Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006
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RADIO TEST REPORT

KDB 996369 D04 Module Integration Guide v02
FCC 47 CFR PART 15 : May 2022
FCC part 15.249
RSS-210, Issue 10, April 2020
(Partial test)

Company ..... :	**OBERTHUR CASH PROTECTION**
Address..... :	3 BIS RUE DOCTEUR QUIGNARD ZAE CAP NORD 21000 DIJON FRANCE
Test item description. ..... :	**ICSD (In-Cassette Staining Device) for IBNS (Intelligent Banknote Neutralisation System) / ATM device**
Trade Mark. ..... :	Oberthur Cash Protection
Manufacturer..... :	Oberthur Cash Protection
Model/Type reference..... :	OCPICSDSCM / OCP_ICSD-SR
FCC ID..... :	2AXRGOCPICSDSCM
IC. ..... :	26545-OCPICSDSCM
Ratings..... :	2.7Vdc to 3.6Vdc (internal battery)
Testing Laboratory ..... :	**EMITECH MONTPELLIER laboratory**
Address..... :	145 rue de Massacan 34740 VENDARGUES FRANCE
Report Reference No..... :	**RR-EVE-22L237-2A**
Test procedure. ..... :	FCC IC Certification
Diffusion..... :	M. EZERZER Hugo
Applicant's name. ..... :	OBERTHUR CASH PROTECTION
Date of issue..... :	November 22, 2022
Total number of pages..... :	31
Revision. ..... :	0
Compiled by..... :	Célien FOUGEROLLE
Approved by (+ signature). ..... :	Olivier HEYER (Laboratory Manager)

Duplication of this test report is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above. This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

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REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	November 22, 2022	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **ICSD NCR SR / IOXXX** (denominated hereafter E.U.T.: equipment under test) according to document(s) listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:

Testing Location ..... :	EMITECH MONTPELLIER laboratory
Address. ..... :	145 rue de Massacan 34740 VENDARGUES FRANCE
Test procedure. ..... :	FCC IC Certification
Tested by ..... :	Célien FOUGEROLLE
Test supervisor ..... :	Olivier AELBRECHT
Date of receipt of test item ..... :	N/A
Date (s) of performance of tests ..... :	June, the 28th and the 29th of 2022

APPLICANT'S GENERAL INFORMATIONS:

Company name ..... :	OBERTHUR CASH PROTECTION
Company address. ..... :	3 BIS RUE DOCTEUR QUIGNARD ZAE CAP NORD 21000 DIJON FRANCE
Person(s) present during the tests. ..... :	M. EZERZER Hugo
Responsible. ..... :	M. EZERZER Hugo

GENERAL REMARKS:

The information in italics is declared by the manufacturer and is under his responsibility
The test results presented in this report relate only to the object tested.
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report the decimal separator is point.

POSSIBLE TEST CASE VERDICTS:

Test case does not apply to the test object.:	N/A
Test case not performed..... :	N/P
Test object does meet the requirement..... :	P (Pass)
Test object does not meet the requirement. ..... :	F (Fail)

DEFINITIONS AND ABBREVIATIONS:

E.U.T.	Equipment Under Test	AE	Ancillary Equipment	Pk	Peak detector
RBW	Resolution BandWidth	VBW	Video BandWidth	QP	Quasi-peak detector
OATS	Open Area Test Site	FAR	Full Anechoic Room	Av	Average detector
VP	Vertical Polarization	HP	Horizontal Polarization	RMS	Root Mean Square
RF	Radio Frequency	N.T.R	Nothing To Report	N/C	Not Communicated

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:
The following referenced documents are necessary for the application of the present test report. **KDB 996369 D04 Module Integration Guide v02** Modular transmitter integration guide. Guidance for host product manufacturers. **FCC 47 CFR PART 15 : May 2022** Code of federal regulations. Title 47- Telecommunication Chapter 1- Federal Communication Commission. Part 15- Radio frequency devices Subpart B- Unintentional Radiators. Limits and methods of measurement of radio disturbance. Characteristic of information technology equipment. **FCC part 15.249** Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHZ, and 24.0-24.25 GHz. **RSS-210, Issue 10, April 2020** Licence-Exempt Radio Apparatus: Category I Equipment **RSS -Gen, Issue 5, April 2018 / AMD1: 2019 / AMD2: 2021** General Requirements for Compliance of Radio Apparatus **ANSI C 63.10:2013** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices **KDB 447498 D01 General RF Exposure Guidance V06** RF exposure procedures and equipment authorization. Policies for mobile and portable 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. ..... :	ICSD (In-Cassette Staining Device) for IBNS (Intelligent Banknote Neutralisation System) / ATM device
Model/Type reference..... :	OCPICSDSCM / OCP_ICSD-SR
Trade Mark. ..... :	Oberthur Cash Protection
Serial number (S/N). ..... :	I85195
Part number (P/N). ..... :	N/A
Software version. ..... :	*N/A*
Firmware version. ..... :	*L262 6.80*
Type of sample. ..... :	Pre serial
Function(s)..... :	IBNS devices: ATM protection range of product ICSD : IBNS cassette module, permit to stain banknotes in case of attack detection
Manufacturer name. ..... :	OBERTHUR CASH PROTECTION
Address. ..... :	3 BIS RUE DOCTEUR QUIGNARD 21000 DIJON FRANCE

General product information:

N/A

3.2. EUT Marking plate

Marking plate provided by customer:

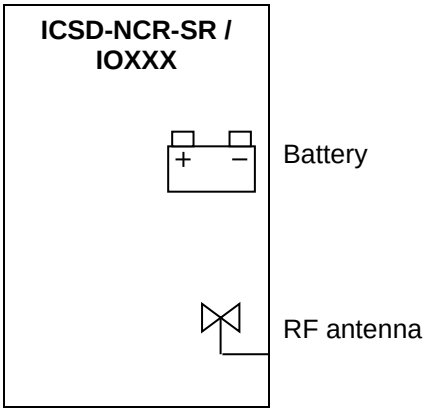
3.3. EUT General view

3.4. EUT Mechanical and Electrical Design

Power supply. ..... : *3.6Vdc*
Power supply range. ..... : *2.7Vdc to 3.6Vdc*
Power type. ..... : *Internal battery*
Power (W). ..... : *<2mW*
Nominal current (A). ..... : *<500µA*
Dimensions (L x W x H) (m). ..... : *0.480 x 0.200 x 0.135*
Weight (kg). ..... : *5*
Temperature range (°C). ..... : *-20°C to +65°C*
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	3.6Vdc
2	RF antenna	RF	N/A	N/A	PCB printed

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

3.6. EUT Radio Specifications

a) GENERAL INFORMATIONS
According to manufacturer's declarations : EUT type..... : *Transceiver* Technology..... : *SRD* Environmental profile..... : *Data transmissions* Temperature range..... : *-20°C to +65°C* Antenna type ..... : *Integrated* Antenna Gain..... : *Not communicated* **Comments:** *EUT includes an RF module already certified, see appropriates tests report for full testing results* ***FCC ID : 2AXRGOCPICSDSCM*** ***IC : 26545-OCPICSDSCM***
b) TRANSMITTER PARAMETERS (TX)
Frequency bands..... : *902 - 928 MHz* RF Power..... : *0dBm* Number of channels / Separation..... : *2 channels* Modulation type ..... : *GFSK* Duty cycle ..... : *0.1%* Tested frequency..... : *Low channel : 915.03MHz* *High channel : 915.6MHz*

