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_SCM
FCC ID	2AXRGOCPICSDSCM
IC	26545-OCPICSDSCM
Ratings	99Vac/60Hz to 121Vac/60Hz + 6Vdc to 7,2Vdc (internal battery)

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

Report Reference No	**RR410-20-103551-1A**
Test procedure	FCC IC Certification
Diffusion	Mr. EZERZER
Applicant's name	Oberthur Cash Protection
Date of issue	December 2, 2020
Total number of pages	54
Revision	0
Modified page(s)	Creation
Compiled by	Olivier AELBRECHT
Approved by (+ signature)	David MONTAULON (Technical Manager)

REPORT INDEX:

REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	December 2, 2020	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **IBNS ATM devices OCP_SCM** (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_SCM
FCC ID.	2AXRGOCPICSDSCM
IC.	26545-OCPICSDSCM
Trade Mark.	Oberthur Cash Protection
Serial number (S/N).	S17239
Part number (P/N).	Not communicated
Software version.	*N/A*
Firmware version.	*L257 5.62*
Type of sample.	Pre-serial
Function(s).	IBNS devices: ATM protection range of product ATM safe integrity survey, communication with ICSD devices
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 General with All Sensors and Power supply connected

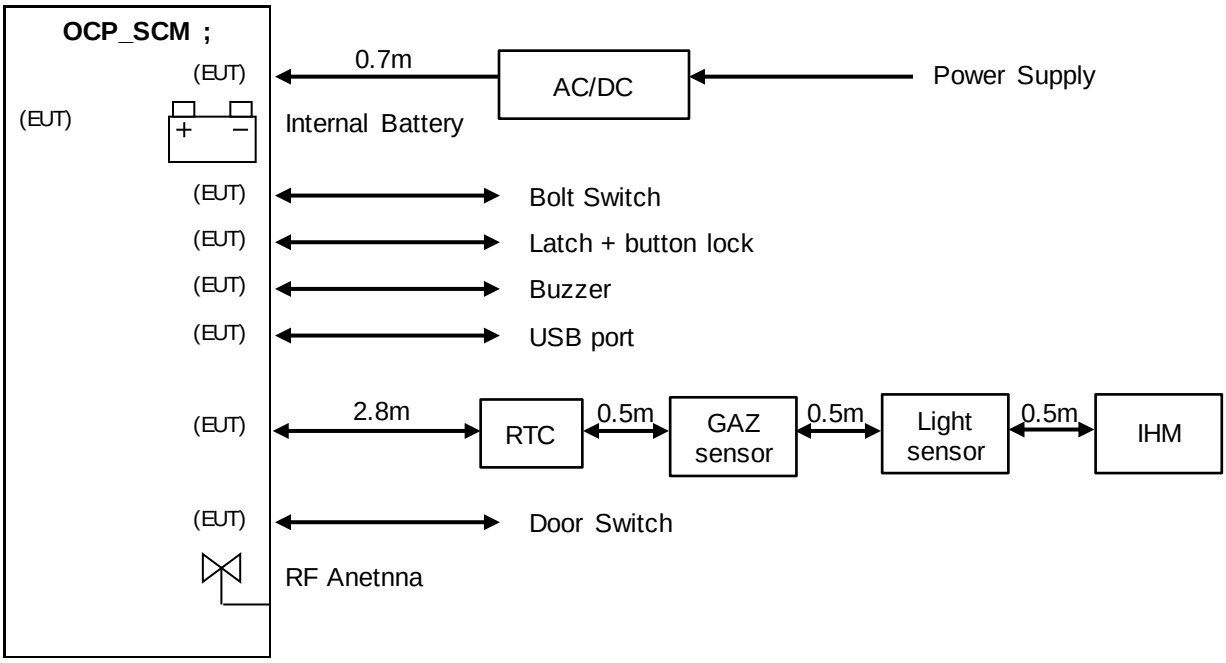
3.4. EUT Marking Plate

3.5. EUT Mechanical and Electrical Design

Power supply. .....: *110Vac/60Hz*
Power supply range. .....: 99Vac/60Hz to 121Vac/60Hz + 6Vdc to 7,2Vdc (internal battery)
Power type. .....: *Single phase without earth*
Power (W). .....: *12*
Nominal current (A). .....: *1*
Dimensions (L x W x H) (cm). .....: *25 x 10 x 2 (without sensors and power supply)*
Weight (kg). .....: *0,5 k (without sensors and power supply)*
Temperature range (°C).....: *-20°C / +65°C*
Ground bounding strap. .....: *No*

Comments:
N/A

3.6. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	N/A
1	Power supply	AC/DC	0.7m	2P for AC / 4P for DC	AC/DC output:12Vdc
2	Internal Battery	DC	N/A	N/A	used as backup
3	Bolt Switch	I/O	2.8m	3P	N/A
4	Latch + button lock	I/O	2.8m	5P	N/A
5	Buzzer	I/O	0.15m	2P	N/A
6	USB port	I/O	N/A	USB	N/A
7	Sensors (RTC GAZ Light IHM)	I/O	2.8m + 0.5m + 0.5m + 0.5m	RJ12	N/A
8	Door Switch	I/O	2.5m	3P	N/A
9	RF Anetnna	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

3.7. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
AC/DC power supply converter	CINCON ELECTRONICS CO.,LTD.	TRH50A120	Ouput 12Vdc

(EA) - AC/DC POWER SUPPLY CONVERTER

3.8. 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* 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 15.149, RSS-210	N/A
FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen	N/A
FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen	N/A
FCC part 15 Radio part 15.215 c) and RSS Gen	N/A
ANSI C63.4: 2014	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	**PASS**	
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 - High Channel - For Freq > 1GHz	15.209	**PASS**	
- Tx mode - Low 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 15.149, 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.
complies

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 15.149, RSS-210	N/A
FCC part 15.109, 15.209, 15.205, 15.215, 15.249 RSS-210, CNR Gen	N/A
FCC part 15.109, 15.209, 15.205, 15.215 RSS-210, CNR Gen	N/A
FCC part 15 Radio part 15.215 c) and RSS Gen	N/A
ANSI C63.4: 2014	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. Conducted emission (measurement)

Reference standard:	FCC part 15.107, 15.207 and RSS-Gen
Test method:	ANSI C63.4: 2014
General test setup: EUT is set on an insulating support at 40cm from the ground reference plane. All power was connected to the system through Artificial Mains Network (AMN). The AMN is placed at 80cm from the boundary of the EUT and bonded to a ground reference plane.	

TESTED CABLE	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Power Supply / 110Vac/60Hz	150kHz-30MHz	Class B	EMI4729	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	*See Graph(es)*
Relative Humidity	30 to 60 %	*See Graph(es)*
Atmospheric pressure	N/A	*See Graph(es)*
Test method deviation: N/A		
Supplementary information: N/A		

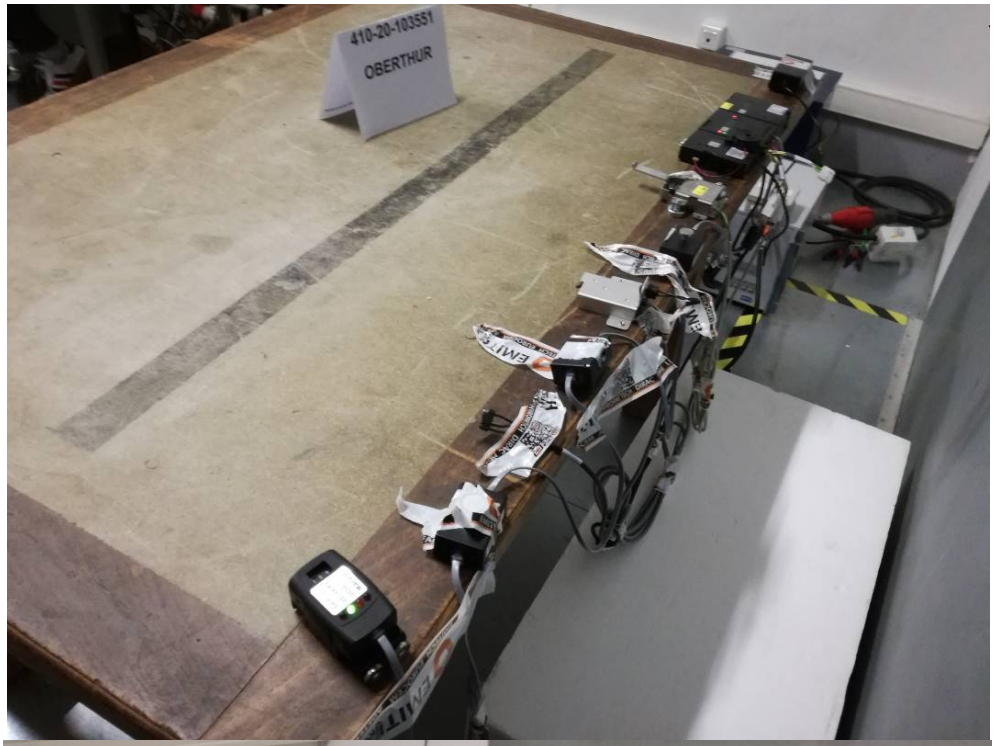
TEST EQUIPMENT USED

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	25/07/2019	25/09/2021
Cable	EMITECH	Current absorber sheath	9491	23/06/2020	23/08/2022
Cable	MICRO-COAX	N-3m	10538	20/12/2019	20/02/2022
Ground plane	EMITECH	Test area	11569		
LISN	AFJ	LT32C\10	12007	11/01/2019	11/03/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
PE choke	EMITECH	CISPR 16-2-1 : 2008	10071		
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

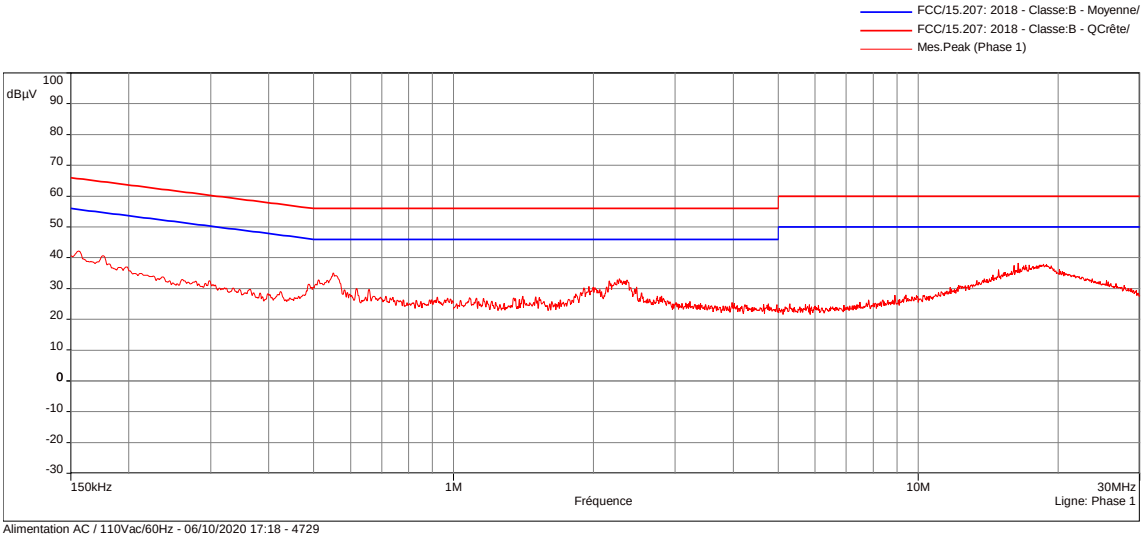
BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS							
ALIMENTATION AC / 110VAC/60HZ						EMI4729	
Terminal	Test Frequency (MHz)	Meter Reading dB (µV)	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (µV)	Limit dB (µV)	Margin (dB)
/	/	/	/	/	/	/	/
Supplementary information: No spurious emissions were detected.							

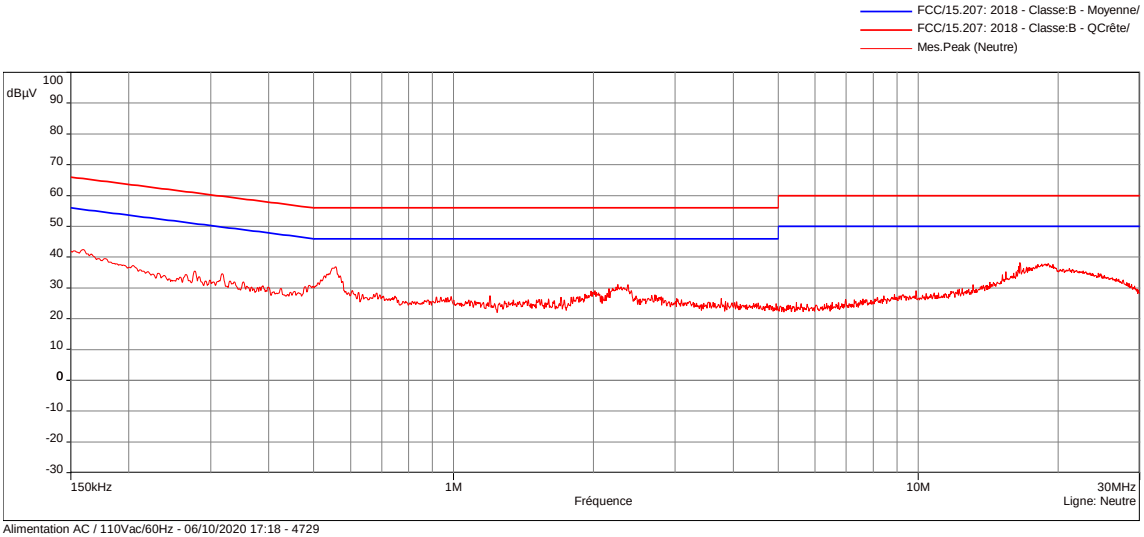
TEST SETUP PHOTO(S)



CONDUCTED EMISSION (MEASUREMENT) - GRAPH			
POWER SUPPLY / 110VAC/60HZ		EMI4729	
EUT mode:	Continous modulated Tx	**T (°C):**	21.8
Test Date:	06/10/2020	**H (%):**	61.8
Test Operator:	OAT	**P (hPa):**	1006



