



Test report issued under the responsibility of:
 EMITECH MONTPELLIER laboratory
 MRA US-EU Designation Number: FR0006
 Canadian CAB Identifier: FR0003

RADIO TEST REPORT

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

Company : **OBERTHUR CASH PROTECTION**
Address..... : **3 BIS RUE DOCTEUR QUIGNARD**
21000 DIJON
FRANCE

Test item description. : **SCM (Security Control Module) for IBNS (Intelligent Banknote Neutralisation System) / ATM device**
Trade Mark. : **OBERTHUR CASH PROTECTION**
Manufacturer..... : **OBERTHUR CASH PROTECTION**
Model/Type reference..... : **OCPICSDSCM / OCP_SCM**
FCC ID..... : **2AXRGOCPICSDSCM**
IC. : **26545-OCPICSDSCM**
Ratings..... : **100-240Vac/50-60Hz**
6-7.2 Vdc (Internal Backup battery)

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

Report Reference No. : **RR-EVE-22L225-2A**
Test procedure. : **FCC IC Certification**
Diffusion..... : **M. EZERZER Hugo**
Applicant's name. : **OBERTHUR CASH PROTECTION**
Date of issue..... : **November 24, 2022**
Total number of pages..... : **36**
Revision. : **0**
Compiled by..... : **Célien FOUGEROLLE**
Approved by (+ signature). : **Olivier HEYER (Laboratory Manager)**

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

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REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	November 24, 2022	/	Creation

1. GENERAL INFORMATION

This document submits the results of Radio tests performed on the equipment **SCM / G0288** (denominated hereafter E.U.T.: equipment under test) according to document(s) listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:					
Testing Location : EMITECH MONTPELLIER laboratory Address. : 145 rue de Massacan 34740 VENDARGUES FRANCE Test procedure. : FCC IC Certification Tested by : Célien FOUGEROLLE Test supervisor : N/A Date of receipt of test item : N/A Date (s) of performance of tests : Form June, the 28 th to the 29 th of 2022					
APPLICANT'S GENERAL INFORMATIONS:					
Company name : OBERTHUR CASH PROTECTION Company address. : 3 BIS RUE DOCTEUR QUIGNARD 21000 DIJON FRANCE Person(s) present during the tests. : M. EZERZER Hugo Responsible. : M. EZERZER Hugo					
GENERAL REMARKS:					
The information in <i>italics</i> is declared by the manufacturer and is under his responsibility The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report the decimal separator is point.					
POSSIBLE TEST CASE VERDICTS:					
Test case does not apply to the test object.: N/A Test case not performed..... : N/P Test object does meet the requirement..... : P (Pass) Test object does not meet the requirement. : F (Fail)					
DEFINITIONS AND ABBREVIATIONS:					
E.U.T.	Equipment Under Test	AE	Ancillary Equipment	Pk	Peak detector
RBW	Resolution BandWidth	VBW	Video BandWidth	QP	Quasi-peak detector
OATS	Open Area Test Site	FAR	Full Anechoic Room	Av	Average detector
VP	Vertical Polarization	HP	Horizontal Polarization	RMS	Root Mean Square
RF	Radio Frequency	N.T.R	Nothing To Report	N/C	Not Communicated

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

The following referenced documents are necessary for the application of the present test report.

KDB 996369 D04 Module Integration Guide v02

Modular transmitter integration guide. Guidance for host product manufacturers.

FCC 47 CFR PART 15 : May 2022

Code of federal regulations. Title 47- Telecommunication Chapter 1- Federal Communication Commission. Part 15- Radio frequency devices Subpart B- Unintentional Radiators. Limits and methods of measurement of radio disturbance.

Characteristic of information technology equipment.

FCC part 15.249

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

RSS-210, Issue 10, April 2020

Licence-Exempt Radio Apparatus: Category I Equipment

RSS -Gen, Issue 5, April 2018 / AMD1: 2019 / AMD2: 2021

General Requirements for Compliance of Radio Apparatus

ANSI C 63.10:2013

American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

KDB 447498 D01 General RF Exposure Guidance V06

RF exposure procedures and equipment authorization. Policies for mobile and portable devices

Although the product standard uses obsolete technical standards, the latest versions of standards achievable by the laboratory will be used for testing.

INFORMATIVE REFERENCES:

The following referenced documents are not necessary for the application of the present test report but they assist the user with regard to a particular subject area.

3. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description. : SCM (Security Control Module) for IBNS (Intelligent Banknote Neutralisation System) / ATM device

Model/Type reference..... : OCPICSDSCM / OCP_SCM

Trade Mark. : OBERTHUR CASH PROTECTION

Serial number (S/N)..... : S22249

Part number (P/N). : N/A

Software version..... : N/A

Firmware version. : L257 7.00

Type of sample..... : Standard equipment

Function(s)..... : Security control module for IBNS (Intelligent Banknote Neutralisation System: ATM protection range and safe integrity survey, communication with ICSD (In-Cassette Staining Device)

Manufacturer name. : OBERTHUR CASH PROTECTION

Address. : 3 BIS RUE DOCTEUR QUIGNARD
21000 DIJON
FRANCE

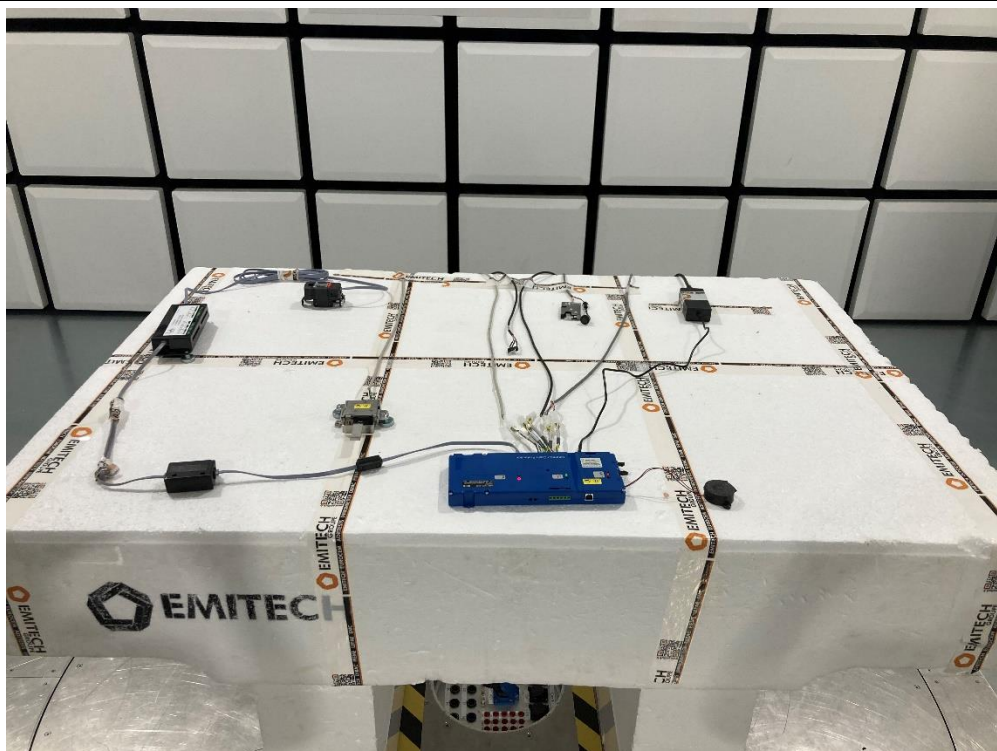
General product information:

N/A

3.2. EUT Marking plate



3.3.EUT General view



3.4.EUT AC/DC Adapter



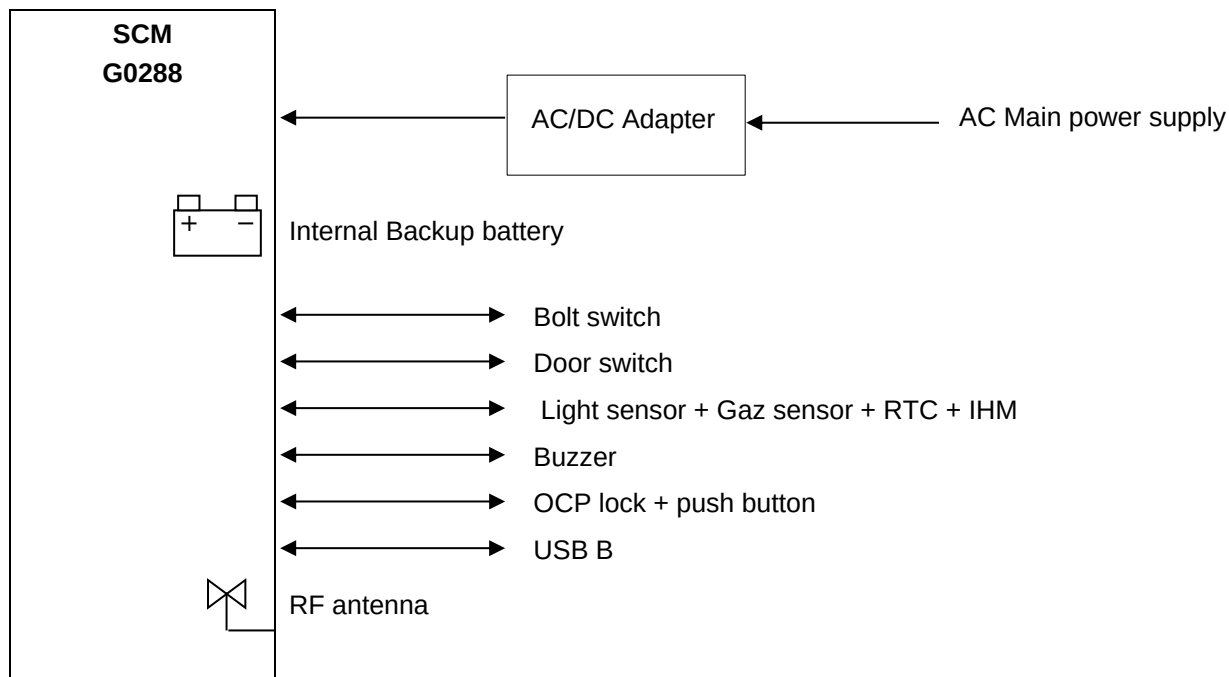
3.5.EUT Mechanical and Electrical Design