4. OPINION(S) AND INTERPRETATION(S)

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
FCC part 15.207 RSS-Gen	N/A
FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210	N/A
FCC part 15 Radio part 15.249 RSS-210	N/A

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Duty Cycle of Test Signal	-	-	**Used to compute duty cycle correction factor for average spurious measurement.**
Radiated spurious emissions			**FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210**
- Tx mode - All channels - 0°	15.209	**PASS**	
- Tx mode – All channels – 45°	15.209	**PASS**	
- Tx mode – All channels – 90°	15.209	**PASS**	
- Spurious -Tx mode - Low channel - For Freq <1GHz	15.209	**PASS**	
- Spurious - Tx mode - High channel - For Freq <1GHz	15.209	**PASS**	
- Spurious - Tx mode - Low channel - For Freq >1GHz	15.209	**PASS**	
- Spurious - Tx mode - High channel - For Freq >1GHz	15.209	**PASS**	
Equivalent isotropic radiated power			**FCC part 15 Radio part 15.249 RSS-210**
- RF output power / Tx mode – Low channel	93.98 dBµV/m	**PASS**	
- RF output power / Tx mode - High channel		**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)
FCC part 15.207 RSS-Gen	N/A
FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210	N/A
FCC part 15 Radio part 15.249 RSS-210	N/A

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	± 1 x 10^{-7}	±1 x 10^{-7}
Supply voltages	± 3 %	± 3 %
Temperature	± 1 °C	± 1°C
Humidity	± 5 %	± 5 %
Conducted emission (FCC)		
(Artificial Mains Network) 150kHz – 30MHz	± 3.4 dB	± 3.4 dB
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	± 2.7 dB	/
30MHz – 1GHz	± 5.0 dB	/
1GHz – 18GHz	± 5.3 dB	/
18GHz – 40GHz	± 6.1 dB	/
40GHz – 140GHz	± 5.7 dB	/

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

7. RF EXPOSURE

RF EXPOSURE – TABULATED RESULT		
FREQUENCY (MHz)	**MAXIMUM EIRP (dBm)**	**MAXIMUM EIRP (mW)**
915.08	-4.83	0.329

In accordance with KDB 447498 D01 General RF Exposure Guidance v06 and OET Bulletin 65 (1997):

$$PSD = \frac{EIRP_{mW}}{4 \times \pi \times d^2}$$

d : distance of use in centimeter

$$PSD = \frac{0.329}{4 \times \pi \times 20cm^2}$$

RESULT	**LIMIT**
0.00007 mW/cm²	0.61 mW/cm²

In accordance with RSS-102, Issue 5, Section 2.5.2., as EIRP is lower than 1.38W at 915.08 MHz, routine evaluation exemption of RF exposure for ISED can be considered for a distance > 20cm.

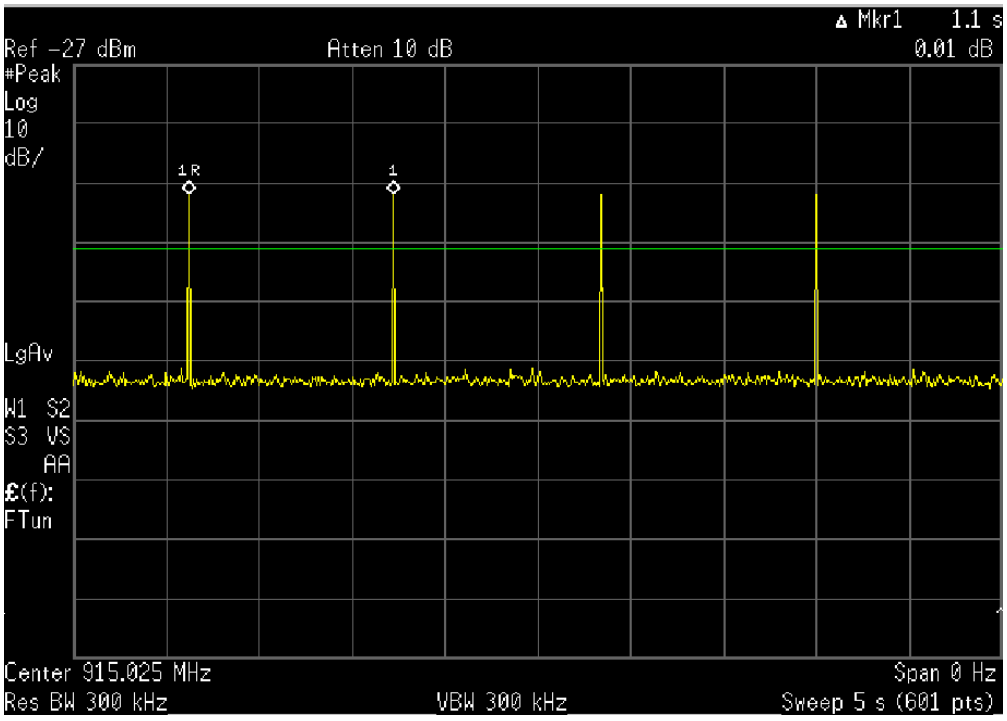
8. TEST CONDITIONS AND RESULTS

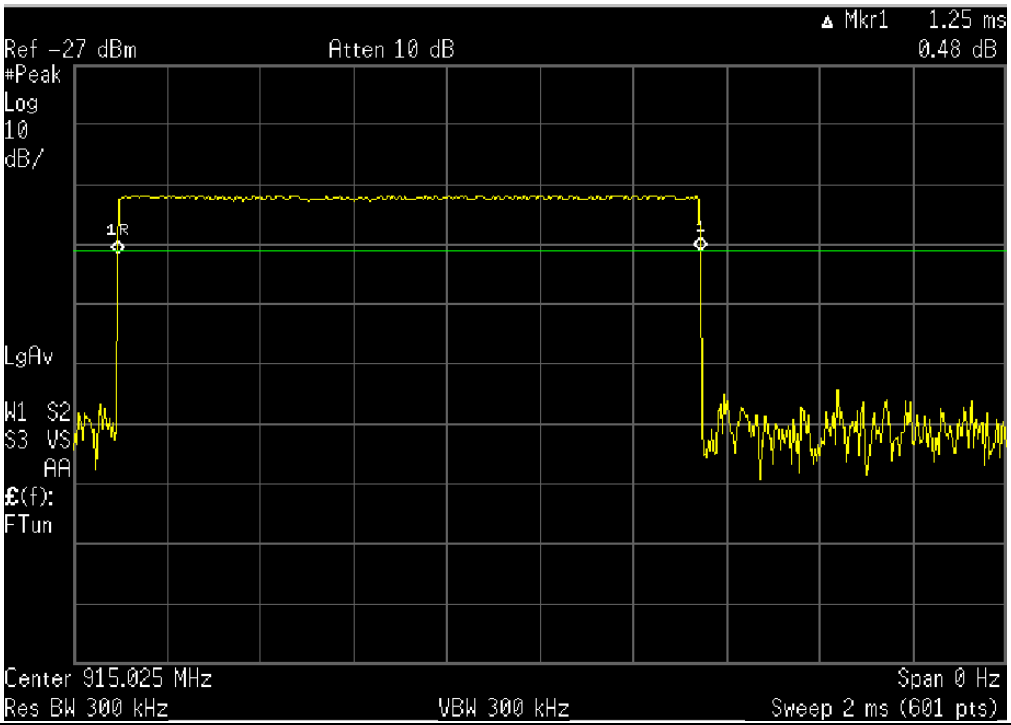
8.1. Duty Cycle of Test Signal

Reference standard:	FCC part 15 RSS 210
Test method:	ANSI C63.10 : 2013
Test description: EUT is set on an insulating support at 80cm above the ground reference plane. Measurement are done on a normalized test site.	

