



Test report issued under the responsibility of:

EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006

IC Assigned Code: FR0003

RADIO TEST REPORT

RSS-210 FCC part 15.225

Company STMICROELECTRONICS SAS

Address...... 190 AVENUE CELESTIN COQ

13106 ROUSSET

FRANCE

Test item description. NFC card reader evaluation board based on ST25R3916 integrated

circuit

Trade Mark. STMICROELECTRONICS SAS

Manufacturer. STMICROELECTRONICS (ROUSSET) SAS

 Model/Type reference
 : ST25R3916-DISCO

 FCC ID
 : YCPR3916DB1

 IC
 : 8976A-R3916DB1

 Ratings
 : 5Vdc +/-10%

Testing Laboratory EMITECH MONTPELLIER laboratory

Address...... 145 rue de Massacan

34740 VENDARGUES

FRANCE

Report Reference No...... R412-18-105699-4A

Test procedure. FCC IC Certification

Diffusion....: Mr ROMAN

Applicant's name. STMICROELECTRONICS SAS

Date of issue...... 11/12/2019

Compiled by...... Morgan PATEY

Approved by (+ signature)...... David MONTAULON (Technical Manager)

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







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1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **ST25R3916 Discovery Kit** (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 : Morgan PATEY
Test supervisor : David MONTAULON

Date of receipt of test item....: N/A

Date (s) of performance of tests...... April, from 15th to September 11th of 2019

APPLICANT'S GENERAL INFORMATIONS:

Company name: STMICROELECTRONICS SAS

Company address. 190 Avenue Celestin Coq

13106 Rousset

FRANCE

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.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. Throughout this report the decimal separator is point.

POSSIBLE TEST CASE VERDICTS:

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, 2018

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 9, August 2016, Amendment November 2017

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. NFC card reader evaluation board based on ST25R3916

integrated circuit

Model/Type reference..... ST25R3916-DISCO

Trade Mark.: STMICROELECTRONICS SAS

 FCC ID.
 : YCPR3916DB1

 IC.
 : 8976A-R3916DB1

 Serial number (S/N).
 : PRODV1.0.1

 Part number (P/N).
 : Not communicated

 Software version.
 : Not communicated

 Firmware version.
 : ST25R3916/disco v1.0.1

Type of sample. Pre-serial

Function(s).....: NFC card reader evaluation board based on ST25R3916

integrated circuit. Additionally, the device also supports card emulation and peer-to-peer modes. This equipment is for use by

developers for evalution purposes only and must not be

incorporated into any other device or system

Manufacturer name. STMICROELECTRONICS SAS

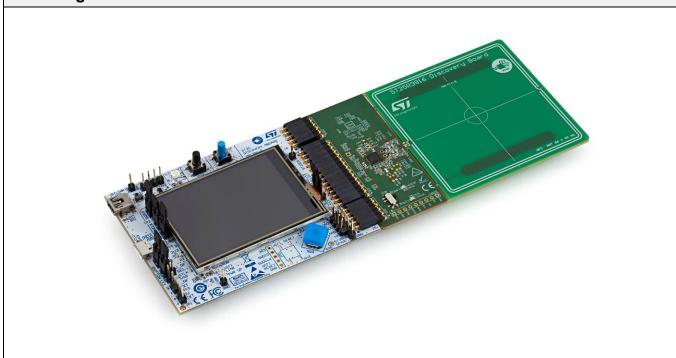
Address.....: 190 Avenue Celestin Coq

13106 Rousset FRANCE

General product information:

N/A

3.2. EUT general view





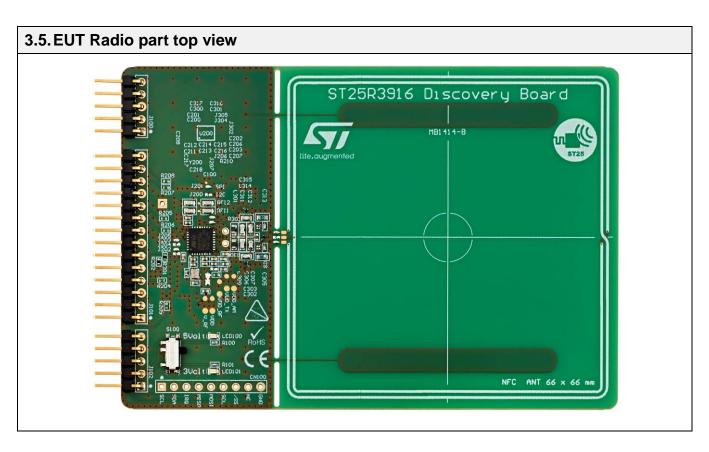
3.3. EUT top view

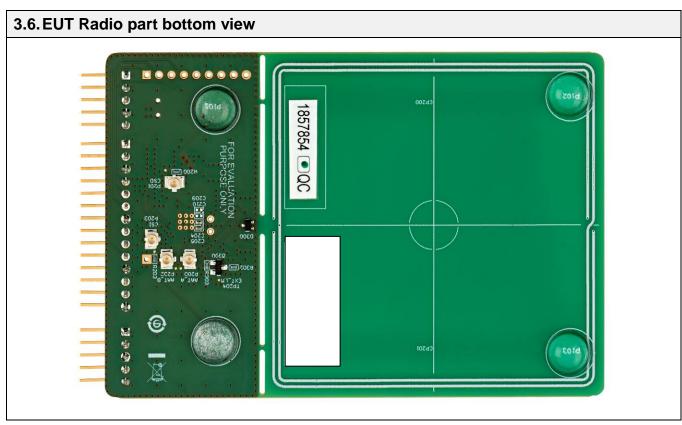


3.4. EUT bottom view







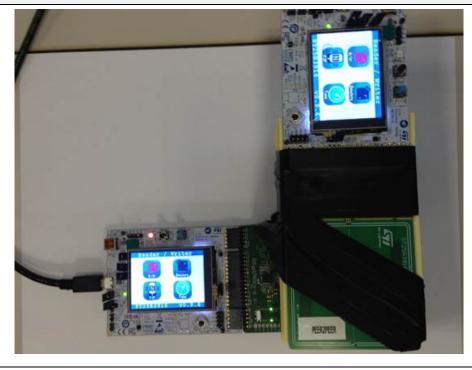




3.7. EUT (Tag mode)



3.8. EUT (Card emul or P2P mode)





3.9. EUT Mechanical and Electrical Design

 Power supply.
 : 5 Vdc

 Power supply range.
 : +/-10%

 Power type.
 : USB

 Power (mW).
 : 2

 Nominal current (mA).
 : 200mA

Dimensions (L x W x H) (m). Not communicated

Weight (kg).: 0.2

Temperature range (°C).: -20 to +55°C

Ground bounding strap.....: No

Comments:

N/A

3.10. EUT Input/Output ports

ST25R3916 Discovery Kit

(EUT)

+5Vdc power source (USB)



RF antenna

Port	NAME	Түре	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	N/A	PCB
1	DC power source	DC	<3m	N/A	5Vdc
2	RF antenna	RF	N/A	N/A	13.56MHz

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

N/E: Non Electrical port



3.11. EUT Radio Specifications

a) GENERAL INFORMATIONS

According to manufacturer's declarations:

EUT type.....: Transceiver

Technology: SRD - RFID HF 13.56MHz

Environmental profile.....: Data transmissions

Temperature range: Category I (General) (-20°C to +55°C)

Antenna type: Integral Antenna Gain....: N/A

Comments:

N/A

b) TRANSMITTER PARAMITTERS (Tx)

Frequency bands.....: N/A RF Power...... 1.7W Number of channels / Separation...... 1 Modulation type: AM Duty cycle: N/A

Tested frequency.....: 13.56MHz

c) RECEIVER PARAMETERS (RX)

Frequency bands.....: N/A

Category/Class: Not communicated

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 CPU boards and power supplies used in 		N/A	
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		PASS	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.		PASS	
- 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
Conducted emission		
(Artificial Mains Network) 150kHz – 30MHz	± 3.4 dB	± 3.4 dB
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
Occupied bandwidth		
RF power	± 1.2 %	± 5 %
Conducted emission (spurious)		
f <u><</u> 1 GHz	± 0.8 dB	- 2 dD
1 GHz - 12.75 GHz	± 1.6 dB	± 3 dB
Radiated emission (PAR / PIRE / RNE)		
f <u><</u> 62.5 MHz	± 5.1 dB	\pm 6 dB
62.5 MHz - 1 GHz	± 5.1 dB	\pm 6 dB
1 GHz - 18 GHz	± 5.2 dB	\pm 6 dB
18 GHz – 26 GHz	± 5.1 dB	\pm 6 dB
26 GHz – 40 GHz	± 5.4 dB	\pm 6 dB
PIRE and power spectral density with diode	± 5.4 dB	\pm 6 dB
Radiated emission (magnetic field)		
9kHz – 30MHz	± 2.7 dB	\pm 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 80cm above 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
115Vac/60Hz power supply / Reader mode	150kHz-30MHz	Class B	EMI4331	PASS
115Vac/60Hz power supply / Card emulation mode	150kHz-30MHz	Class B	EMI4345	PASS
115Vac/60Hz power supply / P2P mode	150kHz-30MHz	Class B	EMI4373	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

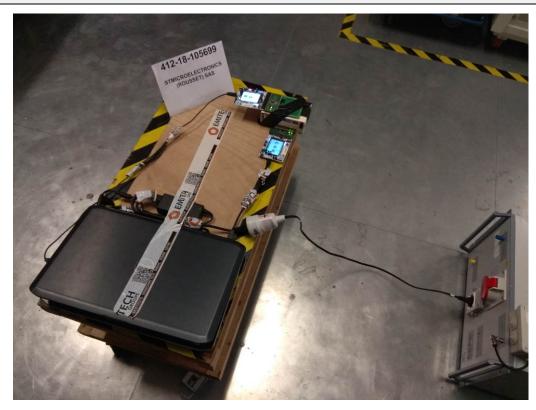
Supplementary information: EUT power supply is done trought a "standard power supply" wich meets FCC and RSS requirements.

