



**FCC PART 15
TEST REPORT
No. I21Z70160-EMC12**

for

Samsung Electronics Co., Ltd.

Notebook PC

NP760XDA, NP762XDA

with

FCC ID: ZCANP760XDA

Hardware Version: REV1.0

Software Version: Windows10-Pro

Issued Date: 2021-06-04

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.

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REPORT HISTORY

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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°C

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2021-04-25

Testing End Date: 2021-05-30

1.5. Signature



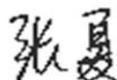
Li Yan

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(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.
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Telephone: +1-201-937-4203
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	NP760XDA, NP762XDA
FCC ID	ZCANP760XDA

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
UT13a	2170160UT12a	REV1.0	Windows10-Pro
UT22a	2170160UT33a	REV1.0	Windows10-Pro

*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	Adapter	/	/
AE2	battery	/	/

AE1

Model	A20-135P1A
Manufacturer	Chicony Power Technology (Chong Qing) Co., Ltd.
Length	/

AE2

Model	AA-PBAN6TI
Manufacturer	SUNWODA Electronic Co., Ltd.

*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.

The difference of the model name is only for different marketing purposes.

Antenna information

Item	Spec.	Type	Vendor	Vendor P/N	Sample under test
Antenna	Main antenna (Chain A)	PIFA	INPAQ	WA-F-LA-02-090	UT13a
	Auxiliary antenna (Chain B)	PIFA			
Antenna	Main antenna (Chain A)	PIFA	SPEED	F-0G-XZ-0272-000-00	UT22a
	Auxiliary antenna (Chain B)	PIFA			

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
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	Verdict
Radiated Spurious Emission	15.407, 15.205, 15.209	P
AC Power line Conducted Emission	15.407, 15.207	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°C
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	2022-03-16
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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.40
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.32
$18\text{GHz} \leq f \leq 40\text{GHz}$	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

According 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

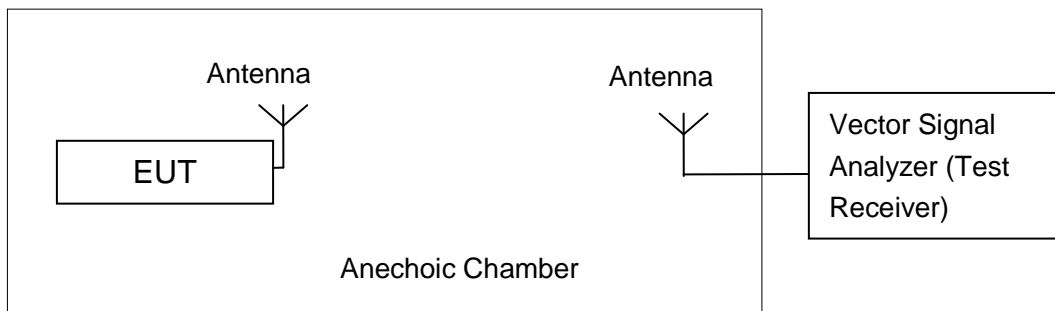
Specification Reference

FCC 47 CFR Part 15, Clause 15.407 (b) Clause 15.205 Clause 15.209

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	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(μ V/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(dB μ V/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:

$$E = \text{EIRP} - 20 \log(D) + 104.77$$

Where:

E is the field strength in dB μ V/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:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + \text{Cable Loss} + \text{Antenna Factor}$$

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

C.1.1 Radiated Spurious Emission- above 1GHz

INPAQ

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)
5393.250	40.14	-22.29	34.36	28.07	54.0	13.9	V
5436.600	40.13	-22.60	34.38	28.36	54.0	13.9	V
11490.200	32.38	-29.15	38.20	23.33	54.0	21.6	H
16165.200	36.42	-23.28	40.97	18.74	54.0	17.6	H
17749.200	37.93	-22.29	41.55	18.68	54.0	16.1	H
17928.500	38.27	-22.68	41.51	19.43	54.0	15.7	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)
5387.550	40.23	-22.29	34.36	28.16	54.0	13.8	V
5441.100	39.97	-22.64	34.38	28.23	54.0	14.0	V
11570.500	31.84	-29.25	38.27	22.81	54.0	22.2	V
16155.300	36.43	-23.29	40.95	18.77	54.0	17.6	H
17762.400	37.75	-22.32	41.55	18.53	54.0	16.3	H
17910.900	38.34	-22.64	41.52	19.46	54.0	15.7	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)
5397.900	40.15	-22.30	34.36	28.09	54.0	13.9	V
5449.500	39.90	-22.70	34.38	28.22	54.0	14.1	V
11649.700	31.98	-29.41	38.35	23.03	54.0	22.0	H
16037.600	36.28	-23.59	40.76	19.11	54.0	17.7	V
17758.000	37.76	-22.31	41.55	18.53	54.0	16.2	H
17917.500	38.43	-22.65	41.52	19.57	54.0	15.6	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)
5398.050	40.28	-22.30	34.36	28.22	54.0	13.7	V
5429.850	40.08	-22.55	34.37	28.25	54.0	13.9	V
11490.200	32.48	-29.15	38.20	23.44	54.0	21.5	H
16146.500	36.47	-23.30	40.94	18.83	54.0	17.5	H
17749.200	37.95	-22.29	41.55	18.69	54.0	16.1	V
17919.700	38.26	-22.66	41.52	19.40	54.0	15.7	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)
5383.950	40.33	-22.29	34.36	28.26	54.0	13.7	V
5400.450	40.17	-22.32	34.36	28.13	54.0	13.8	V
11570.500	31.91	-29.25	38.27	22.88	54.0	22.1	V
16146.500	36.51	-23.30	40.94	18.88	54.0	17.5	V
17751.400	37.92	-22.30	41.55	18.67	54.0	16.1	V
17915.300	38.46	-22.65	41.52	19.59	54.0	15.5	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)
5386.950	39.15	-22.29	34.36	27.08	54.0	14.9	V
5434.350	39.05	-22.58	34.37	27.26	54.0	15.0	V
11649.700	32.01	-29.41	38.35	23.06	54.0	22.0	V
16060.700	36.32	-23.52	40.80	19.04	54.0	17.7	H
17749.200	37.95	-22.29	41.55	18.70	54.0	16.1	H
17902.100	38.29	-22.62	41.52	19.39	54.0	15.7	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)
5387.400	39.19	-22.29	34.36	27.12	54.0	14.8	V
5404.500	39.06	-22.35	34.36	27.05	54.0	14.9	V
11510.000	31.87	-29.14	38.21	22.80	54.0	22.1	H
16145.400	36.45	-23.31	40.94	18.82	54.0	17.6	H
17740.400	38.01	-22.27	41.55	18.73	54.0	16.0	V
17906.500	38.43	-22.63	41.52	19.54	54.0	15.6	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)
5397.600	39.24	-22.30	34.36	27.18	54.0	14.8	V
5410.350	39.10	-22.40	34.37	27.13	54.0	14.9	V
11590.300	32.17	-29.28	38.29	23.16	54.0	21.8	H
16029.900	36.32	-23.61	40.75	19.18	54.0	17.7	H
17731.600	37.98	-22.25	41.55	18.68	54.0	16.0	H
17906.500	38.46	-22.63	41.52	19.57	54.0	15.5	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)
5384.850	40.27	-22.29	34.36	28.20	54.0	13.7	V
5434.650	40.13	-22.59	34.37	28.34	54.0	13.9	V
11490.200	32.45	-29.15	38.20	23.41	54.0	21.6	V
16164.100	36.48	-23.28	40.97	18.80	54.0	17.5	H
17765.700	37.83	-22.33	41.55	18.61	54.0	16.2	V
17908.700	38.42	-22.64	41.52	19.54	54.0	15.6	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)
5388.450	40.35	-22.29	34.36	28.28	54.0	13.7	V
5405.550	40.16	-22.36	34.36	28.15	54.0	13.8	V
11570.500	31.96	-29.25	38.27	22.93	54.0	22.0	H
16165.200	36.47	-23.28	40.97	18.79	54.0	17.5	H
17740.400	37.93	-22.27	41.55	18.65	54.0	16.1	V
17912.000	38.44	-22.64	41.52	19.56	54.0	15.6	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)
5398.350	40.34	-22.30	34.36	28.28	54.0	13.7	V
5410.950	40.19	-22.40	34.37	28.22	54.0	13.8	V
11649.700	32.01	-29.41	38.35	23.06	54.0	22.0	H
16157.500	36.42	-23.29	40.95	18.75	54.0	17.6	V
17740.400	38.03	-22.27	41.55	18.76	54.0	16.0	H
17930.700	38.45	-22.68	41.51	19.61	54.0	15.6	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)
5390.700	39.28	-22.29	34.36	27.21	54.0	14.7	V
5405.100	39.12	-22.36	34.36	27.11	54.0	14.9	V
11510.000	31.95	-29.14	38.21	22.88	54.0	22.1	V
16145.400	36.47	-23.31	40.94	18.84	54.0	17.5	H
17765.700	37.79	-22.33	41.55	18.57	54.0	16.2	V
17919.700	38.45	-22.66	41.52	19.60	54.0	15.6	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)
5398.650	39.17	-22.30	34.36	27.11	54.0	14.8	V
5440.350	39.17	-22.63	34.38	27.42	54.0	14.8	V
11590.300	32.11	-29.28	38.29	23.10	54.0	21.9	V
16033.200	36.27	-23.60	40.75	19.12	54.0	17.7	H
17740.400	37.92	-22.27	41.55	18.64	54.0	16.1	H
17910.900	38.44	-22.64	41.52	19.56	54.0	15.6	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)
5387.700	39.2	-22.3	34.5	26.96	54.0	14.8	V
5418.000	39.1	-22.5	34.5	26.97	54.0	14.9	V
11549.600	32.2	-29.2	38.5	22.84	54.0	21.8	V
16156.400	36.4	-23.3	41.0	18.74	54.0	17.6	V
17783.300	37.8	-22.4	41.3	18.87	54.0	16.2	V
17920.800	38.4	-22.7	41.3	19.82	54.0	15.6	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)
5394.150	39.2	-22.3	34.5	27.00	54.0	14.8	V
5417.700	39.1	-22.5	34.5	26.98	54.0	14.9	V
11549.600	32.2	-29.2	38.5	22.91	54.0	21.8	V
16144.300	36.4	-23.3	41.0	18.77	54.0	17.6	V
17749.200	37.9	-22.3	41.3	18.96	54.0	16.1	V
17912.000	38.4	-22.6	41.3	19.79	54.0	15.6	V

