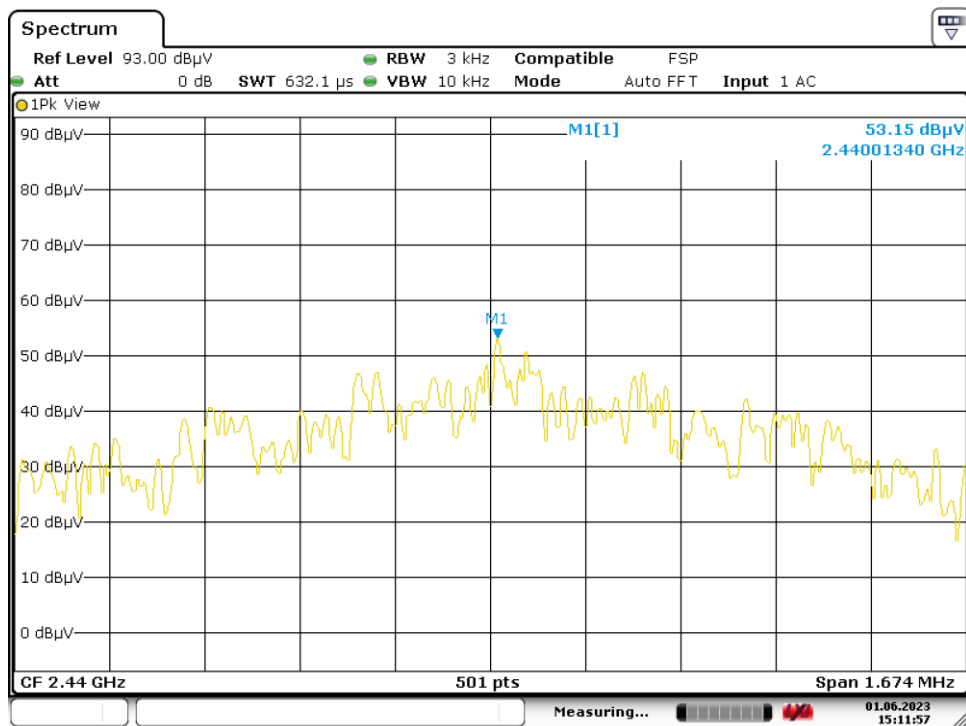
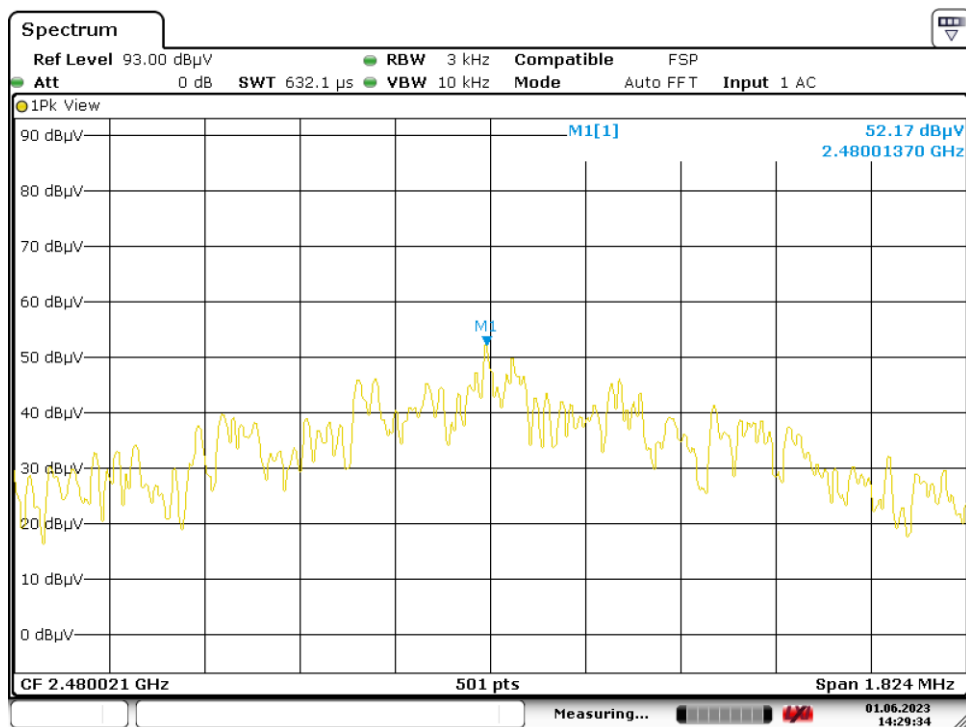




Date: 1.JUN.2023 15:11:58



Date: 1.JUN.2023 14:29:35

6.4. Additional provisions to the general radiated emissions limitation

Reference standard:	FCC 47 CFR PART 15 : 2022 RSS-247 Issue 2 : 2017
Test method:	§ 15.215 (c) and § 15.247 d) of FCC 47 CFR PART 15 : 2022 § 5.5 of RSS-247 Issue 2 : 2017
General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane. Measurement are done on a normalized test site. 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.	

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	23.5°C
Relative Humidity	10 to 90 %	44.5%
Atmospheric pressure	N/A	1019 hPa
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED					
Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
0941	Antenna	Emco	3115	01/03/2022	01/05/2025
17270	Cable	Huber + Suhner	N-6m	10/06/2022	10/08/2024
14228	Cable	C&C	N-4m	10/06/2022	10/08/2024
17272	Cable	Huber + Suhner	N-10m	01/07/2022	01/09/2024
14768	Receiver	Rohde & Schwarz	ESR7	02/01/2023	02/03/2024
14803	Shielded enclosure	Comtest	SAC 3m		

Blank cells = Permanent validity

Band Edge measurement :

For UltralightX Medium

Polarization of test antenna: Vertical (height = 150 cm) } For 2402 MHz
Position of equipment: azimuth = 305° }

Polarization of test antenna: Vertical (height = 170 cm) } For 2480 MHz
Position of equipment: azimuth = 305° }

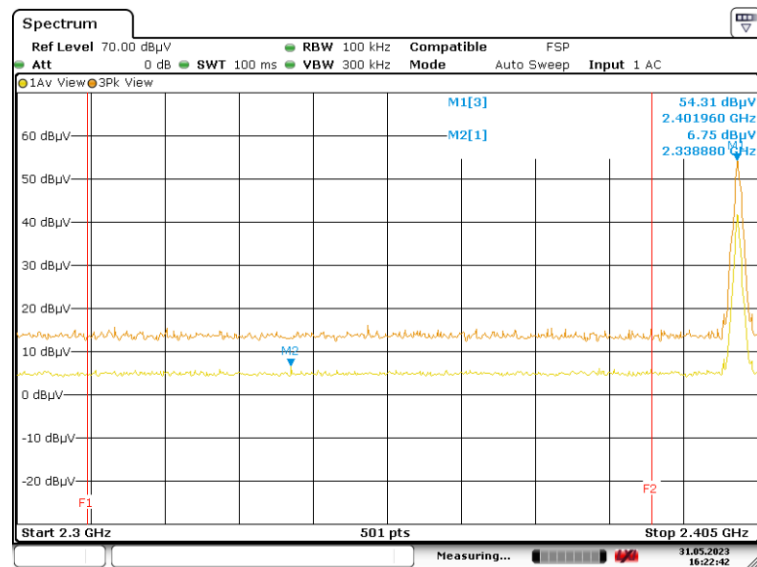
For UltralightX Dongle

Polarization of test antenna: Vertical (height = 125 cm) } For 2402 MHz
Position of equipment: azimuth = 260° }

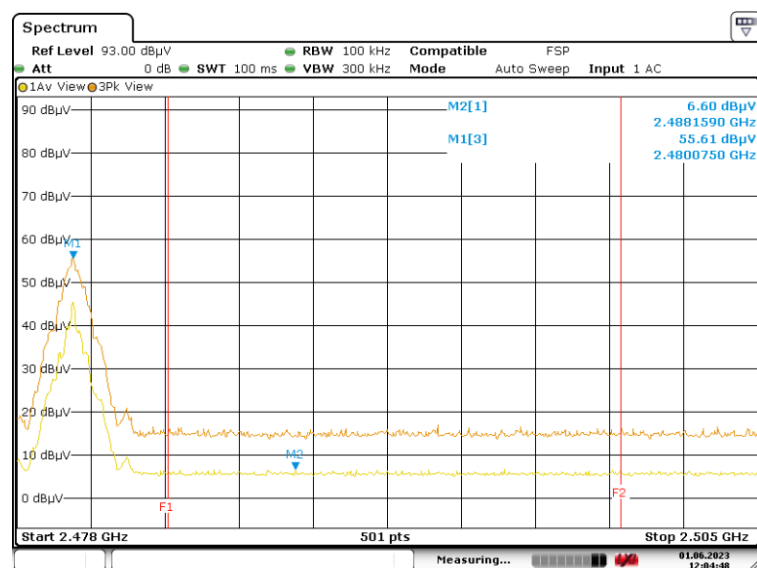
Polarization of test antenna: Vertical (height = 155 cm) } For 2480 MHz
Position of equipment: azimuth = 260° }

E.U.T.	Frequency (MHz)	Field Strength Level of fundamental (dBμV/m)	Detector (Peak or Average)	Frequency of maximum Band-edges Emission (MHz)	Calculated Max Out of Band Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
UltralightX Medium	2401.96	89.7	Average	2338.9	41.5	54	12.5
	2480.08	91.3	Average	2488.2	41.9	54	12.1
UltralightX Dongle	2401.96	102.4	Average	2338.0	41.1	54	12.9
	2480.02	102.3	Average	2484.4	42.1	54	11.9

For UltralightX Medium

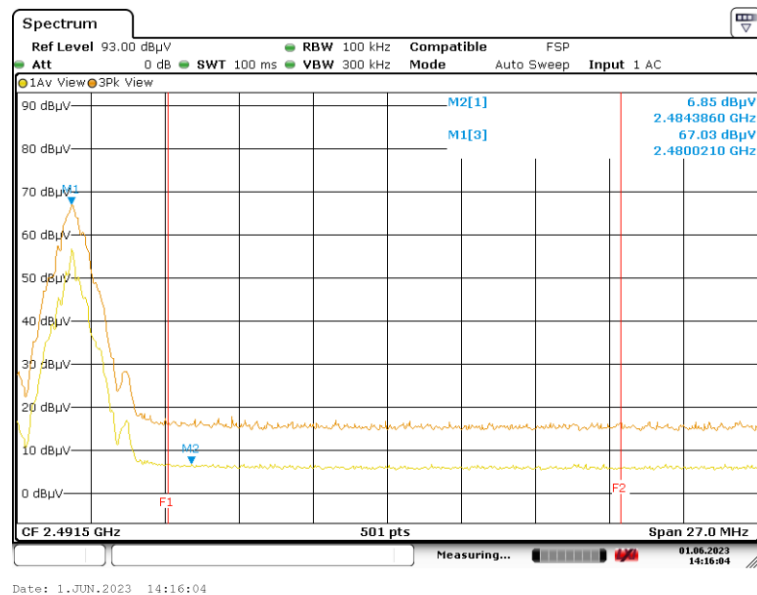
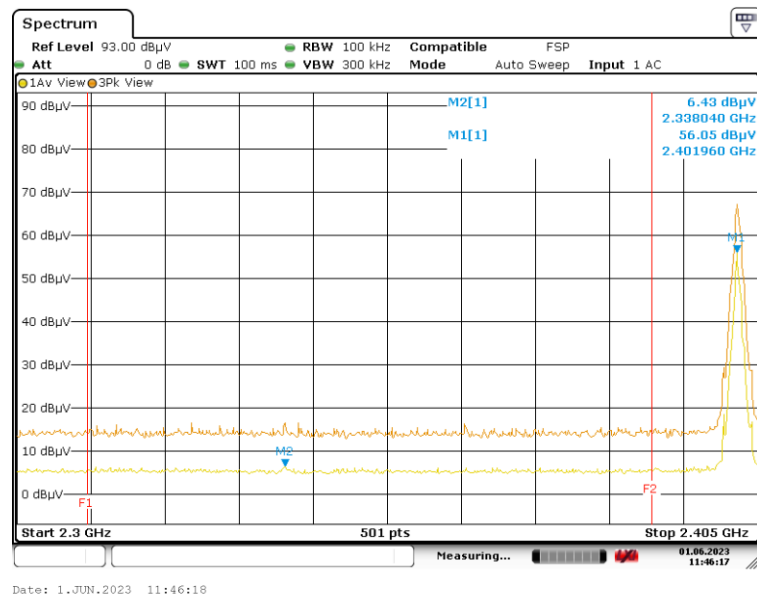