Power supply.	: 120Vac/60Hz 7.2Vdc (<i>Internal Backup battery</i>)
Power supply range.....	: 100-240Vac/50-60Hz 6Vdc-7.2Vdc (<i>Internal Backup battery</i>)
Power type.....	: <i>Single phase with earth & Internal Backup battery</i>
Power (W).....	: <12W
Nominal current (A).	: <1A
Dimensions (L x W x H) (m).	: 0,25 x 0,1 x 0,02
Weight (kg).	: 0.5
Temperature range (°C).	: 0 to +40
Ground bounding strap.....	: No

Comments:

N/A

3.6. EUT Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	N/A
1	AC Main power supply	AC	N/A	2P+T	120Vac/60Hz
2	Internal Backup battery	DC	N/A	N/A	7.2Vdc
3	Bolt switch	I/O	<3m	3P	N/A
4	Door switch	I/O	<3m	3P	N/A
5	Sensor (Light + Gaz + RTC + IHM)	I/O	<3m	RJ12	N/A
6	Buzzer	I/O	<3m	2P	N/A
7	OCP lock + push button	I/O	<3m	5P	N/A
8	USB B	I/O	N/A	N/P	N/A
9	RF antenna	RF	N/A	N/A	Integrated

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.....: Direct current port

RF.....: Radio frequency port

3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	Transceiver
Technology	SRD
Environmental profile.....	Data transmissions
Temperature range.....	0 to +40°C
Antenna type	Internal
Antenna Gain.....	Not communicated
Comments:	
<i>EUT includes an RF module already certified, see appropriate tests report for full testing results</i>	
FCC ID : 2AXRGOCPICSDSCM	
IC : 26545-OCPICSDSCM	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	902 - 928 MHz
RF Power.....	Not communicated
Number of channels / Separation.....	2 channels
Modulation type	GFSK
Duty cycle	0.1%
Tested frequency.....	Low channel : 915.03MHz High channel : 915.6MHz

4. OPINION(S) AND INTERPRETATION(S)

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

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Duty Cycle of Test Signal	-	-	Used to compute duty cycle correction factor for average spurious measurement.
AC power-line conducted emissions			FCC part 15.207 RSS-Gen
- 120Vac/60Hz power supply / Armed mode	15.207	PASS	
- 120Vac/60Hz power supply / Disable mode	15.207	PASS	
Radiated spurious emissions			FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210
- Tx mode - All channels - 0°	15.209	PASS	
- Tx mode – All channels – 45°	15.209	PASS	
- Tx mode – All channels – 90°	15.209	PASS	
- Spurious -Tx mode - Low channel - For Freq <1GHz	15.209	PASS	
- Spurious - Tx mode - High channel - For Freq <1GHz	15.209	PASS	
- Spurious - Tx mode - Low channel - For Freq >1GHz	15.209	PASS	
- Spurious - Tx mode - High channel - For Freq >1GHz	15.209	PASS	
Equivalent isotropic radiated power			FCC part 15 Radio part 15.249 RSS-210
- RF output power / Tx mode - Low channel	93.98	PASS	
- RF output power / Tx mode - High channel	dBμV/m	PASS	

Sample subject to the test complies for tests done with the requirements of the reference document(s) listed in §2 of this test report and, where applicable, with deviation(s) specified in this document.

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the results with the exception of emission tests based on CISPR standards.

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

6. MEASUREMENT UNCERTAINTY

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

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

7. RF EXPOSURE

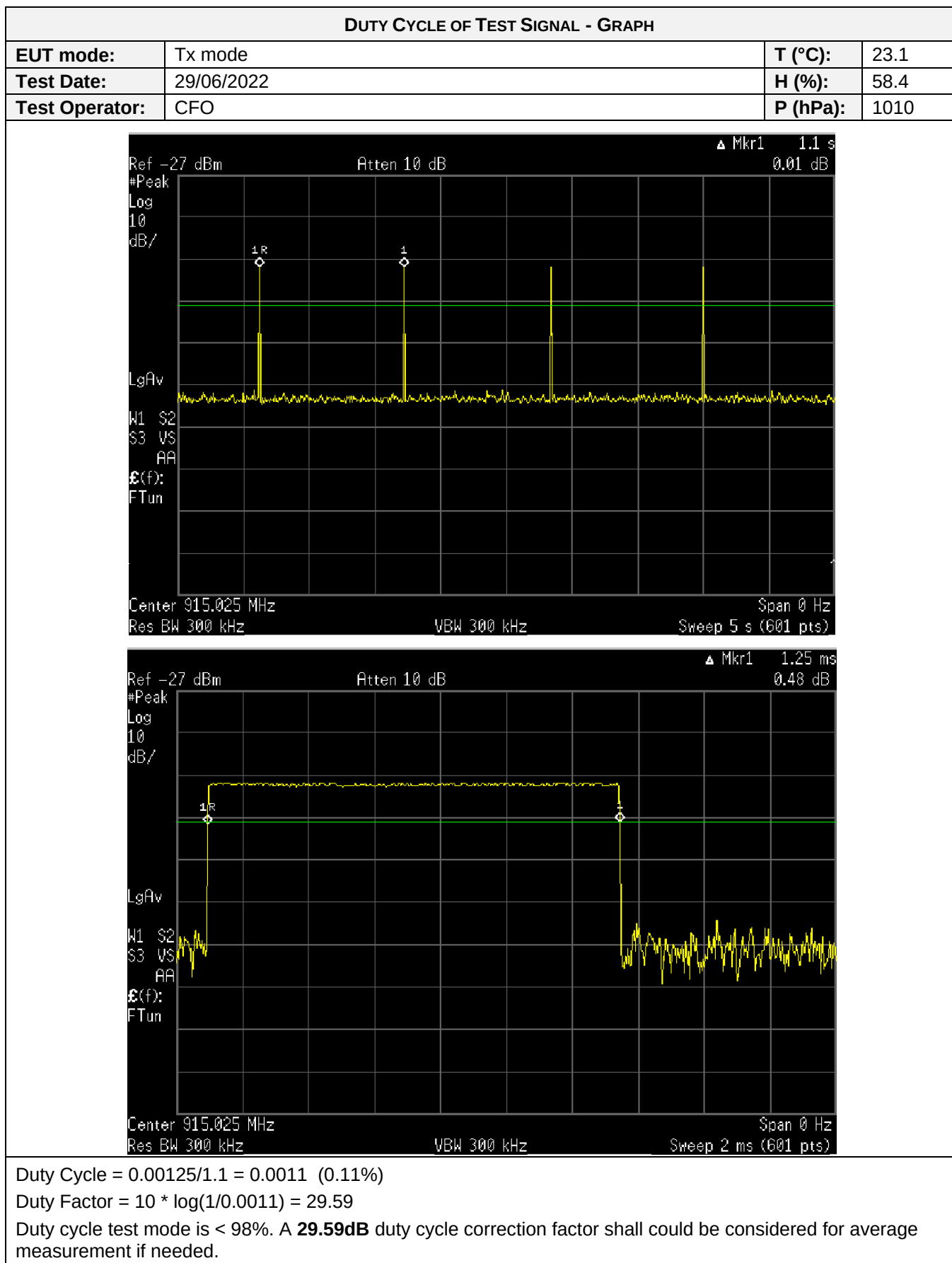
RF EXPOSURE – TABULATED RESULT		
FREQUENCY (MHz)	MAXIMUM EIRP (dBm)	MAXIMUM EIRP (mW)
915.69	-2.43	0.572
In accordance with KDB 447498 D01 General RF Exposure Guidance v06: $PSD = \frac{EIRP_{mW}}{4 \times \pi \times d^2}$ <i>d : distance of use in centimeter</i> $PSD = \frac{0.572}{4 \times \pi \times 20cm^2}$		
RESULT		LIMIT
0.00011 mW/cm ²		0.61 mW/cm ²
In accordance with RSS-102, Issue 5, Section 2.5.2., as EIRP is lower than 1.38W at 915.08 MHz, routine evaluation exemption of RF exposure for ISED can be considered for a distance > 20cm.		

8. TEST CONDITIONS AND RESULTS

8.1. Duty Cycle of Test Signal

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

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



8.2. AC power-line conducted emissions

Reference standard:	FCC part 15 Radio part 15.207 RSS-Gen
Test method:	ANSI C63.10 : 2013
General test setup: EUT is set on an insulating support at 40cm from the ground reference plane. All power was connected to the system through Artificial Mains Network (AMN). The AMN is placed at 80cm from the boundary of the EUT and bonded to a ground reference plane. All tested telecommunications lines (if applicable) were connected to an Asymmetric Artificial Network (AAN) and conducted voltage measurements on telecommunications lines were made at the output of the AAN. Where an AAN was not appropriate or available, measurements were made using a Capacitive Voltage Probe and/or a Current probe. Additional ground terminals (if any) are connected to earth terminal of the AMN.	

