



FCC TEST REPORT

FCC ID: 2A7ZC-SG20A

On Behalf of

GEOMATE POSITIONING PTE. LTD.

Geodetic GNSS Receiver

Model No.: SG20AR

Prepared for : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

Report Number : A2407246-C01-R14
Date of Receipt : August 2, 2024
Date of Test : August 2, 2024 – August 28, 2024
Date of Report : August 31, 2024
Version Number : V0
Result **Pass**

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TEST REPORT DECLARATION

Applicant : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479
Manufacturer : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479
EUT Description : Geodetic GNSS Receiver
(A) Model No. : SG20AR
(B) Trademark : 

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart E

ANSI C63.4:2014, ANSI C63.10:2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

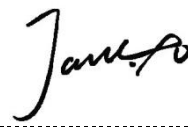
Tested by (name + signature).....:

Yannis Wen
Project Engineer



Approved by (name + signature).....:

Jack Xu
Project Manager



Date of issue.....:

August 31, 2024

Revision History

Revision	Issue Date	Revisions	Revised By
V0	August 31, 2024	Initial released Issue	Yannis Wen

1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	Section 15.203 Section 7.1.4	PASS
AC Power Line Conducted Emission	Section 15.207 Section 7.2.4 ANSI C63.10	PASS
Peak Transmit Power	Section 15.407(a)	PASS
Power Spectral Density	Section 15.407(a)	PASS
Undesirable Emission	Section 15.407(b)	PASS
26dB/6dB&99% Bandwidth	Section 15.407	PASS
Radiated Emission	Section 15.407(b)&15.209 Section 5.5 ANSI C63.10	PASS
Band Edge	15.205, ANSI C63.10	PASS
Frequency Stability	15.407(f)	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Frequency Stability: The manufacturer stated in the user's manual.
3. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

1.1 Measurement Uncertainty

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8} GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

2 General Information

2.1 General Description of EUT

EUT Name	: Geodetic GNSS Receiver
Model No.	: SG20AR
DIFF.	: N/A
Power supply	: DC 5V from AC Adapter, DC 7.2V from battery.
Radio Technology	: 5G WIFI
Operation Frequency	: 802.11a/n(HT20)/ac(HT20): 5180-5240MHz; 5745-5825MHz 802.11n(HT40)/ac(HT40): 5190-5230MHz; 5755-5795MHz 802.11ac(HT80): 5210MHz; 5775MHz
Channel separation	: 20MHz for 802.11a/ 802.11ac20/ 802.11n(HT20) 40MHz for 802.11ac40/ 802.11n(HT40) 80MHz for 802.11ac80
Modulation technology:	: IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	: PCB antenna, max gain 0dBi (Antenna information is provided by applicant.)
Software version	: V1.0
Hardware version	: V1.0.1
Intend use environment	: Residential, commercial and light industrial environment

2.2 Test mode

Transmitting mode Keep the EUT in transmitting with modulation.
 EUT was test with 99% duty cycle at its maximum power control level.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 Test Facility

Shenzhen Alpha Product Testing Co., Ltd
 Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission
 Registration Number: 293961

July 25, 2017 Certificated by IC
 Registration Number: 12135A

2.4 Description of Support Units

Accessories : AC Adapter
 Manufacturer : Yisheng Electronics Co., LTD
 Model : EA1012AVRU-050
 INPUT : 100-240Vac, 1.0A, 50-60Hz
 OUTPUT : 5.0V=2.4A 12.0W
 Accessories Type-C charging cable
 Manufacturer /
 Model /
 Accessories UHF Receiving Antenna
 Manufacturer /
 Model /

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

2.8 Additional instructions

Software (Used for test) from client

Channel	Power level
Lowest	Default
Middle	Default
Highest	Default

3 Test Instruments list

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2022.05.18	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2024.08.08	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2024.08.08	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-102082-Wa	2024.08.08	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2024.08.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2023.08.28	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2023.08.19	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00128	2023.08.19	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2024.08.08	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2024.08.08	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2024.08.08	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2024.08.08	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2024.08.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2024.08.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2024.08.08	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	/	00946	2023.08.19	2Year
Preamplifier	SKET	LNPA_1840-50	/	SK2018101801	2024.08.08	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2024.08.08	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2024.08.08	1 Year
Electronic Thermo-Hygrometer	S.H.Qixiang	HTC-1	/	N/A	2024.08.11	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2024.08.08	1 Year
Adjustable attenuator	MWRFtest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

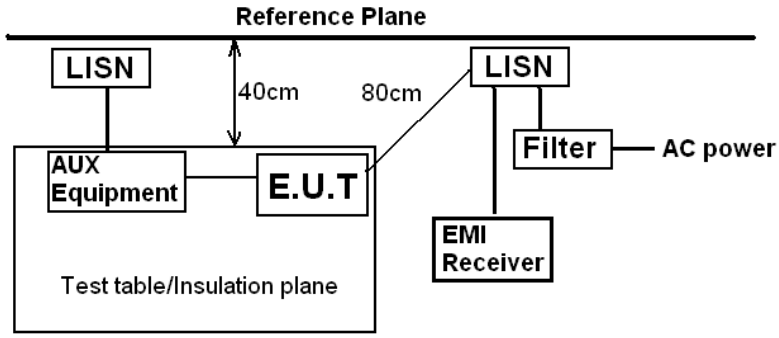
Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	EZ	Alpha-3A1
CE	EZ-EMC	EZ	Alpha-3A1
RF-CE	MTS 8310	MW	V2.0.0.0

4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The antenna is internal antenna. The best case gain of the antenna is 0dBi, for 5.15~5.25GHz, 5.25~5.35GHz, 5.725~5.85GHz	

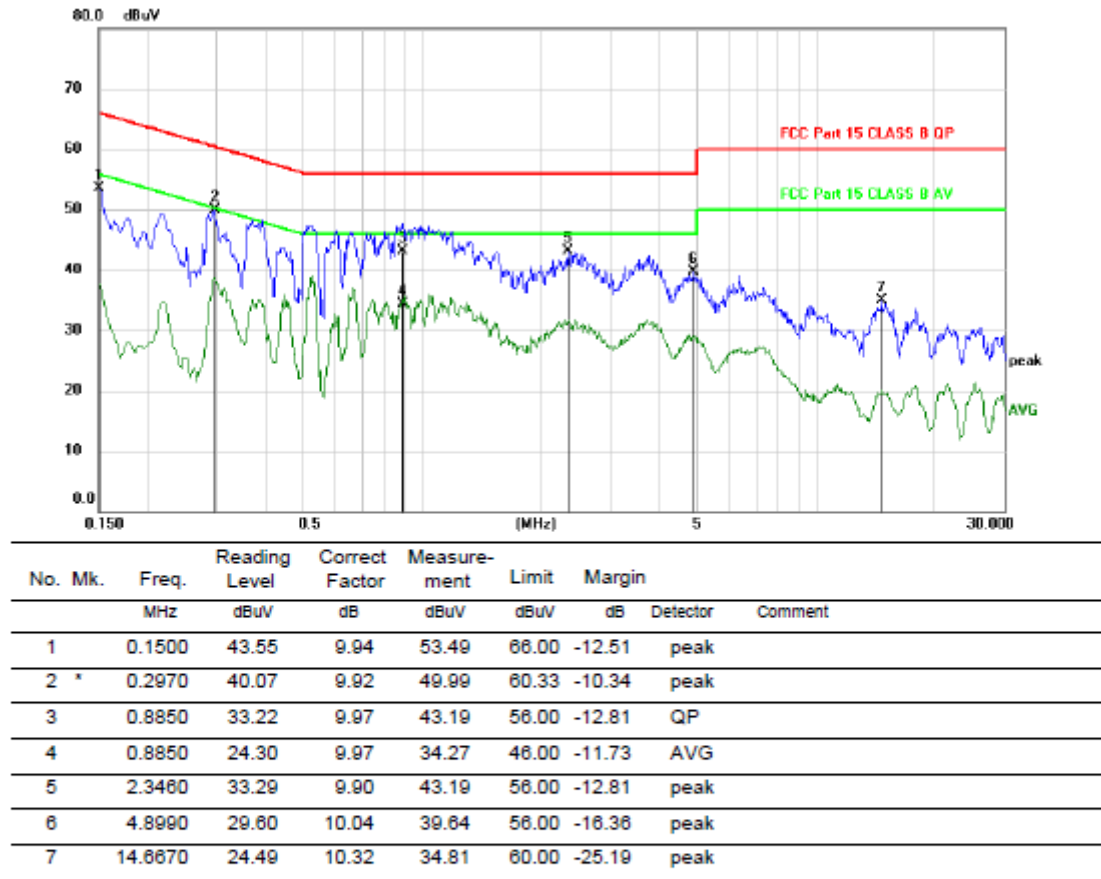
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class Severity:	Class B		
Class B			
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 3 for details		
Test mode:	Refer to section 2.2 for details		
Test results:	Pass		

Measurement Data

An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

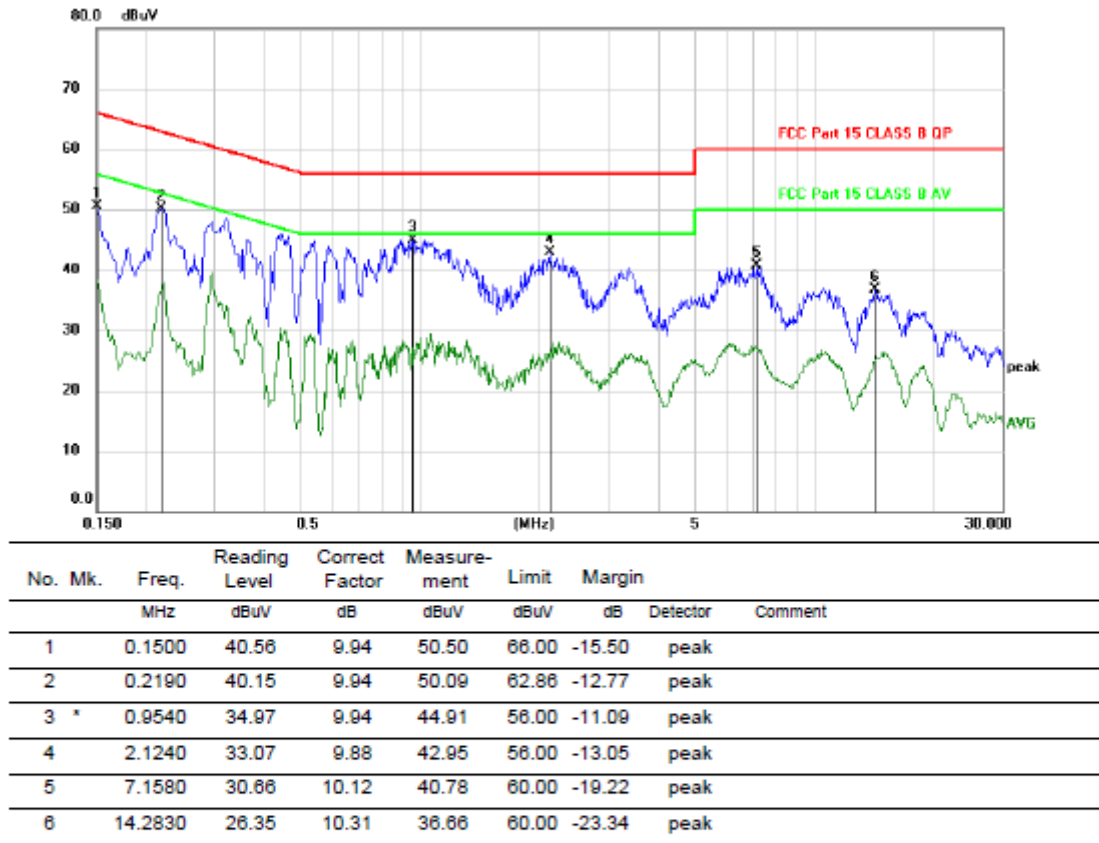
Line:



*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Neutral:

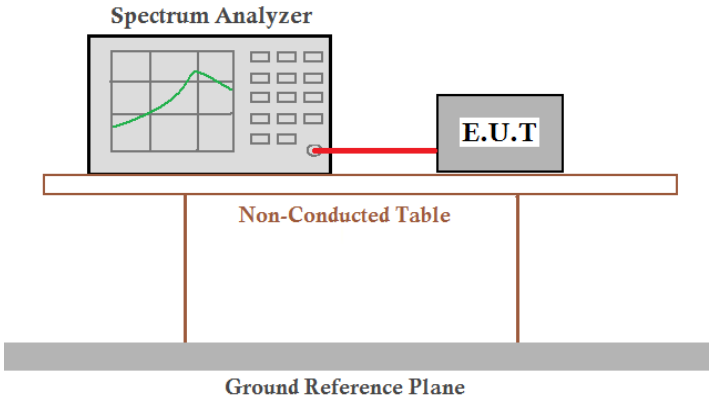
*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

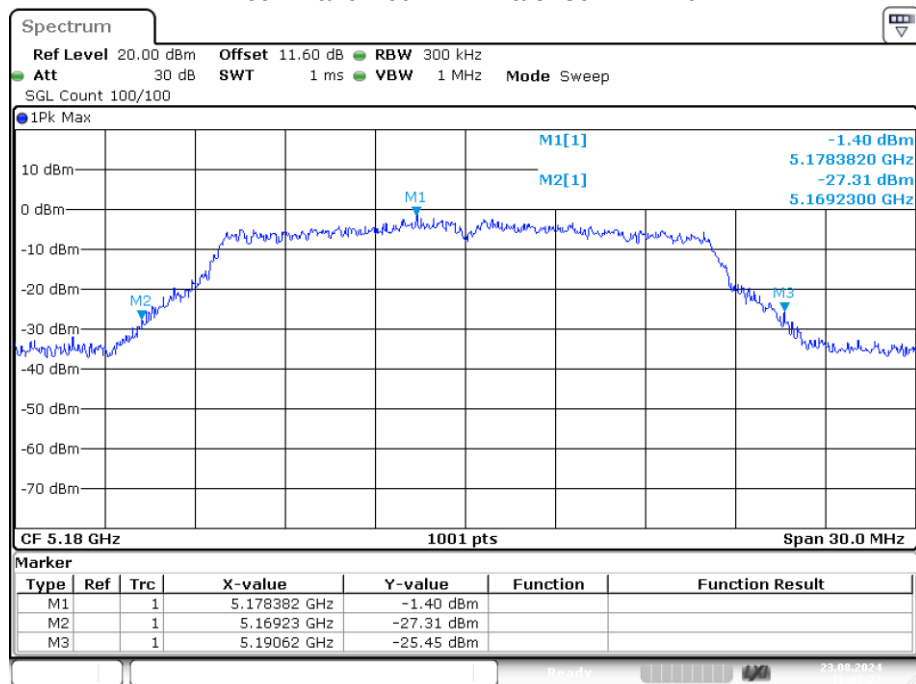
Note: All modes and channels have been tested and only the ac80 5210MHz mode with the worst data is listed.

4.3 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	>500kHz for 6 dB bandwidth
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a green trace on its screen, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a Non-Conducted Table, which is supported by two vertical legs. Below the table, a Ground Reference Plane is indicated by a thick grey bar.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 3 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

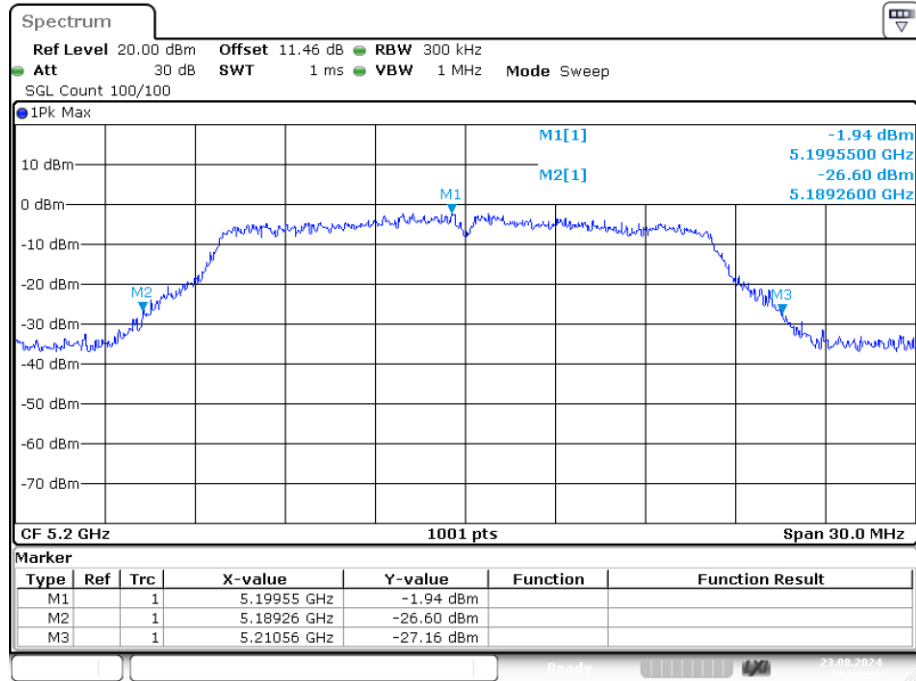
Measurement Data:**Band 1 (5150-5250 MHz):****-26dB Bandwidth**

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)
NVNT	a	5180	Ant1	21.39
NVNT	a	5200	Ant1	21.3
NVNT	a	5240	Ant1	21.54
NVNT	ac20	5180	Ant1	21.84
NVNT	ac20	5200	Ant1	21.84
NVNT	ac20	5240	Ant1	21.78
NVNT	ac40	5190	Ant1	40.2
NVNT	ac40	5230	Ant1	40.32
NVNT	ac80	5210	Ant1	84.12
NVNT	n20	5180	Ant1	21.72
NVNT	n20	5200	Ant1	21.75
NVNT	n20	5240	Ant1	21.69
NVNT	n40	5190	Ant1	55.86
NVNT	n40	5230	Ant1	58.56

-26dB Bandwidth NVNT a 5180MHz Ant1

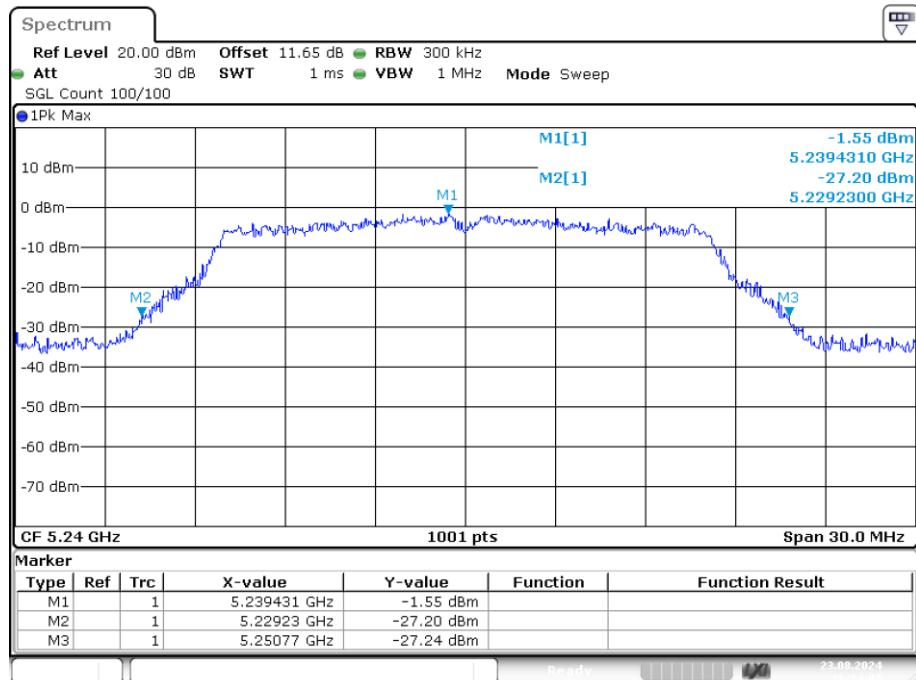
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-26dB Bandwidth NVNT a 5200MHz Ant1



