Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006 (FCC#: 954701)
Canadian CAB Identifier: FR0003 (ISED#: 4379C)

RADIO TEST REPORT

FCC part 15.249
RSS-210, issue 10, April 2020

Company ..... :	**Oberthur Cash Protection**
Address..... :	3 Bis rue du Docteur Quignard 21000 DIJON FRANCE

Test item description. ..... :	**IBNS ATM devices**
Trade Mark. ..... :	Oberthur Cash Protection
Manufacturer. ..... :	Oberthur Cash Protection
Model/Type reference..... :	OCPICSDSCM / OCP_ICSD-ActiveDispense
FCC ID..... :	2AXRGOCPICSDSCM
IC. ..... :	26545-OCPICSDSCM
Ratings..... :	2.7Vdc to 3.6Vdc

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

Report Reference No..... :	**RR410-20-103551-4A**
Test procedure. ..... :	FCC IC Certification
Diffusion..... :	Mr. EZERZER
Applicant's name. ..... :	Oberthur Cash Protection
Date of issue..... :	January 18, 2021
Total number of pages..... :	47
Revision. ..... :	0
Modified page(s). ..... :	Creation
Compiled by..... :	Olivier AELBRECHT
Approved by (+ signature). ..... :	David MONTAULON (Technical 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.

REPORT INDEX:

REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	January 18, 2021	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **IBNS ATM devices OCP_ICSD-ActiveDispense** (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	Olivier AELBRECHT
Test supervisor	None
Date of receipt of test item	N/A
Date (s) of performance of tests	From October the 5th of 2020 to October the 7th of 2020

APPLICANT'S GENERAL INFORMATIONS:

Company name	Oberthur Cash Protection
Company address.	3 Bis rue du Docteur Quignard 21000 DIJON FRANCE
Person(s) present during the tests.	Mr EZERZER
Responsible.	Mr. EZERZER

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.	Equipement 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	NTR	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. **FCC part 15** 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** Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence Exempt Local Area Network (LE-LAN) Devices **RSS/CNR-Gen, Issue 5, March 2019** Exigences générales et information relatives à la certification du matériel de radiocommunication **ANSI C 63.10:2013** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices **ANSI C 63.4:2014** American National Standard for Methods of measurement of Radio-Noise from low-voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz 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.	:	IBNS ATM devices
Model/Type reference	:	OCPICSDSCM / OCP_ICSD-ActiveDispense
FCC ID.	:	2AXRGOCPICSDSCM
IC.	:	26545-OCPICSDSCM
Trade Mark.	:	Oberthur Cash Protection
Serial number (S/N).	:	I62588
Part number (P/N).	:	Not communicated
Software version.	:	*N/A*
Firmware version.	:	*L262 6.71*
Type of sample.	:	Pre-serial
Function(s)	:	IBNS devices: ATM protection range of product IBNS cassette module, permit to stain banknotes in case of attack detection
Manufacturer name.	:	Oberthur Cash Protection
Address	:	3 Bis rue du Docteur Quignard 21000 DIJON FRANCE

General product information:

N/A

3.2. EUT General View

3.3. EUT Marking Plate

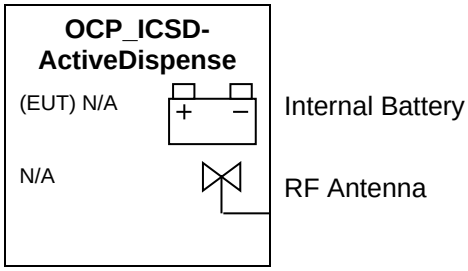
3.4. EUT Mechanical and Electrical Design

Power supply. ..... : *3.6Vdc*
Power supply range. ..... : *2.7Vdc to 3.6Vdc*
Power type. ..... : *Internal battery*
Power (mW). ..... : *< 2*
Nominal current (µA). ..... : *< 500*
Dimensions (L x W x H) (mm). ..... : *420 x 220 x 120 (mm)*
Weight (kg). ..... : *2,1*
Temperature range (°C). ..... : *-20°C / +65°C*
Ground bounding strap. ..... : *No*

Comments:

N/A

3.5. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Métallique / Plastic	N/A
1	Internal Battery	DC	N/A	N/A	N/A
2	RF Antenna	RF	N/A	N/A	*PCB printed*

AC/DC : AC/DC Converter port
I/O.....: Input or Output port
N/E .....: Non Electrical port
AC ..... : Alternative current port
TP ..... : Telecommunication port
DC .....: Discontinuous current port
RF.....: Radio frequency 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 ..... : *Internal (PCB printed)* Antenna Gain..... : *Not communicated* **Comments:**
b) TRANSMITTER PARAMITTERS (TX)
Frequency bands..... : *902 MHz to 928 MHz* RF Power..... : *Not communicated* Number of channels / Separation..... : *2 channels* Modulation type ..... : *GFSK* Duty cycle ..... : *Not communicated* Tested frequency..... : *915,025 MHz (Low channel)* *915,625 MHz (High channel)*
c) RECEIVER PARAMETERS (RX)
Frequency bands..... : *902 MHz to 928 MHz* Category/Class ..... : *Not communicated* Bandwidth..... : *Not communicated*

4. OPINION(S) AND INTERPRETATION(S)

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
FCC part 15.249 and RSS-210	N/A
FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen	N/A
FCC part 15 Radio part 15.215 c) and RSS Gen	N/A
FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen	N/A

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Conducted emission (measurement)			**FCC part 15.107, 15.207 and RSS-Gen**
- Power Supply / 110Vac/60Hz	Class B	**N/A**	Powered by internal batteries
Transmitter radiated spurious emissions at frequencies <30MHz			**FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen**
- Tx Mode / 0° - All Channels	15.209	**PASS**	
- Tx Mode / 45° - All Channels	15.209	**PASS**	
- Tx Mode / 90° - All Channels	15.209	**PASS**	
Transmitter radiated spurious emissions at frequencies >30MHz			**FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen**
- Tx mode - All Channels - For Freq < 1GHz	15.209	**PASS**	
- Tx mode - Low Channel - For Freq > 1GHz	15.209	**PASS**	
- Tx mode - High Channel - For Freq > 1GHz	15.209	**PASS**	
Band-edge compliance			**FCC part 15.249 subclause d) and RSS-210**
- BandEdge - Low Channel	15.249	**PASS**	
- BandEdge - High Channel	15.249	**PASS**	
Effective isotropic radiated power			**FCC part 15.249 and RSS-210**
- EIRP - Low Channel	50mV/m	**PASS**	
- EIRP - High Channel	50mV/m	**PASS**	
Occupied Bandwidth			**FCC part 15 Radio part 15.215 c) and RSS Gen**
- 99% Bandwidth / Low channel	Flow > 904.6 MHz Fhigh < 925.4 MHz	**PASS**	
- 99% Bandwidth / High channel		**PASS**	
- 20dB Bandwidth / Low channel		**PASS**	
- 20dB Bandwidth / High channel		**PASS**	
Frequency error			**FCC part 15 Radio part 15.215 c) and RSS Gen**
- Low channel	0.001 %	**PASS**	
- High channel	0.001 %	**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.

TEST(S) PERFORMED	MODIFICATION(S)
FCC part 15.249 and RSS-210	N/A
FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen	N/A
FCC part 15 Radio part 15.215 c) and RSS Gen	N/A
FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen	N/A

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	± 1 x 10^{-7}	±1 x 10^{-7}
RF power, conducted		
RF power	± 0.8dB	± 1 dB
Power spectral density	± 2.3dB	± 3 dB
Occuped bandwidth		
RF power	± 3.8 %	± 5 %
Conducted emission (spurious)		
f ≤ 1 GHz	± 0.8 dB	± 3 dB
1 GHz - 12.75 GHz	± 1.6 dB	
Radiated emission (PAR / PIRE / RNE)		
f ≤ 62.5 MHz	± 5.1 dB	± 6 dB
62.5 MHz - 1 GHz	± 5.1 dB	± 6 dB
1 GHz - 18 GHz	± 5.2 dB	± 6 dB
18 GHz – 26 GHz	± 5.1 dB	± 6 dB
26 GHz – 40 GHz	± 5.4 dB	± 6 dB
PIRE and power spectral density with diode	± 5.2 dB	± 6 dB
Radiated emission (magnetic field)		
9kHz – 30MHz	± 3 dB	± 6 dB
Supply voltages	± 3 %	± 3 %
Temperature	± 1 °C	± 1°C
Humidity	± 5 %	± 5 %
Time / Duty cycle	± 4.4 %	± 5 %
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	± 2.7 dB	/
30MHz – 1GHz	± 5.0 dB	/
1GHz – 18GHz	± 5.6 dB	/
18GHz – 26GHz	± 5.7 dB	/
26GHz – 40GHz	± 5.7 dB	/