TEST EQUIPMENT USED											
CATEGORY	BRAND	Түре	IDENTIFIER	CAL. DATE	CAL. DUE						
AC power source	KIKUSUI	PCR2000L	0800	12/06/2018	12/08/2019						
Cable	MICRO-COAX	N-3m	10536	12/10/2017	12/12/2019						
Cable	EMITECH	Current absorber sheath	10653	19/10/2018	19/12/2020						
Cable	SUCOFLEX	N-3m	14378	19/01/2017	19/09/2019						
LISN	PMM	L2-16	1209	08/02/2018	08/04/2020						
PE choke	EMITECH	CISPR 16-2-1 : 2008	10071								
Receiver	Rohde & Schwarz	ESI	9704	15/02/2019	15/04/2020						
Shielded enclosure	COMTEST	SAC 3m	14494	14/02/2017	14/04/2020						
Software	Nexio		0000								
Surges Suppressor	Hewlett Packard	11947A	0238	11/09/2017	11/11/2019						
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021						
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020						

Blank cells = Permanent validity



TEST SETUP PHOTO(S) – POWER SUPPLY USED FOR CONDUCTED MEASUREMENT



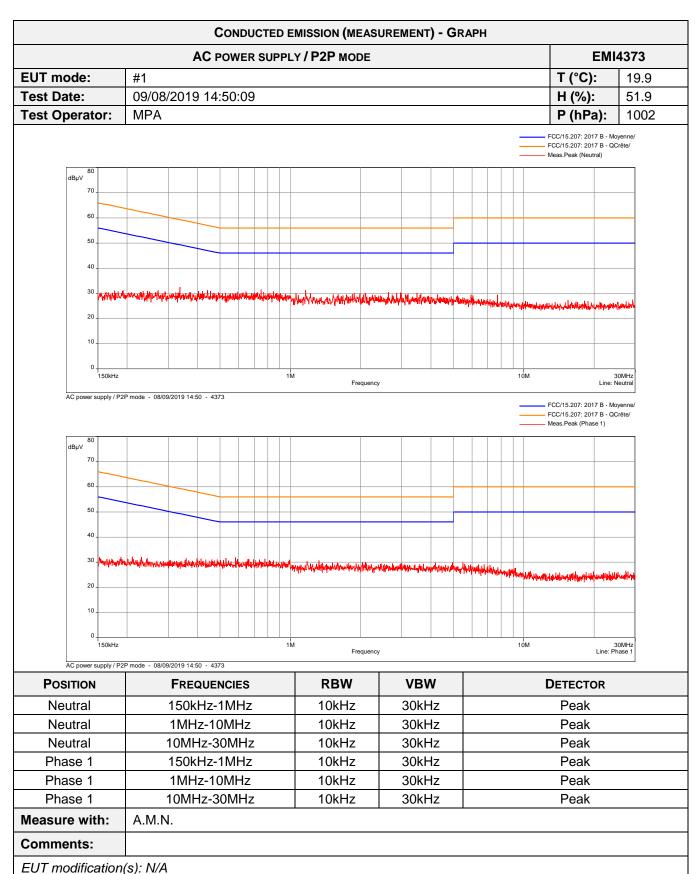


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EUT mode:	#1												Т	(°C):		19.9
Test Date:	16/04/2019	16:13:2	21										H	l (%):		51.9
Test Operator:	MPA									F	hPa):	1002			
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Neutral		lz-1M⊢			10kHz		30kH							ak/Avg		
Neutral		z-10MH			10kHz		30kF		\top					Peak	,	
Neutral		z-30MF			10kHz		30k⊦							Peak		
Phase 1	150kH	lz-1M⊦	lz		10kHz		30k⊦	lz					Pe	ak/Avç)	
Phase 1		z-10MH			10kHz		30kH							Peak	-	
Phase 1					10kHz											
Measure with:	A.M.N.															
Measure with: Comments:	A.M.N.															



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EUT mode:		#1																T	(°C	;):	19.9
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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	7.7944 kHz	<14kHz	EMI5993	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	21.3°C
Relative Humidity	20 to 75 %	39.4 %
Atmospheric pressure	N/A	1015 hPa

Test method deviation: N/A

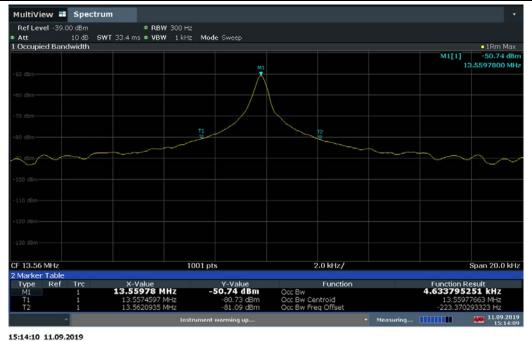
Supplementary information: Test is done in the worst observed configuration: Reader mode + P2P mode at the same time.

TEST EQUIPMENT USED					
CATEGORY	BRAND	Түре	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	KIKUSUI	PCR4000L	3074	24/07/2019	24/09/2020
Antenna	Emitech	3.5 cm	4653		
Cable	MICRO-COAX	N-3m	10537	05/07/2019	05/07/2021
Multimeter	FLUKE	8808A	12446	19/07/2019	19/09/2020
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12268	27/11/2017	27/01/2020

Blank cells = Permanent validity



	OCCUPIED BANDWIDTH - GRAPH				
	99% BANDWIDTH	EMI5993			
EUT mode:	D-M3				
Test Date:	11/09/2019				
Test Operator:	MPA				



Results: The system has an OBW of 4.633 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
TX / 0° / Card emulation mode / Position 1	9kHz-30MHz	15.209	EMI4272	PASS
TX / 45° / Card emulation mode / Position 1	9kHz-30MHz	15.209	EMI4273	PASS
TX / 90° / Card emulation mode / Position 1	9kHz-30MHz	15.209	EMI4274	PASS
TX / 0° / Card emulation mode / Position 2	9kHz-30MHz	15.209	EMI4275	PASS
TX / 45° / Card emulation mode / Position 2	9kHz-30MHz	15.209	EMI4276	PASS
TX / 90° / Card emulation mode / Position 2	9kHz-30MHz	15.209	EMI4277	PASS
TX / 0° / P2P mode / Position 1	9kHz-30MHz	15.209	EMI4278	PASS
TX / 45° / P2P mode / Position 1	9kHz-30MHz	15.209	EMI4279	PASS
TX / 90° / P2P mode / Position 1	9kHz-30MHz	15.209	EMI4280	PASS
TX / 0° / P2P mode / Position 2	9kHz-30MHz	15.209	EMI4281	PASS
TX / 45° / P2P mode / Position 2	9kHz-30MHz	15.209	EMI4282	PASS
TX / 90° / P2P mode / Position 2	9kHz-30MHz	15.209	EMI4283	PASS
TX / 0° / Mode reader / Position 1	9kHz-30MHz	15.209	EMI4284	PASS
TX / 45° / Mode reader / Position 1	9kHz-30MHz	15.209	EMI4285	PASS
TX / 90° / Mode reader / Position 1	9kHz-30MHz	15.209	EMI4286	PASS
TX / 0° / Mode reader / Position 2	9kHz-30MHz	15.209	EMI4287	PASS
TX / 45° / Mode reader / Position 2	9kHz-30MHz	15.209	EMI4288	PASS
TX / 90° / Mode reader / Position 2	9kHz-30MHz	15.209	EMI4289	PASS
TX / 0° / Mode reader / Position 3	9kHz-30MHz	15.209	EMI4290	PASS
TX / 45° / Mode reader / Position 3	9kHz-30MHz	15.209	EMI4291	PASS
TX / 90° / Mode reader / Position 3	9kHz-30MHz	15.209	EMI4292	PASS
Tx mode / Mode reader / Position 1	30MHz-1GHz	15.209	EMI4223	PASS



TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx mode / Mode reader / Position 2	30MHz-1GHz	15.209	EMI4224	PASS
Tx mode / Mode reader / Position 3	30MHz-1GHz	15.209	EMI4225	PASS
Tx mode / Card emulation mode / Position 1	30MHz-1GHz	15.209	EMI4227	PASS
Tx mode / Card emulation mode / Position 2	30MHz-1GHz	15.209	EMI4228	PASS
Tx mode / P2P mode / Position 1	30MHz-1GHz	15.209	EMI4229	PASS
Tx mode / P2P mode / Position 2	30MHz-1GHz	15.209	EMI4230	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:

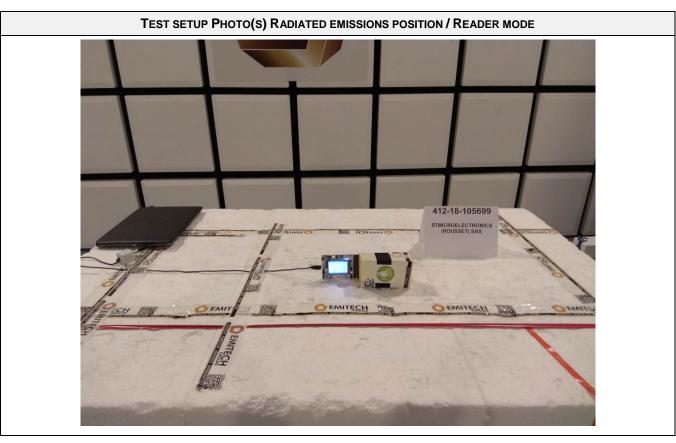
From 9 kHz to 30MHz: limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.

