



EMI - T E S T R E P O R T

- FCC Part 15.247, RSS-247 -

Type / Model Name : EBI10 System

Product Description : Wireless data logger system

Applicant : Xylem Analytics Germany GmbH

Address : Dr.-Karl-Slevogt-Strasse 1
82362 WEILHEIM, GERMANY

Manufacturer : Xylem Analytics Germany GmbH

Address : Dr.-Karl-Slevogt-Strasse 1
82362 WEILHEIM, GERMANY

Test Result according to the standards listed in clause 1 test standards:	POSITIVE
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Test Report No. :	T46080-00-02FX	09. March 2020
		Date of issue



Deutsche
Akkreditierungsstelle
D-PL-12030-01-01
D-PL-12030-01-02

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test results
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FCC ID: VQ5-EBI10

IC: 7412A-EBI10

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (September 2019)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September 2019)

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.247	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz

ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
ETSI TR 100 028 V1.3.1: 2001-03	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2
KDB 558074 D01 v05	Guidance for compliance measurements on DTS; FHSS and hybrid system devices operating under Section 15.247 of the FCC rules, April 2, 2019.

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2 EQUIPMENT UNDER TEST

2.1 Photo documentation of the EUT – Detailed photos see ATTACHMENT A

2.2 General remarks

The EUT is a fully tested device, which is approved and certified according to FCC 15.247/RSS-247 by the test report T32050-00-12HS by Mikes Testingpartners GmbH. The logger has been modified by a PCB antenna in the ZigBee part. This test report shows the further compliance to the FCC 15247/RSS-247 in the framework of a Class II Permissive Change (C2PC). The re-test is partly done to the following requirements, only.

- RF output power (radiated)
- Transmitter unwanted emissions, radiated

2.3 Equipment type

ZigBee device

2.4 Short description of the equipment under test (EUT)

The EUT is a mobile data logger for temperature, pressure, conductivity and/or humidity. It can be used and read-out by an interface. The interface identifies a logger in the programming slot via 13.56 MHz RFID-Transceiver, whereas the logger contains a passive RFID tag only. A 2.4 GHz ZigBee port is used for data exchange, communication and programming the data logger, after the logger is identified and enabled via the RFID signal.

Number of tested samples: 2
 Serial number: 19707034 19707035
 Firmware number: 4.05

EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

2.5 Variants of the EUT

Variants	Device-Name	Comment	Antenna
T01	EBI 10-Txxx	temperature sensor	integrated
T02	EBI 10-THxxx	humidity sensor	integrated
T03	EBI 10-TPxxx	pressure sensor	integrated
T04	EBI 100-Txxx	temperature sensor	integrated
T05	EBI 100-THxxx	humidity sensor	integrated
T06	EBI 100-TPxxx	pressure sensor	integrated
T07	EBI 12-Txxx	temperature sensor	integrated
T08	EBI 12-TTxxx	low temperature sensor	integrated
T09	EBI 12-THxxx	humidity sensor	integrated
T10	EBI 12-TPxxx	pressure sensor	integrated
T11	EBI 12-TLPxxx	low pressure sensor	integrated
T12	EBI 12-TCxxx	conductivity sensor	integrated
T13	EBI 16	pressure sensor	integrated

Note: The logger EBI 12-TPxxx was selected for testing.

The logger variant EBI 16 is only FCC certified. All electronics including HF are identical with EBI 12-TP.

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2.6 Operation frequency and channel plan

The operating frequency is 2400 MHz to 2483.5 MHz.

Channel plan ZigBee:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

Note: The marked frequencies are determined for final testing.

2.7 Transmit operating modes

The EUT uses O-QPSK modulation and may provide following data rates:

- 250 kbps (kbps = kilobits per second)

2.8 Antenna

The following antennas shall be used with the EUT:

The EUT is equipped with one internal PCB meander antenna.

2.9 Power supply system utilised

Power supply voltage, V_{nom} : 3.6 VDC lithium ion battery

2.10 Peripheral devices and interface cables

The following peripheral devices and interface cables are connected during the measurements:

- --- Model : _____

2.11 Determination of worst case conditions for final measurement

Measurements are made in all three orthogonal axes and the settings of the EUT are changed to locate at which position and at what setting of the EUT produce the maximum of the emissions. For the further measurement the EUT is set in X position.

For the final test the following channels and test modes are selected:

IEEE standard	Available channel	Tested channels	Power setting	Modulation	Modulation type	Data rate
802.15.4	11 to 26	11, 19, 26	Default	DSSS	O-QPSK	250 kbps

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No test jig is used.

2.11.2 Test software

The test software does not provide free power setting. The EUT was set with the test software to transmit data during the tests in a continuous and modulated TX mode.

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3 TEST RESULT SUMMARY

ZigBee device using digital modulation:

Operating in the 2400 MHz – 2483.5 MHz:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS-Gen, 8.8	AC power line conducted emissions	not applicable
15.247(a)(2)	RSS-247, 5.2(a)	-6 dB EBW	Not tested
15.247(b)(3)	RSS-247, 5.4(d)	Maximum peak conducted output power	passed
15.247(b)(4)	RSS-247, 5.4(d)	Defacto limit	not applicable
15.247(d)	RSS-247, 5.5	Unwanted emission, radiated	passed
15.247(d)	RSS-Gen, 8.10	Emissions in restricted bands	passed
15.247(e)	RSS-247, 5.2(b)	PSD	Not tested
15.35(c)	RSS-Gen, 6.10	Pulsed operation	Not tested
15.203	-	Antenna requirement	passed
	RSS-Gen, 6.11	Transmitter frequency stability	Not tested
	RSS-Gen, 6.6	99 % Bandwidth	Not tested

The mentioned RSS Rule Parts in the above table are related to:

RSS-Gen, Issue 5, April 2018

RSS-247, Issue 2, February 2017

3.1 Final assessment

The equipment under test fulfills the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 08 January 2020

Testing concluded on : 06 March 2020

Checked by:

Tested by:

Klaus Gegenfurtner
Teamleader Radio

Franz-Xaver Schettenbrunner
Radio Team

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 °C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

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4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Type	Range	Confidence Level	Calculated Uncertainty
AC power line conducted emissions	0.15 MHz to 30 MHz	95%	± 3.29 dB
EBW and OBW	2400 MHz to 30000 MHz	95%	$\pm 2.5 \times 10^{-7}$
Output power ERP, radiated	1000 MHz to 7000 MHz	95%	± 2.71 dB
Field strength of the fundamental	1000 MHz to 7000 MHz	95%	± 2.71 dB
Power spectral density	2400 MHz to 3000 MHz	95%	± 0.62 dB
Spurious Emissions, conducted	9 kHz to 10000 MHz	95%	± 2.15 dB
Spurious Emissions, conducted	10000 MHz to 40000 MHz	95%	± 3.47 dB
Spurious Emissions, radiated	9 kHz to 30 MHz	95%	± 3.53 dB
Spurious Emissions, radiated	30 MHz to 1000 MHz	95%	± 4.44 dB
Spurious Emissions, radiated	1000 MHz to 30000 MHz	95%	± 2.34 dB
Spurious Emissions, radiated	30000 MHz to 40000 MHz	95%	± 5.13 dB

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4.4 Measurement protocol for FCC and ISED

4.4.1 General information

CSA Group Bayern GmbH is recognized as wireless testing laboratory under the CAB identifier:

FCC: DE 0011
ISED: DE0009

4.4.2 General Standard information

The test methods used comply with ANSI C63.10 - "Testing Unlicensed Wireless Devices".

4.4.2.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.4.2.2 Radiated emission (electrical field 30 MHz - 1 GHz)

Spurious emissions from the EUT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarised antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is established in accordance with ANSI C63.10. The interface cables that are closer than 40 centimetres to the ground plane are bundled in the centre in a serpentine fashion so that they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the centre of the table and to a screened room located outside the test area. The antenna is positioned 3, 10 or 30 metres horizontally from the EUT and is repeated vertically. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 metres and the EUT is rotated 360 degrees. The final level in dB μ V/m is calculated by taking the reading from the EMI receiver (Level dB μ V) and adding the correction factors and cable loss factor (dB). The FCC limit is subtracted from this result in order to provide the limit margin listed in the measurement protocol.

The resolution bandwidth setting:

30 MHz – 1000 MHz: RBW: 120 kHz

Example:

Frequency Delta (MHz)	Level (dB μ V)	+	Factor (dB)	=	Level (dB μ V/m)	-	Limit (dB μ V/m)	=	(dB)
719.0	75.0	+	32.6	=	107.6	-	110.0	=	-2.4

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4.4.2.3 Radiated emission (electrical field 1 GHz - 40 GHz)

Radiated emissions from the EUT are measured in the frequency range 1 GHz up to the maximum frequency as specified in 47 CFR Part 15, Subpart A, Section 15.33, using a spectrum analyser and appropriate linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 metre non-conducting table, 1.5 metre above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is following set out in ANSI C63.10. The interface cables that are closer than 40 centimetres to the ground plane are bundled in the centre in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the centre of the table and to a screened room located outside the test area. Measurements are made in both the horizontal and vertical polarization planes in a fully anechoic room using a spectrum analyser set to max peak detector function, a resolution bandwidth 1 MHz and video bandwidth 3 MHz. The conditions determined as worst case will then be used for the final measurements. When the EUT is larger than the beam width of the measuring antenna it will be moved over the surface for the four sides of the equipment. Where appropriate, the test distance may be reduced in order to detect emissions under better uncertainty and are calculated at the specified test distance.