Alimentation AC / 110Vac/60Hz - 06/10/2020 17:18 - 4729



Alimentation AC / 110Vac/60Hz - 06/10/2020 17:18 - 4729

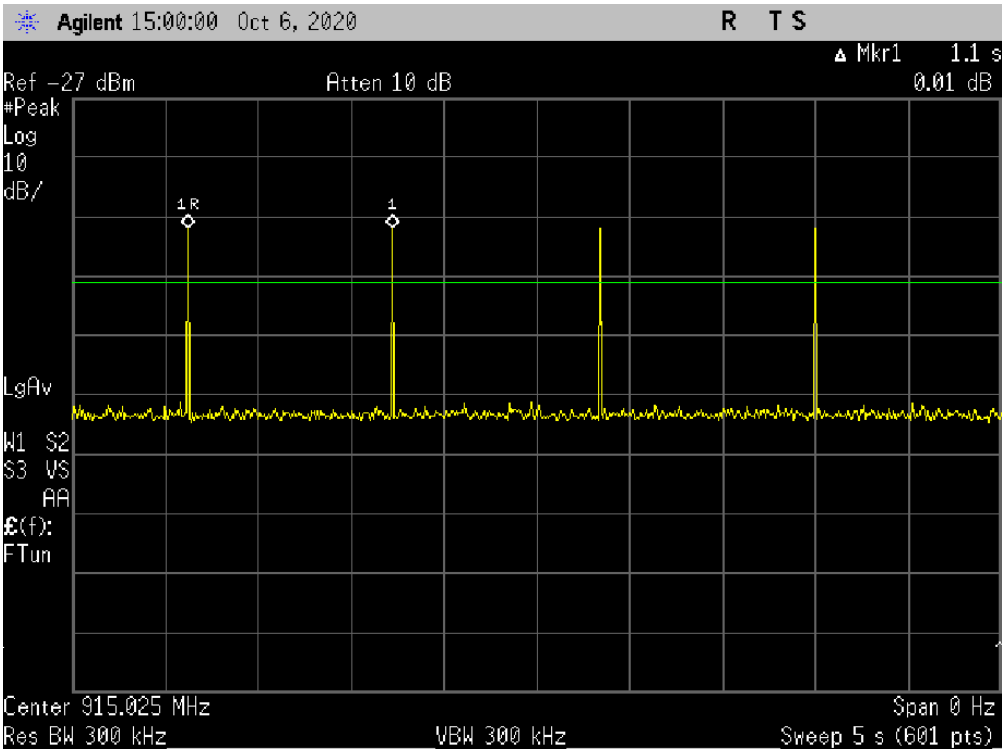
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Neutral	150kHz-1MHz	10kHz	30kHz	Peak
Neutral	1MHz-10MHz	10kHz	30kHz	Peak
Neutral	10MHz-30MHz	10kHz	30kHz	Peak
Phase 1	150kHz-1MHz	10kHz	30kHz	Peak
Phase 1	1MHz-10MHz	10kHz	30kHz	Peak
Phase 1	10MHz-30MHz	10kHz	30kHz	Peak
Measure with:	A.M.N.			
Comments:	N/A			
EUT modification(s): N/A				

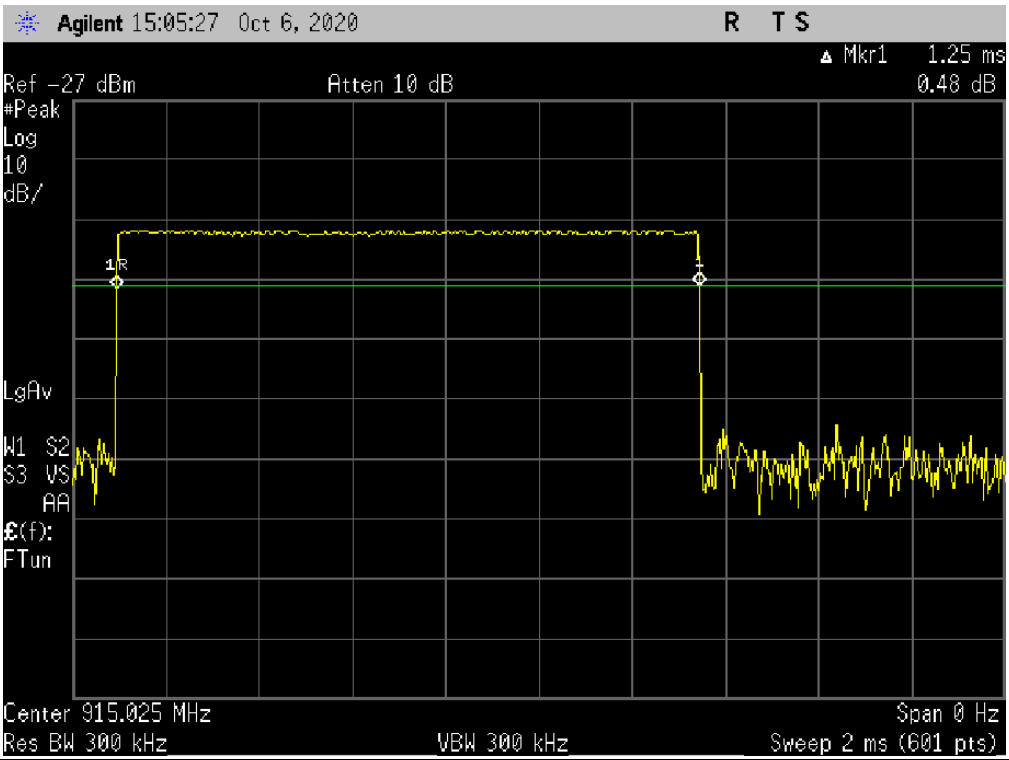
7.2. Duty Cycle of Test Signal

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.

7.3. 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 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	EMI4639	**PASS**
Tx Mode / 45° - All Channels	9kHz-30MHz	15.209	EMI4641	**PASS**
Tx Mode / 90° - All Channels	9kHz-30MHz	15.209	EMI4642	**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		

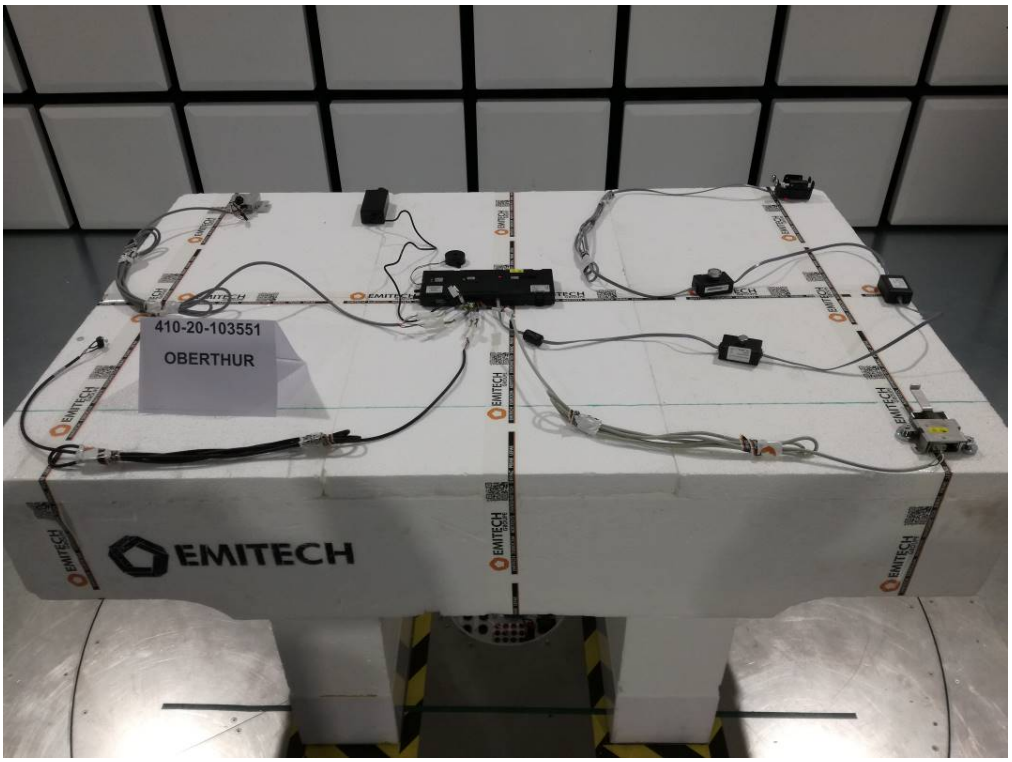
TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
AC power source	APT	AC07040	10624	25/07/2019	25/09/2021
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Agilent Technologies	E7405A	2161	11/02/2020	11/04/2022
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

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

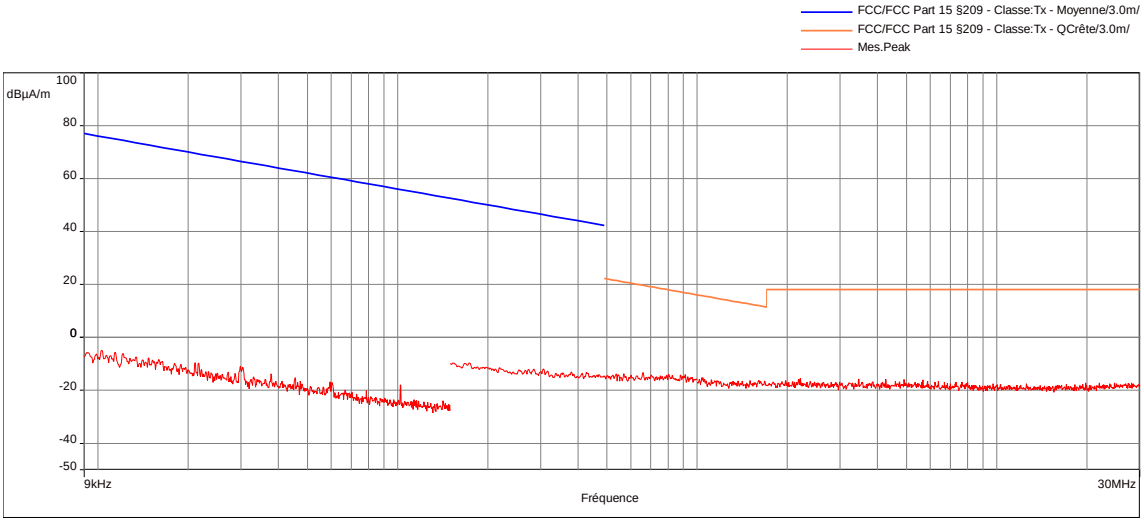
No spurious emissions were detected.

TEST SETUP PHOTO(S) – EUT POSITION



TEST SETUP PHOTO(S)

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH			
TX MODE / 0° - ALL CHANNELS		EMI4639	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

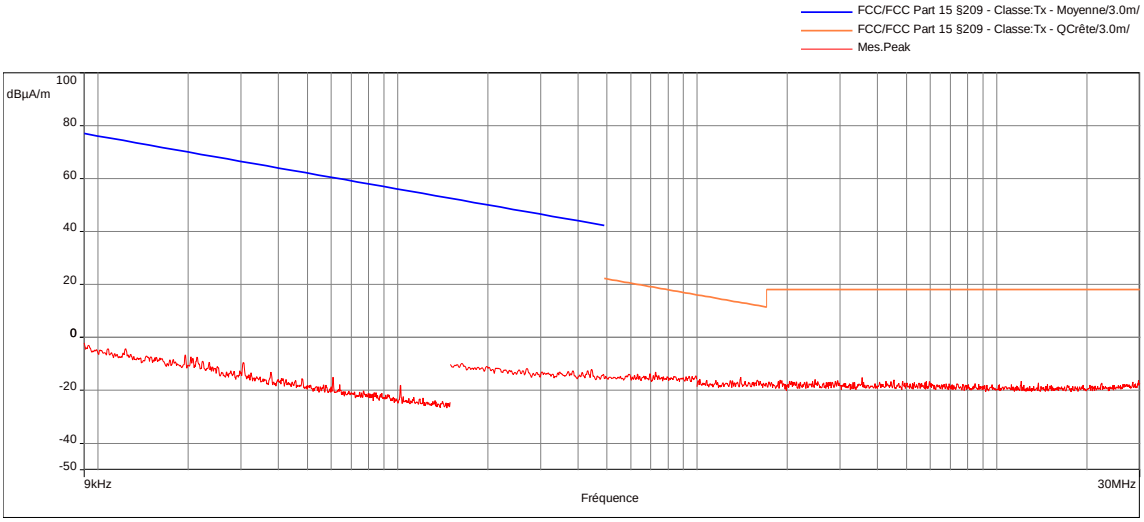


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

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		EMI4641	
EUT mode:	Continuous modulated Tx	**T (°C):**	18.6
Test Date:	05/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003

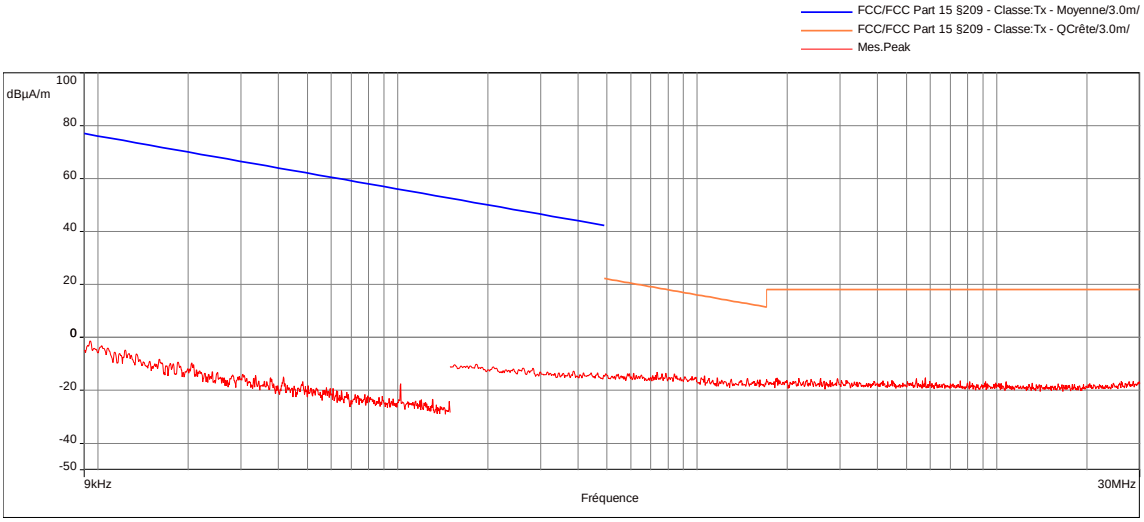


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-30MHz	10kHz	30kHz	Peak

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 / 90° - ALL CHANNELS		EMI4642	
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

