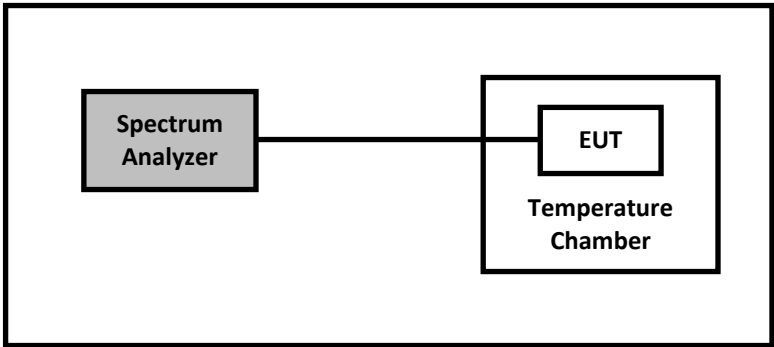


8.3 Test Setup Diagram



8.4 Test Equipment List and Details

BACL No.	Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Interval
912	Rohde & Schwarz	Signal Analyzer	FSV40	1321.3008k3 9-101203-UW	2024-07-25	1 year
1461	Rohde & Schwarz	Signal Analyzer	FSQ26	200103	2024-08-06	1 year
1060	BACL	Temperature and Humidity Chamber	BTH-150-40	30078	2024-12-03	1 year
-	-	RF Cable	-	-	Each time ¹	N/A

Note¹: cable included in the test set-up was checked each time before testing.

Statement of Traceability: *BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 “A2LA Policy on Metrological Traceability”.*

8.5 Test Environmental Conditions

Temperature:	17 to 19 °C
Relative Humidity:	47.2 to 51.7 %
ATM Pressure:	101.2 to 101.7 kPa

The testing was performed by Arturo Reyes from 2024-12-04 to 2024-12-27 at RF test site.

8.6 Test Results

Normal Voltage, -30°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0166	470.1831	470.0999	0.3191	0.000032	±50	±0.005	Pass
	539.025	538.9416	539.1081	539.0249	0.2783	0.000028	±50	±0.005	Pass
	607.950	607.8663	608.0334	607.9499	0.2467	0.000025	±50	±0.005	Pass
HDM	470.100	470.0436	470.1552	470.0994	1.2763	0.000128	±50	±0.005	Pass
	539.025	538.9677	539.0808	539.0243	1.3914	0.000139	±50	±0.005	Pass
	607.950	607.8945	608.0049	607.9497	0.4935	0.000049	±50	±0.005	Pass

Normal Voltage, -20°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0162	470.1836	470.0999	0.1393	0.000014	±50	±0.005	Pass
	539.025	538.9394	539.1081	539.0237	2.3830	0.000238	±50	±0.005	Pass
	607.950	607.8653	608.0331	607.9492	1.3258	0.000133	±50	±0.005	Pass
HDM	470.100	470.0439	470.1555	470.0997	0.6584	0.000066	±50	±0.005	Pass
	539.025	538.9693	539.0801	539.0247	0.5046	0.000051	±50	±0.005	Pass
	607.950	607.8938	608.0053	607.9496	0.7098	0.000071	±50	±0.005	Pass

Normal Voltage, -10°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0175	470.1838	470.1007	-1.4359	-0.000144	±50	±0.005	Pass
	539.025	538.9407	539.1090	539.0248	0.3126	0.000031	±50	±0.005	Pass
	607.950	607.8664	608.0337	607.9500	-0.0773	-0.000008	±50	±0.005	Pass
HDM	470.100	470.0447	470.1557	470.1002	-0.3595	-0.000036	±50	±0.005	Pass
	539.025	538.9689	539.0815	539.0252	-0.3822	-0.000038	±50	±0.005	Pass
	607.950	607.8937	608.0055	607.9496	0.6325	0.000063	±50	±0.005	Pass

Normal Voltage, 0°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0161	470.1825	470.0993	1.4157	0.000142	±50	±0.005	Pass
	539.025	538.9415	539.1087	539.0251	-0.1911	-0.000019	±50	±0.005	Pass
	607.950	607.8655	608.0329	607.9492	1.2805	0.000128	±50	±0.005	Pass
HDM	470.100	470.0441	470.1551	470.0996	0.8977	0.000090	±50	±0.005	Pass
	539.025	538.9690	539.0796	539.0243	1.3209	0.000132	±50	±0.005	Pass
	607.950	607.8931	608.0060	607.9496	0.7246	0.000073	±50	±0.005	Pass

Normal Voltage, 10°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	607.8654	608.0331	607.9493	1.2337	0.000123	±50	±0.005	Pass
	539.025	538.9444	539.1070	539.0257	-1.2875	-0.000129	±50	±0.005	Pass
	607.950	607.8671	608.0324	607.9498	0.3701	0.000037	±50	±0.005	Pass
HDM	470.100	470.0434	470.1551	470.0993	1.5954	0.000160	±50	±0.005	Pass
	539.025	538.9407	539.1087	539.0247	0.5566	0.000056	±50	±0.005	Pass
	607.950	607.8949	608.0051	607.9500	0.0156	0.000002	±50	±0.005	Pass

Normal Voltage, 20°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0166	470.1819	470.0993	1.5954	0.000160	±50	±0.005	Pass
	539.025	538.9398	539.1081	539.0240	1.9480	0.000195	±50	±0.005	Pass
	607.950	607.8645	608.0337	607.9491	1.4804	0.000148	±50	±0.005	Pass
HDM	470.100	470.0440	470.1554	470.0997	0.6382	0.000064	±50	±0.005	Pass
	539.025	538.9695	539.0808	539.0251	-0.2087	-0.000021	±50	±0.005	Pass
	607.950	607.8936	608.0052	607.9494	0.9557	0.000096	±50	±0.005	Pass

Normal Voltage, 30°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0160	470.1824	470.0992	1.6358	0.000164	±50	±0.005	Pass
	539.025	538.9408	539.1077	539.0243	1.3747	0.000137	±50	±0.005	Pass
	607.950	607.8661	608.0332	607.9496	0.6168	0.000062	±50	±0.005	Pass
HDM	470.100	470.0440	470.1546	470.0993	1.5752	0.000158	±50	±0.005	Pass
	539.025	538.9693	539.0812	539.0253	-0.5389	-0.000054	±50	±0.005	Pass
	607.950	607.8944	608.0050	607.9497	0.5091	0.000051	±50	±0.005	Pass

Normal Voltage, 40°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0159	470.1839	470.0999	0.1989	0.000020	±50	±0.005	Pass
	539.025	538.9416	539.1073	539.0245	1.0083	0.000101	±50	±0.005	Pass
	607.950	607.8650	608.0329	607.9490	1.6506	0.000165	±50	±0.005	Pass
HDM	470.100	470.0437	470.1549	470.0993	1.4752	0.000148	±50	±0.005	Pass
	539.025	538.9694	539.0801	539.0248	0.3998	0.000040	±50	±0.005	Pass
	607.950	607.8930	608.0058	607.9494	1.0025	0.000100	±50	±0.005	Pass

Normal Voltage, 50°C Temperature

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0151	470.1838	470.0995	1.1561	0.000116	±50	±0.005	Pass
	539.025	538.9418	539.1061	539.0240	1.9480	0.000195	±50	±0.005	Pass
	607.950	607.8661	608.0332	607.9497	0.5091	0.000051	±50	±0.005	Pass
HDM	470.100	470.0448	470.1551	470.1000	0.0606	0.000006	±50	±0.005	Pass
	539.025	538.9701	539.0800	539.0250	-0.0872	-0.000009	±50	±0.005	Pass
	607.950	607.8930	608.0050	607.9490	1.6038	0.000160	±50	±0.005	Pass

Normal Temperature, -15% (3.06V) Voltage

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0160	470.1840	470.1000	0.0000	0.000000	±50	±0.005	Pass
	539.025	538.9404	539.1084	539.0244	1.1131	0.000111	±50	±0.005	Pass
	607.950	607.8654	608.0336	607.9495	0.8636	0.000086	±50	±0.005	Pass
HDM	470.100	470.0443	470.1550	470.0997	0.7381	0.000074	±50	±0.005	Pass
	539.025	538.9697	539.0796	539.0246	0.6790	0.000068	±50	±0.005	Pass
	607.950	607.8942	608.0059	607.9501	-0.1234	-0.000012	±50	±0.005	Pass

Normal Temperature, +15% (4.14V) Voltage

Mode	Channel Frequency (MHz)	Left Frequency (MHz)	Right Frequency (MHz)	Center Frequency (MHz)	Deviation (ppm)	Deviation (%)	Limits (ppm)	Limits (%)	Result
D2	470.100	470.0151	470.1834	470.0993	1.5954	0.000160	±50	±0.005	Pass
	539.025	538.9413	539.1075	539.0244	1.1131	0.000111	±50	±0.005	Pass
	607.950	607.8658	608.0339	607.9498	0.2780	0.000028	±50	±0.005	Pass
HDM	470.100	470.0441	470.1552	470.0997	0.7381	0.000074	±50	±0.005	Pass
	539.025	538.9685	539.0804	539.0244	1.0779	0.000108	±50	±0.005	Pass
	607.950	607.8931	608.0045	607.9488	1.9738	0.000197	±50	±0.005	Pass

Note 1: Center frequency (MHz) = [Left Frequency (MHz) + Right Frequency (MHz)] / 2

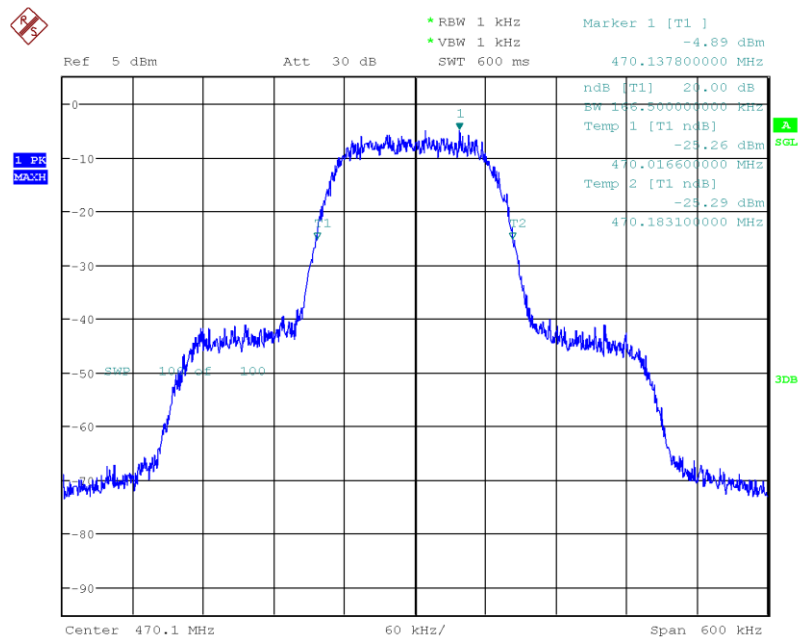
Note 2: PPM = [Center Frequency (MHz) – Channel Frequency (MHz)] / Channel Frequency (MHz) * 1000000

Note 2: % Deviation = [Center Frequency (MHz) – Channel Frequency (MHz)] / Channel Frequency (MHz) * 100

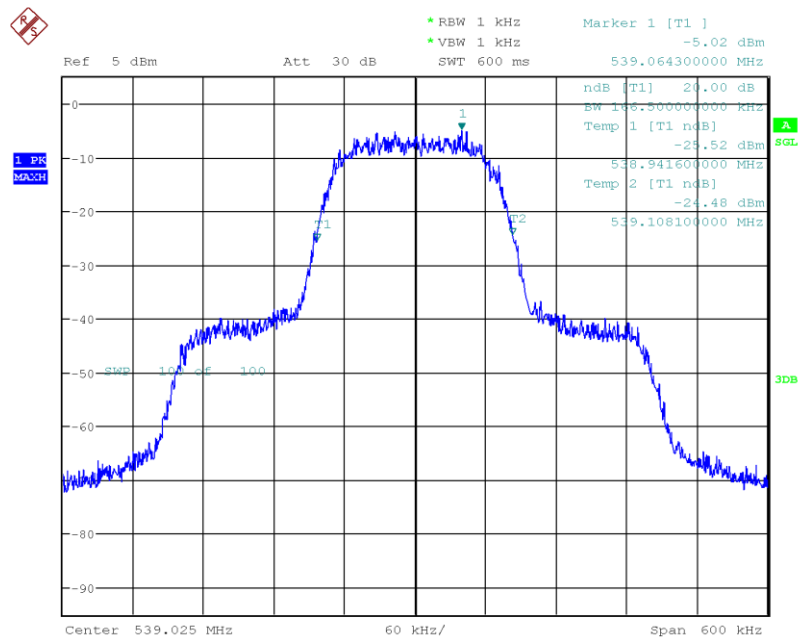
Please refer to Section 8.7 for detailed Frequency Stability plots.

8.7 Frequency Stability Test Plots

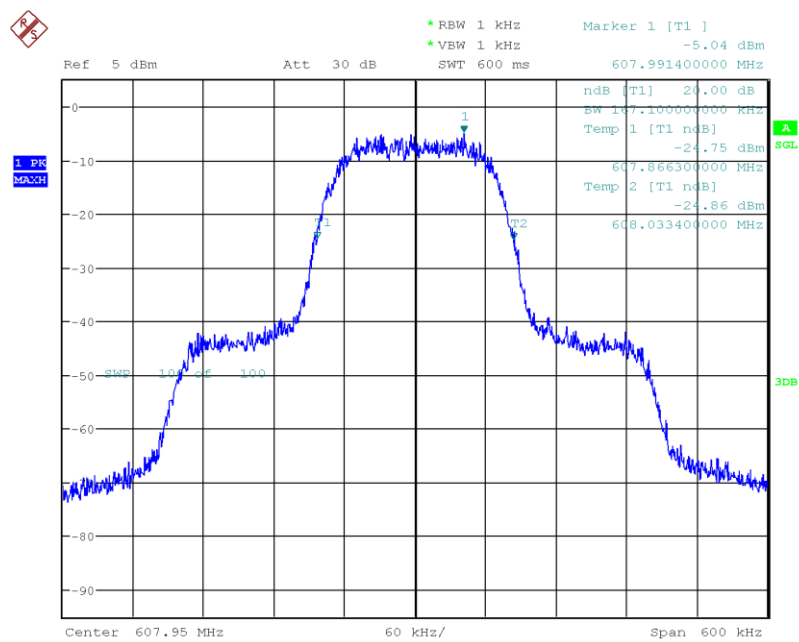
Normal Voltage, -30°C, D2 mode, 470.100 MHz



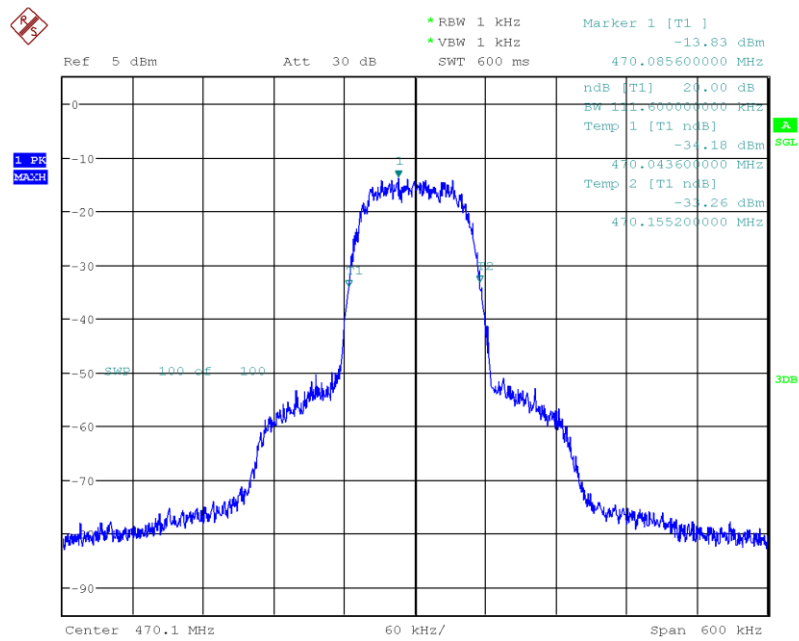
Normal Voltage, -30°C, D2 mode, 539.025 MHz