Date: 31.MAY.2023 16:22:42



Date: 1.JUN.2023 12:04:49

For UltralightX Dongle



6.5. Unintentional radiated emissions and transmitter unwanted emission in the band 9 kHz – 26 GHz

Reference standard:	FCC 47 CFR PART 15 : 2022 RSS-Gen Issue 5 : 2019
Test method:	§ 15.205; § 15.209 and § 15.247 of FCC 47 CFR PART 15 : 2022 § 6.13 of RSS-Gen Issue 5 : 2019
General test setup: E.U.T. is set on an insulating support at 0.8 m (<1GHz) and 1.5 m (>1GHz) above the ground reference plane. For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane for 9 kHz - 26 GHz. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization.	

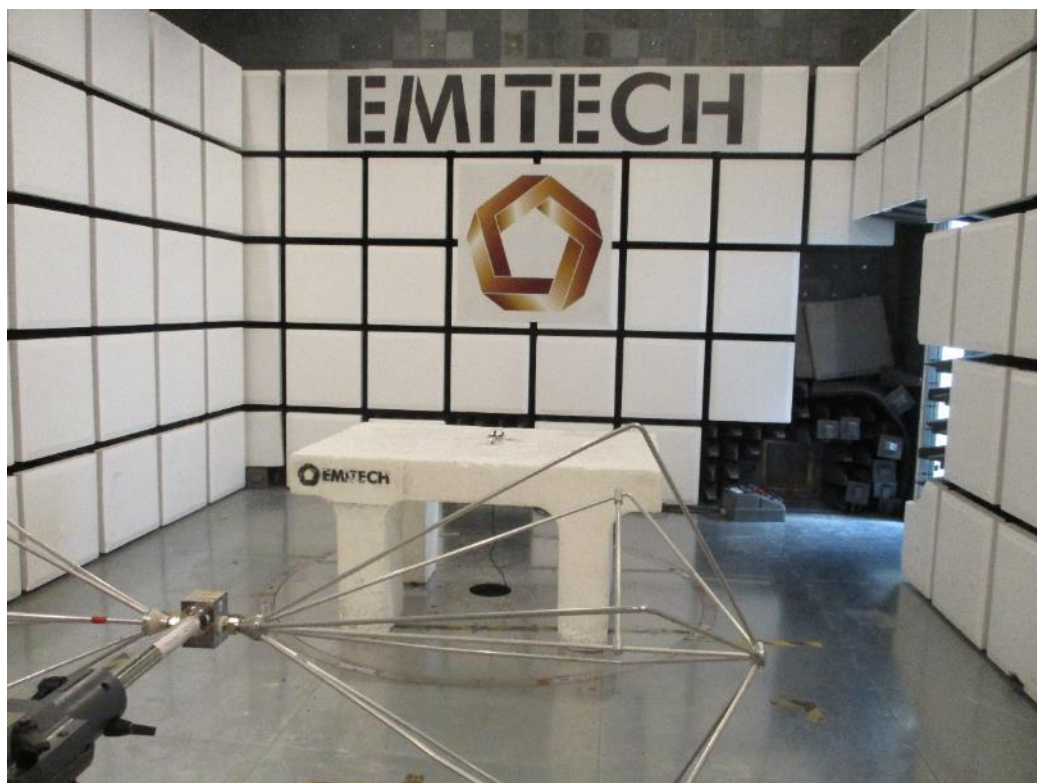
TESTED CONFIGURATION	PARAMETER	VERDICT
Maxhold 360° - Tx 2402 MHz channel - UltralightX Medium	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2440 MHz channel - UltralightX Medium	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2480 MHz channel - UltralightX Medium	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2402 MHz channel - UltralightX Dongle	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2440 MHz channel - UltralightX Dongle	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2480 MHz channel - UltralightX Dongle	9kHz-30MHz	N/A (1)
Maxhold 360° - Tx 2402 MHz channel - UltralightX Medium	30MHz-1GHz	PASS
Maxhold 360° - Tx 2440 MHz channel - UltralightX Medium	30MHz-1GHz	PASS
Maxhold 360° - Tx 2480 MHz channel - UltralightX Medium	30MHz-1GHz	PASS
Maxhold 360° - Tx 2402 MHz channel - UltralightX Dongle	30MHz-1GHz	PASS
Maxhold 360° - Tx 2440 MHz channel - UltralightX Dongle	30MHz-1GHz	PASS
Maxhold 360° - Tx 2480 MHz channel - UltralightX Dongle	30MHz-1GHz	PASS
Maxhold 360° - Tx 2402 MHz channel - UltralightX Medium	1GHz-26GHz	PASS
Maxhold 360° - Tx 2440 MHz channel - UltralightX Medium	1GHz-26GHz	PASS
Maxhold 360° - Tx 2480 MHz channel - UltralightX Medium	1GHz-26GHz	PASS
Maxhold 360° - Tx 2402 MHz channel - UltralightX Dongle	1GHz-26GHz	PASS
Maxhold 360° - Tx 2440 MHz channel - UltralightX Dongle	1GHz-26GHz	PASS
Maxhold 360° - Tx 2480 MHz channel - UltralightX Dongle	1GHz-26GHz	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	22.4°C
Relative Humidity	10 to 90 %	48%
Atmospheric pressure	N/A	1025 hPa
Test method deviation: No		
Supplementary information: (1) : No EUT internal frequencies on this frequency band.		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Amplifier	Mini-circuit	ZFL-1000LN	0364	15/02/2023	15/04/2024
Amplifier	Agilent	8449B	14487	16/02/2023	16/04/2024
Antenna	Schwarzbeck	VHA 9103	3426	21/04/2023	21/06/2025
Antenna	Schwarzbeck	UHALP 9108A	3106	25/04/2023	25/06/2025
Antenna	Emco	3115	0941	01/03/2022	01/05/2025
Antenna	Oritel	CM 42/25	1045	01/03/2022	01/05/2025
Cable	Sucoflex	N-3m	12929	04/07/2023	04/09/2024
Cable	C&C	N-12m	11173	09/09/2022	09/11/2024
Cable	Huber + Suhner	N-6m	17271	20/06/2022	20/08/2024
Cable	C&C	K-2m	11132	23/09/2022	23/11/2024
Cable	C&C	K-4m	11134	23/09/2022	23/11/2024
Filter	Micro-Tronics	HPM 14758	4691	13/06/2022	13/08/2025
Shielded enclosure	Comtest	SAC 3m	14803		
Software	Nexio	BAT EMC	0000		
Spectrum analyzer	Rohde & Schwarz	ESR7	12811	22/05/2023	22/07/2024
Spectrum analyzer	Rohde & Schwarz	FSP40 (V 4.00SP1-V3.0-10-2)	5175	16/03/2023	16/05/2025

BAT-EMC software version: V3.18.0.26
Blank cells = Permanent validity

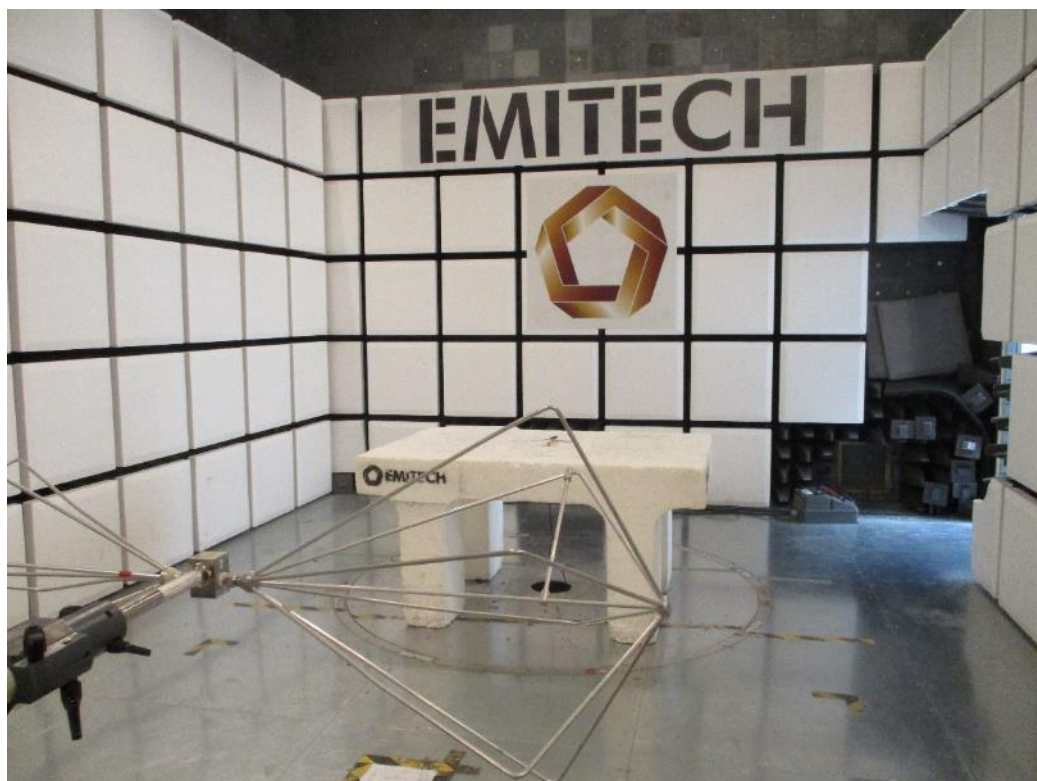
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX DONGLE
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX DONGLE
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 26 GHz



TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 26 GHz

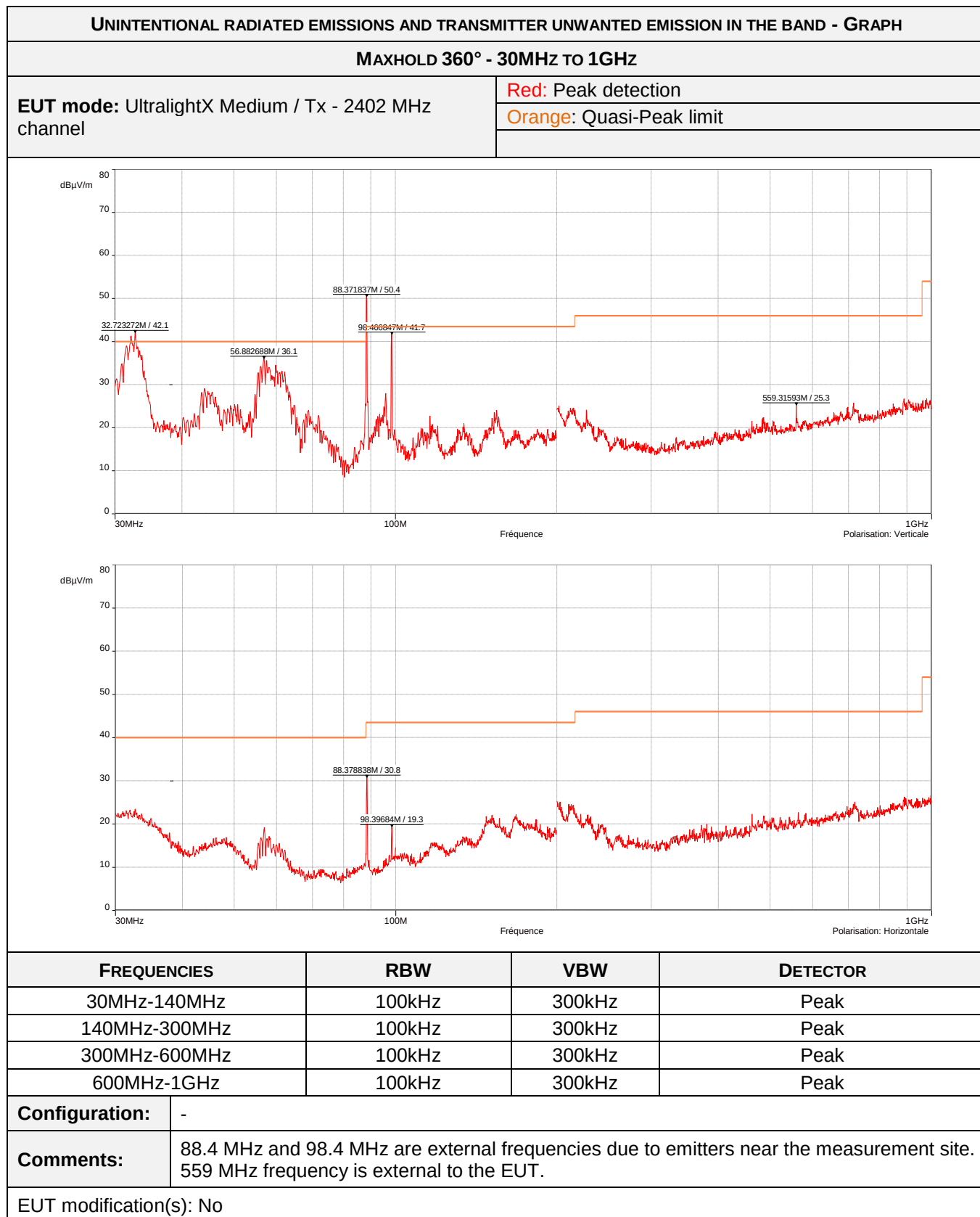


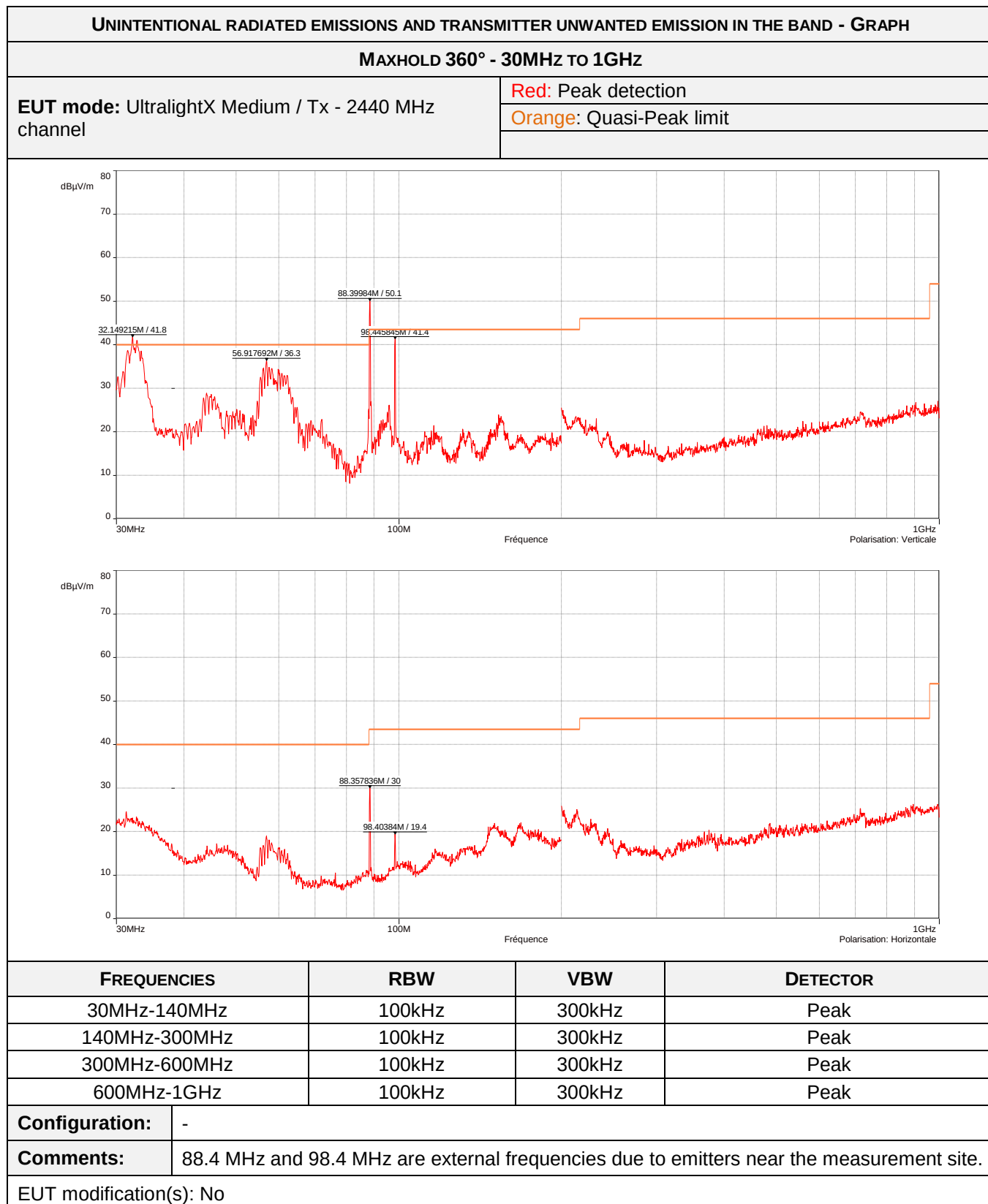
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 26 GHz

