FCC PART 15C
TEST REPORT
No. I14Z47255-SRD10

for

Sony Mobile Communications Inc.

GSM/WCDMA/LTE mobile phone

With

FCC ID: PY7PM-0808

Hardware Version: A

Software Version: 23.0.F.0.56

Issued Date: 2014-08-25

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 TMC Beijing.

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CONTENTS

CONTENTS **2**

1. TEST LATORATORY **6**

1.1. TESTING LOCATION 6
1.2. PROJECT DATA 6
1.3. SIGNATURE 6

2. CLIENT INFORMATION **7**

2.1. APPLICANT INFORMATION **7**

2.2. MANUFACTURER INFORMATION **7**

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE) **8**

3.1. ABOUT EUT 8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST 8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST 8
3.4. GENERAL DESCRIPTION 8

4. REFERENCE DOCUMENTS **9**

4.1. DOCUMENTS SUPPLIED BY APPLICANT 9
4.2. REFERENCE DOCUMENTS FOR TESTING 9

5. LABORATORY ENVIRONMENT **9**

6. SUMMARY OF TEST RESULTS **10**

6.1. SUMMARY OF TEST RESULTS 10
6.2. STATEMENTS 10
6.3. TEST CONDITIONS 10

7. TEST EQUIPMENTS UTILIZED **11**

ANNEX A: MEASUREMENT RESULTS **12**

A.1. MEASUREMENT METHOD 12
A.2. MAXIMUM PEAK OUTPUT POWER 13
A.2.1. OUTPUT POWER VERIFICATION 13
A.2.2. ANTENNA GAIN 14
A.2.3. MAXIMUM PEAK OUTPUT POWER 14
A.3. PEAK POWER SPECTRAL DENSITY 15
A.4. OCCUPIED 6DB BANDWIDTH 15
FIG. 1 OCCUPIED 6DB BANDWIDTH (802.11A, CH 149) 16
FIG. 2 OCCUPIED 6DB BANDWIDTH (802.11A, CH 157) 16
FIG. 3 OCCUPIED 6DB BANDWIDTH (802.11A, CH 165) 17
FIG. 4 OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 149) 17
FIG. 5 OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 157) 18
FIG. 6 OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 165) 18

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FIG. 7 OCCUPIED 6DB BANDWIDTH (802.11N-HT40, CH 151) 19
FIG. 8 OCCUPIED 6DB BANDWIDTH (802.11N-HT40, CH 159) 19
FIG. 9 OCCUPIED 6DB BANDWIDTH (802.11AC-HT80, CH 155) 20
A.5. TRANSMITTER SPURIOUS EMISSION 21
A.5.1 TRANSMITTER SPURIOUS EMISSION - CONDUCTED 21
FIG. 10 CONDUCTED SPURIOUS EMISSION (802.11A, CH149, CENTER FREQUENCY) 23
FIG. 11 CONDUCTED SPURIOUS EMISSION (802.11A, CH149, 30 MHZ-12 GHZ) 23
FIG. 12 CONDUCTED SPURIOUS EMISSION (802.11A, CH149, 12 GHZ-25 GHZ) 24
FIG. 13 CONDUCTED SPURIOUS EMISSION (802.11A, CH149, 25 GHZ-40 GHZ) 24
FIG. 14 CONDUCTED SPURIOUS EMISSION (802.11A, CH157, CENTER FREQUENCY) 25
FIG. 15 CONDUCTED SPURIOUS EMISSION (802.11A, CH157, 30 MHZ-12 GHZ) 25
FIG. 16 CONDUCTED SPURIOUS EMISSION (802.11A, CH157, 12 GHZ-25 GHZ) 26
FIG. 17 CONDUCTED SPURIOUS EMISSION (802.11A, CH157, 25 GHZ-40 GHZ) 26
FIG. 18 CONDUCTED SPURIOUS EMISSION (802.11A, CH165, CENTER FREQUENCY) 27
FIG. 19 CONDUCTED SPURIOUS EMISSION (802.11A, CH165, 30 MHZ-12 GHZ) 27
FIG. 20 CONDUCTED SPURIOUS EMISSION (802.11A, CH165, 12 GHZ-25 GHZ) 28
FIG. 21 CONDUCTED SPURIOUS EMISSION (802.11A, CH165, 25 GHZ-40 GHZ) 28
FIG. 22 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH149, CENTER FREQUENCY) 29
FIG. 23 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH149, 30 MHZ-12 GHZ) 29
FIG. 24 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH149, 12 GHZ-25 GHZ) 30
FIG. 25 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH149, 25 GHZ-40 GHZ) 30
FIG. 26 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH157, CENTER FREQUENCY) 31
FIG. 27 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH157, 30 MHZ-12 GHZ) 31
FIG. 28 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH157, 12 GHZ-25 GHZ) 32
FIG. 29 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH157, 25 GHZ-40 GHZ) 32
FIG. 30 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH165, CENTER FREQUENCY) 33
FIG. 31 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH165, 30 MHZ-12 GHZ) 33
FIG. 32 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH165, 12 GHZ-25 GHZ) 34
FIG. 33 CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH165, 25 GHZ-40 GHZ) 35
FIG. 34 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH151, CENTER FREQUENCY) 35
FIG. 35 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH151, 30 MHZ-12 GHZ) 36
FIG. 36 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH151, 12 GHZ-25 GHZ) 36
FIG. 37 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH151, 25 GHZ-40 GHZ) 37
FIG. 38 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH159, CENTER FREQUENCY) 37
FIG. 39 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH159, 30 MHZ-12 GHZ) 38
FIG. 40 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH159, 12 GHZ-25 GHZ) 38
FIG. 41 CONDUCTED SPURIOUS EMISSION (802.11N-HT40, CH159, 25 GHZ-40 GHZ) 39
FIG. 42 CONDUCTED SPURIOUS EMISSION (802.11AC-HT80, CH155, CENTER FREQUENCY) 39
FIG. 43 CONDUCTED SPURIOUS EMISSION (802.11AC-HT80, CH155, 30 MHZ-12 GHZ) 40
FIG. 44 CONDUCTED SPURIOUS EMISSION (802.11AC-HT80, CH155, 12 GHZ-25 GHZ) 40
FIG. 45 CONDUCTED SPURIOUS EMISSION (802.11AC-HT80, CH155, 25 GHZ-40 GHZ) 41
A.5.2 TRANSMITTER SPURIOUS EMISSION - RADIATED 42
FIG. 46 RADIATED SPURIOUS EMISSION (802.11A, CH149, 1 GHZ-6 GHZ) 47
FIG. 47 RADIATED SPURIOUS EMISSION (802.11A, CH149, 3 GHZ-18 GHZ) 48

