



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

RADIO TEST REPORT

FCC Part 15 :2018
RSS-Gen - Issue 5, April 2018

Company: **XPLOER**
Address.....: 40 chemin du Moulin
31320 MERVILLA
FRANCE

Test item description: **Wireless metal detection sensor**
Trade Mark: FMF
Manufacturer: XPLOER
Model/Type reference.....: XPMF / FMF3428
FCC ID.....: XFJMF
IC: 8392A-MF
Ratings.....: 3.45Vdc to 4.2Vdc

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

Report Reference No.: **RR410-20-101751-20A**
Test procedure: FCC IC Certification
Diffusion.....: Mr LOUBET
Applicant's name: XPLOER
Date of issue.....: October 21, 2021
Total number of pages.....: 68
Revision.....: 0
Modified page(s).....: Creation
Compiled by.....: Olivier AELBRECHT
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	October 21, 2021	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment **Disques Wireless metal detection sensor XPMF / FMF3428** (denominated hereafter E.U.T.: equipment under test) according to document(s) listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:					
Testing Location : EMITECH MONTPELLIER laboratory Address : 145 rue de Massacan 34740 VENDARGUES FRANCE Test procedure. : FCC IC Certification Tested by : Olivier AELBRECHT Test supervisor : None Date of receipt of test item : N/A Date (s) of performance of tests : From September the 2 nd of 2020 to October the 19 th of 2020					
APPLICANT'S GENERAL INFORMATIONS:					
Company name : XPLOER Company address. : 40 chemin du Moulin 31320 MERVILLA FRANCE Person(s) present during the tests. : No representative for company attended the tests. Responsible. : Mr LOUBET					
GENERAL REMARKS:					
The information in italics is declared by the manufacturer and is under his responsibility The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report the decimal separator is point.					
POSSIBLE TEST CASE VERDICTS:					
Test case does not apply to the test object.. : N/A Test case not performed..... : N/P Test object does meet the requirement..... : P (Pass) Test object does not meet the requirement.. : F (Fail)					
DEFINITIONS AND ABBREVIATIONS:					
E.U.T.	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	NTR	Nothing to report	N/C	Not communicated

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

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

FCC Part 15 :2018

Code of Federal Regulations Title 47 – Telecommunications Chapter 1 – Federal Communications Commission
Part 15 – Radio frequency devices Subpart C – Intentional Radiators

RSS-Gen - Issue 5, April 2018

General requirements and Information for the Certification of radio Apparatus

ANSI C63.10 : 2013

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

ANSI C 63.4:2014

American National Standard for Methods of measurement of Radio-Noise from low-voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

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

INFORMATIVE REFERENCES:

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

3. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description. : Wireless metal detection sensor
 Model/Type reference..... : XPMF / FMF3428
 Trade Mark. : FMF
 FCC ID..... : XFJMF
 IC. : 8392A-MF
 Serial number (S/N)..... : 50908A
 Part number (P/N). : Not communicated
 Software version..... : *Not communicated*
 Firmware version. : *Not communicated*
 Type of sample. : Prototype
 Function(s)..... : Wireless object detection sensor
 Manufacturer name. : XPLOER
 Address..... : 8 rue du Développement - ZI de Vic
 31320 CASTANET-TOLOSAN

General product information:

N/A

3.2. EUT Marking plate



3.3. EUT General view



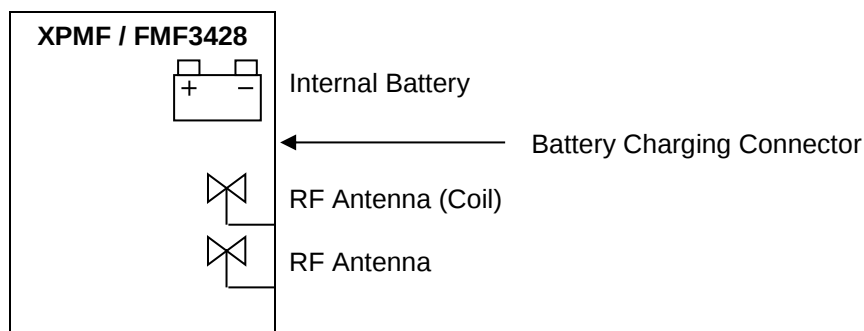
3.4. EUT Mechanical and Electrical Design

Power supply. : 3.7Vdc
Power supply range..... : 3.45Vdc to 4.2Vdc
Power type..... : Battery powered
Power (W)..... : not communicated
Nominal current (A). : 1
Dimensions (L x W x H) (m). : 0.34x0.28x0.04
Weight (kg). : 0.501
Temperature range (°C). : -5°C to +40°C
Ground bounding strap..... : No

Comments:

N/A

3.5. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	
1	Internal Battery	DC	N/A	N/A	
2	Battery Charging Connector	DC	1m	2P	
3	RF Antenna (Coil)	RF	N/A	N/A	Used for detection (4.1 kHz to 45.19 kHz)
4	RF Antenna	RF	N/A	N/A	Used to communicate with remote (2.4GHz)

AC/DC : AC/DC Converter port

I/O.....: Input or Output port

N/E: Non Electrical port

AC.....: Alternative current port

TP: Telecommunication port

DC.....: Discontinuous current port

RF.....: Radio frequency port

3.6. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Remote Device Battery charger (AC/DC)	XPLORER Sinohero Industrial Ltd.	DEUS 2 SJ-0510-E	Used to set the EUT in test mode Used for conducted emission

REMOTE DEVICE (EA)



ATTERY CHARGER (AC/DC) (EA)



3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	<i>Transmitter</i>
Technology	<i>SRD (Metal and object detection sensors)</i>
Environmental profile.....	<i>Data transmissions</i>
Temperature range.....	<i>-5°C to +40°C</i>
Antenna type	<i>Integral</i>
Antenna Gain.....	<i>not communicated</i>
Comments:	
b) TRANSMITTER PARAMITERS (Tx)	
Frequency bands.....	<i>4.1 kHz to 45.19 kHz</i>
RF Power.....	<i>not communicated</i>
Number of channels / Separation.....	<i>Multiple</i>
Modulation type	<i>Not modulated</i>
Duty cycle	<i>N/A</i>
Tested frequency.....	<i>4.1kHz low Channel</i> <i>45.19kHz High Channel</i>
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	<i>4.1 kHz to 45.19 kHz</i>
Category/Class	<i>not communicated</i>
Bandwidth.....	<i>Multiple</i>

4. OPINION(S) AND INTERPRETATION(S)

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen	The EUT is encapsulated in a casing. We were not able to measure its voltage supply during radiated tests
FCC part 15 Radio part 15.215 and RSS Gen	N/A
ANSI C63.4: 2014	N/A

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	COMMENTS
GENERAL			
Labeling requirements		PASS	15.19 / See certification documents
Information to user		PASS	15.21 / See certification documents
Home-built devices		N/A	15.23
Kits		N/A	15.25
Special Accessories		PASS	15.27 / See certification documents
Inspection by the Commission		N/A	
Measurement standards		PASS	15.31
Test procedure for CPU boards and computer power supplies		N/A	15.32
Frequency range of radiated measurements		N/A	15.33
Measurement detector functions and bandwidths		N/A	15.36
Transition provisions for compliance with the rules		PASS	15.37 / See certification documents
UNINTENTIONAL RADIATORS			
Equipment authorization			15.101
- Verification		N/A	
- Declaration of Conformity		N/A	
CPU boards and power supplies used in personal computers		N/A	15.102
Exempted device		N/A	15.103
Information to the user		N/P	15.105 / See certification documents
Conducted limits	Class B	PASS	15.107
Radiated emission limits	Class B	PASS	15.109
Antenna power conduction limits for receivers		N/A	15.111
Power line carrier systems		N/A	15.113
TV interface devices, including cable system terminal devices		N/A	15.115
TV broadcast receivers		N/A	15.117
Cable ready consumer electronics equipment		N/A	15.118
Program blocking technology requirements for TV receivers		N/A	15.120
Scanning receivers and frequency converters used with scanning receivers		N/A	15.121
Labeling of digital cable ready products		N/A	15.123
INTENTIONAL RADIATORS			

TEST DESIGNATION	SEVERITY	VERDICT	COMMENTS
Equipment authorization requirement		PASS	15.201 / Transmitter part is subject to Certification procedure
Certified operating frequency range		N/A	15.202
Antenna requirement		PASS	15.203 / Dedicated integral antenna
External radio frequency power amplifiers and antenna modifications		N/A	15.204
Restricted bands of operation		PASS	15.205
Conducted limits	Class B	PASS	15.207
Radiated emission limits; general requirements	Class B	PASS	15.209
Tunnel radio systems		N/A	15.211
Modular transmitters		N/A	15.212
Cable locating equipment		N/A	15.213
Cordless telephones		N/A	15.214
Additional provisions to the general radiated emission limits		PASS	15.215

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

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the results.

TEST(S) PERFORMED	MODIFICATION(S)
FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen	N/A
FCC part 15 Radio part 15.215 and RSS Gen	N/A
ANSI C63.4: 2014	N/A

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	$\pm 1 \times 10^{-7}$	$\pm 1 \times 10^{-7}$
RF power, conducted		
RF power	$\pm 0.8\text{dB}$	$\pm 1 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 1.3\text{dB}$	$\pm 1.5 \text{ dB}$
Power spectral density	$\pm 2.3\text{dB}$	$\pm 3 \text{ dB}$
Occupied bandwidth		
RF power	$\pm 3.8 \%$	$\pm 5 \%$
RF power (EN 300328 / EN 301893)	$\pm 3.8 \%$	$\pm 5 \%$
Maximum frequency deviation		
300 Hz < audio frequency < 6 kHz	$\pm 1.2 \%$	$\pm 5 \%$
6 kHz < audio frequency < 25 kHz	$\pm 1.2 \%$	$\pm 3 \text{ dB}$
Adjacent channel power	$\pm 1.6 \text{ dB}$	$\pm 3 \text{ dB}$
Sensibility of receiver (conducted)	$\pm 2.0 \text{ dB}$	$\pm 3 \text{ dB}$
Blocking	$\pm 4.0 \text{ dB}$	$\pm 4 \text{ dB}$
Transitoire		
Amplitude	$\pm 8.5 \%$	$\pm 20 \%$
At the frequency	$\pm 166 \text{ Hz}$	$\pm 250 \text{ Hz}$
Conducted emission (spurious)		
$f \leq 1 \text{ GHz}$	$\pm 0.8 \text{ dB}$	$\pm 3 \text{ dB}$
1 GHz - 12.75 GHz	$\pm 1.6 \text{ dB}$	
Radiated emission (PAR / PIRE / RNE)		
$f \leq 62.5 \text{ MHz}$	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
62.5 MHz - 1 GHz	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
1 GHz - 18 GHz	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
18 GHz – 26 GHz	$\pm 5.1 \text{ dB}$	$\pm 6 \text{ dB}$
26 GHz – 40 GHz	$\pm 5.4 \text{ dB}$	$\pm 6 \text{ dB}$
180-1000 MHz / 1 – 12.75 GHz (EN 301 908-1)	$\pm 3.0 / 2.9 \text{ dB}$	$\pm 3 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 5.3 \text{ dB}$	$\pm 6 \text{ dB}$
PIRE and power spectral density with diode	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 3 \text{ dB}$	$\pm 6 \text{ dB}$
RF level for a given BER	$\pm 0.8 \text{ dB}$	$\pm 1.5 \text{ dB}$
Supply voltages	$\pm 3 \%$	$\pm 3 \%$
Temperature	$\pm 1 \text{ }^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5 \%$	$\pm 5 \%$
Time / Duty cycle	$\pm 4.4 \%$	$\pm 5 \%$
Adaptivity	$\pm 2.9 \text{ dB}$	/
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	$\pm 2.7 \text{ dB}$	/
30MHz – 1GHz	$\pm 5.0 \text{ dB}$	/
1GHz – 18GHz	$\pm 5.6 \text{ dB}$	/
18GHz – 26GHz	$\pm 5.7 \text{ dB}$	/
26GHz – 40GHz	$\pm 5.7 \text{ dB}$	/

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

7. TEST CONDITIONS AND RESULTS

7.1. Conducted emission (measurement)

Reference standard:	FCC part 15.107, 15.207 and RSS-Gen
Test method:	ANSI C63.4: 2014
General test setup: EUT is set on an insulating support at 80cm above the ground reference plane and at 40cm to the vertical 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 / Tx mode Low Channel	150kHz-30MHz	Class B	EMI5892	PASS
120Vac/60Hz power supply / Tx mode High Channel	150kHz-30MHz	Class B	EMI5903	PASS
120Vac/60Hz power supply / Standby mode	150kHz-30MHz	Class B	EMI5898	PASS

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

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	25/07/2019	25/09/2021
Cable	N	3m	16422	04/05/2019	04/07/2021
Cable	EMITECH	Current absorber sheath	9491	23/06/2020	23/08/2022
Ground plane	EMITECH	Test area	11569		
LISN	AFJ	LT32C\10	12007	11/01/2019	11/03/2021
Multimeter	FLUKE	8808A	12446	29/09/2020	29/11/2021
Receiver	Rohde & Schwarz	ESHS10	3371	27/04/2020	27/06/2021
Receiver	Rohde & Schwarz	FPL1003	16027	14/08/2020	14/10/2021
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
TV	DESIMET	TVC 2437B	0903		

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST SETUP PHOTO(S)