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)
5650.655	55.48	-22.84	34.68	43.64	68.69	13.21	H
5655.532	54.41	-22.84	34.69	42.56	72.29	17.88	V
11490.200	45.90	-29.15	38.20	36.85	74.00	28.10	H
16811.450	57.52	-23.00	41.94	38.58	68.30	10.78	H
17234.950	55.32	-22.85	41.92	36.25	68.30	12.98	H
17324.600	56.80	-22.86	41.81	37.85	68.30	11.50	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)
5758.000	53.81	-22.93	34.87	41.86	68.30	14.49	V
5817.600	55.42	-22.63	34.98	43.08	68.30	12.88	H
11569.950	45.99	-29.24	38.27	36.97	74.00	28.01	H
17031.450	57.21	-23.03	42.16	38.07	68.30	11.09	V
17117.250	56.55	-23.04	42.06	37.53	68.30	11.75	H
17354.850	55.13	-22.93	41.77	36.29	68.30	13.17	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)
5919.515	54.90	-22.24	35.16	41.98	72.26	17.36	H
5923.114	54.86	-22.22	35.17	41.92	69.60	14.73	H
11650.250	46.77	-29.41	38.35	37.83	74.00	27.23	H
17161.250	56.92	-22.97	42.00	37.89	68.30	11.38	H
17298.200	56.57	-22.80	41.84	37.53	68.30	11.73	H
17474.750	54.22	-23.07	41.63	35.66	68.30	14.08	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)
5650.897	53.79	-22.84	34.68	41.95	68.86	15.07	V
5664.973	55.48	-22.84	34.71	43.61	79.28	23.80	H
11490.200	46.08	-29.15	38.20	37.03	74.00	27.92	H
16566.150	56.21	-23.27	41.59	37.88	68.30	12.09	H
17234.950	56.21	-22.85	41.92	37.15	68.30	12.09	V
17450.550	57.01	-23.16	41.66	38.51	68.30	11.29	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)
5753.400	54.16	-22.93	34.87	42.23	68.30	14.14	V
5840.200	55.88	-22.47	35.02	43.32	68.30	12.42	V
11569.950	45.80	-29.24	38.27	36.77	74.00	28.20	H
16827.400	56.72	-23.00	41.96	37.76	68.30	11.58	H
17354.850	54.79	-22.93	41.77	35.95	68.30	13.51	H
17564.400	56.92	-22.48	41.59	37.81	68.30	11.38	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)
5920.814	54.69	-22.24	35.16	41.76	71.30	16.61	H
5921.596	55.23	-22.23	35.16	42.29	70.72	15.49	H
11650.250	46.10	-29.41	38.35	37.15	74.00	27.90	H
17027.600	56.67	-23.03	42.17	37.53	68.30	11.63	V
17474.750	54.60	-23.07	41.63	36.04	68.30	13.70	V
17661.750	57.21	-22.09	41.57	37.73	68.30	11.09	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)
5651.115	54.12	-22.84	34.68	42.28	69.03	14.91	V
5653.565	54.25	-22.84	34.68	42.41	70.84	16.59	H
11510.000	46.36	-29.14	38.21	37.29	74.00	27.64	V
16880.200	56.41	-23.00	42.03	37.38	68.30	11.89	H
17265.200	54.63	-22.80	41.88	35.55	68.30	13.67	V
17646.350	57.12	-22.05	41.57	37.60	68.30	11.18	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)
5917.894	54.59	-22.25	35.16	41.68	73.46	18.87	V
5922.712	55.06	-22.22	35.17	42.11	69.89	14.84	H
11589.750	45.42	-29.28	38.29	36.41	74.00	28.58	V
17084.250	56.98	-23.04	42.10	37.92	68.30	11.32	V
17385.100	55.12	-23.01	41.74	36.39	68.30	13.18	V
17402.150	57.20	-23.05	41.72	38.53	68.30	11.10	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)
5651.817	53.68	-22.84	34.68	41.84	69.54	15.86	H
5654.462	55.14	-22.84	34.69	43.29	71.50	16.36	V
11490.200	47.14	-29.15	38.20	38.09	74.00	26.86	H
17006.150	56.91	-23.02	42.19	37.74	68.30	11.39	V
17234.950	54.72	-22.85	41.92	35.65	68.30	13.58	V
17652.400	57.02	-22.07	41.57	37.52	68.30	11.28	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)
5760.400	55.47	-22.92	34.88	43.52	68.30	12.83	H
5811.000	57.95	-22.68	34.97	45.66	68.30	10.35	H
11569.950	46.04	-29.24	38.27	37.01	74.00	27.96	H
16845.000	56.73	-23.00	41.99	37.75	68.30	11.57	V
17354.850	54.15	-22.93	41.77	35.31	68.30	14.15	H
17465.950	56.87	-23.13	41.64	38.36	68.30	11.43	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)
5920.711	55.19	-22.24	35.16	42.26	71.37	16.19	H
5922.367	55.16	-22.23	35.17	42.22	70.15	14.99	H
11650.250	46.28	-29.41	38.35	37.34	74.00	27.72	H
16989.650	56.83	-23.02	42.19	37.66	68.30	11.47	V
17140.350	56.99	-23.00	42.03	37.96	68.30	11.31	H
17474.750	54.16	-23.07	41.63	35.60	68.30	14.14	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)
5654.105	53.93	-22.84	34.69	42.09	71.24	17.31	V
5658.000	54.12	-22.84	34.69	42.27	74.12	20.00	H
11510.000	46.05	-29.14	38.21	36.98	74.00	27.95	V
17052.900	57.01	-23.03	42.14	37.90	68.30	11.29	H
17265.200	54.19	-22.80	41.88	35.11	68.30	14.11	H
17585.300	56.87	-22.34	41.58	37.63	68.30	11.43	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)
5922.332	55.43	-22.23	35.17	42.49	70.17	14.74	H
5924.218	54.88	-22.21	35.17	41.92	68.78	13.90	V
11589.750	45.25	-29.28	38.29	36.23	74.00	28.75	H
17048.500	56.57	-23.03	42.14	37.46	68.30	11.73	V
17385.100	54.59	-23.01	41.74	35.86	68.30	13.71	H
17637.000	57.09	-22.03	41.57	37.55	68.30	11.21	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)
5652.277	53.6	-22.8	34.8	41.60	68.3	14.8	H
5655.566	54.1	-22.8	34.8	42.14	68.3	14.2	V
11550.150	46.1	-29.2	38.5	36.82	74.0	27.9	V
17068.300	56.6	-23.0	41.6	37.98	68.3	11.7	H
17325.150	54.1	-22.9	41.4	35.61	68.3	14.2	V
17430.200	57.1	-23.1	41.3	38.95	68.3	11.2	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)
5651.323	54.5	-22.8	34.8	42.56	68.3	13.8	H
5652.174	54.3	-22.8	34.8	42.36	68.3	14.0	V
11550.150	45.3	-29.2	38.5	36.00	74.0	28.7	V
16986.900	56.5	-23.0	41.7	37.78	68.3	11.8	H
17295.450	56.9	-22.8	41.4	38.25	68.3	11.4	H
17325.150	54.9	-22.9	41.4	36.42	68.3	13.4	H

Conclusion: pass

Note: the spurious emission above 18G is noise only

SPEED:
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)
5366.000	40.25	-22.29	34.35	28.19	54.0	13.8	V
5384.600	40.29	-22.29	34.36	28.22	54.0	13.7	V
11490.200	32.31	-29.15	38.20	23.26	54.0	21.7	V
17822.900	38.12	-22.46	41.54	19.04	54.0	15.9	H
17884.500	38.13	-22.59	41.52	19.19	54.0	15.9	V
17953.800	38.12	-22.73	41.51	19.34	54.0	15.9	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)
5367.800	38.97	-22.29	34.35	26.91	54.0	15.0	V
5396.400	38.93	-22.29	34.36	26.86	54.0	15.1	V
11570.500	32.29	-29.25	38.27	23.26	54.0	21.7	V
17833.900	38.14	-22.48	41.53	19.09	54.0	15.9	H
17886.700	38.09	-22.59	41.52	19.16	54.0	15.9	V
17952.700	38.61	-22.73	41.51	19.83	54.0	15.4	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)
5361.600	38.88	-22.29	34.35	26.82	54.0	15.1	V
5386.400	38.83	-22.29	34.36	26.76	54.0	15.2	V
11649.700	32.28	-29.41	38.35	23.33	54.0	21.7	H
17783.300	37.94	-22.37	41.54	18.76	54.0	16.1	V
17826.200	38.14	-22.47	41.53	19.07	54.0	15.9	H
17904.300	38.24	-22.63	41.52	19.35	54.0	15.8	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)
5398.600	38.96	-22.30	34.36	26.90	54.0	15.0	V
5429.400	38.83	-22.54	34.37	27.00	54.0	15.2	V
11490.200	32.23	-29.15	38.20	23.19	54.0	21.8	V
17828.400	38.15	-22.47	41.53	19.08	54.0	15.9	H
17883.400	38.12	-22.58	41.52	19.18	54.0	15.9	V
17938.400	38.25	-22.70	41.51	19.44	54.0	15.8	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)
5378.400	39.05	-22.29	34.35	26.99	54.0	15.1	V
5426.400	38.90	-22.52	34.37	27.05	54.0	15.2	V
11570.500	32.27	-29.25	38.27	23.25	54.0	21.8	H
17780.000	37.92	-22.36	41.54	18.74	54.0	16.1	H
17864.700	37.98	-22.55	41.53	19.00	54.0	16.1	H
17940.600	38.33	-22.70	41.51	19.52	54.0	15.9	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)
5381.400	38.89	-22.29	34.35	26.82	48.30	9.41	V
5406.000	38.80	-22.36	34.36	26.80	48.30	9.50	V
11649.700	32.23	-29.41	38.35	23.29	48.30	16.07	V
17788.800	37.87	-22.38	41.54	18.71	48.30	10.43	H
17868.000	37.87	-22.55	41.53	18.90	48.30	10.43	V
17947.200	38.12	-22.72	41.51	19.32	48.30	10.18	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)
5361.400	38.57	-22.29	34.35	26.52	54.0	15.4	V
5398.200	38.53	-22.30	34.36	26.47	54.0	15.5	V
11510.000	32.14	-29.14	38.21	23.08	54.0	21.9	H
17828.400	38.13	-22.47	41.53	19.07	54.0	15.9	H
17868.000	37.86	-22.55	41.53	18.89	54.0	16.1	V
17954.900	38.20	-22.73	41.51	19.42	54.0	15.8	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)
5385.000	38.57	-22.29	34.36	26.50	54.0	15.4	V
5416.600	38.31	-22.45	34.37	26.39	54.0	15.7	V
11590.300	32.25	-29.28	38.29	23.24	54.0	21.8	V
17836.100	38.16	-22.49	41.53	19.12	54.0	15.8	V
17880.100	37.98	-22.58	41.52	19.03	54.0	16.0	H
17960.400	38.07	-22.74	41.51	19.30	54.0	15.9	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)
5398.000	38.87	-22.30	34.36	26.81	54.0	15.1	V
5409.200	38.76	-22.39	34.37	26.78	54.0	15.2	V
11490.200	32.14	-29.15	38.20	23.09	54.0	21.9	V
17749.200	38.11	-22.29	41.55	18.85	54.0	15.9	H
17833.900	38.16	-22.48	41.53	19.11	54.0	15.8	H
17929.600	38.38	-22.68	41.51	19.55	54.0	15.6	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)
5366.800	38.70	-22.29	34.35	26.64	54.0	15.3	V
5399.600	38.62	-22.31	34.36	26.57	54.0	15.4	V
11570.500	32.30	-29.25	38.27	23.27	54.0	21.7	H
17827.300	38.16	-22.47	41.53	19.09	54.0	15.8	H
17876.800	38.04	-22.57	41.52	19.09	54.0	16.0	H
17936.200	38.27	-22.69	41.51	19.45	54.0	15.7	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)
5367.200	38.70	-22.29	34.35	26.65	54.0	15.3	V
5390.400	38.80	-22.29	34.36	26.73	54.0	15.2	V
11649.700	32.32	-29.41	38.35	23.37	54.0	21.7	H
17830.600	38.12	-22.48	41.53	19.07	54.0	15.9	H
17880.100	38.05	-22.58	41.52	19.11	54.0	16.0	H
17936.200	38.27	-22.69	41.51	19.45	54.0	15.7	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)
5365.200	38.70	-22.29	34.35	26.64	54.0	15.3	V
5387.400	38.75	-22.29	34.36	26.68	54.0	15.3	V
11510.000	32.07	-29.14	38.21	23.00	54.0	21.9	H
17833.900	38.11	-22.48	41.53	19.06	54.0	15.9	V
17896.600	38.27	-22.61	41.52	19.37	54.0	15.7	H
17945.000	38.27	-22.71	41.51	19.46	54.0	15.7	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)
5376.400	38.72	-22.29	34.35	26.66	54.0	15.3	V
5417.800	38.56	-22.45	34.37	26.64	54.0	15.4	V
11590.300	32.26	-29.28	38.29	23.24	54.0	21.7	V
17837.200	38.07	-22.49	41.53	19.03	54.0	15.9	H
17902.100	35.26	-22.62	41.52	16.36	54.0	18.7	V
17949.400	38.16	-22.72	41.51	19.37	54.0	15.8	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)
5361.600	38.8	-22.3	34.5	26.61	54.0	15.2	V
5374.200	38.7	-22.3	34.5	26.51	54.0	15.3	V
11549.600	32.2	-29.2	38.5	22.91	54.0	21.8	V
17843.800	37.9	-22.5	41.3	19.15	54.0	16.1	V
17901.000	38.3	-22.6	41.3	19.68	54.0	15.7	V
17950.500	38.1	-22.7	41.3	19.49	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)
5361.200	38.8	-22.3	34.5	26.64	54.0	15.2	V
5386.800	38.7	-22.3	34.5	26.46	54.0	15.3	V
11549.600	32.2	-29.2	38.5	22.86	54.0	21.8	H
17827.300	38.1	-22.5	41.3	19.30	54.0	15.9	V
17894.400	38.1	-22.6	41.3	19.39	54.0	15.9	V
17956.000	38.1	-22.7	41.3	19.57	54.0	15.9	V