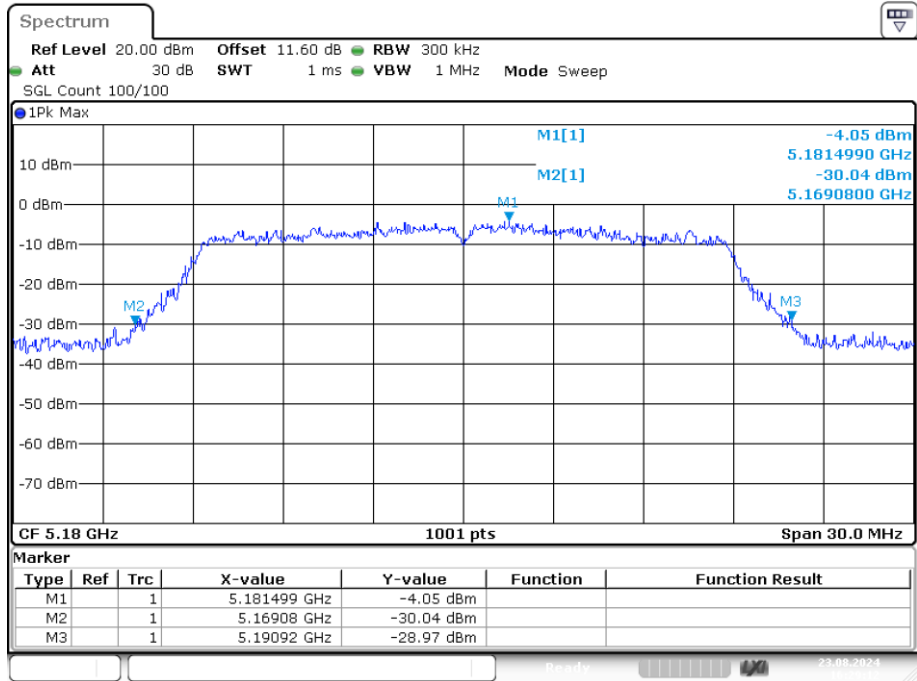
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-26dB Bandwidth NVNT a 5240MHz Ant1



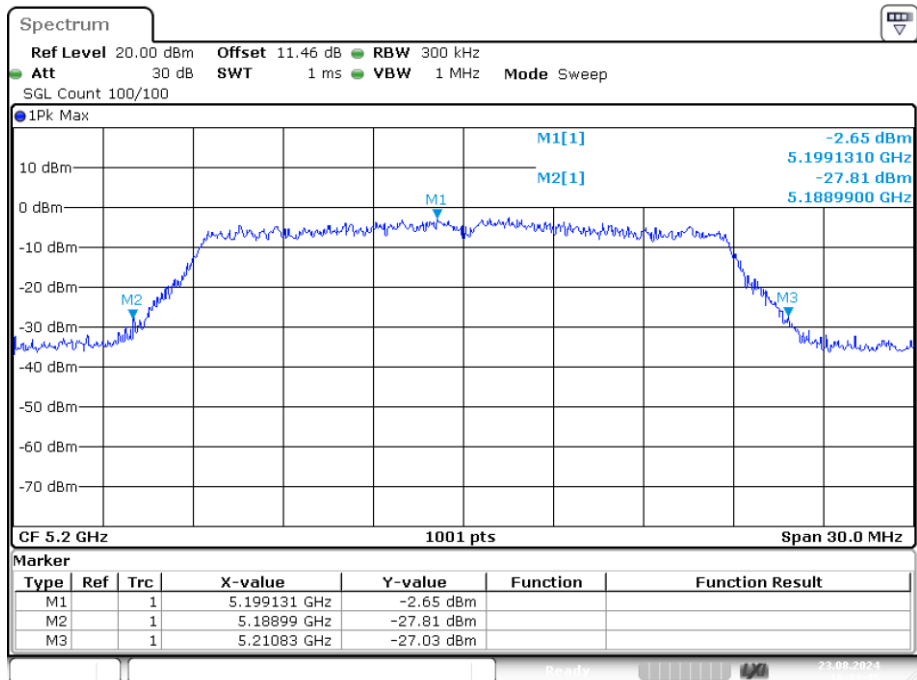
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-26dB Bandwidth NVNT ac20 5180MHz Ant1



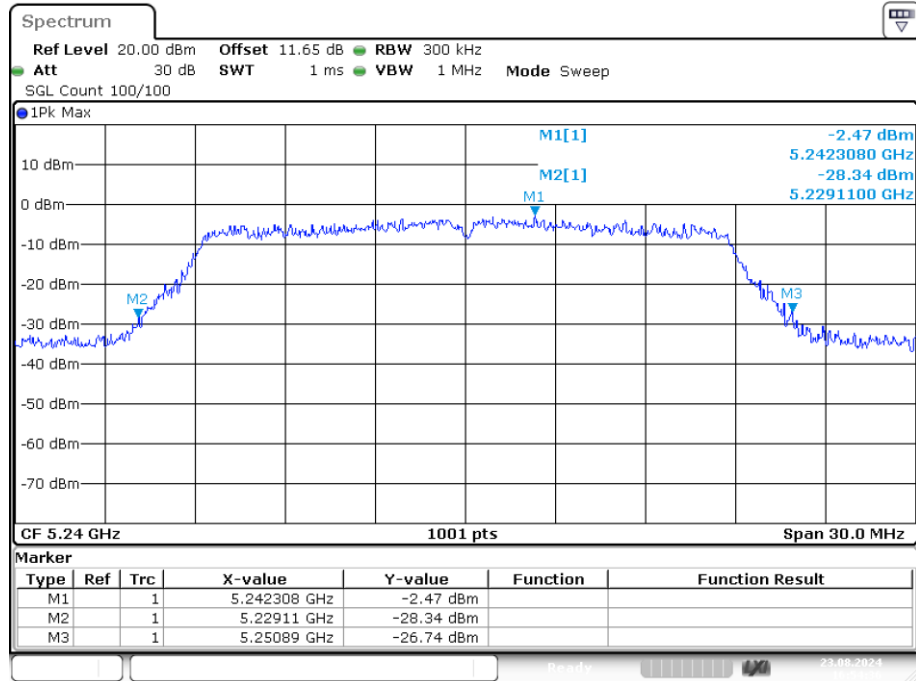
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-26dB Bandwidth NVNT ac20 5200MHz Ant1



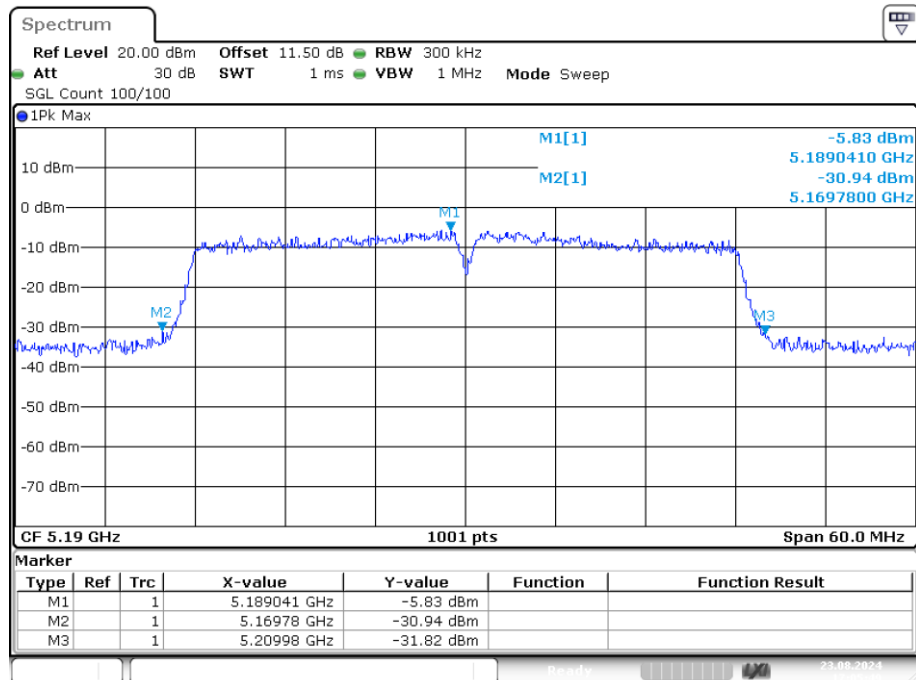
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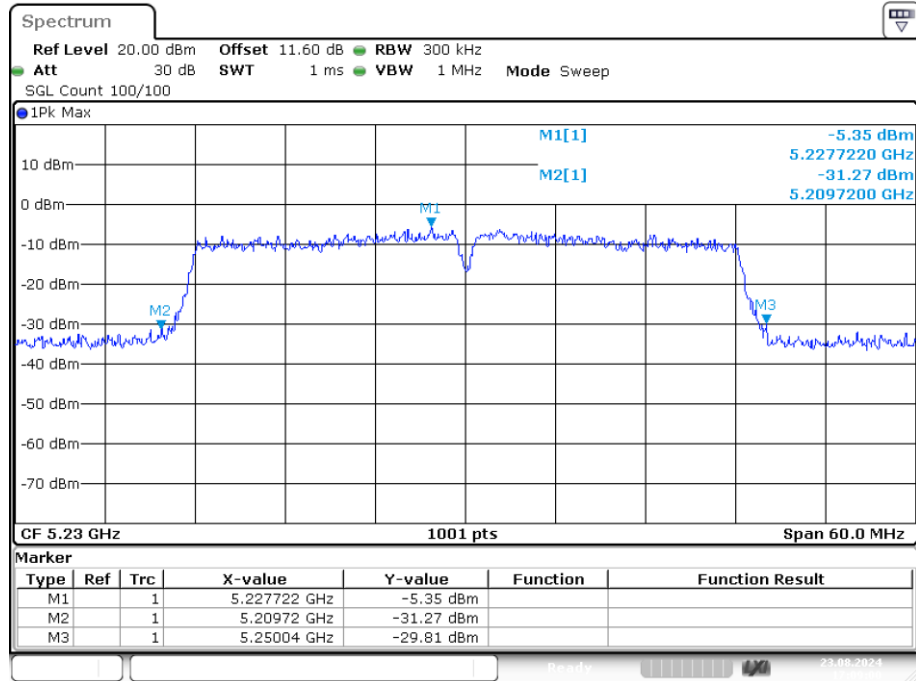
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-26dB Bandwidth NVNT ac40 5190MHz Ant1



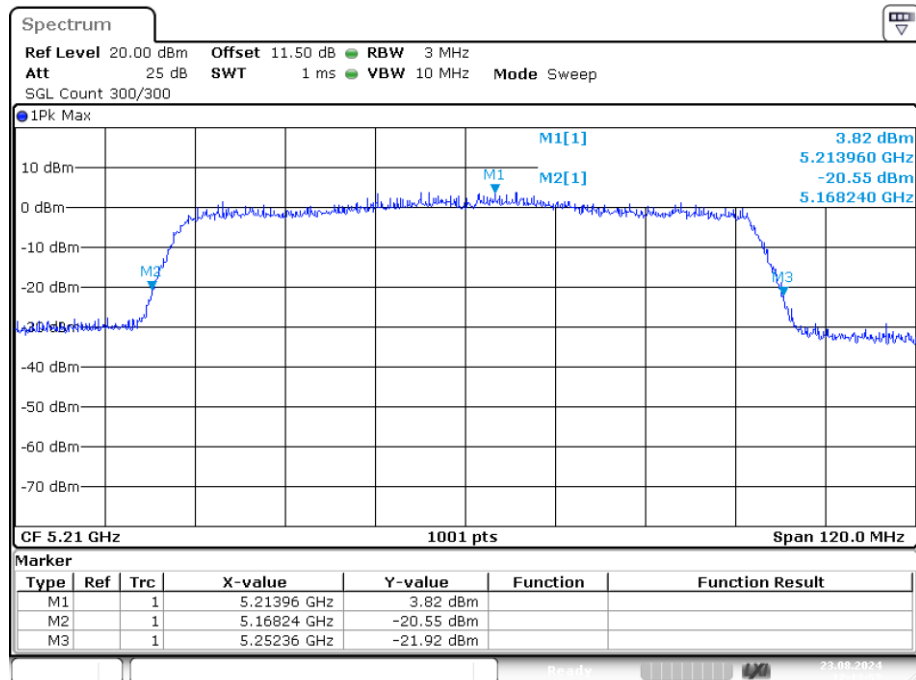
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-26dB Bandwidth NVNT ac40 5230MHz Ant1



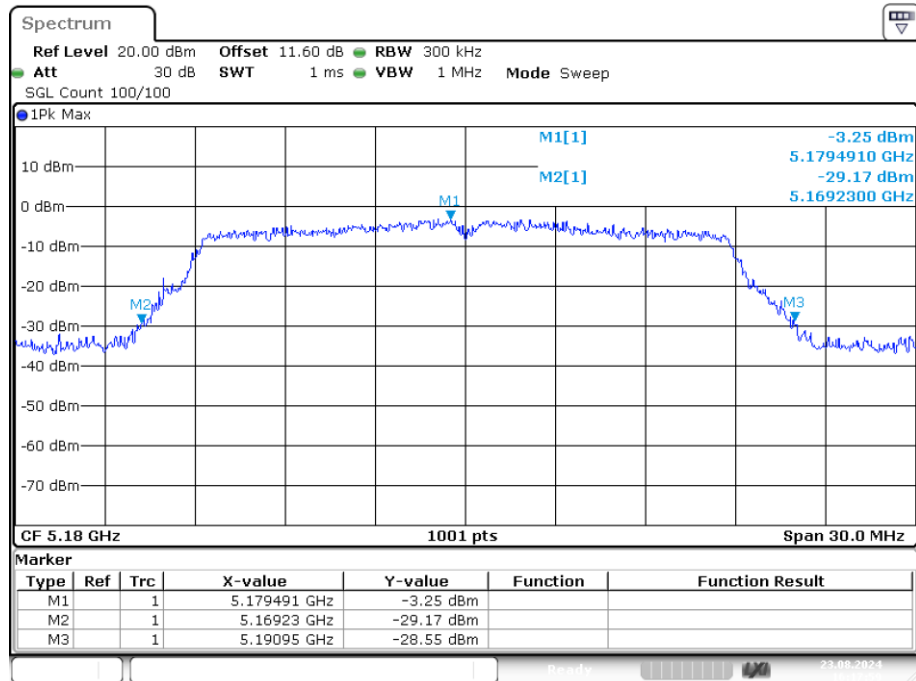
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-26dB Bandwidth NVNT ac80 5210MHz Ant1



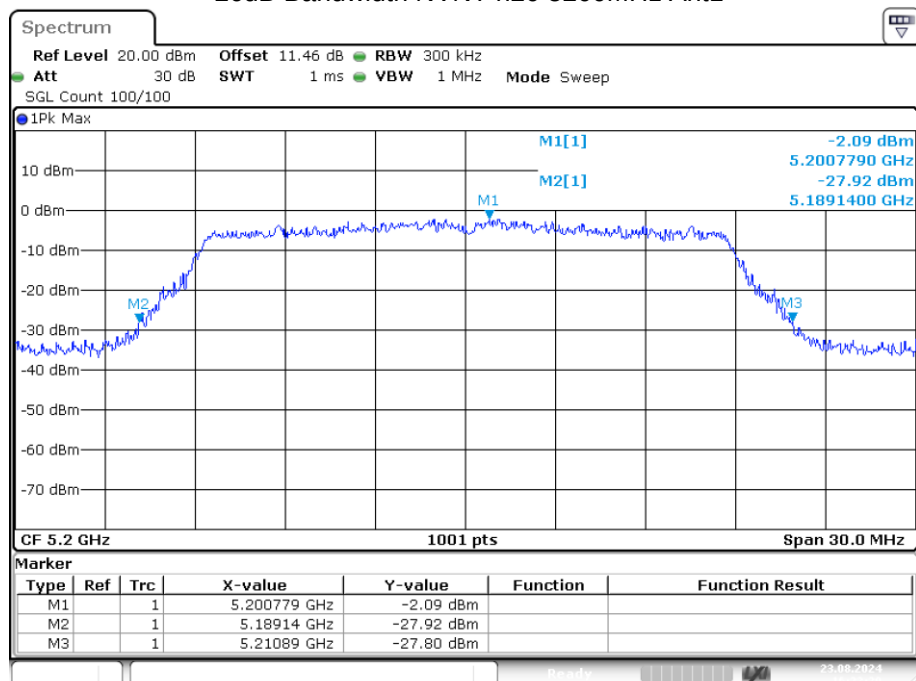
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-26dB Bandwidth NVNT n20 5180MHz Ant1



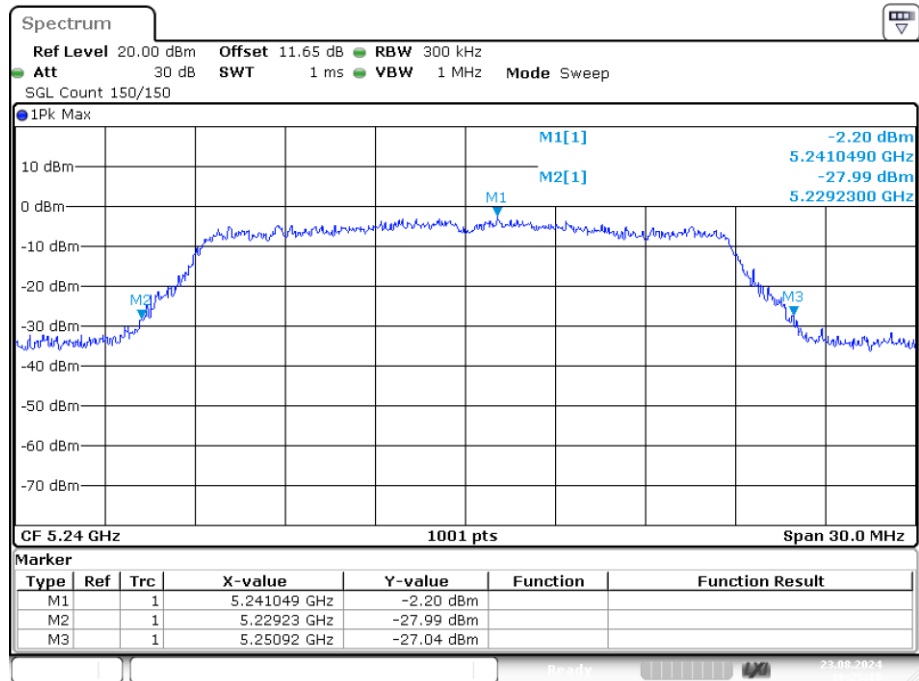
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-26dB Bandwidth NVNT n20 5200MHz Ant1



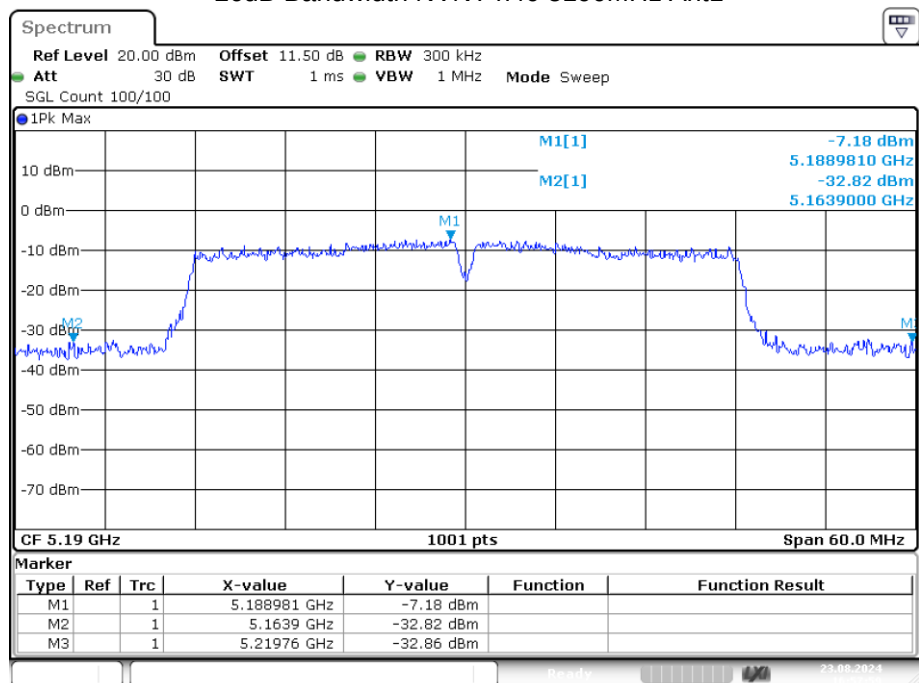
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-26dB Bandwidth NVNT n20 5240MHz Ant1



