REGULATORY COMPLIANCE TEST REPORT

FCC CFR 47 Part 90 Subpart Y

Report No.: RDWN90-U2 Rev B

Company: Radwin Ltd.

Model Name: RADWIN JET DUO 5.x/5.x GHz

REGULATORY COMPLIANCE TEST REPORT

Company: Radwin Ltd.

Model Name: RADWIN JET DUO 5.x/5.x GHz

To: FCC CFR 47 Part 90 Subpart Y

Test Report Serial No.: RDWN90-U2 Rev B

This report supersedes: RDWN90-U2 Rev A

Applicant: Radwin Ltd.
27 Habarzel Street
Tel Aviv, 6971039
Israel

Issue Date: 6th November 2023

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
USA
Phone: +1 (925) 462-0304
Fax: +1 (925) 462-0306
www.micomlabs.com

ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

Table of Contents

1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2005. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

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Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

CORPORATE SEAL A2LA

Presented this 14th day of January 2022.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.01
Valid to February 29, 2024
Revised October 26, 2023

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

1.2. RECOGNITION

MiCOM Labs, Inc has widely recognized wireless testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA countries. MiCOM Labs test reports are accepted globally.

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	US0159 Listing #: 4143A-2 4143A-3
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	APEC MRA 2	RCB 210
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA	NB 2280
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	CAB	APEC MRA 1	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	CAB	APEC MRA 1	
Singapore	Infocomm Development Authority (IDA)	CAB	APEC MRA 1	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	CAB	APEC MRA 1	
Vietnam	Ministry of Communication (MIC)	CAB	APEC MRA 1	

EU MRA – European Union Mutual Recognition Agreement.
NB – Notified Body
APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement. Recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.

Phase I - recognition for product testing
Phase II – recognition for both product testing and certification

1.3. PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf

Accredited Product Certification Body

A2LA has accredited

MiCOM LABS

Pleasanton, CA

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 *Requirements for bodies certifying products, processes and services*. This product certification body also meets the *A2LA R322 – Specific Requirements – Notified Body Accreditation Requirements* and *A2LA R308 - Specific Requirements - ISO-IEC 17065 - Telecommunication Certification Body Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a management system.

Presented this 14th day of January 2022

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.02
Valid to February 29, 2024
Revised October 26, 2023

For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.

United States of America – Telecommunication Certification Body (TCB)
Industry Canada – Certification Body, CAB Identifier – US0159
Europe – Notified Body (NB), NB Identifier - 2280
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	30th August 2023	Draft for comment"
Draft 2	14th September 2023	Basic report update
Rev A	22nd September 2023	Initial release
Rev B	6th November 2023	Correction of antenna gain details in Section 5.4.
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In the above table the latest report revision will replace all earlier versions.

3. TEST RESULT CERTIFICATE

Manufacturer:	Radwin Ltd. 27 Habarzel Street Tel Aviv, 6971039 Israel	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model:	RADWIN JET DUO 5.x/5.x GHz	**Telephone:**	+1 925 462 0304
Equipment Type:	Dual Carrier 5.x GHz Base Station with Beamforming Antenna	**Fax:**	+1 925 462 0306
S/N's:	Prototype		
Test Date(s):	24th – 29th August 2023	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 90 Subpart Y **ISED RSS-111**	**EQUIPMENT COMPLIES**

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

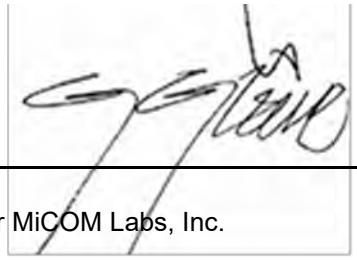
1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

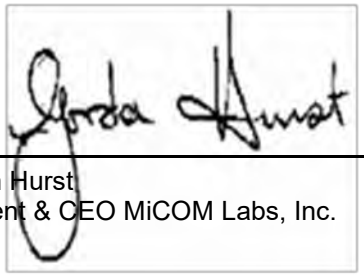
3. Test results apply only to the item(s) tested.

ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:



Graeme Grieve
Quality Manager MiCOM Labs, Inc.



Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911 D01, D02, D03	D01 Oct 2013, D02 Oct 2011, D03 Oct 2020	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band. 662911 D01 Multiple Transmitter Output v02r01, 662911 D02 MIMO with Cross Polarized Antenna v01, 662911 D03 MIMO Antenna Gain Measurement v01, OET 13TR1003 Directional Gain of 802 11 MIMO with CDD 04 05 2013
II	A2LA	22nd June 2022	R105 - Requirement's When Making Reference to A2LA Accreditation Status
III	ANSI C63.10	2020	American National Standard for Testing Unlicensed Wireless Devices
IV	ANSI C63.4	2014	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
V	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
VI	M 3003	EDITION 4 Oct 2019	Expression of Uncertainty and Confidence in Measurements
VII	RSS-111	September 4th 2014	Broadband Public Safety Equipment Operating in the Band 4940-4990 MHz
VIII	RSS-Gen Issue 5	Amendment 1,2 (Feb 2021)	General Requirements for Compliance of Radio Apparatus
IX	FCC 47 CFR Part 2.1033	May 2021	FCC requirements and rules regarding photographs and test setup diagrams.
X	FCC 47 CFR Part 90	June 2003	Private Land Mobile Radio Services; Subpart Y – Regulations Governing Licensing and Use of Frequencies in the 4940-4990 MHz Band
XI	KDB 971168 D01, D02	D01 April 2018 D02 April 2023	Guidance for measurement of output emissions and power for licensed wideband digital transmission systems. D01 Power Meas License Digital Systems v03r01 971168 D02 Misc OOBE License Digital Systems v02r02

4.2. Test and Uncertainty Procedure

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

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5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the RADWIN Dual Carrier 5.x GHz Base Station with Beam forming Antenna to FCC CFR 47 Part 90 Subpart Y. Compliance Measurement Procedures for use in the 4940-4990 MHz band
Applicant:	Radwin 27 Habarzel Street Tel Aviv 6971039 Israel
Manufacturer:	RADWIN
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	RDWN90-U2
Date EUT received:	25th August 2023
Standard(s) applied:	FCC CFR 47 Part 90 Subpart Y ISED RSS 111
Dates of test (from - to):	24th – 29th August 2023
No of Units Tested:	1
Product Family Name:	RADWIN JET
Model(s):	RADWIN JET DUO 5.x/5.x GHz
Location for use:	Outdoor
Declared Frequency Range(s):	4940 - 4990 MHz;
Type of Modulation:	OFDM
EUT Bandwidths:	4940 - 4990 MHz: 10MHz; 20MHz; 40MHz
Declared Nominal Output Power (dBm):	+30 dBm
Transmit/Receive Operation:	Transceiver
Rated Input Voltage and Current:	55V DC
Operating Temperature Range:	-40 to +60 ºC
ITU Emission Designator:	10M0W7W, 20M0W7W, 40M0W7W
Equipment Dimensions:	2.6 x 14.2 x 13.9 in
Weight:	14.0 lb
Hardware Rev:	Prototype
Software Rev:	C

5.2. Scope Of Test Program

RADWIN JET DUO 5.x/5.x GHz

The scope of the test program was to test the RADWIN JET DUO 5.x/5.x GHz; for compliance against the following specification:

FCC CFR 47 Part 90 Subpart Y

This subpart sets out the regulations governing use of the 4940–4990 MHz (4.9 GHz) band. It includes eligibility requirements, and specific operational and technical standards for stations licensed in this band. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part; however, in case of conflict, the provisions of this subpart shall govern with respect to licensing and operation in this band.

RSS-111
Broadband Public Safety Equipment Operating in the Band 4940-4990 MHz

5.3. Equipment Model(s) and Serial Number(s)

Type (EUT/ Support)	Equipment Description	Manufacturer	Model No.	Serial No.
EUT	Dual Carrier 5.x GHz Base Station with Beamforming Antenna	RADWIN	RADWIN JET DUO 5.x/5.x GHz	Prototype
Support	POE Power Supply	Sinpro	CPU55A-270-1	--
Support	Laptop	Dell	--	--

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
Integrated	RADWIN Ltd.	AP0200600	Panel	7.0	--	80	Yes	4900 - 5000
Integrated	RADWIN Ltd.	AP0200600	Directional	17.0	10.0	18	Yes	4900 - 5000

BF Gain - Beamforming Gain
Dir BW - Directional BeamWidth
X-Pol - Cross Polarization

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# of Ports	Screened	Connector Type	Data Type	Data Rate(s)
Ethernet PoE IN	>30m	1	No	RJ45	Packet	10,100,1000

5.6. Test Configurations

Results for the following configurations are provided in this report:

Channel Bandwidths	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
4940 - 4990 MHz				
*10	39	4,945.00	4,965.00	4,985.00
*20	78	4,950.00	4,965.00	4,980.00
40	180	4,960.00	4,965.00	4,970.00

*note: only 10 and 20 MHz bandwidths are compliant for ISED RSS-111. 40MHz may not be used for ISED RSS-111

5.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:
1. NONE

5.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:
1. NONE

6. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
Peak Transmit Power	Complies	View Data
26 dB & 99% Bandwidth	Complies	View Data
Power Spectral Density	Complies	View Data
Peak Excursion Ratio	Complies	View Data
Spectrum Emission Mask	Complies	View Data
Radiated	Complies	-
TX Spurious Emissions	Complies	-
Antenna AP0200600 80º	Complies	View Data
Antenna AP0200600 18º	Complies	View Data
RX Spurious Emissions	Complies	View Data

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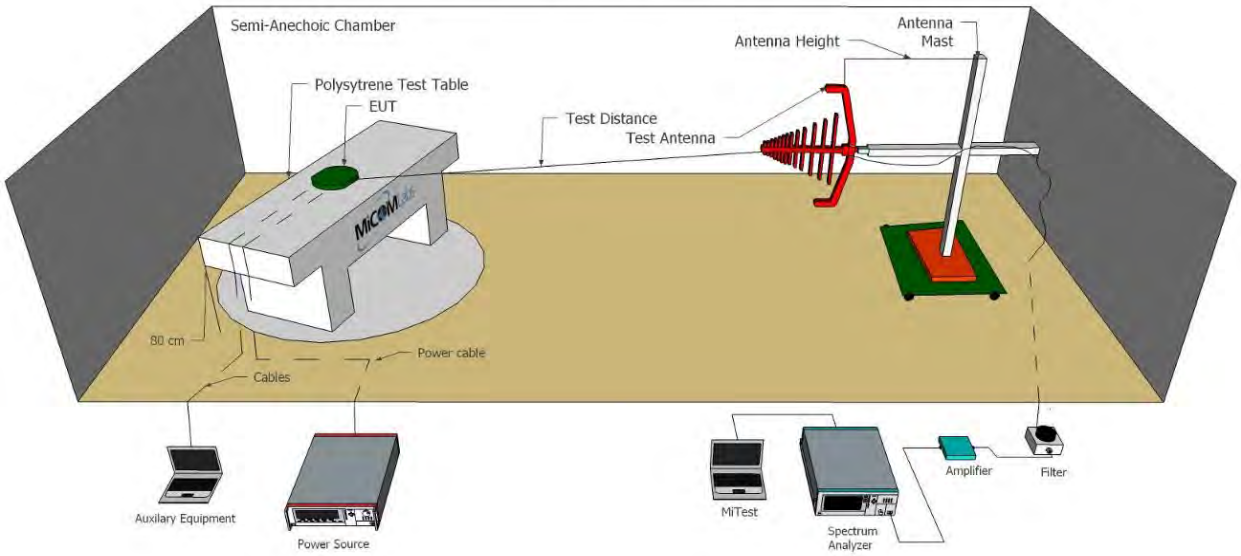
7. TEST EQUIPMENT CONFIGURATION(S)

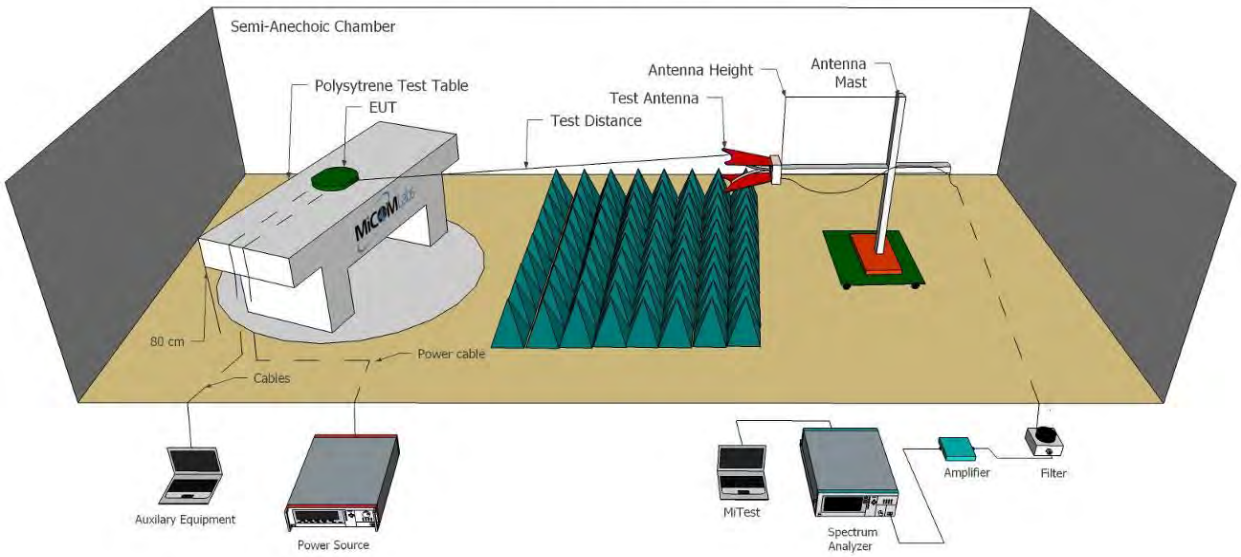
7.1. Radiated Emissions - 3m Chamber

Test Setup for Radiated Emissions for above and below 1 GHz

Radiated Emissions Below 1GHz Test Setup



Radiated Emissions Above 1GHz Test Setup



A full system calibration was performed on the test station and any resulting system losses (or gains) were taken into account in the production of all final measurement data.

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
330	Variac 0-280 Vac	Staco Energy Co	3PN1020B	0546	Cal when used
336	Active loop Ant 10kHz to 30 MHz	EMCO	EMCO 6502	00060498	29 Nov 2023
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	29 Sep 2023
373	26III RMS Multimeter	Fluke	Fluke 26 series III	76080720	29 Sep 2023
377	Band Rejection Filter 5150 to 5880MHz	Microtronics	BRM50716	034	6 Oct 2023
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	27 Oct 2023
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	30 Sep 2023
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	2 Nov 2023
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	Not Required
416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	27 Oct 2023
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	27 Oct 2023
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	27 Oct 2023
465	Low Pass Filter DC-1000 MHz	Mini-Circuits	NLP-1200+	VUU01901402	6 Oct 2023
466	Low Pass Filter DC-1500 MHz	Mini-Circuits	NLP-1750+	VUU10401438	6 Oct 2023
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	6 Oct 2023
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	6 Oct 2023
510	Barometer/Thermometer	Digi Sense	68000-49	170871375	4 Jan 2024
554	Precision SMA Cable	Fairview Microwave	SCE18060101-400CM	554	6 Oct 2023
555	Rhode & Schwarz Receiver (Firmware Version : 2.00 SP1)	Rhode & Schwarz	ESW 44	101893	28 Jun 2024

8. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix 'Graphical Data'.

Test and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for conducted RF testing.

The MiCOM Labs "MiTest" Automated Test System" (Patent Pending)

9. TEST RESULTS

9.1. Peak Transmit Power

Conducted Test Conditions for Maximum Output Power			
Standard:	FCC CFR 47:90 (Y)	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	90.1215 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Maximum Output Power Measurement
Spectrum Analyzer Method. KDB 789033 defines a methodology using spectrum analyzer. Where power shall be calculated by integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99% occupied bandwidth of the signal.

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.
KDB 662911 D01 & KDB 662911 D02

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Radiated measurements used for compliance with conducted limits, the following steps are required to ensure that the total emission power is determined for equipment driving cross polarized antennas:

(1) Measure radiated emissions with vertical and horizontal polarizations of the measurement antenna;
(2) Convert each radiated measurement to transmit power based on the antenna gain;

EIRP level to an equivalent electric field strength using the following relationship:
E = EIRP – 20*log (D) + 104.8

Where:
E = electric field strength in dBµV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.

$EIRP = P_R + L_P$

where;

EIRP = equivalent (or effective) isotropically radiated power (in same units as P_R);
P_R = adjusted received power level, in dBW, dBm, or PSD;
L_P = basic free space propagation path loss, in dB.
The received power level **P_R** is the measured power adjusted for measurement antenna gain, connecting cable loss, and any external signal amplification or attenuation used in the test Configuration. Mathematically:

$P_R = P_{Meas} – G_R + L_C + L_{Atten} - G_{Amp}$
where;

$P_{Measured}$ = measured power level, in dBW, dBm or psd;
G_R = gain of the receive (measurement) antenna, in dBi;
L_C = signal loss in the measurement cable, in dB;
L_{Atten} = value of external attenuation (if used), in dB;
G_{Amp} = value of external amplification (if used), in dB.

The free space propagation path loss **L_P** is determined from the following equation:
L_P = 20 Log F + 20 Log D – 27.5
where:
L_P = basic free space propagation path loss, in dB;
F = center frequency of radiated DUT signal, in MHz;
D = measurement distance, in meters.

Where:
E = electric field strength in dBµV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.

(3) Sum the powers across the two polarizations to compare the resultant electric field strength level to the applicable limit.

Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

Limits Maximum Conducted Output Power
90.1215
Except as provided in paragraph (f) of this section, the transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.

(a)(1) For base, mobile, and temporary fixed operations, the maximum conducted output power must not exceed:

Channel Bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33
30	21.8	34.8
40	23	36
50	24	37

(a) (2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidth other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ a transmitting antenna with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

(f) The transmitting power of permanent fixed point-to-point and point-to-multipoint stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this paragraph (f). Moreover, applicants should request no more power than necessary for a particular use.

(1) The maximum equivalent isotropically radiated power (EIRP), as referenced to an isotropic radiator, must not exceed 55 dBW (85 dBm)
(2) For path lengths shorter than 17 kilometers, the EIRP shall not exceed the value derived from the following equation: New EIRP limit = 55 dBW – 40*log(17/B) dBW, where B = the actual path length in kilometers.

Consolidated Power Results, EIRP Limits

The EUT was tested for Radiated Output Power and the following tables define the worst-case compliant results defined for each Antenna

Output Power Summary Table

Antenna Type – Integrated (outdoor use only)

Antenna	Gain	Channel Bandwidths	Channel	Combined Output Power *(H+V)*	Calc. Output Power	Limit	Margin	Power Setting
Model Number	**dBi**	**MHz**	**MHz**	**dBm/EIRP**	**dBm**	**dBm**	**dB**	
AP0200600 80º	7.0	10	4945	34.48	27.48	30.0	-2.52	10.0
			4965	34.68	27.68	30.0	-2.32	9.5
			4985	34.80	27.80	30.0	-2.20	11.5
		20	4950	34.92	27.92	33.0	-5.08	10.5
			4965	35.55	28.55	33.0	-4.45	10.5
			4980	35.55	28.55	33.0	-4.45	13.5
		40	4960	36.16	29.16	36.0	-6.84	13.0
			4965	33.14	26.14	36.0	-9.86	10.0
			4970	31.79	24.79	36.0	-11.21	10.5
AP0200600 18º	17.0	10	4945	42.76	25.76	30.0	-4.24	13.0
			4965	42.06	25.06	30.0	-4.94	10.5
			4985	41.75	24.75	30.0	-5.25	12.0
		20	4950	41.19	24.19	33.0	-8.81	10.5
			4965	41.10	24.10	33.0	-8.90	10.0
			4980	39.20	22.20	33.0	-10.80	11.0
		40	4960	42.15	25.15	36.0	-10.85	13.0
			4965	40.05	23.05	36.0	-12.95	10.0
			4970	37.77	20.77	36.0	-15.23	10.0

The following tables used the lowest gain antenna to calculate the maximum conducted power from the EUT.

Equipment Configuration for RF Output Power

Variant:	10MHz Bandwidth	**Duty Cycle (%):**	96
Data Rate:	39 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power + DCCF	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4945	32.59	29.43	27.48	30.0	-2.52	10.0
4965	32.92	29.35	27.68	30.0	-2.32	9.5
4985	32.27	30.84	27.80	30.0	-2.20	11.5

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 0.18 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Equipment Configuration for RF Output Power			
Variant:	20MHz Bandwidth	**Duty Cycle (%):**	82
Data Rate:	78 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power + DCCF	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4950	32.91	27.71	27.92	33.0	-5.08	10.5
4965	33.60	28.14	28.55	33.0	-4.45	10.5
4980	32.67	30.38	28.55	33.0	-4.45	13.5

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 0.86 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Equipment Configuration for RF Output Power			
Variant:	40MHz Bandwidth	**Duty Cycle (%):**	72
Data Rate:	180 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power + DCCF	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4960	33.30	29.22	29.16	36.0	-6.84	13.0
4965	30.29	26.18	26.14	36.0	-9.86	10.0
4970	28.06	26.51	24.79	36.0	-11.21	10.5

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 1.43 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Equipment Configuration for RF Output Power			
Variant:	10MHz Bandwidth	**Duty Cycle (%):**	96
Data Rate:	39 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power + DCCF	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4945	41.54	35.87	25.76	30.0	-4.24	13.0
4965	41.15	33.77	25.06	30.0	-4.94	10.5
4985	40.52	34.91	24.75	30.0	-5.25	12.0

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 0.18 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Equipment Configuration for RF Output Power			
Variant:	20MHz Bandwidth	**Duty Cycle (%):**	82
Data Rate:	78 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256 QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power +DCCF	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4950	39.53	32.58	24.19	33.0	-8.81	10.5
4965	39.52	32.05	24.10	33.0	-8.90	10.0
4980	36.79	33.10	22.20	33.0	-10.80	11.0

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 0.86 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

Equipment Configuration for RF Output Power			
Variant:	40MHz Bandwidth	**Duty Cycle (%):**	72
Data Rate:	180 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256 QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured EIRP (dBm)		Calculated Total Conducted Power	Limit	Margin	EUT Power Setting
	H	V	dBm	dB	Numeric	Numeric
4960	39.74	33.79	25.15	36.0	-10.85	13.0
4965	37.80	31.01	23.05	36.0	-12.95	10.0
4970	34.83	31.03	20.77	36.0	-15.23	10.0

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

Duty Cycle Correction Factor (DCCF): 1.43 dB

NOTE: KDB 412172 D01 was used to determine the EIRP from the results of a power measurements performed under far-field conditions with respect to all transmit and receive (measurement) antennas.

9.2. 26 dB & 99% Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standards:	FCC CFR 47:90	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for 26 dB and 99% Bandwidth Measurement
The bandwidth at 26 dB and 99 % is measured radiated, in a 3 meter chamber, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.
Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported. In this case Vertical a (V) and Horizontal for port b (H).

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document.

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	10 MHz Bandwidth	**Duty Cycle (%):**	Not Applicable
Data Rate:	39 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
4945	8.741	7.493	8.741	7.493		
4965	8.791	8.741	8.791	8.741		
4985	8.891	8.641	8.891	8.641		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
4945	6.53	6.55	6.53	6.55		
4965	5.50	6.46	5.50	6.46		
4985	6.52	6.50	6.53	6.55		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	20 MHz Bandwidth	**Duty Cycle (%):**	Not Applicable
Data Rate:	78 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
4950	18.731	18.432	18.731	18.432		
4965	18.656	17.907	18.656	17.907		
4980	18.581	18.716	18.581	18.716		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
4950	14.911	14.820	14.911	14.820		
4965	14.931	14.831	14.931	14.831		
4980	14.847	14.803	14.847	14.803		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	40 MHz Bandwidth	**Duty Cycle (%):**	Not Applicable
Data Rate:	180 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
5190.0	43.53	40.05	43.53	40.05		
5210.0	41.73	39.94	41.73	39.94		
5230.0	39.58	38.50	39.58	38.50		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
MHz	**H**	**V**	**Highest**	**Lowest**		
5190.0	32.83	32.57	32.83	32.57		
5210.0	32.89	32.55	32.89	32.55		
5230.0	32.54	32.36	32.54	32.36		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

9.3. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:90.1215	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	90.1215 (a)(2)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D02 General UNII Test Procedures New Rules v01		

Test Procedure for Power Spectral Density

The In-Band power spectral density was measured using the measure and sum approach per FCC KDB 662911 (D01 Multiple Transmitter Output v02.)

Measure and sum the spectra across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The individual spectra are then summed mathematically in linear power units. Unlike in-band power measurements, in which the sum involves a single measured value (output power) from each output, measurements for compliance with PSD limits involve summing entire spectra across corresponding frequency bins on the various outputs. Consistency is maintained for any device with N transmitter outputs to be certain the individual outputs are all aligned with the same span and same number of points. In this instance, the linear power spectrum value within the first spectral bin of output 0 is summed with that in the first spectral bin of output 1, and the first spectral bin of output 2, and so on up to the Nth output to obtain the true value for the first frequency bin of the summed spectrum. The summed spectrum value for each frequency bin is computed in this fashion. These summed spectral values were calculated on a computer, and the results read back into the spectrum analyzer as a data file to produce a representative plot of total spectral power density.

Calculated Power = A + 10 log (1/x) dBm

A = Total Power Spectral Density [10 Log10 (10a/10 + 10 b/10 + 10c/10 + 10d/10)]

x = Duty Cycle

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.

KDB 662911 D01 & KDB 662911 D02

Radiated measurements used for compliance with conducted limits, the following steps are required to ensure that the total emission power s determined for equipment driving cross polarized antennas:

(1) Measure radiated emissions with vertical and horizontal polarizations of the measurement antenna;
(2) Convert each radiated measurement to transmit power based on the antenna gain;

EIRP level to an equivalent electric field strength using the following relationship:
E = EIRP – 20*log (D) + 104.8

Where:
E = electric field strength in dBµV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.

(3) Sum the powers or PSDs across the two polarizations to compare the resultant electric field strength level to the applicable limit.

Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

Limits Power Spectral Density

(a) (2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidth other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ a transmitting antenna with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

(d) The peak power spectral density is measured as conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of one MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

Equipment Configuration for Power Spectral Density			
Variant:	10 MHz Bandwidth	**Duty Cycle (%):**	96
Data Rate:	39 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Power Spectral Density dBm/MHz EIRP**		**Calc. Conducted Summation Peak Marker + DCCF**	**Limit**	**Margin**
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4945	24.35	23.32	20.05	21.00	-0.95
4965	24.77	24.46	20.81	21.00	-0.19
4985	24.65	22.87	20.04	21.00	-0.96

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Duty Cycle Correction Factor (DCCF): 0.18 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			
Variant:	20 MHz Bandwidth	**Duty Cycle (%):**	82
Data Rate:	78 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density dBm/MHz EIRP		Calc. Conducted Summation Peak Marker + DCCF	Limit	Margin
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4950	22.29	18.56	17.69	21.00	-3.31
4965	23.06	18.39	18.20	21.00	-2.80
4980	22.01	20.82	18.33	21.00	-2.67

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Duty Cycle Correction Factor (DCCF): 0.86 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			
Variant:	40 MHz Bandwidth	**Duty Cycle (%):**	72
Data Rate:	180 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Power Spectral Density dBm/MHz EIRP**		**Calc. Conducted Summation Peak Marker + DCCF**	**Limit**	**Margin**
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4960	19.81	16.60	15.93	21.00	-5.07
4965	16.68	14.01	12.98	21.00	-8.02
4970	15.64	14.20	12.42	21.00	-8.58

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Duty Cycle Correction Factor (DCCF): 0.1.43 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			
Variant:	10 MHz Bandwidth	**Duty Cycle (%):**	96
Data Rate:	39 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density dBm/MHz EIRP		Calc. Conducted Summation Peak Marker + DCCF	Limit	Margin
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4945	34.12	29.00	18.46	21.00	-2.54
4965	33.59	26.97	17.62	21.00	-3.38
4985	33.60	28.91	18.05	21.00	-2.95

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Duty Cycle Correction Factor (DCCF): 0.18 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			
Variant:	20 MHz Bandwidth	**Duty Cycle (%):**	82
Data Rate:	78 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Power Spectral Density** dBm/MHz EIRP		**Calc. Conducted Summation Peak Marker + DCCF**	**Limit**	**Margin**
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4950	28.48	22.40	13.30	21.00	-7.70
4965	26.59	21.87	11.71	21.00	-9.29
4980	26.00	22.73	11.54	21.00	-9.46

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Duty Cycle Correction Factor (DCCF): 0.86 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			
Variant:	40 MHz Bandwidth	**Duty Cycle (%):**	72
Data Rate:	180 MBit/s	**Antenna Gain (dBi):**	7.00
Modulation:	256QAM	**Beam Forming Gain (Y)(dB):**	10.00
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density dBm/MHz EIRP		Calc. Conducted Summation Peak Marker + DCCF	Limit	Margin
MHz	**H**	**V**	**dBm/MHz**	**dBm/MHz**	**dB**
4960	25.43	20.56	11.08	21.00	-9.92
4965	22.59	17.75	8.25	21.00	-12.75
4970	20.74	17.46	6.84	21.00	-14.16

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Duty Cycle Correction Factor (DCCF): 1.43 dB

Note: click the links in the above matrix to view the graphical image (plot).

9.4. Peak Excursion Ratio

Conducted Test Conditions for Peak Excursion Ratio			
Standard:	FCC CFR 47:90 (Y)	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Peak Excursion Ratio	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	90.1215 (e)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Peak Excursion Ratio
The spectrum analyzers built in Peak-To-Average Power Ratio measurement function was utilized.

Only the center channel is measured for each operating mode and only the Horizontal Polarity is reported as it is the worst case scenario.

Peak Excursion Limits
The ratio of the peak excursion of the modulation envelope to the maximum output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less. Additionally, the PAPR can be used, and shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

Only Horizontal Polarity is reported as it is the worst case scenario.

Equipment Configuration for Peak Excursion Ratio			
Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	39.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	7.88	13.0	-5.12	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

Equipment Configuration for Peak Excursion Ratio			
Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	78.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	8.26	13.0	-4.74	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

Equipment Configuration for Peak Excursion Ratio			
Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	180.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	10.38	13.0	-2.62	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

Equipment Configuration for Peak Excursion Ratio			
Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	39.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	8.08	13.0	-4.98	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

Equipment Configuration for Peak Excursion Ratio			
Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	78.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	8.22	13.0	-4.78	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

Equipment Configuration for Peak Excursion Ratio			
Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	180.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Frequency	Measured Ratio (dB)	Limit	Margin	EUT Power Setting
MHz	**0.1% (dB)**	**dB**	**dB**	
4965.0	10.48	13.0	-2.22	Max

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	

9.5. Spectrum Emission Mask

Conducted Test Conditions for Spectrum Emission Mask			
Standard:	FCC CFR 47:90 (I)	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Spectrum Emission Mask	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	90.210 (m)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Emission Masks

Emission Mask Limits
Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (o) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating under this part.

(m) **Emission Mask M.** For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW):
0 dB.

(2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth (BW):
568 log (% of (BW)/45) dB.

(3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth (BW):
26 + 145 log (% of (BW)/50) dB.

(4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth (BW):
32 + 31 log (% of (BW)/55) dB.

(5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth (BW):
40 + 57 log (% of (BW)/100) dB.

(6) On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth:
50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

(7) The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

Equipment Configuration for Spectrum Emission Mask			
Variant:	10MHz	**Duty Cycle (%):**	99.0
Data Rate:	39.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4945.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4985.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Spectrum Emission Mask			
Variant:	20MHz	**Duty Cycle (%):**	99.0
Data Rate:	78.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4950.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4980.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Spectrum Emission Mask			
Variant:	40MHz	**Duty Cycle (%):**	99.0
Data Rate:	180.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4960.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4970.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Spectrum Emission Mask			
Variant:	10MHz	**Duty Cycle (%):**	99.0
Data Rate:	39.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4945.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4985.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Spectrum Emission Mask			
Variant:	20MHz	**Duty Cycle (%):**	99.0
Data Rate:	78.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4950.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4980.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Spectrum Emission Mask			
Variant:	40MHz	**Duty Cycle (%):**	99.0
Data Rate:	78.00 MBit/s	**Antenna Gain (dBi):**	7.0
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	10.0
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	**Measured Spectrum Mask**				**Complies**
MHz	**H**	**V**			**Pass/Fail**
4960.0	Mask	Mask	--	--	Pass
4965.0	Mask	Mask	--	--	Pass
4970.0	Mask	Mask	--	--	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

9.6. Radiated

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:90 (I)	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	90.210 (m)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions
Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.
Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

Emission Limits
Except as indicated in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (o) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating under this part.

(m) **Emission Mask M.** For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:
(1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW):
0 dB.
(2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth (BW):
568 log (% of (BW)/45) dB.
(3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth (BW):
26 + 145 log (% of (BW)/50) dB.
(4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth (BW):
32 + 31 log (% of (BW)/55) dB.
(5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth (BW):
40 + 57 log (% of (BW)/100) dB.
(6) On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth:
50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.
(7) The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

Test Procedure
Measurements were made while EUT was operating in a modulated transmit mode of operation, at the appropriate center frequency, 100% duty cycle and maximum power at all times. Radiated spurious emissions were measured to 40 GHz. Substitution was performed on any emissions observed. The antenna port was attenuated with 50 dB attenuation plus a 50 Ω terminator.

The measurement equipment was set to measure in peak hold mode. The emissions were measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode.

The highest emissions relative to the limit are listed for each frequency spanned.
Measurements below 1 GHz utilized 100 KHz RBW, measurements above 1 GHz were performed using a minimum RBW of 1 MHz.

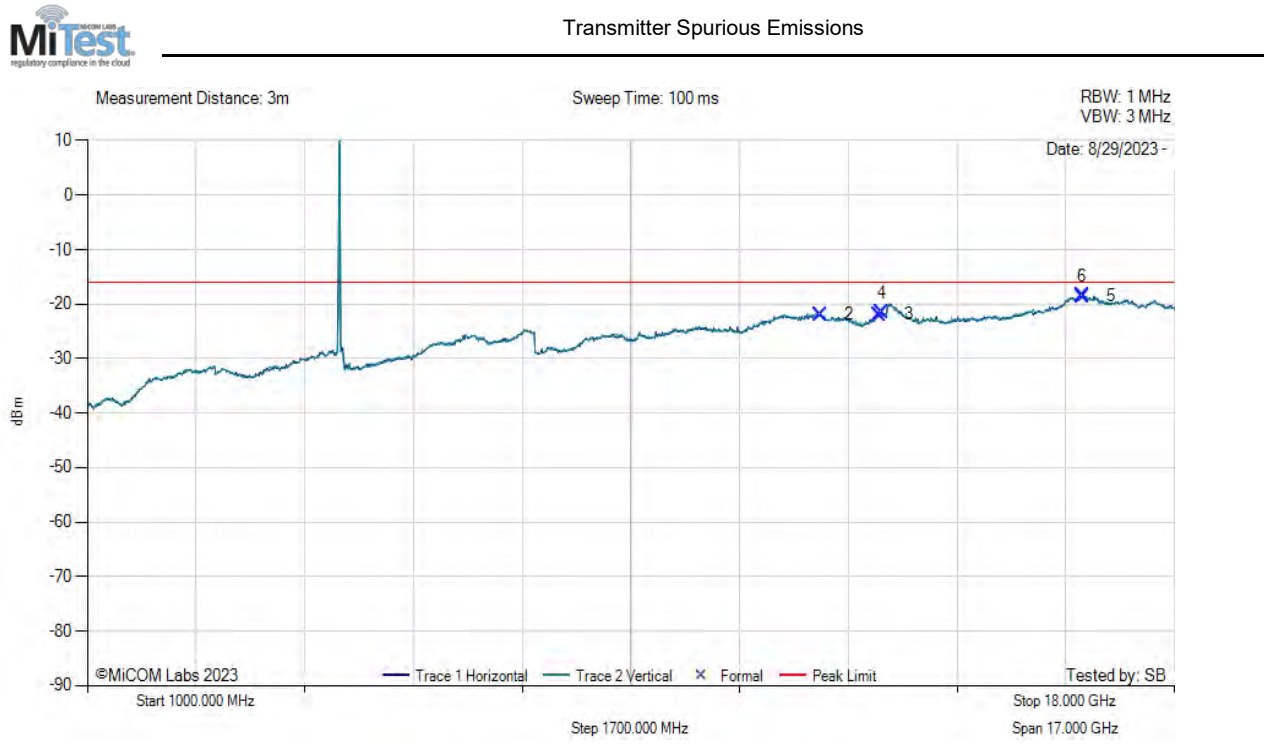
Emission measurements were performed to the 10th harmonic of the transmitter. No emissions were found.

9.6.1. TX Spurious Emissions

9.6.1.1. Antenna AP0200600 80º

Equipment Configuration for Transmitter Spurious Emissions			
Antenna:	Panel	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4945.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results



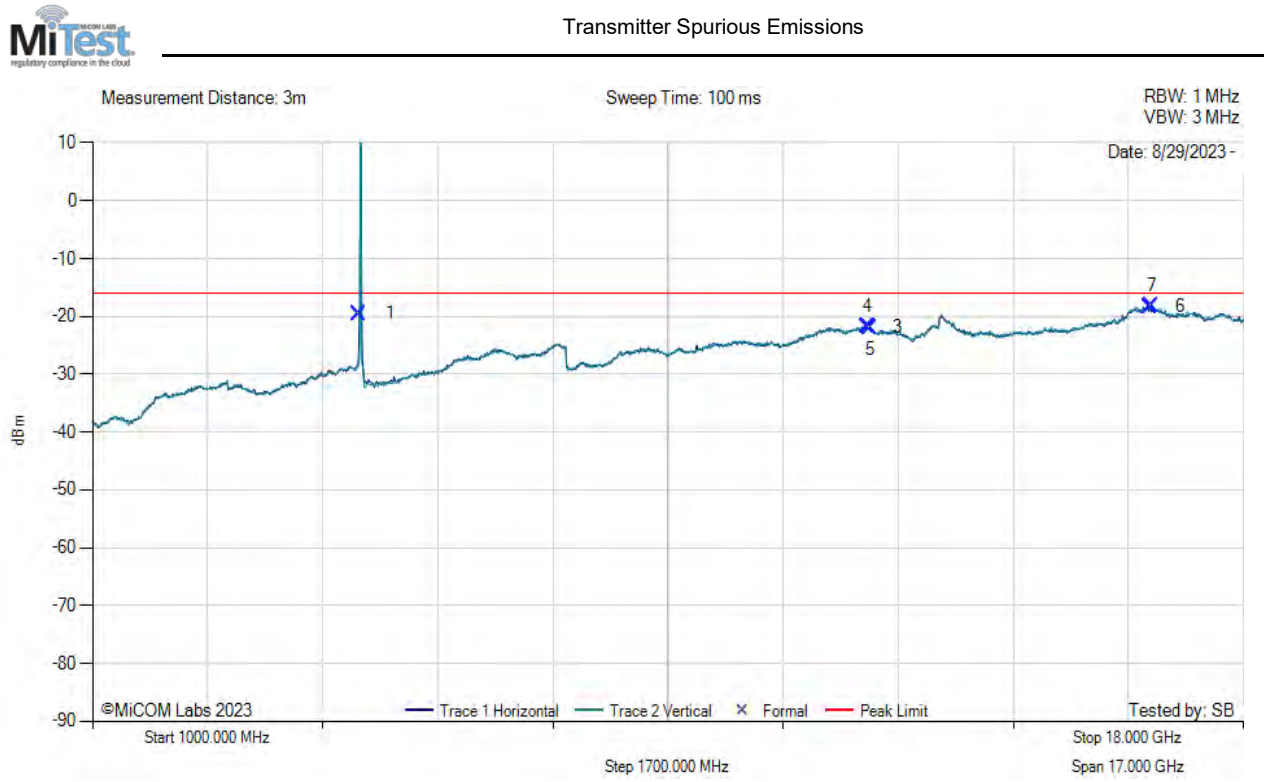
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4944.00	-23.71	-1.70	10.18	23.73	Fundamental	Horizontal	149	--	--	--	Pass
2	12458.00	-75.66	-2.83	13.08	-21.96	AVG	Horizontal	149	30	-16.0	-6.0	Pass
3	13393.00	-75.52	-2.84	13.80	-21.90	AVG	Horizontal	99	330	-16.0	-5.9	Pass
4	13427.00	-75.25	-2.84	13.84	-21.64	AVG	Horizontal	149	300	-16.0	-5.6	Pass
5	16555.00	-74.74	-3.11	13.24	-18.45	AVG	Vertical	99	149	-16.0	-2.5	Pass
6	16555.00	-74.87	-3.11	13.24	-18.58	AVG	Horizontal	99	268	-16.0	-2.6	Pass

Test Notes: POE Powered, Max Power

Equipment Configuration for Transmitter Spurious Emissions

Antenna:	Panel	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4965.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4944.00	-66.95	-1.70	10.18	-19.50	AVG	Horizontal	100	58	-16.0	-3.5	Pass
2	4961.00	-22.25	-1.67	10.21	25.16	Fundamental	Horizontal	149	--	--	--	Pass
3	12441.00	-75.42	-2.77	13.08	-21.79	AVG	Horizontal	149	0	-16.0	-5.8	Pass
4	12458.00	-75.58	-2.83	13.08	-21.88	AVG	Horizontal	199	210	-16.0	-5.9	Pass
5	12492.00	-75.66	-2.78	13.09	-21.99	AVG	Horizontal	100	30	-16.0	-6.0	Pass
6	16623.00	-74.87	-3.26	13.16	-18.31	AVG	Horizontal	149	270	-16.0	-2.3	Pass
7	16640.00	-74.91	-3.30	13.11	-18.25	AVG	Vertical	149	59	-16.0	-2.3	Pass

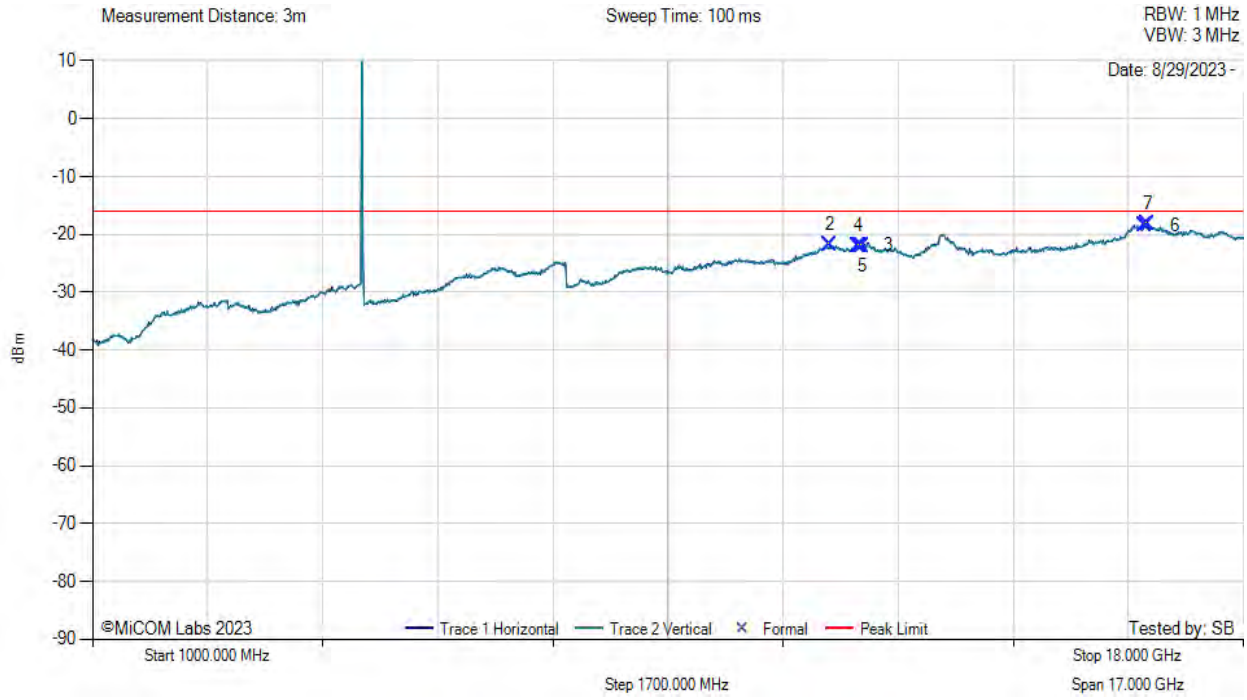
Test Notes: POE Powered, Max Power

Equipment Configuration for Transmitter Spurious Emissions

Antenna:	Panel	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4985.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results