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)
5650.494	54.25	-22.84	34.68	42.41	68.57	14.31	V
5651.403	54.17	-22.84	34.68	42.33	69.24	15.07	V
11490.200	45.64	-29.15	38.20	36.59	74.00	28.36	H
17234.950	55.05	-22.85	41.92	35.99	68.30	13.25	H
17329.550	55.64	-22.87	41.80	36.71	68.30	12.66	V
17500.600	56.56	-22.90	41.60	37.86	68.30	11.74	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)
5724.200	54.71	-22.97	34.81	42.87	68.30	13.59	V
5823.600	54.54	-22.59	34.99	42.14	68.30	13.76	V
11569.950	45.76	-29.24	38.27	36.73	74.00	28.24	H
17354.850	54.06	-22.93	41.77	35.22	68.30	14.24	V
17497.300	55.76	-22.92	41.60	37.07	68.30	12.54	V
17591.900	56.88	-22.29	41.58	37.59	68.30	11.42	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)
5923.333	54.98	-22.22	35.17	42.03	69.43	14.45	V
5924.966	54.15	-22.21	35.17	41.19	68.23	14.07	V
11650.250	57.11	-29.41	38.35	48.16	74.00	16.89	H
17474.750	54.15	-23.07	41.63	35.59	68.30	14.15	H
17539.650	56.80	-22.64	41.59	37.85	68.30	11.50	V
17638.100	56.70	-22.03	41.57	37.16	68.30	11.60	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)
5650.770	54.05	-22.84	34.68	42.21	68.77	14.72	V
5651.920	54.15	-22.84	34.68	42.30	69.62	15.48	V
11490.200	46.31	-29.15	38.20	37.27	74.00	27.69	H
17234.950	54.50	-22.85	41.92	35.43	68.30	13.80	H
17310.850	55.96	-22.83	41.82	36.96	68.30	12.34	V
17475.300	56.53	-23.07	41.63	37.96	68.30	11.77	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)
5728.600	55.34	-22.98	34.82	43.50	68.30	12.96	V
5830.200	54.51	-22.54	35.00	42.05	68.30	13.79	V
11569.950	46.09	-29.24	38.27	37.07	74.00	27.91	V
17354.850	54.38	-22.93	41.77	35.54	68.30	13.92	V
17427.450	55.80	-23.11	41.69	37.22	68.30	12.50	H
17546.250	56.86	-22.60	41.59	37.86	68.30	11.44	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)
5922.275	55.19	-22.23	35.17	42.25	70.22	15.02	V
5924.322	55.03	-22.21	35.17	42.07	68.70	13.68	V
11650.250	47.28	-29.41	38.35	38.33	74.00	26.72	V
17474.750	55.17	-23.07	41.63	36.61	68.30	13.13	H
17441.200	56.55	-23.14	41.67	38.02	68.30	11.75	V
17533.050	56.59	-22.68	41.59	37.67	68.30	11.71	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)
5650.356	54.64	-22.84	34.68	42.80	68.46	13.82	V
5650.757	53.88	-22.84	34.68	42.05	68.76	14.88	V
11510.000	45.55	-29.14	38.21	36.48	74.00	28.45	H
17265.200	54.49	-22.80	41.88	35.41	68.30	13.81	H
17383.450	56.07	-23.00	41.74	37.33	68.30	12.23	H
17513.250	56.99	-22.81	41.60	38.21	68.30	11.31	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)
5922.608	54.41	-22.22	35.17	41.47	69.97	15.56	V
5924.574	53.70	-22.21	35.17	40.74	68.51	14.81	V
11589.750	46.67	-29.28	38.29	37.66	74.00	27.33	V
17385.100	53.97	-23.01	41.74	35.24	68.30	14.33	V
17559.450	56.35	-22.51	41.59	37.27	68.30	11.95	V
17616.650	56.10	-22.13	41.58	36.65	68.30	12.20	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)
5650.460	54.06	-22.84	34.68	42.22	68.54	14.48	V
5651.575	53.90	-22.84	34.68	42.06	69.37	15.47	V
11490.200	46.71	-29.15	38.20	37.66	74.00	27.29	V
17234.950	53.73	-22.85	41.92	34.66	68.30	14.57	H
17403.250	56.05	-23.05	41.71	37.38	68.30	12.25	V
17553.950	56.56	-22.54	41.59	37.51	68.30	11.74	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)
5746.200	54.90	-22.95	34.85	42.99	68.30	13.40	V
5823.800	55.09	-22.59	34.99	42.69	68.30	13.21	V
11569.950	46.21	-29.24	38.27	37.18	74.00	27.79	H
17354.850	53.83	-22.93	41.77	34.99	68.30	14.47	V
17458.250	56.68	-23.18	41.65	38.21	68.30	11.62	H
17513.800	57.01	-22.81	41.60	38.22	68.30	11.29	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)
5922.999	54.88	-22.22	35.17	41.93	69.68	14.80	V
5923.953	55.35	-22.22	35.17	42.40	68.97	13.63	V
11650.250	45.88	-29.41	38.35	36.94	74.00	28.12	V
17474.750	54.56	-23.07	41.63	36.00	68.30	13.74	H
17556.150	56.64	-22.53	41.59	37.58	68.30	11.66	H
17634.250	56.92	-22.03	41.57	37.37	68.30	11.38	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)
5650.207	53.65	-22.84	34.68	41.81	68.35	14.70	V
5650.587	53.65	-22.84	34.68	41.81	68.63	14.99	V
11510.000	45.81	-29.14	38.21	36.75	74.00	28.19	V
17265.200	54.76	-22.80	41.88	35.68	68.30	13.54	V
17394.450	56.23	-23.03	41.73	37.53	68.30	12.07	V
17531.400	56.31	-22.69	41.59	37.41	68.30	11.99	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)
5923.310	54.24	-22.22	35.17	41.29	69.45	15.21	V
5924.448	54.39	-22.21	35.17	41.43	68.61	14.22	V
11589.750	46.09	-29.28	38.29	37.07	74.00	27.91	H
17385.100	53.57	-23.01	41.74	34.84	68.30	14.73	V
17401.050	55.75	-23.04	41.72	37.07	68.30	12.55	H
17534.150	56.23	-22.68	41.59	37.31	68.30	12.07	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)
5650.173	54.4	-22.8	34.8	42.44	68.3	13.9	V
5650.679	54.2	-22.8	34.8	42.30	68.3	14.1	V
11550.150	45.9	-29.2	38.5	36.54	74.0	28.1	V
17325.150	54.8	-22.9	41.4	36.33	68.3	13.5	H
17386.200	55.5	-23.0	41.3	37.22	68.3	12.8	V
17502.250	56.7	-22.9	41.2	38.34	68.3	11.6	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)
5650.817	53.8	-22.8	34.8	41.87	68.3	14.5	V
5651.156	53.7	-22.8	34.8	41.75	68.3	14.6	V
11550.000	46.7	-29.2	38.5	37.35	74.0	27.3	H
17325.150	53.8	-22.9	41.4	35.30	68.3	14.5	H
17362.000	57.3	-23.0	41.3	38.96	68.3	11.0	H
17476.950	56.1	-23.1	41.2	37.96	68.3	12.2	V

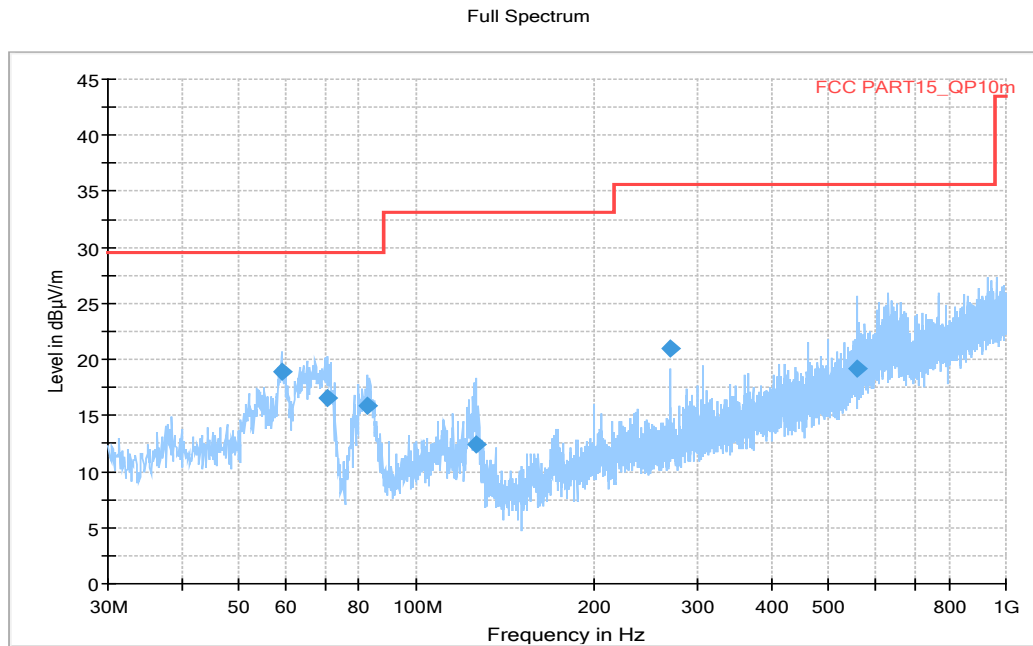
Conclusion: pass

Note: the spurious emission above 18G is noise only

C.1.2 Radiated Spurious Emission- Below 1GHz

WOSRT CASE BELOW 1GHz

- FCC Part 15C 30-1G Limit
- Peak Preview Result
- ◆ Final Result QPK



Final Result 1

Frequency (MHz)	QuasiPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
59.1	18.98	29.5	10.52	1000	120	295	V	1
70.546	16.63	29.5	12.87	1000	120	210	V	157
82.768	15.88	29.5	13.62	1000	120	125	V	294
126.321	12.49	33.1	20.61	1000	120	217	V	150
269.202	21.01	35.6	14.59	1000	120	107	V	300
560.202	19.25	35.6	16.35	1000	120	324	V	-1

Note: 10 meters' limit is got by converting from 3 meters test distance.

Limit (10m) = limit (3m) + 20(log (3/10))

BELOW 30MHz

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

C.1.3 Band Edges Compliance– Radiated

Measurement Result:

INPAQ

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	P
		Fig.12	
802.11ac HT80	5775 MHz(CH155)	Fig.13 Fig.14	P

Conclusion: PASS

SPEED:

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	P
		Fig.26	
802.11ac HT80	5775 MHz(CH155)	Fig.27 Fig.28	P

Conclusion: PASS

Test graphs as below:

— Peak Limits
— Peak Result

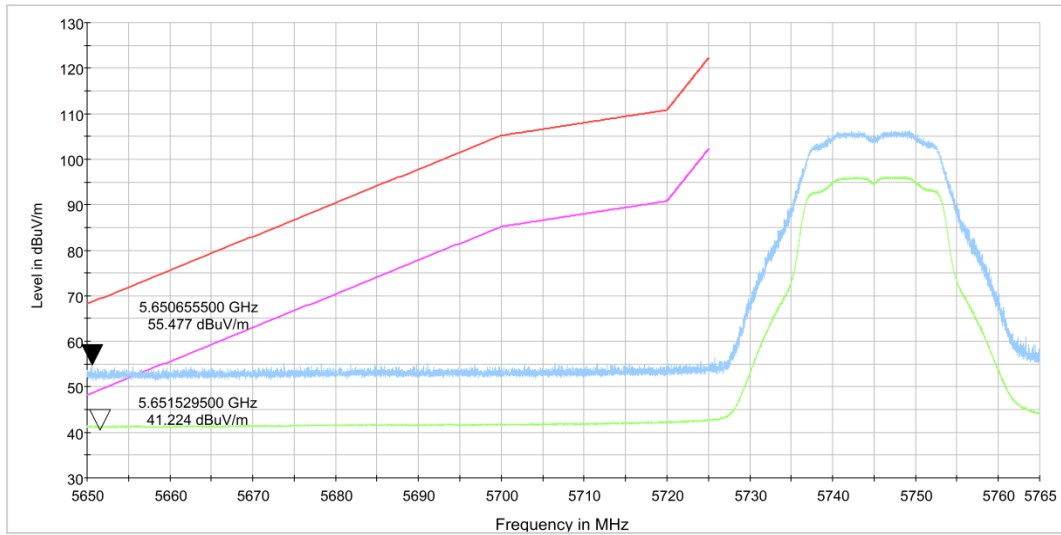


Fig. 1 Band Edges (802.11a, CH149, 5745MHz)

