



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
3451ERM.008

Partial Test report

USA FCC Part 15.247, 15.407 15.209, 15.31(h)
CANADA RSS-247, RSS-Gen

(*) Identification of item tested	Automotive infotainment System
(*) Trademark	BMW
(*) Model and /or type reference tested	MGU22H
Other identification of the product	FCC ID: T8GMGU22H IC: 6434A-MGU22H
(*) Features	USB 2.0 (including support for Apple Devices), Bluetooth, WLAN Modul 2.4 / 5 GHz, GNSS, AR-CAM input, Video-out APIX3, CAN, 100Base-T1 and 1000Base-T1
Manufacturer	Harman Becker Automotive Systems GMBH. Becker-Goering-Strasse 16, 76307 Karlsbad, Germany
Test method requested, standard	USA FCC Part 15.247, 10-1-20 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz USA FCC Part 15.407 10-1-20 Edition : Unlicensed National Information Infrastructure Devices. General technical requirements. USA FCC Part 15.209 10-1-20 Edition: Radiated emission limits; general requirements. USA FCC Part 15.31(h) 10-1-20 Edition: Measurement standards. CANADA RSS-247 Issue 2 (February 2017). CANADA RSS-Gen Issue 5 (April 2018). 558074 D01 15.247 Meas Guidance v05r02. Guidance for Compliance Measurements on Digital Transmission Systems, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under section §15.247 of the FCC Rules ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	03-01-2022
Report template No	FDT08_23 (*) "Data provided by the client"

Index

Competences and guarantees	3
General conditions	3
Uncertainty	3
Data provided by the client.....	4
Usage of samples.....	4
Test sample description	5
Identification of the client.....	6
Testing period and place	7
Document history	7
Environmental conditions	7
Remarks and comments	7
Testing verdicts	8
Summary	8
List of equipment used during the test	10
Appendix A: FCC Multi-transmitters Test Results	11

Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Certification Inc.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U (k=2)	Units
Radiated Spurious Emission	30-180	4.27	dB
	180-1000	3.14	dB
	1000-18000	3.30	dB
	18000-40000	3.49	dB

Data provided by the client

MGU Head-Unit. The main functionalities are: Navigation, USB, voice recognition and several interfaces to the vehicle and Bluetooth / WLAN. The Head-unit provides different interfaces like: AR-CAM input, Video-out APIX3 (for the connection of an external Display), 3 USB interfaces (including support for Apple devices), CAN, 100Base-T1 and 1000Base-T1.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples used for test have been selected by: **The client.**

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
3451/01	Garmin MGU 22 non-beamforming mode sample	MGU22	B43319M259900032	11/08/2021
2874/05	Harness	--	--	03/26/2021

1. Sample S/01 is used for the following test(s): All Radiated (non-beamforming) tests indicated in appendix A.

Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
3451/04	Garmin MGU 22 beamforming mode sample	MGU22	B43359M259900025	11/08/2021
2874/05	Harness	--	--	03/26/2021

1. Sample S/02 is used for the following test(s): All Radiated (beamforming) tests indicated in appendix A.

Sample S/01, & S/02 are composed of the following accessories:

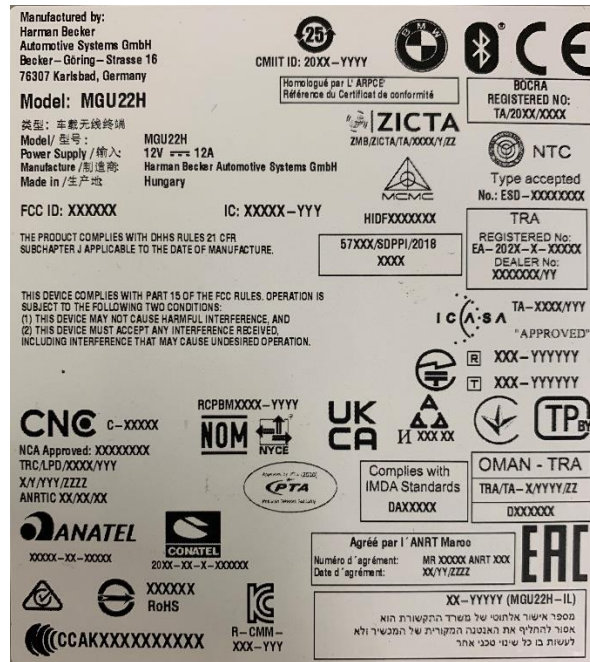
Control N°	Description	Model	Serial N°	Date of reception
2874/13	OABR Connector cable	--	--	03/26/2021
3171/05	Automotive Ethernet Adapter	Rad Moon	13724	03/05/2021
3171/33	Ethernet cable	--	--	03/05/2021
3171/13	USB Type A(male) to Ethernet adapter	Trendnet (TU3-ETG)	32720427 6	03/05/2021
2874/15	Wi-Fi/BTLE Antenna cable (Fakra connector)	--	--	03/26/2021
2874/11	GPS cable (Fakra to SMA Connector)	--	--	03/26/2021