Transmitter Spurious Emissions



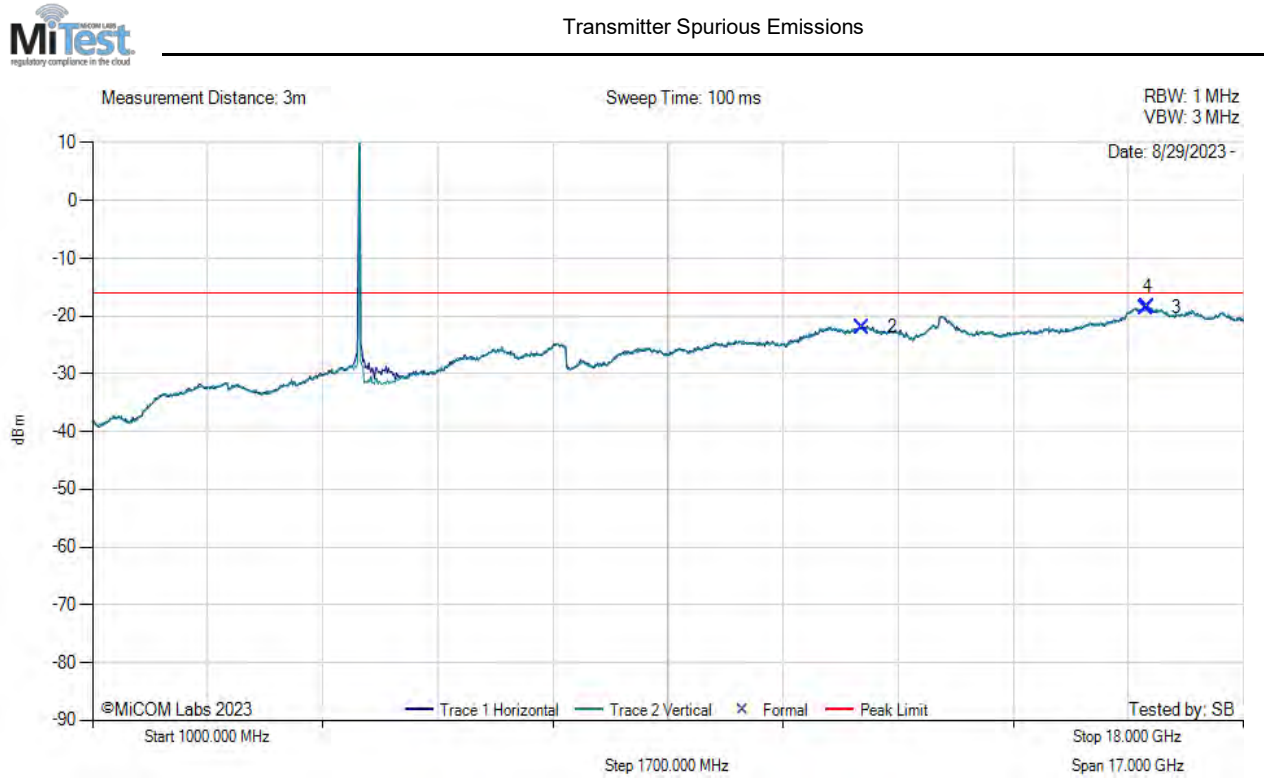
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4978.00	-26.37	-1.79	10.23	21.17	Fundamental	Horizontal	149	--	--	--	Pass
2	11897.00	-75.22	-2.76	12.97	-21.88	AVG	Horizontal	99	58	-16.0	-5.9	Pass
3	12305.00	-75.35	-2.57	13.04	-21.97	AVG	Horizontal	199	120	-16.0	-6.0	Pass
4	12322.00	-75.28	-2.48	13.04	-21.98	AVG	Horizontal	199	240	-16.0	-6.0	Pass
5	12373.00	-75.46	-2.68	13.05	-21.94	AVG	Horizontal	99	120	-16.0	-5.9	Pass
6	16538.00	-74.62	-3.07	13.26	-18.41	AVG	Horizontal	149	58	-16.0	-2.4	Pass
7	16589.00	-74.53	-3.11	13.23	-18.21	AVG	Vertical	199	209	-16.0	-2.2	Pass

Test Notes: POE Powered, Max Power

9.6.1.2. Antenna AP0200600 18º

Equipment Configuration for Transmitter Spurious Emissions			
Antenna:	Directional	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	10.0	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4945.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results

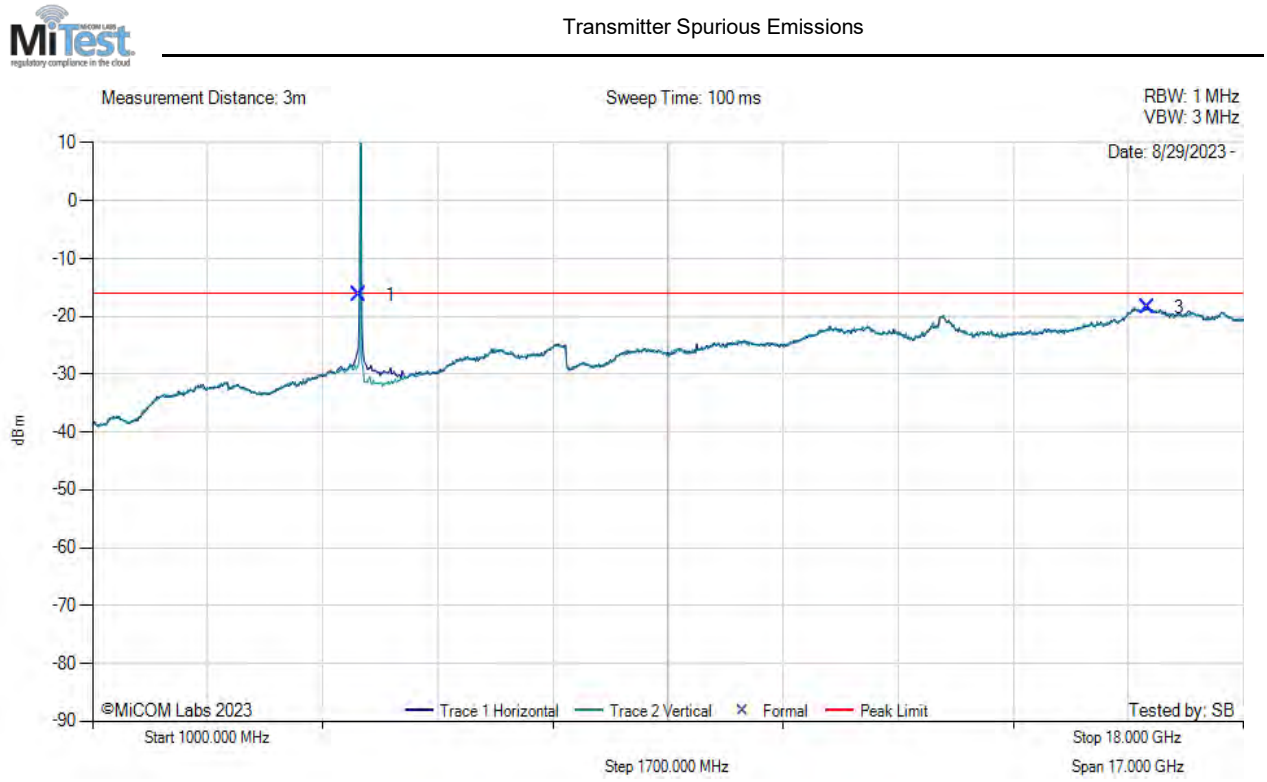


1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4944.00	-17.85	-1.70	10.18	29.60	Fundamental	Horizontal	149	--	--	--	Pass
2	12373.00	-75.47	-2.68	13.05	-21.95	AVG	Horizontal	100	300	-16.0	-5.9	Pass
3	16555.00	-74.82	-3.11	13.24	-18.53	AVG	Horizontal	100	268	-16.0	-2.5	Pass
4	16589.00	-74.82	-3.11	13.23	-18.51	AVG	Vertical	199	239	-16.0	-2.5	Pass

Test Notes: POE Powered, Max Power

Equipment Configuration for Transmitter Spurious Emissions			
Antenna:	Directional	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	10.0	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4965.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results

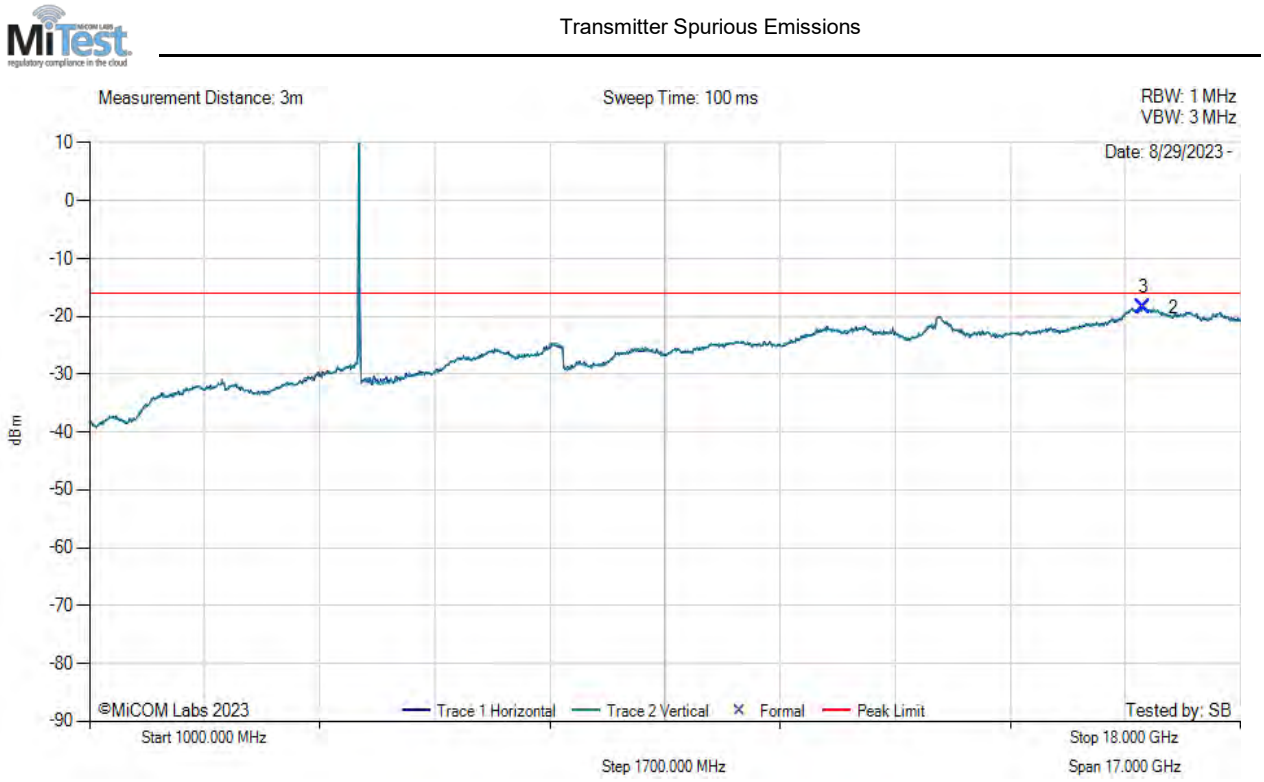


1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4944.00	-63.69	-1.70	10.18	-16.25	Fundamental	Horizontal	149	--	--	--	Pass
2	4961.00	-16.95	-1.67	10.21	30.47	Fundamental	Horizontal	149	--	--	--	Pass
3	16589.00	-74.70	-3.11	13.23	-18.39	AVG	Vertical	149	269	-16.0	-2.4	Pass

Test Notes: POE Powered, Max Power

Equipment Configuration for Transmitter Spurious Emissions			
Antenna:	Directional	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	10.0	**Duty Cycle (%):**	99
Channel Frequency (MHz):	4985.00	**Data Rate:**	39 MBit/s
Power Setting:	Max	**Tested By:**	SB

Test Measurement Results



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBm**	**Cable Loss dB**	**AF dB/m**	**Level dBm**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBm**	**Margin dB**	**Pass /Fail**
1	4978.00	-21.53	-1.79	10.23	26.00	Fundamental	Horizontal	149	--	--	--	Pass
2	16555.00	-74.73	-3.11	13.24	-18.44	AVG	Horizontal	99	180	-16.0	-2.4	Pass
3	16572.00	-74.69	-3.03	13.24	-18.46	AVG	Vertical	149	0	-16.0	-2.5	Pass

Test Notes: POE Powered, Max Power

9.6.2. Receiver Radiated Spurious Emissions

Radiated Spurious Emissionsa			
Standard:	RSS-Gen	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Receiver Radiated Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	4.10, 6	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Receiver RadiatedSpurious Emissions

RSS-Gen §4.10 the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g.. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 3 times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.
For emissions below 1000 MHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.
Above 1000 MHz, measurements shall be performed using an average detector with a minimum resolution bandwidth of 1 MHz.

RSS-Gen §6 Receiver Spurious Radiated Limits
Spurious emissions from receivers shall not exceed the radiated limits shown in the table below:

RSS-Gen Spurious Emissions Limits

Frequency (MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Test Procedure
Measurements were made while EUT was operating in a receiver mode of operation. Radiated Receiver emissions were measured to 40 GHz. .

The measurement equipment was set to measure in peak hold mode. The emissions were measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode.

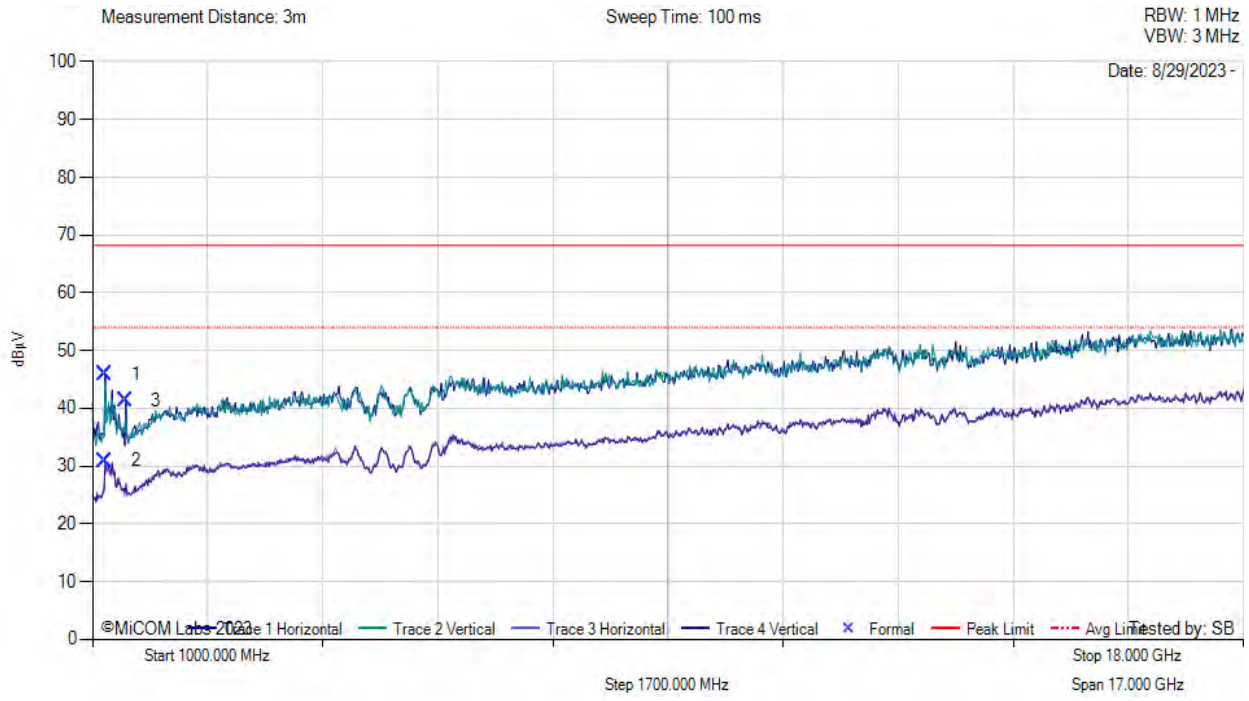
The highest emissions relative to the limit are listed for each frequency spanned.
Measurements below 1 GHz utilized 100 KHz RBW, measurements above 1 GHz were performed using a minimum RBW of 1 MHz.

Emission measurements were performed to the 10^{th} harmonic of the transmitter. No emissions were found.

Equipment Configuration for Receiver Spurious Emissions			
Antenna:	Directional	**Variant:**	10 MHz Bandwidth
Antenna Gain (dBi):	7.0	**Modulation:**	256QAM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	Not Applicable
Channel Frequency (MHz):	4965.00	**Data Rate:**	Not Applicable
Power Setting:	Not Applicable	**Tested By:**	SB

Test Measurement Results

FCC Spurious 1 GHz -18 GHz



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1187.00	61.50	1.40	28.39	45.95	MaxP	Horizontal	149	300	68.2	-22.3	Pass
2	1187.00	46.49	1.40	28.39	30.94	AVG	Horizontal	100	300	54.0	-23.1	Pass
3	1493.00	56.46	1.57	28.27	41.30	MaxP	Horizontal	100	240	68.2	-26.9	Pass

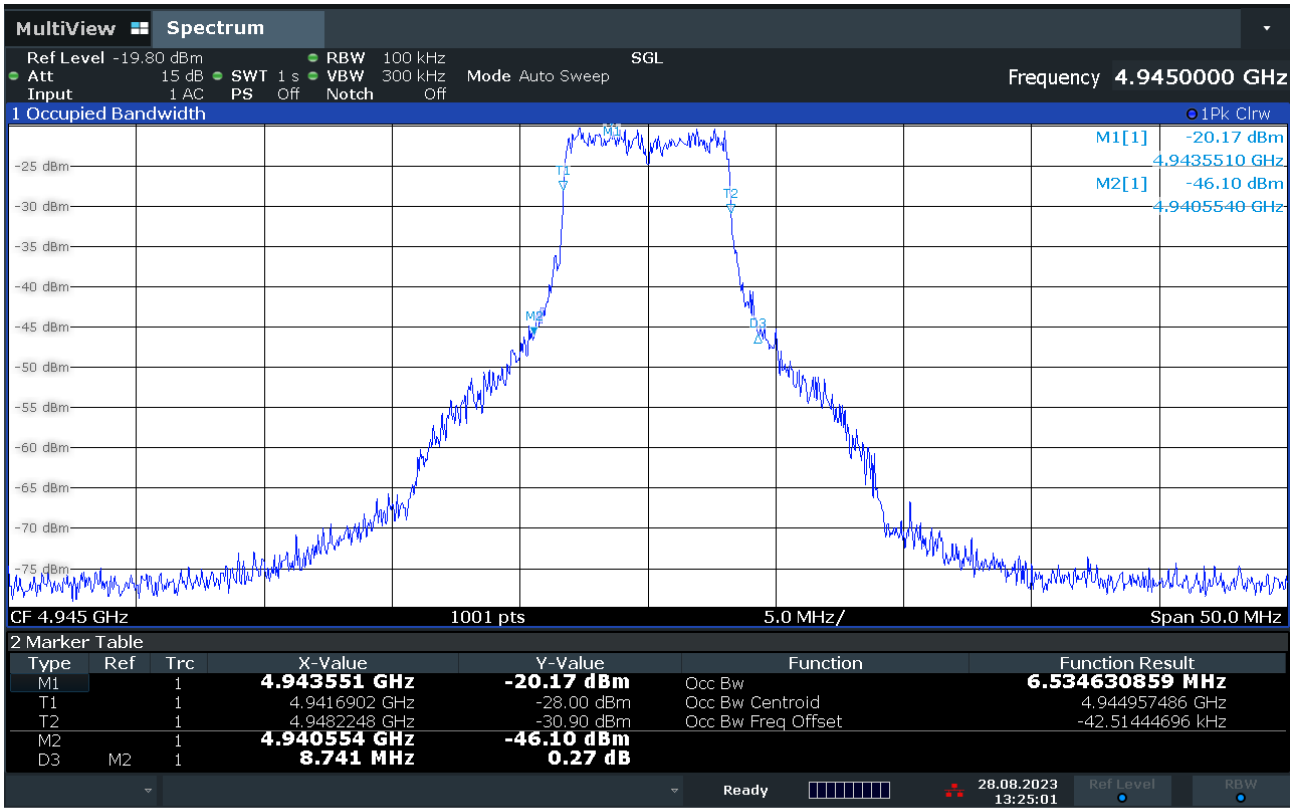
Test Notes: Receiver Mode

A. APPENDIX - GRAPHICAL IMAGES

A.1. 26 dB & 99% Bandwidth

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4945.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

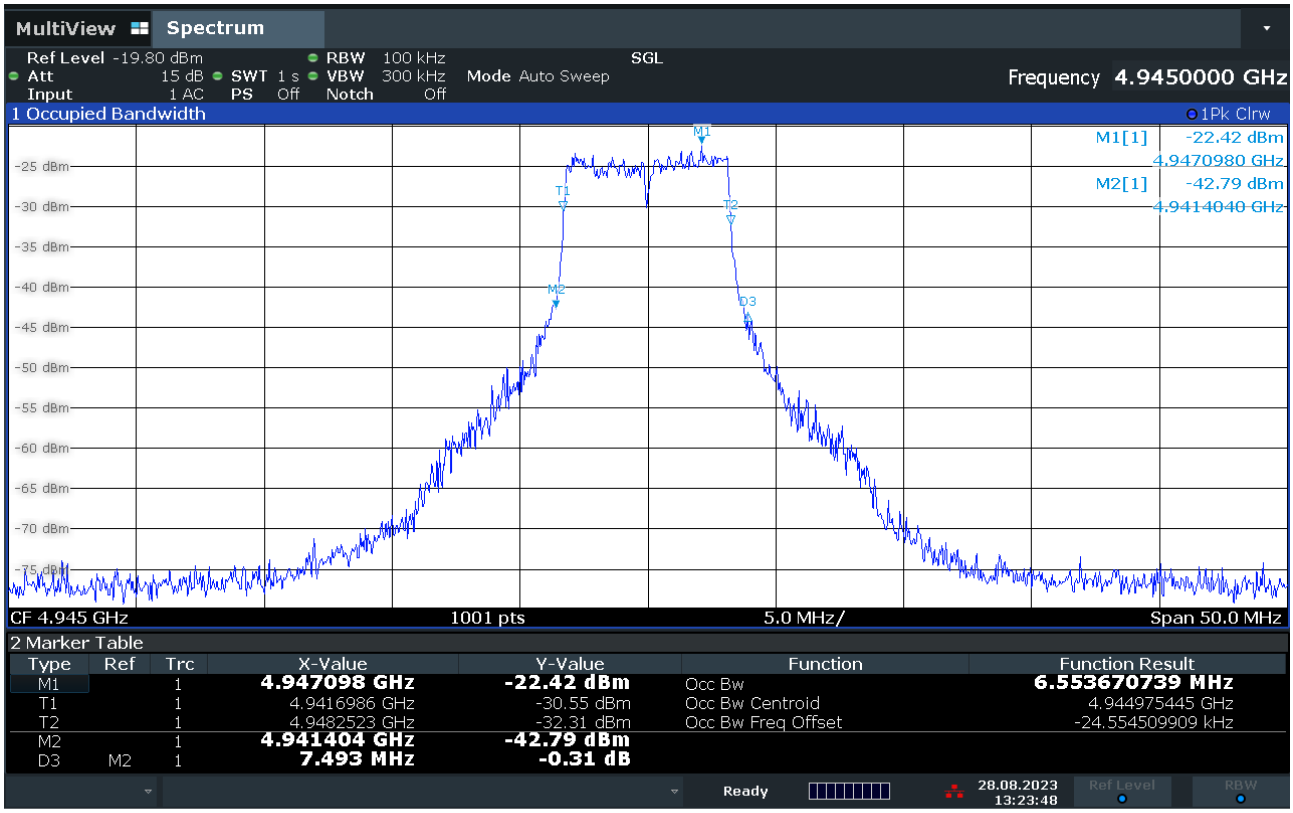


13:25:01 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4945.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

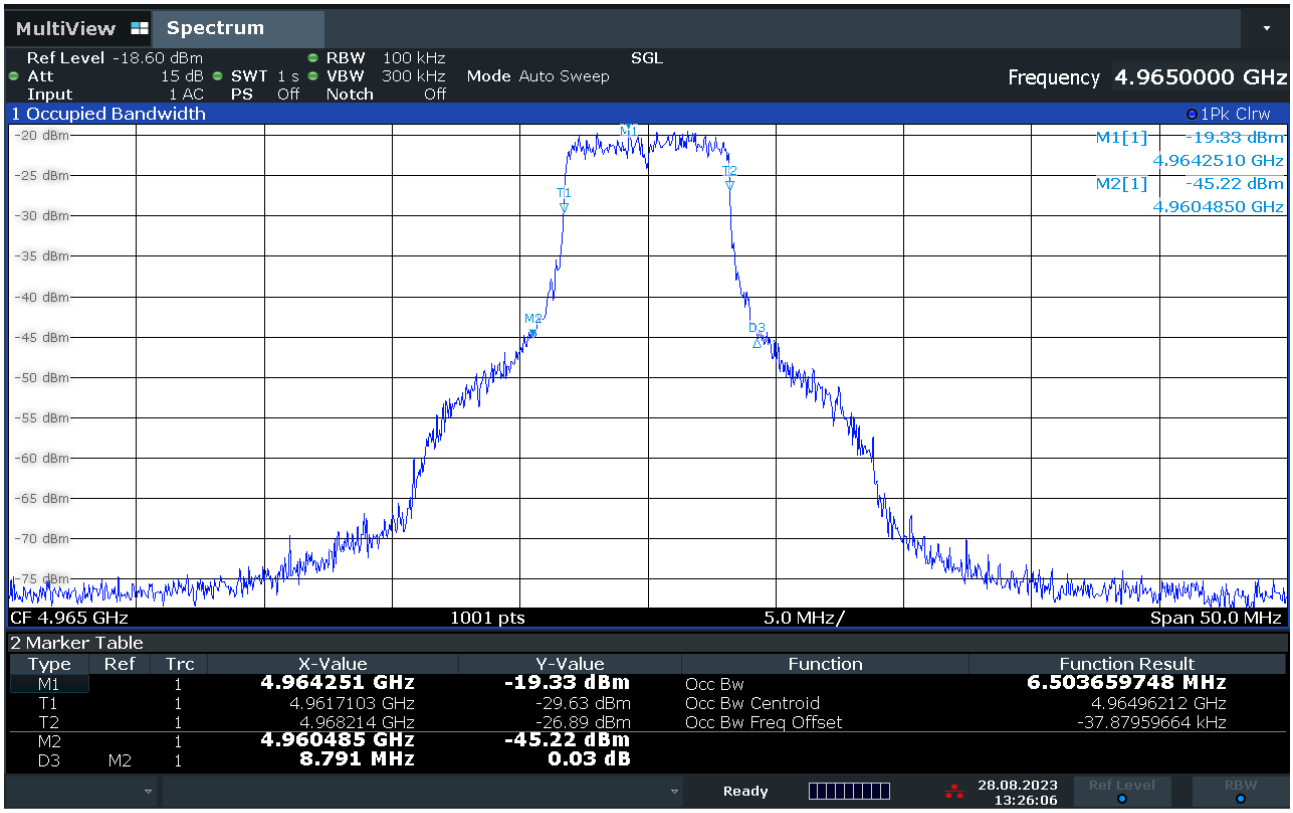


13:23:48 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

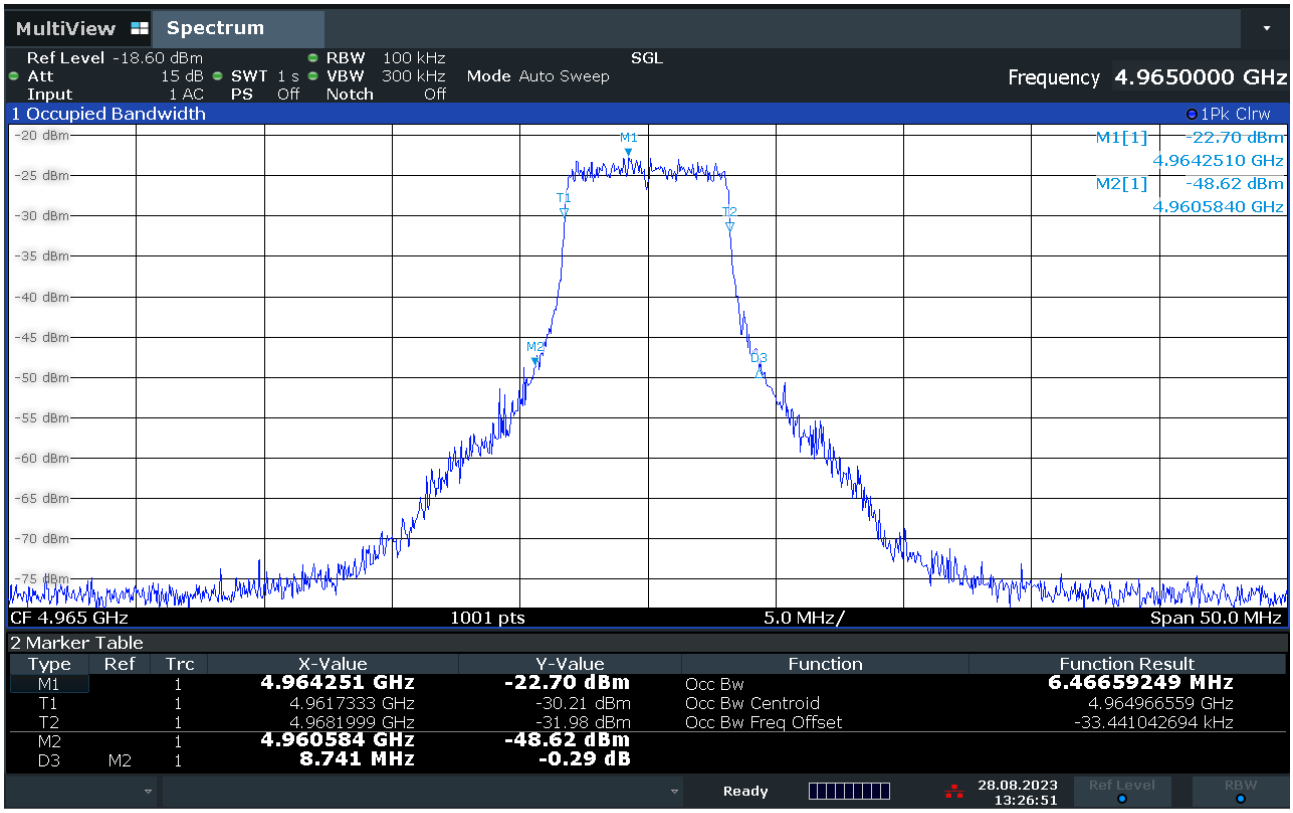


13:26:06 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

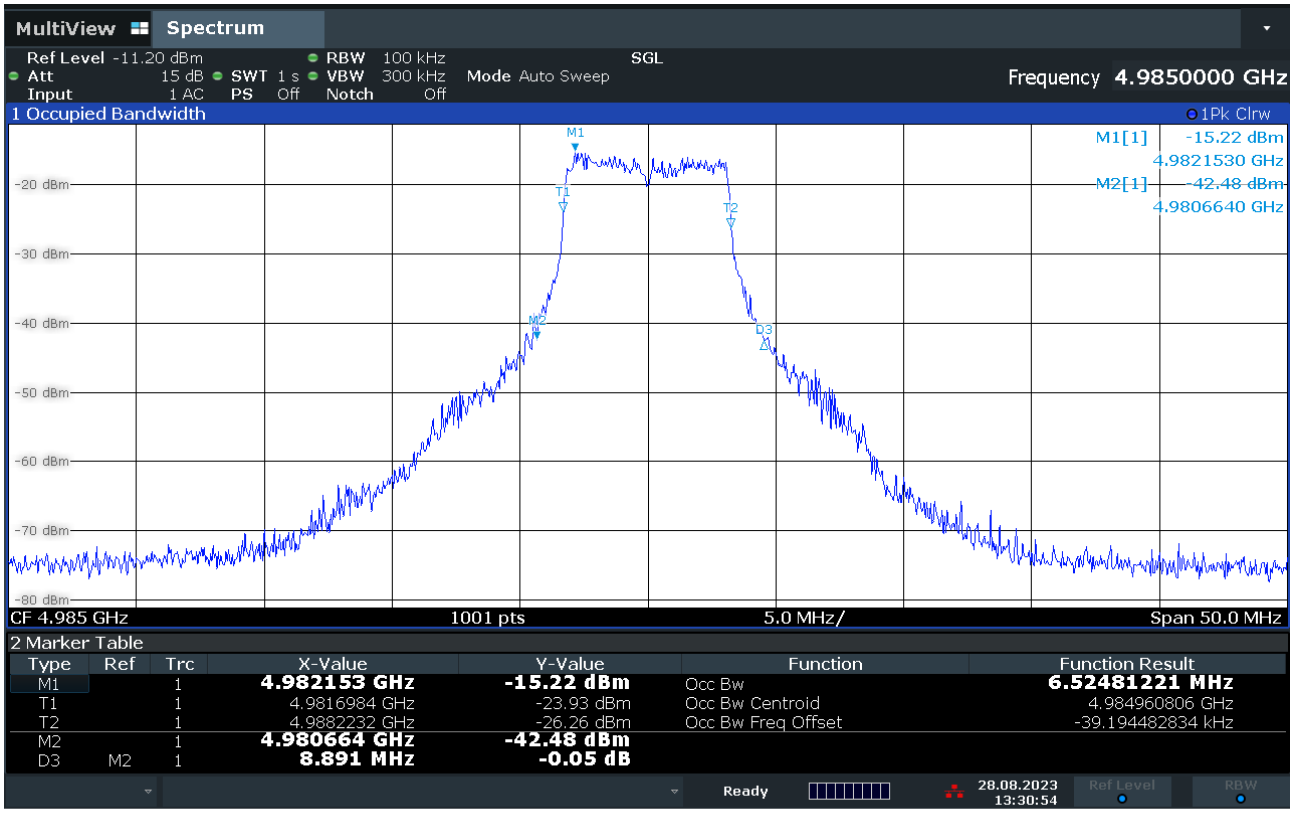


13:26:51 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4985.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

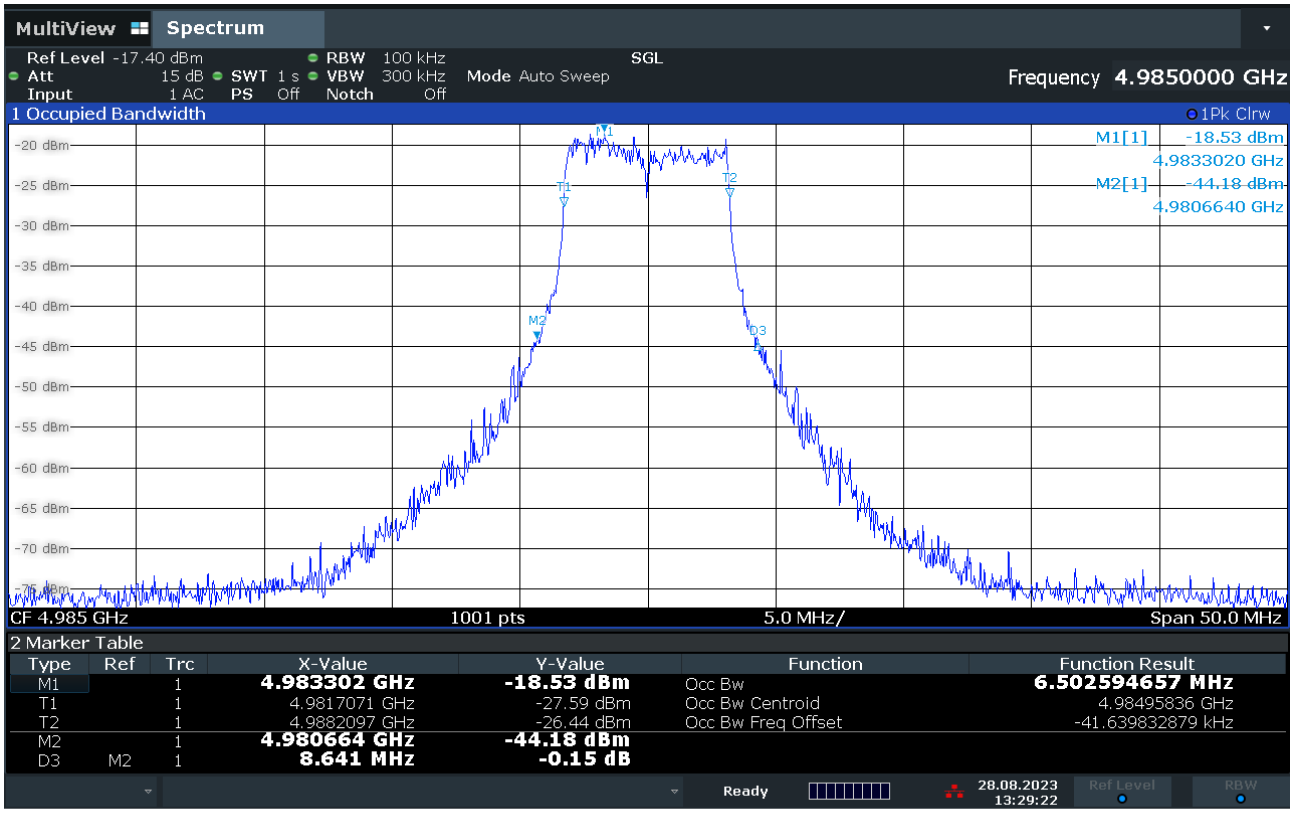


13:30:54 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 10MHz, Channel: 4985.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc



13:29:22 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

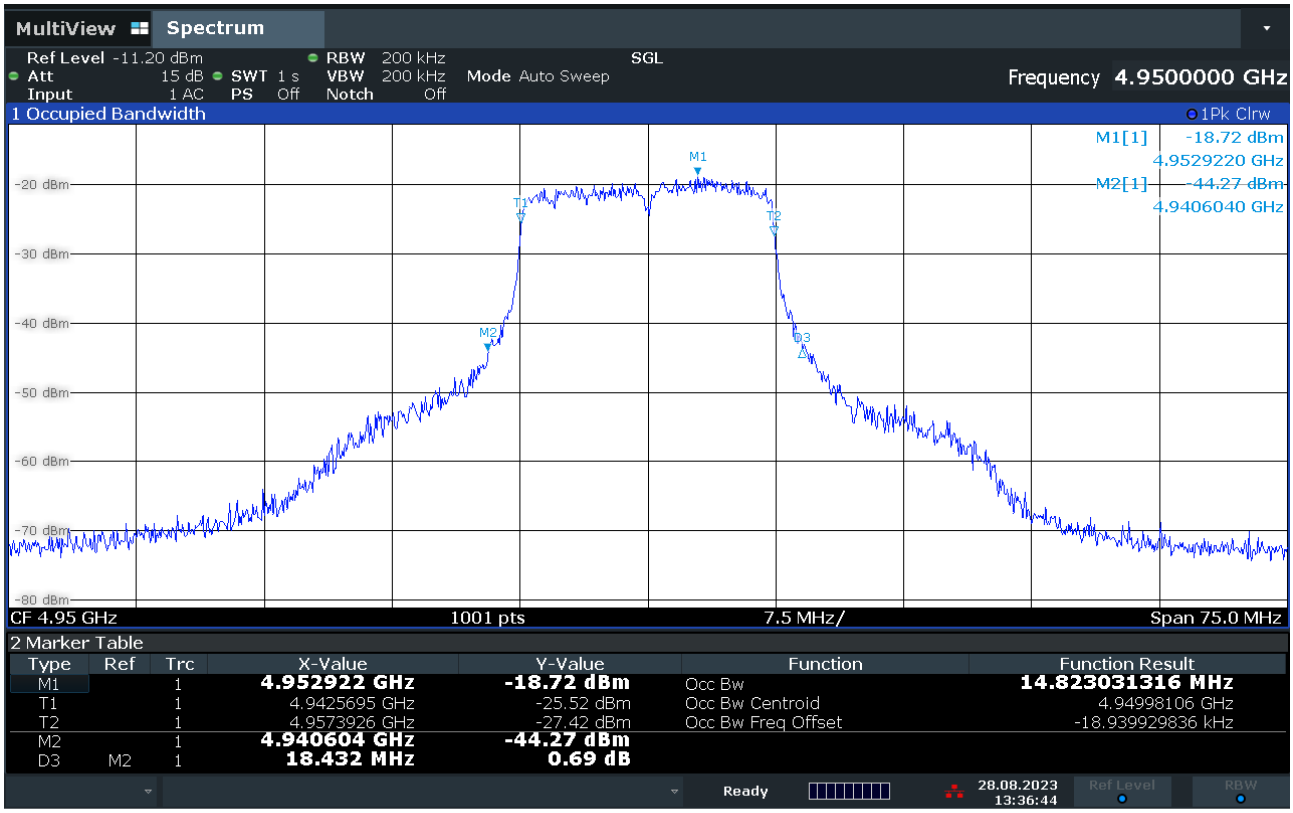
Variant: 20MHz, Channel: 4950.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

13:35:21 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20MHz, Channel: 4950.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

