

Annex 1: Measurement diagrams 23-1-0086301T004a-A1

Number of pages:	20	Date of Report:	2025-Jan-17
Testing company:	cetecom advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken GERMANY	Applicant:	indurad GmbH
Product:	1D Radar		
Model:	iLDR-M-G5		
FCC ID:	2AJRSILDRG5		
Testing has been carried out in accordance with:	FCC Regulations Title 47 CFR, Chapter I, Subchapter D, Part 95 Subpart M The 76-81 GHz Band Radar Service § 95.3367 76-81 GHz Band Radar Service radiated power limits § 95.3379 76-81 GHz Band Radar Service unwanted emissions limits		

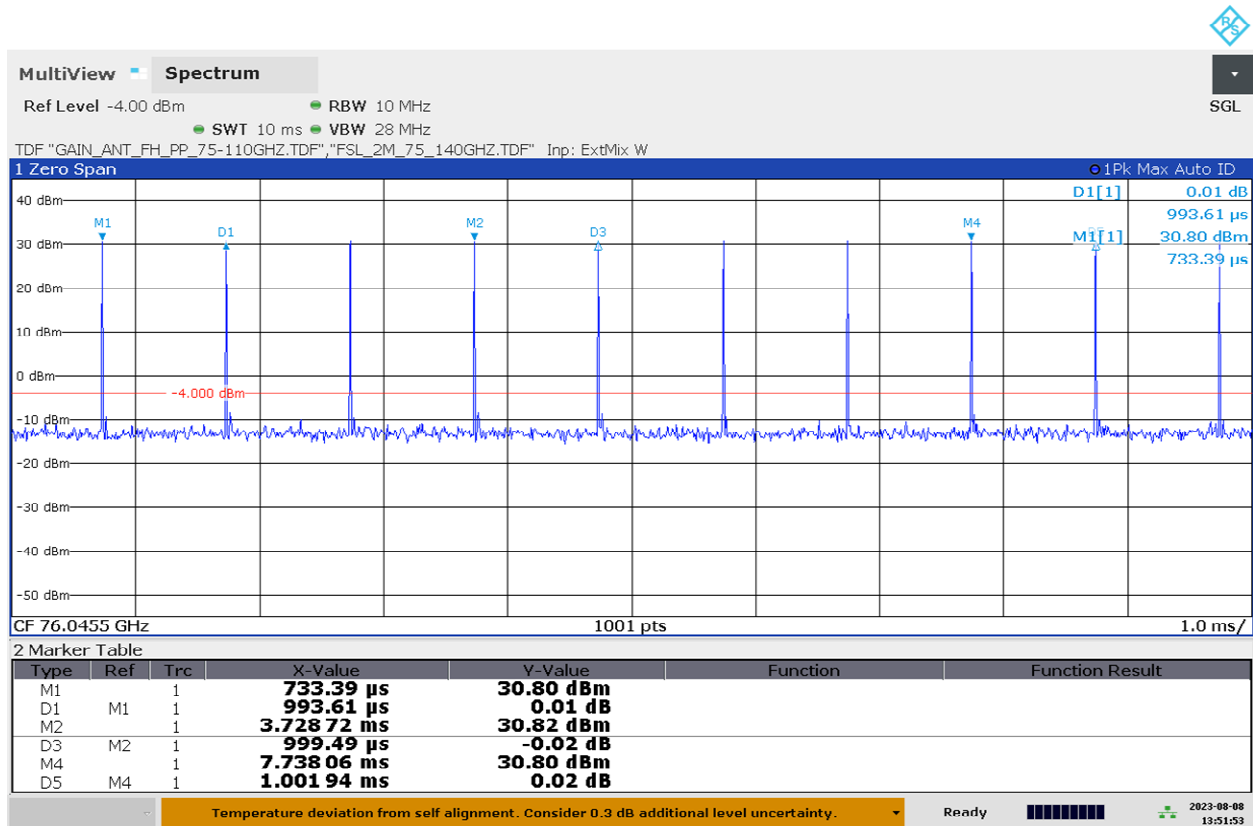
Table of contents:

1	Measurement diagrams.....	3
1.1	EUT Cycle Time (iLDR-M-G5):	3
1.2	Mean / Channel Power (iLDR-M-G5):	4
1.3	Peak Power (iLDR-M-G5):	4
1.4	Operating Frequency Range (iLDR-M-G5):	4
1.5	Unwanted emissions in the out-of-band and spurious domain	5

1 Measurement diagrams

1.1 EUT Cycle Time (iLDR-M-G5):

D105_T01_MT_investigation_fcc_95M



01:51:53 PM 08/08/2023

Note: EUT Cycle Time: 1ms,

Declared by Customer is 1ms (verified), Only for information, not for assessment.

1.2 Mean / Channel Power (iLDR-M-G5):

Note:

Nominal Temperature and Voltage Condition.

Check Annex-6 (TR23-1-0086301T004a-A6)

1.3 Peak Power (iLDR-M-G5):

Note:

Nominal Temperature and Voltage Condition.

Check Annex-6 (TR23-1-0086301T004a-A6)

1.4 Operating Frequency Range (iLDR-M-G5):

Note-1:

Nominal Temperature and Voltage Condition.

Check Annex-6 (TR23-1-0086301T004a-A6)

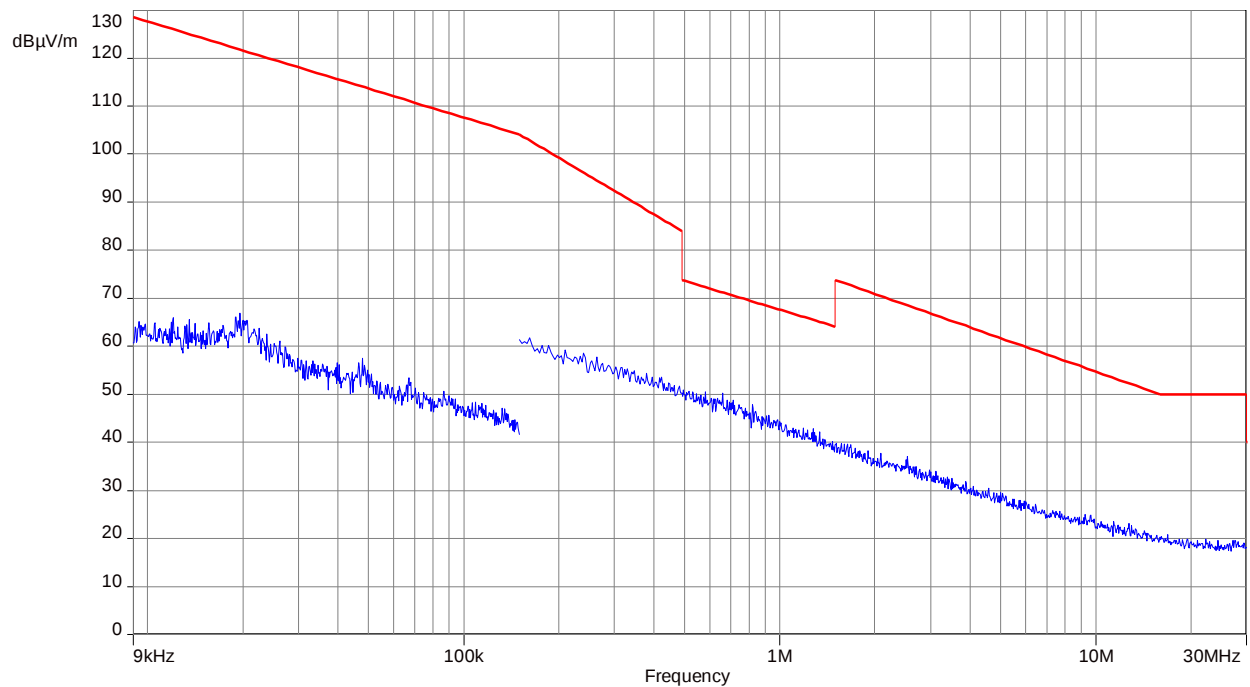
Note-2:

Extreme condition with Temperature and Voltage variation.