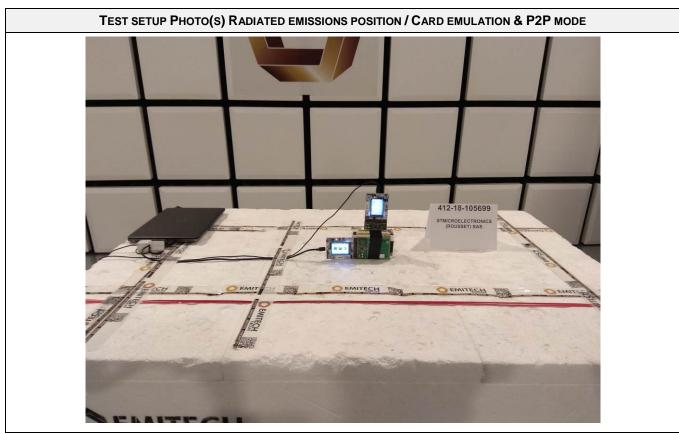
From 30MHz to 1GHz Quasi peak limit provided is the limit given in §15.209.

		TEST EQUIPMENT USED			
CATEGORY	BRAND	ТҮРЕ	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	24/04/2018	24/06/2019
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/09/2017	20/11/2019
Antenna	Electro Metrics	BIA-30HF	0824	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	SUCOFLEX	N-3m	14378	19/07/2017	19/09/2019
Cable	SUCOFLEX	N-6,5m	14380	19/07/2017	19/09/2019
Cable	TechniWAVE	N-0.23m	14891	23/02/2018	23/04/2020
Cable	TechniWAVE	N-0.23m	14899	23/02/2018	23/04/2020
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Shielded enclosure	COMTEST	SAC 3m	14494	14/02/2017	14/04/2020
Software	Nexio		0000		
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
Turntable	Maturo	NCD	14657		

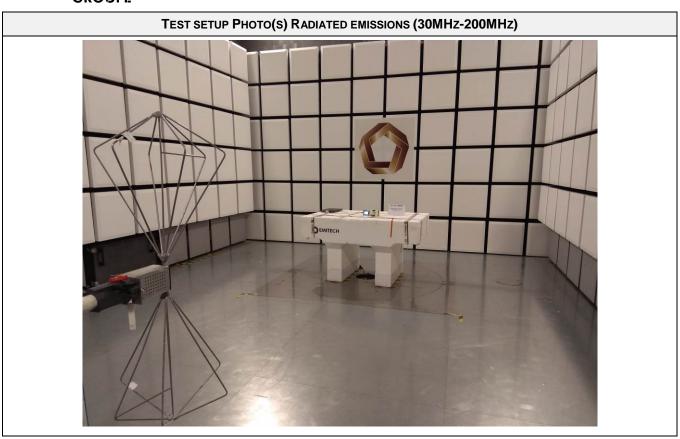
Blank cells = Permanent validity







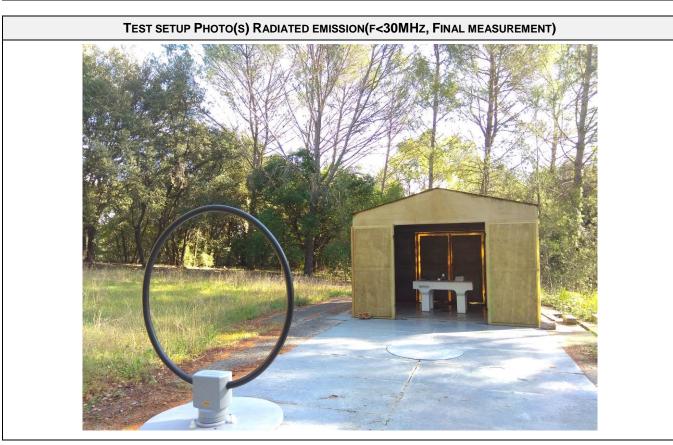












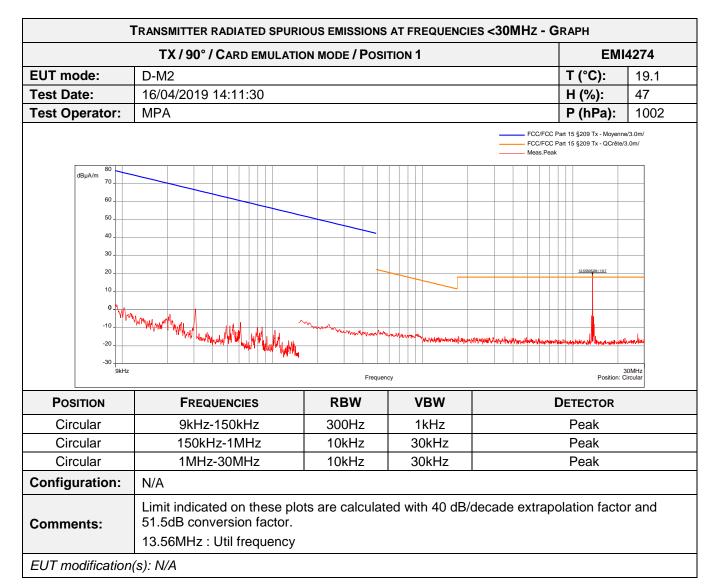


	TX / 0° / CARD EMULATIO		AT FREQUENCIE			4272
EUT mode:	D-M2	11111002271 0011		-	T (°C):	19.1
Test Date:	16/04/2019 14:05:04				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					15 §209 Tx - Moyenne 15 §209 Tx - QCrête/3	
dBμA/m 80 60 60 40 30 20 10 -10 -20 -30 9kHz	Know, and and an an all and an all an all and an all and an all and an all and an all a			Atter Mars and Property and Association and State of State of the Stat	33.2550(201/197	witer/fr
Decimos:	Farauruara	Frequer	·	D-	Position: C	ircular
Position	FREQUENCIES	RBW	VBW		TECTOR	
Circular	9kHz-150kHz	300Hz	1kHz		Peak	
Circular Circular	150kHz-1MHz 1MHz-30MHz	10kHz 10kHz	30kHz 30kHz		Peak Peak	
Configuration:	N/A	TUNTIZ	JUNITZ		I Gan	
- · J · · · · ·		ts are calculat	ed with 40 dB/d	lecade extrapola	ation facto	r and
Comments:	Limit indicated on these plo 51.5dB conversion factor. 13.56MHz: Util frequency	to are calculat	oa miii 10 ab/c	·		



	TX / 45° / CARD EMULATION	ON MODE / Posi	TION 1		EMI	4273
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:08:00				H (%):	47
Test Operator:	MPA				P (hPa):	1002
80					Part 15 §209 Tx - Moyenne Part 15 §209 Tx - QCrête/3	
dBµA/m 70 60 50 40 10 10 00 10 00 10 00 10 00 10 00 10 00 10 1					13.550/2M/19.3	
-10 % N	Warrand Hall Language Halling Markey May	Frequen	Cy	hopeodores and the second of t	Position: C	OMHz ircular
-20	FREQUENCIES	Frequen			Position: C	iOMHz ircular
-20 -30 9kHz		1	су		Position: C	ioMHz ircular
POSITION	FREQUENCIES	RBW	VBW		Position: C	iOMHz ircular
POSITION Circular	FREQUENCIES 9kHz-150kHz	RBW 300Hz	VBW 1kHz		DETECTOR Peak	ioMHz ircular
POSITION Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz	RBW 300Hz 10kHz	VBW 1kHz 30kHz		DETECTOR Peak Peak	in Maryllandon (Maryllandon) (

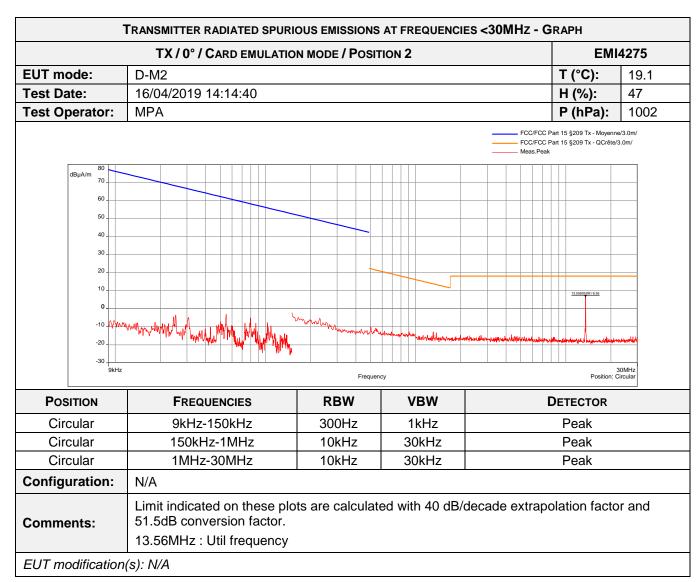




No spurious emissions were detected.

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





No spurious emissions were detected.

