



RF - TEST REPORT

- FCC Part 15.247, RSS-247 -

Type / Model Name : 60667 - Mobile Station WLAN

Product Description : Wireless Controller for model trains

Applicant : Gebr. Märklin & Cie. GmbH

Address : Stuttgarter Straße 55-57

73033 GÖPPINGEN, GERMANY

Manufacturer : Gebr. Märklin & Cie. GmbH

Address : Stuttgarter Straße 55-57

73033 GÖPPINGEN, GERMANY

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

POSITIVE

Test Report No. : 80110020-00 Rev-0

04. August 2023

Date of issue



Deutsche
Akkreditierungsstelle
D-PL-12030-01-03
D-PL-12030-01-04

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ATTACHMENT A as separate supplement

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.

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (July 2022)

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 (July 2022)

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

ISED Rules and Regulations

RSS-Gen Issue 5, March 2018 Amendment 1 (March 2019) Amendment 2 (February 2021)	General Requirements and Information for the Certification of Radiocommunication Equipment
RSS-247 Issue 2, February 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN)

ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
KDB 558074 D01 v05r02	Guidance for compliance measurements on DTS; FHSS and hybrid system devices operating under Section 15.247 of the FCC rules
KDB 996369 D04 v02	Modular transmitter integration guide – Guidance for host product manufacturers

2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according to his/her instructions.

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

2.4 General remarks

This report covers the emissions of the Module “WGM160PX22KGA3 (FCC ID: 2A532WGM160P, IC ID: 29966-WGM160P)” in combination with the host device 60667 - Mobile Station WLAN.

Performed tests:

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

2.5 Equipment type

WLAN device

2.6 Short description of the equipment under test (EUT)

The EUT is a Wireless Controller for model trains.

Number of tested samples: 1
Serial number: #MW1

EUT configuration:

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

2.7 Variants of the EUT

There are no variants.

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.

2.8 Operation frequency and channel plan

The operating frequency is 2400 MHz to 2483.5 MHz.

Channel plan WLAN Standard 802.11b, g, n HT 20:

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

2.9 Transmit operating modes

The EUT use DSSS or OFDM modulation and may operate under operating mode 2 and provide following data rates with auto-fall-back:

- | | | |
|----------------|-----------------------------------|------------------------------|
| - 802.11b mode | 11, 5.5, 2, 1 Mbps | (Mbps = megabits per second) |
| - 802.11g mode | 54, 48, 36, 24, 18, 12, 9, 6 Mbps | (Mbps = megabits per second) |
| - 802.11n HT20 | MCS 0 - 7 | |

2.10 Antenna

The EUT is equipped with an internal PCB WLAN antenna.

2.11 Power supply system utilised

Power supply voltage, V_{nom} : 4 x 1.5V AAA battery

2.12 Peripheral devices and interface cables

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

- Laptop Model : HP EliteBook 840

2.13 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 worst-case position.

The tests are carried out in the following frequency band:

2400 MHz – 2483.5 MHz

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

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

WLAN	Available channel	Tested channels	Power setting	Modulation	Modulation type	Data rate
802.11b	1 to 11	1, 7, 11	Pmax	DSSS	DBPSK	1 Mbps
802.11n HT20	1 to 11	1, 7, 11	Pmax	OFDM	BPSK	MCS0

2.13.1 Test jig

No test jig is used.

2.13.2 Test software

The EUT was equipped with special test software. The test modes were configured by the client and could be activated by the test engineer.

3 TEST RESULT SUMMARY

FCC Rule Part	RSS Rule Part	Description	Result
15.207	RSS-Gen, 8.8	AC power line conducted emissions	N/A *
15.247(a)(2)	RSS-247, 5.2(a)	-6 dB EBW	Not tested
15.247(b)	RSS-247, 5.4	Maximum peak conducted output power	Passed
15.247(d)	RSS-247, 5.5	Unwanted emission	Not tested
15.209	RSS-Gen, 8.9	Unwanted Emissions, radiated	Passed
15.247(e)	RSS-247, 5.2(b)	PSD	Not tested
	RSS-Gen, 6.11	Transmitter frequency stability	Not tested
	RSS-Gen, 6.7	99 % Bandwidth	Not tested

Note *: AC power line conducted emissions not applicable because the EuT is battery powered.

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80110020-00	0	03 August 2023	Initial test report

The test report with the highest revision number replaces the previous test reports.

3.2 Final assessment

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

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

Testing commenced on : 11 July 2022

Testing concluded on : 09 August 2022

Checked by:

Tested by:



Klaus Gegenfurtner
2023.08.04 10:22:16
+02'00'

Klaus Gegenfurtner
Teamleader Radio



Laurin Roth
2023.08.04 10:15:18
+02'00'

Laurin Roth
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 on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. 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

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule ($w = 0$).

Details can be found in the procedure CSA_B_V50_29.

4.5 Measurement protocol for FCC and ISED

4.5.1 General information

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

FCC: DE 0011

ISED: DE0009

4.5.2 General Standard information

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

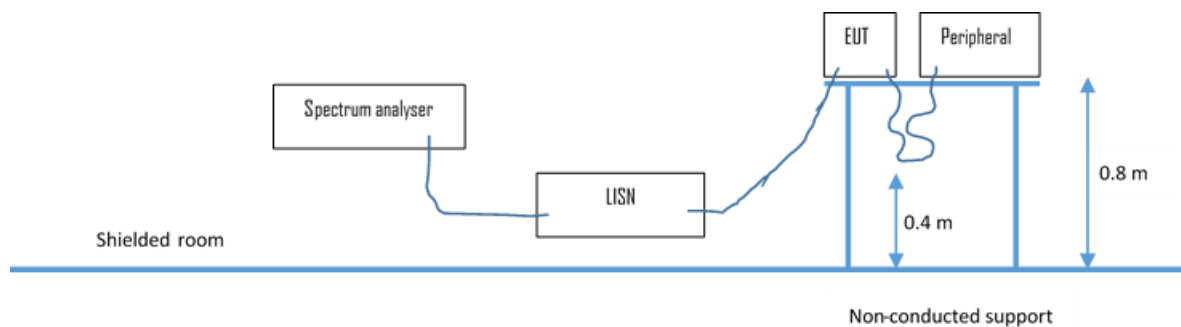
4.5.2.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions.

4.5.3 Details of test procedures

4.5.3.1 Conducted emission

Test setup according ANSI C63.10



The final level, expressed in dB μ V, is arrived at by taking the reading directly from the Spectrum analyser. This level is compared to the limit.

To convert between dB μ V and μ V, the following conversions apply:

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

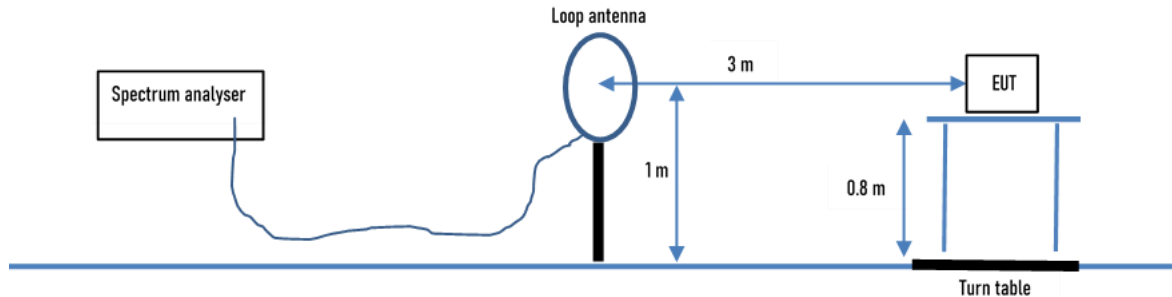
$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50 Ω / 50 μ H (CISPR 16) characteristics. The receiver is protected by means of an impedance matched pulse limiter connected directly to the RF input. 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 emission is re-measured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

4.5.3.2 Radiated emission

4.5.3.2.1 OATS1 test site (9 kHz - 30 MHz):

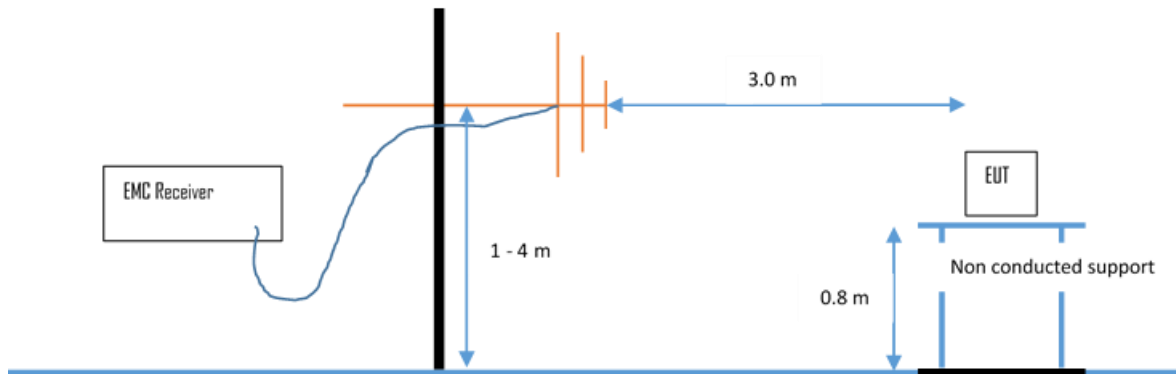
Test setup according ANSI C63.10



Emissions from the EUT are measured in the frequency range of 9 MHz to 30 MHz using a tuned receiver and a calibrated loop antenna. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above 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 along the site axis and the EUT is rotated 360 degrees.

4.5.3.2.2 OATS1 test site (30 MHz - 1 GHz):

Test setup according ANSI C63.10.