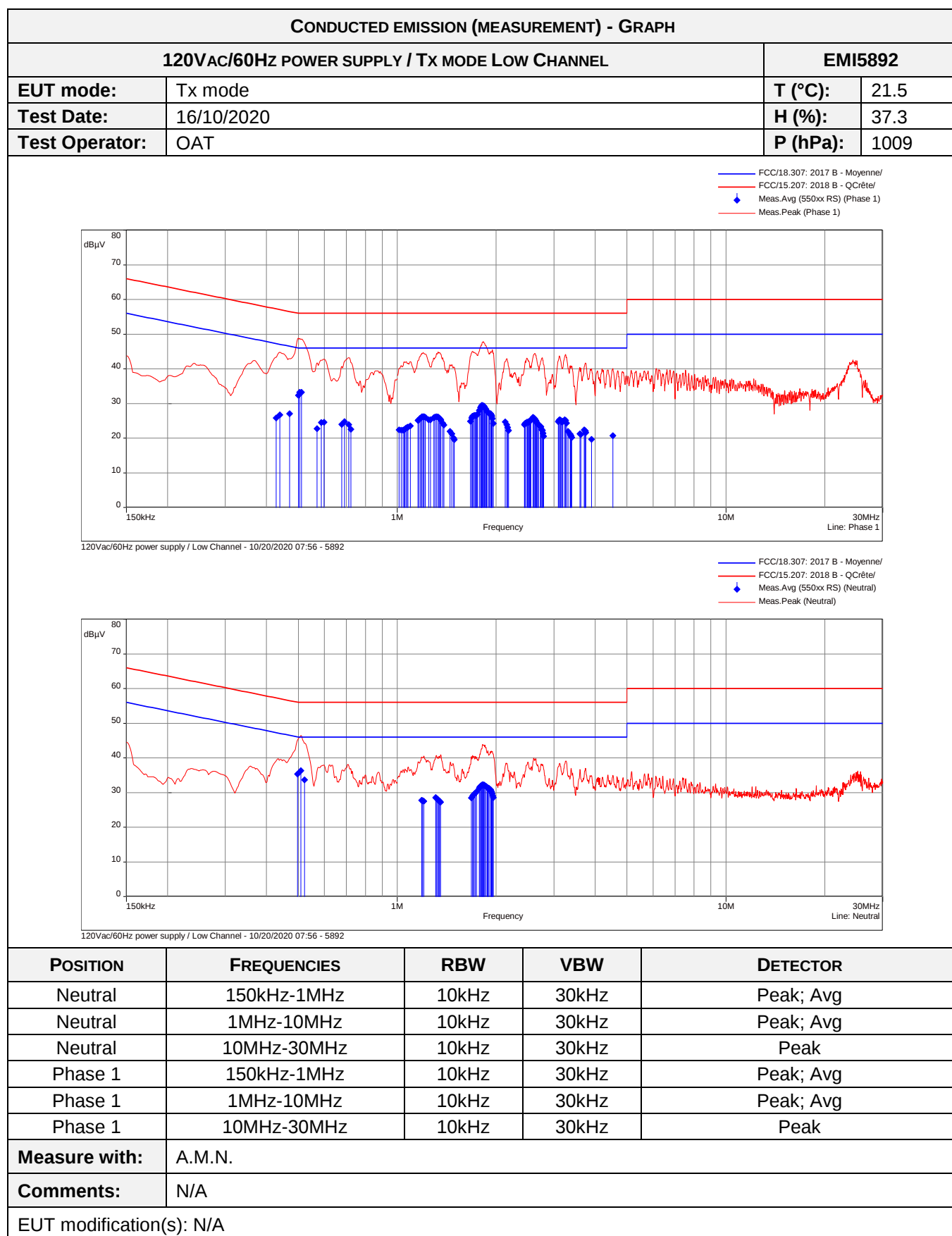
CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS						
120VAC/60Hz POWER SUPPLY / TX MODE LOW CHANNEL						EMI5892
Terminal	Test Frequency (MHz)	Gain/Loss Factor (dB)	Level Pk (dBμV)	Level Avg (dBμV)	Limit Avg (dBμV)	Margin Lvl Avg - Limit Avg (dB)
Neutral	0.498	10.4	44.63	35.32	46.04	-10.72
Neutral	0.510	10.4	45.59	36.31	46	-9.69
Neutral	0.523	10.4	43.7	33.64	46	-12.36
Neutral	1.186	10.45	39.14	27.72	46	-18.28
Neutral	1.194	10.45	39.47	27.65	46	-18.35
Neutral	1.204	10.45	39.41	27.49	46	-18.51
Neutral	1.310	10.45	38.89	28.52	46	-17.48
Neutral	1.315	10.45	39.03	28.38	46	-17.62
Neutral	1.327	10.45	39.88	28.09	46	-17.91
Neutral	1.336	10.46	39.61	27.78	46	-18.22
Neutral	1.340	10.46	40	27.63	46	-18.37
Neutral	1.347	10.46	39.61	27.47	46	-18.53
Neutral	1.356	10.46	39.1	27.21	46	-18.79
Neutral	1.681	10.47	39.2	28.46	46	-17.54
Neutral	1.695	10.47	39.78	29.03	46	-16.97
Neutral	1.707	10.47	39.88	29.38	46	-16.62
Neutral	1.715	10.47	39.88	29.56	46	-16.44
Neutral	1.729	10.47	39.42	29.87	46	-16.13
Neutral	1.743	10.47	38.73	30.19	46	-15.81
Neutral	1.775	10.47	39.39	31.32	46	-14.68
Neutral	1.786	10.47	40.28	31.62	46	-14.38
Neutral	1.797	10.47	41.38	31.86	46	-14.14
Neutral	1.804	10.48	41.95	32.03	46	-13.97
Neutral	1.811	10.48	42.25	32.17	46	-13.83
Neutral	1.819	10.48	42.37	32.22	46	-13.78
Neutral	1.824	10.48	42.92	32.17	46	-13.83
Neutral	1.833	10.48	43.18	32.17	46	-13.83
Neutral	1.837	10.48	42.74	32.17	46	-13.83
Neutral	1.848	10.48	42.81	32	46	-14
Neutral	1.861	10.48	42.02	31.79	46	-14.21
Neutral	1.877	10.48	41.05	31.44	46	-14.56
Neutral	1.886	10.48	40.04	31.34	46	-14.66
Neutral	1.890	10.48	39.81	31.23	46	-14.77
Neutral	1.904	10.48	39.95	31.18	46	-14.82
Neutral	1.922	10.48	40.62	30.81	46	-15.19
Neutral	1.932	10.48	40.35	30.4	46	-15.6
Neutral	1.945	10.48	40.94	29.73	46	-16.27
Neutral	1.952	10.48	40.37	29.07	46	-16.93
Neutral	1.959	10.48	40.49	28.58	46	-17.42
Phase	0.470	10.4	44.57	27.08	46.51	-19.43
Phase	0.500	10.4	48.39	32.37	46	-13.63
Phase	0.505	10.4	49.98	33.25	46	-12.75
Phase	0.512	10.4	49.45	33.25	46	-12.75
Phase	1.190	10.45	43.87	26.15	46	-19.85
Phase	1.199	10.45	44.57	26.15	46	-19.85

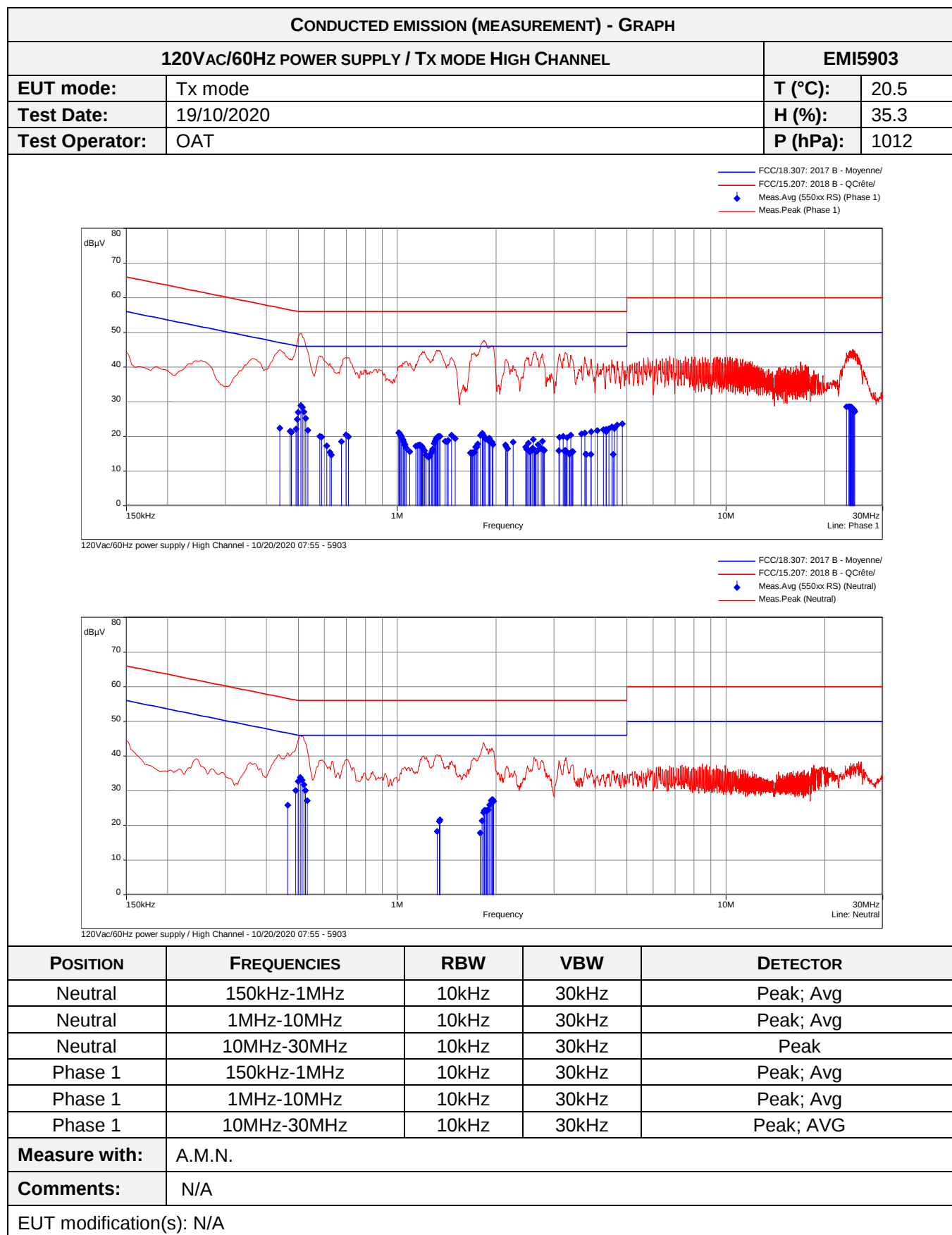
CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS						
120VAC/60Hz POWER SUPPLY / TX MODE LOW CHANNEL						EMI5892
Terminal	Test Frequency (MHz)	Gain/Loss Factor (dB)	Level Pk (dBμV)	Level Avg (dBμV)	Limit Avg (dBμV)	Margin Lvl Avg - Limit Avg (dB)
Phase	1.208	10.45	43.97	26.15	46	-19.85
Phase	1.218	10.45	43.21	26.02	46	-19.98
Phase	1.303	10.45	42.97	26.11	46	-19.89
Phase	1.319	10.45	43.66	26.21	46	-19.79
Phase	1.332	10.46	44.64	26.09	46	-19.91
Phase	1.693	10.47	43.82	26.23	46	-19.77
Phase	1.700	10.47	44.85	26.32	46	-19.68
Phase	1.712	10.47	44.14	26.54	46	-19.46
Phase	1.723	10.47	43.8	26.54	46	-19.46
Phase	1.733	10.47	43.78	26.54	46	-19.46
Phase	1.738	10.47	43.18	26.54	46	-19.46
Phase	1.746	10.47	43.3	26.73	46	-19.27
Phase	1.752	10.47	42.96	26.89	46	-19.11
Phase	1.775	10.47	44.13	28.05	46	-17.95
Phase	1.791	10.47	45.32	28.84	46	-17.16
Phase	1.802	10.47	46.61	29.23	46	-16.77
Phase	1.804	10.48	46.25	29.18	46	-16.82
Phase	1.806	10.48	46.31	29.3	46	-16.7
Phase	1.808	10.48	46.51	29.4	46	-16.6
Phase	1.816	10.48	46.98	29.46	46	-16.54
Phase	1.827	10.48	46.86	29.3	46	-16.7
Phase	1.834	10.48	47.24	29.24	46	-16.76
Phase	1.842	10.48	47.2	28.98	46	-17.02
Phase	1.852	10.48	46.93	28.57	46	-17.43
Phase	1.860	10.48	46.12	28.29	46	-17.71
Phase	1.869	10.48	45.52	27.82	46	-18.18
Phase	1.873	10.48	45.16	27.74	46	-18.26
Phase	1.893	10.48	43.61	27.36	46	-18.64
Phase	1.908	10.48	43.85	27.17	46	-18.83
Phase	1.921	10.48	44.78	27.09	46	-18.91
Phase	1.929	10.48	44.97	26.85	46	-19.15
Phase	1.934	10.48	44.69	26.58	46	-19.42
Supplementary information: Margin between peak measurements and quasi-peak limit is > 6dB, so no quasi-peak measurements were performed. Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.						

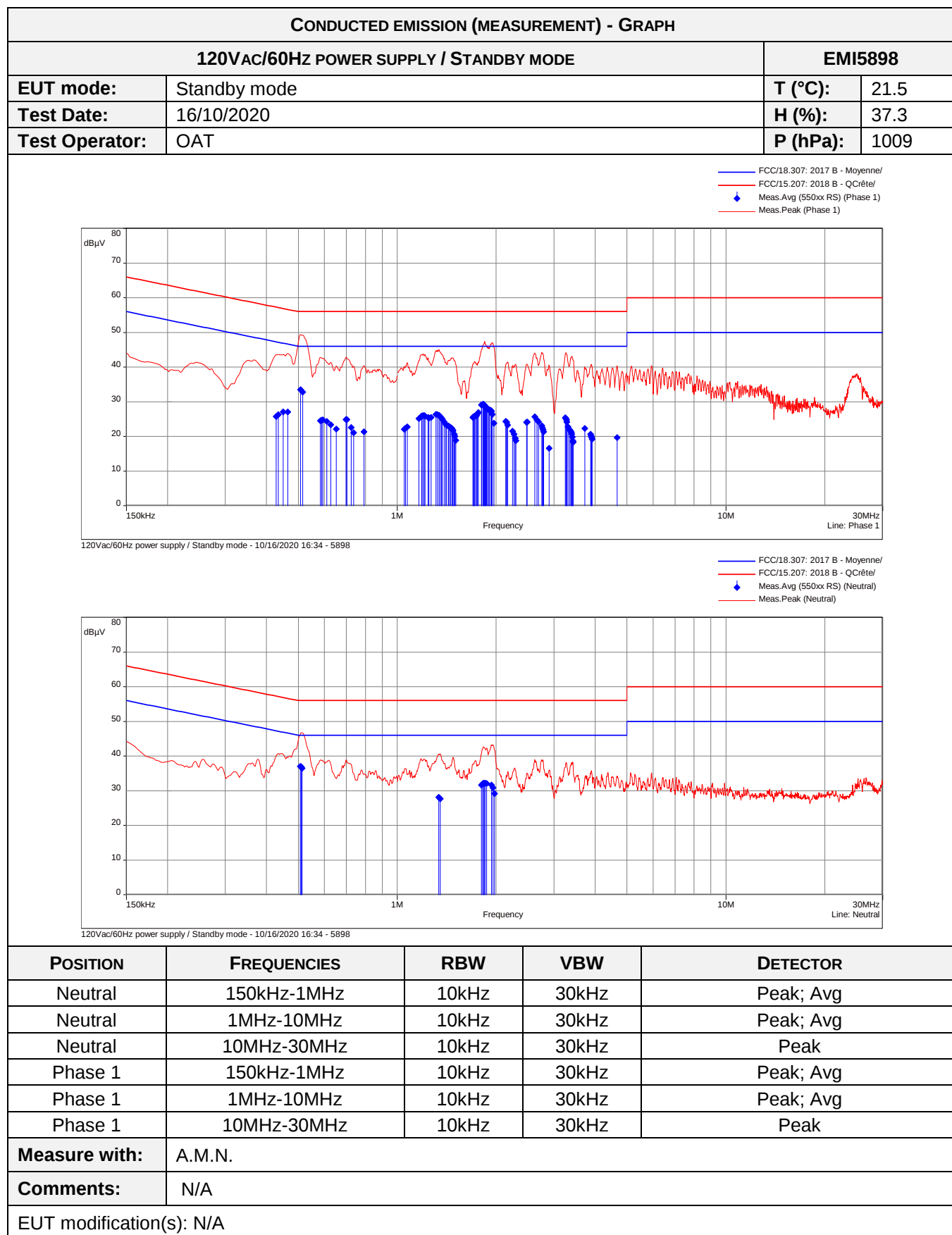
CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS						
120VAC/60Hz POWER SUPPLY / TX MODE HIGH CHANNEL						EMI5903
Terminal	Test Frequency (MHz)	Gain/Loss Factor (dB)	Level Pk (dBμV)	Level Avg (dBμV)	Limit Avg (dBμV)	Margin Lvl Avg - Limit Avg (dB)
Neutral	0.464	10.4	36.63	25.82	46.61	-20.79
Neutral	0.491	10.4	39.21	30.07	46.15	-16.08
Neutral	0.499	10.4	41.47	32.73	46.01	-13.28
Neutral	0.507	10.4	42.41	33.8	46	-12.2
Neutral	0.514	10.4	42.09	33.06	46	-12.94
Neutral	0.520	10.4	41.06	31.7	46	-14.3
Neutral	0.525	10.4	39.64	30.07	46	-15.93
Neutral	0.533	10.4	37.56	27.16	46	-18.84
Neutral	1.344	10.46	31.49	21.18	46	-24.82
Neutral	1.348	10.46	32.22	21.59	46	-24.41
Neutral	1.810	10.48	30.31	21.29	46	-24.71
Neutral	1.832	10.48	34.59	23.69	46	-22.31
Neutral	1.844	10.48	35.82	24.29	46	-21.71
Neutral	1.853	10.48	36.24	24.35	46	-21.65
Neutral	1.869	10.48	36.14	24.24	46	-21.76
Neutral	1.880	10.48	35.53	24.3	46	-21.7
Neutral	1.888	10.48	35.35	24.52	46	-21.48
Neutral	1.913	10.48	35.77	25.91	46	-20.09
Neutral	1.932	10.48	35.19	27.1	46	-18.9
Neutral	1.941	10.48	35.52	27.45	46	-18.55
Neutral	1.953	10.48	36.71	27.45	46	-18.55
Neutral	1.965	10.48	37.44	26.93	46	-19.07
Phase	0.440	10.39	40.24	22.34	47.07	-24.73
Phase	0.473	10.4	39.19	21.47	46.47	-25
Phase	0.492	10.4	40.88	22.08	46.14	-24.06
Phase	0.496	10.4	42.94	24.97	46.06	-21.09
Phase	0.500	10.4	44.53	27	46.01	-19.01
Phase	0.509	10.4	46.27	28.9	46	-17.1
Phase	0.515	10.4	45.35	28.34	46	-17.66
Phase	0.520	10.4	44.65	27.08	46	-18.92
Phase	0.526	10.4	42.8	25.22	46	-20.78
Phase	0.535	10.4	39.54	21.76	46	-24.24
Phase	1.010	10.44	38.83	21.1	46	-24.9
Phase	3.891	10.53	39.94	21.33	46	-24.67
Phase	4.064	10.54	39.66	21.66	46	-24.34
Phase	4.237	10.54	39.23	21.96	46	-24.04
Phase	4.322	10.54	38.21	21.37	46	-24.63
Phase	4.326	10.54	38.53	22	46	-24
Phase	4.410	10.54	39.27	22.17	46	-23.83
Phase	4.497	10.54	39.41	22.71	46	-23.29
Phase	4.582	10.55	38.67	22.31	46	-23.69
Phase	4.671	10.55	40.22	23.24	46	-22.76
Phase	4.843	10.55	40.49	23.63	46	-22.37
Phase	23.265	10.57	43.31	28.51	50	-21.49
Phase	23.611	10.57	43.6	28.52	50	-21.48

CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS						
120VAC/60Hz POWER SUPPLY / TX MODE HIGH CHANNEL						EMI5903
Terminal	Test Frequency (MHz)	Gain/Loss Factor (dB)	Level Pk (dBμV)	Level Avg (dBμV)	Limit Avg (dBμV)	Margin Lvl Avg - Limit Avg (dB)
Phase	23.783	10.57	43.79	28.51	50	-21.49
Phase	23.869	10.57	43.84	28.38	50	-21.62
Phase	23.957	10.57	43.87	28.39	50	-21.61
Phase	24.043	10.57	44.05	28.42	50	-21.58
Phase	24.129	10.57	44.04	28.36	50	-21.64
Phase	24.215	10.57	43.9	28.04	50	-21.96
Phase	24.303	10.57	43.81	27.9	50	-22.1
Phase	24.389	10.57	43.74	27.91	50	-22.09
Phase	24.475	10.57	43.79	27.69	50	-22.31
Phase	24.561	10.57	46.75	27.5	50	-22.5
Phase	24.649	10.57	43.44	27.16	50	-22.84
Supplementary information: Margin between peak measurements and quasi-peak limit is > 6dB, so no quasi-peak measurements were performed. Spurious which has more than 25 dB of margin compared to the applicable limit is not necessarily reported.						

CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS						
120VAC/60HZ POWER SUPPLY / STANDBY MODE						EMI5898
Terminal	Test Frequency (MHz)	Gain/Loss Factor (dB)	Level Pk (dBµV)	Level Avg (dBµV)	Limit Avg (dBµV)	Margin Lvl Avg - Limit Avg (dB)
Neutral	0.507	10.4	46.07	36.98	46	-9.02
Neutral	0.510	10.4	46.13	36.93	46	-9.07
Neutral	0.514	10.4	45.67	36.48	46	-9.52
Neutral	1.338	10.46	39.49	28.1	46	-17.9
Neutral	1.351	10.46	39.49	27.7	46	-18.3
Neutral	1.804	10.48	41.35	31.68	46	-14.32
Neutral	1.817	10.48	41.77	31.99	46	-14.01
Neutral	1.833	10.48	42.23	32.13	46	-13.87
Neutral	1.840	10.48	42.45	32.13	46	-13.87
Neutral	1.849	10.48	42.22	32.18	46	-13.82
Neutral	1.872	10.48	41.21	32.04	46	-13.96
Neutral	1.935	10.48	41.37	31.65	46	-14.35
Neutral	1.955	10.48	41.75	30.87	46	-15.13
Neutral	1.977	10.48	39.98	29.13	46	-16.87
Phase	0.450	10.39	43.51	27.07	46.87	-19.8
Phase	0.464	10.4	43.62	27.08	46.62	-19.54
Phase	0.508	10.4	49.84	33.49	46	-12.51
Phase	0.516	10.4	49.09	32.81	46	-13.19
Phase	1.313	10.45	43.34	26.34	46	-19.66
Phase	1.327	10.45	44.3	26.3	46	-19.7
Phase	1.756	10.47	41.93	26.54	46	-19.46
Phase	1.766	10.47	43.06	26.89	46	-19.11
Phase	1.804	10.48	45.93	29.05	46	-16.95
Phase	1.807	10.48	46.31	29.11	46	-16.89
Phase	1.823	10.48	47.08	29.3	46	-16.7
Phase	1.828	10.48	46.98	29.24	46	-16.76
Phase	1.834	10.48	46.74	29.18	46	-16.82
Phase	1.844	10.48	46.51	28.98	46	-17.02
Phase	1.851	10.48	46.3	28.72	46	-17.28
Phase	1.857	10.48	46.1	28.57	46	-17.43
Phase	1.863	10.48	45.76	28.36	46	-17.64
Phase	1.869	10.48	45.46	28.14	46	-17.86
Phase	1.882	10.48	44.62	27.82	46	-18.18
Phase	1.896	10.48	44.13	27.74	46	-18.26
Phase	1.906	10.48	43.99	27.67	46	-18.33
Phase	1.908	10.48	44.41	27.67	46	-18.33
Phase	1.926	10.48	44.93	27.52	46	-18.48
Phase	1.934	10.48	45.01	27.26	46	-18.74
Phase	1.948	10.48	44.58	26.36	46	-19.64
Supplementary information: Margin between peak measurements and quasi-peak limit is > 6dB, so no quasi-peak measurements were performed. Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.						







7.2. Transmitter radiated spurious emissions at frequencies <30MHz

Reference standard:	FCC part 15 Radio part 15.209 & CNR-Gen
Test method:	FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen
Test description: : Spurious domain emission limits are limits on emissions at frequencies other than those of the carrier and sidebands associated with normal test modulation. EUT is set on an insulating support at 80cm above the ground reference plane. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter in a anechoic chamber. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°). Final measurements (quasi-peak) were then performed in a 10-meter Open Area Test Site that complies to CISPR 16 in the same measurement conditions. All frequencies were investigated, where applicable.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx Mode / Low Channel / 0° - Position 1	9kHz-30MHz	15.209	EMI5210	PASS
Tx Mode / Low Channel / 45° - Position 1	9kHz-30MHz	15.209	EMI5211	PASS
Tx Mode / Low Channel / 90° - Position 1	9kHz-30MHz	15.209	EMI5212	PASS
Tx Mode / Low Channel / 0° - Position 2	9kHz-30MHz	15.209	EMI5213	PASS
Tx Mode / Low Channel / 45° - Position 2	9kHz-30MHz	15.209	EMI5214	PASS
Tx Mode / Low Channel / 90° - Position 2	9kHz-30MHz	15.209	EMI5215	PASS
Tx Mode / Low Channel / 0° - Position 3	9kHz-30MHz	15.209	EMI5216	PASS
Tx Mode / Low Channel / 45° - Position 3	9kHz-30MHz	15.209	EMI5217	PASS
Tx Mode / Low Channel / 90° - Position 3	9kHz-30MHz	15.209	EMI5218	PASS
Tx Mode / High Channel / 0° - Position 1	9kHz-30MHz	15.209	EMI5219	PASS
Tx Mode / High Channel / 45° - Position 1	9kHz-30MHz	15.209	EMI5220	PASS
Tx Mode / High Channel / 90° - Position 1	9kHz-30MHz	15.209	EMI5221	PASS
Tx Mode / High Channel / 0° - Position 2	9kHz-30MHz	15.209	EMI5222	PASS
Tx Mode / High Channel / 45° - Position 2	9kHz-30MHz	15.209	EMI5223	PASS
Tx Mode / High Channel / 90° - Position 2	9kHz-30MHz	15.209	EMI5224	PASS
Tx Mode / High Channel / 0° - Position 3	9kHz-30MHz	15.209	EMI5225	PASS
Tx Mode / High Channel / 45° - Position 3	9kHz-30MHz	15.209	EMI5226	PASS
Tx Mode / High Channel / 90° - Position 3	9kHz-30MHz	15.209	EMI5227	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.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Receiver	Rohde & Schwarz	FPL1003	16027	14/08/2020	14/10/2021
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	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS				
Tx Mode / Low Channel - ALL POSITIONS (OATS)				
Frequency (kHz)	Preliminary measurement (Pk) (dBμA/m)	Final measurement (Avg) (dBμA/m)	Limit Avg (dBμA/m)	Margin (Avg-Limit)
12.322	54.35	27.78	53.37	-25.59
20.533	45.52	19.24	48.94	-29.70
28.762	32.19	6.86	46.01	-39.15
45.201	31.93	5.83	42.09	-36.26
53.412	28.95	3.07	40.63	-37.56
78.063	22.47	-2.84	37.34	-40.18
86.291	20.51	-3.55	36.47	-40.02
Supplementary information: Spurious which has more than 40 dB of margin compared to the applicable limit is not necessarily reported.				

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS				
Tx Mode / High Channel - ALL POSITIONS (OATS)				
Frequency (kHz)	Preliminary measurement (Pk) (dBμA/m)	Final measurement (Avg) (dBμA/m)	Limit Avg (dBμA/m)	Marging (Avg-Limit)
45.201	53.52	27.12	42.08	-14.96
135.592	34.54	8.21	32.54	-24.33
225.961	6.46	3.61	28.11	-24.50
316.347	25.84	2.31	25.19	-22.88
406.837	20.09	-2.56	23.00	-25.56
Supplementary information: Spurious which has more than 30 dB of margin compared to the applicable limit is not necessarily reported. The frequency 45.201 kHz is the utile signal.				