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

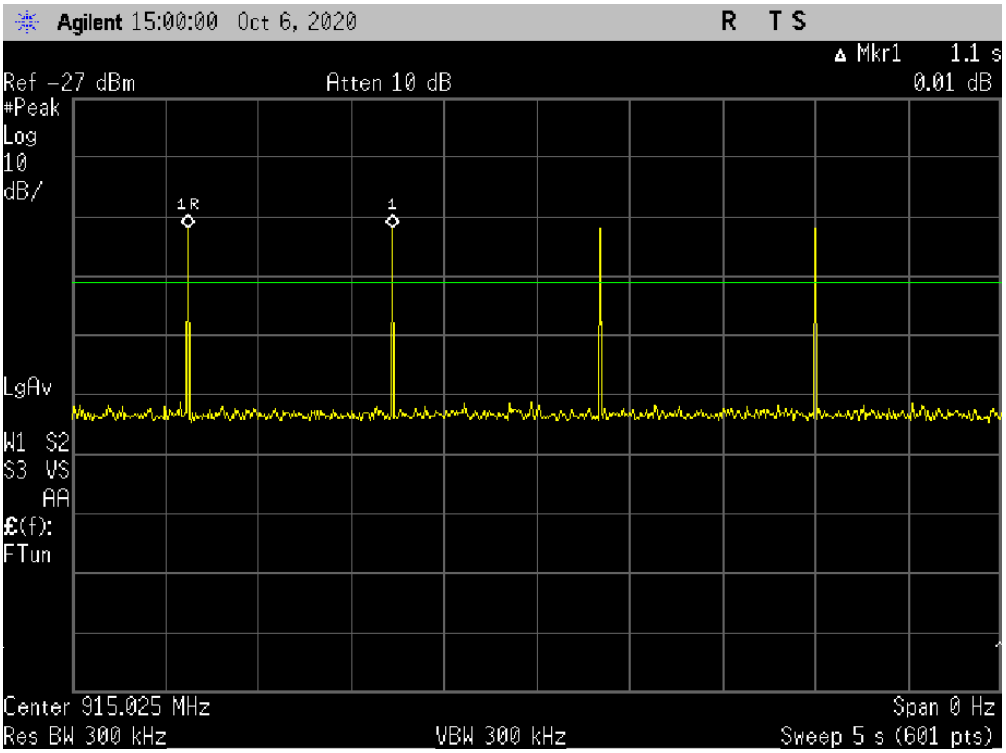
7. TEST CONDITIONS AND RESULTS

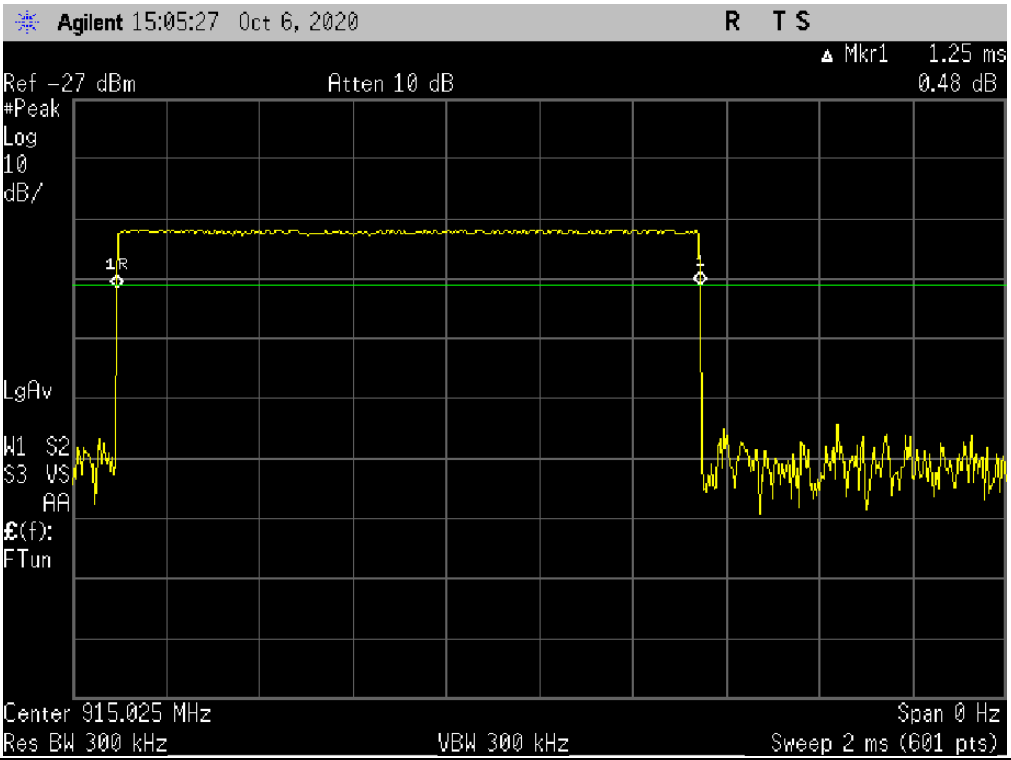
7.1. Duty Cycle of Test Signal

Reference standard:	FCC part 15 & RSS 210
Test method:	ANSI C63.10 : 2013 §11
Test description: EUT is set on an insulating support at 150cm above the ground reference plane. Measurement are done on a normalized test site.	

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

DUTY CYCLE OF TEST SIGNAL - GRAPH			
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003





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.

7.2. Transmitter radiated spurious emissions at frequencies <30MHz

Reference standard:	FCC part 15 Radio part 15.249 and RSS-210
Test method:	FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen

Test description: : Spurious domain emission limits are limits on emissions at frequencies other than those of the carrier and sidebands associated with normal test modulation**.**

EUT is set on an insulating support at 80cm above the ground reference plane.

Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter in a 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.

All frequencies were investigated, where applicable.

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx Mode / 0° - All Channels	9kHz-30MHz	15.209	EMI4648	**PASS**
Tx Mode / 45° - All Channels	9kHz-30MHz	15.209	EMI4655	**PASS**
Tx Mode / 90° - All Channels	9kHz-30MHz	15.209	EMI4656	**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: Limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor

TEST EQUIPMENT USED

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

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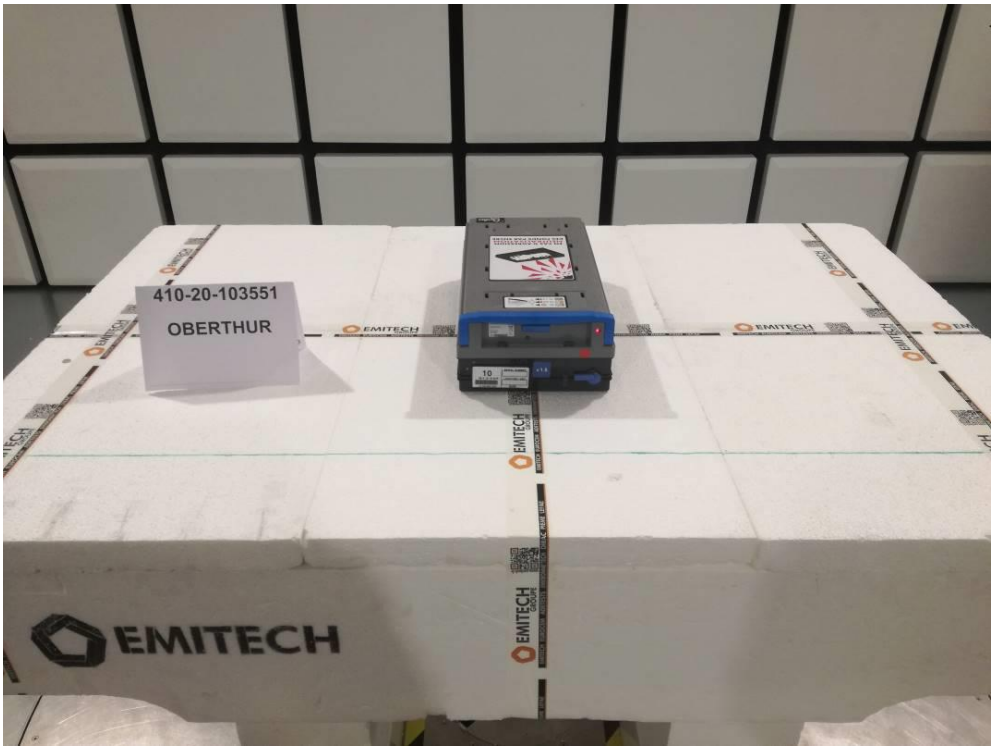
TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - TABULATED RESULTS			
Frequency (MHz)	**Antenna Position**	**Level (dBµA/m)**	**Limit (dBµA/m)**
N/A	N/A	N/A	N/A

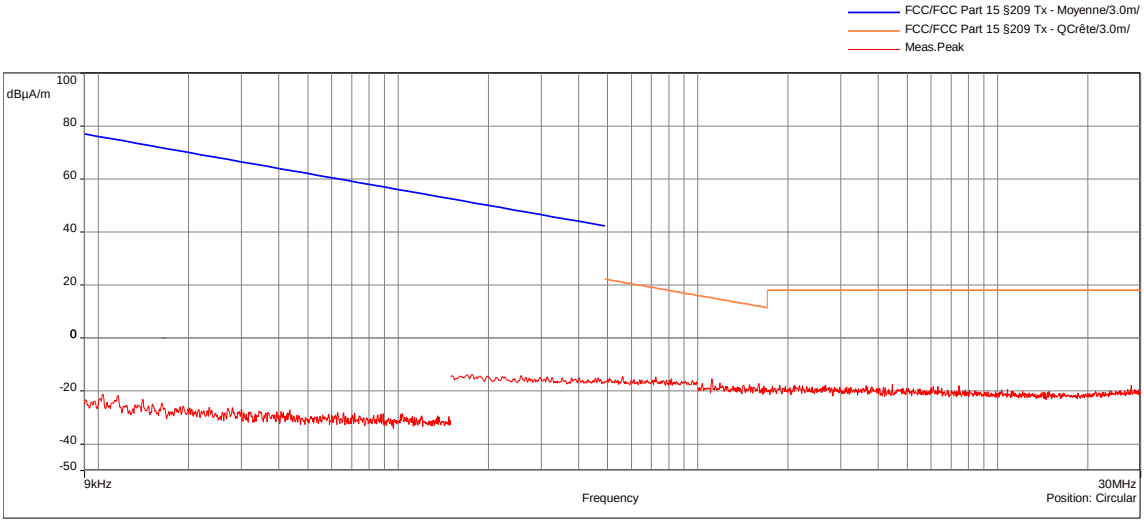
No spurious emissions were detected.

TEST SETUP PHOTO(S) – EUT POSITION



TEST SETUP PHOTO(S)

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH			
TX MODE / 0° - ALL CHANNELS		EMI4648	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

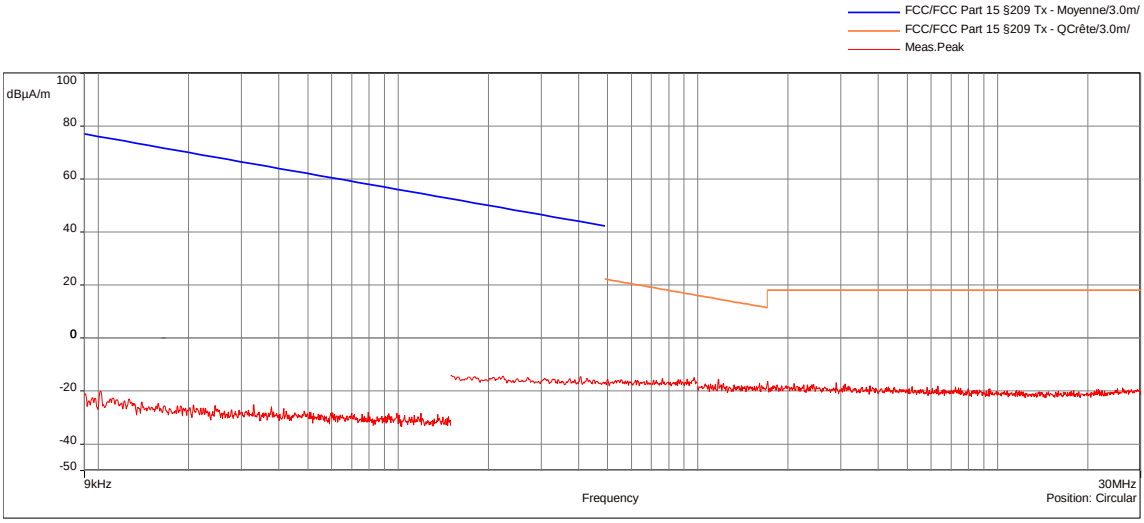


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

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

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH			
TX MODE / 45° - ALL CHANNELS		EMI4655	
EUT mode:	Continuous Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

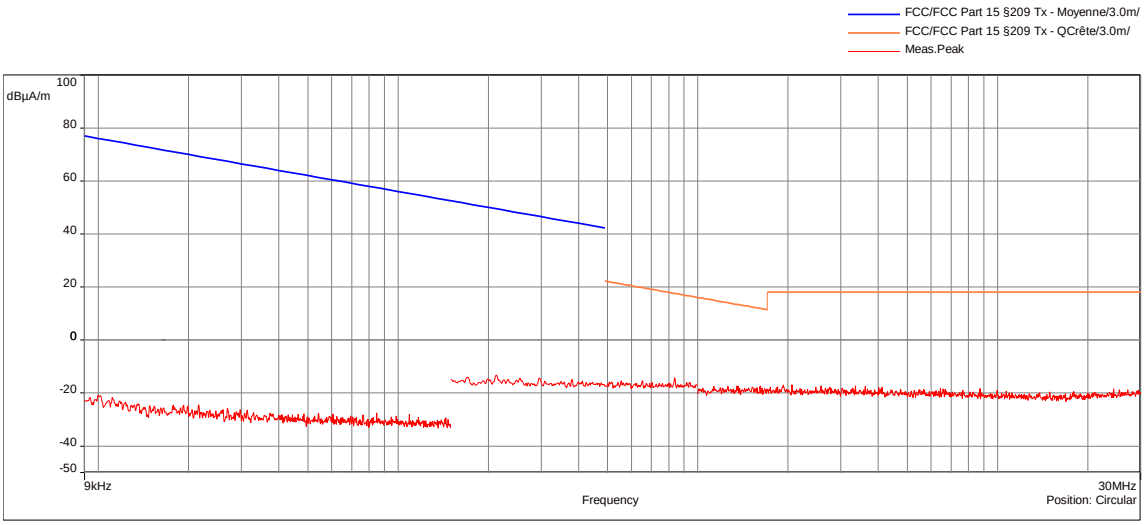


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

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

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH			
TX MODE / 90° - ALL CHANNELS		EMI4656	
EUT mode:	Continuous Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



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

7.3. Transmitter radiated spurious emissions at frequencies >30MHz

Reference standard:	FCC part 15 Radio part 15.249 and RSS-210
Test method:	FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen

General test setup: EUT is set on an insulating support at 80(f<1GHz), 150cm(f>1GHz)cm above the ground reference plane.

