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

RSS-210
FCC part 15

Company ..... :	**STID**
Address..... :	20 PA des Pradeaux Boulevard Salvador Allende 13850 GREASQUE FRANCE

Test item description. ..... :	**Upgradable Blue Readers ARCS**
Trade Mark. ..... :	STID
Manufacturer. ..... :	STID
Type reference. ..... :	ARCS-AQ/BT1, ARCS-BQ/BT1, ARCS-CQ/BT1 (SE9)
Model. ..... :	ARC-AC4
FCC ID. ..... :	OVNAC4
IC. ..... :	10520A-ARCS
Ratings..... :	7Vdc to 28Vdc

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

Report Reference No. ..... :	**RR410-20-102598-4A**
Test procedure. ..... :	FCC IC Certification
Diffusion. ..... :	Mr SILVE
Applicant's name. ..... :	STID
Date of issue. ..... :	December 11, 2020
Total number of pages..... :	69
Revision. ..... :	0
Modified page(s). ..... :	Creation
Compiled by. ..... :	Nicolas SOULAY
Approved by (+ signature). ..... :	David MONTAULON (Technical Manager)

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REPORT INDEX:

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **Upgradable Blue Readers ARCS-xQ & ARCS-xQ/BT1 (SE9)** (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 Laboratory	EMITECH MONTPELLIER laboratory & Open Area Test Site in SALINELLES (30)
Address	145 rue de Massacan 34740 VENDARGUES FRANCE
Test procedure	FCC IC Certification
Tested by	Nicolas SOULAY
Test supervisor	None
Date of receipt of test item	N/A
Date (s) of performance of tests	From September 22nd to October 5th of 2020

APPLICANT'S GENERAL INFORMATIONS:	
Company name	STID
Company address	20 PA des Pradeaux Boulevard Salvador Allende 13850 GREASQUE FRANCE
Person(s) present during the tests	Benoît Berland
Responsible	Mr SILVE

GENERAL REMARKS:

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.

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Throughout this report the decimal separator is point.

POSSIBLE TEST CASE VERDICTS:	
Test case does not apply to the test object	N/A
Information not communicated	N/C
Test case not performed	N/P
Test object does meet the requirement	P (Pass)
Test object does not meet the requirement	F (Fail)
Test object was not subjected to all tests	I (Inconclusive)

DEFINITIONS AND ABBREVIATIONS:

E.U.T.	Equipement under test	AE	Ancillary equipment
RBW	Resolution bandwidth	VBW	Video bandwidth
OATS	Open area test site	FAR	Full anechoic room
RF	Radio frequency	NTR	Nothing to report
SRD	Short Range Device	GPS	Global Positioning System

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 15.225** Operation within the bands 13.553-13.567MHz **RSS-210, Issue 10, December 2019** Licence-Exempt Radio Apparatus: Category I Equipment **RSS/CNR-Gen, Issue 5, March 2019, Amendment 1** General Requirements for Compliance of Radio Apparatus **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
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.	:	*Upgradable Blue Readers ARCS*
Type reference.	:	ARCS-AQ/BT1, ARCS-BQ/BT1, ARCS-CQ/BT1 (SE9)
Model.	:	ARC-AC4
Trade Mark.	:	*STID*
FCC ID.	:	OVNAC4
IC.	:	10520A-ARCS
Serial number (S/N).	:	*Not communicated*
Part number (P/N).	:	*Not communicated*
Software version.	:	*Not communicated*
Firmware version.	:	*Not communicated*
Type of sample.	:	*Standard equipment*
Function(s).	:	*Wall Mounted RFID Device*
Manufacturer name.	:	*STID*
Address	:	*20 PA des Pradeaux* *Boulevard Salvador Allende* *13850 Greasque* *France*

General product information:

The tests were realised with a ferrite (2 turns) on the power supply cable, and a 2.2µF capacitor on the dc input.
The reference of the component used is: Wurth Elektronik 74271222,
These modification were made according to these lines of the user manual:

Use a ferrite (2 passages) for the cable (Power supply and Data).
Example: Reference 74271222 WURTH ELEKTRONIK

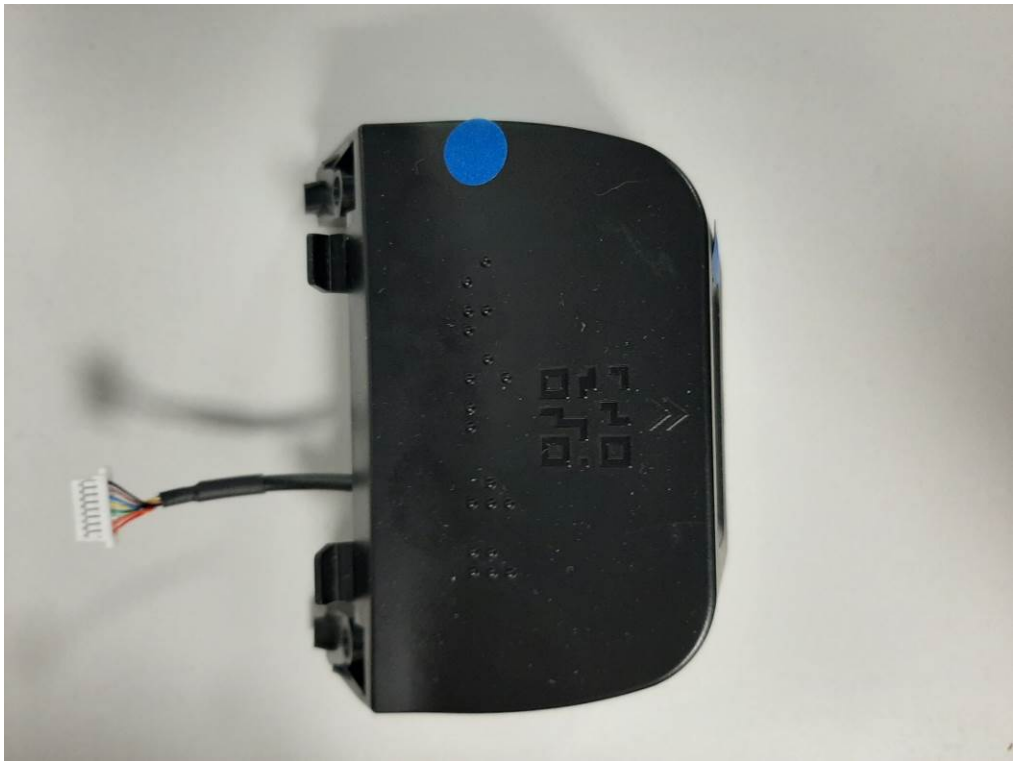
For ARCS screw terminal output reader, connect the 2.2 µF capa (provided) between +12V and GND directly to the output of the connector (no polarization).

3.2. ARCS-AQ External and internal view

3.3. ARCS-BQ External and internal view

3.4. ARCS-CQ External and internal view

3.5. EUT Complementary module



3.6. EUT Power supply (Used for the test only)

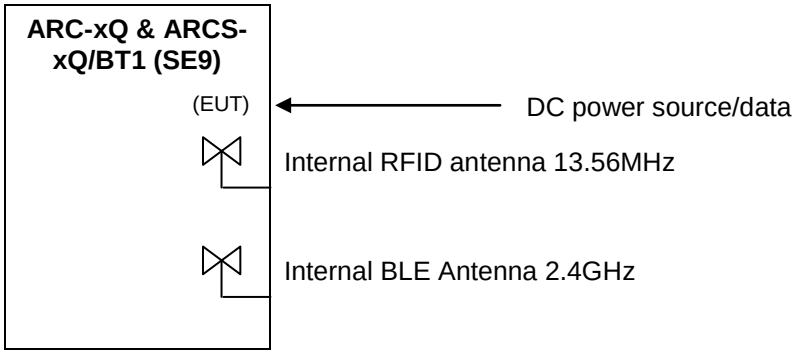
3.7. EUT Mechanical and Electrical Design

Power supply. ..... : *12Vdc*
Power supply range. ..... : *7Vdc to 12Vdc*
Power type. ..... : *DC Power Supply*
Power (mW). ..... : *N/C*
Nominal current (mA). ..... : *ARCS-AQ : 260mA @ 12Vdc*
ARCS-BQ : 300mA @ 12Vdc
ARCS-CQ : 340mA @12Vdc
Dimensions (L x W x H) (m). ..... : *ARCS-AQ : 156,5mm x 80 x36*
ARCS-BQ : 156,5mm x 80 x36
ARCS-CQ : 176mm x 80 x 36
Weight (kg). ..... : *ARCS-AQ : 180g*
ARCS-BQ : 180g
ARCS-CQ : 240g
Temperature range (°C). ..... : *-30°C to 70°C*
Ground bounding strap. ..... : *No*

Comments:

N/A

3.8. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Enveloppe	N/E	N/A	Plastic	Data and power supply cable
1	DC power source	DC/Data	N/A	RS485	
2	RFID Antenna 13.56MHz	RF	N/A	N/A	
3	BLE Antenna 2.4GHz	RF	N/A	N/A	

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

3.9. EUT Radio Specifications

a) GENERAL INFORMATIONS

According to manufacturer's declarations :

EUT type..... : *Transmitter*
Technology ..... : *RFID + Bluetooth*
Environmental profile..... : *Data transmission*
Temperature range..... : *-30°C to +70°C*
Antenna type ..... : *Integral*
Antenna Gain..... : *N/C*

Comments:

N/A

b) TRANSMITTER PARAMITTERS (TX)

Frequency bands..... : *RFID: 13.553MHz - 13.567MHz*
Bluetooth: 2400MHz -2483.5MHz
RF Power..... : *N/C*
Number of channels / Separation..... : *RFID: 1*
Bluetooth: N/C
Modulation type ..... : *RFID: AM Bluetooth: GFSK*
Duty cycle ..... : *N/C*
Tested frequency..... : *13.56MHz*
2400MHz

c) RECEIVER PARAMETERS (RX)

Frequency bands..... : *N/A*
Category/Class ..... : *N/A*
Bandwidth..... : *N/A*

4. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	COMMENTS
GENERAL			
Labeling requirements		N/P	See certification documents
Information to user		N/P	See certification documents
Home-built devices		N/A	
Kits		N/A	
Special Accessories		N/P	See certification documents
Inspection by the Commission		N/A	
Measurement standards		PASS	
Test procedure for CPU boards and computer power supplies		N/A	
Frequency range of radiated measurements		PASS	
Measurement detector functions and bandwidths		PASS	
Transition provisions for compliance with the rules		N/P	See certification documents
UNINTENTIONAL RADIATORS			
Equipment authorization			
- Verification		N/A	
- Declaration of Conformity		N/A	
CPU boards and power supplies used in personal computers		N/A	
Exempted device		N/A	
Information to the user		N/P	See certification documents
Conducted limits		PASS	
Radiated emission limits	Class B	PASS	
Antenna power conduction limits for receivers		N/A	
Power line carrier systems		N/A	
TV interface devices, including cable system terminal devices		N/A	
TV broadcast receivers		N/A	
Cable ready consumer electronics equipment		N/A	
Program blocking technology requirements for TV receivers		N/A	
Scanning receivers and frequency converters used with scanning receivers		N/A	
Labeling of digital cable ready products		N/A	
INTENTIONAL RADIATORS			

TEST DESIGNATION	SEVERITY	VERDICT	COMMENTS
Equipment authorization requirement		N/A	Transmitter part is subject to Certification procedure
Certified operating frequency range		N/A	
Antenna requirement		PASS	Dedicated integral antenna
External radio frequency power amplifiers and antenna modifications		N/A	
Restricted bands of operation		PASS	
Conducted limits	Class B	PASS	
Radiated emission limits; general requirements	Class B	PASS	
Tunnel radio systems		N/A	
Modular transmitters		N/A	
Cable locating equipment		N/A	
Cordless telephones		N/A	
Additional provisions to the general radiated emission limits		PASS	
Operation within the band 13.110-14.010 MHz.			
- Field strength in the band 13.553-13.567 MHz		PASS	
- Field strength in the band 13.410-13.553 MHz and 13.567-13.710 MHz		PASS	
- Field strength in the band 13.110-13.410 MHz and 13.710-14.010 MHz		PASS	
- Field strength outside the band 13.110-14.010 MHz		PASS	
- Frequency tolerance of the carrier signal		PASS	
- Radio frequency powered tag		N/A	EUT is an RFID reader

Sample subject to the test complies 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 account of uncertainty associated with the results.

Opinion(s) and interpretation(s): N/A

5. 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	± 1.2 %	± 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	± 5.4 dB	± 6 dB
Radiated emission (magnetic field)		
9kHz – 30MHz	± 2.7 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	± 5.2 dB	/
1GHz – 18GHz	± 5.3 dB	/
18GHz – 26GHz	± 5.5 dB	/
26GHz – 40GHz	± 5.5 dB	/

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

6. TEST CONDITIONS AND RESULTS

6.1. Conducted voltage emission (measurement)

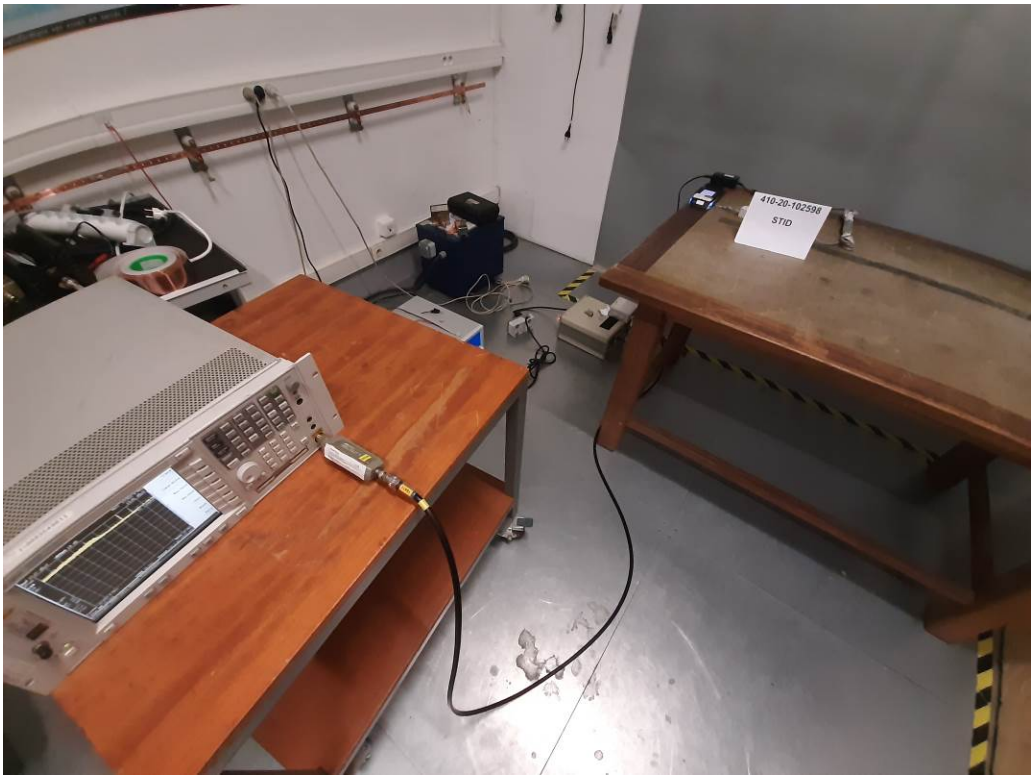
Reference standard:	FCC part 15.107, 15.207 and RSS-Gen
Test method:	ANSI C63.4: 2014
General test setup: Test is done inside a shielded room. EUT is set on an insulating support at 40cm from the ground reference plane. All power was connected to the system through Artificial Mains Network (AMN). The 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
ARCS-xQ AC power supply	150kHz-30MHz	Class A	EMI4930	**PASS**

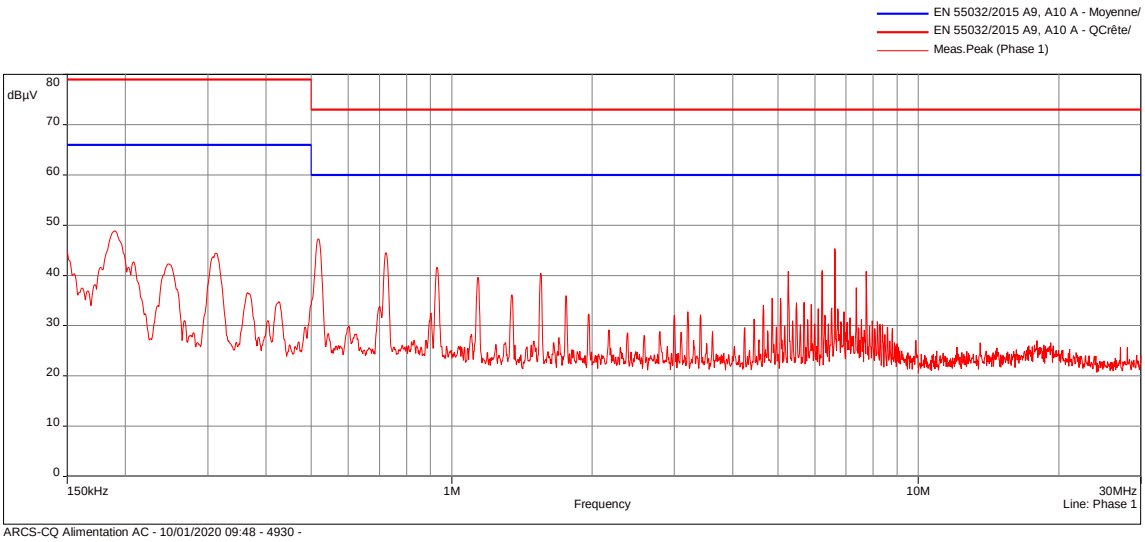
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	*See Graph(es)*
Relative Humidity	30 to 60 %	*See Graph(es)*
Atmospheric pressure	N/A	*See Graph(es)*
Test method deviation: N/A		
Supplementary information: EUT power supply is done trought a “standard power supply” wich meets FCC and RSS requirements.		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Cable	N	3m	16411	04/05/2019	04/07/2021
Cable	EMITECH	Current absorber sheath	10653	19/10/2018	19/12/2020
LISN	PMM	L2-16	1209	08/06/2020	08/08/2022
PE choke	EMITECH	CISPR 16-2-1 : 2008	11042		
Power supply	TTI	TSX-1820P	4365		
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Shielded enclosure	RAY PROOF	C.V1	1123	16/06/2018	16/08/2021
Software	Nexio		0000		
Surges Suppressor	Hewlett Packard	11947A	0238	20/12/2019	20/02/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022

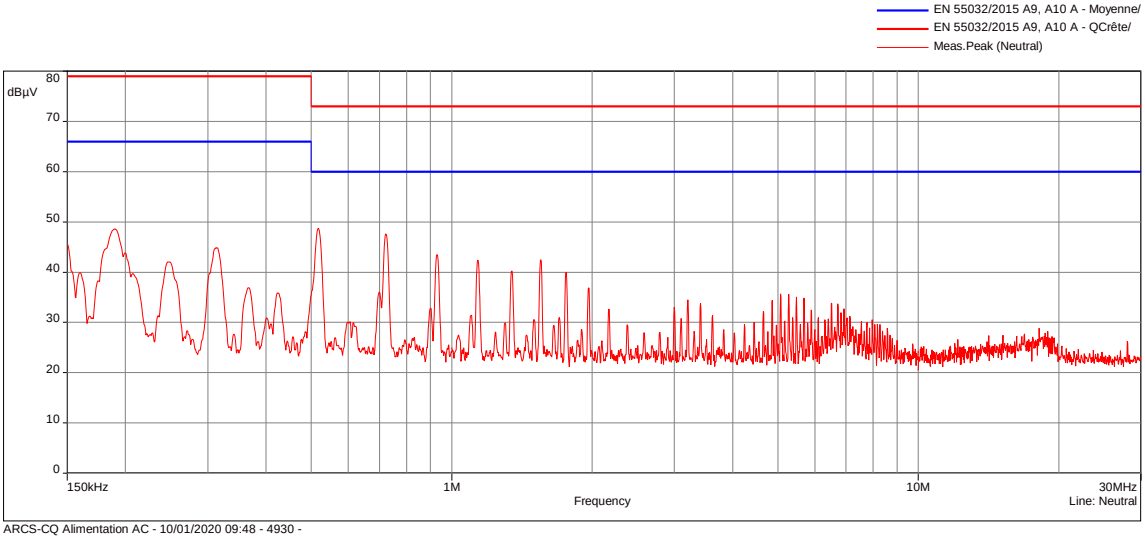
Blank cells = Permanent validity

TEST SETUP PHOTO(S)


CONDUCTED EMISSION (MEASUREMENT) - GRAPH			
ARCS-xQ AC POWER SUPPLY		**EMI4930**	
EUT mode:	#1	**T (°C):**	21.1
Test Date:	01/10/2020 09:48:04	**H (%):**	58.7
Test Operator:	NSO	**P (hPa):**	1000



ARCS-CQ Alimentation AC - 10/01/2020 09:48 - 4930 -



ARCS-CQ Alimentation AC - 10/01/2020 09:48 - 4930 -

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:				
EUT modification(s): N/A				

6.2. Occupied Bandwidth

Reference standard:	FCC part 15 Radio part 15.225 & RSS-210
Test method:	FCC part 15.225 & RSS-210
Test description: The occupied bandwidth (OBW) is the Frequency Range in which 99 % of the total mean power of a given emission falls. The residual part of the total power being denoted as β, which, in cases of symmetrical spectra, splits up into β/2 on each side of the spectrum. Unless otherwise specified, β/2 is taken as 0,5 %. The maximum occupied bandwidth includes all associated side bands above the appropriate emissions level and the frequency error or drift under extreme test conditions. EUT is connected to the measuring receiver via 50Ω attenuator(s).	