— Peak Limits
— Peak Result

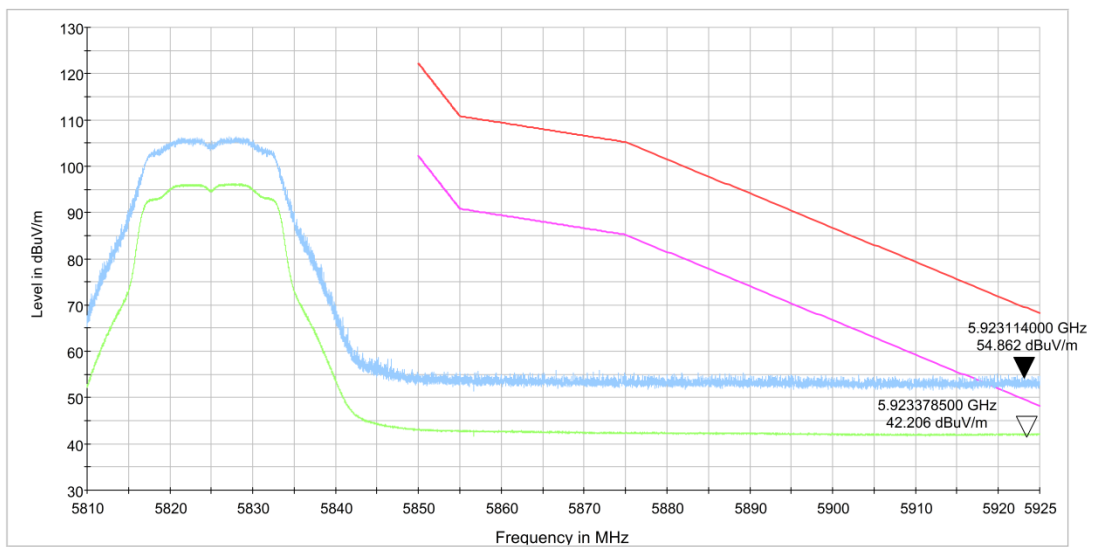


Fig. 2 Band Edges (802.11a, CH165, 5825MHz)

— Peak Limits
— Peak Result

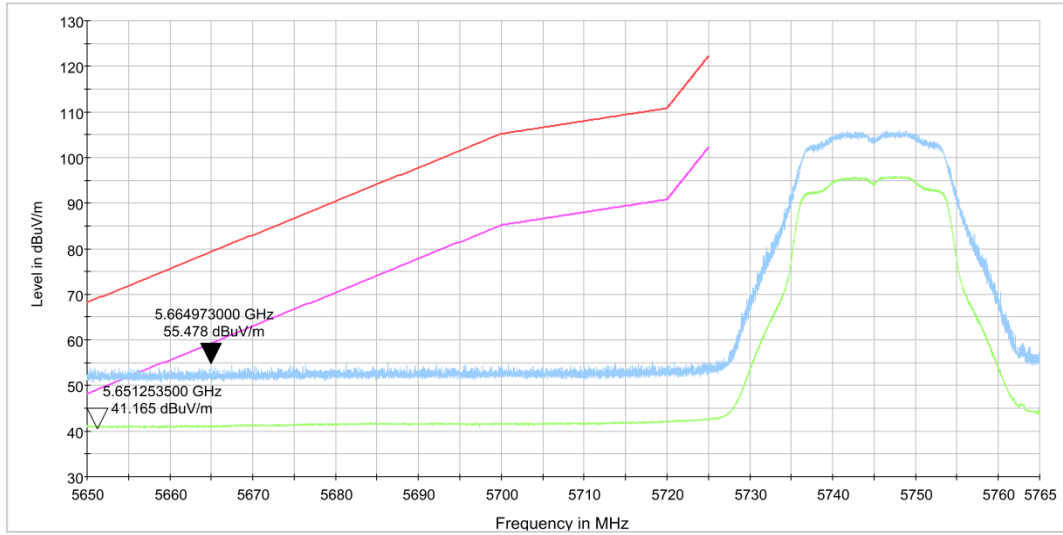


Fig. 3 Band Edges (802.11n-HT20, CH149, 5745MHz)

— Peak Limits
— Peak Result

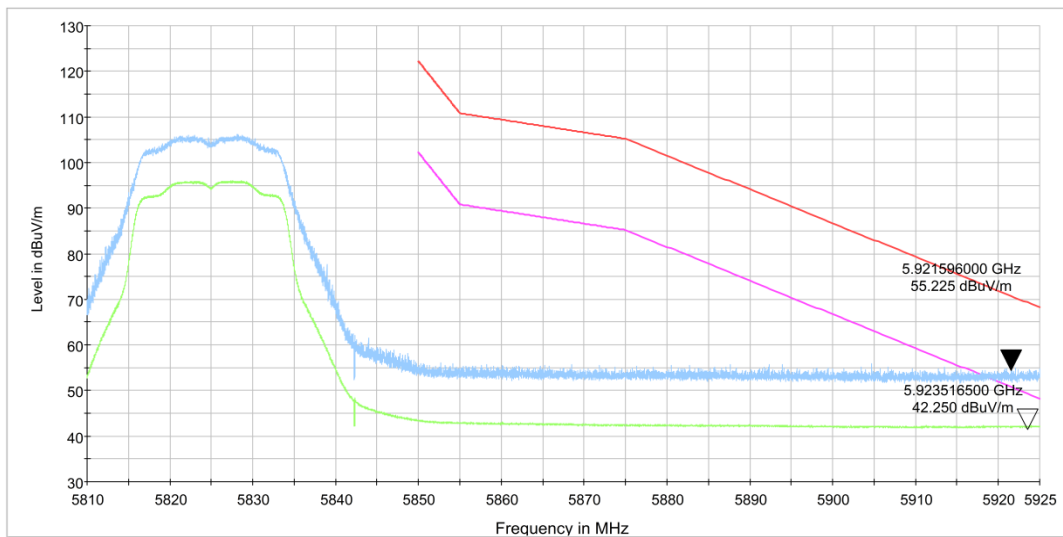


Fig. 4 Band Edges (802.11n-HT20, CH165, 5825MHz)

— Peak Limits
— Peak Result

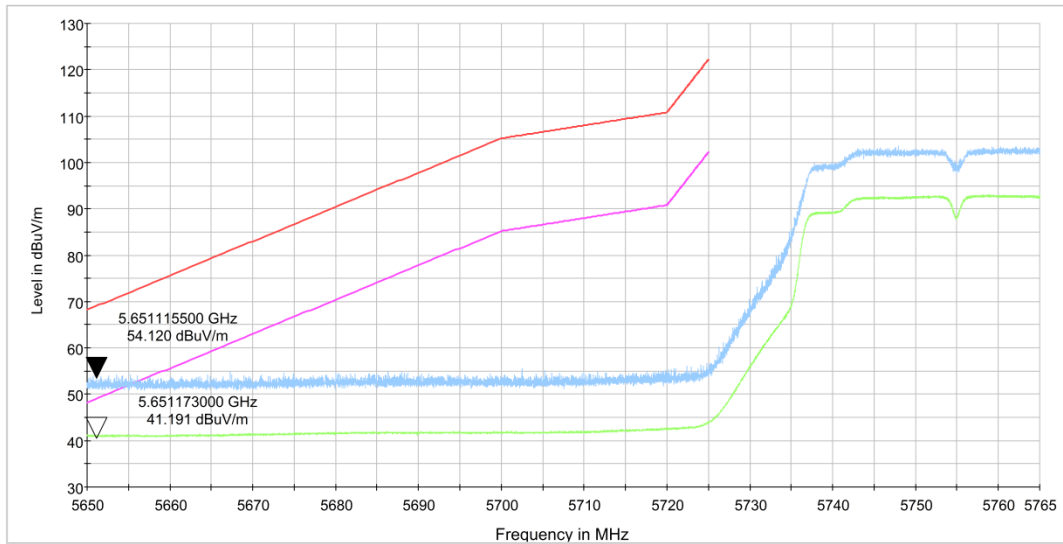


Fig. 5 Band Edges (802.11n-HT40, CH151, 5755MHz)

— Peak Limits
— Peak Result

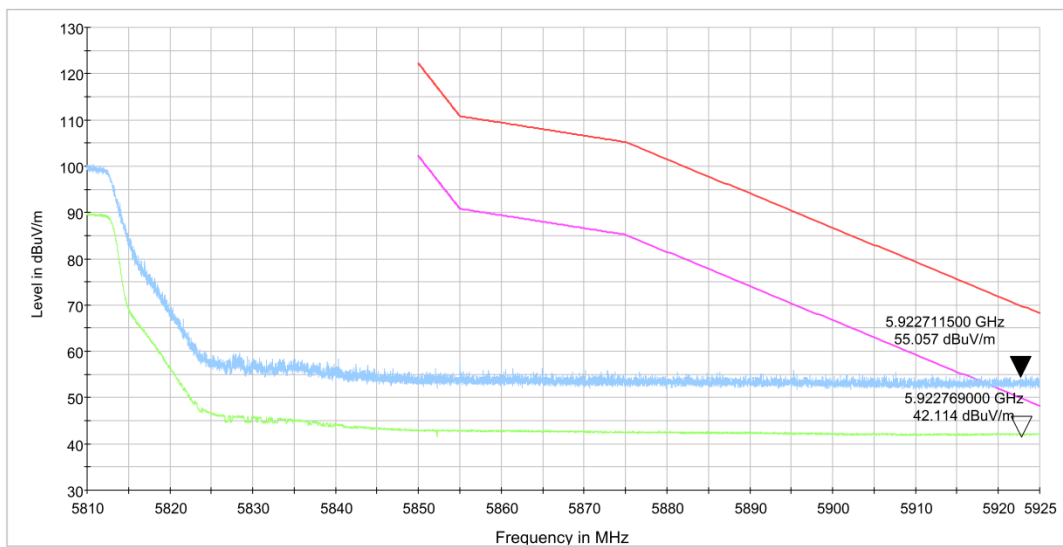


Fig. 6 Band Edges (802.11n-HT40, CH159, 5795MHz)

— Peak Limits
 — Peak Result

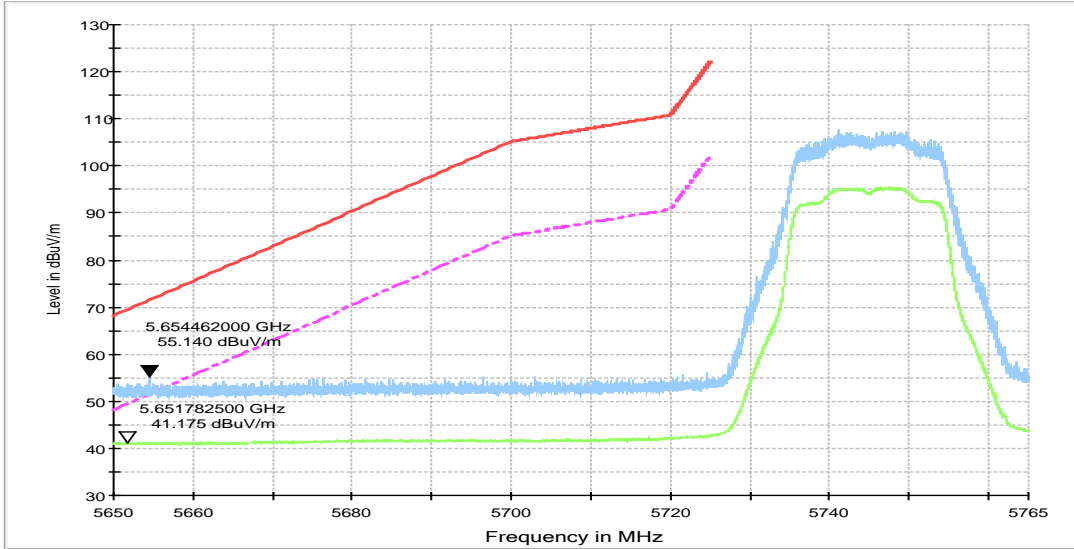


Fig. 7 Band Edges (802.11ax-HT20, CH149, 5745MHz)