7.4. 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	EMI4650	**PASS**
Tx mode - Low Channel - For Freq > 1GHz	1GHz-10GHz	15.209	EMI4690	**PASS**
Tx mode - High Channel - For Freq > 1GHz	1GHz-10GHz	15.209	EMI4688	**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**
AC power source	APT	AC07040	10624	25/07/2019	25/09/2021
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

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Receiver	Rohde & Schwarz	ESI	9704	03/03/2020	03/05/2021
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

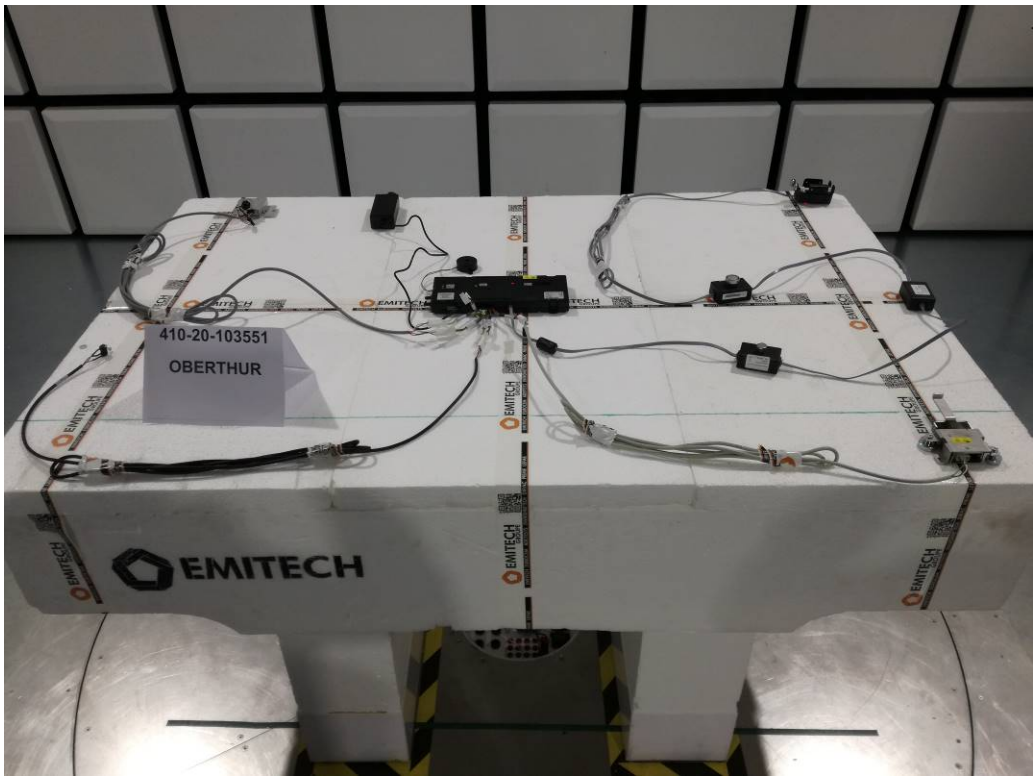
BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

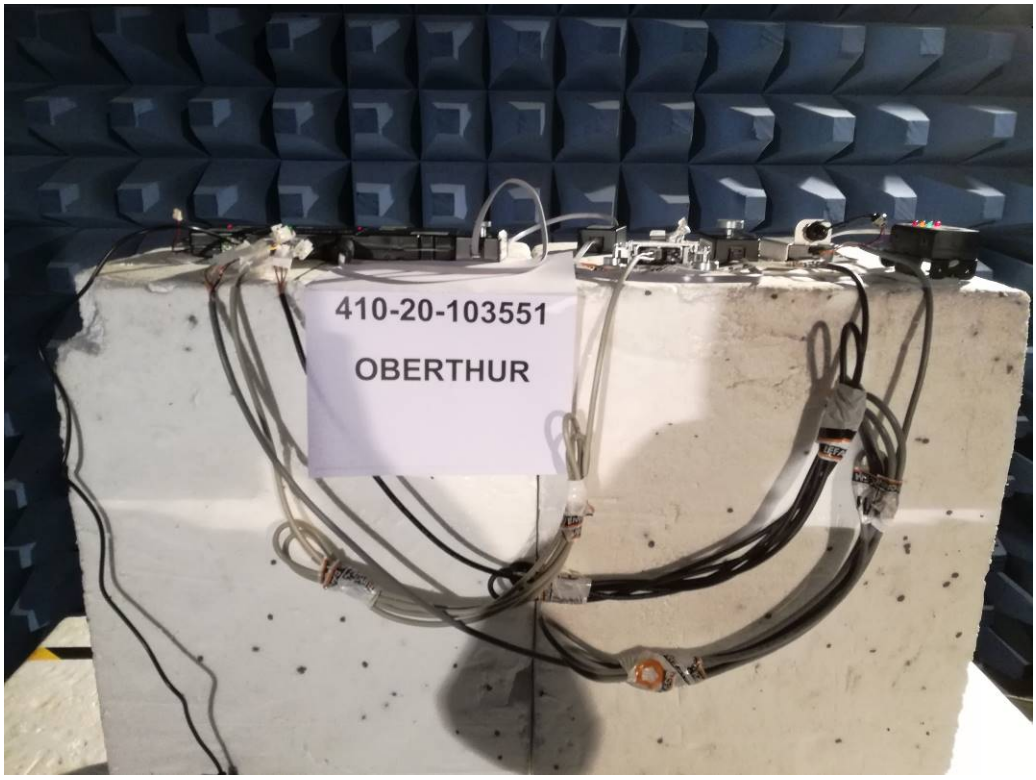
TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS					
TX MODE - ALL CHANNELS - FOR FREQ < 1GHZ				EMI4650	
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Leve Qpeak (dBµV/m)**	**Limit Qpeak (dBµ/m)**	**Margin (Level – Limit)**
30.064	Verticale	39.85	33.76	40	-6.24
30.404	Verticale	40.1	33.71	40	-6.29
30.659	Verticale	40.14	33.68	40	-6.32
30.871	Verticale	38.56	32.53	40	-7.47
31.190	Verticale	38.08	31.78	40	-8.22
31.296	Verticale	38.83	31.58	40	-8.42
31.530	Verticale	37.19	31.17	40	-8.83
32.338	Verticale	37.48	31.46	40	-8.54
32.657	Verticale	38.42	31.97	40	-8.03
33.082	Verticale	39.17	32.92	40	-7.08
33.443	Verticale	39.05	33.63	40	-6.37
33.825	Verticale	40.76	34.80	40	-5.2
34.229	Verticale	40.32	34.75	40	-5.25
34.421	Verticale	40.56	34.98	40	-5.02
34.569	Verticale	40.73	35.2	40	-4.8
34.803	Verticale	41.19	35.17	40	-4.83
34.867	Verticale	40.56	35.16	40	-4.84
35.759	Verticale	38.06	31.96	40	-8.04
35.993	Verticale	38.29	32.27	40	-7.73
36.248	Verticale	40.37	33.75	40	-6.25
36.440	Verticale	40.85	34.65	40	-5.35
36.843	Verticale	43.82	39.72	40	-0.28
37.268	Verticale	40.6	34.82	40	-5.18
37.736	Verticale	40.05	34.16	40	-5.84
38.034	Verticale	40.28	33.87	40	-6.13
38.862	Verticale	38.98	32.96	40	-7.04
39.245	Verticale	38.25	32.31	40	-7.69
40.669	Verticale	38.77	32.60	40	-7.4
41.498	Verticale	39.74	33.46	40	-6.54
42.497	Verticale	38.63	32.16	40	-7.84
43.007	Verticale	39.57	32.95	40	-7.05
43.134	Verticale	38.15	31.75	40	-8.25
46.088	Verticale	39.13	33.48	40	-6.52

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS					
TX MODE - ALL CHANNELS - FOR FREQ < 1GHZ				EMI4650	
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Leve Qpeak (dBµV/m)**	**Limit Qpeak (dBµ/m)**	**Margin (Level – Limit)**
47.193	Verticale	39.42	32.70	40	-7.3
48.022	Verticale	37.55	32.03	40	-7.97
49.149	Verticale	38.68	32.26	40	-7.74
52.230	Verticale	37.93	31.07	40	-8.93
33.847	Horizontale	37.3	31.28	40	-8.72
34.144	Horizontale	37.72	31.79	40	-8.21
34.166	Horizontale	37.54	31.79	40	-8.21
34.208	Horizontale	37.44	31.96	40	-8.04
34.484	Horizontale	38.29	32.59	40	-7.41
34.846	Horizontale	40.63	33.46	40	-6.54
34.973	Horizontale	39.75	33.59	40	-6.41
35.079	Horizontale	40.01	33.85	40	-6.15
35.334	Horizontale	39.13	33.69	40	-6.31
35.568	Horizontale	38.73	32.94	40	-7.06
35.696	Horizontale	39.03	32.62	40	-7.38
36.248	Horizontale	38.59	32.25	40	-7.75
36.291	Horizontale	38.9	32.25	40	-7.75
36.333	Horizontale	38.74	32.4	40	-7.6
36.737	Horizontale	38.15	32.37	40	-7.63
36.886	Horizontale	40.63	34.86	40	-5.14
46.875	Horizontale	37.72	32.20	40	-7.8
47.151	Horizontale	37.3	31.58	40	-8.42
47.491	Horizontale	38.14	30.92	40	-9.08
47.682	Horizontale	36.66	30.56	40	-9.44
48.065	Horizontale	36.52	29.98	40	-10.02
48.256	Horizontale	36.41	29.77	40	-10.23
48.617	Horizontale	36.43	29.35	40	-10.65
49.064	Horizontale	35.48	29.08	40	-10.92
49.212	Horizontale	34.88	29.06	40	-10.94
49.637	Horizontale	34.72	28.79	40	-11.21
67.553	Horizontale	34.08	28.06	40	-11.94
67.617	Horizontale	34.09	28.07	40	-11.93
71.783	Horizontale	34.73	28.44	40	-11.56
71.931	Horizontale	34.54	28.78	40	-11.22
72.017	Horizontale	34.62	28.77	40	-11.23
72.038	Horizontale	35.13	28.77	40	-11.23
72.080	Horizontale	34.52	28.77	40	-11.23
72.102	Horizontale	34.96	28.59	40	-11.41
72.123	Horizontale	34.24	28.59	40	-11.41
72.165	Horizontale	35.45	28.40	40	-11.6
72.208	Horizontale	33.95	28.40	40	-11.6

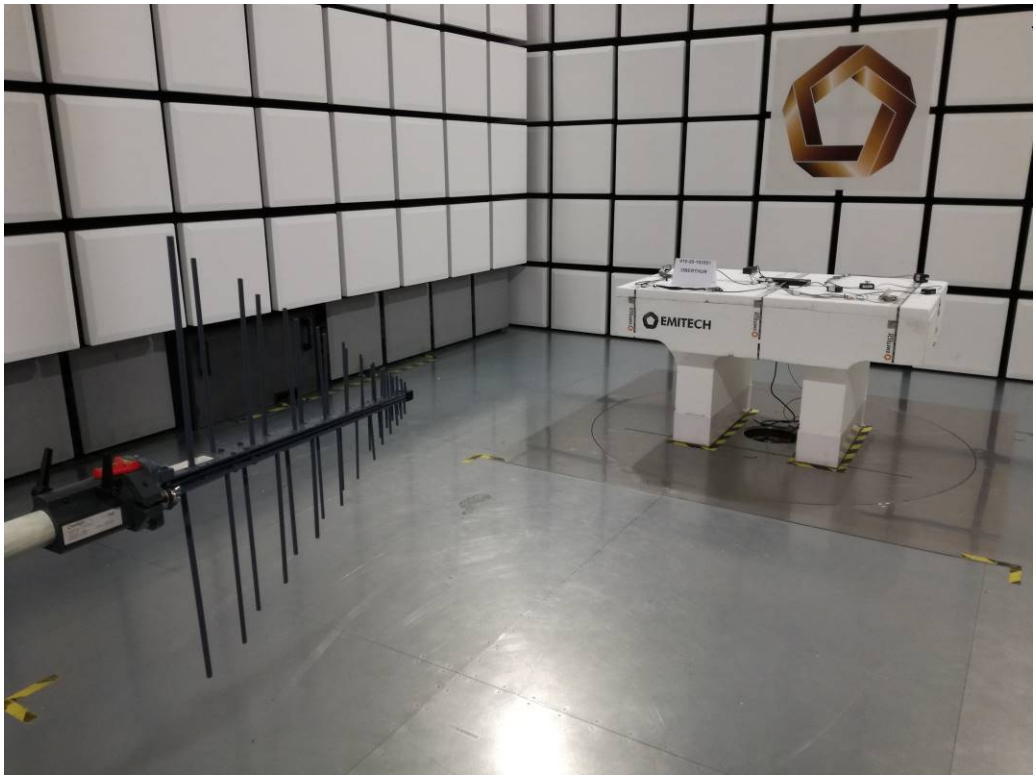
TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS					
TX MODE - LOW CHANNEL - FOR FREQ > 1GHZ				EMI4690	
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Level Avg computed with duty factor (dBµV/m)**	**Limit Avg (dBµ/m)**	**Margin (Level – Limit)**
1829.569	Vertical	45.63	16.04	54	-37.96
1829.569	Horizontal	56.30	26.71	54	-27.29

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - TABULATED RESULTS					
TX MODE - HIGH CHANNEL - FOR FREQ > 1GHZ				EMI4688	
Frequency (MHz)	**Polarization**	**Level Peak (dBµV/m)**	**Level Avg computed with duty factor (dBµV/m)**	**Limit Avg (dBµ/m)**	**Margin (Level – Limit)**
1830.667	Vertical	42.52	12.93	54	-41.07
1830.667	Horizontal	57.62	28.03	54	-25.97