TESTED PARAMETER	OBW	SEVERITY	RESULT TAB.	VERDICT
99% Bandwidth	9.6379 kHz	<14kHz	EMI4829	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	26.5°C
Relative Humidity	20 to 75 %	48.3 %
Atmospheric pressure	N/A	1016 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Attenuator	Radiall	R412720124	4391	02/02/2018	02/04/2021
Cable	N	3m	16416	04/05/2019	04/07/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Multimeter	Keithley	2010	6094	30/05/2019	30/07/2021
Power supply	TTI	PL303QMD	8496		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

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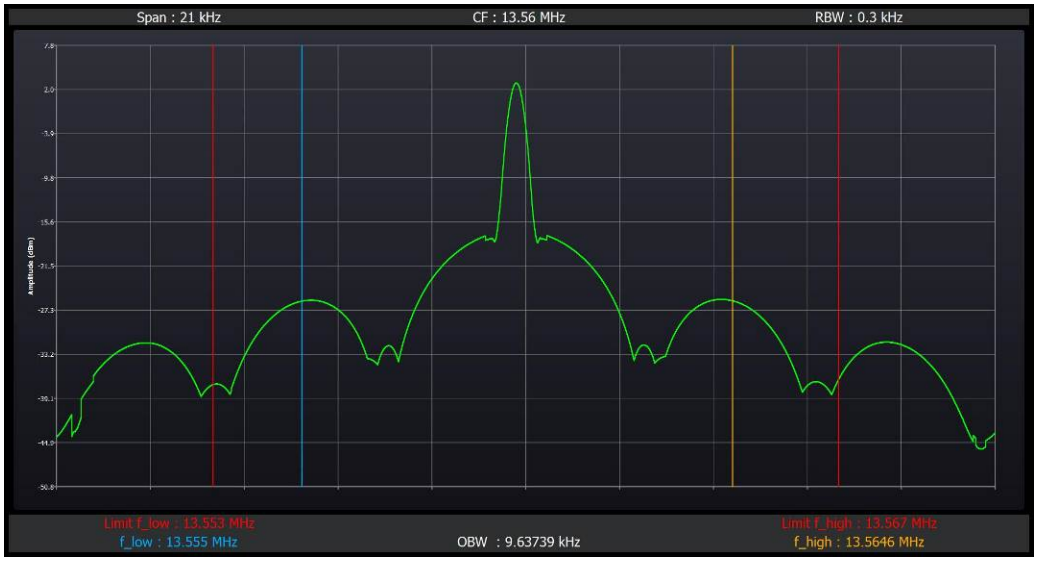
OCCUPIED BANDWIDTH - GRAPH		
99% BANDWIDTH		EMI4829
EUT mode:	D-M2	
Test Date:	05/10/2020 15:46:58	
Test Operator:	NSO	
		
Results:	The system has an OBW of 9.6379 kHz	
EUT modification(s): N/A		

6.3. Radiated spurious emissions

Reference standard:	FCC part 15 Radio part 15.225 & CNR-Gen
Test method:	FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen

General test setup: For f <30MHz, 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 semi-anechoic chamber. The EUT was rotated 360°in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°).

Final measurements (quasi-peak) were then performed in a 10-meter Open Area Test Site that complies to CISPR 16 in the same measurement conditions.

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

Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities.

Final measurements (quasi-peak or average) were then performed in a semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. The EUT was rotated 360° about its azimuth and adjusting the receive antenna height from 1 to 4 m.

All frequencies were investigated, where applicable.

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

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
ARCS-xQ	9kHz-150kHz	15.209	See below	**PASS**
ARCS-xQ	150kHz-30MHz	15.209	See below	**PASS**
ARCS-xQ	30MHz-1GHz	15.209	See below	**PASS**
ARCS-xQ	1GHz-18GHz	15.209	See below	**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:

From 9 kHz to 30MHz: limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.

From 30MHz to 1GHz Quasi peak limit provided is the limit given in §15.209.

Above 1GHz average limit in restricted bands §15.205 is 54dBµV/m. Otherwise, the limit is 20dB under carrier emission level at 3m without averaging

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	8387	24/07/2019	24/09/2022
Antenna	Electro Metrics	BIA-30HF	0824	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Cable	MegaPhase	F135N1N28	16664	25/10/2019	25/12/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	SUCOFLEX	N-3m	14378	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	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Cable	MegaPhase	TM18-N1N1-118	12841	10/05/2018	10/01/2021
Cable	MegaPhase	TM18-N1N1-118	12842	10/05/2018	10/01/2021
Filter	Micro-Tronics	HPM 15162	10273	12/01/2019	12/03/2022
Filter	Micro-Tronics	HPM18865	12843	09/06/2018	09/08/2021
Preamplifier	Techniwave	APS16-0087	14040	25/06/2019	02/12/2020
Receiver	Rohde & Schwarz	ESI	9704	03/03/2020	03/05/2021
Receiver	Rohde & Schwarz	FPL1003	16027	14/08/2020	14/10/2021
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Shielded enclosure	RAY PROOF	C.V1	1123	16/06/2018	16/08/2021
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Turntable	INN-CO	CO3000 & DS1200S	11571		

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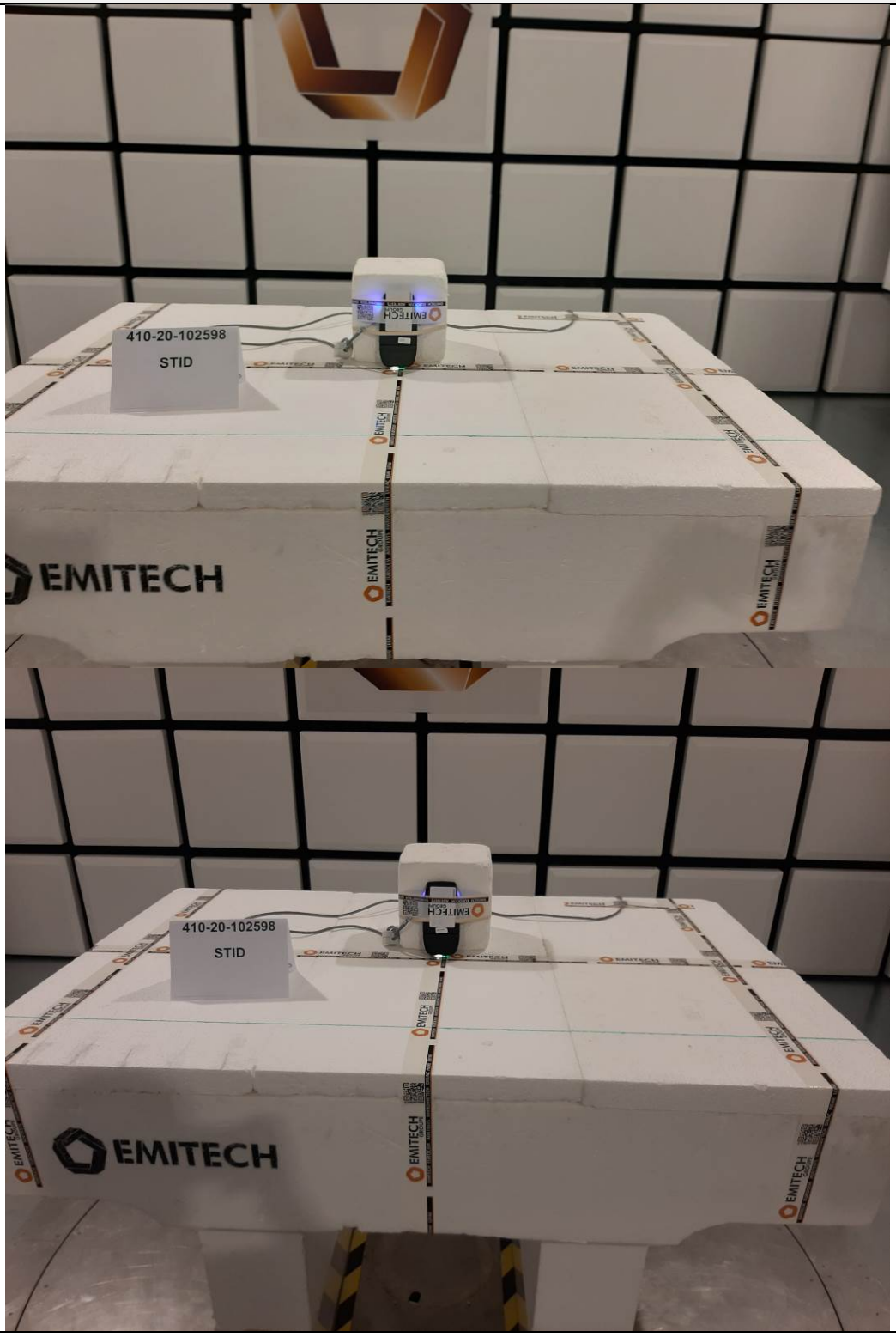
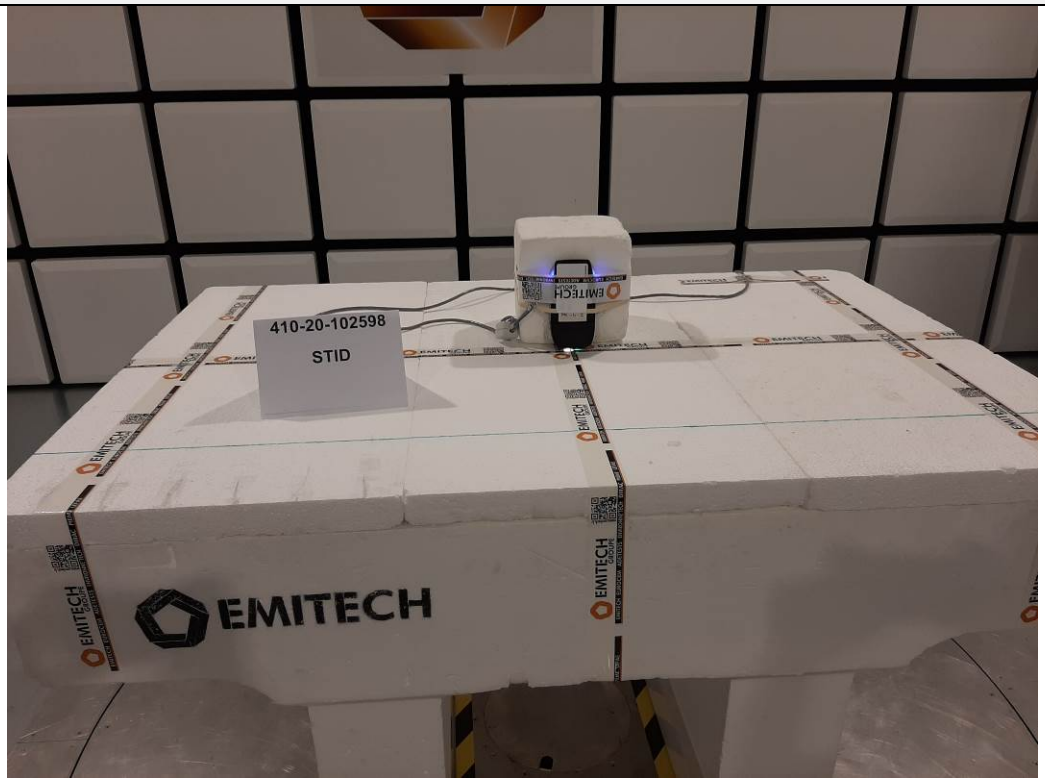
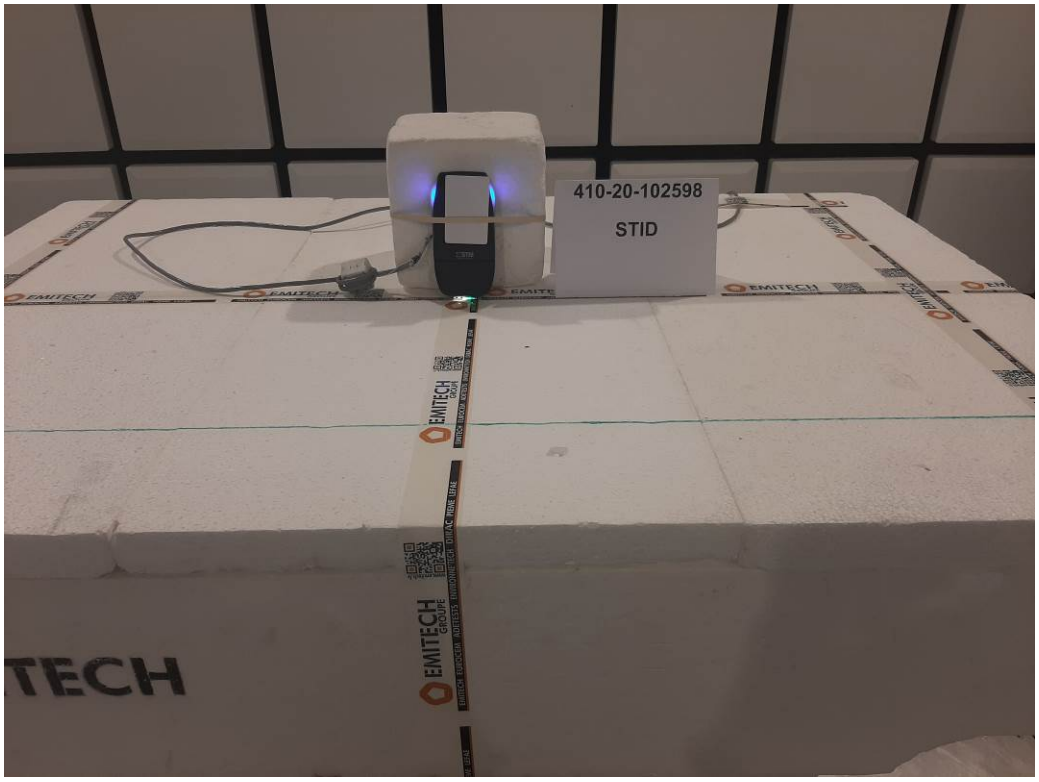
TEST SETUP PHOTO(S) RADIATED EMISSIONS POSITION