Test sample description

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded	Coupled to patient		
	BT/WIFI connector – CONM 4POL ROS BMW209-40MT1-A PCN2944	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	USB1 connector – CONM-SM 4POL ROS D4S20Y-40MA5-B	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	USB2 connector – CONM-SM 4POL ROS D4S20Y-40MA5-C	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	USB3 connector – CONM-SM 4POL ROS D4S20Y-40MA5-E	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	APIX3 connector – CONM-SM 4+2POL ROS 99S22A-40MA5-D	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Car Main-connector – CONM 16POL TYC 2300483-s	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	AR-Cam	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	100 Base T1/1G Base T1/GPS	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Supplementary information to the ports..... :	No Data Provided						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 8V to 16V					
<input type="checkbox"/>	DC:						
Rated Power	No Data Provided						
Clock frequencies.....	No Data Provided						
Other parameters	No Data Provided						
Software version	No Data Provided						
Hardware version	No Data Provided						
Dimensions in cm (W x H x D)	No Data Provided						
Mounting position	<input type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input checked="" type="checkbox"/>	Other: Vehicle / Automotive use					

Modules/parts.....:	Module/parts of test item	Type	Manufacturer
		No Data Provided	
Accessories (not part of the test item)	Description	Type	Manufacturer
	USB drives		
	AR-CAM		
	Screen		
Documents as provided by the applicant	Description	File name	Issue date
	Declaration Equipment Data	FDT30_18 Declaration Equipment Data_MGU22H	11/15/2021

Copy of marking plate:



Identification of the client

Harman Becker Automotive Systems GMBH.
Becker-Goering-Strasse 16,
76307 Karlsbad, Germany.

Testing period and place

Test Location	DEKRA Certification, Inc.
Date (start)	02-01-2022
Date (finish)	02-08-2022

Document history

Report number	Date	Description
3451ERM.008	03-01-2022	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semi anechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Nasir Khan, Koji Nishimoto & Cheikhna Ouattara

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

FCC PART 15 PARAGRAPH / RSS-247 (Bluetooth BR/EDR)					
Report Section	15.247 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
-	§ 2.1049 & § 15.247 (a) (1)	RSS-247 5.1 (b)	20dB Emission Bandwidth, Occupied Bandwidth & Carrier Frequency Separation	N/M	Refer 1
-	§ 15.247 (a) (1) (iii)	RSS-247 5.1 (d)	Number of hopping channels	N/M	Refer 1
-	§ 15.247 (a) (1) (iii)	RSS-247 5.1 (d)	Time of Occupancy (Dwell Time)	N/M	Refer 1
-	§ 15.247 (b) (3)	RSS-247 5.4 (b)	Maximum peak conducted output power and antenna gain	N/M	Refer 1
-	§ 15.247 (d)	RSS-247 5.5	Band-edge conducted emissions compliance (Transmitter)	N/M	Refer 1
-	§ 15.247 (d)	RSS-247 5.5	Emission limitations Conducted (Transmitter)	N/M	Refer 1
A.1	§ 15.247 (d)	RSS-247 5.5	Emission limitations Radiated (Transmitter)	P	N/A
<u>Supplementary information and remarks:</u> 1) Only multi-transmitter radiated spurious emission test was requested.					

FCC PART 15 PARAGRAPH (Wi-Fi 2.4GHz)					
Report Section	15.247 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
-	§ 2.1049 & §15.247 (a) (2)	RSS-247 5.2 (a)	99% Occupied Bandwidth & 6dB Bandwidth	N/M	Refer 1
-	§ 15.247 (b)	RSS-247 5.4 (d)	Maximum Output Power and antenna gain	N/M	Refer 1
-	§ 15.247 (d)	RSS-247 5.5	Band-edge conducted emissions compliance (Transmitter)	N/M	Refer 1
-	§ 15.247 (e)	RSS-247 5.2 (b)	Power Spectral Density	N/M	Refer 1
-	§15.247(d)	RSS-247 5.5	Emission limitations Conducted (Transmitter)	N/M	Refer 1
A.1	§15.247 (d)	RSS-247 5.5	Emission limitations Radiated (Transmitter)	P	N/A
<u>Supplementary information and remarks:</u> 1) Only multi-transmitter radiated spurious emission test was requested.					

FCC PART 15 PARAGRAPH / RSS-247 (Wi-Fi 5GHz) UNII-1 5.150 - 5.250 GHz Band, UNII-3 5.725 - 5.825 GHz Band					
Report Section	15.407 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
	§ 15.403 KDB 789033 D02	RSS 247 6.2.4	26dB Emission Bandwidth & Occupied Bandwidth	N/M	Refer 1
	§ 15.407 (e)	RSS 247 6.2.4.1	6dB Bandwidth	N/M	Refer 1
	§ 15.407 (a)(3)	RSS 247 6.2.4.1	Power Limits. Maximum Output Power	N/M	Refer 1
	§ 15.407 (a)(3)	RSS-247 6.2.4.1	Maximum Power Spectral Density	N/M	Refer 1
	§ 15.407 (b)(4)	RSS-247 6.2.4.2	Band-edge conducted emissions compliance (Transmitter)	N/M	Refer 1
	§ 15.407 (b)(6) § 15.207	RSS-Gen 8.8	Emission limitations Conducted (Transmitter)	N/M	Refer 1
A.1	§ 15.407 (b)(4),(7) § 15.209 § 15.205	RSS-247 6.2.4.2 RSS-Gen 8.9 & 8.10	Undesirable radiated emissions (Transmitter)	P	N/A
	§ 15.407 (g)	RSS-Gen 6.11 & 8.11	Frequency Stability	N/M	Refer 1
<u>Supplementary information and remarks:</u> 1) Only multi-transmitter radiated spurious emission test was requested.					