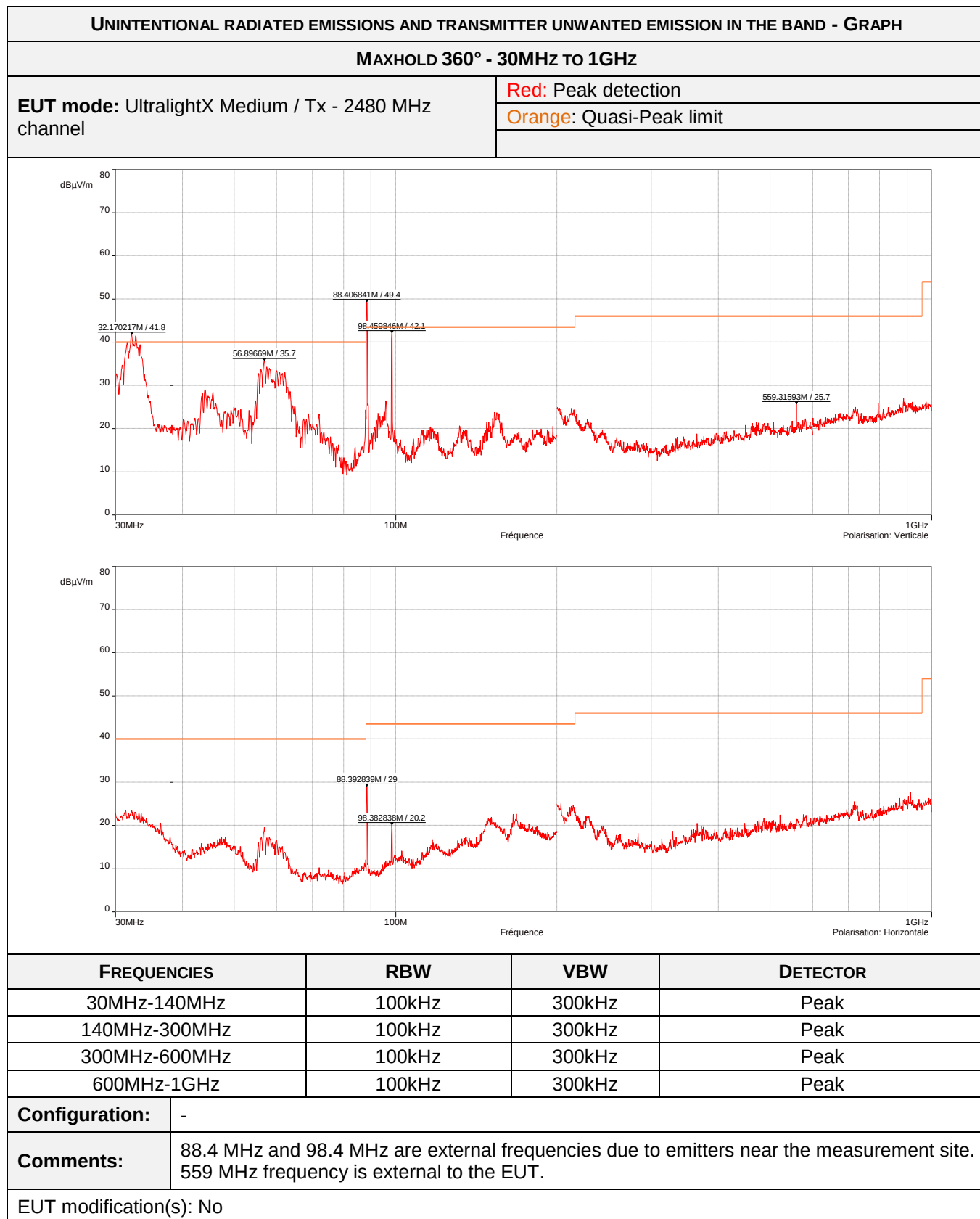


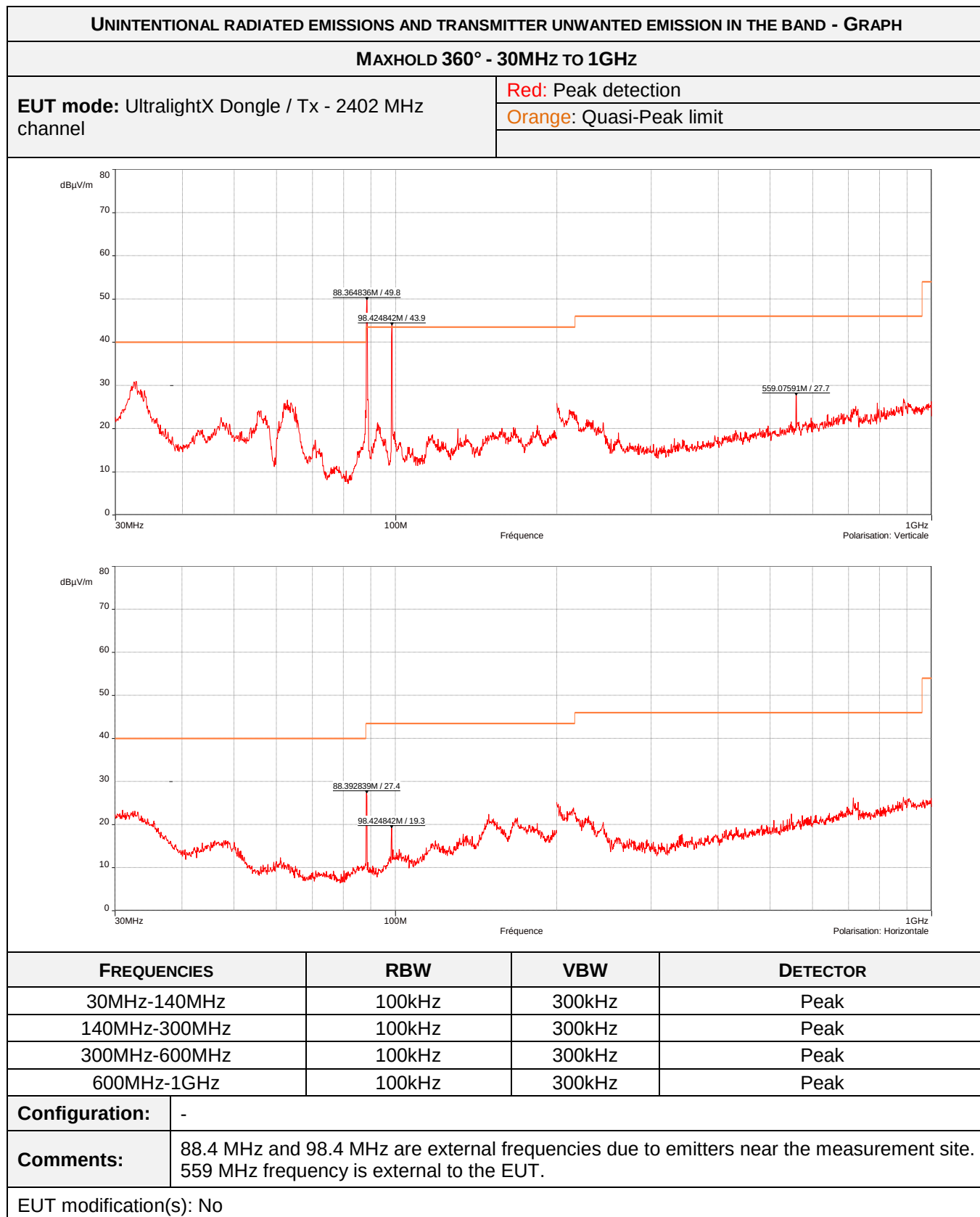
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 26 GHz