TEST SETUP PHOTO(S) -EUT POSITIONS



TEST SETUP PHOTO(S) -EUT POSITIONS

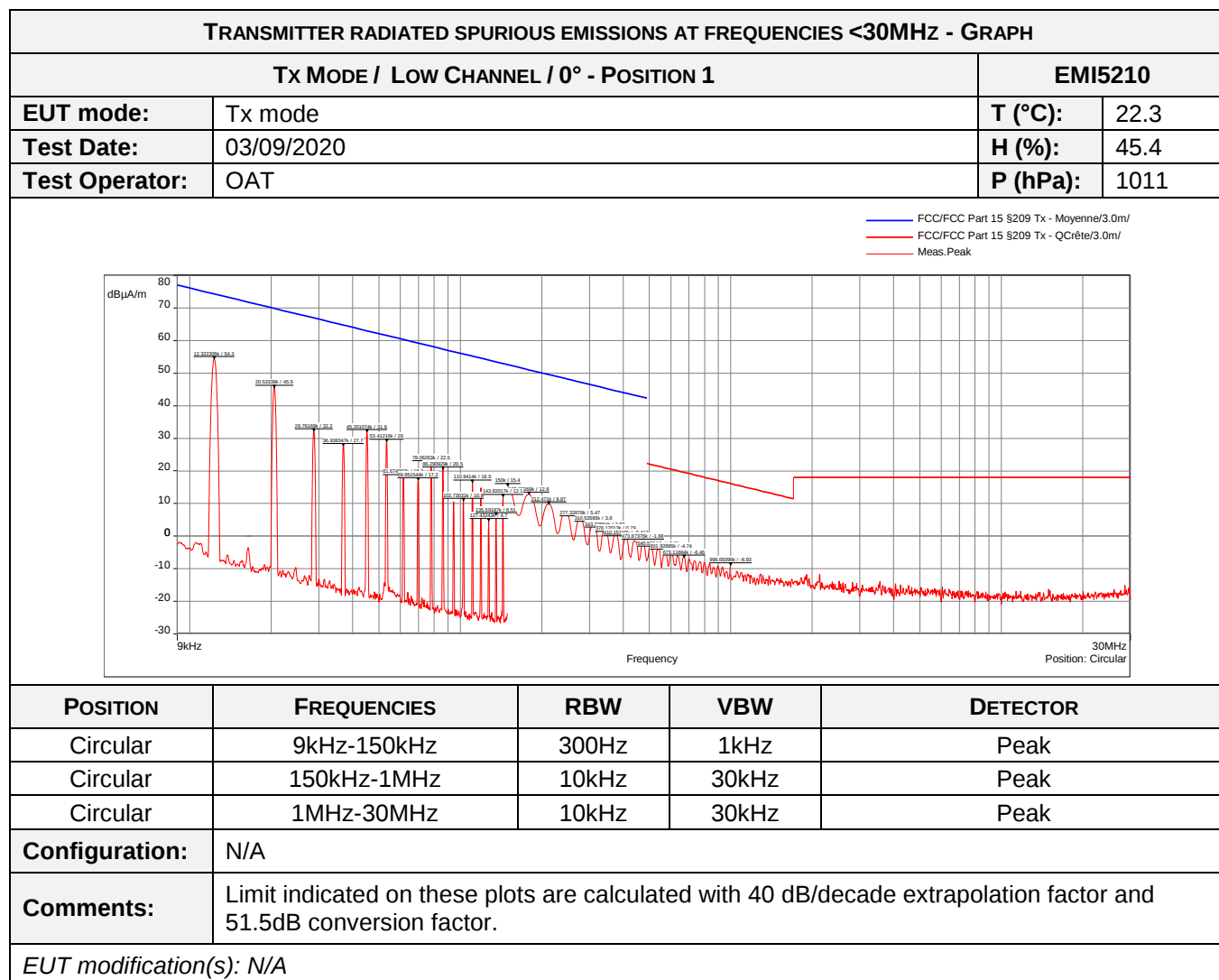


TEST SETUP PHOTO(S) – FOR PRELIMINARY MEASUREMENT

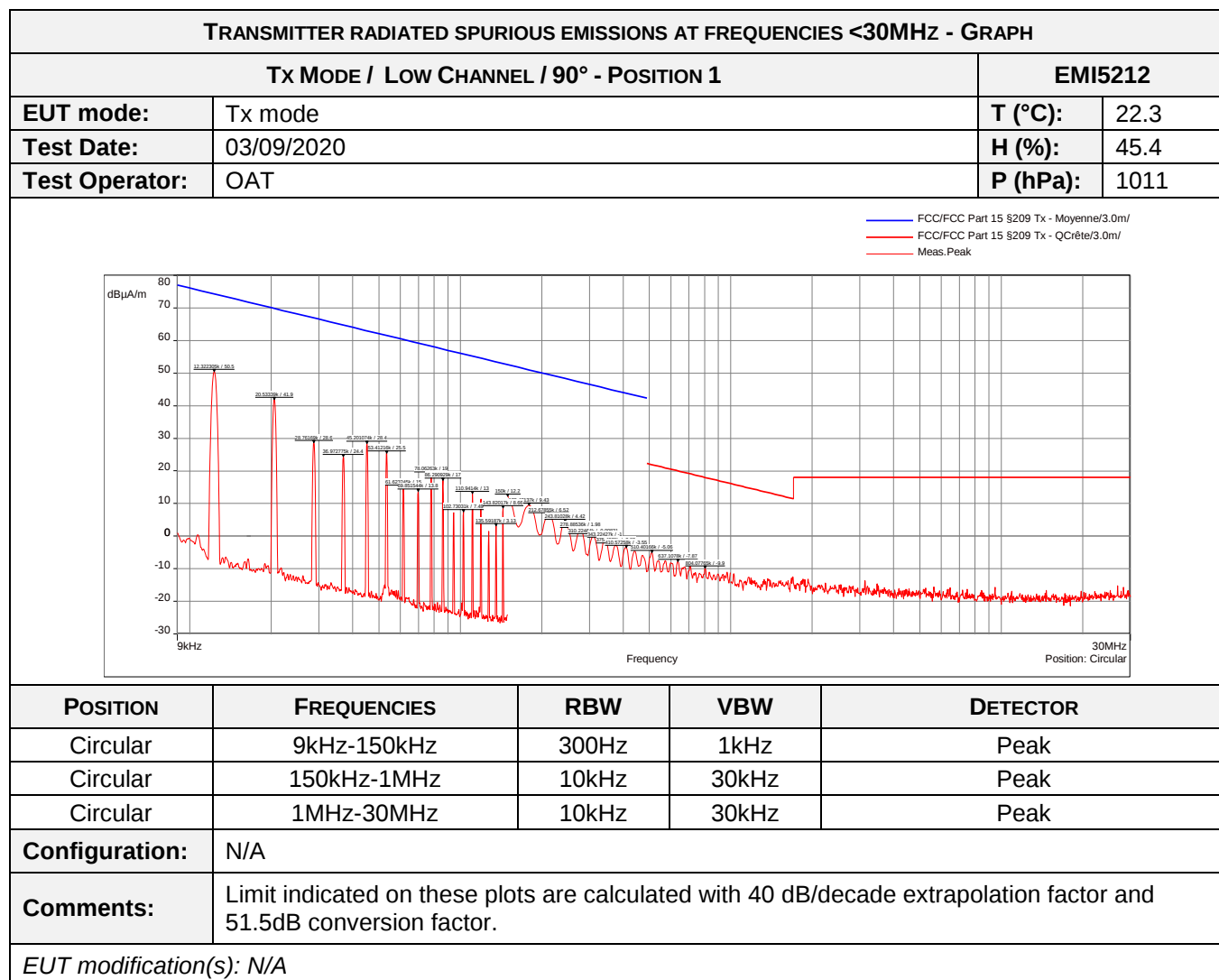


TEST SETUP PHOTO(S) - (OATS) - FOR FINAL MEASUREMENT

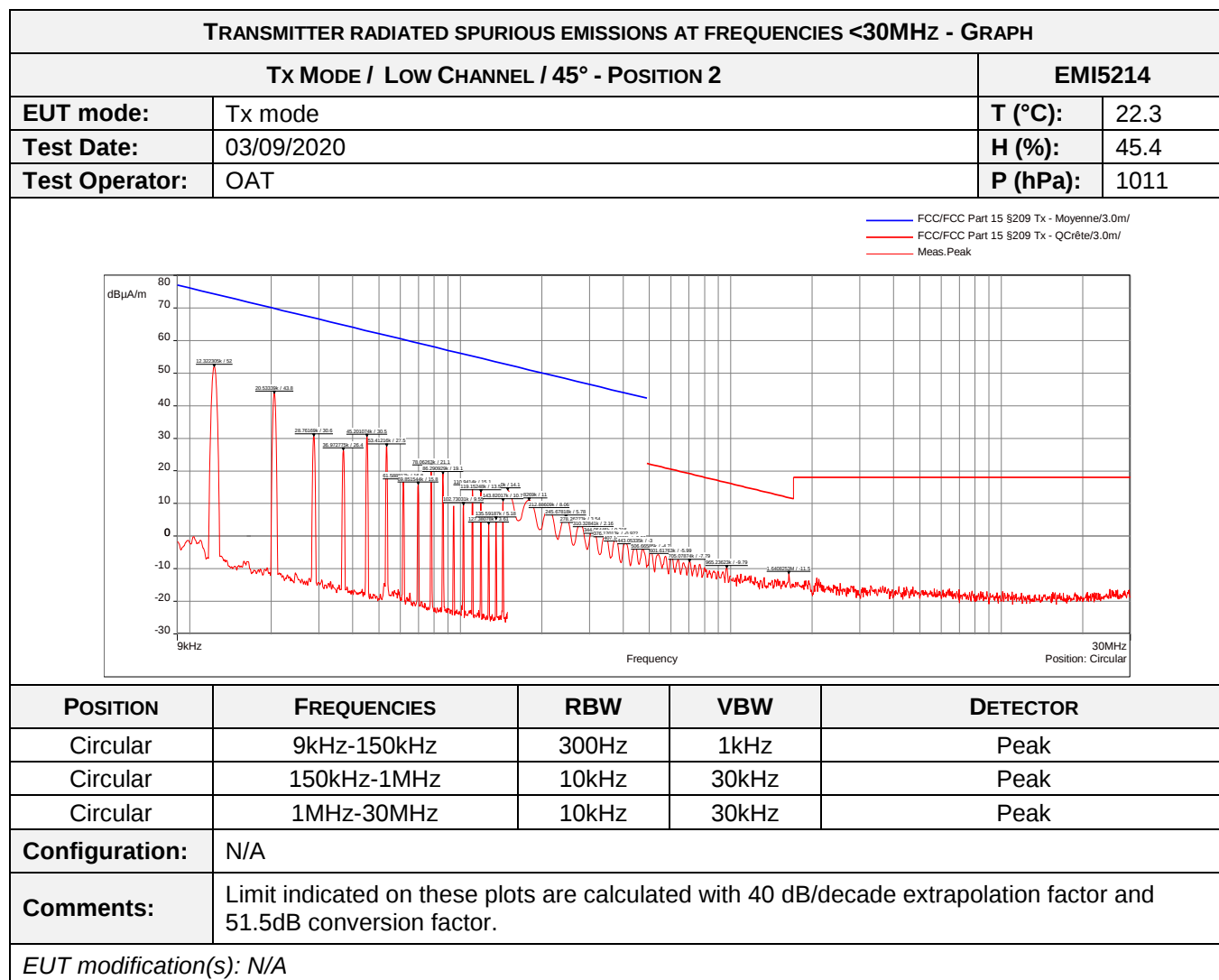




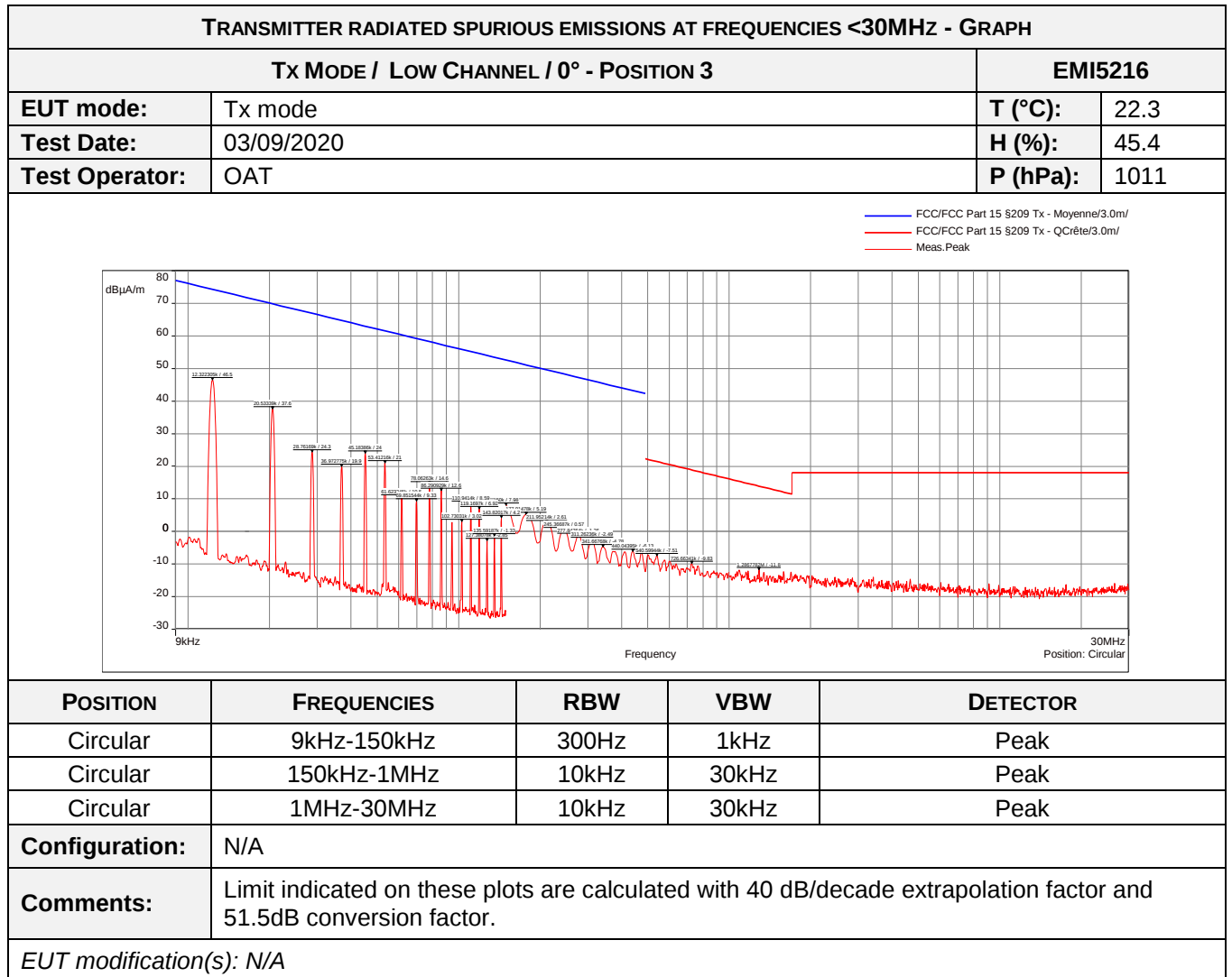
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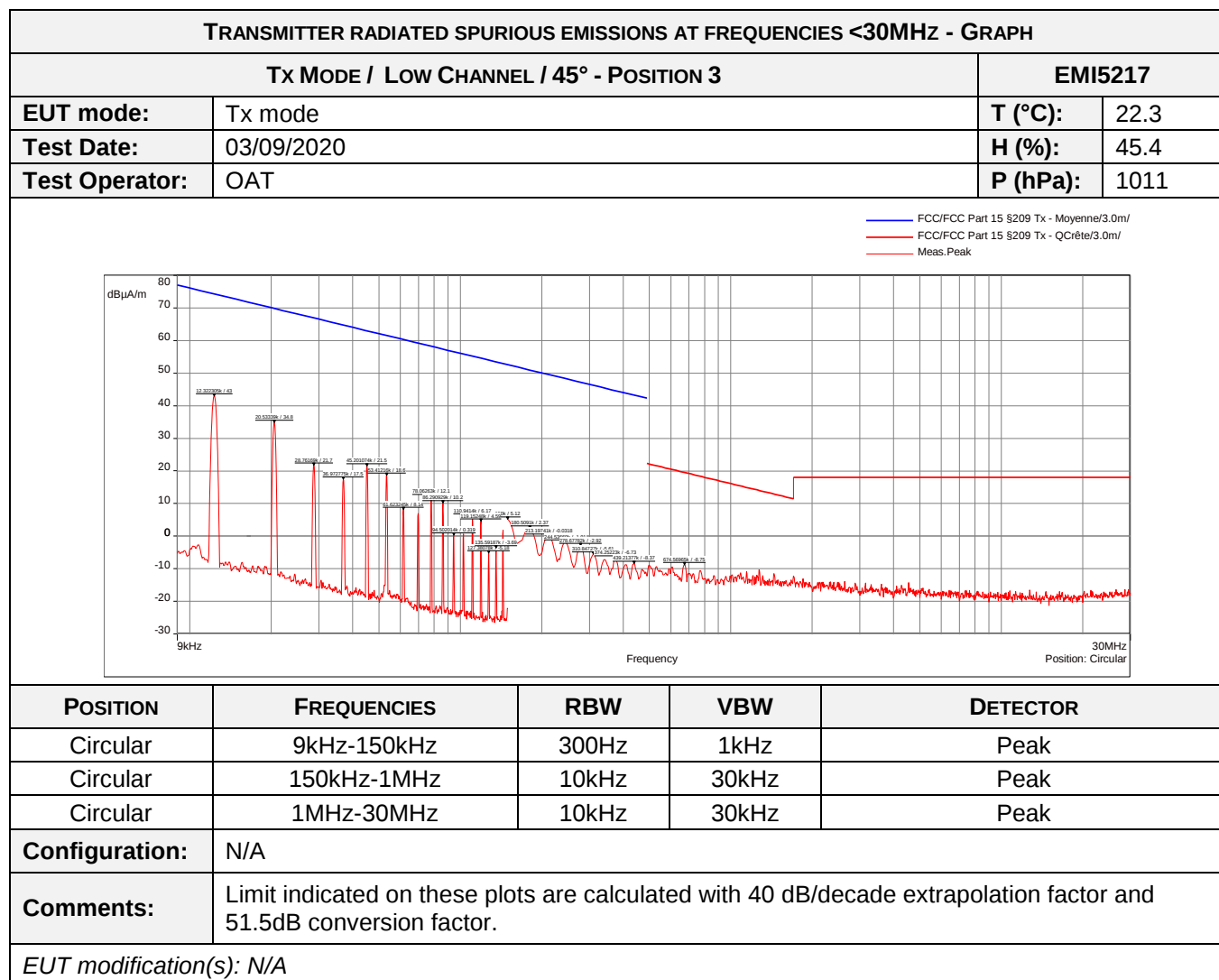


