Full

TEST REPORT

No. I18D00198-SRD07

For

Client : Hisense International Co., Ltd.

Production : Mobile Phone

Model Name : Hisense F23 PLUS

FCC ID: 2ADOBF23PLUS

Hardware Version: YK736-MB-V0.2

Software Version: Hisense_F17_4G_10_S01_20180118

Issued date: 2018-10-12

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 ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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Tel: (+86)-021-63843300, E-Mail: welcome@ecit.org.cn

Revision Version

Report Number	Revision	Date	Memo
I18D00198-SRD07	00	2018-10-12	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301

1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-30/+50℃
Relative Humidity:	20-75%

1.3. Project data

Project Leader:	Xu Yuting
Testing Start Date:	2018-02-02
Testing End Date:	2018-03-27

1.4. Signature

Yang Dejun
(Prepared this test report)

Shi Hongqi
(Reviewed this test report)

Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Hisense International Co., Ltd.
Address:	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
Telephone:	NA
Postcode:	266010

2.2. Manufacturer Information

Company Name:	Hisense Communications Co., Ltd.
Address:	218 Qianwangang Road, Economic & Technological Development Zone, Qingdao, Shandong Province, P.R. China
Telephone:	NA
Postcode:	266010

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	Mobile Phone
Model name	Hisense F23 PLUS
WLAN Frequency Range	ISM Bands: 5725MHz~5850MHz
WLAN type of modulation	OFDM
Extreme Temperature	-30/+50℃
Nominal Voltage	3.8V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.5V

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N14(secondary supply)	861854039320062	YK736-MB-V0.2	Hisense_F17_4G_10_S01_20180118	2018-01-24
N09(main supply)	861854039320062	YK736-MB-V0.2	Hisense_F17_4G_10_S01_20180118	2018-01-24
N08(main supply)	NA	YK736-MB-V0.2	Hisense_F17_4G_10_S01_20180118	2018-01-24

*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
AE1	RF cable	---
AE2	---	---

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

4. Reference Documents

4.1. 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: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; Subpart E—Unlicensed National Information Infrastructure Devices	2017
ANSI 63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013

5. Summary of Test Results

A brief summary of the tests carried out is shown as following.

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Average Output Power-Conducted	15.407	/	P
Power Spectral Density	15.407	/	P
Occupied 6dB Bandwidth	15.407	/	P
Band edge compliance	15.407	/	P
Transmitter Spurious Emission - Conducted	15.407	/	P
Transmitter Spurious Emission - Radiated	15.407	/	P
AC Powerline Conducted Emission	15.407	/	P

Please refer to section 6 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 ECIT.
NA	Not Applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

Test Conditions

Tnom	Normal temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	Tnom	22℃
Voltage	Vnom	3.8V
Humidity	Hnom	47%

5.1. Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with section 3.

The test results of this test report relate exclusively to the item(s) tested as specified in section 5.

5.2. Statements

The Hisense F23 PLUS, supporting GSM/GPRS/EDGE/WCDMA/LTE/WLAN/BT/BLE, manufactured by Hisense Communications Co., Ltd.,which is a variant product for testing. The content of these changes are LCD Module /camera(back and front)/fingerprint module. According to the Product Change Description, the alterations do not affect any performance,so all the test results please refer to the Original test report I18D00020-SRD07. which was prepared by East China Institute of Telecommunications.

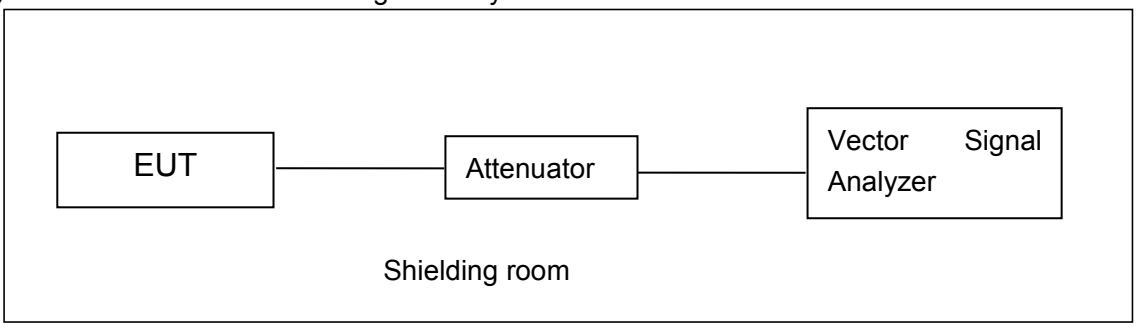
ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

6. Test result

6.1. Measurement Method

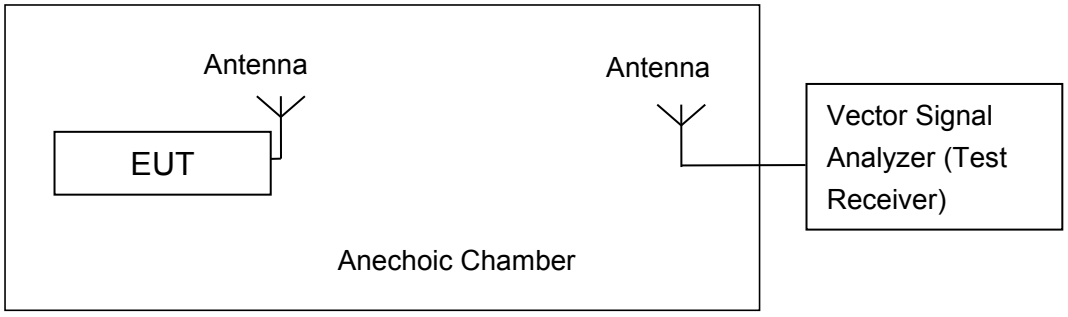
6.1.1. Conducted Measurements

1). Connect the EUT to the test system correctly.
2). Set the EUT to the required work mode.
3). Set the EUT to the required channel.
4). Set the spectrum analyzer to start measurement.
5). Record the values. Vector Signal Analyzer



6.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,
Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;
Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;



The measurement is made according to ANSI C63.10.
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.

6.2. Maximum Average Output Power-Conducted

Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.407(a)	< 30

Method of Measurement: See ANSI C63.10-clause 12.3.2.2 Method SA-1

802.11a mode

U-NII-3

Mode	Data Rate(Mbps)	Teat Result(dBm)		
		5745MHz(Ch149)	5785MHz(Ch157)	5825MHz(Ch165)
802.11a	6	12.09	12.31	12.22

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20 mode

U-NII-3

Mode	Data Rate(Index)	Teat Result(dBm)		
		5745MHz	5785MHz	5825MHz
802.11n(20MHz)	MCS0	11.12	10.62	10.8

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

Conclusion: PASS

6.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407(a)	< 30 dBm/500 kHz

The measurement is made according to ANSI C63.10 and KDB789033 D02

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Measurement Results:

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	149	-9.666	P
	157	-9.626	P
	165	-8.797	P
802.11n HT20	149	-11.239	P
	157	-11.579	P
	165	-10.555	P

Conclusion: PASS

6.4. Occupied 6dB Bandwidth(conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.407 (e)	/

The measurement is made according to KDB 789033 D02

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth (MHz)		conclusion
802.11a	149	Fig.1	15.22	P
	157	Fig.2	15.22	P
	165	Fig.3	15.22	P
802.11n HT20	149	Fig.4	17.63	P
	157	Fig.5	17.71	P
	165	Fig.6	17.71	P

Conclusion: PASS

Test graphs as below:

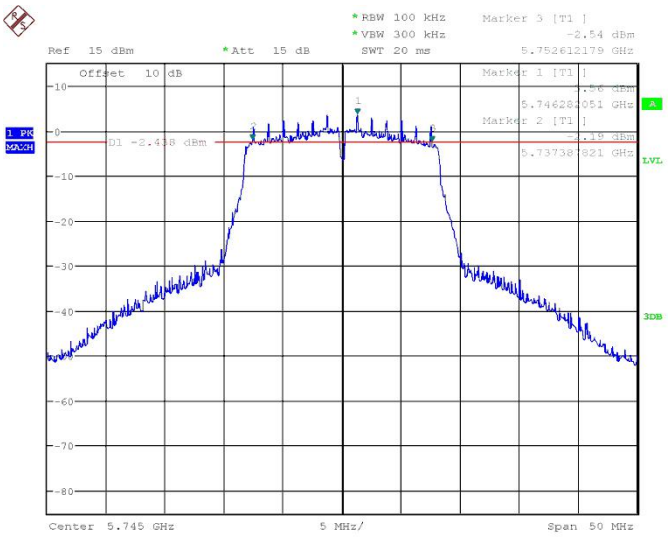


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

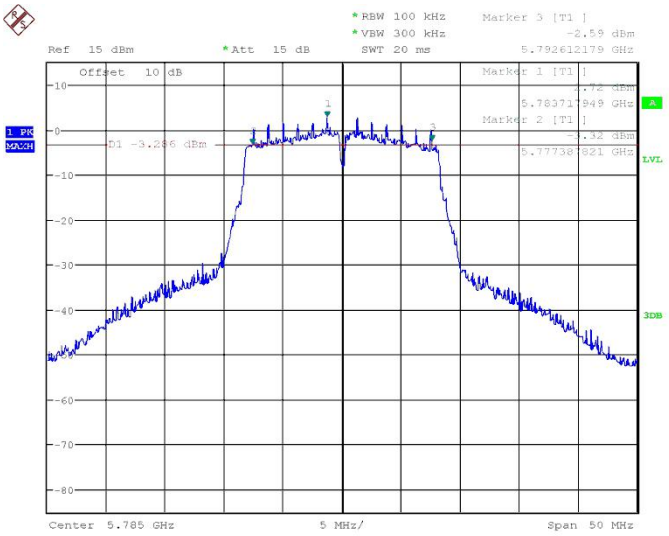


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

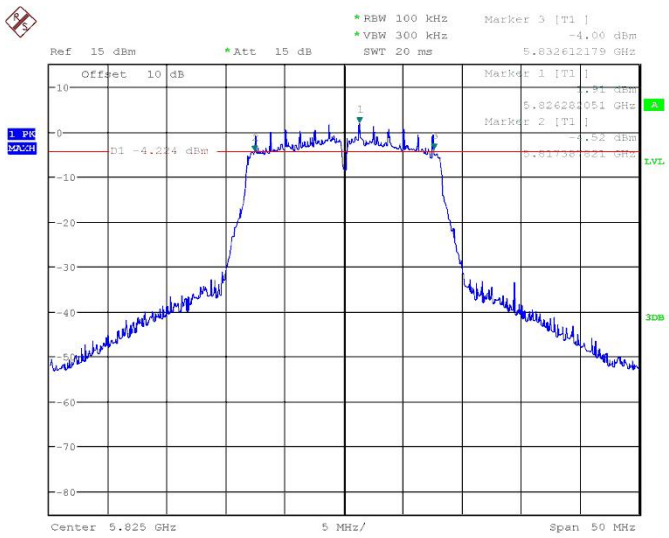


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

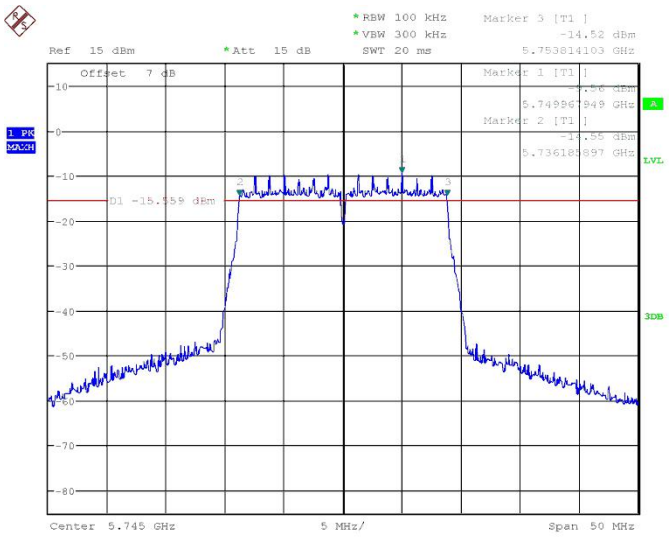


Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

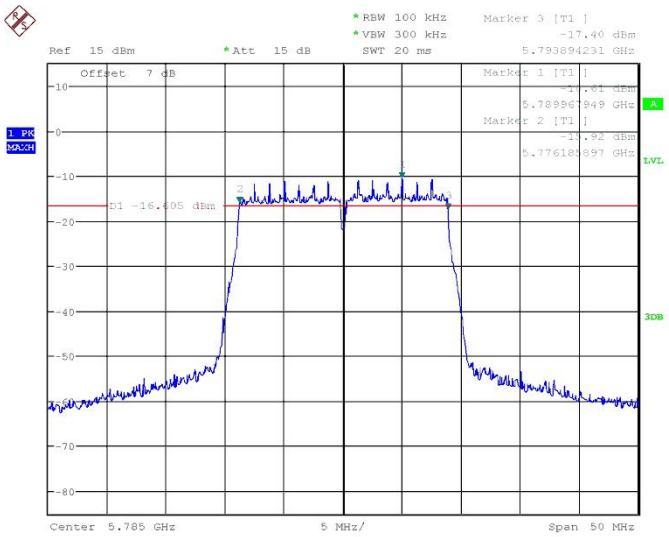


Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

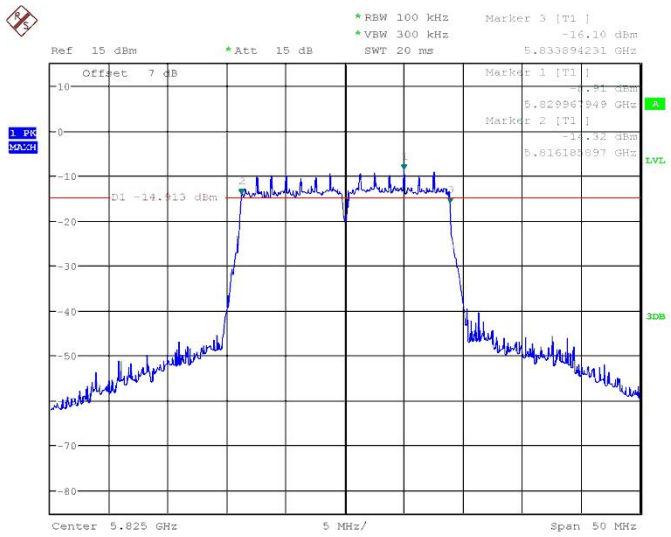


Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

6.5. Transmitter Spurious Emission

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC 47 CFR Part 15.407	5725MHz~5850MHz	< -27

The measurement is made according to ANSI C63.10 .

