



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

RADIO TEST REPORT

FCC 47 CFR PART 15

FCC 47 CFR PART 18

RSS-Gen, Issue 4

RSS-247, Issue 2

Company : **SUBLIMED**
Address..... : 9 RUE DU ROCHER DE LORZIER
38430 MOIRANS
FRANCE

Test item description. : **Nerve stimulator**
Trade Mark. : actiTENS
Manufacturer..... : SUBLIMED
Model/Type reference..... : B8 / actiTENS
FCC ID..... : 2BALKSBM
Ratings..... : 100-240Vac/50-60Hz

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

Report Reference No. : **RR-EVE-22P427-1A**
Test procedure. : FCC IC Certification
Diffusion..... : Mrs JOUVIE Camille
Applicant's name. : SUBLIMED
Date of issue..... : June 15, 2023
Total number of pages..... : 97
Revision..... : 0
Compiled by..... : Alexis TOUZET
Approved by (+ signature)..... : Olivier HEYER (Laboratory Manager)



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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	June 15, 2023	/	Creation

1. GENERAL INFORMATION

This document submits the results of Radio tests performed on the equipment **Nerve stimulator actiTENS SBM1AA100** (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 : Alexis TOUZET Test supervisor : None Date of receipt of test item : N/A Date (s) of performance of tests : From February 15 th to 17 th of 2022					
APPLICANT'S GENERAL INFORMATION:					
Company name : SUBLIMED Company address. : 9 RUE DU ROCHER DE LORZIER 38430 MOIRANS FRANCE Person(s) present during the tests. : No representative for company attended the tests. Responsible. : Mrs JOUVIE Camille Mr CHAMBON Bertrand					
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
FSOATS	Free Space 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
SAC	Semi Anechoic Chamber				

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

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

FCC 47 CFR PART 15: 2017

Code of federal regulations – Title 47 telecommunication
Part 15- Radio frequency devices

FCC 47 CFR PART 18 : 2020

Code of federal regulations Title 47- Telecommunication
Chapter 1- Federal Communication Commission
Part 18- Industrial, scientific and medical equipment Limits and methods of measurement of radio disturbance

RSS-Gen, Issue 4, November 2014

General Requirements for Compliance of Radio Apparatus

FCC part 15.247

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850MHz. (frequency hopping and digitally modulated)

RSS-247 _ Issue 2, February 2017

Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

ANSI C63.10: 2013

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

ANSI C63.4: 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

ICES-001 / NMB-001 ed5 : 2020 and ICES-Gen / NMB-Gen : 2018

Industry Canada
Spectrum Management and Telecommunications Policy
Interference Causing Equipment Standard,
Industrial, scientific and medical equipment (ISM)

KDB 447498 D01

General RF Exposure Guidance V06

KDB 558074 D01 DTS v03r03

Guidance for Performing Compliance on Digital Transmission Systems Operating under §15.247

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. : *Nerve stimulator*
Model/Type reference..... : *B8 / actiTENS*
FCC ID..... : *2BALKSBM*
Trade Mark. : *actiTENS*
Serial number (S/N)..... : *0007594030698*
Part number (P/N). : *759403*
Software version..... : *2.0*
Firmware version. : *7.3*
Type of sample. : *Standard equipment*
Function(s)..... : *Transcutaneous electrical nerve stimulator*
Manufacturer name. : *SUBLIMED*
Address. : *137 rue de Mayoussard*
38430 Moirans
FRANCE

General product information:

N/A

3.2. E.U.T. Marking plate



None

3.5.E.U.T. General view



3.6.E.U.T. Internal view



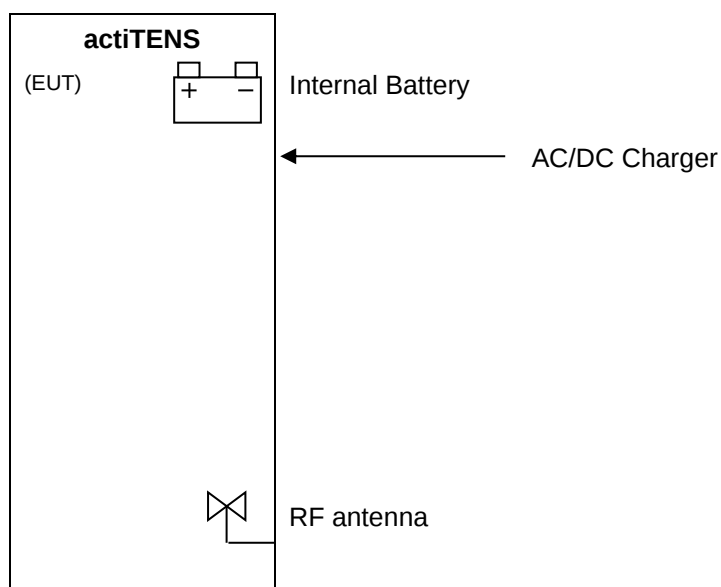
3.7.E.U.T. Mechanical and Electrical Design

Power supply. : 120Vac/60Hz and 230Vac/50Hz
Power supply range..... : 100-240Vac/50-60Hz
Power type..... : Single phase without earth
Power (W)..... : 5
Nominal current (A). : 0.2
Dimensions (L x W x H) (mm). : 108 x 53.5 x 18
Weight (kg). : 115g
Temperature range (°C). : -25 to +85
Ground bounding strap..... : No

Comments:

N/A

3.8.E.U.T. Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	Plastic	-
1	Battery	DC	N/A	N/A	Not communicated
2	AC/DC Charger	AC/DC	N/A	2P	120Vac/60Hz to 5Vdc
3	RF antenna	RF	N/A	N/A	WiFi 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..... : Direct current port

RF : Radio frequency port

3.9. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Laptop UART to USB	DELL N/A	Latitude 5580 N/A	Set test mode

LAPTOP (AE)



UART (AE)



3.10. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	Transmitter
Technology	Bluetooth Low Energy (BLE)
Environmental profile.....	Data transmission
Temperature range.....	-25°C to +85°C
Antenna type	Integral
Antenna Gain.....	0.5 dBi
Comments:	
N/A	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	2400MHz to 2483.5MHz
RF Power.....	Not communicated
Number of channels / Separation.....	40 / 2MHz
Modulation type	GFSK
Duty cycle	Continuous
Tested frequency.....	2402MHz (Low channel) 2426MHz (Mid channel) 2480MHz (High channel)
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	2400MHz to 2483.5MHz
Category/Class	Not communicated
Bandwidth.....	Not communicated

4. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
SUBPART A - GENERAL			
Labeling requirements		PASS	15.19 / See certification documents
Information to user		PASS	15.21 / See certification documents
Measurement standards		PASS	15.31
Frequency range of radiated measurements		PASS	15.33
Measurement detector functions and bandwidths		PASS	15.35
SUBPART B – UNINTENTIONAL RADIATORS			
Information to the user		PASS	15.105 / See certification documents
Conducted limits	Class B	PASS	15.107
Radiated emission limits	Class B	PASS	15.109
SUBPART C –INTENTIONAL RADIATORS			
Equipment authorization requirement		PASS	15.201 / Transmitter part is subject to Certification procedure
Antenna requirement		PASS	15.203 / Dedicated and glued antenna
Restricted bands of operation		PASS	15.204
Conducted limits	Class B	PASS	15.207
Radiated emission limits; general requirements	Class B	PASS	15.209
Additional provisions to the general radiated emission limits		PASS	15.215
Operation within the band 902-928MHz, 2400-2483.5MHz and 5725-5850MHz			15.247
- Frequency hopping and digitally modulated		-	a)
- Frequency hopping system		N/A	a) (1)
- Digital modulation system		PASS	a) (2)
- Maximum peak conducted output power		-	b)
- For hopping system in the 2400-2483.5 MHz and 5725-5850 MHz bands		N/A	b) (1)
- For hopping system in the 902-928MHz band		N/A	b) (2)
- For system using digital modulation in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands		PASS	b) (3)
- Operation with directional antenna gains > 6 dBi		N/A	c)
- Out-of-band emissions		PASS	d)
- Power spectral density conducted		PASS	e)
- Hybrid system		N/A	f)
- Frequency hopping additional requirements		N/A	g)
- Frequency hopping intelligence		N/A	h)
- RF exposure compliance		PASS	i)

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.

TEST(S) PERFORMED	MODIFICATION(S)
FCC part 15.247 subclause d)	N/A
FCC part 15.247	N/A
FCC part 15.109, 15.209, 15.205, 15.215	N/A
FCC part 15 Radio part 15.215	N/A
ANSI C63.4: 2014	N/A
ANSI C63.10: 2013	N/A

5. 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	$\pm 0.8\text{dB}$	$\pm 1 \text{ dB}$
Power spectral density	$\pm 2.3\text{dB}$	$\pm 3 \text{ dB}$
Occupied bandwidth		
RF power	$\pm 3.8 \%$	$\pm 5 \%$
Radiated emission (PIRE)		
62.5 MHz - 1 GHz	$\pm 5.8 \text{ dB}$	$\pm 6 \text{ dB}$
1 GHz - 18 GHz	$\pm 5.6 \text{ dB}$	$\pm 6 \text{ dB}$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 3.4 \text{ dB}$	$\pm 6 \text{ dB}$
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	$\pm 4.4 \%$	$\pm 5 \%$
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).

6. TEST CONDITIONS AND RESULTS

6.1. Conducted emission (measurement)

Reference standard:	FCC part 15.107, 15.207, FCC part 18 and RSS-Gen
Test method:	ANSI C63.4: 2014
General test setup: EUT is set on an insulating support at 40cm from 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. 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
Conducted measurement / Wifi all channels / 120Vac/60Hz	150kHz-30MHz	15.207	EMI4481	PASS
Conducted measurement / Rx mode / 120Vac/60Hz	150kHz-30MHz	15.107	EMI4614	PASS

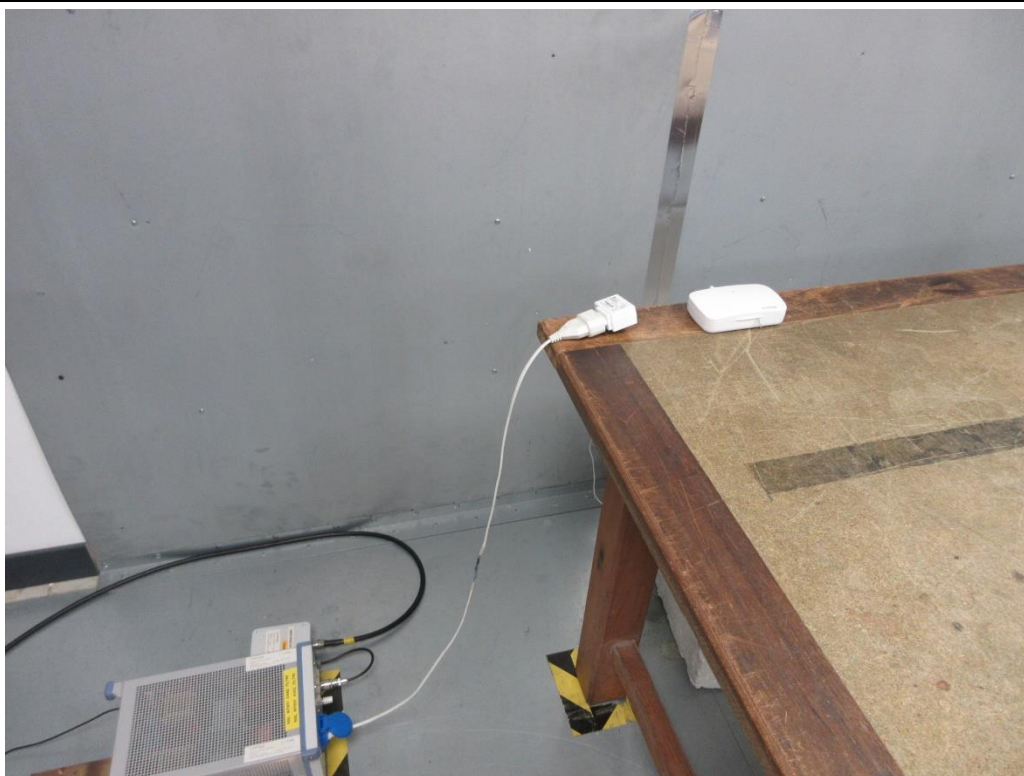
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	30 to 60 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Cable	EMITECH	Current absorber sheath	18366	26/01/2022	26/03/2024
Cable	C&C	N-3m	14334	18/03/2021	18/05/2023
LISN	Rohde & Schwarz	ENV216	17925	24/09/2021	24/11/2023
Receiver	Rohde & Schwarz	ESI	9704	18/11/2022	18/01/2024
Thermohygrometer	Testo	608-H2	12268	24/10/2022	24/12/2024
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)

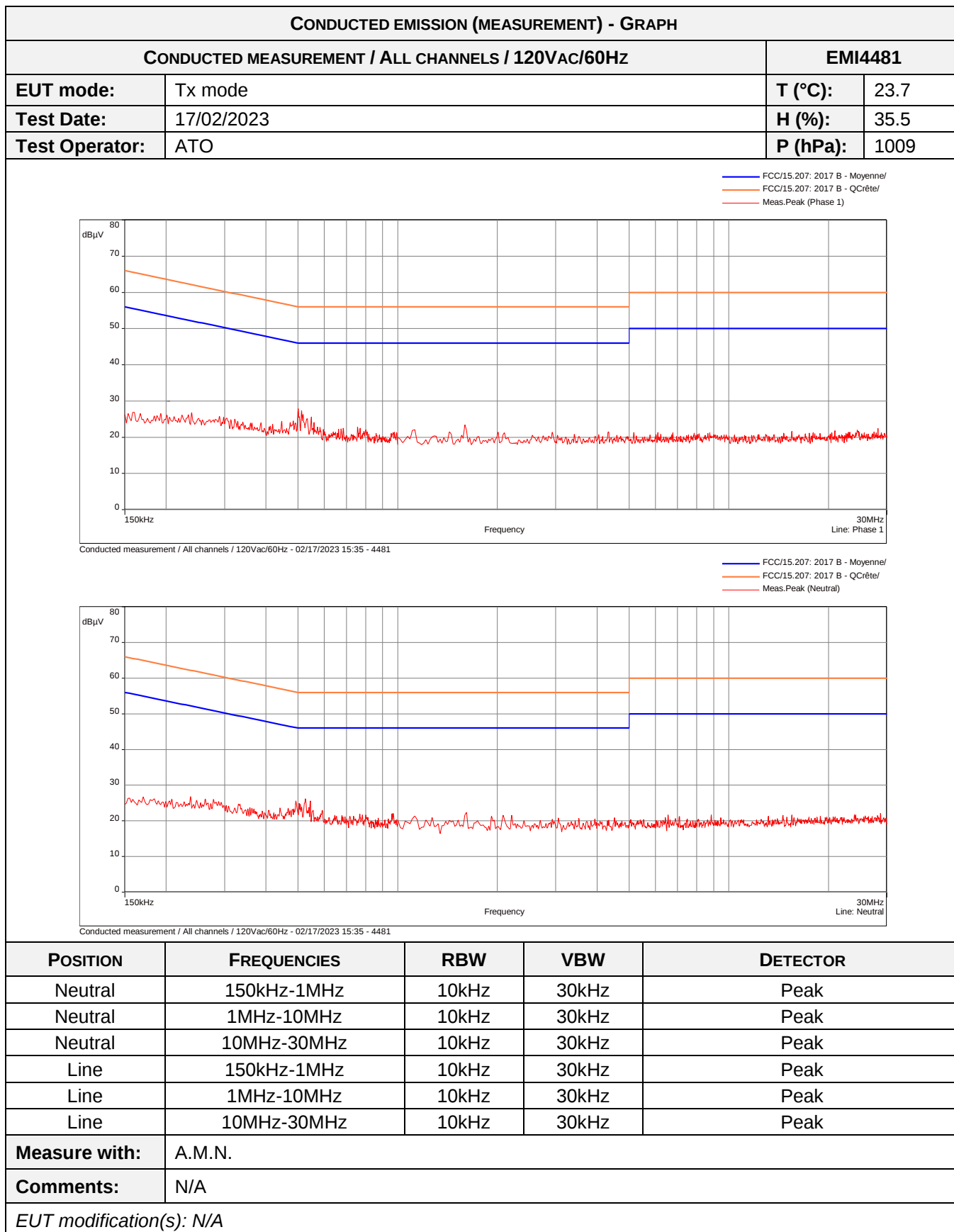


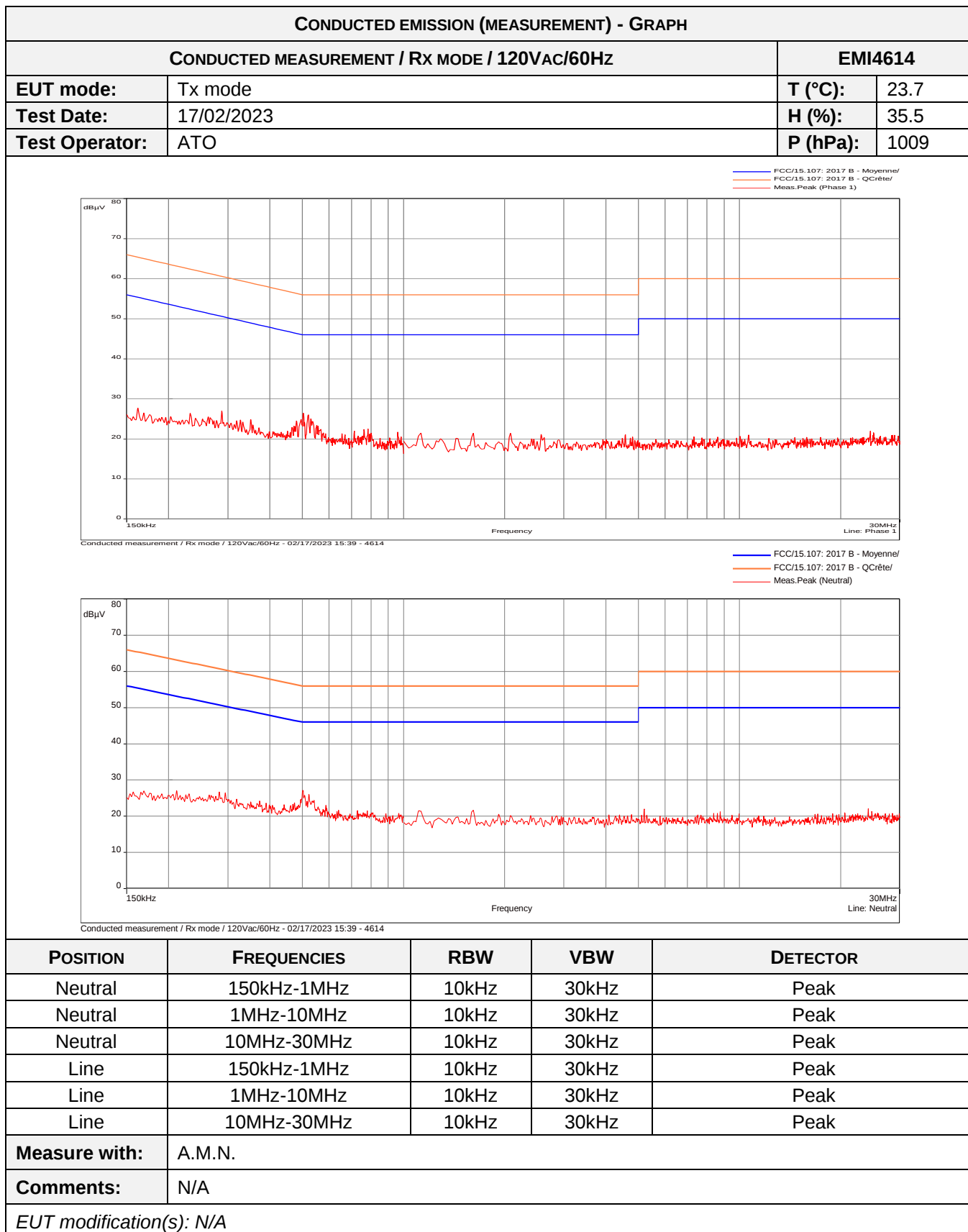
CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS

CONDUCTED MEASUREMENT / ALL CHANNELS / 120VAC/60Hz						EMI4481
Terminal	Test Frequency (MHz)	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: No Spurious emission detected.						

CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS

CONDUCTED MEASUREMENT / RX MODE / 120VAC/60Hz						EMI4614
Terminal	Test Frequency (MHz)	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: No Spurious emission detected.						





6.2.6dB bandwidth

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247 and RSS-247
Test description: a) (2): Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. EUT is connected to the measuring receiver via 50Ω attenuator(s). Tests are done in max-hold mode in order to capture all channels.	

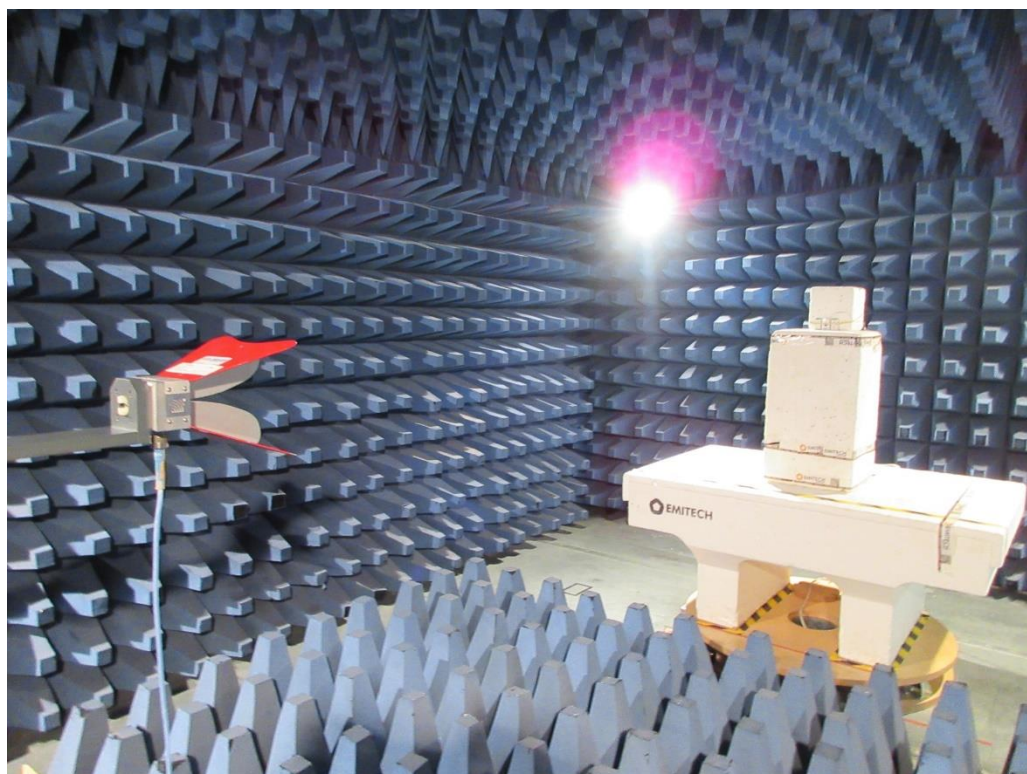
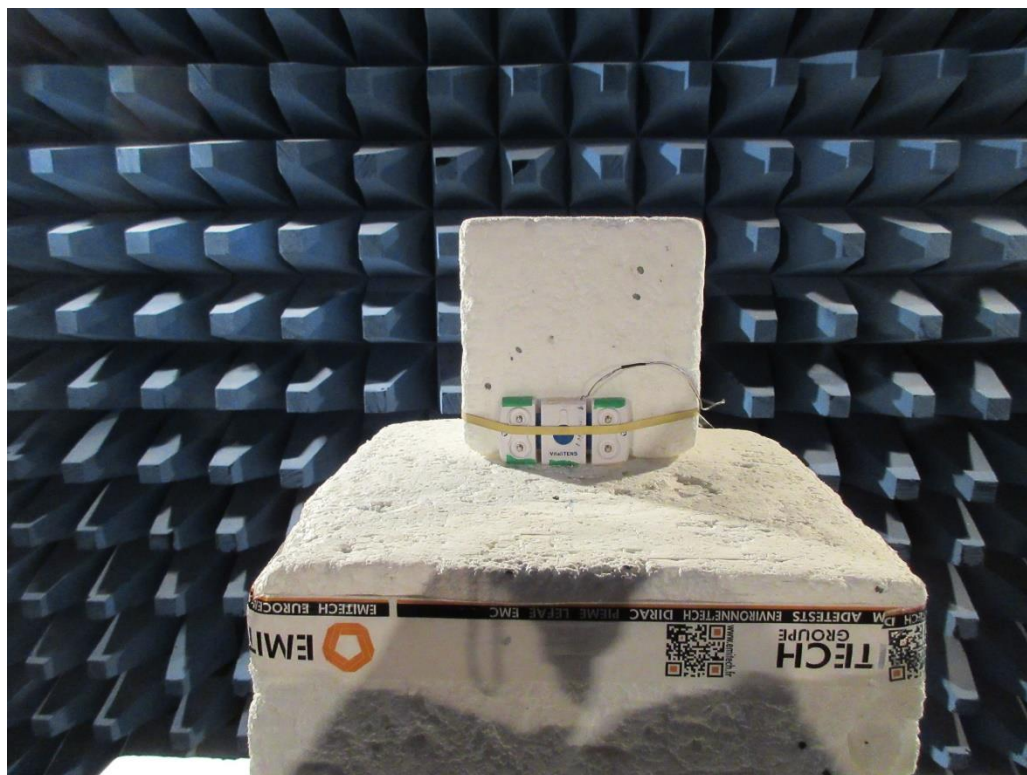
TEST CASE AND CONDITIONS	SEVERITY	RESULT TAB.	VERDICT
Low Channel	>500kHz	EMI4633	PASS
Mid Channel	>500kHz	EMI4634	PASS
High Channel	>500kHz	EMI4635	PASS

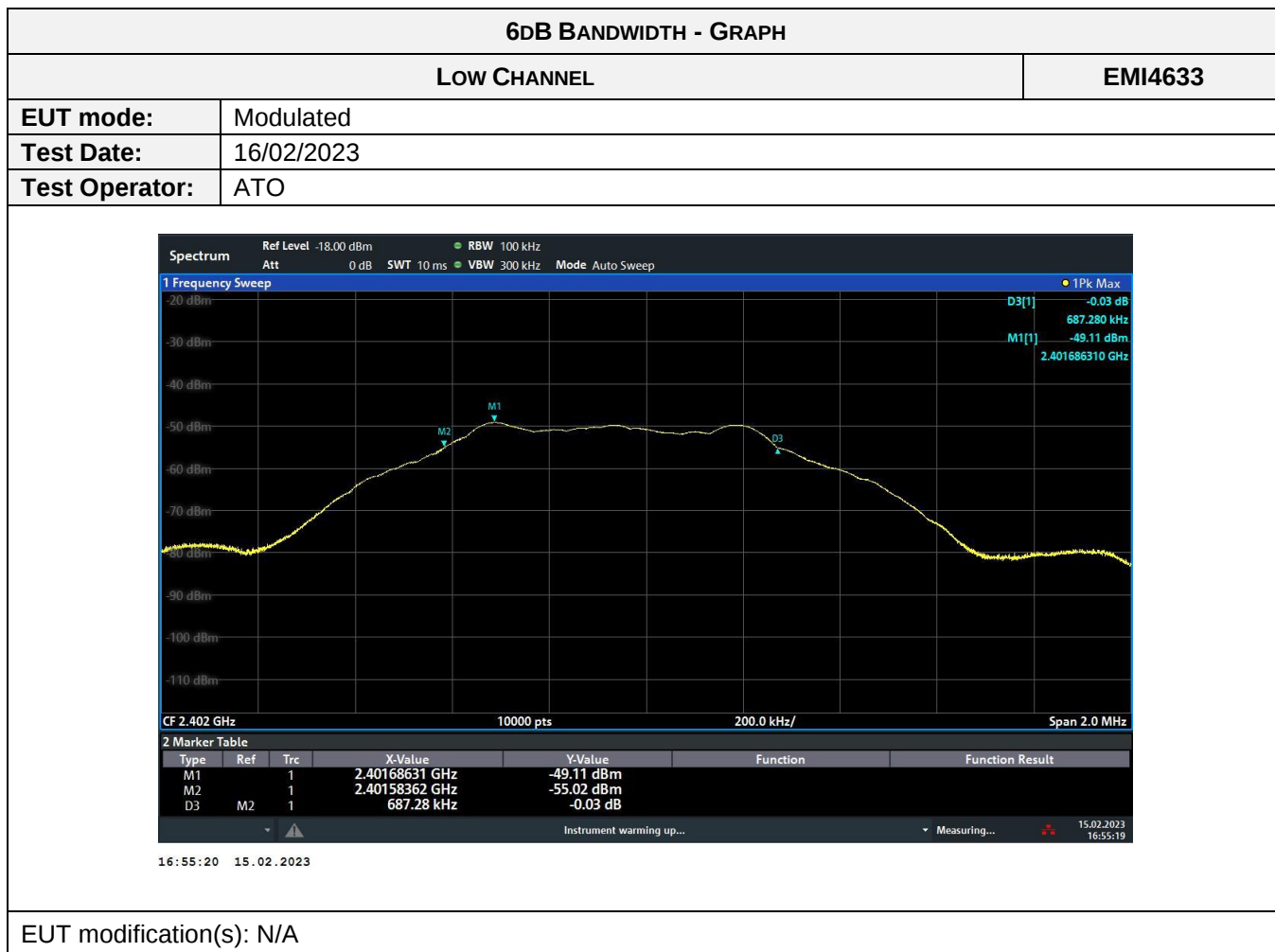
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	24.2 °C
Relative Humidity	20 to 75 %	35.4 %
Atmospheric pressure	N/A	1002 hPa
Test method deviation: N/A		
Supplementary information:		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Receiver	Rohde & Schwarz	FPL1003	16027	16/11/2021	16/07/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

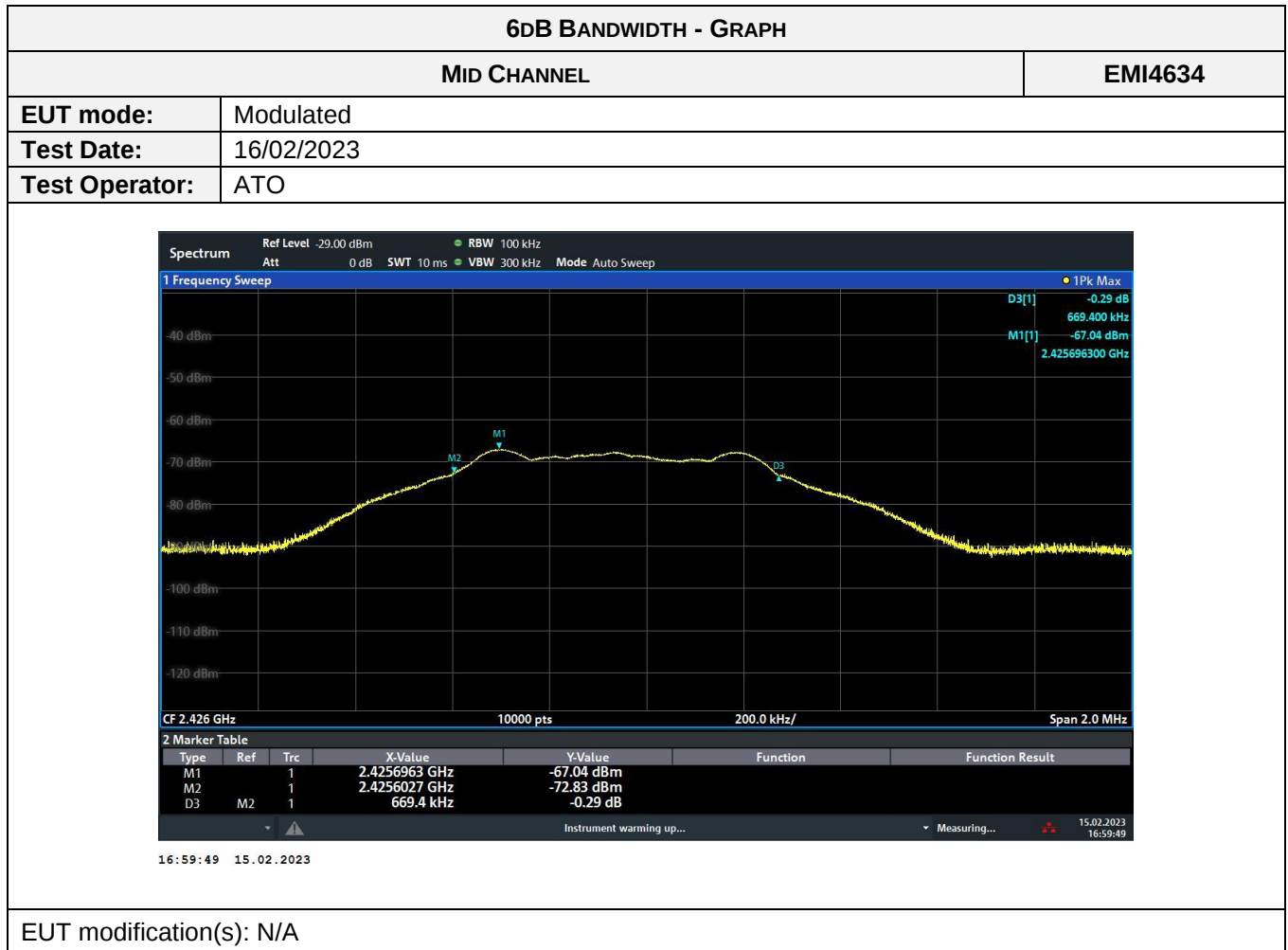
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TEST SETUP PHOTO(S)