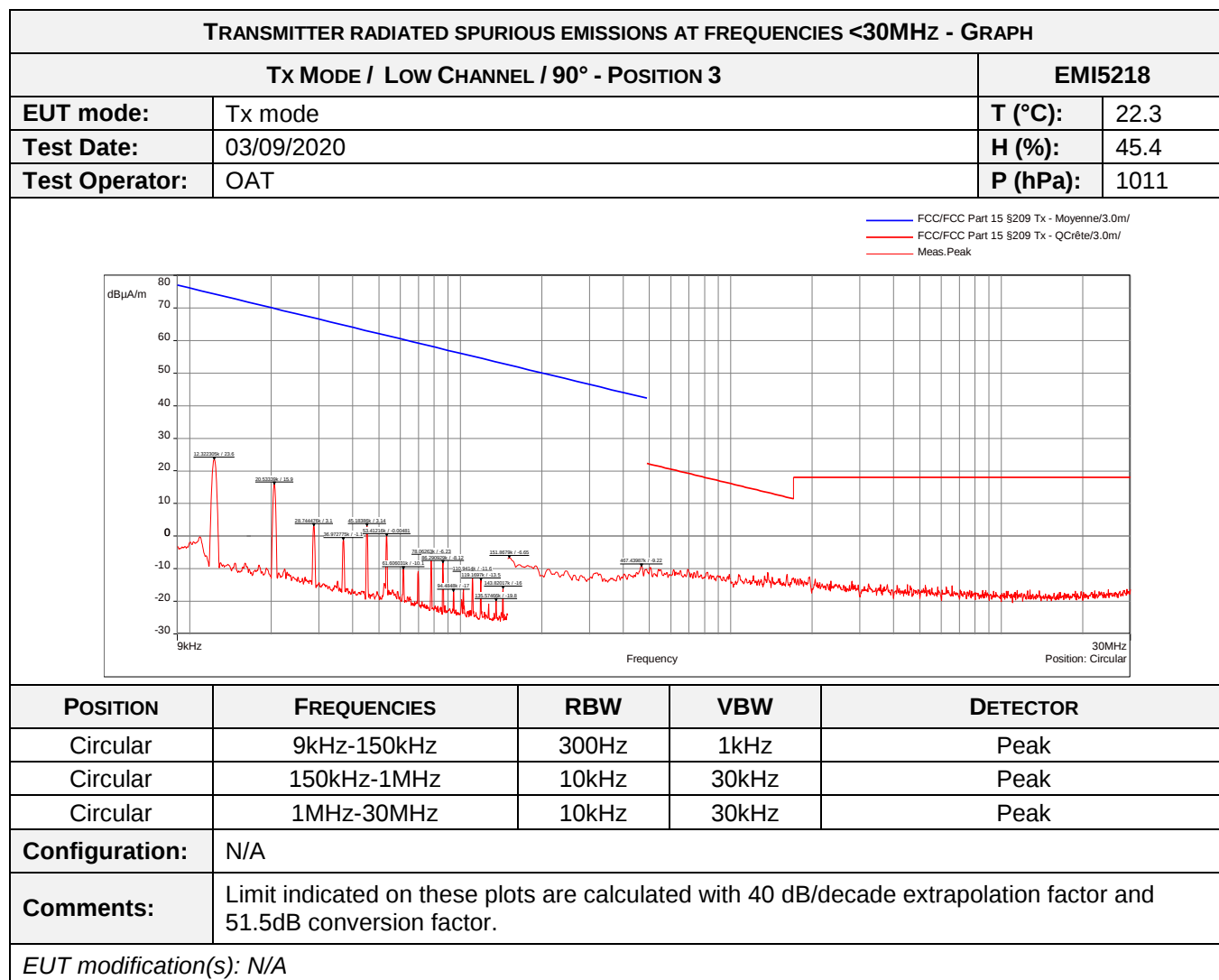
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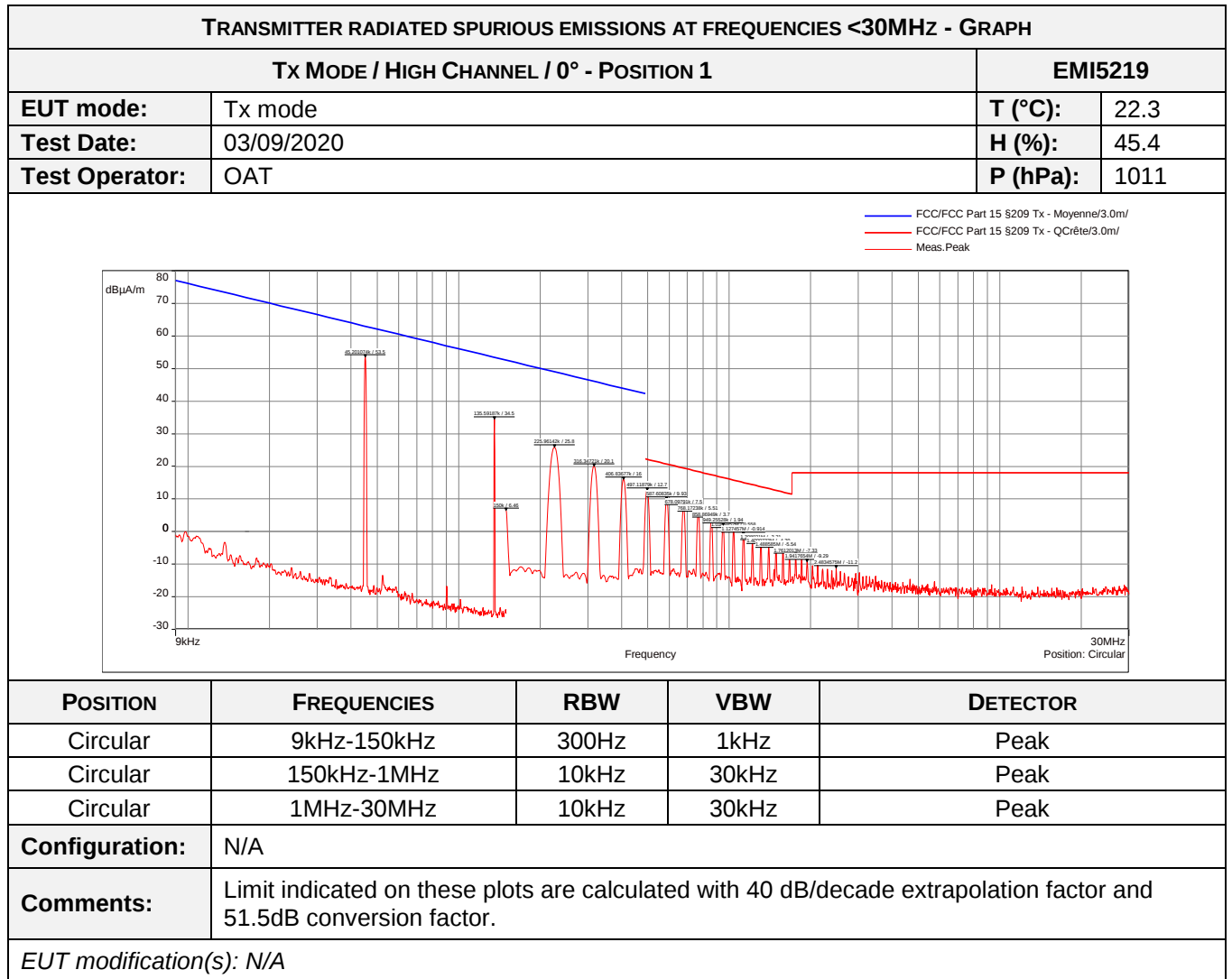


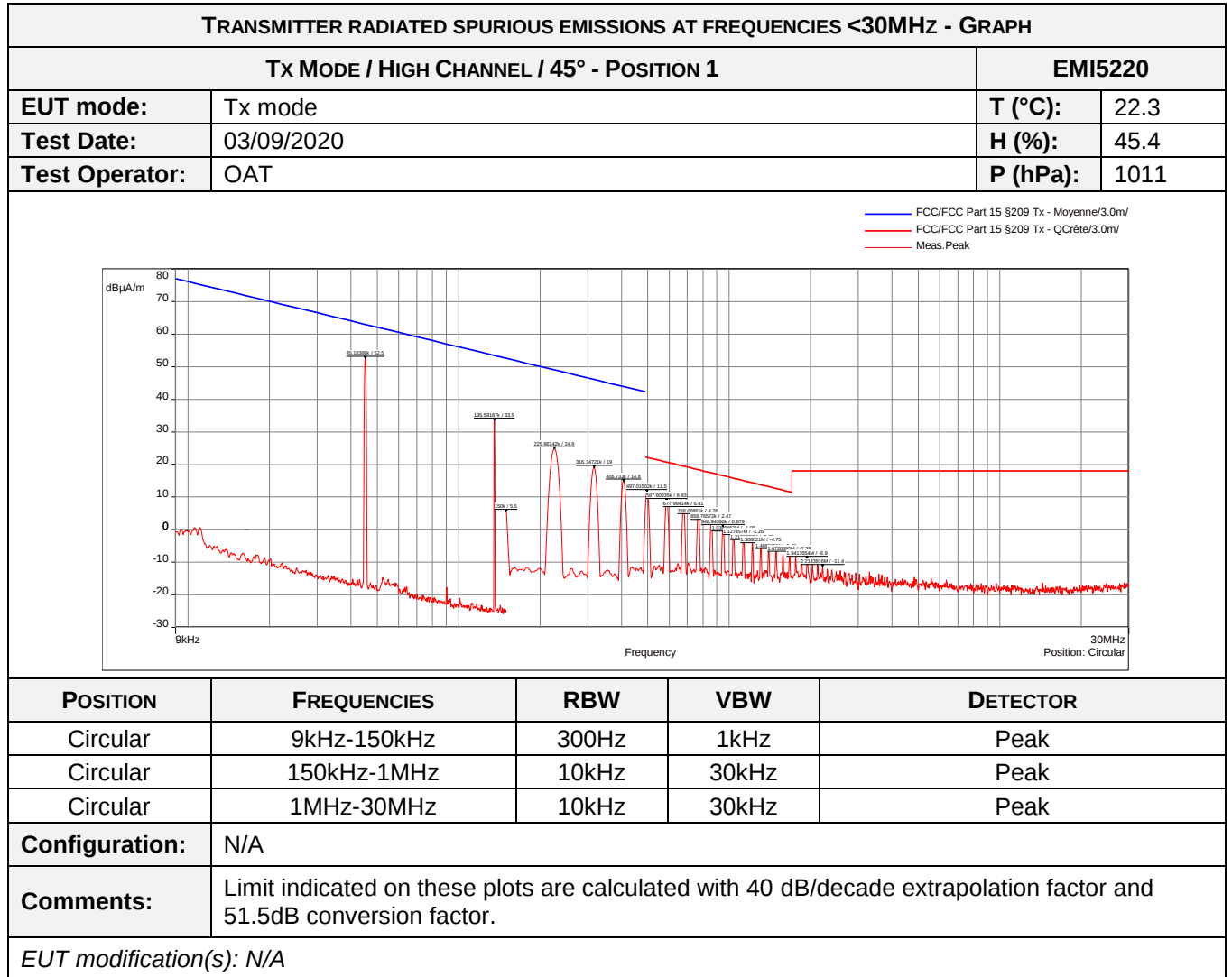
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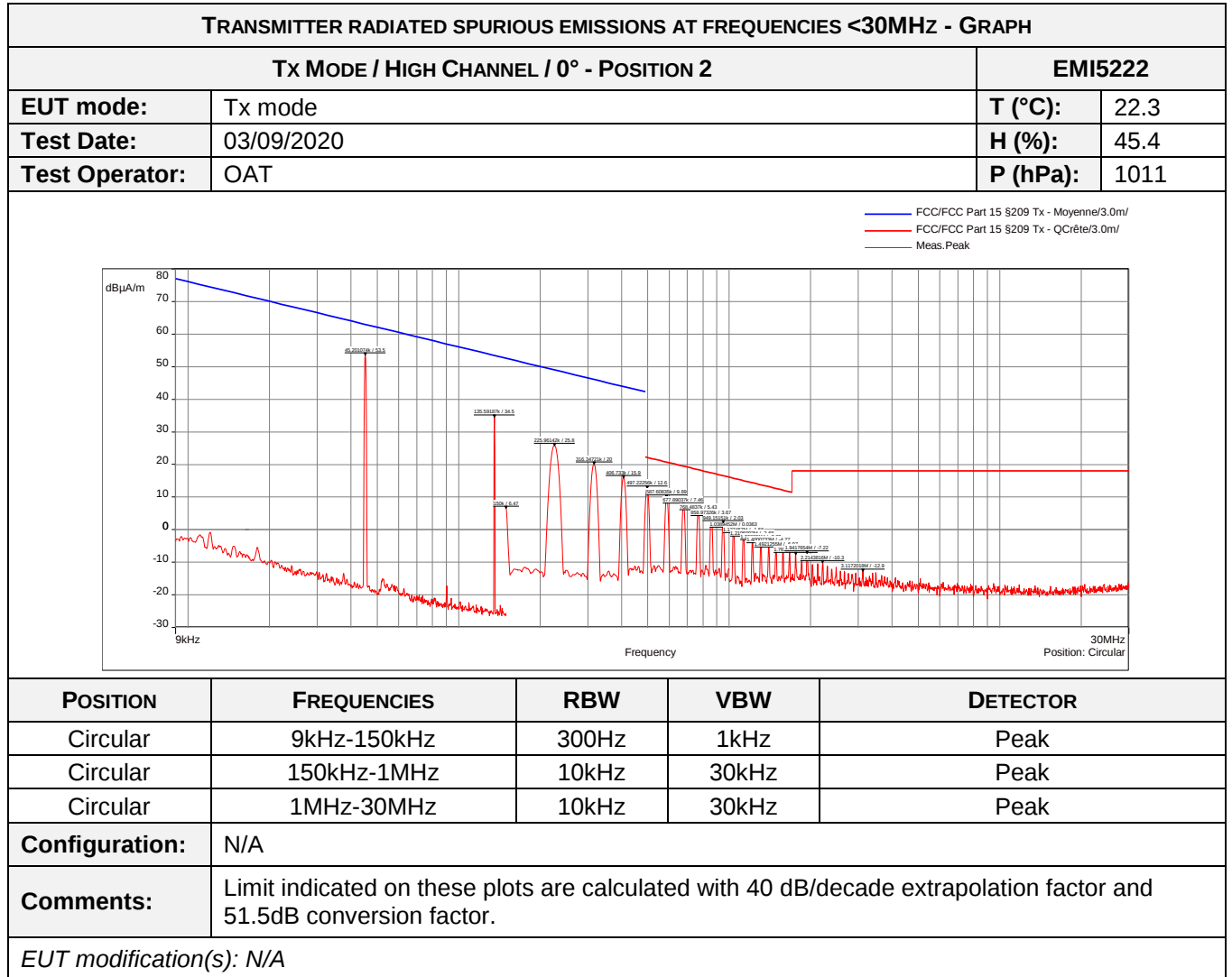