— Peak Limits
 — Peak Result

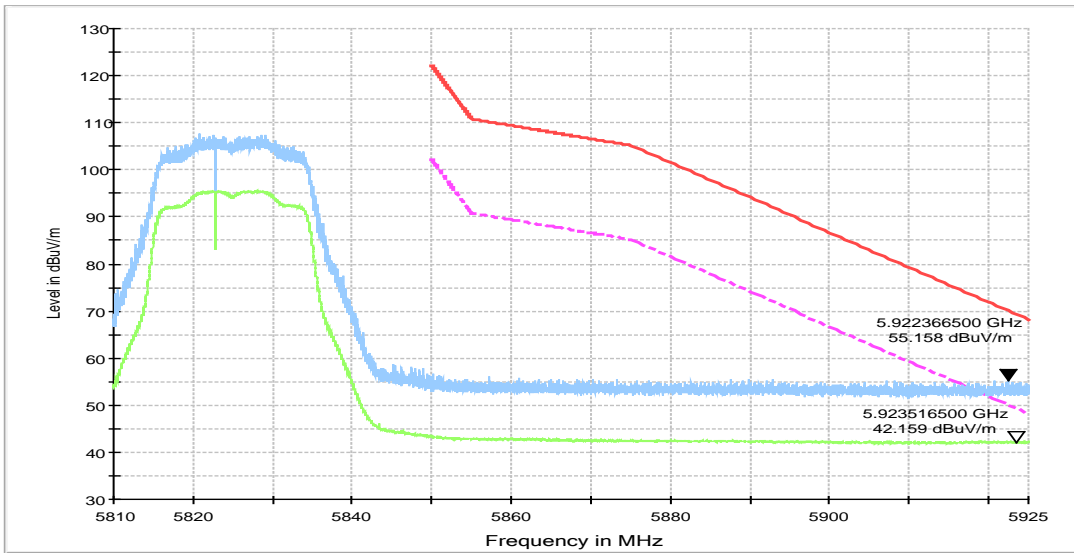


Fig. 8 Band Edges (802.11ax-HT20, CH165, 5825MHz)

— Peak Limits
— Peak Result

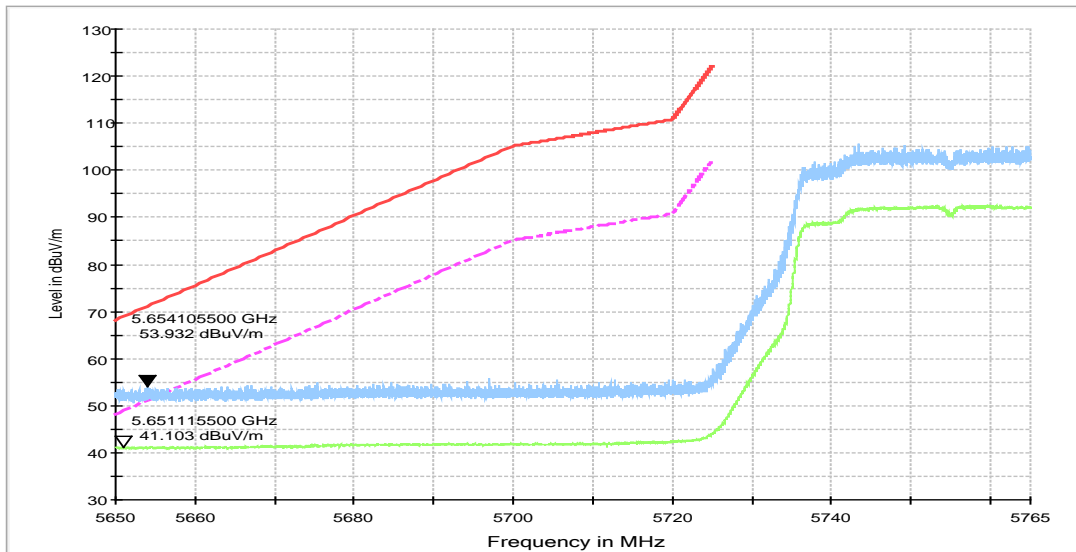


Fig. 9 Band Edges (802.11ax-HT40,CH151, 5755MHz)

— Peak Limits
— Peak Result

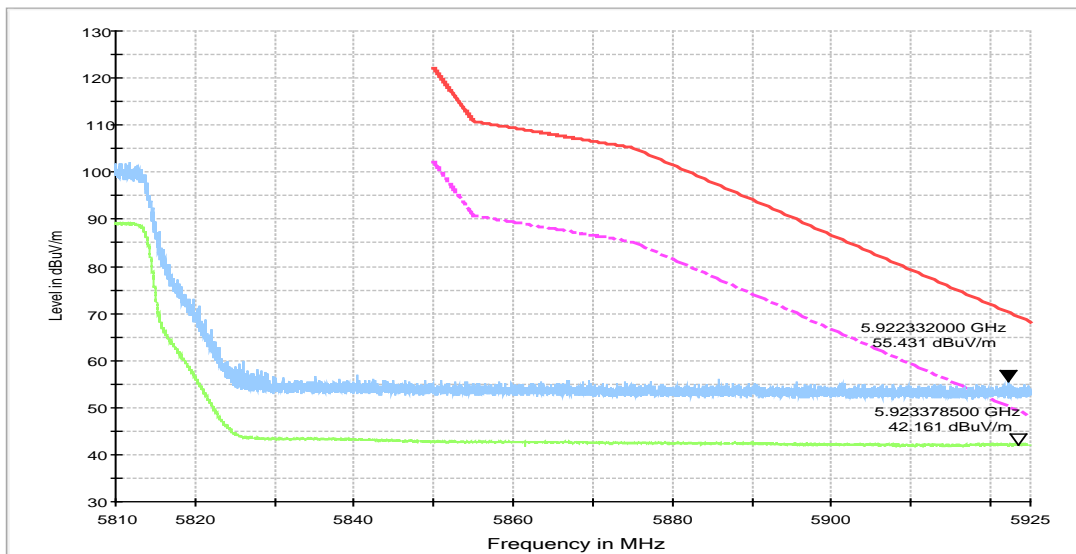


Fig. 10 Band Edges (802.11ax-HT40,CH159, 5795MHz)

— Peak Limits
— Peak Result

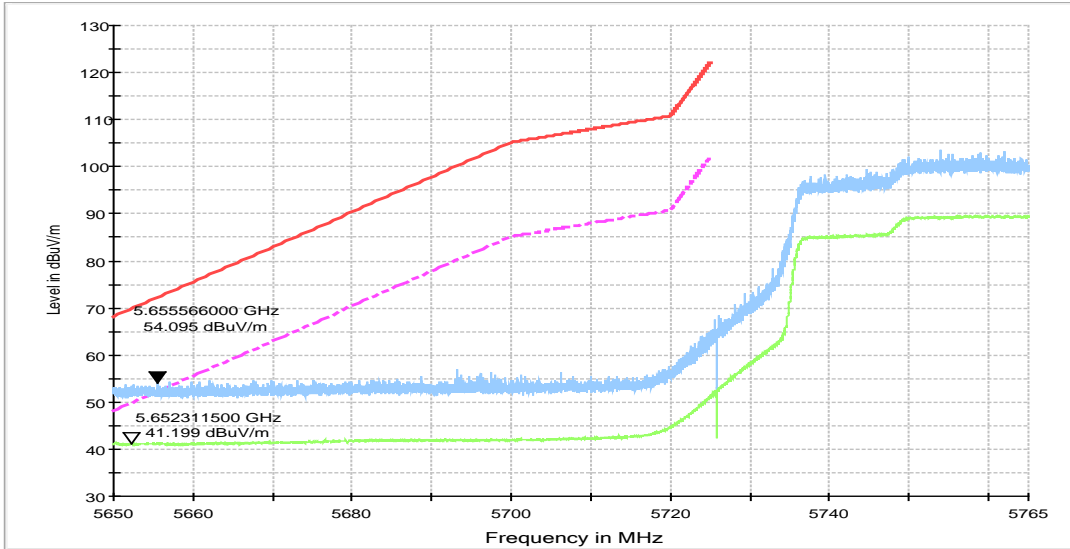


Fig. 11 Band Edges (802.11ax-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

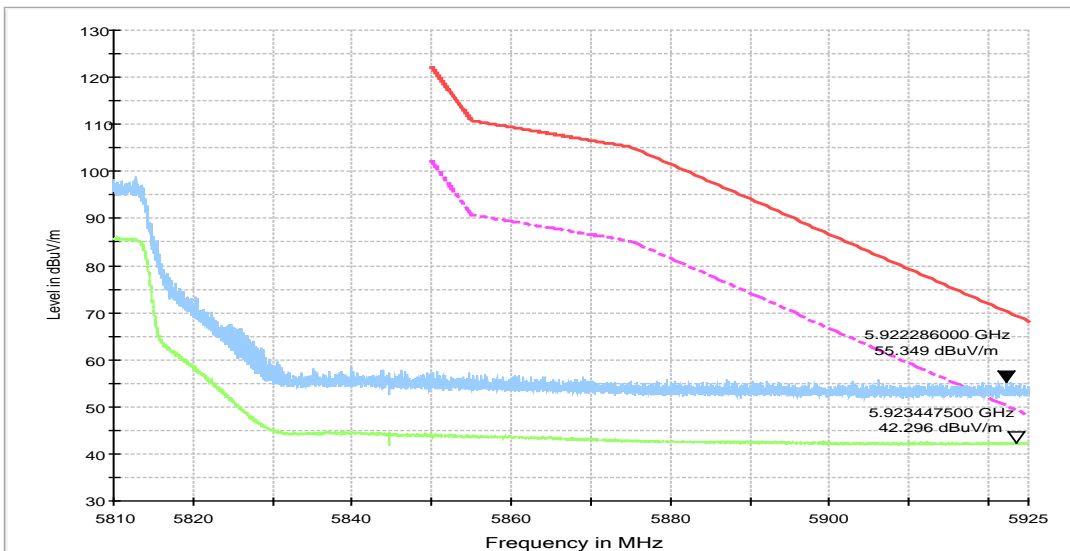


Fig. 12 Band Edges (802.11ax-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

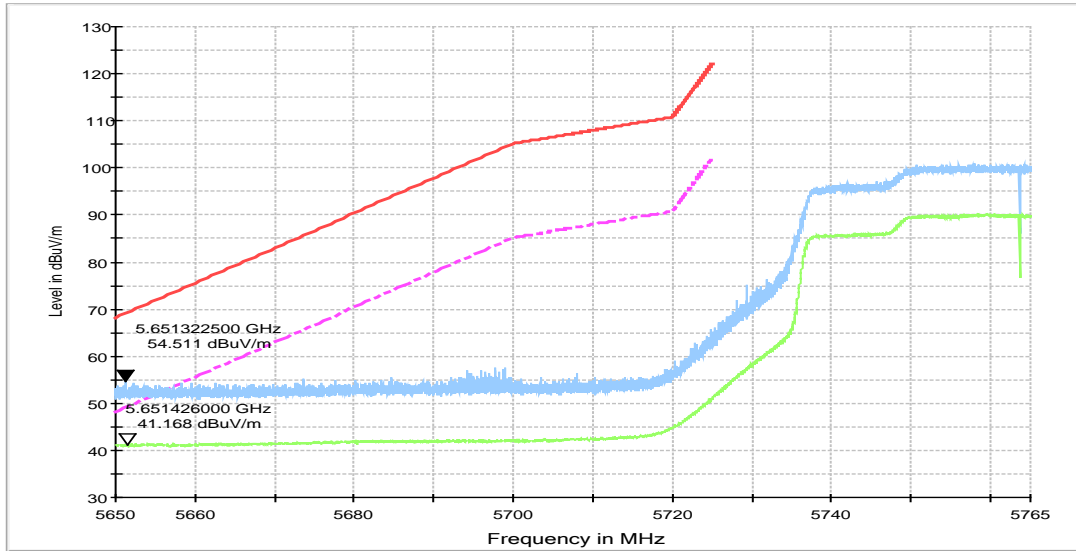


Fig. 13 Band Edges (802.11ac-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

