



FCC PART 15 TEST REPORT No. I22Z60667-EMC06

for

Honor Device Co., Ltd.

Smart Phone

Model Name: VNE-N41

FCC ID: 2AYGCVNE-N41

with

Hardware Version: HN2VNEM

Software Version: 4.2.0.55(C900E55R1P1)

Issued Date: 2022-06-15

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

©Copyright. All rights reserved by CTTL.



REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z60667-EMC06	Rev.0	1 st edition	2022-06-15

CONTENTS

CONTENTS	3
1. TEST LATORATORY	4
1.1. INTRODUCTION & ACCREDITATION	4
1.2. TESTING LOCATION	4
1.3. TESTINGENVIRONMENT	4
1.4. PROJECT DATE	4
1.5. SIGNATURE	4
2. CLIENT INFORMATION	5
2.1. APPLICANT INFORMATION	5
2.2. MANUFACTURER INFORMATION	5
3. PRODUCT INFORMATION	6
3.1. ABOUT EUT	6
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	6
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	6
3.4. GENERAL DESCRIPTION	7
3.5. INTERPRETATION OF THE TEST ENVIRONMENT	7
4. REFERENCE DOCUMENTS	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING	8
5. SUMMARY OF TEST RESULTS	9
5.1. SUMMARY OF TEST RESULTS	9
5.2. STATEMENTS	9
5.3. TEST CONDITIONS	9
6. TEST EQUIPMENTS UTILIZED	10
7. MEASUREMENT UNCERTAINTY	11
ANNEX A: EUT PARAMETERS	12
ANNEX B: ANTENNA REQUIREMENTS	12
ANNEX C: DETAILED TEST RESULTS	13
C.1. RADIATED SPURIOUS EMISSION	13
C.1.1 RADIATED SPURIOUS EMISSION- ABOVE 1GHz	15
C.1.2 RADIATED SPURIOUS EMISSION- BELOW 1GHz	25
C.1.3 BAND EDGES COMPLIANCE - RADIATED	26
C.2. AC POWER-LINE CONDUCTED EMISSION	31

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

Location1: CTTL(BDA)

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

Location2: CTTL (Huayuan North Road)

Address: No. 52 Huayuan North Road, Haidian District, Beijing 100191, P.R. China

1.3. TestingEnvironment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2022-04-27

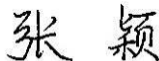
Testing End Date: 2022-05-25

1.5. Signature



An Hui

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: Honor Device Co., Ltd.
Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli
Address /Post: West Road,Xiangmihu Street,Futian District,Shenzhen,Guangdong
518040,People's Republic of China
Contact: /
Email: /
Telephone: /

2.2. Manufacturer Information

Company Name: Honor Device Co., Ltd.
Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli
Address /Post: West Road,Xiangmihu Street,Futian District,Shenzhen,Guangdong
518040,People's Republic of China
Contact: /
Email: /
Telephone: /

3. PRODUCT INFORMATION

3.1. About EUT

Description	Smart Phone
Model name	VNE-N41
FCC ID	2AYGCVNE-N41

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*	SN or IMEI	HW Version	SW Version
UT22a	864258060052700/864258060067179	HN2VNEM	4.2.0.55(C900E55R1P1)
UT25a	864258060053740/864258060068219	HN2VNEM	4.2.0.55(C900E55R1P1)
UT27a	864258060054268/864258060068730	HN2VNEM	4.2.0.55(C900E55R1P1)
UT29a	864258060052007/864258060066478	HN2VNEM	4.2.0.55(C900E55R1P1)

*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	Note
AE1-1	Adapter	HN-100225U00 (Salcomp)
AE1-2	Adapter	HN-100225E00 (Salcomp)
AE1-3	Adapter	HW-100225U00 (Huntkey)
AE1-4	Adapter	HW-100225E00 (Huntkey)
AE1-5	Adapter	HW-100225B00 (Huntkey)
AE2-1	USB Cable	CUDU01B-HC451 -EH (FF)
AE2-2	USB Cable	AU2-CRO013 HF (LJ)
AE2-3	USB Cable	L125UC007-CS-H (LX)
AE2-4	USB Cable	2120-00001-0 (MG)
AE2-5	USB Cable	RY0002 (NB)
AE3-1	Headset	1293-3283-3.5mm-339
AE3-2	Headset	EPAB542-2WH05-DH
AE3-3	Headset	MEND1532B528A11
AE4-1	Battery	HB496590EFW (SCUD)
AE4-2	Battery	HB496590EFW-F (SCUD)
AE4-3	Battery	HB496590EFW (NVT)
AE4-4	Battery	HB496590EFW-F (NVT)

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

3.4. General Description

Equipment Under Test (EUT) is a model of Smart Phone with integrated antenna.

It has MP3, MP4, Camera, USB memory, Bluetooth 5.1, Wi-Fi (802.11b/g/n/ac) , GNSS functions.

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

Samples undergoing test were selected by the client.

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

3.5. 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:	2021
	15.205 Restricted bands of operation;	
	15.209 Radiated emission limits, general requirements;	
ANSI C63.10	15.407 General technical requirements	2013
	Methods of Measurement of Radio-Noise Emissions from	
	Low-Voltage Electrical and Electronic Equipment in the	
UNII: KDB 789033 D02	Range of 9 kHz to 40 GHz	2017-12
	General U-NII Test Procedures New Rules v02r01	

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

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	Normal Temperature	26℃
Voltage	Normal Voltage	4.0V
Humidity	Normal Humidity	20-75%

6. TEST EQUIPMENTS UTILIZED

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2022-12-22
2	EMI Antenna	3115	00167250	ETS-Lindgren	1 year	2022-07-01
3	EMI Antenna	VULB9163	9163-302	Schwarzbeck	1 year	2022-12-28
4	Test Receiver	ESW44	103023	R&S	1 year	2022-10-28
5	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2022-08-11

AC Powerline Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101200	Rohde & Schwarz	1 year	2022-05-30
2	Test Receiver	ESCI 7	100344	Rohde & Schwarz	1 year	2023-02-21

7. Measurement Uncertainty

Radiated Spurious Emission

(k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.15
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.54
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.26

AC Power-line Conducted Emission

Measurement Uncertainty (k=2)	3.08dB
-------------------------------	--------

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

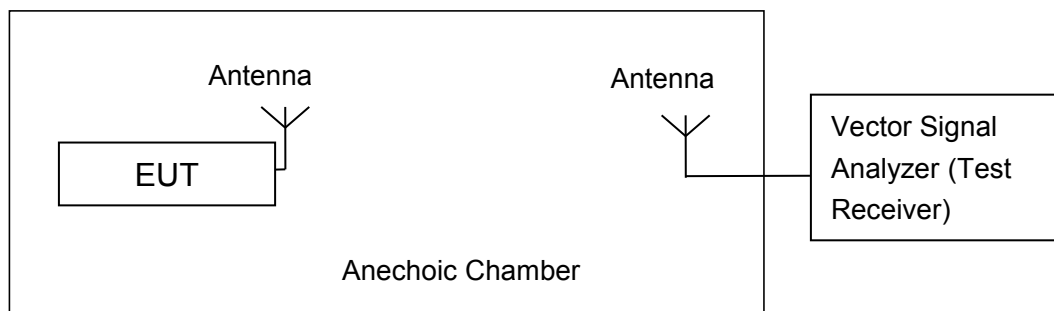
Specification Reference

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(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:

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

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:

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

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.