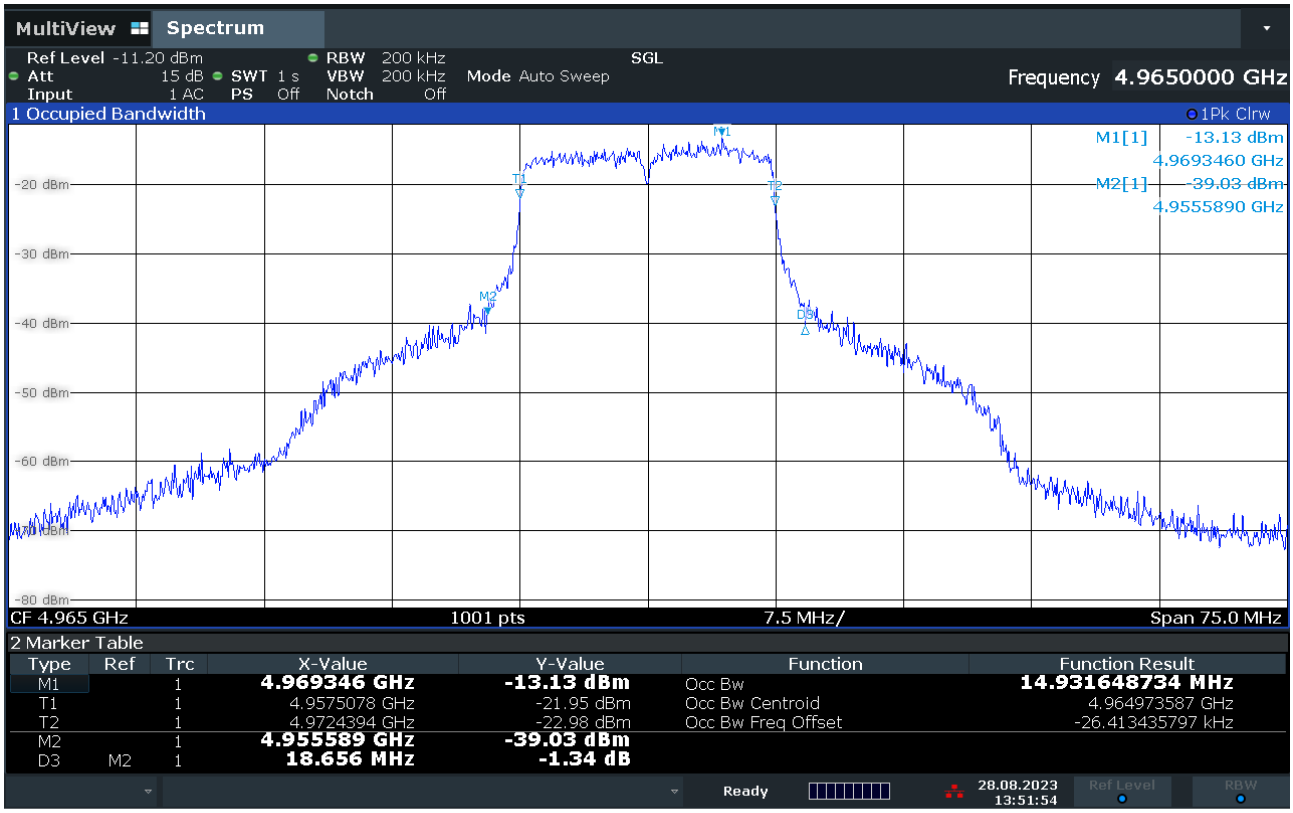


13:36:44 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

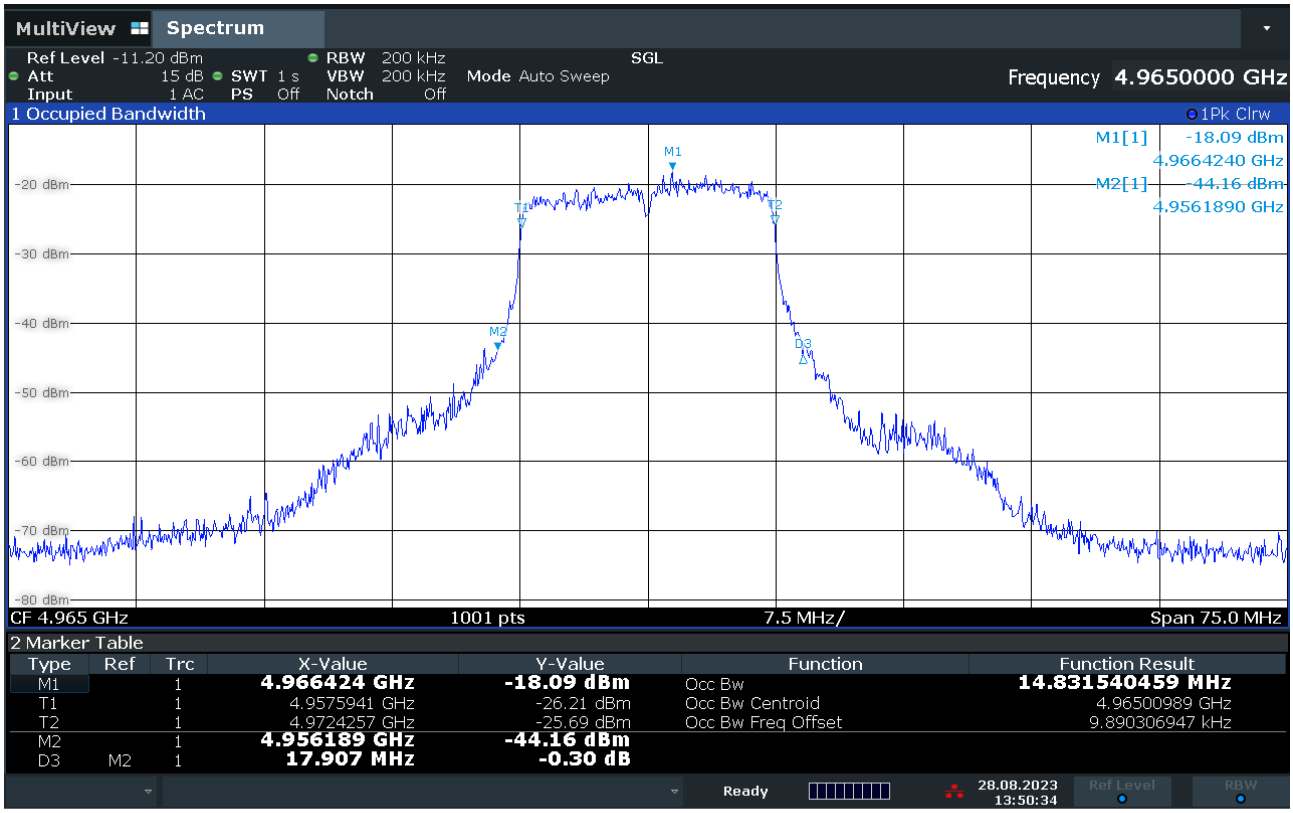


13:51:54 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

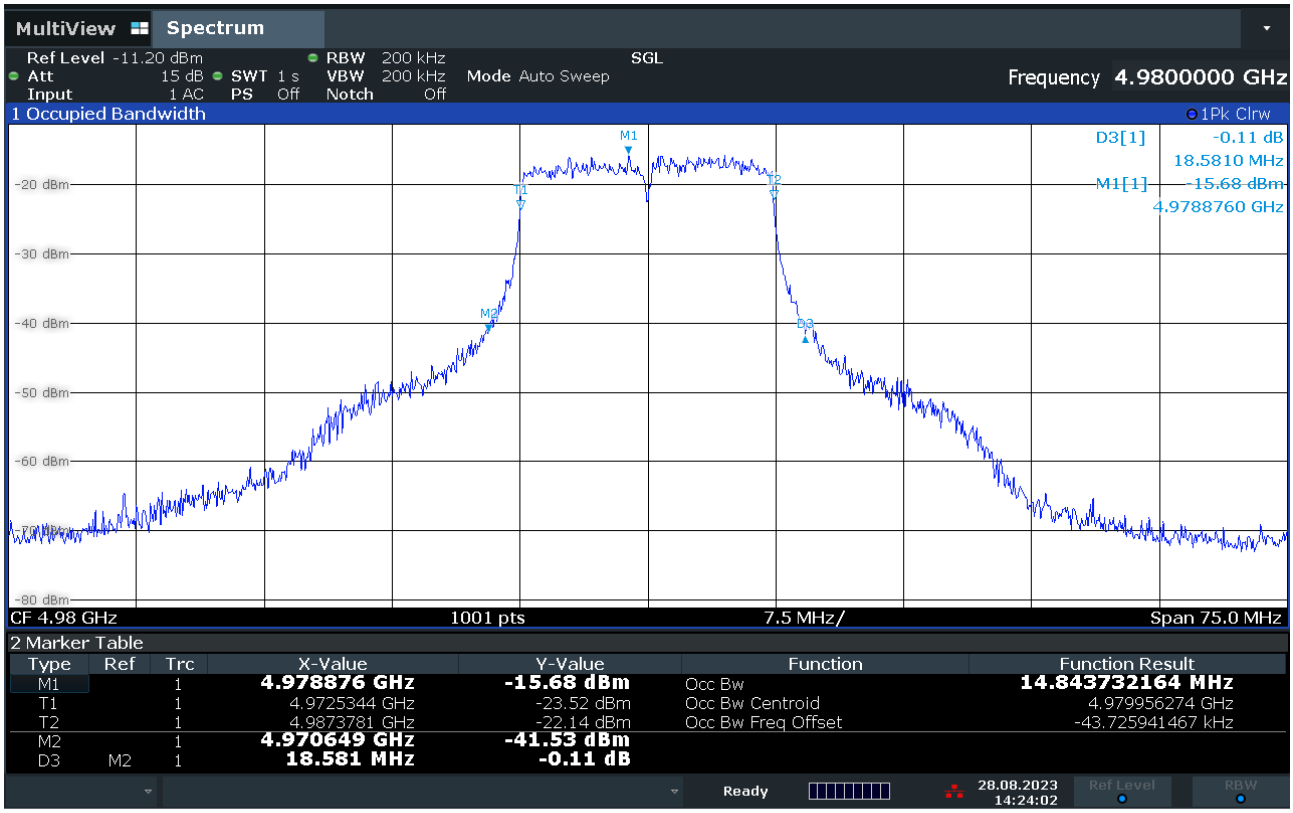


13:50:34 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20MHz, Channel: 4980.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

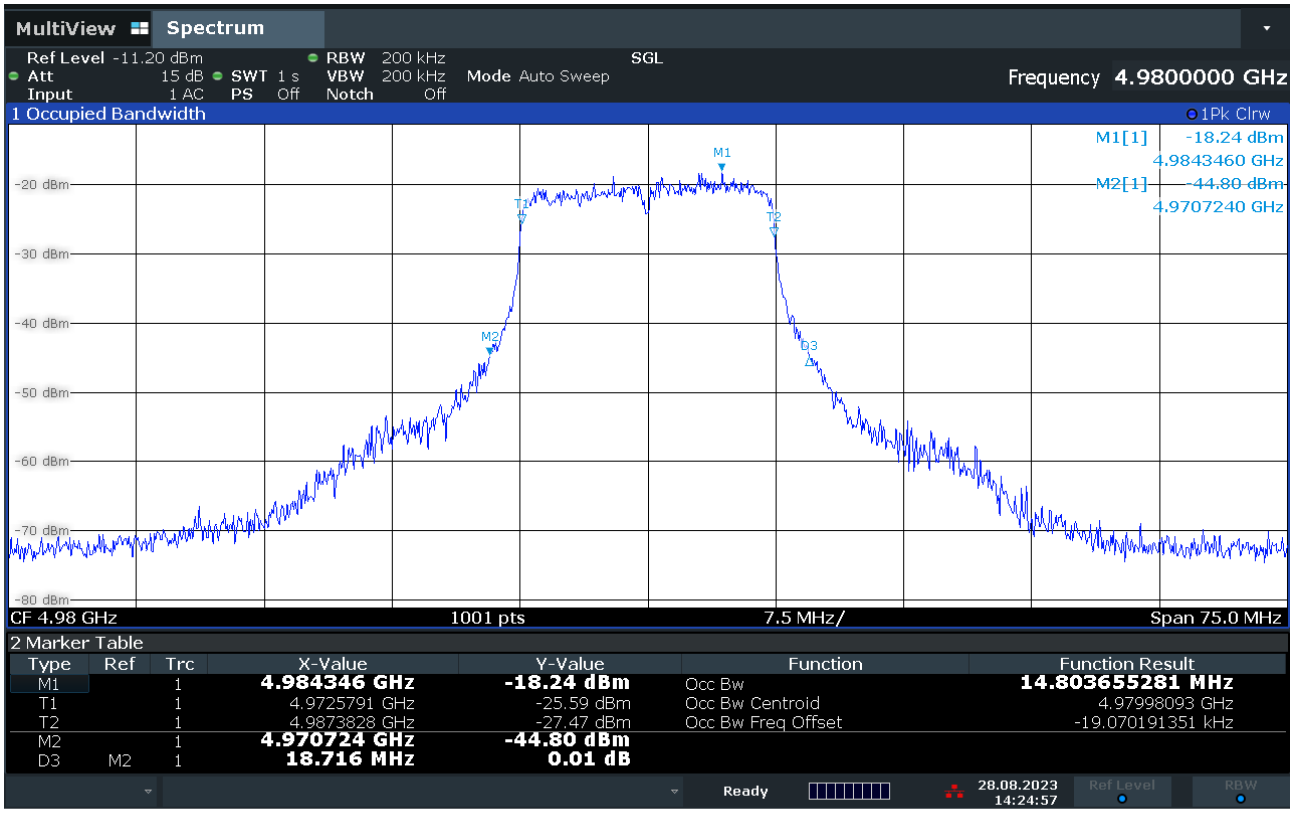


14:24:02 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20MHz, Channel: 4980.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc



14:24:58 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4960.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

14:37:16 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4960.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

14:36:10 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

14:30:45 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

14:32:48 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4970.00 MHz, Polarity H, Temp: 20, Voltage: 55 Vdc

14:29:31 28.08.2023

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40MHz, Channel: 4970.00 MHz, Polarity V, Temp: 20, Voltage: 55 Vdc

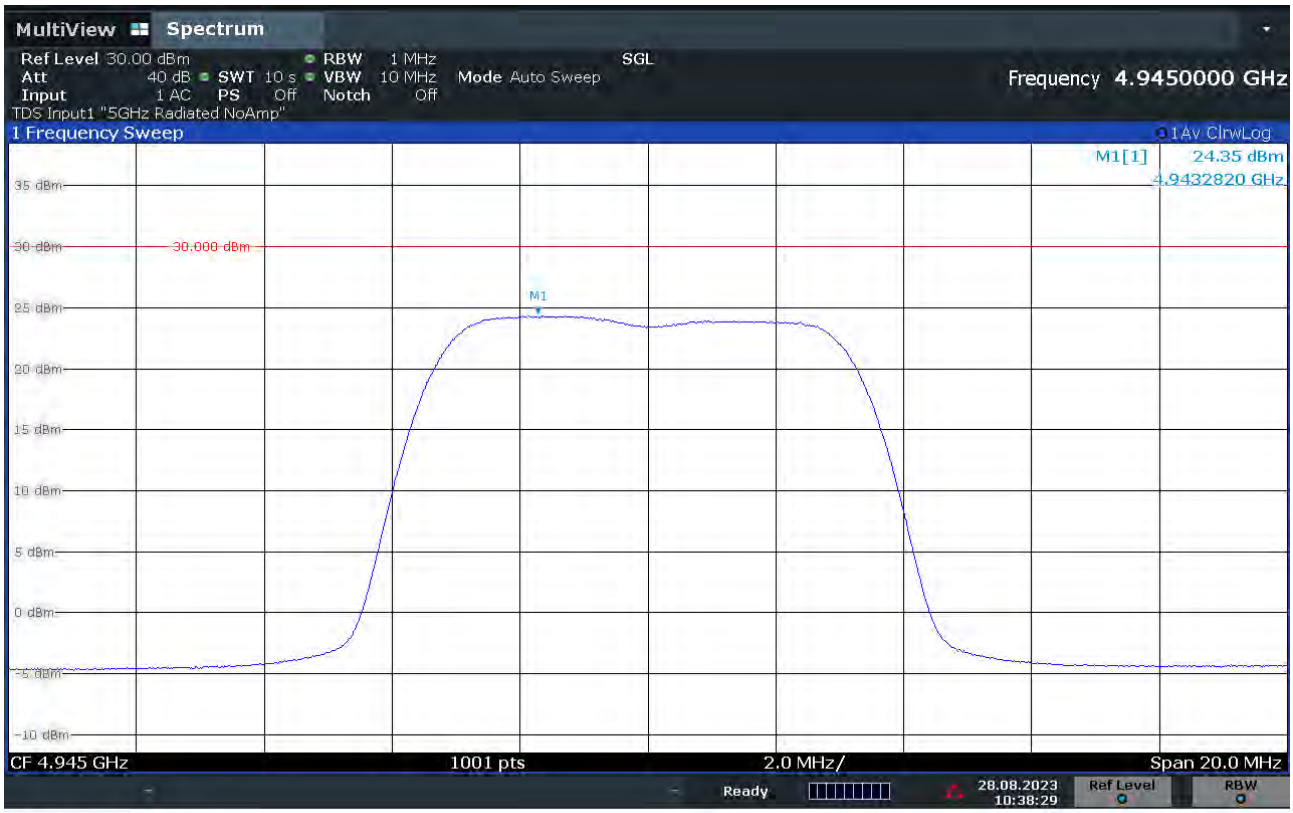
14:28:35 28.08.2023

back to matrix

A.2. Power Spectral Density

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4945.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

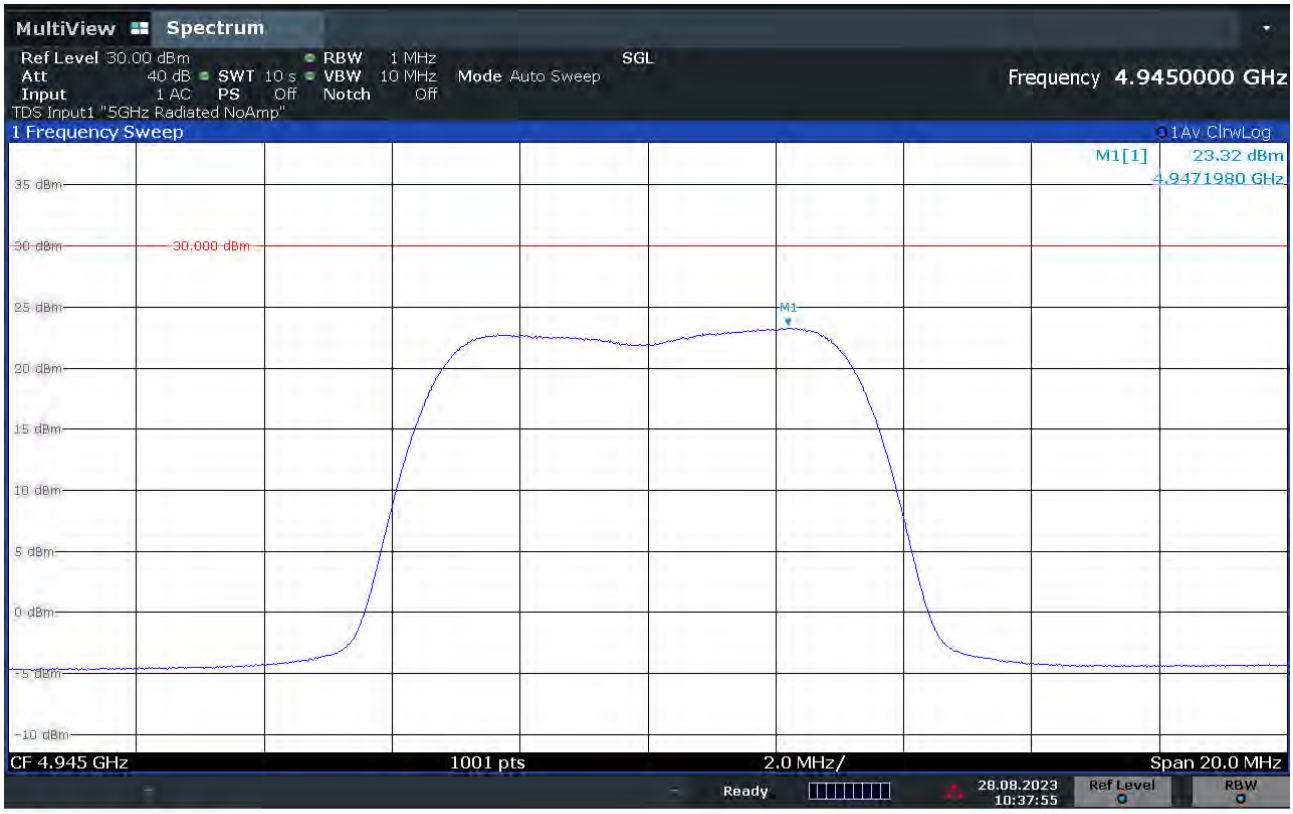


10:38:29 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4945.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

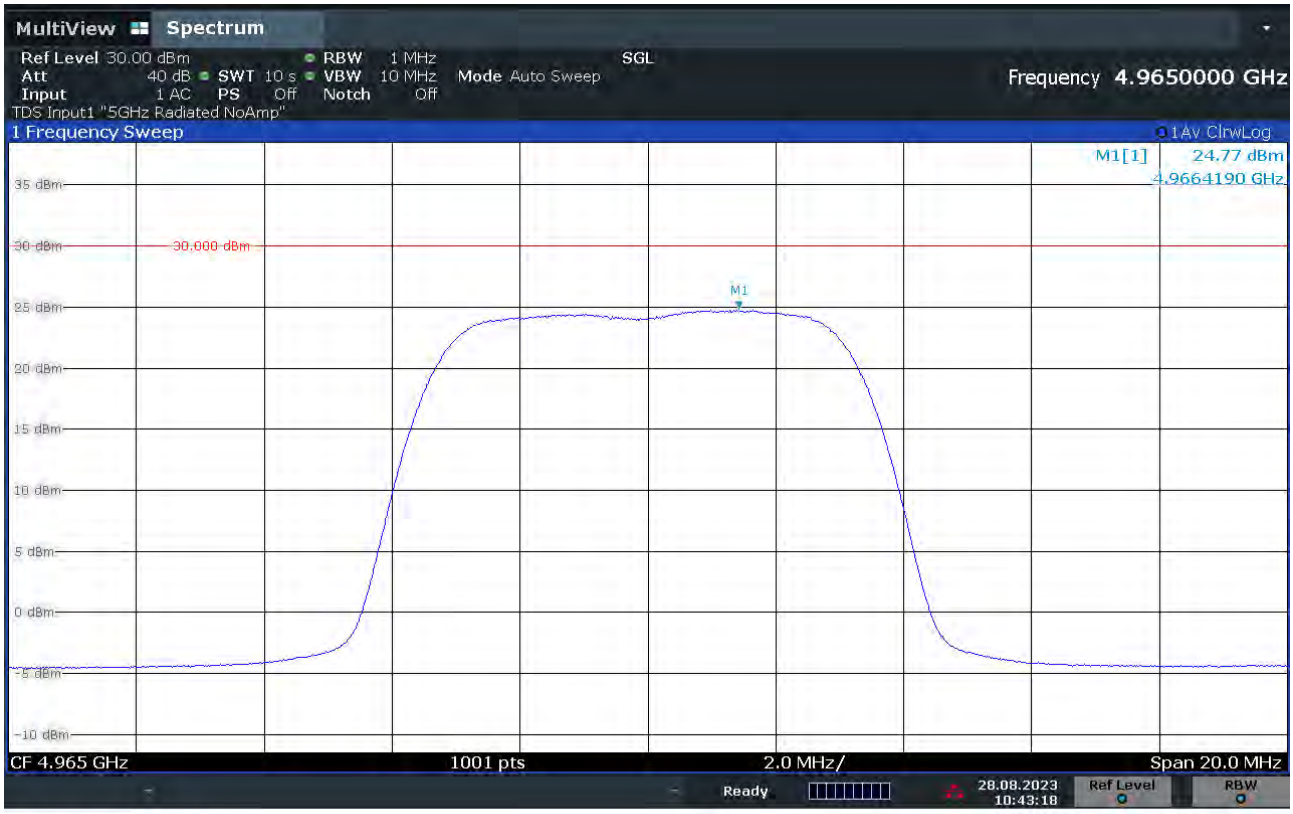


10:37:55 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

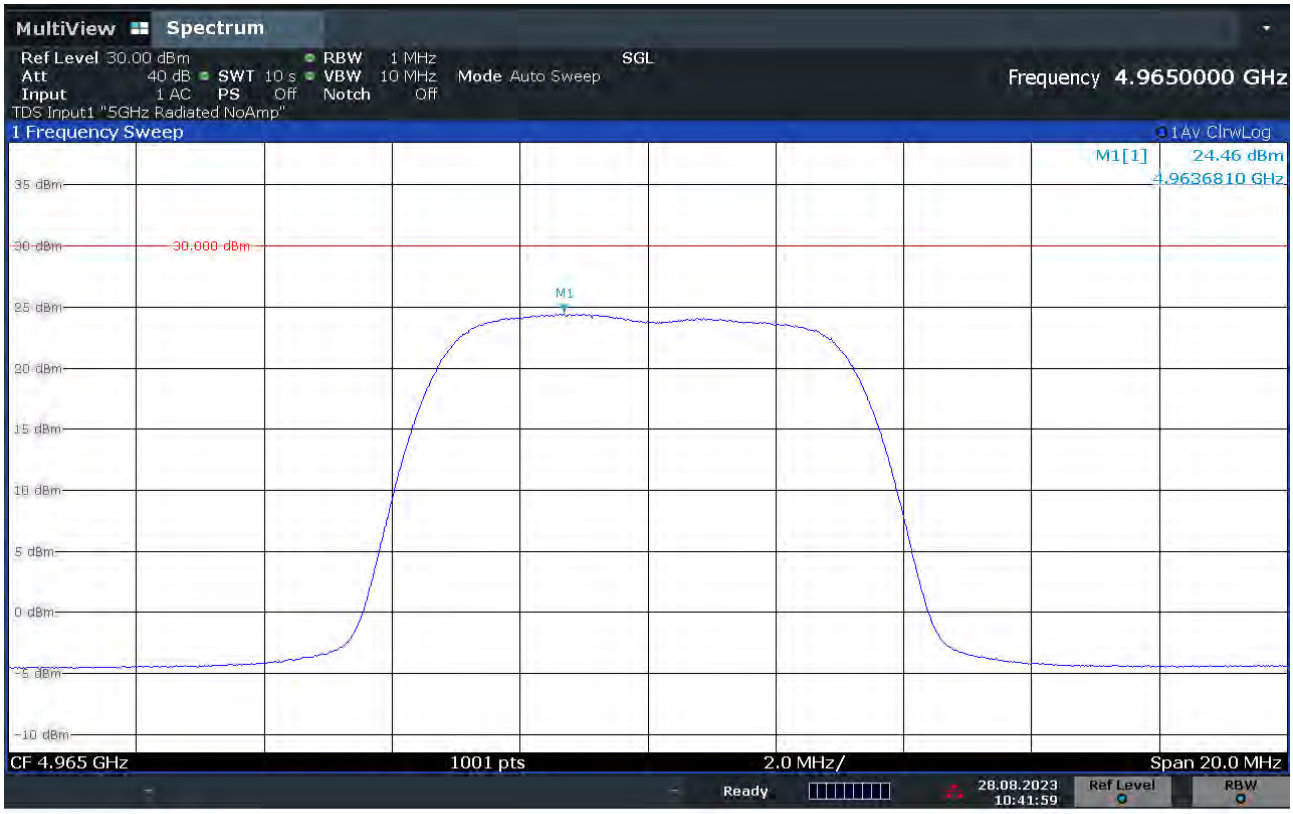


10:43:18 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

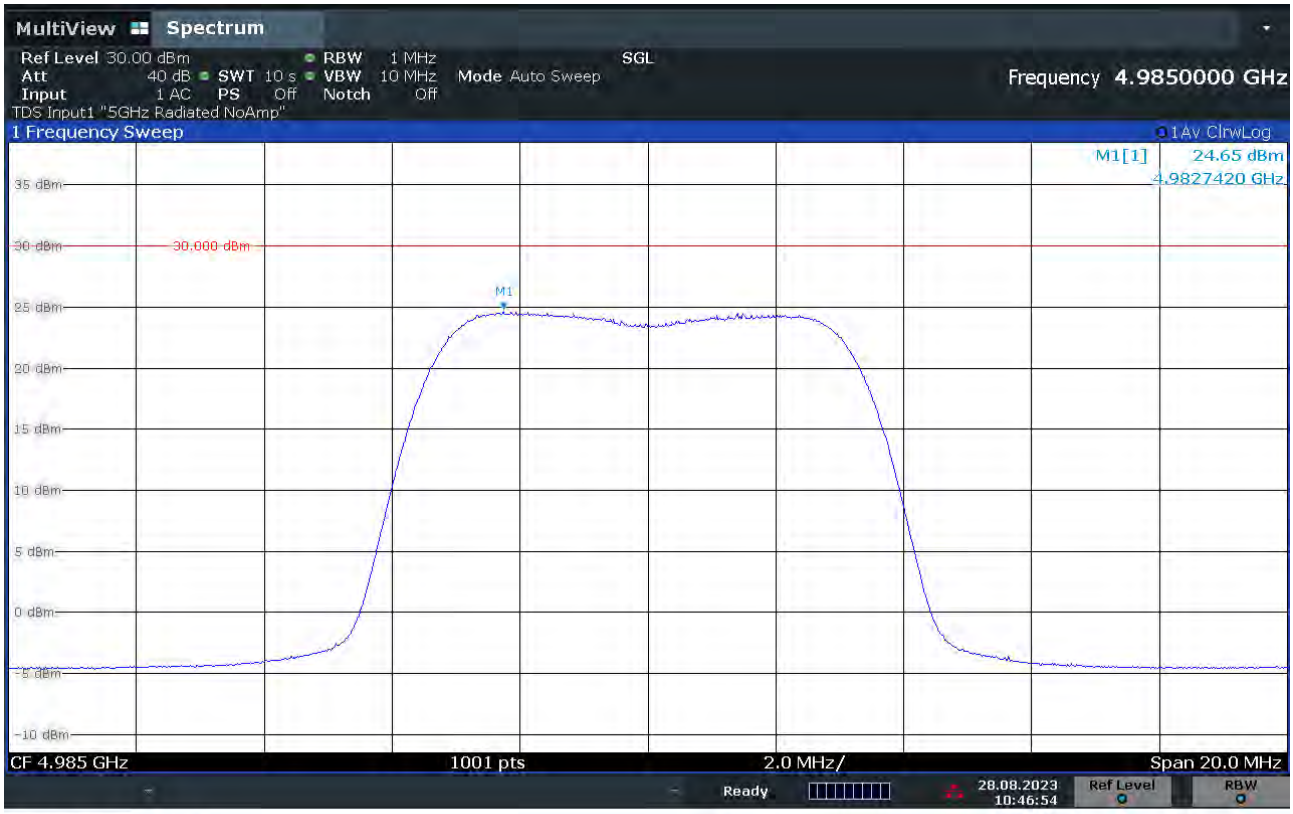


10:41:59 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4985.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

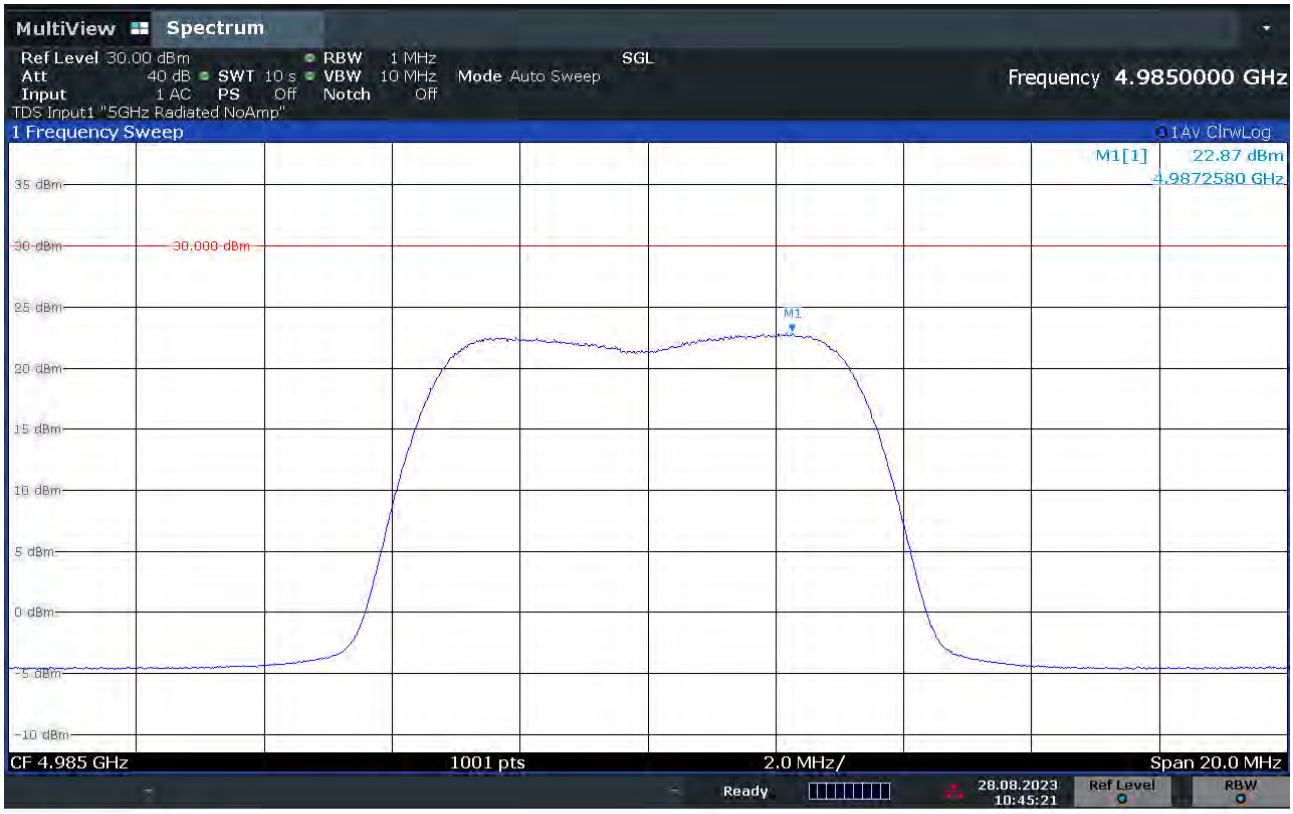


10:46:55 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4985.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

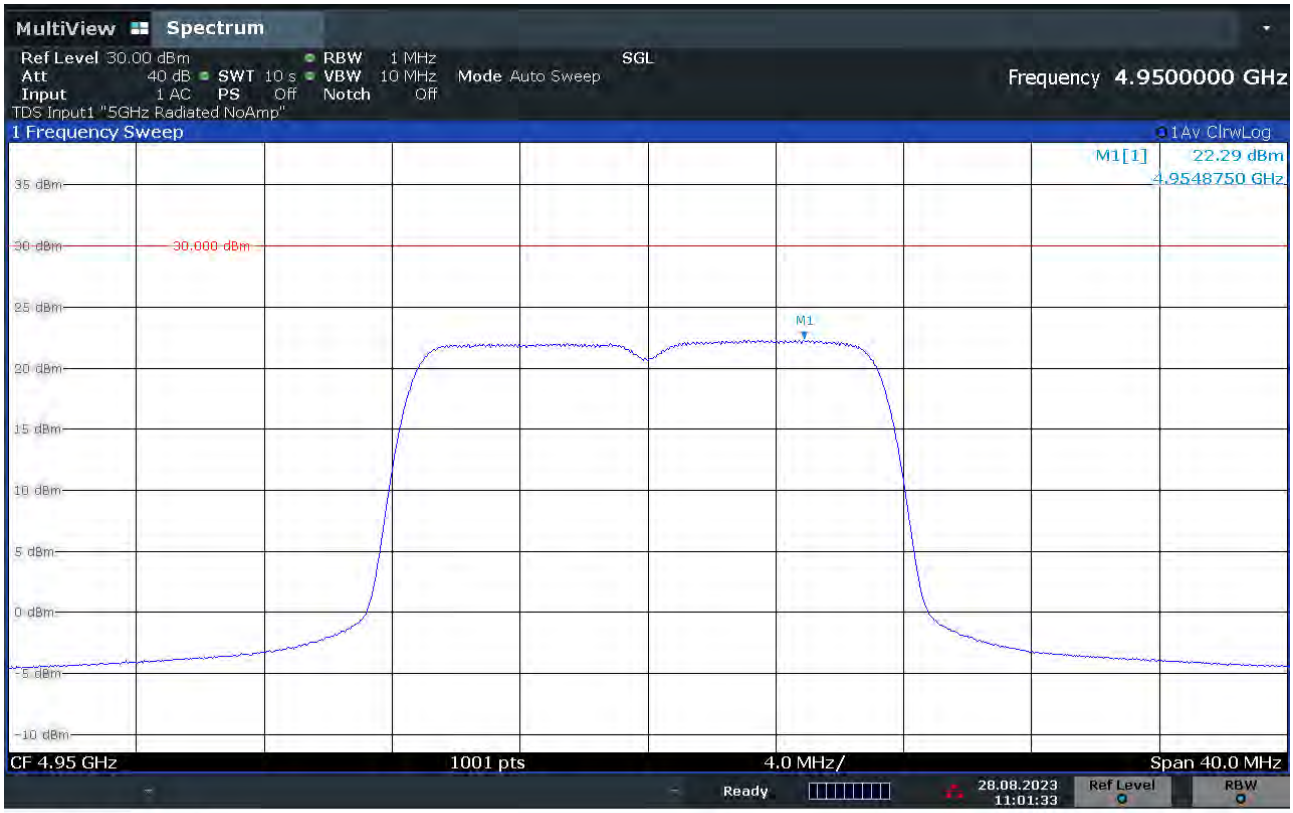


10:45:21 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4950.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

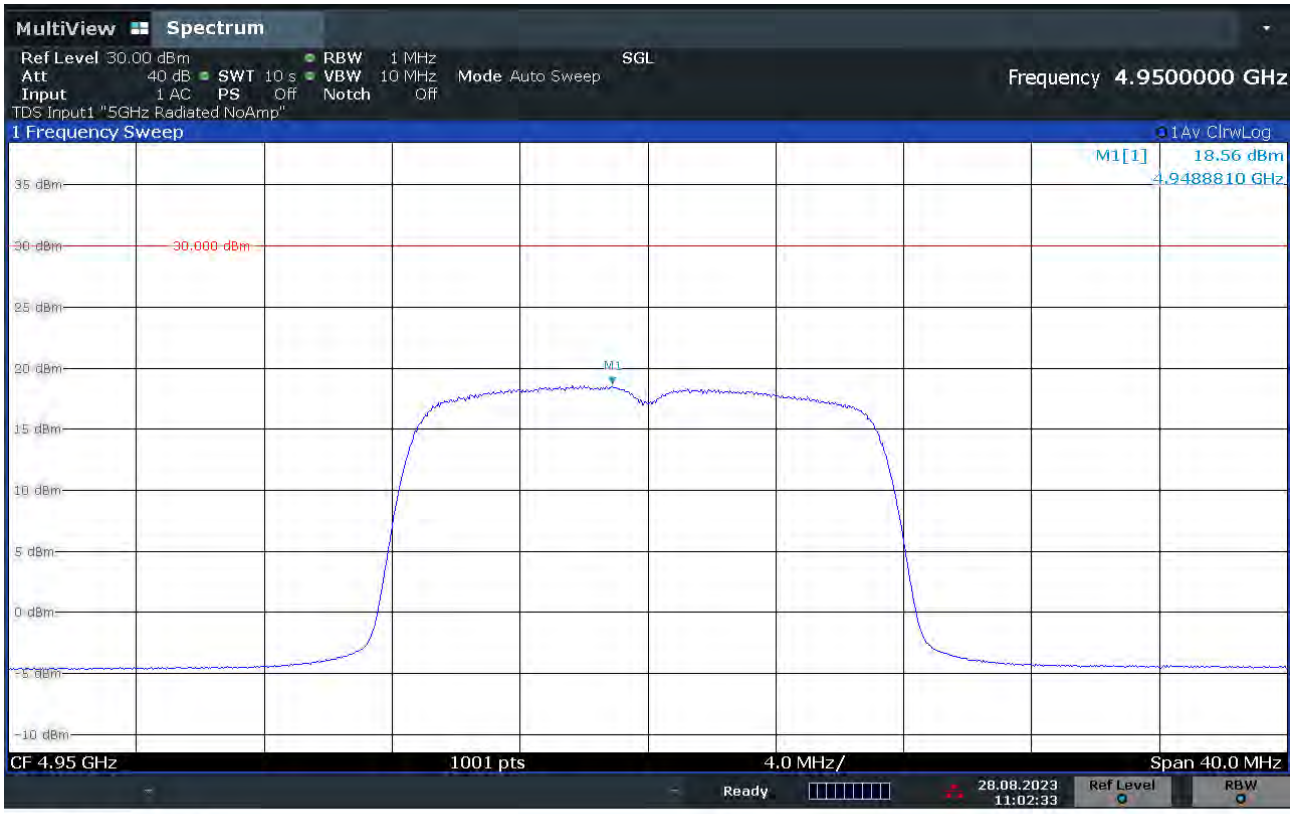


11:01:34 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4950.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

