FCC AND ISED CERTIFICATION TEST REPORT

Report No.: DDT-B23102009-2E04

Applicant	**:**	Beijing Orion Star Technology Co., Ltd.
Address	**:**	Room A-2570, 2nd Floor, No. 30, Shixing Street, Shijingshan District, Beijing China
Equipment under Test	**:**	AI Delivery Robot
Model No.	**:**	OS-R-DR02-A
Trade Mark	**:**	ORIONSTAR
FCC ID	**:**	2A3BD-OSRDR02
IC	**:**	27780-OSRDR02
Manufacturer	**:**	Beijing Orion Star Technology Co., Ltd.
Address	**:**	Room A-2570, 2nd Floor, No. 30, Shixing Street, Shijingshan District, Beijing China

Issued By: Tianjin Dongdian Testing Service Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park Development Area, Tianjin, China.

Tel: +86-22-58038033, E-mail: ddt@dgddt.com, http://www.ddttest.com

REPORT

Table of Contents

Test Report Declare

Applicant	:	Beijing Orion Star Technology Co., Ltd.
Address	:	Room A-2570, 2nd Floor, No. 30, Shixing Street, Shijingshan District, Beijing China
Equipment under Test	:	Al Delivery Robot
Model No	:	OS-R-DR02-A
Trade Mark	:	ORIONSTAR
Manufacturer	:	Beijing Orion Star Technology Co., Ltd.
Address	:	Room A-2570, 2nd Floor, No. 30, Shixing Street, Shijingshan District, Beijing China

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

Test procedure used: ANSI C63.10:2020, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01, RSS-Gen Issue 5: Apr. 2018

We Declare:

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

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

Report No:	DDT-B23102009-2E04		
Date of Receipt:	Nov. 13, 2023	**Date of Test:**	Nov. 13, 2023 ~ Nov. 29, 2023

Prepared By: Novak Wei

Novak Wei/Engineer

Approved By: Aaron Zhang

Aaron Zhang/Manager

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

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Nov. 29, 2023	

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Verdict**
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e) RSS-247 Clause 6.2	Pass[1]
Maximum Conducted Output Power	FCC 15.407 (a) RSS-247 Clause 6.2	Pass[1]
Power Spectral Density	FCC 15.407 (a) RSS-247 Clause 6.2	Pass[1]
Frequency Stability Measurement	FCC 15.407 (g)	Pass[1]
Emissions in restricted frequency bands	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Band Edge Compliance	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass[1]
Power Line Conducted Emission	FCC 15.207 RSS-GEN Clause 8.8	Pass[1]
Antenna requirement	FCC 15.203 RSS-GEN Clause 8.3	Pass[1]
Dynamic Frequency Selection	FCC 15.407 (h) RSS-247 Clause 6.3	Pass[1]

Note 1:
This report adds auto door in term of appearance on the basics of the original model no OS-R-DR02, because the auto door no RF circuit and no impact on RF test result. Therefore, depending on the module and the whole machine , only the worst mode 11ac mode Radiated Spurious Emissions retest and update it to the report. And mark as Pass.
Note 2:
The above "pass[1]" items data are refer from the Tianjin Dongdian Testing Service.,Ltd (Date of Test: Jan. 18, 2023 ~ Mar. 03, 2023). The report number is DDT-B23020801-2E04.

2. General Test Information

2.1. Description of EUT

EUT* Name	:	AI Delivery Robot
Model Number	:	OS-R-DR02-A
Models Difference	:	OS-R-DR02-A compare with original model OS-R-DR02: 1.Added four auto door in term of appearance. 2.Added usbhub motherboard, control motor to open or close the door, the usbhub motherboard has no RF circuit, No impact on RF test results. Others hardware and software exactly same, such as modules, PCBA, antenna, crystal oscillator and so on. So the Report data based on original model OS-R-DR02, Only the Radiated Spurious Emissions data is updated, the original model report number is DDT-B23020802-2E04.
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 25.55V by Polymer Li-ion built-in battery AC 100-240V~50/60Hz by ac/dc adapter for charge
Radio Technology	:	IEEE 802.11a/n/ac
FCC Operation frequency	:	IEEE 802.11a: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11n HT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11n HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5795MHz IEEE 802.11ac HT20: 5180MHz-5240MHz, 5260MHz-5320MHz,5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11ac HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5795MHz IEEE 802.11ac HT80: 5210MHz, 5290MHz, 5530MHz, 5775MHz
Modulation	:	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	:	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: MCS0~MCS15 IEEE 802.11n HT40: MCS0~MCS15 IEEE 802.11ac VHT20: MCS0~MCS9 IEEE 802.11ac VHT40: MCS0~MCS9 IEEE 802.11ac VHT80: MCS0~MCS9
Antenna Type	:	Antenna 1: Dedicated FPC antenna, maximum PK gain: 6.22 dBi Antenna 2: Dedicated FPC antenna, maximum PK gain: 4.44 dBi
Serial Number	:	N/A

Note 1: EUT is the ab. of equipment under test.
Note 2: EUT without DFS detection.
Note 3: This EUT supports MIMO in IEEE 802.11n/ac mode, and antenna gains are not equal, Directional gain was calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So Directional gain = GANT+ Array Gain, where Array Gain is as follows:
For power measurements, Array Gain = 0 dB (NANT ≤ 4), so the Directional gain=6.22
For power spectral density measurements, NANT = 2, NSS = 1. So Directional gain = GANT + Array Gain =10 log (NANT/ NSS) dB =6.22 + 10 log (2/1) dBi = 9.23

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
AC/DC ADAPTER	FOSHAN SHUNDE GUANYUDA POWER SUPPLY CO., LTD	GM262-320078 0-1F	INPUT:100-240V~50/60Hz 3.5A, OUTPUT:32V-7.8A	GVE

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
Notebook	Lenovo Beijing Co. Ltd.	ThinkPad	FCC/CE	TP00067A
Wireless LAN Access Point	ASUS	RT-AX82U	FCC ID: MSQ-RTAXJ300	LAIC4003599

2.4. Block diagram of EUT configuration for test

EUT

Run a special test software “QRCT.exe” provided by manufacturer to control EUT work in Continuous Tx mode, and select test channel, wireless mode and data rate.

Tested mode, channel, and data rate information					
Mode	Setting Tx Power		data rate (Mbps) (See Note)	Channel	Frequency (MHz)
	Ant1	Ant2			
IEEE 802.11a	14	14	6	Low: CH36	5180
	14	14	6	Middle: CH40	5200
	14	14	6	High: CH48	5240
	14	14	6	Low: CH52	5260
	14	14	6	Middle: CH56	5280
	14	14	6	High: CH64	5320
	14	14	6	Low: CH100	5500
	14	14	6	Middle: CH116	5580
	14	14	6	High: CH140	5700
	14	14	6	Low: CH149	5745
	14	14	6	Middle: CH157	5785
	14	14	6	High: CH165	5825
IEEE 802.11n HT20	11	11	MCS 0	Low: CH36	5180
	11	11	MCS 0	Middle: CH40	5200
	11	11	MCS 0	High: CH48	5240
	12	12	MCS 0	Low: CH52	5260
	12	12	MCS 0	Middle: CH56	5280
	12	12	MCS 0	High: CH64	5320
	12	12	MCS 0	Low: CH100	5500
	12	12	MCS 0	Middle: CH116	5580
	12	12	MCS 0	High: CH140	5700
	12	12	MCS 0	Low: CH149	5745
	12	12	MCS 0	Middle: CH157	5785
	12	12	MCS 0	High: CH165	5825
IEEE 802.11n HT40	12	12	MCS 0	Low: CH38	5190
	12	12	MCS 0	Middle: CH46	5230
	12	12	MCS 0	High: CH54	5270
	12	12	MCS 0	Low: CH62	5310
	12	12	MCS 0	Middle: CH102	5510
	12	12	MCS 0	High: CH110	5550
	12	12	MCS 0	Low: CH134	5670
	12	12	MCS 0	Middle: CH151	5755
	12	12	MCS 0	High: CH159	5795
IEEE 802.11ac HT20	12	12	MCS 0	Low: CH36	5180
	12	12	MCS 0	Middle: CH40	5200
	11	11	MCS 0	High: CH48	5240
	12	12	MCS 0	Low: CH52	5260
	12	12	MCS 0	Middle: CH56	5280
	12	12	MCS 0	High: CH64	5320
	12	12	MCS 0	Low: CH100	5500
	11	11	MCS 0	Middle: CH116	5580
	12	12	MCS 0	High: CH140	5700
	12	12	MCS 0	Low: CH149	5745
	12	12	MCS 0	Middle: CH157	5785
	12	12	MCS 0	High: CH165	5825

IEEE 802.11ac HT40	11	11	MCS 0	Low: CH38	5190
	11	11	MCS 0	Middle: CH46	5230
	11	11	MCS 0	High: CH54	5270
	11	11	MCS 0	Low: CH62	5310
	11	11	MCS 0	Middle: CH102	5510
	11	11	MCS 0	High: CH110	5550
	11	11	MCS 0	Low: CH134	5670
	11	11	MCS 0	Middle: CH151	5755
	11	11	MCS 0	High: CH159	5795
IEEE 802.11ac HT80	11	11	MCS 0	CH42	5210
	11	11	MCS 0	CH58	5290
	11	11	MCS 0	CH106	5530
	11	11	MCS 0	CH122	5610
	11	11	MCS 0	CH155	5775
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test. For ISED the EUT is not be capable of transmitting in the band 5600-5650 MHz.					

2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-28℃
Humidity range:	20-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

Tianjin Dongdian Testing Service Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park Development Area, Tianjin, China.

Tel: +86-22-58038033, http://www.ddttest.com, Email: ddt@dgddt.com

NVLAP (National Voluntary Laboratory Accreditation Program) CODE: 500036-0

CNAS (China National Accreditation Service for Conformity Assessment) CODE: L13402

FCC Designation Number: CN5004; FCC Test Firm Registration Number: 368676

ISED (Innovation, Science and Economic Development Canada) Company Number: 27768

Conformity Assessment Body Identifier: CN0125

VCCI Facility Registration Number: C-20089, T-20093, R-20125, G-20122

2.8. Measurement uncertainty

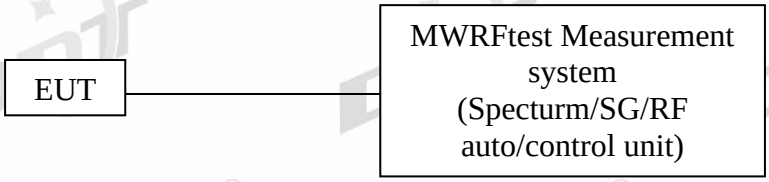
Test Item	Uncertainty
Bandwidth	0.14%
Peak Output Power (Conducted) (Spectrum Analyzer)	0.12 dB (10 MHz ≤ f < 3.6 GHz);
	0.32 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.51 dB
Power Spectral Density	0.12 dB (10 MHz ≤ f < 3.6 GHz);
	0.32 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7×10^{-8} (Antenna couple method)
	3.4×10^{-8} (Conducted method)
Conducted Spurious Emissions	0.12 dB (10 MHz ≤ f < 3.6 GHz);
	0.32 dB (3.6 GHz ≤ f < 8 GHz)
	0.52 dB (8 GHz ≤ f < 22 GHz)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3×10^{-7}
Temperature	±2℃
Humidity	±1%
Uncertainty for Radiation Emission Test (30 MHz - 1 GHz)	2.72 dB (Antenna Polarize: V)
	2.72 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 GHz - 40 GHz)	2.74 dB (1 - 6 GHz)
	2.72 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.40 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (MWRFtest system)					
Microwave Signal Generator	R&S	SMF100A	101396	2023/05/29	1 Year
MXG Vector Signal Generator	Keysight	N5182A	MY50143288	2023/03/06	1 Year
EMI Test Receiver	R&S	ESU26	100243	2023/03/03	1 Year
Wideband Radio Communication Tester	R&S	CMW500	158800	2023/06/20	1 Year
Power Sensor	KEYSIGHT	U2021XA	MY59150007	2023/03/22	1 Year
DC Power Supply	inSTEK	PSP-2010	EN122317	2023/02/12	1 Year
Test Software	MWRFtest	MTS8310	V03	N/A	N/A
Radiated Emission -10m EMI Chamber					
Broadband Horn Antenna	TESEQ	BHA 9118	31754	2023/10/11	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	2023/05/06	1 Year
Active Loop Antenna	R&S	HFH2-Z2	100269	2022/07/11	2 Year
Low noise amplifier	MITEQ	TPA0118-36	0914	2023/02/16	1 Year
EMI Test Receiver	R&S	ESCI	101024	2023/02/15	1 Year
EMI Test Receiver	R&S	ESCI	101030	2023/02/15	1 Year
EMI Test Receiver	R&S	ESU26	100244	2023/03/03	1 Year
Bilog Antenna	TESEQ	CBL6112D	29068	2022/10/10	2 Year
Bilog Antenna	TESEQ	CBL6112D	29069	2022/10/10	2 Year
Amplifier	Sonoma	310N	300913	2023/02/15	1 Year
Amplifier	Sonoma	310N	300914	2023/02/15	1 Year
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector1	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector2	N/A	N/A
Test software	TOYO	EP5/RSE	Ver 1.9.1	N/A	N/A
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
Test Receiver	R&S	ESCI	101397	2023/02/15	1 Year
LISN	R&S	ENV216	101122	2023/02/15	1 Year
Test software	TOYO	EP5/CE	V 5.4.40	N/A	N/A

4. 26dB Bandwidth, 6dB Bandwidth and 99% Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150 - 5250
	26 dB Bandwidth	5250 - 5350
	26 dB Bandwidth	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725
	Minimum 500 kHz 6 dB Bandwidth	5725 - 5850

4.3. Test procedure

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

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: 1% to 5% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

(2) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB and 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

99% OBW

Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
a	5180	Ant1	16.740
a	5200	Ant1	16.653
a	5240	Ant1	16.728
a	5260	Ant1	16.695
a	5280	Ant1	16.746
a	5320	Ant1	16.695
a	5500	Ant1	16.713
a	5580	Ant1	16.692
a	5700	Ant1	16.665
a	5745	Ant1	16.683
a	5785	Ant1	16.731
a	5825	Ant1	16.698
a	5180	Ant2	16.644
a	5200	Ant2	16.578
a	5240	Ant2	16.623
a	5260	Ant2	16.581
a	5280	Ant2	16.653
a	5320	Ant2	16.590
a	5500	Ant2	16.653
a	5580	Ant2	16.593
a	5700	Ant2	16.569
a	5745	Ant2	16.608
a	5785	Ant2	16.668
a	5825	Ant2	16.599
ac20	5180	Ant1	17.919
ac20	5180	Ant2	17.835
ac20	5200	Ant1	17.823
ac20	5200	Ant2	17.814
ac20	5240	Ant1	17.910
ac20	5240	Ant2	17.823
ac20	5260	Ant1	17.805
ac20	5260	Ant2	17.805
ac20	5280	Ant1	17.853
ac20	5280	Ant2	17.862
ac20	5320	Ant1	17.829
ac20	5320	Ant2	17.790
ac20	5500	Ant1	17.877
ac20	5500	Ant2	17.868
ac20	5580	Ant1	17.877
ac20	5580	Ant2	17.796
ac20	5700	Ant1	17.856
ac20	5700	Ant2	17.844
ac20	5745	Ant1	17.901
ac20	5745	Ant2	17.856
ac20	5785	Ant1	17.874
ac20	5785	Ant2	17.817

ac20	5825	Ant1	17.835
ac20	5825	Ant2	17.865
ac40	5190	Ant1	36.654
ac40	5190	Ant2	36.546
ac40	5230	Ant1	36.534
ac40	5230	Ant2	36.558
ac40	5270	Ant1	36.600
ac40	5270	Ant2	36.582
ac40	5310	Ant1	36.606
ac40	5310	Ant2	36.558
ac40	5510	Ant1	36.714
ac40	5510	Ant2	36.558
ac40	5550	Ant1	36.666
ac40	5550	Ant2	36.522
ac40	5670	Ant1	36.642
ac40	5670	Ant2	36.558
ac40	5755	Ant1	36.612
ac40	5755	Ant2	36.570
ac40	5795	Ant1	36.624
ac40	5795	Ant2	36.540
ac80	5210	Ant1	75.852
ac80	5210	Ant2	76.032
ac80	5290	Ant1	75.828
ac80	5290	Ant2	75.960
ac80	5530	Ant1	76.200
ac80	5530	Ant2	76.032
ac80	5610	Ant1	75.828
ac80	5610	Ant2	76.092
ac80	5775	Ant1	76.068
ac80	5775	Ant2	75.876
n20	5180	Ant1	17.868
n20	5180	Ant2	17.859
n20	5200	Ant1	17.805
n20	5200	Ant2	17.796
n20	5240	Ant1	17.835
n20	5240	Ant2	17.829
n20	5260	Ant1	17.802
n20	5260	Ant2	17.790
n20	5280	Ant1	17.910
n20	5280	Ant2	17.868
n20	5320	Ant1	17.868
n20	5320	Ant2	17.805
n20	5500	Ant1	17.865
n20	5500	Ant2	17.865
n20	5580	Ant1	17.781
n20	5580	Ant2	17.796
n20	5700	Ant1	17.784
n20	5700	Ant2	17.766
n20	5745	Ant1	17.868
n20	5745	Ant2	17.778
n20	5785	Ant1	17.901
n20	5785	Ant2	17.883

n20	5825	Ant1	17.826
n20	5825	Ant2	17.856
n40	5190	Ant1	36.660
n40	5190	Ant2	36.564
n40	5230	Ant1	36.624
n40	5230	Ant2	36.558
n40	5270	Ant1	36.678
n40	5270	Ant2	36.594
n40	5310	Ant1	36.666
n40	5310	Ant2	36.588
n40	5510	Ant1	36.672
n40	5510	Ant2	36.564
n40	5550	Ant1	36.540
n40	5550	Ant2	36.546
n40	5670	Ant1	36.534
n40	5670	Ant2	36.528
n40	5755	Ant1	36.612
n40	5755	Ant2	36.564
n40	5795	Ant1	36.600
n40	5795	Ant2	36.540

26 dB Bandwidth

Mode	Frequency (MHz)	Antenna	26 dB Bandwidth (MHz)
a	5180	Ant1	23.400
a	5200	Ant1	23.109
a	5240	Ant1	23.088
a	5260	Ant1	22.827
a	5280	Ant1	22.926
a	5320	Ant1	22.746
a	5500	Ant1	23.025
a	5580	Ant1	22.893
a	5700	Ant1	22.581
a	5180	Ant2	22.299
a	5200	Ant2	21.642
a	5240	Ant2	21.729
a	5260	Ant2	21.729
a	5280	Ant2	22.032
a	5320	Ant2	21.666
a	5500	Ant2	22.041
a	5580	Ant2	21.792
a	5700	Ant2	22.002
ac20	5180	Ant1	23.823
ac20	5180	Ant2	23.346
ac20	5200	Ant1	23.634
ac20	5200	Ant2	23.682
ac20	5240	Ant1	24.096
ac20	5240	Ant2	23.469
ac20	5260	Ant1	23.298
ac20	5260	Ant2	23.352
ac20	5280	Ant1	23.499
ac20	5280	Ant2	23.691

ac20	5320	Ant1	23.709
ac20	5320	Ant2	23.298
ac20	5500	Ant1	23.841
ac20	5500	Ant2	23.520
ac20	5580	Ant1	23.922
ac20	5580	Ant2	23.373
ac20	5700	Ant1	23.598
ac20	5700	Ant2	23.379
ac40	5190	Ant1	42.018
ac40	5190	Ant2	41.730
ac40	5230	Ant1	41.658
ac40	5230	Ant2	41.796
ac40	5270	Ant1	42.108
ac40	5270	Ant2	41.994
ac40	5310	Ant1	41.610
ac40	5310	Ant2	41.916
ac40	5510	Ant1	42.228
ac40	5510	Ant2	41.832
ac40	5550	Ant1	42.042
ac40	5550	Ant2	41.760
ac40	5670	Ant1	42.198
ac40	5670	Ant2	41.832
ac80	5210	Ant1	81.960
ac80	5210	Ant2	82.560
ac80	5290	Ant1	81.996
ac80	5290	Ant2	81.960
ac80	5530	Ant1	82.944
ac80	5530	Ant2	82.236
ac80	5610	Ant1	82.284
ac80	5610	Ant2	82.464
n20	5180	Ant1	23.856
n20	5180	Ant2	23.619
n20	5200	Ant1	23.718
n20	5200	Ant2	23.400
n20	5240	Ant1	23.886
n20	5240	Ant2	23.679
n20	5260	Ant1	23.598
n20	5260	Ant2	23.343
n20	5280	Ant1	24.171
n20	5280	Ant2	23.595
n20	5320	Ant1	24.054
n20	5320	Ant2	23.451
n20	5500	Ant1	23.910
n20	5500	Ant2	23.811
n20	5580	Ant1	23.436
n20	5580	Ant2	23.520
n20	5700	Ant1	23.457
n20	5700	Ant2	23.127
n40	5190	Ant1	42.144
n40	5190	Ant2	41.694
n40	5230	Ant1	41.766
n40	5230	Ant2	41.754

n40	5270	Ant1	41.994
n40	5270	Ant2	41.886
n40	5310	Ant1	41.856
n40	5310	Ant2	41.568
n40	5510	Ant1	42.282
n40	5510	Ant2	42.228
n40	5550	Ant1	41.928
n40	5550	Ant2	41.796
n40	5670	Ant1	41.886
n40	5670	Ant2	41.598

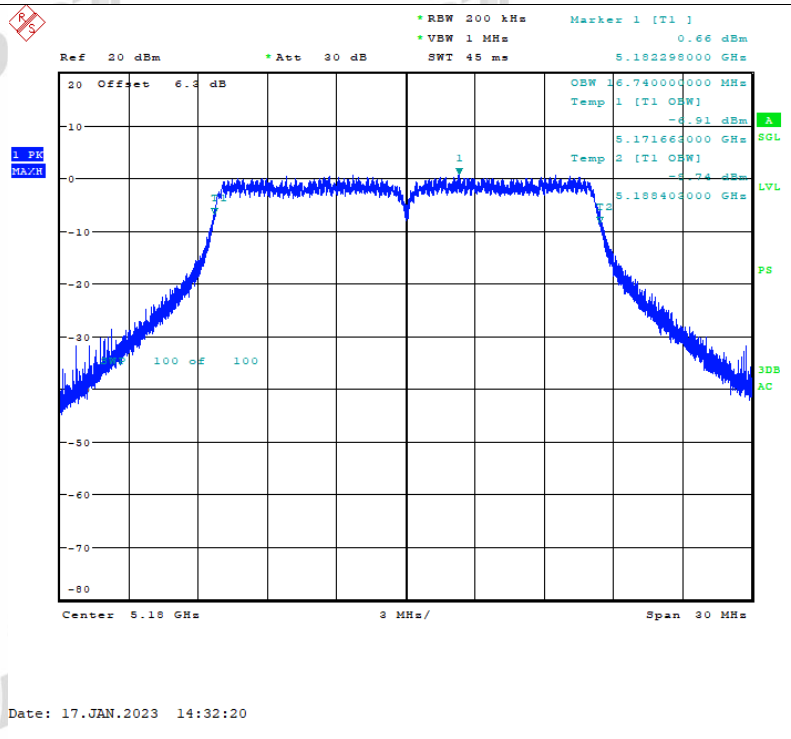
6 dB Bandwidth

Mode	Frequency (MHz)	Antenna	6 dB Bandwidth (MHz)	Limit 6 dB Bandwidth (MHz)	Verdict
a	5745	Ant1	16.341	≧0.5	Pass
a	5785	Ant1	16.350	≧0.5	Pass
a	5825	Ant1	16.326	≧0.5	Pass
a	5745	Ant2	16.338	≧0.5	Pass
a	5785	Ant2	16.353	≧0.5	Pass
a	5825	Ant2	16.326	≧0.5	Pass
ac20	5745	Ant1	17.580	≧0.5	Pass
ac20	5745	Ant2	17.592	≧0.5	Pass
ac20	5785	Ant1	17.580	≧0.5	Pass
ac20	5785	Ant2	17.568	≧0.5	Pass
ac20	5825	Ant1	17.556	≧0.5	Pass
ac20	5825	Ant2	17.571	≧0.5	Pass
ac40	5755	Ant1	36.312	≧0.5	Pass
ac40	5755	Ant2	36.306	≧0.5	Pass
ac40	5795	Ant1	36.300	≧0.5	Pass
ac40	5795	Ant2	36.300	≧0.5	Pass
ac80	5775	Ant1	76.284	≧0.5	Pass
ac80	5775	Ant2	75.132	≧0.5	Pass
n20	5745	Ant1	17.595	≧0.5	Pass
n20	5745	Ant2	17.559	≧0.5	Pass
n20	5785	Ant1	17.589	≧0.5	Pass
n20	5785	Ant2	17.589	≧0.5	Pass
n20	5825	Ant1	17.559	≧0.5	Pass
n20	5825	Ant2	17.574	≧0.5	Pass
n40	5755	Ant1	36.306	≧0.5	Pass
n40	5755	Ant2	36.318	≧0.5	Pass
n40	5795	Ant1	36.276	≧0.5	Pass
n40	5795	Ant2	36.324	≧0.5	Pass

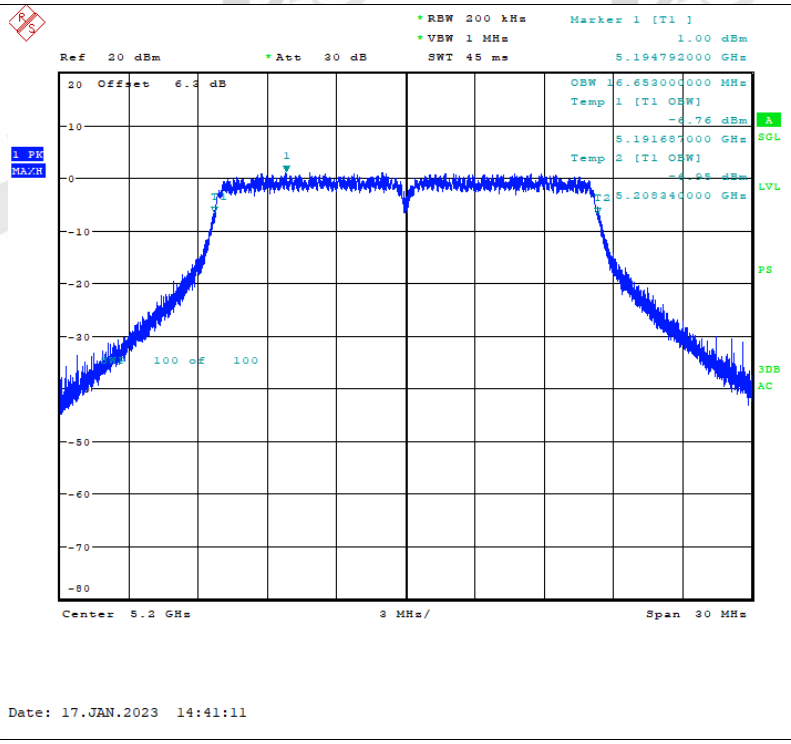
4.5. Original test data

99% Bandwidth:

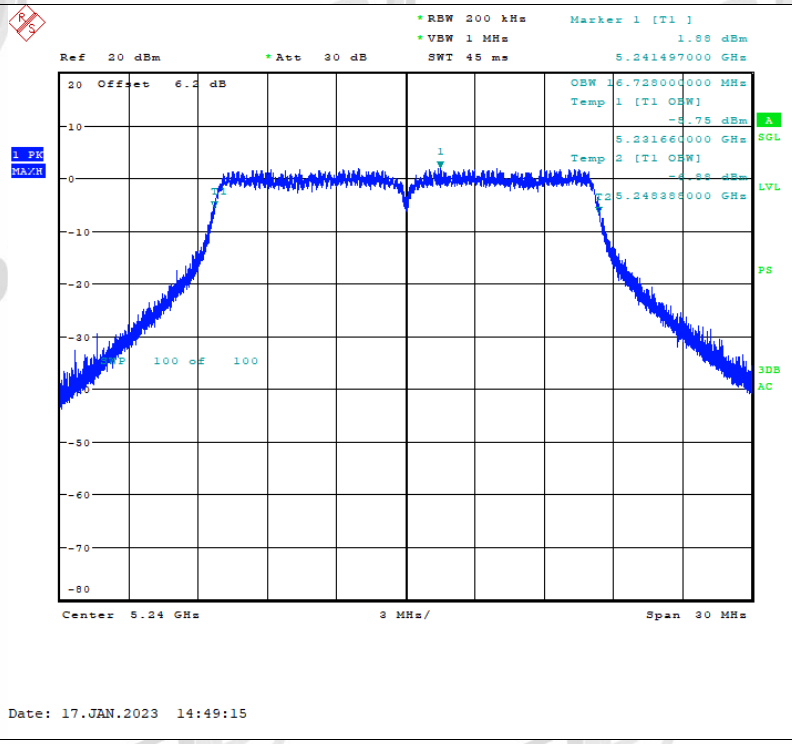
Test Graphs
OBW NVNT a 5180MHz Ant1



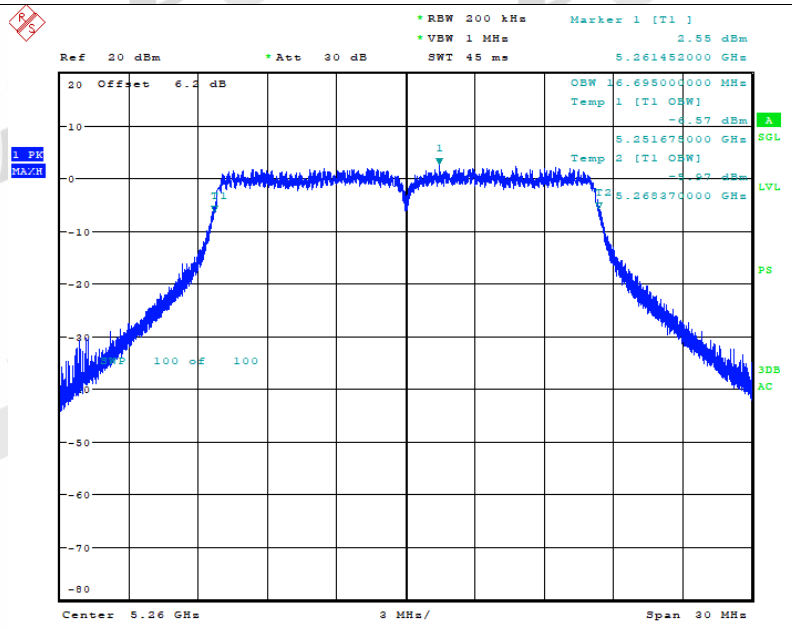
OBW NVNT a 5200MHz Ant1



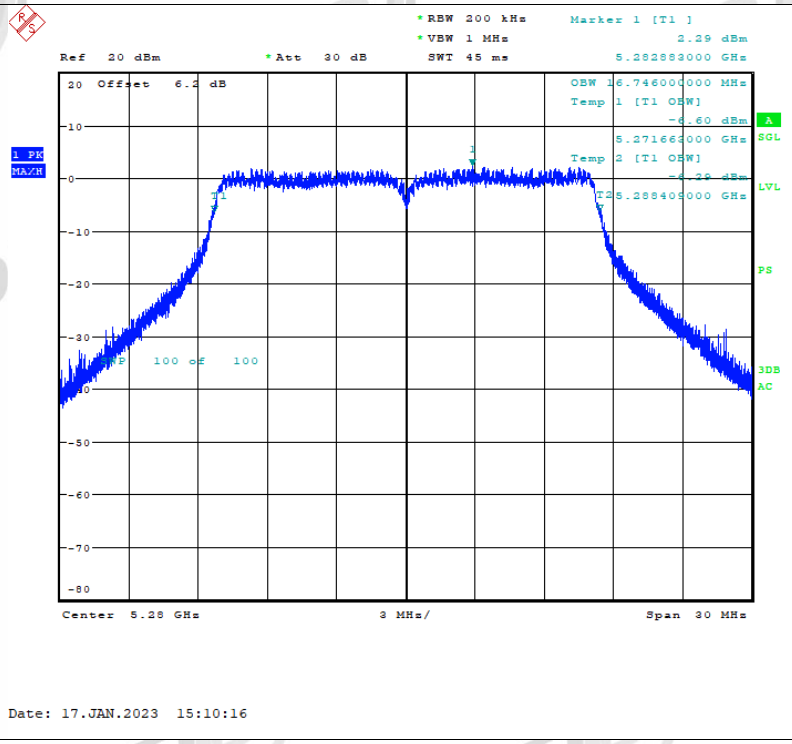
OBW NVNT a 5240MHz Ant1



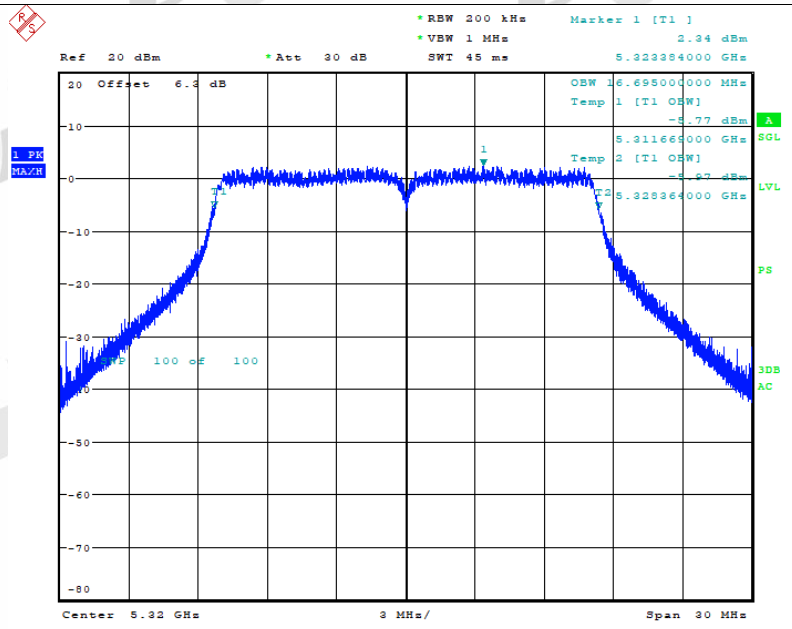
OBW NVNT a 5260MHz Ant1



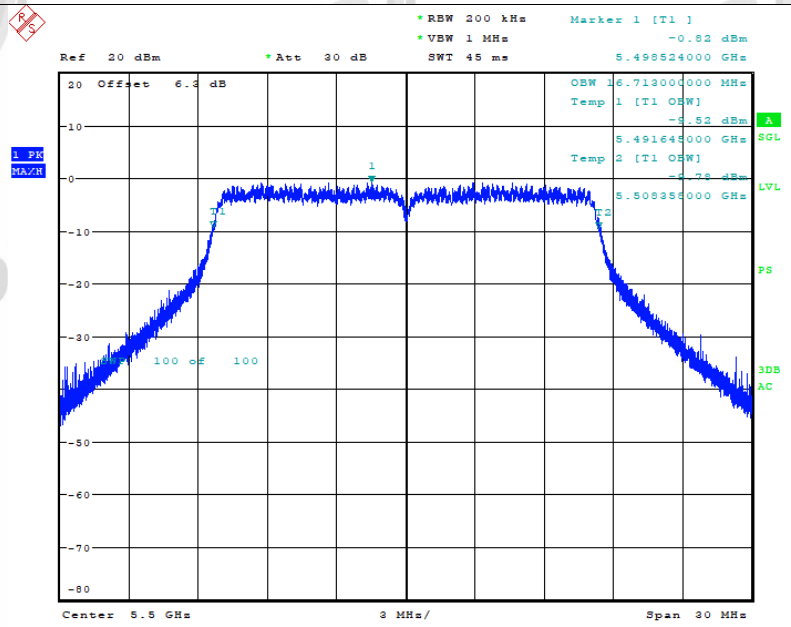
OBW NVNT a 5280MHz Ant1



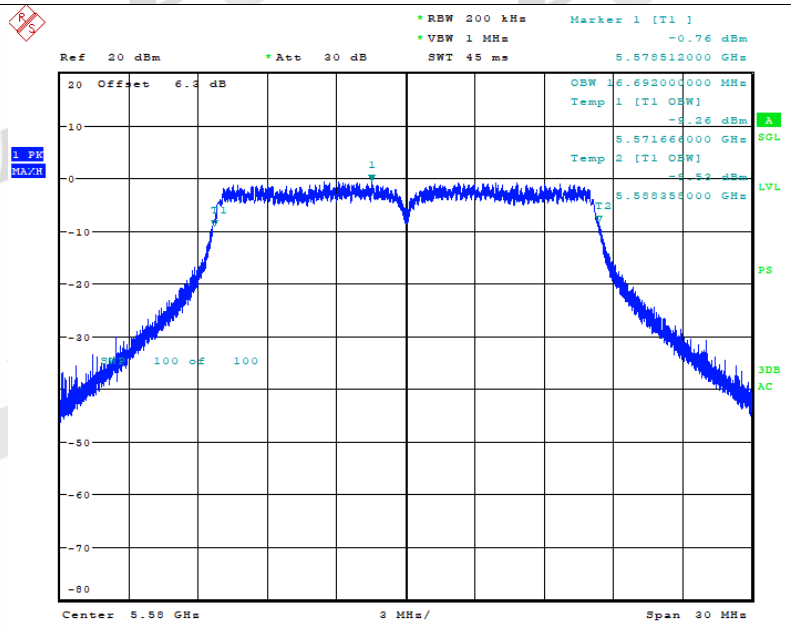
OBW NVNT a 5320MHz Ant1



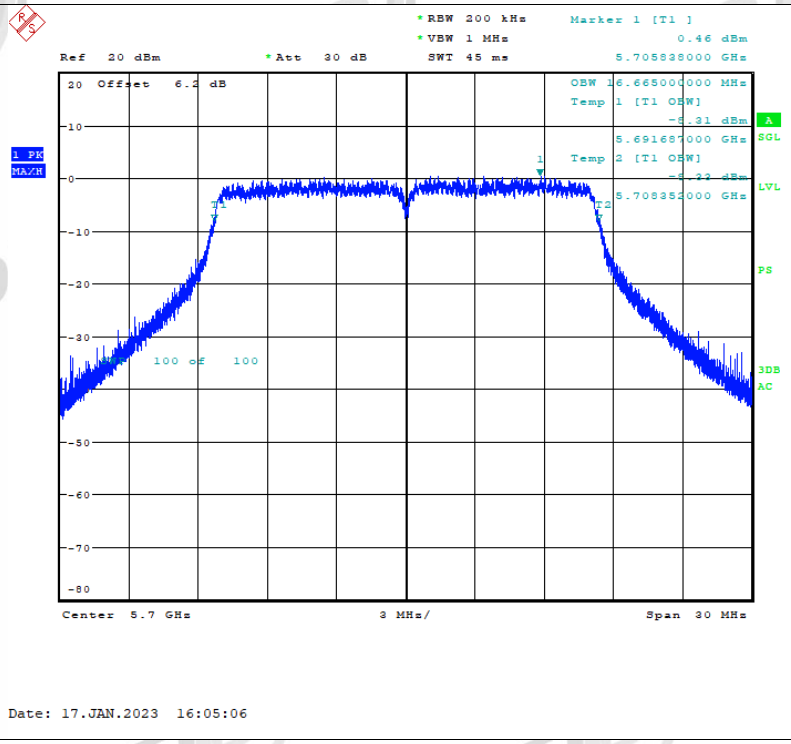
OBW NVNT a 5500MHz Ant1



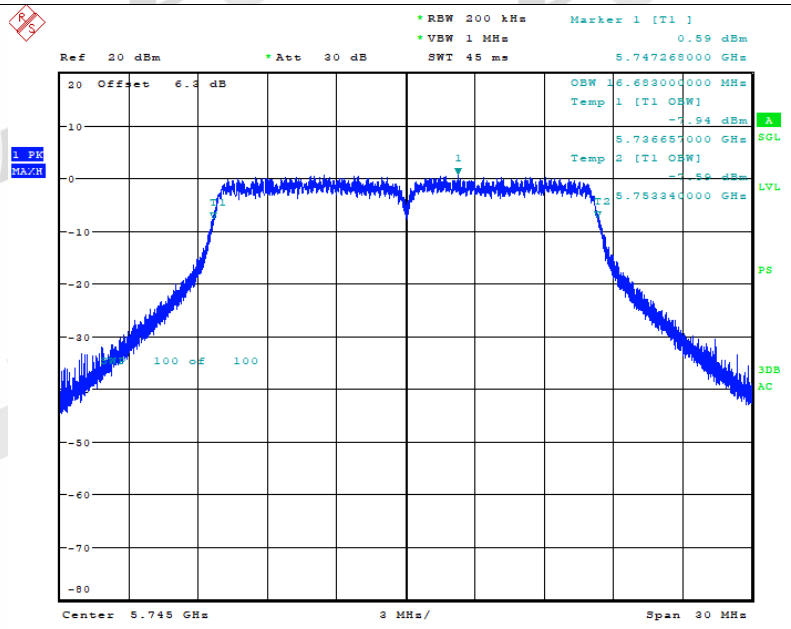
OBW NVNT a 5580MHz Ant1



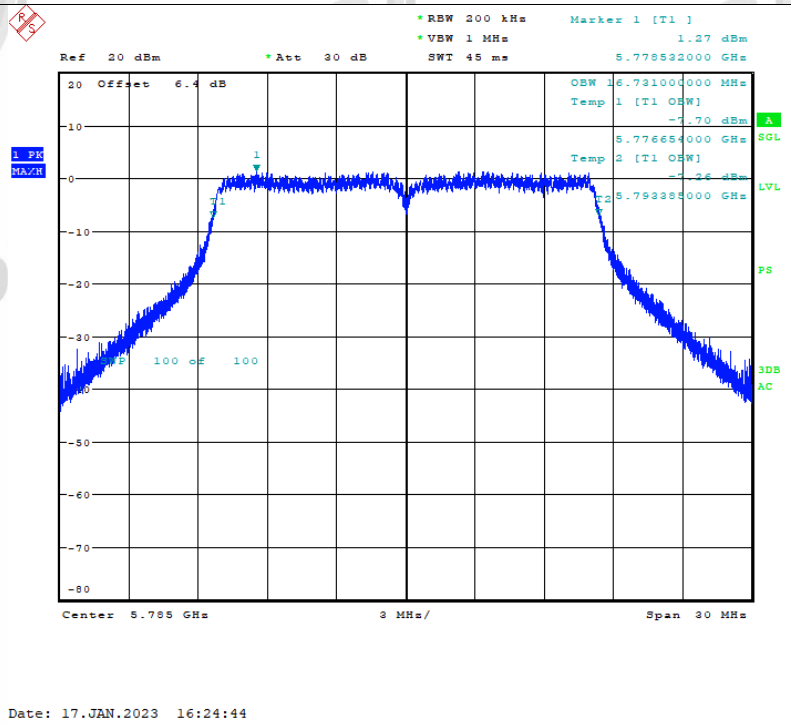
OBW NVNT a 5700MHz Ant1



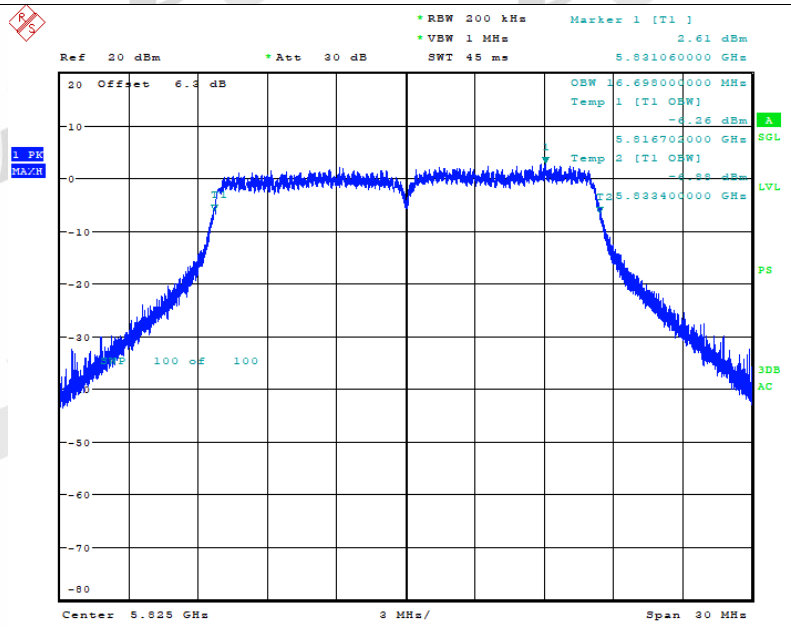
OBW NVNT a 5745MHz Ant1



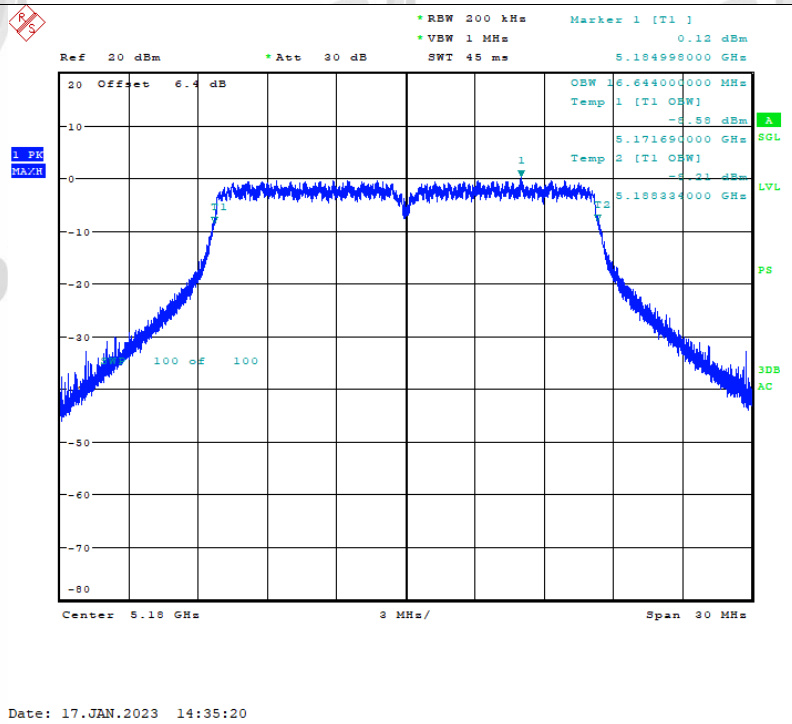
OBW NVNT a 5785MHz Ant1



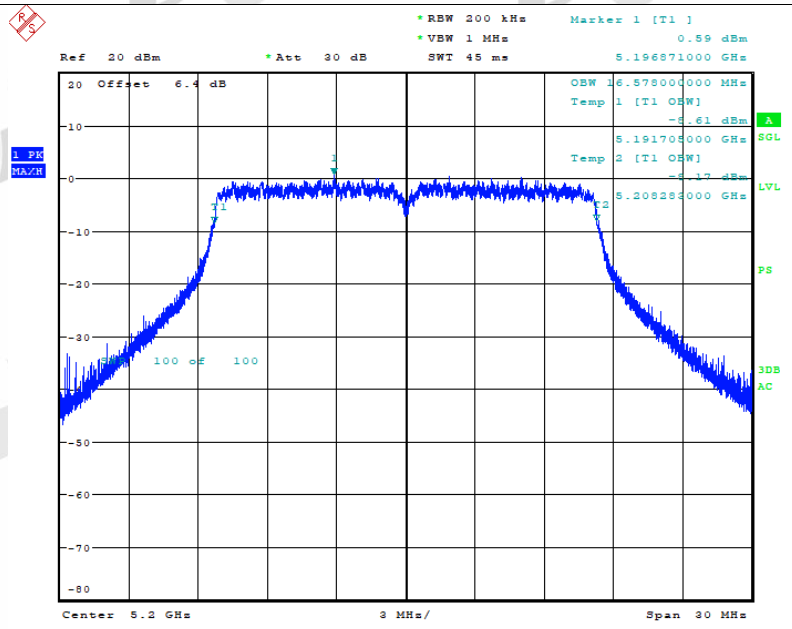
OBW NVNT a 5825MHz Ant1



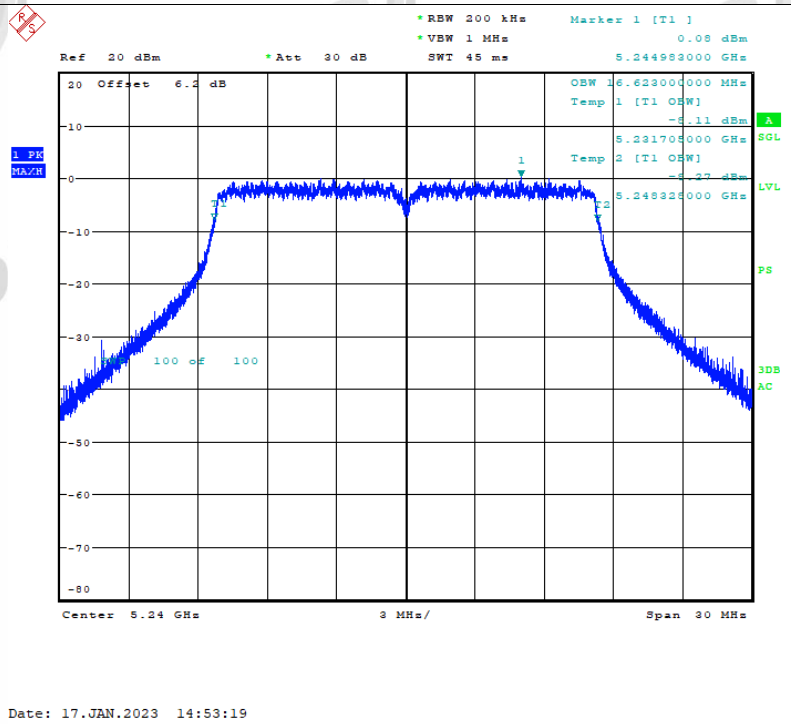
OBW NVNT a 5180MHz Ant2



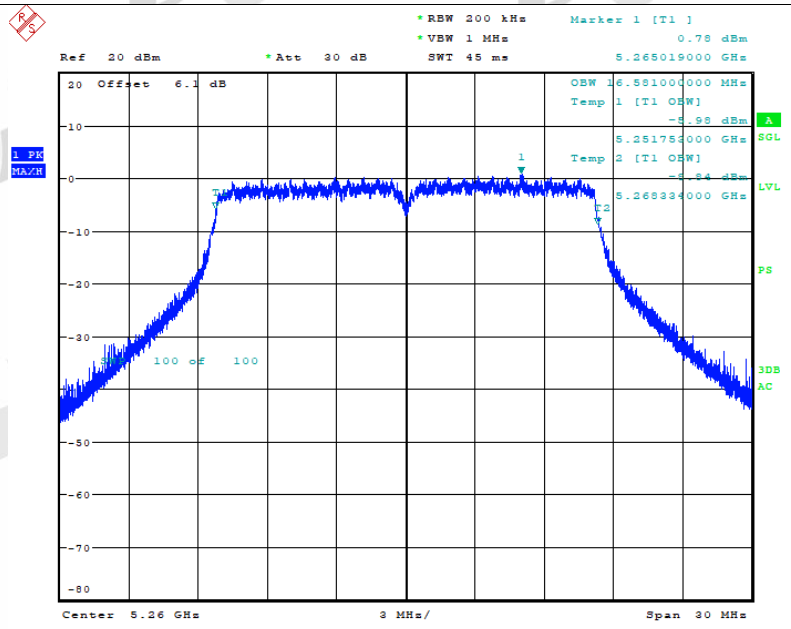
OBW NVNT a 5200MHz Ant2



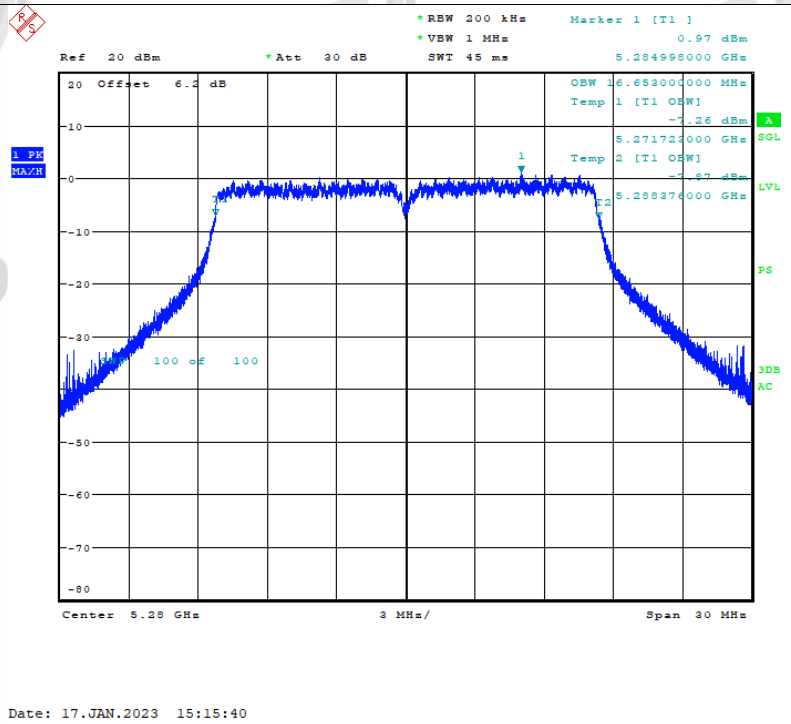
OBW NVNT a 5240MHz Ant2



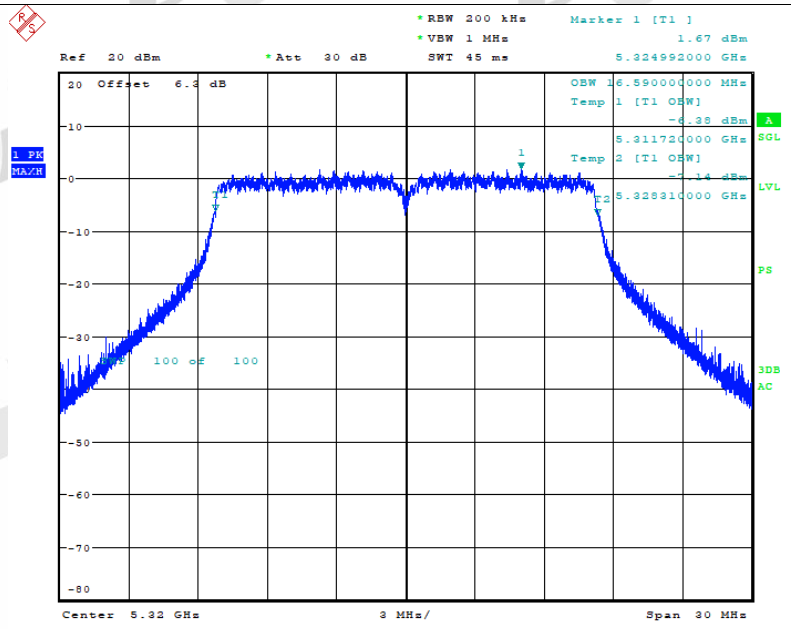
OBW NVNT a 5260MHz Ant2



