

Test Report

Test report no.: 21116498-25420-0

Date of issue: 2022-09-29

Test result: The test item - **passed** - and **complies** with below listed standards.

Applicant

Symeo GmbH

Manufacturer

Symeo GmbH

Test Item

BSW200291

RF-Spectrum Testing according to:

FCC 47 CFR Part 15

Radio Frequency Devices, Subpart C -
§15.255 Operation within the bands 57-71GHz

RSS-210, Issue 10 (2019-12)

RSS-210 – Licence-Exempt Radio Apparatus: Category I Equipment

RSS-Gen, Issue 5 (2018-04)

RSS-Gen – General Requirements for Compliance of Radio Apparatus

Tested by
(name, function, signature)

Sebastian Janoschka
Lab Manager RF


signature

Approved by
(name, function, signature)

Andreas Bender
Deputy Managing Director


signature

Applicant and Test item details

Applicant	Symeo GmbH Professor-Messerschmitt-Str. 3 85579, Neubiberg / München, Germany Phone: +49 89 6607796-0 Fax: +49 89 6607796-190
Manufacturer	Symeo GmbH Professor-Messerschmitt-Str. 3 85579, Neubiberg / München, Germany
Test item description	Radar
Model/Type reference	BSW200291
FCC ID	W5IBSW200291V1
IC	8185A-BSW200291V1
HMN	N/A
PMN	LPR-1DHP-291
HVIN	BSW200291
FVIN	N/A
Frequency	57 GHz to 64 GHz
Antenna	integrated patch antenna
Power supply	11.0 to 36.0 V DC (nominal: 24.0 V DC)
Temperature range	-40 °C to +75 °C

Disclaimer and Notes

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Within this test report, a ☒ point / ☐ comma is used as a decimal separator.
If otherwise, a detailed note is added adjoined to its use.

IBL-Lab GmbH does not take test samples. The samples used for testing are provided by the applicant.

Decision rule:

Decision rule based on simple acceptance without guard bands, binary statement, based on mutually agreed uncertainty tolerances with expansion factor k=2 according to ILAC-G8:09/2019

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2 GENERAL INFORMATION

2.1 Administrative details

Testing laboratory	IBL-Lab GmbH Heinrich-Hertz-Allee 7 66386 St. Ingbert / Germany Fon: +49 6894 38938-0 Fax: +49 6894 38938-99 URL: www.ib-lenhardt.de E-Mail: info@ib-lenhardt.de
Accreditation	<p>The testing laboratory is accredited by Deutsche Akkreditierungsstelle GmbH (DAkKS) in compliance with DIN EN ISO/IEC 17025:2018.</p> <p>Scope of testing and registration number:</p> <ul style="list-style-type: none"> Electronics D-PL-21375-01-01 Electromagnetic Compatibility D-PL-21375-01-02 Electromagnetic Compatibility and Telecommunication (FCC requirements) D-PL-21375-01-03 Testing Laboratory Designation Number DE0024 Telecommunication (TC) and Electromagnetic Compatibility (EMC) for Canadian Standards D-PL-21375-01-04 ISED Company Number 27156 Testing Laboratory CAB Identifier DE0020 Telecommunication (TC) D-PL-21375-01-05 <p>Website DAkKS: https://www.dakks.de/</p> <p>The Deutsche Akkreditierungsstelle GmbH (DAkKS) is also a signatory to the ILAC Mutual Recognition Arrangement</p>
Testing location	IBL-Lab GmbH Heinrich-Hertz-Allee 7 66386 St. Ingbert / Germany
Date of receipt of test samples	2022-08-09
Start – End of tests	2022-08-09 – 2022-09-06

2.2 Possible test case verdicts

Test sample meets the requirements	P (PASS)
Test sample does not meet the requirements	F (FAIL)
Test case does not apply to the test sample	N/A (Not applicable)
Test case not performed	N/P (Not performed)

2.3 Observations

No additional observations other than the reported observations within this test report have been made.

2.4 Opinions and interpretations

No appropriate opinions or interpretations according ISO/IEC 17025:2017 clause 7.8.7 are within this test report.

2.5 Revision history

-0 Initial Version

2.6 Further documents

List of further applicable documents belonging to the present test report:
– no additional documents –

3 ENVIRONMENTAL & TEST CONDITIONS

3.1 Environmental conditions

Temperature	20°C ± 5°C
Relative humidity	25-75% r.H.
Barometric Pressure	860-1060 mbar
Power supply	230 V AC ± 5%

3.2 Normal and extreme test conditions

	minimum	nominal	maximum
Temperature	-40 °C	+20 °C	+75 °C
Relative humidity	-/-	45 % r.h.	-/-
Power supply	11.0 V DC	24.0 V DC	36.0 V DC

4 TEST STANDARDS AND REFERENCES

Test standard (accredited)	Description
FCC 47 CFR Part 15	Radio Frequency Devices, Subpart C - §15.255 Operation within the bands 57-71GHz
RSS-210, Issue 10 (2019-12)	RSS-210 – Licence-Exempt Radio Apparatus: Category I Equipment
RSS-Gen, Issue 5 (2018-04)	RSS-Gen – General Requirements for Compliance of Radio Apparatus

Reference	Description
ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

5 EQUIPMENT UNDER TEST (EUT)

5.1 Product description

Radar

5.2 Description of test item

Model name*	BSW200291
Serial number*	EM4AJN0009
PCB identifier*	N/A
Hardware status*	v0.91
Software status*	BR2019-194-g412f7ee.devel_sr

*: as declared by applicant

5.3 Technical data of test item

Operational frequency band*	57 GHz to 64 GHz
Type of radio transmission*	modulated carrier
Modulation type*	FMCW
Number of channels*	1
Channel bandwidth*	<6 GHz
Channel spacing*	N/A
Receiver category*	N/A
Receiver bandwidth*	N/A
Duty cycle*	~31%
Antenna*	integrated patch antenna
Rated RF output power*	<20 dBm
Power supply*	11.0 to 36.0 V DC (nominal: 24.0 V DC)
Temperature range*	-40 °C to +75 °C

*: as declared by applicant

5.4 Additional information

Model differences	-
Ancillaries tested with	-
Additional equipment used for testing	Notebook with LAN connection to configure channel and mode

6 SUMMARY OF TEST RESULTS

Test specification

FCC 47 CFR Part 15
&
FCC 47 CFR Part 15 / RSS-Gen, Issue 5 (2018-04)

Clause	Requirement / Test case	Test Conditions	Result / Remark	Verdict
§15.255(e) / §2.1049 / RSS-Gen, 6.7	Occupied bandwidth (6dB/12dB bandwidth)	Normal	5920 MHz	P
§15.255(c) / RSS-210, J.2	Radiated EIRP	Normal	0.9 dBm AVG 10.1 dBm Peak	P
§15.215(c) / §15.255(f) / RSS-210, J.6	Transmitter frequency stability	Normal/Extreme	-/-	P
§15.255(d) / §15.209(a) / RSS-210, J.3	Field strength of emissions (spurious & harmonics)	Normal	< limit	P

Notes

FCC's Millimeter Wave Test Procedures:

I. A radiated method of measurements in order to demonstrate compliance with the various regulatory requirements has been chosen in consideration of test equipment availability and the limitations of many external harmonic mixers. A conducted method of measurement could be employed if EUT and mixer waveguides both are accessible and of the same type (WG number) and if waveguide sections and transitions can be found. Another potential problem is that the peak power output may exceed the +20 dBm input power limit of many commercially available mixers. For these reasons a radiated method is preferred.

Comments and observations

Measurements were done with the intention to show compliance in defined worst case modes, therefore several modes/channels were measured, to encompass all possible configurations:

- Spurious measurements with the sweep halted on the highest, middle and lowest intended frequencies according to FCC §15.31(c) (m)
 - Carrier measurements in primary radar mode (highest duty cycle), with several carriers to show compliance in terms of power, occupied bandwidth and frequency stability.
 - Occupied bandwidth and frequency stability were made with highest power settings to assure more accurate measurements, due to better S/N ratio.
 - o 6.0 GHz BW at 60.50 GHz as mode with the broadest bandwidth (CB 28)
 - o 0.5 GHz BW at 59.25 GHz (CB 14)
 - o 0.5 GHz BW at 61.25 GHz (CB 09)
 - o 0.5 GHz BW at 63.75 GHz (CB 05)

7 TEST RESULTS

7.1 Occupied bandwidth (§2.1049)

Description

§2.1049 / RSS-Gen, 6.7

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

Limits

The radar device's occupied bandwidth (i.e. 99% emission bandwidth) shall be contained in the 57-71GHz frequency band.

FCC §15.255 (e) (1):

For the purposes of this paragraph, emission bandwidth is defined as the instantaneous frequency range occupied by a steady state radiated signal with modulation, outside which the radiated power spectral density never exceeds 6 dB below the maximum radiated power spectral density in the band, as measured with a 100 kHz resolution bandwidth spectrum analyzer. The center frequency must be stationary during the measurement interval, even if not stationary during normal operation (e.g., for frequency hopping devices).

Test procedure

ANSI C63.10, 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

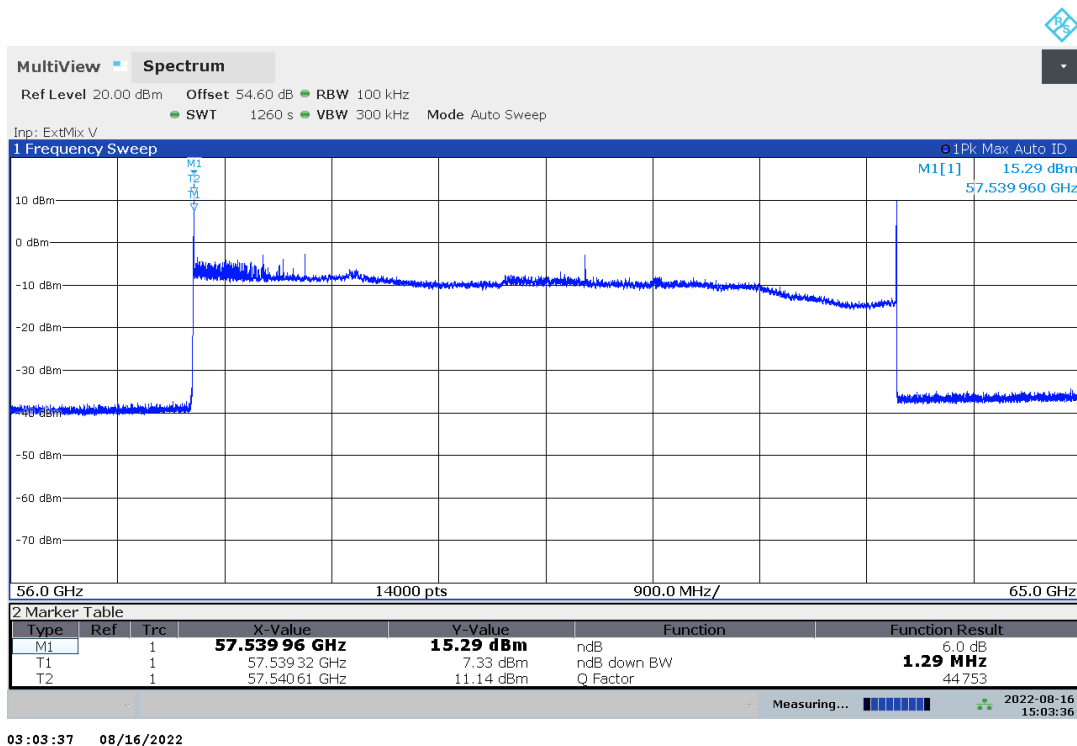
Note

Measurements with the peak detector are also suitable to demonstrate compliance of an EUT, as long as the required resolution bandwidth is used, because peak detection will yield amplitudes equal to or greater than amplitudes measured with RMS detector. The measurement data from a spectrum analyser peak detector will represent the worst-case results (see ANSI C63.10).

Test setup: 8.4

Test results				
EUT mode	Test conditions	f _L [GHz]	f _H [GHz]	99% OBW [GHz]
Primary mode – CB 09	Normal - 6dB	61.009	61.479	0.470
Primary mode – CB 09	Normal - 10dB	61.006	61.480	0.474
Primary mode – CB 09	Normal - 99%	61.010	61.477	0.467
Primary mode – CB 09	Normal - 6dB 1MHz RBW	61.007	61.479	0.473
Primary mode – CB 14	Normal - 6dB	63.509	63.979	0.470
Primary mode – CB 14	Normal - 10dB	63.506	63.979	0.473
Primary mode – CB 14	Normal - 99%	63.508	63.977	0.469
Primary mode – CB 14	Normal - 6dB 1MHz RBW	63.504	63.979	0.475
Primary mode – CB 28	Normal - 6dB	57.531	63.454	5.92
Primary mode – CB 28	Normal - 10dB	57.533	63.454	5.92
Primary mode – CB 28	Normal - 99%	57.543	63.391	5.85
Primary mode – CB 28	Normal - 6dB 1MHz RBW	57.533	63.453	5.92

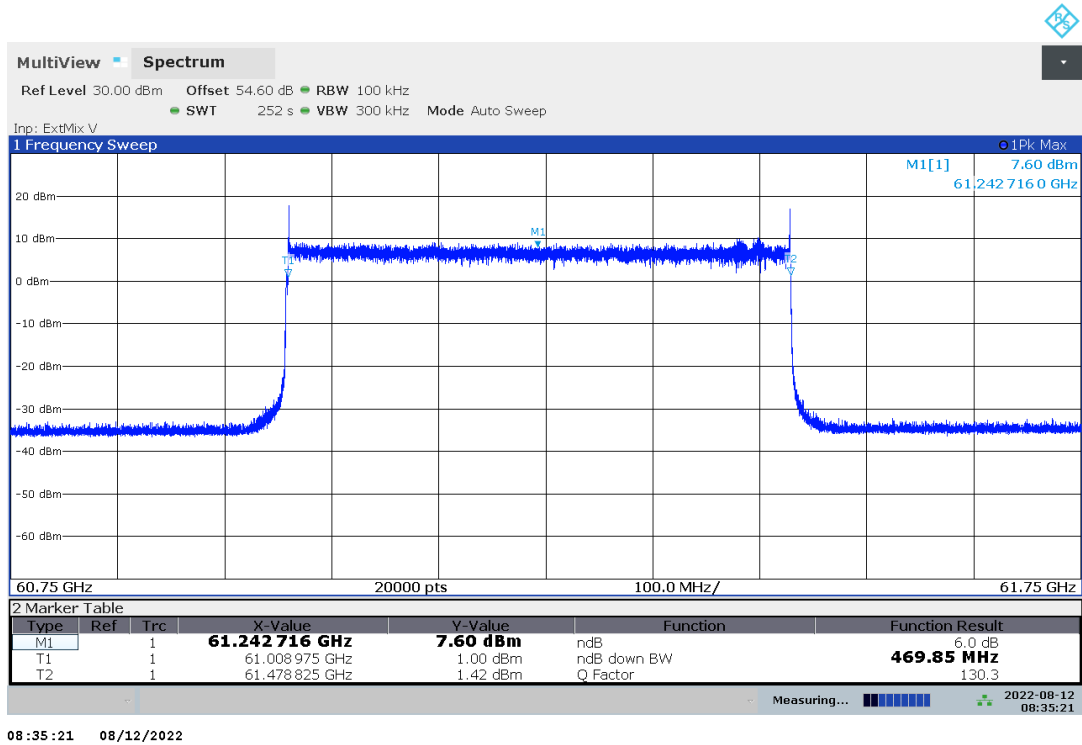
Plot no. 1: 6 dB bandwidth measured with 100 kHz RBW



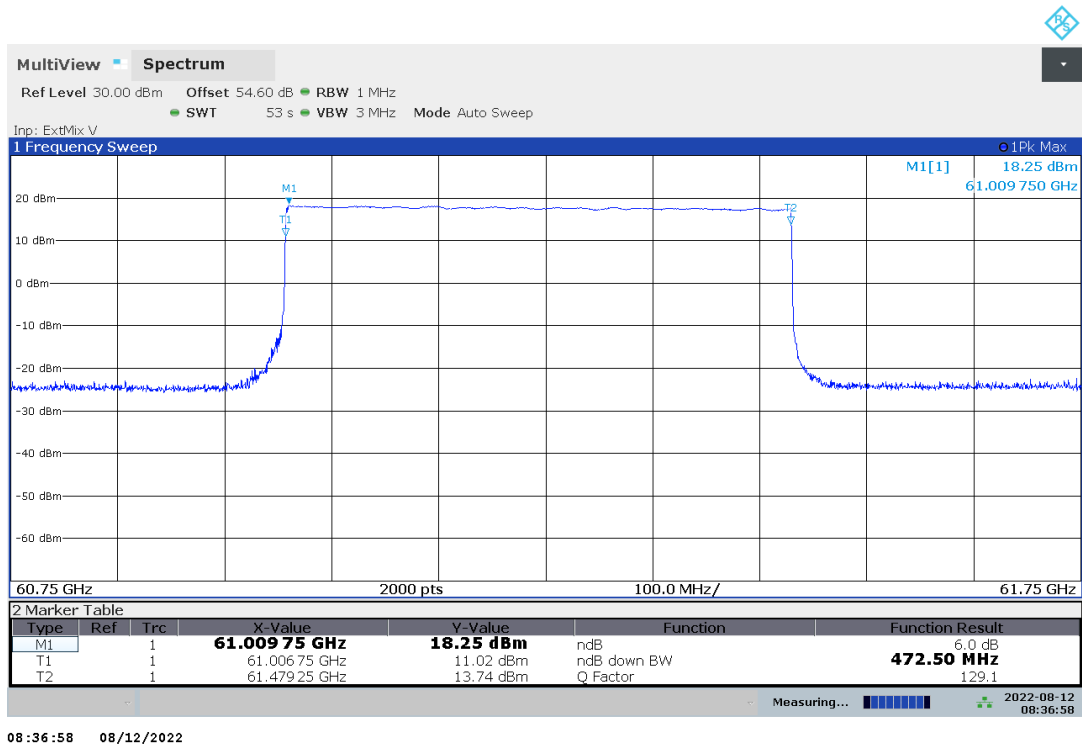
Note: The 6 dB Bandwidth does not cover the full spectrum due to an uneven power spectral density as well as a pulse desensitization factor to be considered and is therefore deemed insufficient, alternative measurements were made as worst-case considerations:

- 6 dB BW with marker set approx. to center of PSD
- 6 dB BW, as well as 10 dB BW measured with 1 MHz RBW due to fast sweep rate (pulse desensitization)