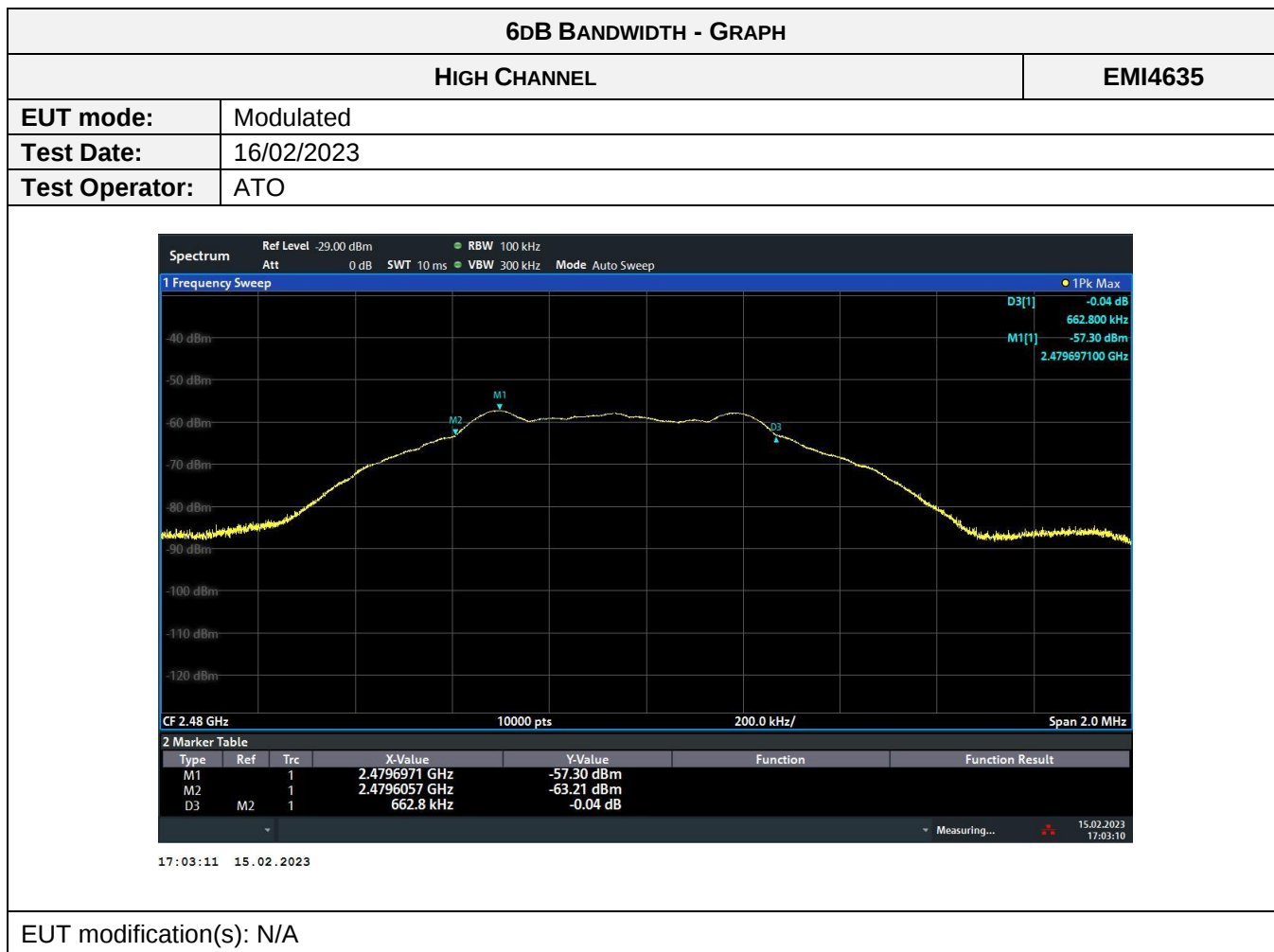




6dB BANDWITH - TABULATED RESULTS			
LOW CHANNEL			
Frequency	RBW	6 dB Bandwidth	Limit
2402 MHz	100kHz	687.28 kHz	>500kHz



6dB BANDWIDTH - TABULATED RESULTS			
LOW CHANNEL			
Frequency	RBW	6 dB Bandwidth	Limit
2426 MHz	100kHz	669.40 kHz	>500kHz



6dB BANDWITH - TABULATED RESULTS			
LOW CHANNEL			
Frequency	RBW	6 dB Bandwidth	Limit
2480 MHz	100kHz	662.80 kHz	>500kHz

6.3. Occupied bandwidth

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

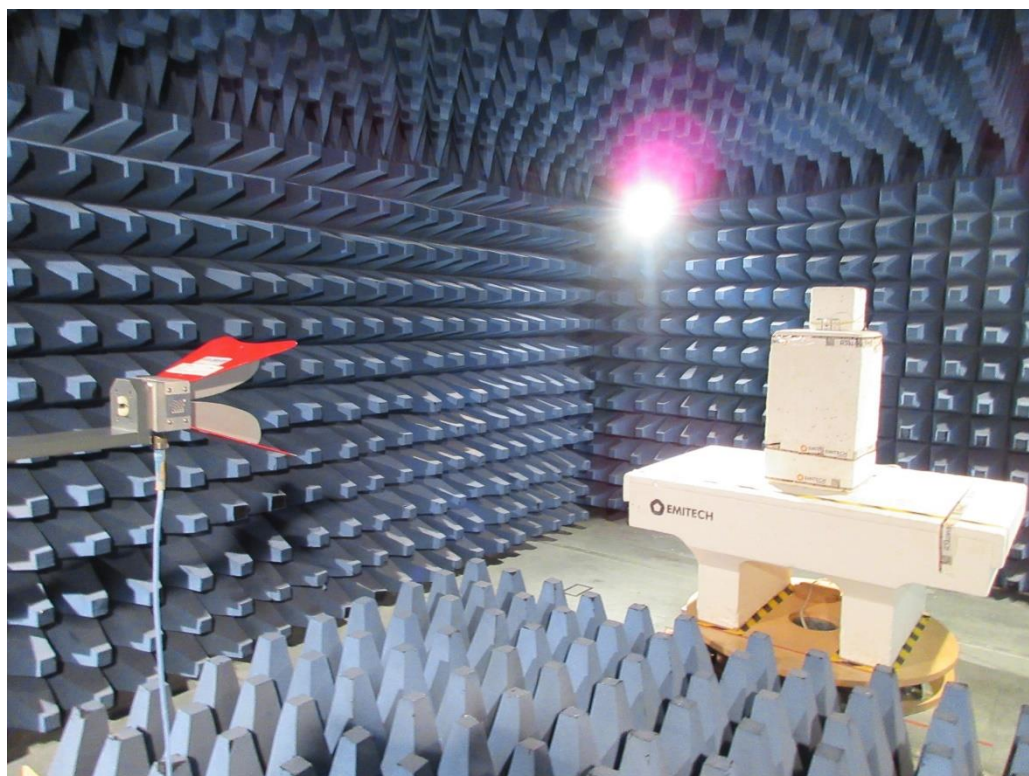
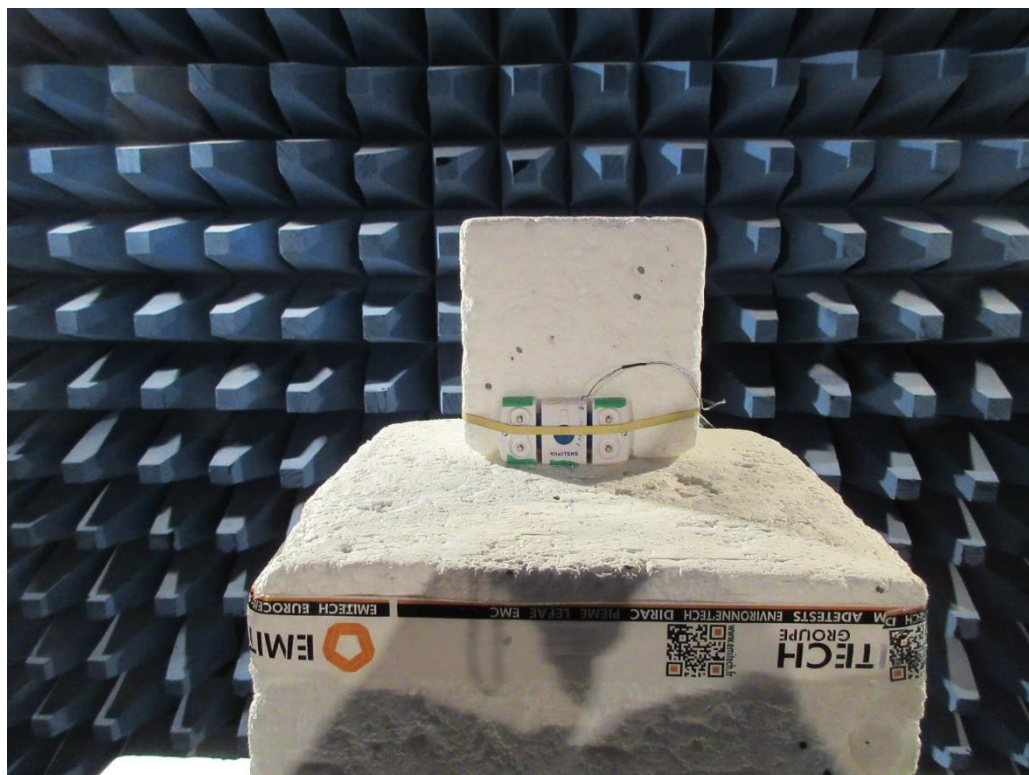
TEST CASE AND CONDITIONS	SEVERITY	RESULT TAB.	VERDICT
Low Channel	>500kHz	EMI4471	PASS
Mid Channel	>500kHz	EMI4631	PASS
High Channel	>500kHz	EMI4632	PASS

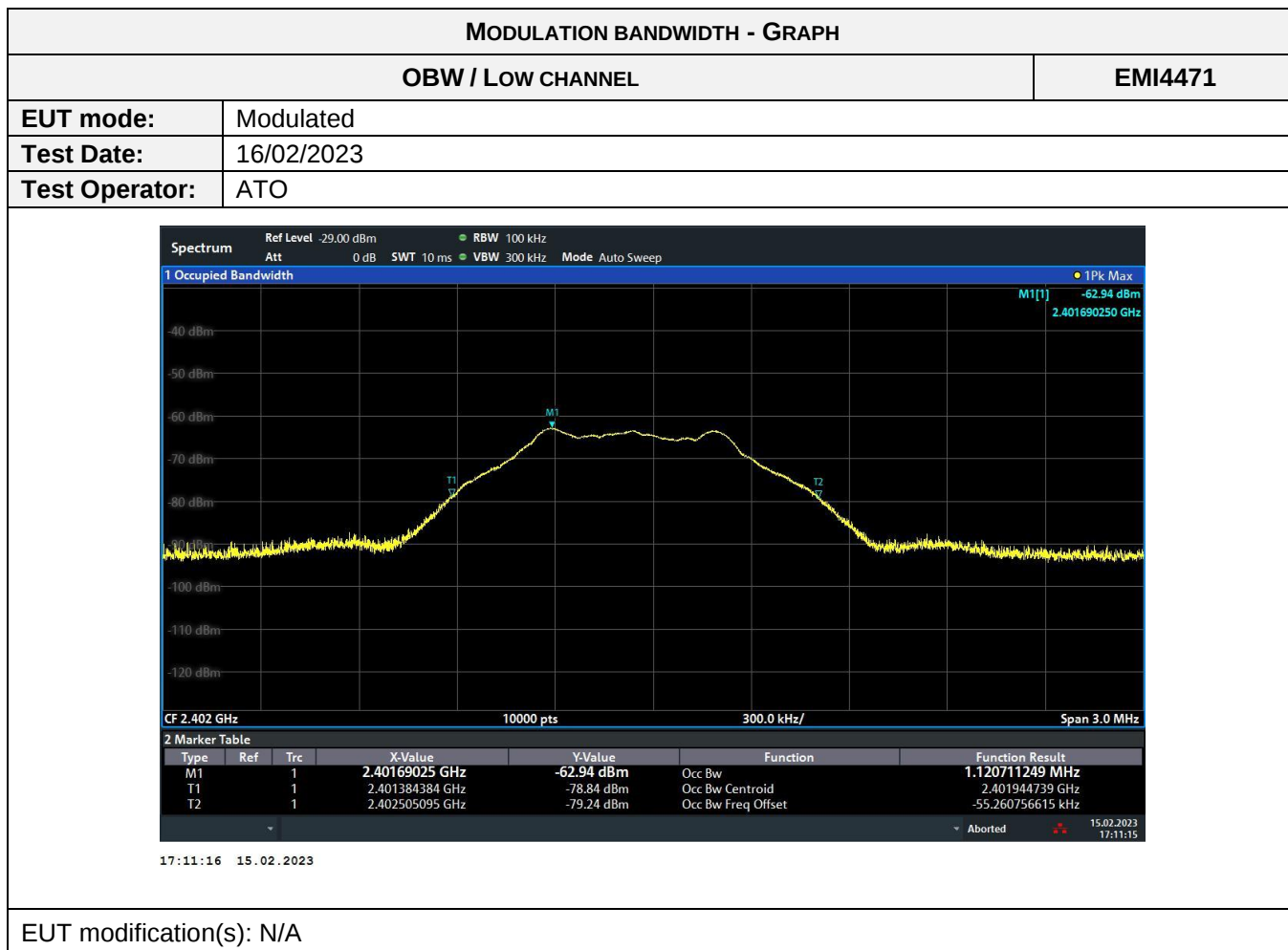
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	24.2 °C
Relative Humidity	20 to 75 %	35.4 %
Atmospheric pressure	N/A	1002 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Receiver	Rohde & Schwarz	FPL1003	16027	16/11/2021	16/07/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

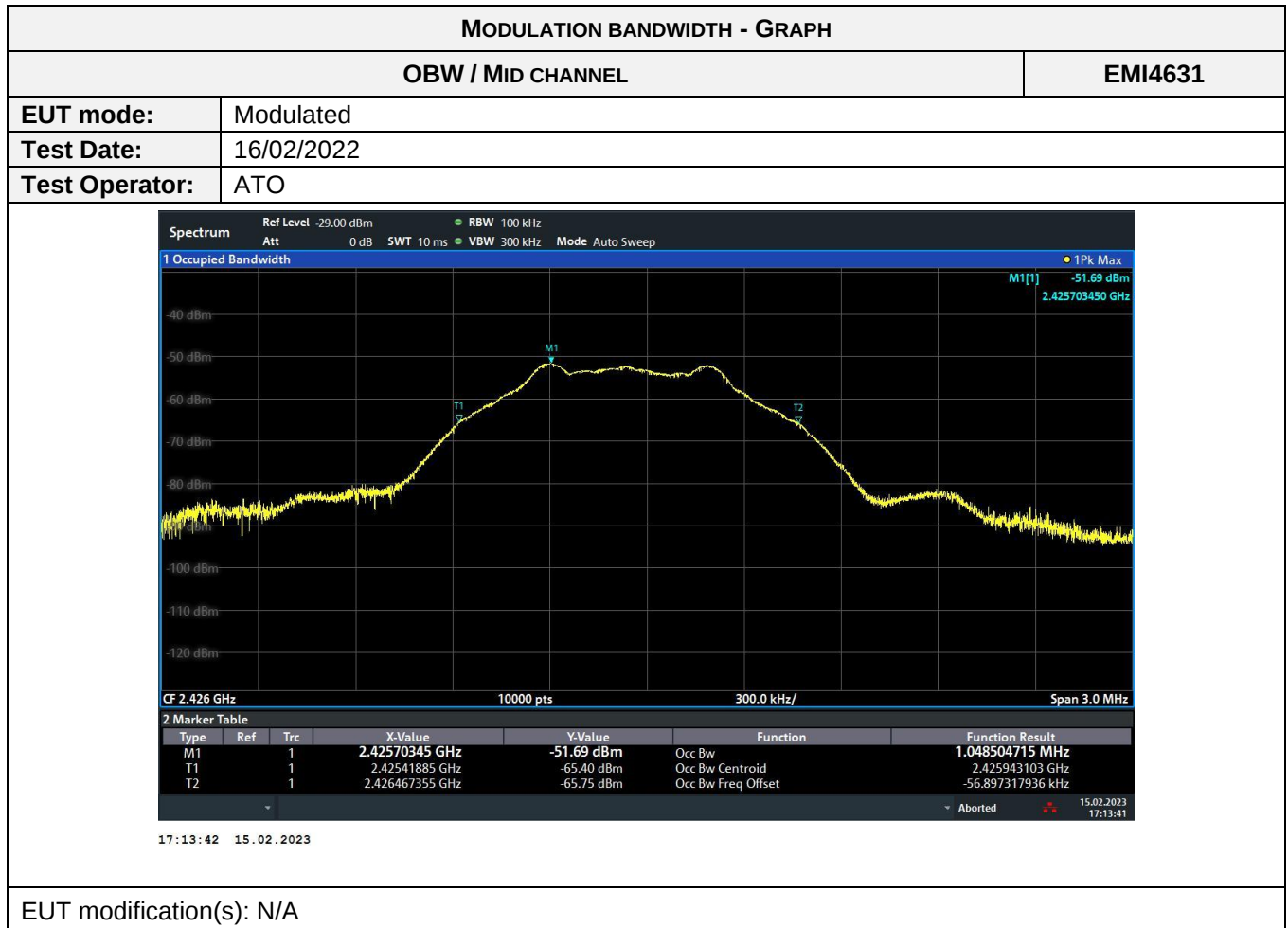
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TEST SETUP PHOTO(S)

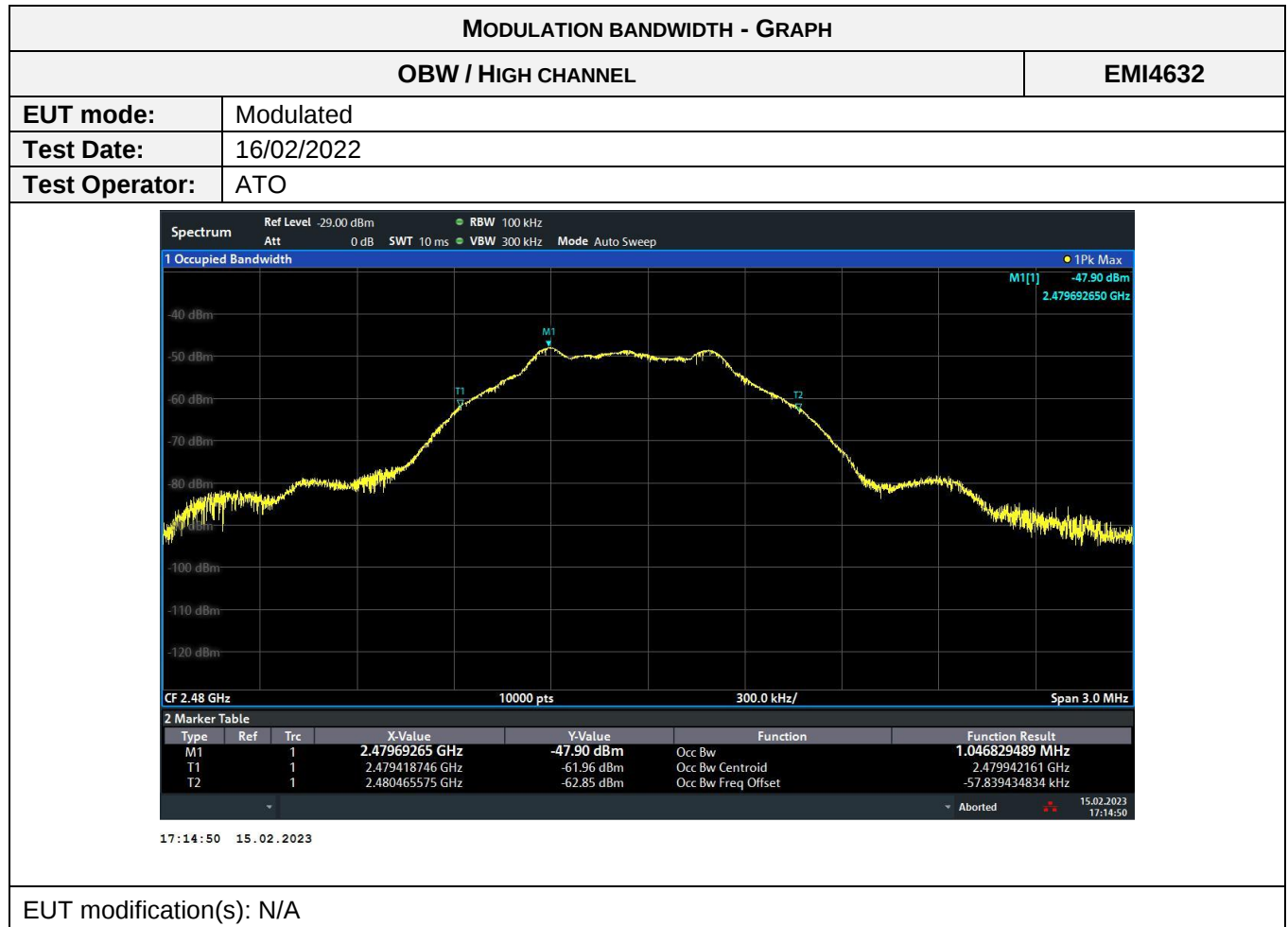




OCCUPIED BANDWIDTH - TABULATED RESULTS			
HIGH CHANNEL			
Frequency	RBW	OBW 99%	Limit
2402 MHz	100 kHz	1.120 MHz	> 500kHz



OCCUPIED BANDWIDTH - TABULATED RESULTS			
HIGH CHANNEL			
Frequency	RBW	OBW 99%	Limit
2426 MHz	100 kHz	1.048 MHz	> 500kHz



OCCUPIED BANDWIDTH - TABULATED RESULTS			
HIGH CHANNEL			
Frequency	RBW	OBW 99%	Limit
2480 MHz	100 kHz	1.046 MHz	> 500kHz

6.4. Maximum effective isotropic radiated power

a) NORMAL TESTS CONDITIONS

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

TEST CASE	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
RF output power / Low channel (2402MHz) / Position 1	2.3995GHz-2.4045GHz	30dBm	EMI4589	PASS
RF output power / Low channel (2402MHz) / Position 2	2.3995GHz-2.4045GHz	30dBm	EMI4590	PASS
RF output power / Low channel (2402MHz) / Position 3 (Charging)	2.3995GHz-2.4045GHz	30dBm	EMI4588	PASS
RF output power / Mid channel (2426MHz) / Position 1	2.4235GHz-2.4285GHz	30dBm	EMI4591	PASS
RF output power / Mid channel (2426MHz) / Position 2	2.4235GHz-2.4285GHz	30dBm	EMI4592	PASS
RF output power / Mid channel (2426MHz) / Position 3 (Charging)	2.4235GHz-2.4285GHz	30dBm	EMI4593	PASS
RF output power / High channel (2480MHz) / Position 1	2.4775GHz-2.4825GHz	30dBm	EMI4596	PASS
RF output power / High channel (2480MHz) / Position 2	2.4775GHz-2.4825GHz	30dBm	EMI4595	PASS
RF output power / High channel (2480MHz) / Position 3 (Charging)	2.4775GHz-2.4825GHz	30dBm	EMI4594	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	25.1 °C
Relative Humidity	20 to 75 %	35.7 %
Atmospheric pressure	N/A	1009 hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Attenuator	EMITECH	SUB.V2-H	14495	05/01/2022	05/03/2023
Attenuator	EMITECH	SUB.V2-V	14496	05/01/2022	05/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Receiver	Agilent Technologies	E4440A	5824	02/11/2020	02/07/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
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

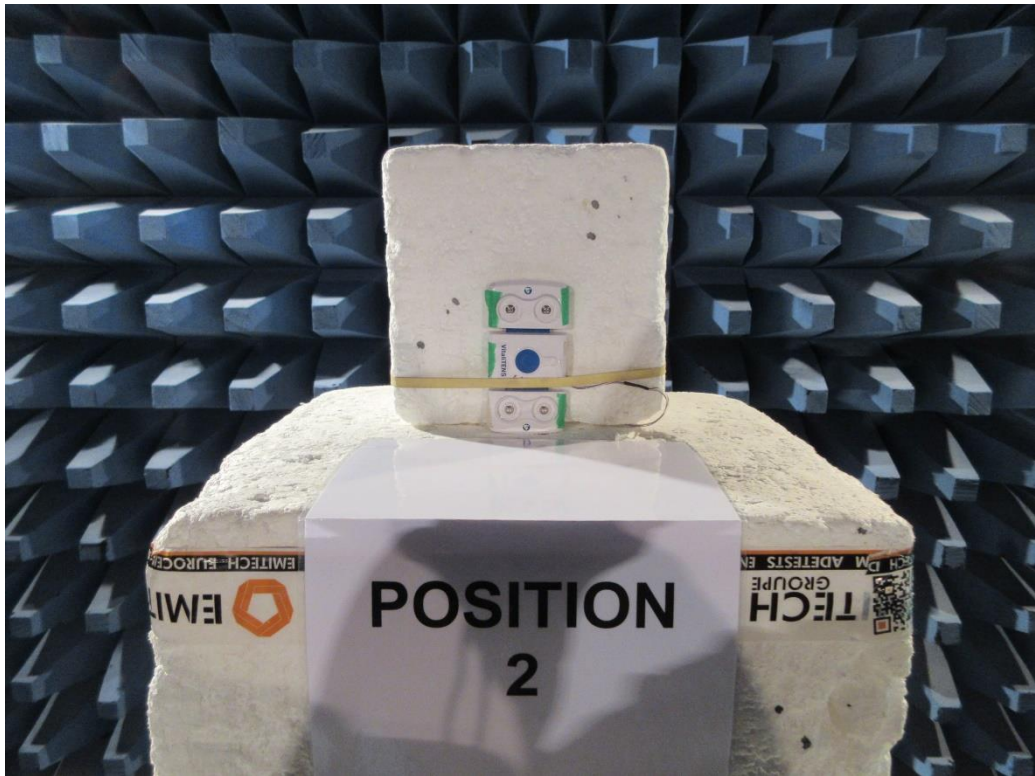
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – POSITION 1