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)).

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 1GHz	0.63
1GHz ≤ f ≤5.6GHz	1.55
5.6GHz ≤ f ≤40GHz	1.86

6.5.1 Transmitter Spurious Emission - Conducted

Measurement Results:

802.11a mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	30 MHz ~ 1 GHz	Fig.7	P
		1 GHz ~ 5.6 GHz	Fig.8	P
		5.9 GHz ~ 40 GHz	Fig.9	P
	157	30 MHz ~ 1 GHz	Fig.10	P
		1 GHz ~ 5.6 GHz	Fig.11	P
		5.9 GHz ~ 40 GHz	Fig.12	P
	165	30 MHz ~ 1 GHz	Fig.13	P
		1 GHz ~ 5.6 GHz	Fig.14	P
		5.9 GHz ~ 40 GHz	Fig.15	P

802.11n-HT20 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n HT20	149	30 MHz ~ 1 GHz	Fig.16	P
		1 GHz ~ 5.6 GHz	Fig.17	P

		5.9 GHz ~ 40 GHz	Fig.18	P
	157	30 MHz ~ 1 GHz	Fig.19	P
		1 GHz ~ 5.6 GHz	Fig.20	P
		5.9 GHz ~ 40 GHz	Fig.21	P
	165	30 MHz ~ 1 GHz	Fig.22	P
		1 GHz ~ 5.6 GHz	Fig.23	P
		5.9 GHz ~ 40 GHz	Fig.24	P

Conclusion: PASS

Test graphs as below:

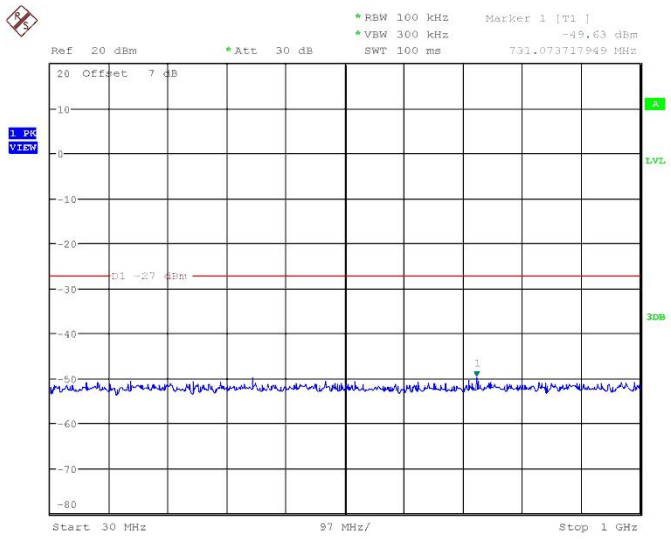


Fig. 7 Conducted Spurious Emission (802.11a, Ch149, 30 MHz-1 GHz)

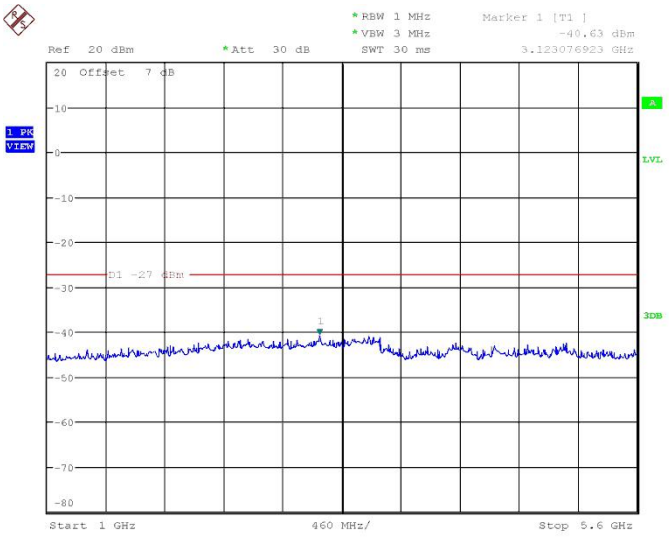


Fig. 8 Conducted Spurious Emission (802.11a, Ch149, 1 GHz -5.6 GHz)

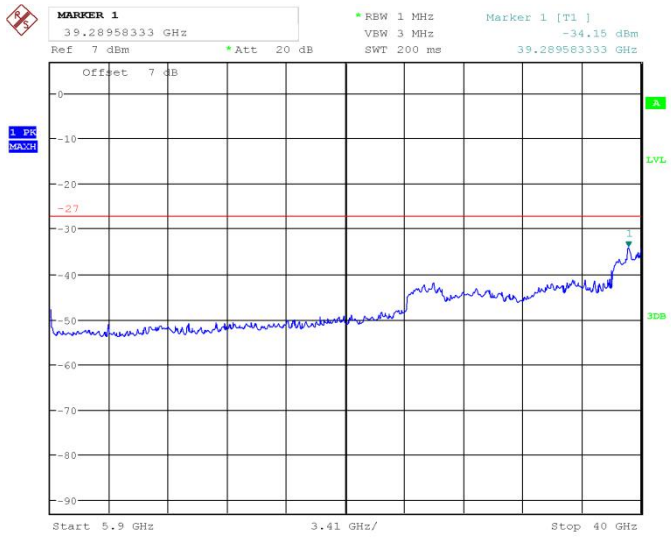


Fig. 9 Conducted Spurious Emission (802.11a, Ch149, 5.9 GHz-40 GHz)

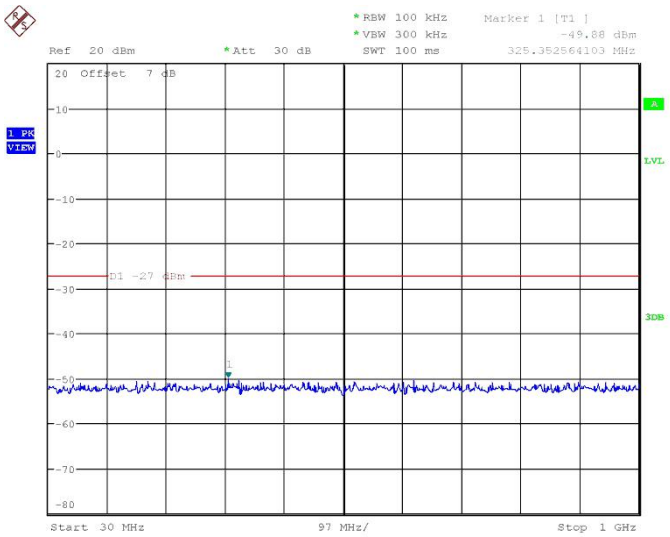


Fig. 10 Conducted Spurious Emission (802.11a, Ch157, 30 MHz-1 GHz)

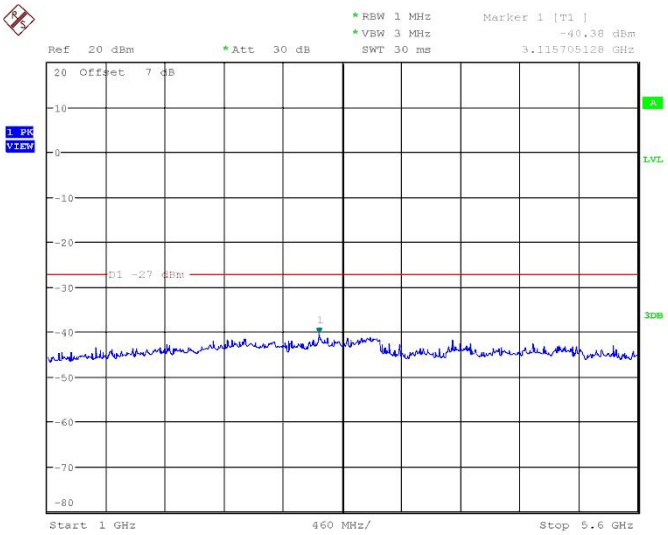


Fig. 11 Conducted Spurious Emission (802.11a, Ch157, 1 GHz -5.6 GHz)

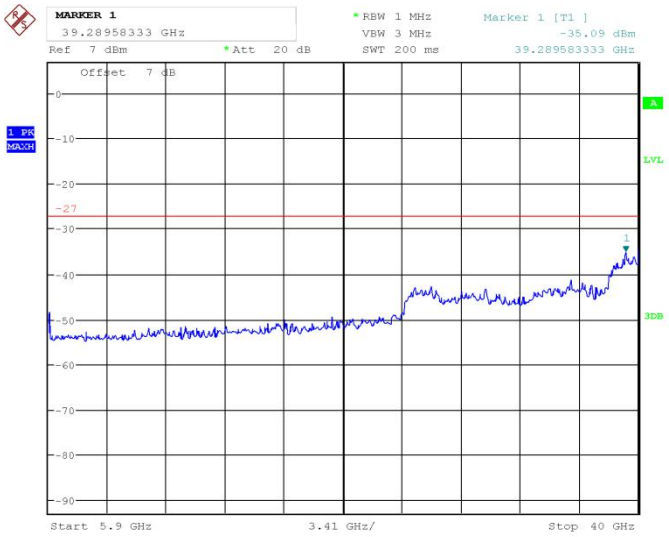


Fig. 12 Conducted Spurious Emission (802.11a, Ch157, 5.9 GHz-40 GHz)

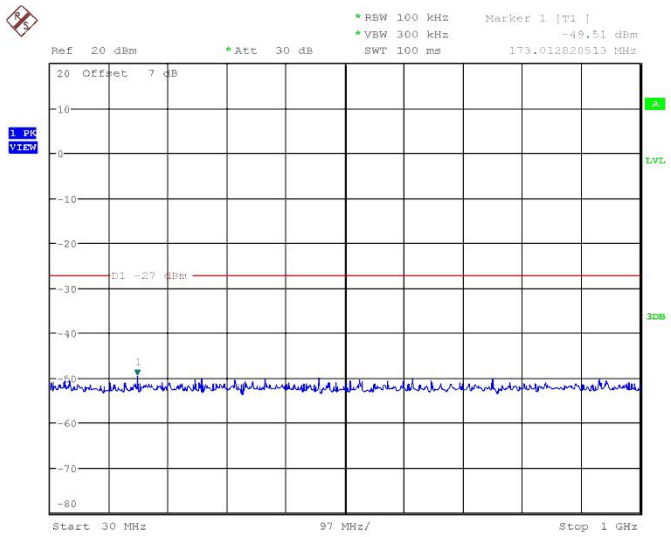


Fig. 13 Conducted Spurious Emission (802.11a, Ch165, 30 MHz-1 GHz)

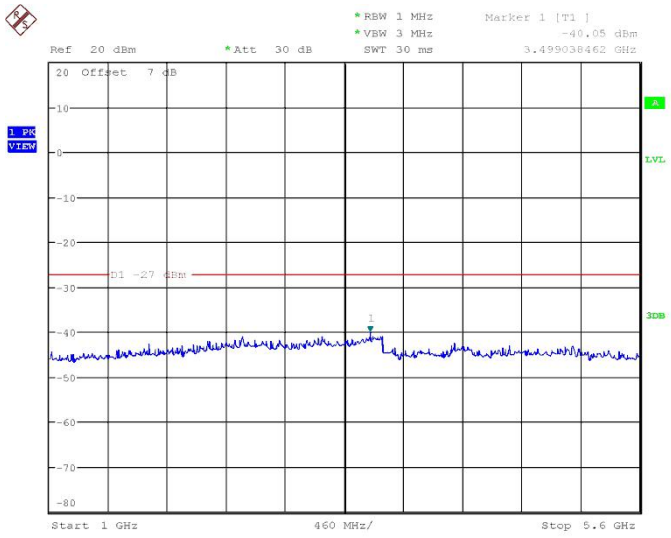


Fig. 14 Conducted Spurious Emission (802.11a, Ch165, 1 GHz -5.6 GHz)

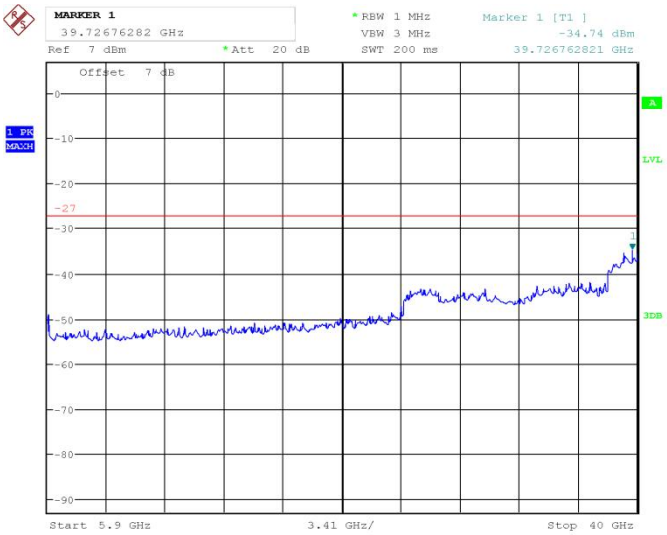


Fig. 15 Conducted Spurious Emission (802.11a, Ch165, 5.9 GHz-40 GHz)

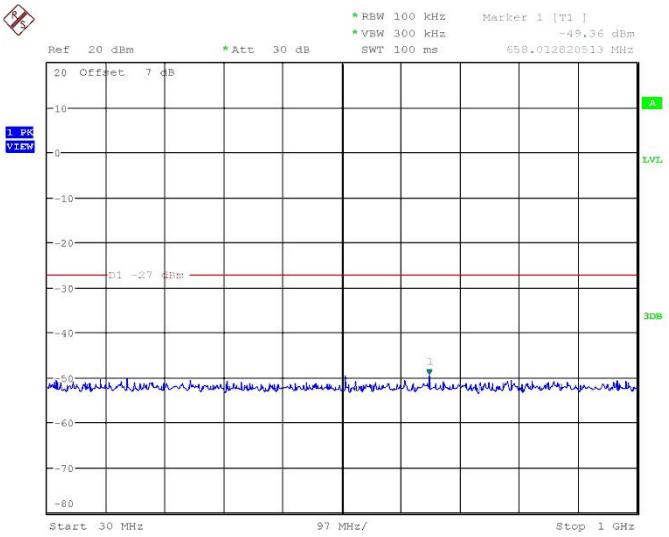


Fig. 16 Conducted Spurious Emission (802.11n-HT20, Ch149, 30 MHz-1 GHz)