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 - For Freq < 1GHz	30MHz-1GHz	15.209	EMI4654	**PASS**
Tx mode - Low Channel - For Freq > 1GHz	1GHz-10GHz	15.209	EMI4684	**PASS**
Tx mode - High Channel - For Freq > 1GHz	1GHz-10GHz	15.209	EMI4685	**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					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Antenna	ETS-Lindgren	3117	5456	24/07/2019	24/09/2022
Antenna	Electro Metrics	BIA-30HF	1107	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	MegaPhase	F135N1N28	16667	25/10/2019	25/12/2021
Cable	SUCOFLEX	N-3m	14378	25/06/2019	25/08/2021
Cable	SUCOFLEX	N-3m	14379	25/06/2019	25/08/2021
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Cable	MegaPhase	TM18-N1N1-118	12841	14/08/2020	14/10/2022
Filter	Micro-Tronics	HPM18865	12843	09/06/2018	09/08/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Preamplifier	IMPULSE	CA118-546ACN	9169	20/12/2019	20/02/2021
Receiver	Agilent	E4440A	5824	24/04/2018	24/12/2020

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
	Technologies				
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/12/2022
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

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

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS			
TX MODE - ALL CHANNELS - FOR FREQ < 1GHZ			EMI4654
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµ/m)**
N/A	N/A	N/A	N/A

No spurious emissions were detected.

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS				
TX MODE - LOW CHANNEL - FOR FREQ > 1GHZ				EMI4684
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Leve Avg computed with duty factor (dBµV/m)**	**Limit Avg (dBµ/m)**
1829.569	Vertical	53.32	23.73	54
1829.569	Horizontal	52.13	22.54	54

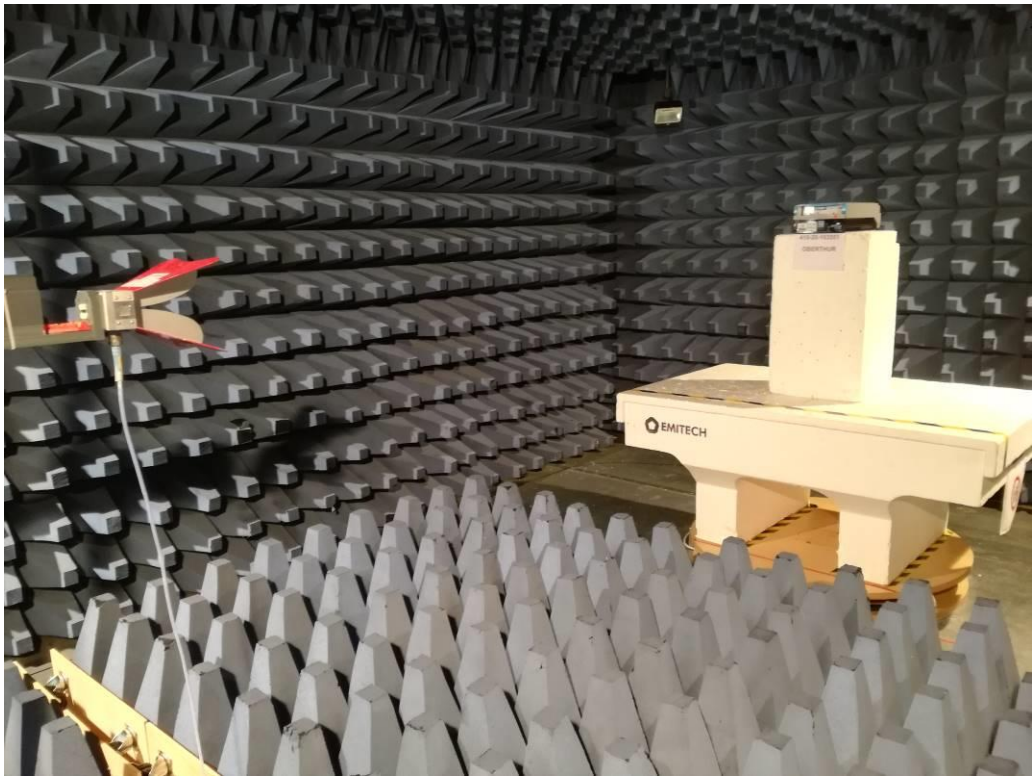
TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS				
TX MODE - HIGH CHANNEL - FOR FREQ > 1GHZ				EMI4685
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Leve Avg computed with duty factor (dBµV/m)**	**Limit Avg (dBµ/m)**
1830.667	Vertical	53.71	24.12	54
1830.667	Horizontal	52.41	22.82	54

TEST SETUP PHOTO(S) – EUT POSITION FOR FREQ < 1GHZ

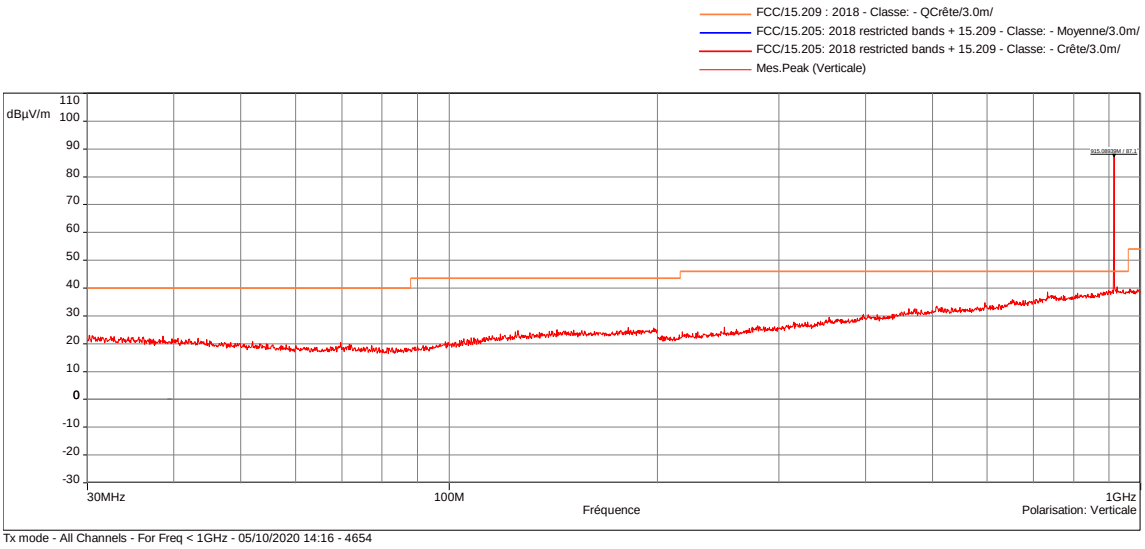

TEST SETUP PHOTO(S) – EUT POSITION FOR FREQ > 1GHZ


TEST SETUP PHOTO(S) – 30MHZ < FOR FREQ < 200MHZ

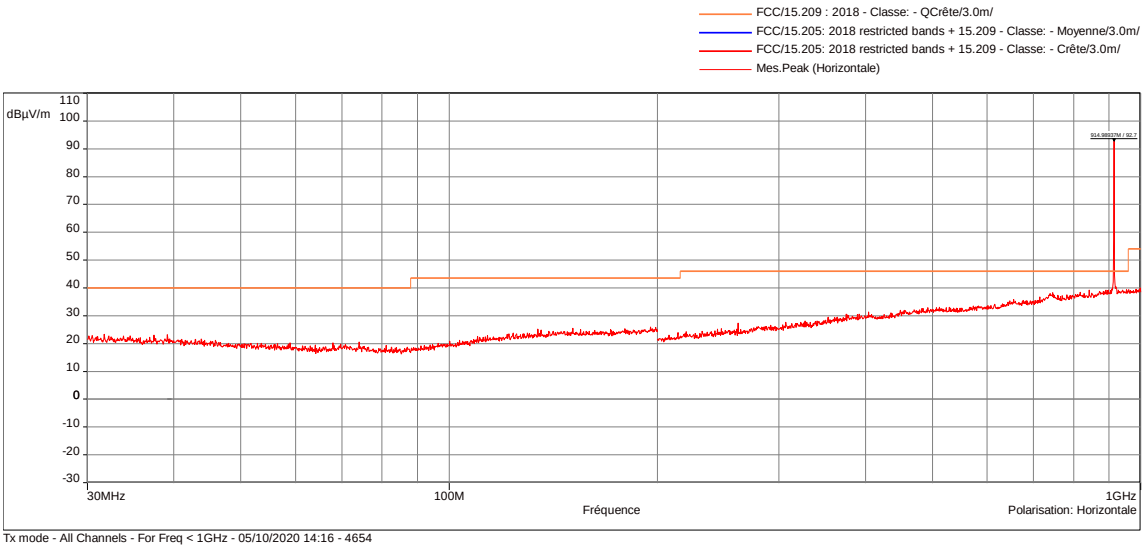

TEST SETUP PHOTO(S) - 200MHZ < FOR FREQ < 1GHZ


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


TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
TX MODE - ALL CHANNELS - FOR FREQ < 1GHZ		EMI4654	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



Tx mode - All Channels - For Freq < 1GHz - 05/10/2020 14:16 - 4654



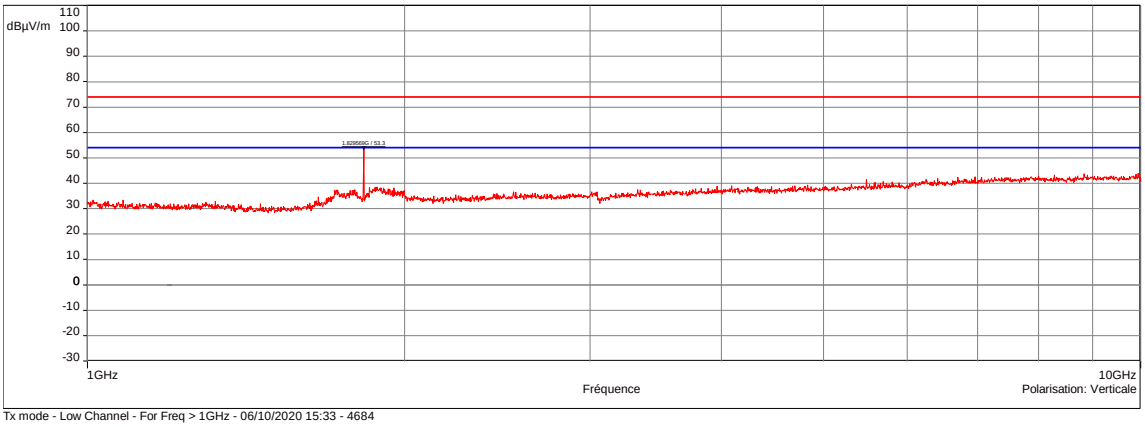
Tx mode - All Channels - For Freq < 1GHz - 05/10/2020 14:16 - 4654