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


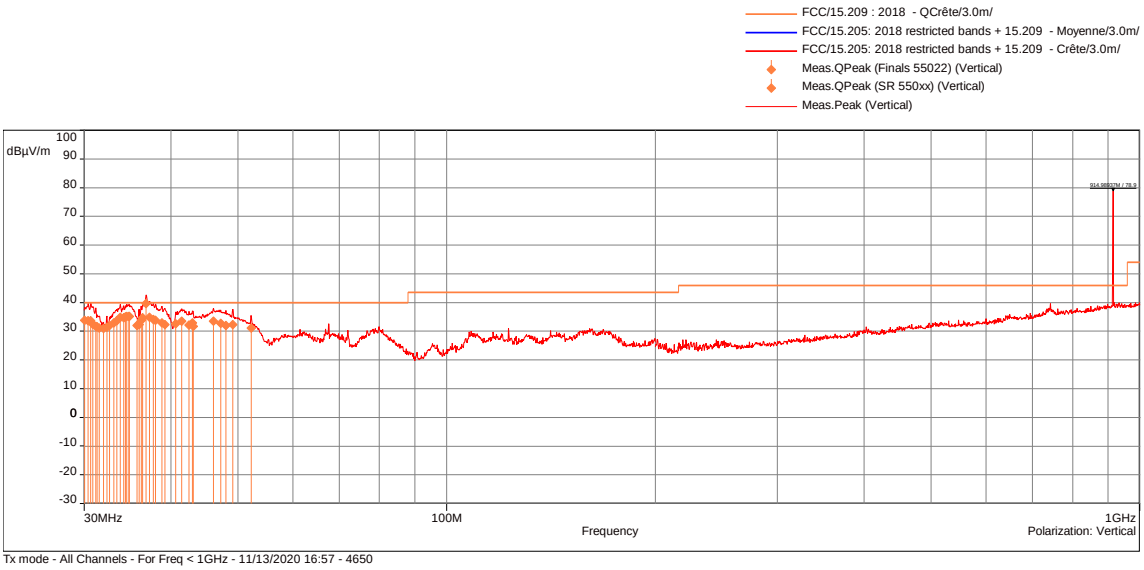
TEST SETUP PHOTO(S) – EUT POSITION FOR FREQ > 1GHZ


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

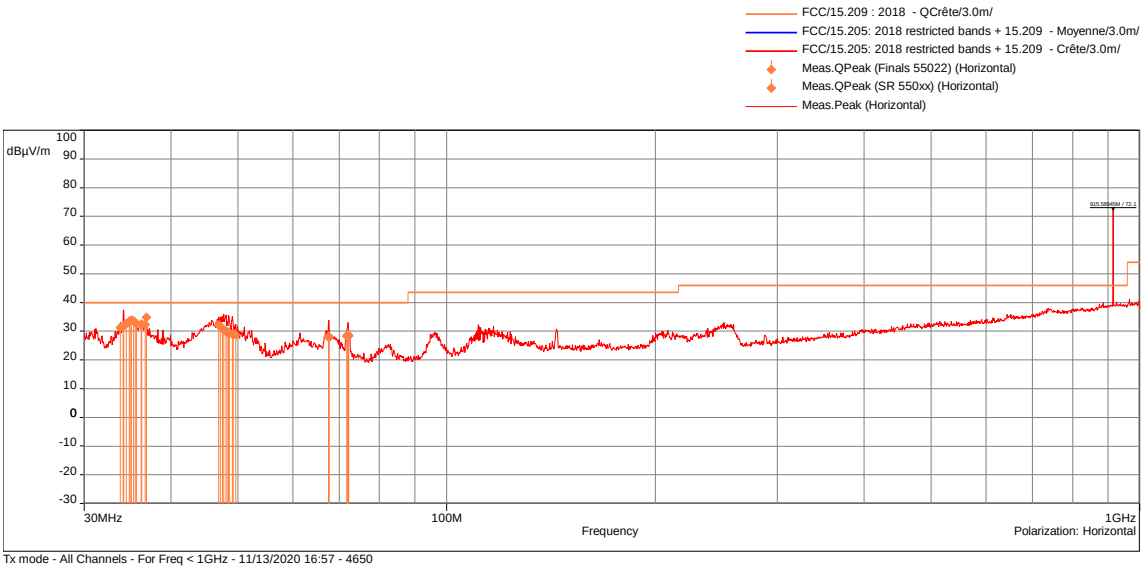

TEST SETUP PHOTO(S) - 200MHZ < FOR FREQ < 1GHZ


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


TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
TX MODE - ALL CHANNELS - FOR FREQ < 1GHZ		EMI4650	
EUT mode:	Continous Tx	**T (°C):**	18.6
Test Date:	13/11/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



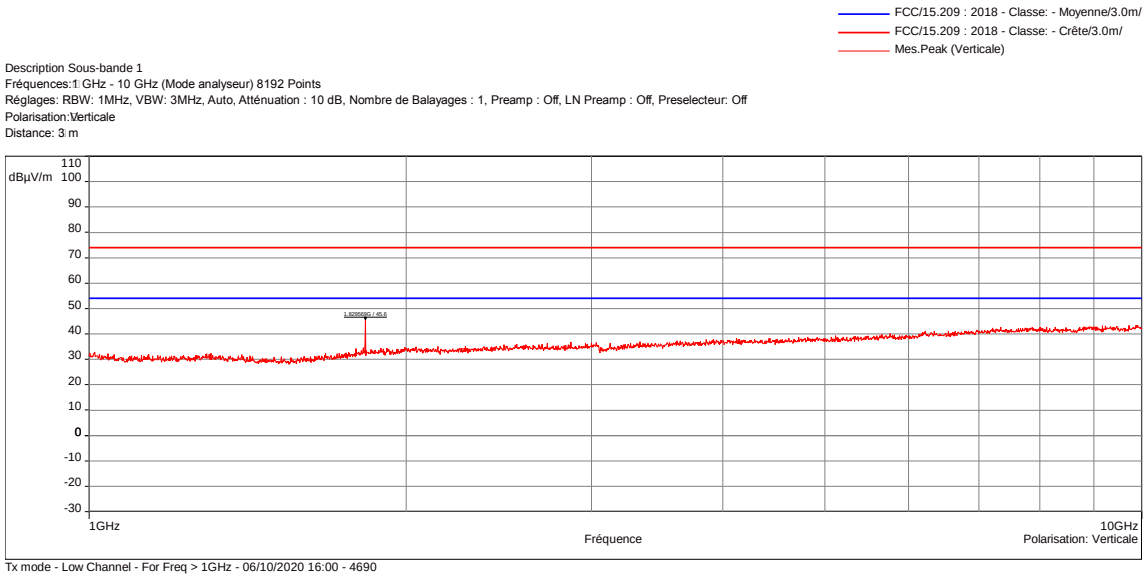
Tx mode - All Channels - For Freq < 1GHz - 11/13/2020 16:57 - 4650



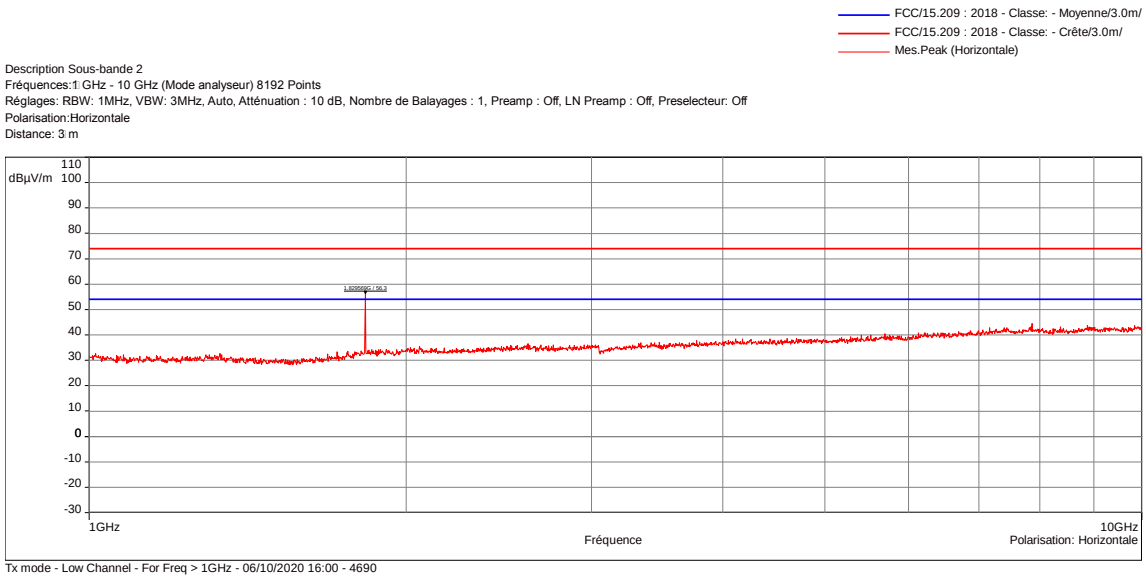
Tx mode - All Channels - For Freq < 1GHz - 11/13/2020 16:57 - 4650

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-200MHz	100kHz	300kHz	Peak; Qpeak
Horizontal	30MHz-200MHz	100kHz	300kHz	Peak; Qpeak
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		EMI4690	
EUT mode:	Continous Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



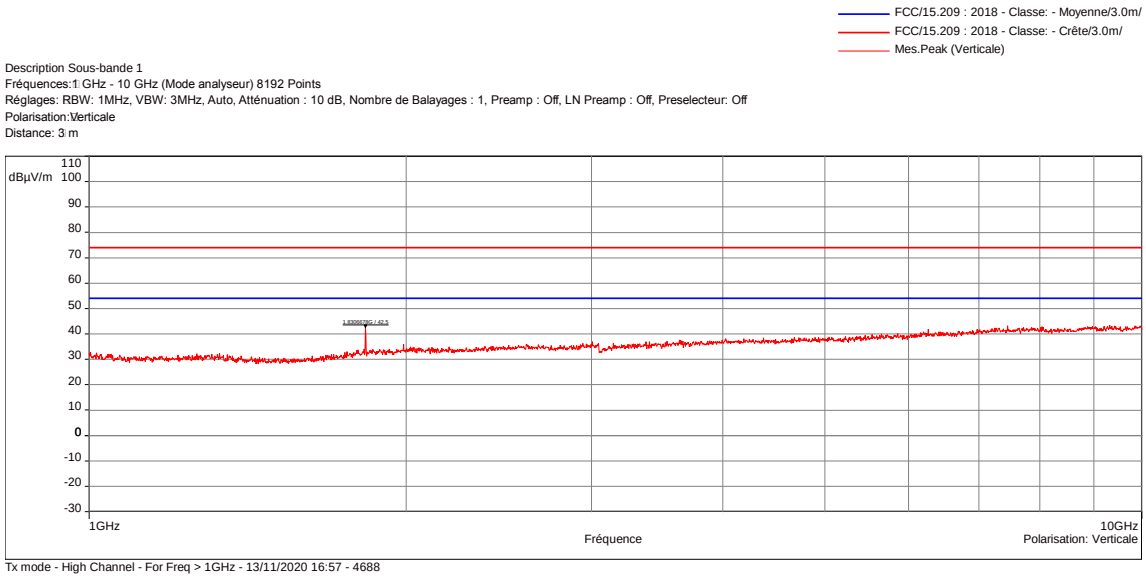
Tx mode - Low Channel - For Freq > 1GHz - 06/10/2020 16:00 - 4690



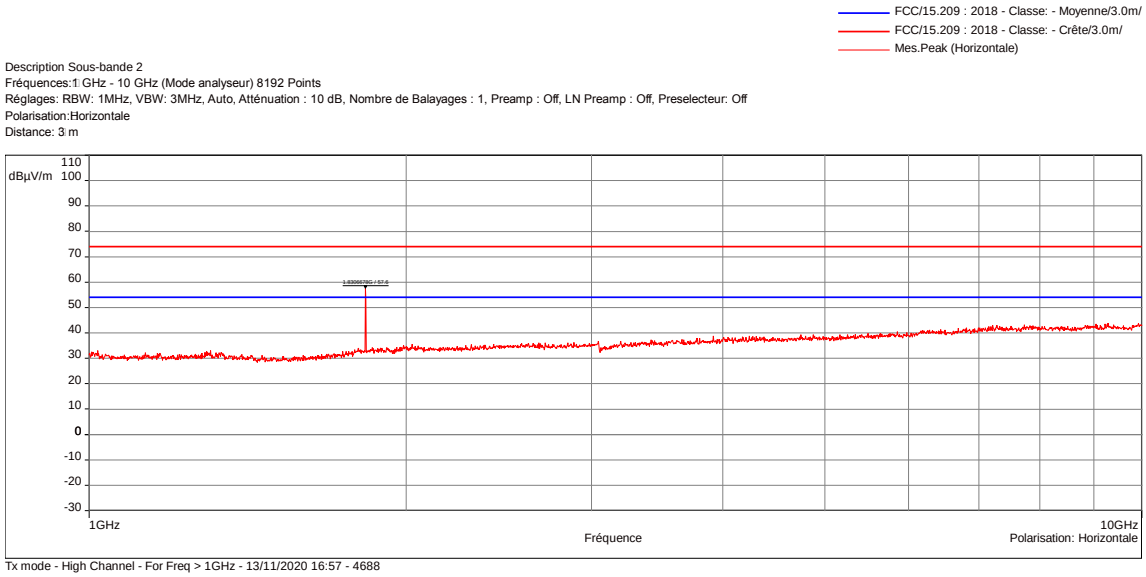
Tx mode - Low Channel - For Freq > 1GHz - 06/10/2020 16:00 - 4690

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		EMI4688	
EUT mode:	Continous 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 - 13/11/2020 16:57 - 4688



Tx mode - High Channel - For Freq > 1GHz - 13/11/2020 16:57 - 4688

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				

7.5. 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	EMI4681	**PASS**
BandEdge - High Channel	901MHz-929MHz	15.249	EMI4680	**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**
AC power source	CHROMA	61603	12532	25/07/2019	25/09/2021
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