TESTED CABLE	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
120Vac/60Hz power supply / Armed mode	150kHz-30MHz	15.207	EMI4780	PASS
120Vac/60Hz power supply / Disable mode	150kHz-30MHz	15.207	EMI4781	PASS

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

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	28/10/2021	28/12/2023
Cable	EMITECH	Current absorber sheath	18366	26/01/2022	26/03/2024
Cable	C&C	N-3m	14334	18/03/2021	18/05/2023
Ground plane	EMITECH	Test area	11569		
LISN	Rohde & Schwarz	ENV216	17925	24/09/2021	24/11/2023
PE choke	EMITECH	CISPR 16-2-1 : 2008	10071		
Multimeter	FLUKE	8808A	12446	24/11/2021	24/01/2023
Receiver	Rohde & Schwarz	ESI	9704	24/08/2021	24/10/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

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TEST SETUP PHOTO(S) - 120VAC/60Hz POWER SUPPLY / ALL MODE



CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS

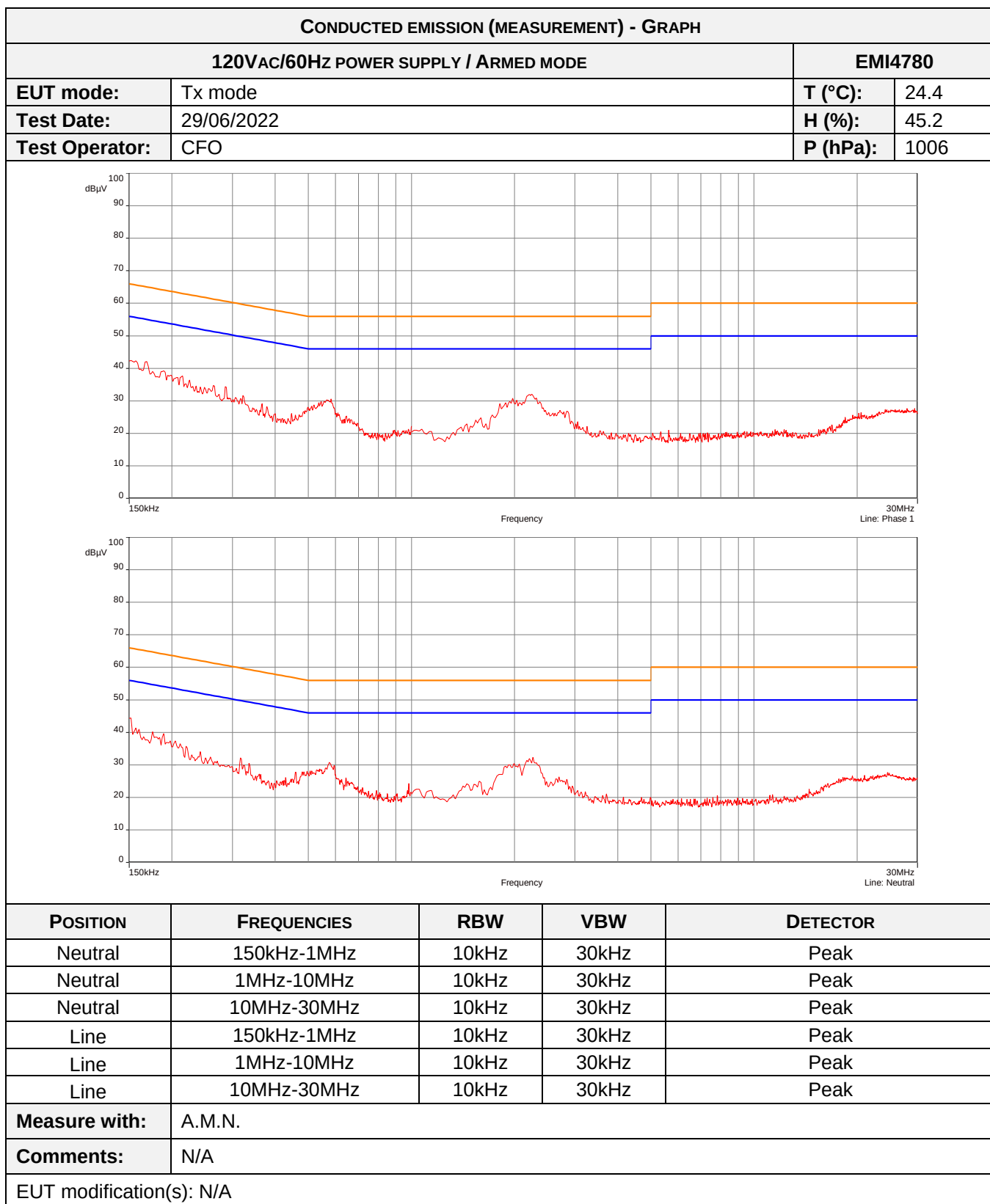
120VAC/60Hz POWER SUPPLY / ARMED MODE					EMI4780
POSITION	FREQUENCIES (MHz)	DETECTOR	LEVEL (dBμV)	LIMIT AVG (dBμV)	MARGIN (dB)
Neutral	0.152	Peak	44.41	55.91	-11.50
Neutral	2.263	Peak	32.27	46.00	-13.73
Neutral	24.549	Peak	27.69	50.00	-22.31
Line	0.152	Peak	42.41	55.91	-13.50
Line	2.245	Peak	32.03	46.00	-13.97
Line	29.438	Peak	27.67	50.00	-22.33

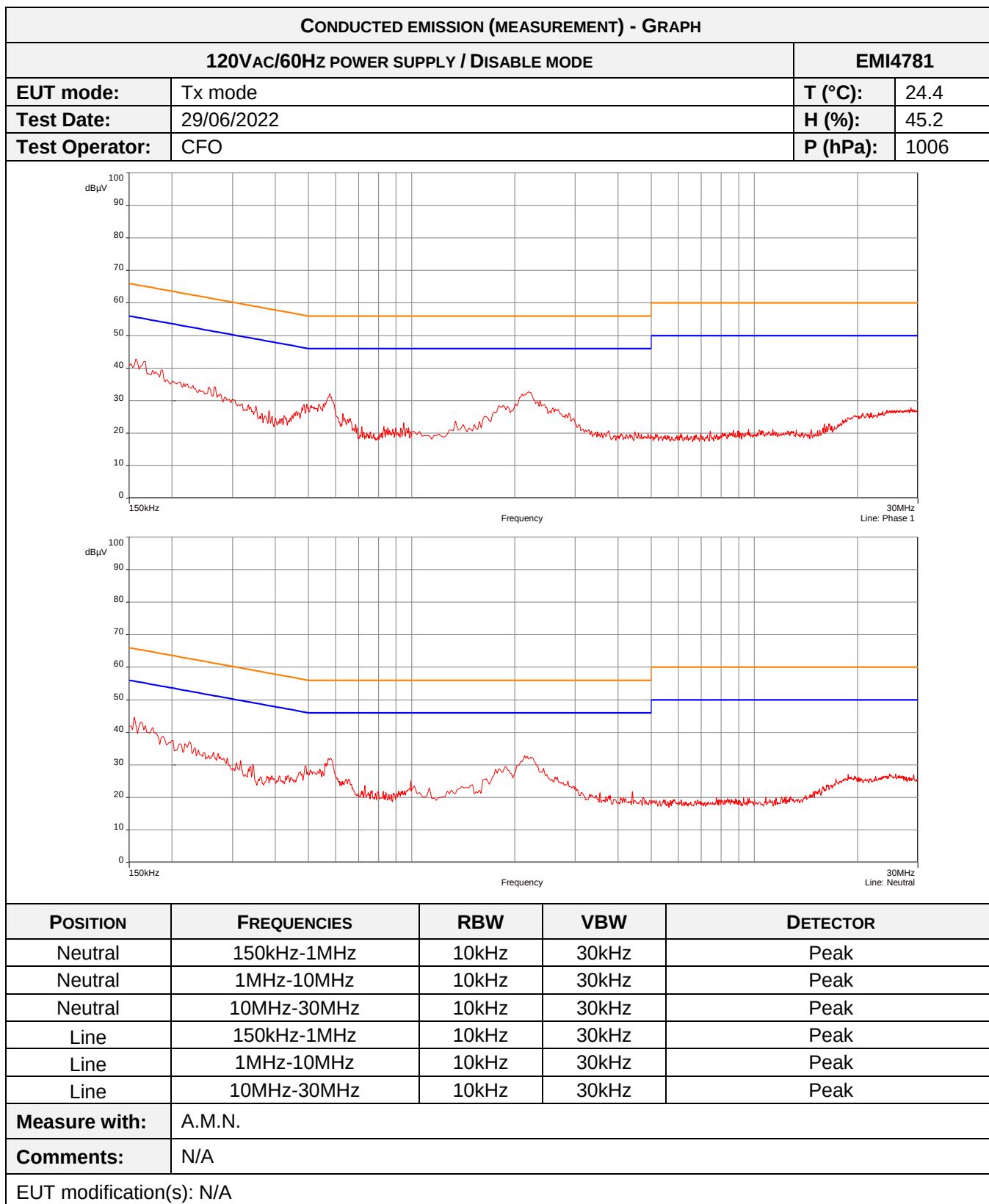
Supplementary information: Margin between peak measurements and average/quasi-peak limit(s) is > 6dB, so no average/quasi-peak measurements were performed.

CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS

120VAC/60Hz POWER SUPPLY / DISABLE MODE					EMI4781
POSITION	FREQUENCIES (MHz)	DETECTOR	LEVEL (dBμV)	LIMIT AVG (dBμV)	MARGIN (dB)
Neutral	0.155	Peak	44.59	55.72	-11.13
Neutral	2.136	Peak	32.75	46.00	-13.25
Neutral	24.789	Peak	27.31	50.00	-22.69
Line	0.157	Peak	42.82	55.63	-12.81
Line	2.191	Peak	32.74	46.00	-13.26
Line	28.638	Peak	27.81	50.00	-22.19

Supplementary information: Margin between peak measurements and average/quasi-peak limit(s) is > 6dB, so no average/quasi-peak measurements were performed.