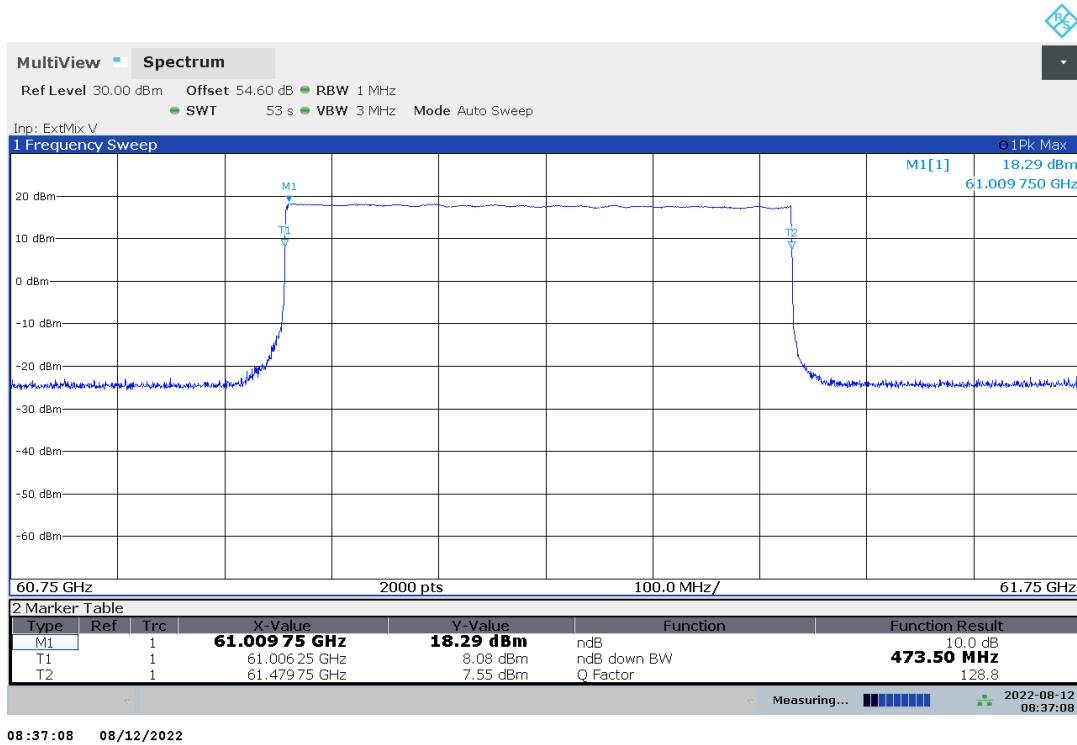
Plot no. 2: 6 dB bandwidth, CB 09



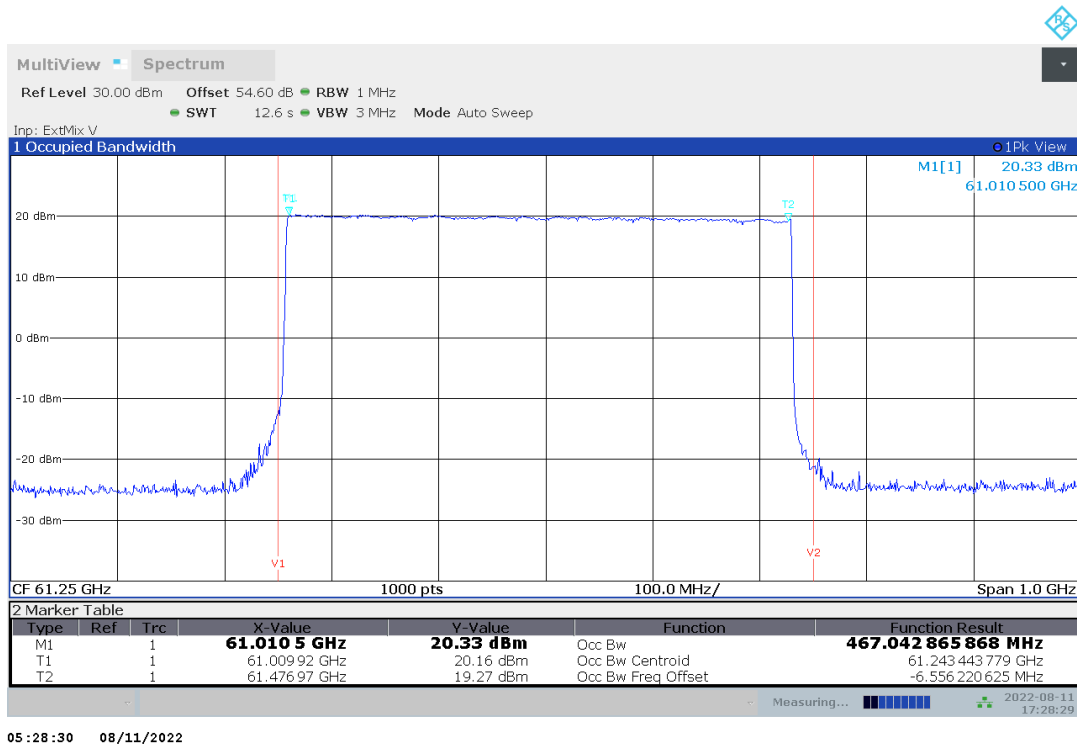
Plot no. 3: 6 dB bandwidth, 1 MHz RBW, CB 09



Plot no. 4: 10 dB bandwidth, CB 09



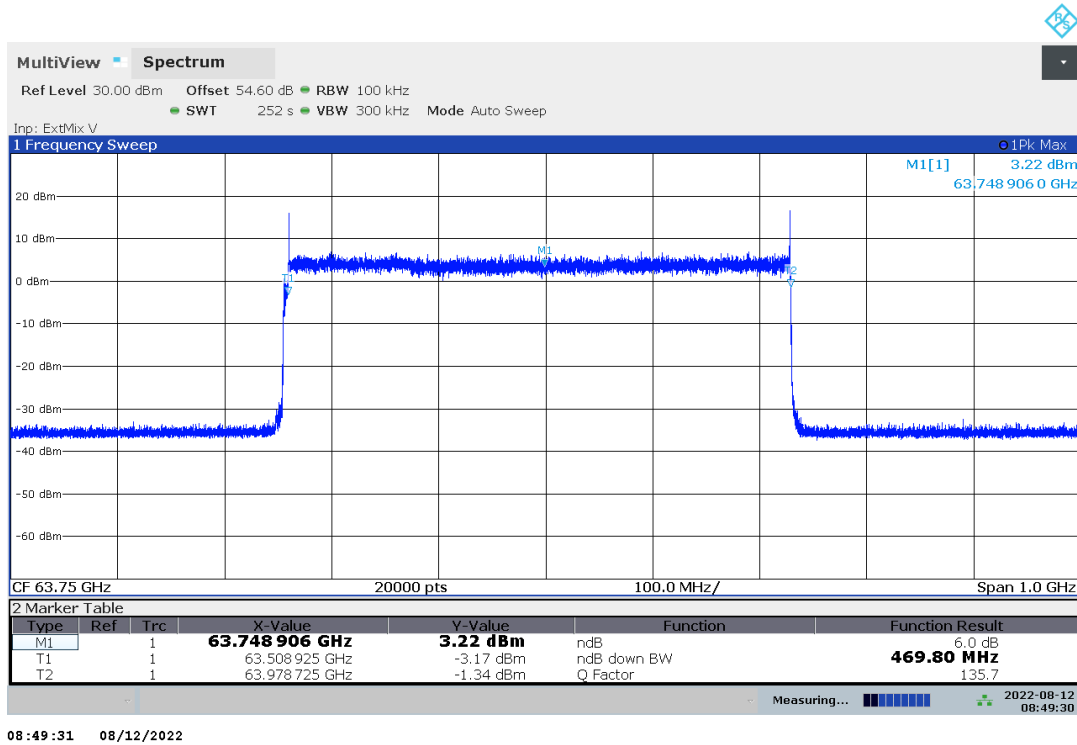
Plot no. 5: 99 % bandwidth, CB 09



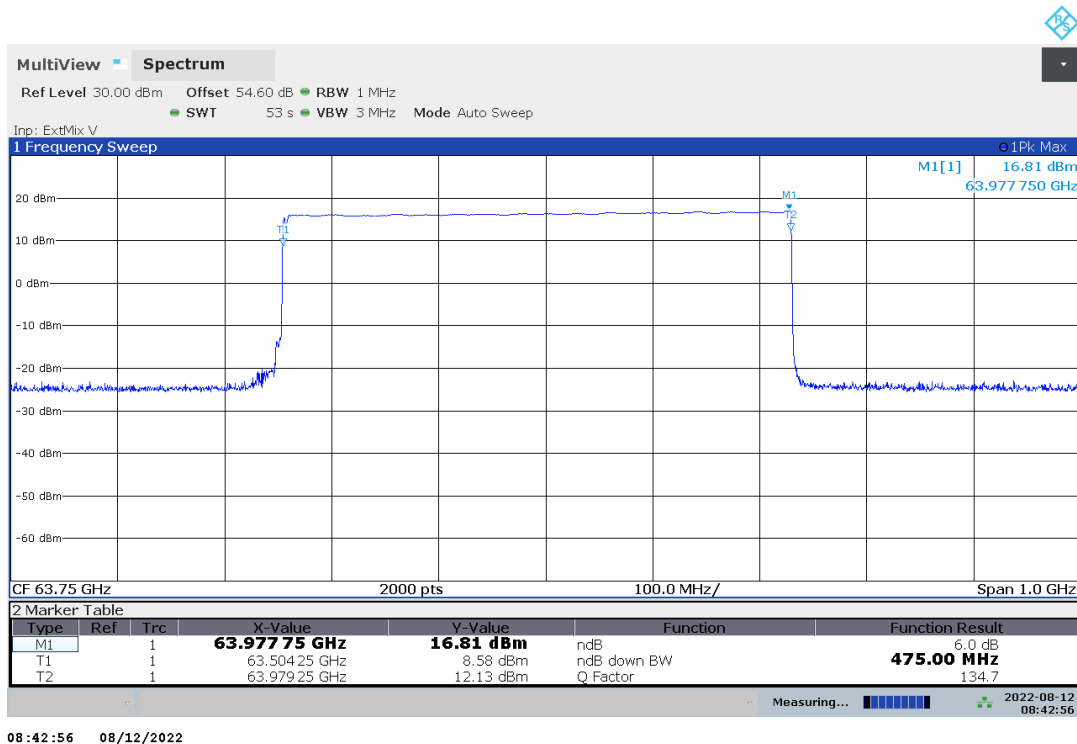
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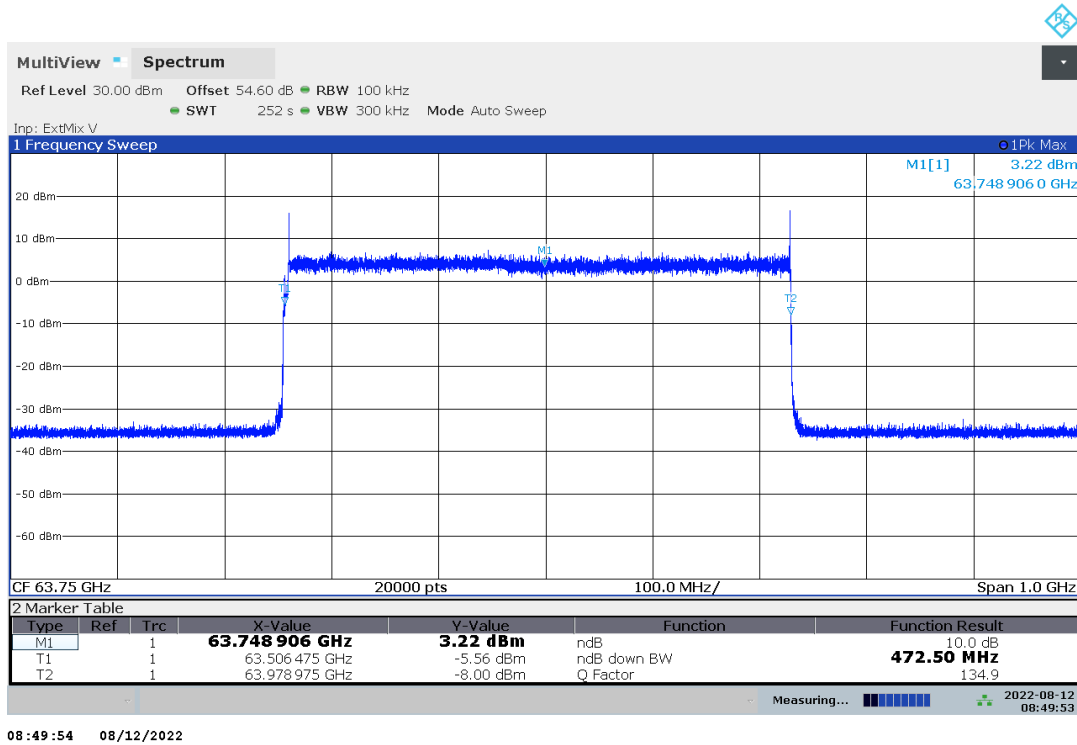
Plot no. 6: 6 dB bandwidth, CB 14



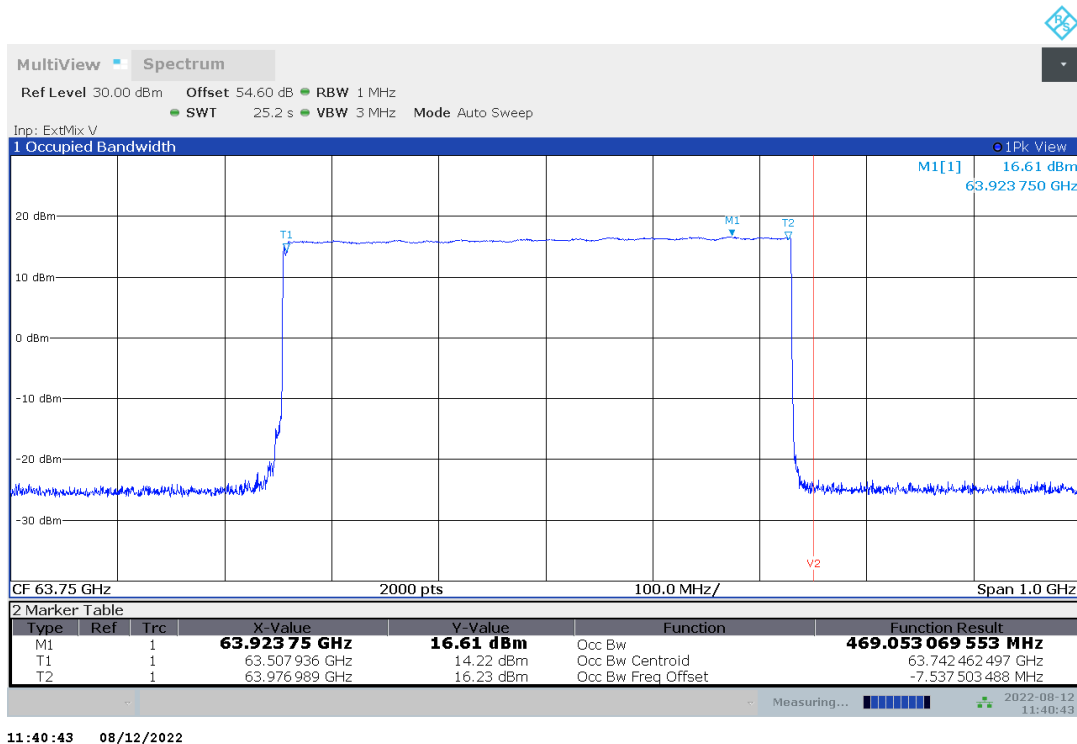
Plot no. 7: 6 dB bandwidth, 1 MHz RBW, CB 14