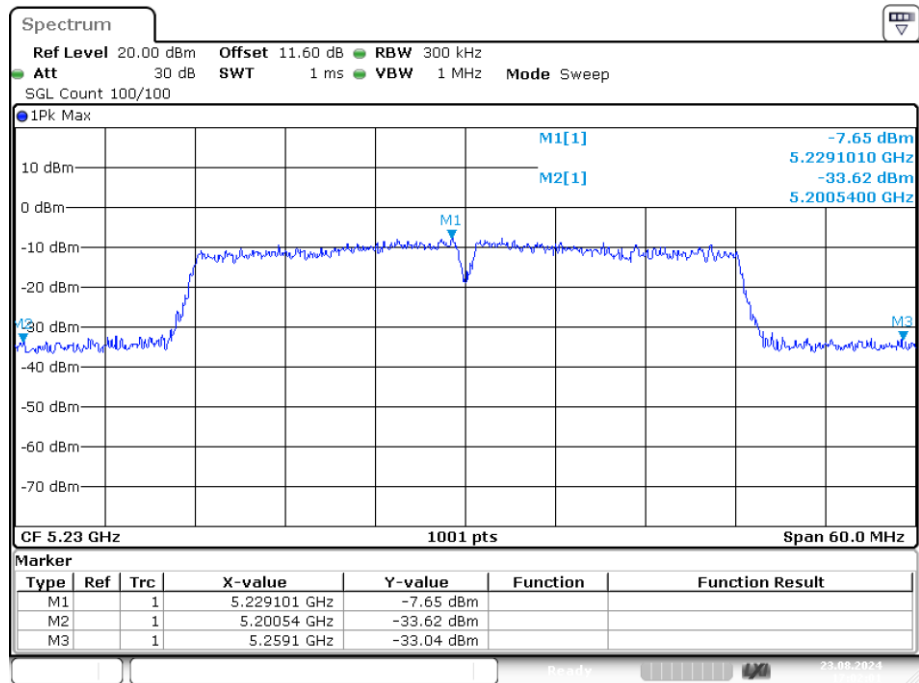
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-26dB Bandwidth NVNT n40 5190MHz Ant1



Date: 23.AUG.2024 16:57:59

-26dB Bandwidth NVNT n40 5230MHz Ant1

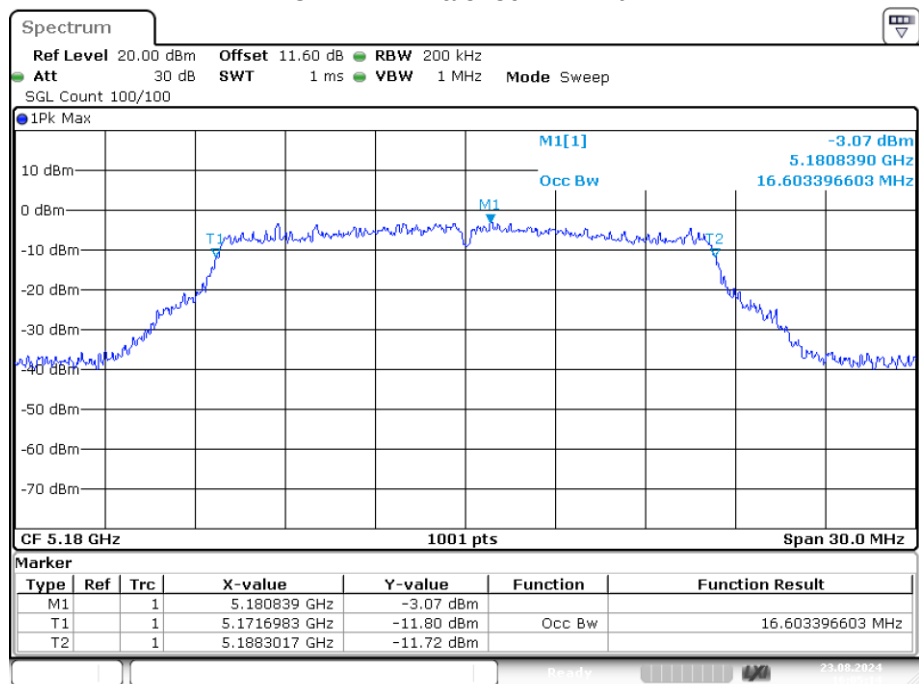


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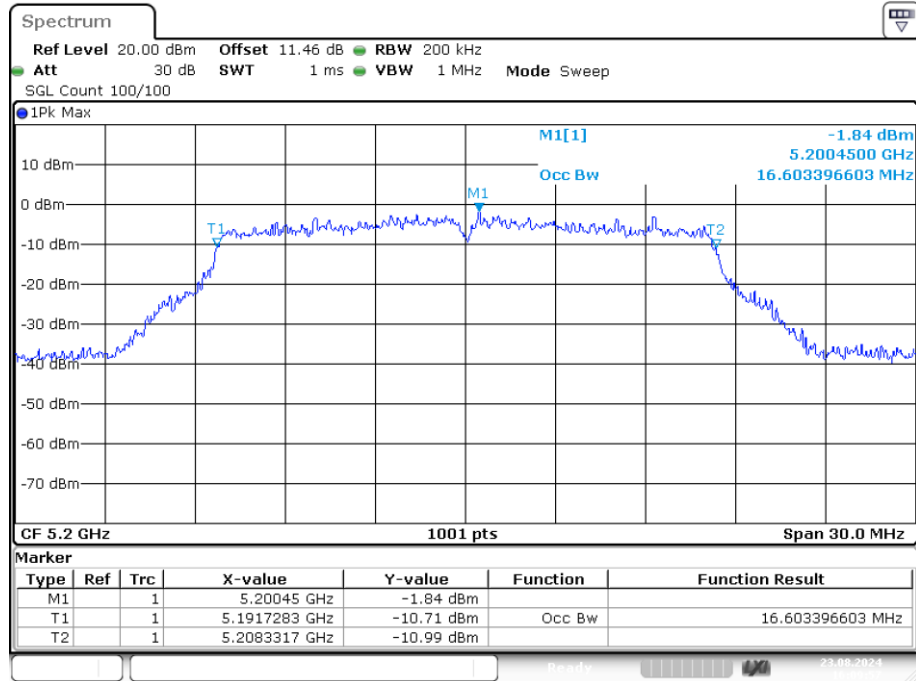
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.603
NVNT	a	5200	Ant1	16.603
NVNT	a	5240	Ant1	16.603
NVNT	ac20	5180	Ant1	17.742
NVNT	ac20	5200	Ant1	17.772
NVNT	ac20	5240	Ant1	17.742
NVNT	ac40	5190	Ant1	36.444
NVNT	ac40	5230	Ant1	36.324
NVNT	ac80	5210	Ant1	78.282
NVNT	n20	5180	Ant1	17.712
NVNT	n20	5200	Ant1	17.742
NVNT	n20	5240	Ant1	17.802
NVNT	n40	5190	Ant1	36.324
NVNT	n40	5230	Ant1	36.384

OBW NVNT a 5180MHz Ant1

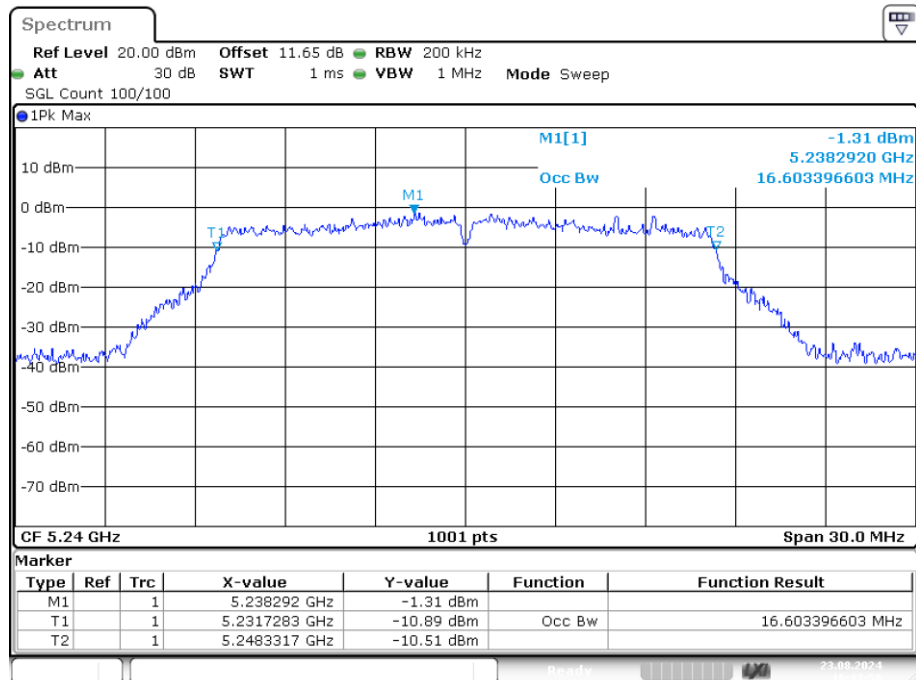


OBW NVNT a 5200MHz Ant1



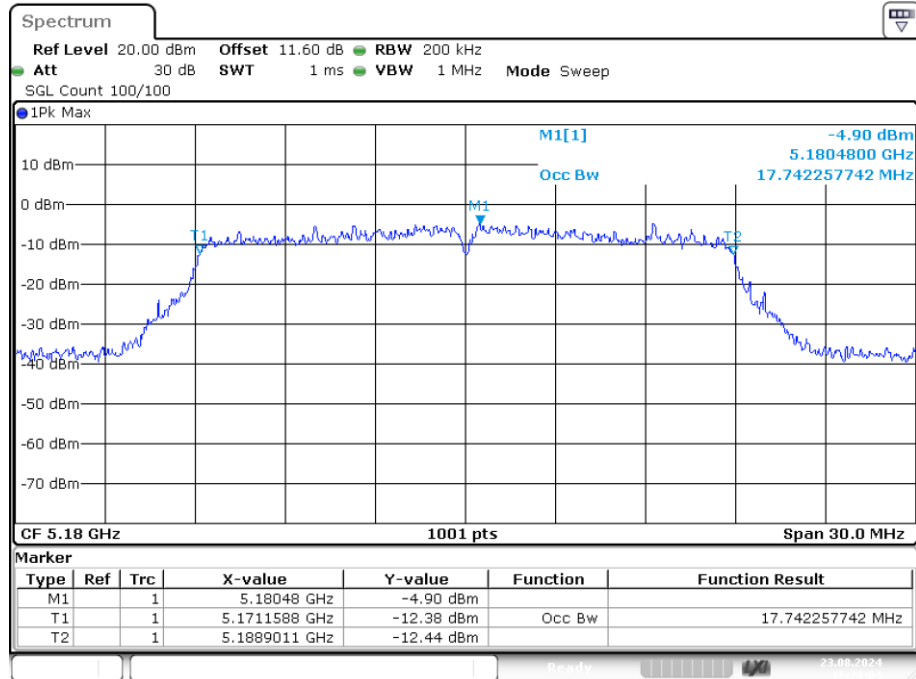
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OBW NVNT a 5240MHz Ant1



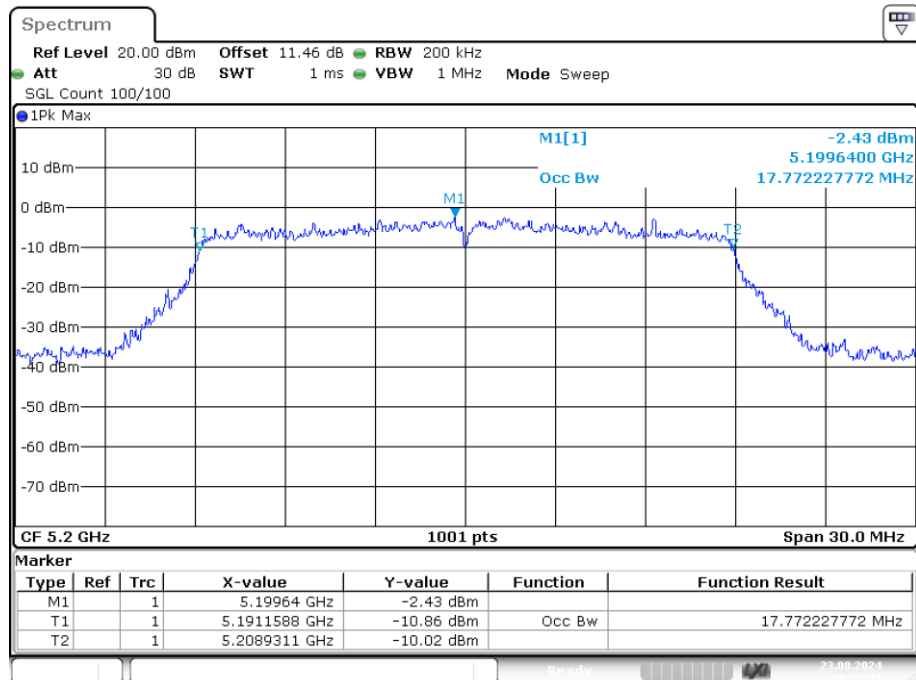
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OBW NVNT ac20 5180MHz Ant1



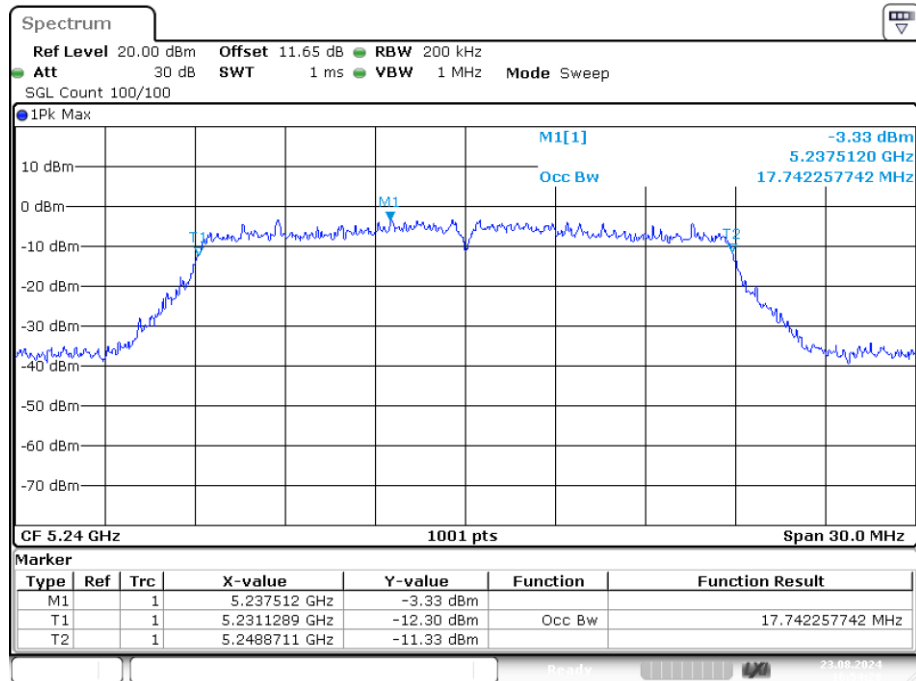
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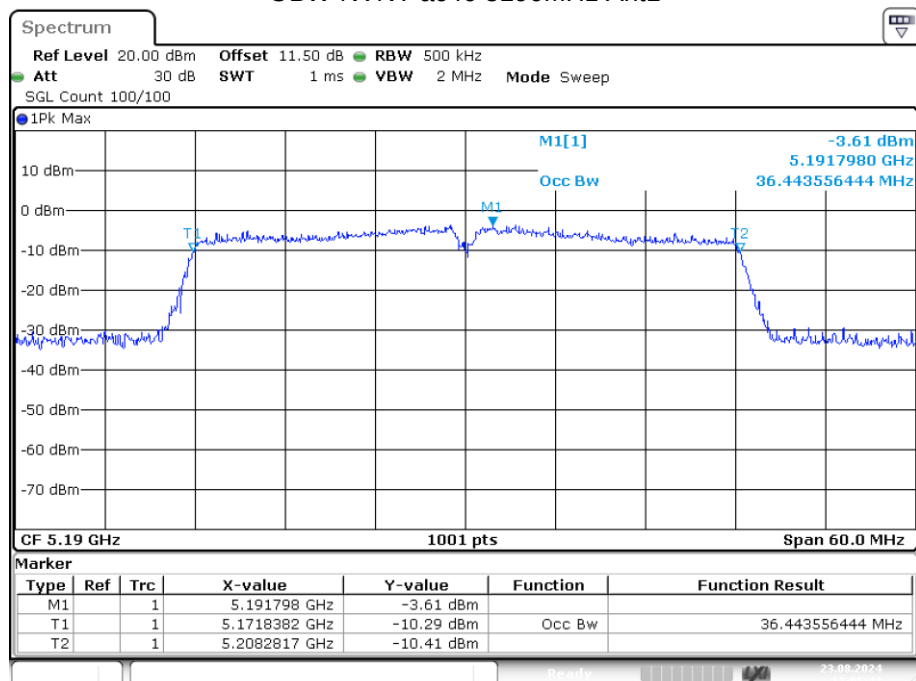
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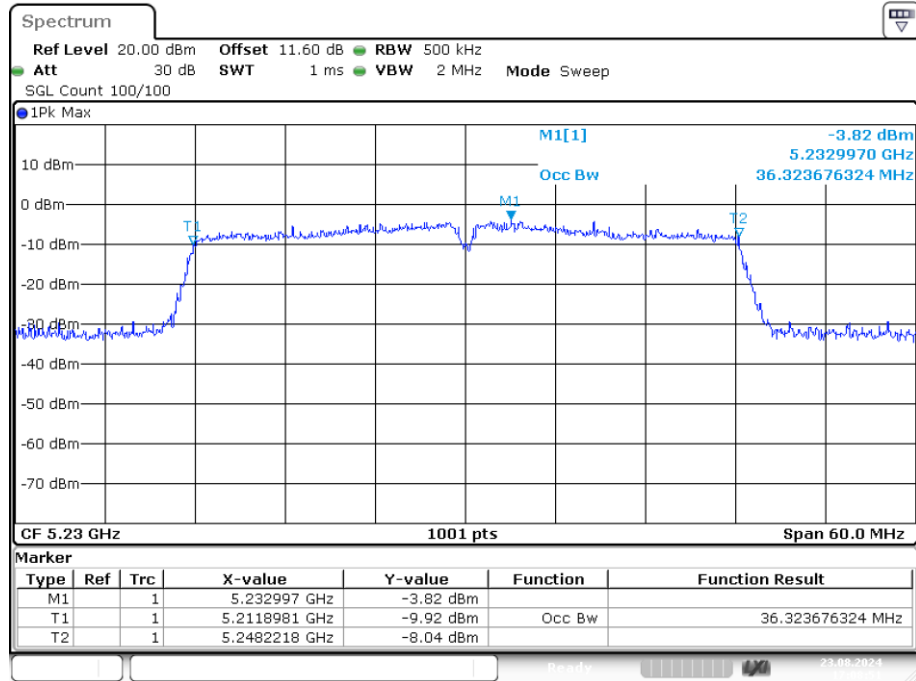
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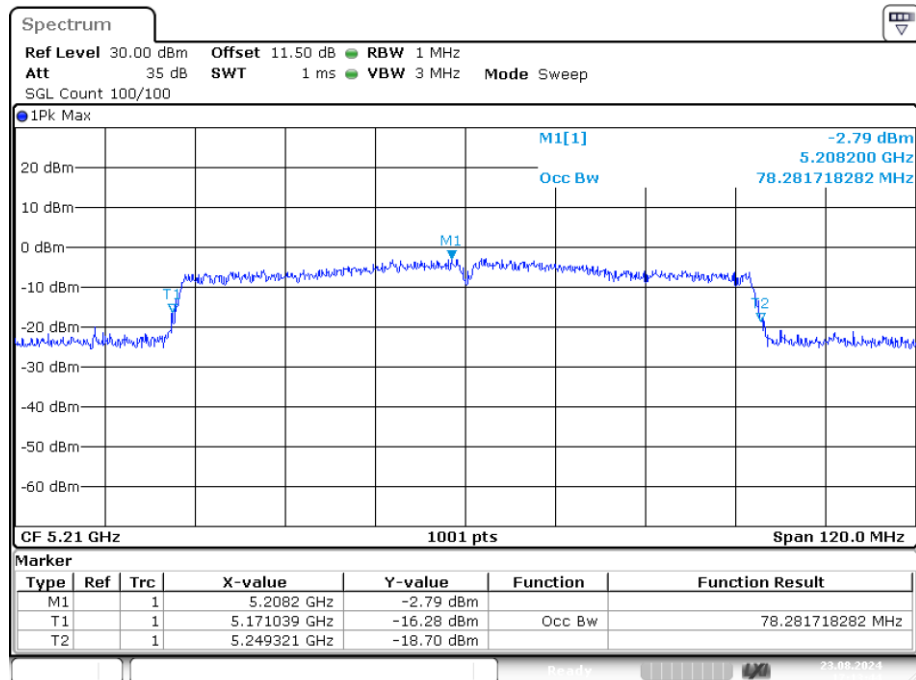
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OBW NVNT ac40 5230MHz Ant1



