

EMI – TEST REPORT

- FCC Part 15.407 -

Type / Model Name : Xirium Pro (NXP2TX)

Product Description : Digital Wireless Audio Network

Applicant : NEUTRIK AG

Address : Im alten Riet 143

9494 SCHAAN, LIECHTENSTEIN

Manufacturer : NEUTRIK AG

Address : Im alten Riet 143

9494 SCHAAN, LIECHTENSTEIN

Licence holder : NEUTRIK AG

Address : Im alten Riet 143

9494 SCHAAN, LIECHTENSTEIN

Test Result according to the standards
listed in clause 1 test standards:

POSITIVE

Test Report No. : **T41996-03-00HS**

02. October 2018

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
without the written permission of the test laboratory.

Contents

1	<u>TEST STANDARDS</u>	3
2	<u>EQUIPMENT UNDER TEST</u>	4
2.2	General remarks	4
3	<u>TEST RESULT SUMMARY</u>	6
4	<u>TEST ENVIRONMENT</u>	7
4.1	Address of the test laboratory	7
4.2	Environmental conditions	7
4.3	Statement of the measurement uncertainty	7
4.1	Measurement protocol for FCC and ISED	8
5	<u>TEST CONDITIONS AND RESULTS</u>	9
5.1	Conducted emissions	9
5.2	Undesirable emissions	13
6	<u>USED TEST EQUIPMENT AND ACCESSORIES</u>	27

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (September, 2017)

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, 2017)

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 15.212	Modular transmitters

FCC Rules and Regulations Part 15, Subpart E – Unlicensed National Information Infrastructure Devices (December, 2017)

Part 15, Subpart E, Section 15.407	Operation within the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, 5.47 - 5.725 GHz and 5.725 - 5.85 GHz
------------------------------------	--

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 789033 D02 v02r01	Guidelines for compliance testing of UNII-Devices – Part 15, Subpart E, December 14, 2017.
-----------------------	--

2 EQUIPMENT UNDER TEST

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

2.2 General remarks

The EUT is fully tested and approved under FCC 15.407 with the test report T41996-00-00HS by CSA Group Bayern GmbH. Now the EUT is modified a new variant of the EUT will operate without battery and without charging circuits. This test report shows the further compliance to FCC 15.407. Therefore re-measurements are done for the appropriate RF-parameters like spurious emission.

2.3 Equipment category

Mobile and portable WLAN client

2.4 Short description of the equipment under test (EUT)

The EUT is part of a digital wireless audio network. The product represents a TX base station. The audio stream is transmitted in the band 5180 MHz to 5240 MHz and 5725 MHz to 5850 MHz. The EUT is controlled via 2.4 GHz WLAN interface. The 2.4 GHz functionality is not part of this test report.

Number of tested samples: 1
 Serial number: Host module 620007, TX module 518938
 Firmware version: 4.0

EUT configuration:

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

2.5 Variants of the EUT

The EUT is available with and without battery.
 Xirium Pro (NXP2TX) US-Version

2.6 Operation frequency and channel plan

The operating frequency is 5150 MHz to 5250 MHz and 5725 MHz to 5850 MHz.
 WLAN Standard 802.11a:

Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240

Note: Ch36 is disabled by firmware.

Channel	Frequency (MHz)
149	5745
153	5765
157	5785
161	5805
165	5825

Note: The marked frequencies are determined for final testing.

2.7 Transmit operating modes

The module use OFDM modulation and is capable to provide following data rates:

- 802.11a 24, 6 Mbps (Mbps = megabits per second)

2.8 Antenna

The following antenna shall be used with the EUT:

Number	Manufacturer Number	Characteristic	Model number	Connector	Frequency (GHz)	Gain 5 GHz	Cable loss (dB)	effective Gain 5 GHz (dBi)
1	ECO9-5500 Series	Omni	ECO9-5500-BLK-RN	N-male	5 GHz	9.0	0	9.0
2	ECO6-5500 Series	Omni	ECO6-5500-BLK-RN	N-male	5 GHz	6.0	0	6.0
3	WiFi Antenna 1399.17.0225	Omni	SOA-2456/360/1/0/V	N-male	5 GHz	2.0	0	2.0

2.9 Power supply system utilised

Power supply voltage, V_{nom} : Input: 100-240 V, 50-60 Hz, 1 ϕ Power supply,
Output: +5 VDC

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 have been made in all three orthogonal axes and the settings of the EUT were changed to locate at which position and at what setting of the EUT produce the maximum of the emissions. For the final measurement the EUT is set in Y position.

Preliminary tests were performed to find the worst case mode from all possible combinations between available modulations, data rates. The maximum output power depends on used data rate.

Following channels and test modes were selected for the final test as listed below:

802.11a mode:

Technology	Available channels	Tested channels	Modulation	Modulation type	Data rate (Mbps)
802.11a	40 - 165	40, 44, 48 149, 153, 165	OFDM	BPSK	6, MCS=0 (BW=20 MHz)

2.11.1 Test jig

No test jig is used.

2.11.2 Test software

The production software for the EUT provides the TX continuous mode, modulated, after switch on. The XIRIUM PRO App is used to switch the channels 40, 44, 48, 149, 153, 165 and to set the highest available TX power.

3 TEST RESULT SUMMARY

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	-	AC power line conducted emissions	passed
15.407(a)	-	EBW 26 dB	Not tested
15.407(a)	-	Output power and PSD	Not tested
15.407(b)	-	Undesirable emissions	passed
15.205(a)	-	Emissions in restricted bands	passed
15.407(g)	-	Transmitter frequency stability	Not tested
15.407(h)(1)	-	TPC	not applicable
15.407(a)	-	Antenna requirement	Not tested
15.407(a)	-	EBW26, OBW 99 %	Not tested

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 : 11 July 2018

Testing concluded on : 21 September 2018

Checked by:

Tested by:

Klaus Gegenfurtner
Teamleader Radio

Hermann Smetana
Radio Team

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

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.

4.1 Measurement protocol for FCC and ISCED

4.1.1 General information

The Open Area test site is a listed Open Site under the Canadian Test-Sites File-No:

IC 3009A-1

The Anechoic chamber is a listed test site under the Canadian Test-Sites File-No:

IC 3009A-2

4.1.2 General Standard information

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

4.1.2.1 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.

4.1.3 Radiated emission (electrical field 1 GHz - 18 GHz)

4.1.3.1 Description of measurement

Radiated emission from the EUT are measured in the frequency range of 1 GHz to the maximum frequency as specified in 47 CFR Part 15 Subpart A section 15.33, using a tuned receiver (Spectrum Analyser) and appropriate linearly polarized antennas. Table top equipment is placed on a 0.65 X 1.5 metre non-conducting table 80 centimetres above the ground plane. The turntable must be fully covered with the appropriate absorber (Type VHP-12). Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is established in accordance with ANSI C63.4.

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. The antenna is positioned 3 metres horizontally from the EUT.

Measurements are made in both the horizontal and vertical polarization planes in a fully anechoic room using a spectrum analyser set to a peak detector function and a resolution and video bandwidth of 1 MHz. All tests are performed at a test distance of 3 metres. Hand-held or body-worn devices are rotated around three orthogonal axes in order to determine the position, angle and configuration having the maximum emission. The cables and equipment are placed and moved within the range of their likely positioning to find the maximum emission. These conditions will then be used for the final measurements. The antenna height is then adjusted from 1 m to 4 m maximizing the measured value. The antenna is mounted to a boresight axis so the antenna centre always points to the EUT.

Other devices are placed according to their general purpose. The turntable is rotated 360° until the spectrum analyser displays the maximum level at the observed frequency. The antenna height is then adjusted from 1 m to 4 m maximizing the measured value. The turntable is re-adjusted to re-affirm the maximum emission value which is then recorded. This procedure is repeated for all frequencies of interest.

When the EUT is larger than the beamwidth 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 demonstrate that emissions are under the limits at the specified test distance.