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
AC power source	CHROMA	61603	12532	28/10/2021	28/12/2023
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Multimeter	FLUKE	8808A	12446	24/11/2021	24/01/2023
Receiver	Agilent Technologies	E4440A	5824	22/10/2020	22/12/2022
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

DUTY CYCLE OF TEST SIGNAL - GRAPH			
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	29/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010





Duty Cycle = 0.00125/1.1 = 0.0011 (0.11%)

Duty Factor = 10 * log(1/0.0011) = 29.59

Duty cycle test mode is < 98%. A **29.59dB** duty cycle correction factor shall could be considered for average measurement if needed.

8.2. Radiated spurious emissions

Reference standard:	FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210
Test method:	ANSI C63.10: 2013

General test setup: For f <30MHz, EUT is set on an insulating support at 80cmcm above the ground reference plane.

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°).

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.

For f > 30MHz, EUT is set on an insulating support at 80cm above the ground reference plane (150cm for f >1GHz).

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.

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.

All frequencies were investigated, where applicable.

For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx mode / All channels - 0°	9kHz-30MHz	15.209	EMI4742	**PASS**
Tx mode / All channels - 45°	9kHz-30MHz	15.209	EMI4743	**PASS**
Tx mode / All channels - 90°	9kHz-30MHz	15.209	EMI4744	**PASS**
Spurious -Tx mode - Low channel - For Freq <1GHz	30MHz-1GHz	15.209	EMI4745	**PASS**
Spurious -Tx mode - High channel - For Freq <1GHz	30MHz-1GHz	15.209	EMI4749	**PASS**
Spurious - Tx mode - Low channel - For Freq >1GHz	1GHz-10GHz	15.249	EMI4762	**PASS**
Spurious - Tx mode - High channel - For Freq >1GHz	1GHz-10GHz	15.249	EMI4761	**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 1GHz Quasi peak limit provided is the limit given in §15.209.

Above 1GHz peak and average limit provided is the limit given in §15.249.

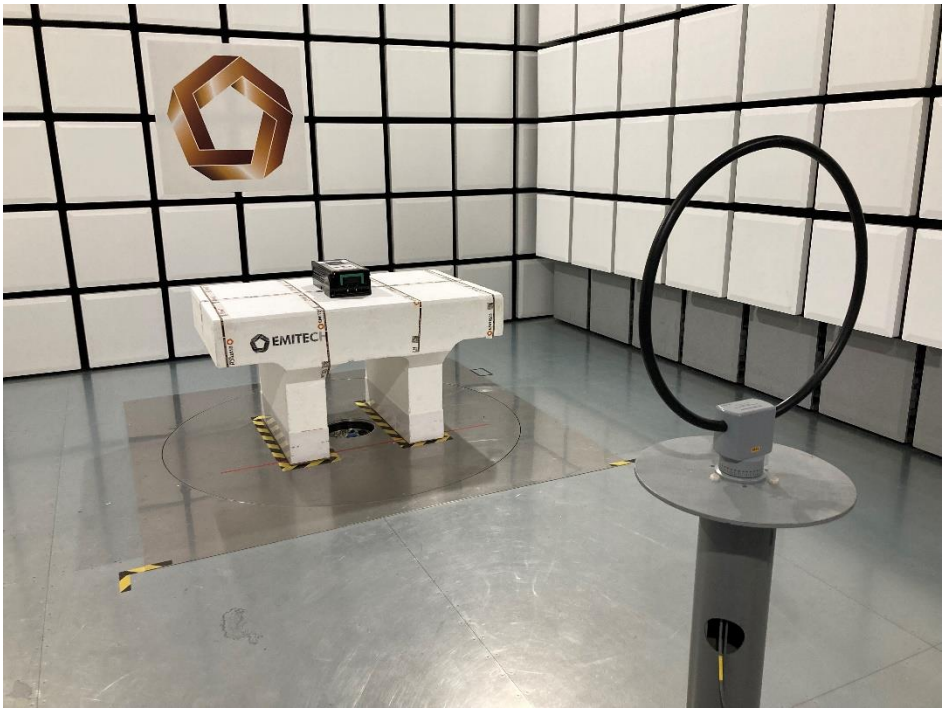
TEST EQUIPMENT USED – FOR FREQ <30MHZ					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

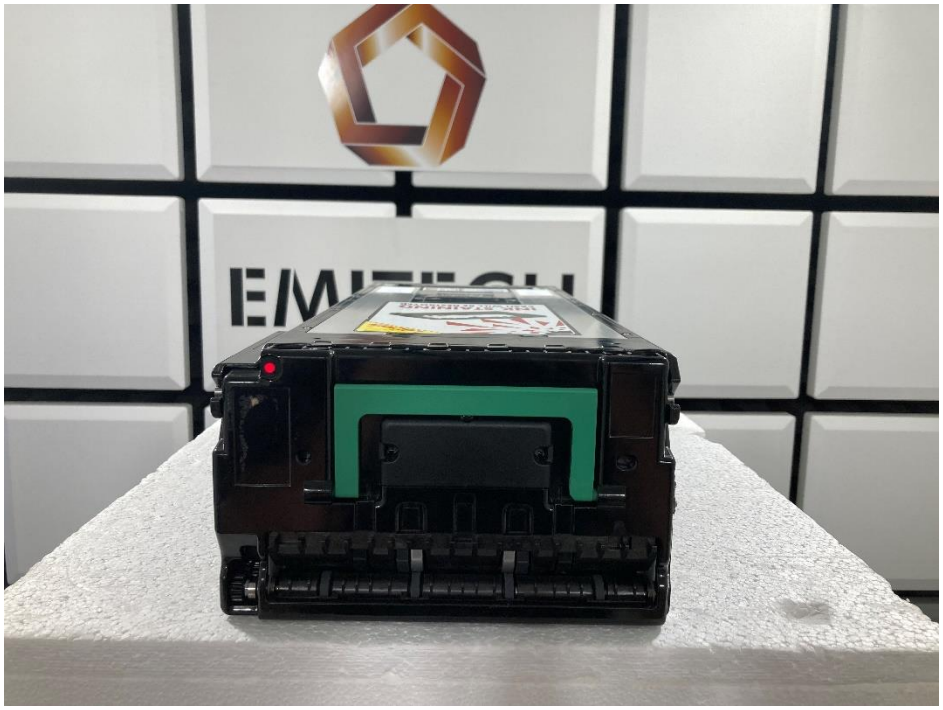
TEST EQUIPMENT USED – FOR FREQ FROM 30MHZ TO 10GHZ					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Antenna	AARONIA	Powerlog 70180	15306	23/07/2019	23/09/2022
Cable	Techniwave	N-1.5m	18341	25/01/2022	25/03/2024
Cable	Techniwave	N-1.5m	18342	25/01/2022	25/03/2024
Cable	Techniwave	N-1m	18344	25/01/2022	25/03/2024
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Filter	Micro-Tronics	HPM18865	12843	24/08/2021	24/10/2024
Preamplifier	IMPULSE	CA118-546ACN	9169	26/04/2022	26/06/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Receiver	Rohde & Schwarz	FSW43	14830	29/07/2020	29/09/2022
Shielded enclosure	COMTEST	FAR 3m	18014	10/12/2021	10/02/2025
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