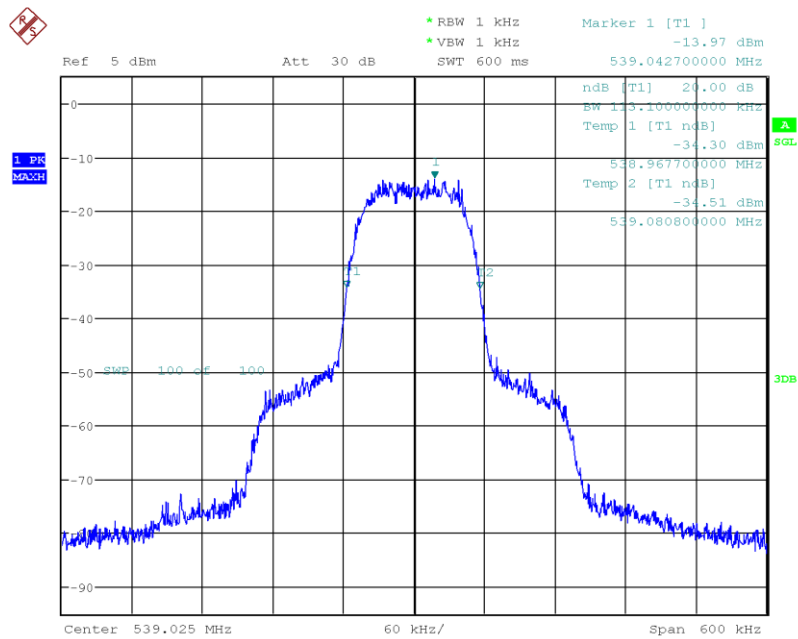
Normal Voltage, -30°C, D2 mode, 607.950 MHz



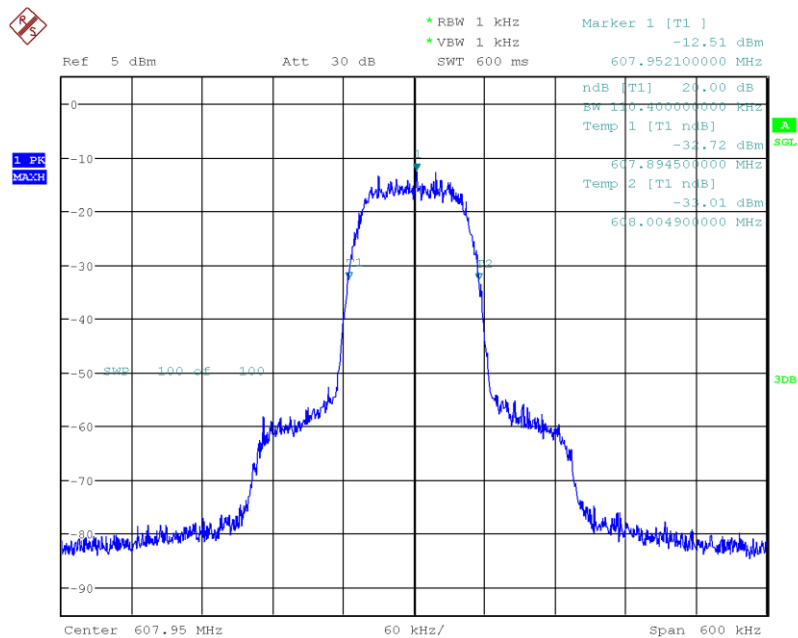
Normal Voltage, -30°C, HDM mode, 470.100 MHz



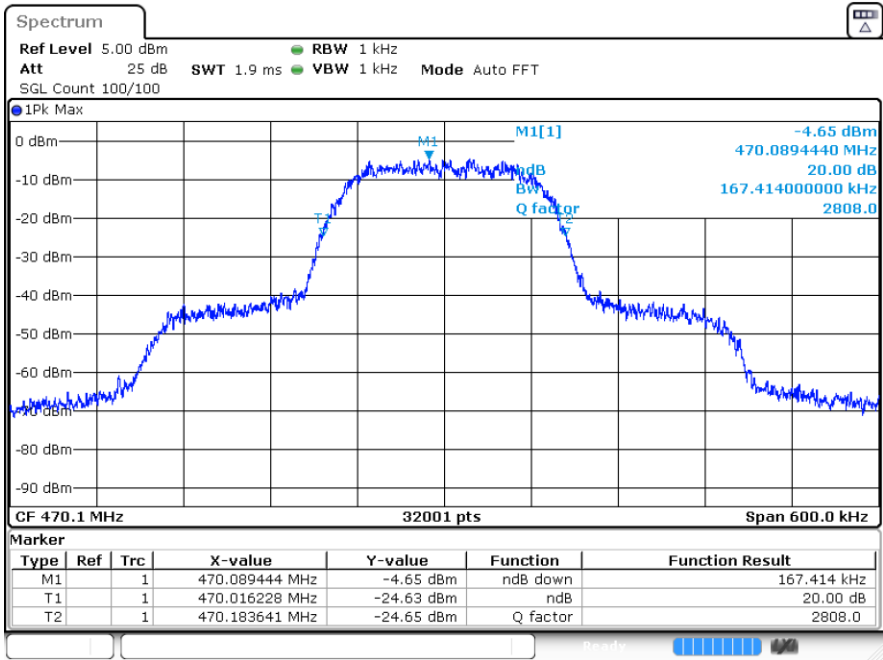
Normal Voltage, -30°C, HDM mode, 539.025 MHz



Normal Voltage, -30°C, HDM mode, 607.950 MHz

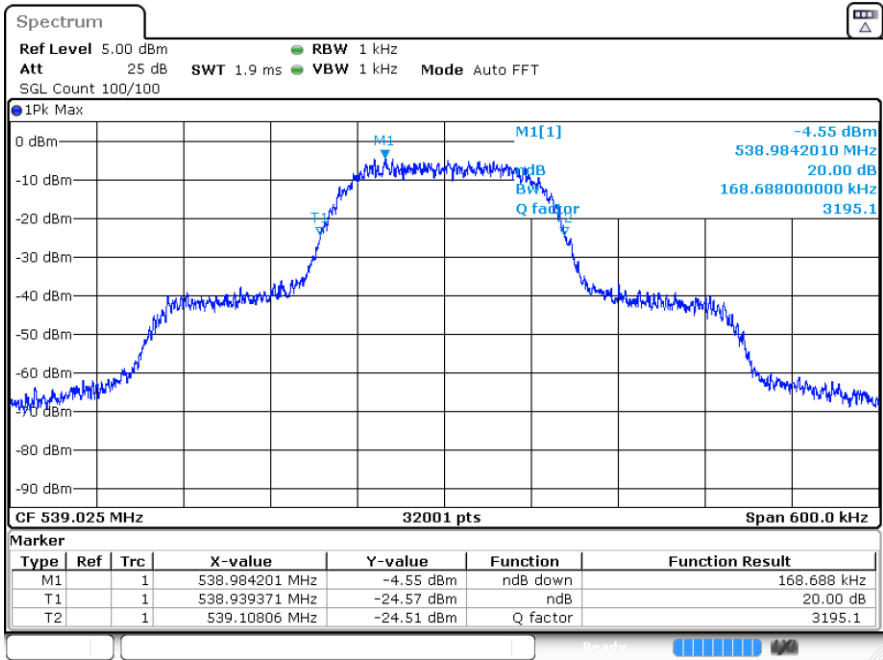


Normal Voltage, -20°C, D2 mode, 470.100 MHz



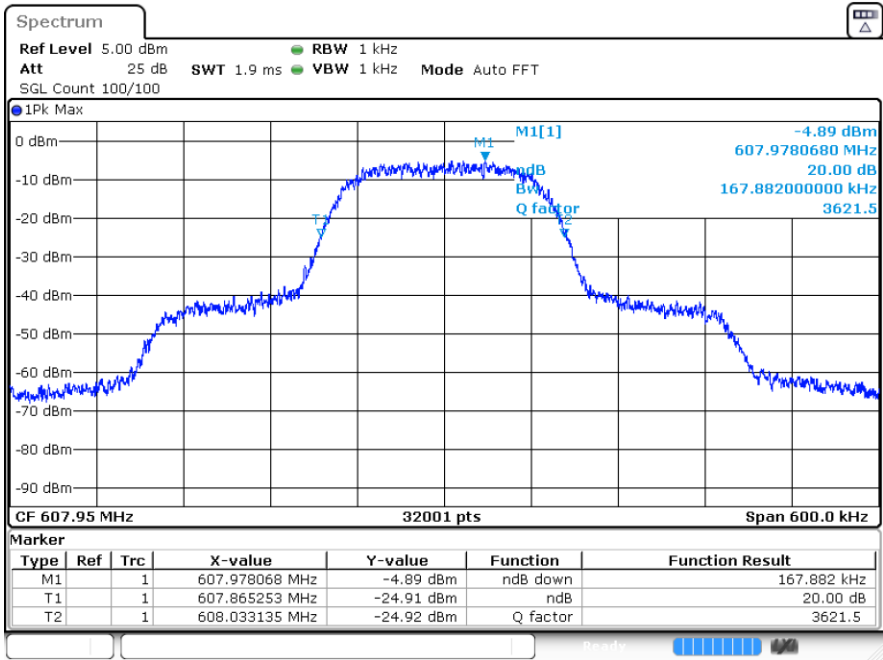
Date: 17. DEC. 2024 18:24:57

Normal Voltage, -20°C, D2 mode, 539.025 MHz



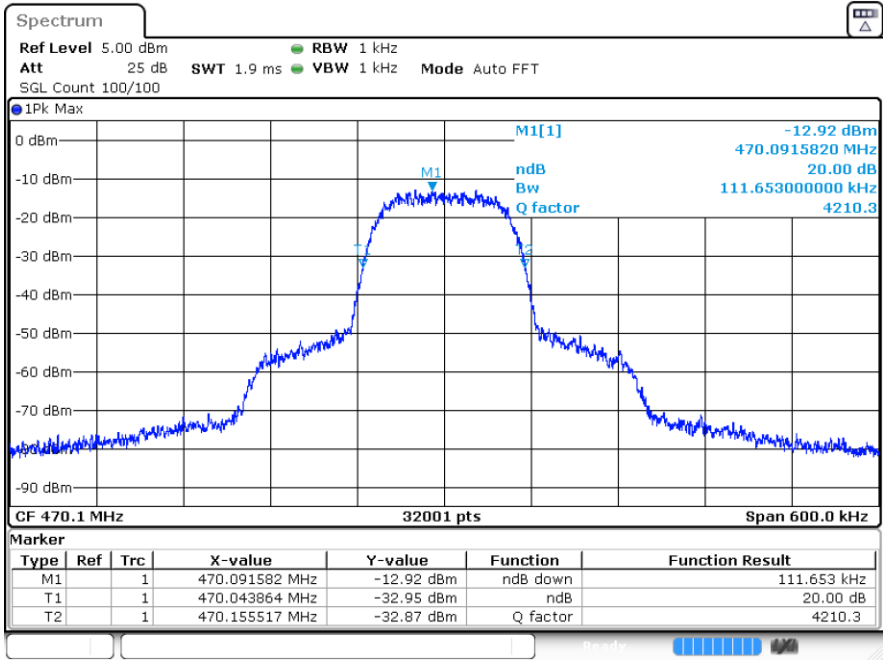
Date: 17. DEC. 2024 18:34:59

Normal Voltage, -20°C, D2 mode, 607.950 MHz



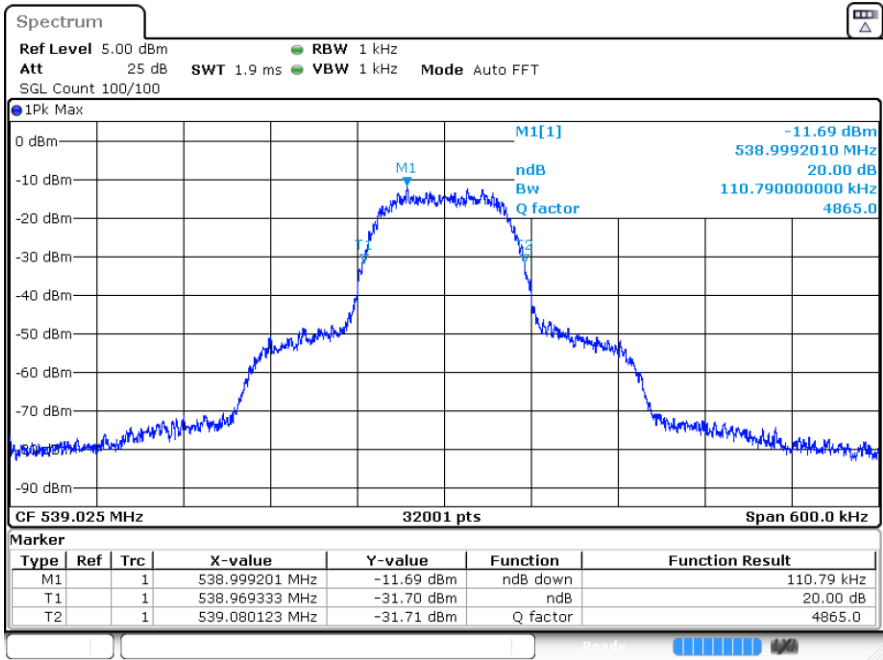
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Normal Voltage, -20°C, HDM mode, 470.100 MHz



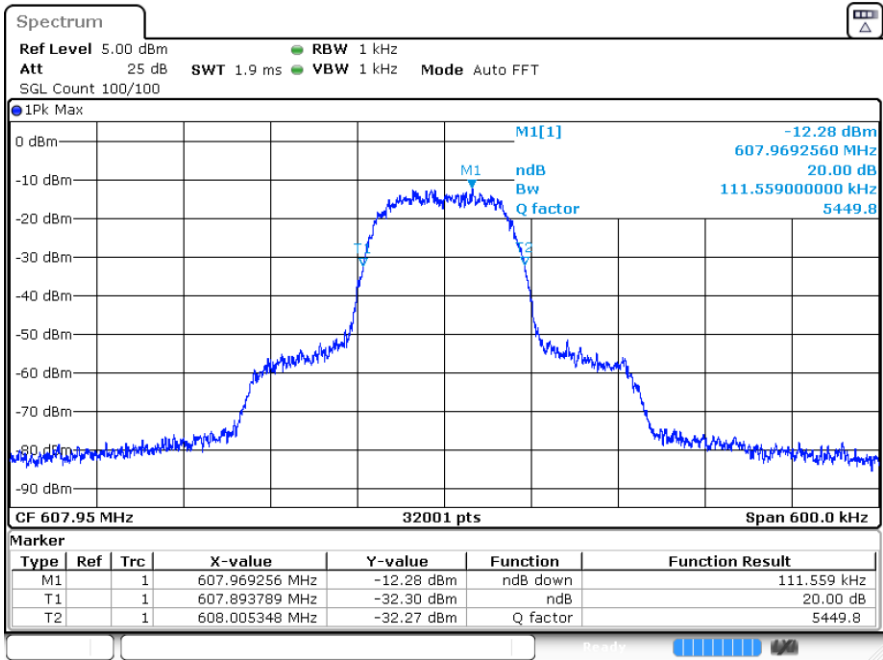
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Normal Voltage, -20°C, HDM mode, 539.025 MHz



