



Deutsche
Akkreditierungsstelle
D-PL-21375-01-02
D-PL-21375-01-03



Bundesnetzagentur

BNetzA-CAB-21/21-21

Test Report

Test report no.: 23058741-34053-1

Date of issue: 2023-10-18

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

Applicant

Hella Aglaia Mobile Vision GmbH

Manufacturer

SynchronicIT BV

Test Item

UWB Tag

Radio Frequency Testing according to:

Title 47
FCC Regulations Subpart 15F
§15.519

Tested by
(name, function, signature)

Piotr Sardyko
Labor Manager

signature

Approved by
(name, function, signature)

Andreas Bender
Deputy Managing Director

signature

Applicant and Test item details

Applicant	Hella Aglaia Mobile Vision GmbH Ullsteinstraße 140, 12109 Berlin Germany
Manufacturer	SynchronicIT BV Spoonstraat 155 Room 413 6591 GT Gennep, The Netherlands
Test item description	UWB dongle & UWB wearable with wireless charge
Model/Type reference	UWB Tag

FCC ID	2ASWU-PS10
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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.

Decision rule: Binary Statement for Simple Acceptance Rule according 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 Sankt Ingbert / Germany Fon: +49 6894 38938-0 Fax: +49 6894 38938-99 URL: www.ib-lenhardt.de E-Mail: info@ib-lenhardt.de
Accreditation	The testing laboratory is accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS) in compliance with DIN EN ISO/IEC 17025:2018. Scope of testing and registration number: - Electronics, EMC, Radio D-PL-21375-01-01 - Electromagnetic Compatibility and Telecommunication (FCC requirements) D-PL-21375-01-02 Testing Laboratory Designation Number DE0024 - Telecommunication (TC) and Electromagnetic Compatibility (EMC) for Canadian Standards D-PL-21375-01-03 ISED Company Number 27156 Testing Laboratory CAB Identifier DE0020 Website DAkkS: https://www.dakks.de/ The Deutsche Akkreditierungsstelle GmbH (DAkkS) is also a signatory to the ILAC Mutual Recognition Arrangement
Date of receipt of test samples	2023-08-07
Start – End of tests	2023-08-07 – 2023-08-11

2.2 Possible verdicts of the results

Test sample meets the requirements	P (PASS) – the measured value is below the acceptance limit, AL = TL
Test sample does not meet the requirements	F (FAIL) – the measured value is above the acceptance limit, AL = TL
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

-1:

- Transmission time test was performed

This test report 23058741-34053-1 replaces the previous test report 23058741-34053-0.

2.6 Further documents

List of further applicable documents belonging to the present test report:

Measurement plots: 23058741-34053-1_Annex A

EUT photographs: 23058741-34053-1_Annex B

Test setup photographs: 23058741-34053-1_Annex C

2.7 Formula for determination of correction values (E_c)

$$E_c = E_R + AF + C_L + D_F - G_A \quad (1)$$

$$M = L_T - E_c \quad (2)$$

E_c = Electrical field – corrected value

E_R = Receiver reading

M = Margin

L_T = Limit

AF = Antenna factor

C_L = Cable loss

D_F = Distance correction factor (if used)

G_A = Gain of pre-amplifier (if used)

All units are dB-units, positive margin means value is below limit.

2.8 Software/Firmware used for measurements

All measurements were done directly with spectrum analyzer or SW R&S EMC32.

In some measurements (please see test equipment list for each test) R&S ESW 26 was used (please see chapter 8).

(Instrument) Firmware Version: **1.70**

In some measurements (please see test equipment list for each test) R&S FSW 50 was used (please see chapter 8).

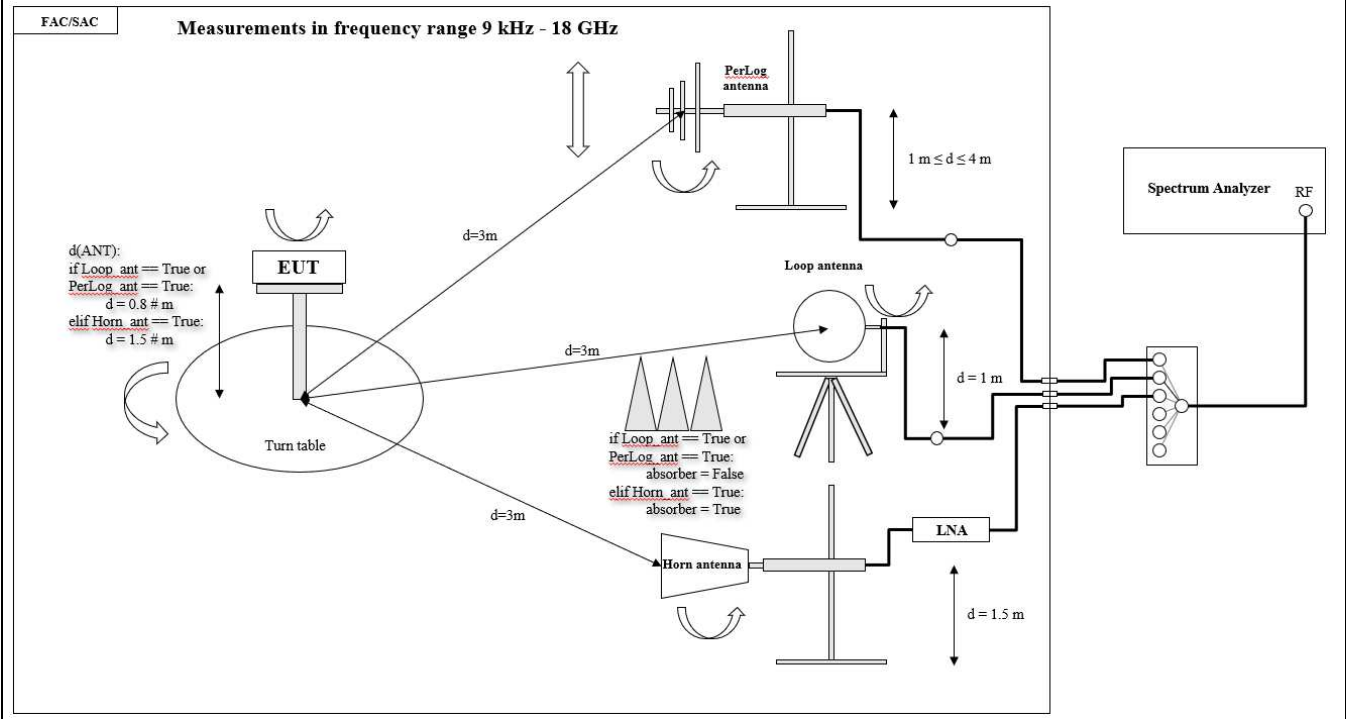
(Instrument) Firmware Version: **4.61**

In some measurements SW R&S EMC32 was used.

Version: **11.10.00**

2.9 Block diagrams

Block diagram 1*:



* depending on limit line different horn antennas, correspondingly different measurement distances, can be used. If the case here, please see the annex C with test set-up photos.

3 ENVIRONMENTAL & TEST CONDITIONS

3.1 Environmental conditions

Temperature	20 C $\pm$ 5 C
Relative humidity	25-75 % R.H.
Barometric Pressure	860-1060 mbar
Power supply	3.7 V battery

4 TEST STANDARDS AND REFERENCES

Test standard (accredited)

FCC CFR Title 47 Part 15 Subpart F	---
ANSI C63.10: 2013	---

Test standard (not accredited)

None

Reference	Description
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none	---
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5 EQUIPMENT UNDER TEST (EUT)

5.1 Product Description*

UWB dongle & UWB wearable with wireless charge

*: declared by the applicant

5.2 Technical Data of Equipment*

Number of channel:	1
Channel tested:	f_{cent} : 6489.6 MHz
Device type:	Hand held UWB system
Number of channels:	1
Emission designator(s):	IEEE 802.15.4-2011 UWB
RF mode:	Tx / Rx
Antenna Type:	Internal (Johansson 7000AT18A1600)
Max radiated emissions:	< -41.3 dBm
Antenna connector:	None
Equipment type:	Production model
Temperature range:	Tmin: 0 °C, Tmax: 40 °C
Type of power source:	Internal power battery (3V to 4.2V)

*: declared by the applicant

5.3 Test Item (Equipment Under Test) Description*

Short designation	EUT Model	EUT Description	ID	Hardware status	Software status
EUT A	UWB Tag	Tx sample	N/A	MH201	N/A
EUT B	UWB Tag	Normal sample	N/A	MH201	N/A

*: declared by the applicant

5.4 Auxiliary Equipment (AE) Description*

AE short designation	EUT Name (if available)	EUT Description	Serial number (if available)	Software (if used)
AE 1	Normal sample	UWB Dongle	-	-

*: declared by the applicant

5.5 Test Item Operating Modes Description*

EUT operating mode no.	Description of operating modes	Additional information
op. 1	Continuous modulated	-
op. 2	Normal mode	-

*: declared by the applicant

5.6 Test Item Set-ups Description

set. 1	EUT A
set. 2	EUT B + AE 1

5.7 Test Conditions

Temperatur, [C]		Voltage, [V]	
Tnom	20 ± 5	Vnom	3.7

5.8 Additional Information

Test items differences	-
Additional application considerations to test a component or sub-assembly	Internal battery of the EUT was charged regularly. The power was set with the following command in the script: <pre>config.txPower = 33;</pre>

6 SUMMARY OF TEST RESULTS

Test specification

FCC 15.519

FCC part	Requirement / Test Case	Test Conditions	Set-up	Operating mode	Result / Remark	Verdict
15.519 (a)(1)	Transmission time	Nominal	2	2	None	Pass
15.519(b)	10 dB bandwidth	Nominal	1	1	None	Pass
15.209 15.519(c)	Radiated emissions	Nominal	1	1	None	Pass
15.519(d)	Radiated emissions in the GPS bands	Nominal	1	1	None	Pass
15.519(e)	Fundamental emission peak power	Nominal	1	1	None	Pass
15.203	Antenna requirement	-	-	-	-	Pass

Notes

None

Comments and observations

None

7 TEST RESULTS

7.1 Transmit time

Test equipment (Please see Chapter 8 for exact information of test equipment)

Radiated: R3, A3, C1, Amp2

Description*:

Plot 1.1.: AE 1 is not signaling. No movement. -> EUT B is also not transmitting.

Plot 1.2.: AE 1 starts to signal at M1. No movement. -> EUT B is not transmitting.

Plot 1.3.: AE 1 starts to signal at M1. Movement from 0 s up to M3. -> EUT B starts to transmit at M2 and stops at M4. AE1 stops to transmit at M5.

Plot 1.4.: AE 1 starts to signal at M1. Movement all the time. -> EUT B starts to transmit at M2. AE1 stops to transmit at M3. EUT B also stops to transmit at M3.

Limits

FCC 15.519(a)(1):

A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

Results*

Plot No	Set-up / Op.	Frequency, [MHz]	Measured value, [ms]	Limit**, [sec]	Result
1.3	2/2	6500	4	10	Pass
1.4	2/2	6500	0	10	Pass

* Please see measurement plots in Annex A.

7.2 Occupied Bandwidth

Test equipment (Please see Chapter 8 for exact information of test equipment)

Radiated: R3, A3, C1, Amp2

Description

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.10: 2013, Chapter 10.1.

Please see test set-up photos in Annex C and block diagram in Chapter 2.9.

Please see Plots in Annex A for spectrum analyzer settings.

Measurement was done radiated.

Limits

The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10600 MHz.

Results*

Plot No	Set-up / Op.	f_{low} , [MHz]	f_{high} , [MHz]	Measured value (10 dB BW), [MHz]	Limit, [GHz]	Result
2.1.	1 / 1	6189.9	6771.9	582	3.1 – 10.6	Pass

* Please see measurement plots in Annex A.

7.3 Radiated field strength / emissions

Test equipment

Frequency range 9 kHz – 30 MHz

Measurement in a semianechoic room with the distance between the EUT and the reference point of the antenna 3 m (see photos in Annex B). The measurement was done with software R&S EMC 32 V11.00.

Radiated: A1, C1, R1, SW2

Frequency range 30 MHz – 1 GHz

Measurement in a semianechoic room with the distance between the EUT and the reference point of the antenna 3 m (see photos in Annex B). The measurement was done with software R&S EMC 32 V11.00.

Radiated: A2, C1, R1, SW2

Frequency range 1 GHz – 40 GHz

The measurement was done directly with spectrum analyzer.

Radiated: Amp2, C1, R3

Frequency range, [MHz]	Antenna	Measurement distance, [m]	Min Rayleigh (far-field) distance, [m]	Amplifier used	Is the measurement distance in m equal to or greater than the Rayleigh distance
960-1610	A3	1	0.99	Amp2	Yes
1610-3100	A3	2	1.59	Amp2	Yes
3100-10600	A3	3	3	Amp2	Yes
10600-15000	A7	1	0.97	Amp3	Yes
15000-18000	A8	1	0.62	Amp3	Yes
18000-26500	A9	0.5	0.48	Amp4	Yes
26500-40000	A10	0.32	0.31	Amp4	Yes

Description

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.10: 2013.

RBW for frequency range 9 kHz- 30 MHz: 200 Hz, 9 kHz.

RBW for frequency range 30 MHz- 1 GHz: 120 kHz.

RBW for frequency range 1 GHz- 40 GHz: 1 MHz.