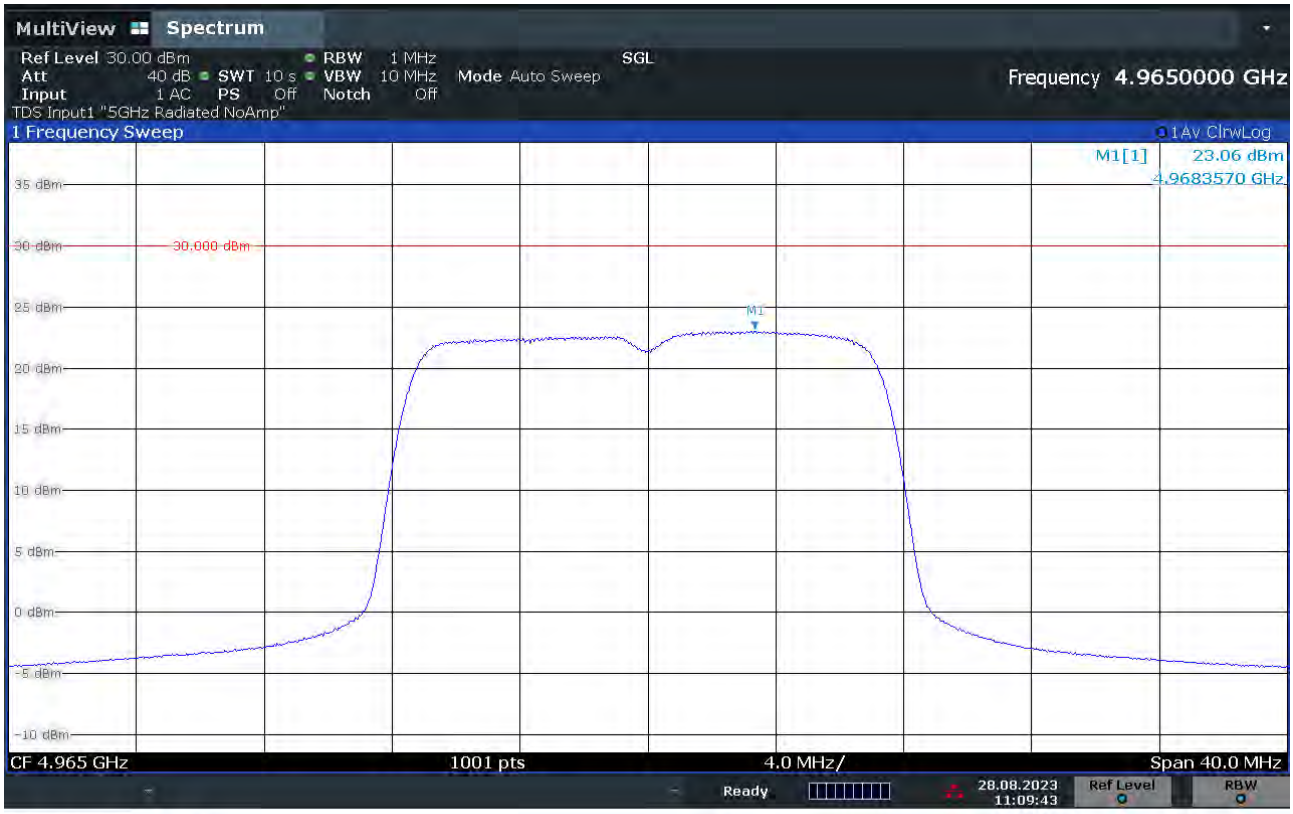


11:02:34 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

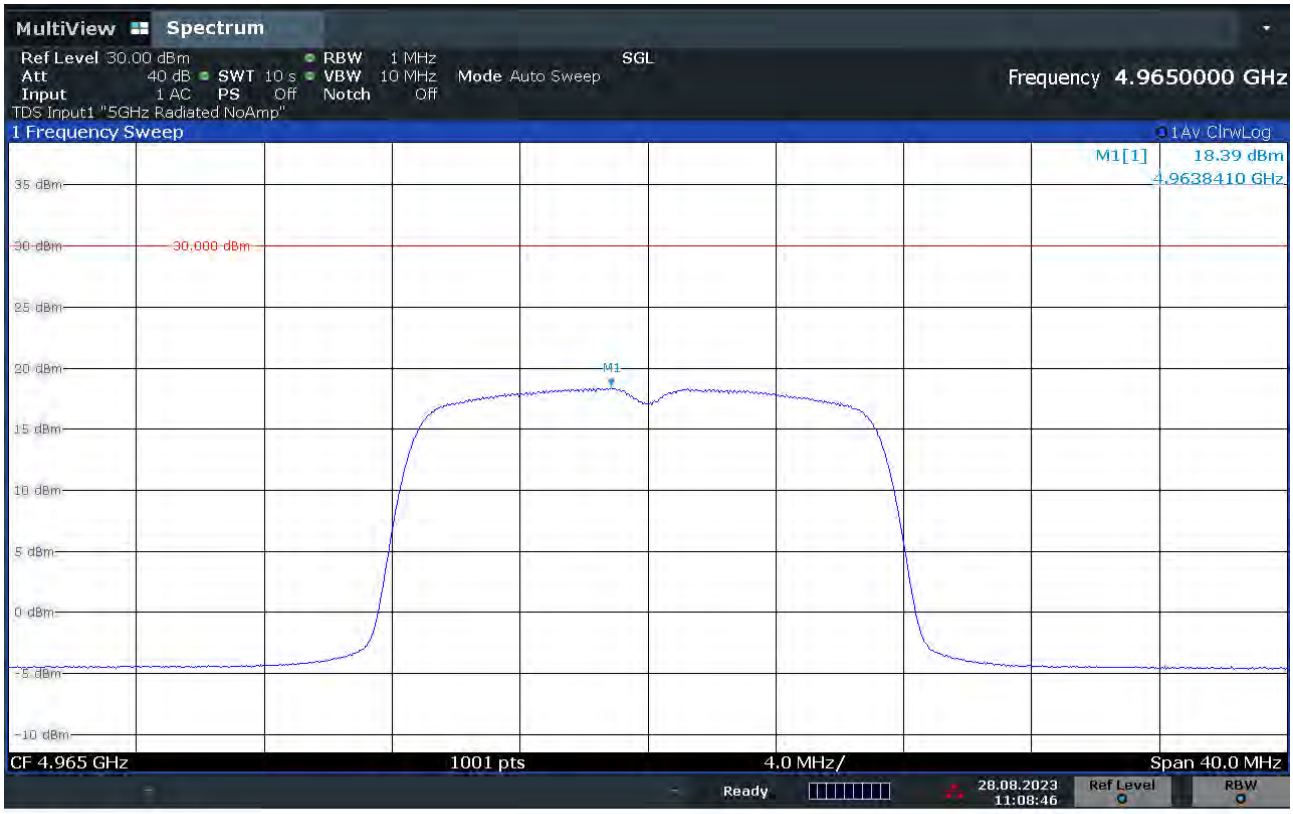


11:09:44 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

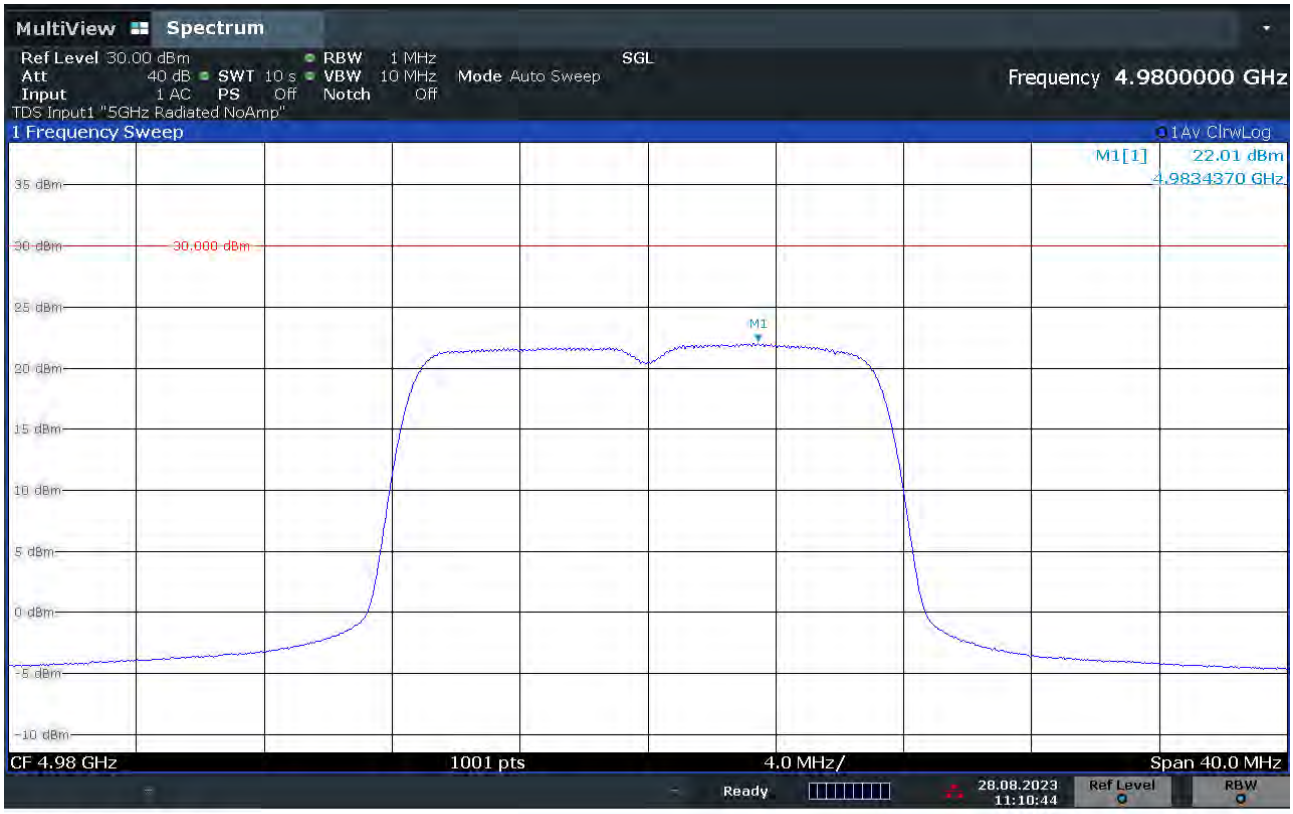


11:08:47 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4980.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

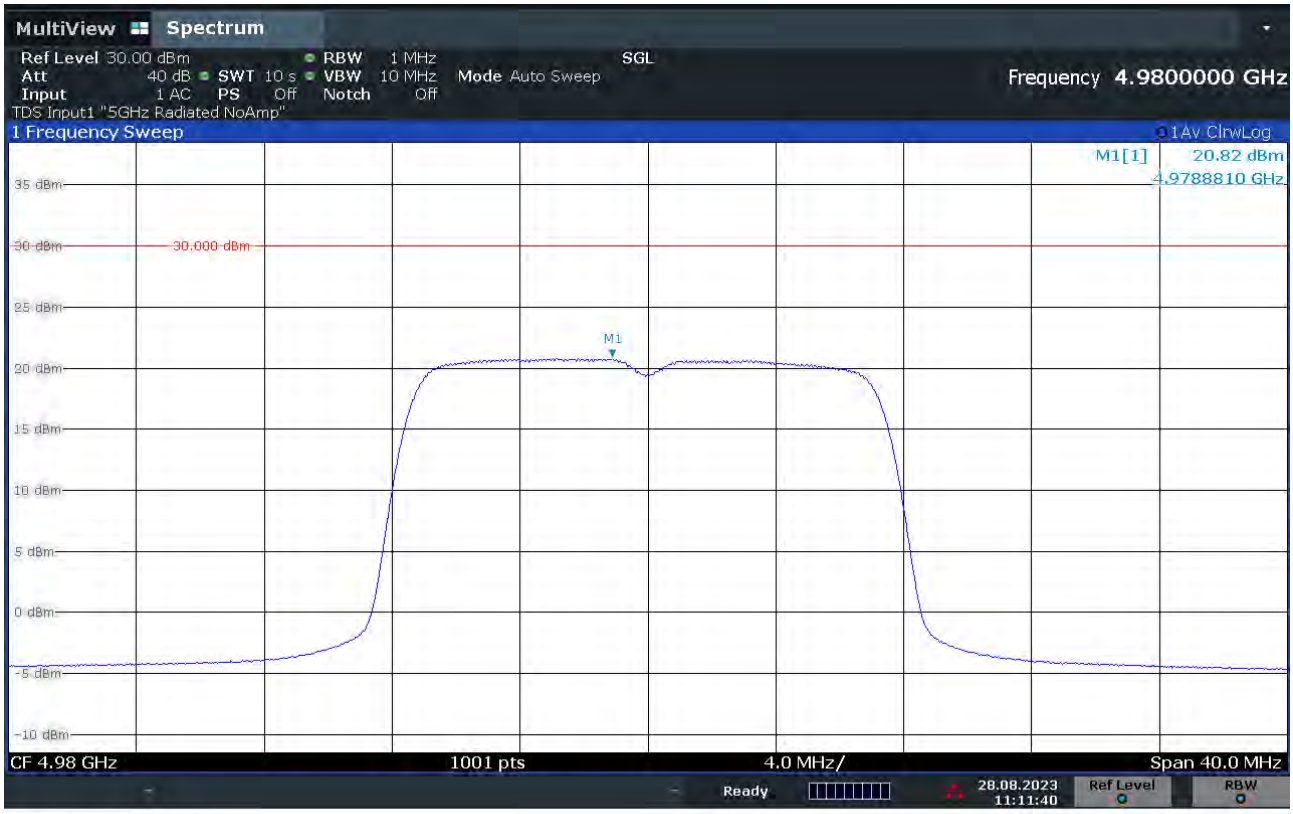


11:10:45 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4980.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

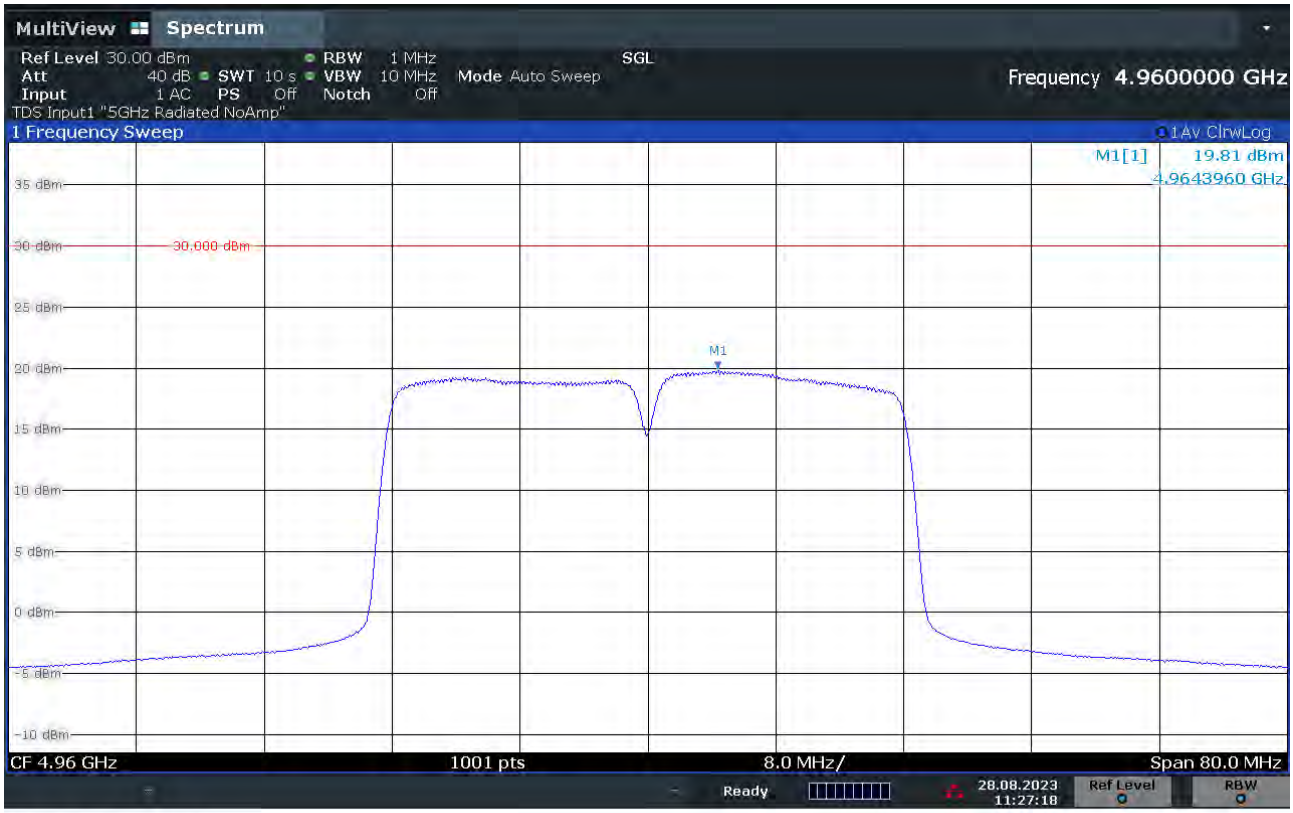


11:11:40 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4960.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

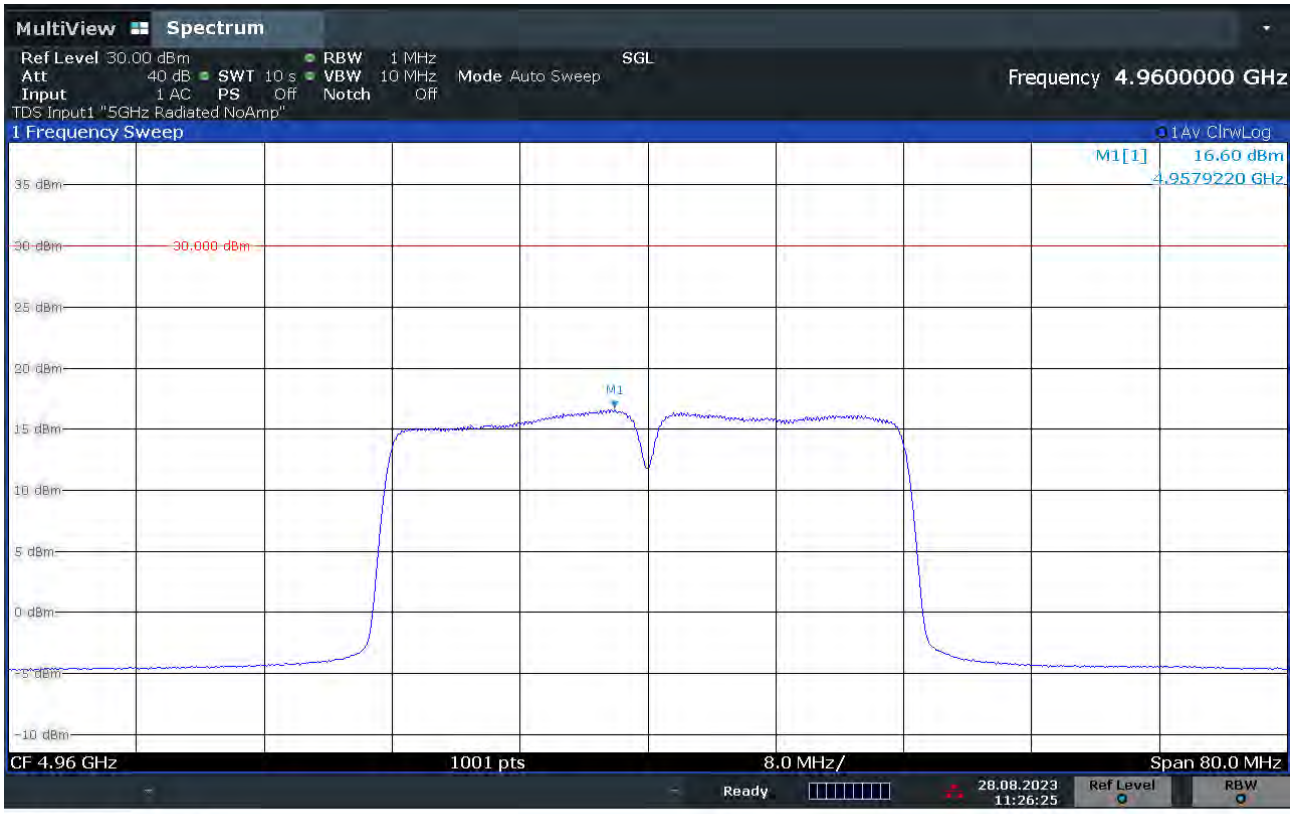


11:27:19 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4960.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

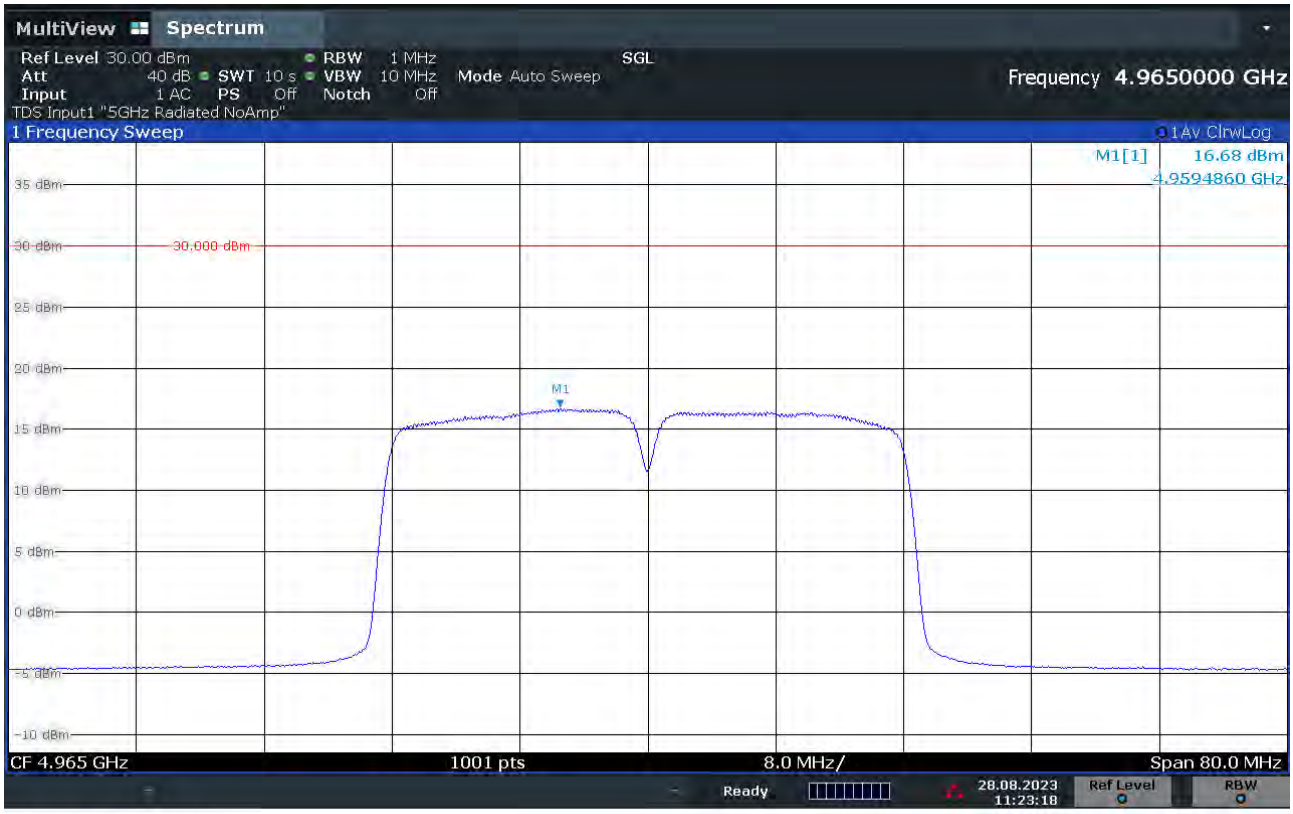


11:26:26 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

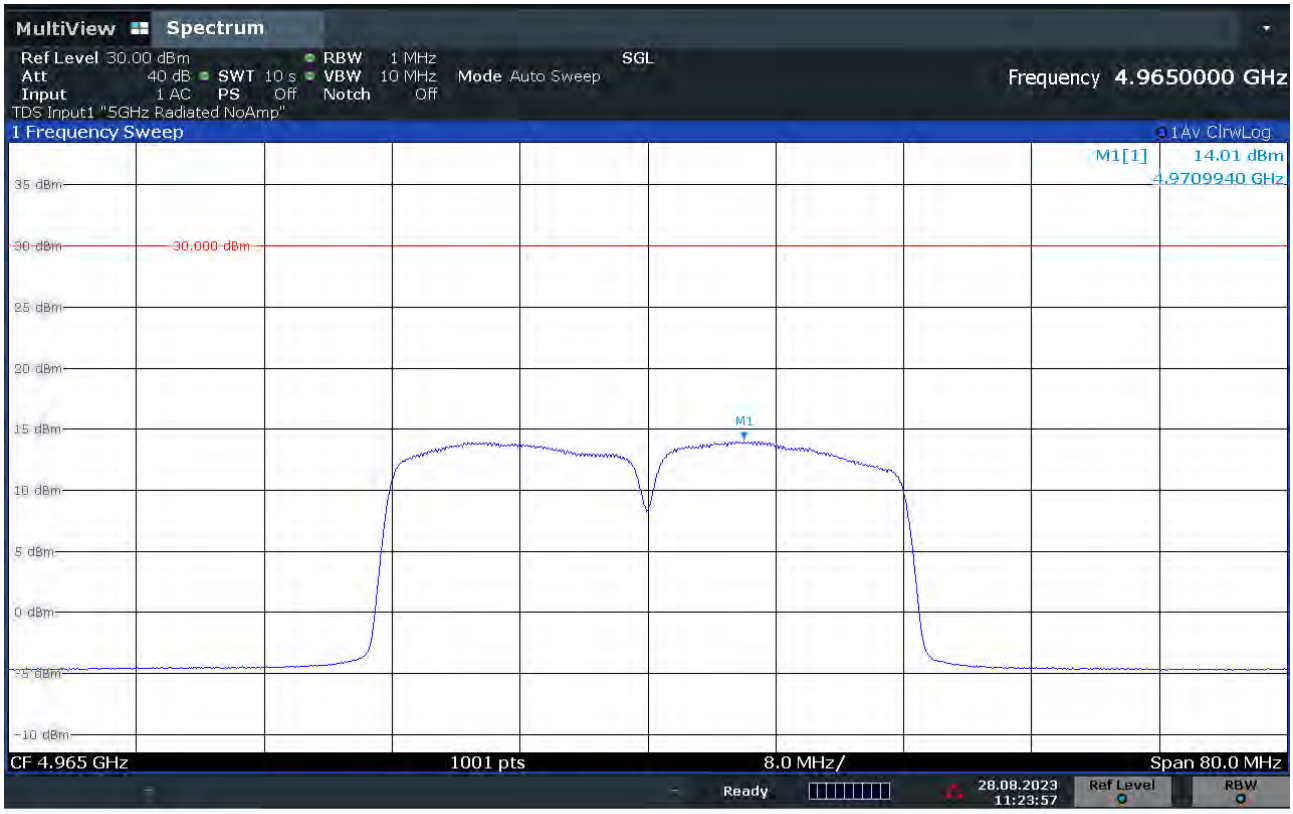


11:23:19 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

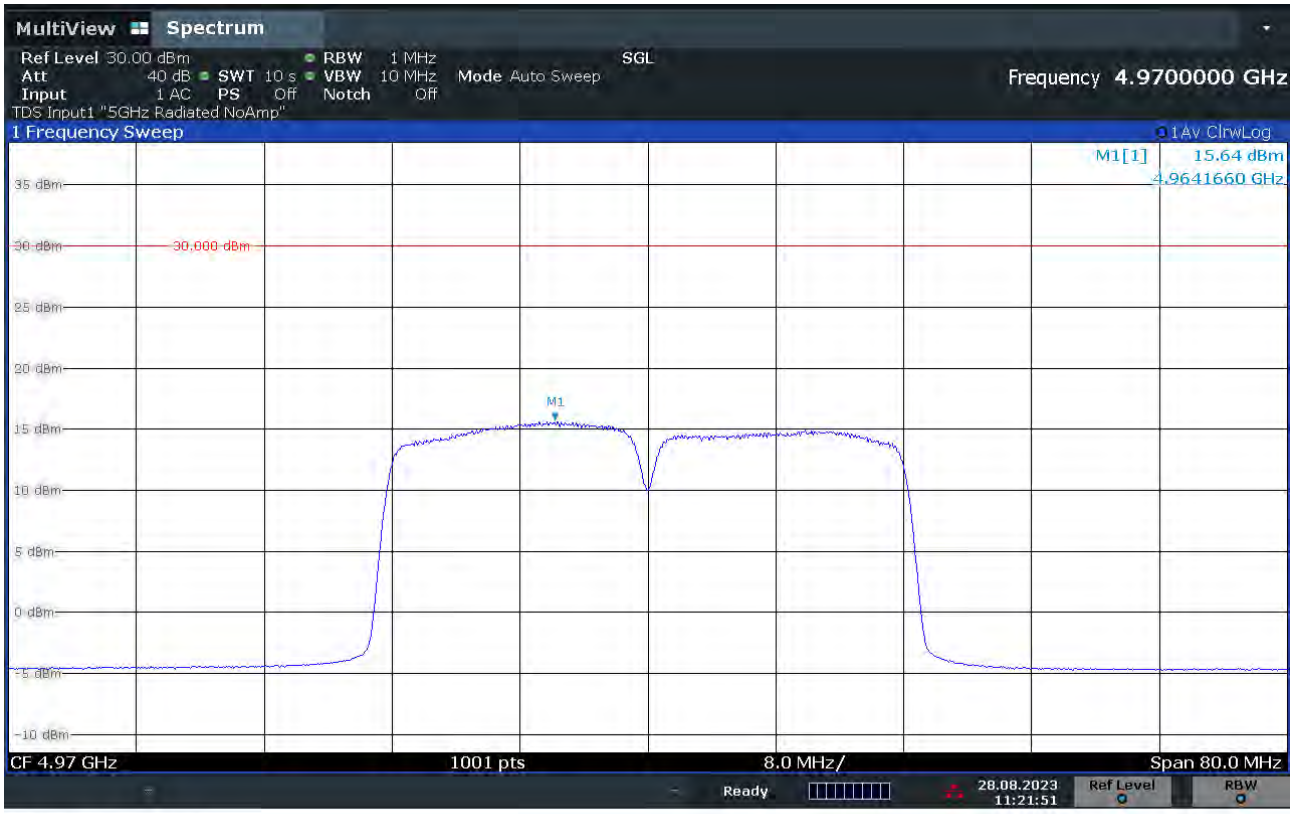


11:23:58 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4970.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

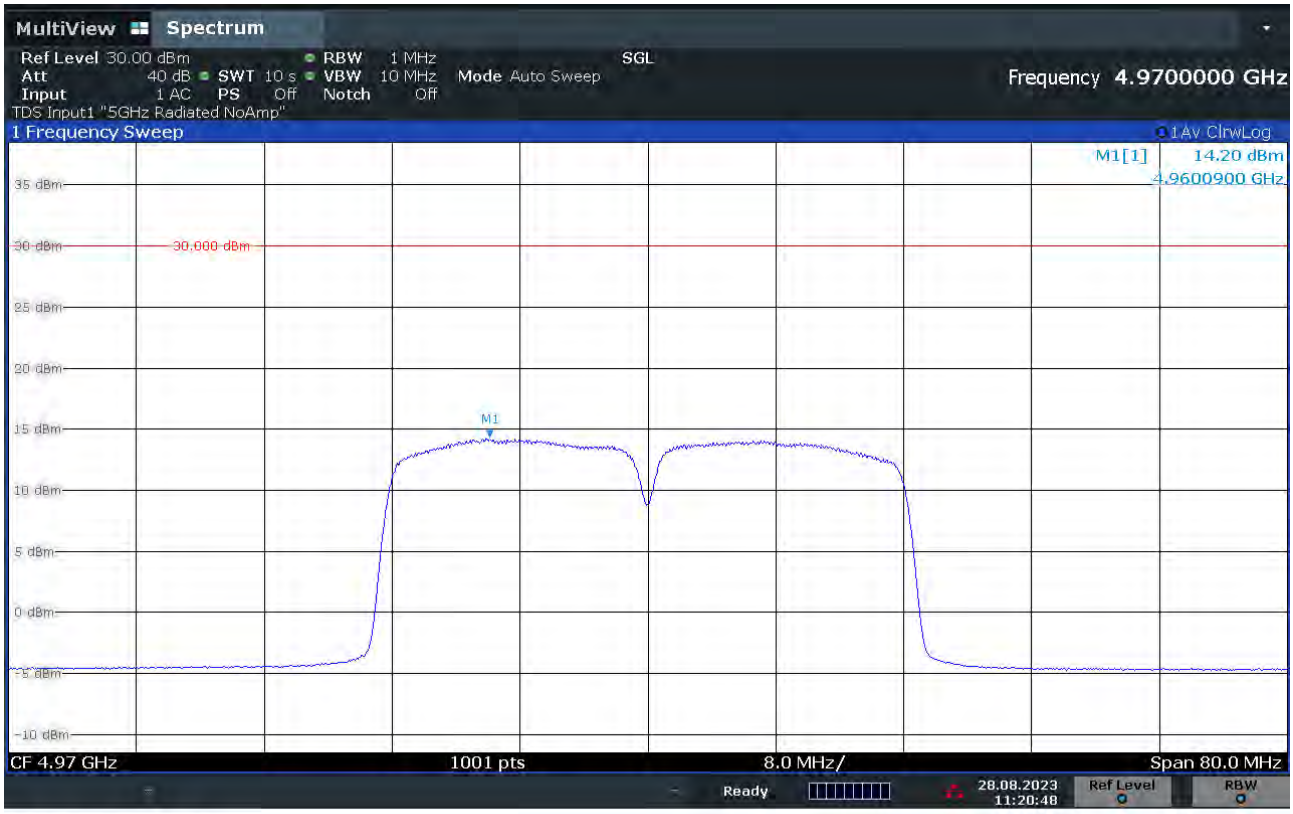


11:21:52 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4970.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

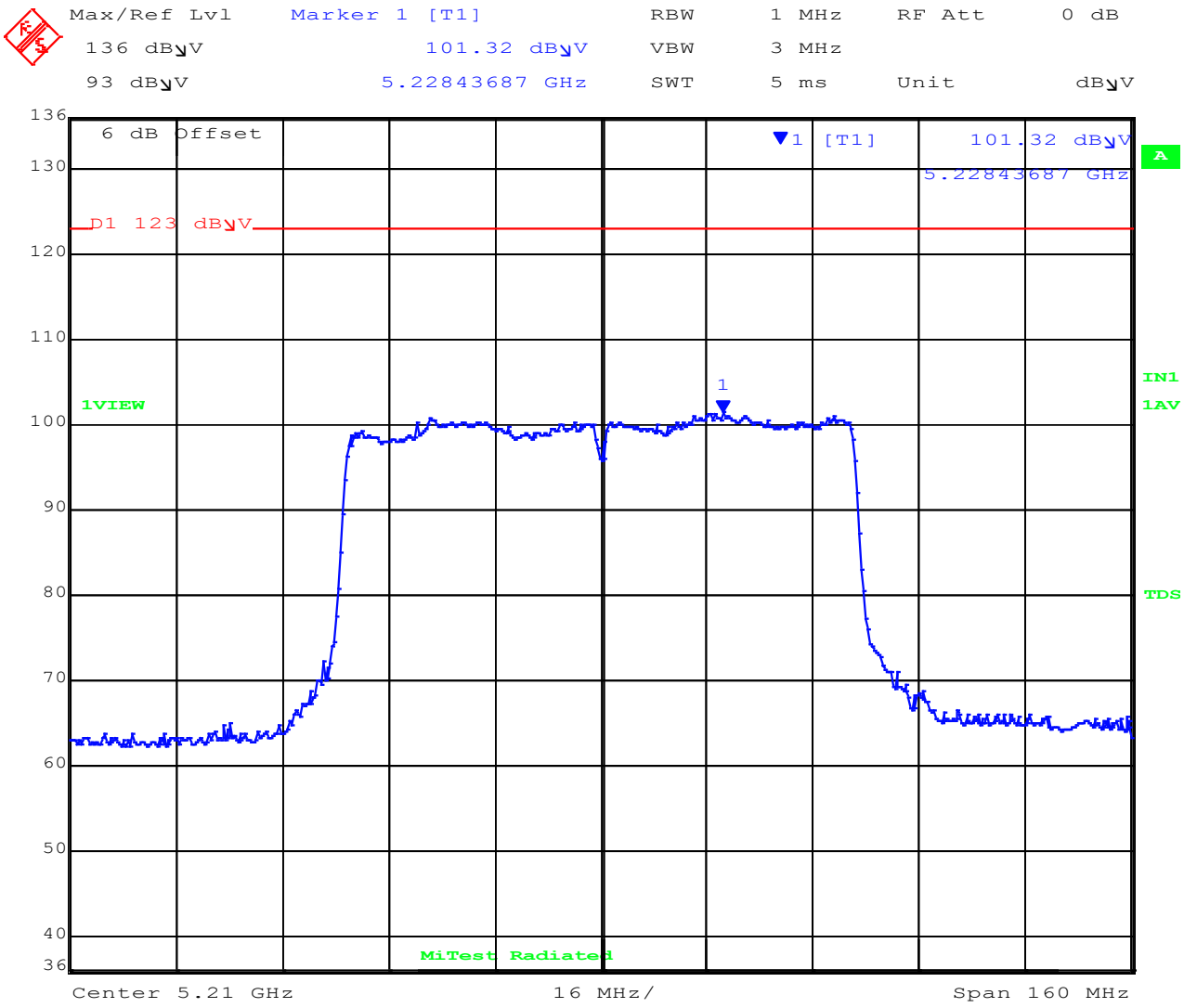


11:20:49 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

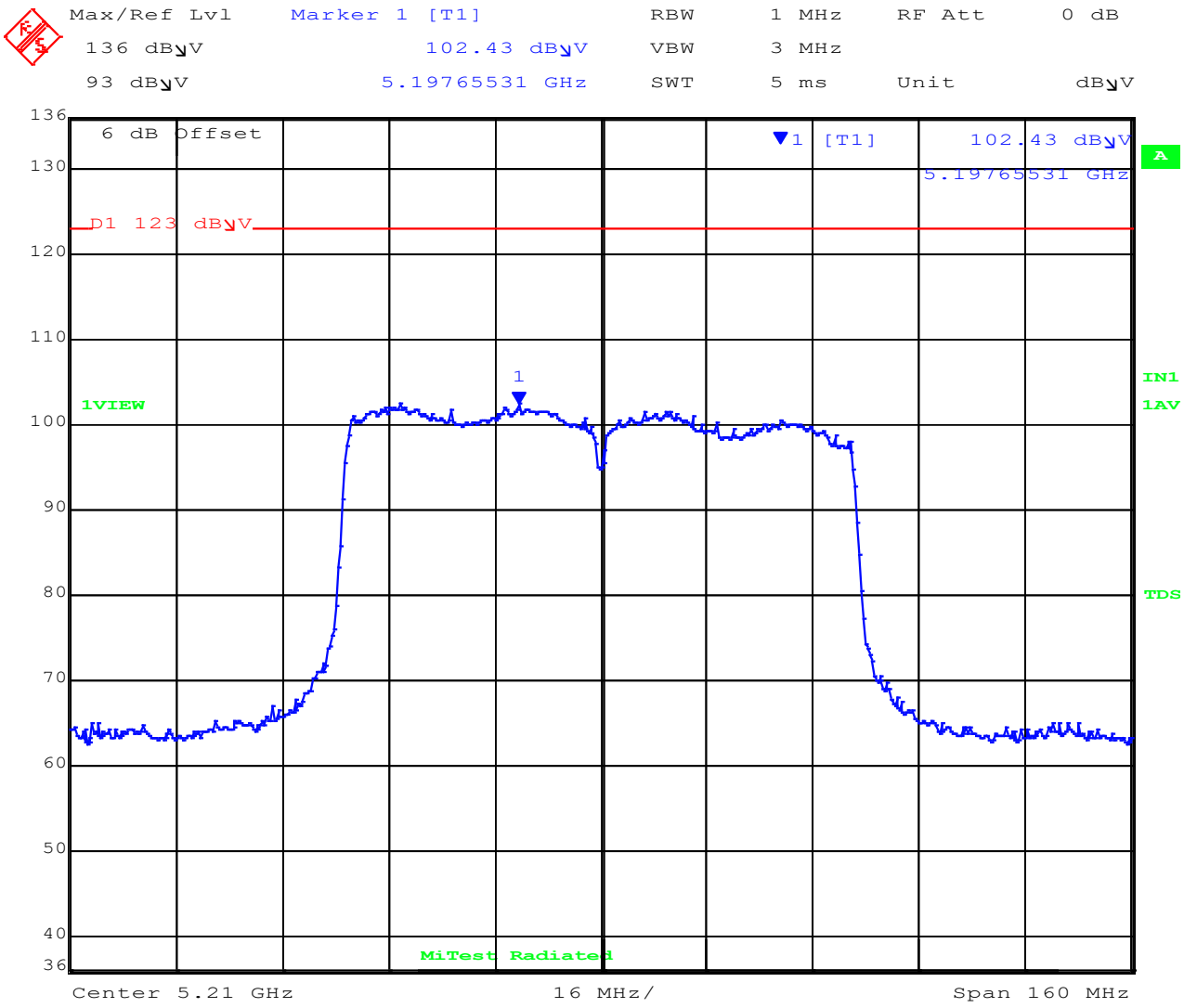


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5228.44 MHz : 102.32 dBuV/m	Limit: ≤ 16.00 dBm, 123 dBuVm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



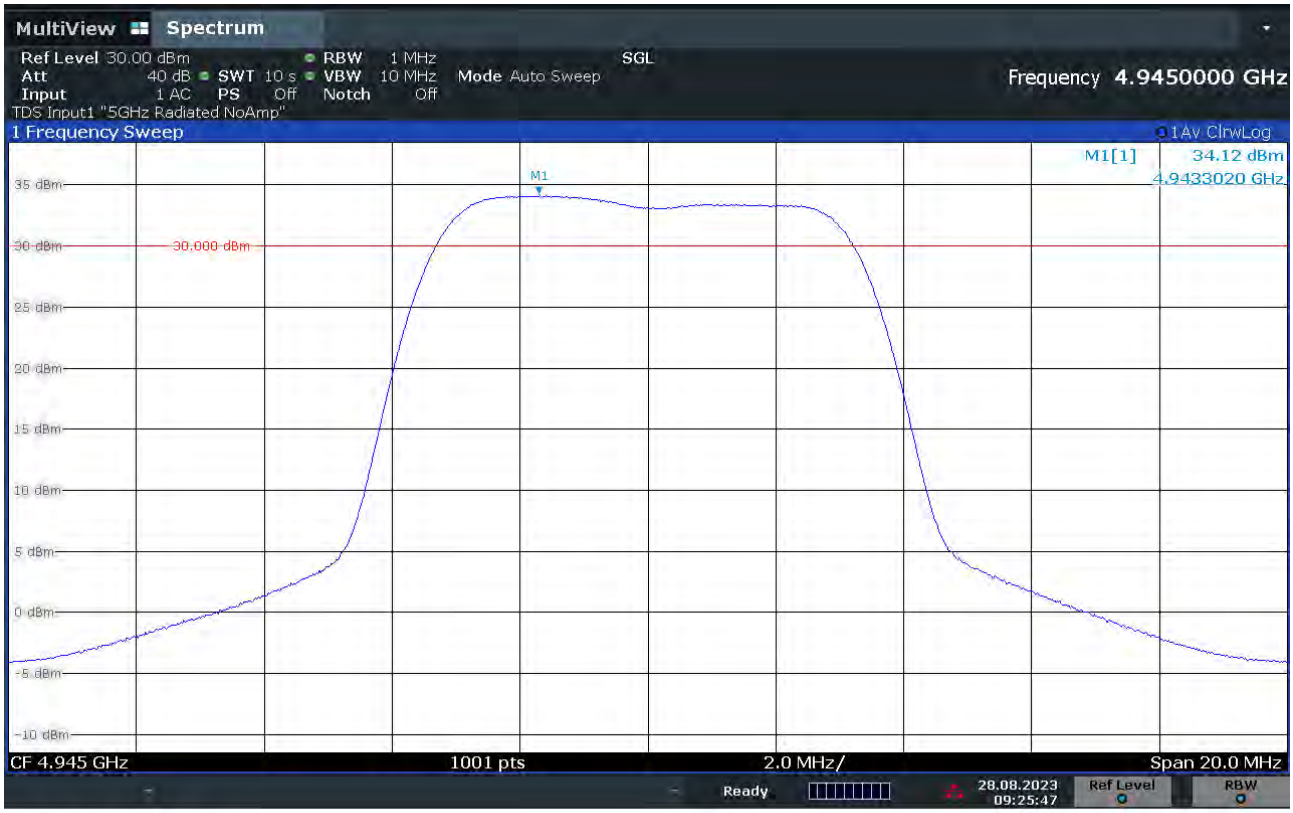
Date: 14.AUG.2019 16:08:49

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5197.66 MHz : 102.43 dBuV/m	Limit: ≤ 16.00 dBm, 123 dBuVm

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4960.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

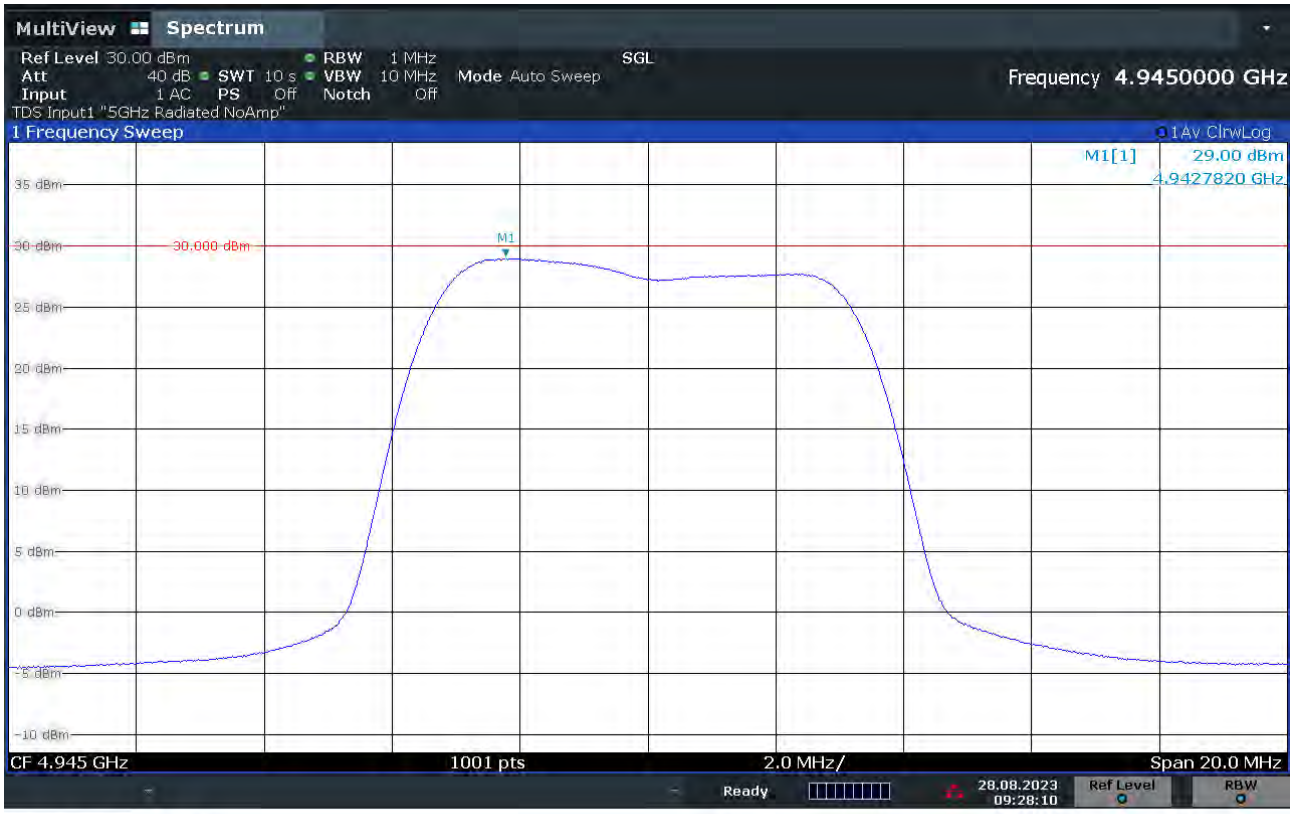


09:25:47 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4960.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

