



**FCC PART 15E  
TEST REPORT  
No. B17N00484-RLAN**

**For**

**Huawei Technologies Co., Ltd.**

**LTE/WCDMA/GSM digital mobile phone**

**Model Name: H1711, H1711z**

**With**

**Hardware Version: HL3TRTM**

**Software Version: H1711C07B032**

**FCC ID: QISH1711**

**Issued Date: 2017-07-03**

**Test Laboratory:**

***FCC 2.948 Listed: No.342690***

**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.

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
B17N00484-RLAN	Rev.0	1st edition	2017-07-03

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## 1. TEST LATORATORY

### 1.1. Testing Location

Location: CTTL(South Branch)  
Address: TCL International E city, No. 1001, Zhongshanyuan Road, Nanshan  
District, Shenzhen, Guangdong, China 518000

### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Extreme Temperature: -10/+55°C  
Relative Humidity: 20-75%

### 1.3. Project data

Testing Start Date: 2017-04-24  
Testing End Date: 2017-06-30

### 1.4. Signature

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Lin Kanfeng

(Prepared this test report)

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Tang Weisheng

(Reviewed this test report)

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Zhang Bojun

(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: Huawei Technologies Co., Ltd.  
Address: Administration Building, Headquarters of Huawei Technologies Co.,  
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City: Shenzhen  
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Country: China  
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### **2.2. Manufacturer Information**

Company Name: Huawei Technologies Co., Ltd.  
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City: Shenzhen  
Postal Code: /  
Country: China  
Telephone: 18100974025  
Fax: /

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

#### **3.1. About EUT**

Description	LTE/WCDMA/GSM digital mobile phone
Model Name	H1711, H1711z
Market Name	/
FCC ID	QISH1711
WLAN Frequency Range	ISM Band: 5250MHz~5350MHz 5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.82V DC by Battery

#### **3.2. Internal Identification of EUT**

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Receive Date</b>
EUT1	864885030020779	HL3TRTM	H1711C07B032	2017-04-24

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

#### **3.3. Internal Identification of AE**

<b>AE ID*</b>	<b>Description</b>	<b>Type</b>	<b>Manufacturer</b>
AE1	Charger	HW-050200U01	Huizhou BYD Electric Co.,Ltd
AE2	Charger	HW-050200U01	Dongguan Phitek Electric Co.,Ltd
AE3	Charger	HW-050200U01	Shenzhen Huntkey Electric Co., Ltd

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



## 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	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	Nov,2015
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	Jun,2013
UNII: KDB 789033	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E	Jun,2014

## 5. SUMMARY OF TEST RESULTS

### 5.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Verdict
Maximum Output Power	15.407(a)	P
Power Spectral Density	15.407(a)	P
Occupied 26dB Bandwidth	15.403(i)	P
Band edge compliance	15.407(b)	P
Spurious emissions conducted	15.407(a)	P
AC Powerline Conducted Emission	15.107, 15.207	P
Frequency Stability	15.407(g)	P

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

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant/matrix manufacturer as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

### 5.3. Terms used in the result table

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropic radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

## 6. TEST EQUIPMENTS UTILIZED

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2018-01-18	1 year
2	Climate chamber	SU-242	93008165	ESPEC	2018-04-06	1 year
3	DC Power Supply	NGSM3 2/10	5425	Rohde & Schwarz	2017-11-12	1 year

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Test Receiver	ESCI	100701	R&S	2017-08-09	1 year
2	Loop Antenna	HLA6120	35779	TESEQ	2019-05-02	3 years
3	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2020-02-17	3 years
4	Horn Antenna	3117	00066585	ETS-Lindgren	2019-03-05	3 years
5	Universal Radio Communication Tester	CMW270	100540	Rohde & Schwarz	2018-04-12	1 year
6	Spectrum Analyzer	FSP 40	100378	R&S	2017-12-15	1 year
7	Chamber	FACT5-2.0	4166	ETS-Lindgren	2018-05-13	3 years

### Anechoic chamber

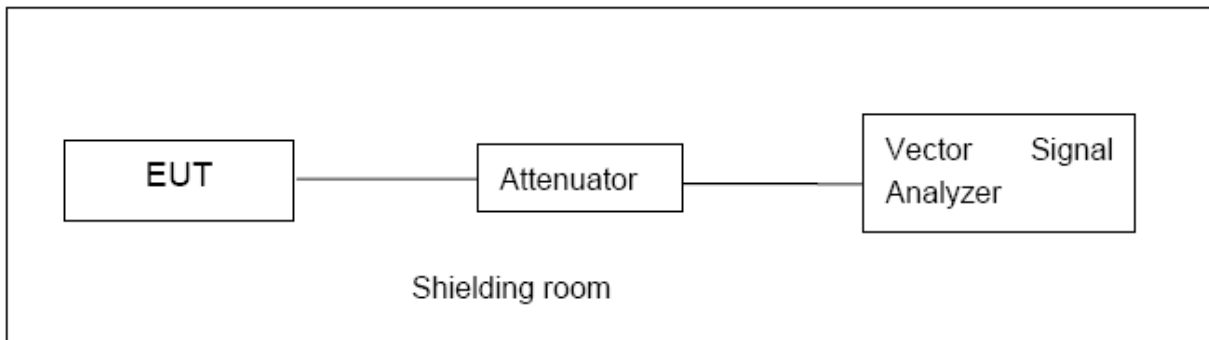
Fully anechoic chamber by ETS-Lindgren

## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### 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

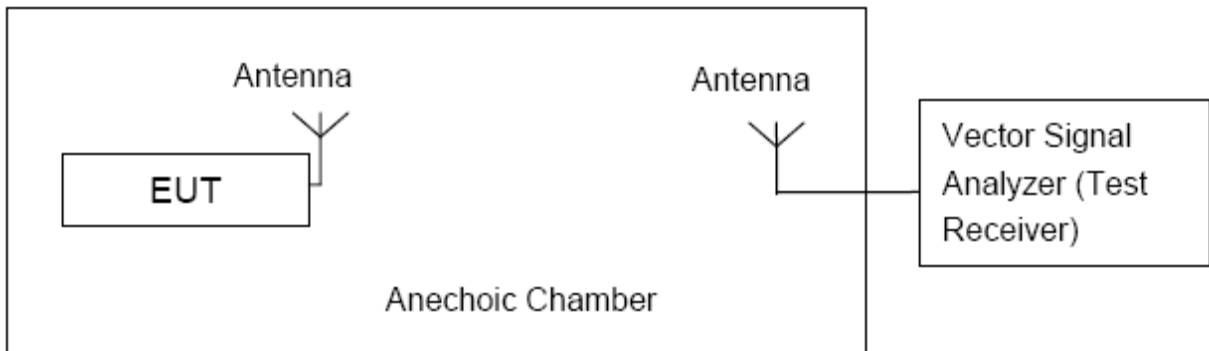


#### Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows:

Sweep frequency from 30 MHz to 1 GHz, RBW = 100 KHz, VBW = 300 KHz;

Sweep frequency from 1 GHz to 26 GHz, RBW = 1 MHz, VBW = 10 Hz;



The measurement is made according to 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.

## A.2. Maximum output Power

### Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurement method SA-1 is made according to KDB 789033.

**Method SA-1** (trace averaging with the EUT transmitting at full power throughout each sweep):

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1 MHz
- (iii) Set VBW  $\geq$  3 MHz
- (iv) Number of points in sweep  $\geq 2 \times$  span / RBW. (This ensures that bin-to-bin spacing is  $\leq$  RBW/2, so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.
- (vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle  $<$  98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle  $\geq$  98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
- (viii) Trace average at least 100 traces in power averaging (rms) mode.
- (ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

### Measurement Results:

#### 802.11a mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5260MHz(Ch52)	14.85	14.71	14.83	14.78	14.64	14.71	14.57	14.62
	5280MHz(Ch56)	14.79	/	/	/	/	/	/	/
	5320MHz(Ch64)	14.75	/	/	/	/	/	/	/
	5500MHz(Ch100)	14.87	/	/	/	/	/	/	/
	5580MHz(Ch116)	14.74	/	/	/	/	/	/	/
	5700MHz(Ch140)	14.75	/	/	/	/	/	/	/

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

#### 802.11n-HT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5260MHz(Ch52)	14.92	14.73	14.75	14.77	14.68	14.70	14.74	14.73
	5280MHz(Ch56)	14.89	/	/	/	/	/	/	/
	5320MHz(Ch64)	14.64	/	/	/	/	/	/	/
	5500MHz(Ch100)	14.95	/	/	/	/	/	/	/
	5580MHz(Ch116)	14.90	/	/	/	/	/	/	/
	5700MHz(Ch140)	14.72	/	/	/	/	/	/	/

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

**802.11n-HT40 mode**

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5270MHz(Ch54)	13.96	13.91	13.74	13.88	13.84	13.67	13.77	13.75
	5310MHz(Ch62)	13.98	/	/	/	/	/	/	/
	5510MHz(Ch102)	14.11	/	/	/	/	/	/	/
	5550MHz(Ch110)	14.04	/	/	/	/	/	/	/
	5670MHz(Ch134)	13.94							

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

### A.3. Peak Power Spectral Density (conducted)

**Measurement Limit:**

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

The output power measurement method SA-1 is made according to KDB 789033.

**Measurement Results:**

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5260 MHz	4.43	P
	5280 MHz	4.61	P
	5320 MHz	4.78	P
	5500 MHz	4.44	P
	5580 MHz	3.99	P
	5700 MHz	4.83	P
802.11n HT20	5260 MHz	4.62	P
	5280 MHz	4.57	P
	5320 MHz	4.26	P
	5500 MHz	4.86	P
	5580 MHz	4.06	P
	5700 MHz	4.42	P

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11n HT40	5270 MHz	0.94	P
	5310 MHz	0.67	P
	5510 MHz	0.83	P
	5550 MHz	0.99	P
	5670 MHz	0.80	P

**Conclusion: PASS**

#### A.4. Occupied 26dB Bandwidth(conducted)

##### Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033.

##### Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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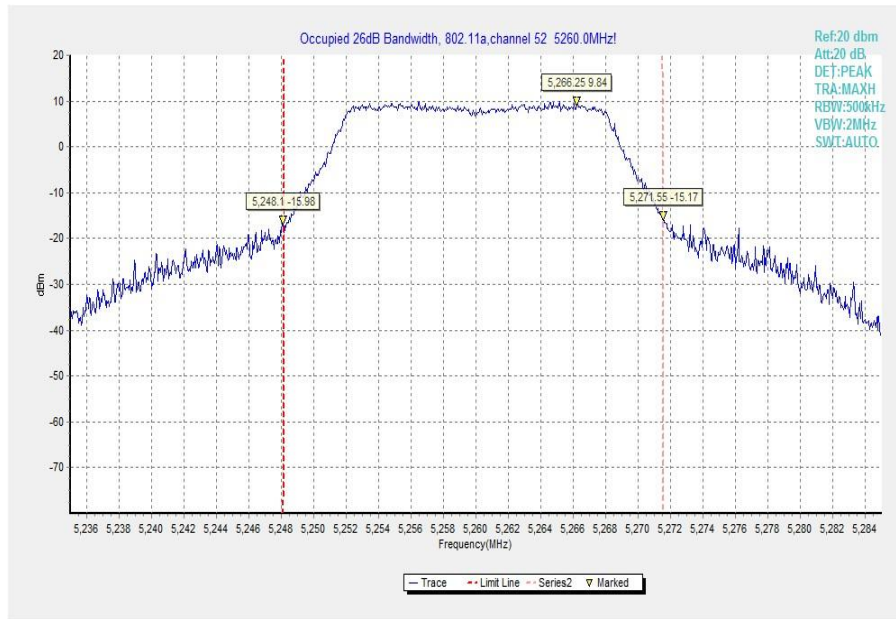
##### Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth ( kHz)		conclusion
		Fig.	Value	
802.11a	5260 MHz	Fig.1	23450	P
	5280 MHz	Fig.2	23200	P
	5320 MHz	Fig.3	23350	P
	5500 MHz	Fig.4	23400	P
	5580 MHz	Fig.5	23450	P
	5700 MHz	Fig.6	30850	P
802.11n HT20	5260 MHz	Fig.7	23350	P
	5280 MHz	Fig.8	23950	P
	5320 MHz	Fig.9	24000	P
	5500 MHz	Fig.10	23650	P
	5580 MHz	Fig.11	29650	P
	5700 MHz	Fig.12	32400	P
802.11n HT40	5270 MHz	Fig.13	43680	P
	5310 MHz	Fig.14	45200	P
	5510 MHz	Fig.15	45120	P
	5550 MHz	Fig.16	43760	P
	5670 MHz	Fig.17	45280	P

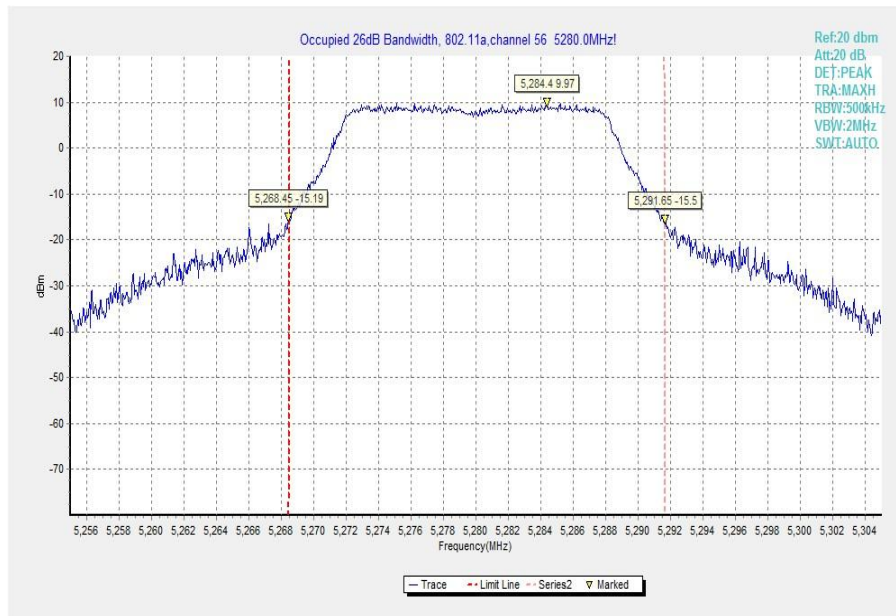
**Conclusion: PASS**

Test graphs as below:





**Fig. 1 Occupied 26dB Bandwidth (802.11a, 5260MHz)**



**Fig. 2 Occupied 26dB Bandwidth (802.11a, 5280MHz)**



Fig. 3 Occupied 26dB Bandwidth (802.11a, 5320MHz)

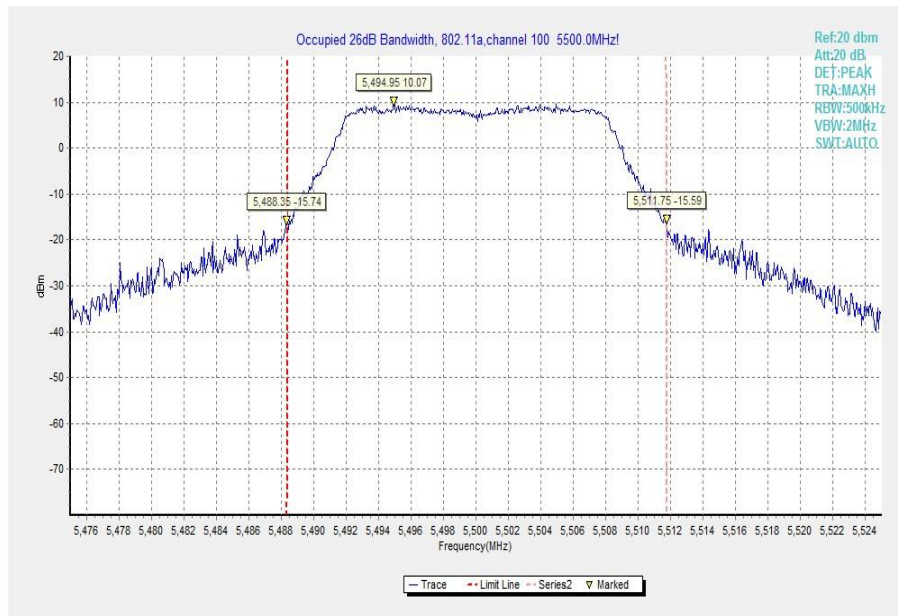
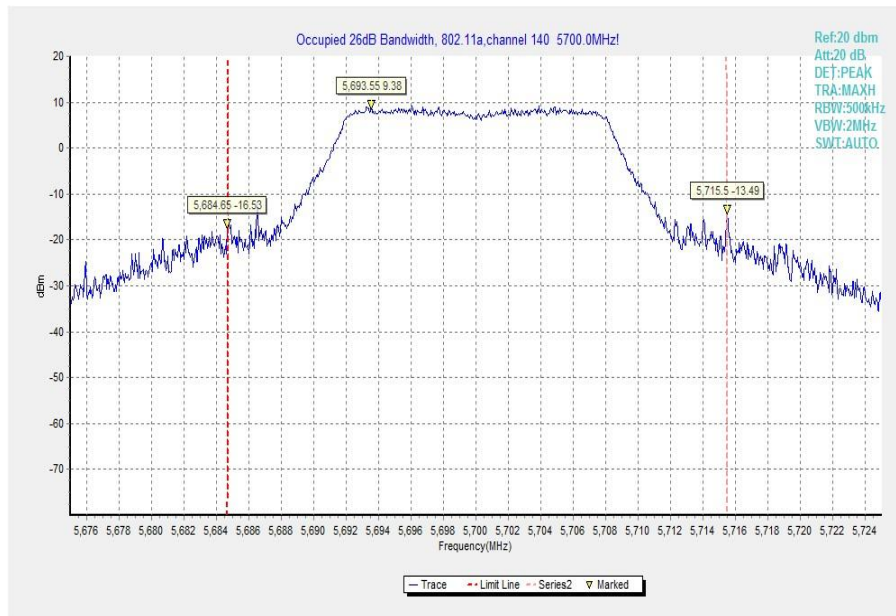


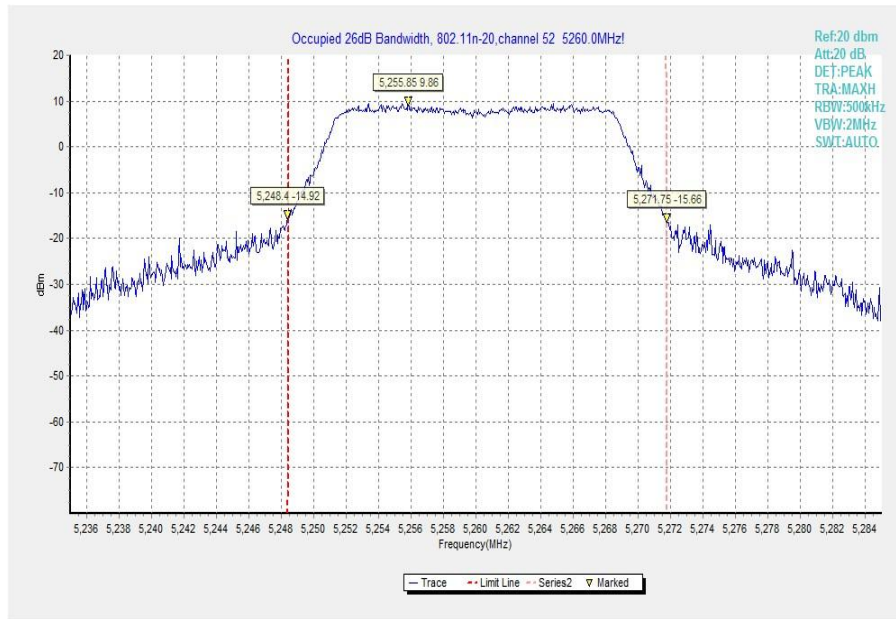
Fig. 4 Occupied 26dB Bandwidth (802.11a, 5500MHz)



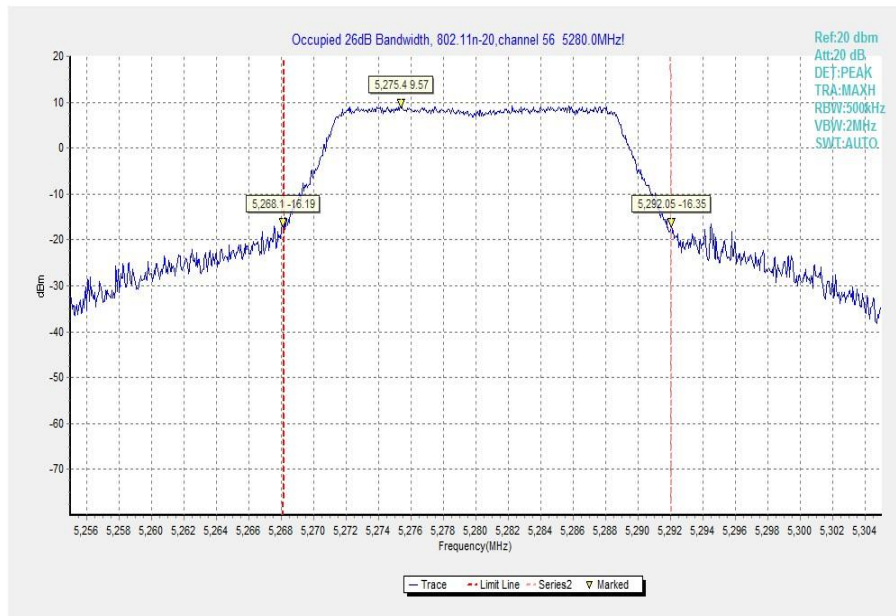
**Fig. 5 Occupied 26dB Bandwidth (802.11a, 5580MHz)**