See photos in Annex C for test Set-up and block diagram in Chapter 2.9.

Limits

According to FCC 15.209(a):

Frequency (MHz)	Magnetic field strength (HField) ($\mu\text{A/m}$)*	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	6.37/F (F in kHz)	2400/F(kHz)	300
0.490-1.705	63.7/F (F in kHz)	24000/F(kHz)	30
1.705-30.0	0.08	30	30
30-88	-	100	3
88-216	-	150	3
216-960	-	200	3

* the measurement was done with dBuV/m units. Please see the appropriate dBuV/m limits in the same table

Limits

According to FCC 15.519(c) Radiated emissions:

Frequency [MHz]	EIRP in dBm	Measurement distance [meters]	Remarks
960-1610	-75.3	3	-
1610-1990	-63.3		
1990-3100	-61.3		
3100-10600	-41.3		
Above 10600	-61.3		

Test Results

Set-up / Op.	Frequency	Verdict
1 / 1	9 kHz – 40 GHz	Pass

All Readings below 1 GHz are Quasi-Peak or Peak detector, above 1 GHz with RMS detector.

Comment:	---
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Verdict	- PASS -	For plots please see Annex A to current report
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7.4 Radiated emissions in the GPS bands

Test equipment (Please see Chapter 8 for exact information of test equipment)

Radiated: R3, A3, C1, Amp2

Description

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.10: 2013, Chapter 10.3.10.

Please see test set-up photos in Annex C and block diagram in Chapter 2.9.

Please see Plots in Annex A for spectrum analyzer settings.

Measurement was done radiated.

Measurement distance: 3 m.

Limits

-85.3 dBm for frequency range 1164 MHz – 1240 MHz and 1559 MHz – 1610 MHz.

Test Results

Set-up / Op.	Frequency range, [MHz]	Verdict
1 / 1	1164-1240	Pass
1 / 1	1559-1610	Pass

All Readings were done with RMS detector.

Comment:

Verdict

- PASS -

For plots please see Annex A to current report

7.5 Fundamental emission peak power

Test equipment (Please see Chapter 8 for exact information of test equipment)

Radiated: R3, A3, C1, Amp2

Description

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.10: 2013, Chapter 10.3.6.

Please see test set-up photos in Annex C and block diagram in Chapter 2.9.

Please see Plots in Annex A for spectrum analyzer settings.

Measurement was done radiated.

Measurement distance: 3 m.

Limits

0 dBm

Results*

Plot No	Set-up / Op.	fc, [MHz]	fmax, [MHz]	Pmax, [dBm]	Limit, [dBm]	Result
5.1.	1 / 1	6489.6	6606.98	-1.76	0	Pass

* Please see measurement plots in Annex A.

7.6 Antenna requirement according to FCC 15.203

The antenna is permanently affixed to the module.

Verdict	- PASS -	Please see internal photos of the EUT
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8 MEASUREMENT EQUIPMENT

No	Equipment	Type	Manufacturer	Serial No.	Int. No.	Last Calibration	Next Calibration
Antennas (A):							
1.	Active Loop Antenna	HFH2-Z2E	Rohde & Schwarz	100108	LAB000108	2023-05-05	2026-05-05
2.	Ultrabroadband antenna	HL562E	Rohde & Schwarz	102005	LAB000150	2022-12-22	2025-12-22
3.	Double-Ridged Waveguide Horn Antenna	HF-907	Rohde & Schwarz	102899	LAB000151	2023-05-05	2026-05-05
4.	Rod Antenna	-	-	-	LAB000290	-	-
5.	Horn Antenna (2.6 GHz – 3.95 GHz)	PE9863/SF-10	Pasternack	-	LAB000312	2021-01-13	-
6.	Horn Antenna (3.95 GHz – 5.85 GHz)	PE9861/SF-10	Pasternack	-	LAB000264	2020-09-29	-
7.	Horn Antenna (10 GHz – 15 GHz)	PE9855 SF-20	Pasternack	-	LAB000263	2020-09-29	-
8.	Horn Antenna (12.4 GHz – 18 GHz)	62-HA20-A-SMF	TTE Europe	-	LAB000282	2020-09-29	-
9.	Horn Antenna (17.6 GHz – 26.7 GHz)	20240-20	Flann Microwave Ltd	266402	LAB000127	2020-06-29	-
10.	Horn Antenna (26.4 GHz – 40.1 GHz)	22240-20	Flann Microwave Ltd	270447	LAB000129	2020-06-29	-
11.	Horn Antenna (33 GHz – 50.1 GHz)	23240-20	Flann Microwave Ltd	273430	LAB000132	2020-07-01	-
12.	Horn Antenna (49.9 GHz – 75.8 GHz)	25240-20	Flann Microwave Ltd	272860	LAB000133	2020-07-01	-
13.	Horn Antenna (60.5 GHz – 91.5 GHz)	26240-20	Flann Microwave Ltd	273417	LAB000135	2020-07-01	-
14.	Horn Antenna (73.8 GHz – 114 GHz)	27240-20	Flann Microwave Ltd	273368	LAB000138	2020-07-01	-
15.	Horn Antenna (114 GHz – 173 GHz)	29240-20	Flann Microwave Ltd	273382	LAB000139	2020-07-01	-
16.	Horn Antenna (145 GHz – 220 GHz)	30240-20	Flann Microwave Ltd	273390	LAB000178	2020-08-01	-
17.	Horn Antenna (217 GHz – 330 GHz)	32240-20	Flann Microwave Ltd	273469	LAB000152	2020-08-01	-
18.	Horn Antenna (49.9 GHz – 75.8 GHz)	25240-20	Flann Microwave Ltd	272861	LAB000134	2020-07-01	-
19.	Horn Antenna (60.5 GHz – 91.5 GHz)	26240-20	Flann Microwave Ltd	273418	LAB000136	2020-08-01	-
Amplifiers (Amp)*:							
1.	Pre-Amplifier	BBV 9718 C	Schwarzbeck Mess-Elektronik OHG	84	LAB000169	-	-
2.	Low noise amplifier	BZ-01000900-111550-202320	B&Z Technologies	24336	LAB000296	-	-
3.	Low noise amplifier	BZ-08001800-180855-202020	B&Z Technologies	22105	LAB000297	-	-
4.	Low noise amplifier	BZ-18004000-270845-252525	B&Z Technologies	22449	LAB000298	-	-
Attenuator (Att)*:							
1.	Attenuator	25081-20 (49.9 GHz – 75.8 GHz)	Flann Microwave Ltd	234411	LAB000229	-	-
2.	Attenuator	27081-20 (73.8 GHz – 112 GHz)	Flann Microwave Ltd	270004	LAB000230	-	-
RF Cables (Cab)*:							
1.	Coaxial cable	LU7-022-1000	Rosenberger	33	LAB000153	-	-
2.	Coaxial cable	LU7-022-1000	Rosenberger	34	LAB000153	-	-

3.	Coaxial cable	SF101/1.5m	Huber & Suhner	503987/1	LAB000165	-	-
Chambers (C):							
1.	Semi/Fully Anecoic Chamber	SAC5	Albatross Projects GmbH	20168.PRB	LAB000235	2022-01-31	2025-01-31
2.	Climatic chamber	T-65/50	CTS GmbH	204002	LAB000110	2023-05-11	2024-05-11
3.	Shielding Cover	CMU-Z11	Rohde & Schwarz	100876	LAB000039	-	-
4.	Climatic chamber	T-70/350	CTS GmbH	194027	LAB000066	2023-06-30	2024-06-30
Corner Reflector (CR):							
1.	Trihedral Corner Reflector	SAJ-080-S1	ERAVANT	04756-01	LAB000201	-	-
Directional coupler (DC):							
1.	Directional coupler	CPL-5230-10-SMA-79	Midwest Microwave	-	LAB000672	-	-
Distance meter (DM):							
1.	Laser distance meter	GLM 50 C	Bosch	-	-	-	-
2.	Laser distance meter	GLM 120 C	Bosch	-	-	-	-
Filter (F)*:							
1.	High-pass filter (84 GHz – 110 GHz)	10-WHPF-84.5-UG387	TTE	-	LAB000299	-	-
2.	High-pass filter (7 GHz – 23 GHz)	HPF 7-23	AtlantRF	-	LAB000444	-	-
3.	High-pass filter (3.3 GHz – 12.75 GHz)	HPF 3.3-11	AtlantRF	-	LAB000382	-	-
4.	High-pass filter (1.3 GHz – 12.75 GHz)	H1G713G1	Microwave Circuits Inc	46291	LAB000443	-	-
5.	High-pass filter (1.3 GHz – 12.75 GHz)	H1G713G1	Microwave Circuits Inc	1896-01	LAB000670	-	-
6.	Bandstop filter (30MHz – 3GHz for 900 MHz Band)	WRCG876/960-847/989-50/8SS	Wainwright Instruments GmbH	-	LAB000671	-	-
Harmonic mixers (H):							
1.	Harmonic Mixer	FS-Z60	Rohde & Schwarz	101350	LAB000375	2023-04-13	2024-04-13
2.	Harmonic Mixer	FS-Z75	Rohde & Schwarz	102015	LAB000112	2023-05-03	2024-05-03
3.	Harmonic Mixer	FS-Z90	Rohde & Schwarz	102020	LAB000113	2023-04-06	2024-04-06
4.	Harmonic Mixer	FS-Z110	Rohde & Schwarz	102000	LAB000114	2023-05-02	2024-05-02
5.	Harmonic Mixer	FS-Z170	Rohde & Schwarz	100996	LAB000126	2023-04-26	2024-04-26
6.	Harmonic Mixer	FS-Z220	Rohde & Schwarz	101039	LAB000116	2023-04-16	2024-04-06
7.	Harmonic Mixer	FS-Z325	Rohde & Schwarz	101015	LAB000117	2023-04-11	2024-04-11
Multimeters (M):							
1.	Multimeter	U1242B	Keysight	MY59240021	LAB000187	2022-06-20	2024-06-20
2.	Multimeter	U1242B	Keysight	MY59160026	LAB000018	-	-
Multipliers (Mp):							
1.	Multiplier	SMZ75	Rohde & Schwarz	101307	-	2018-03-15	-
2.	Multiplier	SMZ110	Rohde & Schwarz	100001	-	2020-05-09	-
Power Supply (P):							
1.	Power Supply	PS 2042-10 B	Elektro-Automatic GmbH	2878350263	LAB000190	-	-
2.	Power Supply	PS 2042-10 B	Elektro-Automatic GmbH	2878350322	LAB000192	-	-
3.	Power Supply	E3640A	Agilent	MY40005693	LAB000036	-	-
Power meters (PM):							
1.	Power meter	NRP-Z81	Rohde & Schwarz	106194	LAB000120	2023-05-10	2024-05-10
2.	Power meter	NRP110T	Rohde & Schwarz	101151	LAB000119	2023-06-05	2024-06-05
Receivers and Spectranalyzers (R):							
1.	Test Receiver, SAC5	ESW-26	Rohde & Schwarz	101517	LAB000363	2023-01-31	2024-01-30
2.	Test Receiver	ESW-26	Rohde & Schwarz	101481	LAB000236	-	-
3.	Spectrum Analyzer 1 Hz – 50 GHz	FSW-50	Rohde & Schwarz	101450	LAB000111	2023-07-26	2024-07-26
4.	Spectrum Analyzer 2 Hz – 43 GHz	FSW-43	Rohde & Schwarz	101391	LAB000289	2023-06-02	2024-06-02
Signal Generators (SG):							

1.	Signal generator 8 kHz – 50 GHz	SMA100B	Rohde & Schwarz	103838	LAB000118	2021-06-30	2024-06-30
2.	Vector Signal Generator	SMW200A	Rohde & Schwarz	108822	LAB000288	-	-
Software (SW):							
No	Type	Name	Manufacturer	Version	Int. No.	Build	Rev
1.	Software	R&S Power Viewer	Rohde & Schwarz	11.3, 3.2.2020	-	7338	3230
2.	Software	R&S EMC32	Rohde & Schwarz	11.20	-	-	-

* The gain values of Amp and attenuation values of Cab and Att are remeasured annually internal.

9 MEASUREMENT UNCERTAINTIES

Test case	Measurement uncertainty*
Radiated field strength	$\leq \pm 6$ dB
Occupied bandwidth	± 100 kHz
Time domain measurement	± 2.32 ms
DC and low frequency voltages	± 3 %
Temperature	± 1 °C
Humidity	± 3 %

*) The indicated expanded measurement uncertainty corresponds to the standard measurement uncertainty for the measurement results multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %.