C.1.1 Radiated Spurious Emission- above 1GHz

EUT set-up No.	Combination of EUT and AE
Set.1-1	EUT1 + AE1-1 + AE2-1

Results Set.1-1

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)
17982.400	42.30	-25.50	46.66	21.14	54.00	11.70	H
17995.000	42.25	-25.50	46.66	21.09	54.00	11.75	V
11488.000	39.78	-32.26	38.84	33.21	54.00	14.22	V
11486.400	39.05	-32.26	38.84	32.48	54.00	14.95	V
16075.500	38.84	-26.77	38.93	26.68	54.00	15.16	V
16077.800	38.84	-26.77	38.93	26.68	54.00	15.16	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)
17937.800	42.47	-25.50	46.66	21.31	54.00	11.53	V
17995.600	42.12	-25.50	46.66	20.96	54.00	11.88	V
16055.800	38.75	-27.35	38.54	27.56	54.00	15.25	V
16064.000	38.62	-26.77	38.93	26.46	54.00	15.38	H
11570.500	37.93	-32.31	38.91	31.34	54.00	16.07	V
11569.400	37.78	-32.31	38.91	31.19	54.00	16.22	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)
17992.300	42.19	-25.50	46.66	21.03	54.00	11.81	V
17996.200	42.00	-25.50	46.66	20.84	54.00	12.00	H
16042.500	38.62	-27.35	38.54	27.43	54.00	15.38	H
16071.100	38.53	-26.77	38.93	26.37	54.00	15.47	V
11649.700	37.53	-32.31	38.91	30.94	54.00	16.47	V
11651.900	37.50	-32.31	38.91	30.91	54.00	16.50	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)
17970.800	42.22	-25.50	46.66	21.06	54.00	11.78	H
17984.600	41.94	-25.50	46.66	20.78	54.00	12.06	V
16055.200	38.80	-27.35	38.54	27.61	54.00	15.20	H
15967.800	38.35	-27.35	38.54	27.16	54.00	15.65	V
11486.900	38.28	-32.26	38.84	31.71	54.00	15.72	V
11490.200	38.26	-32.26	38.84	31.69	54.00	15.74	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)
17981.300	42.03	-25.50	46.66	20.87	54.00	11.97	V
17988.500	42.02	-25.50	46.66	20.86	54.00	11.98	H
16047.500	38.46	-27.35	38.54	27.27	54.00	15.54	H
15949.600	38.45	-27.35	38.54	27.26	54.00	15.55	V
11570.000	37.12	-32.31	38.91	30.53	54.00	16.88	V
11569.400	37.01	-32.31	38.91	30.42	54.00	16.99	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)
17956.500	42.16	-25.50	46.66	21.00	54.00	11.84	V
17997.200	42.09	-25.50	46.66	20.93	54.00	11.91	H
15972.100	38.69	-27.35	38.54	27.50	54.00	15.31	H
16148.700	38.50	-26.77	38.93	26.34	54.00	15.50	V
11649.700	37.52	-32.31	38.91	30.93	54.00	16.48	V
11648.600	36.82	-32.31	38.91	30.23	54.00	17.18	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)
17758.000	41.90	-25.50	46.66	20.74	54.00	12.10	H
17951.600	41.84	-25.50	46.66	20.68	54.00	12.16	H
16054.100	38.62	-27.35	38.54	27.43	54.00	15.38	V
16055.800	38.56	-27.35	38.54	27.37	54.00	15.44	H
11510.000	37.65	-32.26	38.84	31.08	54.00	16.35	V
11506.100	37.15	-32.26	38.84	30.58	54.00	16.85	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)
17985.200	42.09	-25.50	46.66	20.93	54.00	11.91	V
17924.100	42.00	-25.50	46.66	20.84	54.00	12.00	H
15949.000	38.59	-27.35	38.54	27.40	54.00	15.41	V
16079.400	38.34	-26.77	38.93	26.18	54.00	15.66	V
11053.000	36.35	-32.49	38.72	30.11	54.00	17.65	H
11592.000	36.32	-32.31	38.91	29.73	54.00	17.68	V

802.11ac-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)
17974.200	41.96	-25.50	46.66	20.80	54.00	12.04	V
17998.900	41.94	-25.50	46.66	20.78	54.00	12.06	V
16054.600	38.77	-27.35	38.54	27.58	54.00	15.23	V
16053.000	38.48	-27.35	38.54	27.29	54.00	15.52	V
11486.900	38.38	-32.26	38.84	31.81	54.00	15.62	V
11489.100	38.38	-32.26	38.84	31.81	54.00	15.62	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)
17982.400	41.98	-25.50	46.66	20.82	54.00	12.02	V
17992.300	41.96	-25.50	46.66	20.80	54.00	12.04	V
16055.200	38.76	-27.35	38.54	27.57	54.00	15.24	H
16137.700	38.56	-26.77	38.93	26.40	54.00	15.44	H
11572.700	37.40	-32.31	38.91	30.81	54.00	16.60	V
11573.200	37.14	-32.31	38.91	30.55	54.00	16.86	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)
17984.000	42.31	-25.50	46.66	21.15	54.00	11.69	V
17974.700	42.10	-25.50	46.66	20.94	54.00	11.90	H
15990.300	38.71	-27.35	38.54	27.52	54.00	15.29	V
16069.000	38.69	-26.77	38.93	26.53	54.00	15.31	H
11650.200	37.02	-32.31	38.91	30.43	54.00	16.98	V
11643.100	36.61	-32.31	38.91	30.02	54.00	17.39	V

802.11ac-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)
17781.100	42.22	-25.50	46.66	21.06	54.00	11.78	H
17958.200	41.97	-25.50	46.66	20.81	54.00	12.03	H
16050.200	38.42	-27.35	38.54	27.23	54.00	15.58	V
16068.400	38.41	-26.77	38.93	26.25	54.00	15.59	H
11502.300	37.11	-32.26	38.84	30.54	54.00	16.89	V
11501.200	37.01	-32.26	38.84	30.44	54.00	16.99	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)
17992.300	41.98	-25.50	46.66	20.82	54.00	12.02	H
17996.200	41.91	-25.50	46.66	20.75	54.00	12.09	V
16056.300	38.49	-27.35	38.54	27.30	54.00	15.51	V
16045.300	38.34	-27.35	38.54	27.15	54.00	15.66	V
11589.800	36.97	-32.31	38.91	30.38	54.00	17.03	V
11898.900	36.33	-31.85	39.05	29.13	54.00	17.67	H