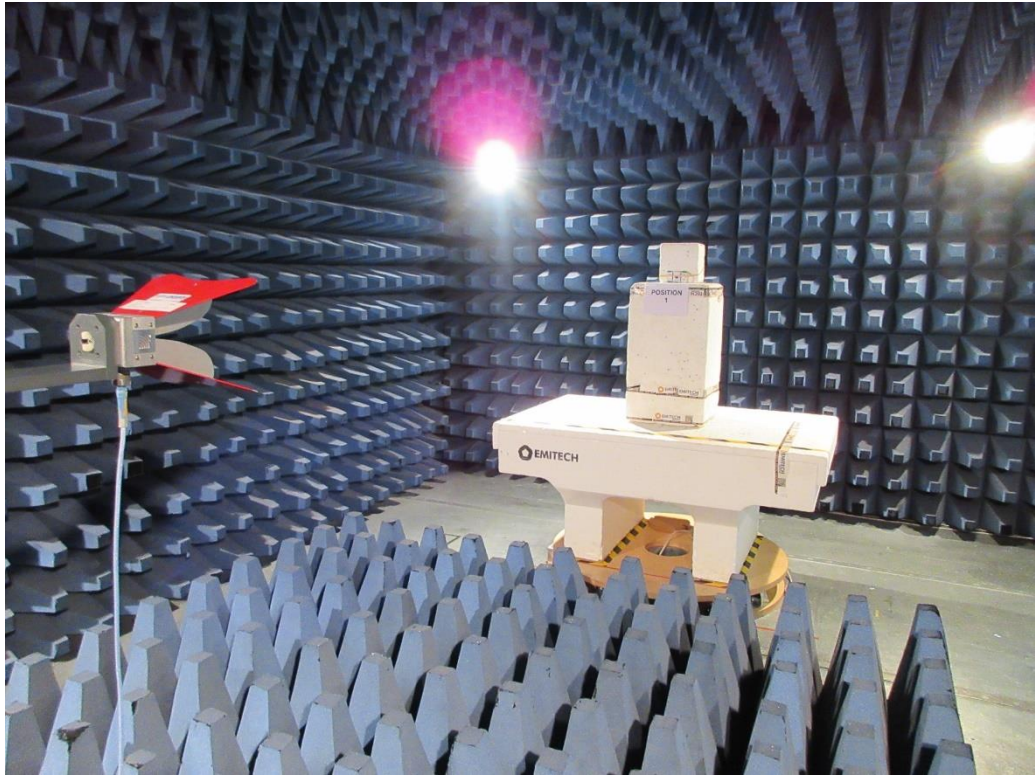
TEST SETUP PHOTO(S) – POSITION 2

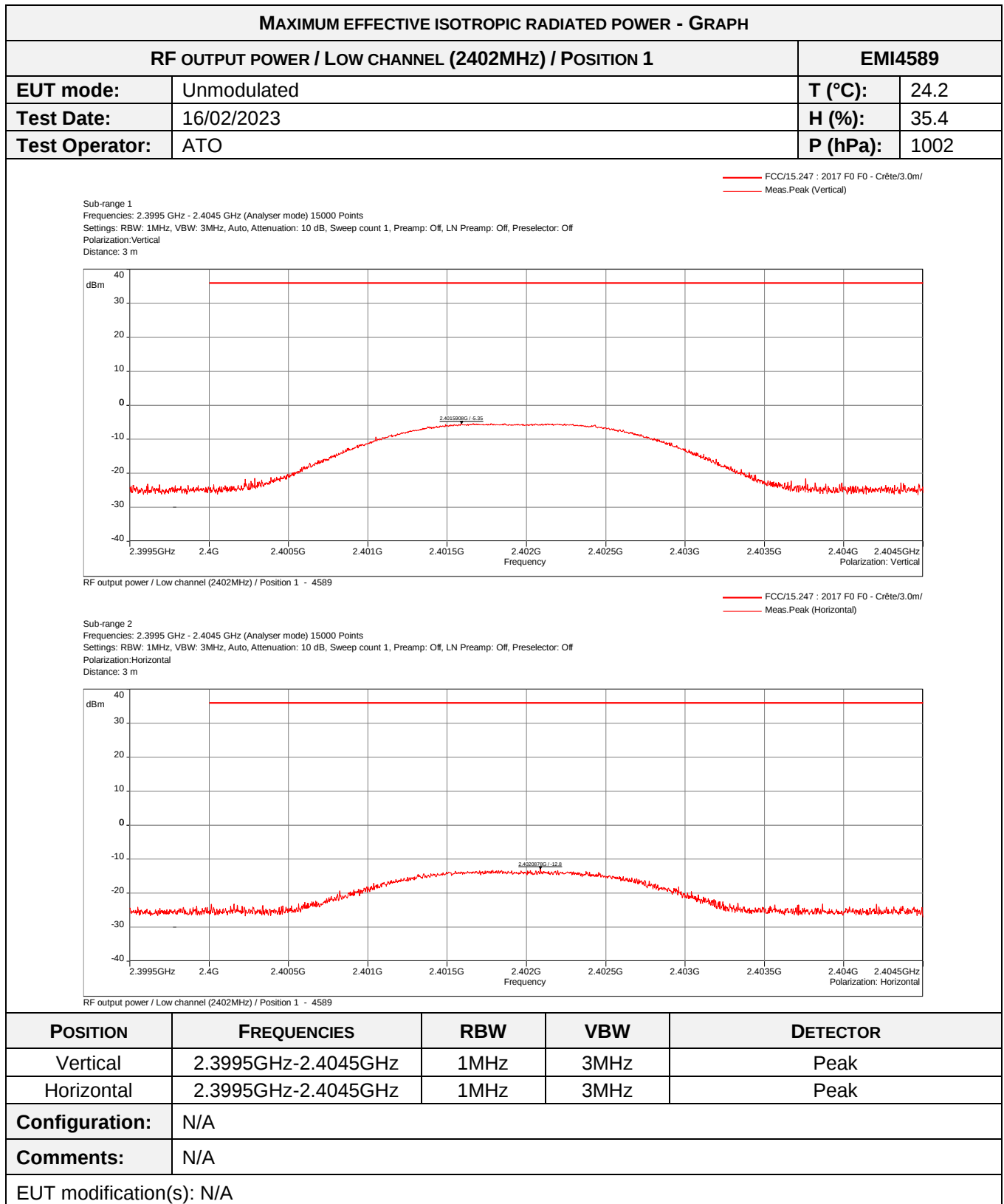


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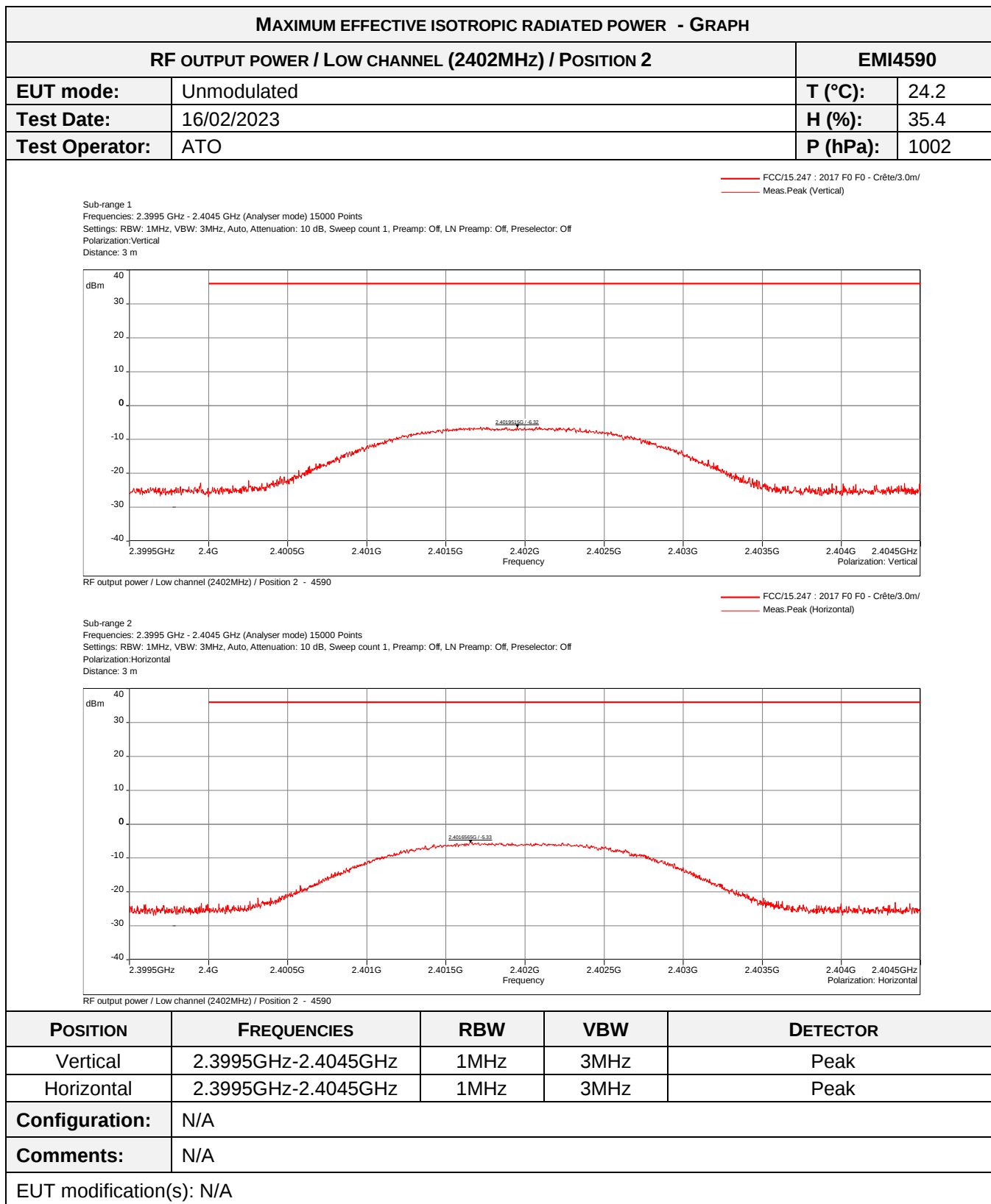


TEST SETUP PHOTO(S)

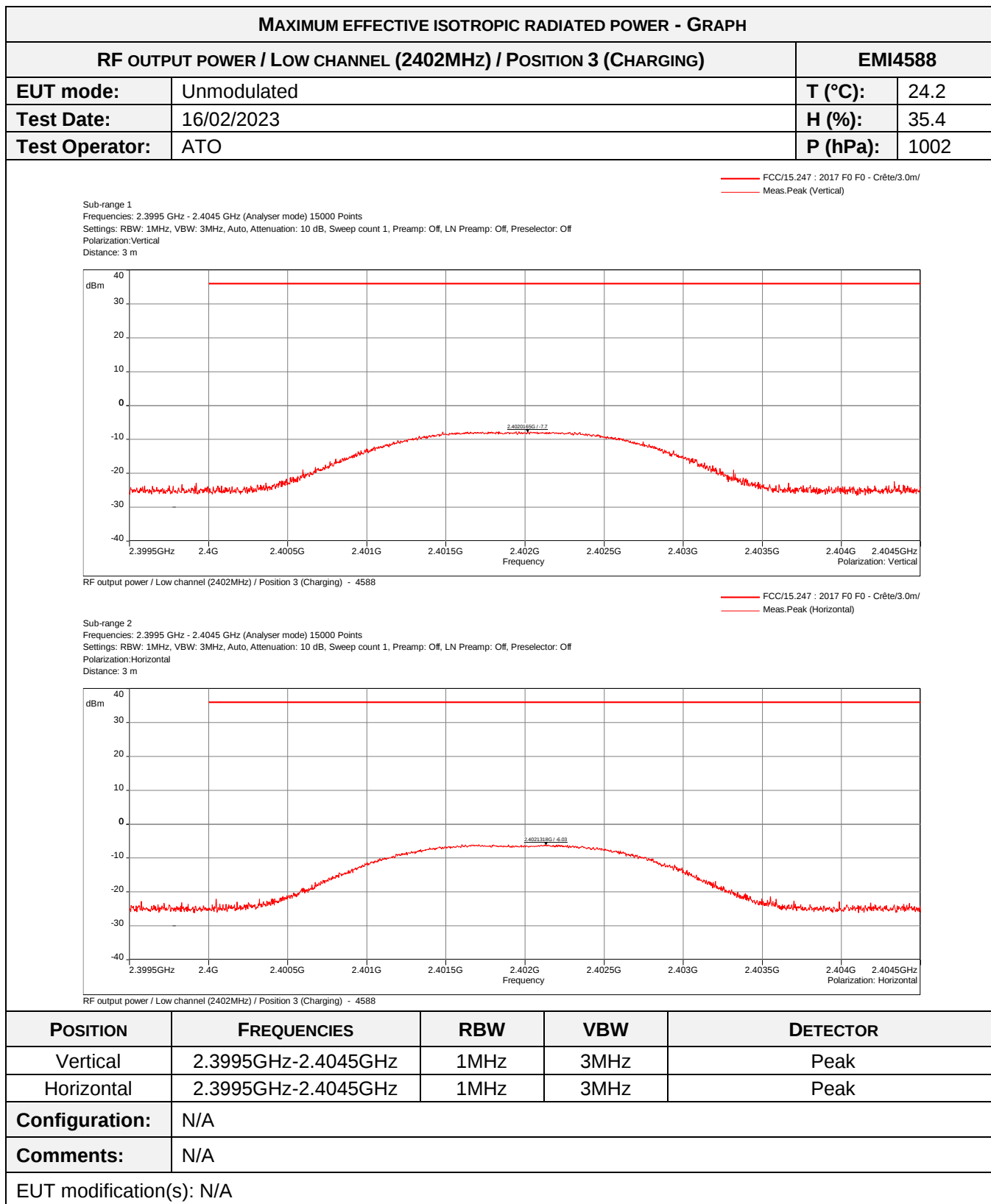




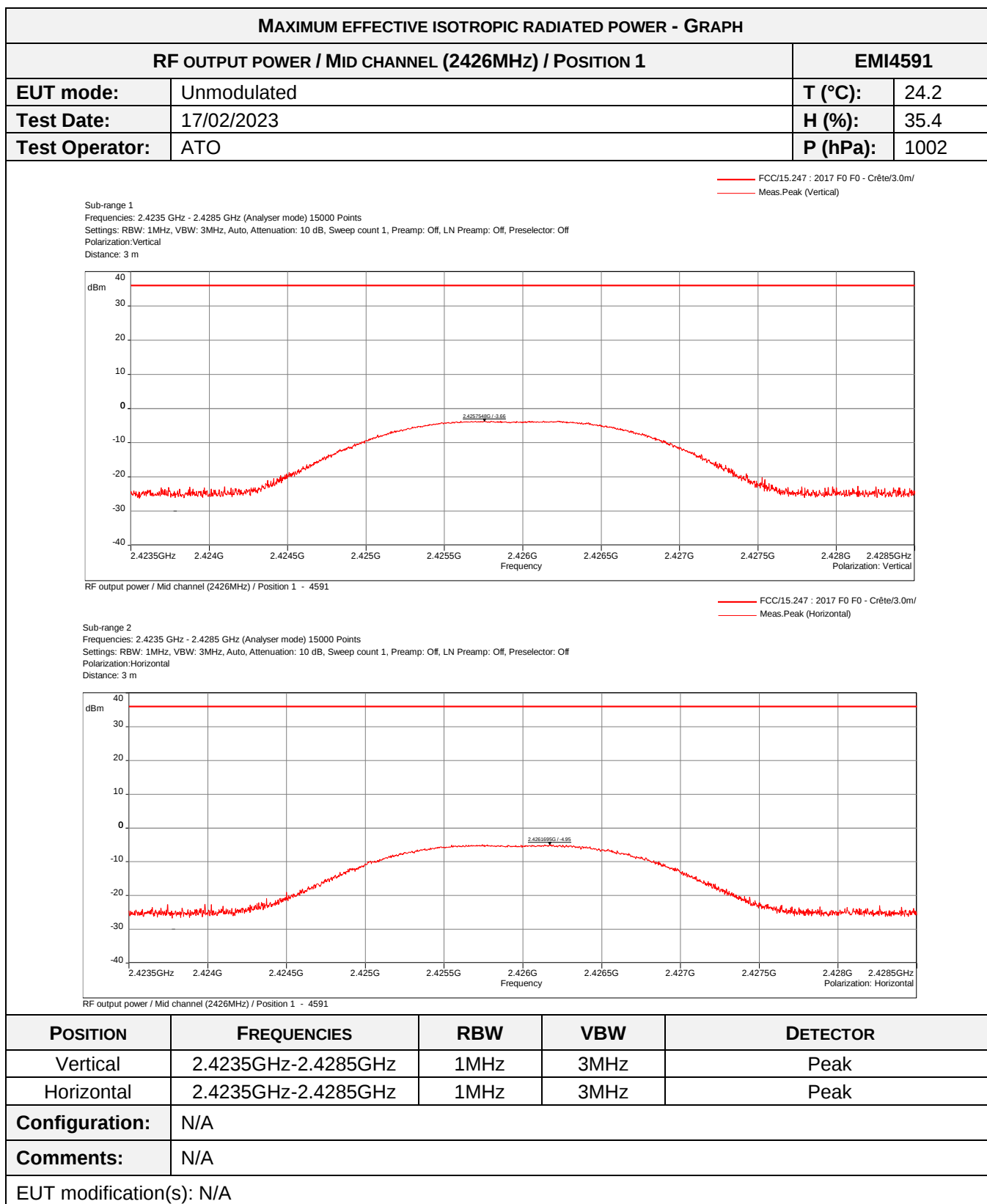
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / LOW CHANNEL (2402MHz) / POSITION 1			EMI4589
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2402MHz	Vertical	-5.35	30.00
2402MHz	Horizontal	-12.8	30.00



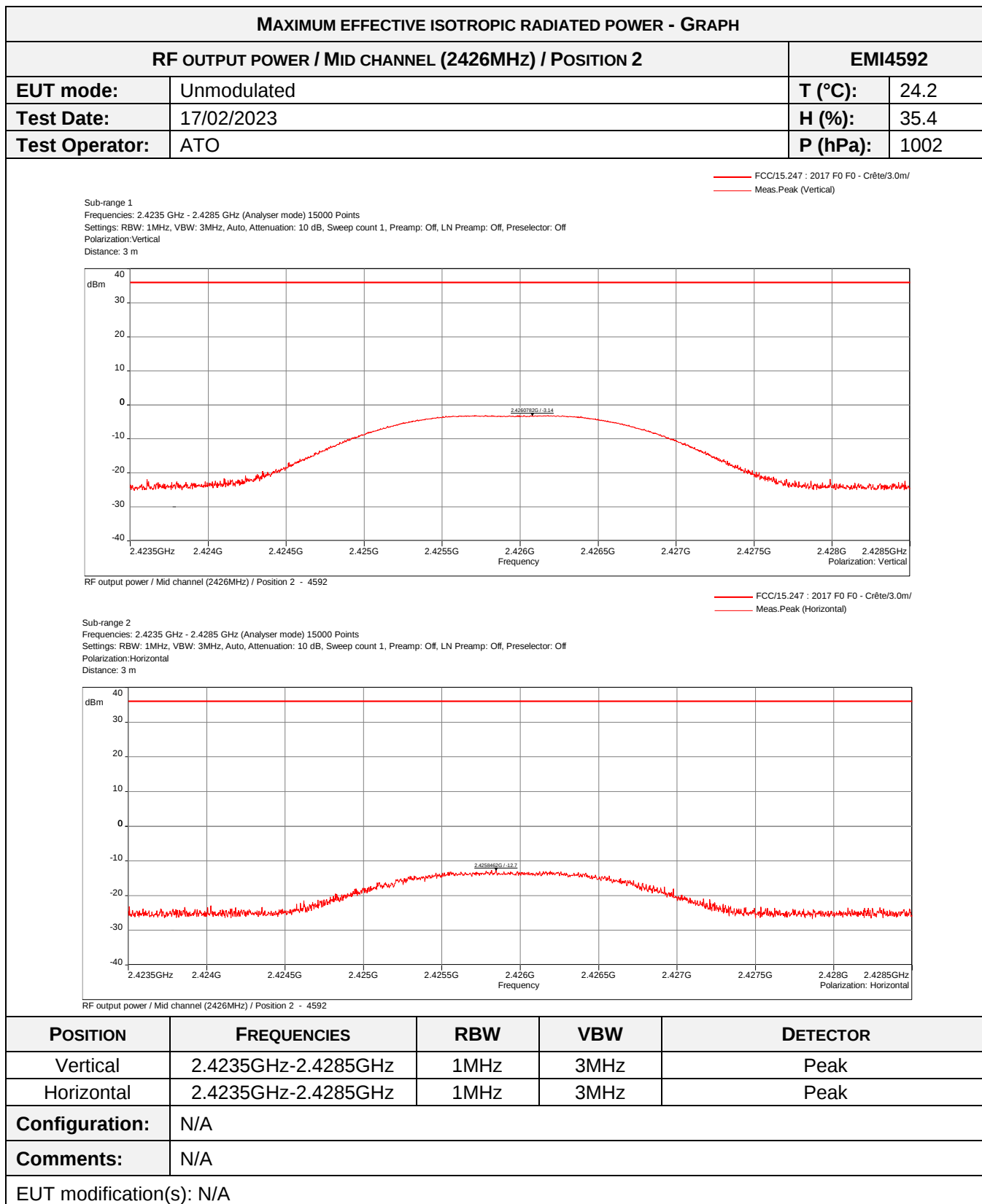
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / LOW CHANNEL (2402MHz) / POSITION 2			EMI4590
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2402	Vertical	-6.32	30.00
2402	Horizontal	-5.33	30.00



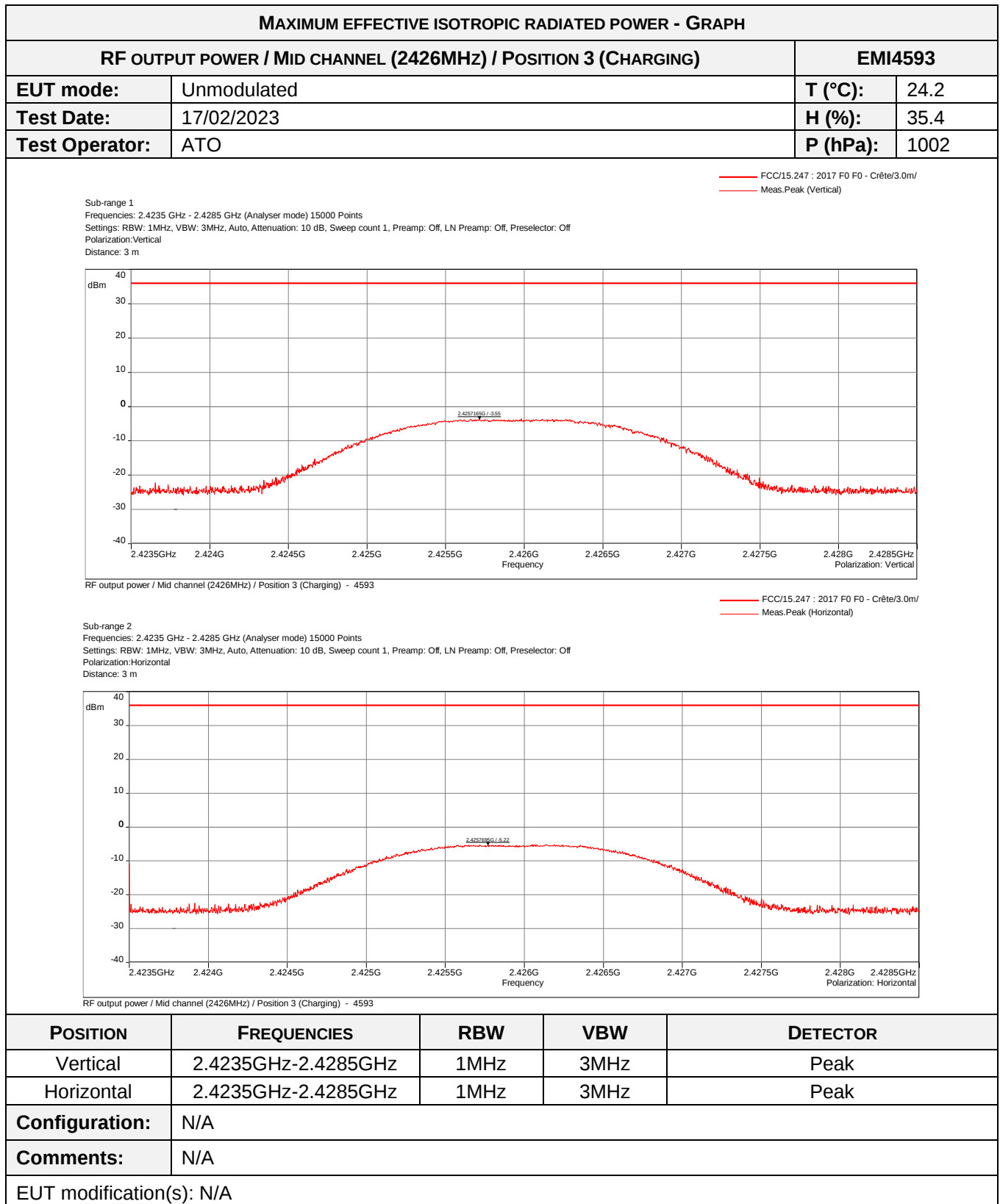
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / LOW CHANNEL (2402MHz) / POSITION 3 (CHARGING)			EMI4588
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2402	Vertical	-7.70	30.00
2402	Horizontal	-6.03	30.00



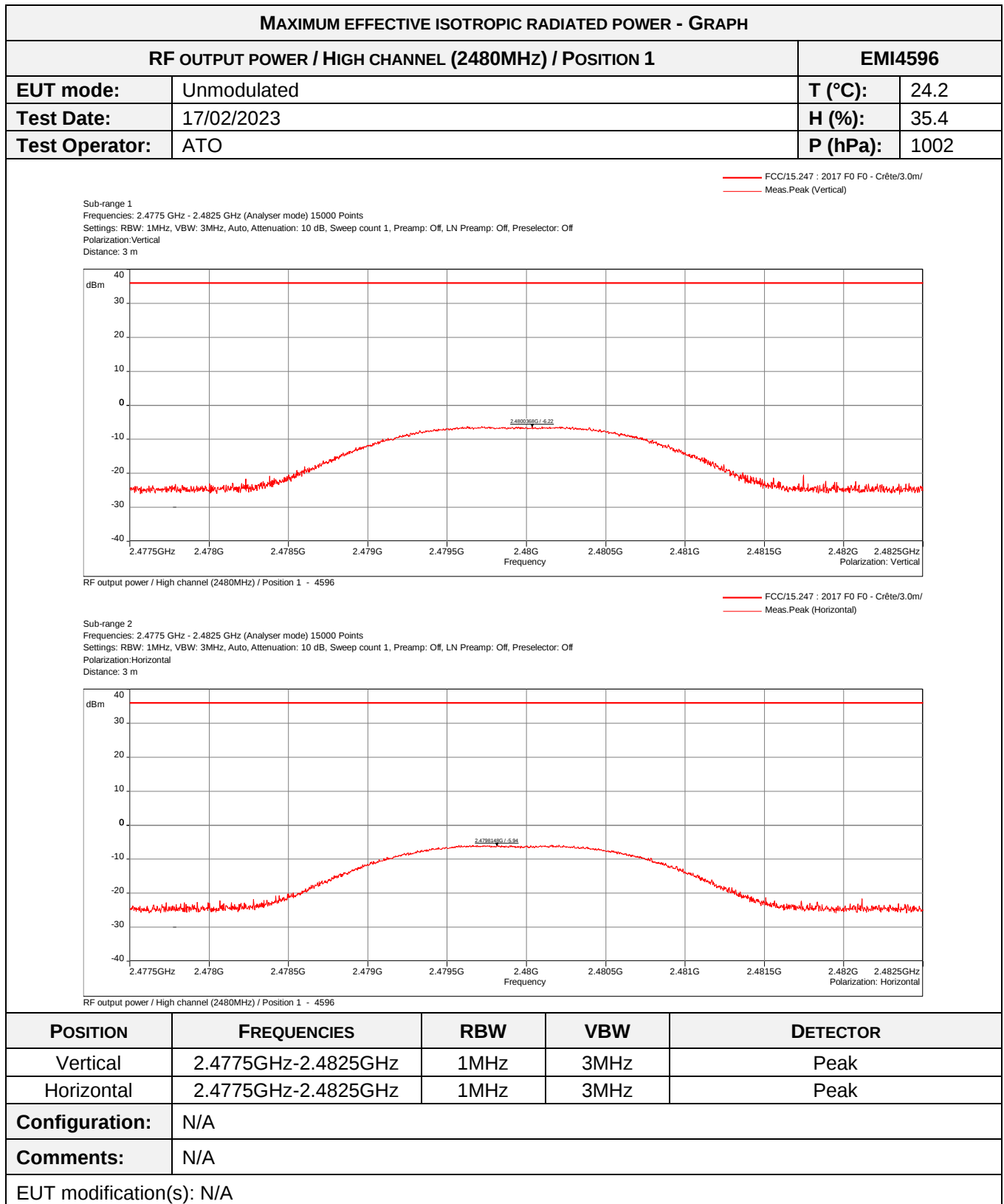
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / MID CHANNEL (2426MHz) / POSITION 1			EMI4591
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2426	Vertical	-3.66	30.00
2426	Horizontal	-4.95	30.00



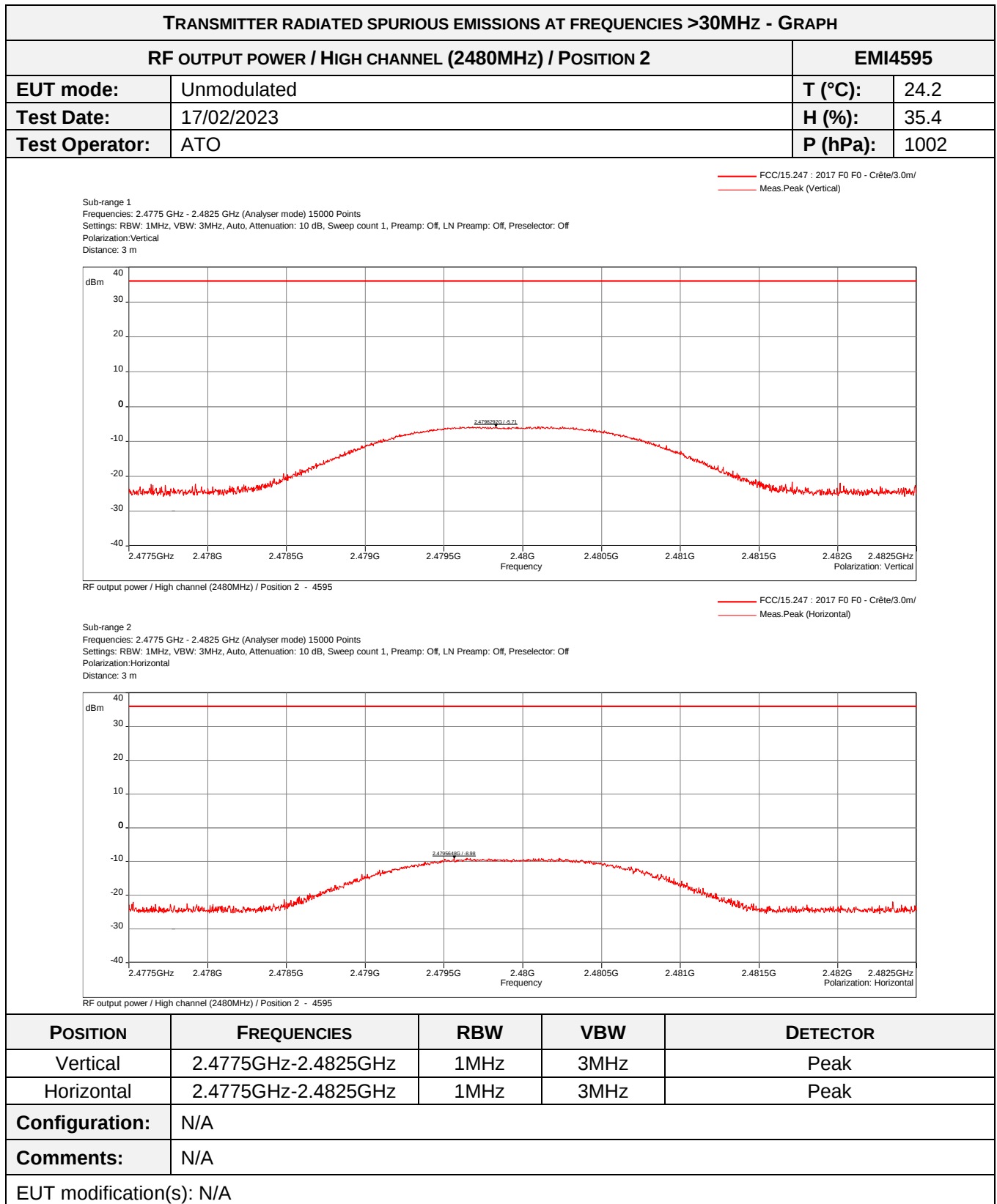
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / MID CHANNEL (2426MHz) / POSITION 2			EMI4592
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2426	Vertical	-3.14	30.00
2426	Horizontal	-12.7	30.00



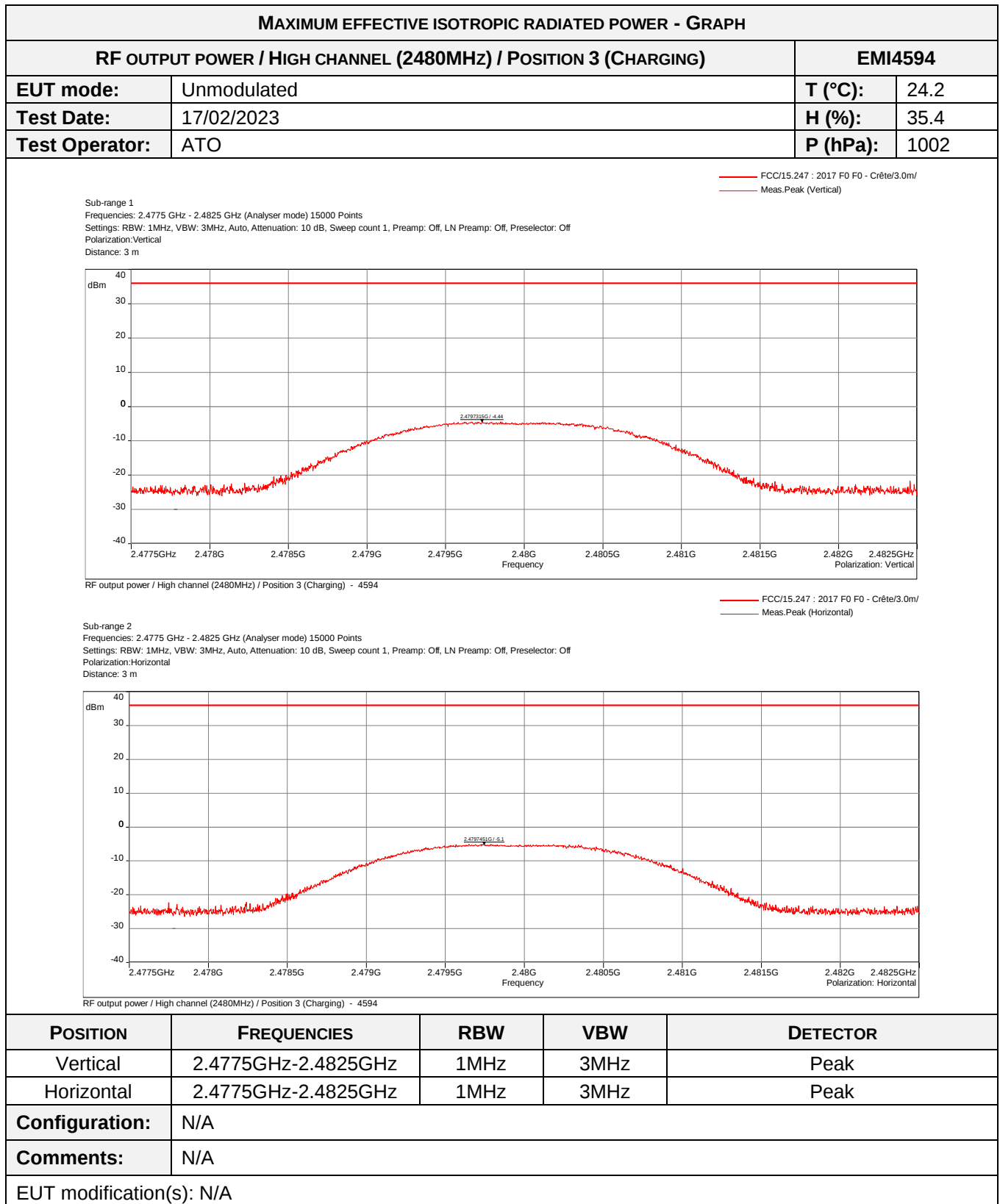
MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / MID CHANNEL (2426MHz) / POSITION 3 (CHARGING)			EMI4593
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2426	Vertical	-3.55	30.00
2426	Horizontal	-5.22	30.00



MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / HIGH CHANNEL (2480MHz) / POSITION 1			EMI4596
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2480	Vertical	-6.22	30.00
2480	Horizontal	-5.94	30.00



MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / HIGH CHANNEL (2480MHz) / POSITION 2			EMI4595
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2480	Vertical	-5.71	30.00
2480	Vertical	-8.98	30.00



MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS			
RF OUTPUT POWER / HIGH CHANNEL (2480MHz) / POSITION 3 (CHARGING)			EMI4594
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
2480	Vertical	-4.44	30.00
2480	Horizontal	-5.10	30.00

b) EXTREMES TESTS CONDITIONS (*)

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247 and RSS-247
General test setup: EUT is set inside the climatic enclosure. EIRP measurements are repeated in extreme test conditions with the power levels correlated with the maximum effective radiated power measured in normal conditions.	