List of equipment used during the test

Radiated Measurements

CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
981	RF pre-amplifier 1-18 GHz	Bonn Elektronik	BLMA 0118-2A	2020/11	2022/11
982	RF pre-amplifier 18-40 GHz	Bonn Elektronik	BLMA 1840-1M	2020/11	2022/11
1010	ESR7 EMI Test Receiver	Rohde & Schwarz	ESR7	2020/10	2022/10
1014	FSV40 Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40	2021/05	2023/05
1055	3116C Double-Ridged Waveguide Horn Antennas	ETS Lindgren	3116C	2019/12	2022/12
1057	Double-ridge Waveguide Horn antenna 1-18 GHz	ETS Lindgren	3115	2020/06	2023/06
1065	Biconical Log antenna	ETS Lindgren	3142E	2020/08	2023//08
1111	Ethernet SNMP Thermometer	HW GROUP	HWg-STE Plain	2020/08	2022/08
1179	Semi anechoic Absorber Lined Chamber	Frankonia	SAC 3 plus "L"	N/A	N/A
1314	Wireless measurement software EMC 32	Rohde & Schwarz	-	N/A	N/A

Appendix A: FCC Multi-transmitters Test Results

Appendix A Content

PRODUCT INFORMATION	13
Description of Test Conditions	14
A.1: RADIATED EMISSIONS (Multi-Transmitters)	15

Product Information

Information	Description
Modulation	BR/EDR: GFSK, $\pi/4$ -DQPSK, 8-DPSK Wi-Fi 2.4 GHz: DSSS, OFDM, MIMO-OFDM Wi-Fi 5 GHz: DSSS, OFDM, MIMO-OFDM
Operation mode 1: Single Antenna Equipment	
- Operating Frequency Range	BR/EDR: 2400 - 2483.5 MHz Wi-Fi 2.4 GHz: 2.402 - 2.480 GHz Wi-Fi 5 GHz: 5.150 - 5.250 GHz 5.725 - 5.825 GHz
- Nominal Channel Bandwidth	BR/EDR: 1 MHz Wi-Fi 2.4 GHz: 20MHz, 40MHz, 80MHz Wi-Fi 5GHz: 20MHz, 40MHz, 80MHz
- RF Output Power	BR/EDR: 4 dBm Wi-Fi 2.4 GHz: 13 dBm Wi-Fi 5 GHz: 14 dBm (Beamforming)
Extreme operating conditions	
- Temperature range	-40 °C to +70 °C
Antenna type	Whip
Antenna gain	BR/EDR: -2.5 dBi Wi-Fi 2.4 GHz: -2.5 dBi Wi-Fi 5 GHz: -2.8 dBi
Nominal Voltage	
- Supply Voltage	12 Vdc
- Type of power source	DC voltage
Equipment type	Bluetooth, Wi-Fi 2.4 GHz, and Wi-Fi 5 GHz
Geo-location capability	No

Description of Test Conditions

TEST CONDITIONS	DESCRIPTION															
TC#01 ⁽¹⁾	<p>Power supply (V): 12 Vdc</p> <p>Test Frequencies for Radiated tests:</p> <table border="1" data-bbox="475 703 1334 909"> <thead> <tr> <th>Technology</th> <th>Tested Frequency</th> <th>BW (MHz)</th> <th>Modulation</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>Bluetooth</td> <td>2402</td> <td>20</td> <td>FHSS</td> <td>8DPSK</td> </tr> <tr> <td>Wi-Fi 2.4 GHz MIMO (non - beamforming)</td> <td>2412</td> <td>20</td> <td>OFDM</td> <td>b mode</td> </tr> </tbody> </table> <p>The test was performed with the equipment transmitting with Bluetooth and two Wi-Fi 2.4GHz radios simultaneously. These measurements have been performed in order to check the impact of the multi-transmitter of all radio interfaces that can be transmitting simultaneously.</p>	Technology	Tested Frequency	BW (MHz)	Modulation	Mode	Bluetooth	2402	20	FHSS	8DPSK	Wi-Fi 2.4 GHz MIMO (non - beamforming)	2412	20	OFDM	b mode
Technology	Tested Frequency	BW (MHz)	Modulation	Mode												
Bluetooth	2402	20	FHSS	8DPSK												
Wi-Fi 2.4 GHz MIMO (non - beamforming)	2412	20	OFDM	b mode												
TC#02 ⁽¹⁾	<p>Power supply (V): 12 Vdc</p> <p>Test Frequencies for Radiated tests:</p> <table border="1" data-bbox="475 1312 1334 1518"> <thead> <tr> <th>Technology</th> <th>Tested Frequency</th> <th>BW (MHz)</th> <th>Modulation</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>Bluetooth</td> <td>2402</td> <td>20</td> <td>FHSS</td> <td>8DPSK</td> </tr> <tr> <td>Wi-Fi 5 GHz MIMO (beamforming)</td> <td>5180</td> <td>20</td> <td>OFDM</td> <td>ac mode</td> </tr> </tbody> </table> <p>The test was performed with the equipment transmitting with Bluetooth and two Wi-Fi 5GHz radios simultaneously. These measurements have been performed in order to check the impact of the multi-transmitter of all radio interfaces that can be transmitting simultaneously.</p>	Technology	Tested Frequency	BW (MHz)	Modulation	Mode	Bluetooth	2402	20	FHSS	8DPSK	Wi-Fi 5 GHz MIMO (beamforming)	5180	20	OFDM	ac mode
Technology	Tested Frequency	BW (MHz)	Modulation	Mode												
Bluetooth	2402	20	FHSS	8DPSK												
Wi-Fi 5 GHz MIMO (beamforming)	5180	20	OFDM	ac mode												

Note (1): Preliminary scan was performed to determine the worst case between two SISO ports (2.4 GHz or + 5 GHz) and MIMO (2.4 GHz or 5 GHz) ports. The following tables and plots show the results for the worst case in MIMO (2.4 GHz or 5 GHz) + BT.

