



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
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RADIO TEST REPORT

FCC part 15.519
RSS-220

Company: **ETS GEORGES RENAULT**
Address.....: 38 RUE BOBBY SANDS
44818 SAINT HERBLAIN
FRANCE

Test item description: **Device used to accessorize a battery nutrunner (hand held)**
Trade Mark: DESOUTTER
Manufacturer.....: ASTEELFLASH
Model/Product/Type reference: 615919138002 / TRACKER-EPBC / 6158132600
FCC ID.....: 2APE2-TRACKER
IC: 24012-TRACKER
Ratings.....: Not communicated

Testing Laboratory: **EMITECH MONTPELLIER laboratory**
Address.....: 145 rue de Massacan
34740 VENDARGUES
FRANCE

Report Reference No.....: **RR-EVE-21C805-1A**
Test procedure: FCC IC Certification
Diffusion.....: Mr SAJA
Applicant's name: ETS GEORGES RENAULT
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Compiled by.....: Morgan PATEY
Approved by (+ signature): Olivier HEYER (Laboratory Manager)



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REVISION HISTORY:

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2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

The following referenced documents are necessary for the application of the present test report.

FCC 47 CFR Part 15

Code of federal regulations – Title 47 telecommunication - Part 15 - Radio frequency devices

FCC 47 CRF Part 15.519

Technical requirements for hand held UWB systems.

FCC 47 CRF Part 15.521

Technical requirements applicable to all UWB devices.

RSS-GEN: March 2021

General Requirements for Compliance of Radio Apparatus

RSS-220: July 2018

Devices Using Ultra-Wideband (UWB) Technology

ANSI C 63.10: 2013

American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Although the product standard uses obsolete technical standards, the latest versions of standards achievable by the laboratory will be used for testing.

INFORMATIVE REFERENCES:

The following referenced documents are not necessary for the application of the present test report but they assist the user with regard to a particular subject area.

3. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description. : Device used to accessorize a battery nutrunner (hand held)
 Model/Product/Type reference. : 615919138002 / TRACKER-EPBC / 6158132600
 Trade Mark. : DESOUTTER
 FCC ID..... : 2APE2-TRACKER
 IC..... : 24012-TRACKER
 Serial number (S/N)..... : 49xx2100342
 Part number (P/N). : 6158132600
 Software version..... : N/A
 Firmware version..... : 2.3.30
 Type of sample..... : Pre-serial
 Function(s)..... : Trackers EPBC is used to accessorize a battery assembly tool.
 Power is supplied by tool itself with a 5V DC connector. When
 Tracker is on, it can communicate with Tracking Base (FCC ID :
 2APE2-TRACKBASE). Signal exchanged between Tracker and
 Tracking Base allows to measure distance between them.

Manufacturer name. : ASTEELFLASH
 Address. : 6 RUE VINCENT VAN GOGH
 93360 NEUILLY-PLAISANCE
 FRANCE

General product information:

N/A

3.2. EUT General view & Marking plate



3.3. EUT Side view



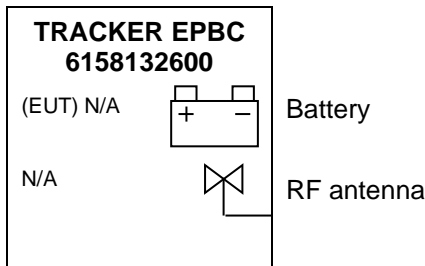
3.4. EUT Mechanical and Electrical Design

Power supply..... : 5 VDC
 Power supply range..... : Not communicated
 Power type..... : Battery powered
 Power (W)..... : Not communicated
 Nominal current (A). : 1
 Dimensions (L x W x H) (m). : 0.043 x 0.044 x 0.025
 Weight (kg). : 0.09
 Temperature range (°C). : +5 to +40
 Ground bounding strap..... : No

Comments:

N/A

3.5. EUT Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	N/A
1	Battery	DC	N/A	N/A	5VDC from EA
2	RF antenna	RF	N/A	N/A	3.5GHz to 6.5GHz

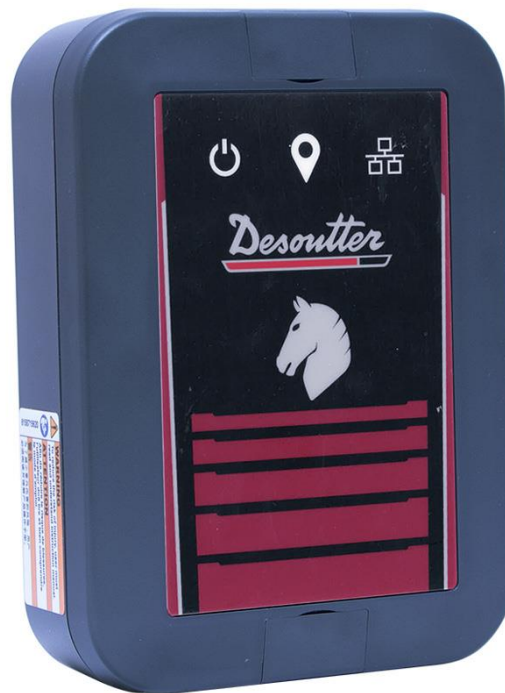
AC/DC AC/DC Converter port AC Alternative current port DC.....: Discontinuous current port
 :
 I/O Input or Output port TP Telecommunication port RF: Radio frequency port
 :
 N/E Non Electrical port
 :

3.6. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Anchor	DESOUTTER	N/A	Used to remote EUT power and to initiate communications in normal condition with normal duty cycle
Plastic holder + cable	DESOUTTER	N/A	Used to power and programming EUT

ANCHOR (EA)



3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	: <i>Transmitter</i>
Technology	: <i>UWB</i>
Environmental profile.....	: <i>Data transmissions</i>
Temperature range.....	: <i>+5°C to +40°C</i>
Antenna type	: <i>Integrated</i>
Antenna Gain.....	: <i>3 dBi</i>
Comments:	
<i>N/A</i>	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	: <i>3.5 GHz to 6.5 GHz</i>
RF Power.....	: <i>< 0 dBm EIRP</i>
Number of channels / Separation	: <i>6 (channel 1,2,3,4,5,7)</i>
Modulation type	: <i>BPM-BPSK</i>
Duty cycle	: <i>0.5 % (calculation method : 128 slots of 0.5 ms = 64 ms). On each slot; emission is around 0.3 ms. (0.3/64 = ~0.5 %)</i>
Tested frequency	: <i>3993.6 MHz (channel 4)</i> <i>4492.8 MHz (channel 3)</i> <i>6489.6 MHz (channel 7)</i>
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	: <i>3.5 GHz to 6.5 GHz</i>
Category/Class	: <i>Not communicated</i>
Bandwidth	: <i>according IEEE 802.15.4-2011 UWB Compliant</i>

4. OPINION(S) AND INTERPRETATION(S)

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
ANSI C63.10 : 2013	N/A

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Conducted emissions	-	N/A	Powered by internals batteries
UWB 10dB bandwidth			ANSI C63.10 : 2013
- 10dB Bandwidth / Low channel	3.1GHz-10.6GHz	PASS	
- 10dB Bandwidth / Mid channel	3.1GHz-10.6GHz	PASS	
- 10dB Bandwidth / High channel	3.1GHz-10.6GHz	PASS	
Transmission time			ANSI C63.10 : 2013
- Transmission time	>10sec	PASS	
Radiated emission limits			ANSI C63.10 : 2013
- Radiated measurement / 0° / All channels / All positions	15.209	PASS	
- Radiated measurement / 45° / All channels / All positions	15.209	PASS	
- Radiated measurement / 90° / All channels / All positions	15.209	PASS	
- Radiated measurement / 30MHz to 1GHz / All channels / All positions	15.209	PASS	
- Radiated measurement / 960MHz to 18GHz / Low channel / Position 1	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / Low channel / Position 2	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / Low channel / Position 3	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / Mid channel / Position 1	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / Mid channel / Position 2	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / Mid channel / Position 3	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / High channel / Position 1	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / High channel / Position 2	15.519	PASS	
- Radiated measurement / 960MHz to 18GHz / High channel / Position 3	15.519	PASS	
- Radiated measurement / 15.519 (d) / Low channel / Position 1	15.519	PASS	
- Radiated measurement / 15.519 (d) / Low channel / Position 2	15.519	PASS	
- Radiated measurement / 15.519 (d) / Low channel / Position 3	15.519	PASS	
- Radiated measurement / 15.519 (d) / Mid channel / Position 1	15.519	PASS	
- Radiated measurement / 15.519 (d) / Mid channel / Position 2	15.519	PASS	
- Radiated measurement / 15.519 (d) / Mid channel / Position 3	15.519	PASS	
- Radiated measurement / 15.519 (d) / High channel / Position 1	15.519	PASS	
- Radiated measurement / 15.519 (d) / High channel / Position 2	15.519	PASS	

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
- Radiated measurement / 15.519 (d) / High channel / Position 3	15.519	PASS	ANSI C63.10 : 2013
- Radiated measurement / 18GHz to 40GHz / Low channel	15.519	PASS	
- Radiated measurement / 18GHz to 40GHz / Mid channel	15.519	PASS	
- Radiated measurement / 18GHz to 40GHz / High channel	15.519	PASS	
Maximum peak output level of UWB device			
- Radiated measurement / 50MHz / Channel 1	0dBm / 15.519	PASS	
- Radiated measurement / 50MHz / Channel 2	0dBm / 15.519	PASS	
- Radiated measurement / 50MHz / Channel 3	0dBm / 15.519	PASS	
- Radiated measurement / 50MHz / Channel 4	0dBm / 15.519	PASS	
- Radiated measurement / 50MHz / Channel 5	0dBm / 15.519	PASS	
- Radiated measurement / 50MHz / Channel 7	0dBm / 15.519	PASS	

Sample subject to the test complies for tests done with the requirements of the reference document(s) listed in §2 of this test report and, where applicable, with deviation(s) specified in this document.

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the results with the exception of emission tests based on CISPR standards.

TEST(S) PERFORMED	MODIFICATION(S)
ANSI C63.10 : 2013	N/A

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	$\pm 1 \times 10^{-7}$	$\pm 1 \times 10^{-7}$
RF power, conducted		
RF power	$\pm 0.8\text{dB}$	$\pm 1 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 1.3\text{dB}$	$\pm 1.5 \text{ dB}$
Power spectral density	$\pm 2.3\text{dB}$	$\pm 3 \text{ dB}$
Occupied bandwidth		
RF power	$\pm 3.8 \%$	$\pm 5 \%$
RF power (EN 300328 / EN 301893)	$\pm 3.8 \%$	$\pm 5 \%$
Maximum frequency deviation		
300 Hz < audio frequency < 6 kHz	$\pm 1.2 \%$	$\pm 5 \%$
6 kHz < audio frequency < 25 kHz	$\pm 1.2 \%$	$\pm 3 \text{ dB}$
Adjacent channel power	$\pm 1.6 \text{ dB}$	$\pm 3 \text{ dB}$
Sensibility of receiver (conducted)	$\pm 2.0 \text{ dB}$	$\pm 3 \text{ dB}$
Blocking	$\pm 4.0 \text{ dB}$	$\pm 4 \text{ dB}$
Transient		
Amplitude	$\pm 8.5 \%$	$\pm 20 \%$
At the frequency	$\pm 166 \text{ Hz}$	$\pm 250 \text{ Hz}$
Conducted emission (spurious)		
$f \leq 1 \text{ GHz}$	$\pm 0.8 \text{ dB}$	
1 GHz - 12.75 GHz	$\pm 1.6 \text{ dB}$	$\pm 3 \text{ dB}$
Radiated emission (PAR / PIRE / RNE)		
$f \leq 62.5 \text{ MHz}$	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
62.5 MHz - 1 GHz	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
1 GHz - 18 GHz	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
18 GHz – 26 GHz	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
26 GHz – 40 GHz	$\pm 5.4 \text{ dB}$	$\pm 6 \text{ dB}$
180-1000 MHz / 1 – 12.75 GHz (EN 301 908-1)	$\pm 3.0 / 2.9 \text{ dB}$	$\pm 3 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 5.3 \text{ dB}$	$\pm 6 \text{ dB}$
PIRE and power spectral density with diode	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 3 \text{ dB}$	$\pm 6 \text{ dB}$
RF level for a given BER	$\pm 0.8 \text{ dB}$	$\pm 1.5 \text{ dB}$
Supply voltages	$\pm 3 \%$	$\pm 3 \%$
Temperature	$\pm 1 \text{ }^\circ\text{C}$	$\pm 1^\circ\text{C}$
Humidity	$\pm 5 \%$	$\pm 5 \%$
Time / Duty cycle	$\pm 4.4 \%$	$\pm 5 \%$
Adaptivity	$\pm 2.9 \text{ dB}$	/
Conducted emission (FCC)		
(Artificial Mains Network) 150kHz – 30MHz	$\pm 3.4 \text{ dB}$	$\pm 3.4 \text{ dB}$
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	$\pm 2.7 \text{ dB}$	/
30MHz – 1GHz	$\pm 5.0 \text{ dB}$	/
1GHz – 18GHz	$\pm 5.6 \text{ dB}$	/
18GHz – 26GHz	$\pm 5.7 \text{ dB}$	/
26GHz – 40GHz	$\pm 5.7 \text{ dB}$	/

For the calculation of expanded uncertainty, the confidence interval is 95 % (k=2).

7. TEST CONDITIONS AND RESULTS

7.1. UWB 10dB bandwidth

Reference standard:	FCC part 15 Radio part 15.519
Test method:	ANSI C63.10 : 2013
Test description: b): The UWB 10 bandwidth of a UWB system operating under the provisions of this section must be contained between 3100 MHz and 10600 MHz. f_m is the frequency at which the highest emission occurs. Tests are done in max-hold mode in order to capture all channels.	

TESTED PARAMETER	SEVERITY	VERDICT
10dB Bandwidth / Low channel	3100MHz-10600MHz	PASS
10dB Bandwidth / Mid channel	3100MHz-10600MHz	PASS
10dB Bandwidth / High channel	3100MHz-10600MHz	PASS

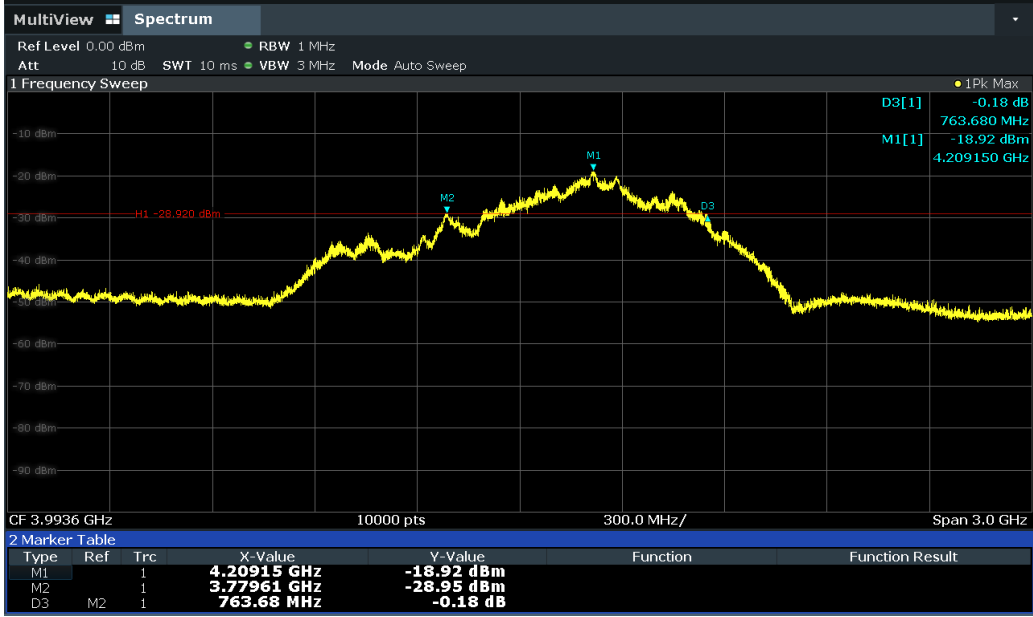
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	22.2°C
Relative Humidity	20 to 75 %	51.2 %
Atmospheric pressure	N/A	1003 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-3m	14379	23/08/2021	23/10/2023
Cable	Huber + Suhner	SF102K	16042	24/03/2021	24/05/2023
Cable	cables and connectors	N-1.5m	4201	27/01/2021	27/03/2023
Preamplifier	Techniwave	APS16-0087	14040	06/04/2022	06/06/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023 ⁽¹⁾
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Software	Nexio		0000		
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023

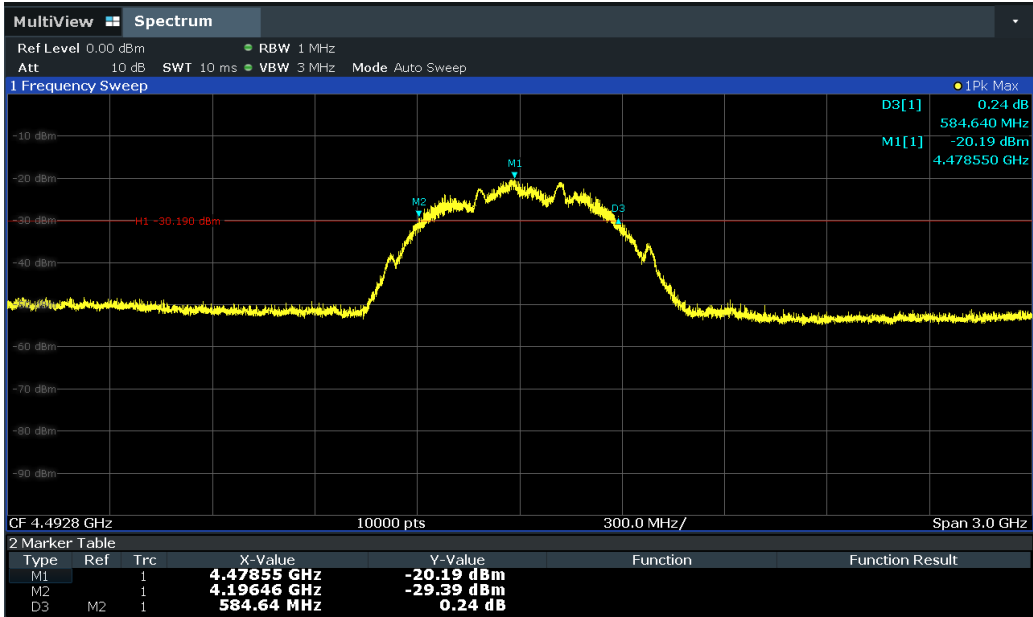
BAT-EMC software version: V3.18.0.26

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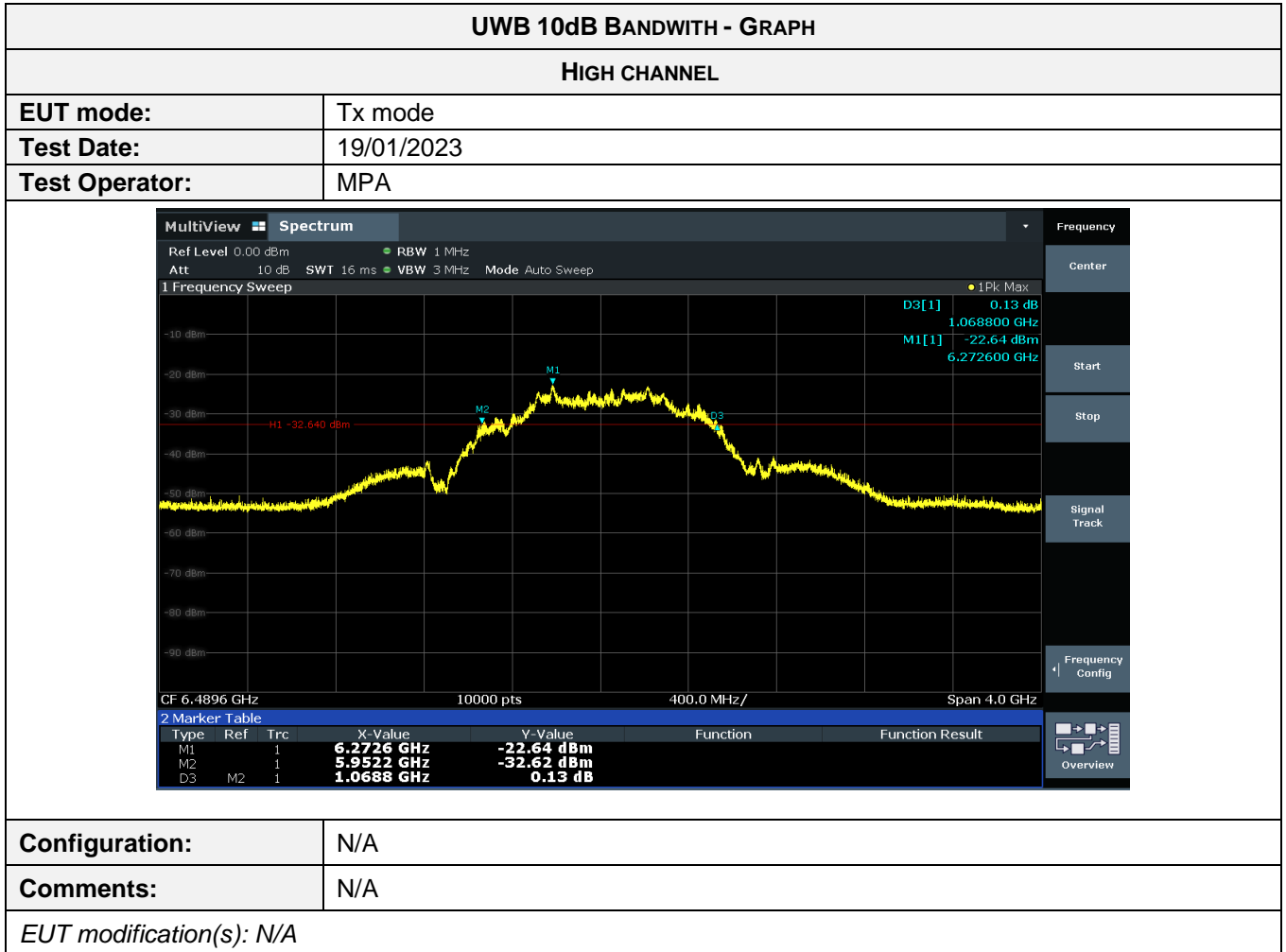
⁽¹⁾ Under derogation EQSDER000S4100100

UWB 10dB BANDWIDTH - GRAPH	
LOW CHANNEL	
EUT mode:	Tx mode
Test Date:	19/01/2023
Test Operator:	MPA
	
Configuration:	N/A
Comments:	N/A
<i>EUT modification(s): N/A</i>	

UWB 10dB BANDWIDTH - TABULATED RESULTS							
LOW CHANNEL							
f _M (MHz)	RBW	UWB 10 dB BW (MHz)	UWB 10 dB BW Limit (MHz)	f _L (MHz)	f _L Limit (MHz)	f _H (MHz)	f _H Limit (MHz)
3993.6	1MHz	763.68	500	3779.61	3100	4209.15	10600

UWB 10dB BANDWIDTH - GRAPH	
MID CHANNEL	
EUT mode:	Tx mode
Test Date:	19/01/2023
Test Operator:	MPA
	
Configuration:	N/A
Comments:	N/A
EUT modification(s): N/A	

UWB 10dB BANDWIDTH - TABULATED RESULTS						
MID CHANNEL						
f_M (MHz)	RBW	UWB 10 dB BW (MHz)	f_L (MHz)	f_L Limit (MHz)	f_H (MHz)	f_H Limit (MHz)
4492.8	1MHz	584.64	4196.46	3100	4478.55	10600



UWB 10dB BANDWIDTH - TABULATED RESULTS						
HIGH CHANNEL						
f_M (MHz)	RBW	UWB 10 dB BW (MHz)	f_L (MHz)	f_L Limit (MHz)	f_H (MHz)	f_H Limit (MHz)
6489.6	1MHz	1068.8	5952.2	3100	6272.6	10600

7.2. OBW 99%

Reference standard:	RSS-Gen
Test method:	ANSI C63.10 §10
<p>Test description: The occupied bandwidth (OBW) is the Frequency Range in which 99 % of the total mean power of a given emission falls. The residual part of the total power being denoted as β, which, in cases of symmetrical spectra, splits up into $\beta/2$ on each side of the spectrum. Unless otherwise specified, $\beta/2$ is taken as 0,5 % as described in Figure 3 of the standard.</p> <p>The maximum occupied bandwidth includes all associated side bands above the appropriate emissions level and the frequency error or drift under extreme test conditions.</p> <p>For EUT without dedicated or integral antenna, EUT is connected to the measuring receiver via 50Ω attenuator(s). Radiated power limit applies to the maximum measured conducted power value adjusted by the antenna gain.</p> <p>For EUT with integral or dedicated antenna, measurements are done on a normalized test site by the substitution method. EUT is set on an insulating support at 150cm above the ground reference plane.</p> <p>Then EUT is set inside the climatic enclosure. Measurements are repeated in extreme test conditions with the power levels correlated with the maximum effective radiated power measured in normal conditions.</p>	

TESTED PARAMETER	SEVERITY	VERDICT
OBW 99% / Low channel	N/A	PASS
OBW 99% / Mid channel	N/A	PASS
OBW 99% / High channel	N/A	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	28.2 °C
Relative Humidity	20 to 75 %	48.5 %
Atmospheric pressure	N/A	1002 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	AARONIA	Powerlog 70180	15306	04/12/2022	04/02/2026
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Huber + Suhner	SF102K	16041	08/04/2022	08/06/2024
Cable	MegaPhase	TM18-N1N1-118	12841	04/10/2022	04/12/2024
Cable	MegaPhase	TM18-N1N1-118	12842	04/10/2022	04/12/2024
Preamplifier	IMPULSE	CA118-546ACN	9169	26/04/2022	26/06/2023
Receiver	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/06/2023 ⁽¹⁾
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12268	24/10/2022	24/12/2024
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024

BAT-EMC software version: V3.18.0.26

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⁽¹⁾ Under derogation EQSDER000S4100096

OBW 99% / LOW CHANNEL - TABULATED RESULTS			
LOW CHANNEL			
EUT mode:	Tx mode		
Test Date:	13/06/2023		
Test Operator:	MPA		
Configuration:	N/A		
Frequency	RBW	OBW 99%	Limit
3993.3 MHz	1MHz	1246.4 MHz	N/A
Comments:	N/A		
<i>EUT modification(s): N/A</i>			

OBW 99% / MID CHANNEL - TABULATED RESULTS			
MID CHANNEL			
EUT mode:	Tx mode		
Test Date:	13/06/2023		
Test Operator:	MPA		
Configuration:	N/A		
Frequency	RBW	OBW 99%	Limit
4492.8 MHz	1MHz	745.2 MHz	N/A
Comments:	N/A		
<i>EUT modification(s): N/A</i>			

OBW 99% / HIGH CHANNEL - TABULATED RESULTS			
HIGH CHANNEL			
EUT mode:	Tx mode		
Test Date:	13/06/2023		
Test Operator:	MPA		
Configuration:	N/A		
Frequency	RBW	OBW 99%	Limit
6489.6 MHz	1MHz	1574.2 MHz	N/A
Comments:	N/A		
<i>EUT modification(s): N/A</i>			

7.3. Transmission time

Reference standard:	FCC 47 CRF Part 15.519
Test method:	ANSI C63.10 : 2013
Test description: 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.	