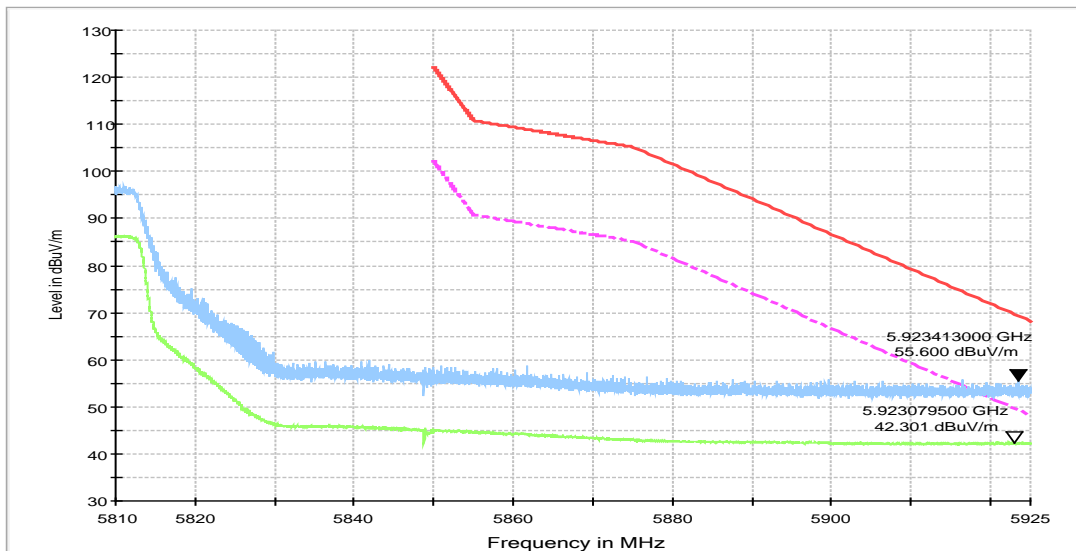


Fig. 14 Band Edges (802.11ax-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

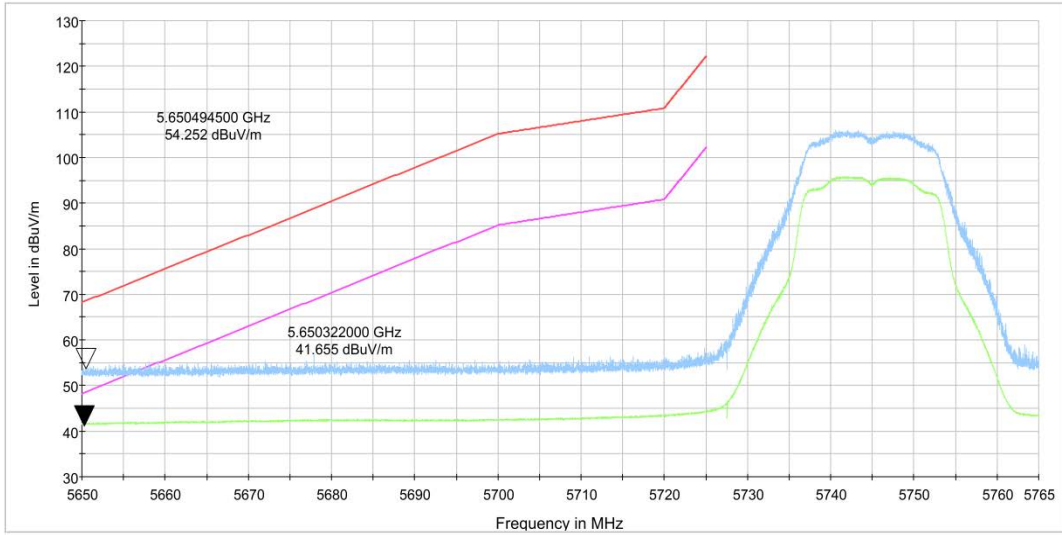


Fig. 15 Band Edges (802.11a,CH149, 5745MHz)

— Peak Limits
— Peak Result

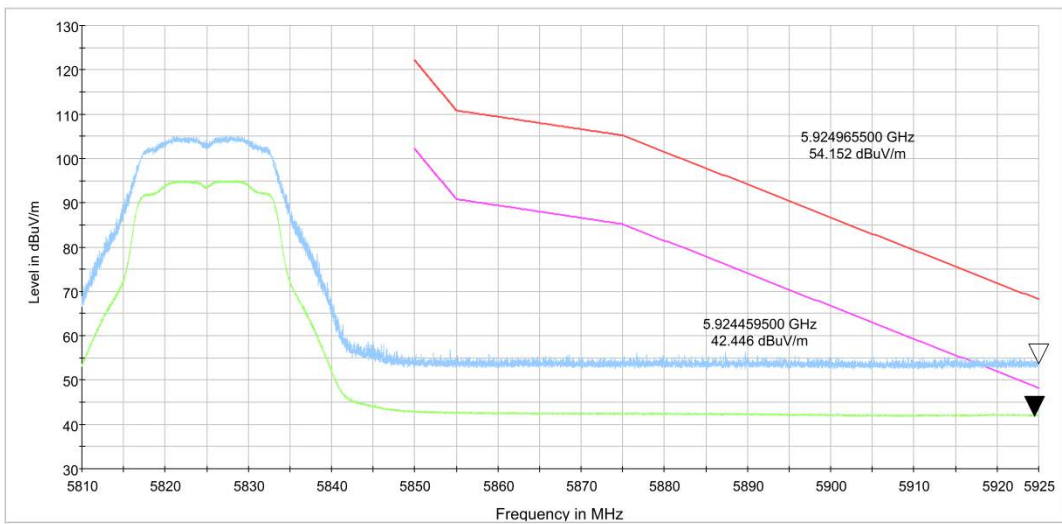


Fig. 16 Band Edges (802.11a, CH165, 5825MHz)

— Peak Limits
— Peak Result

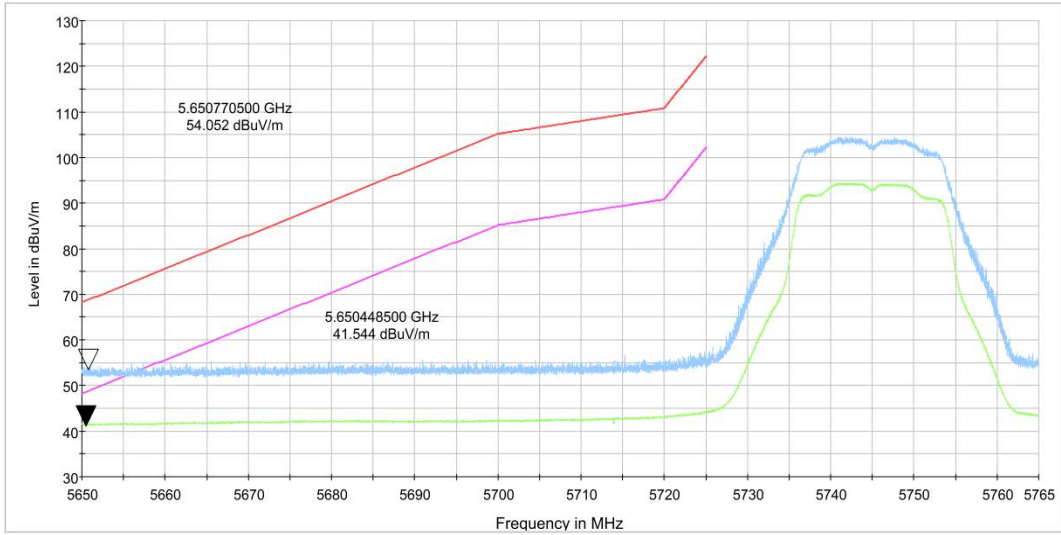


Fig. 17 Band Edges (802.11n-HT20, CH149, 5745MHz)

— Peak Limits
— Peak Result

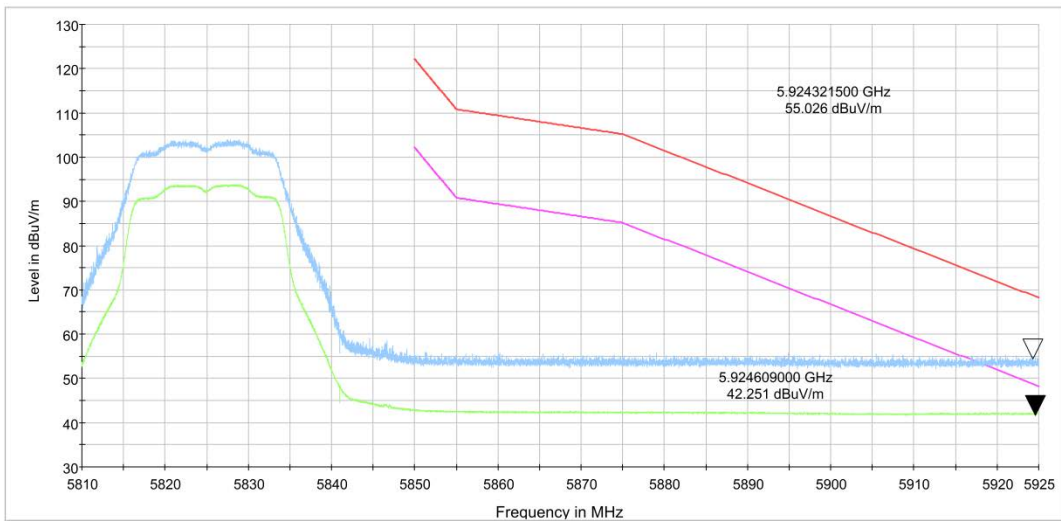


Fig. 18 Band Edges (802.11n-HT20, CH165, 5825MHz)

— Peak Limits
— Peak Result

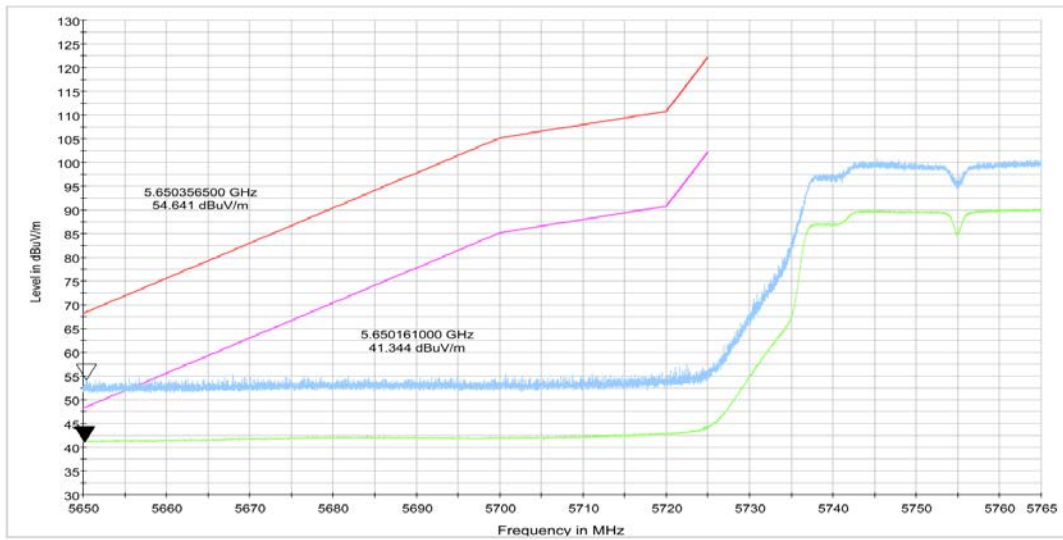


Fig. 19 Band Edges (802.11n-HT40, CH151, 5755MHz)

— Peak Limits
— Peak Result

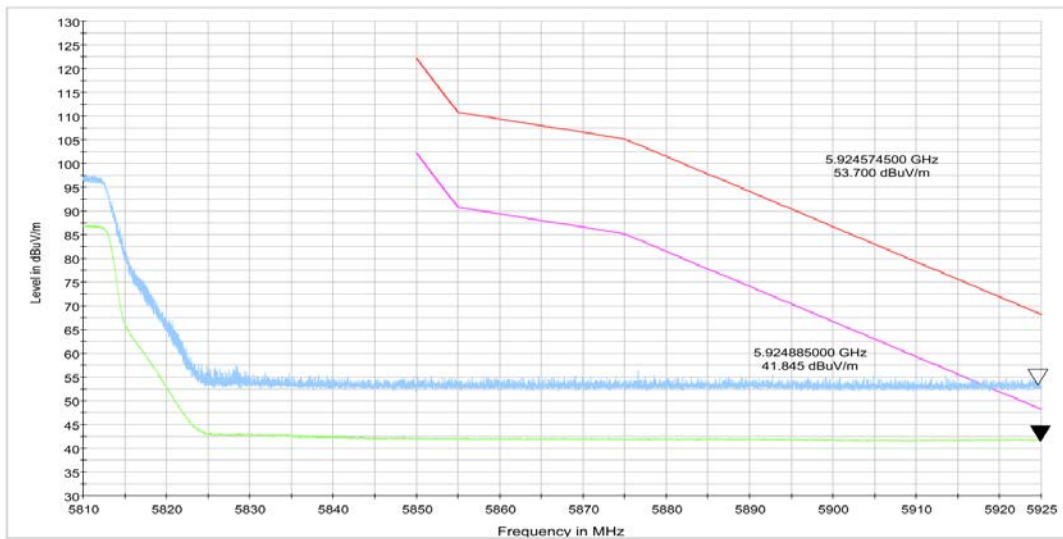


Fig. 20 Band Edges (802.11n-HT40, CH159, 5795MHz)