TEST SETUP PHOTO(S) RADIATED EMISSIONS POSITION


TEST SETUP PHOTO(S) RADIATED EMISSIONS POSITION

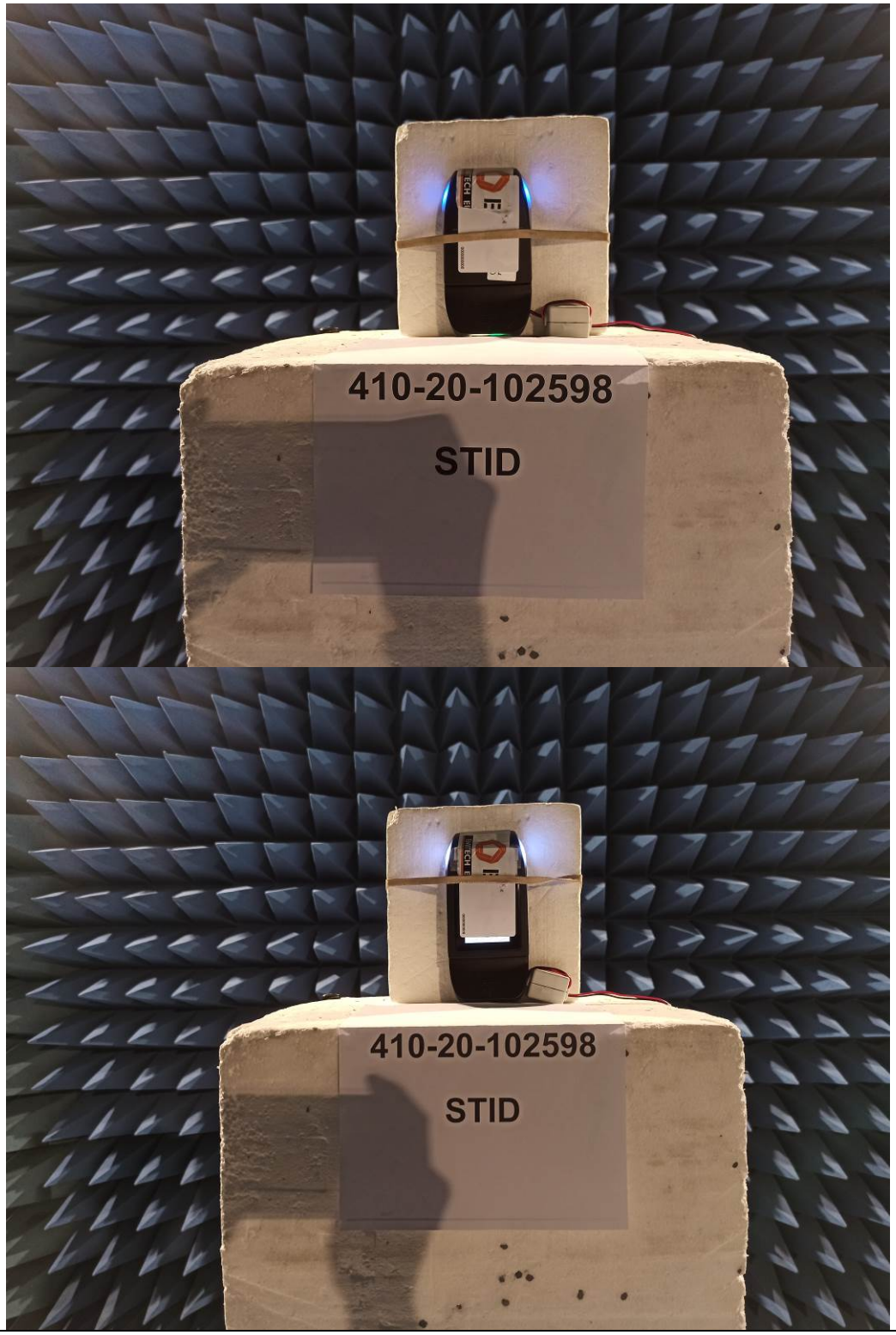




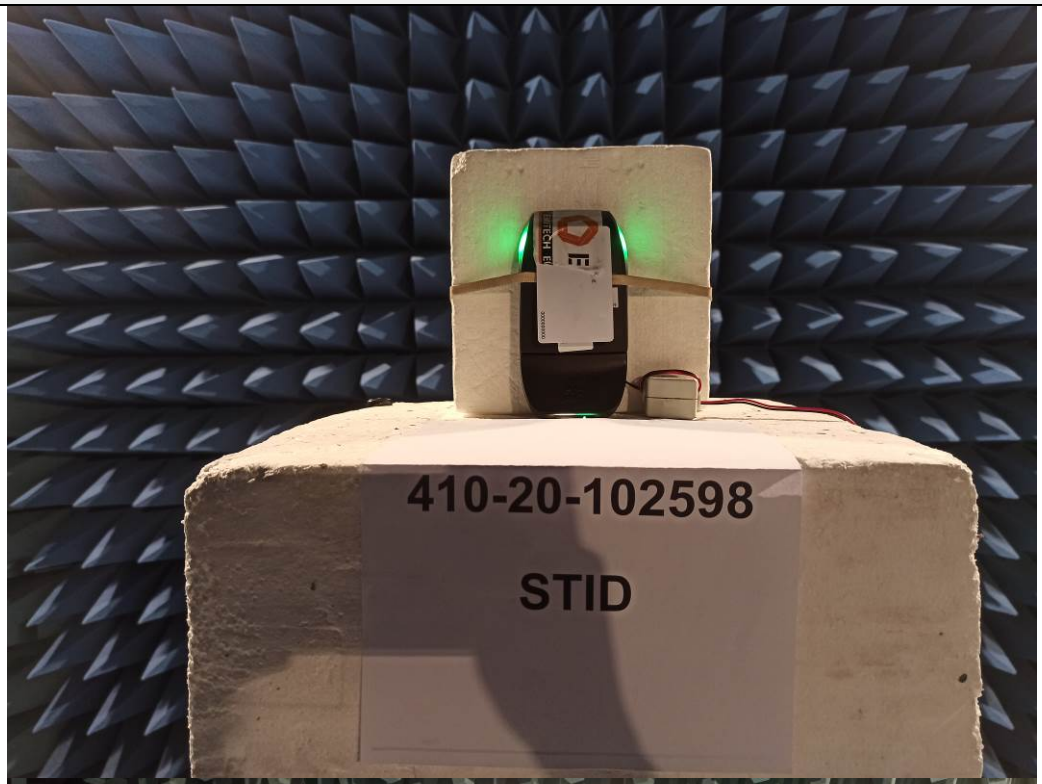
TEST SETUP PHOTO(S) RADIATED EMISSION(F<30MHZ, PRE MEASUREMENT)

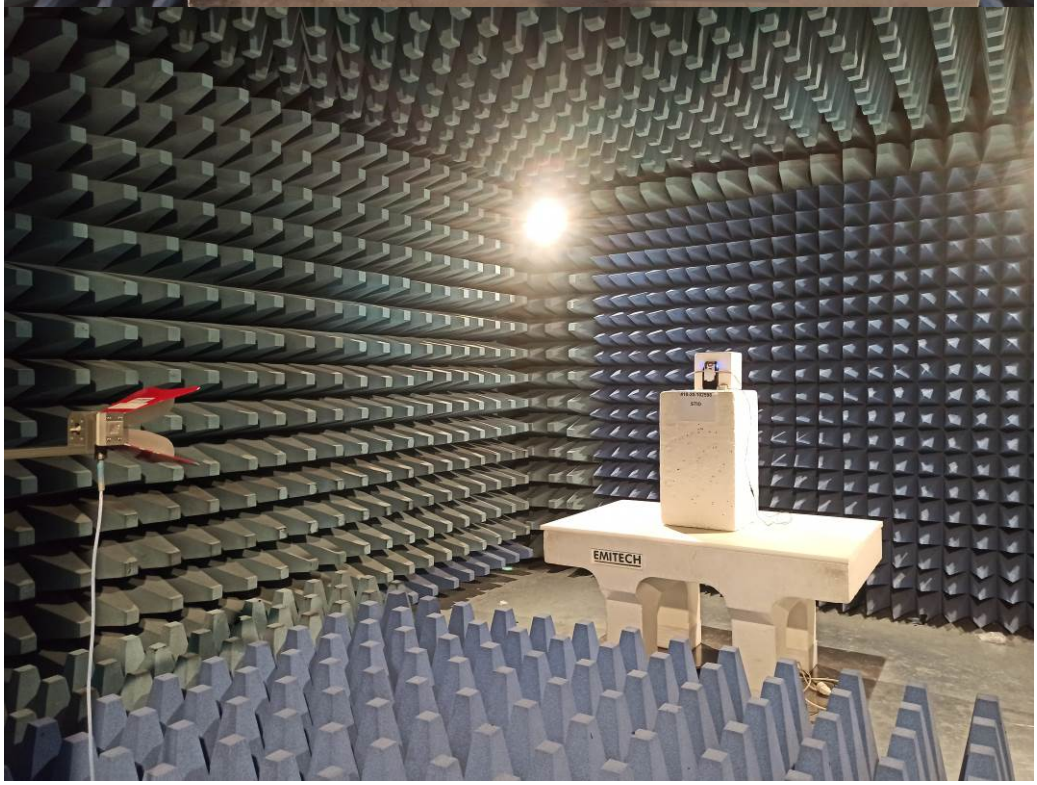

TEST SETUP PHOTO(S) RADIATED EMISSIONS (30MHZ-200MHZ)


TEST SETUP PHOTO(S) RADIATED EMISSIONS (200MHZ-1GHZ)


TEST SETUP PHOTO(S) RADIATED EMISSION(F>1GHZ)


TEST SETUP PHOTO(S) RADIATED EMISSION(F>1GHZ)

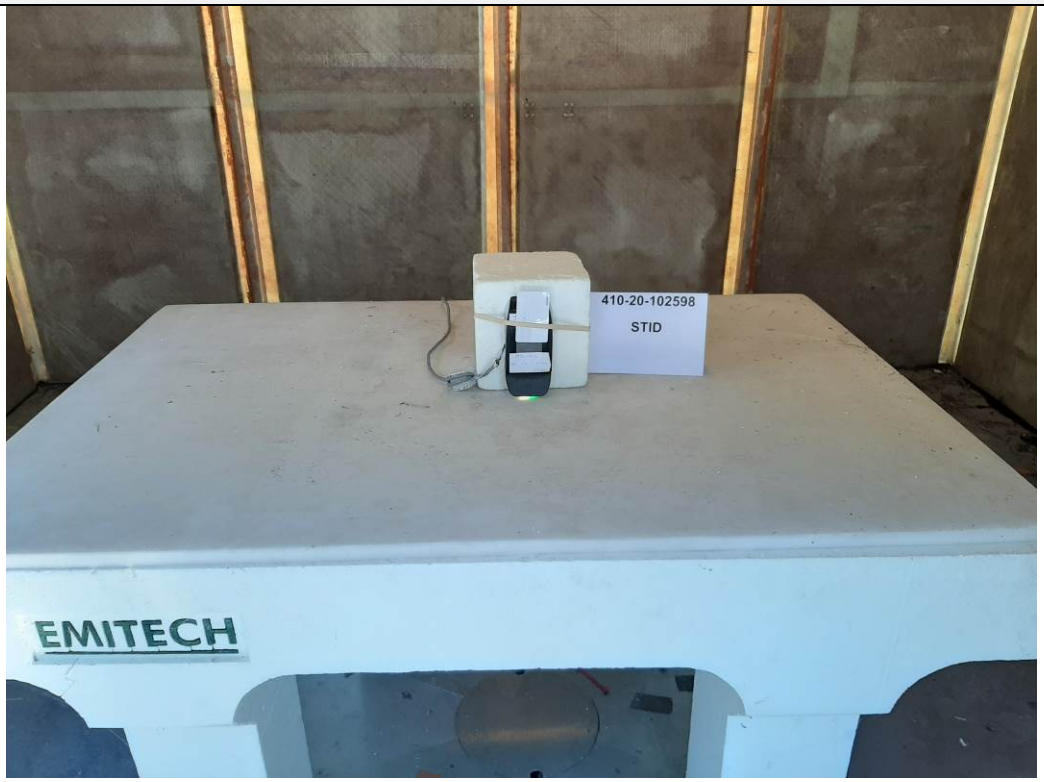




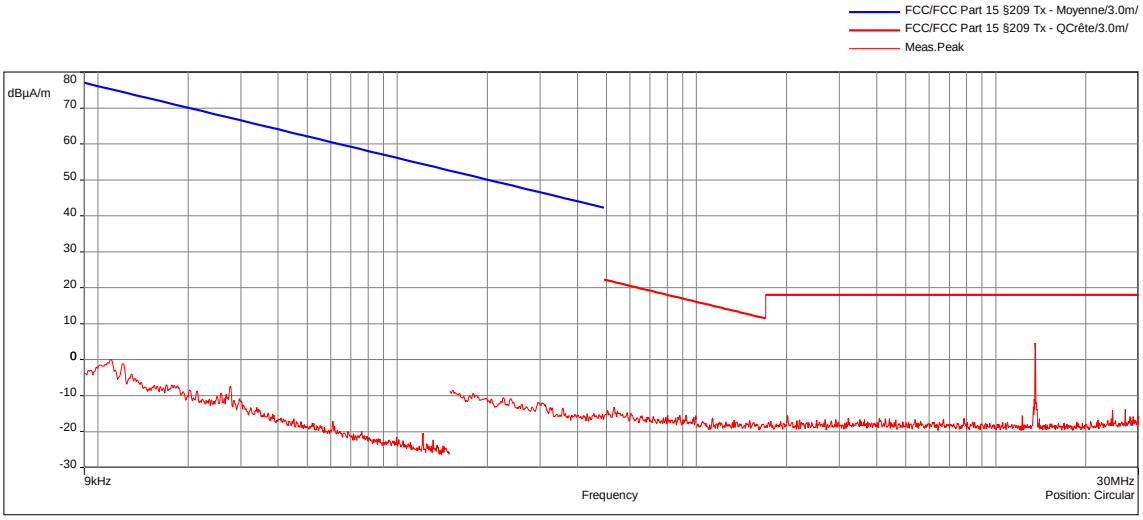
TEST SETUP PHOTO(S) RADIATED EMISSION(F<30MHZ, FINAL MEASUREMENT)

TEST SETUP PHOTO(S) RADIATED EMISSION(F<30MHZ, FINAL MEASUREMENT)


TEST SETUP PHOTO(S) RADIATED EMISSION(F<30MHZ, FINAL MEASUREMENT)


TEST SETUP PHOTO(S) RADIATED EMISSION(F<30MHZ, FINAL MEASUREMENT)


RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-AQ / 0°		**EMI4676**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013

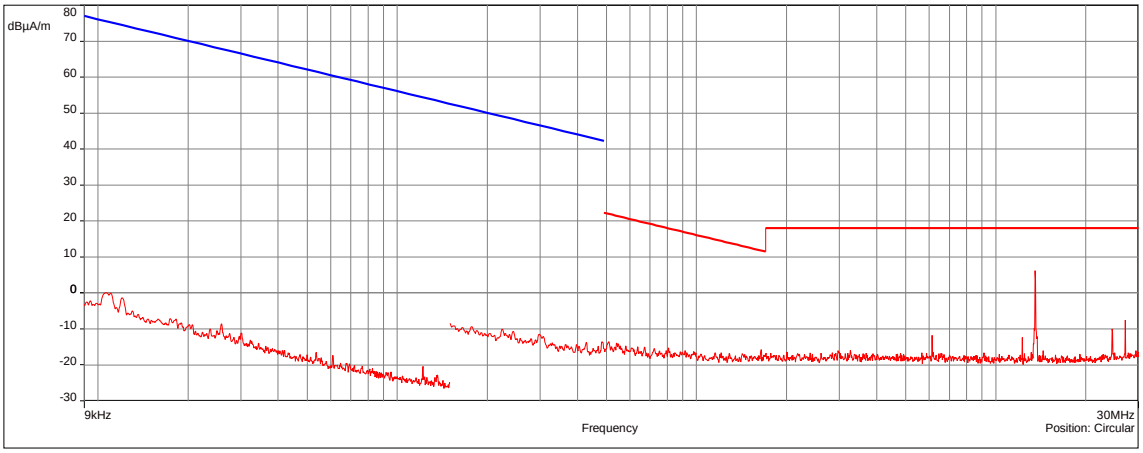


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-10MHz	10kHz	30kHz	Peak

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

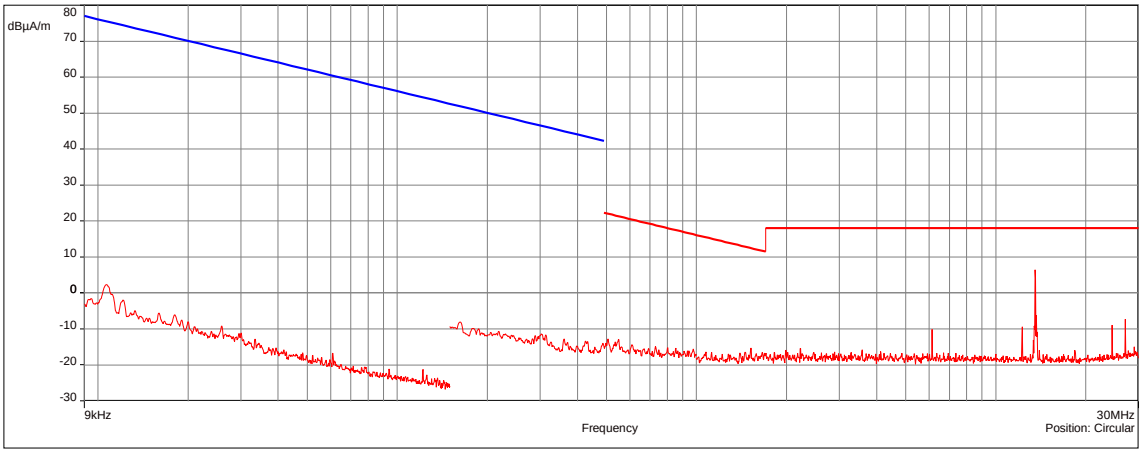
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-AQ / 45°		**EMI4677**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

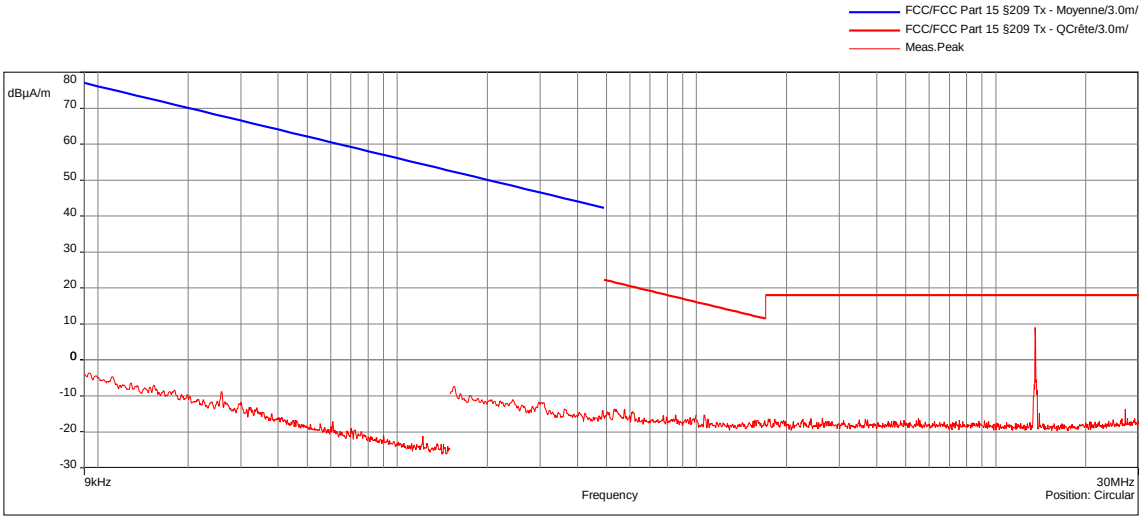
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-AQ / 90°		**EMI4678**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

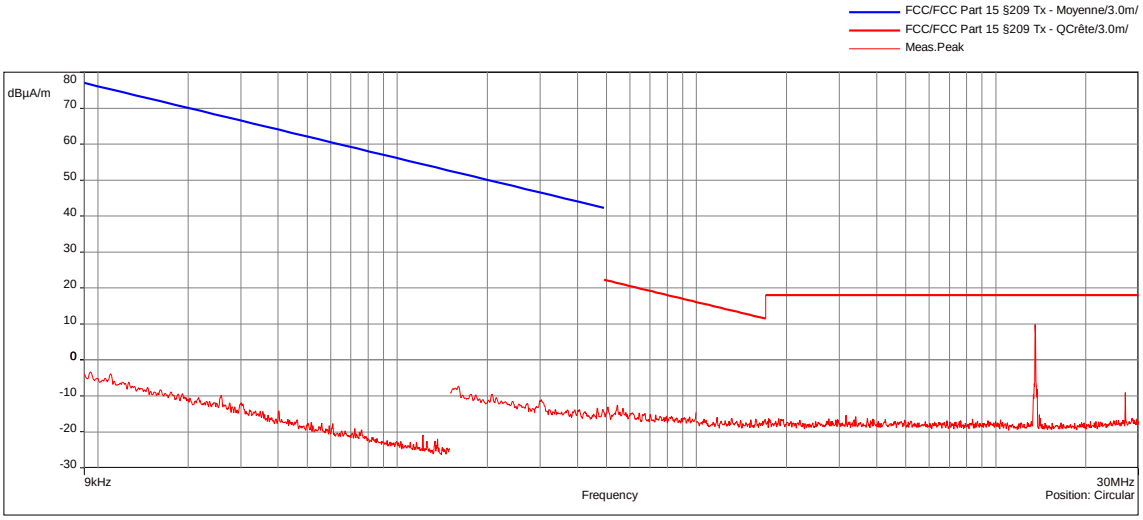
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-BQ / 0°		**EMI4675**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

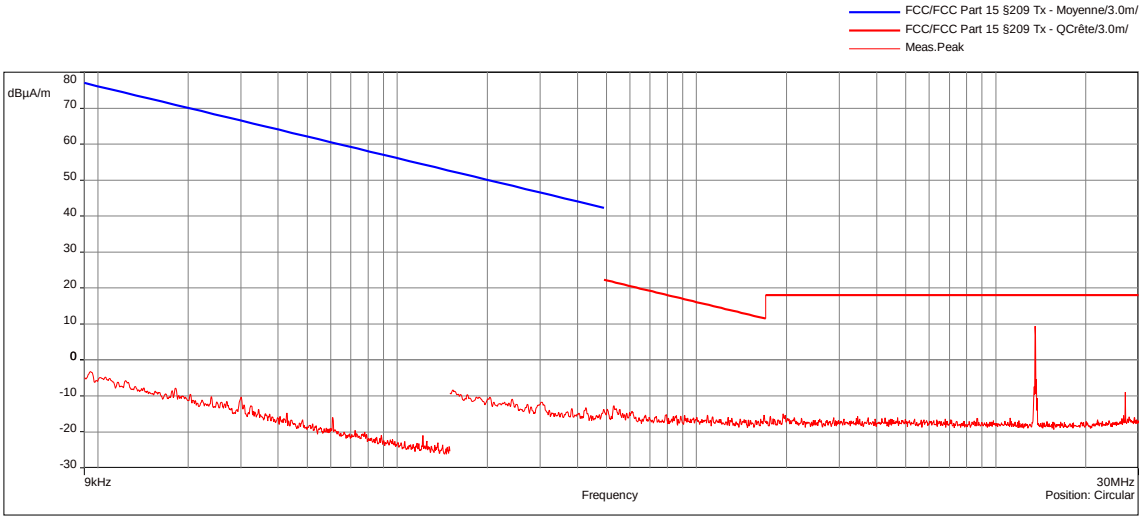
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-BQ / 45°		**EMI4673**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