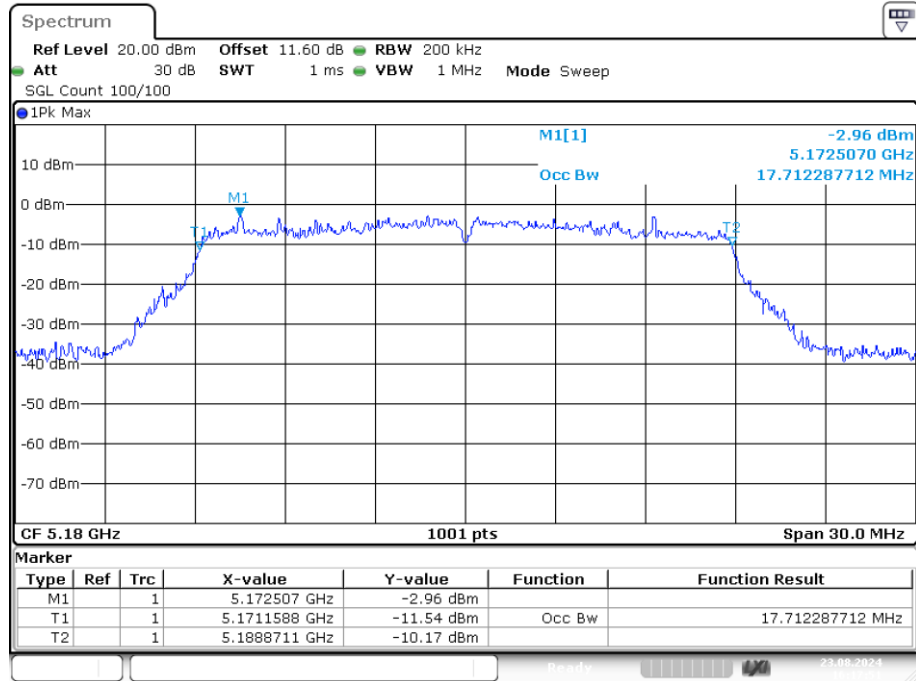
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OBW NVNT ac80 5210MHz Ant1



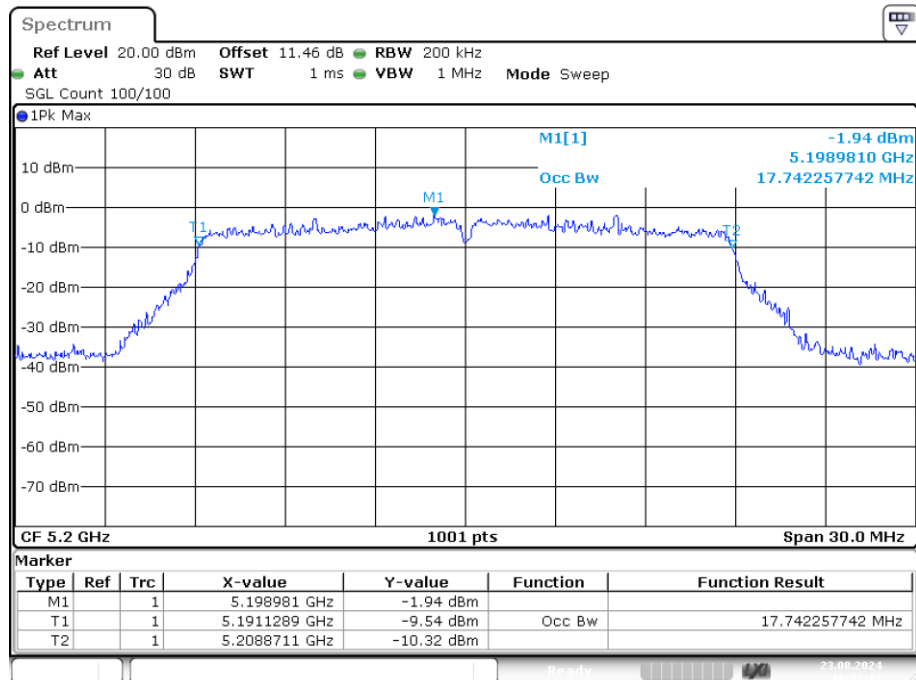
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OBW NVNT n20 5180MHz Ant1



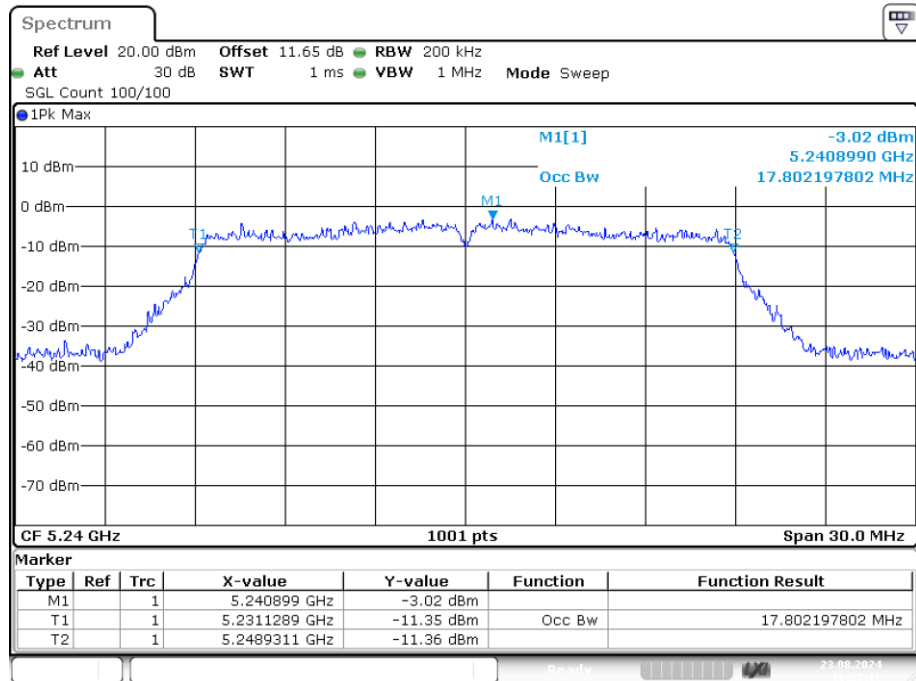
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OBW NVNT n20 5200MHz Ant1



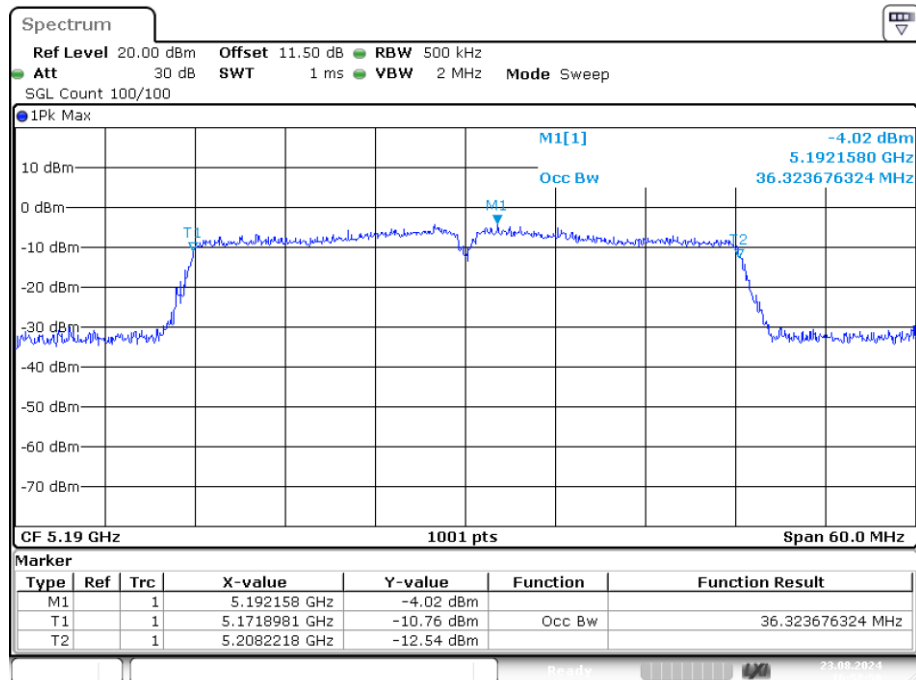
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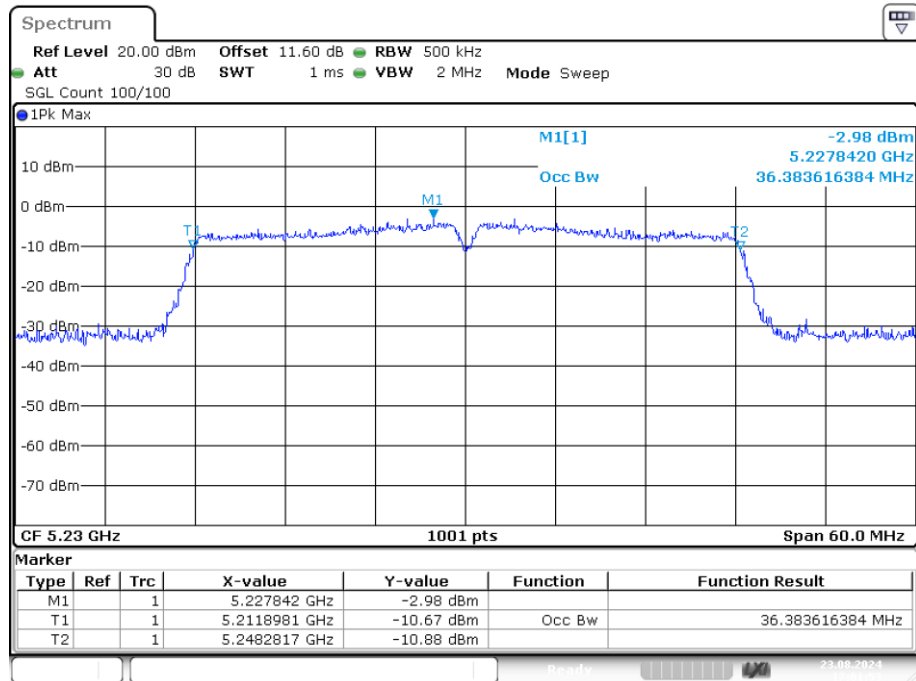
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OBW NVNT n40 5190MHz Ant1



Date: 23.AUG.2024 16:57:50

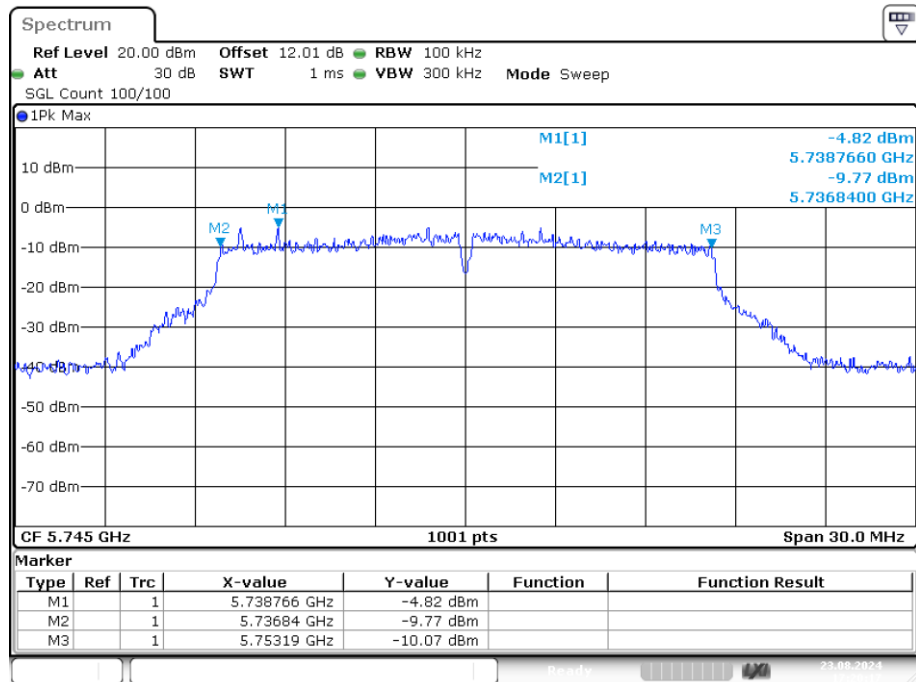
OBW NVNT n40 5230MHz Ant1



Date: 23.AUG.2024 17:01:53

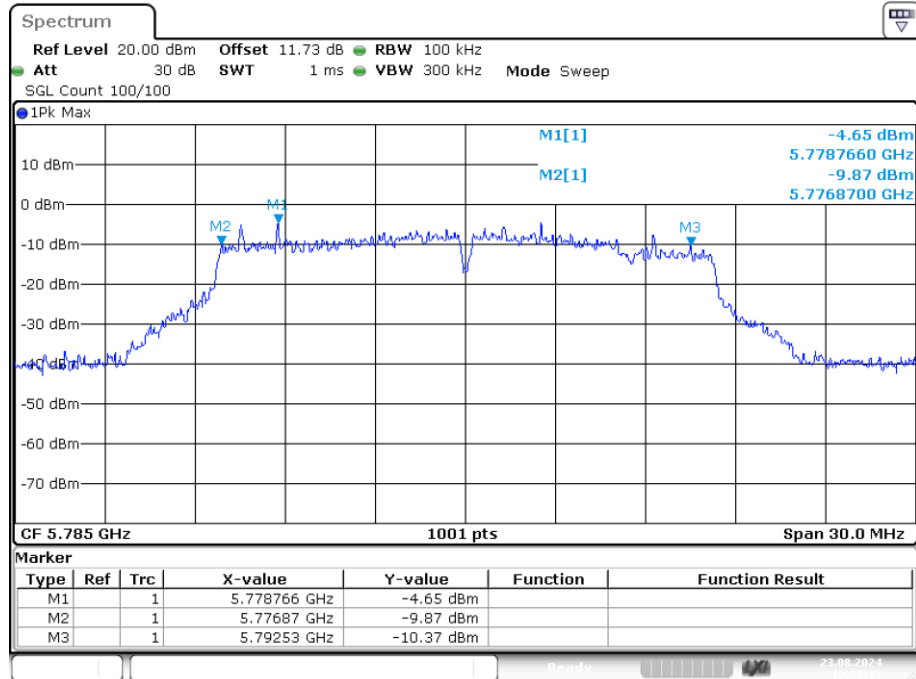
Band 4 (5725-5850 MHz):**-6dB Bandwidth**

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	Ant1	16.35	0.5	Pass
NVNT	a	5785	Ant1	15.66	0.5	Pass
NVNT	a	5825	Ant1	16.05	0.5	Pass
NVNT	ac20	5745	Ant1	17.55	0.5	Pass
NVNT	ac20	5785	Ant1	16.74	0.5	Pass
NVNT	ac20	5825	Ant1	17.55	0.5	Pass
NVNT	ac40	5755	Ant1	35.94	0.5	Pass
NVNT	ac40	5795	Ant1	35.82	0.5	Pass
NVNT	ac80	5775	Ant1	75.12	0.5	Pass
NVNT	n20	5745	Ant1	17.58	0.5	Pass
NVNT	n20	5785	Ant1	15.12	0.5	Pass
NVNT	n20	5825	Ant1	17.52	0.5	Pass
NVNT	n40	5755	Ant1	35.22	0.5	Pass
NVNT	n40	5795	Ant1	35.7	0.5	Pass