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. 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. 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 dBμV/m is calculated by taking the reading from the EMI receiver (Level dBμV) 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:

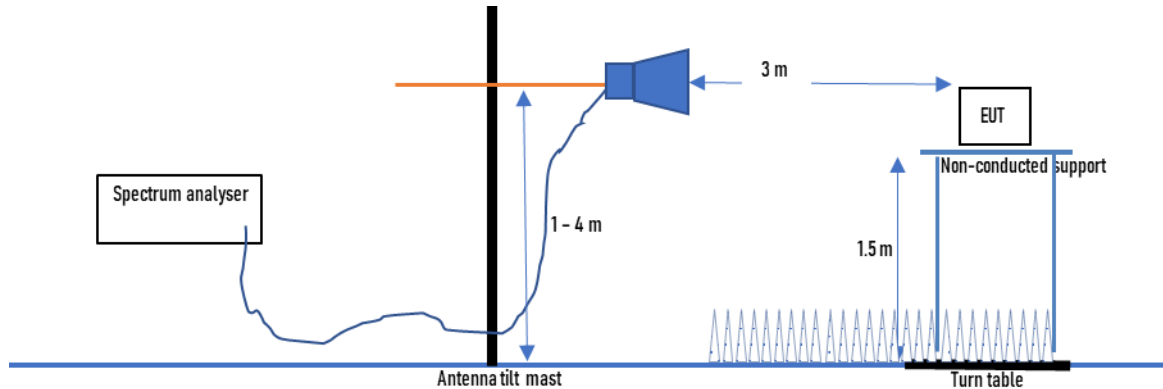
30 MHz – 1000 MHz: RBW: 120 kHz

Example:

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

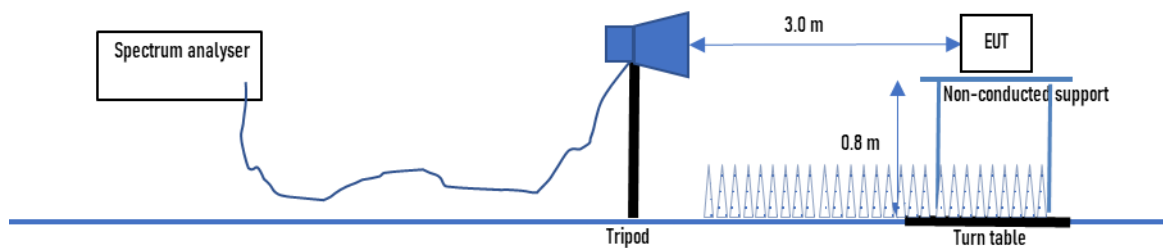
4.5.3.2.3 Anechoic chamber 1 (1000 MHz – 18000 MHz)

Test setup according ANSI C63.10.



Radiated emissions from the EUT are measured in the frequency range 1 GHz up to 18 GHz 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 non-conducting table, 1.5 metre above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12). Any controlling device is positioned such that it does not significantly influence the measurement results. Interconnecting cables that hang closer than 40 cm to the ground plane are folded back and forth in the centre, forming a bundle 30 cm to 40 cm long. Measurements are made in three orientations of the EUT and the horizontal and vertical polarization planes of measurement antenna in a fully anechoic room. The measurement antenna is adjusted and the EUT orientated to permit the measurement of the maximum emission from the EUT. The conditions determined as worst-case will then be used for the final measurements.

4.5.3.2.4 Anechoic chamber 1 (18 GHz – 40 GHz)



Emissions from the EUT are measured in the frequency range 18 GHz up to 40 GHz 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 non-conducting table, 0.8 metre above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12). Any controlling device is positioned such that it does not significantly influence the measurement results. Interconnecting cables that hang closer than 40 cm to the ground plane are folded back and forth in the centre, forming a bundle 30 cm to 40 cm long. Measurements are made in three orientations of the EUT and the horizontal and vertical polarization planes of measurement antenna in a fully anechoic room. The measurement antenna is adjusted and the EUT orientated to permit the measurement of the maximum emission from the EUT. The conditions determined as worst-case will then be used for the final measurements. Where appropriate, the test distance may be reduced in order to detect emissions under better uncertainty. The limit is adopted.

5 TEST CONDITIONS AND RESULTS

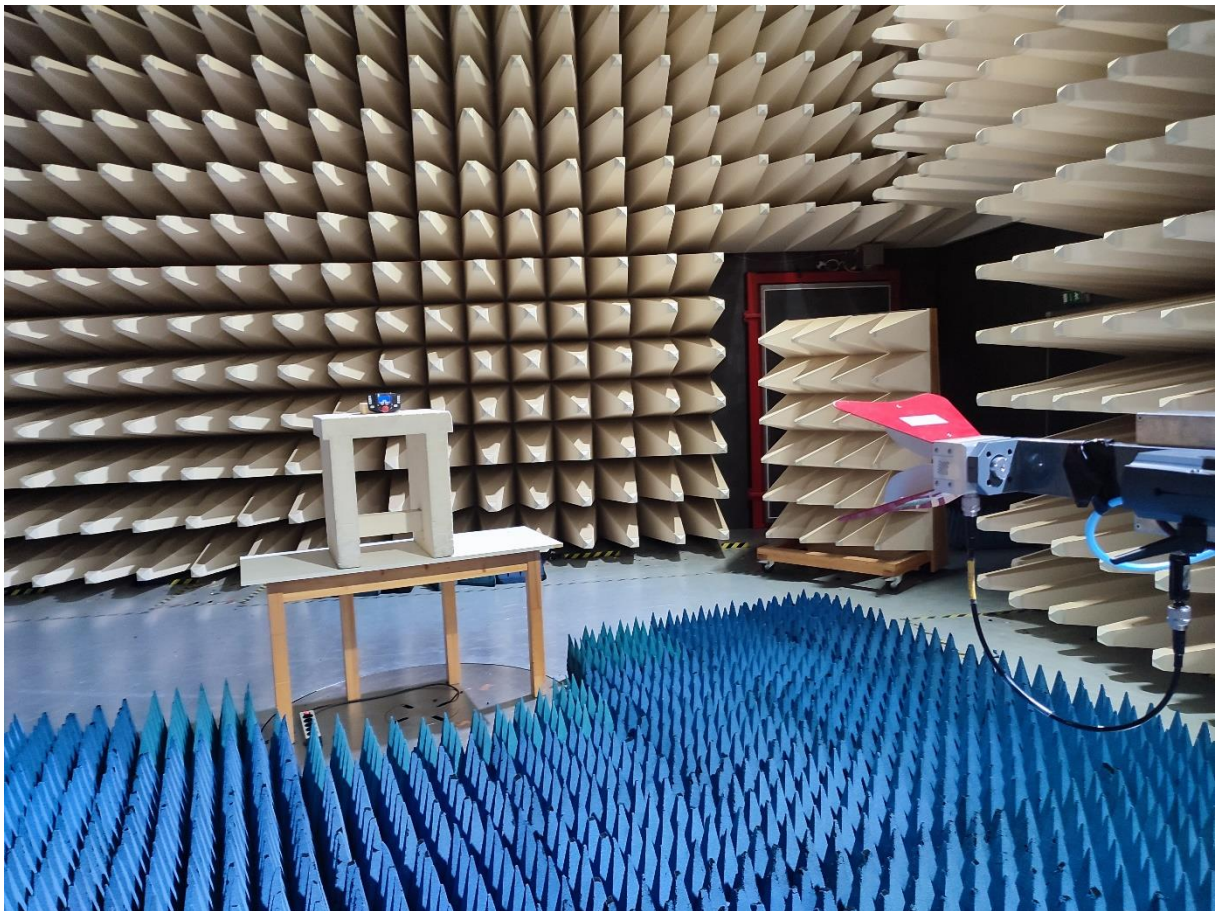
5.1 Maximum peak conducted output power

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



5.1.3 Applicable standard

FCC Part 15, Section 15.247(b) and RSS-247, 5.4

5.1.4 Description of Measurement

The maximum peak output power is measured radiated due to module integration.

5.1.5 Test result

File No.:	80110020-00 Rev-0	Result	passed
Operation mode:	WLAN connection		
Tested by:	LR		
Location:	A1	Date:	13.07.2022
Remarks:	/		

802.11b, 1 Mbps, 1 TX		Test results radiated			
Duty cycle: 99%					
		FS (dBμV/m)	P [EIRP] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH1					
T_{nom}	V_{nom}	113,1	17,8	36,0	-18,2
Middle frequency: CH7					
T_{nom}	V_{nom}	112,6	17,3	36,0	-18,7
Highest frequency: CH11					
T_{nom}	V_{nom}	112,3	17,0	36,0	-19,1

802.11n HT20, MCS0, 1 TX		Test results radiated			
Duty cycle: 99%					
		FS (dBμV/m)	P [EIRP] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH1					
T_{nom}	V_{nom}	111,9	16,6	36,0	-19,4
Middle frequency: CH7					
T_{nom}	V_{nom}	111,0	15,7	36,0	-20,3
Highest frequency: CH11					
T_{nom}	V_{nom}	109,3	14,0	36,0	-22,0

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.

Calculated peak conducted output power:

Antenna gain: 1.86 dBi.

For calculation the following formula is used: $A = P - G$;

Where:

A is peak conducted output power

P is the out put power as EIRP

G is the antenna gain

802.11b, 1 Mbps, 1 TX		Test results conducted		
Duty cycle: 99%		A [Pmax] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH1				
T_{nom}	V_{nom}	15,9	30,0	-14,1
Middle frequency: CH6				
T_{nom}	V_{nom}	15,4	30,0	-14,6
Highest frequency: CH11				
T_{nom}	V_{nom}	15,1	30,0	-14,9

802.11n HT20, MCS0, 1 TX		Test results conducted		
Duty cycle: 99%		A [Pmax] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH149				
T_{nom}	V_{nom}	14,7	30,0	-15,3
Middle frequency: CH157				
T_{nom}	V_{nom}	13,8	30,0	-16,2
Highest frequency: CH165				
T_{nom}	V_{nom}	12,1	30,0	-17,9

Peak Power Limit according to FCC Part 15, Section 15.247(b)(3) and RSS-247, 5.4d:

Frequency (MHz)	Peak Power Limit - EIRP	
	(dBm)	(Watt)
2400-2483.5	36	4.0

For FCC the limit is derived from the 1 Watt limit (30dBm) combined with the 6dBi Antenna gain requirement.

The requirements are **FULFILLED**.

Remarks: The measurement is performed radiated for module integration.