**Fig. 6 Occupied 26dB Bandwidth (802.11a, 5700MHz)**

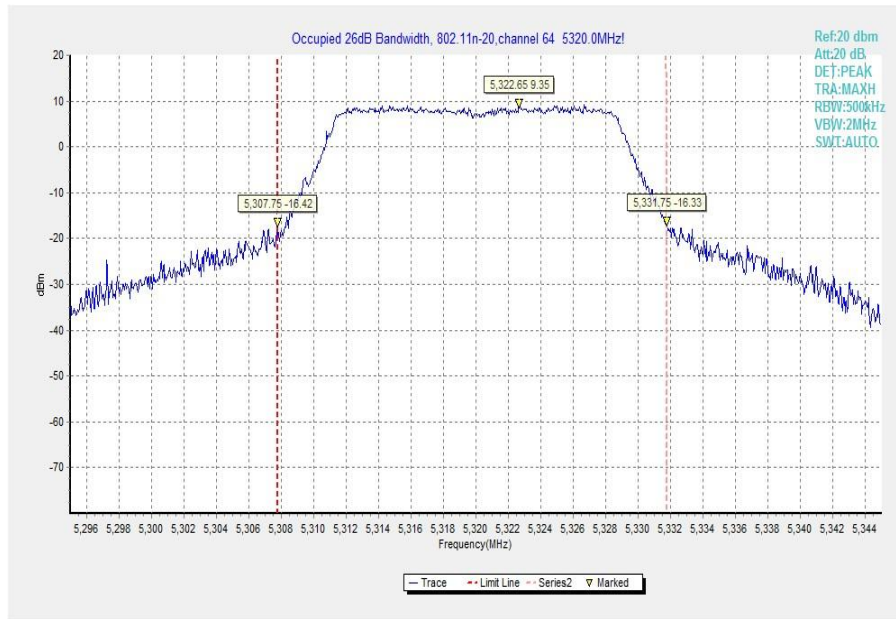


**Fig. 7 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)**

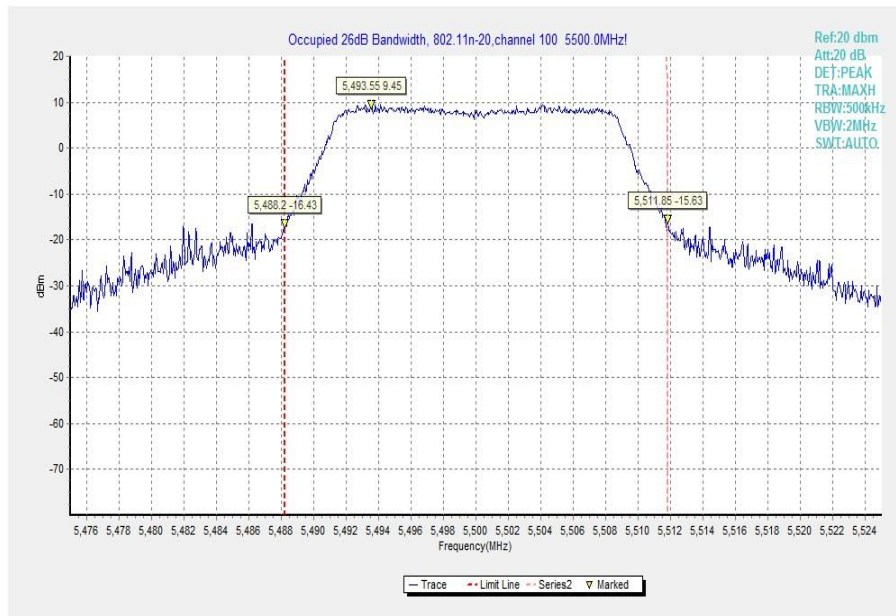


**Fig. 8 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)**





**Fig. 9 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)**



**Fig. 10 Occupied 26dB Bandwidth (802.11n-HT20, 5500MHz)**

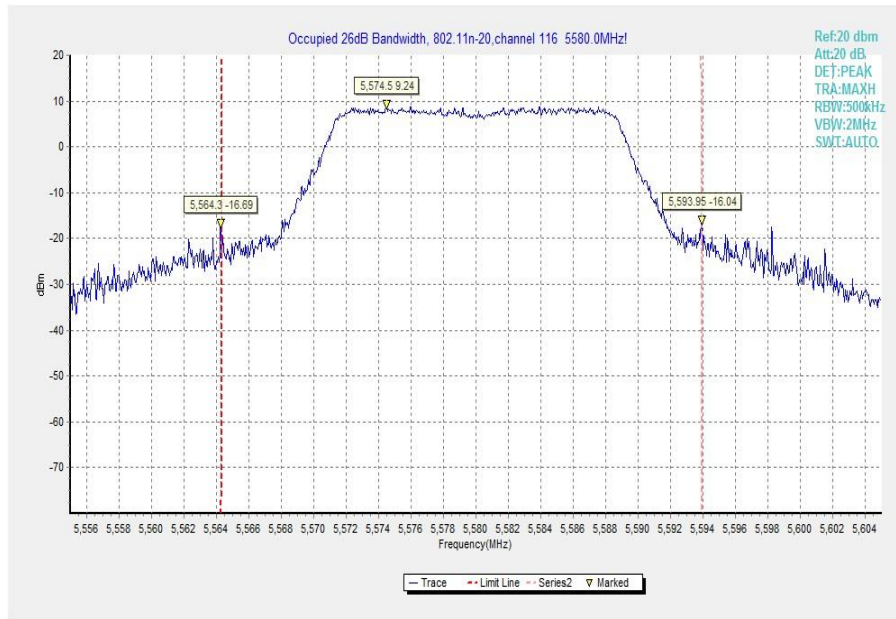


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT20, 5580MHz)

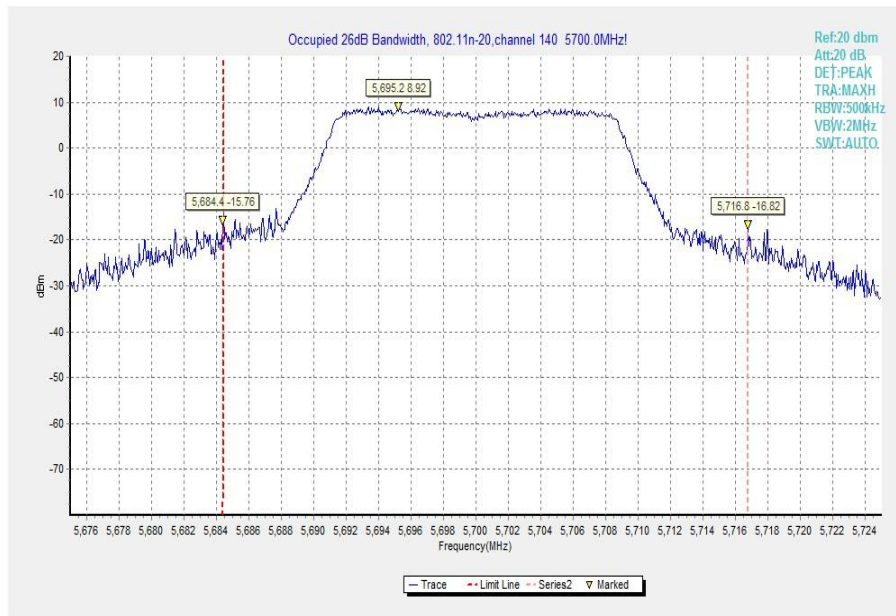
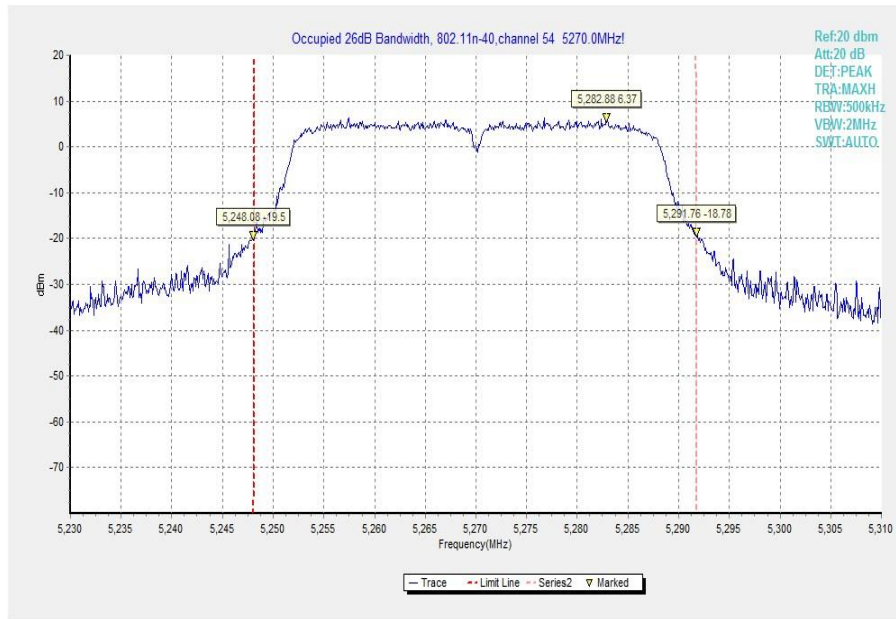
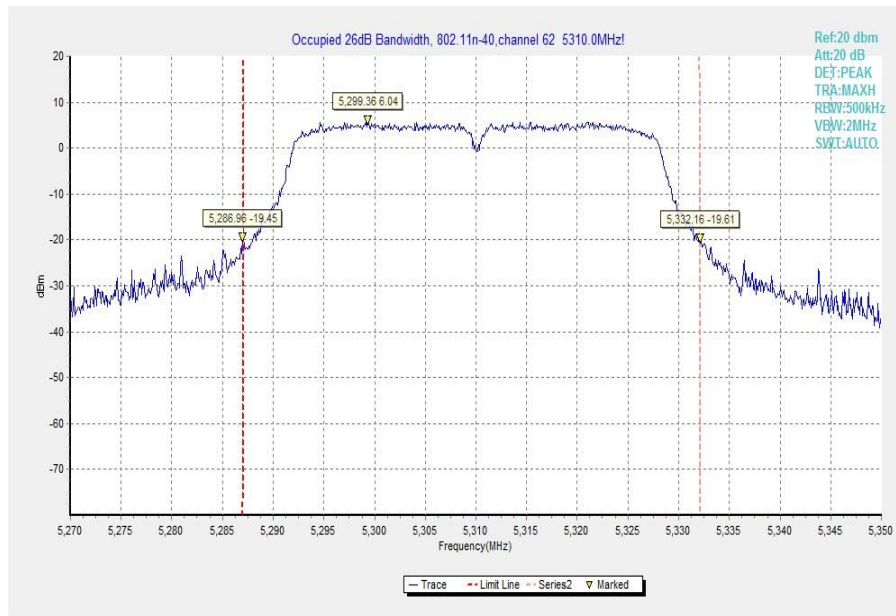


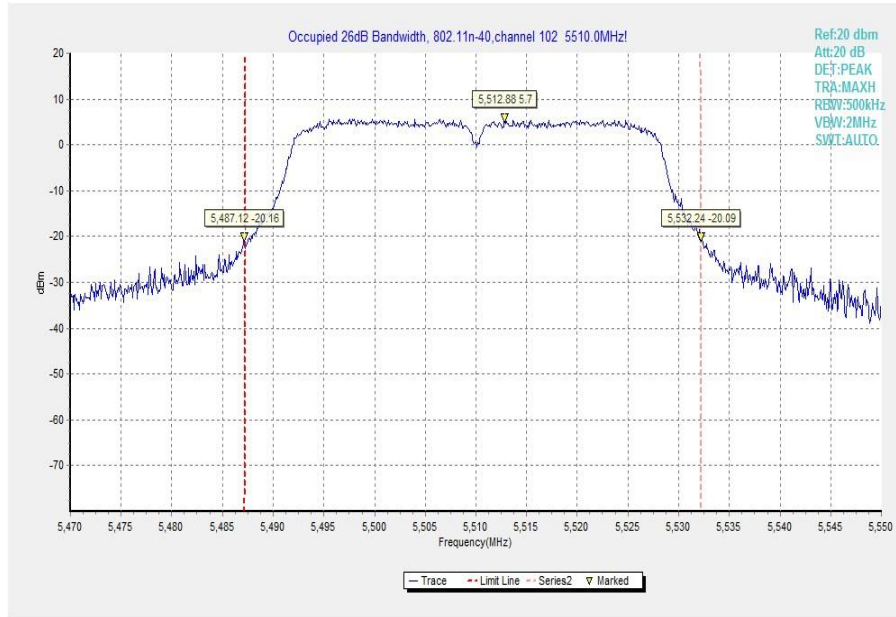
Fig. 12 Occupied 26dB Bandwidth (802.11n-HT20, 5700MHz)



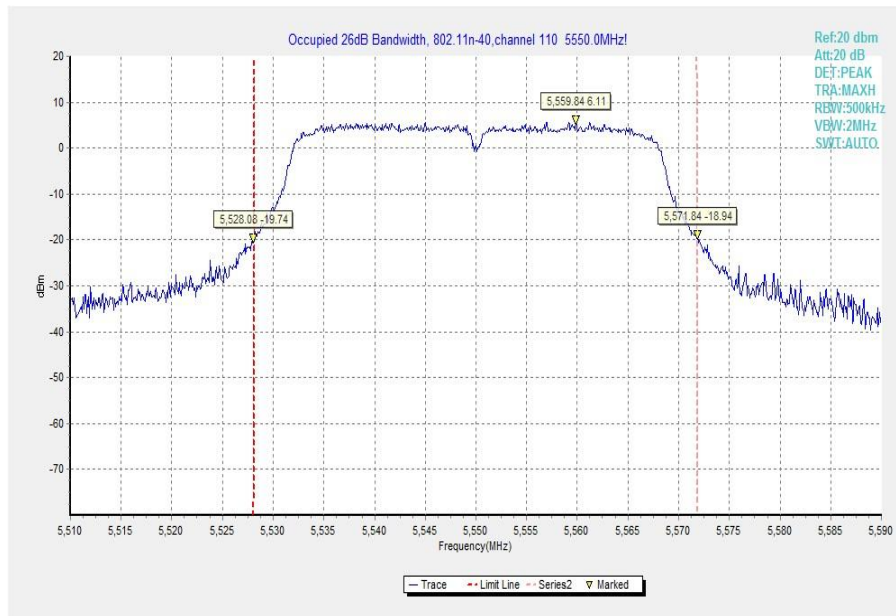
**Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)**



**Fig. 14 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)**

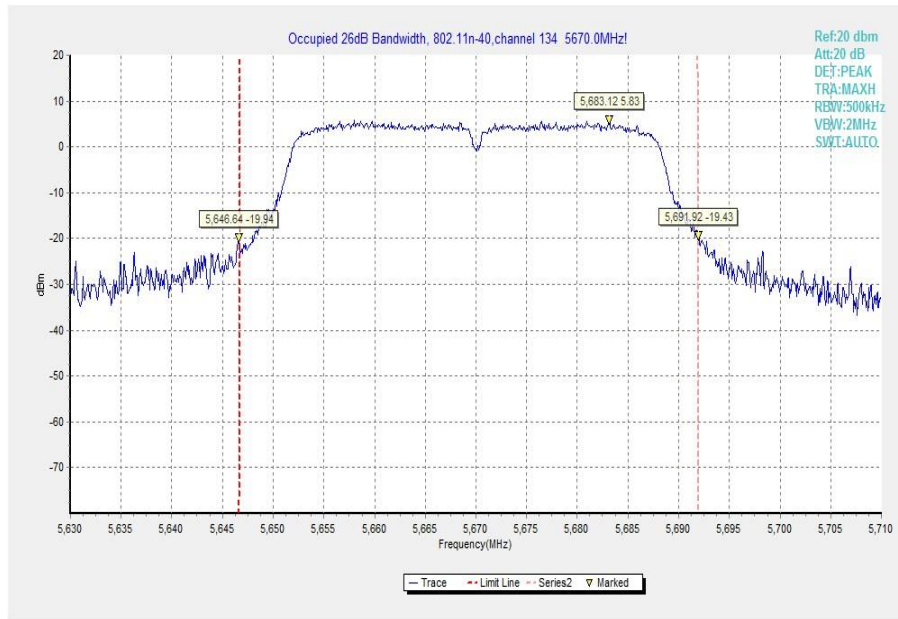


**Fig. 15 Occupied 26dB Bandwidth (802.11n-HT40, 5510MHz)**



**Fig. 16 Occupied 26dB Bandwidth (802.11n-HT40, 5550MHz)**





**Fig. 17 Occupied 26dB Bandwidth (802.11n-HT40, 5670MHz)**

## A.5. Band Edges Compliance

### Band Edges - conducted

#### Measurement Limit:

Standard	Limit (dBm/MHz)
FCC 47 CFR Part 15.407(b)	< -27

The measurement is made according to KDB 789033.

#### Measurement Uncertainty:

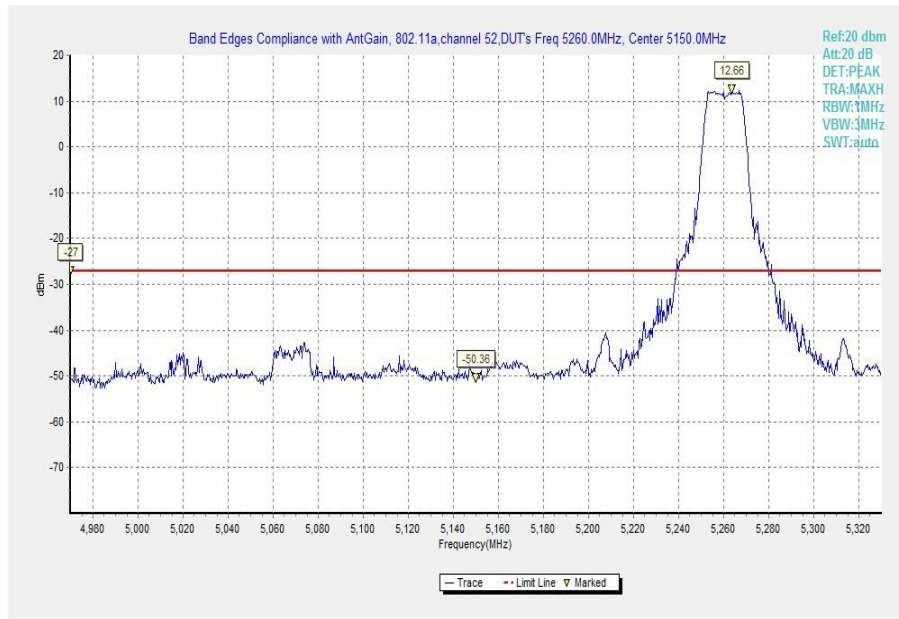
Measurement Uncertainty	0.75dB
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#### Measurement Result:

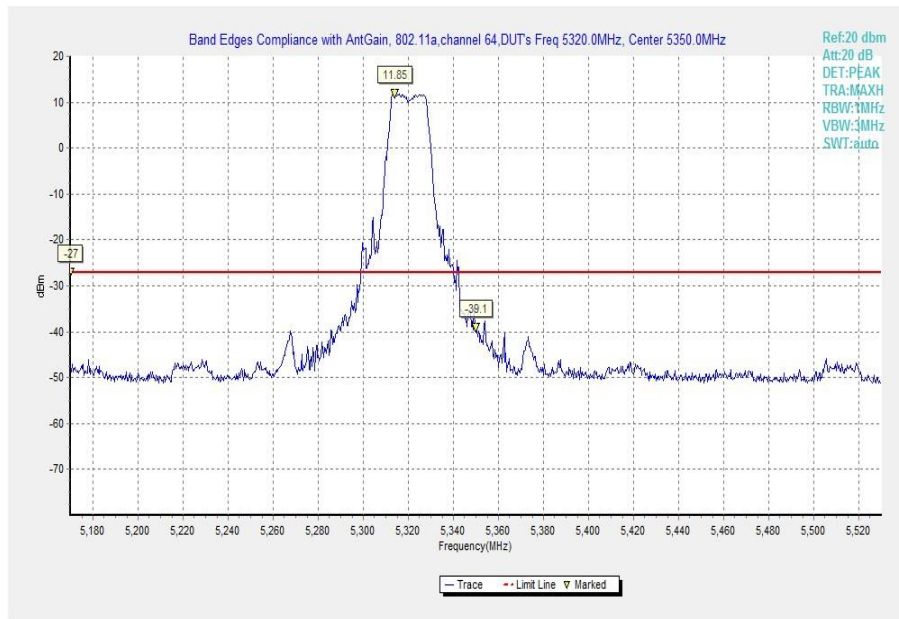
Mode	Channel	Test Results	Conclusion
802.11a	5260 MHz	Fig.18	P
	5320 MHz	Fig.19	P
	5500 MHz	Fig.20	P
	5700 MHz	Fig.21	P
802.11n HT20	5260 MHz	Fig.22	P
	5320 MHz	Fig.23	P
	5500 MHz	Fig.24	P
	5700 MHz	Fig.25	P
802.11n HT40	5270 MHz	Fig.26	P
	5310 MHz	Fig.27	P
	5510 MHz	Fig.28	P
	5670 MHz	Fig.29	P

**Conclusion: PASS**

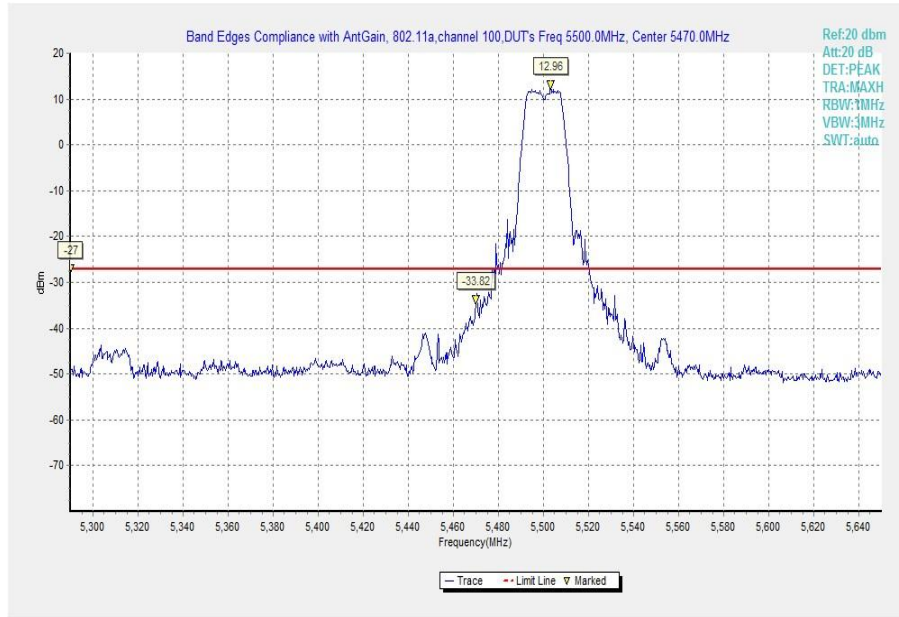
Test graphs as below:



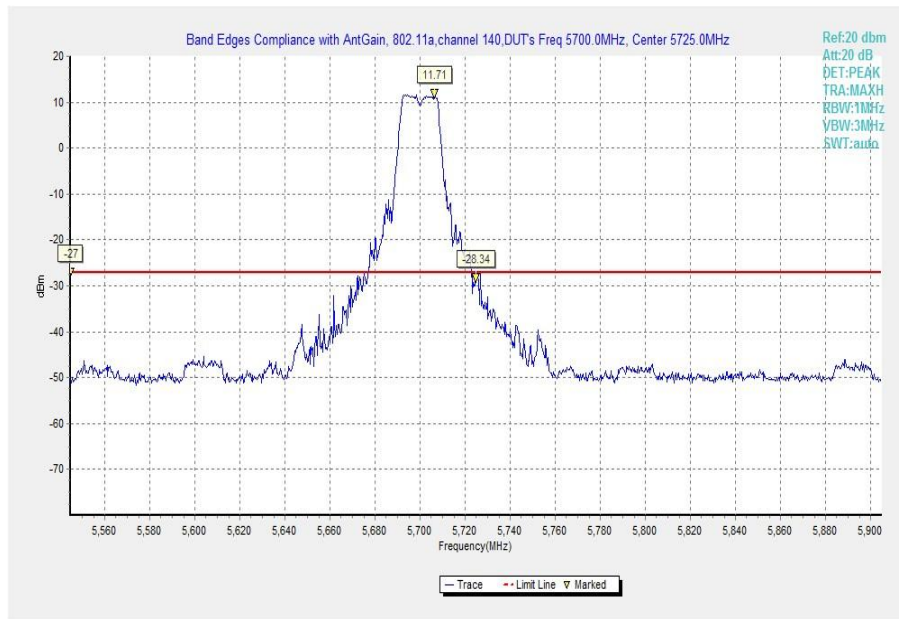
**Fig. 18 Band Edges (802.11a, 5260MHz)**



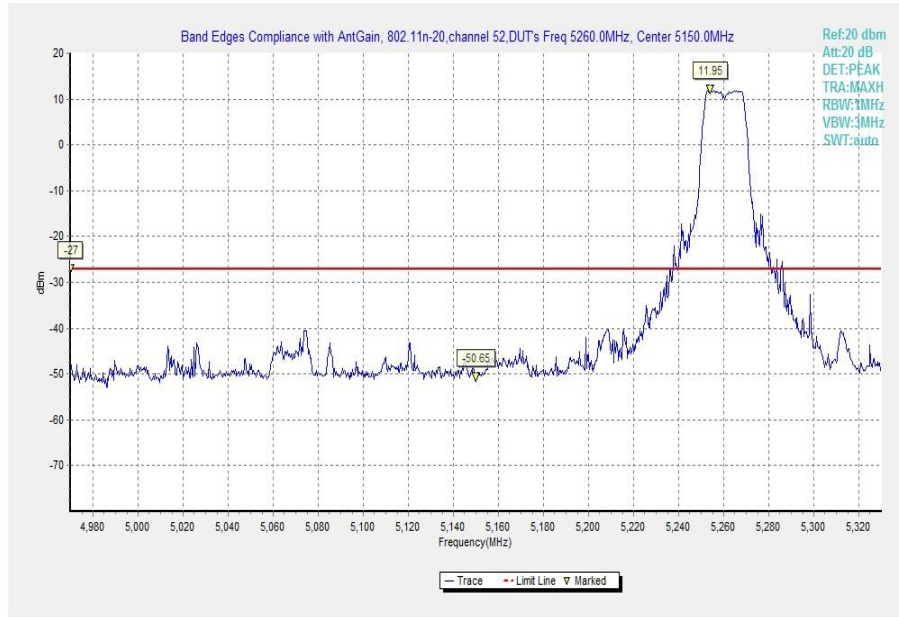
**Fig. 19 Band Edges (802.11a, 5320MHz)**



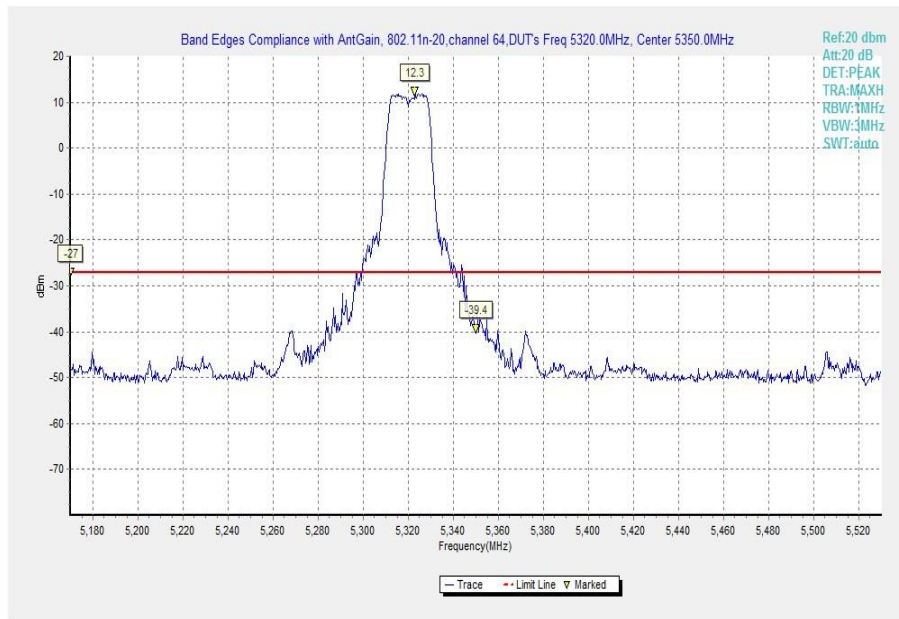
**Fig. 20 Band Edges (802.11a, 5500MHz)**



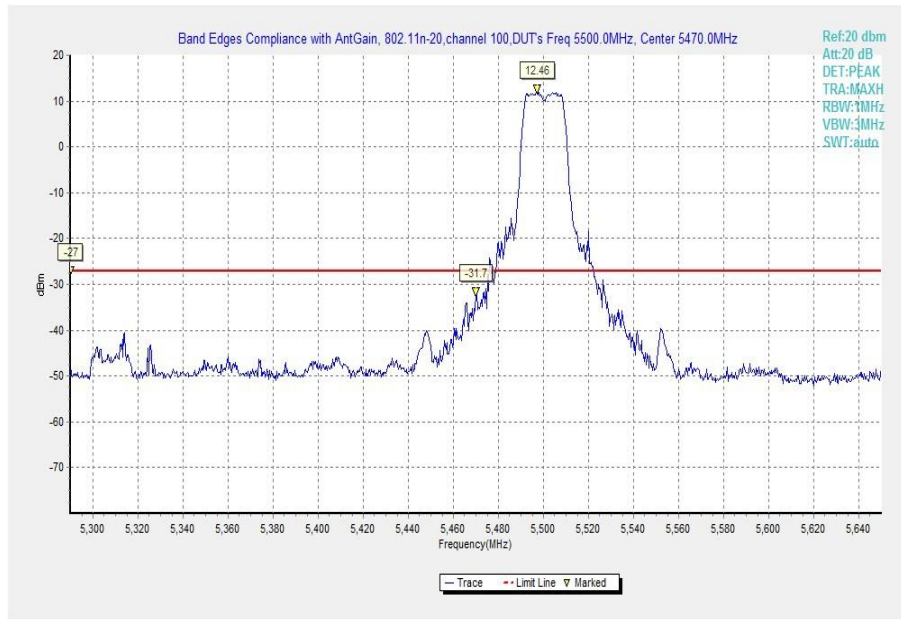
**Fig. 21 Band Edges (802.11a, 5700MHz)**



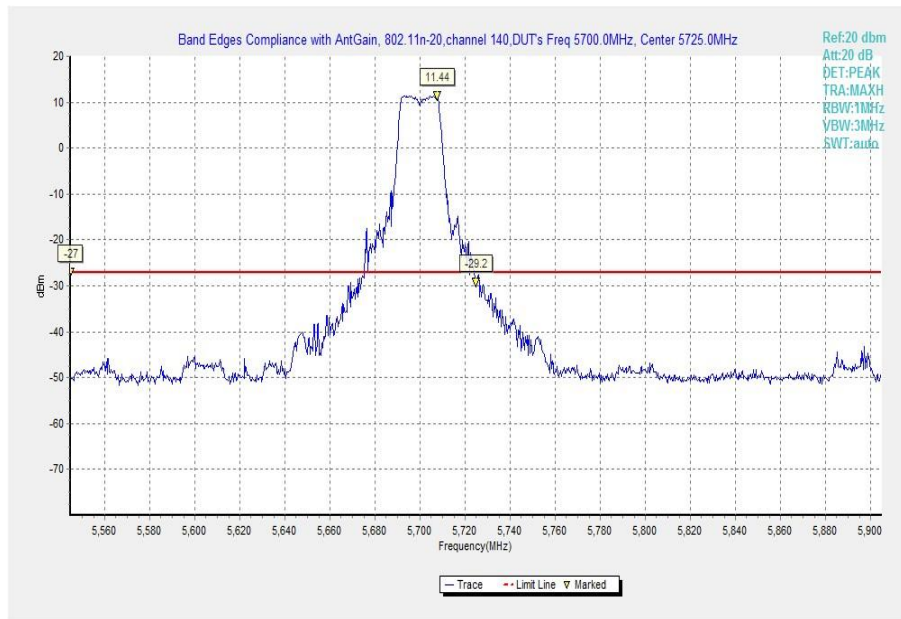
**Fig. 22 Band Edges (802.11n-HT20, 5260MHz)**



**Fig. 23 Band Edges (802.11n-HT20, 5320MHz)**

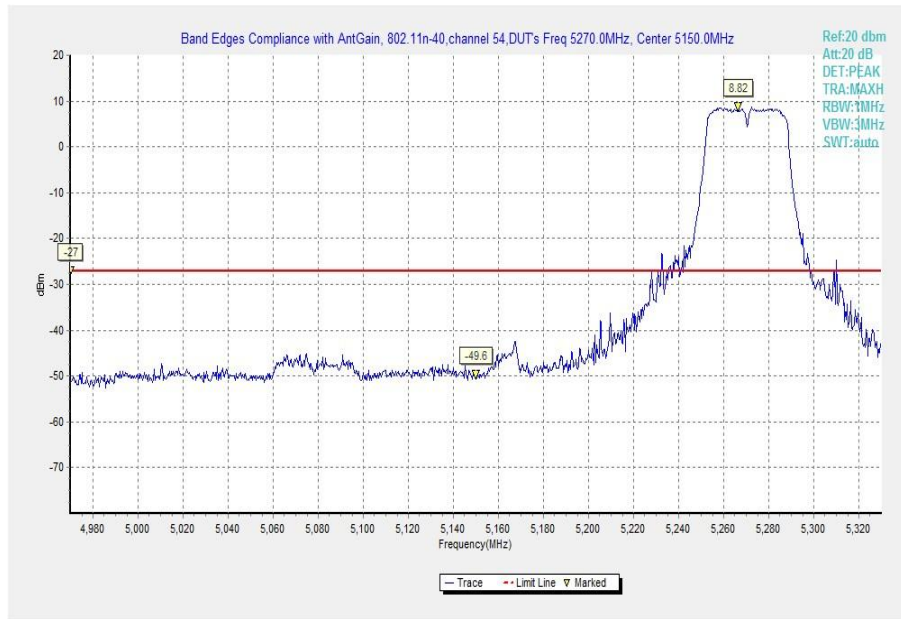


**Fig. 24 Band Edges (802.11n-HT20, 5500MHz)**

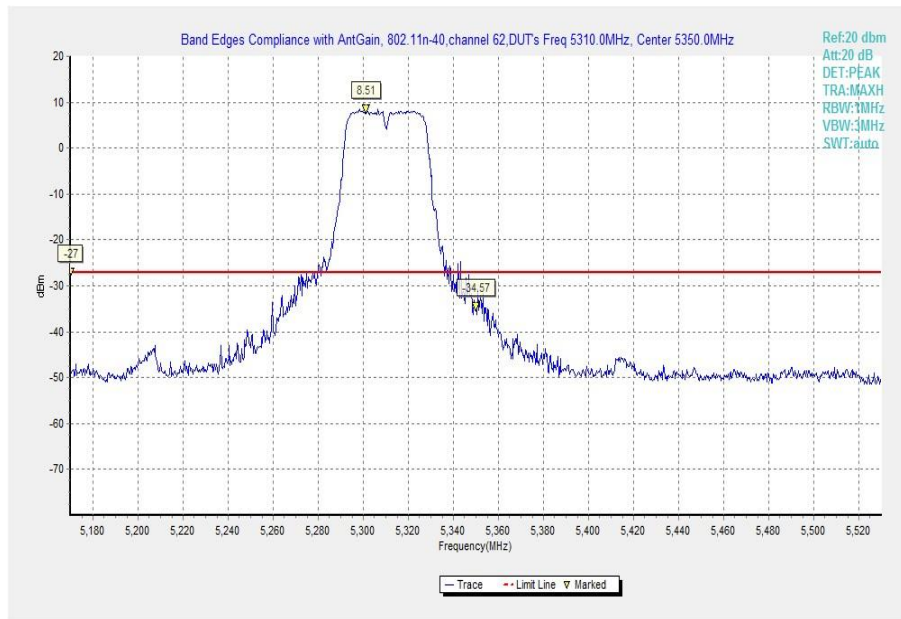


**Fig. 25 Band Edges (802.11n-HT20, 5700MHz)**

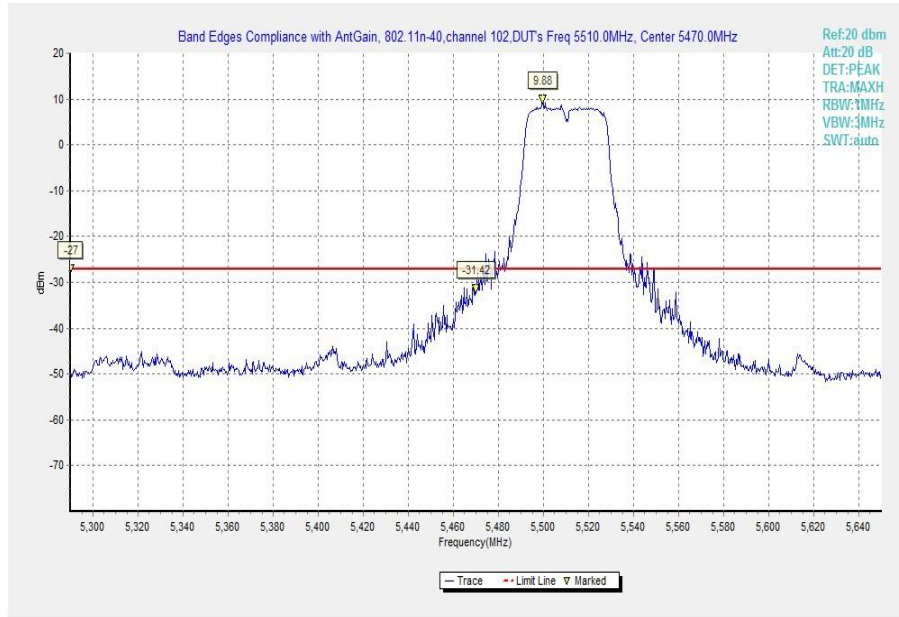




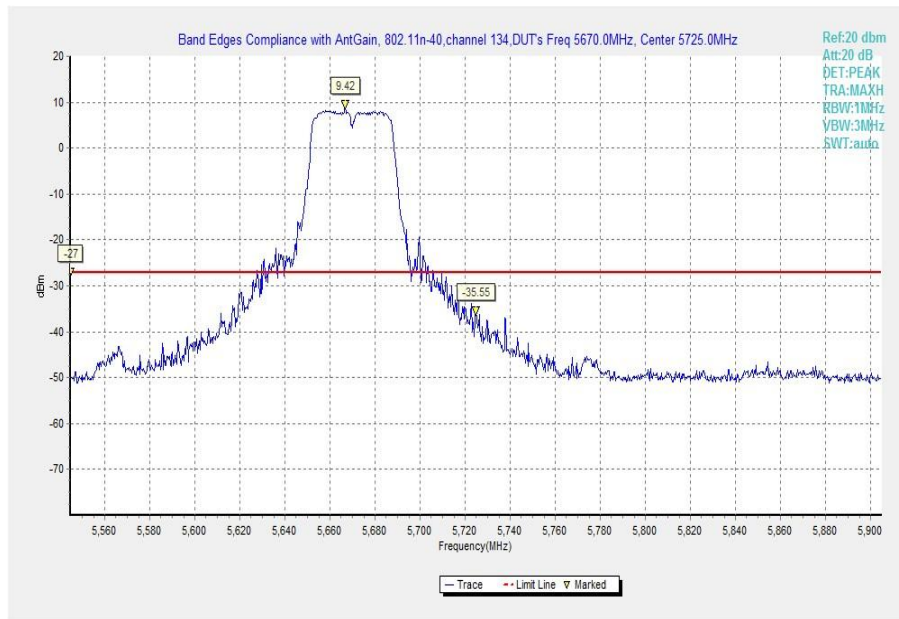
**Fig. 26 Band Edges (802.11n-HT40, 5270MHz)**



**Fig. 27 Band Edges (802.11n-HT40, 5310MHz)**



**Fig. 28 Band Edges (802.11n-HT40, 5510MHz)**



**Fig. 29 Band Edges (802.11n-HT40, 5670MHz)**



### A.6. Radiated Spurious Emission > 30MHz

**Measurement Limit:**

Standard	Limit (dBm/MHz)
FCC 47 CFR Part 15.407(a)	< -27

The measurement is made according to KDB 789033.

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 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

Note: For frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m.

**Measurement Uncertainty:**

Expanded measurement uncertainty for this test item is U =5.28 dB, k=2.

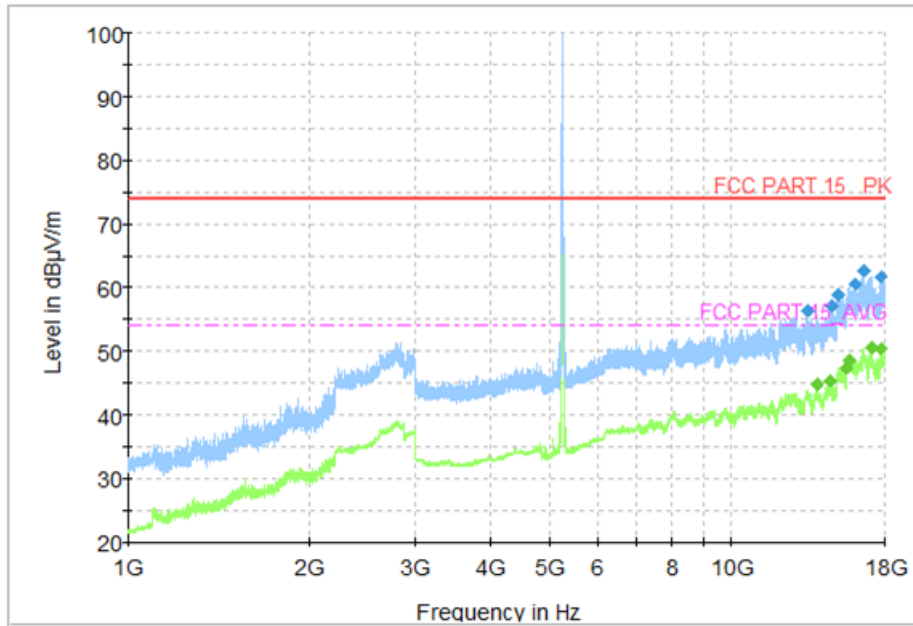
**Measurement Result:**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	52	1 GHz ~18 GHz	Fig.30	P
	56	30 MHz ~1 GHz	Fig.31	P
		1 GHz ~18 GHz	Fig.32	P
		18 GHz ~26.5 GHz	Fig.33	P
		26.5 GHz ~40 GHz	Fig.34	P
	64	1 GHz ~18 GHz	Fig.35	P
	100	1 GHz ~18 GHz	Fig.36	P
	120	30 MHz ~1 GHz	Fig.37	P
		1 GHz ~18 GHz	Fig.38	P
		18 GHz ~26.5 GHz	Fig.39	P
26.5 GHz ~40 GHz		Fig.40	P	
140	1 GHz ~18 GHz	Fig.41	P	
802.11n HT20	52	1 GHz ~18 GHz	Fig.42	P
	56	30 MHz ~1 GHz	Fig.43	P
		1 GHz ~18 GHz	Fig.44	P
		18 GHz ~26.5 GHz	Fig.45	P
		26.5 GHz ~40 GHz	Fig.46	P
	64	1 GHz ~18 GHz	Fig.47	P
	100	1 GHz ~18 GHz	Fig.48	P