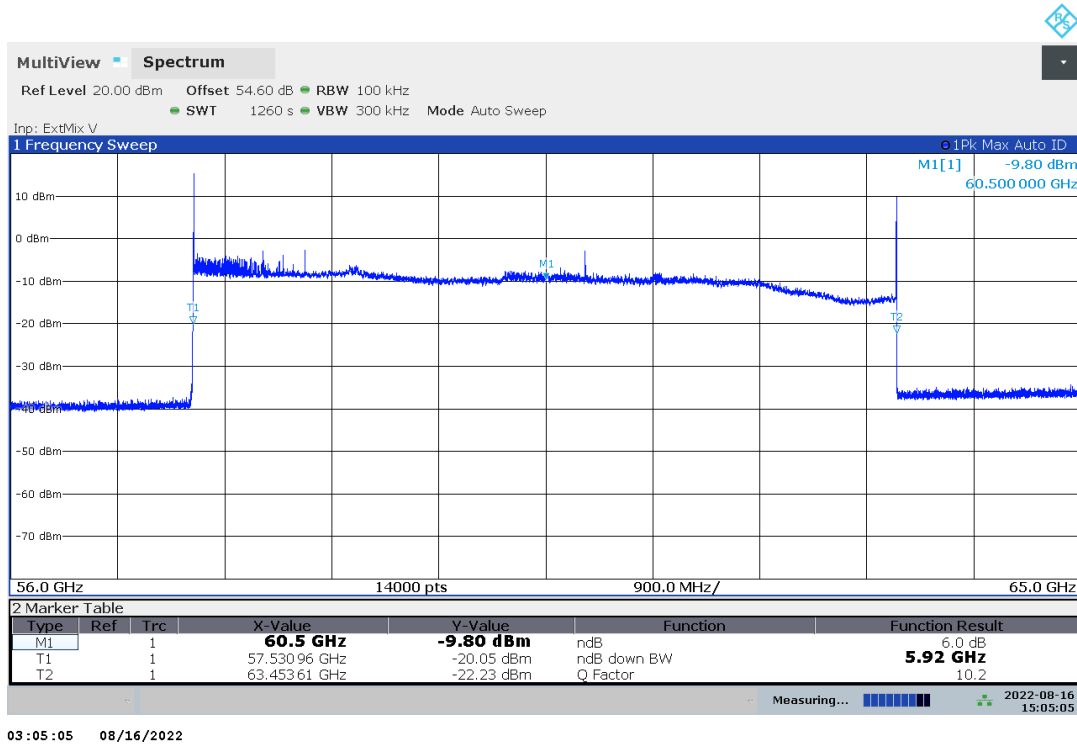
Plot no. 8: 10 dB bandwidth, CB 14



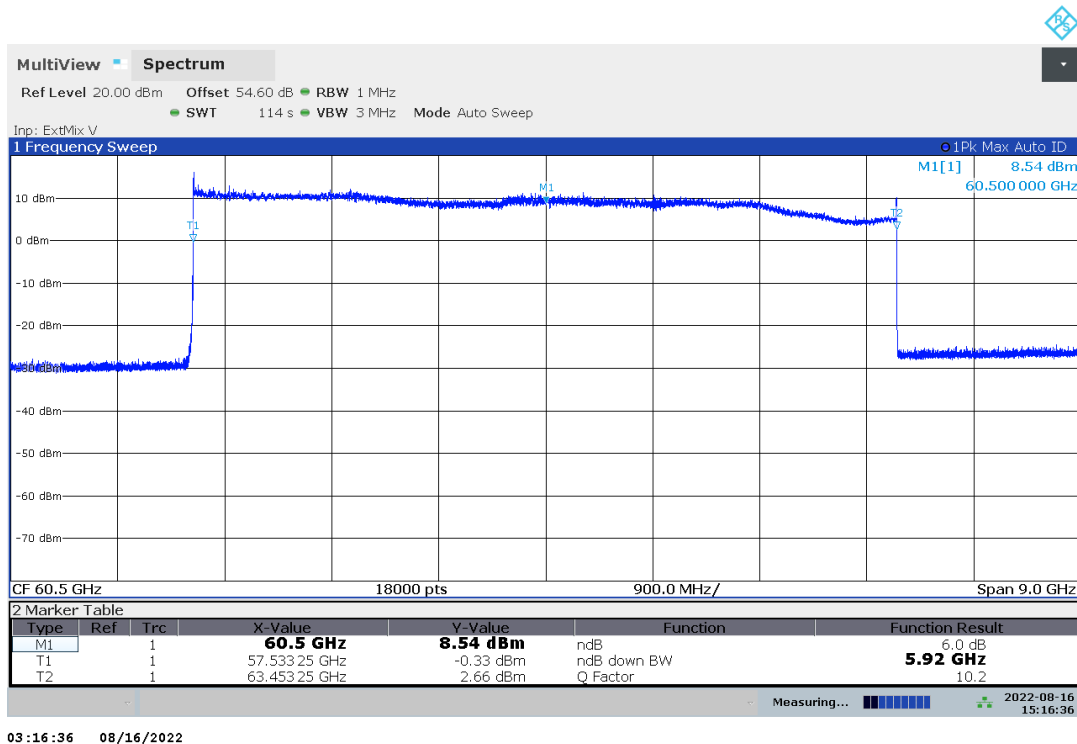
Plot no. 9: 99 % bandwidth, CB 14



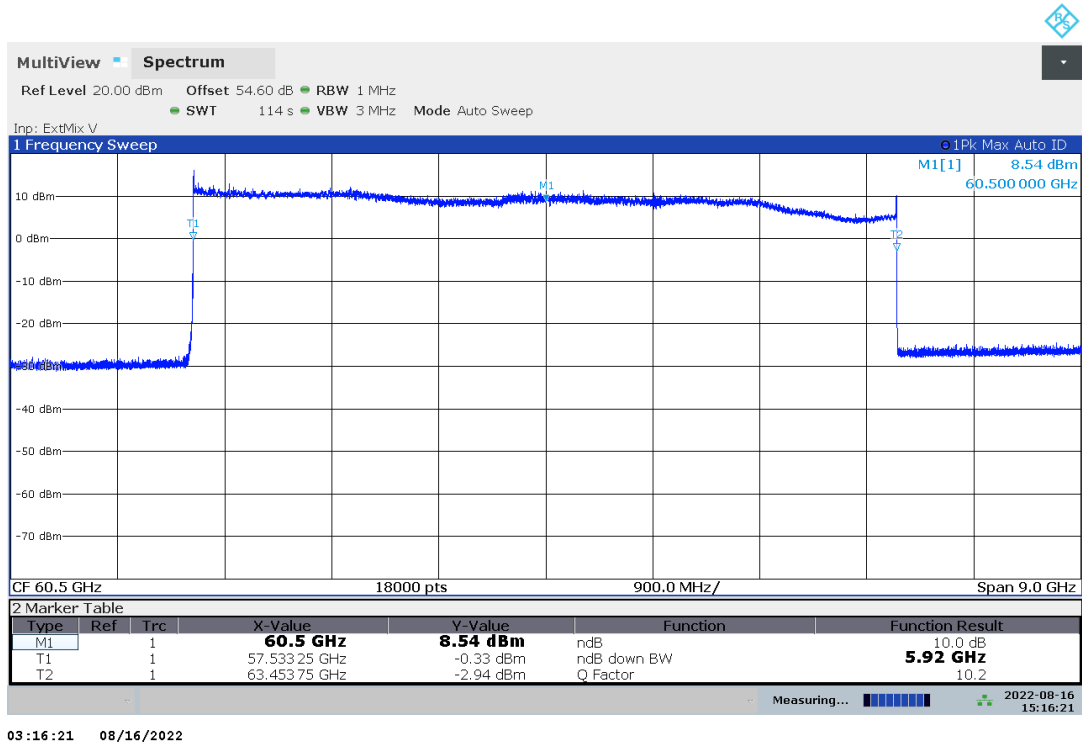
Plot no. 10: 6 dB bandwidth, CB 28



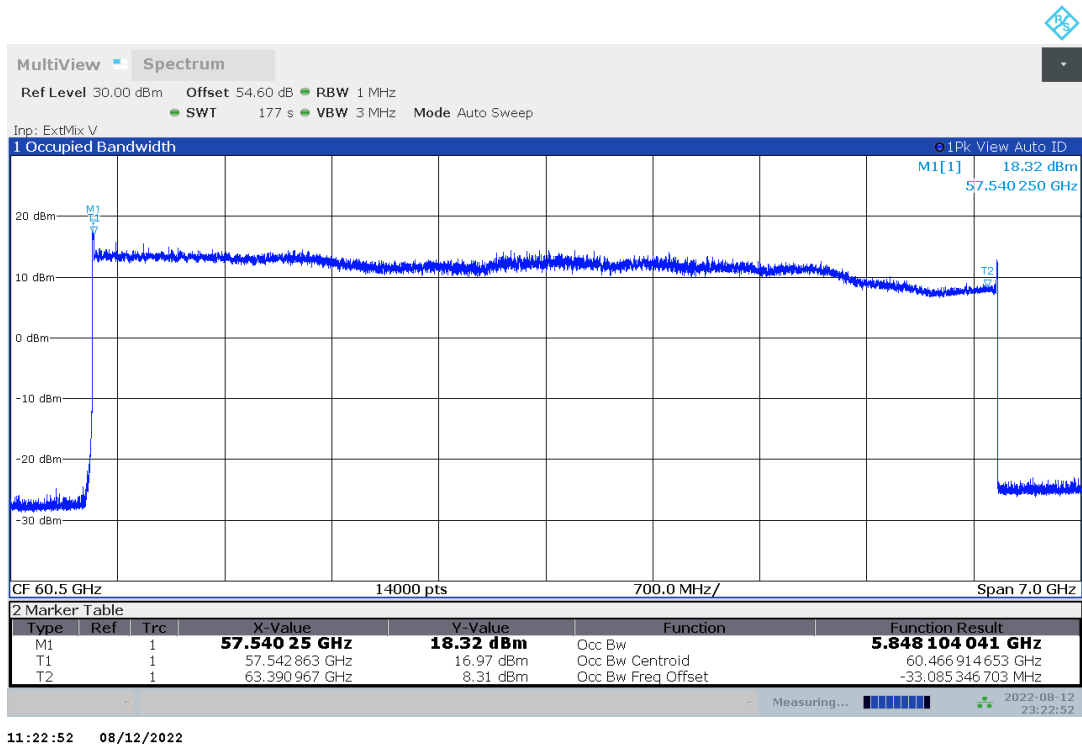
Plot no. 11: 6 dB bandwidth, 1 MHz RBW, CB 28



Plot no. 12: 10 dB bandwidth, CB 28



Plot no. 13: 99 % bandwidth, CB 28



7.2 Radiated EIRP

§ 15.255 (c) (4) / RSS-210, J.2

The peak power shall be measured with an RF detector that has a detection bandwidth that encompasses the 57-71 GHz band and has a video bandwidth of at least 10 MHz. The average emission levels shall be measured over the actual time period during which transmission occurs.

Limits

The average power of any emission shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm.

Test procedure

According to ANSI C63.10, 9.11 Measurement of the fundamental emission using an RF detector and substitution.

Test setup: 8.5

Test results:

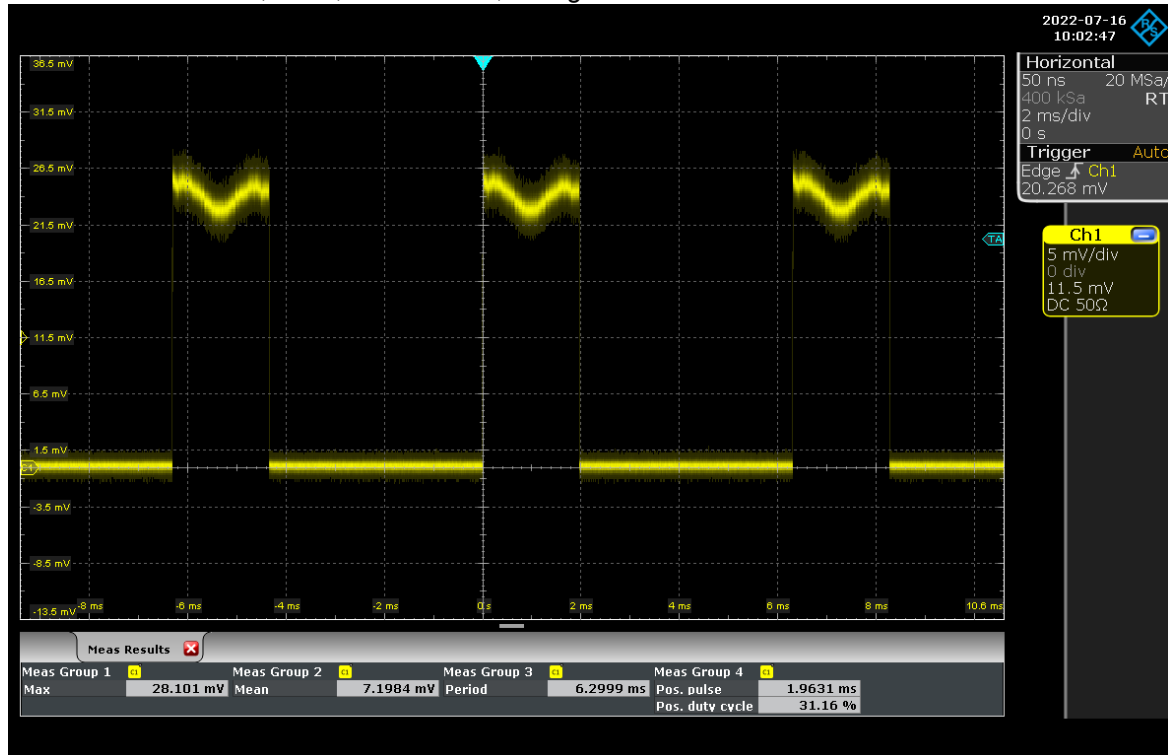
EUT mode	Temperature / Voltage	Peak Power [dBm]	Mean Power [dBm]	Duty Cycle
Primary mode – cb 05*	T_{nom} / V_{nom}	19.65	12.20	31.16 %
Primary mode – cb 07	T_{nom} / V_{nom}	8.00	-0.20	31.16 %
Primary mode – cb 09	T_{nom} / V_{nom}	10.10	0.90	31.16 %
Primary mode – cb 13	T_{nom} / V_{nom}	5.00	-2.90	31.16 %
Primary mode – cb 14*	T_{nom} / V_{nom}	17.10	08.75	31.16 %
Primary mode – cb 28	T_{nom} / V_{nom}	9.90	-3.60	31.16 %
Primary mode – cb 29*	T_{nom} / V_{nom}	23.35	12.00	31.16 %

*note: only informative as full FMCW bandwidth measurement, not available to customer, highest power settings due to EU market

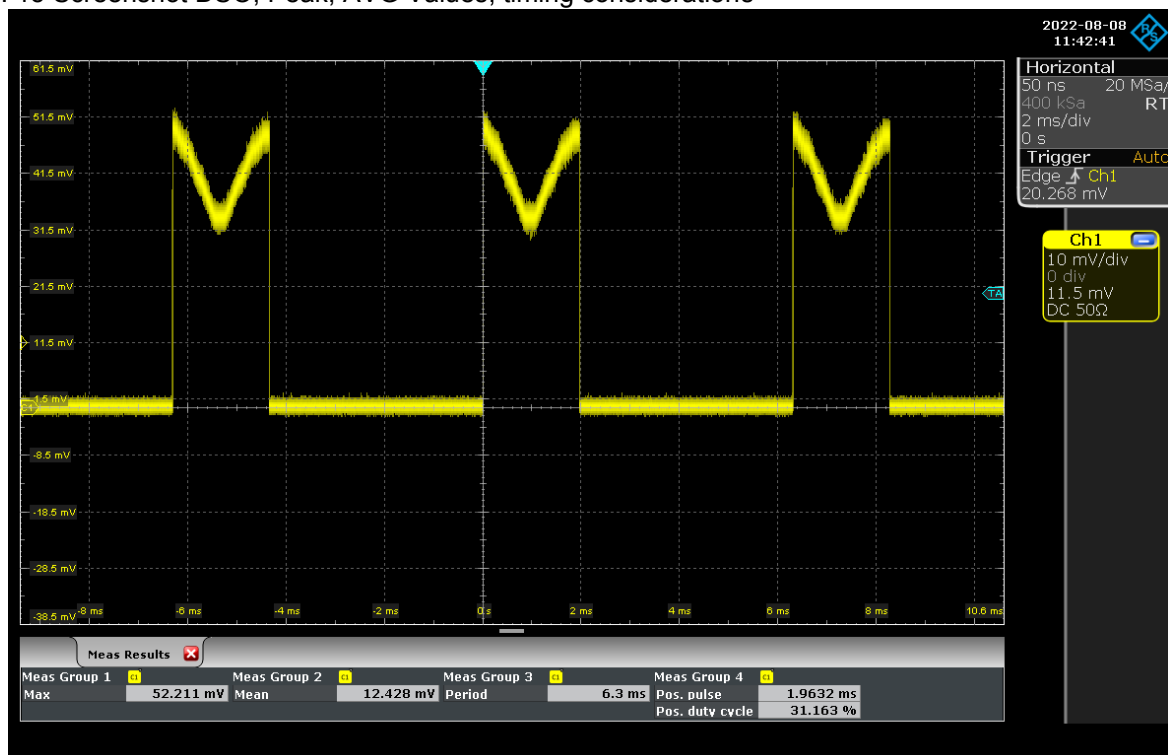
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Plot no. 14: Screenshot DSO, Peak, AVG Values, timing considerations



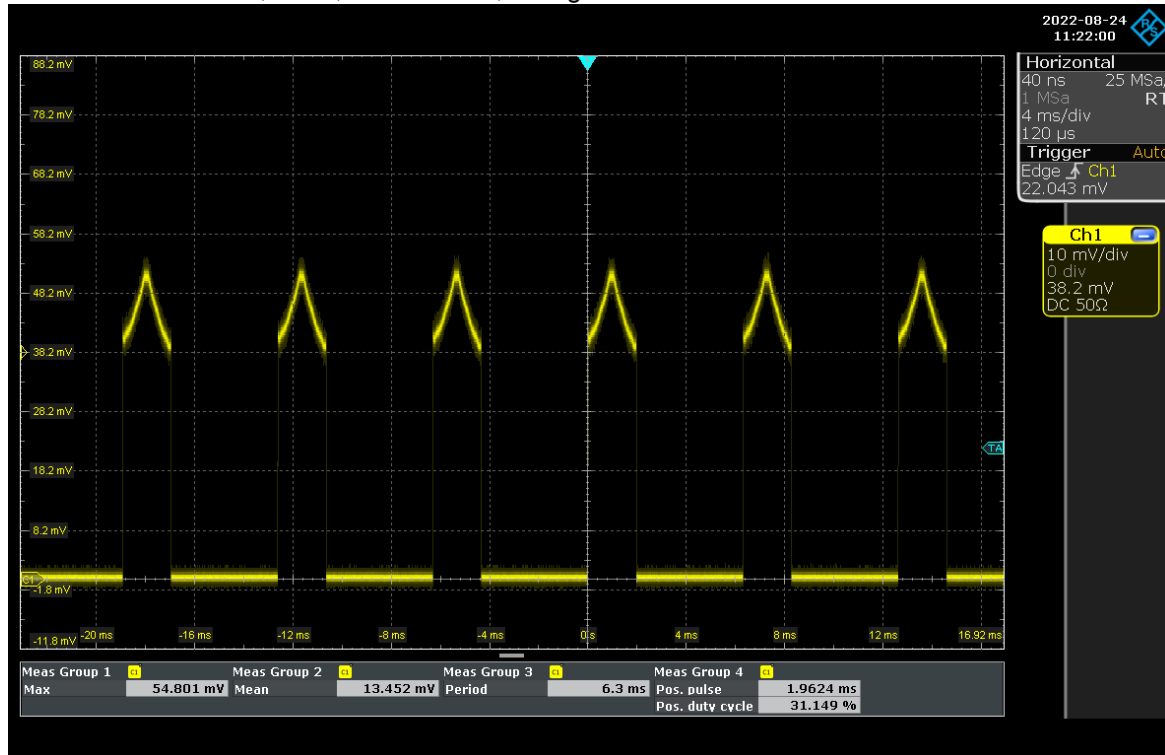
Plot no. 15 Screenshot DSO, Peak, AVG Values, timing considerations



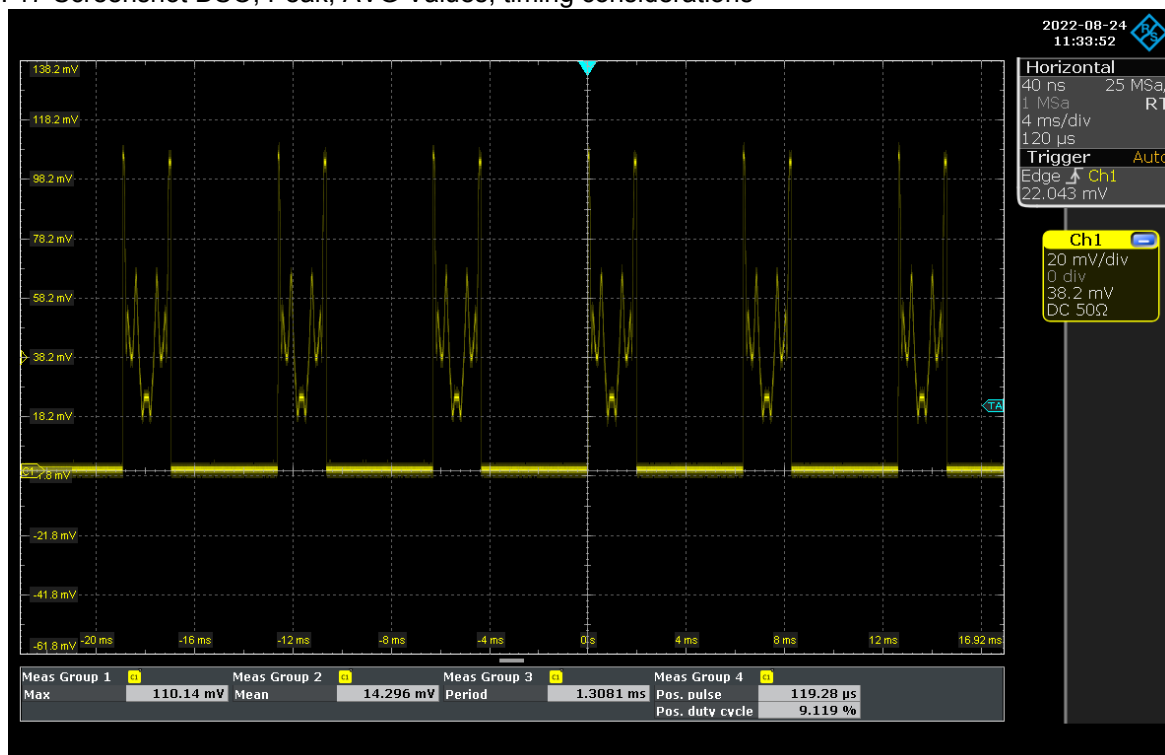
TR no.: 21116498-25420-0

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Plot no. 16: Screenshot DSO, Peak, AVG Values, timing considerations

