TESTING
NVLAP LAB CODE 600118-0

FCC PART 15
ISED RSS-247
TEST REPORT
No. I21Z70185-EMC12

for

Samsung Electronics Co., Ltd.

Notebook PC

XE310XDA

with

FCC ID: ZCAXE310XDA

ISED Number: 25314-XE310XDA

Hardware Version: REV1.0

Software Version: Chrome

Issued Date: 2021-06-21

Note:

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z70185-EMC12	Rev.0	1st edition	2021-06-21

CONTENTS

1. TEST LATORATORY

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1:CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

Location 2:CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, P. R. China 100176

1.3. TestingEnvironment

Normal Temperature: 15-35℃

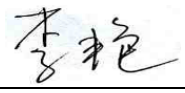
Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2021-05-06

Testing End Date: 2021-06-18

1.5. Signature

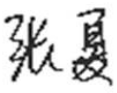


Li Yan

(Prepared this test report)

Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	19 Chapin Rd.,Building D Pine Brook, NJ 07058
Contact:	Jenni Chun
Email:	j1.chun@samsung.com
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Fax:	/

2.2. Manufacturer Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
Contact:	Sunghoon Cho
Email:	ggobi.cho@samsung.com
Telephone:	+82-10-2722-4159
Fax:	/

3. PRODUCT INFORMATION

3.1. About EUT

Description	Notebook PC
Model name	XE310XDA
FCC ID	ZCAXE310XDA
ISED Number	25314-XE310XDA

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of T CTTL-Telecommunication Technology Labs, CAICT

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	2170185UT31a	REV1.0	Chrome
EUT2	2170185UT11a	REV1.0	Chrome

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Remarks
AE1	Travel Adapter	/	/
AE2	Travel Adapter	/	/
AE3	battery	/	Inbuilt

AE1

Model	EP-TA845
Manufacturer	DONGYANG E&P Inc
Length of cable	/

AE2

Model	EP-TA845
Manufacturer	SOLUM CO.,LTD
Length of cable	/

AE3

Model	/
Manufacturer	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) was a Notebook Computer with Bluetooth, Bluetooth Low Energy and 802.11 a/b/g/n/ac/ax capabilities in the 2.4 GHz and 5 GHz bands.

Antenna information

Item	Spec.	Vendor	Vendor P/N	Sample under test
Antenna	Main antenna (Chain A)	AWAN	/	EUT2
	Auxiliary antenna (Chain B)			
Antenna	Main antenna (Chain A)	SPEED	/	EUT1
	Auxiliary antenna (Chain B)			

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

For more EUT information please refers to the manufacturer's specifications or user's manual.

3.5. Test Configuration

For 802.11a mode the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, but not simultaneously.

For 802.11n20 & 802.11ax20 (20 MHz channel bandwidth), 802.11n40 & 802.11ax40 (40MHz channel bandwidth) and 802.11ac80 & 802.11ax80 (80MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously(MIMO).

The software DRTU provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

3.6. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	2019
ISED RSS - Gen	Spectrum Management and Telecommunications - Radio Standards Specification General Requirements and Information for the Certification of Radio communication Equipment	Issue 5 2019
ISED RSS-247	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	Issue 2 2017
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

Note: The test methods have no deviation with standards.

5. SUMMARY OF TEST RESULTS

5.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15	Sub-clause of ISED	Verdict
Radiated Spurious Emission	15.407, 15.205, 15.209	RSS-247 6.2 RSS-Gen 8.9,8.10	**P**
AC Power line Conducted Emission	15.407, 15.207	RSS-Gen 8.8	**P**

Please refer to **ANNEX C** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by CTTL
BR	Re-use test data from basic model report.
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

5.2. Statements

The test cases as listed in section 5.1 of this report for the EUT specified in section 3 was performed by CTTL and according to the standards or reference documents listed in section 4.2 The EUT met all requirements of the standards or reference documents, and only the WLAN function was tested in this report.

5.3. Test Conditions

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage

For this report, if the test cases listed above are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	T nom	26℃
Voltage	V nom	4.0V
Humidity	H nom	20-75%

6. TEST EQUIPMENTS UTILIZED

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	R&S	1 year	2021-09-04
2	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	1 year	2021-11-04
3	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	1 year	2021-10-11
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	1 year	2021-08-05
5	Analytical Spectrometer	FSV40	R&S	101047	1 year	2022-05-17
6	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2021-12-10
7	Test Receiver	ESU26	100235	R&S	1 year	2022-02-23

AC Powerline Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101459	R&S	1 year	2021-04-09
2	Test Receiver	ESCI	100766	R&S	1 year	2022-03-09

7. Measurement Uncertainty

Radiated Spurious Emission

(k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
30MHz ≤ f ≤ 1GHz	5.40
1GHz ≤ f ≤18GHz	4.32
18GHz ≤ f ≤40GHz	5.26

AC Power-line Conducted Emission

Measurement Uncertainty: 3.10dB,k=2

ANNEX A: EUT parameters

Disclaimer: The antenna gain and setting power provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX B: Antenna Requirements

A ccording to FCC 47 CFR § 15.203, §15.407:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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.”

(1) The antennas of the EUT are permanently attached.

(2) The EUT complies with the requirement of §15.203, §15.407.

ANNEX C: Detailed Test Results

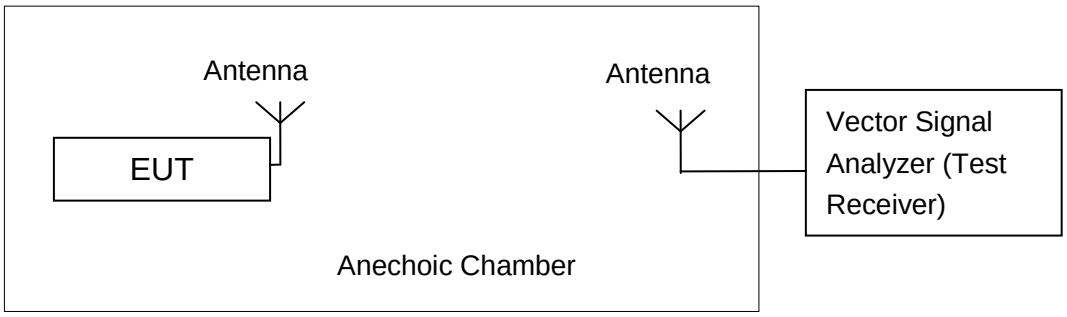
C.1. Radiated Spurious Emission

Specification Reference

FCC 47 CFR Part 15, Clause 15.407 (b) Clause 15.205 Clause 15.209
ISED RSS-247, Clause 6.2, ISED RSS-GEN, Clause 8.9, 8.10

Method of Measurement

Testing was performed in according with ANSI C63.10-2013 and KDB 789033.
The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.



Measurement Limit

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407 RSS-247, 6.2	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note：Increasing linearly from point to point.	

In addition, 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)).
Limit in restricted band:

Frequency (MHz)	Field strength(μV/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

Frequency of emission (MHz)	Field strength(dBμV/m)	Measurement distance(m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

Test settings

Frequency of emission (MHz)	RBW/VBW
30-1000	100KHz/300KHz
1000-4000	1MHz/3MHz
4000-18000	1MHz/3MHz
18000-26500	1MHz/3MHz
26500-40000	1MHz/3MHz

Sample Calculation

1. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
E=EIRP- 20log (*D)* +104.77
Where:
E is the field strength in dBμV/m
D is the measurement distance in meters
EIRP is the equivalent isotropically radiated power in dbm

2. The measurement results are obtained as described below:
Result=P_{Mea}+$A_{Rpl=}$ P_{Mea}+Cable Loss+Antenna Factor
A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.
P_{Mea} is the field strength recorded from the instrument.

Test Notes

1. The EUT is operating at its maximum duty cycle and its maximum power control level.
2. Investigation has been done on all channel, modes and modulations/data rates. Only the radiated emissions of the configurations that produced the worst case emissions are reported in this section.
3.
For EUT1 with SPEED antenna the measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this report.
For EUT2 with AWAN antenna the measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this report.

C.1.1 Radiated Spurious Emission- above 1GHz

SPEED

The measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this section.

Average Results：

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5390.600	38.70	-22.29	34.36	26.63	54.00	15.30	V
5409.200	38.45	-22.39	34.37	26.47	54.00	15.55	V
11490.200	37.98	-29.15	38.20	28.94	54.00	16.02	H
16154.200	36.49	-23.29	40.95	18.84	54.00	17.51	V
17740.400	38.16	-22.27	41.55	18.88	54.00	15.84	V
17910.900	38.15	-22.64	41.52	19.27	54.00	15.85	H

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5373.600	38.70	-22.29	34.35	26.64	54.00	15.30	V
5394.900	38.67	-22.29	34.36	26.60	54.00	15.33	V
11569.400	38.19	-29.24	38.27	29.17	54.00	15.81	H
16145.400	36.55	-23.31	40.94	18.92	54.00	17.45	V
17737.100	38.08	-22.26	41.55	18.80	54.00	15.92	H
17910.900	38.20	-22.64	41.52	19.33	54.00	15.80	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5374.500	38.50	-22.29	34.35	26.44	54.00	9.80	V
5400.200	38.59	-22.32	34.36	26.54	54.00	9.71	V
11649.700	37.72	-29.41	38.35	28.77	54.00	10.58	H
16154.200	36.53	-23.29	40.95	18.87	54.00	11.77	H
17758.000	37.89	-22.31	41.55	18.65	54.00	10.41	V
17910.900	38.29	-22.64	41.52	19.41	54.00	10.01	H

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5377.800	38.83	-22.29	34.35	26.76	54.00	15.17	V
5408.400	38.54	-22.38	34.36	26.55	54.00	15.46	V
11489.100	37.76	-29.16	38.20	28.72	54.00	16.24	H
16088.200	36.48	-23.44	40.84	19.07	54.00	17.52	H
17723.900	38.04	-22.23	41.55	18.72	54.00	15.96	H
17906.500	38.30	-22.63	41.52	19.42	54.00	15.70	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5377.000	38.79	-22.29	34.35	26.73	54.00	15.21	V
5397.100	38.76	-22.29	34.36	26.69	54.00	15.24	V
11569.400	37.92	-29.24	38.27	28.89	54.00	16.08	H
16154.200	36.48	-23.29	40.95	18.82	54.00	17.52	H
17744.800	38.12	-22.28	41.55	18.85	54.00	15.88	V
17917.500	38.28	-22.65	41.52	19.42	54.00	15.72	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5366.600	38.92	-22.29	34.35	26.86	54.00	15.08	V
5391.500	38.77	-22.29	34.36	26.69	54.00	15.23	V
11649.700	37.54	-29.41	38.35	28.60	54.00	16.46	H
16154.200	36.49	-23.29	40.95	18.83	54.00	17.51	V
17742.600	38.16	-22.28	41.55	18.88	54.00	15.84	H
17910.900	38.24	-22.64	41.52	19.36	54.00	15.76	V

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5373.000	38.81	-22.29	34.35	26.75	54.00	15.19	V
5351.400	38.99	-22.29	34.34	26.94	54.00	15.01	V
11510.000	34.39	-29.14	38.21	25.32	54.00	19.61	V
16145.400	36.36	-23.31	40.94	18.73	54.00	17.64	H
17740.400	37.91	-22.27	41.55	18.63	54.00	16.09	H
17912.000	38.09	-22.64	41.52	19.21	54.00	15.91	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5360.100	38.95	-22.29	34.35	26.90	54.00	15.05	V
5383.200	38.96	-22.29	34.35	26.90	54.00	15.04	V
11590.300	24.91	-29.28	38.29	15.90	54.00	29.09	H
16038.700	36.27	-23.58	40.76	19.10	54.00	17.73	H
17736.000	37.88	-22.26	41.55	18.59	54.00	16.12	V
17833.900	37.91	-22.48	41.53	18.86	54.00	16.09	H

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5377.700	38.76	-22.29	34.35	26.70	54.00	15.24	V
5401.500	38.83	-22.33	34.36	26.79	54.00	15.17	V
11490.200	37.39	-29.15	38.20	28.34	54.00	16.61	H
16141.000	36.49	-23.31	40.93	18.87	54.00	17.51	H
17750.300	38.09	-22.30	41.55	18.84	54.00	15.91	H
17833.900	38.13	-22.48	41.53	19.08	54.00	15.87	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5386.200	38.91	-22.29	34.36	26.84	54.00	15.09	V
5400.500	38.82	-22.32	34.36	26.78	54.00	15.18	V
11569.400	37.80	-29.24	38.27	28.78	54.00	16.20	V
16060.700	36.55	-23.52	40.80	19.26	54.00	17.45	H
17740.400	38.18	-22.27	41.55	18.90	54.00	15.82	V
17905.400	38.34	-22.63	41.52	19.45	54.00	15.66	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5371.600	38.60	-22.29	34.35	26.54	54.00	15.40	V
5397.700	38.87	-22.30	34.36	26.80	54.00	15.13	V
11649.700	35.20	-29.41	38.35	26.26	54.00	18.80	V
16163.000	36.28	-23.28	40.96	18.60	54.00	17.72	H
17740.400	37.79	-22.27	41.55	18.51	54.00	16.21	V
17910.900	37.94	-22.64	41.52	19.07	54.00	16.06	H

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5360.100	39.08	-22.29	34.35	27.03	54.00	14.92	V
5388.500	38.94	-22.29	34.36	26.86	54.00	15.06	V
11505.600	33.95	-29.14	38.21	24.88	54.00	20.05	H
16155.300	36.29	-23.29	40.95	18.64	54.00	17.71	V
17740.400	37.95	-22.27	41.55	18.67	54.00	16.05	H
17906.500	38.12	-22.63	41.52	19.23	54.00	15.88	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5355.600	38.92	-22.29	34.34	26.87	54.00	15.08	V
5380.400	38.80	-22.29	34.35	26.73	54.00	15.20	V
11589.200	34.81	-29.28	38.29	25.80	54.00	19.19	V
16145.400	36.39	-23.31	40.94	18.76	54.00	17.61	H
17749.200	37.88	-22.29	41.55	18.62	54.00	16.12	V
17919.700	38.08	-22.66	41.52	19.23	54.00	15.92	V

802.11ax-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5362.400	38.8	-22.3	34.5	26.62	54.0	15.2	V
5381.400	38.8	-22.3	34.5	26.53	54.0	15.2	V
11549.600	33.9	-29.2	38.5	24.54	54.0	20.1	V
16065.100	36.3	-23.5	40.9	18.95	54.0	17.7	V
17749.200	37.9	-22.3	41.3	18.95	54.0	16.1	V
17901.000	38.1	-22.6	41.3	19.42	54.0	15.9	V