TESTED PARAMETER	SEVERITY	VERDICT
Transmission time	>10sec	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	22.2°C
Relative Humidity	20 to 75 %	51.2 %
Atmospheric pressure	N/A	1003 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	EMITECH	3.5 cm	4653		
Cable	SUCOFLEX	N-3m	14379	23/08/2021	23/10/2023
Cable	Huber + Suhner	SF102K	16042	24/03/2021	24/05/2023
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Software	Nexio		0000		
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023

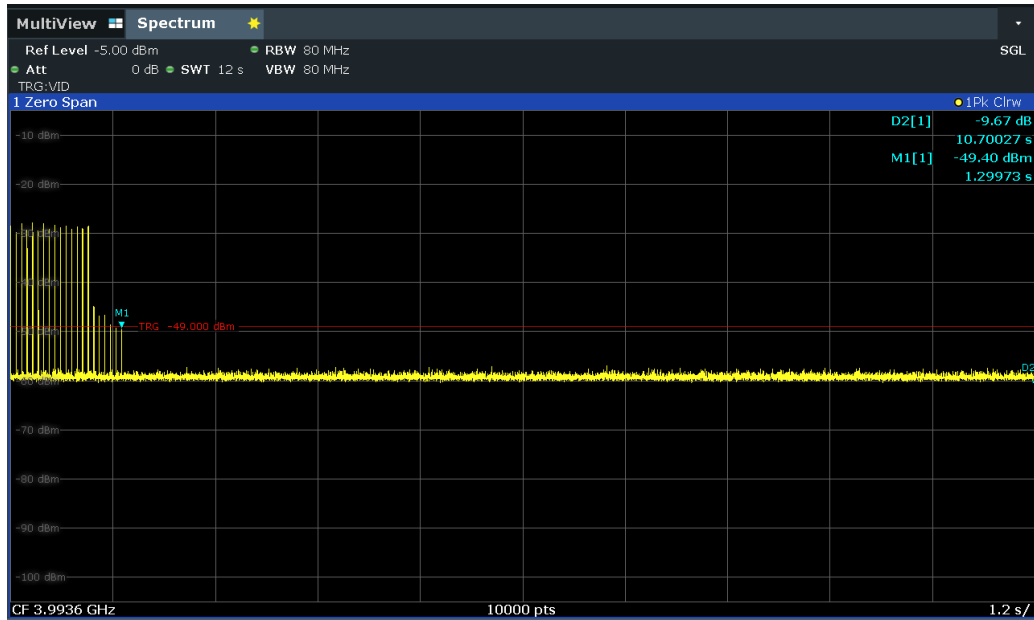
BAT-EMC software version: V3.18.0.26

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TRANSMISSION TIME - GRAPH

F_M

EUT mode:	Tx mode
Test Date:	19/01/2023
Test Operator:	MPA



Configuration:	N/A
Comments:	AE (Anchor) was disconnected approximately 1 s after the start of the measurement. EUT will no longer transmit after this for a period of at least 10 sec.
<i>EUT modification(s): N/A</i>	

TRANSMISSION TIME - TABULATED RESULTS

F_M			
Configuration	Sweep time	Result	Limit
Zero span	12s	10.70s	>10sec

7.4. Radiated emission limits

Reference standard:	FCC part 15 Radio part 15.519 and part 15.209
Test method:	ANSI C63.10 : 2013
<p>Test description :</p> <p>c) and d)</p> <p>For $f < 30\text{MHz}$, EUT is set on an insulating support at 80cm above the ground reference plane.</p> <p>Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter in a semi-anechoic chamber. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°).</p> <p>Final measurements (quasi-peak) were then performed in a 10-meter Open Area Test Site that complies to CISPR 16 in the same measurement conditions.</p> <p>For $f > 30\text{MHz}$, EUT is set on an insulating support at 80cm above the ground reference plane (150cm for $f > 1\text{GHz}$).</p> <p>Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities.</p> <p>Final measurements (quasi-peak or average) were then performed in a semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. The EUT was rotated 360° about its azimuth and adjusting the receive antenna height from 1 to 4 m.</p> <p>Above 960MHz, radiated measurements were done at 1m test distance in order to optimise measurement dynamic.</p> <p>All frequencies were investigated, where applicable.</p> <p>For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.</p>	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement / 0° / All channels / All positions	9kHz-30MHz	15.209	EMI4519	PASS
Radiated measurement / 45° / All channels / All positions	9kHz-30MHz	15.209	EMI4520	PASS
Radiated measurement / 90° / All channels / All positions	9kHz-30MHz	15.209	EMI4521	PASS
Radiated measurement / 30MHz to 1GHz / All channels / All positions	30MHz-1GHz	15.209	EMI4518	PASS
Radiated measurement / 960MHz to 18GHz / Low channel / Position 1	960MHz-18GHz	15.519	EMI4529	PASS
Radiated measurement / 960MHz to 18GHz / Low channel / Position 2	960MHz-18GHz	15.519	EMI4530	PASS
Radiated measurement / 960MHz to 18GHz / Low channel / Position 3	960MHz-18GHz	15.519	EMI4531	PASS
Radiated measurement / 960MHz to 18GHz / Mid channel / Position 1	960MHz-18GHz	15.519	EMI4532	PASS
Radiated measurement / 960MHz to 18GHz / Mid channel / Position 2	960MHz-18GHz	15.519	EMI4533	PASS
Radiated measurement / 960MHz to 18GHz / Mid channel / Position 3	960MHz-18GHz	15.519	EMI4534	PASS
Radiated measurement / 960MHz to 18GHz / High channel / Position 1	960MHz-18GHz	15.519	EMI4535	PASS
Radiated measurement / 960MHz to 18GHz / High channel / Position 2	960MHz-18GHz	15.519	EMI4536	PASS

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement / 960MHz to 18GHz / High channel / Position 3	960MHz-18GHz	15.519	EMI4537	PASS
Radiated measurement / 15.519 (d) / Low channel / Position 1	1.164GHz-1.61GHz	15.519	EMI4539	PASS
Radiated measurement / 15.519 (d) / Low channel / Position 2	1.164GHz-1.61GHz	15.519	EMI4540	PASS
Radiated measurement / 15.519 (d) / Low channel / Position 3	1.164GHz-1.61GHz	15.519	EMI4541	PASS
Radiated measurement / 15.519 (d) / Mid channel / Position 1	1.164GHz-1.61GHz	15.519	EMI4542	PASS
Radiated measurement / 15.519 (d) / Mid channel / Position 2	1.164GHz-1.61GHz	15.519	EMI4543	PASS
Radiated measurement / 15.519 (d) / Mid channel / Position 3	1.164GHz-1.61GHz	15.519	EMI4544	PASS
Radiated measurement / 15.519 (d) / High channel / Position 1	1.164GHz-1.61GHz	15.519	EMI4545	PASS
Radiated measurement / 15.519 (d) / High channel / Position 2	1.164GHz-1.61GHz	15.519	EMI4546	PASS
Radiated measurement / 15.519 (d) / High channel / Position 3	1.164GHz-1.61GHz	15.519	EMI4547	PASS
Radiated measurement / 18GHz to 40GHz / Low channel	18GHz-40GHz	15.519	EMI4549	PASS
Radiated measurement / 18GHz to 40GHz / Mid channel	18GHz-40GHz	15.519	EMI4550	PASS
Radiated measurement / 18GHz to 40GHz / High channel	18GHz-40GHz	15.519	EMI4551	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: From 9 kHz to 30MHz: limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor. From 30MHz to 960MHz Quasi peak limit provided is the limit given in §15.209. Above 960MHz average limit of §15.519 c) and d).		

TEST EQUIPMENT USED – 9KHZ TO 30MHZ					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	16/08/2022	16/10/2024
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	MegaPhase	N-8m	15813	14/01/2021	14/03/2023
Cable	MegaPhase	TM18-N1N1-118	12841	04/10/2022	04/12/2024
Receiver	Rohde & Schwarz	ESW26	17791	14/04/2021	14/03/2023 ⁽¹⁾
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/06/2023 ⁽²⁾
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST EQUIPMENT USED – 30MHZ TO 40GHZ					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Antenna	ETS lindgren	3160-09	14690	07/01/2022	07/03/2025
Antenna	ETS lindgren	3160-10	14692	07/01/2022	07/03/2025
Antenna	Electro Metrics	BIA-30HF	0824	21/08/2021	21/10/2024
Antenna	Rohde & Schwarz	HL223	3126	21/08/2021	21/10/2024
Attenuator	EMITECH	SUB.V2-H	14495	05/01/2022	05/03/2023
Attenuator	EMITECH	SUB.V2-V	14496	05/01/2022	05/03/2023
Cable	MegaPhase	F135N1N28	16664	16/02/2022	16/04/2024
Cable	MegaPhase	F135N1N28	16666	16/02/2022	16/04/2024
Cable	JYE BAO	K30K30-5003-40G1	14887	19/01/2022	19/03/2024
Cable	Huber + Suhner	K-5m	14460	19/01/2022	19/03/2024
Cable	cables and connectors	N-1.5m	4201	27/01/2021	27/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-3m	14379	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	MegaPhase	N-8m	15813	14/01/2021	14/03/2023
Cable	Huber + Suhner	SF102K	16042	24/03/2021	24/05/2023
Cable	MegaPhase	TM18-N1N1-118	12841	04/10/2022	04/12/2024
Preamplifier	Techniwave	APS16-0087	14040	06/04/2022	06/06/2023
Preamplifier	Wright Technologie	ASL40-B3015	14851	28/01/2022	28/03/2023
Preamplifier	IMPULSE	CA118-546ACN	9169	26/04/2022	26/06/2023
Receiver	Rohde & Schwarz	ESW26	17791	14/04/2021	14/03/2023 ⁽¹⁾
Receiver	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023 ⁽³⁾
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/06/2023 ⁽²⁾
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

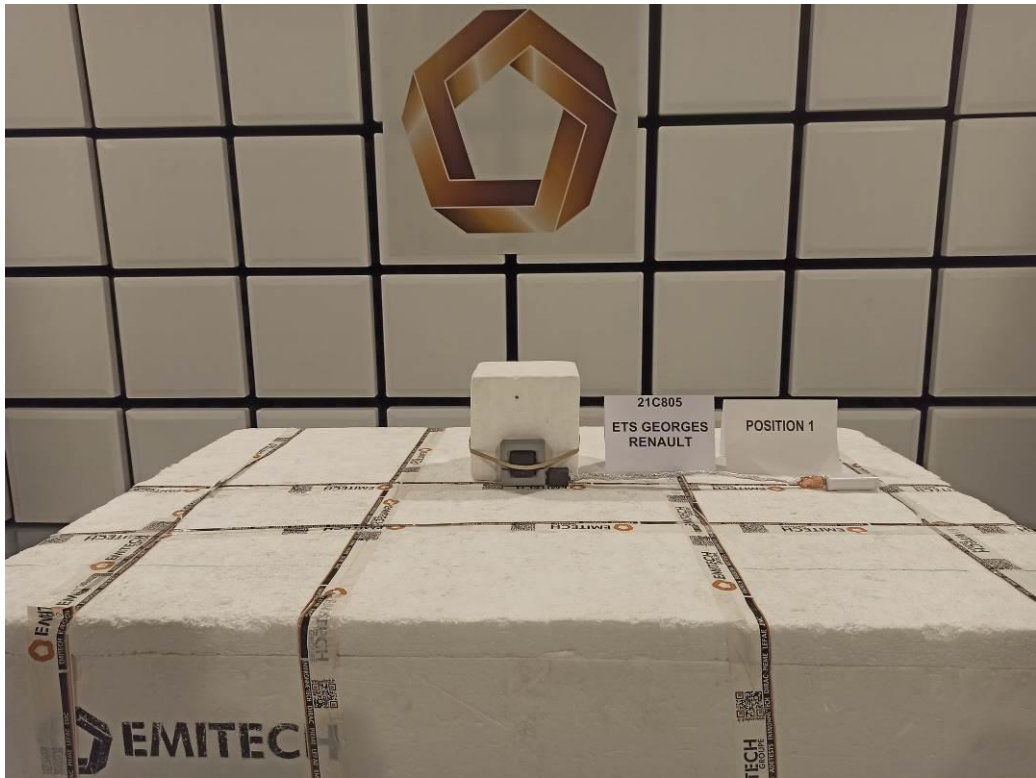
Blank cells = Permanent validity

⁽¹⁾ Under derogation EQSDER000S4100093

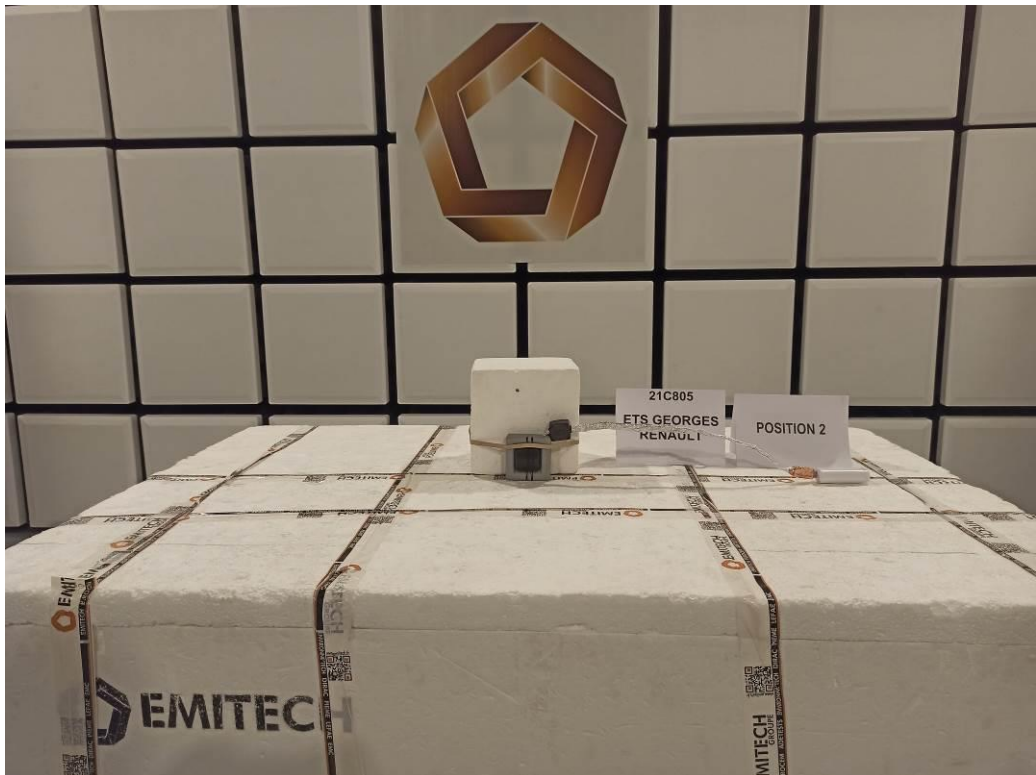
⁽²⁾ Under derogation EQSDER000S4100095 and EQSDER000S4100096

⁽³⁾ Under derogation EQSDER000S4100100

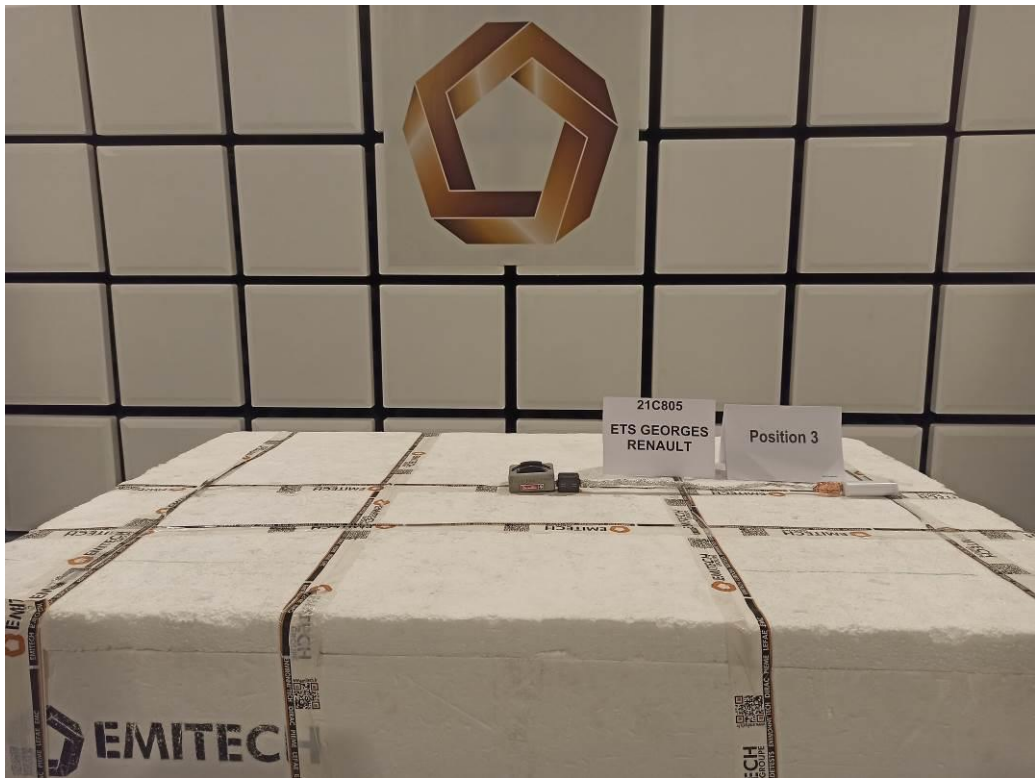
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 1 / <GHZ



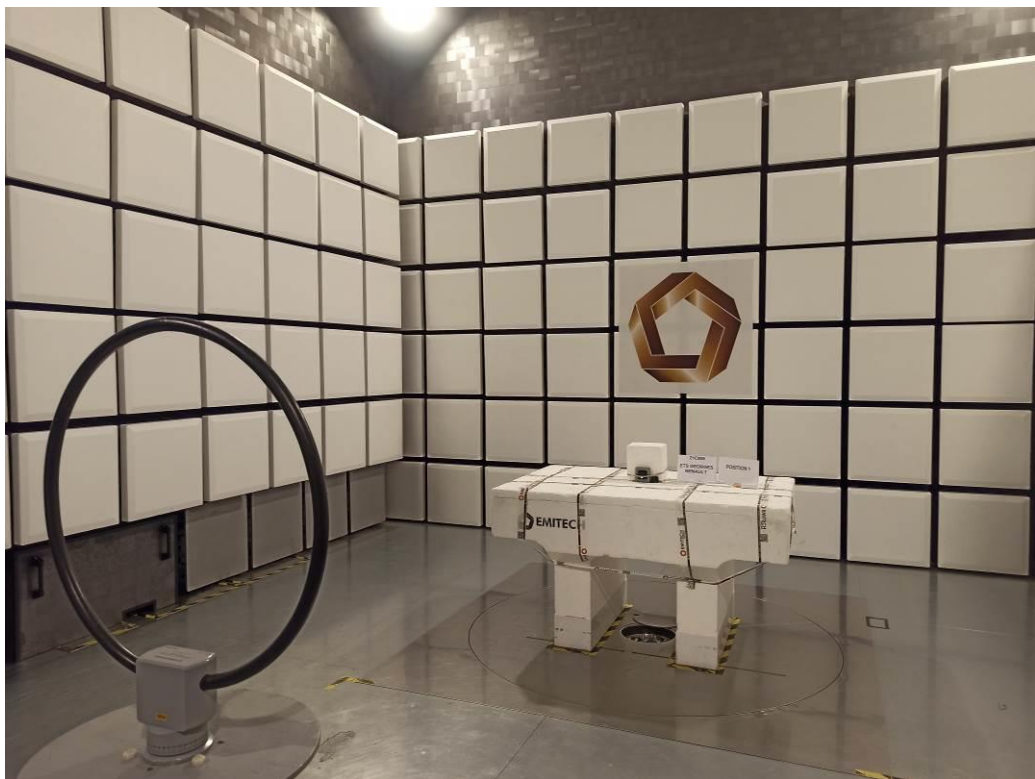
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 2 / <GHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 3 / <GHZ



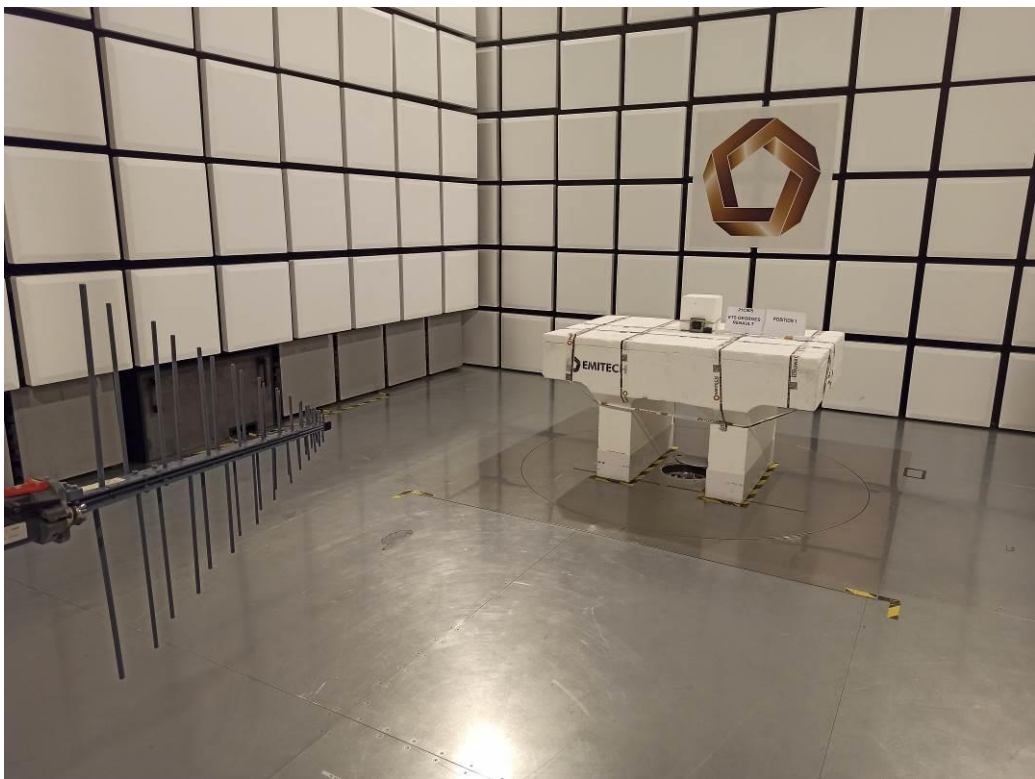
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 9KHZ TO 30MHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 30MHZ TO 200MHZ



