



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory
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RADIO TEST REPORT

FCC part 15
RSS-247_Issue 2, February 2017
(Partial tests)

Company: **TRAXENS**
Address.....: HELIOPOLIS III - 16 RUE LOUIS LEPRINCE RINGUET
13013 MARSEILLE
FRANCE

Test item description: **TRAXENS-BOX V2 DRY**
Trade Mark: TRAXENS
Manufacturer: TRAXENS
Model/Type reference.....: 2DR/BOX0023
FCC ID.....: 2AHZ6TRBV2
IC: 25616-TRBV2
Ratings.....: 7.2 Vdc

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

Report Reference No.: **RR410-20-101635-5A**
Test procedure: FCC IC Certification
Diffusion.....: MR CERVERA
Applicant's name: TRAXENS
Date of issue.....: July 7, 2020
Total number of pages.....: 46
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Modified page(s).....: Creation
Compiled by.....: Morgan PATEY
Approved by (+ signature).....: Olivier HEYER (Laboratory Manager)

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

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REVISION HISTORY:

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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.

ANSI C 63.10:2013

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

RSS-247 Issue 2, February 2017

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

ANSI C 63.4:2014

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

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

INFORMATIVE REFERENCES:

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

3.1. Test Conditions

Test item description.	: TRAXENS-BOX V2 DRY
Model/Type reference.....	: 2DR/BOX0023
Trade Mark.	: TRAXENS
FCC ID.....	: 2AHZ6TRBV2
IC.	: 25616-TRBV2
Serial number (S/N).....	: 0020201929000003/4/5/6
Part number (P/N).	: Not communicated
Software version.....	: N/A
Firmware version.	: V1.6
Type of sample.	: Pre-serial
Function(s).....	: GSM / GPS / TRAXENS-Net / BLE 5.0 / Sensors
Manufacturer name.	: TRAXENS
Address.....	: HELIOPOLIS III - 16 RUE LOUIS LEPRINCE RINGUET 13013 MARSEILLE

General product information:

N/A

3.2.EUT Marking plate



3.3. EUT General view



3.4. EUT Internal view



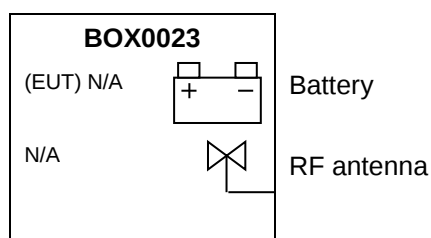
3.5. EUT Mechanical and Electrical Design

Power supply. : 7.2 Vdc
Power supply range. : 7.2 Vdc
Power type. : Battery
Power (W). : 3.6
Nominal current (A). : 0.5
Dimensions (L x W x H) (m). : 0.378 x 0.100 x 0.040
Weight (kg). : 0.840
Temperature range (°C). : -40 to +85
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	N/A
1	Battery	DC	N/A	N/A	7.2 Vdc
2	RF antenna	RF	N/A	N/A	2G/3G/4G + BLE + W4T + GPS

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

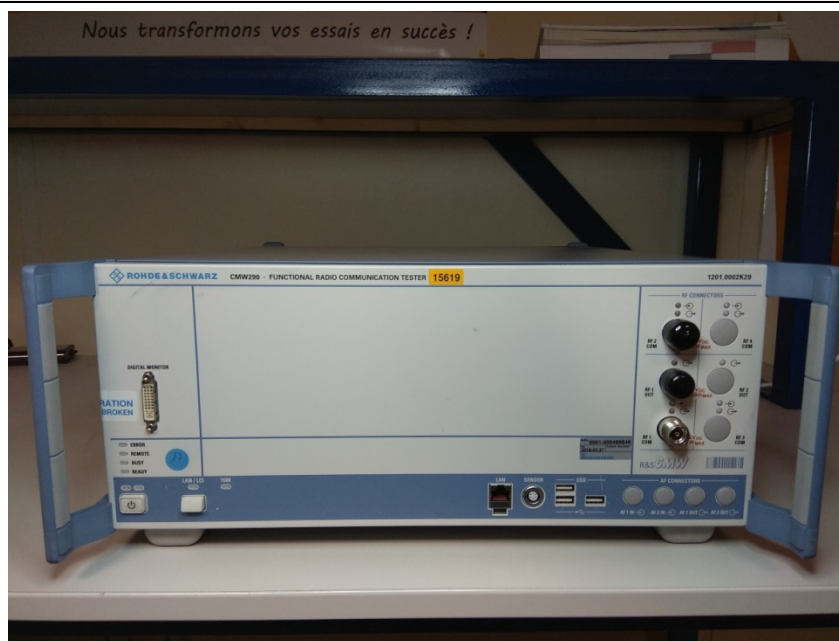
RF.....: Radio frequency port

3.7. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Fonctionnal Radio Communication Tester	Rohde & Schwarz	CMW290	15619

(EA)



3.8. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	Transceiver
Technology	SRD - Multi Band LTE Cat 1 and 2G/3G - BLE - GNSS
Environmental profile.....	Data transmissions
Temperature range.....	Category I (General) (-20°C to +55°C)
Antenna type	Integrated
Antenna Gain.....	2.47dBi impedance 50 Ohms.
Comments:	
Comments: EUT includes RF modules (GSM, GPRS, UMTS, LTE and TRAXENS-NET) which are already certified. BLE technology was considered as a DTS technology.	
b) TRANSMITTER PARAMITERS (Tx)	
Frequency bands.....	W4T : 920.55 to 927.35 MHz GSM : Quad Band GSM: 850, 900, 1800 and 1900 MHz UMTS : Seven Bands UMTS (WCDMA/FDD): 800, 850, 900, 1700/2100 (AWS), 1800, 1900 and 2100 MHz LTE : FDD-LTE: 700, 800, 850, 900, 1700/2100 (AWS), 1800, 1900, 2100, 2600 MHz BLE : 2400 to 2483.5 MHz
RF Power.....	W4T : 15 dBm GSM/UMTS/LTE : Not communicated BLE : 8 dBm max (setting use during the test)
Number of channels / Separation.....	W4T : 68 GSM/UMTS/LTE : Not communicated BLE : 79
Modulation type	W4T : GMSK GSM/UMTS/LTE : Multiple BLE : GFSK
Duty cycle	Not communicated
Tested frequency.....	W4T : 924 MHz GSM 800 & 900 & 1800 & 1900 UMTS Band I & II & V LTE Band 2 & 4 & 7 & 12 BLE : 2400 to 2483.5 MHz
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	W4T : 920.55 to 927.35 MHz GSM : Quad Band GSM: 850, 900, 1800 and 1900 MHz UMTS : Seven Bands UMTS (WCDMA/FDD): 800, 850, 900, 1700/2100 (AWS), 1800, 1900 and 2100 MHz LTE : FDD-LTE: 700, 800, 850, 900, 1700/2100 (AWS), 1800, 1900, 2100, 2600 MHz BLE : 2400 to 2483.5 MHz
Category/Class	Not communicated
Bandwidth	Not communicated

4. EUT REQUIREMENTS FOR FCC RULES

4.1. Subpart A - General

This part sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of part 15 devices.

The user notice, shall include the following informations:

a) LABELING REQUIREMENTS (§15.19):
Equipment authorization: Supplier's Declaration of Conformity (SDoC) or Certification List of different type of devices and associated "statement on product": §15.19(a)(1) - Receivers associated with the operation of a licensed radio service: <i>"This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference."</i> §15.19(a)(2) - A stand-alone cable input selector switch: <i>"This device complies with part 15 of the FCC Rules for use with cable television service."</i> §15.19(a)(3) - All other devices: <i>"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."</i> §15.19(a)(4) - Where a device is constructed in two or more sections connected by wires and marketed together: The statement specified only to the main control unit: <i>"This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference."</i> §15.19(a)(5) - When the device is so small: The statement of §15.19(a) shall be placed in the user manual and must also either be placed on the device packaging or on a removable label attached to the device. Compliance information (§2.1077): The identification, by name, address and telephone number or internet contact information, of the responsible party, as defined in § 2.909 of the standard. The responsible party for Supplier's Declaration of Conformity must be located within the United States. Identification (§2.1074): (a) Devices subject only to Supplier's Declaration of Conformity shall be uniquely identified by the party responsible for marketing or importing the equipment within the United States. (b) Devices subject to authorization under Supplier's Declaration of Conformity may be labeled with the following logo on a voluntary basis as a visual indication that the product complies with the applicable FCC requirements.  (image size: 6.7 x 2.8" ;3.5 x 1.4" ;1.6 x .7")

The label shall be located in a conspicuous location on the device.

The label shall not be a stick-on, paper label. The label on these products shall be permanently affixed to the product and shall be readily visible (font of at least 4-point or larger) to the purchaser at the time of purchase.

EUT LABEL


BOX

MGT PN : BOX0023 VXX


TRAXENS

HELIOPOLIS III

16 rue Louis Leprince Ringuet
13013 Marseille - FRANCE

2DR - 042 - 002
BOX0023 - HVIN : 2DR

IMEI : 358674528976410
MAC @ BLE : 50DE1930007A
FCC ID : 2AHZ6TRBV2
IC : 25616 - TRBV2

CONTAINS:
FCC ID : 2AHZ6WING4TRAX:
IC : 25616 - W4T
FCC ID : QIPPLS62 - W
IC : 7830A - PLS62W


IP68


SN:20204P00011941000017
CRC: 6A
b) DEVICES INCLUDING MODULAR TRANSMITTER(S) (§15.212):

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:

"Contains Transmitter Module FCC ID: XYZMODEL1" or "Contains FCC ID: XYZMODEL1."

Device under test includes single modular transmitter(s):

FCC ID: 2AHZ6WING4TRAX

FCC ID: QIPPLS62-W

IC: 25616-W4T

IC: 7830A-PLS62W

c) INFORMATION TO USER (§15.21):

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that:

"The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment"

4.2. Subpart B - Unintentional Radiators

In addition to Subpart A, the user notice Référence du manuel utilisateur, shall include the following informations:

a) INFORMATION TO USER (§15.105):
Equipment authorization: Supplier's Declaration of Conformity (SDoC) or Certification §15.105(a) - For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual: <i>“NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.”</i> §15.105(b) - For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual: <i>“NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:</i> <i>—Reorient or relocate the receiving antenna.</i> <i>—Increase the separation between the equipment and receiver.</i> <i>—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.</i> <i>—Consult the dealer or an experienced radio/TV technician for help.”</i>

5. OPINION(S) AND INTERPRETATION(S)

Some tests required by the generic or product standard are not performed by the mlaboratory in accordance with applicant request. The results of this report do not imply an assessment of the conformity of the whole requirements of the applicable standard(s).

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
ANSI C 63.10 : 2013	N/A

Comments: N/A

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Radiated spurious emissions (transmitter)			ANSI C 63.10 : 2013 ANSI C 63.4:2014
- Tx mode / f<GHz / All channels	15.209	PASS	
- Tx mode / f>GHz / DRY / GSM850	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / GSM900	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / GSM1800	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / GSM1900	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / UMTS Band I	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / UMTS Band II	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / UMTS Band V	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / LTE Band 2	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / LTE Band 4	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / LTE Band 7	2G/3G/4G	PASS	
- Tx mode / f>GHz / DRY / LTE Band 12	2G/3G/4G	PASS	
- Tx mode / f<GHz / DRY / W4T	15.209	PASS	
- Tx mode / f>GHz / DRY / W4T 5dBm	15.209	PASS	
- Tx mode / f<GHz / DRY / BLE / Hopping	15.209	PASS	
- Tx mode / f>GHz / DRY / BLE / Low channel	15.209	PASS	
- Tx mode / f>GHz / DRY / BLE / Mid channel	15.209	PASS	
- Tx mode / f>GHz / DRY / BLE / High channel	15.209	PASS	
- Radio OFF / f <GHz / DRY	B	PASS	
- Radio OFF / f >GHz / DRY	B	PASS	
Operation within the band 902-928MHz, 2400-2483.5MHz and 5725-5850MHz			Fcc Part 15.247 / RSS-247 ANSI C 63.10 : 2013
- RF Output power / BLE	15.247	PASS	
- PSD / BLE	15.247	PASS	
- Band Edge / BLE	15.247	PASS	

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

TEST(S) PERFORMED	MODIFICATION(S)
ANSI C 63.10 : 2013	N/A

7. RF EXPOSURE

Maximum EIRP with = 8.511 mW (eirp) at 2440MHz

In accordance with KDB 447498 D01 General RF Exposure Guidance v06:

PSD= $EIRP/(4*\pi*R^2)=8.511/(4*\pi*(20\text{ cm})^2)=0.0017\text{ mW/cm}^2$

Limit= 1 mW/cm²

8. 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	$\pm 3.8\%$	$\pm 5\%$
Adjacent channel power	$\pm 1.6\text{ dB}$	$\pm 3\text{ dB}$
Sensibility of receiver (conducted)	$\pm 2.0\text{ dB}$	$\pm 3\text{ dB}$
Conducted emission (spurious)		
$f \leq 1\text{ GHz}$	$\pm 0.8\text{ dB}$	
1 GHz - 12.75 GHz	$\pm 1.6\text{ dB}$	$\pm 3\text{ dB}$
Radiated emission (PAR / PIRE / RNE)		
$f \leq 62.5\text{ MHz}$	$\pm 5.1\text{ dB}$	$\pm 6\text{ dB}$
62.5 MHz - 1 GHz	$\pm 5.1\text{ dB}$	$\pm 6\text{ dB}$
1 GHz - 18 GHz	$\pm 5.2\text{ dB}$	$\pm 6\text{ dB}$
18 GHz – 26 GHz	$\pm 5.1\text{ dB}$	$\pm 6\text{ dB}$
26 GHz – 40 GHz	$\pm 5.4\text{ dB}$	$\pm 6\text{ dB}$
PIRE and power spectral density with diode	$\pm 5.4\text{ dB}$	$\pm 6\text{ dB}$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 3\text{ dB}$	$\pm 6\text{ dB}$
RF level for a given BER	$\pm 0.8\text{ dB}$	$\pm 1.5\text{ dB}$
Supply voltages	$\pm 3\%$	$\pm 3\%$
Temperature	$\pm 1\text{ }^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$	$\pm 5\%$
Time / Duty cycle	$\pm 4.4\%$	$\pm 5\%$
Adaptivity	$\pm 2.9\text{ dB}$	/
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	$\pm 2.7\text{ dB}$	/
30MHz – 1GHz	$\pm 5.0\text{ dB}$	/
1GHz – 18GHz	$\pm 5.6\text{ dB}$	/
18GHz – 26GHz	$\pm 5.7\text{ dB}$	/
26GHz – 40GHz	$\pm 5.7\text{ dB}$	/