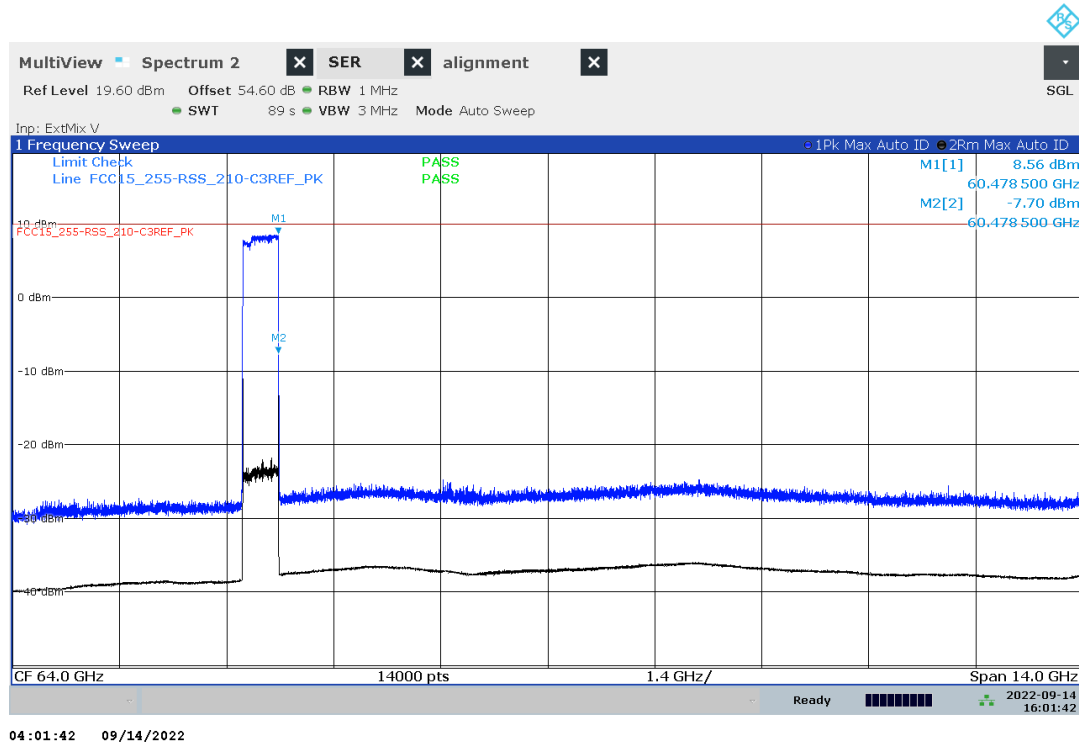


Plot no. 17 Screenshot DSO, Peak, AVG Values, timing considerations



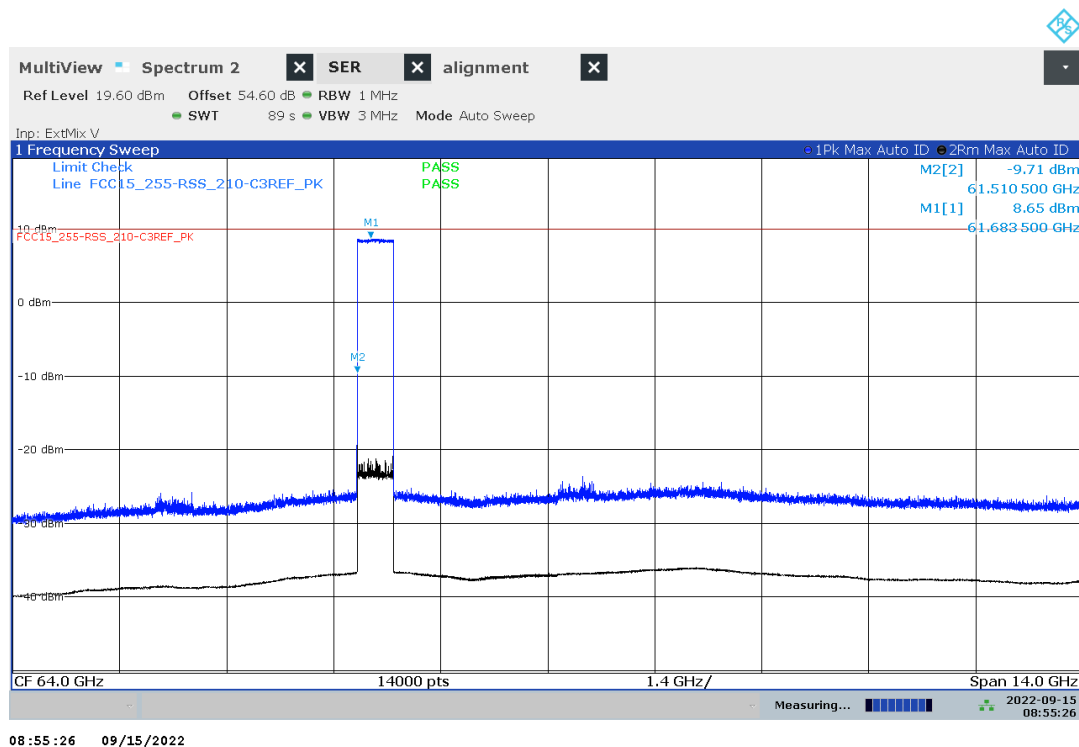
Note: duty cycle measured manually since DSO trigger for calculations was not working correctly. 31.16 % positive duty cycle measured.

Plot no. 18: PSD at 60.25 GHz



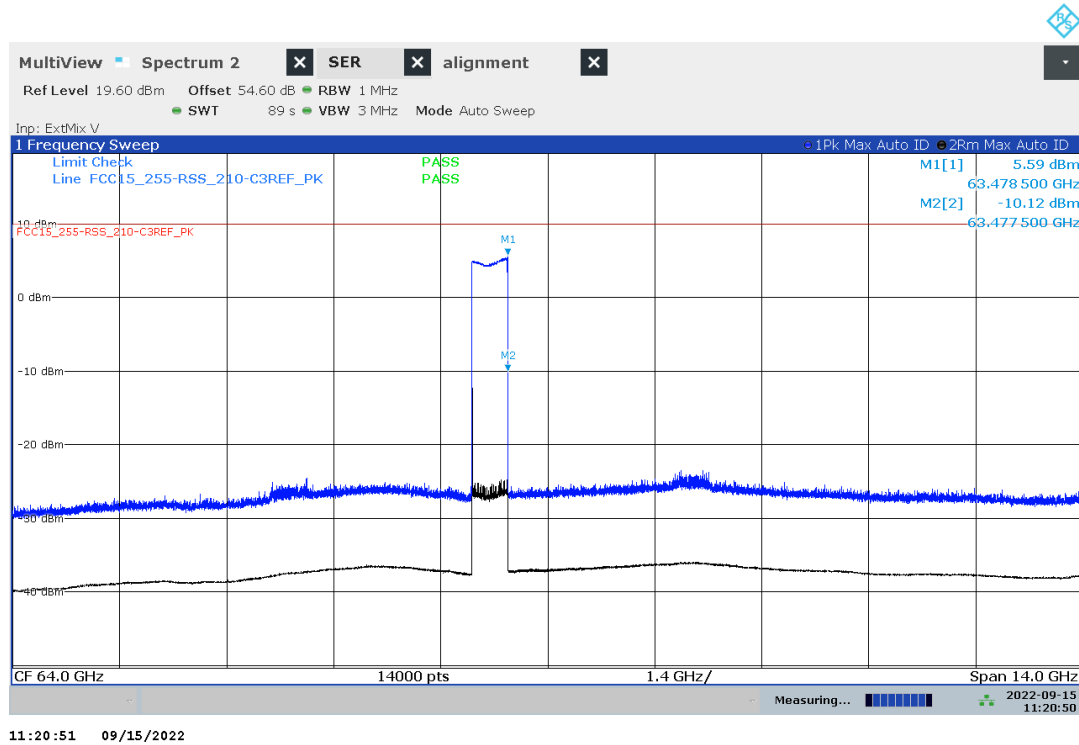
*Note: only informative since measurements are to be done with a matched diode

Plot no. 19: PSD at 61.75 GHz



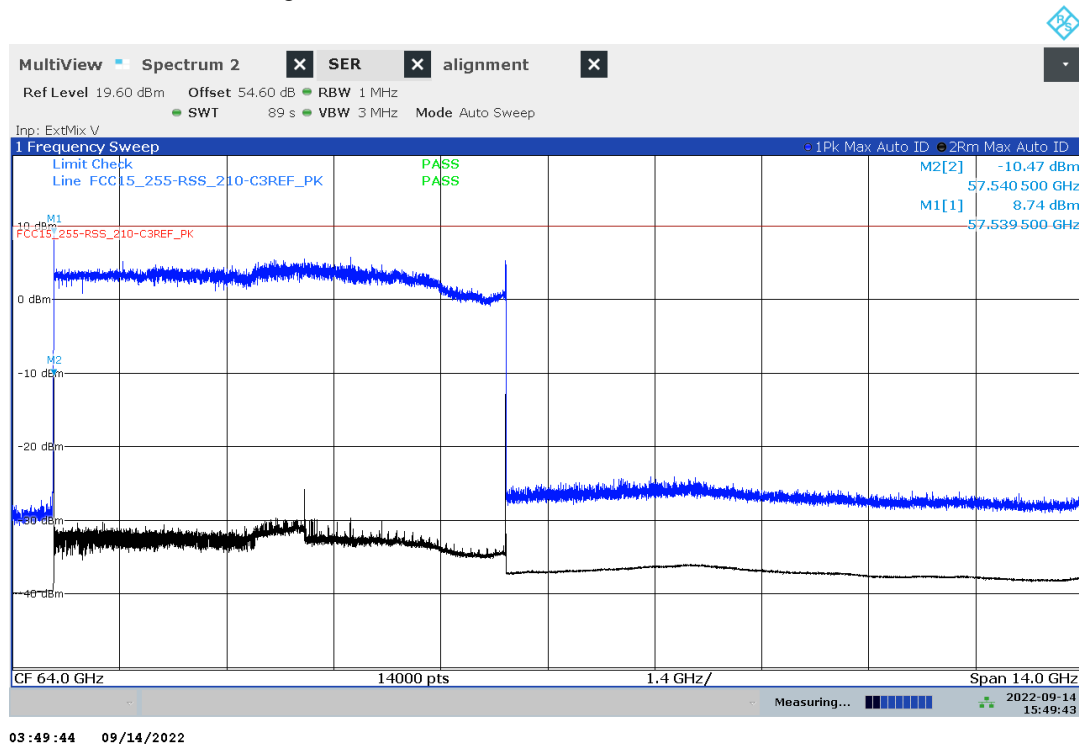
*Note: only informative since measurements are to be done with a matched diode

Plot no. 20: PSD at 63.25 GHz



*Note: only informative since measurements are to be done with a matched diode

Plot no. 21: PSD at 60 GHz with highest bandwidth



*Note: only informative since measurements are to be done with a matched diode

7.3 Frequency stability (§2.1055 & §15.255 (f))

Description

§2.1055 / RSS-210, J.6

Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30° to $+50^{\circ}$ centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

Limits

§15.255 Operation within the band 57-71 GHz:

(f) Frequency stability. Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to $+50$ degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

Test procedure

ANSI C63.10, 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Test setup: 8.6

Test results under normal and extreme test conditions:

EUT mode	Test conditions	f_L [GHz]	f_H [GHz]	99% OBW [MHz]
500 MHz bandwidth, Channel block 05	-20 °C	59.004	59.482	478.453
	-10 °C	59.004	59.482	478.665
	0 °C	59.004	59.482	478.418
	10 °C	59.004	59.482	478.253
	20 °C / V_{min}	59.004	59.482	478.296
	20 °C / V_{nom}	59.004	59.482	478.200
	20 °C / V_{max}	59.004	59.482	478.145
	30 °C	59.004	59.482	477.970
	40 °C	59.004	59.482	478.072
	50 °C	59.004	59.482	478.353
500 MHz bandwidth, Channel block 09	-20 °C	61.003	61.483	479.996
	-10 °C	61.002	61.482	479.878
	0 °C	61.003	61.483	479.930
	10 °C	61.003	61.483	479.398
	20 °C / V_{min}	61.003	61.483	479.430
	20 °C / V_{nom}	61.003	61.482	479.488
	20 °C / V_{max}	61.003	61.483	479.843
	30 °C	61.003	61.483	479.429
	40 °C	61.003	61.482	479.372
	50 °C	61.003	61.483	479.504
500 MHz bandwidth, channel block 14	-20 °C	63.503	63.982	478.839
	-10 °C	63.503	63.982	478.785
	0 °C	63.503	63.982	478.859
	10 °C	63.503	63.983	479.126
	20 °C / V_{min}	63.503	63.982	479.334
	20 °C / V_{nom}	63.503	63.982	479.249
	20 °C / V_{max}	63.503	63.982	479.215
	30 °C	63.502	63.983	480.426
	40 °C	63.502	63.983	480.678
	50 °C	63.502	63.983	480.883
6 GHz bandwidth, channel block 28	-20 °C	57.516	63.423	5 907
	-10 °C	57.516	63.424	5 908
	0 °C	57.516	63.424	5 908
	10 °C	57.516	63.425	5 909
	20 °C / V_{min}	57.516	63.425	5 909
	20 °C / V_{nom}	57.516	63.425	5 909
	20 °C / V_{max}	57.516	63.425	5 909
	30 °C	57.516	63.426	5 910
	40 °C	57.515	63.427	5 912
	50 °C	57.515	63.428	5 913

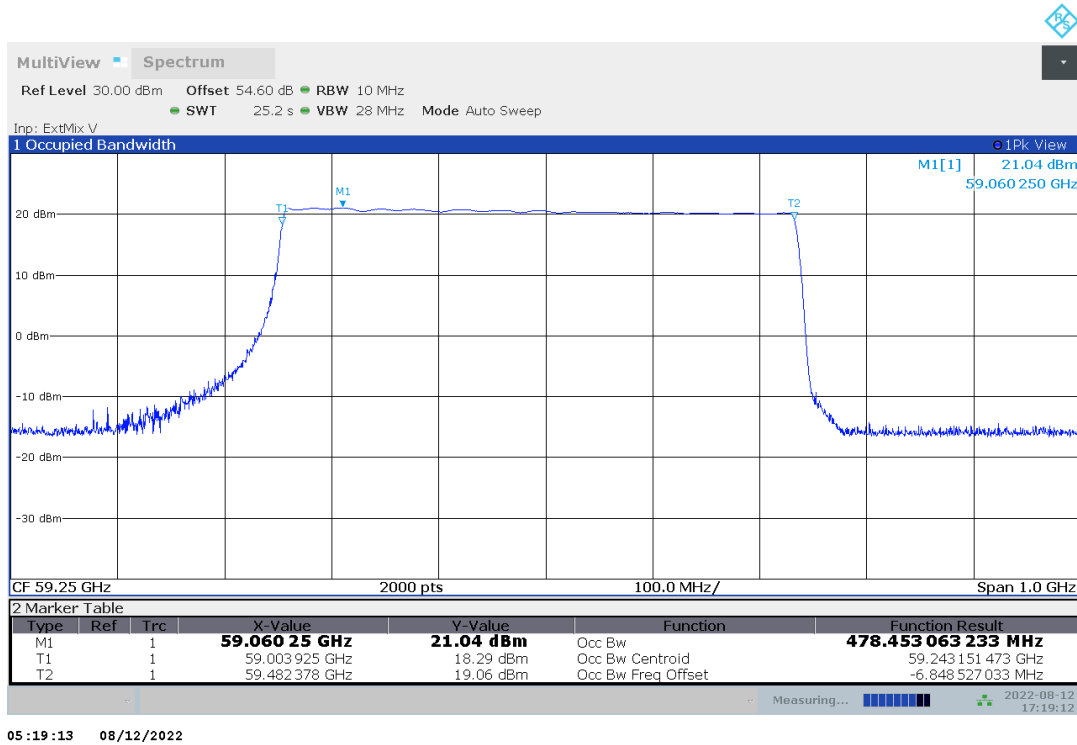
Voltage variation

Input voltage variation does not affect the transmitted signal (see plots for ambient/normal temperature).

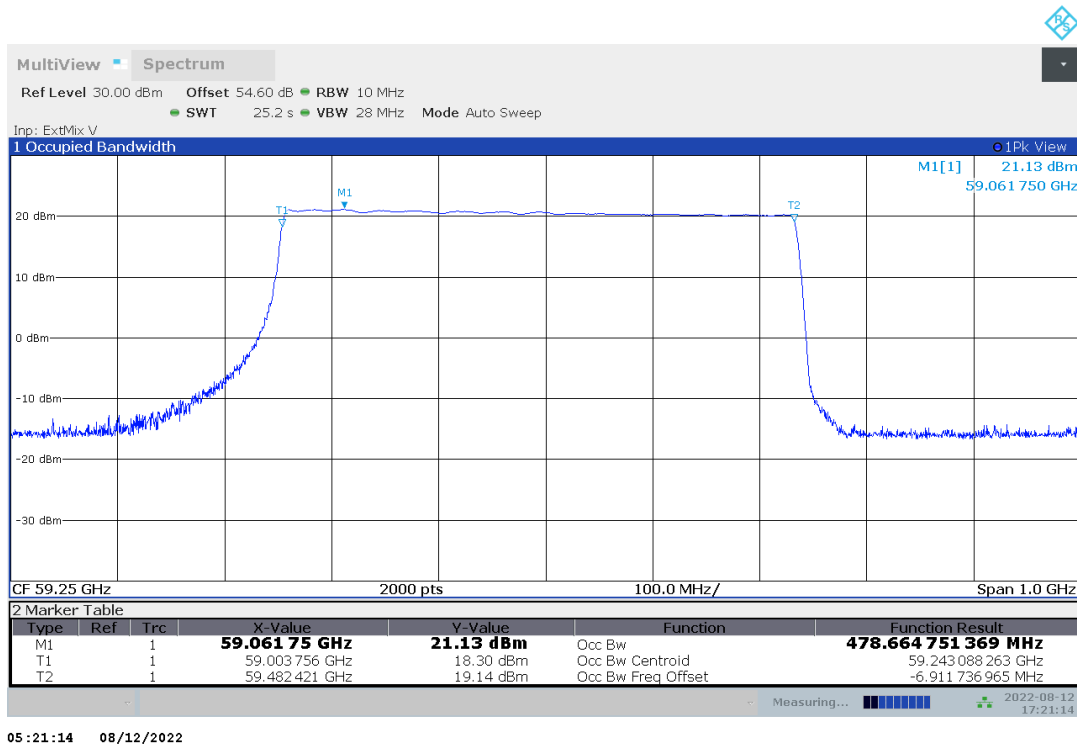
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Plot no. 22: 99% OBW, Peak detector, -20 °C, 500 MHz bandwidth, channel 05



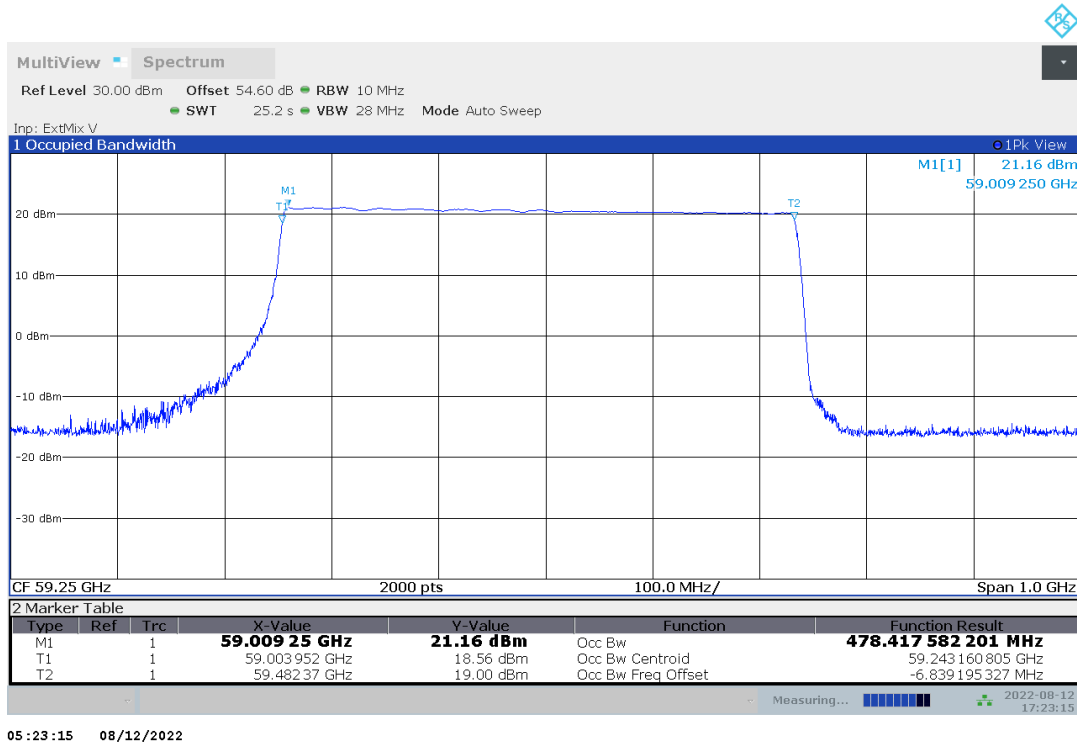
Plot no. 23: 99% OBW, Peak detector, -10 °C, 500 MHz bandwidth, channel 05



