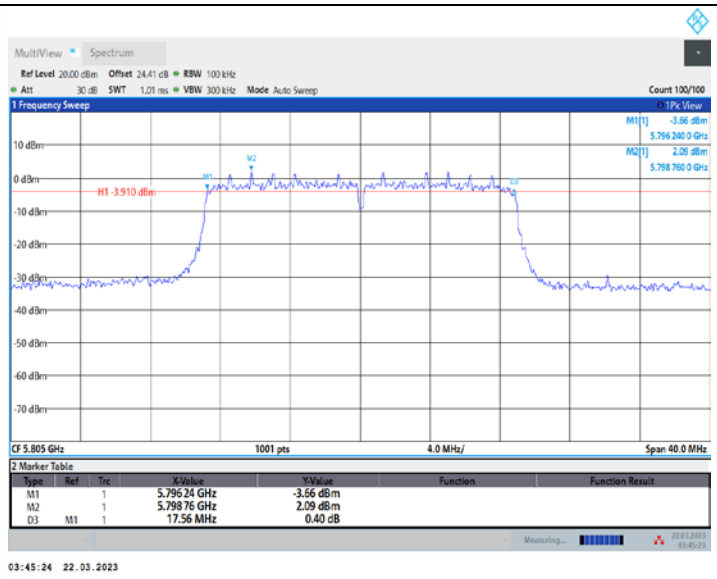

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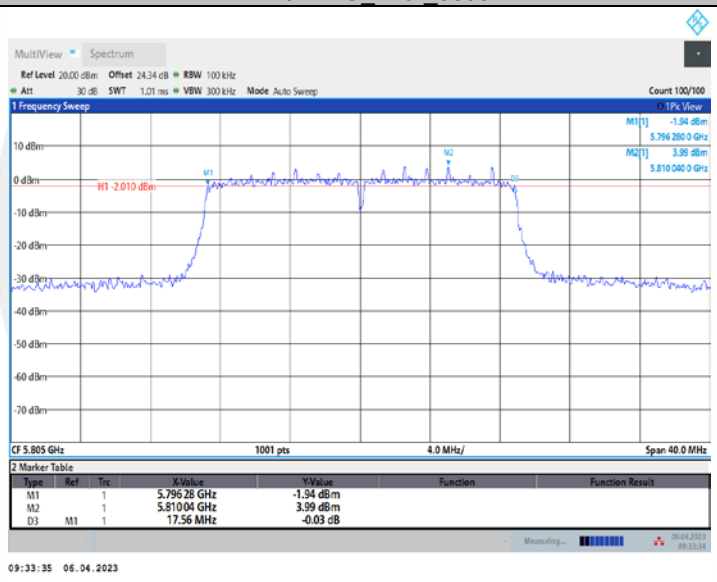

8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 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 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz,
(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 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 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(a) (1) (iv) For 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.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands
(a) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 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.

■ For the band 5.725-5.85 GHz
(a) (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

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

a. The Transmitter output (antenna port) was connected to the power meter.
b. Turn on the EUT and power meter and then record the power value.
c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

TestMode	Antenna	Frequency[MHz]	TransmissionDuration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	2.07	2.30	90.00
	Ant2	5180	2.06	2.28	90.35
	Ant1	5200	2.07	2.26	91.59
	Ant2	5200	2.06	2.22	92.79
	Ant1	5240	2.07	2.23	92.83
	Ant2	5240	2.07	2.25	92.00
	Ant1	5745	2.07	2.28	90.79
	Ant2	5745	2.06	2.23	92.38
	Ant1	5785	2.06	2.28	90.35
	Ant2	5785	2.06	2.27	90.75
	Ant1	5805	2.06	2.34	88.03
	Ant2	5805	2.06	2.24	91.96
11N20MIMO	Ant1	5180	1.92	2.15	89.30
	Ant2	5180	1.92	2.08	92.31
	Ant1	5200	1.92	2.14	89.72
	Ant2	5200	1.92	2.14	89.72
	Ant1	5240	1.92	2.13	90.14
	Ant2	5240	1.92	2.09	91.87
	Ant1	5745	1.92	2.13	90.14
	Ant2	5745	1.92	2.14	89.72
	Ant1	5785	1.92	2.11	91.00
	Ant2	5785	1.92	2.15	89.30
	Ant1	5805	1.92	2.34	82.05
	Ant2	5805	1.92	2.76	69.57