8.3. Radiated spurious emissions

Reference standard:	FCC part 15 Radio part 15.209 & 15.249 RSS-Gen & RSS-210
Test method:	ANSI C63.10: 2013
General test setup: For $f < 30\text{MHz}$, 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 $f > 30\text{MHz}$, EUT is set on an insulating support at 80cm above the ground reference plane (150cm for $f > 1\text{GHz}$). 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 equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx mode - All channels - 0°	9kHz-30MHz	15.209	EMI4739	PASS
Tx mode - All channels - 45°	9kHz-30MHz	15.209	EMI4740	PASS
Tx mode - All channels - 90°	9kHz-30MHz	15.209	EMI4741	PASS
Spurious - Tx mode - Low channel - For Freq $< 1\text{GHz}$	30MHz-1GHz	15.209	EMI4737	PASS
Spurious - Tx mode - High channel - For Freq $< 1\text{GHz}$	30MHz-1GHz	15.209	EMI4738	PASS
Spurious - Tx mode - Low channel - For Freq $> 1\text{GHz}$	1GHz-10GHz	15.249	EMI4777	PASS
Spurious - Tx mode - High channel - For Freq $> 1\text{GHz}$	1GHz-10GHz	15.249	EMI4778	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: From 9 kHz to 30MHz: limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor. From 30MHz to 1GHz Quasi peak limit provided is the limit given in §15.209. Above 1GHz peak and average limit provided is the limit given in §15.249.		

TEST EQUIPMENT USED – FOR FREQ <30MHz					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	28/10/2021	28/12/2023
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Multimeter	FLUKE	8808A	12446	24/11/2021	24/01/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

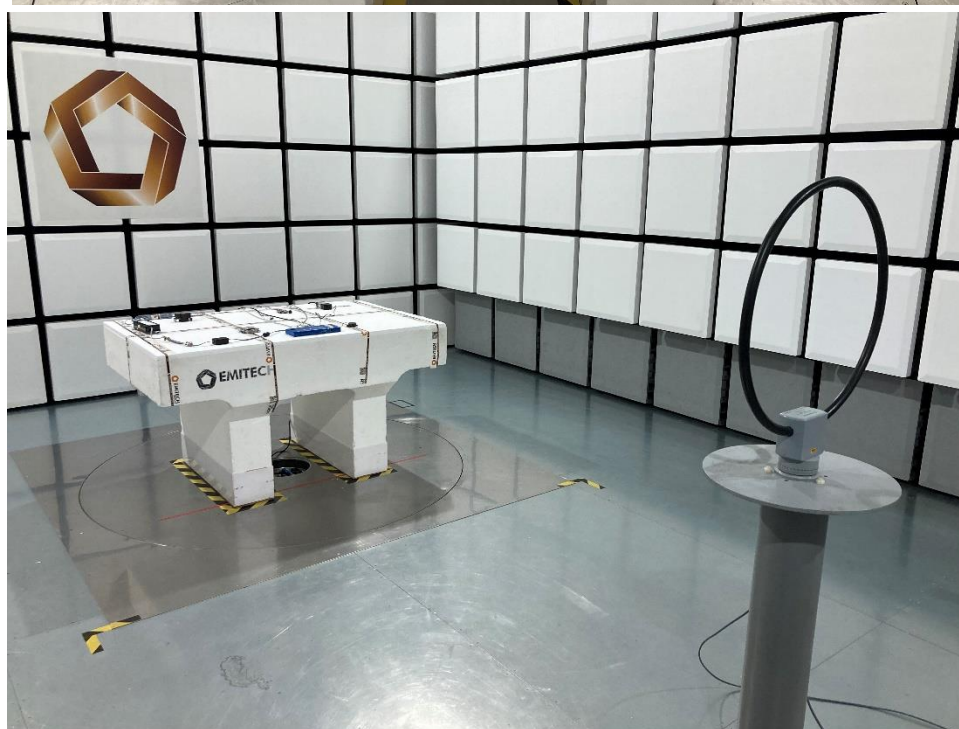
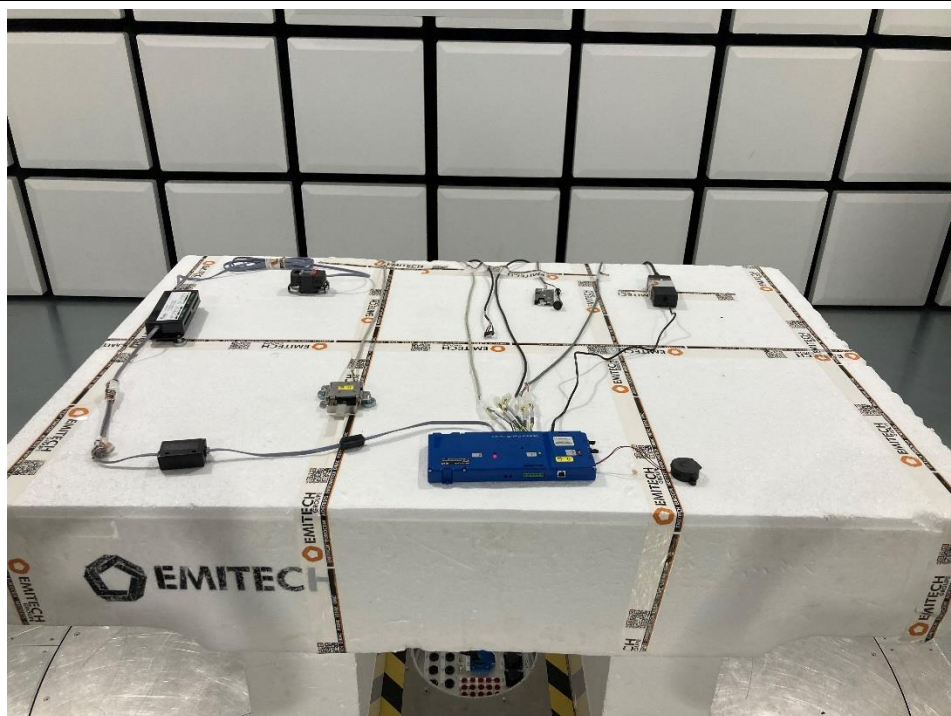
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TEST EQUIPMENT USED – FOR FREQ FROM 30MHz TO 10GHz					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	28/10/2021	28/12/2023
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Antenna	AARONIA	Powerlog 70180	15306	23/07/2019	23/09/2022
Cable	Techniwave	N-1.5m	18341	25/01/2022	25/03/2024
Cable	Techniwave	N-1.5m	18342	25/01/2022	25/03/2024
Cable	Techniwave	N-1m	18343	25/01/2022	25/03/2024
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Filter	Micro-Tronics	HPM18865	12843	24/08/2021	24/10/2024
Multimeter	FLUKE	8808A	12446	24/11/2021	24/01/2023
Preamplifier	IMPULSE	CA118-546ACN	9169	26/04/2022	26/06/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Receiver	Rohde & Schwarz	FSW43	14830	29/07/2020	29/09/2022
Shielded enclosure	COMTEST	FAR 3m	18014	10/12/2021	10/02/2025
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

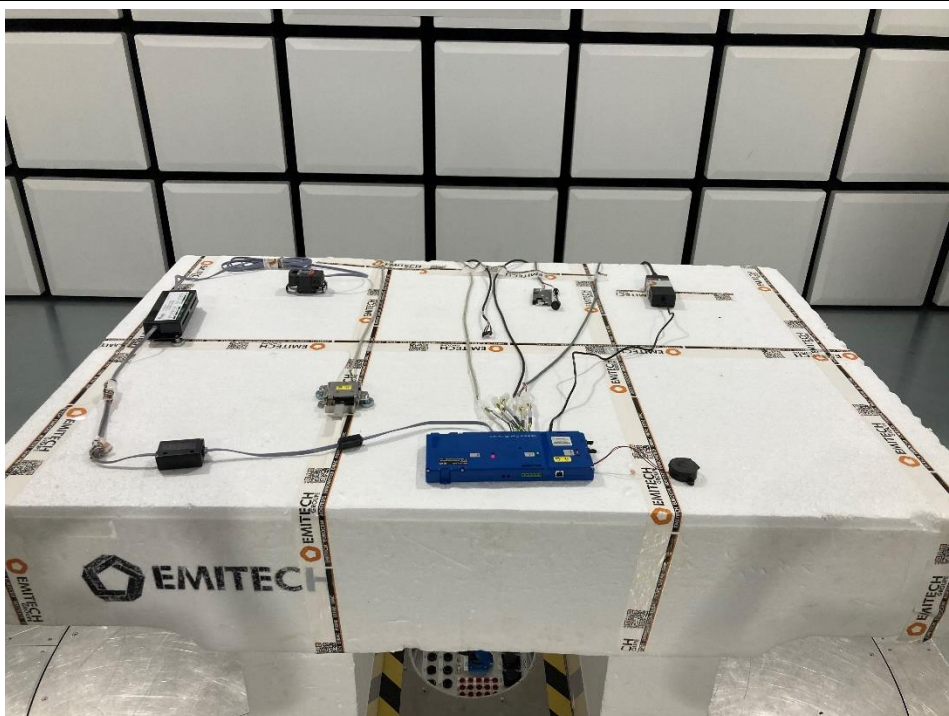
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

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



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



TEST SETUP PHOTO(S) - Tx MODE – FOR FREQ >1GHz



RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 0°					EMI4739
FREQUENCY (MHz)	LEVEL (dBμA/m)	PEAK LEVEL (dBμA/m)	QPEAK LIMIT (dBμA/m)	AVG LIMIT (dBμA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 45°					EMI4740
FREQUENCY (MHz)	LEVEL (dBμA/m)	PEAK LEVEL (dBμA/m)	QPEAK LIMIT (dBμA/m)	AVG LIMIT (dBμA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