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FIG. 48 RADIATED SPURIOUS EMISSION (802.11A, CH157, 30 MHZ-1 GHZ) 48
FIG. 49 RADIATED SPURIOUS EMISSION (802.11A, CH157, 1 GHZ-6 GHZ) 49
FIG. 50 RADIATED SPURIOUS EMISSION (802.11A, CH157, 3 GHZ-18 GHZ) 49
FIG. 51 RADIATED SPURIOUS EMISSION (802.11A, CH157, 18 GHZ-26.5 GHZ) 50
FIG. 52 RADIATED EMISSION: 802.11N, (802.11A, CH157, 26.5 GHZ - 40 GHZ) 50
FIG. 53 RADIATED SPURIOUS EMISSION (802.11A, CH165, 1 GHZ-6 GHZ) 51
FIG. 54 RADIATED SPURIOUS EMISSION (802.11A, CH165, 3 GHZ-18 GHZ) 51
FIG. 55 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH149, 1 GHZ-6 GHZ) 52
FIG. 56 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH149, 3 GHZ-18 GHZ) 52
FIG. 57 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH157, 30 MHZ-1 GHZ) 53
FIG. 58 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH157, 1 GHZ-6 GHZ) 53
FIG. 59 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH157, 3 GHZ-18 GHZ) 54
FIG. 60 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH157, 18 GHZ-26.5 GHZ) 54
FIG. 61 RADIATED EMISSION: 802.11N, (802.11N-HT20, CH157, 26.5 GHZ - 40 GHZ) 55
FIG. 62 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH165, 1 GHZ-6 GHZ) 55
FIG. 63 RADIATED SPURIOUS EMISSION (802.11N-HT20, CH165, 3 GHZ-18 GHZ) 56
FIG. 64 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH151, 30 MHZ-1 GHZ) 56
FIG. 65 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH151, 1 GHZ-6 GHZ) 57
FIG. 66 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH151, 3 GHZ-18 GHZ) 57
FIG. 67 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH151, 18 GHZ-26.5 GHZ) 58
FIG. 68 RADIATED EMISSION: 802.11N, (802.11N-HT40, CH151, 26.5 GHZ - 40 GHZ) 58
FIG. 69 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH159, 30 MHZ-1 GHZ) 59
FIG. 70 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH159 1 GHZ-6 GHZ) 59
FIG. 71 RADIATED SPURIOUS EMISSION (802.11N-HT40, CH159, 3 GHZ-18 GHZ) 60
FIG. 72 RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH155, 1 GHZ-6 GHZ) 60
FIG. 73 RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH155, 3 GHZ-18 GHZ) 61
FIG. 74 RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH155, 18 GHZ-26.5 GHZ) 61
FIG. 75 RADIATED EMISSION: 802.11N, (802.11AC-HT80, CH155, 26.5 GHZ - 40 GHZ) 62
A.6. BAND EDGES COMPLIANCE 63
A6.1 BAND EDGES - CONDUCTED 63
FIG. 76 BAND EDGES (802.11A, 5745MHZ) 64
FIG. 77 BAND EDGES (802.11A, 5825MHZ) 64
FIG. 78 BAND EDGES (802.11N-HT20, 5745MHZ) 65
FIG. 79 BAND EDGES (802.11N-HT20, 5825MHZ) 65
FIG. 80 BAND EDGES (802.11N-HT40, 5755MHZ) 66
FIG. 81 BAND EDGES (802.11N-HT40, 5795MHZ) 66
FIG. 82 BAND EDGES (802.11AC-HT80, 5775MHZ) 67
FIG. 83 BAND EDGES (802.11AC-HT80, 5775MHZ) 67
A6.2 BAND EDGES - RADIATED 68
FIG. 84 BAND EDGES (802.11A, 5745MHZ) 69
FIG. 85 BAND EDGES (802.11A, 5825MHZ) 69
FIG. 86 BAND EDGES (802.11N-HT20, 5745MHZ) 70
FIG. 87 BAND EDGES (802.11N-HT20, 5825MHZ) 70
FIG. 88 BAND EDGES (802.11N-HT40, 5755MHZ) 71

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FIG. 89 BAND EDGES (802.11N-HT40, 5795MHZ) 71
FIG. 90 BAND EDGES (802.11AC-HT80, 5775MHZ) 72
FIG. 91 BAND EDGES (802.11AC-HT80, 5775MHZ) 72
A.7. AC POWERLINE CONDUCTED EMISSION 73
FIG. 92 AC POWERLINE CONDUCTED EMISSION-802.11A 74
FIG. 93 AC POWERLINE CONDUCTED EMISSION-IDLE 75

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1. TEST LATORATORY

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China
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Telephone:	+86-10-62304633-2561
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1.2. Project data

Testing Start Date:	2014-07-23
Testing End Date:	2014-07-25

1.3. Signature

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(Reviewed this test report)

Xiao Li

Deputy Director of the laboratory

(Approved this test report)

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2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

2.2. Manufacturer Information

Company Name:	Sony Mobile Communications Inc.
Address /Post:	1-8-15 Konan, Minato-ku, Tokyo, 108-0075, Japan
City:	Tokyo
Postal Code:	108-0075
Country:	Japan

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3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)

3.1. About EUT

Description	GSM, GPRS, EDGE,WCDMA FDD, HSDPA, HSUPA,LTE mobile phone
FCC ID	PY7PM-0808
WLAN Frequency Range	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
MAX Conducted Power	20.82dBm(OFDM)
MAX Radiated Power	18.98dBm(OFDM)
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 3.8VDC)

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	S/N	IMEI	HW Version	SW Version
EUT1	CB5A1ZTFRY	004402452521432	A	23.0.F.0.56
EUT2	CB5A1ZTFTL	004402452521085	A	23.0.F.0.56

*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	Type	SN
AE1	Travel Charger	/	/
AE3	USB Cable	134912A21208328	AP1.0

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

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/WCDMA/LTE Mobile Phone with integrated antenna and embedded battery.

It consists of normal options: USB cable and travel charger.

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

Samples undergoing test were selected by the client.

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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.

FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	2014
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	2009
KDB558074	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247	2013
KDB644545	Guidance for IEEE 802.11ac and Pre-ac Device Emissions Testing	2013

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

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6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247 (b)	/	**P**
Peak Power Spectral Density	15.247 (e)	/	**P**
Occupied 6dB Bandwidth	15.247 (a)	/	**P**
Band Edges Compliance	15.247 (b)	/	**P**
Transmitter Spurious Emission - Conducted	15.247	/	**P**
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	/	**P**
AC Powerline Conducted Emission	15.107, 15.207	/	**P**

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

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

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

Temperature	26℃
Voltage	3.8V
Humidity	44%

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7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2014-07-08	2015-07-07
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2013-11-29	2014-11-28
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2014-4-15	2015-4-14
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	2013-11-6	2014-11-5
2	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2011-11-11	2014-11-10
3	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS-Lindgren	2014-4-20	2017-4-19
4	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2014-7-1	2017-06-30
5	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2011-12-21	2014-12-20
6	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

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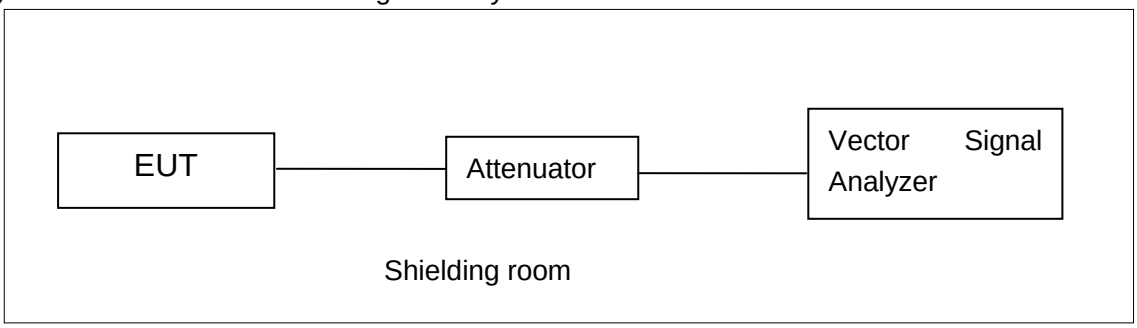
ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

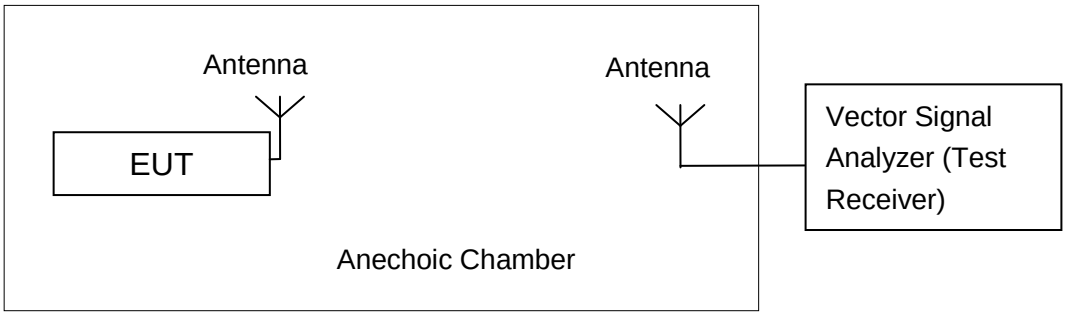
A.1.1. Conducted Measurements

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



A.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 and KDB558074
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.