802.11ac-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5351.300	39.1	-22.3	34.5	26.90	54.0	14.9	V
5353.000	39.2	-22.3	34.5	26.98	54.0	14.8	V
11549.600	33.9	-29.2	38.5	24.58	54.0	20.1	H
16089.300	36.3	-23.4	40.9	18.82	54.0	17.7	V
17758.000	37.9	-22.3	41.3	18.95	54.0	16.1	V
17910.900	38.2	-22.6	41.3	19.53	54.0	15.8	H

Peak Results：

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.414	53.95	-22.84	34.68	42.11	68.51	14.56	V
5651.760	54.38	-22.84	34.68	42.53	69.50	15.13	V
11496.800	52.38	-29.12	38.20	43.31	74.00	21.62	V
16990.200	57.10	-23.02	42.19	37.94	68.30	11.20	V
17164.550	56.86	-22.96	42.00	37.82	68.30	11.44	H
17234.950	54.10	-22.85	41.92	35.03	68.30	14.20	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5737.600	54.87	-22.96	34.84	43.00	68.30	13.43	V
5860.600	54.71	-22.42	35.06	42.07	68.30	13.59	V
11571.050	52.12	-29.25	38.27	43.09	74.00	21.88	H
16480.350	56.88	-23.13	41.47	38.54	68.30	11.42	V
17354.850	55.71	-22.93	41.77	36.87	68.30	12.59	V
17680.450	58.32	-22.13	41.56	38.89	68.30	9.98	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.378	54.61	-22.23	35.17	41.67	70.14	15.53	V
5923.643	54.12	-22.22	35.17	41.17	69.20	15.09	H
11650.250	51.30	-29.41	38.35	42.35	74.00	22.70	H
16969.850	57.26	-23.02	42.16	38.11	68.30	11.04	V
17302.600	56.85	-22.81	41.83	37.82	68.30	11.45	H
17474.750	54.48	-23.07	41.63	35.92	68.30	13.82	V

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.495	53.47	-22.84	34.68	41.63	69.31	15.84	H
5654.876	54.10	-22.84	34.69	42.26	71.81	17.70	V
11495.700	52.05	-29.12	38.20	42.97	74.00	21.95	H
16975.350	56.81	-23.02	42.17	37.67	68.30	11.48	V
17234.950	54.28	-22.85	41.92	35.22	68.30	14.02	H
17532.500	57.81	-22.69	41.59	38.90	68.30	10.49	H

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5738.400	54.61	-22.96	34.84	42.73	68.30	13.69	V
5837.800	53.77	-22.48	35.02	41.24	68.30	14.53	H
11569.950	51.53	-29.24	38.27	42.50	74.00	22.47	H
17000.100	56.88	-23.02	42.20	37.70	68.30	11.42	H
17088.650	56.86	-23.04	42.09	37.80	68.30	11.44	H
17354.850	55.31	-22.93	41.77	36.48	68.30	12.98	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5921.067	54.23	-22.23	35.16	41.30	71.11	16.88	V
5924.985	53.62	-22.21	35.17	40.65	68.21	14.60	V
11653.000	50.93	-29.42	38.36	41.99	74.00	23.07	H
16968.750	56.88	-23.02	42.16	37.74	68.30	11.41	H
17450.000	56.83	-23.16	41.66	38.33	68.30	11.47	V
17474.750	55.94	-23.07	41.63	37.38	68.30	12.36	V

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5652.990	53.60	-22.84	34.68	41.75	70.41	16.82	V
5655.462	53.69	-22.84	34.69	41.84	72.24	18.56	V
11509.450	48.85	-29.14	38.21	39.78	74.00	25.15	V
17003.950	56.91	-23.02	42.20	37.74	68.30	11.39	V
17354.850	54.70	-22.93	41.77	35.86	68.30	13.60	V
17652.950	57.53	-22.07	41.57	38.03	68.30	10.77	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5918.847	54.89	-22.25	35.16	41.98	72.75	17.87	H
5923.781	54.15	-22.22	35.17	41.19	69.10	14.96	H
11585.900	48.59	-29.27	38.29	39.58	74.00	25.41	H
16387.400	56.55	-23.10	41.32	38.32	68.30	11.75	V
17011.100	57.03	-23.02	42.19	37.87	68.30	11.27	V
17385.100	54.43	-23.01	41.74	35.70	68.30	13.87	H

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5652.495	53.71	-22.84	34.68	41.87	70.05	16.34	V
5654.221	53.71	-22.84	34.69	41.87	71.32	17.61	V
11491.300	50.91	-29.14	38.20	41.86	74.00	23.09	V
16785.050	57.20	-23.00	41.90	38.30	68.30	11.10	V
17234.850	54.69	-22.85	41.92	35.62	68.30	13.61	V
17513.800	57.60	-22.81	41.60	38.81	68.30	10.70	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5712.400	54.30	-22.94	34.79	42.45	68.30	14.00	V
5835.600	55.01	-22.50	35.01	42.50	68.30	13.29	V
11572.150	52.54	-29.25	38.27	43.52	74.00	21.46	H
17043.550	57.40	-23.03	42.15	38.29	68.30	10.90	H
17354.850	54.55	-22.93	41.77	35.71	68.30	13.75	V
17575.950	57.51	-22.40	41.58	38.33	68.30	10.79	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5920.435	54.37	-22.24	35.16	41.44	71.58	17.21	V
5922.884	54.11	-22.22	35.17	41.17	69.77	15.65	V
11650.250	49.91	-29.41	38.35	40.96	74.00	24.09	H
16829.050	56.83	-23.00	41.96	37.86	68.30	11.47	H
17398.850	56.81	-23.04	41.72	38.12	68.30	11.49	V
17474.750	54.52	-23.07	41.63	35.96	68.30	13.78	V

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.449	53.72	-22.84	34.68	41.88	69.27	15.55	H
5655.141	53.84	-22.84	34.69	41.99	72.00	18.16	H
11507.250	48.30	-29.14	38.21	39.23	74.00	25.70	V
16882.400	57.01	-23.00	42.04	37.98	68.30	11.29	V
17265.200	53.32	-22.80	41.88	34.24	68.30	14.98	H
17473.100	57.34	-23.08	41.63	38.79	68.30	10.96	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5920.492	54.52	-22.24	35.16	41.59	71.54	17.02	V
5923.609	54.66	-22.22	35.17	41.71	69.23	14.57	H
11589.750	48.23	-29.28	38.29	39.21	74.00	25.77	H
16894.500	57.03	-23.01	42.05	37.98	68.30	11.27	H
17385.100	54.31	-23.01	41.74	35.58	68.30	13.99	H
17518.200	57.21	-22.78	41.60	38.39	68.30	11.09	H

802.11ax-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5924.552	53.6	-22.2	35.1	40.70	68.3	13.2	H
5924.759	54.3	-22.2	35.1	41.40	68.3	13.5	V
11550.150	46.6	-29.2	38.5	37.27	74.0	27.4	V
16945.650	56.5	-23.0	41.7	37.88	68.3	11.8	H
17060.050	56.8	-23.0	41.6	38.23	68.3	11.5	H
17325.150	55.1	-22.9	41.4	36.58	68.3	13.2	H

802.11ac-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5613.800	54.3	-22.8	34.7	42.44	68.3	14.0	H
5807.200	54.7	-22.7	35.0	42.45	68.3	13.6	V
11380.200	46.3	-29.8	38.4	37.81	74.0	27.7	V
16924.750	57.0	-23.0	41.7	38.33	68.3	11.3	H
17069.950	54.4	-23.0	41.6	35.84	68.3	13.9	V
17672.750	57.8	-22.1	41.2	38.65	68.3	10.5	V

Note: the spurious emission above 18G is noise only

Conclusion: pass

AWAN

The measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this section.

Average Results：

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5386.800	39.01	-22.29	34.36	26.94	54.00	14.99	V
5435.000	38.73	-22.59	34.38	26.95	54.00	15.27	V
11490.200	32.21	-29.15	38.20	23.16	54.00	21.79	H
16169.600	35.88	-23.28	40.97	18.19	54.00	18.12	V
17732.700	37.47	-22.25	41.55	18.17	54.00	16.53	V
17931.800	38.01	-22.68	41.51	19.18	54.00	15.99	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5390.100	39.01	-22.29	34.36	26.94	54.00	14.99	V
5437.000	38.76	-22.60	34.38	26.98	54.00	15.24	V
11569.400	32.21	-29.24	38.27	23.19	54.00	21.79	H
16059.600	35.85	-23.52	40.80	18.57	54.00	18.15	V
17742.600	37.67	-22.28	41.55	18.39	54.00	16.33	H
17917.500	38.04	-22.65	41.52	19.18	54.00	15.96	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5384.200	39.02	-22.29	34.36	26.95	54.00	14.98	V
5438.200	38.74	-22.61	34.38	26.98	54.00	15.26	V
11648.600	32.25	-29.40	38.35	23.30	54.00	21.75	V
16145.400	36.06	-23.31	40.94	18.43	54.00	17.94	H
17769.000	37.46	-22.34	41.55	18.26	54.00	16.54	V
17910.900	38.09	-22.64	41.52	19.21	54.00	15.91	H

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5391.200	38.90	-22.29	34.36	26.82	54.00	15.10	V
5438.900	38.74	-22.62	34.38	26.99	54.00	15.26	V
11490.200	31.59	-29.15	38.20	22.54	54.00	22.41	V
16143.200	36.03	-23.31	40.93	18.40	54.00	17.97	H
17750.300	37.67	-22.30	41.55	18.41	54.00	16.33	H
17903.200	38.02	-22.63	41.52	19.13	54.00	15.98	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5407.500	38.74	-22.37	34.36	26.75	54.00	15.26	V
5440.400	38.74	-22.63	34.38	27.00	54.00	15.26	V
11570.500	31.57	-29.25	38.27	22.54	54.00	22.43	H
16150.900	36.20	-23.30	40.94	18.56	54.00	17.80	H
17741.500	37.78	-22.27	41.55	18.50	54.00	16.22	V
17910.900	38.09	-22.64	41.52	19.21	54.00	15.91	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5406.000	38.75	-22.36	34.36	26.75	54.00	15.25	V
5437.400	38.73	-22.61	34.38	26.96	54.00	15.27	V
11648.600	32.26	-29.40	38.35	23.31	54.00	21.74	H
16153.100	36.06	-23.30	40.95	18.41	54.00	17.94	H
17741.500	37.70	-22.27	41.55	18.43	54.00	16.30	H
17907.600	38.03	-22.63	41.52	19.15	54.00	15.97	V

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5398.100	38.83	-22.30	34.36	26.77	54.00	15.17	V
5438.900	38.75	-22.62	34.38	26.99	54.00	15.25	V
11510.000	32.31	-29.14	38.21	23.25	54.00	21.69	V
17778.900	37.63	-22.36	41.54	18.45	54.00	16.37	H
17836.100	37.97	-22.49	41.53	18.92	54.00	16.03	H
17919.700	37.99	-22.66	41.52	19.14	54.00	16.01	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5387.400	38.99	-22.29	34.36	26.92	54.00	15.01	V
5438.300	38.78	-22.61	34.38	27.02	54.00	15.22	V
11590.300	31.97	-29.28	38.29	22.95	54.00	22.03	V
17879.000	37.60	-22.58	41.52	18.65	54.00	16.40	V
17907.600	37.99	-22.63	41.52	19.11	54.00	16.01	H
17945.000	37.82	-22.71	41.51	19.02	54.00	16.18	V

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5409.200	38.75	-22.39	34.37	26.77	54.00	15.25	V
5439.700	38.77	-22.62	34.38	27.02	54.00	15.23	V
11489.100	32.73	-29.16	38.20	23.69	54.00	21.27	V
17829.500	37.96	-22.47	41.53	18.90	54.00	16.04	H
17908.700	38.10	-22.64	41.52	19.22	54.00	15.90	V
17928.500	38.05	-22.68	41.51	19.21	54.00	15.95	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5389.700	38.97	-22.29	34.36	26.90	54.00	15.03	V
5436.600	38.84	-22.60	34.38	27.06	54.00	15.16	V
11571.600	37.63	-29.25	38.27	28.60	54.00	16.37	H
17862.500	37.63	-22.54	41.53	18.64	54.00	16.37	V
17895.500	37.91	-22.61	41.52	18.99	54.00	16.09	H
17953.800	37.84	-22.73	41.51	19.06	54.00	16.16	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5385.800	39.00	-22.29	34.36	26.93	54.00	15.00	V
5436.600	38.77	-22.60	34.38	27.00	54.00	15.23	V
11649.700	32.57	-29.41	38.35	23.63	54.00	21.43	V
17838.300	37.85	-22.49	41.53	18.81	54.00	16.15	H
17886.700	37.70	-22.59	41.52	18.77	54.00	16.30	V
17963.700	37.87	-22.75	41.51	19.11	54.00	16.13	V

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5390.900	39.00	-22.29	34.36	26.93	54.00	15.00	V
5436.400	38.76	-22.60	34.38	26.98	54.00	15.24	V
11510.000	32.36	-29.14	38.21	23.30	54.00	21.64	V
17820.700	37.78	-22.46	41.54	18.70	54.00	16.22	H
17898.800	37.96	-22.62	41.52	19.05	54.00	16.04	V
17971.400	37.68	-22.76	41.51	18.94	54.00	16.32	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5396.900	38.93	-22.29	34.36	26.86	54.00	15.07	V
5440.100	38.77	-22.63	34.38	27.03	54.00	15.23	V
11590.300	31.91	-29.28	38.29	22.90	54.00	22.09	V
17828.400	37.96	-22.47	41.53	18.89	54.00	16.04	V
17886.700	37.64	-22.59	41.52	18.70	54.00	16.36	V
17938.400	37.94	-22.70	41.51	19.12	54.00	16.06	V

802.11ax-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5382.900	39.0	-22.3	34.5	26.76	54.0	15.0	V
5416.500	38.7	-22.4	34.5	26.65	54.0	15.3	V
11549.600	31.9	-29.2	38.5	22.59	54.0	22.1	V
17810.800	37.6	-22.4	41.3	18.77	54.0	16.4	V
17863.600	37.6	-22.5	41.3	18.92	54.0	16.4	V
17948.300	37.9	-22.7	41.3	19.29	54.0	16.1	V

802.11ac-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5366.000	39.0	-22.3	34.5	26.79	54.0	15.0	V
5409.900	38.8	-22.4	34.5	26.67	54.0	15.2	V
11549.600	32.1	-29.2	38.5	22.72	54.0	21.9	H
17836.100	38.0	-22.5	41.3	19.18	54.0	16.0	V
17886.700	37.7	-22.6	41.3	19.06	54.0	16.3	H
17967.000	37.8	-22.8	41.3	19.31	54.0	16.2	H

