



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
MRA US-EU Designation Number: FR0006
IC Assigned Code: FR0003

RADIO TEST REPORT

FCC part 15.249
RSS-210 Issue 10

Company: **ESII**
Address.....: 2 RUE DE LA PRADE
34880 LAVERUNE
FRANCE

Test item description: **GATEWAY**
Trade Mark: ESII
Manufacturer: ESII
Model/Type reference.....: V3/RADMO10
FCC ID.....: 2ATRJRAD
IC: 25190-RAD
Ratings.....: 100-240Vac/50-60Hz

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

Report Reference No.: **R412-19-100847-5A**
Test procedure: FCC IC Certification
Diffusion.....: M. GELLY
Applicant's name: ESII
Date of issue.....: 14/04/2020
Total number of pages.....: 41
Revision.....: 0
Modified page(s).....: Creation
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.*



Siège Social : Emitech - 3, rue des Coudriers - CAP 78 - ZA de l'Observatoire - 78180 MONTIGNY LE BX - France
Siret : 344 545 645 00022 - Tél. : 33 (0)1 30 57 55 55 - Fax : 33 (0)1 30 43 74 48 - E-mail : contact@emitech.fr - URL : www.emitech.fr
S.A. au capital de 1 560 000 € - R.C.S. VERSAILLES 344 545 645 - APE 7112B

REPORT INDEX:

1. GENERAL INFORMATIONS	3
2. REFERENCE DOCUMENT(S)	4
3. EQUIPMENT TECHNICAL DESCRIPTION	5
3.1. TEST CONDITIONS	5
3.2. EUT GENERAL VIEW	5
3.3. EUT MARKING PLATE	6
3.4. EUT ELECTRONIC BOARD	7
3.5. EUT MECHANICAL AND ELECTRICAL DESIGN	8
3.6. EUT INPUT/OUTPUT PORTS	8
3.7. EUT RADIO SPECIFICATIONS	9
4. RESULT SUMMARY	10
5. RF EXPOSURE	11
6. MEASUREMENT UNCERTAINTY	12
7. TEST CONDITIONS AND RESULTS	13
7.1. CONDUCTED EMISSION (MEASUREMENT)	13
7.2. OCCUPIED BANDWIDTH	17
7.3. 20dB BANDWIDTH	21
7.4. FIELD STRENGTH OF FUNDAMENTAL	25
7.5. BAND EDGE	26
7.6. RADIATED SPURIOUS EMISSIONS	29

1. GENERAL INFORMATION

This document submits the results of Radio tests performed on the equipment **GATEWAY** (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 : June, 17th to 24 th and september 25 th of 2019			
APPLICANT'S GENERAL INFORMATION:			
Company name : ESII Company address. : 2 RUE DE LA PRADE 34880 LAVERUNE FRANCE Person(s) present during the tests. : M. GELLY & M. METRAL Responsible. : M. GELLY			
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 case does not apply to the test object. . : N/A Information not communicated. : N/C Test case not performed..... : N/P Test object does meet the requirement..... : P (Pass) Test object does not meet the requirement.. : F (Fail) Test object was not subjected to all tests..... : I (Inconclusive)			
DEFINITIONS AND ABBREVIATIONS:			
E.U.T.	Equipement under test	AE	Ancillary equipment
RBW	Resolution bandwidth	VBW	Video bandwidth
OATS	Open area test site	FAR	Full anechoic room
RF	Radio frequency	NTR	Nothing to report
SRD	Short Range Device	GPS	Global Positioning System

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

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

FCC part 15

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

FCC part 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5850MHz, and 24.0-24.25GHz

RSS/CNR-Gen, Issue 5, March 2019

General Requirements for Compliance of Radio Apparatus

RSS/CNR-210, Issue 10, December 2019

Licence-Exempt Radio Apparatus: Category I Equipment

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

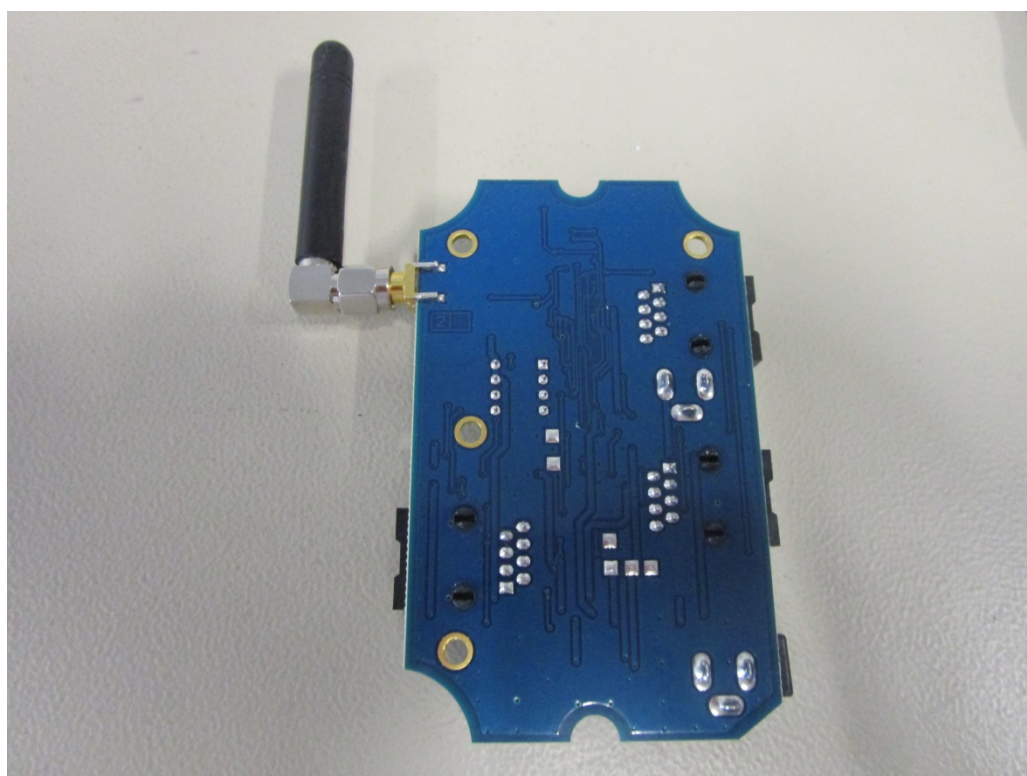
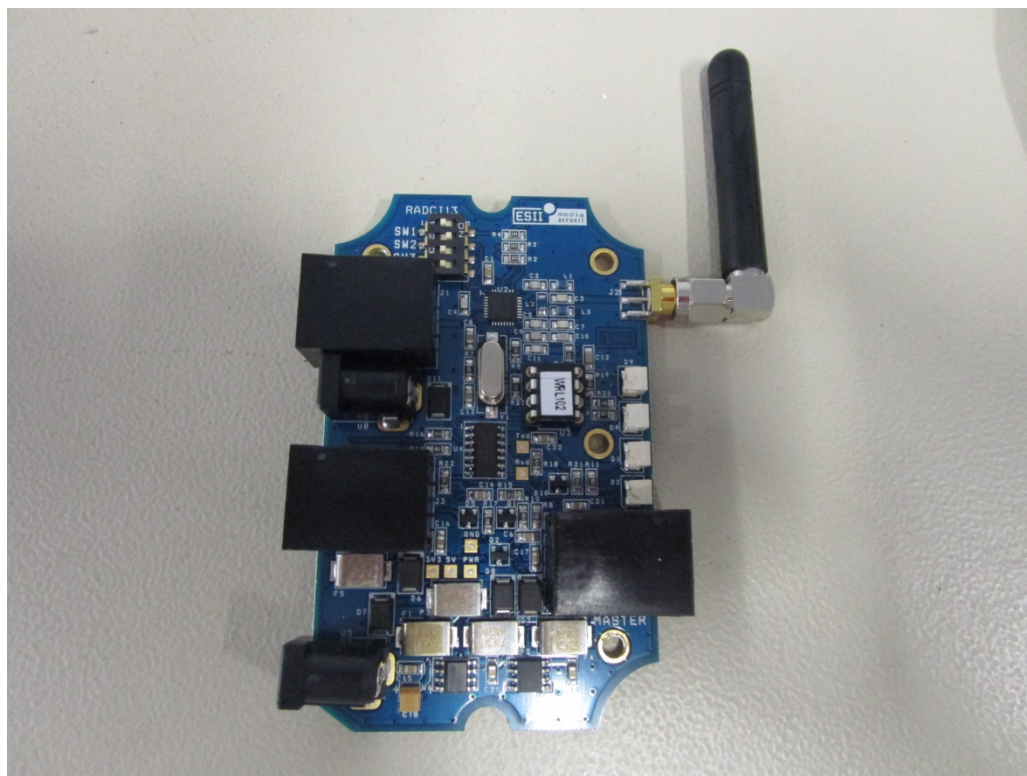
INFORMATIVE REFERENCES:

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.