TEST SETUP PHOTO(S) - TX MODE – FOR FREQ <30MHZ



TEST SETUP PHOTO(S) - TX MODE – FOR FREQ FROM 30MHZ TO 1GHZ

TEST SETUP PHOTO(S) - TX MODE – FOR FREQ >1GHZ



RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 0°					EMI4742
FREQUENCY (MHz)	LEVEL (dBµA/m)	PEAK LEVEL (dBµA/m)	QPEAK LIMIT (dBµA/m)	AVG LIMIT (dBµA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 45°					EMI4743
FREQUENCY (MHz)	LEVEL (dBµA/m)	PEAK LEVEL (dBµA/m)	QPEAK LIMIT (dBµA/m)	AVG LIMIT (dBµA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 90°					EMI4744
FREQUENCY (MHz)	LEVEL (dBµA/m)	PEAK LEVEL (dBµA/m)	QPEAK LIMIT (dBµA/m)	AVG LIMIT (dBµA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

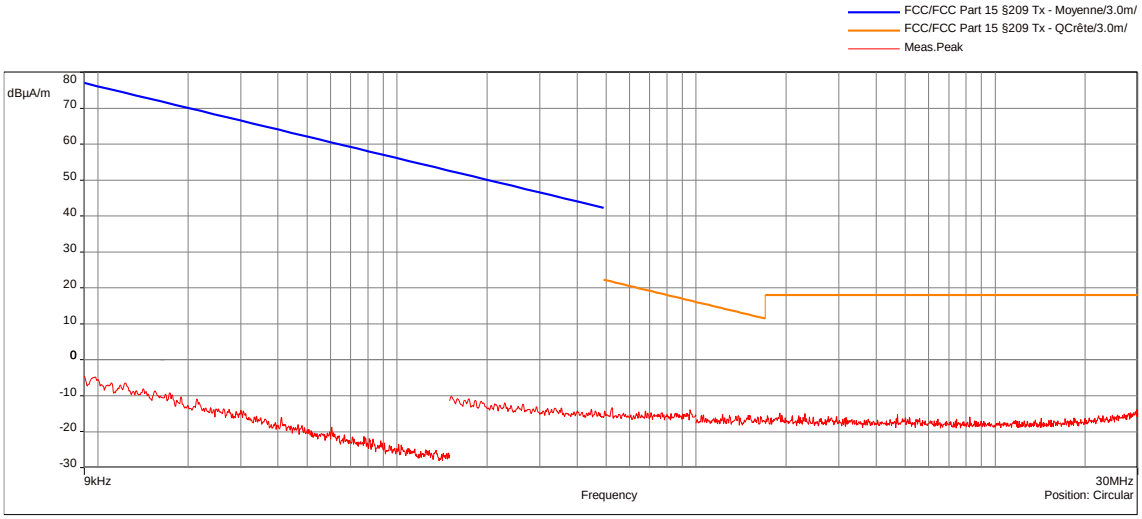
RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS -TX MODE - LOW CHANNEL - FOR FREQ <1GHZ					EMI4745
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBµV/m)	QPEAK LEVEL (dBµV/m)	QPEAK LIMIT (dBµV/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS -TX MODE - HIGH CHANNEL - FOR FREQ <1GHZ					EMI4749
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBµV/m)	QPEAK LEVEL (dBµV/m)	QPEAK LIMIT (dBµV/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS - TX MODE - LOW CHANNEL - FOR FREQ >1GHZ				EMI4762	
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBµV/m)	AVG LEVEL COMPUTED WITH DUTY FACTOR (dBµV/m)	AVG LIMIT (dBµV/m)	MARGING (dB)
1829,86	Horizontal	58.25	28.66	54	-25.34
1829,86	Vertical	56.76	27.17	54	-26.83
Supplementary information: N/A					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS - TX MODE - HIGH CHANNEL - FOR FREQ >1GHZ				EMI4761	
FREQUENCY (MHZ)	POLARIZATION	PEAK LEVEL (dBµV/m)	AVG LEVEL COMPUTED WITH DUTY FACTOR (dBµV/m)	AVG LIMIT (dBµV/m)	MARGING (dB)
1831,06	Vertical	57,18	27.59	54	-26.41
1831,06	Horizontal	58,46	28.87	54	-25.13
Supplementary information: N/A					

RADIATED SPURIOUS EMISSIONS - GRAPH			
TX MODE / 0°		EMI4742	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010

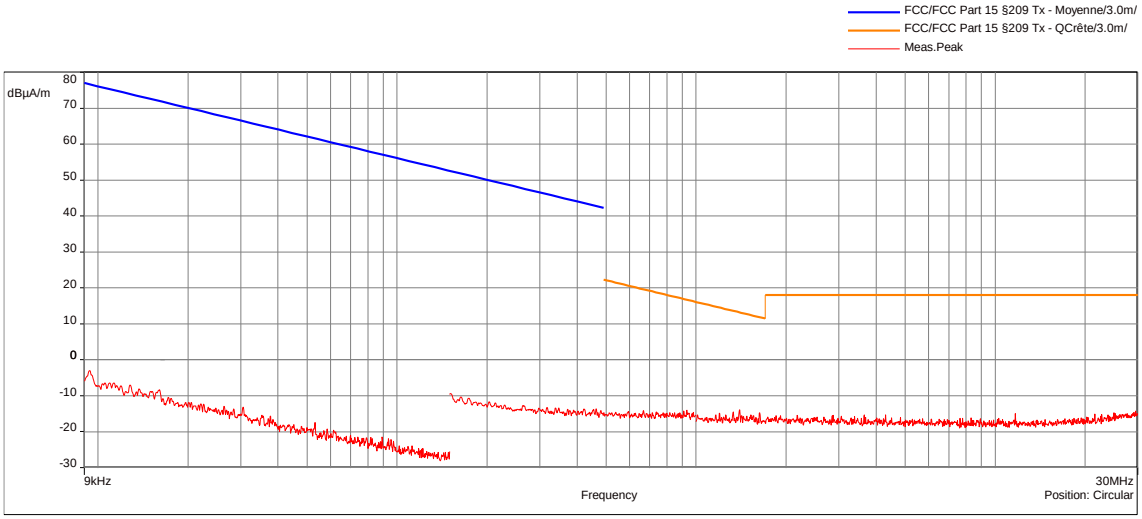


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

Configuration:	N/A
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor. No spurious emissions were detected.