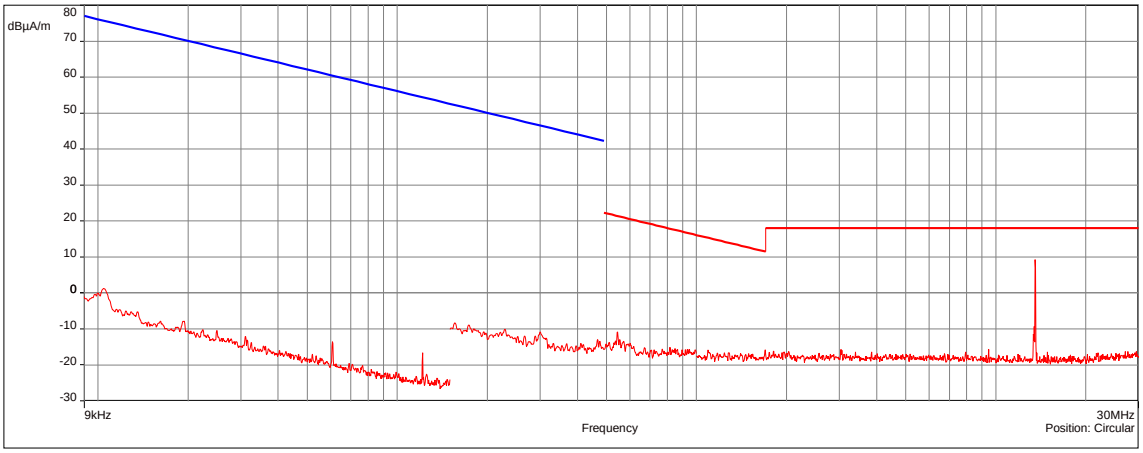
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-BQ / 90°		**EMI4674**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

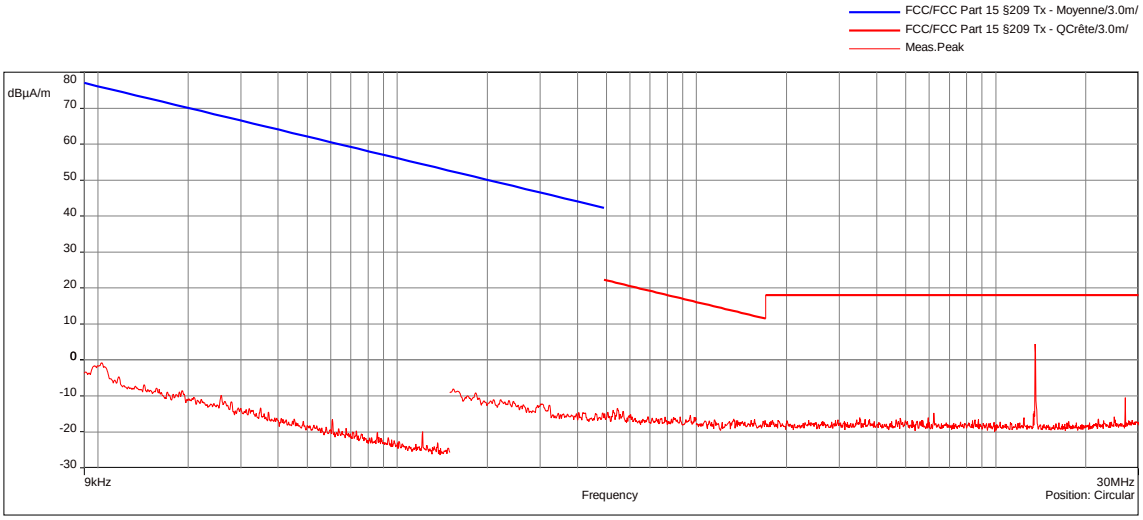
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-CQ / 0°		**EMI4654**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

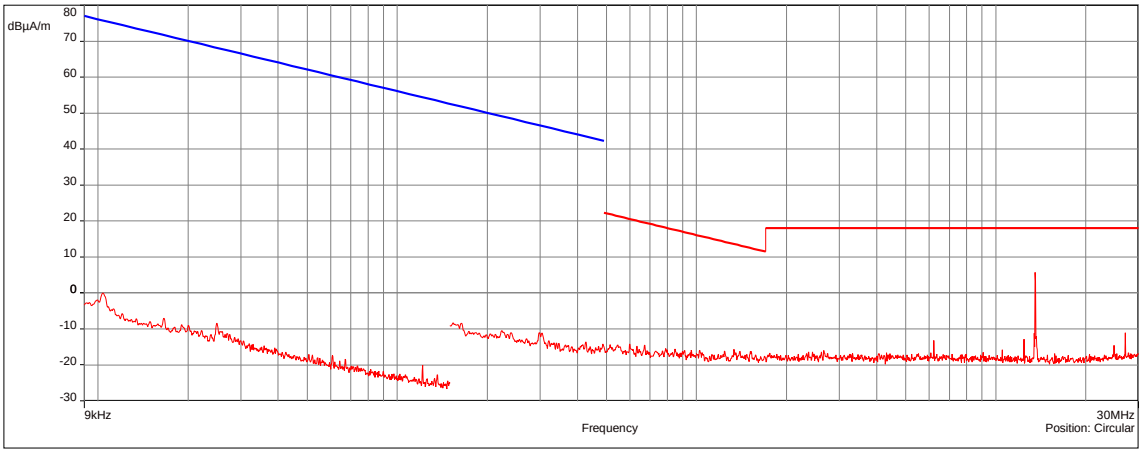
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-CQ / 45°		**EMI4664**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



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

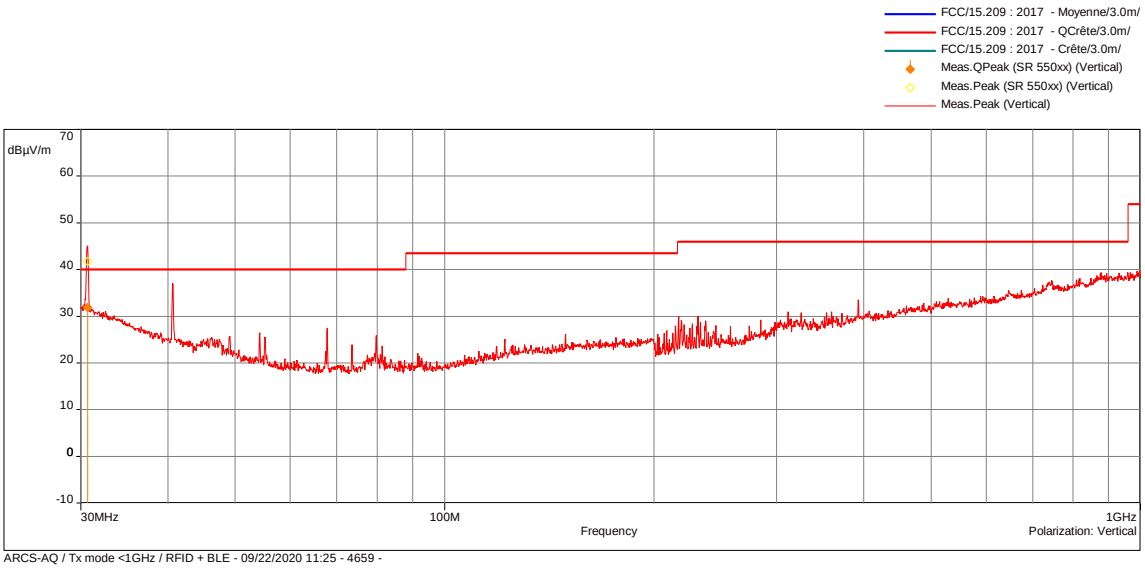
RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-CQ / 90°		**EMI4665**	
EUT mode:	Tx mode	**T (°C):**	22.7
Test Date:	23/09/2020	**H (%):**	70.1
Test Operator:	NSO	**P (hPa):**	1013



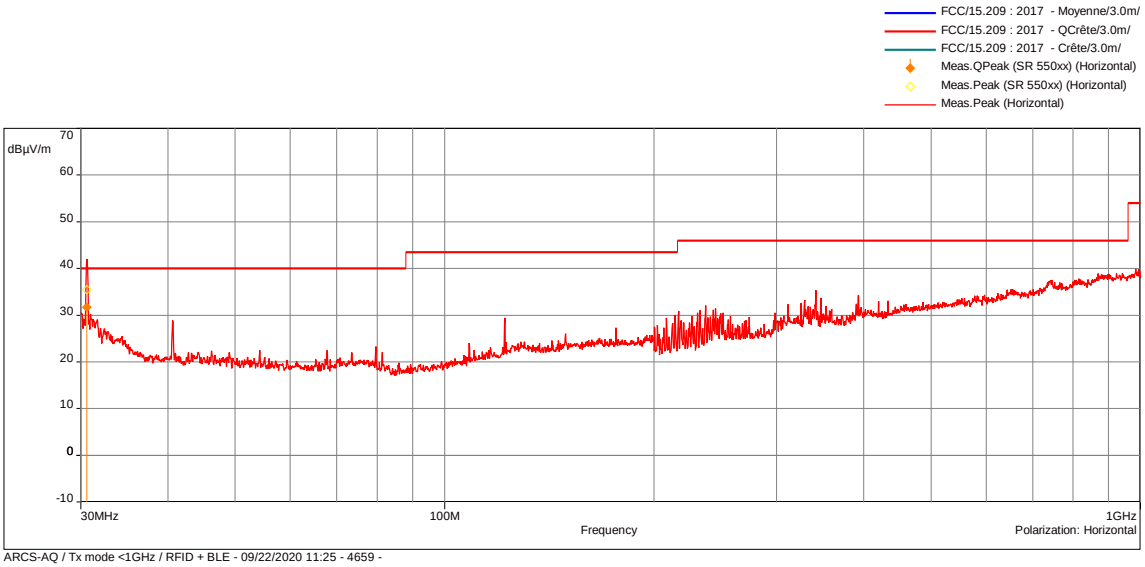
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Circular	9kHz-150kHz	300Hz	1kHz	Peak
Circular	150kHz-1MHz	10kHz	30kHz	Peak
Circular	1MHz-10MHz	10kHz	30kHz	Peak
Configuration:	N/A			
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor.			

EUT modification(s): N/A

RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-AQ / 30MHz-1GHz		**EMI4659**	
EUT mode:	Tx mode	**T (°C):**	22.8
Test Date:	22/09/2020	**H (%):**	68.1
Test Operator:	NSO	**P (hPa):**	1016



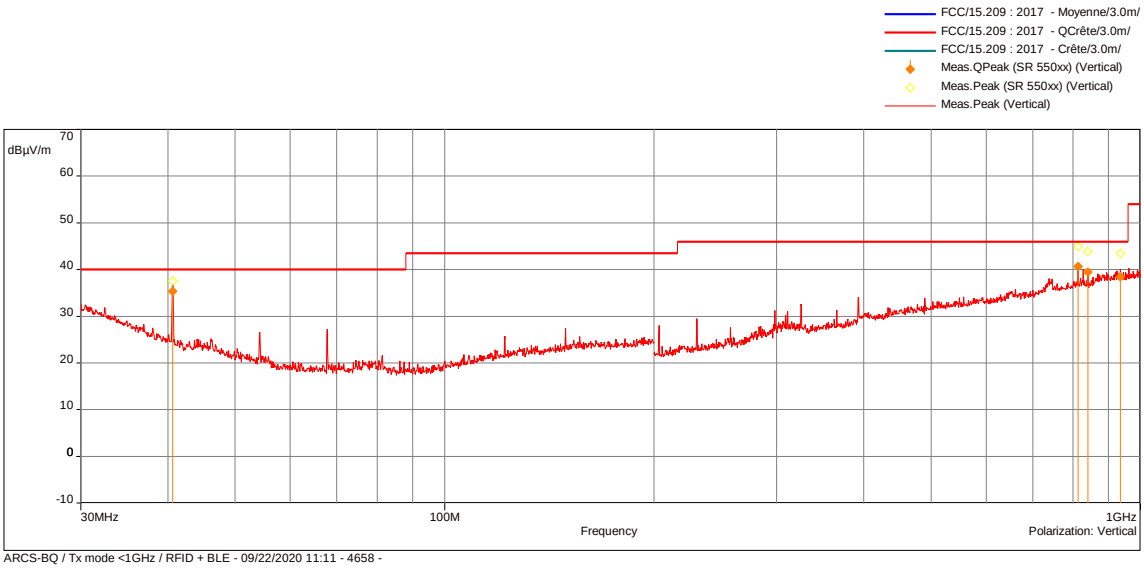
ARCS-AQ / Tx mode <1GHz / RFID + BLE - 09/22/2020 11:25 - 4659 -



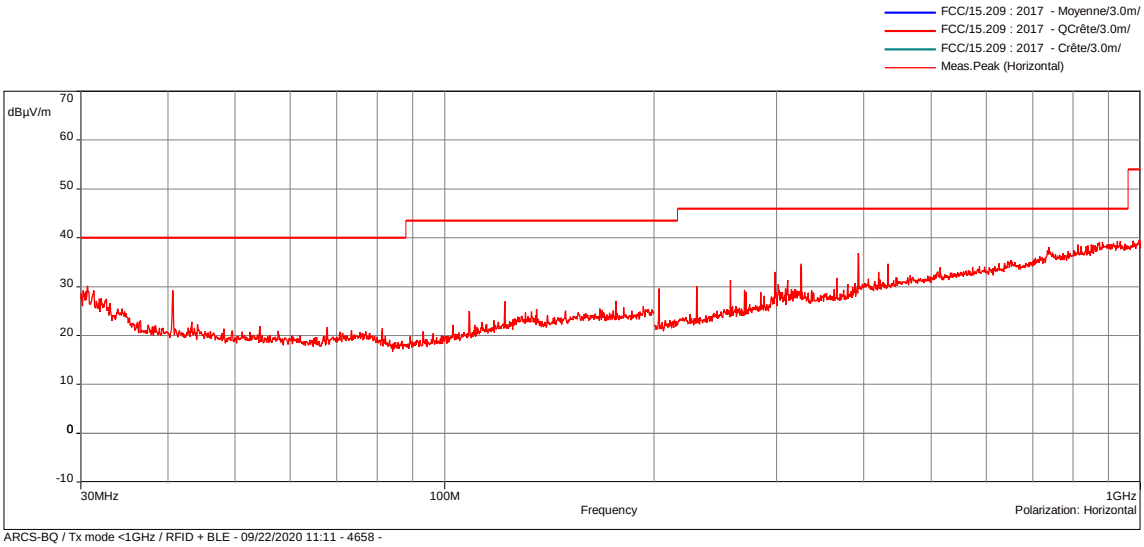
ARCS-AQ / Tx mode <1GHz / RFID + BLE - 09/22/2020 11:25 - 4659 -

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:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-BQ / 30MHz-1GHz		**EMI4658**	
EUT mode:	Tx mode	**T (°C):**	22.8
Test Date:	22/09/2020	**H (%):**	68.1
Test Operator:	NSO	**P (hPa):**	1016



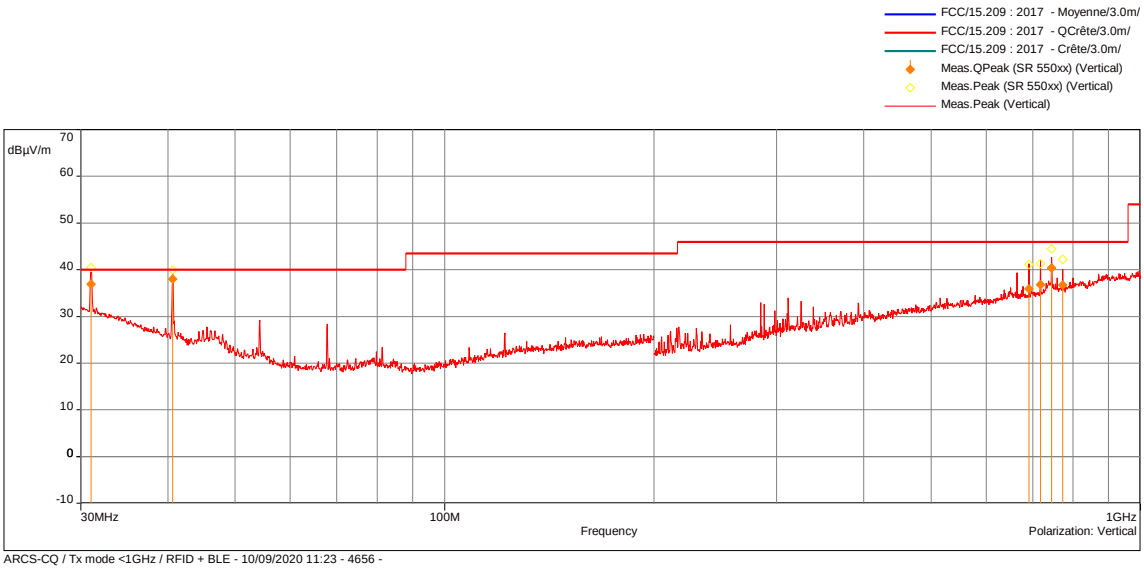
ARCS-BQ / Tx mode <1GHz / RFID + BLE - 09/22/2020 11:11 - 4658 -



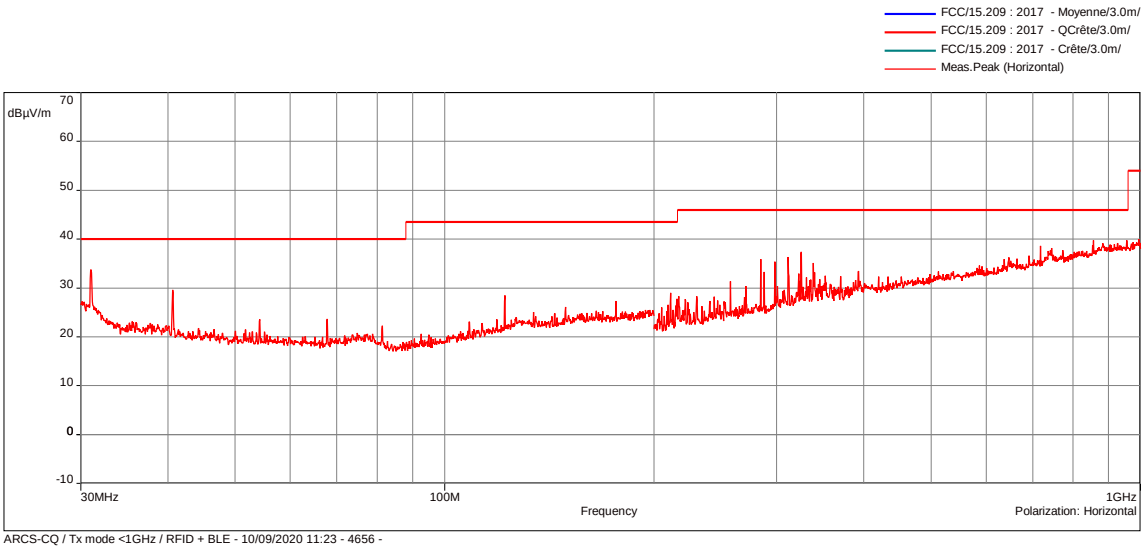
ARCS-BQ / Tx mode <1GHz / RFID + BLE - 09/22/2020 11:11 - 4658 -