802.11ac-HT80

Channel 155

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)
17974.700	42.19	-25.50	46.66	21.03	54.00	11.81	V
17959.300	41.79	-25.50	46.66	20.63	54.00	12.21	V
15961.700	38.36	-27.35	38.54	27.17	54.00	15.64	V
16057.400	38.34	-26.77	38.93	26.18	54.00	15.66	H
11511.100	36.59	-32.26	38.84	30.02	54.00	17.41	V
11535.300	36.56	-32.26	38.84	29.99	54.00	17.44	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)
17283.300	53.22	-25.95	44.35	34.81	68.30	15.08	V
17765.700	52.75	-25.50	46.66	31.59	74.00	21.25	H
16590.300	51.57	-26.87	40.65	37.79	68.30	16.73	H
16868.100	51.57	-26.62	41.49	36.70	68.30	16.73	V
11490.200	48.88	-32.26	38.84	42.31	74.00	25.12	V
11487.500	48.66	-32.26	38.84	42.09	74.00	25.34	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)
17879.000	53.14	-25.50	46.66	31.98	74.00	20.86	H
17945.000	53.08	-25.50	46.66	31.92	74.00	20.92	H
16578.200	51.51	-26.87	40.65	37.73	68.30	16.79	V
16854.900	51.50	-26.62	41.49	36.63	68.30	16.80	H
10943.500	47.49	-32.82	38.70	41.61	74.00	26.51	V
11946.100	47.34	-31.48	39.09	39.73	74.00	26.66	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)
17912.000	53.21	-25.50	46.66	32.05	74.00	20.79	V
17967.500	53.19	-25.50	46.66	32.03	74.00	20.81	H
16598.000	51.03	-26.87	40.65	37.25	68.30	17.27	V
16579.900	50.99	-26.87	40.65	37.21	68.30	17.31	V
11644.800	47.15	-32.31	38.91	40.56	74.00	26.85	V
11054.600	46.81	-32.49	38.72	40.57	74.00	27.19	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)
17926.300	52.67	-25.50	46.66	31.51	74.00	21.33	V
17195.300	52.61	-26.60	43.36	35.85	68.30	15.69	V
16570.500	51.40	-26.87	40.65	37.62	68.30	16.90	V
16548.000	51.04	-26.87	40.65	37.26	68.30	17.26	V
11489.600	47.76	-32.26	38.84	41.19	74.00	26.24	V
11485.200	47.72	-32.26	38.84	41.15	74.00	26.28	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)
17721.700	52.70	-25.74	45.95	32.49	74.00	21.30	H
17995.600	52.55	-25.50	46.66	31.39	74.00	21.45	H
16849.400	51.46	-26.62	41.49	36.59	68.30	16.84	H
16571.100	51.28	-26.87	40.65	37.50	68.30	17.02	H
11931.900	47.19	-31.48	39.09	39.58	74.00	26.81	V
11568.300	46.87	-32.31	38.91	40.28	74.00	27.13	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)
17128.200	52.52	-26.60	43.36	35.76	68.30	15.78	V
17887.200	52.48	-25.50	46.66	31.32	74.00	21.52	V
16537.500	51.28	-26.96	39.82	38.42	68.30	17.02	V
16586.500	51.06	-26.87	40.65	37.28	68.30	17.24	V
11518.800	47.19	-32.26	38.84	40.62	74.00	26.81	H
11321.400	47.09	-32.36	38.77	40.69	74.00	26.91	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)
17780.500	52.89	-25.50	46.66	31.73	74.00	21.11	H
17787.200	52.40	-25.50	46.66	31.24	74.00	21.60	H
16732.800	52.38	-26.62	41.49	37.51	68.30	15.92	H
16589.200	51.24	-26.87	40.65	37.46	68.30	17.06	H
11519.400	47.36	-32.26	38.84	40.79	74.00	26.64	V
11936.200	47.29	-31.48	39.09	39.68	74.00	26.71	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)
17833.300	52.68	-25.50	46.66	31.52	74.00	21.32	H
17754.200	52.33	-25.50	46.66	31.17	74.00	21.67	V
16783.400	51.27	-26.62	41.49	36.40	68.30	17.03	H
16856.500	50.90	-26.62	41.49	36.03	68.30	17.40	H
11544.600	47.19	-32.26	38.84	40.62	74.00	26.81	V
11558.400	47.01	-32.26	38.84	40.44	74.00	26.99	V

802.11ac-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)
17980.200	52.75	-25.50	46.66	31.59	74.00	21.25	V
17411.500	52.71	-26.85	45.25	34.31	68.30	15.59	V
16569.500	51.44	-26.87	40.65	37.66	68.30	16.86	H
16861.500	50.92	-26.62	41.49	36.05	68.30	17.38	H
11488.500	47.91	-32.26	38.84	41.34	74.00	26.09	V
11489.600	47.68	-32.26	38.84	41.11	74.00	26.32	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)
17798.200	53.21	-25.50	46.66	32.05	74.00	20.79	H
17384.500	52.85	-25.95	44.35	34.44	68.30	15.45	H
16545.200	51.18	-26.87	40.65	37.40	68.30	17.12	V
16835.100	50.74	-26.62	41.49	35.87	68.30	17.56	V
11570.500	47.75	-32.31	38.91	41.16	74.00	26.25	V
11451.100	46.97	-32.26	38.84	40.40	74.00	27.03	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)
17823.500	52.92	-25.50	46.66	31.76	74.00	21.08	V
17302.000	52.57	-25.95	44.35	34.16	68.30	15.73	H
13612.100	50.73	-29.50	40.43	39.80	68.30	17.57	H
16816.400	50.71	-26.62	41.49	35.84	68.30	17.59	V
10661.400	47.49	-32.76	38.38	41.87	74.00	26.51	V
11649.700	47.36	-32.31	38.91	40.77	74.00	26.64	V

802.11ac-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)
17957.100	52.57	-25.50	46.66	31.41	74.00	21.43	V
17716.200	52.53	-25.74	45.95	32.32	74.00	21.47	H
16873.000	51.08	-26.62	41.49	36.21	68.30	17.22	V
16817.500	51.06	-26.62	41.49	36.19	68.30	17.24	V
11509.500	47.30	-32.26	38.84	40.73	74.00	26.70	V
11511.600	46.53	-32.26	38.84	39.96	74.00	27.47	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)
17969.800	53.04	-25.50	46.66	31.88	74.00	20.96	V
17978.000	52.62	-25.50	46.66	31.46	74.00	21.38	V
16925.800	51.49	-26.32	42.36	35.44	68.30	16.81	V
16539.800	50.76	-26.96	39.82	37.90	68.30	17.54	V
11948.400	47.95	-31.48	39.09	40.34	74.00	26.05	V
11923.600	47.70	-31.48	39.09	40.09	74.00	26.30	H