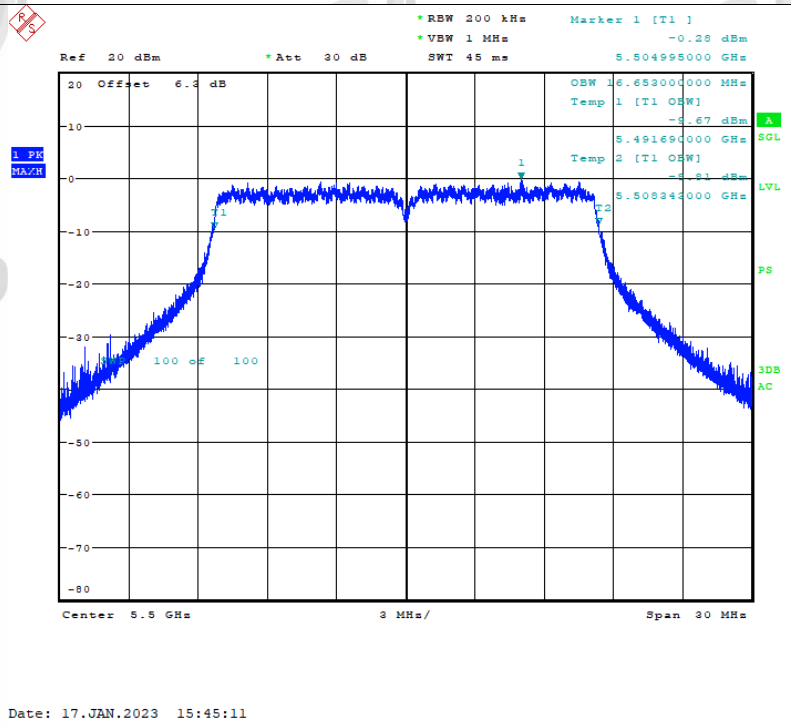
OBW NVNT a 5280MHz Ant2



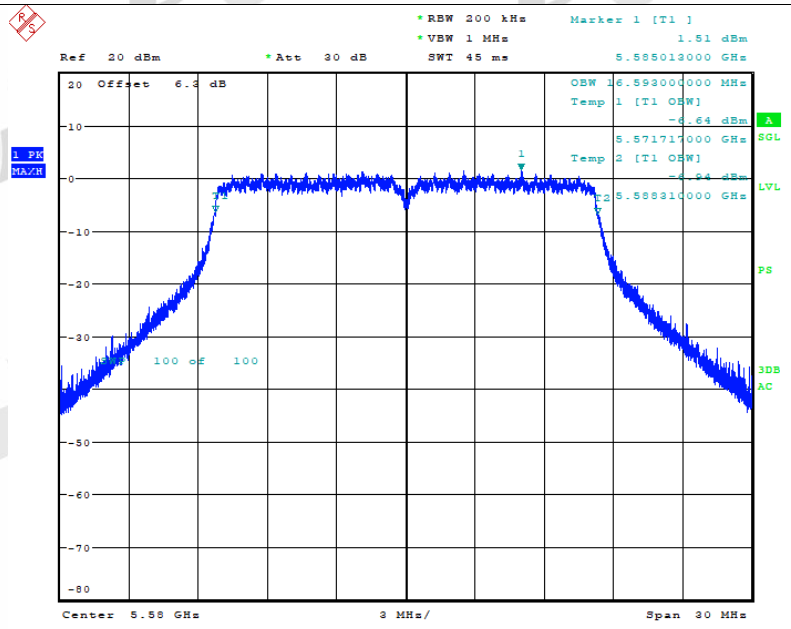
OBW NVNT a 5320MHz Ant2



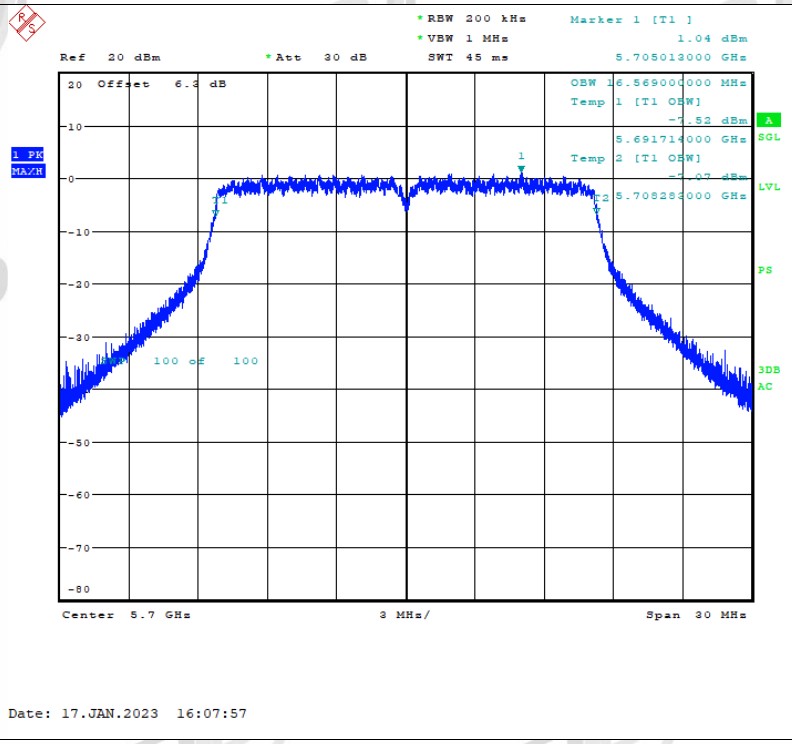
OBW NVNT a 5500MHz Ant2



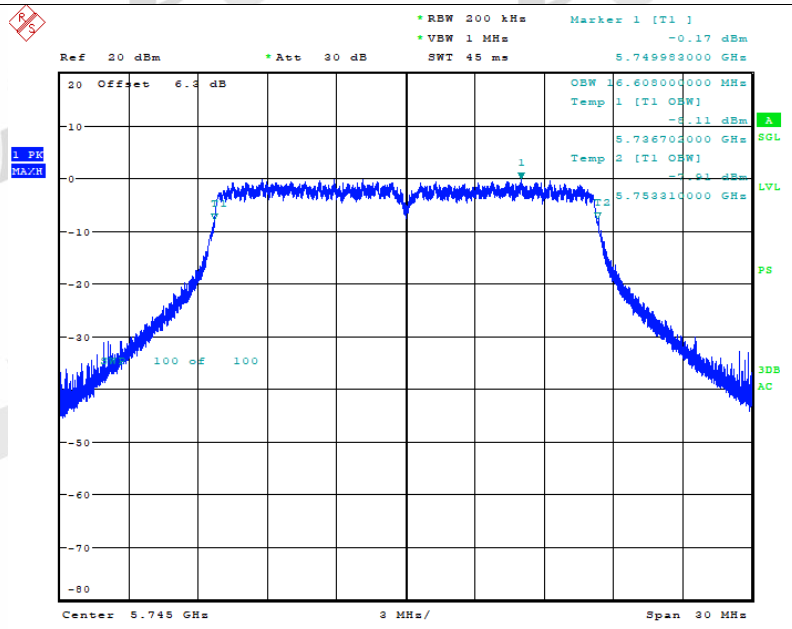
OBW NVNT a 5580MHz Ant2



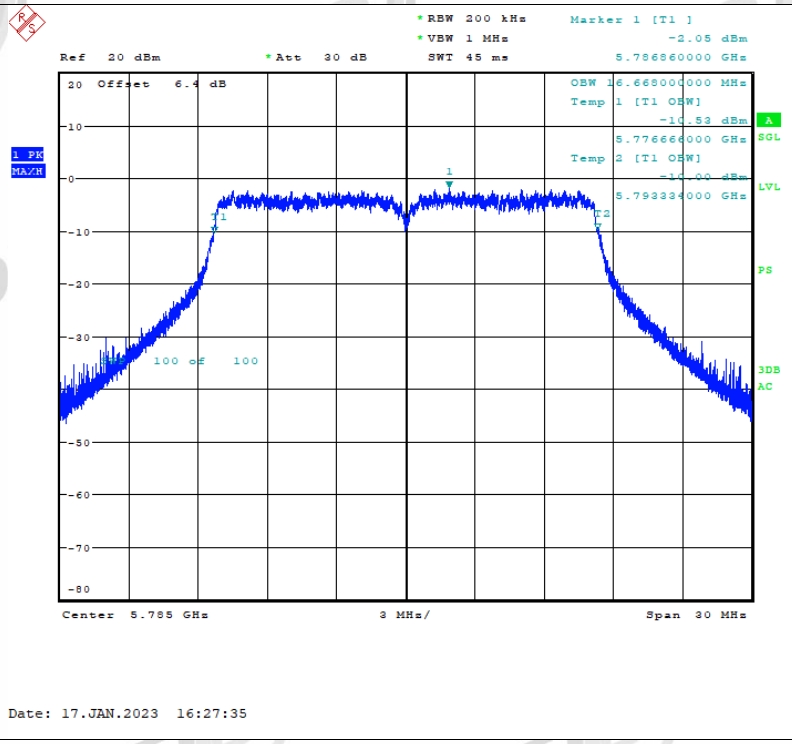
OBW NVNT a 5700MHz Ant2



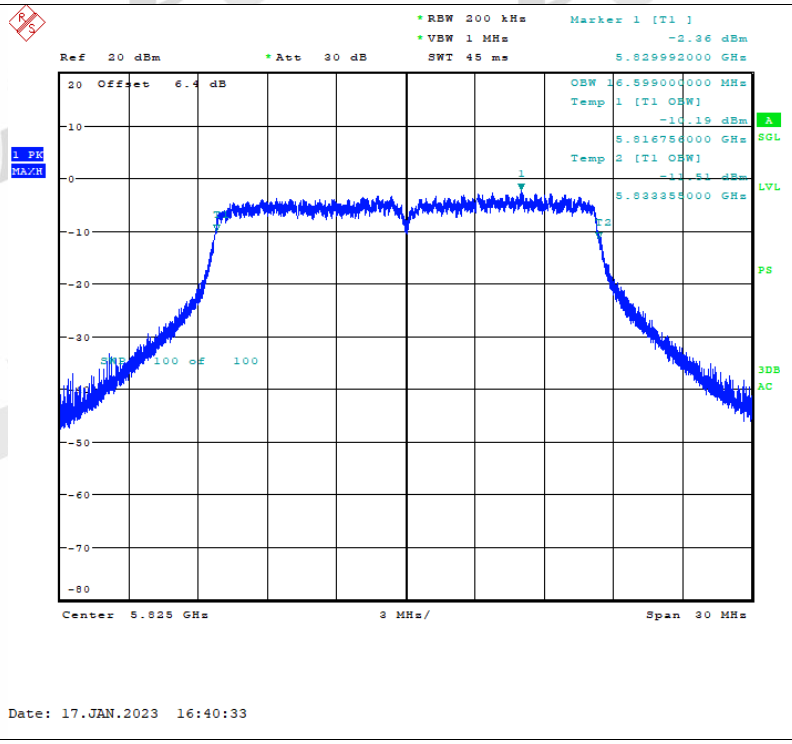
OBW NVNT a 5745MHz Ant2



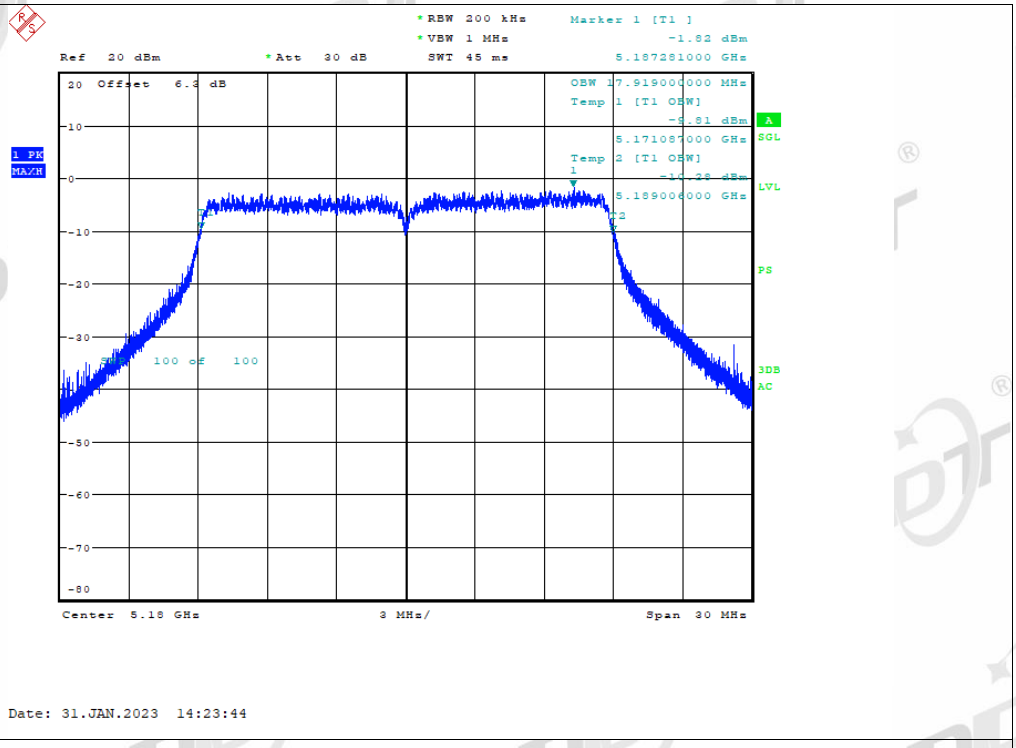
OBW NVNT a 5785MHz Ant2



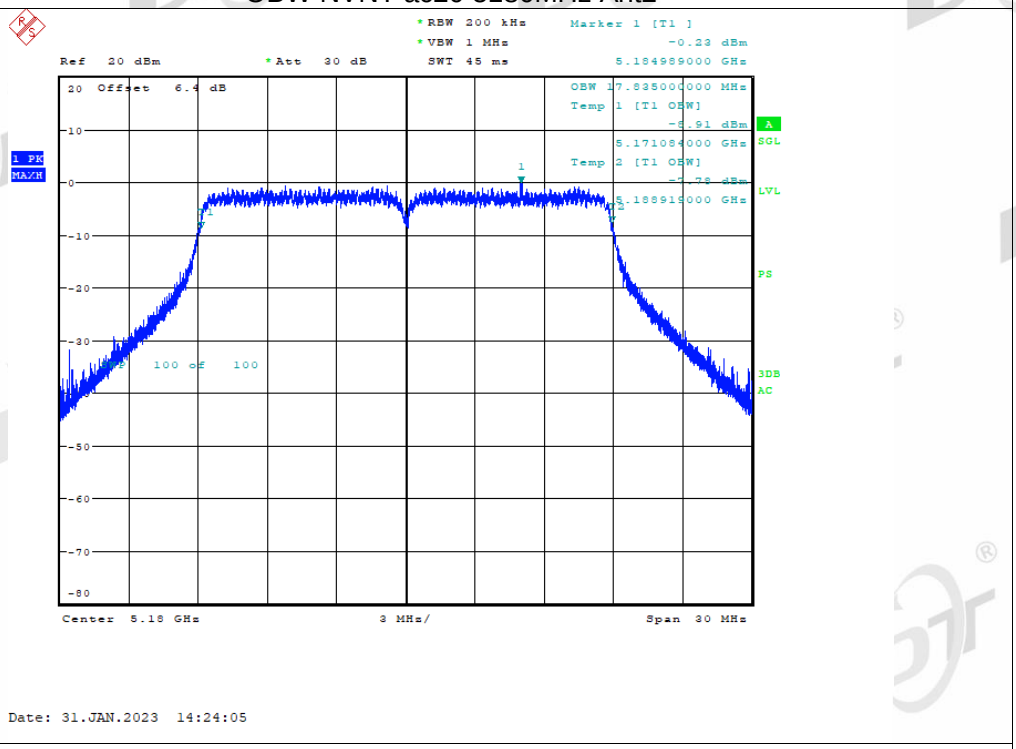
OBW NVNT a 5825MHz Ant2



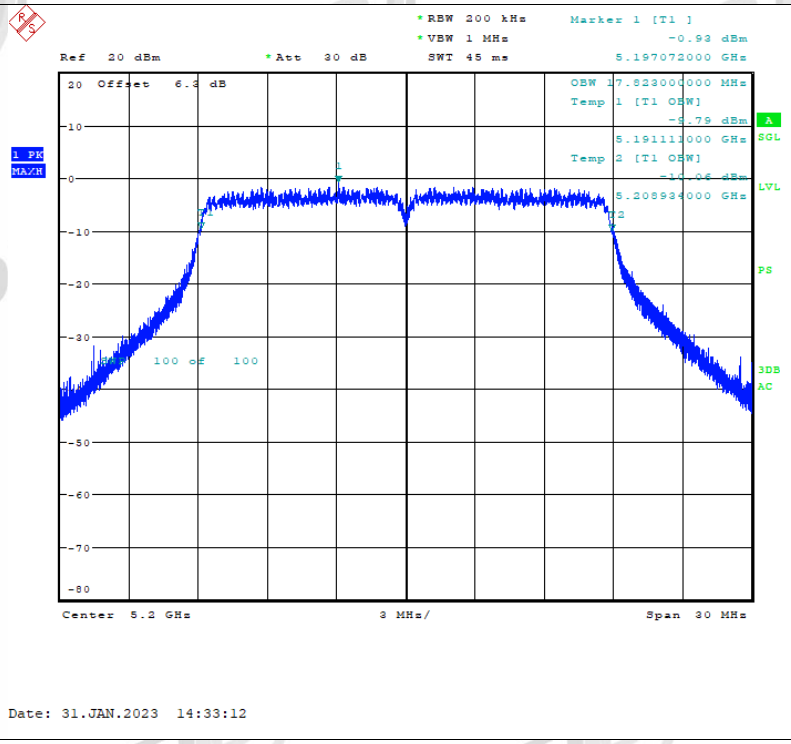
OBW NVNT ac20 5180MHz Ant1



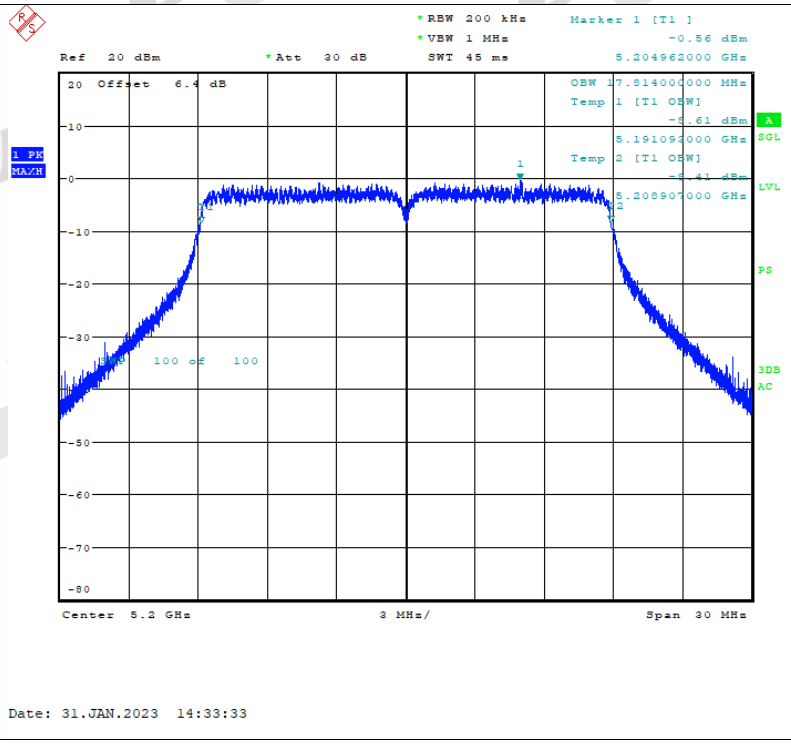
OBW NVNT ac20 5180MHz Ant2



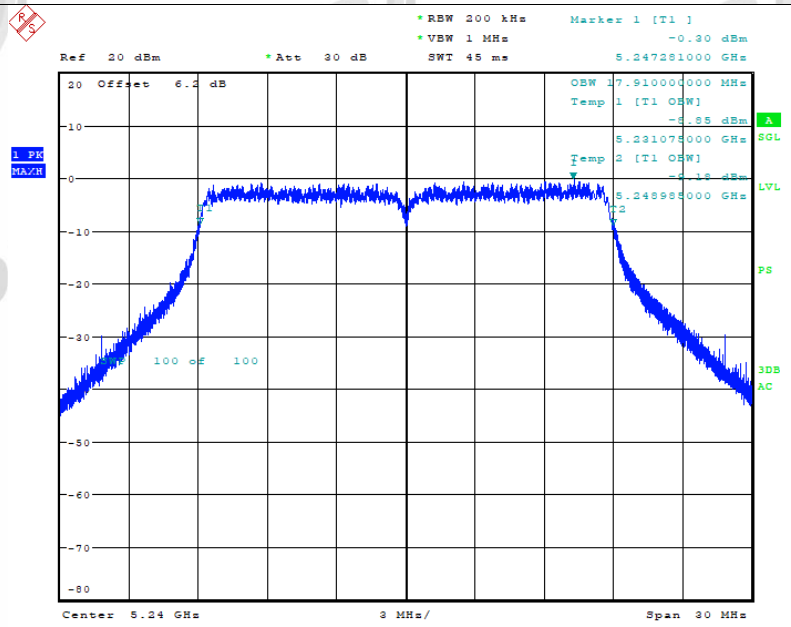
OBW NVNT ac20 5200MHz Ant1



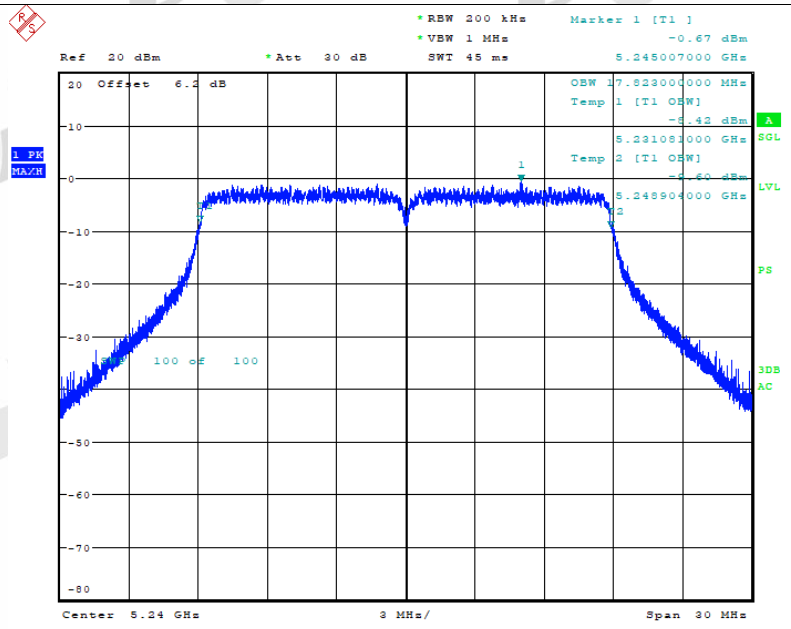
OBW NVNT ac20 5200MHz Ant2



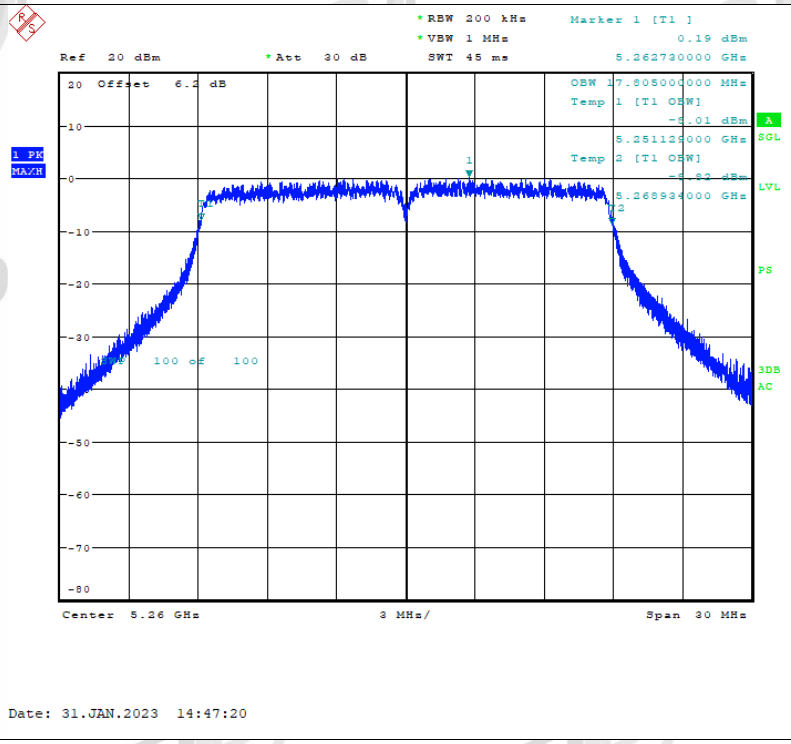
OBW NVNT ac20 5240MHz Ant1



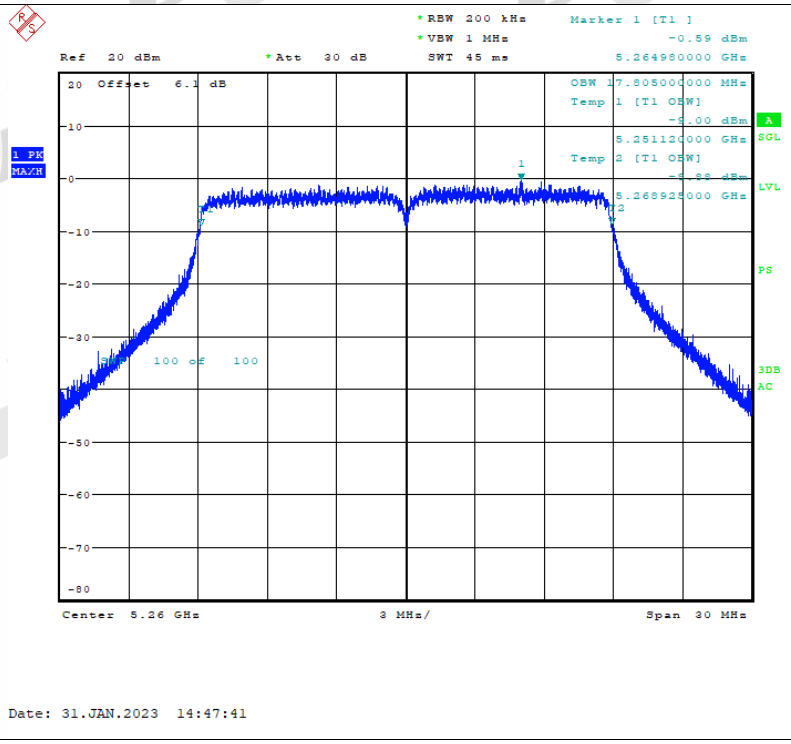
OBW NVNT ac20 5240MHz Ant2



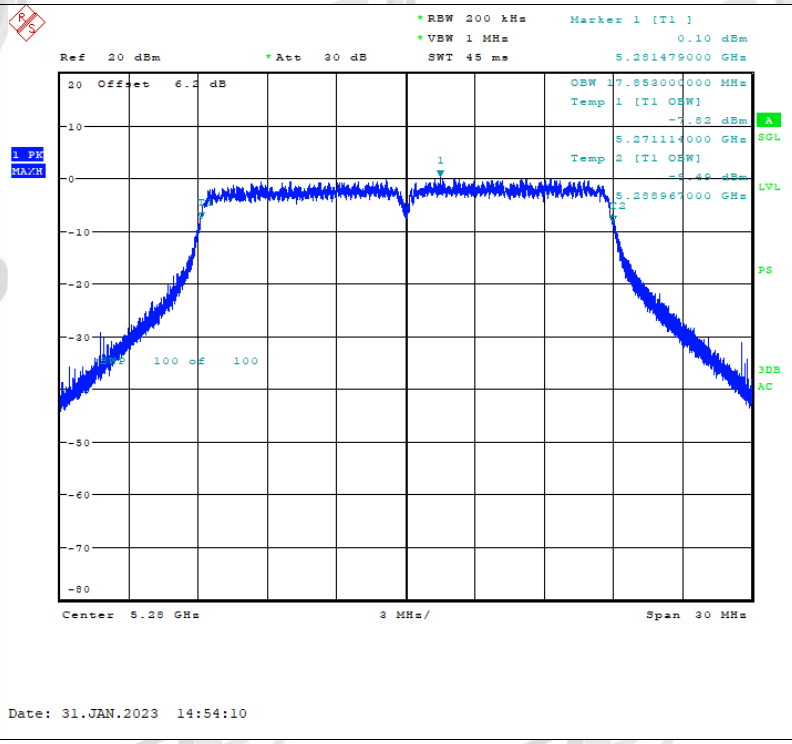
OBW NVNT ac20 5260MHz Ant1



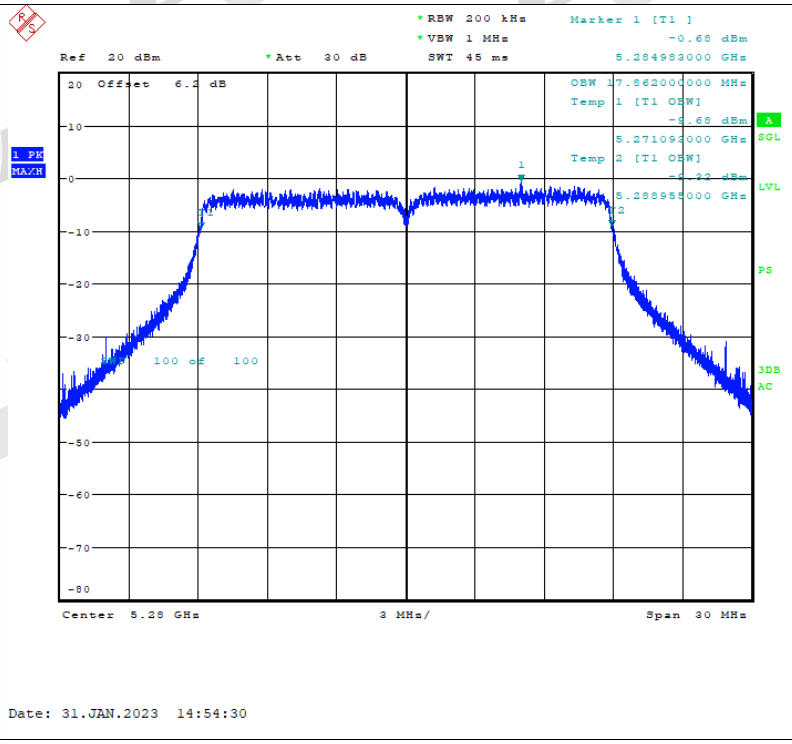
OBW NVNT ac20 5260MHz Ant2