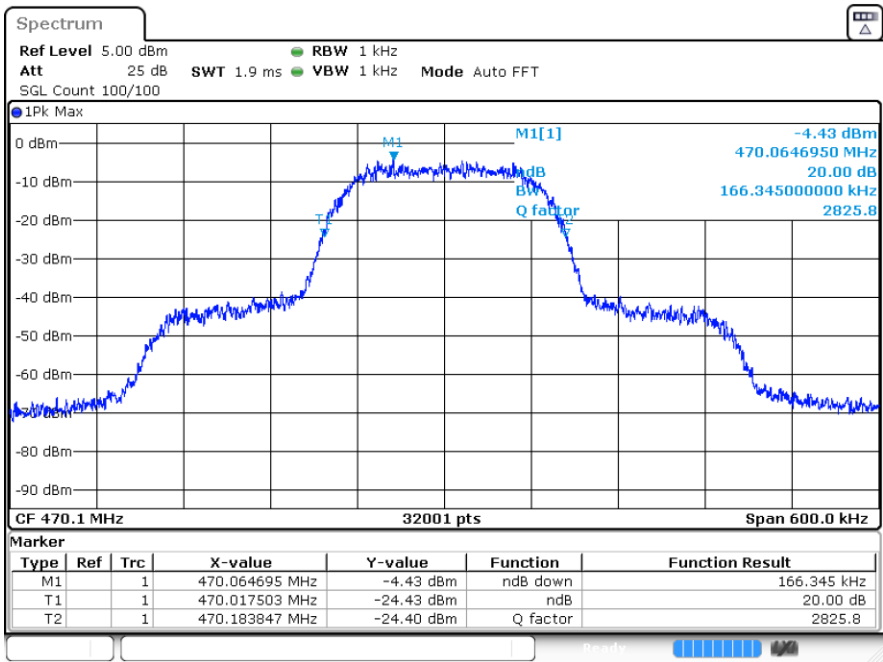
Date: 17.DEC.2024 17:58:42

Normal Voltage, -20°C, HDM mode, 607.950 MHz



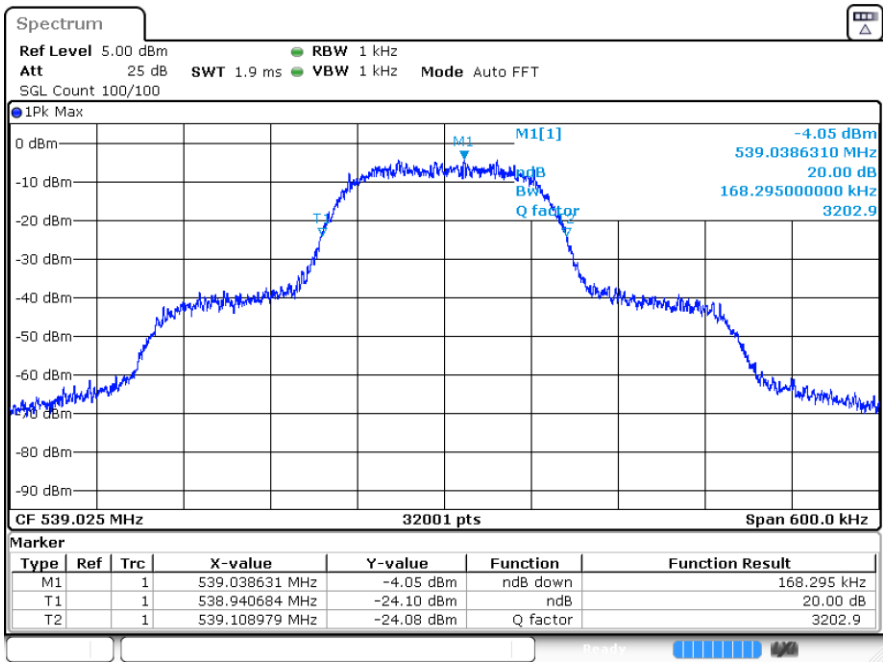
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Normal Voltage, -10°C, D2 mode, 470.100 MHz



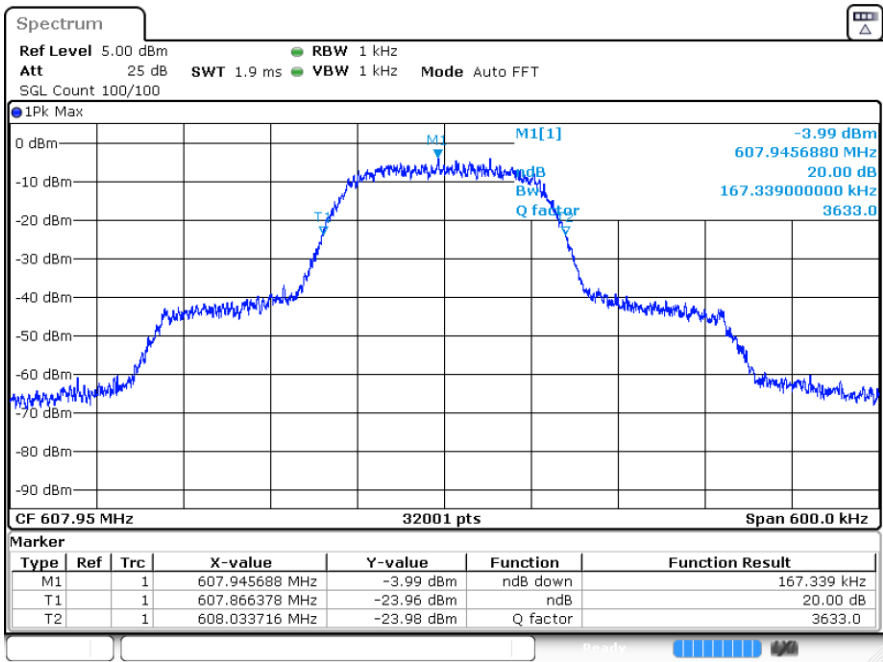
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Normal Voltage, -10°C, D2 mode, 539.025 MHz



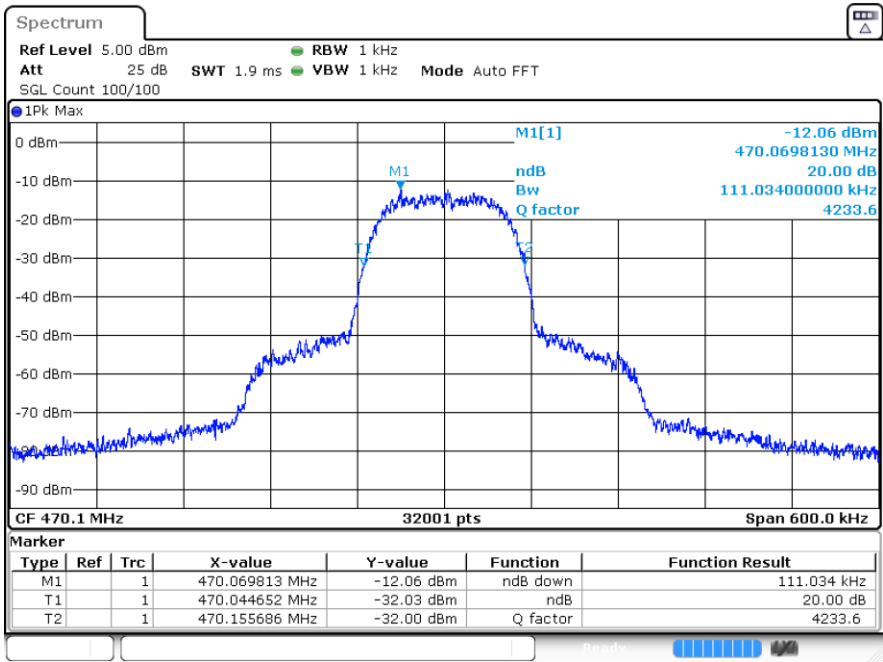
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Normal Voltage, -10°C, D2 mode, 607.950 MHz



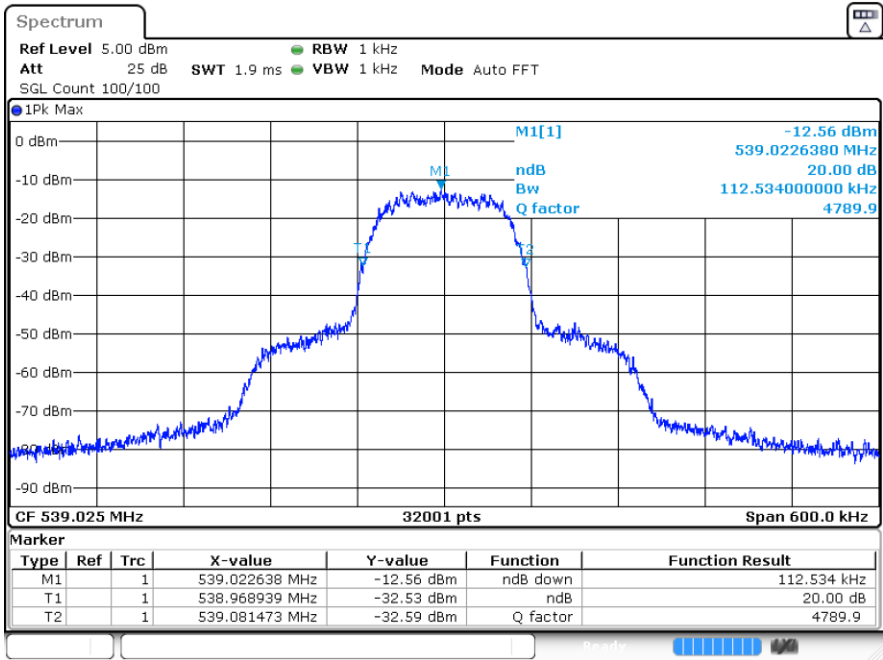
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Normal Voltage, -10°C, HDM mode, 470.100 MHz



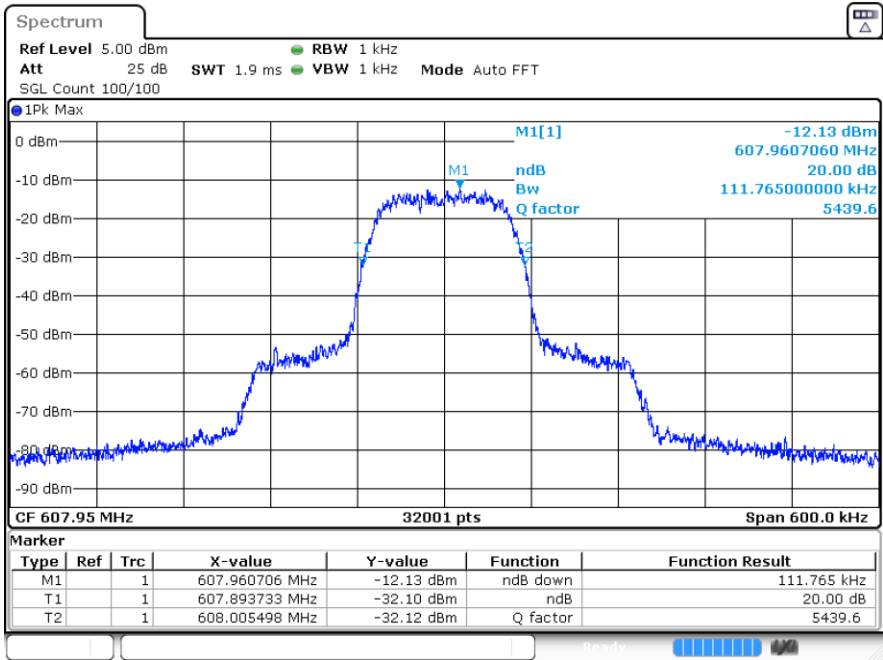
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Normal Voltage, -10°C, HDM mode, 539.025 MHz



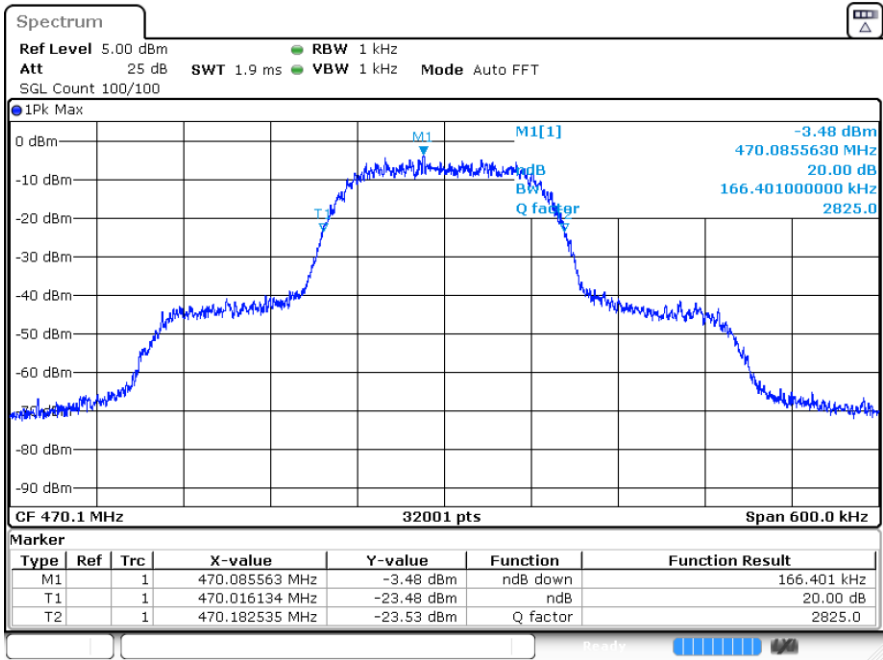
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Normal Voltage, -10°C, HDM mode, 607.950 MHz



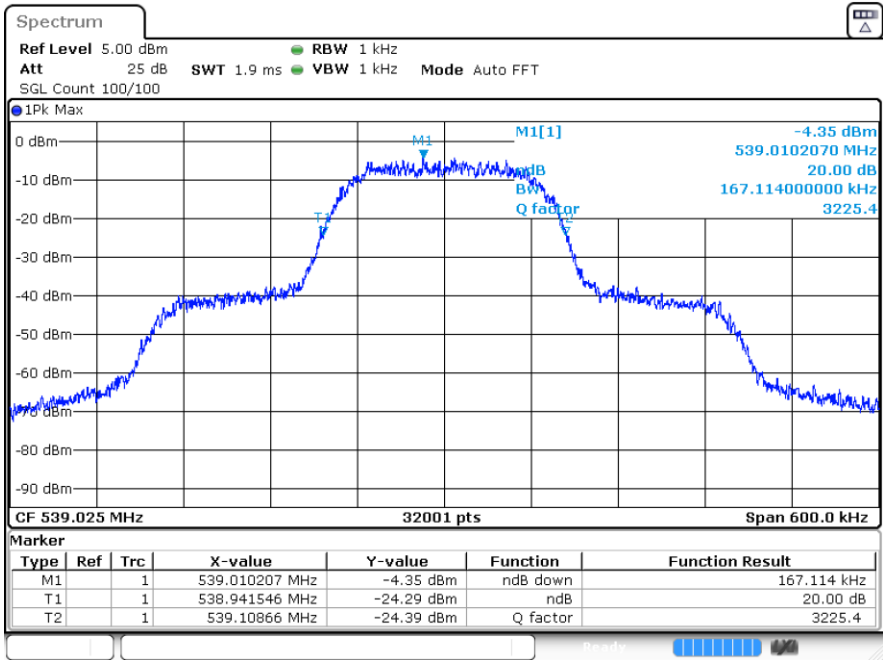
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Normal Voltage, 0°C, D2 mode, 470.100 MHz