5 TEST CONDITIONS AND RESULTS

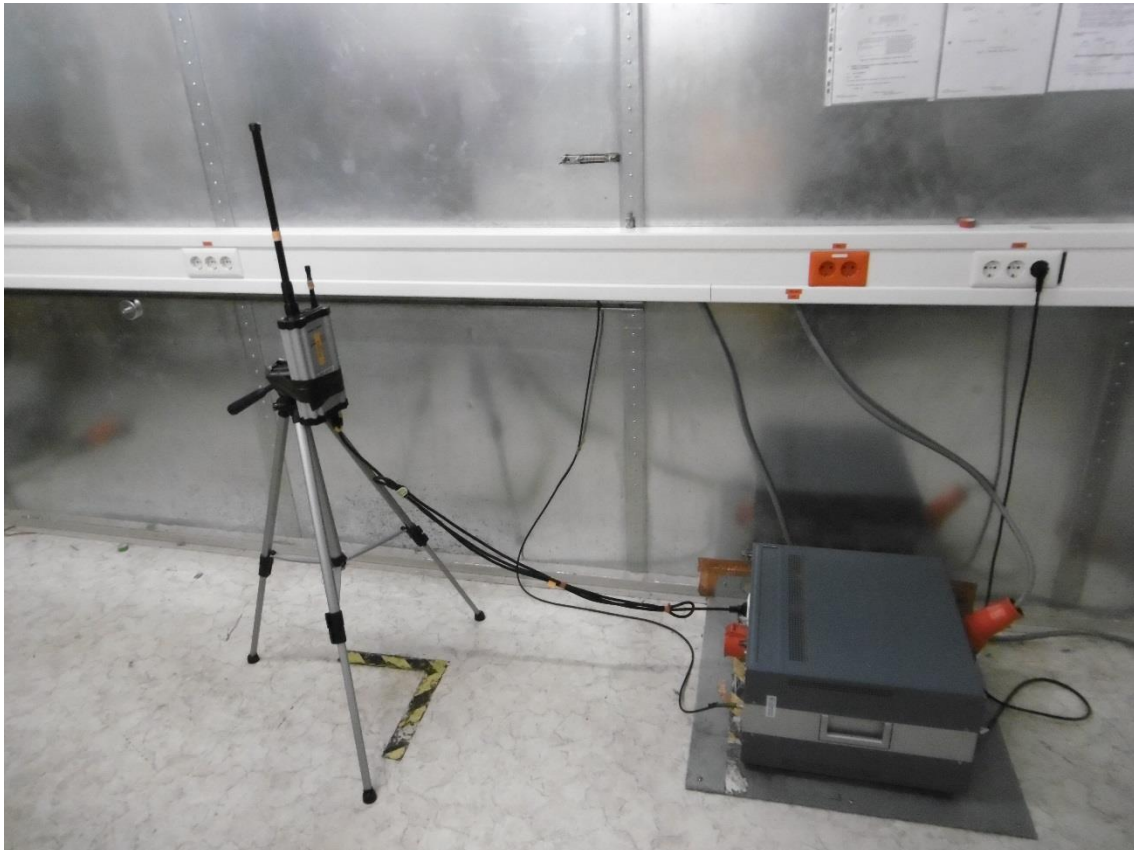
5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



5.1.3 Applicable standard

According to FCC Part 15C, Section 15.207(a):

Except as shown in paragraphs (b) and (c) of this Section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

5.1.4 Description of Measurement

The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a line impedance stabilization network (LISN) with 50Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver with quasi-peak and average detection and recorded.

To convert between dBμV and μV, the following conversions apply:

$$\text{dB}\mu\text{V} = 20 \log \mu\text{V}$$

$$\mu\text{V} = 10^{(\text{dB}\mu\text{V}/20)}$$

5.1.5 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin 1.7 dB at 15.131 MHz

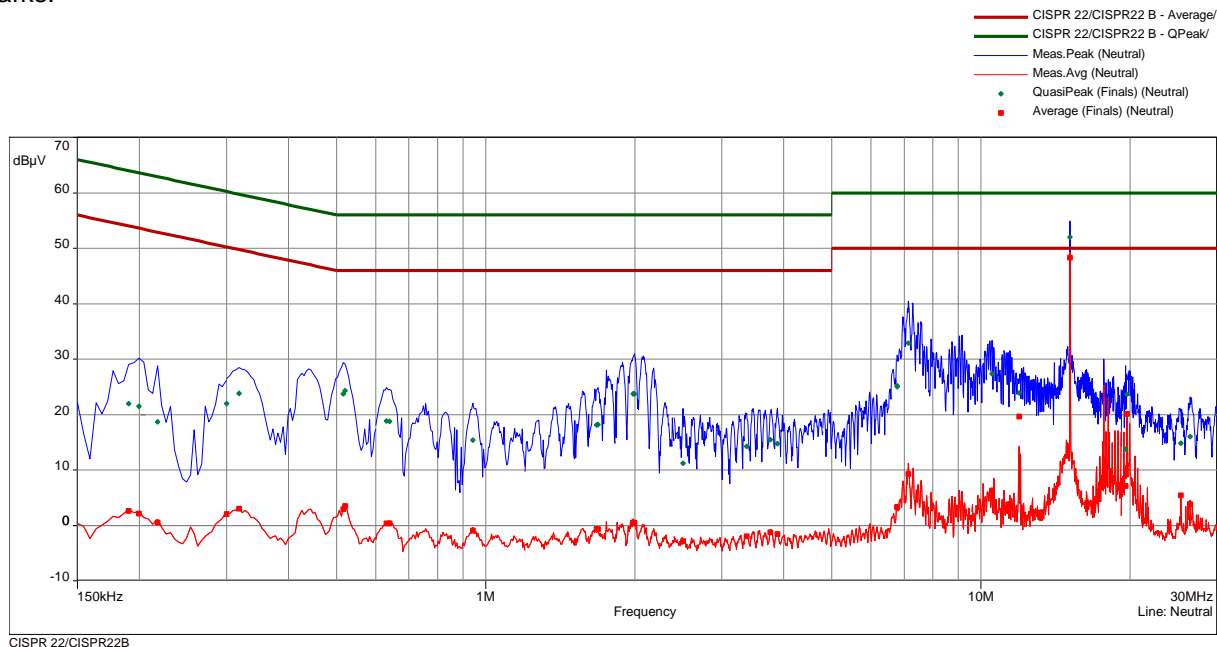
The requirements are **FULFILLED**.

Remarks: For detailed test result please see following test protocols.

5.1.6 Test protocol

Test point N
Operation mode: TX 2.4 GHz and 5 GHz
Remarks:

Result: passed

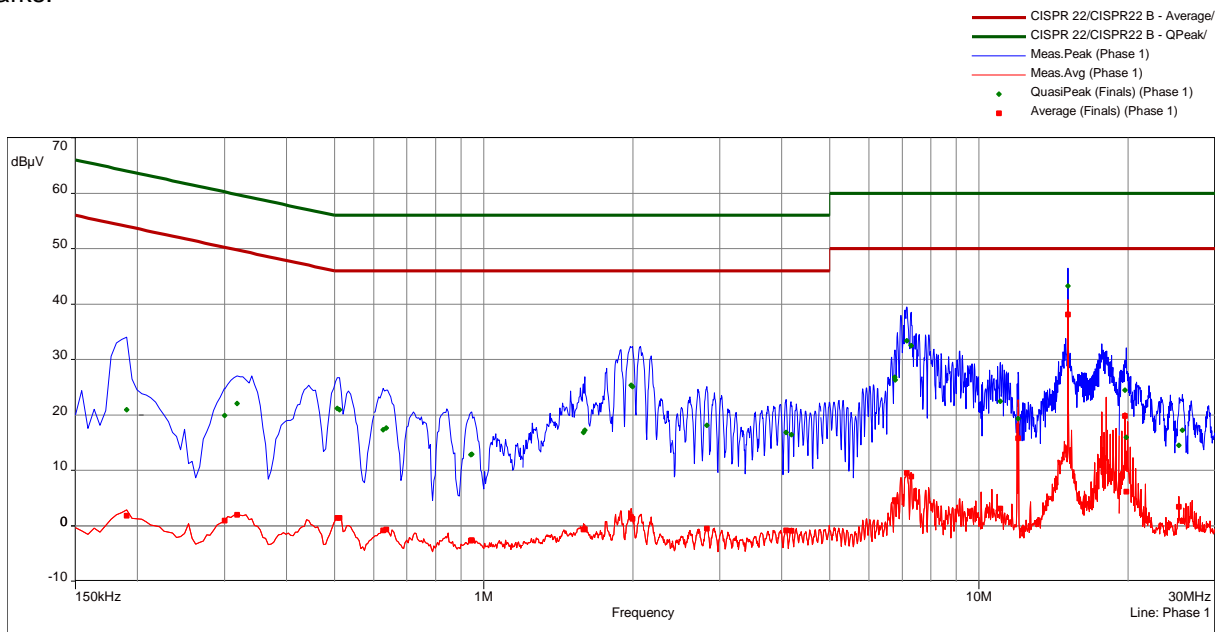


CISPR 22/CISPR22B

freq	SR	QP	margin	limit	AV	margin	limit	line	corr
MHz		dB(μV)	dB	dB	dB(μV)	dB	dB		dB
0.191	9	22.0	42.1	64.0	2.6	51.4	54.0	Neutral	10.1
0.200	9	21.5	42.1	63.6	2.1	51.5	53.6	Neutral	10.1
0.218	9	18.7	44.2	62.9	0.5	52.4	52.9	Neutral	10.1
0.300	9	21.9	38.3	60.2	2.0	48.2	50.2	Neutral	10.1
0.318	10	23.8	36.0	59.8	3.0	46.8	49.8	Neutral	10.1
0.516	10	23.7	32.3	56.0	2.9	43.1	46.0	Neutral	10.1
0.521	10	24.3	31.7	56.0	3.5	42.5	46.0	Neutral	10.1
0.632	11	18.9	37.1	56.0	0.4	45.6	46.0	Neutral	10.2
0.641	11	18.8	37.2	56.0	0.4	45.6	46.0	Neutral	10.2
0.942	11	15.4	40.6	56.0	-1.0	47.0	46.0	Neutral	10.2
1.677	12	18.1	37.9	56.0	-0.7	46.7	46.0	Neutral	10.3
1.686	12	18.2	37.8	56.0	-0.7	46.7	46.0	Neutral	10.3
1.988	12	23.8	32.2	56.0	0.5	45.5	46.0	Neutral	10.3
1.997	12	23.8	32.2	56.0	0.5	45.5	46.0	Neutral	10.3
2.504	13	11.2	44.8	56.0	-2.9	48.9	46.0	Neutral	10.3
3.363	13	14.3	41.7	56.0	-2.0	48.0	46.0	Neutral	10.4
3.759	13	15.4	40.6	56.0	-1.2	47.2	46.0	Neutral	10.4
3.885	13	14.7	41.3	56.0	-1.6	47.6	46.0	Neutral	10.4
6.771	14	25.0	35.0	60.0	3.3	46.8	50.0	Neutral	10.6
6.776	14	25.2	34.8	60.0	3.4	46.6	50.0	Neutral	10.6
7.131	14	32.9	27.1	60.0	9.3	40.7	50.0	Neutral	10.6
10.527	15	27.4	32.6	60.0	6.3	43.7	50.0	Neutral	10.7
11.949	15	23.9	36.1	60.0	19.7	30.3	50.0	Neutral	10.8
15.131	15	52.1	8.0	60.0	48.3	1.7	50.0	Neutral	11.0
19.596	16	13.8	46.2	60.0	7.1	42.9	50.0	Neutral	11.2
19.695	16	23.7	36.3	60.0	20.1	29.9	50.0	Neutral	11.2
25.293	16	14.9	45.1	60.0	5.5	44.5	50.0	Neutral	11.3
26.432	16	16.1	44.0	60.0	3.9	46.2	50.0	Neutral	11.2