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A.2. Maximum Peak Output Power

Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

The measurement is made according to ANSI C63.10 .

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

A.2.1. Output Power Verification

This test is only for mode verification, and the selected mode will be used for the future measurement.

Measurement Results:

OFDM/a mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	6	9	12	18	24	36	48	54
149 (5745 MHz)	24.16	24.08	23.60	23.51	23.14	23.02	23.22	22.97

OFDM/n-HT20 mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
149 (5745 MHz)	23.12	22.87	22.88	23.56	23.60	23.68	23.77	23.62

OFDM/n-HT40 mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
151 (5755 MHz)	22.75	22.48	22.18	22.85	22.78	22.83	22.79	22.71

OFDM/ac-HT80 mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
155 (5775 MHz)	21.80	21.15	21.29	22.09	21.89	21.99	21.99	21.88

Selected data rate for all measurement:

OFDM /a-mode: 6Mbps

OFDM /n-HT20 mode: MCS4

OFDM /n-HT40 mode: MCS3

OFDM /ac-HT80 mode: MCS3

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A.2.2. Antenna Gain

The antenna gain of the complete system is calculated by the difference of radiated power and the conducted power of the EUT.

Test	Channel		
Tnom,Vnom	149	157	165
Conducted Power(dBm)	19.64	19.71	19.90
Radiated Power(dBm)	11.87	11.82	12.06
Gain(dBi)	-7.77	-7.89	-7.84

Antenna Gain = Radiated value (with radiated sample) - Conducted values (with conducted samples)

A.2.3. Maximum Peak Output Power

Measurement Results:

802.11a

Mode	Test Result (dBm)					
	5745 MHz (Ch149)		5785 MHz (Ch157)		5825 MHz (Ch165)	
	Conducted	Radiated	Conducted	Radiated	Conducted	Radiated
802.11a	23.16	15.39	24.47	16.58	24.85	17.01

802.11n-HT20

Mode	Test Result (dBm)					
	5745 MHz (Ch149)		5785 MHz (Ch157)		5825 MHz (Ch165)	
	Conducted	Radiated	Conducted	Radiated	Conducted	Radiated
802.11n-HT20	23.77	16.00	24.15	16.26	24.26	16.42

802.11n-HT40

Mode	Test Result (dBm)			
	5755 MHz (Ch151)		5795 MHz (Ch159)	
	Conducted	Radiated	Conducted	Radiated
802.11n-HT40	22.85	15.08	23.19	15.30

802.11ac-HT80

Mode	Test Result (dBm)	
	5775 MHz (Ch155)	
	Conducted	Radiated
802.11ac-HT80	22.09	14.20

Conclusion: PASS

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A.3. Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(e)	< 30 dBm/500 kHz

The measurement is made according to ANSI C63.10 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Measurement Results:

Mode	Channel	Power Spectral Density (dBm/500 kHz)	Conclusion
802.11a	149	10.69	P
	157	11.18	P
	165	11.29	P
802.11n HT20	149	9.62	P
	157	10.89	P
	165	10.21	P
802.11n HT40	151	6.24	P
	159	7.21	P
802.11ac-HT80	155	2.79	P

Conclusion: PASS

A.4. Occupied 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

The measurement is made according to ANSI C63.10 .

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11a	149	Fig.1	16299	P
	157	Fig.2	16299	P
	165	Fig.3	16350	P
802.11n HT20	149	Fig.4	17700	P
	157	Fig.5	17700	P
	165	Fig.6	17700	P
802.11n HT40	151	Fig.7	36480	P
	159	Fig.8	36400	P
802.11ac-HT80	155	Fig.9	76320	P

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Conclusion: PASS

Test graphs as below:

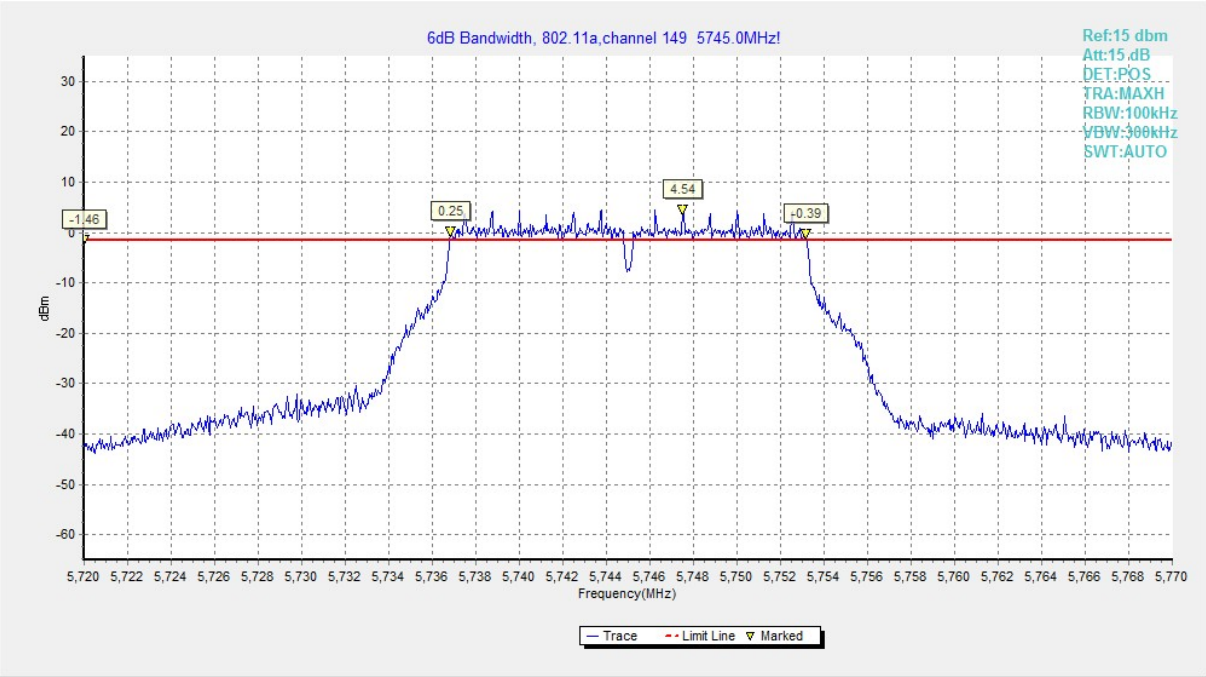

Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

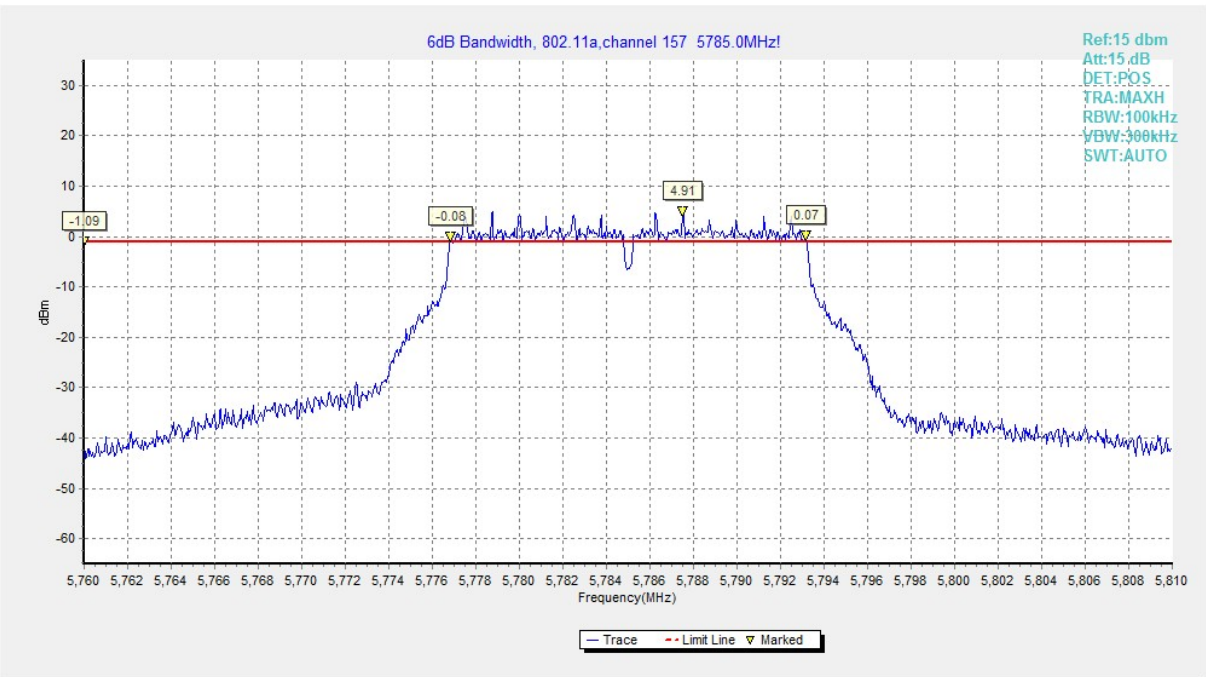

Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

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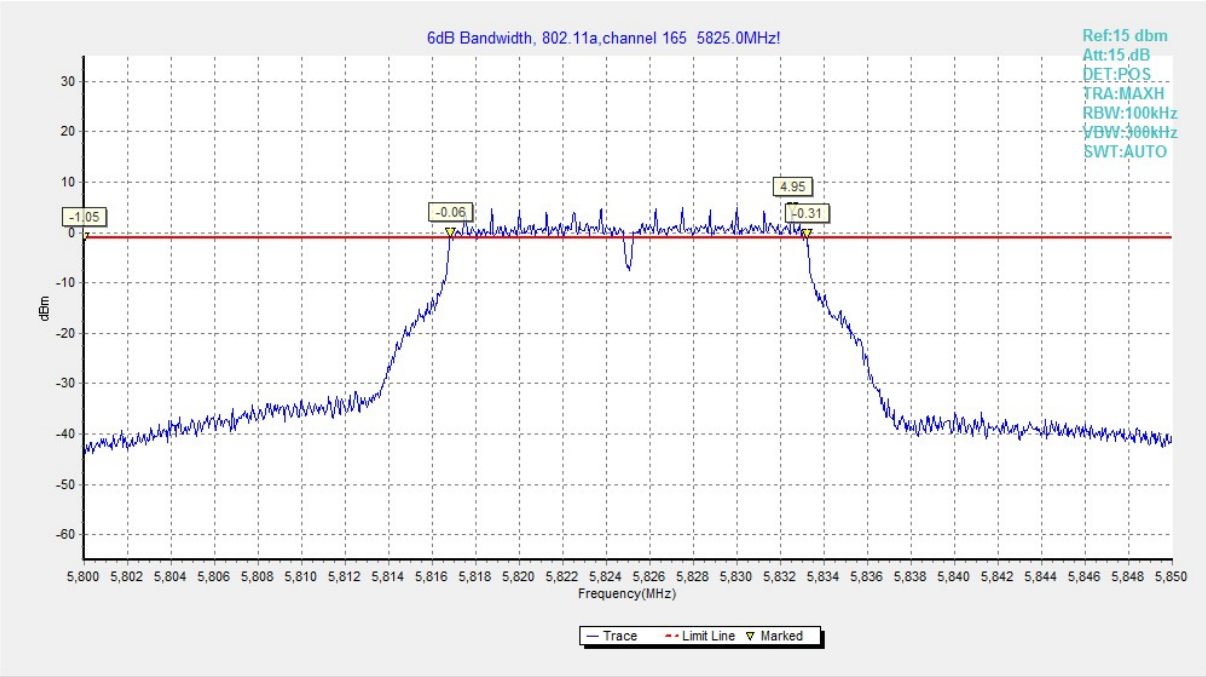

Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

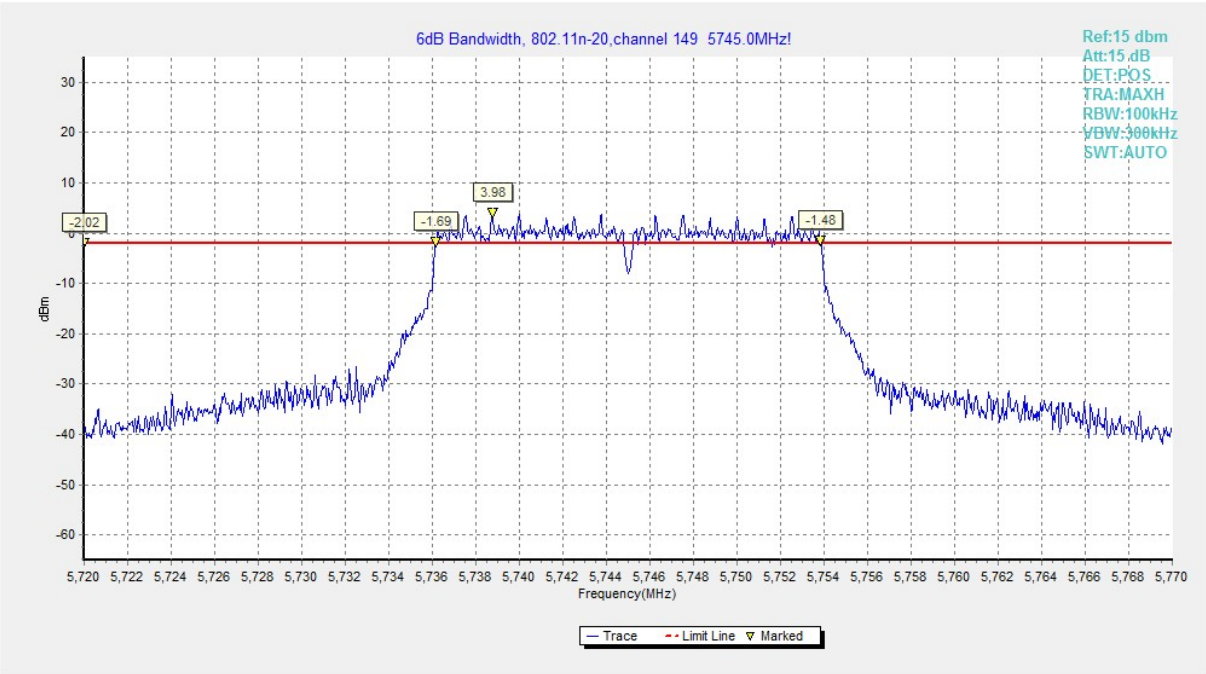

Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

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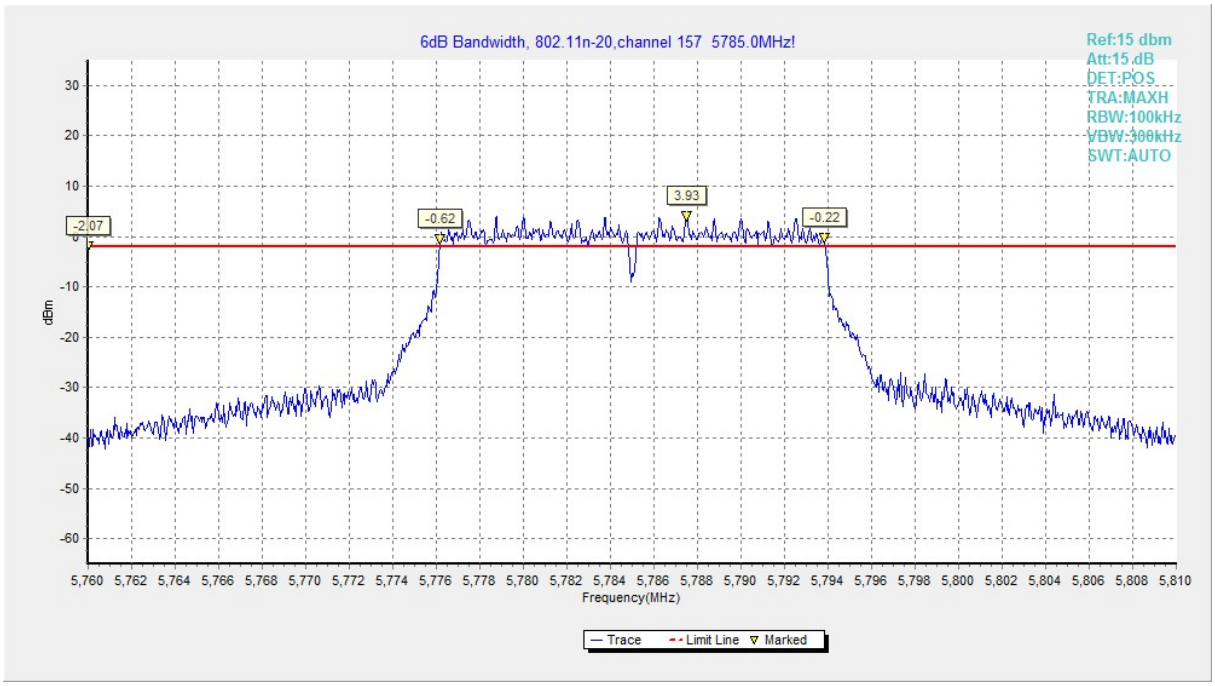

Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

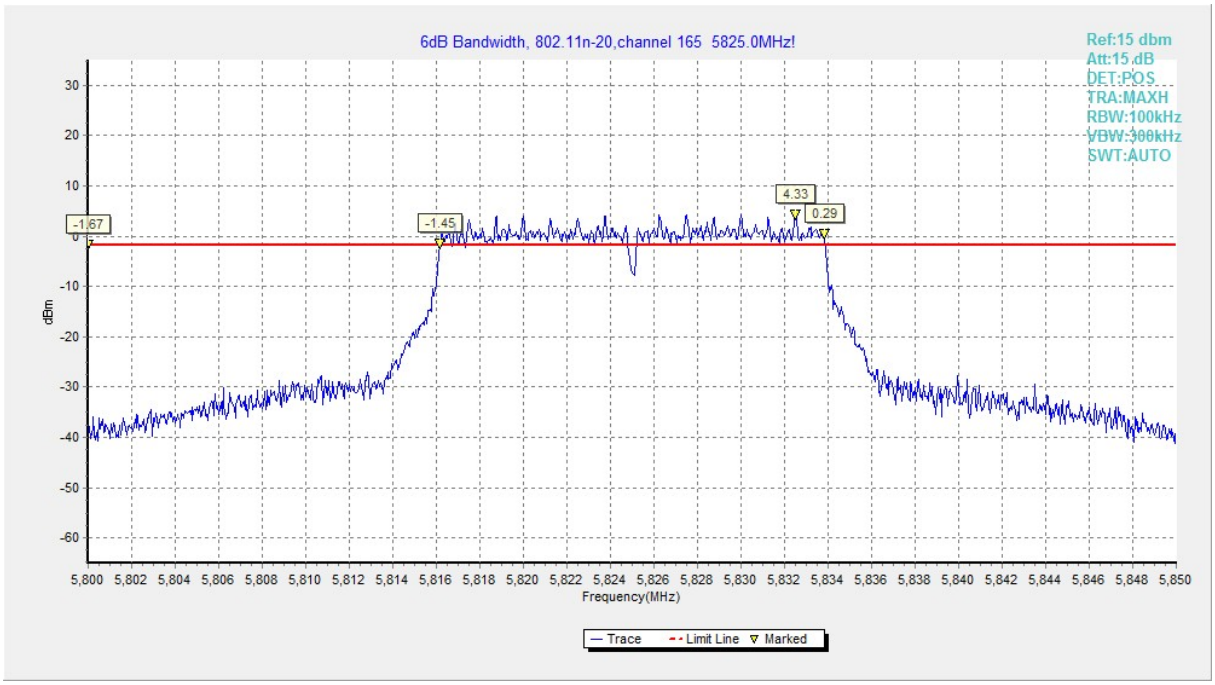

Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

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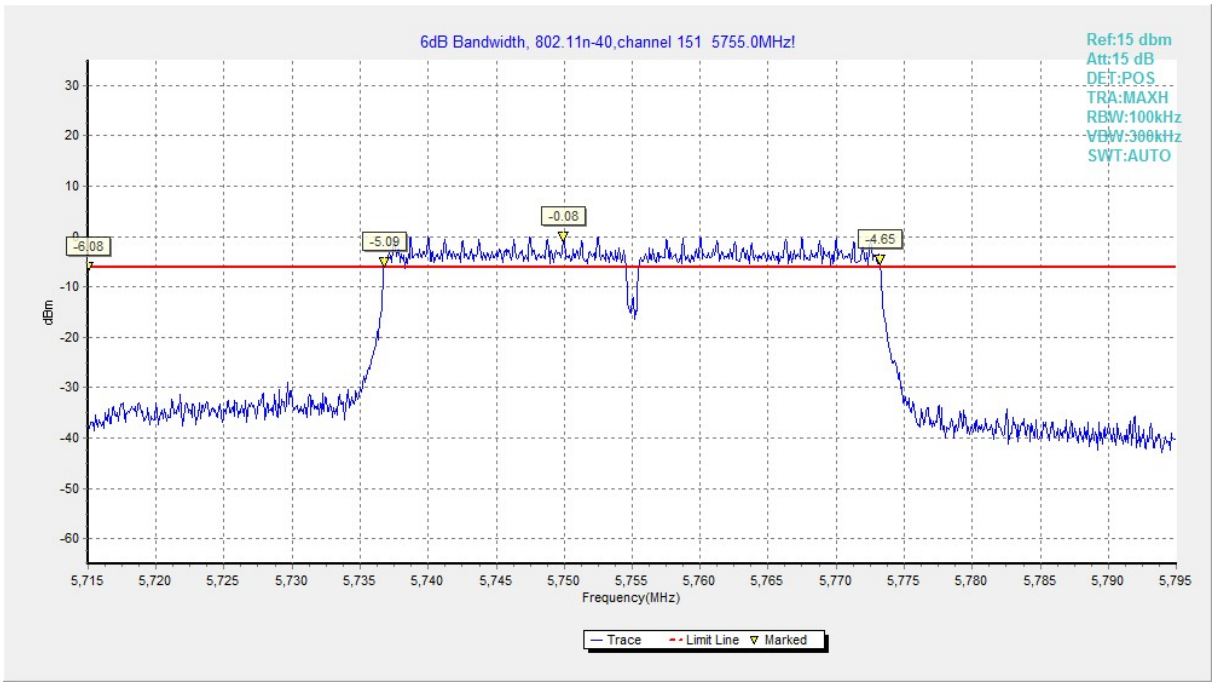