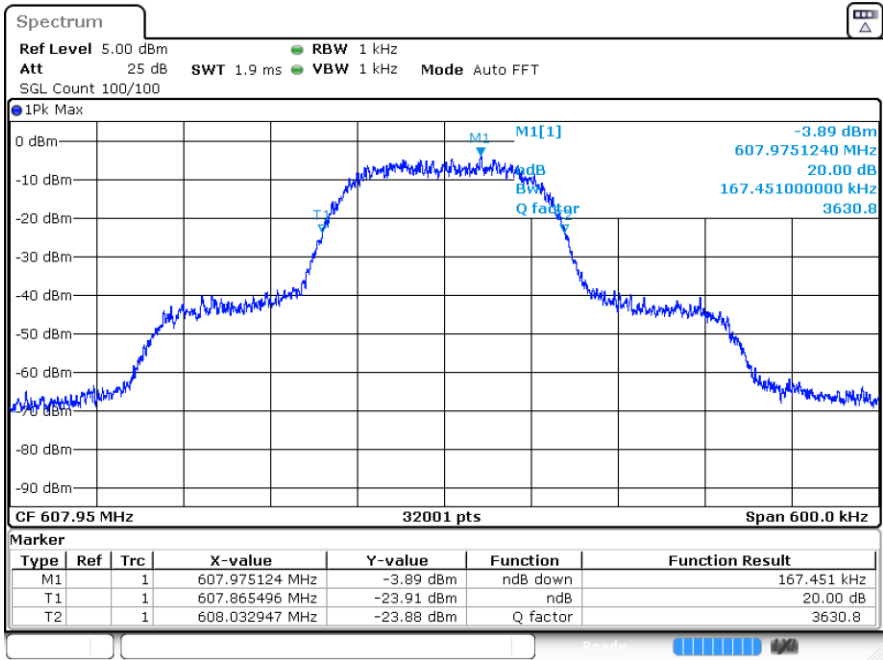
Date: 17 DEC 2024 22:08:33

Normal Voltage, 0°C, D2 mode, 539.025 MHz

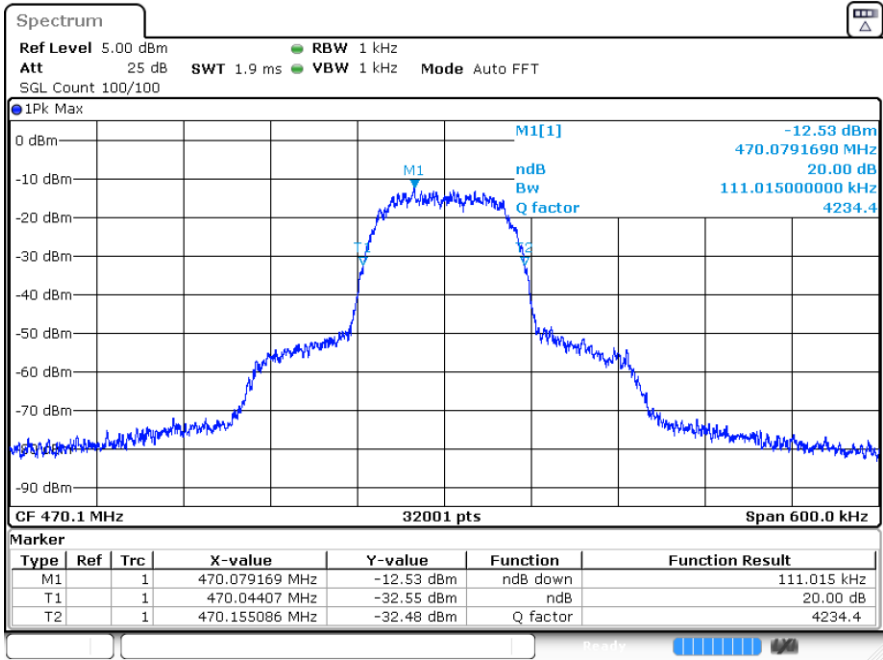


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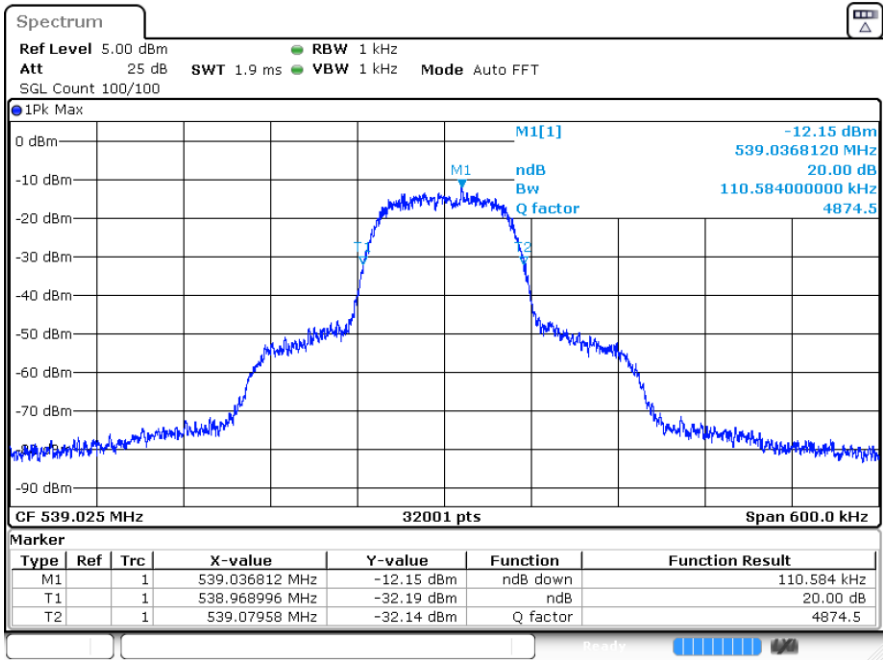
Normal Voltage, 0°C, D2 mode, 607.950 MHz



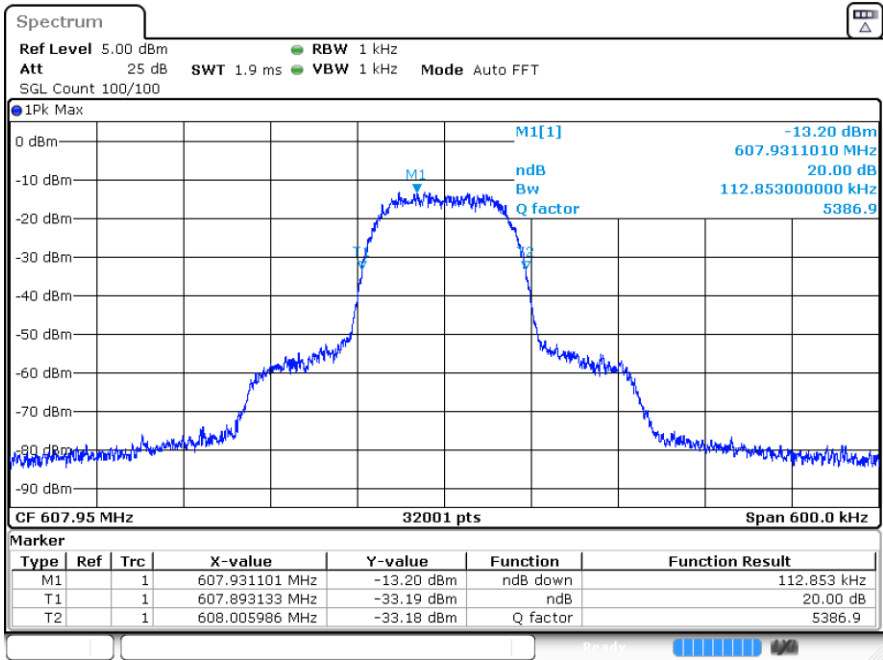
Normal Voltage, 0°C, HDM mode, 470.100 MHz



Normal Voltage, 0°C, HDM mode, 539.025 MHz



Normal Voltage, 0°C, HDM mode, 607.950 MHz



Spectrum

Ref Level 5.00 dBm RBW 1 kHz
 Att 25 dB SWT 1.9 ms VBW 1 kHz Mode Auto FFT
 SGL Count 100/100

1Pk Max

0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm
 -60 dBm
 -70 dBm
 -80 dBm
 -90 dBm

CF 470.1 MHz 32001 pts Span 600.0 kHz

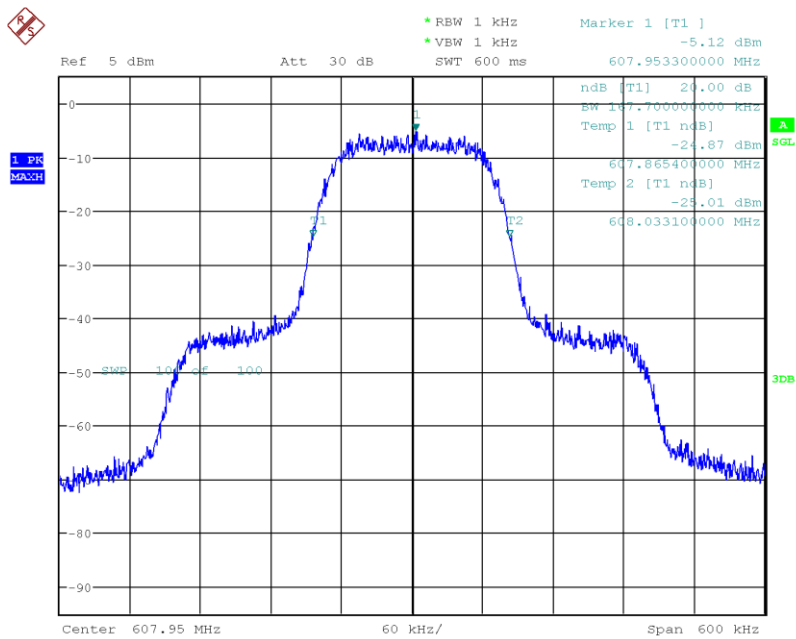
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	470.068163 MHz	-3.70 dBm	ndB down	166.045 kHz
T1		1	470.016884 MHz	-23.68 dBm	ndB	20.00 dB
T2		1	470.182929 MHz	-23.69 dBm	Q factor	2831.0

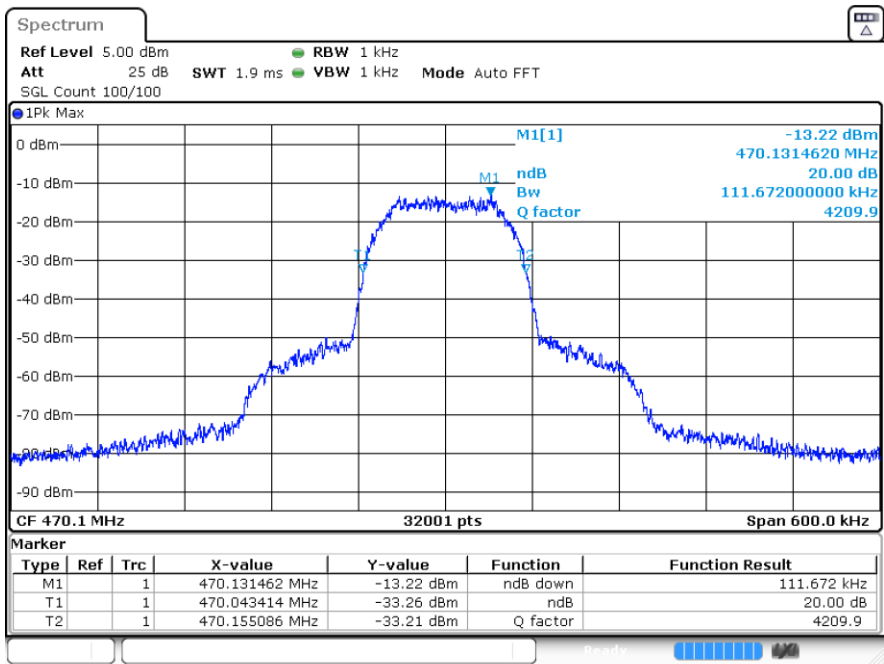
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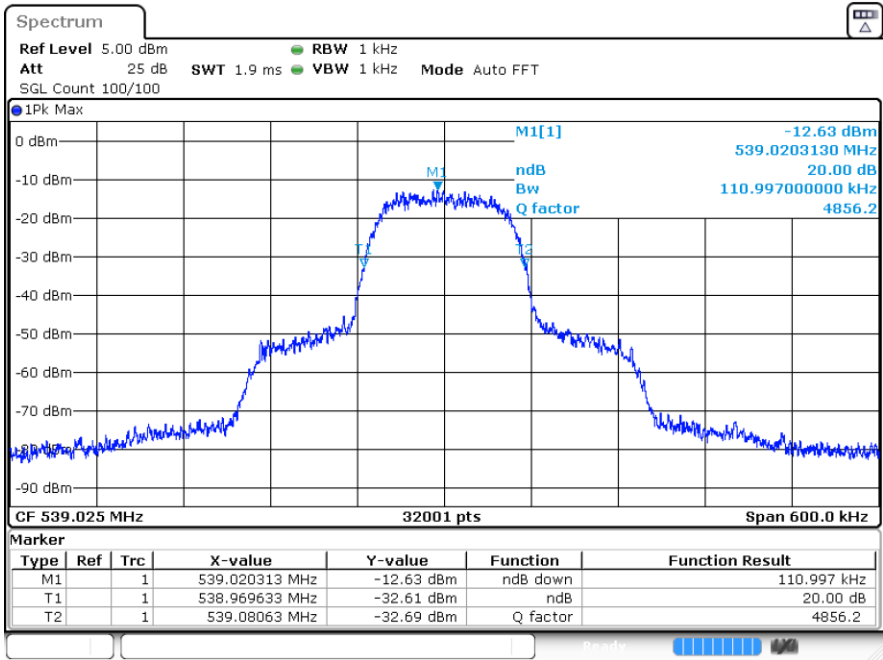
Normal Voltage, 10°C, D2 mode, 607.950 MHz



Normal Voltage, 10°C, HDM mode, 470.100 MHz

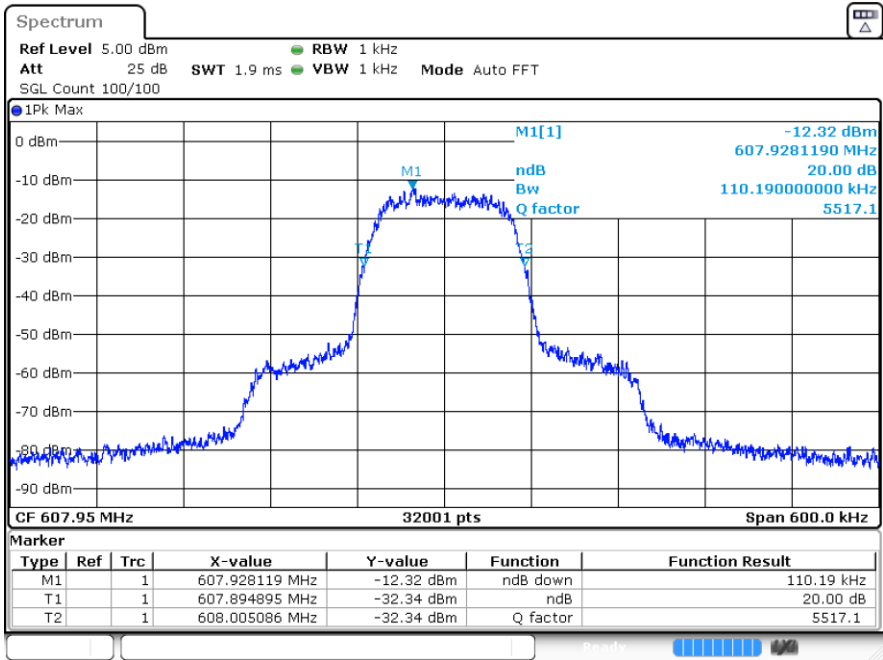


Normal Voltage, 10°C, HDM mode, 539.025 MHz



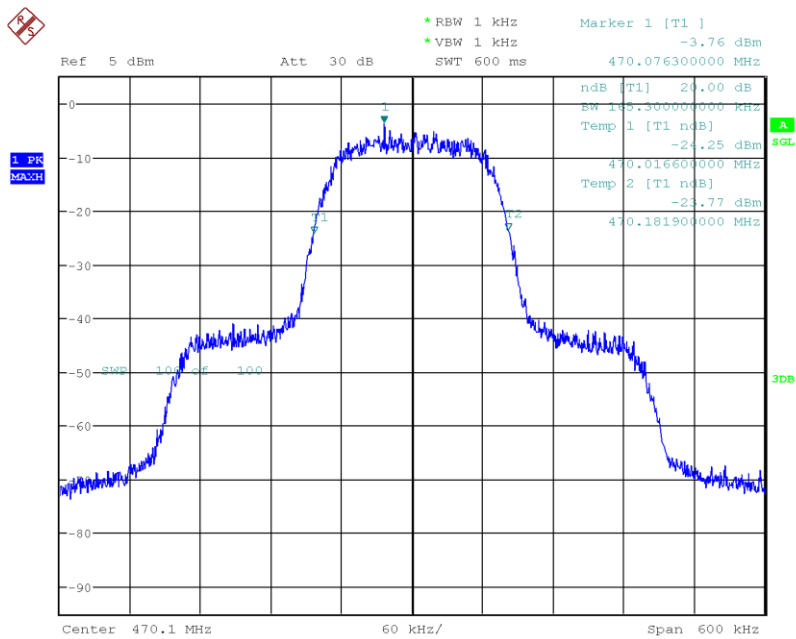
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Normal Voltage, 10°C, HDM mode, 607.950 MHz

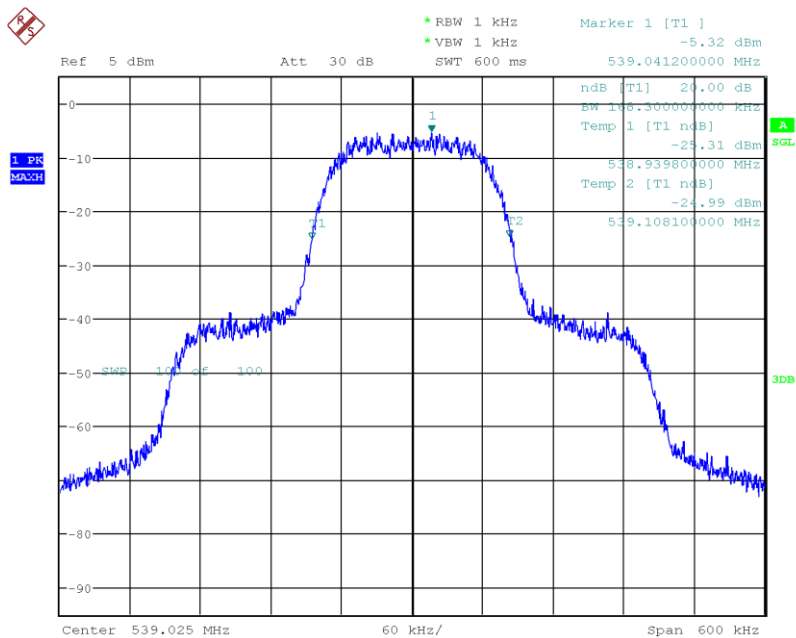


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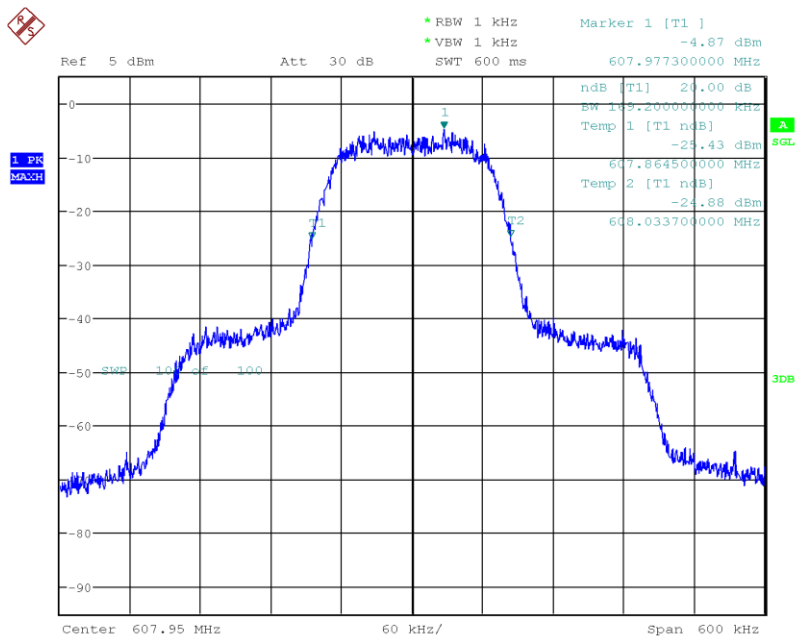
Normal Voltage, 20°C, D2 mode, 470.100 MHz