Peak Results：

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.230	53.30	-22.84	34.68	41.46	69.11	15.81	V
5653.312	54.42	-22.84	34.68	42.57	70.65	16.23	V
11490.200	46.06	-29.15	38.20	37.01	74.00	27.94	H
16864.250	56.48	-23.00	42.01	37.47	68.30	11.82	H
17107.900	56.58	-23.04	42.07	37.55	68.30	11.72	V
17234.950	54.67	-22.85	41.92	35.61	68.30	13.62	H

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5764.400	53.80	-22.91	34.89	41.83	68.30	14.49	H
5817.400	54.40	-22.63	34.98	42.05	68.30	13.90	H
11569.950	47.23	-29.24	38.27	38.20	74.00	26.77	V
16884.050	56.40	-23.00	42.04	37.36	68.30	11.90	V
17003.400	56.35	-23.02	42.20	37.17	68.30	11.95	V
17354.850	53.39	-22.93	41.77	34.55	68.30	14.91	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5921.217	54.62	-22.23	35.16	41.69	71.00	16.38	V
5924.080	54.38	-22.22	35.17	41.43	68.88	14.50	V
11650.250	46.02	-29.41	38.35	37.07	74.00	27.98	V
16306.000	56.14	-23.13	41.19	38.07	68.30	12.16	V
17030.350	56.38	-23.03	42.16	37.25	68.30	11.91	V
17474.750	54.98	-23.07	41.63	36.42	68.30	13.32	H

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.908	53.19	-22.84	34.68	41.35	68.87	15.68	V
5653.496	53.25	-22.84	34.68	41.40	70.79	17.54	H
11490.200	45.72	-29.15	38.20	36.67	74.00	28.28	V
16950.600	56.82	-23.01	42.13	37.70	68.30	11.48	V
17234.950	53.89	-22.85	41.92	34.82	68.30	14.41	H
17529.200	56.87	-22.71	41.59	37.99	68.30	11.43	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5762.000	54.20	-22.92	34.88	42.23	68.30	14.10	H
5822.600	54.49	-22.60	34.99	42.09	68.30	13.81	V
11569.950	45.45	-29.24	38.27	36.42	74.00	28.55	H
16829.050	56.70	-23.00	41.96	37.74	68.30	11.60	V
17287.200	56.76	-22.77	41.85	37.68	68.30	11.54	V
17354.850	54.69	-22.93	41.77	35.85	68.30	13.61	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5919.699	55.12	-22.24	35.16	42.20	72.12	17.01	H
5923.068	54.92	-22.22	35.17	41.97	69.63	14.71	V
11650.250	46.05	-29.41	38.35	37.10	74.00	27.95	H
16837.300	57.07	-23.00	41.97	38.10	68.30	11.23	V
17214.600	57.03	-22.88	41.94	37.97	68.30	11.27	H
17474.750	54.60	-23.07	41.63	36.04	68.30	13.70	H

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.622	53.29	-22.84	34.68	41.44	69.40	16.11	V
5654.359	53.75	-22.84	34.69	41.90	71.43	17.68	H
11510.000	46.99	-29.14	38.21	37.92	74.00	27.01	H
17265.200	55.26	-22.80	41.88	36.18	68.30	13.04	V
17382.350	56.37	-23.00	41.74	37.63	68.30	11.93	H
17547.350	56.55	-22.59	41.59	37.55	68.30	11.75	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.263	54.81	-22.23	35.17	41.87	70.23	15.42	H
5923.700	54.62	-22.22	35.17	41.67	69.16	14.55	H
11589.750	45.10	-29.28	38.29	36.09	74.00	28.90	H
17385.100	54.11	-23.01	41.74	35.38	68.30	14.19	H
17447.800	56.18	-23.15	41.66	37.67	68.30	12.12	V
17578.150	56.33	-22.38	41.58	37.13	68.30	11.97	V

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.391	53.62	-22.84	34.68	41.78	68.30	14.68	H
5653.783	53.58	-22.84	34.69	41.74	71.00	17.42	H
11490.200	46.10	-29.15	38.20	37.05	74.00	27.90	V
17234.950	54.93	-22.85	41.92	35.86	68.30	13.37	H
17373.000	55.67	-22.98	41.75	36.89	68.30	12.63	H
17519.300	56.63	-22.77	41.60	37.81	68.30	11.67	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5763.200	53.39	-22.92	34.88	41.42	68.30	14.91	V
5806.000	54.38	-22.72	34.96	42.14	68.30	13.92	H
11569.950	47.01	-29.24	38.27	37.98	74.00	26.99	H
17257.500	56.94	-22.81	41.89	37.87	68.30	11.36	H
17395.000	56.85	-23.03	41.72	38.16	68.30	11.45	H
17521.500	56.50	-22.76	41.60	37.66	68.30	11.80	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5919.169	55.25	-22.25	35.16	42.34	72.51	17.26	V
5923.310	54.26	-22.22	35.17	41.31	69.45	15.19	V
11650.250	46.92	-29.41	38.35	37.98	74.00	27.08	H
17474.750	54.93	-23.07	41.63	36.37	68.30	13.37	H
17573.750	55.95	-22.41	41.59	36.78	68.30	12.35	H
17678.250	56.33	-22.13	41.56	36.89	68.30	11.97	H

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.047	53.39	-22.84	34.68	41.55	68.97	15.59	H
5653.255	53.48	-22.84	34.68	41.64	70.61	17.12	V
11510.000	45.31	-29.14	38.21	36.25	74.00	28.69	H
17265.200	53.99	-22.80	41.88	34.91	68.30	14.31	V
17407.650	56.20	-23.06	41.71	37.55	68.30	12.10	H
17517.650	56.55	-22.79	41.60	37.74	68.30	11.75	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5920.940	54.02	-22.23	35.16	41.10	71.20	17.18	V
5923.896	53.95	-22.22	35.17	41.00	69.02	15.06	H
11589.750	45.91	-29.28	38.29	36.90	74.00	28.09	V
17385.100	54.42	-23.01	41.74	35.69	68.30	13.88	H
17518.200	56.29	-22.78	41.60	37.47	68.30	12.01	V
17633.700	57.51	-22.02	41.57	37.96	68.30	10.79	V

802.11ax-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5652.438	54.8	-22.8	34.8	42.83	68.3	13.5	V
5924.424	55.0	-22.2	35.1	42.09	68.3	13.3	H
11550.150	45.6	-29.2	38.5	36.30	74.0	28.4	H
17325.150	53.8	-22.9	41.4	35.30	68.3	14.5	H
17466.500	57.1	-23.1	41.2	39.03	68.3	11.2	H
17566.050	56.3	-22.5	41.2	37.58	68.3	12.0	H

802.11ac-HT80

Ch155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5921.550	54.3	-22.2	35.1	41.44	68.3	14.0	V
5924.391	55.2	-22.2	35.1	42.33	68.3	13.1	H
11550.150	46.9	-29.2	38.5	37.57	74.0	27.1	V
17325.150	54.9	-22.9	41.4	36.41	68.3	13.4	V
17517.100	56.8	-22.8	41.2	38.34	68.3	11.5	V
17581.450	56.4	-22.4	41.2	37.54	68.3	11.9	H

Note: the spurious emission above 18G is noise only

Conclusion: pass

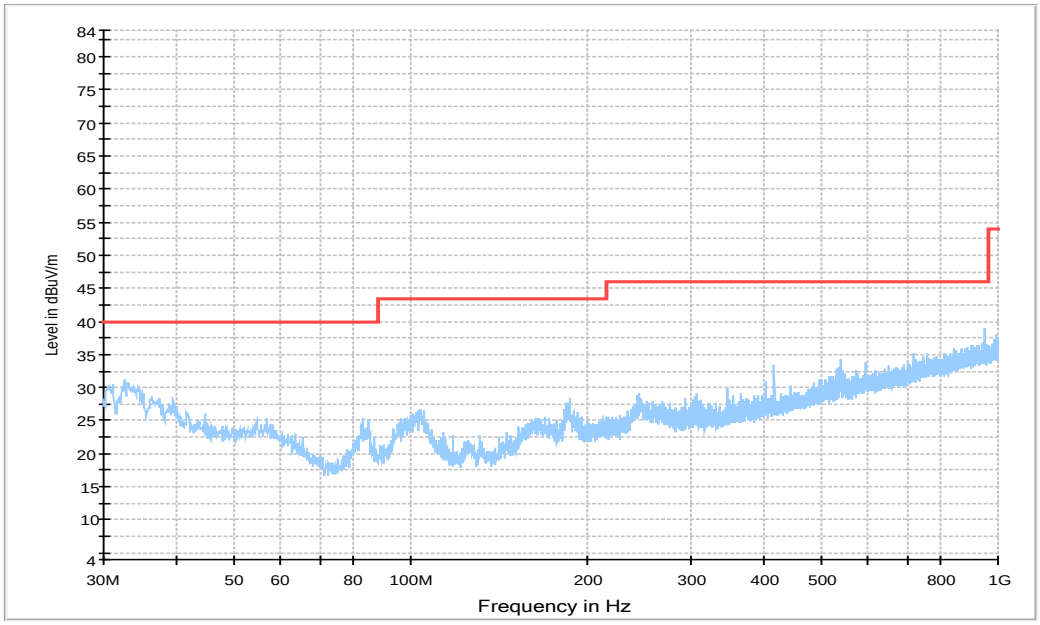
C.1.2 Radiated Spurious Emission- Below 1GHz

WOSRT CASE BELOW 1GHz

FCC Part 15C 30-1G Limit

Peak Preview Result

Final Result QPK



BELOW 30MHz

There are no emissions found below 30MHz with in 20dB of the limit.

C.1.3 Band Edges Compliance– Radiated

Measurement Result:

SPEED:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz(CH149)	Fig.1	P
	5825 MHz(CH165)	Fig.2	P
802.11n HT20	5745 MHz(CH149)	Fig.3	P
	5825 MHz(CH165)	Fig.4	P
802.11n HT40	5755 MHz(CH151)	Fig.5	P
	5795 MHz(CH159)	Fig.6	P
802.11ax HT20	5745 MHz(CH149)	Fig.7	P
	5825 MHz(CH165)	Fig.8	P
802.11ax HT40	5755 MHz(CH151)	Fig.9	P
	5795 MHz(CH159)	Fig.10	P
802.11ax HT80	5775 MHz(CH155)	Fig.11 Fig.12	P
802.11ac HT80	5775 MHz(CH155)	Fig.13 Fig.14	P

The measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this section.

Conclusion: PASS

AWAN:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz(CH149)	Fig.15	P
	5825 MHz(CH165)	Fig.16	P
802.11n HT20	5745 MHz(CH149)	Fig.17	P
	5825 MHz(CH165)	Fig.18	P
802.11n HT40	5755 MHz(CH151)	Fig.19	P
	5795 MHz(CH159)	Fig.20	P
802.11ax HT20	5745 MHz(CH149)	Fig.21	P
	5825 MHz(CH165)	Fig.22	P
802.11ax HT40	5755 MHz(CH151)	Fig.23	P
	5795 MHz(CH159)	Fig.24	P
802.11ax HT80	5775 MHz(CH155)	Fig.25 Fig.26	P
802.11ac HT80	5775 MHz(CH155)	Fig.27 Fig.28	P

The measurements were performed separately in Chain A, Chain B, and MIMO (Chain A+B), and only the worst cases are shown in this section.

Conclusion: PASS

Test graphs as below:

Peak Limits

Peak Result

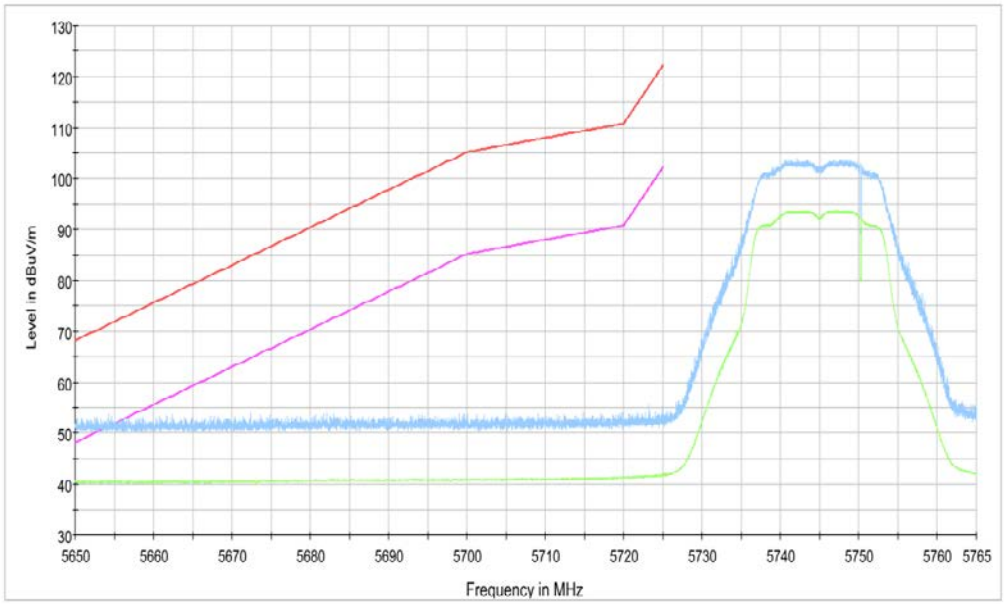


Fig. 1 Band Edges (802.11a,CH149, 5745MHz)

Peak Limits

Peak Result

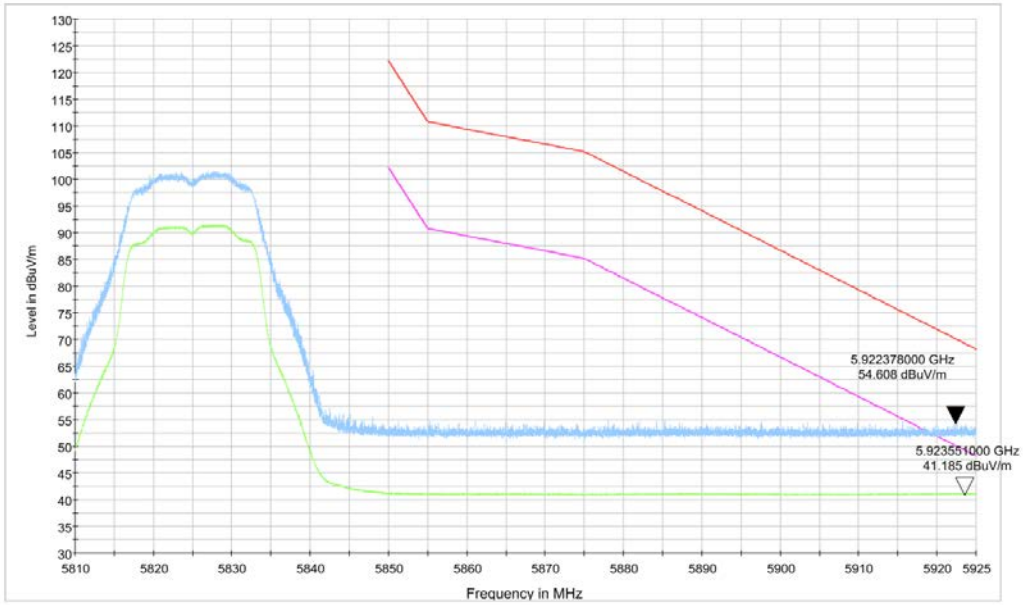


Fig. 2 Band Edges (802.11a, CH165, 5825MHz)