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5 TEST CONDITIONS AND RESULTS

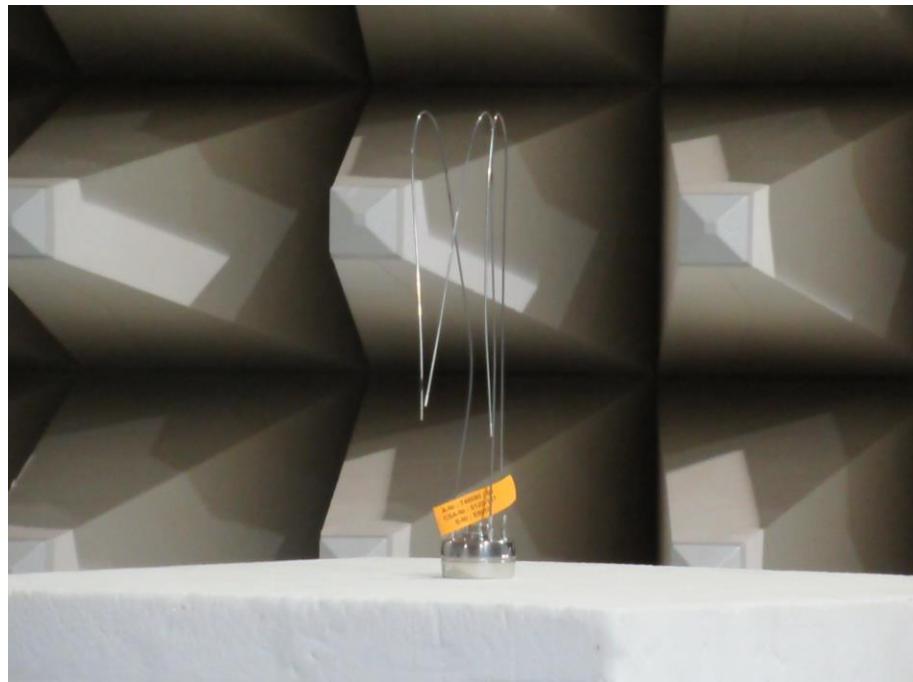
5.1 Maximum peak radiated output power

For test instruments and accessories used see section 6 Part **CPR 3**.

5.1.1 Description of the test location

Test location: Anechoic chamber 1
Test distance: 3 m

5.1.2 Photo documentation of the test set-up



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5.1.3 Applicable standard

According to FCC Part 15, Section 15.247 (b)(3):

For systems using digital modulation in the 2400 – 2483.5 MHz and 5725 – 5850 MHz bands, the maximum peak output power of the transmitter shall not exceed 1 Watt. The limit is based on transmitting antennas of directional gain that do not exceed 6 dBi.

5.1.4 Description of Measurement

The maximum peak conducted output power is measured using a peak power meter following the procedure set out in ANSI C63.10, item 11.9.1.1. The EUT is set in TX continuous mode while measuring.

5.1.5 Test result

ZigBee		Test results radiated			
Duty cycle: 100%		FS (dB μ V/m)	P [EIRP] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH1					
T_{nom}	V_{nom}	78.2	-17.1	36.0	-53.1
Middle frequency: CH6					
T_{nom}	V_{nom}	81.7	-13.6	36.0	-49.6
Highest frequency: CH11					
T_{nom}	V_{nom}	83.5	-11.8	36.0	-47.8

Peak Power Limit according to FCC Part 15, Section 15.247 (b)(3):

Frequency (MHz)	Peak Power Limit	
	(dBm)	(Watt)
2400-2483.5	30	1.0

The requirements are **FULFILLED**.

Remarks: None.

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5.2 Unwanted emissions in restricted bands, radiated

For test instruments and accessories used see section 6 Part **SER 2, SER 3**.

5.2.1 Description of the test location

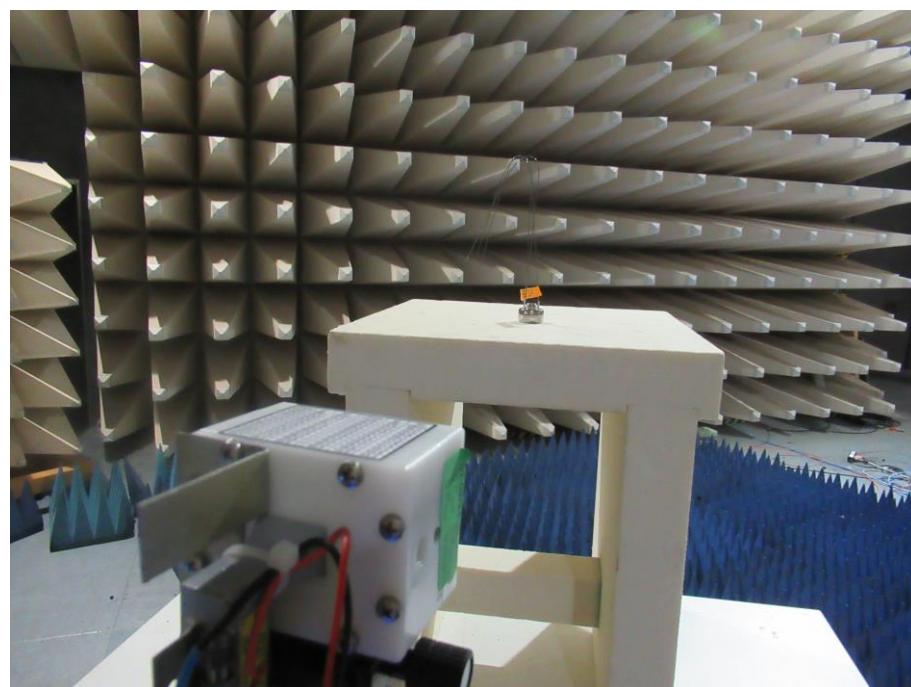
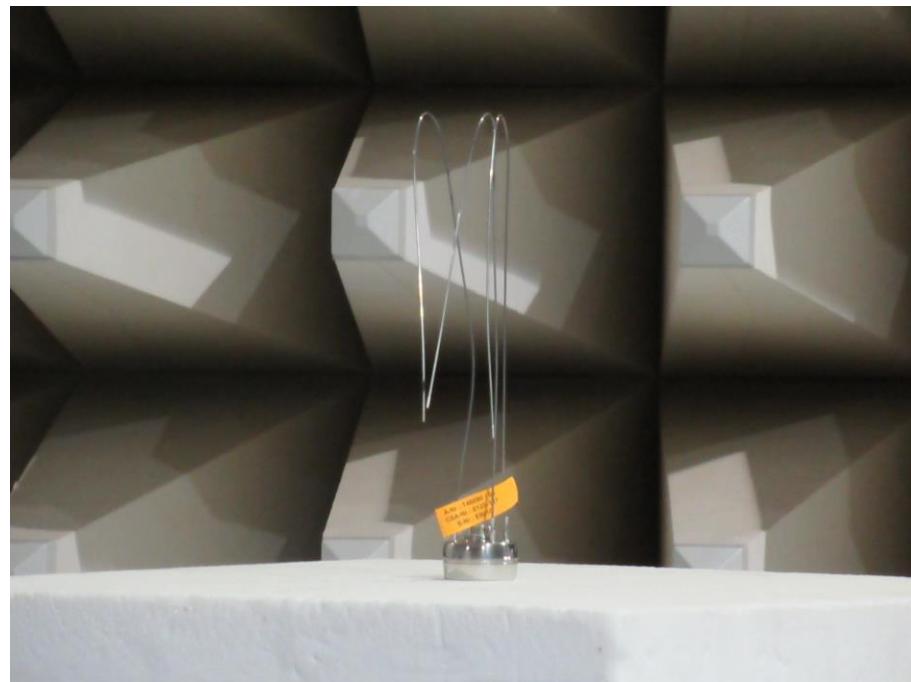
Test location: OATS 1
Test location: Anechoic chamber 1
Test distance: 3 m

5.2.2 Photo documentation of the test set-up



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5.2.3 Applicable standard

According to FCC Part 15, Section 15.205(a):

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limit specified in Section 15.209(a).

5.2.4 Description of Measurement

The restricted bands are measured radiated. The span of the spectrum analyser is set wide enough to capture the restricted band and measure the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation. The restricted bands are measured falling emissions into it and the nearest restricted band are checked for emissions also the restricted band for the harmonics of the carrier.