Test point L1
Operation mode: TX 2.4 GHz and 5 GHz
Remarks:

Result: passed



CISPR 22/CISPR22B

freq	SR	QP	margin	limit	AV	margin	limit	line	corr
MHz		dB(μV)	dB	dB	dB(μV)	dB	dB		dB
0.191	1	20.9	43.1	64.0	1.8	52.2	54.0	Phase 1	10.1
0.300	1	19.9	40.3	60.2	0.9	49.3	50.2	Phase 1	10.1
0.318	2	22.1	37.7	59.8	2.0	47.8	49.8	Phase 1	10.1
0.507	2	21.2	34.8	56.0	1.4	44.6	46.0	Phase 1	10.1
0.512	2	21.0	35.1	56.0	1.4	44.6	46.0	Phase 1	10.1
0.627	3	17.3	38.7	56.0	-0.8	46.8	46.0	Phase 1	10.2
0.636	3	17.6	38.4	56.0	-0.7	46.7	46.0	Phase 1	10.2
0.942	3	12.8	43.2	56.0	-2.7	48.7	46.0	Phase 1	10.2
0.947	3	12.9	43.1	56.0	-2.6	48.6	46.0	Phase 1	10.2
1.592	4	16.8	39.2	56.0	-0.7	46.7	46.0	Phase 1	10.3
1.601	4	17.3	38.8	56.0	-0.6	46.6	46.0	Phase 1	10.3
1.988	4	25.3	30.7	56.0	1.5	44.5	46.0	Phase 1	10.3
1.997	4	25.1	30.9	56.0	1.3	44.7	46.0	Phase 1	10.3
2.823	5	18.1	37.9	56.0	-0.5	46.5	46.0	Phase 1	10.3
4.079	5	16.8	39.2	56.0	-0.8	46.8	46.0	Phase 1	10.4
4.187	5	16.4	39.6	56.0	-0.9	46.9	46.0	Phase 1	10.4
6.767	6	26.8	33.2	60.0	4.7	45.3	50.0	Phase 1	10.6
6.776	6	26.3	33.7	60.0	4.4	45.6	50.0	Phase 1	10.6
7.149	6	33.4	26.6	60.0	9.5	40.5	50.0	Phase 1	10.6
7.302	6	32.5	27.5	60.0	8.9	41.1	50.0	Phase 1	10.6
11.031	7	22.5	37.5	60.0	3.1	46.9	50.0	Phase 1	10.8
12.003	7	19.3	40.7	60.0	15.8	34.2	50.0	Phase 1	10.9
15.131	7	43.3	16.7	60.0	38.1	11.9	50.0	Phase 1	11.2
19.695	8	24.5	35.6	60.0	19.8	30.2	50.0	Phase 1	11.4
19.844	8	16.0	44.0	60.0	6.2	43.8	50.0	Phase 1	11.5
25.293	8	14.5	45.5	60.0	3.4	46.6	50.0	Phase 1	11.7
25.716	8	17.2	42.8	60.0	0.8	49.2	50.0	Phase 1	11.7

5.2 Undesirable emissions

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

5.2.1 Description of the test location

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

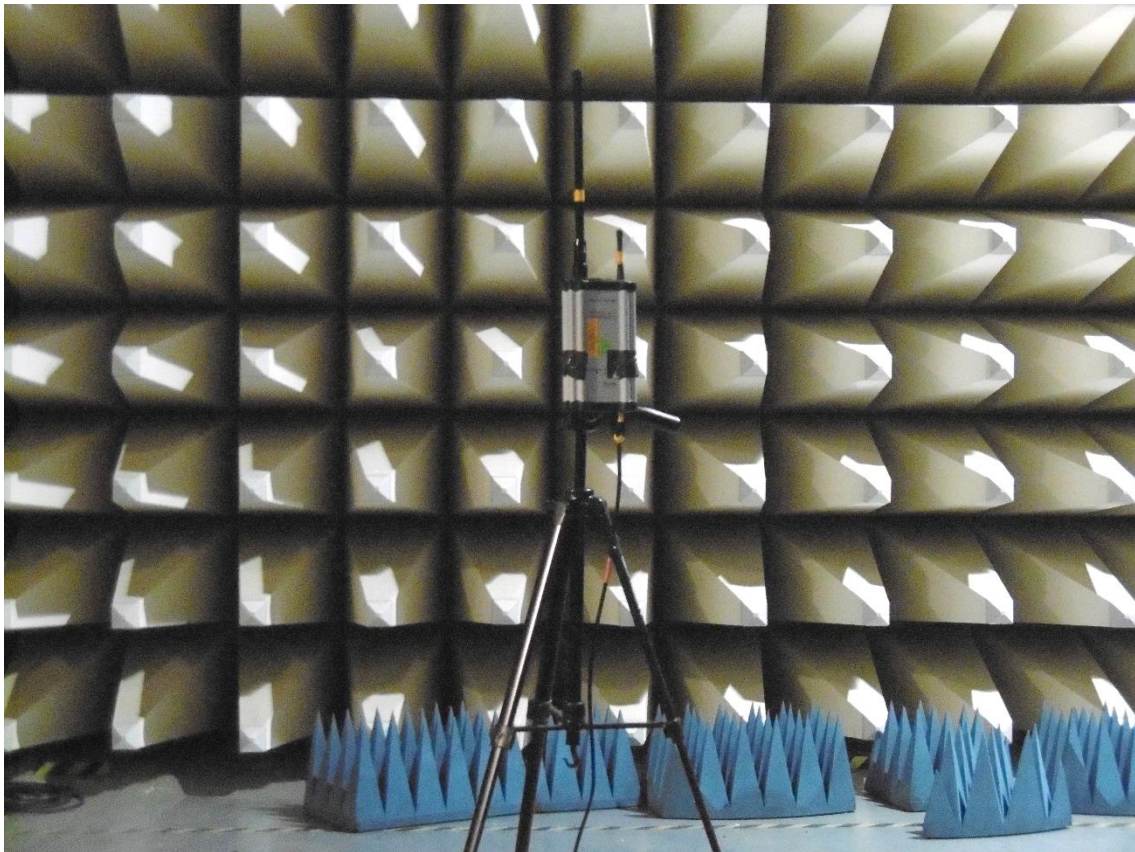
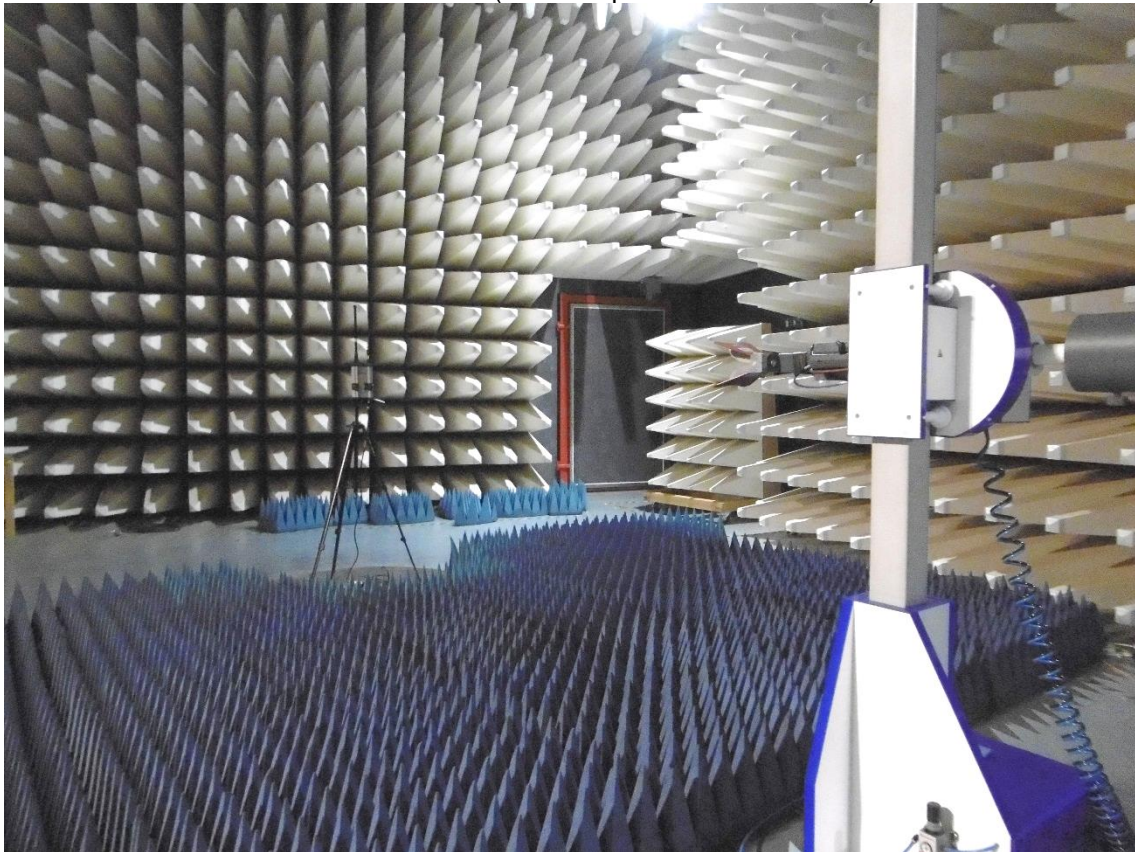
5.2.2 Photo documentation of the test set-up