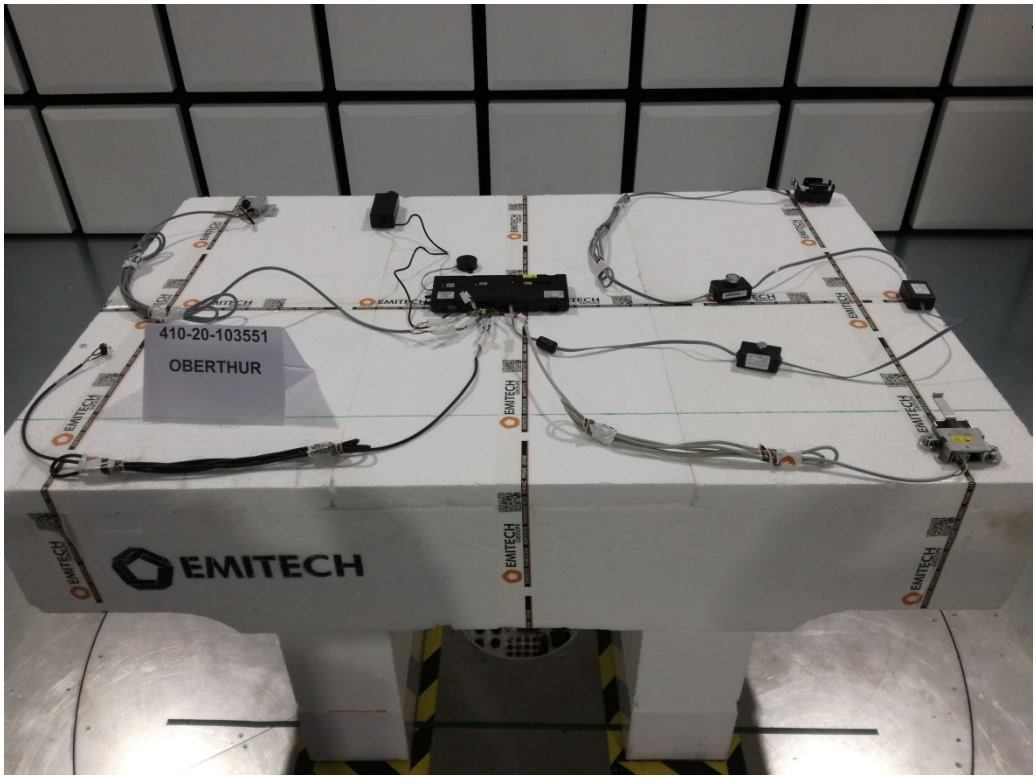
BAND-EDGE COMPLIANCE- TABULATED RESULTS			
BANDEDGE - LOW CHANNEL			EMI4681
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµ/m)**
N/A	N/A	N/A	N/A

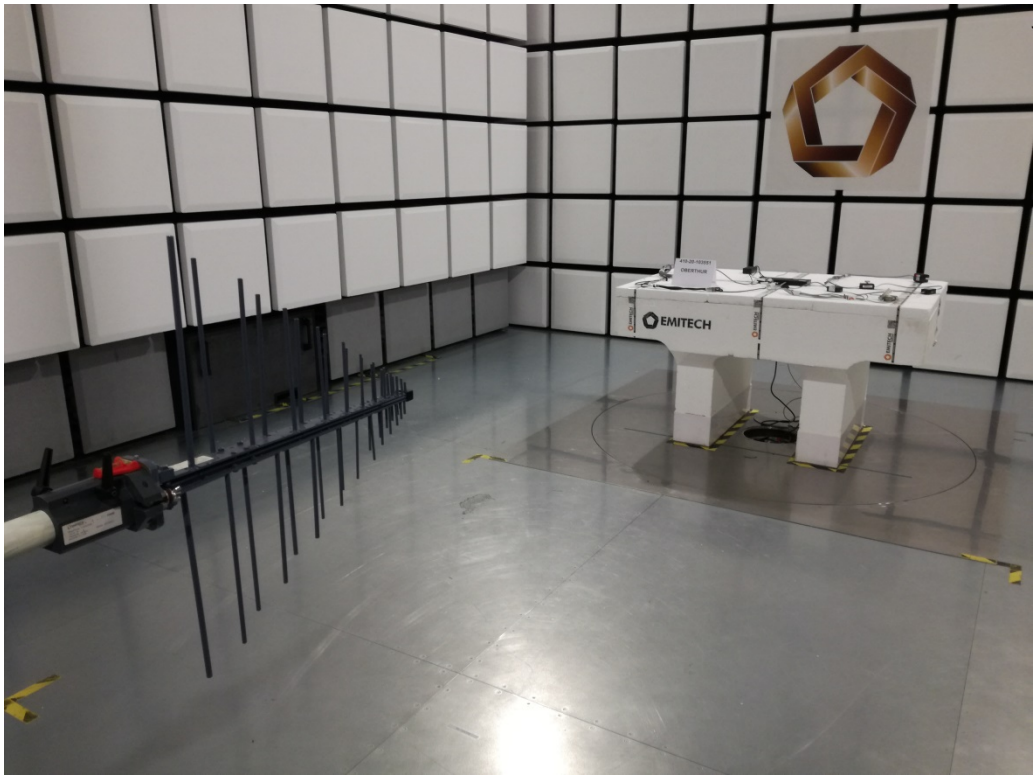
No spurious emissions were detected.

BAND-EDGE COMPLIANCE- TABULATED RESULTS			
BAND EDGE - HIGH CHANNEL			EMI4680
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµ/m)**
N/A	N/A	N/A	N/A

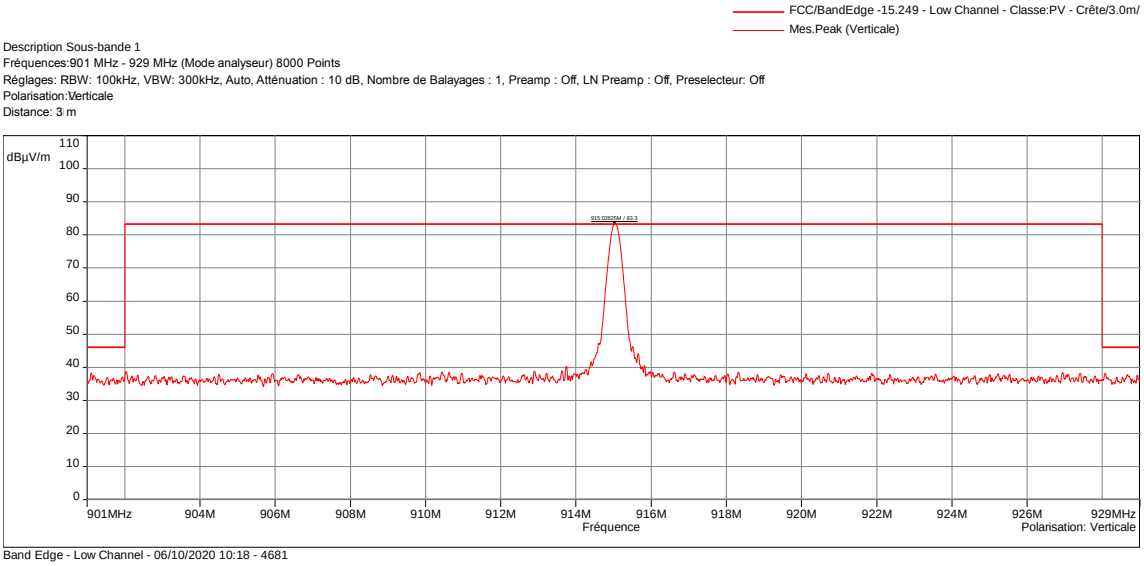
No spurious emissions were detected.

TEST SETUP PHOTO(S) – EUT POSITION

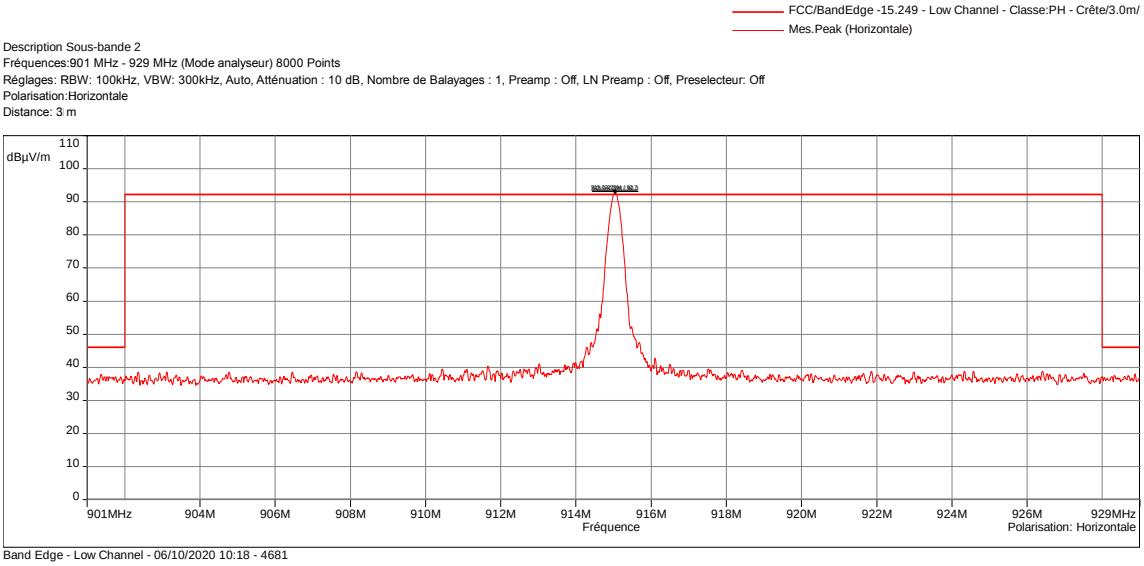


TEST SETUP PHOTO(S)


TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
BAND EDGE - LOW CHANNEL		EMI4681	
EUT mode:	Continous Tx	**T (°C):**	18.6
Test Date:	06/10/2020	**H (%):**	52.2
Test Operator:	OAT	**P (hPa):**	1003



Band Edge - Low Channel - 06/10/2020 10:18 - 4681



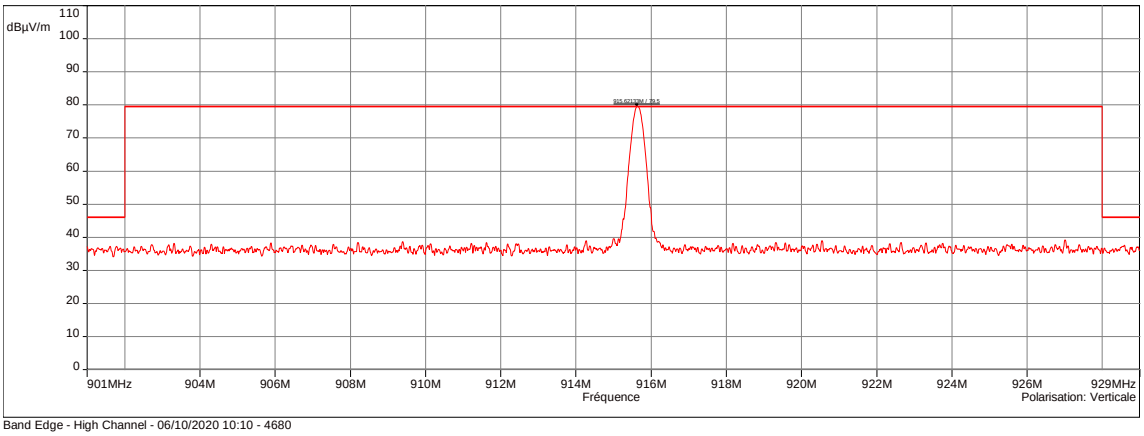
Band Edge - Low Channel - 06/10/2020 10:18 - 4681

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

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHZ - GRAPH			
BAND EDGE - HIGH CHANNEL		EMI4680	
EUT mode:	Continous 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)

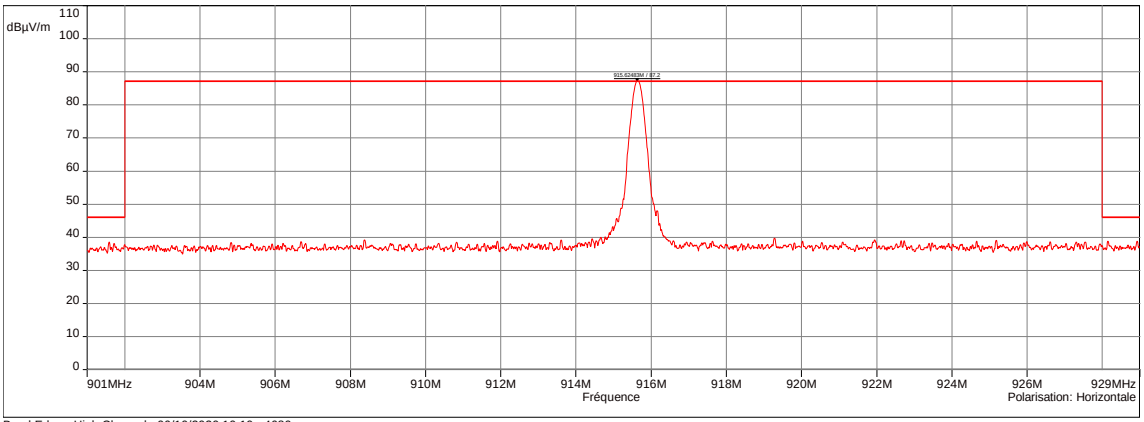
Description Sous-bande 1
Fréquences:901 MHz - 929 MHz (Mode analyseur) 8000 Points
Réglages: RBW: 100kHz, VBW: 300kHz, Auto, Atténuation : 10 dB, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
Polarisation:Verticale
Distance: 3 m



Band Edge - High Channel - 06/10/2020 10:10 - 4680

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



Band Edge - High Channel - 06/10/2020 10:10 - 4680

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

7.6. Effective isotoropic radiated power

a) NORMAL TESTS CONDITIONS

Reference standard :	FCC part 15 Radio part 15.249 and RSS-210
Test method :	FCC part 15.149, 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.	