EUT modification(s): N/A

RADIATED SPURIOUS EMISSIONS - GRAPH			
TX MODE / 45°		EMI4743	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010

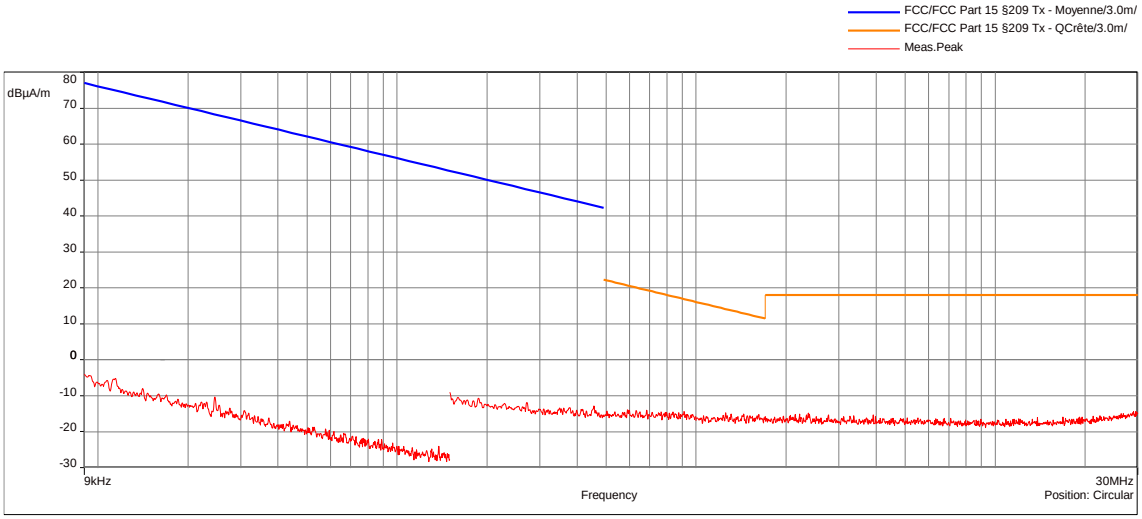


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

Configuration:	N/A
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor. No spurious emissions were detected.

EUT modification(s): N/A

RADIATED SPURIOUS EMISSIONS - GRAPH			
TX MODE / 90°		EMI4744	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010

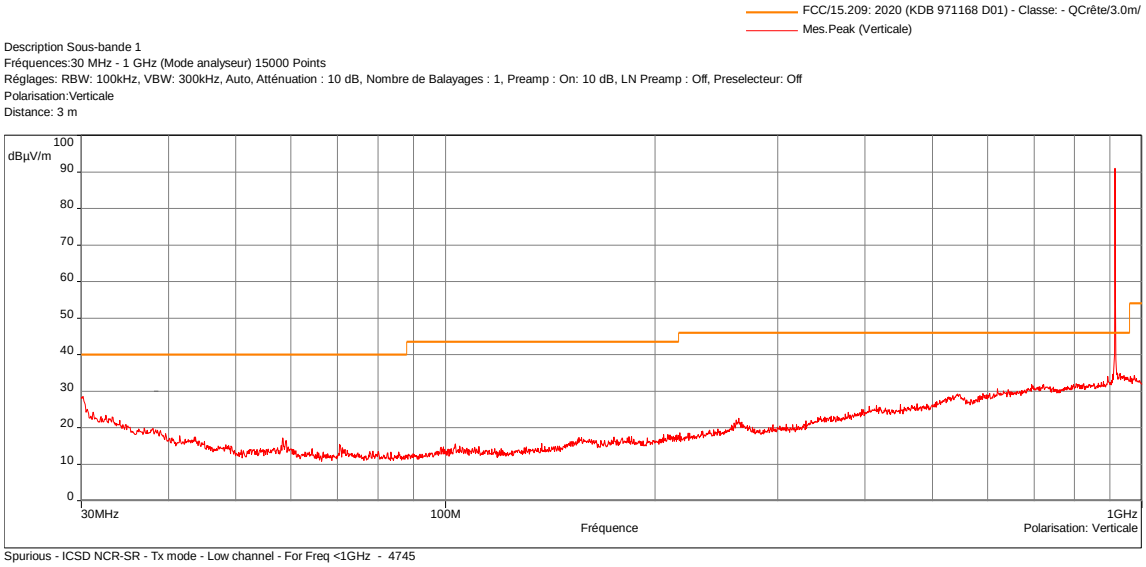


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

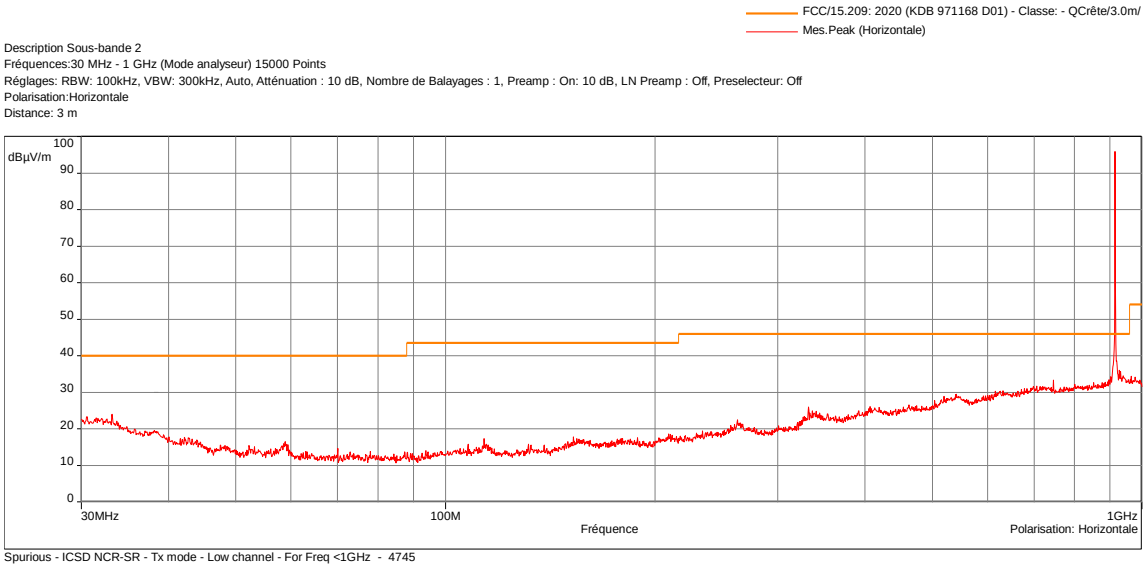
Configuration:	N/A
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor. No spurious emissions were detected.

EUT modification(s): N/A

RADIATED SPURIOUS EMISSIONS- GRAPH			
SPURIOUS - TX MODE - LOW CHANNEL - FOR FREQ <1GHZ		EMI4745	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010



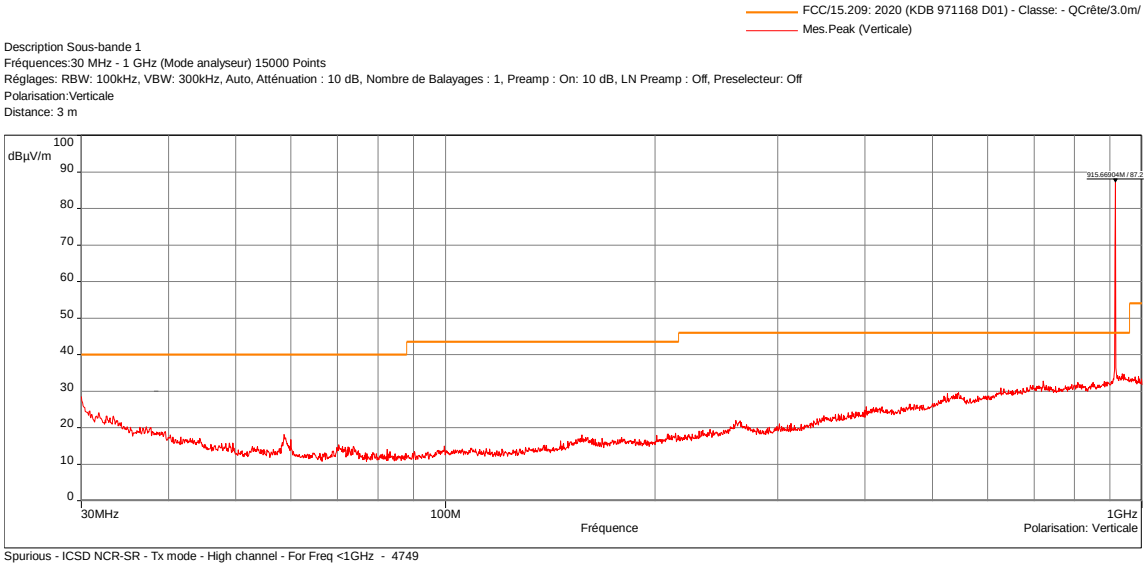
Spurious - ICSD NCR-SR - Tx mode - Low channel - For Freq <1GHz - 4745