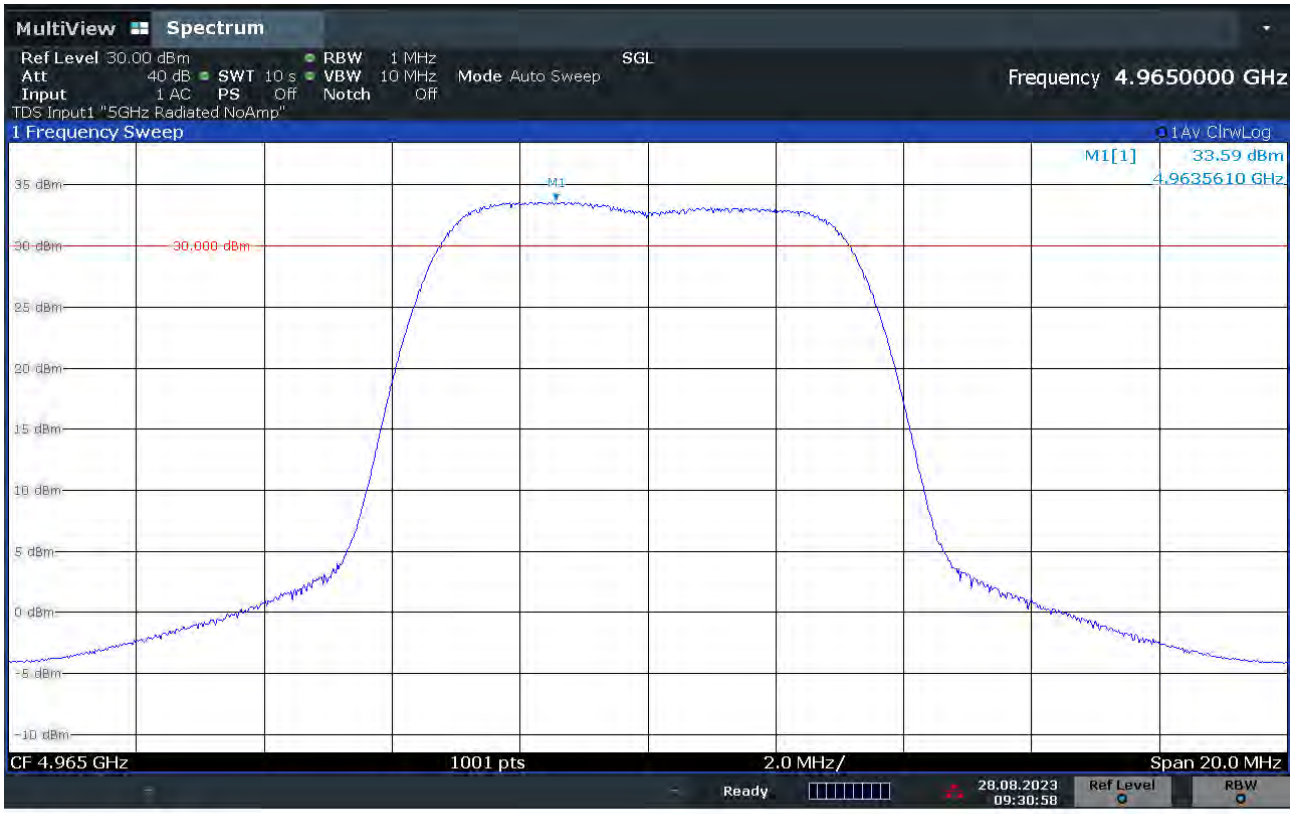


09:28:10 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

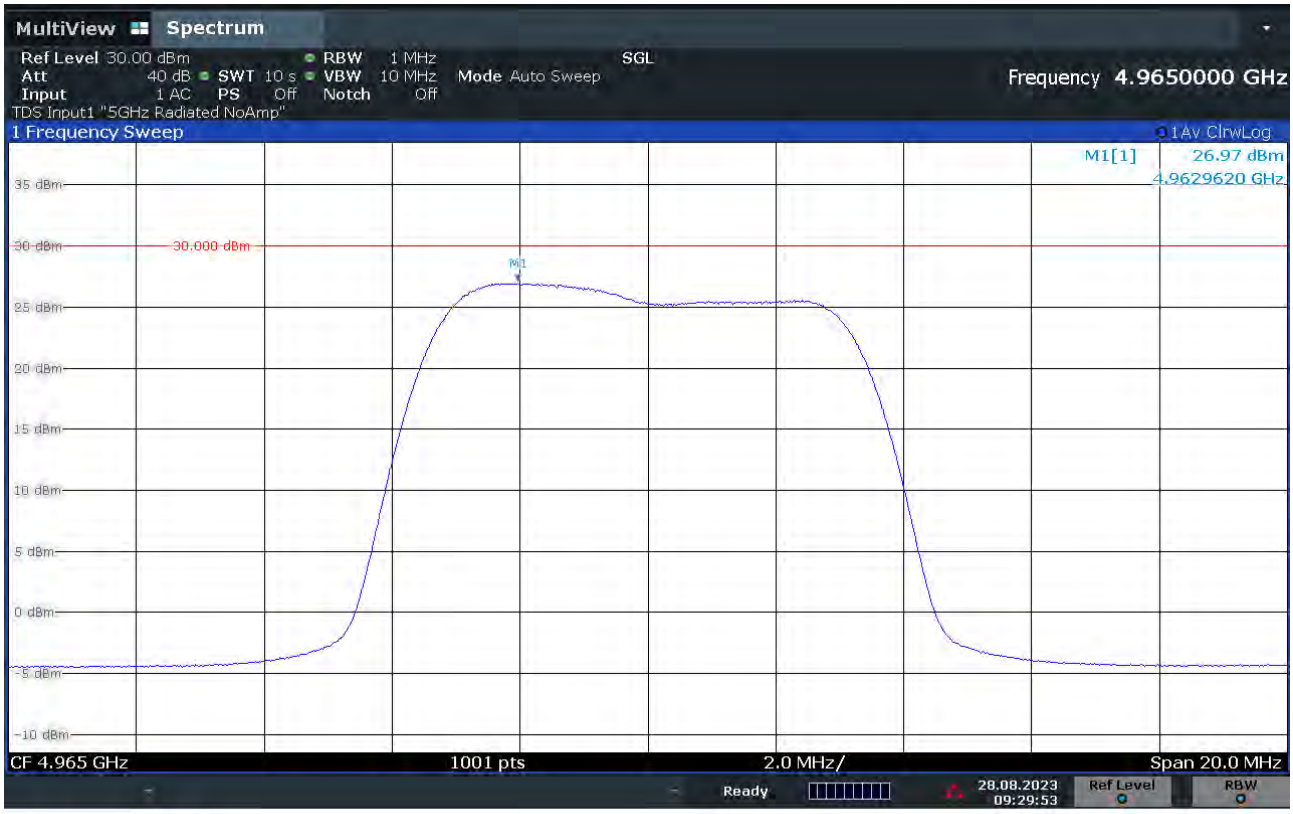


09:30:58 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

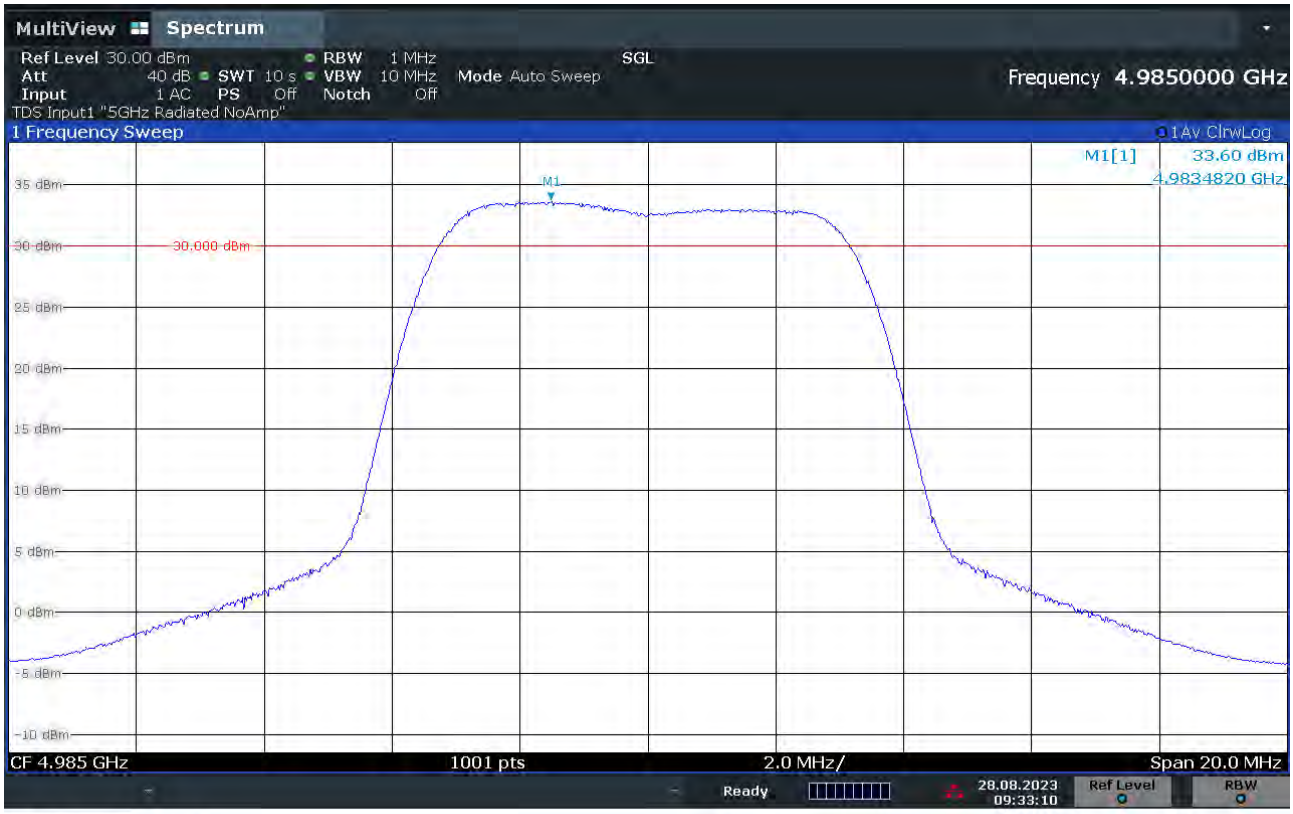


09:29:54 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4970.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

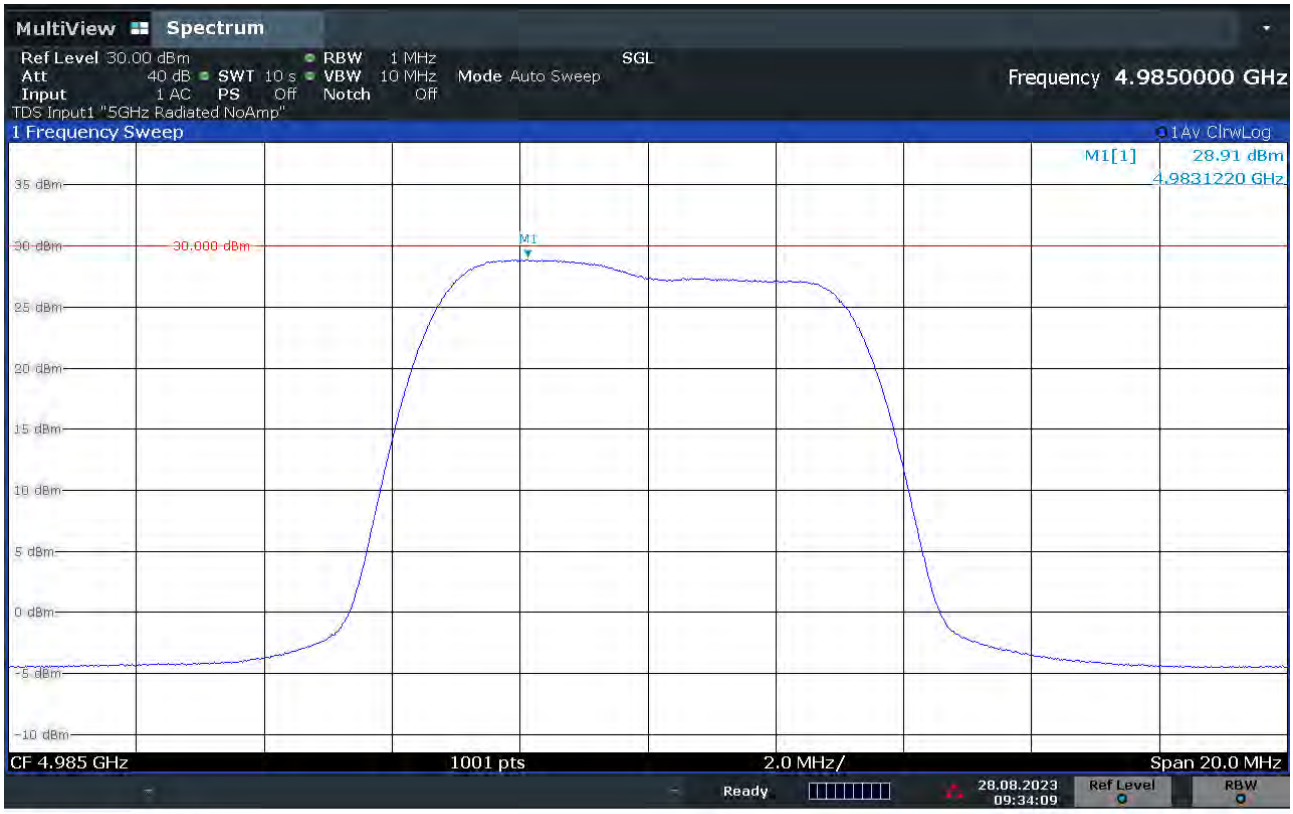


09:33:11 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 10 MHz, Channel: 4970.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

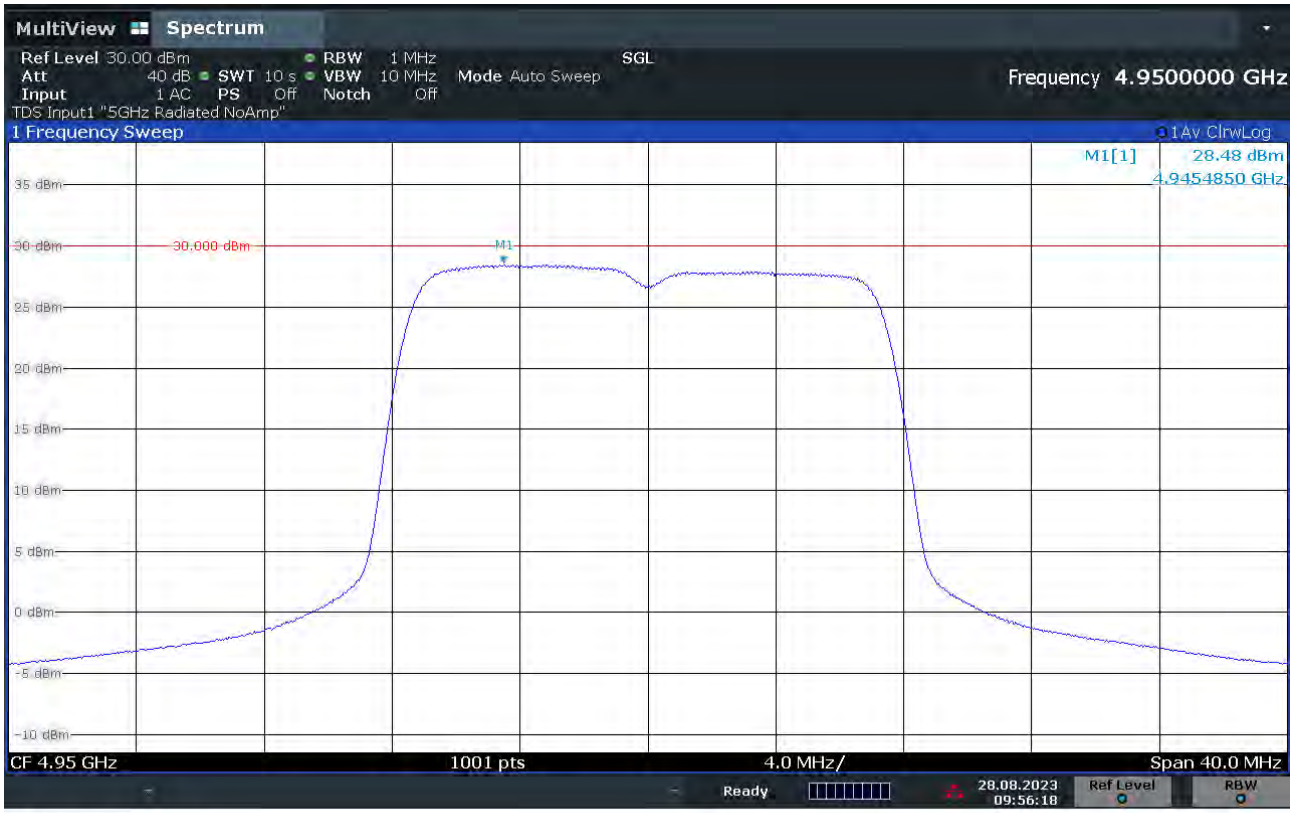


09:34:09 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4950.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

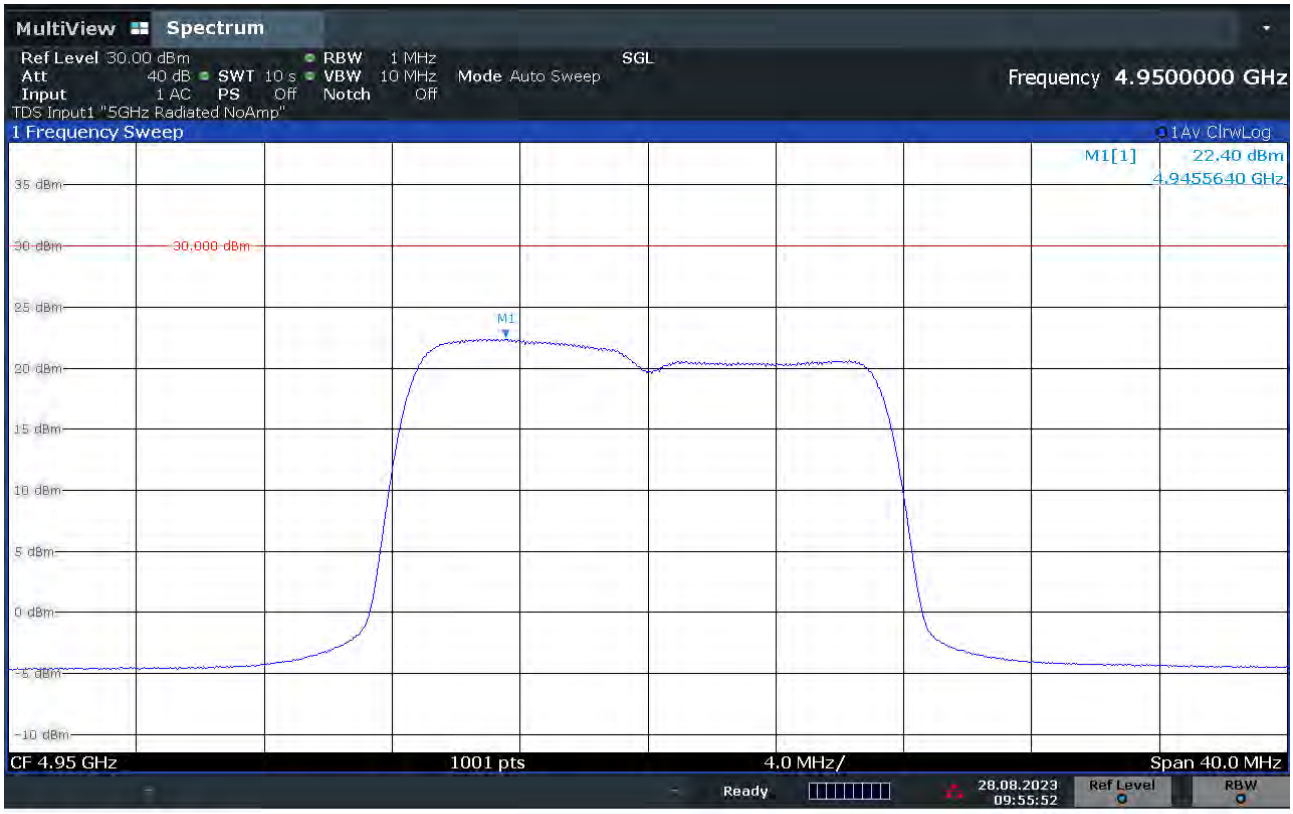


09:56:19 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4950.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

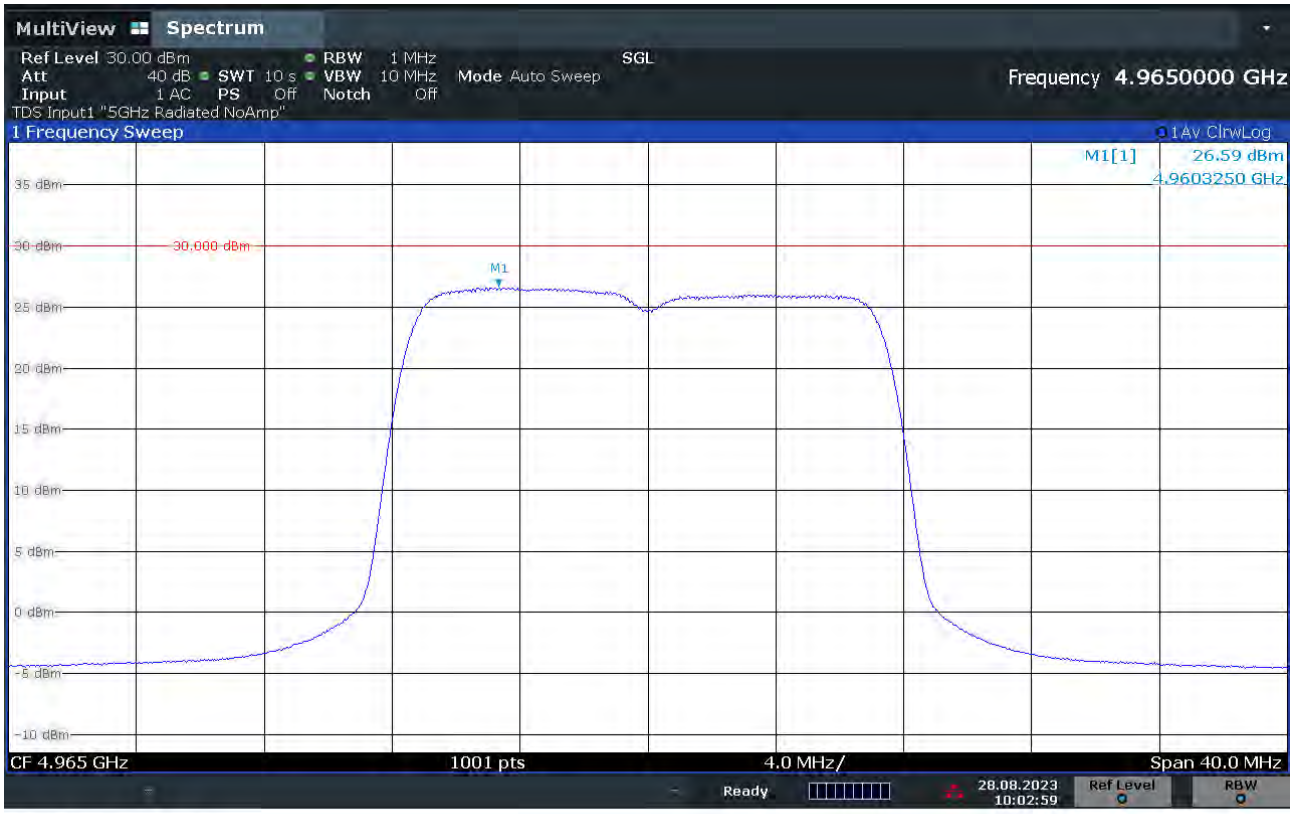


09:55:52 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

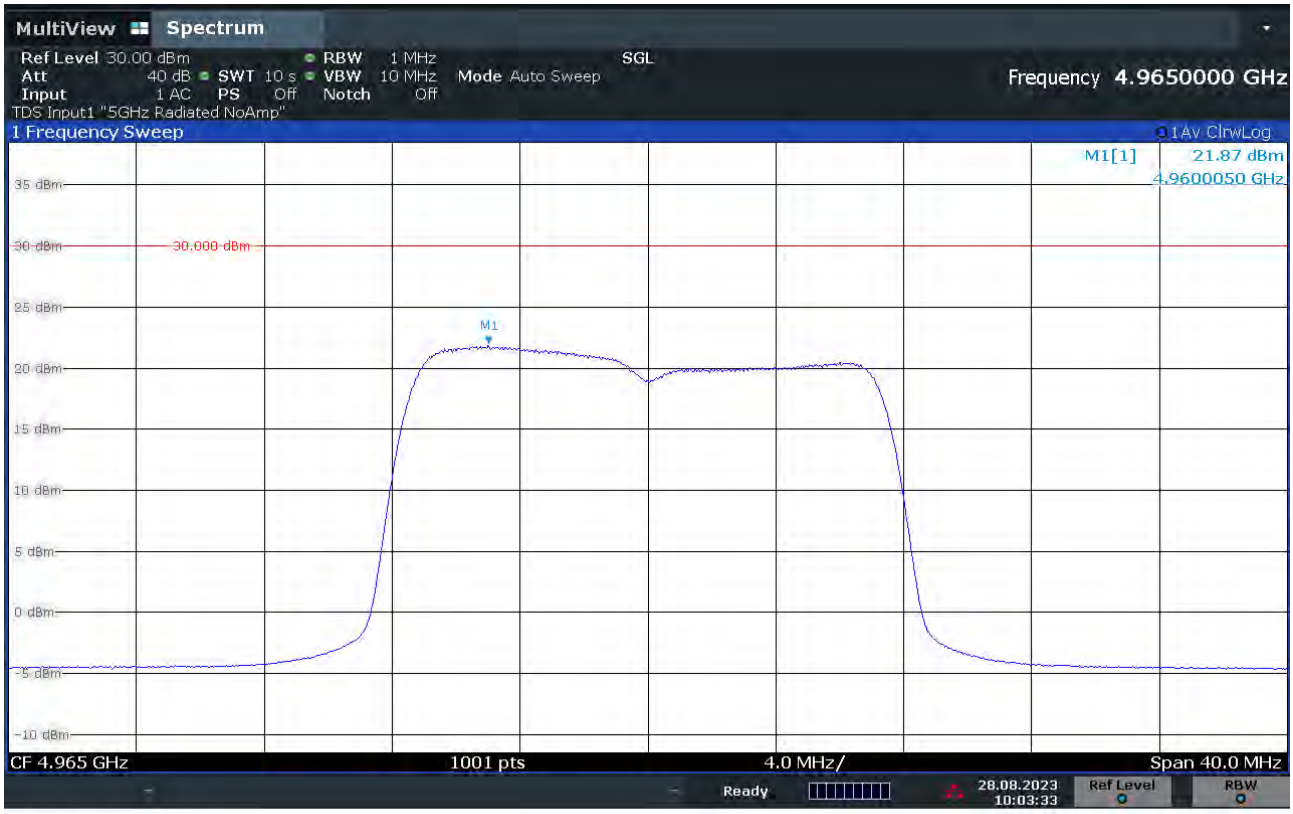


10:03:00 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

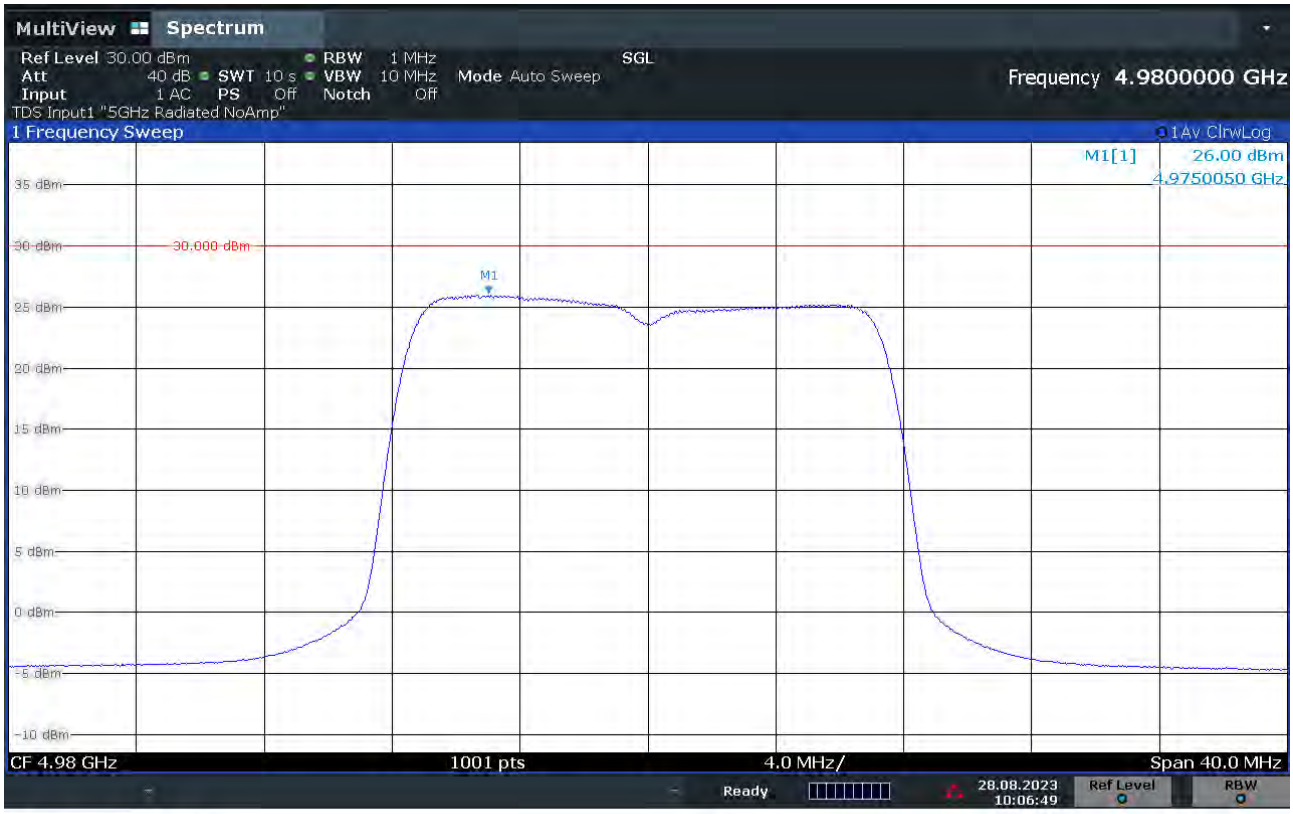


10:03:34 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4980.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

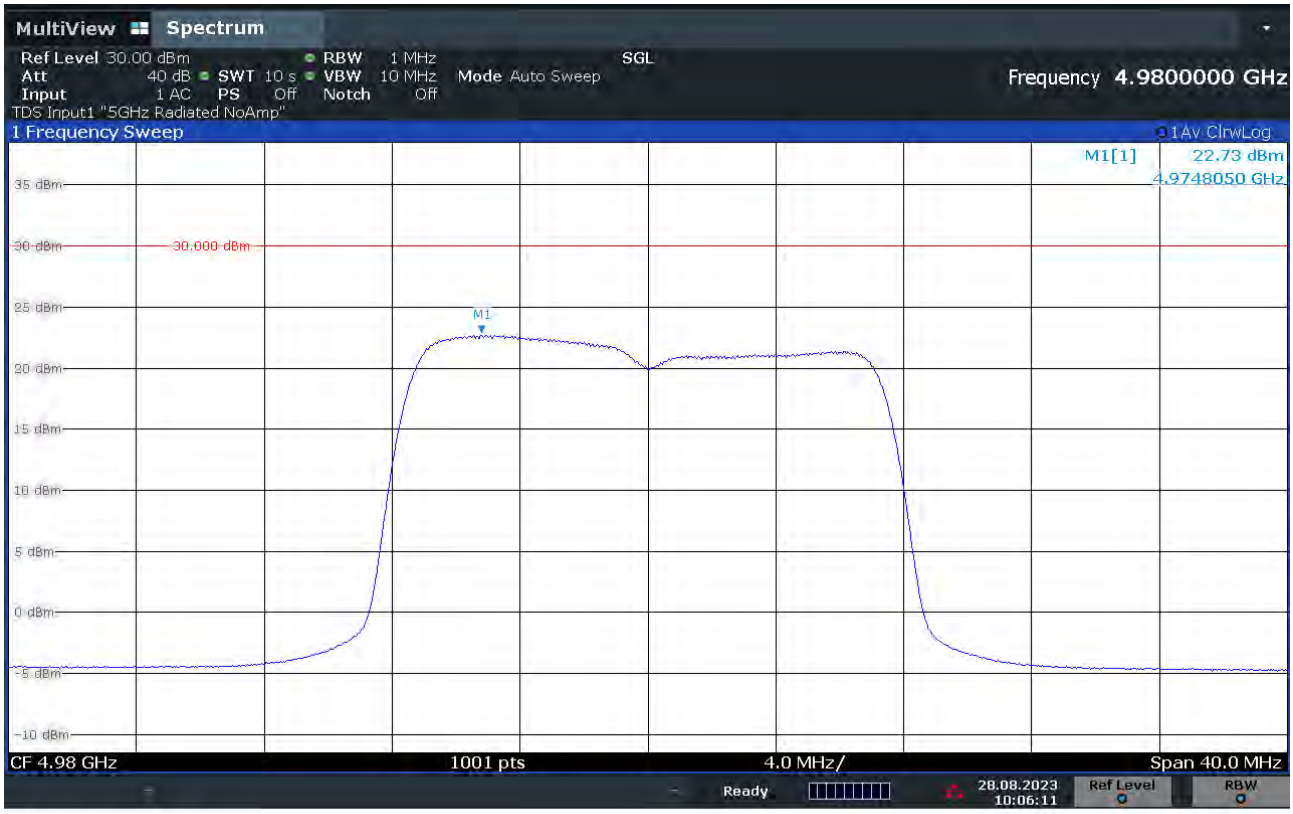


10:06:50 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 4980.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

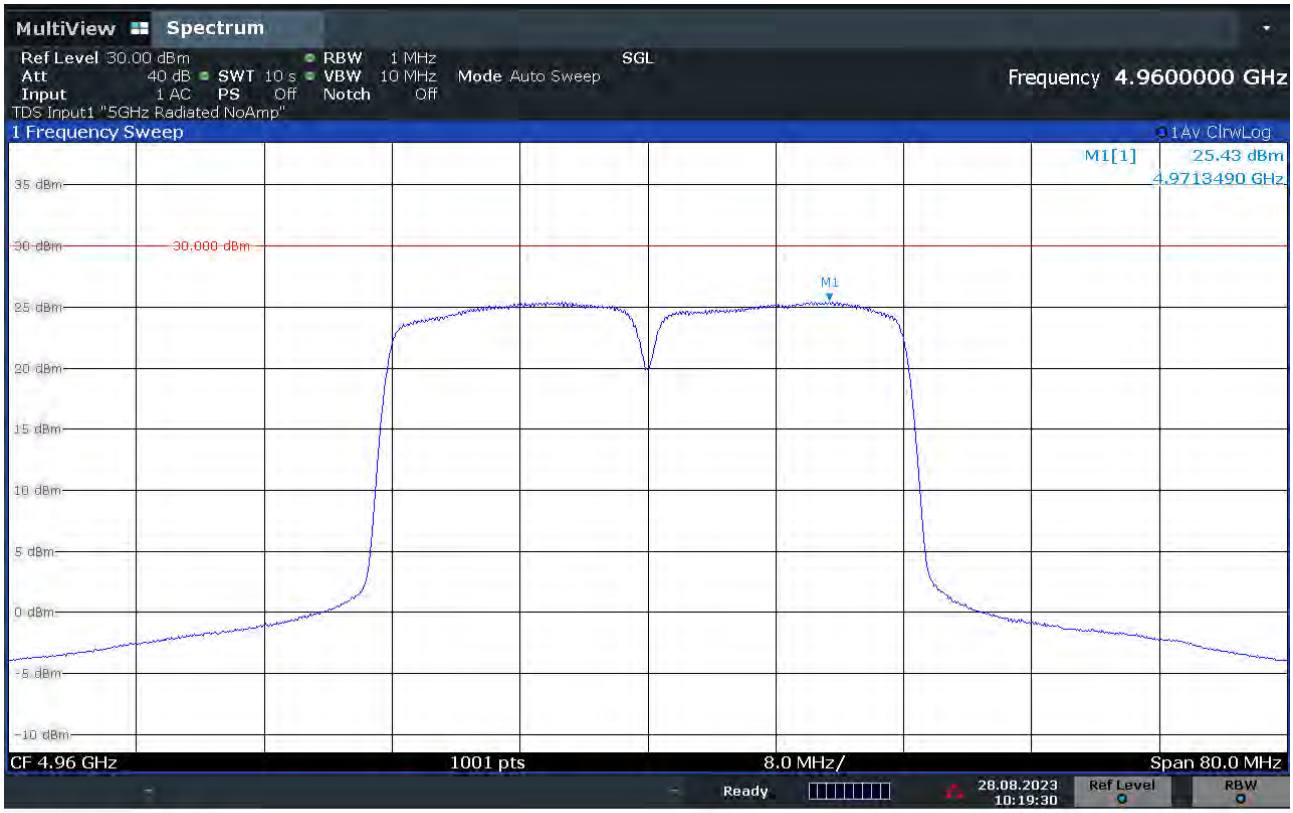


10:06:12 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4960.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

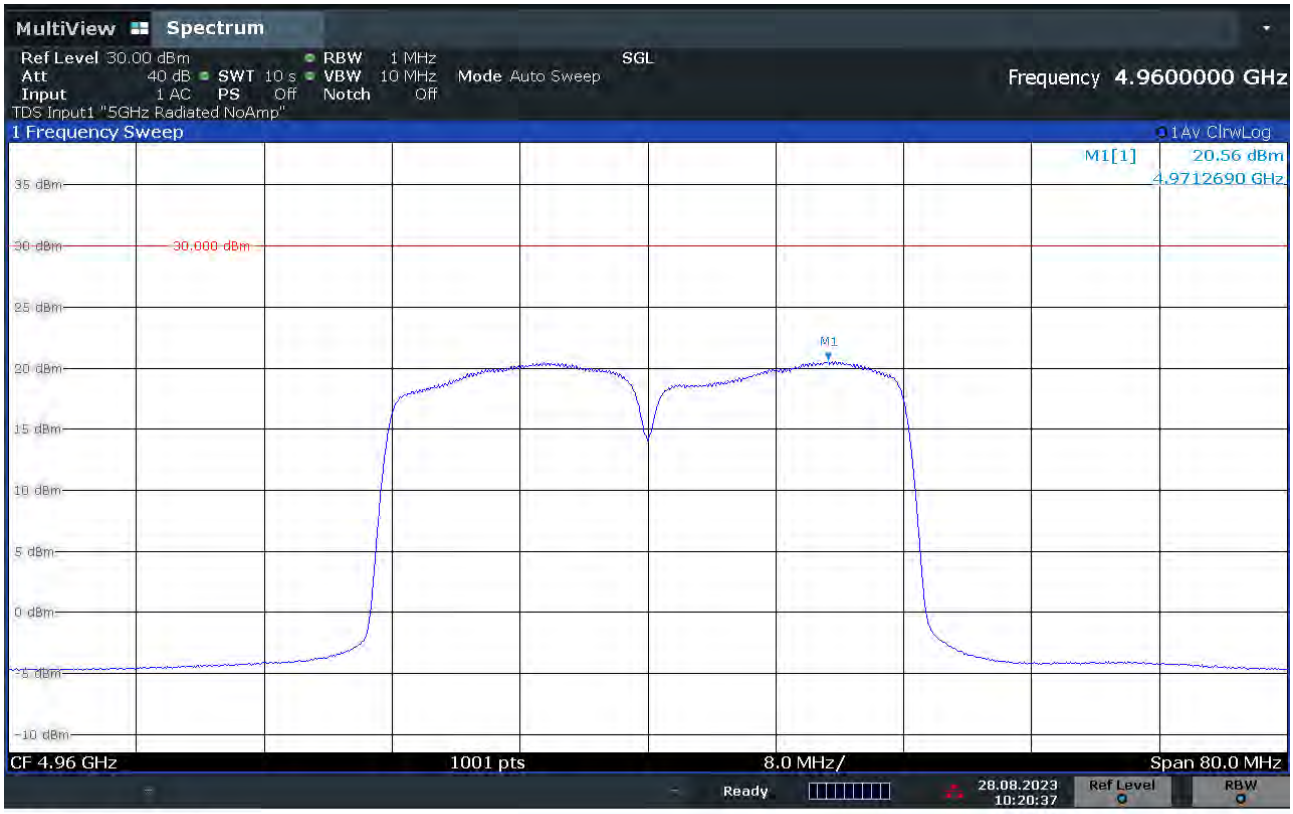


10:19:30 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4960.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