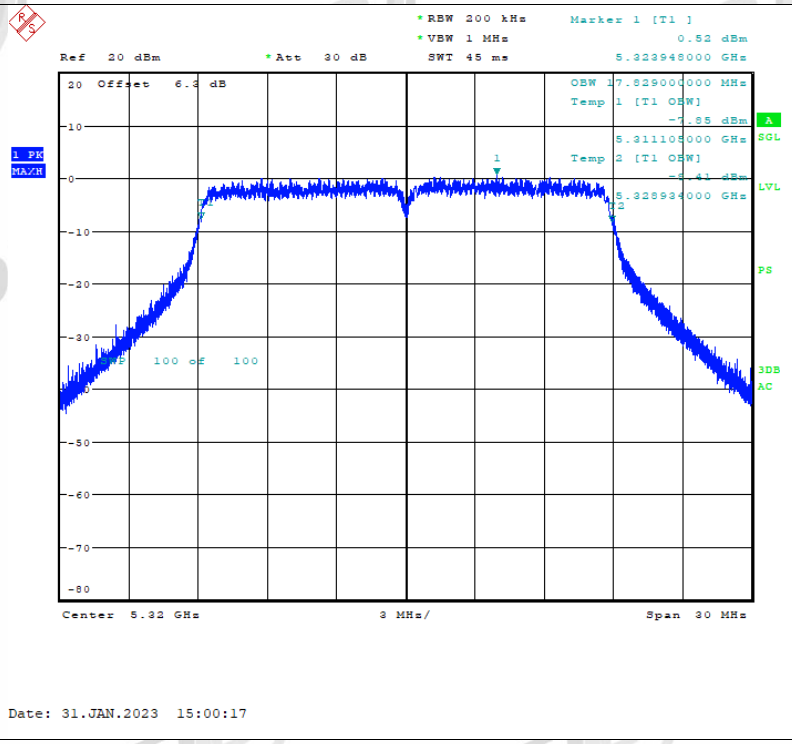
OBW NVNT ac20 5280MHz Ant1



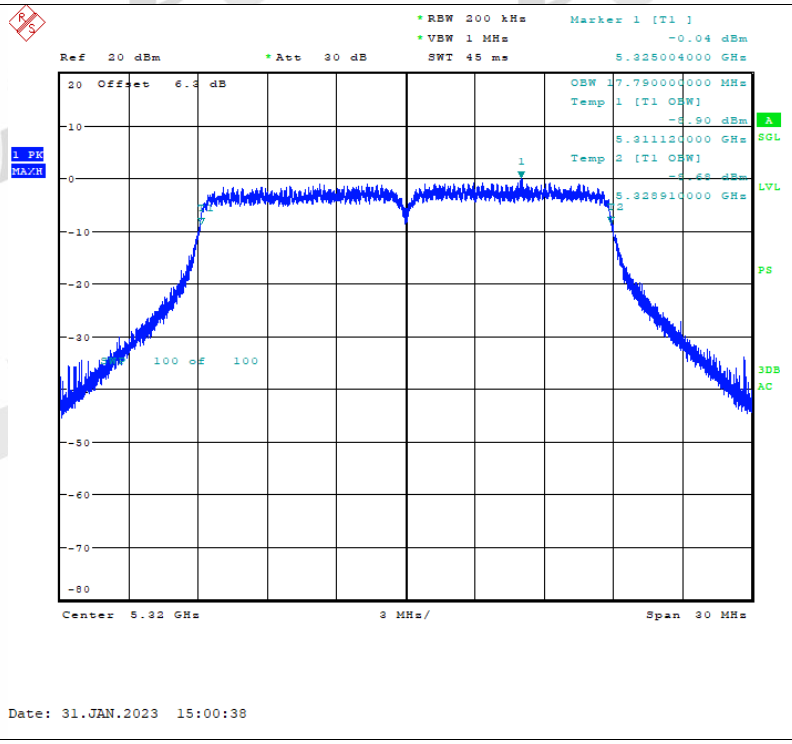
OBW NVNT ac20 5280MHz Ant2



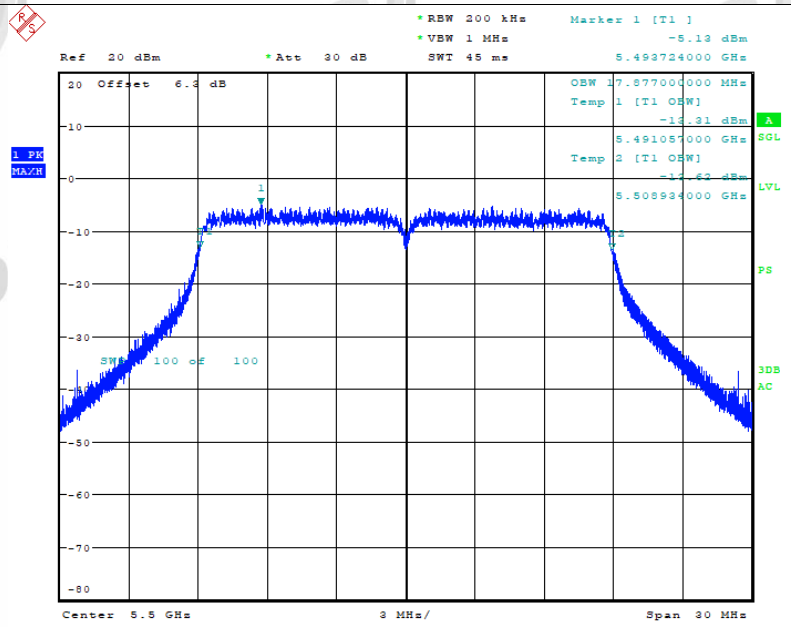
OBW NVNT ac20 5320MHz Ant1



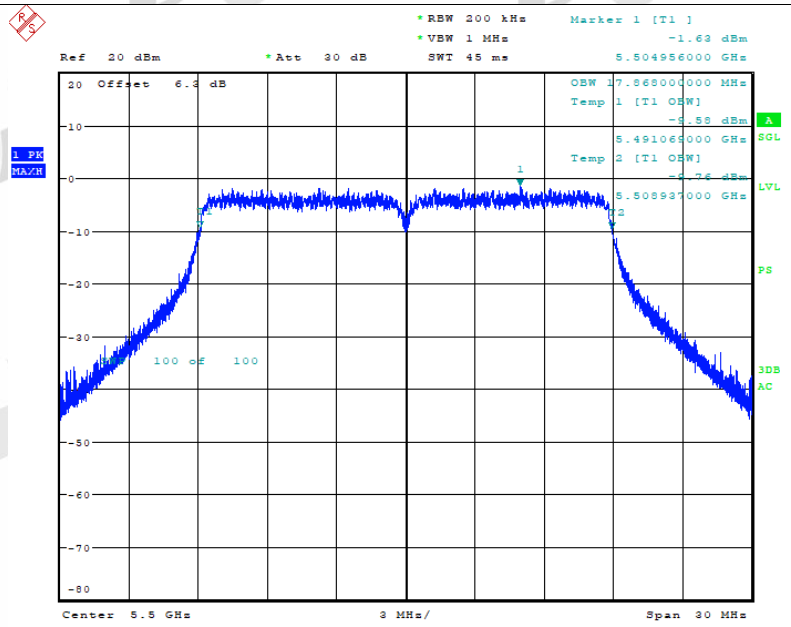
OBW NVNT ac20 5320MHz Ant2



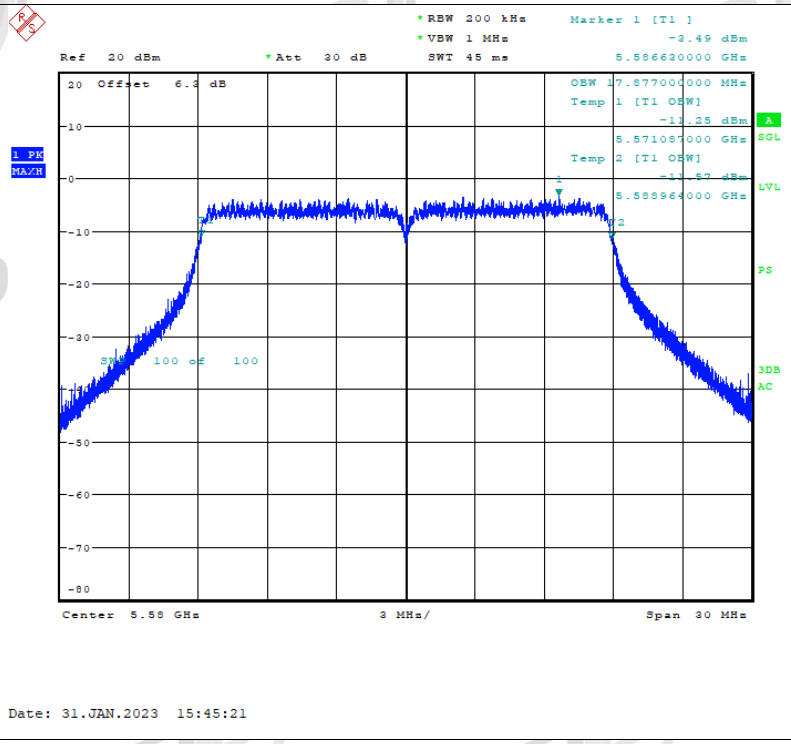
OBW NVNT ac20 5500MHz Ant1



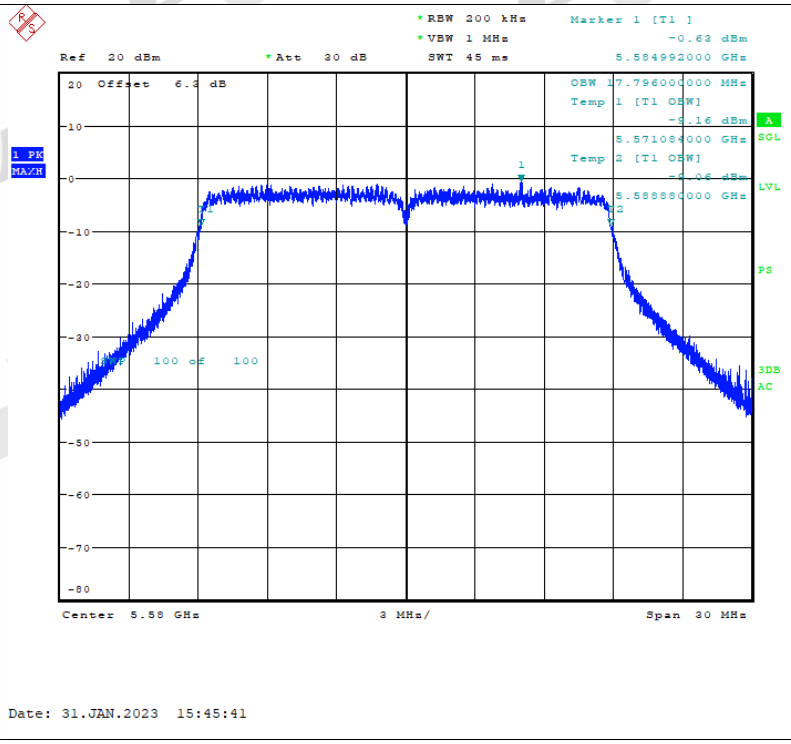
OBW NVNT ac20 5500MHz Ant2



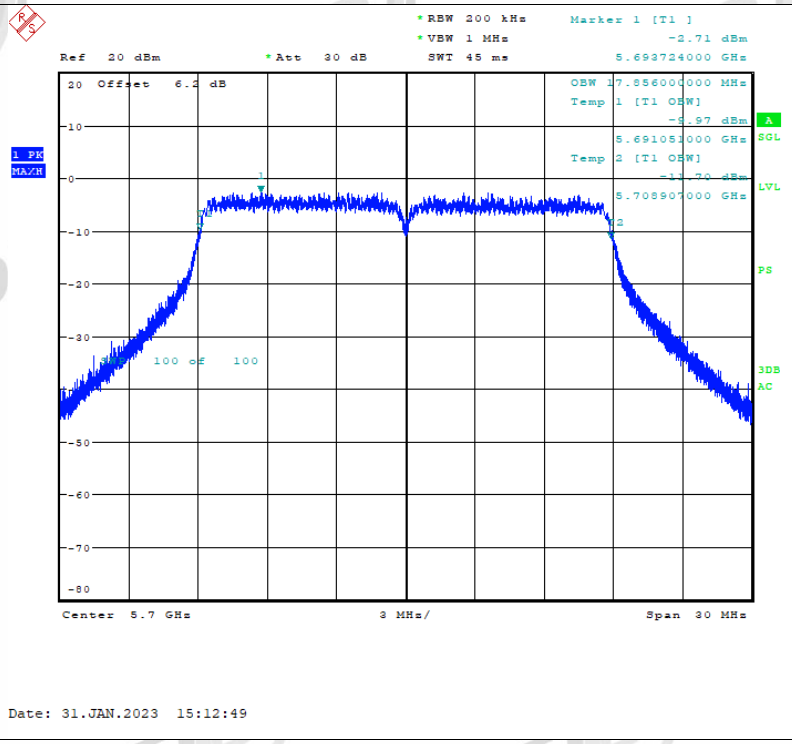
OBW NVNT ac20 5580MHz Ant1



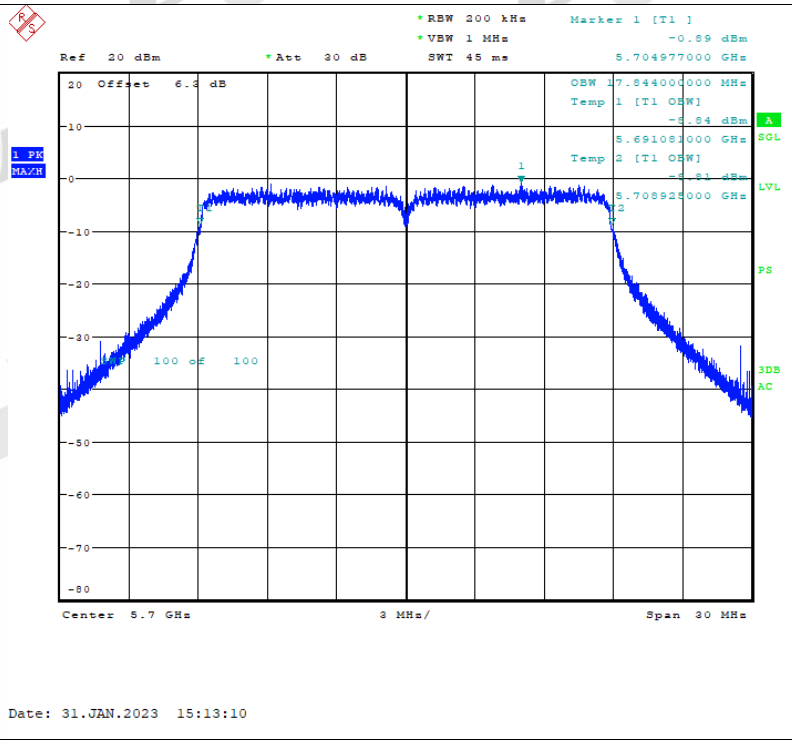
OBW NVNT ac20 5580MHz Ant2



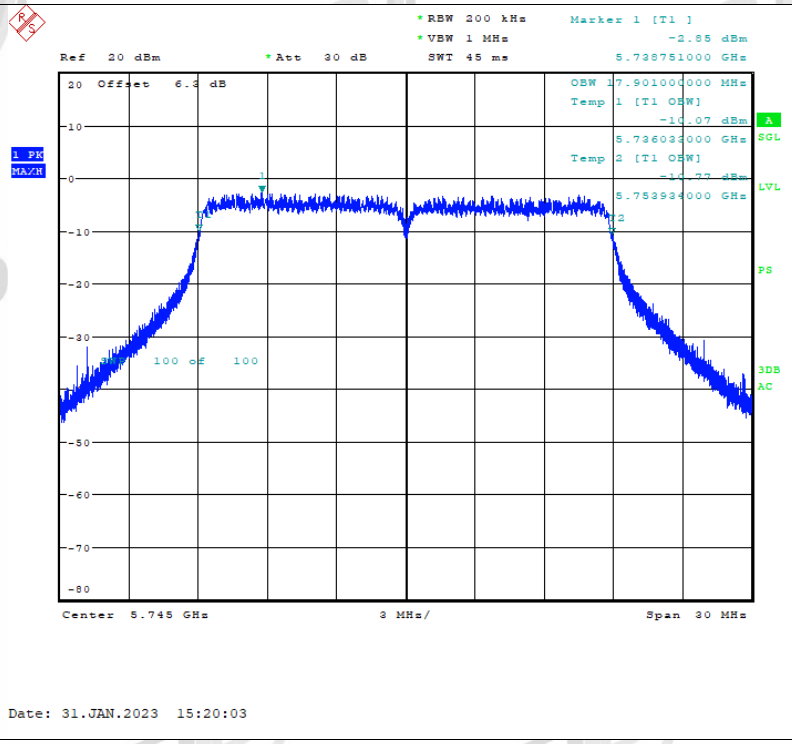
OBW NVNT ac20 5700MHz Ant1



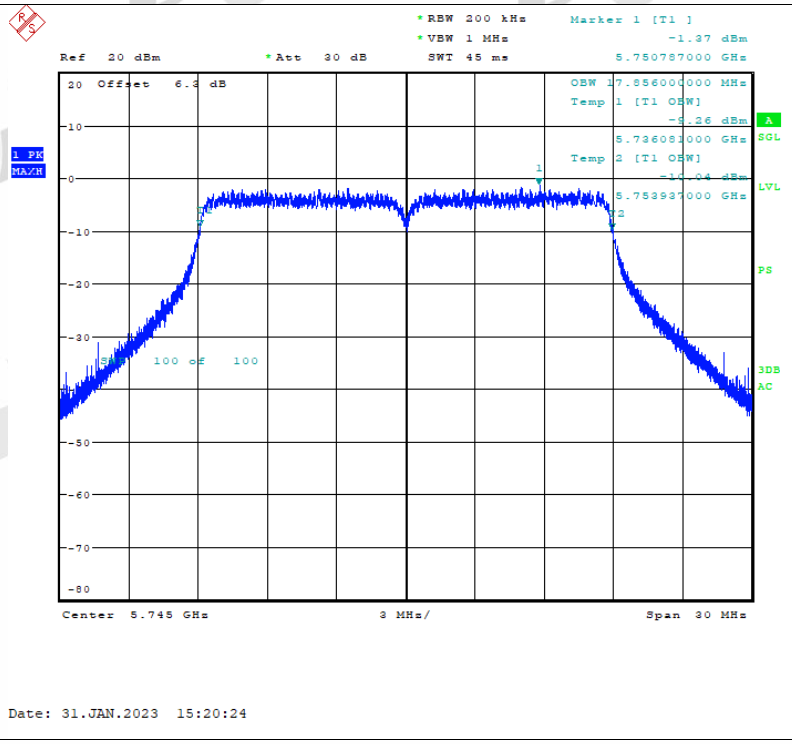
OBW NVNT ac20 5700MHz Ant2



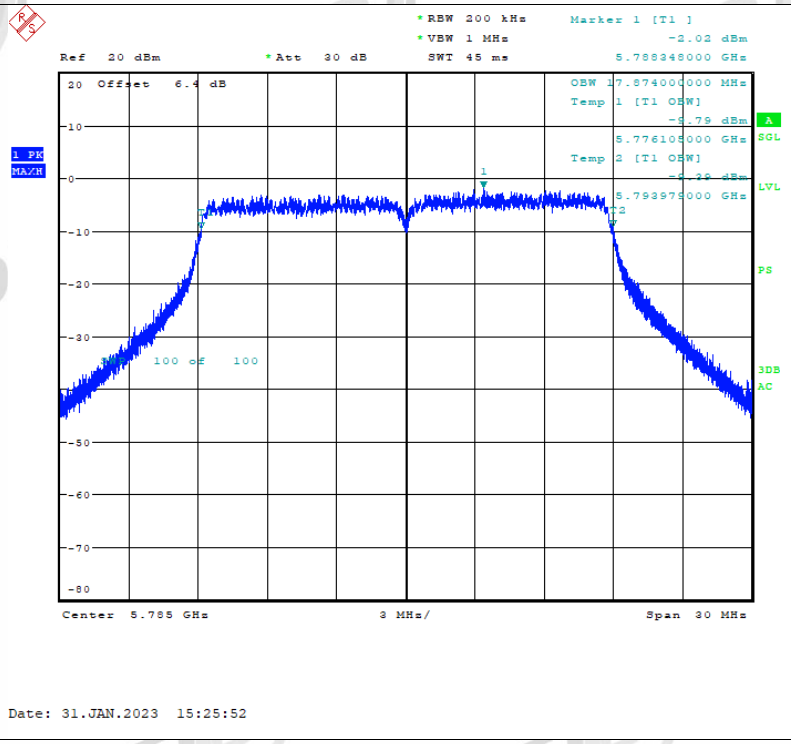
OBW NVNT ac20 5745MHz Ant1



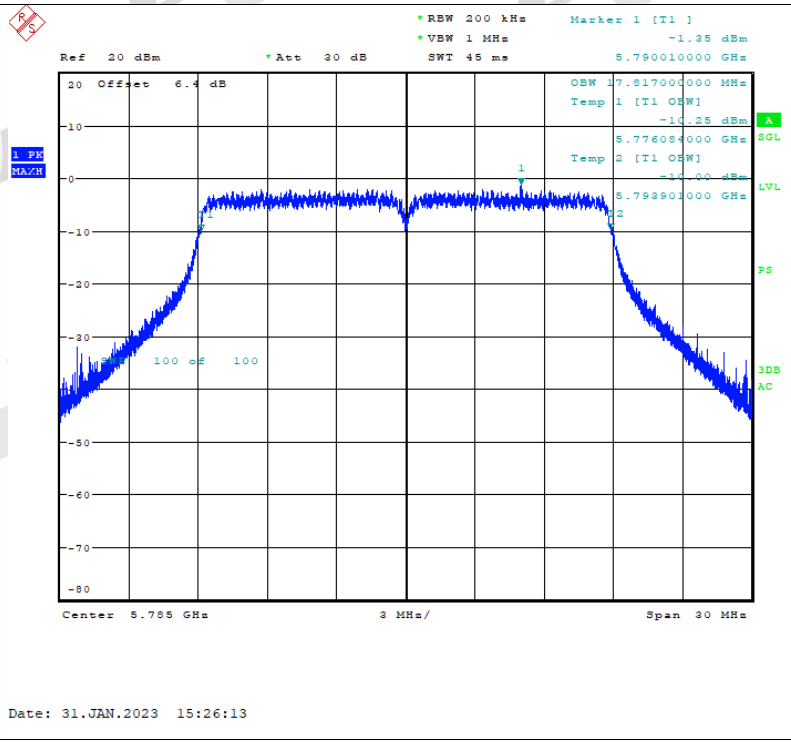
OBW NVNT ac20 5745MHz Ant2



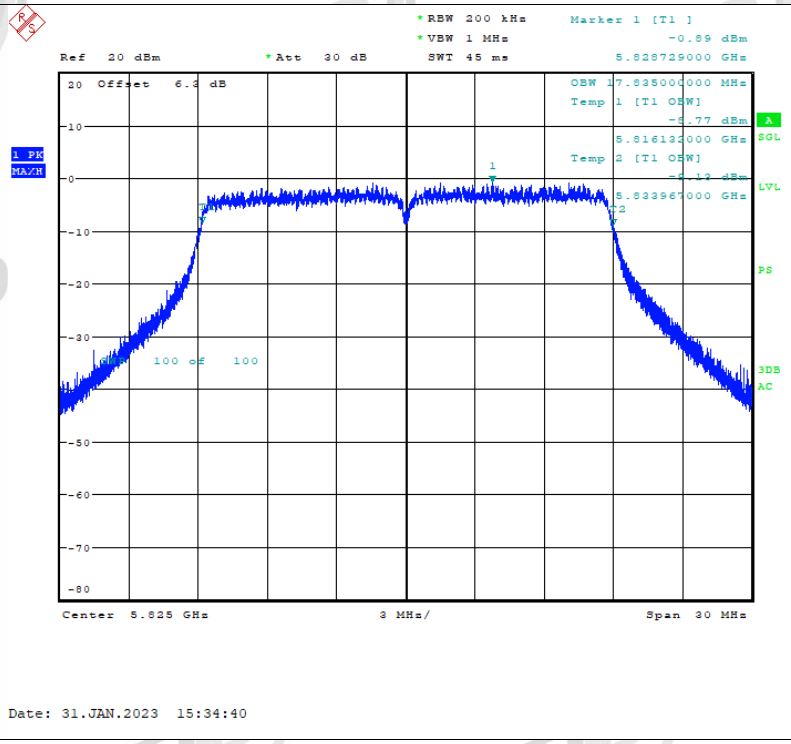
OBW NVNT ac20 5785MHz Ant1



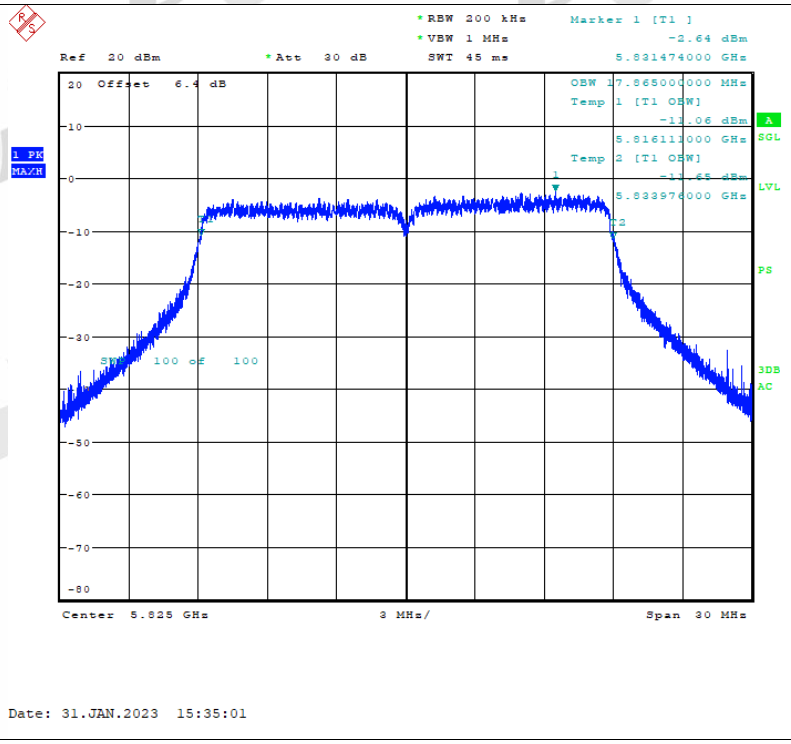
OBW NVNT ac20 5785MHz Ant2



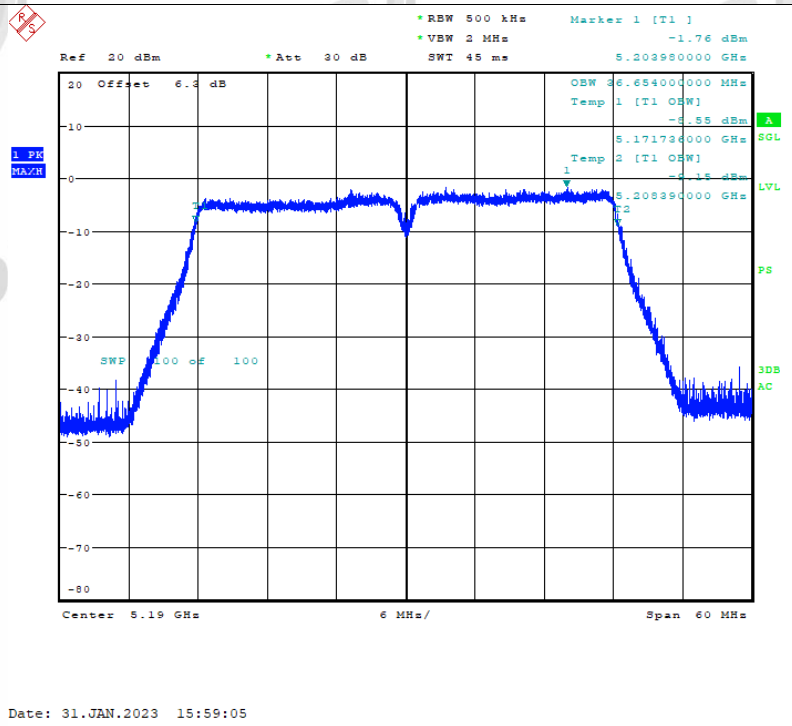
OBW NVNT ac20 5825MHz Ant1



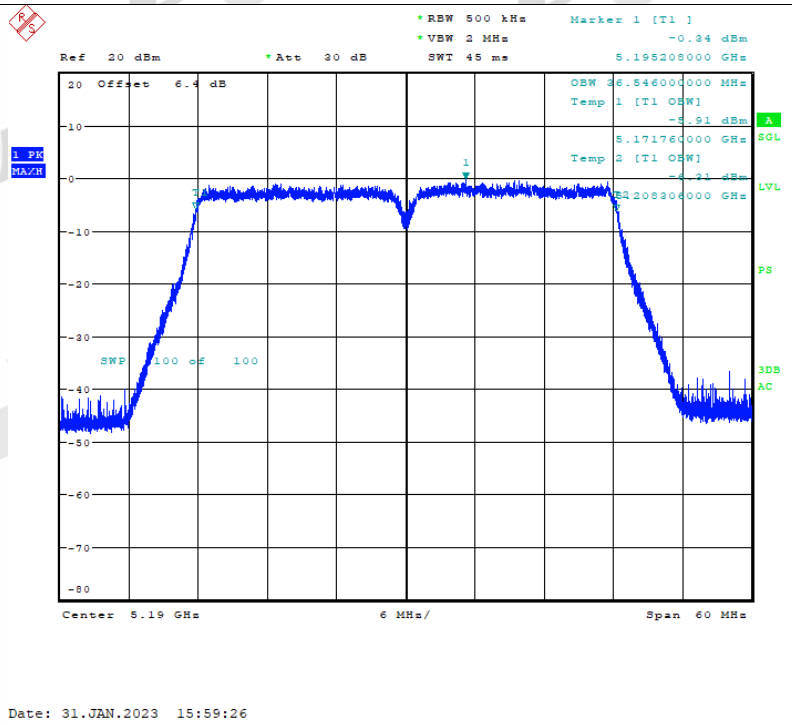
OBW NVNT ac20 5825MHz Ant2