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:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS - GRAPH			
ARCS-CQ / 30MHz-1GHz		EMI4656	
EUT mode:	Tx mode	**T (°C):**	22.8
Test Date:	22/09/2020	**H (%):**	68.1
Test Operator:	NSO	**P (hPa):**	1016



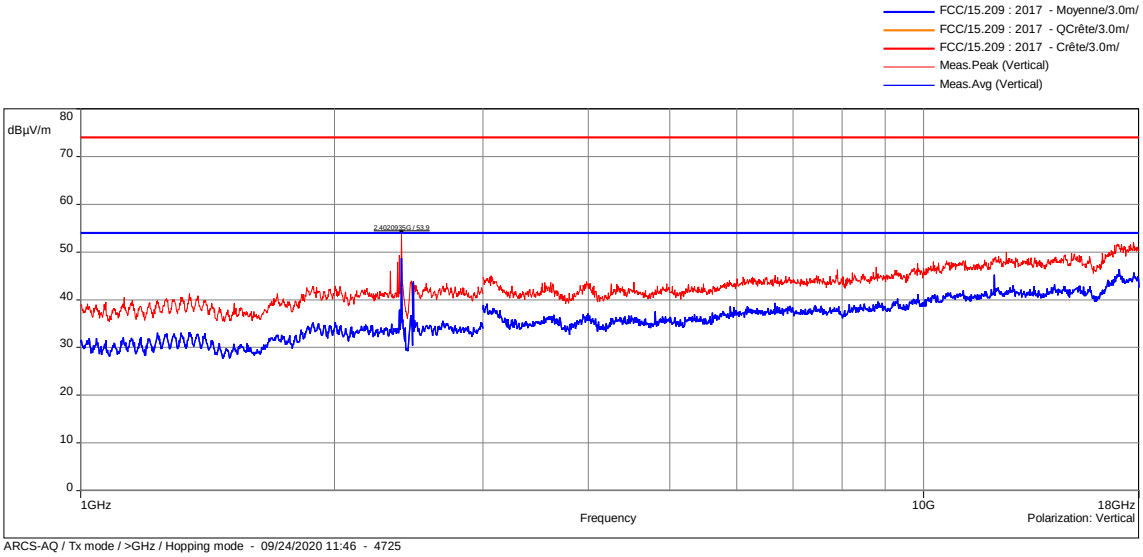
ARCS-CQ / Tx mode <1GHz / RFID + BLE - 10/09/2020 11:23 - 4656 -



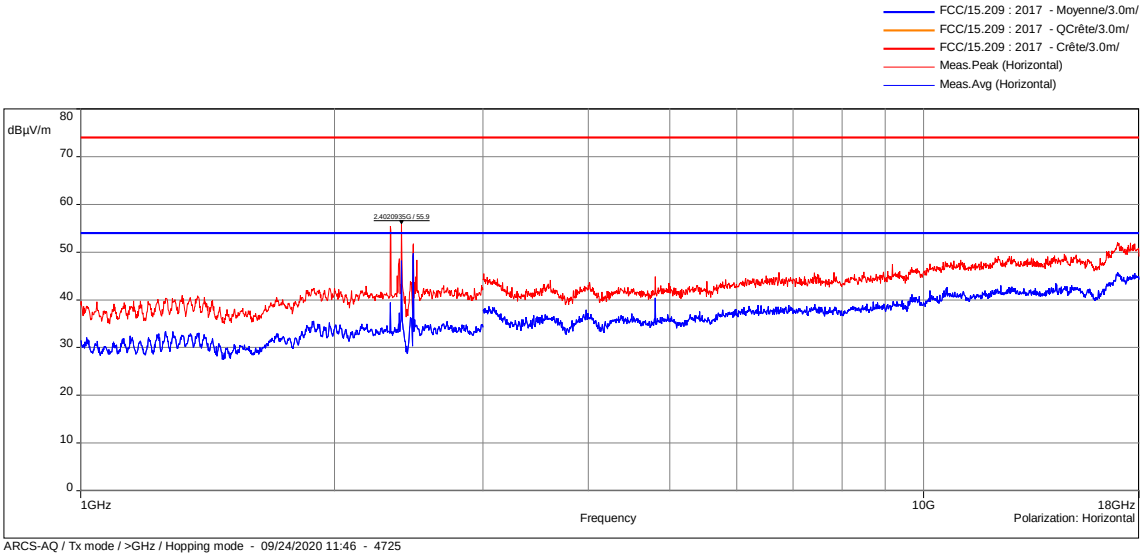
ARCS-CQ / Tx mode <1GHz / RFID + BLE - 10/09/2020 11:23 - 4656 -

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:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
ARCS-AQ / TX MODE / >GHZ / HOPPING MODE		EMI4725	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 11:46:15	**H (%):**	62.7
Test Operator:	MPA	**P (hPa):**	1002



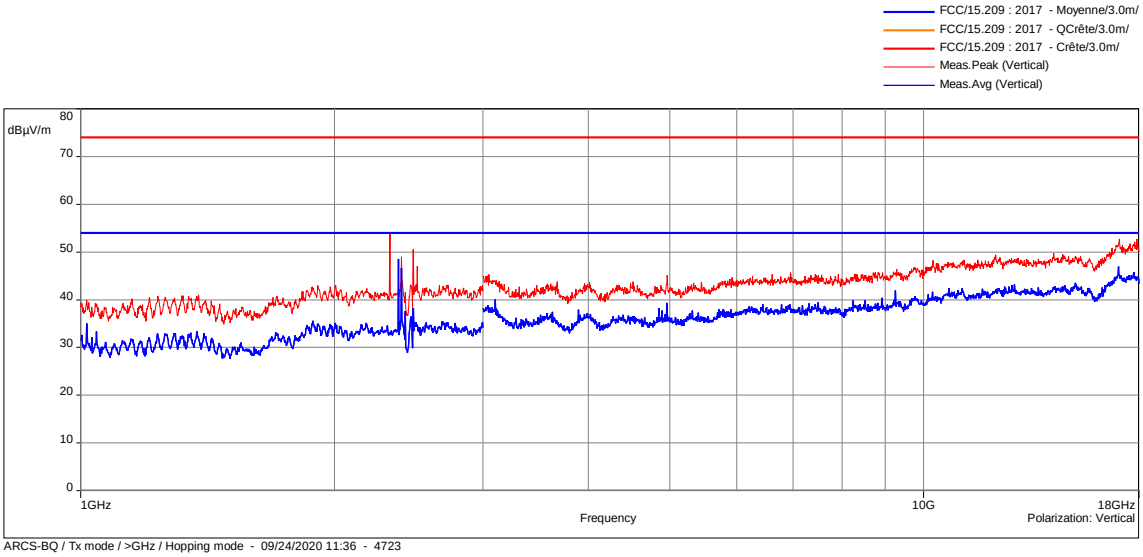
ARCS-AQ / Tx mode / >GHz / Hopping mode - 09/24/2020 11:46 - 4725



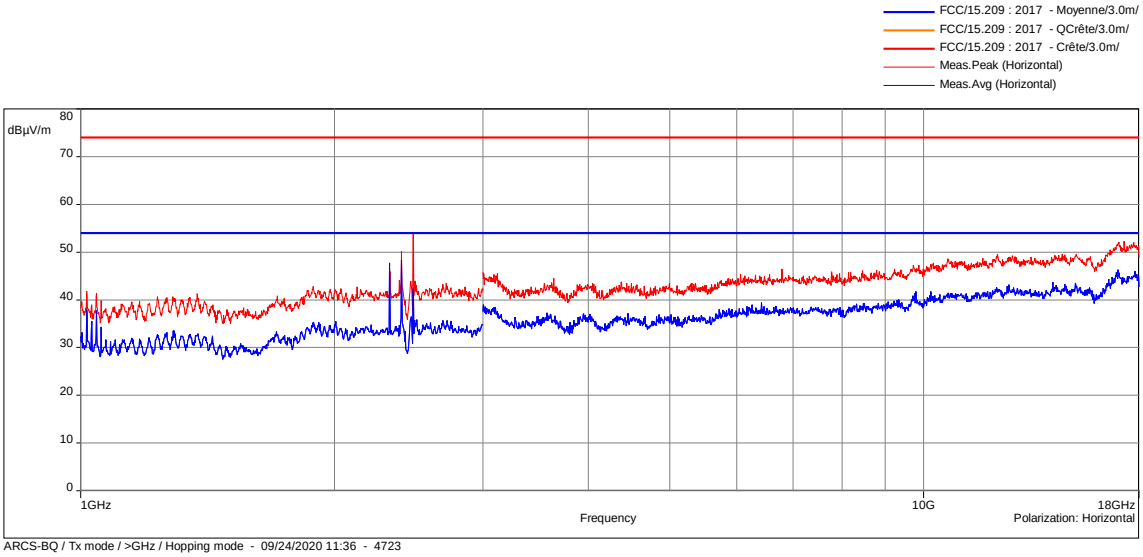
ARCS-AQ / Tx mode / >GHz / Hopping mode - 09/24/2020 11:46 - 4725

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-3GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Horizontal	1GHz-3GHz	1MHz	3MHz	Manual measurement
Vertical	3GHz-18GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Horizontal	3GHz-18GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Configuration:				
Comments:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
ARCS-BQ / TX MODE / >GHZ / HOPPING MODE		EMI4723	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 11:36:03	**H (%):**	62.7
Test Operator:	MPA	**P (hPa):**	1002



ARCS-BQ / Tx mode / >GHz / Hopping mode - 09/24/2020 11:36 - 4723



ARCS-BQ / Tx mode / >GHz / Hopping mode - 09/24/2020 11:36 - 4723

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-3GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Horizontal	1GHz-3GHz	1MHz	3MHz	Manual measurement
Vertical	3GHz-18GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Horizontal	3GHz-18GHz	1MHz	3MHz	Mes.Peak; Mes.Avg;
Configuration:				
Comments:	N/A			
EUT modification(s): N/A				

6.4. Field strength in the band 13.553-13.567MHz

Reference standard:	FCC part 15 Radio part 15.225 a) & RSS-210
Test method:	FCC part 15 Radio part 15.225 a) & RSS-210
General test setup: EUT is set on an insulating support at 80cm. Measurements were then performed in a 10-meter Open Area Test Site that complies to CISPR 16. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°). For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Tx mode	Permanent emission mode	15848µV/m at 30m	-	**PASS**

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

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Cable	Huber + Suhner	N-20m	8385	07/11/2017	07/01/2021
Mast controller	Heinrich Deisel	HD100	4036		
Open area test site	EMITECH	Salinelles	3482	10/10/2017	10/12/2020
Receiver	Rohde & Schwarz	ESHS10	3371	27/04/2020	27/06/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Turntable	Heinrich Deisel	D4420	4038		

Blank cells = Permanent validity

FIELD STRENGTH ARCS-AQ - TABULATED RESULTS				
Frequency (MHz)	**Polarization (°)**	**Level at 10m (dBµA/m)**	**Limit at 10m (dBµA/m)**	**Limit at 30m (µV/m)**
13.56	90	1.46	51.58	15848

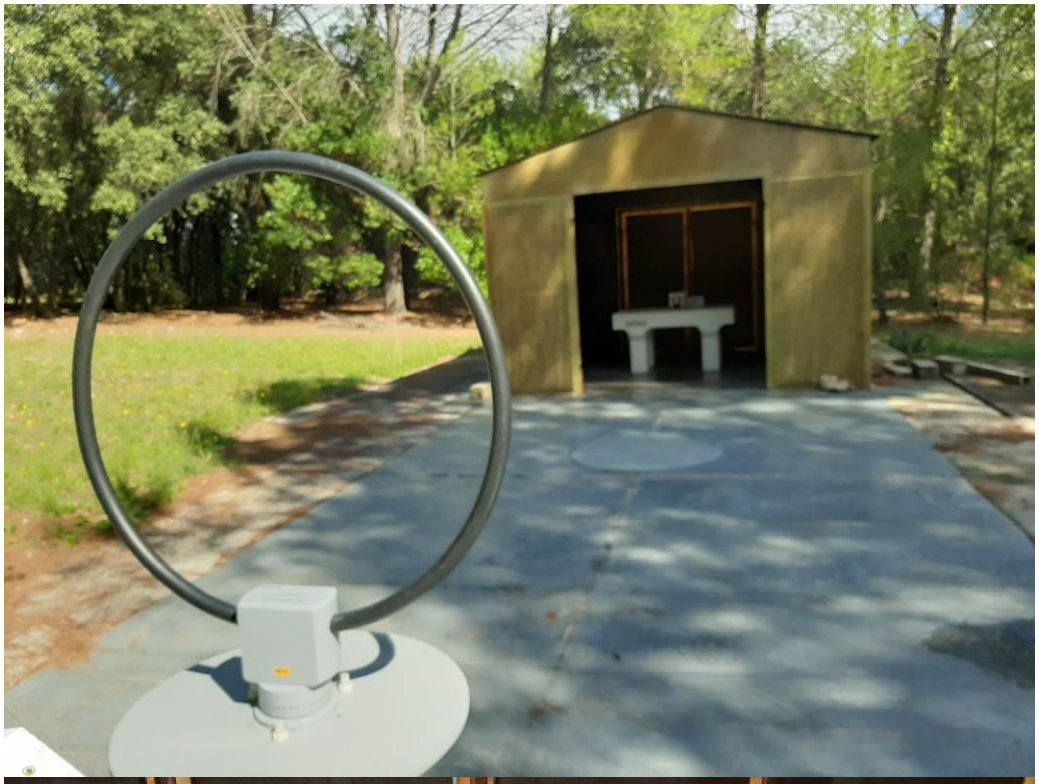
Maximun level at 10m is 1.46dBµA/m for a limit at 51.58 dBµA/m.
Using an extrapolation factor of 40dB/dec and a conversion factor of -51.5dB, level at 30m is 33.88dBµV/m for a limit at 84 dBµV/m.

FIELD STRENGTH ARCS-BQ - TABULATED RESULTS				
Frequency (MHz)	**Polarization (°)**	**Level at 10m (dBµA/m)**	**Limit at 10m (dBµA/m)**	**Limit at 30m (µV/m)**
13.56	90	1.36	51.58	15848

Maximun level at 10m is 1.36dBµA/m for a limit at 51.58 dBµA/m.
Using an extrapolation factor of 40dB/dec and a conversion factor of -51.5dB, level at 30m is 33.78 dBµV/m for a limit at 84 dBµV/m.

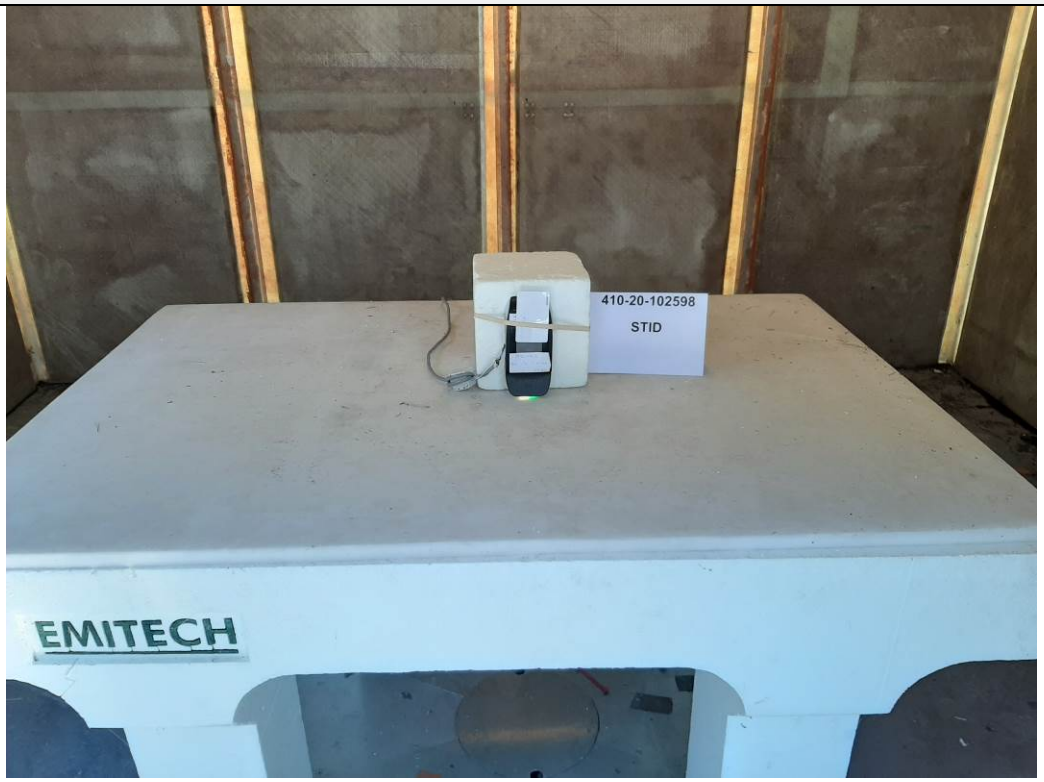
FIELD STRENGTH ARCS-CQ - TABULATED RESULTS				
Frequency (MHz)	**Polarization (°)**	**Level at 10m (dBµA/m)**	**Limit at 10m (dBµA/m)**	**Limit at 30m (µV/m)**
13.56	90	-0.84	51.58	15848

Maximun level at 10m is -0.84dBµA/m for a limit at 51.58 dBµA/m.
Using an extrapolation factor of 40dB/dec and a conversion factor of -51.5dB, level at 30m is 31.58 dBµV/m for a limit at 84 dBµV/m.

TEST SETUP PHOTO(S)



TEST SETUP PHOTO(S)


TEST SETUP PHOTO(S)


TEST SETUP PHOTO(S)


6.5. Field strength outside the band 13.110-14.010MHz

Reference standard:	FCC part 15 Radio part 15.225 b) c) & d) & RSS-210
Test method:	FCC part 15 Radio part 15.225 a) c) & d) & RSS-210
General test setup: EUT is set inside the climatic enclosure. Carrier level are correlated with the maximum carrier level measured in normal conditions.	