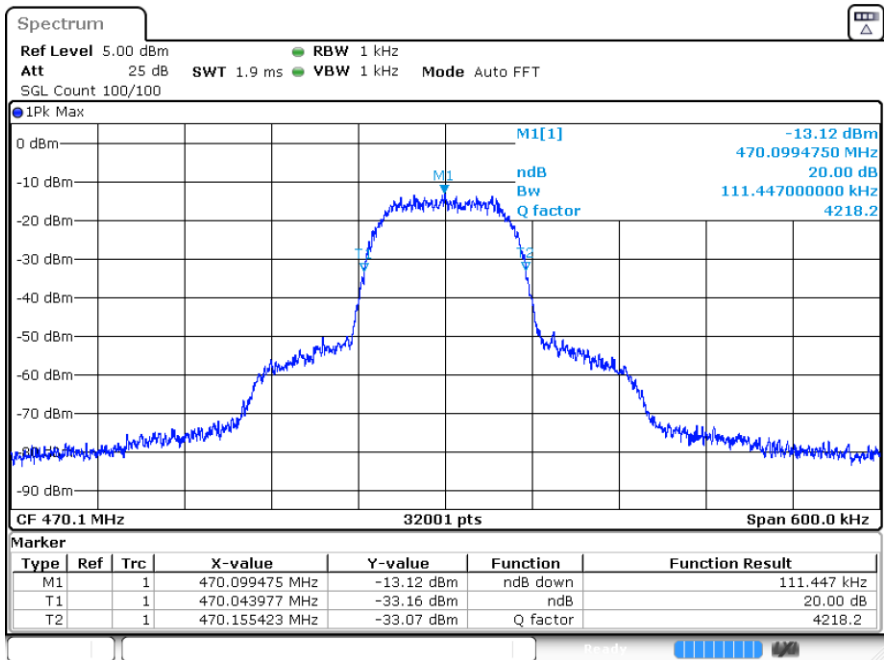
Normal Voltage, 20°C, D2 mode, 539.025 MHz