— Peak Limits
— Peak Result

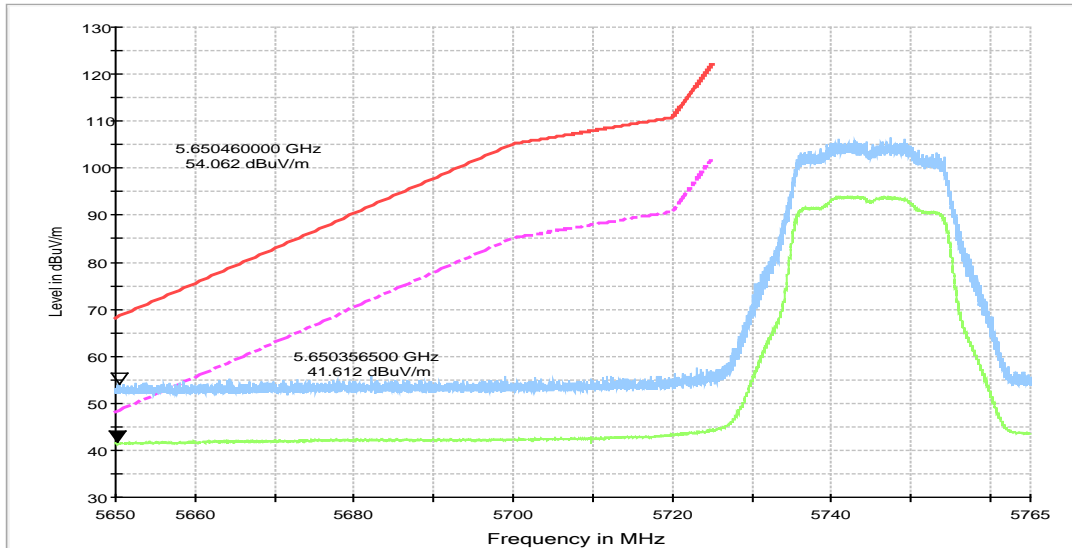


Fig. 21 Band Edges (802.11ax-HT20, CH149, 5745MHz)

— Peak Limits
— Peak Result

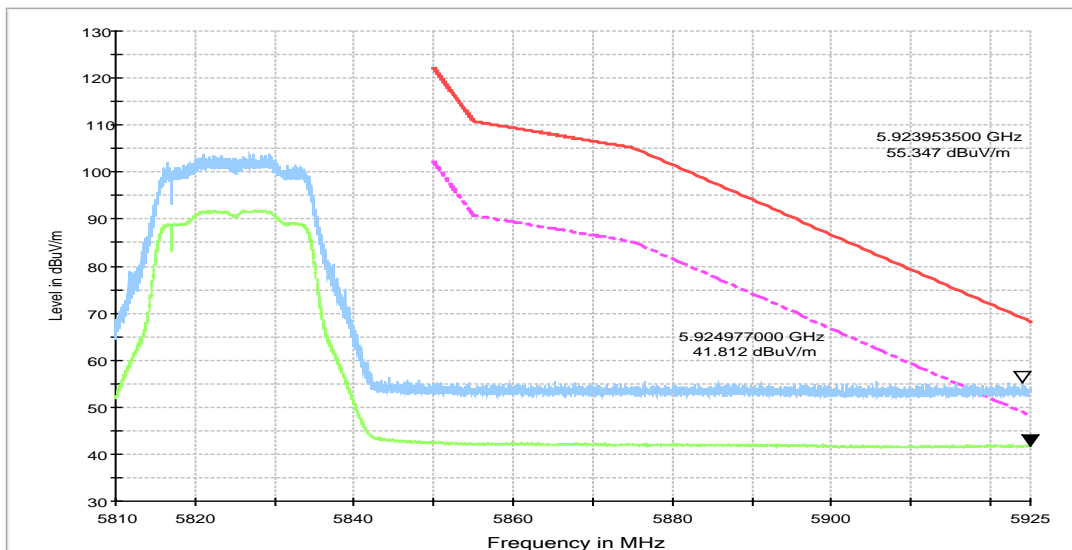


Fig. 22 Band Edges (802.11ax-HT20, CH165, 5825MHz)

— Peak Limits
— Peak Result

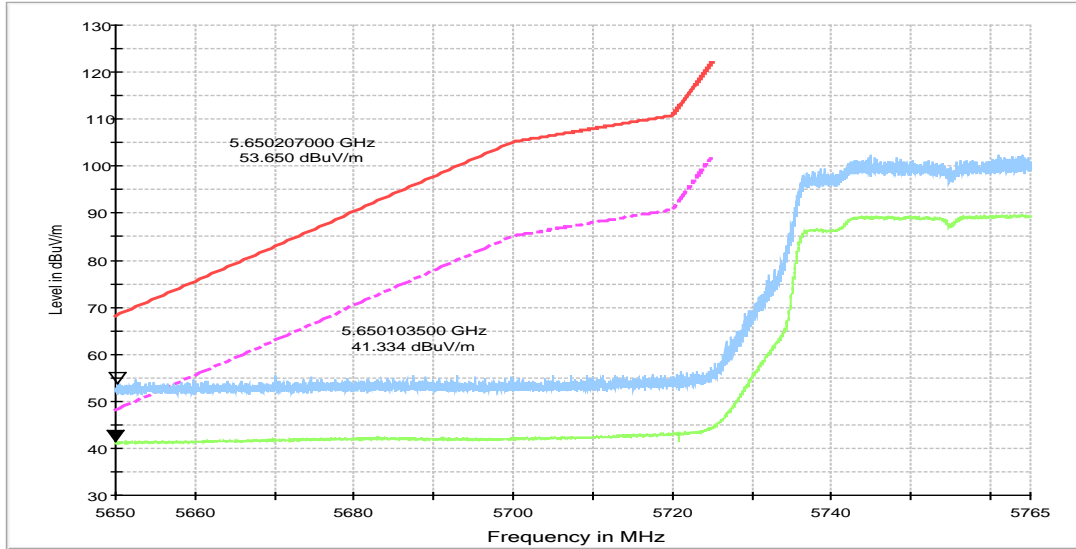


Fig. 23 Band Edges (802.11ax-HT40,CH151, 5755MHz)

— Peak Limits
— Peak Result

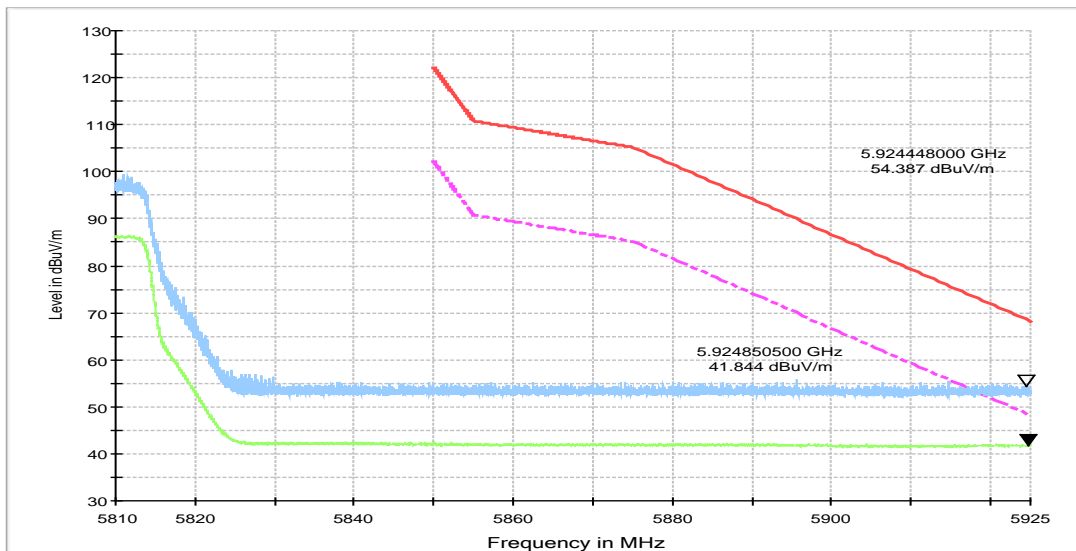


Fig. 24 Band Edges (802.11ax-HT40,CH159, 5795MHz)

— Peak Limits
— Peak Result

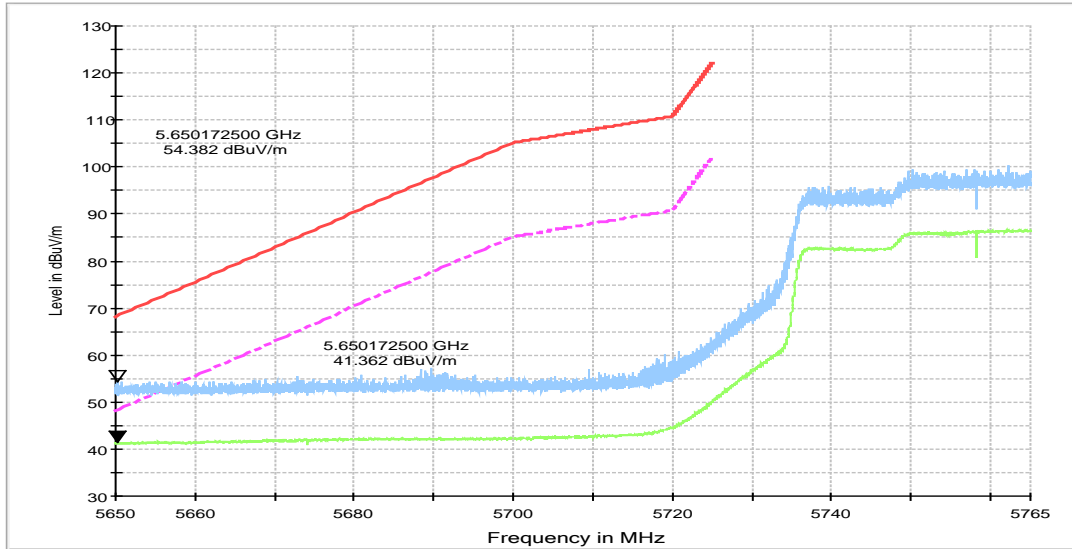


Fig. 25 Band Edges (802.11ax-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

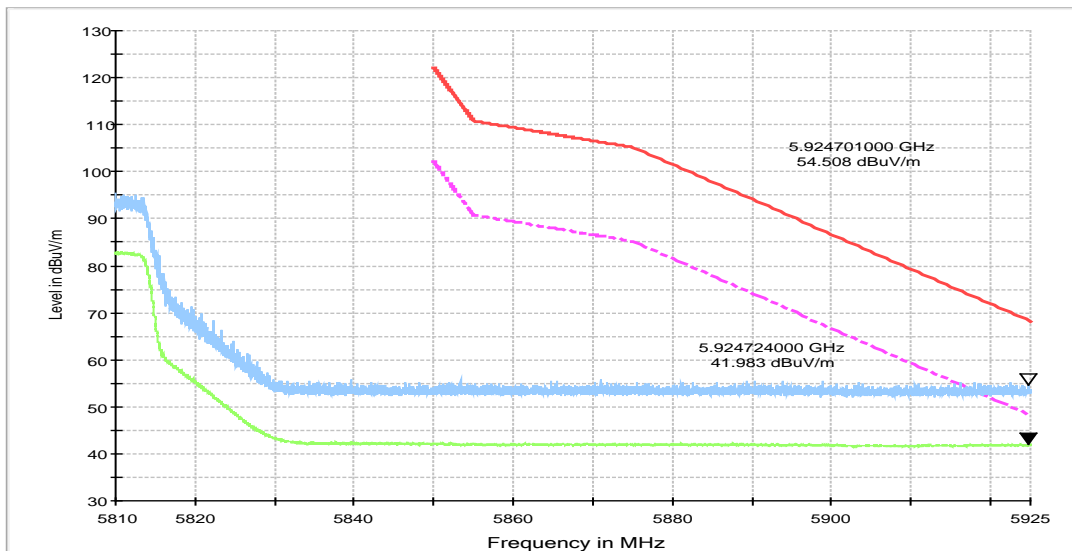


Fig. 26 Band Edges (802.11ax-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