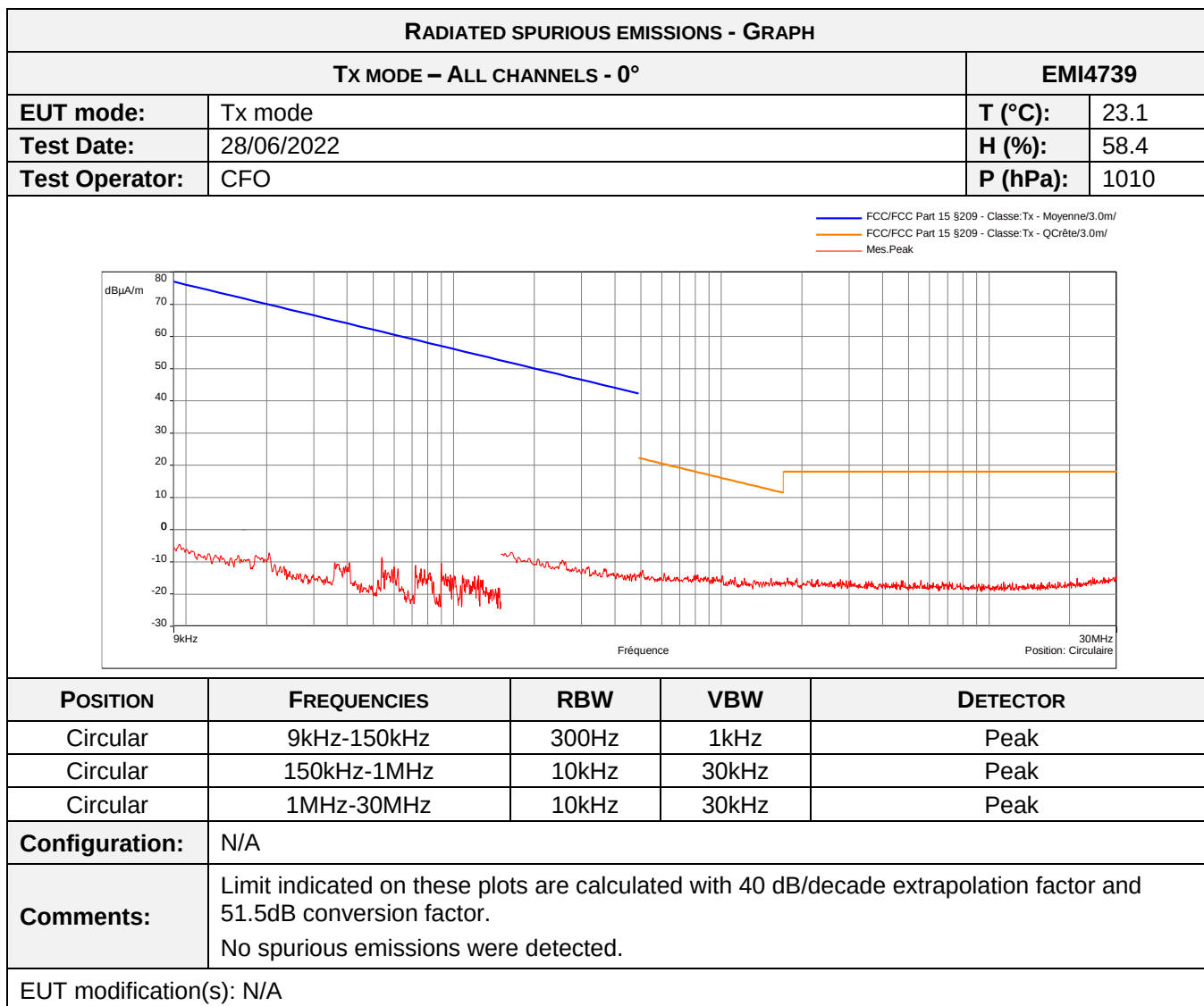
RADIATED EMISSION LIMITS – TABULATED RESULTS					
TX MODE - ALL CHANNELS - 90°					EMI4741
FREQUENCY (MHz)	LEVEL (dBμA/m)	PEAK LEVEL (dBμA/m)	QPEAK LIMIT (dBμA/m)	AVG LIMIT (dBμA/m)	MARGING (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.					

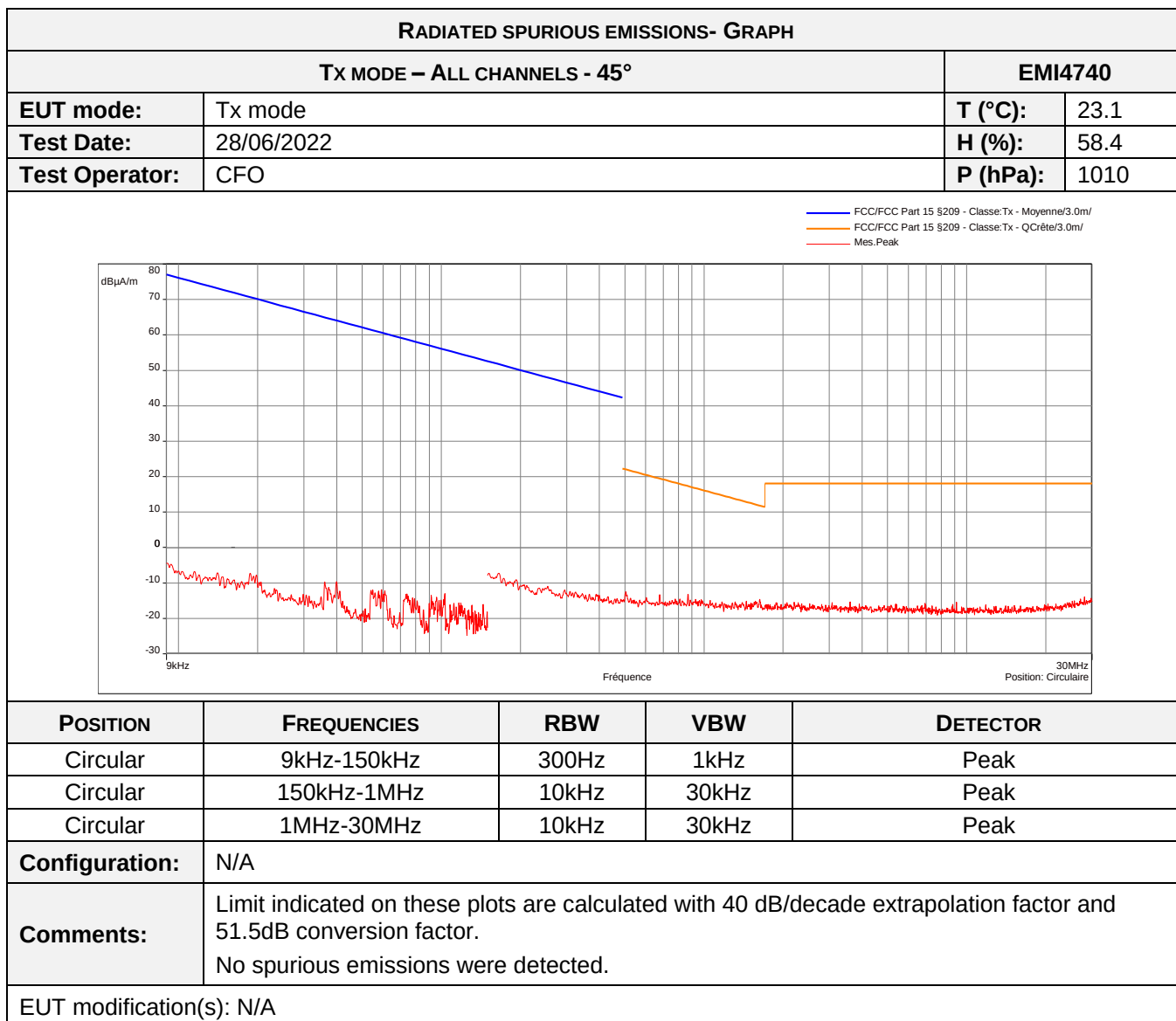
RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS -TX MODE - LOW CHANNEL - FOR FREQ <1GHz					EMI4737
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBμV/m)	QPEAK LEVEL (dBμV/m)	QPEAK LIMIT (dBμV/m)	MARGING (dB)
30.13	Vertical	27.88	N/P	40	-12.12
30.13	Horizontal	27.99	N/P	40	-12.01
746.04	Horizontal	35.15	N/P	46	-10.85
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported					
When margin between peak measurements and quasi-peak limit(s) is > 6dB, no quasi-peak measurements is performed.					

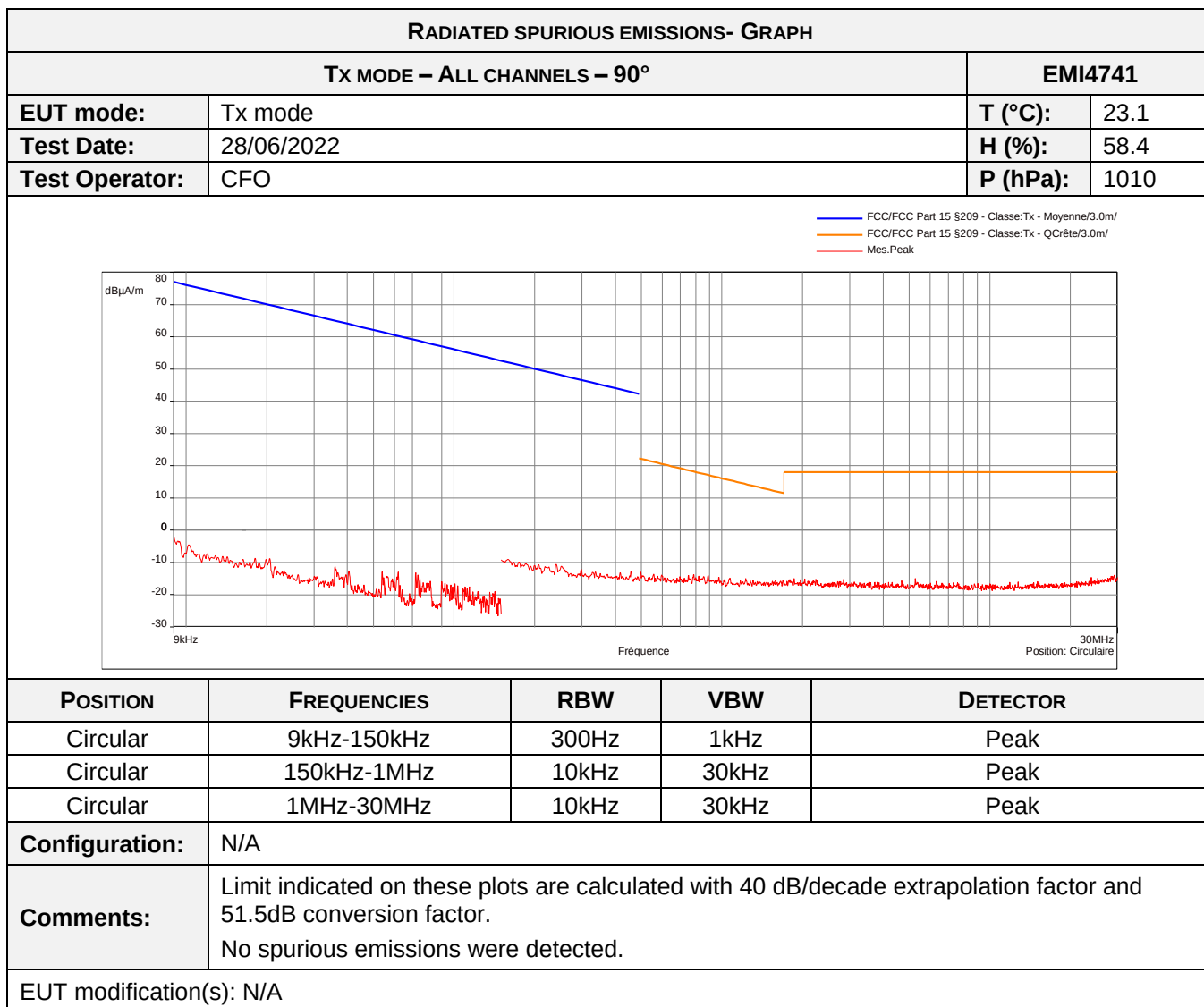
RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS -TX MODE - HIGH CHANNEL - FOR FREQ <1GHz					EMI4738
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBμV/m)	QPEAK LEVEL (dBμV/m)	QPEAK LIMIT (dBμV/m)	MARGING (dB)
31.55	Vertical	33.44	26.2	40	-13.80
36.98	Vertical	37.62	30.88	40	-9.12
38.01	Vertical	34.93	29.43	40	-10.57
746.62	Horizontal	35.13	N/P	46	-10.87
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported					
When margin between peak measurements and quasi-peak limit(s) is > 6dB, no quasi-peak measurements is performed.					