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5.3 Unwanted emissions in restricted bands, radiated

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

5.3.1 Description of the test location

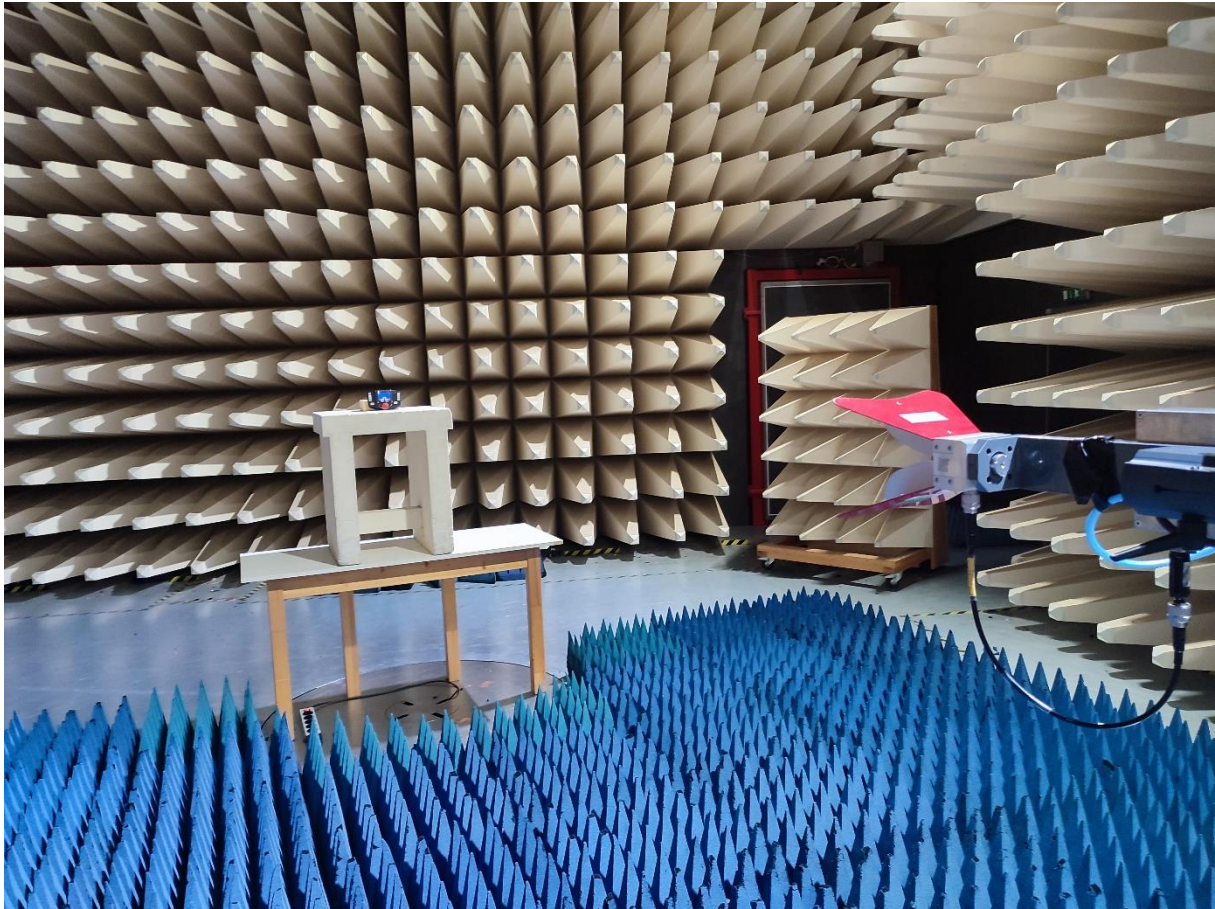
Test location: OATS 1
 Test location: Anechoic chamber 1
 Test distance: 3 m

5.3.2 Photo documentation of the test set-up



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Anechoic chamber 1



5.3.3 Applicable standard

FCC Part 15, Section 15.209 and RSS-Gen, 8.9

5.3.4 Description of Measurement

Measurement was performed according to KDB 558074 D01 clause 8.6

Spectrum analyser settings:

30 MHz – 1000 MHz: RBW: 120 kHz Detector: QP

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

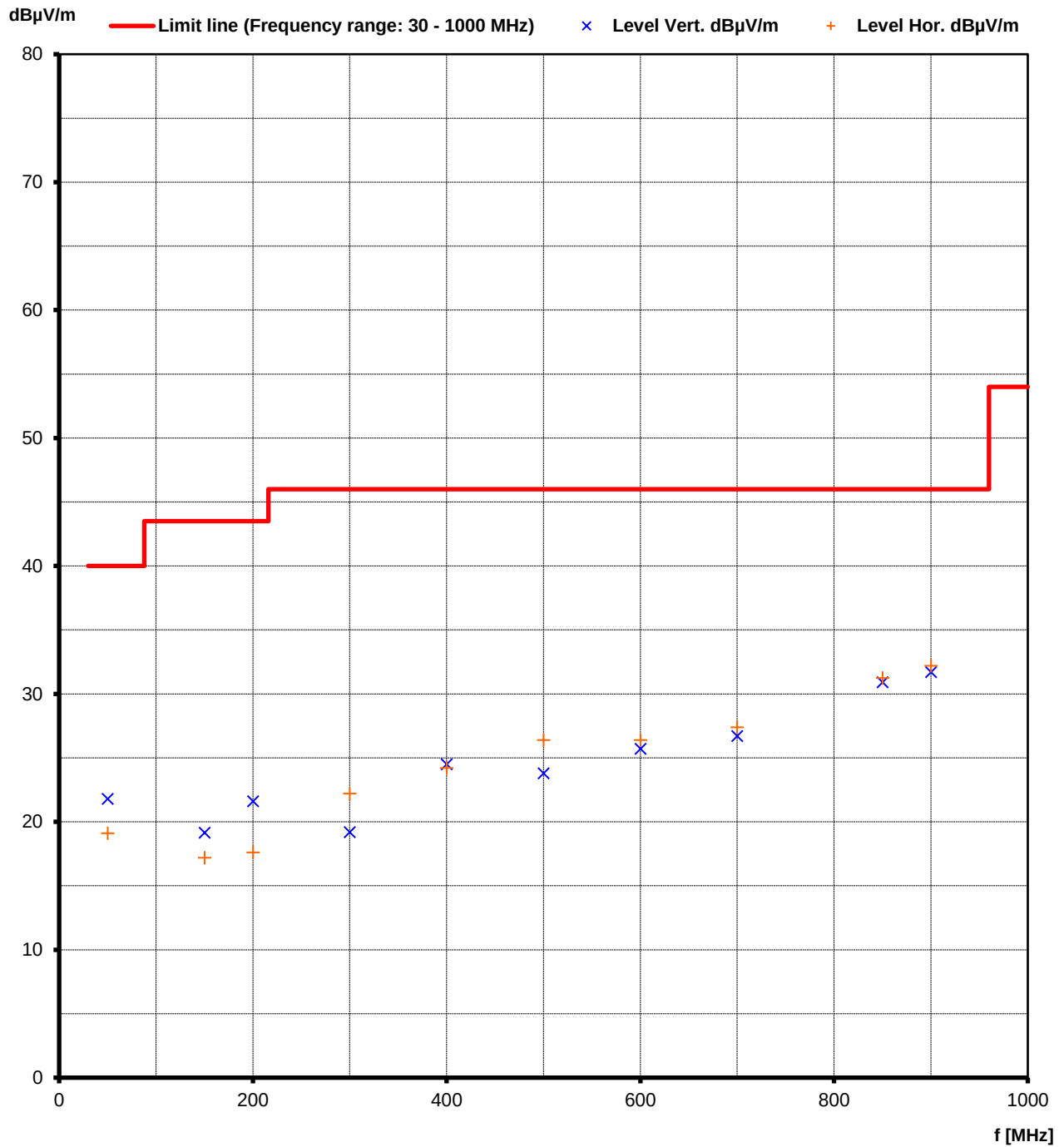
5.3.1 Test result

File No.:	80110020-00 Rev-0	Result	passed
Operation mode:	WLAN connection		
Tested by:	LR		
Location:	OATS1	Date:	3.08.2022
Remarks:	/		

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)
50.00	4.3	0.3	17.5	18.8	21.8	19.1	40.0	-18.2
150.00	-0.4	-1.6	19.6	18.8	19.2	17.2	43.5	-24.3
200.00	4.6	1.3	17.0	16.3	21.6	17.6	43.5	-21.9
300.00	-1.0	1.5	20.2	20.7	19.2	22.2	46.0	-23.8
400.00	1.4	0.7	23.1	23.5	24.5	24.2	46.0	-21.5
500.00	-1.9	0.4	25.7	26.0	23.8	26.4	46.0	-19.6
600.00	-2.3	-2.0	28.0	28.4	25.7	26.4	46.0	-19.6
700.00	-2.8	-2.7	29.5	30.1	26.7	27.4	46.0	-18.6
850.00	-1.1	-1.2	32.0	32.5	30.9	31.3	46.0	-14.7
900.00	-0.9	-1.0	32.6	33.2	31.7	32.2	46.0	-13.8

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.



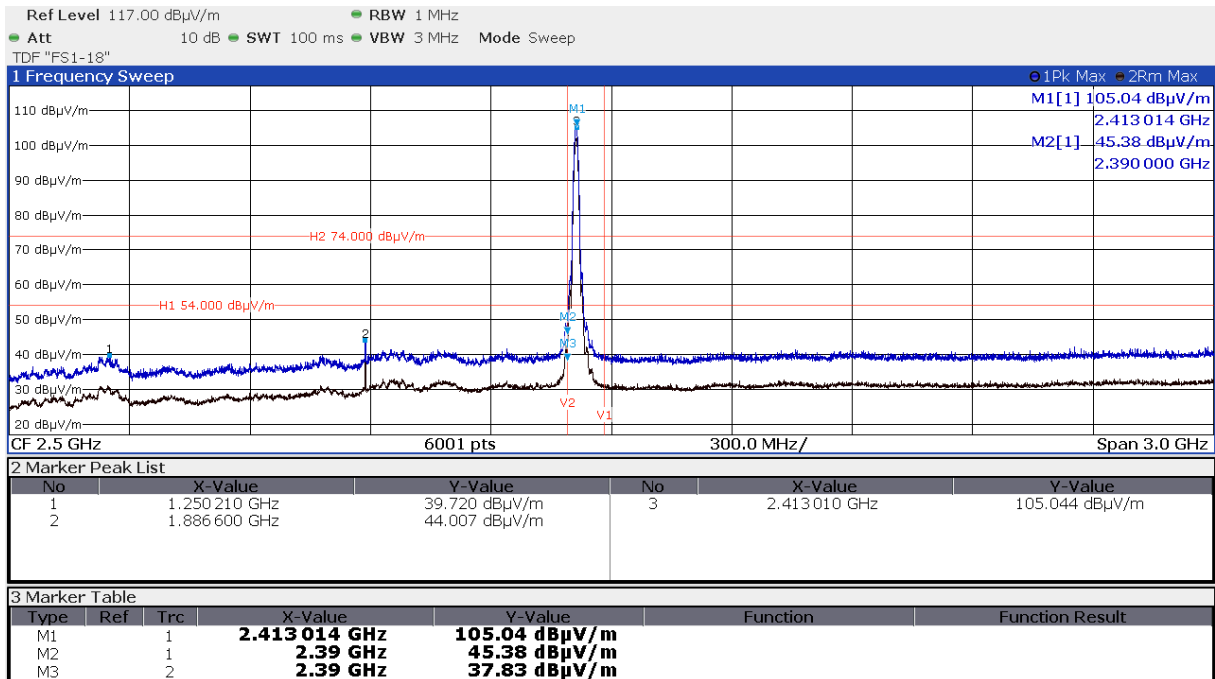
The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

f > 1000 MHz:

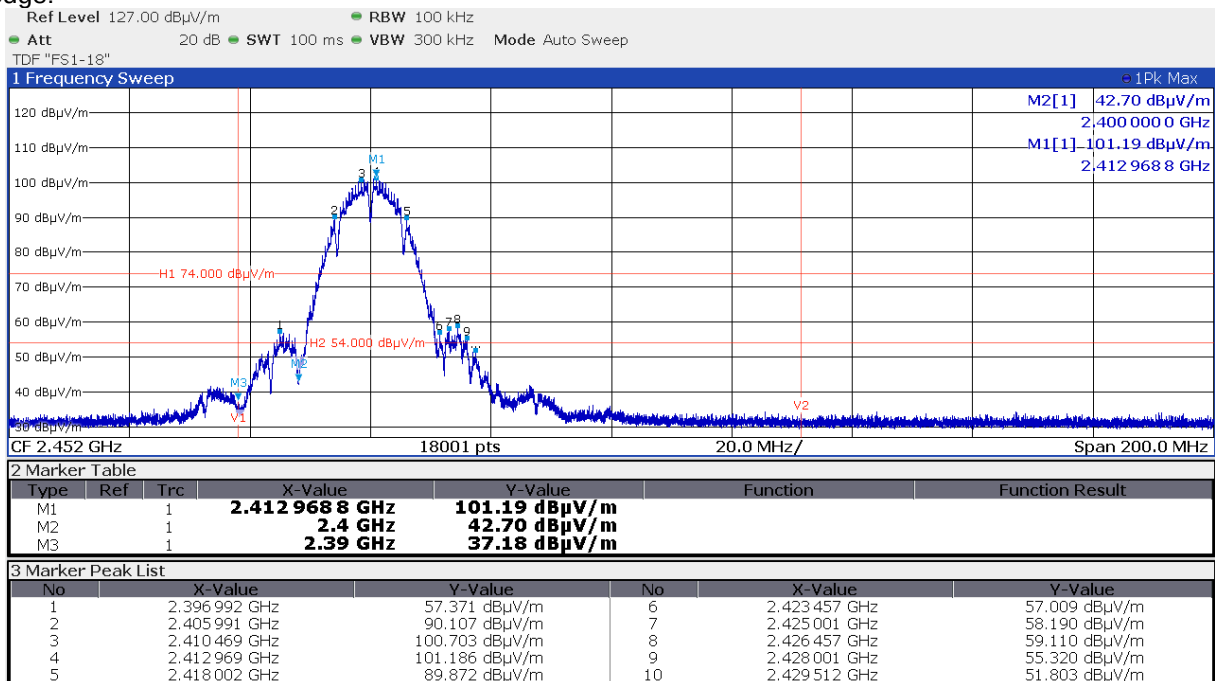
File No.:	80110020-00 Rev-0	Result	passed
Operation mode:	WLAN connection		
Tested by:	LR		
Location:	A1	Date:	13.07.2022
Remarks:	/		

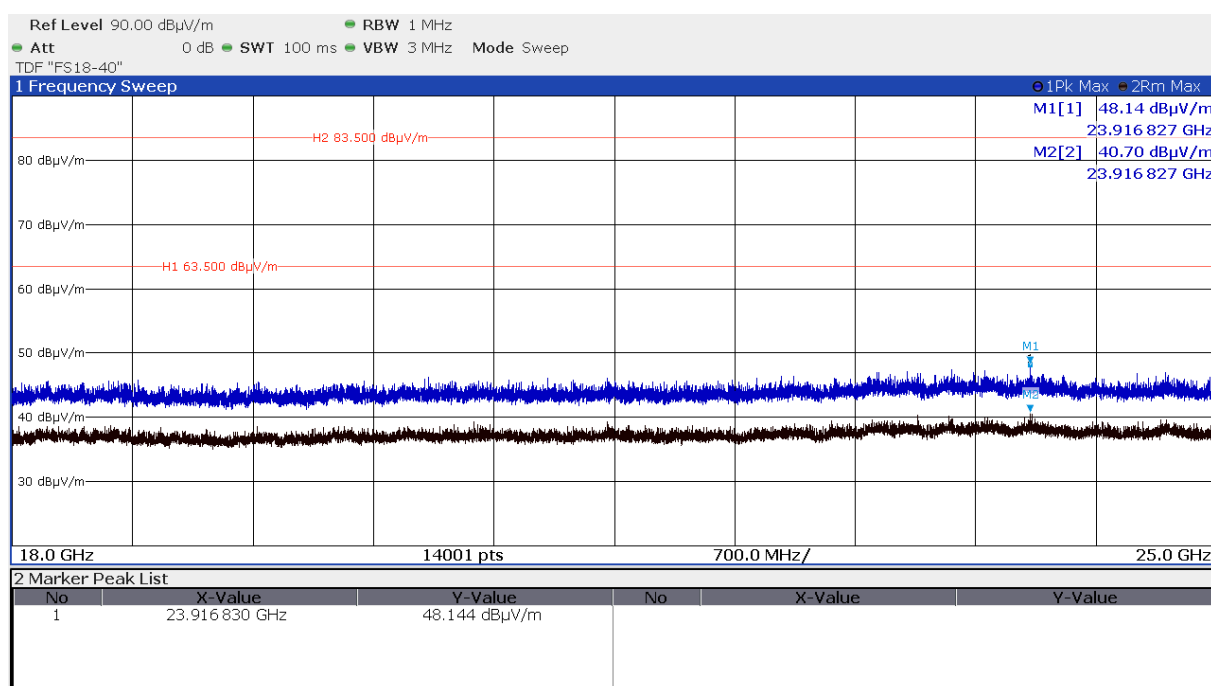
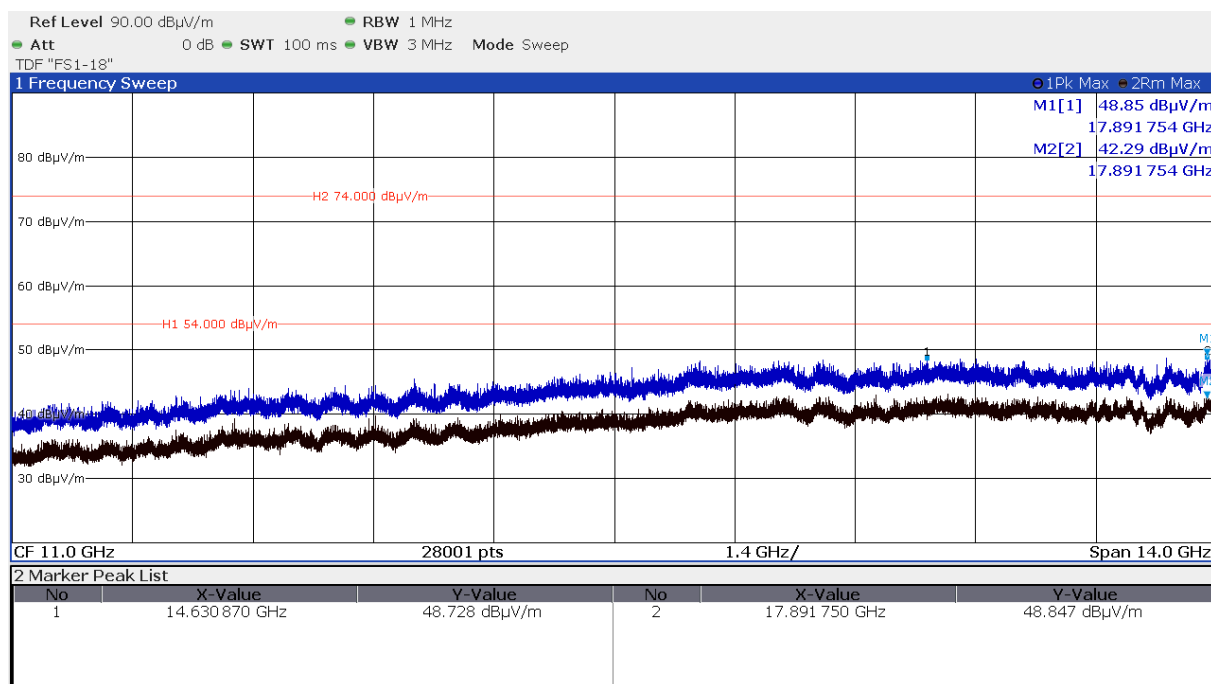
5.3.1.1 WLAN Standard 802.11b