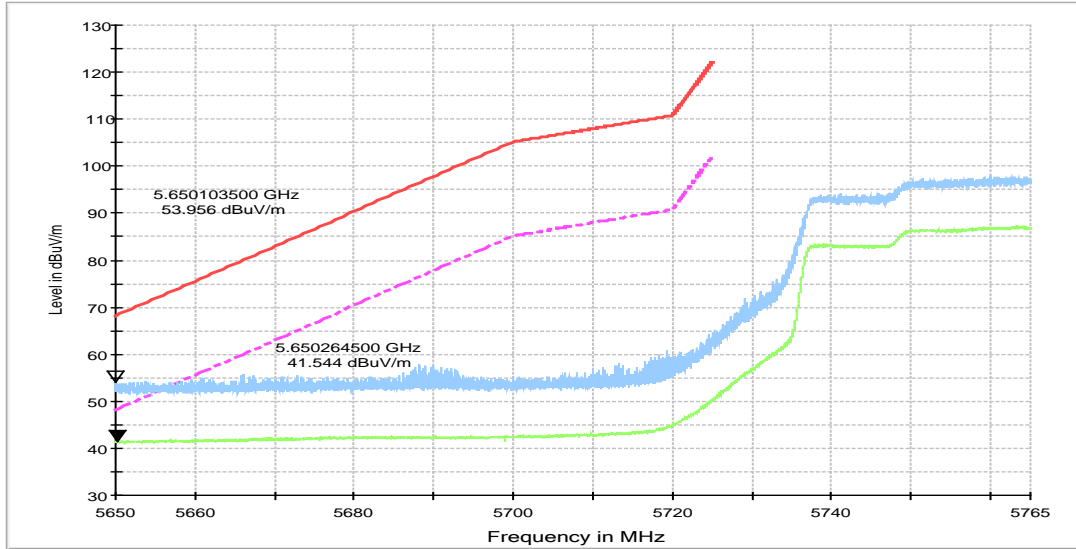


Fig. 27 Band Edges (802.11ac-HT80, CH155, 5775MHz)

— Peak Limits
— Peak Result

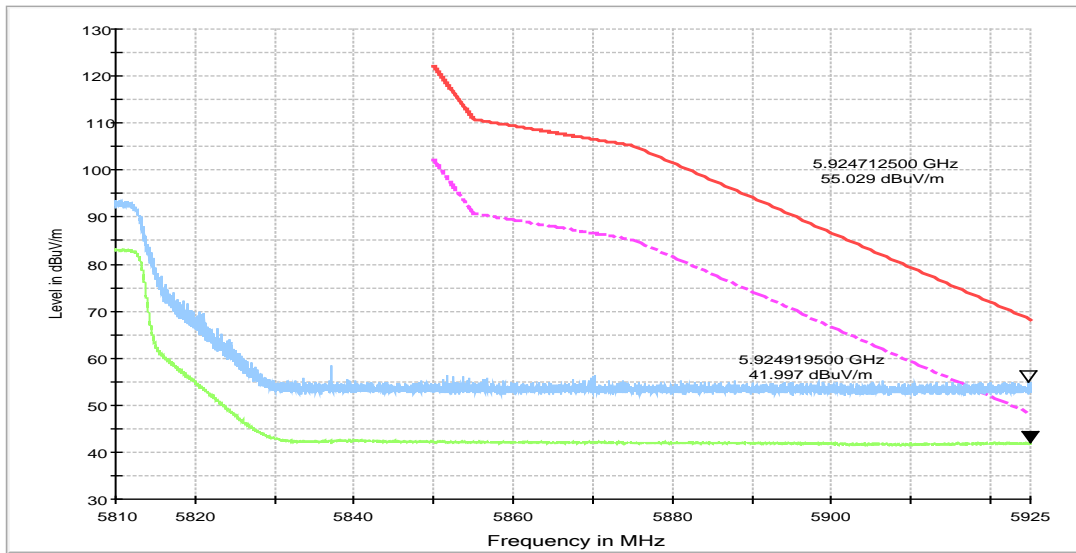


Fig. 28 Band Edges (802.11ax-HT80, CH155, 5775MHz)

C.2. AC Power-line Conducted Emission

Reference

FCC 47 CFR Part 15, Clause 15.407 Clause 15.207

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:

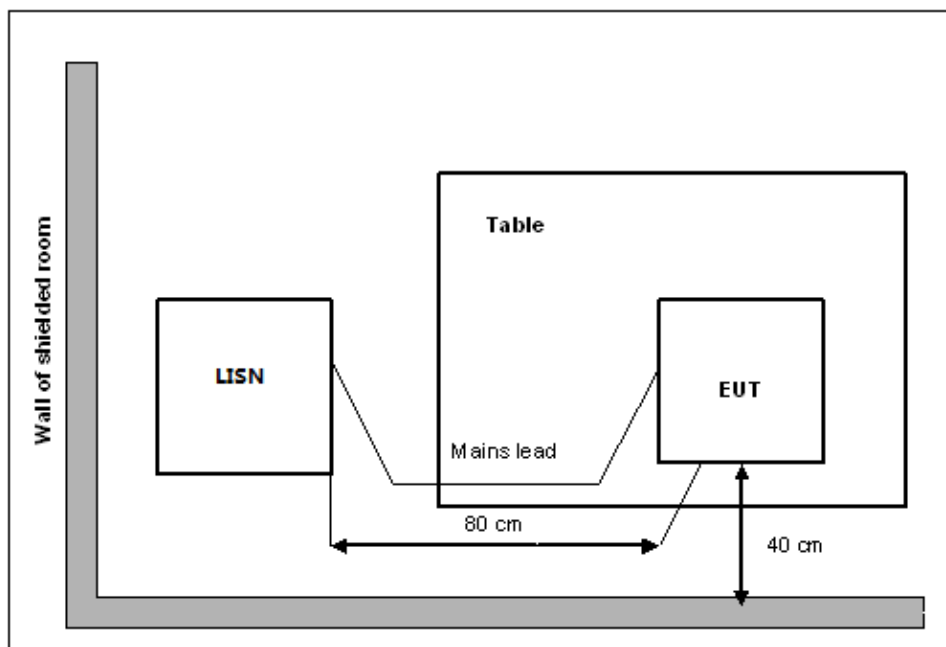
Measurement Bandwidth

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 (dB μ V)	Result (dB μ V)		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 (dB μ V)	Result (dB μ V)		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 investigated and the worst results shown here.

Conclusion: Pass
Test graphs as below:

Traffic:

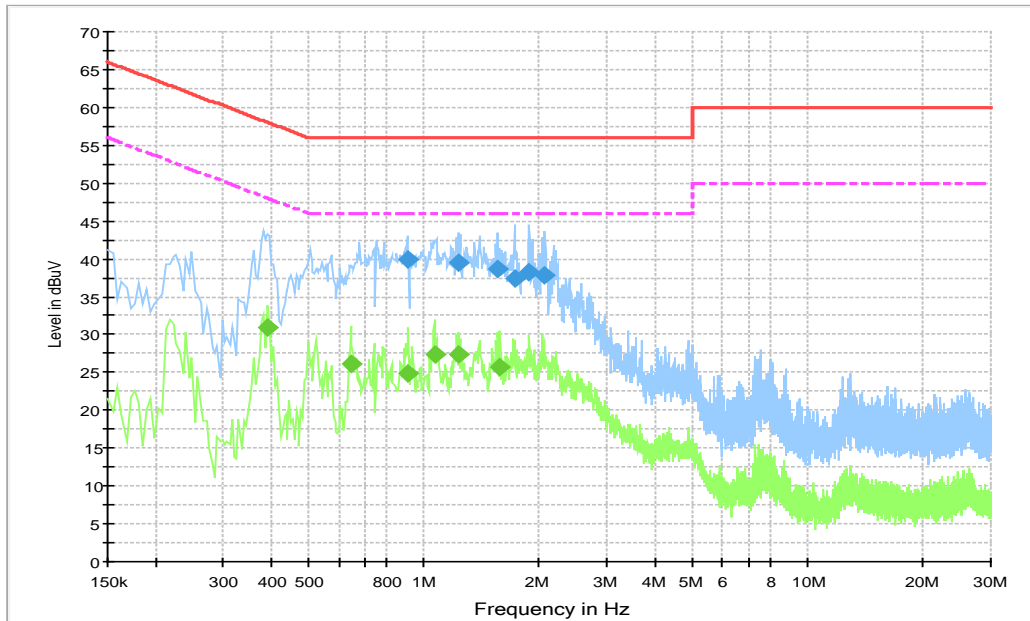


Fig.C.2.1 AC Powerline Conducted Emission-802.11b

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)
0.906000	39.9	1000.	9.000	N	19.6	16.1	56.0
1.230000	39.5	1000.	9.000	N	19.6	16.5	56.0
1.558500	38.7	1000.	9.000	N	19.6	17.3	56.0
1.720500	37.3	1000.	9.000	N	19.6	18.7	56.0
1.887000	38.3	1000.	9.000	N	19.6	17.7	56.0
2.071500	37.7	1000.	9.000	L1	19.6	18.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.393000	30.9	1000.0	9.000	N	19.7	17.1	48.0
0.645000	26.2	1000.0	9.000	N	19.7	19.8	46.0
0.910500	24.8	1000.0	9.000	N	19.7	21.2	46.0
1.068000	27.4	1000.0	9.000	N	19.7	18.6	46.0
1.230000	27.3	1000.0	9.000	N	19.6	18.7	46.0
1.581000	25.6	1000.0	9.000	N	19.6	20.4	46.0

Idle:

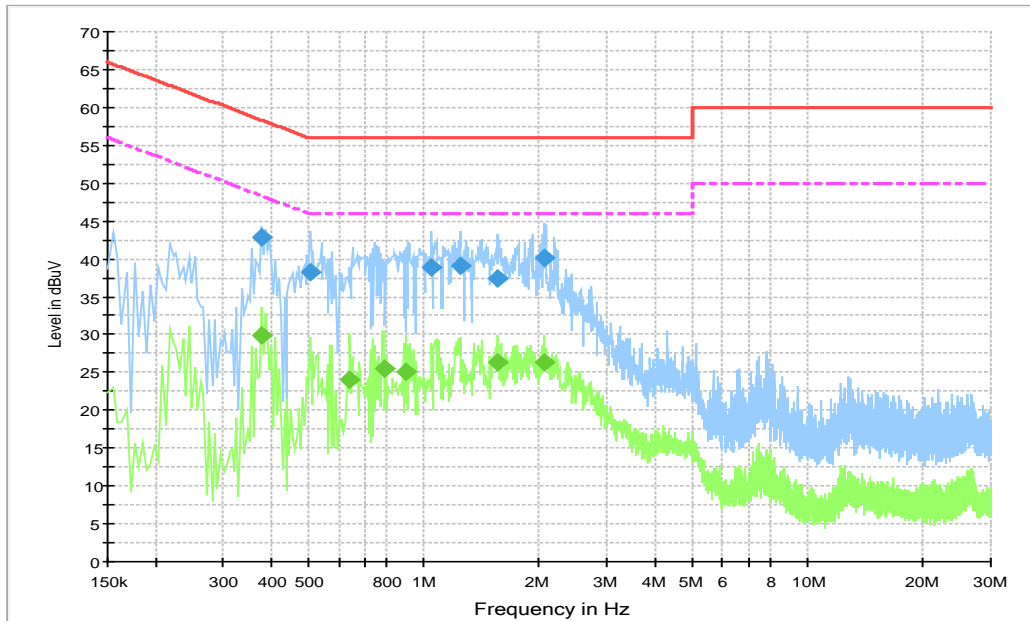


Fig.C.2.2 AC Powerline Conducted Emission-Idle

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

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.379500	42.8	1000.	9.000	L1	19.8	15.5	58.3
0.505500	38.3	1000.	9.000	N	19.8	17.7	56.0
1.050000	38.8	1000.	9.000	N	19.6	17.2	56.0
1.248000	39.1	1000.	9.000	N	19.6	16.9	56.0
1.558500	37.4	1000.	9.000	N	19.6	18.6	56.0
2.067000	40.0	1000.	9.000	N	19.6	16.0	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.379500	29.9	1000.0	9.000	L1	19.8	18.4	48.3
0.640500	24.1	1000.0	9.000	N	19.7	21.9	46.0
0.789000	25.6	1000.0	9.000	N	19.7	20.4	46.0
0.901500	25.0	1000.0	9.000	N	19.6	21.0	46.0
1.558500	26.2	1000.0	9.000	N	19.6	19.8	46.0
2.049000	26.4	1000.0	9.000	L1	19.6	19.6	46.0

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