3.3. EUT Marking Plate



3.4. EUT Electronic board



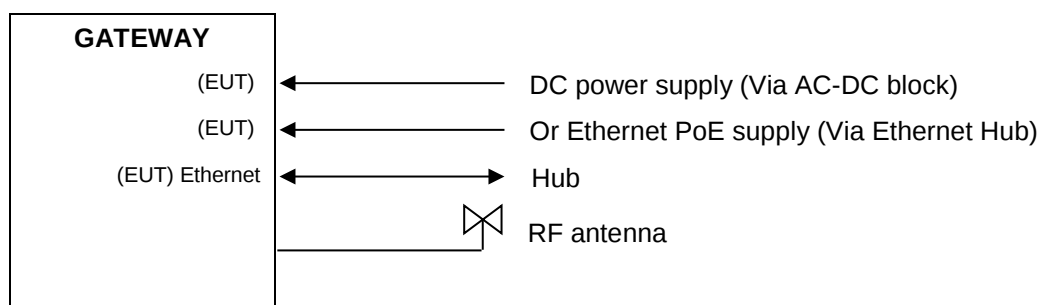
3.5. EUT Mechanical and Electrical Design

Power supply. : 110Vac/60Hz and Ethernet PoE Supply
Power supply range. : 100-240Vac/50-60Hz
Power type. : Single phase without earth and Ethernet PoE Supply
Power (W). : Not communicated
Nominal current (A). : Not communicated
Dimensions (L x W x H) (m). : 0.1 x 0.06 x 0.025
Weight (kg). : 0.082
Temperature range (°C). : 0-40
Ground bounding strap. : No

Comments:

N/A

3.6. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	
1	AC power supply	AC/DC	N/A	N/A	
2	Ethernet PoE supply	DC	10m	N/A	
3	Ethernet	TP	10m	N/A	
4	RF antenna	RF	N/A	N/A	External

AC/DC : AC/DC Converter port

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

N/E: Non Electrical port

AC.....: Alternative current port

TP: Telecommunication port

DC: Discontinuous current port

RF.....: Radio frequency port

3.7. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	: Transceiver
Technology	: SRD
Environmental profile.....	: Data transmissions
Temperature range.....	: (Indoor) (+5°C to +40°C)
Antenna type	: External
Antenna Gain.....	: 0 dBi (average)
Comments:	
N/A	
b) TRANSMITTER PARAMITERS (Tx)	
Frequency bands.....	: 902MHz-928 MHz
RF Power setting	: -2 dBm
Number of channels / Separation.....	: 2
Modulation type	: GFSK
Duty cycle	: < 100%
Tested frequency.....	: 915MHz (Low channel) 920MHz (High channel)
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	: 915MHz-920MHz
Category/Class	: Category 2
Bandwidth	: 250 kHz

4. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
SUBPART A - GENERAL			
Labeling requirements		N/P	15.19 / See certification documents
Information to user		N/P	15.21 / See certification documents
Home-built devices		N/A	15.23
Kits		N/A	15.25
Special Accessories		N/A	15.27
Inspection by the Commission		N/A	15.29
Measurement standards		PASS	15.31
Test procedure for CPU boards and computer power supplies		N/A	15.32
Frequency range of radiated measurements		PASS	15.33
Measurement detector functions and bandwidths		PASS	15.35
Transition provisions for compliance with the rules		N/P	15.37 / See certification documents
SUBPART B – UNINTENTIONAL RADIATORS			
Equipment authorization			15.101
- Verification		N/P	
- Declaration of Conformity		N/P	
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
SUBPART C –INTENTIONAL RADIATORS			

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / 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 / Integral antenna
External radio frequency power amplifiers and antenna modifications		N/A	15.204
Restricted bands of operation		PASS	15.204
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
Operation within the band 902-928MHz, 2400-2483.5MHz, 5725-5850MHz, and 24.0-24.25GHz			15.249
- Field strength of fundamental		PASS	a)
- Point to point system		N/A	b)
- Field strength in the band		N/A	b) (1)
- Frequency tolerance of the carrier signal		N/A	b) (2)
- Antenna gain		N/A	b) (3)
- Field strength limits		PASS	c)
- Emissions radiated outside of the specified frequency bands		PASS	d)
- Field strength limits for frequencies above 1000 MHz		PASS	e)

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. RF EXPOSURE

Radiated measurement = 88.5dBμV/m approximatively -8.9dBm
Maximum antenna gain = integral (included in eirp measurement)
Maximum EIRP = 0.13 mW (eirp) at 915.3MHz

In accordance with KDB 447498 D01 General RF Exposure Guidance v06:
 $PSD = EIRP / (4 * \pi * R^2) = 0.13 / (4 * \pi * (20 \text{ cm})^2) = 0.000025 \text{ mW/cm}^2$
Limit= 0.61 mW/cm² (f /1500 if 300<f< 1500 MHz)

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Conducted emission (Artificial Mains Network) 150kHz – 30MHz	$\pm 3.4 \text{ dB}$	$\pm 3.4 \text{ dB}$
Radio frequency	$\pm 1 \times 10^{-7}$	$\pm 1 \times 10^{-7}$
Occupied bandwidth		
RF power	$\pm 1.2 \%$	$\pm 5 \%$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 2.7 \text{ dB}$	$\pm 6 \text{ dB}$
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	$\pm 4.4 \%$	$\pm 5 \%$
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	$\pm 2.7 \text{ dB}$	/
30MHz – 1GHz	$\pm 5.2 \text{ dB}$	/
1GHz – 18GHz	$\pm 5.3 \text{ dB}$	/
18GHz – 26GHz	$\pm 5.5 \text{ dB}$	/
26GHz – 40GHz	$\pm 5.5 \text{ dB}$	/

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 and RSS-Gen Issue 5
Test method:	ANSI 63.4: 2014
General test setup: EUT is set on an insulating support at 40cm 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. 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
110Vac/60Hz power supply	150kHz-30MHz	Class B	EMI4669	PASS
110Vac/60Hz power supply – Hub power	150kHz-30MHz	Class B	EMI4670	PASS

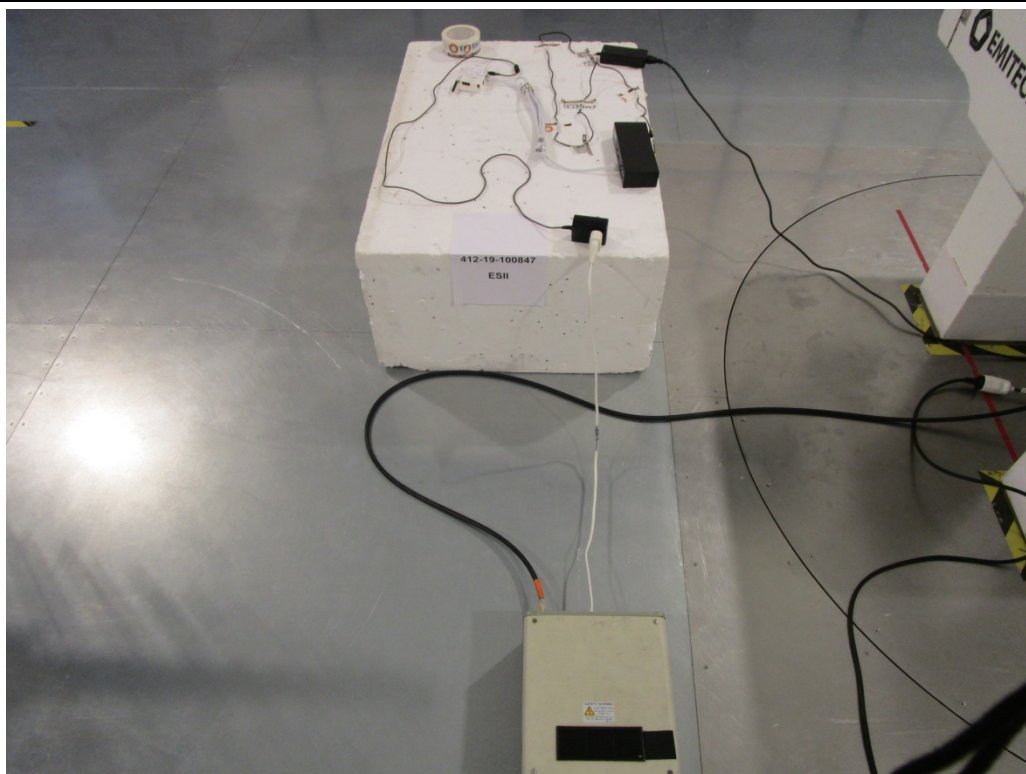
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(es)
Relative Humidity	30 to 60 %	See Graph(es)
Atmospheric pressure	N/A	See Graph(es)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	CHROMA	61603	12532	25/04/2018	25/06/2020
Cable	MICRO-COAX	N-3m	10536	12/10/2017	12/12/2019
Cable	SUCOFLEX	N-3m	14378	19/07/2017	19/09/2019
Cable	C&C	N-5m	14341	15/01/2019	15/03/2021
LISN	PMM	L2-16	1209	08/02/2018	08/04/2020
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	BAT EMC V3.18.0.26	0000		
Surges Suppressor	Hewlett Packard	11947A	0238	11/09/2017	11/11/2019
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