802.11ac-HT80

Channel 155

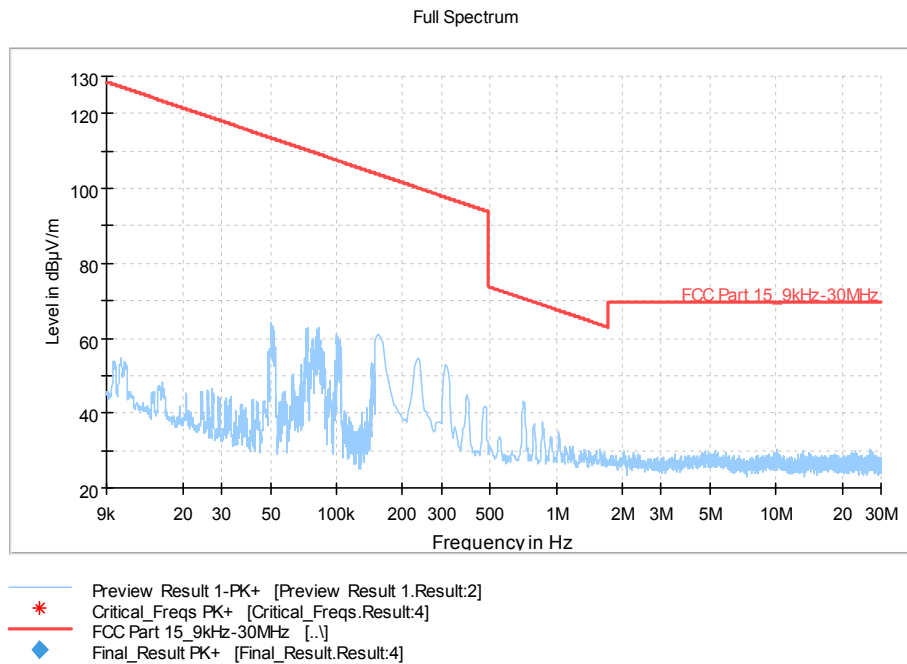
Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17910.300	52.27	-25.50	46.66	31.11	74.00	21.73	V
17441.800	52.06	-26.85	45.25	33.66	68.30	16.24	V
16566.200	50.58	-26.87	40.65	36.80	68.30	17.72	H
13641.800	50.51	-29.50	40.43	39.58	68.30	17.79	V
11519.900	46.67	-32.26	38.84	40.10	74.00	27.33	H
11459.400	46.64	-32.26	38.84	40.07	74.00	27.36	V

The EUT is no radiated spurious emission above 18GHz, all the signals are background noise.

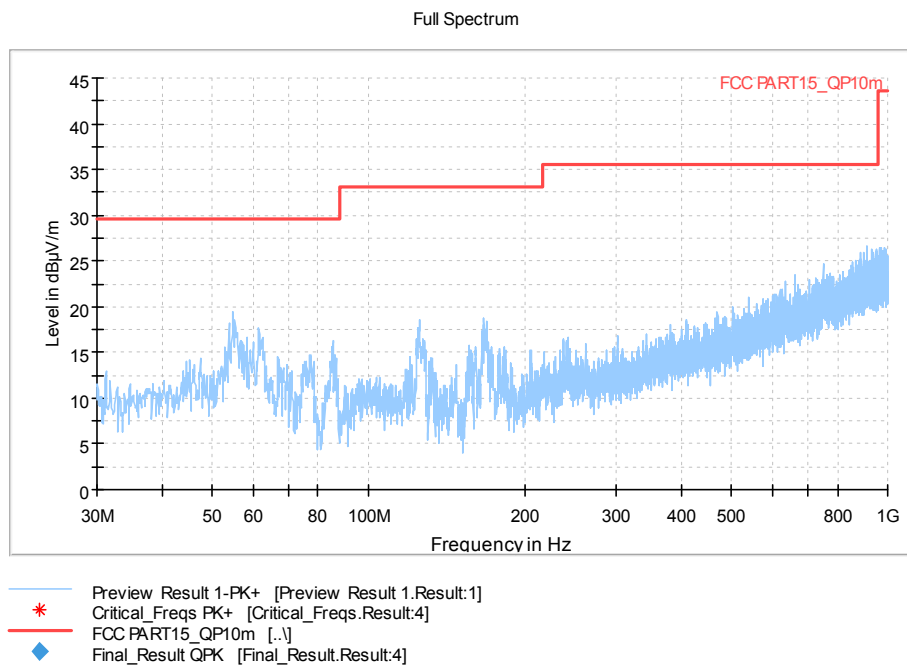
Conclusion: pass

C.1.2 Radiated Spurious Emission- Below 1GHz

WOSRT CASE BELOW 30MHz (Set.1-1, 802.11a CH149)



WOSRT CASE for 30MHz-1GHz (Set.1-1, 802.11a CH149)



C.1.3 Band Edges Compliance – Radiated

Measurement Result:

EUT set-up No.	Combination of EUT and AE
Set.1-1	EUT1 + AE1-1 + AE2-1

Results for Set.1-1

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
802.11ac HT20	5745 MHz(CH149)	Fig.7	P
	5825 MHz(CH165)	Fig.8	P
802.11ac HT40	5755 MHz(CH151)	Fig.9	P
	5795 MHz(CH159)	Fig.10	P
802.11ac HT80	5775 MHz(CH155)	Fig.11 Fig.12	P

Conclusion: PASS

Test graphs as below:

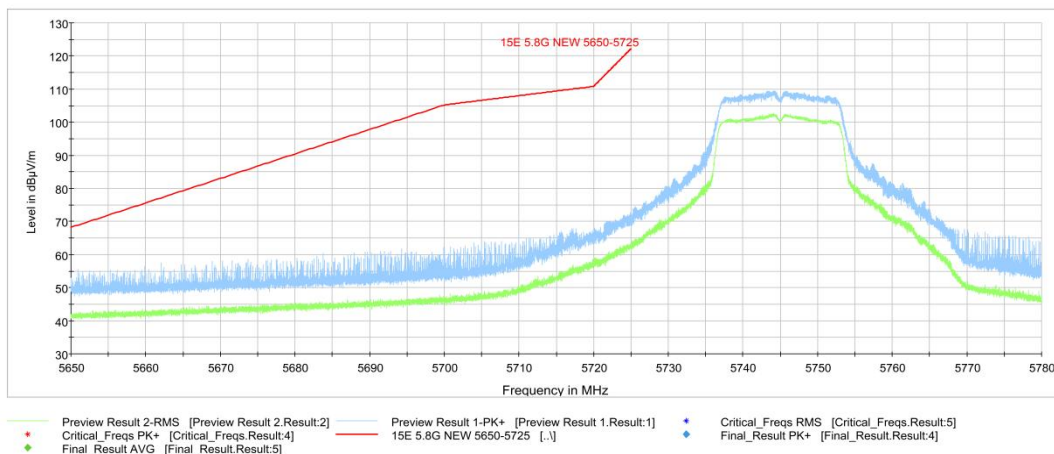


Fig. 1 Band Edges (802.11a,CH149, 5745MHz)