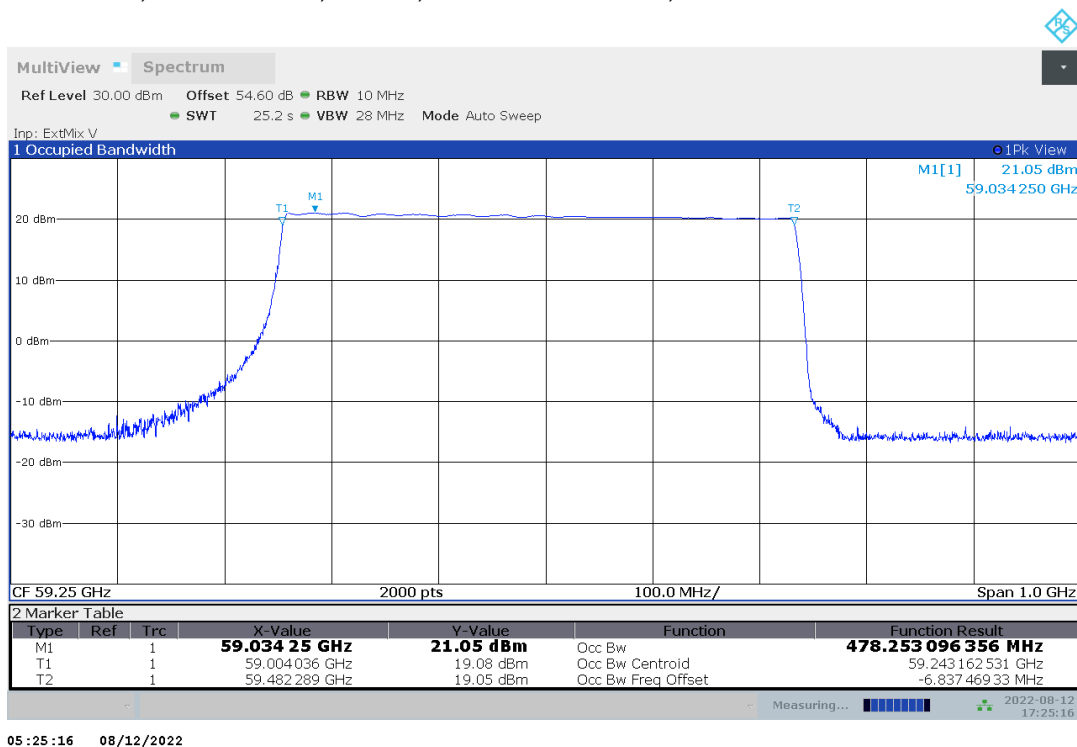
TR no.: **21116498-25420-0**

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Plot no. 24: 99% OBW, Peak detector, +0 °C, 500 MHz bandwidth, channel 05



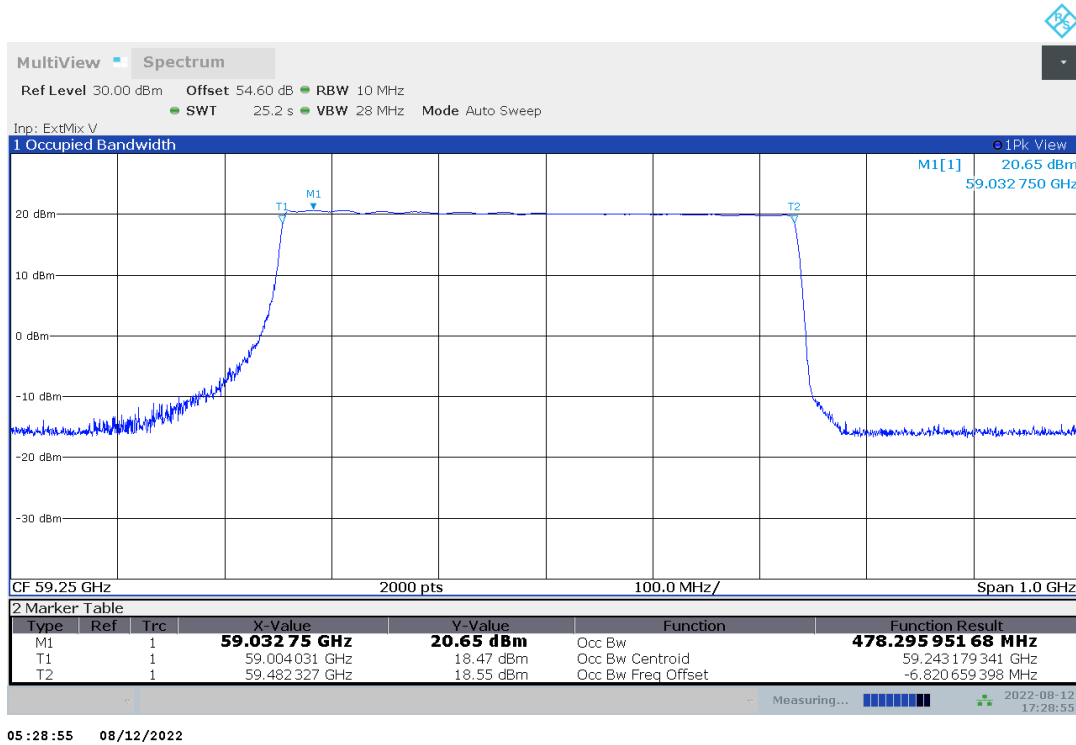
Plot no. 25: 99% OBW, Peak detector, +10 °C, 500 MHz bandwidth, channel 05



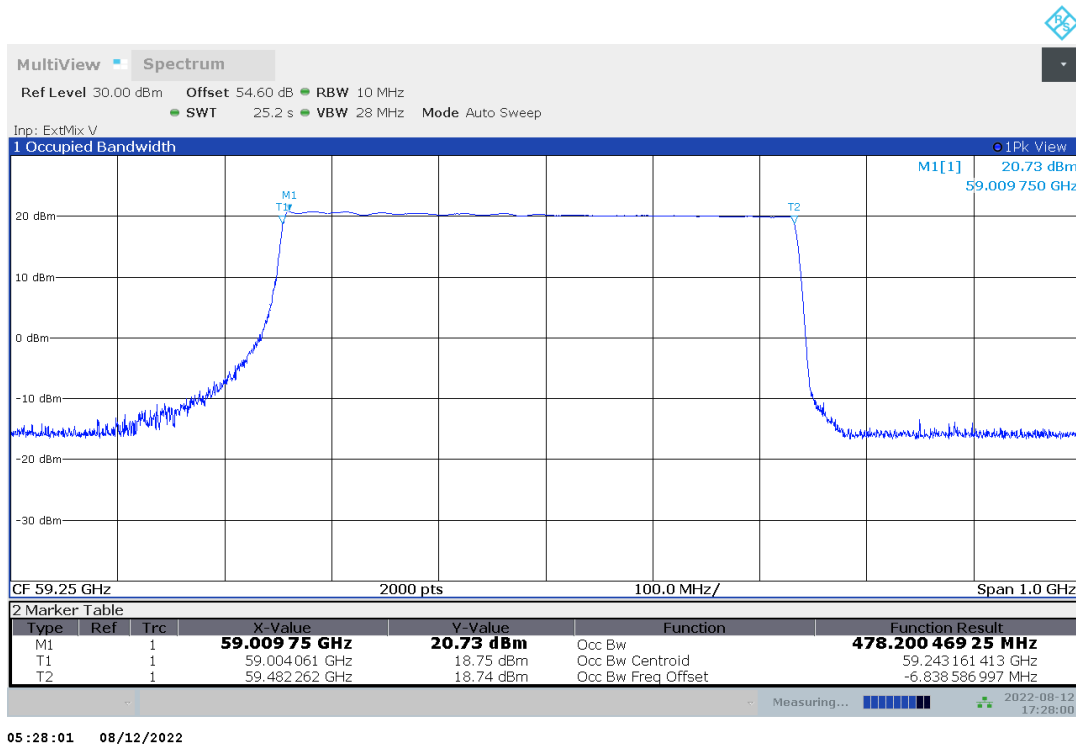
TR no.: 21116498-25420-0

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Plot no. 26: 99% OBW, Peak detector, +20 °C, V_{\min} , 500 MHz bandwidth, channel 05



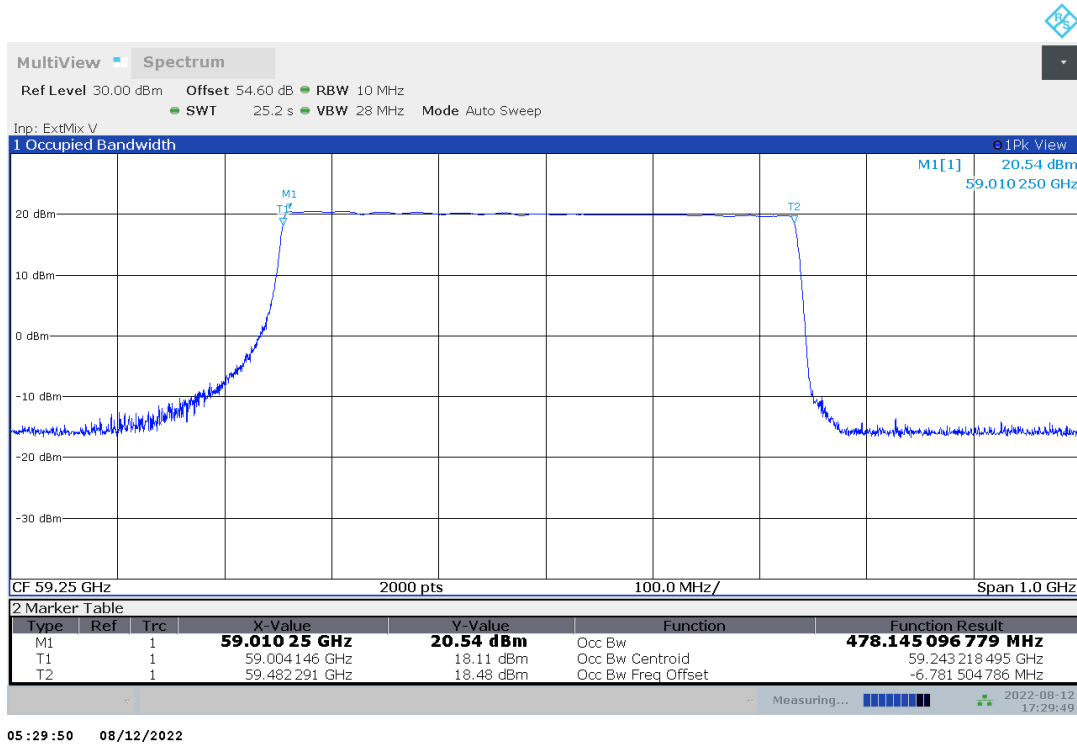
Plot no. 27: 99% OBW, Peak detector, +20 °C, V_{nom} , 500 MHz bandwidth, channel 05



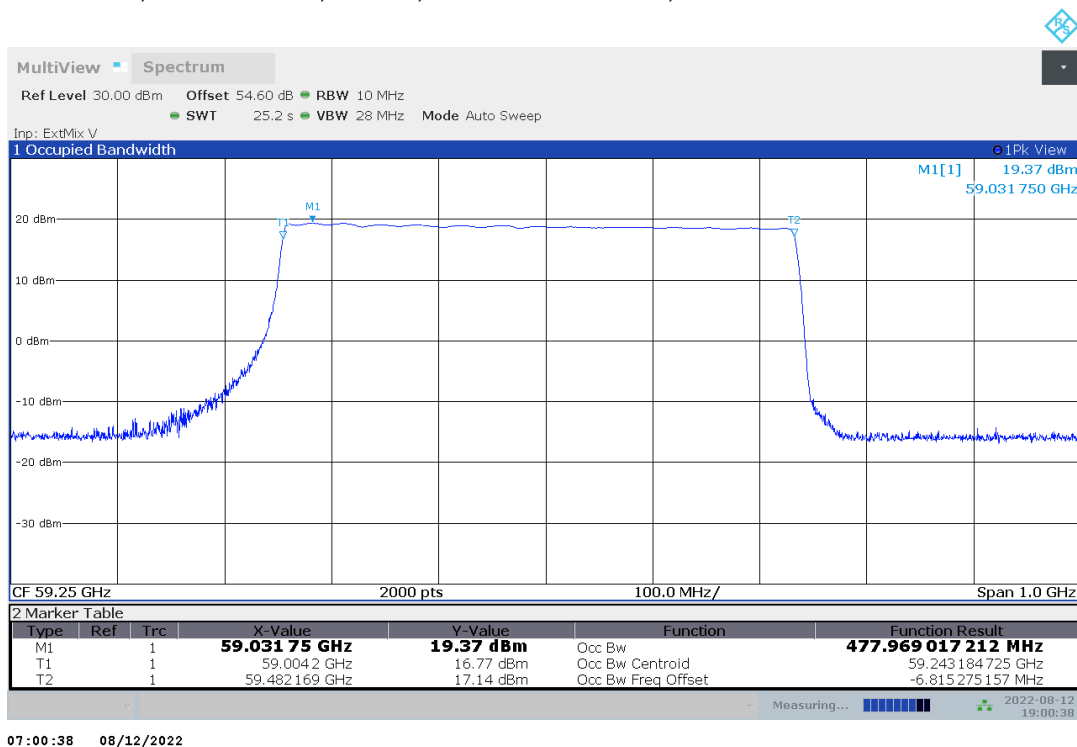
TR no.: 21116498-25420-0

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Plot no. 28: 99% OBW, Peak detector, +20 °C, V_{\max} , 500 MHz bandwidth, channel 05



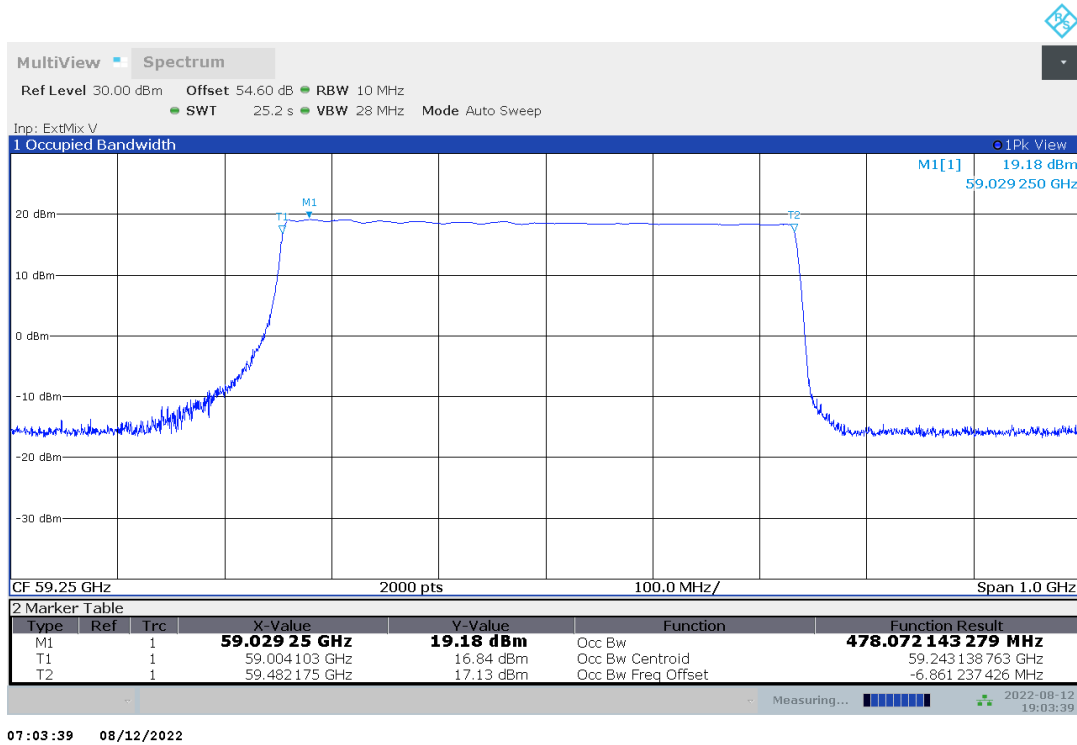
Plot no. 29: 99% OBW, Peak detector, +30 °C, 500 MHz bandwidth, channel 05



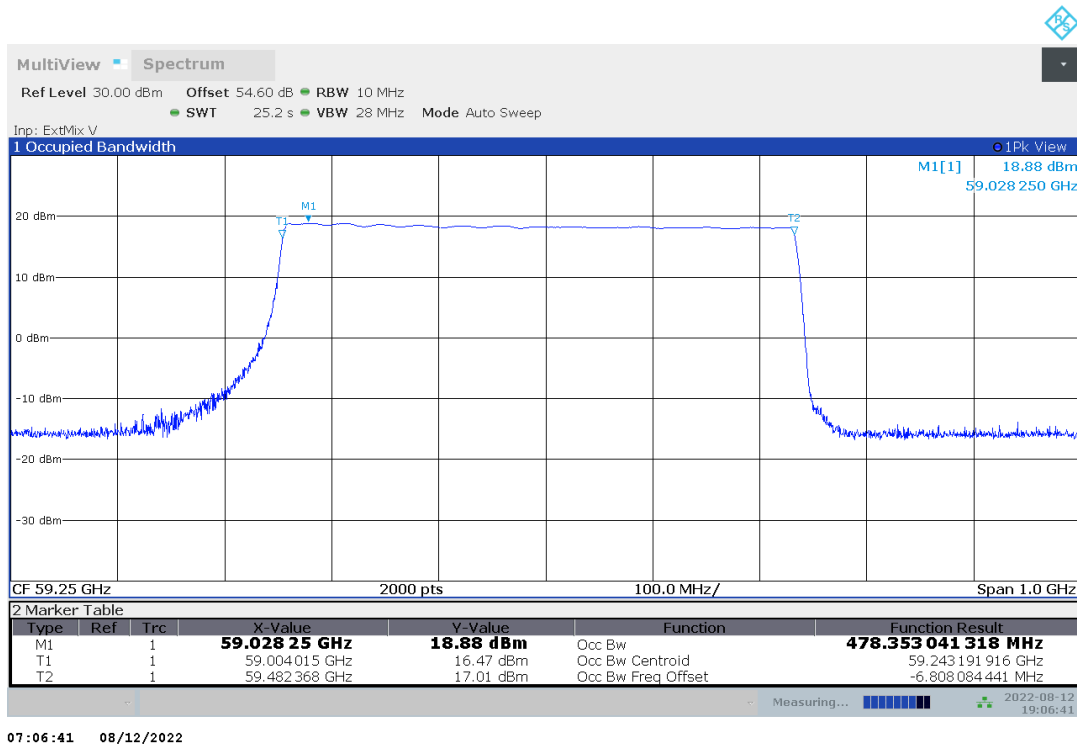
TR no.: **21116498-25420-0**

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Plot no. 30: 99% OBW, Peak detector, +40 °C, 500 MHz bandwidth, channel 05