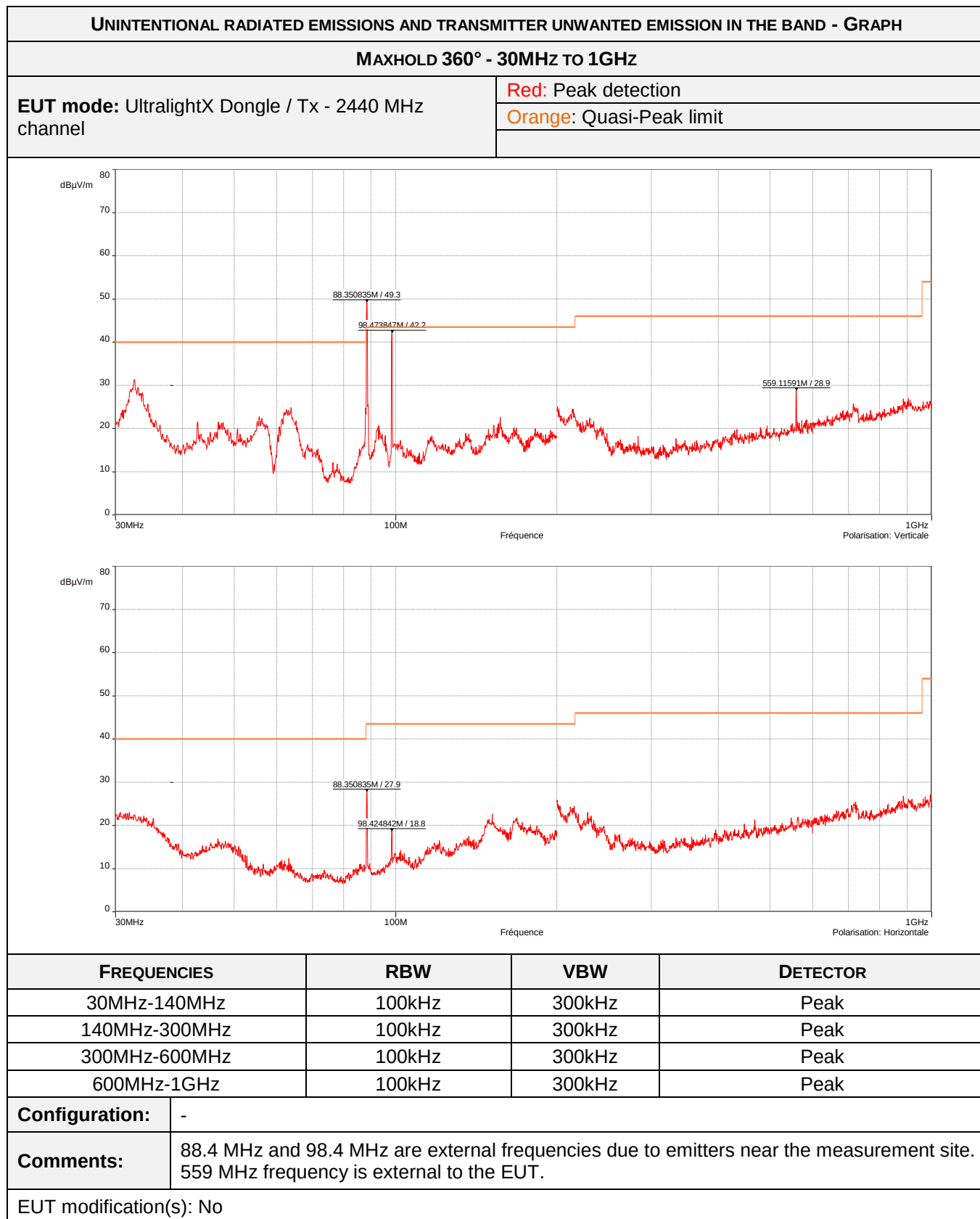


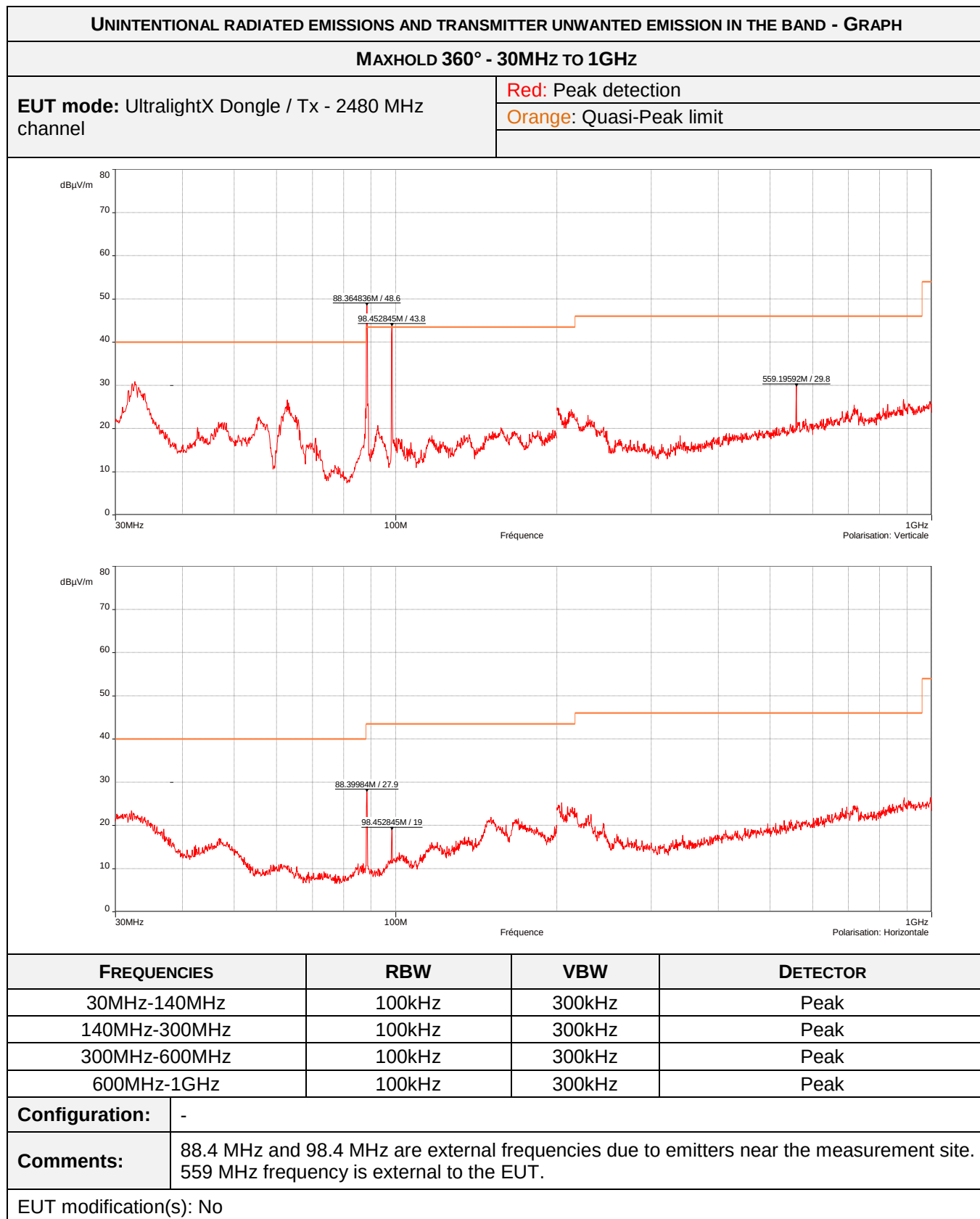


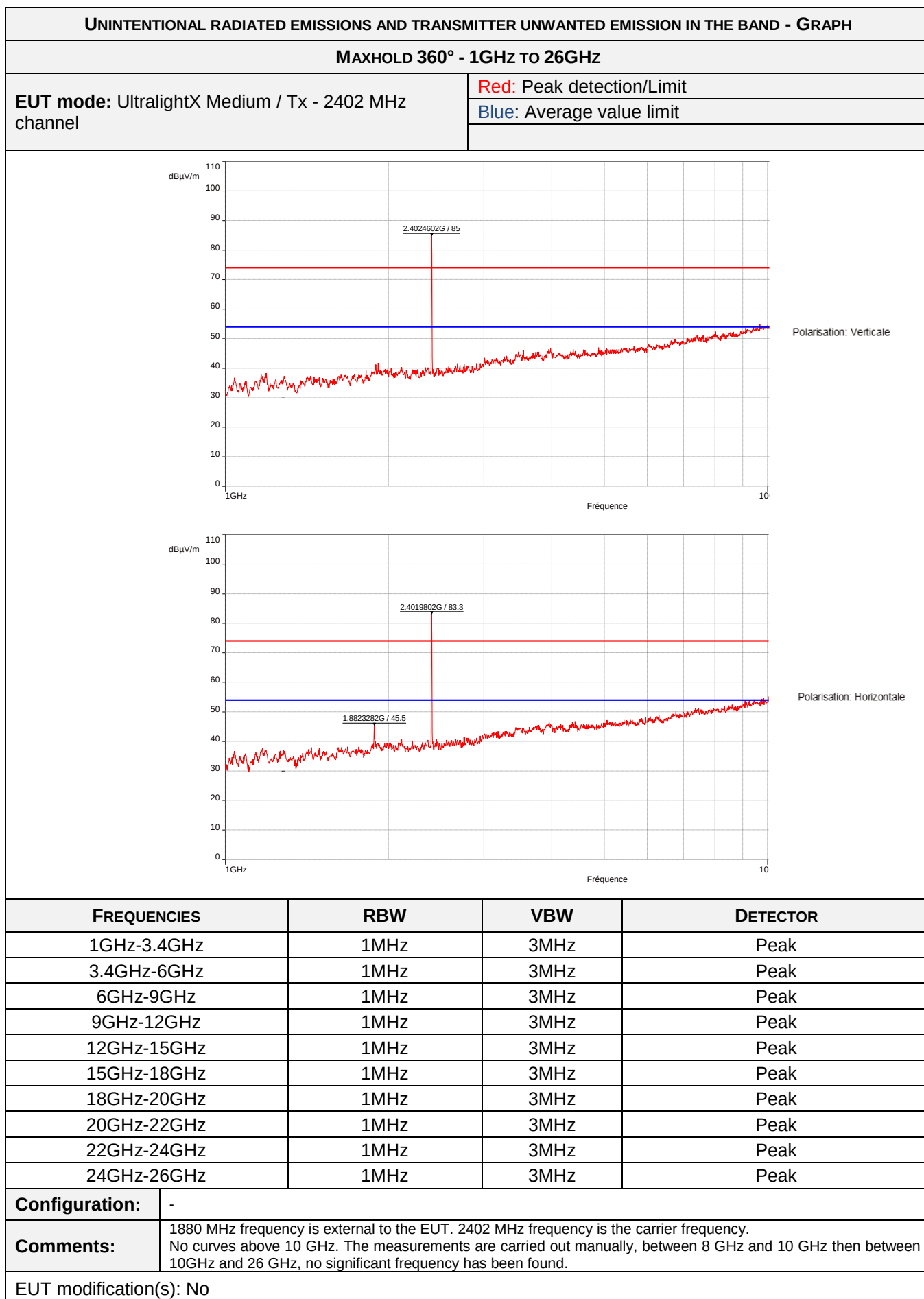


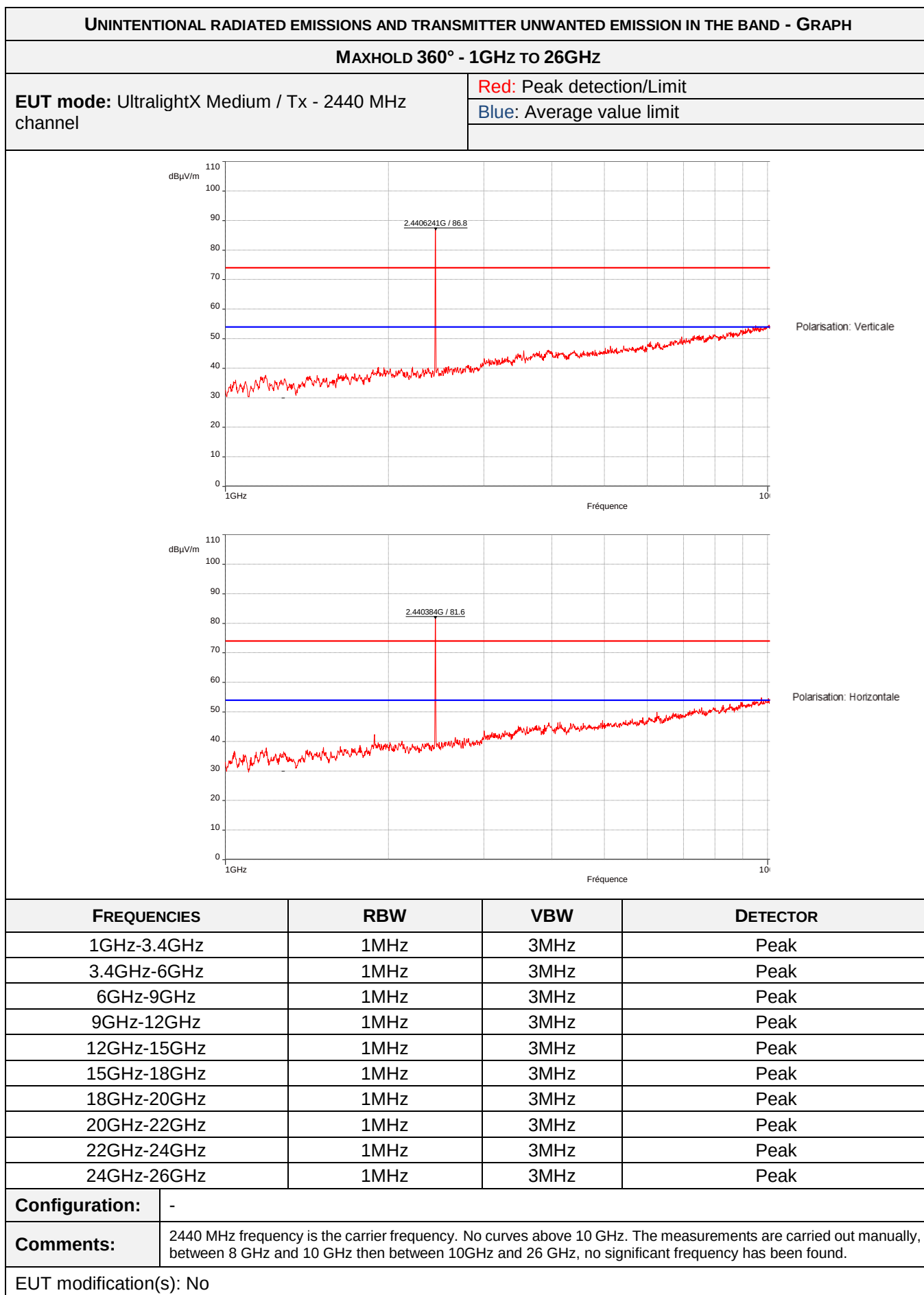


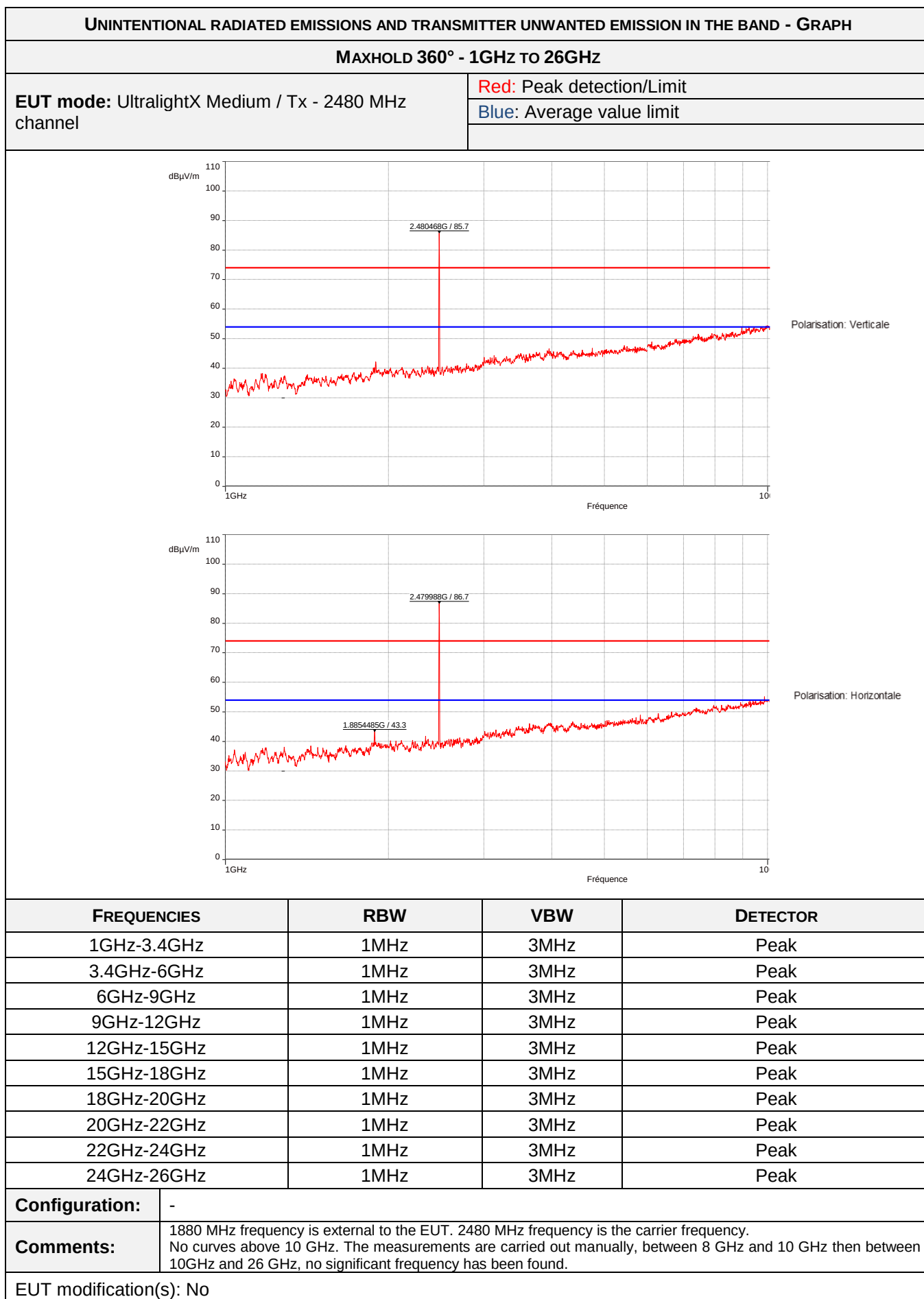


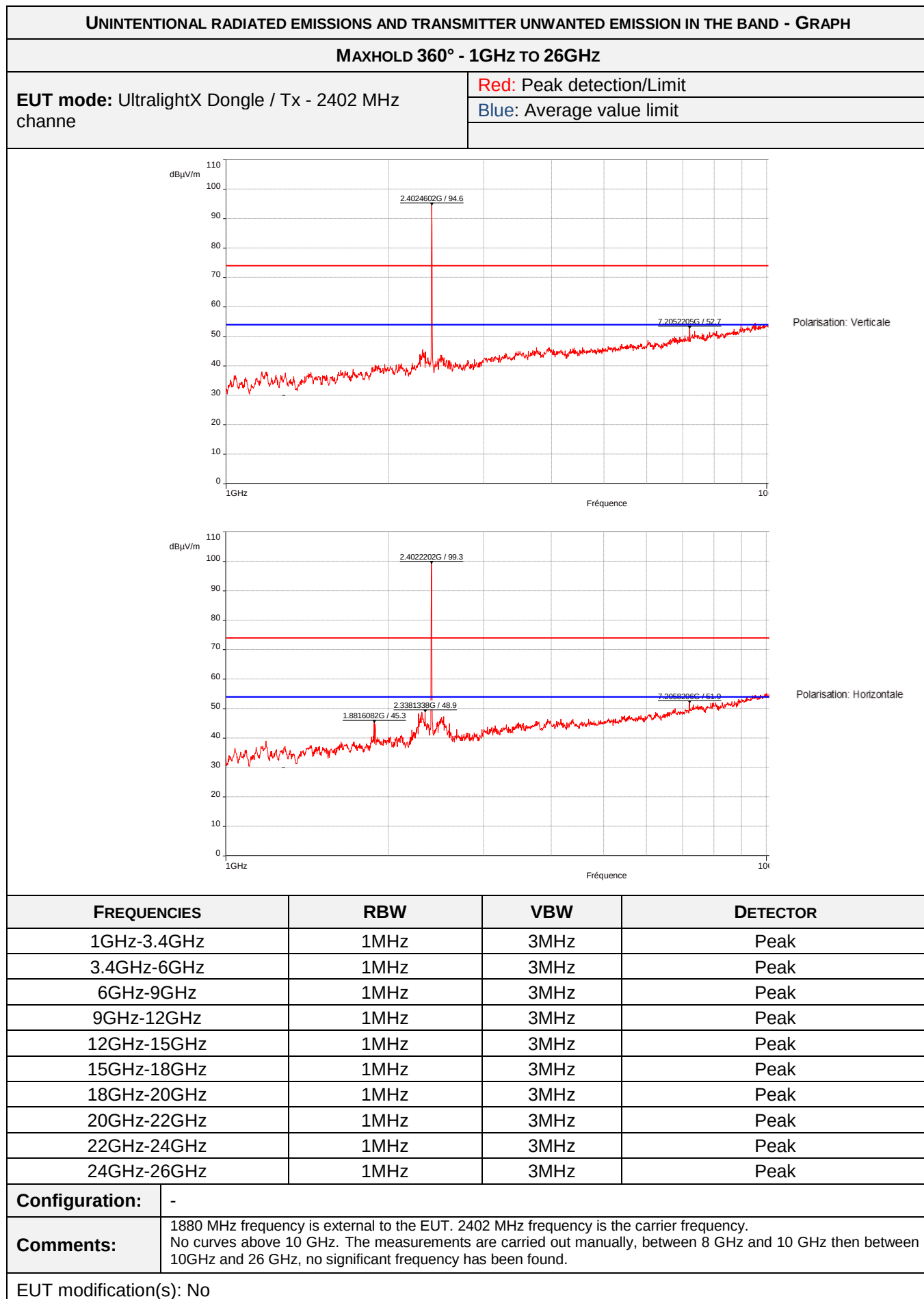


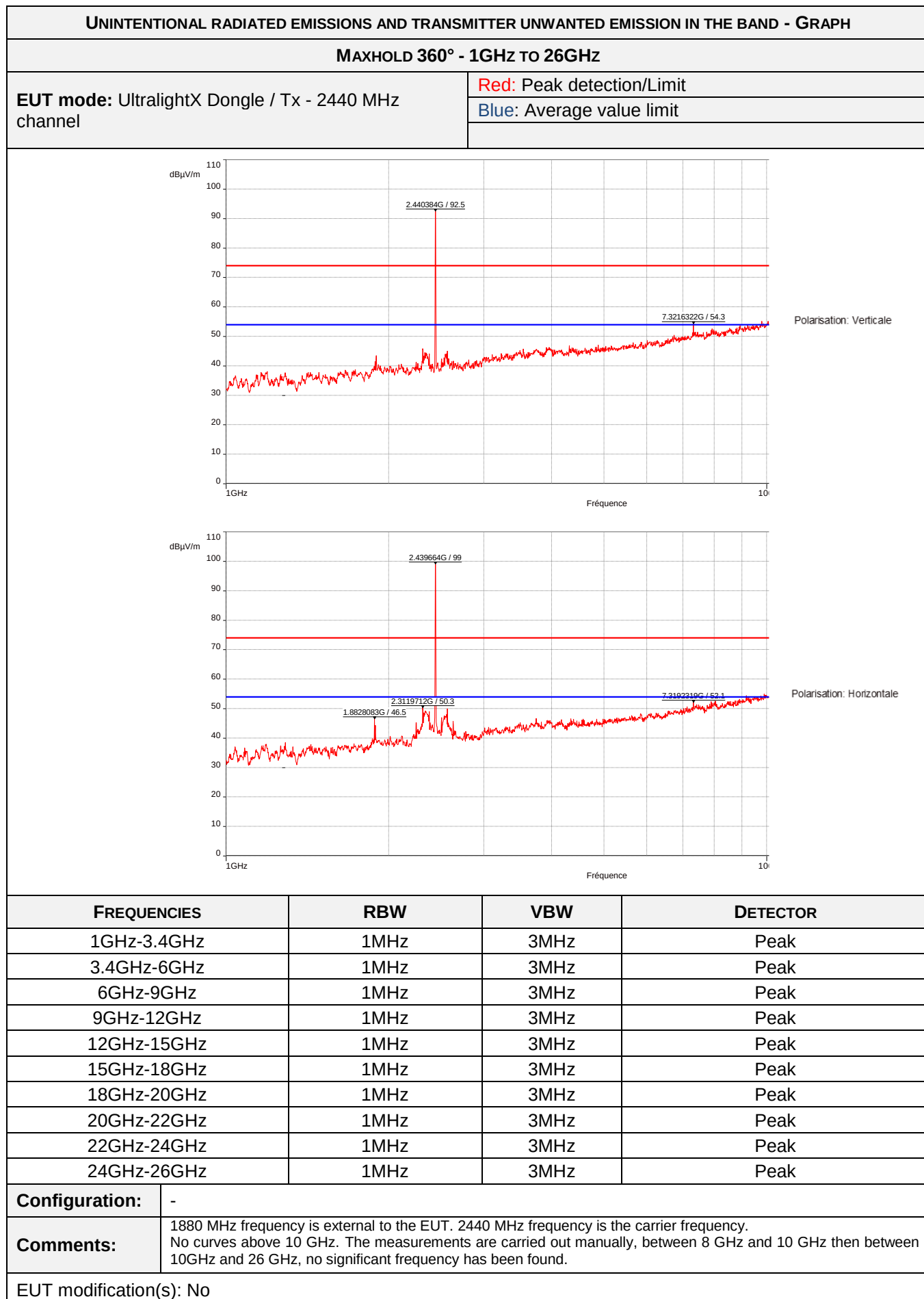


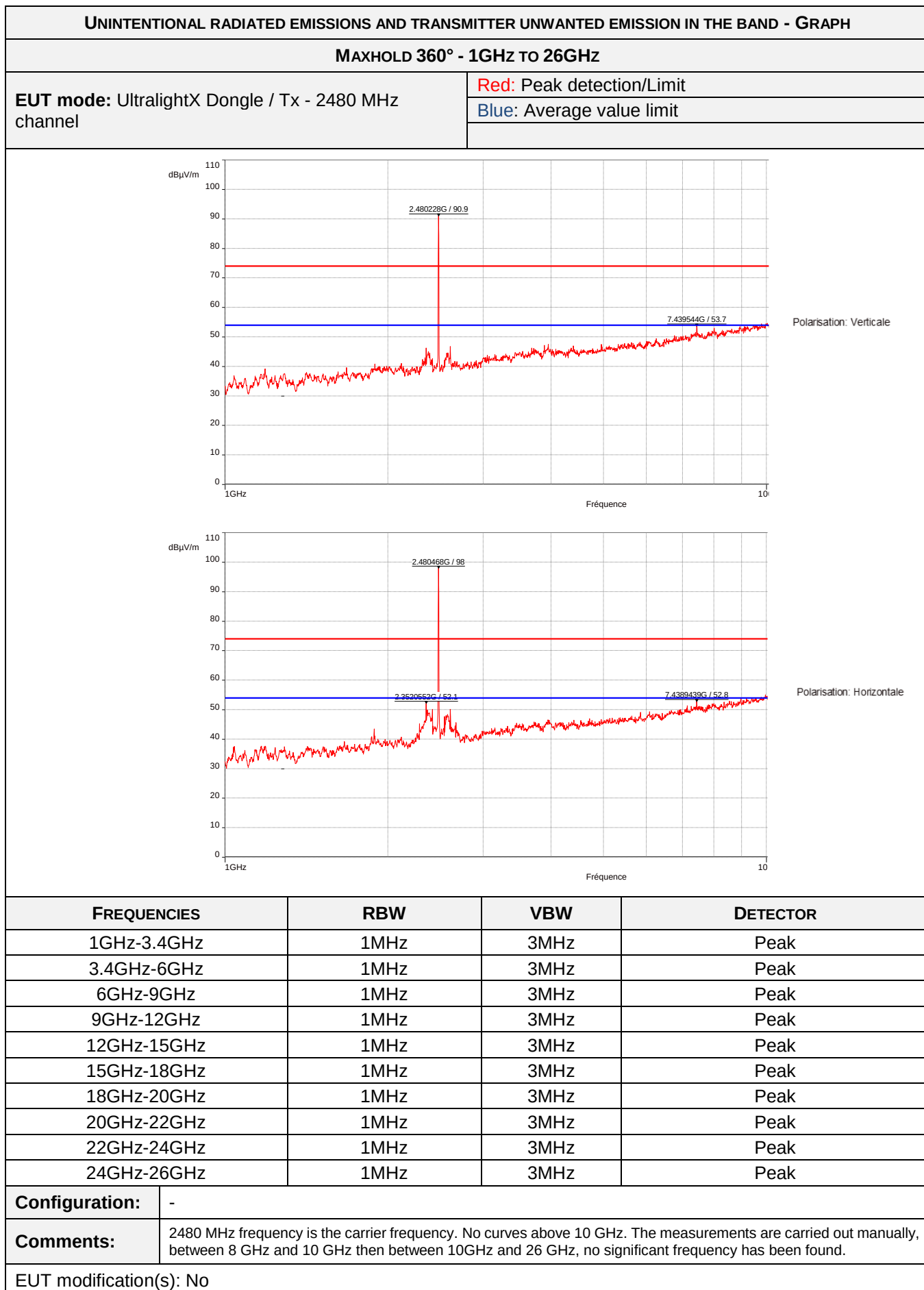












Nota : some frequencies are not necessarily recorded in the table because they have more than 10 dB of the margin with the limit. This is the case for frequencies that are not part of the restrictive bands of §15.205 of FCC 47 CFR PART 15 and therefore, which are compared to the limit of 74dB μ V/m.

Channel 2402 MHz

Frequency (MHz)	Detector mode	Height (cm)	Polarization (H or V)	Azimuth (°)	Electro-magnetic field (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
32.16	Quasi-Peak	100	V	80	36.1	40.0	3.9
2338.13	CISPR Av	150	H	230	44.0	54.0	10.0
7205.82	CISPR Av	150	V	300	48.3	54.0	5.7

H : Horizontal – V : Vertical

Channel 2440 MHz