CH1

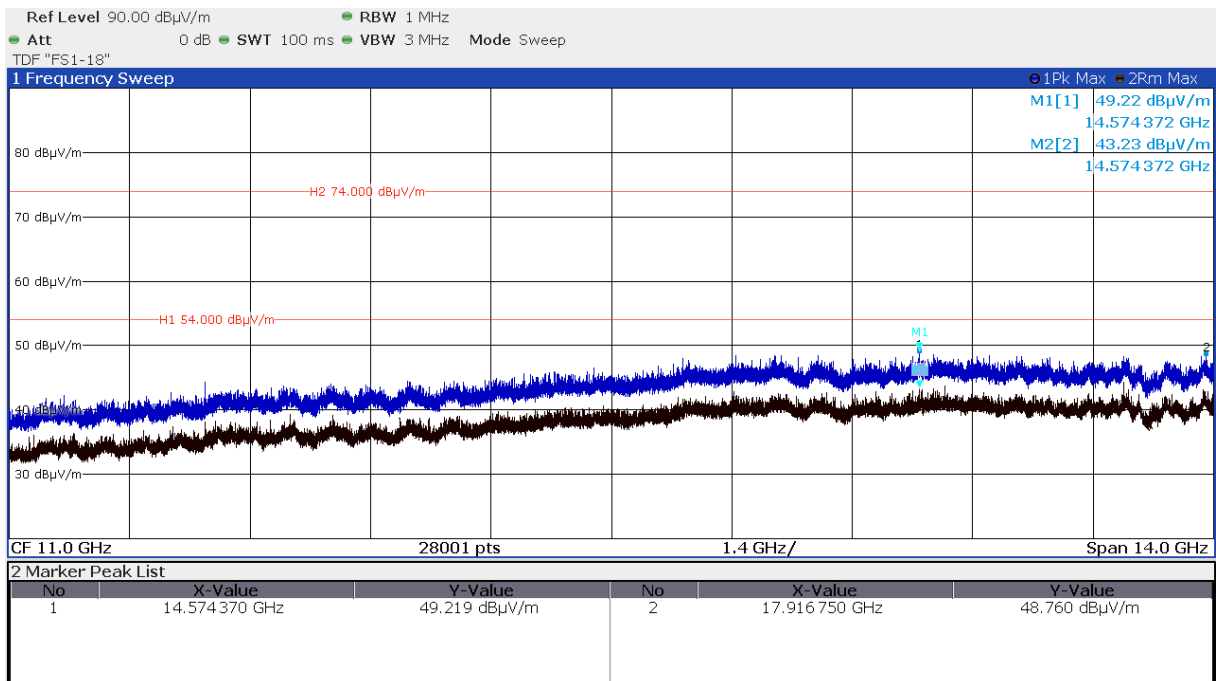
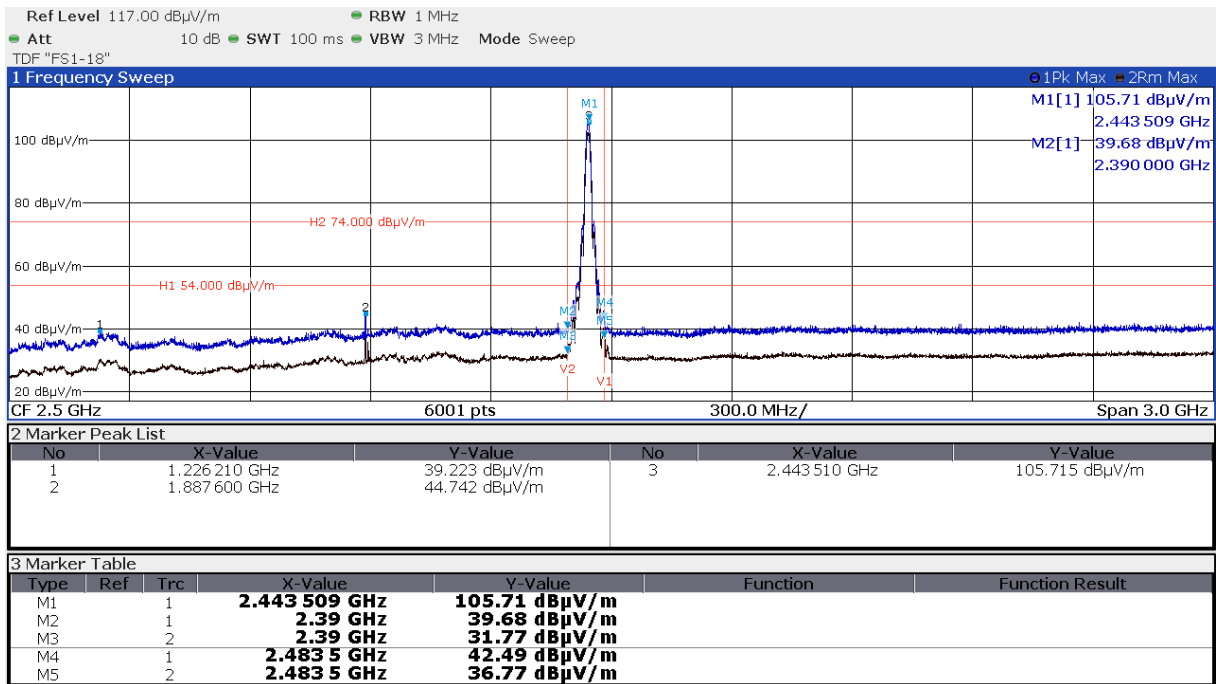


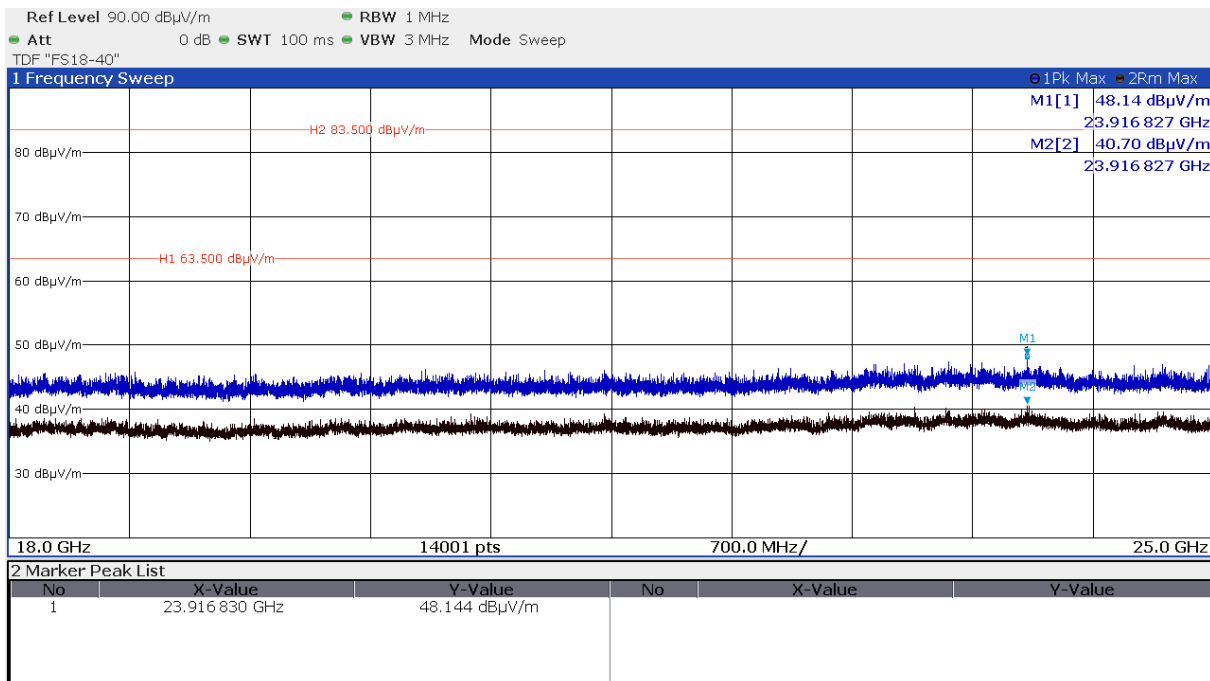
Bandedge:



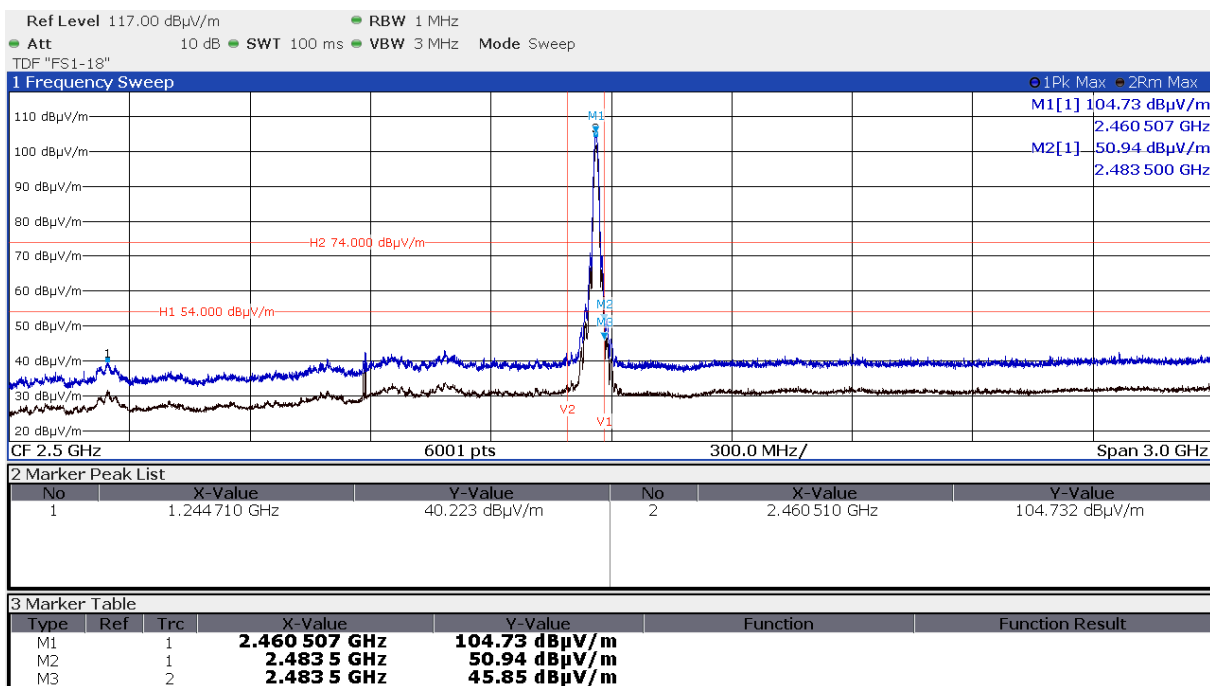


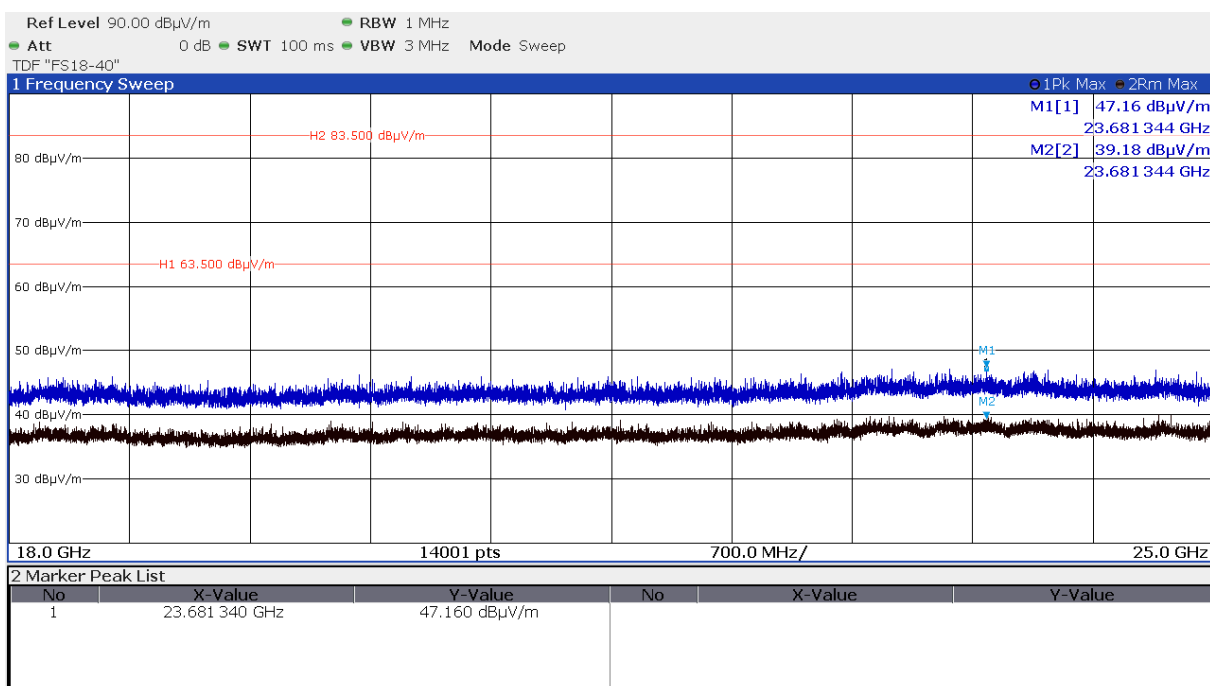
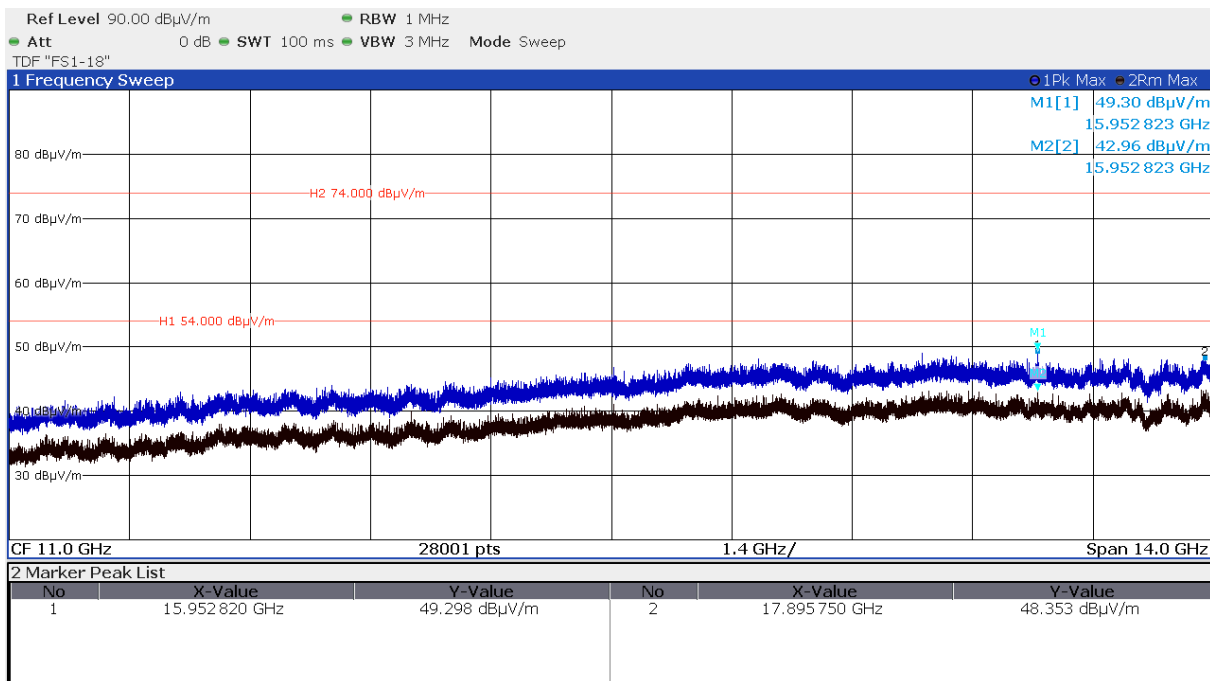
CH7