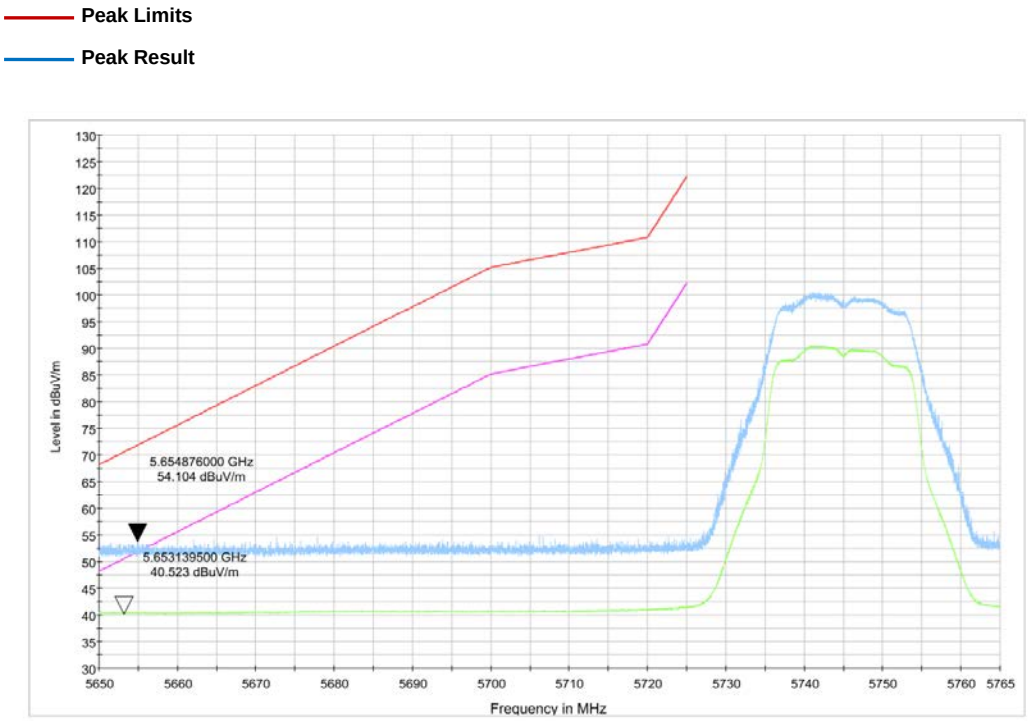


Fig. 3 Band Edges (802.11n-HT20, CH149, 5745MHz)

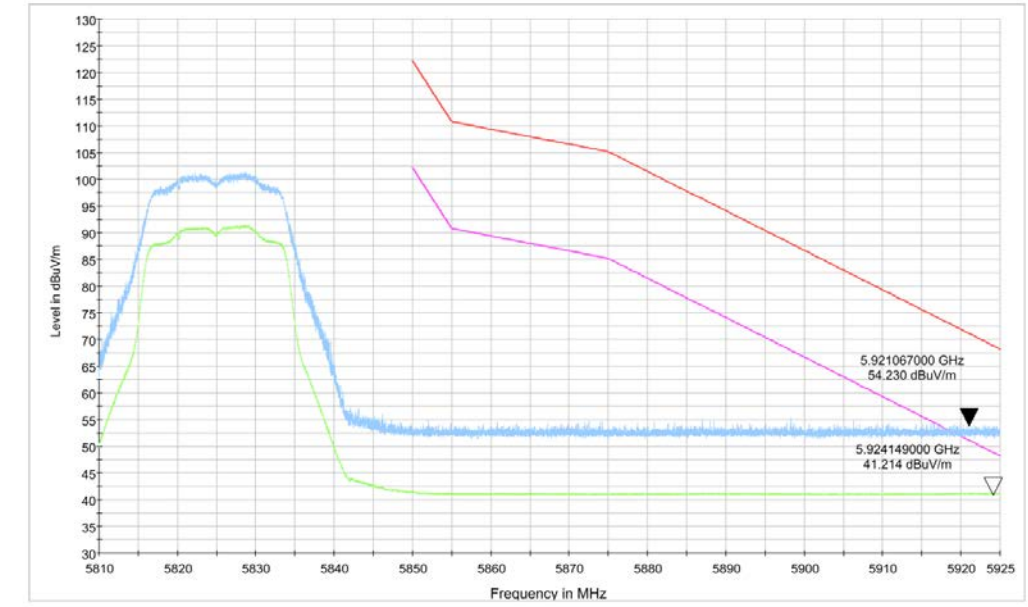


Fig. 4 Band Edges (802.11n-HT20, CH165, 5825MHz)

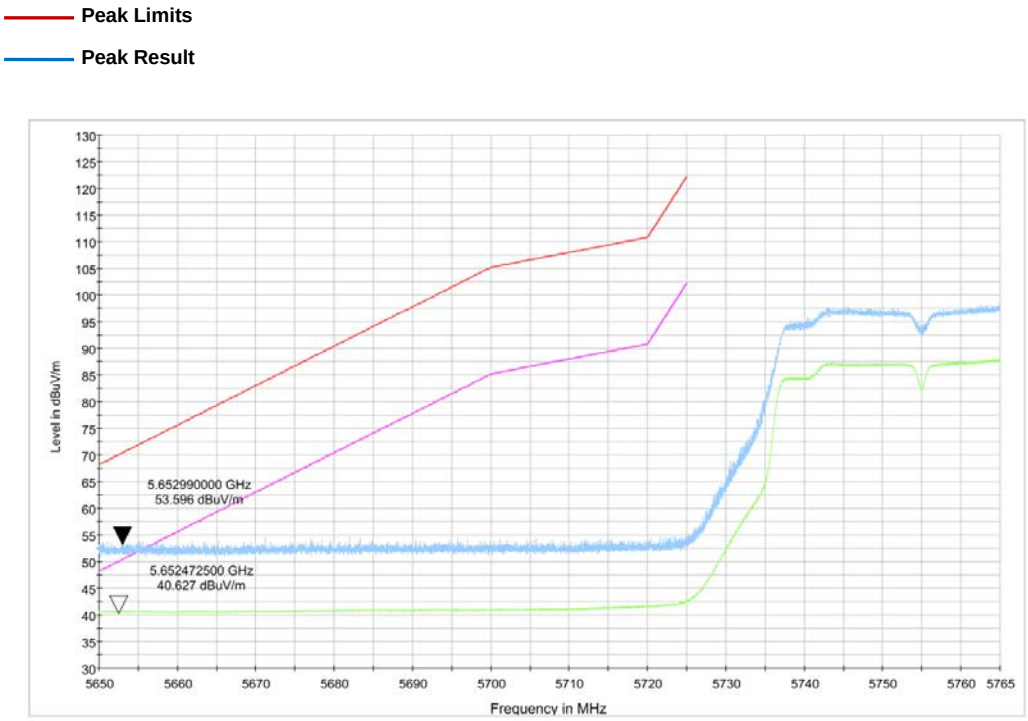


Fig. 5 Band Edges (802.11n-HT40, CH151, 5755MHz)

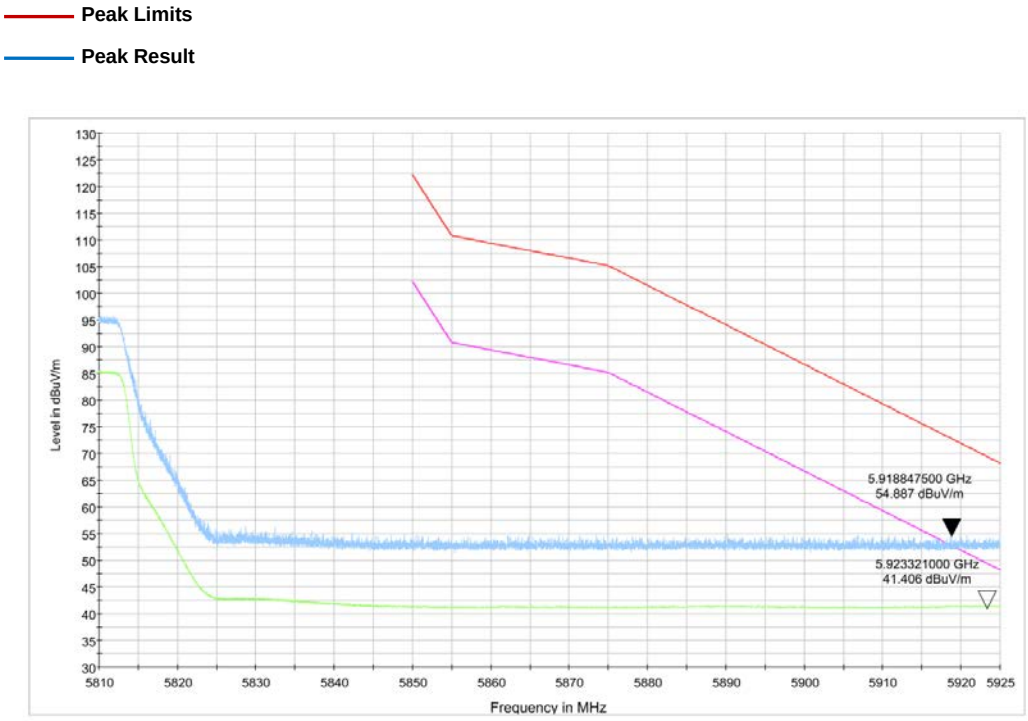


Fig. 6 Band Edges (802.11n-HT40, CH159, 5795MHz)

Peak Limits

Peak Result

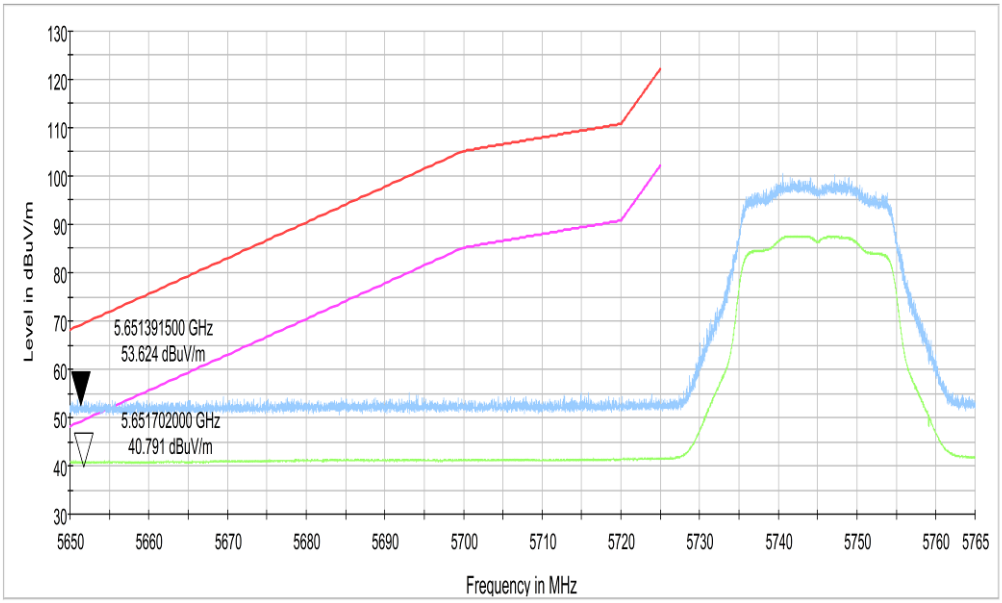


Fig. 7 Band Edges (802.11ax-HT20, CH149, 5745MHz)

Peak Limits

Peak Result

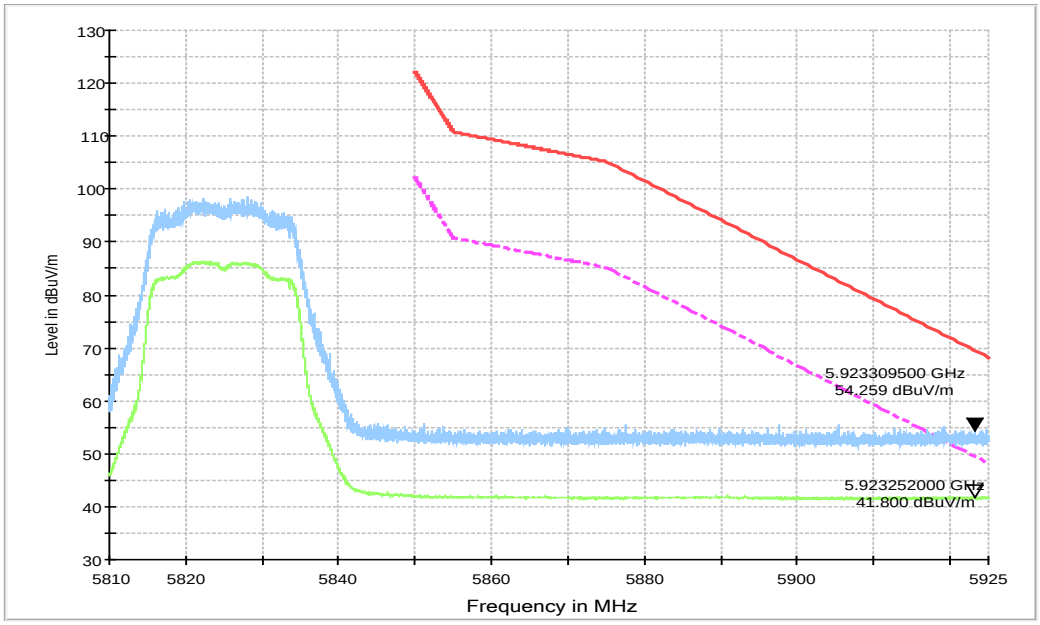


Fig. 8 Band Edges (802.11ax-HT20, CH165, 5825MHz)