Check Annex-6 (TR23-1-0086301T004a-A6)

1.5 Unwanted emissions in the out-of-band and spurious domain

2-01_B_RSE_TX_RADAR_76G - 81GHz_TX SER magnetic (dBuV_m)

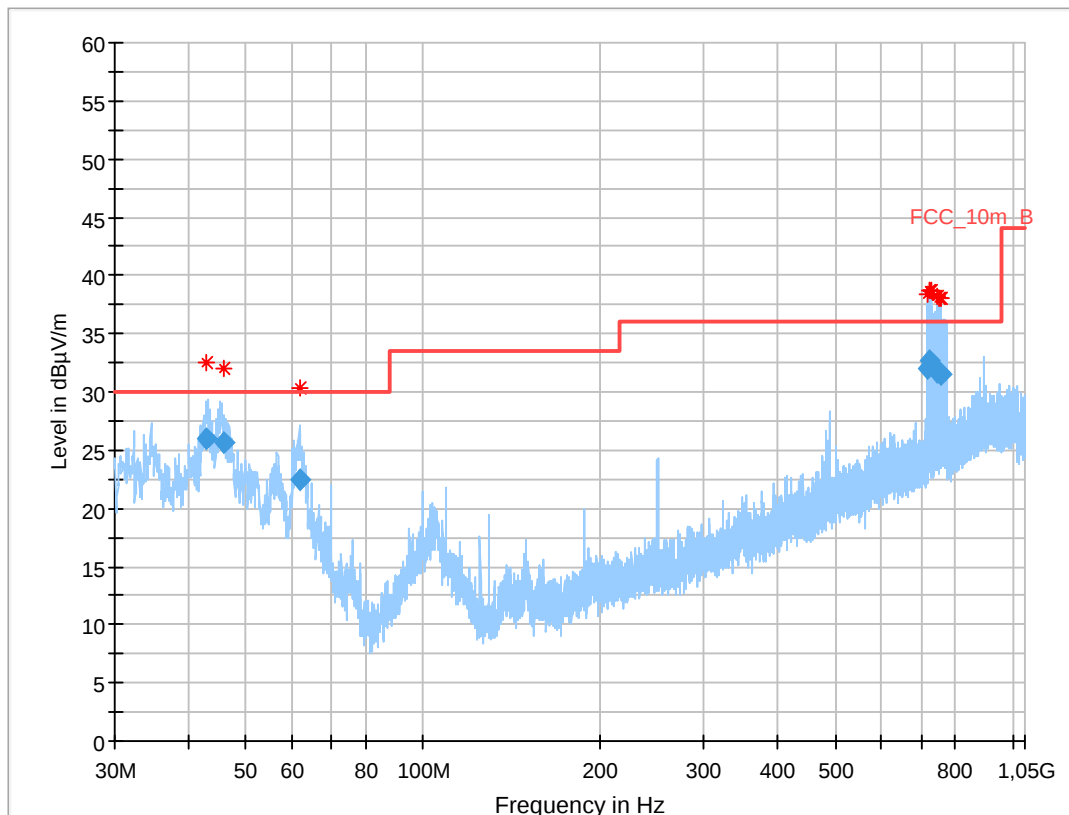


Note: No critical Frequency found, Result: Passed.

Diagram 3.01_RSE_TX_RADAR_76G - 81GHz

Common Information

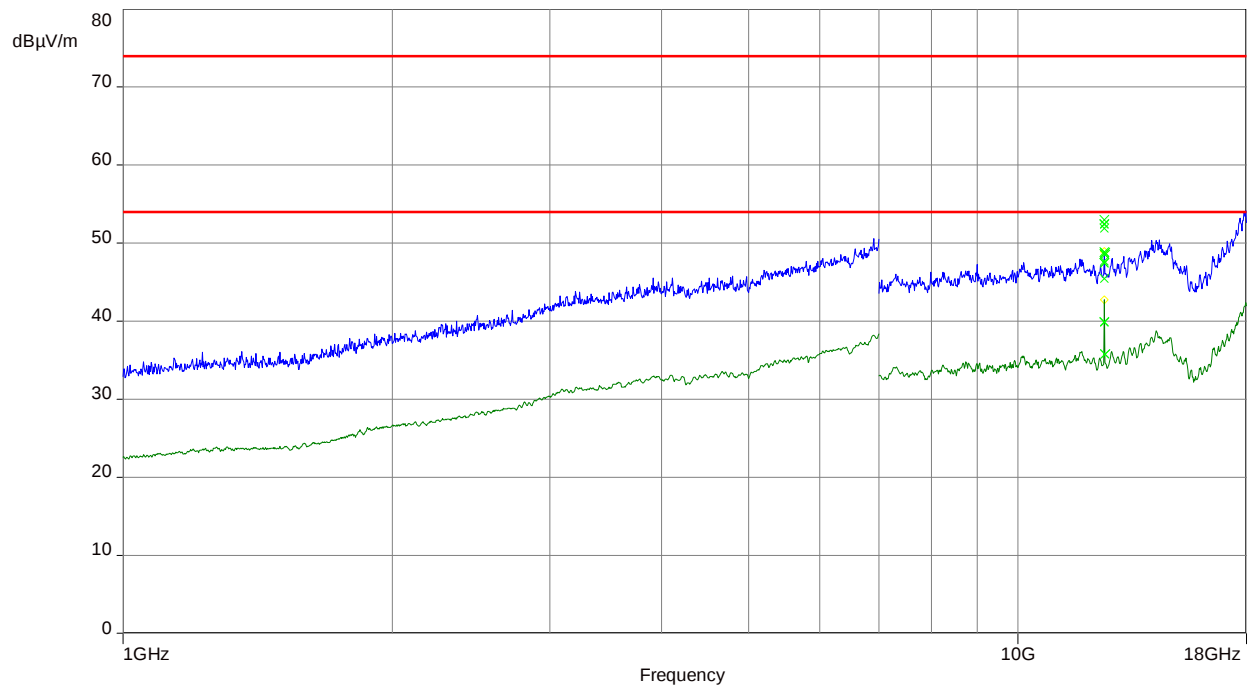
EUT:	radar
Serial number:	
Test description:	FCC part 15 class B @ 10 m
Operating condition:	active
Operator name:	MED
Comment:	Ferrit hinter EUT, Schirm von EUT-Gehäuse getrennt



Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.828	25.91	30.0	4.1	1000	120.0	105.0	V	37	15
45.890	25.67	30.0	4.3	1000	120.0	139.0	V	147	15
61.743	22.49	30.0	7.5	1000	120.0	195.0	V	37	13
719.436	31.95	36.0	4.1	1000	120.0	134.0	H	271	23
724.106	32.62	36.0	3.4	1000	120.0	134.0	H	267	23
726.287	32.37	36.0	3.6	1000	120.0	111.0	H	266	23
747.522	31.74	36.0	4.3	1000	120.0	129.0	H	271	23
752.538	31.62	36.0	4.4	1000	120.0	124.0	H	265	24
756.007	31.44	36.0	4.6	1000	120.0	126.0	H	267	24

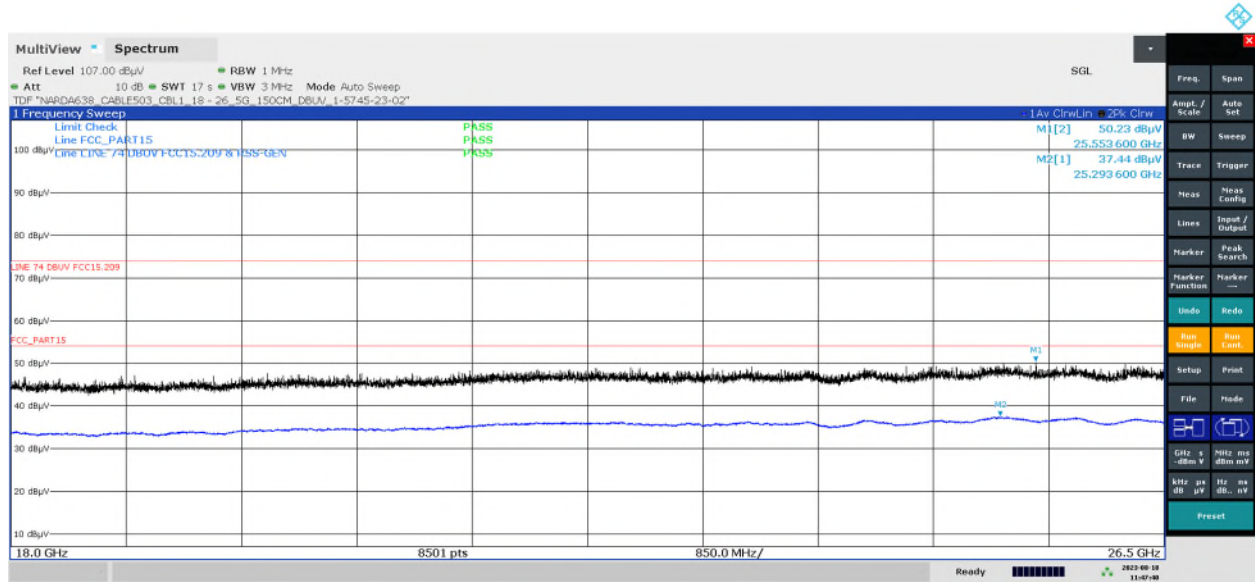
Diagram D127_B_TX_RSE_1G_18GHz_TX SER (dBuV_m)