Spectrum analyser settings:

30 MHz – 1000 MHz: RBW: 120 kHz
 1000 MHz – 26 GHz: RBW: 1 MHz, VBW: 3 MHz, Sweep: Auto, Detector function: Max Peak

5.2.5 Test result

f < 1000 MHz:

Frequency (MHz)	Reading Vert. (dB μ V)	Reading Hor. (dB μ V)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dB μ V/m)	Level Hor. (dB μ V/m)	Limit (dB μ V/m)	Dlimit (dB)
44.30	-0.6	6.3	15.1	13.9	14.5	20.2	40.0	-19.8
84.40	3.8	6.6	10.1	10.3	13.9	16.9	40.0	-23.1
155.65	-0.9	1.5	14.3	15.1	13.4	16.6	43.5	-26.9
300.00	0.4	-0.6	16.9	16.5	17.3	15.9	46.0	-28.7
600.00	-0.3	0.2	25.5	25.3	25.2	25.5	46.0	-20.5
900.00	-1.9	-1.8	31.1	30.7	29.2	28.9	46.0	-16.8

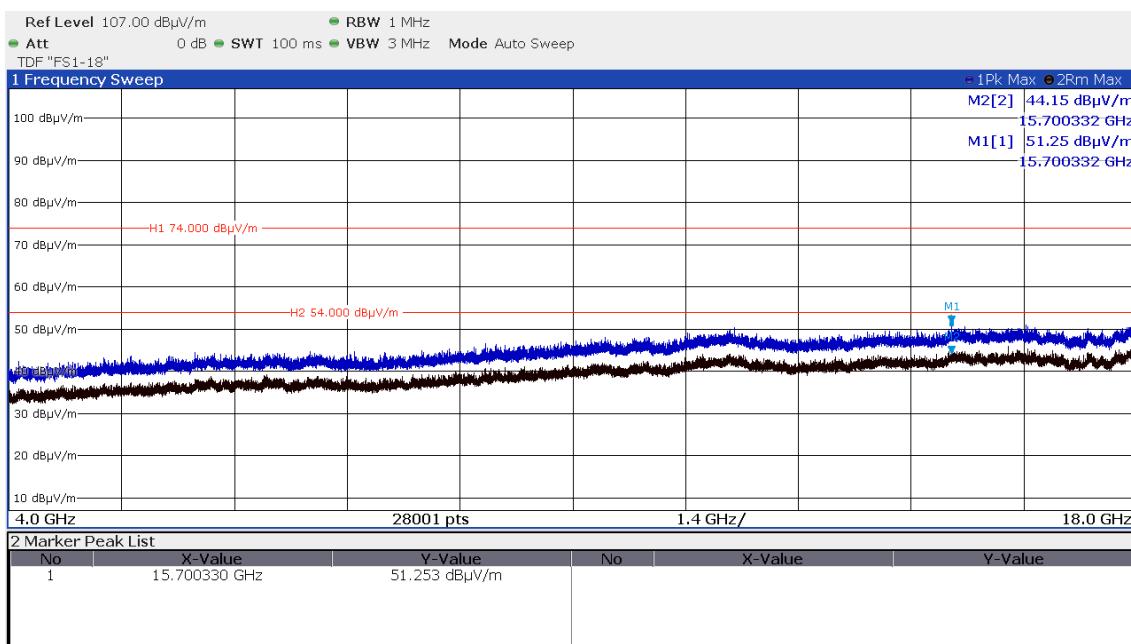
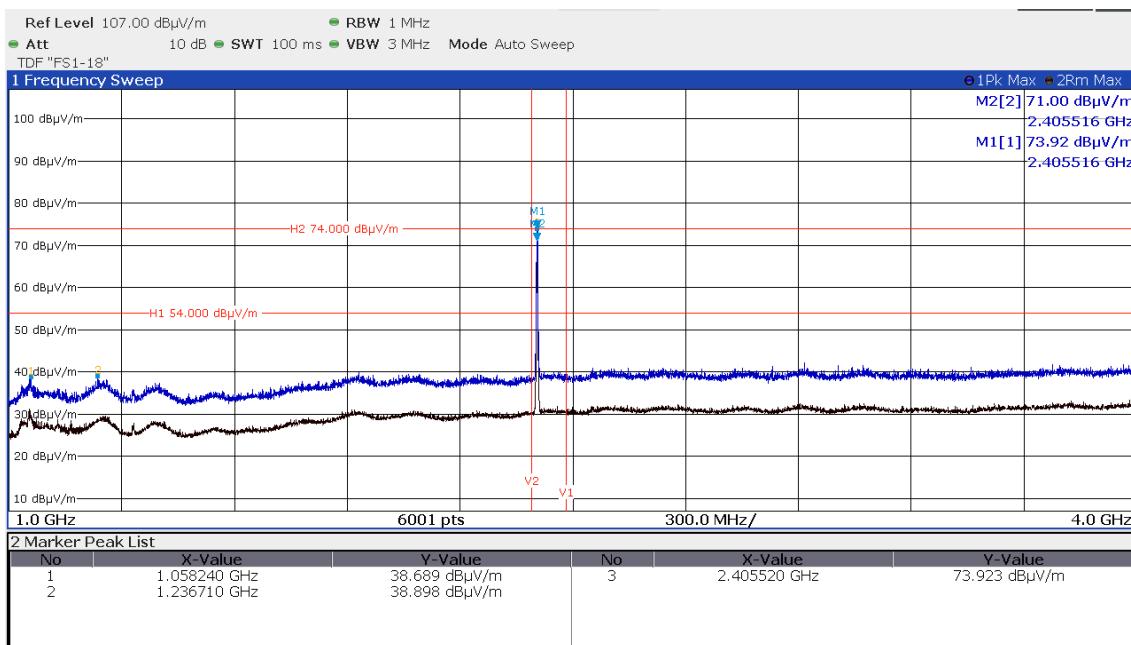
Note: There are no emissions which could be allocated to the EUT. The measured values represent the noise level.

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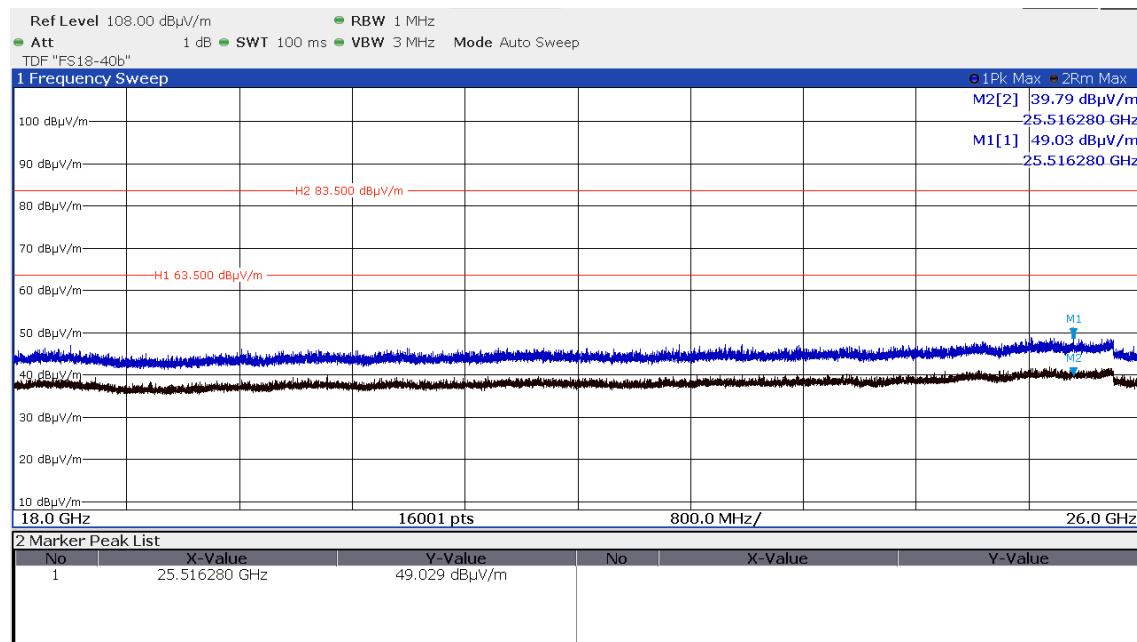
f > 1000 MHz:

CH11 horizontal

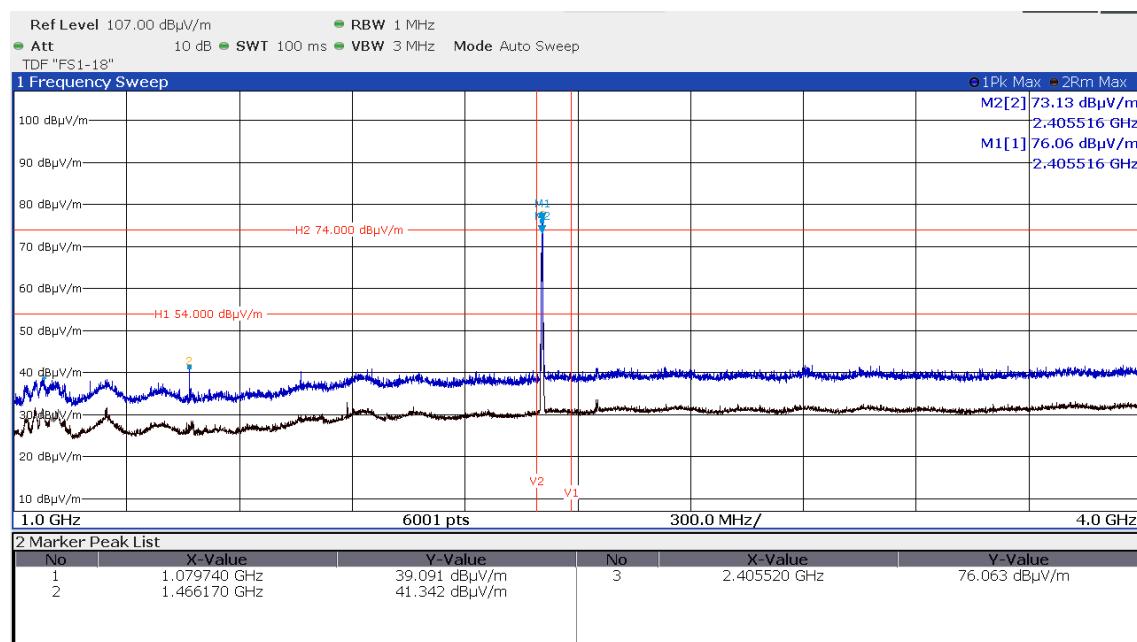


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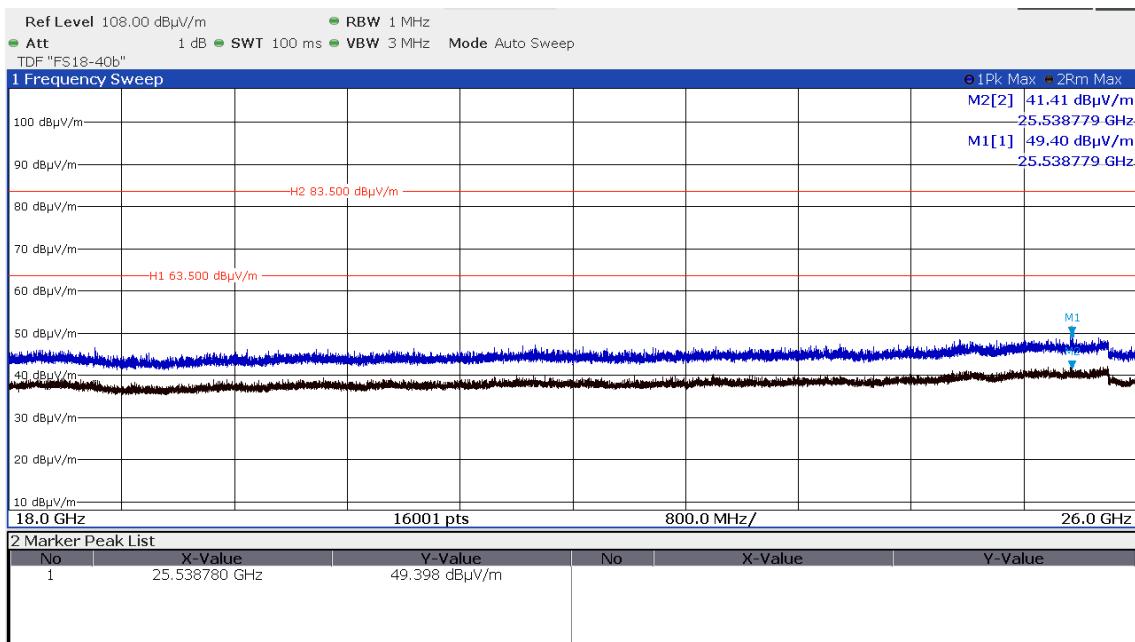
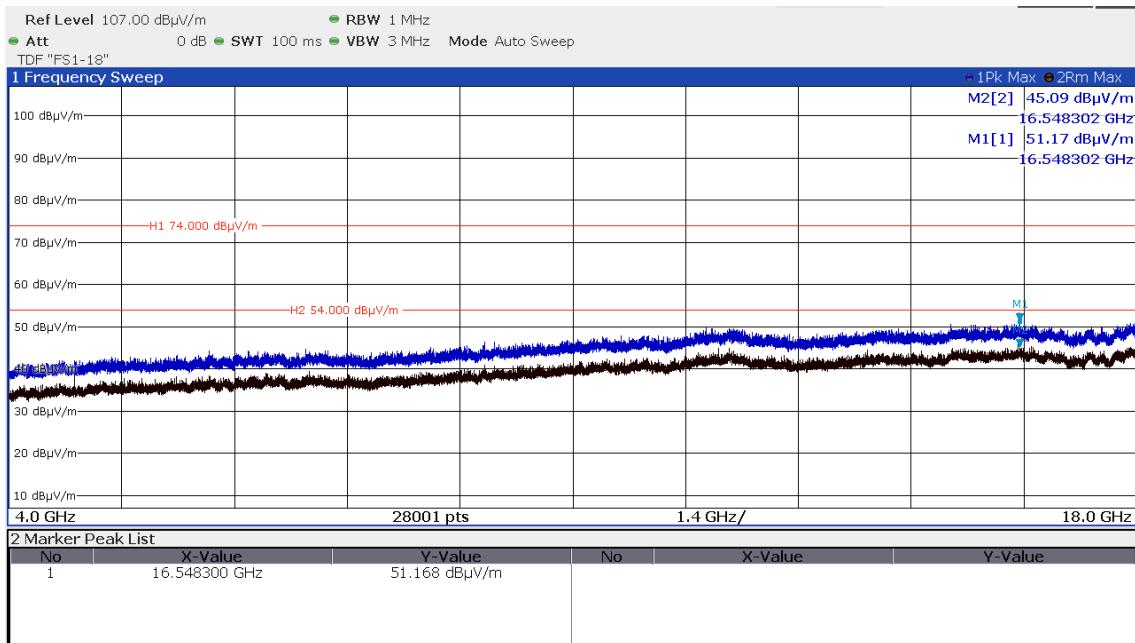


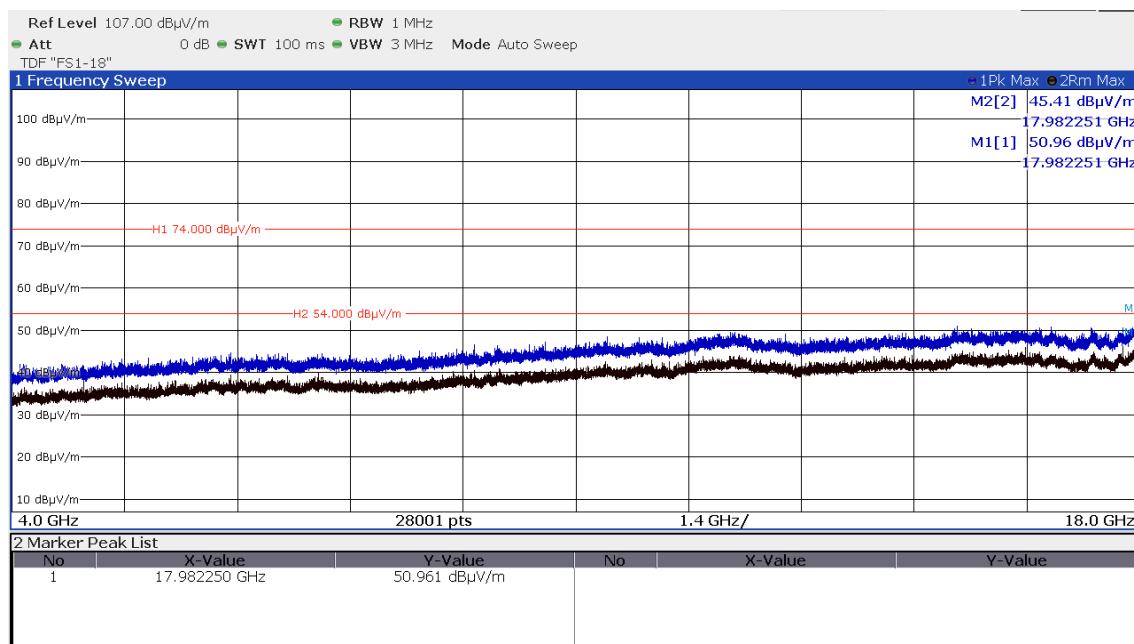
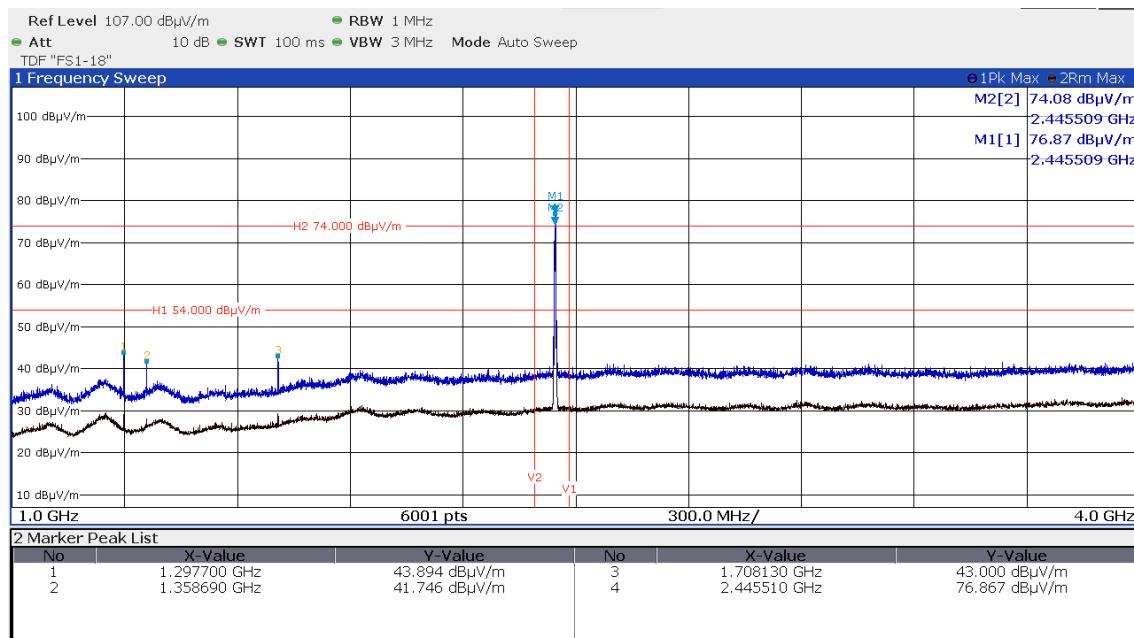
CH11 vertical