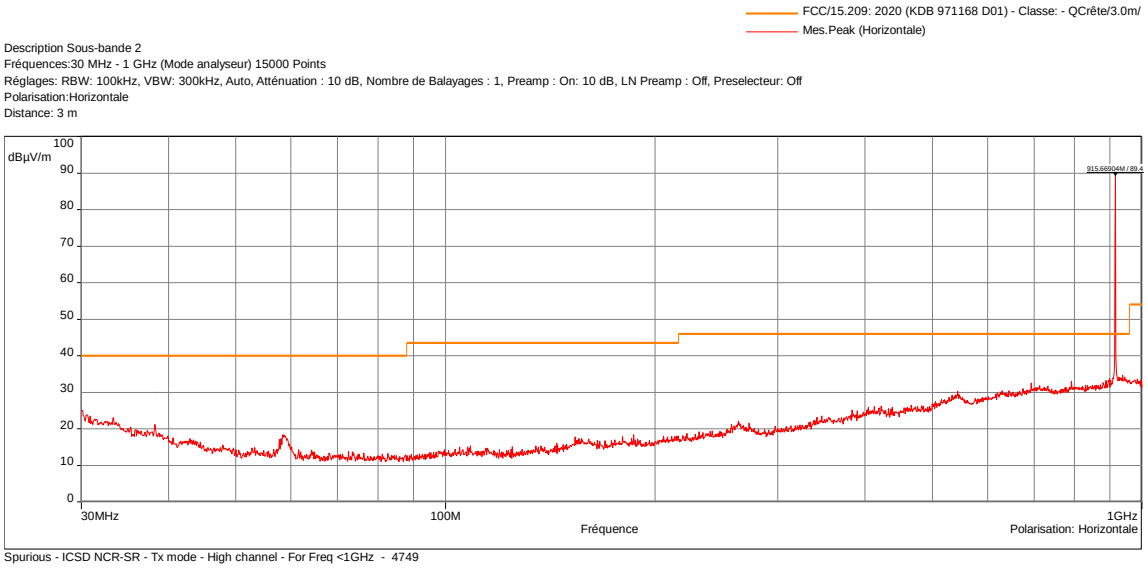
Spurious - ICSD NCR-SR - Tx mode - Low channel - For Freq <1GHz - 4745

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-1GHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	915.03MHz is the operating frequency. No spurious emissions were detected.			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS- GRAPH			
SPURIOUS - TX MODE - HIGH CHANNEL - FOR FREQ <1GHZ		EMI4749	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010



Spurious - ICSD NCR-SR - Tx mode - High channel - For Freq <1GHz - 4749



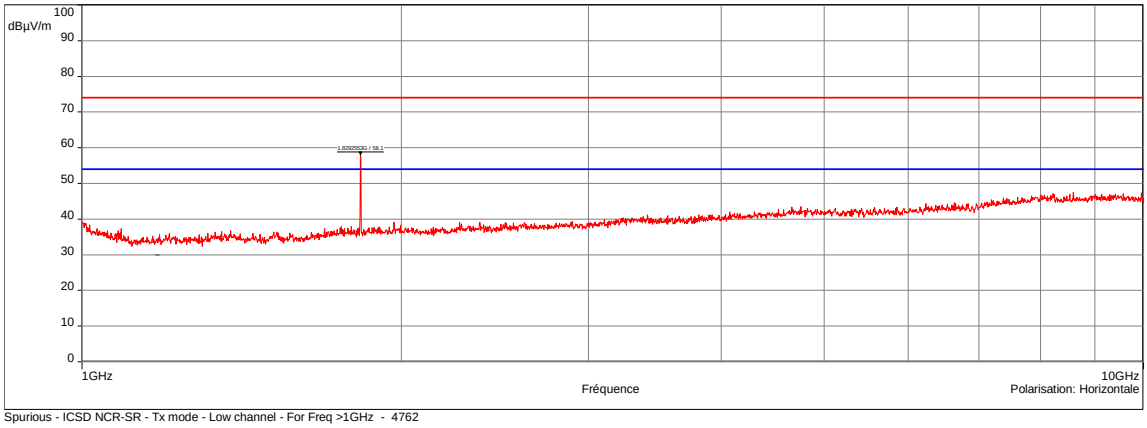
Spurious - ICSD NCR-SR - Tx mode - High channel - For Freq <1GHz - 4749

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-1GHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	915.6MHz si the operating frequency. No spurious emissions were detected.			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS- GRAPH			
SPURIOUS - TX MODE - LOW CHANNEL - FOR FREQ >1GHZ		EMI4762	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010

FCC/15.209 : 2017 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2017 - Classe: - Crête/3.0m/
Mes.Peak (Horizontale)

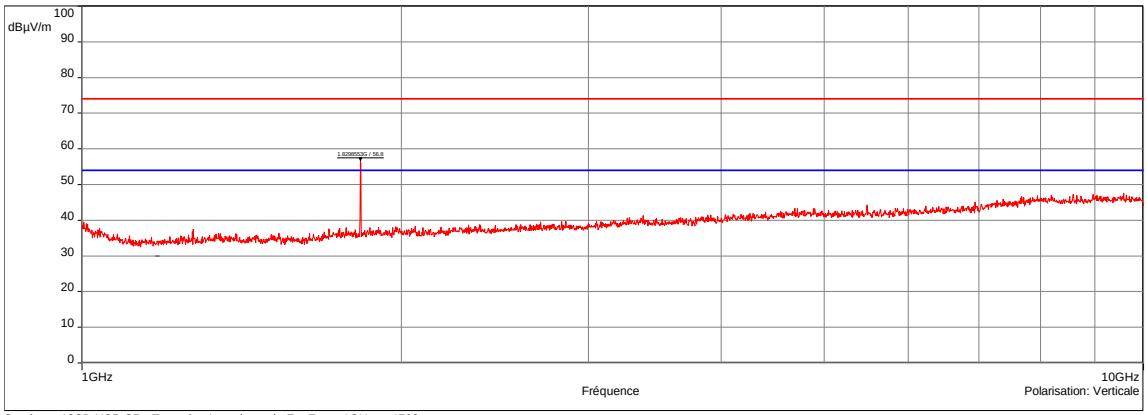
Description Sous-bande 1
Fréquences:1 GHz - 10 GHz (Mode analyseur) 15000 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur: Off
Polarisation:Horizontale
Distance: 3 m



Spurious - ICSD NCR-SR - Tx mode - Low channel - For Freq >1GHz - 4762

FCC/15.209 : 2017 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2017 - Classe: - Crête/3.0m/
Mes.Peak (Verticale)