Note-1: Max Peak: 53dBuV/m @ 12500GHz
 Max Average: 47.7 dBuV/m @ 12500GHz

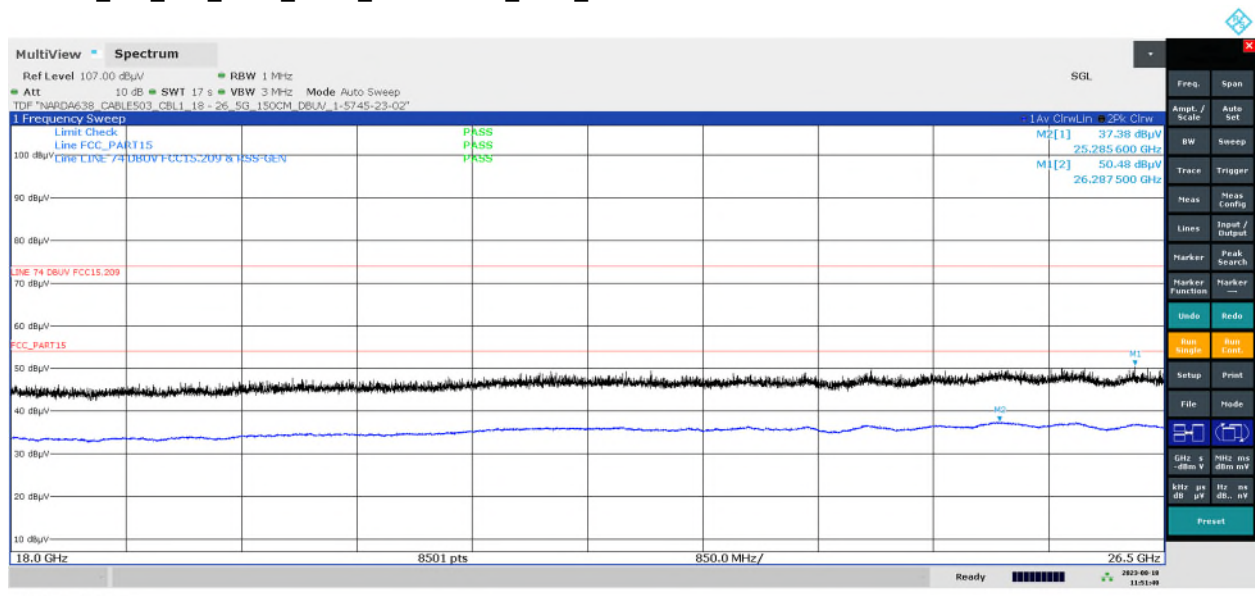
Note-2:
 Limit line FCC: Peak: 74dBuV, Avg: 54dBuV, Result: Passed.

D129_01_TX_RSE_18G_26.5GHz_Ant_H



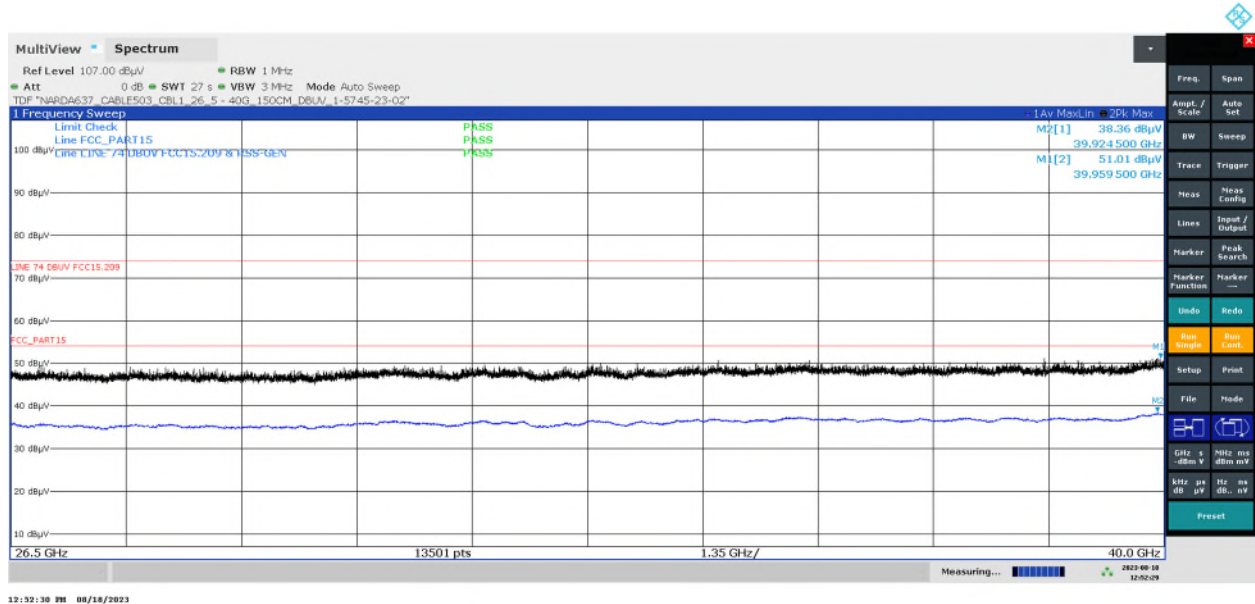
Note: no critical frequency found,
Limit line FCC: Peak: 74dBµV, Avg: 54dBµV, Result: Passed.

D130_01_TX_RSE_18G_26.5GHz_Ant_V



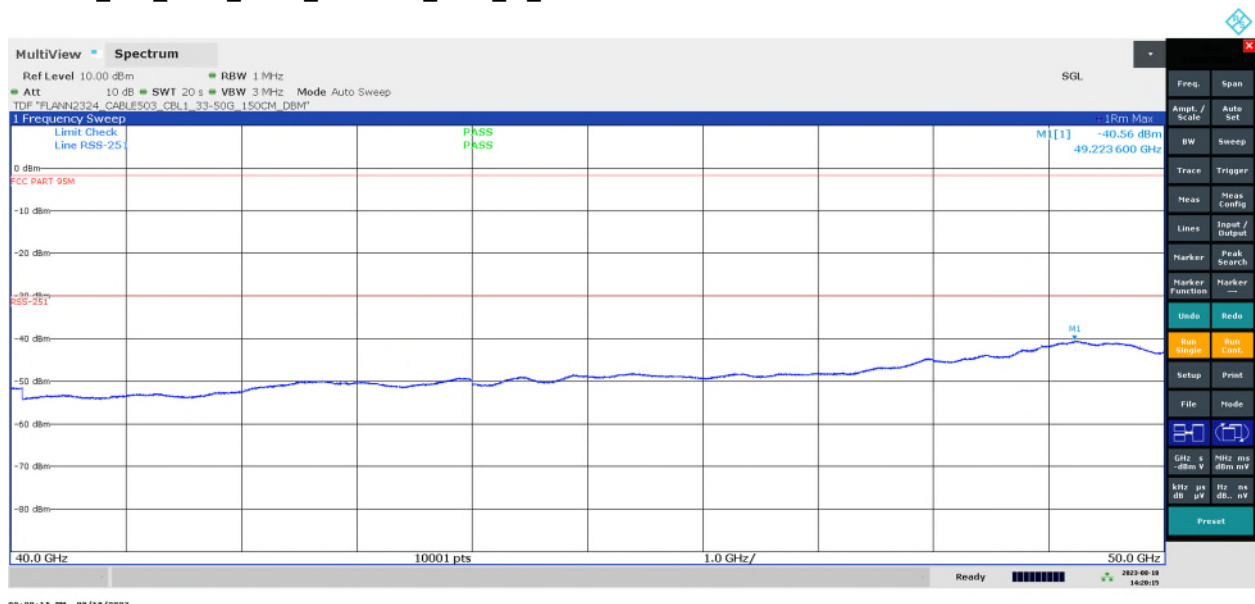
Note: no critical frequency found,
Limit line FCC: Peak: 74dBμV, Avg: 54dBμV, Result: Passed.

D129_02_TX_RSE_26.5G_40GHz_Ant_H_V



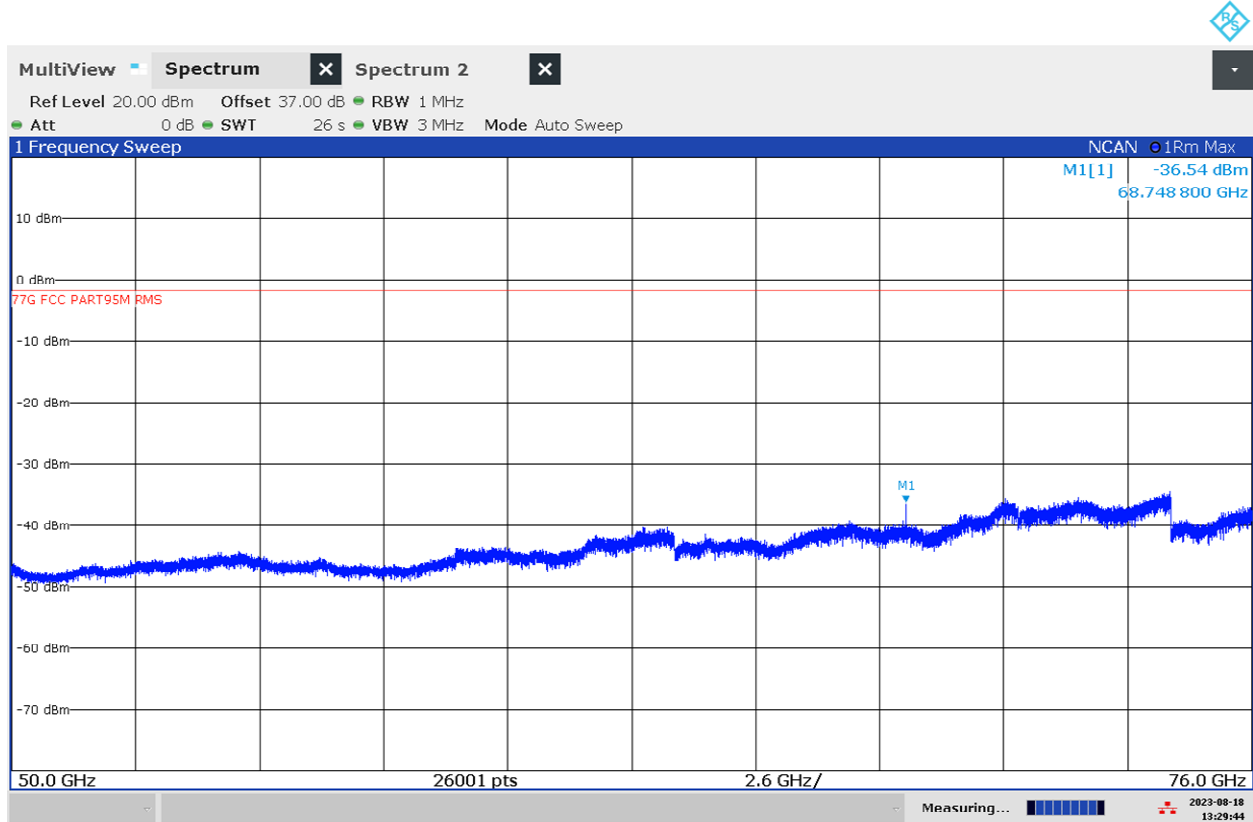
Note: no critical frequency found,
Limit line FCC: Peak: 74dBμV, Avg: 54dBμV, Result: Passed.