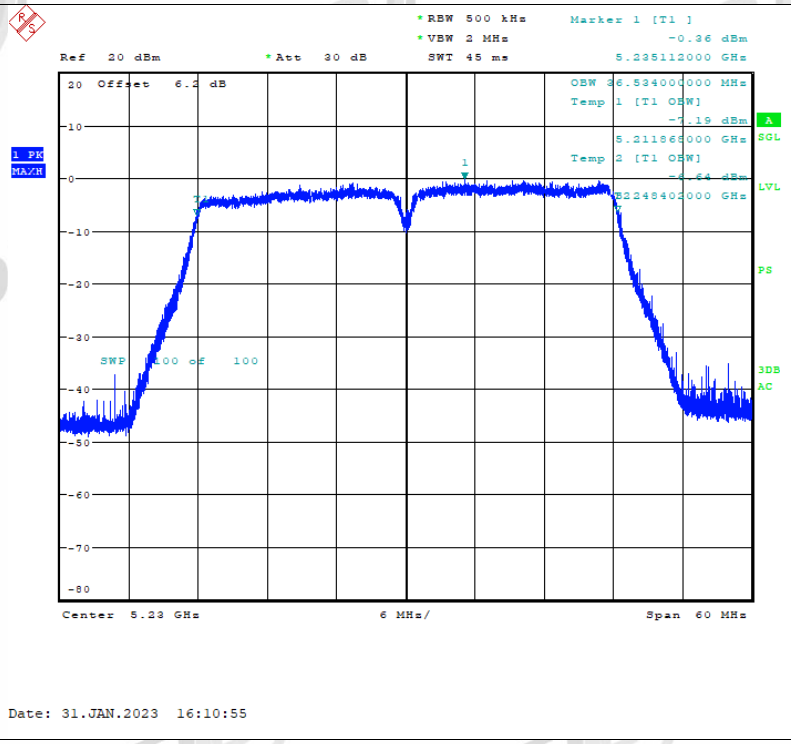
OBW NVNT ac40 5190MHz Ant1



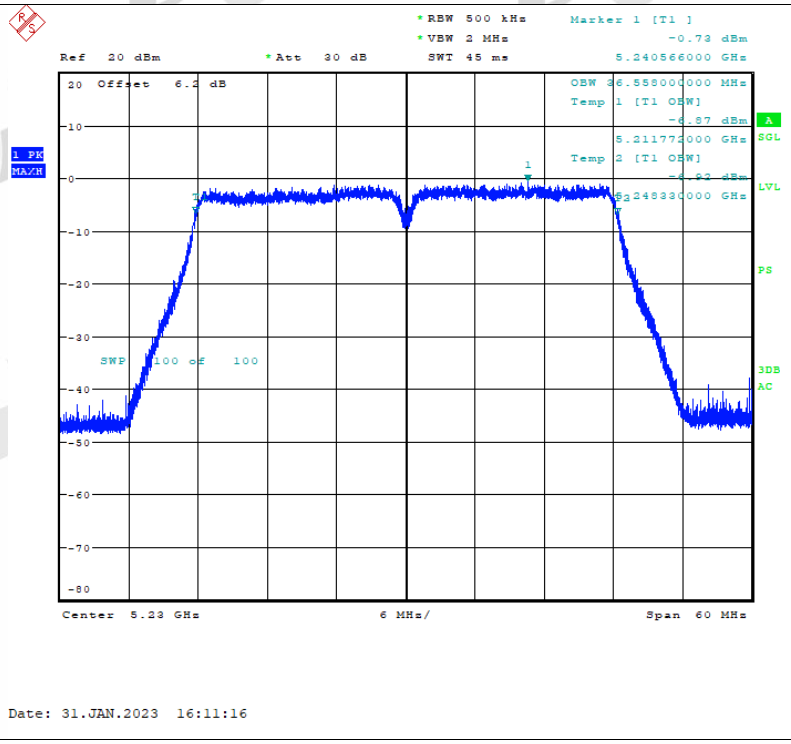
OBW NVNT ac40 5190MHz Ant2



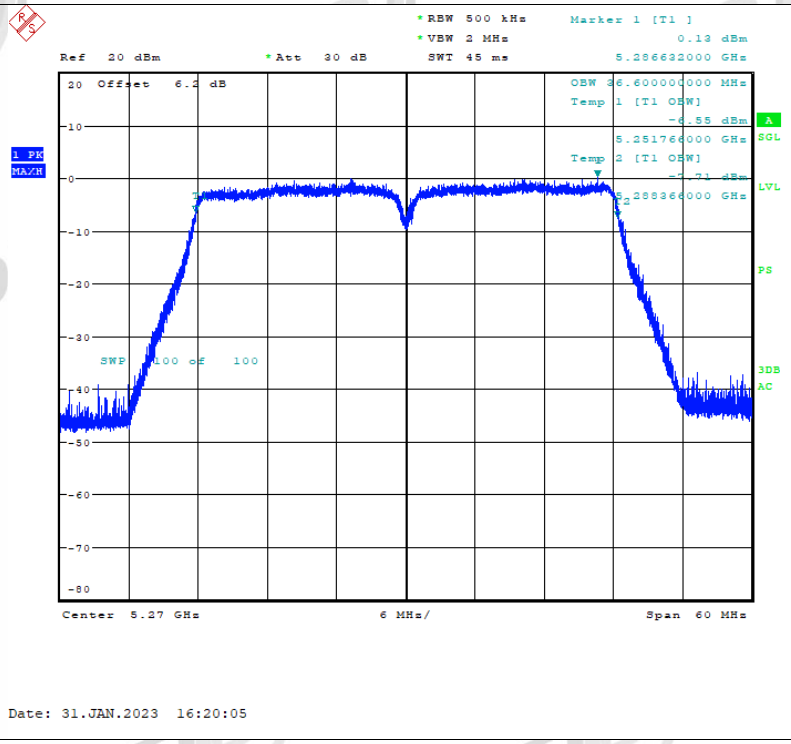
OBW NVNT ac40 5230MHz Ant1



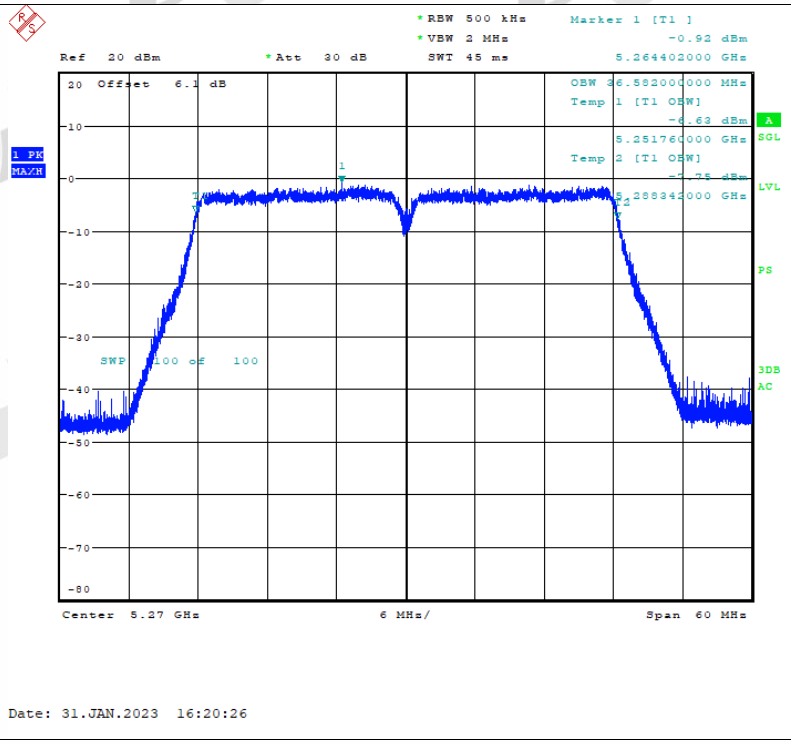
OBW NVNT ac40 5230MHz Ant2



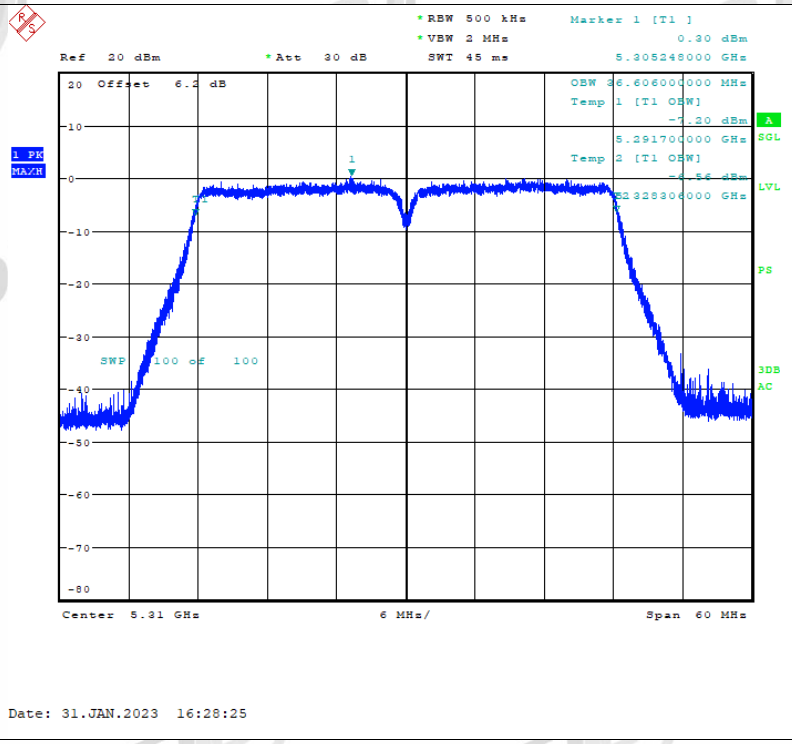
OBW NVNT ac40 5270MHz Ant1



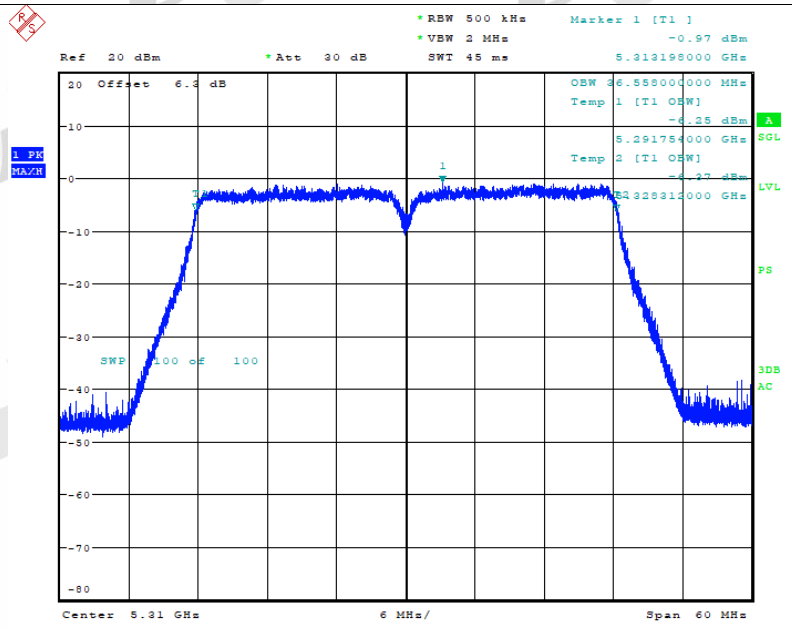
OBW NVNT ac40 5270MHz Ant2



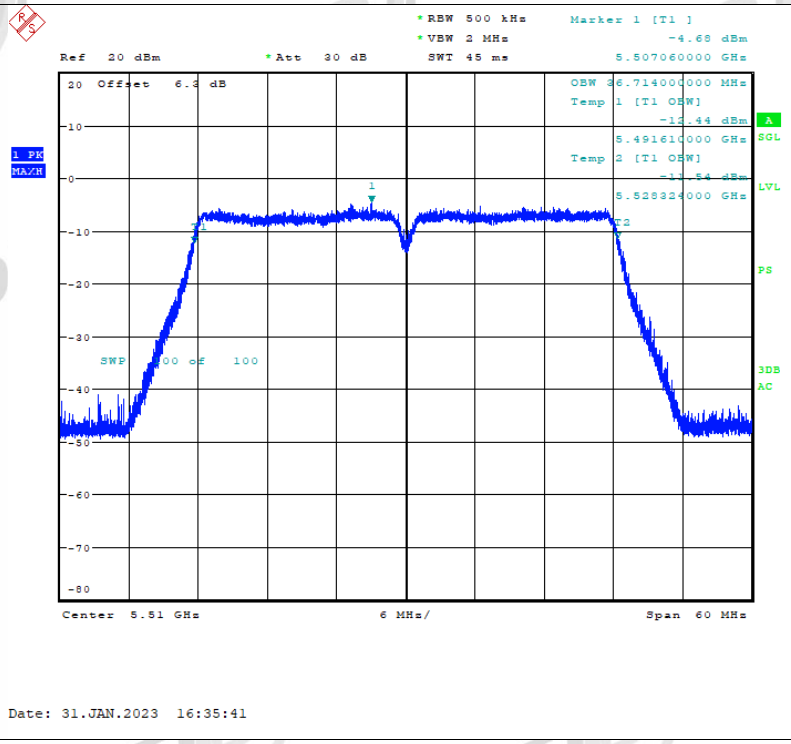
OBW NVNT ac40 5310MHz Ant1



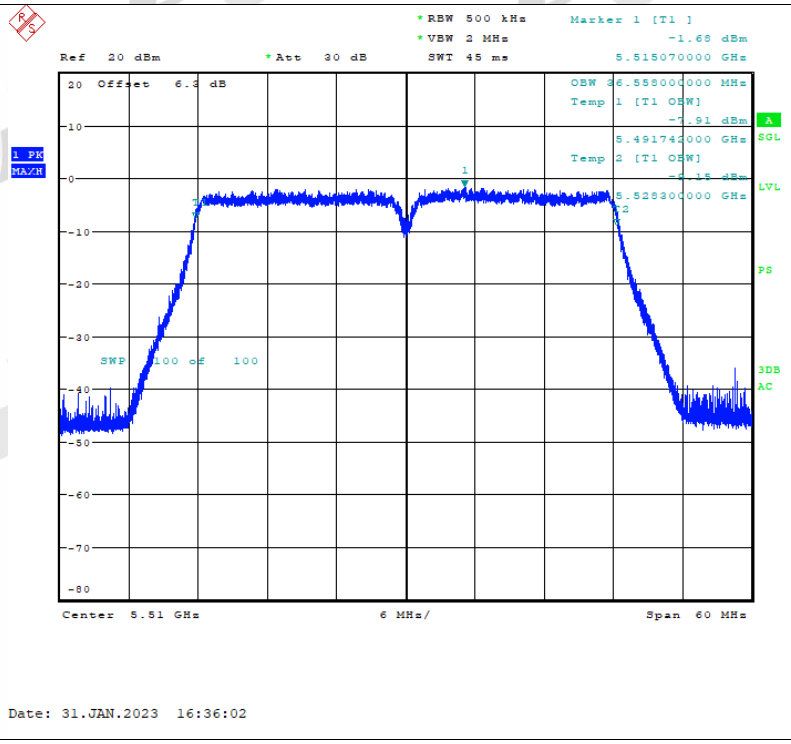
OBW NVNT ac40 5310MHz Ant2



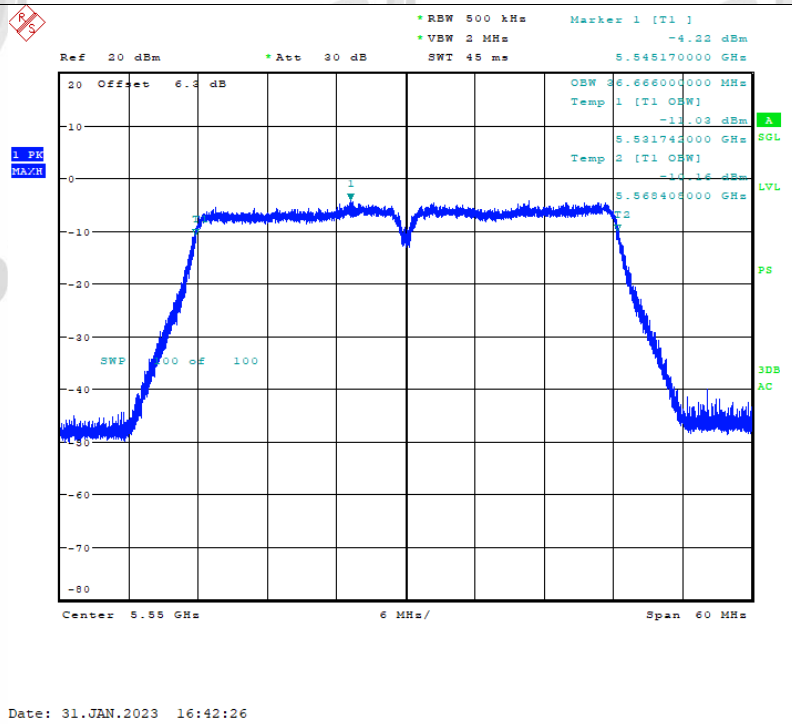
OBW NVNT ac40 5510MHz Ant1



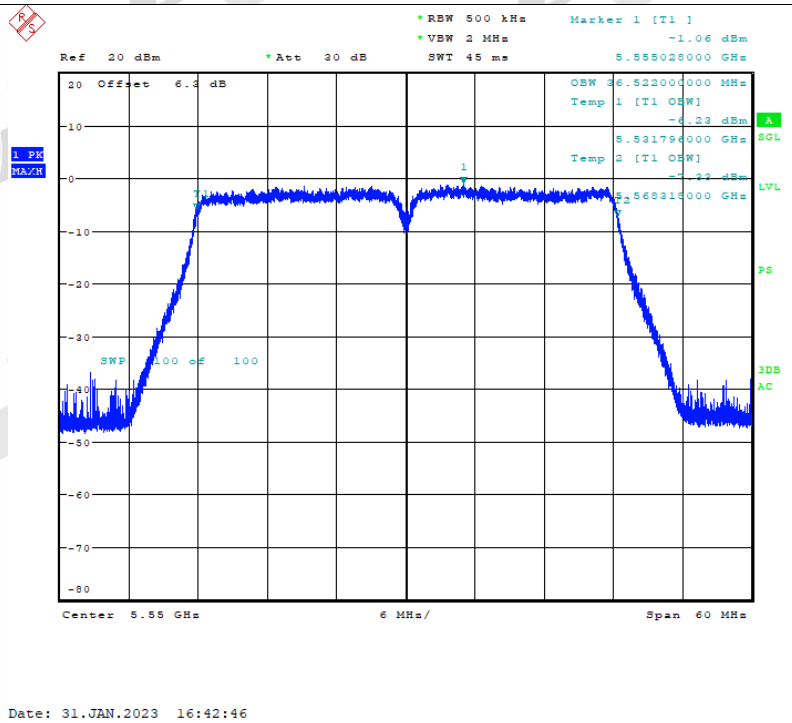
OBW NVNT ac40 5510MHz Ant2



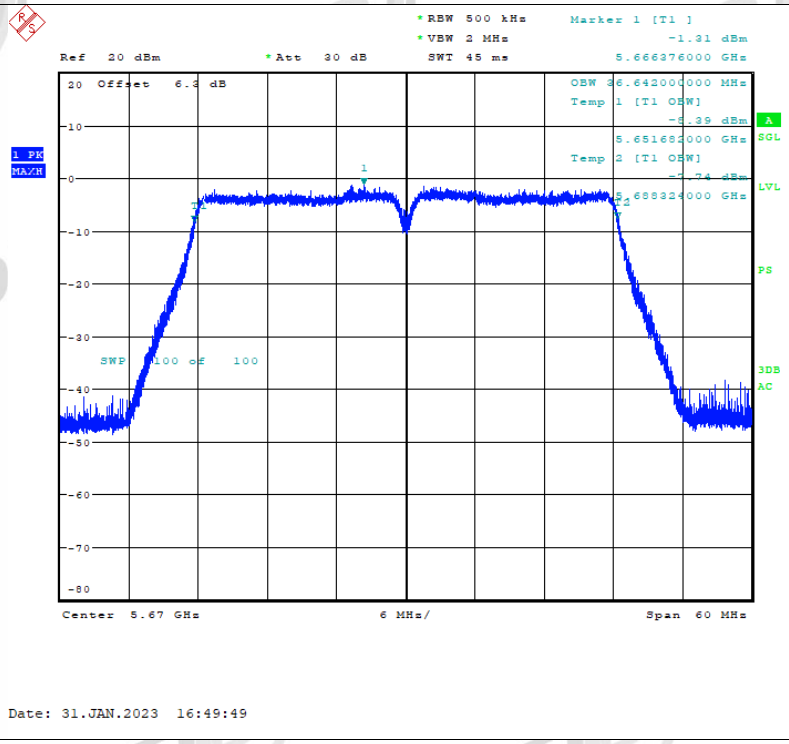
OBW NVNT ac40 5550MHz Ant1



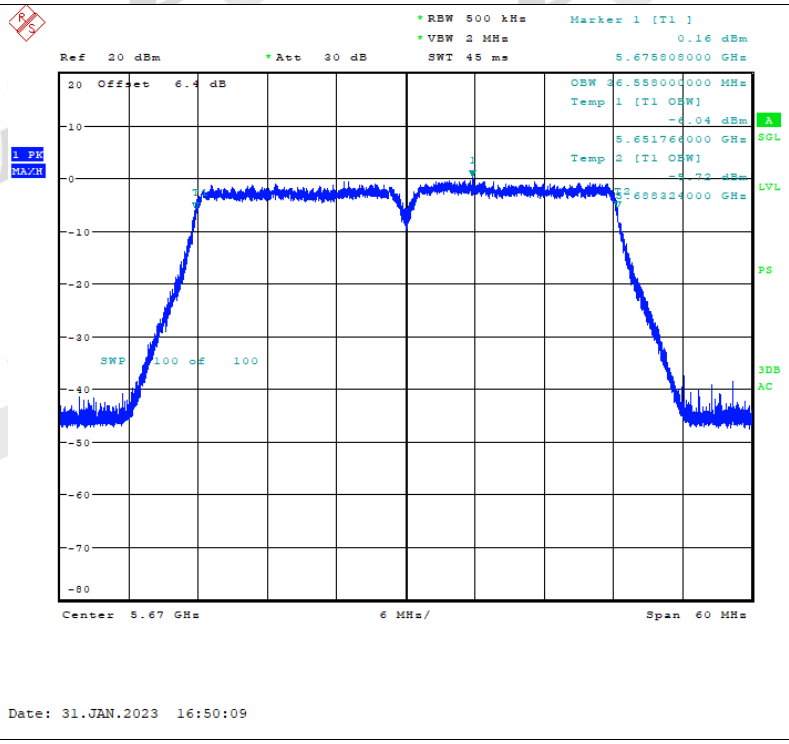
OBW NVNT ac40 5550MHz Ant2



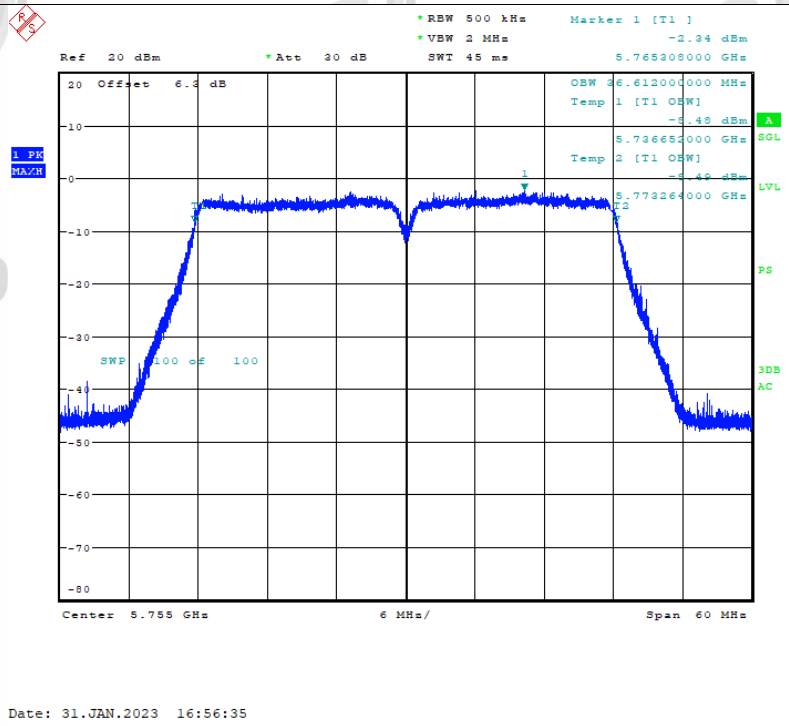
OBW NVNT ac40 5670MHz Ant1



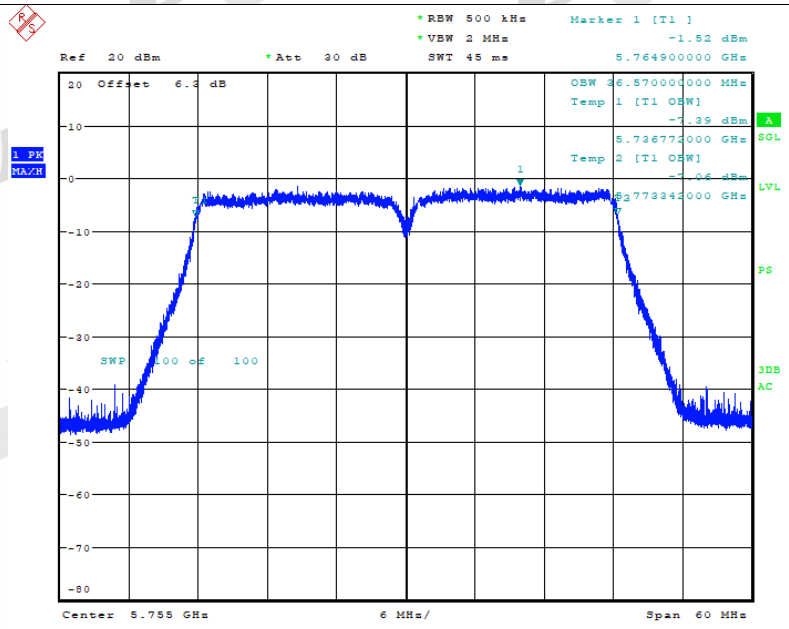
OBW NVNT ac40 5670MHz Ant2



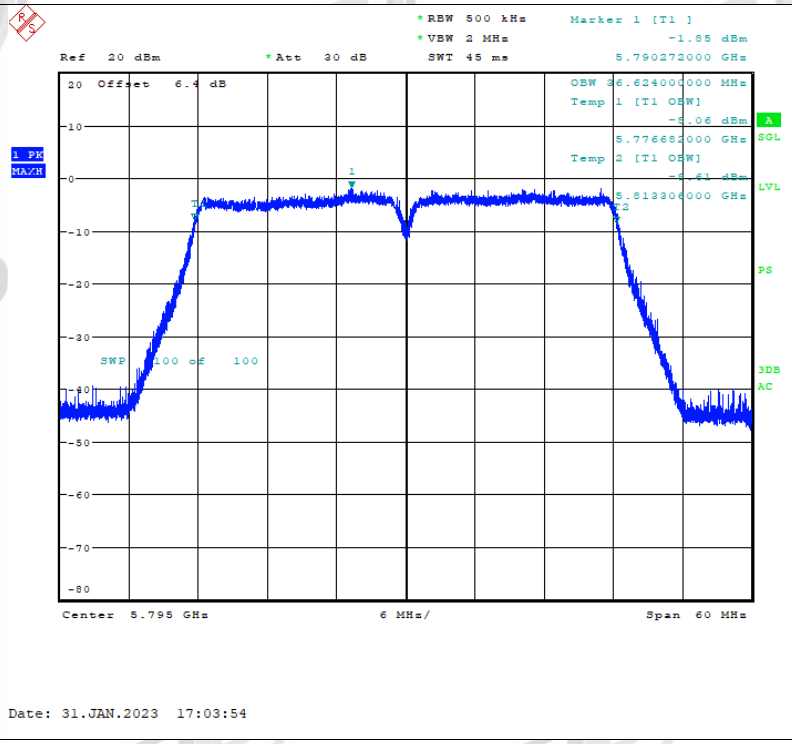
OBW NVNT ac40 5755MHz Ant1



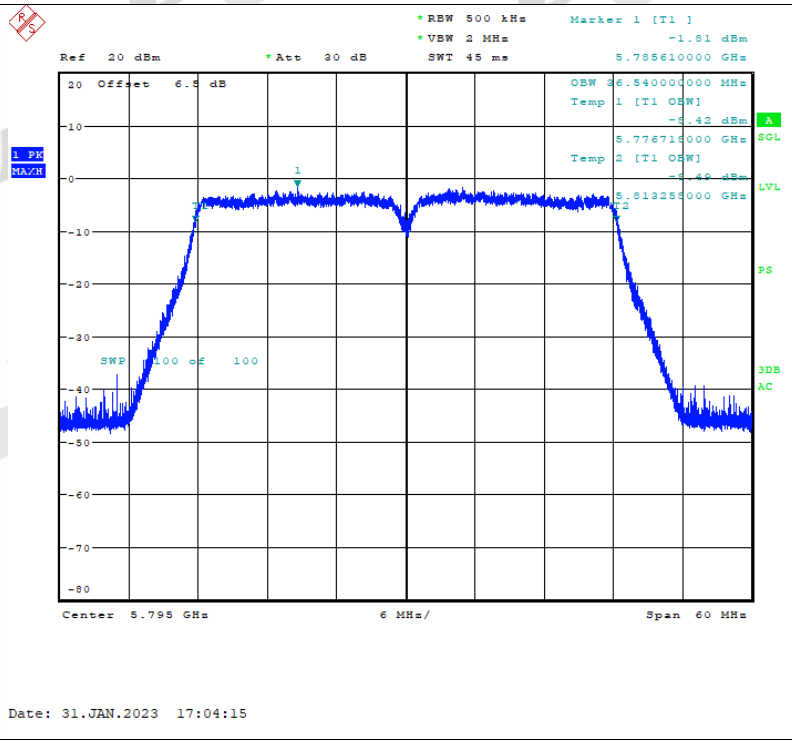