Frequency (MHz)	Detector mode	Height (cm)	Polarization (H or V)	Azimuth (°)	Electro-magnetic field (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2311.97	CISPR Av	150	H	20	45.4	54.0	8.6
7321.63	CISPR Av	150	V	300	48.5	54.0	5.5

H : Horizontal – V : Vertical

Channel 2480 MHz

Frequency (MHz)	Detector mode	Height (cm)	Polarization (H or V)	Azimuth (°)	Electro-magnetic field (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
56.89	Quasi-Peak	100	V	180	33.1	40.0	6.9
2352.06	CISPR Av	150	H	230	47.7	54.0	6.3
7439.54	CISPR Av	150	V	290	47.1	54.0	6.9

H : Horizontal – V : Vertical

6.6. Unintentional radiated emissions in the band 30 MHz – 13 GHz

Reference standard:	FCC 47 CFR PART 15 : 2022 RSS-Gen Issue 5 : 2019
Test method:	§ 15.109 of FCC 47 CFR PART 15 : 2022 § 6.13 of RSS-Gen Issue 5 : 2019
General test setup: E.U.T. is set on an insulating support at 0.8 m (<1GHz) and 1.5 m (>1GHz) above the ground reference plane. For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane for 30 MHz - 13 GHz. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization.	