A.1: RADIATED EMISSIONS (Multi-Transmitters)

LIMITS:	Product standard:	Part 15 Subpart C §15.247, Part 15 Subpart E §15.407, Part 15.31(h), and RSS-247
	Test standard:	Part 15 Subpart C §15.247 (d), Part 15 Subpart E §15.407 (b) (1) & (4) and RSS-Gen 8.9 and 8.10

LIMITS

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required

TEST SETUP

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 30-1000 MHz (Bilog antenna) and 1-18 GHz (Double ridge horn antenna, and at 1m for the frequency range 18-40 GHz (Double ridge horn antenna).

For radiated emissions in the range 18-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

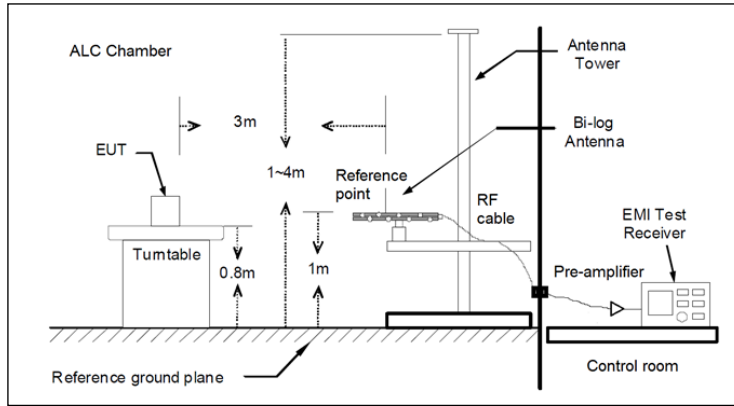
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

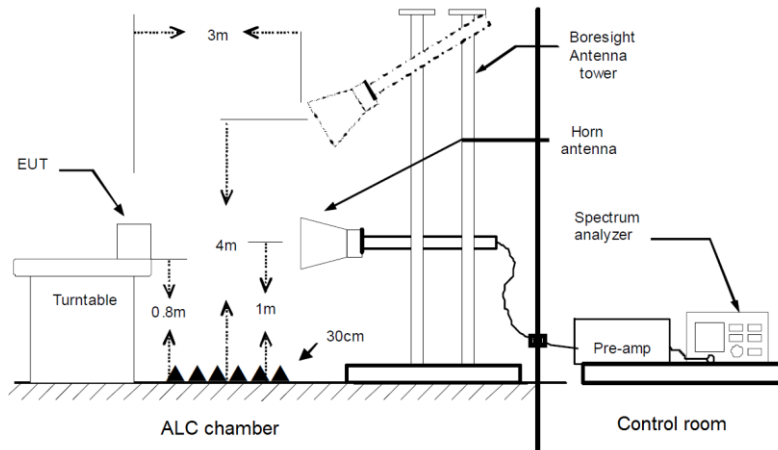
The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

TEST SETUP (CONT.)