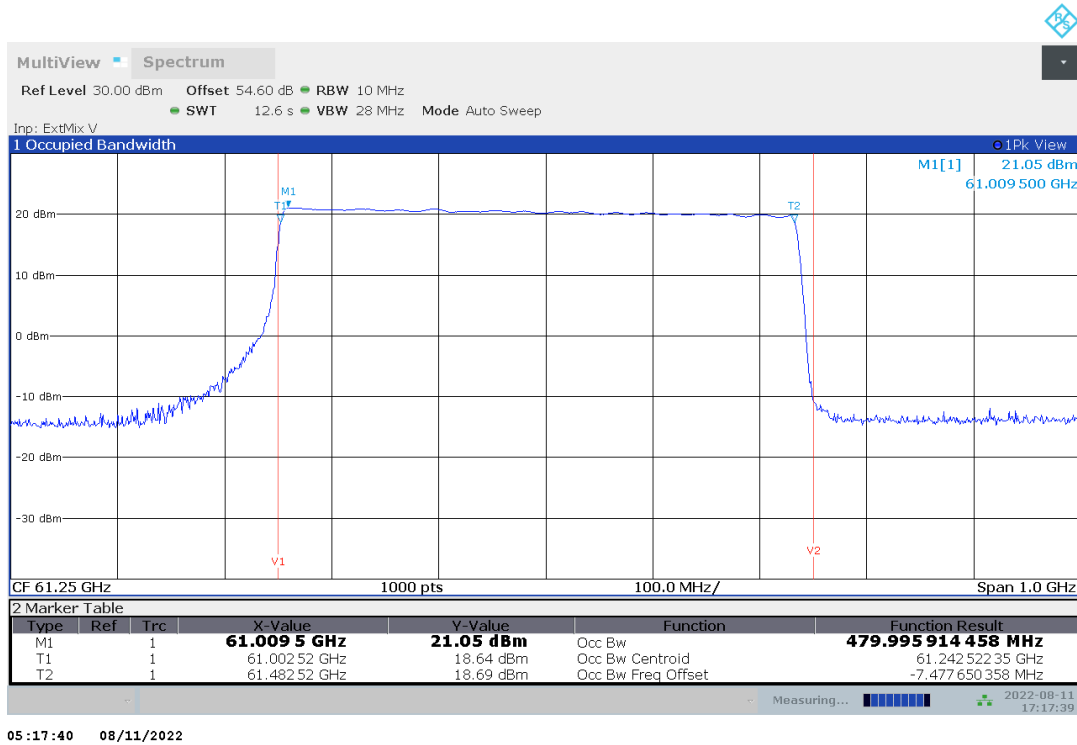
Plot no. 31: 99% OBW, Peak detector, +50 °C, 500 MHz bandwidth, channel 05



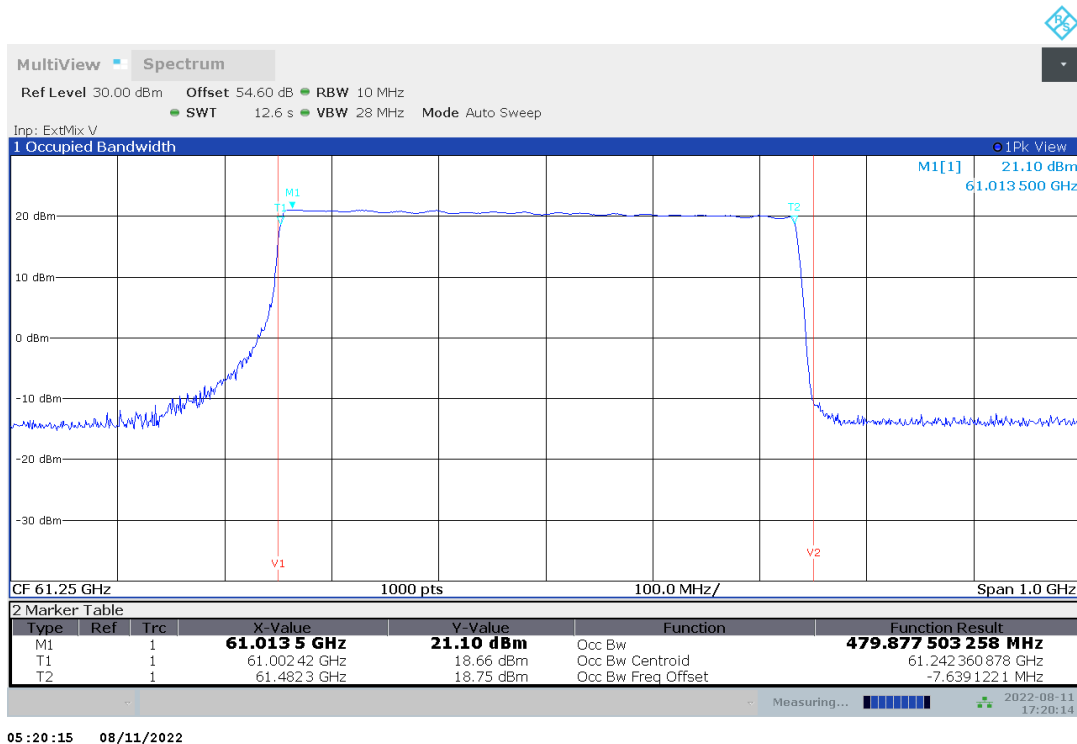
TR no.: **21116498-25420-0**

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Plot no. 32: 99% OBW, Peak detector, -20 °C, 500 MHz bandwidth, channel 09



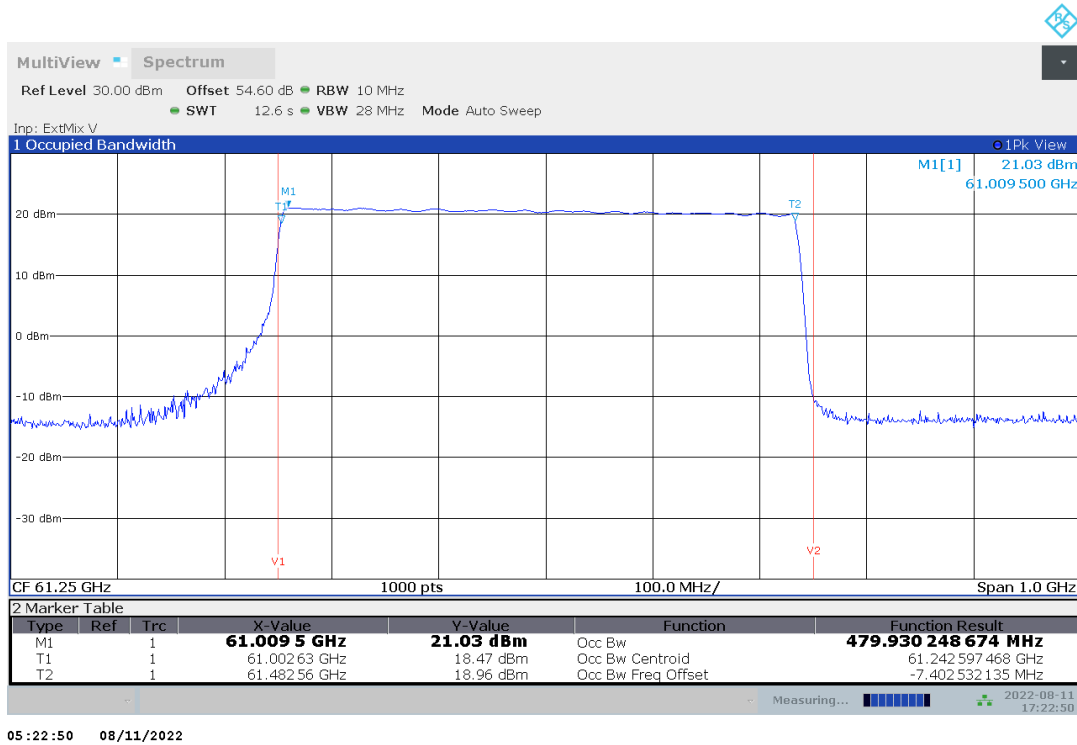
Plot no. 33: 99% OBW, Peak detector, -10 °C, 500 MHz bandwidth, channel 09



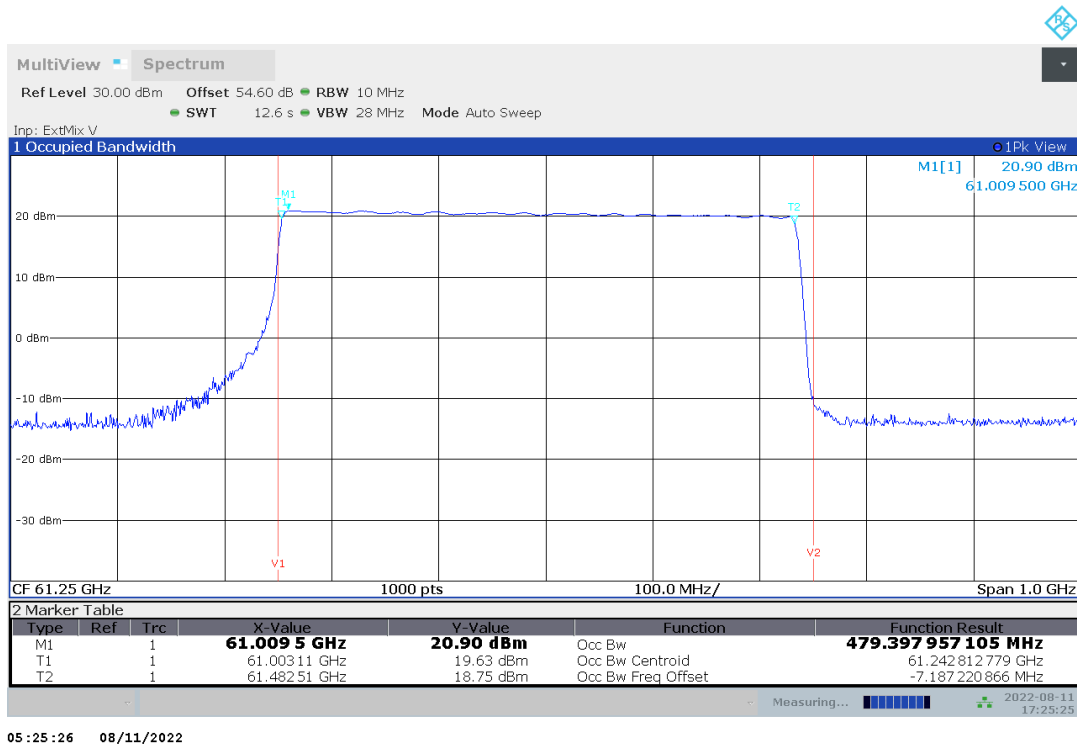
TR no.: 21116498-25420-0

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Plot no. 34: 99% OBW, Peak detector, +0 °C, 500 MHz bandwidth, channel 09



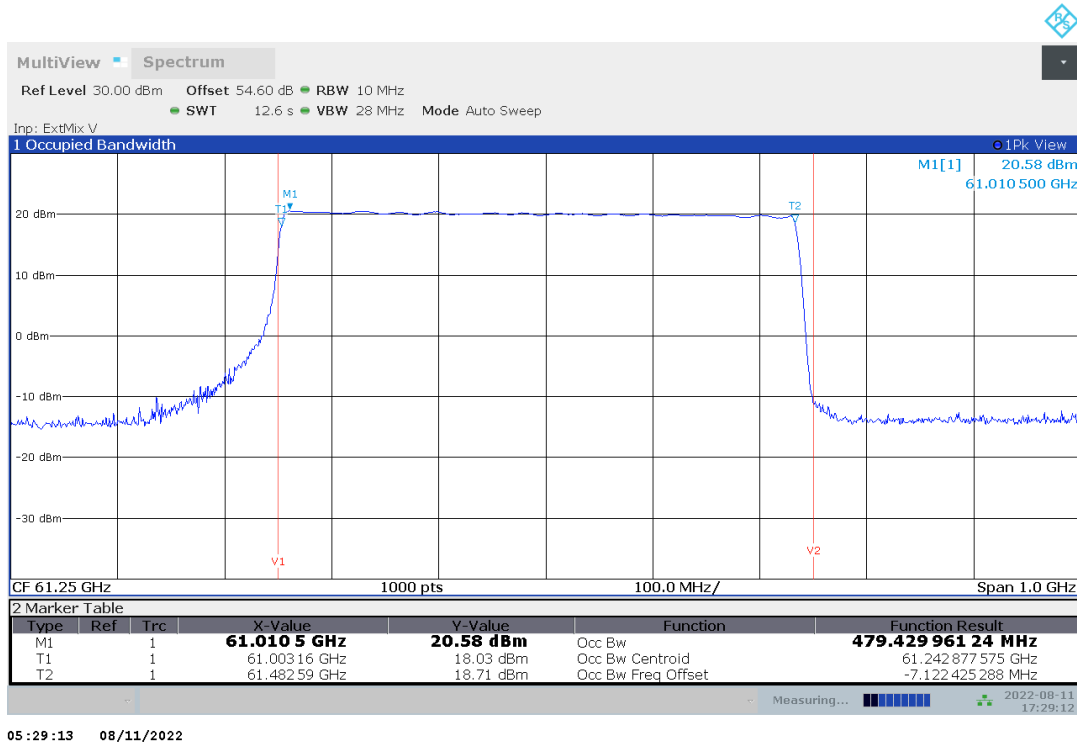
Plot no. 35: 99% OBW, Peak detector, +10 °C, 500 MHz bandwidth, channel 09



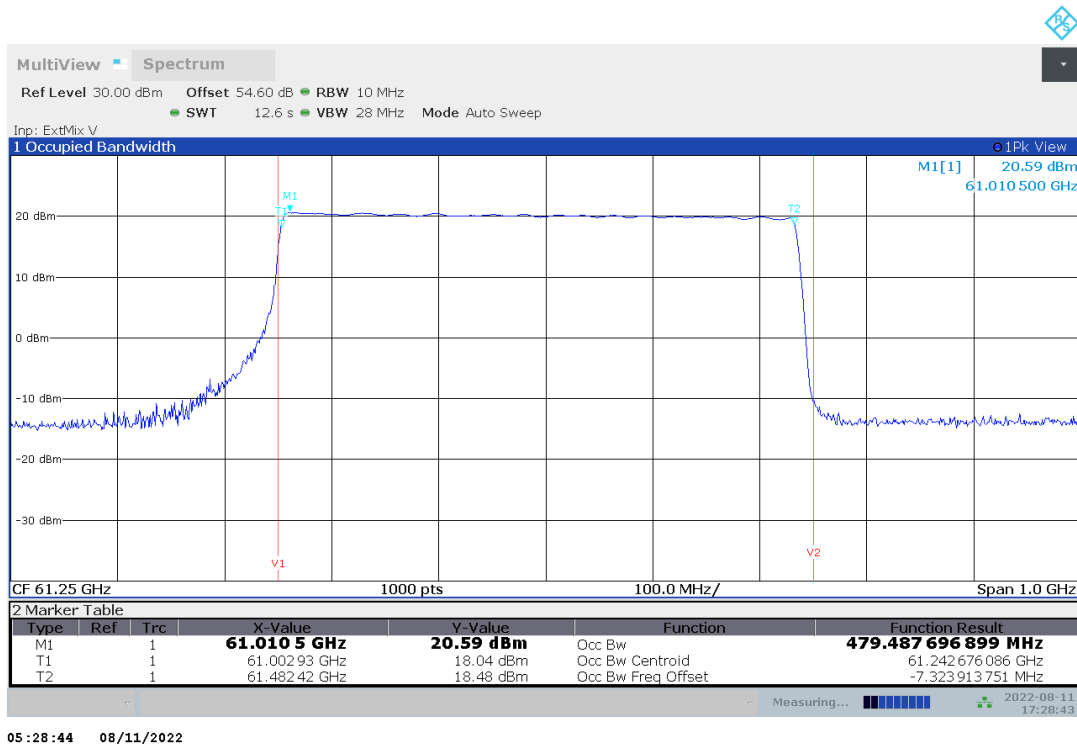
TR no.: 21116498-25420-0

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Plot no. 36: 99% OBW, Peak detector, +20 °C, V_{\min} , 500 MHz bandwidth, channel 09



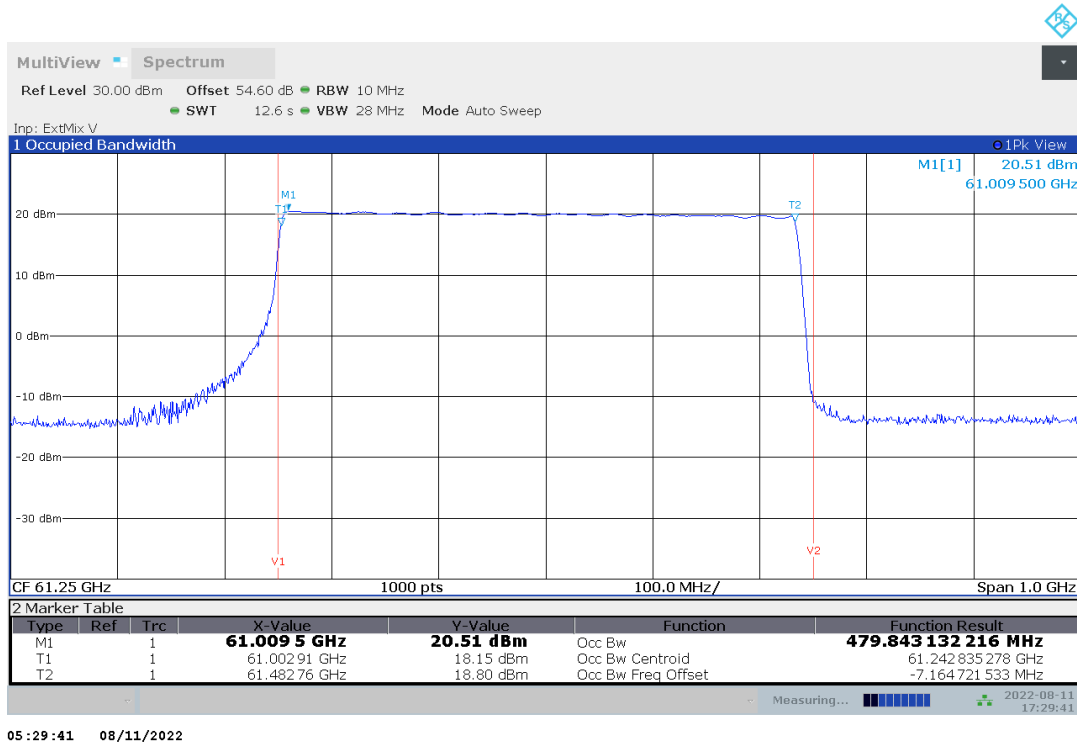
Plot no. 37: 99% OBW, Peak detector, +20 °C, V_{nom} , 500 MHz bandwidth, channel 09