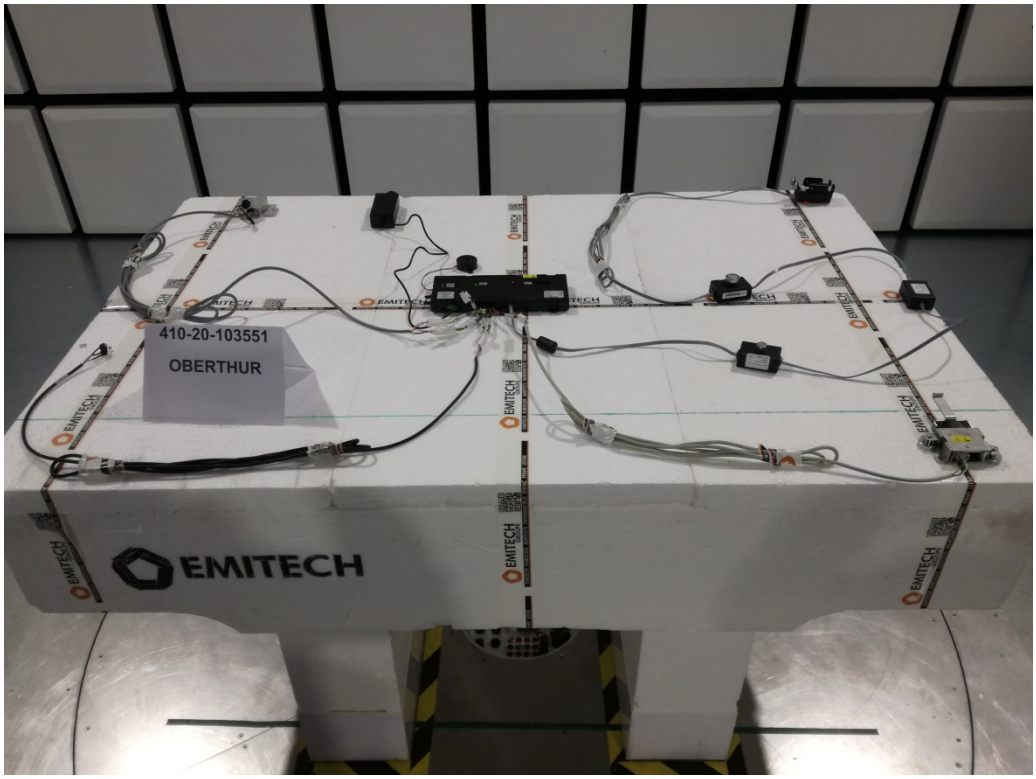
TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
EIRP – Low Channel	914.525MHz-915.525MHz	50 mV/m (93.98 dBµV/m)	EMI4678	**PASS**
EIRP – High Channel	915.125MHz-916.125MHz		EMI4679	**PASS**

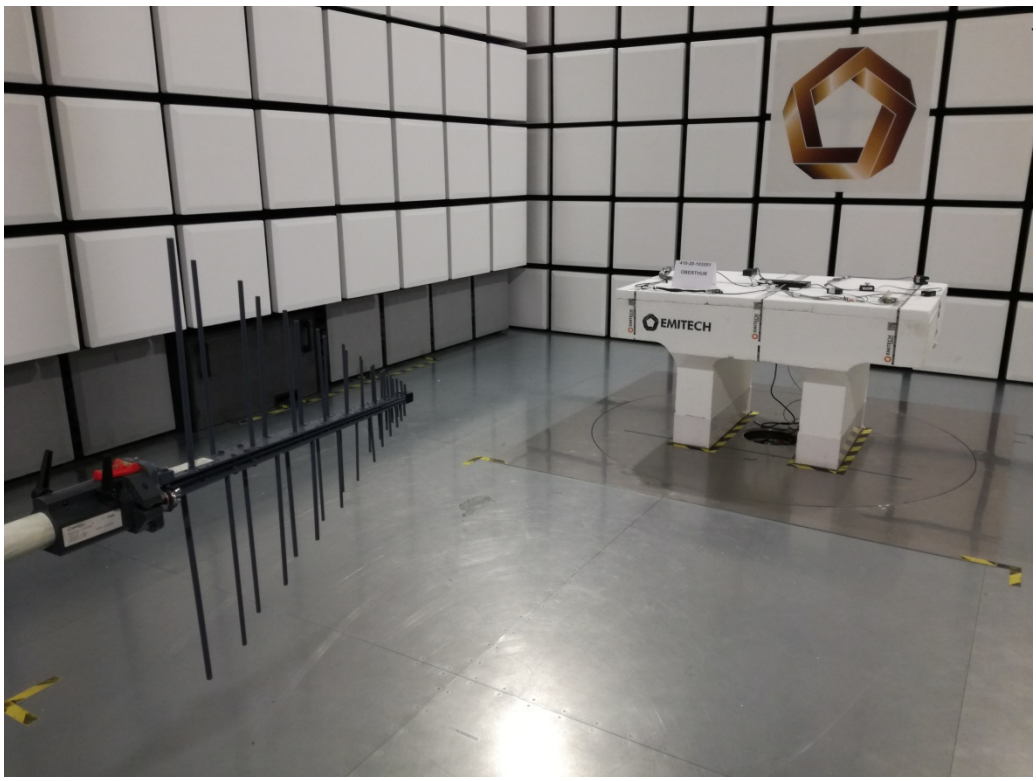
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	*See Graph(es)*
Relative Humidity	20 to 75 %	*See Graph(es)*
Atmospheric pressure	N/A	*See Graph(es)*
Test method deviation: N/A		
Supplementary information : N/A		

TEST EQUIPMENT USED

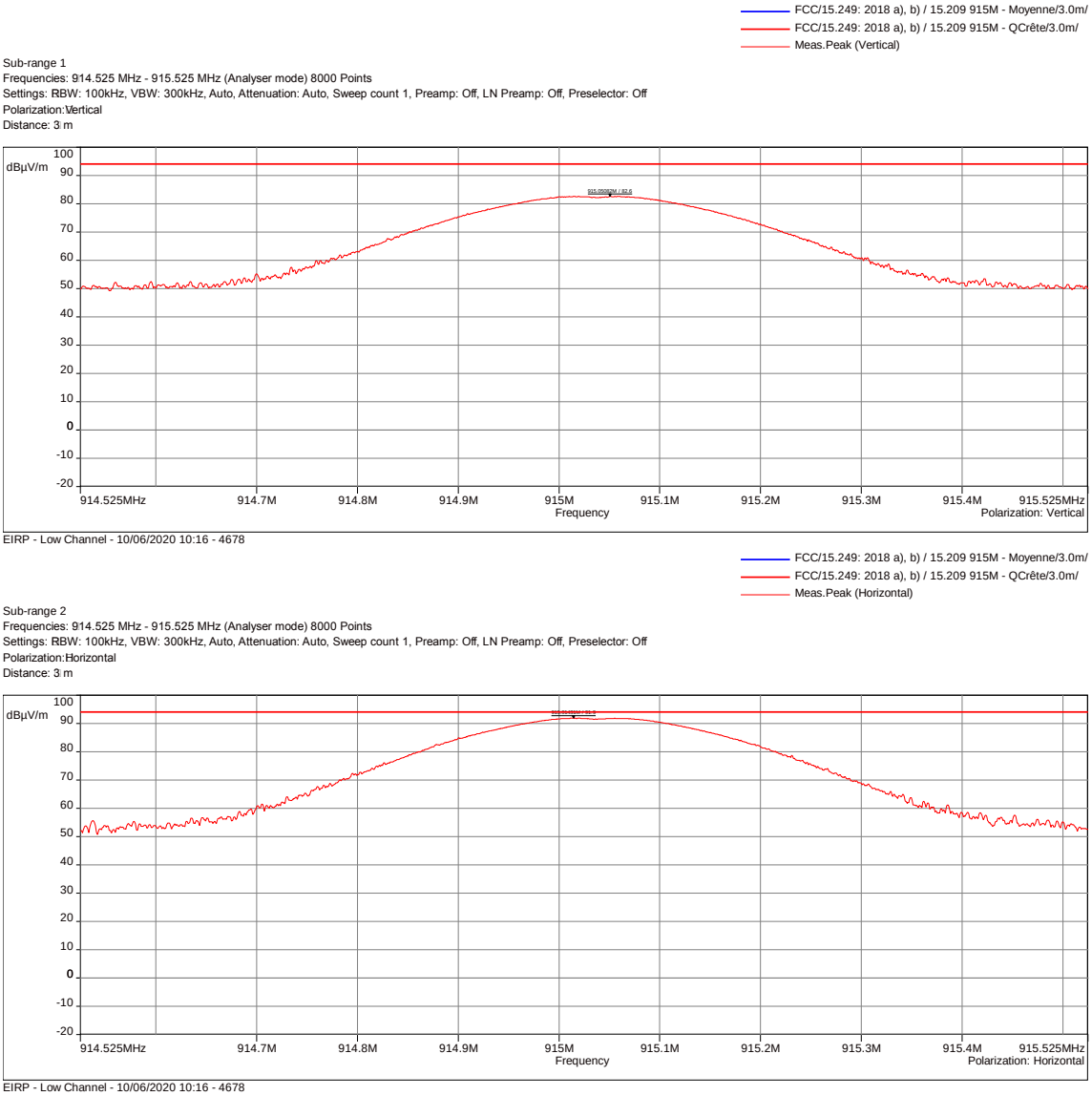
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	APT	AC07040	10624	25/07/2019	25/09/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	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

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

TEST SETUP PHOTO(S) – EUT POSITION


TEST SETUP PHOTO(S)


EFFECTIVE ISOTROPIC RADIATED POWER – GRAPH			
EIRP – LOW CHANNEL		EMI4678	
EUT mode:		**T (°C) :**	54.1
Test Date:	06/10/2020	**H (%):**	19.6
Test Operator:	OAT	**P (hPa):**	1011

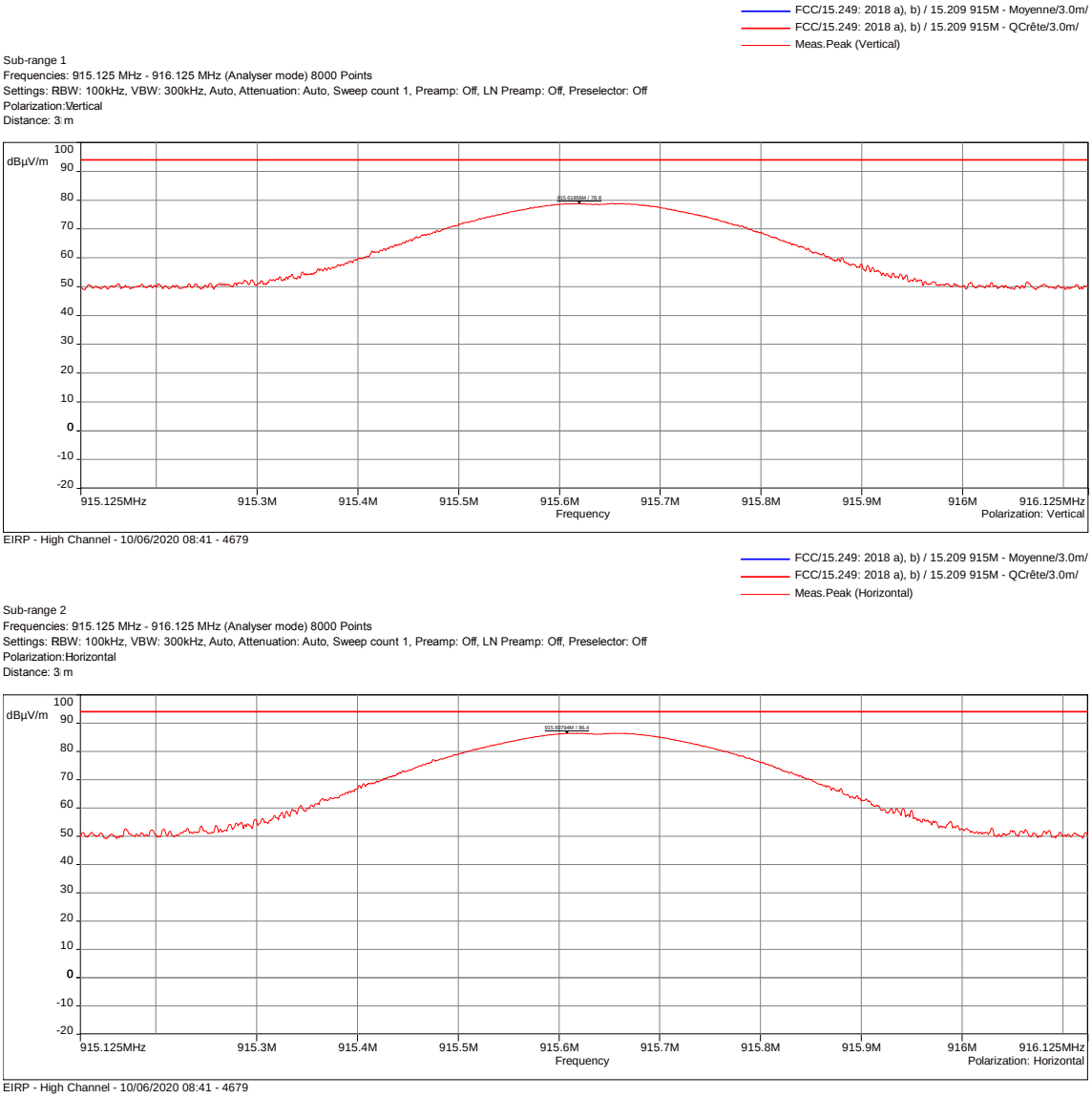


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	914.525MHz-915.525MHz	100kHz	300kHz	Peak
Horizontal	914.525MHz-915.525MHz	100kHz	300kHz	Peak

EUT modification(s) : N/A

EFFECTIVE ISOTROPIC RADIATED POWER – TABULATED RESULTS			
EIRP – LOW CHANNEL			EMI4678
Frequency (MHz)	**Polarization**	**Level (dBµV/m)**	**Limit (dBµV/m)**
915.025	Vertical	82.6	93.98
915.025	Horizontal	91.9	93.98