TEST CASE	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Low channel / 25°C	Unmodulated	30dBm	EMI4473	PASS
Mid channel / 25°C	Unmodulated	30dBm	EMI4636	PASS
High channel / 25°C	Unmodulated	30dBm	EMI4637	PASS
Low channel / 10°C	Unmodulated	30dBm	EMI4638	PASS
Mid channel / 10°C	Unmodulated	30dBm	EMI4639	PASS
High channel / 10°C	Unmodulated	30dBm	EMI4640	PASS
Low channel / 40°C	Unmodulated	30dBm	EMI4641	PASS
Mid channel / 40°C	Unmodulated	30dBm	EMI4642	PASS
High channel / 40°C	Unmodulated	30dBm	EMI4643	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	25.1 °C
Relative Humidity	20 to 75 %	35.7 %
Atmospheric pressure	N/A	1009 hPa
Test method deviation: N/A		
Supplementary information: Extrêmes tests conditions are not made under COFRAC accréditation.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Attenuator	Radiall	R412710124	17328	22/06/2020	22/08/2023
Cable	MegaPhase	TM18-N1N1-118	12841	04/10/2022	04/12/2024
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	01/09/2022	01/11/2023
Spectrum analyzer	Rohde & Schwarz	FPL1007	17908	02/11/2022	02/01/2024
Thermohygrometer	Testo	608-H2	12268	24/10/2022	24/12/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – CLIMATIC ENCLOSURE



MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER - TABULATED RESULTS

TEST CONDITION	FREQUENCY	EIRP	LIMIT	RESULT TAB.
Low channel / 25°C	2402MHz	-5.35dBm	30dBm	EMI4473
Mid channel / 25°C	2426MHz	-3.14dBm	30dBm	EMI4636
High channel / 25°C	2480MHz	-5.94dBm	30dBm	EMI4637
Low channel / 10°C	2402MHz	-5.59dBm	30dBm	EMI4638
Mid channel / 10°C	2426MHz	-3.25dBm	30dBm	EMI4639
High channel / 10°C	2480MHz	-5.12dBm	30dBm	EMI4640
Low channel / 40°C	2402MHz	-4.78dBm	30dBm	EMI4641
Mid channel / 40°C	2426MHz	-2.64dBm	30dBm	EMI4642
High channel / 40°C	2480MHz	-5.53dBm	30dBm	EMI4643

6.5. Band-edge compliance

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247 subclause d) and RSS-247
Test description: In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. EUT is connected to the measuring receiver via 50Ω attenuator(s). Only the highest levels are recorded.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Band-edge / All Positions / Low channel (2402MHz)	2.38GHz-2.5035GHz	>20dBc	EMI4626	PASS
Band-edge / All Positions / Mid channel (2426MHz)	2.38GHz-2.5035GHz	>20dBc	EMI4627	PASS
Band-edge / All Positions / High channel (2480MHz)	2.38GHz-2.5035GHz	>20dBc	EMI4628	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	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Attenuator	EMITECH	SUB.V2-H	14495	05/01/2022	05/03/2023
Attenuator	EMITECH	SUB.V2-V	14496	05/01/2022	05/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Receiver	Agilent Technologies	E4440A	5824	02/11/2020	02/07/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
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) – POSITION 1



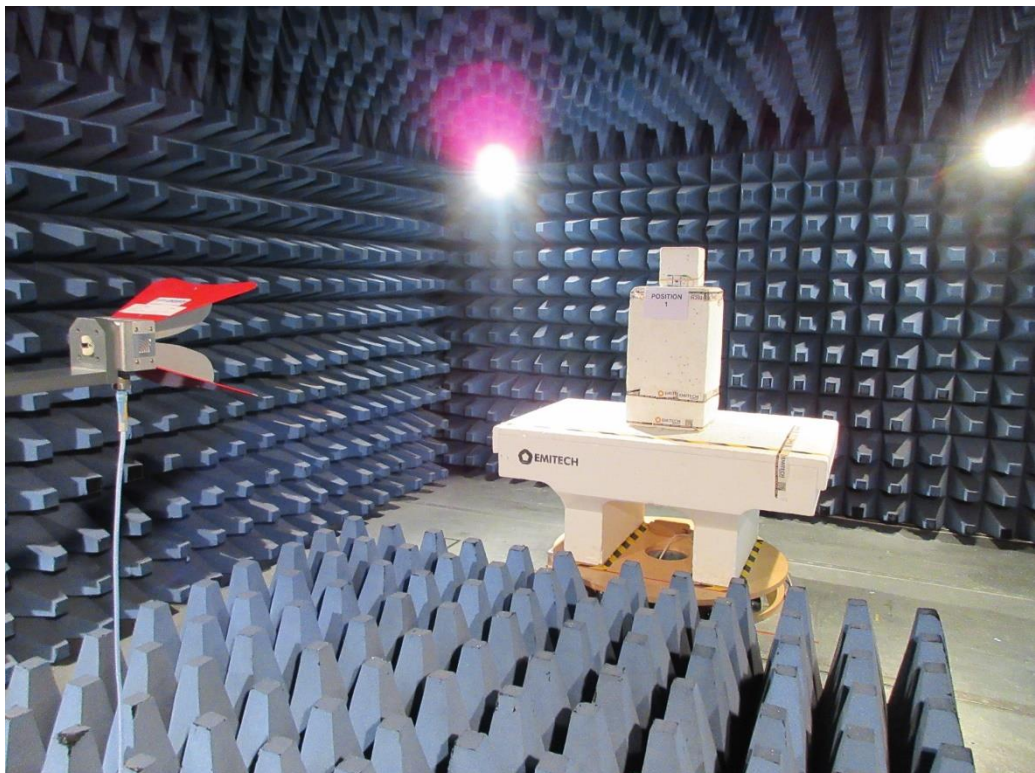
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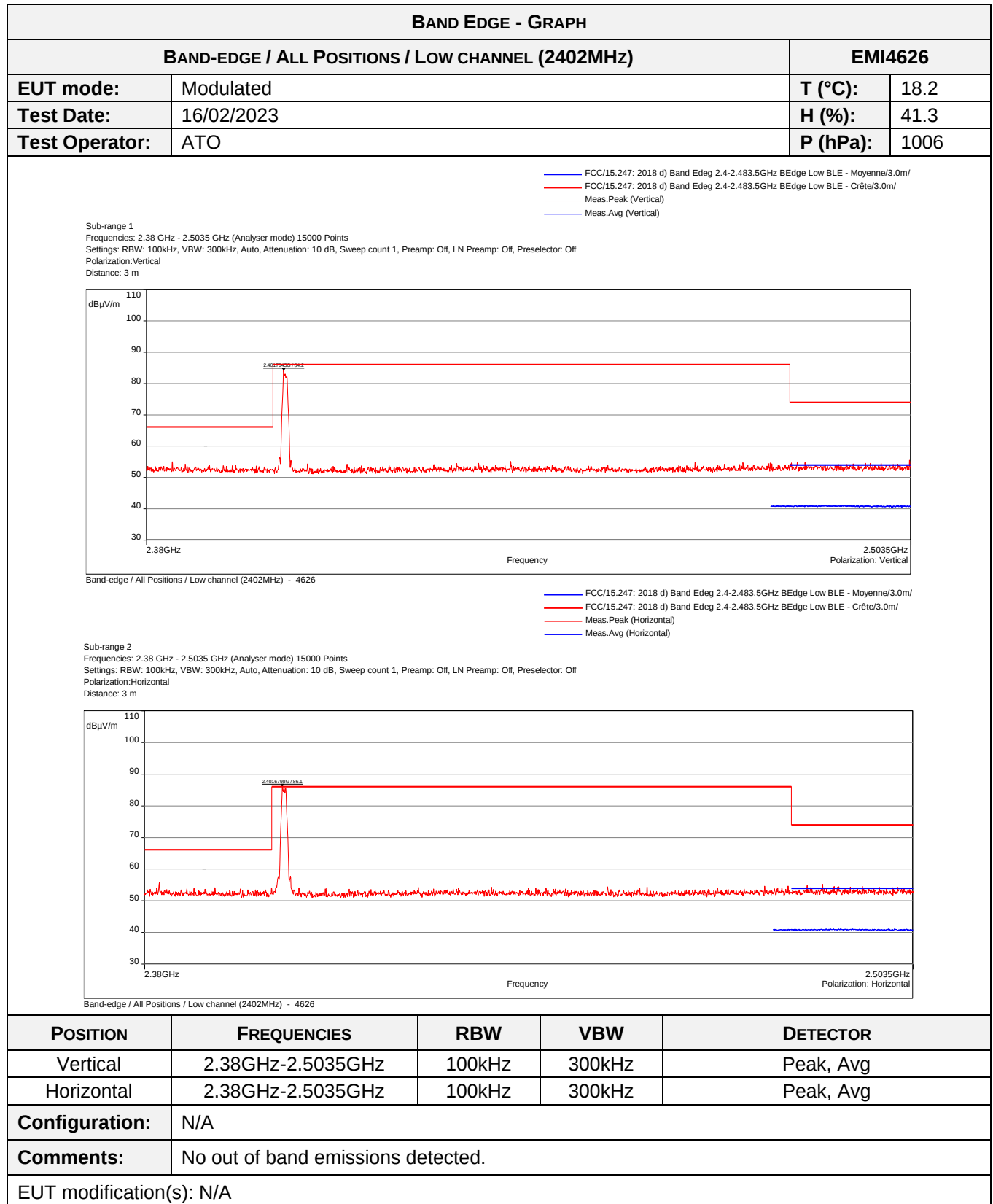


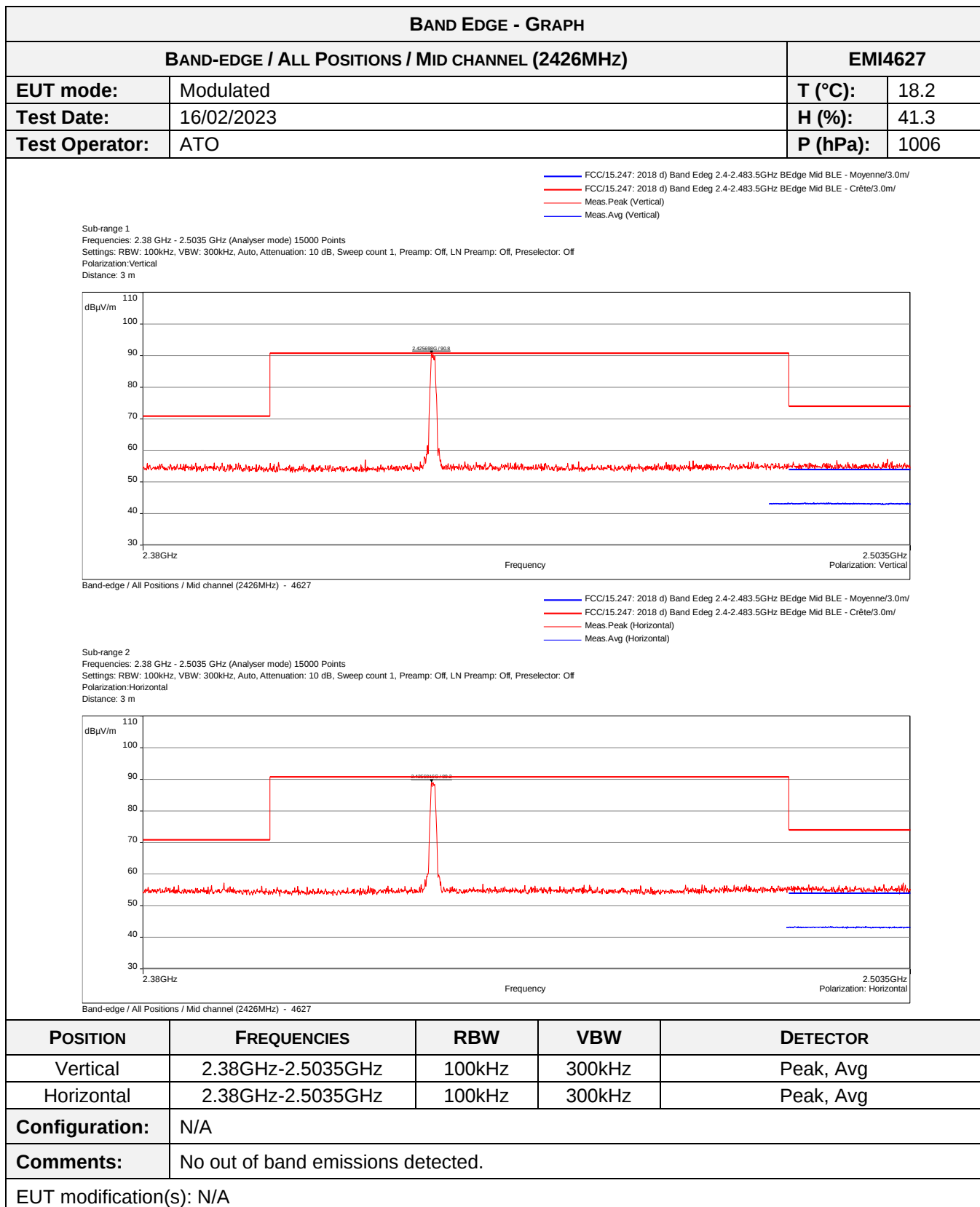
TEST SETUP PHOTO(S) – POSITION 3

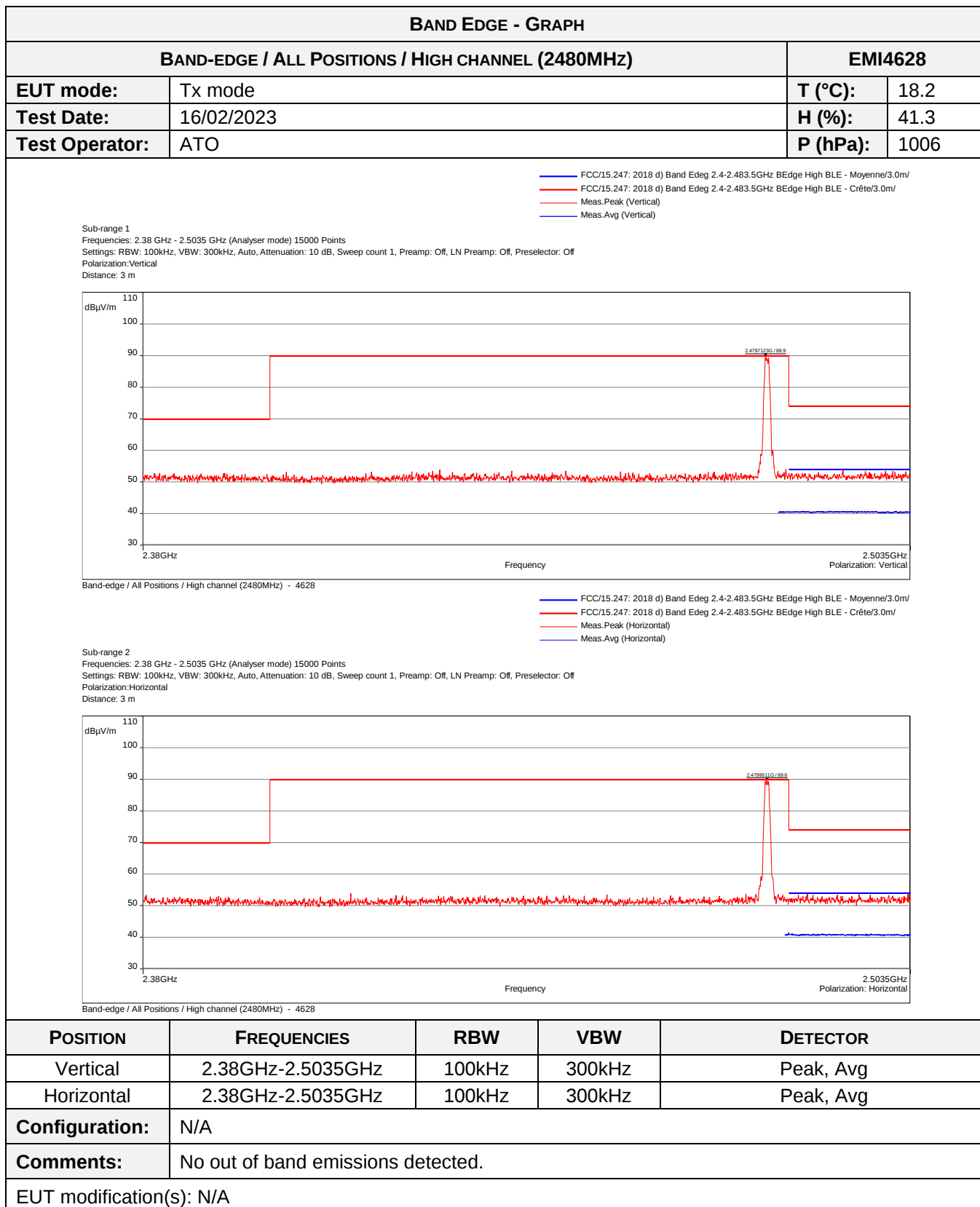


TEST SETUP PHOTO(S)









6.6. Power spectral density

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247 and RSS-247
Test description: e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density. EUT is connected to the measuring receiver via 50Ω attenuator(s). Only the highest levels are recorded.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
PSD / Low channel (2402 MHz) / Position 1	2.401GHz-2.403GHz	8dBm/3kHz	EMI4616	PASS
PSD / Low channel (2402 MHz) / Position 2	2.401GHz-2.403GHz	8dBm/3kHz	EMI4617	PASS
PSD / Low channel (2402 MHz) / Position 3 (Charging)	2.401GHz-2.403GHz	8dBm/3kHz	EMI4618	PASS
PSD / Mid channel (2426 MHz) / Position 1	2.425GHz-2.427GHz	8dBm/3kHz	EMI4619	PASS
PSD / Mid channel (2426 MHz) / Position 2	2.425GHz-2.427GHz	8dBm/3kHz	EMI4620	PASS
PSD / Mid channel (2426 MHz) / Position 3 (Charging)	2.425GHz-2.427GHz	8dBm/3kHz	EMI4621	PASS
PSD / High channel (2480 MHz) / Position 1	2.479GHz-2.481GHz	8dBm/3kHz	EMI4622	PASS
PSD / High channel (2480 MHz) / Position 2	2.479GHz-2.481GHz	8dBm/3kHz	EMI4623	PASS
PSD / High channel (2480 MHz) / Position 3 (Charging)	2.479GHz-2.481GHz	8dBm/3kHz	EMI4624	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
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Attenuator	EMITECH	SUB.V2-H	14495	05/01/2022	05/03/2023
Attenuator	EMITECH	SUB.V2-V	14496	05/01/2022	05/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Receiver	Agilent Technologies	E4440A	5824	02/11/2020	02/07/2023
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
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

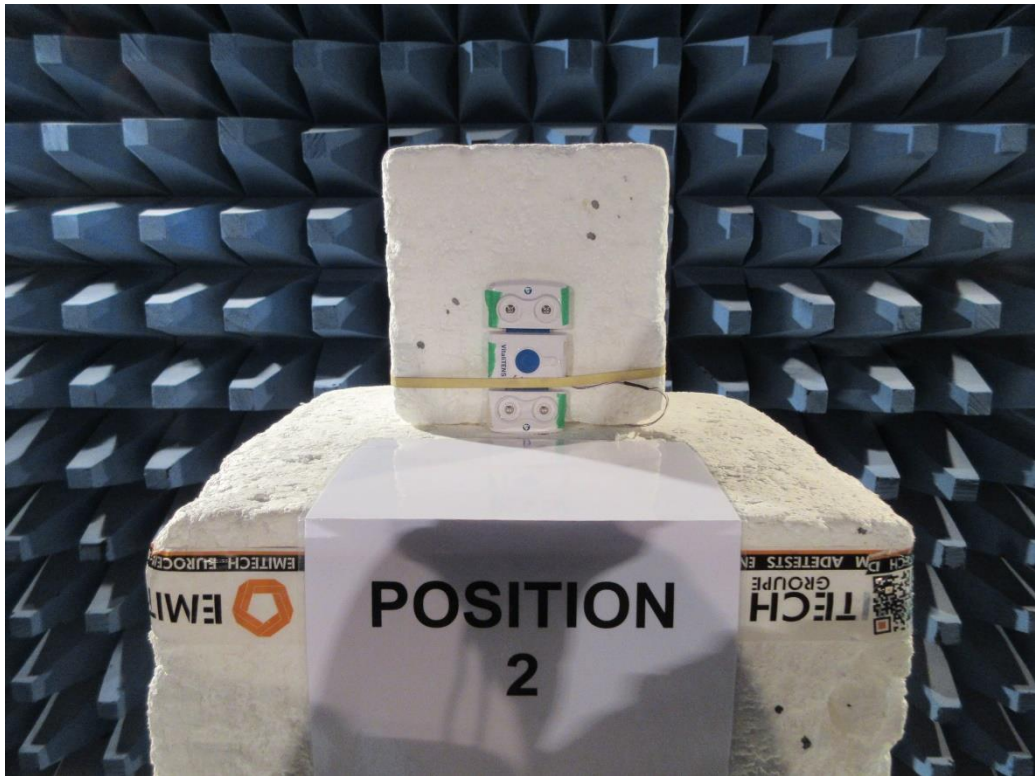
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – POSITION 1



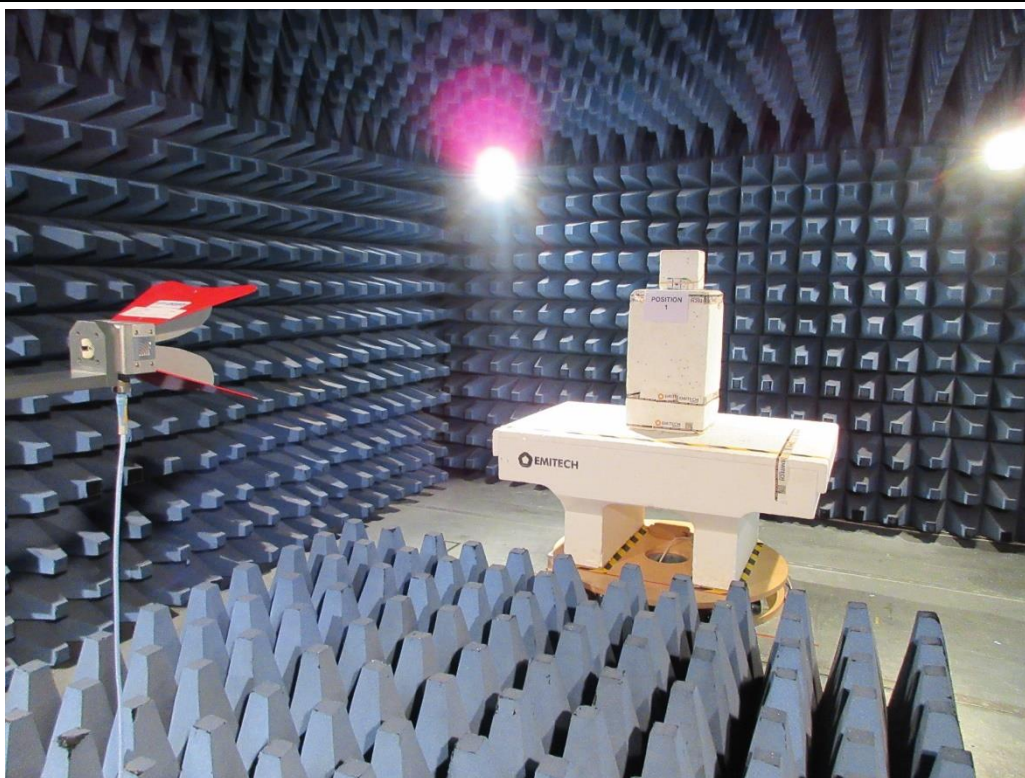
TEST SETUP PHOTO(S) – POSITION 2

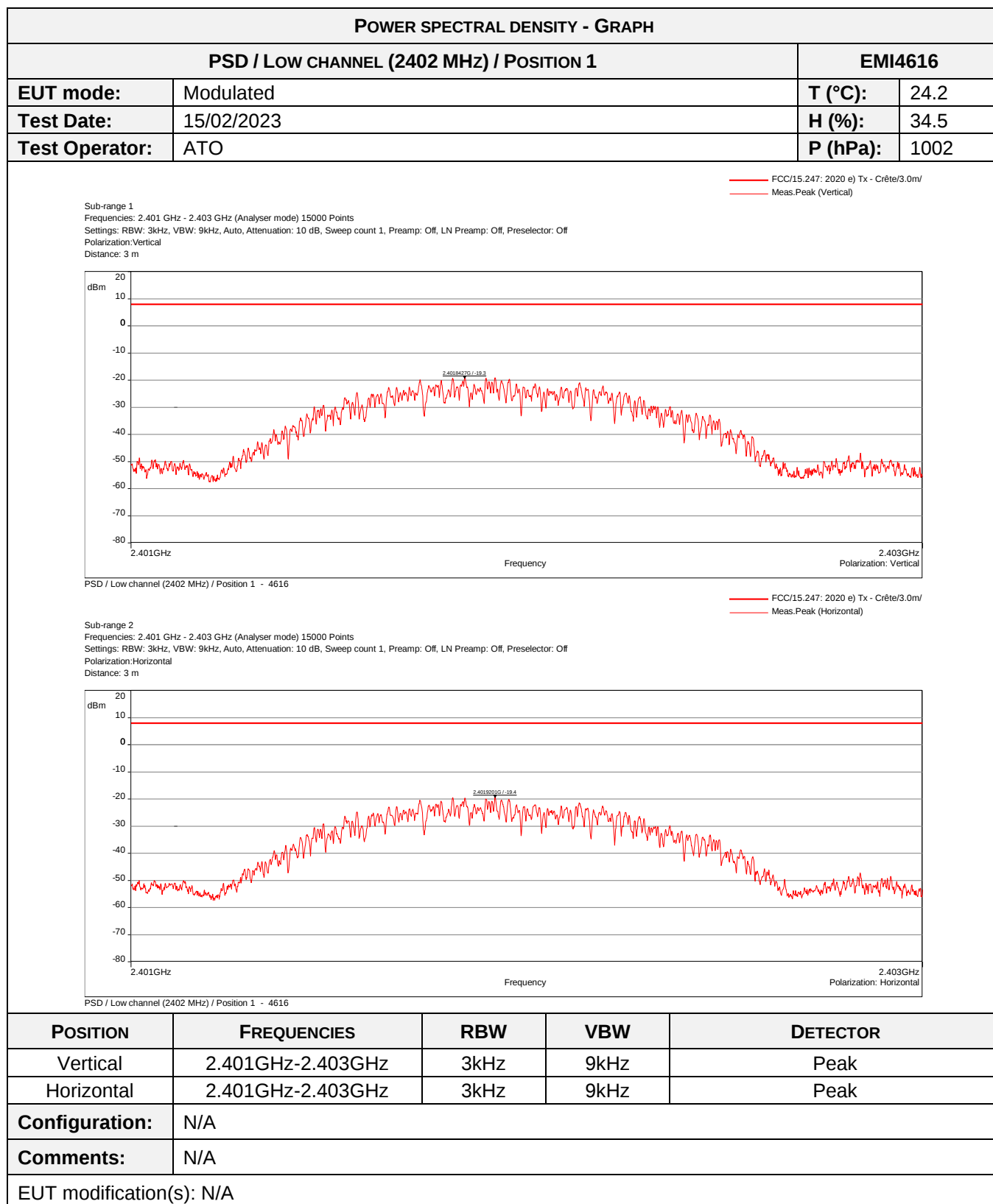


TEST SETUP PHOTO(S) – POSITION 3

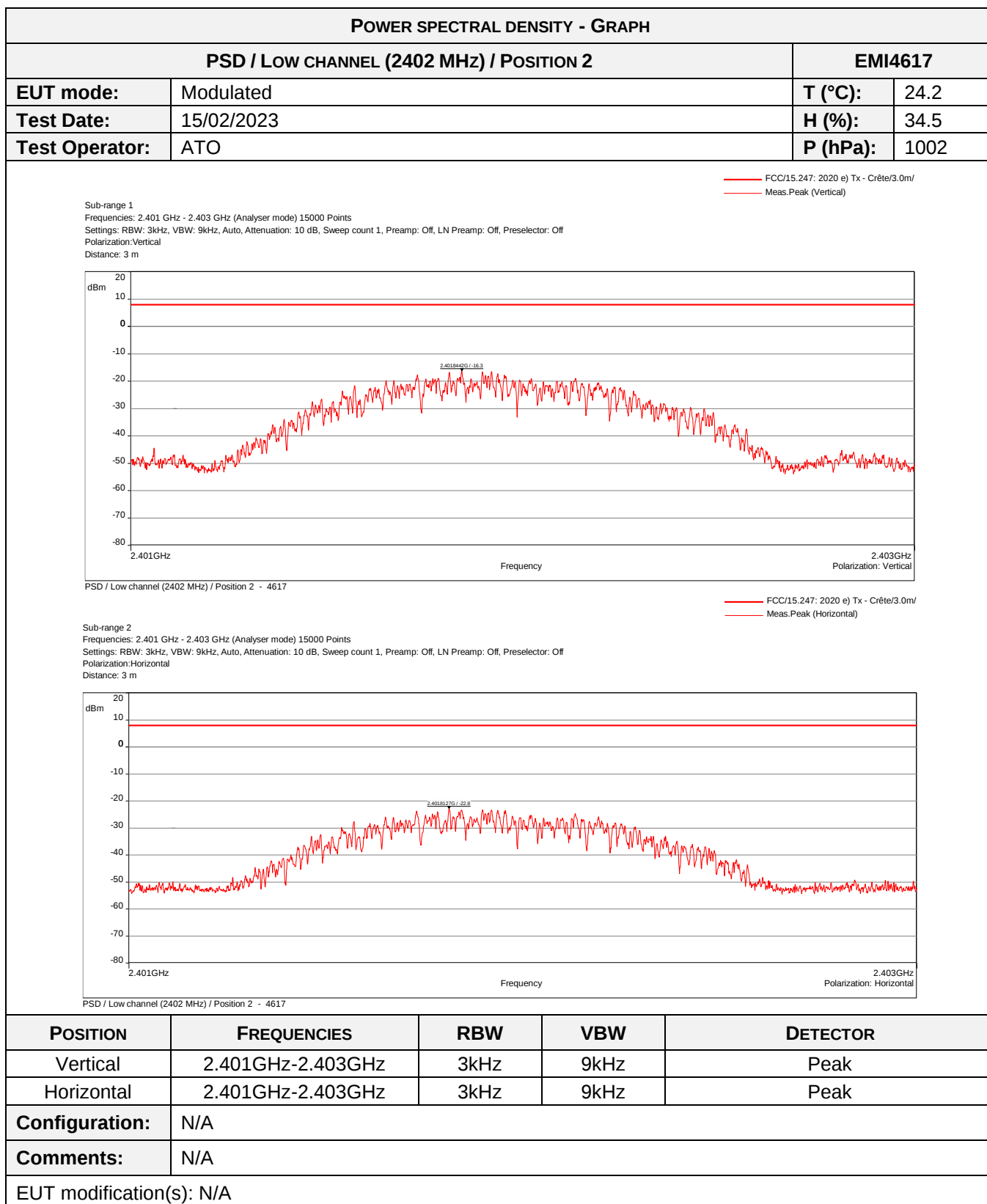


TEST SETUP PHOTO(S)