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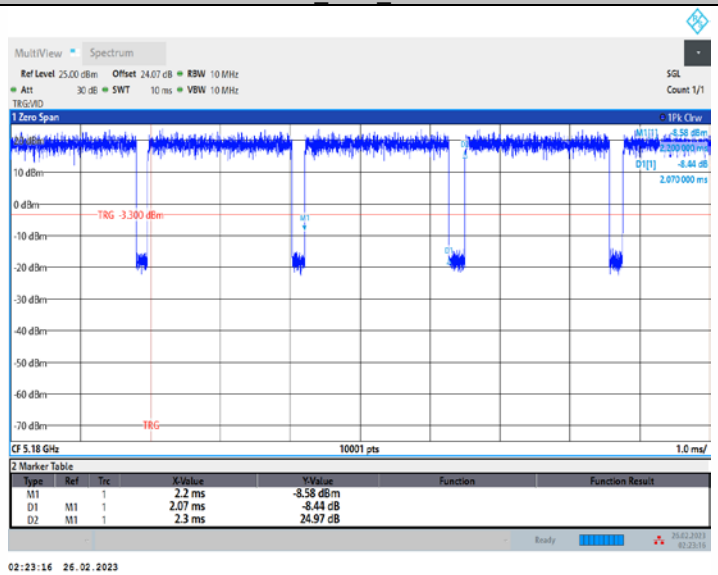
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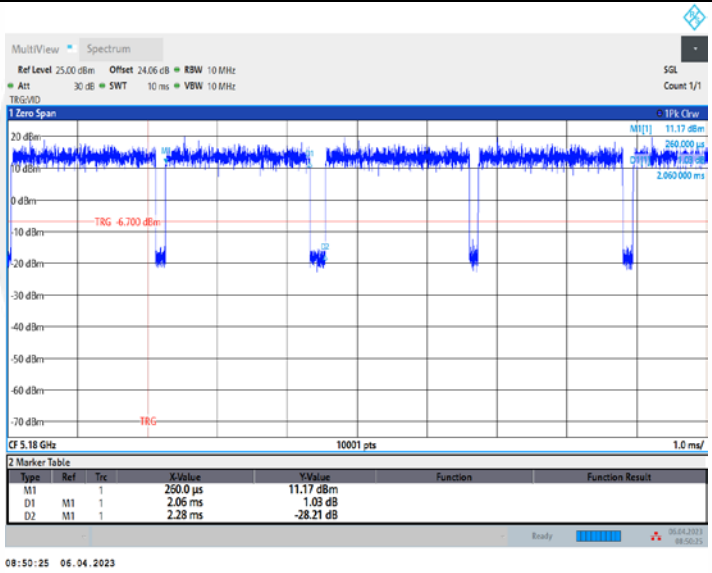
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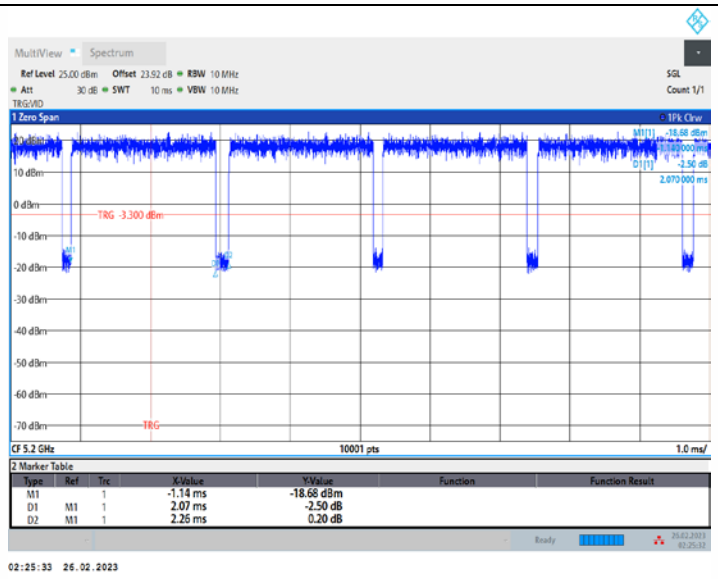