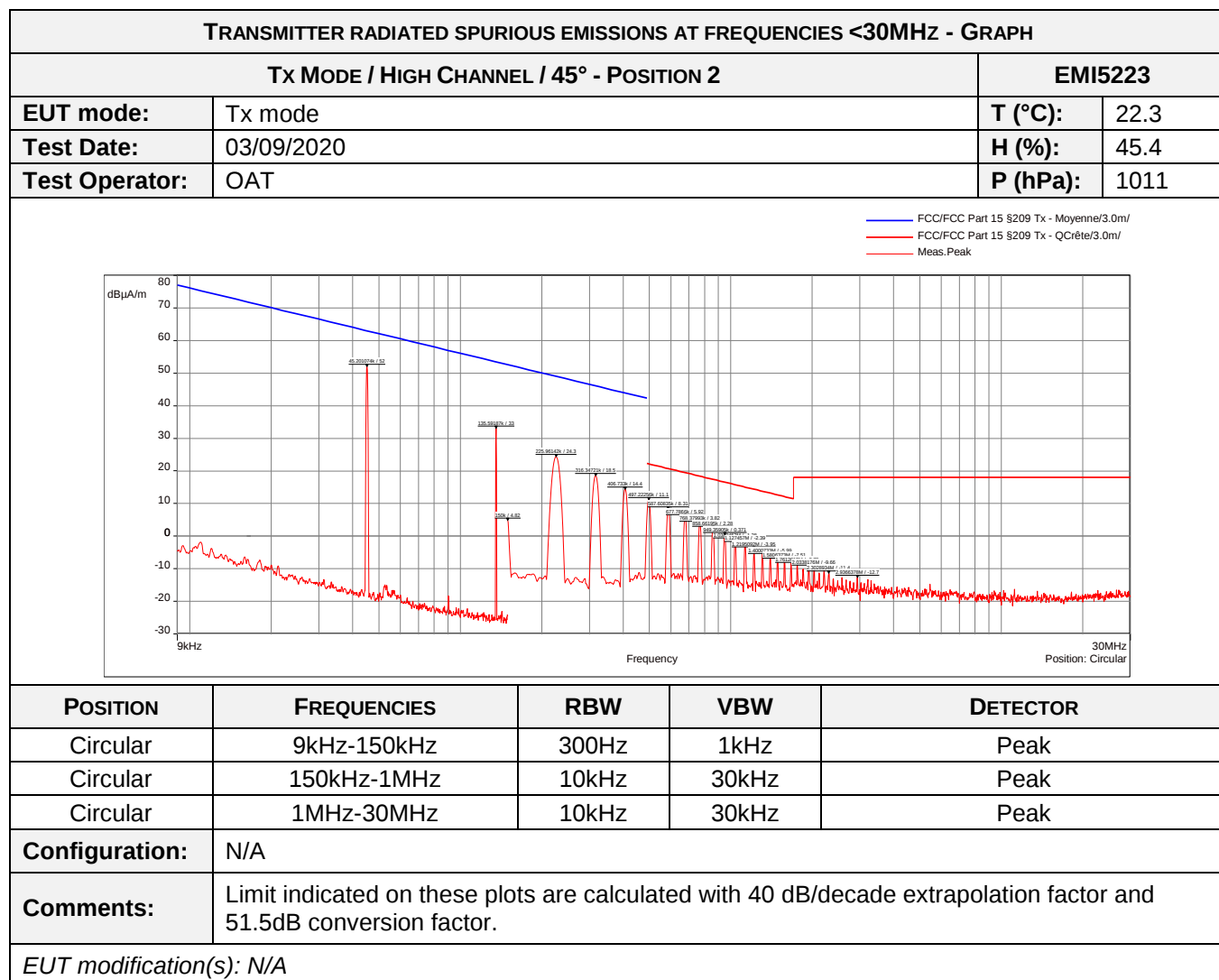




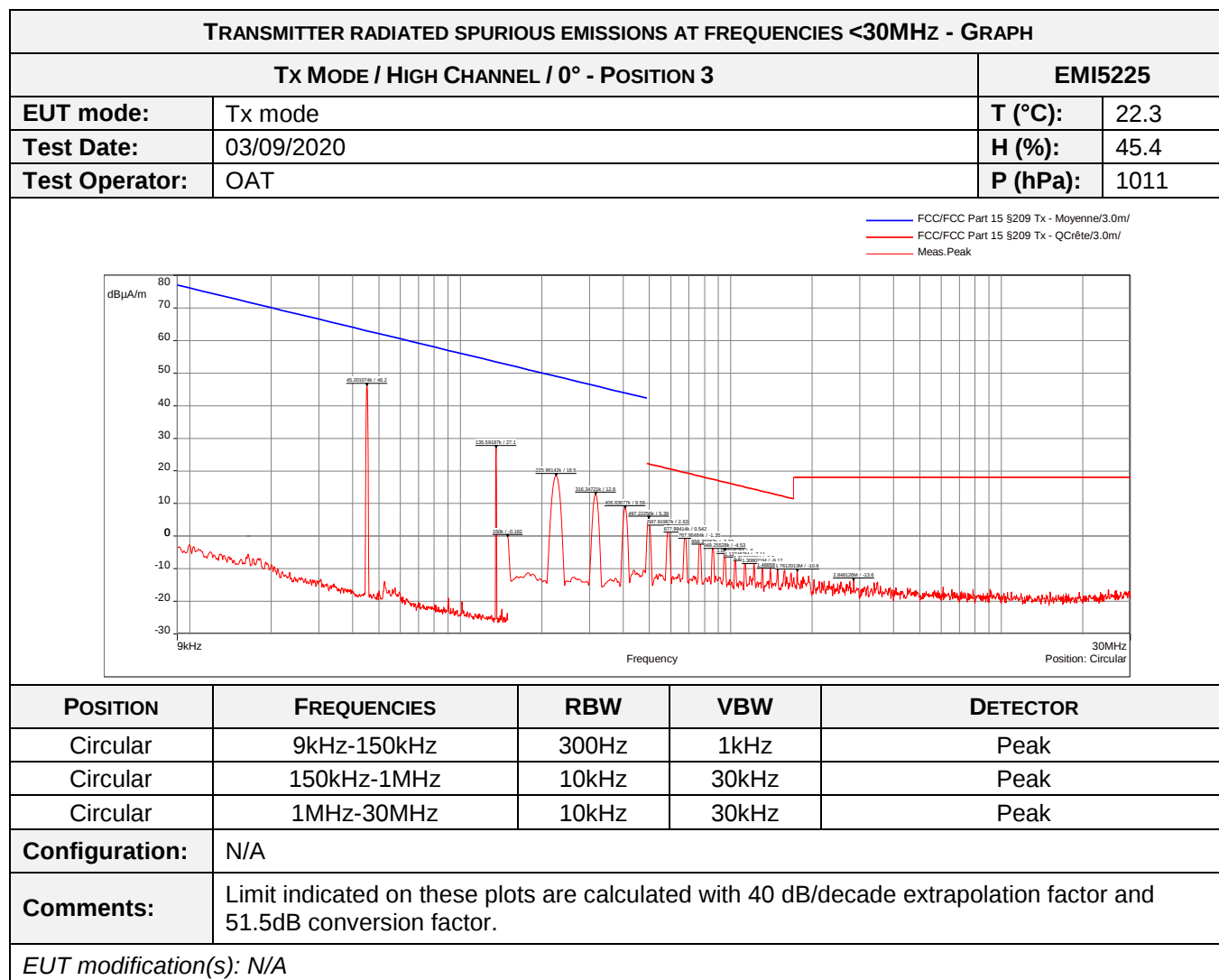


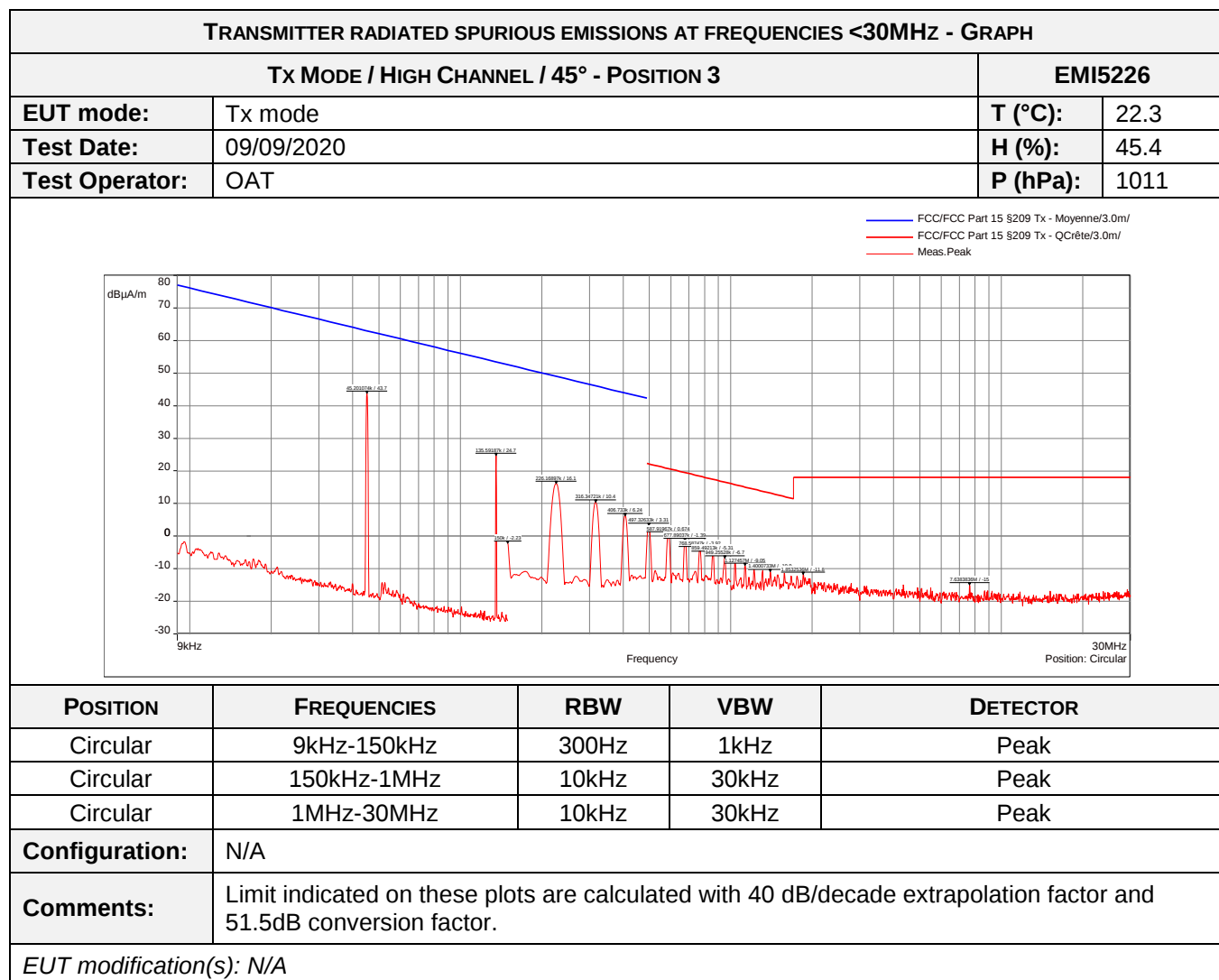
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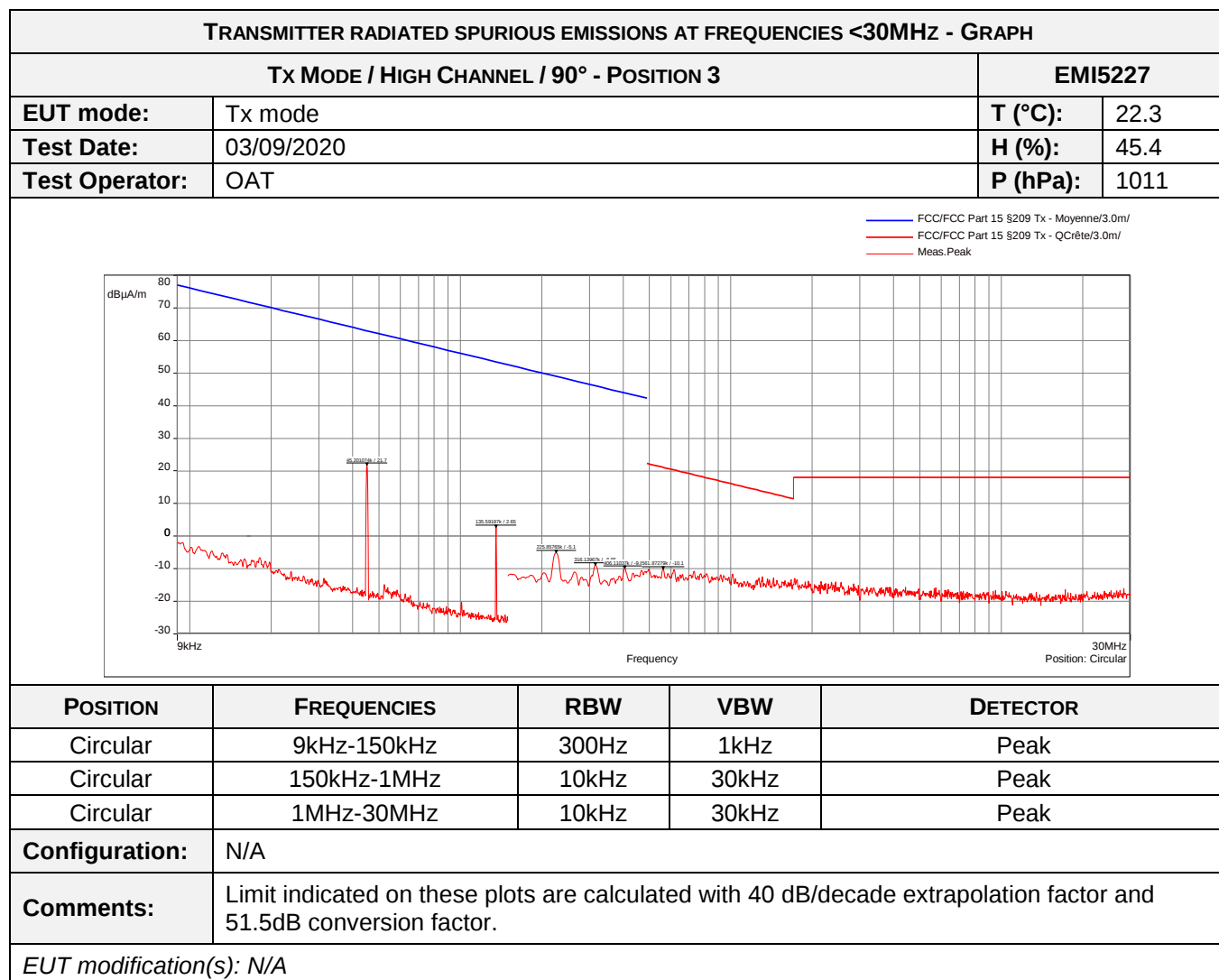




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7.3. Transmitter radiated spurious emissions at frequencies >30MHz

Reference standard:	FCC part 15 Radio part 15.209 & CNR-Gen
Test method:	FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen
General test setup: EUT is set on an insulating support at 150cm above the ground reference plane. Measurement are done on a normalized test site by the substitution method. The test antenna is oriented in the two polarizations (vertical and horizontal), and the product is rotated at 360° in the horizontal plane (See photo(s) for initial position of the EUT(0°)). If applicable the test antenna was raised and lowered through the specified range of height until a maximum signal level is detected. 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 Freq - All Positions	30MHz-1GHz	15.209	EMI5199	PASS

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

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Electro Metrics	BIA-30HF	0824	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	MegaPhase	F135N1N28	16664	25/10/2019	25/12/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	C&C	N-1.5m	10554	20/12/2019	20/02/2022
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Preamplifier	Mini-circuit	ZFL-1000LN	1321	25/06/2019	25/02/2021
Receiver	Rohde & Schwarz	FPL1003	16027	14/08/2020	14/10/2021
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	07/05/2020	07/07/2022
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS				
TX MODE / ALL FREQ - ALL POSITIONS				
Frequency (kHz)	Preliminary measurement (Pk) (dB μ V/m)	Final measurement (QP) (dB μ V/m)	Limit QP (dB μ V/m)	Margin (QP-Limit)
N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected.				

TEST SETUP PHOTO(S) -EUT POSITIONS



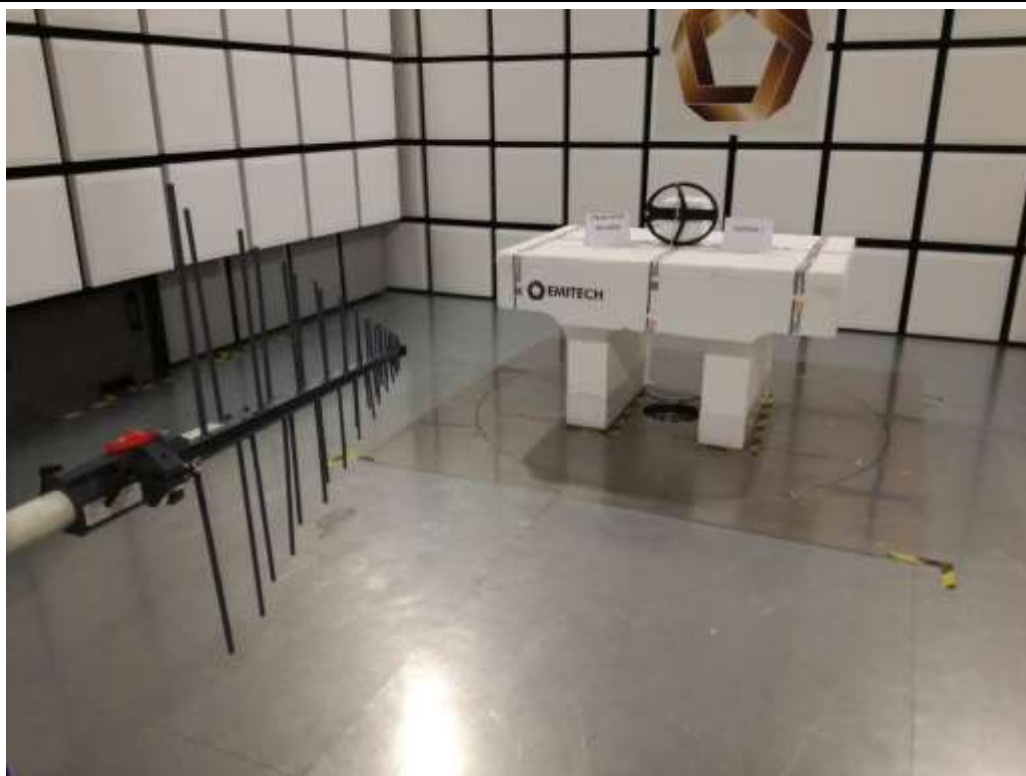
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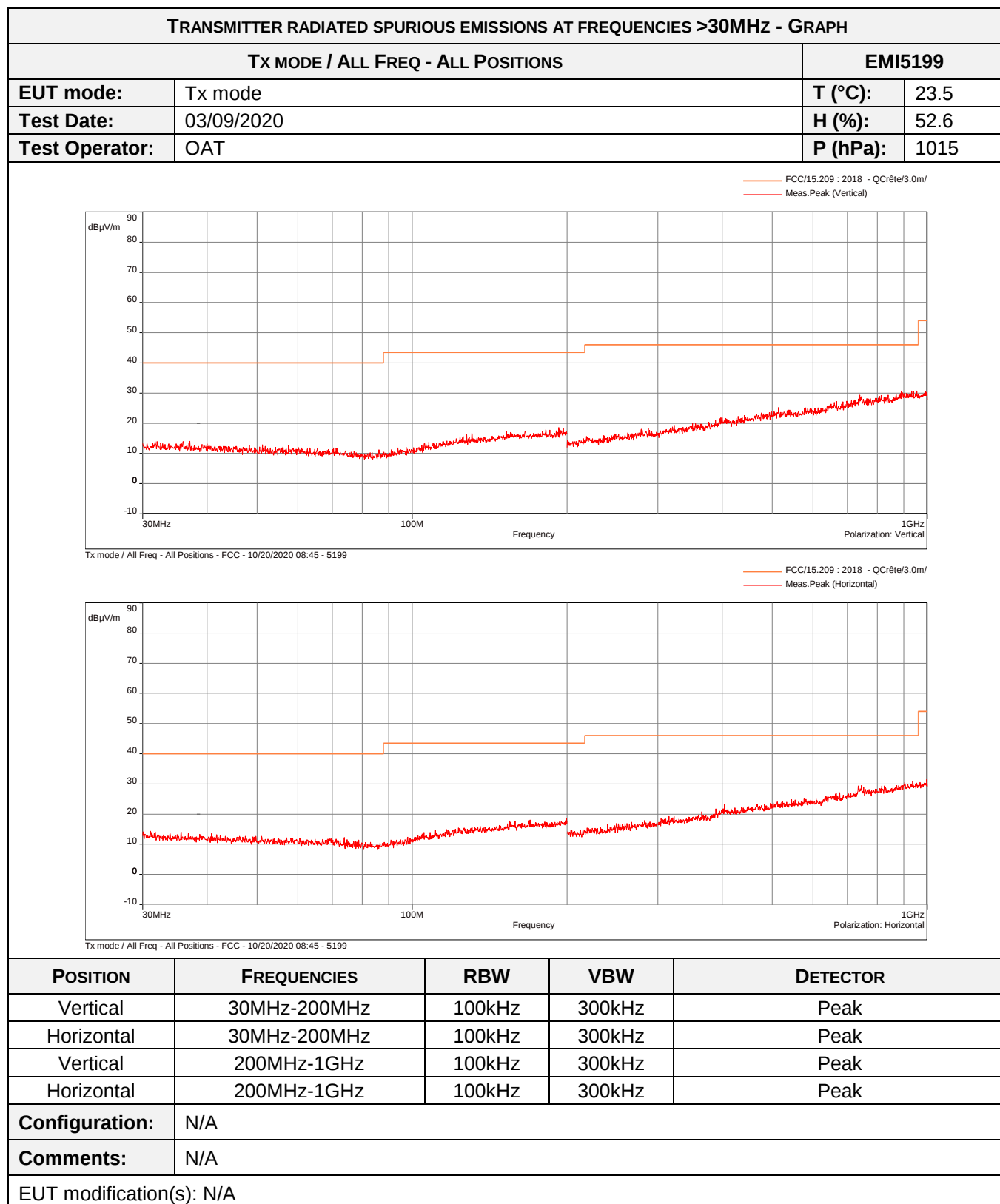