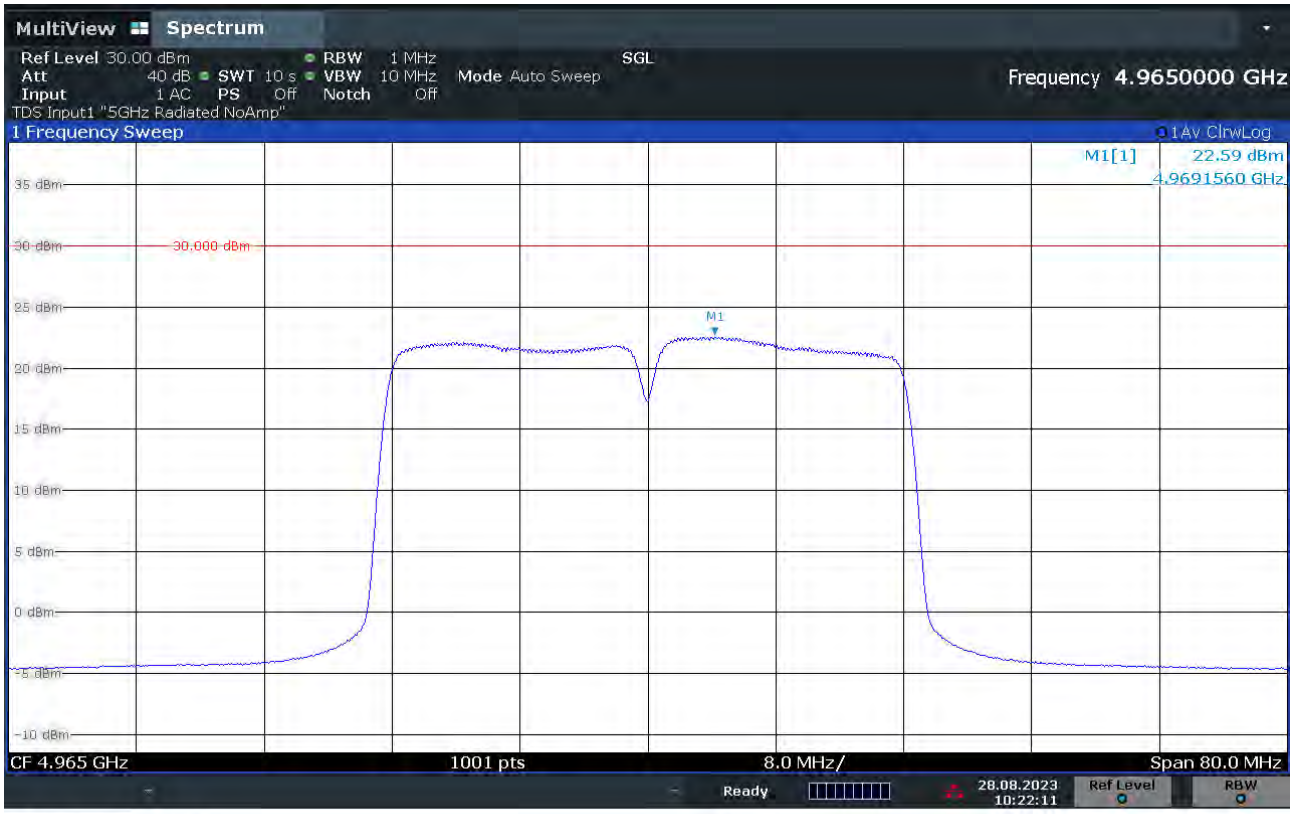


10:20:38 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4965.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

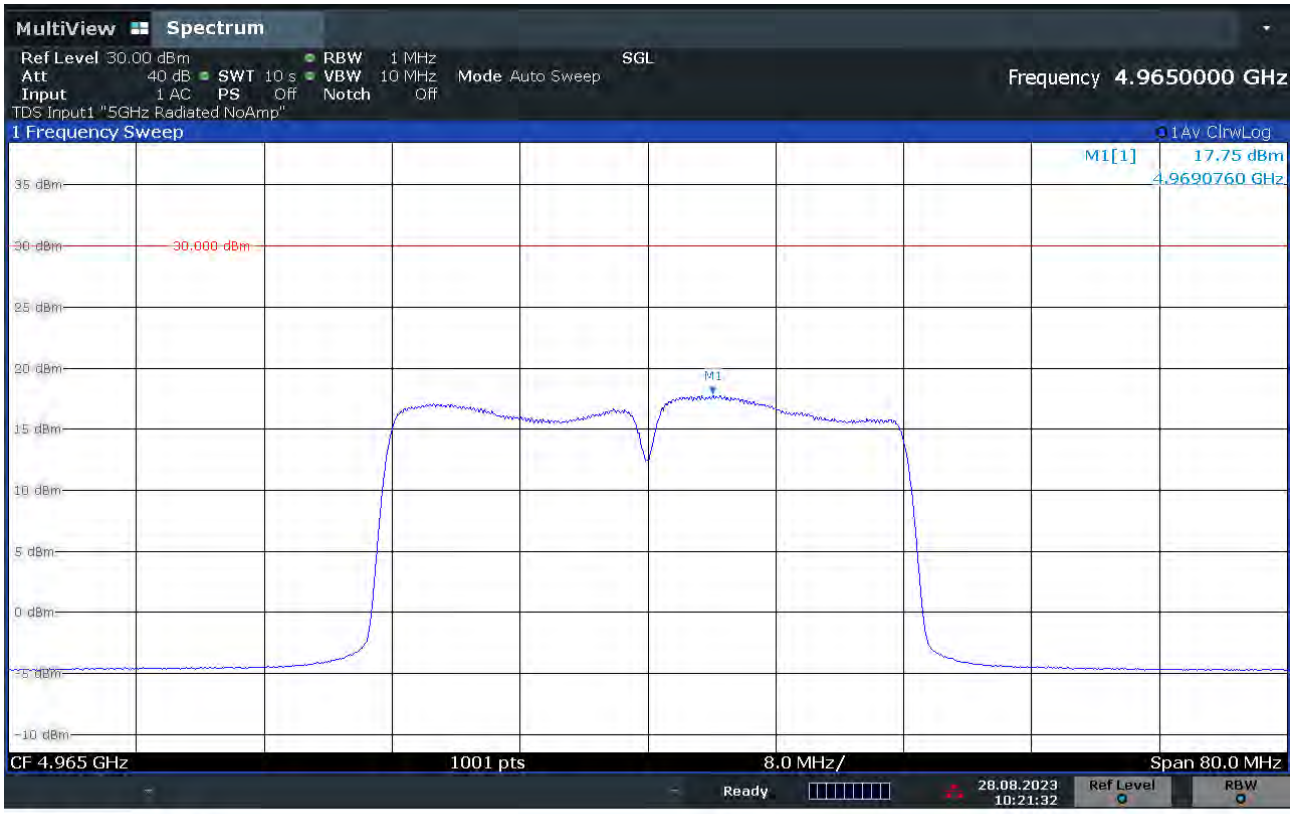


10:22:11 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4965.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

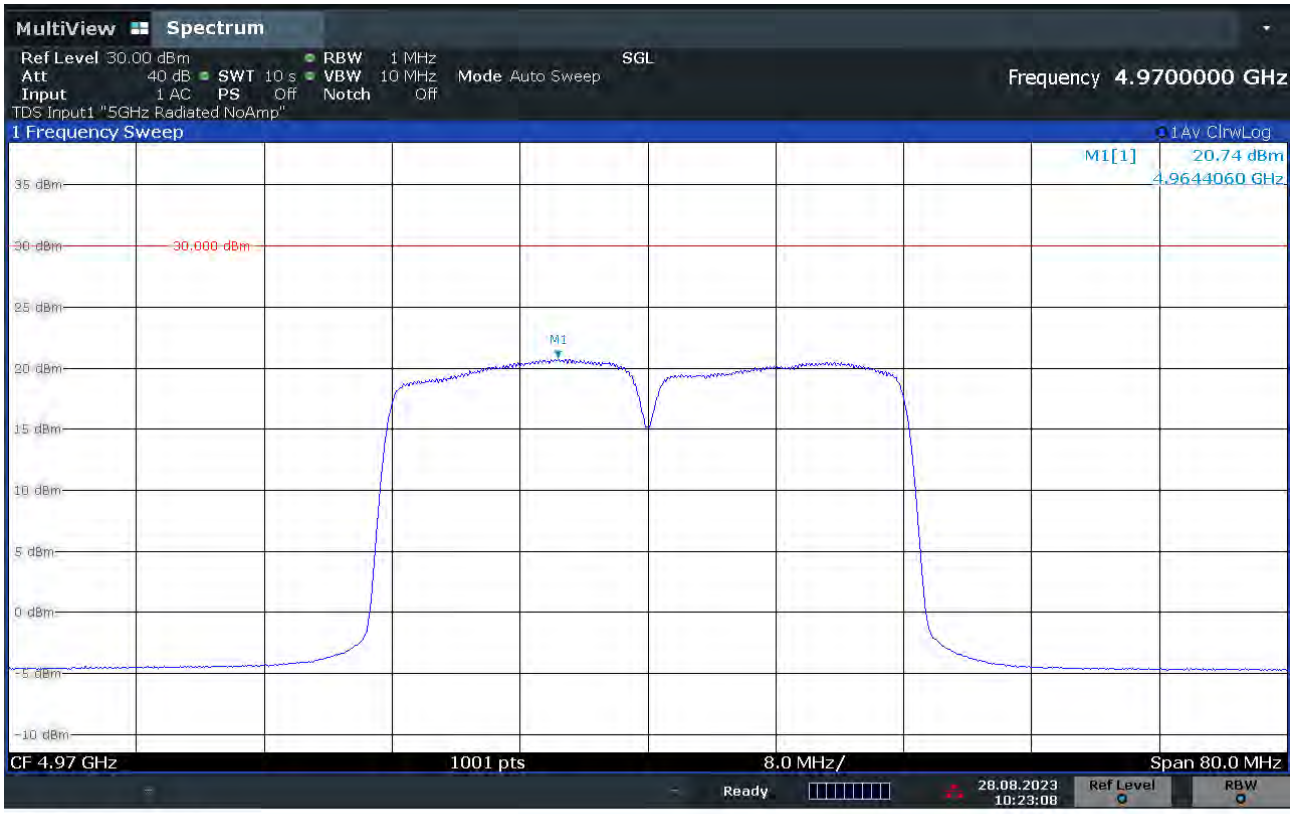


10:21:32 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4970.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

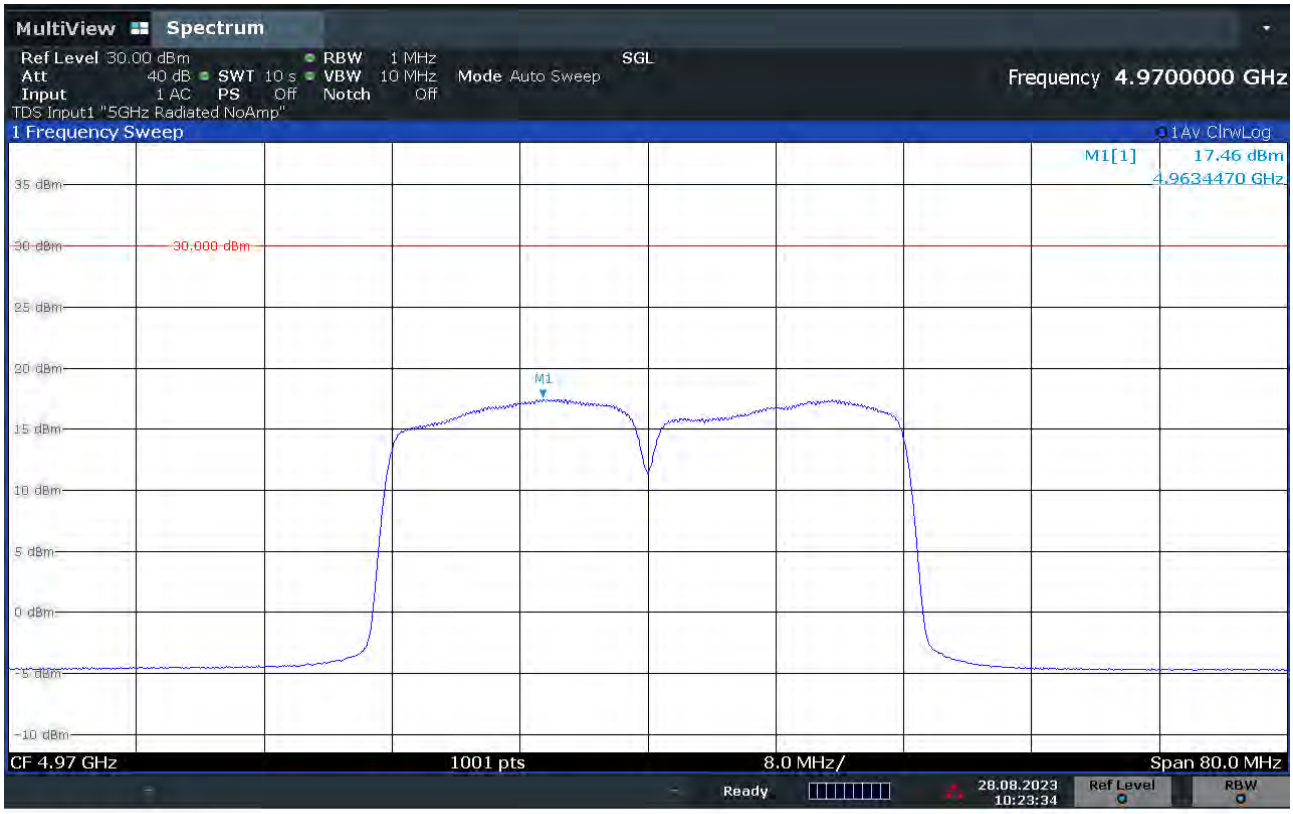


10:23:08 28.08.2023

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 4970.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



10:23:34 28.08.2023

back to matrix

A.3. Peak Excursion Ratio

PEAK EXCURSION RATIO

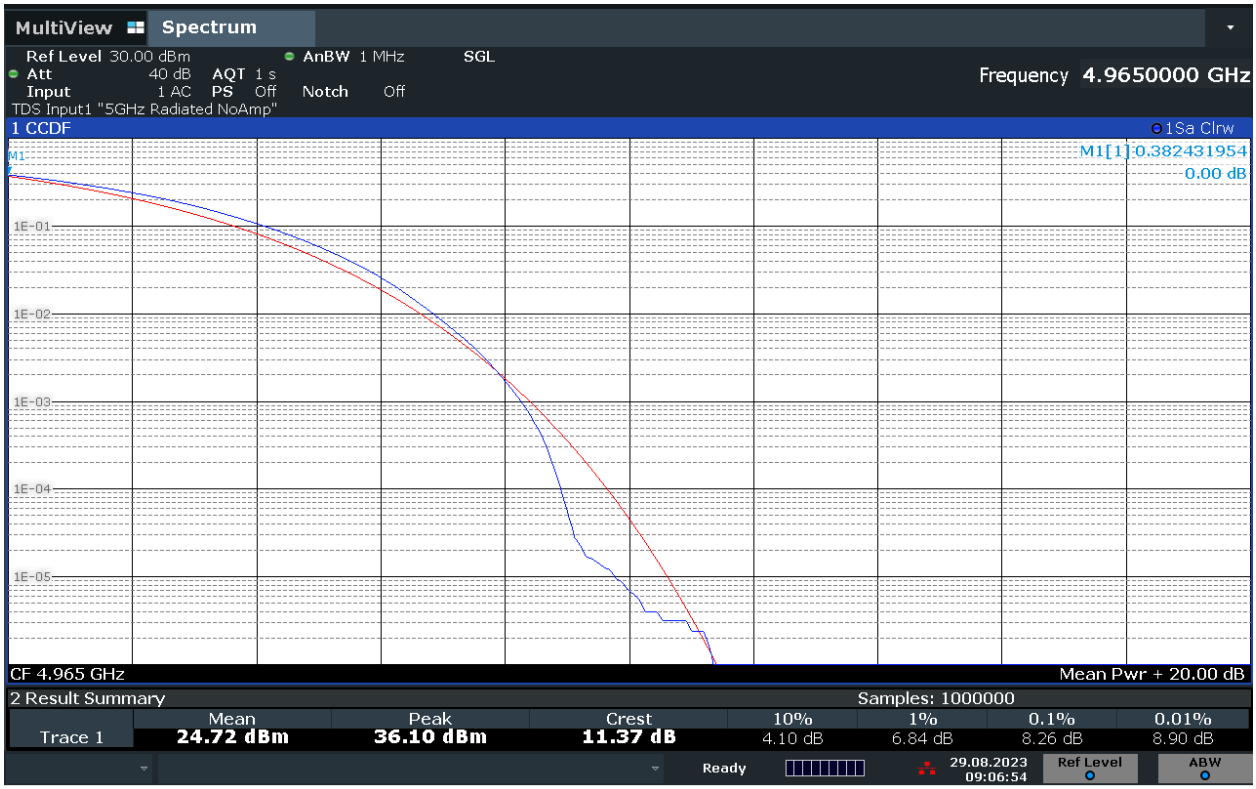
Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

09:09:25 29.08.2023

back to matrix

PEAK EXCURSION RATIO

Variant: 40MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc



09:06:54 29.08.2023

back to matrix

PEAK EXCURSION RATIO

Variant: 50MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

09:07:21 29.08.2023

back to matrix

PEAK EXCURSION RATIO

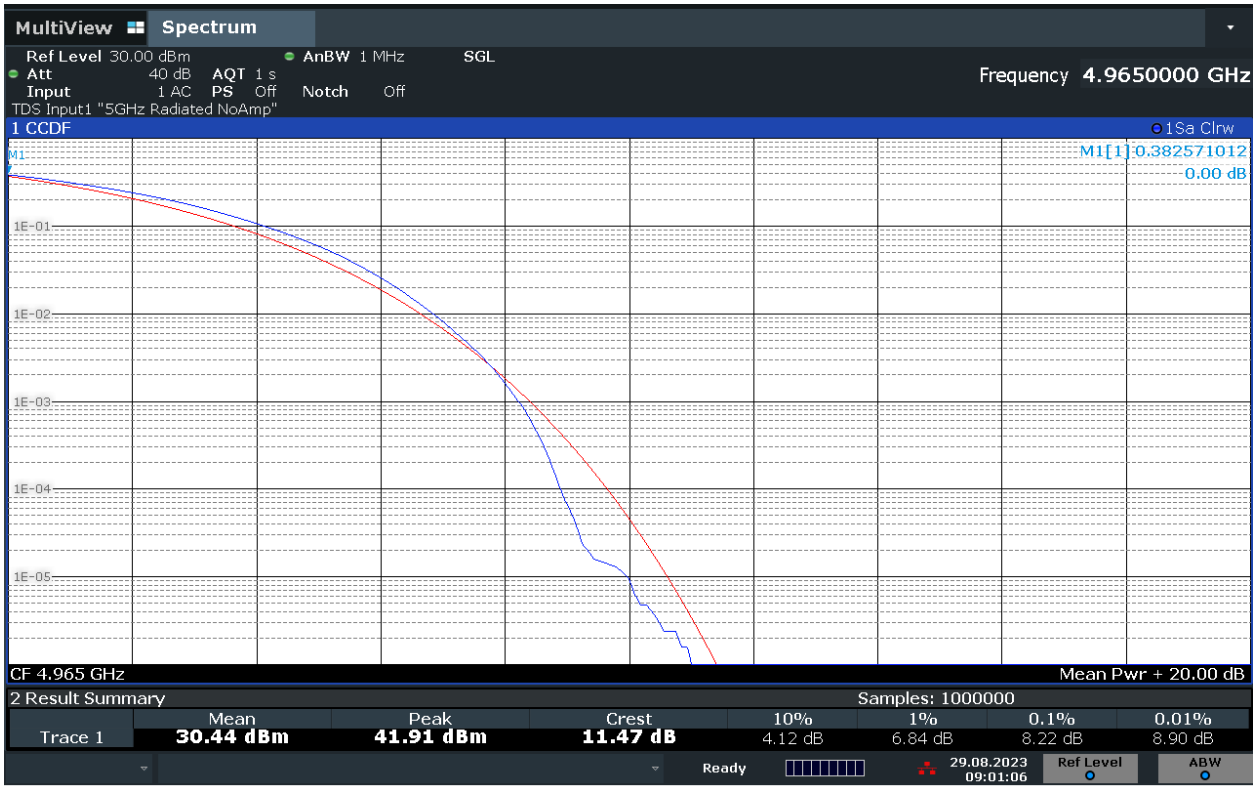
Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

08:59:11 29.08.2023

back to matrix

PEAK EXCURSION RATIO

Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc



09:01:06 29.08.2023

back to matrix

PEAK EXCURSION RATIO

Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

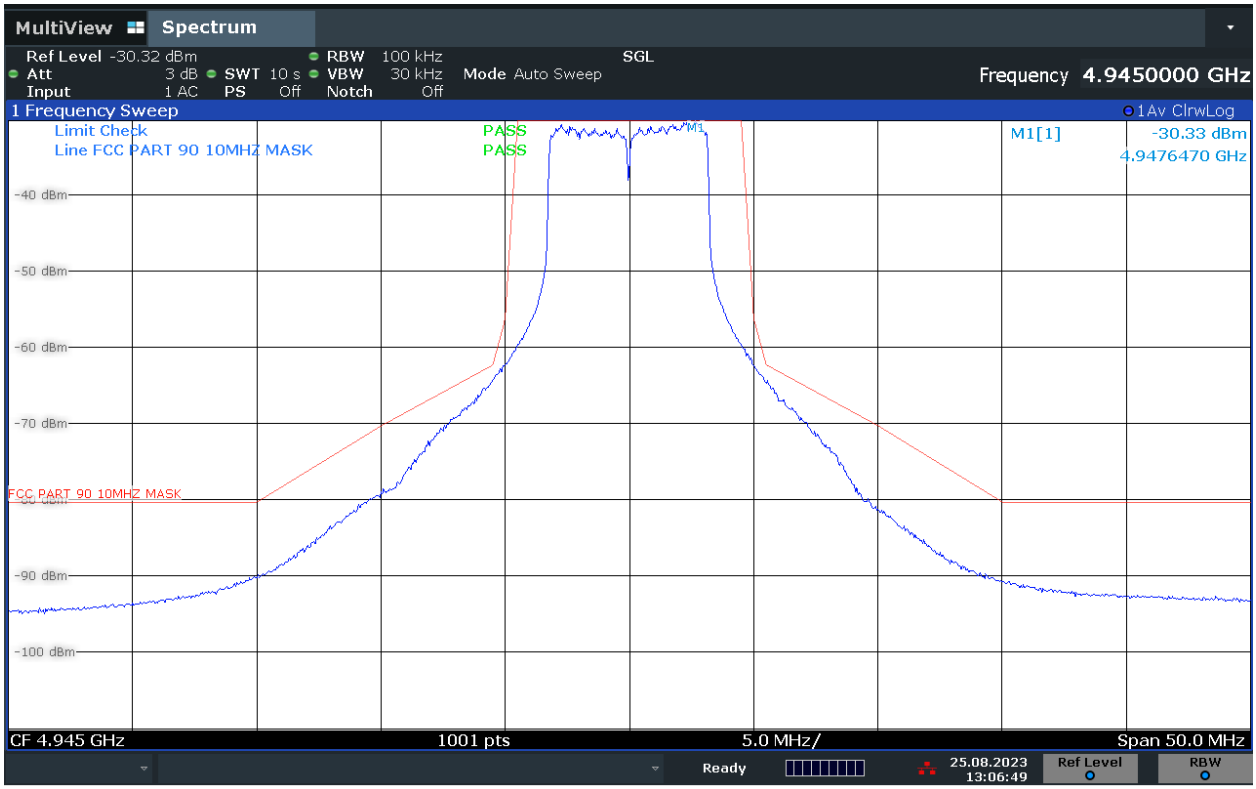
09:02:21 29.08.2023

back to matrix

A.4. Spectrum Emission Mask

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4945.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

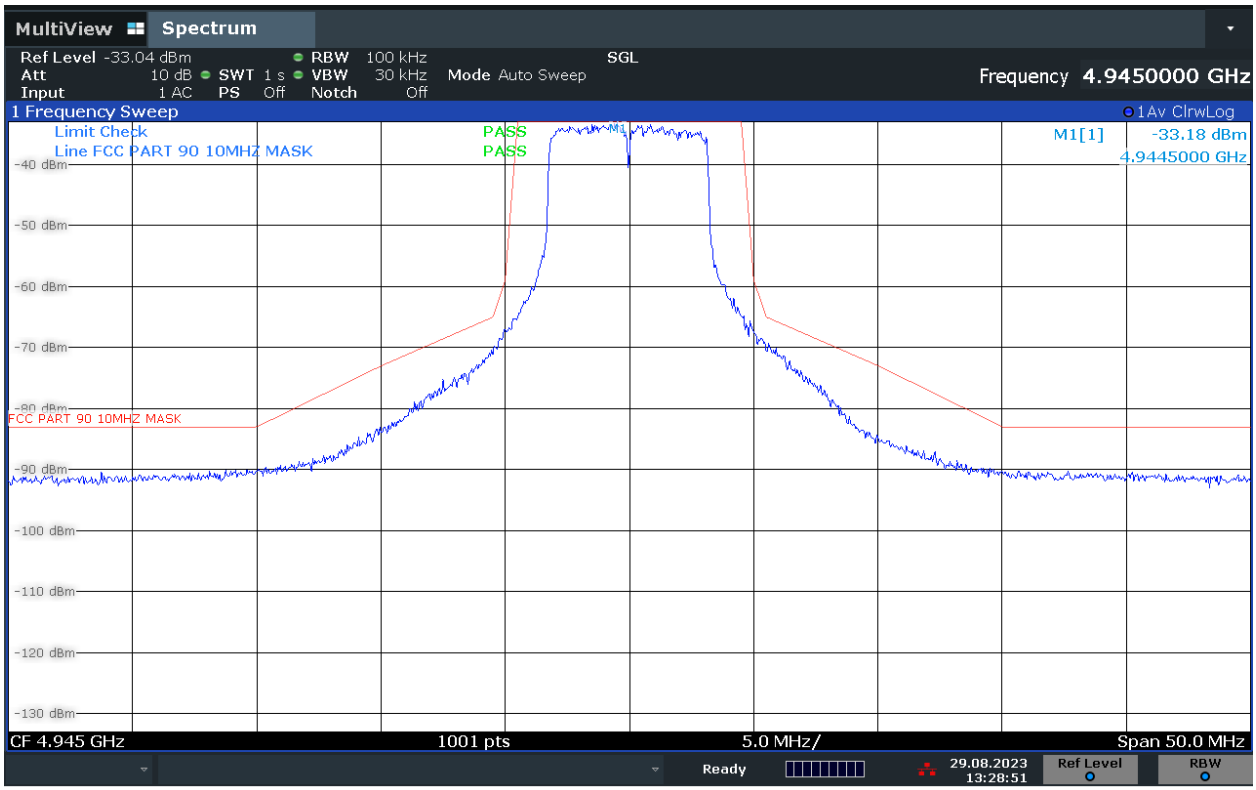


13:06:50 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4945.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

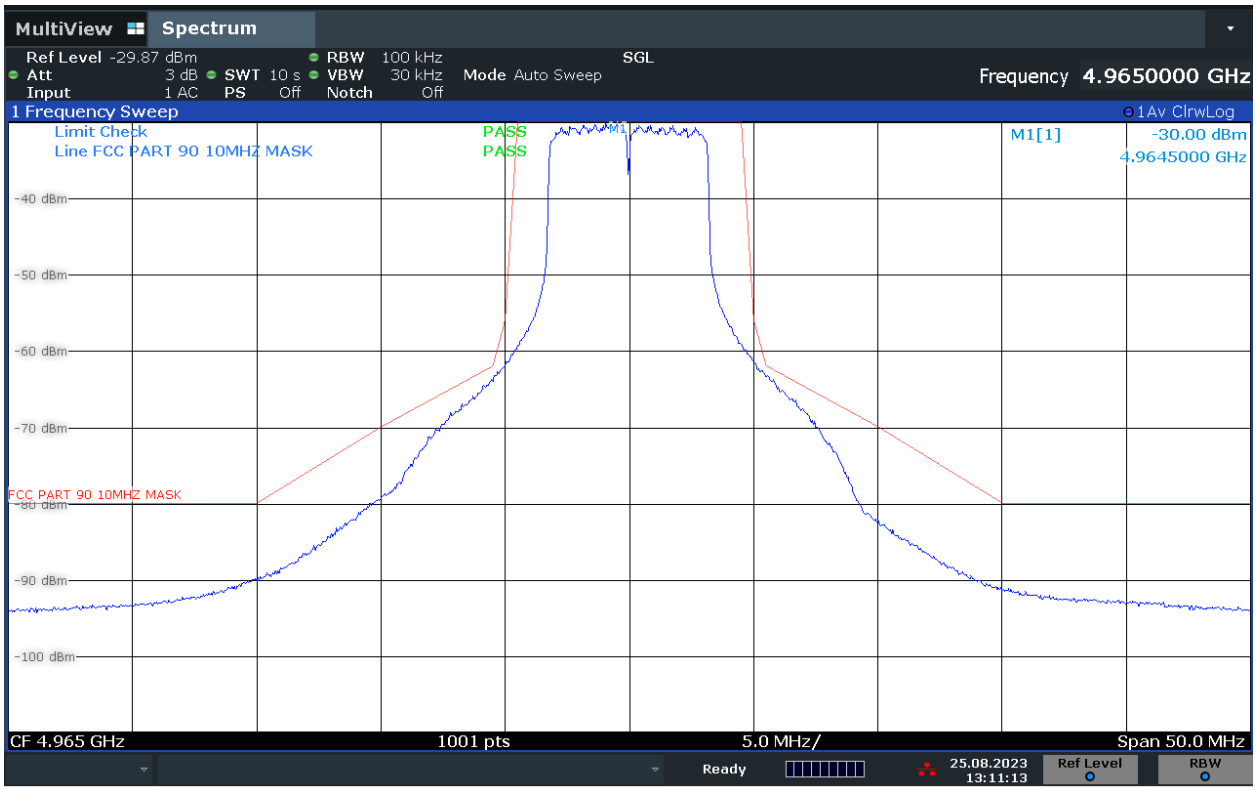


13:28:52 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

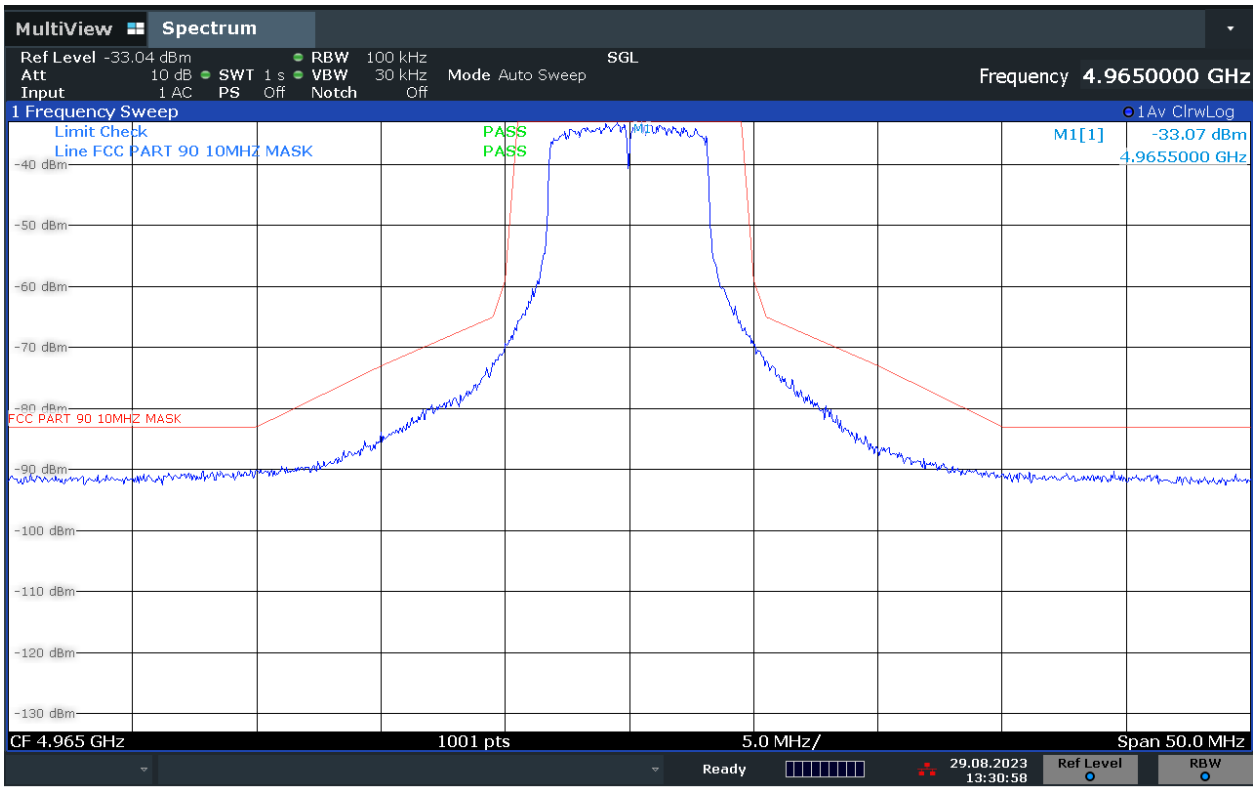


13:11:14 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4965.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

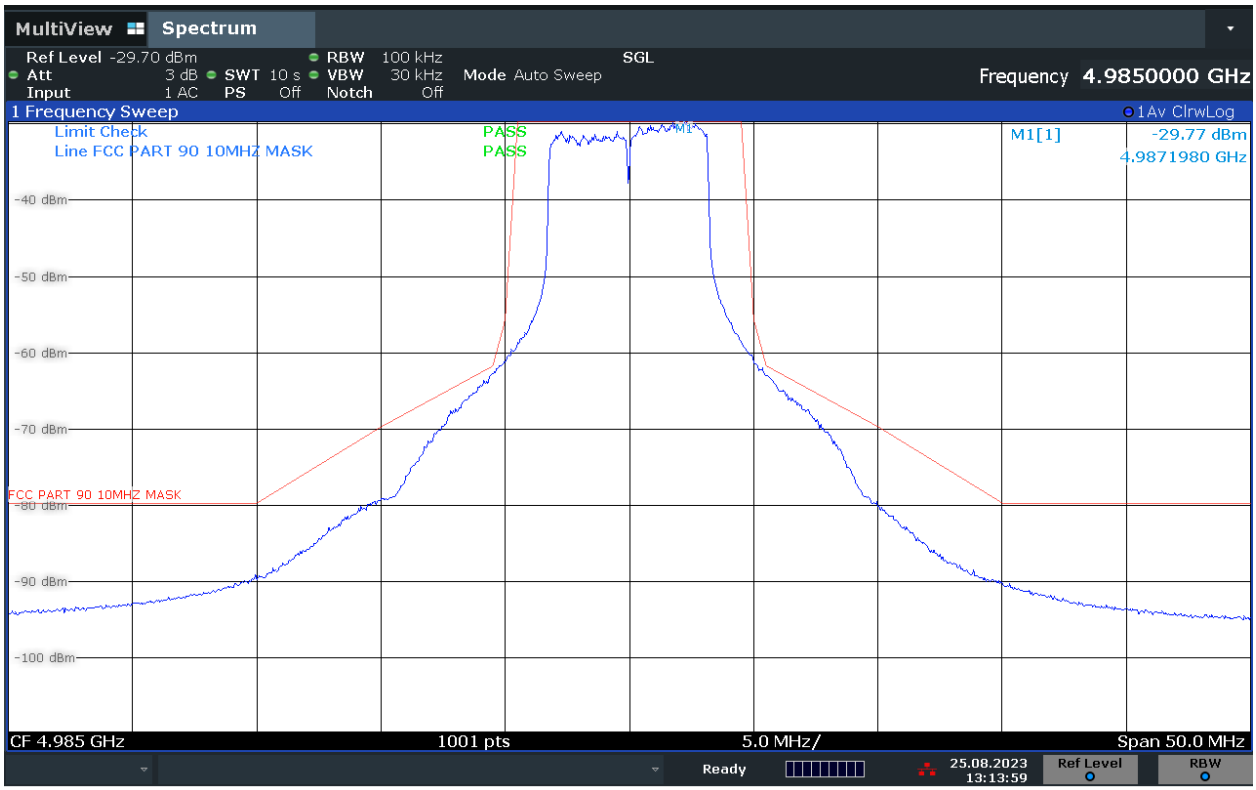


13:30:59 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4985.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

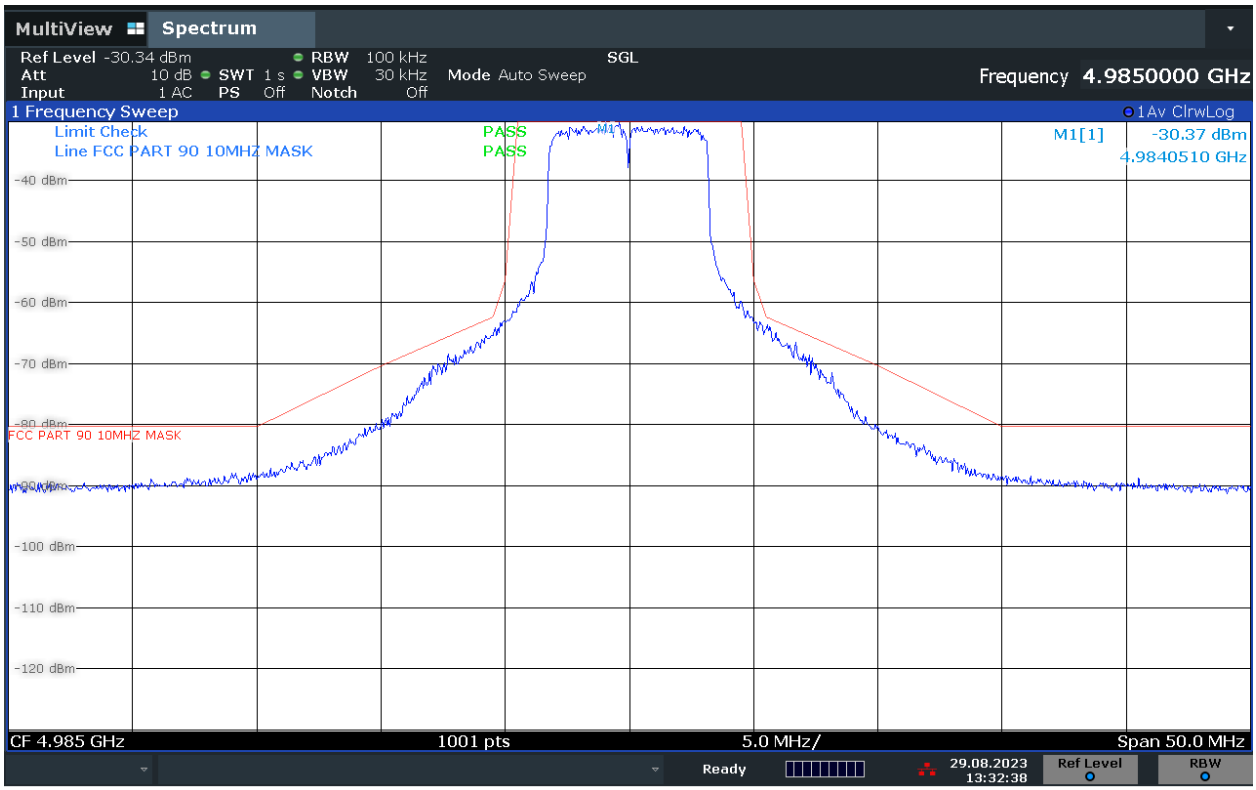


13:14:00 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4985.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

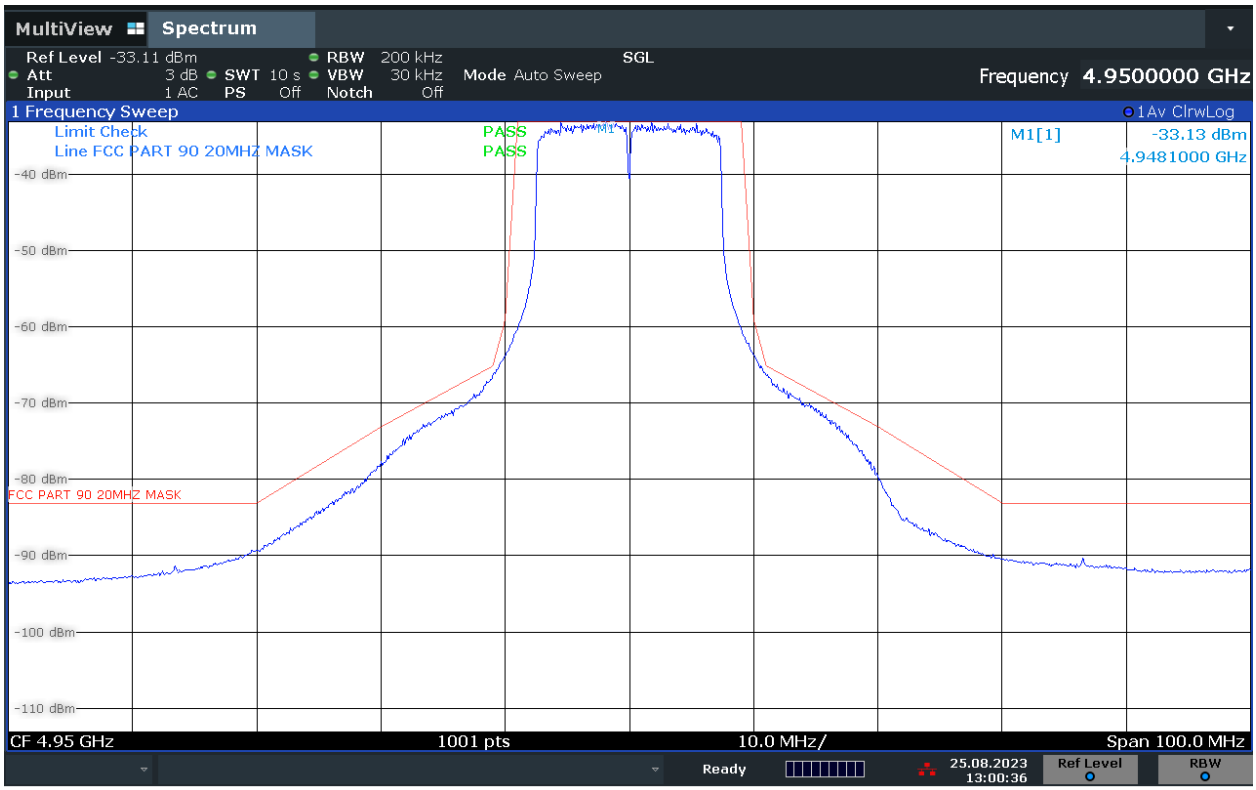


13:32:39 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4950.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

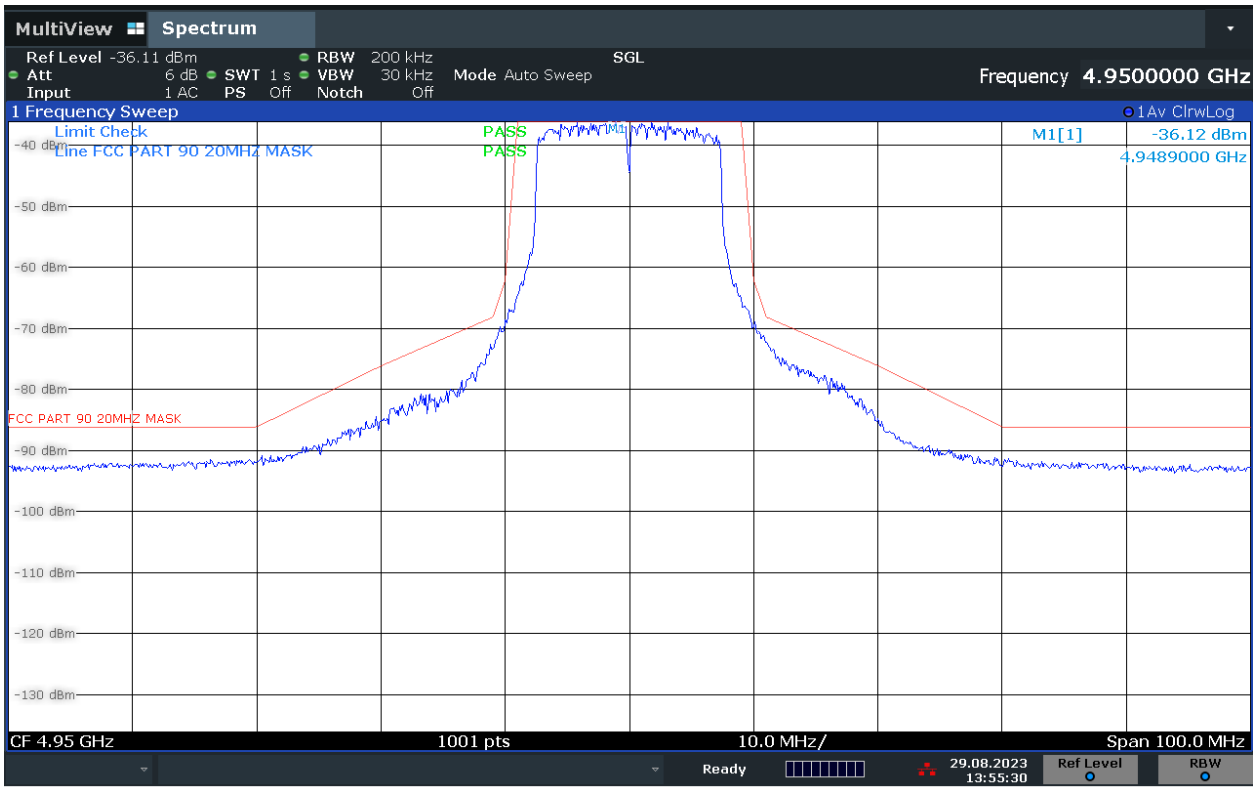


13:00:37 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4950.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