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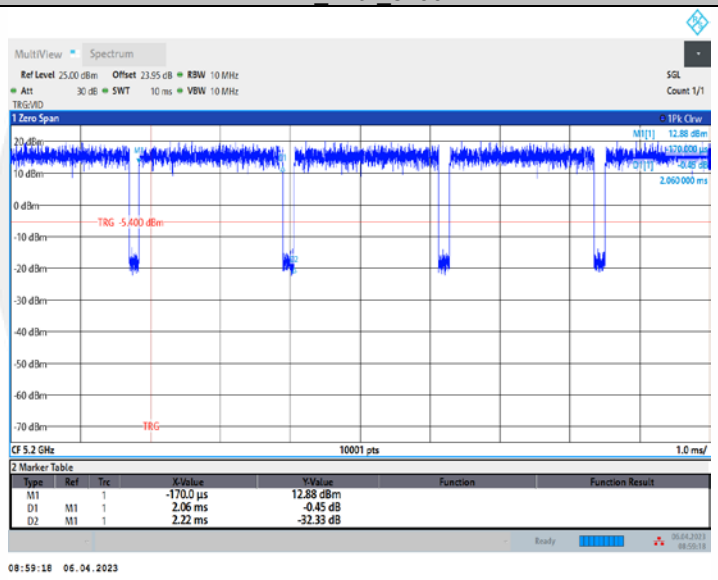

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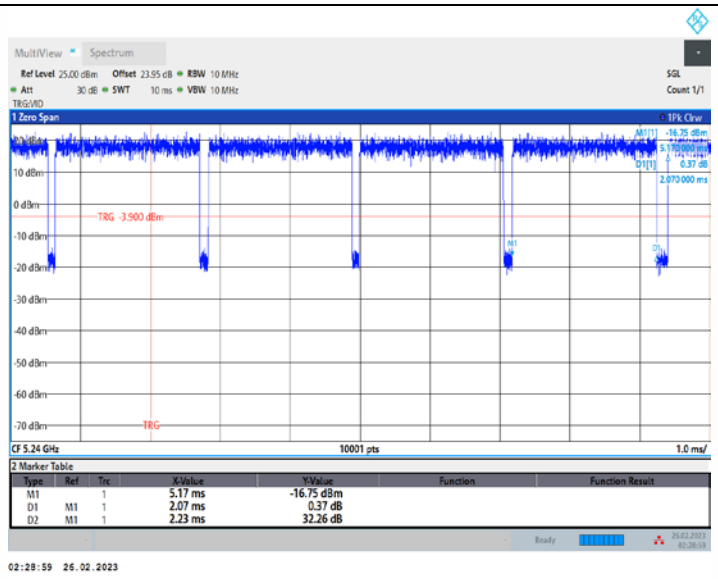