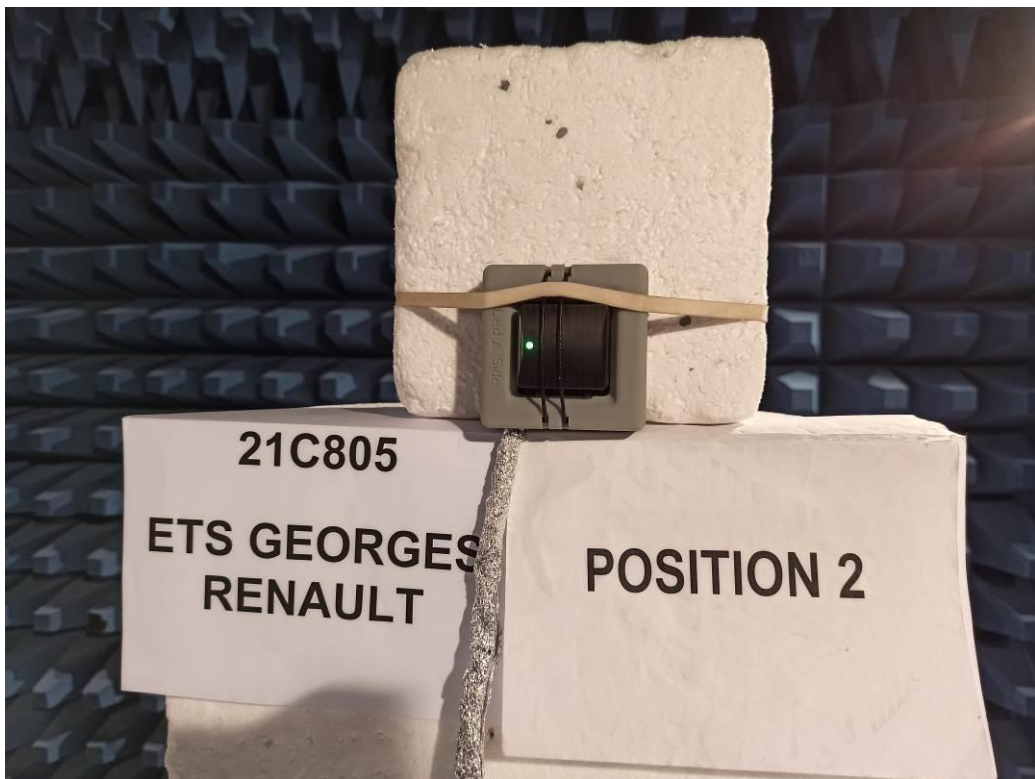
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 200MHZ TO 1GHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 1 / >GHZ



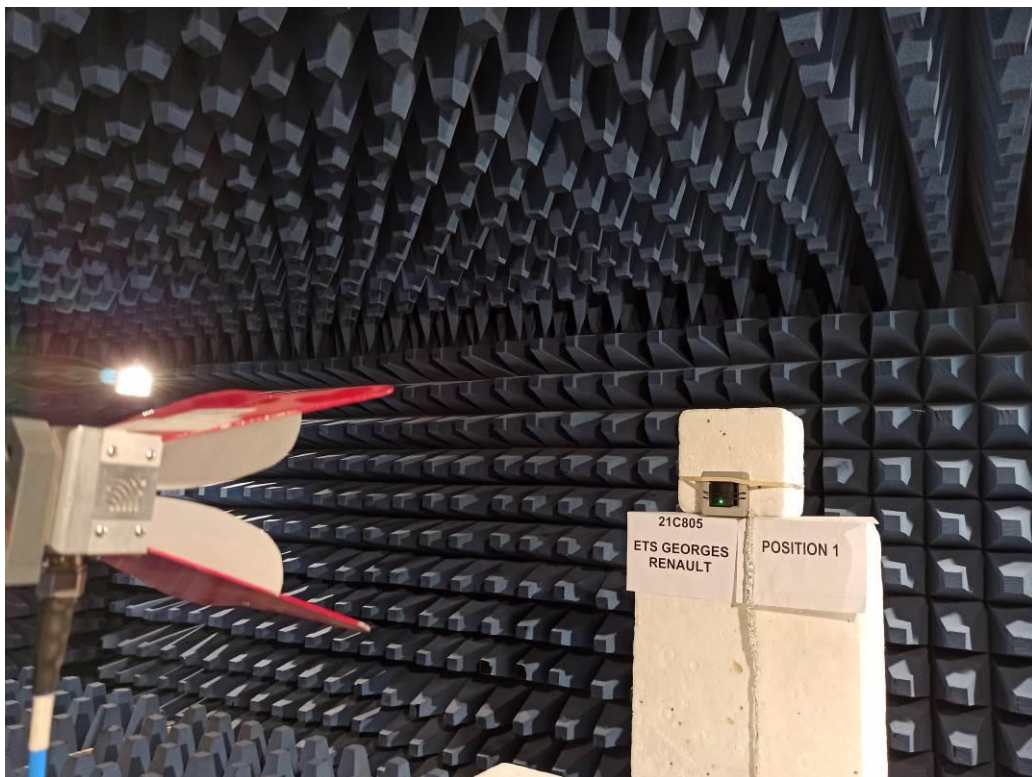
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 2 / >GHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 3 / >GHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 1GHZ TO 18GHZ



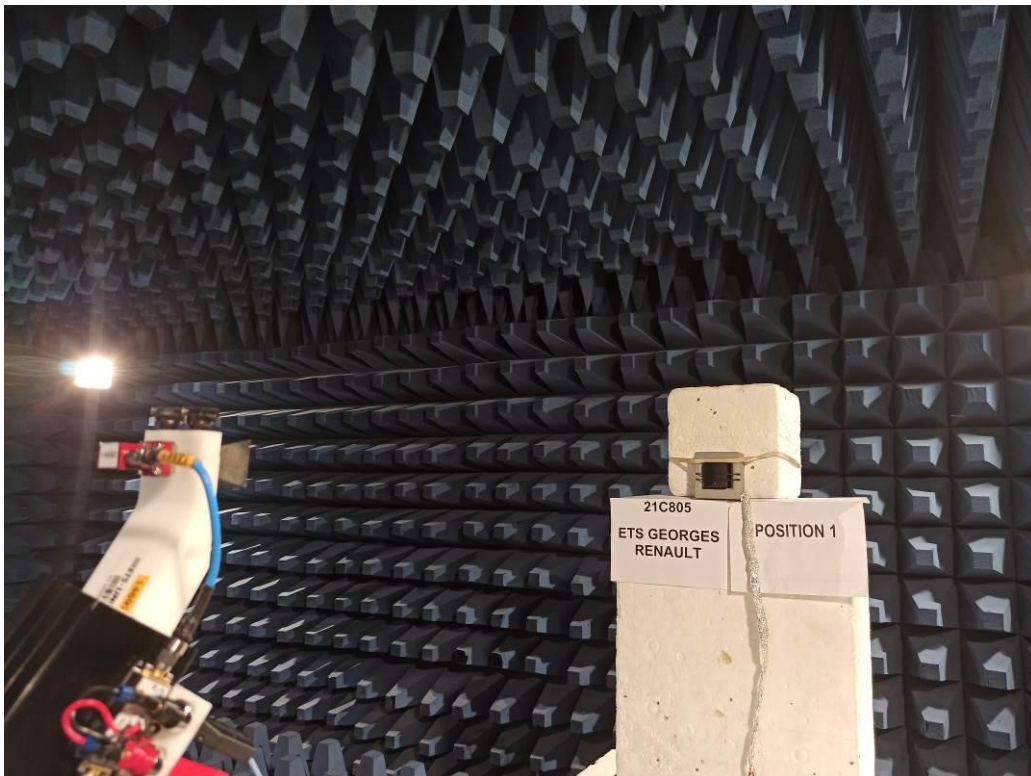
NB : As stipulated in the ANSI C63.10 standard, absorbers are positioned between the antenna and the test object (not visible in the photo).

TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 18GHZ TO 26.5GHZ



NB : As stipulated in the ANSI C63.10 standard, absorbers are positioned between the antenna and the test object (not visible in the photo).

TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 26.5GHZ TO 40GHZ



NB : As stipulated in the ANSI C63.10 standard, absorbers are positioned between the antenna and the test object (not visible in the photo).

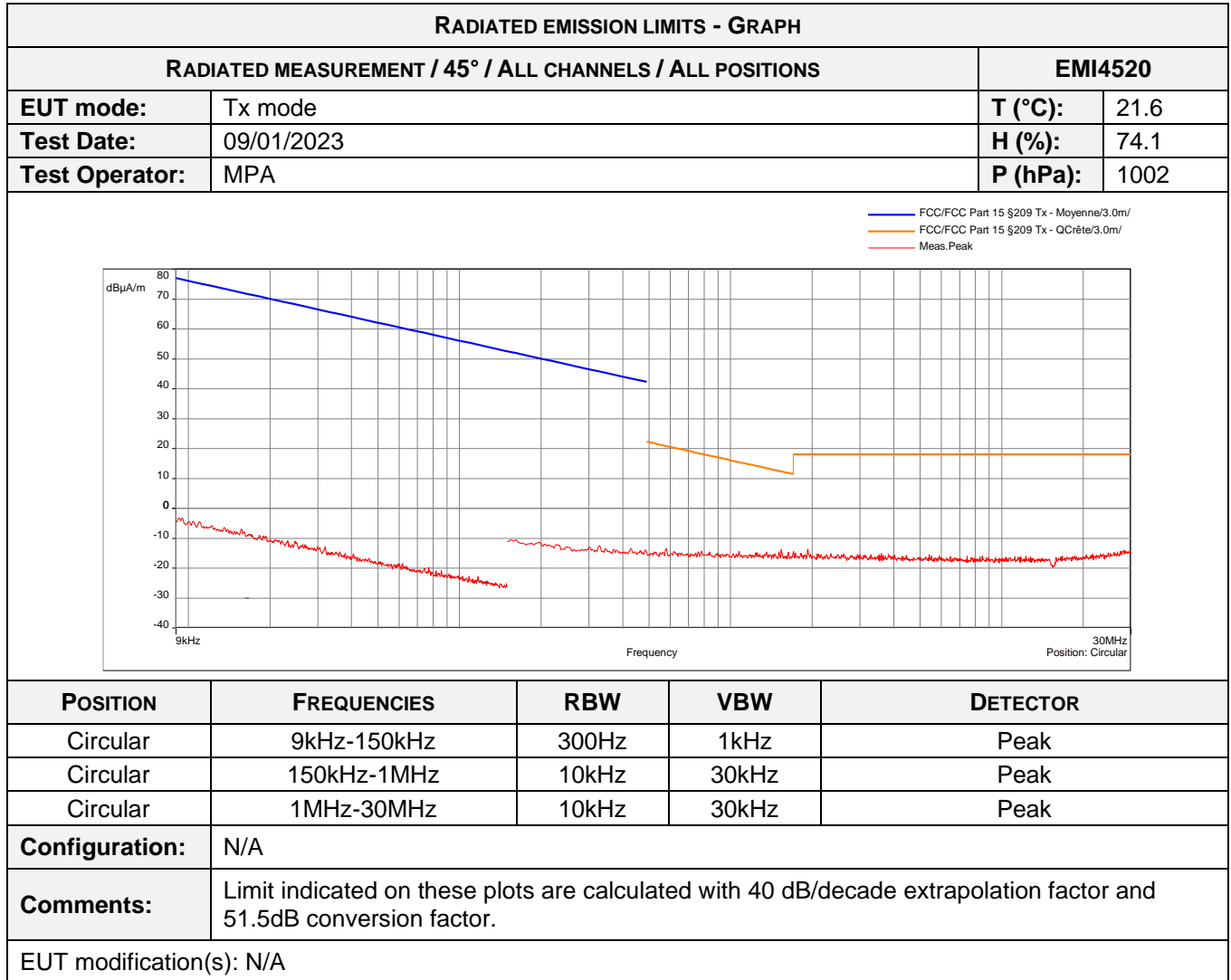
RESULTS TABLE					
RADIATED MEASUREMENT / 30MHZ TO 1GHZ / ALL CHANNELS / ALL POSITIONS					EMI4518
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	QP LEVEL	QP LIMIT
194.45 MHz	Vertical	42.9 dB μ V/m	N/A	37.7 dB μ V/m	43 dB μ V/m
194.49 MHz	Horizontal	40.3 dB μ V/m	N/A	35.4 dB μ V/m	43 dB μ V/m
RADIATED MEASUREMENT / 960MHZ TO 18GHZ / LOW CHANNEL / POSITION 1					EMI4529
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1096.90 MHz	Vertical	40.79 dB μ V/m	N/A	29.52 dB μ V/m	31.62 dB μ V/m
1352.47 MHz	Vertical	38.37 dB μ V/m	N/A	29.79 dB μ V/m	31.62 dB μ V/m
4209.70 MHz	Vertical	74.76 dB μ V/m	N/A	51.45 dB μ V/m	65.62 dB μ V/m
7893.72 MHz	Vertical	48.42 dB μ V/m	N/A	41.91 dB μ V/m	65.62 dB μ V/m
1121.83 MHz	Horizontal	36.38 dB μ V/m	N/A	29.12 dB μ V/m	31.62 dB μ V/m
4210.27 MHz	Horizontal	77.54 dB μ V/m	N/A	53.19 dB μ V/m	65.62 dB μ V/m
7986.66 MHz	Horizontal	52.55 dB μ V/m	N/A	47.92 dB μ V/m	65.62 dB μ V/m
RADIATED MEASUREMENT / 960MHZ TO 18GHZ / LOW CHANNEL / POSITION 2					EMI4530
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1061.20 MHz	Vertical	45.54 dB μ V/m	N/A	29.66 dB μ V/m	31.62 dB μ V/m
4207.44 MHz	Vertical	77.19 dB μ V/m	N/A	52.76 dB μ V/m	65.62 dB μ V/m
7986.66 MHz	Vertical	53.63 dB μ V/m	N/A	51.39 dB μ V/m	65.62 dB μ V/m
4205.17 MHz	Horizontal	72.01 dB μ V/m	N/A	63.10 dB μ V/m	65.62 dB μ V/m
7987.23 MHz	Horizontal	49.32 dB μ V/m	N/A	42.99 dB μ V/m	65.62 dB μ V/m
RADIATED MEASUREMENT / 960MHZ TO 18GHZ / LOW CHANNEL / POSITION 3					EMI4531
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
4208.00 MHz	Vertical	75.63 dB μ V/m	N/A	51.84 dB μ V/m	65.62 dB μ V/m
7986.66 MHz	Vertical	50.91 dB μ V/m	N/A	49.03 dB μ V/m	65.62 dB μ V/m
4209.14 MHz	Horizontal	74.12 dB μ V/m	N/A	51.59 dB μ V/m	65.62 dB μ V/m
7986.66 MHz	Horizontal	49.65 dB μ V/m	N/A	47.05 dB μ V/m	65.62 dB μ V/m
RADIATED MEASUREMENT / 960MHZ TO 18GHZ / MID CHANNEL / POSITION 1					EMI4532
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1142.80 MHz	Vertical	40.91 dB μ V/m	N/A	29.77 dB μ V/m	31.62 dB μ V/m
4378.01 MHz	Vertical	68.38 dB μ V/m	N/A	58.71 dB μ V/m	65.62 dB μ V/m
1342.84 MHz	Horizontal	37.91 dB μ V/m	N/A	29.35 dB μ V/m	31.62 dB μ V/m
4610.35 MHz	Horizontal	74.28 dB μ V/m	N/A	50.69 dB μ V/m	65.62 dB μ V/m
8986.29 MHz	Horizontal	47.98 dB μ V/m	N/A	42.39 dB μ V/m	65.62 dB μ V/m
RADIATED MEASUREMENT / 960MHZ TO 18GHZ / MID CHANNEL / POSITION 2					EMI4533
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1063.46 MHz	Vertical	41.52 dB μ V/m	N/A	28.44 dB μ V/m	31.62 dB μ V/m
4438.08 MHz	Vertical	73.91 dB μ V/m	N/A	50.68 dB μ V/m	65.62 dB μ V/m
9048.07 MHz	Vertical	47.67 dB μ V/m	N/A	42.60 dB μ V/m	65.62 dB μ V/m
1122.97 MHz	Horizontal	36.74 dB μ V/m	N/A	28.95 dB μ V/m	31.62 dB μ V/m
4611.48 MHz	Horizontal	69.89 dB μ V/m	N/A	60.36 dB μ V/m	65.62 dB μ V/m
8811.76 MHz	Horizontal	47.02 dB μ V/m	N/A	40.40 dB μ V/m	65.62 dB μ V/m

RADIATED MEASUREMENT / 960MHz TO 18GHz / MID CHANNEL / POSITION 3					EMI4534
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1063.47 MHz	Vertical	40.32 dB μ V/m	N/A	30.04 dB μ V/m	31.62 dB μ V/m
4616.58 MHz	Vertical	70.48 dB μ V/m	N/A	61.56 dB μ V/m	65.62 dB μ V/m
8985.17 MHz	Vertical	46.72 dB μ V/m	N/A	43.01 dB μ V/m	65.62 dB μ V/m
1354.75 MHz	Horizontal	37.67 dB μ V/m	N/A	29.28 dB μ V/m	31.62 dB μ V/m
4618.29 MHz	Horizontal	70.87 dB μ V/m	N/A	62.00 dB μ V/m	65.62 dB μ V/m
8985.73 MHz	Horizontal	47.84 dB μ V/m	N/A	41.76 dB μ V/m	65.62 dB μ V/m
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 1					EMI4535
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1007.93 MHz	Vertical	39.18 dB μ V/m	N/A	31.00 dB μ V/m	31.62 dB μ V/m
1354.17 MHz	Vertical	37.86 dB μ V/m	N/A	30.16 dB μ V/m	31.62 dB μ V/m
6211.24 MHz	Vertical	73.46 dB μ V/m	N/A	51.81 dB μ V/m	65.62 dB μ V/m
1141.67 MHz	Horizontal	41.03 dB μ V/m	N/A	28.72 dB μ V/m	31.62 dB μ V/m
1280.51 MHz	Horizontal	38.01 dB μ V/m	N/A	27.81 dB μ V/m	31.62 dB μ V/m
1343.41 MHz	Horizontal	37.86 dB μ V/m	N/A	27.88 dB μ V/m	31.62 dB μ V/m
6707.09 MHz	Horizontal	77.05 dB μ V/m	N/A	53.98 dB μ V/m	65.62 dB μ V/m
13228.51 MHz	Horizontal	52.86 dB μ V/m	N/A	41.76 dB μ V/m	45.62 dB μ V/m
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 2					EMI4536
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1064.60 MHz	Vertical	42.63 dB μ V/m	N/A	30.83 dB μ V/m	31.62 dB μ V/m
6273.00 MHz	Vertical	75.73 dB μ V/m	N/A	52.97 dB μ V/m	65.62 dB μ V/m
12479.92 MHz	Vertical	51.10 dB μ V/m	N/A	40.74 dB μ V/m	45.62 dB μ V/m
1121.84 MHz	Horizontal	35.84 dB μ V/m	N/A	28.41 dB μ V/m	31.62 dB μ V/m
1357.58 MHz	Horizontal	37.13 dB μ V/m	N/A	28.44 dB μ V/m	31.62 dB μ V/m
6271.88 MHz	Horizontal	74.37 dB μ V/m	N/A	52.02 dB μ V/m	65.62 dB μ V/m
12681.09 MHz	Horizontal	49.57 dB μ V/m	N/A	42.06 dB μ V/m	45.62 dB μ V/m
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 3					EMI4537
FREQUENCY	POLARIZATION	PEAK LEVEL	PEAK LIMIT	AVERAGE LEVEL	AVERAGE LIMIT
1005.10 MHz	Vertical	39.85 dB μ V/m	N/A	29.99 dB μ V/m	31.65 dB μ V/m
1121.84 MHz	Vertical	36.69 dB μ V/m	N/A	29.66 dB μ V/m	31.62 dB μ V/m
1355.31 MHz	Vertical	36.29 dB μ V/m	N/A	28.65 dB μ V/m	31.65 dB μ V/m
6439.05 MHz	Vertical	75.21 dB μ V/m	N/A	52.54 dB μ V/m	65.62 dB μ V/m
12978.60 MHz	Vertical	49.61 dB μ V/m	N/A	45.10 dB μ V/m	45.62 dB μ V/m
1121.27 MHz	Horizontal	36.08 dB μ V/m	N/A	29.35 dB μ V/m	31.62 dB μ V/m
1367.78 MHz	Horizontal	37.61 dB μ V/m	N/A	30.31 dB μ V/m	31.62 dB μ V/m
6274.14 MHz	Horizontal	75.80 dB μ V/m	N/A	53.04 dB μ V/m	65.62 dB μ V/m
13010.33 MHz	Horizontal	49.36 dB μ V/m	N/A	44.85 dB μ V/m	45.62 dB μ V/m

No spurious detected on the other measurements.

RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 0° / ALL CHANNELS / ALL POSITIONS				EMI4519	
EUT mode:	Tx mode			T (°C):	21.6
Test Date:	09/01/2023			H (%):	74.1
Test Operator:	MPA			P (hPa):	1002
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Circular	9kHz-150kHz	300Hz	1kHz	Peak	
Circular	150kHz-1MHz	10kHz	30kHz	Peak	
Circular	1MHz-30MHz	10kHz	30kHz	Peak	
Configuration:	N/A				
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor.				
EUT modification(s): N/A					

No spurious emissions were detected.
 Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported



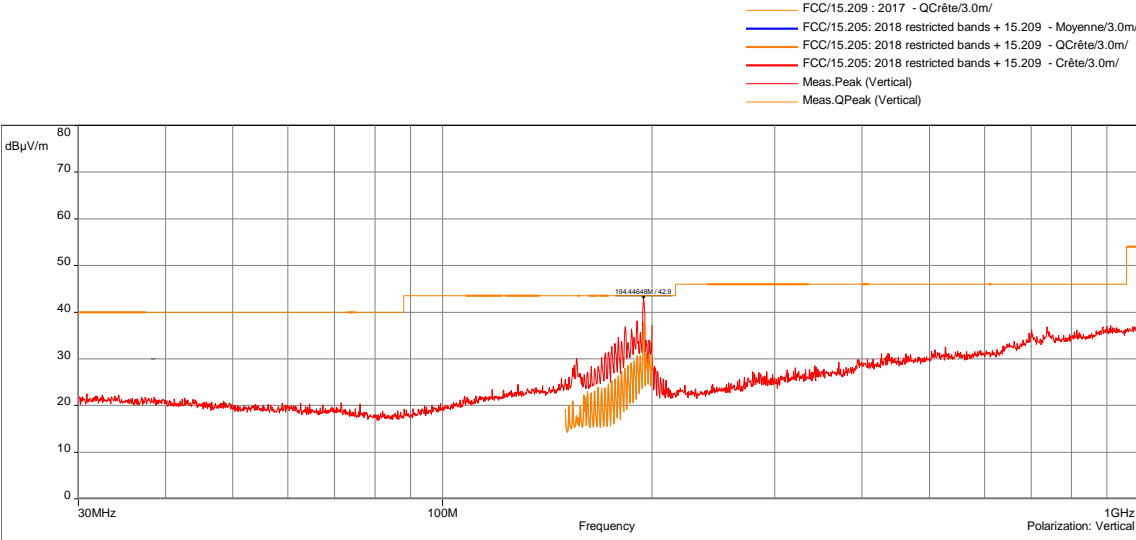
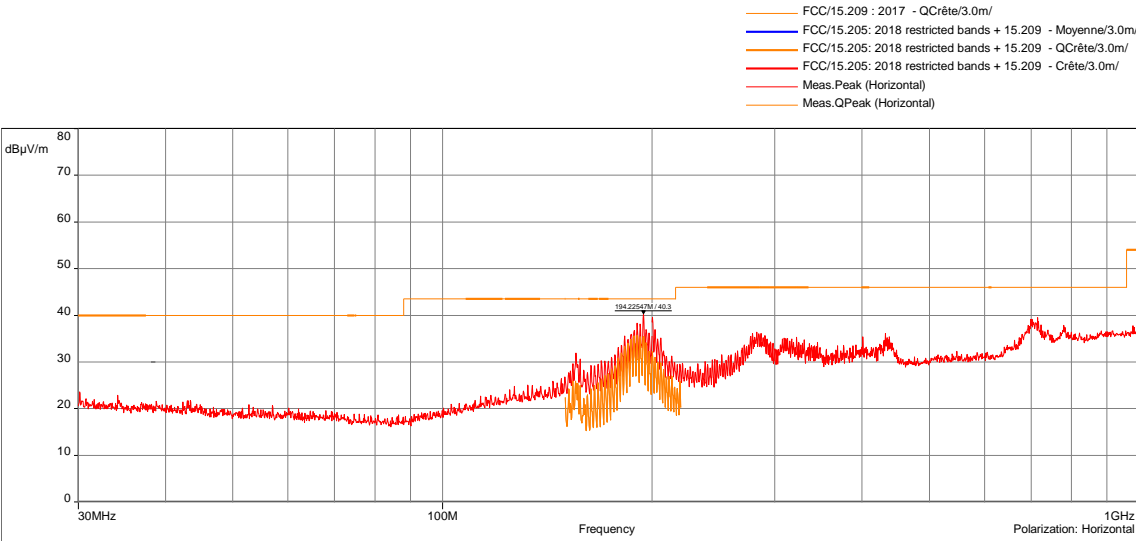
No spurious emissions were detected.