TEST SETUP PHOTO(S) – FOR FREQ < 200MHZ



TEST SETUP PHOTO(S) – FOR FREQ > 200MHz





7.4. H-field (radiated)

Reference standard:	FCC part 15 Radio part 15.209 & CNR-Gen
Test method:	FCC part 15.109, 15.209, 15.205, 15.215, CNR-Gen
Test description: The H-field is measured with a shielded loop antenna connected to a measurement receiver at standard distance of 10 m. For EUT with integral or dedicated antenna, measurements are done on a normalized test site (OATS) that complies to CISPR 16.. EUT is set on an insulating support at 80cm above the ground reference plane. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°). Then EUT is set inside the climatic enclosure. Measurements are repeated in extreme test conditions with the carrier level correlated with the maximum carrier level measured in normal conditions. EUT is powered by a stabilized power supply.	

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Low channel (OATS) / Position 1	Tx mode	N/A for information	EMI5719	N/A
Low channel (OATS) / Position 2	Tx mode		EMI5720	N/A
Low channel (OATS) / Position 3	Tx mode		EMI5721	N/A
High channel (OATS) / Position 1	Tx mode	15.209	EMI5722	PASS
High channel (OATS) / Position 2	Tx mode	15.209	EMI5723	PASS
High channel (OATS) / Position 3	Tx mode	15.209	EMI5724	PASS
Low channel / 25°C / 3.7Vdc	Tx mode	N/A for information	EMI5725	N/A
Low channel / 25°C / 4.5Vdc	Tx mode		EMI5726	N/A
Low channel / 25°C / 3.45Vdc	Tx mode		EMI5727	N/A
High channel / 25°C / 3.7Vdc	Tx mode	15.209	EMI5728	PASS
High channel / 25°C / 4.5Vdc	Tx mode	15.209	EMI5729	PASS
High channel / 25°C / 3.45Vdc	Tx mode	15.209	EMI5730	PASS
Low channel / 40°C / 3.7Vdc	Tx mode	N/A for information	EMI5731	N/A
Low channel / 40°C / 4.5Vdc	Tx mode		EMI5732	N/A
Low channel / 40°C / 3.45Vdc	Tx mode		EMI5733	N/A
High channel / 40°C / 3.7Vdc	Tx mode	15.209	EMI5734	PASS
High channel / 40°C / 4.5Vdc	Tx mode	15.209	EMI5735	PASS
High channel / 40°C / 3.45Vdc	Tx mode	15.209	EMI5736	PASS
Low channel / -5°C / 3.7Vdc	Tx mode	N/A for information	EMI5737	N/A
Low channel / -5°C / 4.5Vdc	Tx mode		EMI5738	N/A
Low channel / -5°C / 3.45Vdc	Tx mode		EMI5739	N/A
High channel / -5°C / 3.7Vdc	Tx mode	15.209	EMI5740	PASS
High channel / -5°C / 4.5Vdc	Tx mode	15.209	EMI5741	PASS
High channel / -5°C / 3.45Vdc	Tx mode	15.209	EMI5742	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	25.3 °C
Relative Humidity	20 to 75 %	54.1 %
Atmospheric pressure	N/A	1016 hPa
Test method deviation: The EUT is encapsulated in a casing. We were not able to measure its voltage supply during radiated tests		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Emco	6507	4211	04/09/2020	04/11/2022
Antenna	Rohde & Schwarz	HFH2-Z2	5825	24/04/2020	24/06/2022
Attenuator	Radiall	R412710124	17329	22/06/2020	22/08/2023
Cable	N	3m	16421	04/05/2019	04/07/2021
Cable	Huber + Suhner	N-20m	8385	07/11/2017	07/01/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Open area test site	EMITECH	Salinelles	3482	10/10/2017	10/12/2020
Power supply	TTI	TSX-1820P	4365		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Spectrum analyzer	Agilent Technologies	E4440A	5824	24/04/2018	24/12/2020
Thermo-Hygro-Baromètre	LUFFT	OPUS 20	14563	05/02/2020	05/04/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Wattmeter	Rohde & Schwarz	HMC 8015	17005	05/03/2020	05/05/2021

Blank cells = Permanent validity

TEST SETUP PHOTO(S) -EUT POSITION 1



TEST SETUP PHOTO(S) -EUT POSITION 2



TEST SETUP PHOTO(S) -EUT POSITION 3



TEST SETUP PHOTO(S) - (OATS) - FOR FREQ 4.1KHz



TEST SETUP PHOTO(S) - (OATS) - FOR FREQ 45.19KHz



TEST SETUP PHOTO(S) – EXTREME CONDITION



TEST SETUP PHOTO(S) – EXTREME CONDITION



H-FIELD (RADIATED) - TABULATED RESULTS				
TEST CONDITION	FREQUENCY	LEVEL	LIMIT	RESULT TAB.
Low channel (OATS) / Position 1	4.1kHz	39.06 dBμA/m (Azimuth: 0°) (Antenna Pos: 0°)	N/A for information	EMI5719
Low channel (OATS) / Position 2	4.1kHz	37.84 dBμA/m (Azimuth: 0°) (Antenna Pos: 0°)		EMI5720
Low channel (OATS) / Position 3	4.1kHz	23.46 dBμA/m (Azimuth: 0°) (Antenna Pos: 0°)		EMI5721
High channel (OATS) / Position 1	45.19kHz	27.12 dBμA/m (Azimuth: 0°) (Antenna Pos: 0°)	42.09	EMI5722
High channel (OATS) / Position 2	45.19kHz	26.92 dBμA/m (Azimuth: 0°) (Antenna Pos: 0°)		EMI5723
High channel (OATS) / Position 3	45.19kHz	4.01 dBμA/m (Azimuth: 150°) (Antenna Pos: 0°)		EMI5724
Low channel / 25°C / 3.7Vdc	4.1 kHz	39.06 dBμA/m	N/A for information	EMI5725
Low channel / 25°C / 4.5Vdc	4.1 kHz	39.06 dBμA/m		EMI5726
Low channel / 25°C / 3.45Vdc	4.1 kHz	39.06 dBμA/m		EMI5727
High channel / 25°C / 3.7Vdc	45.19kHz	27.12 dBμA/m	42.09	EMI5728
High channel / 25°C / 4.5Vdc	45.19kHz	27.12 dBμA/m		EMI5729
High channel / 25°C / 3.45Vdc	45.19kHz	27.12 dBμA/m		EMI5730
Low channel / 40°C / 3.7Vdc	4.1 kHz	39.53 dBμA/m	N/A for information	EMI5731
Low channel / 40°C / 4.5Vdc	4.1 kHz	39.53 dBμA/m		EMI5732
Low channel / 40°C / 3.45Vdc	4.1 kHz	39.53 dBμA/m		EMI5733
High channel / 40°C / 3.7Vdc	45.19kHz	27.07 dBμA/m	42.09	EMI5734
High channel / 40°C / 4.5Vdc	45.19kHz	27.07 dBμA/m		EMI5735
High channel / 40°C / 3.45Vdc	45.19kHz	27.07 dBμA/m		EMI5736
Low channel / -5°C / 3.7Vdc	4.1 kHz	38.92 dBμA/m	N/A for information	EMI5737
Low channel / -5°C / 4.5Vdc	4.1 kHz	38.92 dBμA/m		EMI5738
Low channel / -5°C / 3.45Vdc	4.1 kHz	38.92 dBμA/m		EMI5739
High channel / -5°C / 3.7Vdc	45.19kHz	26.43 dBμA/m	42.09	EMI5740
High channel / -5°C / 4.5Vdc	45.19kHz	26.43 dBμA/m		EMI5741
High channel / -5°C / 3.45Vdc	45.19kHz	26.43 dBμA/m		EMI5742

EUT MODIFICATIONS	OPERATOR	TEST DATE	RESULT TAB.
N/A	OAT	25/09/2020	-

7.5. Modulation bandwidth

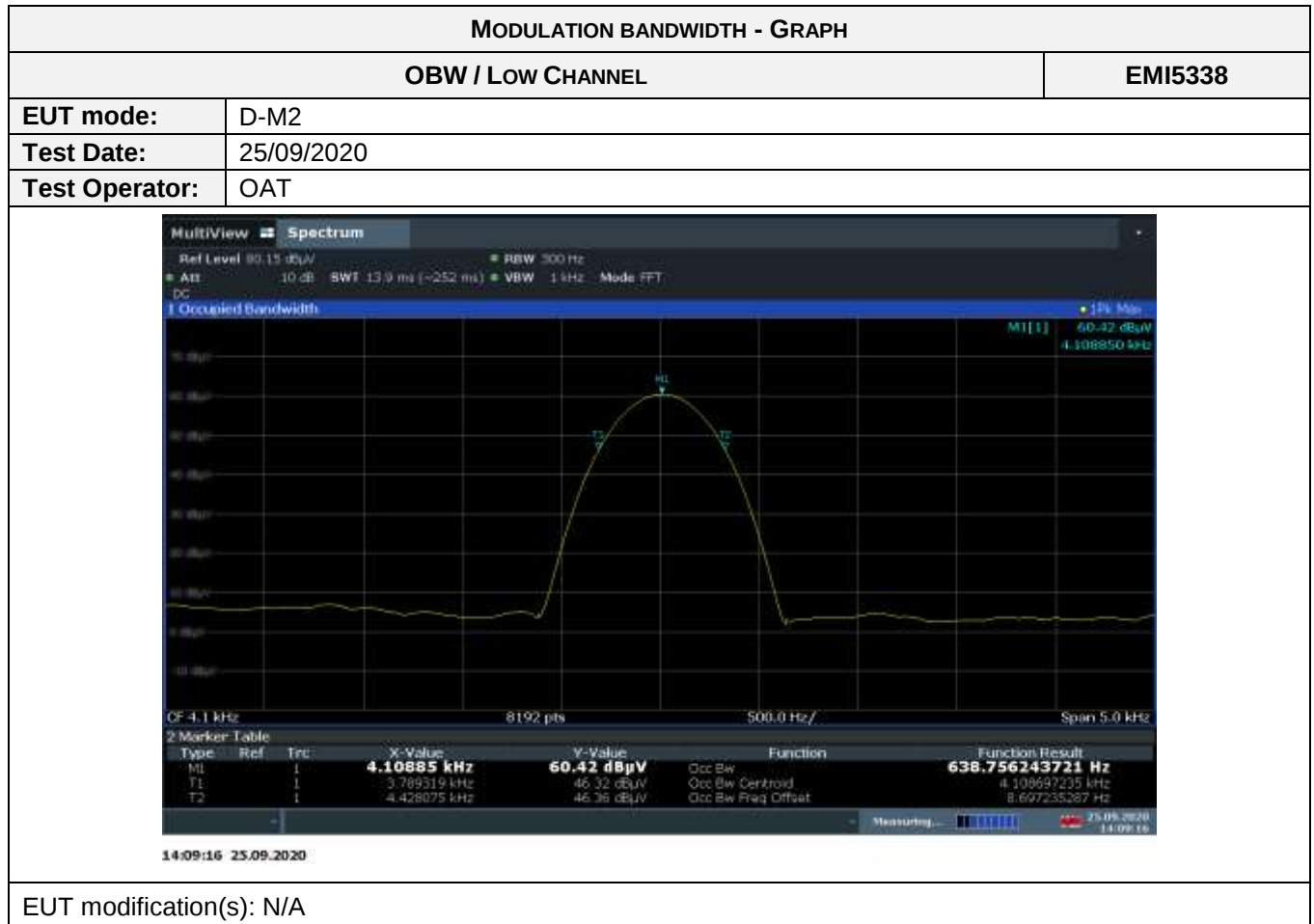
Reference standard:	FCC part 15 Radio part 15.215 and RSS Gen
Test method:	FCC part 15 Radio part 15.215 and RSS Gen
Test description: The modulation bandwidth contains all associated side bands above a defined level. For EUT without dedicated or integral antenna, EUT is connected to the measuring receiver via 50Ω attenuator(s). Radiated carrier limit applies to the maximum measured conducted power value adjusted by the antenna gain. For EUT with integral or dedicated antenna, measurements are done on a normalized test site. EUT is set on an insulating support at 80cm above the ground reference plane. Then EUT is set inside the climatic enclosure. Measurements are repeated in extreme test conditions with the carrier levels correlated with the maximum carrier level measured in normal conditions.	