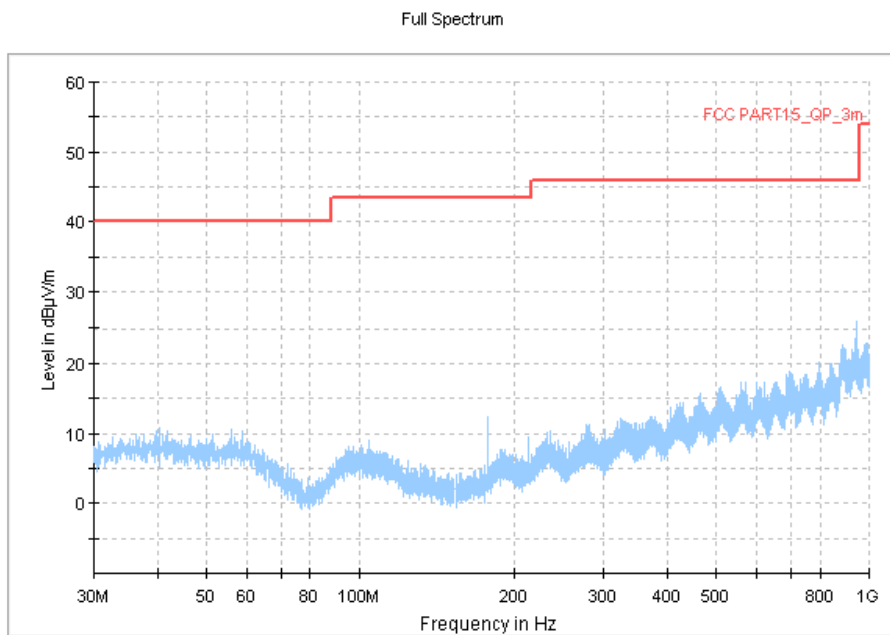
	120	30 MHz ~1 GHz	Fig.49	P
		1 GHz ~18 GHz	Fig.50	P
		18 GHz ~26.5 GHz	Fig.51	P
		26.5 GHz ~40 GHz	Fig.52	P
	140	1 GHz ~18 GHz	Fig.53	P
802.11n HT40	54	30 MHz ~1 GHz	Fig.54	P
		1 GHz ~18 GHz	Fig.55	P
		18 GHz ~26.5 GHz	Fig.56	P
		26.5 GHz ~40 GHz	Fig.57	P
	62	1 GHz ~18 GHz	Fig.58	P
	102	1 GHz ~18 GHz	Fig.59	P
	118	30 MHz ~1 GHz	Fig.60	P
		1 GHz ~18 GHz	Fig.61	P
		18 GHz ~26.5 GHz	Fig.62	P
		26.5 GHz ~40 GHz	Fig.63	P
134	1 GHz ~18 GHz	Fig.64	P	

**Conclusion: PASS**

**Test graphs as below:**



**Fig. 30 WIFI-11a-CH52-1G-18G**



**Fig. 31 WIFI-11a-CH56-30M-1G**

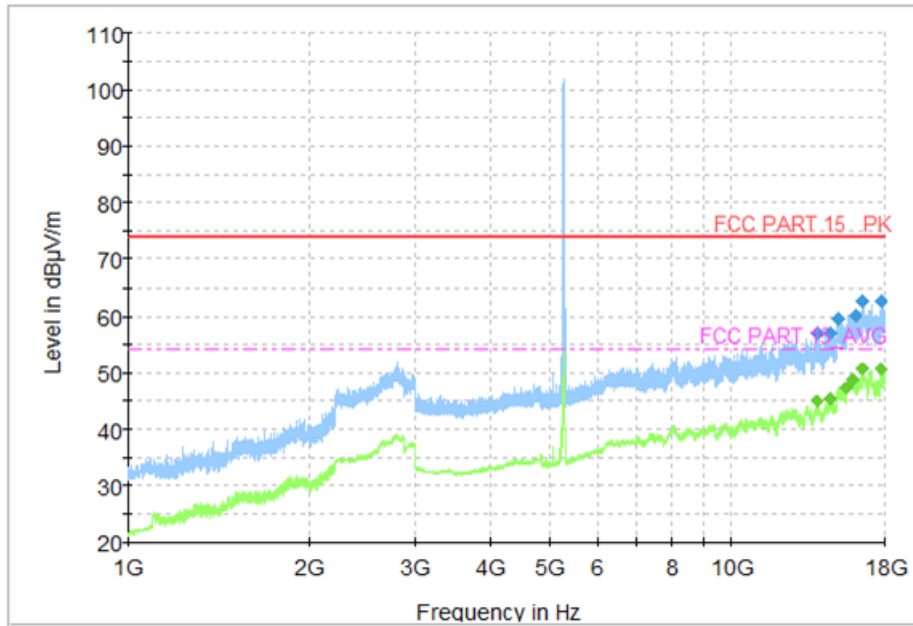


Fig. 32 WIFI-11a-CH56-1G-18G

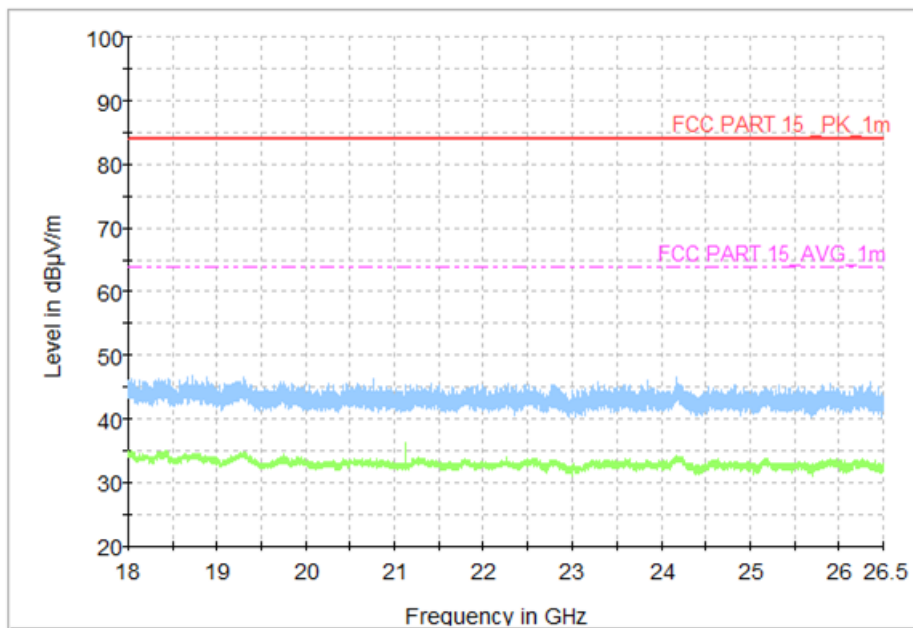


Fig. 33 WIFI-11a-CH56-18G-26.5G

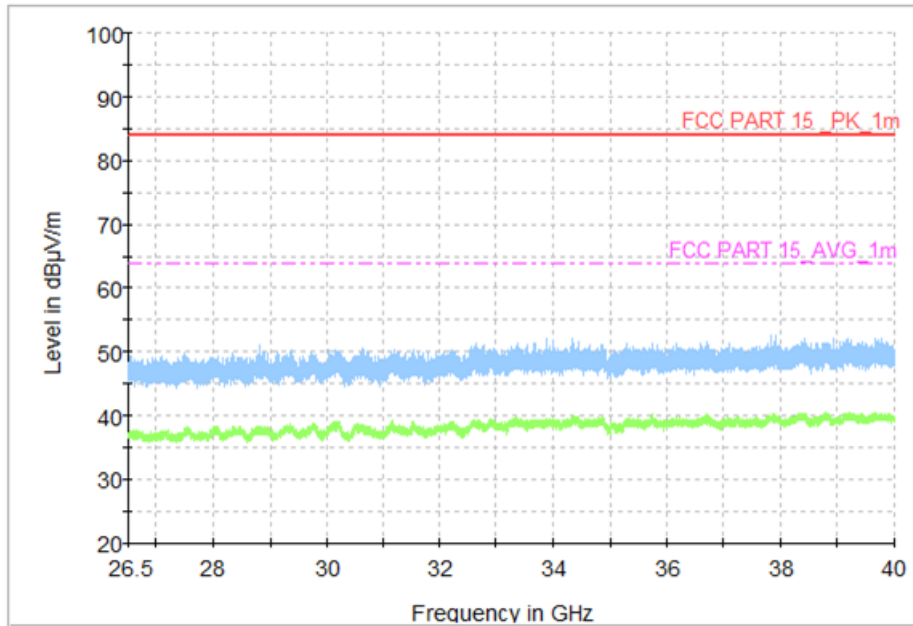


Fig. 34 WIFI-11a-CH56-26.5G-40G

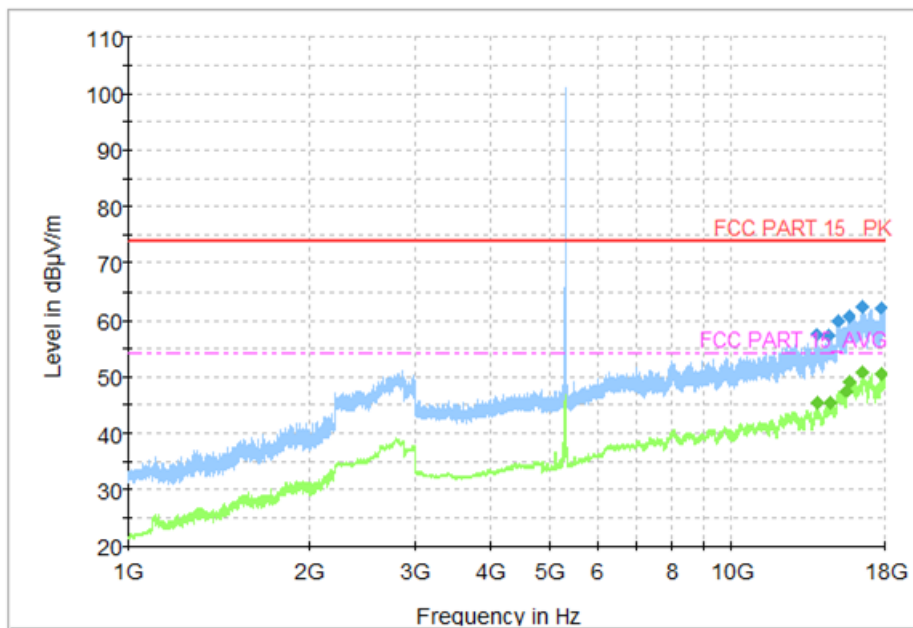
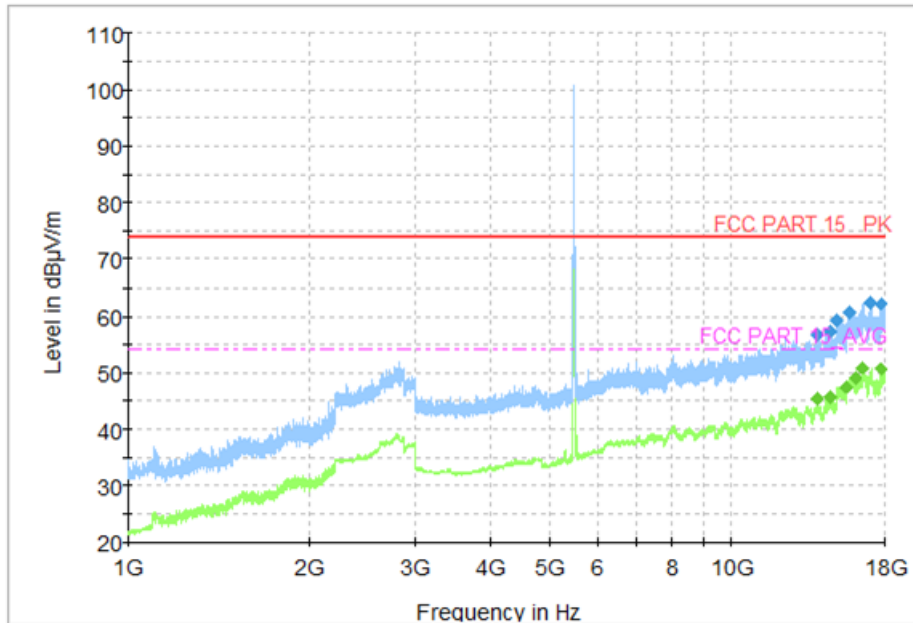
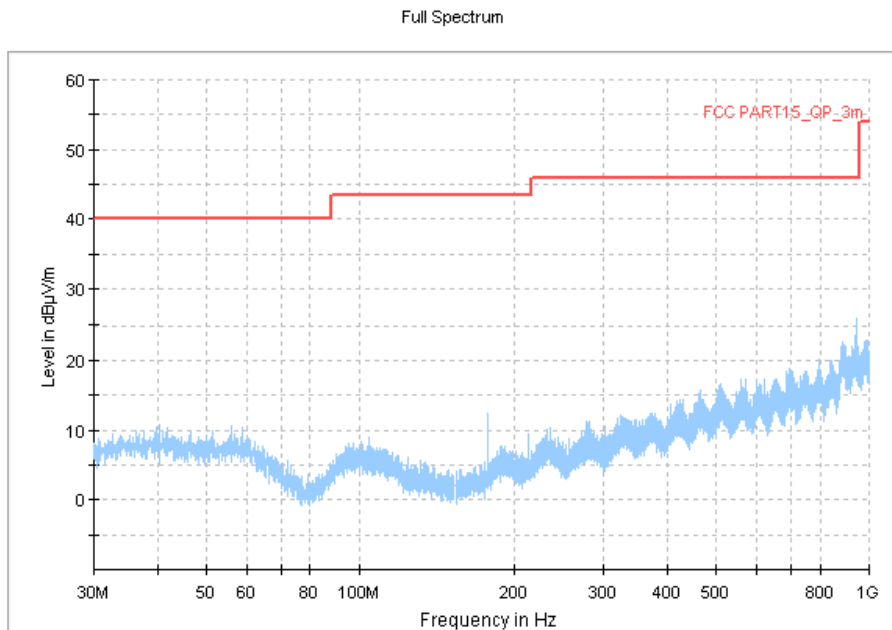