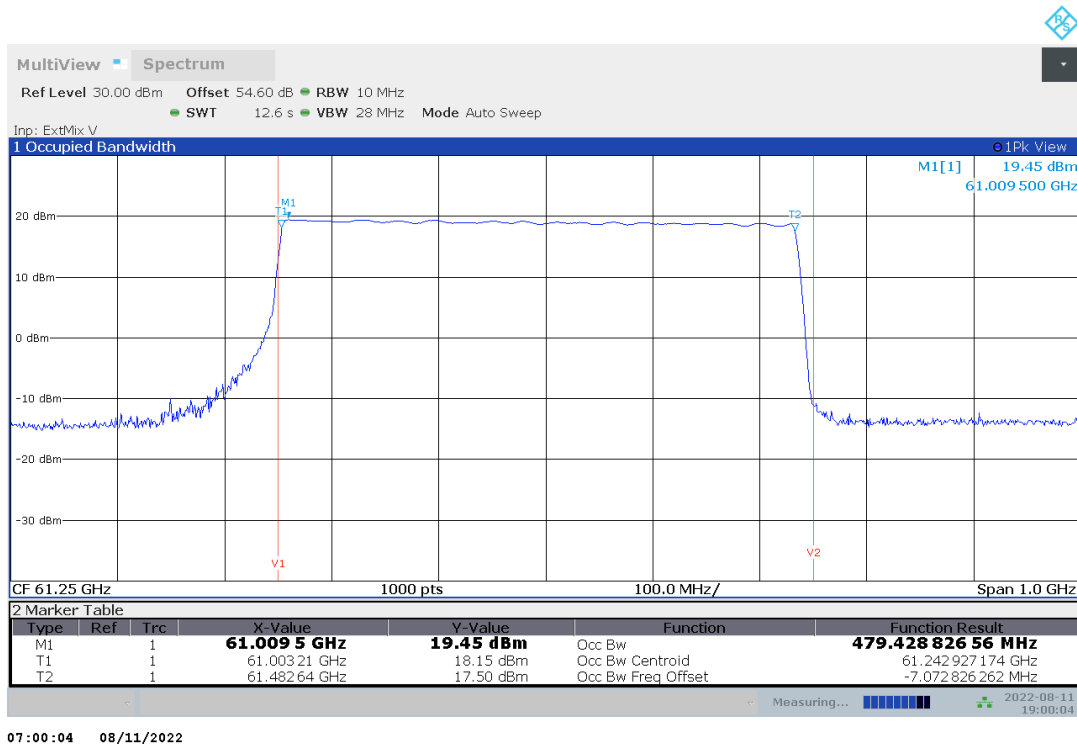
TR no.: 21116498-25420-0

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Plot no. 38: 99% OBW, Peak detector, +20 °C, V_{\max} , 500 MHz bandwidth, channel 09



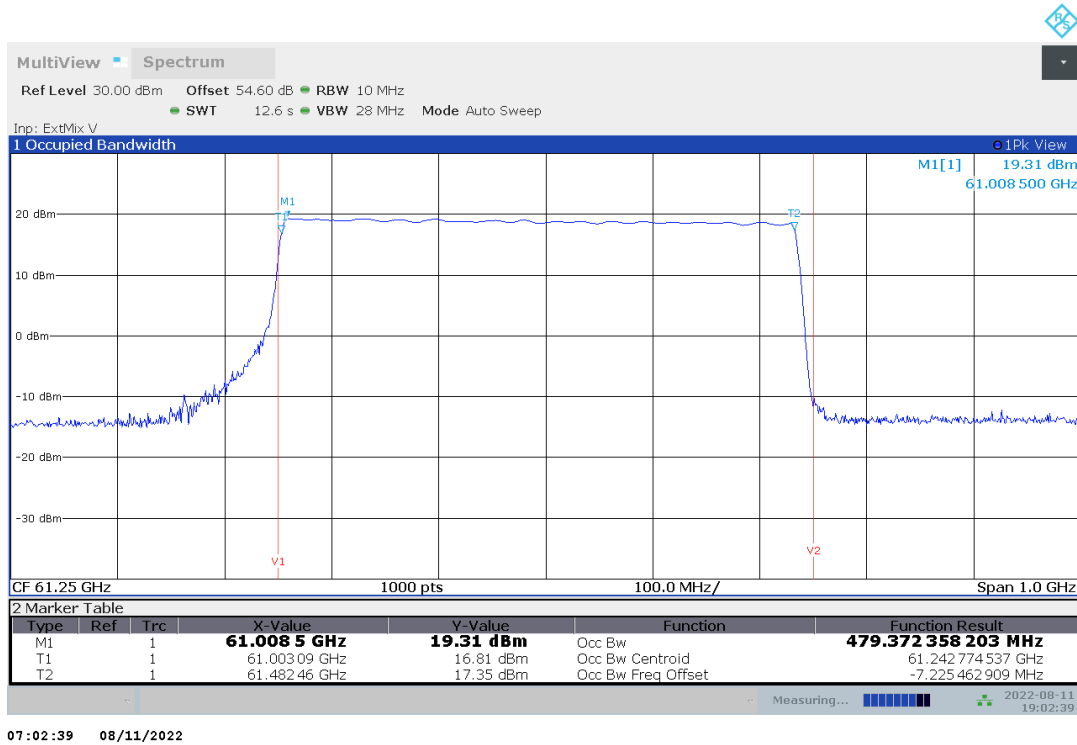
Plot no. 39: 99% OBW, Peak detector, +30 °C, 500 MHz bandwidth, channel 09



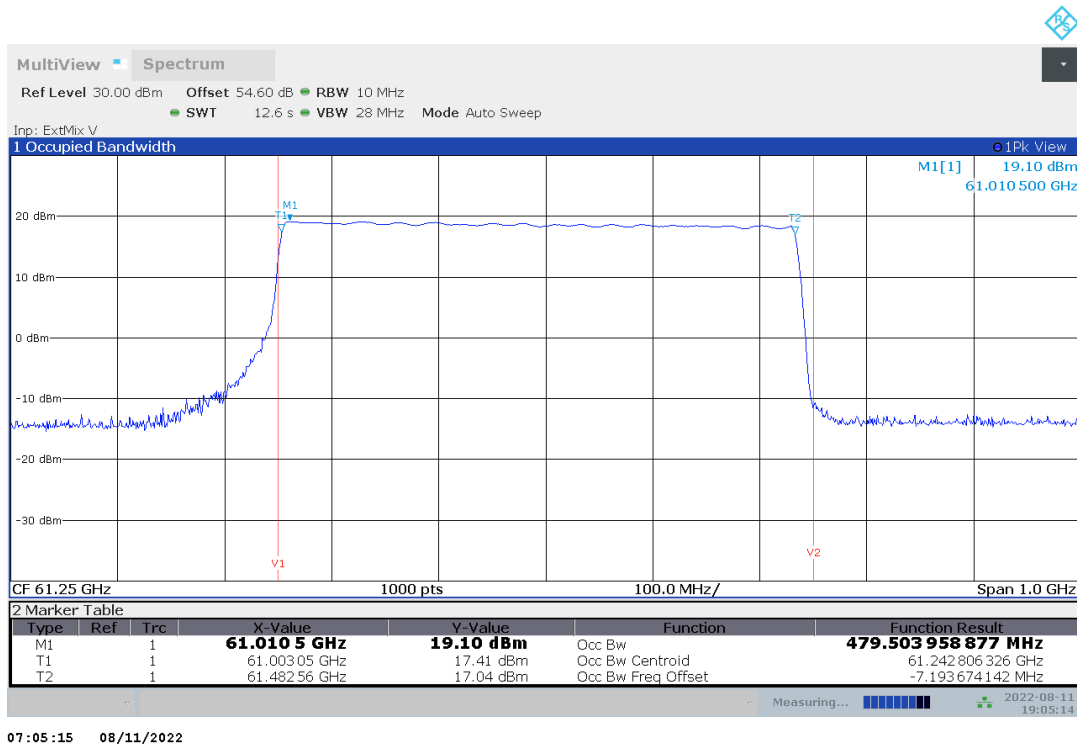
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Plot no. 40: 99% OBW, Peak detector, +40 °C, 500 MHz bandwidth, channel 09



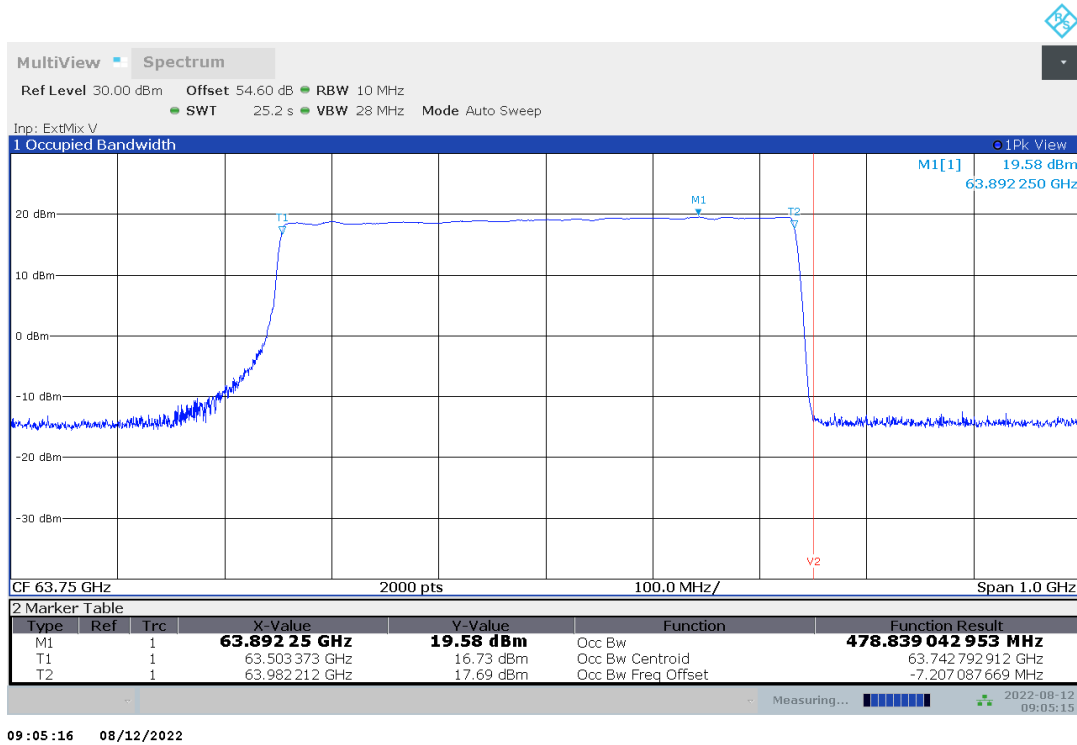
Plot no. 41: 99% OBW, Peak detector, +50 °C, 500 MHz bandwidth, channel 09



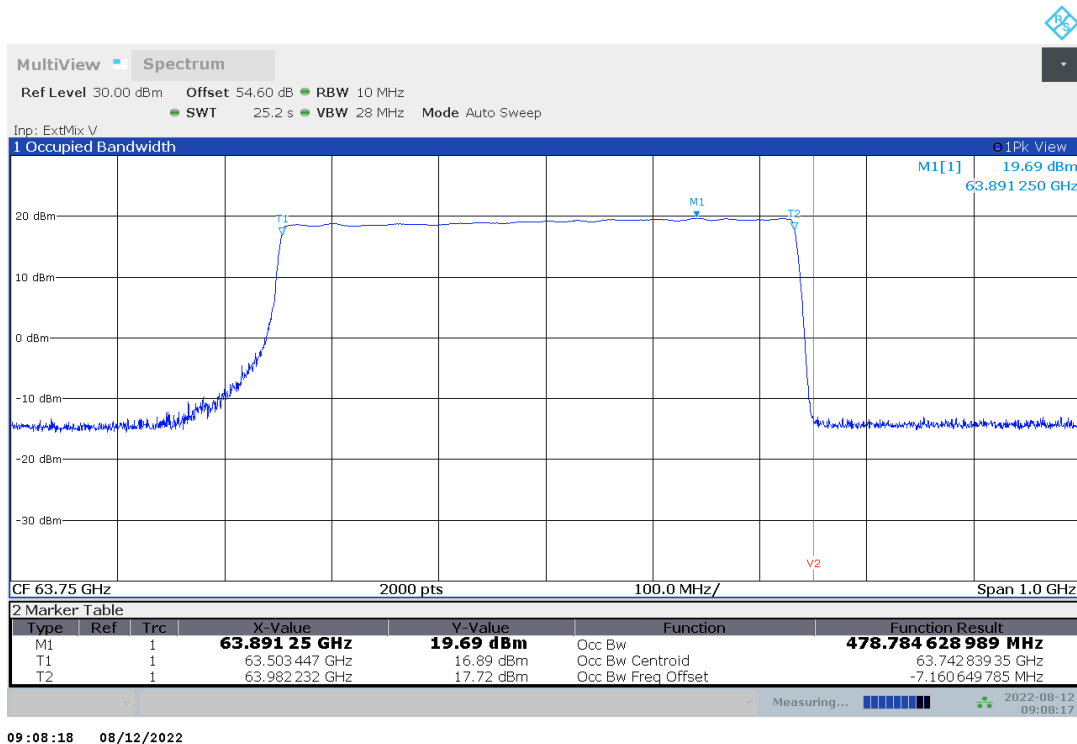
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Plot no. 42: 99% OBW, Peak detector, -20 °C, 500 MHz bandwidth, channel 14



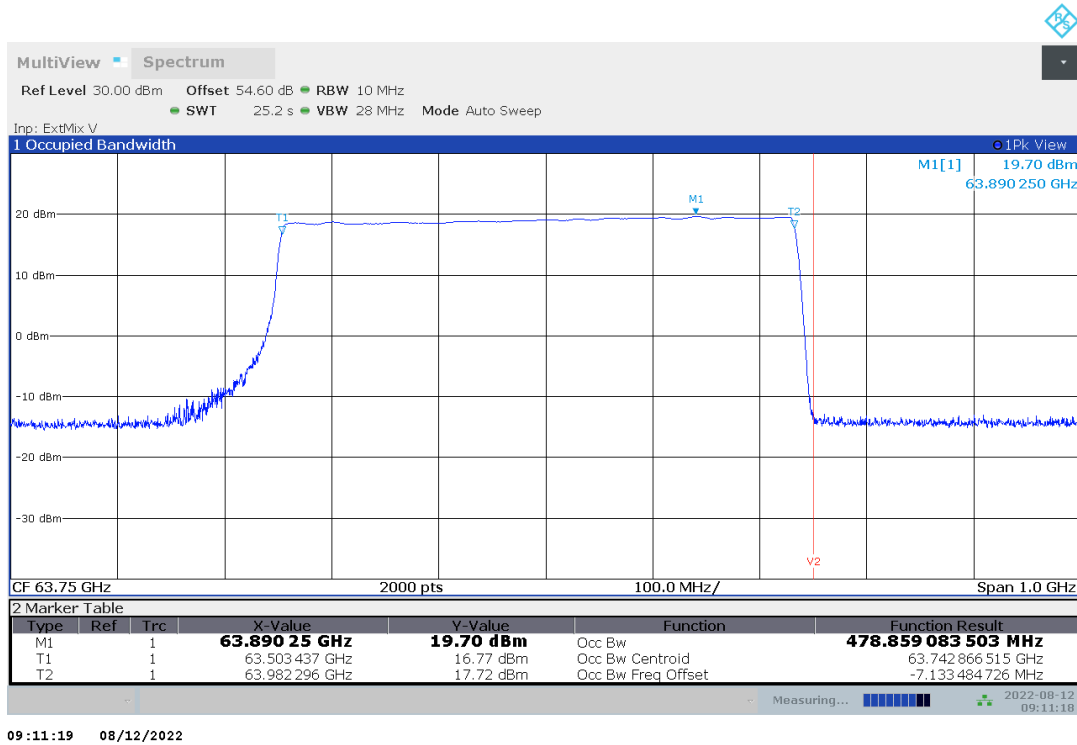
Plot no. 43: 99% OBW, Peak detector, -10 °C, 500 MHz bandwidth, channel 14



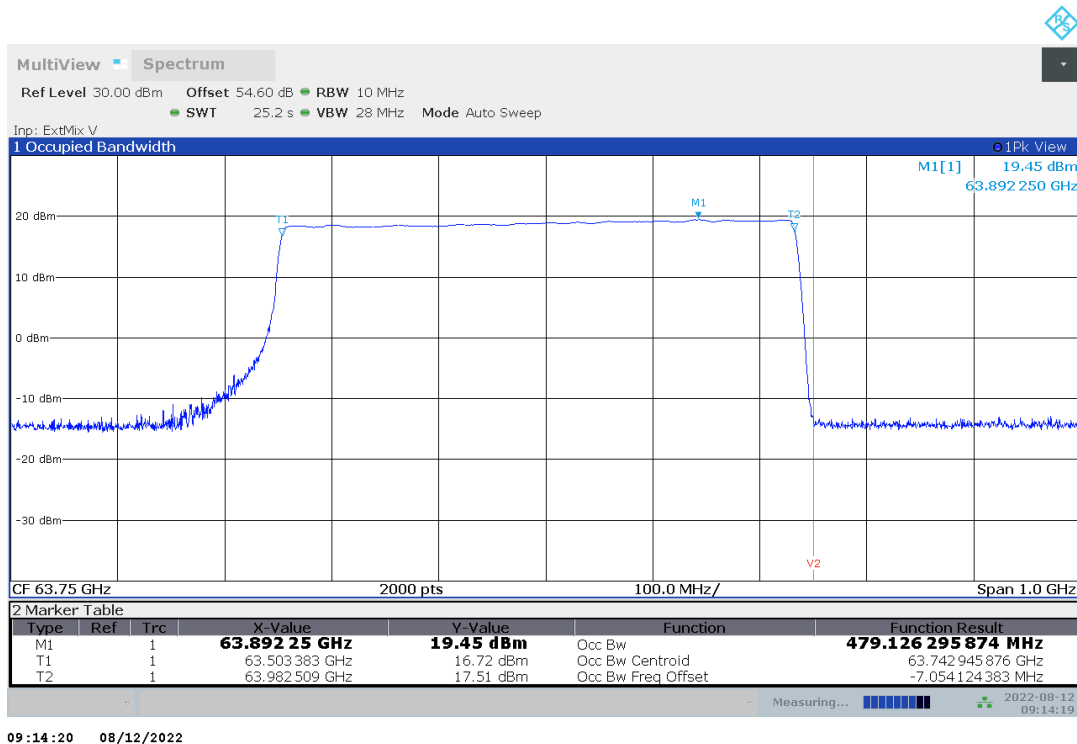
TR no.: 21116498-25420-0

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Plot no. 44: 99% OBW, Peak detector, +0 °C, 500 MHz bandwidth, channel 14



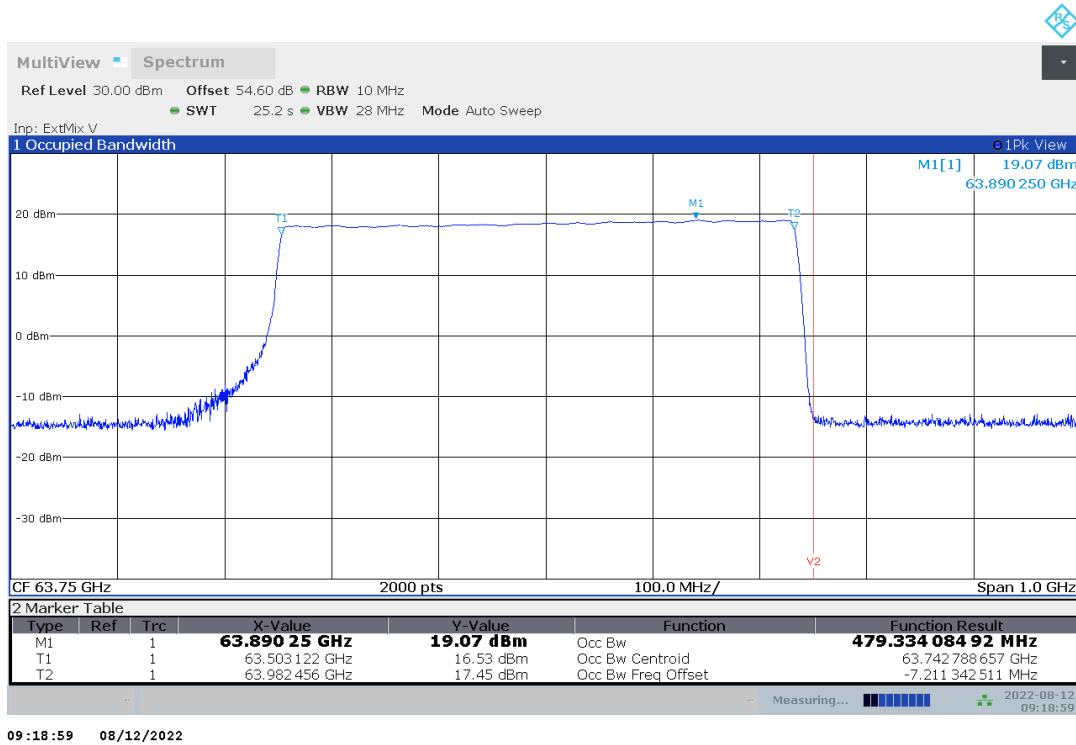
Plot no. 45: 99% OBW, Peak detector, +10 °C, 500 MHz bandwidth, channel 14