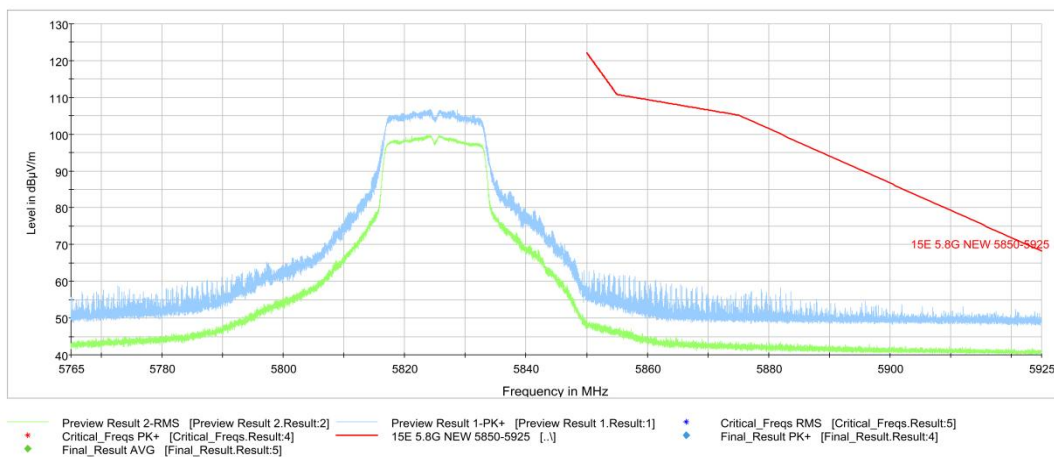


Fig. 2 Band Edges (802.11a, CH165, 5825MHz)

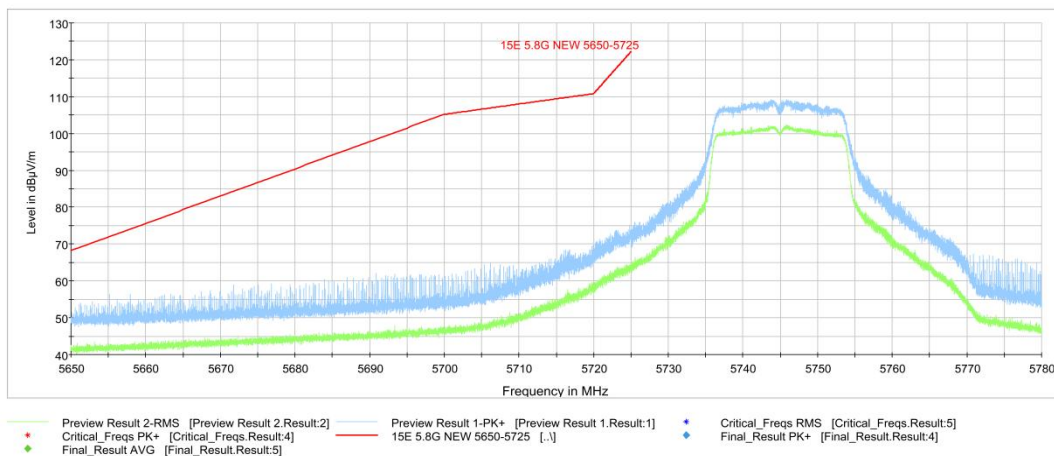


Fig. 3 Band Edges (802.11n-HT20, CH149, 5745MHz)

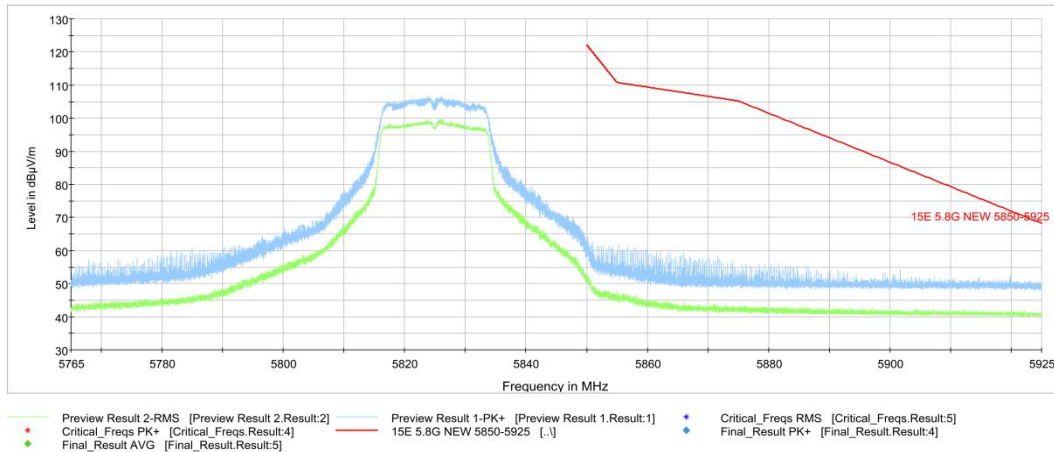


Fig. 4 Band Edges (802.11n-HT20, CH165, 5825MHz)

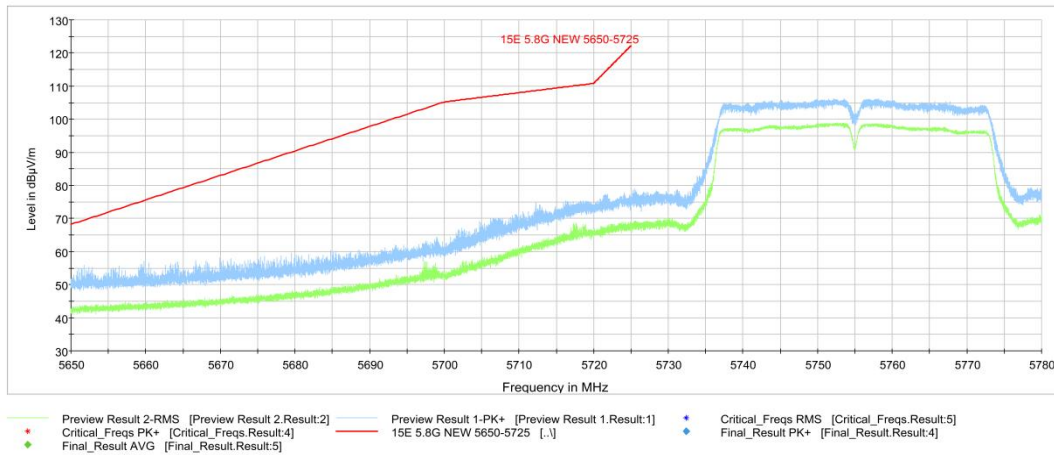


Fig. 5 Band Edges (802.11n-HT40, CH151, 5755MHz)