-6dB Bandwidth NVNT a 5745MHz Ant1

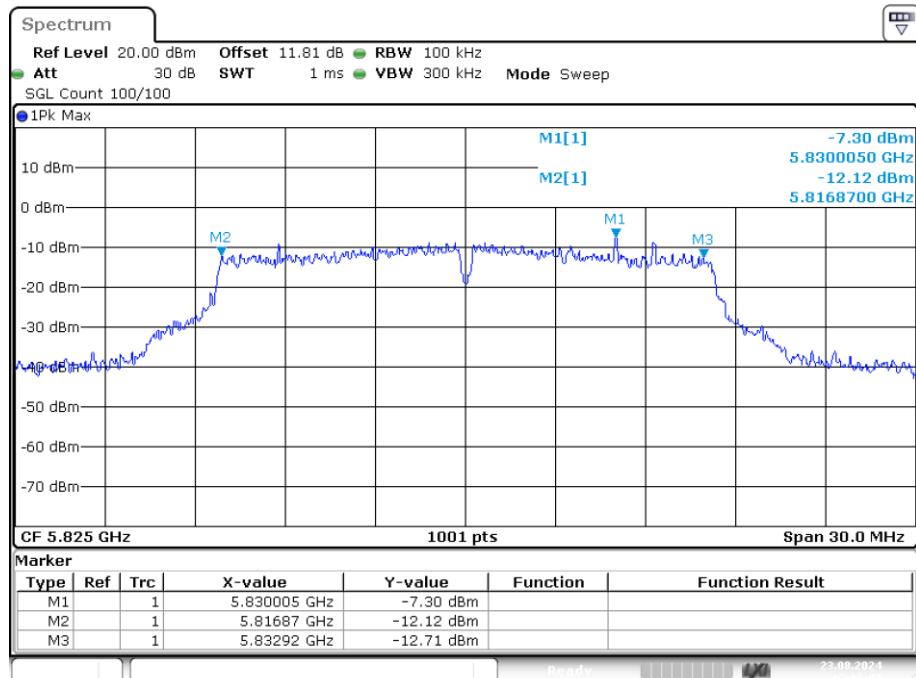
Date: 23.AUG.2024 17:20:17

-6dB Bandwidth NVNT a 5785MHz Ant1



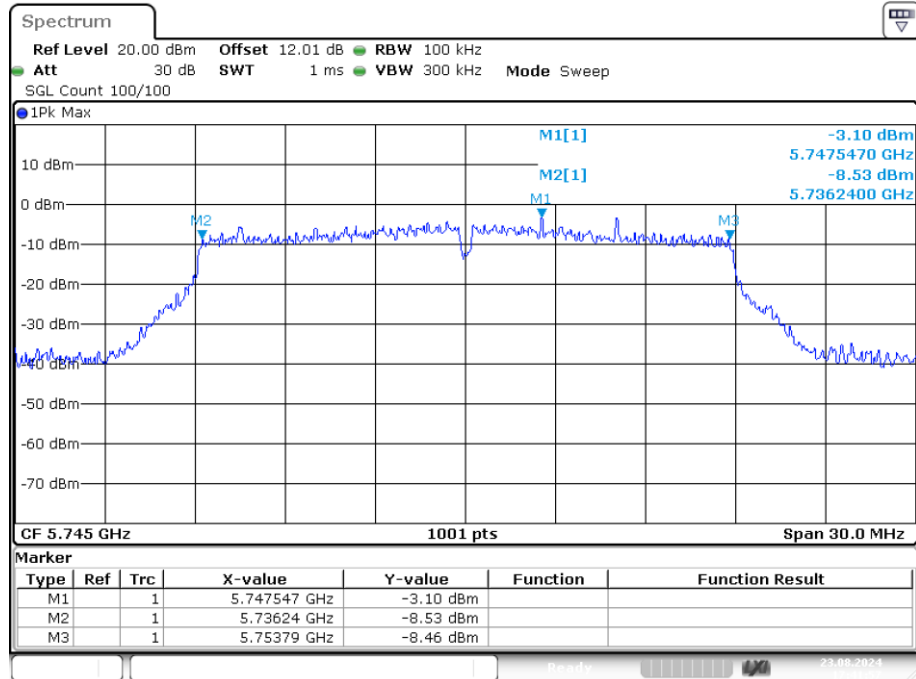
Date: 23.AUG.2024 17:23:19

-6dB Bandwidth NVNT a 5825MHz Ant1



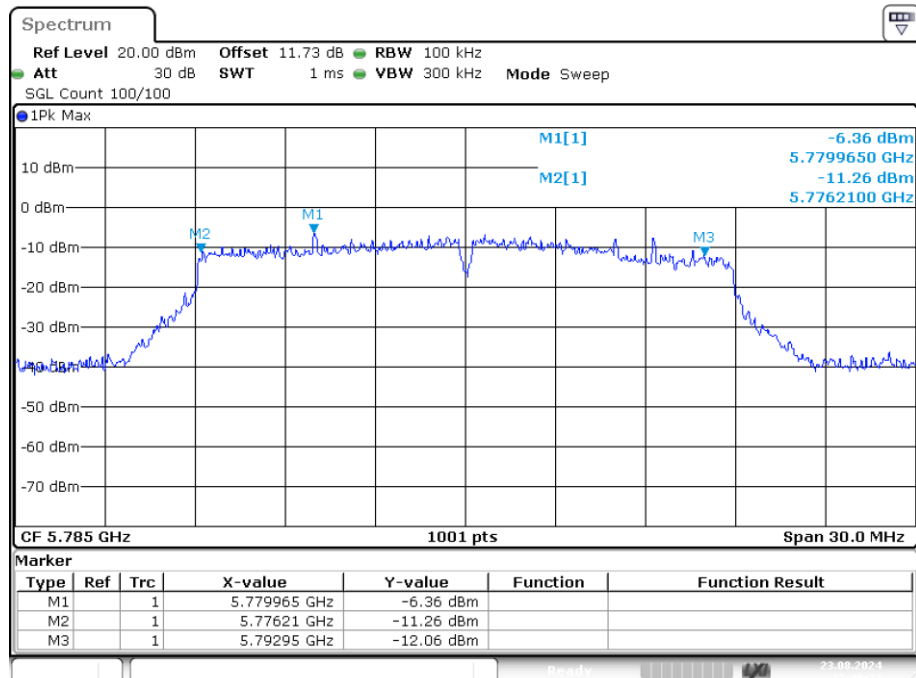
Date: 23.AUG.2024 17:26:06

-6dB Bandwidth NVNT ac20 5745MHz Ant1



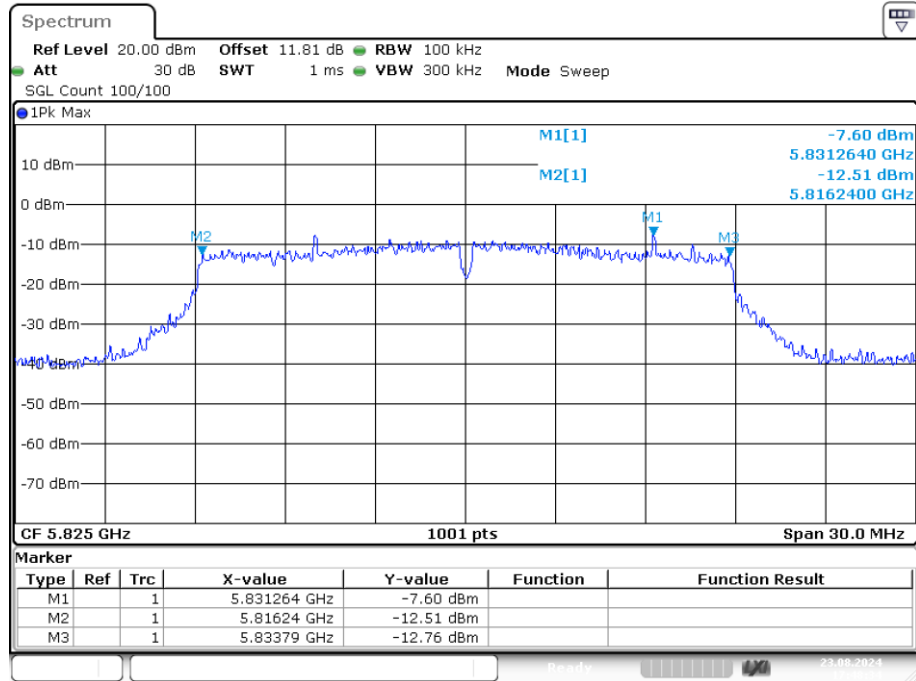
Date: 23.AUG.2024 17:41:57

-6dB Bandwidth NVNT ac20 5785MHz Ant1



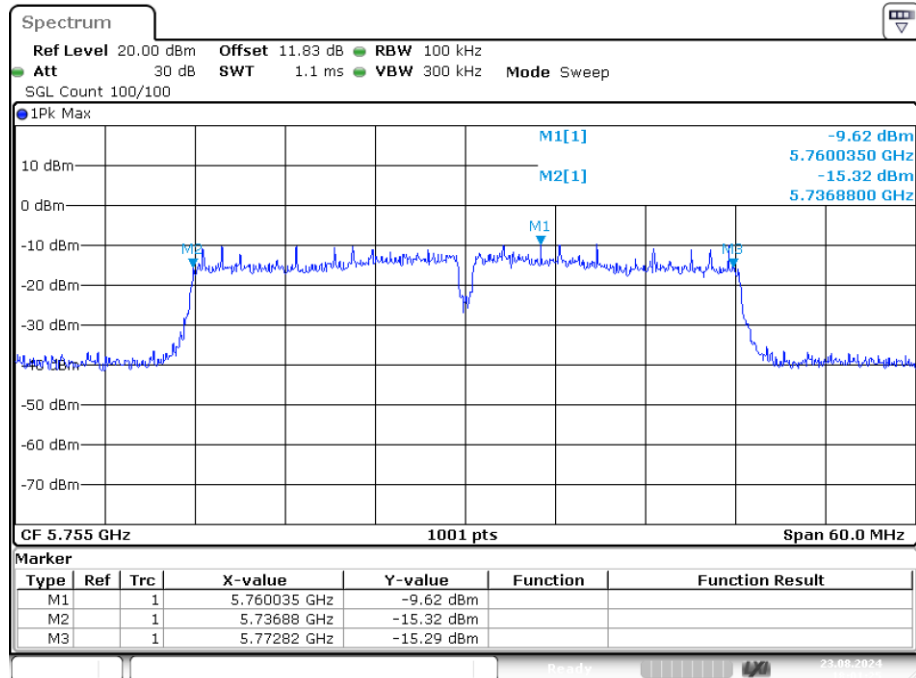
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-6dB Bandwidth NVNT ac20 5825MHz Ant1



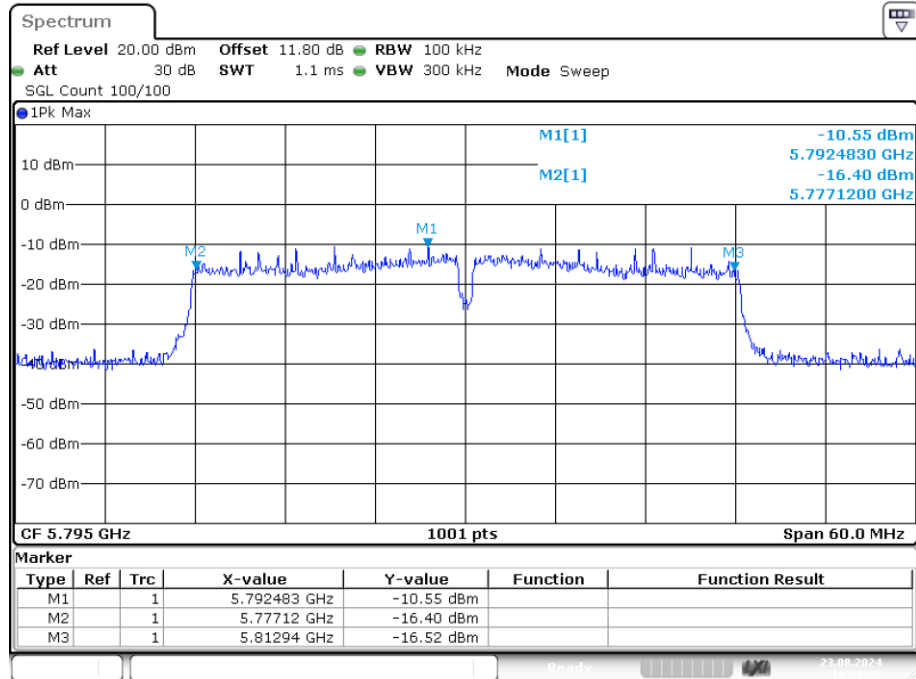
Date: 23.AUG.2024 17:48:34

-6dB Bandwidth NVNT ac40 5755MHz Ant1



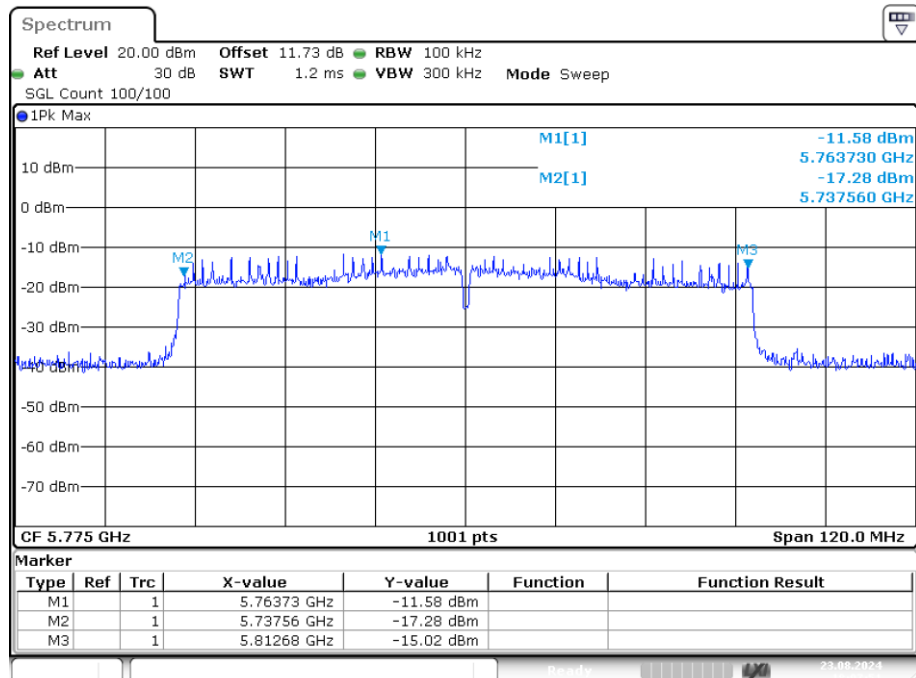
Date: 23.AUG.2024 18:01:25

-6dB Bandwidth NVNT ac40 5795MHz Ant1



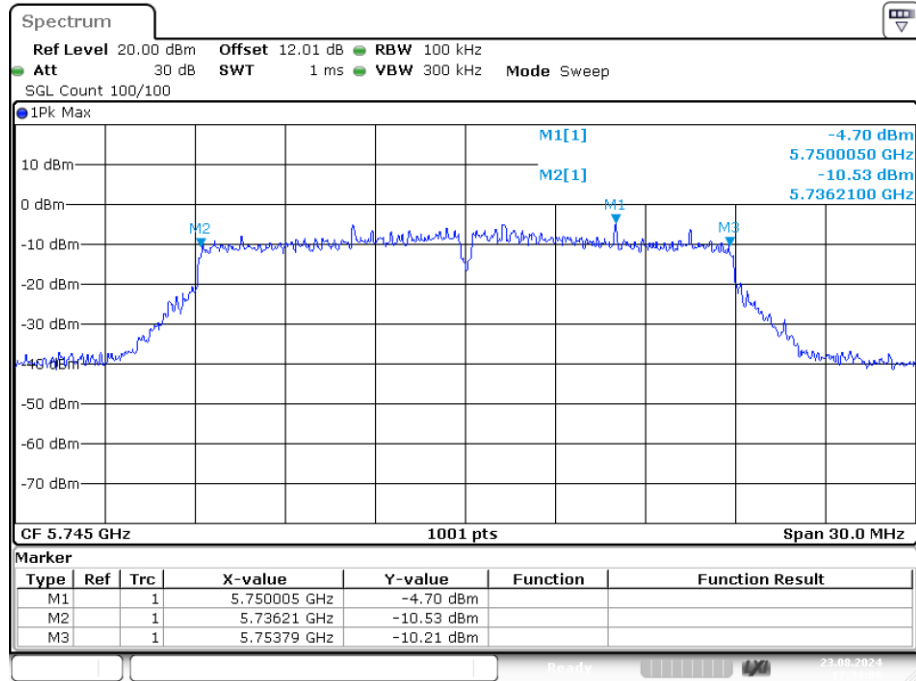
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-6dB Bandwidth NVNT ac80 5775MHz Ant1



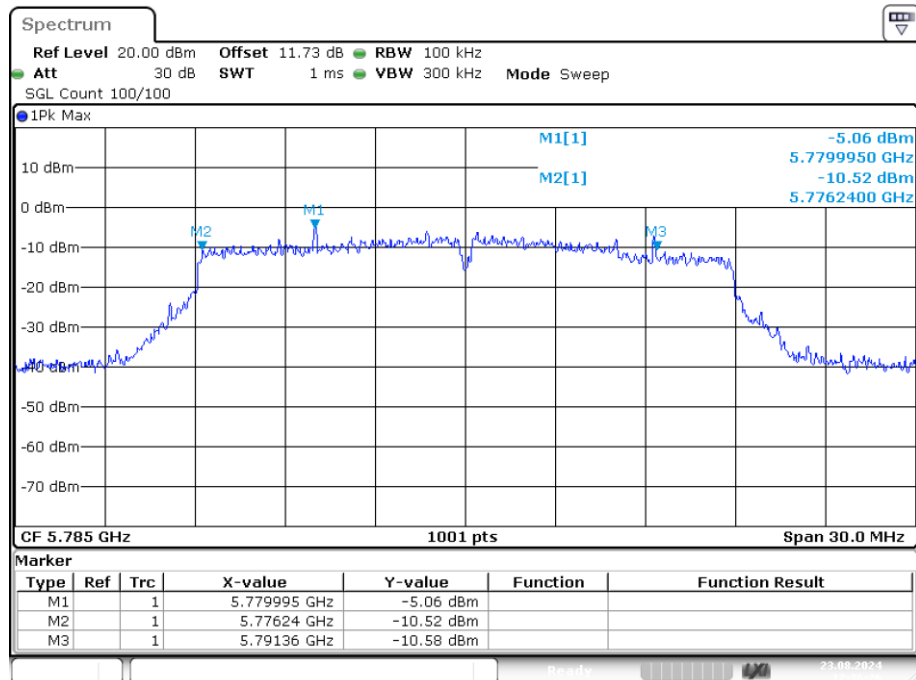
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-6dB Bandwidth NVNT n20 5745MHz Ant1



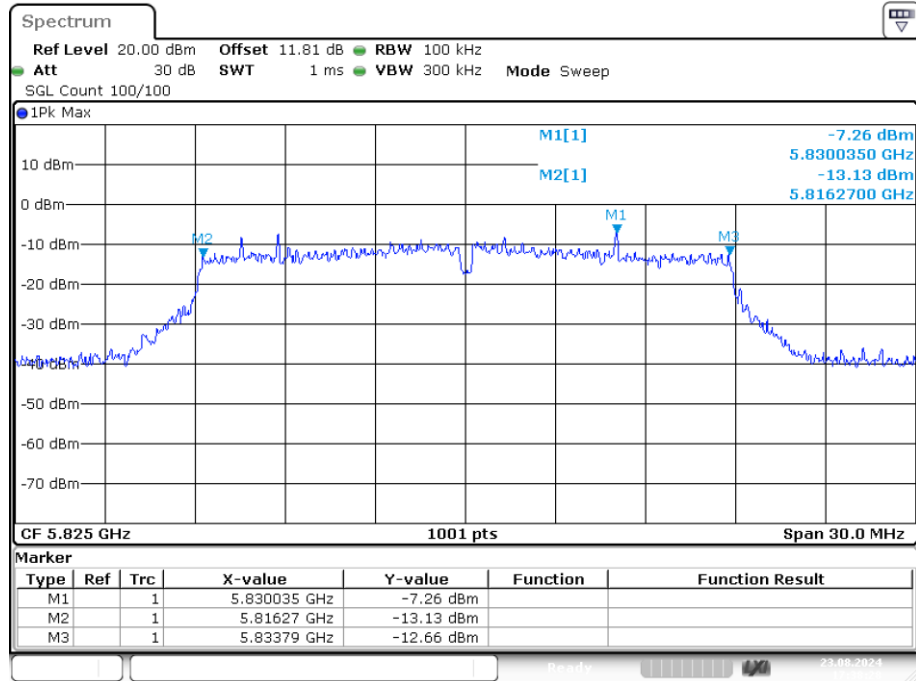
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-6dB Bandwidth NVNT n20 5785MHz Ant1



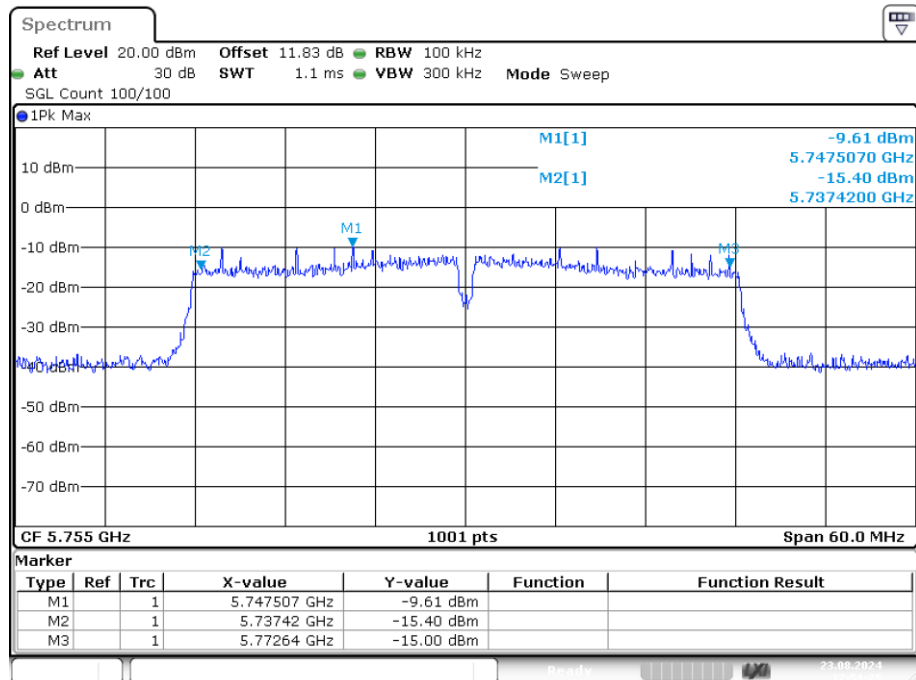
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-6dB Bandwidth NVNT n20 5825MHz Ant1