TEST CASE AND CONDITIONS	MODULATION BANDWIDTH	RESULT TAB.	VERDICT
OBW / Low Channel	638.756 Hz	EMI5338	PASS
OBW / High Channel	637.759 Hz	EMI5339	PASS
20dB Bandwidth / Low Channel	752.92 Hz	EMI5356	N/A
20dB Bandwidth / High Channel	752.56 Hz	EMI5357	PASS

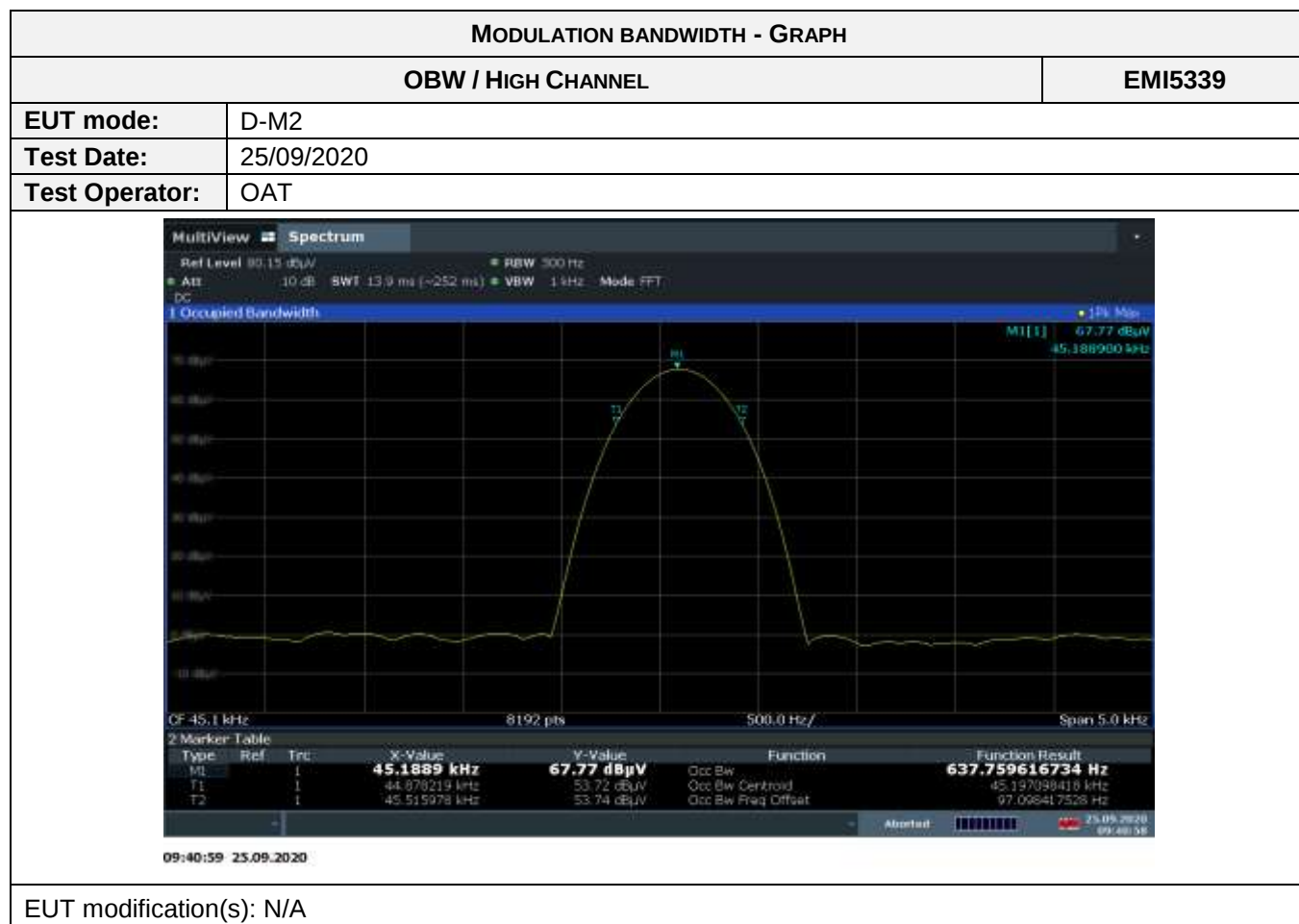
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	22.1 °C
Relative Humidity	20 to 75 %	47.3 %
Atmospheric pressure	N/A	999 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Attenuator	Radiall	R412710124	17329	22/06/2020	22/08/2023
Cable	N	3m	16421	04/05/2019	04/07/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Power supply	TTI	TSX-1820P	4365		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Thermo-Hygro-Baromètre	LUFFT	OPUS 20	14563	05/02/2020	05/04/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Wattmeter	Rohde & Schwarz	HMC 8015	17005	05/03/2020	05/05/2021

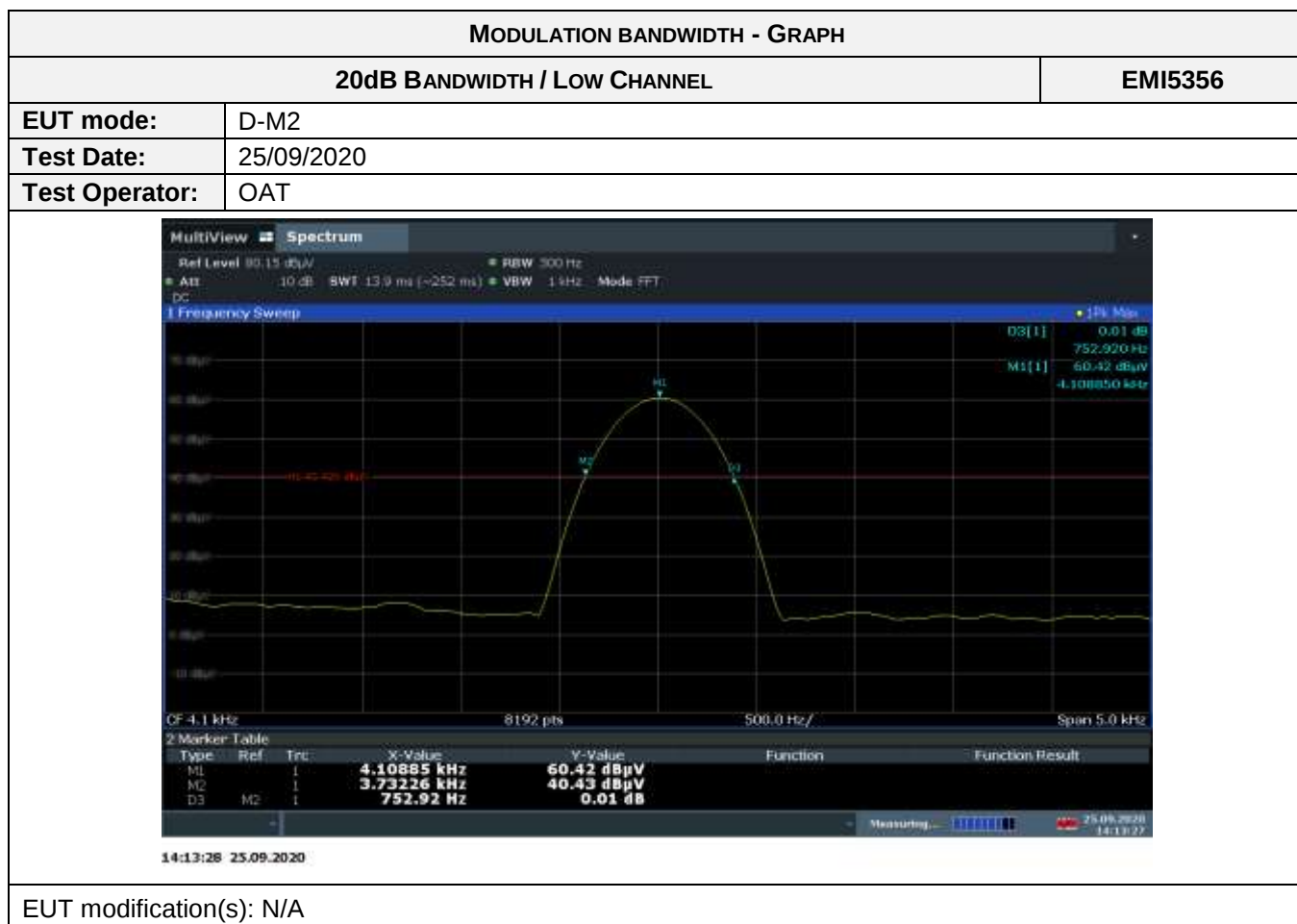
Blank cells = Permanent validity



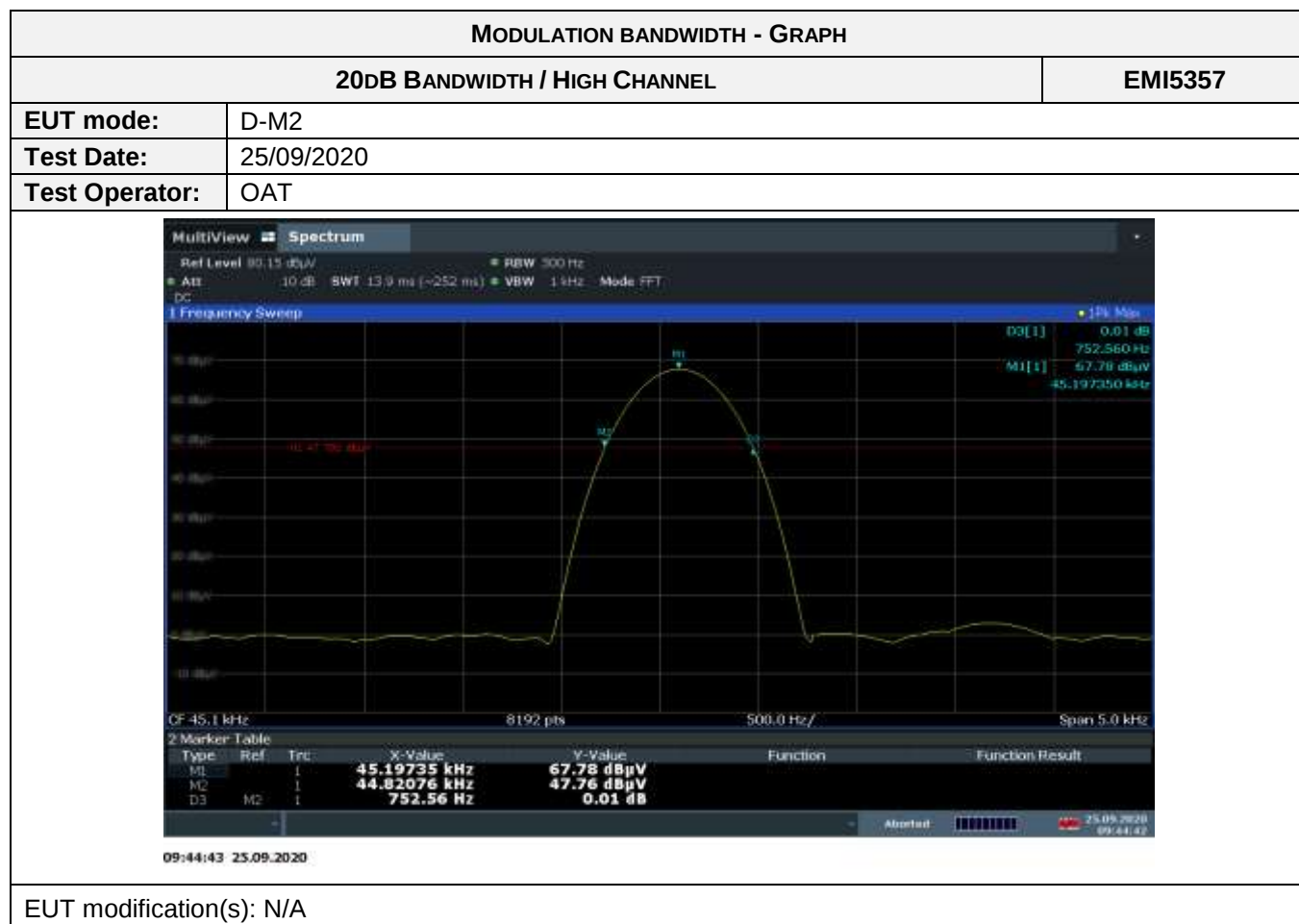
MODULATION BANDWIDTH - TABULATED RESULTS		
OBW / Low CHANNEL		EMI5338
f _{Low}	f _{High}	OBW
3.789 kHz	4.428 kHz	638.756 Hz



MODULATION BANDWIDTH - TABULATED RESULTS		
OBW / HIGH CHANNEL / 25°C / 3.7VDC		EMI5339
f _{Low}	f _{High}	OBW
44.878 kHz	45.516 kHz	637.759 Hz



MODULATION BANDWIDTH - TABULATED RESULTS		
20dB BANDWIDTH / Low CHANNEL		EMI5356
f_{Low}	f_{High}	20dB Bandwidth
3.732 kHz	4.485 kHz	752.92 Hz



MODULATION BANDWIDTH - TABULATED RESULTS		
20dB BANDWIDTH / HIGH		EMI5357
f_{Low}	f_{High}	20dB Bandwidth
44.821 kHz	45.573 kHz	752.56 Hz

7.6. Frequency error

Reference standard:	FCC part 15 Radio part 15.215 and RSS Gen
Test method:	FCC part 15 Radio part 15.215 and RSS Gen
Test description: Frequency error is the difference between the measured unmodulated carrier frequency under extreme conditions and the nominal Centre Frequency as stated by the manufacturer. EUT is set inside the climatic enclosure. It is connected to the measuring receiver via 50Ω attenuator(s). RBW=100Hz	

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Low channel / 25°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5849	PASS
Low channel / 25°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5850	PASS
Low channel / 25°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5851	PASS
High channel / 25°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5852	PASS
High channel / 25°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5853	PASS
High channel / 25°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5854	PASS
Low channel / 40°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5855	PASS
Low channel / 40°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5856	PASS
Low channel / 40°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5857	PASS
High channel / 40°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5858	PASS
High channel / 40°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5859	PASS
High channel / 40°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5860	PASS
Low channel / -5°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5861	PASS
Low channel / -5°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5862	PASS
Low channel / -5°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5863	PASS
High channel / -5°C/ 3.7Vdc	Continuous Tx	0.001 %	EMI5864	PASS
High channel / -5°C/ 4.2Vdc	Continuous Tx	0.001 %	EMI5865	PASS
High channel / -5°C/ 3.45Vdc	Continuous Tx	0.001 %	EMI5866	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	22.1 °C
Relative Humidity	20 to 75 %	47.3 %
Atmospheric pressure	N/A	999 hPa
Test method deviation: N/A		
Supplementary information: EUT power supply is replaced by a stabilized power supply.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Attenuator	Radiall	R412710124	17329	22/06/2020	22/08/2023
Cable	N	3m	16421	04/05/2019	04/07/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2019	19/11/2020
Power supply	TTI	TSX-1820P	4365		
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/03/2021
Thermo-Hygro-Baromètre	LUFFT	OPUS 20	14563	05/02/2020	05/04/2021
Thermohygrometer	Testo	608-H2	12268	07/05/2020	07/07/2022
Wattmeter	Rohde & Schwarz	HMC 8015	17005	05/03/2020	05/05/2021

Blank cells = Permanent validity



TEST SETUP PHOTO(S)



FREQUENCY ERROR - TABULATED RESULTS				
TEST CASE	FREQUENCY	FREQUENCY ERROR	LIMIT	RESULT TAB.
Low channel / 25°C/ 3.7Vdc	4.10885 kHz	N/A	0.001 %	EMI5849
Low channel / 25°C/ 4.2Vdc	4.10885 kHz	0	0.001 %	EMI5850
Low channel / 25°C/ 3.45Vdc	4.10885 kHz	0	0.001 %	EMI5851
High channel / 25°C/ 3.7Vdc	45.1889 kHz	N/A	0.001 %	EMI5852
High channel / 25°C/ 4.2Vdc	45.1889 kHz	0	0.001 %	EMI5853
High channel / 25°C/ 3.45Vdc	45.1889 kHz	0	0.001 %	EMI5854
Low channel / 40°C/ 3.7Vdc	4.10885 kHz	0	0.001 %	EMI5855
Low channel / 40°C/ 4.2Vdc	4.10885 kHz	0	0.001 %	EMI5856
Low channel / 40°C/ 3.45Vdc	4.10885 kHz	0	0.001 %	EMI5857
High channel / 40°C/ 3.7Vdc	45.1889 kHz	0	0.001 %	EMI5858
High channel / 40°C/ 4.2Vdc	45.1889 kHz	0	0.001 %	EMI5859
High channel / 40°C/ 3.45Vdc	45.1889 kHz	0	0.001 %	EMI5860
Low channel / -5°C/ 3.7Vdc	4.10885 kHz	0	0.001 %	EMI5861
Low channel / -5°C/ 4.2Vdc	4.10885 kHz	0	0.001 %	EMI5862
Low channel / -5°C/ 3.45Vdc	4.10885 kHz	0	0.001 %	EMI5863
High channel / -5°C/ 3.7Vdc	45.1889 kHz	0	0.001 %	EMI5864
High channel / -5°C/ 4.2Vdc	45.1889 kHz	0	0.001 %	EMI5865
High channel / -5°C/ 3.45Vdc	45.1889 kHz	0	0.001 %	EMI5866

EUT MODIFICATIONS	OPERATOR	TEST DATE	RESULT TAB.
N/A	OAT	25/09/2020	-

End of test report