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

9. TEST CONDITIONS AND RESULTS

9.1. Radiated spurious emissions

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	ANSI C 63.10: 2013 ANSI C 63.4: 2014
General test setup: EUT is set on an insulating support at 80cm above the ground reference plane (150cm for f >1GHz). Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak or average) were then performed in a semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. The EUT was rotated 360° about its azimuth and adjusting the receive antenna height from 1 to 4 m. Above 18GHz measurement were performed at a test distance of 1m. All frequencies were investigated, where applicable. For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx mode / f<GHz / All channels	30MHz-1GHz	15.209	EMI4648	PASS
Tx mode / f>GHz / DRY / GSM850	1GHz-18GHz	2G/3G/4G	EMI4564	PASS
Tx mode / f>GHz / DRY / GSM900	1GHz-12.75GHz	2G/3G/4G	EMI4600	PASS
Tx mode / f>GHz / DRY / GSM1800	1GHz-18GHz	2G/3G/4G	EMI4602	PASS
Tx mode / f>GHz / DRY / GSM1900	1GHz-18GHz	2G/3G/4G	EMI4566	PASS
Tx mode / f>GHz / DRY / UMTS Band I	1GHz-18GHz	2G/3G/4G	EMI4598	PASS
Tx mode / f>GHz / DRY / UMTS Band II	1GHz-18GHz	2G/3G/4G	EMI4575	PASS
Tx mode / f>GHz / DRY / UMTS Band V	1GHz-12.75GHz	2G/3G/4G	EMI4570	PASS
Tx mode / f>GHz / DRY / LTE Band 2	1GHz-18GHz	2G/3G/4G	EMI4576	PASS
Tx mode / f>GHz / DRY / LTE Band 4	1GHz-18GHz	2G/3G/4G	EMI4577	PASS
Tx mode / f>GHz / DRY / LTE Band 7	1GHz-18GHz	2G/3G/4G	EMI4604	PASS
Tx mode / f>GHz / DRY / LTE Band 12	1GHz-12.75GHz	2G/3G/4G	EMI4569	PASS
Tx mode / f<GHz / DRY / W4T	30MHz-1GHz	15.209	EMI4646	PASS
Tx mode / f>GHz / DRY / W4T 5dBm	1GHz-12.75GHz	15.209	EMI4595	PASS
Tx mode / f<GHz / DRY / BLE / Hopping	30MHz-1GHz	15.209	EMI4645	PASS
Tx mode / f>GHz / DRY / BLE / Low channel	1GHz-18GHz	15.209	EMI4664	PASS
Tx mode / f>GHz / DRY / BLE / Mid channel	1GHz-18GHz	15.209	EMI4665	PASS
Tx mode / f>GHz / DRY / BLE / High channel	1GHz-18GHz	15.209	EMI4663	PASS
Radio OFF / f <GHz / DRY	30MHz-1GHz	B	EMI4581	PASS
Radio OFF / f >GHz / DRY	1GHz-18GHz	B	EMI4580	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: Above 18GHz, no spurious emissions were detected.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	5456	24/07/2019	24/09/2022
Antenna	ETS-Lindgren	3117	8387	24/07/2019	24/09/2022
Antenna	Electro Metrics	BIA-30HF	0824	13/06/2018	13/08/2021
Antenna	Rohde & Schwarz	HL223	3126	13/06/2018	13/08/2021
Cable	N	3m	16421	04/05/2019	04/07/2021
Cable	MegaPhase	F135N1N28	16664	25/10/2019	25/12/2021
Cable	MegaPhase	F135N1N28	16666	25/10/2019	25/12/2021
Cable	/	N-1m	3627	29/10/2018	29/12/2020
Cable	SUCOFLEX	N-3m	14378	25/06/2019	25/08/2021
Cable	SUCOFLEX	N-3m	14379	25/06/2019	25/08/2021
Cable	SUCOFLEX	N-6,5m	14380	25/07/2019	25/09/2021
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	HPM 15162	10273	12/01/2019	12/03/2022
Filter	Micro-Tronics	HPM18865	12843	09/06/2018	09/08/2021
Preamplifier	Techniwave	APS16-0087	14040	25/06/2019	25/08/2020
Preamplifier	IMPULSE	CA118-546ACN	9169	20/12/2019	20/02/2021
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Receiver	Agilent Technologies	E7405A	2161	11/02/2020	11/04/2022
Receiver	Rohde & Schwarz	FSW43	14830	16/01/2019	16/09/2020
Shielded enclosure	RAY PROOF	C.V1	1123		
Shielded enclosure	RAY PROOF	C.V2	1423		
Shielded enclosure	COMTEST	SAC 3m	14494		
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H1	7562	25/01/2019	25/03/2021
Thermohygrometer	Testo	608-H2	12269	28/11/2017	28/07/2020
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

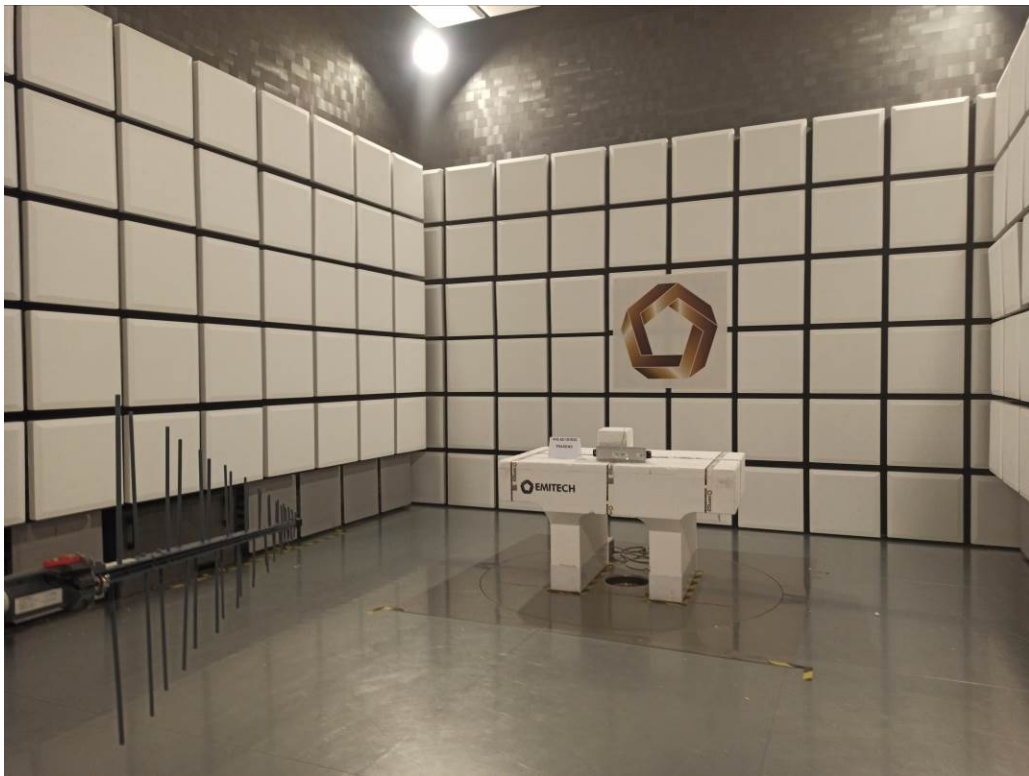
TEST SETUP PHOTO(S) – TX MODE / F<GHz



TEST SETUP PHOTO(S) – TX MODE / F<GHz



TEST SETUP PHOTO(S) – TX MODE / $F < \text{GHz}$



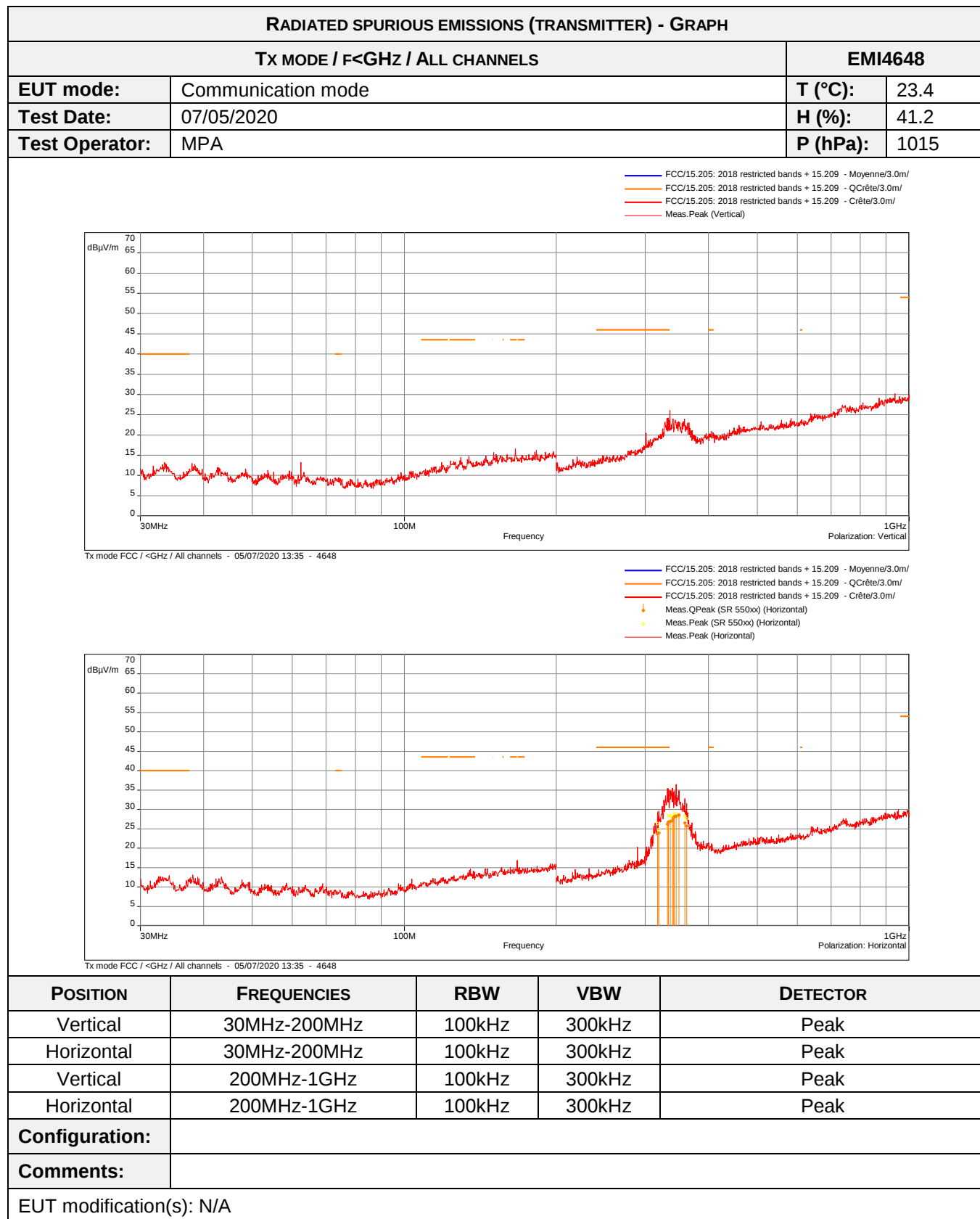
TEST SETUP PHOTO(S) - TX MODE / $F > \text{GHz}$