END OF THE REPORT

Annex A

Measurement plots

part of / in addition to

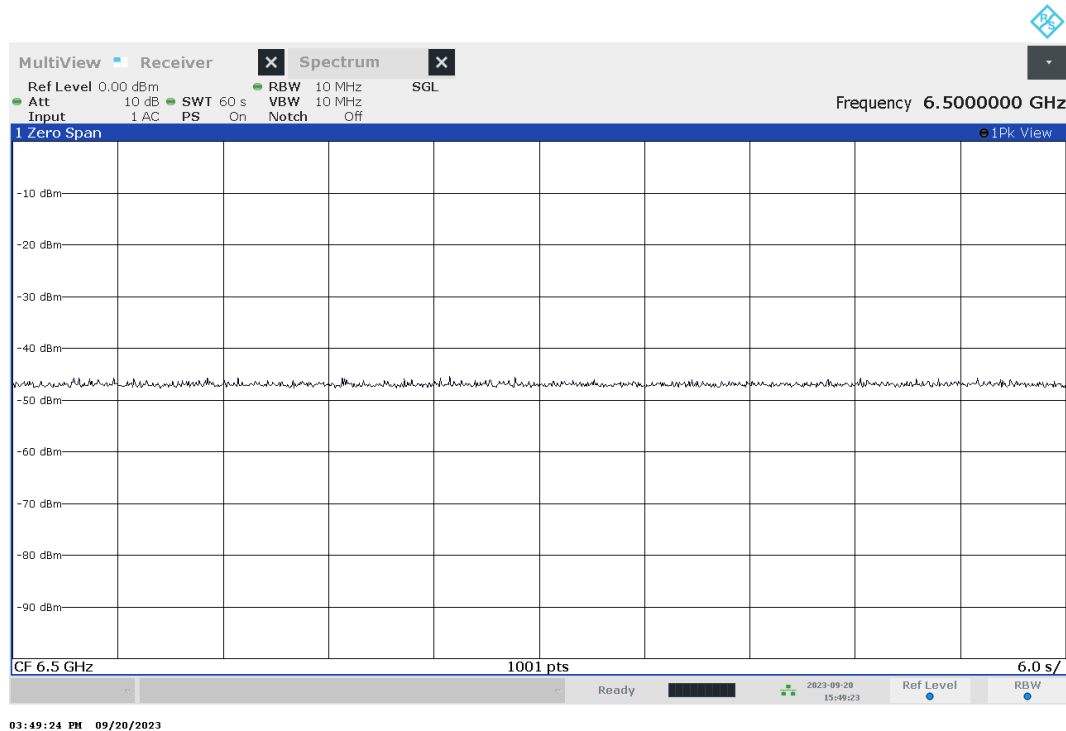
Test report no.: 23058741-34053-1

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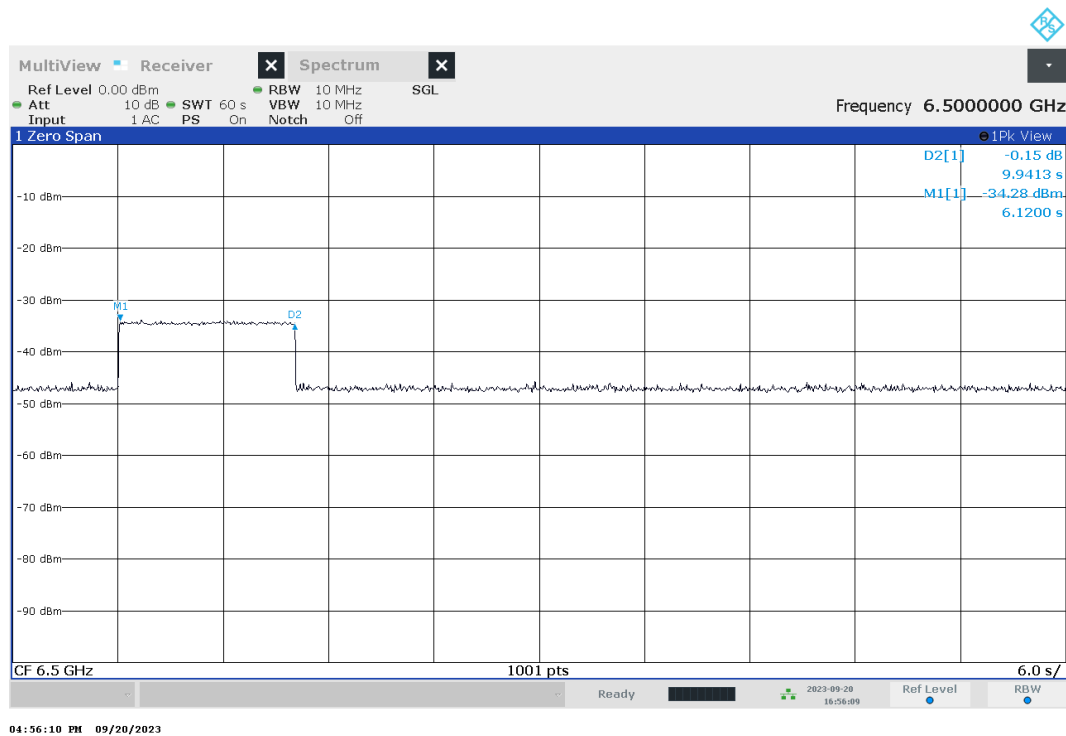
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1 TRANSMISSION TIME MEASUREMENT

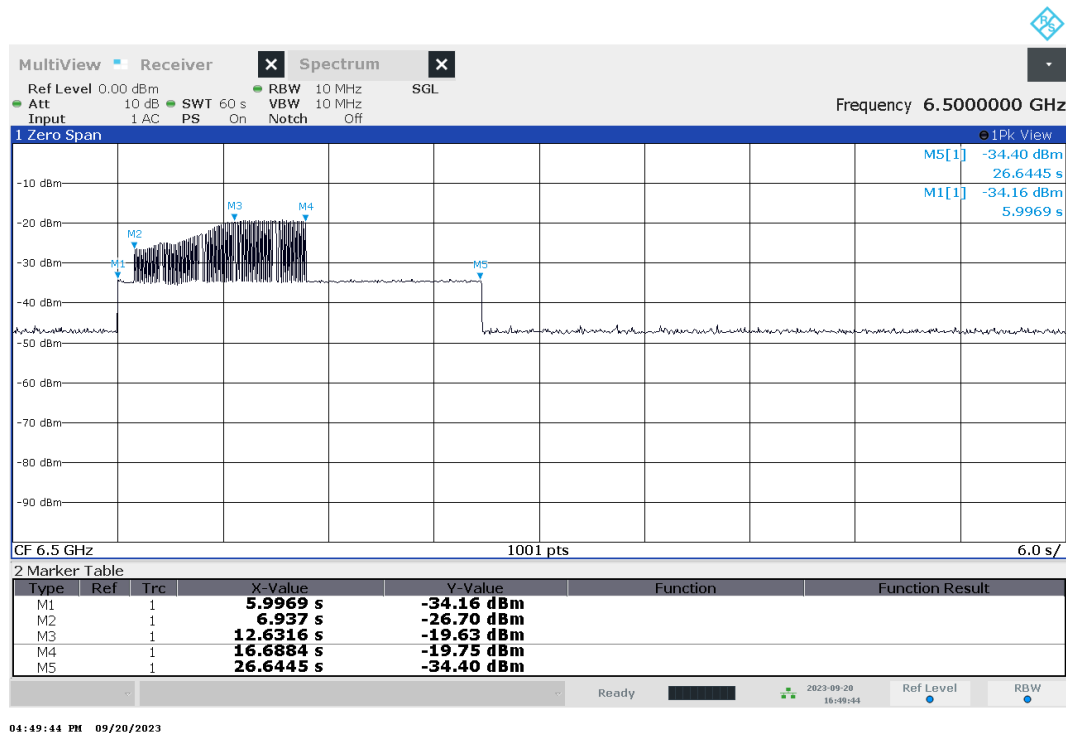
1.1 **Measurement 1:** AE 1 is not signaling. No movement. -> EUT B is also not transmitting.



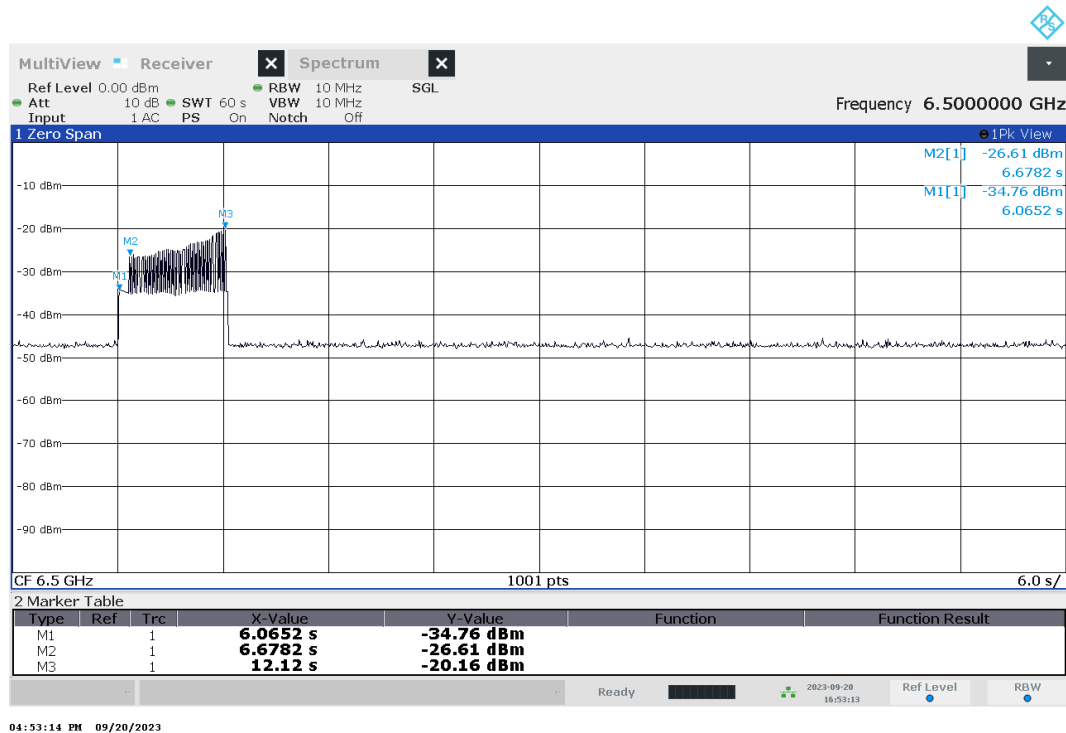
1.2 **Measurement 2:** AE 1 starts to signal at M1. No movement. -> EUT B is not transmitting.



1.3 Measurement 3: AE 1 starts to signal at M1. Movement from 0 s up to M3. -> EUT B starts to transmit at M2 and stops at M4. AE1 stops to transmit at M5.

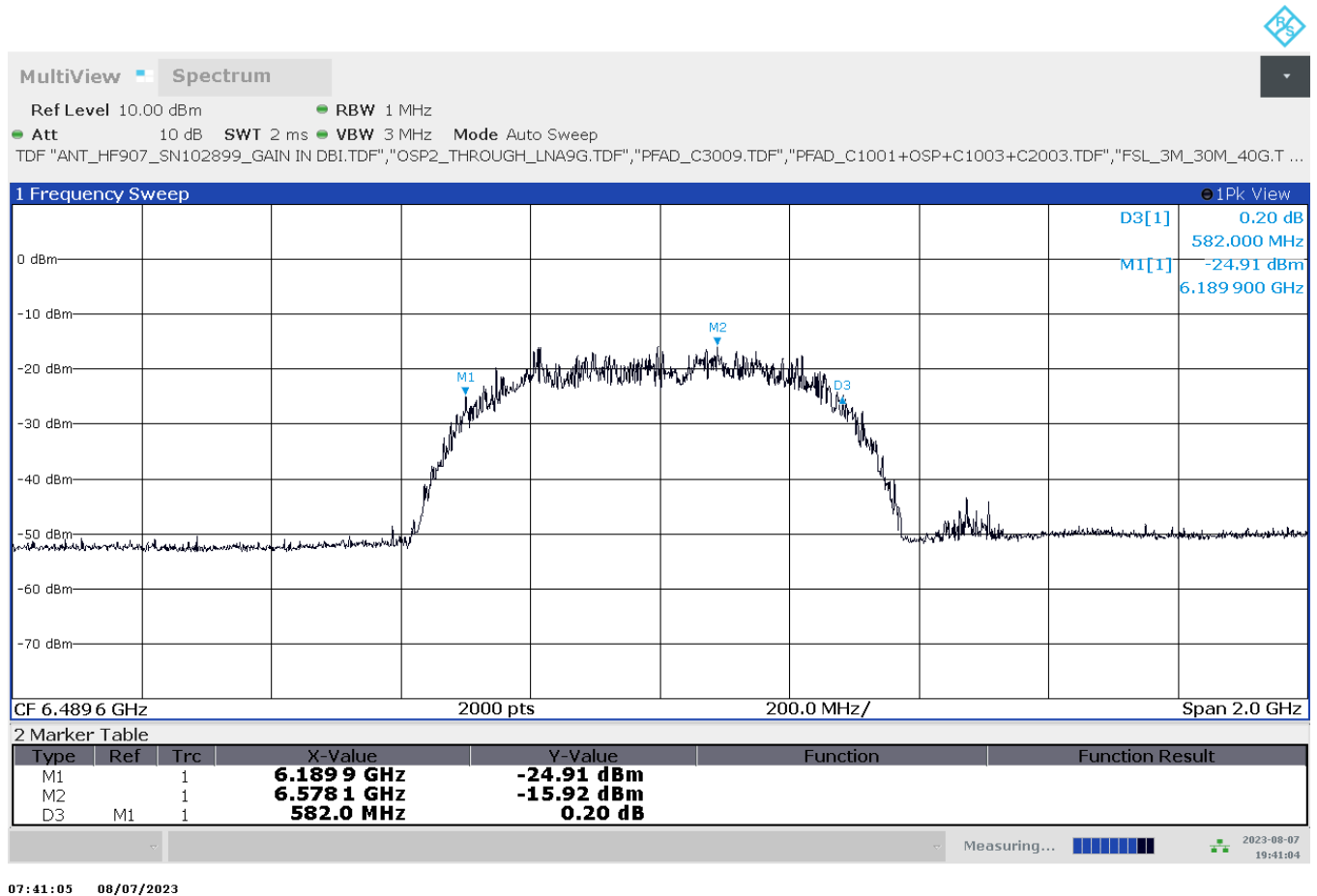


1.4 Measurement 4: AE 1 starts to signal at M1. Movement all the time. -> EUT B starts to transmit at M2. AE1 stops to transmit at M3. EUT B also stops to transmit at M3.