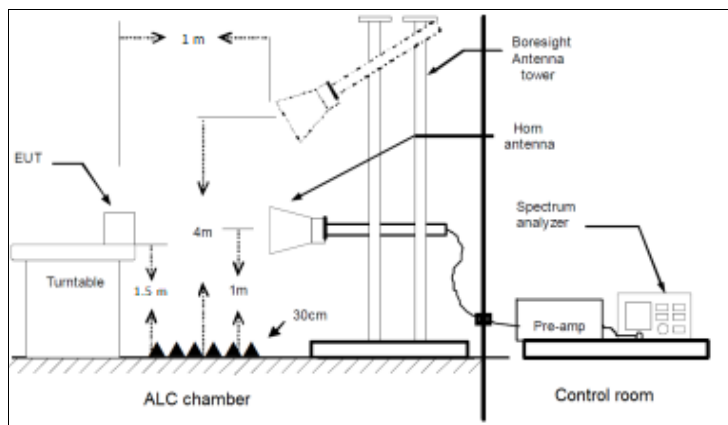
Radiated measurements Setup $f < 1$ GHz



Radiated measurements setup $1 \text{ GHz} < f < 18 \text{ GHz}$



Radiated measurements setup $f > 18 \text{ GHz}$

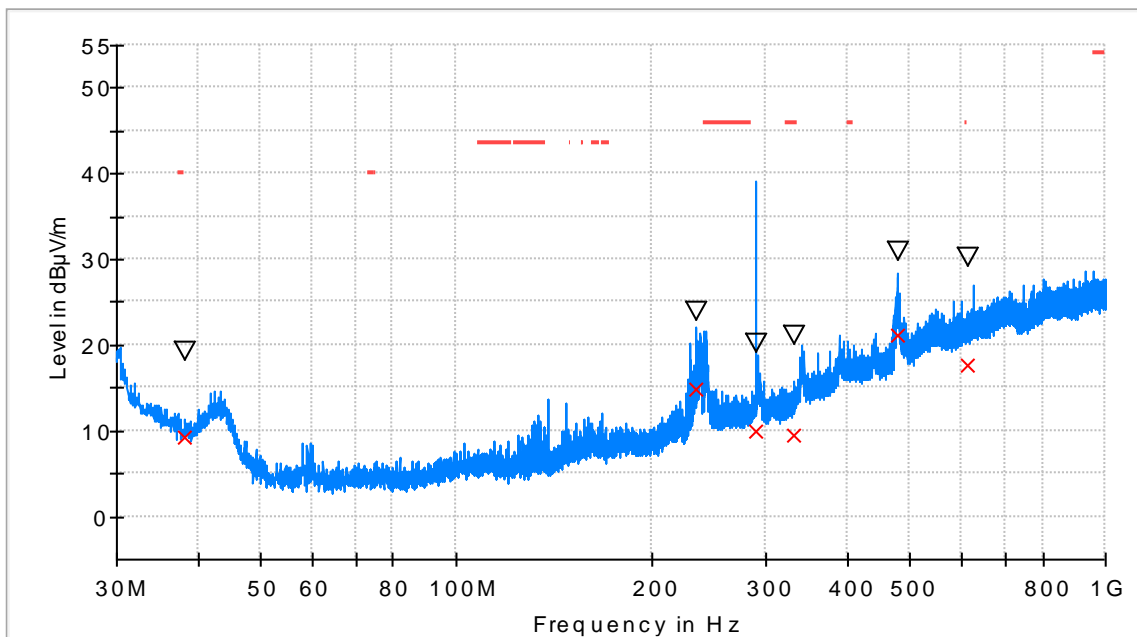


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Frequency range 30 MHz – 1000 MHz

The spurious emissions below 1 GHz do not depend on the operating channel and mode selected in the EUT.

RF_FCC_15.247_E Field_30MHz_1GHz

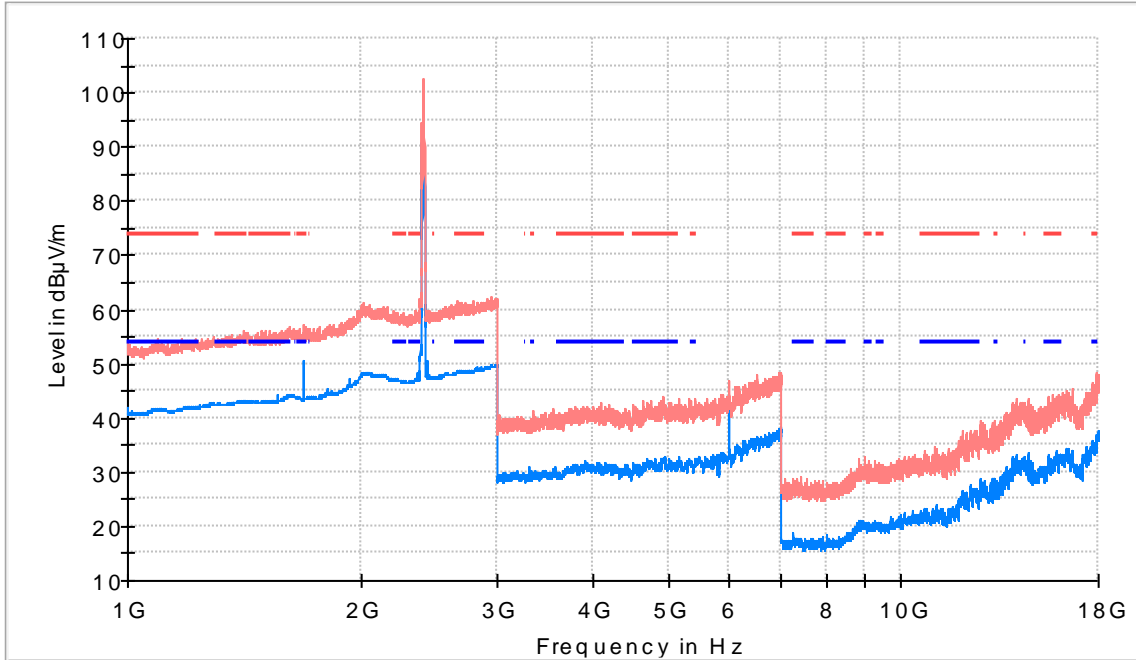


- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Lir
- ▽ MaxPeak-PK+ (Single)
- × QuasiPeak-QPK (Single)

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBµV/m)
38.196500	19.2	9.1	V	30.9	40.0
234.670000	23.9	14.8	H	---	---
289.960000	20.1	9.9	H	---	---
332.203500	21.1	9.4	H	36.6	46.0
480.031500	31.1	21.1	H	---	---
612.485000	30.3	17.8	H	28.3	46.0

TEST RESULTS (Cont.):