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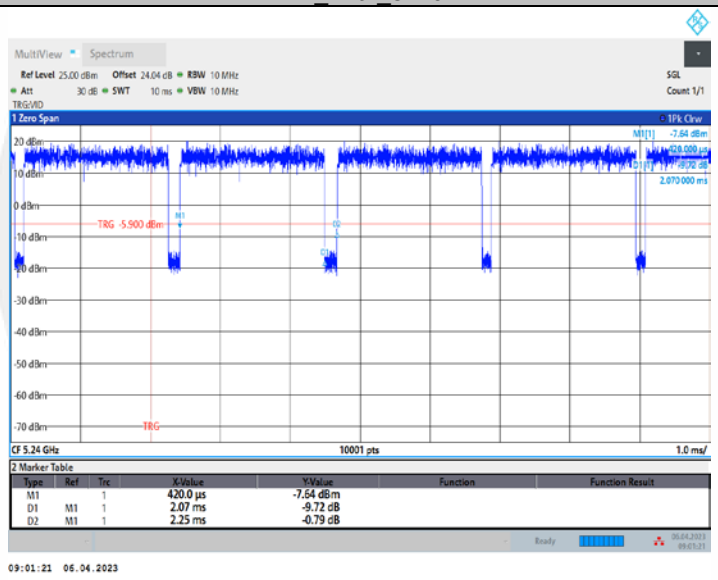

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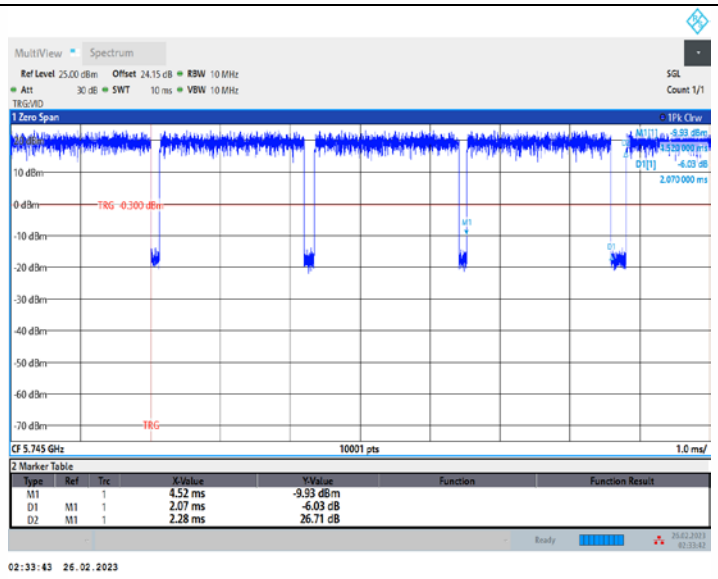

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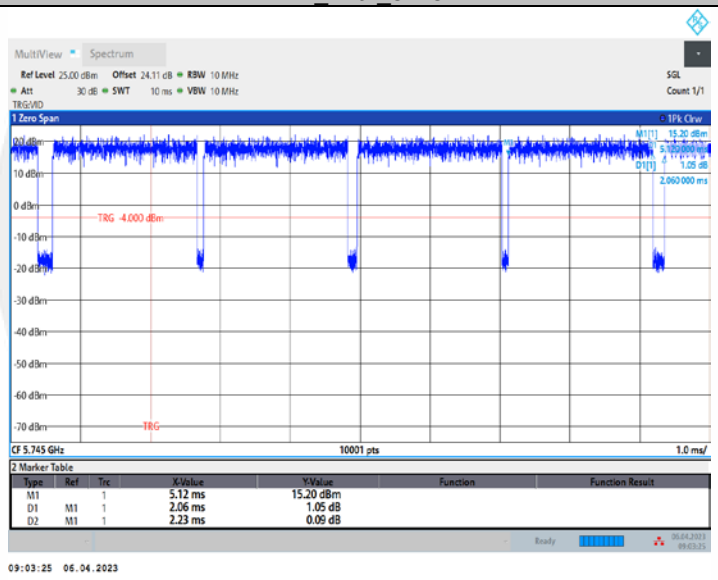