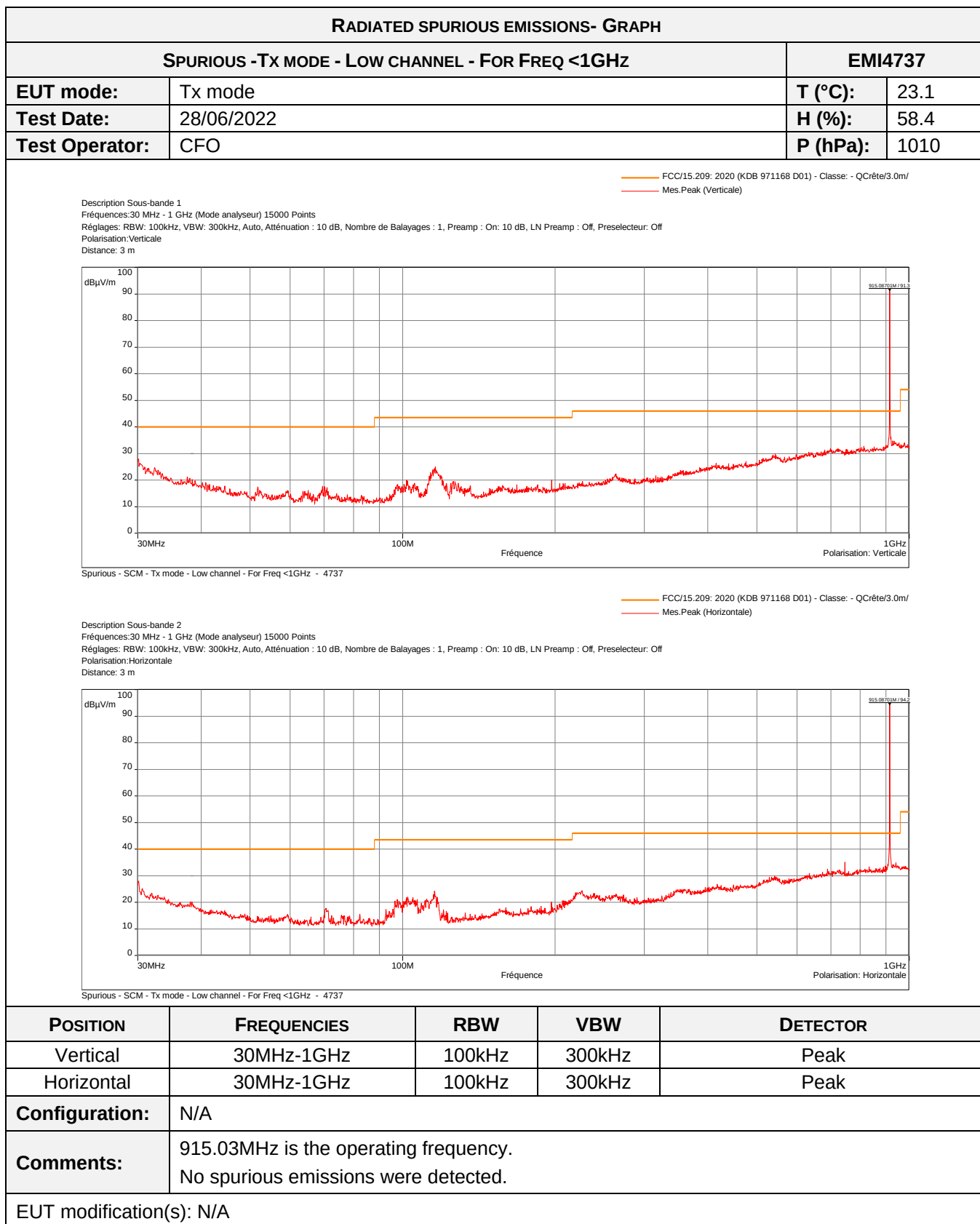
RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS - TX MODE - LOW CHANNEL - FOR FREQ >1GHz				EMI4777	
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBµV/m)	AVG LEVEL COMPUTED WITH DUTY FACTOR (dBµV/m)	AVG LIMIT (dBµV/m)	MARGING (dB)
1829,25	Vertical	62.31	32.72	54	-21.28
1829,85	Horizontal	67.69	38.10	54	-15.9
Supplementary information: N/A					

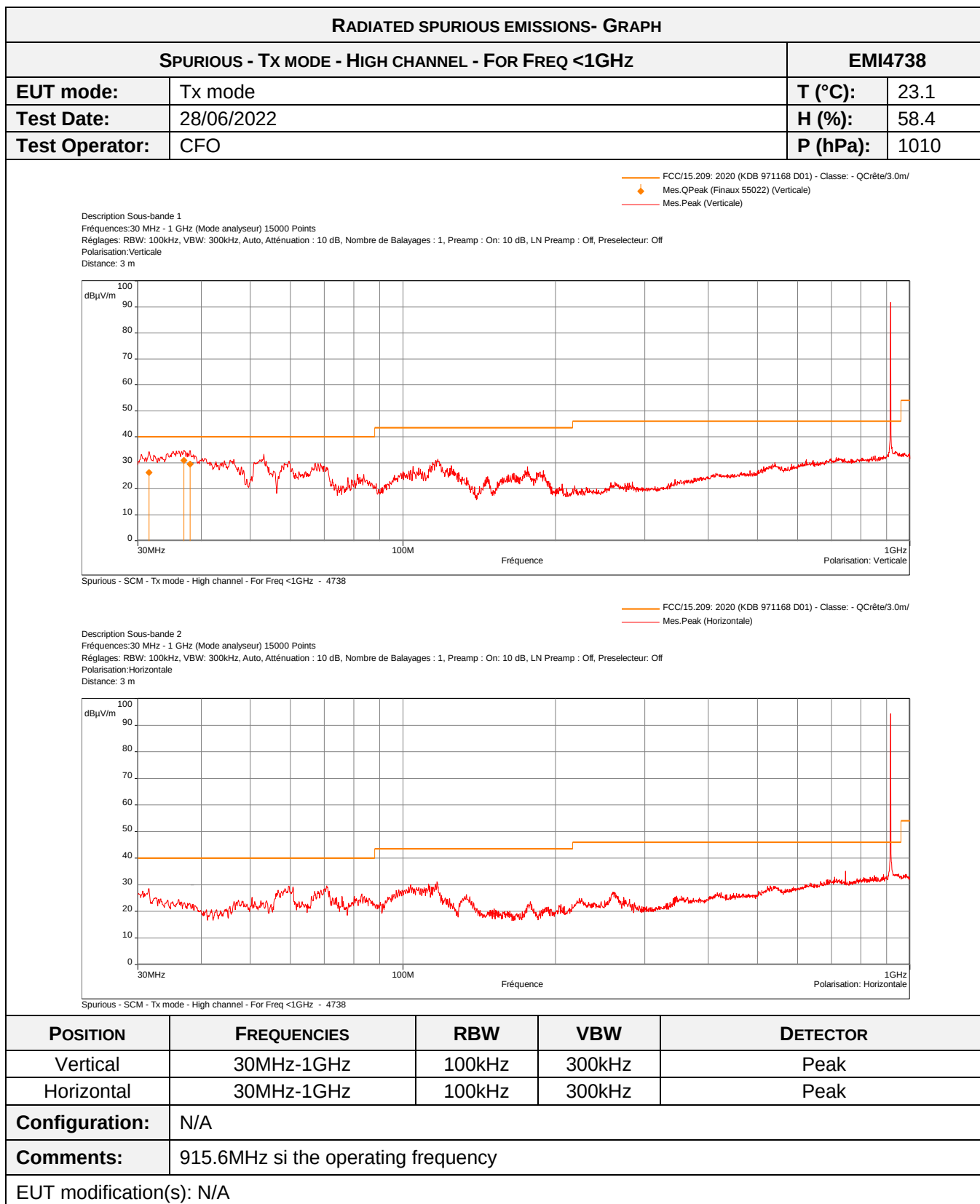
RADIATED EMISSION LIMITS – TABULATED RESULTS					
SPURIOUS - TX MODE - HIGH CHANNEL - FOR FREQ >1GHz				EMI4778	
FREQUENCY (MHz)	POLARIZATION	PEAK LEVEL (dBµV/m)	AVG LEVEL COMPUTED WITH DUTY FACTOR (dBµV/m)	AVG LIMIT (dBµV/m)	MARGING (dB)
1831.05	Horizontal	67.68	38.09	54	-15.91
1831.06	Vertical	62.34	32.75	54	-21.25
Supplementary information: N/A					