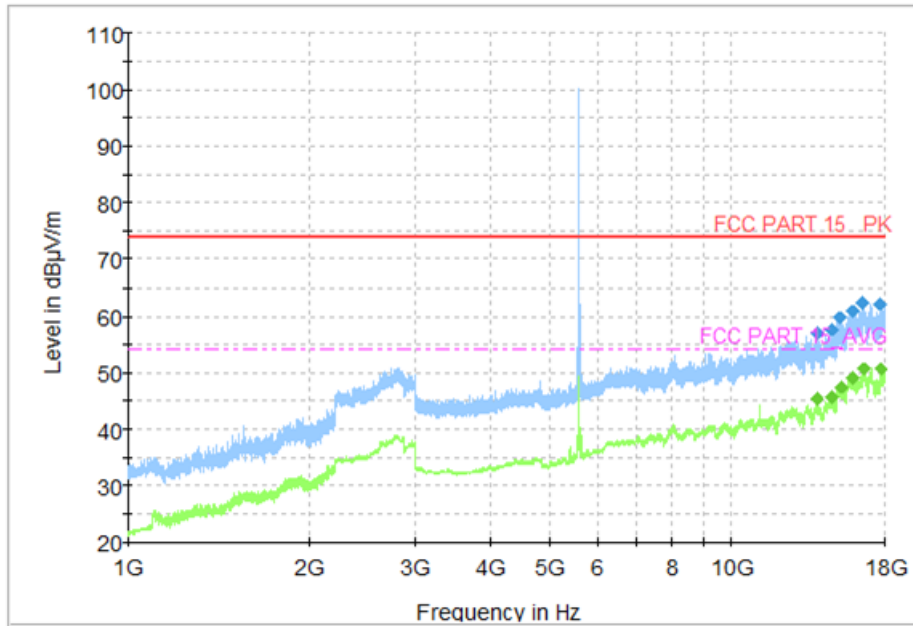
Fig. 35 WIFI-11a-CH64-1G-18G



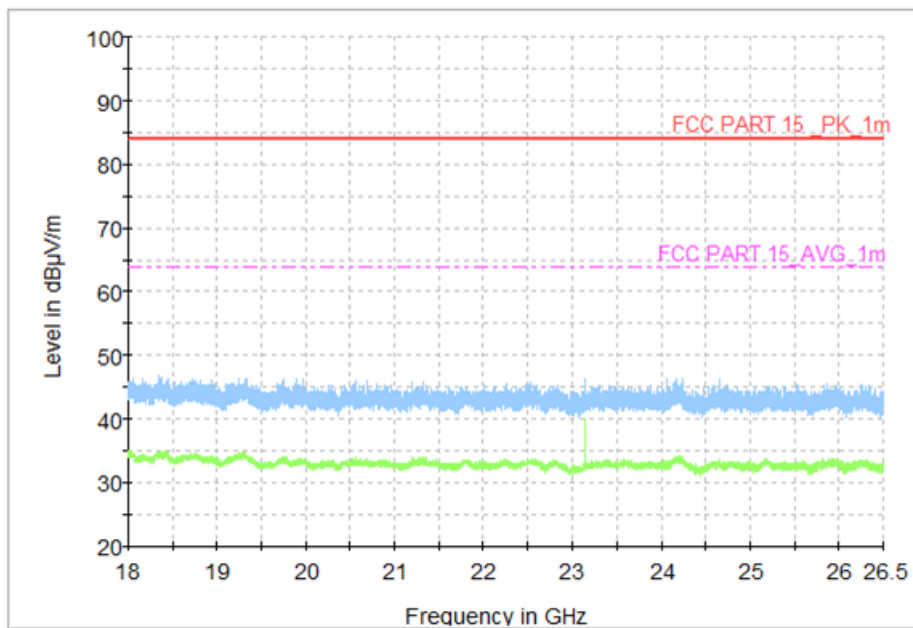
**Fig. 36 WIFI-11a-CH100-1G-18G**



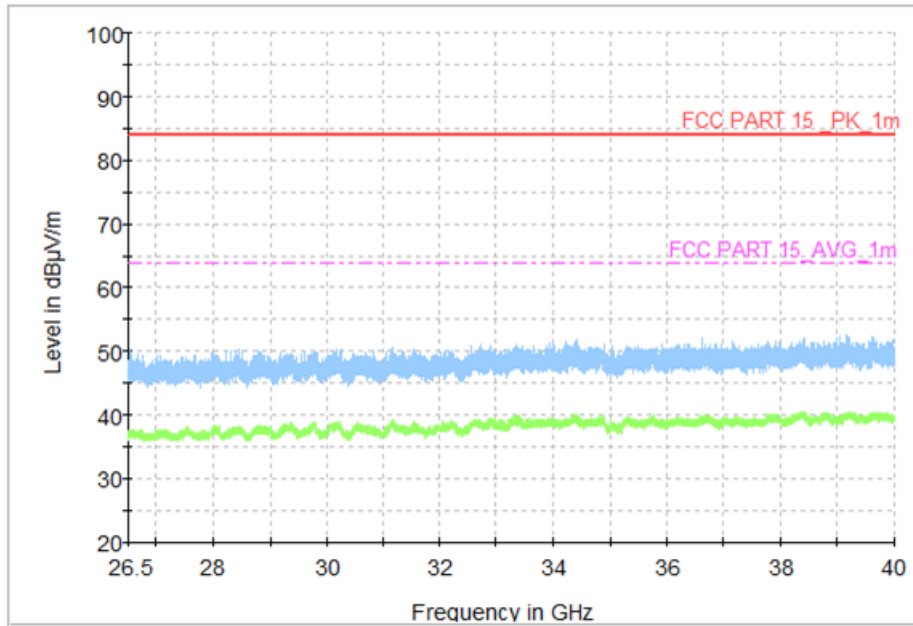
**Fig. 37 WIFI-11a-CH120-30M-1G**



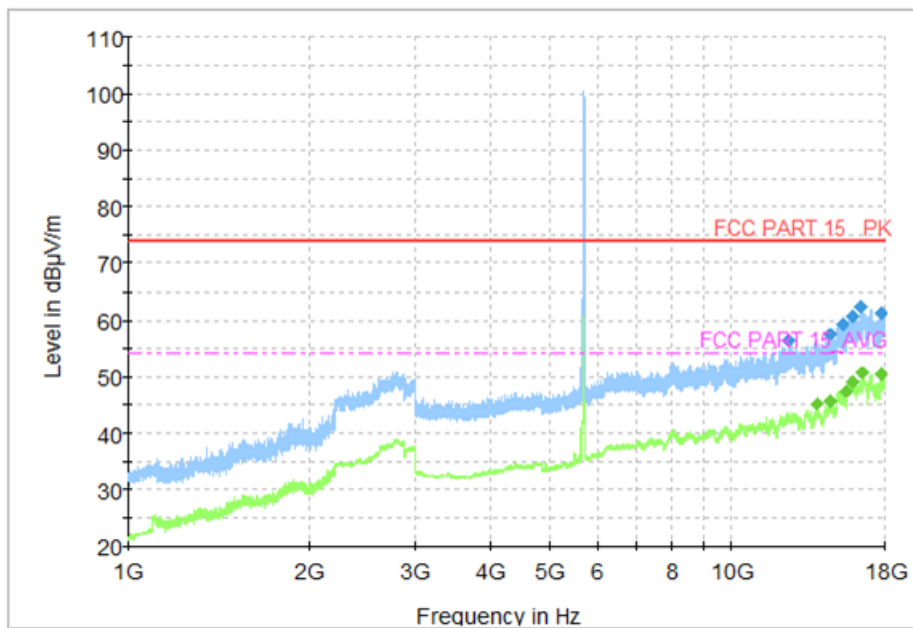
**Fig. 38** WIFI-11a-CH120-1G-18G



**Fig. 39** WIFI-11a-CH120-18G-26.5G

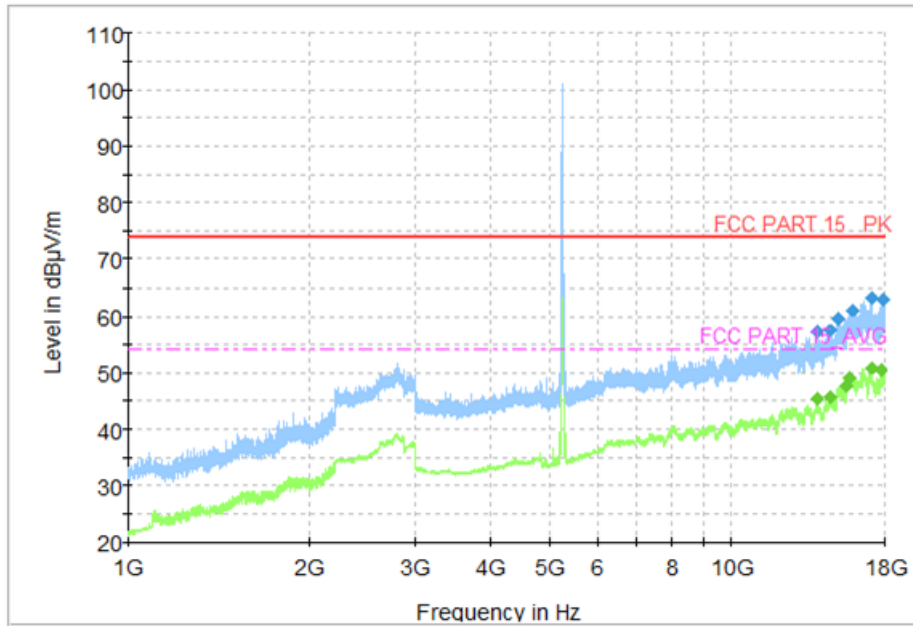


**Fig. 40** WIFI-11a-CH120-26.5G-40G

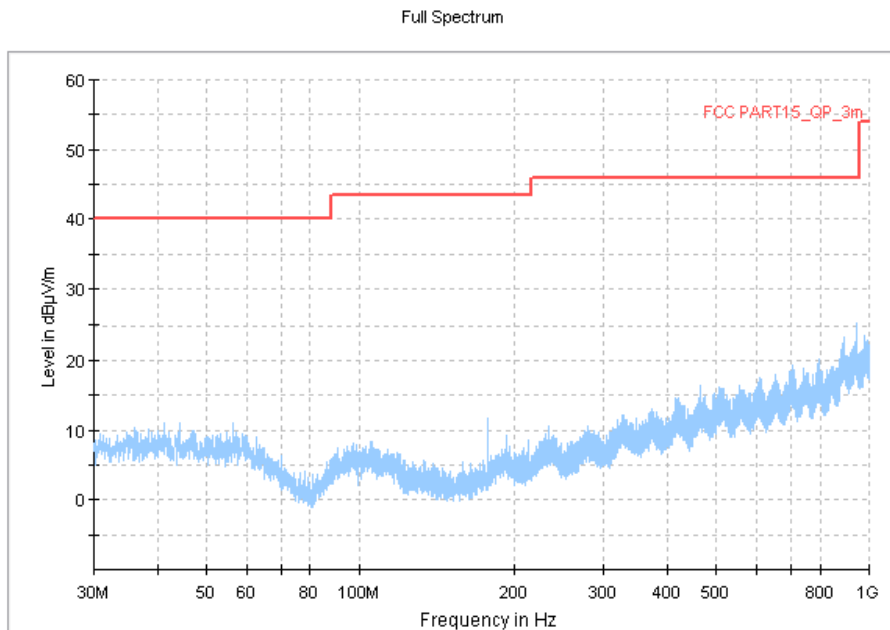


**Fig. 41** WIFI-11a-CH140-1G-18G





**Fig. 42 WIFI-11n(HT20)-CH52-1G-18G**



**Fig. 43 WIFI-11n(HT20)-CH56-30M-1G**

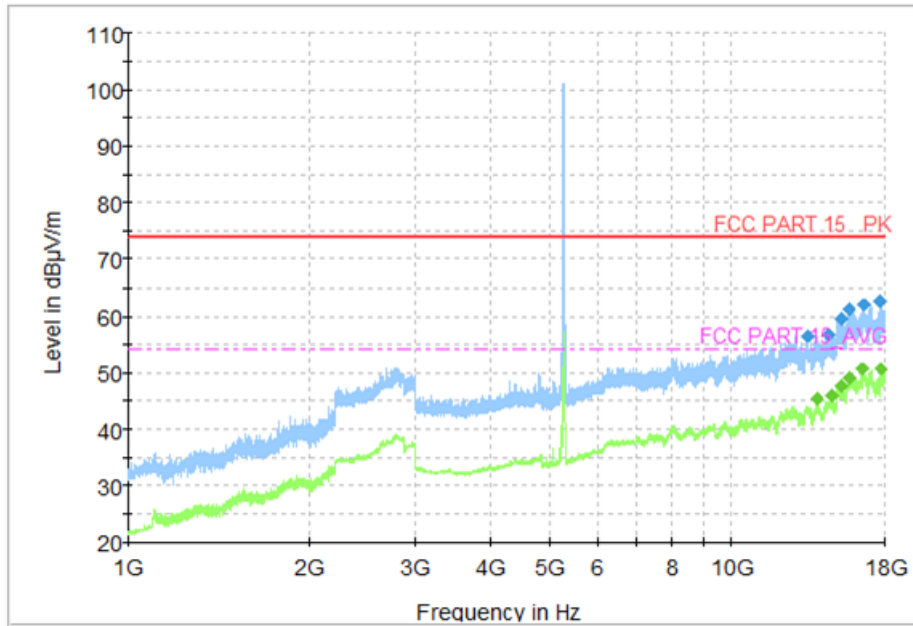


Fig. 44 WIFI-11n(HT20)-CH56-1G-18G

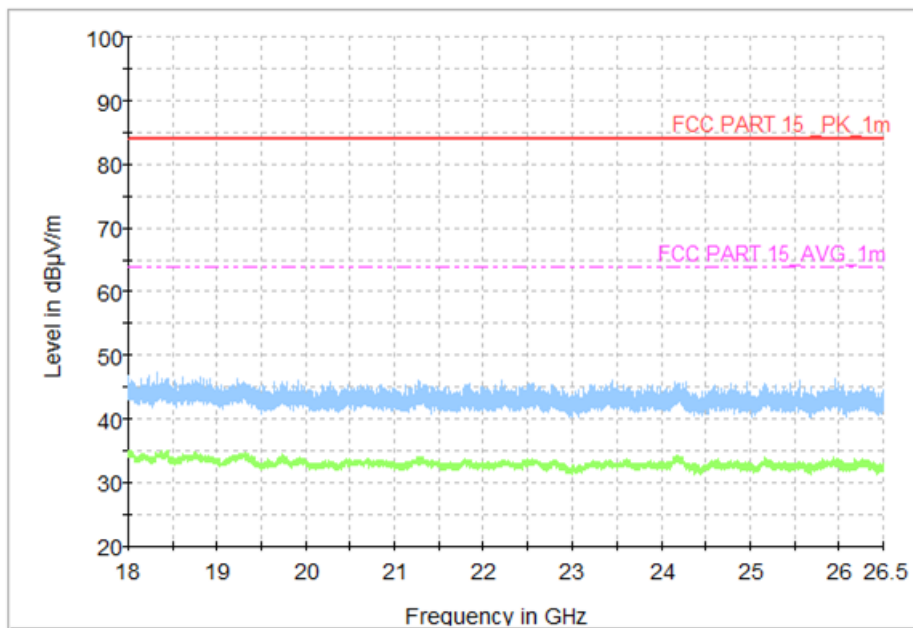


Fig. 45 WIFI-11n(HT20)-CH56-18G-26.5G

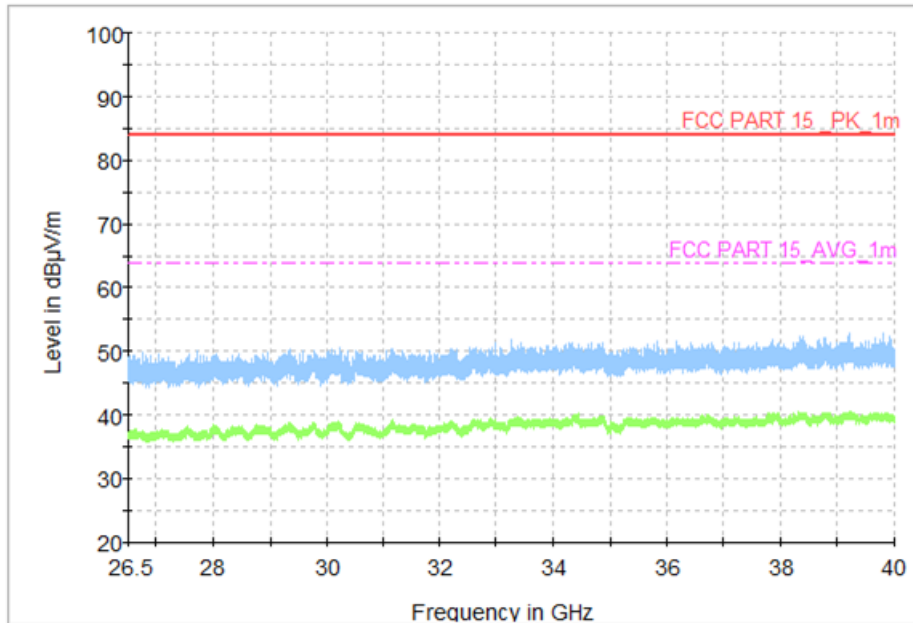


Fig. 46 WIFI-11n(HT20)-CH56-26.5G-40G

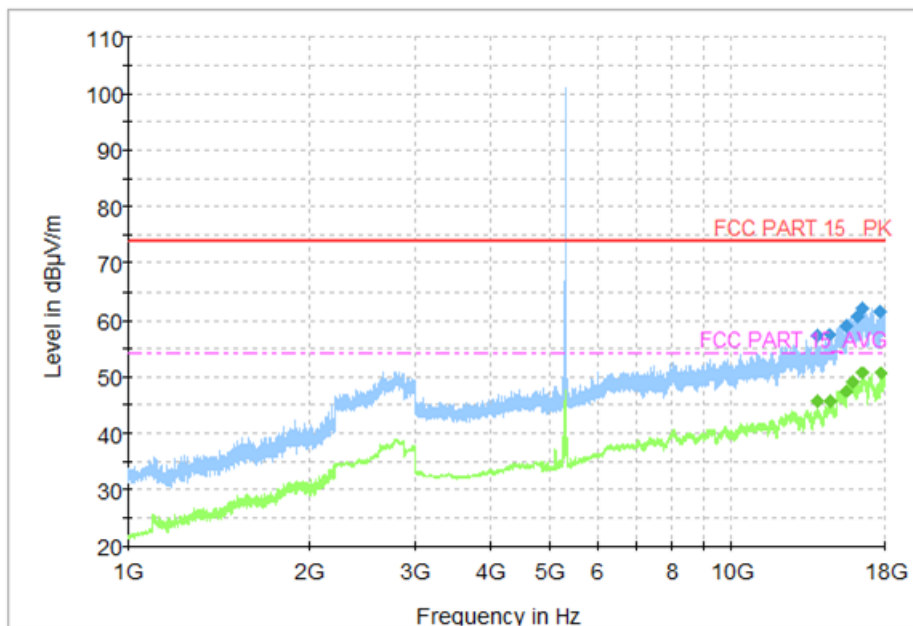
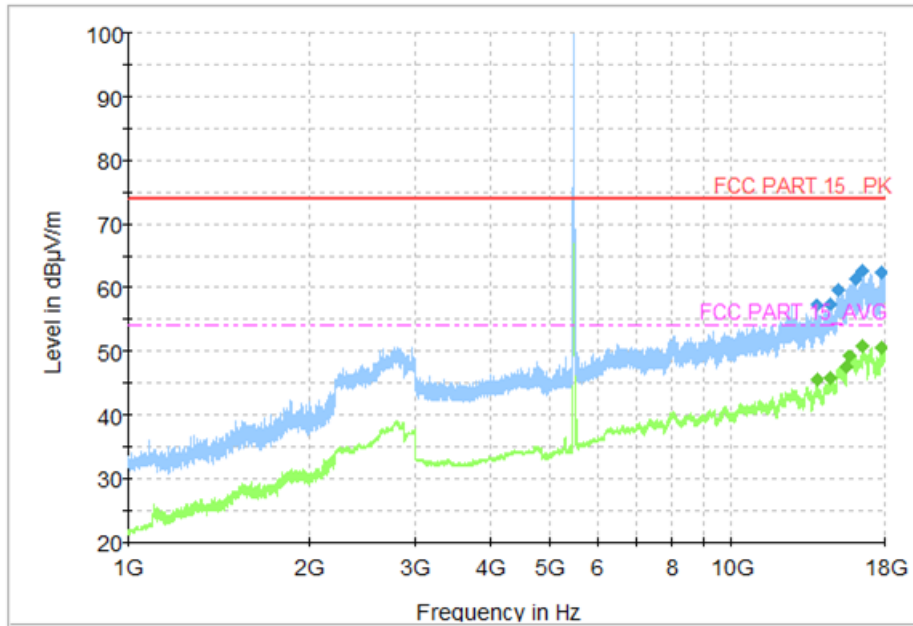
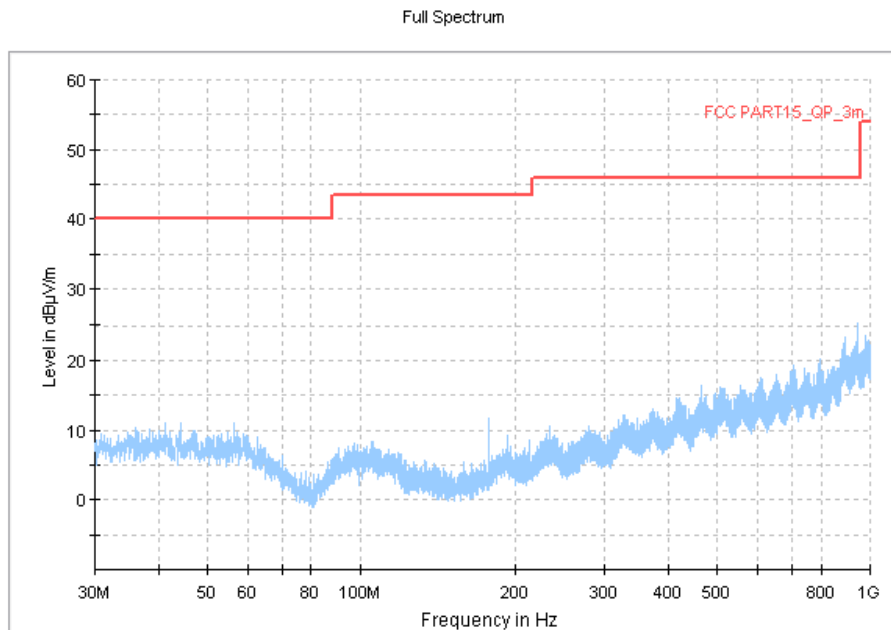


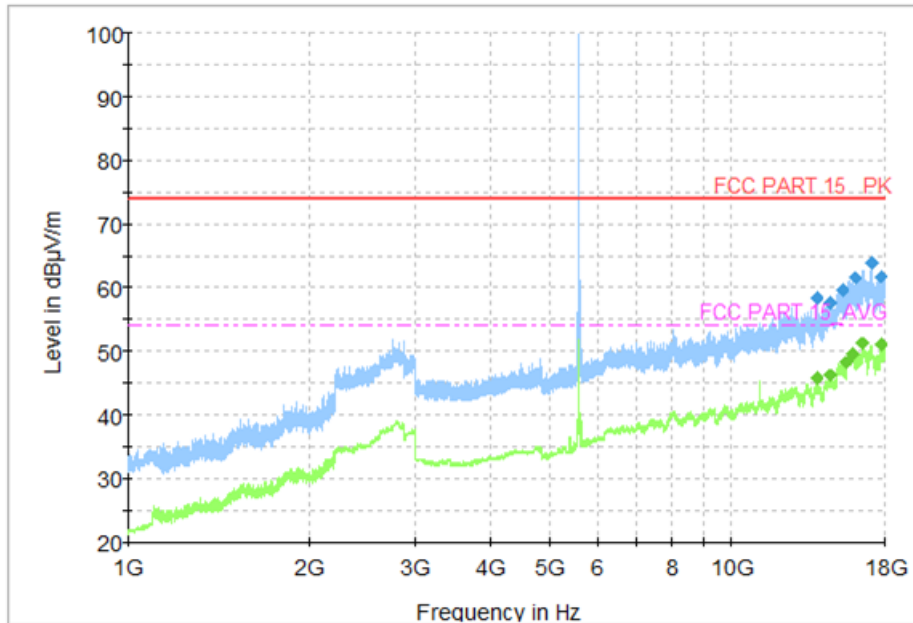
Fig. 47 WIFI-11n(HT20)-CH64-1G-18G



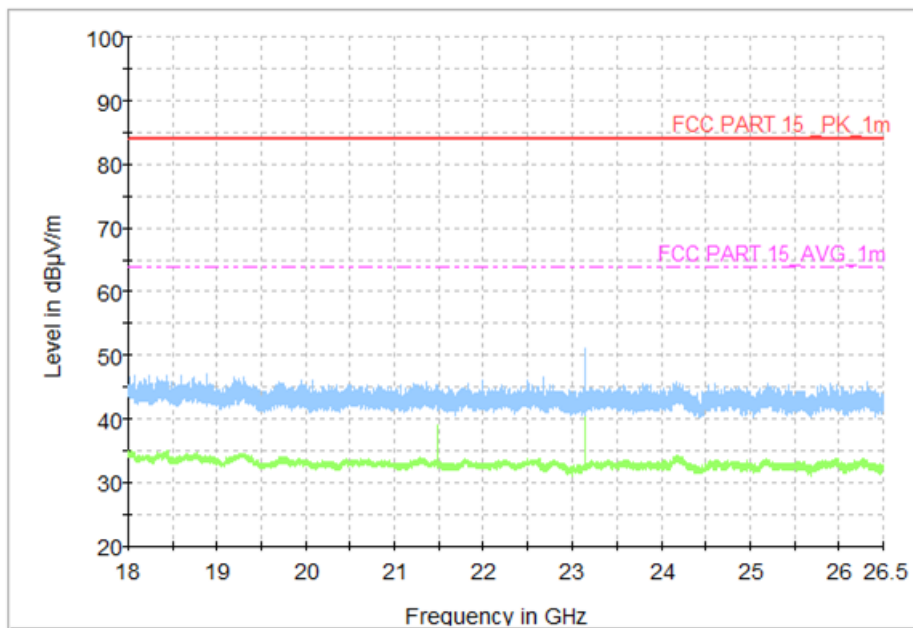
**Fig. 48 WIFI-11n(HT20)-CH100-1G-18G**



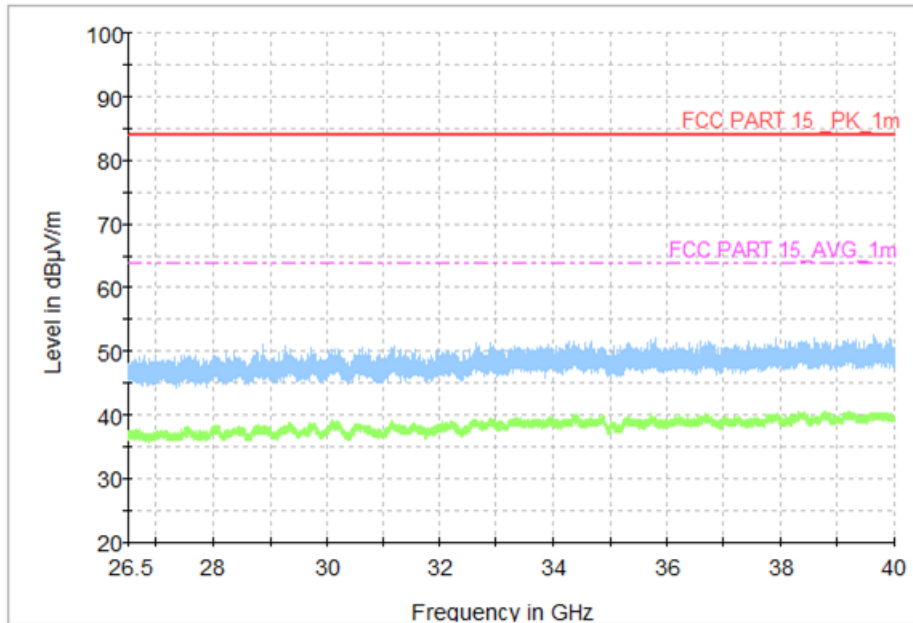
**Fig. 49 WIFI-11n(HT20)-CH120-30M-1G**



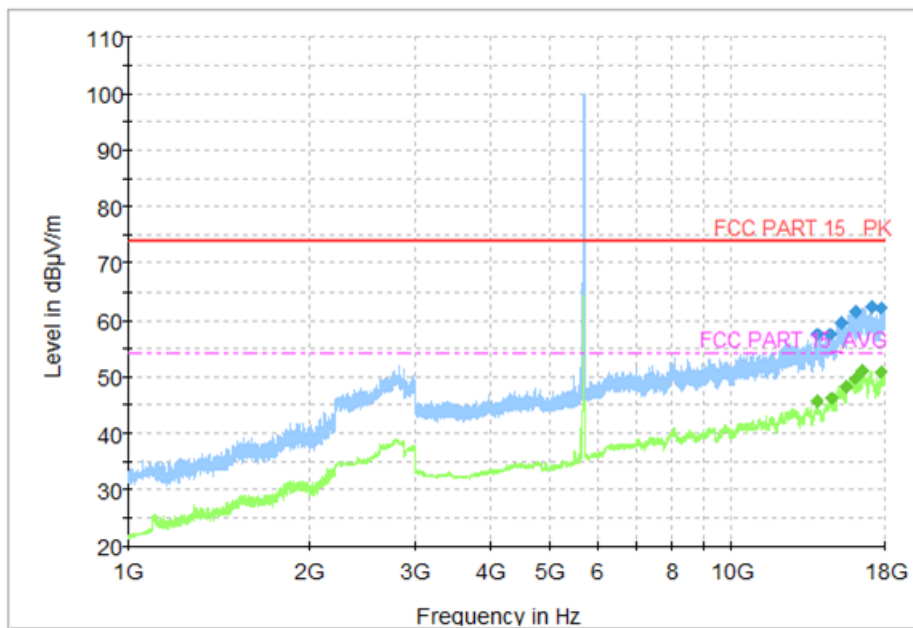
**Fig. 50** WIFI-11n(HT20)-CH120-1G-18G



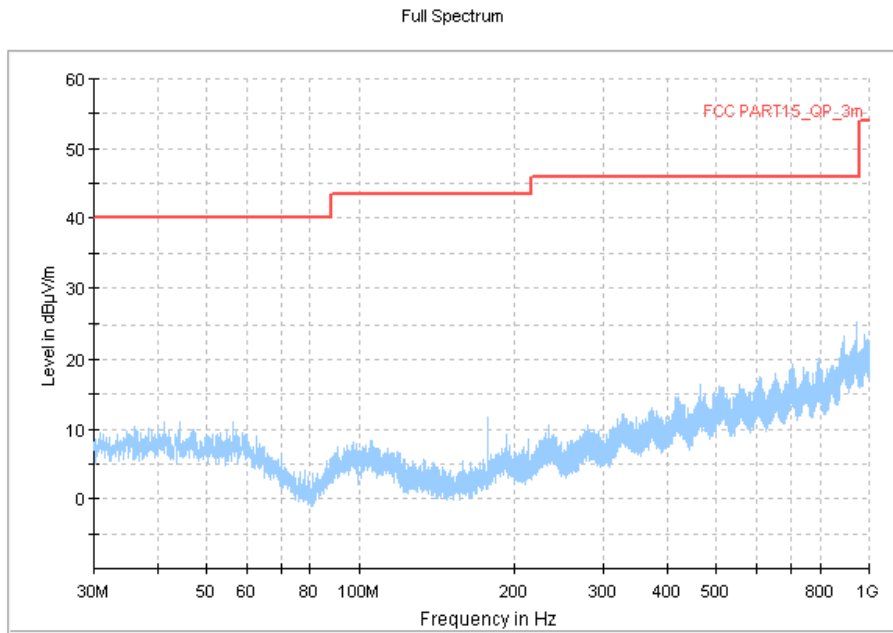
**Fig. 51** WIFI-11n(HT20)-CH120-18G-26.5G