FREQUENCY RANGE: 1-18 GHz

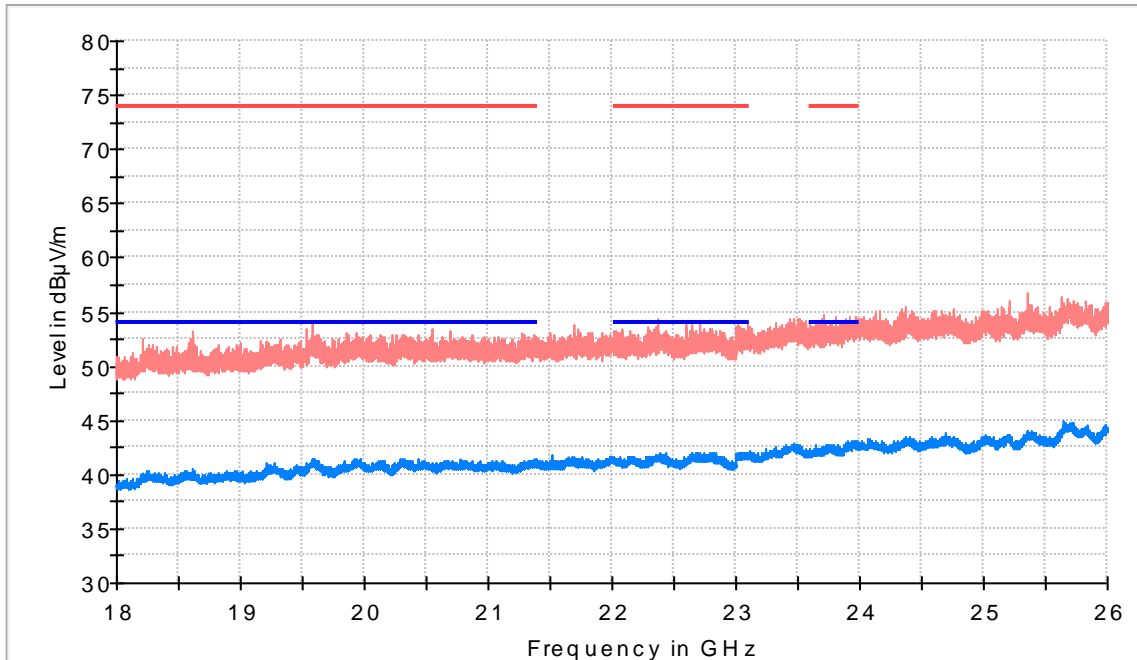


- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands AVG Limit

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
1687.500000	57.2	50.7	H	3.3	54.0	
2390.500000	63.2	53.6	H	---	---	
2402.000000	94.4	90.8	H	---	---	Fundamental
2411.500000	102.8	95.9	H	---	---	Fundamental

TEST RESULTS (Cont.):

FREQUENCY RANGE: 18-40 GHz

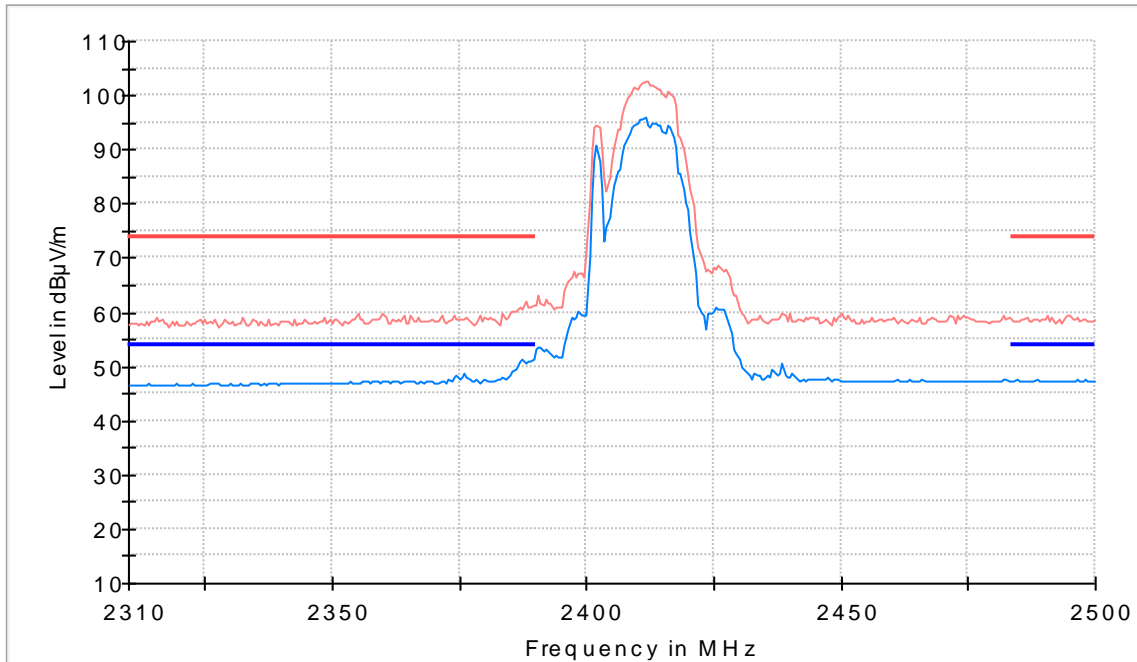


- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands AVG Limit

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19580.000000	54.0	41.2	H	12.8	54.0
19598.000000	51.7	41.4	V	12.6	54.0

TEST RESULTS (Cont.):