2 OCCUPIED BANDWIDTH

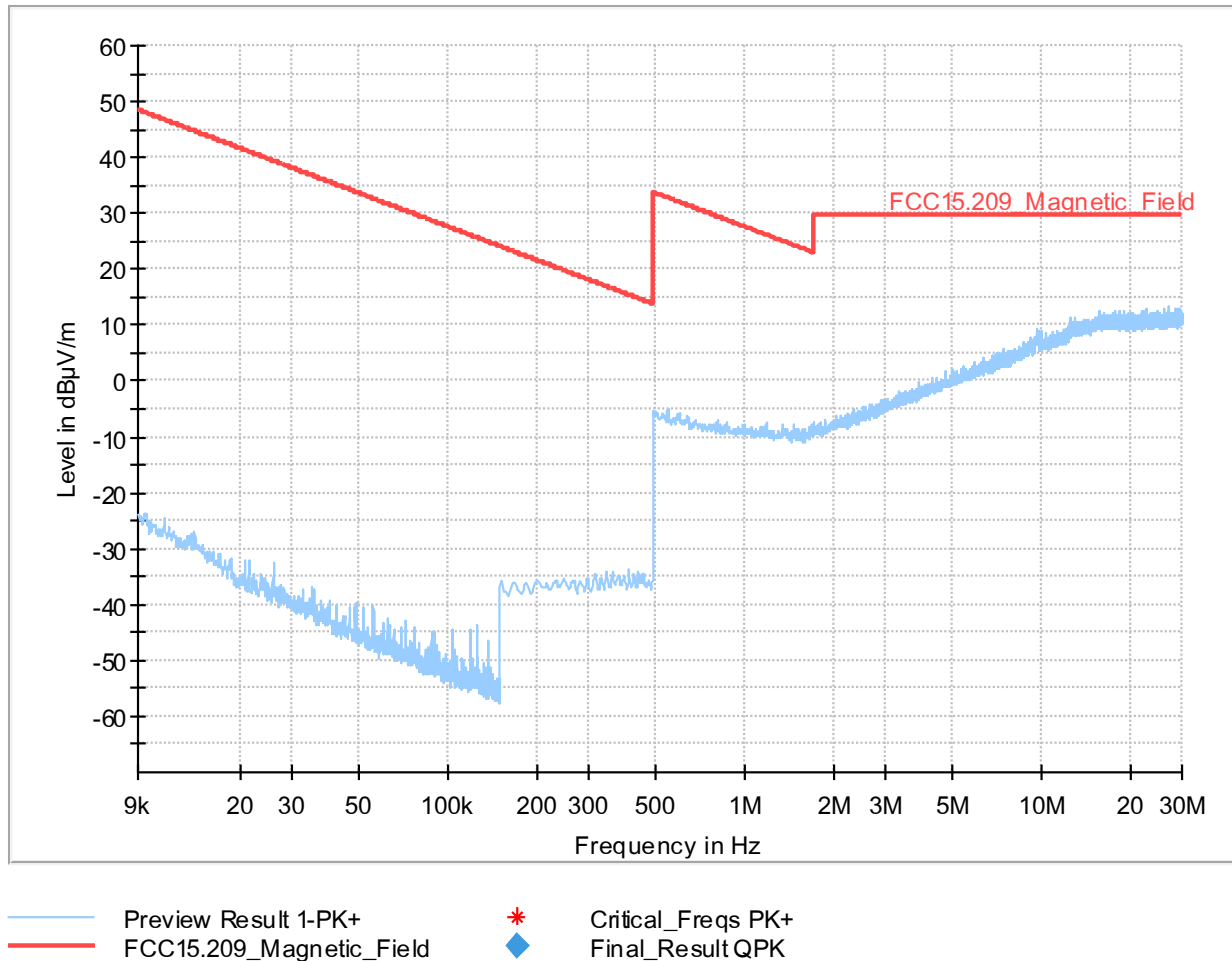
2.1 10 dB bandwidth, set-up 1, op. 1



3 GENERAL LIMIT - RADIATED FIELD STRENGTH EMISSIONS, 9 kHz – 5 GHz

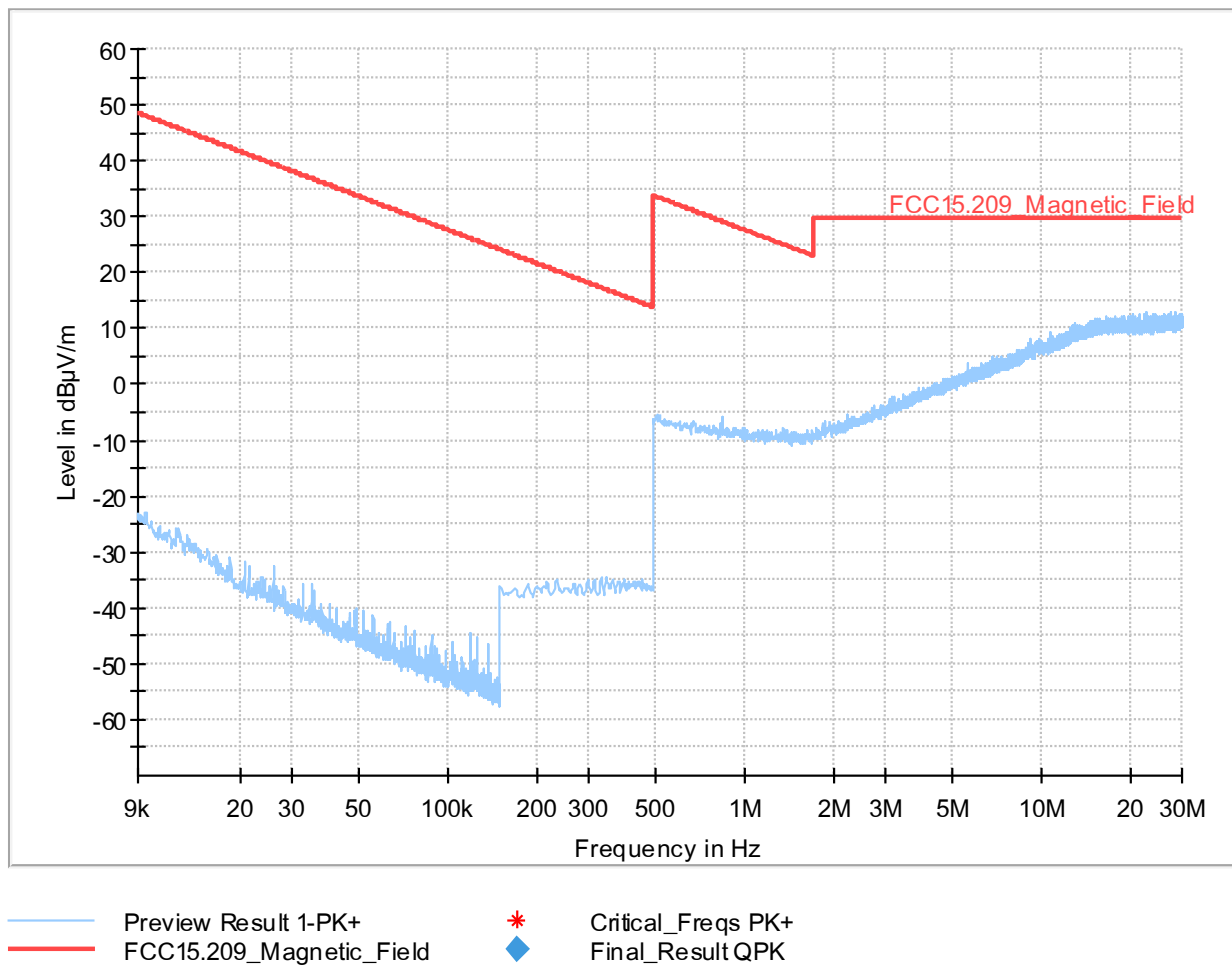
3.1 Radiated field strength measurements ($f < 30$ MHz)

3.1.1 Set-up 1, 9 kHz – 30 MHz, Op. 1, EUTs lying



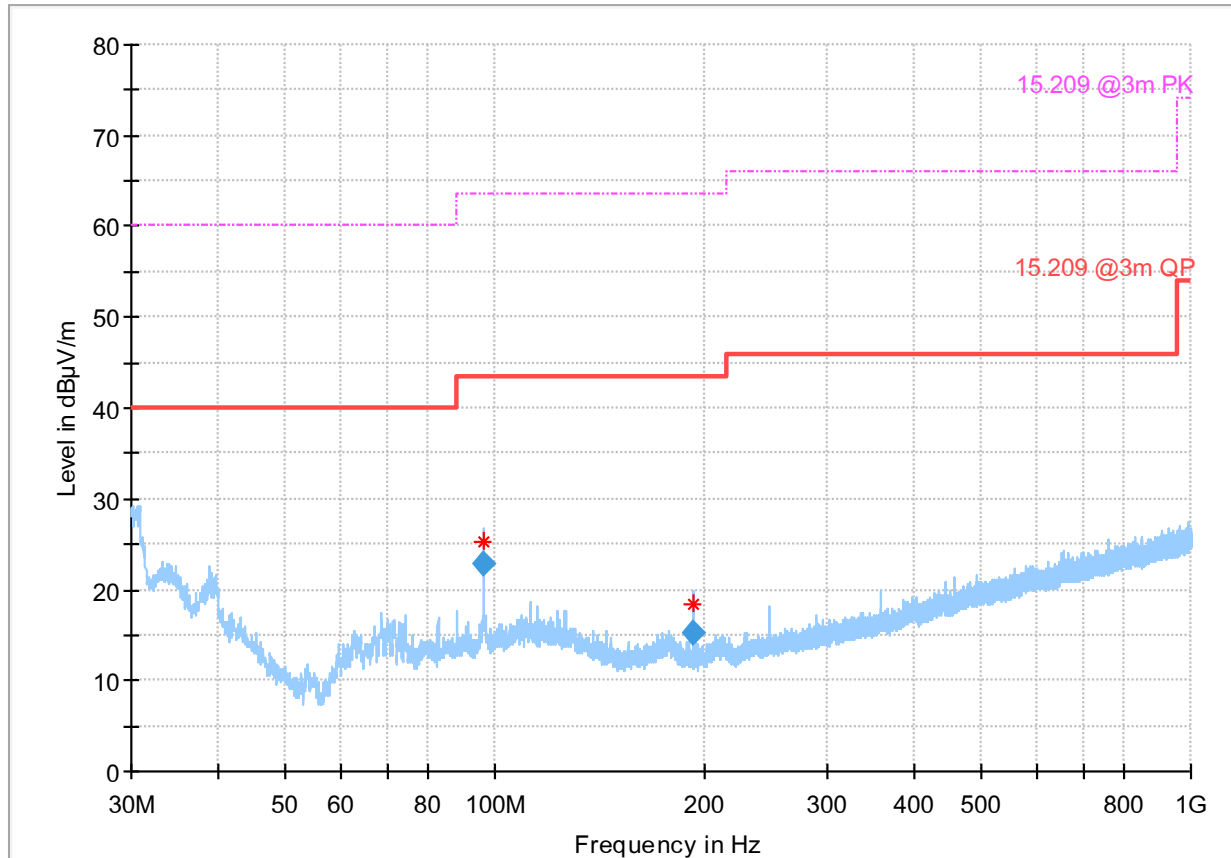
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3.1.2 Set-up 1, 9 kHz – 30 MHz, Op. 1, EUTs staying