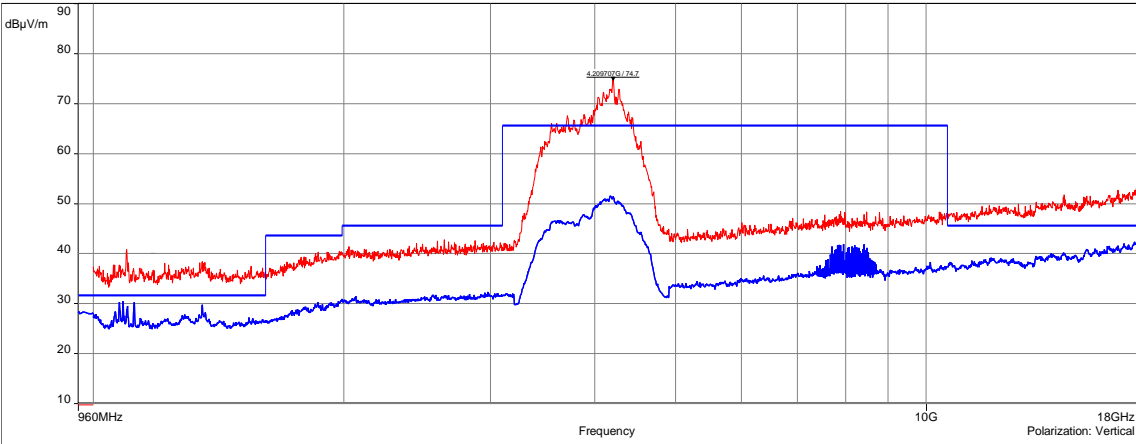
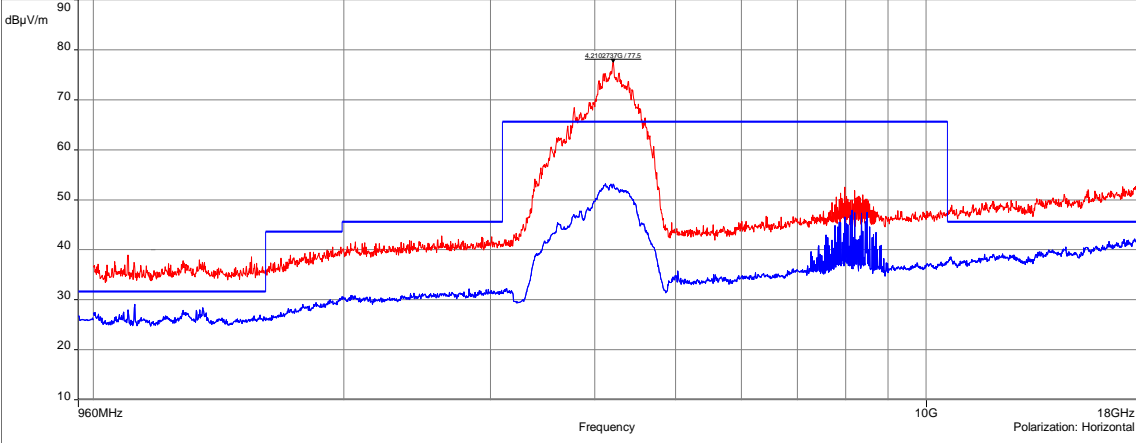
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported

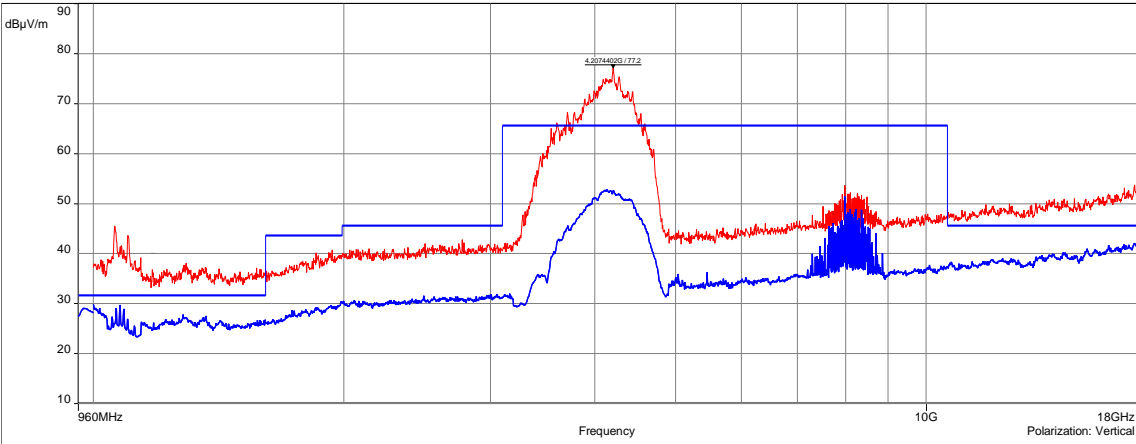
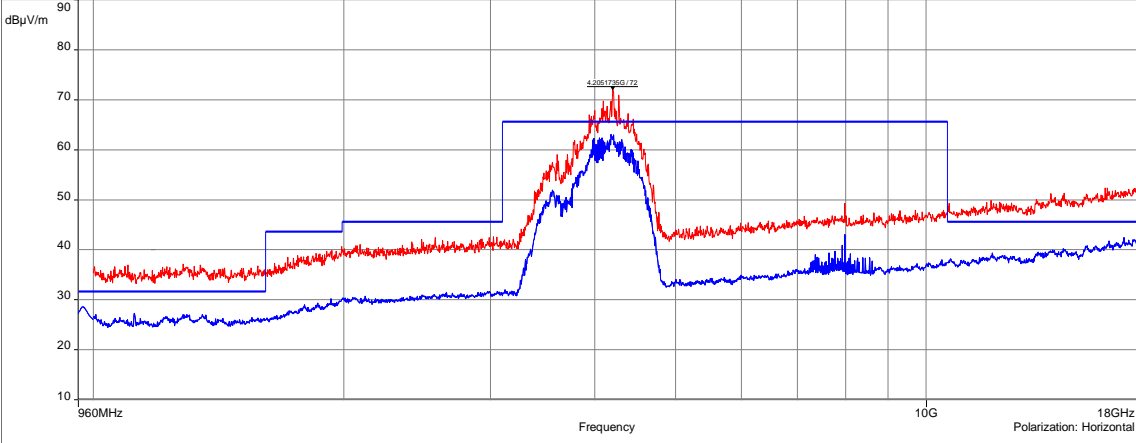
RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 90° / ALL CHANNELS / ALL POSITIONS				EMI4521	
EUT mode:	Tx mode			T (°C):	21.6
Test Date:	09/01/2023			H (%):	74.1
Test Operator:	MPA			P (hPa):	1002
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Circular	9kHz-150kHz	300Hz	1kHz	Peak	
Circular	150kHz-1MHz	10kHz	30kHz	Peak	
Circular	1MHz-30MHz	10kHz	30kHz	Peak	
Configuration:	N/A				
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor.				
EUT modification(s): N/A					

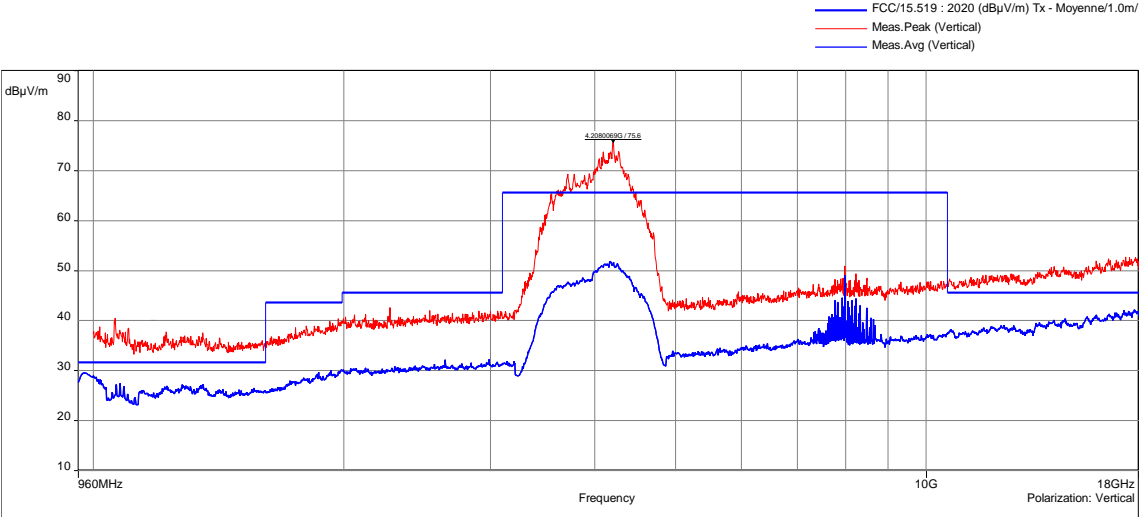
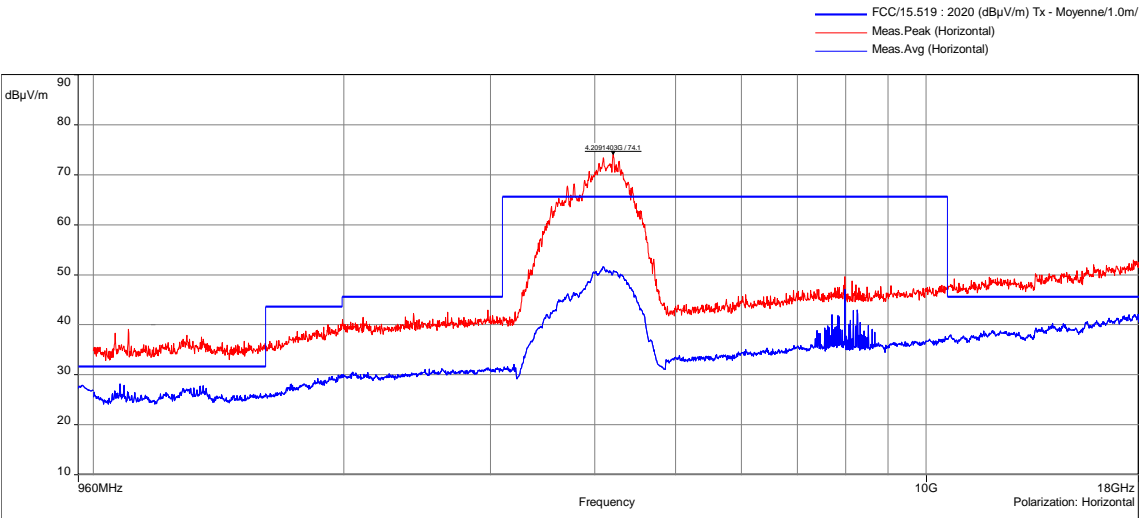
No spurious emissions were detected.

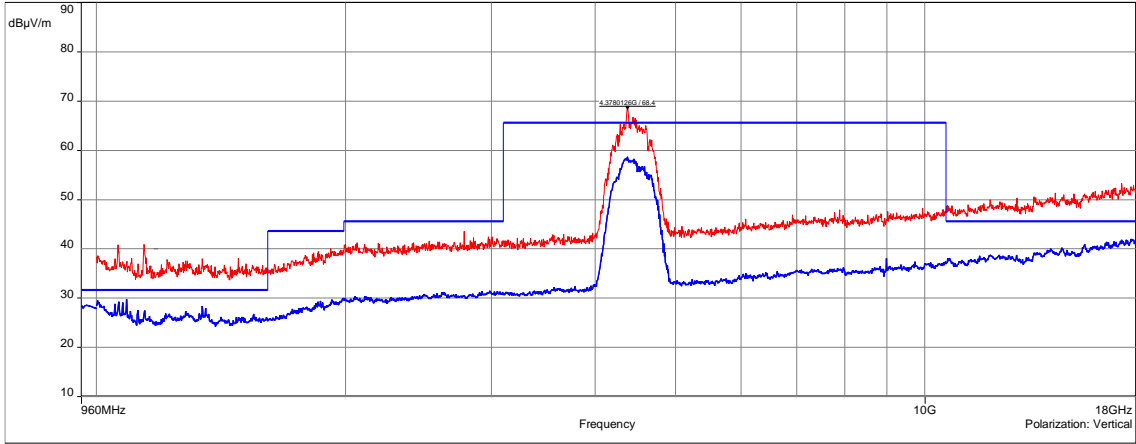
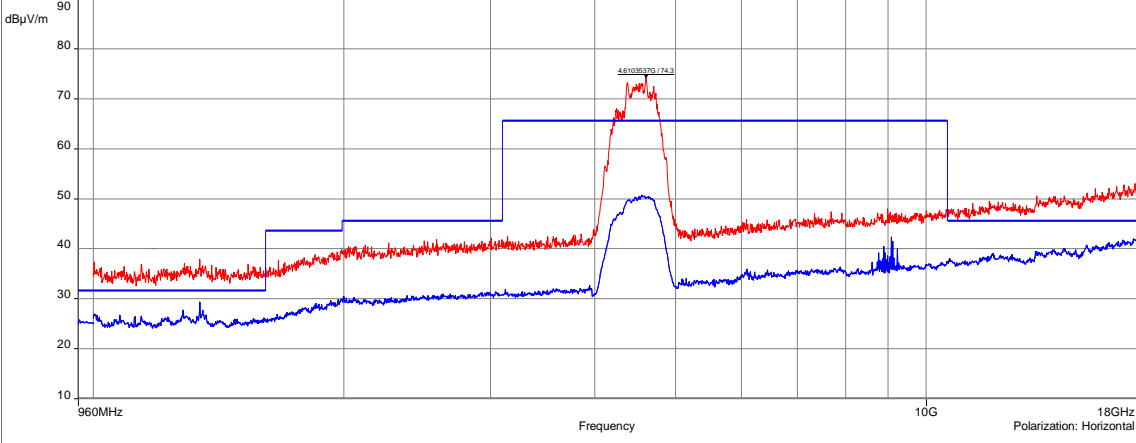
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported

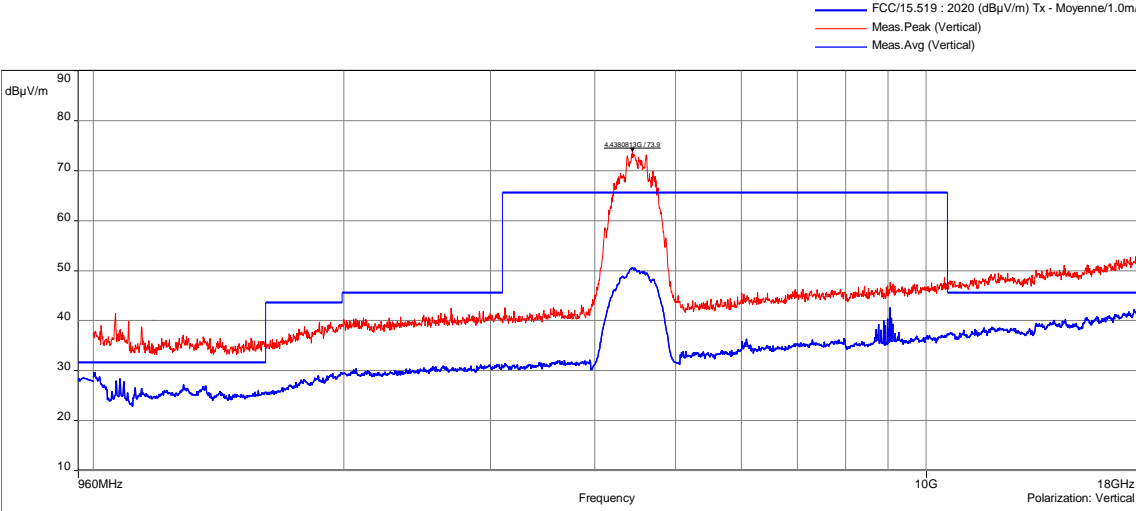
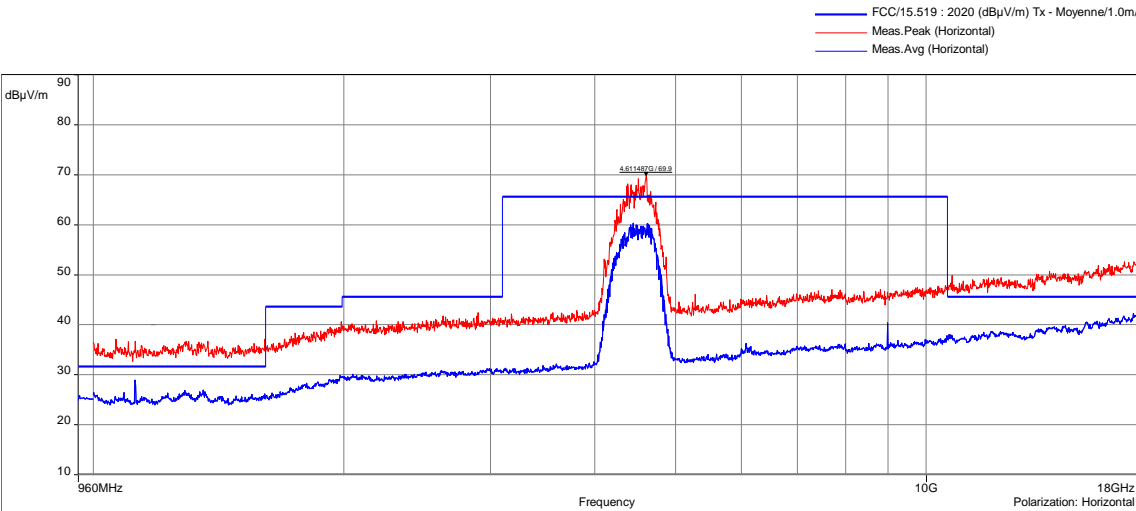
RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 30MHZ TO 1GHZ / ALL CHANNELS / ALL POSITIONS				EMI4518	
EUT mode:	Tx mode			T (°C):	20.5
Test Date:	09/01/2023			H (%):	59.4
Test Operator:	MPA			P (hPa):	1005
 <p>Legend for Vertical Polarization:</p> <ul style="list-style-type: none"> FCC/15.209 : 2017 - QCrête/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - Moyenne/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - QCrête/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - Crête/3.0m/ Meas.Peak (Vertical) Meas.QPeak (Vertical) 					
 <p>Legend for Horizontal Polarization:</p> <ul style="list-style-type: none"> FCC/15.209 : 2017 - QCrête/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - Moyenne/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - QCrête/3.0m/ FCC/15.205: 2018 restricted bands + 15.209 - Crête/3.0m/ Meas.Peak (Horizontal) Meas.QPeak (Horizontal) 					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	30MHz-200MHz	100kHz	300kHz	Peak	
Horizontal	30MHz-200MHz	100kHz	300kHz	Peak	
Vertical	200MHz-1GHz	100kHz	300kHz	Peak	
Horizontal	200MHz-1GHz	100kHz	300kHz	Peak	
Vertical	150MHz-200MHz	120kHz	360kHz	QP	
Horizontal	150MHz-220MHz	120kHz	360kHz	QP	
Configuration:	N/A				
Comments:	N/A				
EUT modification(s): N/A					

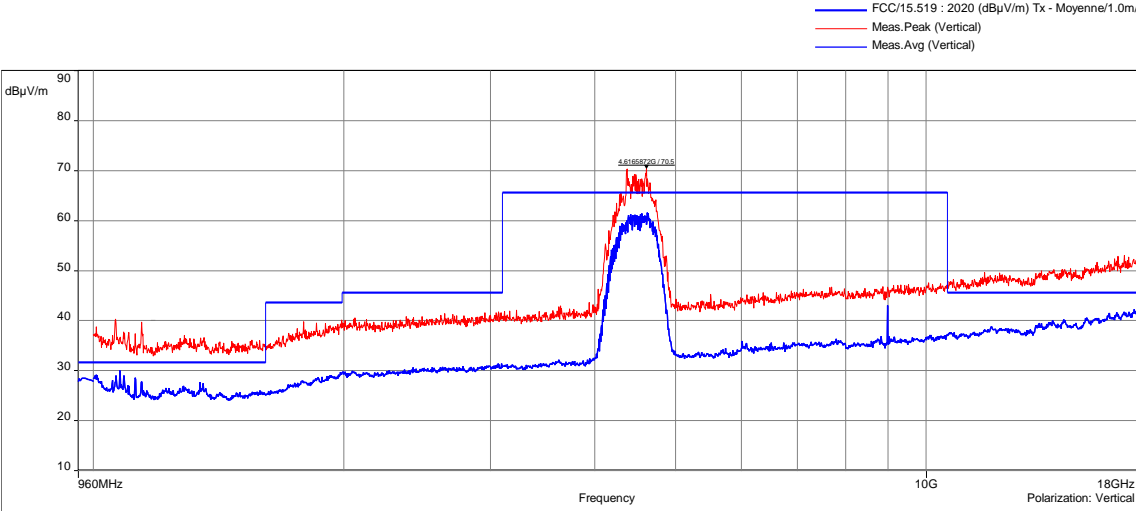
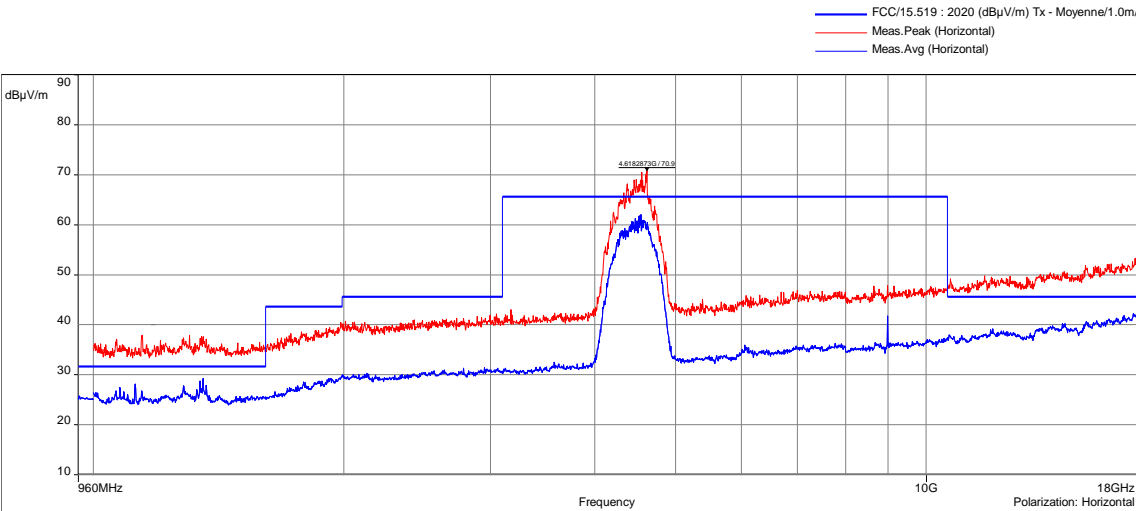
RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 960MHz TO 18GHz / Low channel / POSITION 1			EMI4529	
EUT mode:	Tx mode		T (°C):	20.3
Test Date:	09/01/2023		H (%):	40.1
Test Operator:	MPA		P (hPa):	1016
<div style="text-align: right;"> <p>— FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/</p> <p>— Meas.Peak (Vertical)</p> <p>— Meas.Avg (Vertical)</p> </div>  <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / Low channel / Position 1 - 4529</p>				
<div style="text-align: right;"> <p>— FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/</p> <p>— Meas.Peak (Horizontal)</p> <p>— Meas.Avg (Horizontal)</p> </div>  <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / Low channel / Position 1 - 4529</p>				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