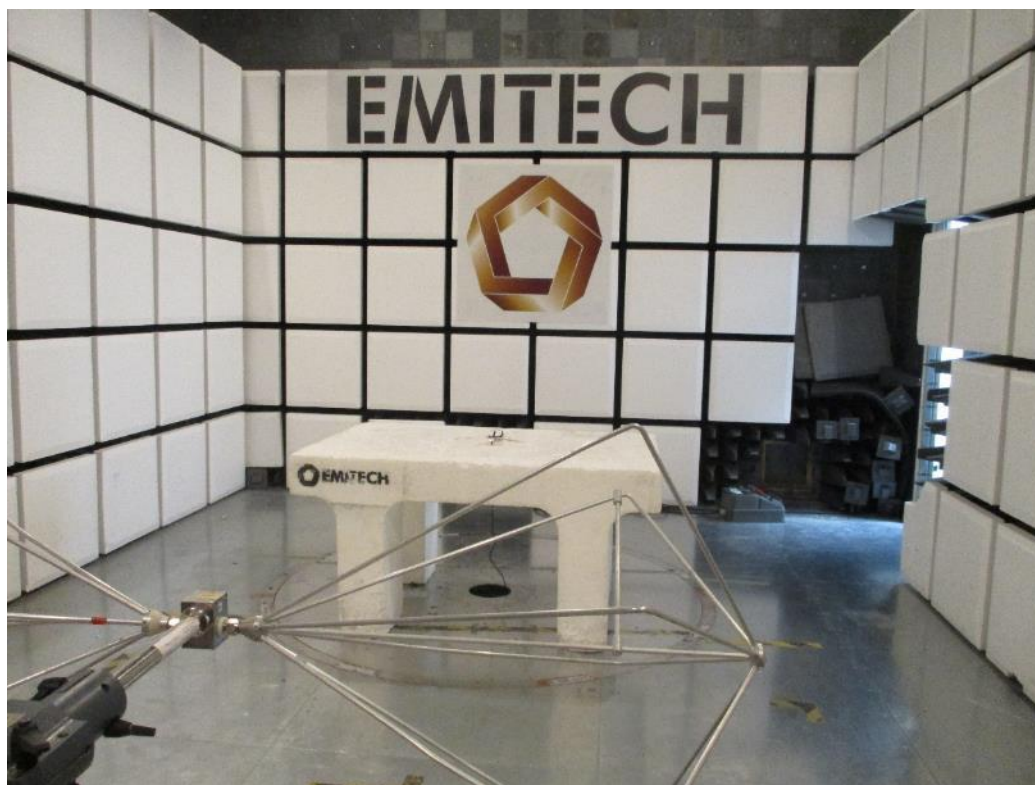
TESTED CONFIGURATION	PARAMETER	VERDICT
Maxhold 360° - Radio Off - UltralightX Medium	30MHz-1GHz	PASS
Maxhold 360° - Radio Off - UltralightX Dongle	30MHz-1GHz	PASS
Maxhold 360° - Radio Off - UltralightX Medium	1GHz-13GHz	PASS
Maxhold 360° - Radio Off - UltralightX Dongle	1GHz-13GHz	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	22.4°C
Relative Humidity	10 to 90 %	48%
Atmospheric pressure	N/A	1025 hPa
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Amplifier	Mini-circuit	ZFL-1000LN	0364	15/02/2023	15/04/2024
Amplifier	Agilent	8449B	14487	16/02/2023	16/04/2024
Antenna	Schwarzbeck	VHA 9103	3426	21/04/2023	21/06/2025
Antenna	Schwarzbeck	UHALP 9108A	3106	25/04/2023	25/06/2025
Antenna	Emco	3115	0941	01/03/2022	01/05/2025
Cable	Sucoflex	N-3m	12929	04/07/2023	04/09/2024
Cable	C&C	N-12m	11173	09/09/2022	09/11/2024
Cable	Huber + Suhner	N-6m	17271	20/06/2022	20/08/2024
Cable	C&C	K-2m	11132	23/09/2022	23/11/2024
Cable	C&C	K-4m	11134	23/09/2022	23/11/2024
Shielded enclosure	Comtest	SAC 3m	14803		
Software	Nexio	BAT EMC	0000		
Spectrum analyzer	Rohde & Schwarz	ESR7	12811	22/05/2023	22/07/2024
Spectrum analyzer	Rohde & Schwarz	FSP40 (V 4.00SP1-V3.0-10-2)	5175	16/03/2023	16/05/2025

BAT-EMC software version: V3.18.0.26
Blank cells = Permanent validity

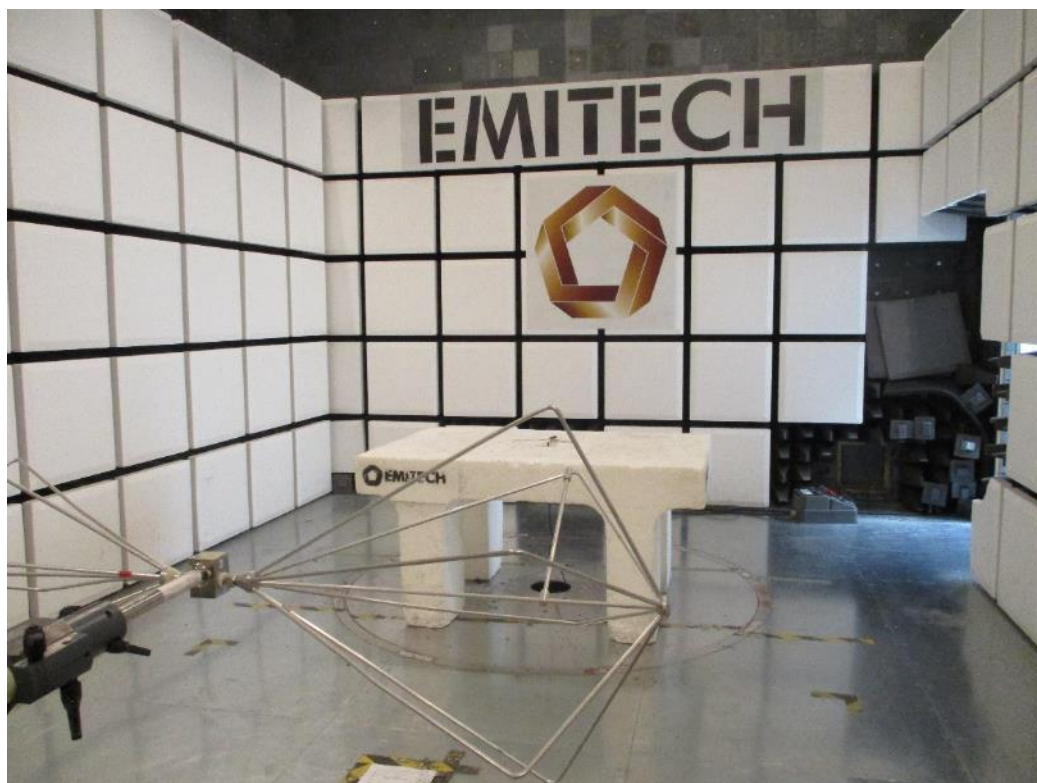
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX DONGLE
30 MHz – 1 GHz