Fig. 7 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)

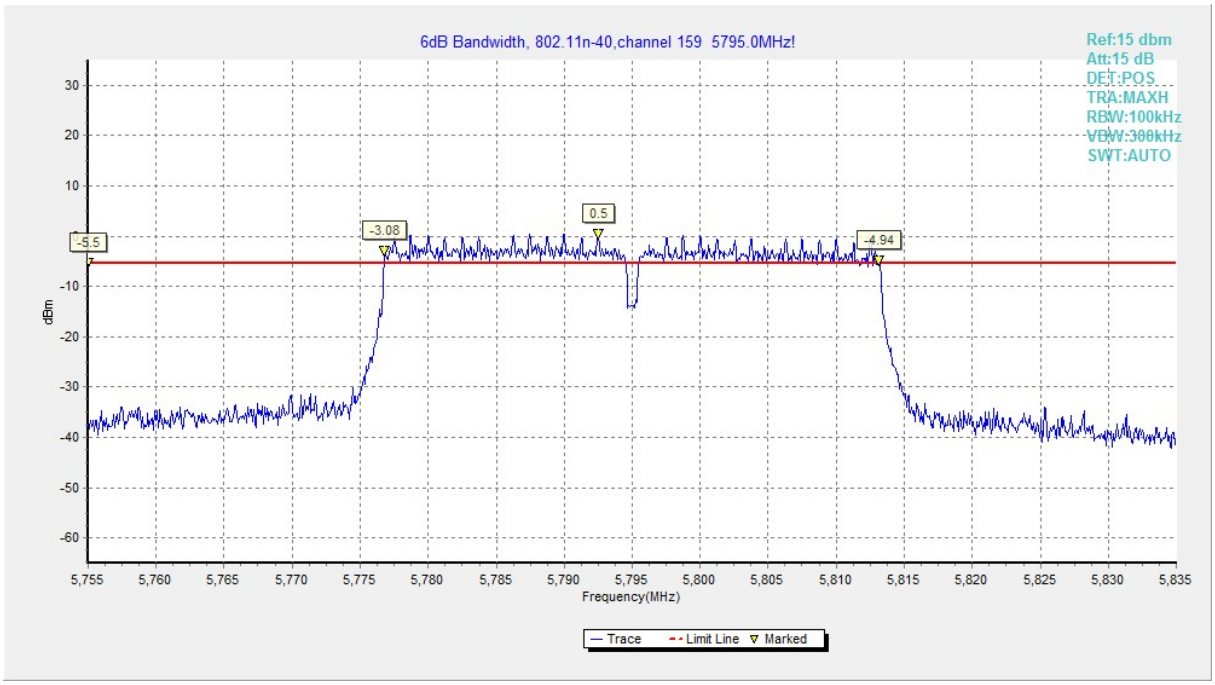

Fig. 8 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)

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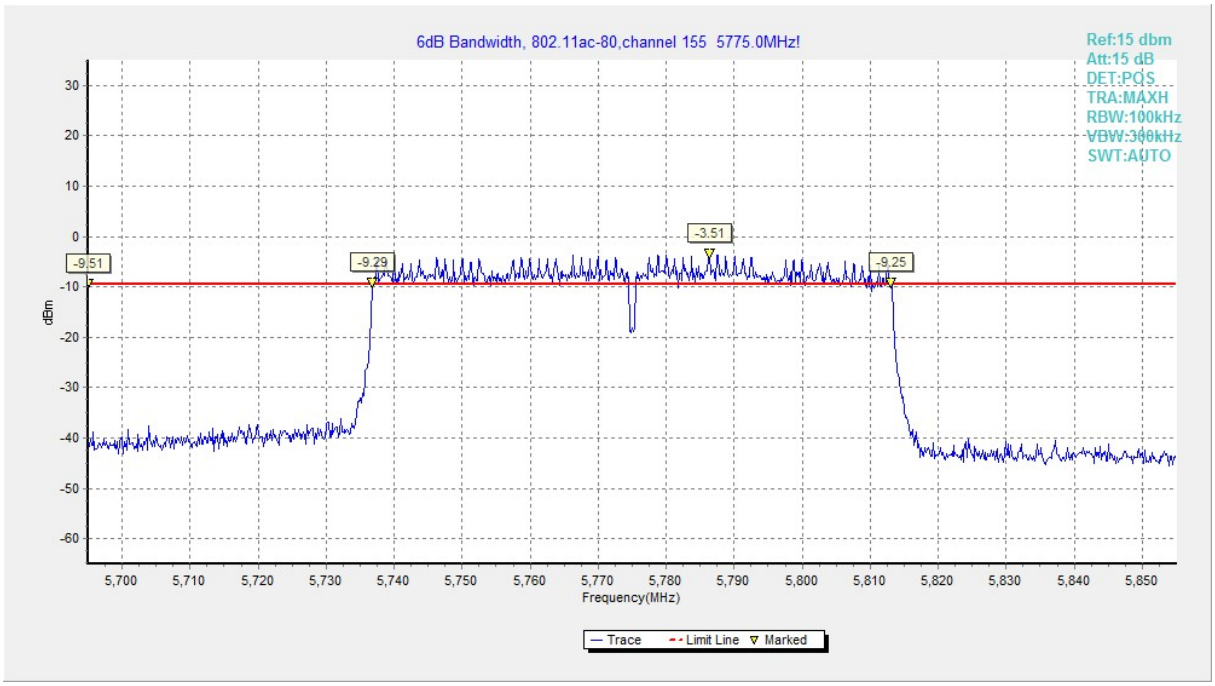

Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

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A.5. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

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 ≤ 2GHz	0.63
2GHz ≤ f ≤3.6GHz	0.82
3.6GHz ≤ f ≤8GHz	1.55
8GHz ≤ f ≤20GHz	1.86
20GHz ≤ f ≤22GHz	1.90
22GHz ≤ f ≤26GHz	2.20

A.5.1 Transmitter Spurious Emission - Conducted

Measurement Results:

802.11a mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	5.745 GHz	Fig.10	P
		30 MHz ~ 12 GHz	Fig.11	P
		12 GHz ~ 25 GHz	Fig.12	P
		25 GHz ~ 40 GHz	Fig.13	P
	157	5.785 GHz	Fig.14	P
		30 MHz ~ 12 GHz	Fig.15	P
		12 GHz ~ 25 GHz	Fig.16	P
		25 GHz ~ 40 GHz	Fig.17	P
	165	5.825 GHz	Fig.18	P
		30 MHz ~ 12 GHz	Fig.19	P
		12 GHz ~ 25 GHz	Fig.20	P
		25 GHz ~ 40 GHz	Fig.21	P

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802.11n-HT20 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n HT20	149	5.745 GHz	Fig.22	P
		30 MHz ~ 12 GHz	Fig.23	P
		12 GHz ~ 25 GHz	Fig.24	P
		25 GHz ~ 40 GHz	Fig.25	P
	157	5.785 GHz	Fig.26	P
		30 MHz ~ 12 GHz	Fig.27	P
		12 GHz ~ 25 GHz	Fig.28	P
		25 GHz ~ 40 GHz	Fig.29	P
	165	5.825 GHz	Fig.30	P
		30 MHz ~ 12 GHz	Fig.31	P
		12 GHz ~ 25 GHz	Fig.32	P
		25 GHz ~ 40 GHz	Fig.33	P