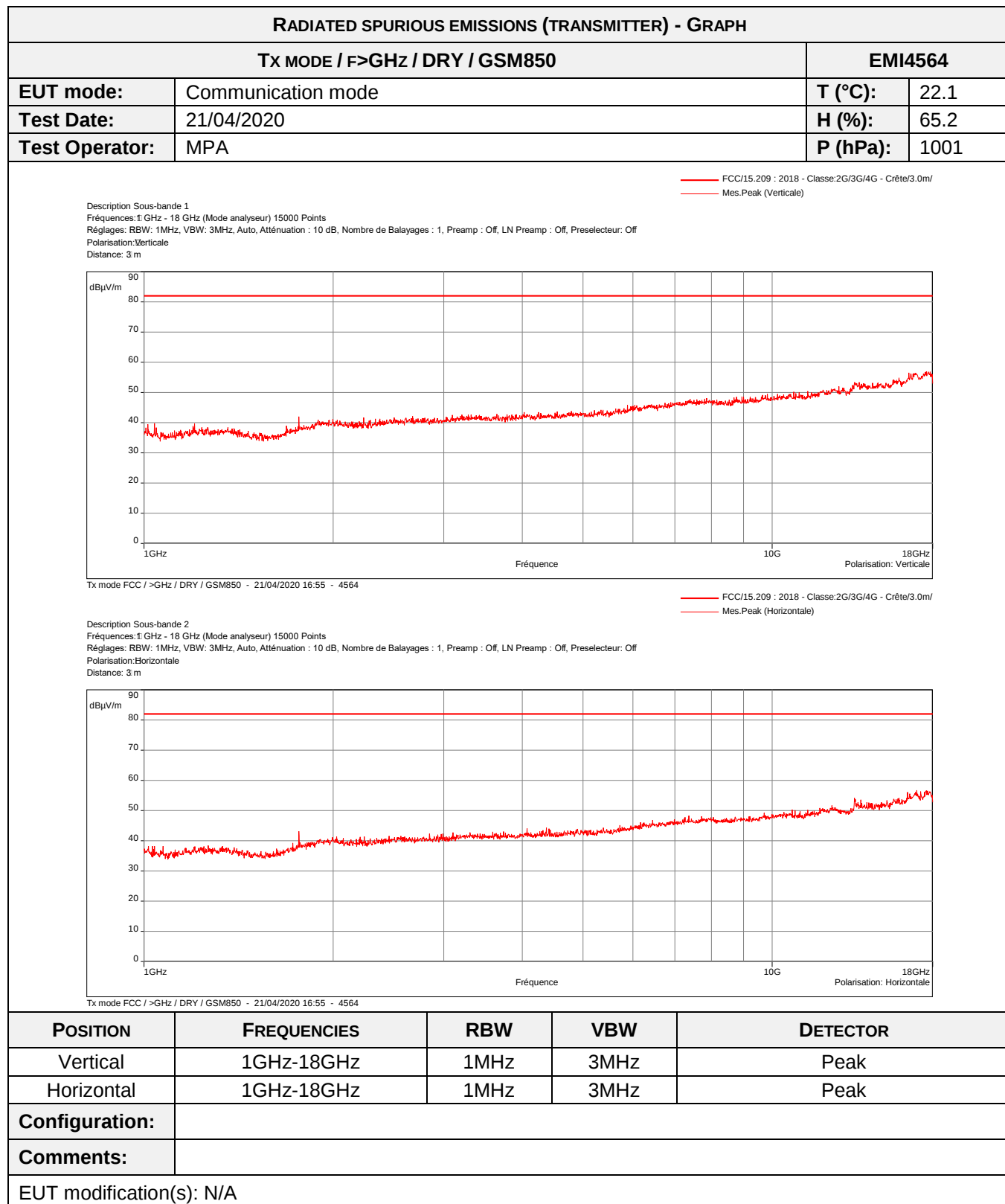


TEST SETUP PHOTO(S) - TX MODE / F>GHz



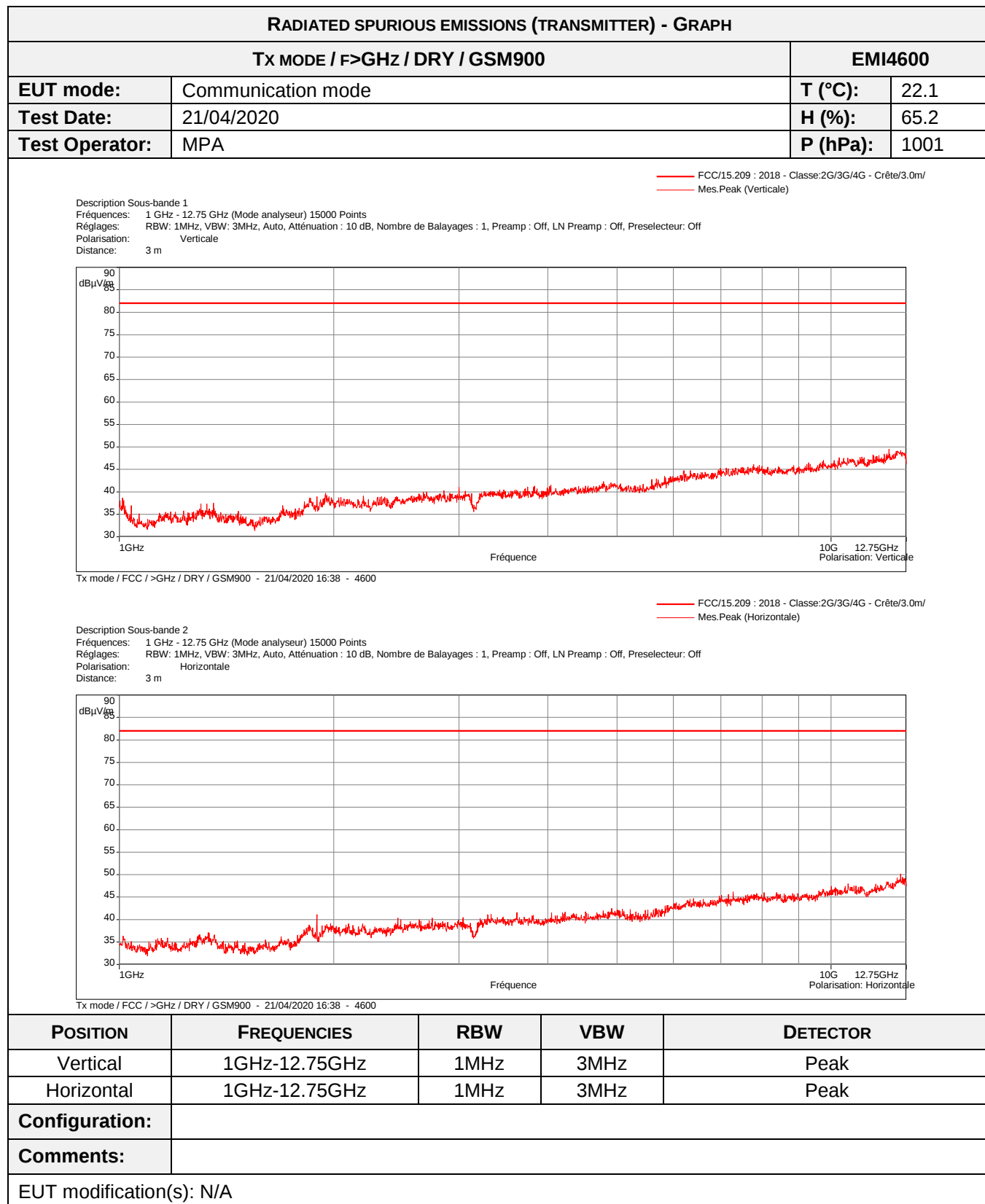
TX MODE / F<GHz / ALL CHANNELS – RESULTS TABLE					
Frequency (MHz)	Polarisation	Peak (dBµV/m)	QP (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)
317.397143	Horizontal	26.34	23.77	46	-22.23
317.787816	Horizontal	23.85	23.83	46	-22.17
319.057502	Horizontal	24.78	23.95	46	-22.05
331.949701	Horizontal	25.07	26.13	46	-19.87
333.61006	Horizontal	28.33	26.76	46	-19.24
336.344769	Horizontal	28.44	26.91	46	-19.09
339.47015	Horizontal	27.79	27.1	46	-18.9
341.130509	Horizontal	24.72	27.76	46	-18.24
342.6932	Horizontal	28.78	28.14	46	-17.86
345.525577	Horizontal	28.9	28.27	46	-17.73
349.725308	Horizontal	28.17	28.55	46	-17.45
359.589794	Horizontal	28.35	26.52	46	-19.48
362.715175	Horizontal	27.61	25.67	46	-20.33



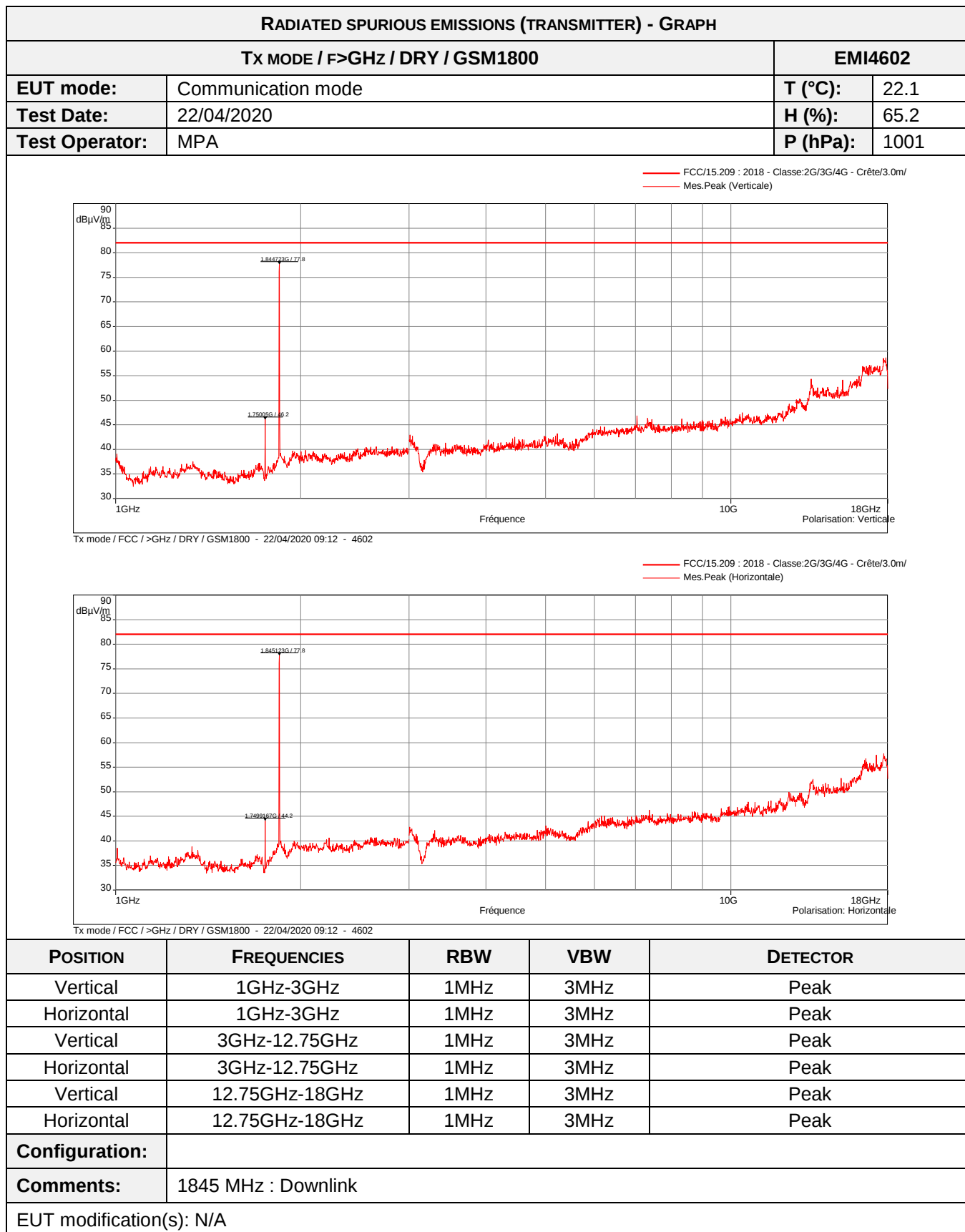


No spurious emissions were detected.

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

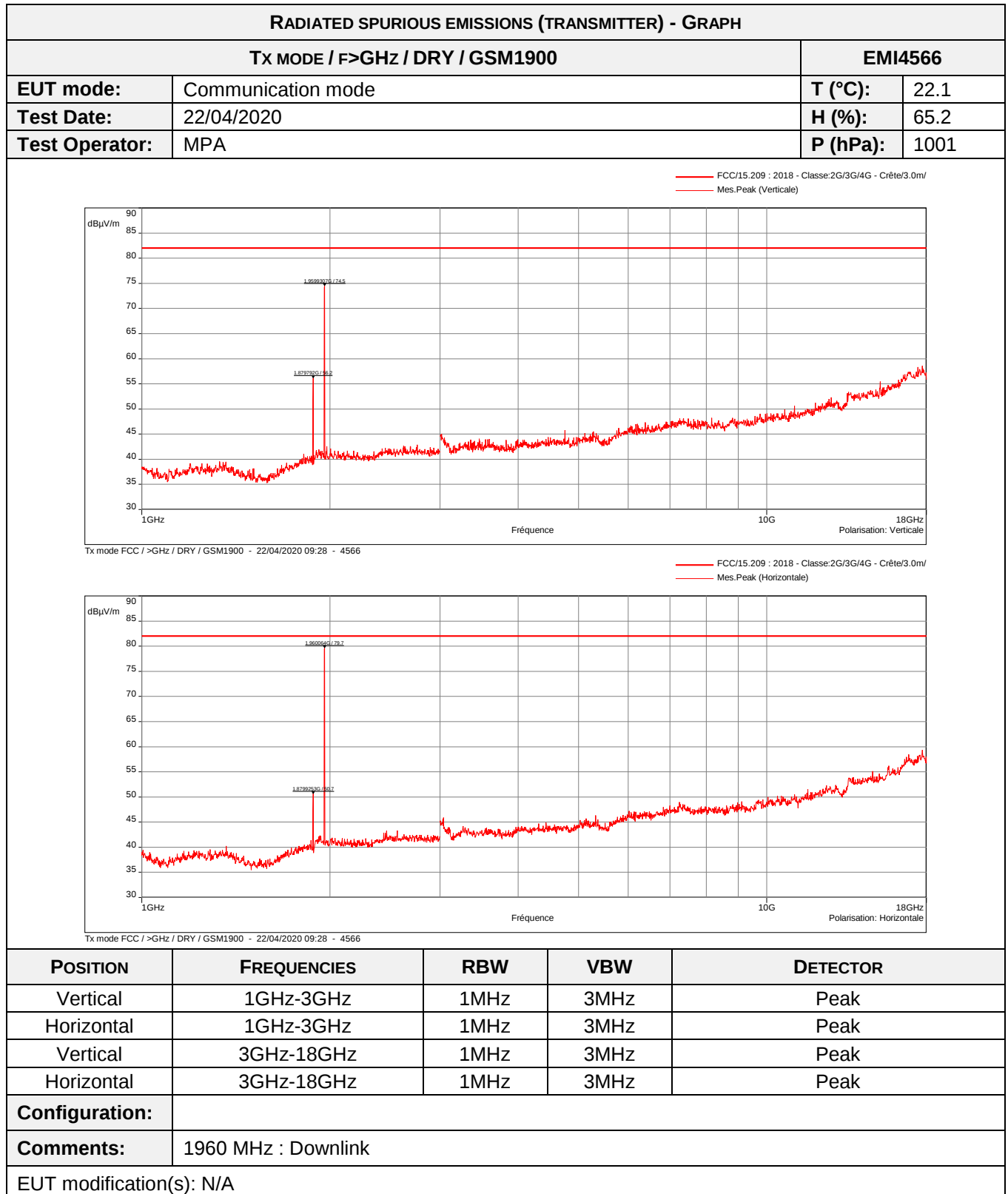


No spurious emissions were detected.
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported