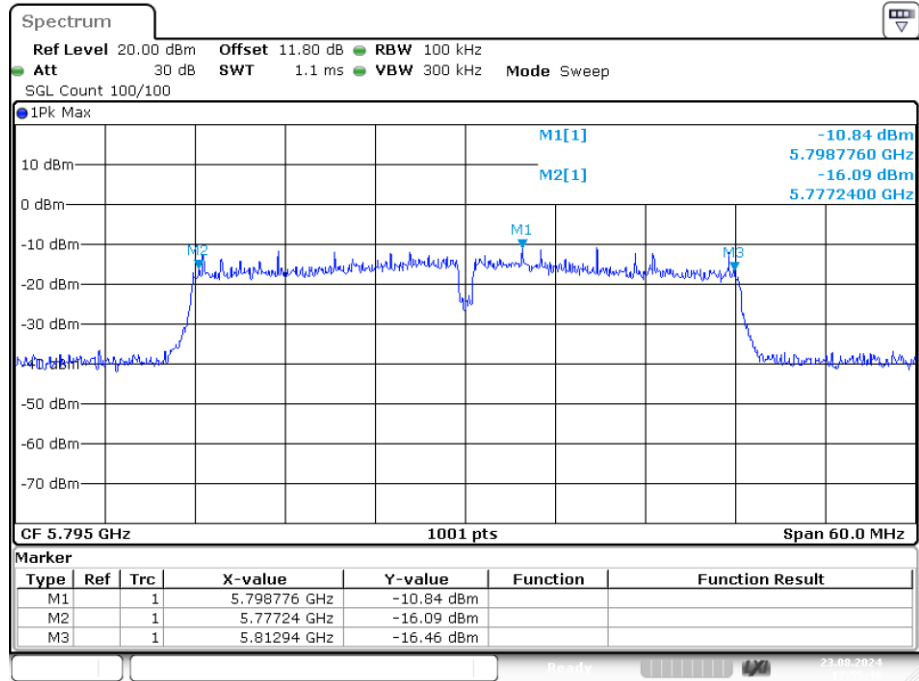
Date: 23.AUG.2024 17:38:28

-6dB Bandwidth NVNT n40 5755MHz Ant1



Date: 23.AUG.2024 17:51:25

-6dB Bandwidth NVNT n40 5795MHz Ant1

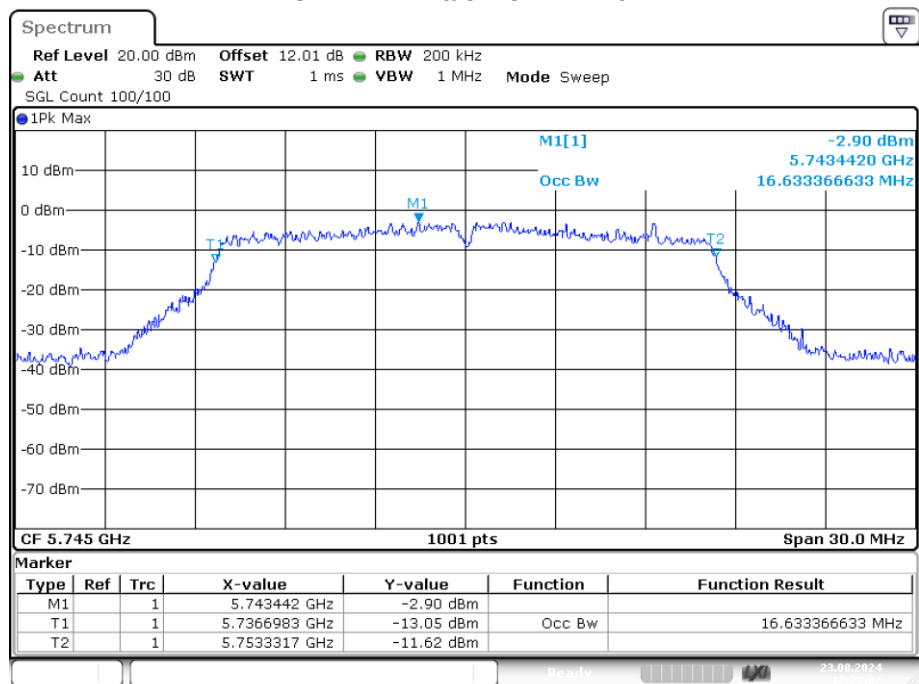


Date: 23.AUG.2024 17:55:48

Occupied Channel Bandwidth

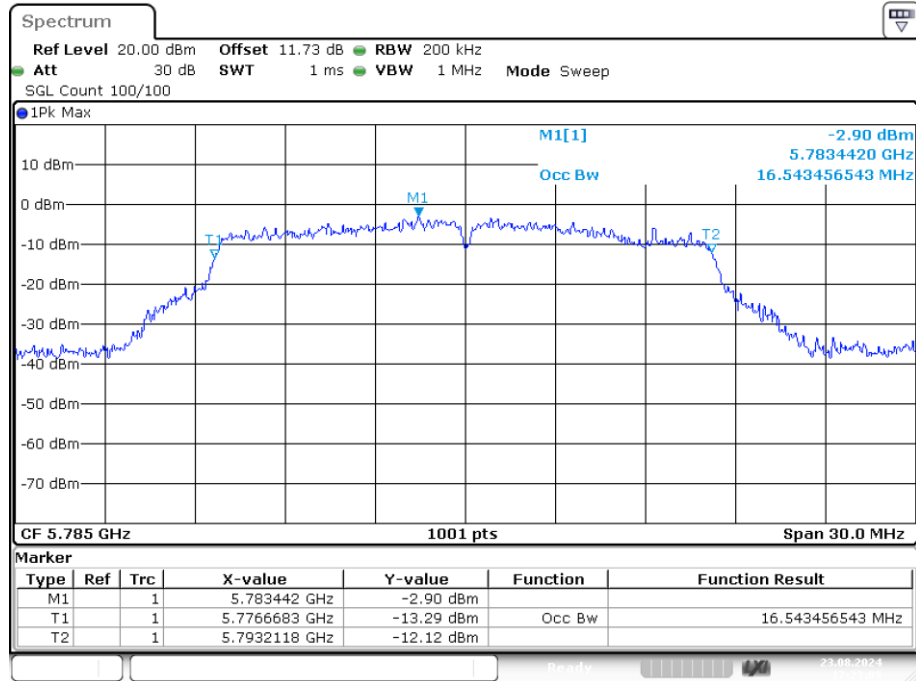
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5745	Ant1	16.543
NVNT	a	5785	Ant1	16.693
NVNT	a	5825	Ant1	17.772
NVNT	ac20	5745	Ant1	17.712
NVNT	ac20	5785	Ant1	17.802
NVNT	ac20	5825	Ant1	36.444
NVNT	ac40	5755	Ant1	36.563
NVNT	ac40	5795	Ant1	75.884
NVNT	ac80	5775	Ant1	17.772
NVNT	n20	5745	Ant1	17.742
NVNT	n20	5785	Ant1	17.892
NVNT	n20	5825	Ant1	36.623
NVNT	n40	5755	Ant1	36.503
NVNT	n40	5795	Ant1	16.633

OBW NVNT a 5745MHz Ant1



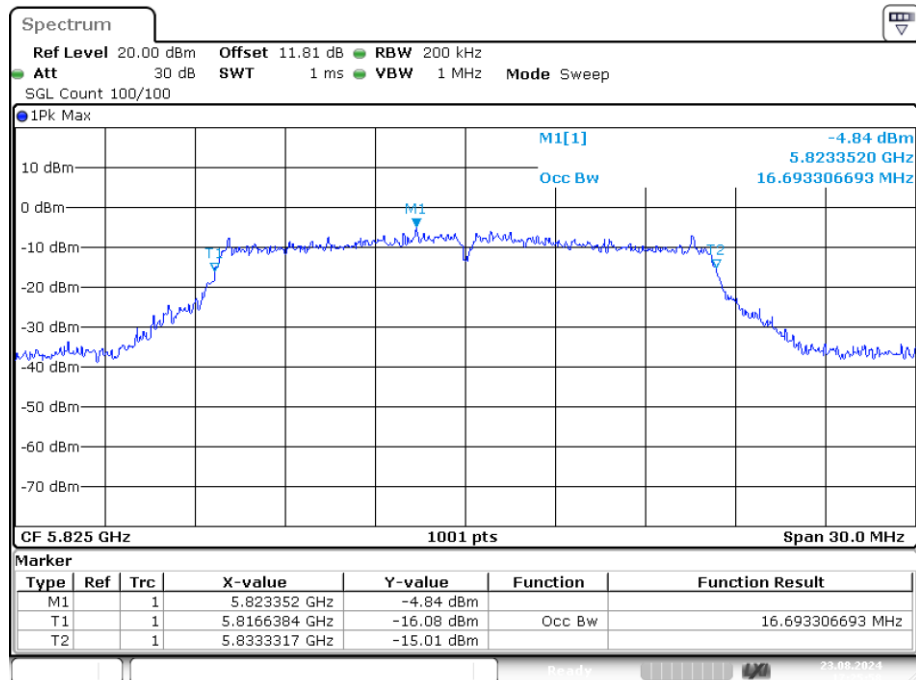
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OBW NVNT a 5785MHz Ant1



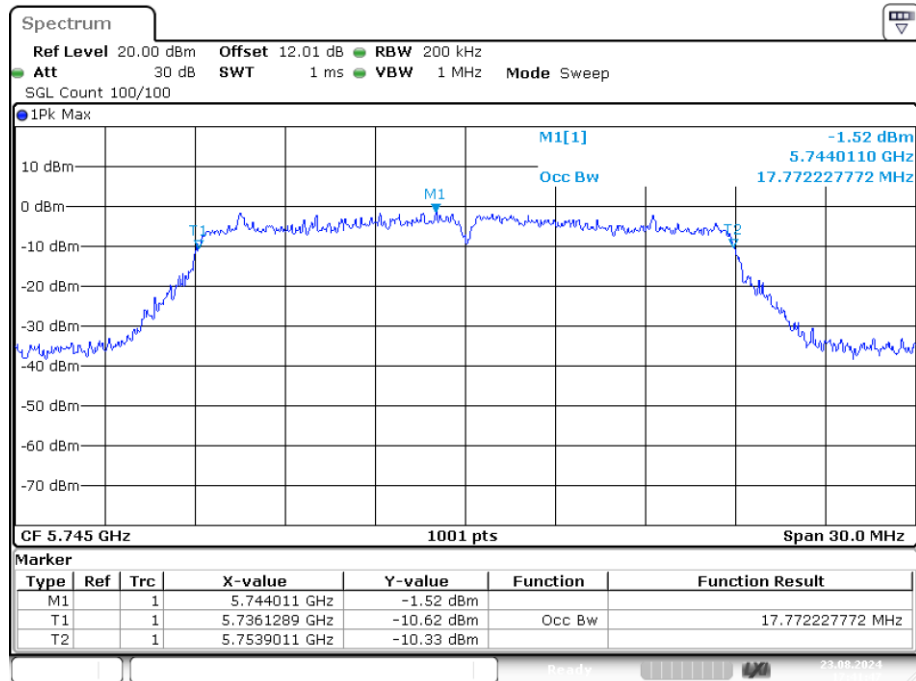
Date: 23.AUG.2024 17:23:08

OBW NVNT a 5825MHz Ant1



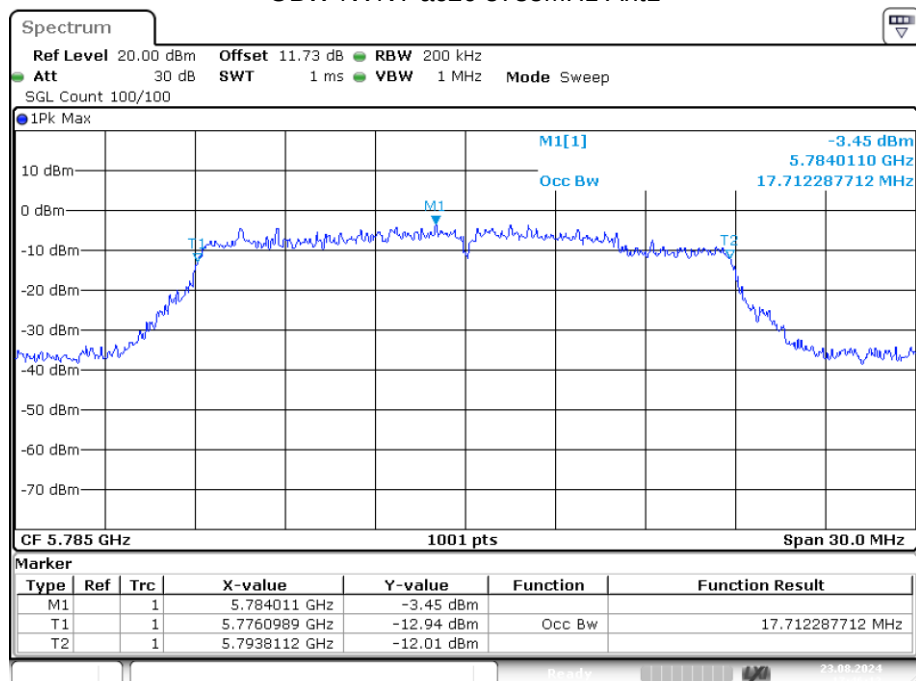
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OBW NVNT ac20 5745MHz Ant1



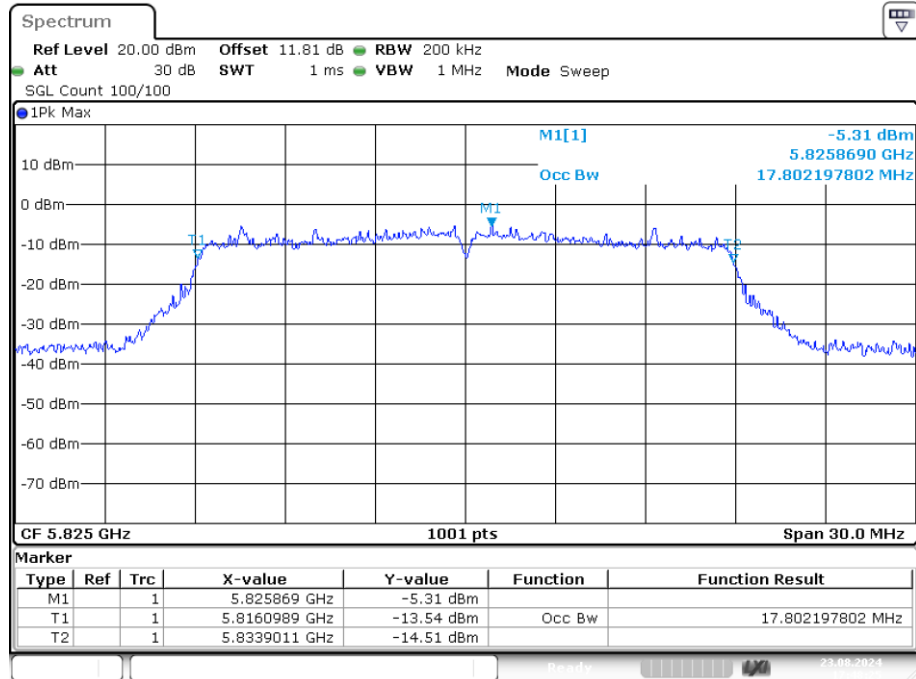
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OBW NVNT ac20 5785MHz Ant1



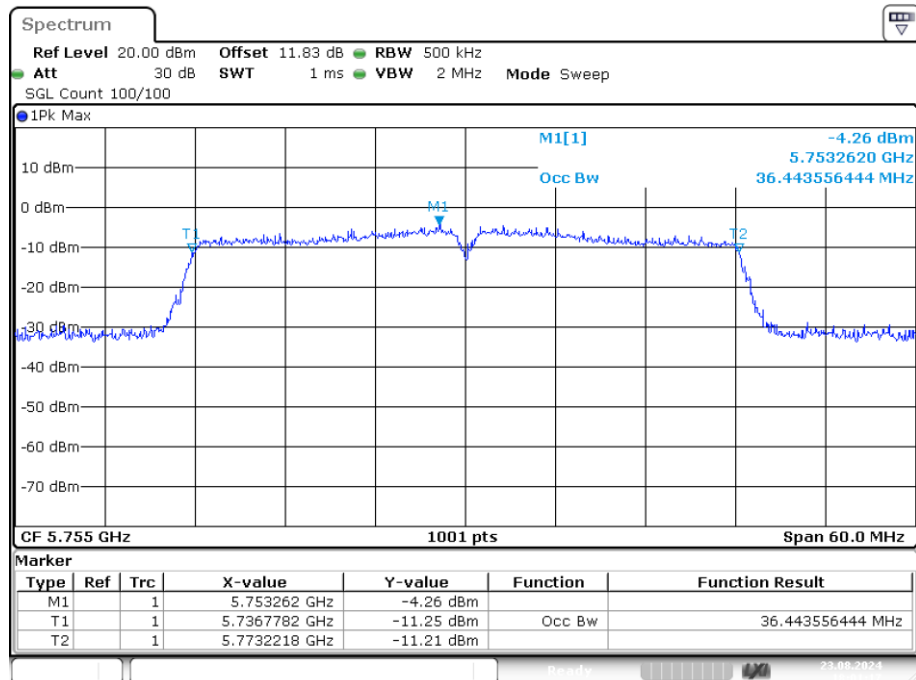
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OBW NVNT ac20 5825MHz Ant1



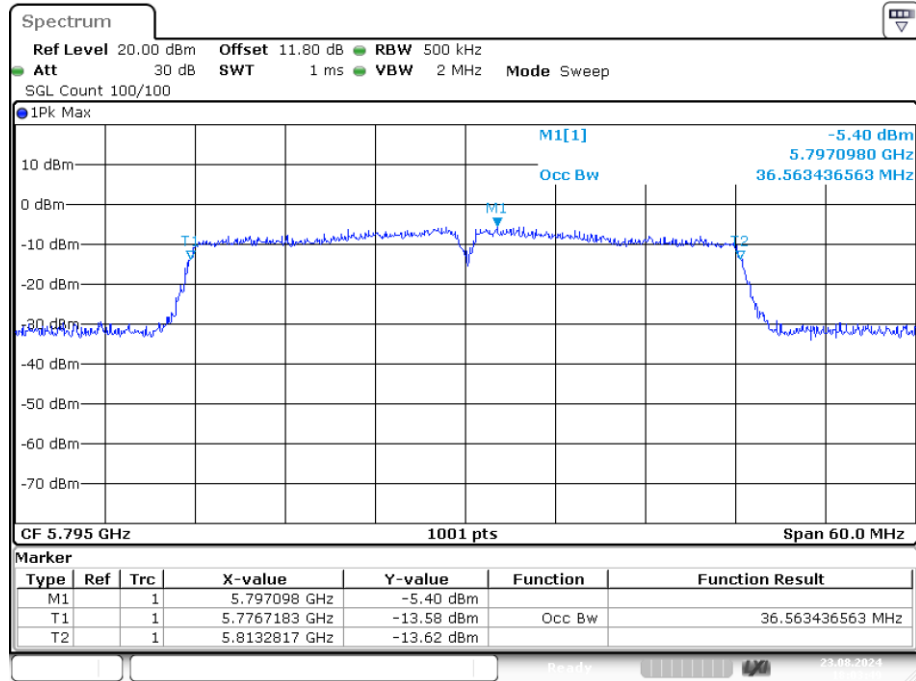
Date: 23.AUG.2024 17:48:25

OBW NVNT ac40 5755MHz Ant1



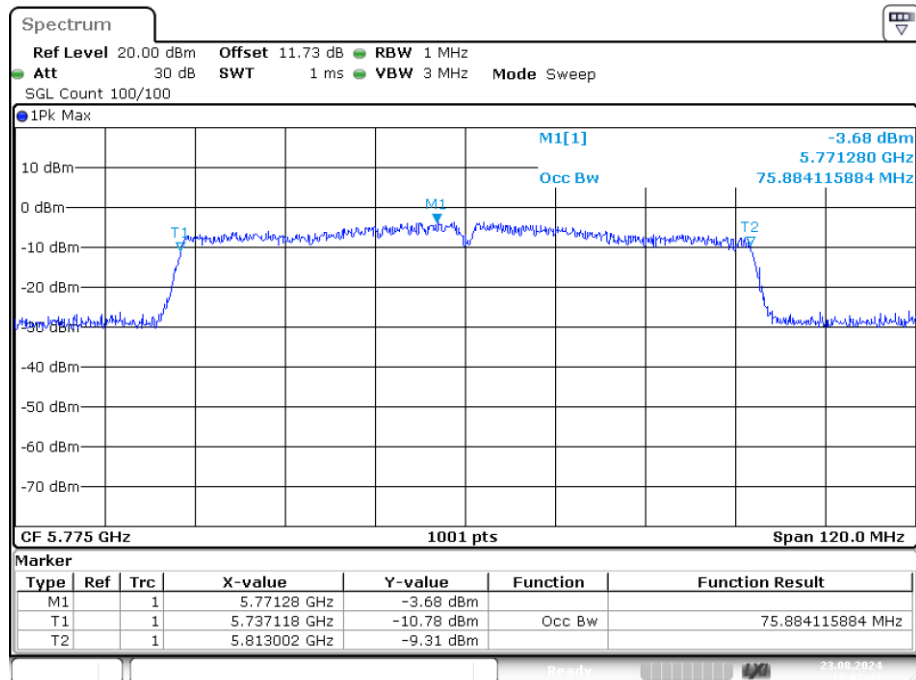
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OBW NVNT ac40 5795MHz Ant1