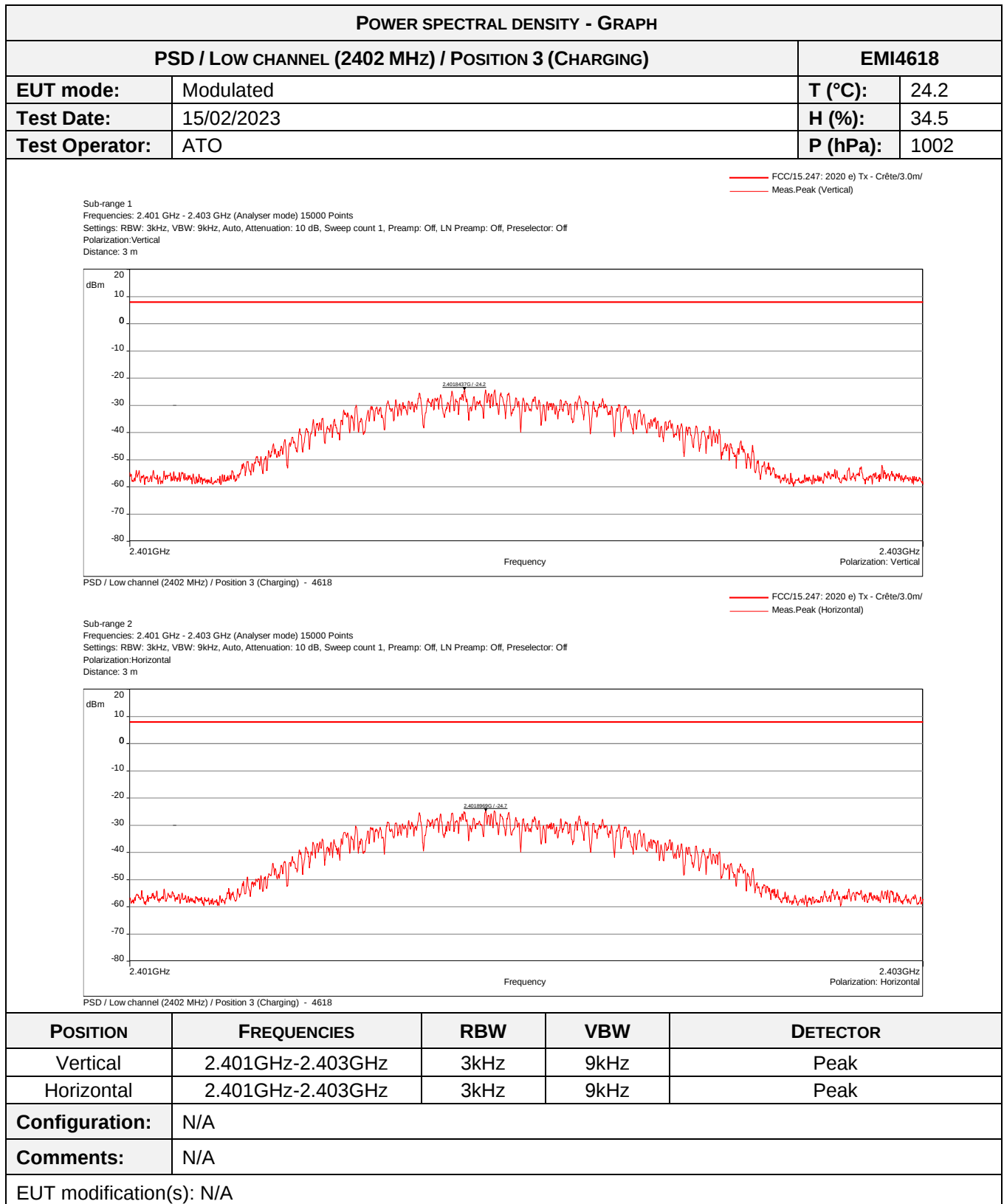




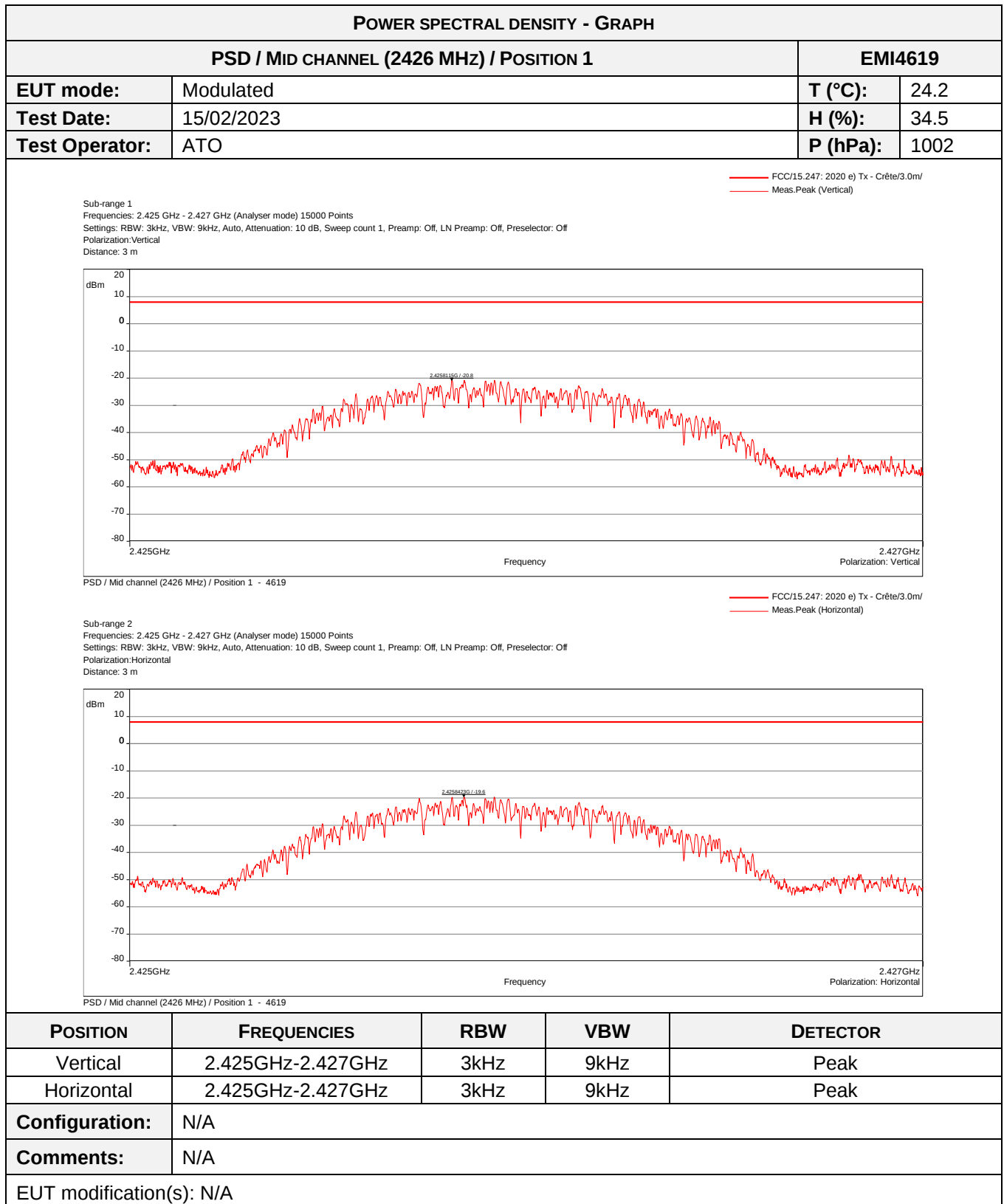
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / Low channel (2402 MHz) / Position 1			EMI4616
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2402	Vertical	-19.3	8.00
2402	Horizontal	-19.4	8.00



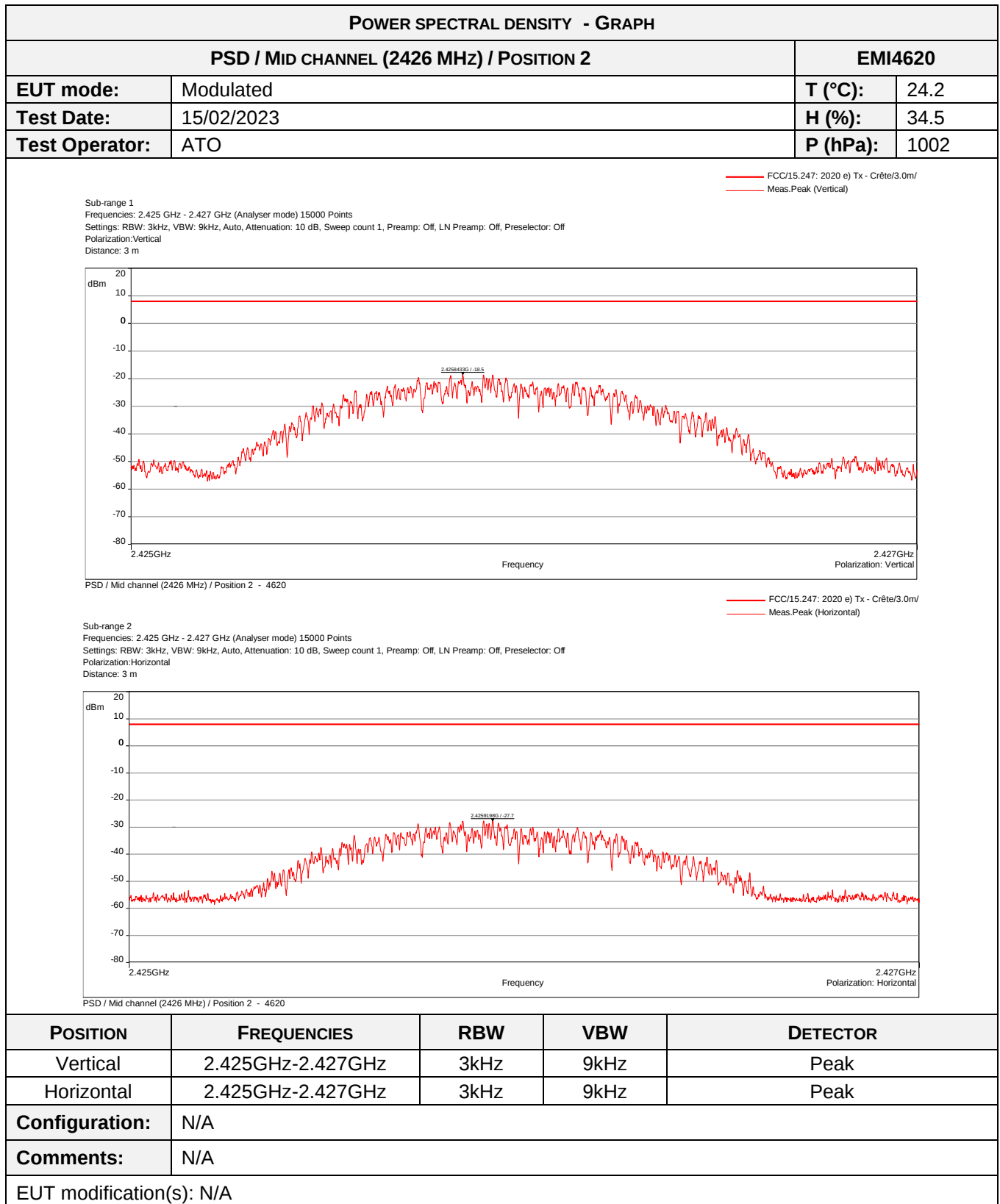
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / Low CHANNEL (2402 MHz) / POSITION 2			EMI4617
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2402	Vertical	-16.3	8.00
2402	Horizontal	-22.8	8.00



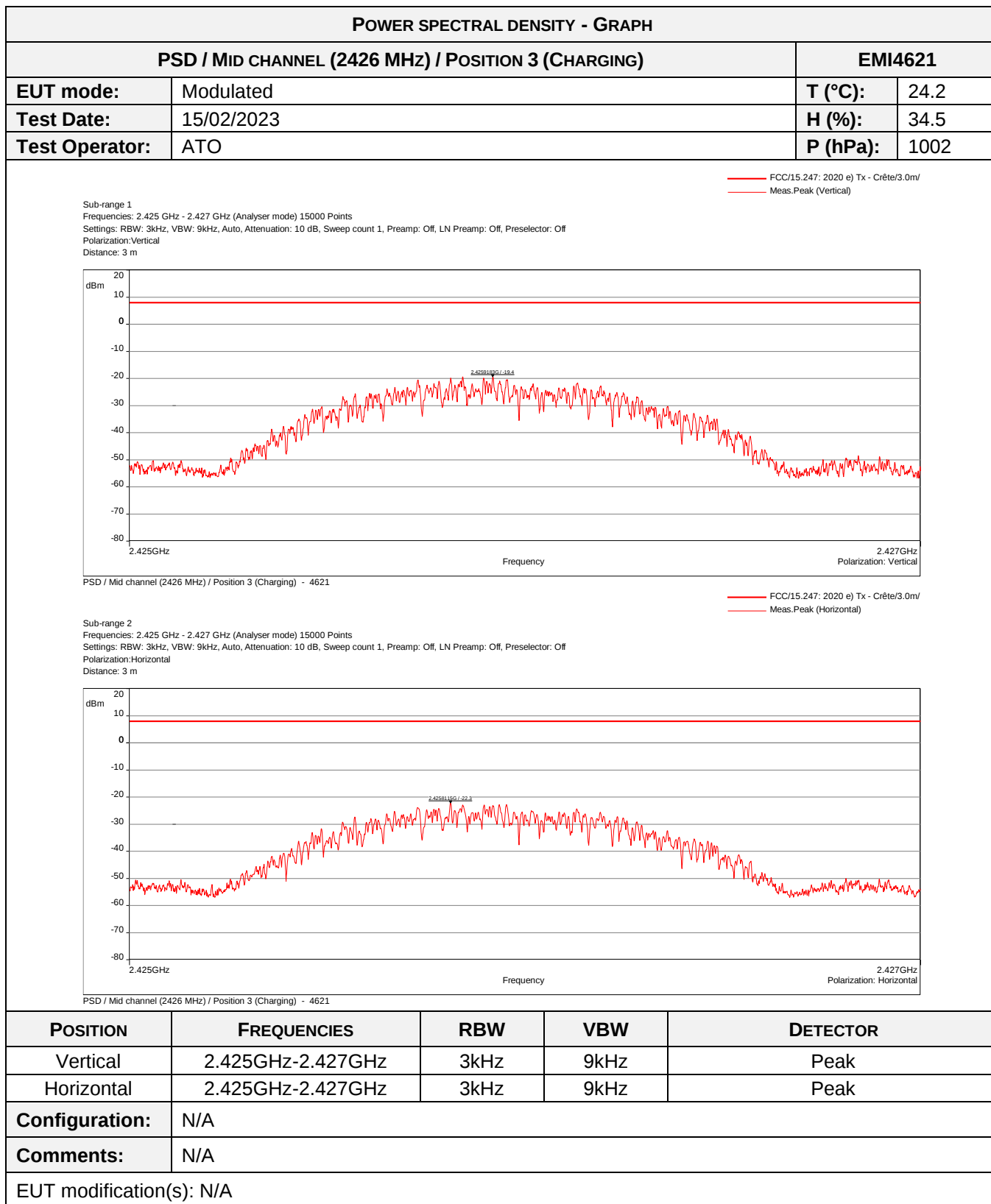
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / Low CHANNEL (2402 MHz) / POSITION 3 (CHARGING)			EMI4618
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2402	Vertical	-24.2	8.00
2402	Horizontal	-24.7	8.00



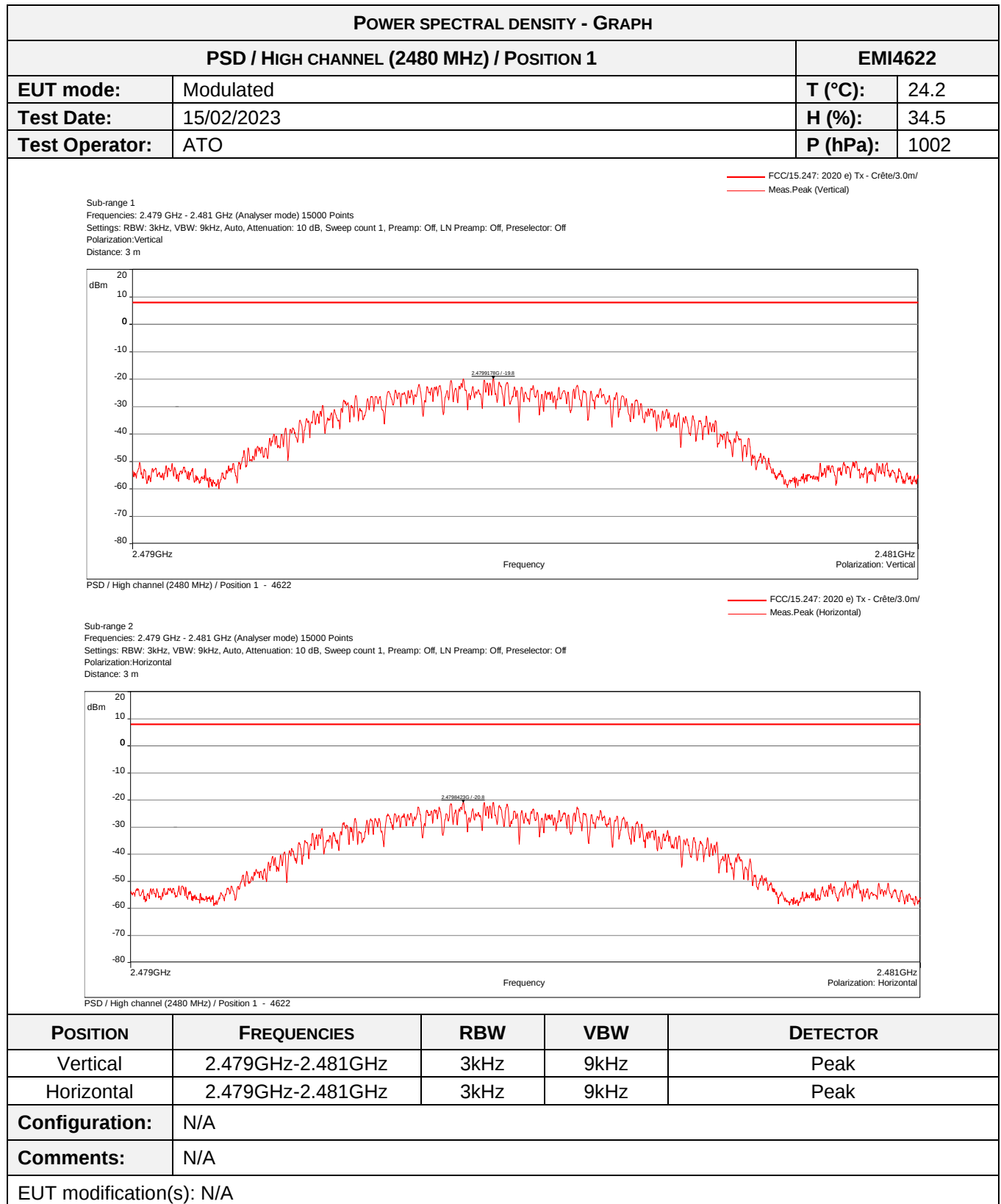
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / MID CHANNEL (2426 MHz) / POSITION 1			EMI4619
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2426	Vertical	-20.8	8.00
2426	Horizontal	-19.6	8.00



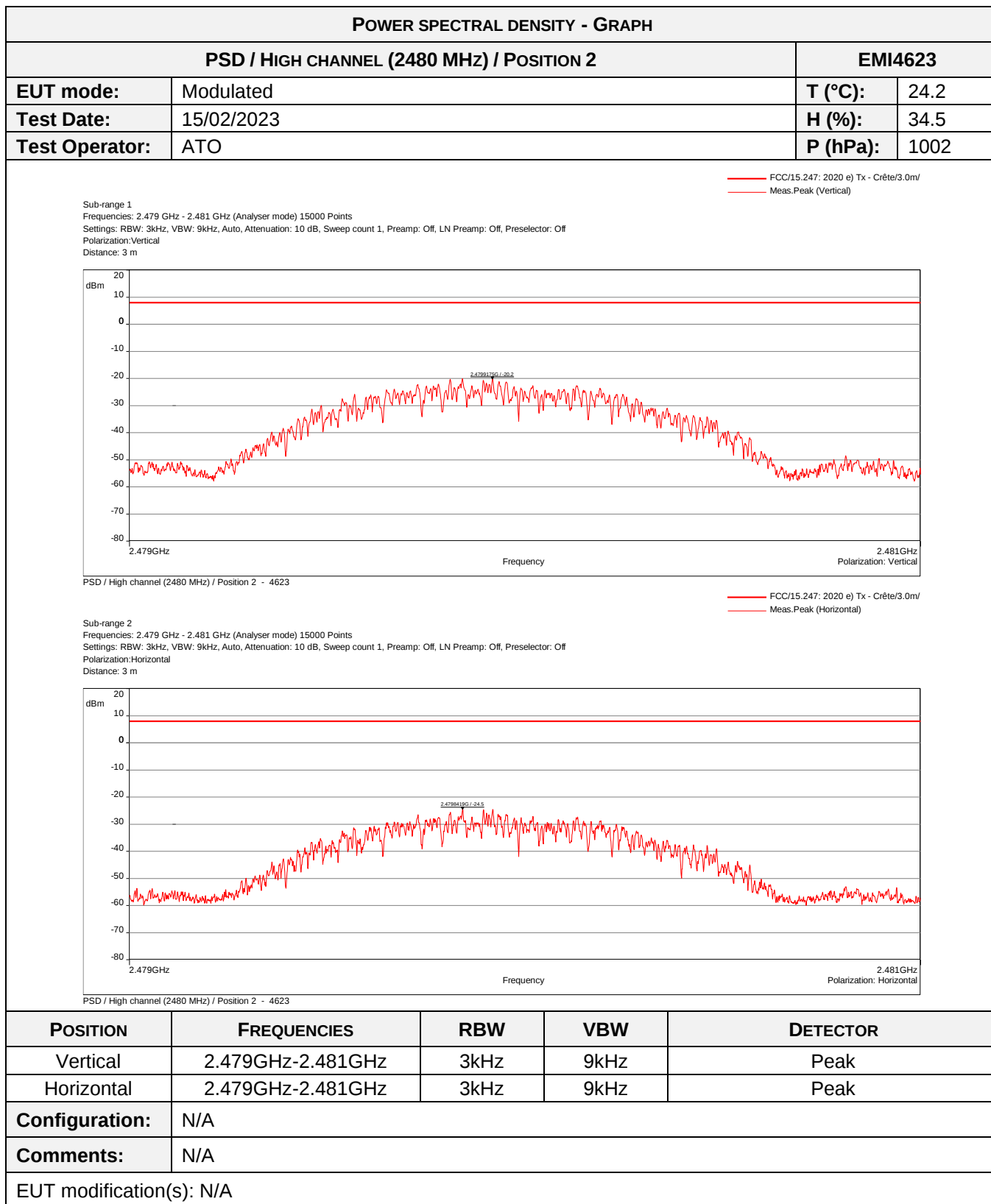
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / MID CHANNEL (2426 MHz) / POSITION 2			EMI4620
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2426	Vertical	-18.5	8.00
2426	Horizontal	-27.7	



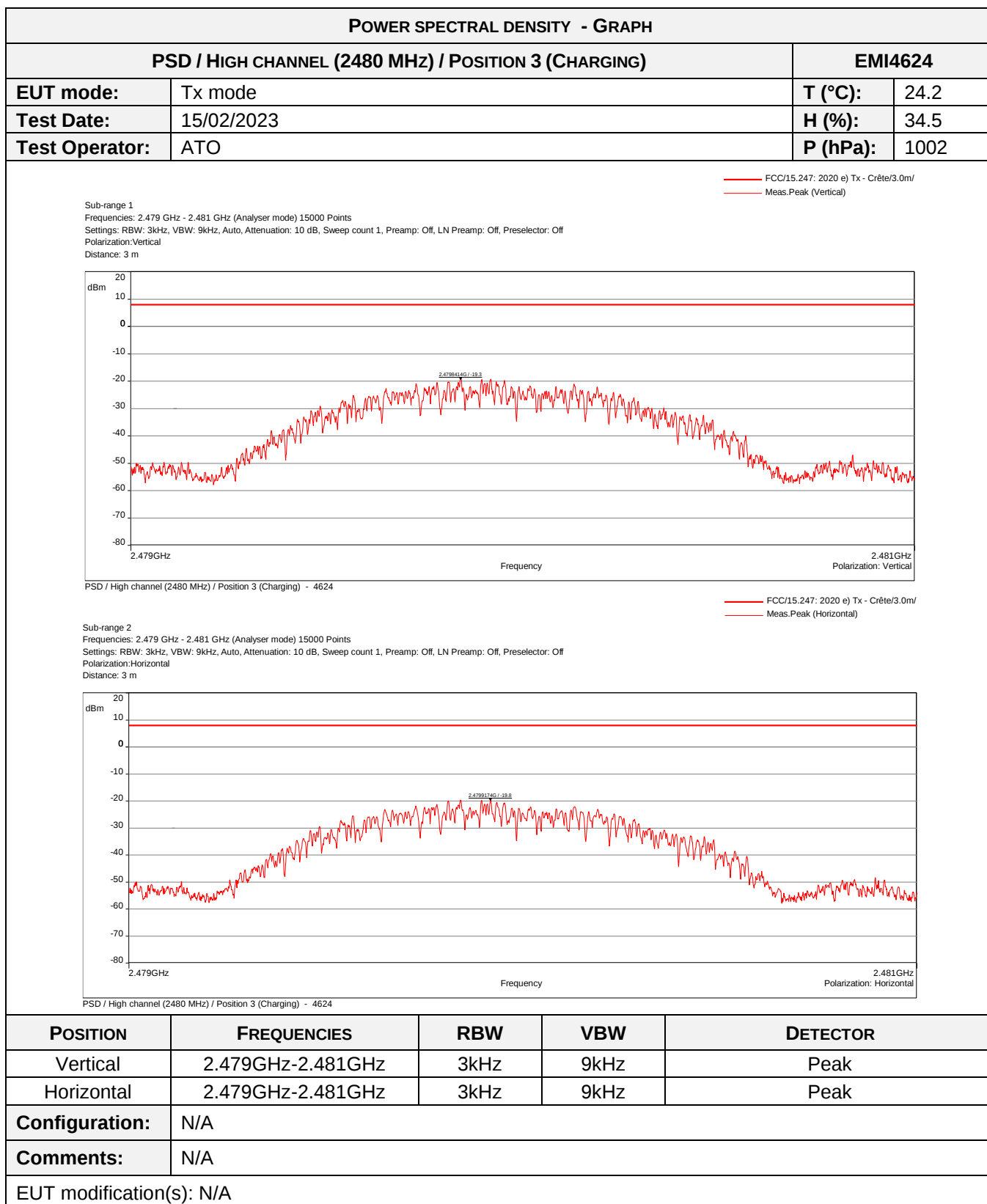
POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / MID CHANNEL (2426 MHz) / POSITION 3 (CHARGING)			EMI4621
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2426	Vertical	-19.4	8.00
2426	Horizontal	-22.3	8.00



POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / HIGH CHANNEL (2480 MHz) / POSITION 1			EMI4622
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2480	Vertical	-19.8	8.00
2480	Horizontal	-20.8	8.00



POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / HIGH CHANNEL (2480 MHz) / POSITION 2			EMI4623
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2480	Vertical	-20.2	8.00
2480	Horizontal	-24.5	8.00



POWER SPECTRAL DENSITY - TABULATED RESULTS			
PSD / HIGH CHANNEL (2480 MHz) / POSITION 3 (CHARGING)			EMI4624
Frequency (MHz)	Polarization	Level (dBm/3kHz)	Limit (dBm/3kHz)
2480	Vertical	-19.3	8.00
2480	Horizontal	-19.8	8.00

6.7. Radiated spurious emissions at frequencies <30MHz

Reference standard:	FCC 47 CFR PART 15.109 & 15.209: 2020 FCC 47 CFR PART 18 and RSS-Gen
Test method:	ANSI C63.4: 2014 ANSI C63.10: 2013
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.	