TEST SETUP PHOTOS - ULTRALIGHTX DONGLE
30 MHz – 1 GHz

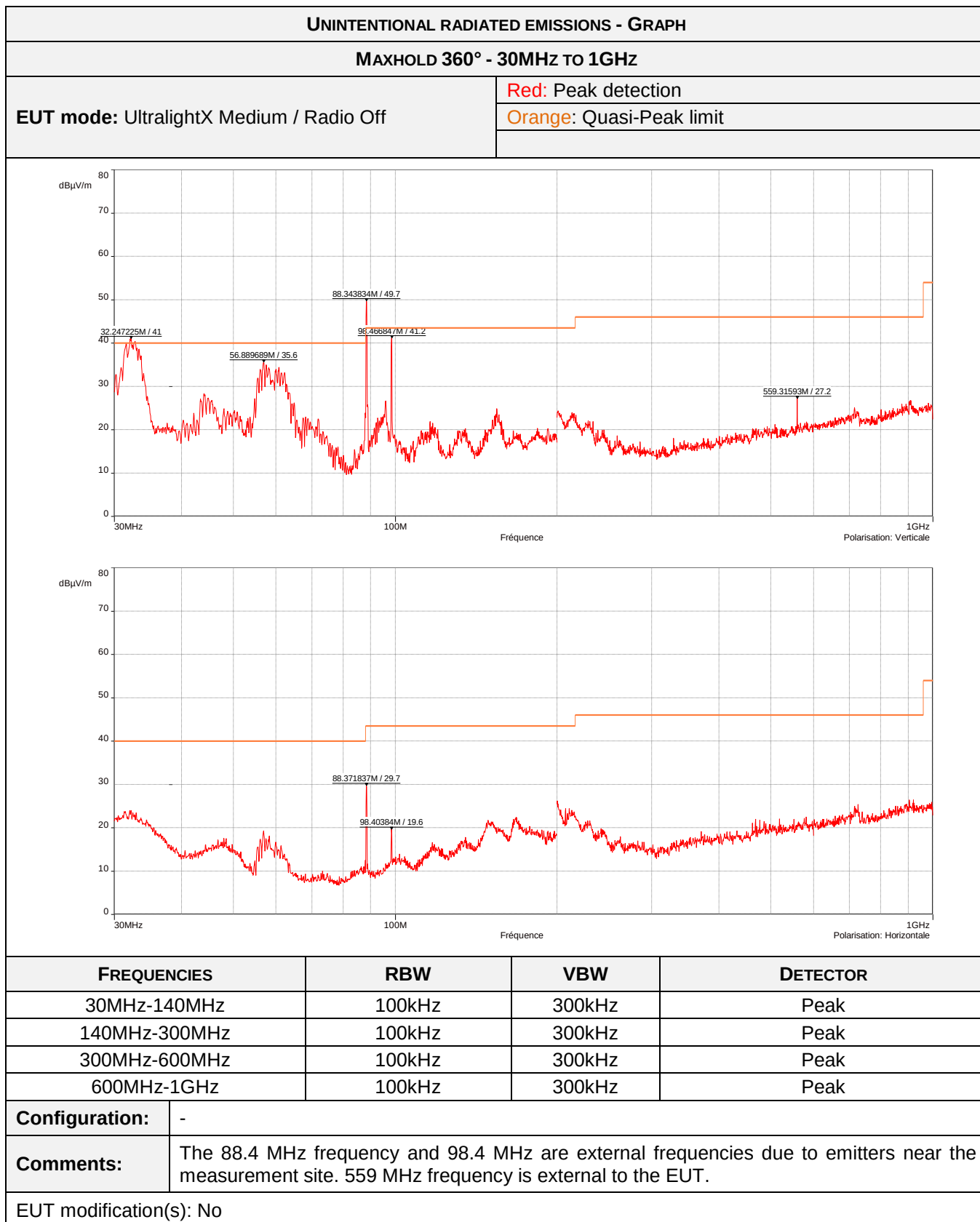


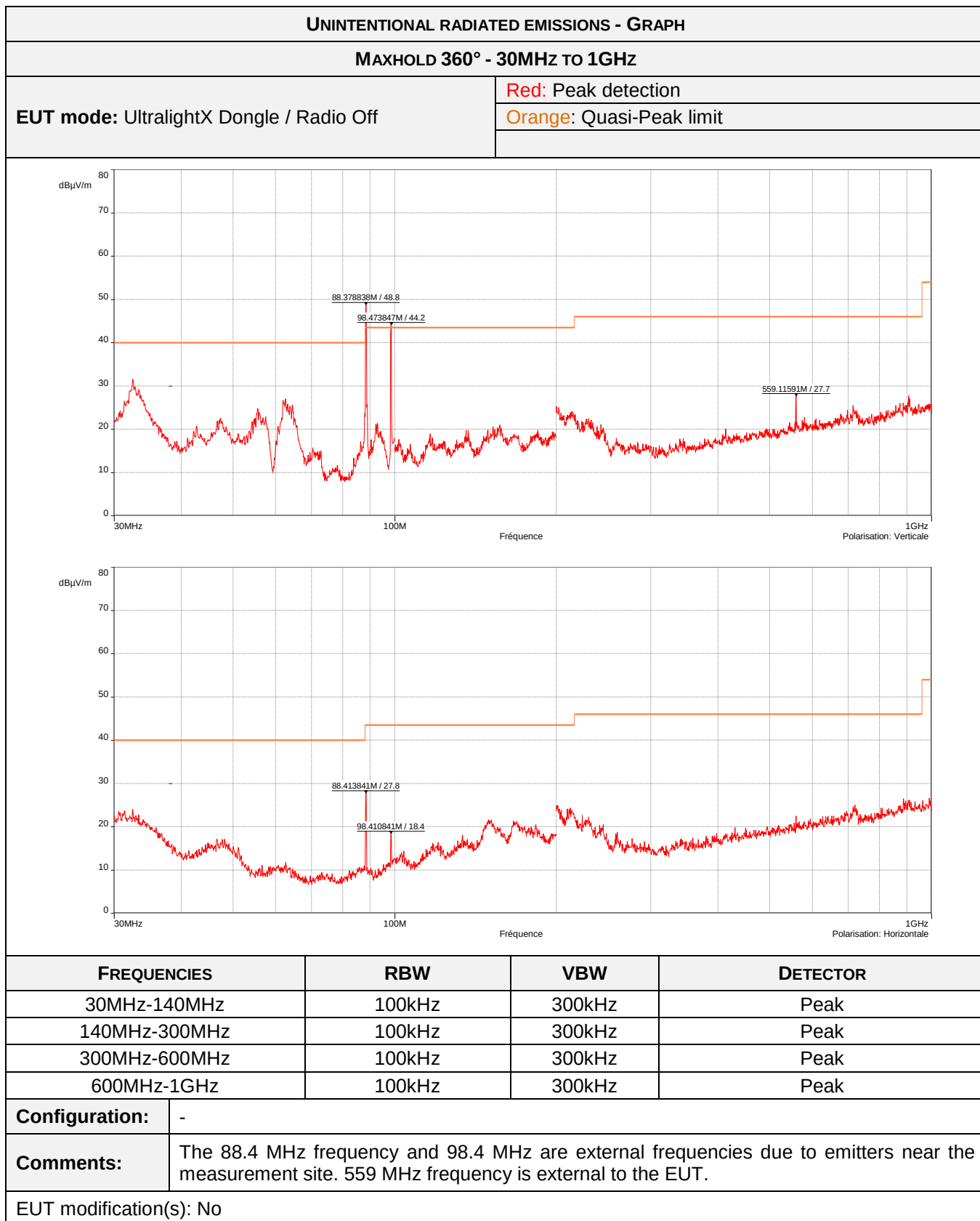
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 13 GHz

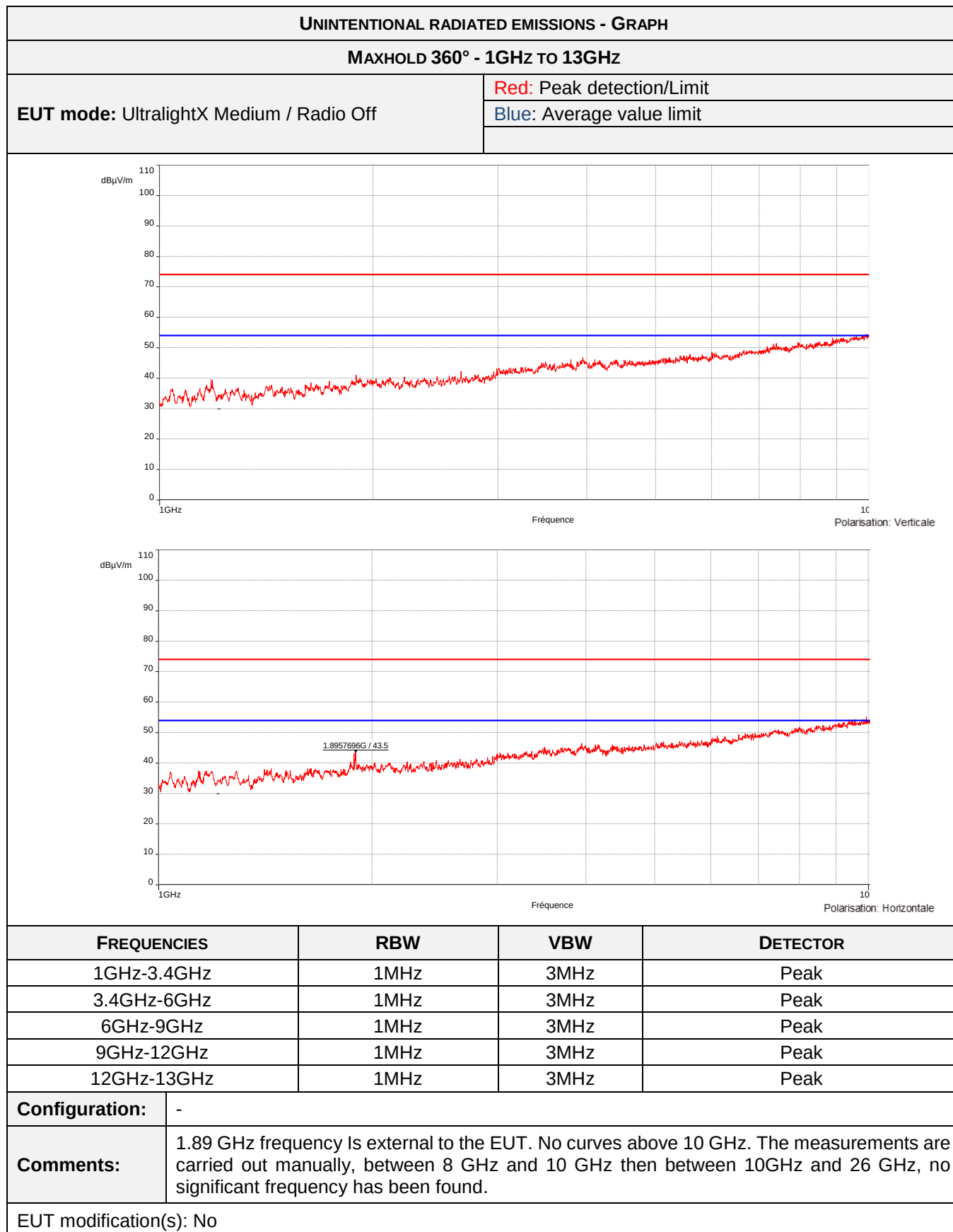


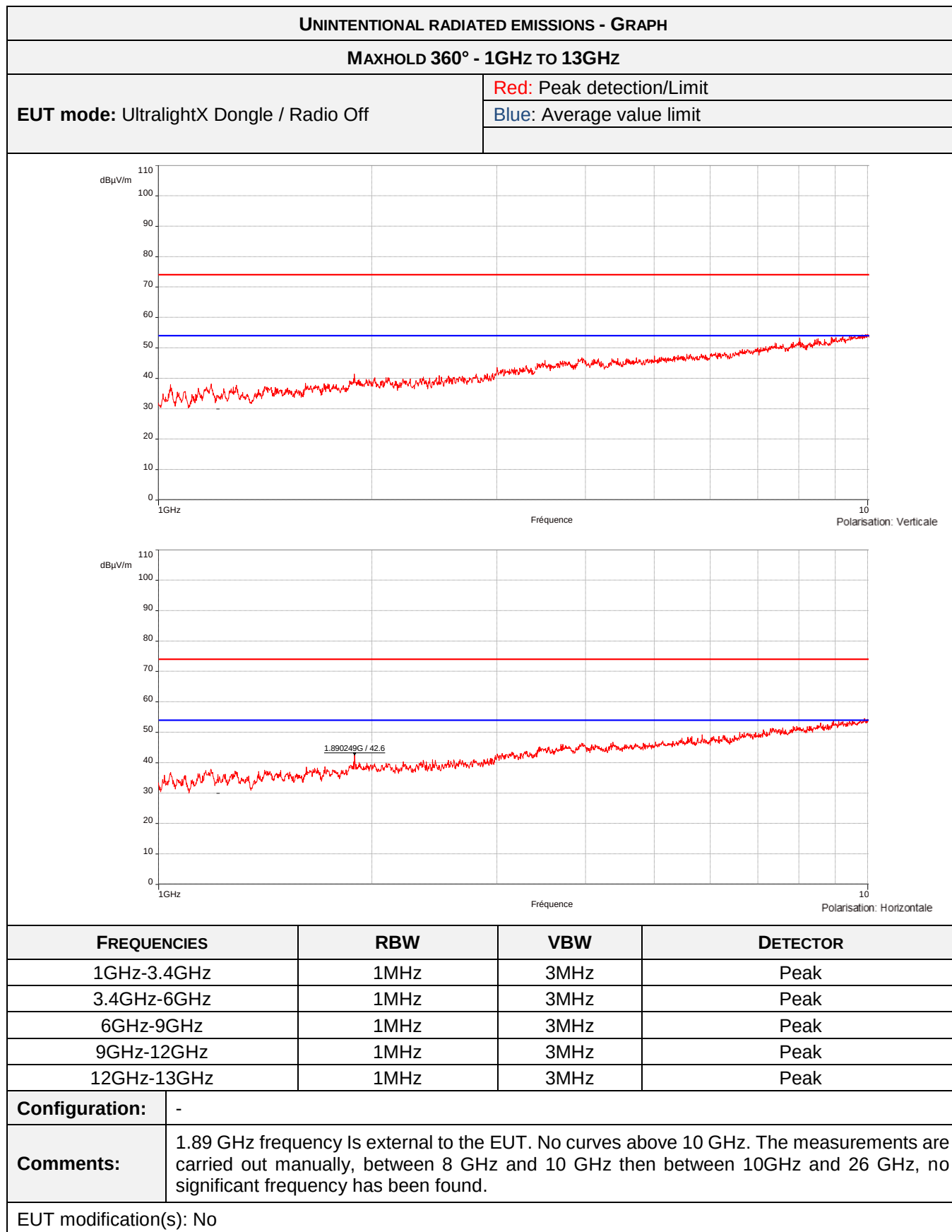
TEST SETUP PHOTOS - ULTRALIGHTX MEDIUM
1 GHz – 13 GHz











Nota : some frequencies are not necessarily recorded in the table because they have more than 10 dB of the margin with the limit. This is the case for frequencies that are not part of the restrictive bands of §15.205 of FCC 47 CFR PART 15 and therefore, which are compared to the limit of 74dB μ V/m.

Frequency (MHz)	Detector mode	Height (cm)	Polarization (H or V)	Azimuth (°)	Electro-magnetic field (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
32.16	Quasi-Peak	100	V	0	36.2	40.0	3.8
56.89	Quasi-Peak	100	V	162	33.2	40.0	6.8

H : Horizontal – V : Vertical

End of test report