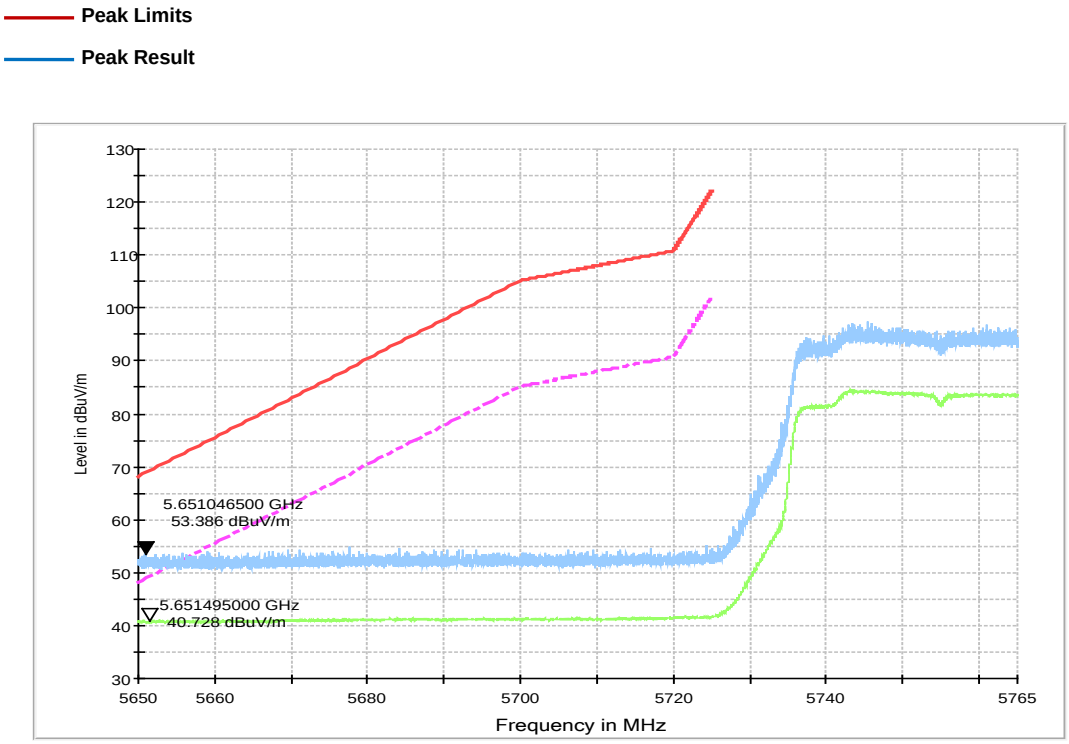


Fig. 9 Band Edges (802.11ax-HT40,CH151, 5755MHz)

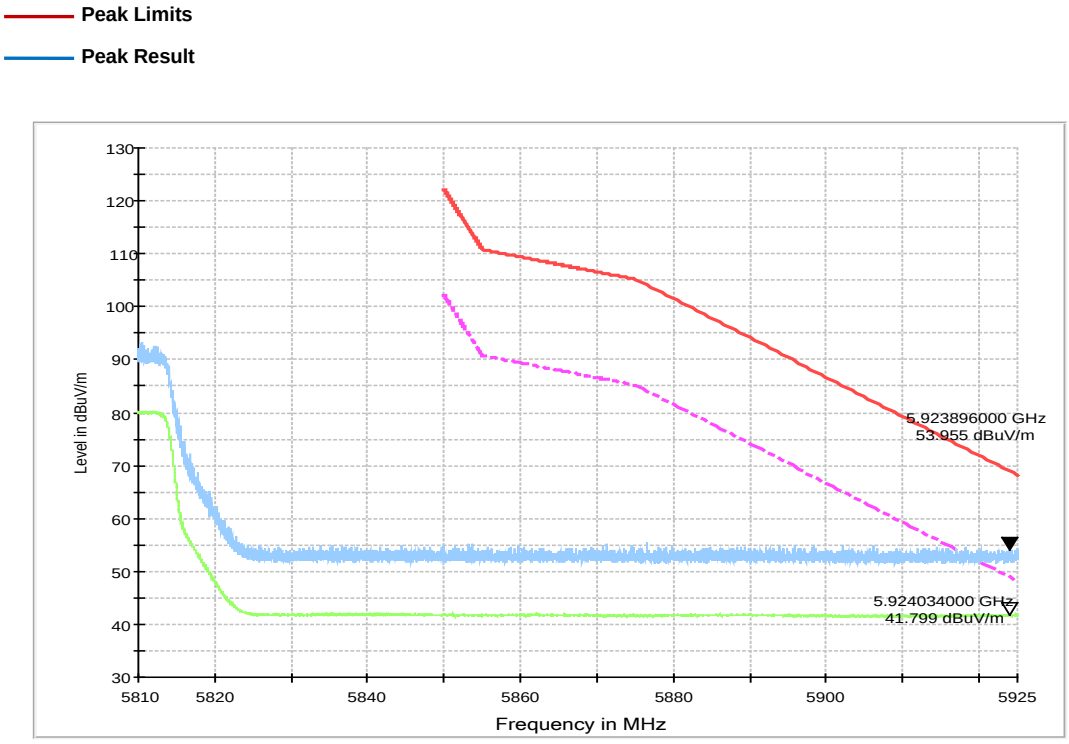


Fig. 10 Band Edges (802.11ax-HT40,CH159, 5795MHz)

Peak Limits

Peak Result

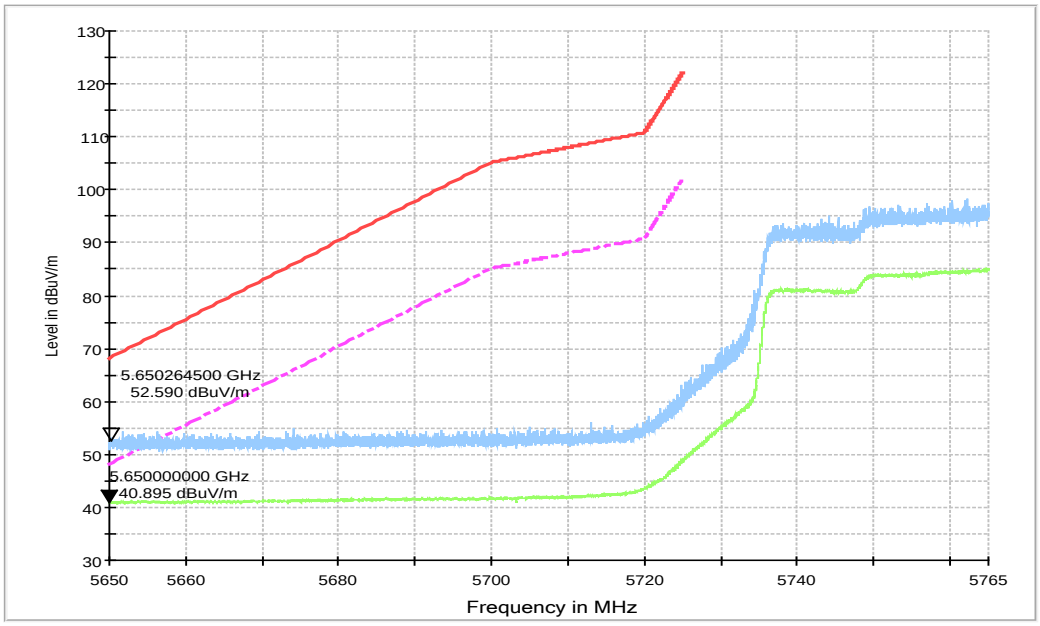


Fig. 11 Band Edges (802.11ax-HT80, CH155, 5775MHz)

Peak Limits

Peak Result

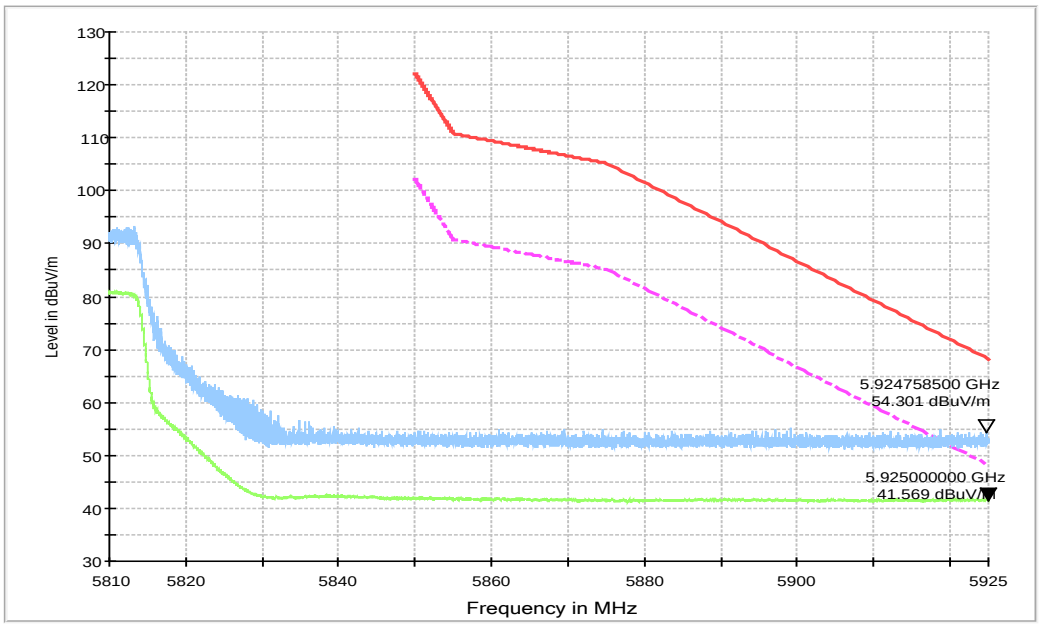


Fig. 12 Band Edges (802.11ax-HT80, CH155, 5775MHz)

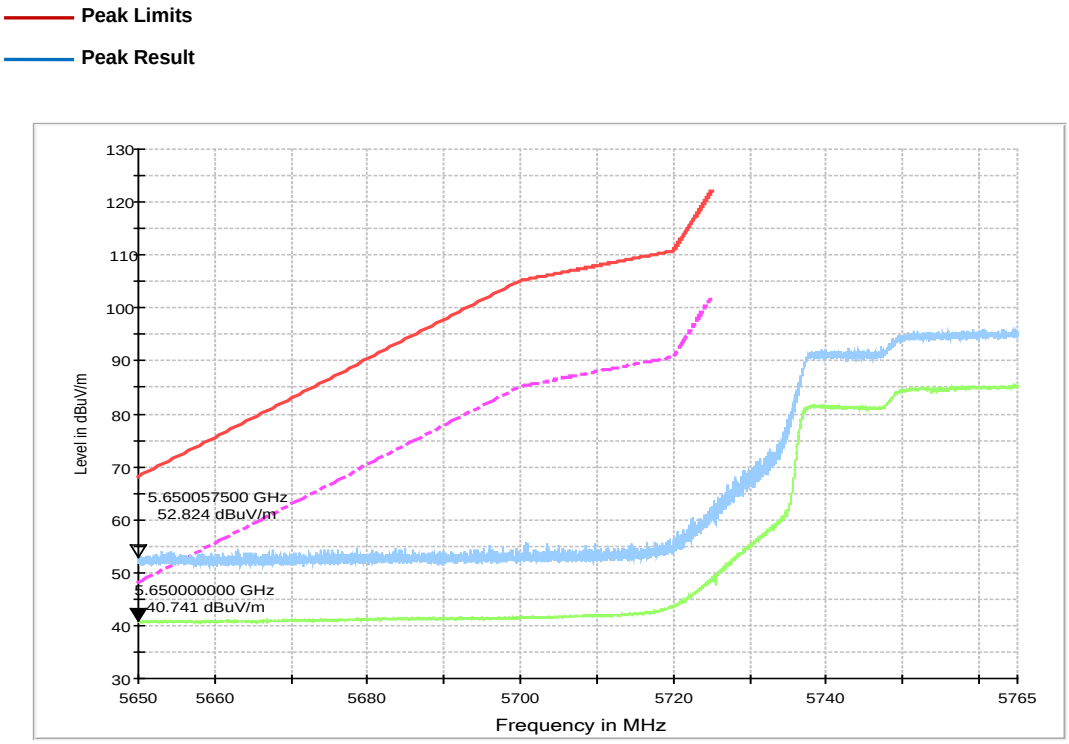


Fig. 13 Band Edges (802.11ac-HT80, CH155, 5775MHz)

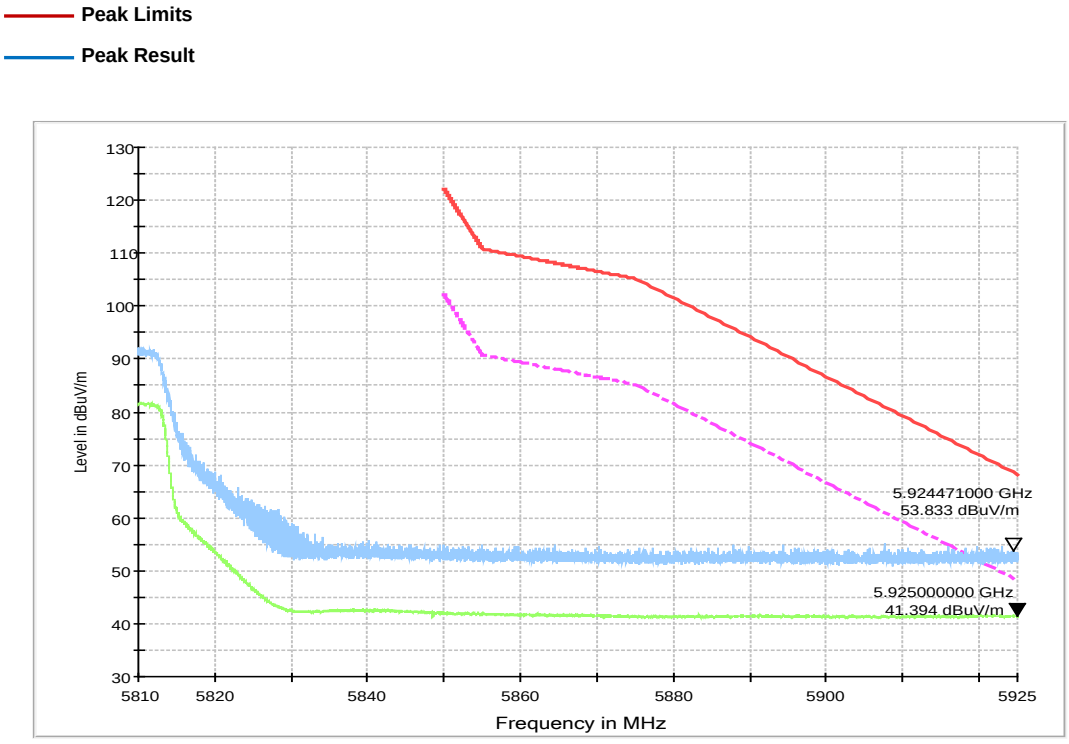


Fig. 14 Band Edges (802.11ax-HT80, CH155, 5775MHz)