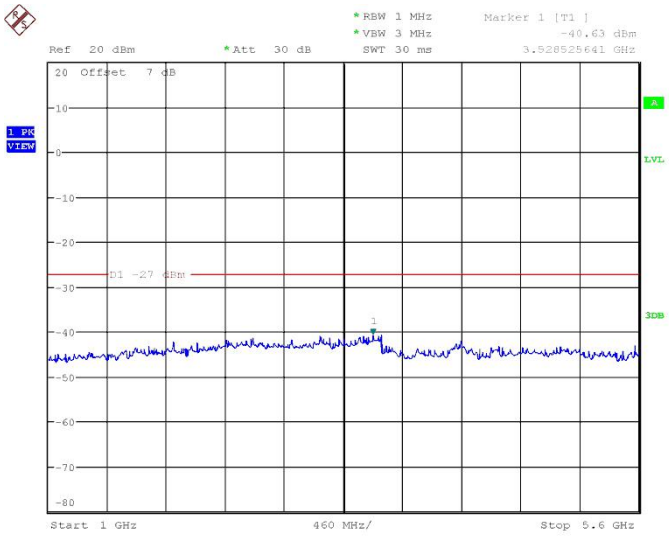


Fig. 17 Conducted Spurious Emission (802.11n-HT20, Ch149, 1 GHz -5.6 GHz)

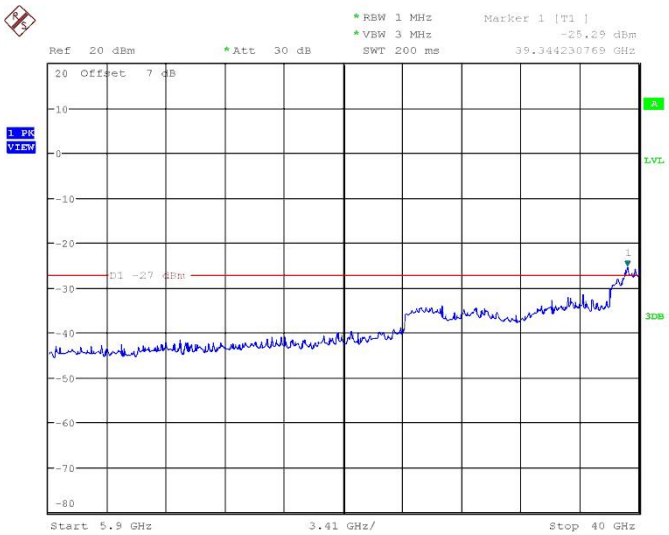


Fig. 18 Conducted Spurious Emission (802.11n-HT20, Ch149, 5.6 GHz-40 GHz)

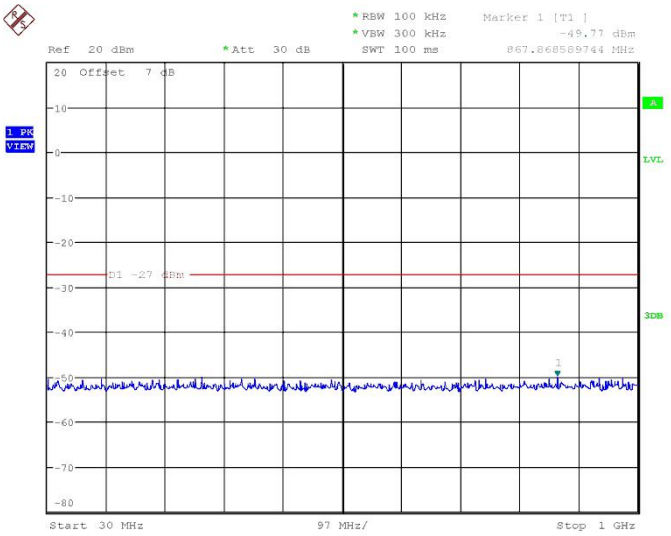


Fig. 19 Conducted Spurious Emission (802.11n-HT20, Ch157, 30 MHz-1 GHz)

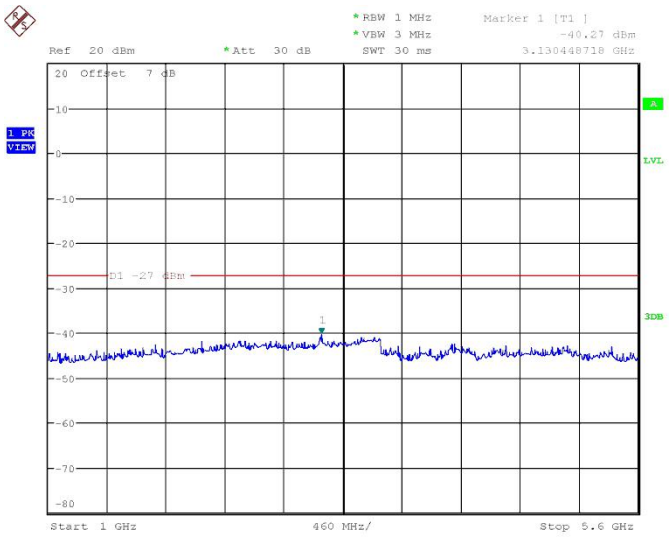


Fig. 20 Conducted Spurious Emission (802.11n-HT20, Ch157, 1 GHz -5.6 GHz)

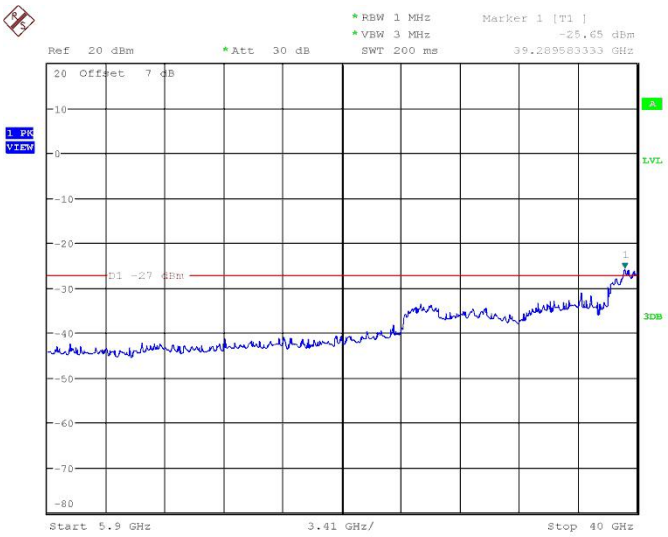


Fig. 21 Conducted Spurious Emission (802.11n-HT20, Ch157, 5.6 GHz-40 GHz)

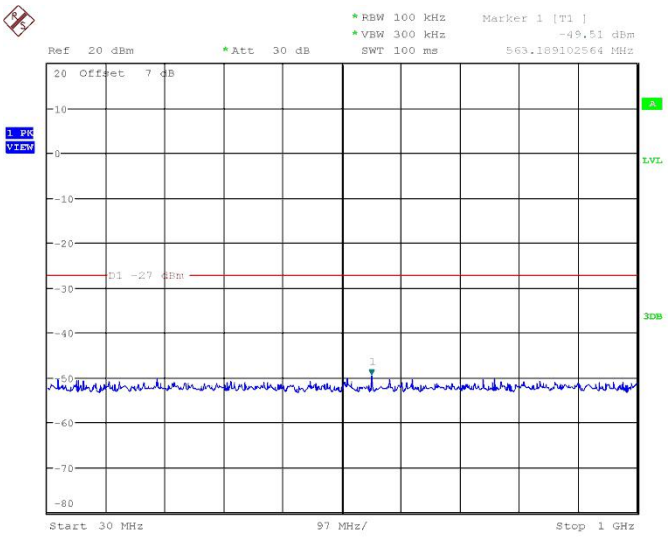


Fig. 22 Conducted Spurious Emission (802.11n-HT20, Ch165, 30 MHz-1 GHz)

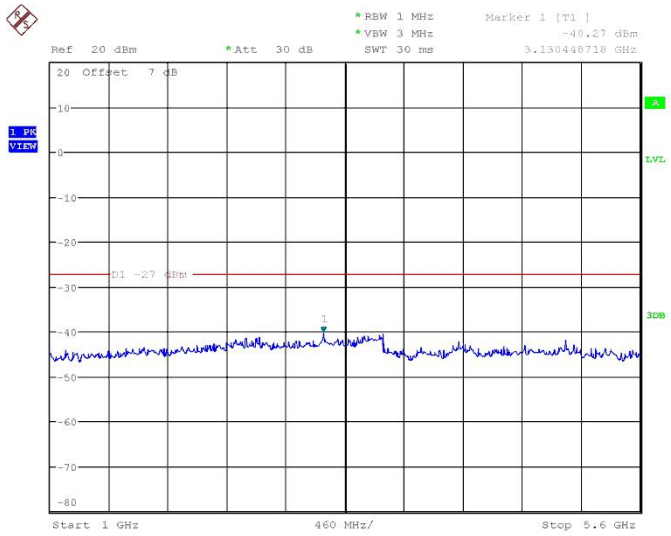


Fig. 23 Conducted Spurious Emission (802.11n-HT20, Ch165, 1 GHz -5.6 GHz)

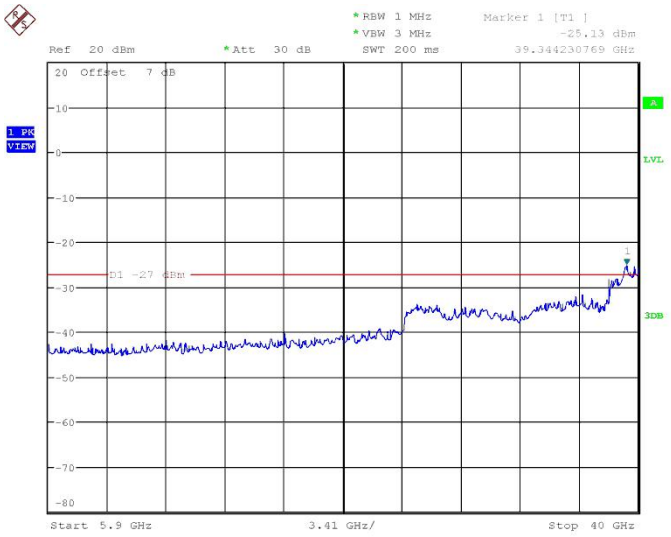


Fig. 24 Conducted Spurious Emission (802.11n-HT20, Ch165, 5.6 GHz-40 GHz)

6.5.2 Transmitter Spurious Emission - Radiated

Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
f ≤ 1GHz	3.9
f>1GHz	4.3

Measurement Results:

First Supply

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 8 GHz	Fig.25	P
		8 GHz ~ 18 GHz	Fig.26	P
		18 GHz ~ 26.5 GHz	Fig.27	P
		26.5 GHz ~ 40 GHz	Fig.28	P
	165	30 MHz ~ 1 GHz	Fig.29	P
		1 GHz ~ 8 GHz	Fig.30	P
		8 GHz ~ 18 GHz	Fig.31	P
		18 GHz ~ 26.5 GHz	Fig.32	P
		26.5 GHz ~ 40 GHz	Fig.33	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 8 GHz	Fig.34	P
		8 GHz ~ 18 GHz	Fig.35	P
		18 GHz ~ 26.5 GHz	Fig.36	P
		26.5 GHz ~ 40 GHz	Fig.37	P
	165	30 MHz ~ 1 GHz	Fig.38	P
		1 GHz ~ 8 GHz	Fig.39	P
		8 GHz ~ 18 GHz	Fig.40	P
		18 GHz ~ 26.5 GHz	Fig.41	P
		26.5 GHz ~ 40 GHz	Fig.42	P

Secon Supply

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	30 MHz ~ 1 GHz	Fig.43	P
		1 GHz ~ 8 GHz	Fig.44	P
		8 GHz ~ 18 GHz	Fig.45	P
		18 GHz ~ 26.5 GHz	Fig.46	P
		26.5 GHz ~ 40 GHz	Fig.47	P

Conclusion: PASS

Note:

A ”reference path loss” is established and A_{Rpi} 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.

The measurement results are obtained as described below:

ARpi = Cable loss + Antenna Gain-Preamplifier gain

Result = P_{Mea} + Cable loss + Antenna Gain-Preamplifier gain = P_{Mea} + ARpi .

First Supply

802.11a

Ch149 (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpI (dB)	PMea(dBuV/m)	Polarity
4518.6	49.03	2.4	46.63	V
7443.4	52.18	7.3	44.88	H
16451.0	56.96	22.8	34.16	H
17619.8	56.80	24.5	32.3	V
21304.8	33.27	-3.6	36.87	H
23465.5	35.01	-2.7	37.71	V
31362.7	44.97	0.2	44.77	H
33412.0	44.28	1.1	43.18	V

Channel 149 (Average)

Frequency(MHz)	Result(dBuV/m)	ARpI (dB)	PMea(dBuV/m)	Polarity
16451.0	43.94	22.8	21.14	H
17619.8	45.25	24.5	20.75	V

Ch165 (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpI (dB)	PMea(dBuV/m)	Polarity
34.19	13.89	-22.0	35.89	V
937.54	23.21	-9.6	32.81	V
6138.2	44.20	5.0	39.2	H
7717.8	47.32	8.2	39.12	V
15225.4	54.51	20.7	33.81	H
17695.0	57.27	24.3	32.97	H
18902.7	29.41	-5.4	34.81	H
25974.7	37.02	-2.0	39.02	H
27833.8	44.57	-0.4	44.97	H

38321.9	47.15	2.1	45.05	H

Channel 165 (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
15225.4	42.76	20.7	22.06	H
17695.0	44.85	24.3	20.55	H

802.11n-HT20

Ch149 (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
6373.8	44.81	5.6	39.21	H
7797.6	48.39	8.5	39.89	V
15079.0	54.59	20.5	34.09	H
17635.4	56.76	24.5	32.26	H
20424.2	31.96	-4.5	36.46	H
21627.8	33.68	-3.4	37.08	H
33042.1	43.88	1.1	42.78	H
34451.5	46.83	1.2	45.63	H

Channel 149 (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
15079.0	43.07	20.5	22.57	H
17635.4	45.12	24.5	20.62	H

Ch165

Second Supply

802.11a

Ch149 (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
33.27	11.52	-22.0	33.52	V

854.6	22.37	-10.5	32.87	V
4383.2	42.67	2.1	40.57	H
7851.4	48.35	8.5	39.85	H
16053.8	55.80	22.5	33.3	V
17662.6	57.25	24.4	32.85	H
19940.55	31.21	-5.0	36.21	H
21186.65	33.52	-4.0	37.52	V
27929.65	45.64	-0.3	45.94	H
30074.8	43.01	-1.2	44.21	V

Channel 149 (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
16053.8	43.95	22.5	21.45	V
17662.6	45.02	24.4	20.62	H

Test graphs as below:

First Supply

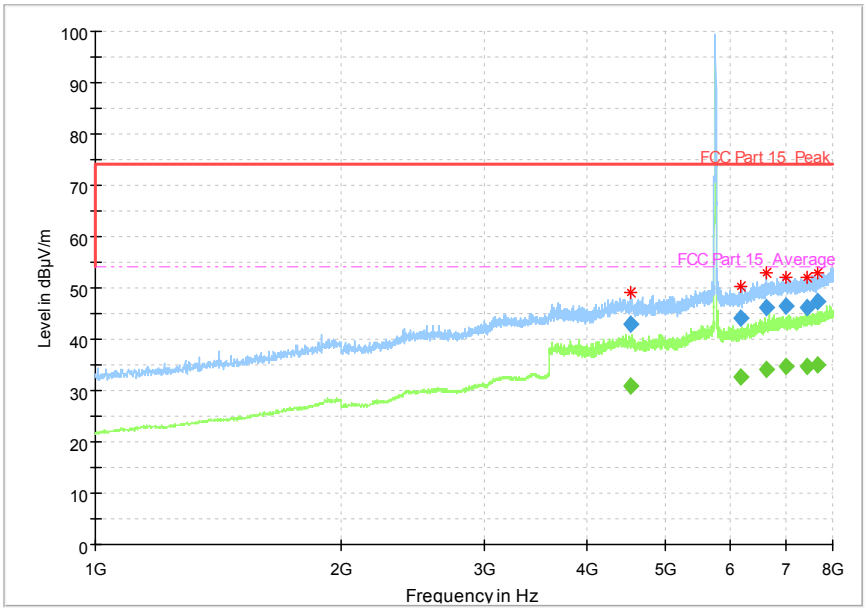


Fig. 25 Radiated Spurious Emission (802.11a, Ch149, 1 GHz-8 GHz)

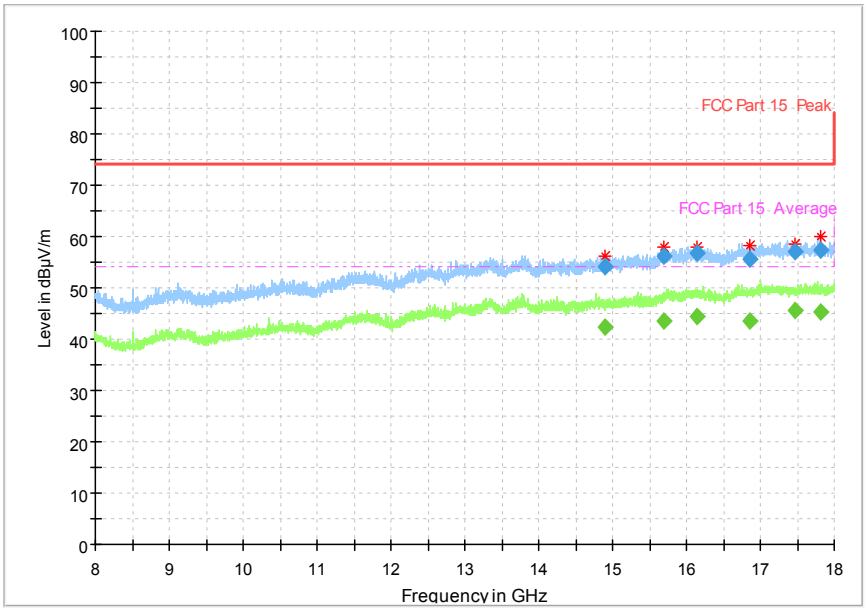


Fig. 26 Radiated Spurious Emission (802.11a, Ch149, 8 GHz-18 GHz)

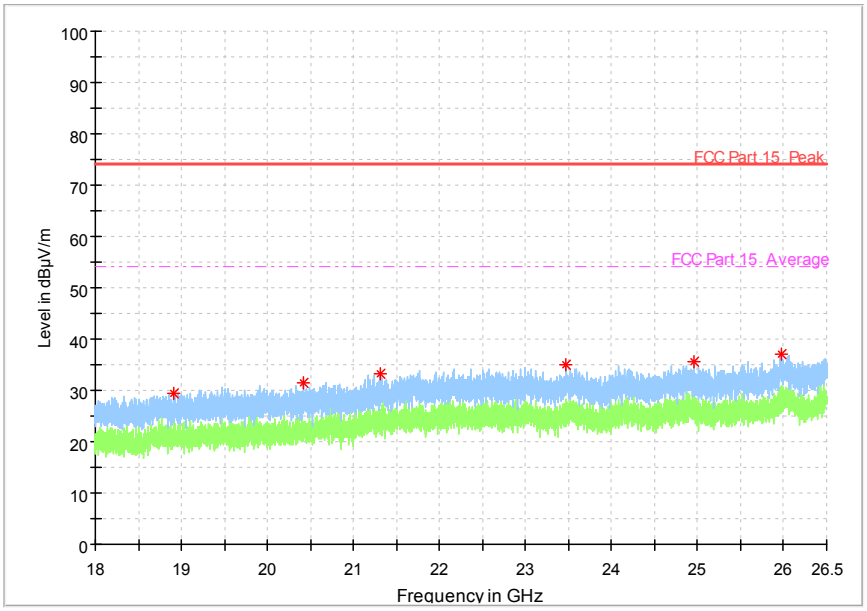


Fig. 27 Radiated Spurious Emission (802.11a, Ch149, 18 GHz-26.5 GHz)

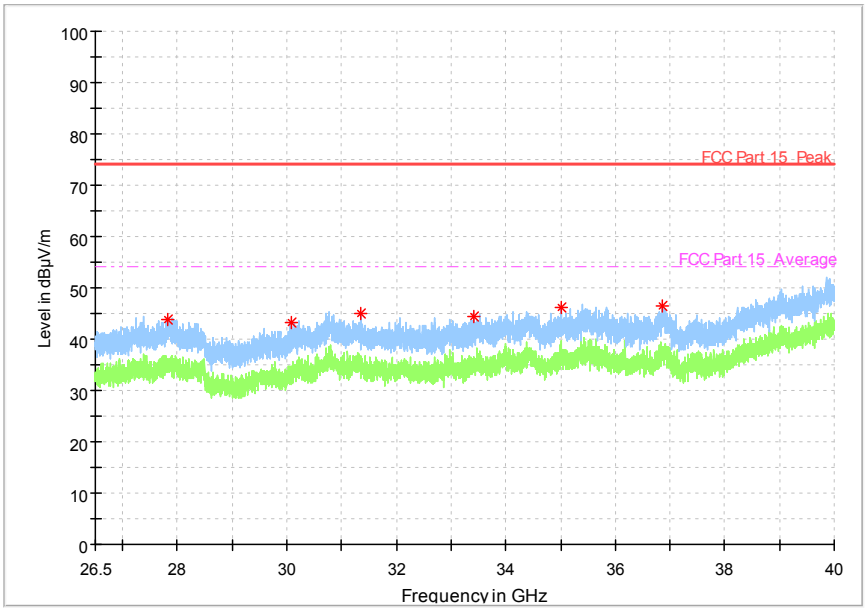


Fig. 28 Radiated Spurious Emission (802.11a, Ch149, 26.6 GHz-40 GHz)

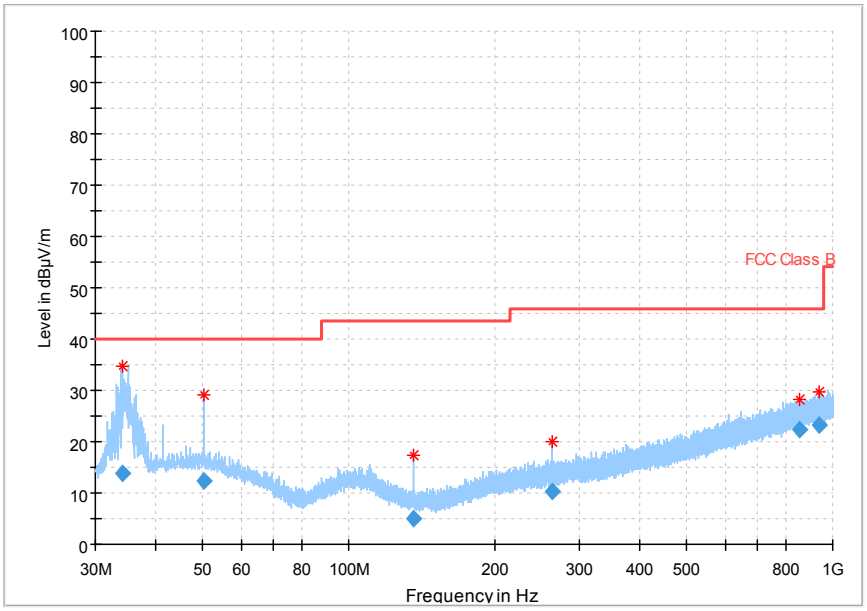


Fig. 29 Radiated Spurious Emission (802.11a, Ch165, 30 MHz-1 GHz)

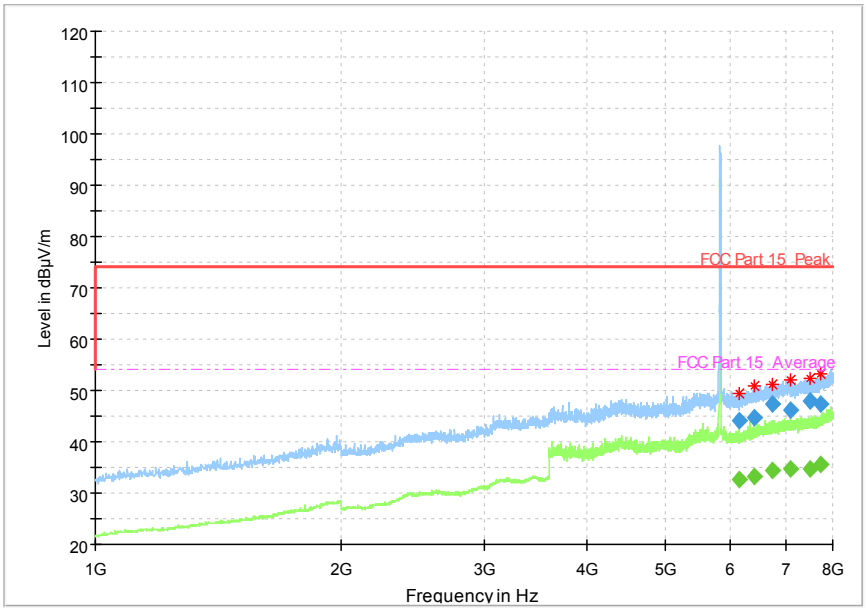


Fig. 30 Radiated emission: 802.11n, (802.11a, Ch165, 1 GHz - 8 GHz)

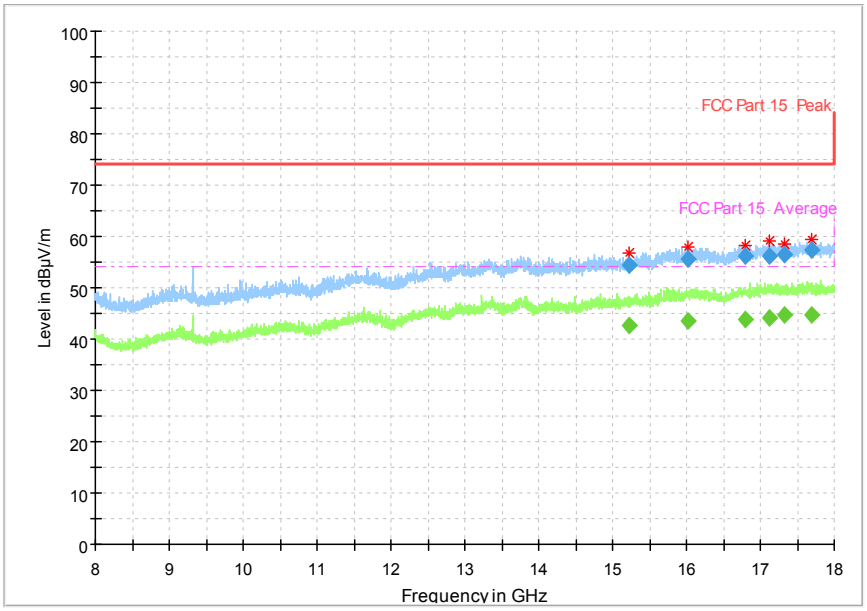


Fig. 31 Radiated Spurious Emission (802.11a, Ch165, 8 GHz-18 GHz)

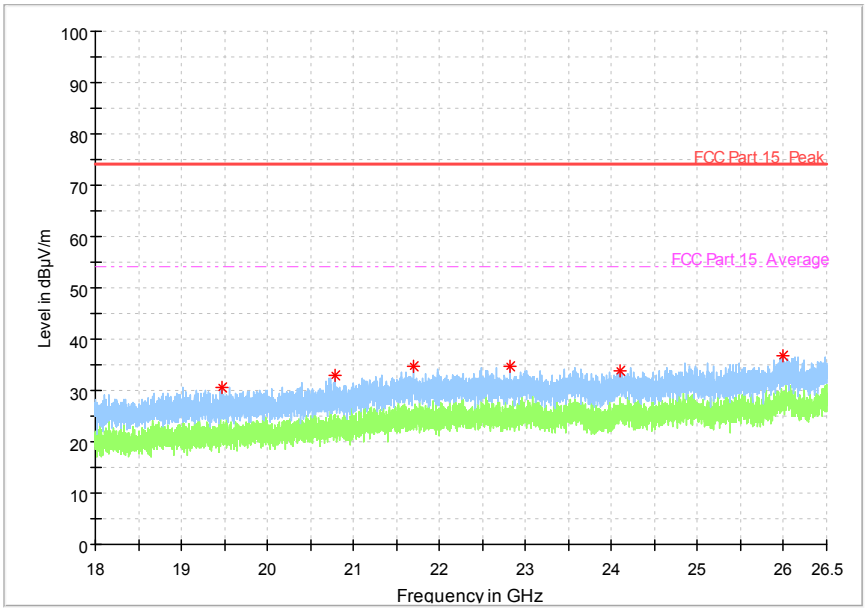


Fig. 32 Radiated Spurious Emission (802.11a, Ch165, 18 GHz-26.5 GHz)