OBW NVNT ac40 5755MHz Ant2



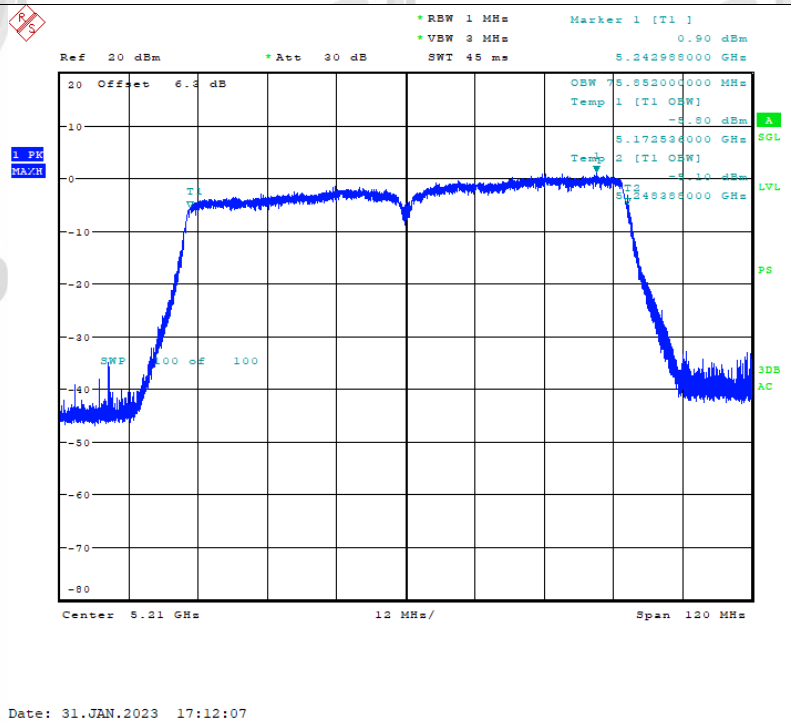
OBW NVNT ac40 5795MHz Ant1



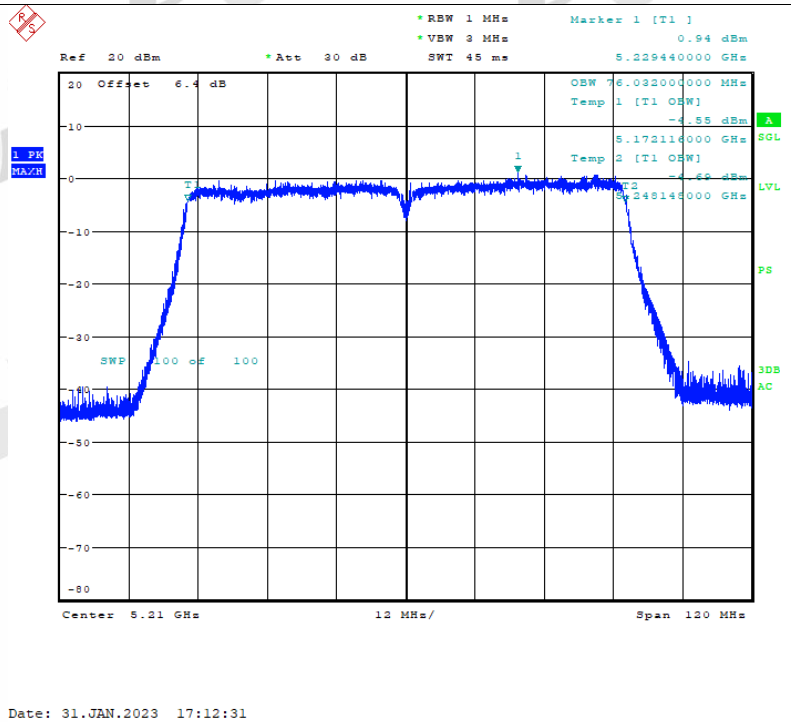
OBW NVNT ac40 5795MHz Ant2



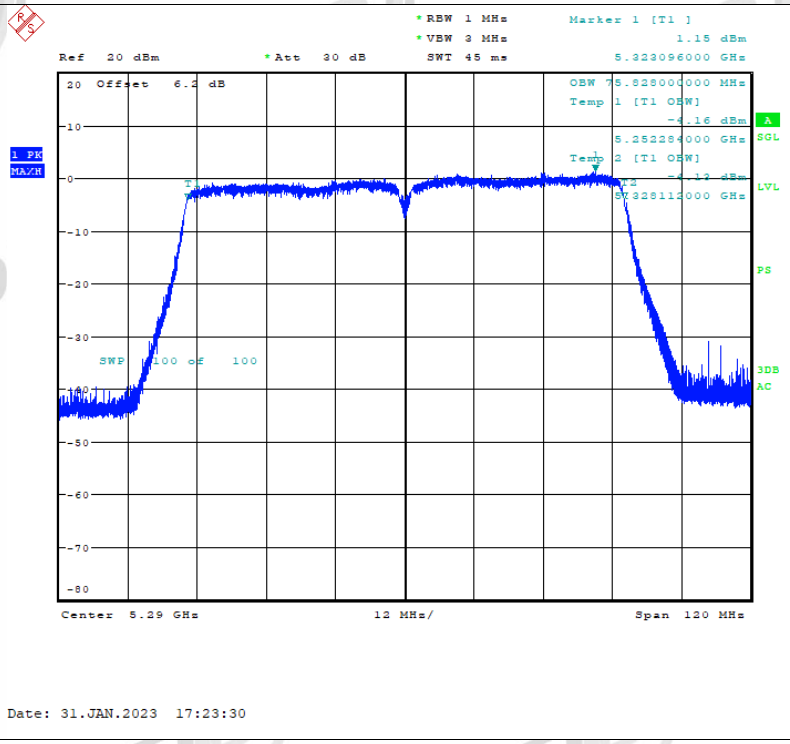
OBW NVNT ac80 5210MHz Ant1



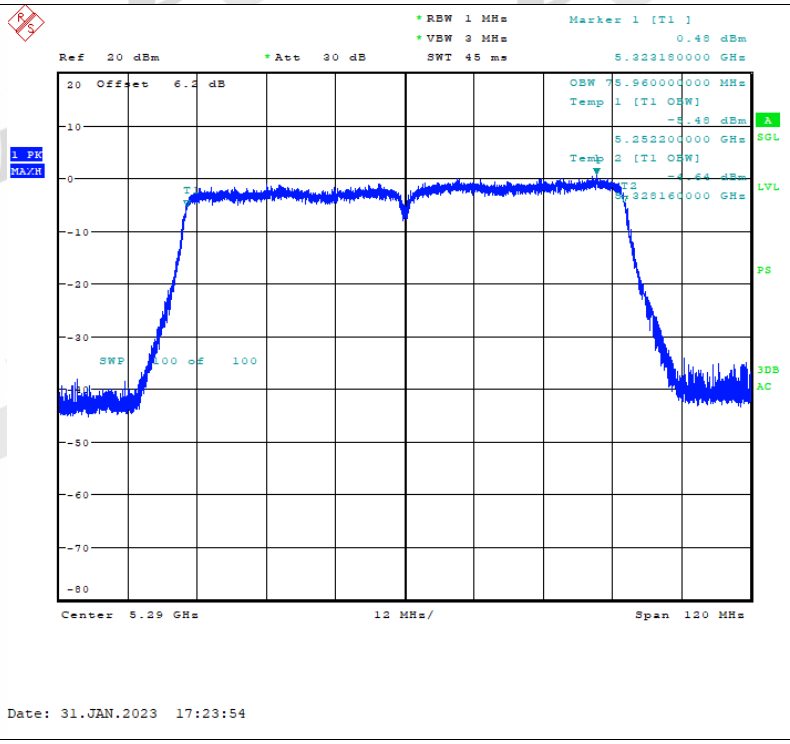
OBW NVNT ac80 5210MHz Ant2



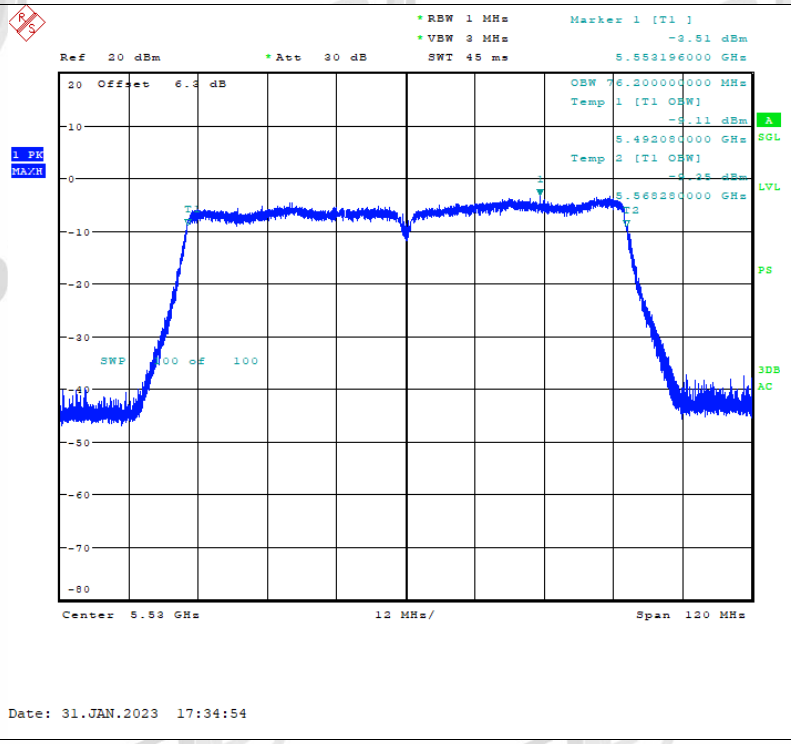
OBW NVNT ac80 5290MHz Ant1



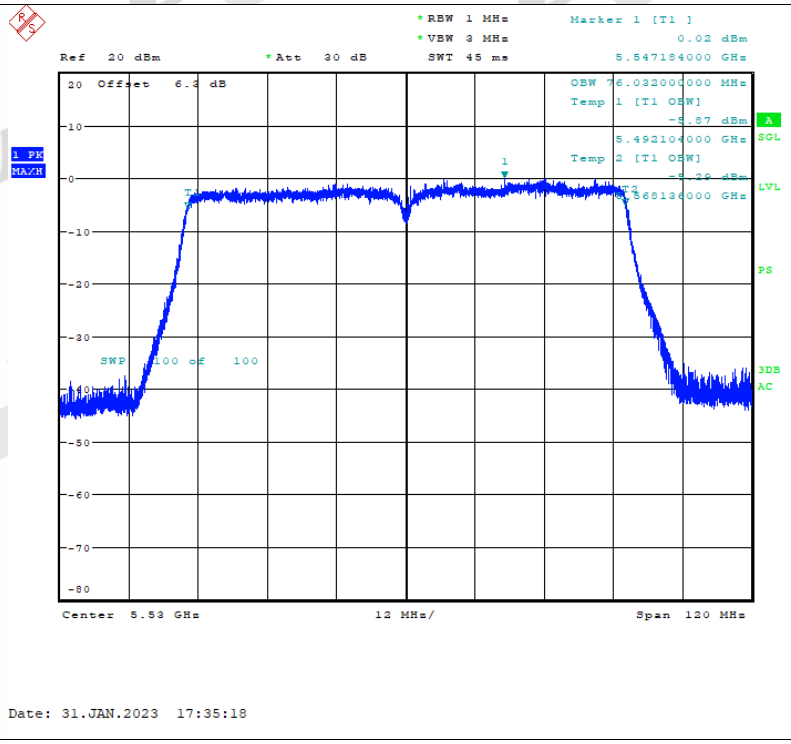
OBW NVNT ac80 5290MHz Ant2



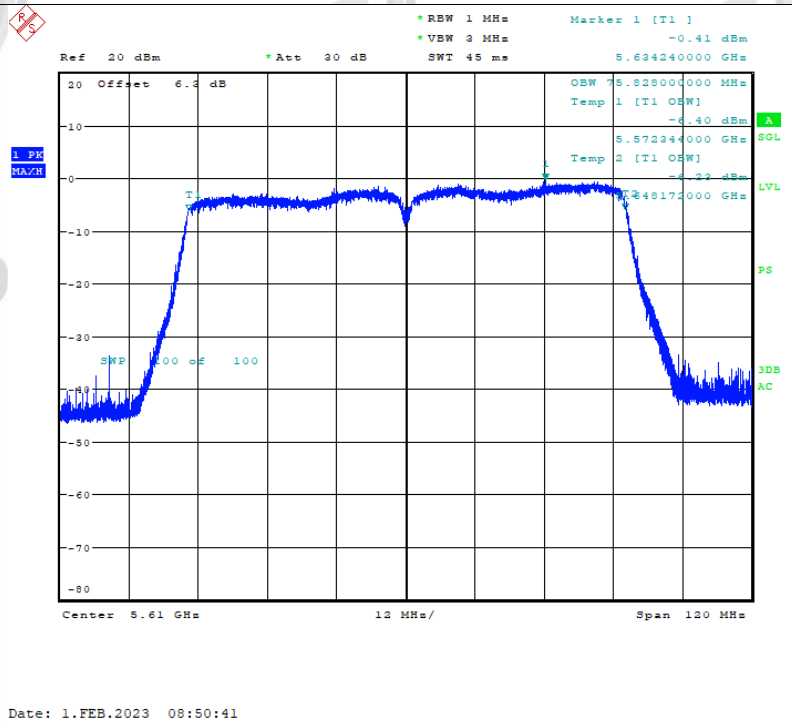
OBW NVNT ac80 5530MHz Ant1



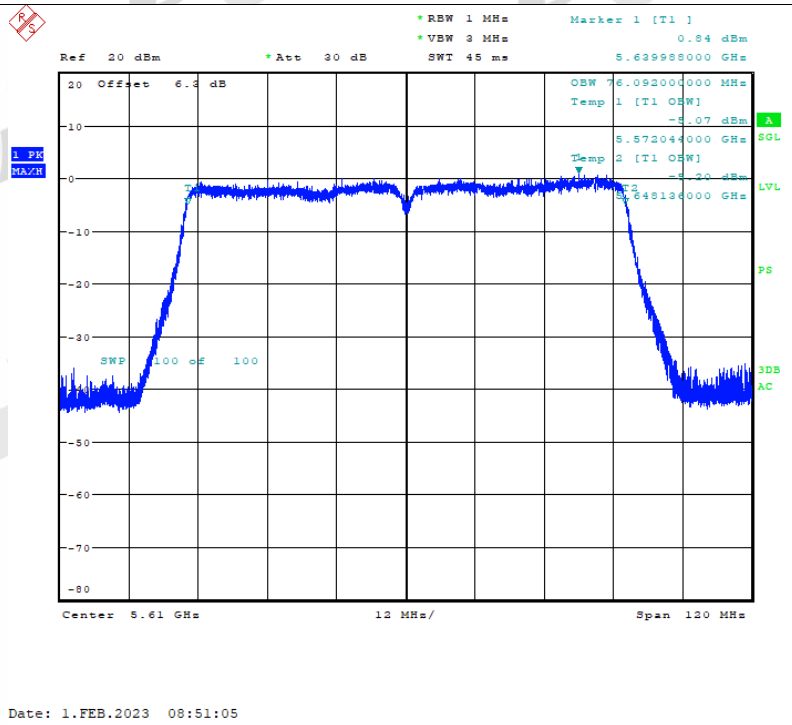
OBW NVNT ac80 5530MHz Ant2



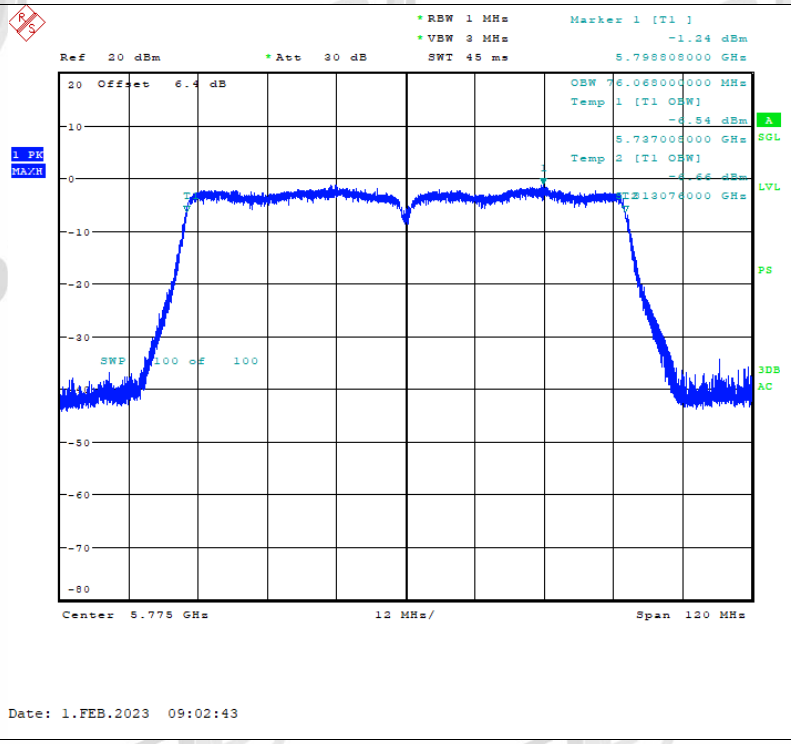
OBW NVNT ac80 5610MHz Ant1



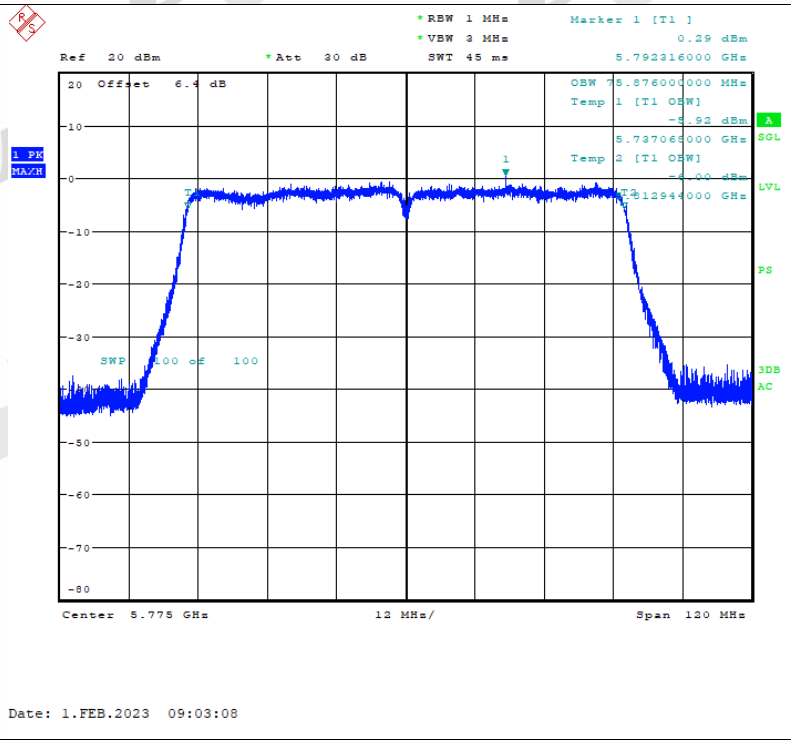
OBW NVNT ac80 5610MHz Ant2



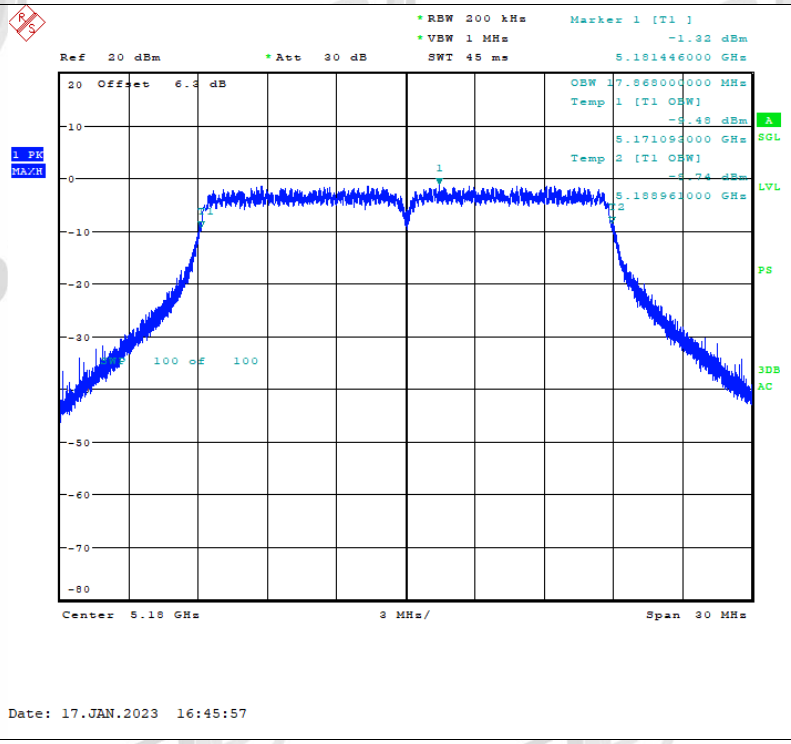
OBW NVNT ac80 5775MHz Ant1



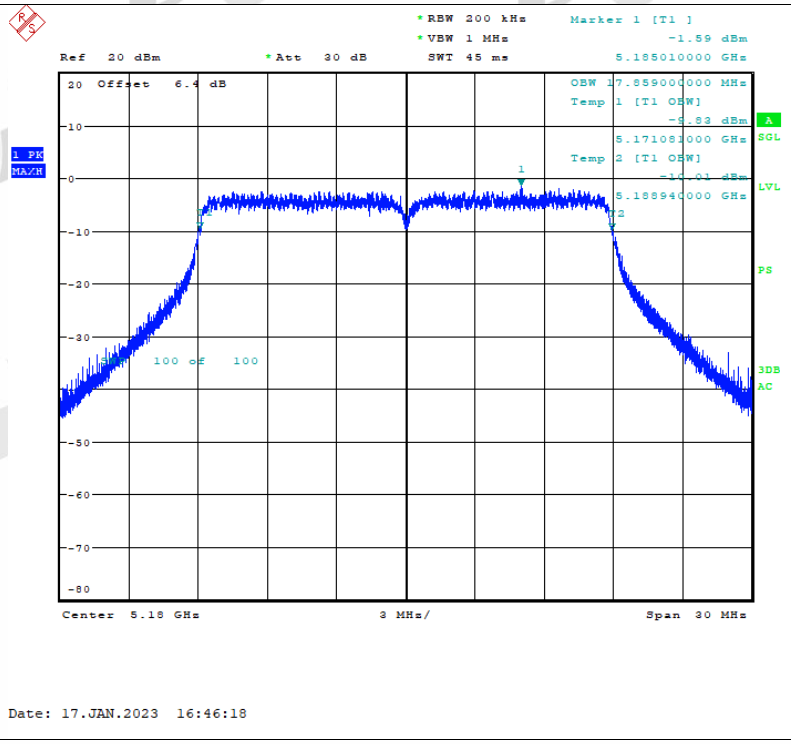
OBW NVNT ac80 5775MHz Ant2



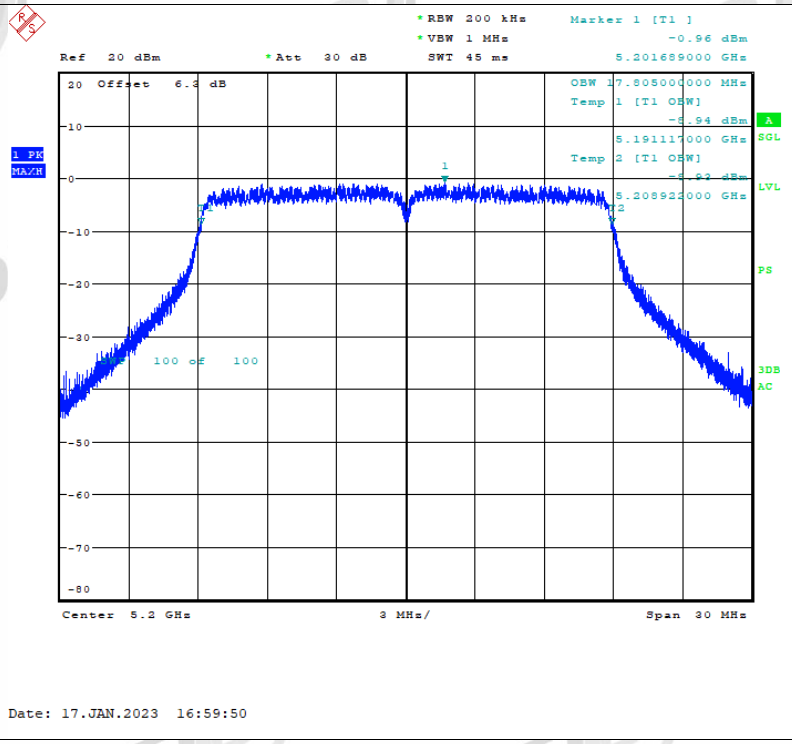
OBW NVNT n20 5180MHz Ant1



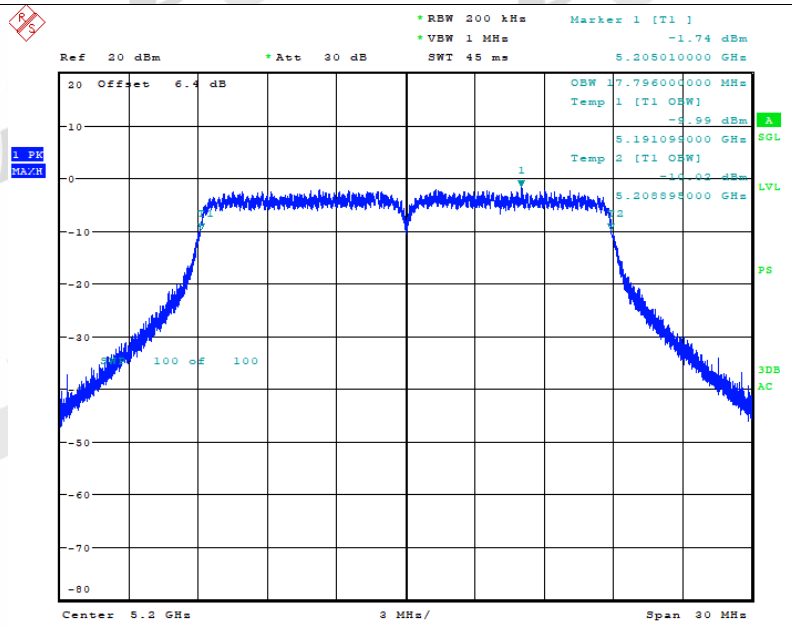
OBW NVNT n20 5180MHz Ant2



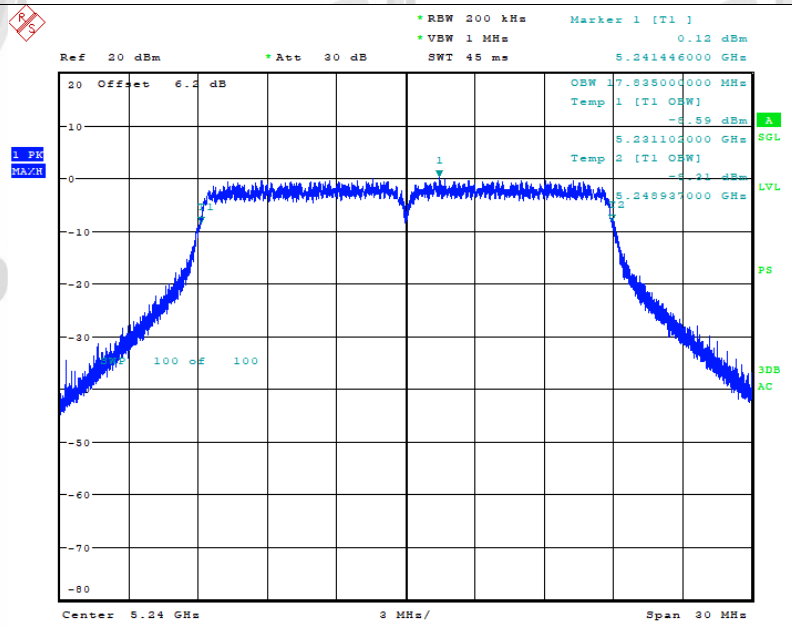
OBW NVNT n20 5200MHz Ant1



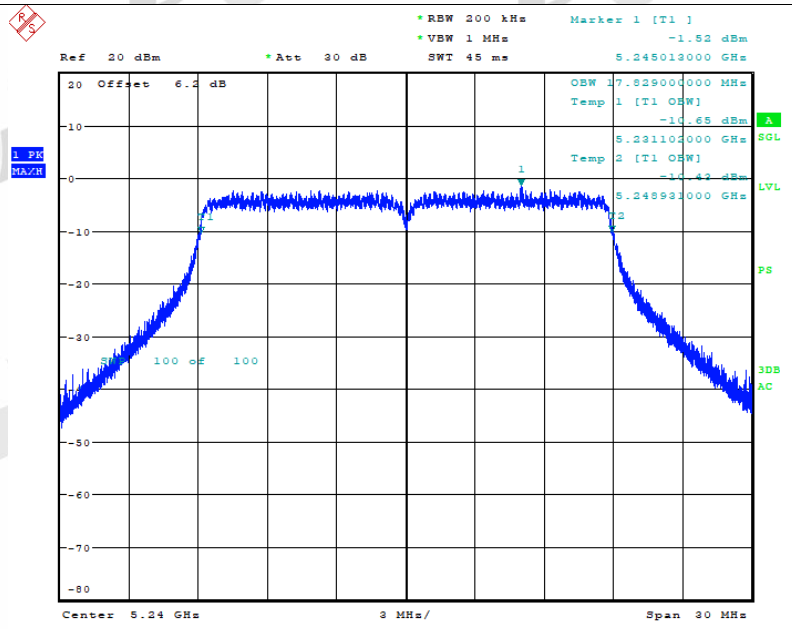