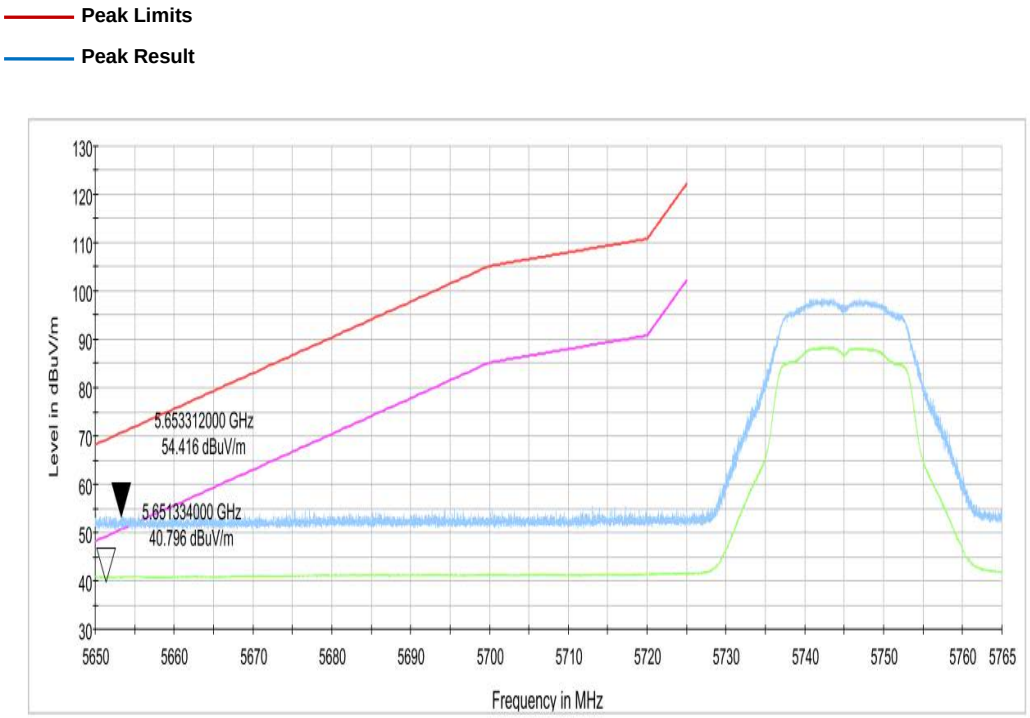


Fig. 15 Band Edges (802.11a,CH149, 5745MHz)

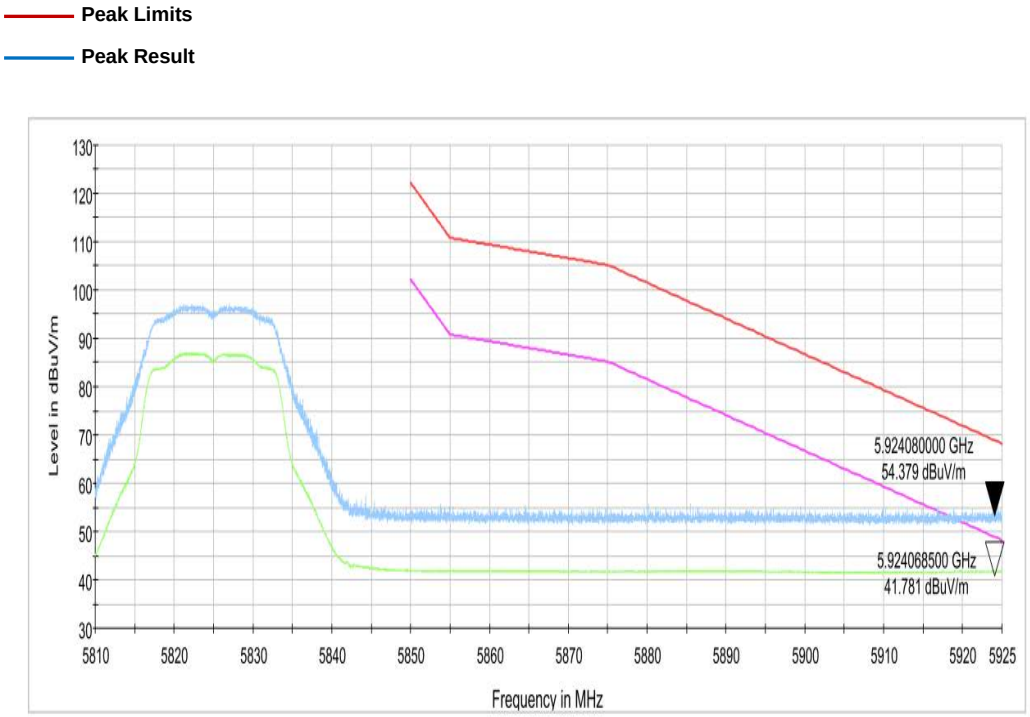


Fig. 16 Band Edges (802.11a, CH165, 5825MHz)

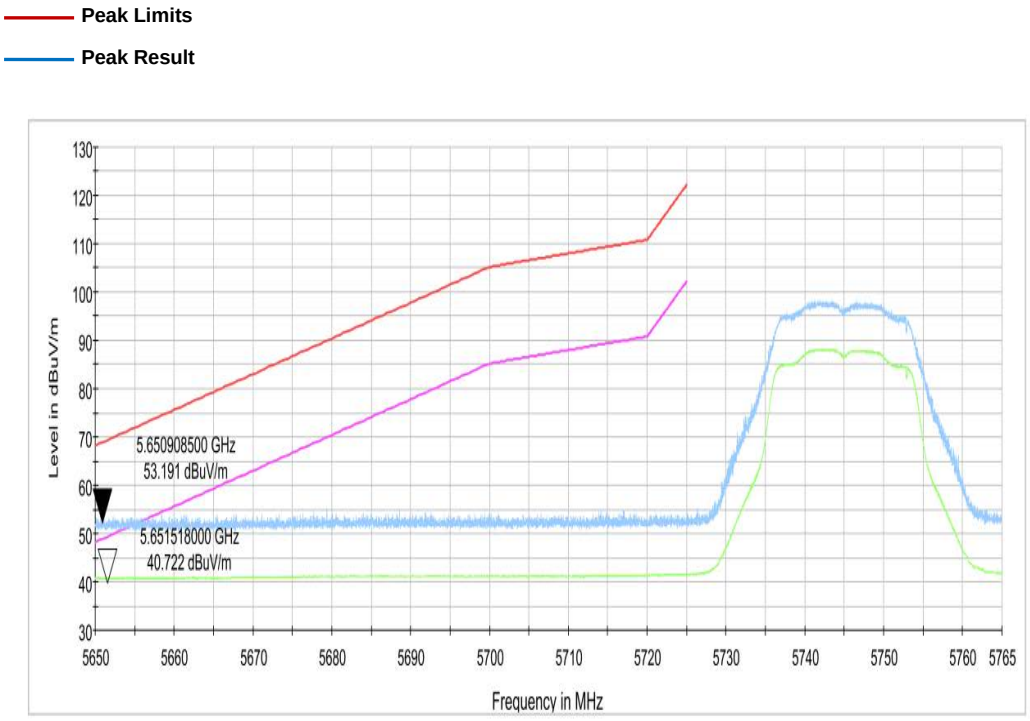


Fig. 17 Band Edges (802.11n-HT20, CH149, 5745MHz)

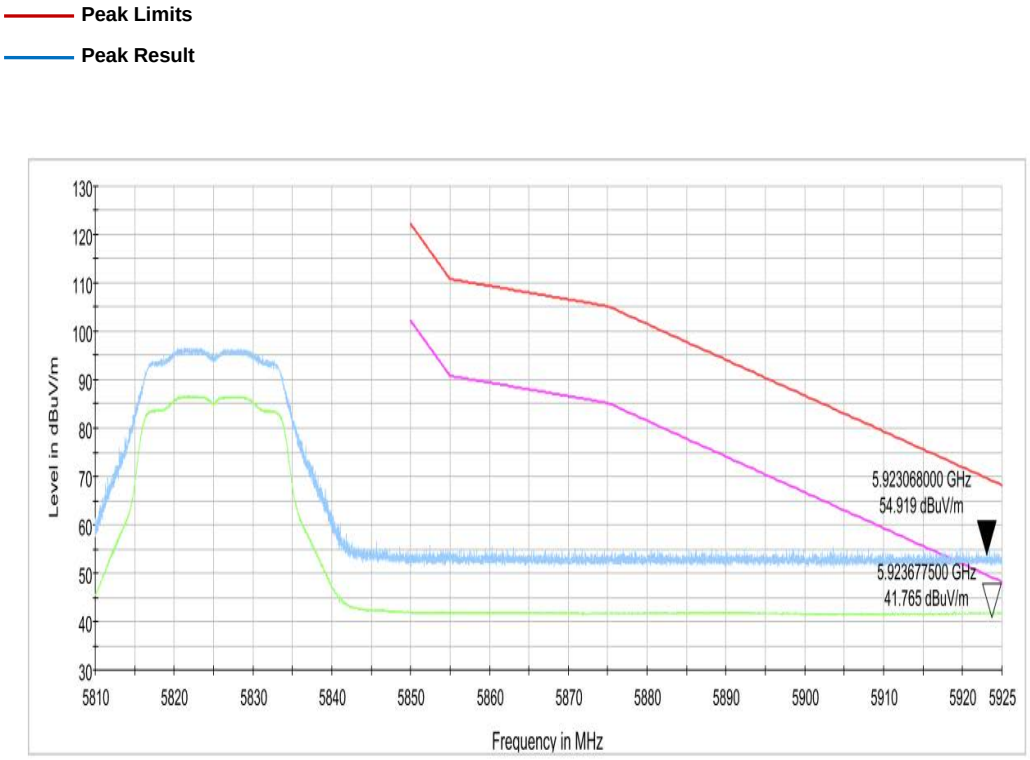


Fig. 18 Band Edges (802.11n-HT20, CH165, 5825MHz)

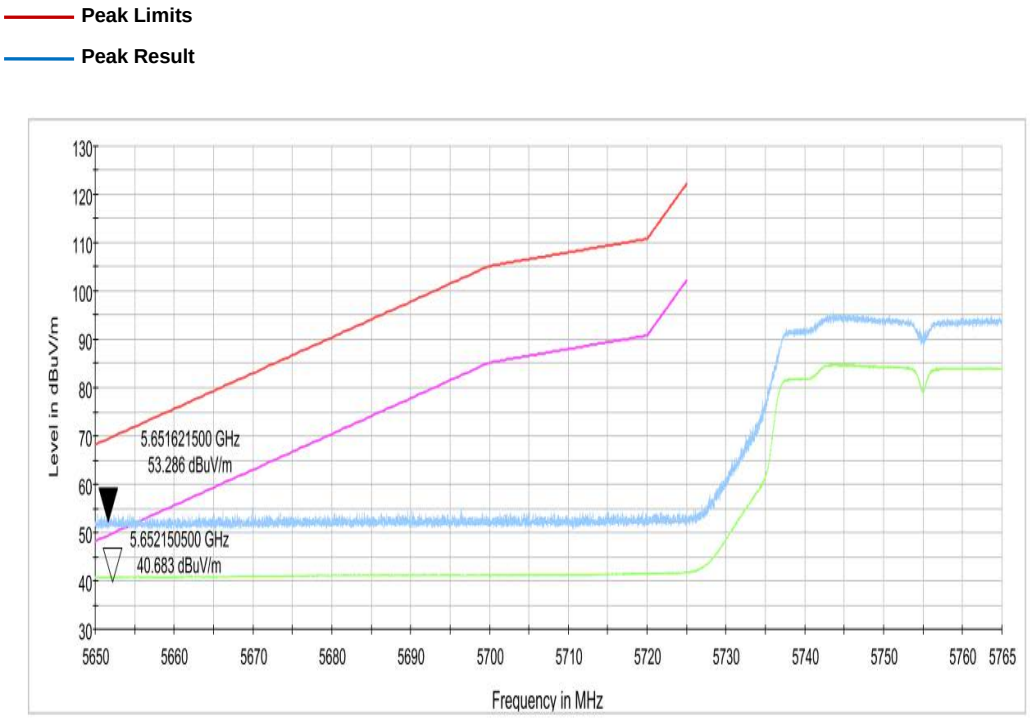


Fig. 19 Band Edges (802.11n-HT40, CH151, 5755MHz)

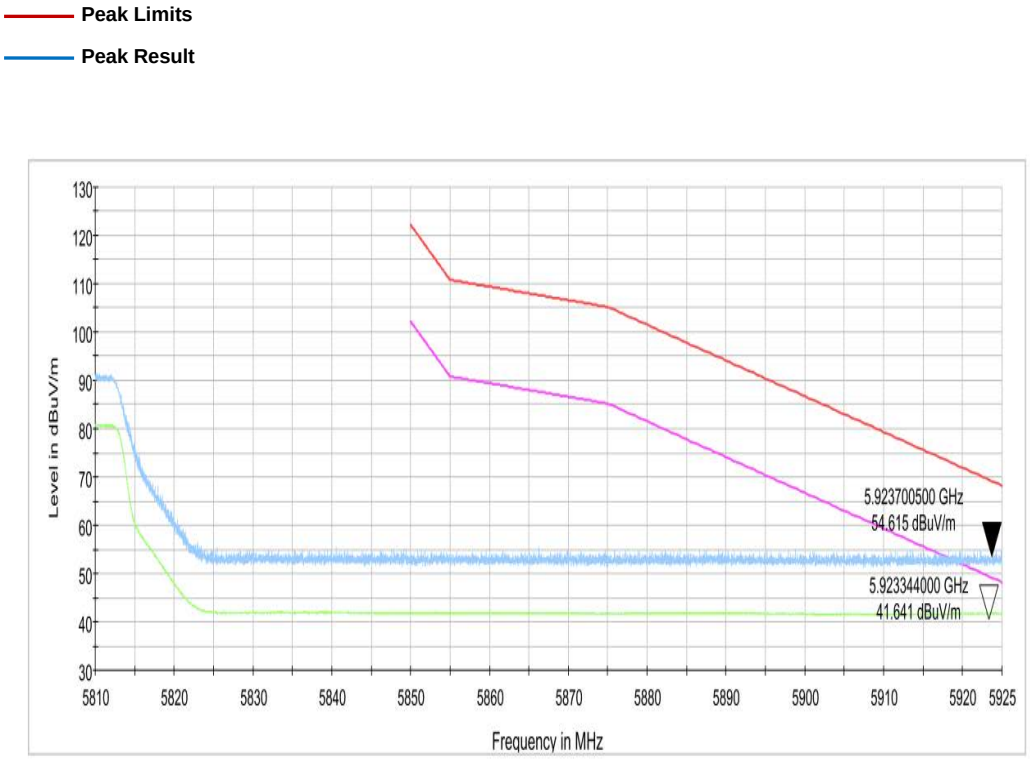


Fig. 20 Band Edges (802.11n-HT40, CH159, 5795MHz)