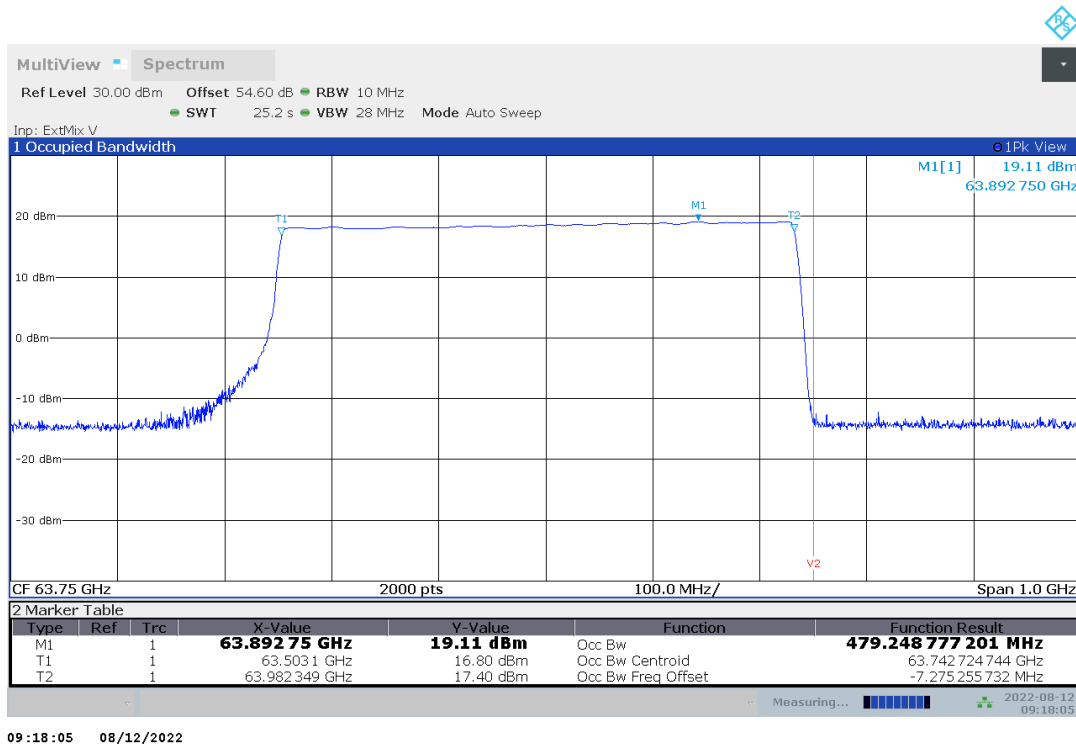
TR no.: 21116498-25420-0

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Plot no. 46: 99% OBW, Peak detector, +20 °C, V_{\min} , 500 MHz bandwidth, channel 14



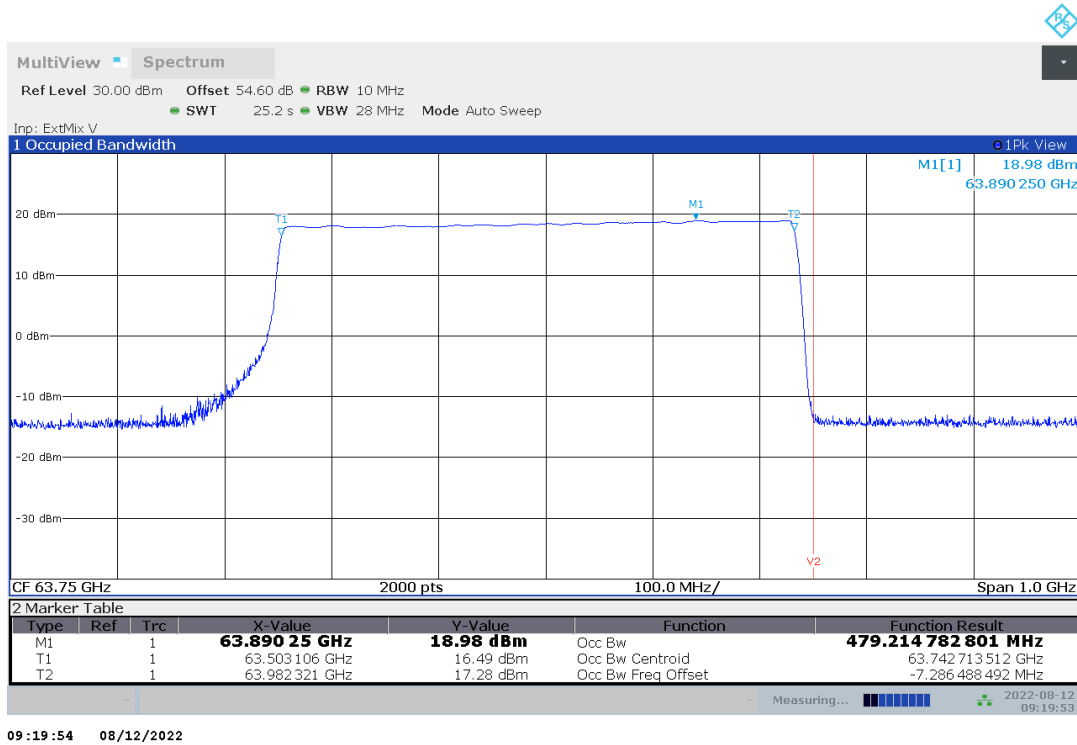
Plot no. 47: 99% OBW, Peak detector, +20 °C, V_{nom} , 500 MHz bandwidth, channel 14



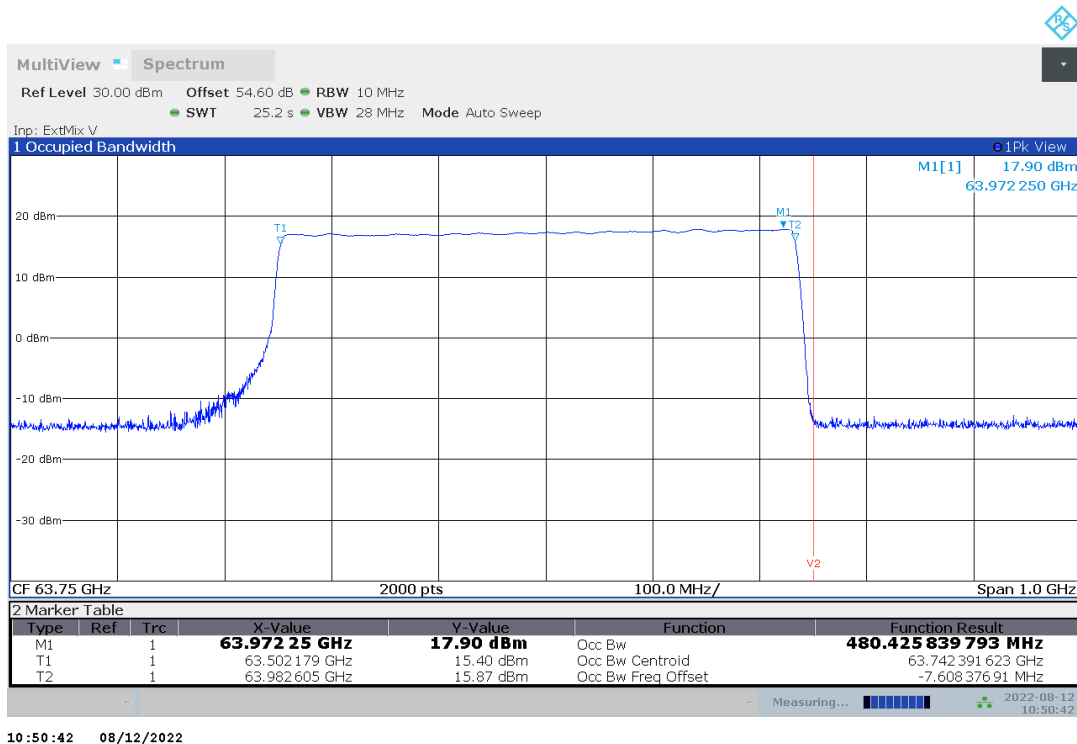
TR no.: 21116498-25420-0

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Plot no. 48: 99% OBW, Peak detector, +20 °C, V_{\max} , 500 MHz bandwidth, channel 14



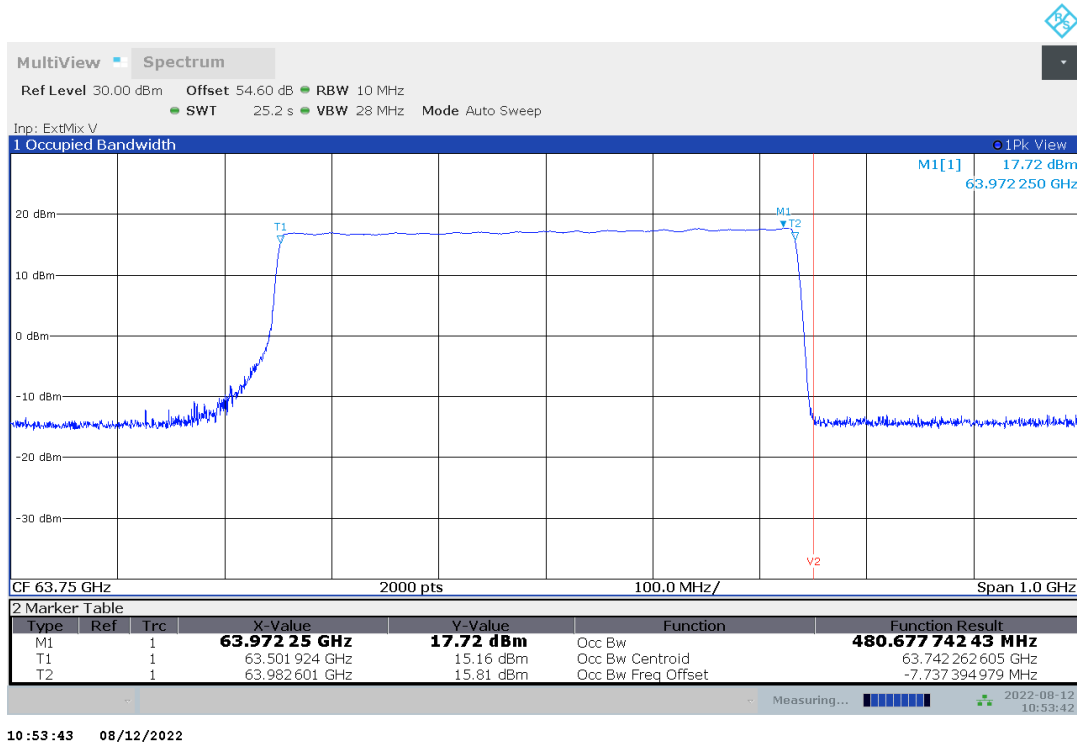
Plot no. 49: 99% OBW, Peak detector, +30 °C, 500 MHz bandwidth, channel 14



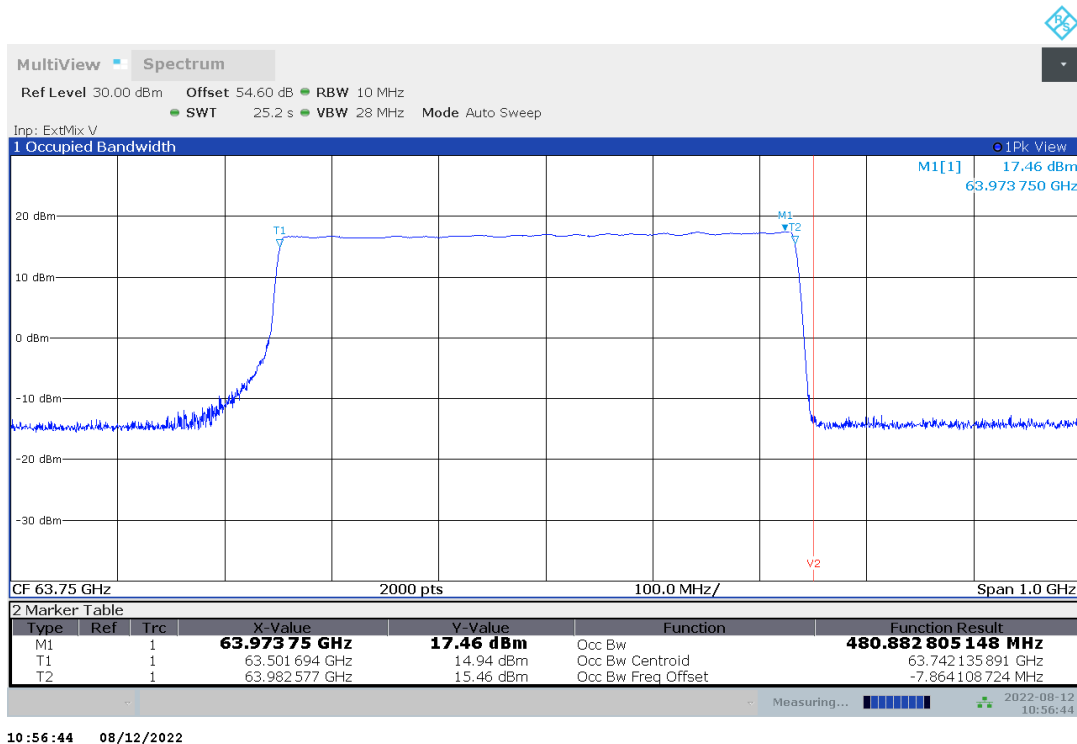
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Plot no. 50: 99% OBW, Peak detector, +40 °C, 500 MHz bandwidth, channel 14



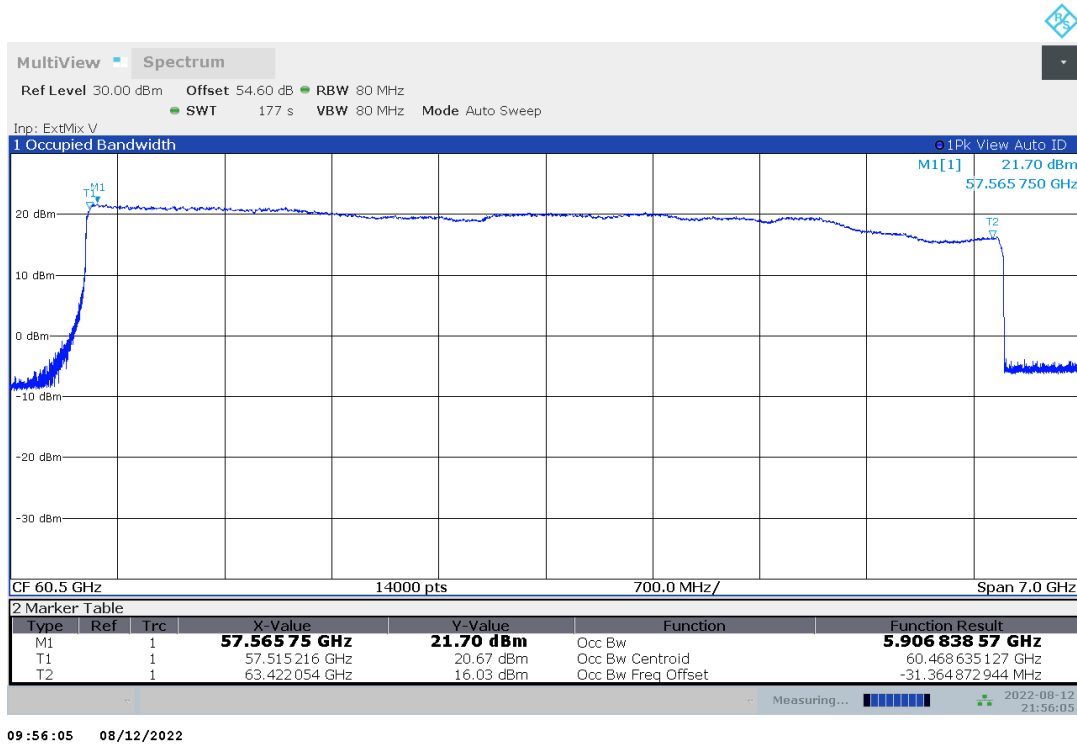
Plot no. 51: 99% OBW, Peak detector, +50 °C, 500 MHz bandwidth, channel 14



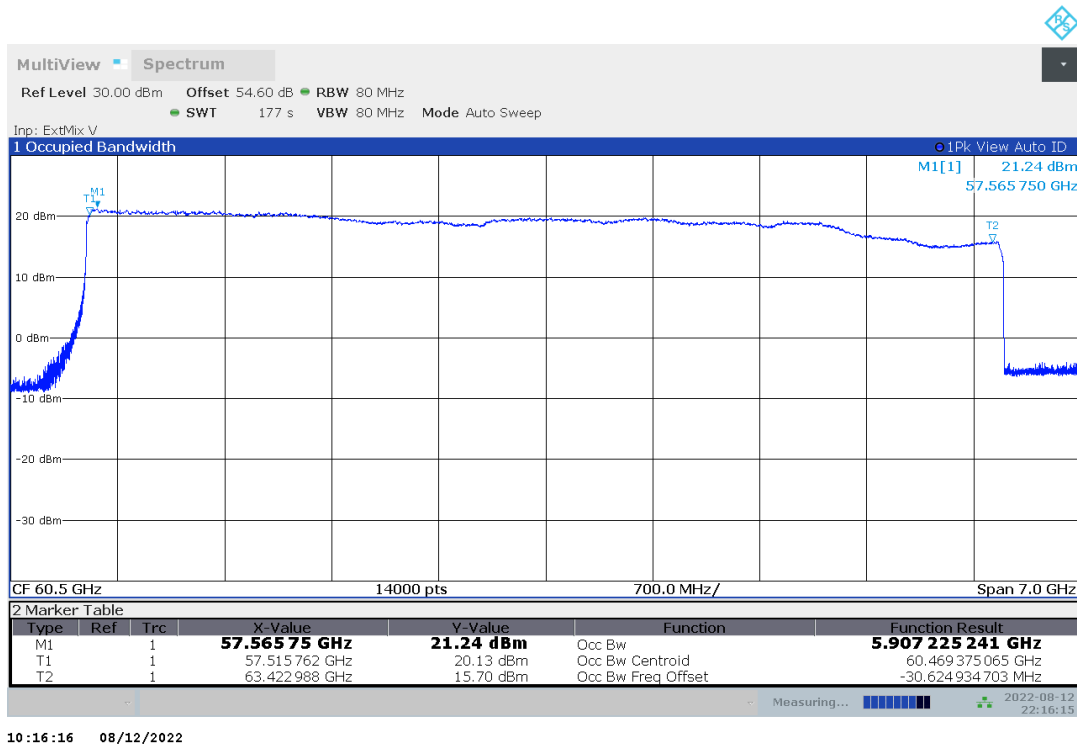
TR no.: 21116498-25420-0

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Plot no. 52: 99% OBW, Peak detector, -20 °C, 6 GHz bandwidth, channel 28



Plot no. 53: 99% OBW, Peak detector, -10 °C, 6 GHz bandwidth, channel 28



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Plot no. 54: 99% OBW, Peak detector, +0 °C, 6 GHz bandwidth, channel 28



Plot no. 55: 99% OBW, Peak detector, +10 °C, 6 GHz bandwidth, channel 28