3.2 Radiated field strength measurements (30 MHz < f < 1000 MHz)

3.2.1 Lying, Set-up 1, Op. 1



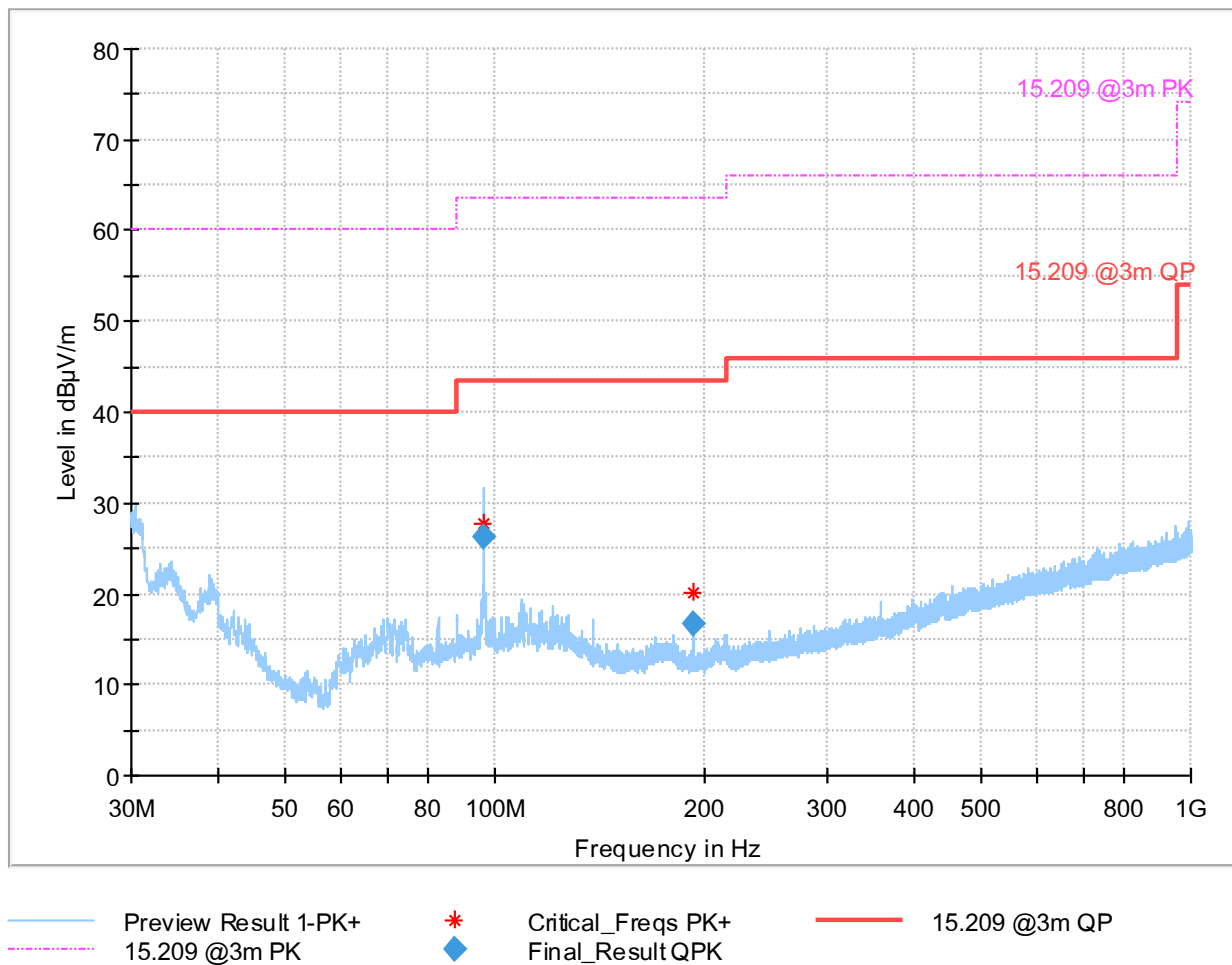
— Preview Result 1-PK+ 15.209 @3m PK
— 15.209 @3m PK
* Critical_Freqs PK+ Final_Result QPK
◆ Final_Result QPK
— 15.209 @3m QP

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
96.400000	22.79	43.50	20.71	100.0	120.000	104.0	V	30.0
193.225000	15.18	43.50	28.32	100.0	120.000	100.0	V	60.0

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3.2.2 Staying, Set-up 1, Op. 1



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
96.375000	26.16	43.50	17.34	100.0	120.000	115.0	V	198.0
193.200000	16.63	43.50	26.87	100.0	120.000	100.0	V	66.0

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3.3 Radiated field strength measurements ($1 \text{ GHz} < f < 40 \text{ GHz}$)

3.3.1 960 MHz – 1610 MHz, Set-up 1, Op. 1



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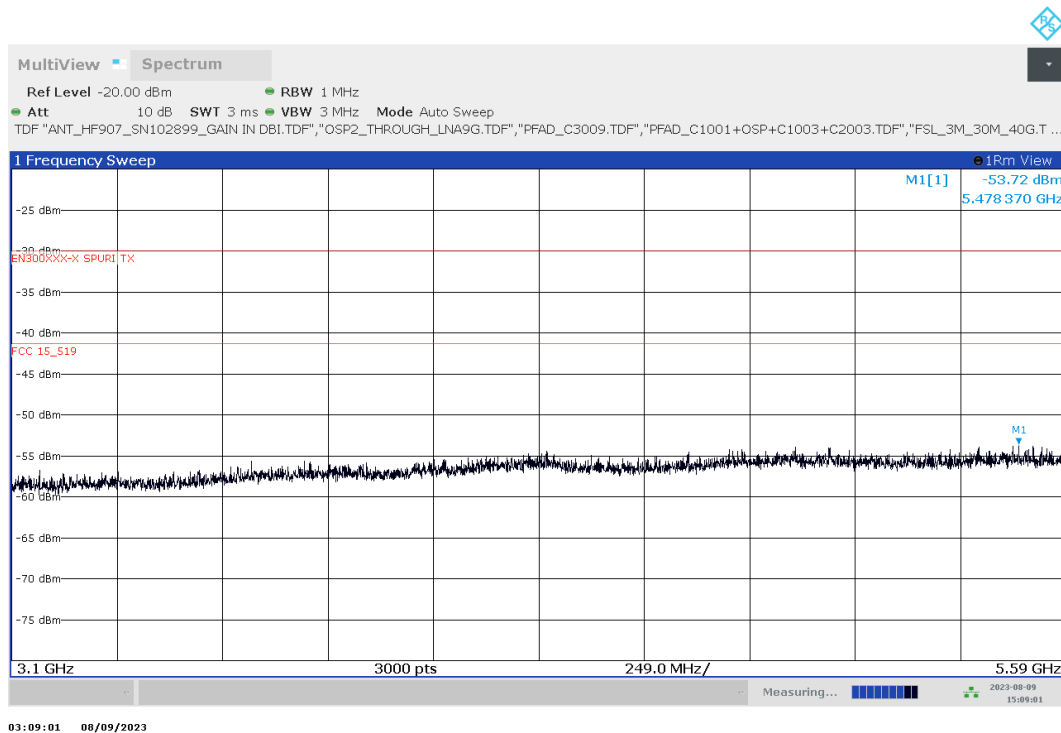
3.3.2 1610 MHz – 3100 MHz, Set-up 1, Op. 1



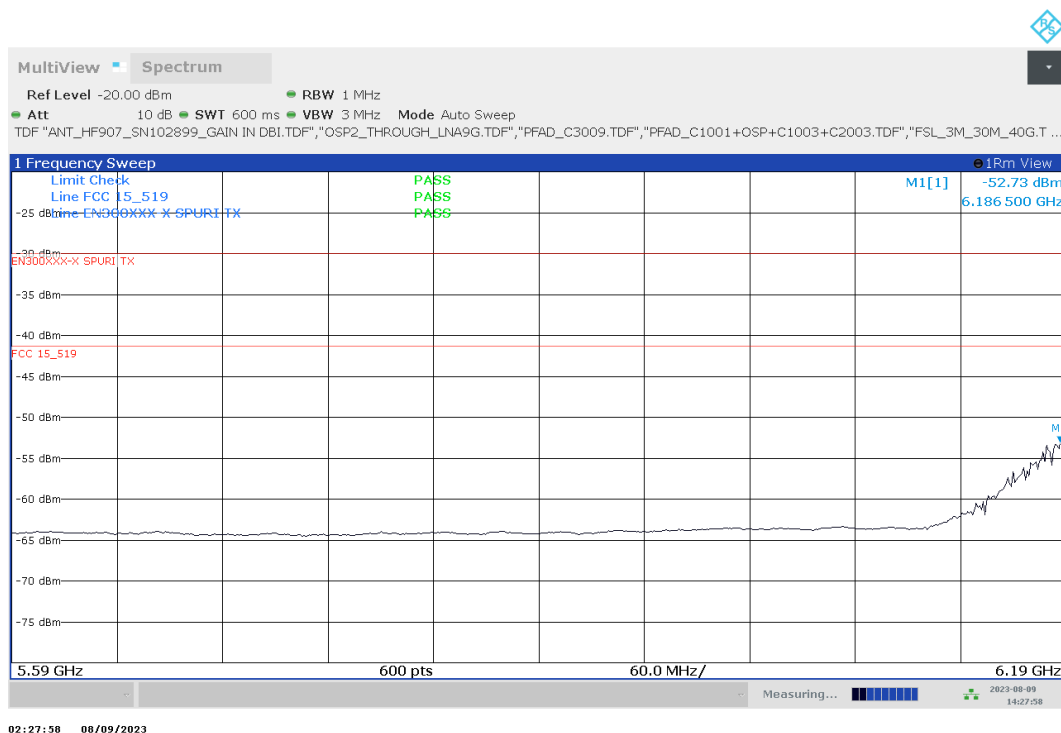
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3.3.3 3100 MHz – 5590 MHz, Set-up 1, Op. 1