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-200MHz	100kHz	300kHz	Peak
Horizontal	30MHz-200MHz	100kHz	300kHz	Peak
Horizontal	200MHz-1GHz	100kHz	300kHz	Peak
Vertical	200MHz-1GHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	The 915MHz is the main carrier signal			
EUT modification(s): N/A				

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
TX MODE - LOW CHANNEL - FOR FREQ > 1GHZ		EMI4684	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

FCC/15.209 : 2018 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2018 - Classe: - Crête/3.0m/
Mes.Peak (Verticale)

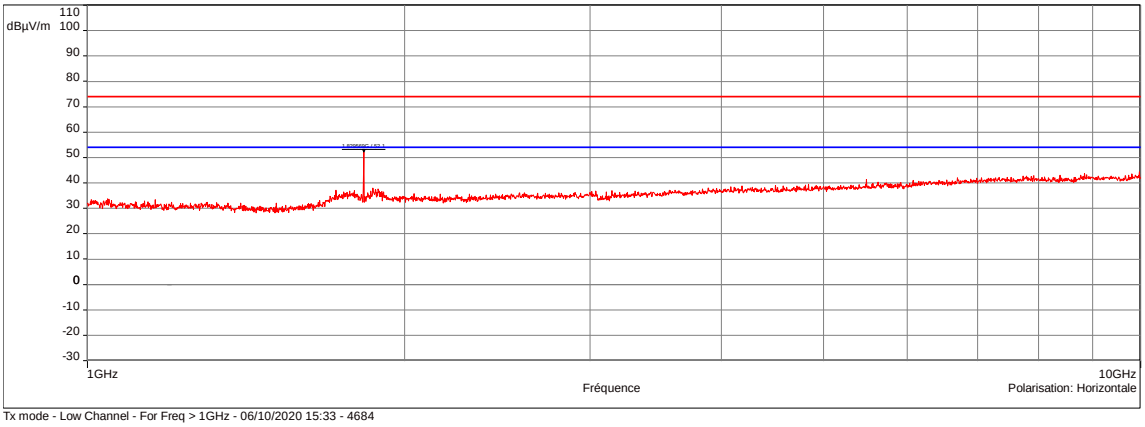
Description Sous-bande 1
Fréquences:1 GHz - 10 GHz (Mode analyseur) 8192 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



Tx mode - Low Channel - For Freq > 1GHz - 06/10/2020 15:33 - 4684

FCC/15.209 : 2018 - Classe: - Moyenne/3.0m/
FCC/15.209 : 2018 - Classe: - Crête/3.0m/
Mes.Peak (Horizontale)

Description Sous-bande 2
Fréquences:1 GHz - 10 GHz (Mode analyseur) 8192 Points
Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Horizontale
Distance: 3 m



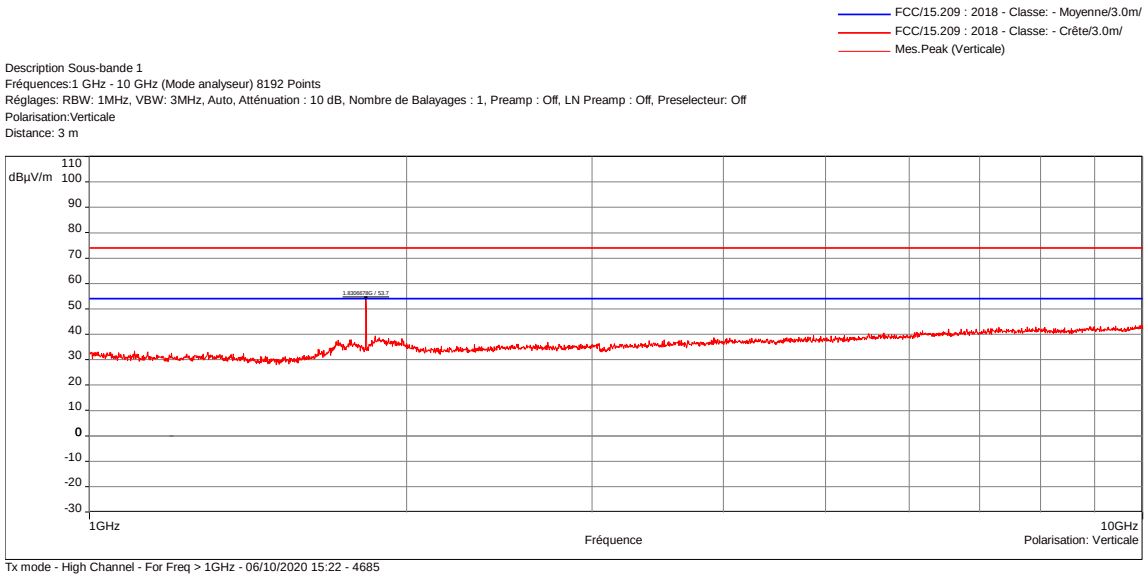
Tx mode - Low Channel - For Freq > 1GHz - 06/10/2020 15:33 - 4684

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-10GHz	1MHz	3MHz	Peak

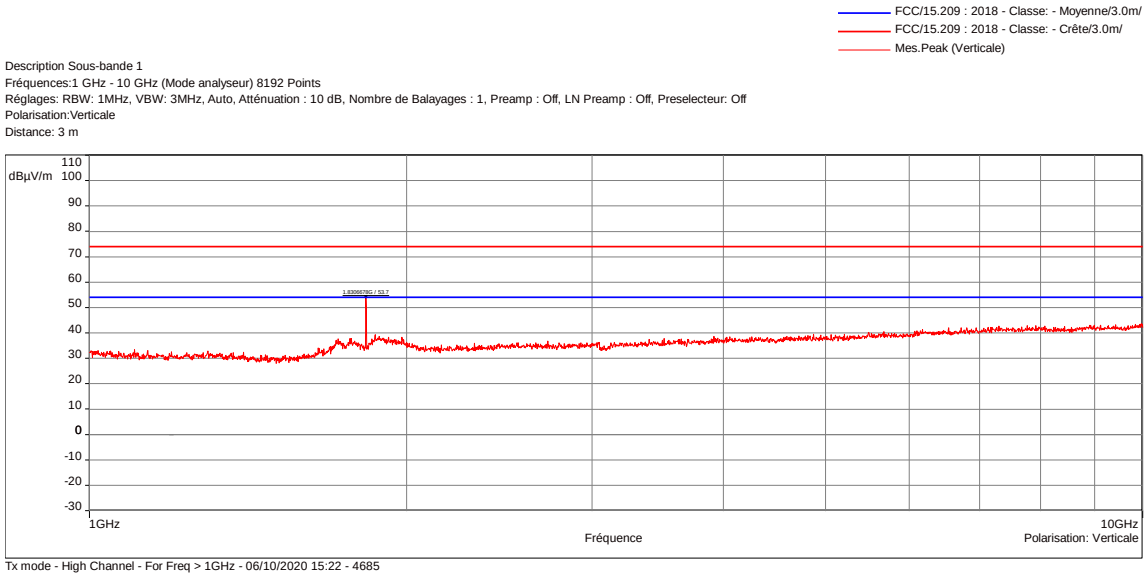
Configuration:	N/A
Comments:	N/A

EUT modification(s): N/A

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
TX MODE - HIGH CHANNEL - FOR FREQ > 1GHZ		EMI4685	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



Tx mode - High Channel - For Freq > 1GHz - 06/10/2020 15:22 - 4685



Tx mode - High Channel - For Freq > 1GHz - 06/10/2020 15:22 - 4685

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				

7.4. Band-edge compliance

Reference standard:	FCC part 15 Radio part 15.249 and RSS-210
Test method:	FCC part 15.249 subclause d) and RSS-210

Test description: d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

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

Masurements were 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.

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
BandEdge - Low Channel	901MHz-929MHz	15.249	EMI4675	**PASS**
BandEdge - High Channel	901MHz-929MHz	15.249	EMI4677	**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					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	SUCOFLEX	N-3m	14378	25/06/2019	25/08/2021
Cable	SUCOFLEX	N-3m	14379	25/06/2019	25/08/2021
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

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

BAND-EDGE COMPLIANCE- TABULATED RESULTS			
BANDEDGE - LOW CHANNEL			EMI4675
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµ/m)**
N/A	N/A	N/A	N/A

No spurious emissions were detected.

BAND-EDGE COMPLIANCE- TABULATED RESULTS			
BAND EDGE - HIGH CHANNEL			EMI4677
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµ/m)**
N/A	N/A	N/A	N/A

No spurious emissions were detected.

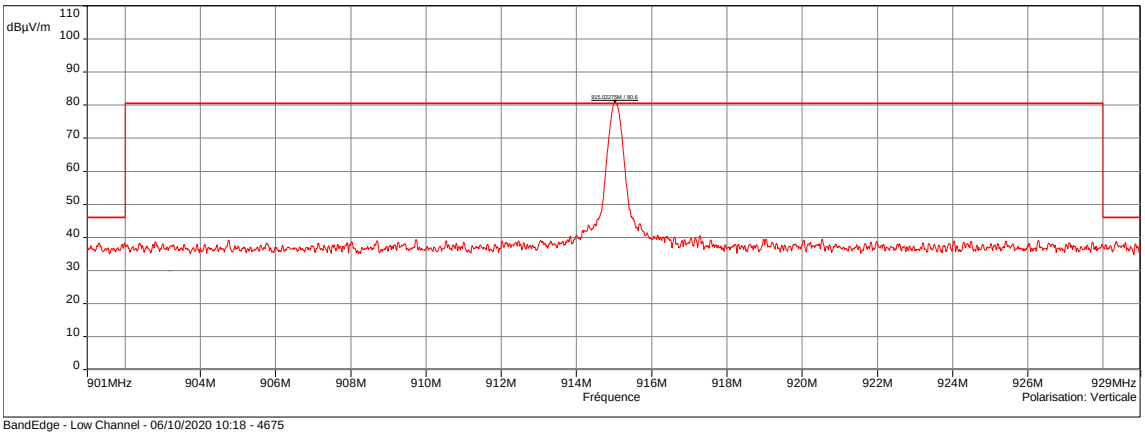
TEST SETUP PHOTO(S) – EUT POSITION


TEST SETUP PHOTO(S)


BAND-EDGE COMPLIANCE - GRAPH			
BANDEDGE - LOW CHANNEL		EMI4675	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

FCC/BandEdge -15.249 - Low Channel - Classe:PV - Crête/3.0m/
Mes.Peak (Verticale)