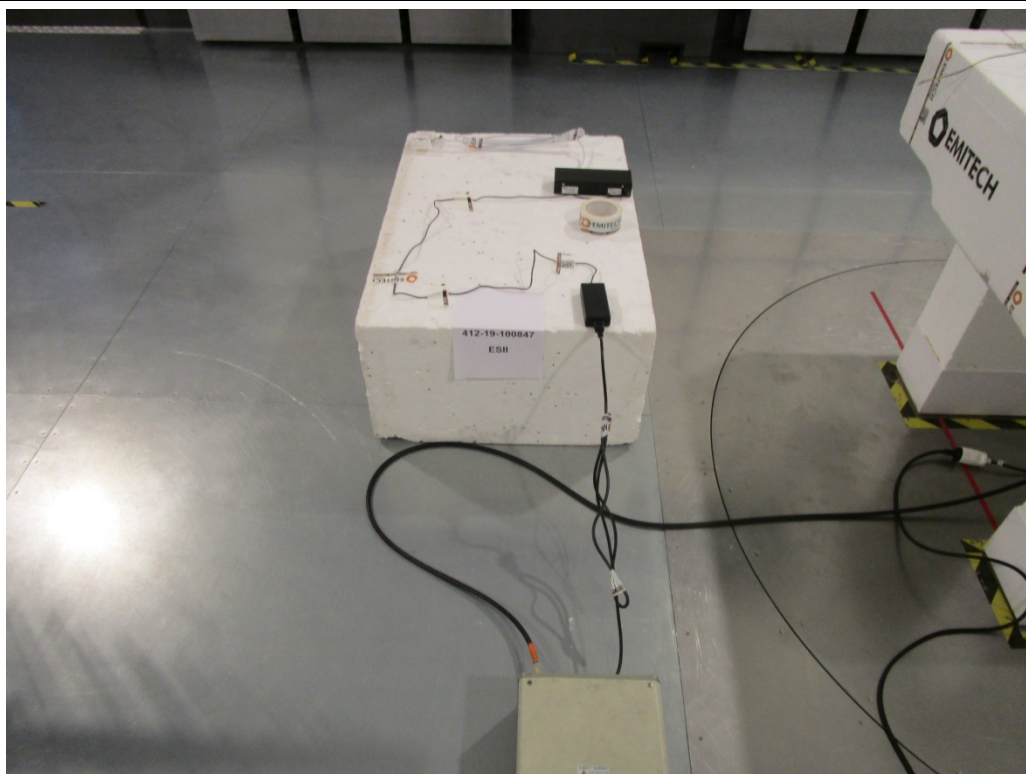
BAT-EMC software version: V3.18.0.26

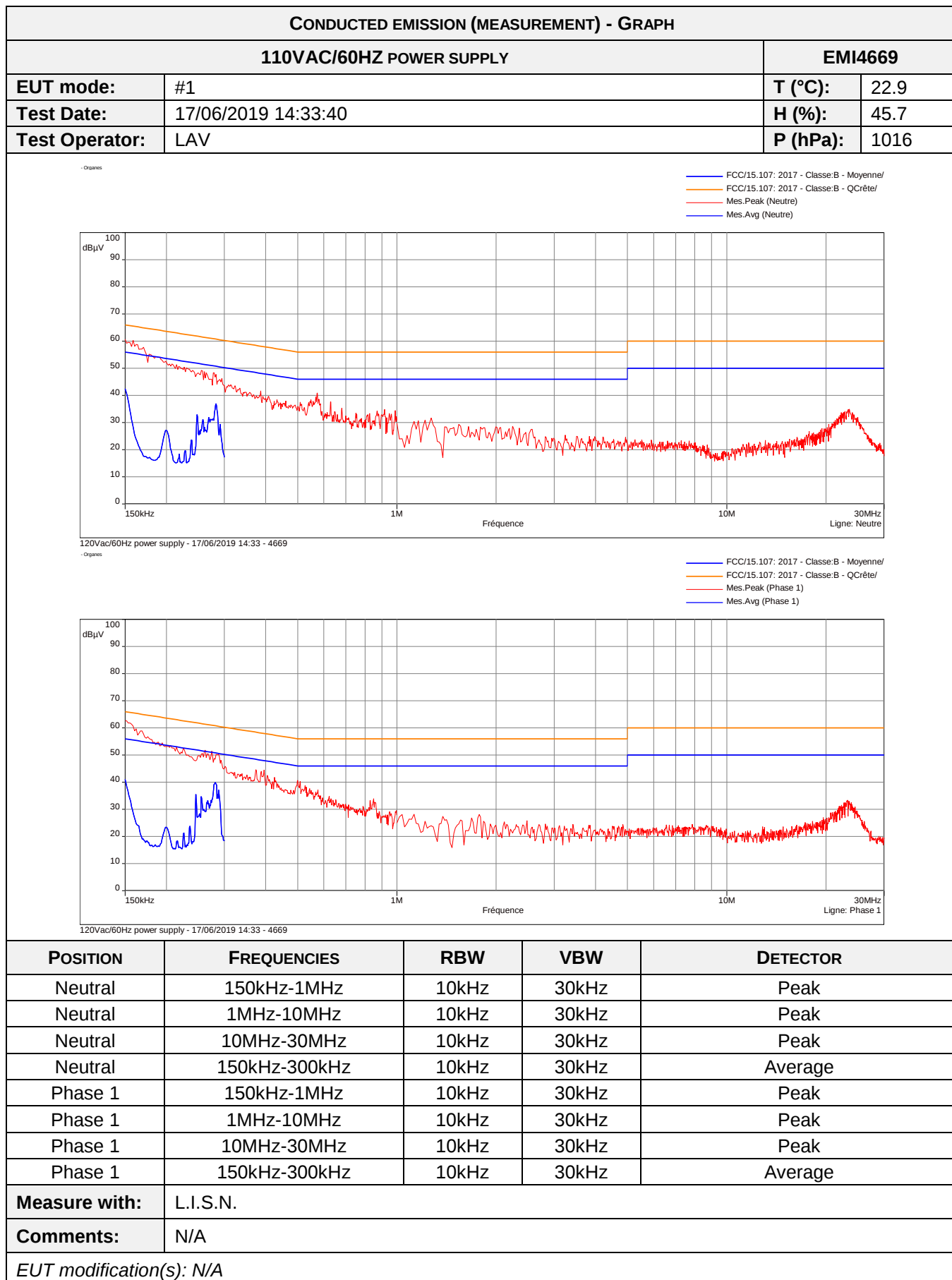
Blank cells = Permanent validity

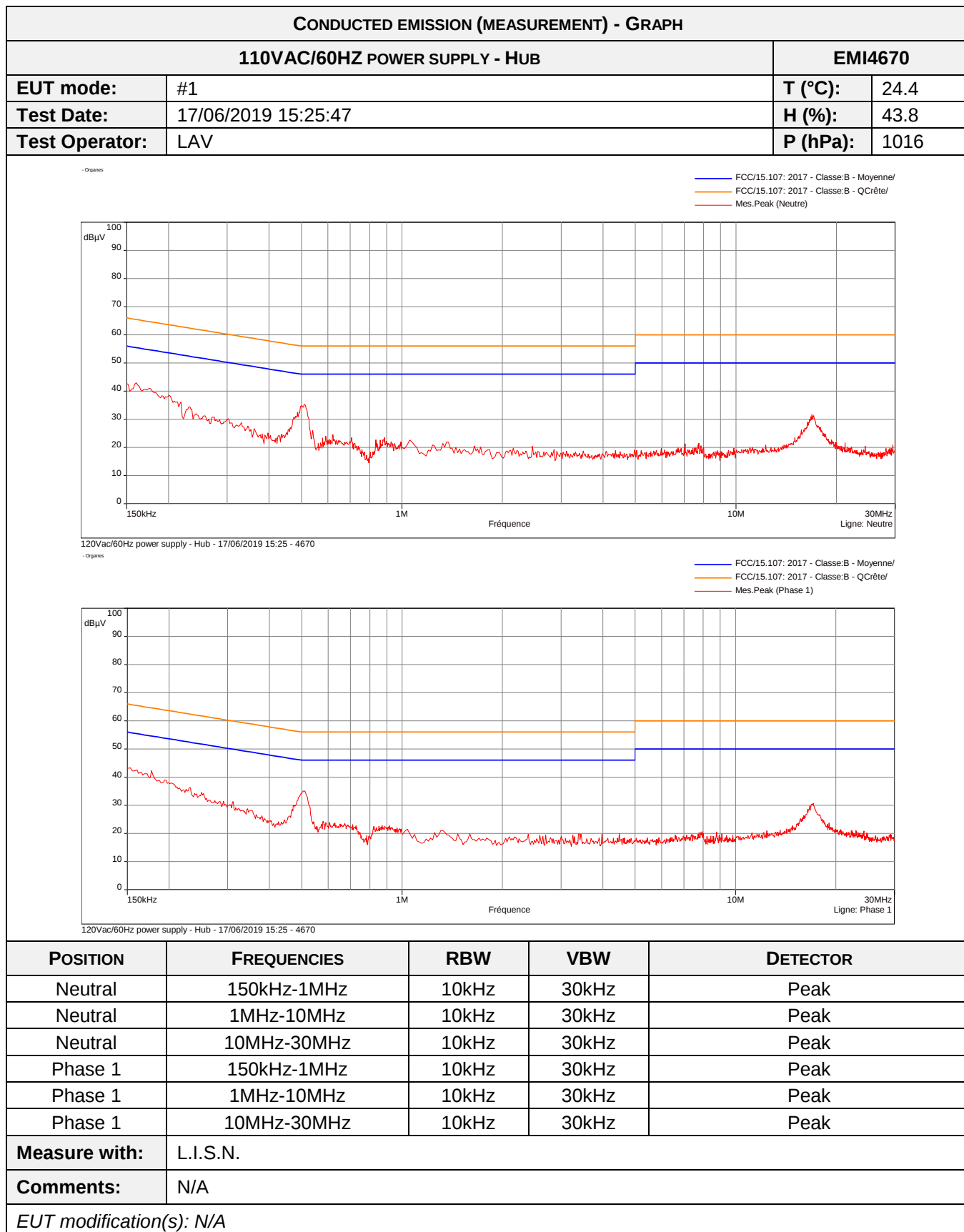
TEST SETUP PHOTO(S) - 110VAC/60HZ POWER SUPPLY



TEST SETUP PHOTO(S) - 110VAC/60HZ POWER SUPPLY - HUB







7.2. Occupied Bandwidth

Reference standard:	FCC part 15 and RSS-210 Issue 10
Test method:	ANSI C63.10: 2013
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 $\beta/2$ on each side of the spectrum. Unless otherwise specified, $\beta/2$ 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).	

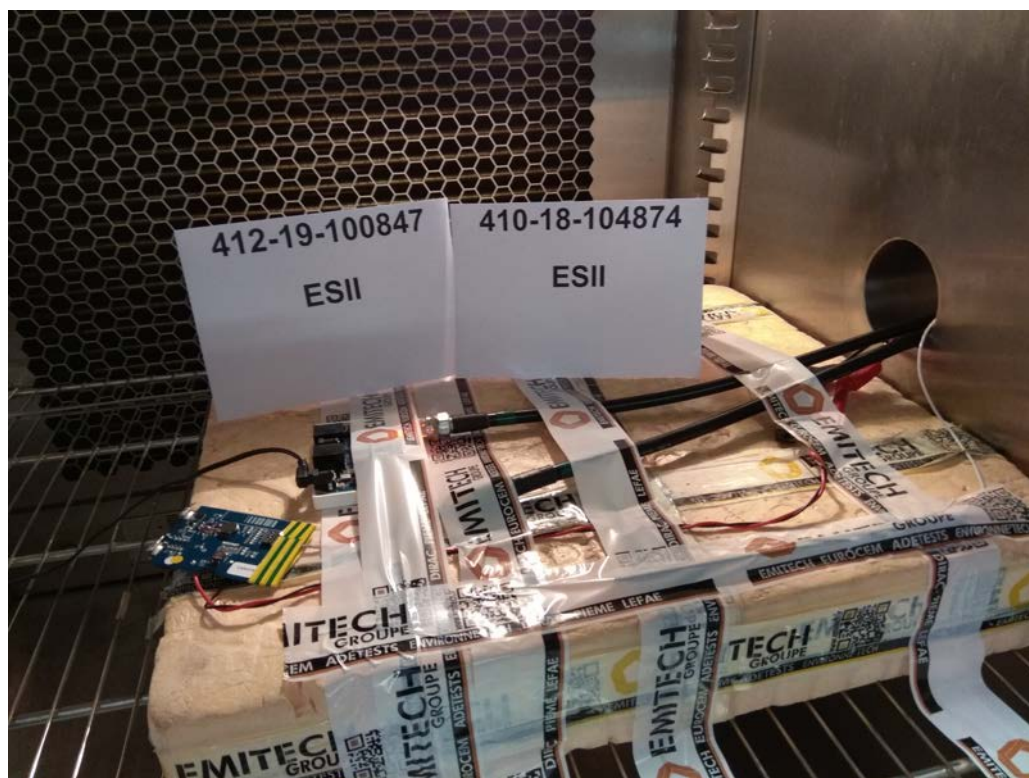
TESTED PARAMETER	OBW	SEVERITY	RESULT TAB.	VERDICT
Low Channel	193.89 kHz	<OCW	EMI5993	PASS
High Channel	193.77 kHz	<OCW	EMI5994	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	23.5 °C
Relative Humidity	20 to 75 %	44.4 %
Atmospheric pressure	N/A	1016 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Attenuator	Radiall	R412710124	4390	01/02/2018	01/04/2020
Cable	C&C	N-3m	14333	15/01/2019	15/03/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Multimeter	Agilent Technologies	U1252A	6138	24/01/2018	24/03/2020
Power supply	TTi	PL303QMD	8496		
Receiver	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020
Software	Nexio		0000		
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
Attenuator	Radiall	R412710124	4390	01/02/2018	01/04/2020