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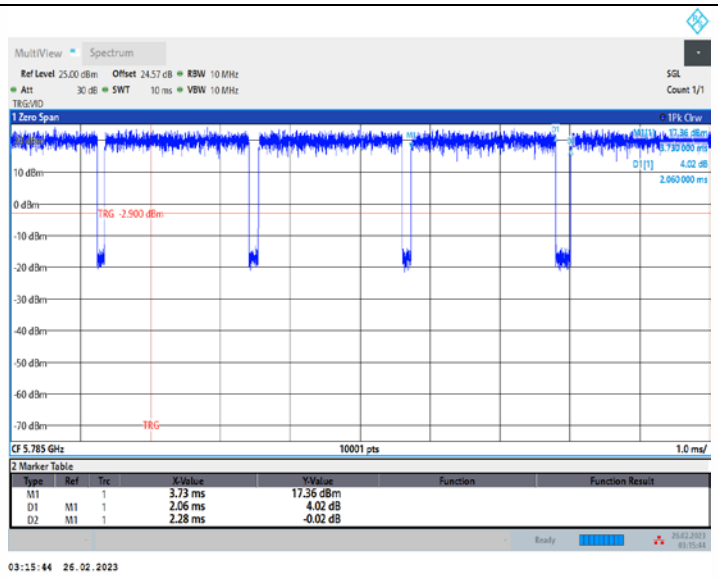

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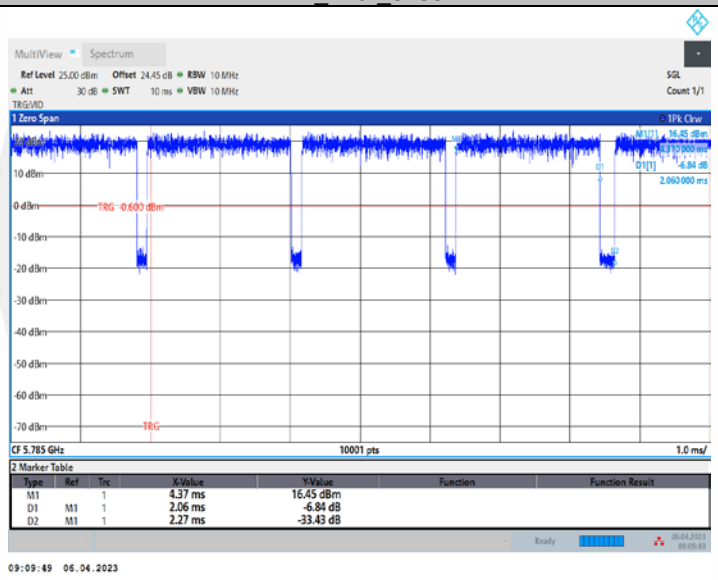

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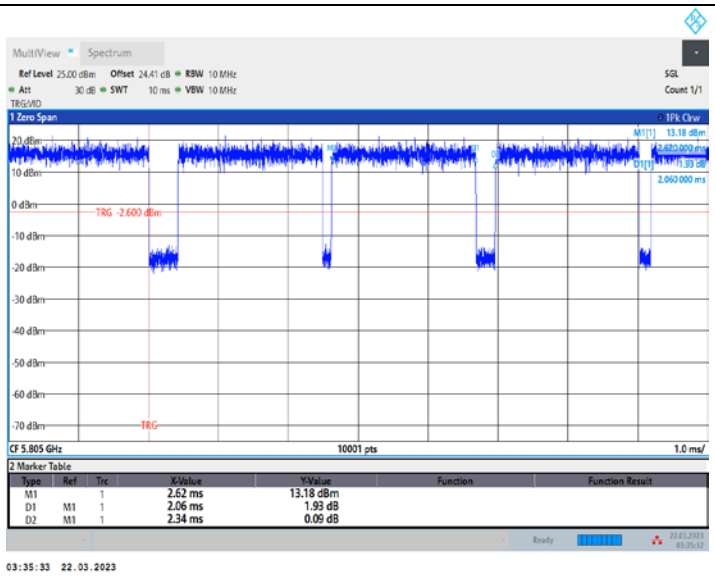