FCC ID: VQ5-EBI10

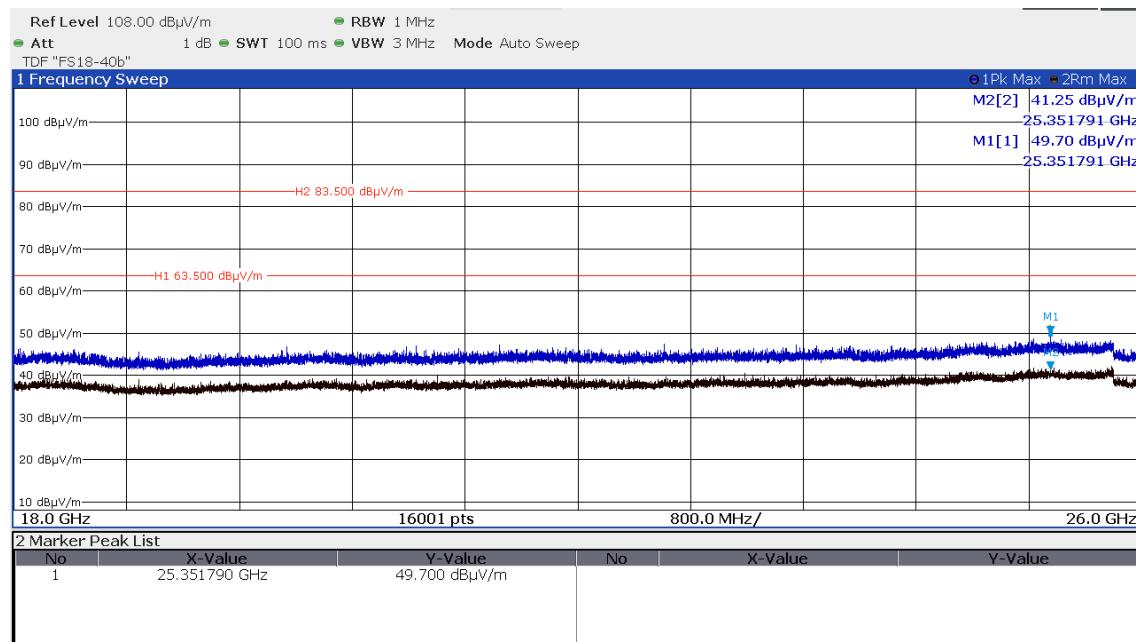
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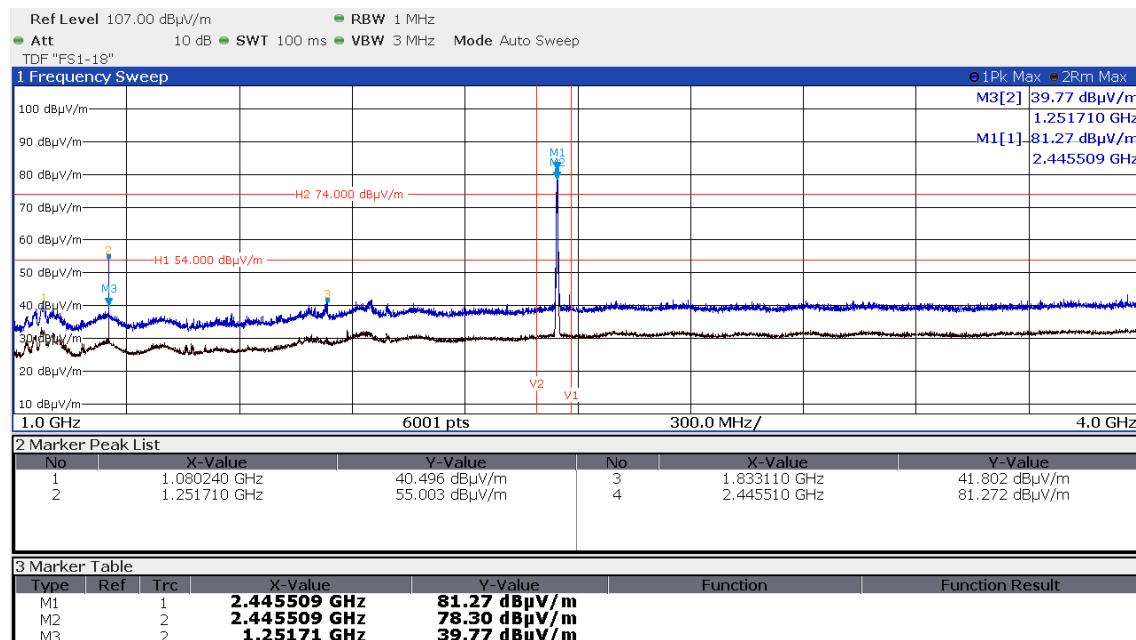
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CH19 horizontal