OBW NVNT n20 5200MHz Ant2



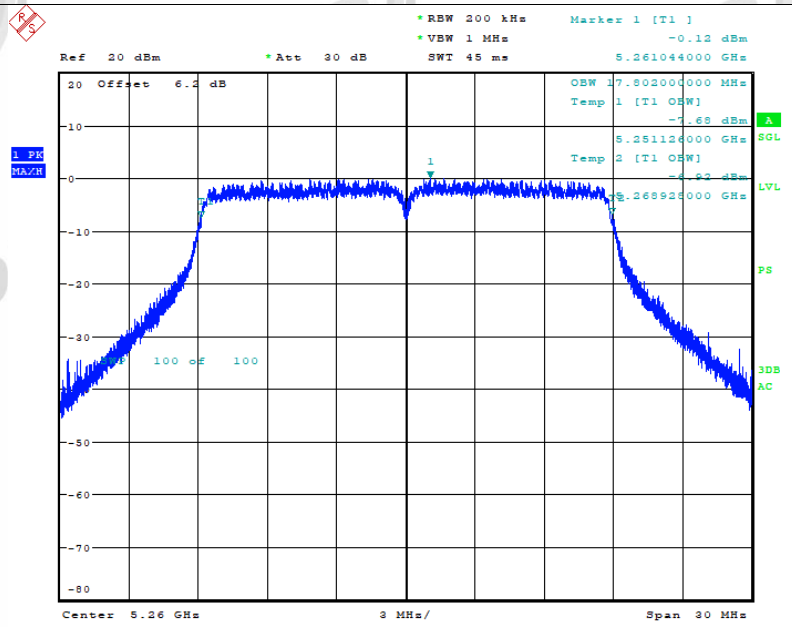
OBW NVNT n20 5240MHz Ant1



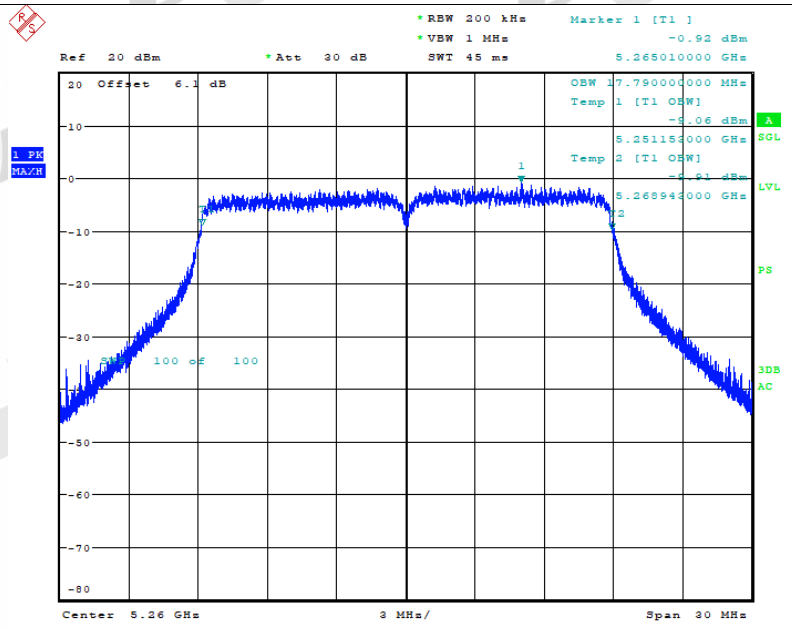
OBW NVNT n20 5240MHz Ant2



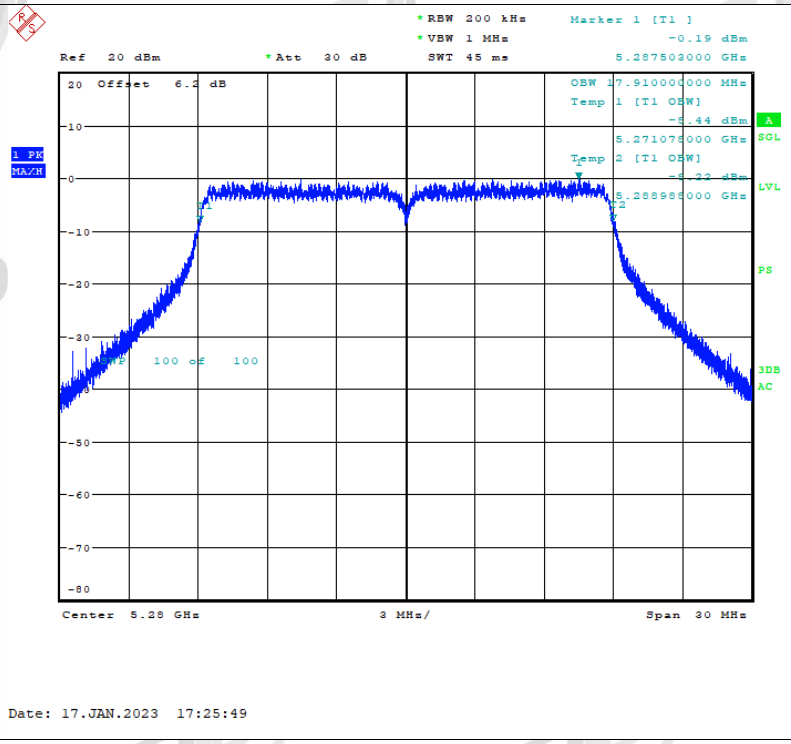
OBW NVNT n20 5260MHz Ant1



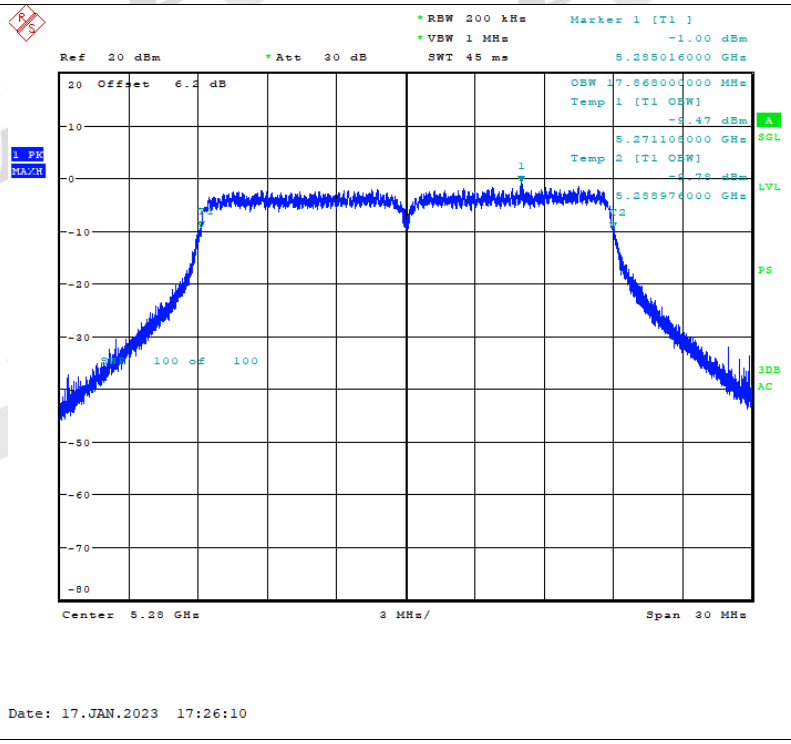
OBW NVNT n20 5260MHz Ant2



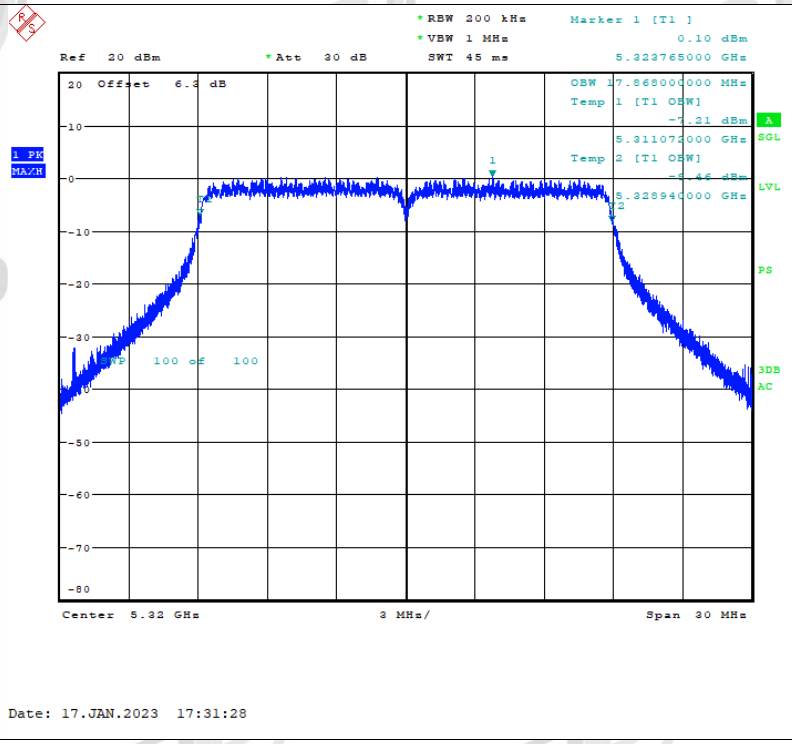
OBW NVNT n20 5280MHz Ant1



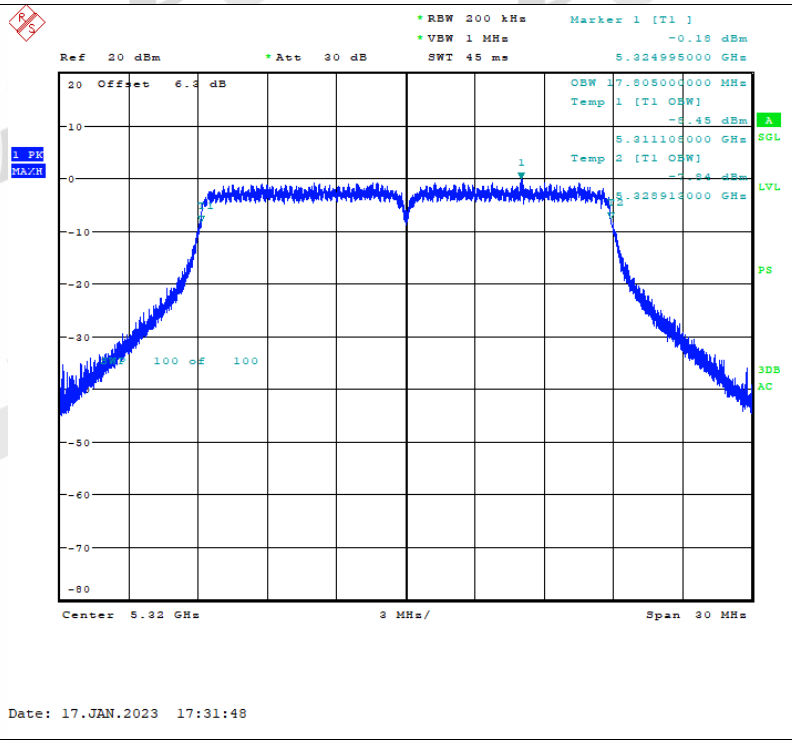
OBW NVNT n20 5280MHz Ant2



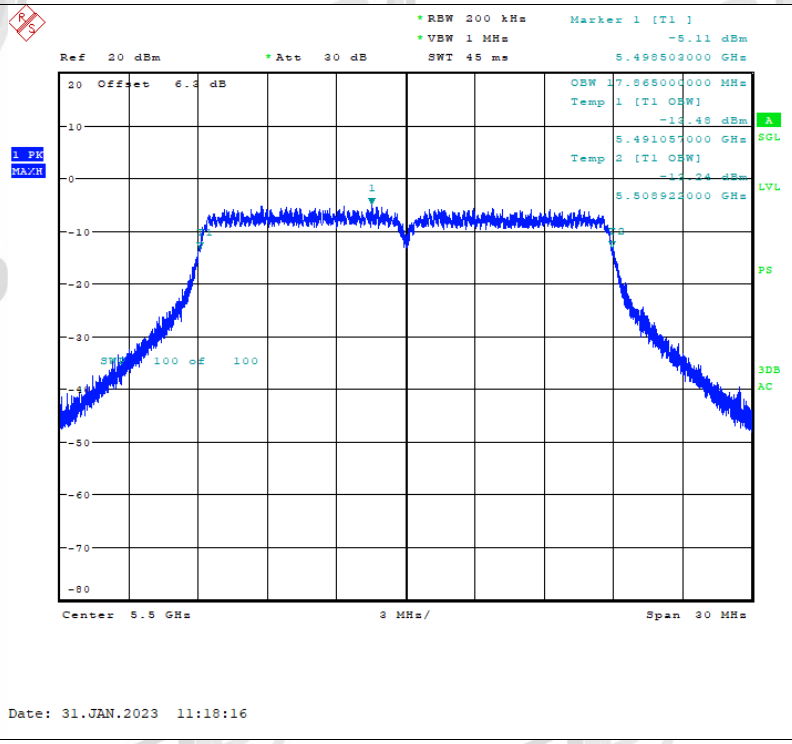
OBW NVNT n20 5320MHz Ant1



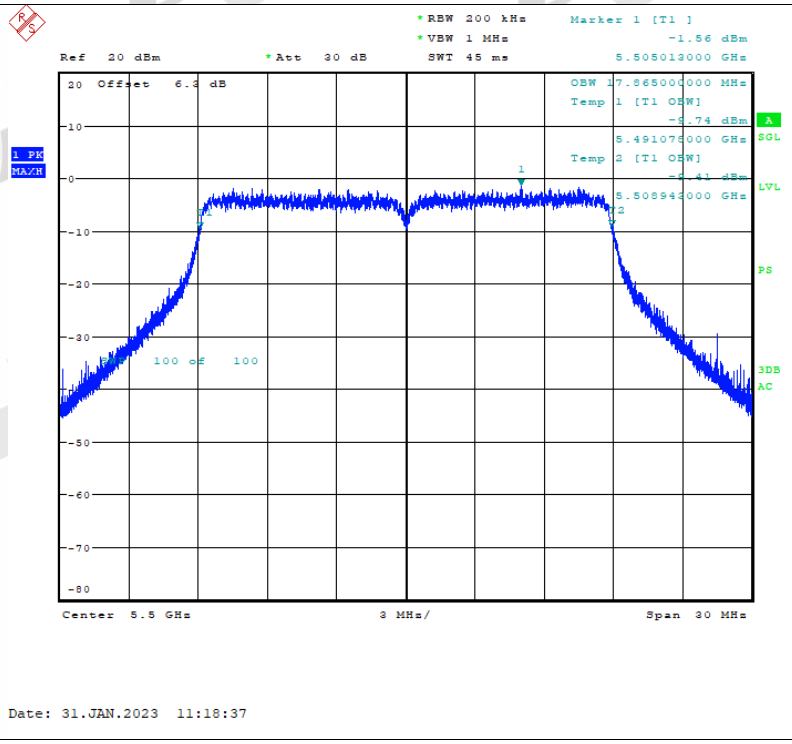
OBW NVNT n20 5320MHz Ant2



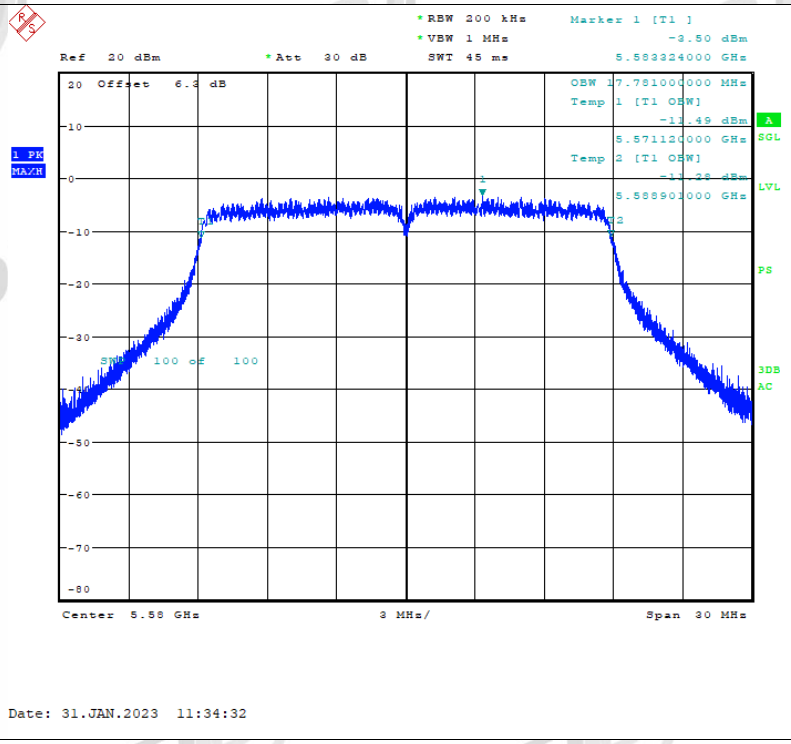
OBW NVNT n20 5500MHz Ant1



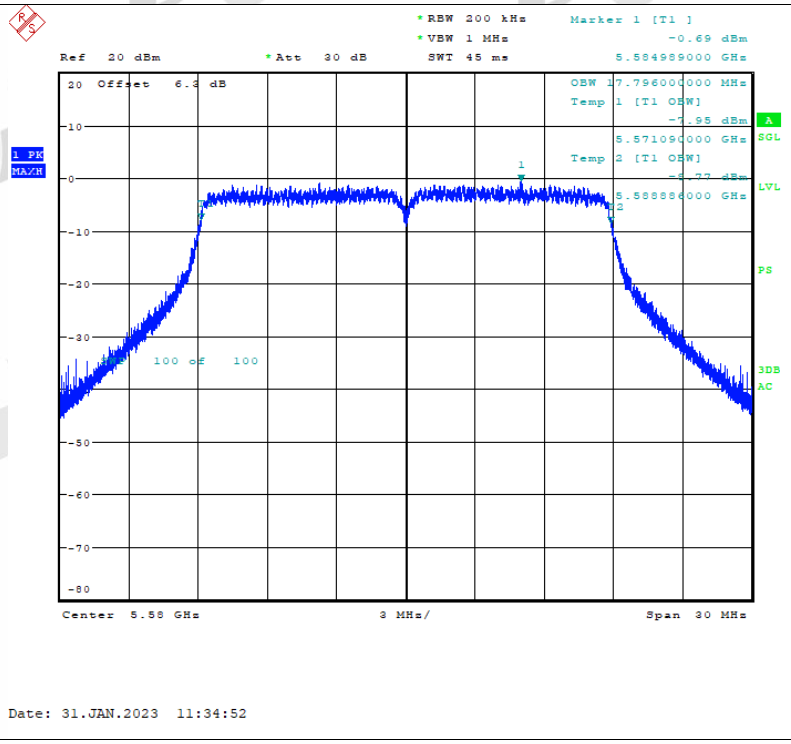
OBW NVNT n20 5500MHz Ant2



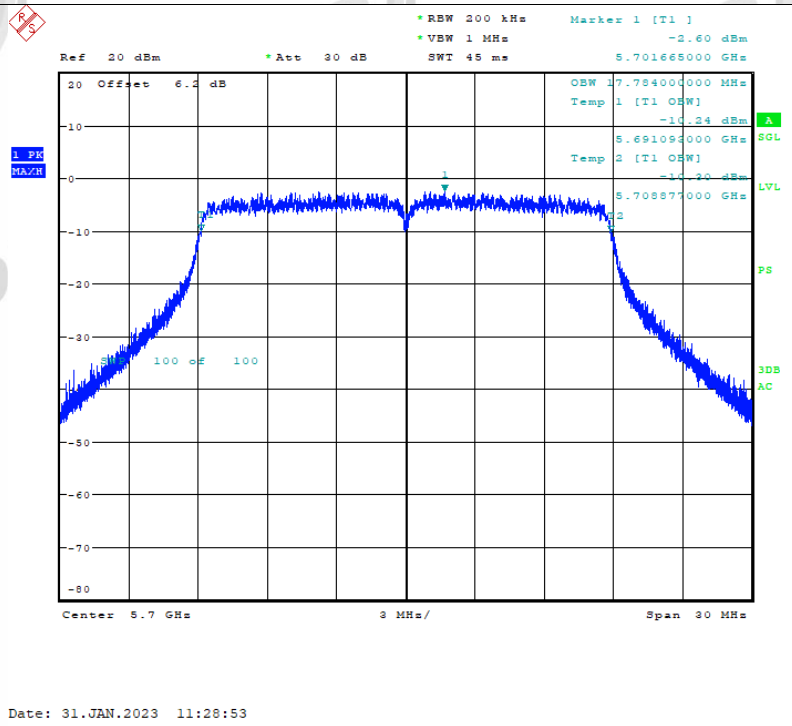
OBW NVNT n20 5580MHz Ant1



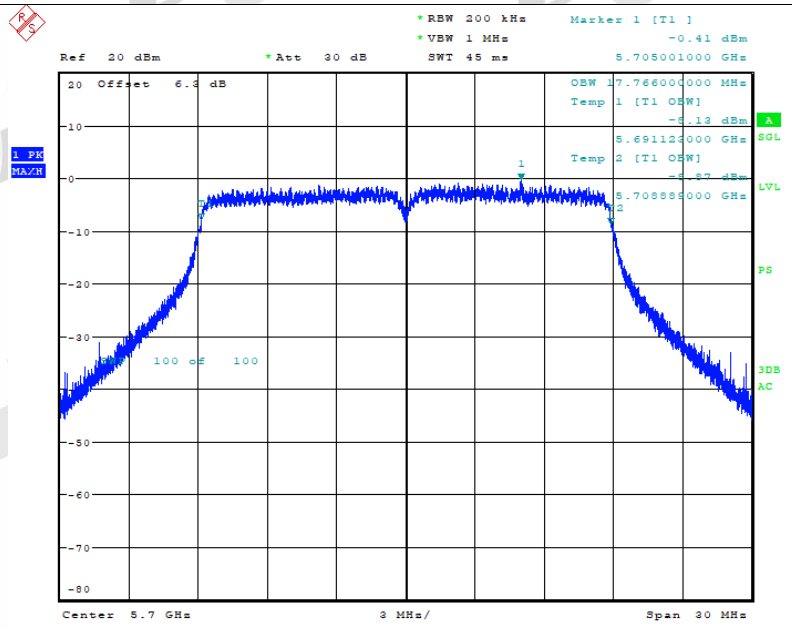
OBW NVNT n20 5580MHz Ant2



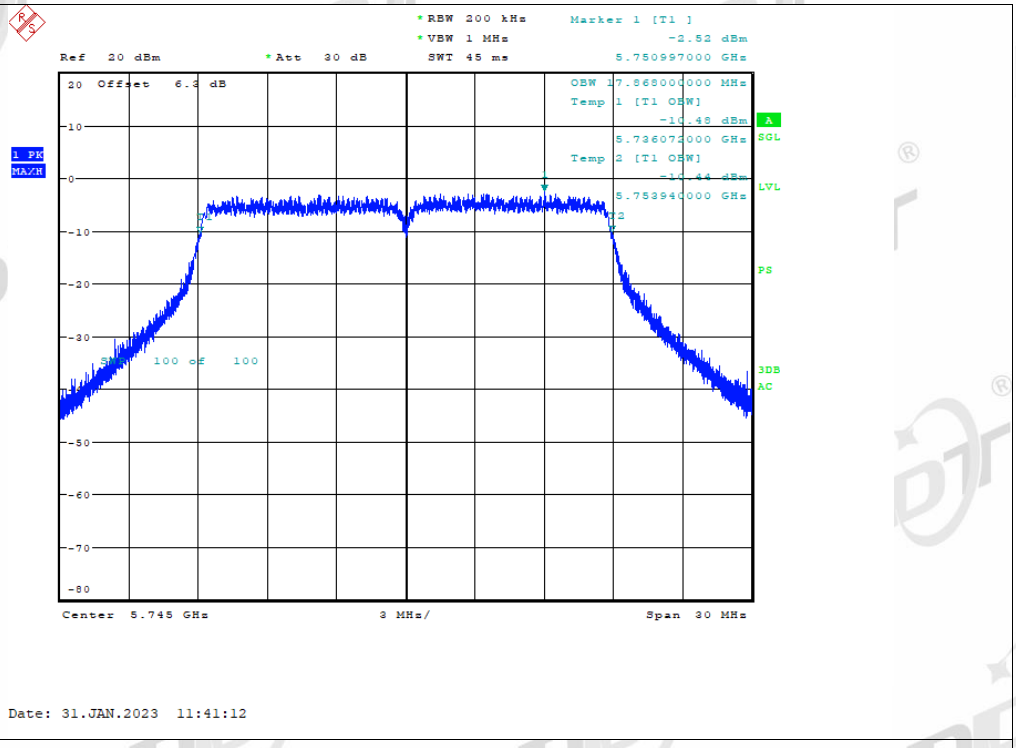
OBW NVNT n20 5700MHz Ant1



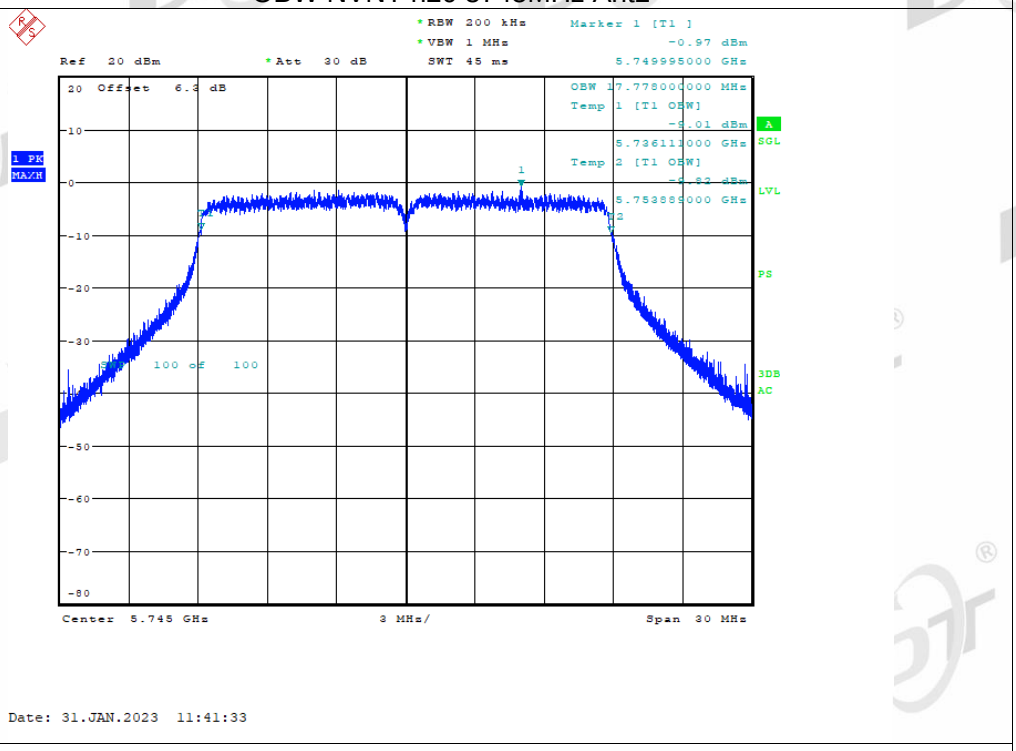
OBW NVNT n20 5700MHz Ant2



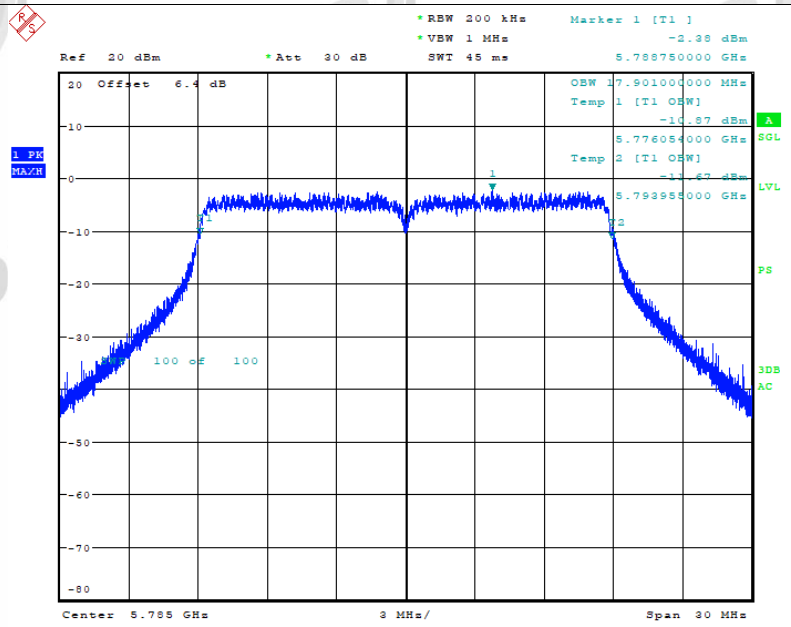
OBW NVNT n20 5745MHz Ant1