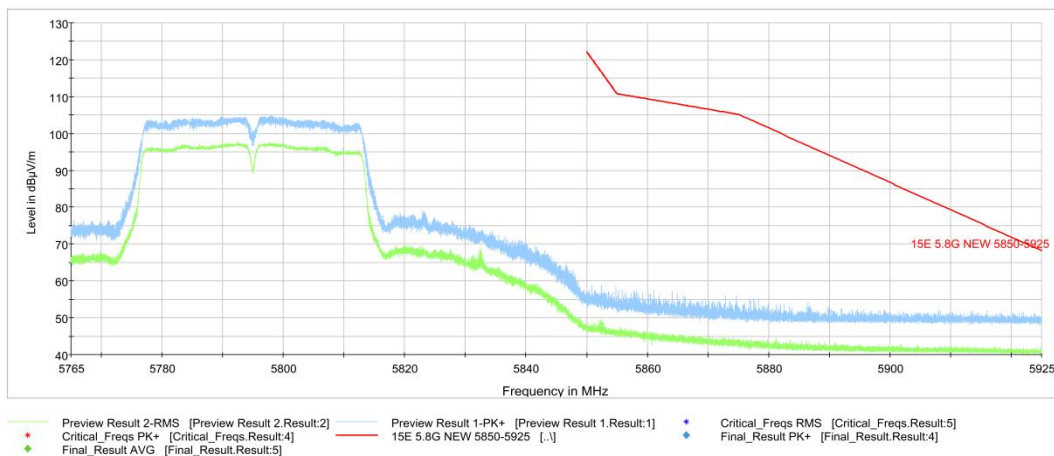


Fig. 6 Band Edges (802.11n-HT40, CH159, 5795MHz)

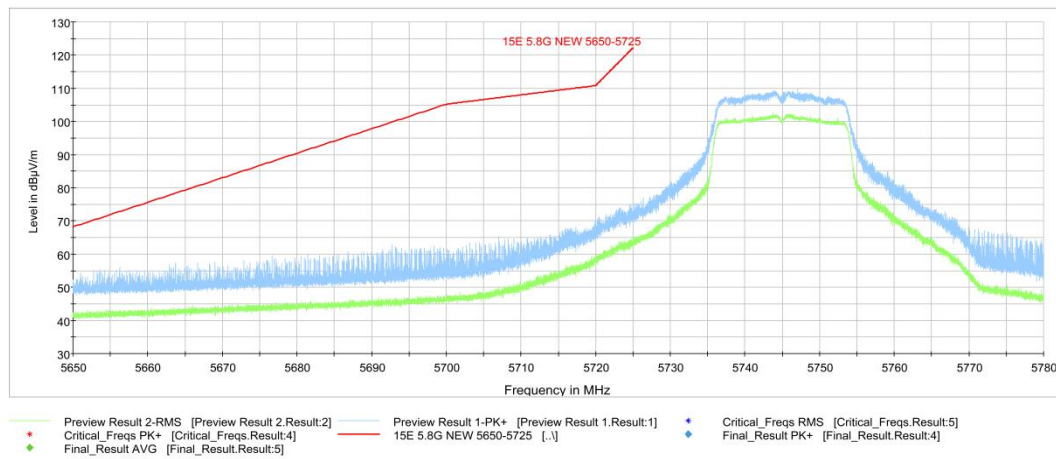


Fig. 7 Band Edges (802.11ac-HT20, CH149, 5745MHz)

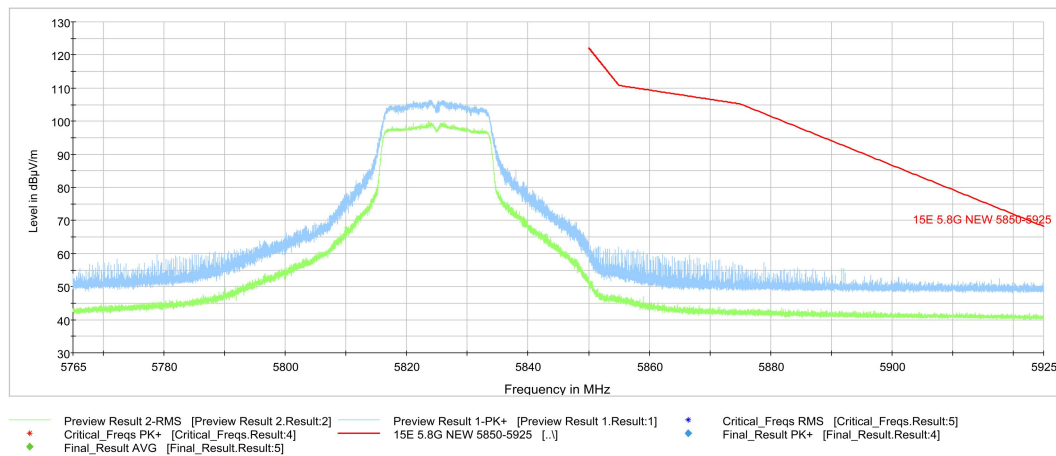


Fig. 8 Band Edges (802.11ac-HT20, CH165, 5825MHz)

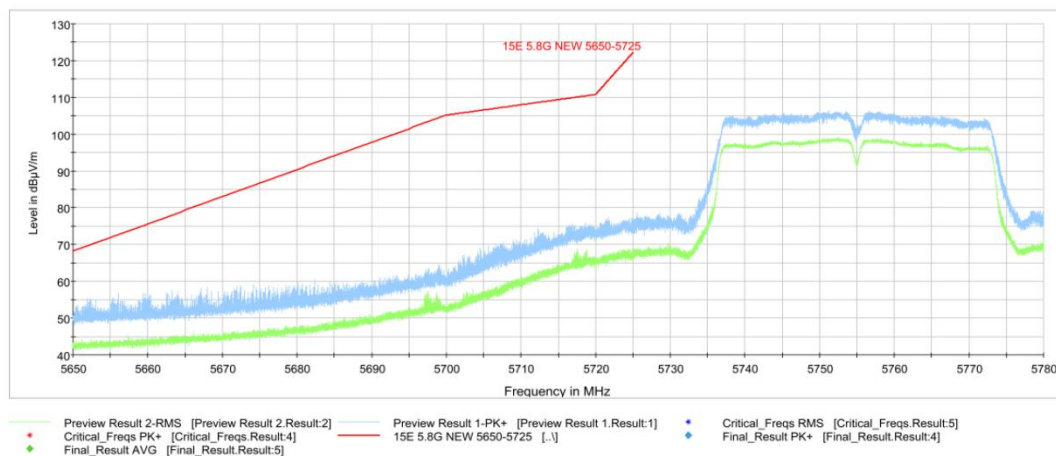


Fig. 9 Band Edges (802.11ac-HT40, CH151, 5755MHz)