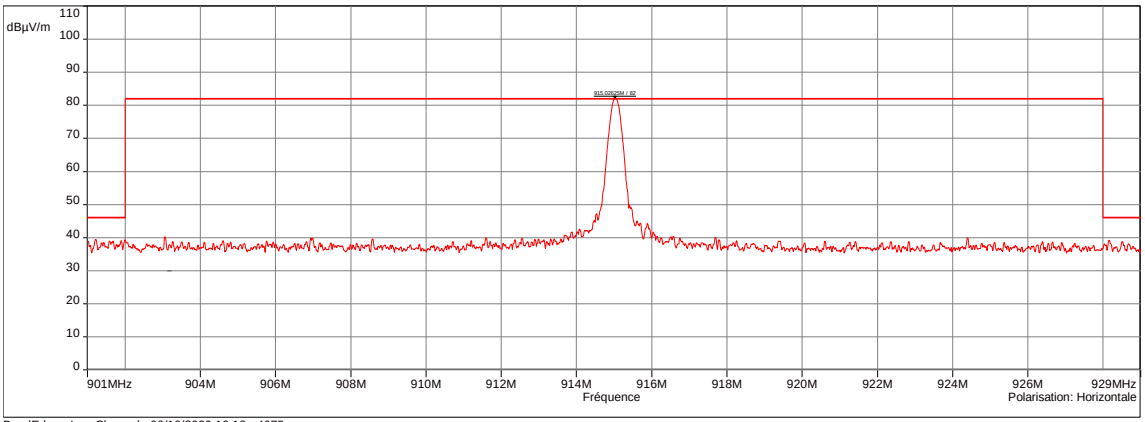
Description Sous-bande 1
Fréquences:901 MHz - 929 MHz (Mode analyseur) 8000 Points
Réglages: RBW: 100kHz, VBW: 300kHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



BandEdge - Low Channel - 06/10/2020 10:18 - 4675

FCC/BandEdge -15.249 - Low Channel - Classe:PH - Crête/3.0m/
Mes.Peak (Horizontale)

Description Sous-bande 2
Fréquences:901 MHz - 929 MHz (Mode analyseur) 8000 Points
Réglages: RBW: 100kHz, VBW: 300kHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Horizontale
Distance: 3 m



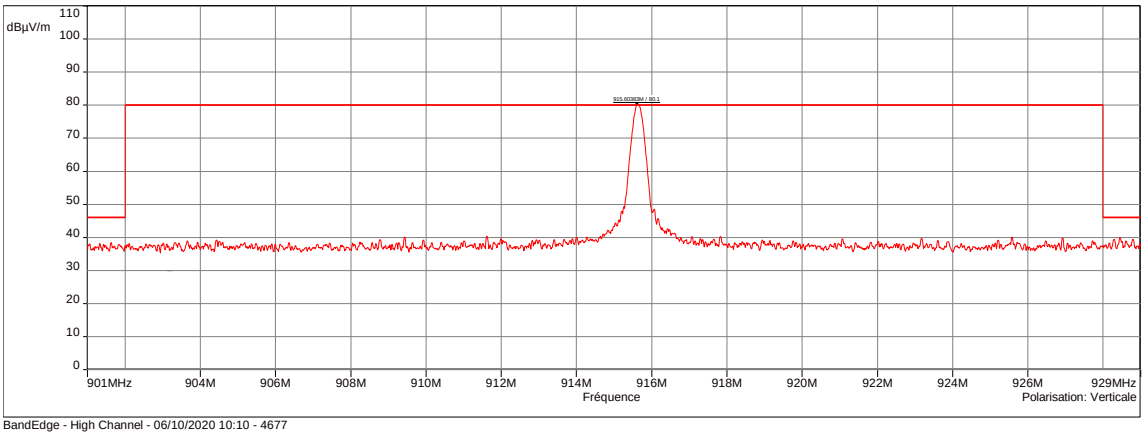
BandEdge - Low Channel - 06/10/2020 10:18 - 4675

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	901MHz-929MHz	100kHz	300kHz	Peak
Horizontal	901MHz-929MHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	No out of band emissions wered detected.			
EUT modification(s): N/A				

BAND-EDGE COMPLIANCE - GRAPH			
BANDEDGE - HIGH CHANNEL		EMI4677	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

FCC/BandEdge -15.249 - High Channel - Classe:PV - Crête/3.0m/
Mes.Peak (Verticale)

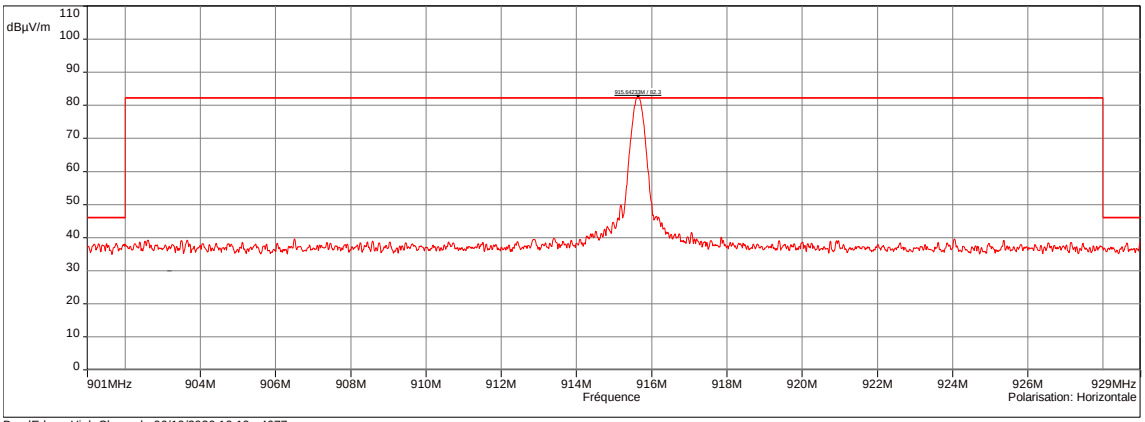
Description Sous-bande 1
Fréquences:901 MHz - 929 MHz (Mode analyseur) 8000 Points
Réglages: RBW: 100kHz, VBW: 300kHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



BandEdge - High Channel - 06/10/2020 10:10 - 4677

FCC/BandEdge -15.249 - High Channel - Classe:PH - Crête/3.0m/
Mes.Peak (Horizontale)

Description Sous-bande 2
Fréquences:901 MHz - 929 MHz (Mode analyseur) 8000 Points
Réglages: RBW: 100kHz, VBW: 300kHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Horizontale
Distance: 3 m



BandEdge - High Channel - 06/10/2020 10:10 - 4677

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	901MHz-929MHz	100kHz	300kHz	Peak
Horizontal	901MHz-929MHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	No out of band emissions wered detected.			
EUT modification(s): N/A				

7.5. Effective isotoropic radiated power

a) Normal Tests Conditions

Reference standard:	FCC part 15 Radio part 15.249 and RSS-210
Test method:	FCC part 15.249 and RSS-210
General test setup: 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
EIRP - Low Channel	914.525MHz-915.525MHz	50 mV/m (93.98 dBµV/m)	EMI4669	**PASS**
EIRP - High Channel	915.125MHz-916.125MHz		EMI4676	**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

Category	Brand	Type	Identifier	Cal. Date	Cal. Due
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

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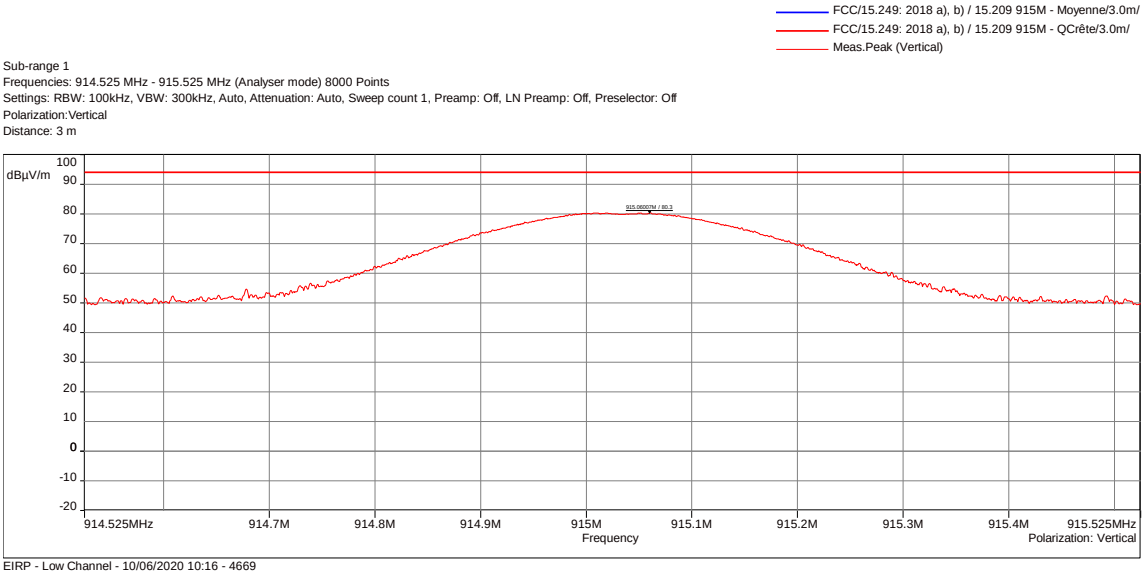
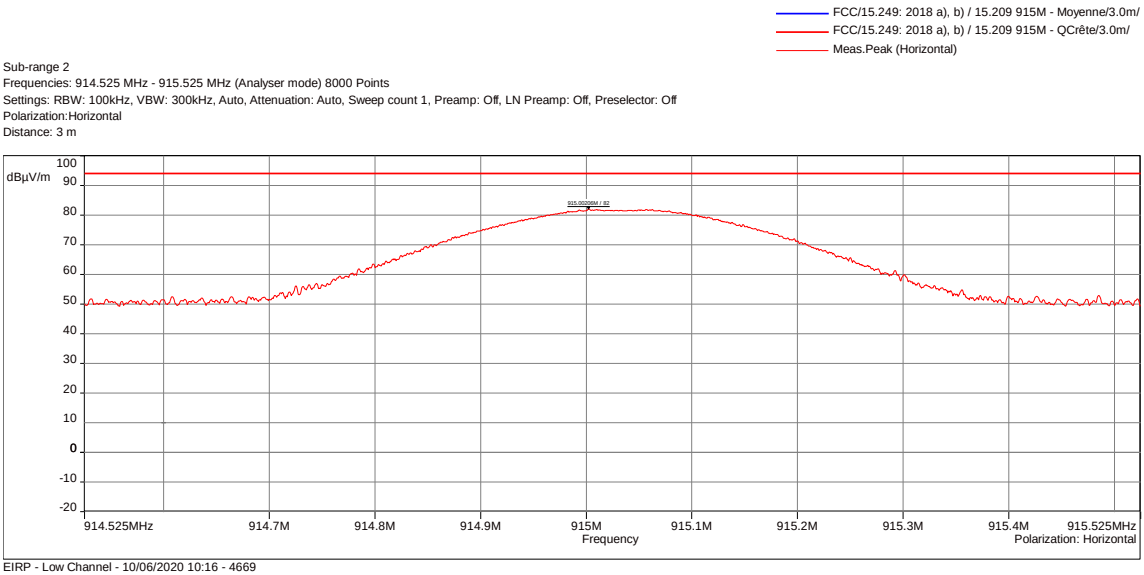
TEST SETUP PHOTO(S) – EUT POSITION


TEST SETUP PHOTO(S)


EFFECTIVE ISOTROPIC RADIATED POWER - GRAPH			
EIRP - LOW CHANNEL		EMI4669	
EUT mode:	Continuous modulated Tx	**T (°C):**	54.1
Test Date:	06/10/2020	**H (%):**	19.6
Test Operator:	OAT	**P (hPa):**	1011