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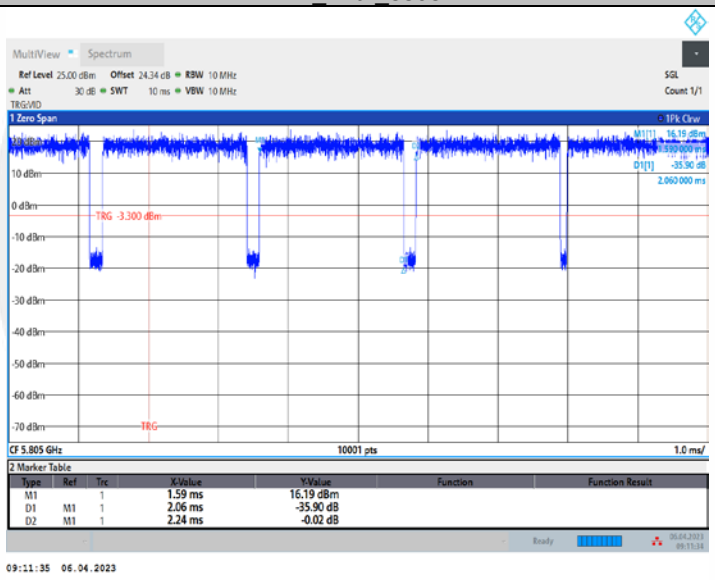

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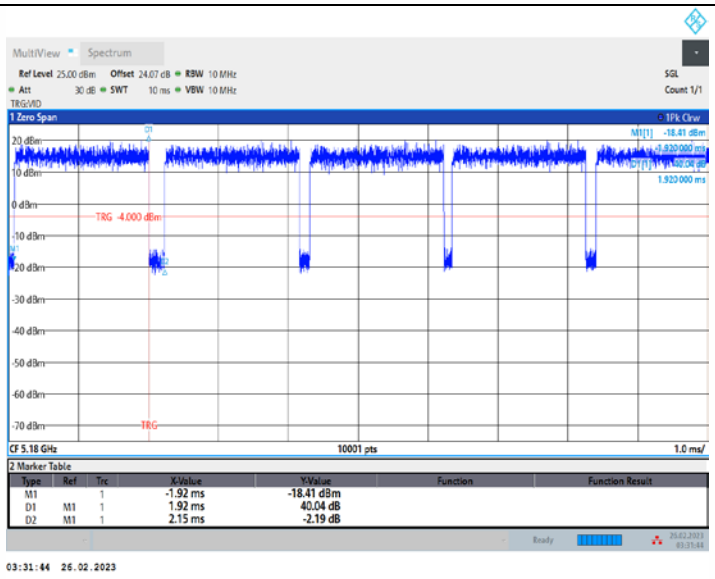

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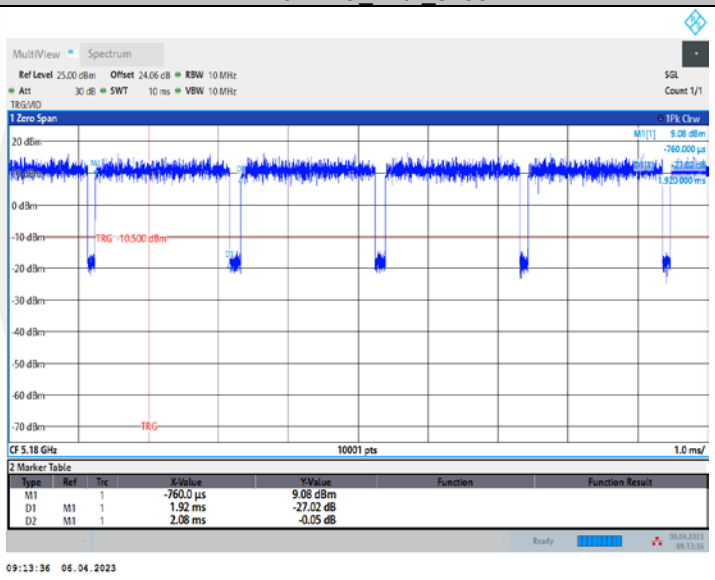