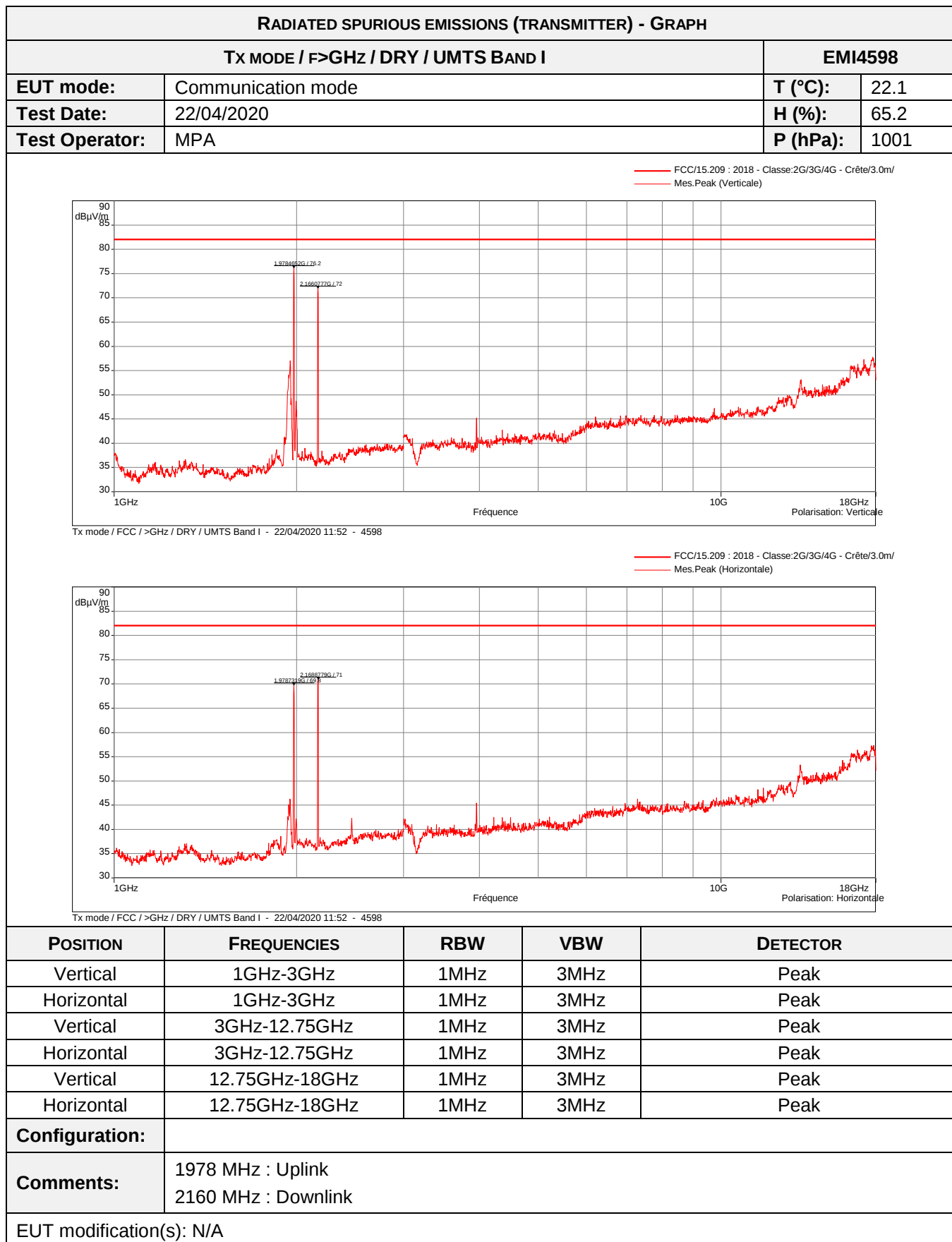
No spurious emissions were detected.

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



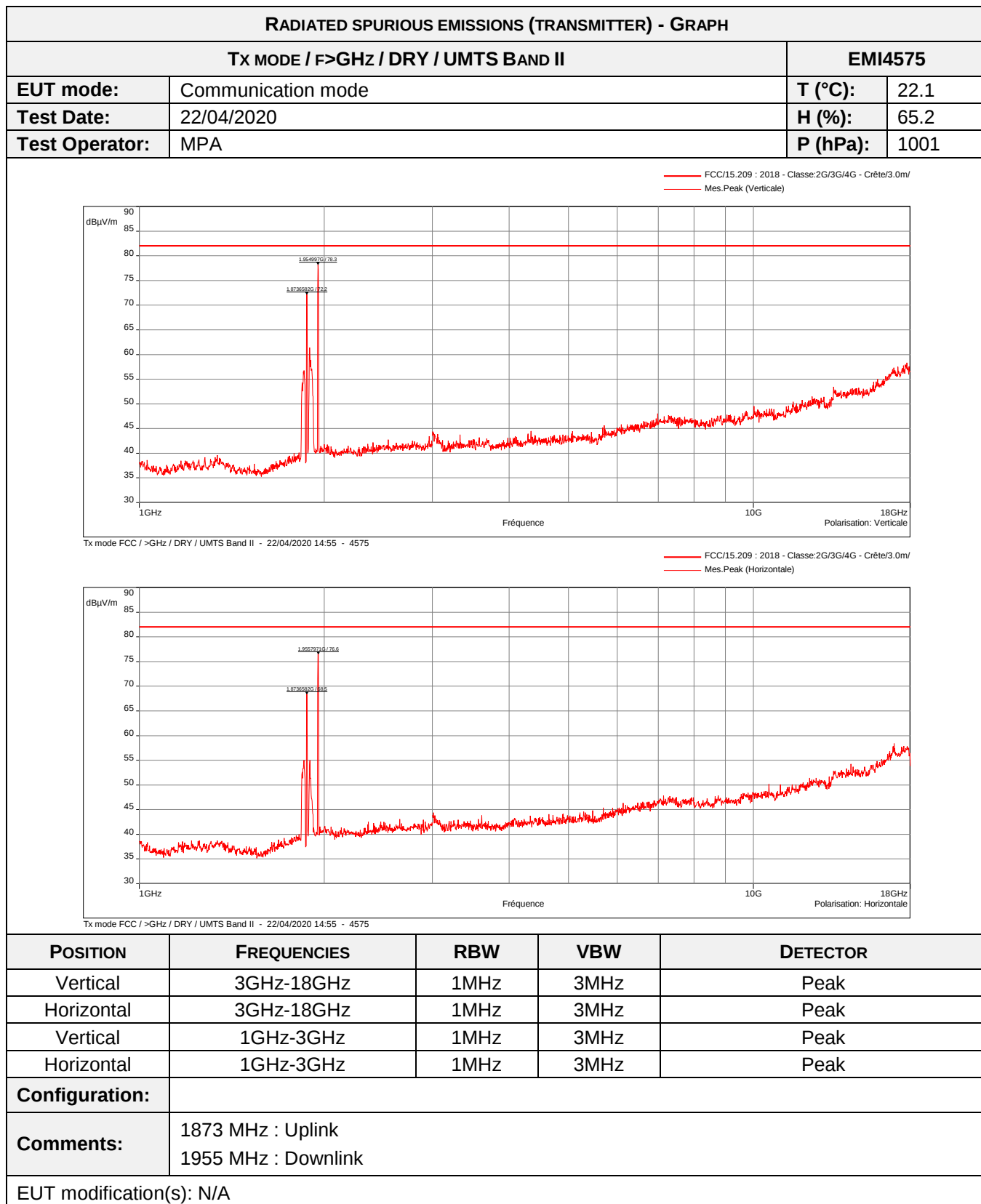
No spurious emissions were detected.

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



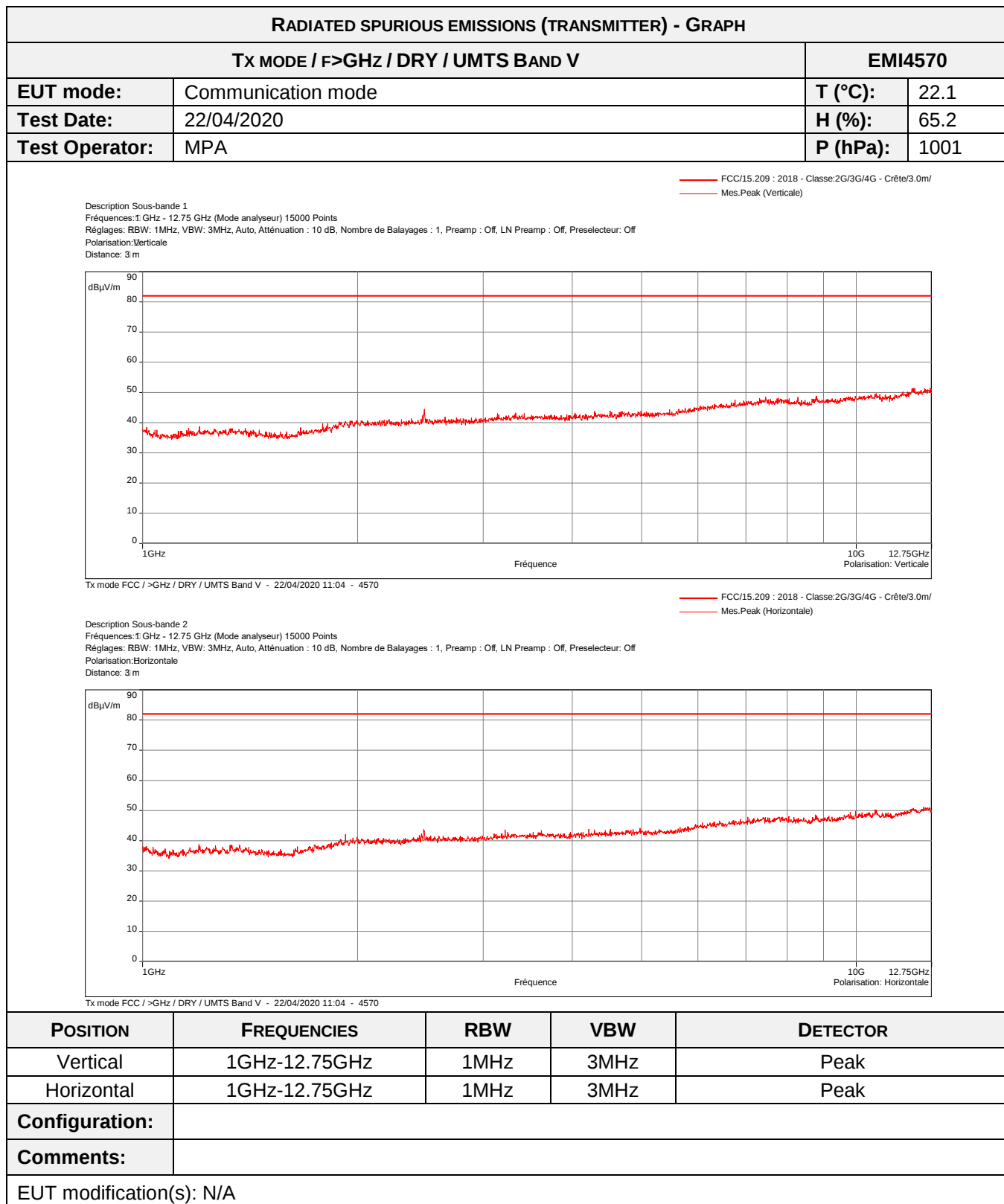
No spurious emissions were detected.

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



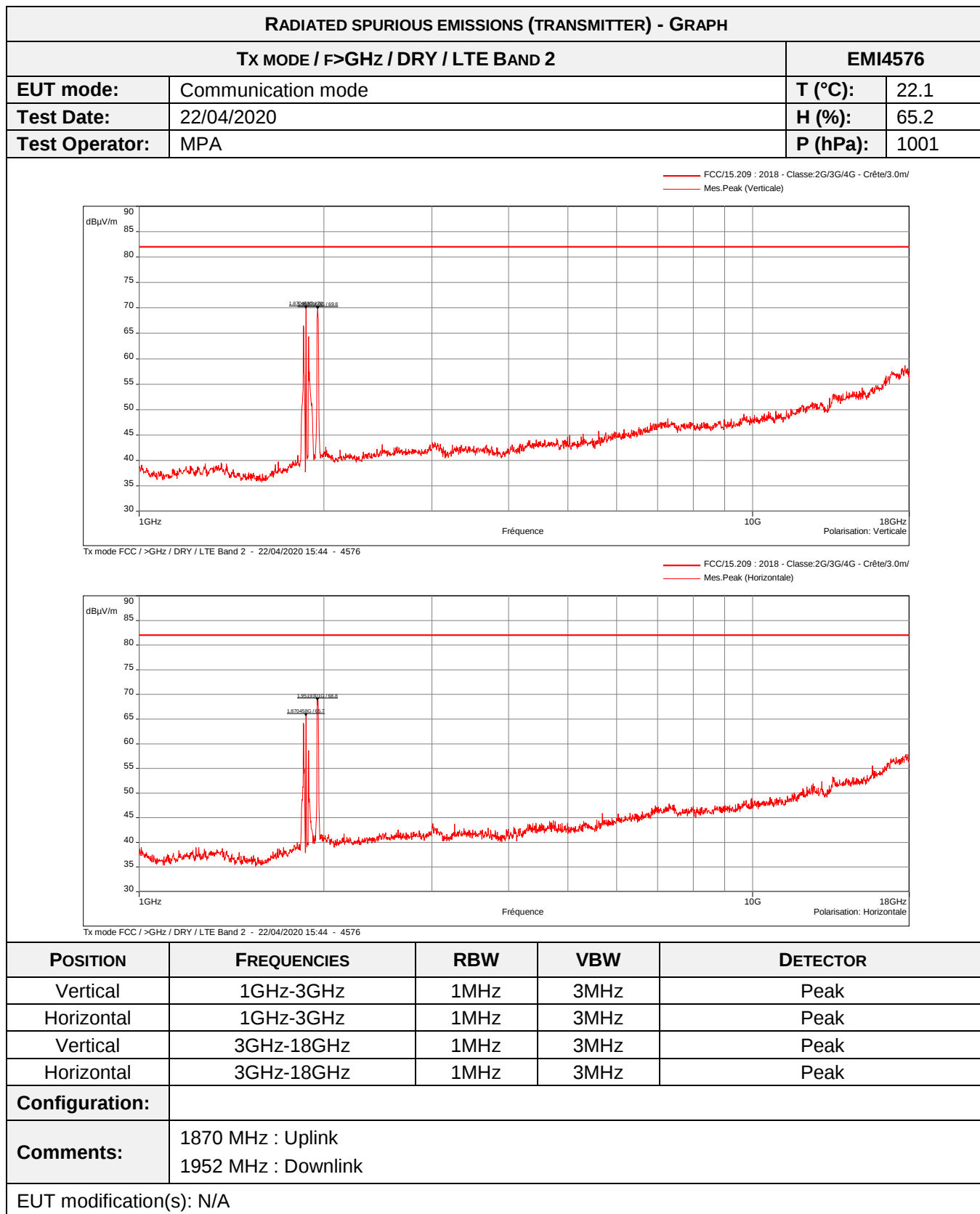
No spurious emissions were detected.