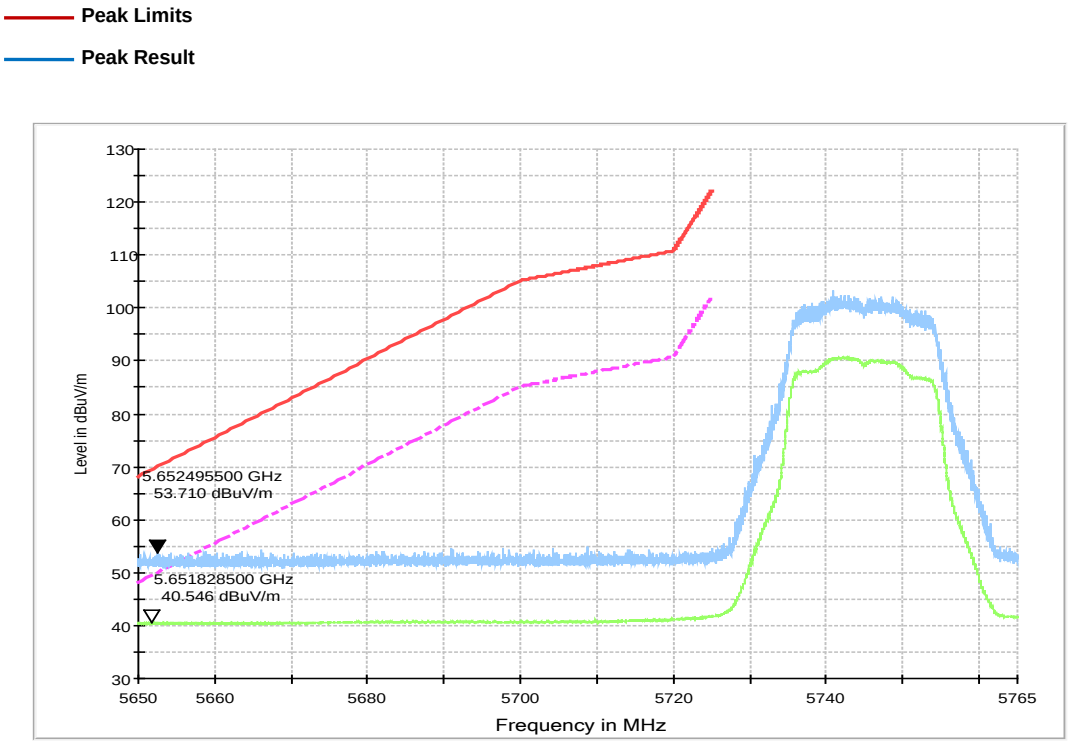


Fig. 21 Band Edges (802.11ax-HT20, CH149, 5745MHz)

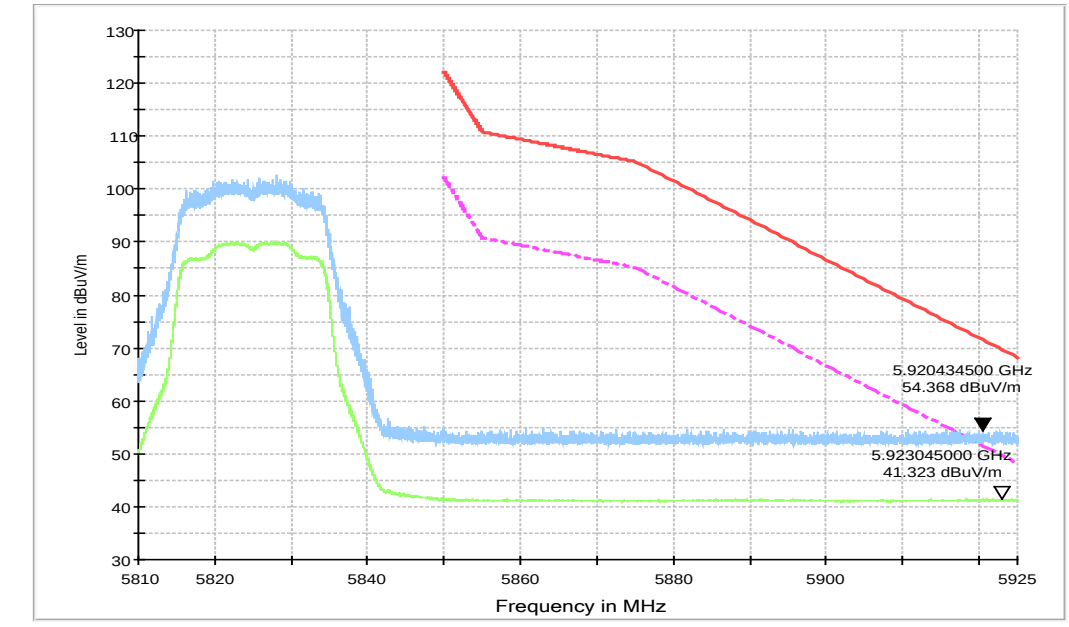


Fig. 22 Band Edges (802.11ax-HT20, CH165, 5825MHz)

Peak Limits

Peak Result

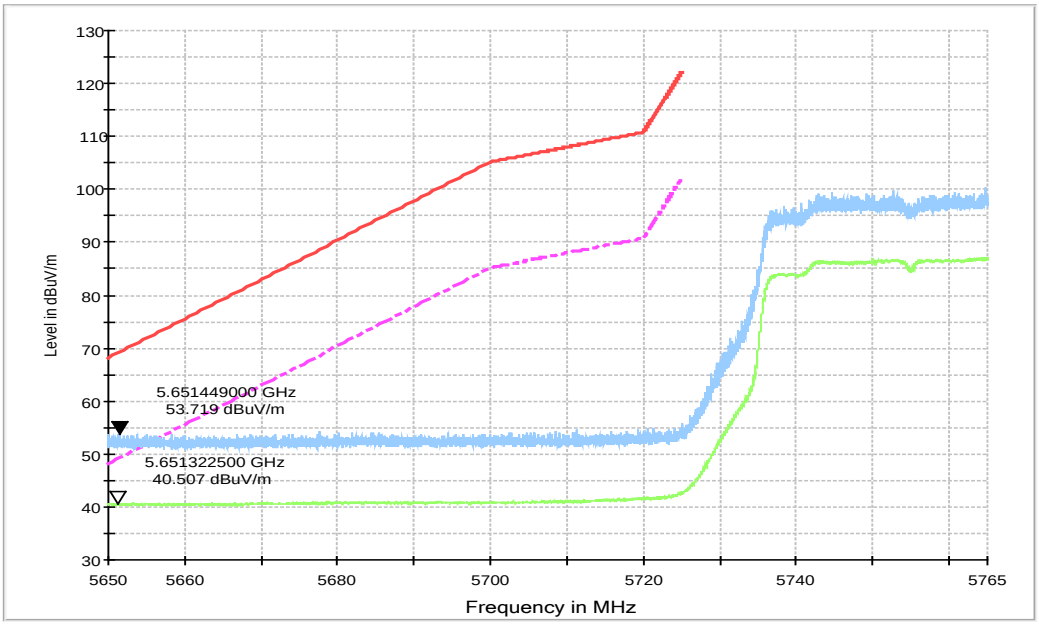


Fig. 23 Band Edges (802.11ax-HT40,CH151, 5755MHz)

Peak Limits

Peak Result

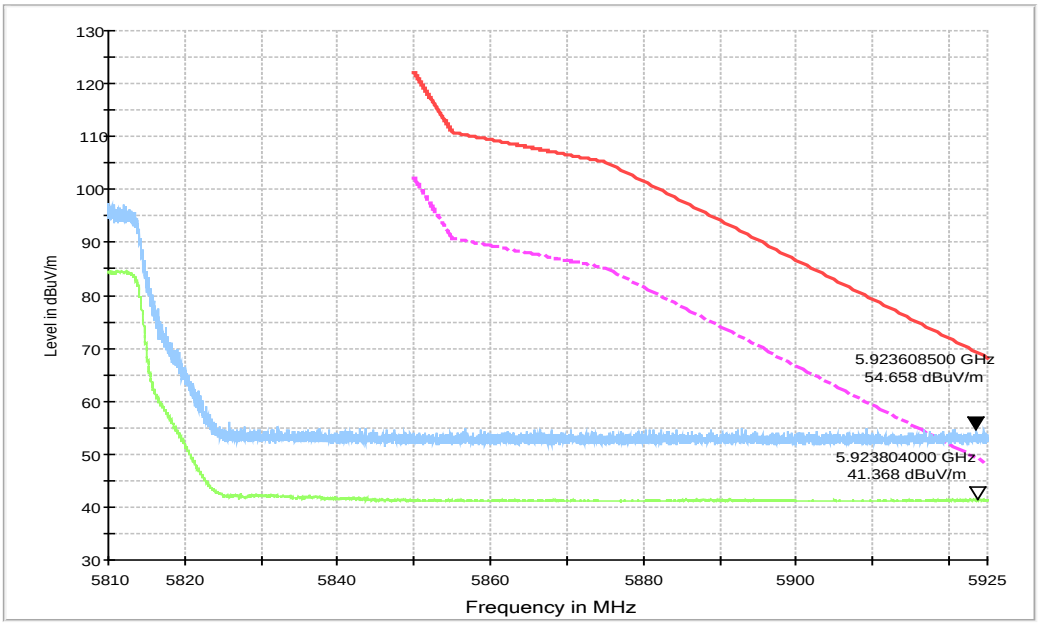


Fig. 24 Band Edges (802.11ax-HT40,CH159, 5795MHz)

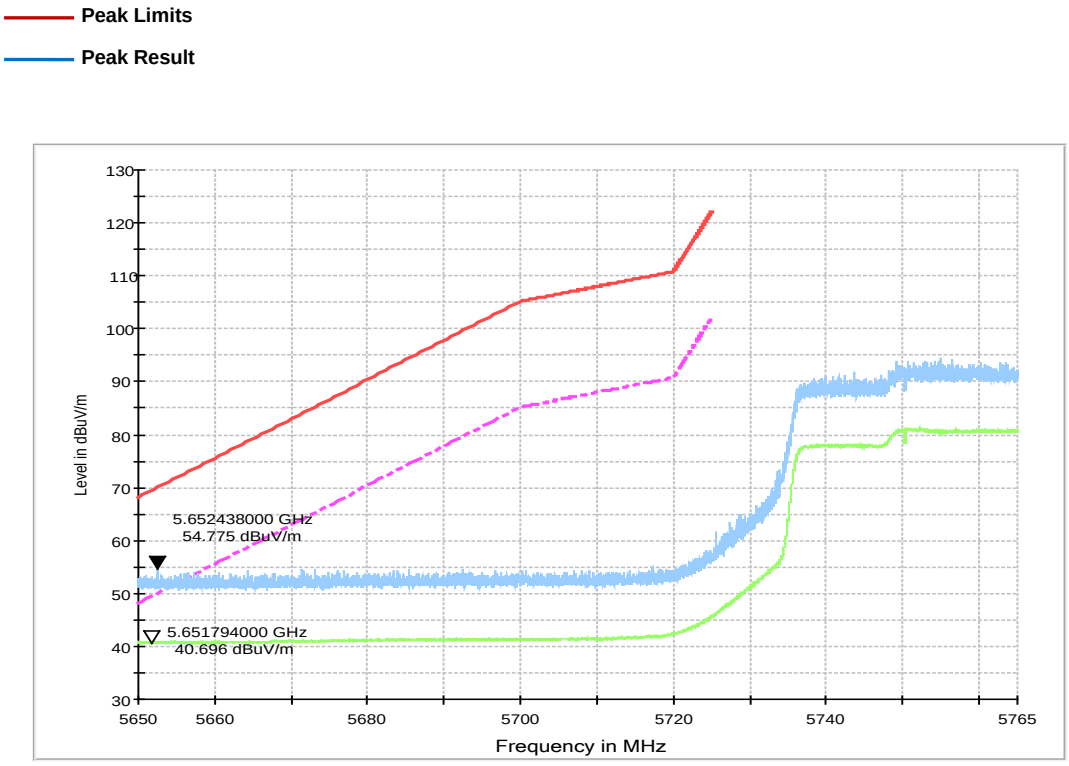


Fig. 25 Band Edges (802.11ax-HT80, CH155, 5775MHz)

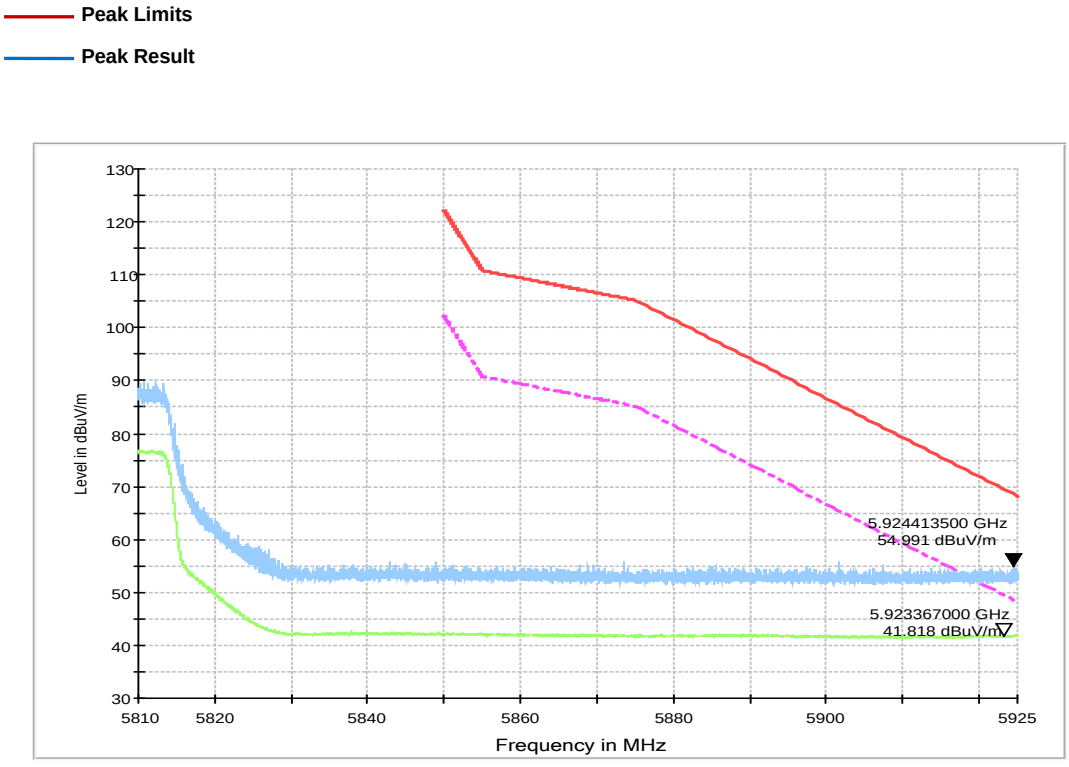


Fig. 26 Band Edges (802.11ax-HT80, CH155, 5775MHz)