Open area test site (Test setup for 30 MHz – 1000 MHz)



FCC ID: 2ABA7XPT

Anechoic chamber (Test setup for 1 GHz – 18 GHz)



Anechoic chamber (Test setup for 18 GHz – 40 GHz)



5.2.3 Applicable standard

According to FCC Part 15E, Section 15.407(b):

For transmitters operating in the defined bands shall not exceed the appropriate emission limit outside of the operating bands.

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) (see Section 15.205(c)).

5.2.4 Description of Measurement

Undesirable emissions are measured using a spectrum analyser and following the procedures according to the OET 789033, item H. If the emission level of the EUT in peak mode complies with the average limit then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported. Up from 7.5 GHz a HP filter is used.

Spectrum analyser settings for peak values:

RBW: 1 MHz, VBW: 3 MHz, Sweep: Auto, Trace mode: max hold;

Spectrum analyser settings for average values:

RBW: 1 MHz VBW: 3 MHz Detector: RMS, Sweep: 100 ms, Trace mode: max hold;

5.2.5 Test result

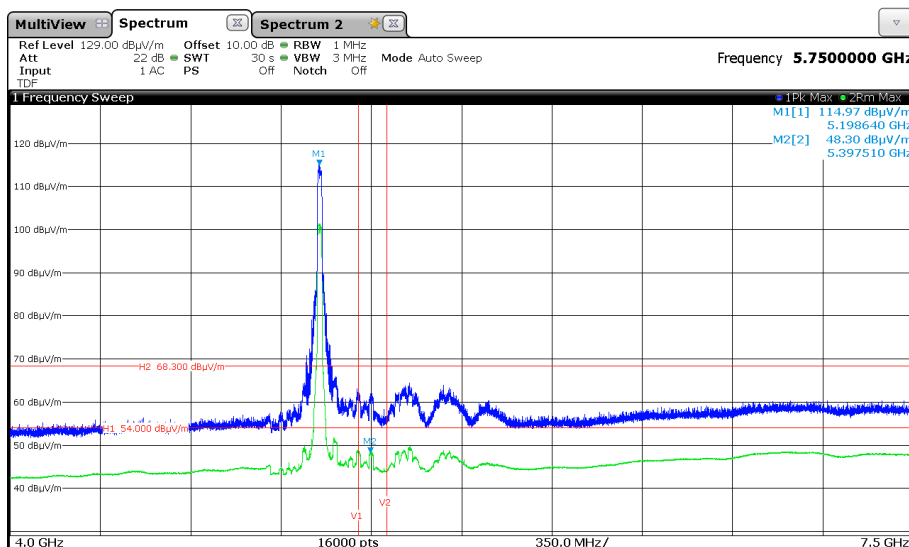
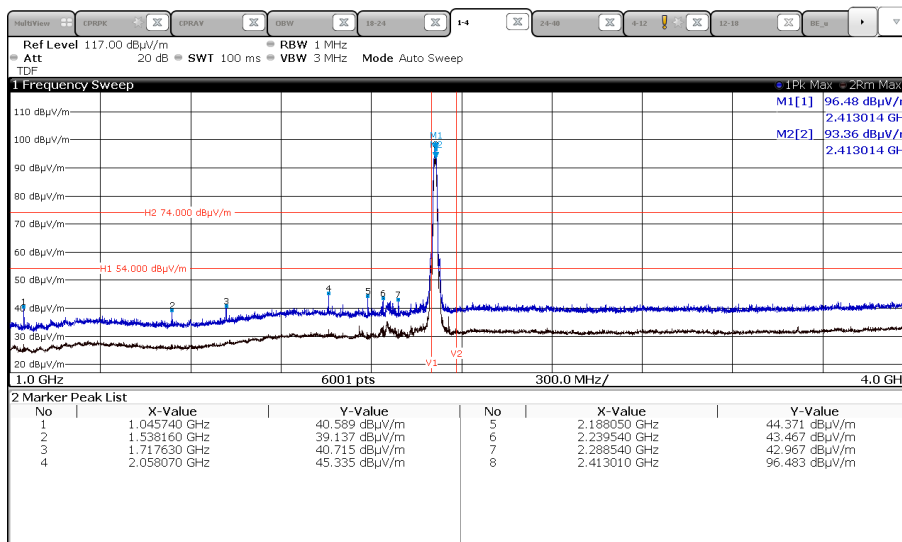
5.2.5.1 Radiated emissions and harmonics in restricted bands

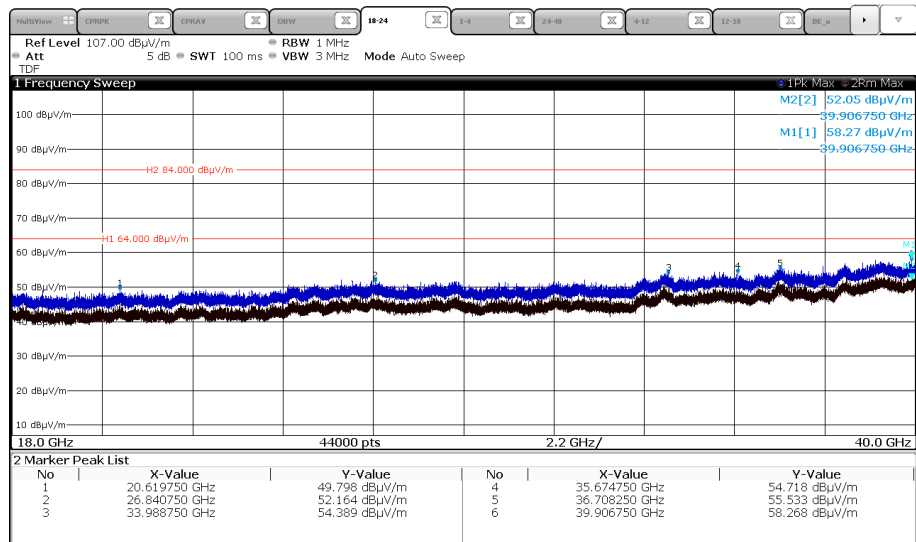
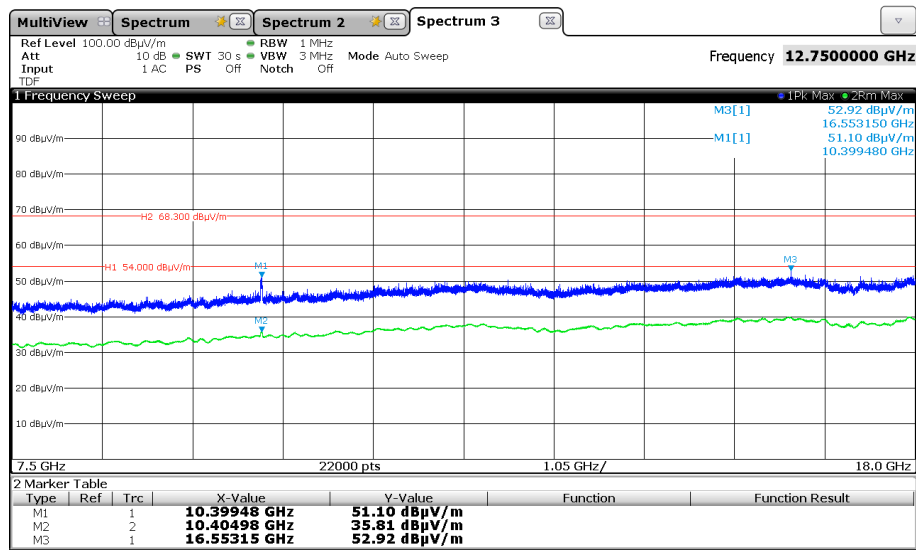
$f < 1000$ MHz

Frequency (MHz)	Reading Vert. (dBμV)	Reading Hor. (dBμV)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dBμV/m)	Level Hor. (dBμV/m)	Limit (dBμV/m)	Dlimit (dB)
39.11	2.8	-1.3	13.5	12.3	16.3	11.0	40.0	-23.7
49.20	5.8	-0.6	14.2	13.2	20.0	12.6	40.0	-20.0
109.00	21.7	20.6	9.8	10.7	31.5	31.3	43.5	-12.0
117.79	10.6	3.2	11.3	11.9	21.9	15.1	43.5	-21.6
250.00	21.7	10.8	12.9	13.1	34.6	23.9	46.0	-11.4
350.00	13.9	13.5	17.4	17.0	31.3	30.5	46.0	-14.7
450.00	8.6	1.5	20.1	19.9	28.7	21.4	46.0	-17.3