EFFECTIVE ISOTROPIC RADIATED POWER – GRAPH			
EIRP – HIGH CHANNEL		EMI4679	
EUT mode:		**T (°C) :**	54.1
Test Date:	06/10/2020	**H (%):**	19.6
Test Operator:	OAT	**P (hPa):**	1011



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			EMI4679
Frequency (MHz)	**Polarization**	**Level (dBm)**	**Limit (dBm)**
915.625	Vertical	78.8	93.98
915.625	Horizontal	86.4	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 / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5039	**PASS**
Low channel / 25°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5040	**PASS**
Low channel / 25°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5041	**PASS**
Low channel / 25°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5009	**PASS**
Low channel / 25°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5010	**PASS**
Low channel / 65°C / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5042	**PASS**
Low channel / 65°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5043	**PASS**
Low channel / 65°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5044	**PASS**
Low channel / 65°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5011	**PASS**
Low channel / 65°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5012	**PASS**
Low channel / -20°C / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5045	**PASS**
Low channel / -20°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5046	**PASS**
Low channel / -20°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5047	**PASS**
Low channel / -20°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5013	**PASS**
Low channel / -20°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5014	**PASS**
High channel / 25°C / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5048	**PASS**
High channel / 25°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5049	**PASS**
High channel / 25°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5050	**PASS**
High channel / 25°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5015	**PASS**
High channel / 25°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5016	**PASS**
High channel / 65°C / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5051	**PASS**

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
High channel / 65°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5052	**PASS**
High channel / 65°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5053	**PASS**
High channel / 65°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5017	**PASS**
High channel / 65°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5018	**PASS**
High channel / -20°C / 110Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5054	**PASS**
High channel / -20°C / 121Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5055	**PASS**
High channel / -20°C / 99Vac/60Hz	Continuous modulated Tx	93.98 dBµV/m	EMI5056	**PASS**
High channel / -20°C / 7.2Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5019	**PASS**
High channel / -20°C / 6Vdc	Continuous modulated Tx	93.98 dBµV/m	EMI5020	**PASS**

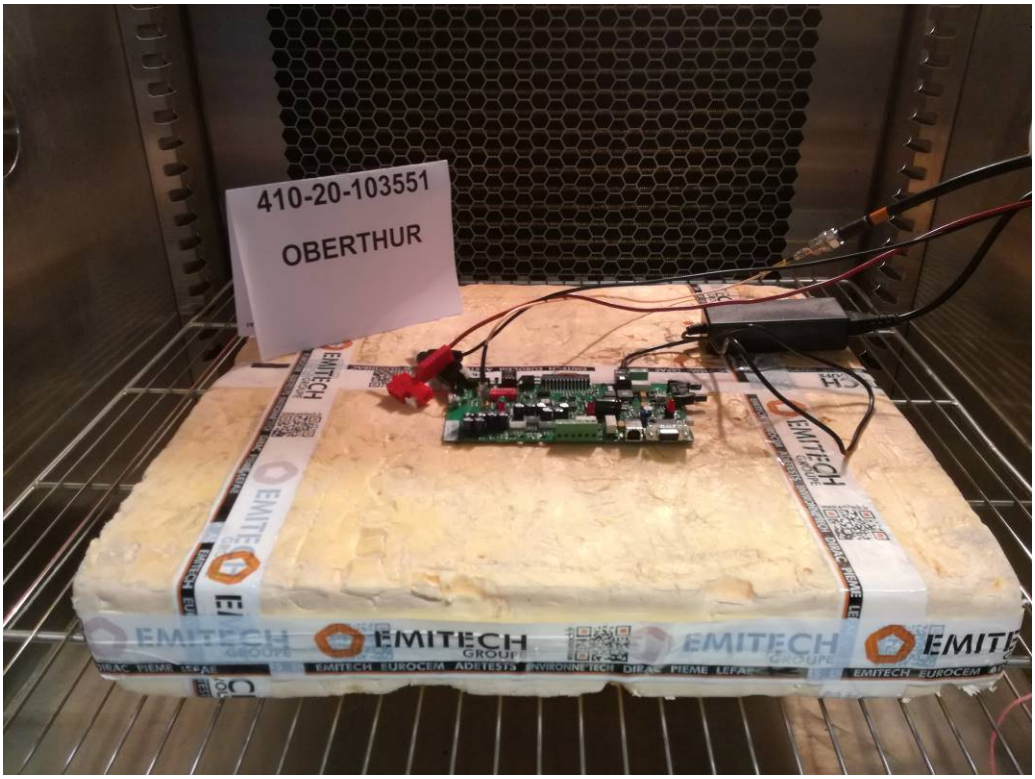
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	21.8 °C
Relative Humidity	20 to 75 %	61.8 %
Atmospheric pressure	N/A	1006 hPa
Test method deviation: N/A		
Supplementary information: EUT power supply is replaced by a stabilized power supply.		

TEST EQUIPMENT USED

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	KIKUSUI	PCR4000L	3074	25/07/2019	25/09/2021
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
Multimeter	FLUKE	8808A	10382	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 / 110Vac/60Hz	915.025 MHz	91.90	93.98	EMI5039
Low channel / 25°C / 121Vac/60Hz	915.025 MHz	91.90	93.98	EMI5040
Low channel / 25°C / 99Vac/60Hz	915.025 MHz	91.88	93.98	EMI5041
Low channel / 25°C / 7.2Vdc	915.025 MHz	91.89	93.98	EMI5009
Low channel / 25°C / 6Vdc	915.025 MHz	91.89	93.98	EMI5010
Low channel / 65°C / 110Vac/60Hz	915.025 MHz	91.46	93.98	EMI5042
Low channel / 65°C / 121Vac/60Hz	915.025 MHz	91.46	93.98	EMI5043
Low channel / 65°C / 99Vac/60Hz	915.025 MHz	91.46	93.98	EMI5044
Low channel / 65°C / 7.2Vdc	915.025 MHz	91.47	93.98	EMI5011
Low channel / 65°C / 6Vdc	915.025 MHz	91.47	93.98	EMI5012
Low channel / -20°C / 110Vac/60Hz	915.025 MHz	92.34	93.98	EMI5045
Low channel / -20°C / 121Vac/60Hz	915.025 MHz	92.34	93.98	EMI5046
Low channel / -20°C / 99Vac/60Hz	915.025 MHz	92.33	93.98	EMI5047
Low channel / -20°C / 7.2Vdc	915.025 MHz	92.30	93.98	EMI5013
Low channel / -20°C / 6Vdc	915.025 MHz	92.29	93.98	EMI5014
High channel / 25°C / 110Vac/60Hz	915.625 MHz	86.40	93.98	EMI5048
High channel / 25°C / 121Vac/60Hz	915.625 MHz	86.41	93.98	EMI5049
High channel / 25°C / 99Vac/60Hz	915.625 MHz	86.40	93.98	EMI5050
High channel / 25°C / 7.2Vdc	915.625 MHz	86.41	93.98	EMI5015
High channel / 25°C / 6Vdc	915.625 MHz	86.40	93.98	EMI5016
High channel / 65°C / 110Vac/60Hz	915.625 MHz	85.90	93.98	EMI5051
High channel / 65°C / 121Vac/60Hz	915.625 MHz	85.91	93.98	EMI5052
High channel / 65°C / 99Vac/60Hz	915.625 MHz	85.90	93.98	EMI5053
High channel / 65°C / 7.2Vdc	915.625 MHz	85.90	93.98	EMI5017
High channel / 65°C / 6Vdc	915.625 MHz	85.91	93.98	EMI5018
High channel / -20°C / 110Vac/60Hz	915.625 MHz	86.63	93.98	EMI5054
High channel / -20°C / 121Vac/60Hz	915.625 MHz	86.68	93.98	EMI5055
High channel / -20°C / 99Vac/60Hz	915.625 MHz	86.65	93.98	EMI5056
High channel / -20°C / 7.2Vdc	915.625 MHz	86.75	93.98	EMI5019
High channel / -20°C / 6Vdc	915.625 MHz	86.72	93.98	EMI5020

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

7.7. 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).	

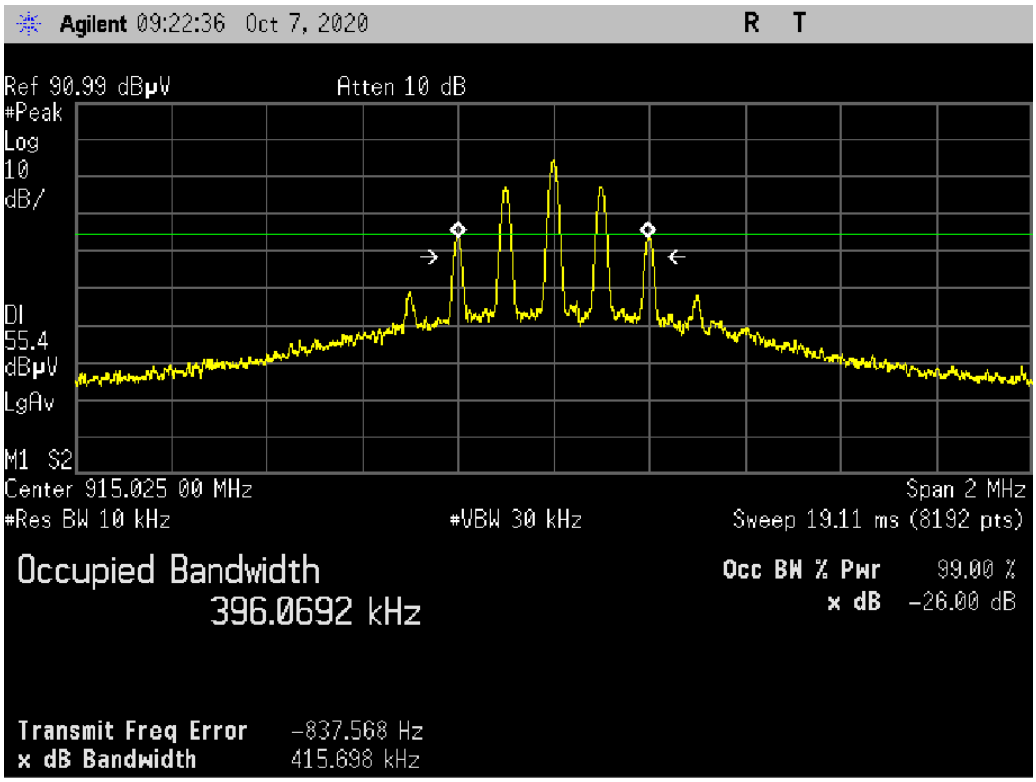
TESTED CHANNEL	OBW	SEVERITY	RESULT TAB.	VERDICT
99% Bandwidth / Low channel	396.0692 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI5022	**PASS**
99% Bandwidth / High channel	394.6140 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI5023	**PASS**
20dB Bandwidth / Low channel	399.49 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI5024	**PASS**
20dB Bandwidth / High channel	398.97 kHz	Flow > 904.6MHz Fhigh < 925.4MHz	EMI5025	**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**
AC power source	KIKUSUI	PCR4000L	3074	25/07/2019	25/09/2021
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
Multimeter	FLUKE	8808A	10382	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

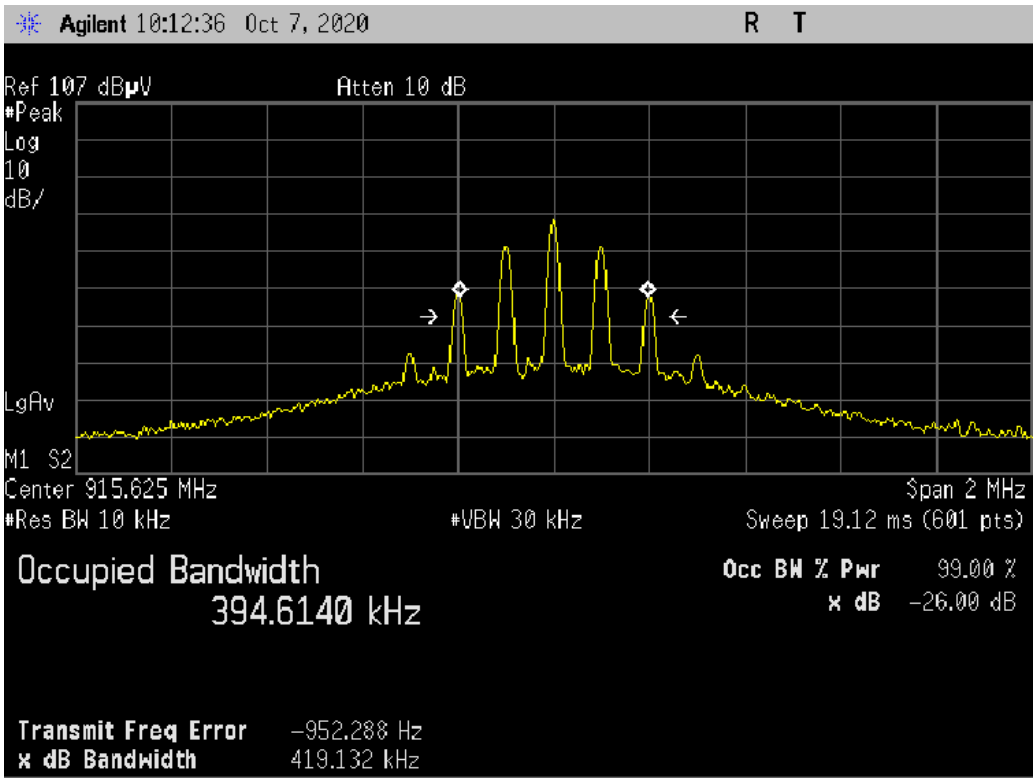
OCCUPIED BANDWIDTH - GRAPH		
99% BANDWIDTH / LOW CHANNEL		EMI5022
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
99% BANDWIDTH / LOW CHANNEL			EMI5022
U_{Start} (start of the test):	110Vac/60Hz	**U_{End} (end of the test):**	110Vac/60Hz
Voltage drop:	0%	**Limit:**	+/- 1/5%
f_{Low}	**f_{High}**	**99% Bandwidth (f_{high}-f_{low})**	**Limit**
> 904.6MHz	< 925.4MHz	396.0692 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