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



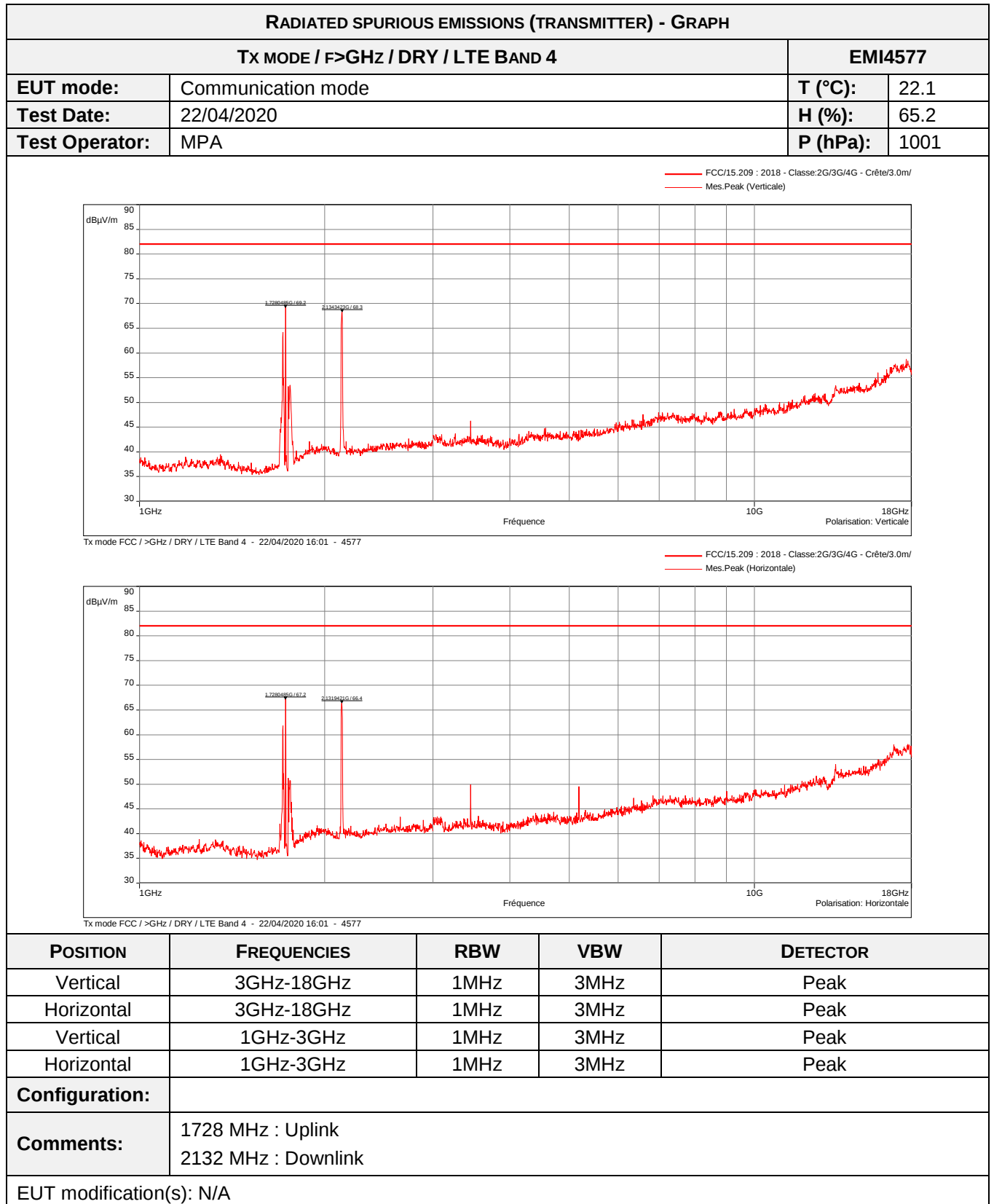
No spurious emissions were detected.

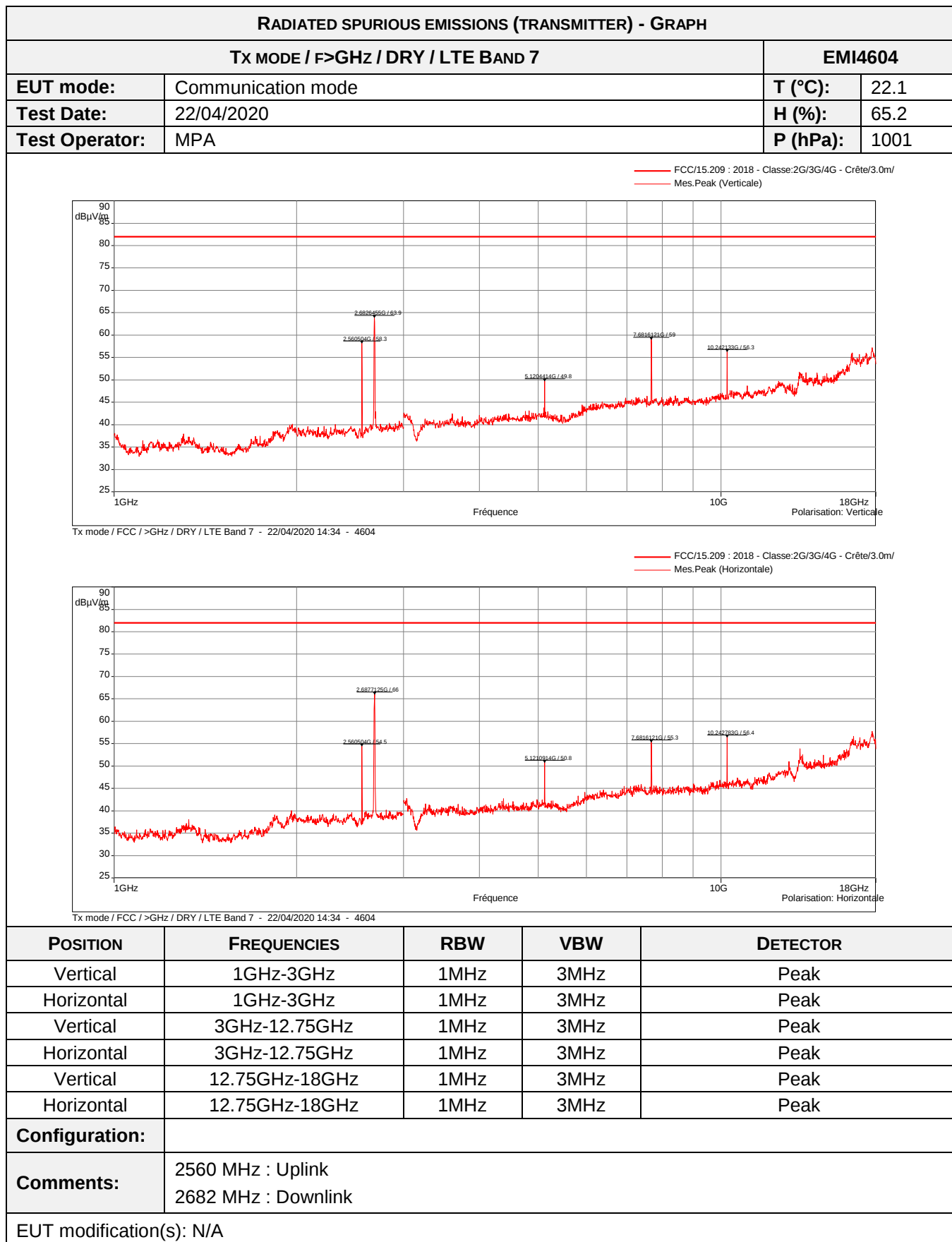
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported

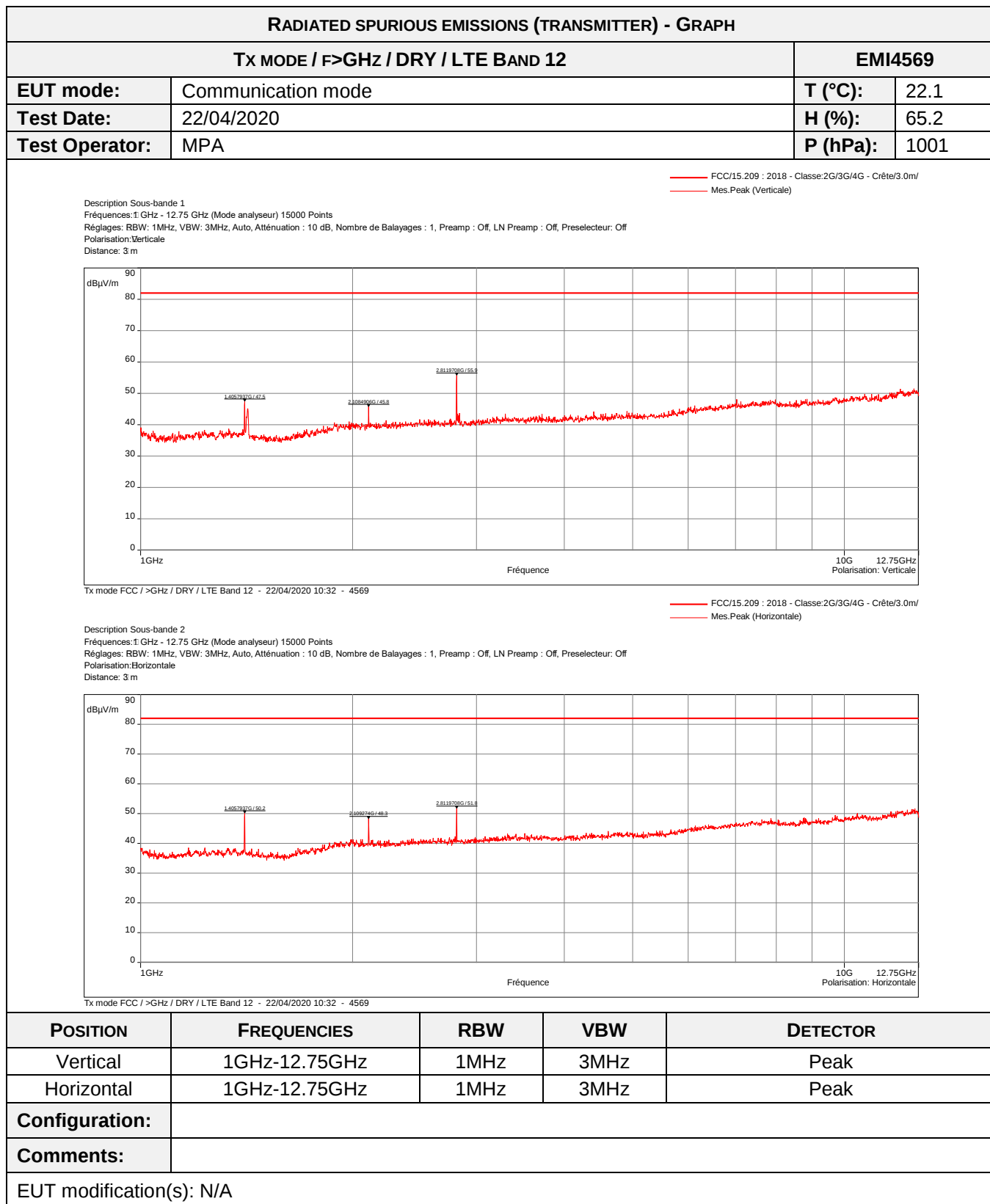


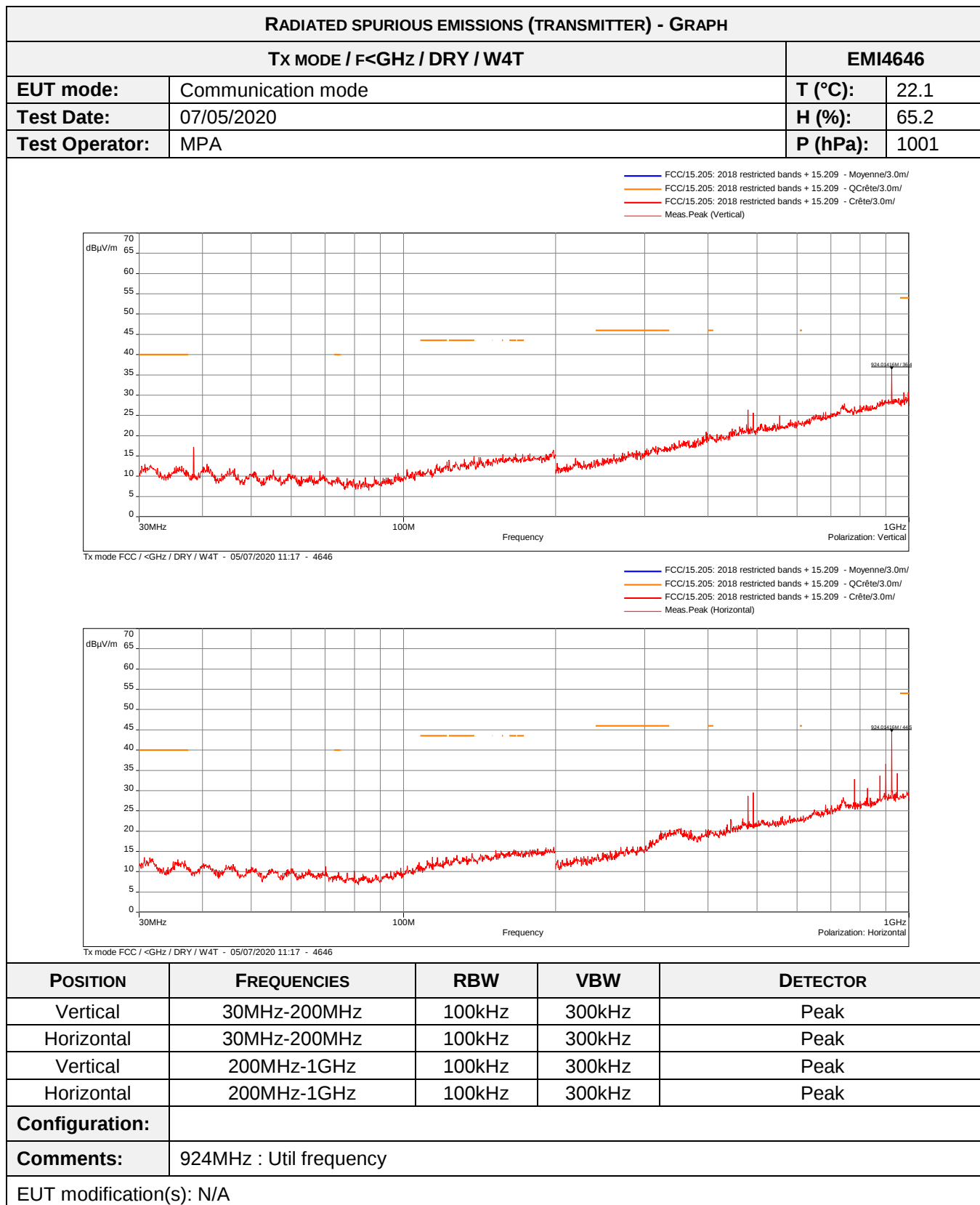
No spurious emissions were detected.