FCC ID: VQ5-EBI10

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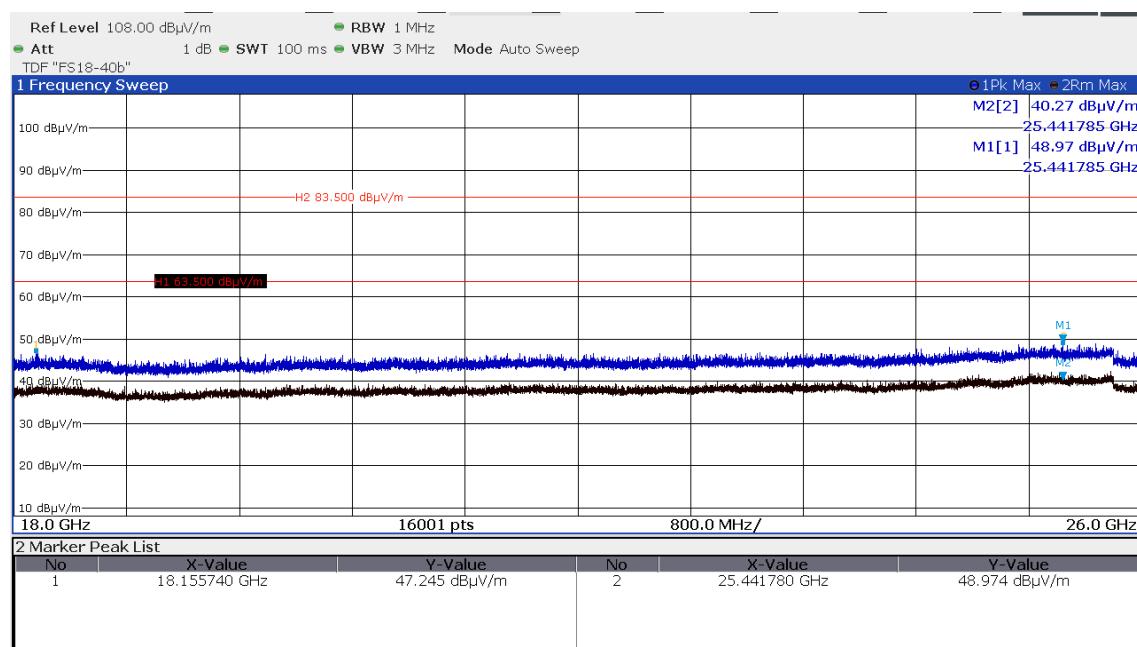
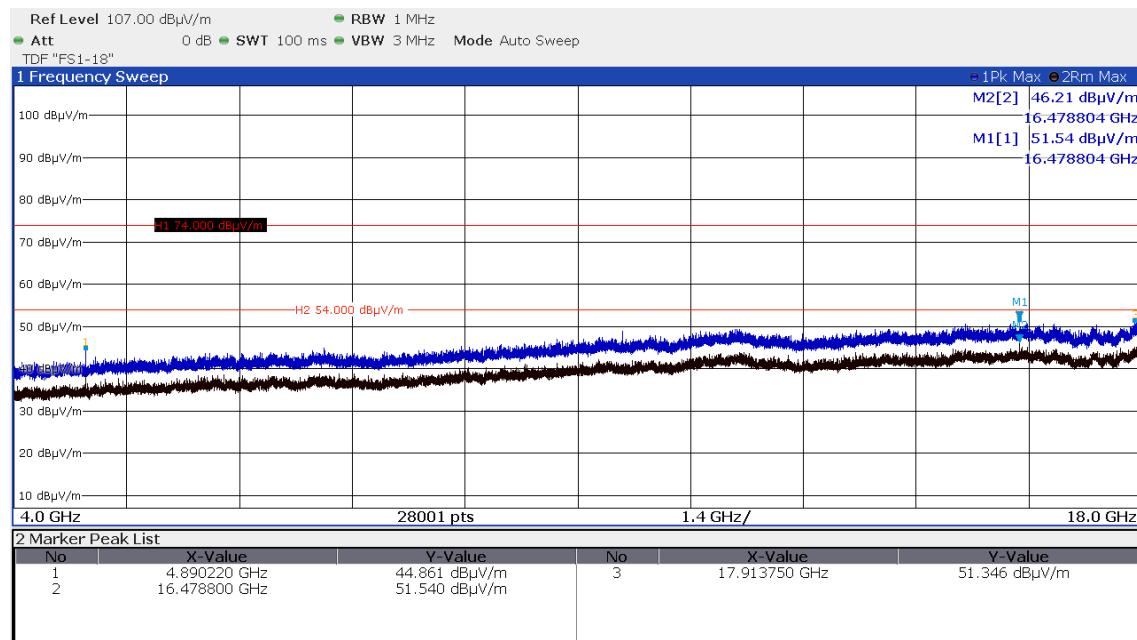


CH19 vertical



FCC ID: VQ5-EBI10

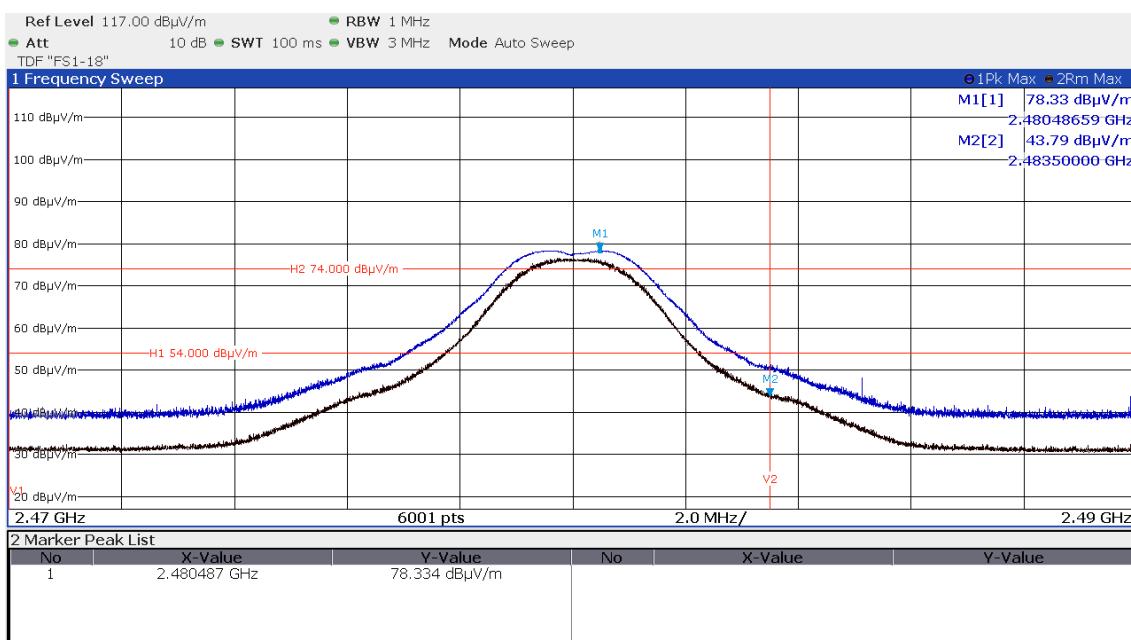
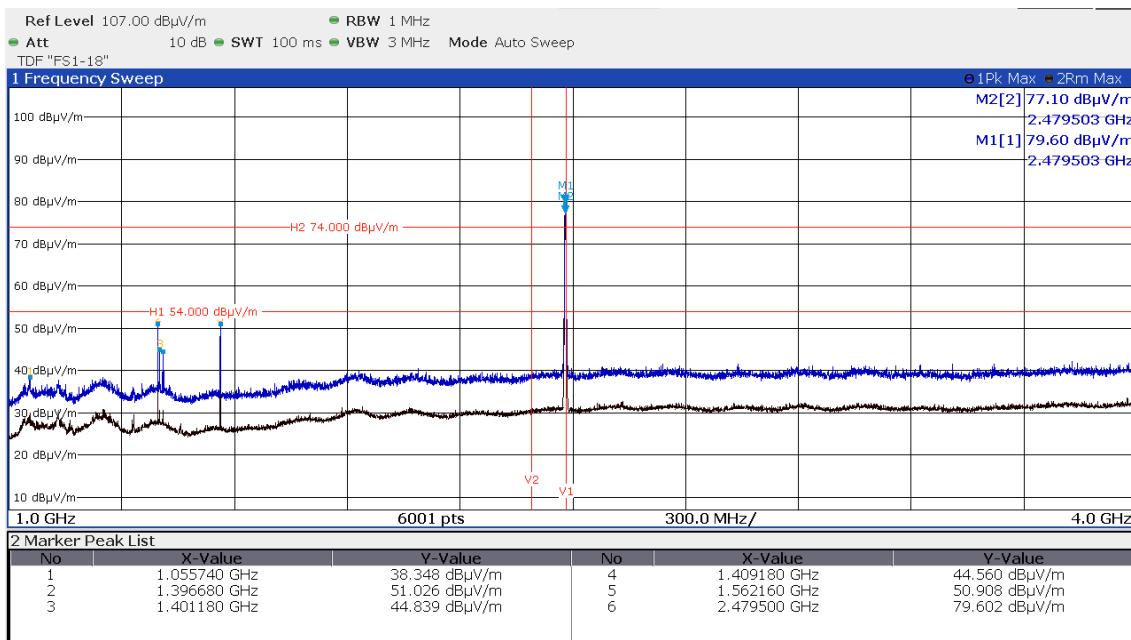
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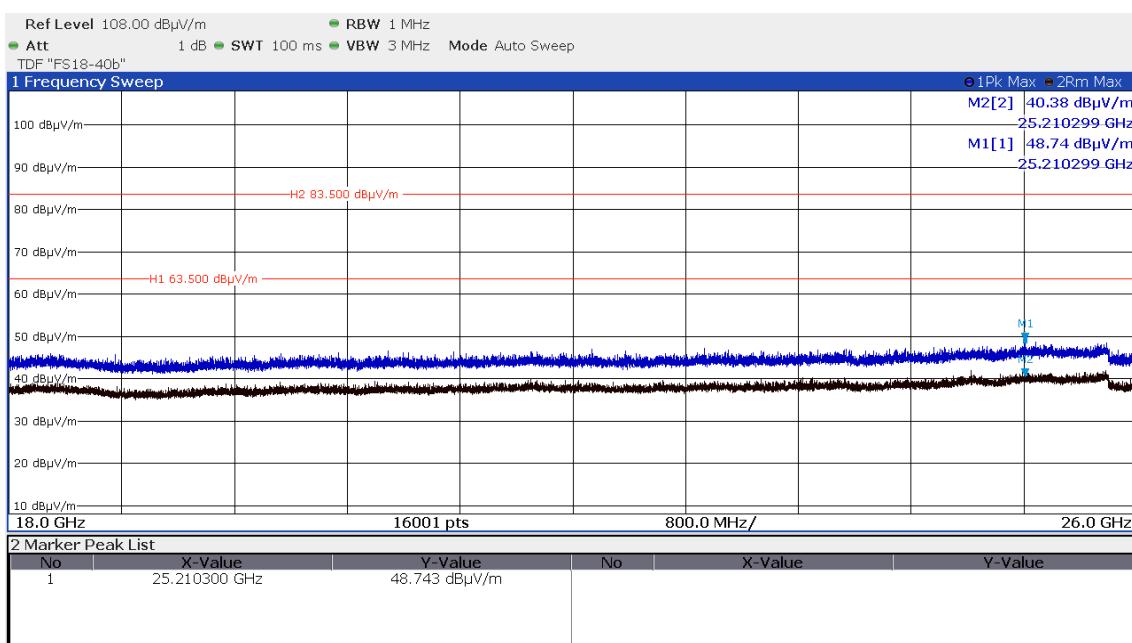
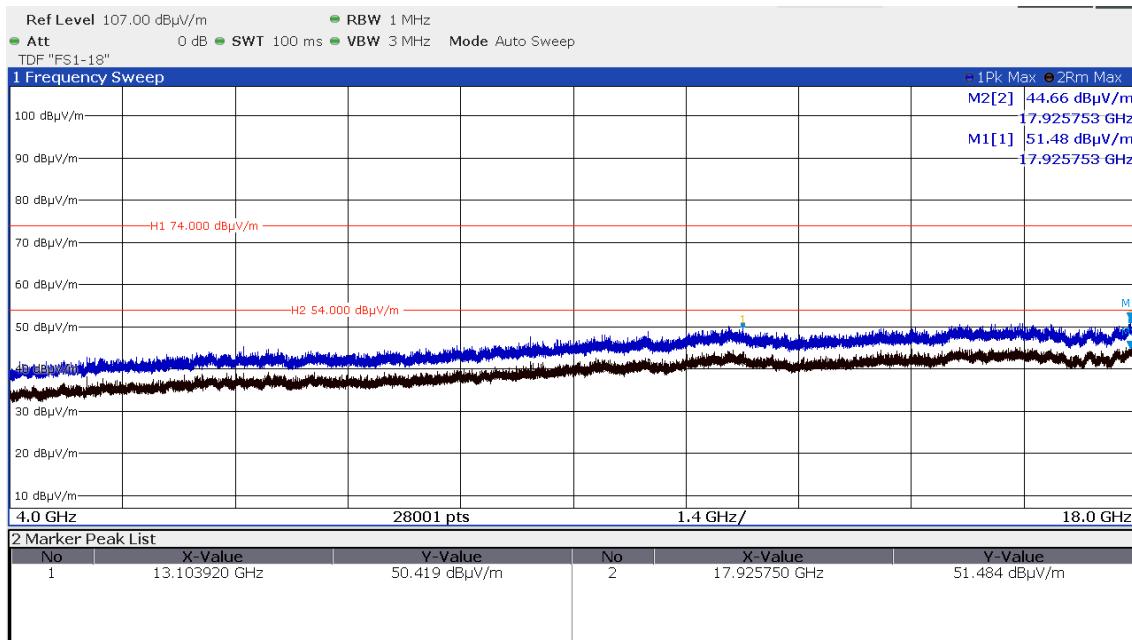
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CH26 horizontal