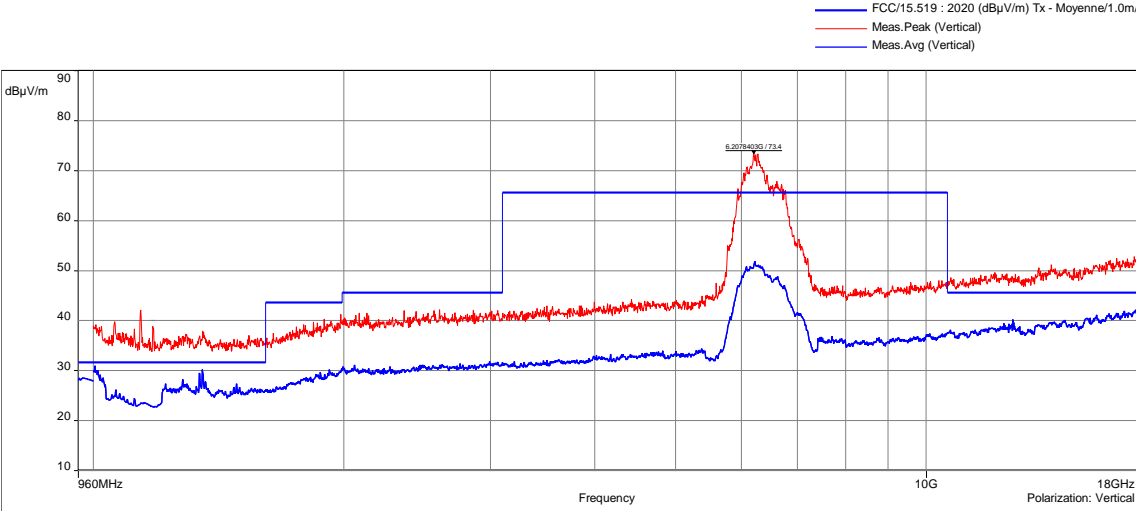
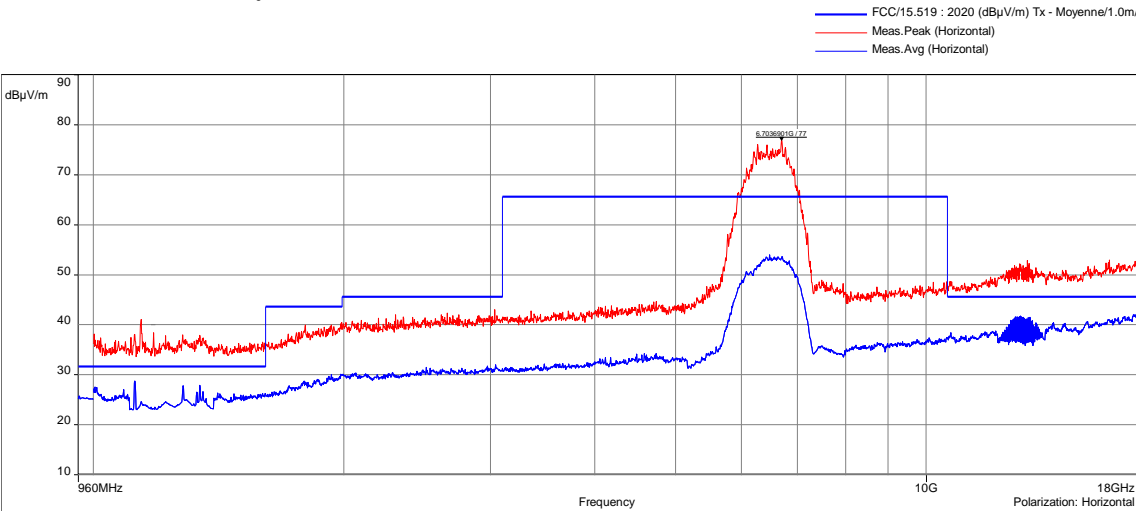
RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 960MHz TO 18GHz / Low channel / POSITION 2			EMI4530	
EUT mode:	Tx mode		T (°C):	20.3
Test Date:	09/01/2023		H (%):	40.1
Test Operator:	MPA		P (hPa):	1016
<div style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </div>  <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / Low channel / Position 2 - 4530</p>				
<div style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </div>  <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / Low channel / Position 2 - 4530</p>				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

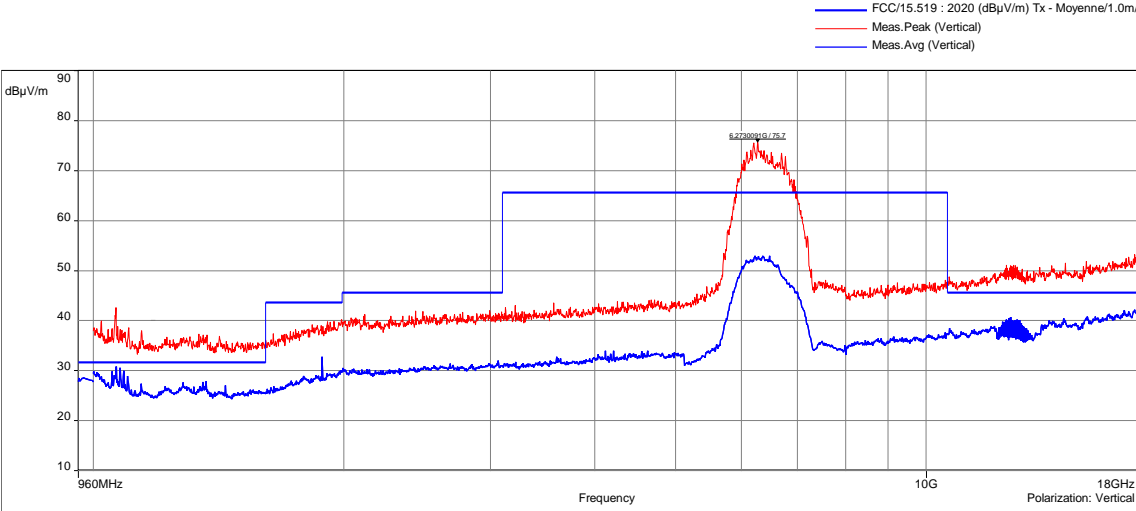
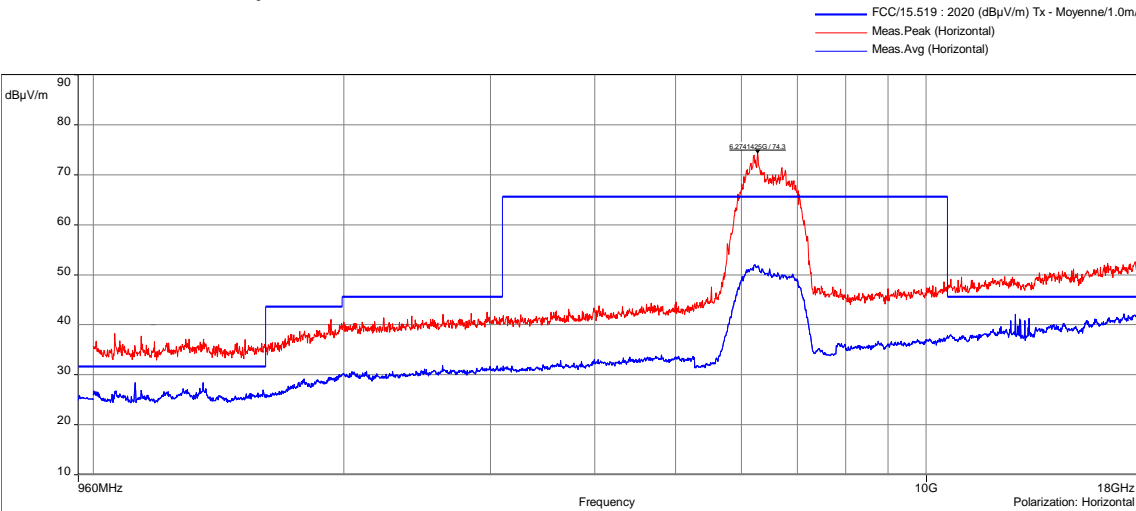
RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 960MHz TO 18GHz / Low channel / POSITION 3			EMI4531	
EUT mode:	Tx mode		T (°C):	20.3
Test Date:	09/01/2023		H (%):	40.1
Test Operator:	MPA		P (hPa):	1016
 <p>Radiated measurement / 960MHz to 18GHz / Low channel / Position 3 - 4531</p>				
 <p>Radiated measurement / 960MHz to 18GHz / Low channel / Position 3 - 4531</p>				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s):	N/A			

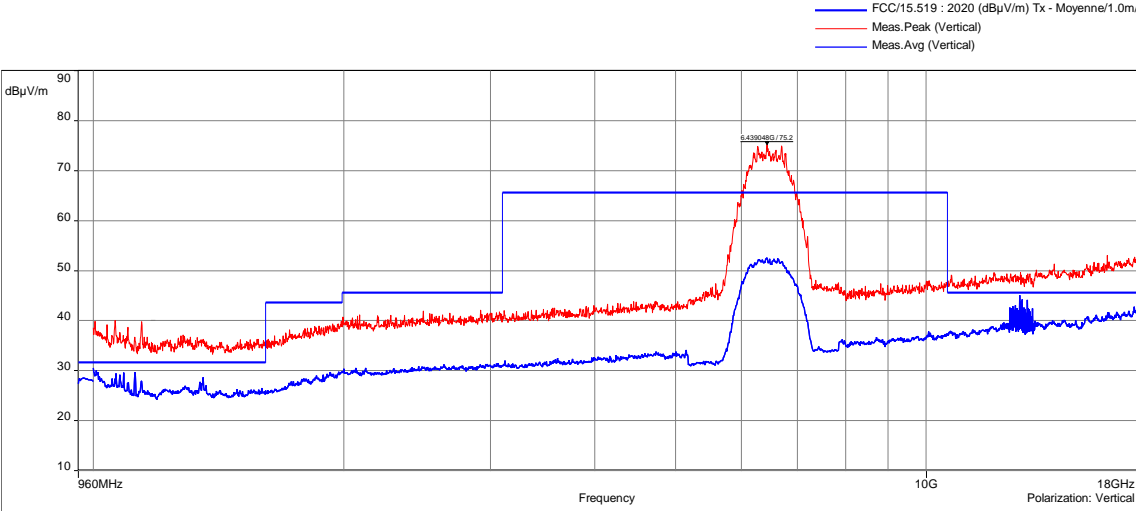
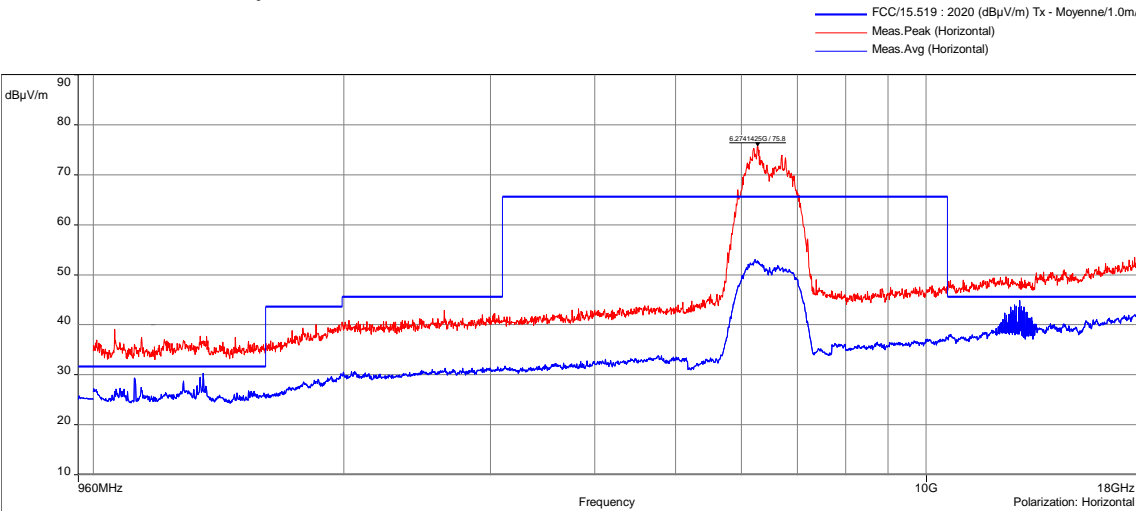
RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 960MHz TO 18GHz / MID CHANNEL / POSITION 1			EMI4532	
EUT mode:	Tx mode		T (°C):	20.3
Test Date:	09/01/2023		H (%):	40.1
Test Operator:	MPA		P (hPa):	1016
<div style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </div>  <p style="font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 1 - 4532</p>				
<div style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </div>  <p style="font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 1 - 4532</p>				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s):	N/A			

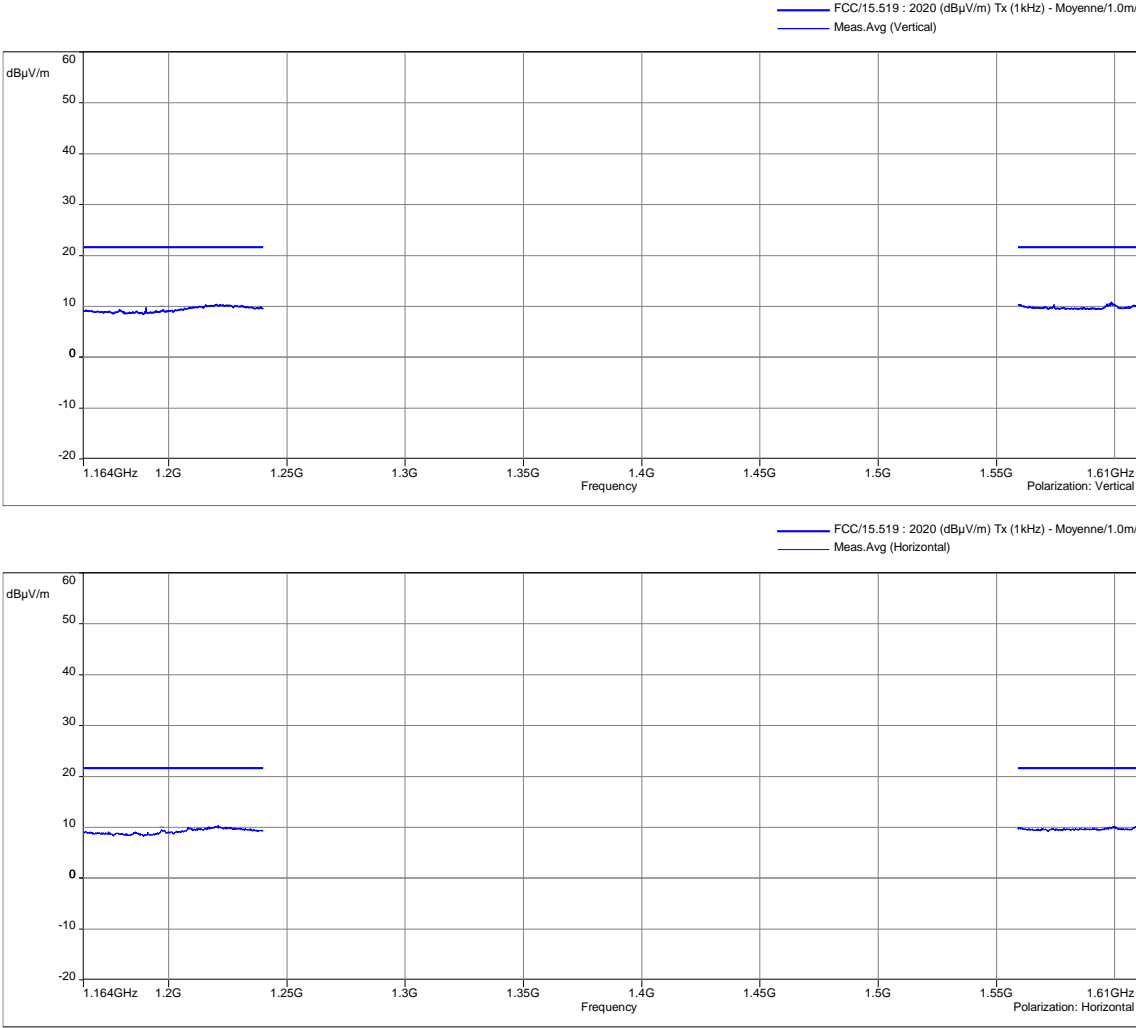
RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 960MHz TO 18GHz / MID CHANNEL / POSITION 2				EMI4533	
EUT mode:	Tx mode			T (°C):	20.3
Test Date:	09/01/2023			H (%):	40.1
Test Operator:	MPA			P (hPa):	1016
 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 2 - 4533</p>					
 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 2 - 4533</p>					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

RADIATED EMISSION LIMITS - GRAPH									
RADIATED MEASUREMENT / 960MHz TO 18GHz / MID CHANNEL / POSITION 3				EMI4534					
EUT mode:	Tx mode			T (°C):	20.3				
Test Date:	09/01/2023			H (%):	40.1				
Test Operator:	MPA			P (hPa):	1016				
 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 3 - 4534</p>					 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / Mid channel / Position 3 - 4534</p>				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR					
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG					
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG					
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG					
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG					
Configuration:	N/A								
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).								
EUT modification(s): N/A									

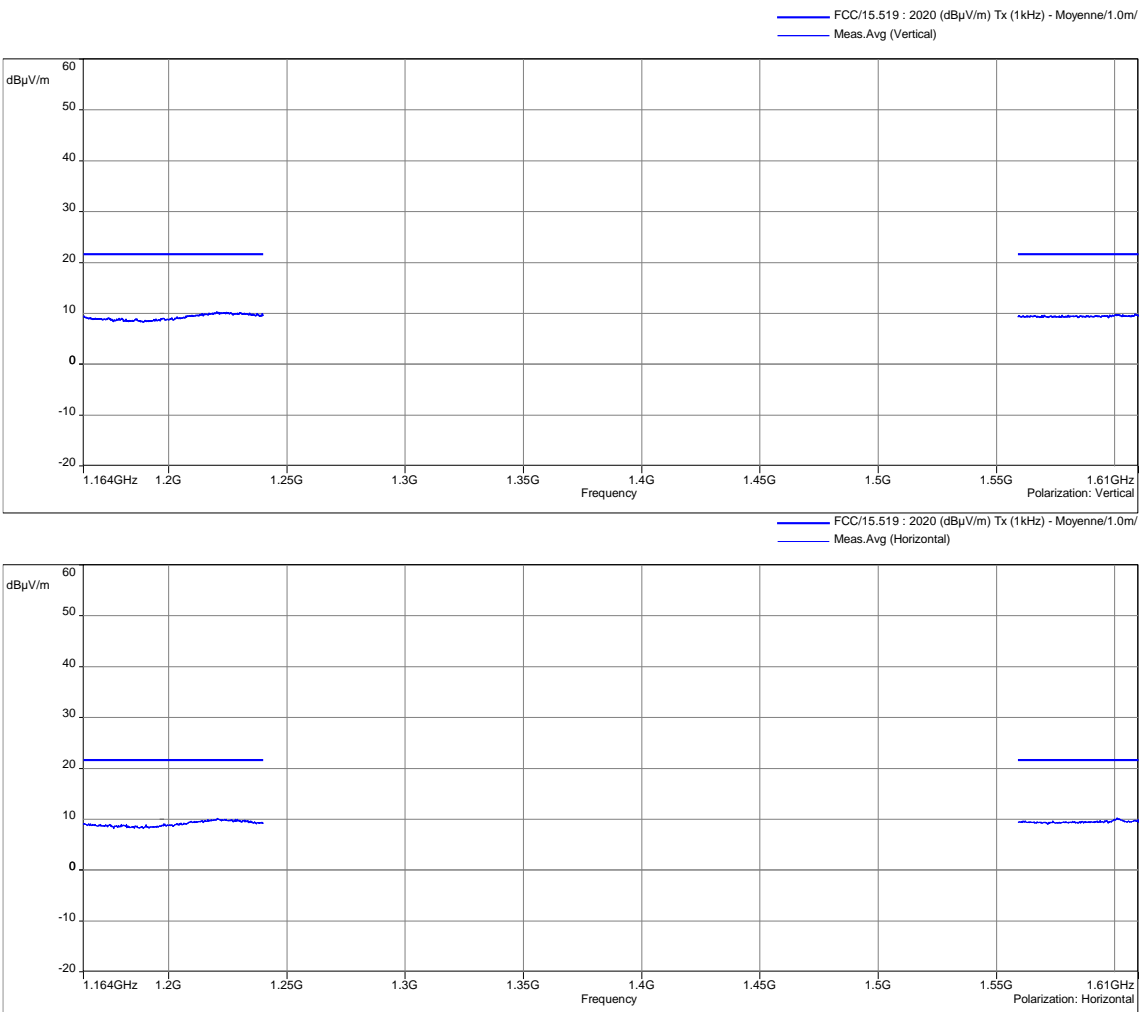
RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 1				EMI4535	
EUT mode:	Tx mode			T (°C):	20.3
Test Date:	09/01/2023			H (%):	40.1
Test Operator:	MPA			P (hPa):	1016
 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / High channel / Position 1 - 4535</p>					
 <p style="text-align: right; font-size: small;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </p> <p style="text-align: center; font-size: x-small;">Radiated measurement / 960MHz to 18GHz / High channel / Position 1 - 4535</p>					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 2				EMI4536	
EUT mode:	Tx mode			T (°C):	20.3
Test Date:	09/01/2023			H (%):	40.1
Test Operator:	MPA			P (hPa):	1016
 <p style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas. Peak (Vertical) — Meas. Avg (Vertical) </p> <p style="text-align: right;">Polarization: Vertical</p>					
 <p style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas. Peak (Horizontal) — Meas. Avg (Horizontal) </p> <p style="text-align: right;">Polarization: Horizontal</p>					
Radiated measurement / 960MHz to 18GHz / High channel / Position 2 - 4536					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