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



TX / 45° / CARD EMULATIO	N MODE / Posi	TION 2		EMI4276
D-M2				
			T (°C): 19.1
16/04/2019 14:19:25			H (%) : 47
MPA			P (hF	Pa): 1002
			FCC/FCC Part 15 §209 T. FCC/FCC Part 15 §209 T. Meas.Peak	
			13.5580529	M/412
was the same of th	who was a second	Mary proprietables and the second of the second	h	
- Hebrita Mark Link Mark		Manufacture a state and a state a stat	Makeusan Milanda Kata Lata Lata kanan kebabahan Pileberahan Pilebe	A Three Trans A The Parish of the Control
	Frequen	су		30MHz Position: Circular
FREQUENCIES	RBW	VBW	DETECT	ΓOR
9kHz-150kHz	300Hz	1kHz	Peal	Κ
150kHz-1MHz	10kHz	30kHz	Peak	<
1MHz-30MHz	10kHz	30kHz	Peal	Κ
N/A				
Limit indicated on these plot 51.5dB conversion factor.	ts are calculate	ed with 40 dB/d	decade extrapolation	factor and
Limit indicated on these plot 51.5dB conversion factor. 13.56MHz: Util frequency	ts are calculate	ed with 40 dB/d	decade extrapolation	factor and
	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz	Frequencies RBW 9kHz-150kHz 300Hz 150kHz-1MHz 10kHz 1MHz-30MHz 10kHz	Frequency FREQUENCIES RBW VBW 9kHz-150kHz 300Hz 1kHz 150kHz-1MHz 10kHz 30kHz 1MHz-30MHz 10kHz 30kHz	Frequency FREQUENCIES RBW VBW DETECTOR 9kHz-150kHz 300Hz 1kHz Peal 150kHz-1MHz 10kHz 30kHz Peal 1MHz-30MHz 10kHz 30kHz Peal



	TRANSMITTER RADIATED SPURI	OUS EMISSIONS	AT FREQUENCI	ES <30MHz - G	RAPH	
	TX / 90° / CARD EMULATION	ON MODE / Posi	TION 2		EMI	4277
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:22:39				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenn Part 15 §209 Tx - QCrête/ k	
dBμA/m 80 60 50 40 30 20 10 -20 -30 9kHz	Warry of the grant of the state	Manage of the second se	Man work has been proportional by the proportion of the proportion	of the state of th	336603201/411	30MHz
Position	FREQUENCIES	RBW	VBW		Position: O	circular
Circular	9kHz-150kHz	300Hz	1kHz		Peak	
Circular	150kHz-1MHz	10kHz	30kHz		Peak	
Circular	1MHz-30MHz	10kHz	30kHz		Peak	
Configuration:	N/A	1	332			
Comments:	Limit indicated on these plo 51.5dB conversion factor. 13.56MHz: Util frequency	ts are calculate	ed with 40 dB/o	decade extrap	olation facto	or and
EUT modification						



		OUS EIVIISSIONS	AI FREQUENCII	ES <30MHz - GRAPH	
	TX / 0° / P2P MOD	E / Position 1		EM	14278
EUT mode:	D-M2			T (°C):	19.1
Test Date:	16/04/2019 14:26:53			H (%):	47
Test Operator:	MPA			P (hPa):	1002
				FCC/FCC Part 15 §209 Tx - Moyen FCC/FCC Part 15 §209 Tx - QCrête Meas.Peak	
dBμA/m 70					
60					
50					
40					
30					
20				13.558052M/19.9	
10					
0					
-10 <u>- 11</u>	MANAGER TO SERVICE STATE OF THE SERVICE STATE OF TH	Mundaya washalaman anda	And managed		
-20	AND THE PROPERTY OF THE PROPER		Mary Mary Mary Mary Mary Mary Mary Mary	at I salka filmet ik at herbita di seperi and i dan di at dan fina kampangan dibibili ti kat geologia basin	herapharyerblar
-30 9kHz		Frequen	icv	Position:	30MHz Circular
Position	FREQUENCIES	RBW	VBW	DETECTOR	
Circular Circular	9kHz-150kHz 150kHz-1MHz	300Hz 10kHz	1kHz 30kHz	Peak Peak	
Circular	1MHz-30MHz	10kHz	30kHz	Peak	
		IUKIZ	SUKITZ	reak	
Configuration:	N/A				
Comments:	Limit indicated on these plo 51.5dB conversion factor.	ts are calculat	ed with 40 dB/d	decade extrapolation fact	or and
Comments:					
Comments:	13.56MHz : Util frequency				



Test Date:	TX / 45° / P2P MOD	E / POSITION 1				
Test Date:					EM14	4279
	D-M2			Т	Γ (°C):	19.1
	16/04/2019 14:34:03			ŀ	H (%):	47
Test Operator:	MPA			F	P (hPa):	1002
					15 §209 Tx - Moyenne 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50		+				
40						
30						
20					13.558052M / 19.4	
10						_
0 00						_
-10 KALVA	many half he fill he wife he	where we wanted	Marantham and a decided			
	The second secon		ALL LONDON AND AND AND AND AND AND AND AND AND AN	Mil. J. J	ality (1911 - 1914 - Print Pri	H-lehad
-30		Frequence	cy		3 Position: Ci	0MHz ircular
Position	FREQUENCIES	RBW	VBW	DE	TECTOR	
Circular	9kHz-150kHz	300Hz	1kHz	ı	Peak	
Circular	150kHz-1MHz	10kHz	30kHz	ſ	Peak	
Circular	1MHz-30MHz	10kHz	30kHz	Ī	Peak	
Configuration:	N/A					
	Limit indicated on these plot 51.5dB conversion factor.	ts are calculate	ed with 40 dB/d	decade extrapola	tion facto	r and
Comments.	13.56MHz : Util frequency					



	TRANSMITTER RADIATED SPURI	OUS EMISSIONS	AT FREQUENCIE	ES <30MHz - G	RAPH	
	TX / 90° / P2P MOD	E / Position 1			EMI	4280
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:36:09				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenni Part 15 §209 Tx - QCrête/	
dBμA/m 70						
60						
50						
40						
30						
20					13.558052M / 19.4	
10						
o	1. 1					
-10 V V	-Many pengely harry was now of a sell by the state of the	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Tari-tariane was allowed a philosophy and a character of the contract of the c	. 4. 14. 14. 14. 14. 14. 14. 14. 14. 14.		
-20	And the state of the state o		at the other designation at a third	ne alle la greca estre establishe de represident de represident de la company de la company de la company de l	Herstein Meridian Herstein der Stein	.a/Lunda/f
-30 9kHz		Frequen	су		Position: C	30MHz ircular
Position	FREQUENCIES	RBW	VBW	Ī	DETECTOR	
Circular	9kHz-150kHz	300Hz	1kHz		Peak	
Circular	150kHz-1MHz	10kHz	30kHz		Peak	
Circular	1MHz-30MHz	10kHz	30kHz		Peak	
Configuration:	N/A					
Cammanta	Limit indicated on these plo 51.5dB conversion factor.	ts are calculat	ed with 40 dB/d	decade extrapo	olation facto	r and
Comments:						
	13.56MHz : Util frequency					
EUT modification	(s): N/A					



	TX/0°/P2P MOD	E / Position 2			EMI	4281
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:39:33				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenne Part 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50						
40						
30						
20						
10					13.558052M / 6.54	
0		\				_
		M 1				
-10 	MARKAN MARKATAN MARKA	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Mayor works . I			
-10 W	war war war day by war war ball by the by	Wand war war	Maryon water patrological property as	addlywayiayddina agad air galanda on	Marinda de la compania de la començación del començación de la començación de la començación del començación de la començación del començación de la començación de la començación del comença	
-10	Mary Marian Control of the Control o	Frequen		idatingaturing Association and analysis of the constitution of the	Position: G	30MHz ircular
-309kHz		Frequen			Position: C	BOMHz ircular
POSITION	FREQUENCIES	RBW	VBW		Position: C	30MHz sircular
Position Circular	FREQUENCIES 9kHz-150kHz	RBW 300Hz	vBW 1kHz		DETECTOR Peak	BOMHz ircular
Position Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz	RBW 300Hz 10kHz	VBW 1kHz 30kHz		DETECTOR Peak Peak	SOMHz ircular
Position Circular Circular Circular	FREQUENCIES 9kHz-150kHz	RBW 300Hz	vBW 1kHz		DETECTOR Peak	SOMHz ricular
Position Circular Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Peak Peak Peak Peak	ircular
Position Circular Circular Circular Circular Configuration:	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Peak Peak Peak Peak	ircular
Position Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz N/A Limit indicated on these plo	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Peak Peak Peak Peak	ircular



	RANSMITTER RADIATED SPURIO			20 30000112 - 0	ı	
	TX / 45° / P2P MOD	E / Position 2			EMI	4282
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:46:22				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenne Part 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50						
40						
30						
20						
10						
0					13.558052M/4.81	
0	MIL 180	Management			13.55805/24/4.81	
0	mangenorphy Many Market	Management	Andrew War and with reflecting the second	halman paralahin arang mengabah	23.5550(524.4.65)	بالمادين المادين الماد
-10 M M -20	many the the top of th	Market and the second	March and the state of the stat	halman para haran para para para para para para para	- Janiston - Landard - Marie Land	المادوهور
0 - -10 - 10 - 10 - 20	home was properly to the first of the first	Frequen		dolaren artikoloriak erreka alaren alaren artika erreka alaren artika erreka alaren artika erreka alaren artika	- Janiston - Landard - Marie Land	اللاندونيية 30MHz Sircular
0 -10 M M -20 -20	FREQUENCIES	The state of the s			- Andrews Landers was	30MHz Sircular
-10 -10 -20 -30 9kHz		Frequer	ncy		Position: C	بالاستون 30MHz Sircular
-10 -10 -10 -10 -10 -10 -10 -10 -10 -10	FREQUENCIES	Frequer	VBW		Position: C	اللاسون 30MHz Sircular
Position Circular	FREQUENCIES 9kHz-150kHz	RBW 300Hz	VBW 1kHz		Position: Ĉ	30MHz Jiroular
Position Circular Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz	RBW 300Hz 10kHz	VBW 1kHz 30kHz		Position: C DETECTOR Peak Peak	اللاسونية 30MHz Sircular
Position Circular Circular Circular Circular Configuration:	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz N/A Limit indicated on these plo	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Position: S DETECTOR Peak Peak Peak Peak	Circular
Position Circular Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz N/A	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Position: S DETECTOR Peak Peak Peak Peak	Circular
Position Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz N/A	RBW 300Hz 10kHz 10kHz	VBW 1kHz 30kHz 30kHz		Position: S DETECTOR Peak Peak Peak Peak	Dircular