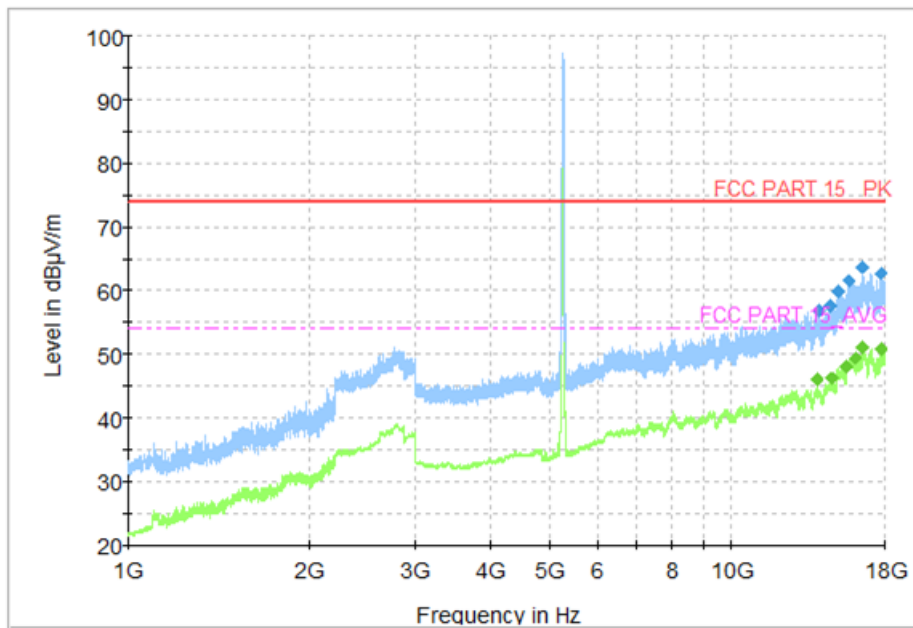
**Fig. 52 WIFI-11n(HT20)-CH120-26.5G-40G**



**Fig. 53 WIFI-11n(HT20)-CH140-1G-18G**



**Fig. 54 WIFI-11n(HT40)-CH54-30M-1G**



**Fig. 55 WIFI-11n(HT40)-CH54-1G-18G**

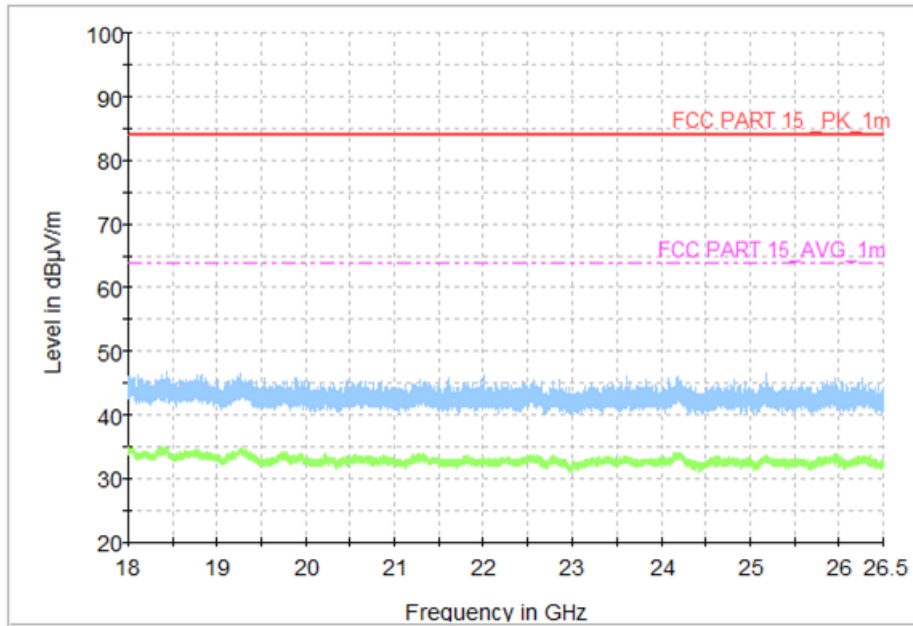


Fig. 56 WIFI-11n(HT40)-CH54-18G-26.5G

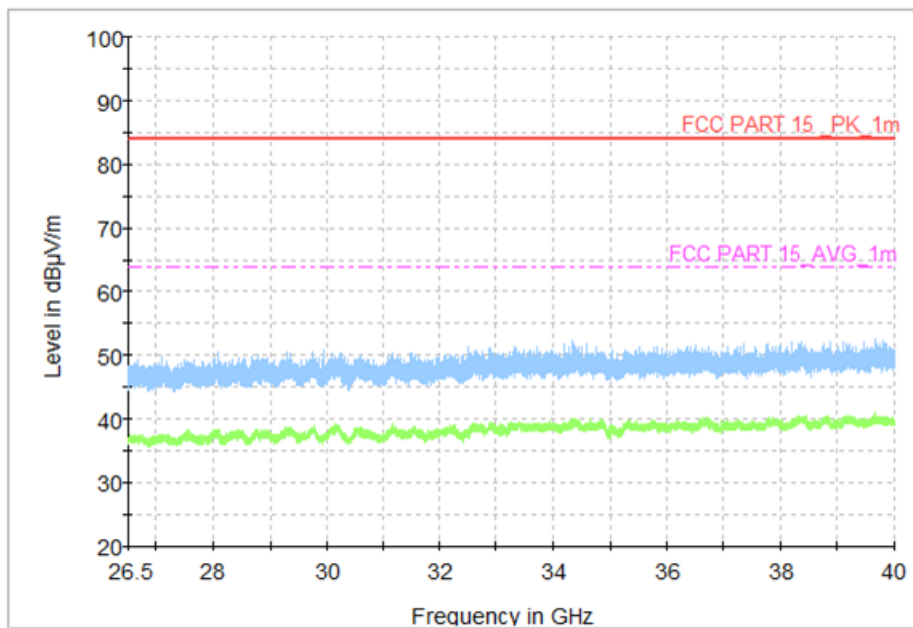
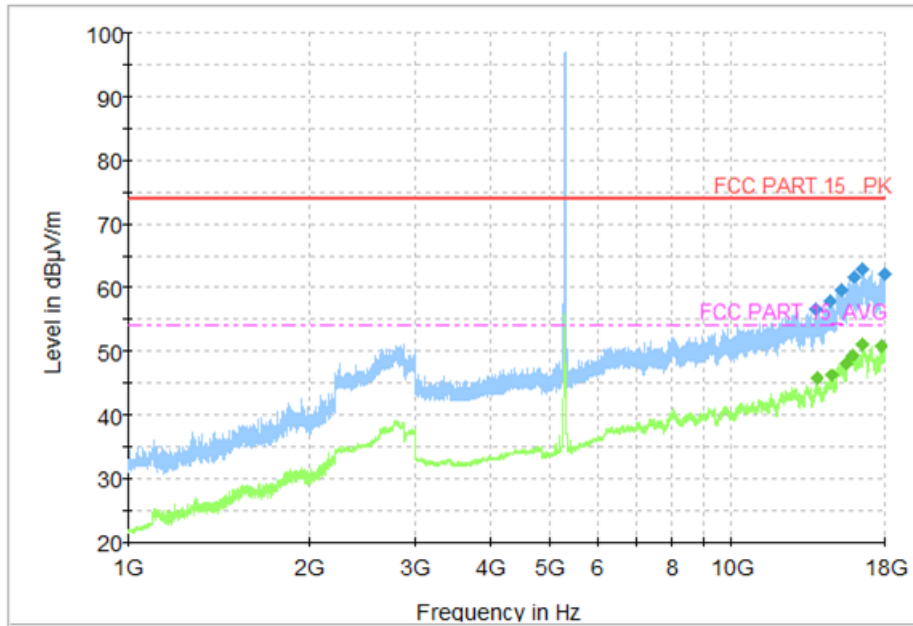
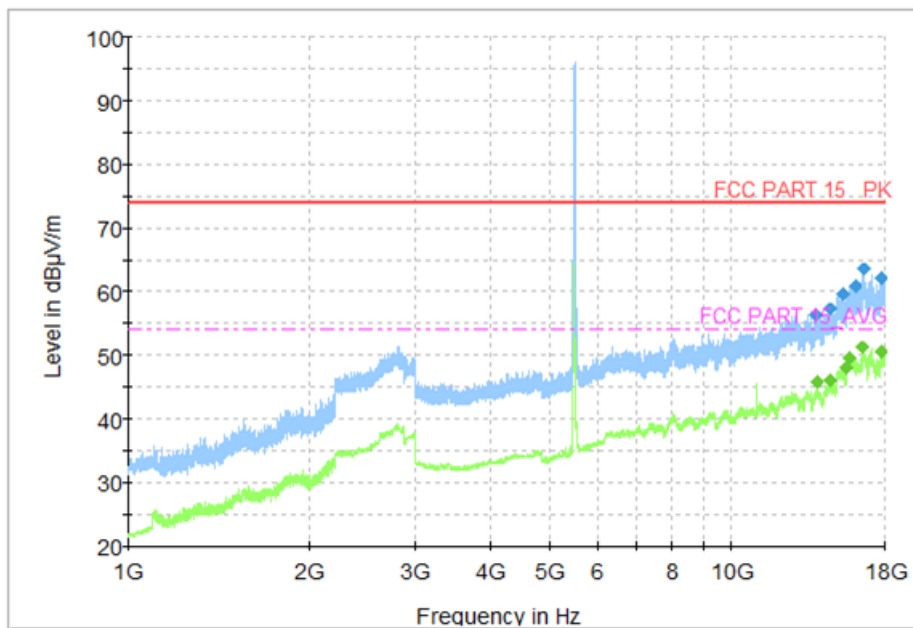


Fig. 57 WIFI-11n(HT40)-CH54-26.5G-40G

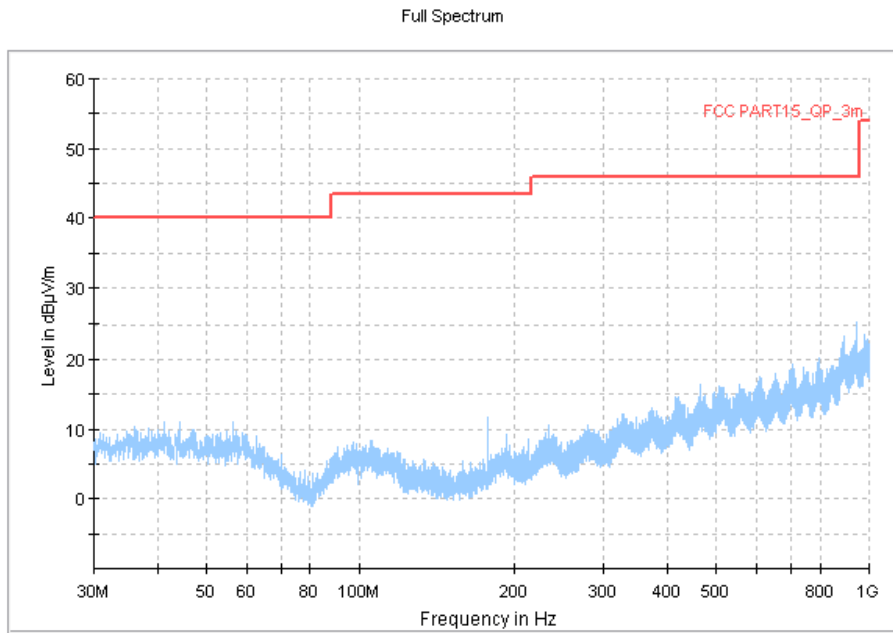




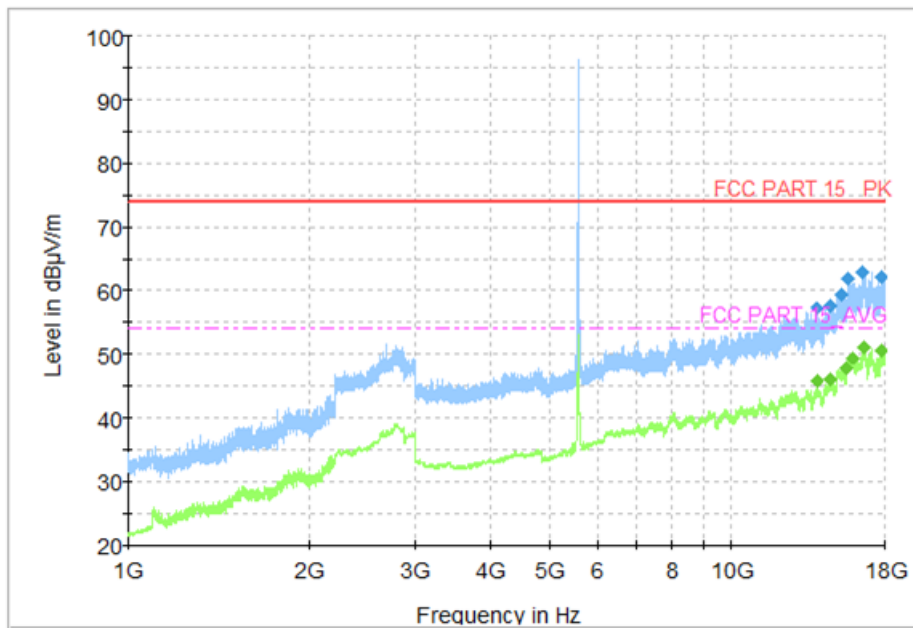
**Fig. 58** WIFI-11n(HT40)-CH62-1G-18G



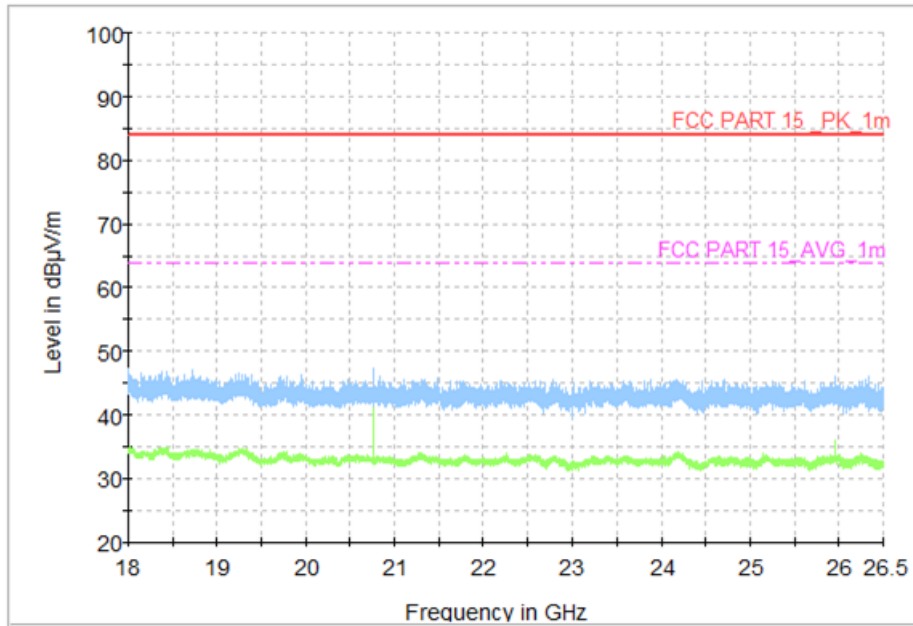
**Fig. 59** WIFI-11n(HT40)-CH102-1G-18G



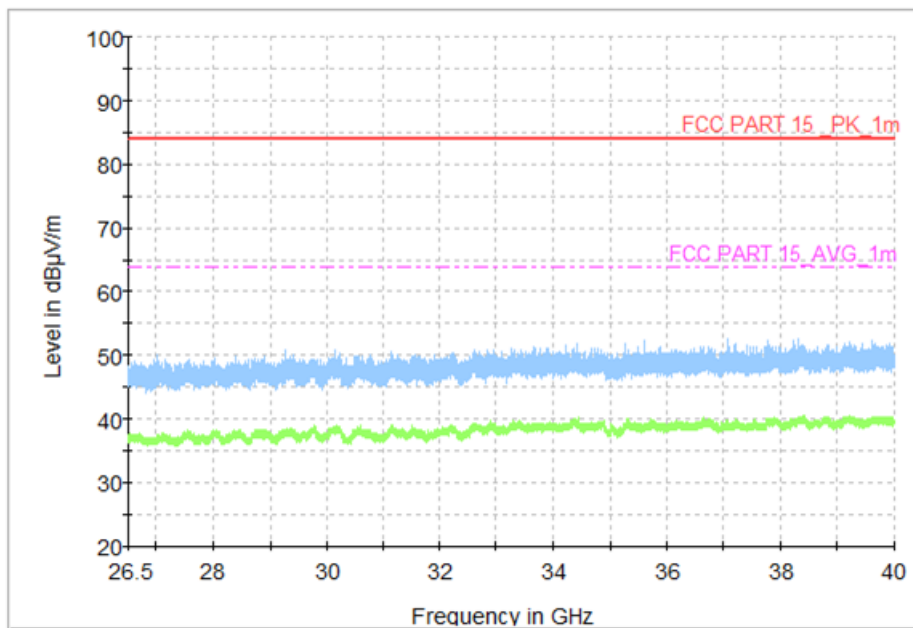
**Fig. 60 WIFI-11n(HT40)-CH118-30M-1G**



**Fig. 61 WIFI-11n(HT40)-CH118-1G-18G**



**Fig. 62 WIFI-11n(HT40)-CH118-18G-26.5G**



**Fig. 63 WIFI-11n(HT40)-CH118-26.5G-40G**

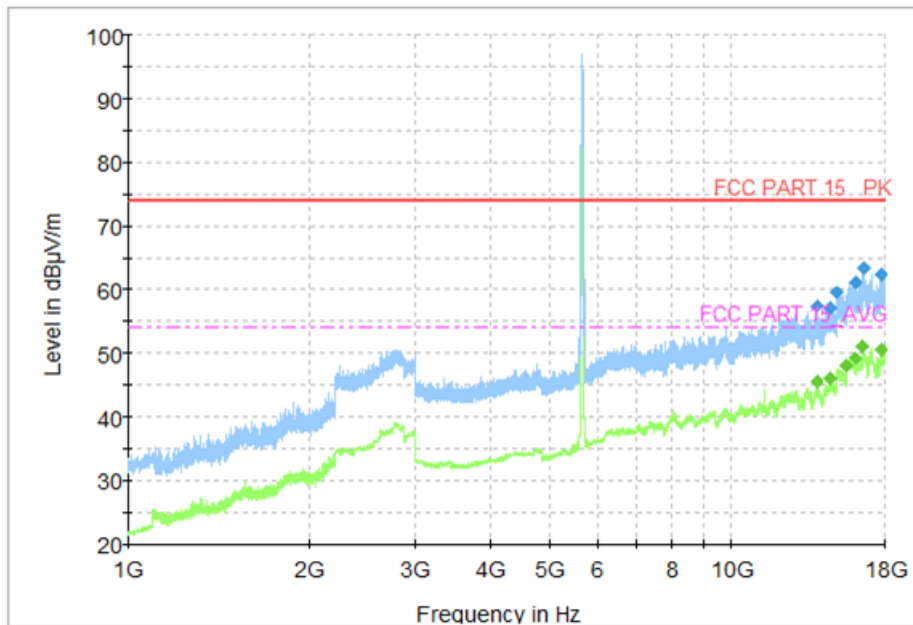


Fig. 64 WIFI-11n(HT40)-CH134-1G-18G

802.11a CH52 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13402.500000	56.41	74.00	17.59	H	19.8
14744.500000	57.09	74.00	16.91	H	21.3
15085.000000	58.96	74.00	15.04	H	22.3
16075.000000	60.57	74.00	13.43	V	25.5
16604.500000	62.72	74.00	11.28	V	26.1
17707.000000	61.62	74.00	12.38	H	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	44.82	54.00	9.18	V	21.1
14686.500000	45.43	54.00	8.57	H	21.6
15576.000000	47.32	54.00	6.68	H	23.8
15739.000000	48.66	54.00	5.34	H	24.4
17114.000000	50.54	54.00	3.46	V	26.2
17707.500000	50.39	54.00	3.61	H	27.6

802.11a CH 56 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	57.04	74.00	16.96	V	21.1
14683.000000	57.04	74.00	16.96	V	21.5
15069.000000	59.44	74.00	14.56	V	22.0
16084.500000	60.22	74.00	13.78	V	25.4
16592.500000	62.61	74.00	11.39	V	26.3
17704.000000	62.52	74.00	11.48	V	27.5

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.500000	44.96	54.00	9.04	V	21.1
14683.000000	45.47	54.00	8.53	V	21.5
15577.000000	47.26	54.00	6.74	H	23.8
15918.500000	48.77	54.00	5.23	V	24.6
16592.500000	50.54	54.00	3.46	V	26.3
17709.500000	50.58	54.00	3.42	H	27.7