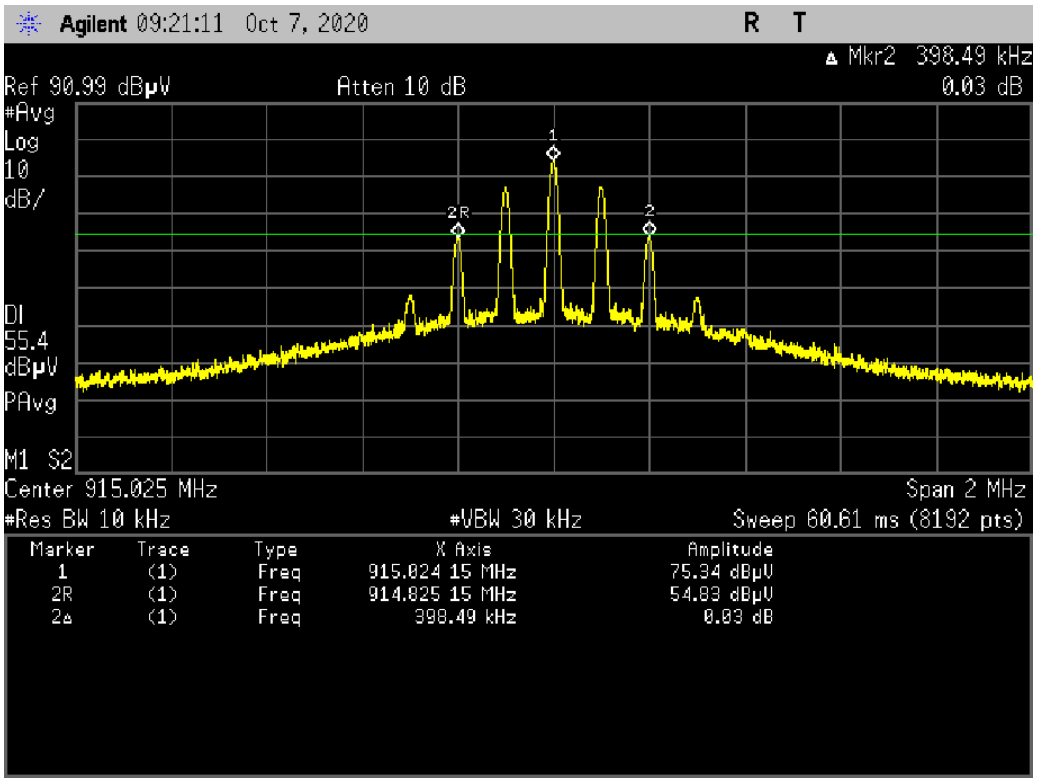
OCCUPIED BANDWIDTH - GRAPH		
99% BANDWIDTH / HIGH CHANNEL		EMI5023
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
99% BANDWIDTH / HIGH CHANNEL			EMI5023
U_{Start} (start of the test):	110Vac/60Hz	**U_{End} (end of the test):**	110Vac/60Hz
Voltage drop:	0%	**Limit:**	+/- 1/5%
f_{Low}	**f_{High}**	**99% Bandwidth (f_{high}-f_{low})**	**Limit**
> 904.6MHz	< 925.4MHz	394.6140 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

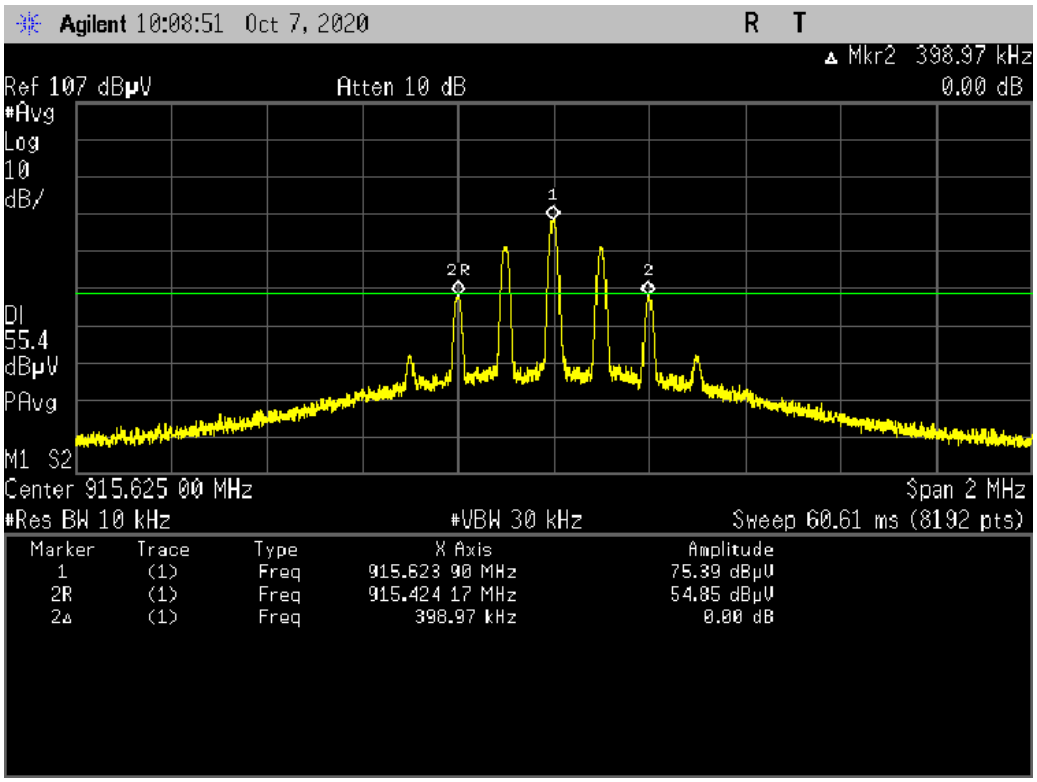
OCCUPIED BANDWIDTH - GRAPH		
20dB BANDWIDTH / LOW CHANNEL		EMI5024
EUT mode:	Continuous modulated Tx	
Test Date:	07/10/2020	
Test Operator:	OAT	



EUT modification(s): N/A

OCCUPIED BANDWIDTH - TABULATED RESULTS			
20dB BANDWIDTH / LOW CHANNEL			EMI5024
f_{Low}	f_{High}	OBW (f_{high}-f_{low})	Limit
914.82515 MHz	915.22464 MHz	399.49 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

OCCUPIED BANDWIDTH - GRAPH		
20dB BANDWIDTH / HIGH CHANNEL		EMI5025
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			EMI5025
f_{Low}	f_{High}	OBW (f_{high}-f_{low})	Limit
915.42417 MHz	915.82314 MHz	398.97 kHz	Flow > 904.6MHz Fhigh < 925.4MHz

7.8. 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/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5057	**PASS**
Low channel / 25°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5058	**PASS**
Low channel / 25°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5059	**PASS**
Low channel / 25°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5026	**PASS**
Low channel / 25°C/ 6Vdc	Continuous unmodulated Tx	0.001 %	EMI5027	**PASS**
Low channel / 65°C/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5060	**PASS**
Low channel / 65°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5061	**PASS**
Low channel / 65°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5062	**PASS**
Low channel / 65°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5028	**PASS**
Low channel / 65°C/ 6Vdc	Continuous unmodulated Tx	0.001 %	EMI5029	**PASS**
Low channel / -20°C/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5063	**PASS**
Low channel / -20°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5064	**PASS**
Low channel / -20°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5065	**PASS**
Low channel / -20°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5030	**PASS**
Low channel / -20°C/ 6Vdc	Continuous unmodulated Tx	0.001 %	EMI5031	**PASS**
High channel / 25°C/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5066	**PASS**
High channel / 25°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5067	**PASS**
High channel / 25°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5068	**PASS**
High channel / 25°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5032	**PASS**
High channel / 25°C/ 6Vdc	Continuous	0.001 %	EMI5033	**PASS**

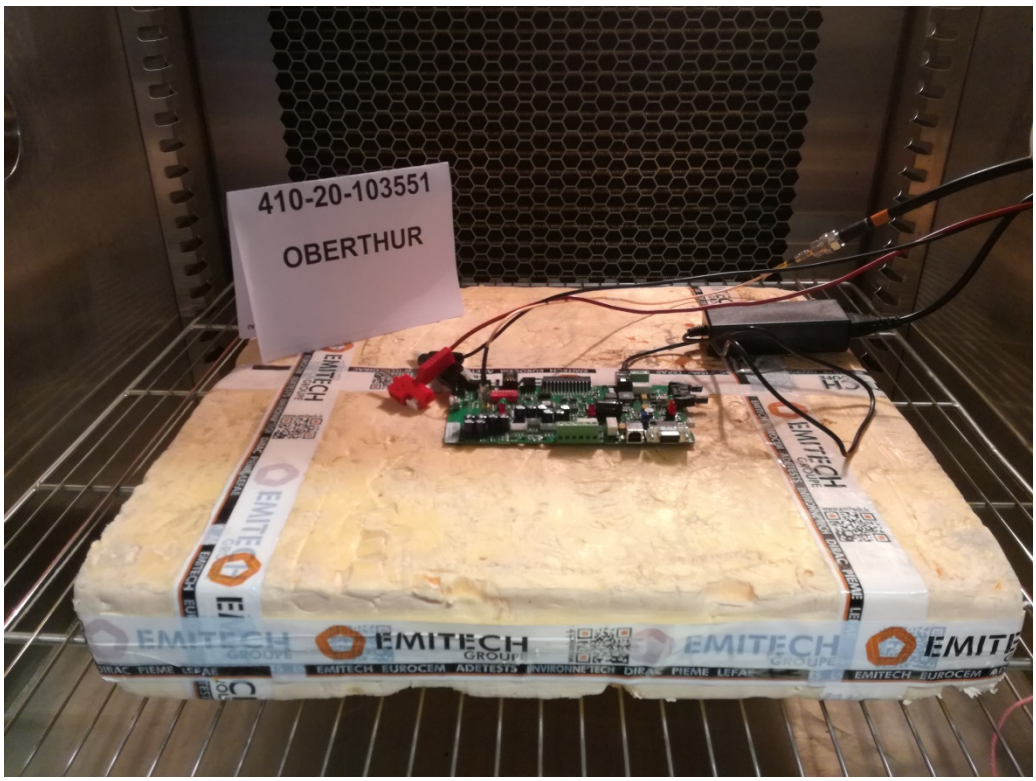
TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
	unmodulated Tx			
High channel / 65°C/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5069	**PASS**
High channel / 65°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5070	**PASS**
High channel / 65°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5071	**PASS**
High channel / 65°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5034	**PASS**
High channel / 65°C/ 6Vdc	Continuous unmodulated Tx	0.001 %	EMI5035	**PASS**
High channel / -20°C/ 110Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5072	**PASS**
High channel / -20°C/ 121Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5073	**PASS**
High channel / -20°C/ 99Vac/60Hz	Continuous unmodulated Tx	0.001 %	EMI5074	**PASS**
High channel / -20°C/ 7.2Vdc	Continuous unmodulated Tx	0.001 %	EMI5036	**PASS**
High channel / -20°C/ 6Vdc	Continuous unmodulated Tx	0.001 %	EMI5037	**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**
AC power source	KIKUSUI	PCR4000L	3074	25/07/2019	25/09/2021
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/ 110Vac/60Hz	915.023980	N/A (Ref)	0.001 %	EMI5057
Low channel / 25°C/ 121Vac/60Hz	915.023970	0.00000	0.001 %	EMI5058
Low channel / 25°C/ 99Vac/60Hz	915.023980	0.00000	0.001 %	EMI5059
Low channel / 25°C/ 7.2Vdc	915.023970	0.00000	0.001 %	EMI5026
Low channel / 25°C/ 6Vdc	915.024014	0.00000	0.001 %	EMI5027
Low channel / 65°C/ 110Vac/60Hz	915.023471	-0.00006	0.001 %	EMI5060
Low channel / 65°C/ 121Vac/60Hz	915.023465	-0.00006	0.001 %	EMI5061
Low channel / 65°C/ 99Vac/60Hz	915.023477	-0.00005	0.001 %	EMI5062
Low channel / 65°C/ 7.2Vdc	915.023349	-0.00007	0.001 %	EMI5028
Low channel / 65°C/ 6Vdc	915.023368	-0.00007	0.001 %	EMI5029
Low channel / -20°C/ 110Vac/60Hz	915.024161	0.00002	0.001 %	EMI5063
Low channel / -20°C/ 121Vac/60Hz	915.024136	0.00002	0.001 %	EMI5064
Low channel / -20°C/ 99Vac/60Hz	915.024130	0.00002	0.001 %	EMI5065
Low channel / -20°C/ 7.2Vdc	915.024161	0.00002	0.001 %	EMI5030
Low channel / -20°C/ 6Vdc	915.024167	0.00002	0.001 %	EMI5031
High channel / 25°C/ 110Vac/60Hz	915.623892	N/A (Ref)	0.001 %	EMI5066
High channel / 25°C/ 121Vac/60Hz	915.623892	0.00000	0.001 %	EMI5067
High channel / 25°C/ 99Vac/60Hz	915.623894	0.00000	0.001 %	EMI5068
High channel / 25°C/ 7.2Vdc	915.623894	0.00000	0.001 %	EMI5032
High channel / 25°C/ 6Vdc	915.623890	0.00000	0.001 %	EMI5033
High channel / 65°C/ 110Vac/60Hz	915.623129	-0.00008	0.001 %	EMI5069
High channel / 65°C/ 121Vac/60Hz	915.623160	-0.00008	0.001 %	EMI5070
High channel / 65°C/ 99Vac/60Hz	915.623153	-0.00008	0.001 %	EMI5071
High channel / 65°C/ 7.2Vdc	915.623226	-0.00007	0.001 %	EMI5034
High channel / 65°C/ 6Vdc	915.623227	-0.00007	0.001 %	EMI5035
High channel / -20°C/ 110Vac/60Hz	915.624032	0.00002	0.001 %	EMI5072
High channel / -20°C/ 121Vac/60Hz	915.624008	0.00001	0.001 %	EMI5073
High channel / -20°C/ 99Vac/60Hz	915.624020	0.00001	0.001 %	EMI5074
High channel / -20°C/ 7.2Vdc	915.623978	0.00001	0.001 %	EMI5036
High channel / -20°C/ 6Vdc	915.624002	0.00001	0.001 %	EMI5037

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

End of test report