Blank cells = Permanent validity

TEST SETUP PHOTO(S)



OCCUPIED BANDWIDTH - GRAPH	
LOW CHANNEL	
EMI5993	
EUT mode:	Contunious Tx modulated mode
Test Date:	25/09/2019
Test Operator:	MPA
MultiView Spectrum Ref Level -32.00 dBm Att 0 dB SWT 12.5 ms RBW 2 kHz VBW 5 kHz Mode Sweep 1 Occupied Bandwidth	

OCCUPIED BANDWIDTH - GRAPH	
HIGH CHANNEL	
EMI5994	
EUT mode:	Contunious Tx modulated mode
Test Date:	25/09/2019
Test Operator:	MPA

MultiView Spectrum

Ref Level -18.00 dBm RBW 2 kHz
Att 0 dB SWT 12.5 ms VBW 5 kHz Mode Sweep

1 Occupied Bandwidth

M1[1] -35.98 dBm
920.340220 MHz

CF 920.34 MHz 1001 pts 50.0 kHz/ Span 500.0 kHz

2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1	1		920.34022 MHz	-35.98 dBm	Occ Bw	193.772413953 kHz
T1	1		920.248205 MHz	-54.29 dBm	Occ Bw Centroid	920.345091614 MHz
T2	1		920.441978 MHz	-56.20 dBm	Occ Bw Freq Offset	5.091613694 kHz

Measuring... 25.09.2019 14:01:14

Results:	OBW = 193.77 kHz
EUT modification(s): N/A	

7.3. 20dB bandwidth

Reference standard:	FCC part 15 and RSS-210 Issue 10
Test method:	ANSI C63.10: 2013
Test description: EUT is connected to the measuring receiver via 50Ω attenuator(s).	

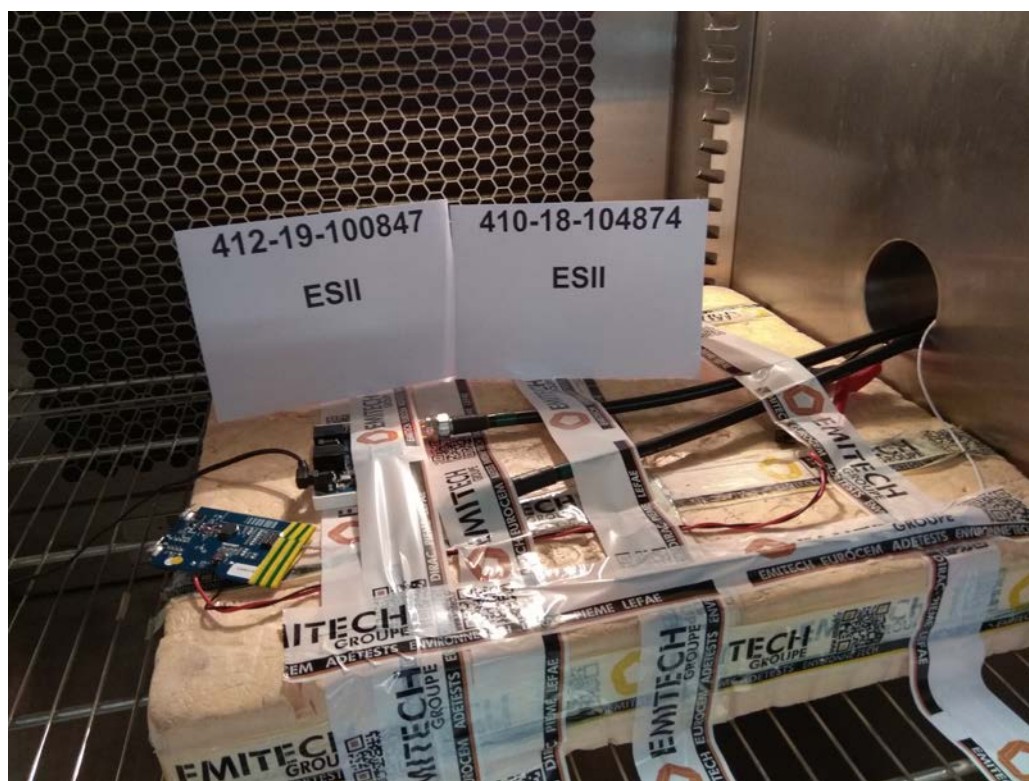
TESTED PARAMETER	RESULT	SEVERITY	RESULT TAB.	VERDICT
20dB Bandwidth Low Channel	206.79 kHz	-	EMI5568	PASS
20dB Bandwidth High Channel	189.81 kHz	-	EMI5569	PASS

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
Attenuator	Radiall	R412710124	4390	01/02/2018	01/04/2020
Cable	C&C	N-3m	14333	15/01/2019	15/03/2021
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Multimeter	Agilent Technologies	U1252A	6138	24/01/2018	24/03/2020
Power supply	TTi	PL303QMD	8496		
Receiver	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020
Software	Nexio		0000		
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
Attenuator	Radiall	R412710124	4390	01/02/2018	01/04/2020

Blank cells = Permanent validity

TEST SETUP PHOTO(S)



20dB BANDWIDTH - GRAPH				
20dB BANDWIDTH LOW CHANNEL			EMI5568	
EUT mode:	Contunious Tx modulated mode		T (°C):	23.5
Test Date:	25/09/2019		H (%):	44.4
Test Operator:	MPA		P (hPa):	1016

MultiView

Spectrum

Ref Level -27.00 dBm

RBW 2 kHz

Att 0 dB

SWT 12.5 ms

VBW 5 kHz

Mode Sweep

1 Frequency Sweep

20dB BANDWIDTH - GRAPH			
20dB BANDWIDTH HIGH CHANNEL		EMI5569	
EUT mode:	Contunious Tx modulated mode	T (°C):	23.5
Test Date:	25/09/2019	H (%):	44.4
Test Operator:	MPA	P (hPa):	1016

MultiView

Spectrum

Ref Level -27.00 dBm

RBW 2 kHz

Att 0 dB

SWT 12.5 ms

VBW 5 kHz

Mode Sweep

1 Frequency Sweep

1Pk View

D3[1]

M1[1]

-1.61 dB

189.810 kHz

-36.20 dBm

920.339000 MHz

CF 920.34 MHz1001 pts50.0 kHz/Span 500.0 kHz

2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	920.339 MHz	-36.20 dBm		
M2		1	920.24759 MHz	-55.19 dBm		
D3	M2	1	189.81 kHz	-1.61 dB		

Measuring...25.09.2019 14:03:20

14:03:21 25.09.2019

Results :	The 20dB bandwidth is 189.81 kHz
EUT modification(s): N/A	

7.4. Field strength of fundamental

Reference standard:	FCC part 15 and RSS-210 Issue 10
Test method:	ANSI C63.10: 2013
General test setup: EUT is set on an insulating support at 80cm above the ground reference plane. Measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth and adjusting the receive antenna height from 1 to 4 m in horizontal and vertical polarities. Measurements were performed in a semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

TESTED	BAND	SEVERITY	RESULT TAB.	VERDICT
Low channel	902MHz-928MHz	94dBμV/m	EMI4468	PASS
High channel	902MHz-928MHz	94dBμV/m	EMI4469	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	20.1 °C
Relative Humidity	20 to 75 %	42.5%
Atmospheric pressure	N/A	1015 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
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	14895	23/02/2018	23/04/2020
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Receiver	Agilent Technologies	E7405A	2161	10/10/2018	10/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	14/02/2017	14/04/2020
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

Blank cells = Permanent validity

FIELD STRENGTH OF FUNDAMENTAL – TABULATED RESULTS				
EUT mode:	D-M1	T (°C):	22.8	
Test Date:	18/06/2019	H (%):	50.1	
Test Operator:	MPA	P (hPa):	1005	
FREQUENCY	POSITION	POLARIZATION	LEVEL	LIMIT
915.3 MHz	1	Horizontal	88.5 dBμV/m	94 dBμV/m
920.3 MHz	1	Horizontal	88.4 dBμV/m	94 dBμV/m