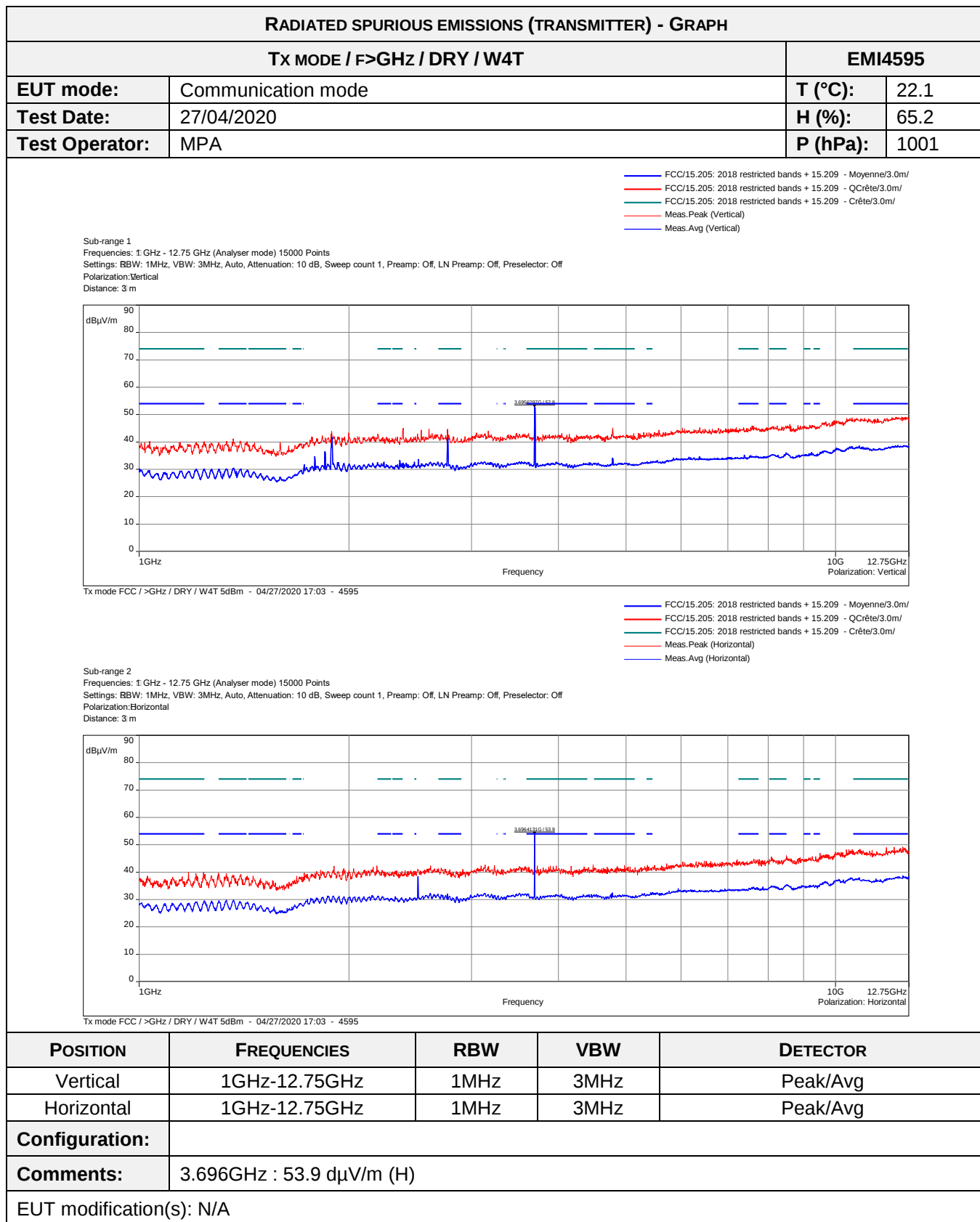
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported

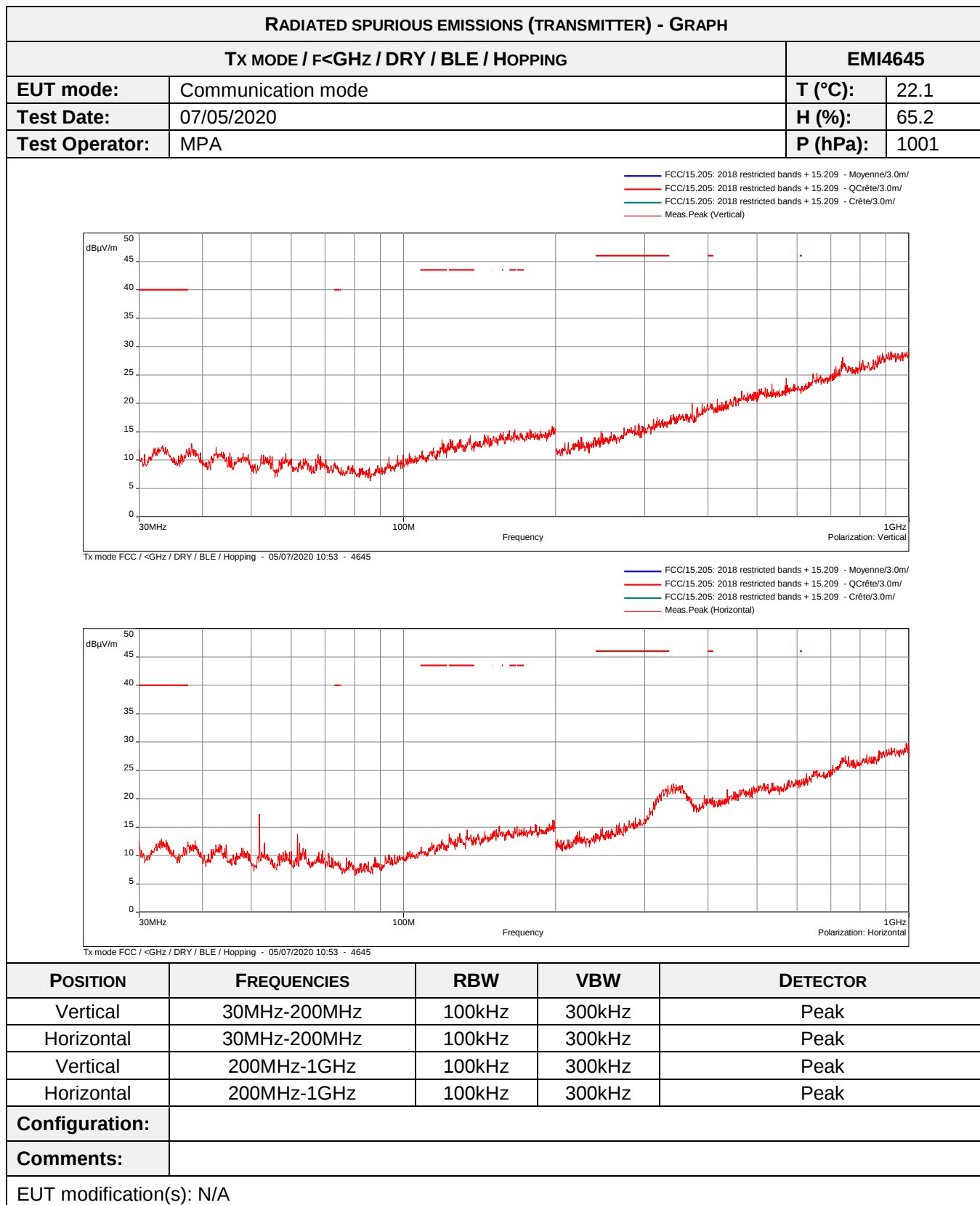






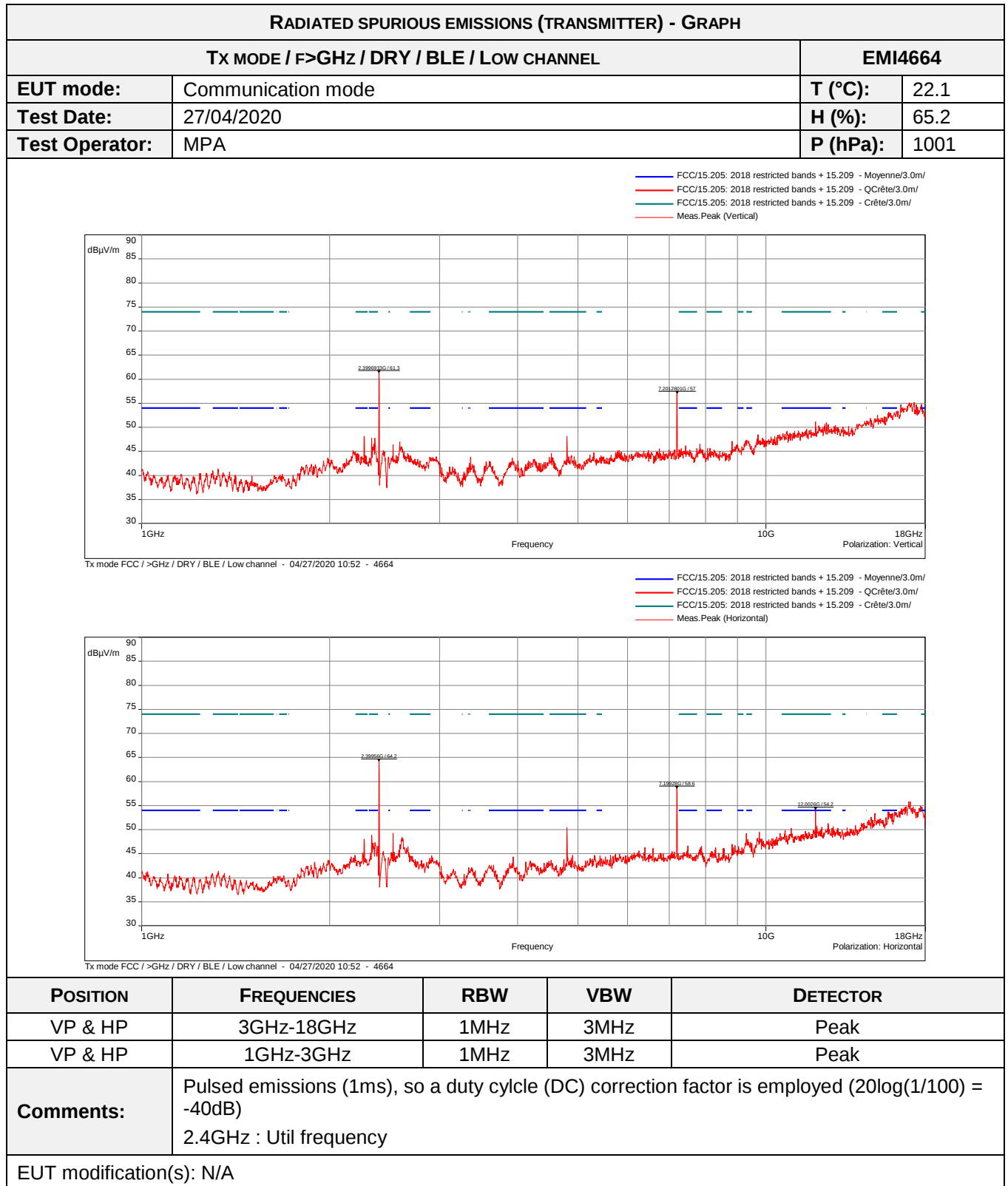




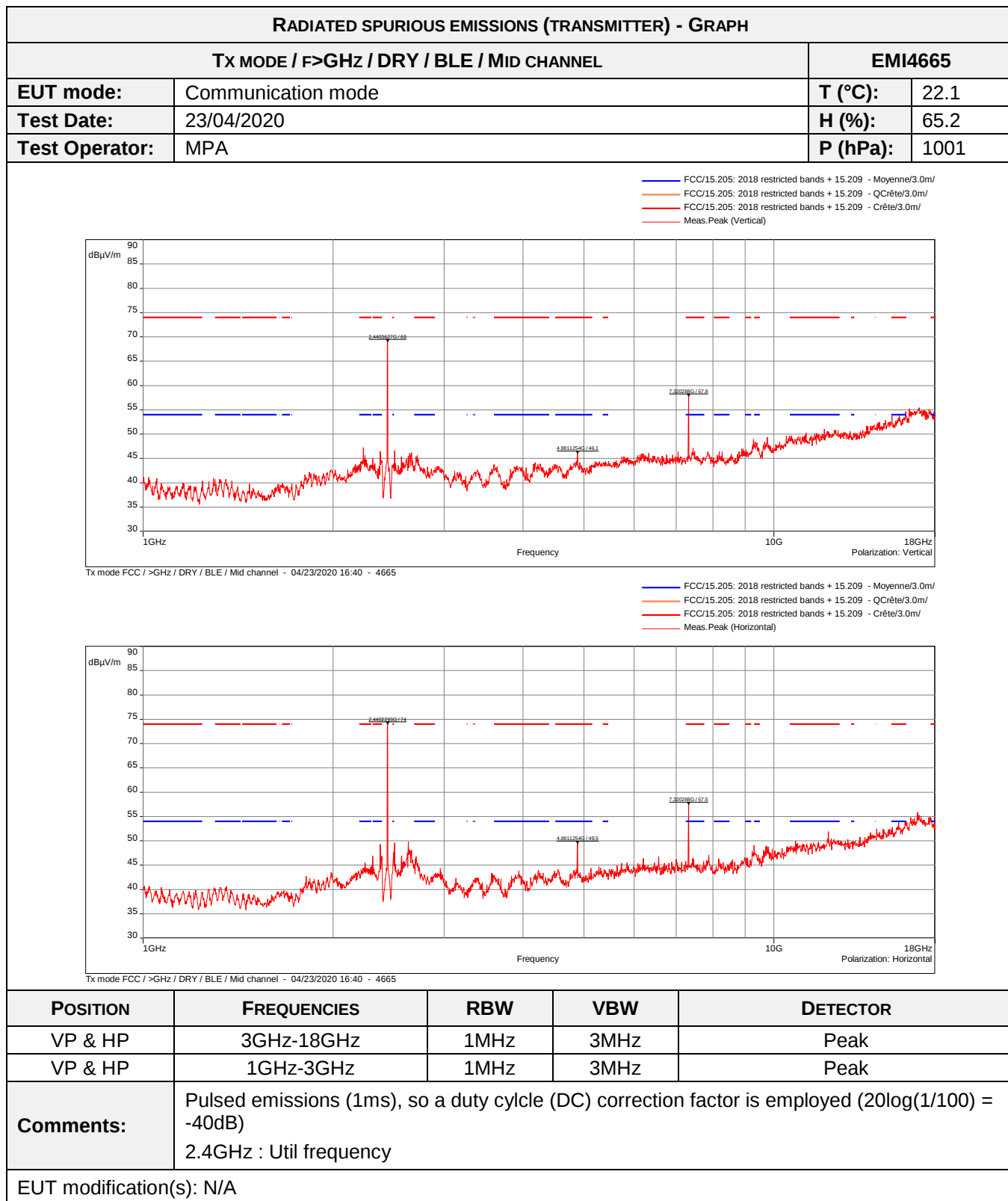


No spurious emissions were detected.

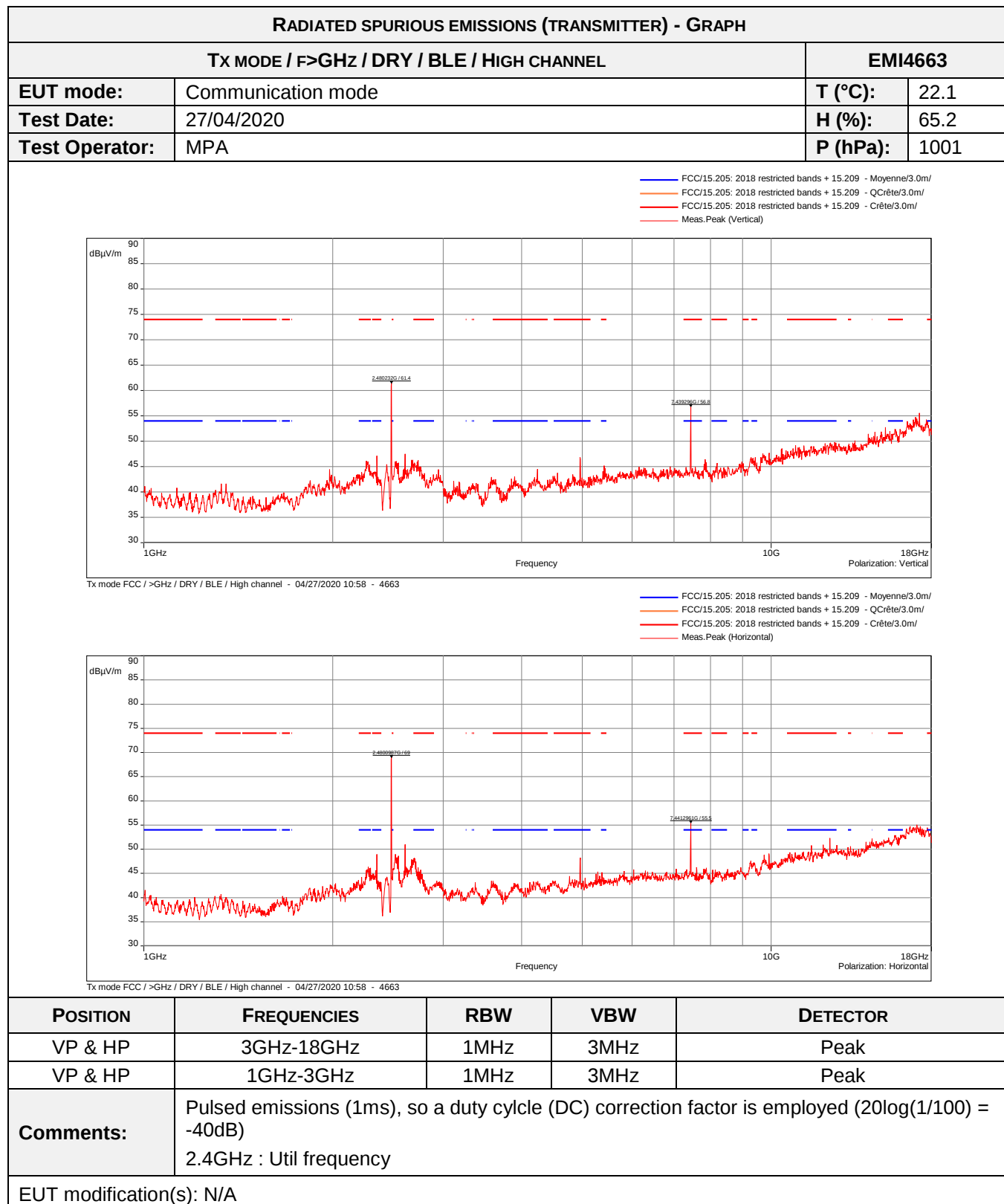
Spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported



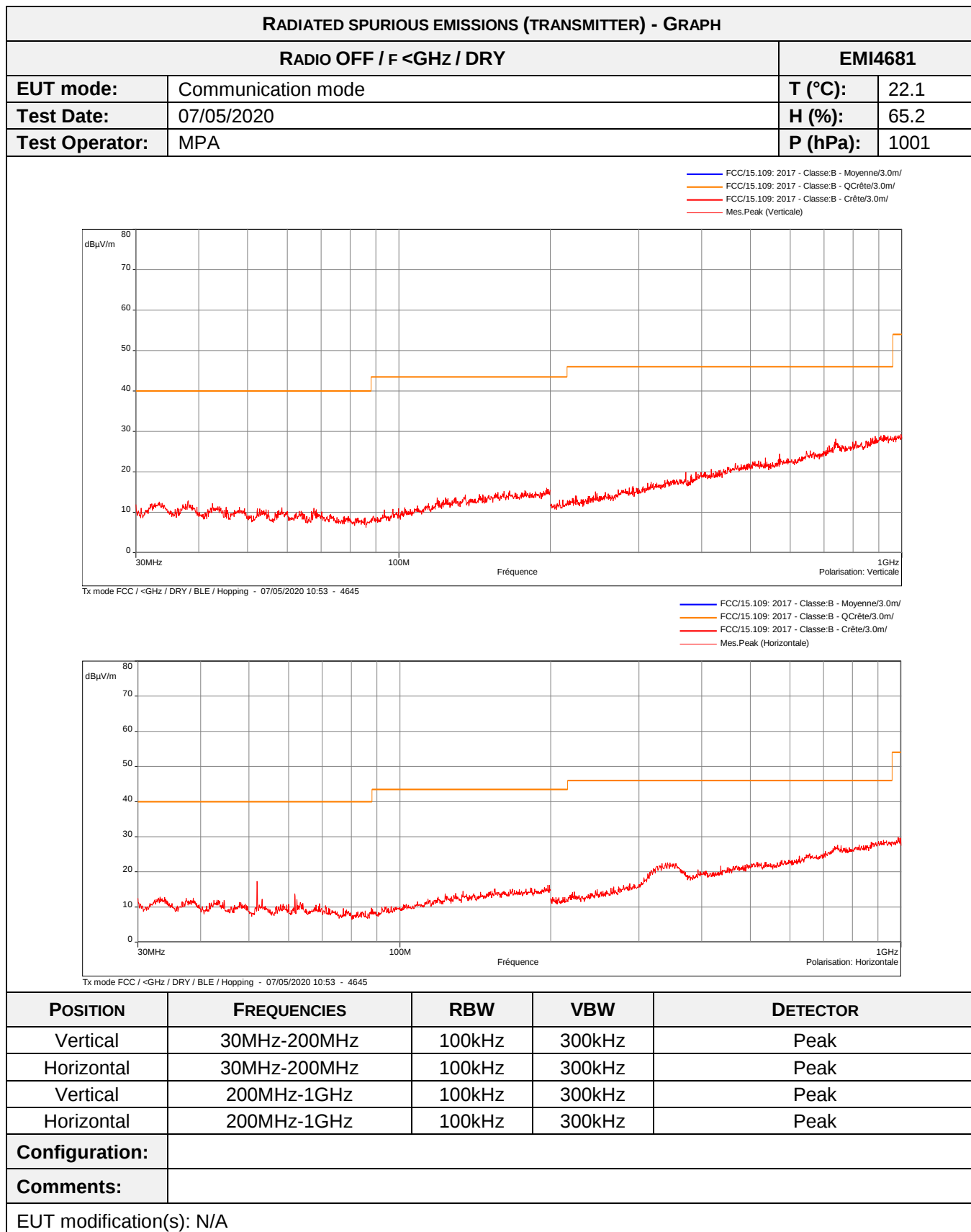
Tx MODE / F<GHz / ALL CHANNELS – RESULTS TABLE					
Frequency (MHz)	Polarisation	Peak (dBμV/m)	Peak Limit (dBμV/m)	DC Averaging (dBμV/m)	Average limit (dBμV/m)
12002	Horizontal	54.2	74	14.2	54



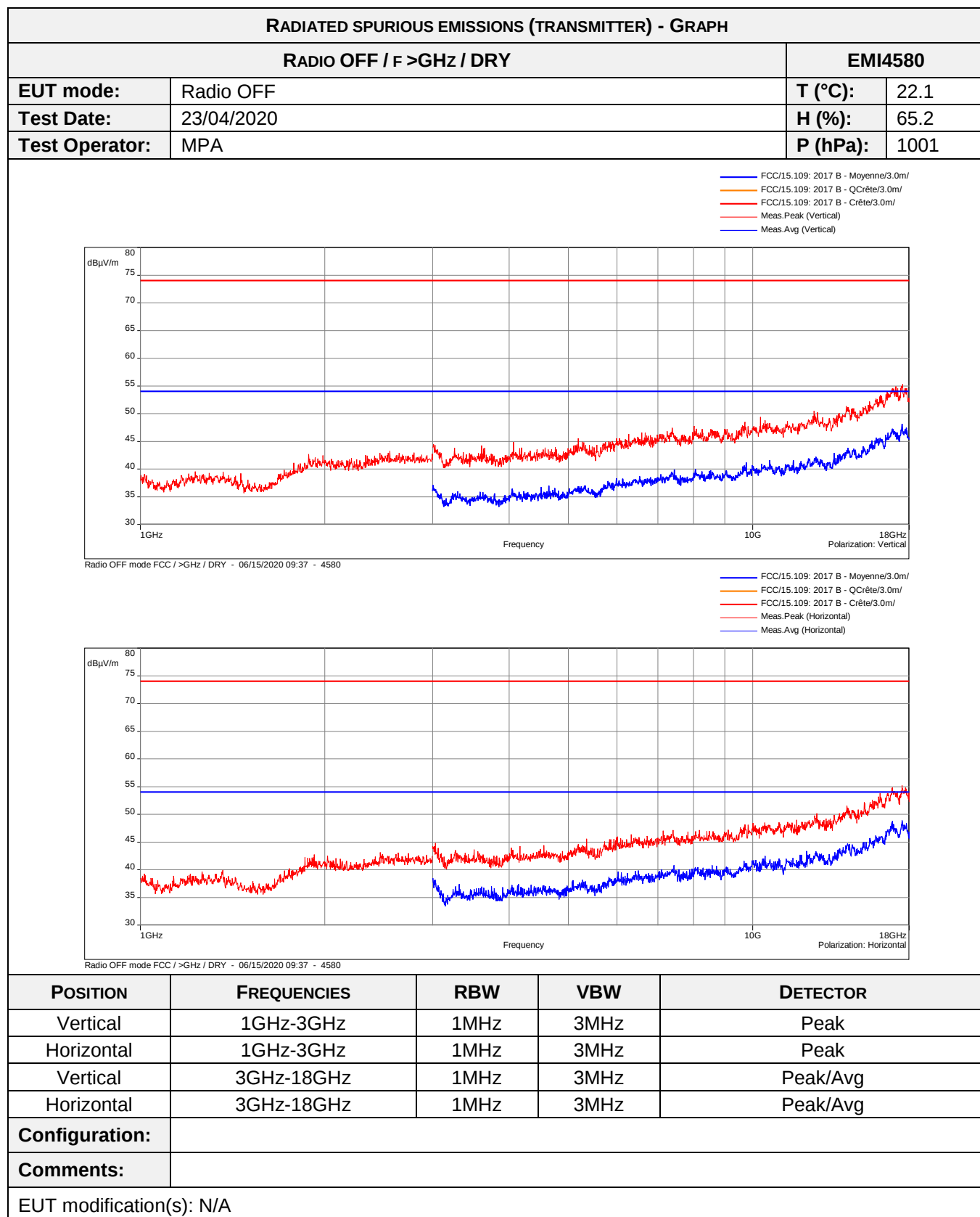
TX MODE / F<GHz / ALL CHANNELS – RESULTS TABLE					
Frequency (MHz)	Polarisation	Peak (dBμV/m)	Peak Limit (dBμV/m)	DC Averaging (dBμV/m)	Average limit (dBμV/m)
7320	Vertical	57.8	74	17.8	54
7320	Horizontal	57.5	74	17.5	54