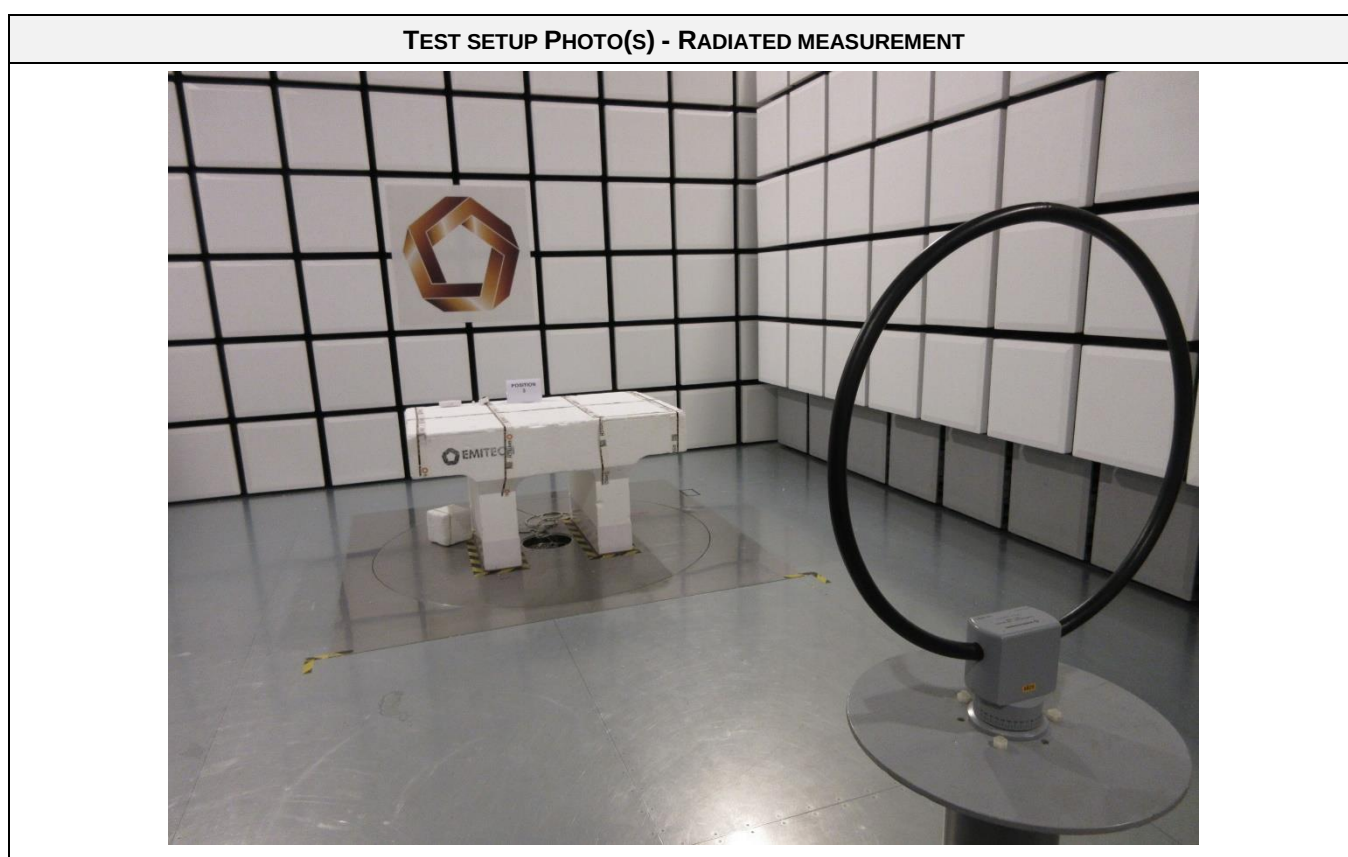
TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement / Rx mode / All Positions / 0°	9kHz-30MHz	15.109	EMI4608	PASS
Radiated measurement / Rx mode / All Positions / 45°	9kHz-30MHz	15.109	EMI4609	PASS
Radiated measurement / Rx mode / All Positions / 90°	9kHz-30MHz	15.109	EMI4610	PASS
Radiated measurement / All channels / All Positions / 0°	9kHz-30MHz	15.209	EMI4611	PASS
Radiated measurement / All channels / All Positions / 45°	9kHz-30MHz	15.209	EMI4612	PASS
Radiated measurement / All channels / All Positions / 90°	9kHz-30MHz	15.209	EMI4613	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		

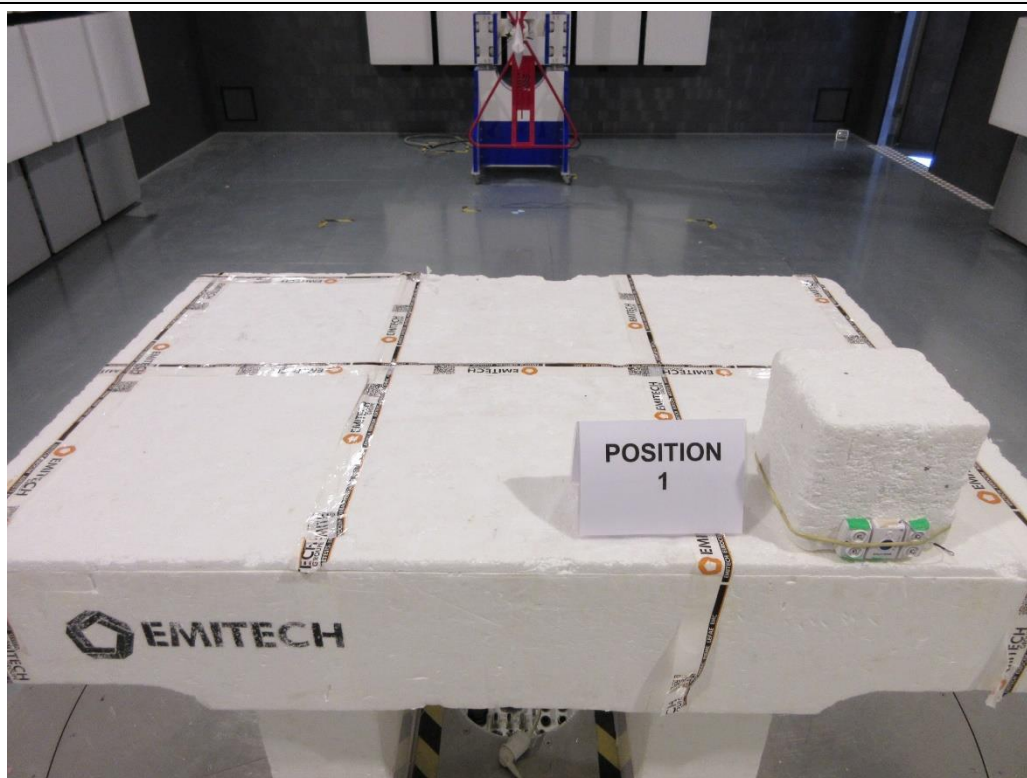
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	16/08/2022	16/10/2024
Cable	MegaPhase	N-3m	14852	18/03/2021	18/05/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Receiver	Rohde & Schwarz	ESW26	17791	13/02/2023	13/04/2024
Shielded enclosure	COMTEST	FAR-3m	18014	17/08/2021	17/10/2024
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

BAT-EMC software version: V3.18.0.26

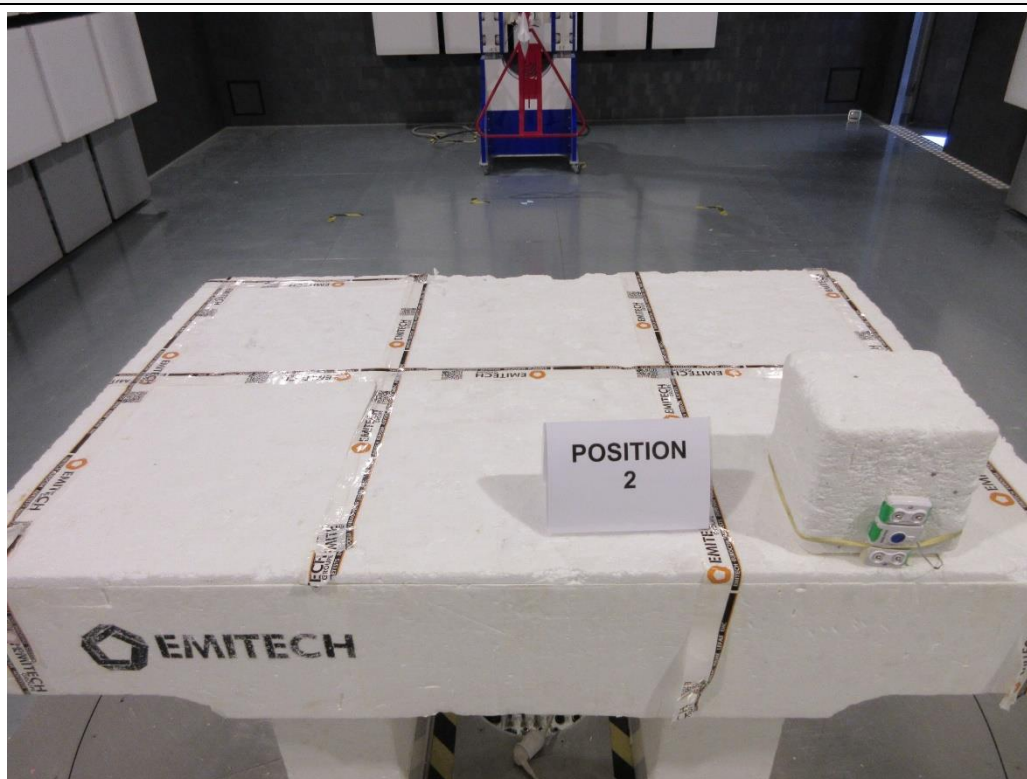
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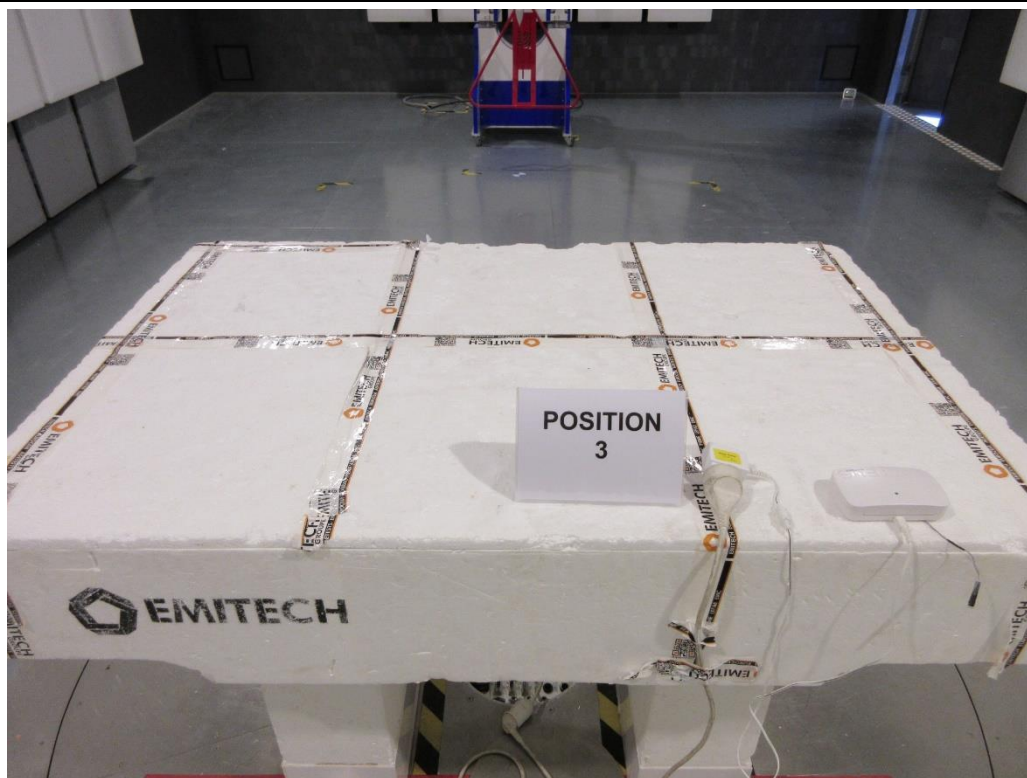
TEST SETUP PHOTO(S) – POSITION 1



TEST SETUP PHOTO(S) – POSITION 2



TEST SETUP PHOTO(S) – POSITION 3



RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / 0°						EMI4608
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

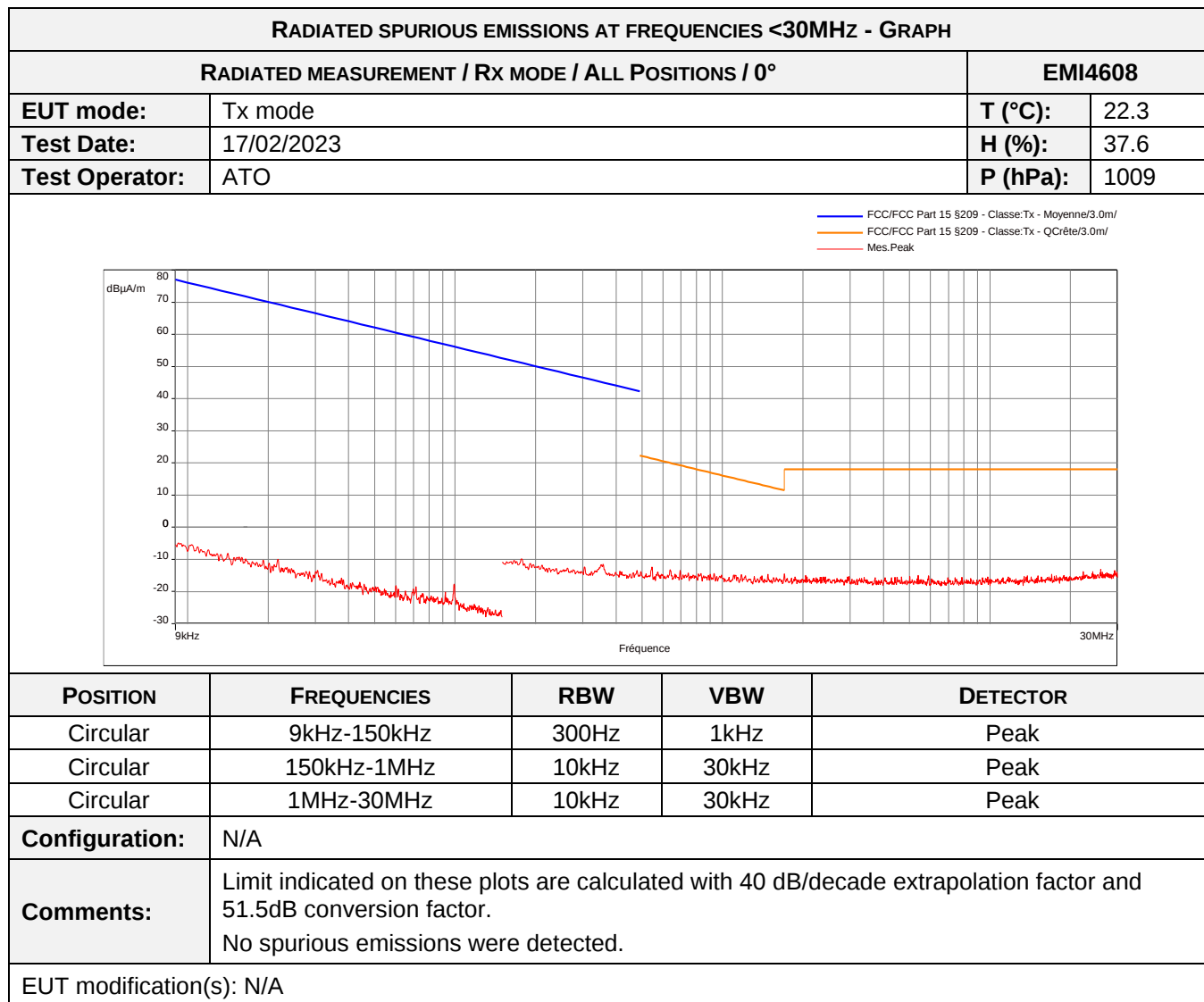
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / 45°						EMI4609
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

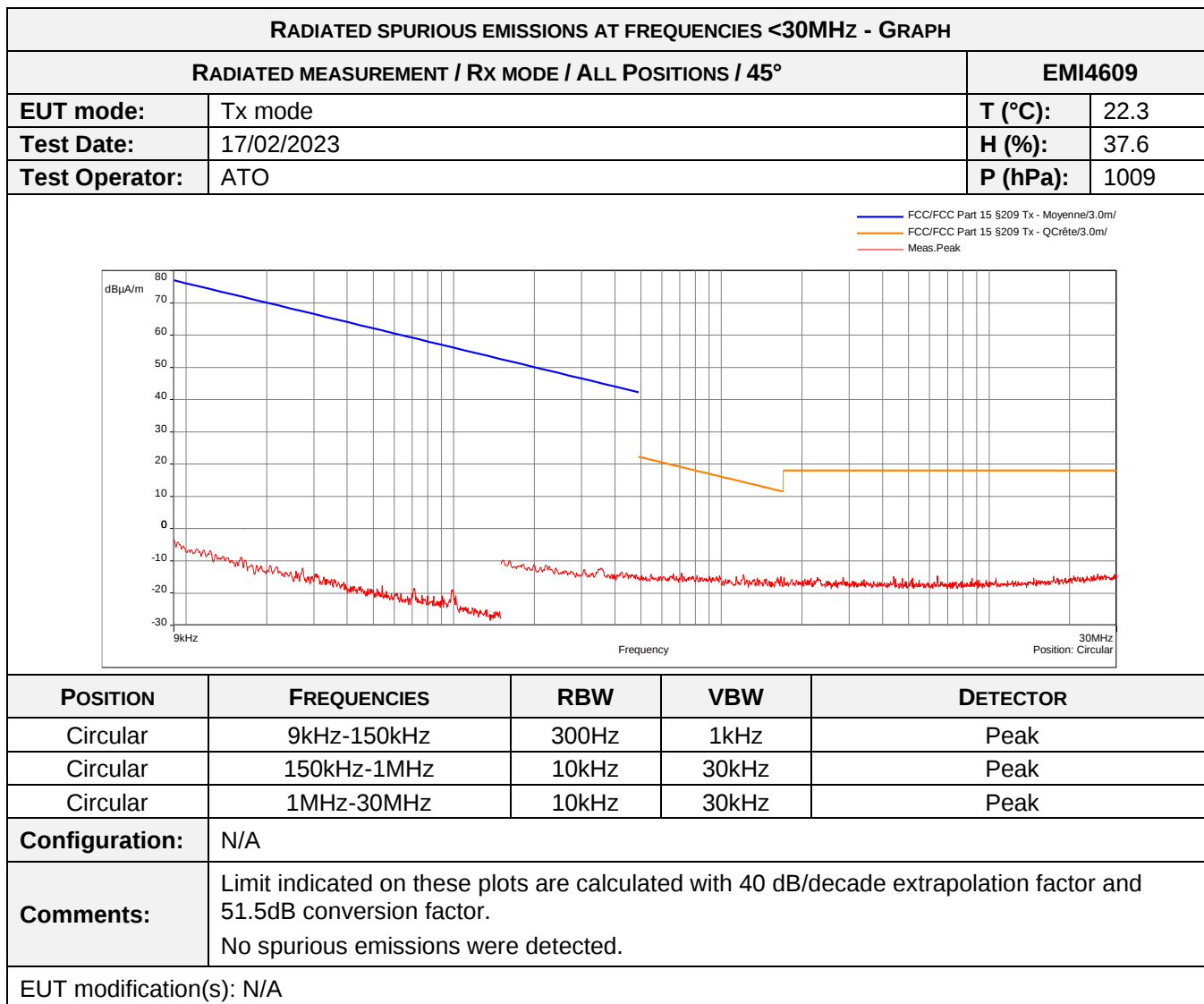
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / 90°						EMI4610
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

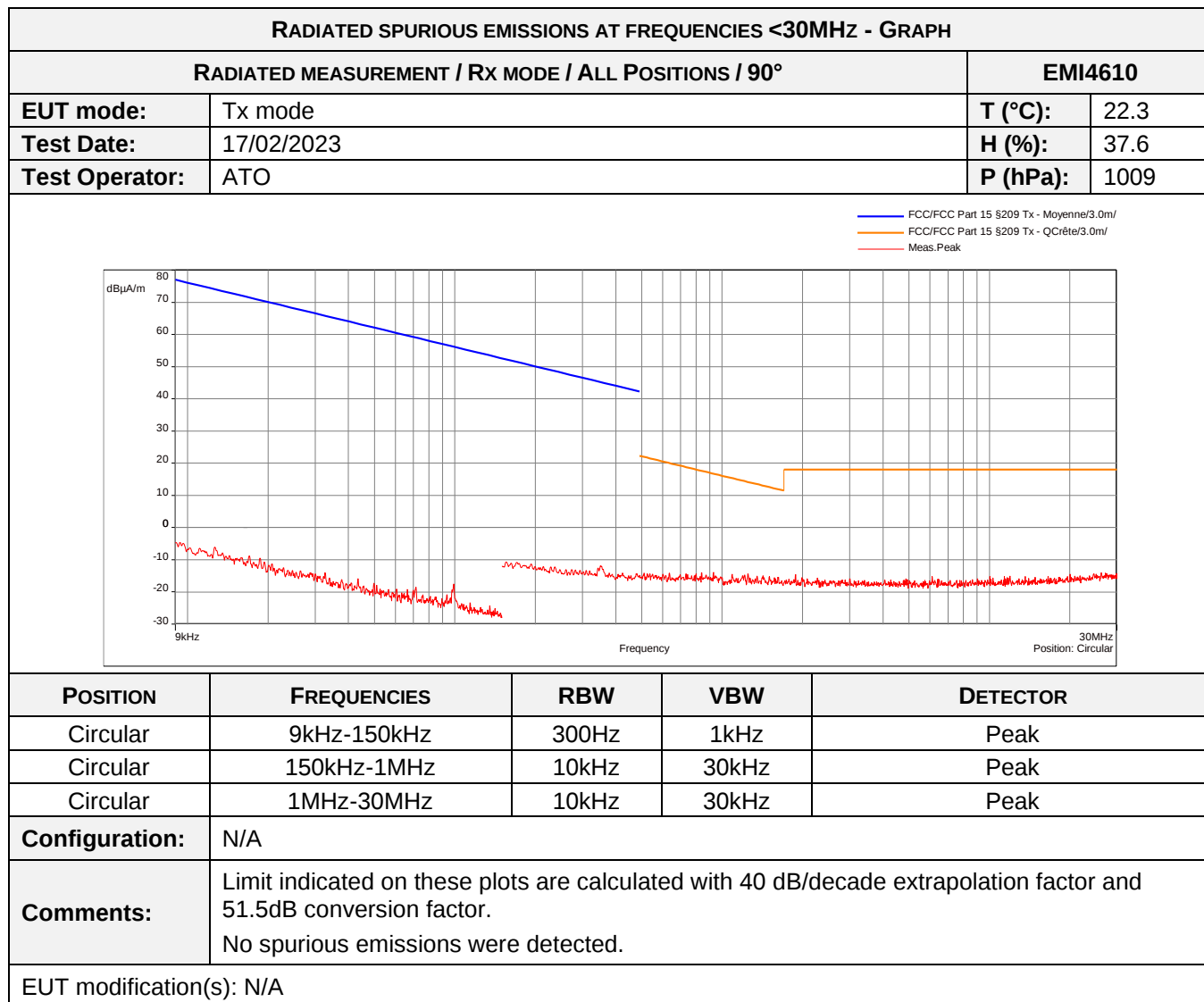
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / ALL CHANNELS / ALL POSITIONS / 0°						EMI4611
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

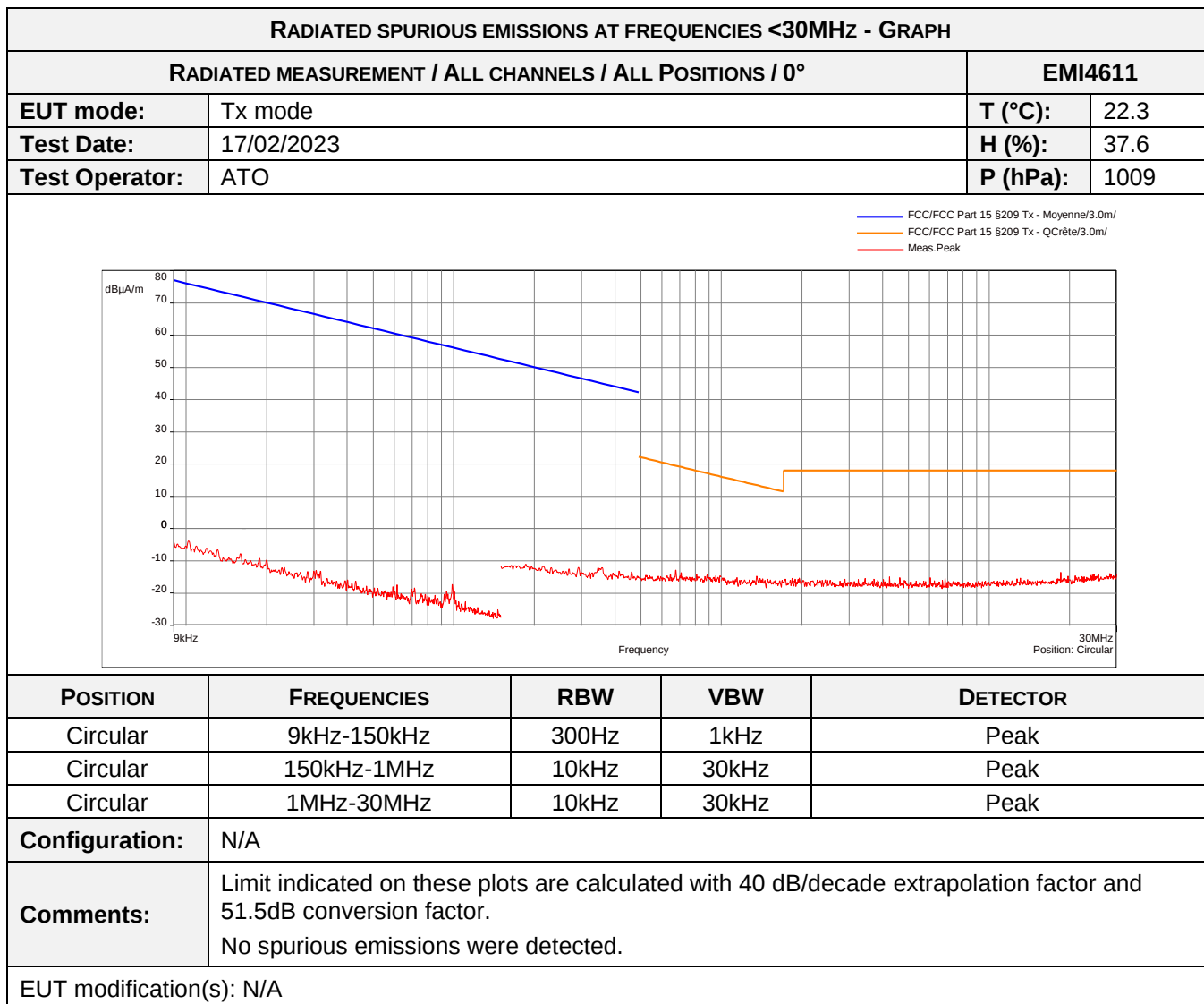
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / ALL CHANNELS / ALL POSITIONS / 45°						EMI4612
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH						
RADIATED MEASUREMENT / ALL CHANNELS / ALL POSITIONS / 90°						EMI4613
Test Frequency (MHz)	Polarization	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (µV)	Limit dB (µV)	Margin (dB)
/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported						

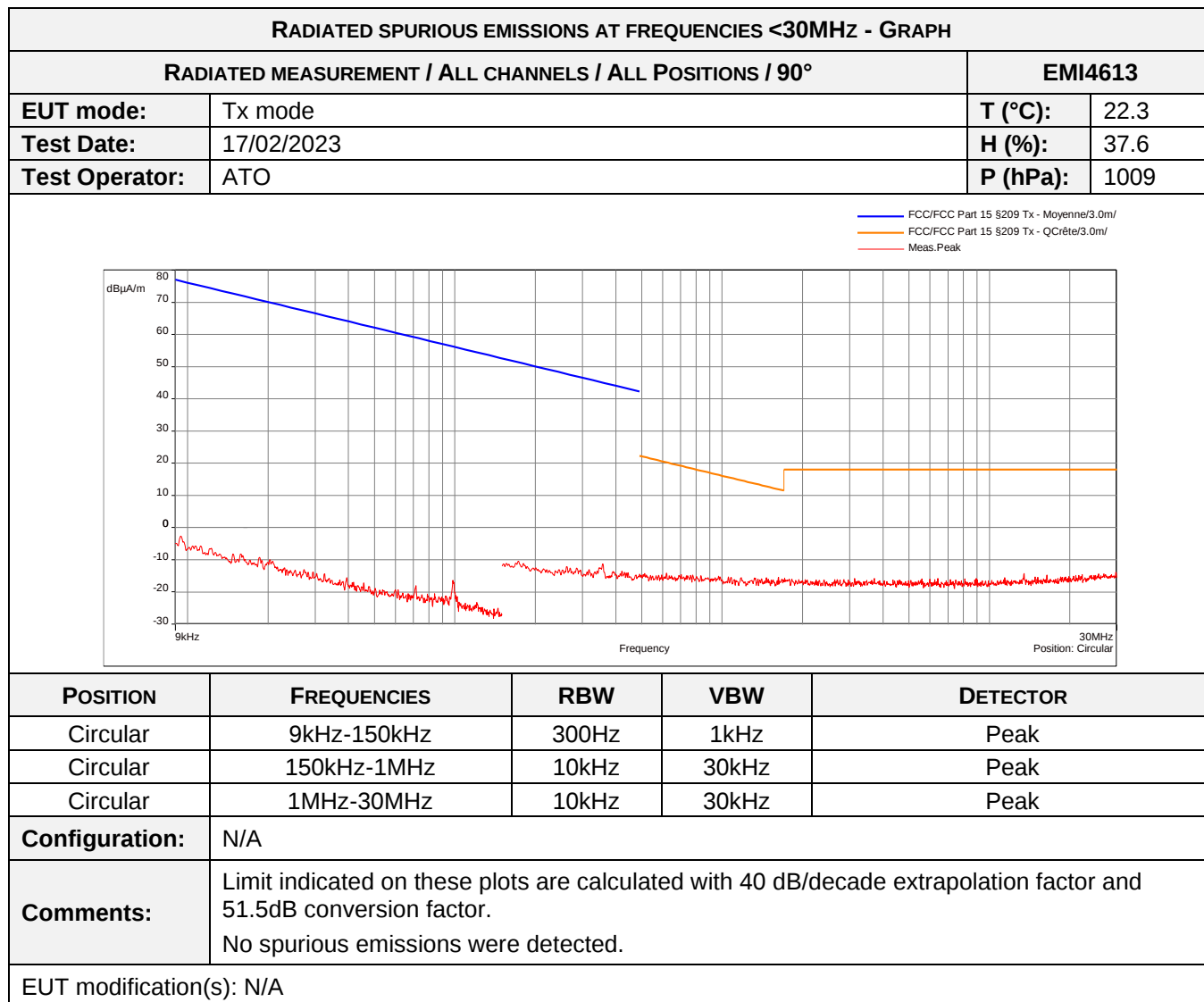








RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - GRAPH					
RADIATED MEASUREMENT / ALL CHANNELS / ALL POSITIONS / 45°				EMI4612	
EUT mode:	Tx mode			T (°C):	22.3
Test Date:	17/02/2023			H (%):	37.6
Test Operator:	ATO			P (hPa):	1009
</					



6.8. Radiated spurious emissions at frequencies >30MHz

Reference standard:	FCC 47 CFR PART 15.109 & 15.209: 2020 FCC 47 CFR PART 18 and RSS-Gen
Test method:	ANSI C63.4: 2014 ANSI C63.10: 2013
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
Radiated measurement / All Positions / Low channel (2402MHz) / For freq <1GHz	30MHz-1GHz	15.209	EMI4602	PASS
Radiated measurement / All Positions / Mid channel (2426MHz) / For freq <1GHz	30MHz-1GHz	15.209	EMI4603	PASS
Radiated measurement / All Positions / High channel (2480MHz) / For freq <1GHz	30MHz-1GHz	15.209	EMI4604	PASS
Radiated measurement / Rx mode / All Positions / For freq <1GHz	30MHz-1GHz	15.109	EMI4606	PASS
Radiated measurement / Low channel (2402MHz) / All Positions / For freq >1GHz	1GHz-18GHz	15.209	EMI4586	PASS
Radiated measurement / Mid channel (2426MHz) / All Positions / For freq >1GHz	1GHz-18GHz	15.209	EMI4585	PASS
Radiated measurement / High channel (2480MHz) / All Positions / For freq >1GHz	1GHz-18GHz	15.209	EMI4584	PASS
Radiated measurement / Rx mode / All Positions / For freq >1GHz	1GHz-18GHz	15.109	EMI4582	PASS
Radiated measurement / All Positions / Low channel (2402MHz) / 18GHz to 26.5GHz	18GHz-26.5GHz	15.209	EMI4600	PASS
Radiated measurement / All Positions / Mid channel (2426MHz) / 18GHz to 26.5GHz	18GHz-26.5GHz	15.209	EMI4599	PASS
Radiated measurement / All Positions / High channel (2480MHz) / 18GHz to 26.5GHz	18GHz-26.5GHz	15.209	EMI4598	PASS
Radiated measurement / Rx mode / All Positions / 18GHz to 26.5GHz	18GHz-26.5GHz	15.109	EMI4629	PASS

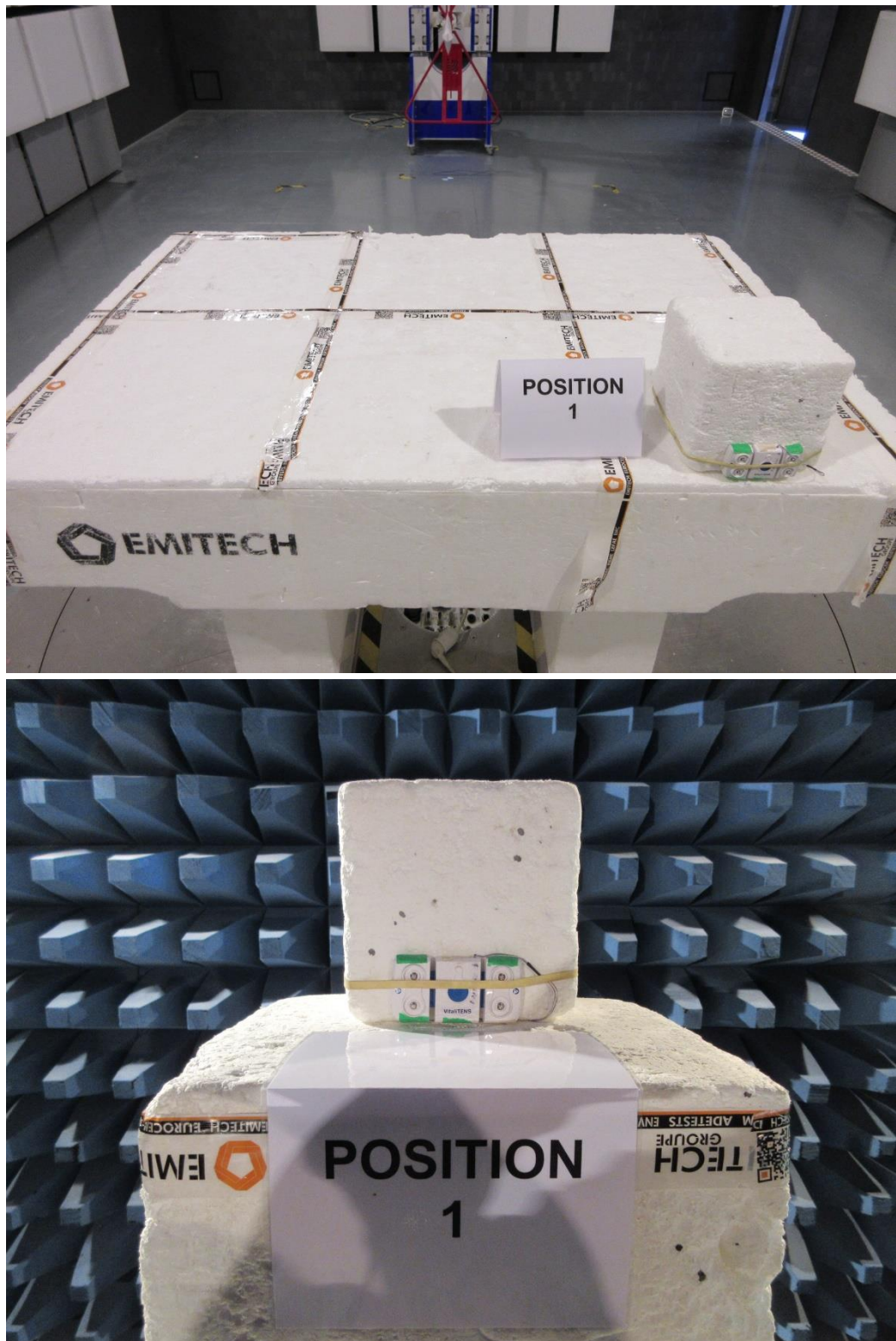
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: From 30MHz to 1GHz Quasi peak limit provided is the limit given in §15.209. Above 1GHz average limit in restricted bands §15.205 is 54dBµV/m. Otherwise, the limit is 20dB under carrier emission level at 3m without averaging.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	09/09/2022	09/11/2025
Antenna	ETS lindgren	3142E	14523	27/01/2022	27/03/2025
Antenna	ETS lindgren	3160-09	14690	07/01/2022	07/03/2025
Cable	JYE BAO	K30K30-5003-40G1	14887	25/06/2019	25/08/2023
Cable	Huber + Suhner	K-5m	14460	19/01/2022	19/03/2024
Cable	cables and connectors	N-1.5m	4203	27/01/2021	27/03/2023
Cable	SUCOFLEX	N-3m	14378	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-3m	14379	23/08/2021	23/10/2023
Cable	MegaPhase	N-3m	14852	18/03/2021	18/05/2023
Cable	SUCOFLEX	N-5,5m	14381	23/08/2021	23/10/2023
Cable	SUCOFLEX	N-6,5m	14380	23/08/2021	23/10/2023
Cable	Techniwave	N-8m	18349	25/01/2022	25/03/2024
Filter	Micro-Tronics	HPM 15162	10273	26/11/2021	26/01/2025
Filter	Micro-Tronics	HPM18865	12843	24/08/2021	24/10/2024
Filter	Wainwright Instruments	WRCGV 2402/2480- 2380/2500- 40/10EE-200W	9771	15/03/2022	15/05/2025
Preamplifier	Wright Technologie	ASL40-B3015	14851	28/01/2022	28/03/2023
Preamplifier	IMPULSE	CA118-546ACN	9169	26/04/2022	26/06/2023
Receiver	Agilent Technologies	E4440A	5824	02/11/2020	02/07/2023
Receiver	Rohde & Schwarz	ESW26	17791	13/02/2023	13/04/2024
Shielded enclosure	RAY PROOF	C.V2	1423	04/10/2019	04/06/2023
Shielded enclosure	COMTEST	FAR-3m	18014	17/08/2021	17/10/2024
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H1	7562	09/06/2021	09/08/2023
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