7.5. Band Edge

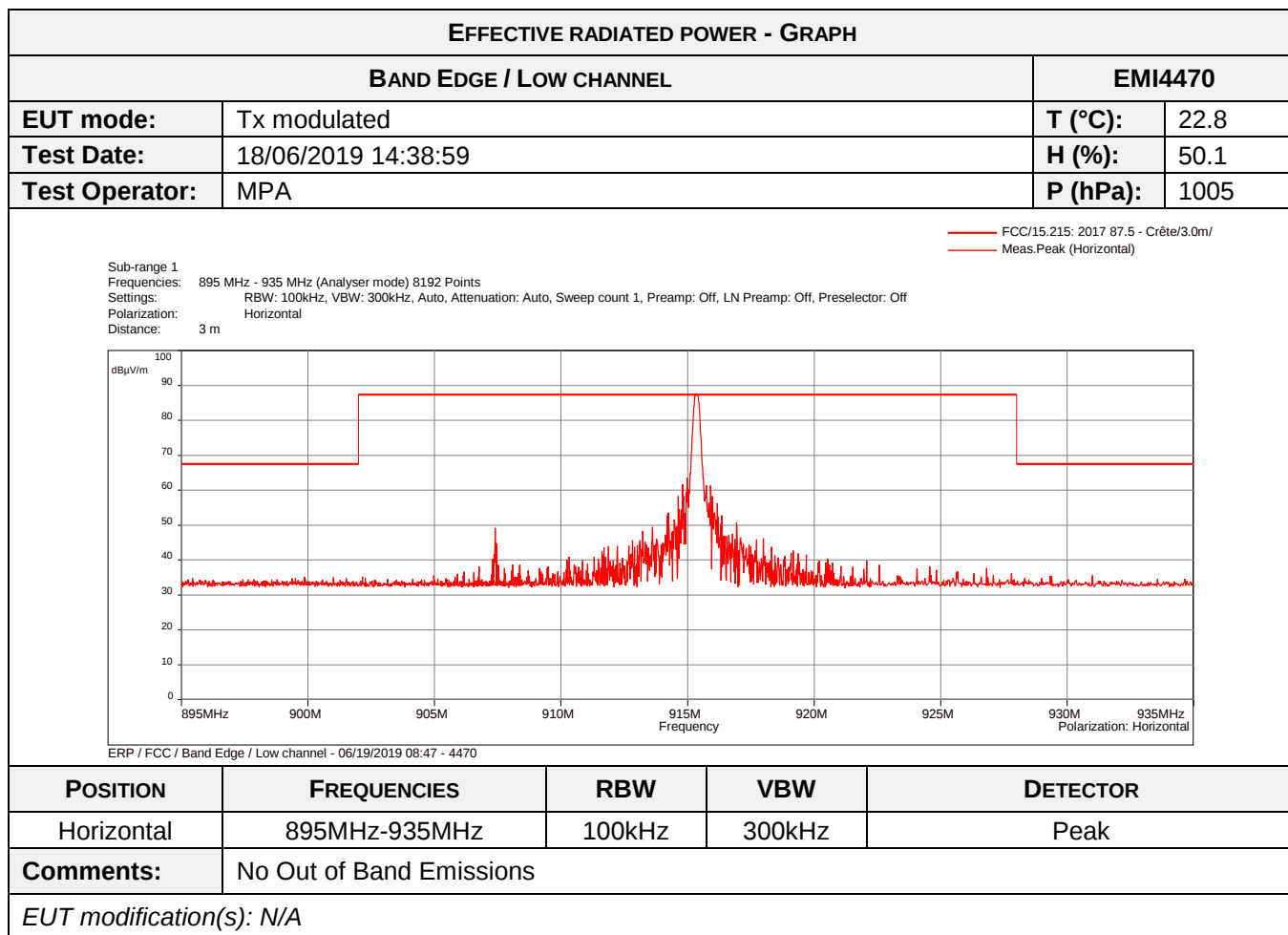
Reference standard:	FCC part 15 and RSS-210 Issue 10
Test method:	FCC part 15.249 subclause d) and 15.215
General test setup: EUT is set on an insulating support at 80cm above the ground reference plane. Measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth and adjusting the receive antenna height from 1 to 4 m in horizontal and vertical polarities. Measurements were performed in a semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded. Tests are performed at the maximum measured radiated field strenght.	

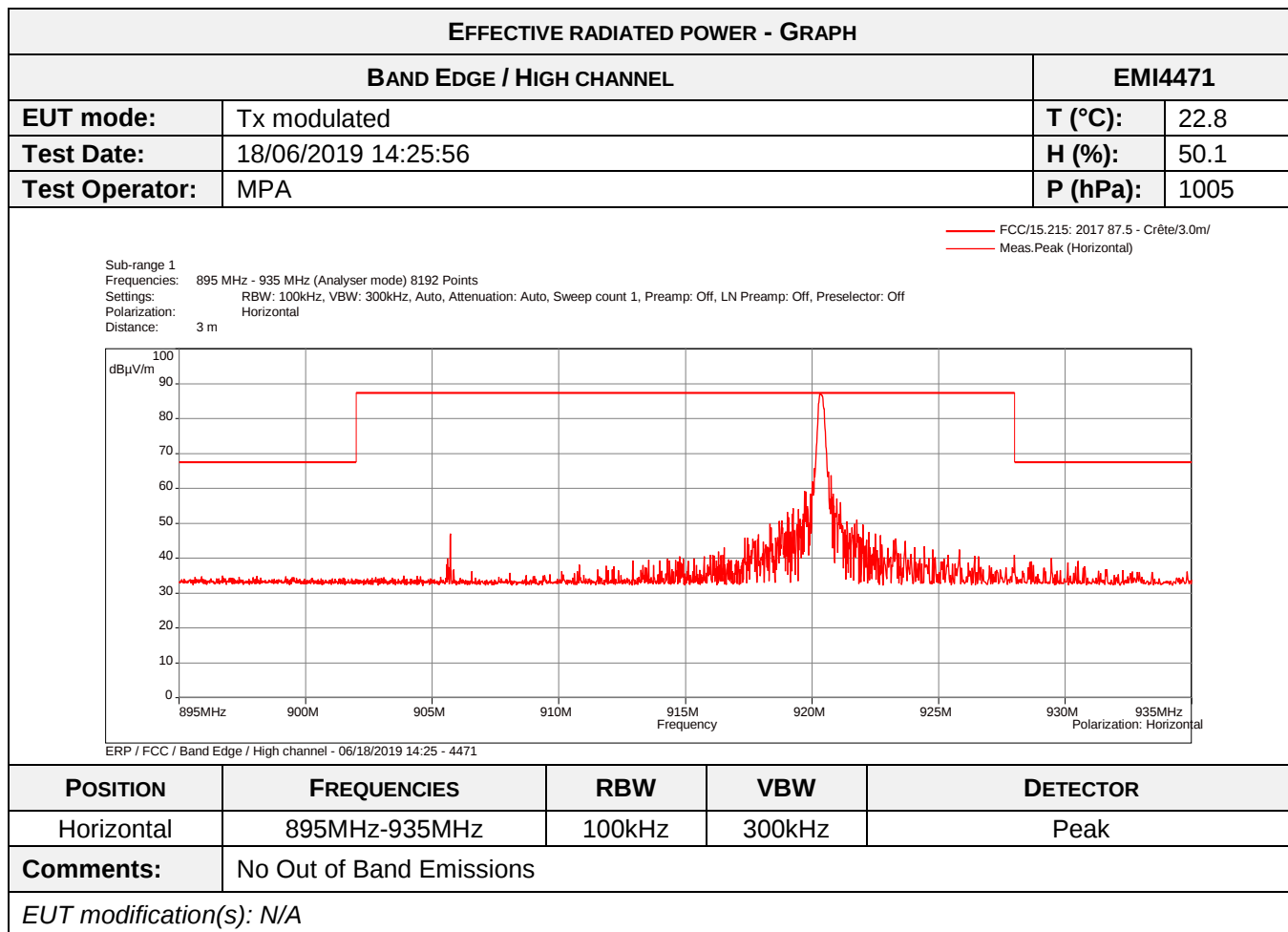
TESTED	BAND	SEVERITY	RESULT TAB.	VERDICT
Band Edge / Low channel	902 MHz to 928 MHz	20dBc	EMI4470	PASS
Band Edge / High channel	902 MHz to 928 MHz	20dBc	EMI4471	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	20.1 °C
Relative Humidity	20 to 75 %	42.5%
Atmospheric pressure	N/A	1015 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
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	14895	23/02/2018	23/04/2020
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Receiver	Agilent Technologies	E7405A	2161	10/10/2018	10/12/2020
Shielded enclosure	COMTEST	SAC 3m	14494	14/02/2017	14/04/2020
Software	Nexio		0000		
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

Blank cells = Permanent validity





7.6. Radiated spurious emissions

Reference standard:	FCC part 15 Radio & RSS-210 Issue 10
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 (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 ($f < 1\text{GHz}$) or average($f > 1\text{GHz}$)) 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 / 0°	9kHz-30MHz	15.209	EMI4351	PASS
TX / 45°	9kHz-30MHz	15.209	EMI4352	PASS
TX / 90°	9kHz-30MHz	15.209	EMI4353	PASS
Tx mode / $< 1\text{GHz}$ / Low channel	30MHz-1GHz	15.209	EMI4320	PASS
Tx mode / $< 1\text{GHz}$ / High channel	30MHz-1GHz	15.209	EMI4321	PASS
Tx mode / $> 1\text{GHz}$ / Low channel	1GHz-12.75GHz	15.209	EMI4320	PASS
Tx mode / $> 1\text{GHz}$ / High channel	1GHz-12.75GHz	15.209	EMI4321	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	Rohde & Schwarz	HFH2-Z2	5825	20/09/2017	20/11/2019
Antenna	ETS-Lindgren	3117	8387	23/04/2018	23/06/2019
Antenna	Electro Metrics	BIA-30HF	0824	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	TechniWAVE	N-0.23m	14895	23/02/2018	23/04/2020
Cable	TechniWAVE	N-0.23m	14898	23/02/2018	23/04/2020
Cable	STORM MICROWAVE	N-1.5m	10263	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-3m	14378	19/07/2017	19/09/2019
Cable	SUCOFLEX	N-3m	14379	19/07/2017	19/09/2019
Cable	MegaPhase	N-3m	14852	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-6,5m	14380	19/07/2017	19/09/2019

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Cable	MegaPhase	N-8m	15813	12/11/2018	12/01/2021
Cable	Huber + Suhner	SF102K	16041	28/02/2019	28/04/2021
Cable	MegaPhase	TM18-N1N1-118	12841	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12842	09/05/2018	09/07/2020
Filter	Micro-Tronics	HPM18865	12843	08/06/2018	08/08/2020
Preamplifier	IMPULSE	CA118-546ACN	9169	29/10/2018	29/12/2019
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Receiver	Rohde & Schwarz	FSW43	14830	28/12/2018	28/02/2020
Shielded enclosure	RAY PROOF	C.V1	1123		
Shielded enclosure	COMTEST	SAC 3m	14494	14/02/2017	14/04/2020
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021
Turntable	INN-CO	CO3000 & DS1200S	11571		