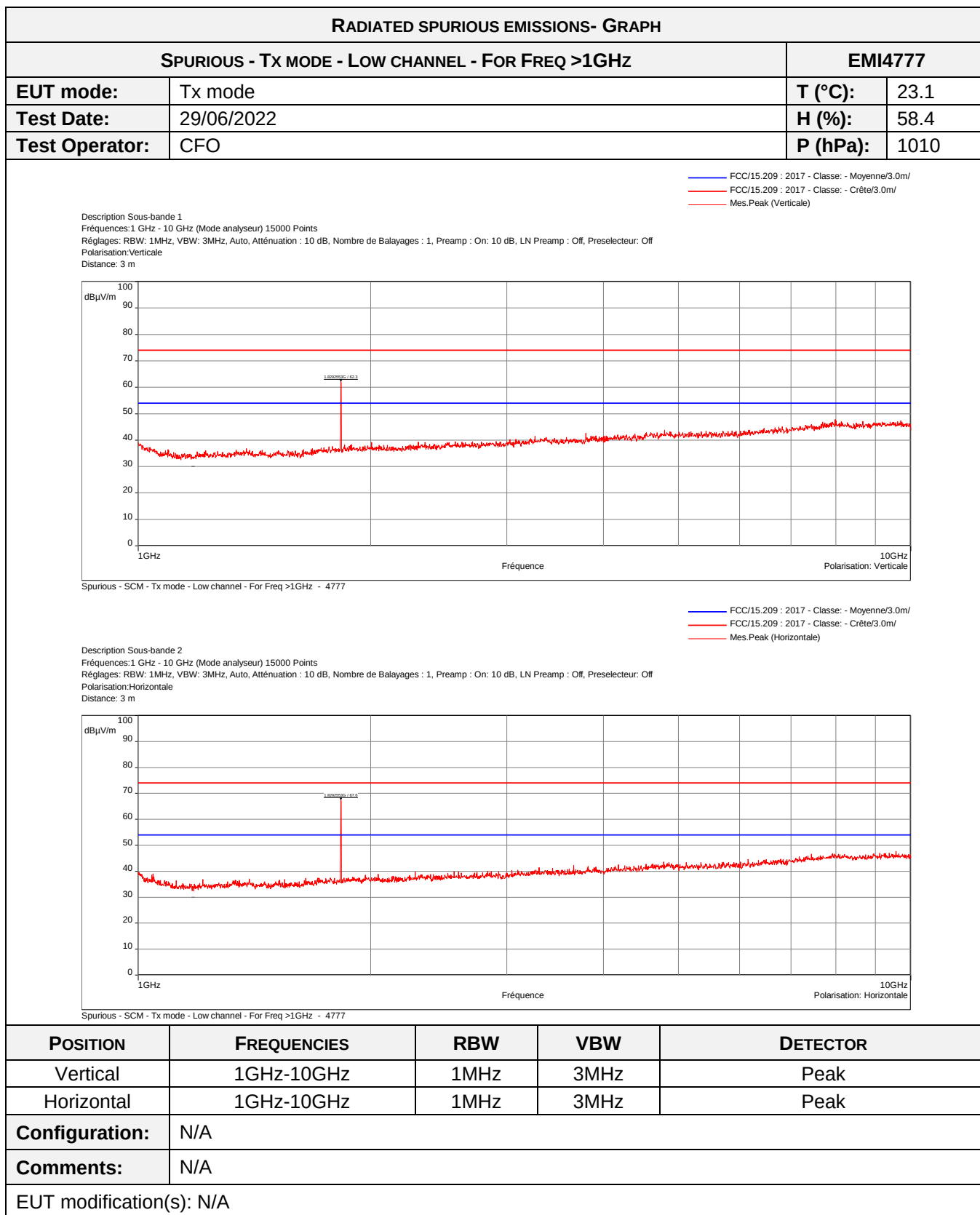


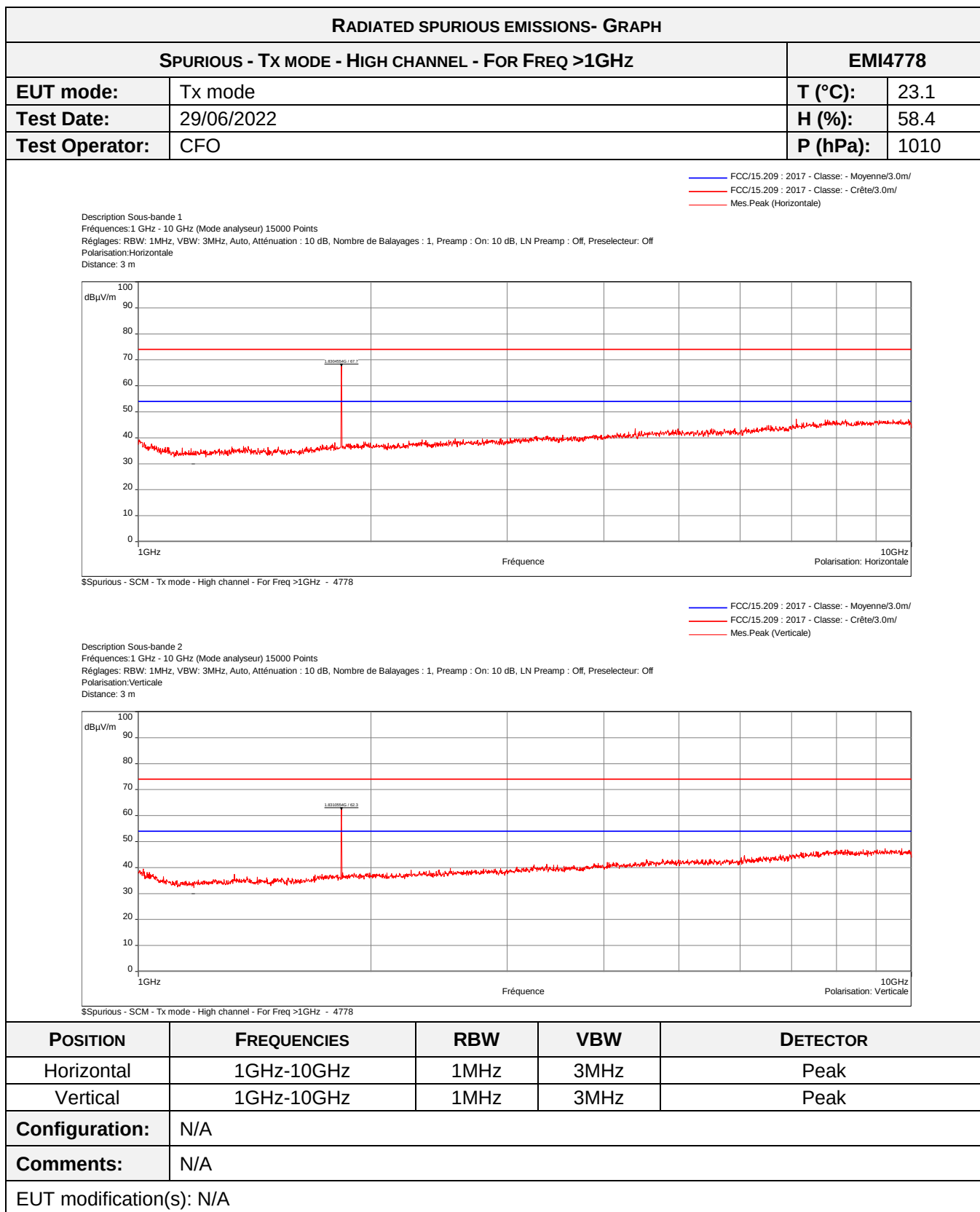












8.4. Equivalent isotropic radiated power

Reference standard:	FCC part 15 Radio part 15.249 RSS-210
Test method:	ANSI C63.10: 2013
Test description: EUT is set on an insulating support at 80cm above the ground reference plane. Measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights (1m to 4m) in horizontal and vertical polarities. For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
RF output power / Tx mode - Low channel	914.53MHz- 915.53MHz	93.98 dBμV/m	EMI4752	PASS
RF output power / Tx mode - High channel	915.1MHz- 916.1MHz	93.98 dBμV/m	EMI4751	PASS

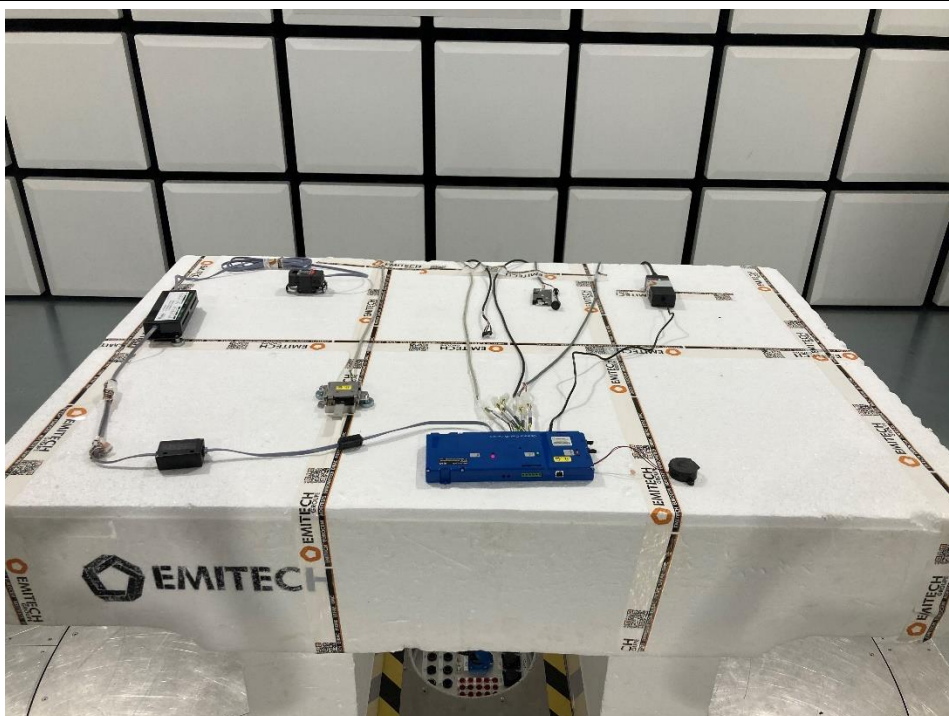
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: N/A		