Normal Voltage, 20°C, D2 mode, 607.950 MHz

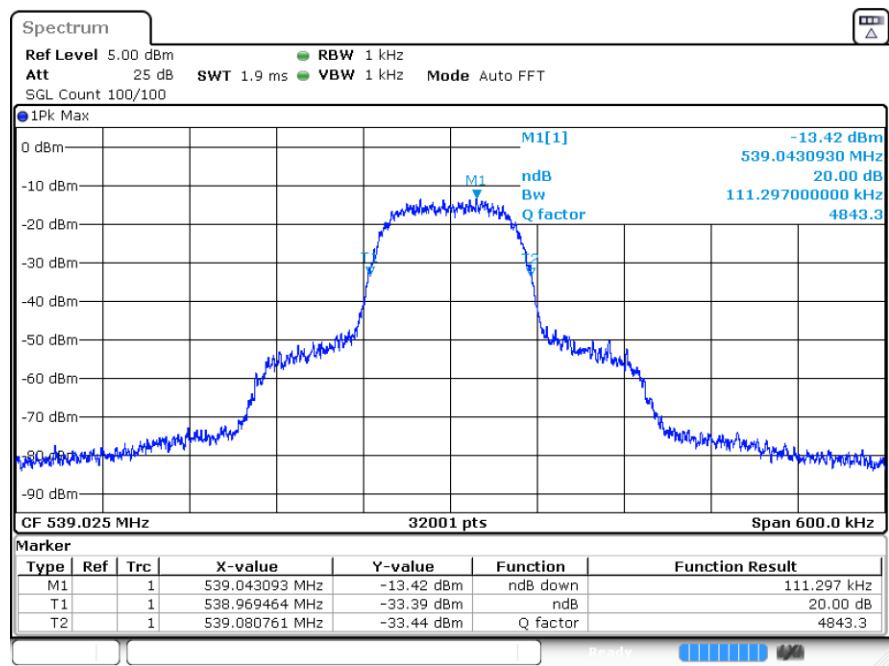


Normal Voltage, 20°C, HDM mode, 470.100 MHz



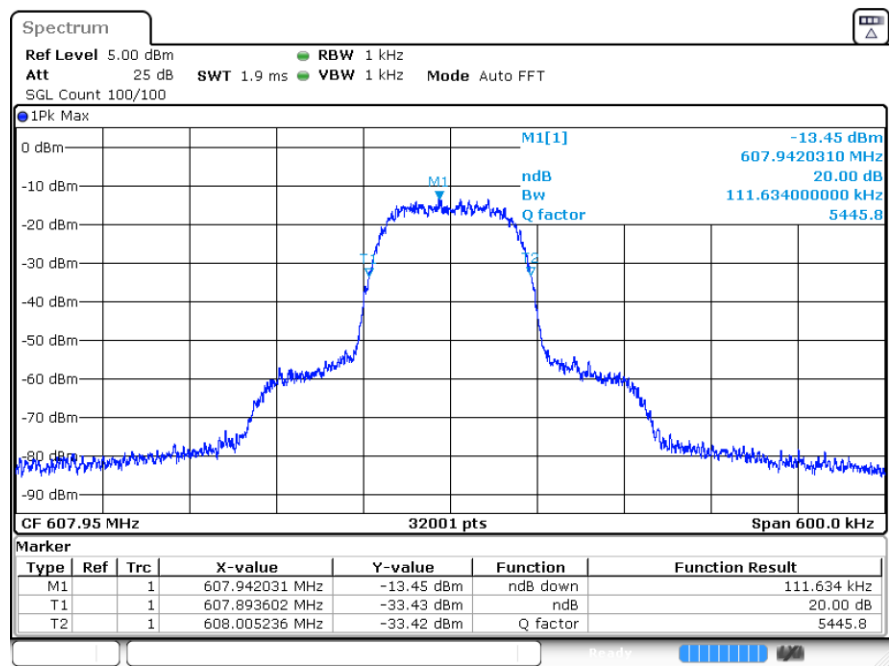
Date: 26 DEC 2024 23:44:01

Normal Voltage, 20°C, HDM mode, 539.025 MHz



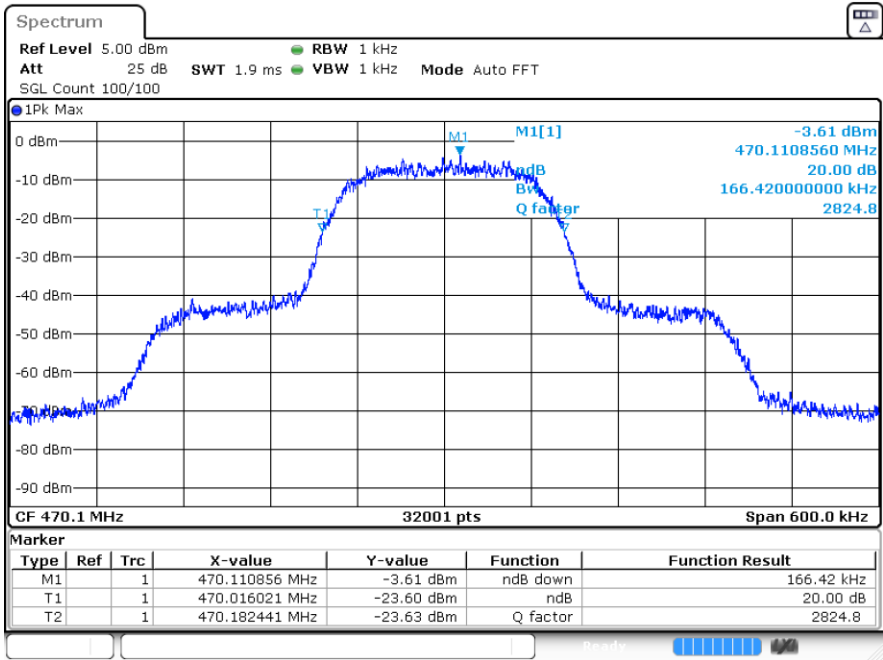
Date: 26 DEC 2024 23:45:04

Normal Voltage, 20°C, HDM mode, 607.950 MHz



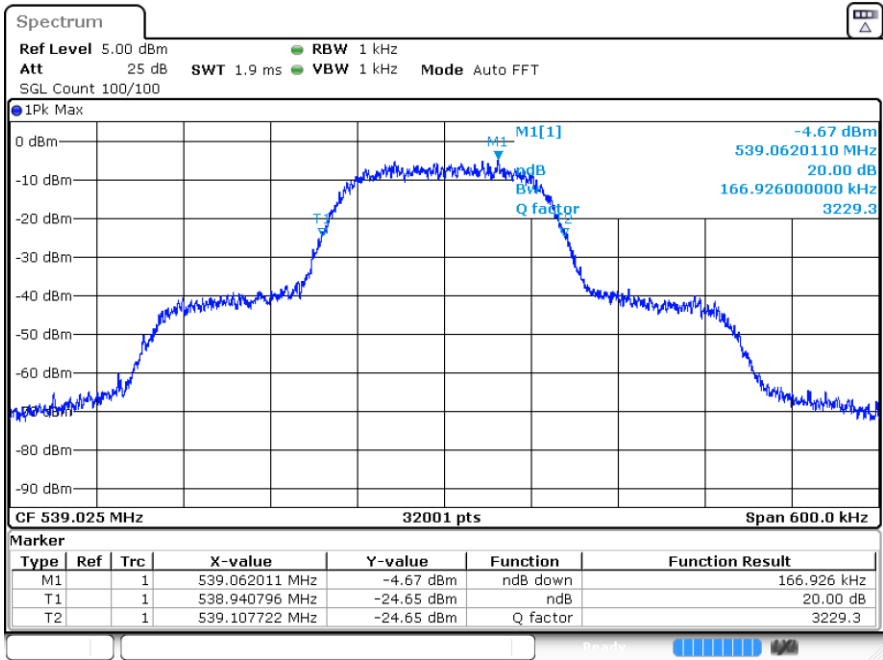
Date: 26 DEC 2024 23:44:16

Normal Voltage, 30°C, D2 mode, 470.100 MHz



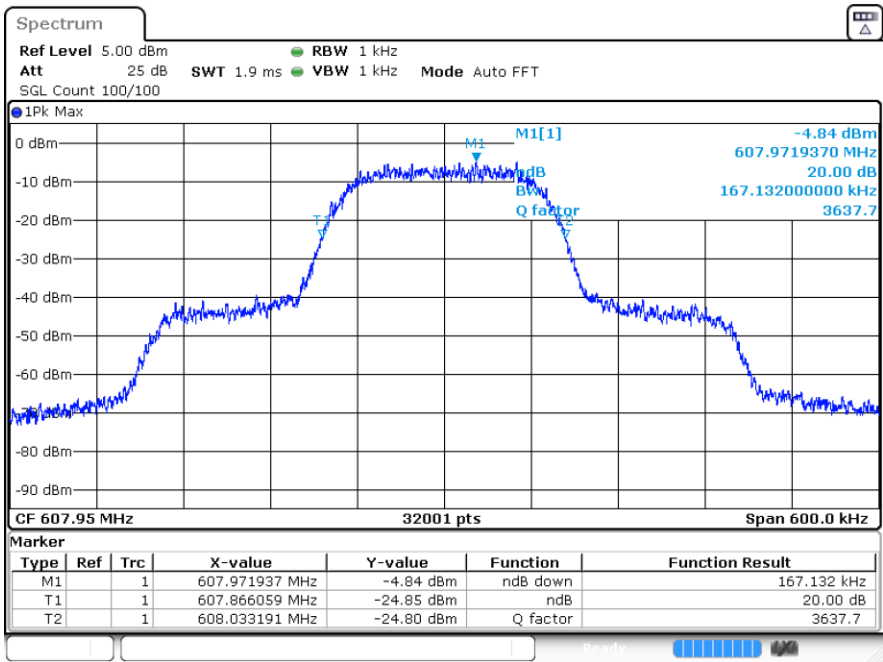
Date: 27 DEC 2024 00:42:08

Normal Voltage, 30°C, D2 mode, 539.025 MHz



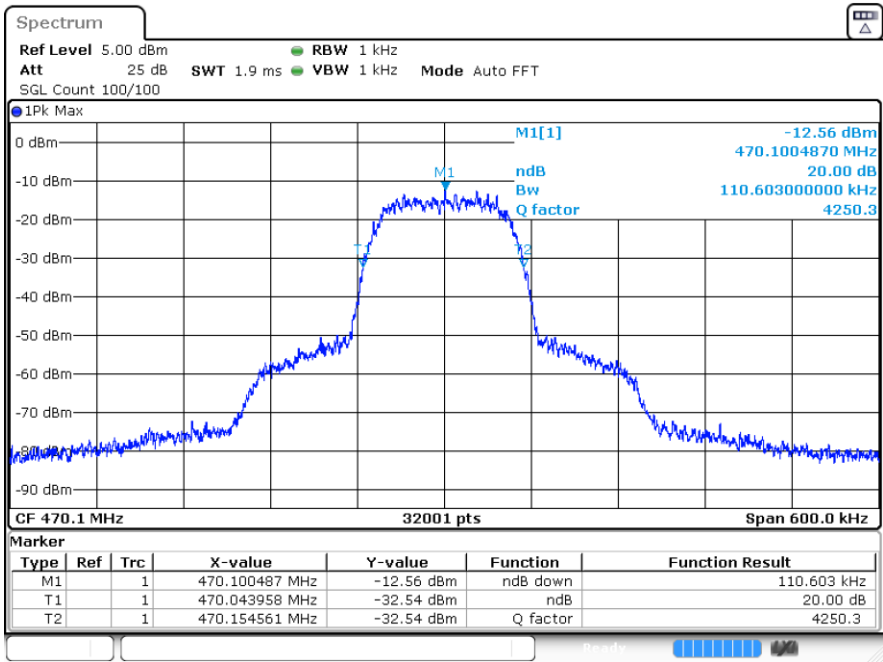
Date: 27 DEC 2024 00:41:28

Normal Voltage, 30°C, D2 mode, 607.950 MHz



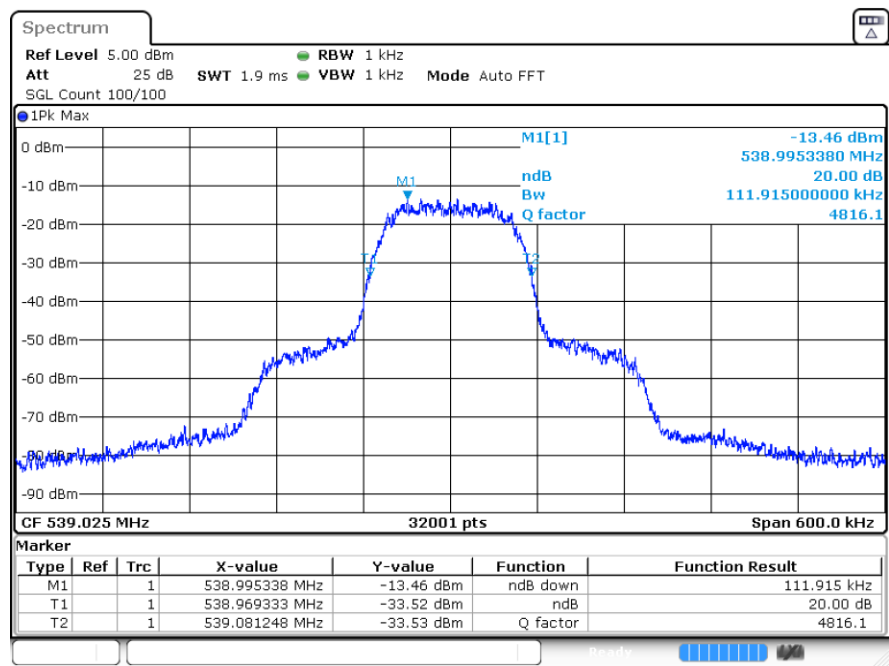
Date: 27 DEC 2024 00:41:55

Normal Voltage, 30°C, HDM mode, 470.100 MHz



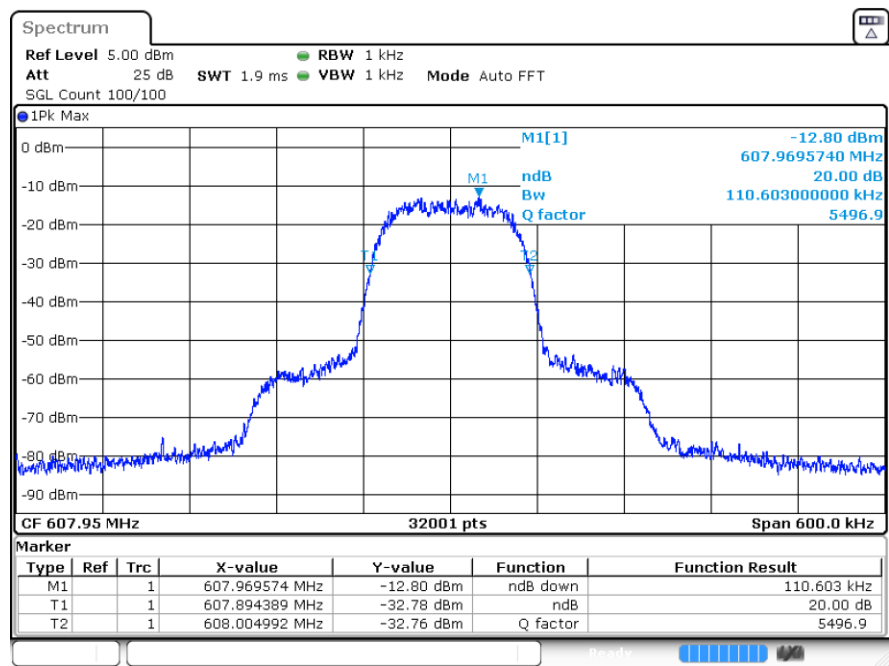
Date: 27 DEC 2024 00:39:58

Normal Voltage, 30°C, HDM mode, 539.025 MHz



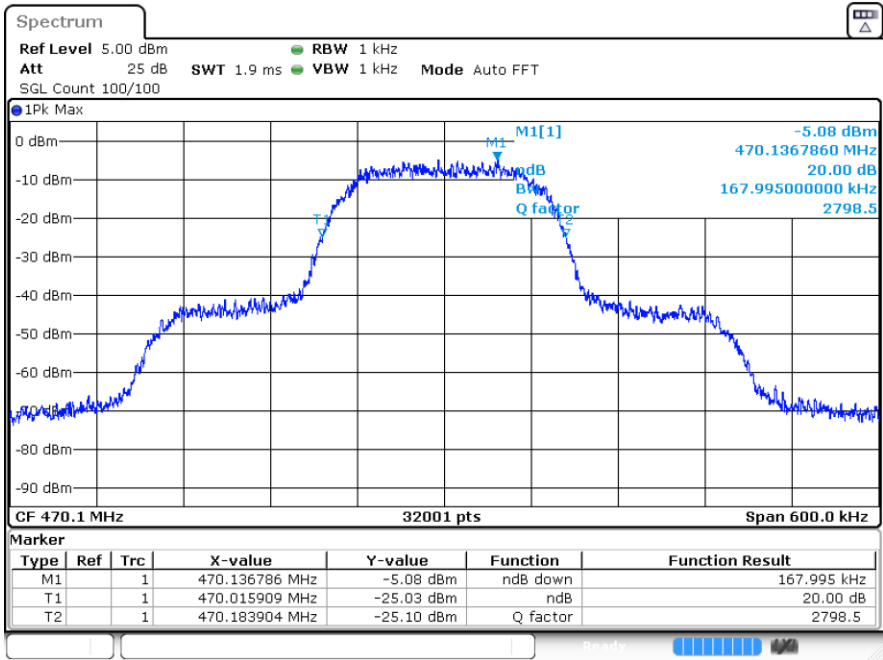
Date: 27 DEC 2024 00:40:55

Normal Voltage, 30°C, HDM mode, 607.950 MHz

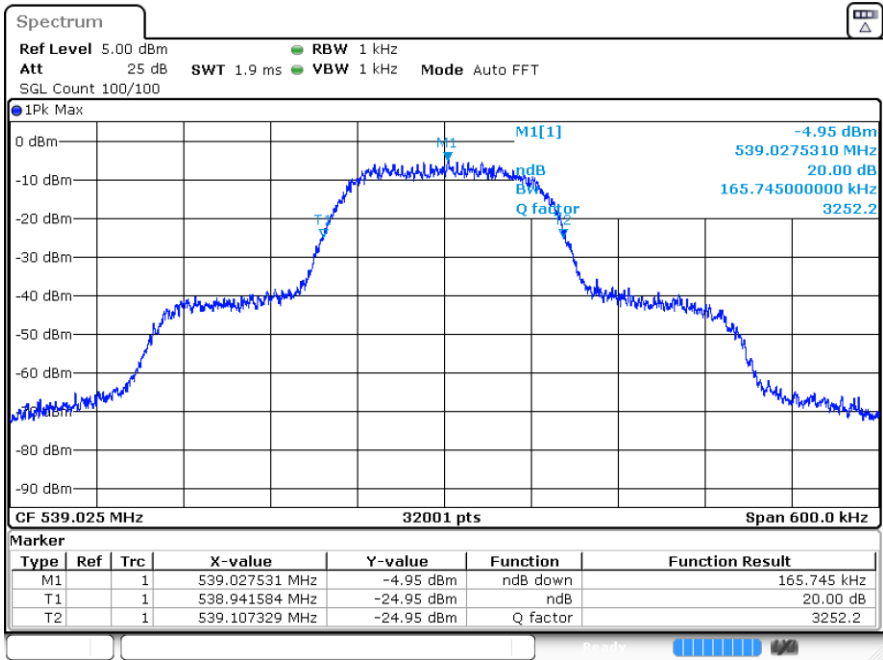


Date: 27 DEC 2024 00:40:19

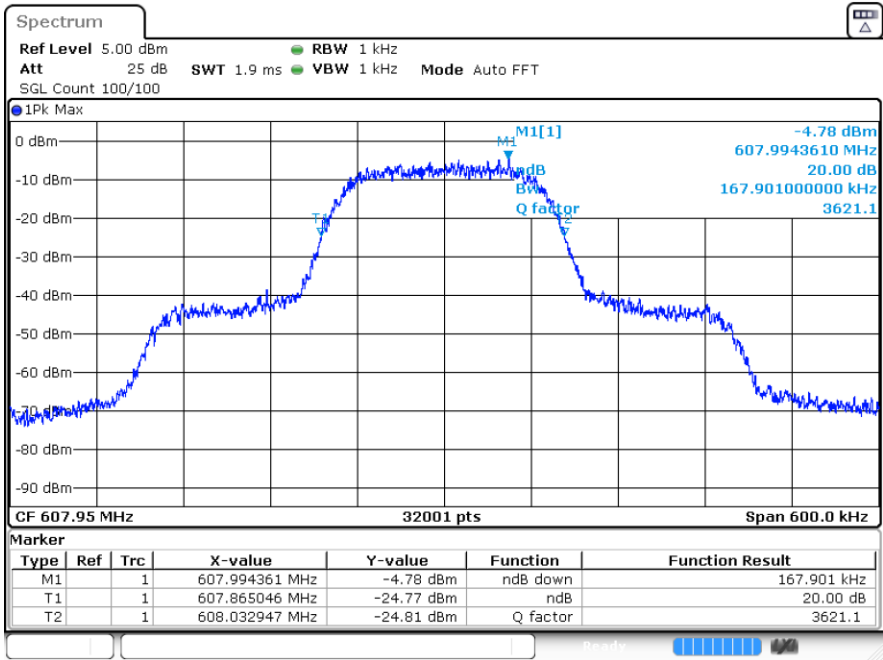
Normal Voltage, 40°C, D2 mode, 470.100 MHz