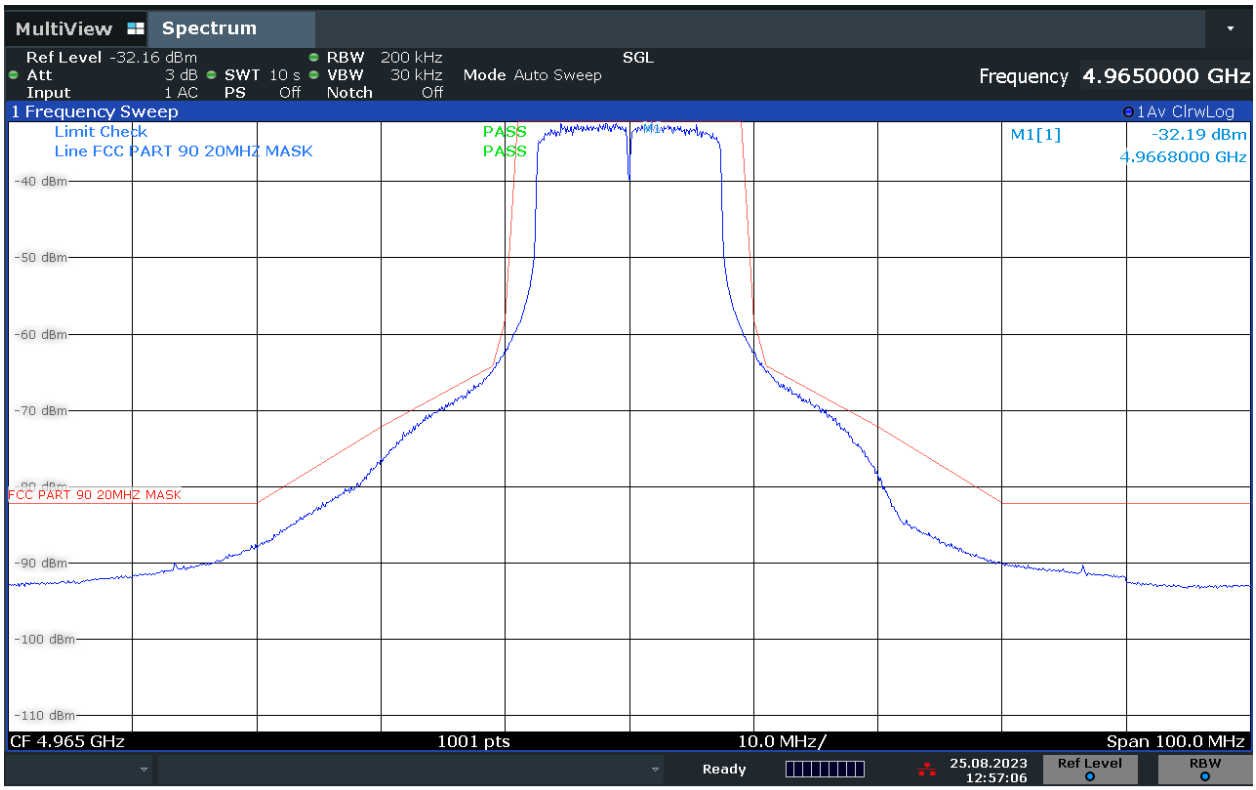


13:55:31 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

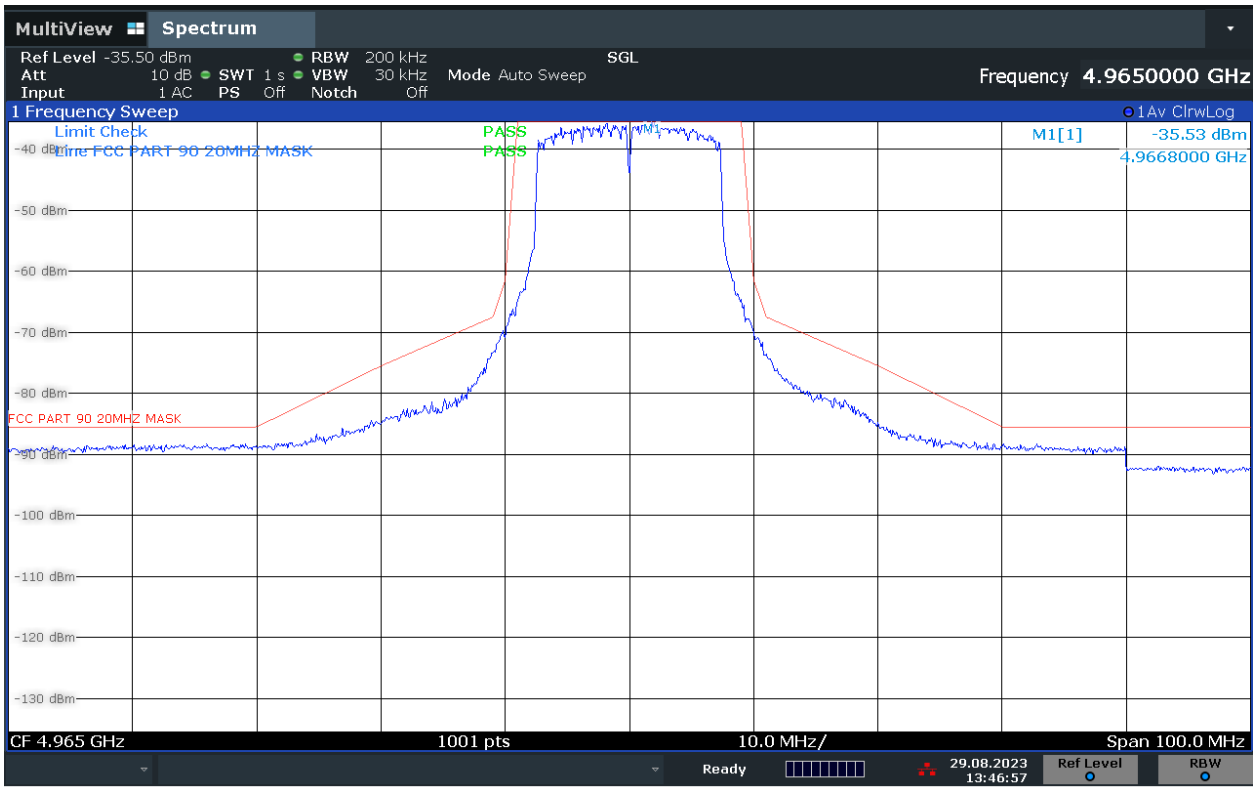


12:57:06 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4965.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

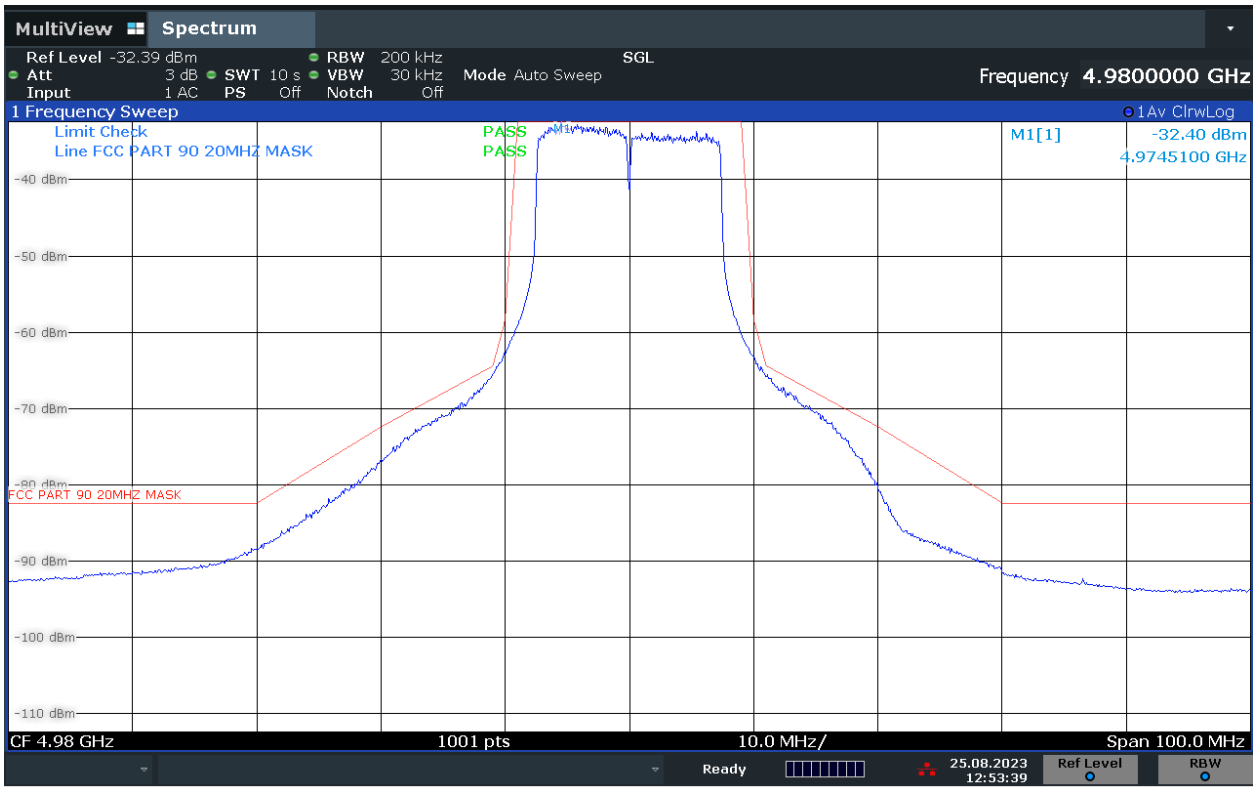


13:46:58 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4980.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

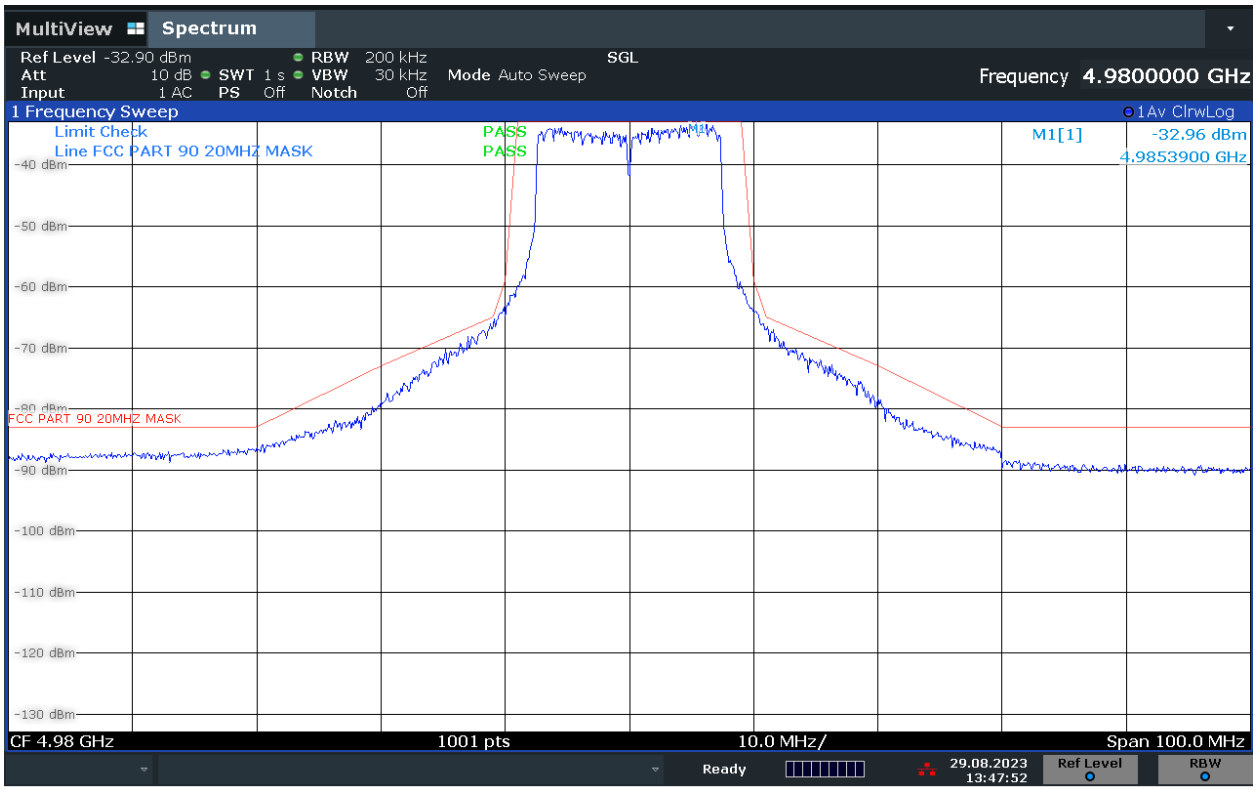


12:53:40 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4980.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

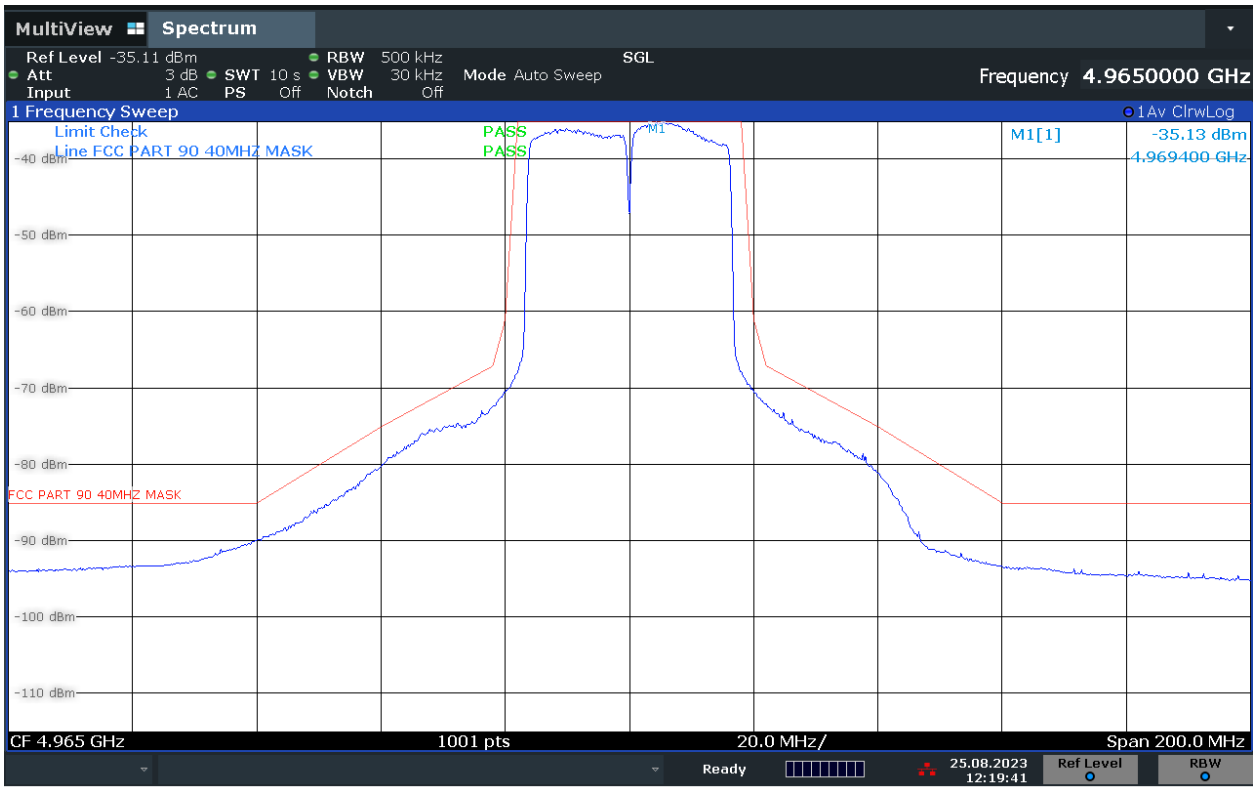


13:47:53 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4965 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

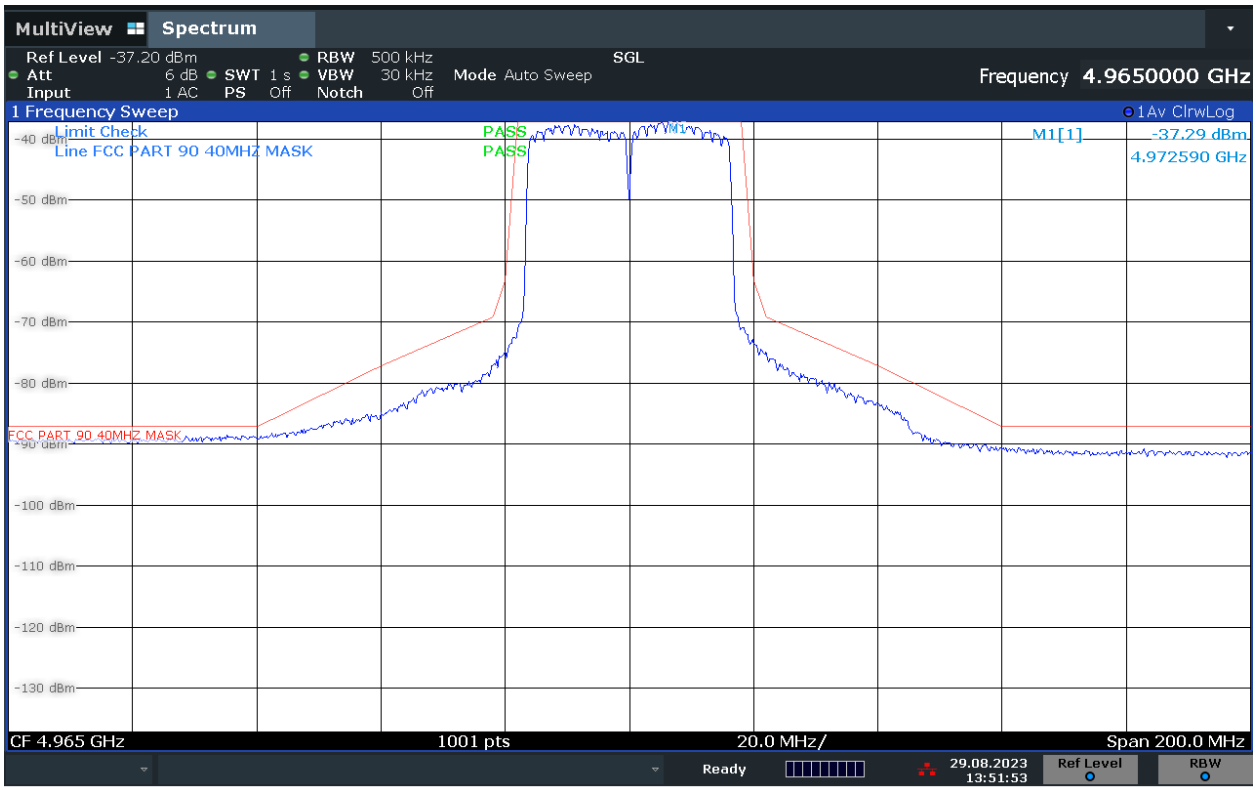


12:19:41 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4965 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

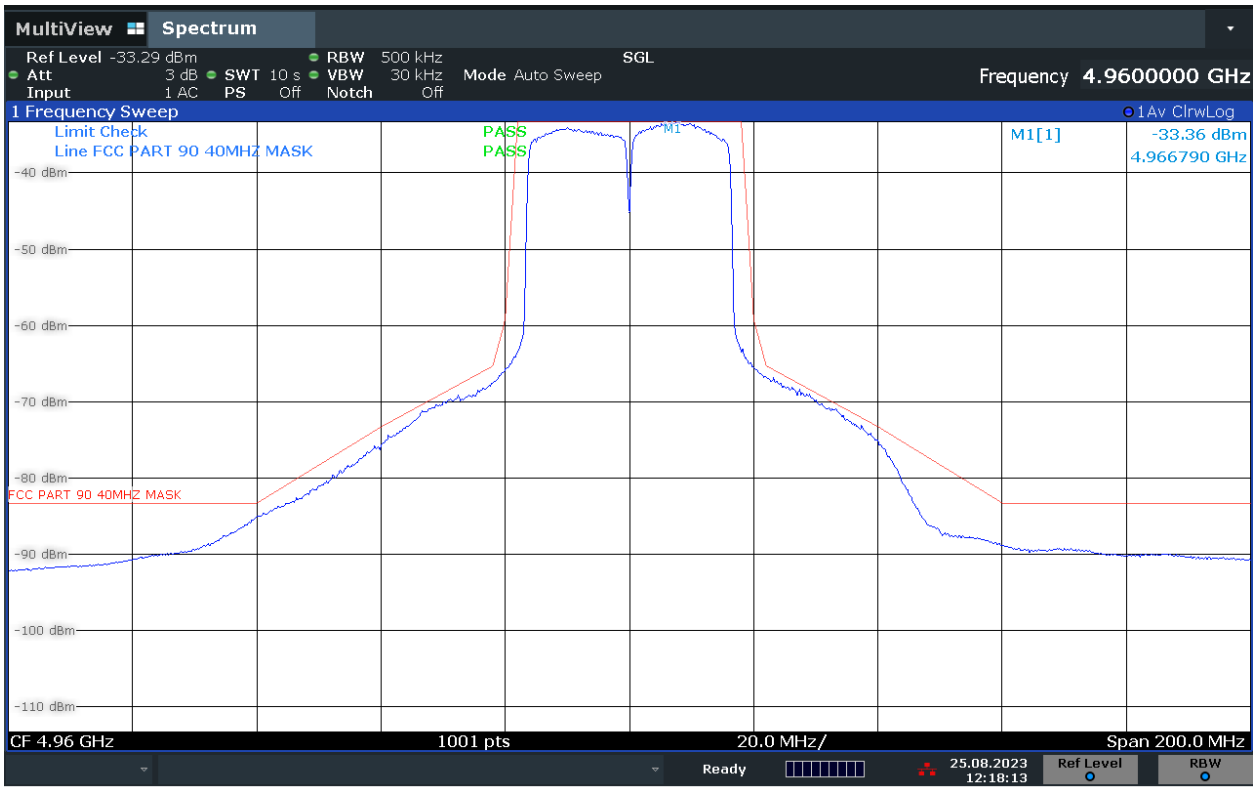


13:51:54 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4960 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

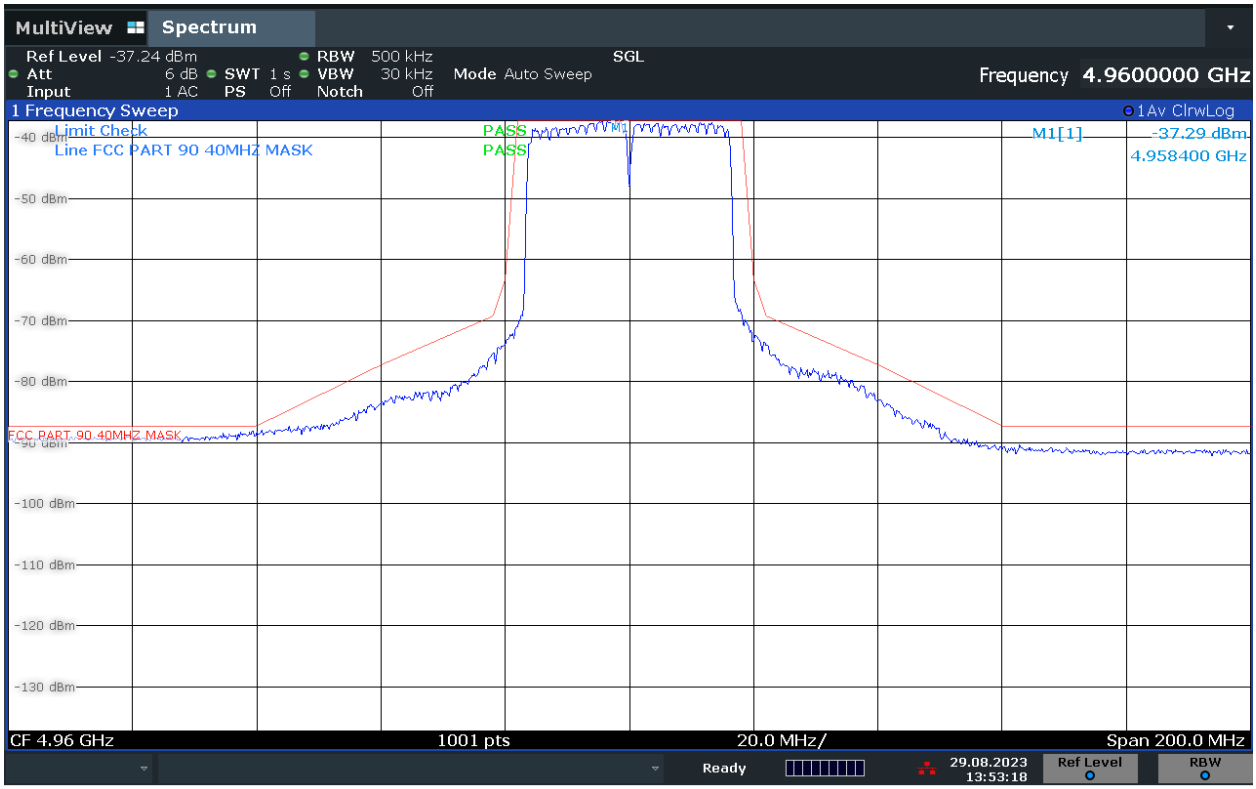


12:18:13 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4960 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

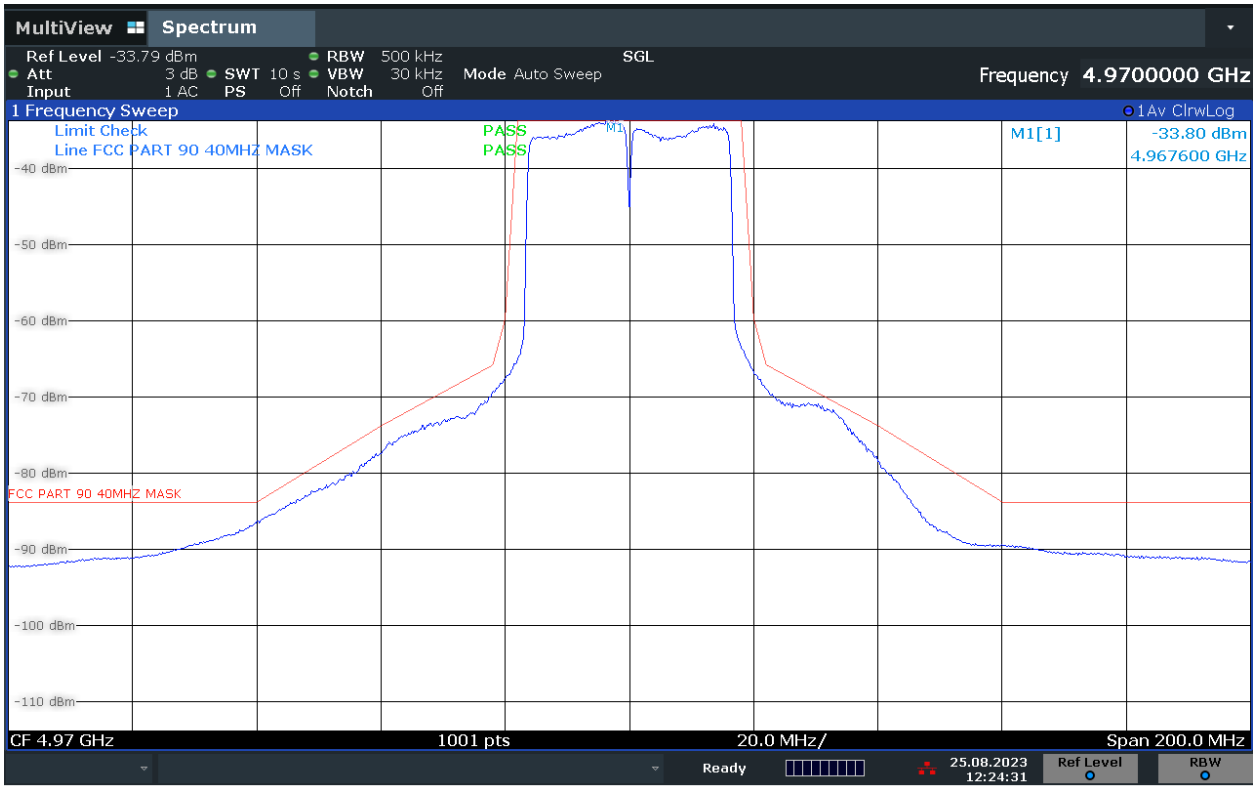


13:53:19 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4970 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

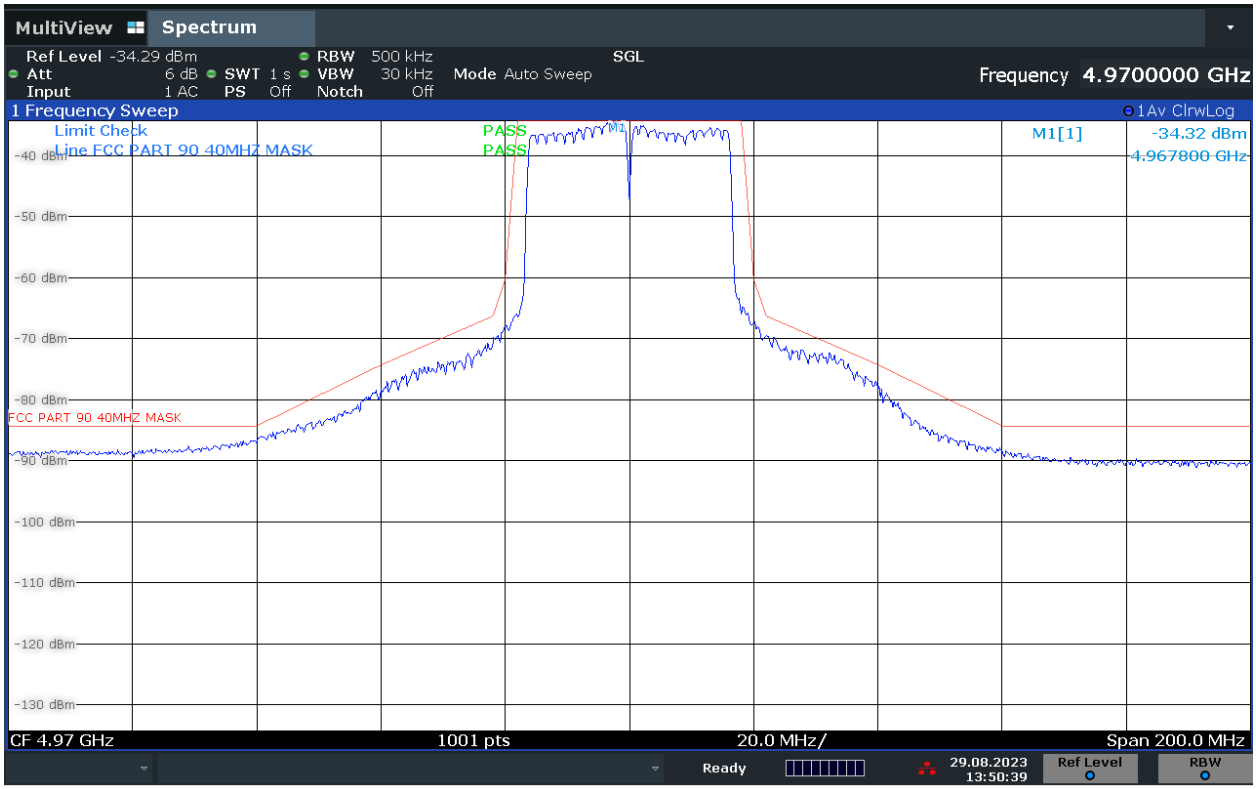


12:24:31 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4970 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

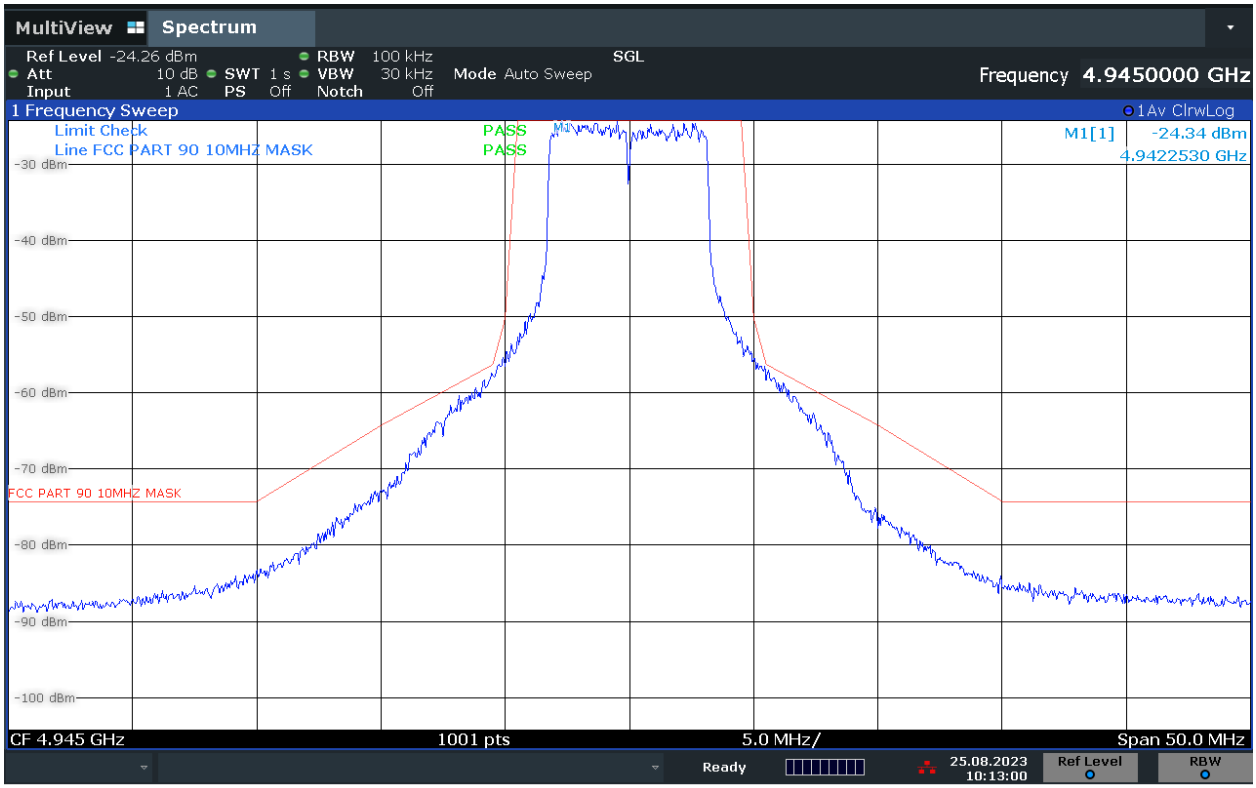


13:50:40 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4945.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

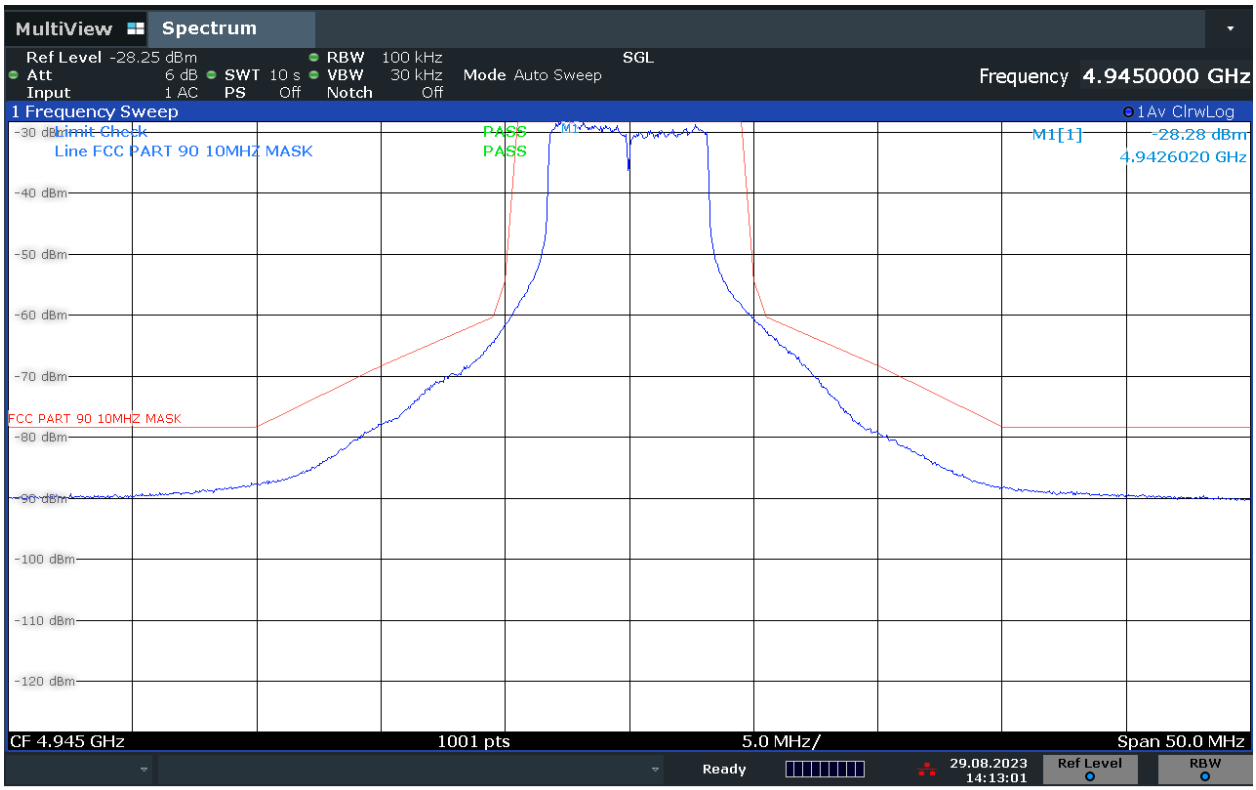


10:13:00 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4945.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

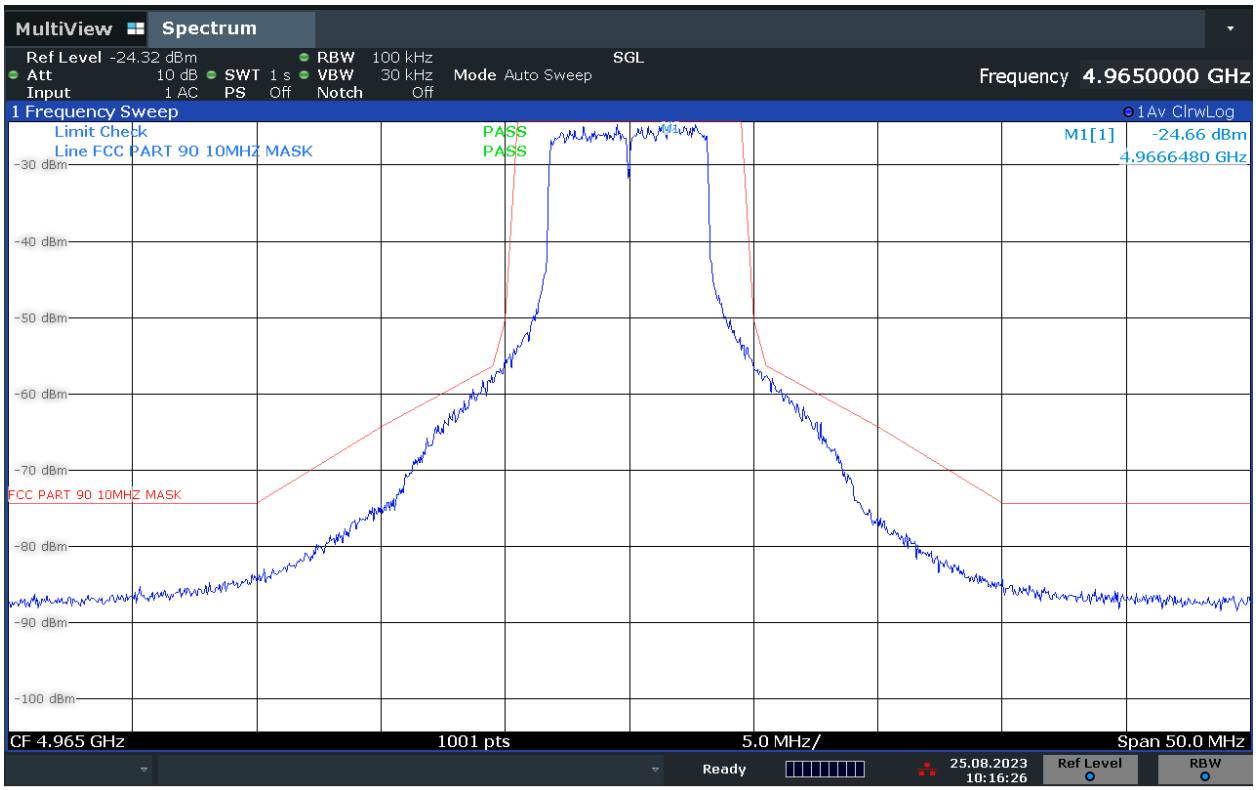


14:13:02 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

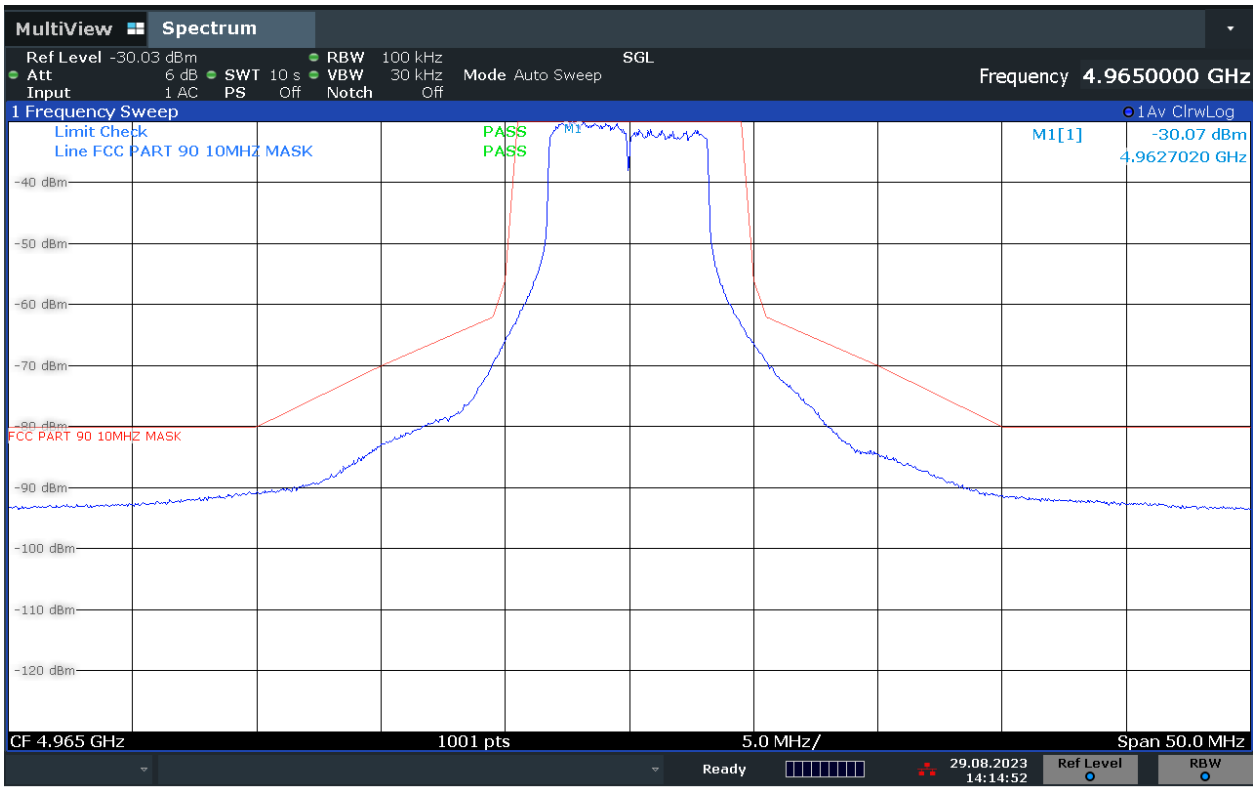


10:16:26 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4965.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