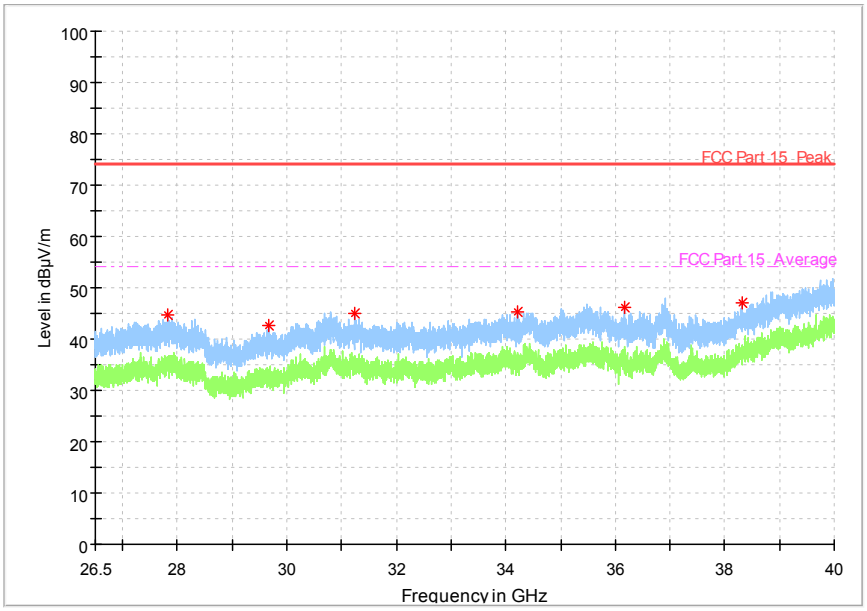


Fig. 33 Radiated Spurious Emission (802.11a, Ch165, 26.5 GHz-40 GHz)

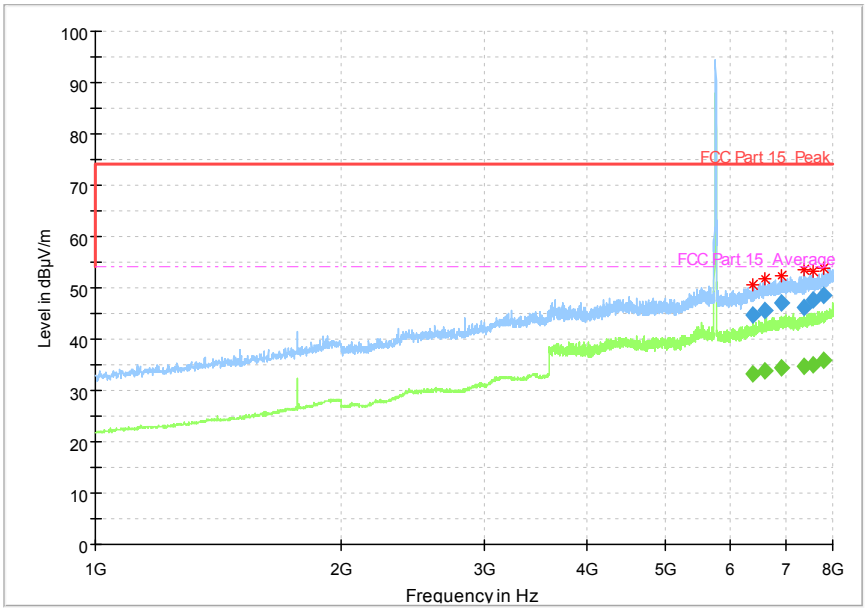


Fig. 34 Radiated Spurious Emission (802.11n-HT20, Ch149, 1 GHz-8 GHz)

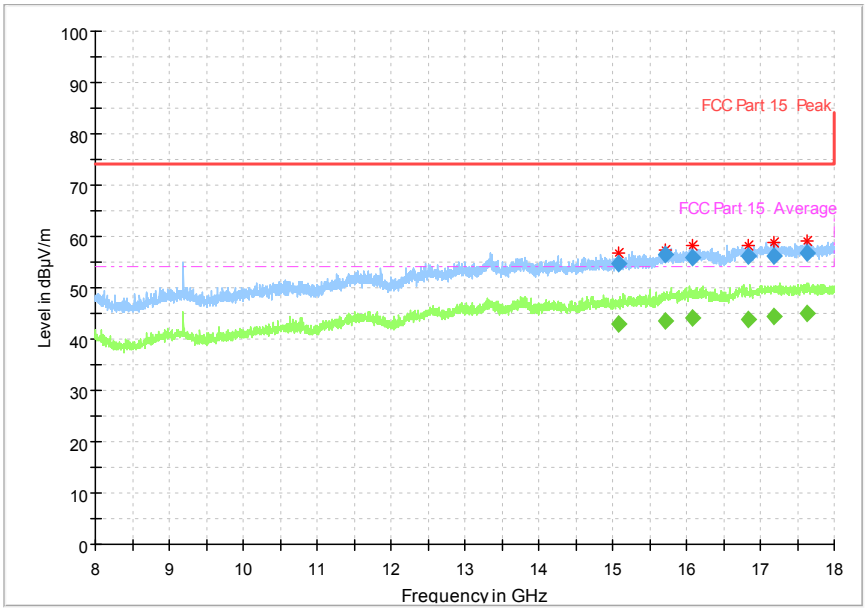


Fig. 35 Radiated Spurious Emission (802.11n-HT20, Ch149, 8 MHz-18 GHz)

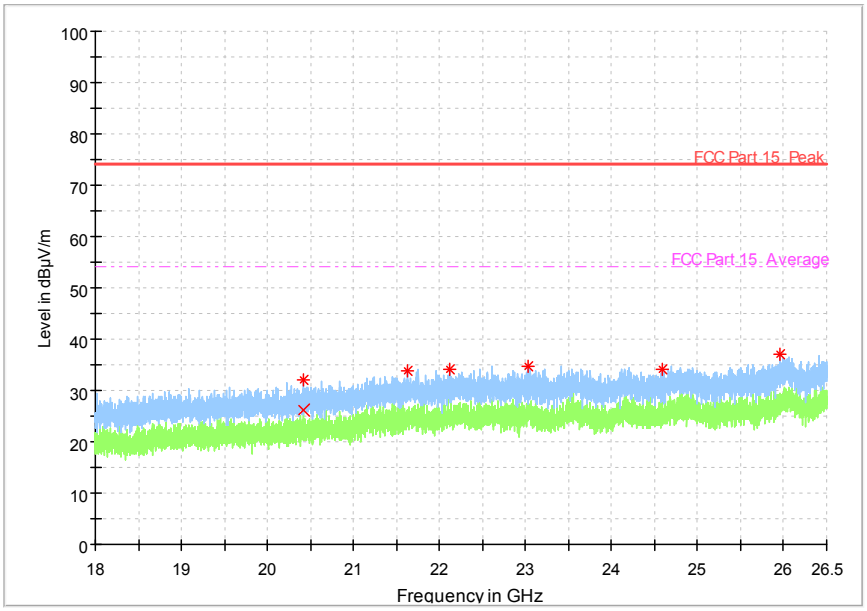


Fig. 36 Radiated Spurious Emission (802.11n-HT20, Ch149, 18 GHz-26.5 GHz)

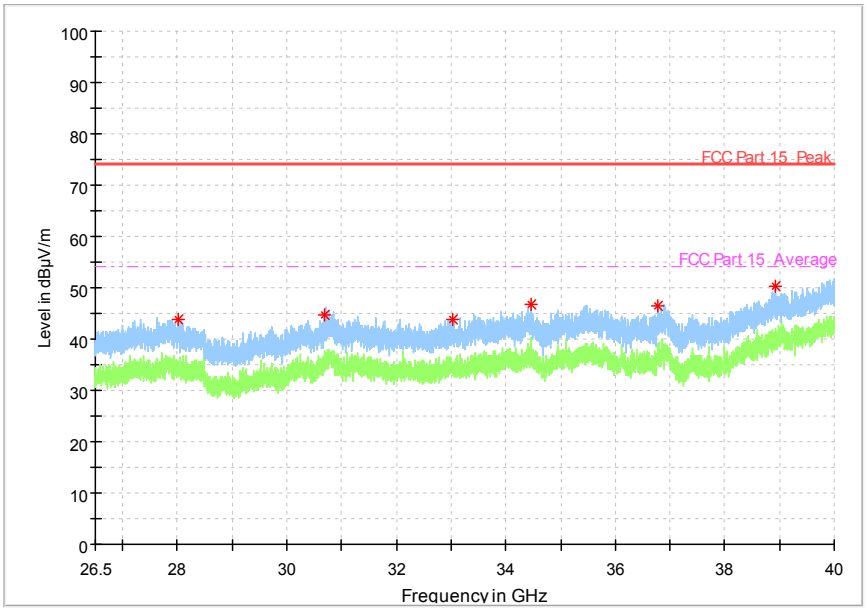


Fig. 37 Radiated Spurious Emission (802.11n-HT20, Ch149, 26.5 MHz-40 GHz)

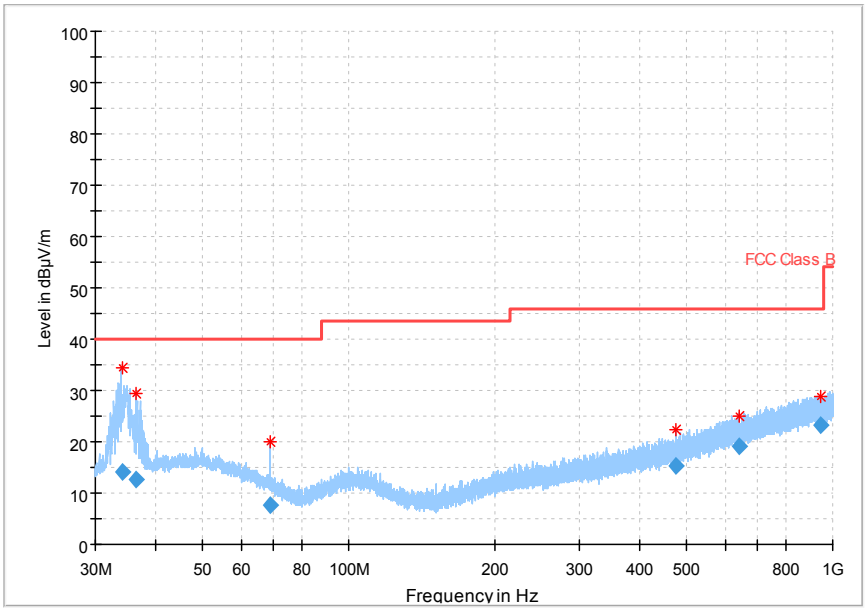


Fig. 38 Radiated Spurious Emission (802.11n-HT20, Ch165, 30 MHz-1 GHz)

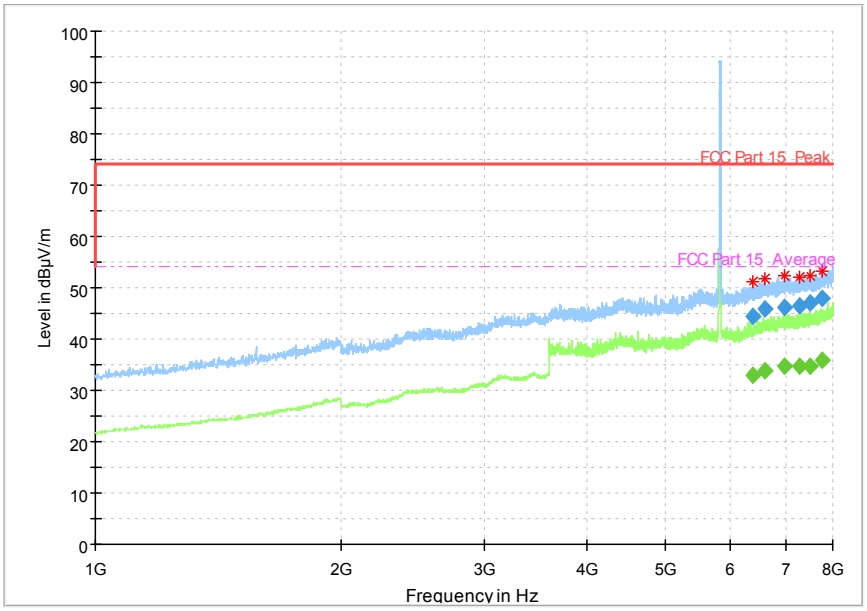


Fig. 39 Radiated Spurious Emission (802.11n-HT20, Ch165, 1 GHz-8 GHz)

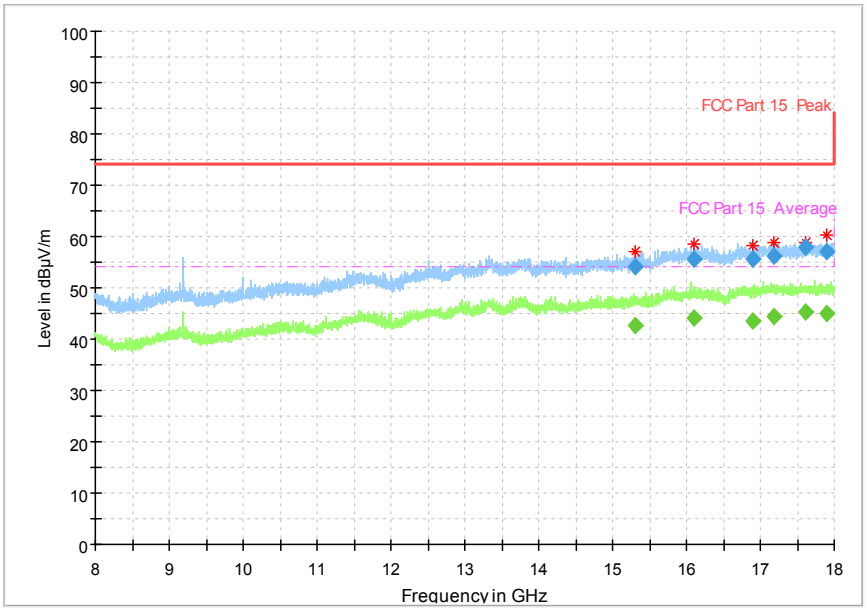


Fig. 40 Radiated Spurious Emission (802.11n-HT20, Ch165, 8 GHz-18 GHz)