	TX / 90° / P2P MOD	E / Position 2			EMI	4283	
EUT mode:	D-M2				T (°C):	19.1	
Test Date:	16/04/2019 14:49:05				H (%):	47	
Test Operator:	MPA				P (hPa):		
					Part 15 §209 Tx - Moyenne Part 15 §209 Tx - QCrête/3 k		
dBμA/m 70							
60							
50							
40							
30							
20							
10							
10							
0 Whi	1				13.558053M/-5.91		
-10	* N/U_N/U_X/NWE/U_T*U_U	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	And both some of the state of t	1112 - car - al - p al-la - al-la - c c.	13.5580524/-5.91		
-10	Marchen James March Marc	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and many september of the september of t	الالاعتماد والمارية	13.5580003N / 4.91	Liferat-lange	
-10	Marchagen Man Alberta Man Albe	Frequen		18 (18 - 18 - 18 - 18 - 18 - 18 - 18 - 1	and distance of the second	Mmi-hay. 30MHz Sircular	
-10 -20 -30	FREQUENCIES	Walter Commence of the Commenc			**************************************	30MHz Sircular	
-10 -20 -30 9kHz	AND THE PROPERTY OF THE PROPER	Frequen	су		Position: C	Josephy 30MHz Circular	
POSITION	FREQUENCIES	Frequen	v VBW		Position: C	L/m²-lav 30MHz Sircular	
Position Circular	FREQUENCIES 9kHz-150kHz	RBW 300Hz	vBW 1kHz		Position: C	30MHz iroular	
Position Circular Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz	RBW 300Hz 10kHz	vBW 1kHz 30kHz		Position: C DETECTOR Peak Peak	L/m/-lav 30MHz Sircular	
POSITION Circular Circular	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz	RBW 300Hz 10kHz 10kHz	vBW 1kHz 30kHz 30kHz		Peak Peak Peak	Circular	



	TX / 0° / MODE READ	DER / POSITION 1			EMI	4284
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:53:02				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenne Part 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50		+				
40						
30						
20					13.558052M/20.9	
10						
0	1 1 11 1	han man				
	.v~r~vV~l~bajalbajalVVlajalid4f/"Yllaja lajAllkij bibih	A South of the work work work work work with the same of the same	Margaret who are walker to the proposed on the	radion parting resident and resident	المالية	مياسين
	TATE OF THE PROPERTY OF THE PR					
-20	A MANAGE TO STATE OF THE PARTY					
-30 9kHz	A MATANA	Frequenc	y		Position: C	0MHz ircular
-30	FREQUENCIES	Frequenc	VBW			
-30 9kHz	FREQUENCIES 9kHz-150kHz				Position: C	
-30 9kHz		RBW	VBW		Position: C	
Position Circular	9kHz-150kHz	RBW 300Hz	VBW 1kHz		DETECTOR Peak	
Position Circular Circular	9kHz-150kHz 150kHz-1MHz	RBW 300Hz 10kHz	VBW 1kHz 30kHz	I	Peak Peak Peak	



	TRANSMITTER RADIATED SPURIO	OUS EMISSIONS	AT FREQUENCI	es <30MHz - G	RAPH	
	TX / 45° / MODE REAL	DER / POSITION	1		EMI	4285
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 14:57:37				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					art 15 §209 Tx - Moyenni art 15 §209 Tx - QCrête/	
dBμA/m 70						
60						
50						
40						
30						
20					13.558052M / 20.7	
10						
0	1					
-10 <u> </u>	Mary Mary Mary Mary Mary Mary Mary Mary	What was a second of the secon	- Agonya May May hall agy of hall aggreen and	والمراجين ومراجي والمالية المالية المالية والمراجع والمالية		المالية المالية
-20	A A MANAGE A STATE OF THE PARTY				Market Market Market Andrews	
9kHz		Frequen	су		Position: C	80MHz ircular
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					
Cammanta.	Limit indicated on these plo	ts are calculate	ed with 40 dB/d	decade extrapo	olation facto	r and
Comments:						
	13.56MHz : Util frequency					
EUT modification	(s): N/A					



TX / 90° / MODE READ	DER / POSITION	1		EMI	4286	
D-M2				T (°C):	19.1	
16/04/2019 15:01:31				H (%):	47	
MPA				P (hPa):	1002	
			FCC/FCC F	Part 15 §209 Tx - QCrête/3		
Willy Willy War and Milly Willy Will	manana	March Contraction of the state	Haring a paragraphic and a par	33.5500 pt. 2022	Monorho	
	Frequen	cy		Position: C	BOMHz Sircular	
FREQUENCIES	RBW	VBW	ı	DETECTOR		
9kHz-150kHz	300Hz	1kHz		Peak		
150kHz-1MHz	10kHz	30kHz		Peak		
1MHz-30MHz	10kHz	30kHz	Peak			
N/A						
Limit indicated on these plot 51.5dB conversion factor. 13.56MHz: Util frequency	ts are calculate	ed with 40 dB/d	decade extrapo	olation facto	r and	
	FREQUENCIES 9kHz-150kHz 150kHz-1MHz 1MHz-30MHz N/A Limit indicated on these plo 51.5dB conversion factor.	FREQUENCIES RBW 9kHz-150kHz 300Hz 150kHz-1MHz 10kHz 1MHz-30MHz 10kHz N/A Limit indicated on these plots are calculate 51.5dB conversion factor.	16/04/2019 15:01:31 MPA	D-M2 16/04/2019 15:01:31 MPA FREQUENCIES RBW VBW 9kHz-150kHz 150kHz-1MHz 10kHz 10k	D-M2 16/04/2019 15:01:31 MPA P (hPa): FCC/FCC Part 15 5001 Tx - Ochect Meas Peak FREQUENCIES RBW VBW DETECTOR 9kHz-150kHz 150kHz-1MHz 10kHz 10kHz 30kHz Peak 1MHz-30MHz N/A Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor 51.5dB conversion factor.	

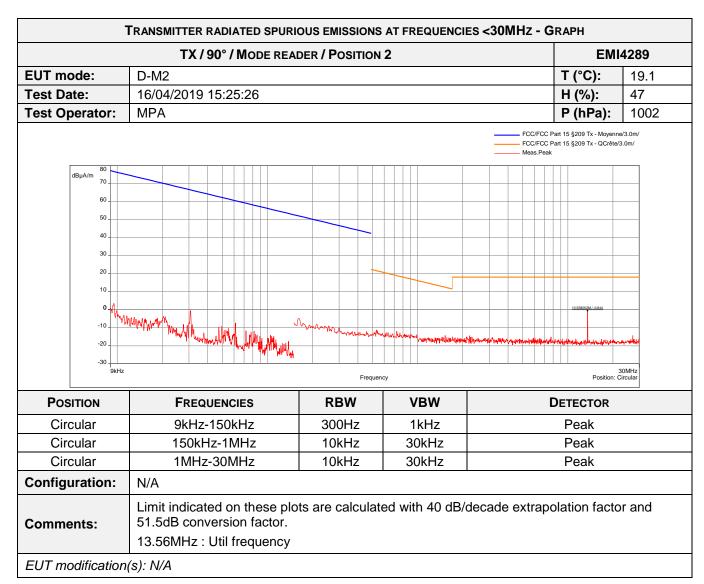


			AT FREQUENCI		-u	
	TX / 0° / MODE READ	ER / POSITION	2		EMI	4287
EUT mode:	D-M2			-	T (°C):	19.1
Test Date:	16/04/2019 15:18:58			I	H (%):	47
Test Operator:	MPA			1	P (hPa):	1002
					15 §209 Tx - Moyenne 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50						
40						
30						
20						
10					13.558052M17.72	
0						
-10 _ 1 0	motor methodology & Market	Varman and and				
-20	" " " " " " " " " " " " " " " " " " "		all day of the high of the state of the stat	early to the most married rather an extra manuscript and a state of particular groups	Haraman landarman	اسافيهيو
-309kHz					3	0MHz
	1	Frequen	су		Position: C	ircular
Position	FREQUENCIES	RBW	VBW	DE	TECTOR	
Circular	9kHz-150kHz	300Hz	1kHz		Peak	
Circular	150kHz-1MHz	10kHz	30kHz		Peak	
Circular	1MHz-30MHz	10kHz	30kHz		Peak	
Configuration:	N/A					
	Limit indicated on these plo	ts are calculate	ed with 40 dB/d	decade extrapola	ation facto	r and
	Comments: 51.5dB conversion factor.					
Comments:						
Comments:	13.56MHz : Util frequency					
Comments: EUT modification	13.56MHz : Util frequency					



	TX / 45° / MODE REAL	DER / POSITION	2		EMI	4288
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 15:22:28				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					: 15 §209 Tx - Moyenne : 15 §209 Tx - QCrête/3	
dBμA/m 70						
60						
50						
40						
30						
20						
10					13.558052M / 6.95	
-10 Made		~~~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~				
-20	MANAGER STATE OF THE STATE OF T	San Andrew Market	Market Market Market Market Service Company Co	water the proposition of the pro	المراجع المراج	ande-
-30	I Jan. Mat. Makenshir					
9kHz		Frequer	icy		Position: C	0MHz ircular
	POSITION FREQUENCIES RBW			Di	ETECTOR	
Position	I REQUENCIES					
Position Circular	9kHz-150kHz	300Hz	1kHz		Peak	
		300Hz 10kHz	1kHz 30kHz		Peak Peak	
Circular	9kHz-150kHz					
Circular Circular	9kHz-150kHz 150kHz-1MHz	10kHz	30kHz		Peak	

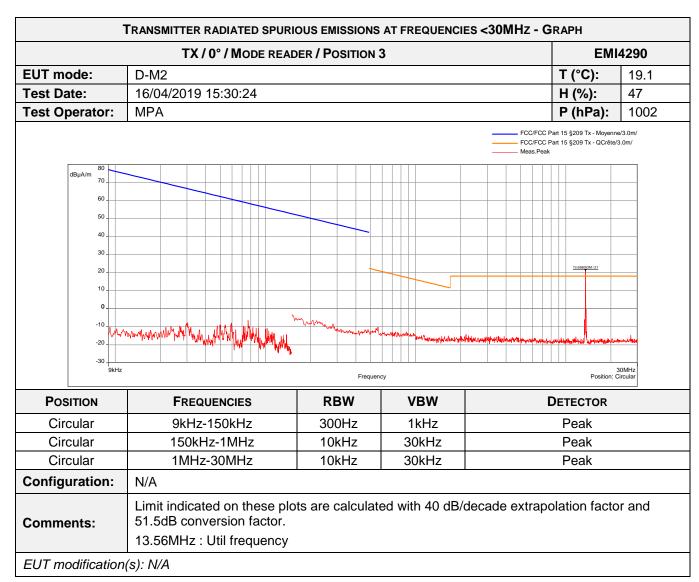




No spurious emissions were detected.