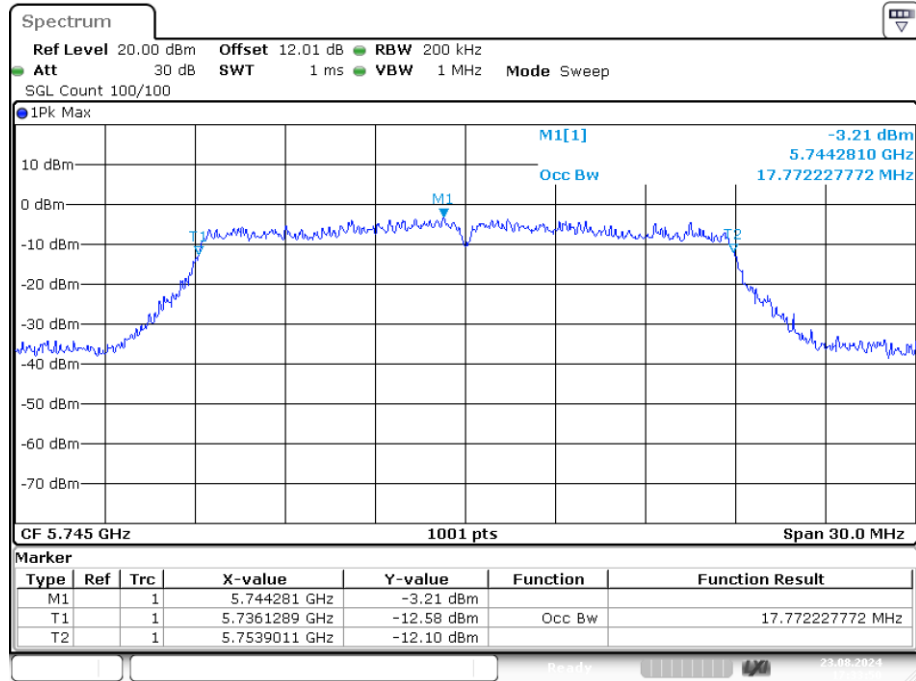
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OBW NVNT ac80 5775MHz Ant1



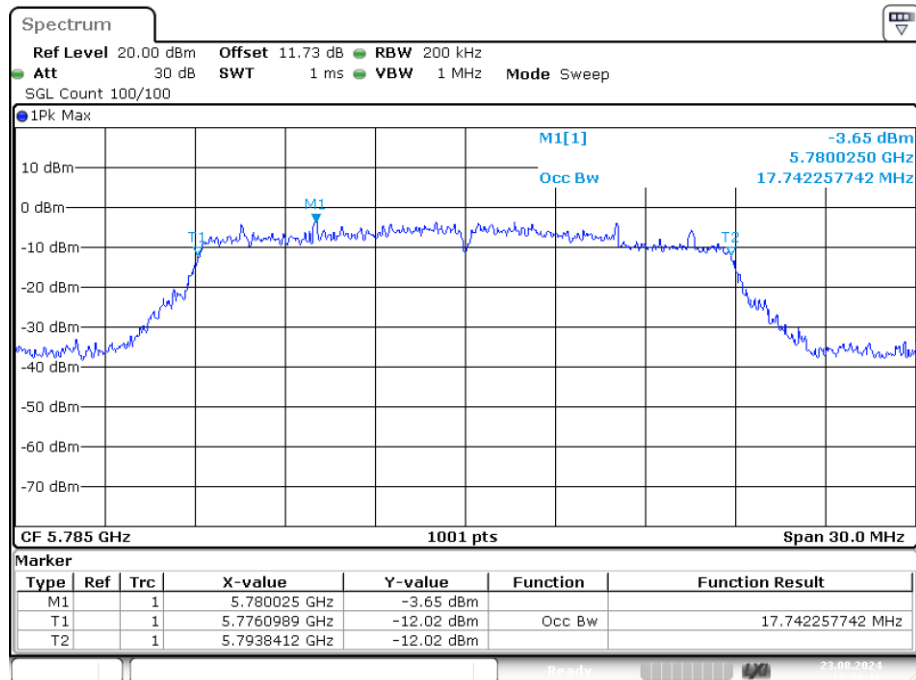
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OBW NVNT n20 5745MHz Ant1



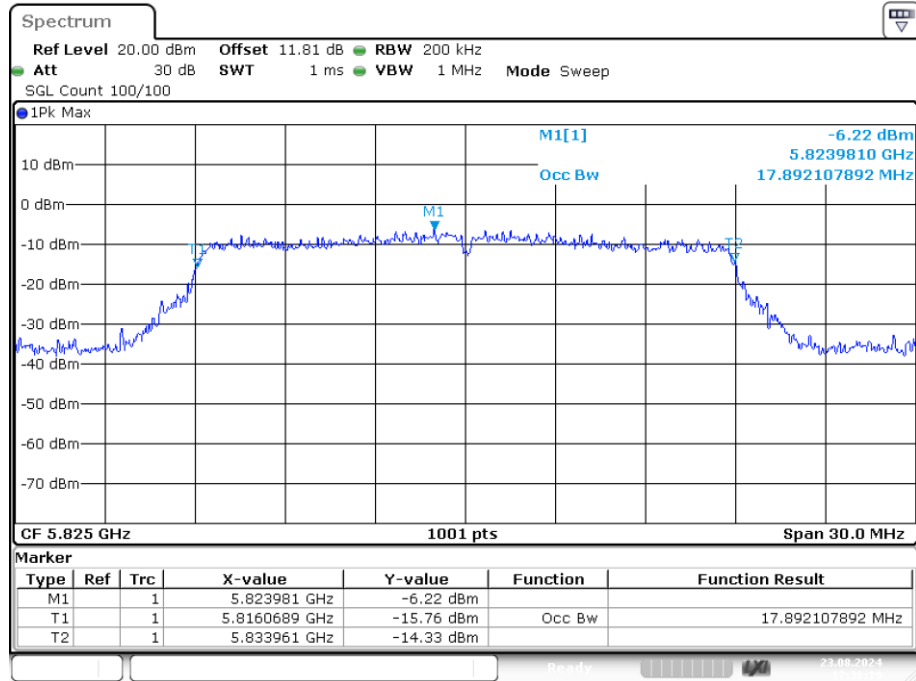
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OBW NVNT n20 5785MHz Ant1



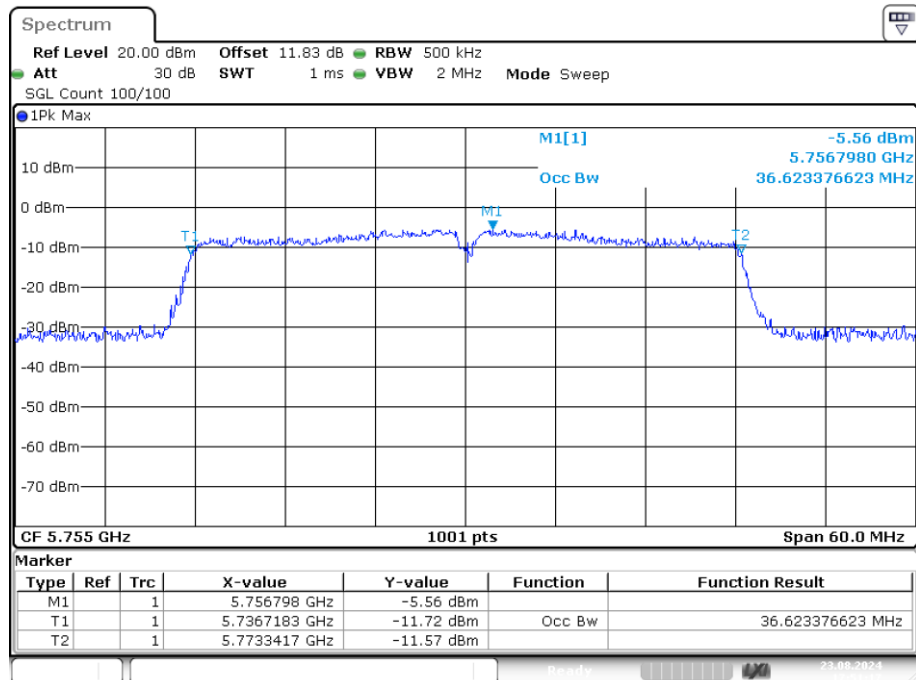
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OBW NVNT n20 5825MHz Ant1



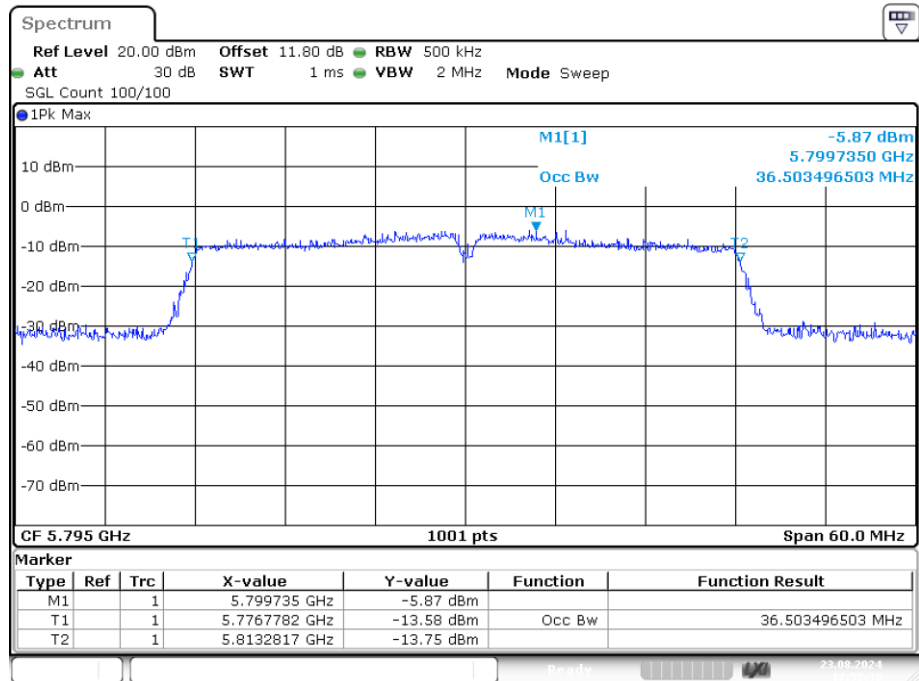
Date: 23.AUG.2024 17:38:19

OBW NVNT n40 5755MHz Ant1



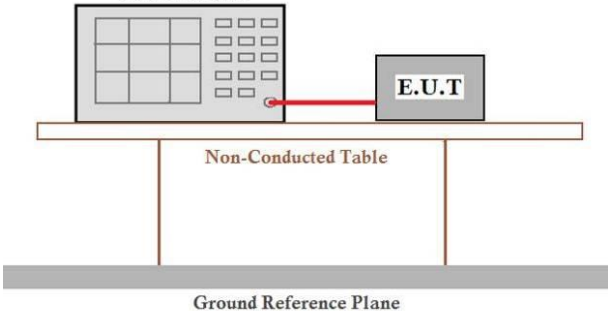
Date: 23.AUG.2024 17:51:17

OBW NVNT n40 5795MHz Ant1



Date: 23.AUG.2024 17:55:39

4.4 Peak Transmit Power

Test Requirement:	FCC Part15 E Section 15.407																		
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01																		
Limit:	FCC: For the band 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, The maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.725-5.85GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 1W. IC: <table><thead><tr><th>Section.</th><th>Test Item.</th><th>Limit.</th><th>FrequencyRange. (MHz).</th><th>Result.</th></tr></thead><tbody><tr><td>6.2.1.1.</td><td rowspan="4">Peak Output Power.</td><td>200 mW or $10 + 10 \log_{10} B$ dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.</td><td>5150-5250.</td><td rowspan="4">PASS.</td></tr><tr><td>6.2.2.1.</td><td rowspan="2">The lesser of 250 mW or $11 \text{ dBm} + 10 \log (26 \text{ dB emission bandwidth})$.</td><td>5250-5350.</td></tr><tr><td>6.2.3.1.</td><td>5470-5725.</td></tr><tr><td>6.2.4.1.</td><td>1 watt.</td><td>5725-5825.</td></tr></tbody></table>	Section.	Test Item.	Limit.	FrequencyRange. (MHz).	Result.	6.2.1.1.	Peak Output Power.	200 mW or $10 + 10 \log_{10} B$ dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.	5150-5250.	PASS.	6.2.2.1.	The lesser of 250 mW or $11 \text{ dBm} + 10 \log (26 \text{ dB emission bandwidth})$.	5250-5350.	6.2.3.1.	5470-5725.	6.2.4.1.	1 watt.	5725-5825.
Section.	Test Item.	Limit.	FrequencyRange. (MHz).	Result.															
6.2.1.1.	Peak Output Power.	200 mW or $10 + 10 \log_{10} B$ dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.	5150-5250.	PASS.															
6.2.2.1.		The lesser of 250 mW or $11 \text{ dBm} + 10 \log (26 \text{ dB emission bandwidth})$.	5250-5350.																
6.2.3.1.			5470-5725.																
6.2.4.1.		1 watt.	5725-5825.																
Test setup:	Power Meter  Non-Conducted Table Ground Reference Plane																		
Test procedure:	Measurement using an RF average power meter (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five. (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B). (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter. (iv) Adjust the measurement in dBm by adding $10 \log(1/x)$ where x is the duty cycle (e.g., $10 \log(1/0.25)$ if the duty cycle is 25 percent).																		
Test Instruments:	Refer to section 3 for details																		
Test mode:	Refer to section 2.2 for details																		
Test results:	Pass																		

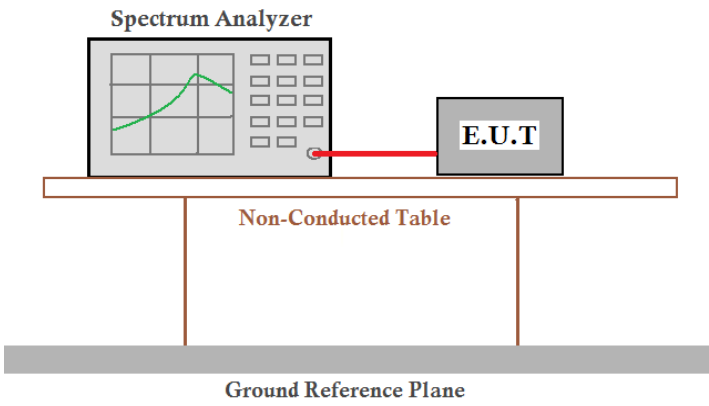
Measurement Data**Band 1 (5150-5250 MHz)**

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	FCC Limit (dBm)	Verdict
NVNT	a	5200	Ant1	13.686	24	Pass
NVNT	a	5240	Ant1	14.004	24	Pass
NVNT	a	5180	Ant1	14.369	24	Pass
NVNT	ac20	5200	Ant1	13.095	24	Pass
NVNT	ac20	5240	Ant1	14.578	24	Pass
NVNT	ac20	5190	Ant1	13.086	24	Pass
NVNT	ac40	5230	Ant1	14.005	24	Pass
NVNT	ac40	5210	Ant1	14.678	24	Pass
NVNT	ac80	5180	Ant1	13.318	24	Pass
NVNT	n20	5200	Ant1	13.78	24	Pass
NVNT	n20	5240	Ant1	14.218	24	Pass
NVNT	n20	5190	Ant1	13.416	24	Pass
NVNT	n40	5230	Ant1	13.566	24	Pass
NVNT	n40	5200	Ant1	14.185	24	Pass

Band 4 (5725 – 5850 MHz)

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	13.905	30	Pass
NVNT	a	5785	Ant1	13.029	30	Pass
NVNT	a	5825	Ant1	12.929	30	Pass
NVNT	ac20	5745	Ant1	15.428	30	Pass
NVNT	ac20	5785	Ant1	13.563	30	Pass
NVNT	ac20	5825	Ant1	13.095	30	Pass
NVNT	ac40	5755	Ant1	13.647	30	Pass
NVNT	ac40	5795	Ant1	13.048	30	Pass
NVNT	ac80	5775	Ant1	13.482	30	Pass
NVNT	n20	5745	Ant1	14.305	30	Pass
NVNT	n20	5785	Ant1	13.114	30	Pass
NVNT	n20	5825	Ant1	13.602	30	Pass
NVNT	n40	5755	Ant1	13.102	30	Pass
NVNT	n40	5795	Ant1	13.2	30	Pass

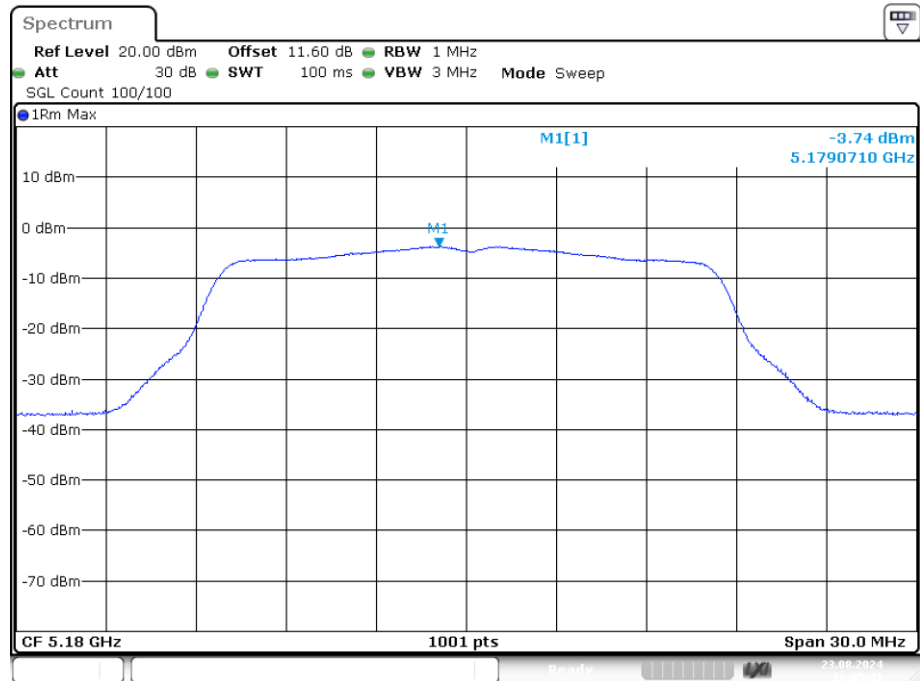
4.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	FCC: 1. $\leq 11.00\text{dBm/MHz}$ for 5150MHz-5250MHz, 5250-5350MHz and 5470-5725 MHz 2. $\leq 30.00\text{dBm/500KHz}$ for 5725MHz-5850MHz IC: 1. For the 5.15-5.25 GHz, The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band. 2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD. 5) 1. Antenna assembly gain G in dBi of the individual antenna. 2. $\text{EIRP PSD} = \text{Max PSD} + G$ (When testing, the line loss has already been added to the antenna gain, so the test result is EIRP PSD)
Test Instruments:	Refer to section 3 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Measurement Data**Band 1 (5150-5250 MHz)**

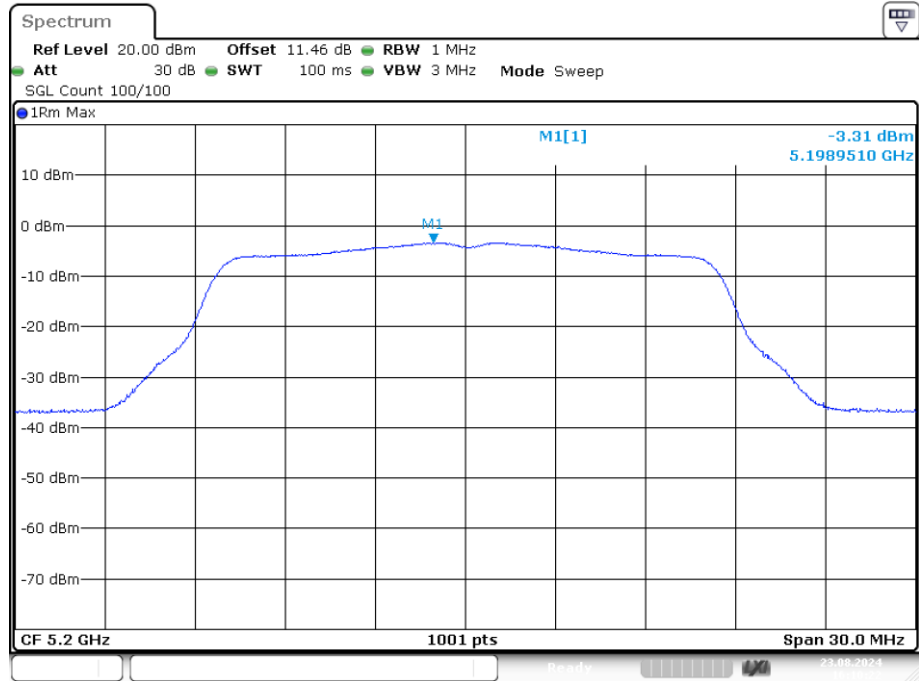
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	EIRP PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-3.74	-3.74	11	Pass
NVNT	a	5200	Ant1	-3.31	-3.31	11	Pass
NVNT	a	5240	Ant1	-2.805	-2.805	11	Pass
NVNT	ac20	5180	Ant1	-5.713	-5.713	11	Pass
NVNT	ac20	5200	Ant1	-4.047	-4.047	11	Pass
NVNT	ac20	5240	Ant1	-4.551	-4.551	11	Pass
NVNT	ac40	5190	Ant1	-6.915	-6.915	11	Pass
NVNT	ac40	5230	Ant1	-7.15	-7.15	11	Pass
NVNT	ac80	5210	Ant1	-10.212	-10.212	11	Pass
NVNT	n20	5180	Ant1	-4.445	-4.445	11	Pass
NVNT	n20	5200	Ant1	-3.496	-3.496	11	Pass
NVNT	n20	5240	Ant1	-4.516	-4.516	11	Pass
NVNT	n40	5190	Ant1	-8.297	-8.297	11	Pass
NVNT	n40	5230	Ant1	-7.869	-7.869	11	Pass