FREQUENCY BAND	SEVERITY	RESULT TAB.	VERDICT
Below 13.110MHz	§15.209	See graphic & §6.3 of this report	**PASS**
13.110-13.410MHz	106µV/m at 30m	See graphic	**PASS**
13.410-13.553MHz	334µV/m at 30m	See graphic	**PASS**
13.553-13.567MHz	15,848µV/m at 30m	See graphic & §6.4 of this report	**PASS**
13.567-13.710MHz	334µV/m at 30m	See graphic	**PASS**
13.710-14.010MHz	106µV/m at 30m	See graphic	**PASS**
Above 14.010MHz	§15.209	See graphic & §6.3 of this report	**PASS**

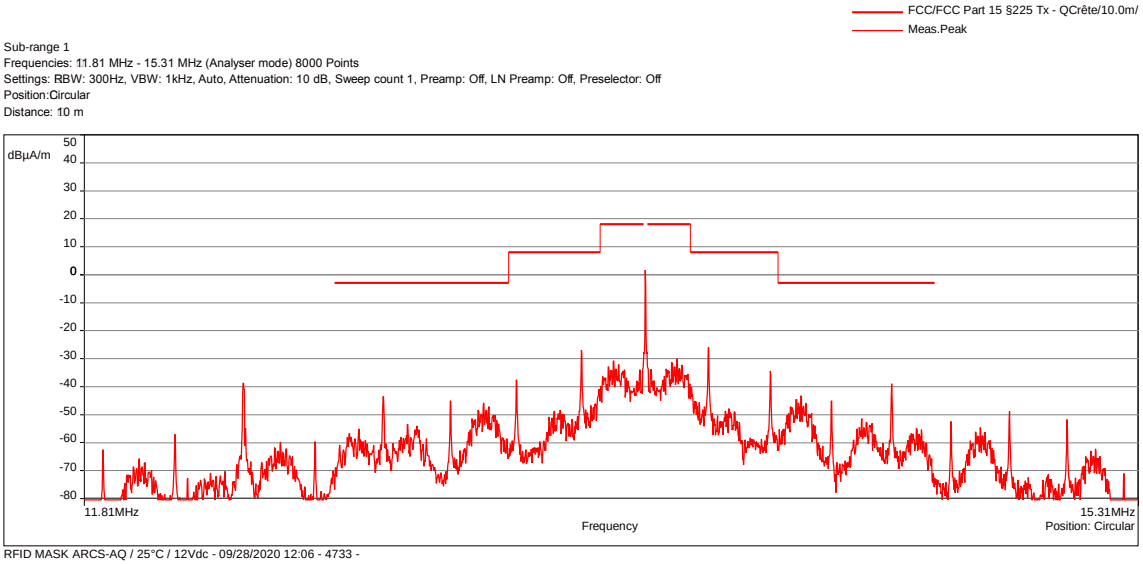
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	N/A
Relative Humidity	20 to 75 %	N/A
Atmospheric pressure	N/A	N/A
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	EMITECH	3.5 cm	4653		
Attenuator	Radiall	R412710124	16489	25/06/2019	25/08/2022
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Cable	MegaPhase	TM8S1S179	16652	30/10/2019	30/12/2021
Power supply	TTI	TSX-1820P	4365		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Software	Nexio		0000		
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Multimeter	Rohde & Schwarz	HMC 8015	17006	05/03/2020	05/05/2021

Blank cells = Permanent validity

FIELD STRENGTH IN THE BAND 13.110-14.010MHZ AND OUTSIDE - GRAPH			
FIELD STRENGTH IN THE BAND 13.110-14.010MHZ AND OUTSIDE		EMI4733	
EUT mode:	Tx mode (ARCS-xQ)	**T (°C):**	21.6
Test Date:	28/09/2020	**H (%):**	46.6
Test Operator:	NSO	**P (hPa):**	1004



POSITION	FREQUENCIES	RBW	VBW	DETECTOR
RF port	11.81-15.31MHz	300Hz	1kHz	Peak max hold
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

6.6. Maximum peak radiated power of the intentional radiator

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247 and RSS-247

Test description: b) (3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

EUT is connected to the measuring receiver via 50Ω attenuator(s).Only the highest levels are recorded.

TESTED PARAMETER	SEVERITY	VERDICT
ARCS-AQ / BLE / Low channel	≤1W	**PASS**
ARCS-AQ / BLE / Mid channel	≤1W	**PASS**
ARCS-AQ / BLE / High channel	≤1W	**PASS**
ARCS-BQ / BLE / Low channel	≤1W	**PASS**
ARCS-BQ / BLE / Mid channel	≤1W	**PASS**
ARCS-BQ / BLE / High channel	≤1W	**PASS**
ARCS-CQ / BLE / Low channel	≤1W	**PASS**
ARCS-CQ / BLE / Mid channel	≤1W	**PASS**
ARCS-CQ / BLE / High channel	≤1W	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See below
Relative Humidity	20 to 75 %	See below
Atmospheric pressure	N/A	See below

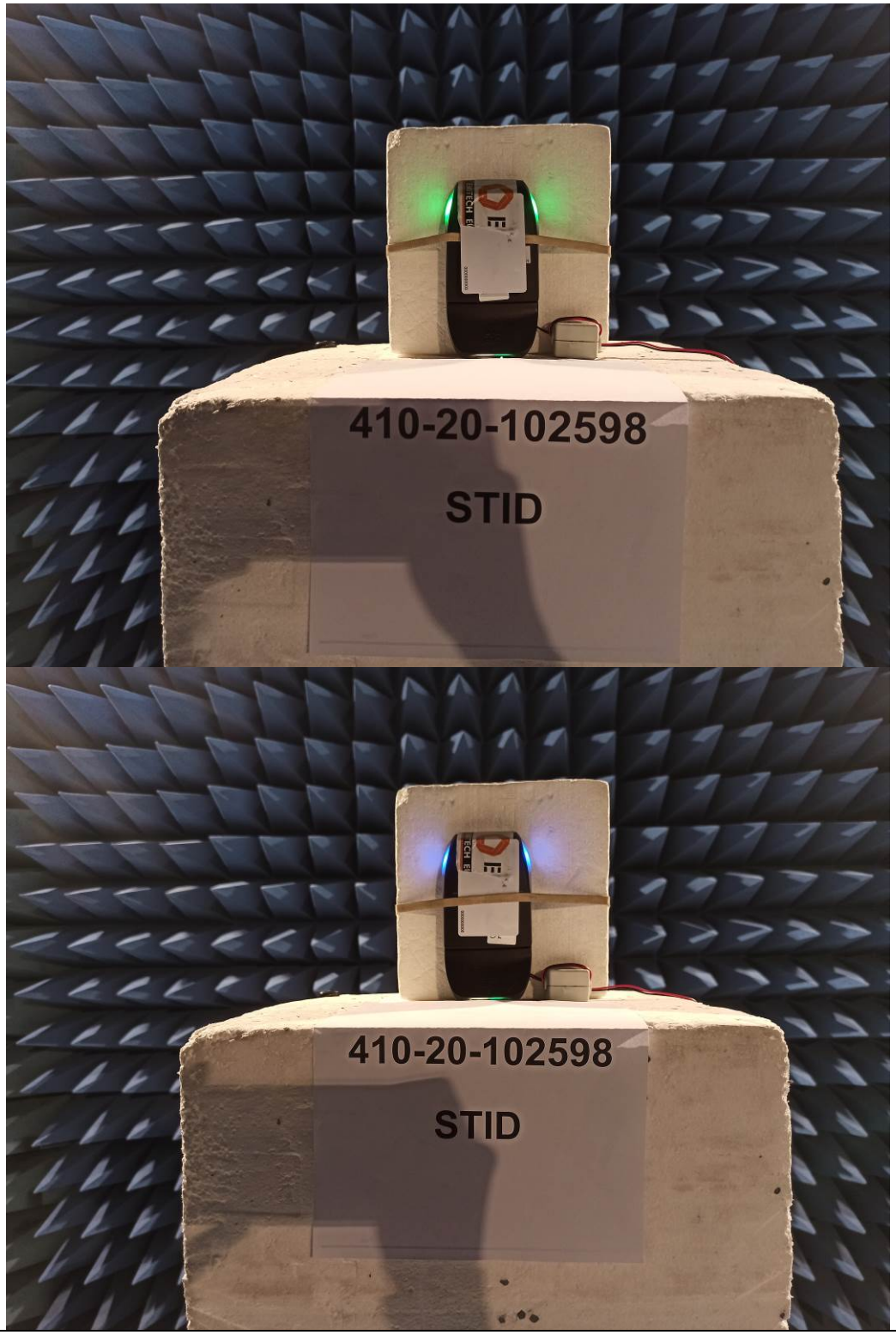
Test method deviation: Antennas are integrated, the measurement are Radiated (e;l;r;p;) instead of Conducted.

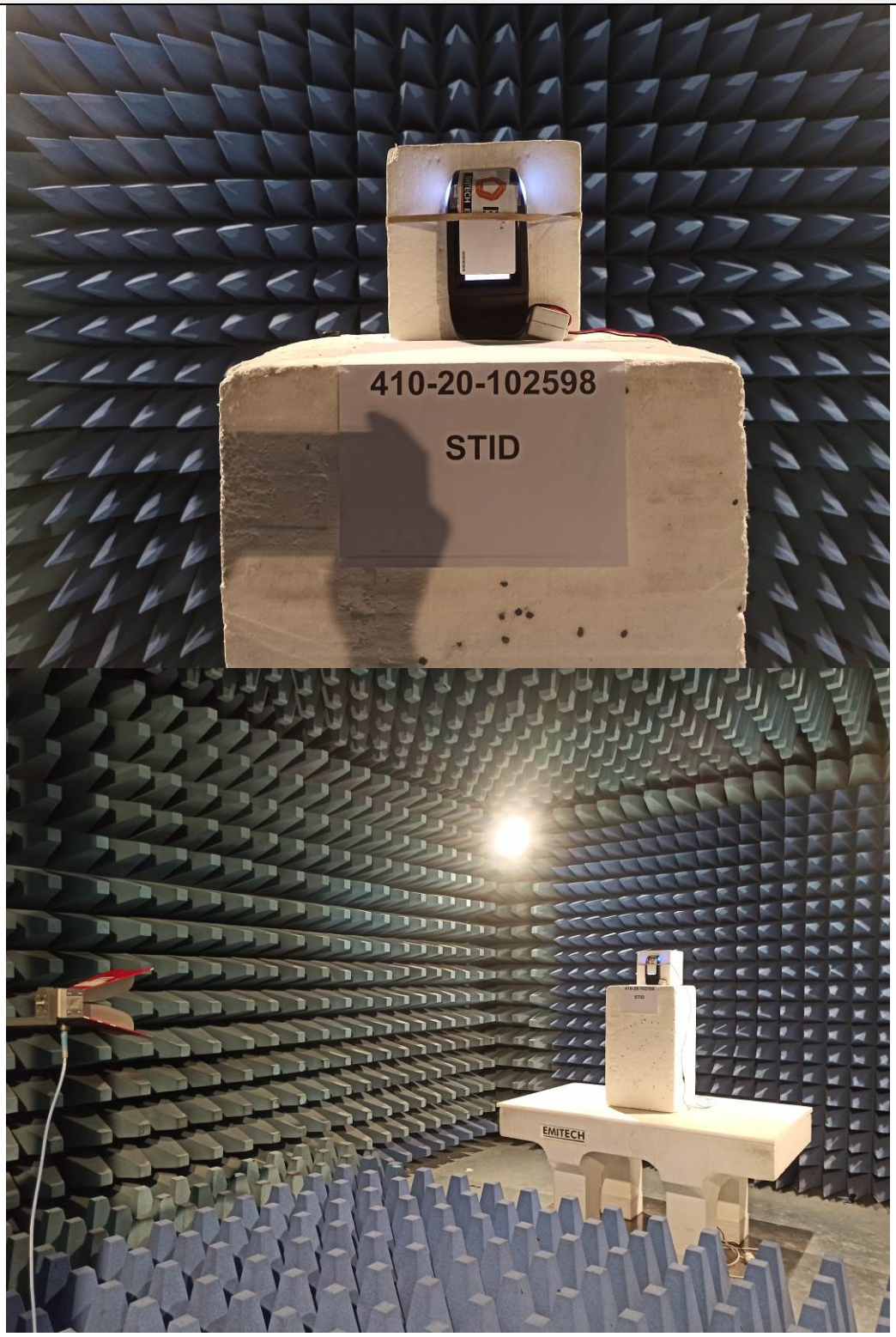
Supplementary information: N/A

TEST EQUIPMENT USED

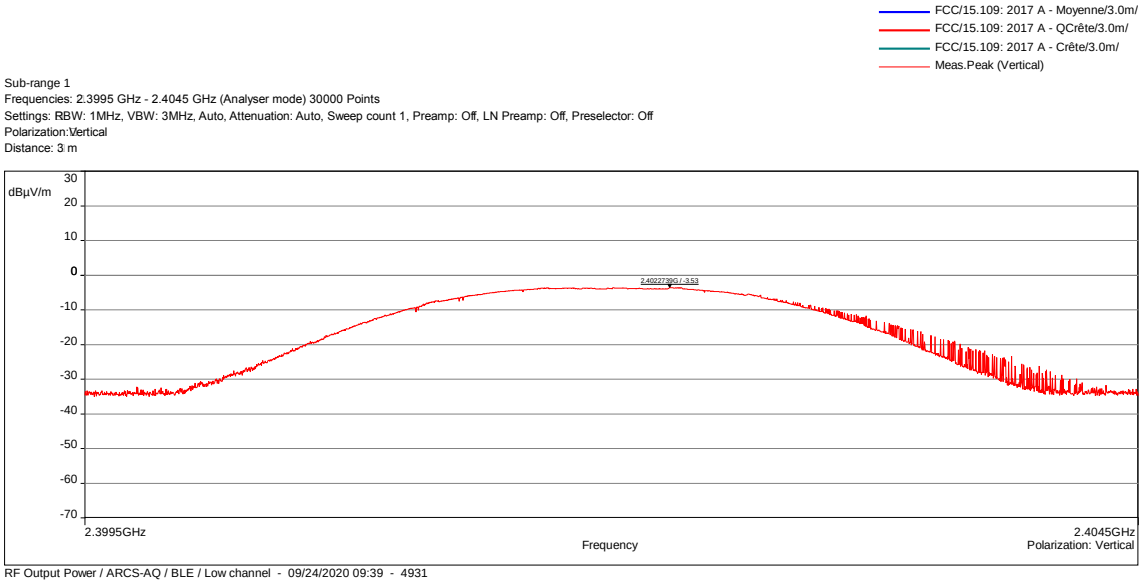
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	8387	24/07/2019	24/09/2022
Antenna Mast	HD GmbH	HD 100	2342		
Attenuator	EMITECH	SUB.V1-H	14780	09/01/2019	09/03/2021
Attenuator	EMITECH	SUB.V1-V	14781	09/01/2019	09/03/2021
Cable	SUCOFLEX	N-3m	14378	25/06/2019	25/08/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Cable	MegaPhase	TM18-N1N1-118	12841	10/05/2018	10/01/2021
Cable	MegaPhase	TM18-N1N1-118	12842	10/05/2018	10/01/2021
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Shielded enclosure	RAY PROOF	C.V1	1123	16/06/2018	16/08/2021
Software	Nexio		0000		
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

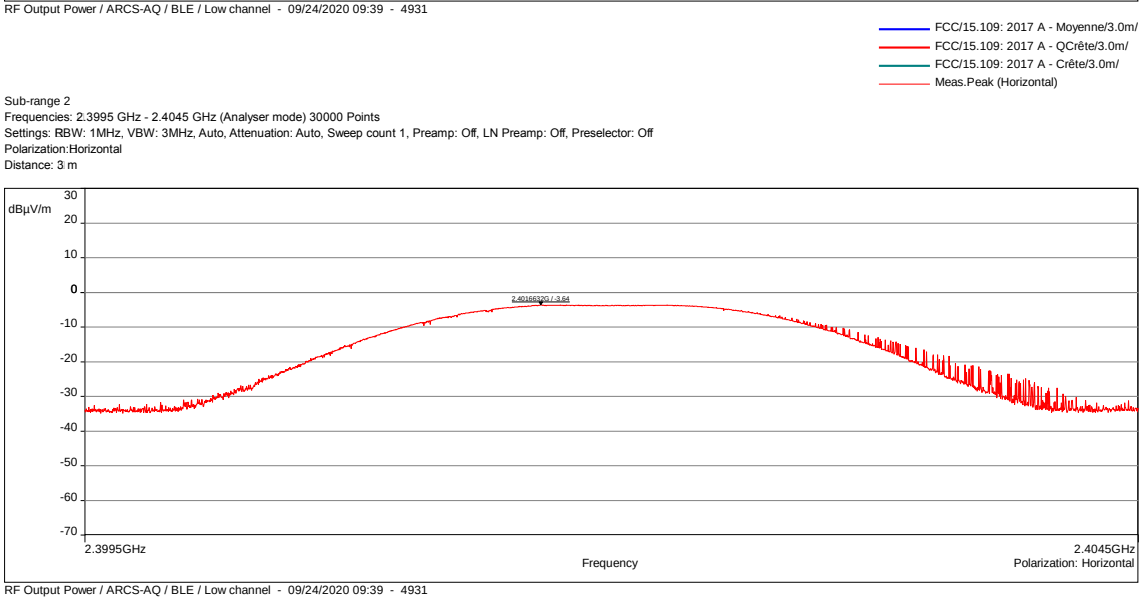
TEST SETUP PHOTO(S)


TEST SETUP PHOTO(S)


RF OUTPUT POWER - GRAPH			
ARCS-AQ / BLE / LOW CHANNEL		EMI4931	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 09:39:43	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



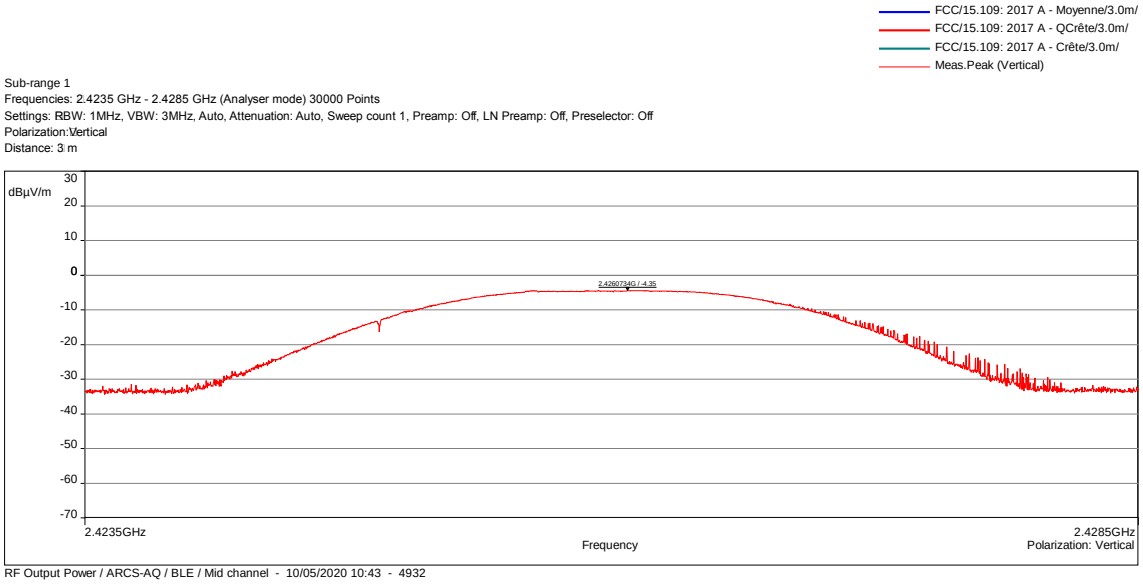
RF Output Power / ARCS-AQ / BLE / Low channel - 09/24/2020 09:39 - 4931



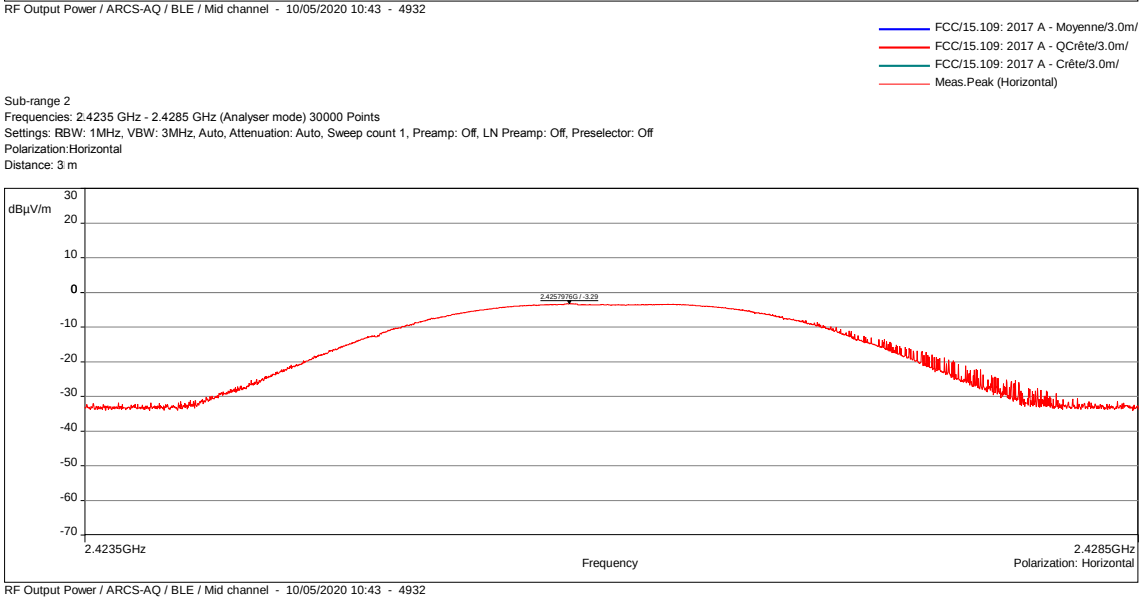
RF Output Power / ARCS-AQ / BLE / Low channel - 09/24/2020 09:39 - 4931