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





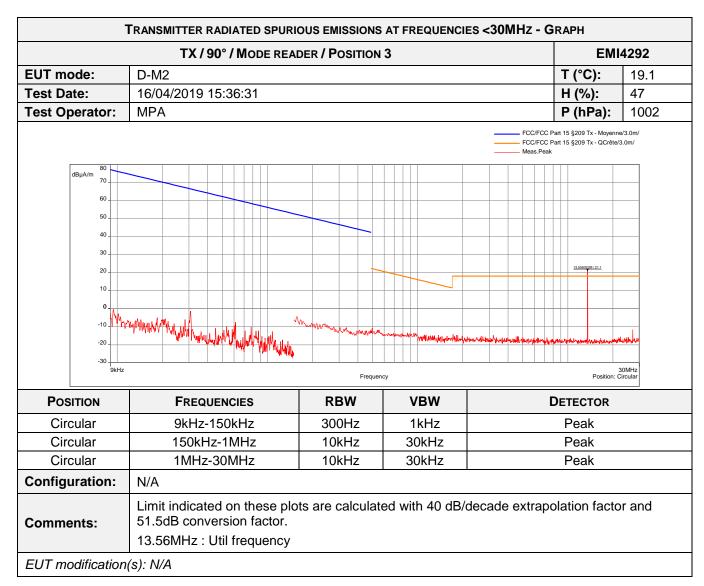
No spurious emissions were detected.

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



	TRANSMITTER RADIATED SPURIO	OUS EMISSIONS	AT FREQUENCIE	s <30MHz - G	RAPH	
	TX / 45° / MODE REAL	DER / POSITION	3		EMI	4291
EUT mode:	D-M2				T (°C):	19.1
Test Date:	16/04/2019 15:33:40				H (%):	47
Test Operator:	MPA				P (hPa):	1002
					Part 15 §209 Tx - Moyenni Part 15 §209 Tx - QCrête/	
dBμA/m 70						
60						
50						
40						
30						
20					13.558052M/21	
10						
0						
-10	Construction of Contract of Co	warmman when the	1.1.1.1			1.
	ALLEN A COLLEGE AND ANALYSIS OF THE PROPERTY O		والكيفال ماستان مست	Andrew Calabra and the second black of both		gentre-rite/h
-30 -30 9kHz		Frequen	су		Position: C	30MHz ircular
Position	FREQUENCIES	RBW	VBW	ſ	DETECTOR	
Circular	9kHz-150kHz	300Hz	1kHz		Peak	
Circular	150kHz-1MHz	10kHz	30kHz		Peak	
Circular	1MHz-30MHz	10kHz	30kHz		Peak	
Configuration:	N/A					
Commente	Limit indicated on these plo	ts are calculate	ed with 40 dB/d	decade extrapo	olation facto	r and
Comments:						
	13.56MHz : Util frequency					
EUT modification	(s): N/A					

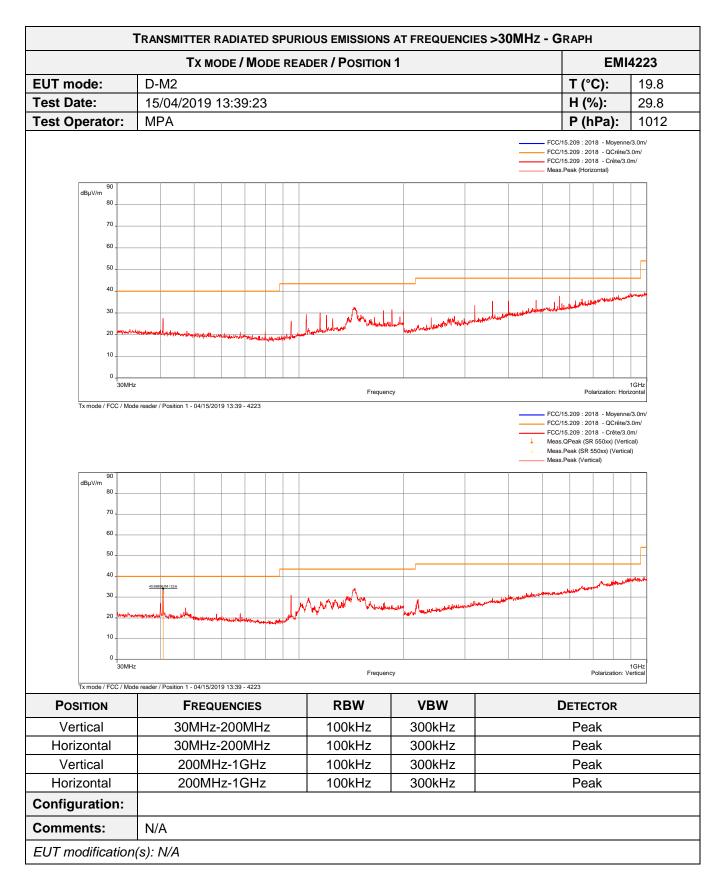




No spurious emissions were detected.

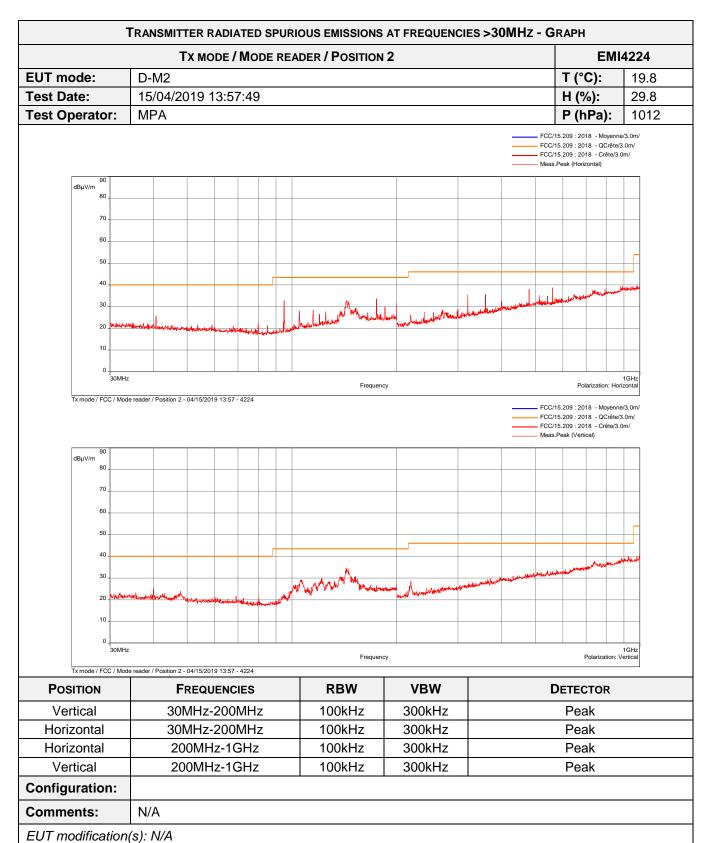
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported





FREQUENCY (MHz)	POLARISATION	PEAK (DB _µ V/M)	QP (DBμV/M)	QP LIMIT (DB _µ V/M)	MARGIN (DB)
40.68856062	Vertical	34.59	31.93	40	-8.07



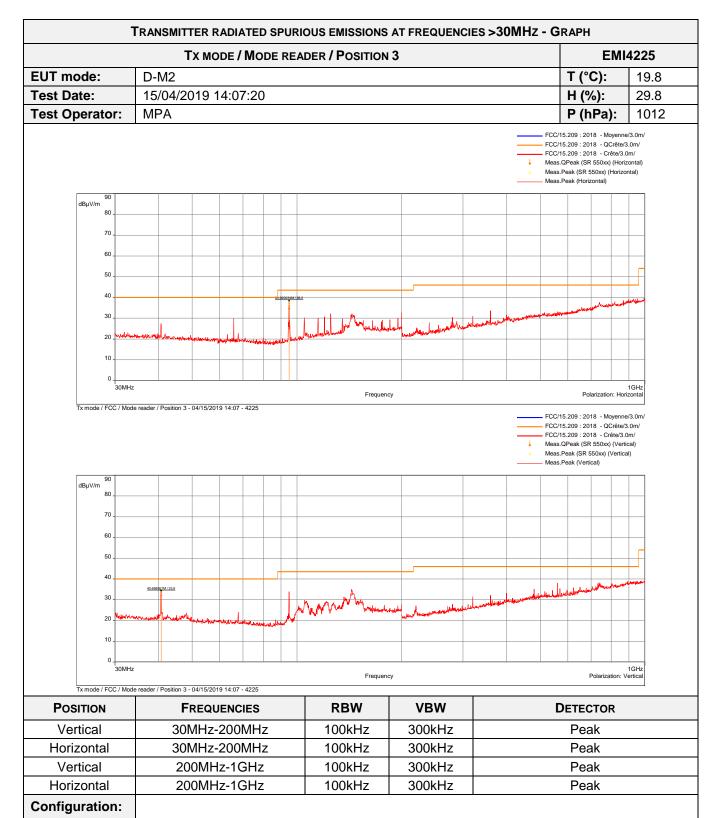




Comments:

EUT modification(s): N/A

N/A



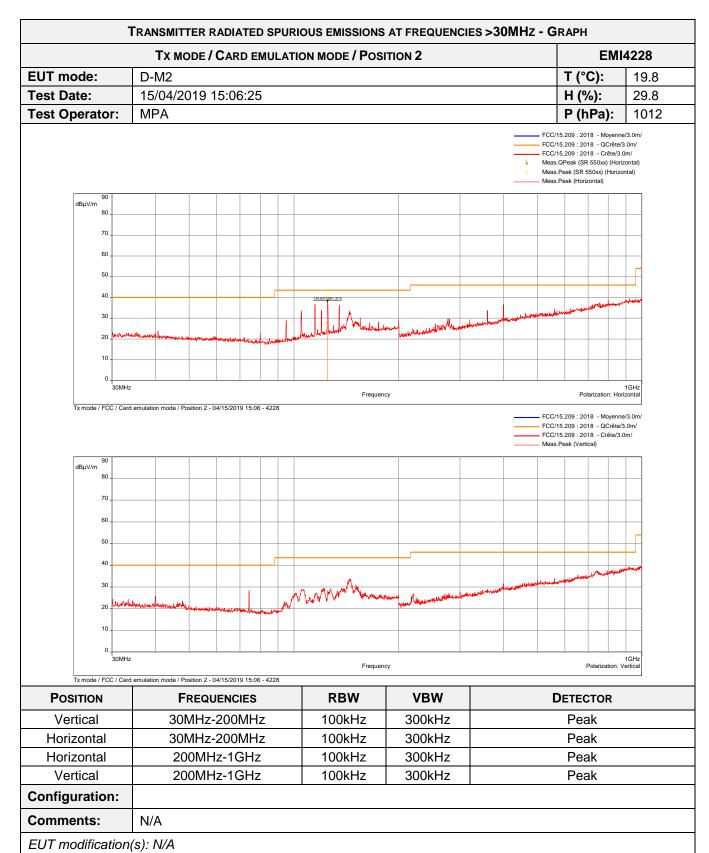
FREQUENCY (MHz)	POLARISATION	PEAK (DBµV/M)	QP (DBμV/M)	QP LIMIT (DBµV/M)	MARGIN (DB)
40.68856062	Vertical	34.32	31.86	40	-8.14
94.92003418	Horizontal	36.93	34.65	43.5	-8.85



	Тх мс	DE/C	ARD E	MUL	ATIC	ON MC	DDE / Po	SITION	1					ΕN	114227
EUT mode:	D-M2												T (°(C):	19.8
Test Date:	15/04/20	019 14:	:46:42	2									H (%	6) :	29.8
Test Operator:	MPA												P (h	Pa):	1012
dBμV/m 80	- COLLAND BLANCE AND A STATE OF THE STATE OF	all and to come			المامالية	in the state of th	us III Arranda	dereck language of the special section of the	draw dan da	Mary and the state of the state		FCC/15 Meas.Q Meas.Pe	.209 : 201 Peak (SR	18 - QCrét 18 - Créte 550xx) (H 50xx) (Hor ontal)	/3.0m/ orizontal)
Tx mode / FCC / Car	rd emulation mode / Po	sition 1 - 04/15	5/2019 14:4	0 4007											
dBμV/m 90 80				6 - 4227								FCC/15.FCC/15.	.209 : 201	18 - Moyer 18 - QCrête 18 - Crête cal)	te/3.0m/
dBμV/m												FCC/15.FCC/15.	.209 : 201 .209 : 201	18 - QCrêt 18 - Crête	te/3.0m/
dBμV/m 80 70 60 50 40 30 10 30MH		tribina 4 AA		J. J	w\	\w\^\	Frequ	uency	Manus Balaka Josephan	Andrew Advisory	parter separable	FCC/15.FCC/15.	.209 : 2010 .209 : 2010 .209 : 2010	18 - QCrêt 18 - Crête	1GHz
dBμV/m 80	rd emulation mode / Pc	REQUE	5/2019 14:4 NCIES	6 - 4227	w\	ı	Frequ RBW		VBW	Mark boy	phates and the	FCC/15 FCC/15 Meas.Pe	.209 : 2010 .209 : 2010 .209 : 2010	18 - OCrètei 18 - Crètei 20 -	1GHz
80	rd emulation mode / Pc		5/2019 14:4 NCIES	6 - 4227	w\	ı	Frequ		VBW 500kHz	and the second second	- Adam and the	FCC/15 FCC/15 Meas.Pe	.209 : 2010 .209 : 2010 .200 :	18 - OCrétel 18 - Orêtel 18 - Orêtel 19 -	1GHz
dBµV/m 80 70 60 50 40 40 30 Tx mode / FCC / Ca Position Vertical Horizontal	rd emulation mode / Pc	REQUEI MHz-2(MHz-2(5/2019 14:44 NCIES DOMH	6 - 4227 Z	w\	1(RBW 00kHz	3	00kHz 00kHz	And the state of t	phalesauthable	FCC/15 FCC/15 Meas.Pe	209 : 2011 Percentage of the control of the contro	18 - OCrète 18 - Orète 18 - Orète 19 - Orète 10 - Orète	1GHz
Position Vertical Horizontal Vertical	rd emulation mode / Po	REQUEI MHz-2(MHz-2(0MHz-	5/2019 14:4 NCIES DOMH DOMH	6 · 4227	w\	10 10 10	RBW 00kHz 00kHz 00kHz	3 3 3	300kHz 300kHz 300kHz	the state of the s	photocopy and the	FCC/15 FCC/15 Meas.Pe	ETEC Pea	18 - OCréte 18 - Orète	1GHz
Tx mode / FCC / Ca Position Vertical Horizontal Vertical Horizontal	rd emulation mode / Po	REQUEI MHz-2(MHz-2(5/2019 14:4 NCIES DOMH DOMH	6 · 4227	w\	10 10 10	RBW 00kHz	3 3 3	00kHz 00kHz		place of the state	FCC/15 FCC/15 Meas.Pe	209 : 2011 Percentage of the control of the contro	18 - OCréte 18 - Orète	1GHz
Position Vertical Horizontal Vertical	rd emulation mode / Po	REQUEI MHz-2(MHz-2(0MHz-	5/2019 14:4 NCIES DOMH DOMH	6 · 4227	w\	10 10 10	RBW 00kHz 00kHz 00kHz	3 3 3	300kHz 300kHz 300kHz	And the second s	phales and the	FCC/15 FCC/15 Meas.Pe	ETEC Pea	18 - OCréte 18 - Orète	1GHz

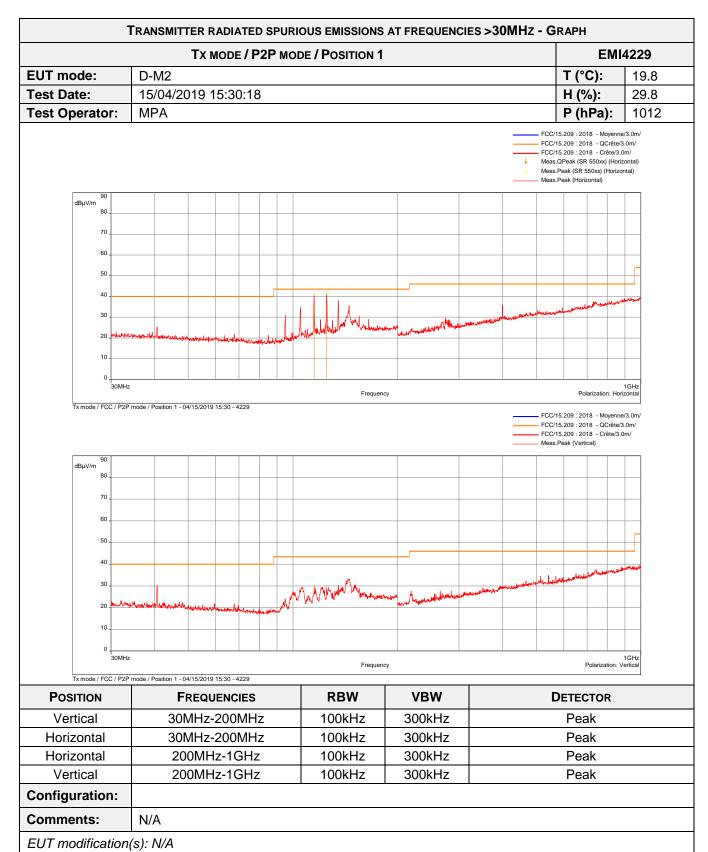
FREQUENCY (MHz)	POLARISATION	PEAK (DBµV/M)	QP (DB _µ V/M)	QP LIMIT (DBµV/M)	MARGIN (DB)
115.0518862	Horizontal	39.71	27.74	43.5	-15.76
124.9725308	Horizontal	40.8	29.03	43.5	-14.47