FCC ID: VQ5-EBI10

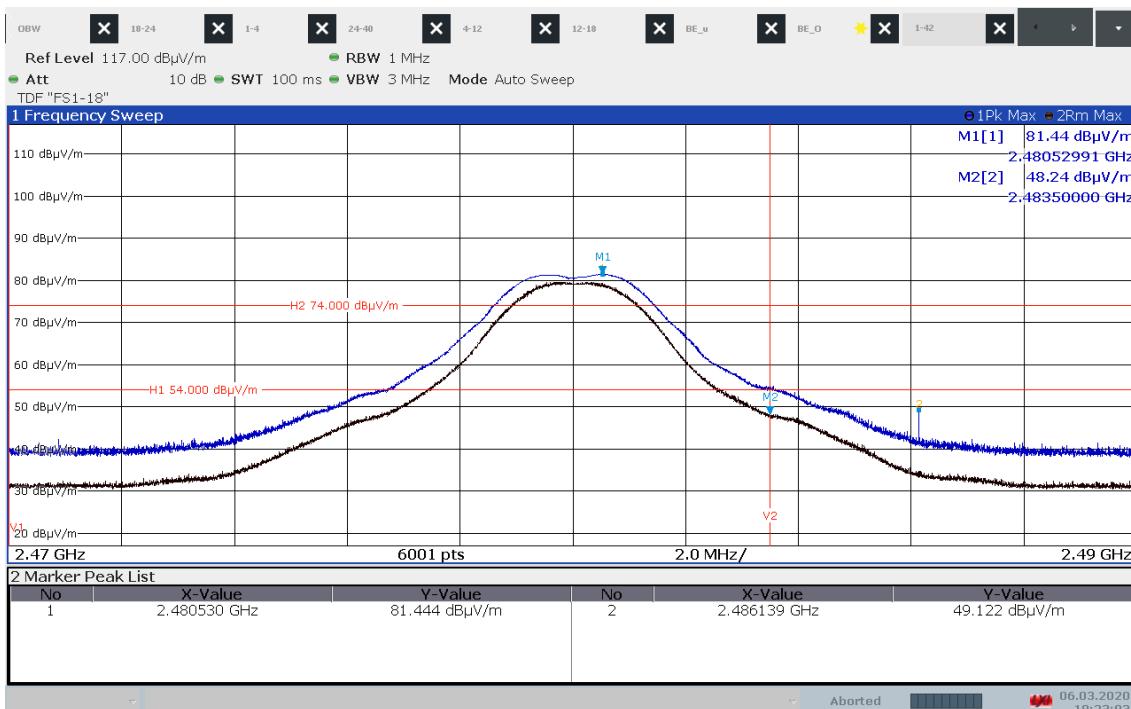
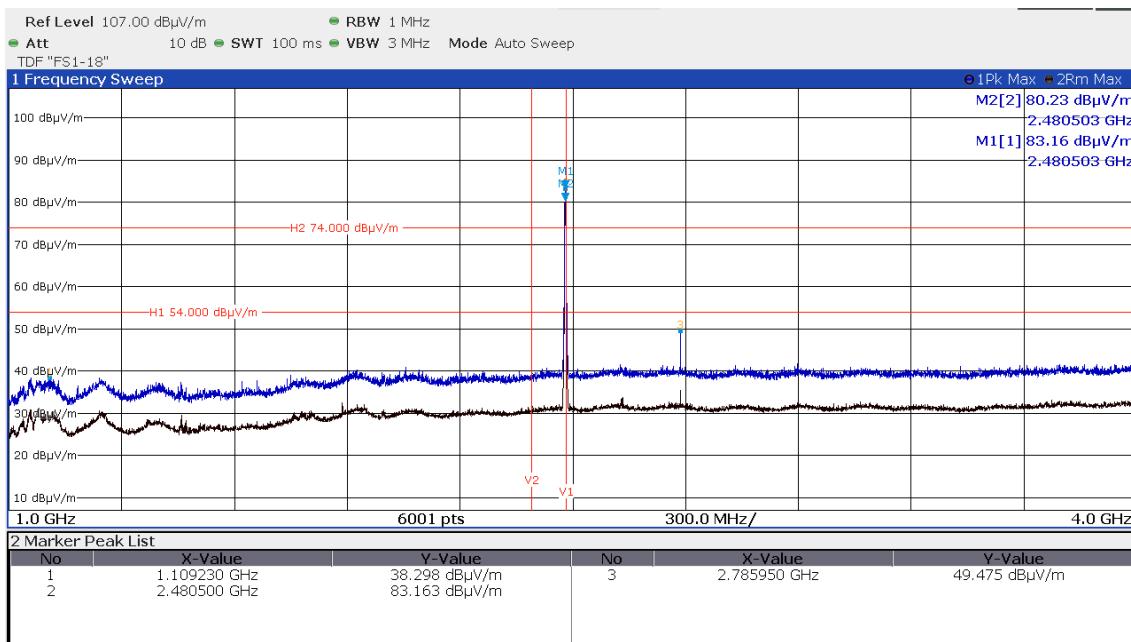
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FCC ID: VQ5-EBI10