$f > 1000$ MHz

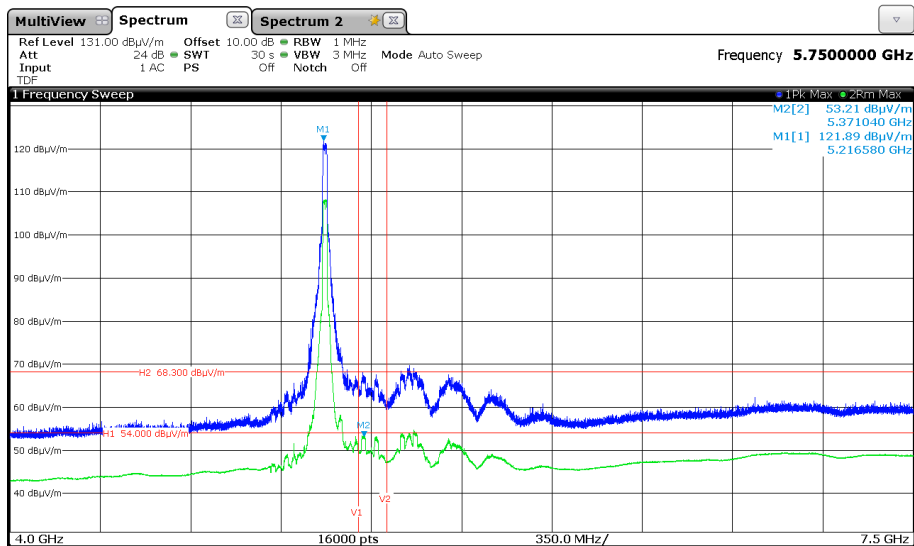
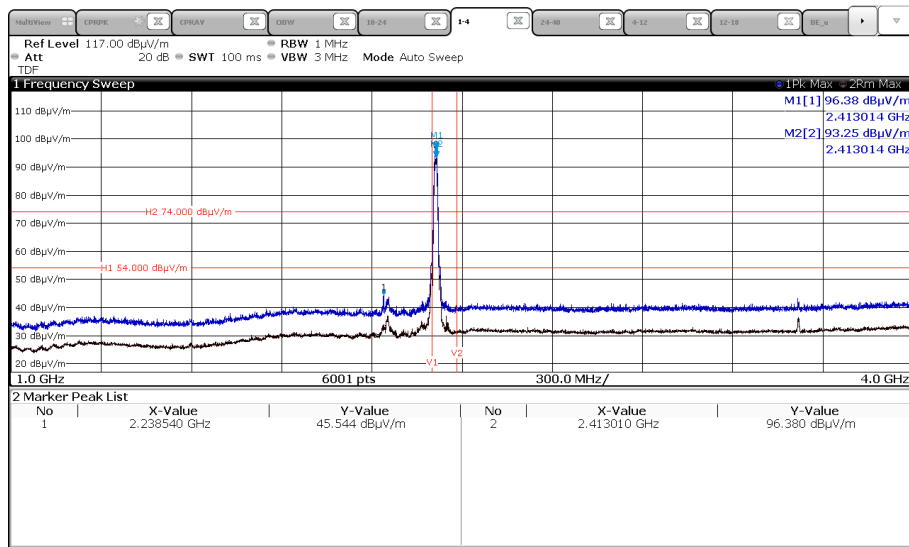
802.11a, 2 TX, 2.4 GHz and 5 G:
CH40



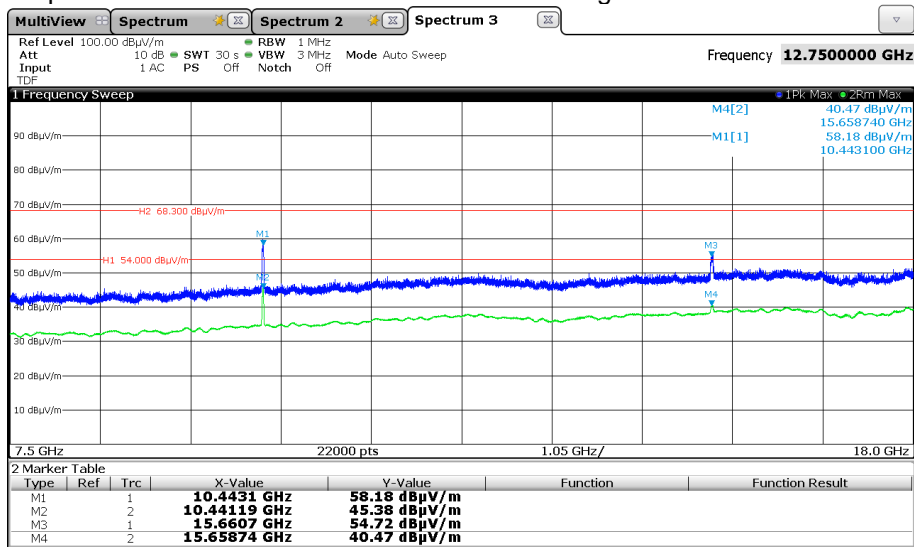


Note: The frequency range 18 – 40 GHz has been measured at distance 1 m. Therefore the limits are adopted 10 dB higher.

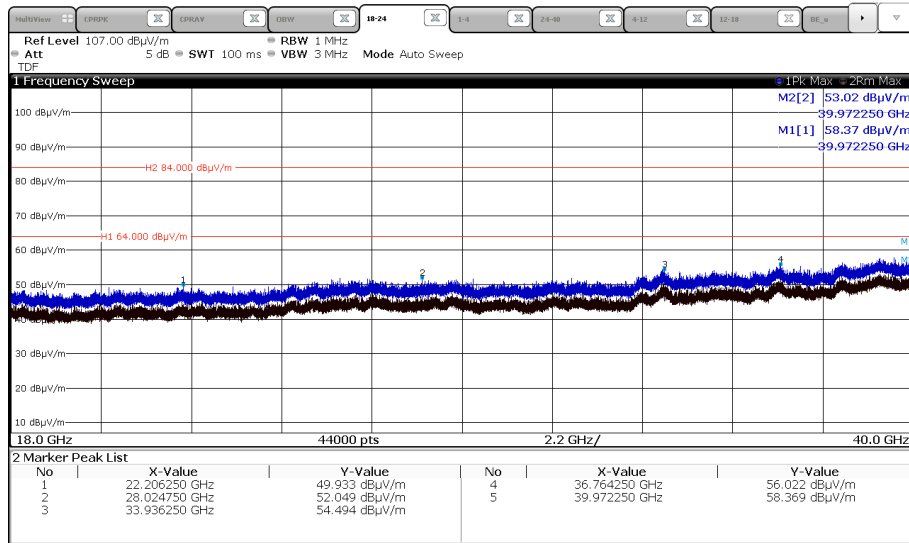
CH44



Note: The limit 68.3 dBμV/m means -27 dBm converted into fieldstrength.

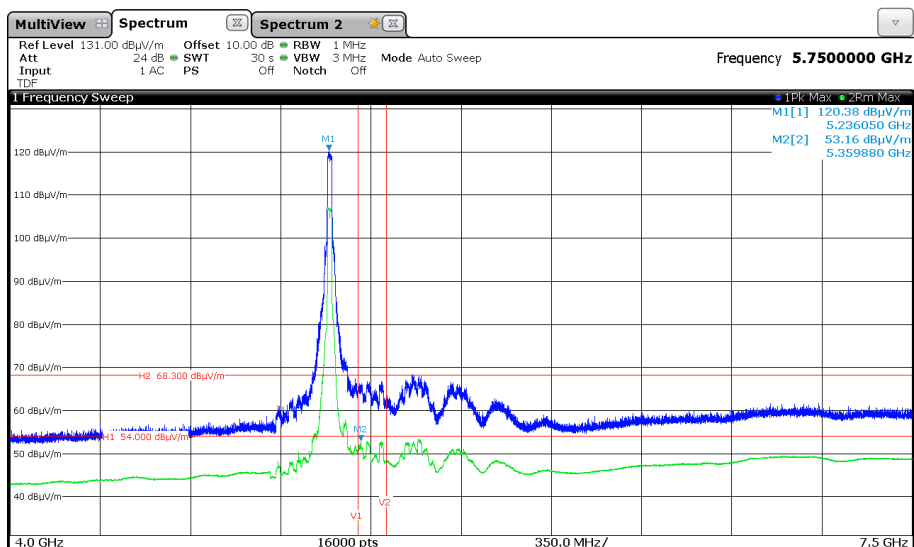
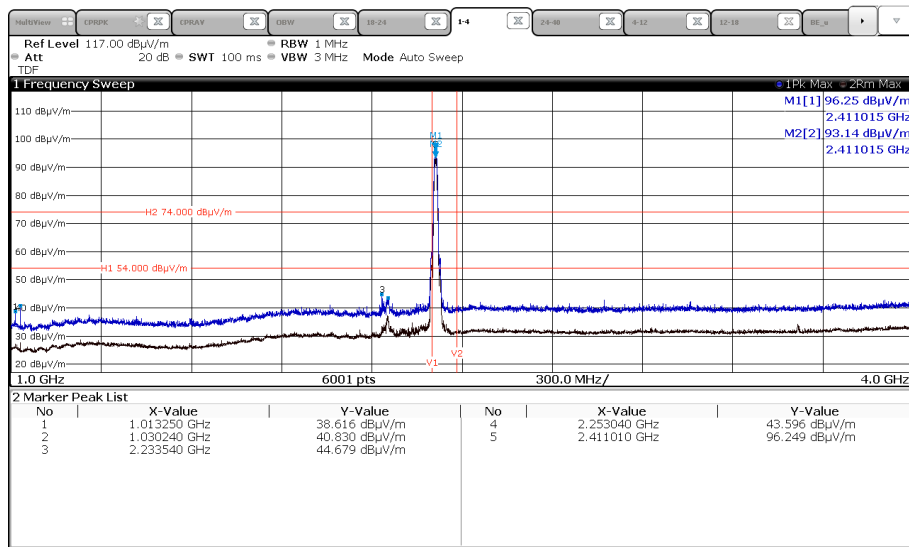