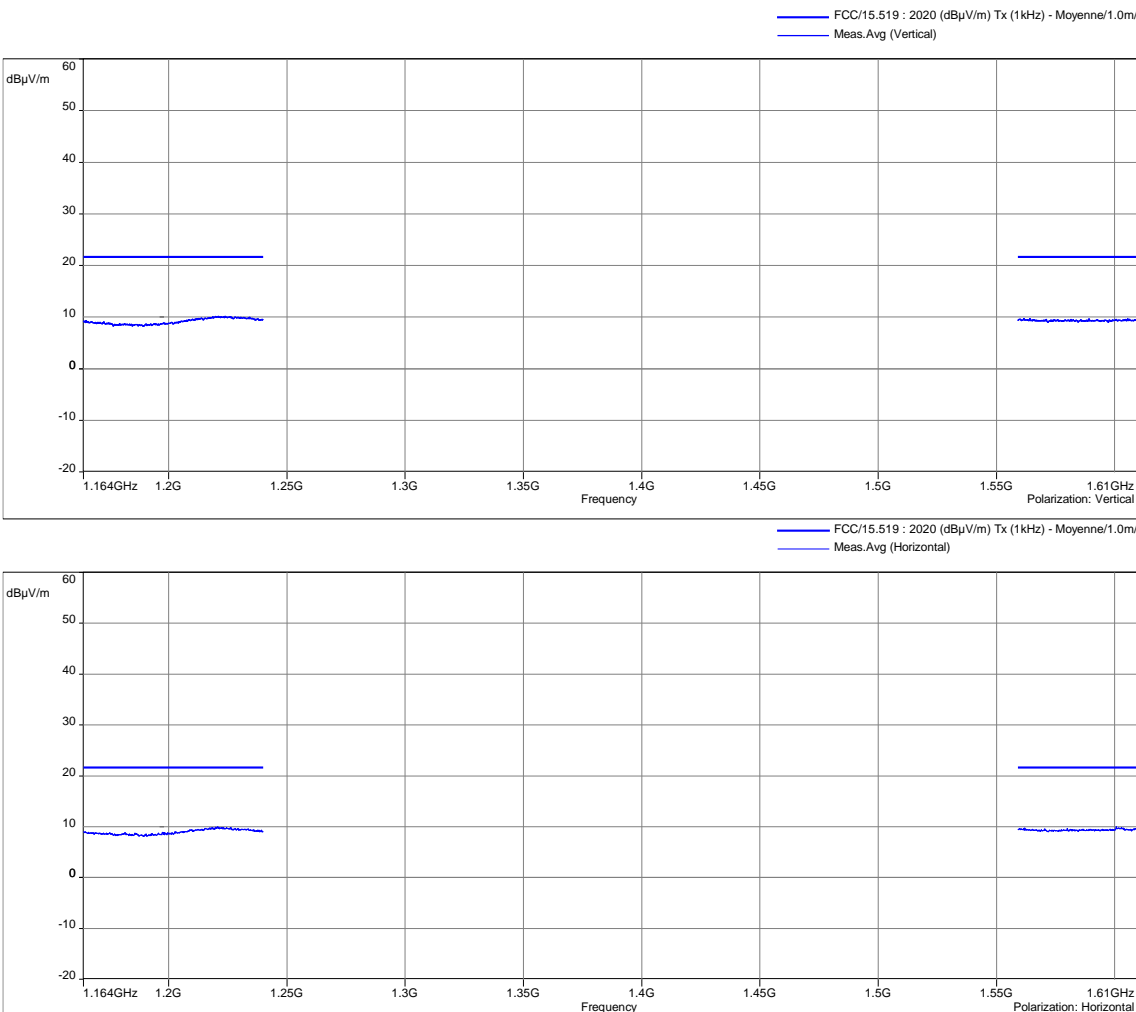
RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT / 960MHz TO 18GHz / HIGH CHANNEL / POSITION 3				EMI4537	
EUT mode:	Tx mode			T (°C):	20.3
Test Date:	09/01/2023			H (%):	40.1
Test Operator:	MPA			P (hPa):	1016
 <p style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Vertical) — Meas.Avg (Vertical) </p> <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / High channel / Position 3 - 4537</p>					
 <p style="text-align: right;"> — FCC/15.519 : 2020 (dBµV/m) Tx - Moyenne/1.0m/ — Meas.Peak (Horizontal) — Meas.Avg (Horizontal) </p> <p style="text-align: center;">Radiated measurement / 960MHz to 18GHz / High channel / Position 3 - 4537</p>					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Horizontal	1GHz-18GHz	1MHz	3MHz	Peak / AVG	
Vertical	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Horizontal	960MHz-1GHz	1MHz	3MHz	Peak / AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / LOW CHANNEL / POSITION 1			EMI4539	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

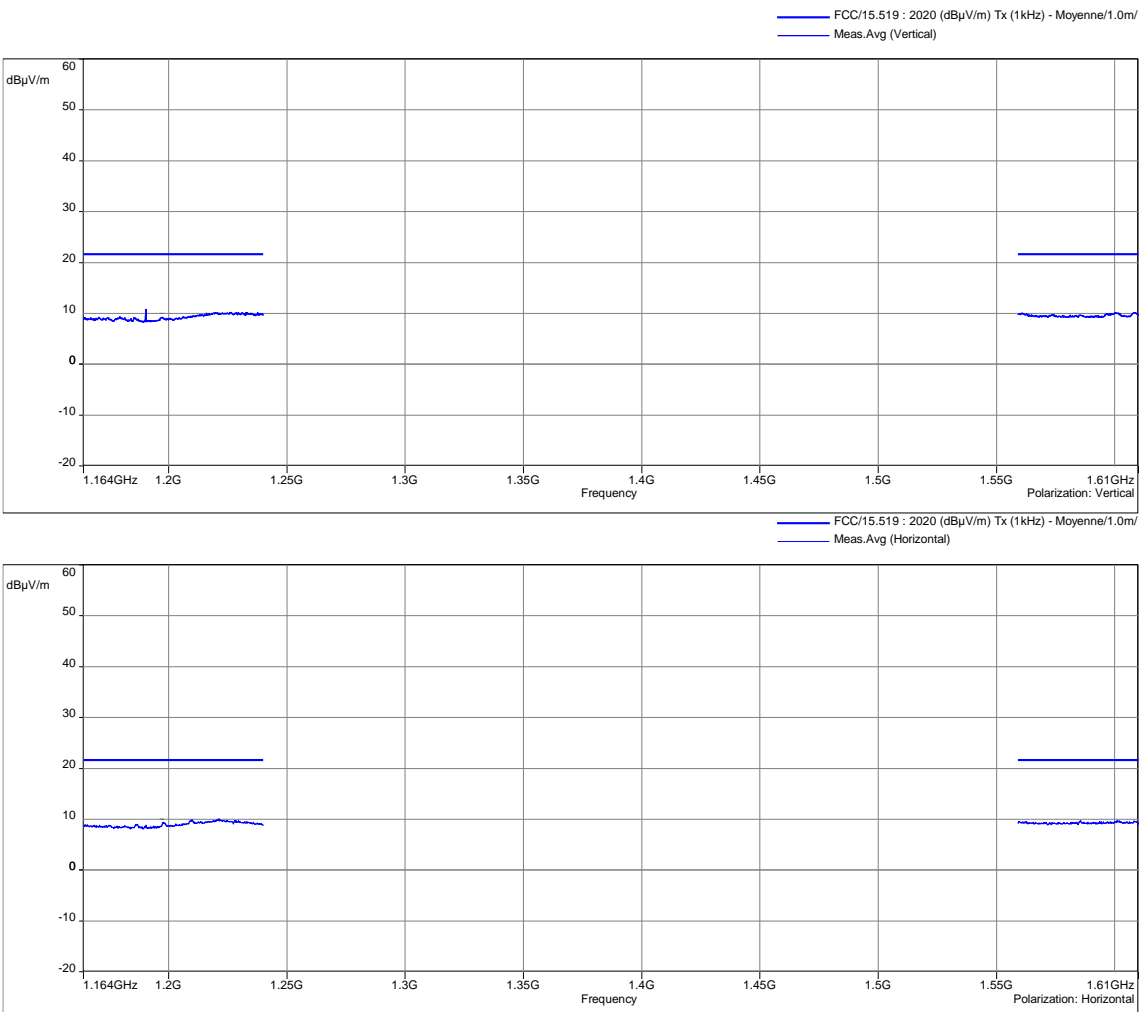
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / LOW CHANNEL / POSITION 2				EMI4540	
EUT mode:	Tx mode			T (°C):	20.5
Test Date:	10/01/2023			H (%):	42.4
Test Operator:	MPA			P (hPa):	1016
					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG	
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG	
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG	
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

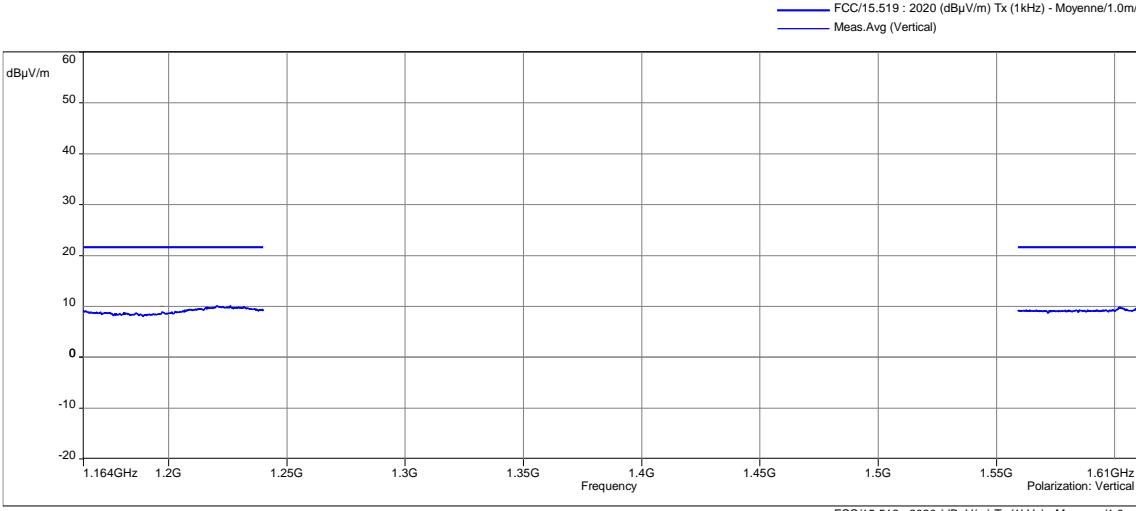
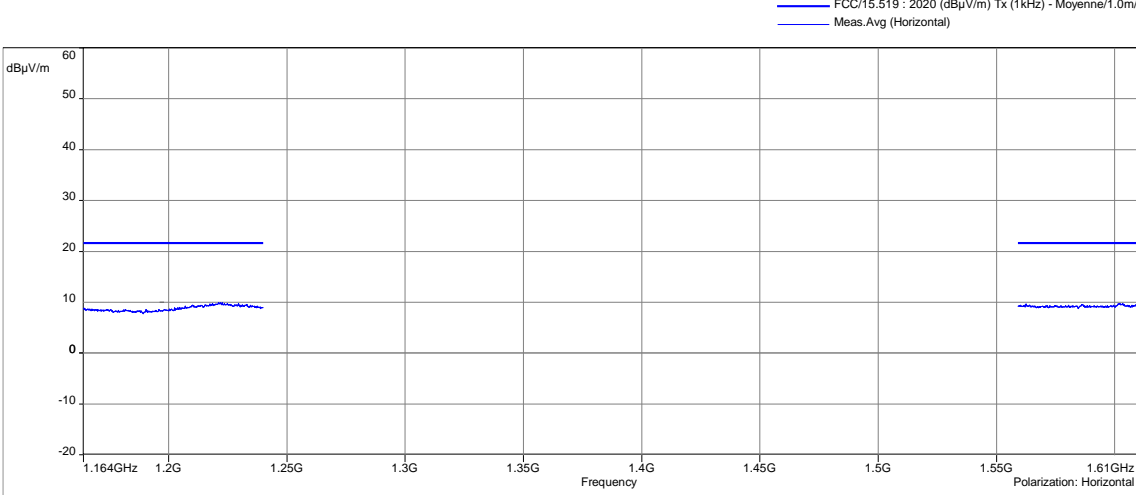
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / LOW CHANNEL / POSITION 3			EMI4541	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

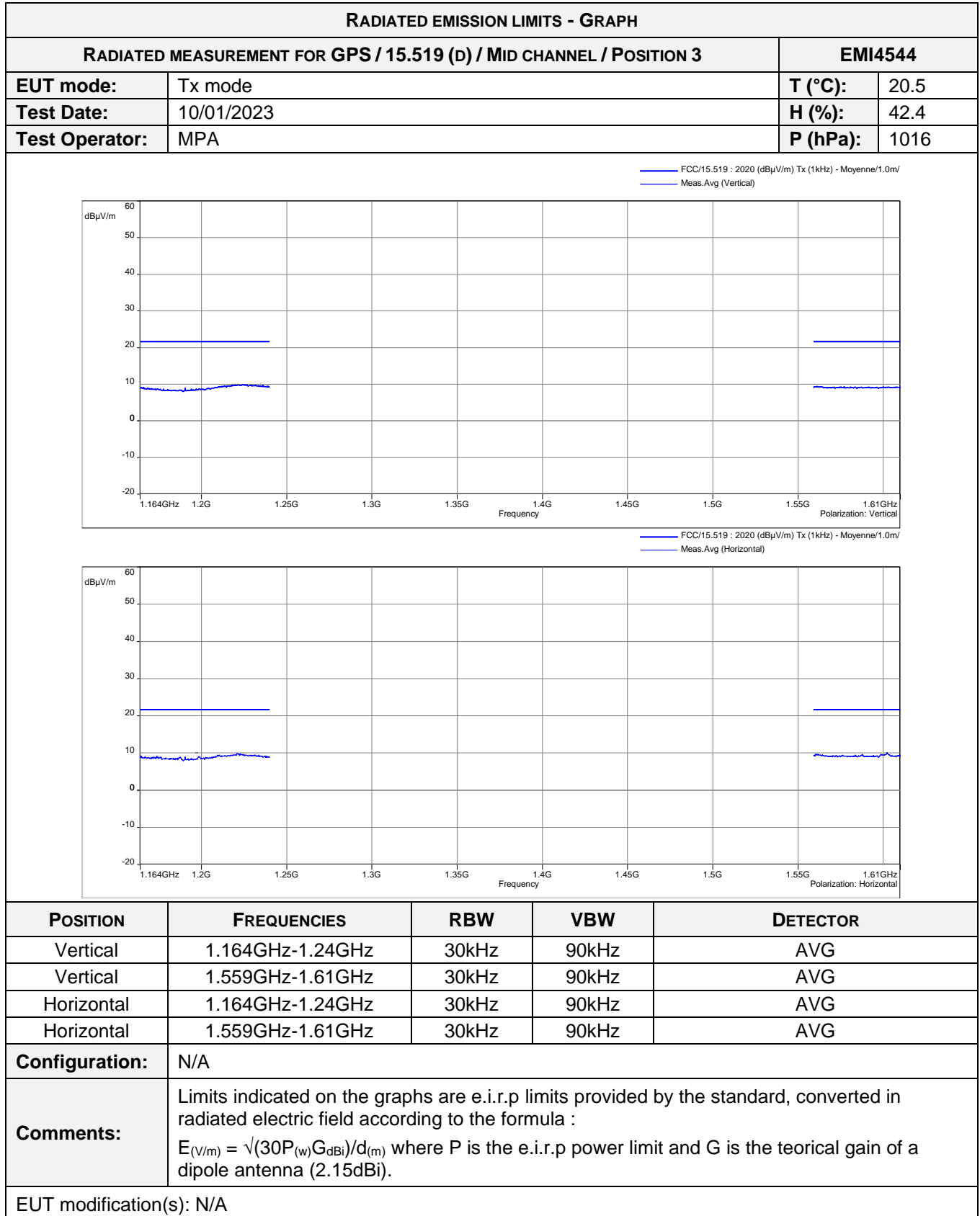
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / MID CHANNEL / POSITION 1			EMI4542	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

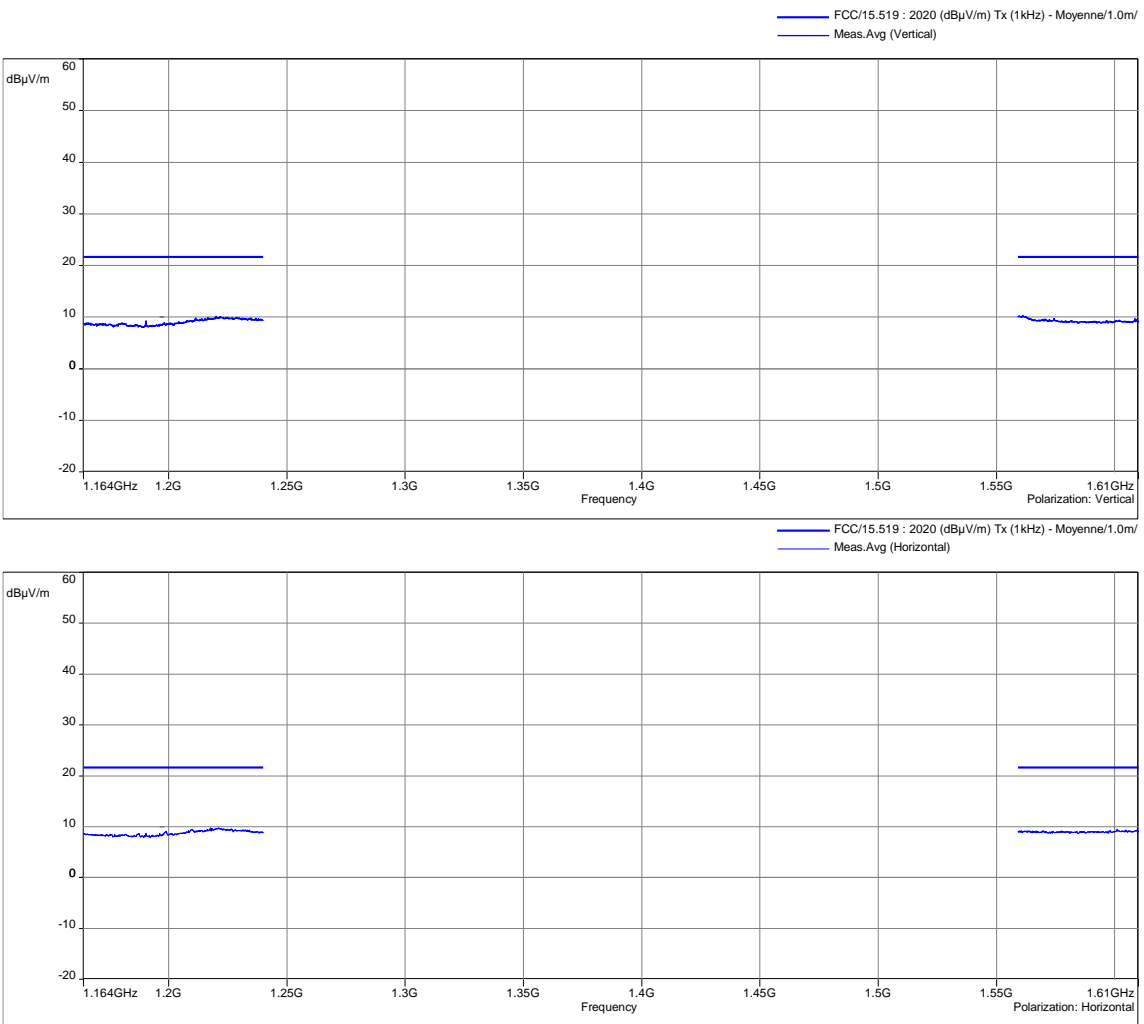
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH					
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / MID CHANNEL / POSITION 2				EMI4543	
EUT mode:	Tx mode			T (°C):	20.5
Test Date:	10/01/2023			H (%):	42.4
Test Operator:	MPA			P (hPa):	1016
					
					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG	
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG	
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG	
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG	
Configuration:	N/A				
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).				
EUT modification(s): N/A					

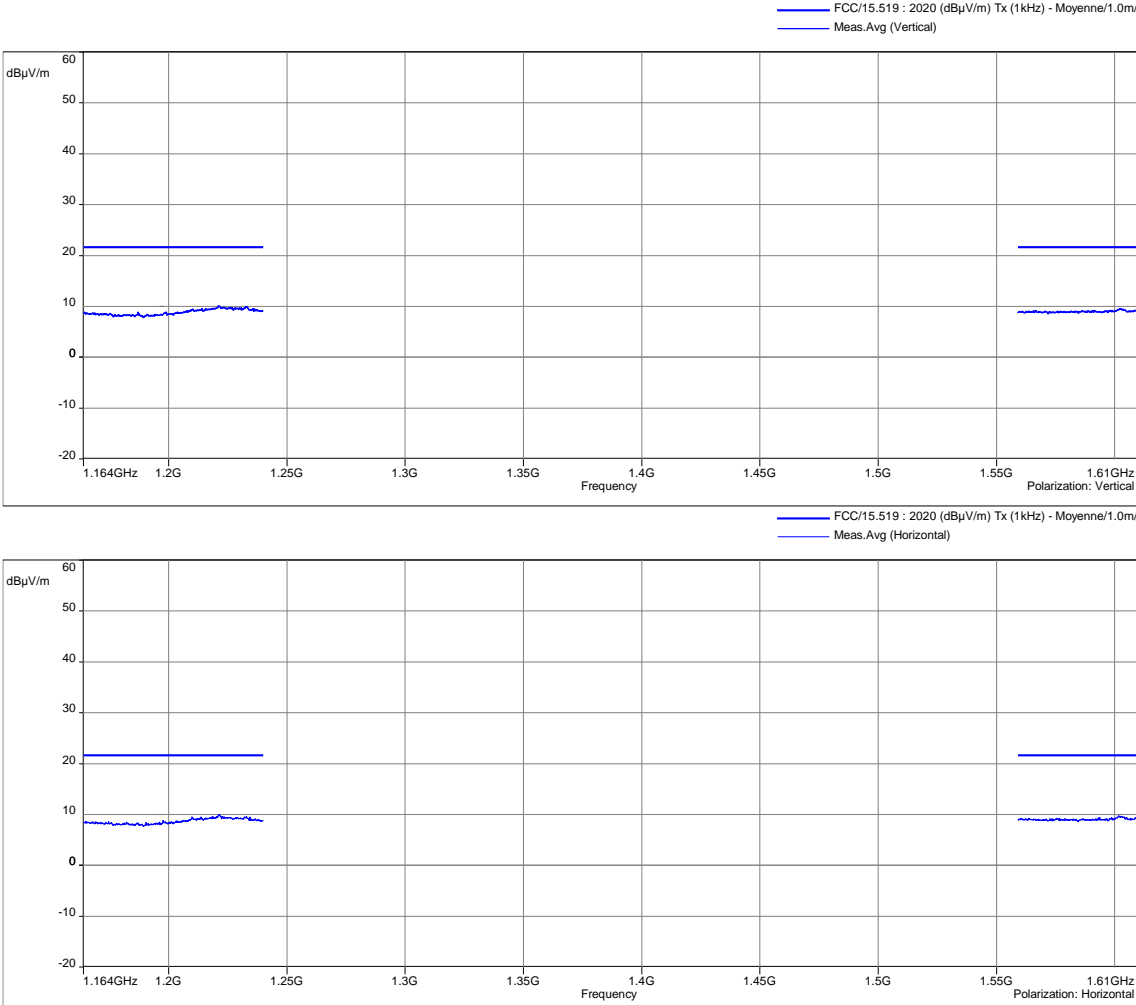
No spurious emissions were detected.