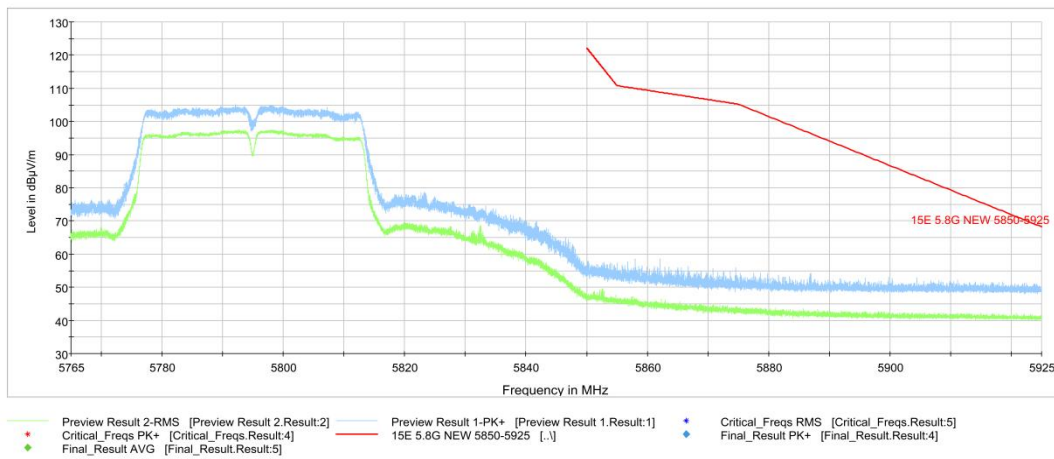


Fig. 10 Band Edges (802.11ac-HT40,CH159, 5795MHz)

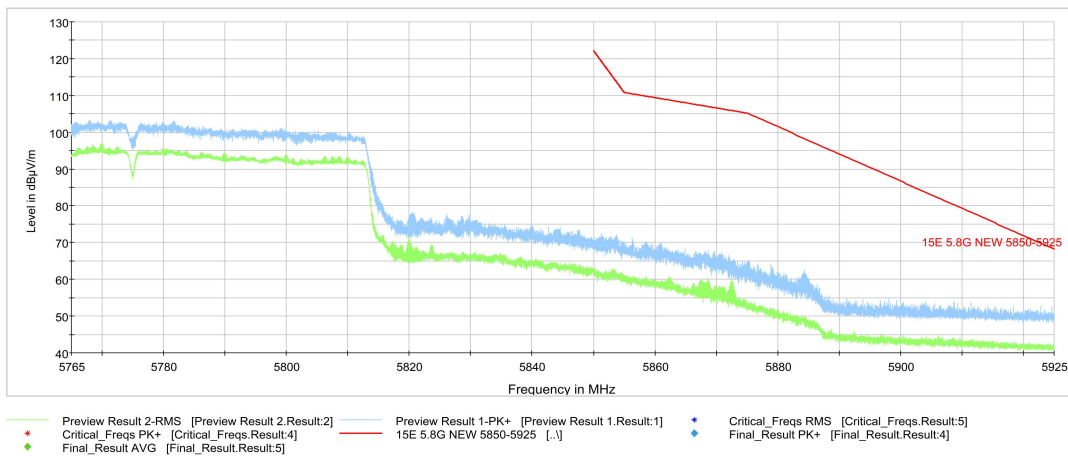


Fig. 11 Band Edges (802.11ac-HT80, CH155, 5775MHz)

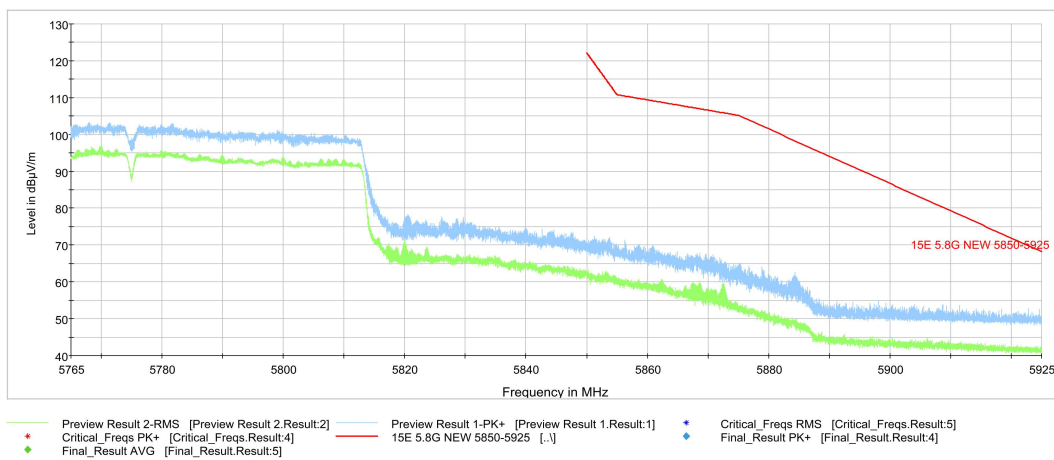


Fig. 12 Band Edges (802.11ac-HT80, CH155, 5775MHz)

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.

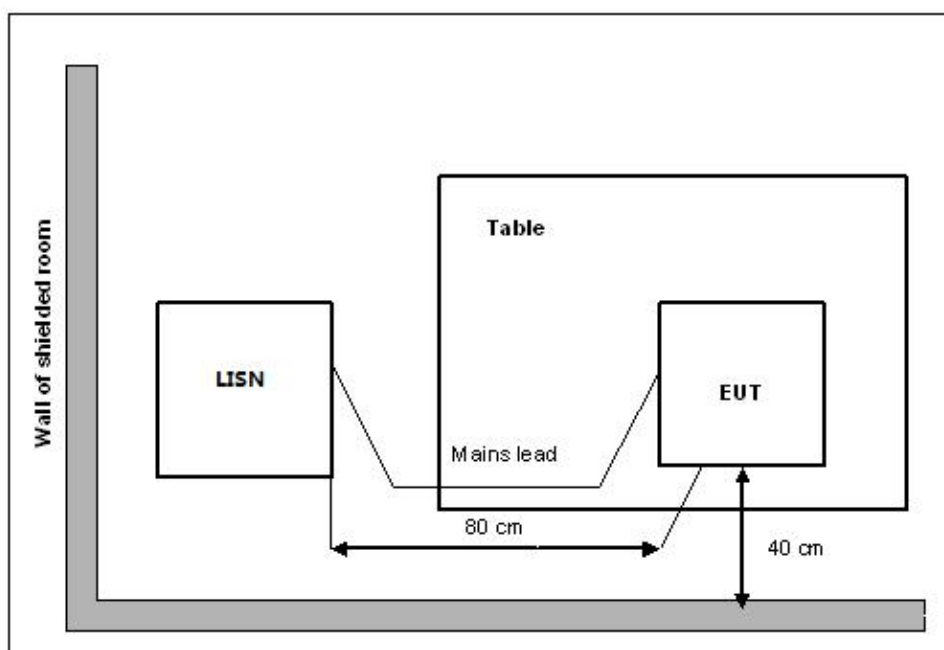
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth	Sweep Time(s)
0.15-30	9kHz	1