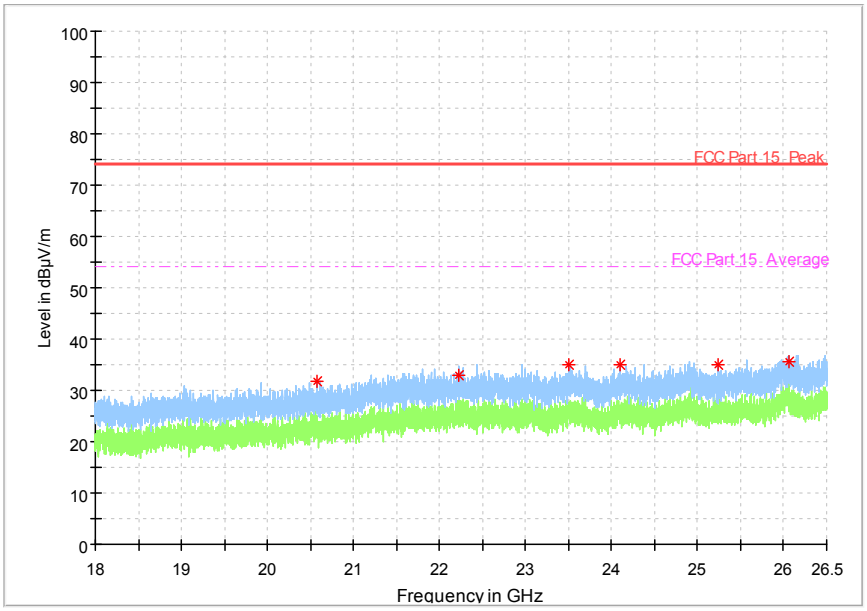


Fig. 41 Radiated Spurious Emission (802.11n-HT20, Ch165, 18 GHz-26.5 GHz)

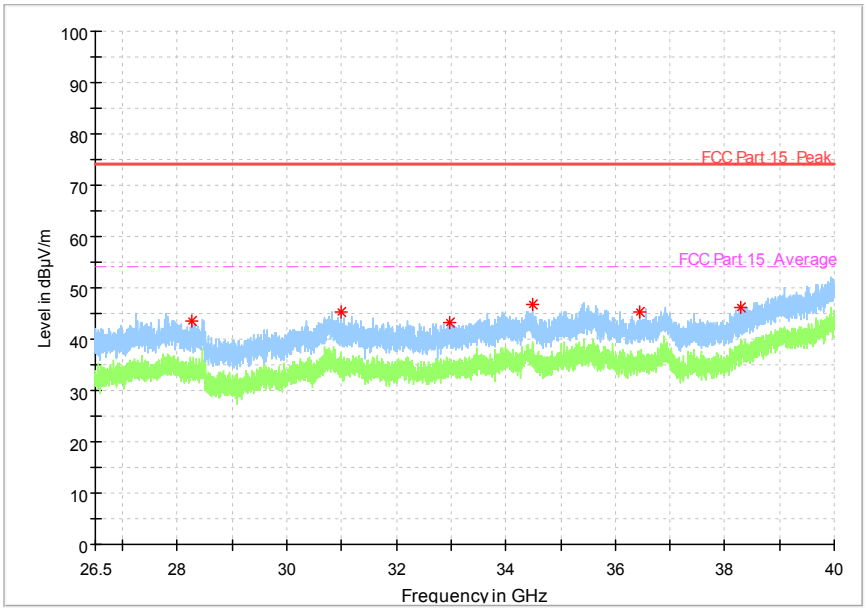


Fig. 42 Radiated emission: 802.11n, (802.11n-HT20, Ch165, 26.5 GHz - 40 GHz)

Second Supply

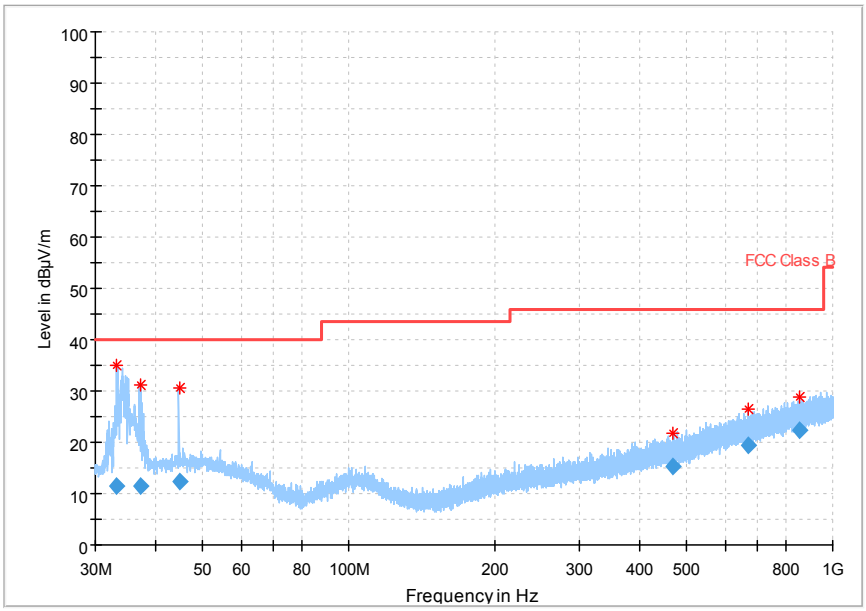


Fig. 43 Radiated Spurious Emission (802.11a, Ch149, 30 MHz-1 GHz)

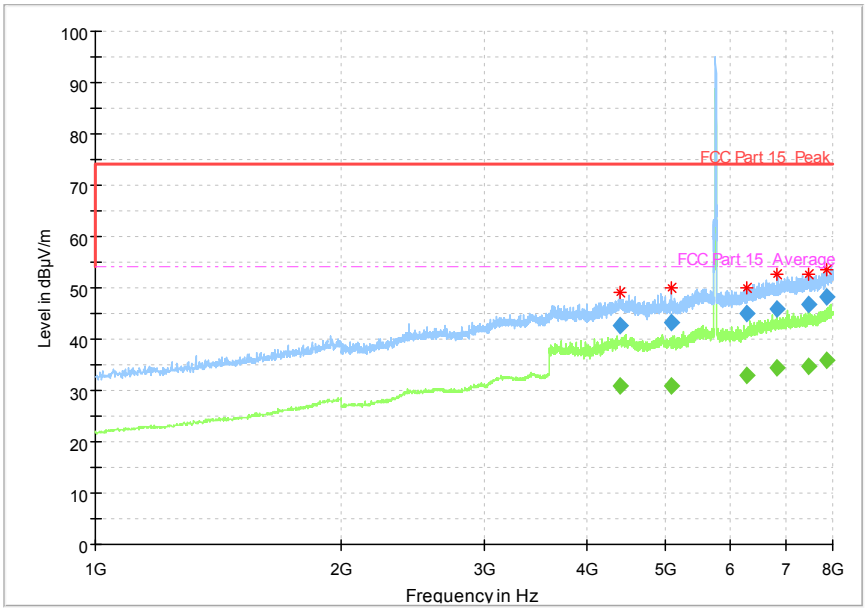


Fig. 44 Radiated Spurious Emission (802.11a, Ch149, 1 GHz-8 GHz)

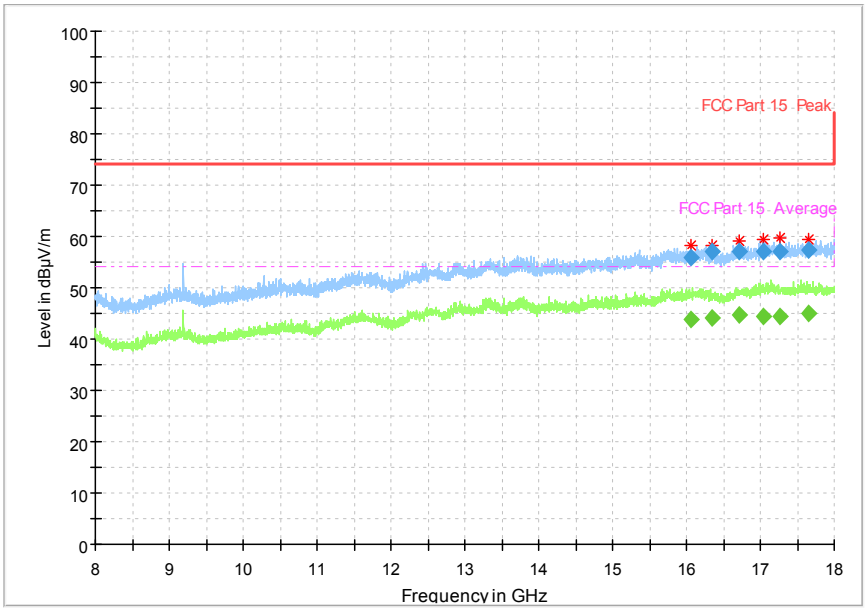


Fig. 45 Radiated Spurious Emission (802.11a, Ch149, 8 GHz-18 GHz)

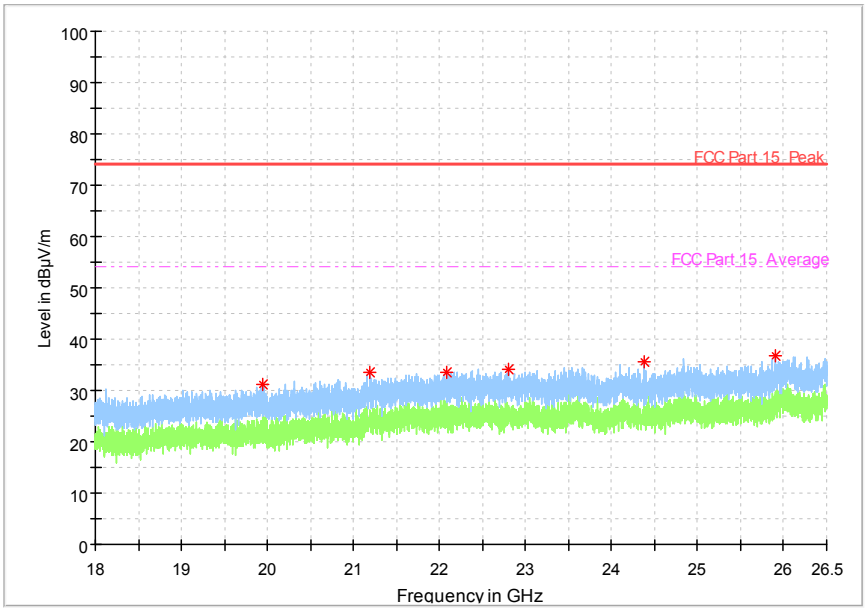


Fig. 46 Radiated Spurious Emission (802.11a, Ch149, 18 GHz-26.5 GHz)

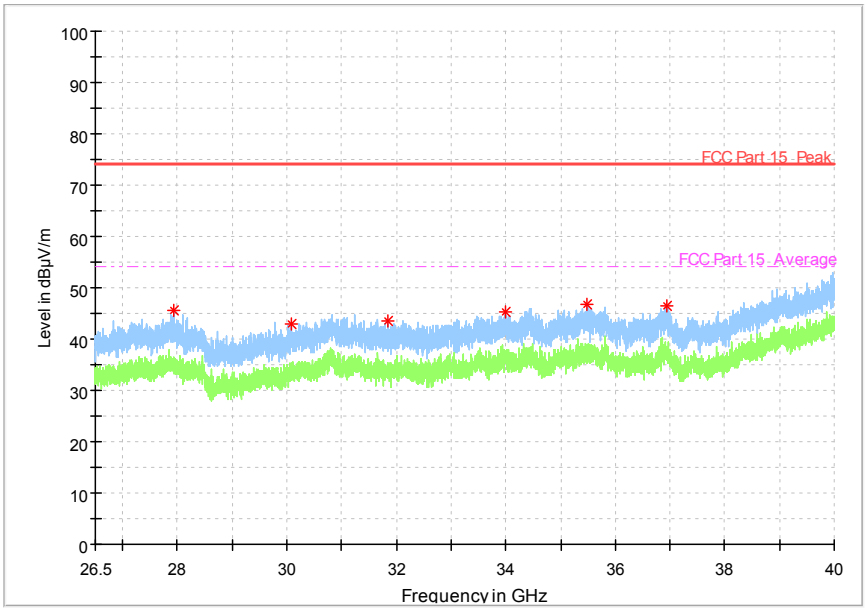


Fig. 47 Radiated Spurious Emission (802.11a, Ch149, 26.6 GHz-40 GHz)

6.6. Band Edges Compliance

Band Edges - Radiated

Measurement Limit:

(1) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) 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)).

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	[2]
13.36-13.41			

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Measurement Result:

First Supply

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.48	P
	5825 MHz	Fig.49	P
802.11n HT20	5745 MHz	Fig.50	P
	5825 MHz	Fig.51	P

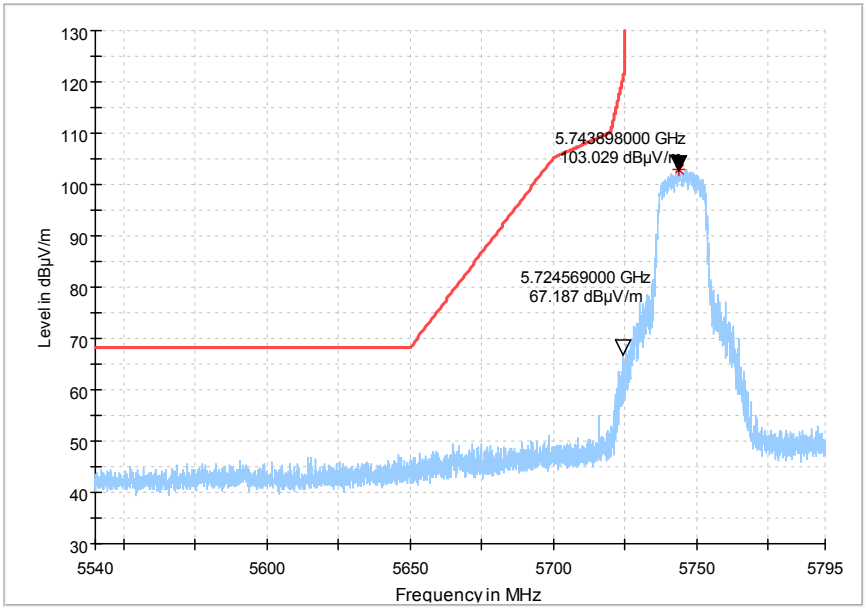
Second Supply

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.52	P
	5825 MHz	Fig.53	P
802.11n HT20	5745 MHz	Fig.54	P
	5825 MHz	Fig.55	P