802.11n-HT40 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n HT40	151	5.755 GHz	Fig.34	P
		30 MHz ~ 12 GHz	Fig.35	P
		12 GHz ~ 25 GHz	Fig.36	P
		25 GHz ~ 40 GHz	Fig.37	P
	159	5.795 GHz	Fig.38	P
		30 MHz ~ 12 GHz	Fig.39	P
		12 GHz ~ 25 GHz	Fig.40	P
		25 GHz ~ 40 GHz	Fig.41	P

802.11ac-HT80 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11ac HT80	155	5.775 GHz	Fig.42	P
		30 MHz ~ 12 GHz	Fig.43	P
		12 GHz ~ 25 GHz	Fig.44	P
		25 GHz ~ 40 GHz	Fig.45	P

Conclusion: PASS

Test graphs as below:

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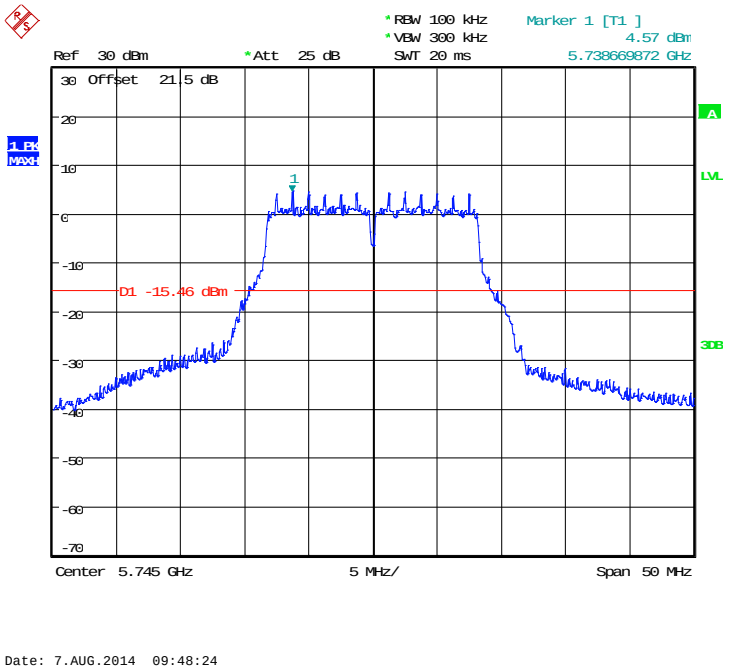

Fig. 10 Conducted Spurious Emission (802.11a, Ch149, Center Frequency)

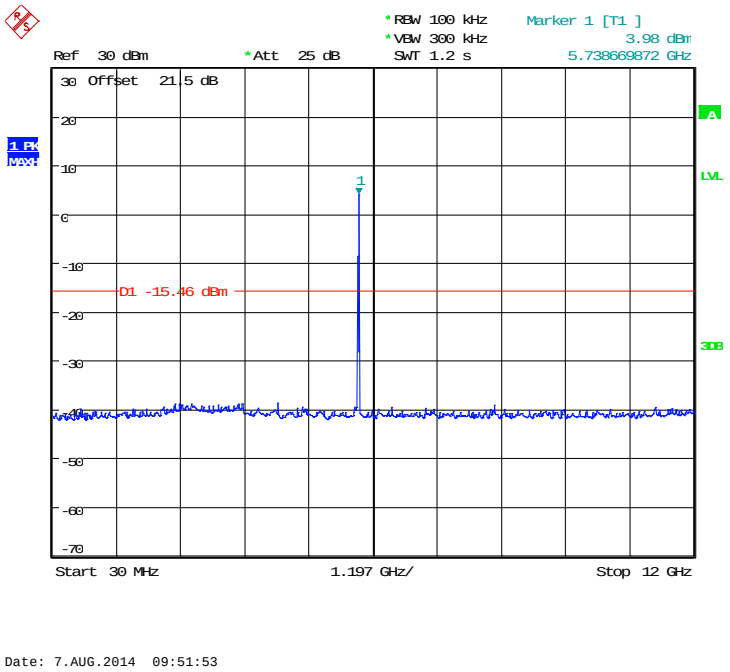

Fig. 11 Conducted Spurious Emission (802.11a, Ch149, 30 MHz-12 GHz)

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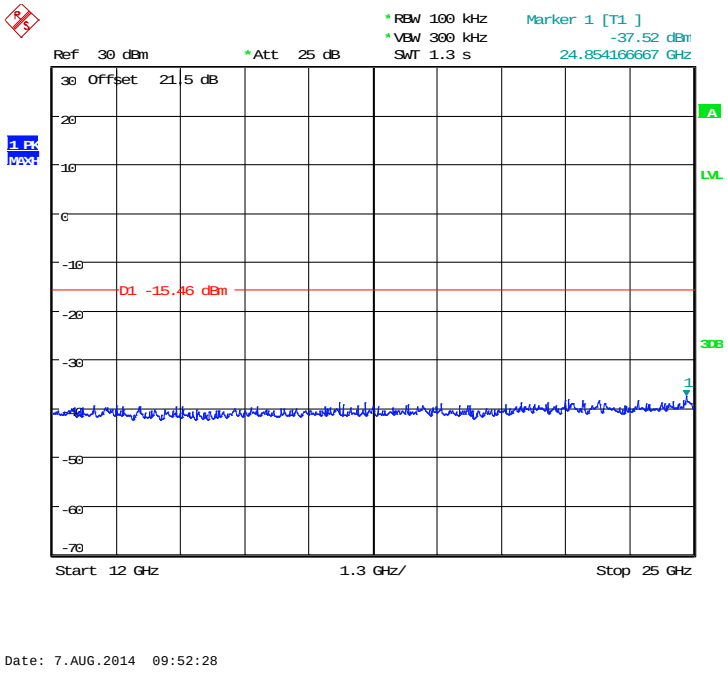

Fig. 12 Conducted Spurious Emission (802.11a, Ch149, 12 GHz-25 GHz)

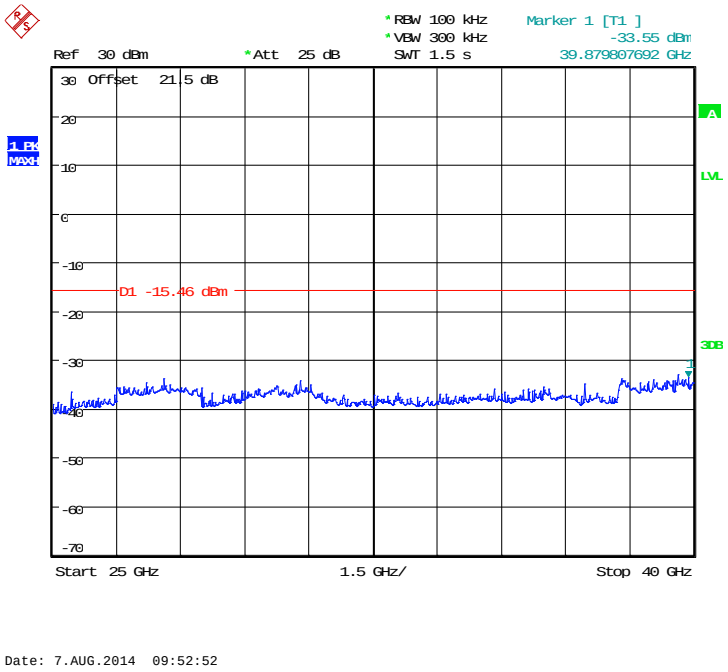

Fig. 13 Conducted Spurious Emission (802.11a, Ch149, 25 GHz-40 GHz)