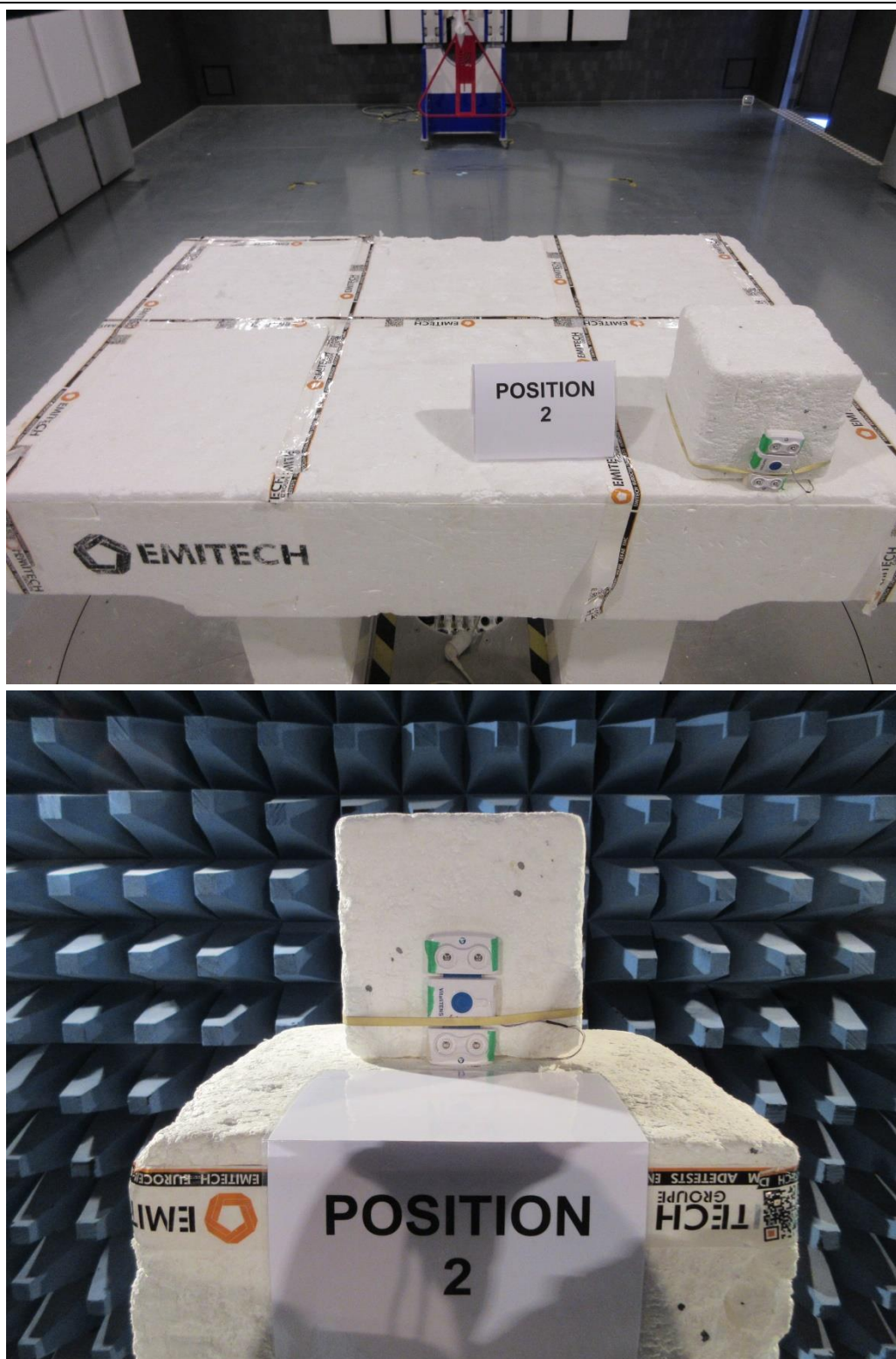
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

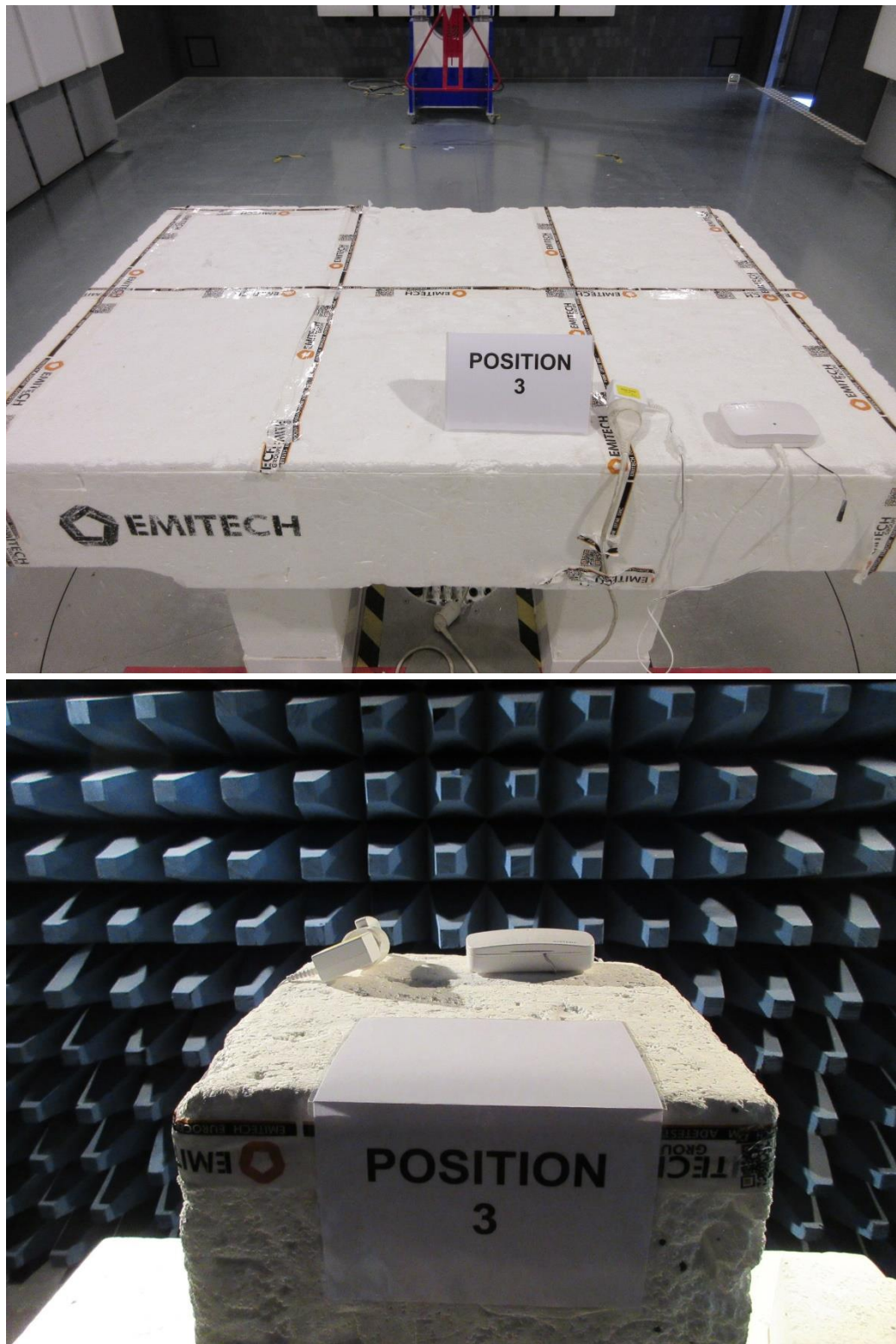
TEST SETUP PHOTO(S) – POSITION 1



TEST SETUP PHOTO(S) – POSITION 2



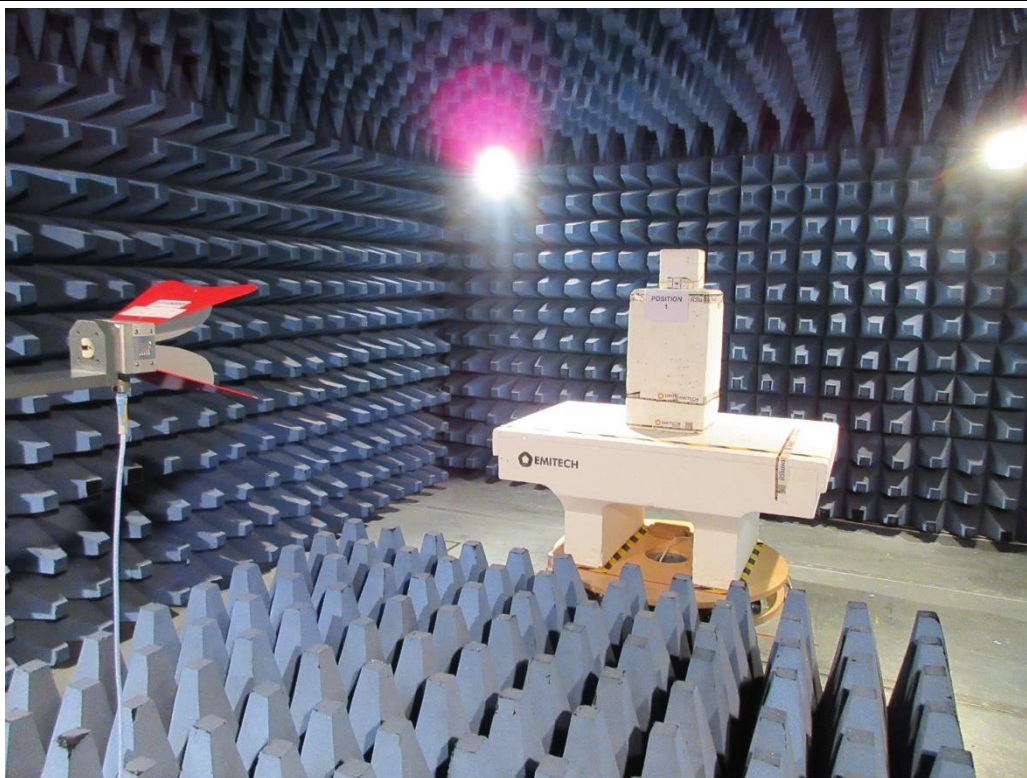
TEST SETUP PHOTO(S) – POSITION 3



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT – 30MHZ TO 1GHz



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT – 1GHz TO 18GHz



TEST SETUP PHOTO(S) - RADIATED MEASUREMENT – 18GHz TO 26.5GHz



RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS

RADIATED MEASUREMENT / ALL POSITIONS / LOW CHANNEL (2402MHz) / FOR FREQ <1GHz								EMI4602
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
39.60	QP	V	0	100	19.87	29.71	40.00	-10.29
42.99	QP	V	0	100	18.28	31.80	40.00	-8.20
55.93	Pk	V	/	/	15.69	27.13	40.00	-12.87
79.37	Pk	V	/	/	14.38	30.39	40.00	-9.61
192.01	QP	V	0	100	17.28	35.33	43.50	-8.17
506.51	Pk	V	/	/	28.43	33.06	46.00	-12.94
39.86	Pk	H	/	/	19.75	25.41	40.00	-14.59
57.19	Pk	H	/	/	15.69	24.66	40.00	-15.34
191.96	Pk	H	/	/	17.28	24.04	43.50	-19.46

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / ALL POSITIONS / MID CHANNEL (2426MHz) / FOR FREQ <1GHz								EMI4603
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
38.22	QP	V	0	100	20.53	29.28	40.00	-10.72
42.60	QP	V	0	100	18.46	32.09	40.00	-7.91
60.87	Pk	V	/	/	15.10	29.62	40.00	-10.38
80.08	Pk	V	/	/	14.41	30.53	40.00	-9.47
191.99	Pk	V	/	/	17.28	30.41	43.50	-13.09
215.98	Pk	V	/	/	18.73	32.85	43.50	-10.65
535.35	Pk	V	/	/	30.47	35.43	46.00	-10.57
37.98	Pk	H	/	/	20.65	26.46	40.00	-13.54
42.19	Pk	H	/	/	18.64	27.70	40.00	-12.3
385.45	Pk	H	/	/	25.42	30.04	46.00	-15.96

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / ALL POSITIONS / HIGH CHANNEL (2480MHz) / FOR FREQ <1GHz								EMI4604
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
38.22	QP	V	0	100	20.53	29.09	40.00	-10.91
42.57	QP	V	0	100	18.47	32.32	40.00	-7.68
72.09	Pk	V	/	/	14.51	28.12	40.00	-11.88
124.12	Pk	V	/	/	15.02	31.31	46.00	-14.69
164.28	Pk	V	/	/	17.34	32.21	43.50	-11.29
216.01	Pk	V	/	/	18.73	34.05	43.50	-9.45
532.47	Pk	V	/	/	30.19	35.48	46.00	-10.52
38.05	Pk	H	/	/	20.62	25.38	40.00	-14.62
42.44	Pk	H	/	/	18.52	25.82	40.00	-14.18

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / FOR FREQ <1GHz								EMI4606
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
38.19	QP	V	0	100	20.55	29.45	40.00	-10.55
42.54	QP	V	0	100	18.48	32.22	40.00	-7.78
168.00	Pk	V	/	/	17.13	37.06	43.50	-6.44

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / LOW CHANNEL (2402MHz) / ALL POSITIONS / FOR FREQ >1GHz								EMI4586
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
4804.12	Av	V	/	/	-1.37	44.49	54.00	-9.51
4804.12	Av	H	/	/	-1.37	43.62	54.00	-10.38
7204.28	Av	H	/	/	3.42	47.82	54.00	-6.18

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / MID CHANNEL (2426MHz) / ALL POSITIONS / FOR FREQ >1GHz								EMI4585
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
4851.12	Av	V	/	/	-1.55	43.90	54.00	-10.1
4851.12	Av	H	/	/	-1.55	42.91	54.00	-11.09
7278.28	Av	H	/	/	3.48	47.63	54.00	-6.37

RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / HIGH CHANNEL (2480MHz) / ALL POSITIONS / FOR FREQ >1GHz								EMI4584
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
4959.13	Av	V	/	/	-1.47	43.70	54.00	-10.3
4959.13	Av	H	/	/	-1.47	39.65	54.00	-14.35
7439.29	Av	H	/	/	3.67	48.66	54.00	-5.34

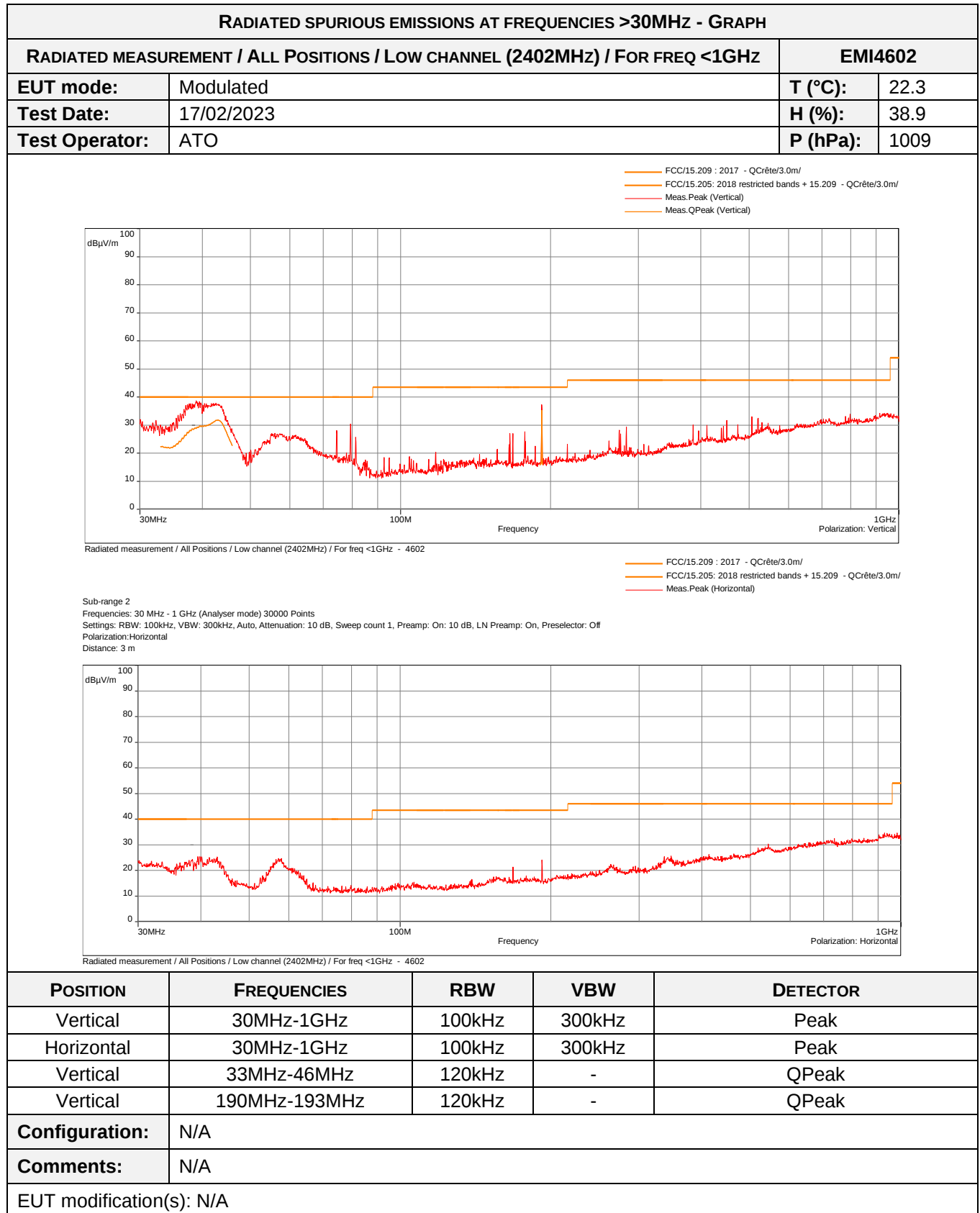
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / FOR FREQ >1GHz								EMI4582
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
/	/	/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.								

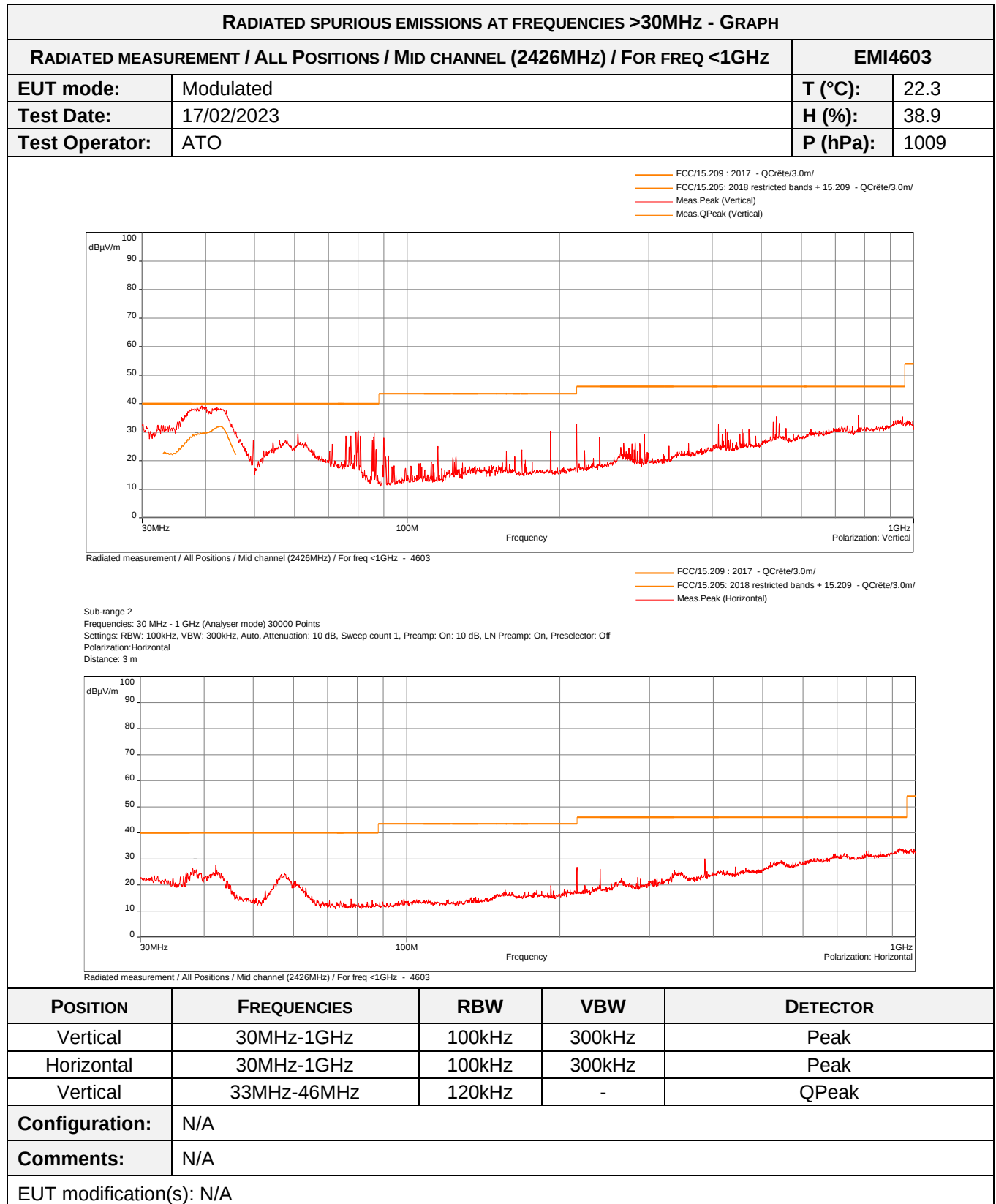
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / ALL POSITIONS / LOW CHANNEL (2402MHz) / 18GHz TO 26.5GHz								EMI4600
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
/	/	/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.								

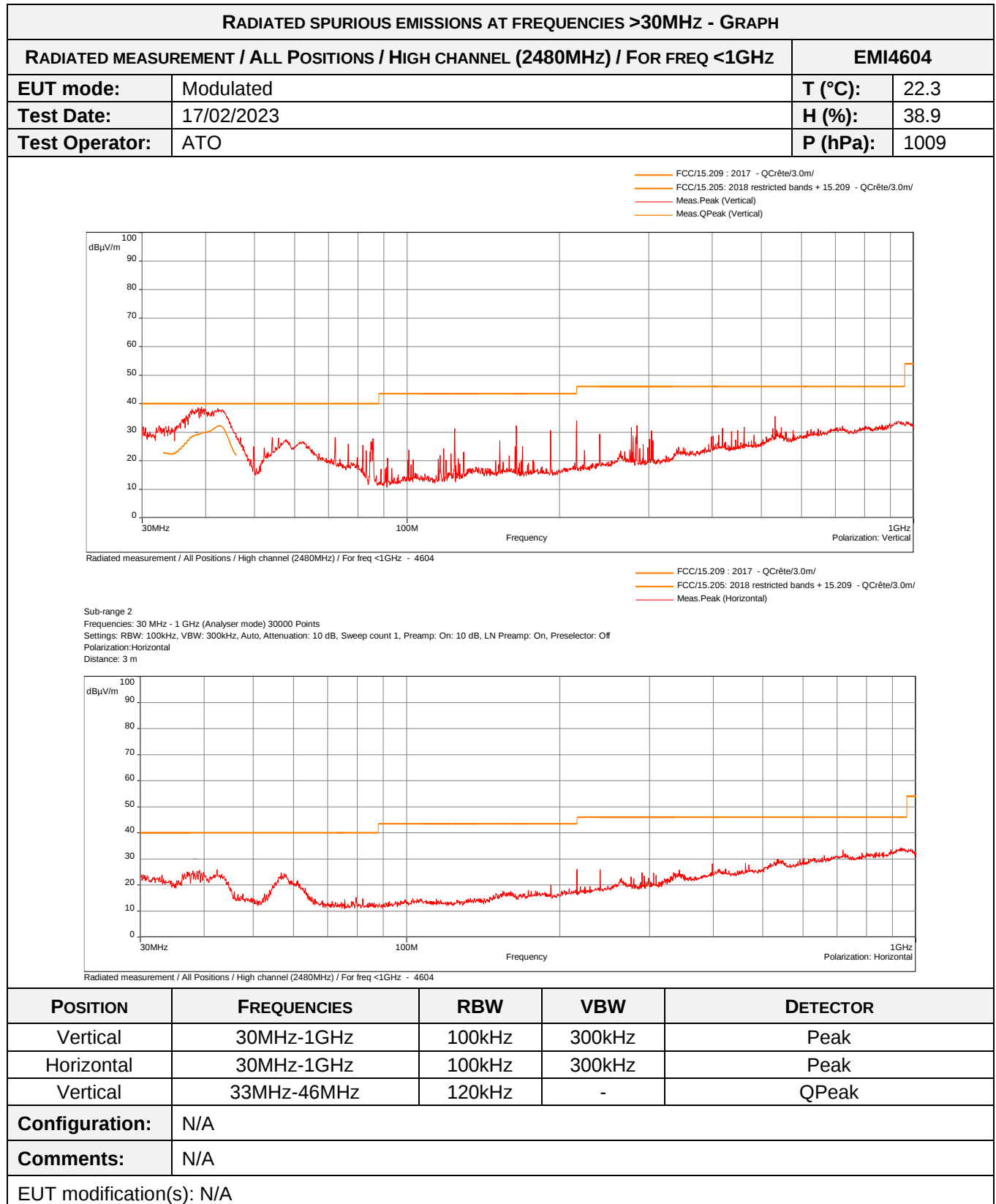
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / ALL POSITIONS / MID CHANNEL (2426MHz) / 18GHz TO 26.5GHz								EMI4599
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
/	/	/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.								

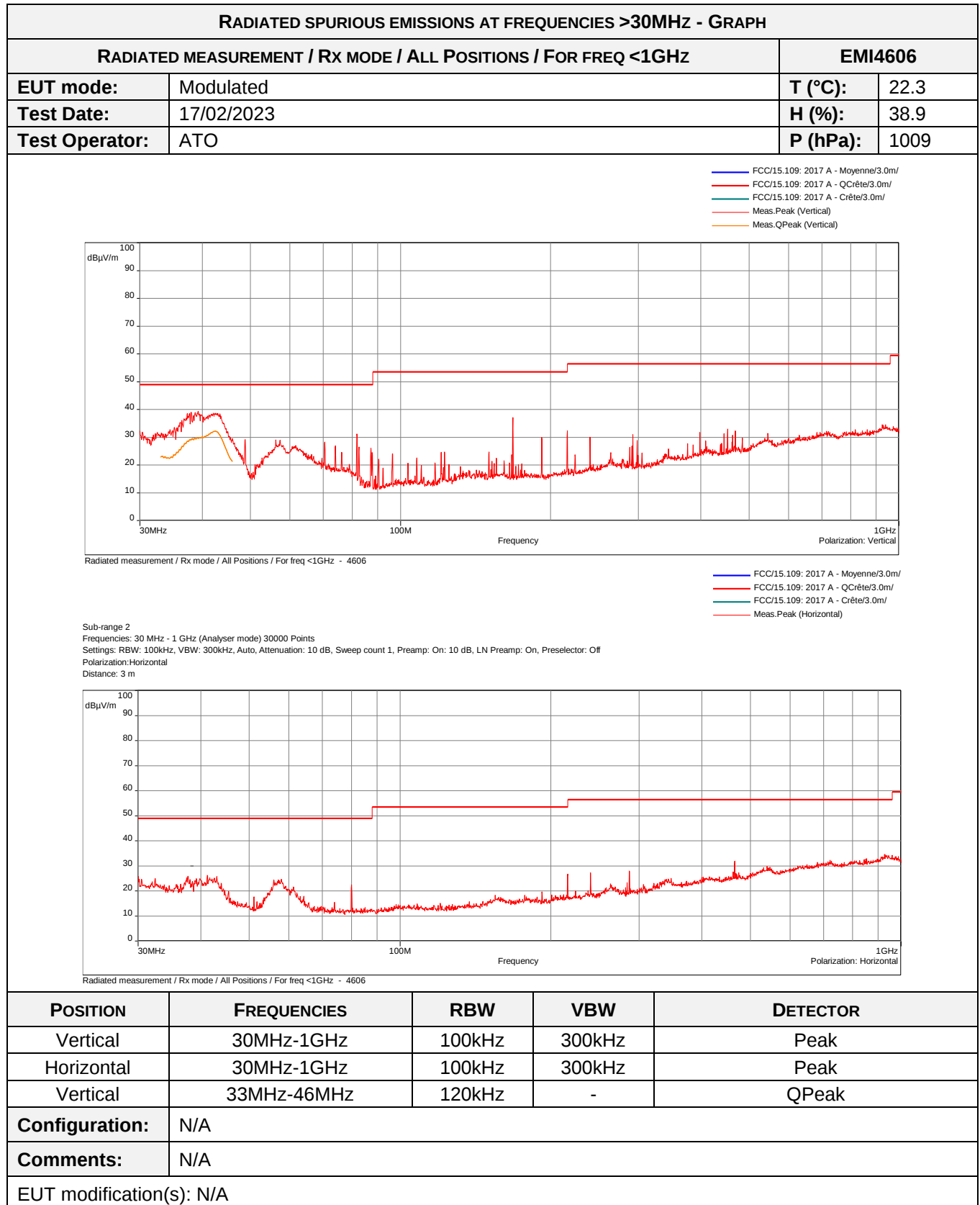
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / ALL POSITIONS / HIGH CHANNEL (2480MHz) / 18GHz TO 26.5GHz								EMI4598
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
/	/	/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.								