PSD NVNT a 5180MHz Ant1



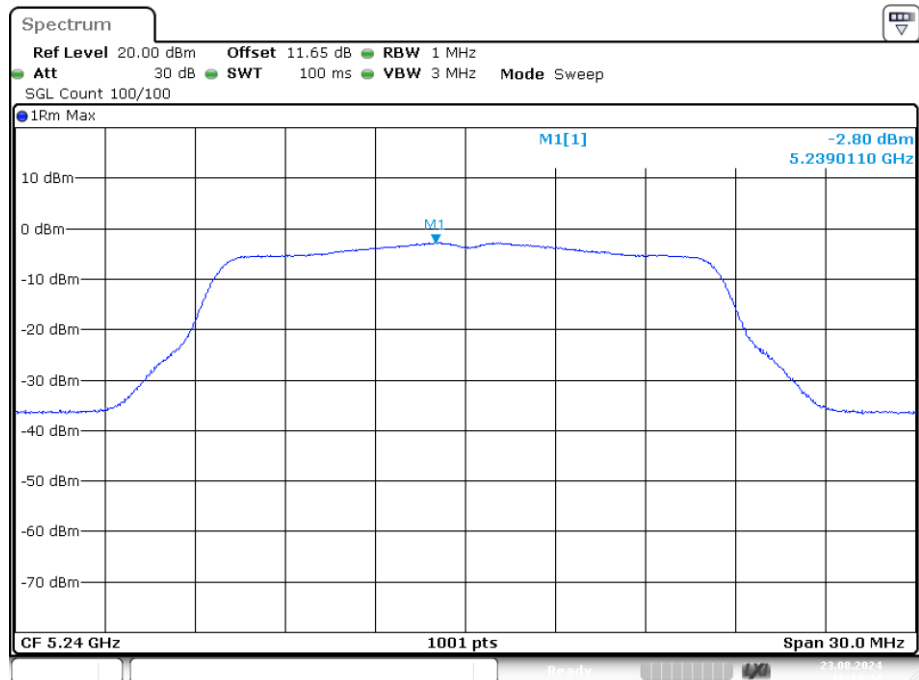
Date: 23.AUG.2024 16:05:40

PSD NVNT a 5200MHz Ant1



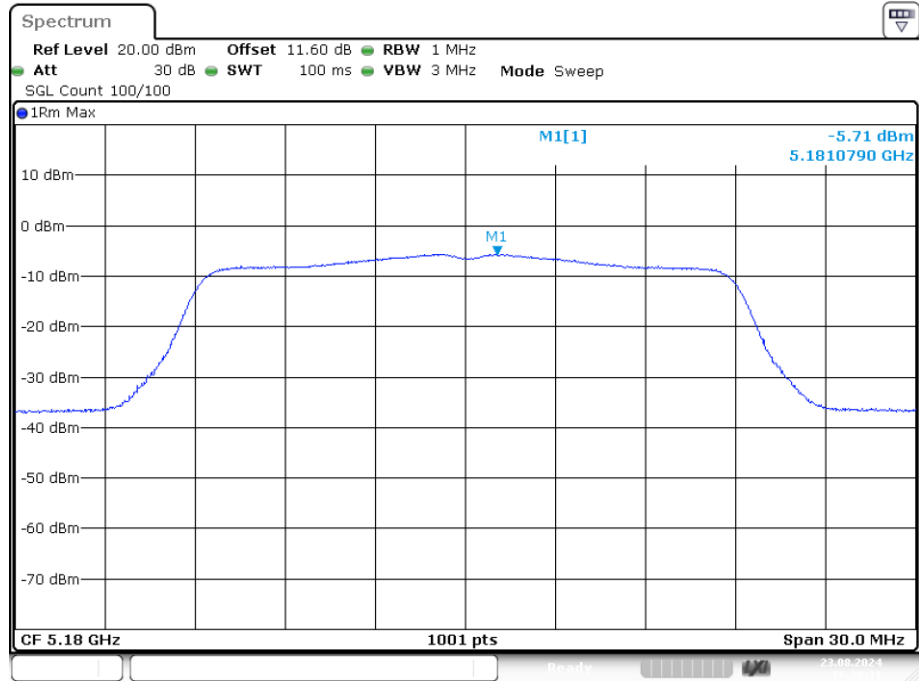
Date: 23.AUG.2024 16:10:23

PSD NVNT a 5240MHz Ant1



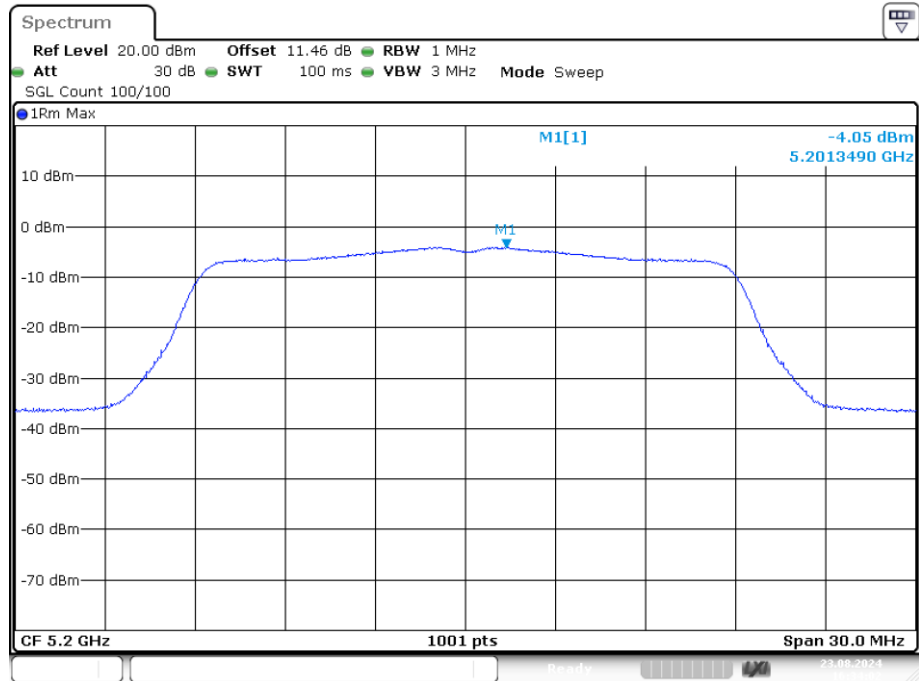
Date: 23.AUG.2024 16:14:25

PSD NVNT ac20 5180MHz Ant1



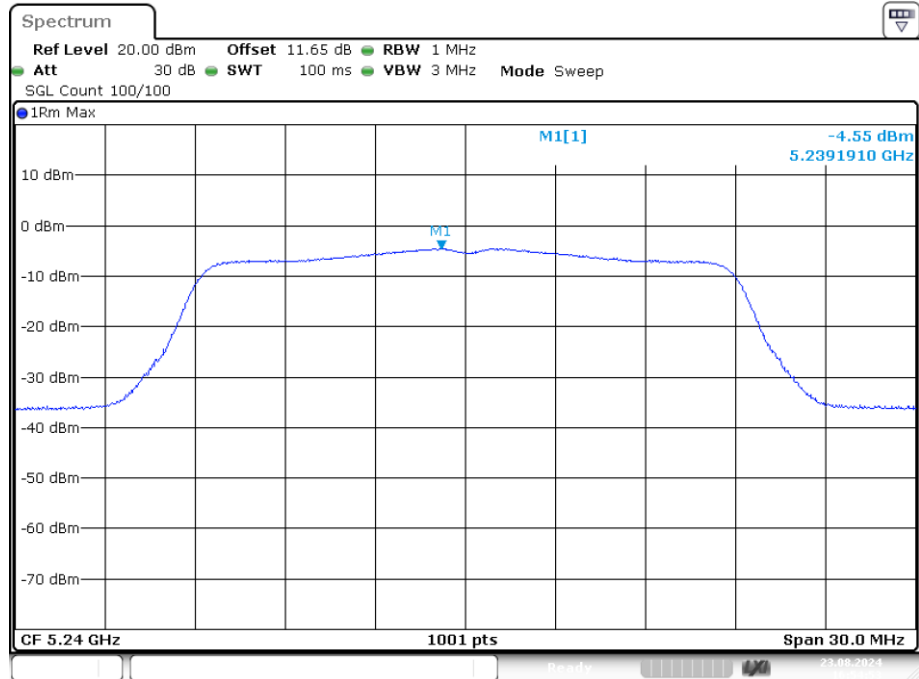
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PSD NVNT ac20 5200MHz Ant1



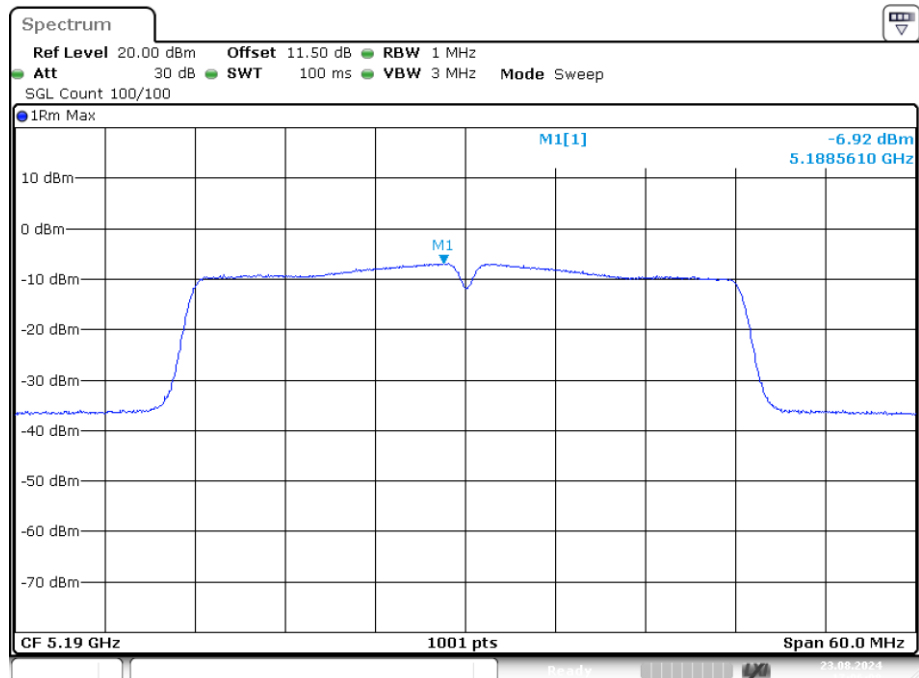
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PSD NVNT ac20 5240MHz Ant1



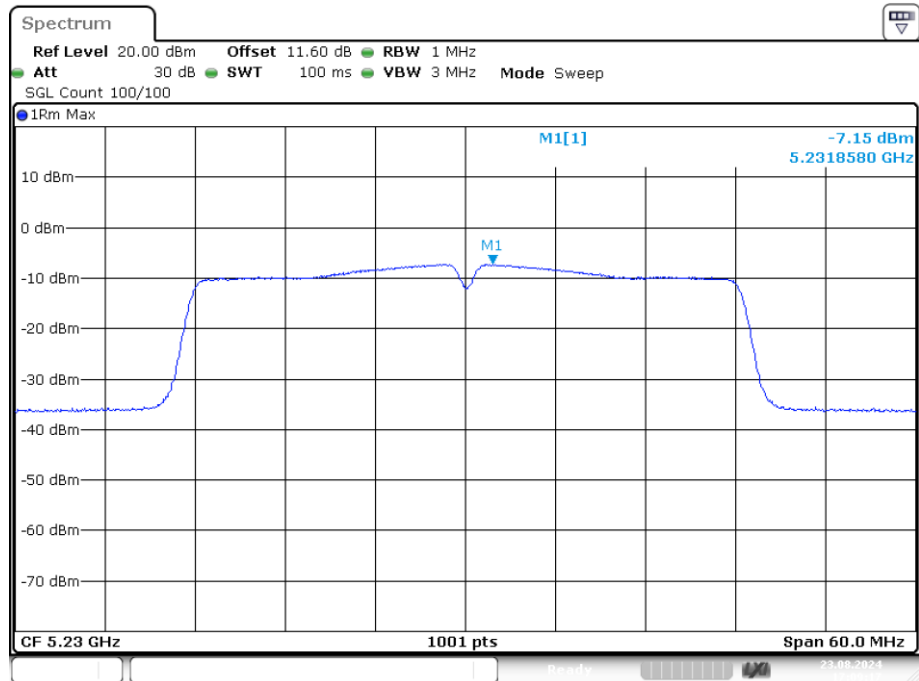
Date: 23.AUG.2024 16:54:53

PSD NVNT ac40 5190MHz Ant1



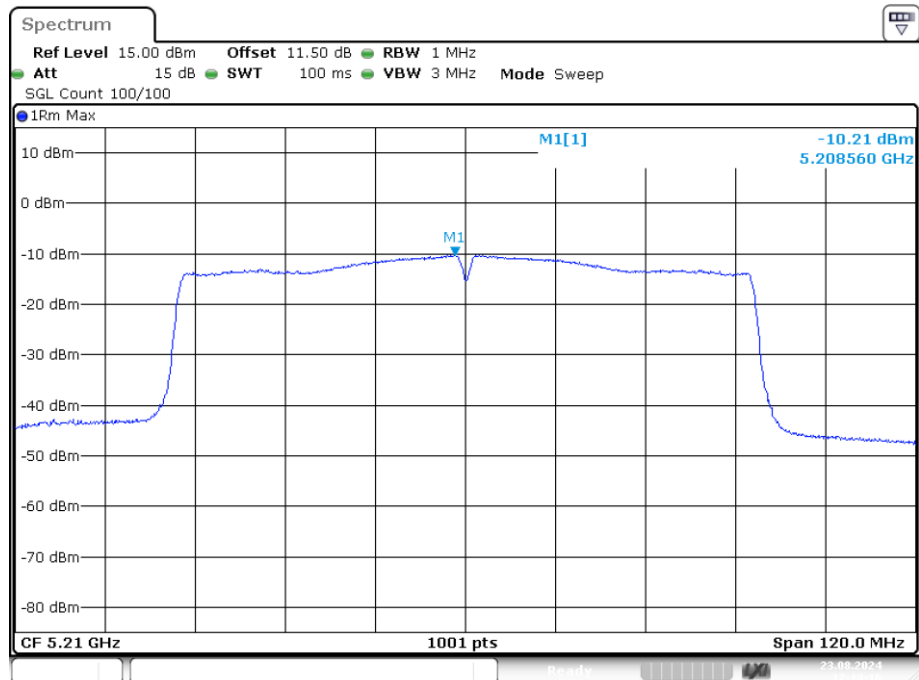
Date: 23.AUG.2024 17:06:08

PSD NVNT ac40 5230MHz Ant1



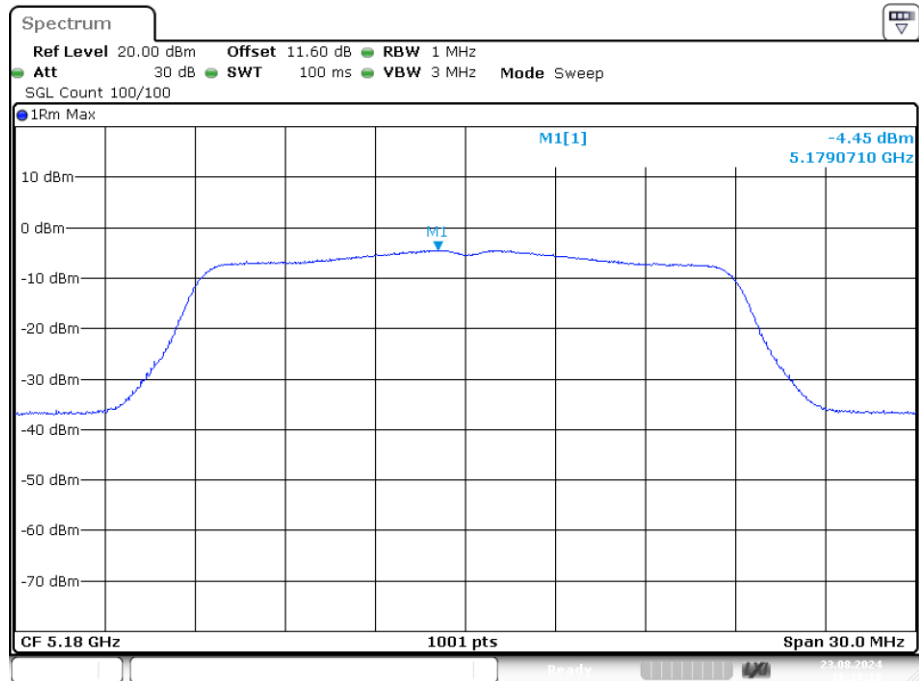
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PSD NVNT ac80 5210MHz Ant1



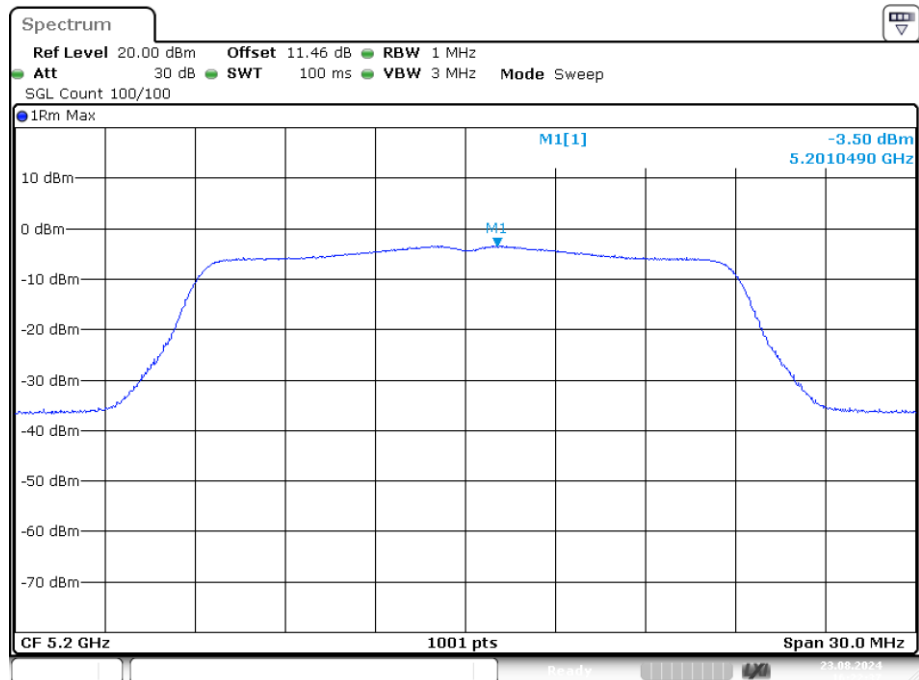
Date: 23.AUG.2024 17:14:16

PSD NVNT n20 5180MHz Ant1



Date: 23.AUG.2024 16:18:18

PSD NVNT n20 5200MHz Ant1



Date: 23.AUG.2024 16:22:37