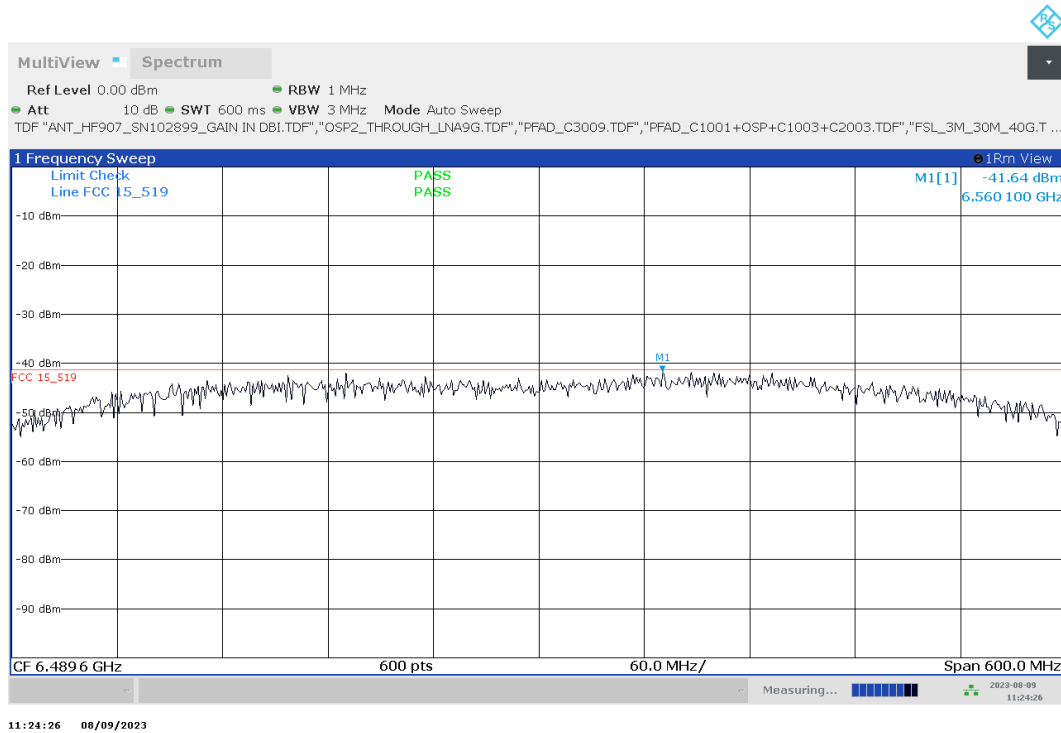


3.3.4 5590 MHz – 6190 MHz, Set-up 1, Op. 1

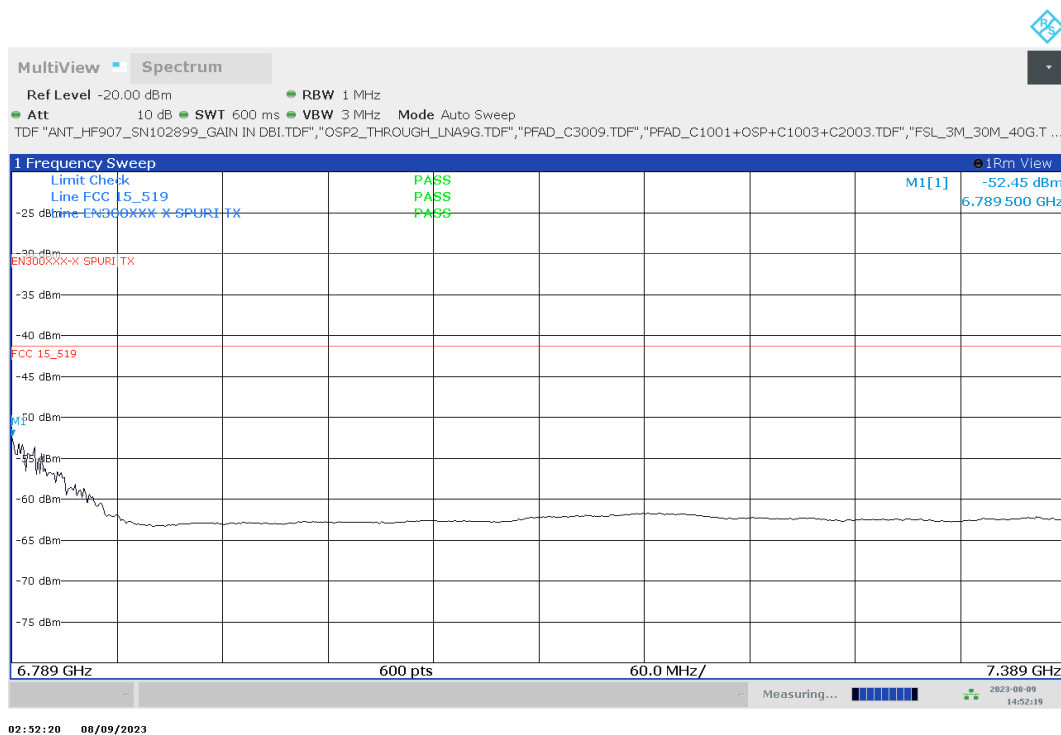


Annex A of TR no.: 23058741-34053-1

3.3.5 $f_c=6489.6$, span = 600 MHz, pts = 600, swt = 600 ms, Set-up 1, Op. 1

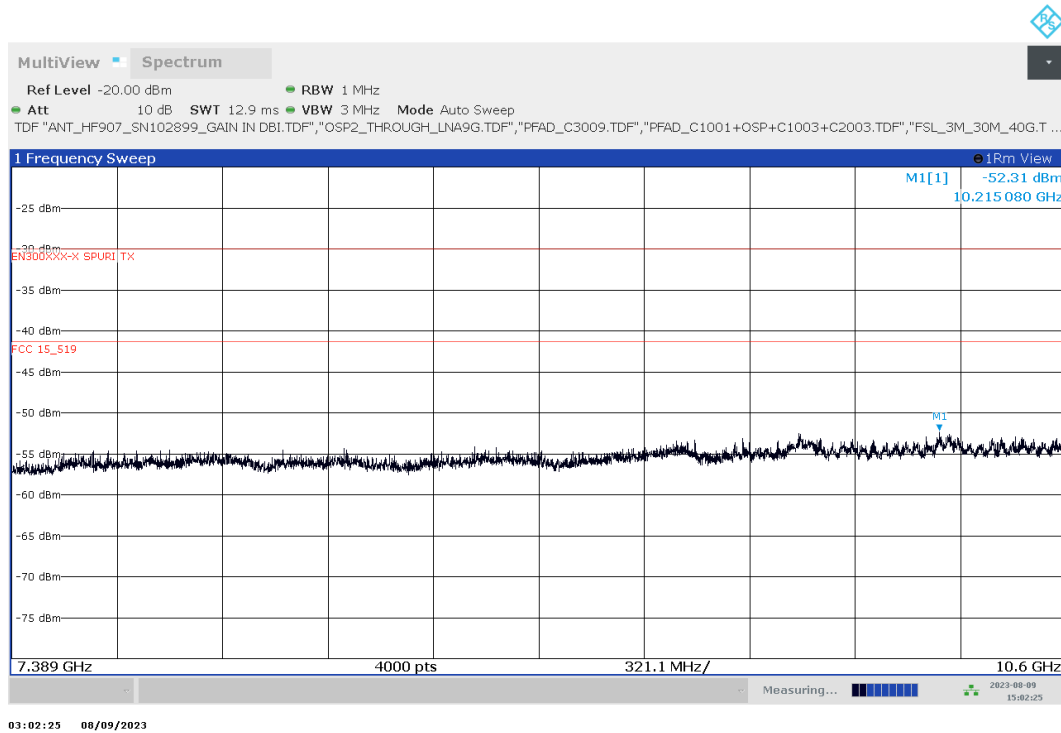


3.3.6 6789 MHz – 7389 MHz, Set-up 1, Op. 1

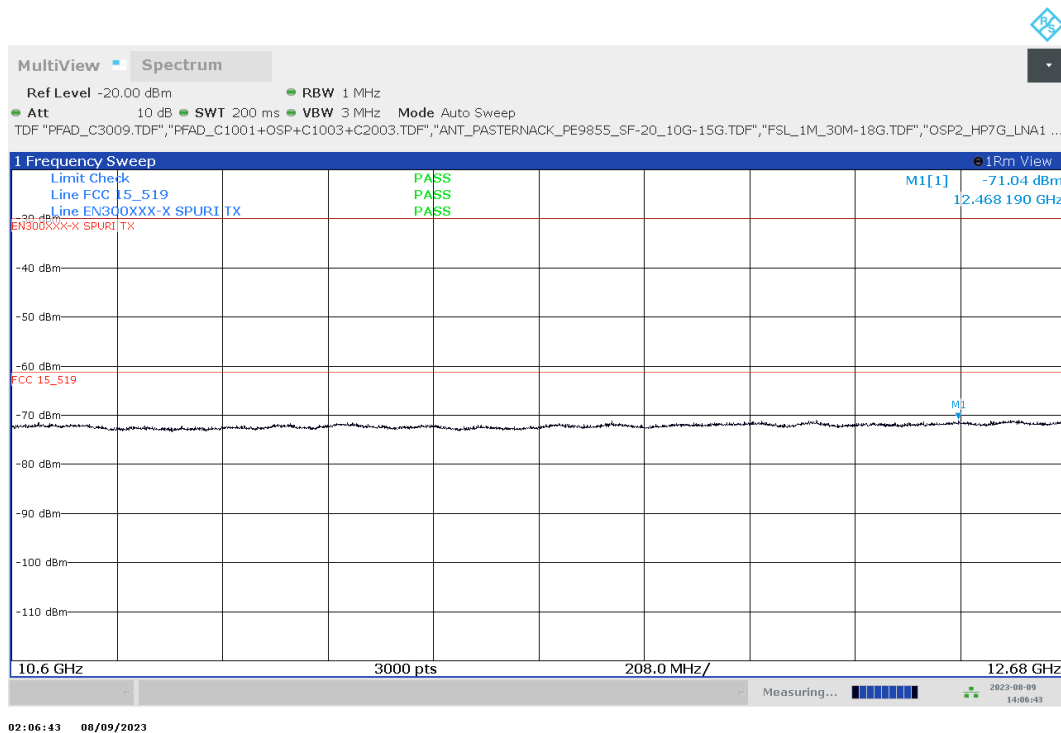


Annex A of TR no.: 23058741-34053-1

3.3.7 7389 MHz – 10600 MHz, Set-up 1, Op. 1

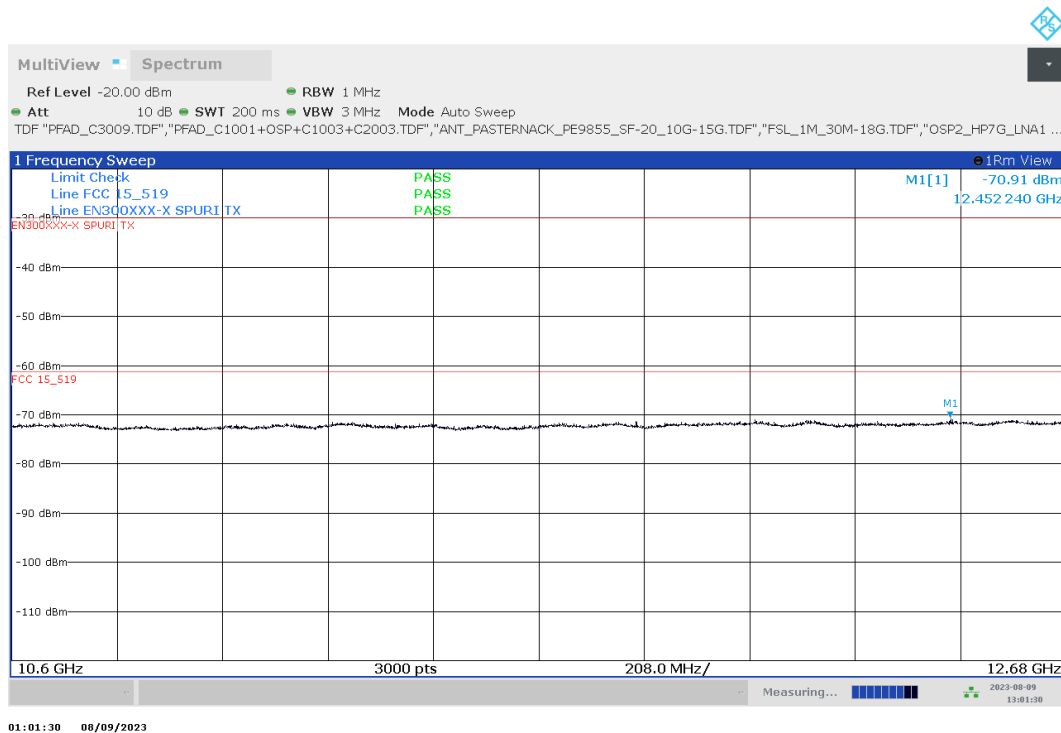


3.3.8 10600 MHz – 12680 MHz, Set-up 1, Op. 1, ANT HOR

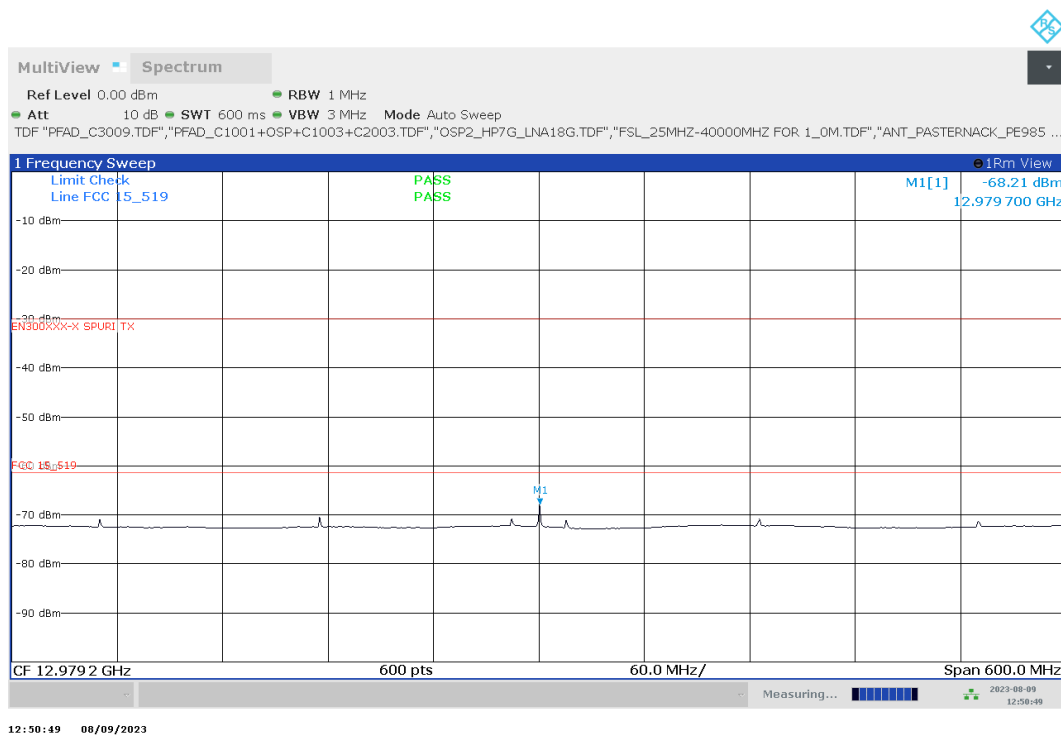


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3.3.9 10600 MHz – 12680 MHz, Set-up 1, Op. 1, ANT VER

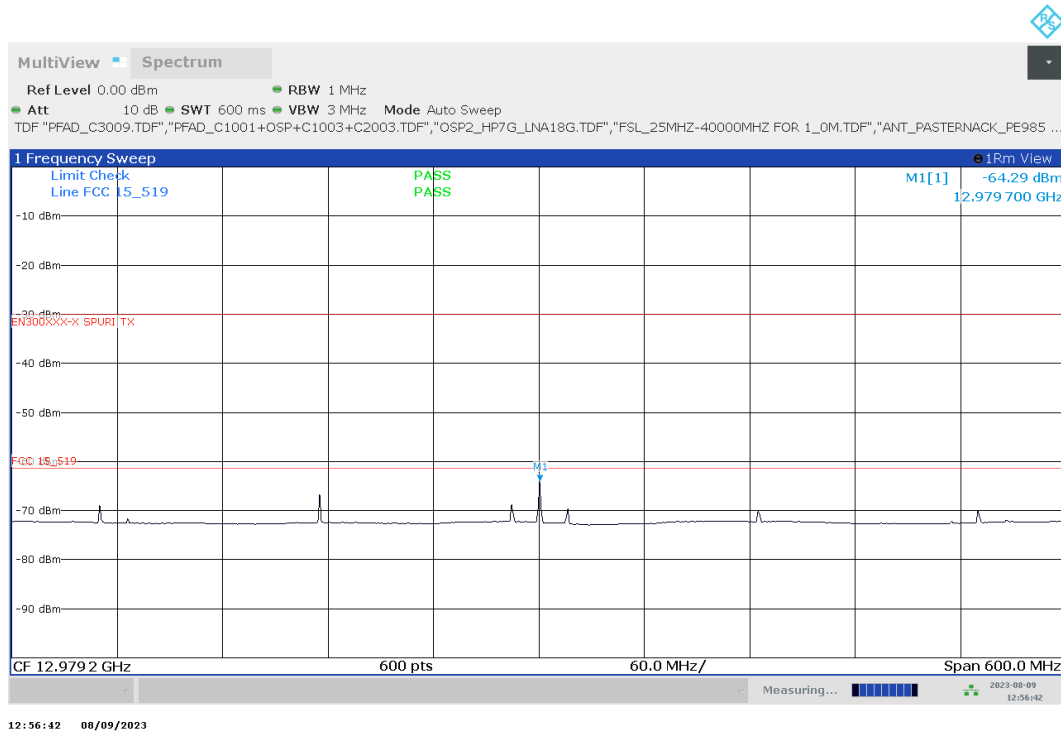


3.3.10 $f_c=12979.2$ (1. harmonic), span = 600 MHz, pts = 600, swt = 600 ms, Set-up 1, Op. 1, ANT HOR