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Horizontal	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -3.53 dBm (V)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-AQ / BLE / MID CHANNEL		EMI4932	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 09:53:36	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



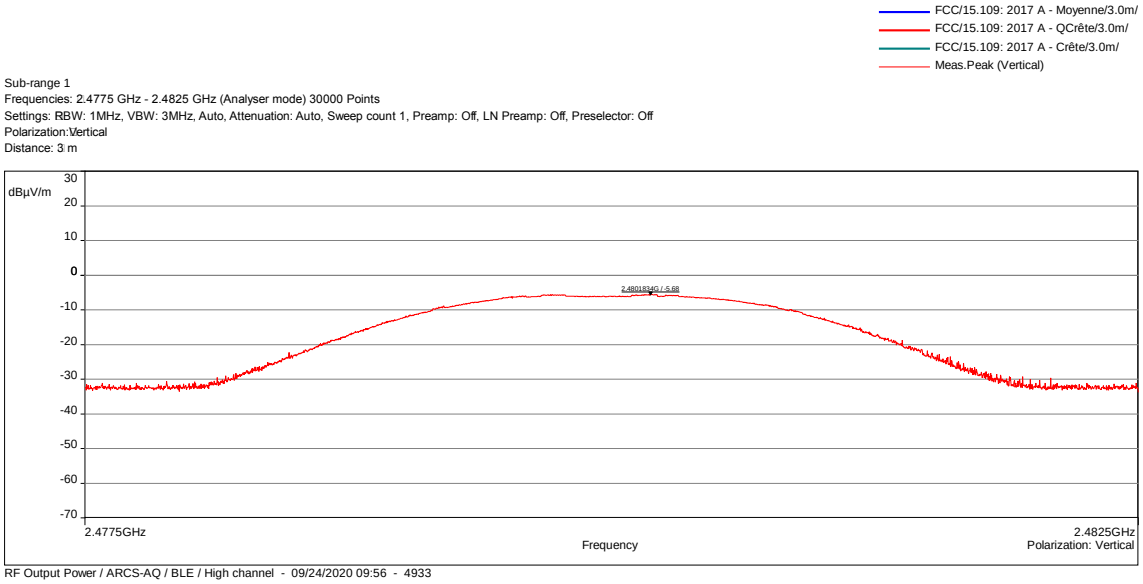
RF Output Power / ARCS-AQ / BLE / Mid channel - 10/05/2020 10:43 - 4932



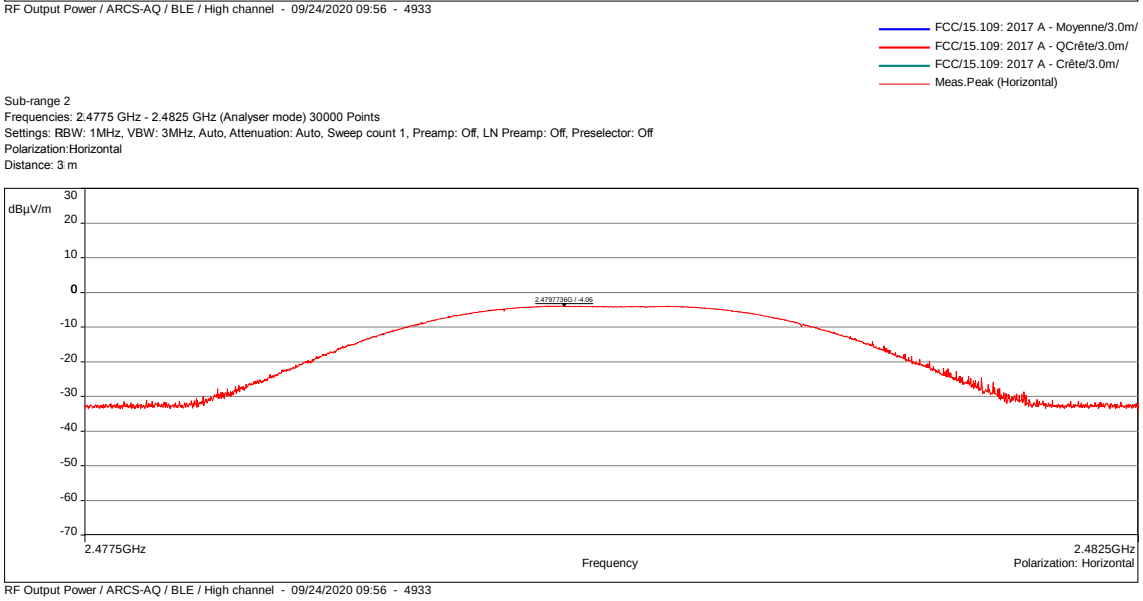
RF Output Power / ARCS-AQ / BLE / Mid channel - 10/05/2020 10:43 - 4932

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Horizontal	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -3.29 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-AQ / BLE / HIGH CHANNEL		EMI4933	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 09:56:07	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



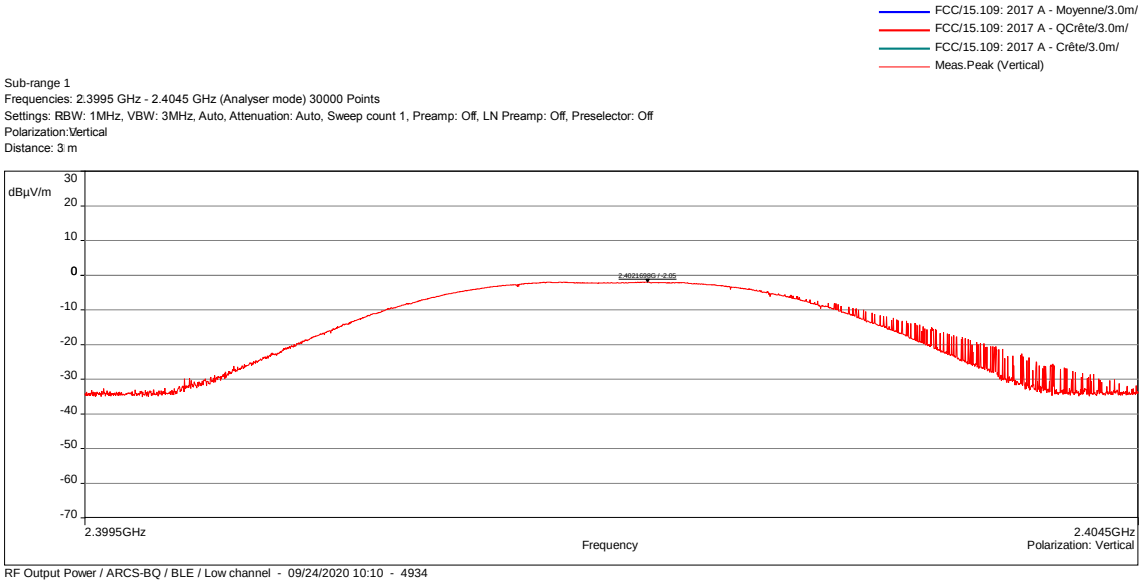
RF Output Power / ARCS-AQ / BLE / High channel - 09/24/2020 09:56 - 4933



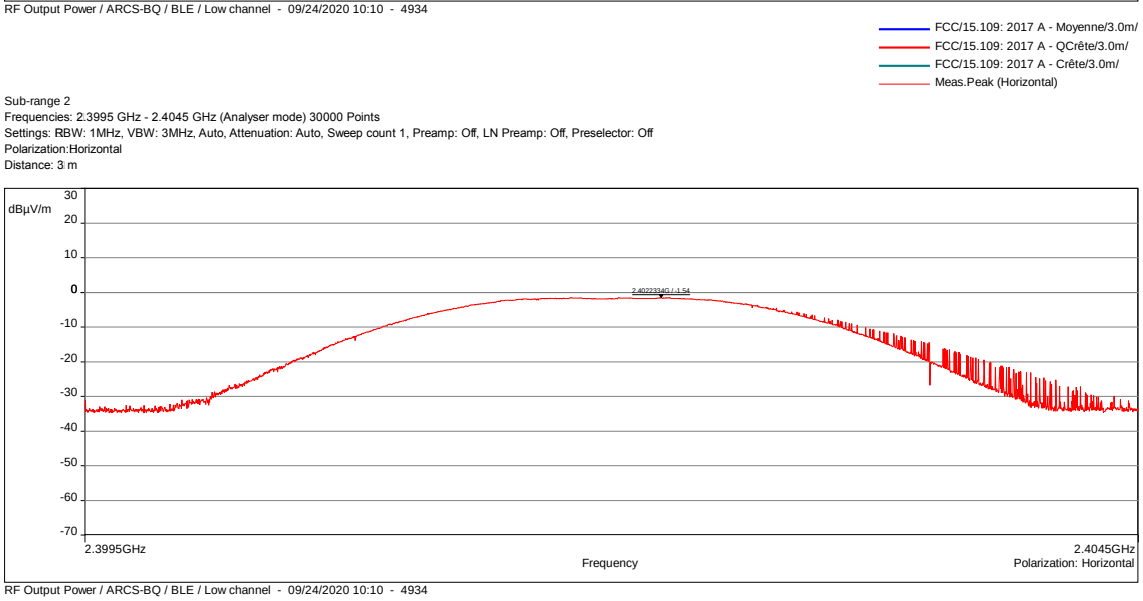
RF Output Power / ARCS-AQ / BLE / High channel - 09/24/2020 09:56 - 4933

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Horizontal	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -4.06 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-BQ / BLE / LOW CHANNEL		EMI4934	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 10:10:22	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



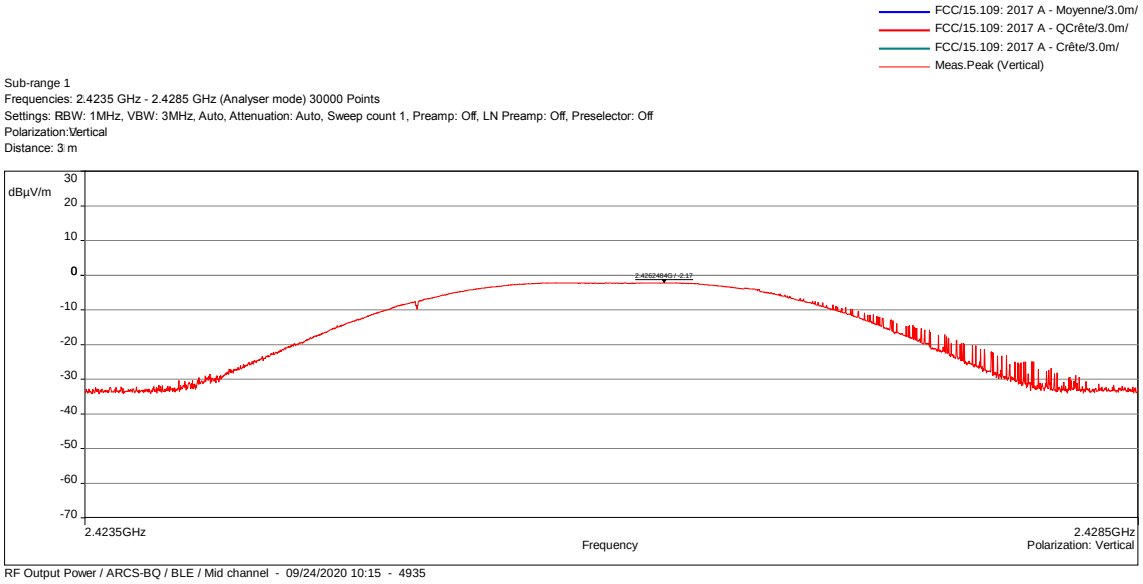
RF Output Power / ARCS-BQ / BLE / Low channel - 09/24/2020 10:10 - 4934



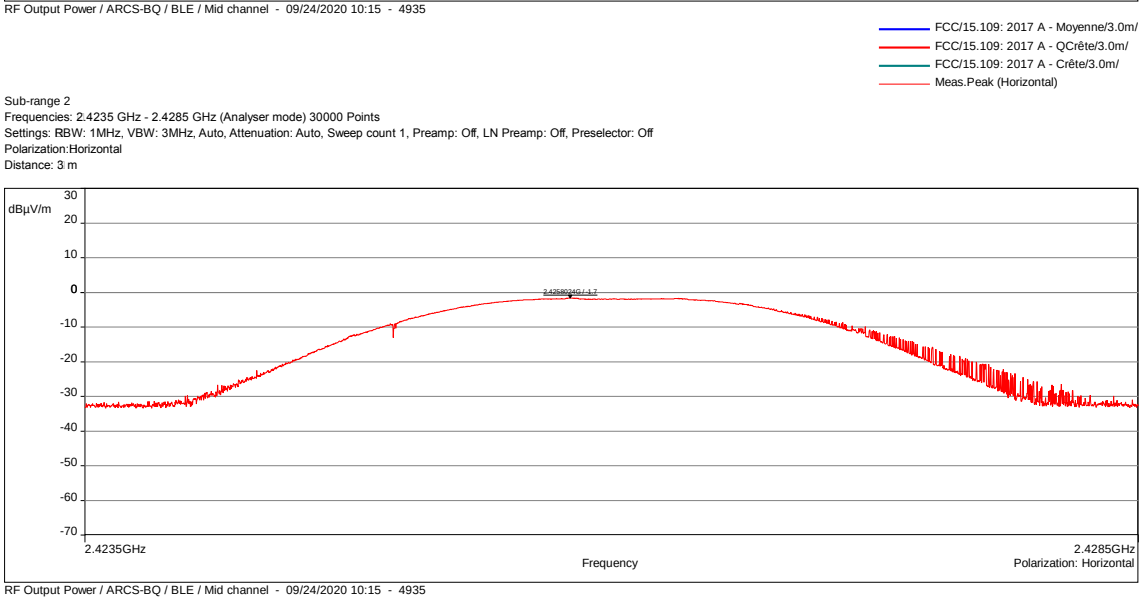
RF Output Power / ARCS-BQ / BLE / Low channel - 09/24/2020 10:10 - 4934

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Horizontal	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -1.54 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-BQ / BLE / MID CHANNEL		EMI4935	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 10:15:34	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



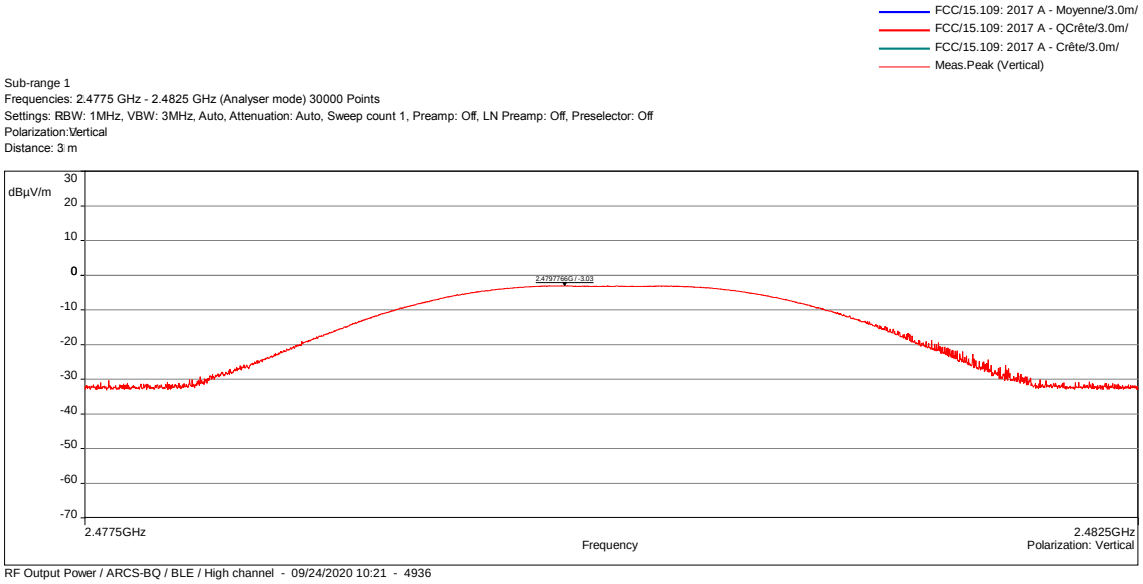
RF Output Power / ARCS-BQ / BLE / Mid channel - 09/24/2020 10:15 - 4935



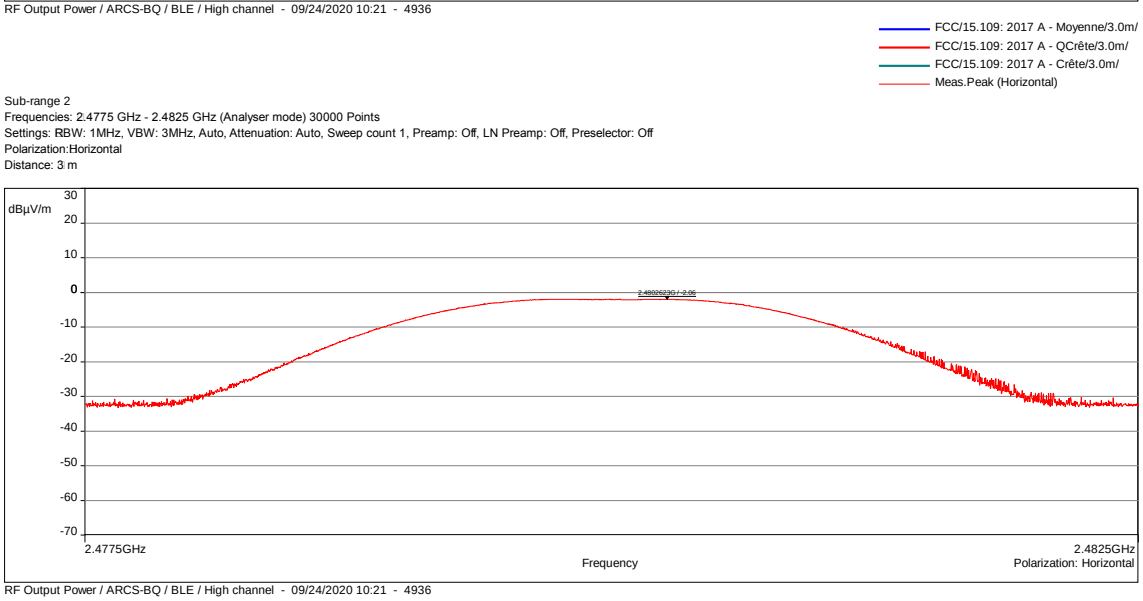
RF Output Power / ARCS-BQ / BLE / Mid channel - 09/24/2020 10:15 - 4935

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Horizontal	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -1.7 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-BQ / BLE / HIGH CHANNEL		EMI4936	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 10:21:15	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