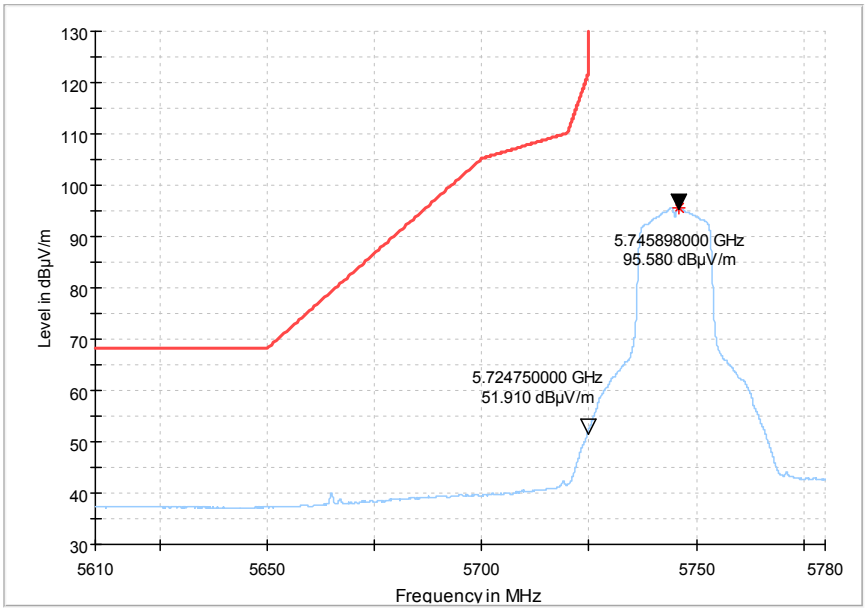
Conclusion: PASS

Test graphs as below:

First Supply

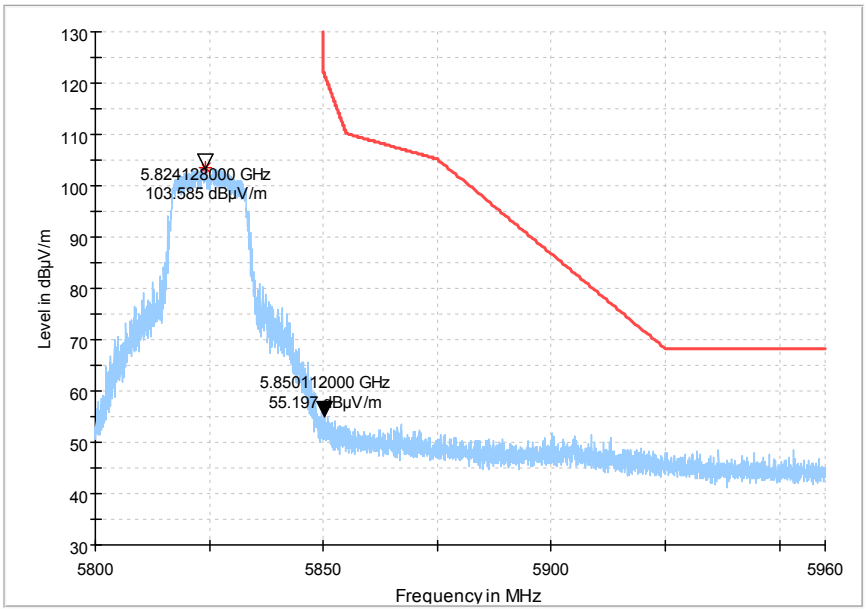


Peak

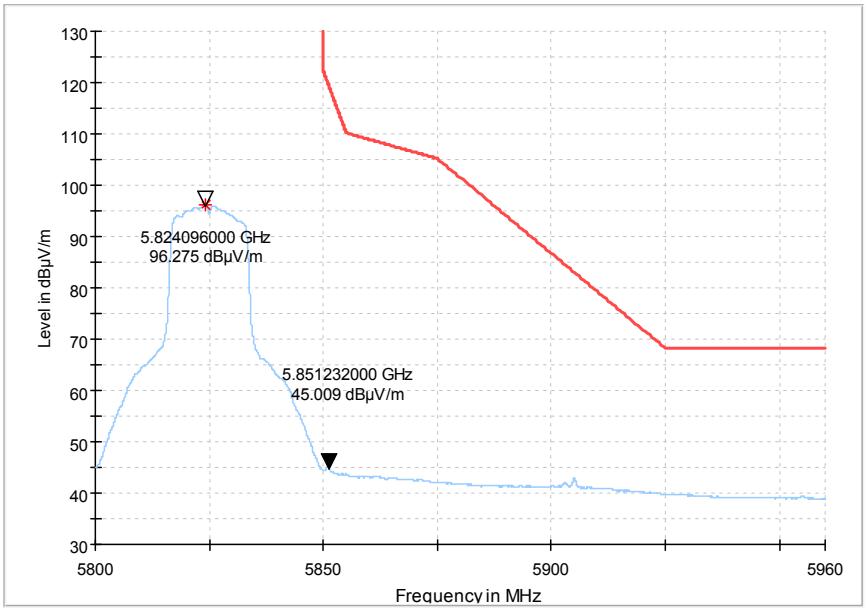


Average

Fig. 48 Band Edges (802.11a, 5745MHz)

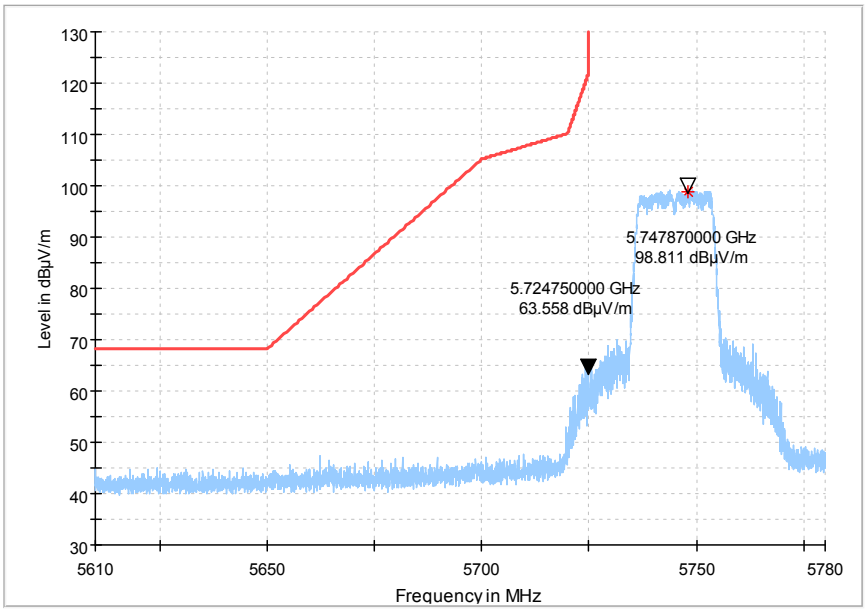


Peak

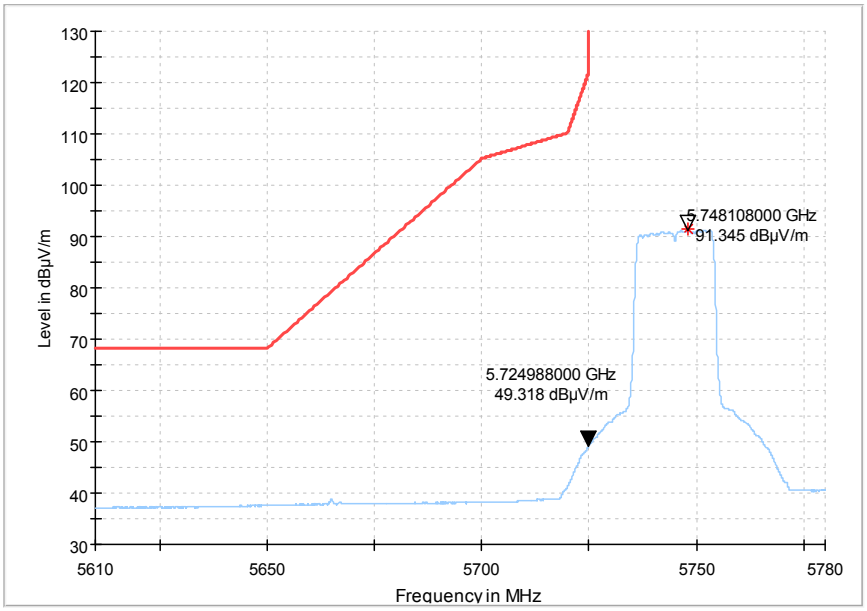


Average

Fig. 49 Band Edges (802.11a, 5825MHz)

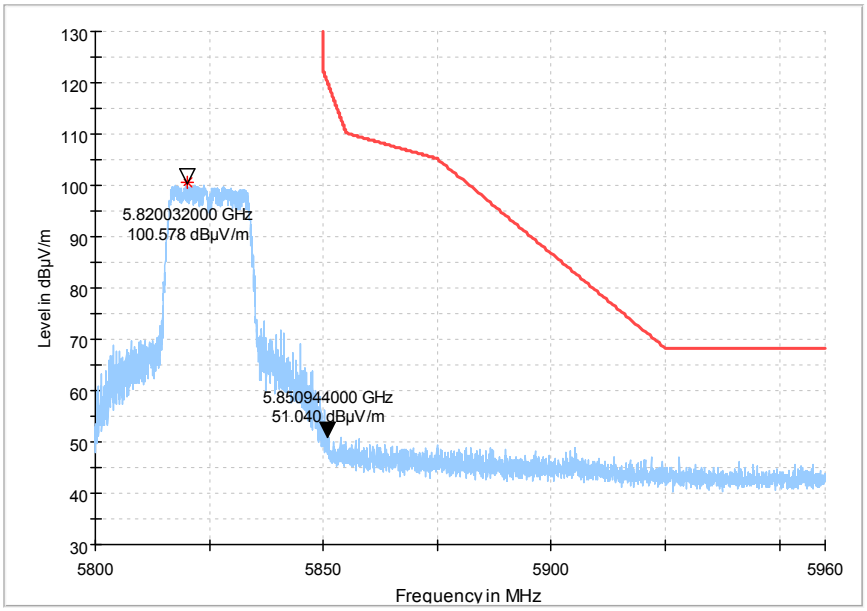


Peak

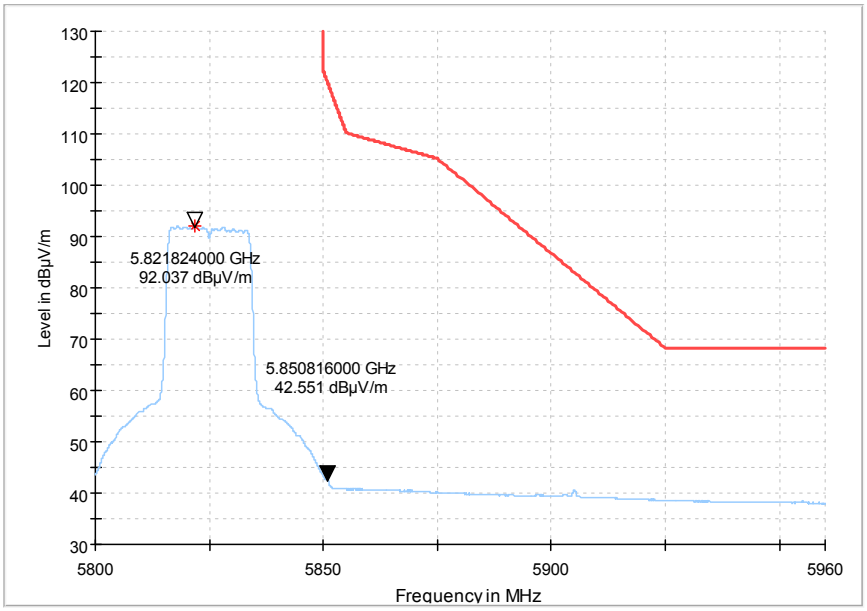


Average

Fig. 50 Band Edges (802.11n-HT20, 5745MHz)



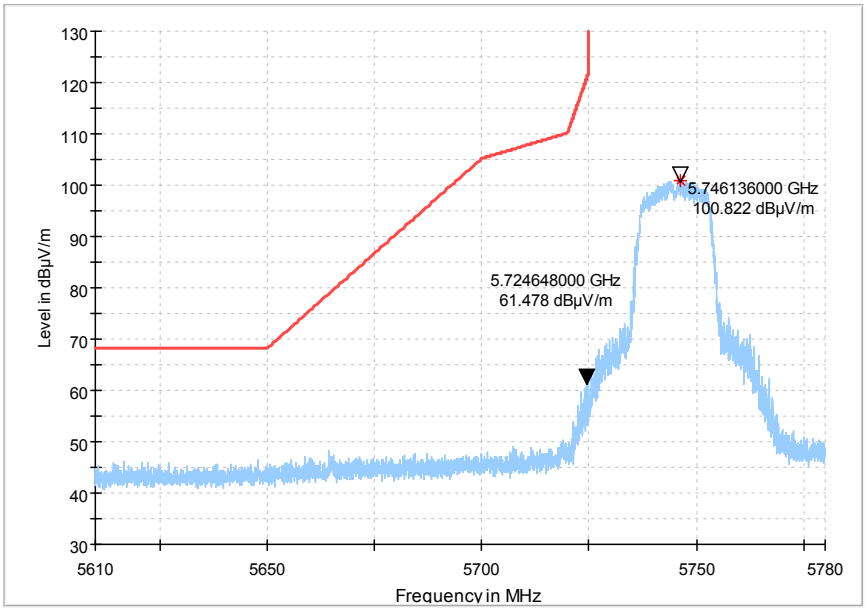
Peak



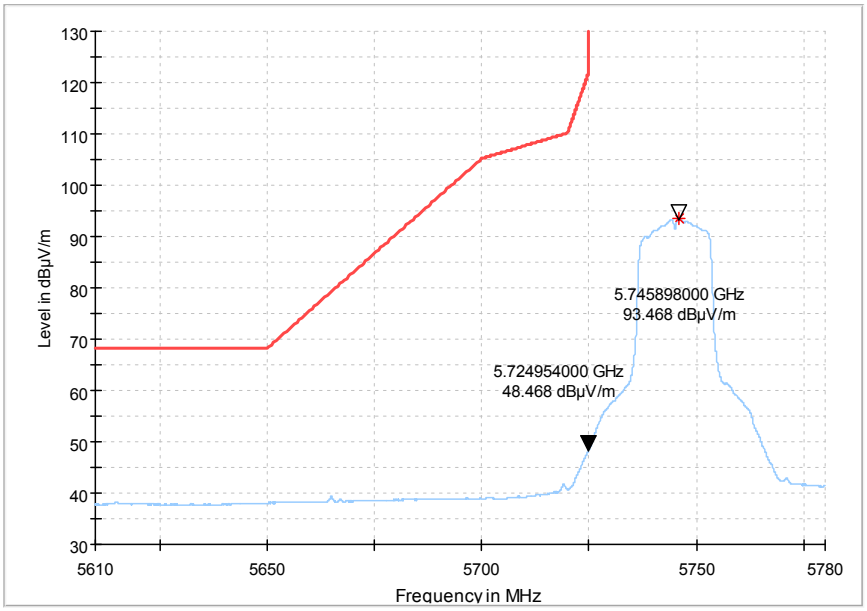
Average

Fig. 51 Band Edges (802.11n-HT20, 5825MHz)