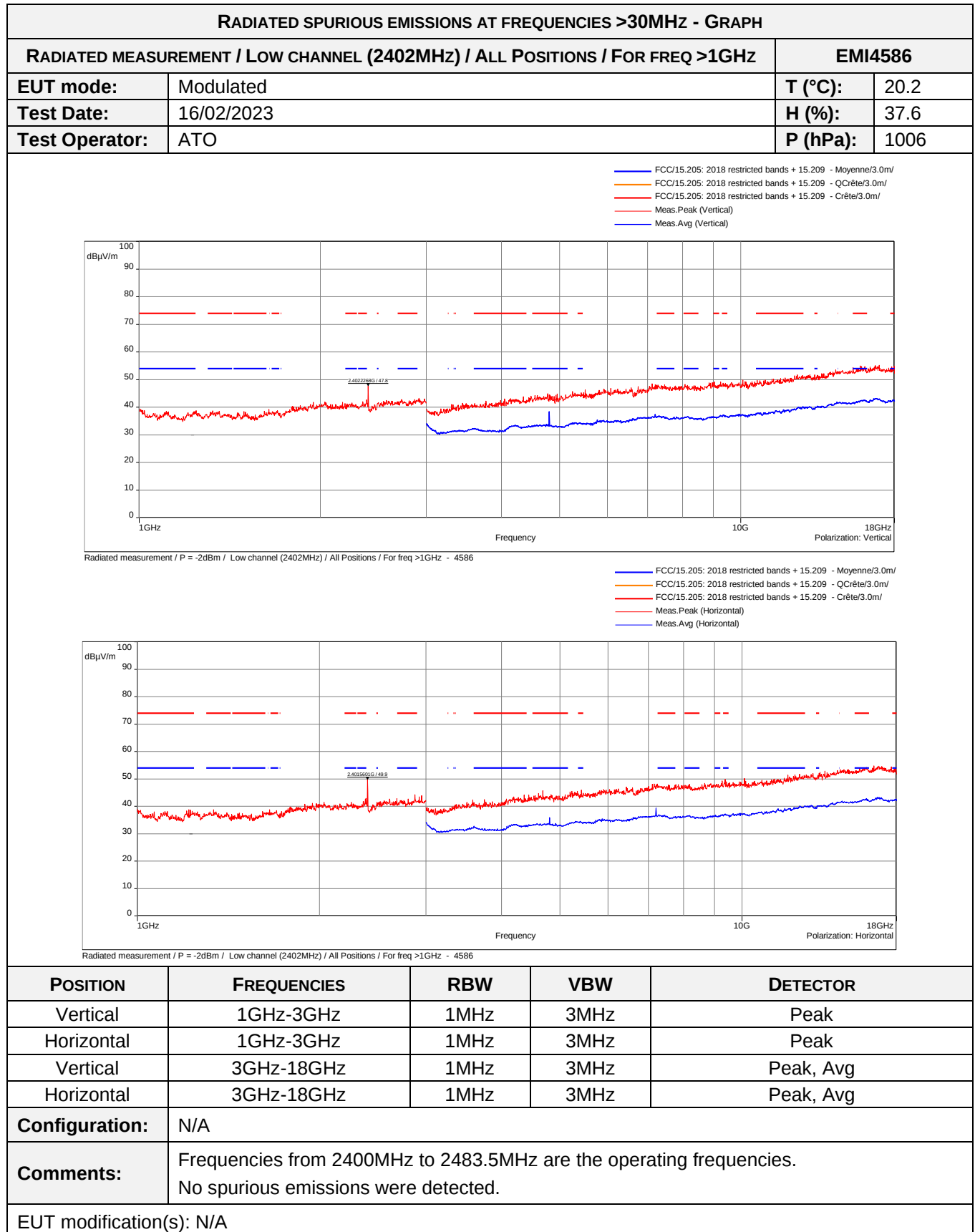
RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT / RX MODE / ALL POSITIONS / 18GHz TO 26.5GHz								EMI4629
Test Freq. (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level dB (µV/m)	Limit dB (µV/m)	Margin (dB)
/	/	/	/	/	/	/	/	/
Supplementary information: Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.								

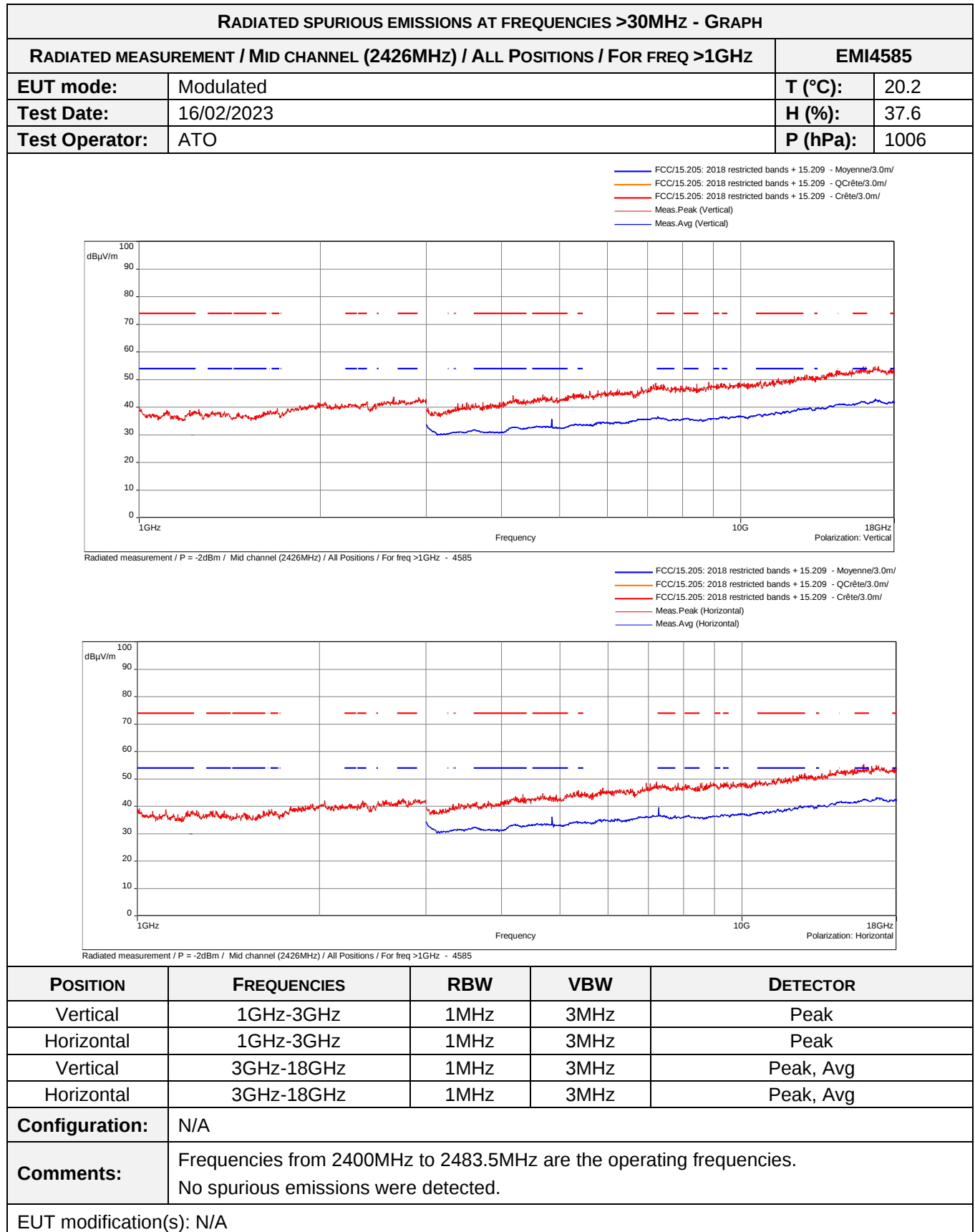


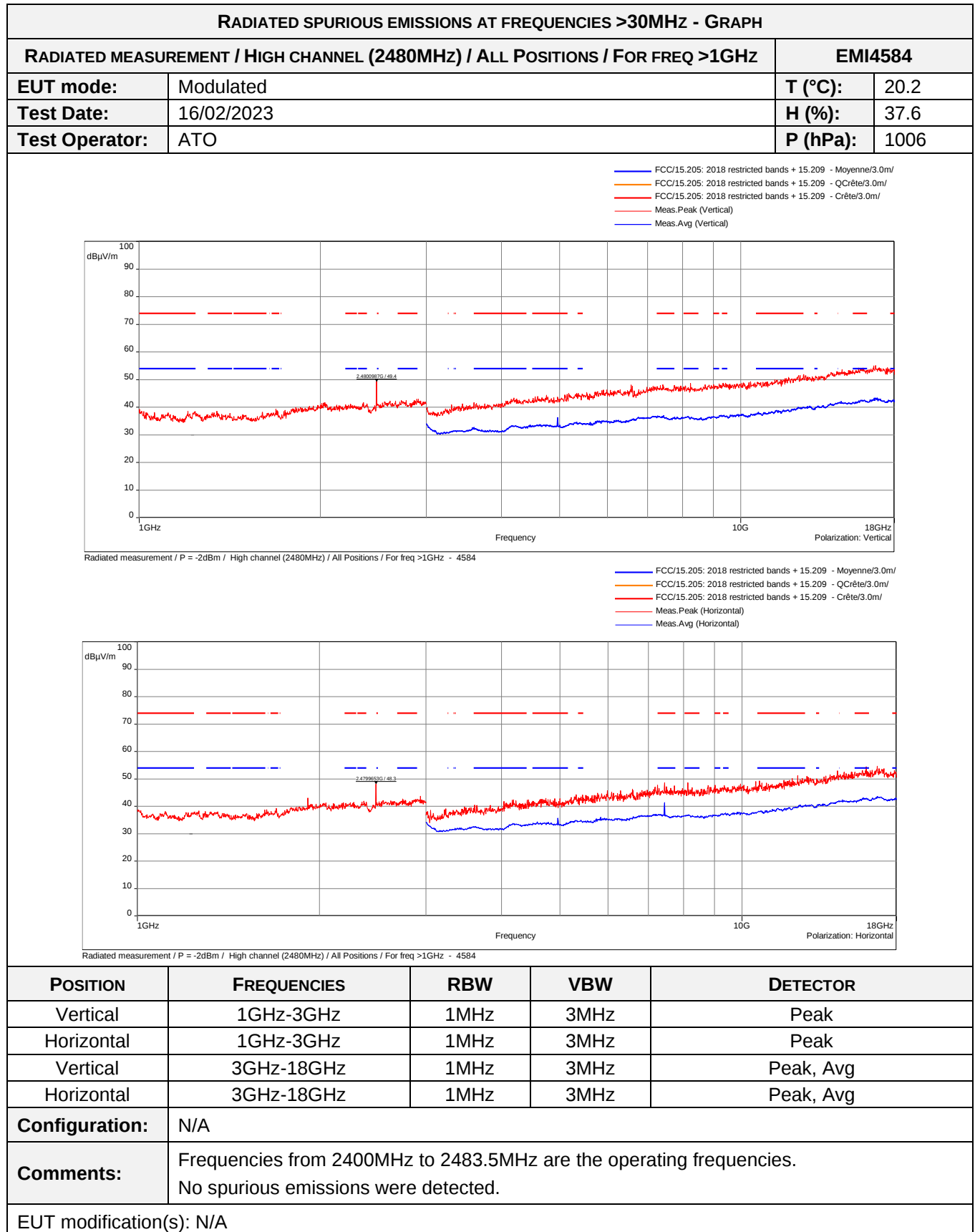


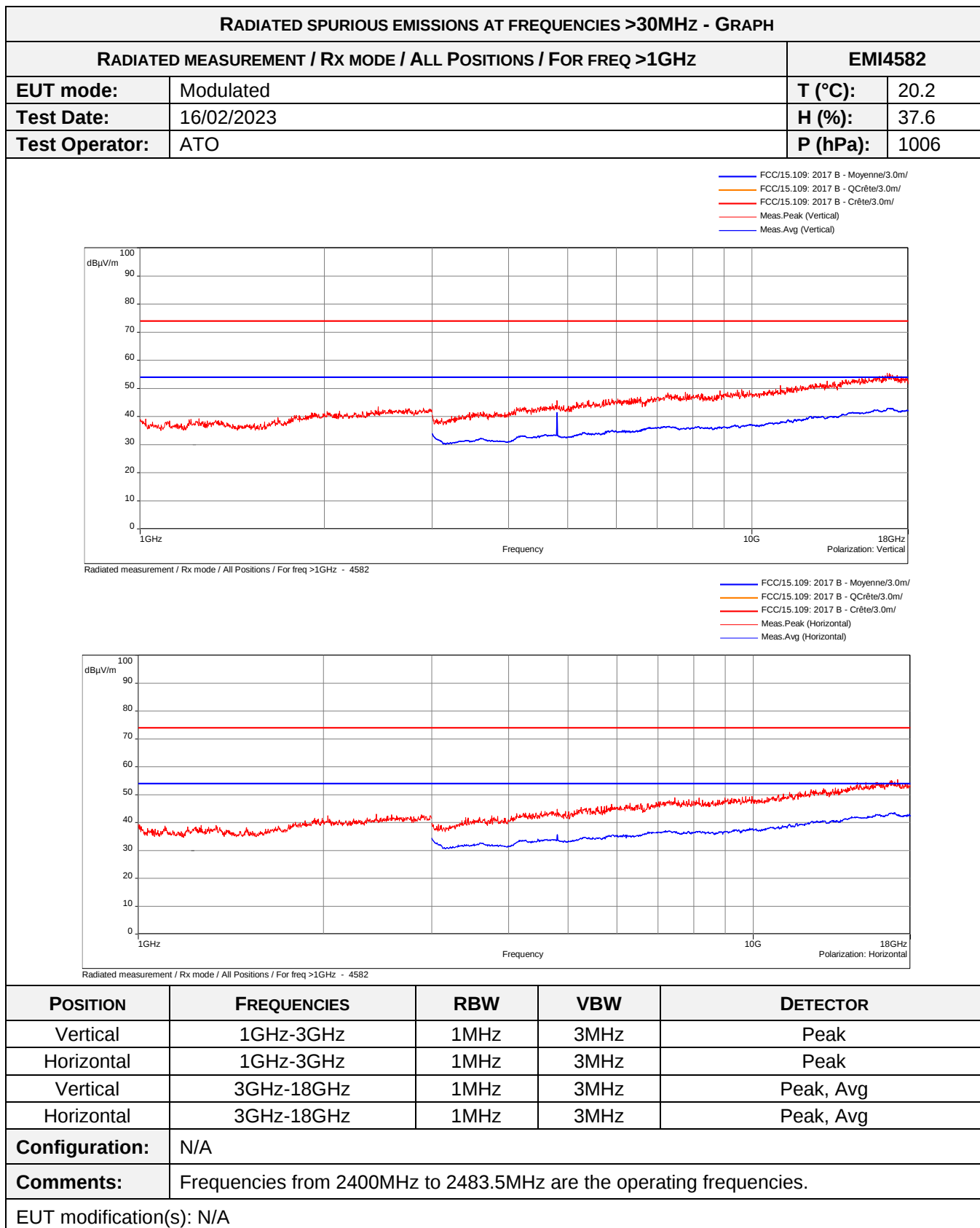


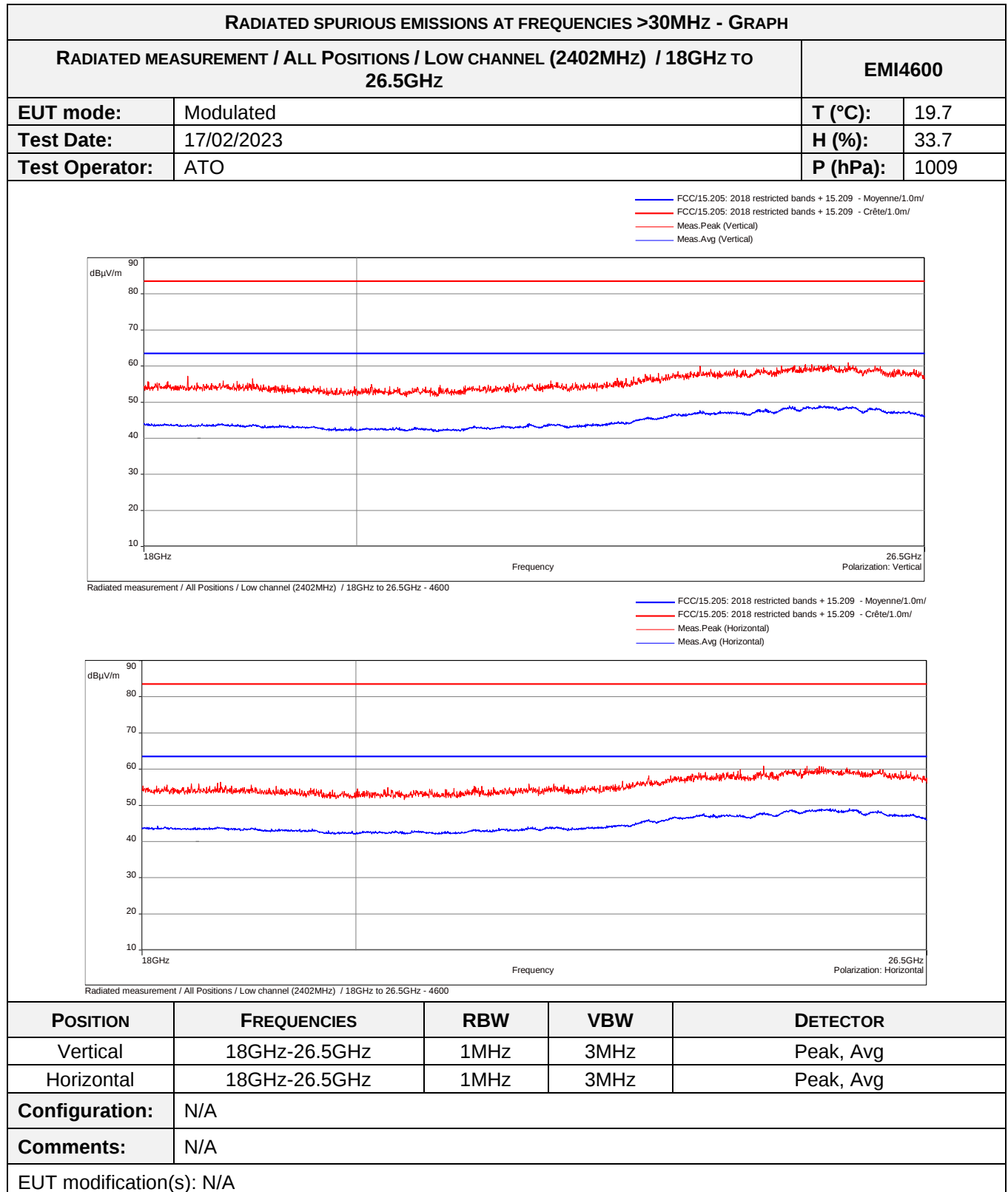


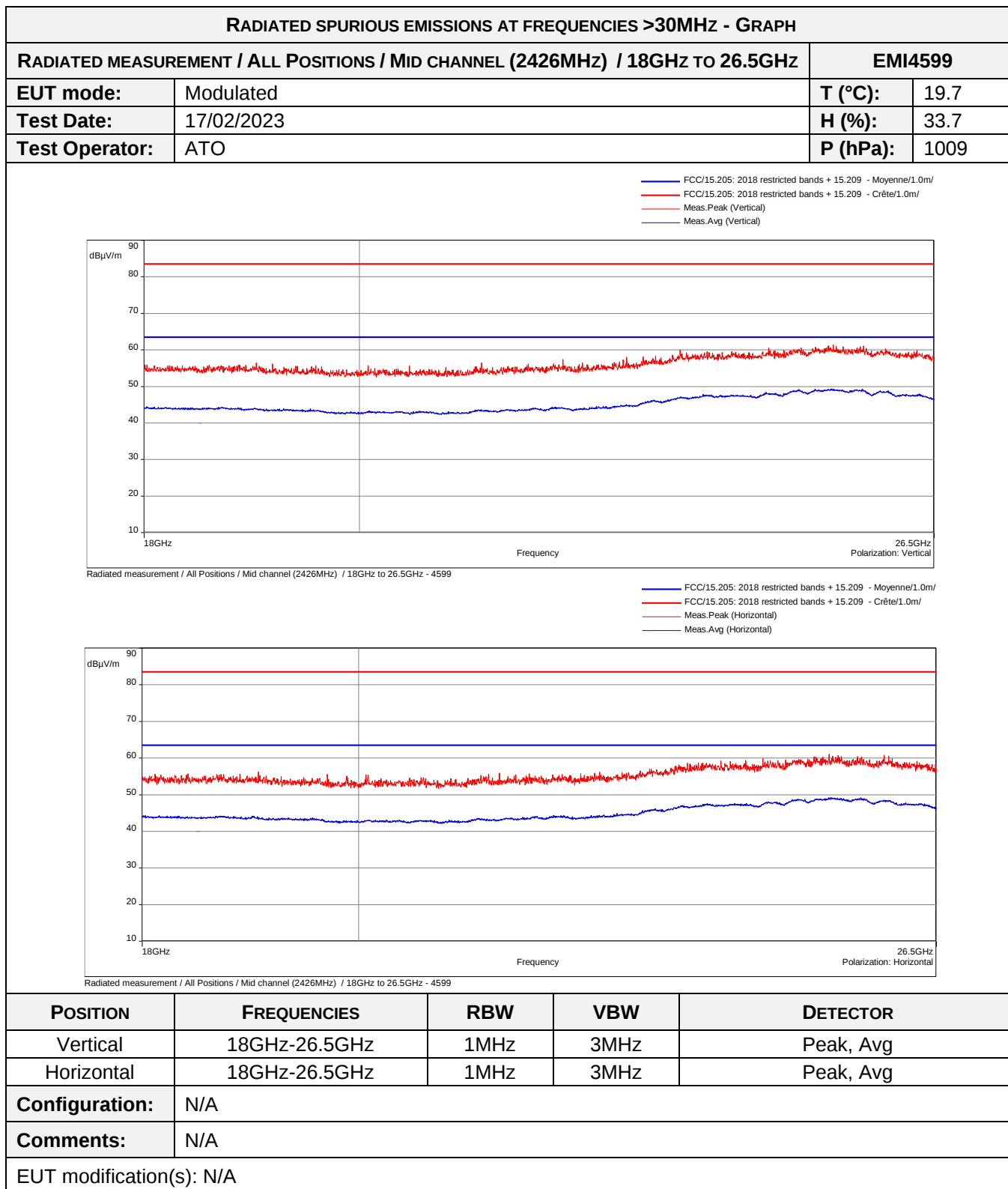


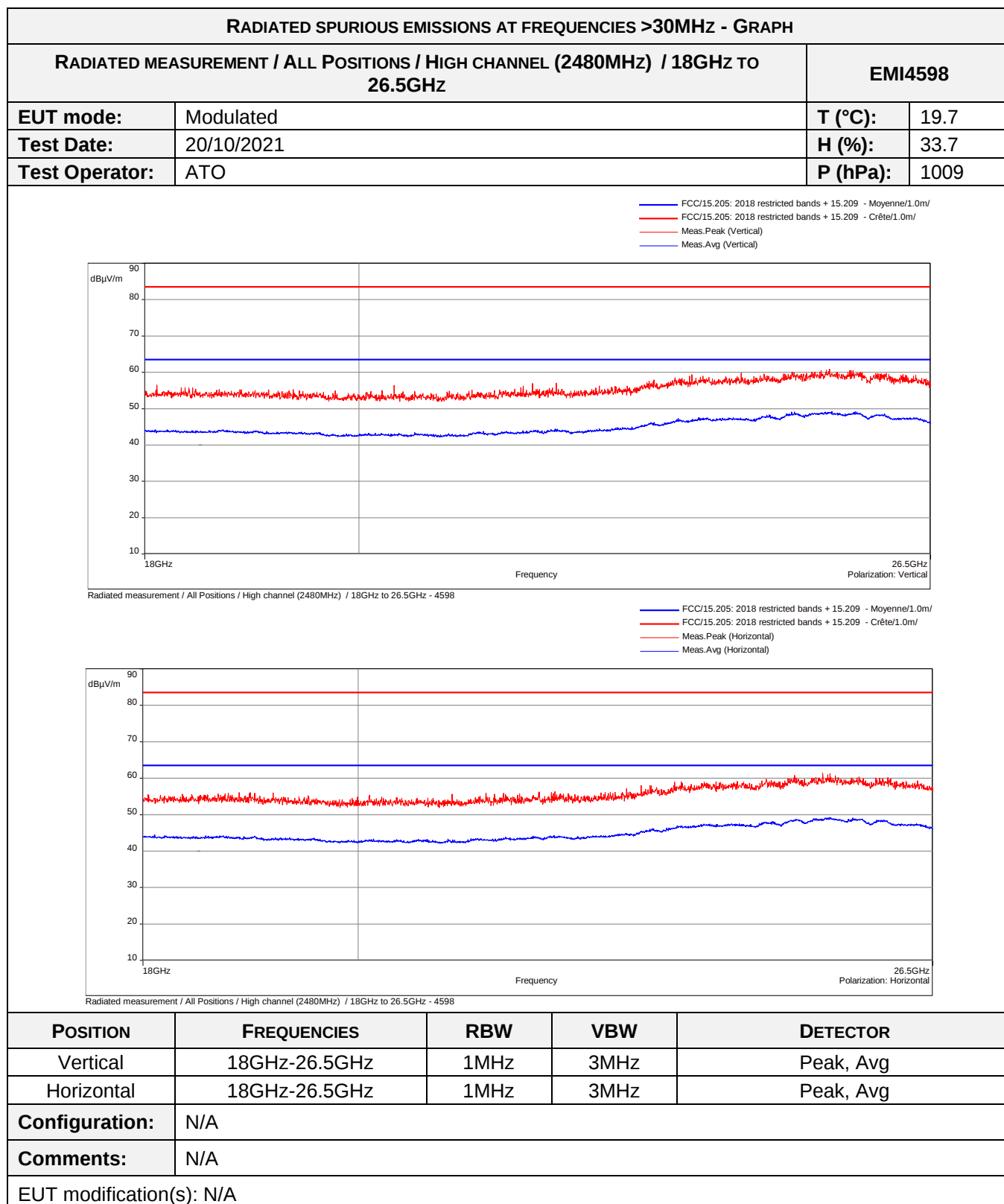


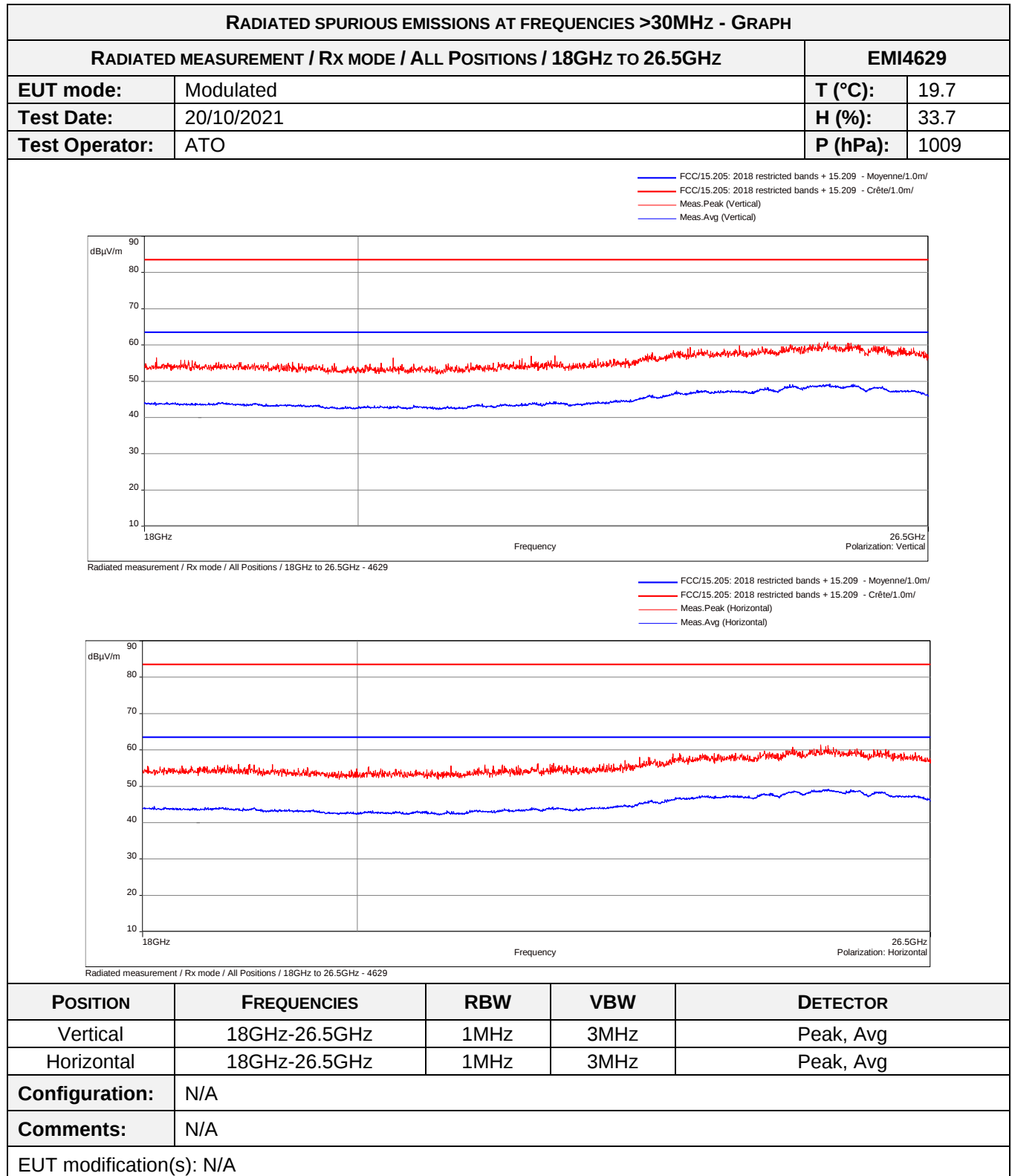












6.9. Frequency error (*)

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. This measurement procedure only applies if the EUT can generate an unmodulated carrier. EUT is set inside the climatic enclosure. It is connected to the measuring receiver via 50Ω attenuator(s). RBW=300Hz	

TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
Low channel / 25°C	Unmodulated	0.001%	EMI4690	PASS
Mid channel / 25°C	Unmodulated	0.001%	EMI4691	PASS
High channel / 25°C	Unmodulated	0.001%	EMI4692	PASS
Low channel / 10°C	Unmodulated	0.001%	EMI4693	PASS
Mid channel / 10°C	Unmodulated	0.001%	EMI4694	PASS
High channel / 10°C	Unmodulated	0.001%	EMI4695	PASS
Low channel / 40°C	Unmodulated	0.001%	EMI4696	PASS
Mid channel / 40°C	Unmodulated	0.001%	EMI4697	PASS
High channel / 40°C	Unmodulated	0.001%	EMI4698	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	24.2 °C
Relative Humidity	20 to 75 %	35.4 %
Atmospheric pressure	N/A	1002 hPa
Test method deviation: N/A		
Supplementary information: EUT is powered by internal batteries and extrêmes tests conditions are not made under COFRAC accréditation.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Attenuator	Radiall	R412710124	17328	22/06/2020	22/08/2023
Cable	MegaPhase	TM18-N1N1-118	12841	04/10/2022	04/12/2024
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	01/09/2022	01/11/2023
Spectrum analyzer	Rohde & Schwarz	FPL1007	17908	02/11/2022	02/01/2024
Thermohygrometer	Testo	608-H2	12268	24/10/2022	24/12/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	07/06/2021	07/08/2023

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – CLIMATIC ENCLOSURE



FREQUENCY ERROR - TABULATED RESULTS

TEST CASE	FREQUENCY (MHz)	FREQUENCY ERROR	LIMIT	RESULT TAB.
Low channel / 25°C	2401.690835	0%	0.001%	EMI4690
Mid channel / 25°C	2425.690222	0%	0.001%	EMI4691
High channel / 25°C	2479.688803	0%	0.001%	EMI4692
Low channel / 10°C	2401.693836	0.00012%	0.001%	EMI4693
Mid channel / 10°C	2425.693276	0.00013%	0.001%	EMI4694
High channel / 10°C	2479.691991	0.00013%	0.001%	EMI4695
Low channel / 40°C	2401.689056	0.00007%	0.001%	EMI4696
Mid channel / 40°C	2425.688499	0.00007%	0.001%	EMI4697
High channel / 40°C	2479.687150	0.00007%	0.001%	EMI4698

End of test report