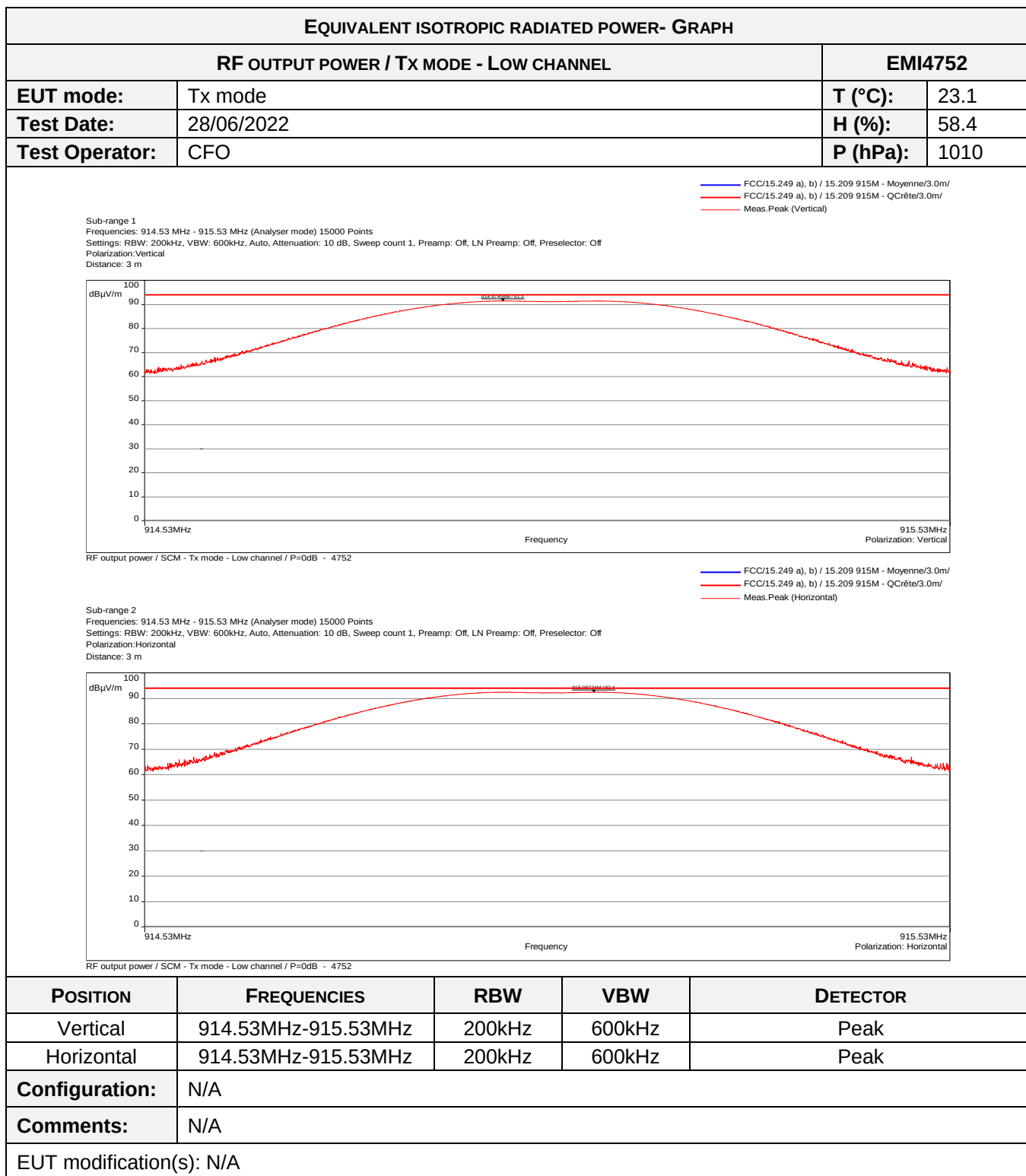
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	28/10/2021	28/12/2023
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Cable	MegaPhase	TM18-N1N1-118	12842	02/12/2020	02/02/2023
Multimeter	FLUKE	8808A	12446	24/11/2021	24/01/2023
Receiver	Rohde & Schwarz	ESW26	17791	23/04/2021	23/06/2023
Shielded enclosure	COMTEST	SAC 3m	14494	02/10/2019	02/12/2022
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7561	16/05/2022	16/07/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

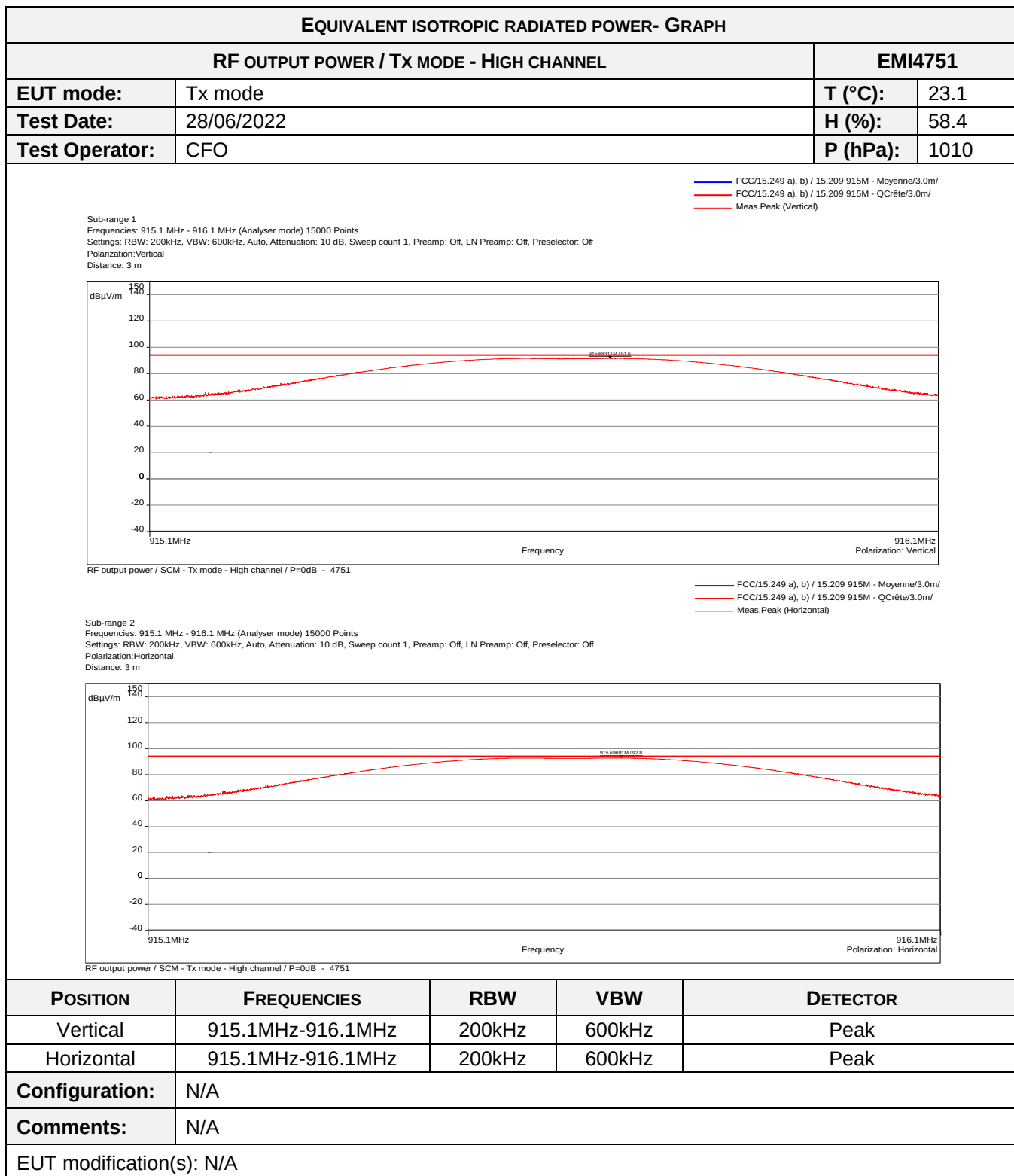
Blank cells = Permanent validity

TEST SETUP PHOTO(S) –EQUIVALENT ISTROPIC RADIATED POWER





EQUIVALENT ISOTROPIC RADIATED POWER- TABULATED RESULTS				
RF OUTPUT POWER / Tx mode - LOW CHANNEL				EMI4752
Frequency (MHz)	Polarization	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
915.03	Vertical	91.5	93.98	-2.48
915.03	Horizontal	92.4	93.98	-1.58



EQUIVALENT ISOTROPIC RADIATED POWER- TABULATED RESULTS				
RF OUTPUT POWER / Tx MODE - HIGH CHANNEL				EMI4751
Frequency (MHz)	Polarization	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
915.6	Vertical	91.6	93.98	-2.38
915.6	Horizontal	92.8	93.98	-1.18

End of test report