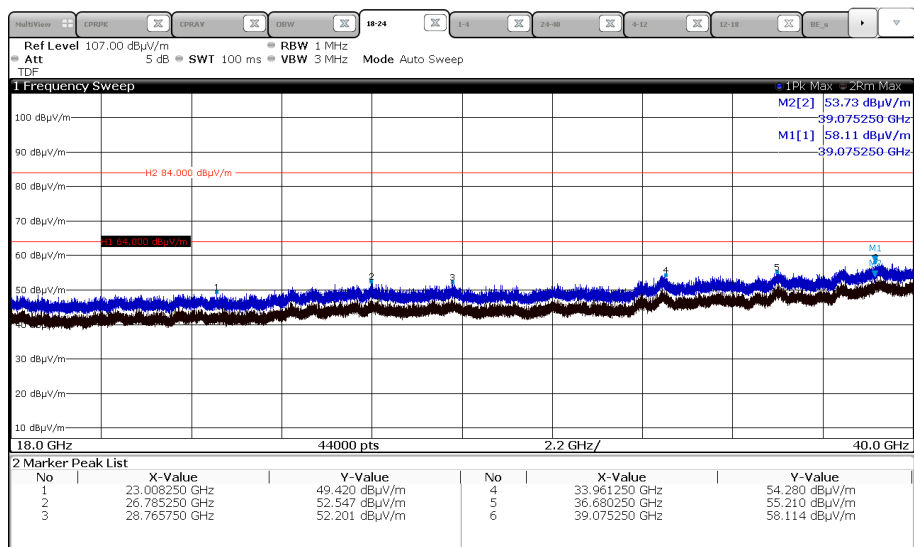
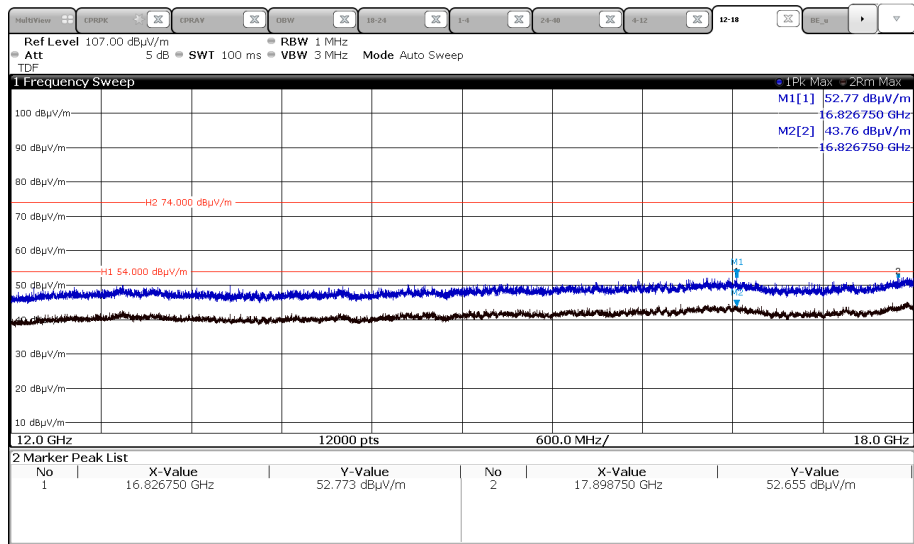
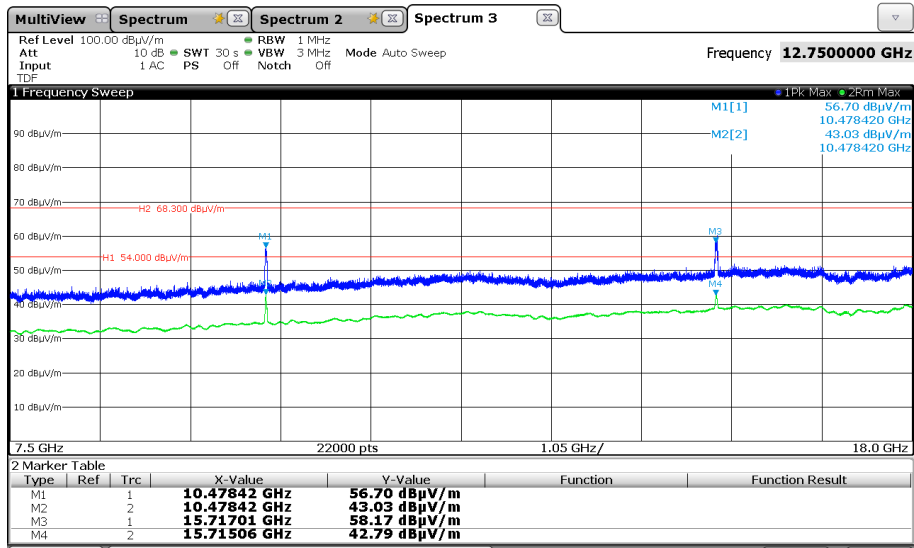
FCC ID: 2ABA7XPT



Note: The frequency range 18 – 40 GHz has been measured at distance 1 m. Therefore the limits are adopted 10 dB higher.

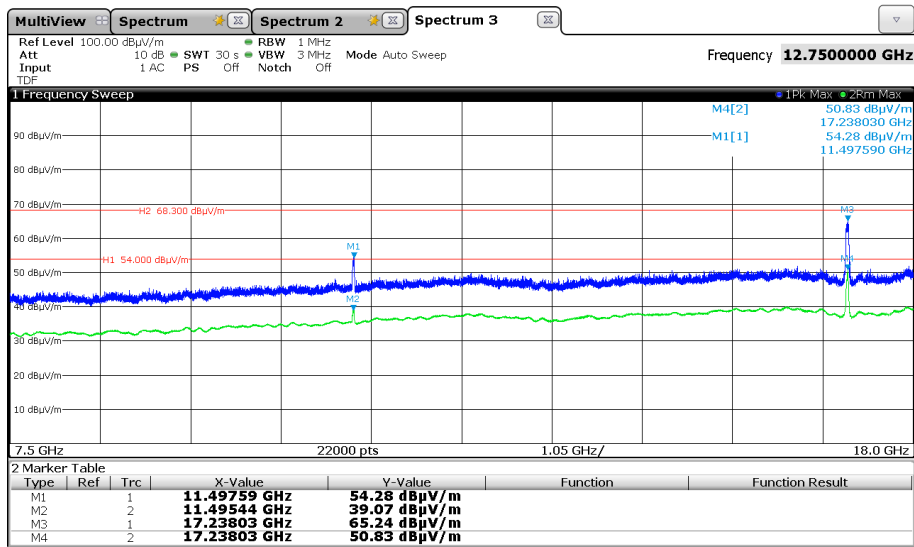
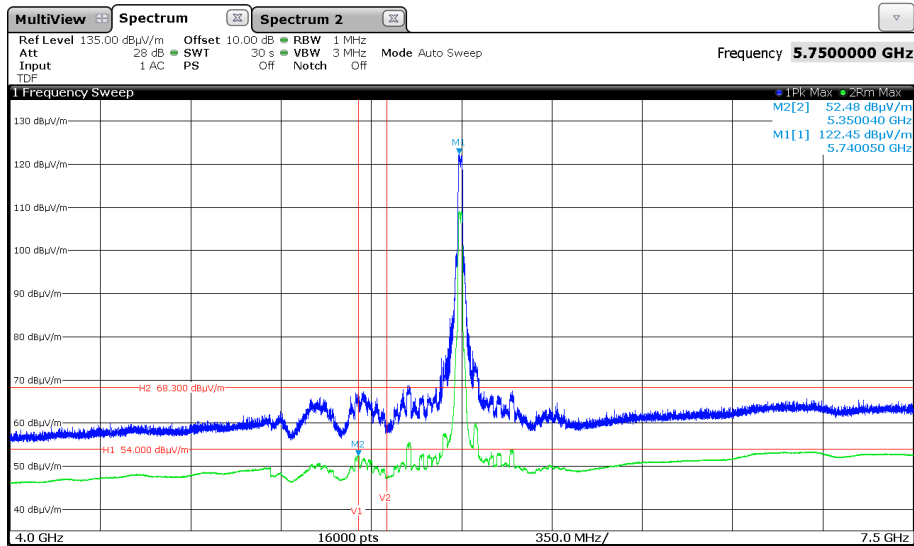
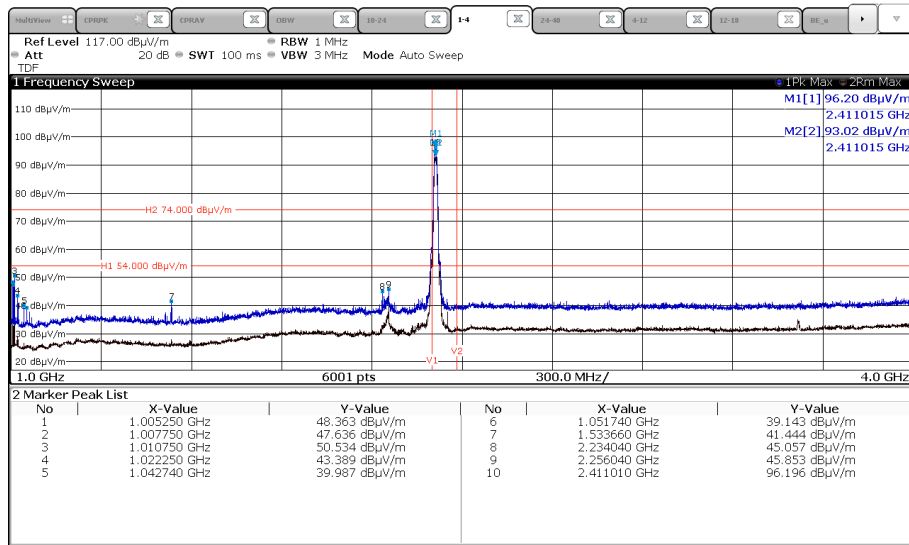
CH48