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – SPURIOUS – EUT


TEST SETUP PHOTO(S) – SPURIOUS – 9KHZ TO 30 MHZ



TEST SETUP PHOTO(S) - SPURIOUS – 30MHZ TO 200 MHZ



TEST SETUP PHOTO(S) - SPURIOUS – 200MHZ TO 1GHZ

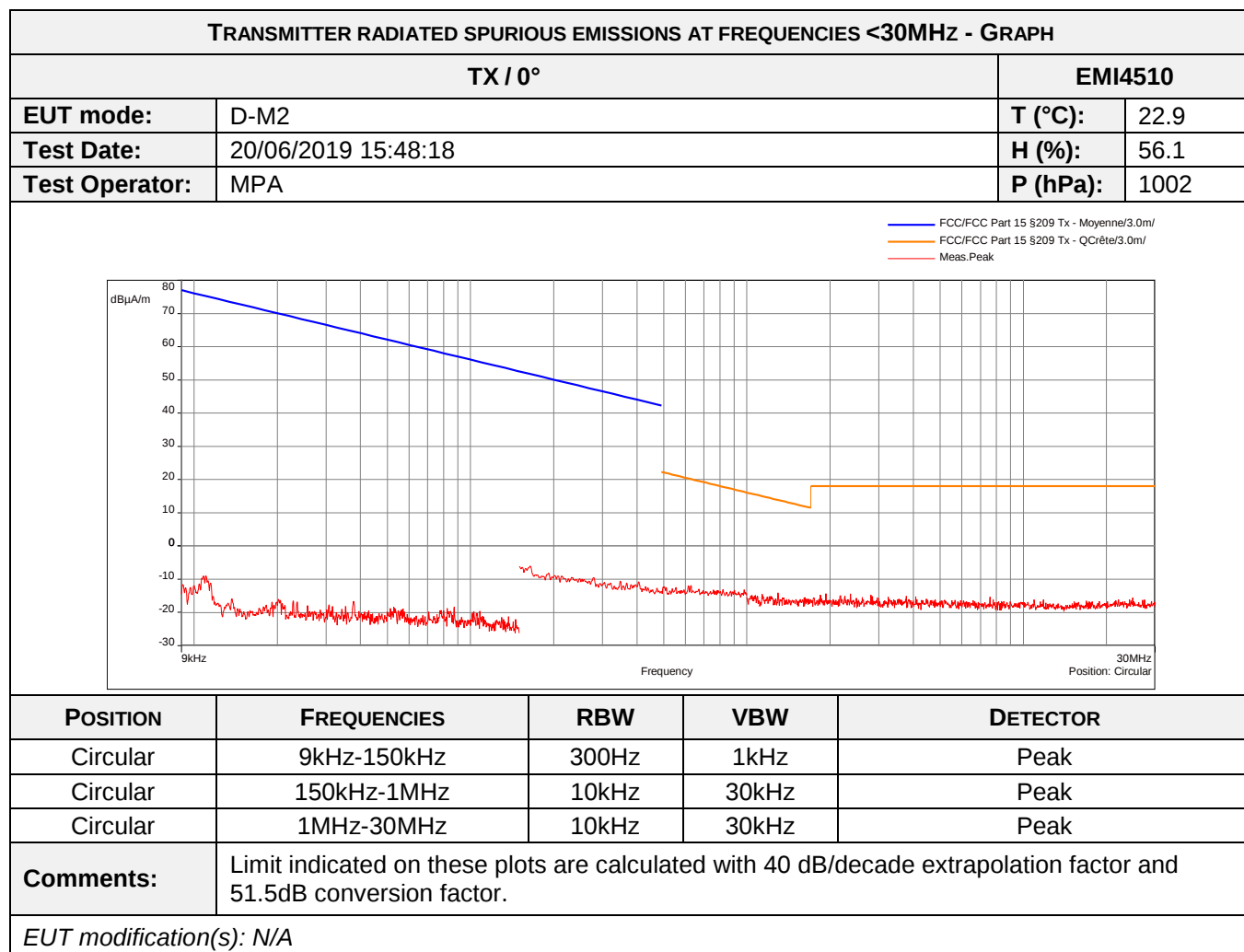


TEST SETUP PHOTO(S) - SPURIOUS – > 1GHZ



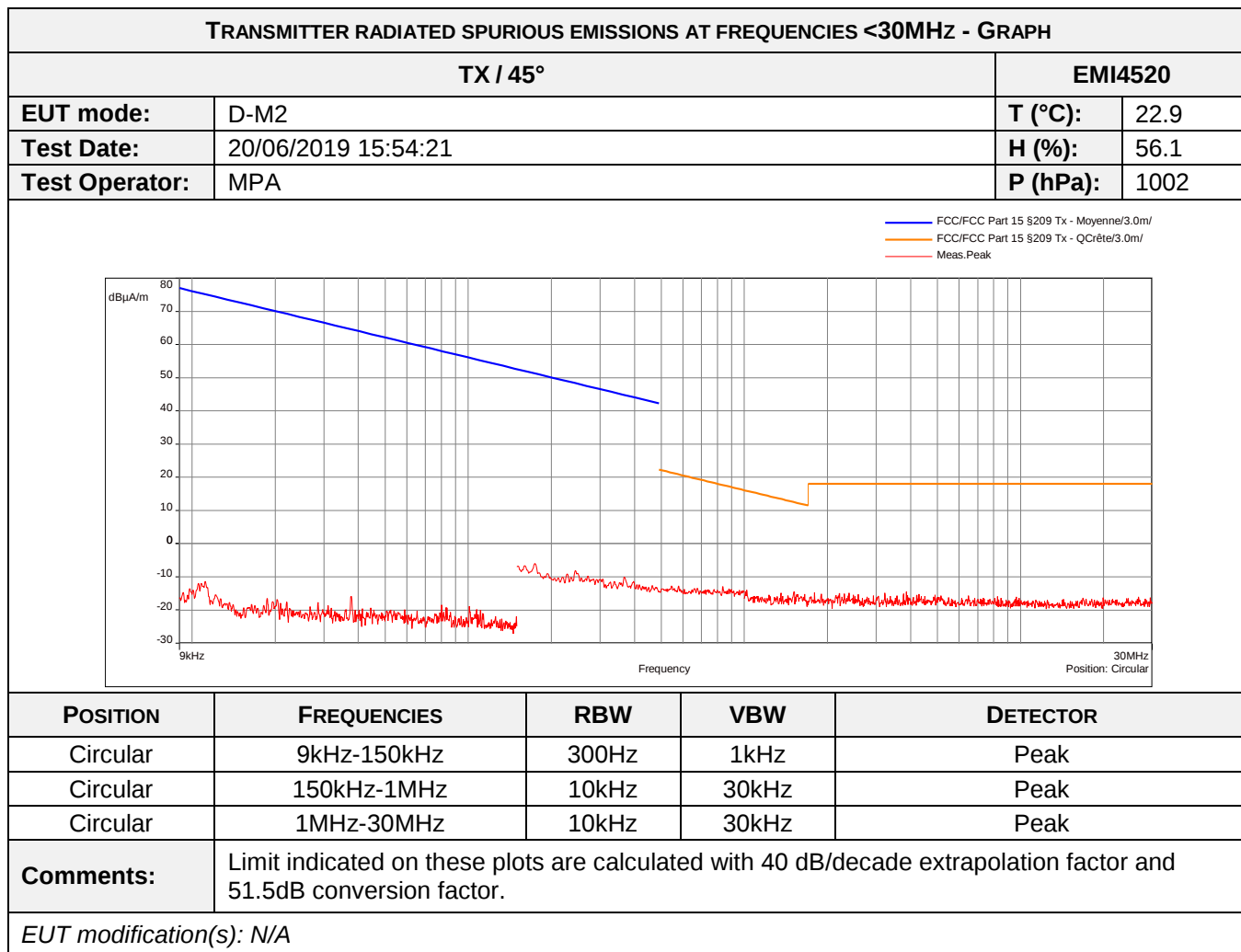
Tx MODE / <1 GHz/ LOW CHANNEL					
Frequency (MHz)	Polarisation	Peak (dBµV/m)	QP (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)
30.0680068	Vertical	35.2	29.41	40	-10.59
31.3771377	Vertical	36.63	31.24	40	-8.76
39.1979198	Vertical	35.11	26.23	40	-13.77
44.2644264	Vertical	39.9	33.13	40	-6.87
46.4236424	Vertical	40.9	34.45	40	-5.55
50.5040504	Horizontal	28.19	19.6	40	-20.4
50.5210521	Vertical	39.55	32.76	40	-7.24
53.2413241	Vertical	38.81	32.37	40	-7.63
53.9893989	Vertical	38.51	31.95	40	-8.05
55.6045605	Vertical	35.86	27.95	40	-12.05
98.839884	Horizontal	35.89	29.04	43.5	-14.46
113.648365	Horizontal	39.21	31.94	43.5	-11.56
120.466047	Horizontal	41.74	35.17	43.5	-8.33
122.217222	Horizontal	41.72	35.31	43.5	-8.19
126.008601	Horizontal	40.93	34.08	43.5	-9.42
150.644064	Horizontal	41.07	34.14	43.5	-9.36
151.834183	Vertical	36.8	29.31	43.5	-14.19
155.217522	Vertical	38.62	31.5	43.5	-12
155.319532	Horizontal	42.7	35.96	43.5	-7.54
158.651865	Horizontal	43.58	36.85	43.5	-6.65
160.386039	Vertical	40.56	33.69	43.5	-9.81
163.412341	Horizontal	43.04	36.32	43.5	-7.18
163.990399	Vertical	40.64	33.6	43.5	-9.9
165.554556	Vertical	40.7	33.7	43.5	-9.8
166.336634	Horizontal	44	36.97	43.5	-6.53
166.982698	Vertical	40.54	33.62	43.5	-9.88
168.682868	Vertical	40.99	33.31	43.5	-10.19
171.386139	Vertical	38.77	31.71	43.5	-11.79
173.239324	Vertical	37.76	30.44	43.5	-13.06
175.534554	Horizontal	35.03	27.05	43.5	-16.45
178.254826	Vertical	32.86	24.4	43.5	-19.1
180.890089	Horizontal	29.82	23.74	43.5	-19.76