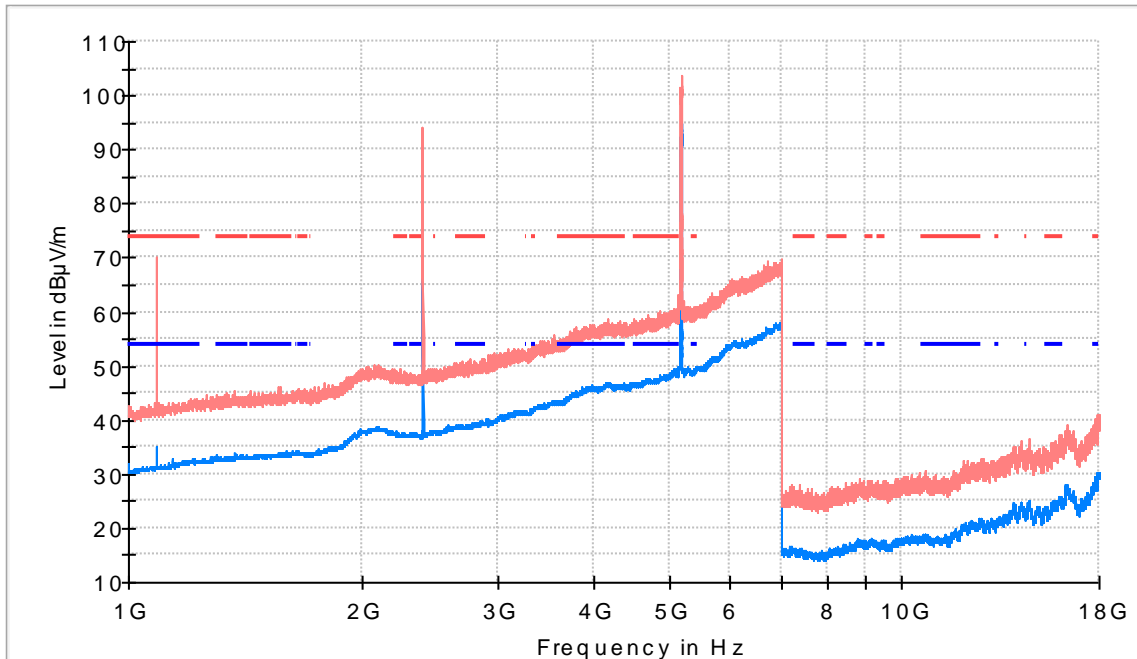
Restricted bands (2.31 GHz – 2.5 GHz)



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands AVG Limit

TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#02
TEST RESULTS:	PASS

FREQUENCY RANGE: 1-18 GHz

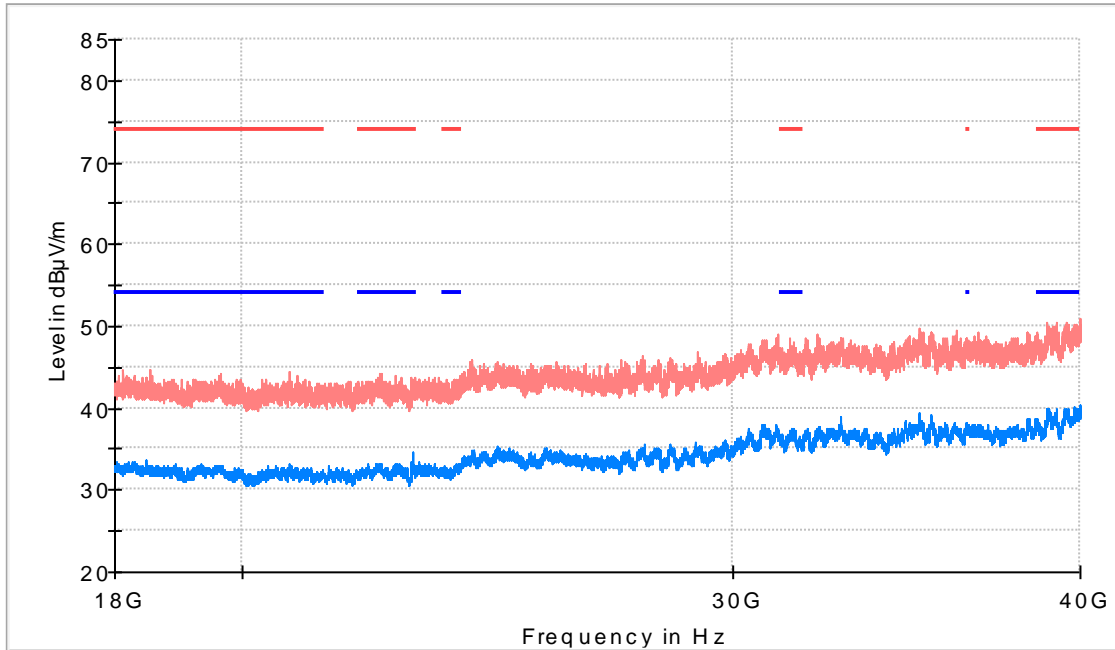


- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Li
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Lim

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
1087.000000	70.3	35.2	H	18.8	54.0	
2402.000000	94.3	91.0	H	---	---	BT Fundamental
5185.000000	103.7	93.3	H	---	---	Wi-Fi Fundamental

TEST RESULTS (Cont.):