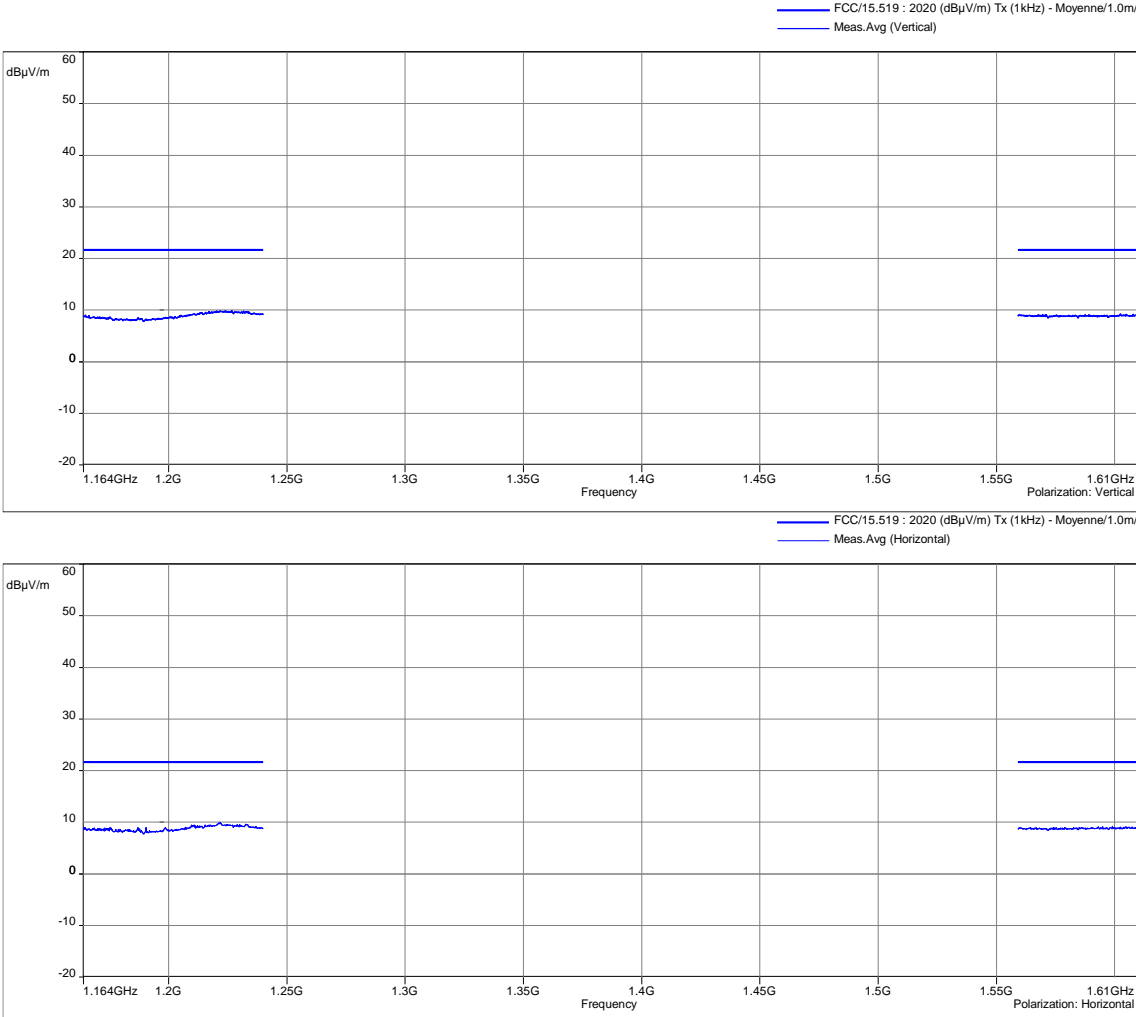
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / HIGH CHANNEL / POSITION 1			EMI4545	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})}/d_{(m)}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

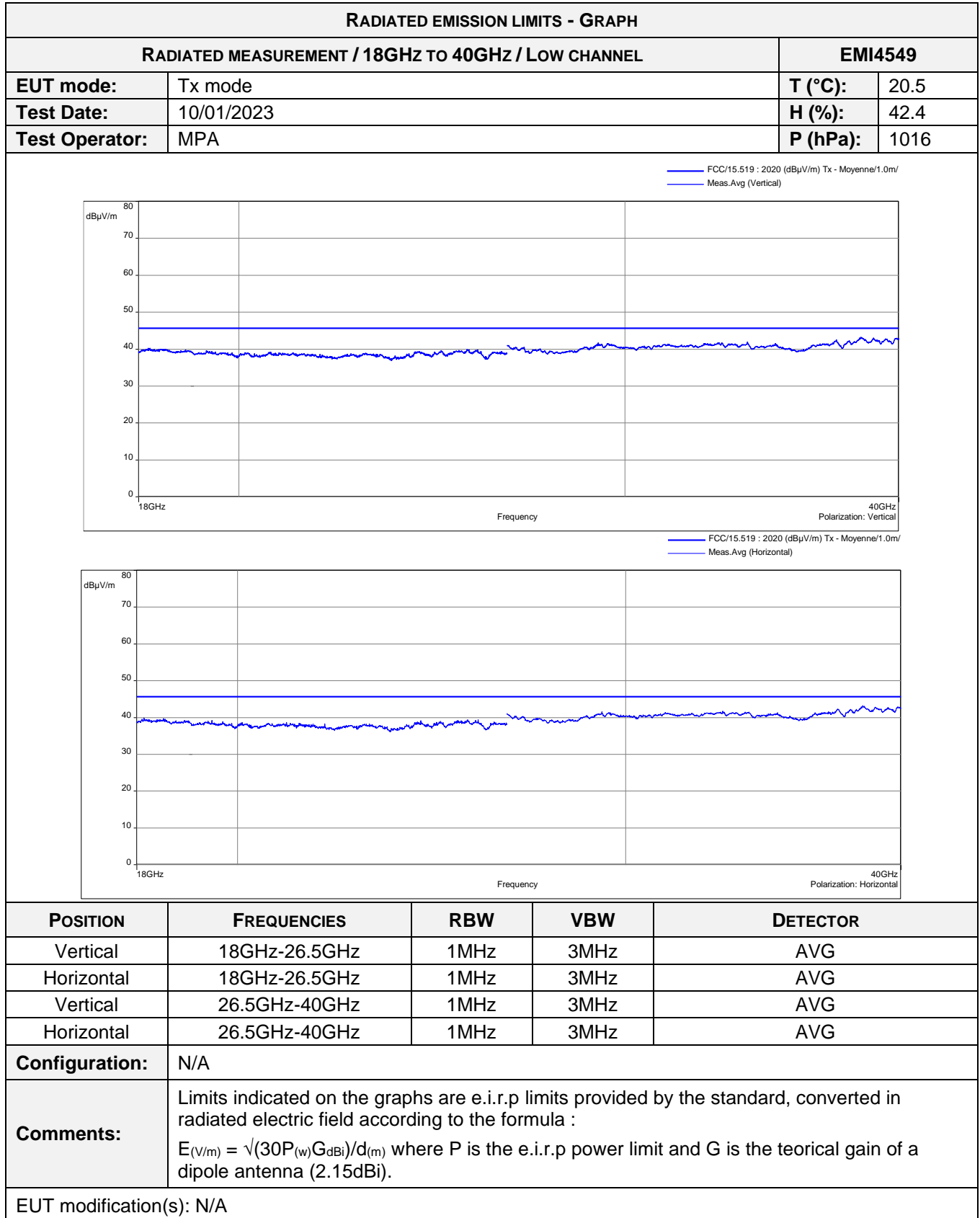
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / HIGH CHANNEL / POSITION 2			EMI4546	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

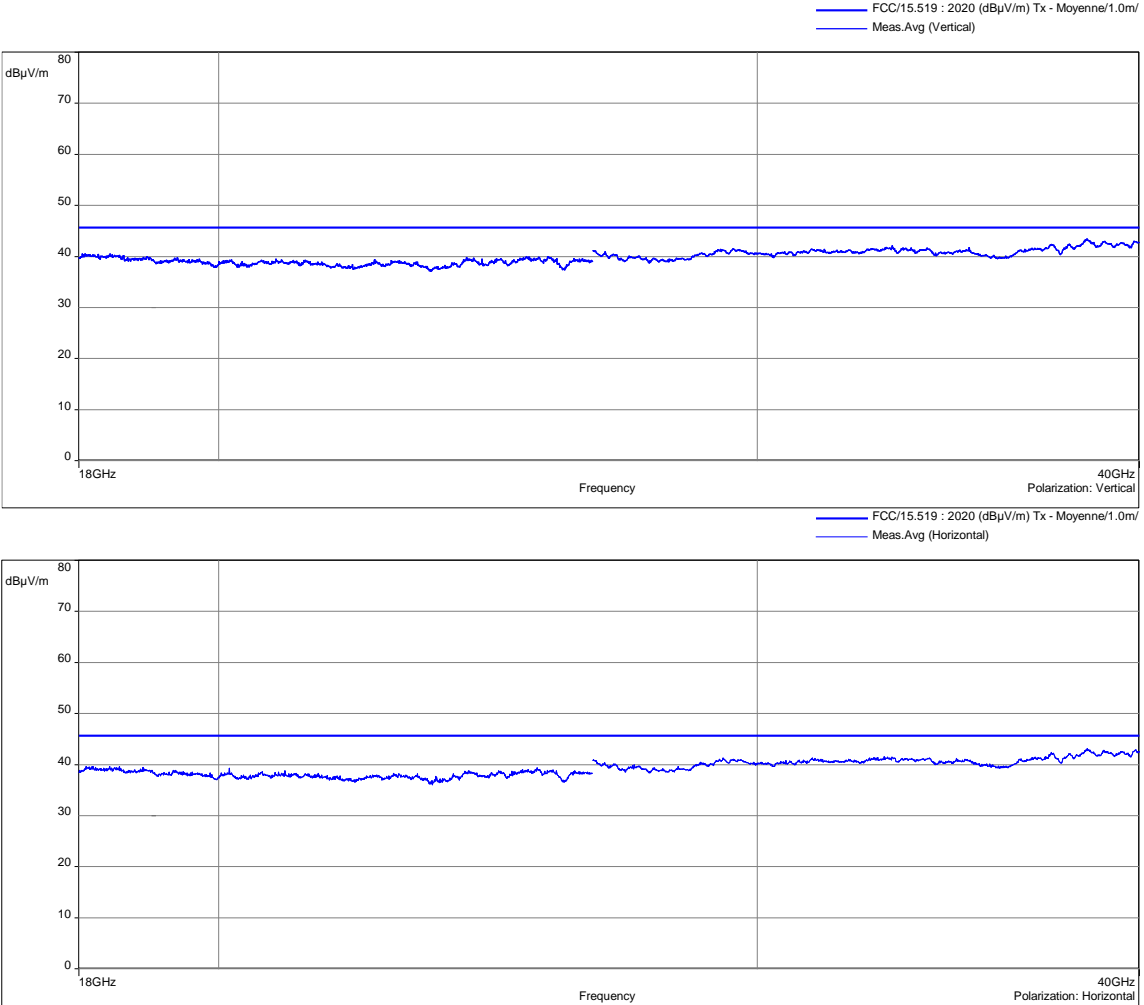
No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT FOR GPS / 15.519 (D) / HIGH CHANNEL / POSITION 3			EMI4547	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Vertical	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Horizontal	1.164GHz-1.24GHz	30kHz	90kHz	AVG
Horizontal	1.559GHz-1.61GHz	30kHz	90kHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})}/d_{(m)}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

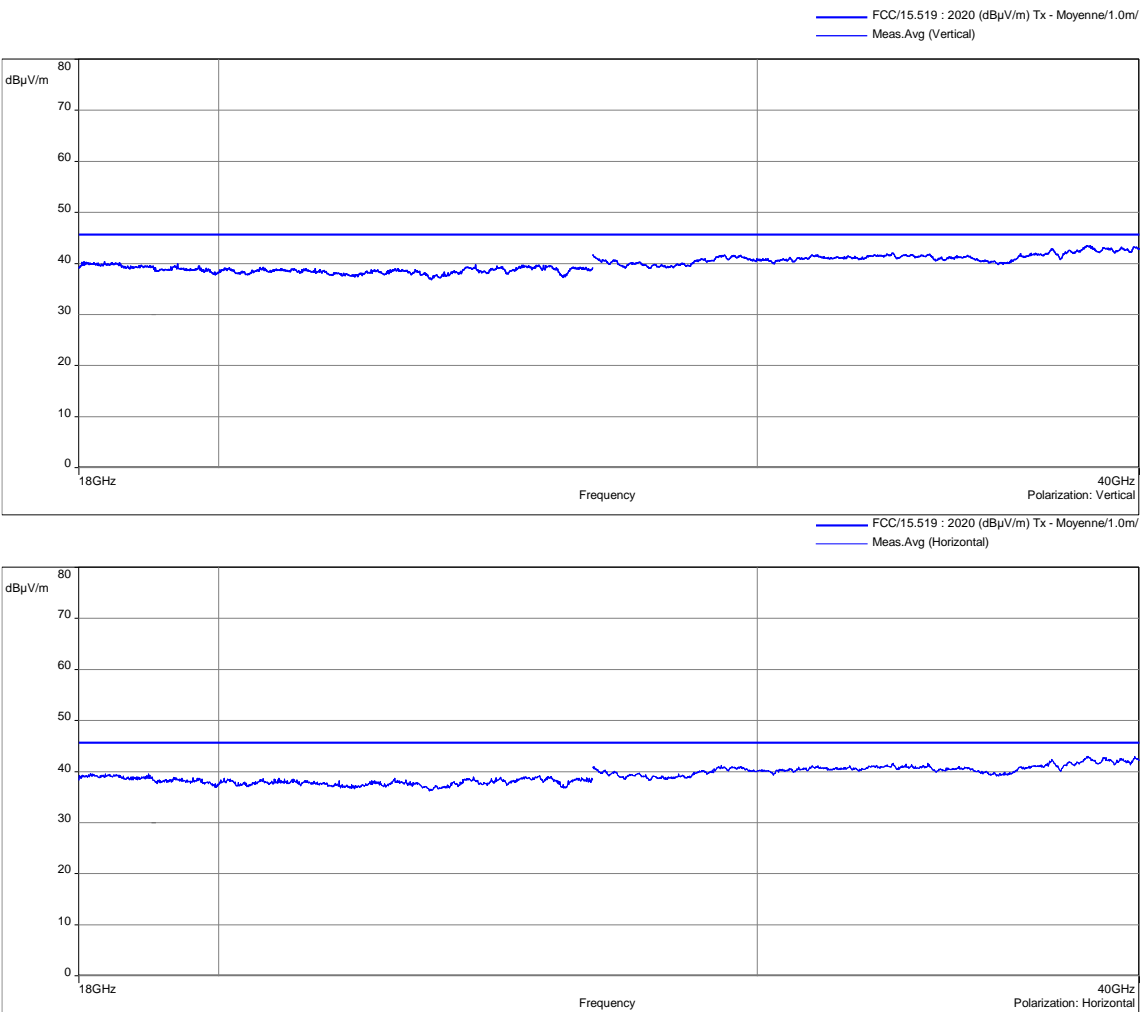
No spurious emissions were detected.



No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 18GHZ TO 40GHZ / MID CHANNEL			EMI4550	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	18GHz-26.5GHz	1MHz	3MHz	AVG
Horizontal	18GHz-26.5GHz	1MHz	3MHz	AVG
Vertical	26.5GHz-40GHz	1MHz	3MHz	AVG
Horizontal	26.5GHz-40GHz	1MHz	3MHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

No spurious emissions were detected.

RADIATED EMISSION LIMITS - GRAPH				
RADIATED MEASUREMENT / 18GHZ TO 40GHZ / HIGH CHANNEL			EMI4551	
EUT mode:	Tx mode		T (°C):	20.5
Test Date:	10/01/2023		H (%):	42.4
Test Operator:	MPA		P (hPa):	1016
				
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	18GHz-26.5GHz	1MHz	3MHz	AVG
Horizontal	18GHz-26.5GHz	1MHz	3MHz	AVG
Vertical	26.5GHz-40GHz	1MHz	3MHz	AVG
Horizontal	26.5GHz-40GHz	1MHz	3MHz	AVG
Configuration:	N/A			
Comments:	Limits indicated on the graphs are e.i.r.p limits provided by the standard, converted in radiated electric field according to the formula : $E_{(V/m)} = \sqrt{(30P_{(w)}G_{dBi})/d_{(m)}}$ where P is the e.i.r.p power limit and G is the teorical gain of a dipole antenna (2.15dBi).			
EUT modification(s): N/A				

No spurious emissions were detected.

7.5. Maximum peak output power of UWB device

Reference standard:	FCC part 15.519
Test method:	ANSI C63.10 : 2013
<p>General test setup: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_m. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.</p> <p>For $f > 1\text{GHz}$, EUT is set on an insulating support at 150cm above the ground reference plane.</p> <p>Measurements are performed in a semi-anechoic chamber at 1m test distance in order to optimise measurement dynamic.</p> <p>For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.</p>	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement / 50MHz / Channel 1	3.24444GHz-3.74444GHz	0dBm / 15.521	EMI4522	PASS
Radiated measurement / 50MHz / Channel 2	3.5GHz-4.5GHz	0dBm / 15.521	EMI4523	PASS
Radiated measurement / 50MHz / Channel 3	4.2428GHz-4.7428GHz	0dBm / 15.521	EMI4524	PASS
Radiated measurement / 50MHz / Channel 4	3GHz-5GHz	0dBm / 15.521	EMI4525	PASS
Radiated measurement / 50MHz / Channel 5	6.2396GHz-6.7396GHz	0dBm / 15.521	EMI4526	PASS
Radiated measurement / 50MHz / Channel 7	5.5GHz-7.5GHz	0dBm / 15.521	EMI4527	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(es)
Relative Humidity	20 to 75 %	See Graph(es)
Atmospheric pressure	N/A	See Graph(es)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED – 30MHZ TO 40GHZ					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Attenuator	EMITECH	SUB.V2-H	14495	05/01/2022	05/03/2023
Attenuator	EMITECH	SUB.V2-V	14496	05/01/2022	05/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-3m	14379	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Cable	Huber + Suhner	SF102K	16042	24/03/2021	24/05/2023
Preamplifier	Techniwave	APS16-0087	14040	06/04/2022	06/06/2023
Receiver	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023 ⁽¹⁾
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

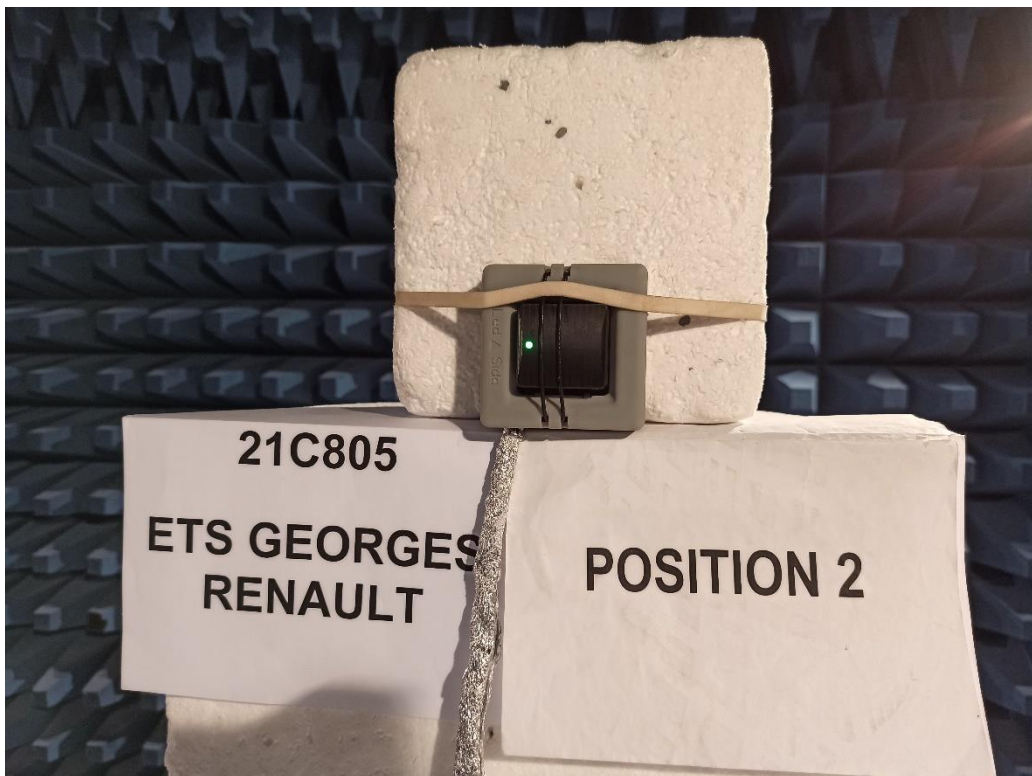
Blank cells = Permanent validity

⁽¹⁾ Under derogation EQSDER000S4100100

TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 1 / >GHZ



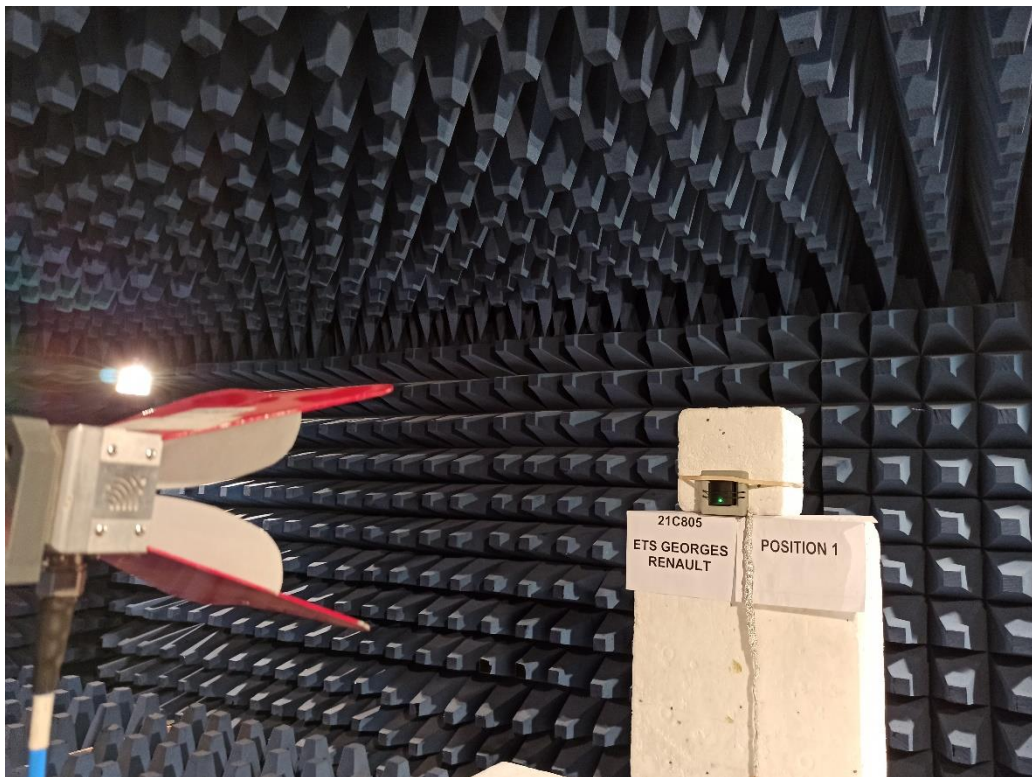
TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 2 / >GHZ



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / POSITION 3 / >GHZ

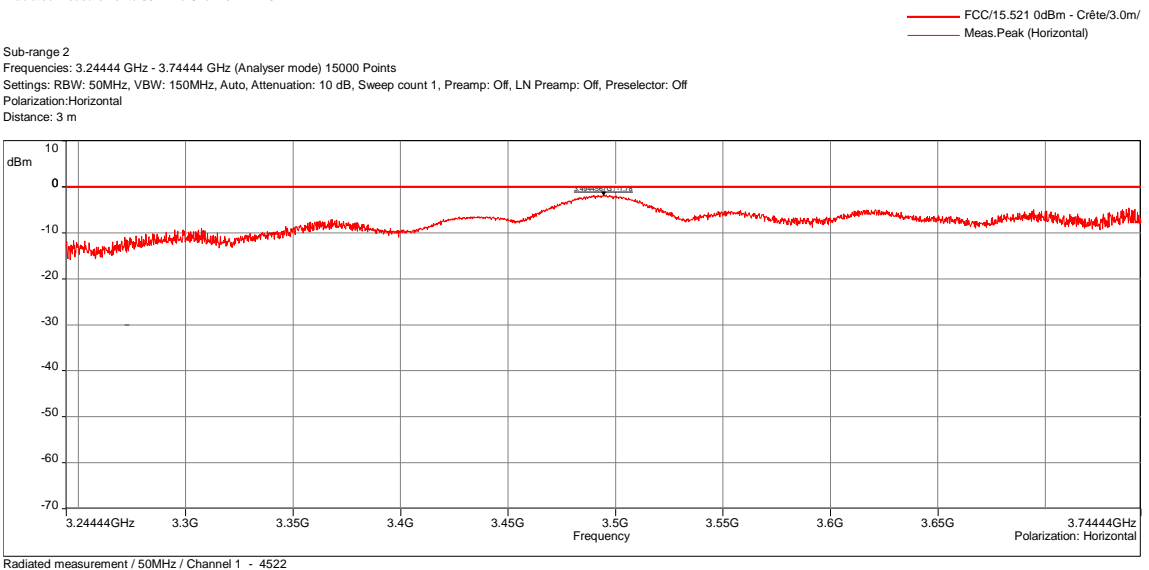
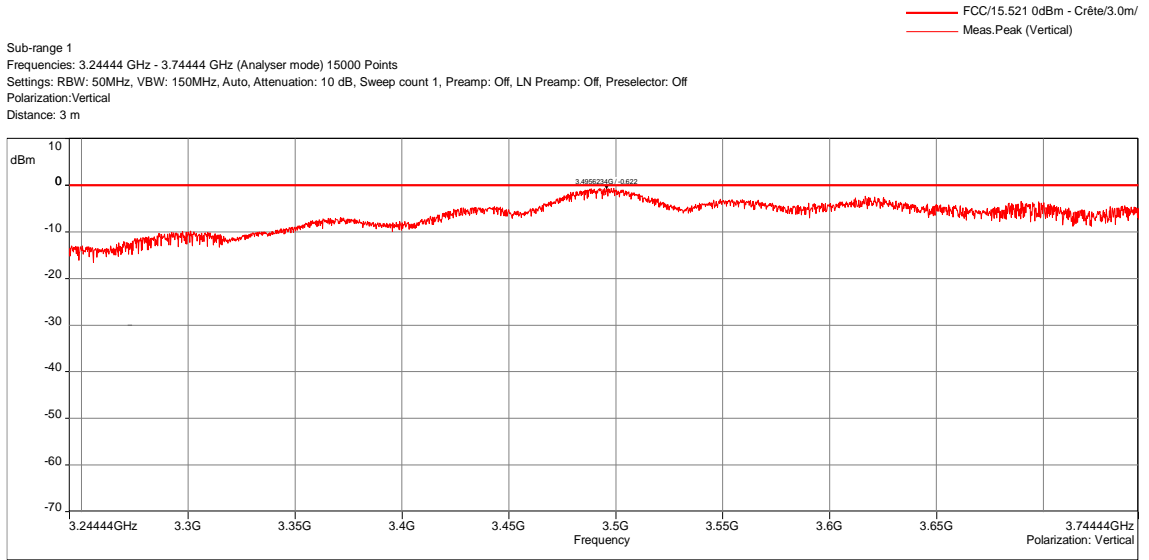