TX MODE / <1 GHz/ HIGH CHANNEL					
Frequency (MHz)	Polarisation	Peak (dBµV/m)	QP (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)
31.3941394	Vertical	36.76	31.38	40	-8.62
38.3308331	Vertical	35.61	26.65	40	-13.35
42.7852785	Vertical	37.82	30.67	40	-9.33
43.9243924	Vertical	39.81	33.15	40	-6.85
45.19952	Vertical	40.96	34.68	40	-5.32
47.2907291	Vertical	40.42	33.84	40	-6.16
50.30003	Vertical	40.35	33.6	40	-6.4
51.9661966	Vertical	39.04	32.82	40	-7.18
95.5245525	Vertical	32.88	25.71	43.5	-17.79
114.719472	Horizontal	38.07	31.56	43.5	-11.94
122.948295	Horizontal	42.38	35.79	43.5	-7.71
128.728873	Horizontal	40.3	34.04	43.5	-9.46
151.188119	Vertical	35.12	27.34	43.5	-16.16
153.313331	Vertical	36.9	29.15	43.5	-14.35
154.078408	Vertical	37.25	29.51	43.5	-13.99
154.911491	Vertical	37.84	30.38	43.5	-13.12
155.557556	Vertical	38.34	30.83	43.5	-12.67
155.880588	Horizontal	42.96	36.53	43.5	-6.97
156.254626	Vertical	38.05	31.07	43.5	-12.43
159.059906	Vertical	38.78	31.43	43.5	-12.07
161.236124	Vertical	38.88	31.46	43.5	-12.04
162.052205	Vertical	39.32	32.01	43.5	-11.49
162.834283	Horizontal	43.92	36.94	43.5	-6.56
163.973397	Vertical	40.59	33.38	43.5	-10.12
165.486549	Vertical	41.42	34.27	43.5	-9.23
168.325833	Vertical	41.75	34.88	43.5	-8.62
172.831283	Horizontal	39.21	32.41	43.5	-11.09
176.843684	Vertical	38.39	30.92	43.5	-12.58



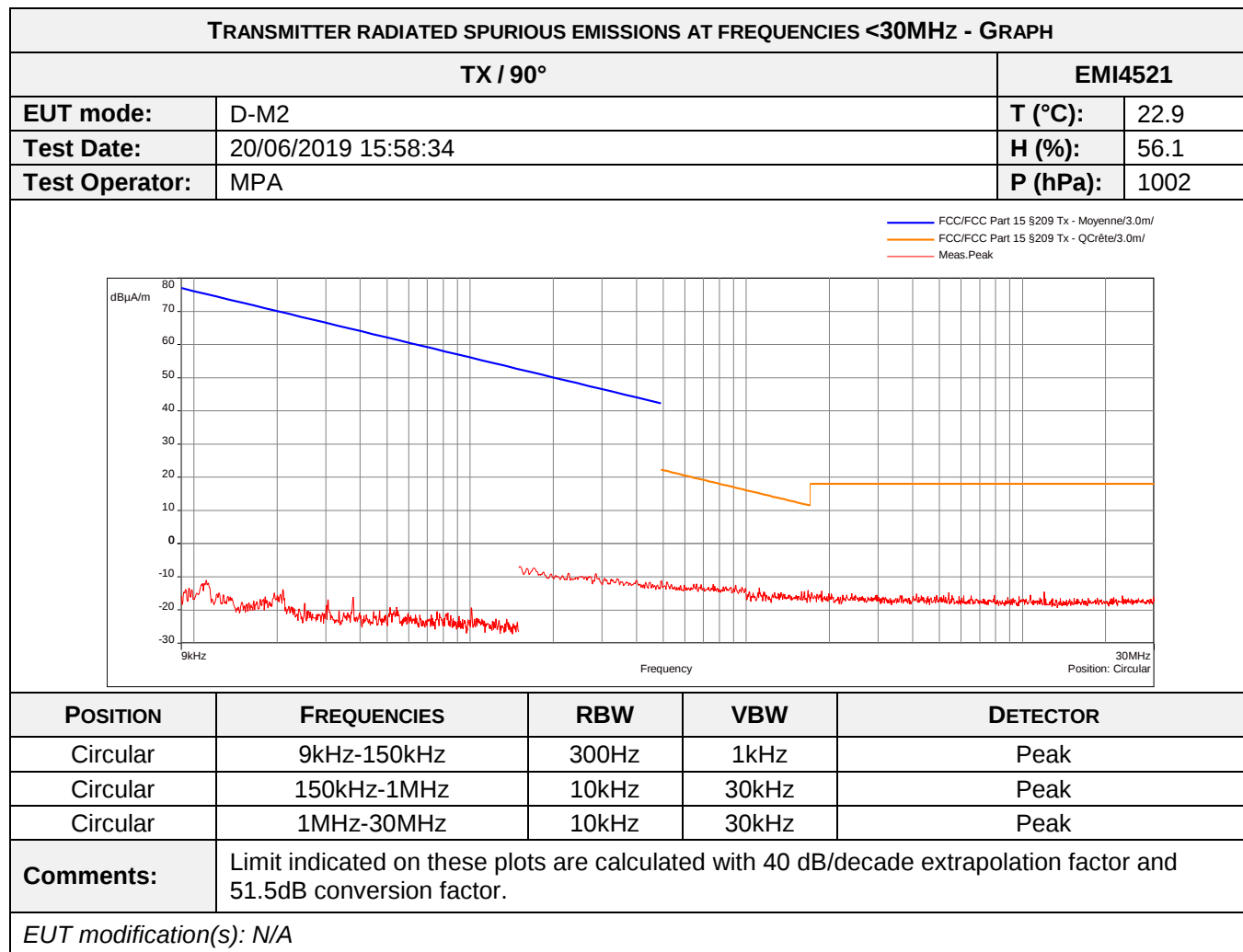
No spurious emissions were detected.

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



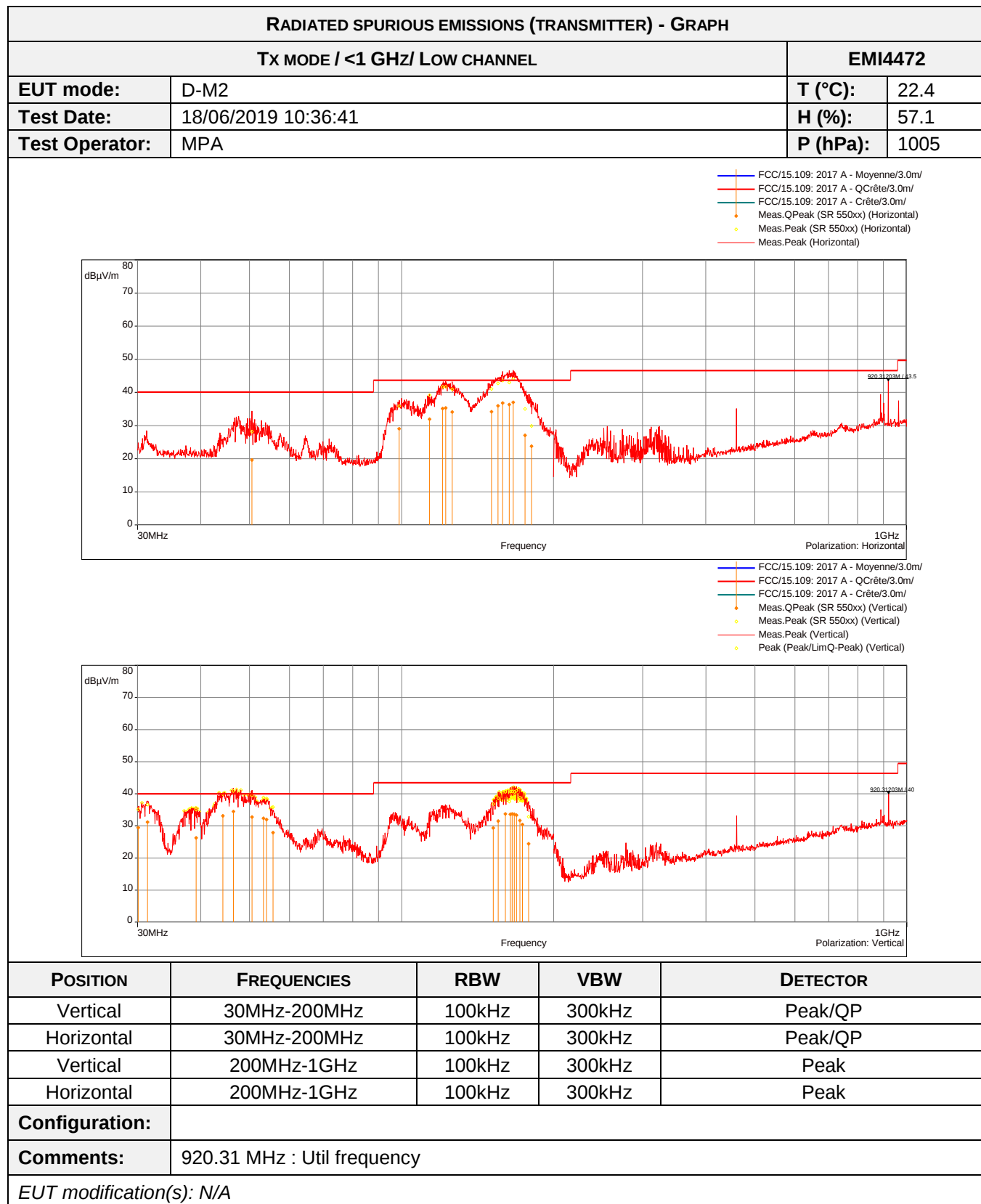
No spurious emissions were detected.