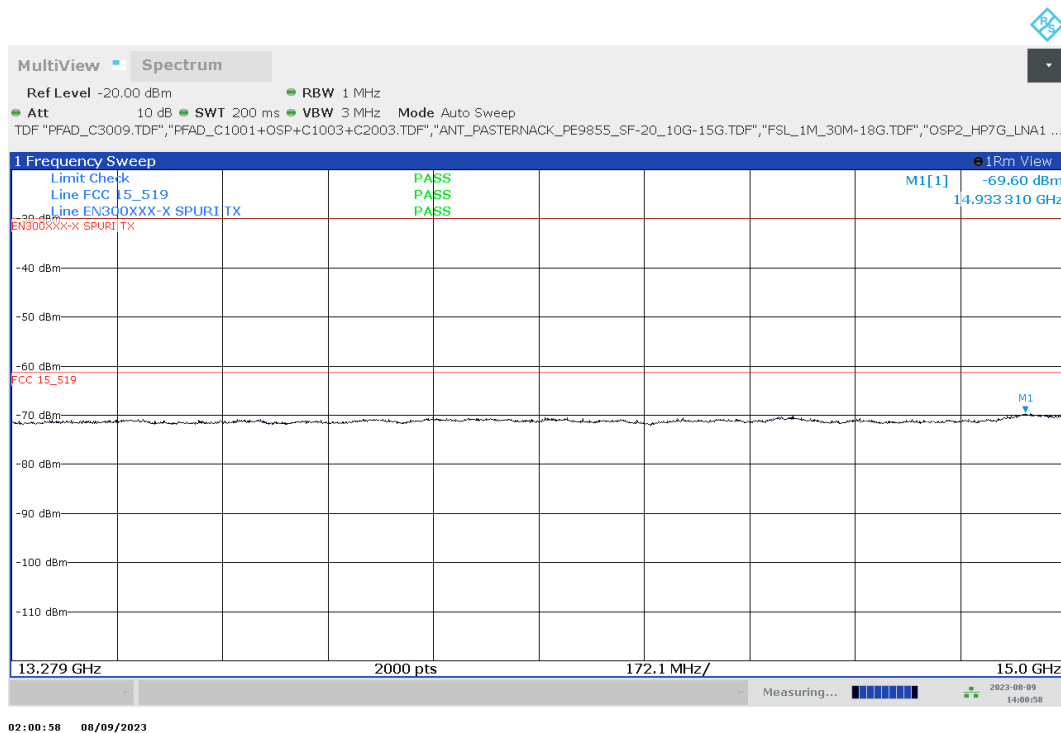


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3.3.11 $f_c=12979.2$ (1. harmonic), span = 600 MHz, pts = 600, swt = 600 ms, Set-up 1, Op. 1, ANT VER

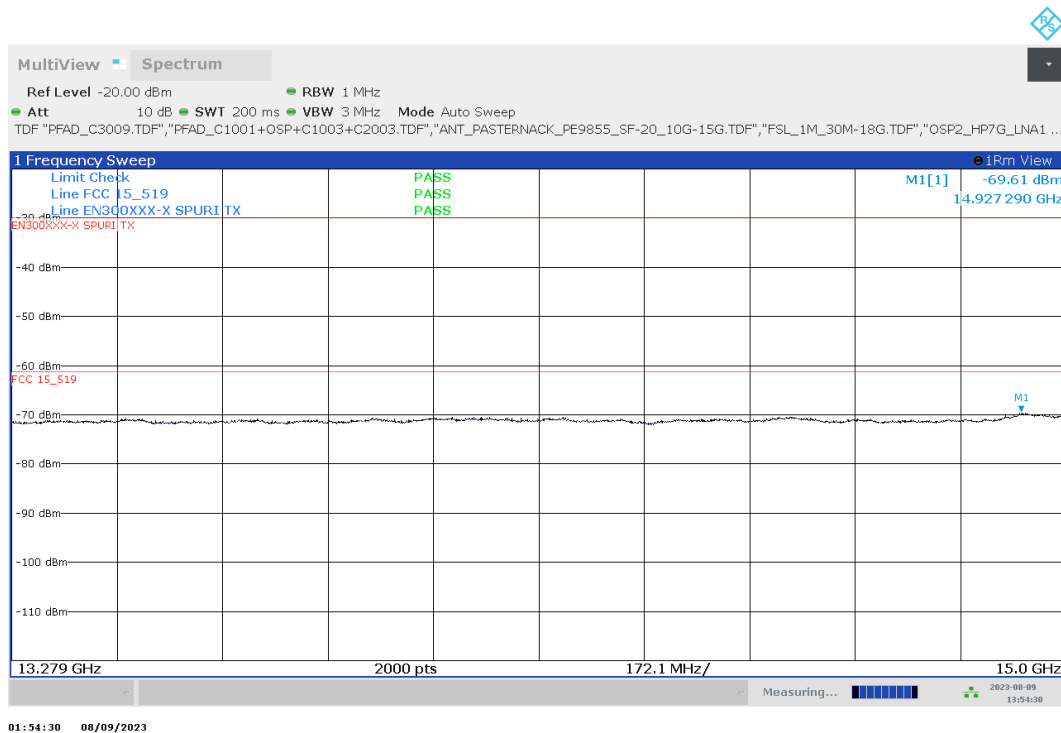


3.3.12 13279 MHz – 15000 MHz, Set-up 1, Op. 1, ANT HOR

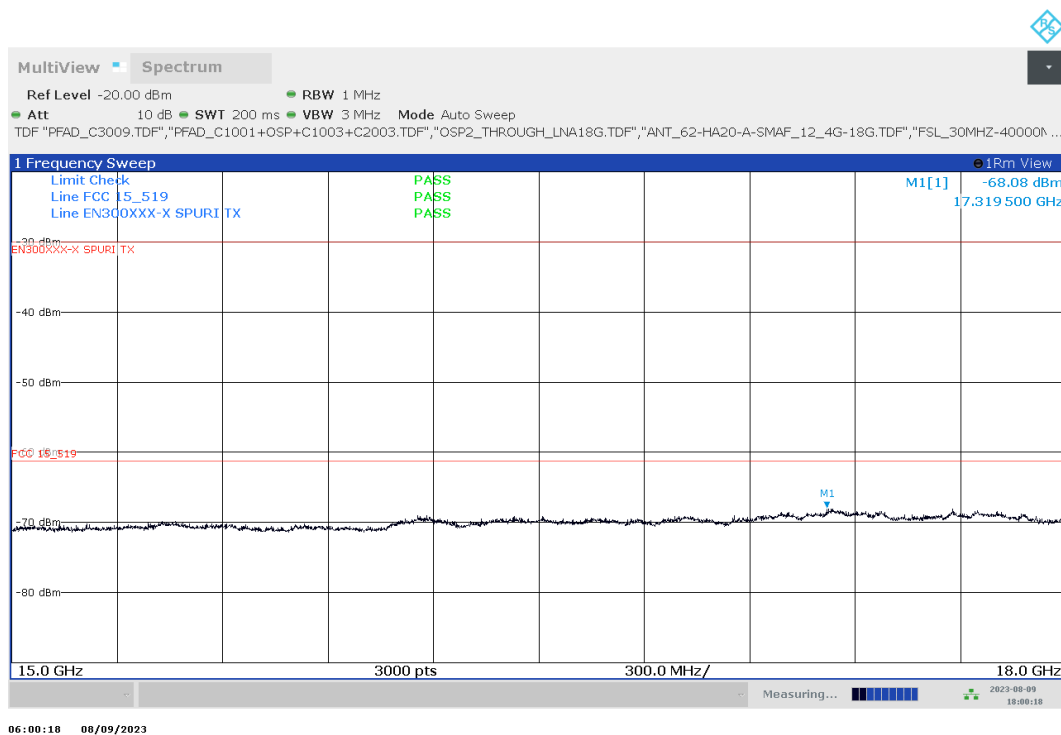


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3.3.13 13279 MHz – 15000 MHz, Set-up 1, Op. 1, ANT VER

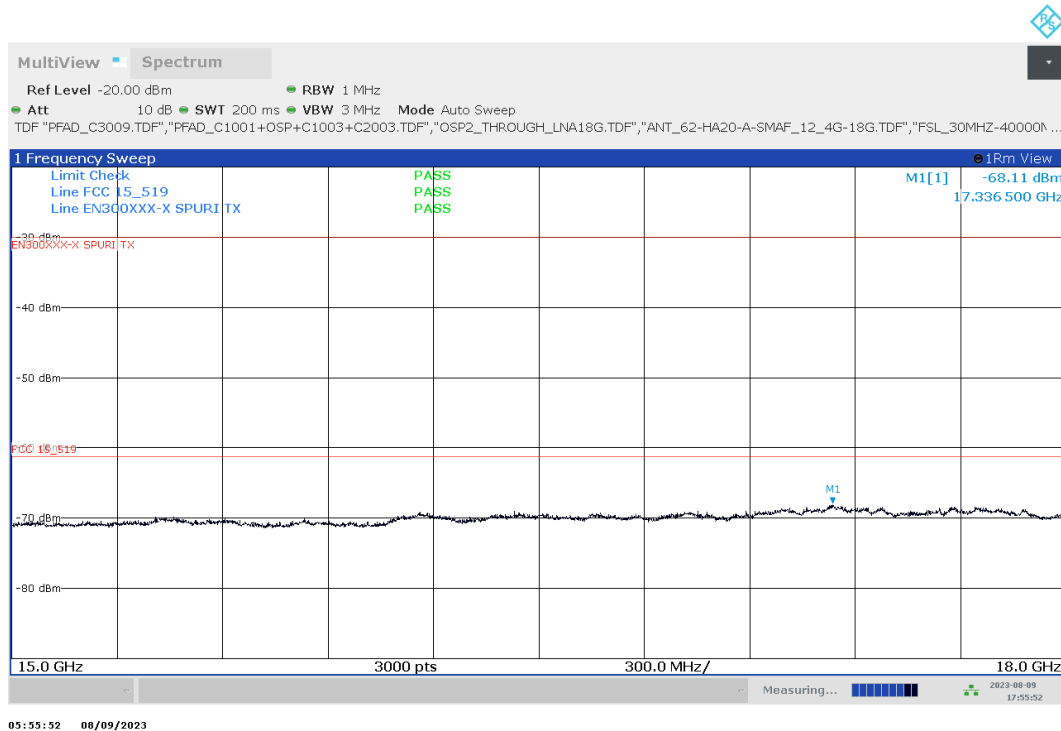


3.3.14 15000 MHz – 18000 MHz, Set-up 1, Op. 1, ANT HOR

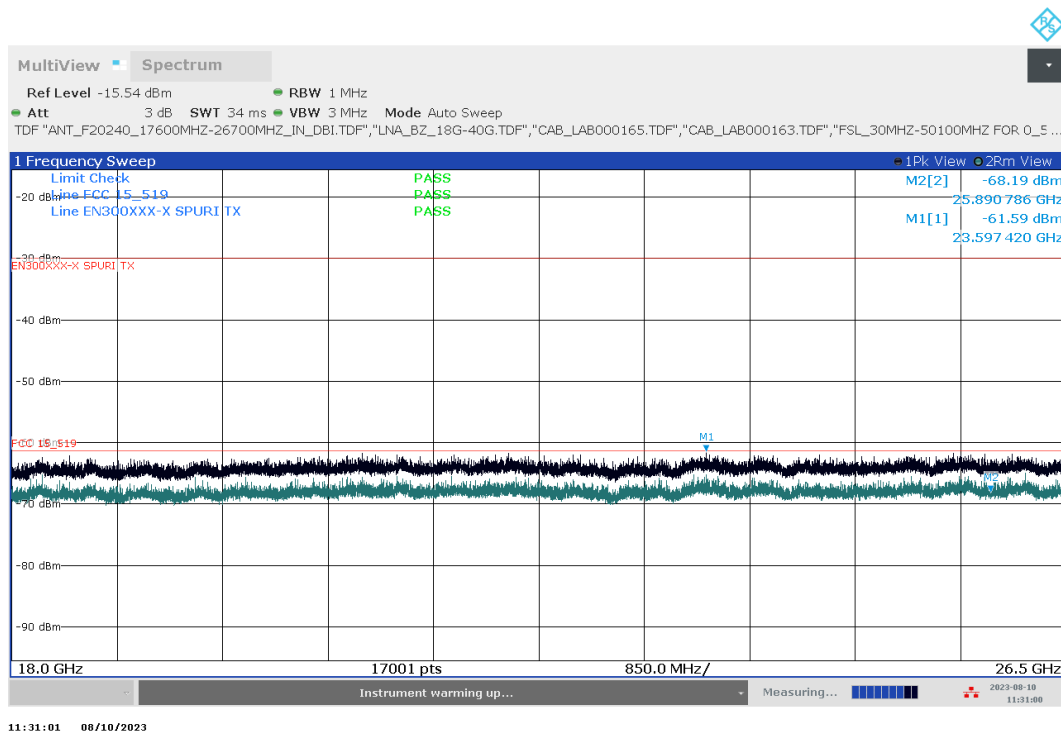


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3.3.15 15000 MHz – 18000 MHz, Set-up 1, Op. 1, ANT VER