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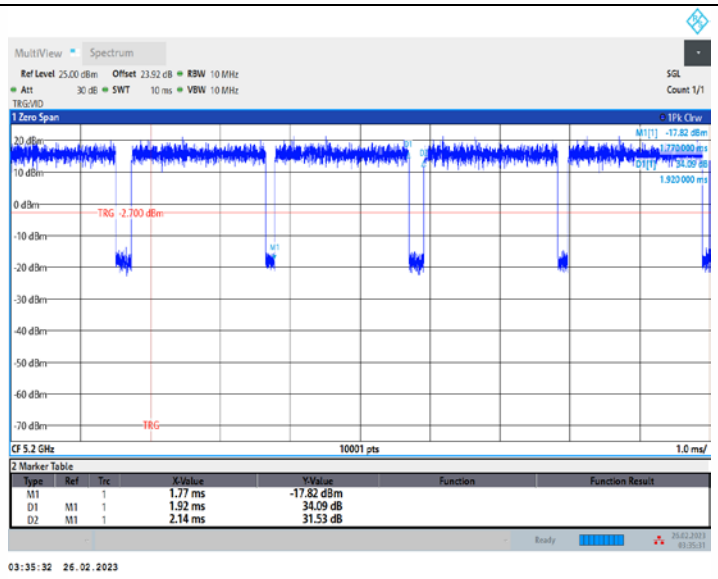

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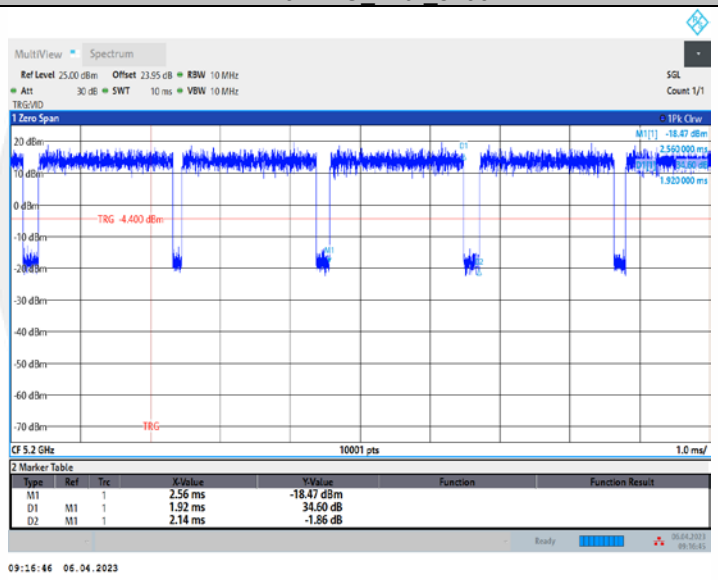

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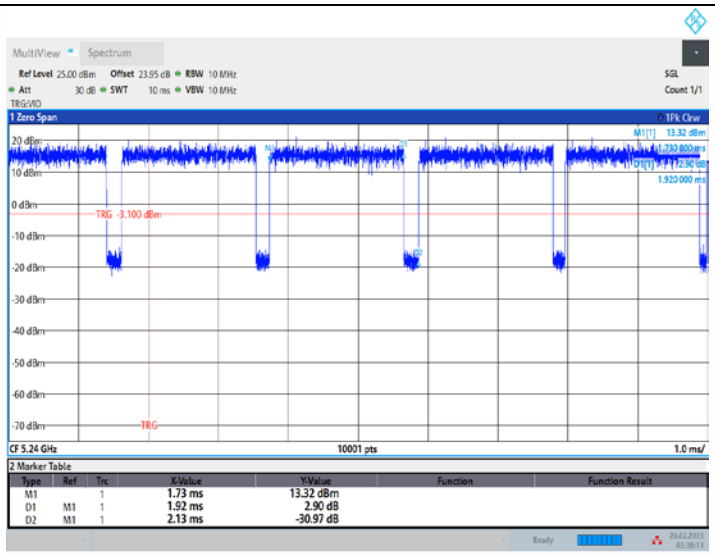