Tx MODE / F<GHz / ALL CHANNELS – RESULTS TABLE					
Frequency (MHz)	Polarisation	Peak (dBμV/m)	Peak Limit (dBμV/m)	DC Averaging (dBμV/m)	Average limit (dBμV/m)
7441	Vertical	56.8	74	16.8	54
7441	Horizontal	55.5	74	15.5	54



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

9.2. Maximum peak conducted power of the intentional radiator

a) NORMAL TESTS CONDITIONS

Reference standard:	FCC part 15 Radio part 15.247 and RSS-247
Test method:	FCC part 15.247, RSS-247 and ANSI C63.4: 2013
Test description: b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode. For conducted measurement, EUT is connected to the measuring receiver via 50Ω attenuator(s). Only the highest levels are recorded. For radiated measurement, 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
RF Power / BLE / Low channel	2.3975GHz-2.4025GHz	1W (30dBm)	EMI4667	PASS
RF Power / BLE / Mid channel	2.4375GHz-2.4425GHz	1W (30dBm)	EMI4666	PASS
RF Power / BLE / High channel	2.4775GHz-2.4825GHz	1W (30dBm)	EMI4668	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: EUT has its dedicated internal PCB antenna, due to this, this measurement was done in radiated by the substitution method.		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	8387	24/07/2019	24/09/2022
Antenna Mast	HD GmbH	HD 100	2342		
Attenuator	EMITECH	SUB.V1-H	14780	09/01/2019	09/09/2020
Attenuator	EMITECH	SUB.V1-V	14781	09/01/2019	09/09/2020
Cable	MegaPhase	F135N1N28	16668	25/10/2019	25/12/2021

CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Cable	SUCOFLEX	N-3m	14378	25/06/2019	25/08/2021
Cable	SUCOFLEX	N-3m	14379	25/06/2019	25/08/2021
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
Receiver	Agilent Technologies	E4440A	5824	24/04/2018	24/06/2020
Shielded enclosure	RAY PROOF	C.V1	1123		
Software	Nexio		0000		
Thermohygrometer	Testo	608-H1	7561	25/01/2019	25/03/2021
Thermohygrometer	Bioblock Scientific	Météostar	0963	25/01/2019	25/03/2021

BAT-EMC software version: V3.18.0.26

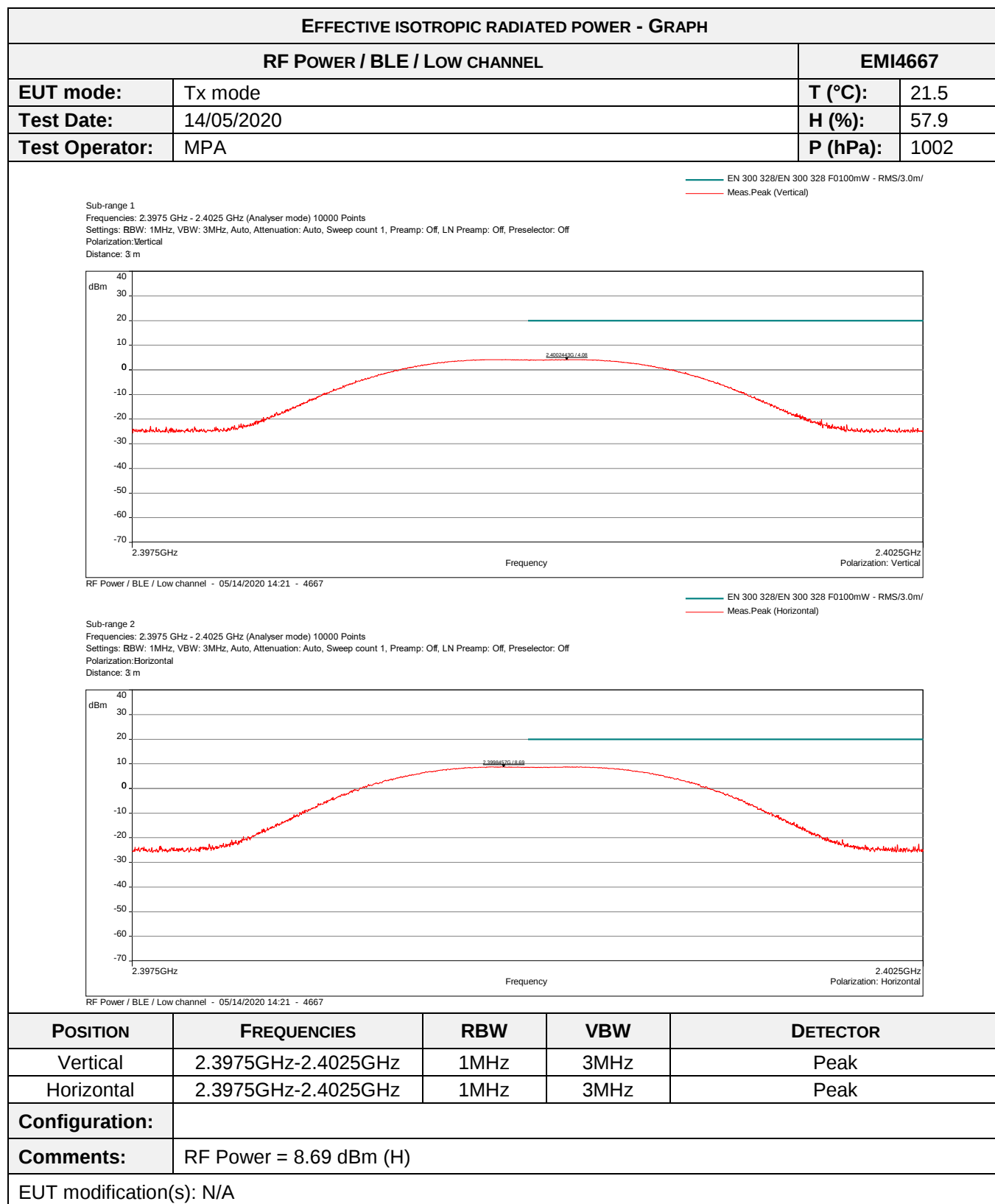
Blank cells = Permanent validity

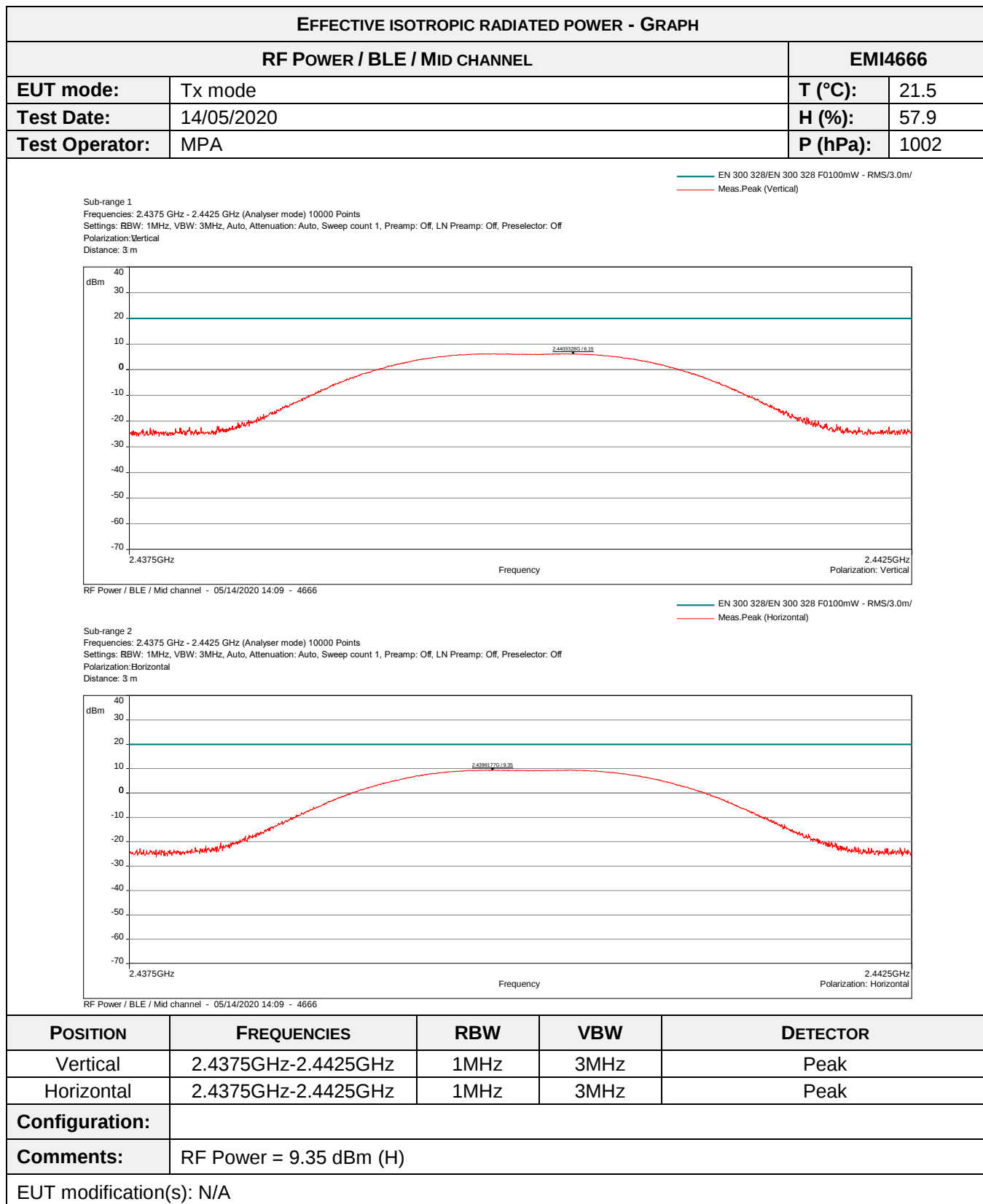
TEST SETUP PHOTO(S)

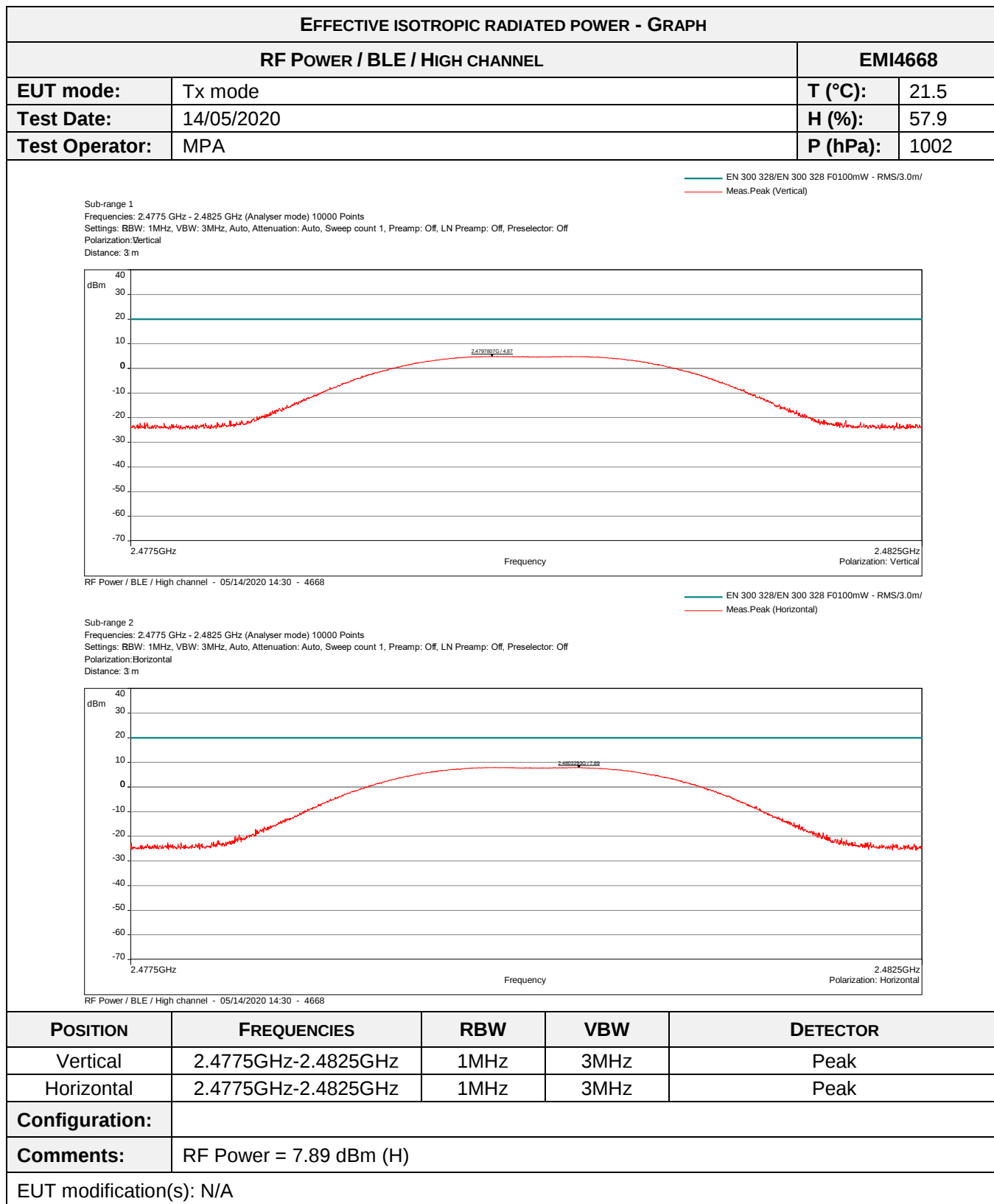


TEST SETUP PHOTO(S)









End of test report