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:

EUT set-up No. **Combination of EUT and AE**
Set.1-2 EUT1 + AE1-1 + AE2-1 + AE3-3

Set.1-2

802.11a/802.11n-HT20/802.11n-HT40/802.11ac-HT20 mode/802.11ac-HT40/802.11ac-HT80:

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)

Limit (Average Limit)		Result (dBμV)		Conclusion
Frequency range (MHz)	Average Limit (dBμV)	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.				

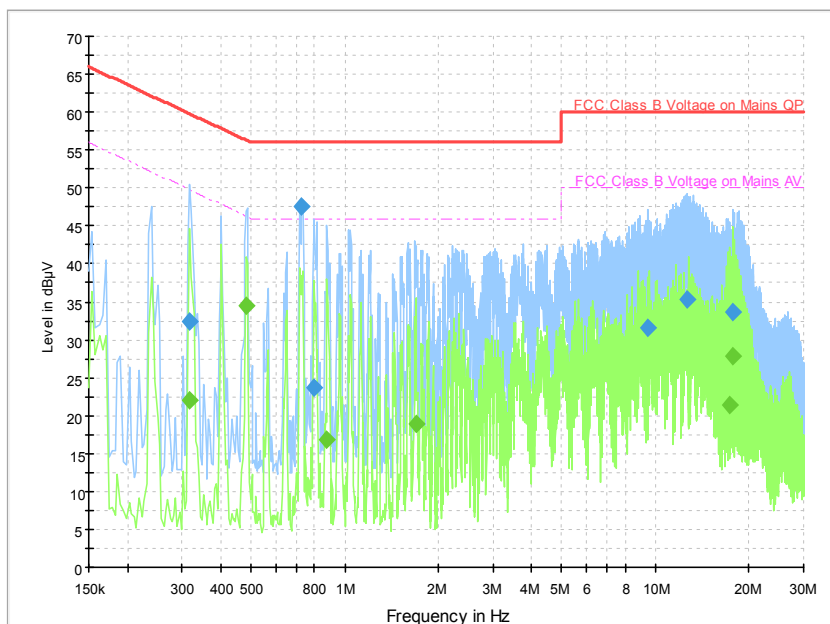
Note: all modes have been tested and the worst results shown here.

Conclusion: Pass

Test graphs as below:

Set.1-2, 802.11a, CH149

Traffic:


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

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

Final Result 1

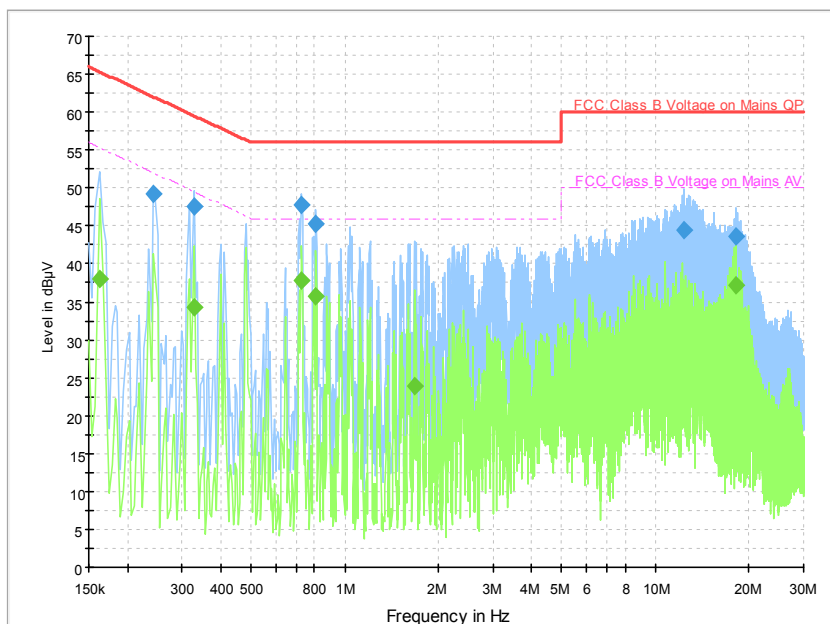
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.318000	32.3	5000.0	9.000	On	N	19.9	27.4
0.726000	47.7	5000.0	9.000	On	L1	19.7	8.3
0.798000	23.7	5000.0	9.000	On	N	19.8	32.3
9.398000	31.5	5000.0	9.000	On	L1	19.6	28.5
12.614000	35.3	5000.0	9.000	On	N	19.7	24.7
17.842000	33.7	5000.0	9.000	On	L1	19.9	26.3

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.318000	22.0	5000.0	9.000	On	N	19.9	27.7
0.482000	34.5	5000.0	9.000	On	L1	19.9	11.8
0.878000	16.8	5000.0	9.000	On	L1	19.6	29.2
1.690000	19.0	5000.0	9.000	On	L1	19.5	27.0
17.362000	21.4	5000.0	9.000	On	L1	19.9	28.6
17.842000	27.9	5000.0	9.000	On	L1	19.9	22.1

Set.1-2, 802.11a, CH149

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)
0.242000	49.3	5000.0	9.000	On	N	19.8	12.7
0.326000	47.7	5000.0	9.000	On	N	19.8	11.9
0.726000	47.7	5000.0	9.000	On	L1	19.7	8.3
0.806000	45.3	5000.0	9.000	On	N	19.8	10.7
12.354000	44.4	5000.0	9.000	On	L1	19.6	15.6
18.082000	43.7	5000.0	9.000	On	L1	19.9	16.3

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.162000	38.0	5000.0	9.000	On	N	19.6	17.4
0.326000	34.2	5000.0	9.000	On	N	19.8	15.4
0.726000	37.8	5000.0	9.000	On	N	19.8	8.2
0.806000	35.7	5000.0	9.000	On	N	19.8	10.3
1.670000	23.8	5000.0	9.000	On	L1	19.5	22.2
18.082000	37.1	5000.0	9.000	On	L1	19.9	12.9

*** END OF REPORT BODY ***