D131_TX_RSE_40G_50GHz_Ant_V_H



Note: no critical frequency found, Limit line FCC: -1.7dBm, Result: Passed.

D132_TX_RSE_50G_76GHz_Ant_V_H



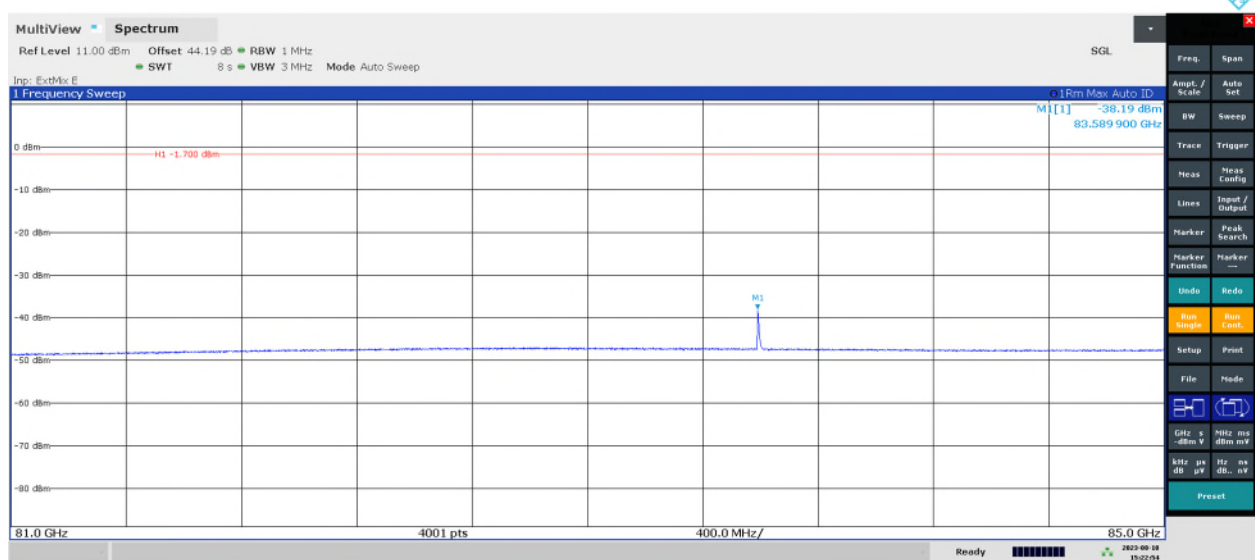
01:29:44 PM 08/18/2023

Note: Maximum Emission found - 36.54dBm at 68.749GHz
Limit Line: -1.7dBm, Result: Passed.

76G – 81GHz Measurements: In Band Measurements,

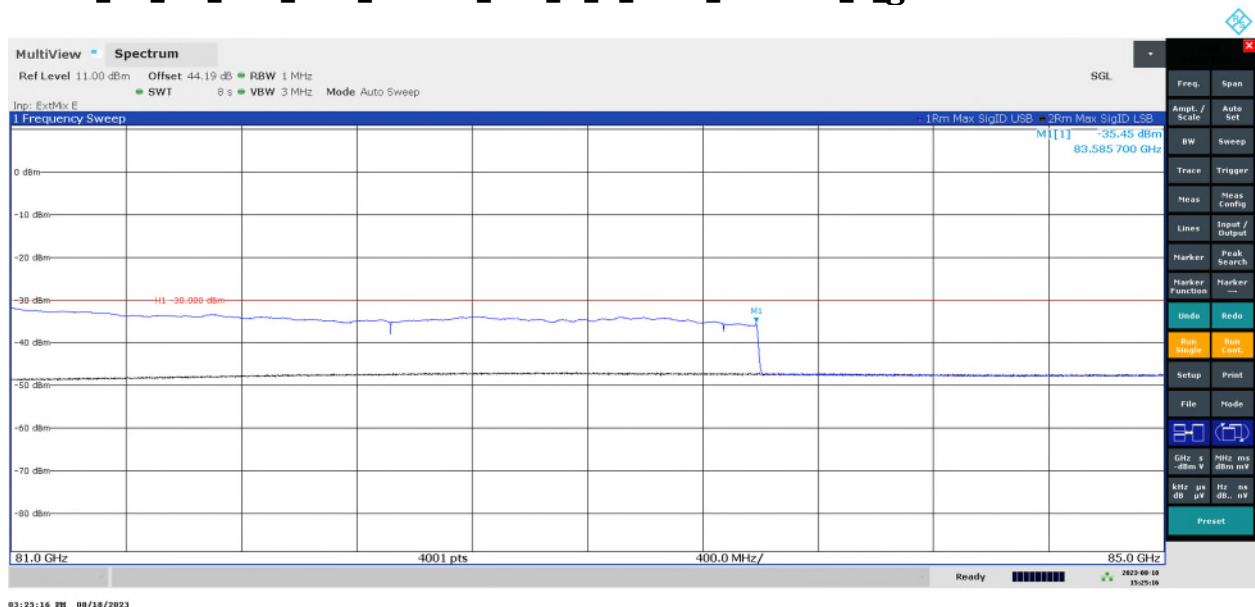
Note: Check Annex-6 (TR23-1-0086301T004a-A6)

D134_01_TX_RSE_81G_85GHz_Ant_H_V_FCC



Note: No critical emission found, only ghost signal, since mixer products are used.
Ghost signal verified, check diagram D134_02, Limit Line: -1.7dBm, Result: Passed.

D134_02_TX_RSE_81G_85GHz_Ant_H_V_ISED_marker_1_ghost



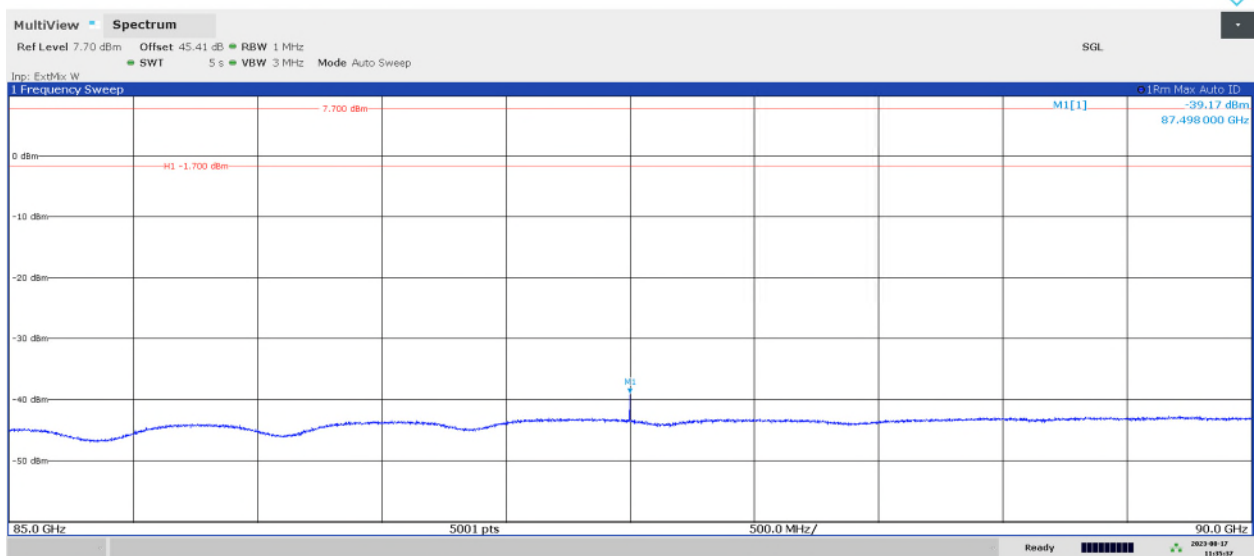
Note: no critical frequency found, only image signal.

Mixer Products are used, therefore there are some image/ghost signals.

Image/Ghost signal: signals which are not overlapping.