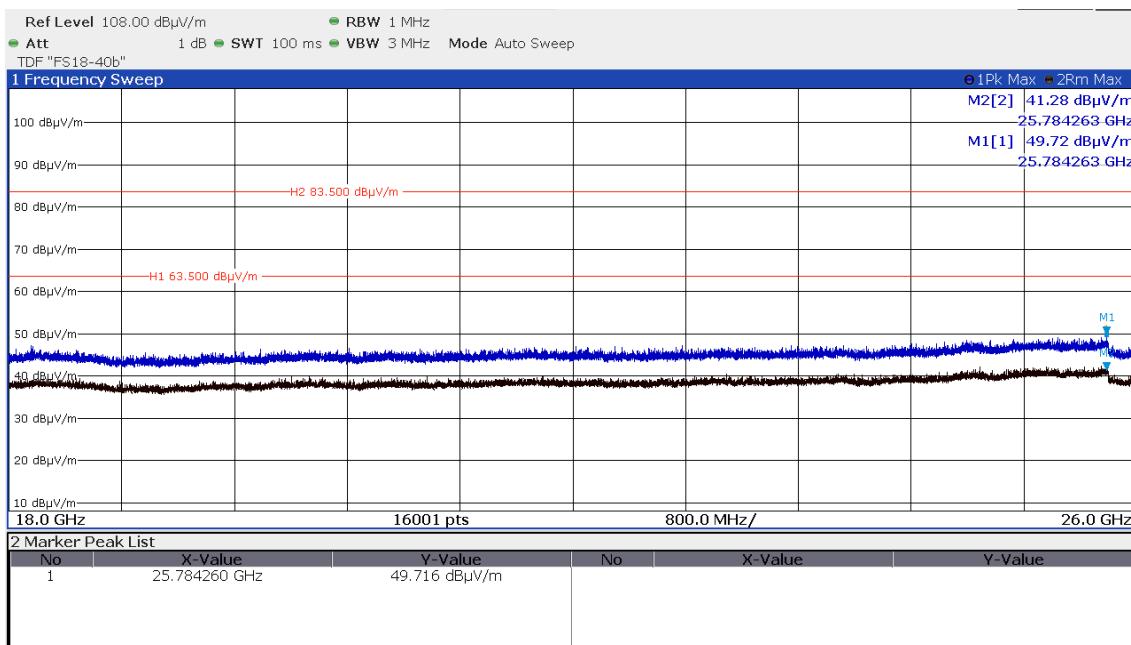
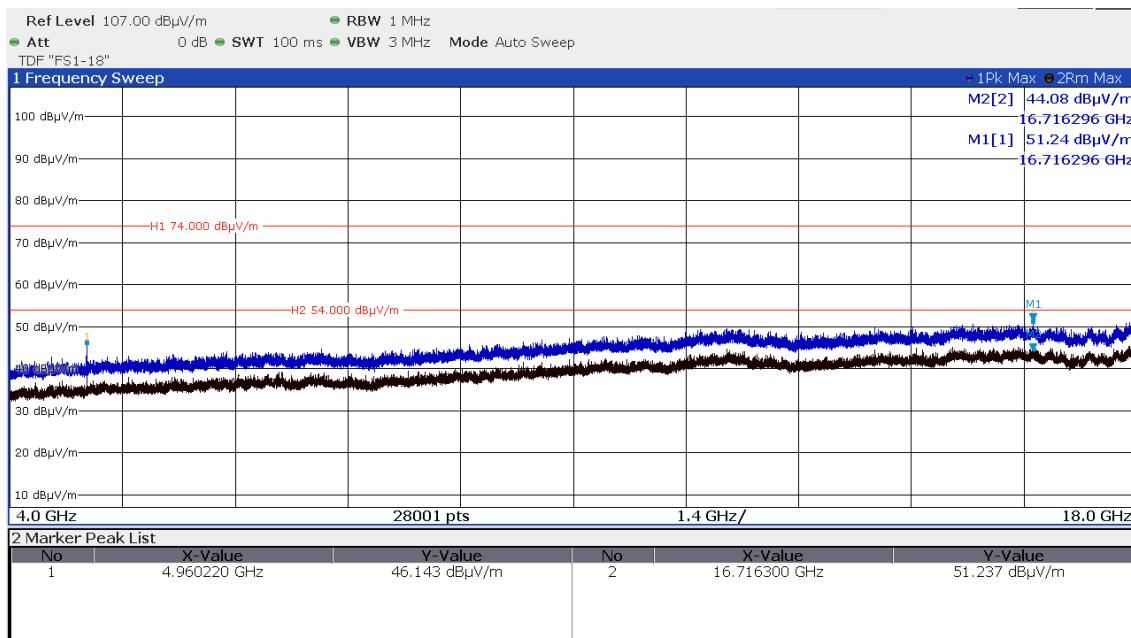
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CH26 vertical



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Radiated limits according to FCC Part 15 Section 15.209(a) for spurious emissions which fall in restricted bands:

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (metres)
	(μ V/m)	dB(μ V/m)	
0.009-0.490	2400/F (kHz)		300 30 30 3 3 3 3
0.490-1.705	24000/F (kHz)		
1.705-30	30	29.5	
30-88	100	40	
88-216	150	43.5	
216-960	200	46	
Above 960	500	54	

Restricted bands of operation:

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.41425 – 8.41475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	Above 38.6

FCC ID: VQ5-EBI10**IC: 7412A-EBI10**

RSS-Gen, Table 6 – Restricted Frequency Bands

MHz	MHz	MHz	GHz
0.090 - 0.110	12.57675 - 12.57725	399.9 - 410	7.250 - 7.750
0.495 - 0.505	13.36 - 13.41	608 - 614	8.025 – 8.500
2.1735 - 2.1905	16.42 - 16.423	960 - 1427	9.0 - 9.2
3.020 - 3.026	16.69475 - 16.69525	1435 - 1626.5	9.3 - 9.5
4.125 - 4.128	16.80425 - 16.80475	1645.5 - 1646.5	10.6 - 12.7
4.17725 - 4.17775	25.5 - 25.67	1660 - 1710	13.25 - 13.4
4.20725 - 4.20775	37.5 - 38.25	1718.8 - 1722.2	14.47 - 14.5
5.677 - 5.683	73 - 74.6	2200 - 2300	15.35 - 16.2
6.215 - 6.218	74.8 - 75.2	2310 - 2390	17.7 - 21.4
6.26775 - 6.26825	108 - 138	2483.5 - 2500	22.01 - 23.12
6.31175 - 6.31225	149.9 - 150.05	2655 - 2900	23.6 - 24.0
8.291 - 8.294	156.52475 - 156.52525	3260 - 3267	31.2 - 31.8
8.362 - 8.366	156.7 - 156.9	3332 - 3339	36.43 - 36.5
8.37625 - 8.38675	162.0125 - 167.17	3345.8 - 3358	Above 38.6
8.41425 - 8.41475	167.72 - 173.2	3500 - 4400	
12.29 - 12.293	240 - 285	4500 - 5150	
12.51975 - 12.52025	322 - 335.4	5350 - 5460	

The requirements are **FULFILLED**.

Remarks: The measurement was performed up to the 10th harmonic.

FCC ID: VQ5-EBI10

IC: 7412A-EBI10

5.3 Antenna application

5.3.1 Applicable standard

According to FCC Part 15C, Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit that broken antennas can be replaced by the user, but the use of a standard antenna jack is prohibited.

The EUT has an integrated PCB antennas. No other antennas can be used with the device.

5.3.2 Antenna requirements

According to FCC Part 15C, Section 15.247(b)(4):

The conducted output power limit specified in paragraph (b) of 15.247 is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from intentional radiator shall be reduced below the stated values in paragraph (b)(1), (b)(2) and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Defacto EIRP-Limit:

$$P_{out} = 30 - (G_x - 6);$$

The EUT use antennas smaller that 6 dBi. No defacto limit results.

Remarks: No power reduction results from the defacto limit.

FCC ID: VQ5-EBI10

IC: 7412A-EBI10

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 3	AMF-6D-01002000-22-10P 3117 18N-20 NMS111-GL200SC01-NMS11 BAM 4.5-P NCD KK-SF106-2X11N-6,5M	02-02/17-15-004 02-02/24-05-009 02-02/50-17-003 02-02/50-17-012 02-02/50-17-024 02-02/50-17-025 02-02/50-18-016		06/06/2020	06/06/2019	
SER 2	ESVS 30 VULB 9168 NW-2000-NB KK-EF393/U-16N-21N20 m KK-SD_7/8-2X21N-33,0M	02-02/03-05-006 02-02/24-05-005 02-02/50-05-113 02-02/50-12-018 02-02/50-15-028	19/08/2020 19/07/2020	19/08/2019 19/07/2019		
SER 3	FSW43 JS4-18004000-30-5A AMF-6D-01002000-22-10P 3117 BBHA 9170 KMS102-0.2 m 18N-20 NMS111-GL200SC01-NMS11 BAM 4.5-P NCD KK-SF106-2X11N-6,5M	02-02/11-15-001 02-02/17-05-017 02-02/17-15-004 02-02/24-05-009 02-02/24-05-014 02-02/50-11-020 02-02/50-17-003 02-02/50-17-012 02-02/50-17-024 02-02/50-17-025 02-02/50-18-016	08/04/2020 06/06/2020 12/06/2021	08/04/2019 06/06/2019 12/06/2018	14/01/2021	14/01/2020