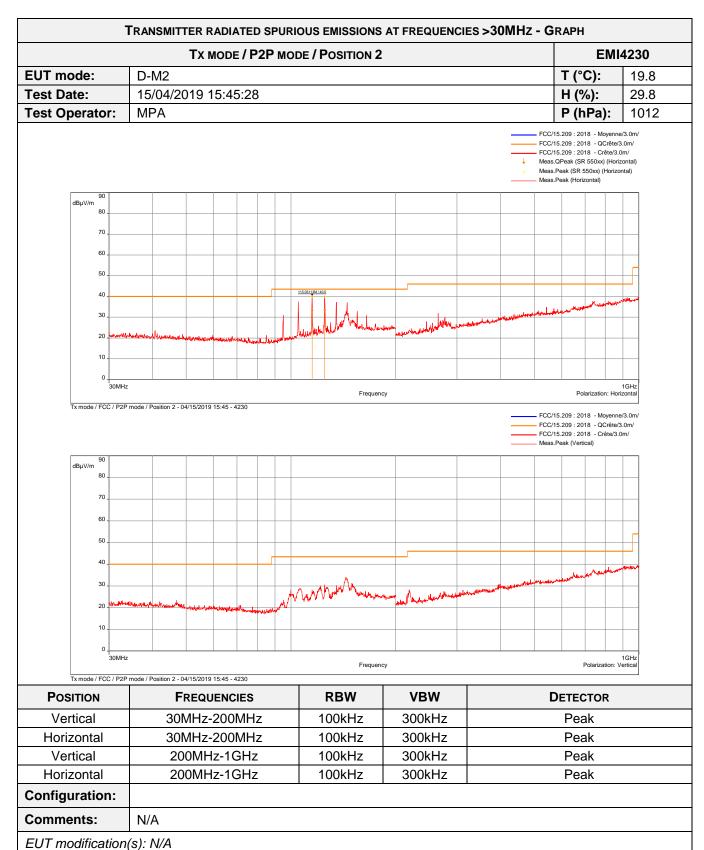
FREQUENCY (MHz)	POLARISATION	PEAK (DBµV/M)	QP (DB _μ V/M)	QP LIMIT (DBµV/M)	MARGIN (DB)
124.9102674	Horizontal	40.62	27.81	43.5	-15.69





FREQUENCY (MHz)	POLARISATION	PEAK (DBµV/M)	QP (DB _µ V/M)	QP LIMIT (DB _µ V/M)	MARGIN (DB)
115.0103772	Horizontal	41.28	34.53	43.5	-8.97
124.9725308	Horizontal	41.81	35.39	43.5	-8.11





FREQUENCY (MHz)	POLARISATION	PEAK (DBµV/M)	QP (DB _µ V/M)	QP LIMIT (DBµV/M)	MARGIN (DB)
115.0311317	Horizontal	39.77	33.27	43.5	-10.23
124.9932853	Horizontal	39.78	33.4	43.5	-10.1



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	Түре	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/09/2017	20/11/2019
Antenna mast	INNCO	MA4000-EP-O	10261		
Cable	Huber + Suhner	N-20m	8385	11/10/2017	11/12/2019
Mast controller	Heinrich Deisel	HD100	4036		
Open area test site	EMITECH	Salinelles	3482	10/10/2017	10/12/2020
Receiver	Rohde & Schwarz	ESHS10	3371	20/09/2018	20/11/2019
Turntable	Heinrich Deisel	D4420	4038		

Blank cells = Permanent validity

FIELD STRENGTH - TABULATED RESULTS — READER MODE				
Frequency (MHz)	Polarization (°)	Level at 10m (dBµA/m)	Limit at 10m (dBµA/m)	Limit at 30m (µV/m)
13.56	0	5.36	51.58	15848
13.56	45	7.86	51.58	15848
13.56	90	9.86	51.58	15848

Maximun level at 10m is 9.86dBµA/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 42.28 dB μ V/m for a limit at 84 dB μ V/m.



FIELD STRENGTH - TABULATED RESULTS — CARD EMULATION MODE				
Frequency (MHz)	Polarization (°)	Level at 10m (dBµA/m)	Limit at 10m (dBµA/m)	Limit at 30m (µV/m)
13.56	0	7.16	51.58	15848
13.56	45	10.36	51.58	15848
13.56	90	11.86	51.58	15848

Maximun level at 10m is 11.86dBµA/m for a limit at 51.58 dBµA/m.

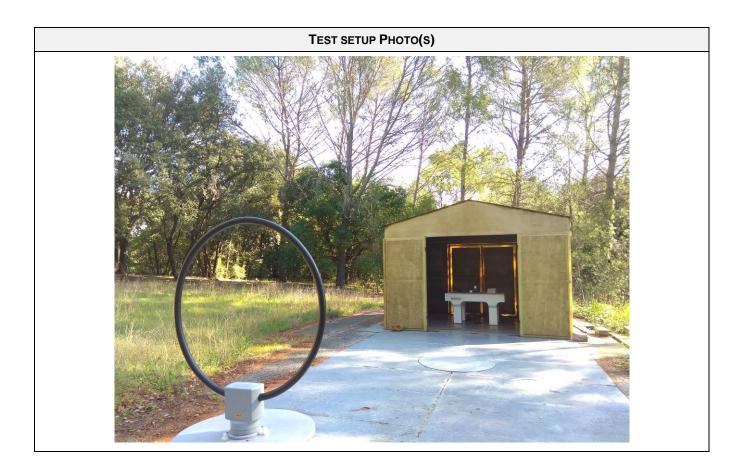
Using an extrapolation factor of 40dB/dec and a conversion factor of -51.5dB, level at 30m is 44.28 dB μ V/m for a limit at 84 dB μ V/m.

FIELD STRENGTH - TABULATED RESULTS – P2P MODE				
Frequency (MHz)	Polarization (°)	Level at 10m (dBµA/m)	Limit at 10m (dBµA/m)	Limit at 30m (µV/m)
13.56	0	5.86	51.58	15848
13.56	45	8.76	51.58	15848
13.56	90	10.56	51.58	15848

Maximun level at 10m is 10.56dBµA/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 42.98 dB μ V/m for a limit at 84 dB μ V/m.







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	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: Test is done in the worst observed configuration: Reader mode + P2P mode at the same time.

TEST EQUIPMENT USED						
CATEGORY	BRAND	Түре	IDENTIFIER	CAL. DATE	CAL. DUE	
AC power source	KIKUSUI	PCR4000L	3074	12/06/2018	12/08/2019	
Antenna	Emitech	3.5 cm	4653			
Cable	MICRO-COAX	N-3m	10535	06/04/2017	06/06/2019	
Multimeter	FLUKE	8808A	12446	24/04/2018	24/06/2019	
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020	
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021	
Thermohygrometer	Testo	608-H2	12268	27/11/2017	27/01/2020	

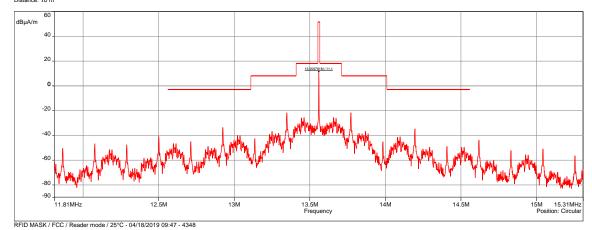
Blank cells = Permanent validity

FCC/FCC Part 15 §225 Tx - QCrête/10.0m/



FIELD STRENGTH IN THE BAND 13.110-14.010MHz AND OUTSIDE - GRAPH					
FIELD STRENGTH IN THE BAND 13.110-14.010MHz AND OUTSIDE EMI4348					
EUT mode:	D-M2	T (°C):	22.1		
Test Date:	18/04/2019 09:47:27	H (%):	45.3		
Test Operator:	MPA	P (hPa):	1010		

Sub-range 1
Frequencies: 11.81 MHz - 15.31 MHz (Analyser mode) 8000 Points
Settings: RBW: 300Hz, VBW: 1kHz, Auto, Attenuation: Auto, Sweep count 1, Preamp: Off, LN Preamp: Off, Preselector: Off
Position:Circular
Distance: 10 m



Position	FREQUENCIES	RBW	VBW	DETECTOR
Circular	11.81MHz-15.31MHz	300Hz	1kHz	Peak max hold
Configuration:	N/A			

Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor.

EUT modification(s): N/A

Comments:



6.6. 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), ANSI C63.10:2013 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.

A digital temperature probe is set near the equipement in order to ensure a temperature stabilisation.

Measurement are made according to ANSI C63.10:2013 §6.8.1, only extremes tests values are shown in final results.

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

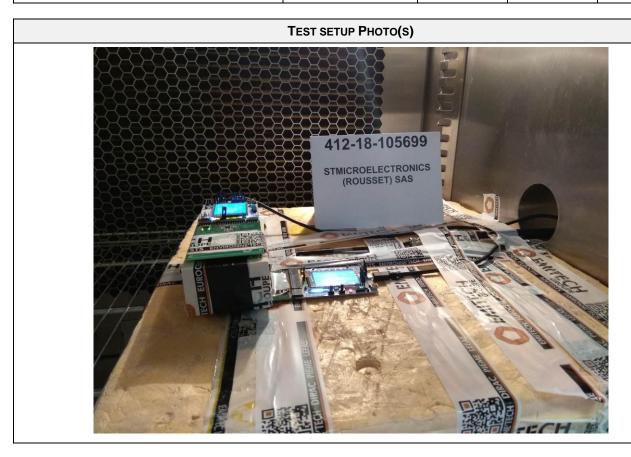
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST			
Ambient Temperature	15 to 35 °C	N/A			
Relative Humidity	20 to 75 %	N/A			
Atmospheric pressure	N/A	N/A			
Test method deviation: N/A					
Supplementary information: N/A					

TEST EQUIPMENT USED						
CATEGORY	BRAND	Түре	IDENTIFIER	CAL. DATE	CAL. DUE	
AC power source	KIKUSUI	PCR4000L	3074	12/06/2018	12/08/2019	
Antenna	Emitech	3.5 cm	4653			
Cable	MICRO-COAX	N-3m	10535	06/04/2017	06/06/2019	
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	26/04/2018	26/06/2019	
Digital thermometer	GHM Greisinger	GMH 3710	12968	11/02/2019	11/04/2020	
Multimeter	FLUKE	8808A	12446	24/04/2018	24/06/2019	
Spectrum analyzer	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020	
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021	
Thermohygrometer	Testo	608-H2	12268	27/11/2017	27/01/2020	
Thermometer contactless	GHM Greisinger	GMH 3710	12968	11/02/2019	11/04/2020	

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	5	13.560268	-	
Extremes tests conditions	-30	5	13.5602425	0.00179	
Extremes tests conditions	+55	5	13.5602025	0.00149	



000 End of test report **000**