Description Sous-bande 2
Fréquences:1 GHz - 10 GHz (Mode analyseur) 15000 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



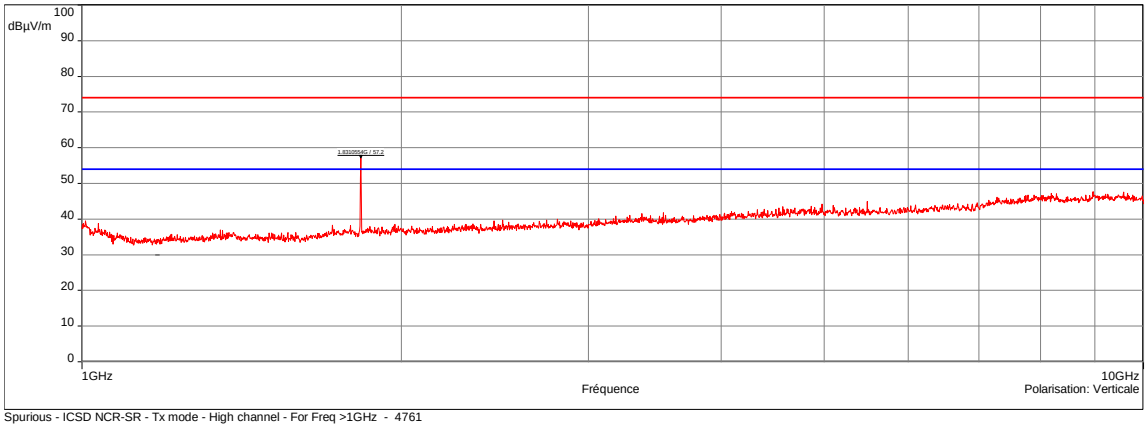
Spurious - ICSD NCR-SR - Tx mode - Low channel - For Freq >1GHz - 4762

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Horizontal	1GHz-10GHz	1MHz	3MHz	Peak
Vertical	1GHz-10GHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS- GRAPH			
SPURIOUS - TX MODE - HIGH CHANNEL - FOR FREQ >1GHZ		EMI4761	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010

FCC/15.209 : 2017 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2017 - Classe: - Crête/3.0m/
Mes.Peak (Verticale)

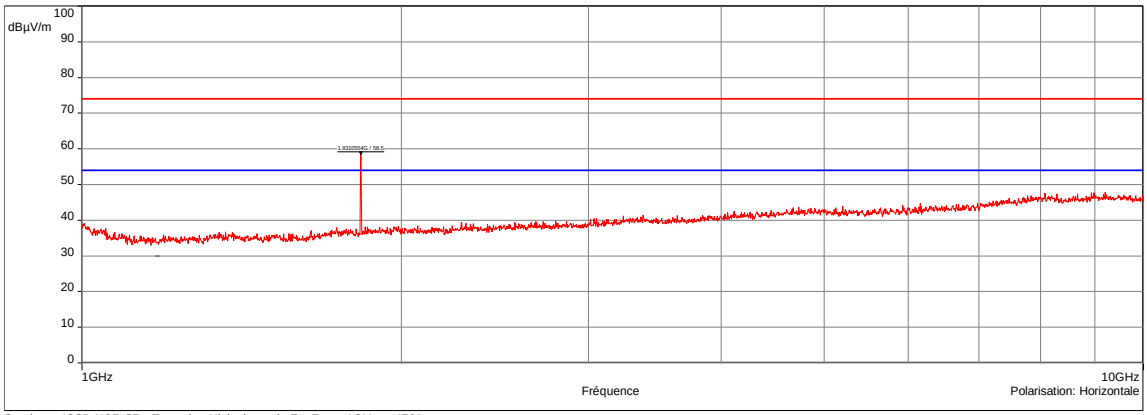
Description Sous-bande 1
Fréquences:1 GHz - 10 GHz (Mode analyseur) 15000 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



Spurious - ICSD NCR-SR - Tx mode - High channel - For Freq >1GHz - 4761

FCC/15.209 : 2017 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2017 - Classe: - Crête/3.0m/
Mes.Peak (Horizontale)

Description Sous-bande 2
Fréquences:1 GHz - 10 GHz (Mode analyseur) 15000 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur: Off
Polarisation:Horizontale
Distance: 3 m



Spurious - ICSD NCR-SR - Tx mode - High channel - For Freq >1GHz - 4761

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-10GHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

8.3. Equivalent isotropic radiated power

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	ANSI C63.10: 2013 & RSS-247
Test description: EUT is set on an insulating support at 80cm above the ground reference plane. 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 (1m to 4m) in horizontal and vertical polarities. For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
RF output power / Tx mode - Low channel	914.53MHz-915.53MHz	93.98 dBµV/m	EMI4747	**PASS**
RF output power / Tx mode - High channel	915.1MHz-916.1MHz	93.98 dBµV/m	EMI4748	**PASS**

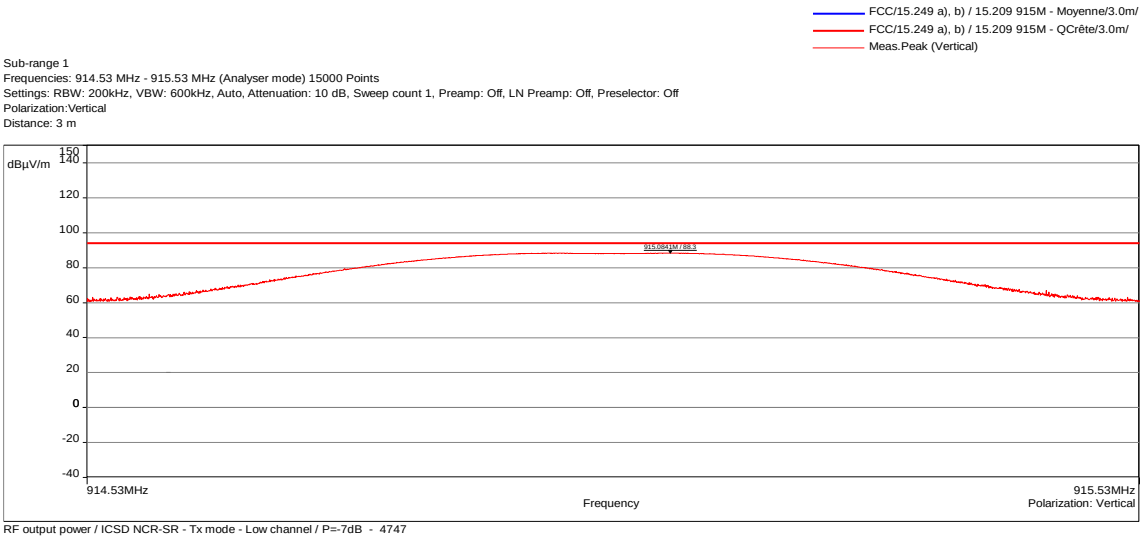
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	*See Graph(s)*
Relative Humidity	20 to 75 %	*See Graph(s)*
Atmospheric pressure	N/A	*See Graph(s)*
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