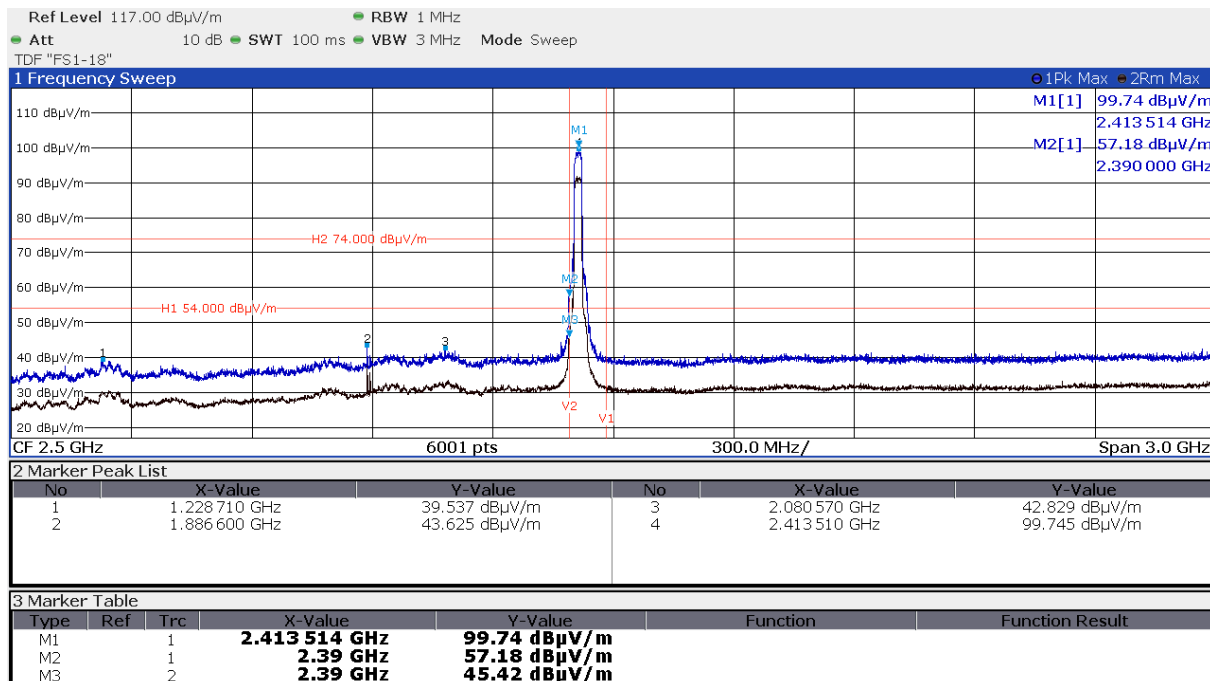
CH11



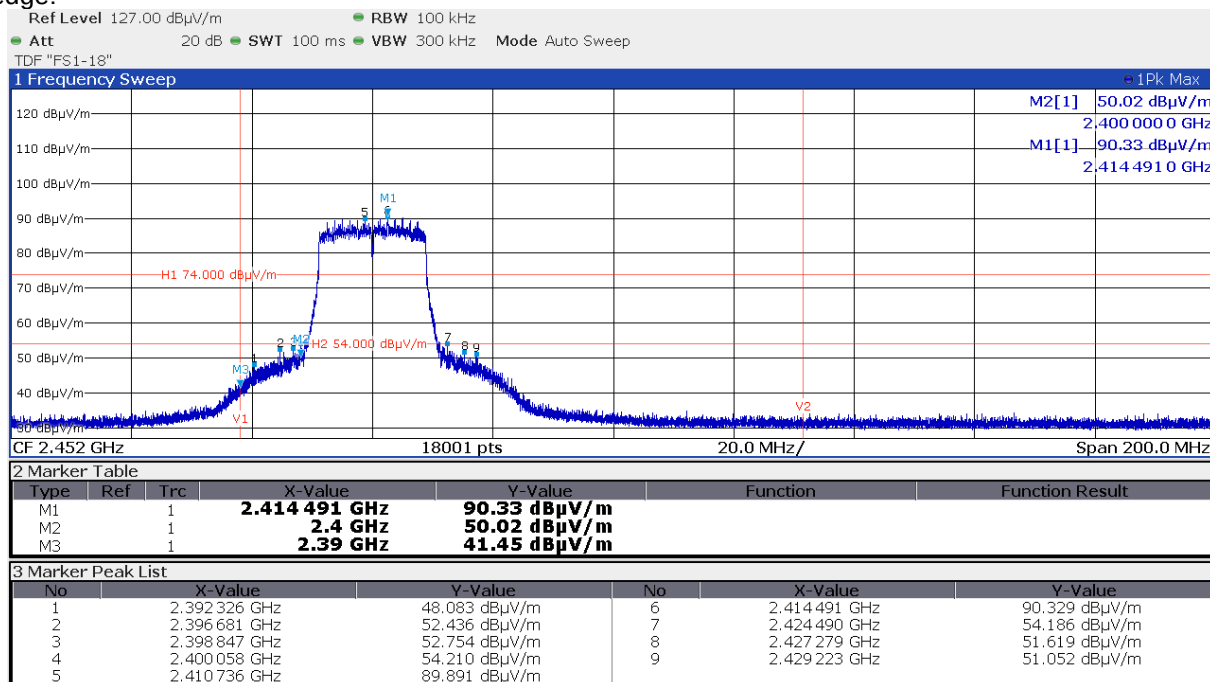


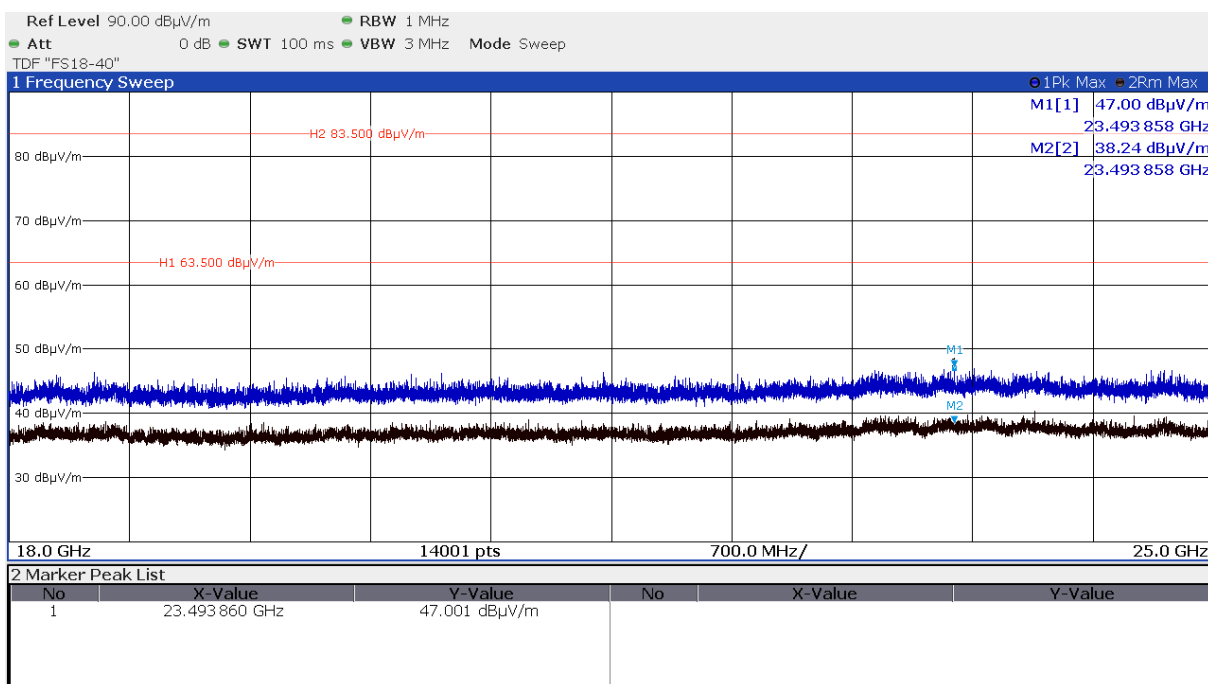
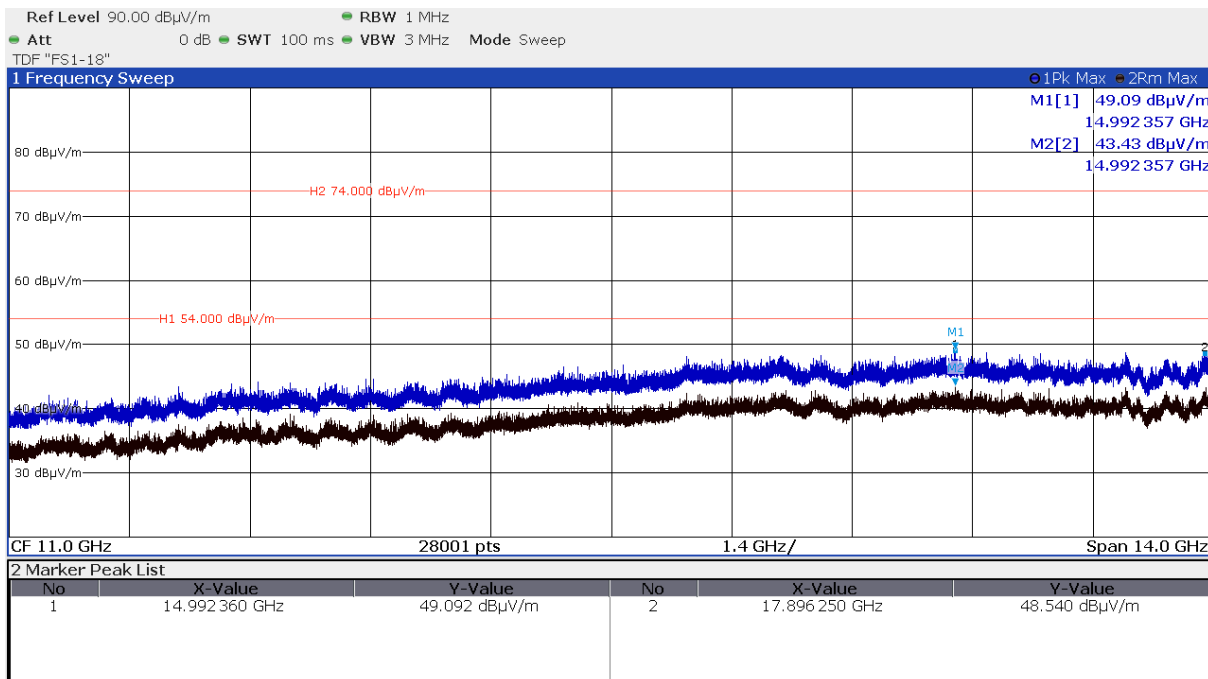
5.3.1.2 WLAN Standard 802.11n HT20

CH1

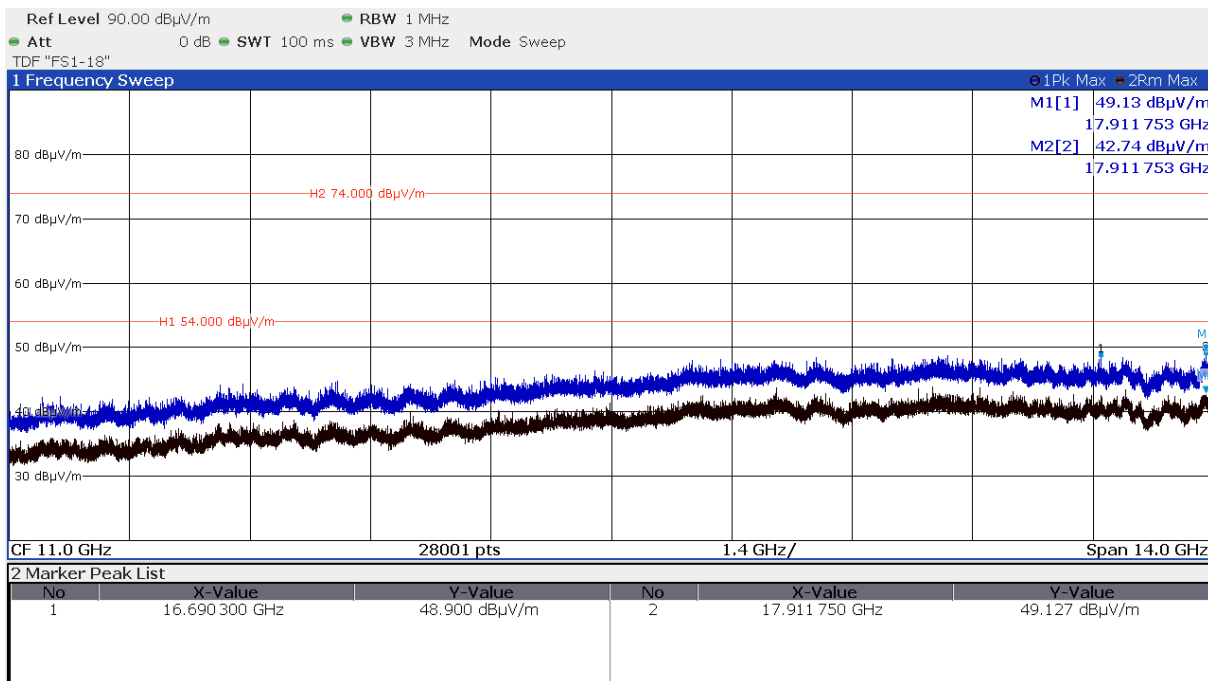
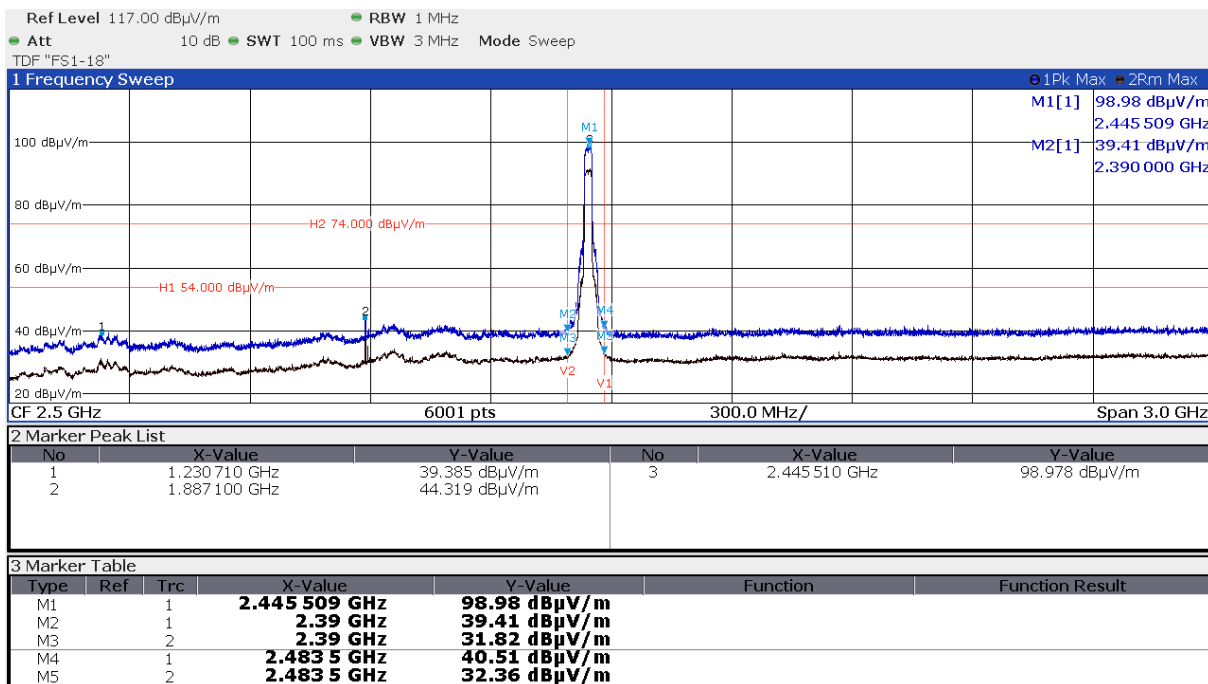


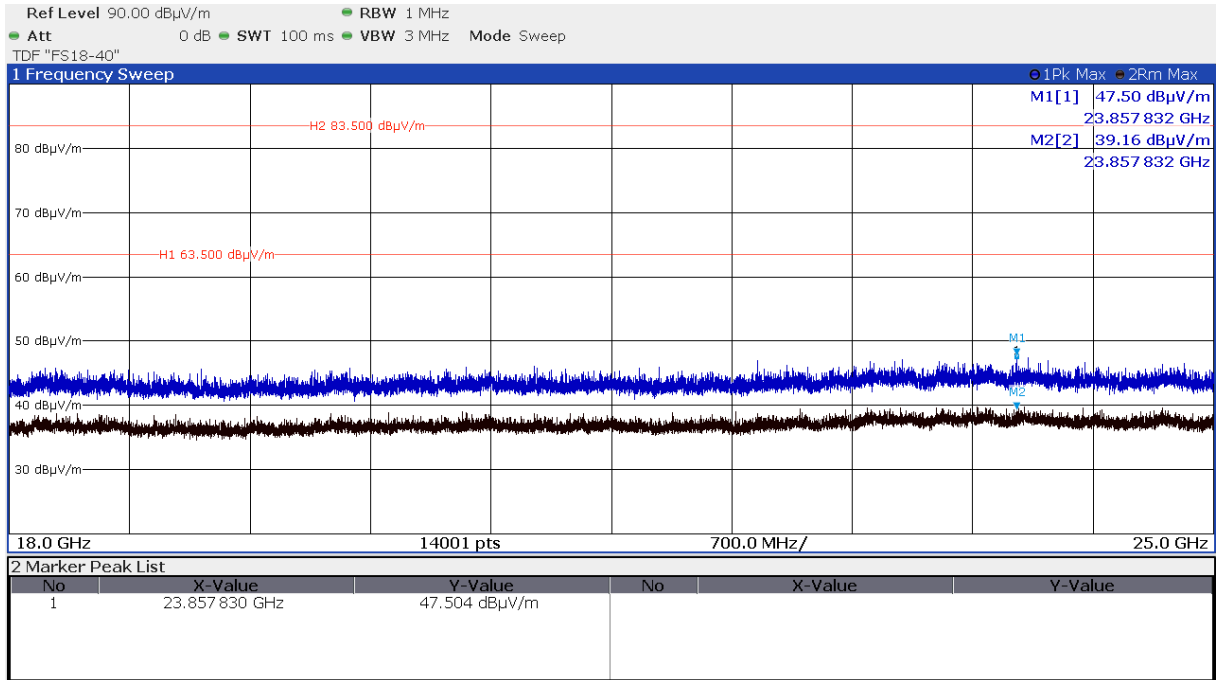
Bandedge:



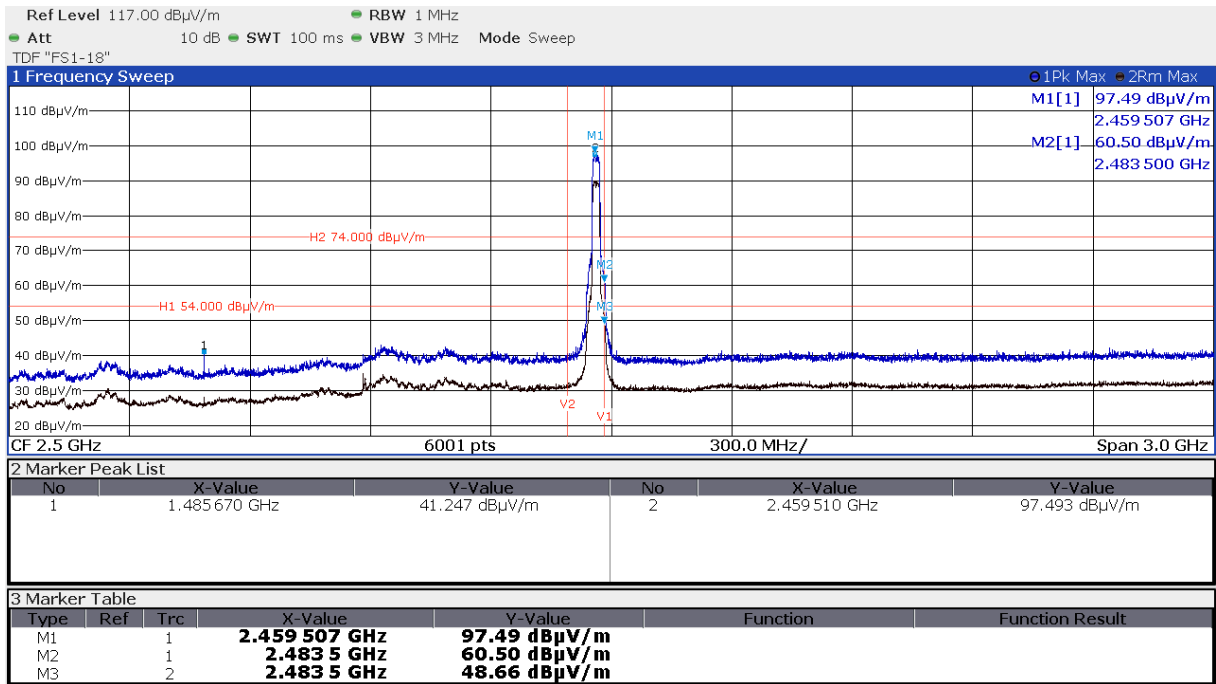


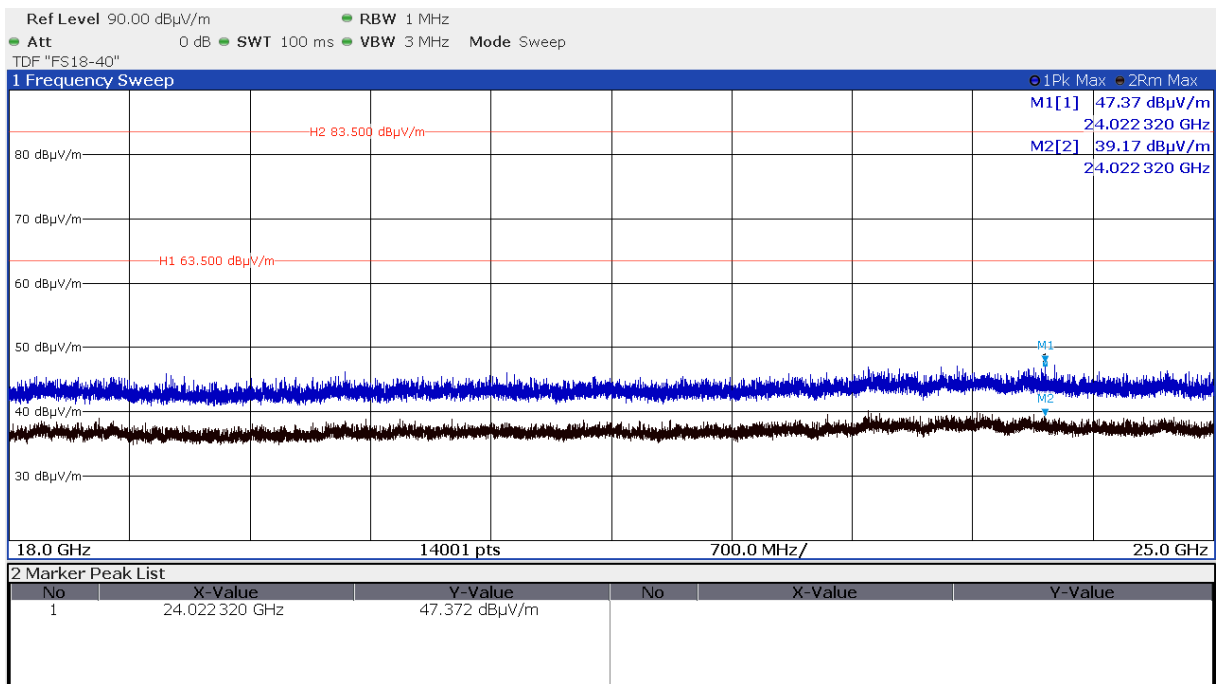
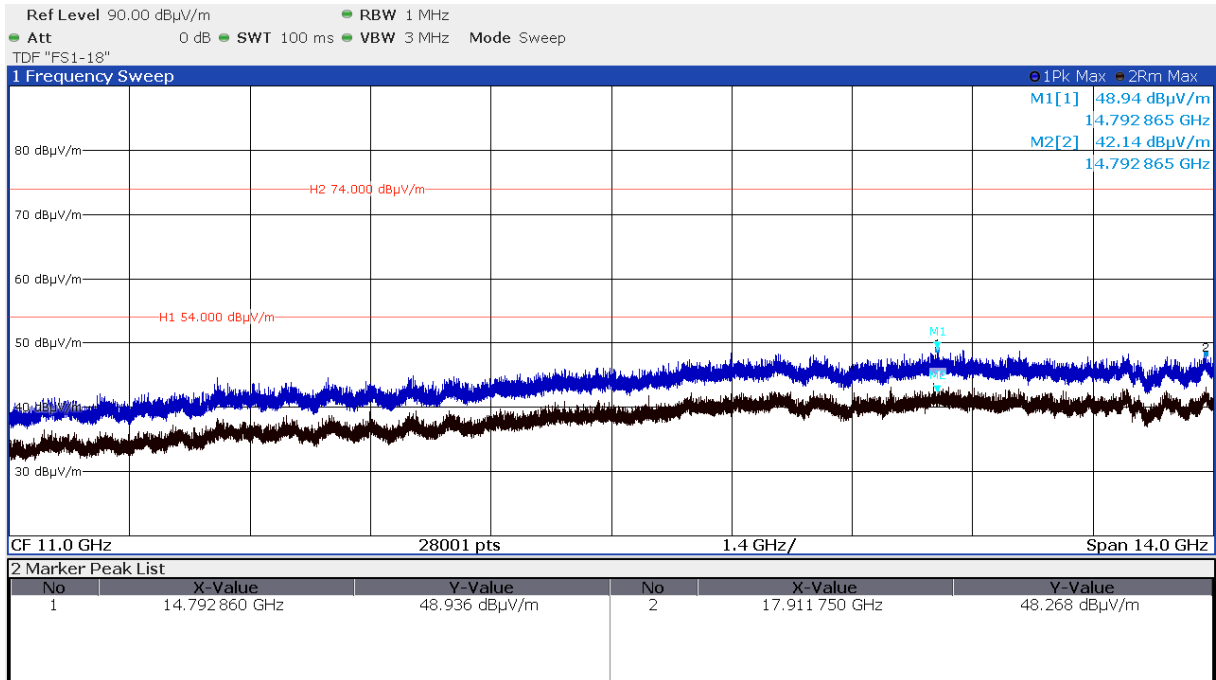
CH7





CH11





Radiated limits according to FCC Part 15 Section 15.209(a) and RSS-GEN 8.9 table 5

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
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

The requirements are **FULFILLED**.

Remarks:

The measurement was performed up to the 10th harmonic.

Below 1 GHz only noise from the open area test side were recorded.

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.

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	FSW43	02-02/11-15-001	22/04/2023	22/04/2022		
	AMF-6D-01002000-22-10P	02-02/17-15-004				
	3117	02-02/24-05-009	23/06/2023	23/06/2022		
	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				
	BAT-EMC 3.21.0.24	02-02/68-13-001				
SER 2	ESVS 30	02-02/03-05-006	27/07/2023	27/07/2022		
	VULB 9168	02-02/24-05-005	20/12/2022	20/12/2021	03/07/2023	03/07/2022
	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				
	50F-003 N 3 dB	02-02/50-21-010				
SER 3	FSW43	02-02/11-15-001	22/04/2023	22/04/2022		
	AMF-6D-01002000-22-10P	02-02/17-15-004				
	LNA-40-18004000-33-5P	02-02/17-20-002				
	3117	02-02/24-05-009	23/06/2023	23/06/2022		
	BBHA 9170	02-02/24-05-013	19/05/2023	19/05/2020	10/03/2023	10/03/2022
	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				
	KMS116-GL140SE-KMS116-	02-02/50-20-026				
	BAT-EMC 3.21.0.24	02-02/68-13-001				

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.