Second Supply

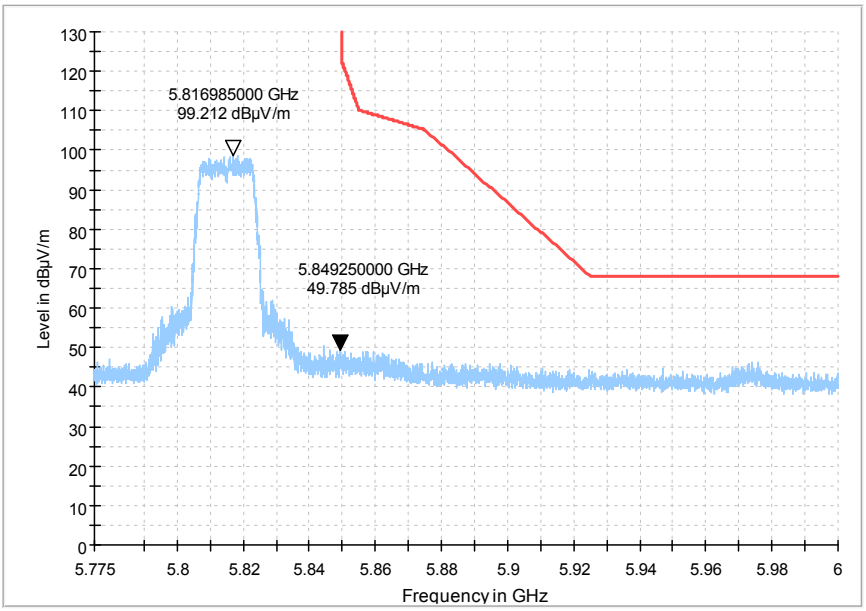


Peak

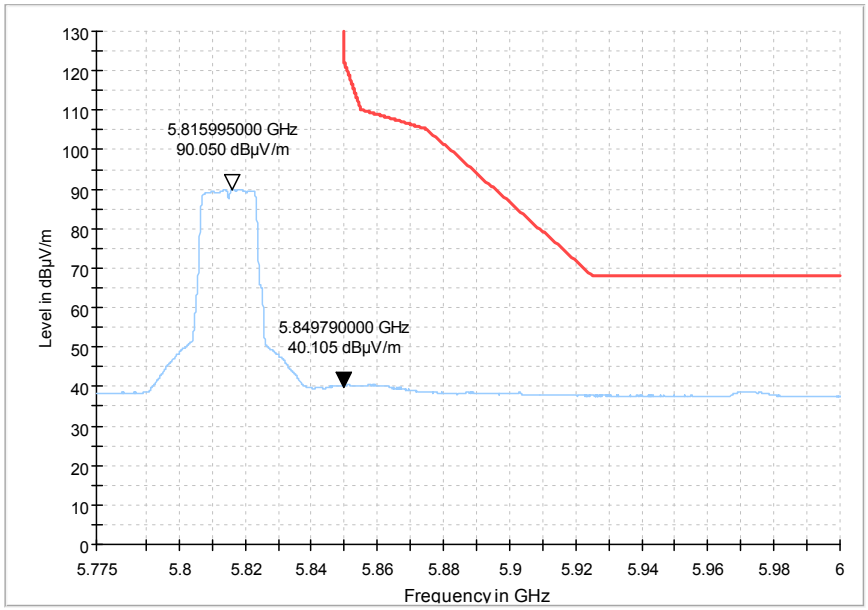


Average

Fig. 52 Band Edges (802.11a, 5745MHz)

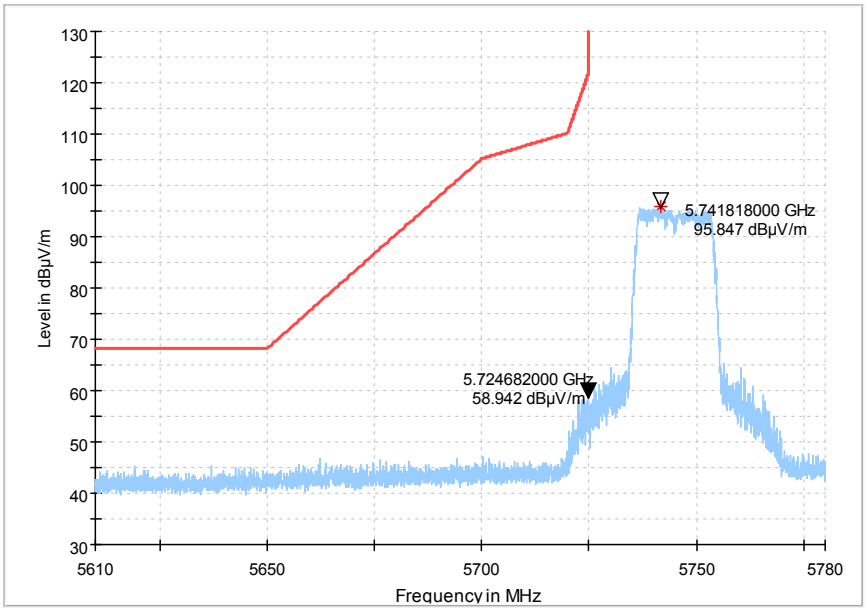


Peak

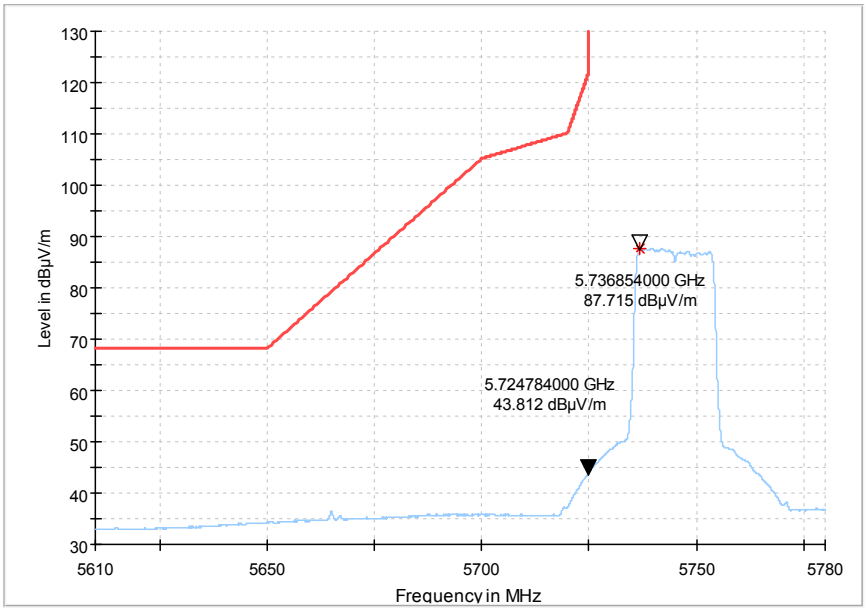


Average

Fig. 53 Band Edges (802.11a, 5825MHz)

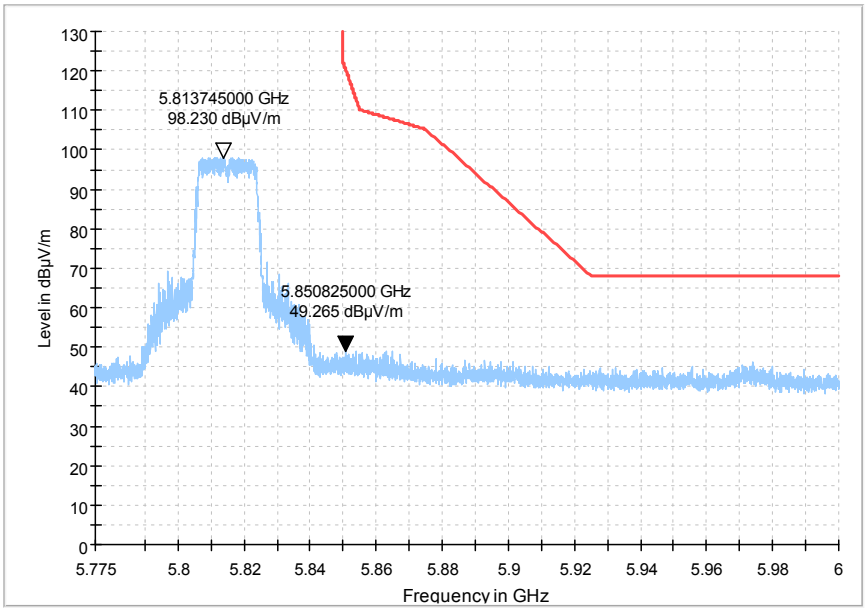


Peak

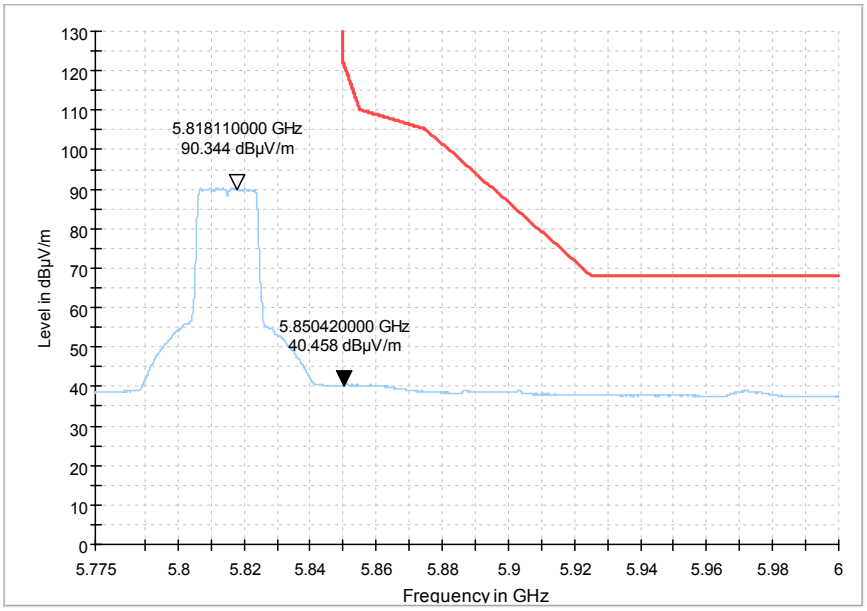


Average

Fig. 54 Band Edges (802.11n-HT20, 5745MHz)



Peak



Average

Fig. 55 Band Edges (802.11n-HT20, 5825MHz)

6.7. AC Powerline Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement uncertainty:

Expanded measurement uncertainty for this test item is U =3.2dB, k=2.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)	Conclusion
		With charger	
		802.11a	
0.15 to 0.5	66 to 56	Fig.56	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	
0.15 to 0.5	56 to 46	Fig.56	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.			

The measurement is made according to ANSI C63.10 .

Conclusion: PASS

Test graphs as below:

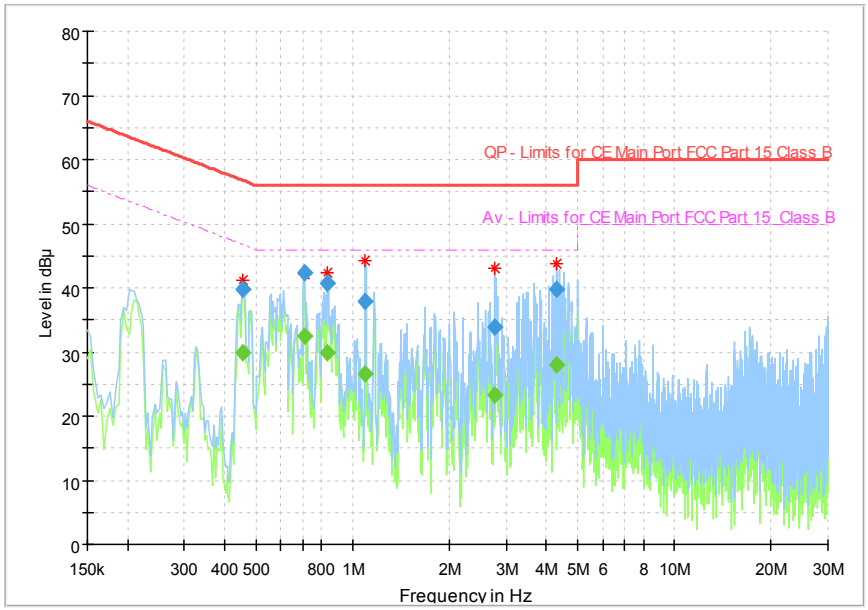


Fig. 56 AC Powerline Conducted Emission-802.11a

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.455962	---	29.96	46.77	16.81	1000.0	9.000	L1	ON	9.6
0.455962	39.77	---	56.77	17.00	1000.0	9.000	L1	ON	9.6
0.705956	---	32.37	46.00	13.63	1000.0	9.000	L1	ON	9.7
0.705956	42.42	---	56.00	13.58	1000.0	9.000	L1	ON	9.7
0.836550	---	29.83	46.00	16.17	1000.0	9.000	L1	ON	9.7
0.836550	40.75	---	56.00	15.25	1000.0	9.000	L1	ON	9.7
1.097738	---	26.54	46.00	19.46	1000.0	9.000	L1	ON	9.7
1.097738	37.79	---	56.00	18.21	1000.0	9.000	L1	ON	9.7
2.776800	---	23.37	46.00	22.63	1000.0	9.000	L1	ON	9.7
2.776800	33.95	---	56.00	22.05	1000.0	9.000	L1	ON	9.7
4.321538	---	27.95	46.00	18.05	1000.0	9.000	N	ON	9.7
4.321538	39.65	---	56.00	16.35	1000.0	9.000	N	ON	9.7

7. Test Equipment and Ancillaries Used For Tests

The test equipment and ancillaries used are as follows.

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Vector Signal Analyzer	FSQ40	200063	Rohde&Schwarz	2017-12-17	1 Year
2	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2017-05-11	1 Year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2017-05-11	1 Year
2	EMI Test Receiver	ESU40	100307	R&S	2017-05-11	1 Year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2017-02-25	3 Year
4	Double-ridged Waveguide Antenna	ETS-3117	00135890	ETS	2017-01-11	3 Year
5	2-Line V-Network	ENV216	101380	R&S	2017-05-11	1 Year

Anechoic chamber

Fully anechoic chamber by Frankonia German.

8. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A. Accreditation Certificate

Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 15th day of March 2017.

President and CEO
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

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