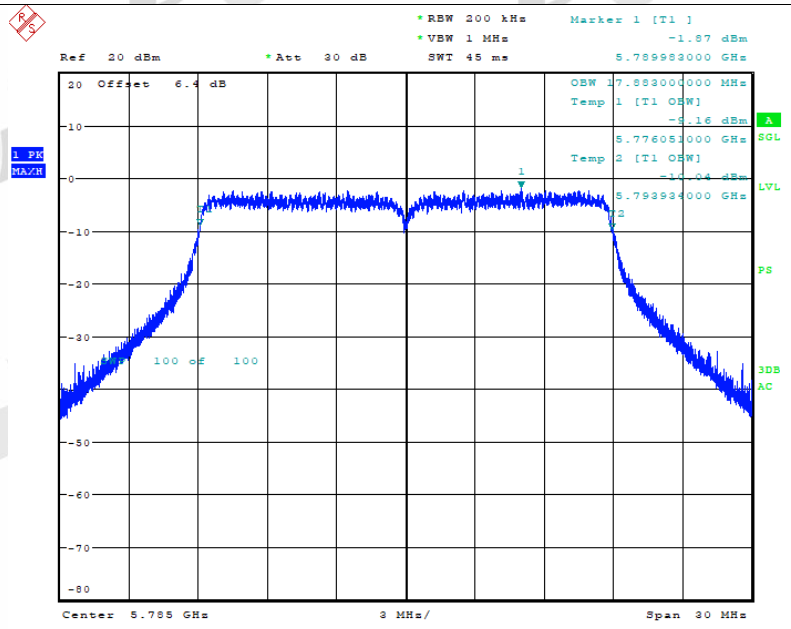
OBW NVNT n20 5745MHz Ant2



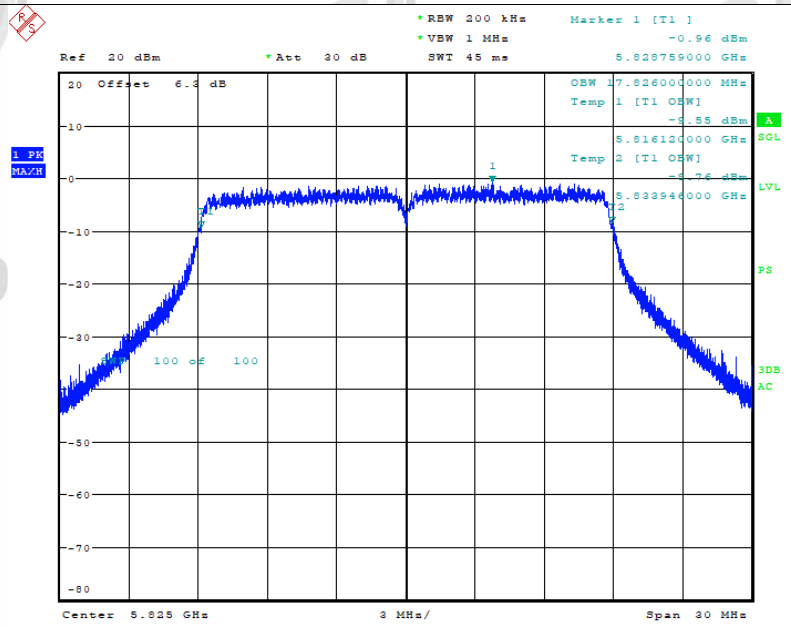
OBW NVNT n20 5785MHz Ant1



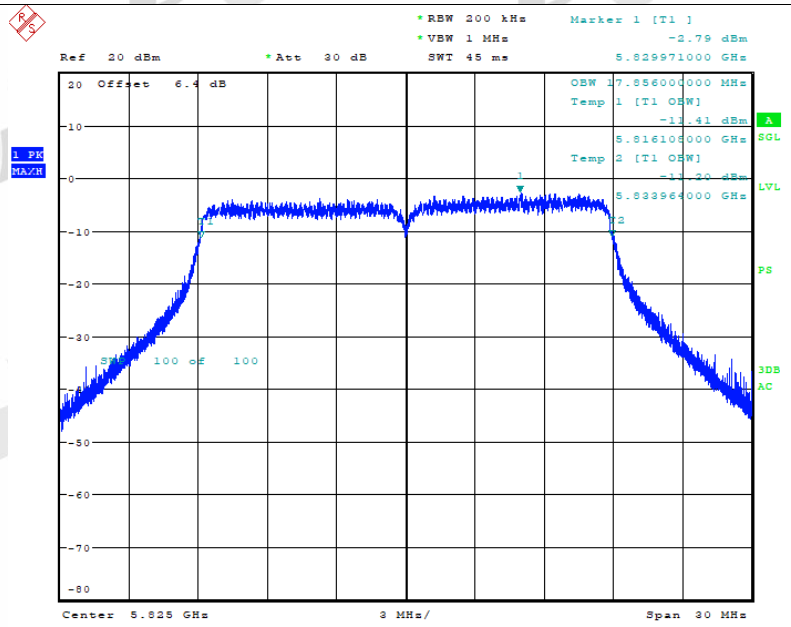
OBW NVNT n20 5785MHz Ant2



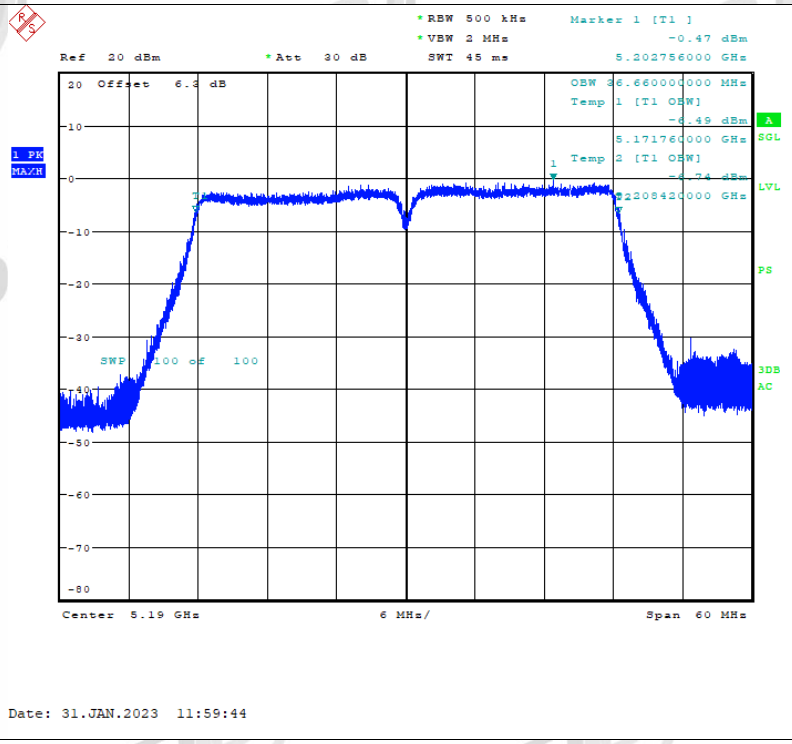
OBW NVNT n20 5825MHz Ant1



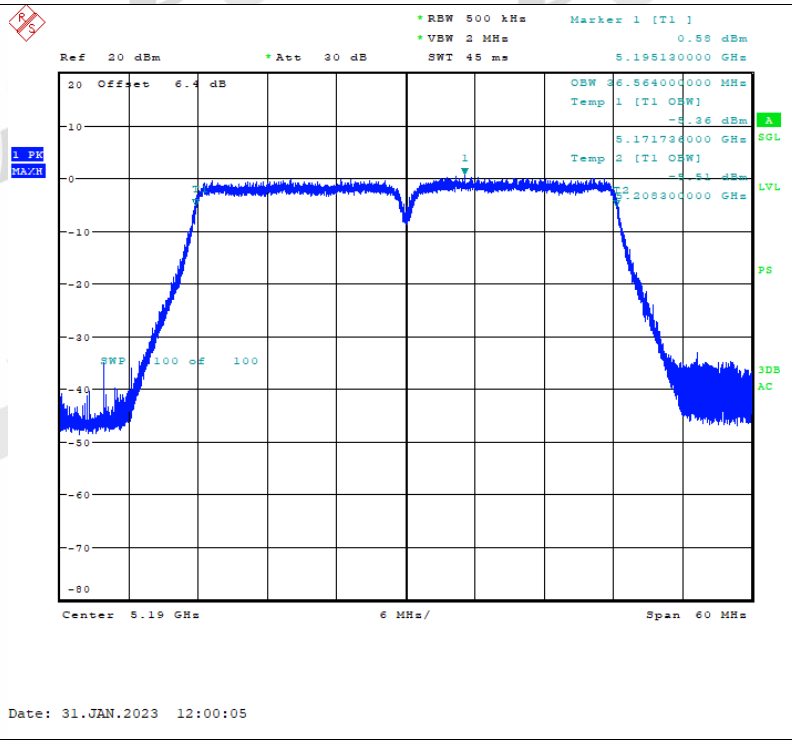
OBW NVNT n20 5825MHz Ant2



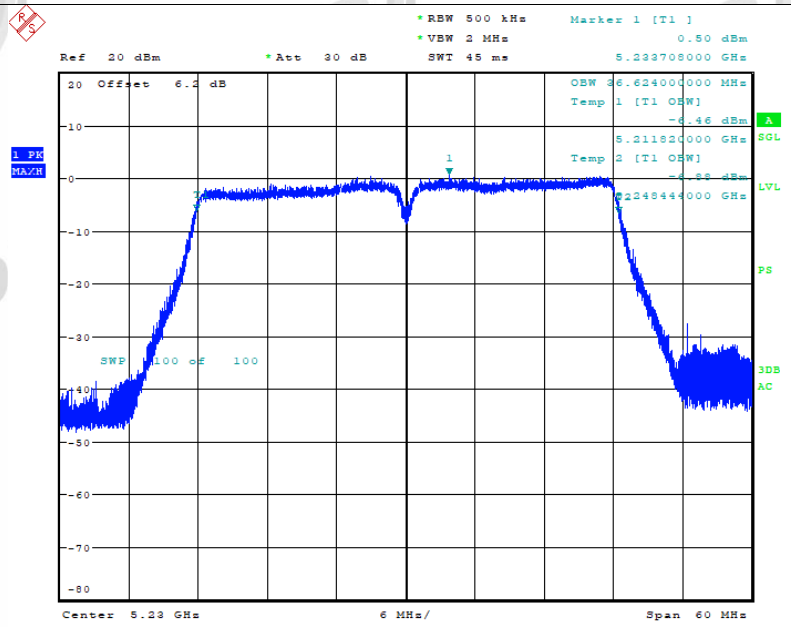
OBW NVNT n40 5190MHz Ant1



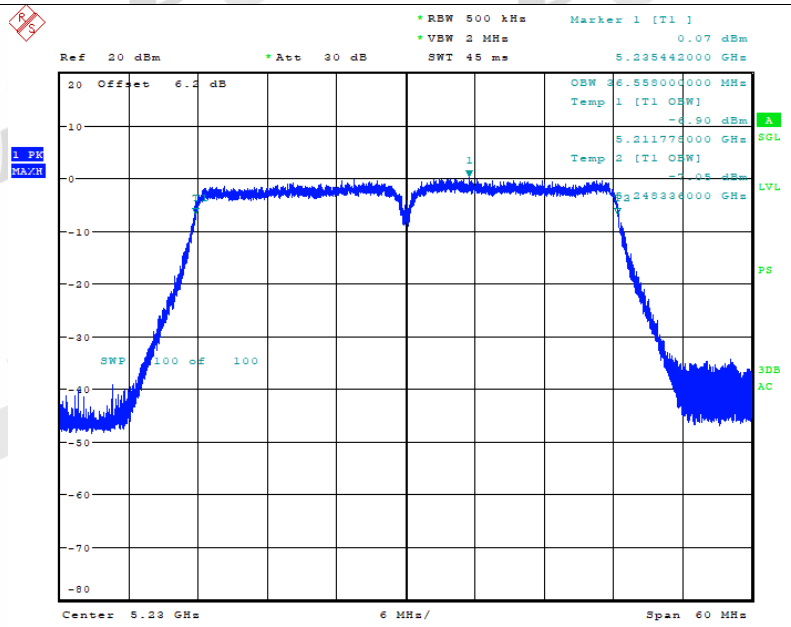
OBW NVNT n40 5190MHz Ant2



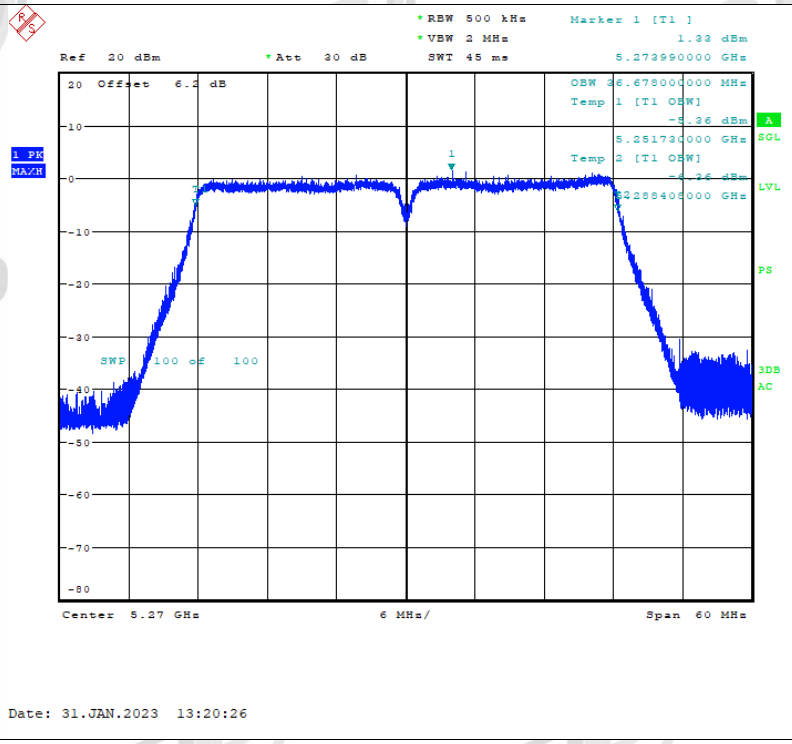
OBW NVNT n40 5230MHz Ant1



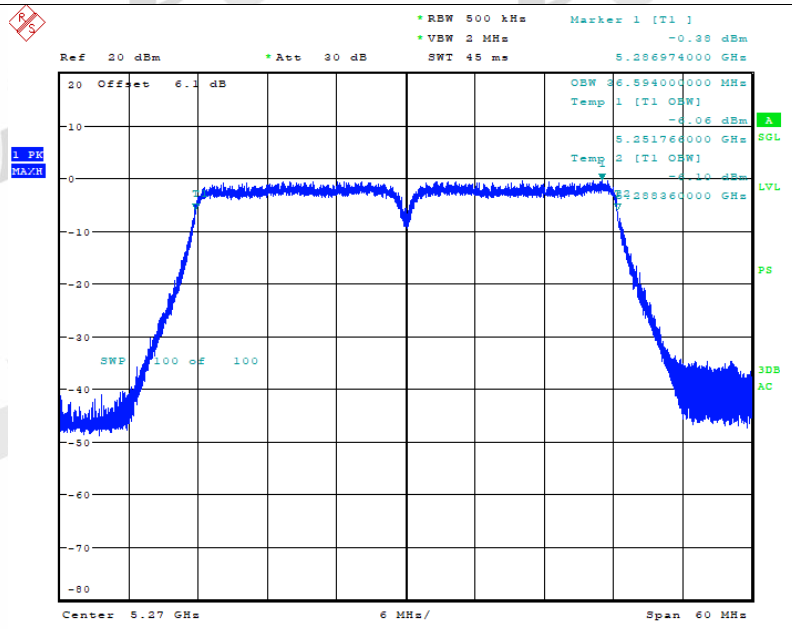
OBW NVNT n40 5230MHz Ant2



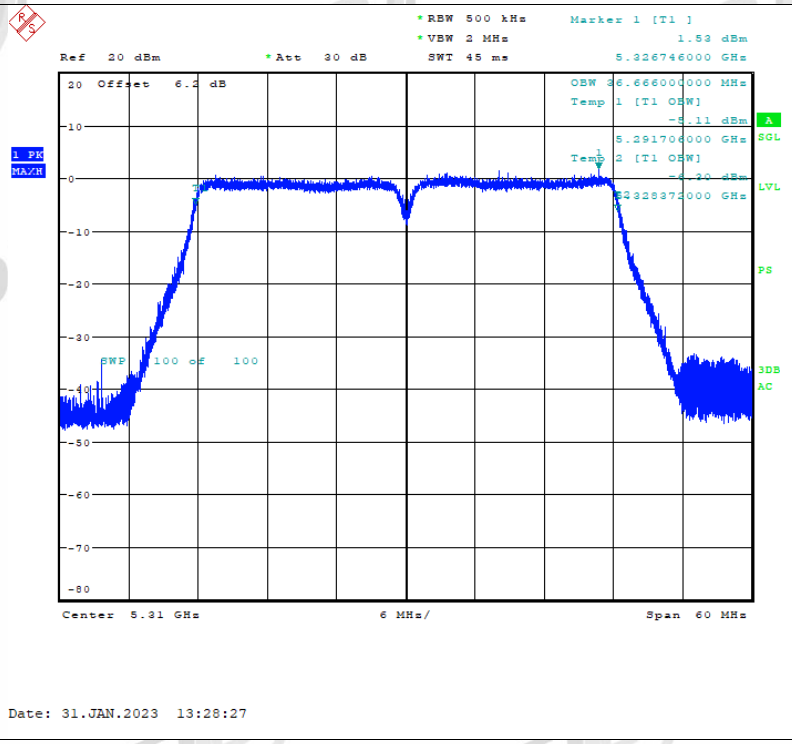
OBW NVNT n40 5270MHz Ant1



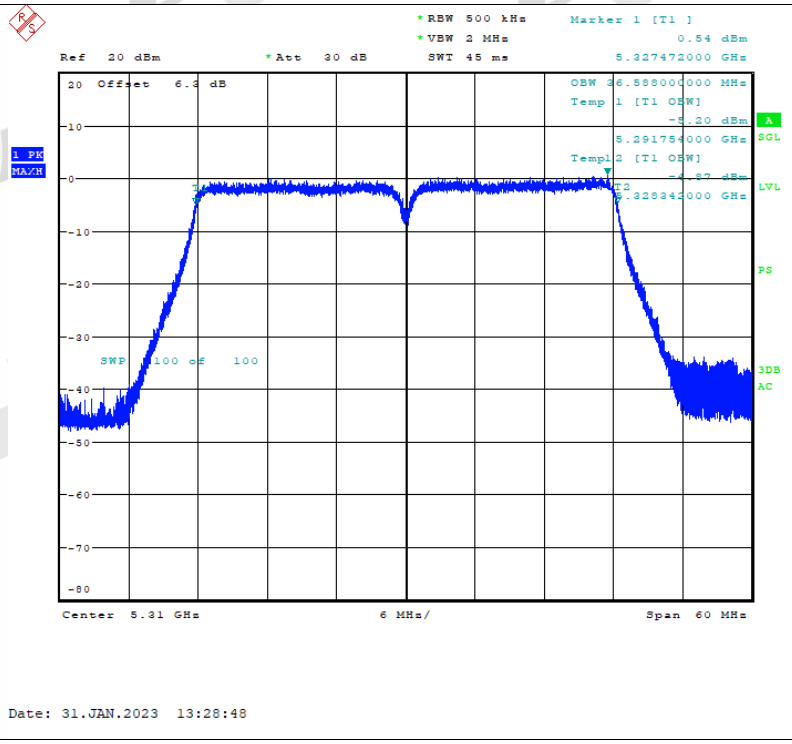
OBW NVNT n40 5270MHz Ant2



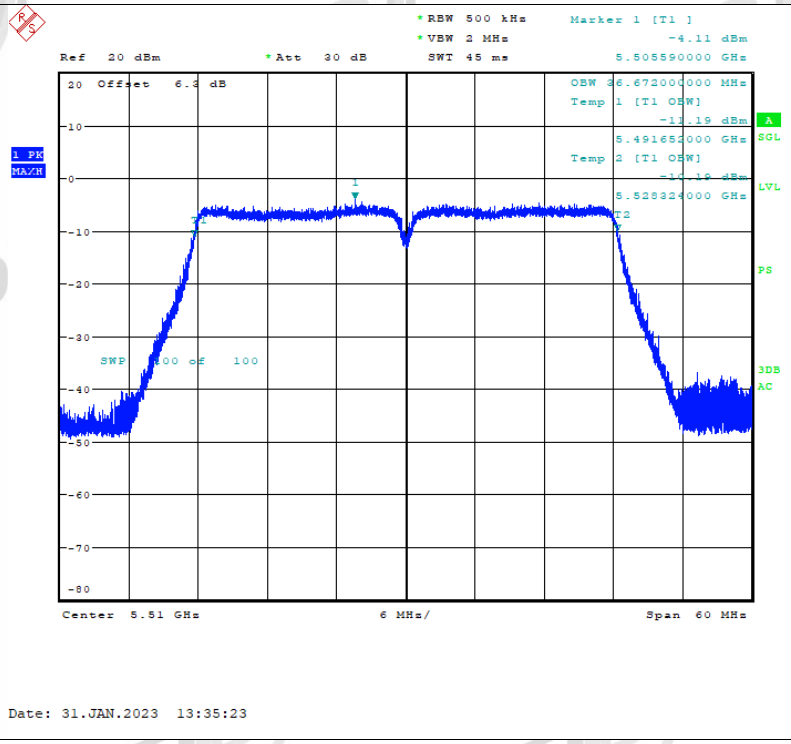
OBW NVNT n40 5310MHz Ant1



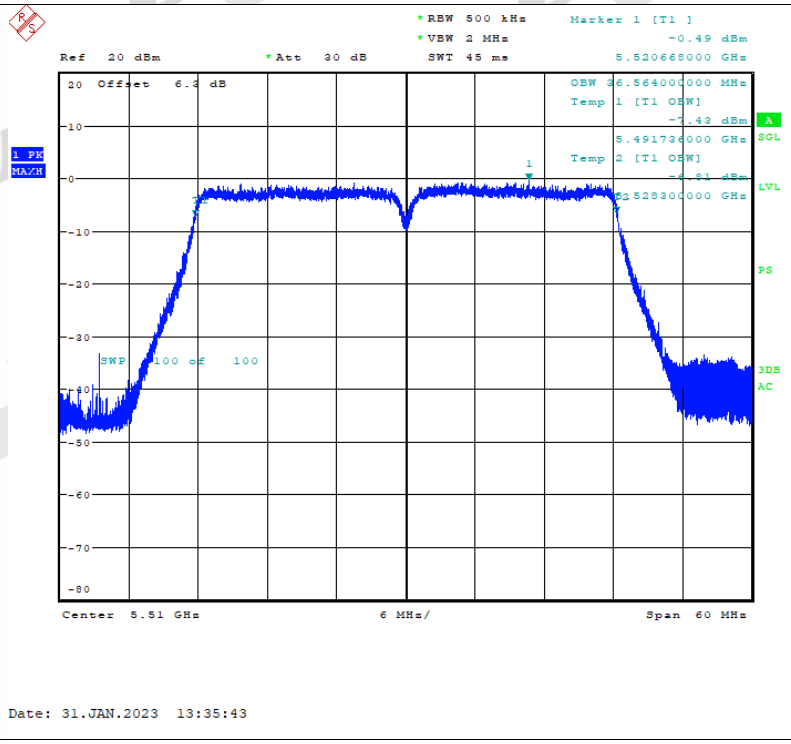
OBW NVNT n40 5310MHz Ant2



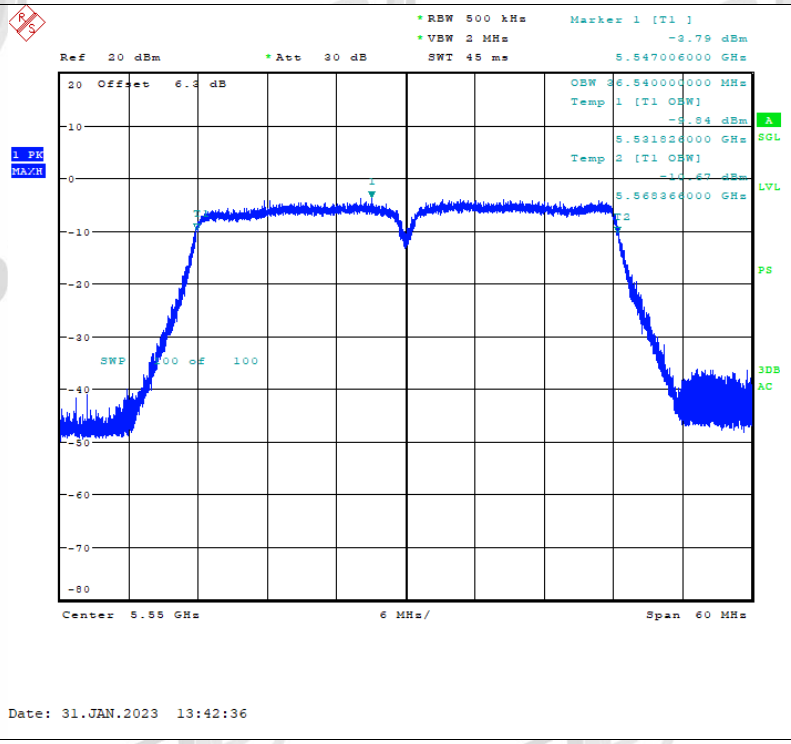
OBW NVNT n40 5510MHz Ant1



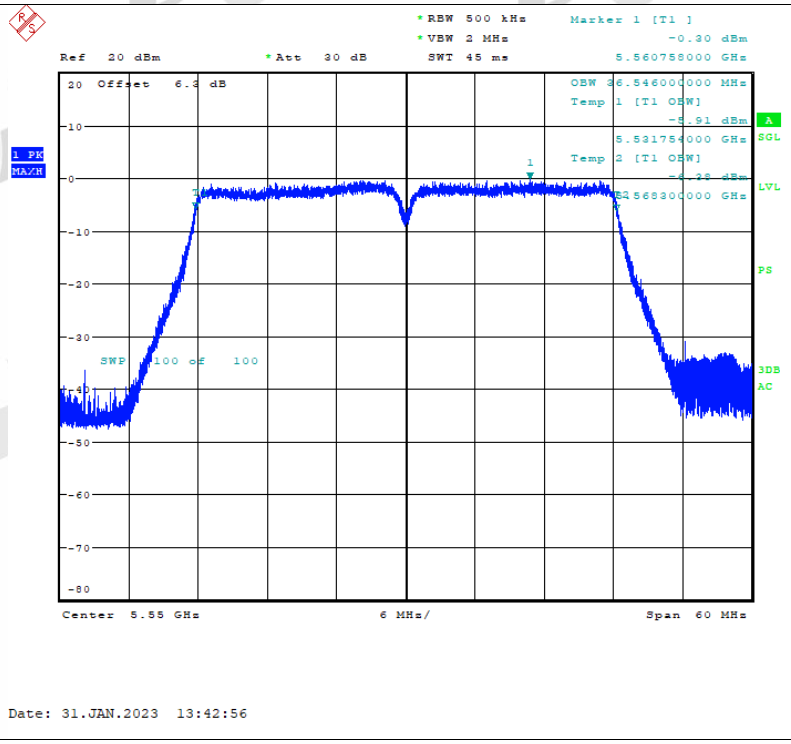
OBW NVNT n40 5510MHz Ant2



OBW NVNT n40 5550MHz Ant1



OBW NVNT n40 5550MHz Ant2



OBW NVNT n40 5670MHz Ant1