FREQUENCY RANGE: 18-40 GHz

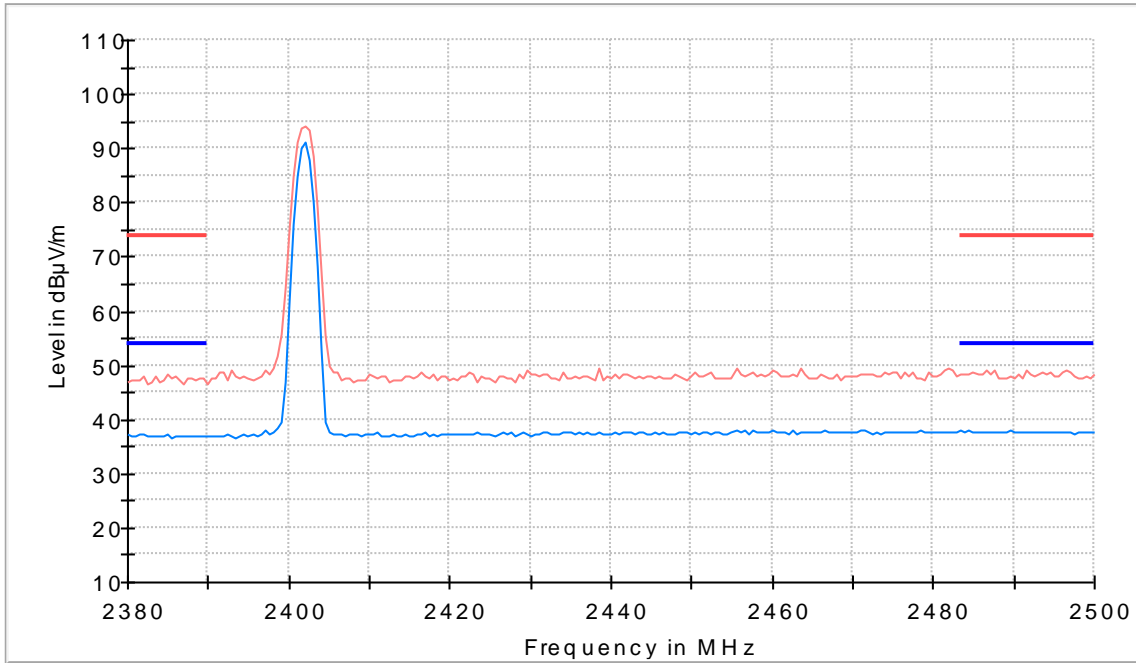


- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Lim
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Li

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
23019.437500	42.8	34.6	H	19.4	54.0
39998.625000	51.0	40.3	V	13.7	54.0

TEST RESULTS (Cont.):

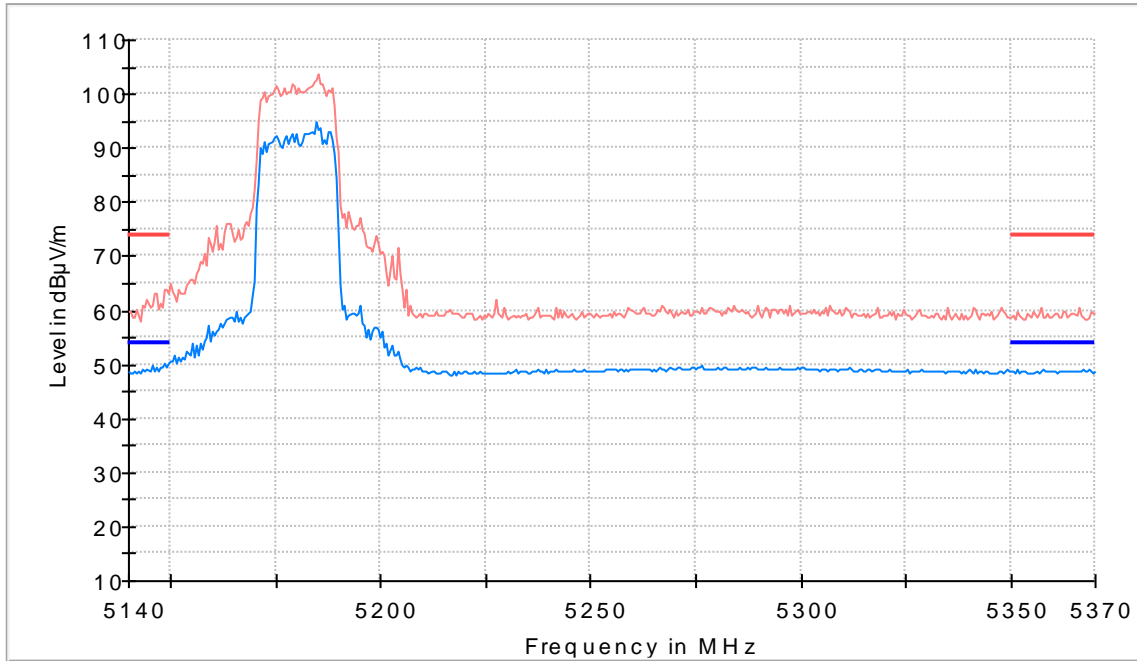
Restricted bands (2.38 GHz – 2.5 GHz)



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Li
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Lim

TEST RESULTS (Cont.):

Restricted bands (5.14 GHz – 5.37 GHz)



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Li
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Lim