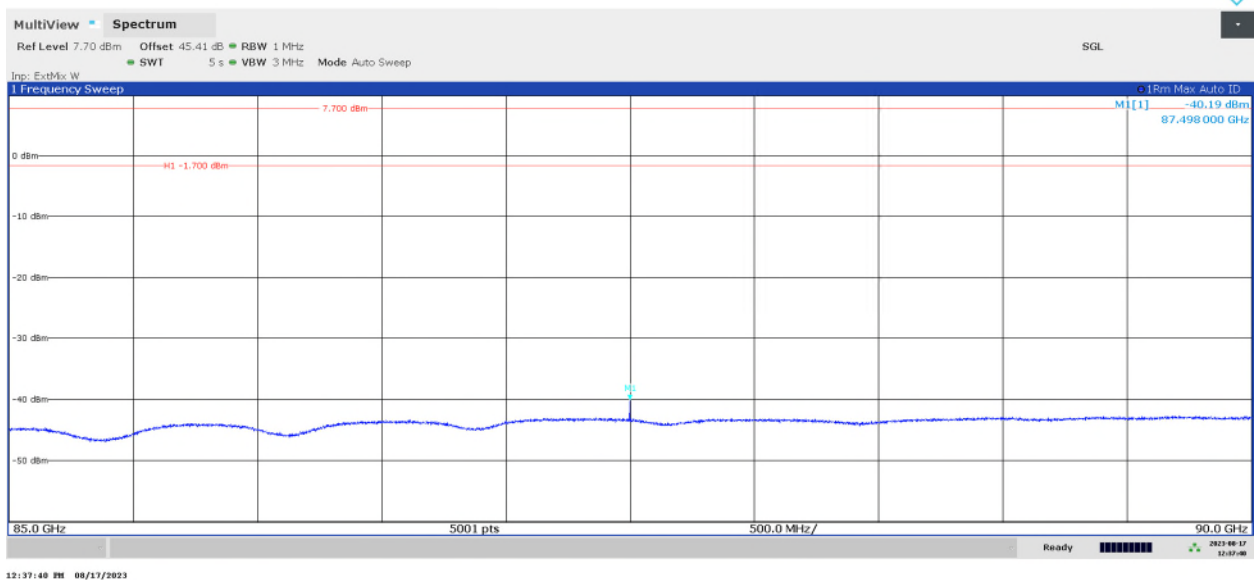
Real signal: signals which are overlapping.

D135_TX_RSE_85G_90GHz_Ant_V_FCC



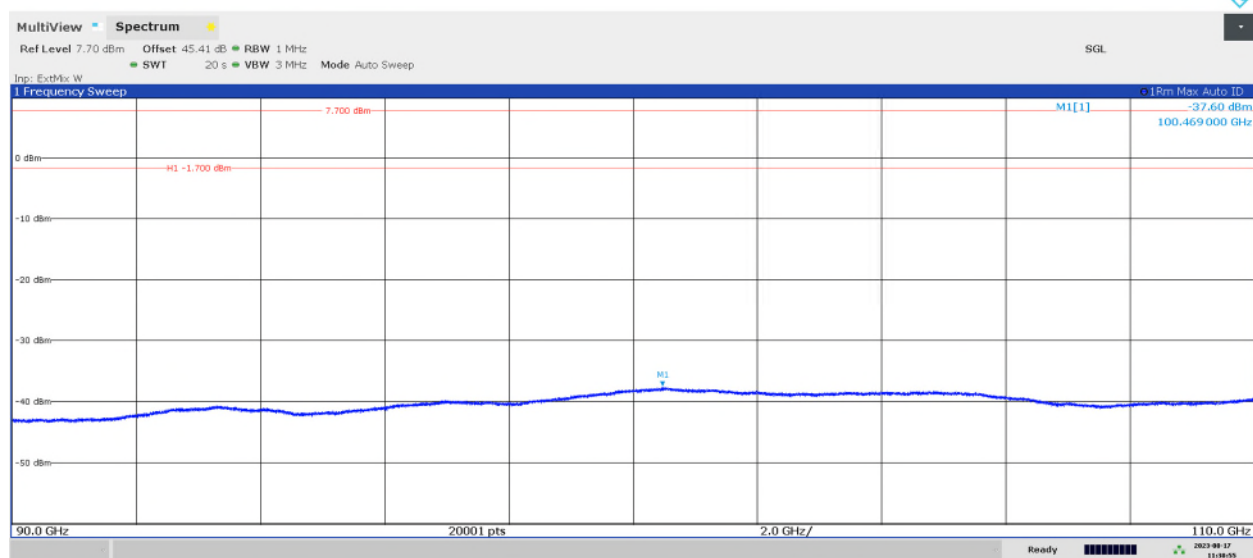
Note: no critical frequency found,
 maximum emission found -39.17dBm@87.498GHz, Limit line: -1.7dBm, Result: Passed.

D136_TX_RSE_85G_90GHz_Ant_H_FCC

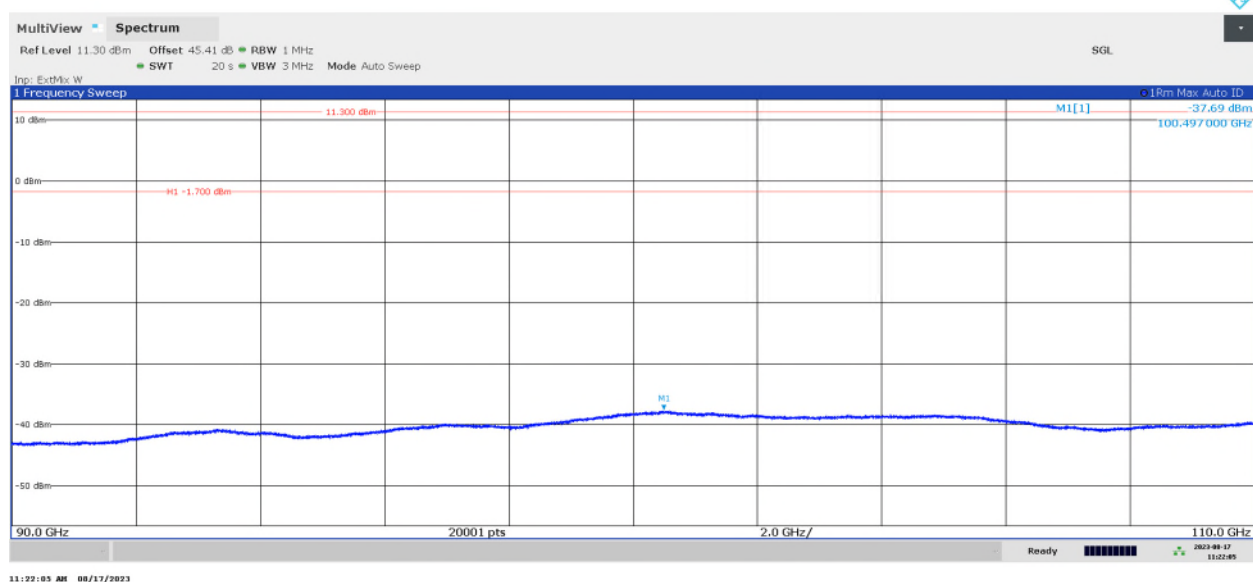


Note: no critical frequency found,
 maximum emission found -40.19dBm@87.498GHz, Limit line: -1.7dBm, Result: Passed.