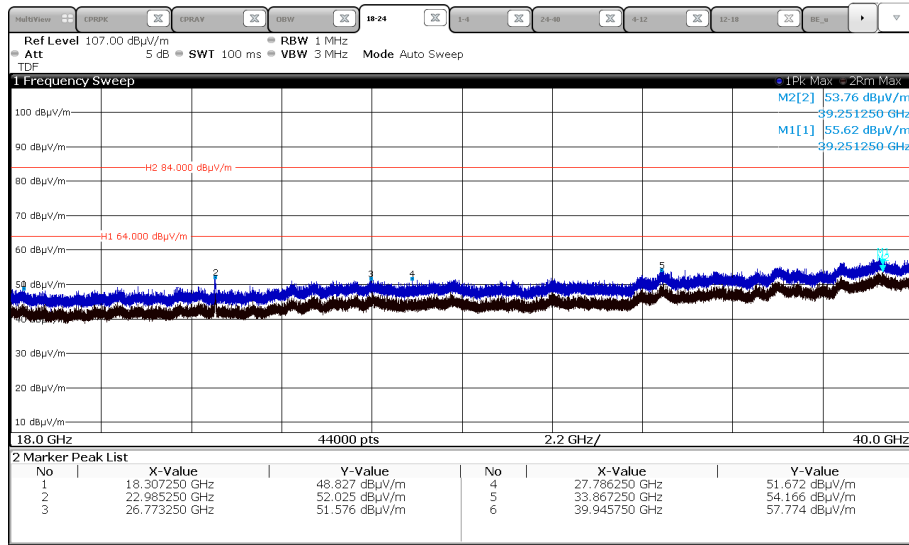


Note: The frequency range 18 – 40 GHz has been measured at distance 1 m. Therefore the limits are adopted 10 dB higher.

CH149

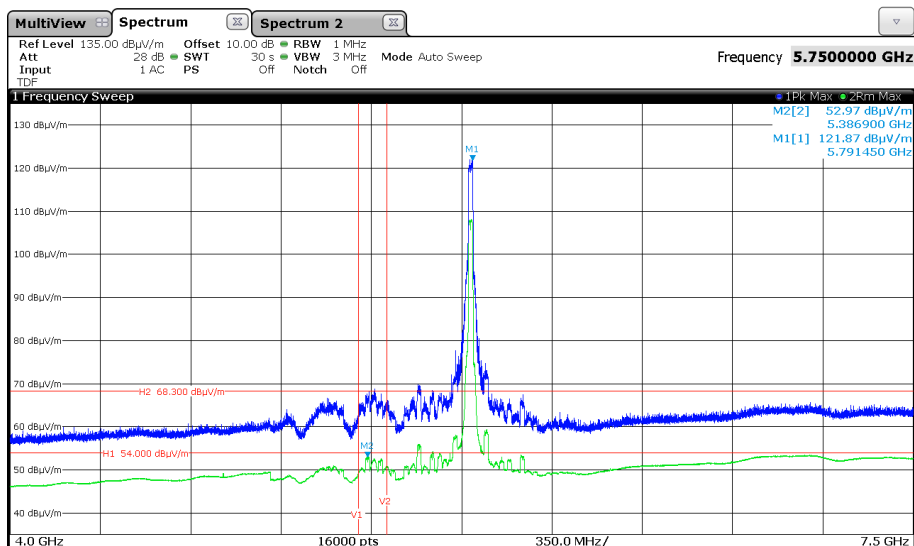
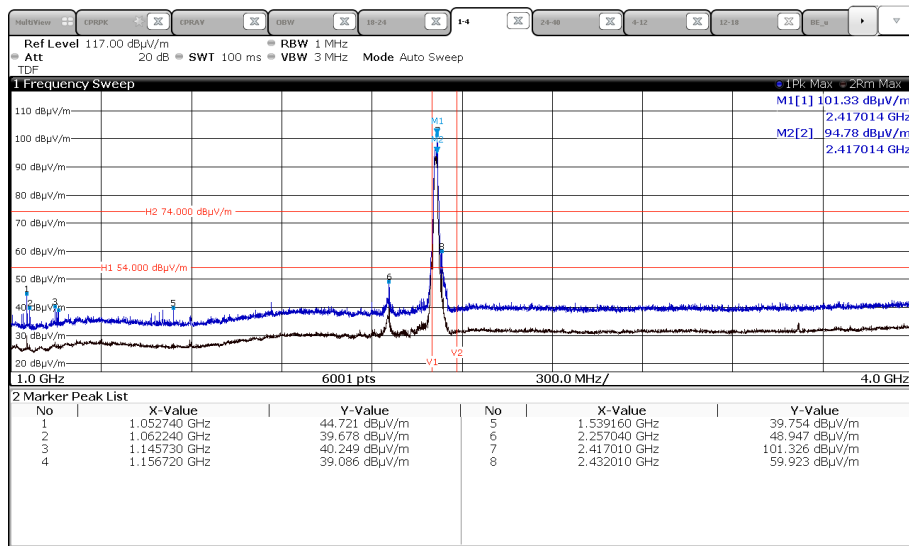


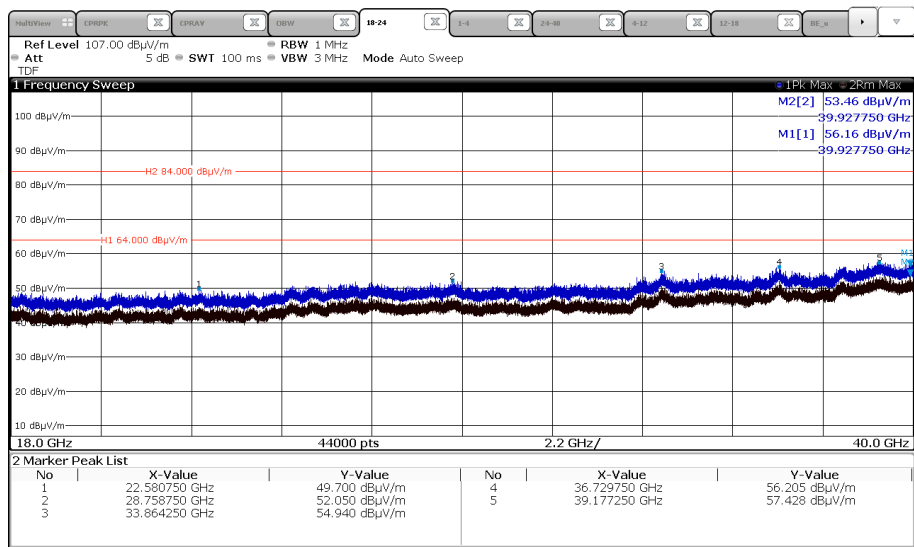
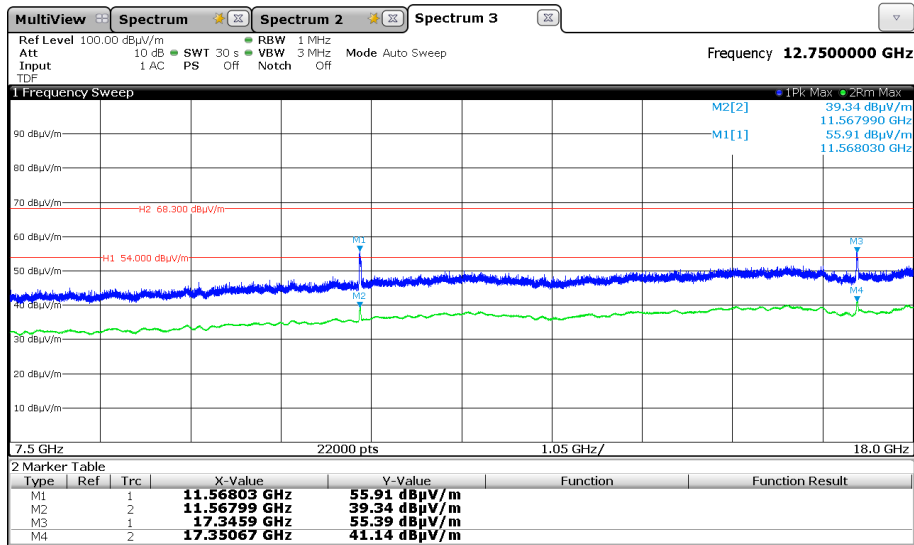
FCC ID: 2ABA7XPT



Note: The frequency range 18 – 40 GHz has been measured at distance 1 m. Therefore the limits are adopted 10 dB higher.