EIRP - Low Channel - 10/06/2020 10:16 - 4669



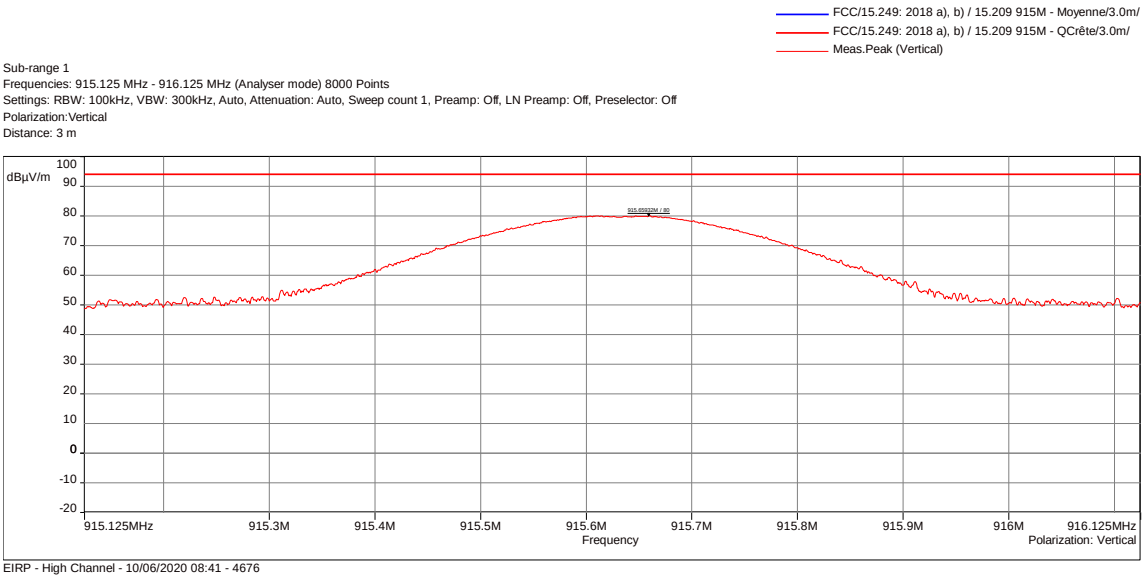
EIRP - Low Channel - 10/06/2020 10:16 - 4669

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	914.525MHz-915.525MHz	100kHz	300kHz	Peak
Horizontal	914.525MHz-915.525MHz	100kHz	300kHz	Peak

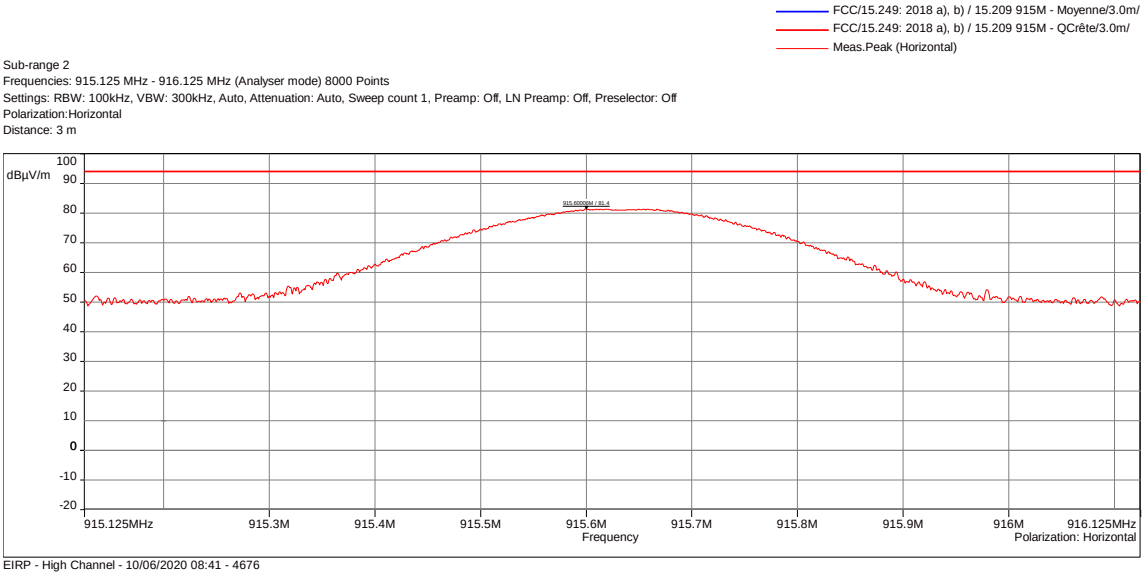
EUT modification(s): N/A

EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
EIRP - LOW CHANNEL			EMI4669
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµV/m)**
915.025	Vertical	80.3	93.98
915.025	Horizontal	82.0	93.98

EFFECTIVE ISOTROPIC RADIATED POWER - GRAPH			
EIRP - HIGH CHANNEL		EMI4676	
EUT mode:	Continuous modulated Tx	**T (°C):**	54.1
Test Date:	06/10/2020	**H (%):**	19.6
Test Operator:	OAT	**P (hPa):**	1011



EIRP - High Channel - 10/06/2020 08:41 - 4676



EIRP - High Channel - 10/06/2020 08:41 - 4676

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	915.125MHz-916.125MHz	100kHz	300kHz	Peak
Horizontal	915.125MHz-916.125MHz	100kHz	300kHz	Peak

EUT modification(s): N/A

EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
EIRP - HIGH CHANNEL			EMI4676
Frequency (MHz)	**Polarization**	**Level (dBm)**	**Limit (dBm)**
915.625	Vertical	80.0	93.98
915.625	Horizontal	81.4	93.98

b) EXTREMES TESTS CONDITIONS

Reference standard:	FCC part 15 Radio part 15.249 and RSS-210
Test method:	FCC part 15.249 and RSS-210
General test setup: EUT is set inside the climatic enclosure. EIRP measurements are repeated in extreme test conditions with the power levels correlated with the maximum effective radiated power measured in normal conditions.	

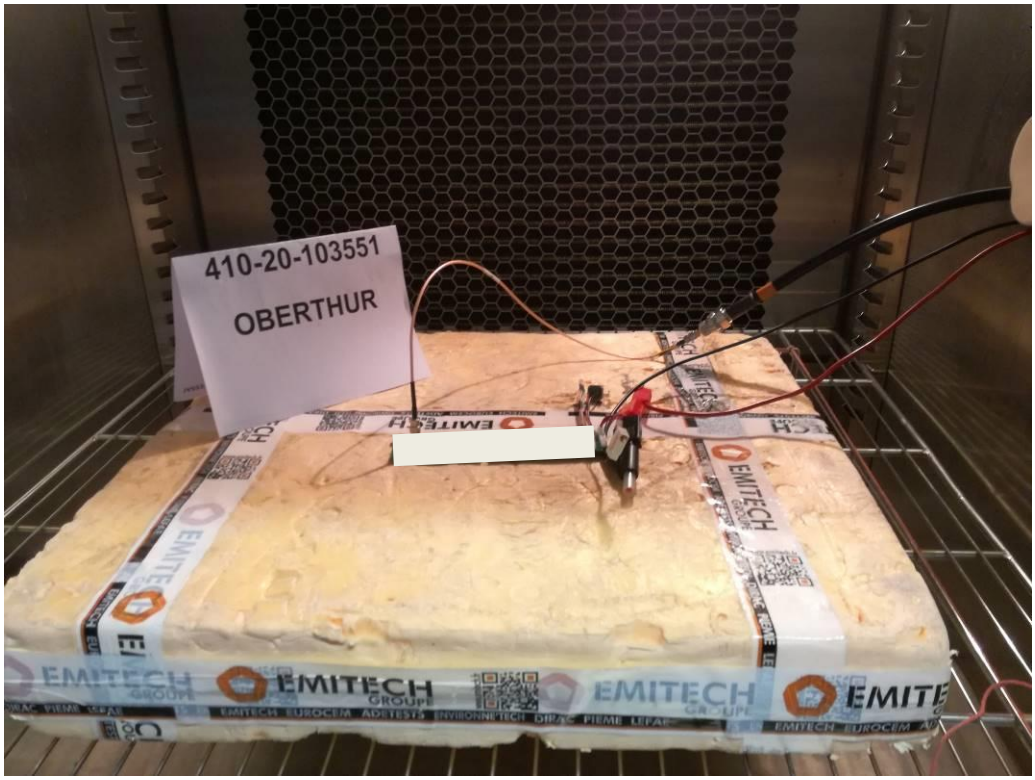
TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Low channel / 25°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4590	**PASS**
Low channel / 25°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4911	**PASS**
Low channel / 65°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4912	**PASS**
Low channel / 65°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4913	**PASS**
Low channel / -20°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4914	**PASS**
Low channel / -20°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4915	**PASS**
High channel / 25°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4916	**PASS**
High channel / 25°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4917	**PASS**
High channel / 65°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4918	**PASS**
High channel / 65°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4919	**PASS**
High channel / -20°C / 3.6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4920	**PASS**
High channel / -20°C / 2.7Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI4921	**PASS**

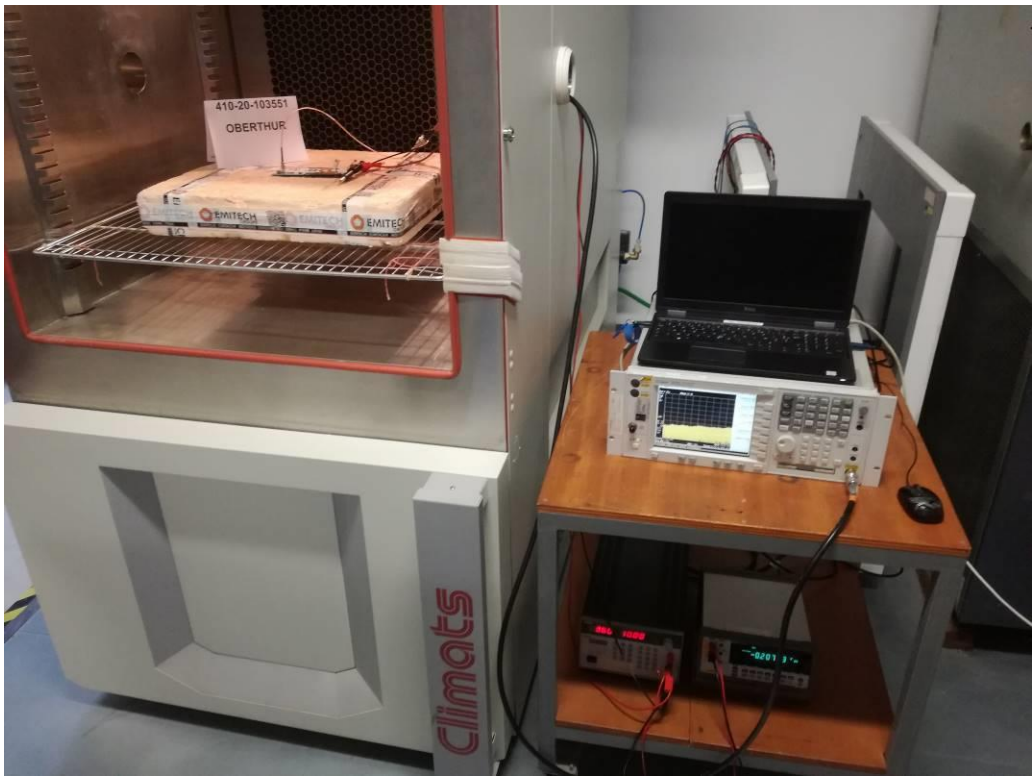
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	21.8 °C
Relative Humidity	20 to 75 %	61.8 %
Atmospheric pressure	N/A	1006 hPa
Test method deviation: N/A		
Supplementary information: EUT power supply is replaced by a stabilized power supply.		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Attenuator	Radiall	R412710124	16490	25/06/2019	25/08/2022
Cable	N	3m	16414	04/05/2019	04/07/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Digital thermometer	GHM Greisinger	GMH 3710	12968	01/10/2020	01/10/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Power supply	TTI	TSX-1820P	4365		
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/06/2022
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – EXTREME TEST CONDITIONS