**802.11a CH64 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.500000	57.43	74.00	16.57	V	21.1
14544.500000	57.24	74.00	16.76	V	20.6
15095.500000	59.90	74.00	14.10	H	22.2
15678.000000	60.50	74.00	13.50	V	23.9
16575.000000	62.29	74.00	11.71	V	26.3
17709.500000	62.09	74.00	11.91	H	27.7

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.36	54.00	8.64	H	21.1
14686.500000	45.50	54.00	8.50	V	21.6
15576.500000	47.43	54.00	6.57	H	23.8
15736.000000	49.05	54.00	4.95	V	24.3
16589.500000	50.82	54.00	3.18	H	26.3
17707.500000	50.40	54.00	3.60	H	27.6

**802.11a CH 100 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13872.000000	56.66	74.00	17.34	V	20.2
14671.000000	57.13	74.00	16.87	H	21.3
15035.000000	59.17	74.00	14.83	V	22.4
15762.000000	60.55	74.00	13.45	H	24.0
17072.000000	62.34	74.00	11.66	V	25.8
17707.000000	62.23	74.00	11.77	V	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.30	54.00	8.70	H	21.1
14685.000000	45.58	54.00	8.42	H	21.5
15576.500000	47.47	54.00	6.53	V	23.8
16045.000000	48.94	54.00	5.06	V	25.0
16593.500000	50.73	54.00	3.27	V	26.3
17704.500000	50.68	54.00	3.32	V	27.6

**802.11a CH120 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13944.000000	56.87	74.00	17.13	V	20.1
14744.500000	57.64	74.00	16.36	V	21.3
15197.000000	59.57	74.00	14.43	V	23.0
15926.500000	60.88	74.00	13.12	V	24.8
16597.500000	62.38	74.00	11.62	V	26.3
17691.000000	62.17	74.00	11.83	H	26.9

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.500000	45.37	54.00	8.63	V	21.1
14693.500000	45.57	54.00	8.43	V	21.6
15203.000000	47.33	54.00	6.67	H	23.0
15958.500000	48.93	54.00	5.07	V	25.3
16627.000000	50.69	54.00	3.31	H	26.1
17704.500000	50.50	54.00	3.50	H	27.6

**802.11a CH 140 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
12457.000000	56.43	74.00	17.57	H	19.2
14660.000000	57.32	74.00	16.68	V	21.3
15322.000000	59.24	74.00	14.76	H	22.6
15934.500000	60.48	74.00	13.52	V	24.8
16390.000000	62.45	74.00	11.55	V	26.2
17707.000000	61.19	74.00	12.81	H	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.27	54.00	8.73	H	21.1
14686.500000	45.72	54.00	8.28	H	21.6
15576.000000	47.44	54.00	6.56	V	23.8
15936.500000	49.04	54.00	4.96	V	24.9
16593.000000	50.67	54.00	3.33	V	26.3
17708.500000	50.35	54.00	3.65	H	27.6



802.11n (HT20) CH52 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13892.500000	57.08	74.00	16.92	H	20.3
14684.000000	57.32	74.00	16.68	V	21.5
15105.500000	59.41	74.00	14.59	V	22.5
15946.500000	61.12	74.00	12.88	V	24.8
17104.000000	63.12	74.00	10.88	V	25.7
17879.000000	62.84	74.00	11.16	V	28.0

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.38	54.00	8.62	V	21.1
14686.500000	45.60	54.00	8.40	V	21.6
15577.500000	47.63	54.00	6.37	H	23.8
15734.000000	48.93	54.00	5.07	V	24.2
17104.000000	50.80	54.00	3.20	V	25.7
17708.500000	50.45	54.00	3.55	V	27.6

802.11n (HT20) CH 56 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13417.500000	56.43	74.00	17.57	V	20.4
14530.500000	56.79	74.00	17.21	V	20.8
15236.500000	59.52	74.00	14.48	V	22.9
15710.000000	61.37	74.00	12.63	V	24.2
16624.000000	61.87	74.00	12.13	V	26.1
17679.500000	62.54	74.00	11.46	V	27.2

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.29	54.00	8.71	V	21.1
14690.500000	45.87	54.00	8.13	V	21.6
15202.500000	47.61	54.00	6.39	V	23.0
15739.500000	49.01	54.00	4.99	V	24.4
16592.500000	50.62	54.00	3.38	V	26.3
17704.500000	50.49	54.00	3.51	V	27.6

802.11n (HT20) CH64 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13883.000000	57.18	74.00	16.82	H	20.3
14596.000000	57.47	74.00	16.53	V	21.5
15572.500000	58.89	74.00	15.11	V	23.7
16274.500000	60.68	74.00	13.32	V	24.7
16579.500000	62.22	74.00	11.78	V	26.4
17682.000000	61.57	74.00	12.43	V	27.1

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.54	54.00	8.46	V	21.1
14686.000000	45.58	54.00	8.42	H	21.5
15575.500000	47.53	54.00	6.47	V	23.8
15961.500000	48.99	54.00	5.01	V	25.4
16594.500000	50.56	54.00	3.44	V	26.3
17707.500000	50.60	54.00	3.40	V	27.6

802.11n (HT20) CH 100 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	57.38	74.00	16.62	V	21.1
14677.000000	57.39	74.00	16.61	V	21.4
15090.000000	59.62	74.00	14.38	V	22.4
16058.000000	61.28	74.00	12.72	V	25.4
16588.000000	62.66	74.00	11.34	V	26.3
17708.000000	62.37	74.00	11.63	V	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.55	54.00	8.45	H	21.1
14680.000000	45.80	54.00	8.20	V	21.4
15576.000000	47.59	54.00	6.41	V	23.8
15736.000000	49.24	54.00	4.76	V	24.3
16587.500000	50.83	54.00	3.17	V	26.3
17701.000000	50.58	54.00	3.42	V	27.5

802.11n (HT20) CH120 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13907.500000	58.22	74.00	15.78	H	21.0
14687.500000	57.68	74.00	16.32	V	21.6
15292.500000	59.78	74.00	14.22	V	22.7
16086.500000	61.53	74.00	12.47	V	25.3
17107.500000	63.90	74.00	10.10	H	26.0
17732.000000	61.73	74.00	12.27	H	27.2

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13913.000000	45.87	54.00	8.13	V	20.9
14676.500000	46.25	54.00	7.75	V	21.4
15577.000000	48.17	54.00	5.83	H	23.8
15961.500000	49.64	54.00	4.36	V	25.4
16584.500000	51.31	54.00	2.69	V	26.4
17704.500000	50.94	54.00	3.06	V	27.6

802.11n (HT20) CH 140 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13929.500000	57.39	74.00	16.61	V	20.5
14686.000000	57.35	74.00	16.65	V	21.5
15236.500000	59.50	74.00	14.50	V	22.9
16090.500000	61.53	74.00	12.47	V	25.1
17117.000000	62.41	74.00	11.59	V	26.2
17730.000000	62.20	74.00	11.80	V	27.3

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13902.500000	45.70	54.00	8.30	H	20.7
14693.500000	46.17	54.00	7.83	V	21.6
15576.000000	48.07	54.00	5.93	V	23.8
16075.000000	49.60	54.00	4.40	V	25.5
16586.500000	51.00	54.00	3.00	V	26.3
17704.500000	50.89	54.00	3.11	V	27.6

802.11n (HT40) CH54 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
14036.500000	56.82	74.00	17.18	H	20.0
14679.000000	57.75	74.00	16.25	V	21.4
15108.000000	59.88	74.00	14.12	V	22.7
15707.000000	61.47	74.00	12.53	V	24.0
16596.500000	63.81	74.00	10.19	V	26.3
17707.000000	62.66	74.00	11.34	V	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.500000	45.94	54.00	8.06	V	21.1
14693.500000	46.28	54.00	7.72	V	21.6
15573.000000	48.03	54.00	5.97	V	23.7
16062.500000	49.52	54.00	4.48	H	25.4
16591.500000	51.09	54.00	2.91	V	26.3
17704.000000	50.76	54.00	3.24	H	27.5

802.11n (HT40) CH 62 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13787.500000	56.71	74.00	17.29	V	20.1
14571.000000	57.98	74.00	16.02	V	21.0
15226.500000	59.73	74.00	14.27	H	23.0
15968.500000	61.64	74.00	12.37	V	25.6
16583.000000	62.88	74.00	11.12	V	26.4
17999.000000	62.09	74.00	11.91	H	27.4

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	45.73	54.00	8.27	H	21.1
14693.500000	46.22	54.00	7.78	V	21.6
15576.000000	48.09	54.00	5.91	V	23.8
15925.500000	49.36	54.00	4.64	V	24.7
16589.500000	51.08	54.00	2.92	V	26.3
17708.000000	50.73	54.00	3.27	V	27.6

802.11n (HT40) CH 102 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13819.500000	56.54	74.00	17.46	H	19.9
14686.000000	57.21	74.00	16.79	H	21.5
15410.500000	59.62	74.00	14.38	H	22.8
16076.500000	60.93	74.00	13.07	V	25.5
16622.000000	63.50	74.00	10.50	V	26.2
17715.000000	62.10	74.00	11.90	V	27.7

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13905.500000	45.76	54.00	8.24	V	20.9
14682.500000	46.04	54.00	7.96	H	21.5
15577.000000	48.01	54.00	5.99	V	23.8
15738.500000	49.58	54.00	4.42	V	24.4
16589.500000	51.14	54.00	2.86	V	26.3
17704.000000	50.72	54.00	3.28	H	27.5

802.11n (HT40) CH118 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13889.000000	57.30	74.00	16.70	H	20.2
14675.500000	57.63	74.00	16.37	H	21.4
15248.000000	59.26	74.00	14.74	V	23.1
15617.500000	61.91	74.00	12.09	V	24.1
16580.500000	62.96	74.00	11.04	V	26.4
17723.000000	62.18	74.00	11.82	H	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13905.500000	45.81	54.00	8.19	V	20.9
14680.000000	46.01	54.00	7.99	H	21.4
15576.500000	47.85	54.00	6.15	H	23.8
15932.500000	49.33	54.00	4.67	V	24.8
16644.000000	51.06	54.00	2.94	V	25.7
17702.500000	50.66	54.00	3.34	H	27.5

**802.11n (HT40) CH 134 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13908.500000	57.54	74.00	16.46	V	21.1
14646.000000	57.08	74.00	16.92	H	21.3
15044.500000	59.52	74.00	14.48	V	22.5
16068.500000	61.19	74.00	12.81	H	25.4
16627.000000	63.31	74.00	10.69	H	26.1
17709.000000	62.24	74.00	11.76	V	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13906.000000	45.65	54.00	8.35	V	20.9
14686.500000	45.90	54.00	8.10	V	21.6
15576.000000	48.00	54.00	6.00	V	23.8
16069.000000	49.26	54.00	4.74	V	25.4
16593.500000	51.04	54.00	2.96	H	26.3
17701.000000	50.64	54.00	3.36	V	27.5

**Note:**

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.

The measurement results are obtained as described below:

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

### A.7. Radiated Spurious Emissions < 30MHz

**Measurement Limit (15.209, 9kHz-30MHz):**

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	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

The measurement is made according to KDB 789033.

Note: The measurement distance during the test is 3m. The limit used in plots recalculated based on the extrapolation factor of 40 dB/decade.

**Measurement Uncertainty:**

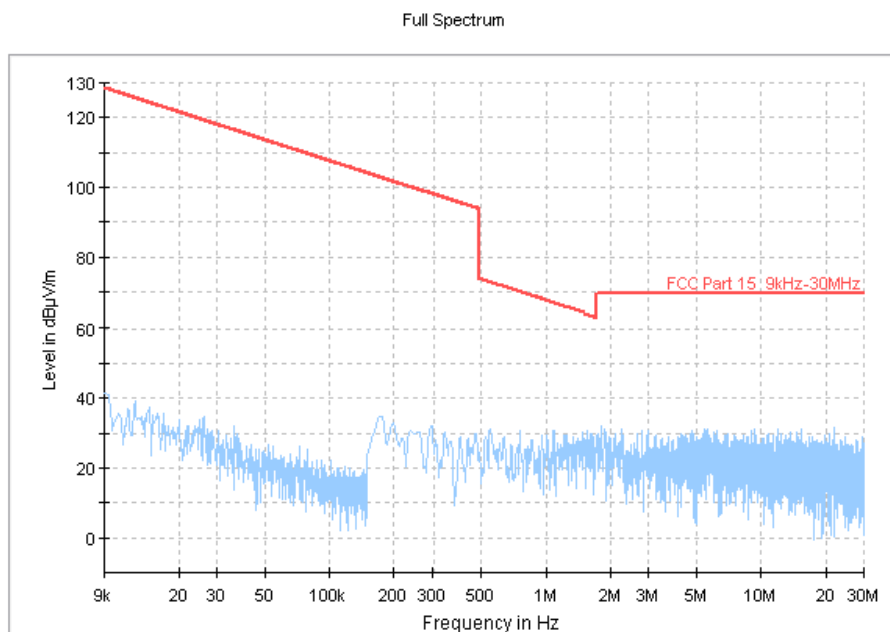
Expanded measurement uncertainty for this test item is  $U = 3.94\text{dB}$ ,  $k=2$ .

**Measurement Result:**

Mode	Frequency Range	Test Results	Conclusion
802.11a	9 kHz ~30 MHz	Fig.65	P

**Conclusion: PASS**

Test graphs as below:



**Fig. 65 Radiated Spurious Emission (802.11a, ch56, 9 kHz ~30 MHz)**



### A.8. AC Powerline Conducted Emission

**Test Condition:**

Voltage (V)	Frequency (Hz)
120	60

**Measurement Uncertainty:**

Expanded measurement uncertainty for this test item is  $U = 3.38\text{dB}$ ,  $k=2$ .

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.66	Fig.67	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)-AE1

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.66	Fig.67	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.

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.68	Fig.69	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)-AE2

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.68	Fig.69	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.

WLAN (Quasi-peak Limit)-AE3

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.70	Fig.71	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)-AE3

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.70	Fig.71	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.

Test Condition:

Voltage (V)	Frequency (Hz)
240	60

Measurement Uncertainty:

Expanded measurement uncertainty for this test item is  $U = 3.38\text{dB}$ ,  $k=2$ .

Measurement Result and limit:

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.16 to 0.5	66 to 56	Fig.72	Fig.73	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)-AE1

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.72	Fig.73	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.

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.74	Fig.75	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)-AE2

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.74	Fig.75	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.

WLAN (Quasi-peak Limit)-AE3

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.76	Fig.77	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)-AE3

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.76	Fig.77	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.

**Conclusion: PASS**

**Test graphs as below:**

ESH2-Z5 Scan-FCC

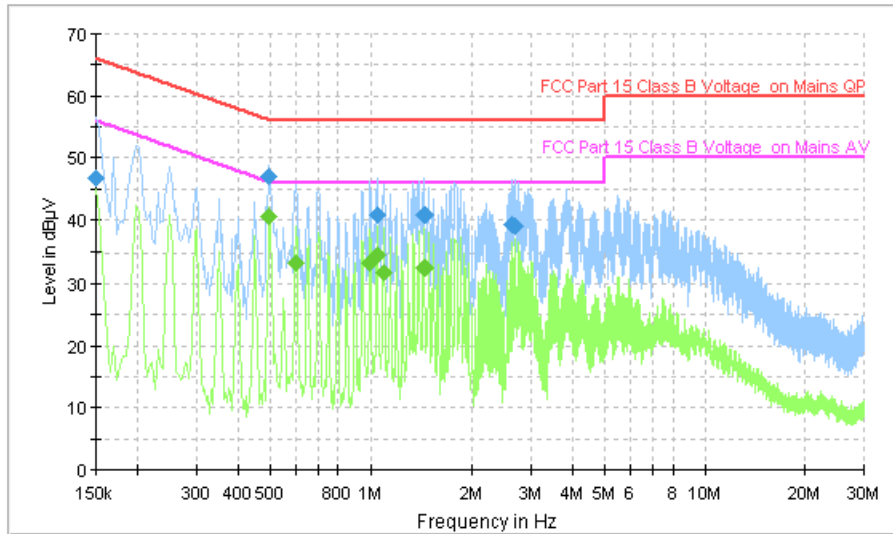


Fig. 66 AC Powerline Conducted Emission (802.11a, AE1, 120V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	46.7	GND	N	9.6	19.3	66.0
0.498000	47.1	GND	N	9.7	8.9	56.0
1.046000	40.9	GND	N	9.5	15.1	56.0
1.442000	40.7	GND	N	9.5	15.3	56.0
2.646000	39.2	GND	N	9.6	16.8	56.0
2.690000	39.0	GND	N	9.6	17.0	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	40.6	GND	N	9.7	5.4	46.0
0.598000	33.2	GND	N	9.6	12.8	46.0
0.998000	33.3	GND	N	9.5	12.7	46.0
1.046000	34.7	GND	N	9.5	11.3	46.0
1.098000	31.8	GND	N	9.6	14.2	46.0
1.446000	32.5	GND	N	9.5	13.5	46.0

ESH2-Z5 Scan-FCC

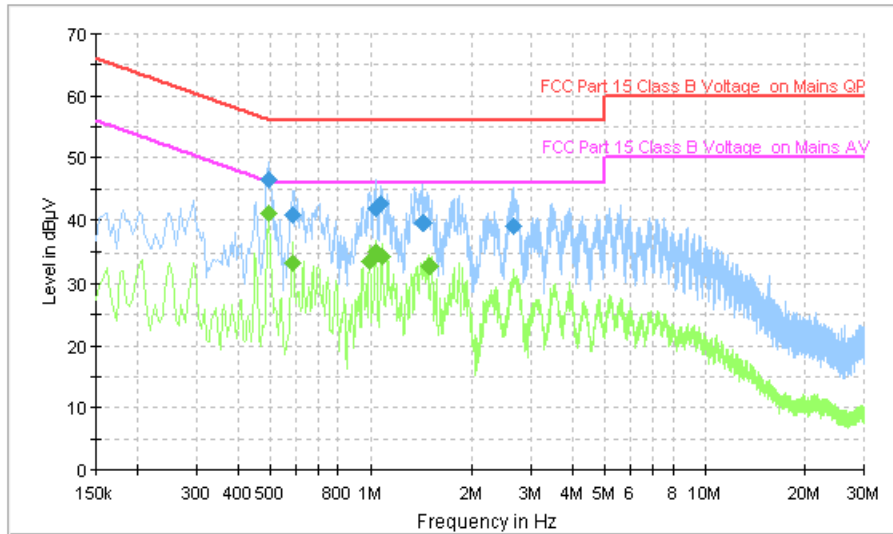


Fig. 67 AC Powerline Conducted Emission (Idle, AE1, 120V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	46.5	GND	N	9.7	9.6	56.0
0.586000	40.9	GND	N	9.6	15.1	56.0
1.038000	41.9	GND	N	9.5	14.1	56.0
1.078000	42.5	GND	N	9.6	13.5	56.0
1.434000	39.5	GND	N	9.5	16.5	56.0
2.662000	39.1	GND	N	9.6	16.9	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.494000	41.1	GND	N	9.7	5.0	46.1
0.586000	33.4	GND	N	9.6	12.6	46.0
0.994000	33.5	GND	N	9.6	12.5	46.0
1.038000	35.0	GND	N	9.5	11.0	46.0
1.082000	34.3	GND	N	9.6	11.7	46.0
1.490000	32.9	GND	N	9.6	13.1	46.0

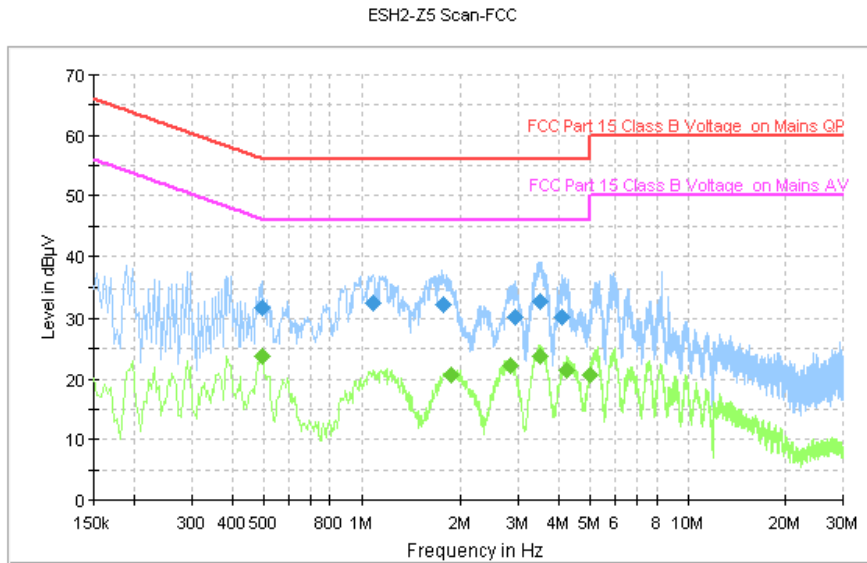


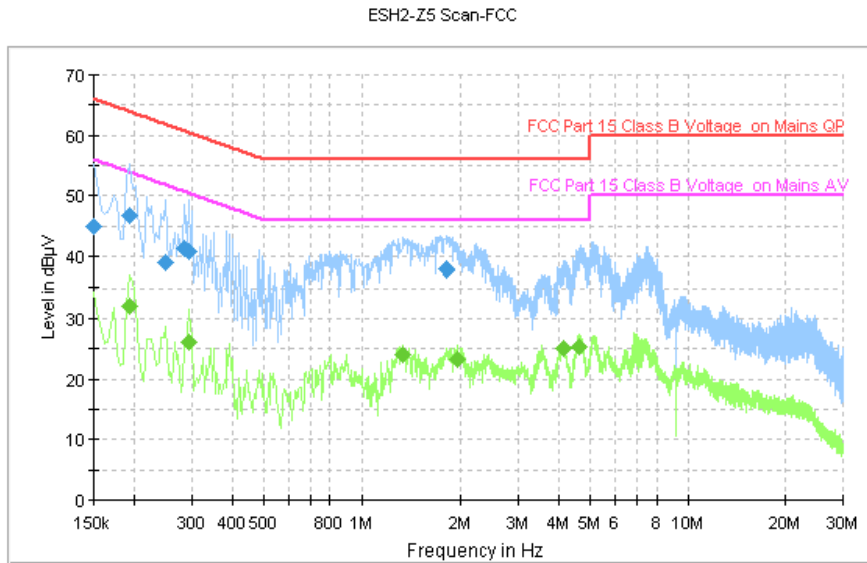
Fig. 68 AC Powerline Conducted Emission (802.11a, AE2, 120V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	31.8	GND	N	9.7	24.2	56.0
1.086000	32.4	GND	N	9.6	23.6	56.0
1.774000	32.2	GND	N	9.6	23.8	56.0
2.934000	30.3	GND	N	9.6	25.7	56.0
3.498000	32.7	GND	N	9.6	23.3	56.0
4.114000	30.2	GND	N	9.6	25.8	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.494000	23.6	GND	N	9.7	22.5	46.1
1.858000	20.5	GND	N	9.5	25.5	46.0
2.838000	22.3	GND	N	9.6	23.7	46.0
3.498000	23.9	GND	N	9.6	22.1	46.0
4.234000	21.4	GND	N	9.6	24.6	46.0
4.990000	20.6	GND	N	9.6	25.4	46.0