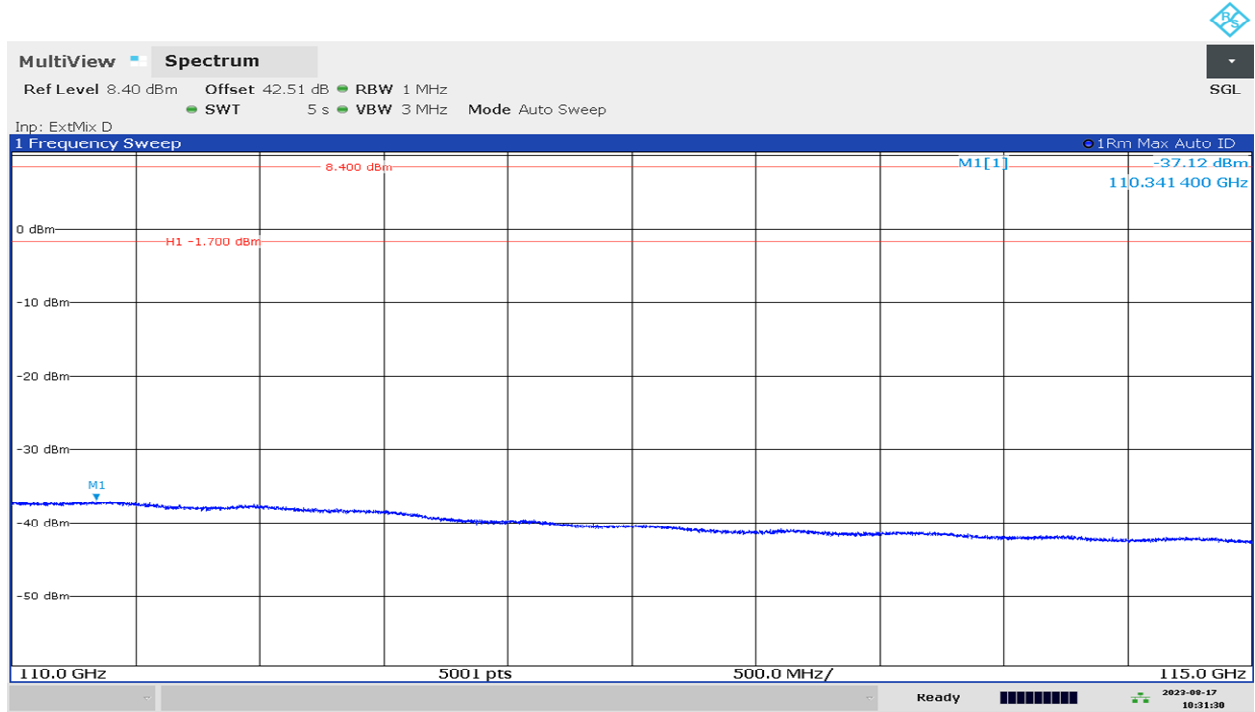
D137_TX_RSE_90G_110GHz_Ant_V_FCC



D138_TX_RSE_90G_110GHz_Ant_H_FCC



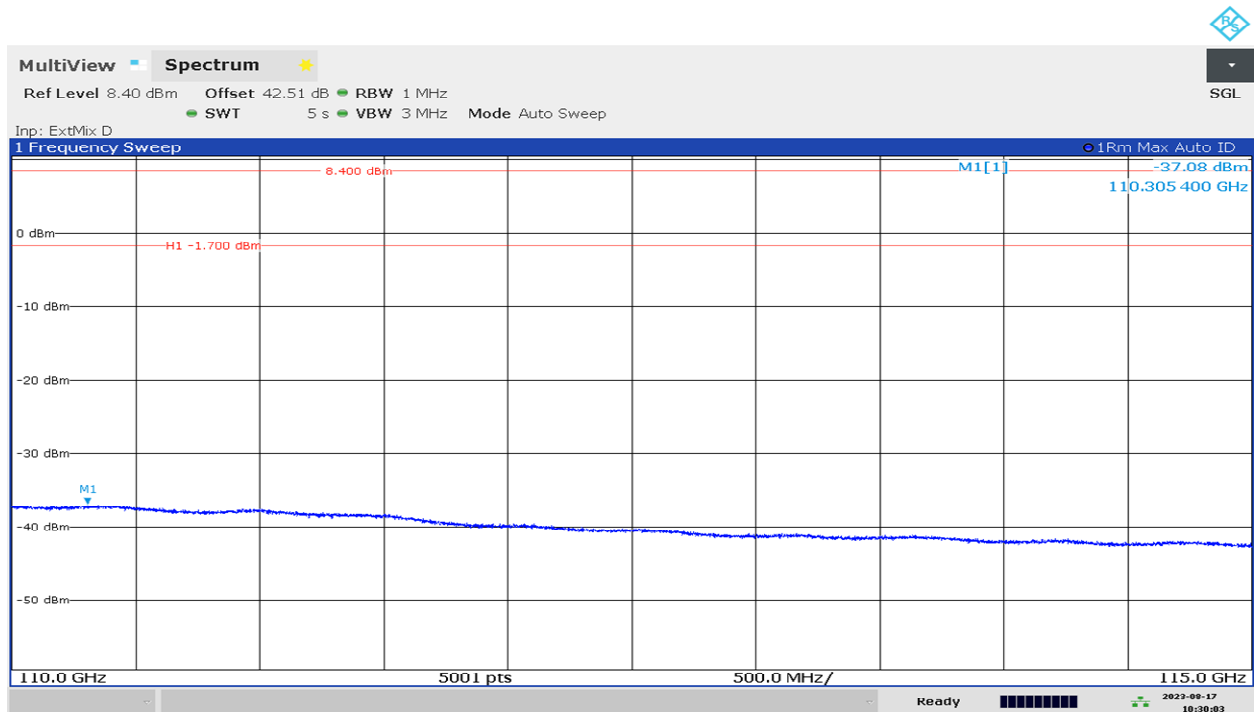
D139_TX_RSE_110G_115GHz_Ant_V_FCC



10:31:30 AM 08/17/2023

Note: no critical frequency found, Limit line: -1.7dBm, Result: Passed.

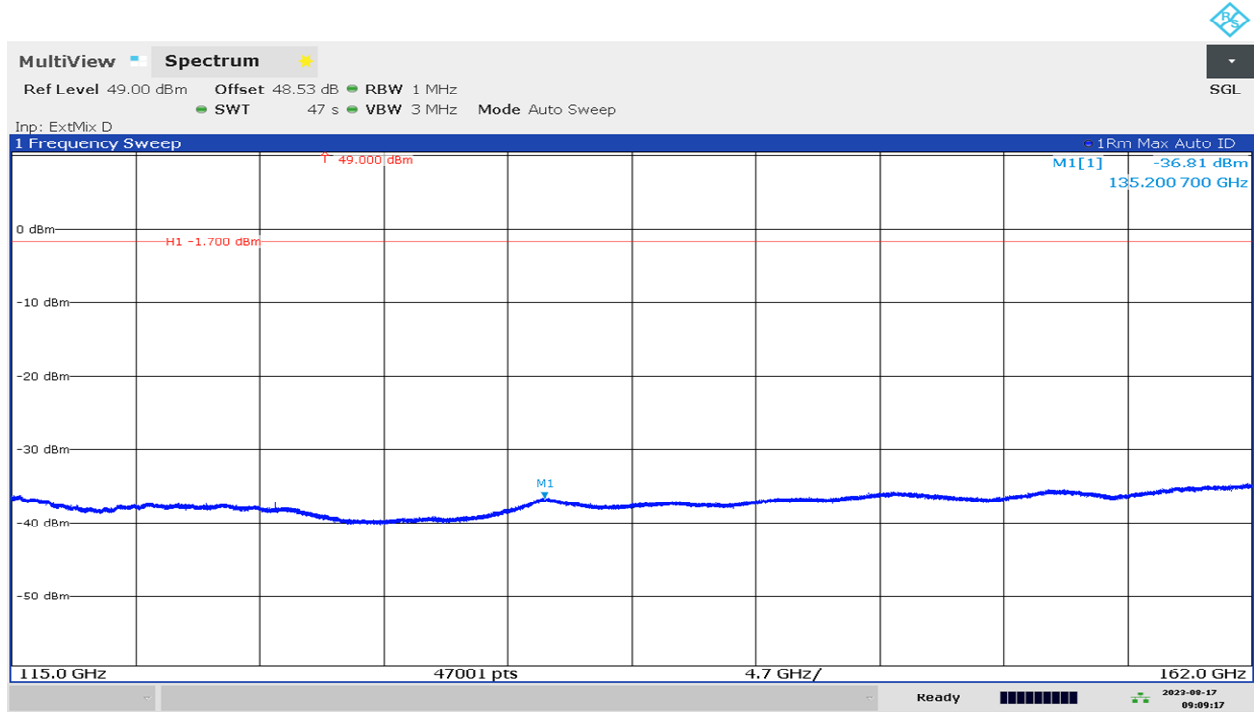
D140_TX_RSE_110G_115GHz_Ant_H_FCC



10:30:03 AM 08/17/2023

Note: no critical frequency found, Limit line: -1.7dBm, Result: Passed.

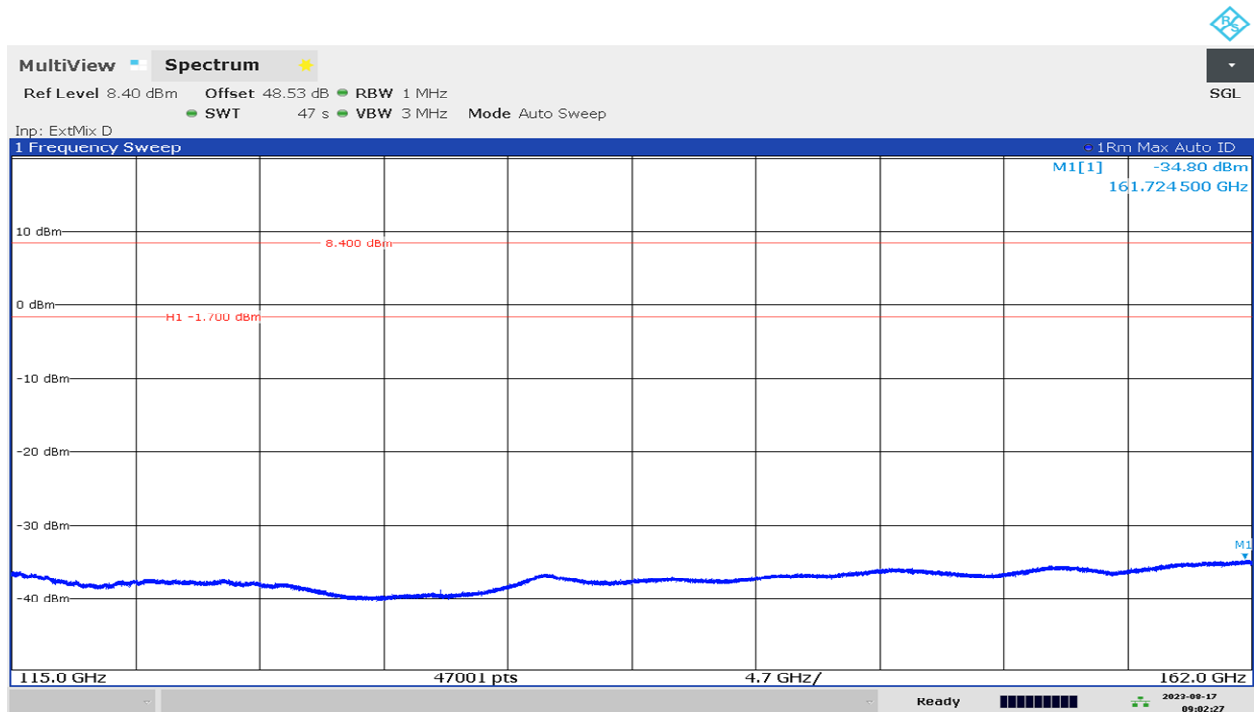
D141_TX_RSE_115G_162GHz_Ant_V_FCC



09:09:17 AM 08/17/2023

Note: no critical frequency found, Limit line: -1.7dBm, Result: Passed.