EFFECTIVE RADIATED POWER - TABULATED RESULTS				
TEST CASE	FREQUENCY	LEVEL (dBµV/m)	LIMIT (dBµV/m)	RESULT TAB.
Low channel / 25°C / 3.6Vdc	915.025 MHz	82.00	93.98	EMI4590
Low channel / 25°C / 2.7Vdc	915.025 MHz	81.77	93.98	EMI4911
Low channel / 65°C / 3.6Vdc	915.025 MHz	81.39	93.98	EMI4912
Low channel / 65°C / 2.7Vdc	915.025 MHz	80.58	93.98	EMI4913
Low channel / -20°C / 3.6Vdc	915.025 MHz	82.46	93.98	EMI4914
Low channel / -20°C / 2.7Vdc	915.025 MHz	81.61	93.98	EMI4915
High channel / 25°C / 3.6Vdc	915.625 MHz	81.40	93.98	EMI4916
High channel / 25°C / 2.7Vdc	915.625 MHz	80.76	93.98	EMI4917
High channel / 65°C / 3.6Vdc	915.625 MHz	80.84	93.98	EMI4918
High channel / 65°C / 2.7Vdc	915.625 MHz	79.65	93.98	EMI4919
High channel / -20°C / 3.6Vdc	915.625 MHz	81.90	93.98	EMI4920
High channel / -20°C / 2.7Vdc	915.625 MHz	81.07	93.98	EMI4921

EUT MODIFICATIONS	OPERATOR	TEST DATE	RESULT TAB.
N/A	OAT	07/10/2020	-

7.6. Occupied Bandwidth

Reference standard:	FCC part 15 Radio part 15.215 c)
Test method:	FCC part 15 Radio part 15.215 c) and RSS Gen
Test description: The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. EUT is connected to the measuring receiver via 50Ω attenuator(s).	

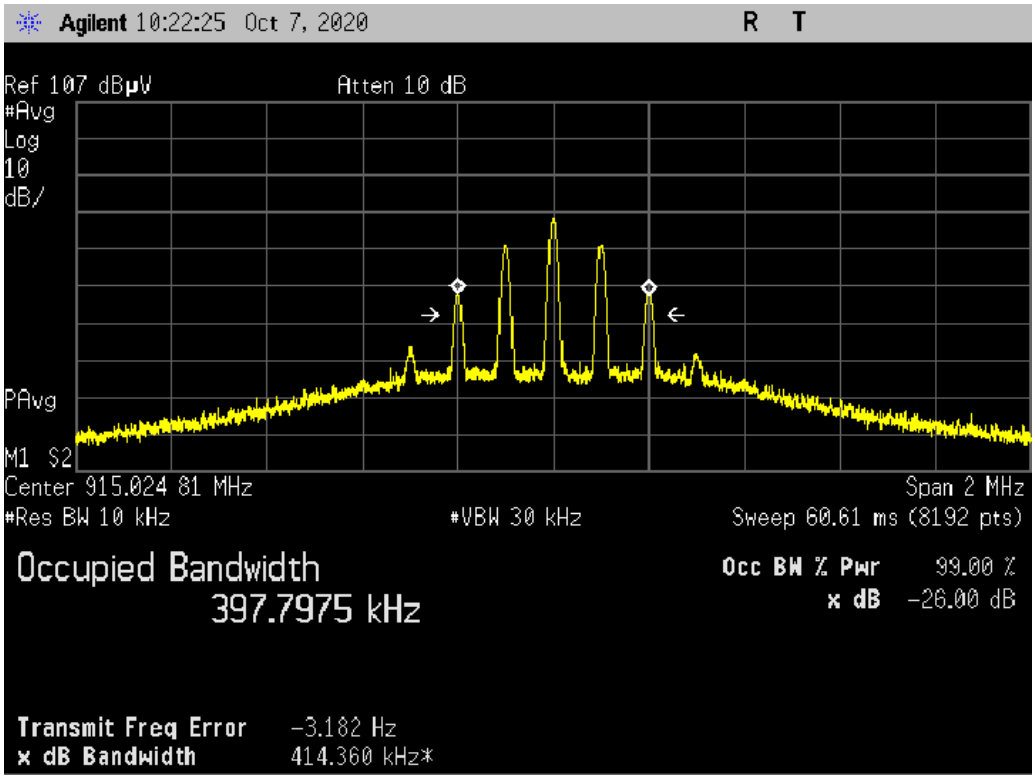
TESTED CHANNEL	RESULT	SEVERITY	RESULT TAB.	VERDICT
99% Bandwidth / Low channel	397.7975 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI4593	**PASS**
99% Bandwidth / High channel	395.8670 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI4934	**PASS**
20dB Bandwidth / Low channel	399.22 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI4935	**PASS**
20dB Bandwidth / High channel	399.22 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI4936	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	21.8 °C
Relative Humidity	20 to 75 %	61.8 %
Atmospheric pressure	N/A	1006 hPa
Test method deviation: N/A		
Supplementary information: EUT power supply is replaced by a stabilized power supply.		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Attenuator	Radiall	R412710124	16490	25/06/2019	25/08/2022
Cable	N	3m	16414	04/05/2019	04/07/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Power supply	TTI	TSX-1820P	4365		
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Voltmeter	Agilent Technologies	E4440A	5824	24/04/2018	24/06/2022

Blank cells = Permanent validity

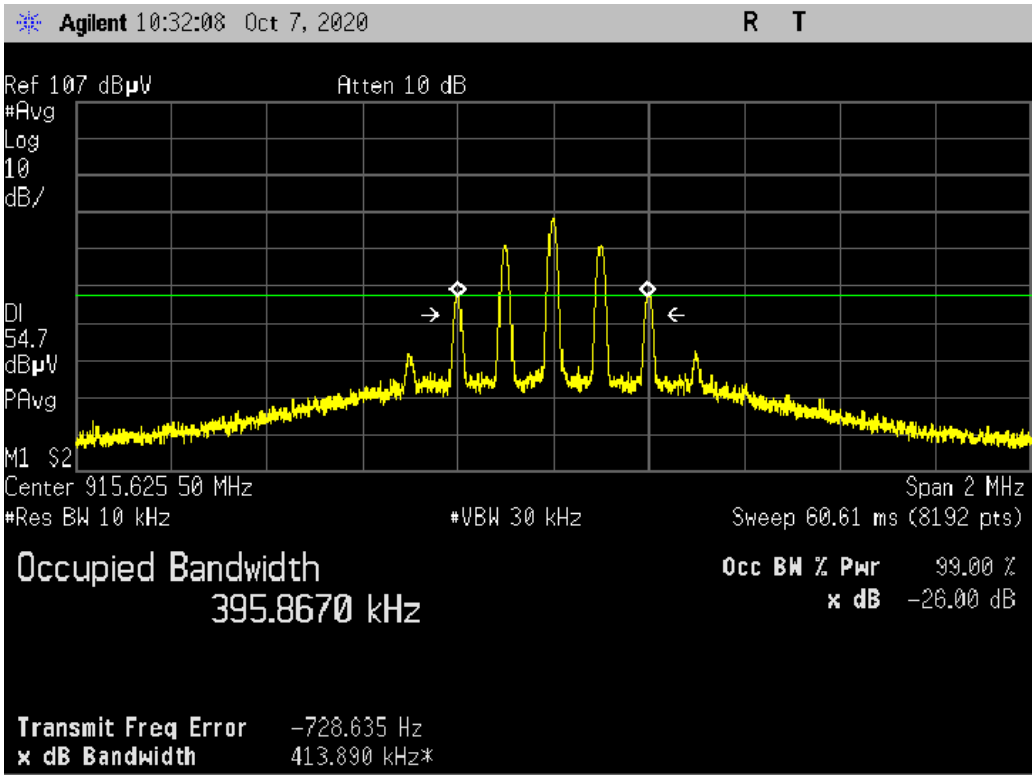
OCCUPIED BANDWIDTH - GRAPH		
99% BANDWIDTH / LOW CHANNEL		EMI4593
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
99% BANDWIDTH / LOW CHANNEL			EMI4593
f_{Low}	**f_{High}**	**99% Bandwidth (f_{high}-f_{low})**	**Limit**
> 904.6MHz	< 925.4MHz	397.7975 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

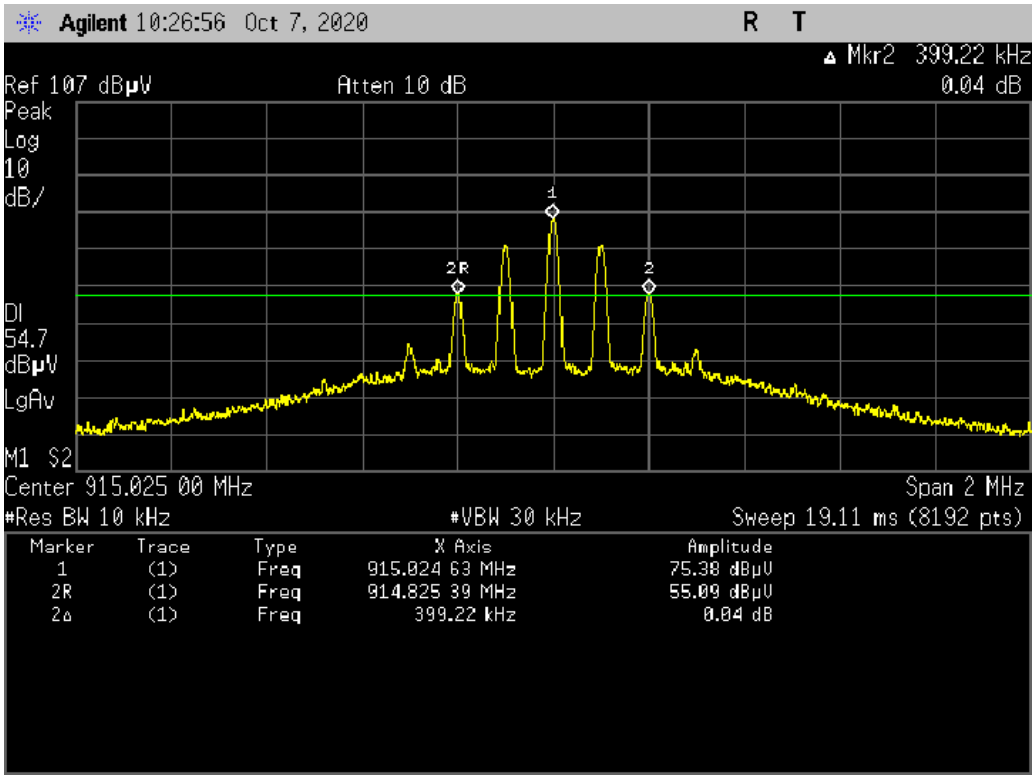
OCCUPIED BANDWIDTH - GRAPH		
99% BANDWIDTH / HIGH CHANNEL		EMI4934
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
99% BANDWIDTH / HIGH CHANNEL			EMI4934
f_{Low}	**f_{High}**	**99% Bandwidth (f_{high}-f_{low})**	**Limit**
> 904.6MHz	< 925.4MHz	395.8670 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