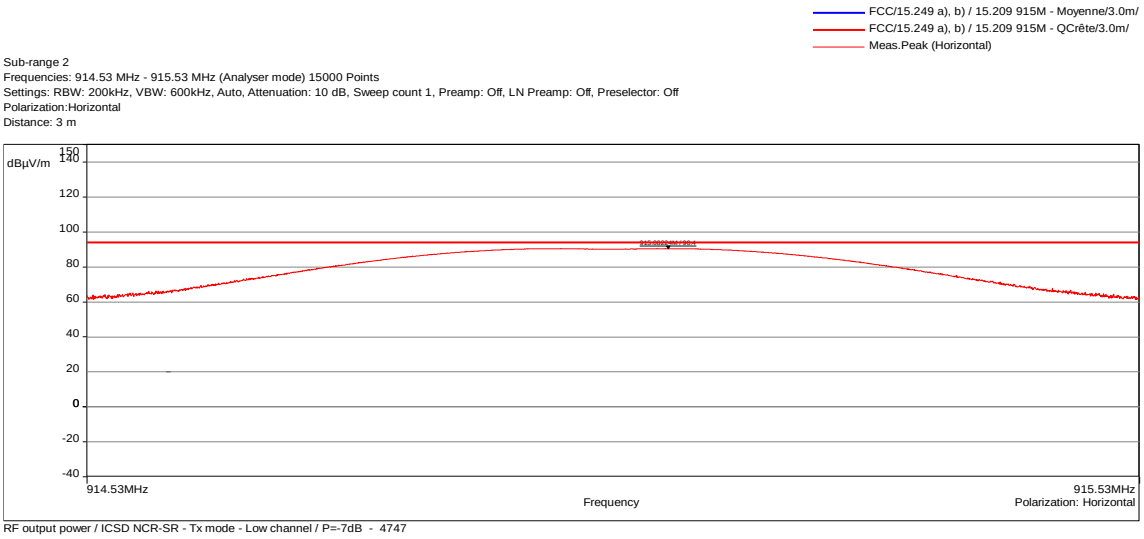
BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

TEST SETUP PHOTO(S) - EQUIVALENT ISTROPIC RADIATED POWER

EQUIVALENT ISOTROPIC RADIATED POWER- GRAPH			
RF OUTPUT POWER - TX MODE - LOW CHANNEL		EMI4747	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010



RF output power / ICSD NCR-SR - Tx mode - Low channel / P=-7dB - 4747

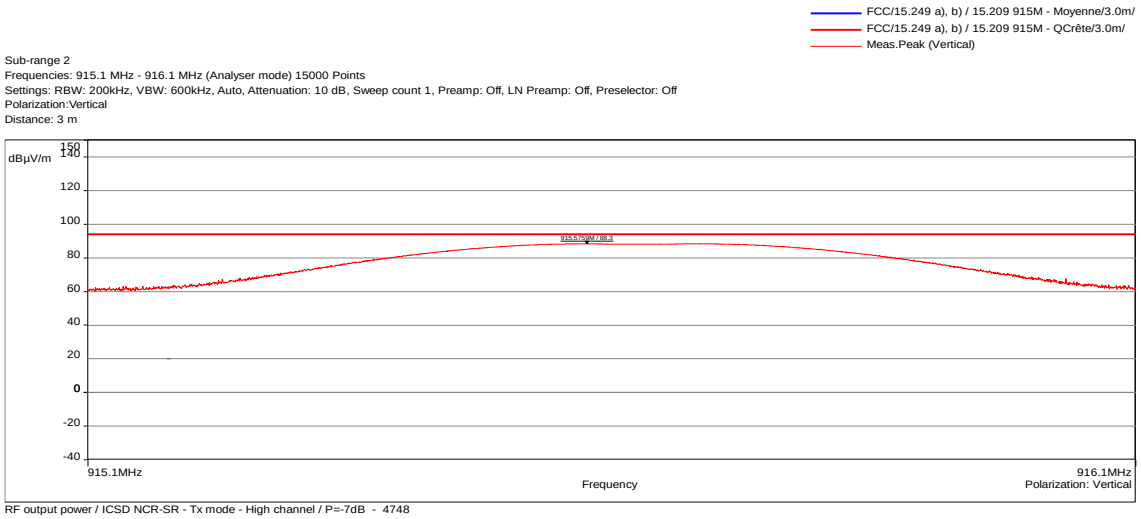


RF output power / ICSD NCR-SR - Tx mode - Low channel / P=-7dB - 4747

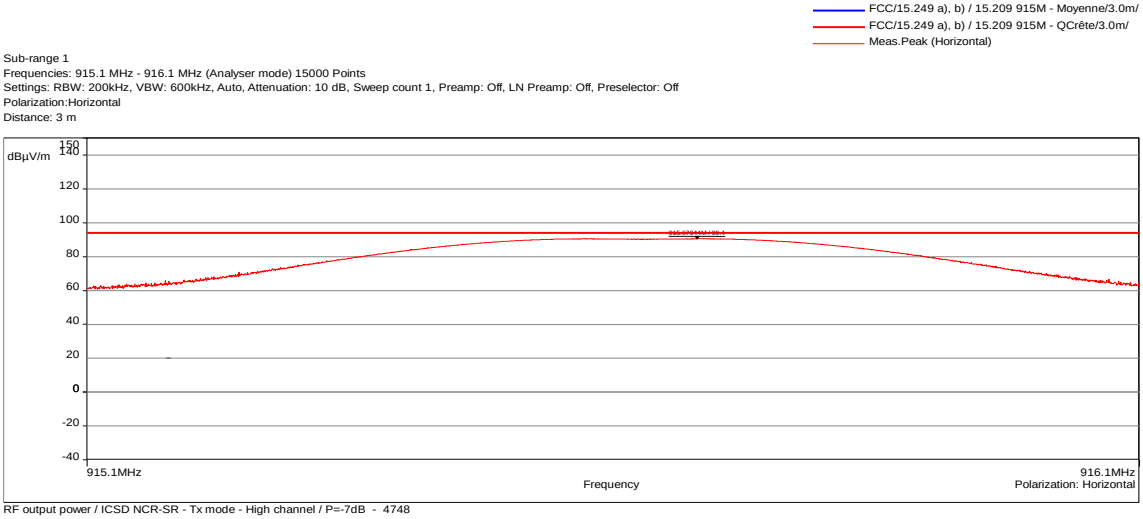
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	914.53MHz-915.53MHz	200kHz	600kHz	Peak
Horizontal	914.53MHz-915.53MHz	200kHz	600kHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

EQUIVALENT ISOTROPIC RADIATED POWER- TABULATED RESULTS				
RF OUTPUT POWER / TX MODE - LOW CHANNEL				EMI4747
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**
915.03	Vertical	88.3	93.98	-5.68
915.03	Horizontal	90.4	93.98	-3.58

RADIATED SPURIOUS EMISSIONS- GRAPH			
RF OUTPUT POWER / TX MODE - HIGH CHANNEL		EMI4748	
EUT mode:	Tx mode	**T (°C):**	23.1
Test Date:	28/06/2022	**H (%):**	58.4
Test Operator:	CFO	**P (hPa):**	1010



RF output power / ICSD NCR-SR - Tx mode - High channel / P=-7dB - 4748



RF output power / ICSD NCR-SR - Tx mode - High channel / P=-7dB - 4748

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Horizontal	915.1MHz-916.1MHz	200kHz	600kHz	Peak
Vertical	915.1MHz-916.1MHz	200kHz	600kHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

EQUIVALENT ISOTROPIC RADIATED POWER- TABULATED RESULTS				
RF OUTPUT POWER / TX MODE - HIGH CHANNEL				EMI4748
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**
915.6	Vertical	88.3	93.98	-5.68
915.6	Horizontal	90.4	93.98	-3.58

End of test report