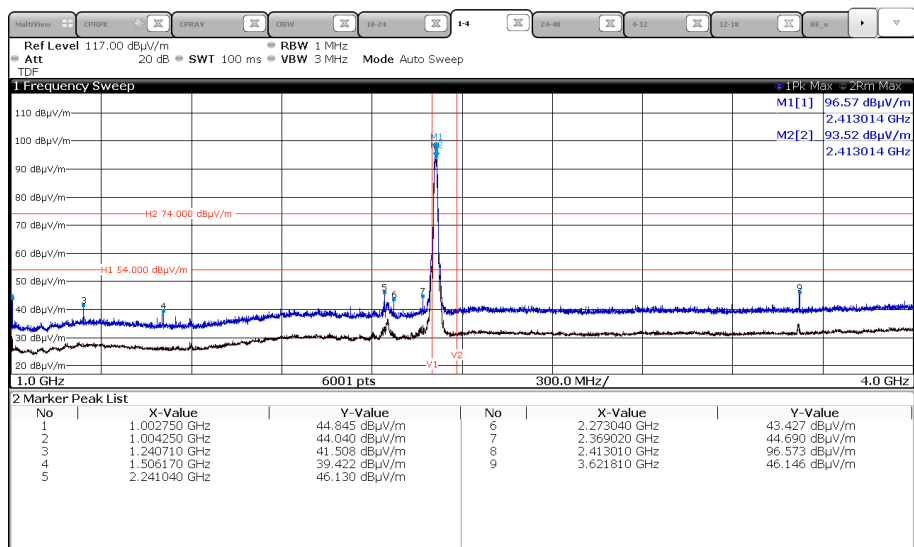
CH153

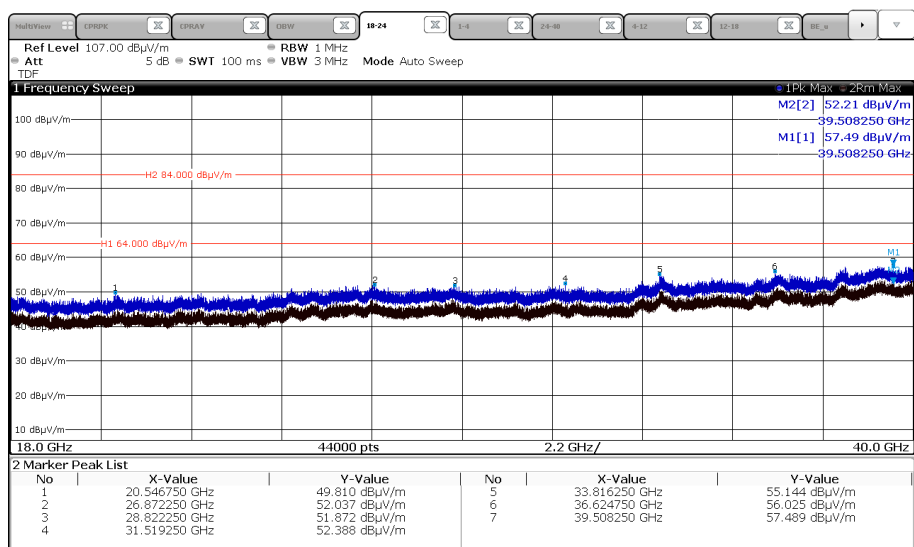
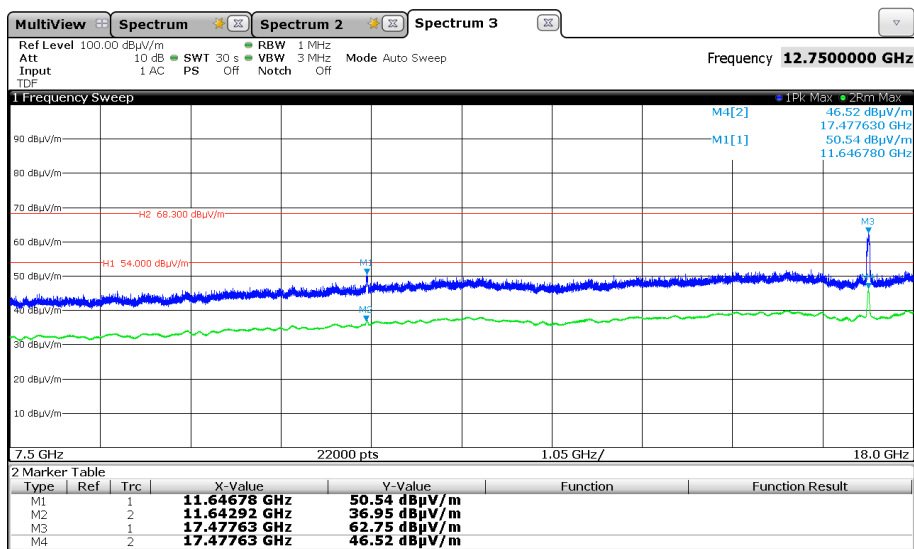
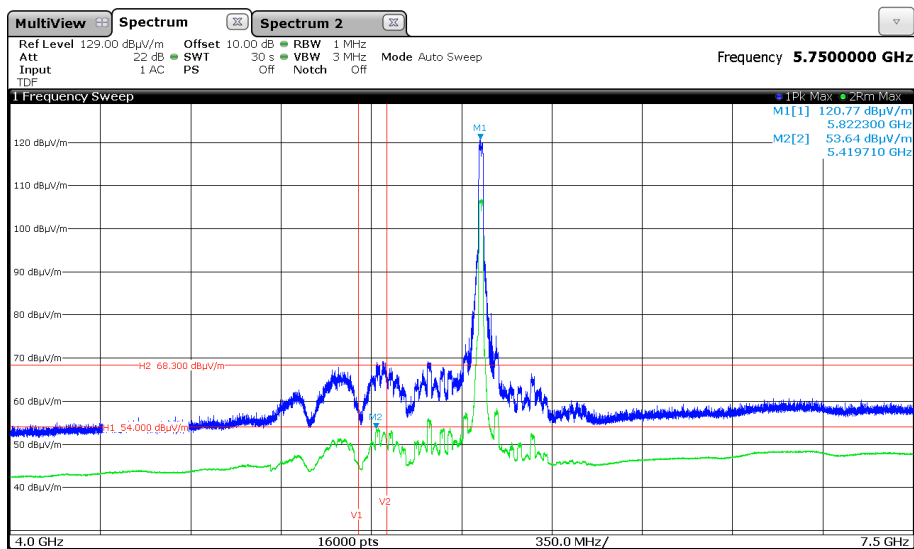




Note: The frequency range 18 – 40 GHz has been measured at distance 1 m. Therefore the limits are adopted 10 dB higher.

CH165





FCC ID: 2ABA7XPT

Limit according to FCC Part 15E, Section 15.407(b) for undesirable emissions:

Operating Frequency range (MHz)	Undesirable emission limit, EIRP (dBm/MHz)
5150 - 5250	-27.0
5725 - 5850	-27.0

Radiated limits according to FCC Part 15C, Section 15.209(a):

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

FCC Part 15C, Section 15.205, restricted bands of operation:

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

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 from 30 MHz up to 40 GHz. For detailed test results please see
the following test protocols. Only the worst case of the plots are listed.

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.
A 4	BAT-EMC 3.17.0.22	01-02/68-13-001				
	ESCI	02-02/03-15-001	11/06/2019	11/06/2018		
	ESH 2 - Z 5	02-02/20-05-004	25/10/2019	25/10/2017	30/10/2018	30/04/2018
	EMV D 30000/PAS	02-02/30-05-006	21/02/2020	21/02/2017	20/02/2019	20/02/2018
	N-4000-BNC	02-02/50-05-138				
	N-1500-N	02-02/50-05-140				
	ESH 3 - Z 2	02-02/50-05-155	18/11/2019	18/11/2016	07/11/2018	07/05/2018
SER 2	ESVS 30	02-02/03-05-006	06/06/2019	06/06/2018		
	VULB 9168	02-02/24-05-005	18/04/2019	18/04/2018	21/09/2018	21/03/2018
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
SER 3	FSW43	02-02/11-15-001	19/03/2019	19/03/2018		
	JS4-18004000-30-5A	02-02/17-05-017				
	AMF-6D-01002000-22-10P	02-02/17-15-004				
	3117	02-02/24-05-009	08/05/2019	08/05/2018		
	BBHA 9170	02-02/24-05-014	12/06/2021	12/06/2018	12/06/2019	12/06/2018
	KMS102-0.2 m	02-02/50-11-020				
	18N-20	02-02/50-17-003				
	NMS111-GL200SC01-NMS11	02-02/50-17-012				
	BAM 4.5-P	02-02/50-17-024				
	NCD	02-02/50-17-025				
	KK-SF106-2X11N-6,5M	02-02/50-18-016				