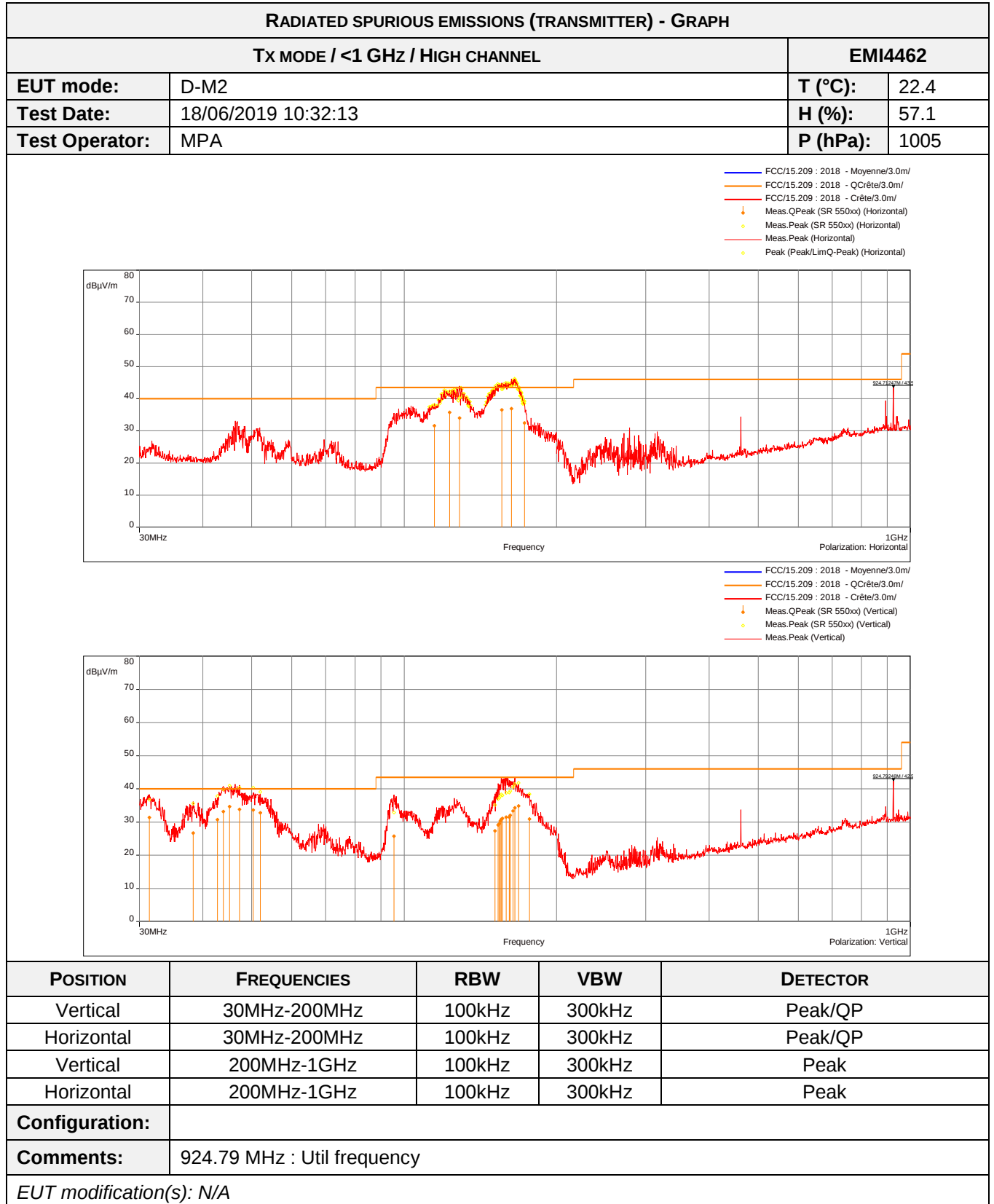
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported

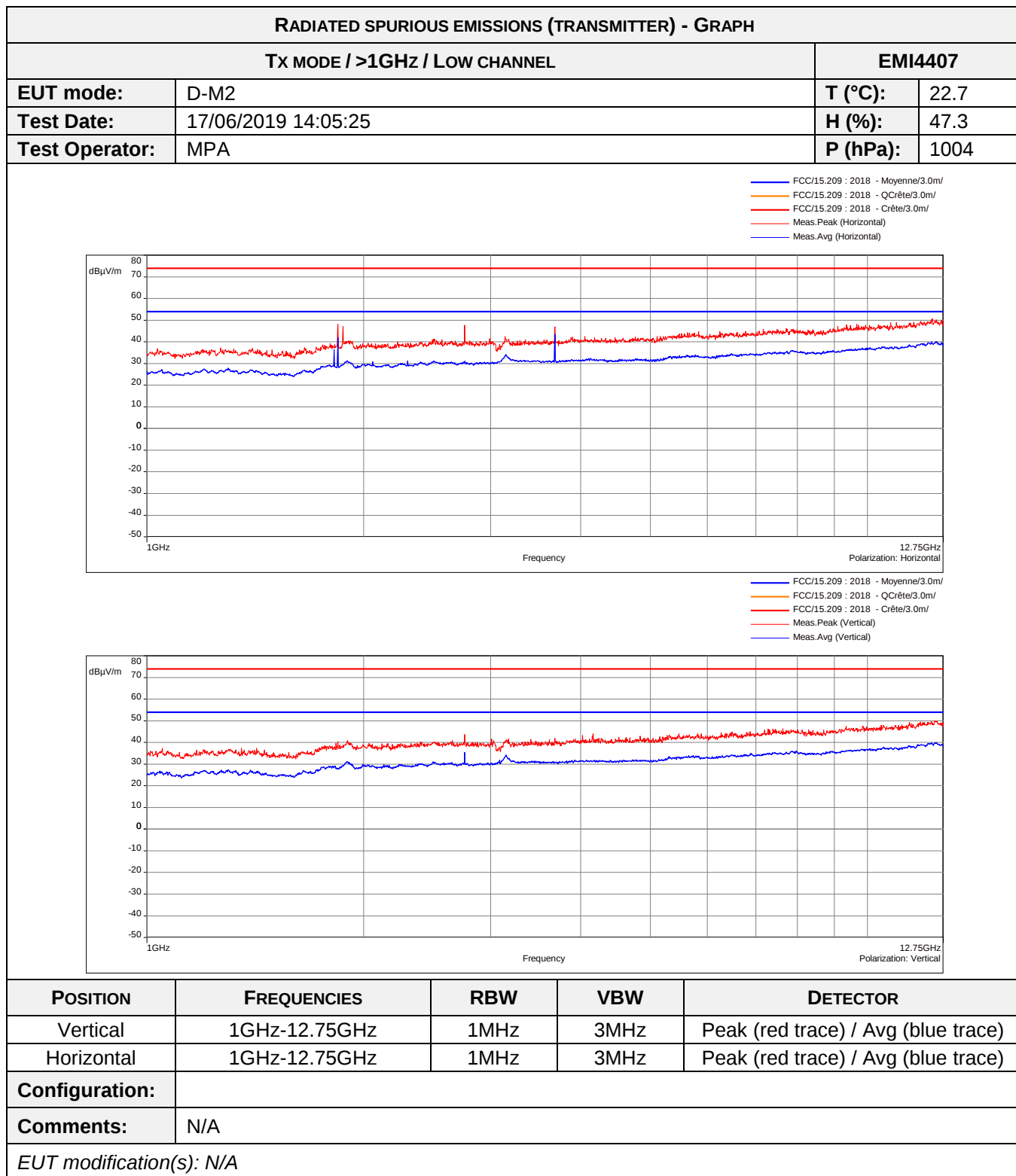


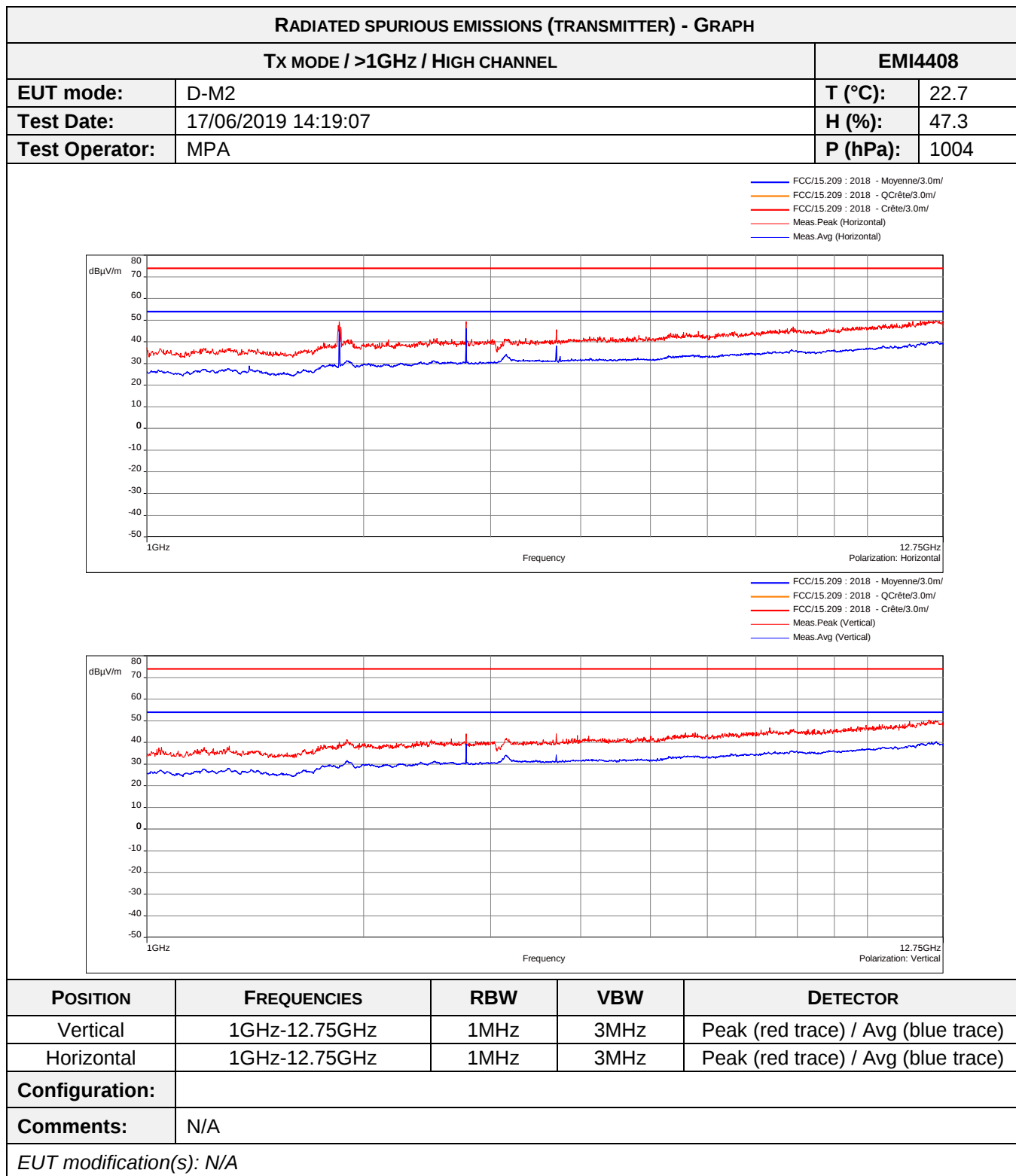
No spurious emissions were detected.

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









●●● End of test report ●●●