Normal Voltage, 40°C, D2 mode, 539.025 MHz

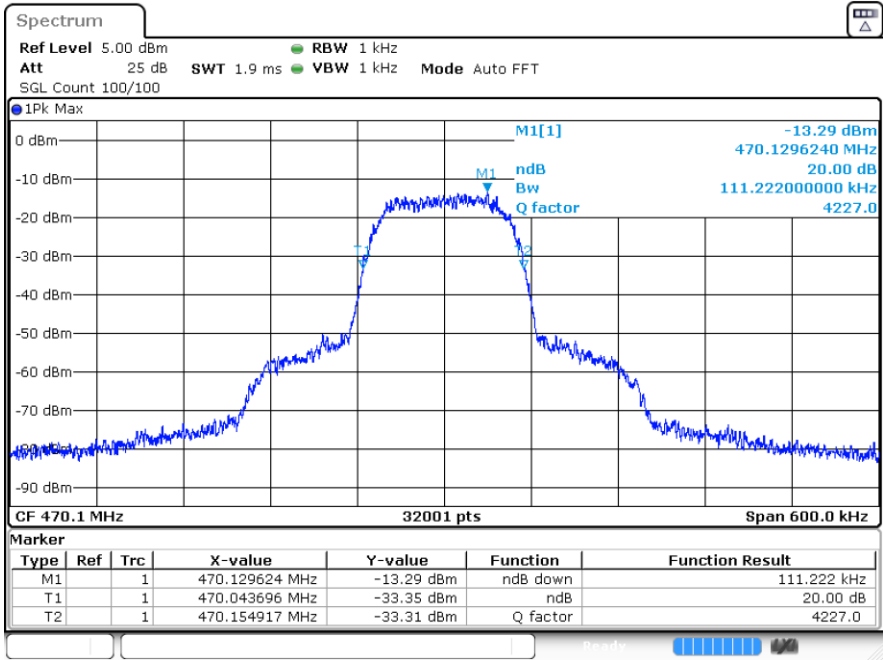


Normal Voltage, 40°C, D2 mode, 607.950 MHz



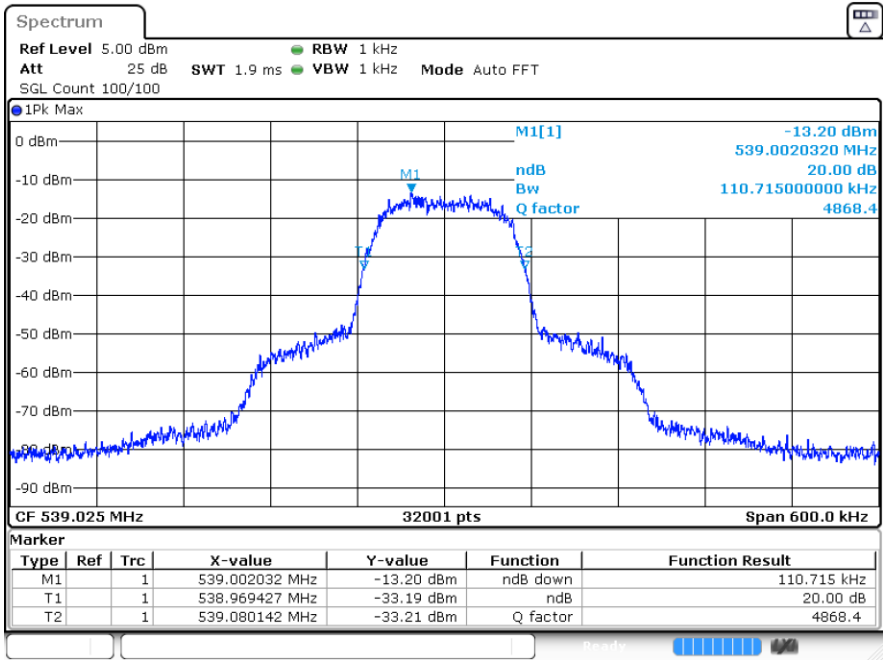
Date: 27 DEC 2024 00:43:09

Normal Voltage, 40°C, HDM mode, 470.100 MHz



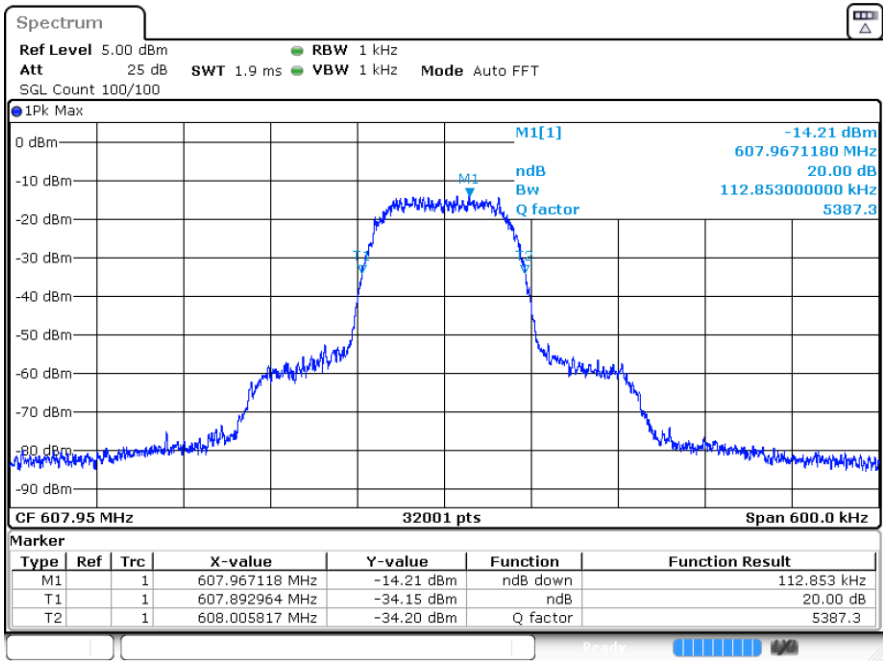
Date: 27 DEC 2024 00:45:43

Normal Voltage, 40°C, HDM mode, 539.025 MHz



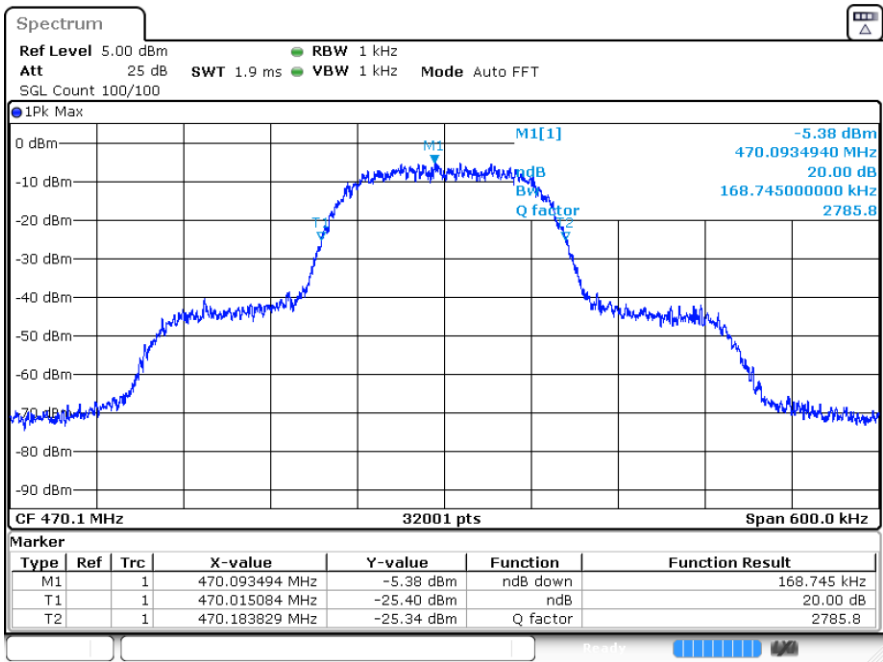
Date: 27 DEC 2024 00:44:21

Normal Voltage, 40°C, HDM mode, 607.950 MHz



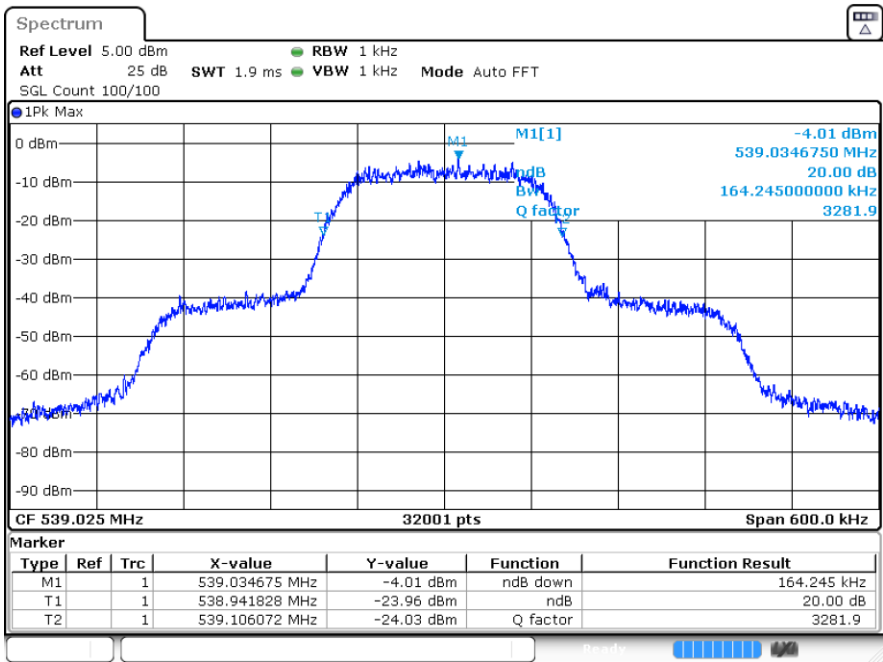
Date: 27 DEC 2024 00:45:01

Normal Voltage, 50°C, D2 mode, 470.100 MHz



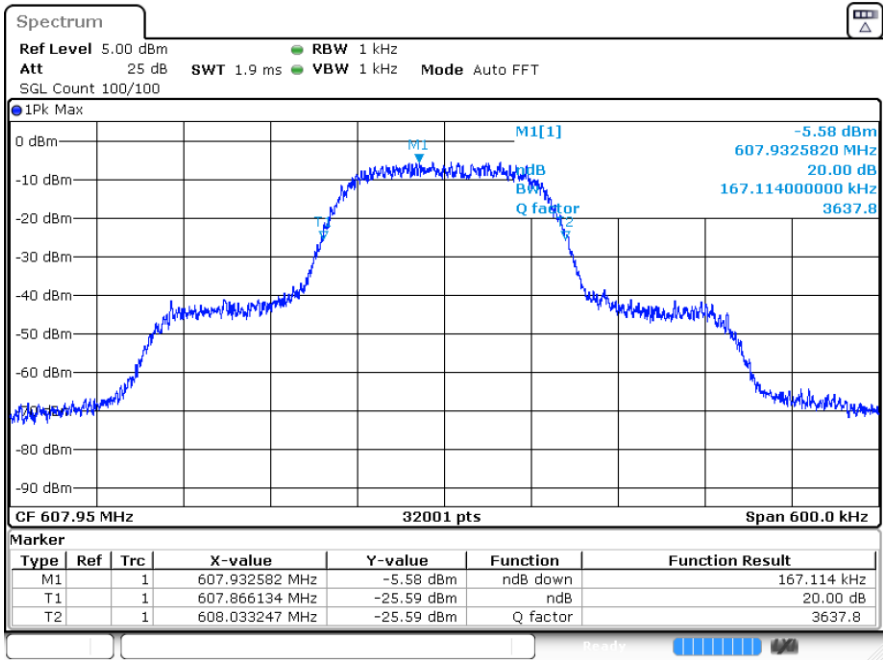
Date: 27 DEC 2024 00:47:44

Normal Voltage, 50°C, D2 mode, 539.025 MHz

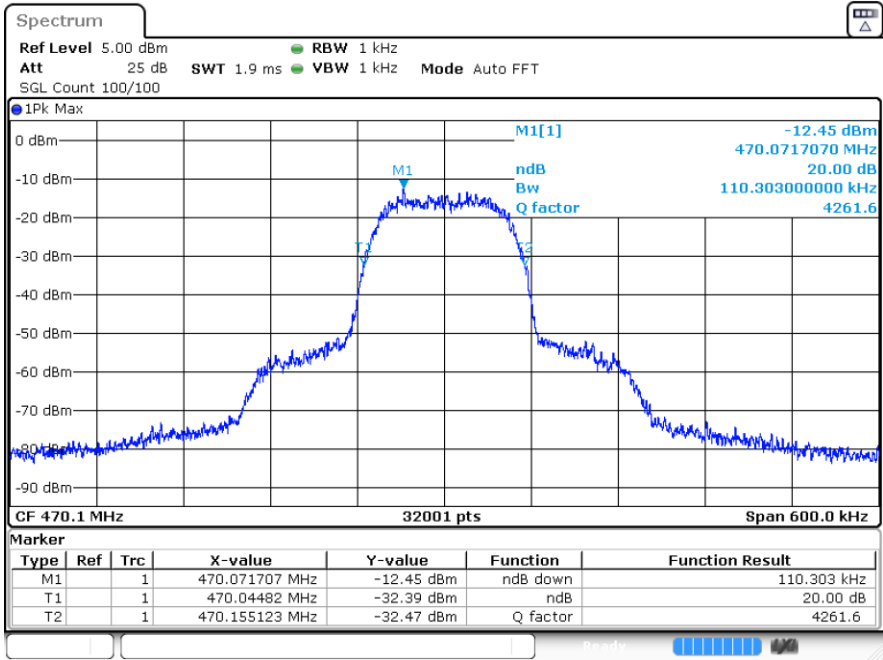


Date: 27 DEC 2024 00:47:14

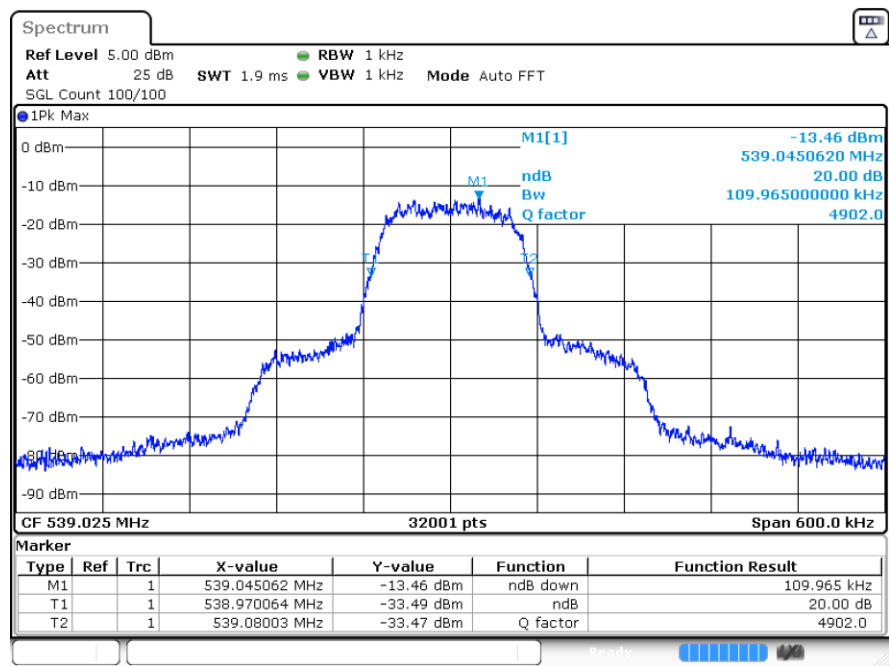
Normal Voltage, 50°C, D2 mode, 607.950 MHz



Normal Voltage, 50°C, HDM mode, 470.100 MHz

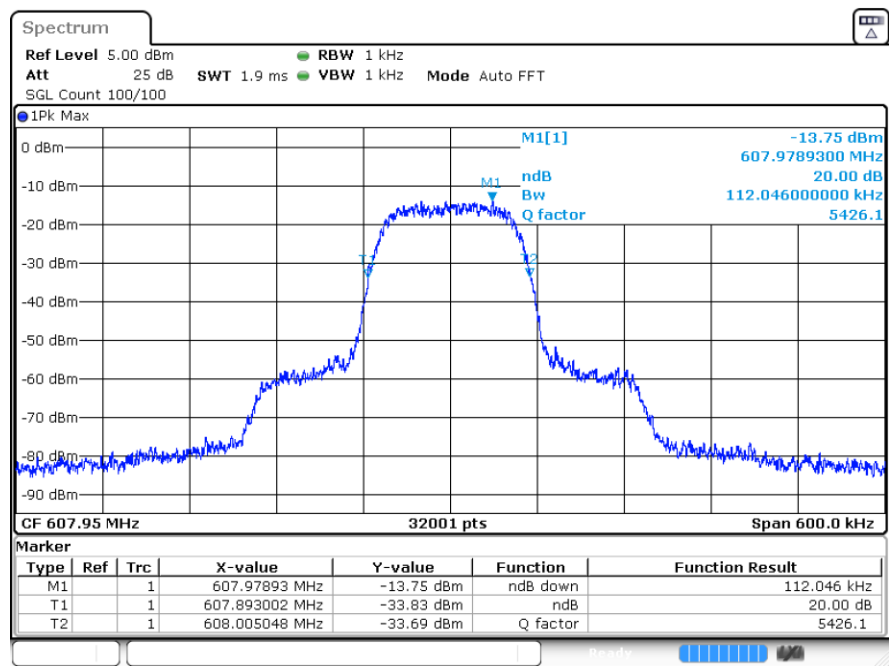


Normal Voltage, 50°C, HDM mode, 539.025 MHz



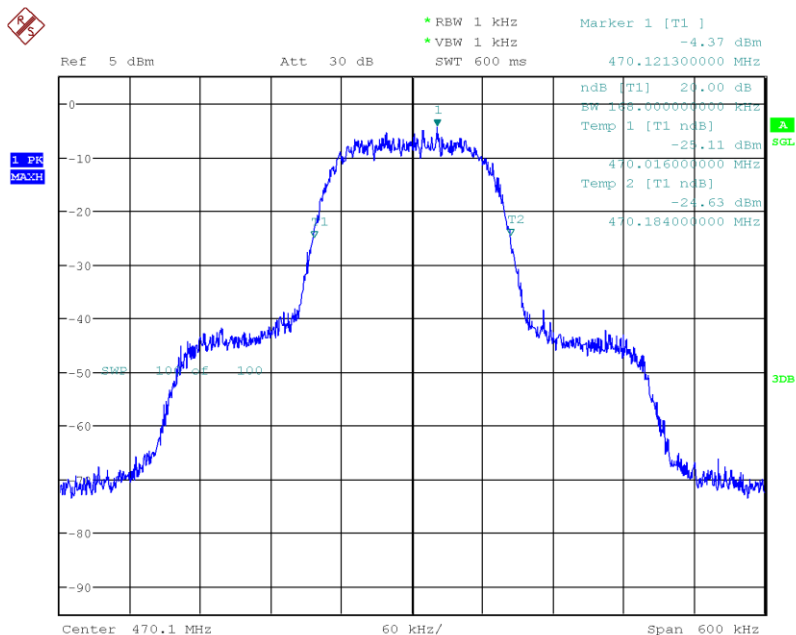
Date: 27 DEC 2024 00:46:59

Normal Voltage, 50°C, HDM mode, 607.950 MHz

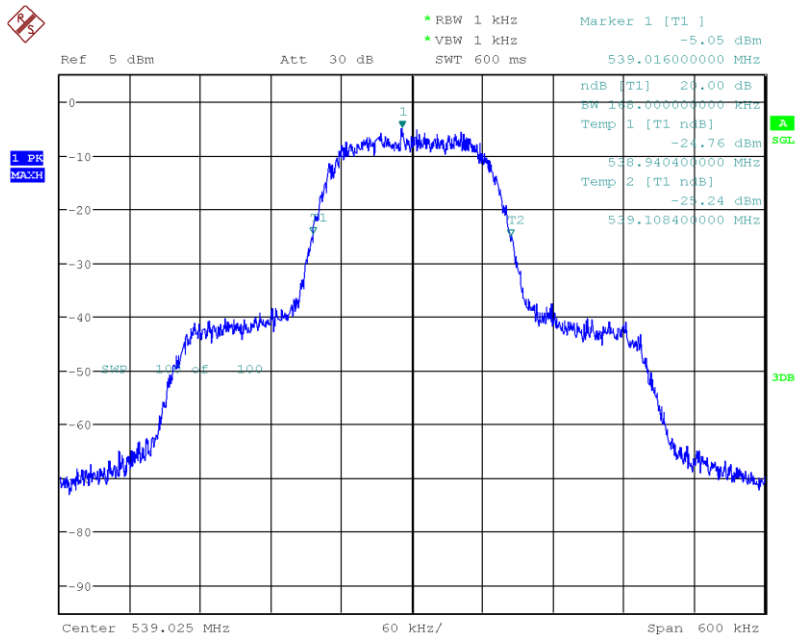


Date: 27 DEC 2024 00:46:29

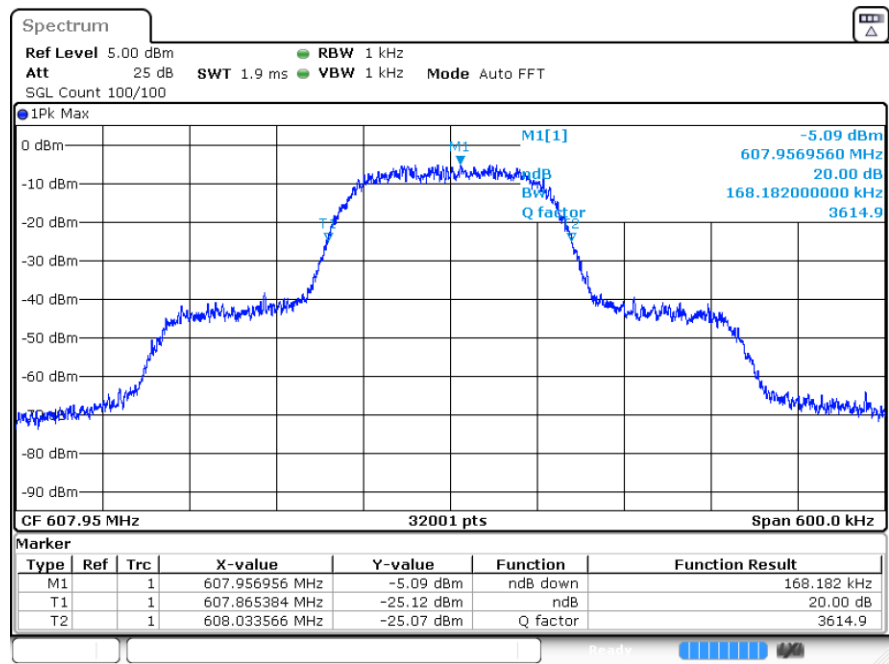
Normal Temperature, -15% (3.06V) Voltage, D2 mode, 470.100 MHz



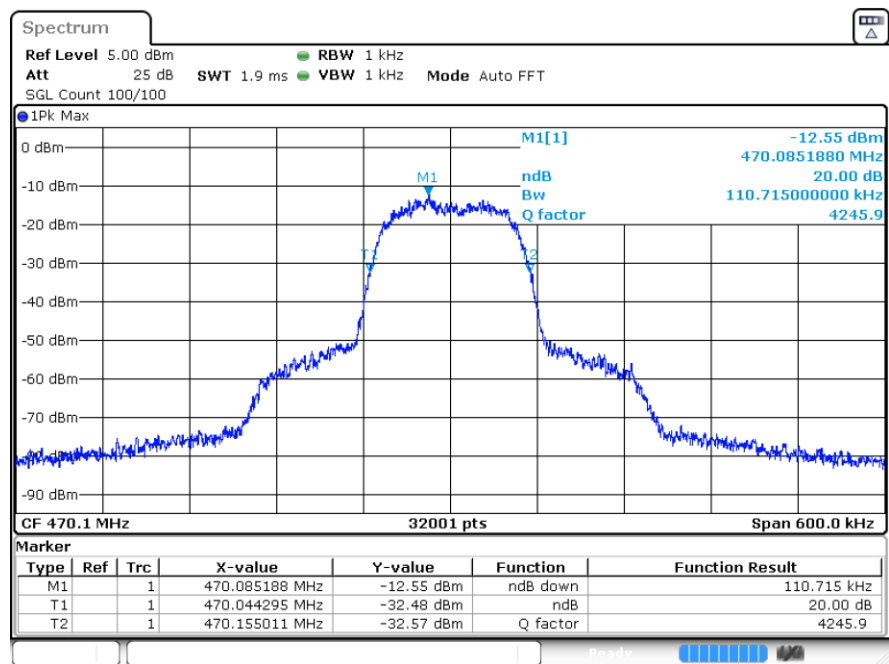
Normal Temperature, -15% (3.06V) Voltage, D2 mode, 539.025 MHz