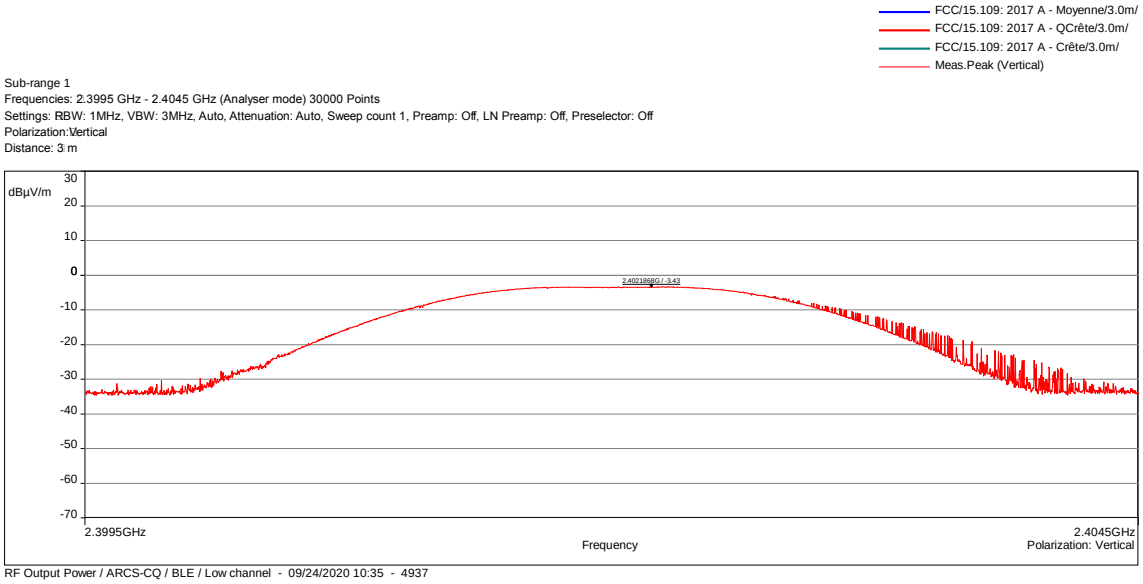
RF Output Power / ARCS-BQ / BLE / High channel - 09/24/2020 10:21 - 4936



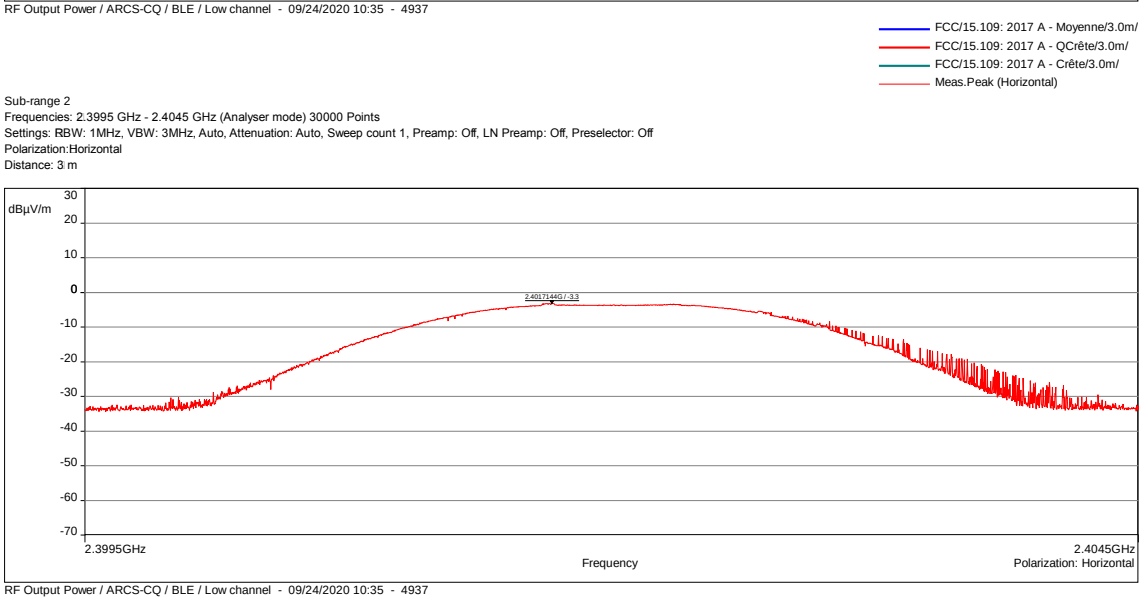
RF Output Power / ARCS-BQ / BLE / High channel - 09/24/2020 10:21 - 4936

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Horizontal	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -2.06 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-CQ / BLE / LOW CHANNEL		EMI4937	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 10:35:45	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



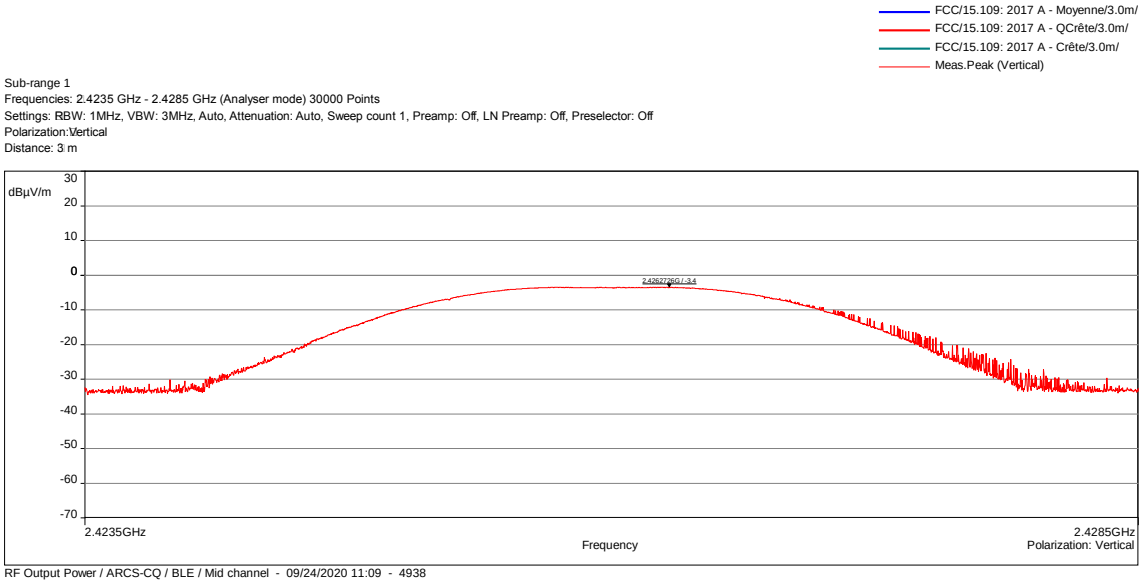
RF Output Power / ARCS-CQ / BLE / Low channel - 09/24/2020 10:35 - 4937



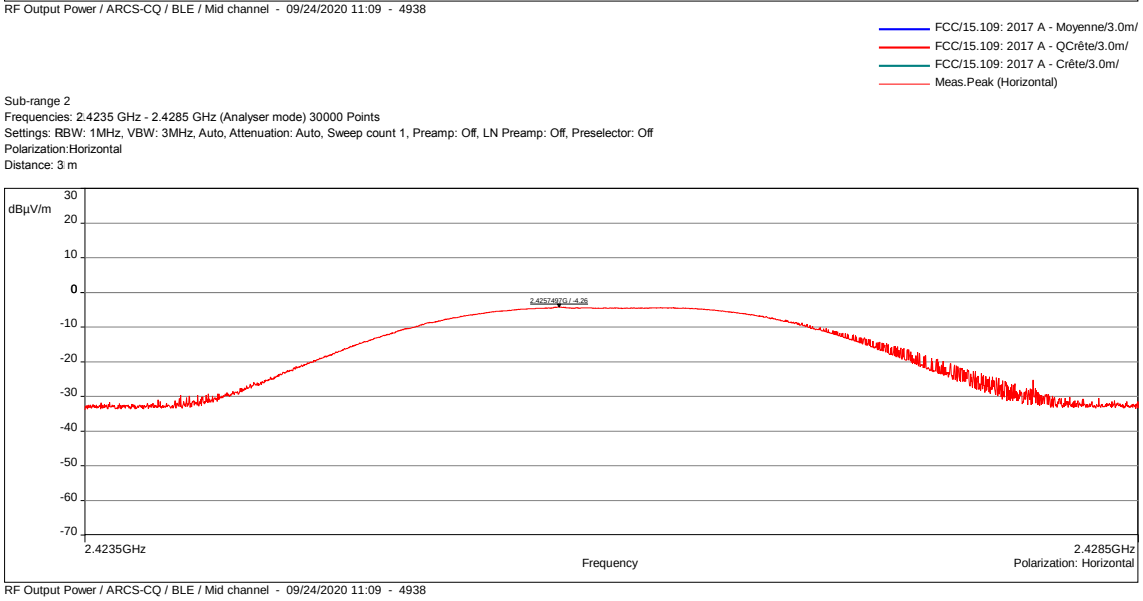
RF Output Power / ARCS-CQ / BLE / Low channel - 09/24/2020 10:35 - 4937

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Horizontal	2.3995GHz-2.4045GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -3.3 dBm (H)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-CQ / BLE / MID CHANNEL		EMI4938	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 11:09:51	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



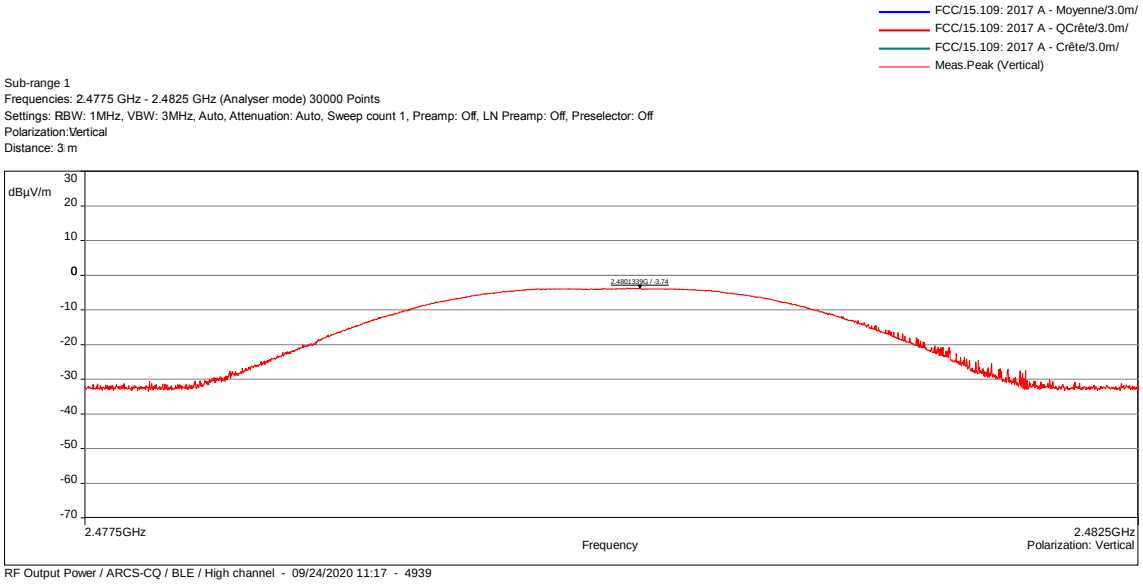
RF Output Power / ARCS-CQ / BLE / Mid channel - 09/24/2020 11:09 - 4938



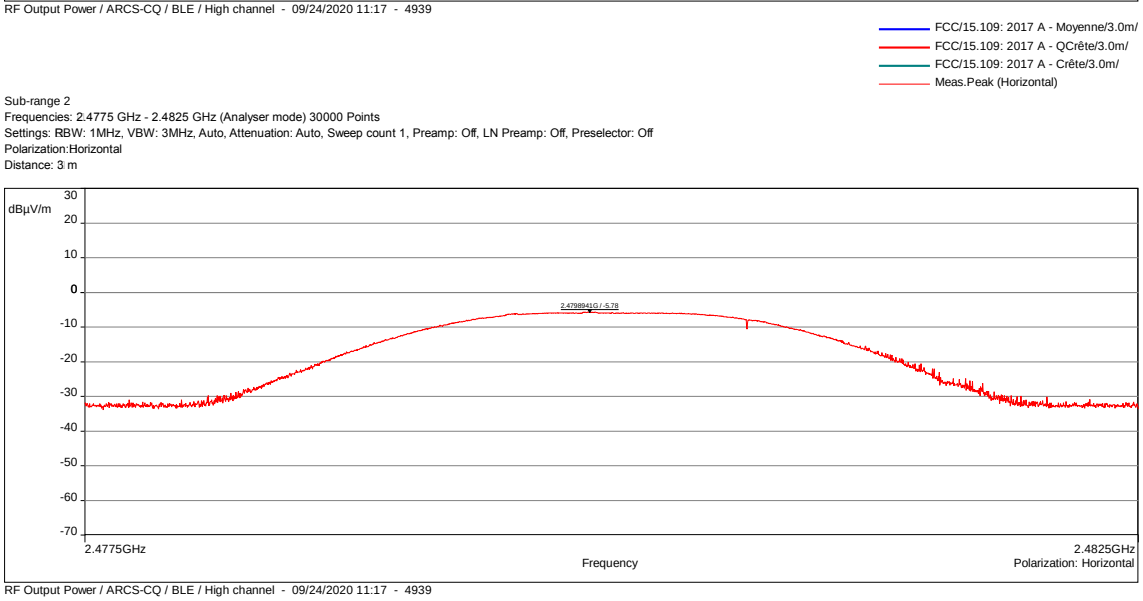
RF Output Power / ARCS-CQ / BLE / Mid channel - 09/24/2020 11:09 - 4938

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Horizontal	2.4235GHz-2.4285GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -3.4 dBm (V)			
EUT modification(s): N/A				

RF OUTPUT POWER - GRAPH			
ARCS-CQ / BLE / HIGH CHANNEL		EMI4939	
EUT mode:	Tx mode (Hopping)	**T (°C):**	24.1
Test Date:	24/09/2020 11:17:51	**H (%):**	63
Test Operator:	MPA	**P (hPa):**	1002



RF Output Power / ARCS-CQ / BLE / High channel - 09/24/2020 11:17 - 4939



RF Output Power / ARCS-CQ / BLE / High channel - 09/24/2020 11:17 - 4939

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Horizontal	2.4775GHz-2.4825GHz	1MHz	3MHz	Peak
Configuration:				
Comments:	RF Output Power = -3.74 dBm (V)			
EUT modification(s): N/A				

MAXIMUM PEAK CONDUCTED POWER - TABULATED RESULTS			
Test Date:	24/09/2020		
Test Operator:	MPA		
EUT	**Frequency (MHz)**	**P_{eirp} (dBm)**	**Limit (dBm)**
ARCS-AQ	2402.2739	-3.53	$36dBm_{eirp}$
	2425.7976	-3.29	$36dBm_{eirp}$
	2479.7736	-4.06	$36dBm_{eirp}$
ARCS-BQ	2402.2334	-1.54	$36dBm_{eirp}$
	2425.8024	-1.7	$36dBm_{eirp}$
	2480.2623	-2.06	$36dBm_{eirp}$
ARCS-CQ	2401.7144	-3.3	$36dBm_{eirp}$
	2426.2726	-3.4	$36dBm_{eirp}$
	2480.1339	-3.74	$36dBm_{eirp}$

6.7. Measurement of Frequency Stability

Reference standard:	FCC part 15 Radio part 15.225 e) & RSS-210
Test method :	FCC part 15 Radio part 15.225 e) and RSS Gen
General test setup: 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. Carrier level are correlated with the maximum carrier level measured in normal conditions.	

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Tx mode	Tx mode	+/-0.01%	-	**PASS**

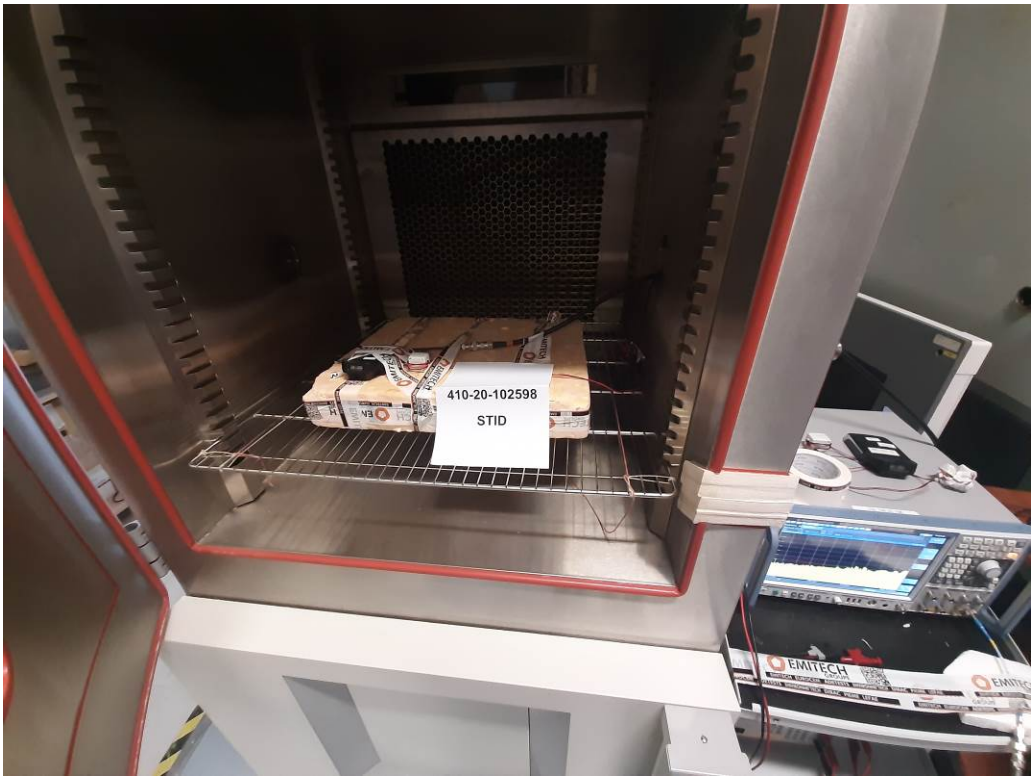
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	N/A
Relative Humidity	20 to 75 %	N/A
Atmospheric pressure	N/A	N/A
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	**BRAND**	**TYPE**	**IDENTIFIER**	**CAL. DATE**	**CAL. DUE**
Antenna	EMITECH	3.5 cm	4653		
Attenuator	Radiall	R412710124	16489	25/06/2019	25/08/2022
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Cable	MegaPhase	TM8S1S179	16652	30/10/2019	30/12/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Digital thermometer	GHM Greisinger	GMH 3710	12967	28/01/2020	28/03/2021
Power supply	TTI	TSX-1820P	4365		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Software	Nexio		0000		
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Multimeter	Rohde & Schwarz	HMC 8015	17006	05/03/2020	05/05/2021

Blank cells = Permanent validity

EFFECTIVE RADIATED POWER - TABULATED RESULTS				
Test Case (Temperature variation)	**Temperature (°C)**	**Power supply (Vdc)**	**Frequency (MHz)**	**Frequency error (%)**
Normal conditions	25	12	**13.5598**	**-**
		7	13.5598	0.00000
		24	13.5598	0.00000
Extremes tests conditions	-30	12	13.5599011	0.00075
		7	13.5599011	0.00075
		24	13.5598981	0.00072
	+70	12	13.55992506	0.00092
		7	13.55992506	0.00092
		24	13.55992506	0.00092

TEST SETUP PHOTO(S)



End of test report