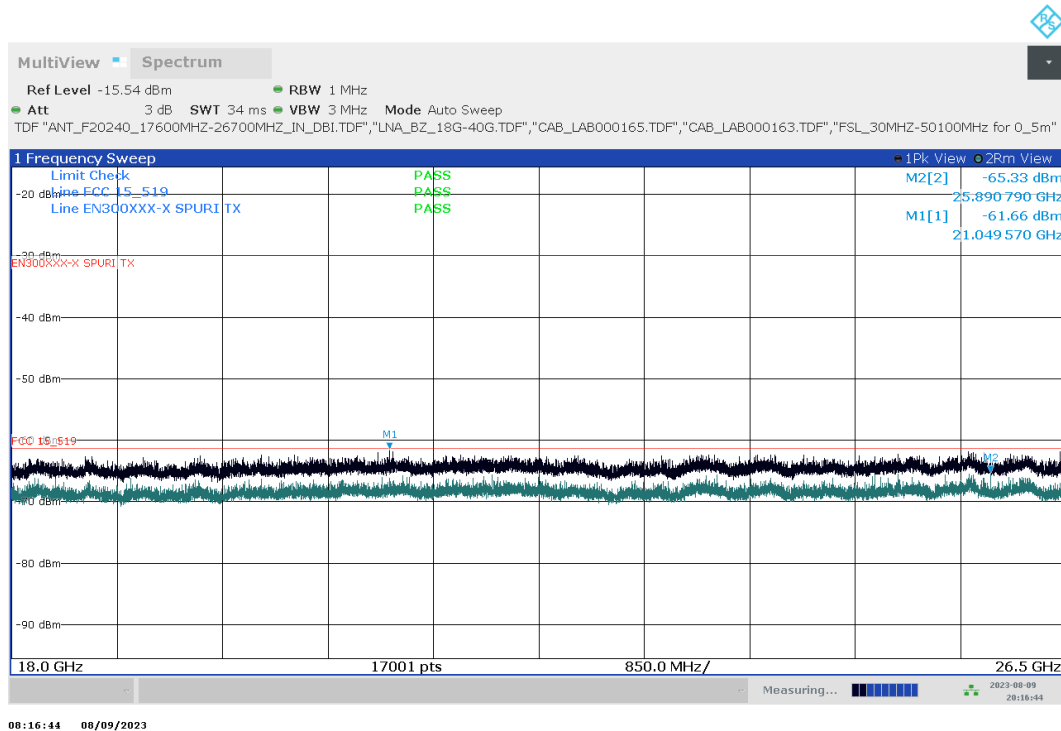


3.3.16 18000 MHz – 26500 MHz, Set-up 1, Op. 1, ANT HOR

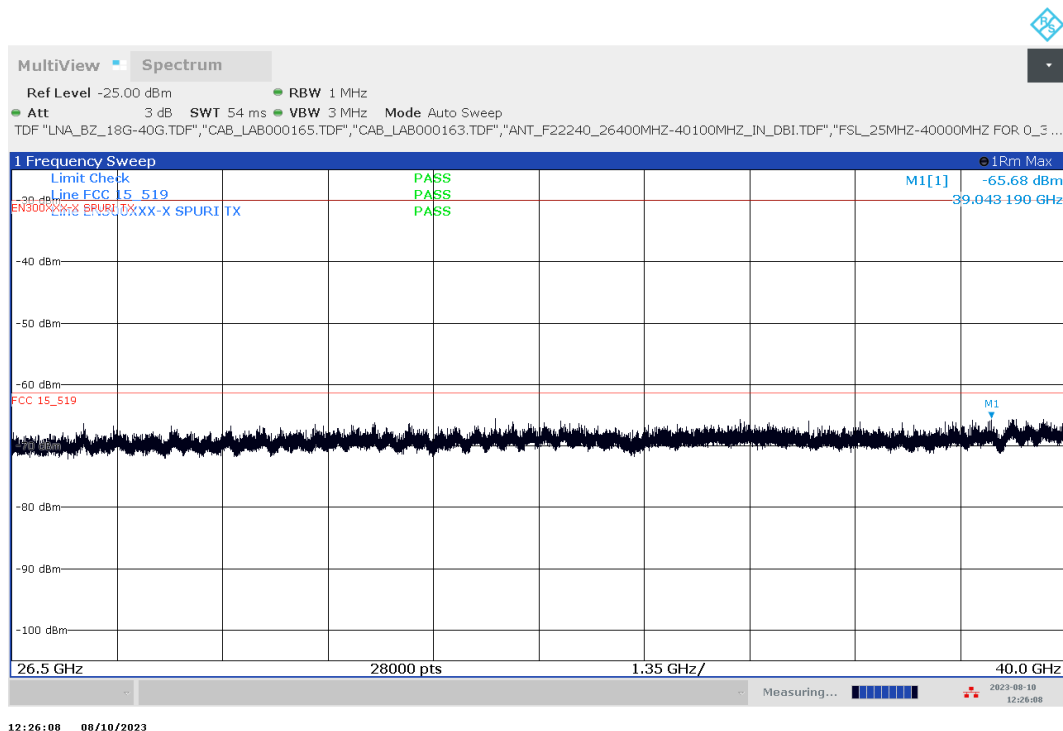


Annex A of TR no.: 23058741-34053-1

3.3.17 18000 MHz – 26500 MHz, Set-up 1, Op. 1, ANT VER

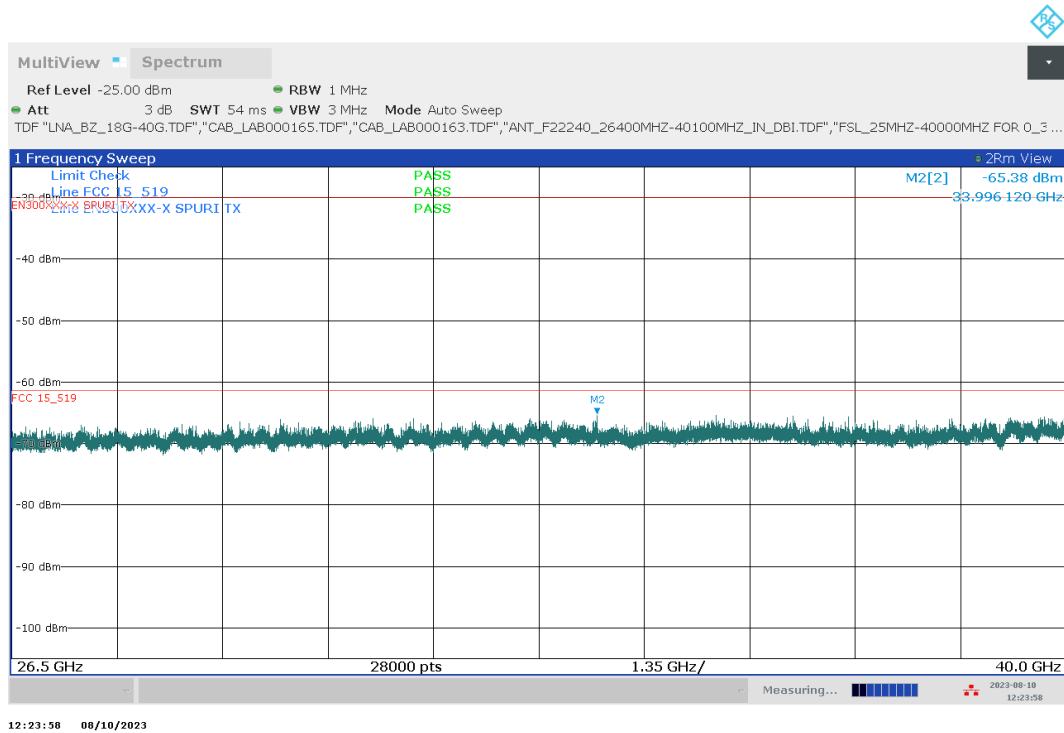


3.3.18 26500 MHz – 40000 MHz, Set-up 1, Op. 1, ANT HOR



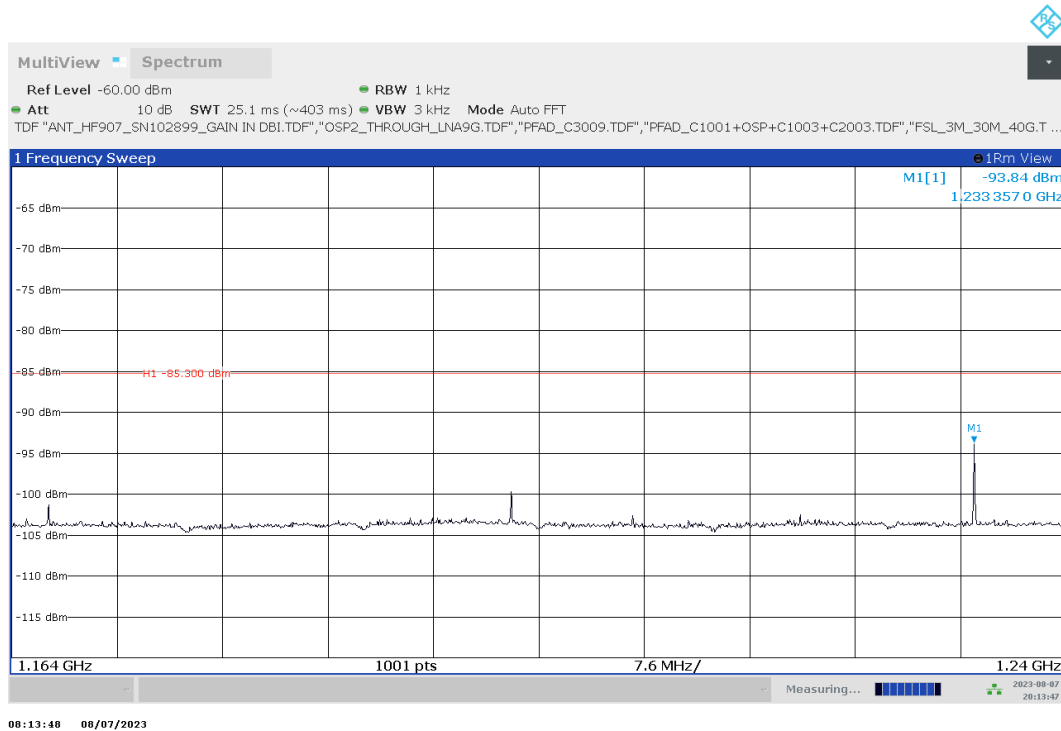
Annex A of TR no.: 23058741-34053-1

3.3.19 26500 MHz – 40000 MHz, Set-up 1, Op. 1, ANT VER

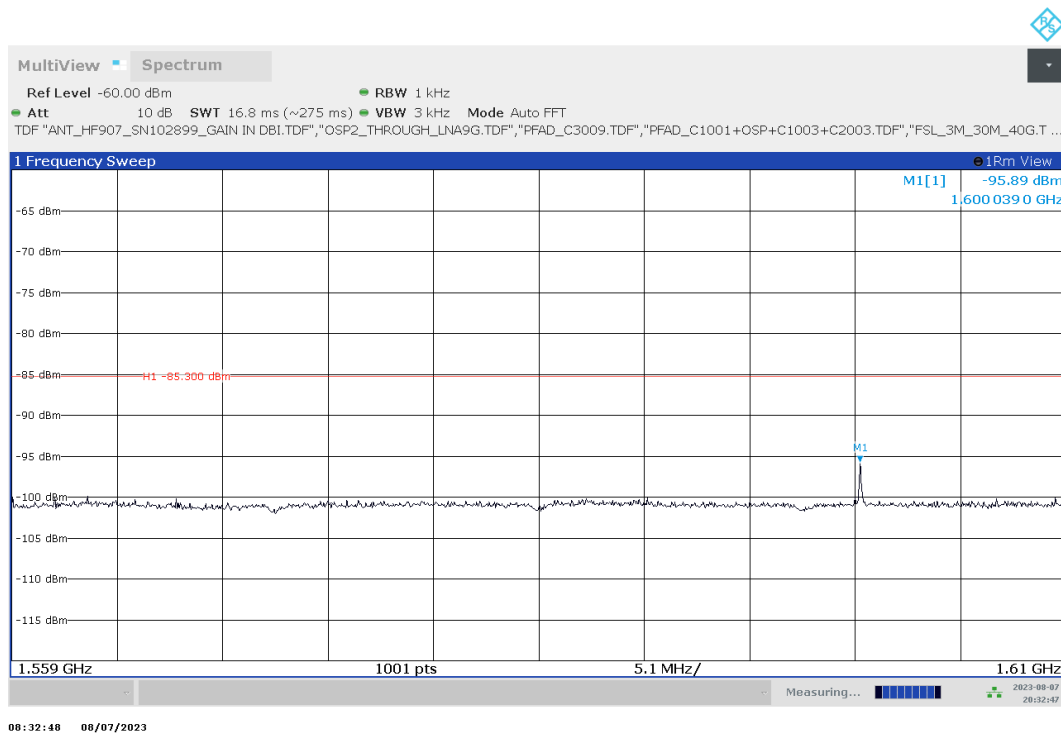


4 FUNDAMENTAL EMISSIONS IN THE GPS BAND

4.1 Frequency range 1164 MHz – 1240 MHz, Set-up 1, Op. 1



4.2 Frequency range 1559 MHz – 1610 MHz, Set-up 1, Op. 1



5 FUNDAMENTAL EMISSION PEAK POWER

5.1 Set-up 1, Op. 1