**Fig. 69 AC Powerline Conducted Emission (Idle, AE2, 120V)**

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.9	GND	N	9.6	21.1	66.0
0.194000	46.6	GND	N	9.6	17.2	63.9
0.250000	39.1	GND	N	9.6	22.6	61.8
0.286000	41.3	GND	N	9.6	19.4	60.6
0.294000	40.8	GND	N	9.6	19.6	60.4
1.810000	37.9	GND	N	9.5	18.1	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.194000	32.1	GND	N	9.6	21.8	53.9
0.294000	26.0	GND	N	9.6	24.4	50.4
1.342000	23.9	GND	N	9.6	22.1	46.0
1.946000	23.3	GND	N	9.6	22.7	46.0
4.122000	25.1	GND	N	9.6	20.9	46.0
4.626000	25.2	GND	N	9.6	20.8	46.0



ESH2-Z5 Scan-FCC

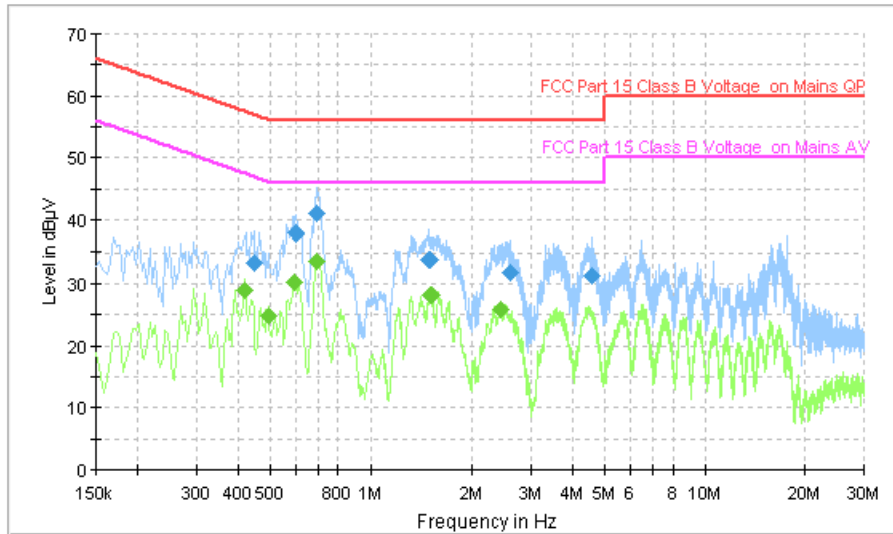


Fig. 70 AC Powerline Conducted Emission (802.11a, AE3, 120V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.446000	33.3	GND	N	9.7	23.7	56.9
0.598000	37.9	GND	N	9.6	18.1	56.0
0.694000	41.2	GND	N	9.5	14.8	56.0
1.502000	33.9	GND	N	9.6	22.1	56.0
2.594000	31.9	GND	N	9.6	24.2	56.0
4.566000	31.3	GND	N	9.6	24.7	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	29.0	GND	N	9.7	18.5	47.5
0.494000	24.9	GND	N	9.7	21.2	46.1
0.594000	30.2	GND	N	9.6	15.8	46.0
0.694000	33.7	GND	N	9.5	12.3	46.0
1.510000	28.1	GND	N	9.6	17.9	46.0
2.430000	25.9	GND	N	9.6	20.1	46.0

ESH2-Z5 Scan-FCC

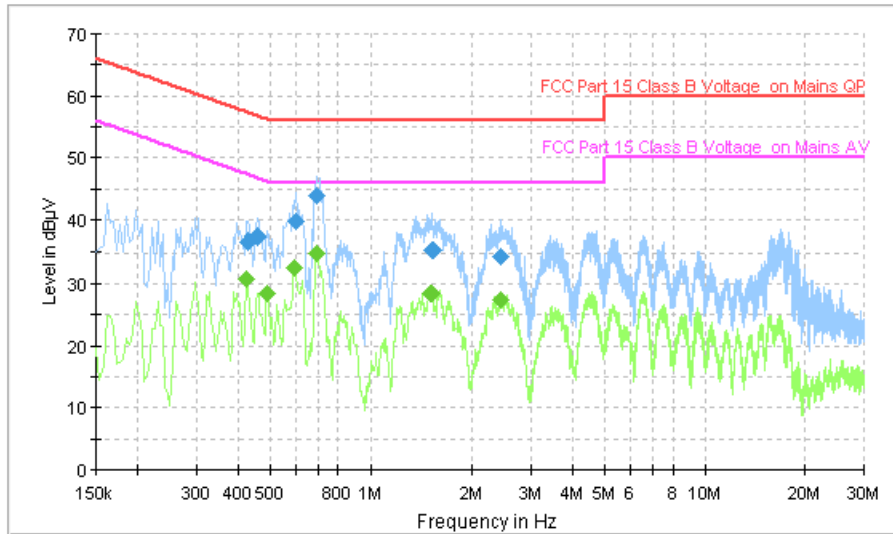


Fig. 71 AC Powerline Conducted Emission (Idle, AE3, 120V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	36.6	GND	N	9.7	20.6	57.3
0.458000	37.5	GND	N	9.7	19.2	56.7
0.598000	39.9	GND	N	9.6	16.1	56.0
0.690000	44.0	GND	N	9.5	12.0	56.0
1.526000	35.5	GND	N	9.6	20.5	56.0
2.446000	34.3	GND	N	9.6	21.7	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	30.7	GND	N	9.7	16.7	47.4
0.490000	28.4	GND	N	9.7	17.8	46.2
0.590000	32.4	GND	N	9.6	13.6	46.0
0.694000	34.9	GND	N	9.5	11.1	46.0
1.514000	28.5	GND	N	9.6	17.5	46.0
2.438000	27.5	GND	N	9.6	18.5	46.0

ESH2-Z5 Scan-FCC

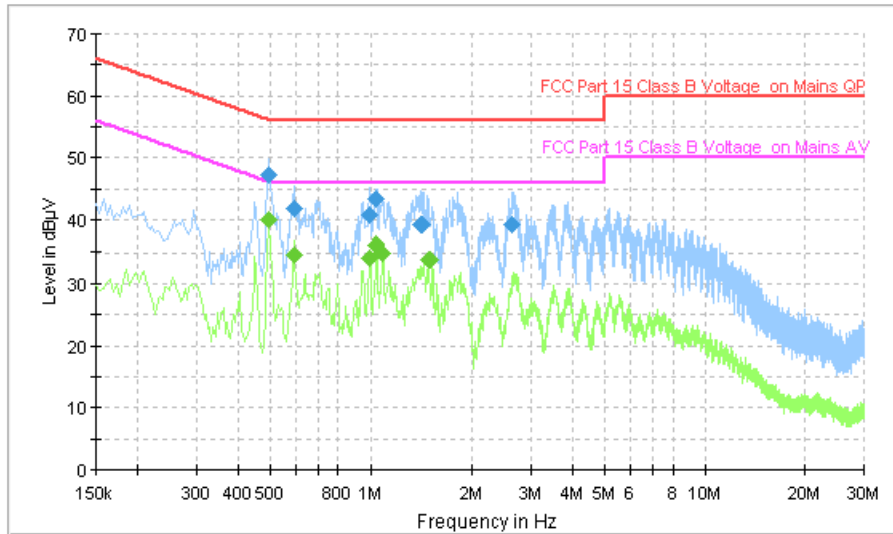


Fig. 72 AC Powerline Conducted Emission (802.11a, AE1, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	47.1	GND	N	9.7	8.9	56.0
0.590000	41.9	GND	N	9.6	14.1	56.0
0.998000	40.8	GND	N	9.5	15.2	56.0
1.038000	43.4	GND	N	9.5	12.6	56.0
1.410000	39.2	GND	N	9.5	16.8	56.0
2.630000	39.1	GND	N	9.6	16.9	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	40.0	GND	N	9.7	6.1	46.0
0.590000	34.7	GND	N	9.6	11.3	46.0
0.998000	34.1	GND	N	9.5	11.9	46.0
1.042000	36.1	GND	N	9.5	9.9	46.0
1.090000	34.8	GND	N	9.6	11.2	46.0
1.494000	33.8	GND	N	9.6	12.2	46.0

ESH2-Z5 Scan-FCC

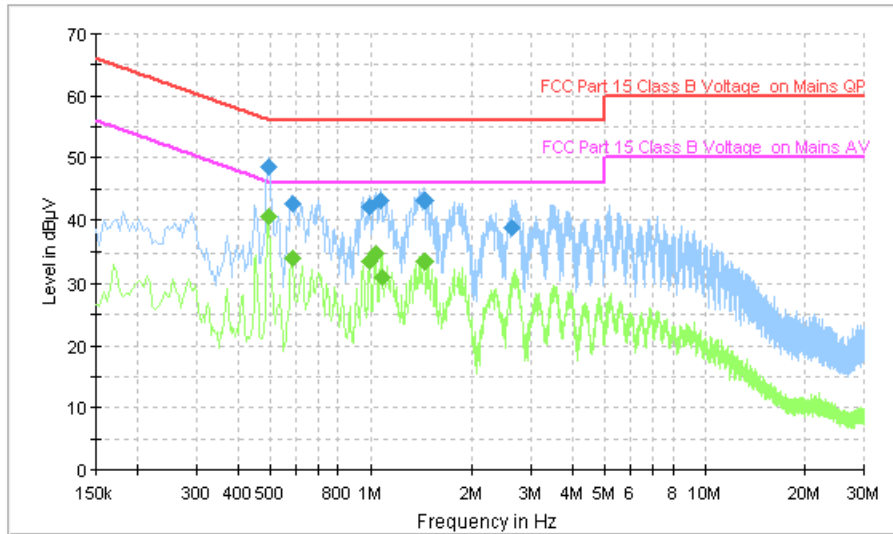


Fig. 73 AC Powerline Conducted Emission (Idle, AE1, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498000	48.5	GND	N	9.7	7.5	56.0
0.582000	42.6	GND	N	9.6	13.4	56.0
0.990000	42.0	GND	N	9.6	14.0	56.0
1.074000	43.3	GND	N	9.6	12.7	56.0
1.446000	43.2	GND	N	9.5	12.8	56.0
2.646000	38.7	GND	N	9.6	17.3	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.494000	40.5	GND	N	9.7	5.6	46.1
0.582000	34.2	GND	N	9.6	11.8	46.0
0.990000	33.5	GND	N	9.6	12.5	46.0
1.038000	35.0	GND	N	9.5	11.0	46.0
1.082000	31.1	GND	N	9.6	14.9	46.0
1.450000	33.7	GND	N	9.5	12.3	46.0

ESH2-Z5 Scan-FCC

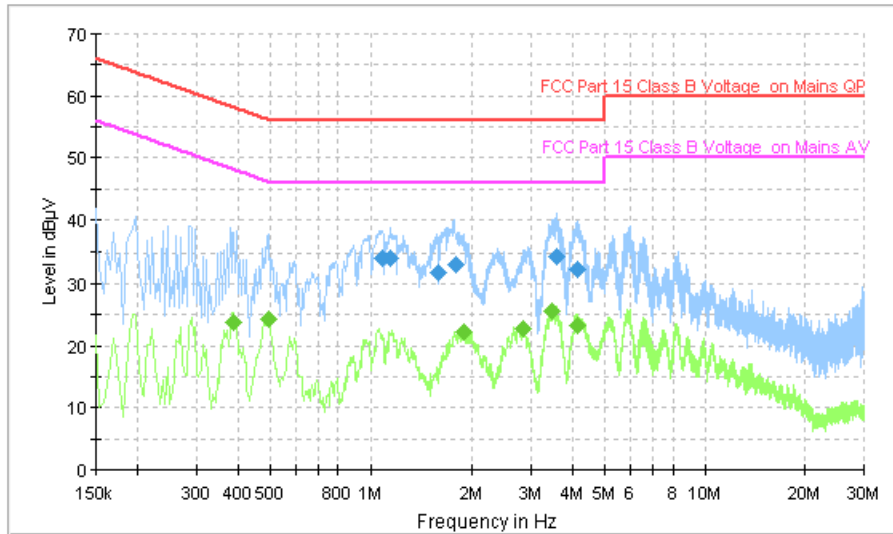


Fig. 74 AC Powerline Conducted Emission (802.11a, AE2, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.082000	34.0	GND	N	9.6	22.0	56.0
1.146000	34.2	GND	N	9.6	21.8	56.0
1.590000	31.8	GND	N	9.6	24.2	56.0
1.782000	33.1	GND	N	9.6	22.9	56.0
3.570000	34.2	GND	N	9.6	21.8	56.0
4.146000	32.4	GND	N	9.6	23.6	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.390000	23.7	GND	N	9.6	24.3	48.1
0.498000	24.4	GND	N	9.7	21.7	46.0
1.890000	22.2	GND	N	9.6	23.8	46.0
2.842000	22.9	GND	N	9.6	23.1	46.0
3.470000	25.5	GND	N	9.6	20.5	46.0
4.158000	23.3	GND	N	9.6	22.7	46.0

ESH2-Z5 Scan-FCC

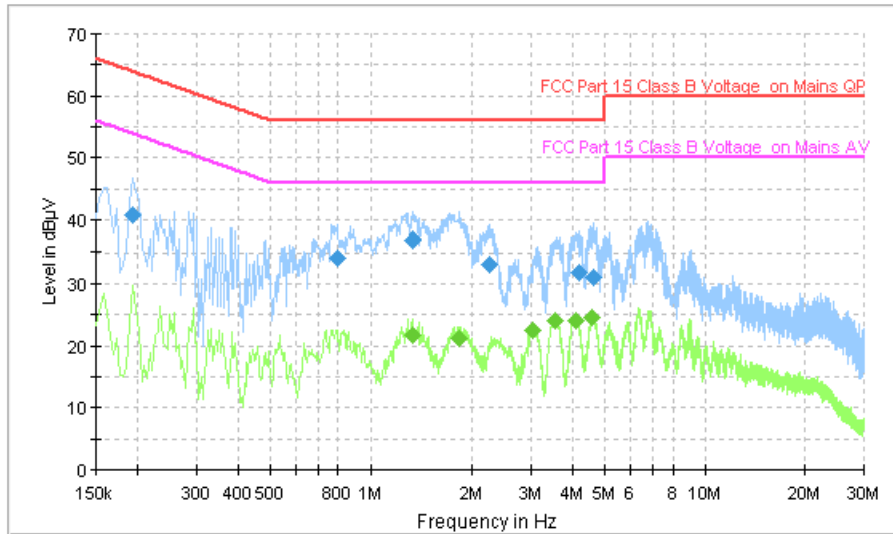


Fig. 75 AC Powerline Conducted Emission (Idle, AE2, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.194000	40.7	GND	N	9.6	23.1	63.9
0.794000	34.2	GND	N	9.6	21.8	56.0
1.342000	36.8	GND	N	9.6	19.2	56.0
2.254000	33.2	GND	N	9.6	22.8	56.0
4.174000	31.7	GND	N	9.6	24.3	56.0
4.618000	31.0	GND	N	9.6	25.0	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.334000	21.8	GND	N	9.6	24.2	46.0
1.834000	21.3	GND	N	9.5	24.7	46.0
3.034000	22.6	GND	N	9.6	23.4	46.0
3.530000	24.0	GND	N	9.6	22.0	46.0
4.118000	23.9	GND	N	9.6	22.1	46.0
4.598000	24.5	GND	N	9.6	21.5	46.0

ESH2-Z5 Scan-FCC

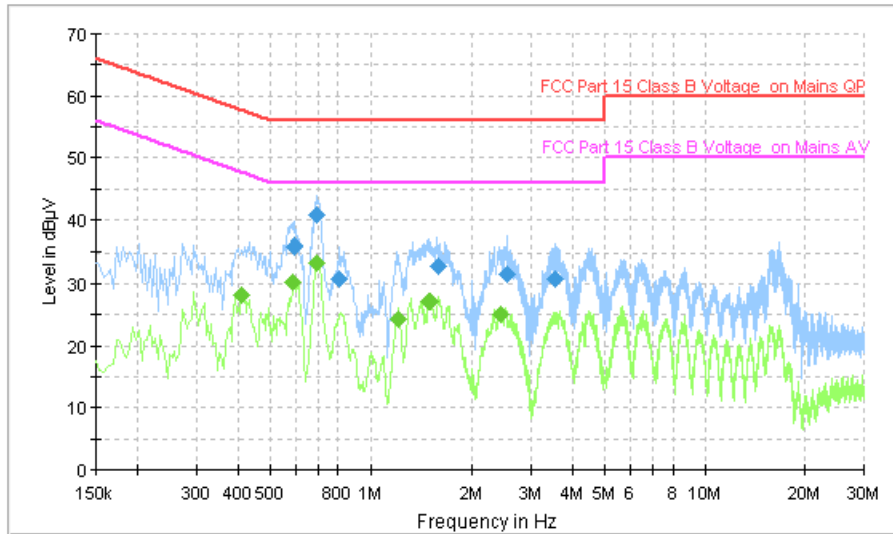


Fig. 76 AC Powerline Conducted Emission (802.11a, AE3, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.594000	35.9	GND	N	9.6	20.1	56.0
0.694000	40.8	GND	N	9.5	15.2	56.0
0.810000	30.7	GND	N	9.6	25.3	56.0
1.586000	32.9	GND	N	9.6	23.1	56.0
2.542000	31.5	GND	N	9.6	24.5	56.0
3.538000	30.6	GND	N	9.6	25.4	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	28.3	GND	N	9.7	19.4	47.6
0.586000	30.3	GND	N	9.6	15.7	46.0
0.694000	33.4	GND	N	9.5	12.6	46.0
1.214000	24.2	GND	N	9.5	21.8	46.0
1.502000	27.2	GND	N	9.6	18.8	46.0
2.430000	25.0	GND	N	9.6	21.0	46.0

ESH2-Z5 Scan-FCC

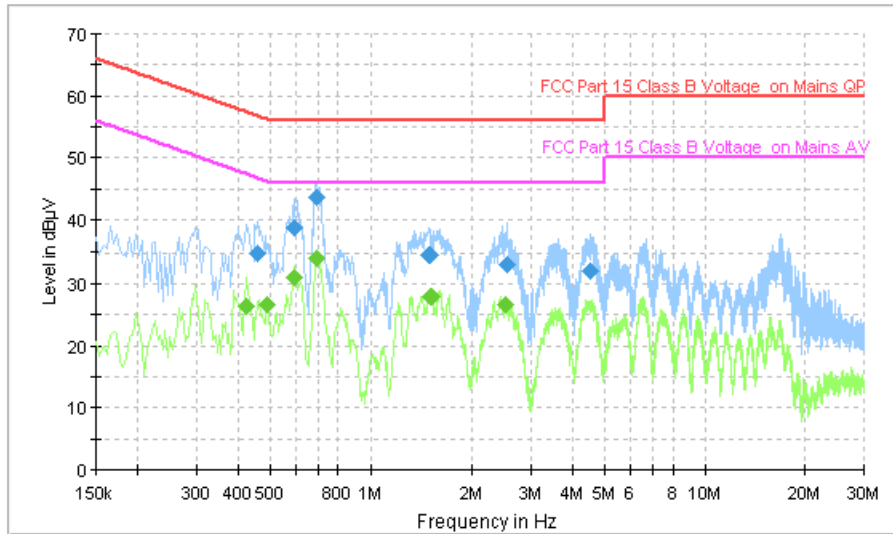


Fig. 77 AC Powerline Conducted Emission (Idle, AE3, 240V)

**MEASUREMENT RESULT: "QuasiPeak"**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.458000	35.0	GND	N	9.7	21.8	56.7
0.594000	38.8	GND	N	9.6	17.2	56.0
0.694000	43.7	GND	N	9.5	12.3	56.0
1.498000	34.7	GND	N	9.6	21.3	56.0
2.538000	33.0	GND	N	9.6	23.0	56.0
4.550000	32.0	GND	N	9.6	24.0	56.0

**MEASUREMENT RESULT: "Average"**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	26.4	GND	N	9.7	21.0	47.3
0.490000	26.5	GND	N	9.7	19.6	46.2
0.594000	31.1	GND	N	9.6	14.9	46.0
0.694000	34.0	GND	N	9.5	12.0	46.0
1.522000	27.8	GND	N	9.6	18.2	46.0
2.522000	26.7	GND	N	9.6	19.3	46.0



### A.9. Frequency Stability

Manufacturers ensured the EUT meet the requirement of frequency stability, such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

#### Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(g)	5250MHz~5350MHz	Specified in the user's manual
	5470MHz~5725MHz	

#### Measurement Condition:

T min = -10°C      T nom = 25°C      T max = 55°C  
V min = 3.6V      V nom = 3.8V      V max = 4.35V

#### Measurement Result:

Mode	Channel	Condition		Frequency
		T	V	
802.11a	5260 MHz	nom	nom	5259.9875
		max	nom	5259.9714
		min	nom	5259.9706
		nom	max	5259.9851
		nom	min	5259.9701
802.11a	5500 MHz	nom	nom	5499.9874
		max	nom	5499.9795
		min	nom	5499.9706
		nom	max	5499.9567
		nom	min	5499.9516

### A.10. Power Control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500mW).

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