TEST SETUP PHOTO(S) - RADIATED MEASUREMENT / 1GHZ TO 18GHZ



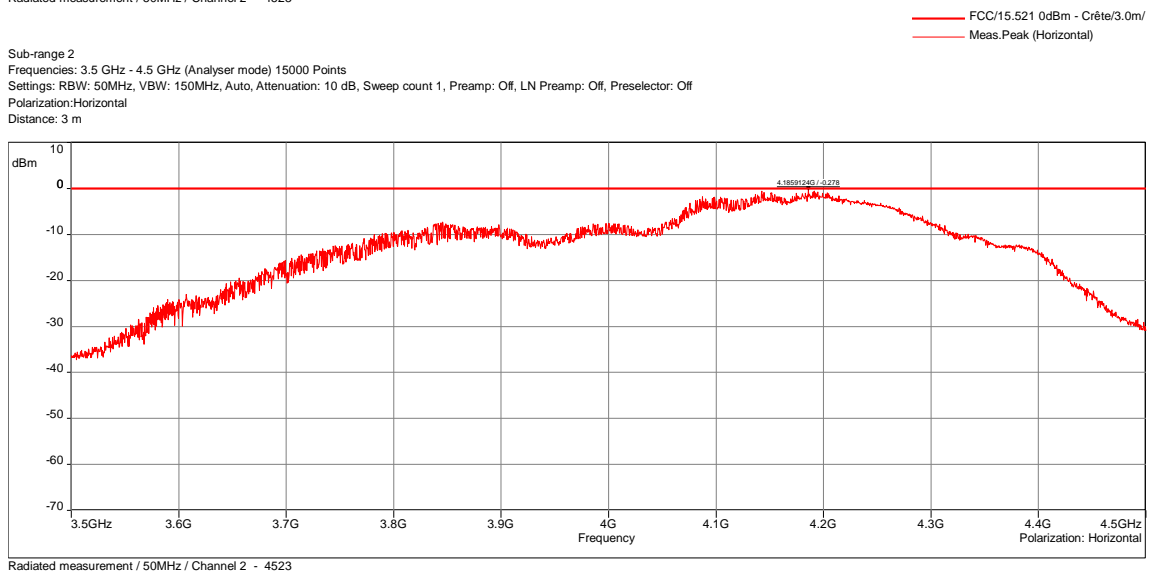
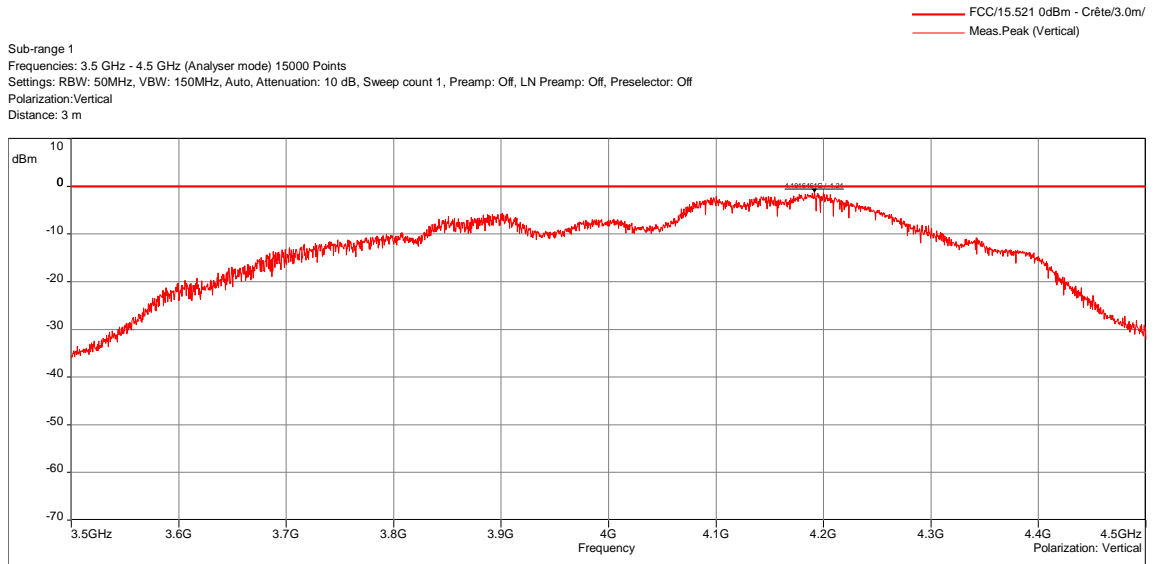
NB : As stipulated in the ANSI C63.10 standard, absorbers are positioned between the antenna and the test object (not visible in the photo).

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - GRAPH			
RADIATED MEASUREMENT / 50MHz / CHANNEL 1			EMI4522
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



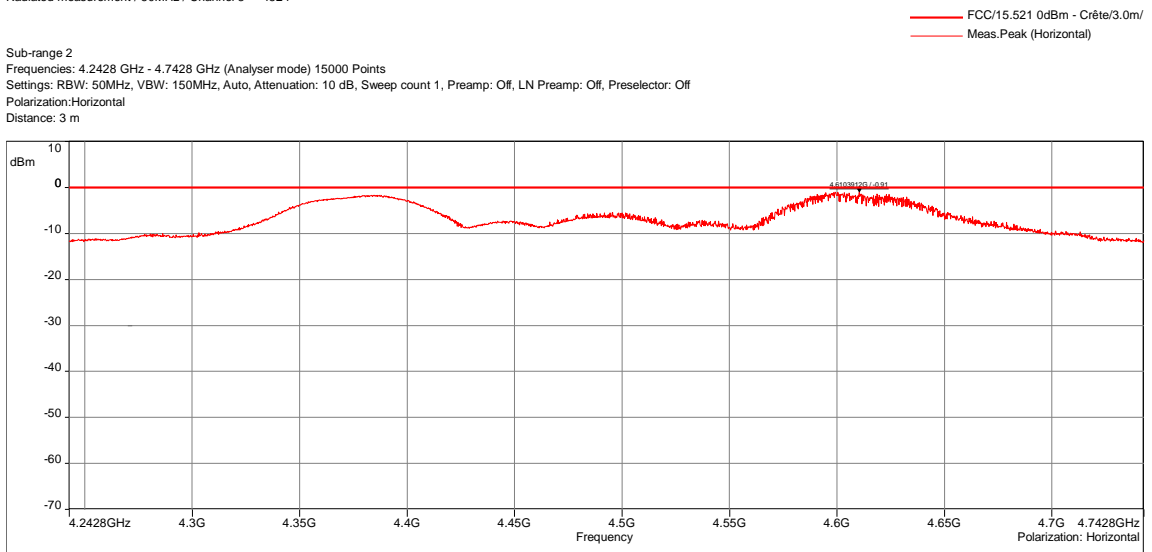
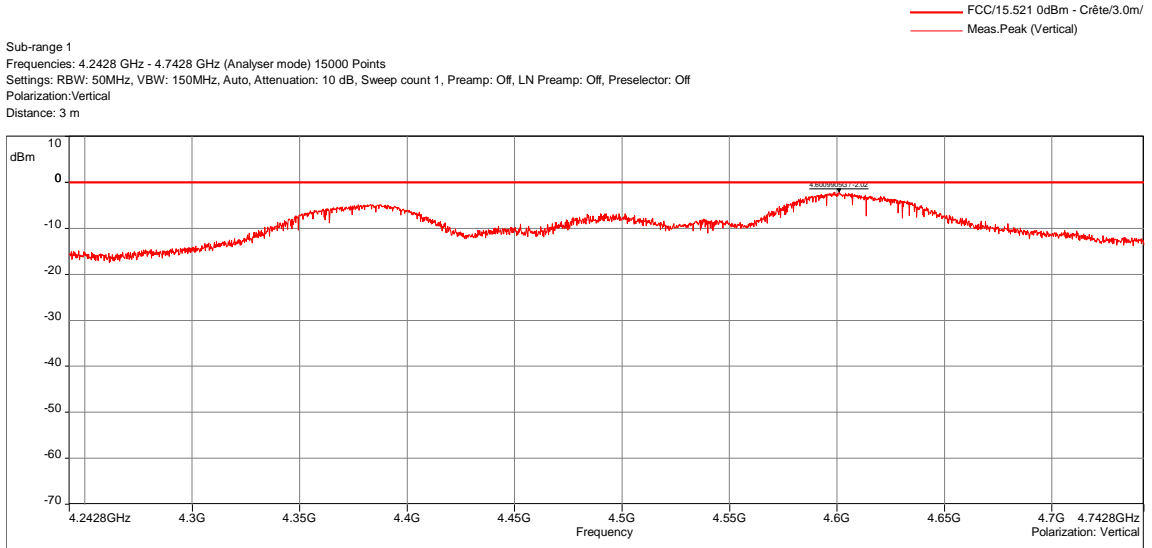
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	3.24444GHz-3.74444GHz	50MHz	150MHz	Peak
Horizontal	3.24444GHz-3.74444GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 27			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
3495.62	Vertical	-0.62	0	
3494.45	Horizontal	-1.78	0	

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
RADIATED MEASUREMENT / 50MHZ / CHANNEL 2			EMI4523
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



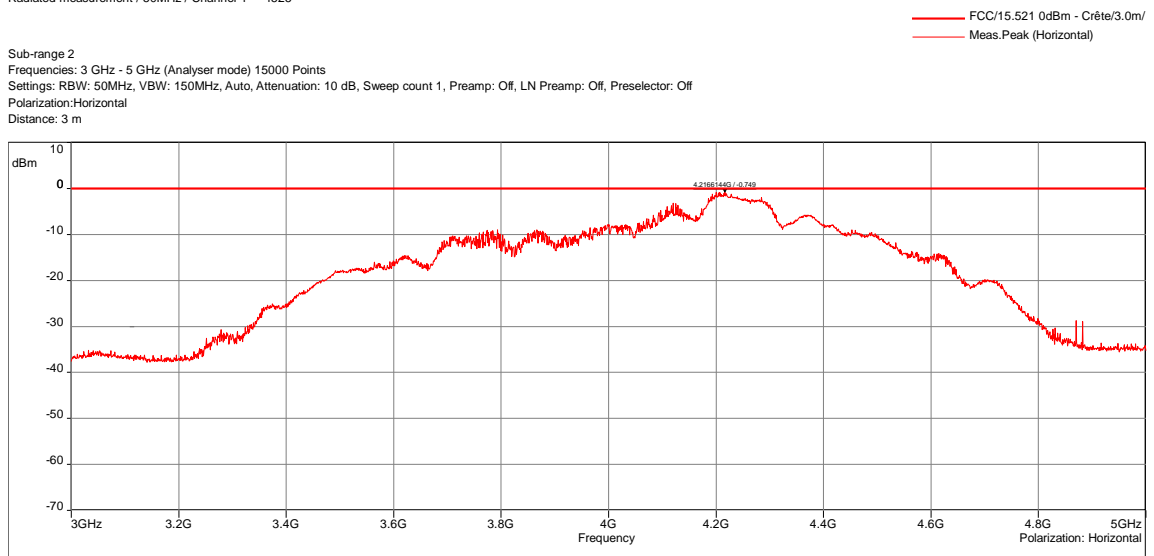
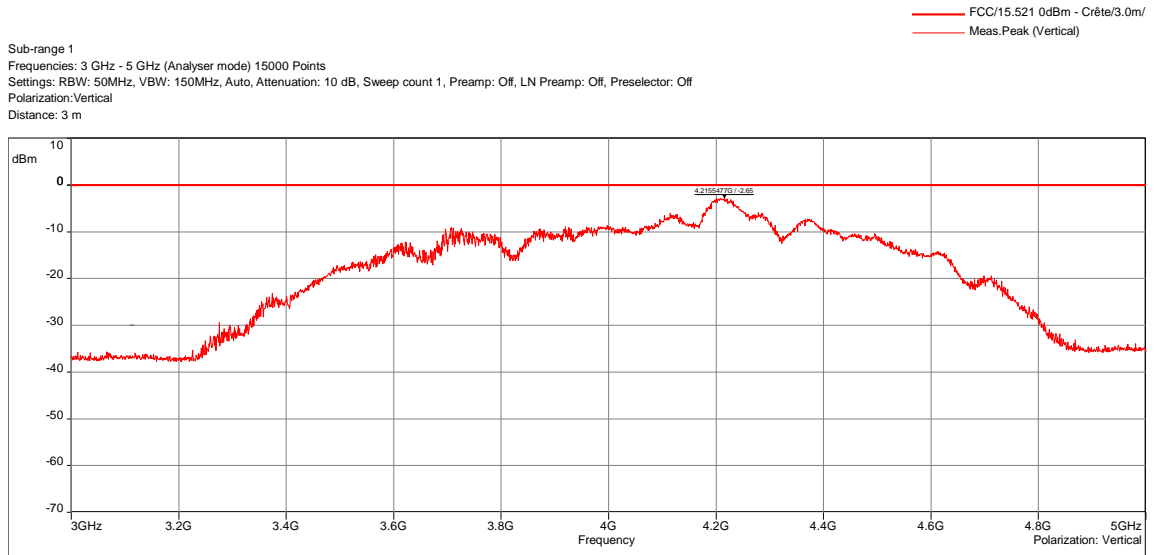
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	3.5GHz-4.5GHz	50MHz	150MHz	Peak
Horizontal	3.5GHz-4.5GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 20			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
4191.64	Vertical	-1.24	0	
4185.91	Horizontal	-0.28	0	

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
RADIATED MEASUREMENT / 50MHZ / CHANNEL 3			EMI4524
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



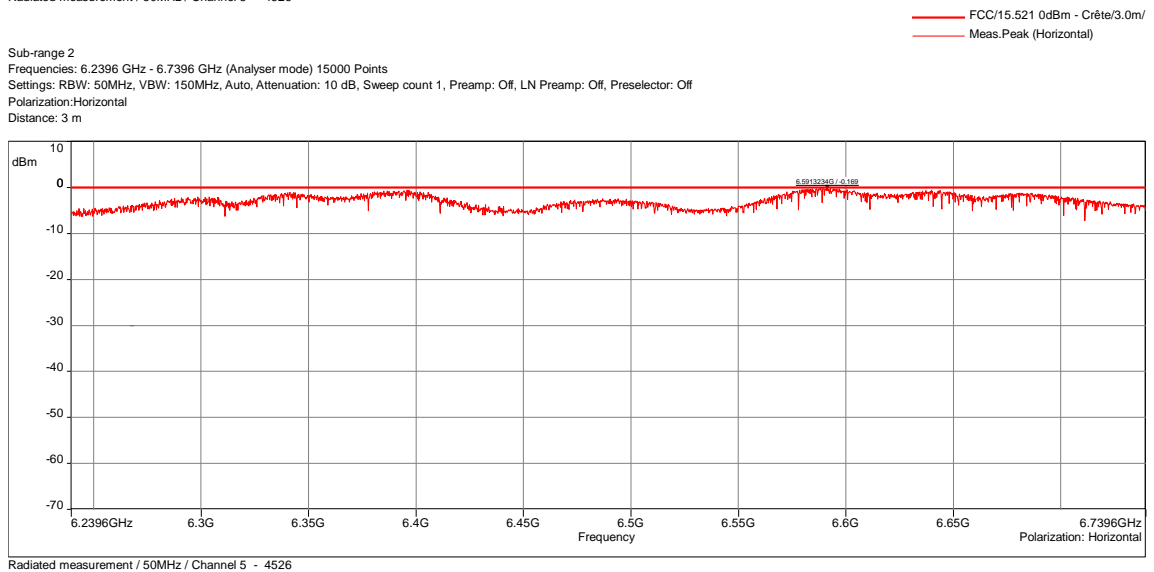
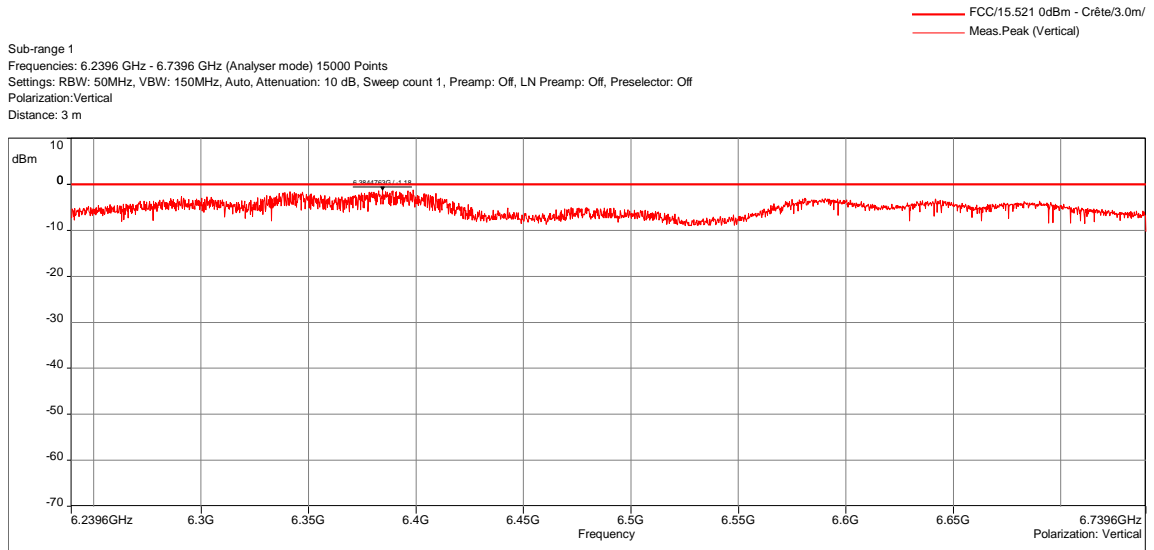
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	4.2428GHz-4.7428GHz	50MHz	150MHz	Peak
Horizontal	4.2428GHz-4.7428GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 14			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
4600.99	Vertical	-2.02	0	
4610.39	Horizontal	-0.91	0	

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - GRAPH			
RADIATED MEASUREMENT / 50MHz / CHANNEL 4			EMI4525
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



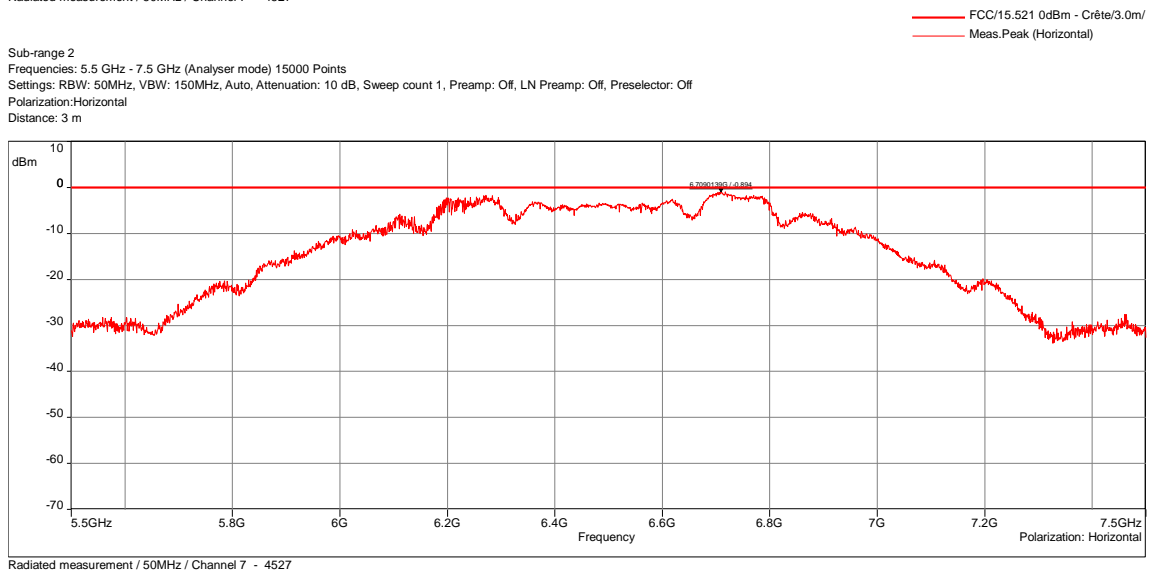
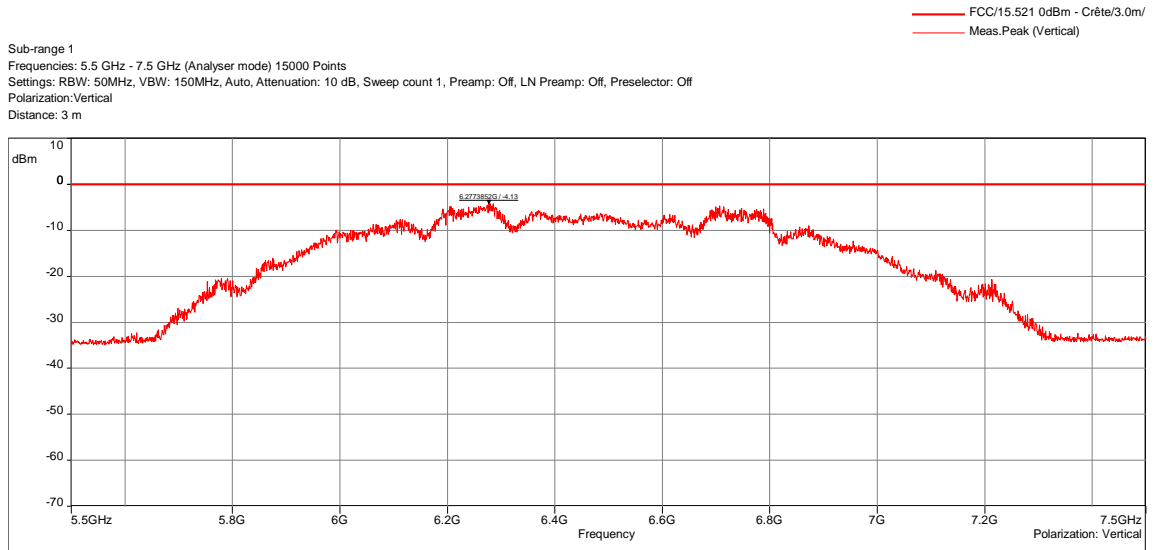
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	3GHz-5GHz	50MHz	150MHz	Peak
Horizontal	3GHz-5GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 24			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
4215.54	Vertical	-2.65	0	
4216.61	Horizontal	-0.75	0	

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
RADIATED MEASUREMENT / 50MHZ / CHANNEL 5			EMI4526
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	6.2396GHz-6.7396GHz	50MHz	150MHz	Peak
Horizontal	6.2396GHz-6.7396GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 19			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
6294.47	Vertical	-1.19	0	
6591.32	Horizontal	-0.17	0	

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
RADIATED MEASUREMENT / 50MHZ / CHANNEL 7			EMI4527
EUT mode:	Tx mode		T (°C): 20.9
Test Date:	09/01/2023		H (%): 42.5
Test Operator:	MPA		P (hPa): 1015



POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	5.5GHz-7.5GHz	50MHz	150MHz	Peak
Horizontal	5.5GHz-7.5GHz	50MHz	150MHz	Peak
Configuration:	N/A			
Comments:	Power set at 18			
EUT modification(s): N/A				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	
6277.38	Vertical	-4.13	0	
6709.01	Horizontal	-0.89	0	

End of test report