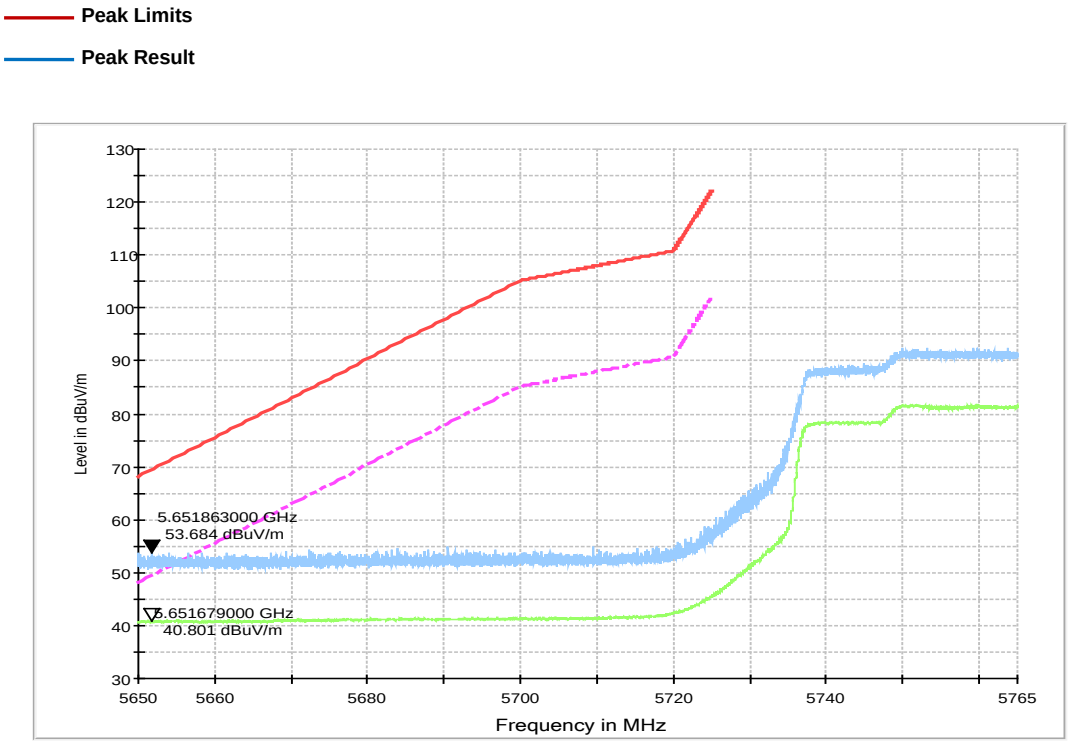


Fig. 27 Band Edges (802.11ac-HT80, CH155, 5775MHz)

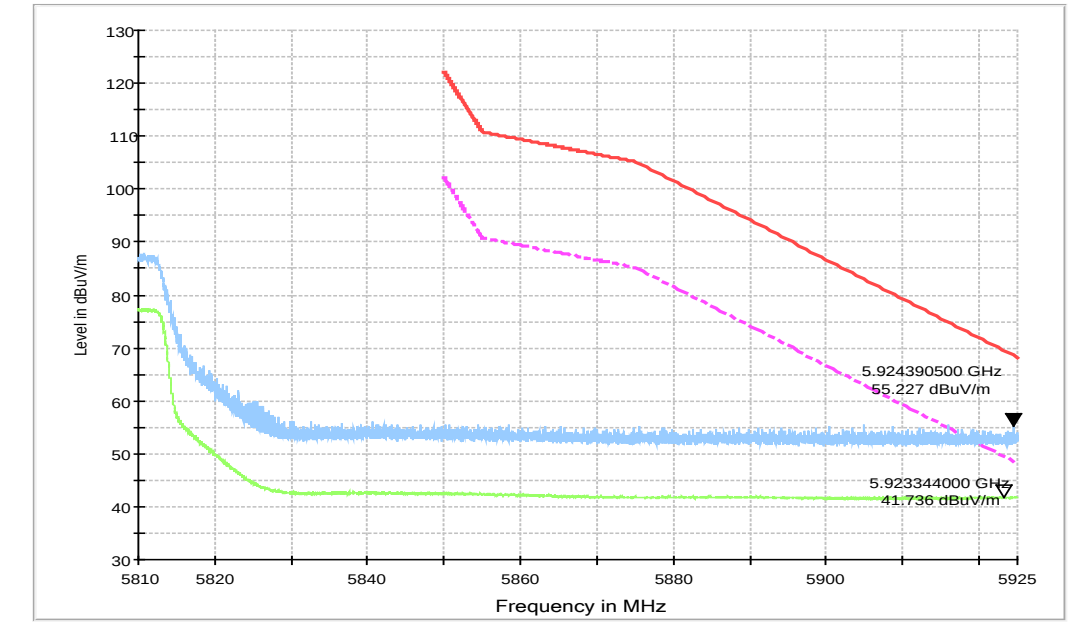


Fig. 28 Band Edges (802.11ax-HT80, CH155, 5775MHz)

C.2. AC Power-line Conducted Emission

Reference

FCC 47 CFR Part 15, Clause 15.407 Clause 15.207

ISED RSS-GEN, Clause 8.8

Method of Measurement:

See Clause 6.2 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

The measurement bandwidth is:

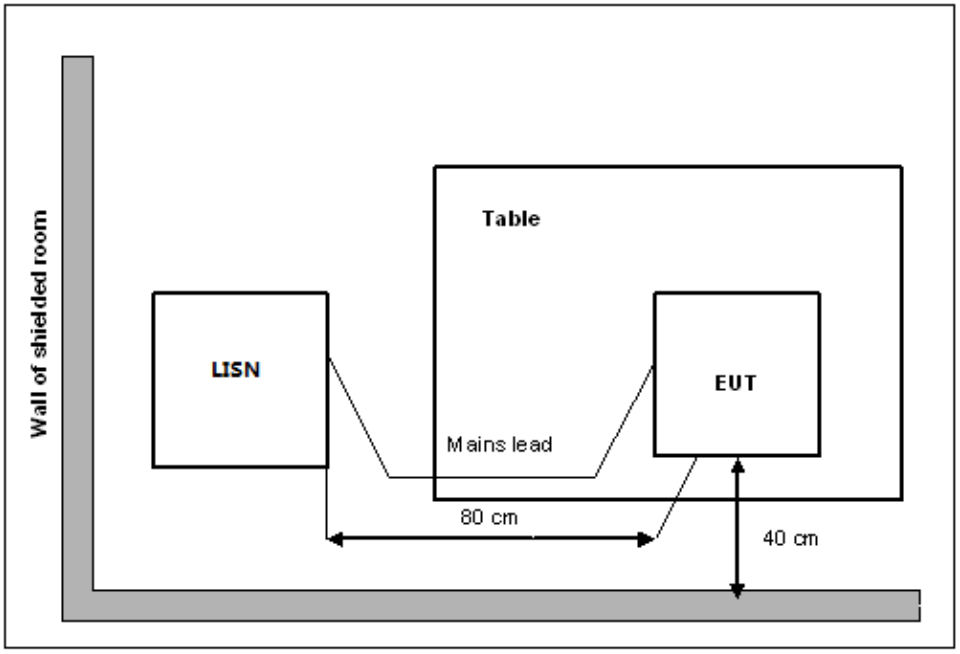
Measurement Bandwidth

Frequency of Emission (MHz)	RBW/VBW
0.15-30	9kHz

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Setup



EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state.

The EUT is powered by an AC/travel adapter.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.C.2.1	Fig.C.2.2	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.C.2.1	Fig.C.2.2	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Note: all modes have been tested and the worst results shown here.

Conclusion: Pass

Test graphs as below:

Traffic:

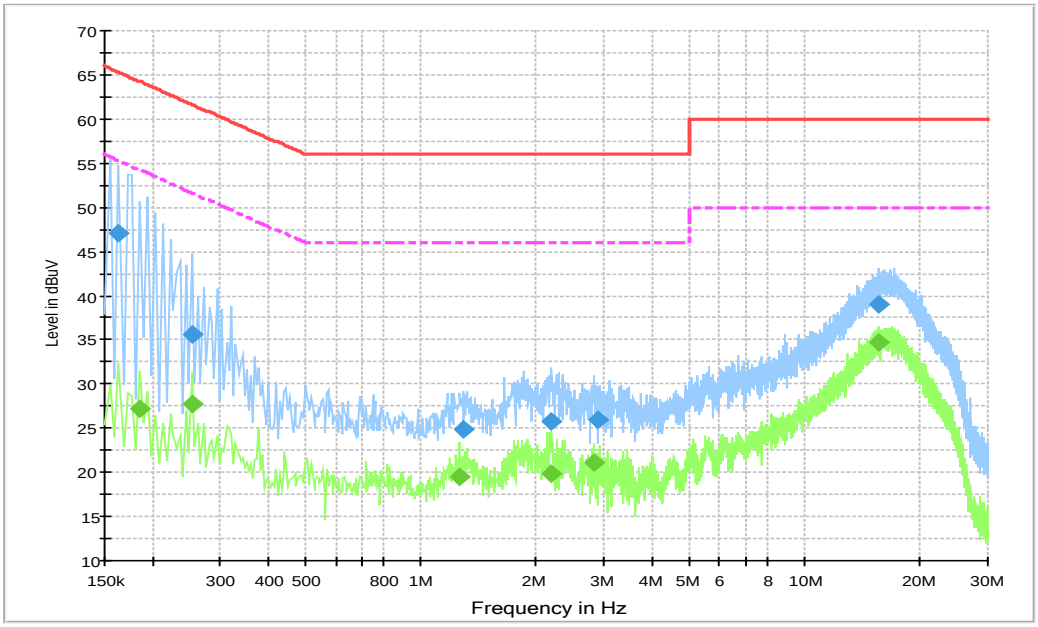


Fig.C.2.1 AC Power line Conducted Emission-802.11b

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	47.1	1000.	9.000	N	19.6	18.2	65.3
0.253500	35.6	1000.	9.000	N	19.7	26.0	61.6
1.288500	24.9	1000.	9.000	L1	19.7	31.1	56.0
2.193000	25.8	1000.	9.000	L1	19.6	30.2	56.0
2.877000	25.9	1000.	9.000	L1	19.7	30.1	56.0
15.558000	39.0	1000.	9.000	L1	19.8	21.0	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	27.2	1000.0	9.000	L1	19.7	27.0	54.2
0.253500	27.8	1000.0	9.000	L1	19.7	23.9	51.6
1.261500	19.4	1000.0	9.000	L1	19.7	26.6	46.0
2.193000	19.9	1000.0	9.000	L1	19.6	26.1	46.0
2.827500	21.1	1000.0	9.000	L1	19.7	24.9	46.0
15.639000	34.8	1000.0	9.000	L1	19.8	15.2	50.0

Idle:

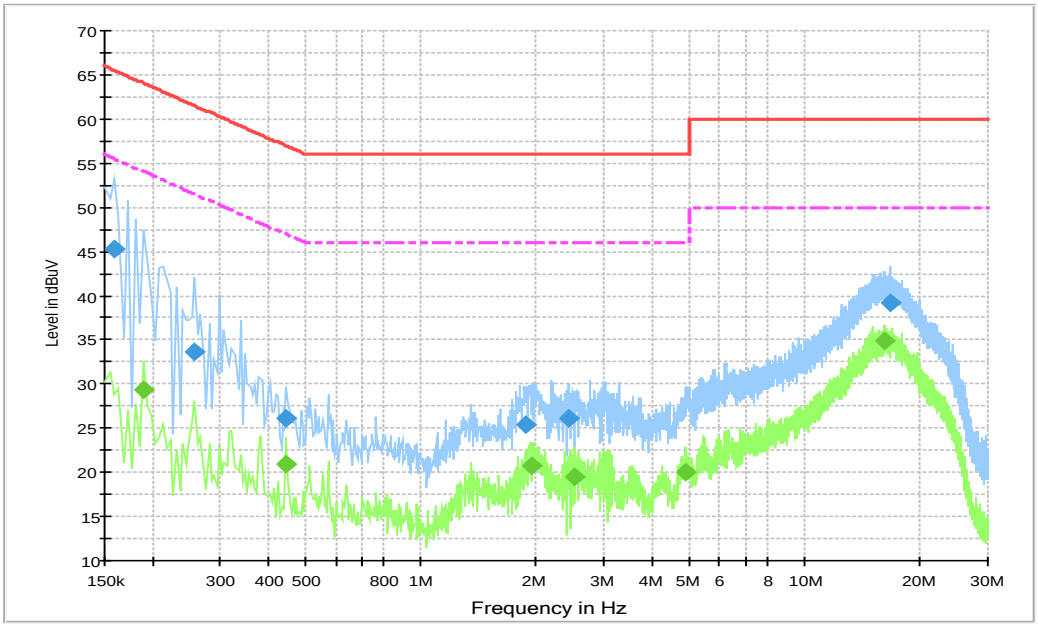


Fig.C.2.2 AC Power line Conducted Emission-Idle

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	45.4	1000.	9.000	L1	19.7	20.2	65.5
0.258000	33.7	1000.	9.000	N	19.7	27.8	61.5
0.447000	26.2	1000.	9.000	L1	19.8	30.7	56.9
1.882500	25.5	1000.	9.000	L1	19.7	30.5	56.0
2.431500	26.1	1000.	9.000	L1	19.7	29.9	56.0
16.777500	39.2	1000.	9.000	L1	19.8	20.8	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190500	29.3	1000.0	9.000	L1	19.7	24.7	54.0
0.447000	21.0	1000.0	9.000	L1	19.8	26.0	46.9
1.954500	20.8	1000.0	9.000	L1	19.7	25.2	46.0
2.508000	19.5	1000.0	9.000	L1	19.6	26.5	46.0
4.902000	20.0	1000.0	9.000	L1	19.7	26.0	46.0
16.080000	34.9	1000.0	9.000	L1	19.8	15.1	50.0

***** END OF REPORT BODY *****