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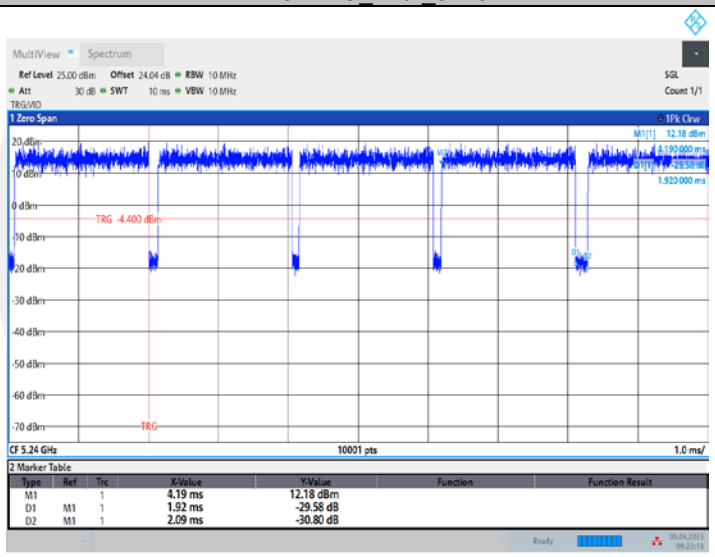

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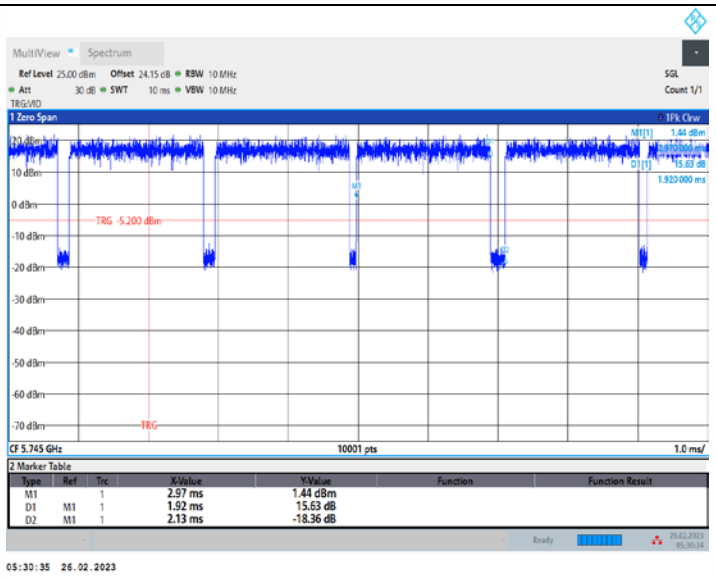

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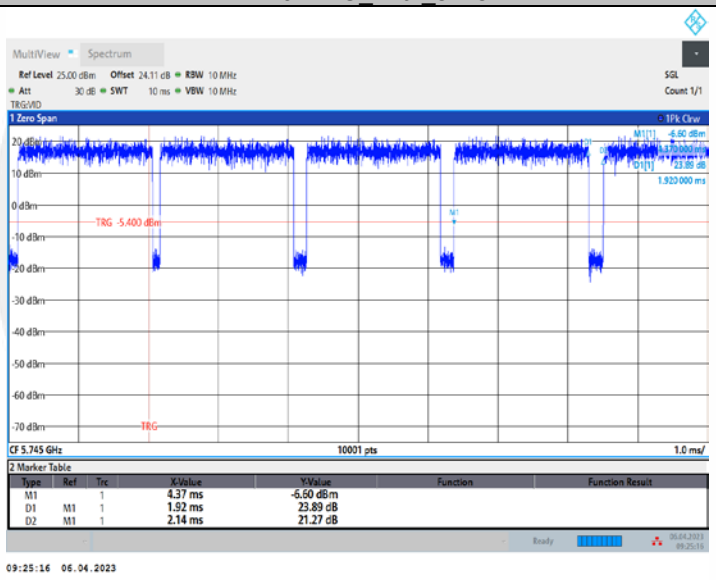

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