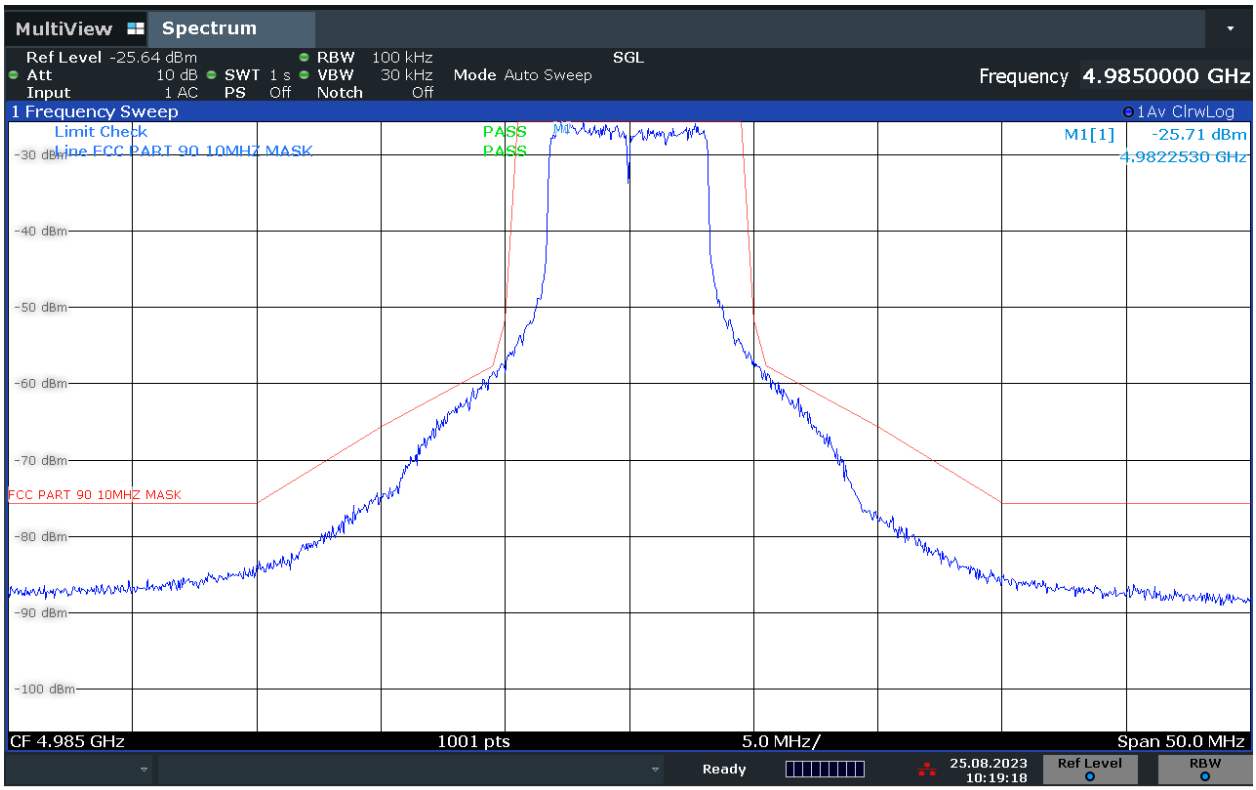


14:14:52 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4985.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

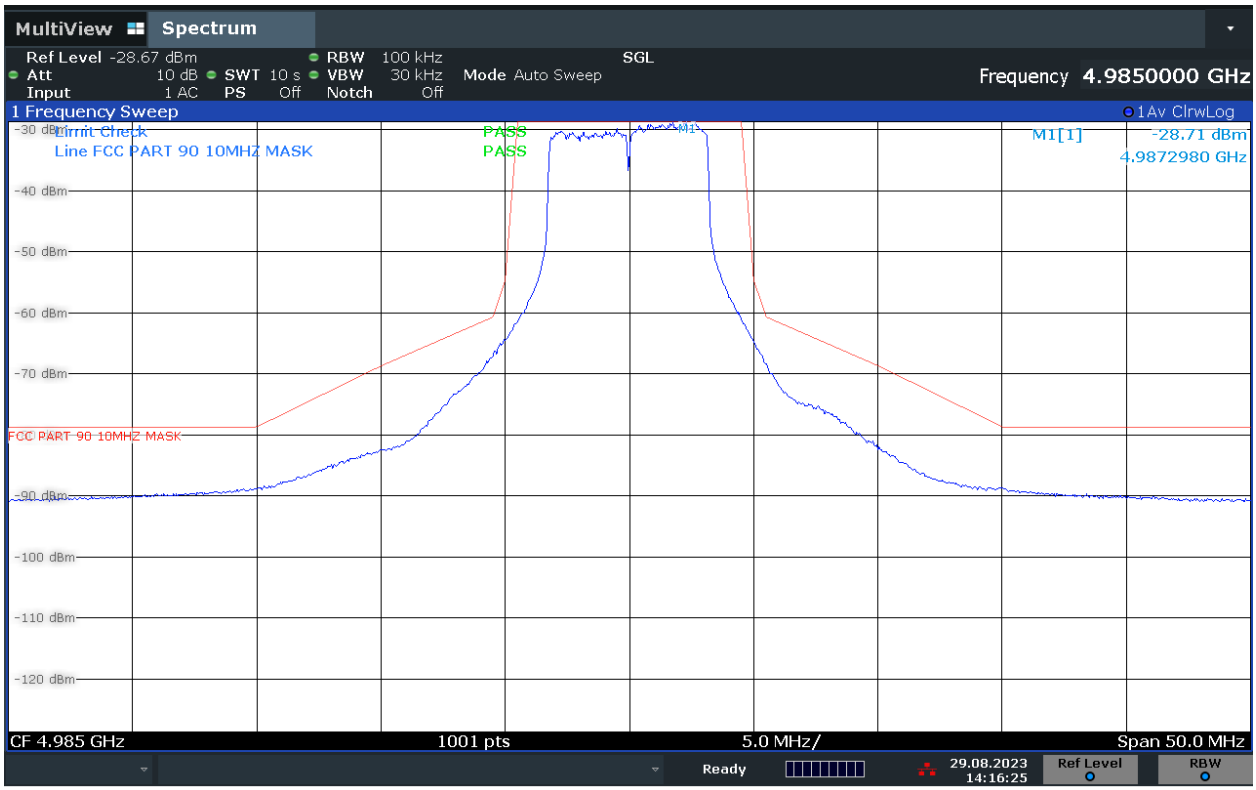


10:19:19 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 10MHz, Channel: 4985.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

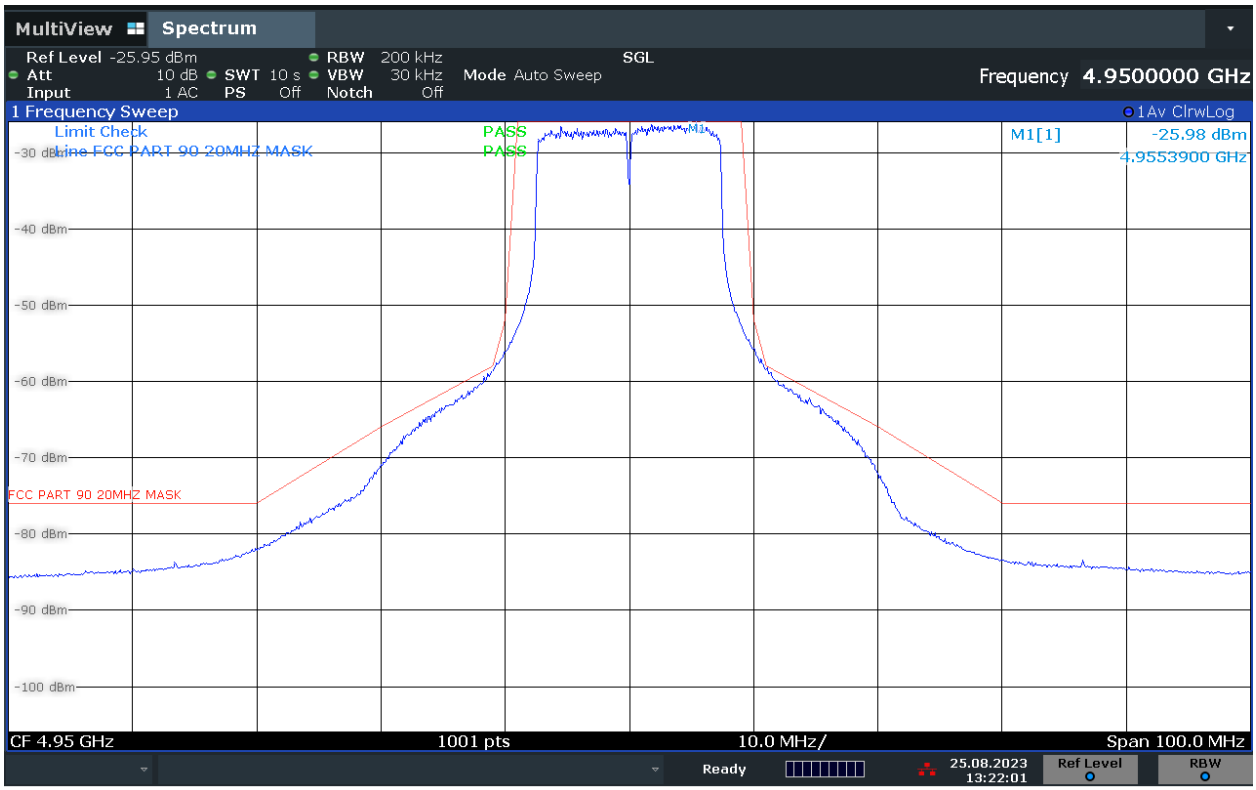


14:16:25 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4950.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

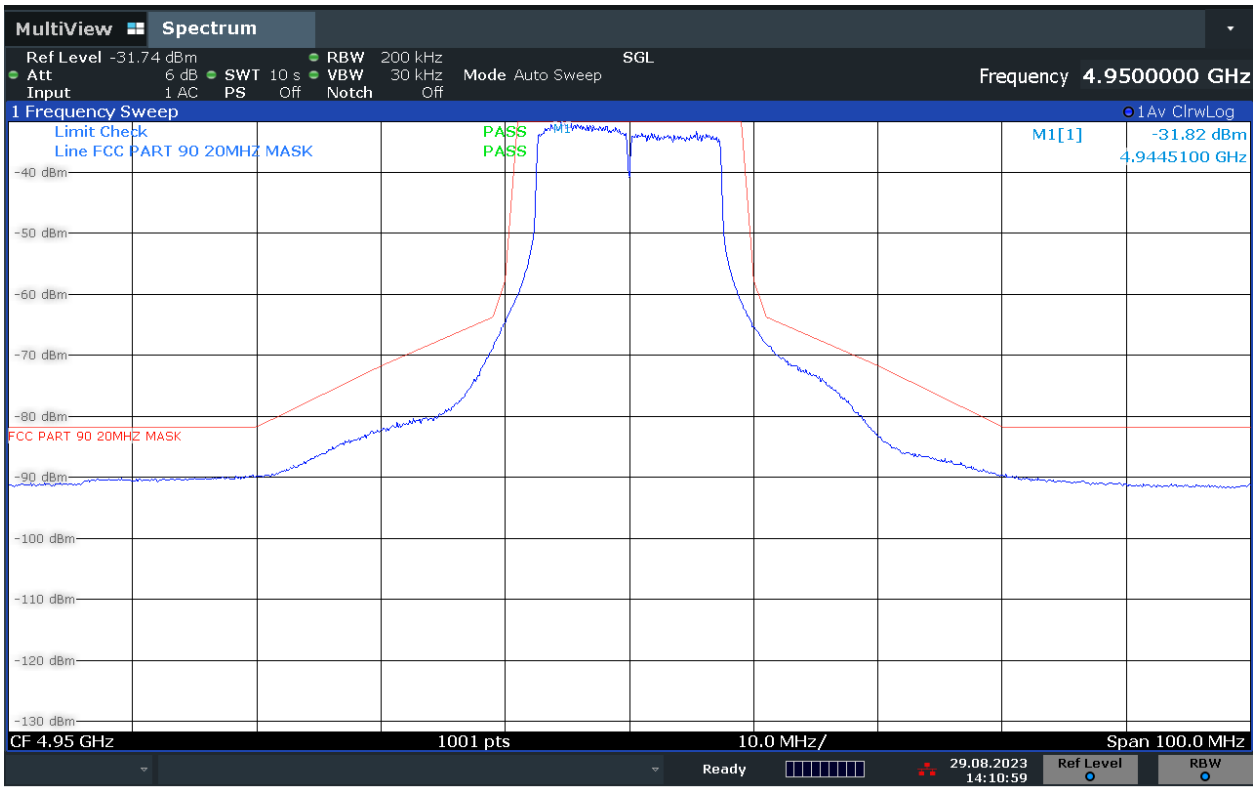


13:22:01 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4950.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

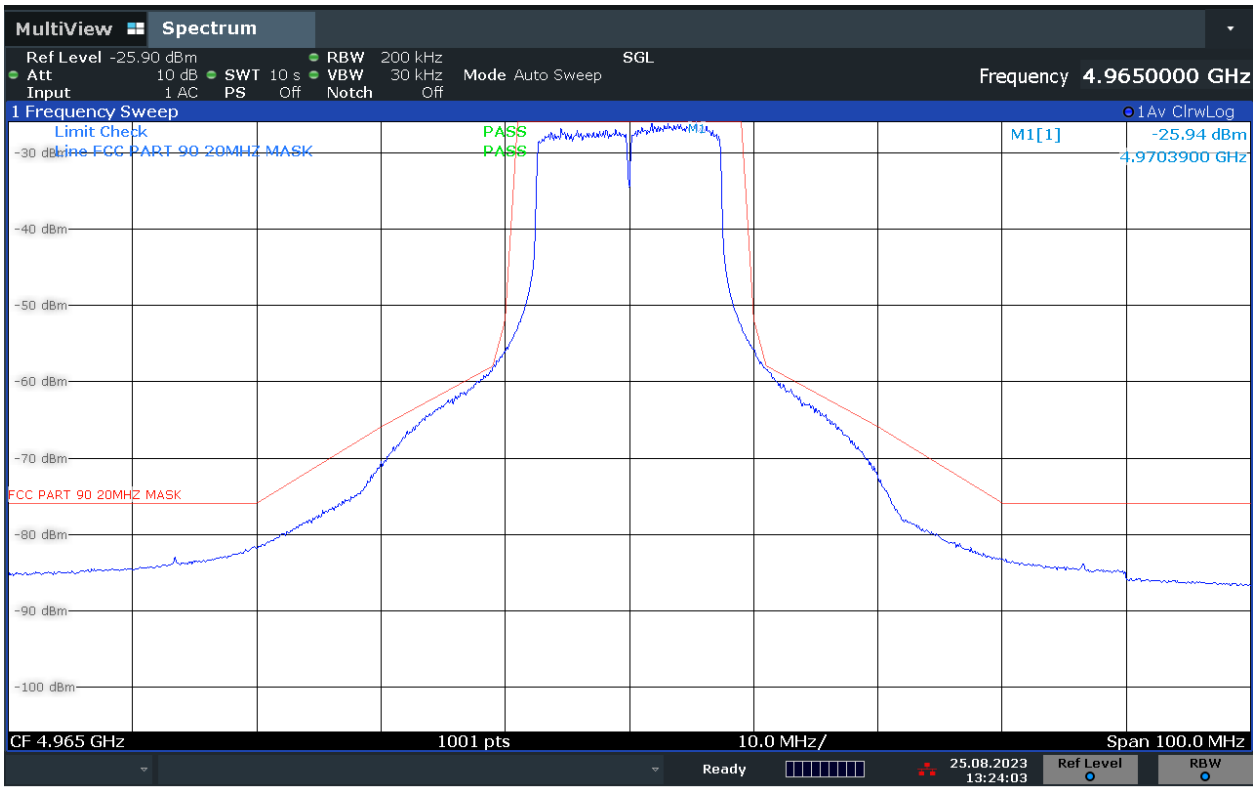


14:10:59 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4965.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc



13:24:03 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

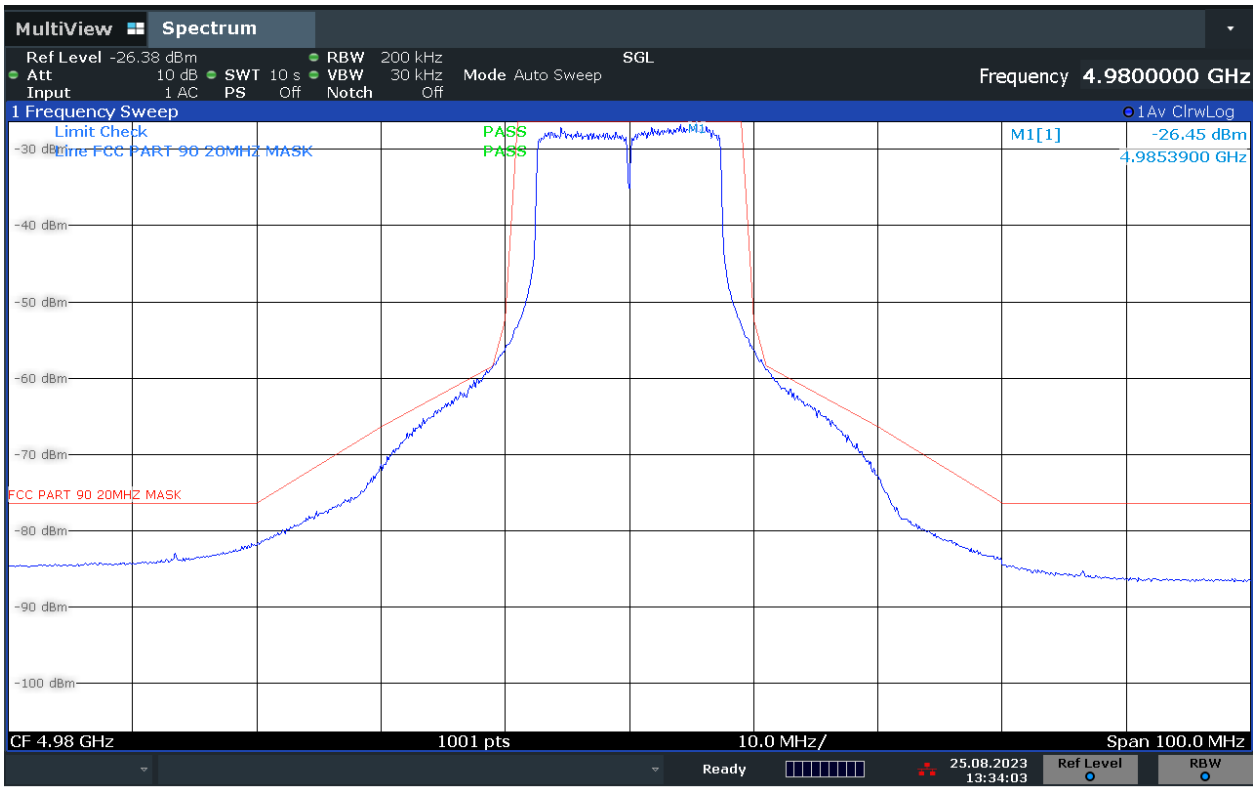
Variant: 20MHz, Channel: 4965.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

14:08:56 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4980.00 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

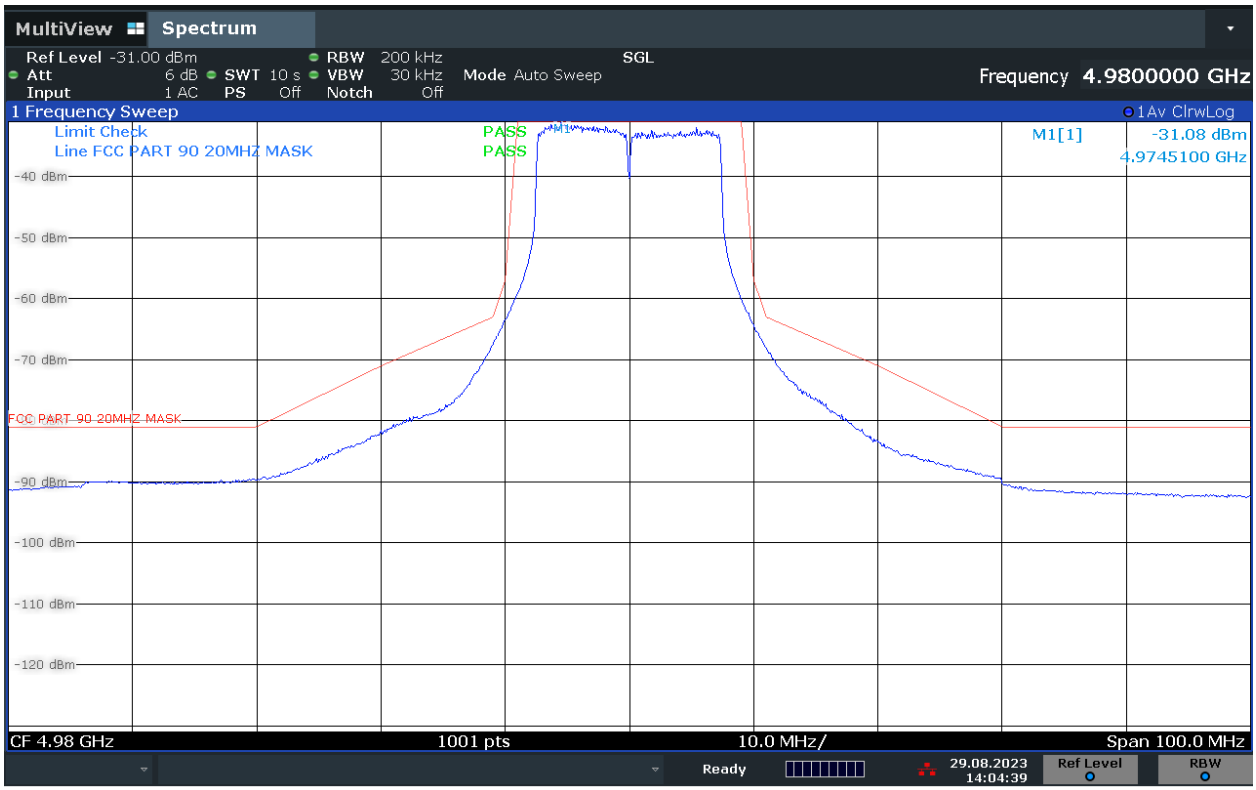


13:34:03 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 20MHz, Channel: 4980.00 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

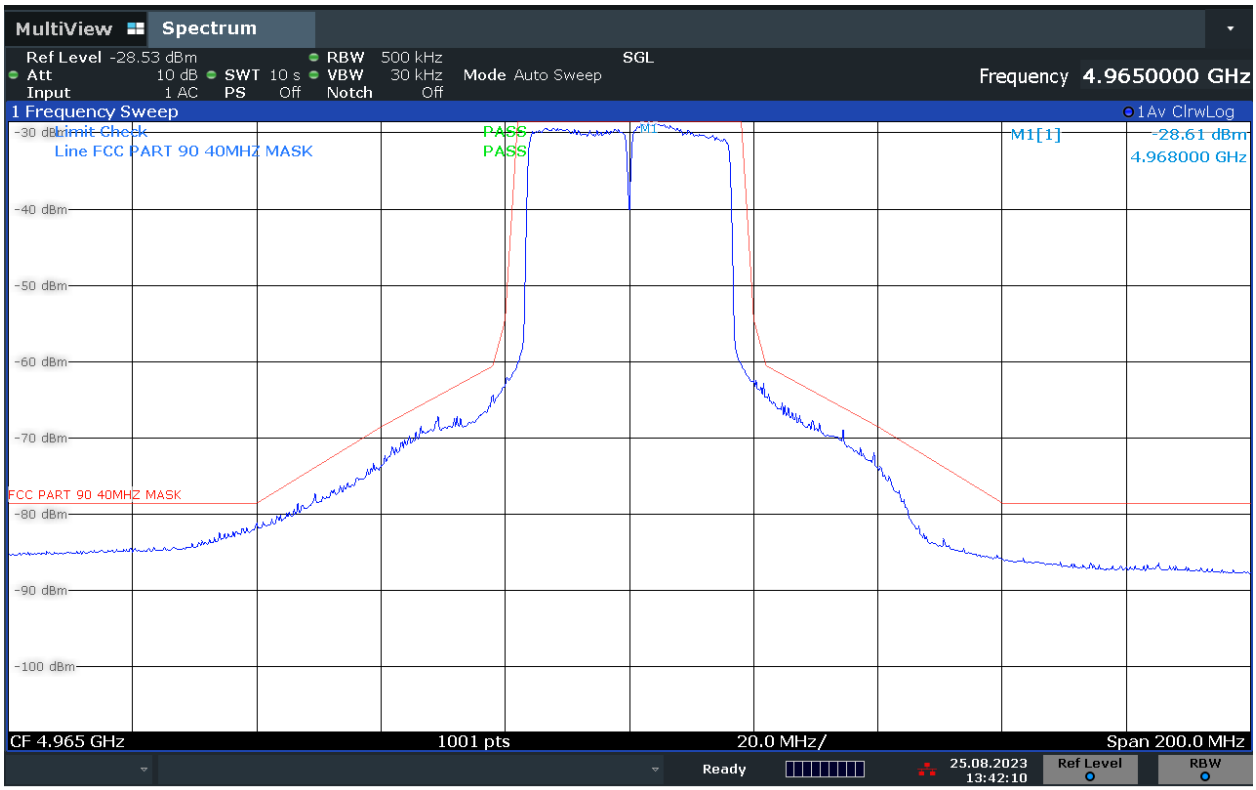


14:04:40 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4965 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

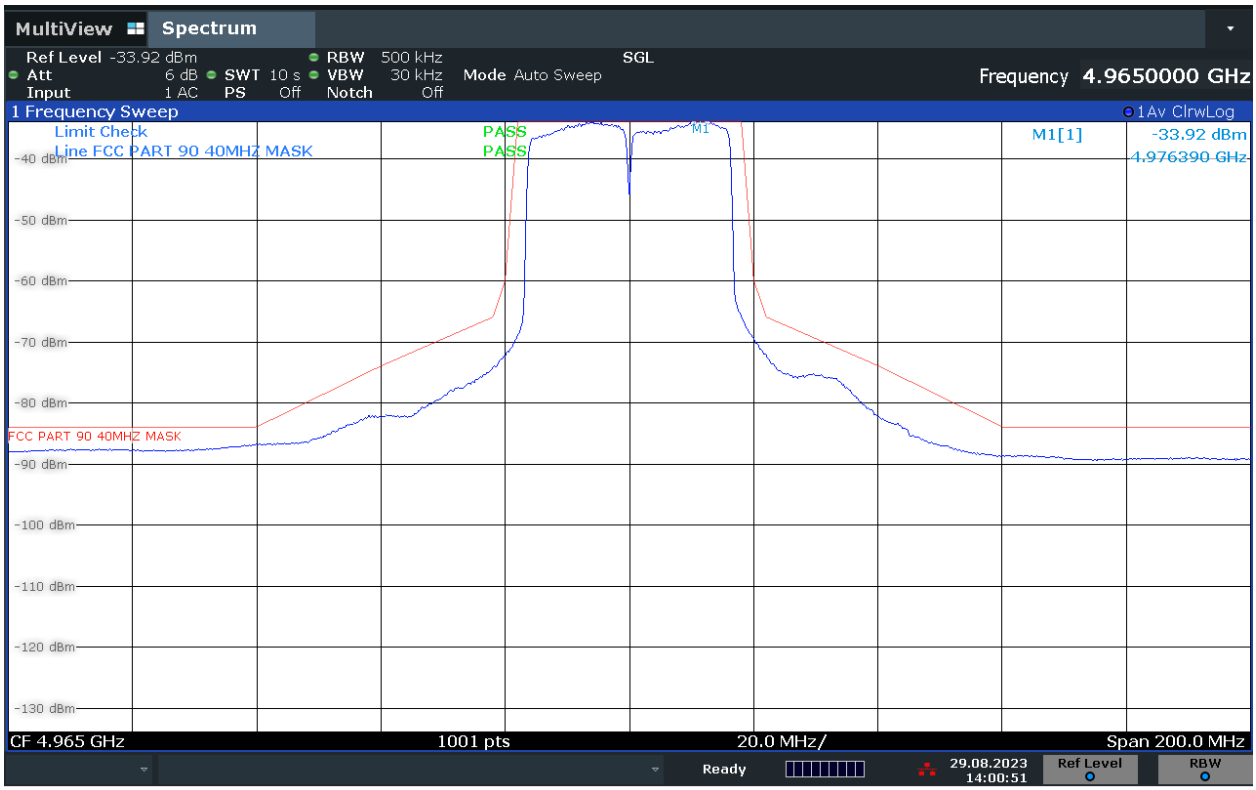


13:42:11 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4965 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

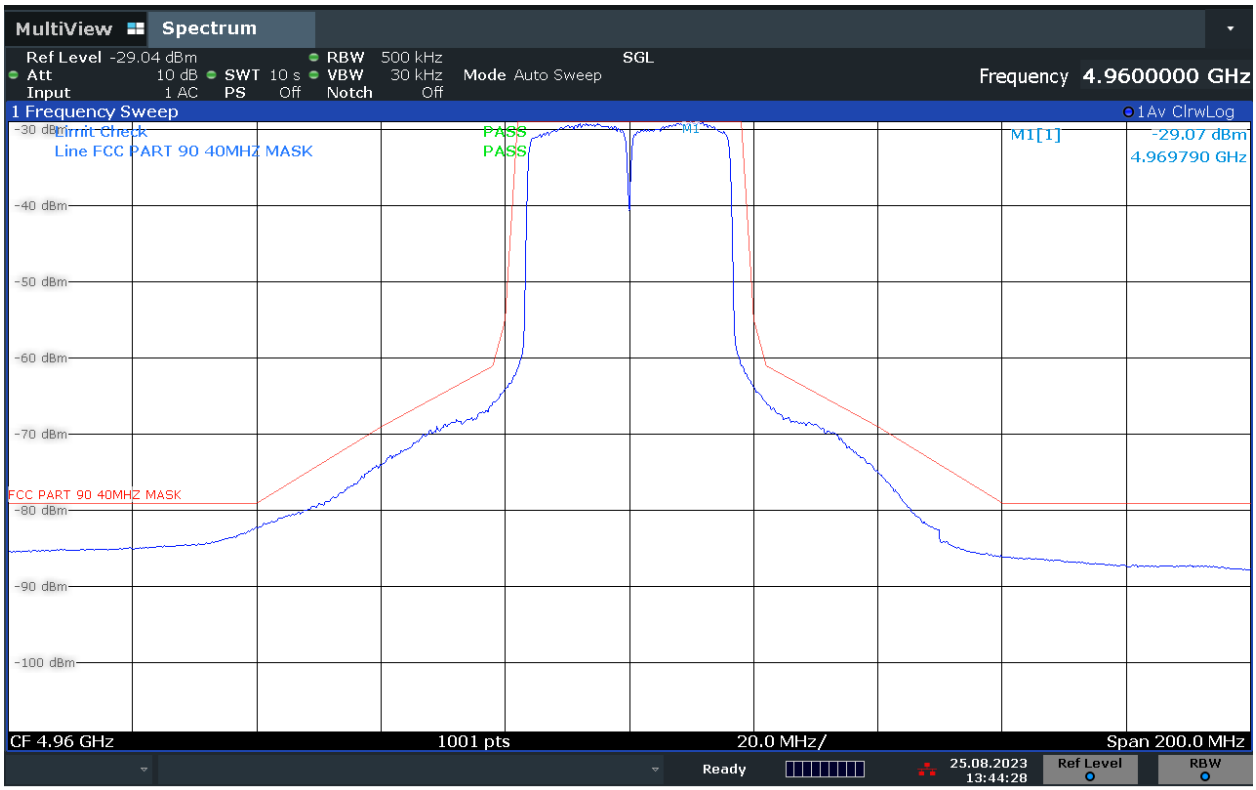


14:00:52 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4960 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

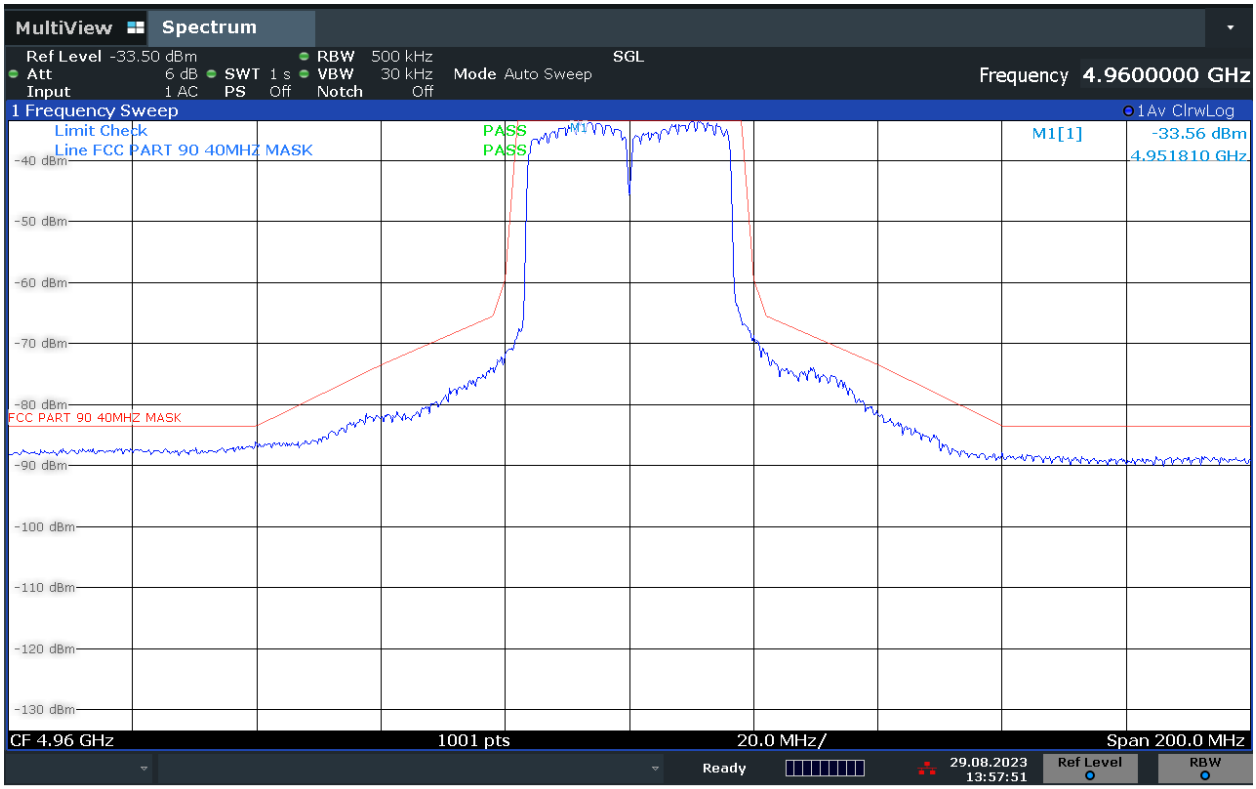


13:44:29 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4960 MHz, Vertical, Temp: 20, Voltage: 56 Vdc

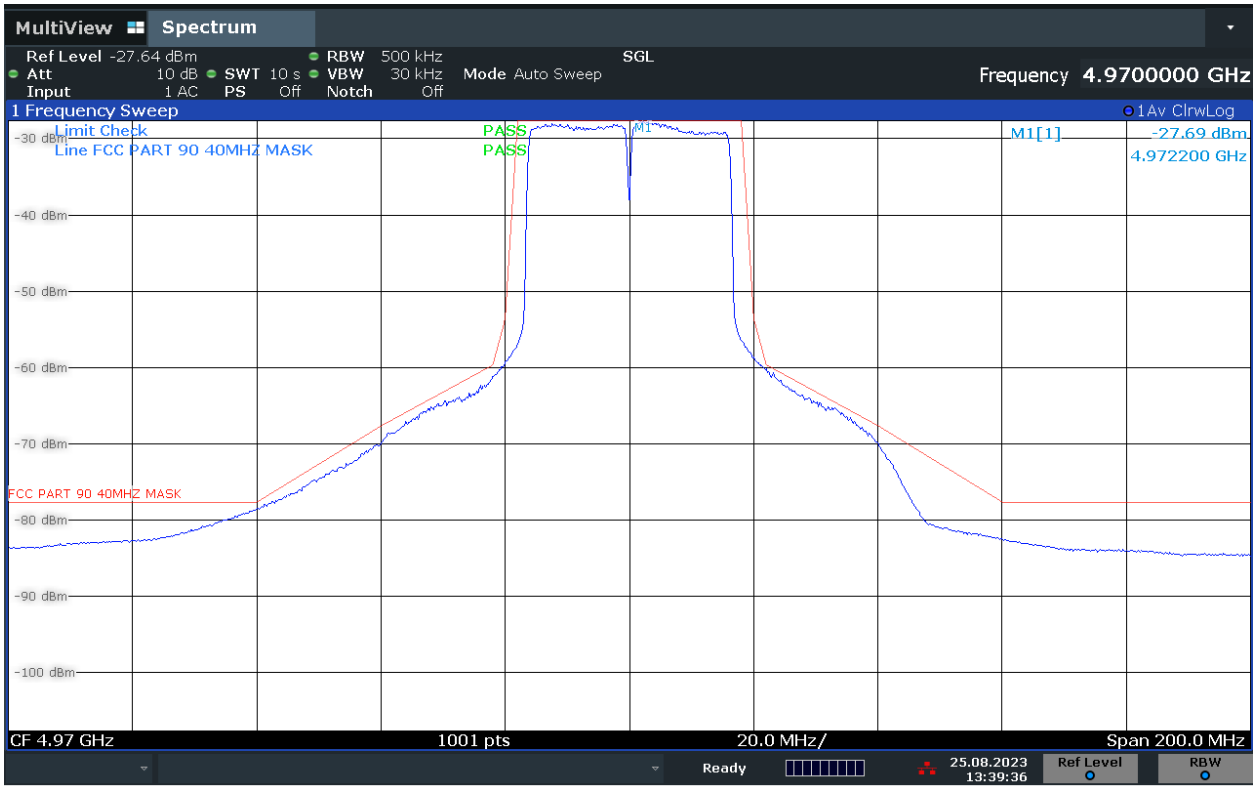


13:57:52 29.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4970 MHz, Horizontal, Temp: 20, Voltage: 56 Vdc

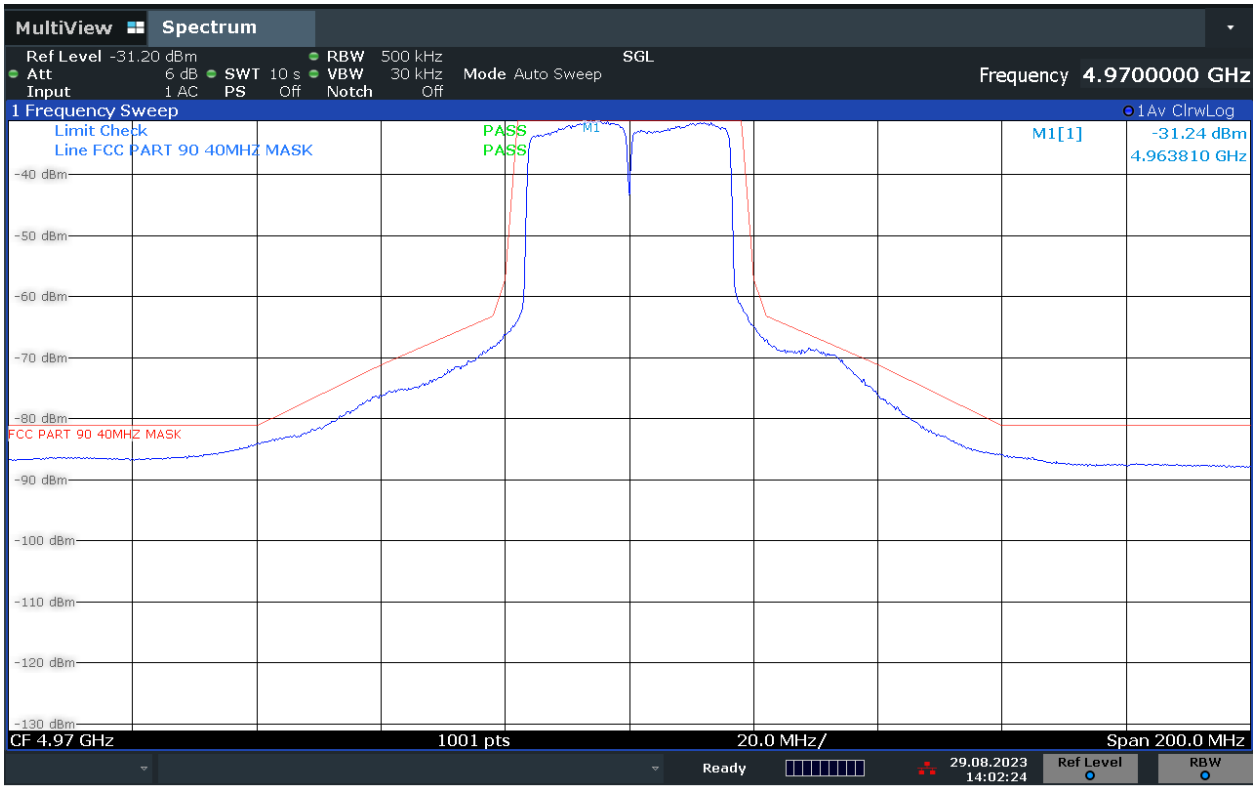


13:39:36 25.08.2023

back to matrix

SPECTRUM EMISSION MASK

Variant: 40MHz, Channel: 4970 MHz, Vertical, Temp: 20, Voltage: 56 Vdc



14:02:25 29.08.2023

back to matrix

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