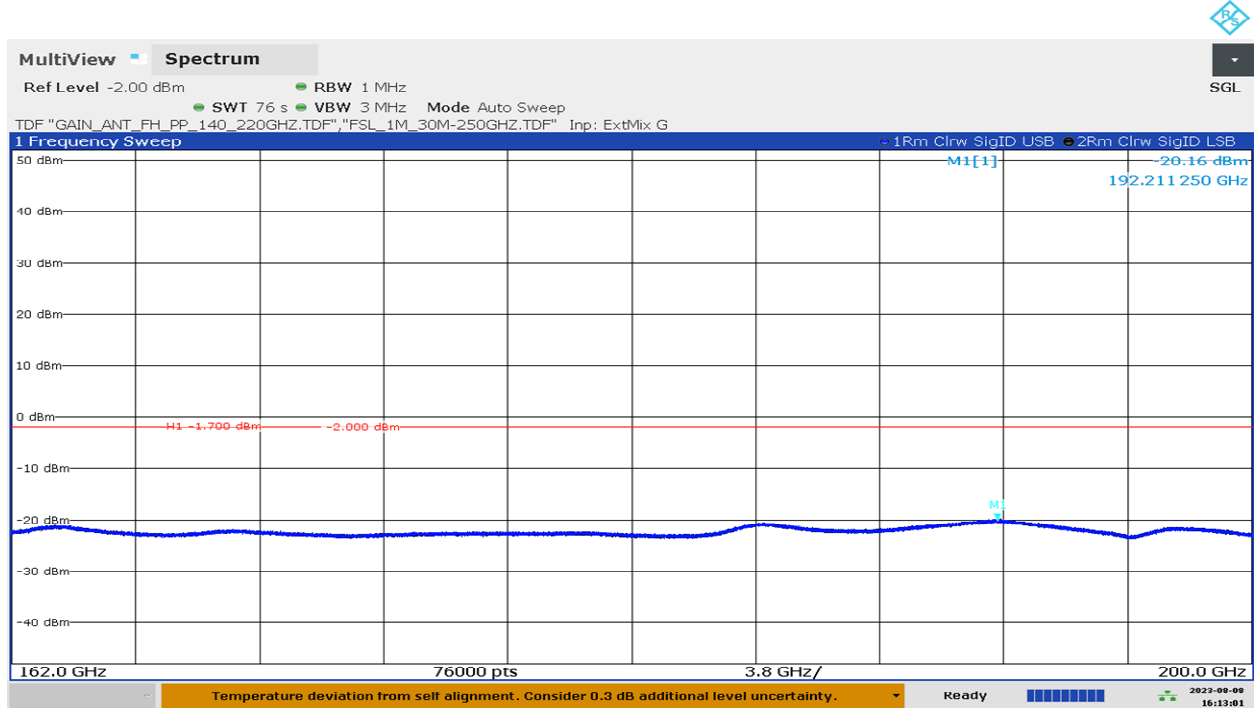
D142_TX_RSE_115G_162GHz_Ant_H_FCC



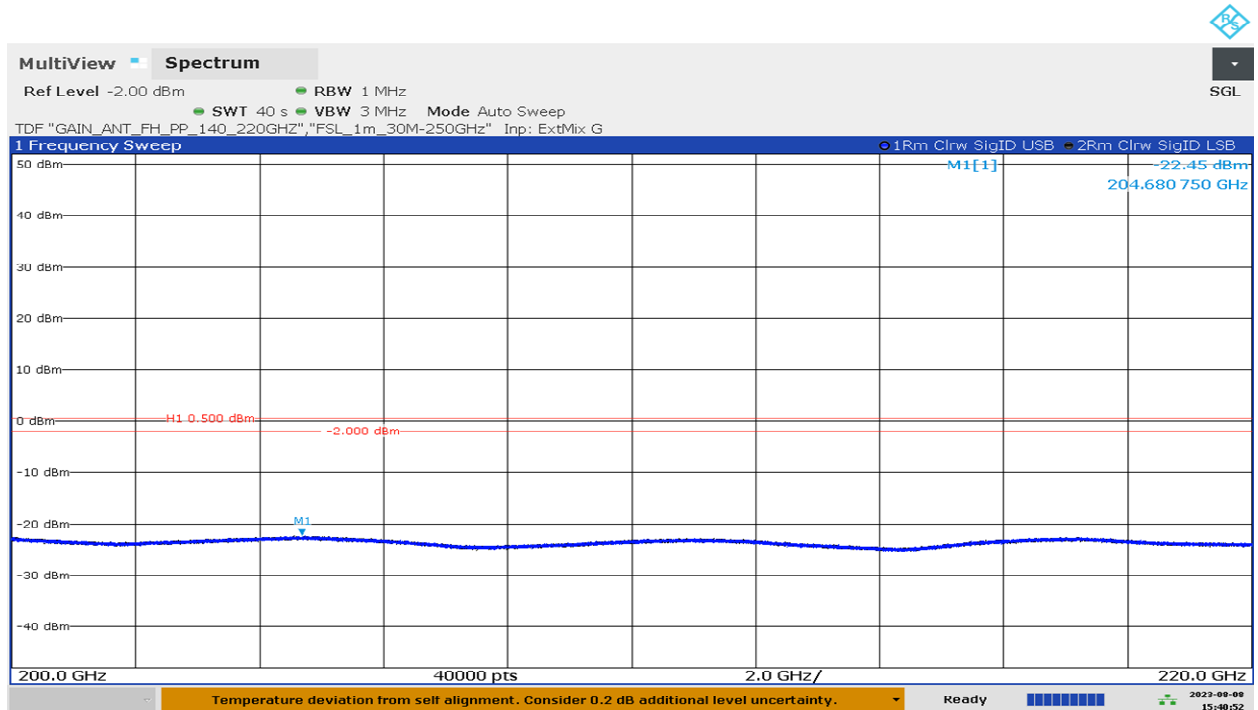
09:02:27 AM 08/17/2023

Note: no critical frequency found, Limit line: -1.7dBm, Result: Passed.