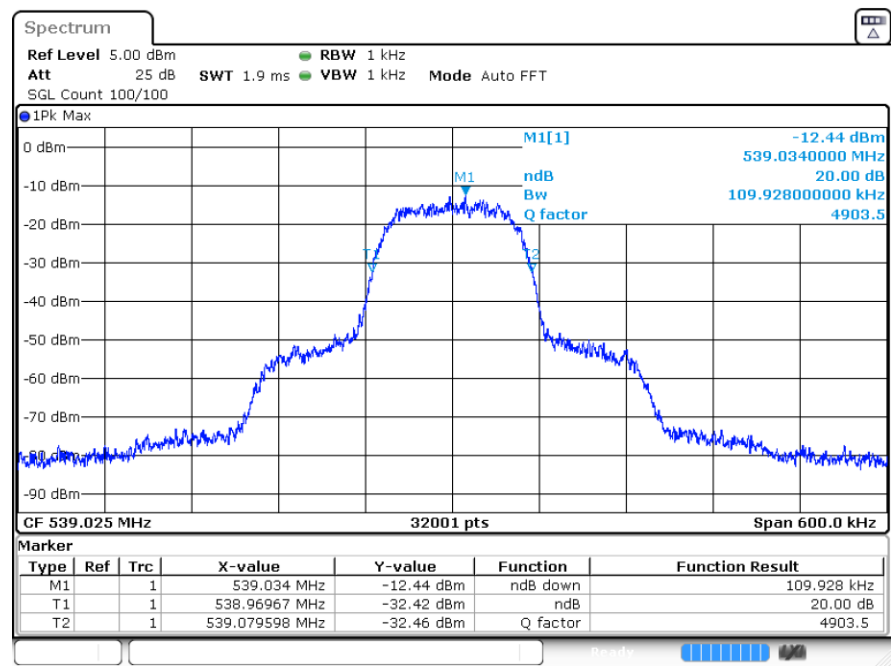
Normal Temperature, -15% (3.06V) Voltage, D2 mode, 607.950 MHz



Normal Temperature, -15% (3.06V) Voltage, HDM mode, 470.100 MHz

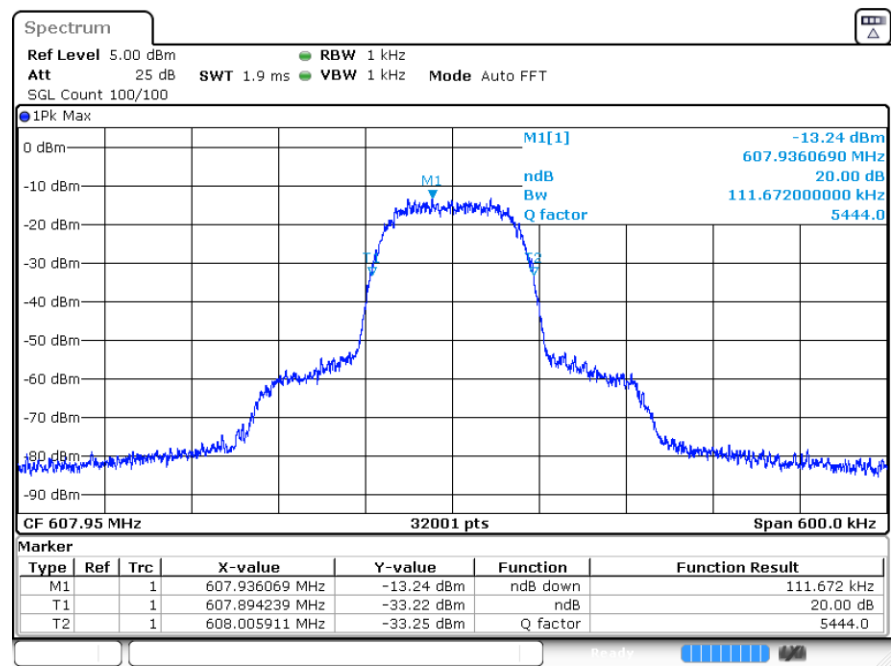


Normal Temperature, -15% (3.06V) Voltage, HDM mode, 539.025 MHz



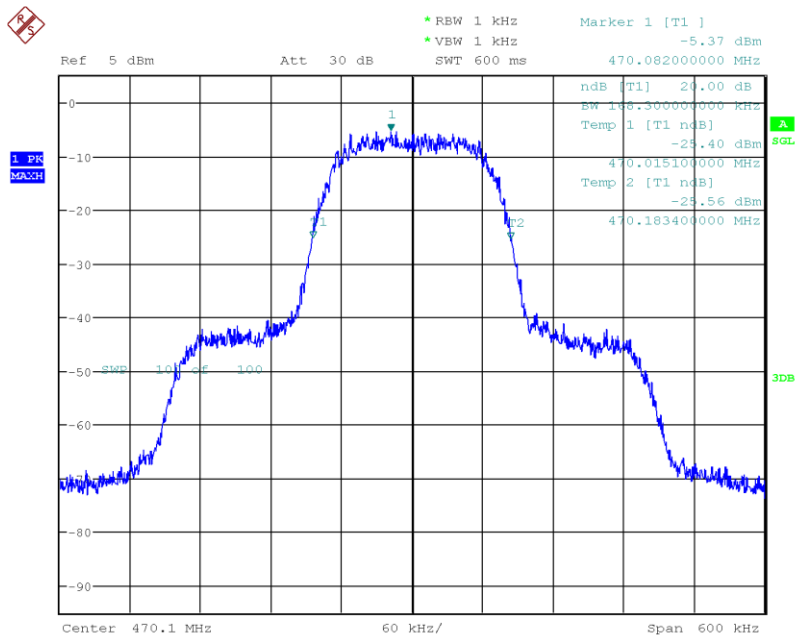
Date: 26 DEC 2024 23:45:21

Normal Temperature, -15% (3.06V) Voltage, HDM mode, 607.950 MHz

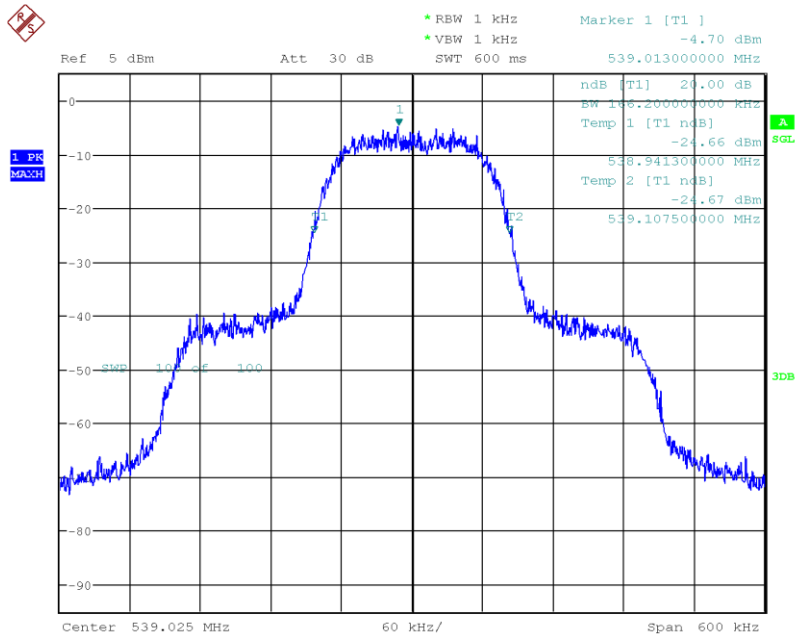


Date: 26 DEC 2024 23:42:18

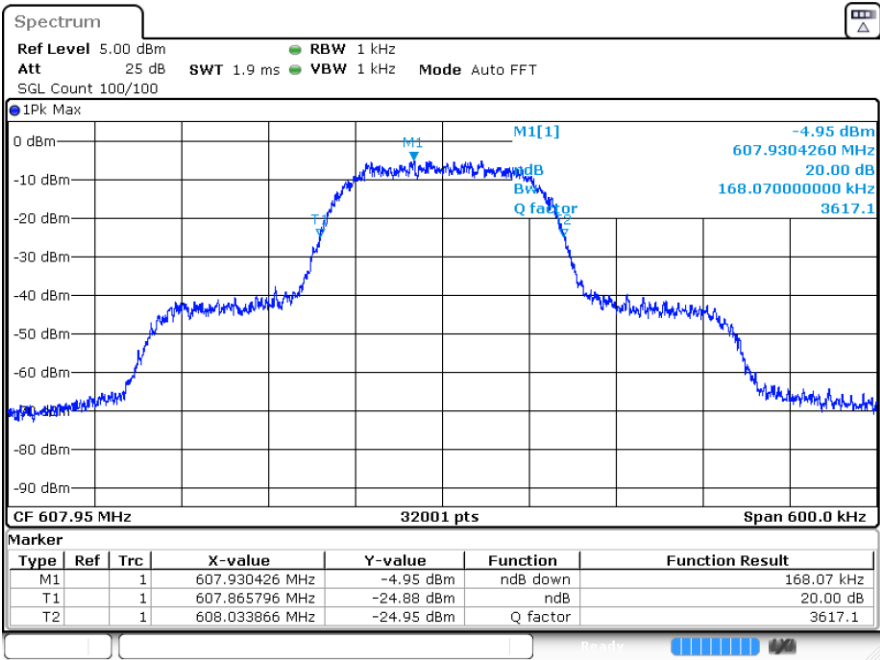
Normal Temperature, +15% (4.14V) Voltage, D2 mode, 470.100 MHz



Normal Temperature, +15% (4.14V) Voltage, D2 mode, 539.025 MHz

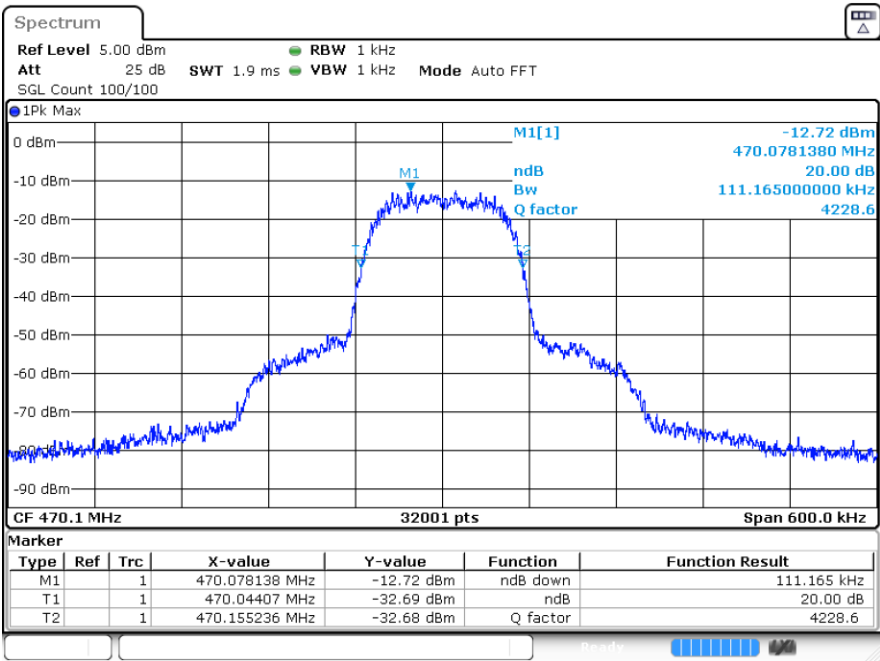


Normal Temperature, -+15% (4.14V) Voltage, D2 mode, 607.950 MHz



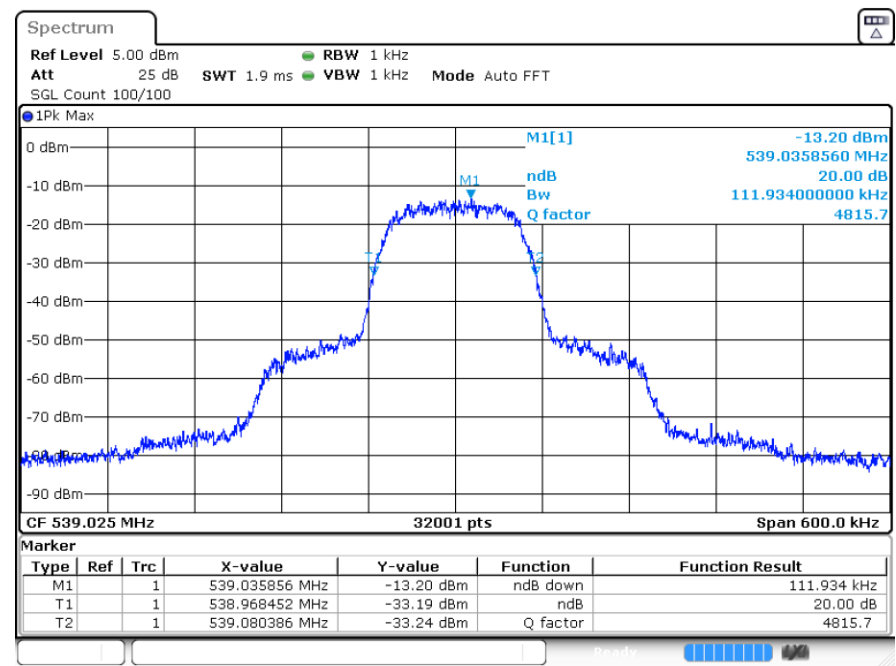
Date: 26.DEC.2024 23:40:02

Normal Temperature, +15% (4.14V) Voltage, HDM mode, 470.100 MHz



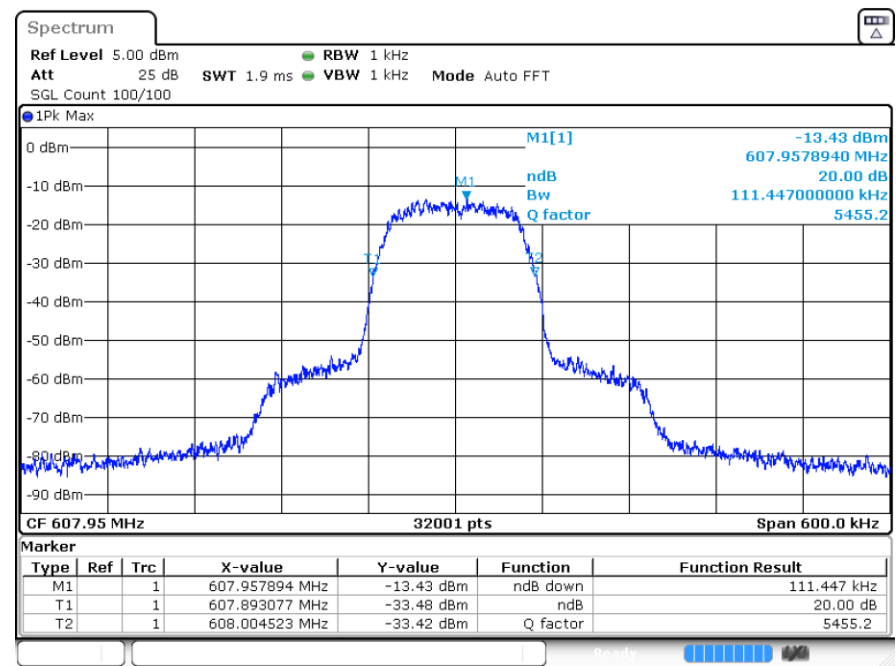
Date: 26.DEC.2024 23:43:12

Normal Temperature, +15% (4.14V) Voltage, HDM mode, 539.025 MHz



Date: 26 DEC 2024 23:45:12

Normal Temperature, +15% (4.14V) Voltage, HDM mode, 607.950 MHz



Date: 26 DEC 2024 23:42:53

9. Annex A (Normative) – EUT Test Setup Photographs

Please refer to the attachment

10. Annex B (Normative) – EUT External Photographs

Please refer to the attachment

11. Annex C (Normative) – EUT Internal Photographs

Please refer to the attachment

12. Annex D (Normative) - A2LA Electrical Testing Certificate



Accredited Laboratory

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, 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 laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. 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).



Presented this 13th day of September 2024.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2026

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

Please follow the web link below for a full ISO 17025 scope.

<https://www.a2la.org/scopepdf/3297-02.pdf>

--- END OF REPORT ---