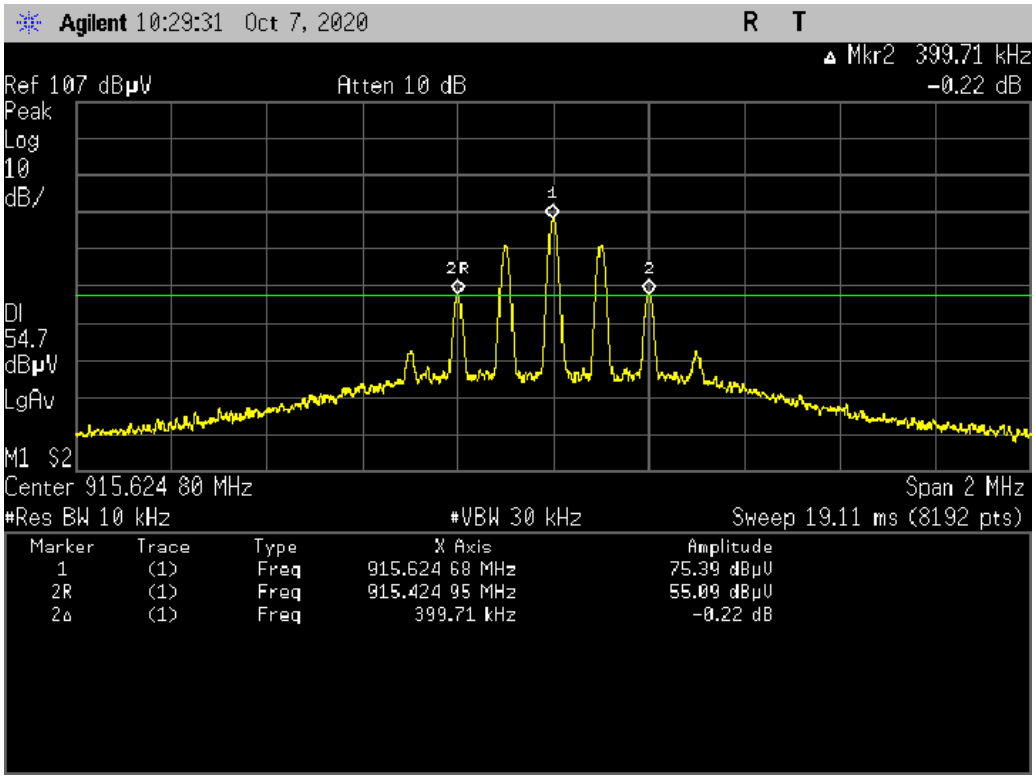
OCCUPIED BANDWIDTH - GRAPH		
20dB BANDWIDTH / LOW CHANNEL		EMI4935
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
20dB BANDWIDTH / LOW CHANNEL			EMI4935
f_{Low}	**f_{High}**	**20dB Bandwidth (f_{high}-f_{low})**	**Limit**
914.82539 MHz	915.22461 MHz	399.22 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

OCCUPIED BANDWIDTH - GRAPH		
20dB BANDWIDTH / HIGH CHANNEL		**EMI4936**
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
20dB BANDWIDTH / HIGH CHANNEL			**EMI4936**
f_{Low}	**f_{High}**	**20dB Bandwidth (f_{high}-f_{low})**	**Limit**
915.42495 MHz	915.82466 MHz	399.22 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

7.7. Frequency error

Reference standard:	FCC part 15 Radio part 15.215 c)
Test method:	FCC part 15 Radio part 15.215 c) and RSS Gen
Test description: The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. EUT is set inside the climatic enclosure. EUT is connected to the measuring receiver via 50Ω attenuator(s).	

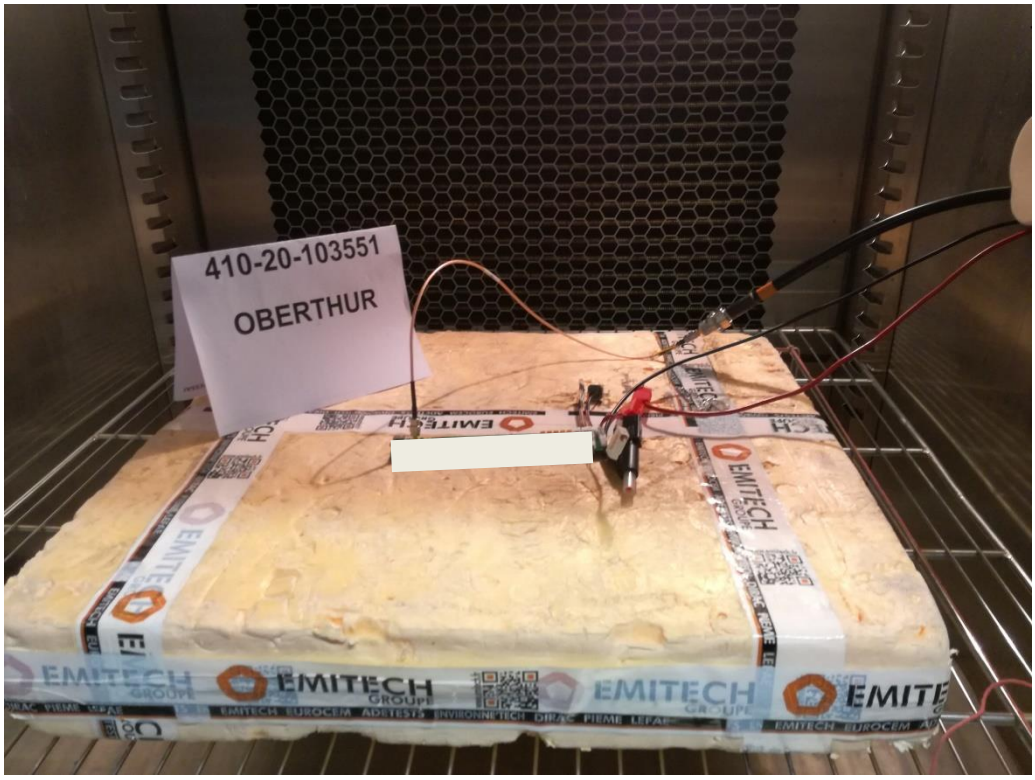
TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Low channel / 25°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4594	**PASS**
Low channel / 25°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4922	**PASS**
Low channel / 65°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4923	**PASS**
Low channel / 65°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4924	**PASS**
Low channel / -20°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4925	**PASS**
Low channel / -20°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4927	**PASS**
High channel / 25°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4928	**PASS**
High channel / 25°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4929	**PASS**
High channel / 65°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4930	**PASS**
High channel / 65°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4931	**PASS**
High channel / -20°C/ 3.6Vdc	Continuous unmodulated Tx	0.001 %	EMI4932	**PASS**
High channel / -20°C/ 2.7Vdc	Continuous unmodulated Tx	0.001 %	EMI4933	**PASS**

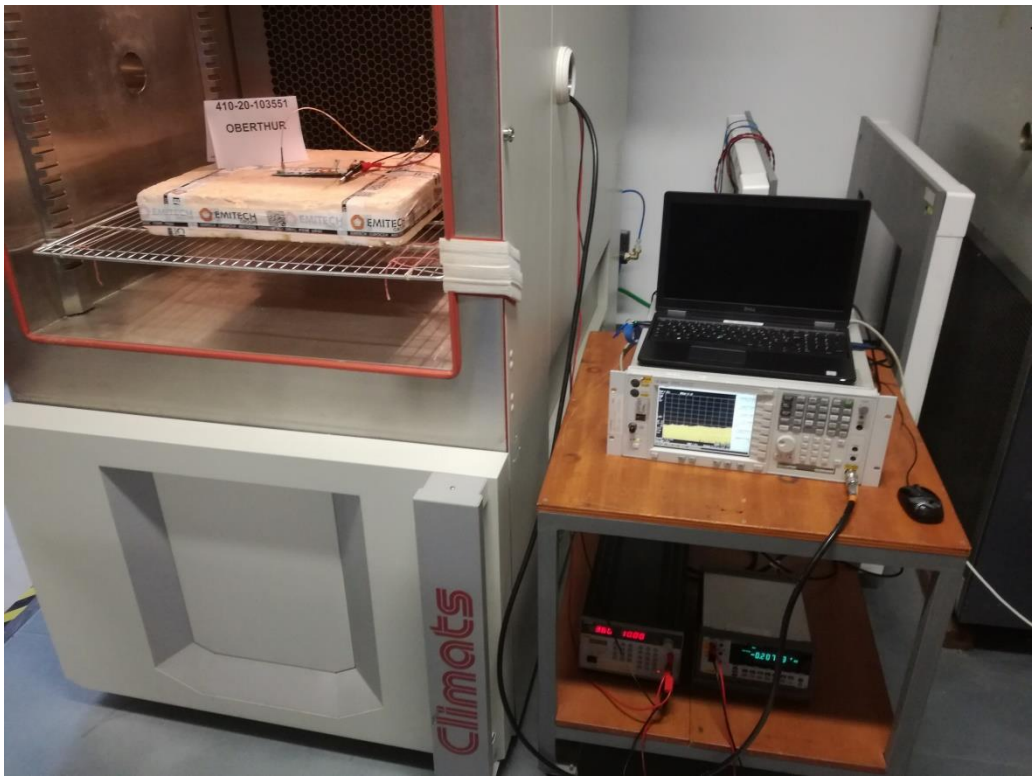
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	21.8 °C
Relative Humidity	20 to 75 %	61.8 %
Atmospheric pressure	N/A	1006 hPa
Test method deviation: N/A		
Supplementary information: EUT power supply is replaced by a stabilized power supply.		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Attenuator	Radiall	R412710124	16490	25/06/2019	25/08/2022
Cable	N	3m	16414	04/05/2019	04/07/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Digital thermometer	GHM Greisinger	GMH 3710	12968	01/10/2020	01/10/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Power supply	TTI	TSX-1820P	4365		
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/06/2022
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – EXTREME TEST CONDITIONS





FREQUENCY ERROR - TABULATED RESULTS				
TEST CASE	FREQUENCY (MHZ)	FREQUENCY ERROR	LIMIT	RESULT TAB.
Low channel / 25°C/ 3.6Vdc	915.024809	N/A (Ref.)	0.001 %	EMI4594
Low channel / 25°C/ 2.7Vdc	915.024741	-0.00001 %	0.001 %	EMI4922
Low channel / 65°C/ 3.6Vdc	915.020834	-0.00043 %	0.001 %	EMI4923
Low channel / 65°C/ 2.7Vdc	915.020773	-0.00044 %	0.001 %	EMI4924
Low channel / -20°C/ 3.6Vdc	915.02461	-0.00002 %	0.001 %	EMI4925
Low channel / -20°C/ 2.7Vdc	915.02543	0.00007 %	0.001 %	EMI4927
High channel / 25°C/ 3.6Vdc	915.624600	N/A (Ref.)	0.001 %	EMI4928
High channel / 25°C/ 2.7Vdc	915.624648	0.00001	0.001 %	EMI4929
High channel / 65°C/ 3.6Vdc	915.620491	-0.00045 %	0.001 %	EMI4930
High channel / 65°C/ 2.7Vdc	915.620443	-0.00045 %	0.001 %	EMI4931
High channel / -20°C/ 3.6Vdc	915.02461	0.00034 %	0.001 %	EMI4932
High channel / -20°C/ 2.7Vdc	915.624686	0.00001 %	0.001 %	EMI4933

EUT MODIFICATIONS	OPERATOR	TEST DATE	RESULT TAB.
N/A	OAT	07/10/2020	-

End of test report