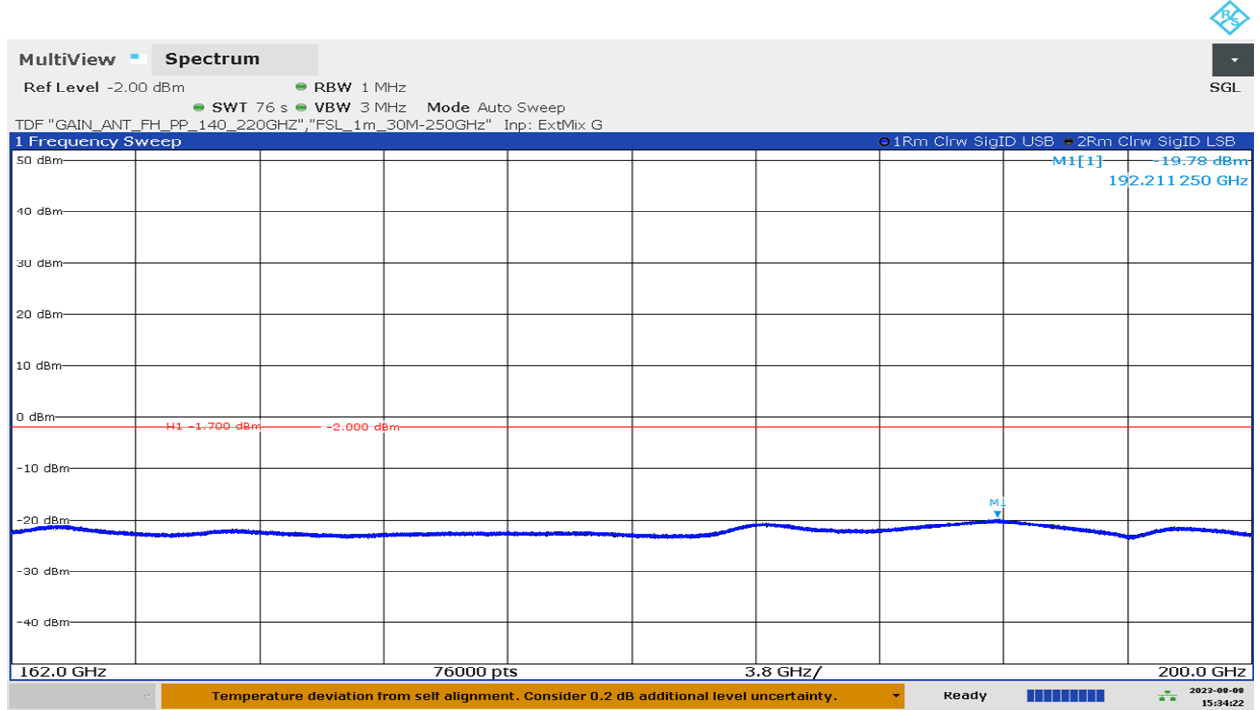
D143_01_TX_RSE_162G_200GHz_Ant_V



D143_02_TX_RSE_200G_220GHz_Ant_V



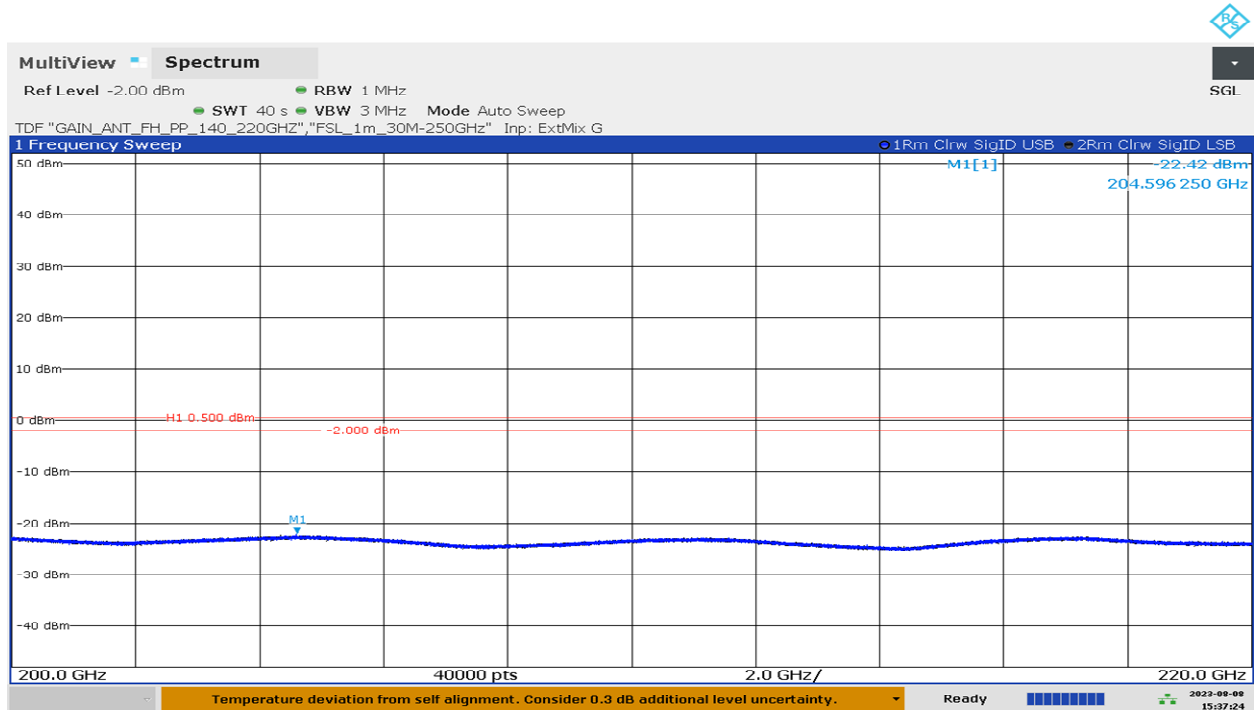
D144_01_TX_RSE_162G_200GHz_Ant_H



03:34:23 PM 08/08/2023

Note: no critical frequency found, Limit line: -1.7dBm, Result: Passed.

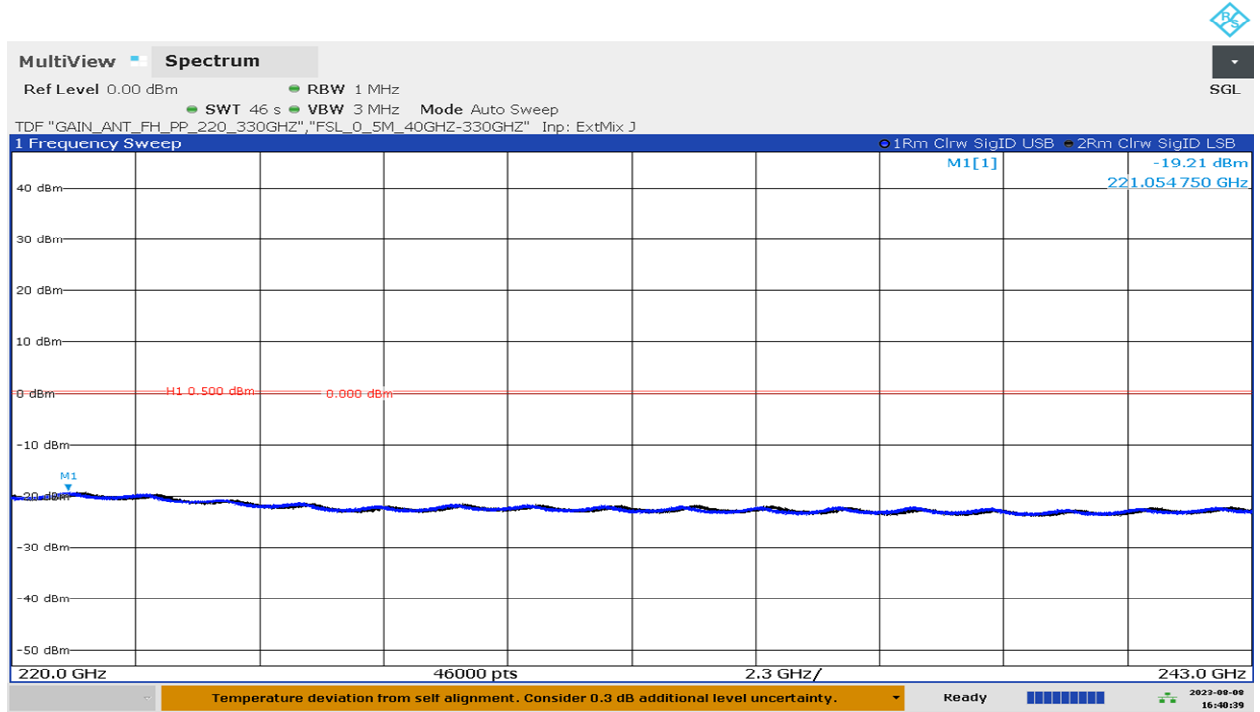
D144_02_TX_RSE_200G_220GHz_Ant_H



03:37:24 PM 08/08/2023

Note: no critical frequency found, Limit line: 0.5dBm, Result: Passed.

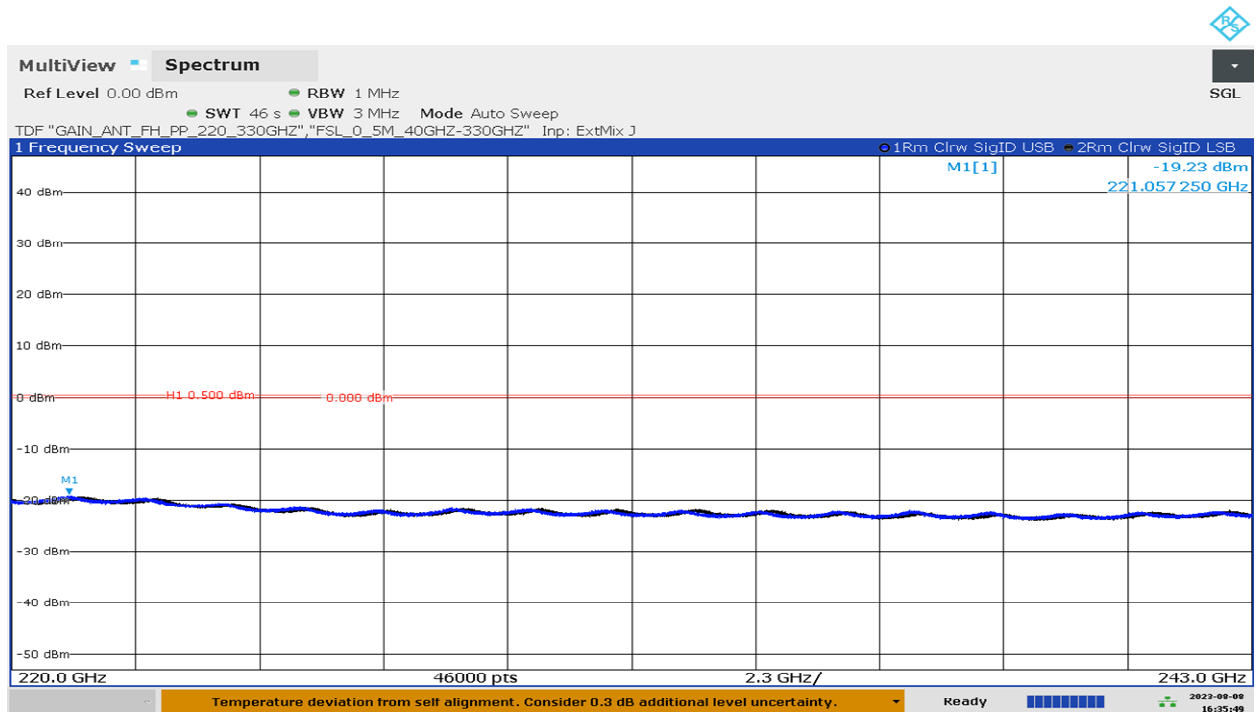
D145_TX_RSE_220G_243GHz_Ant_V



04:40:39 PM 08/08/2023

Note: no critical frequency found, Limit line: 0.5dBm, Result: Passed.

D146_T01_TX_RSE_220G_243GHz_Ant_H



04:35:50 PM 08/08/2023

Note: no critical frequency found, Limit line: 0.5dBm, Result: Passed.

End Of Annex 1