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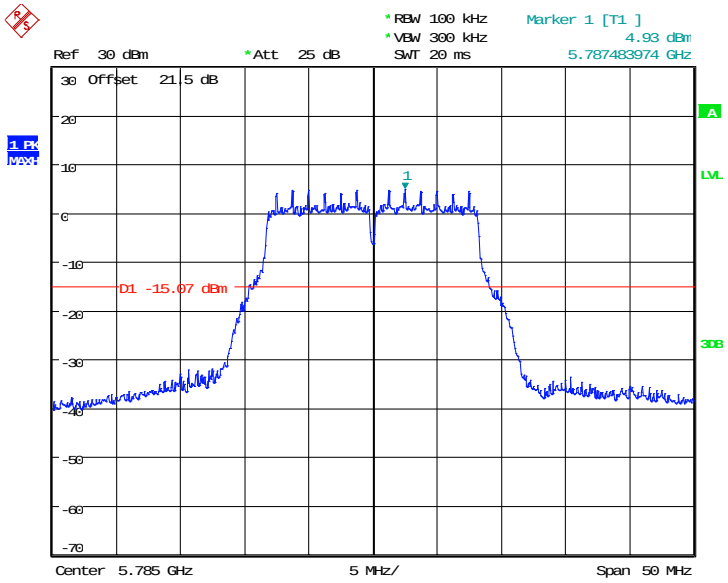

Date: 7.AUG.2014 09:55:22

Fig. 14 Conducted Spurious Emission (802.11a, Ch157, Center Frequency)

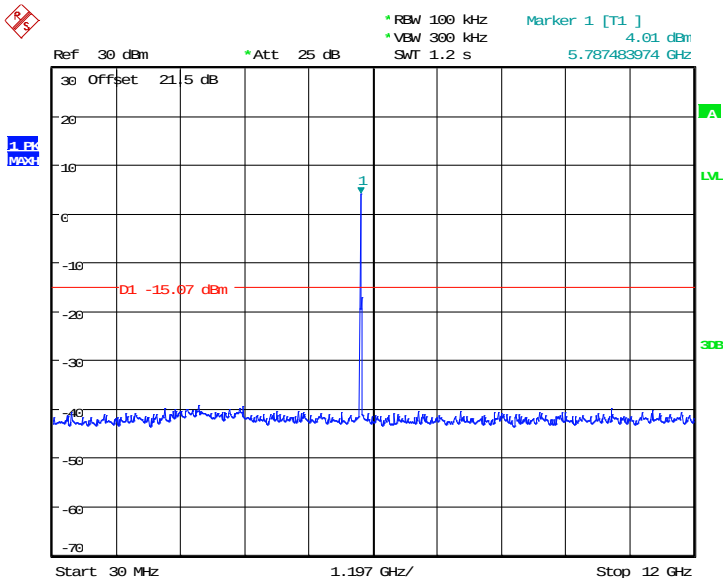

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Fig. 15 Conducted Spurious Emission (802.11a, Ch157, 30 MHz-12 GHz)

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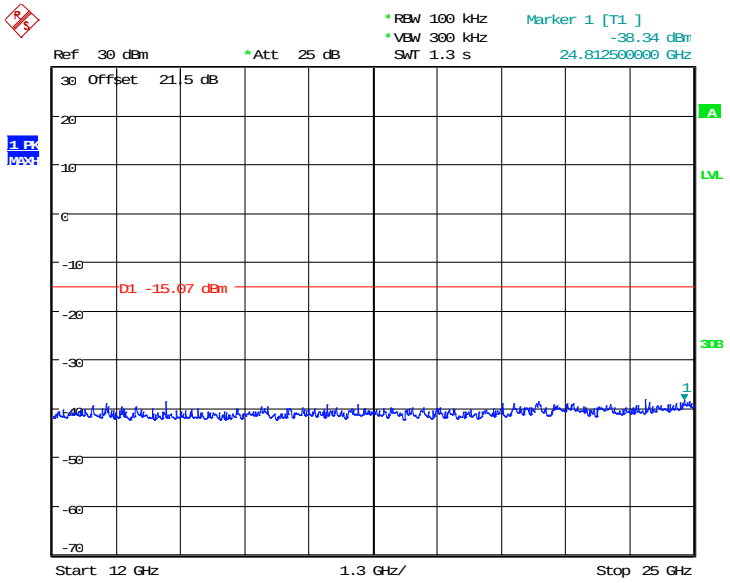

Fig. 16 Conducted Spurious Emission (802.11a, Ch157, 12 GHz-25 GHz)

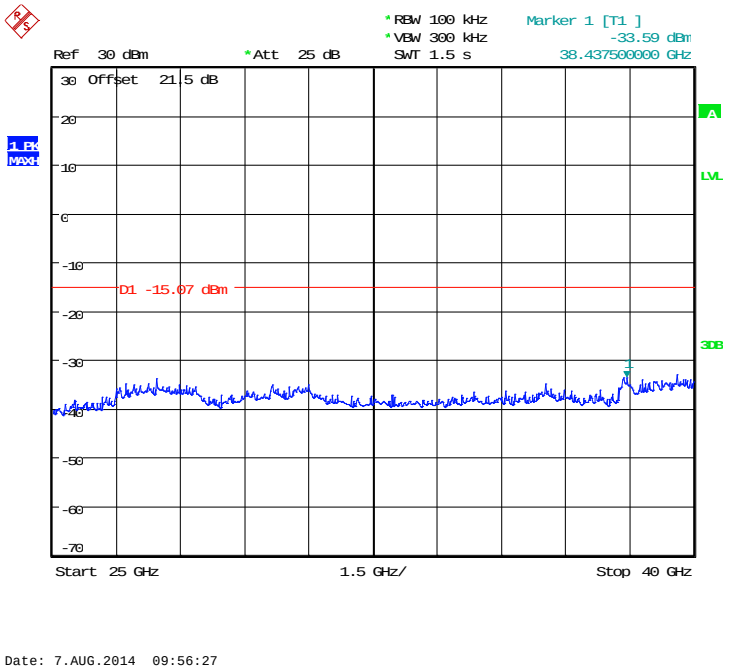

Fig. 17 Conducted Spurious Emission (802.11a, Ch157, 25 GHz-40 GHz)

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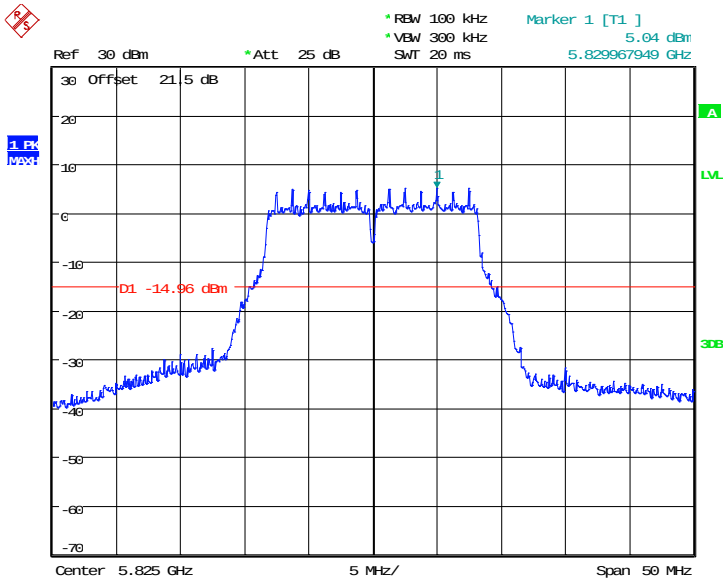

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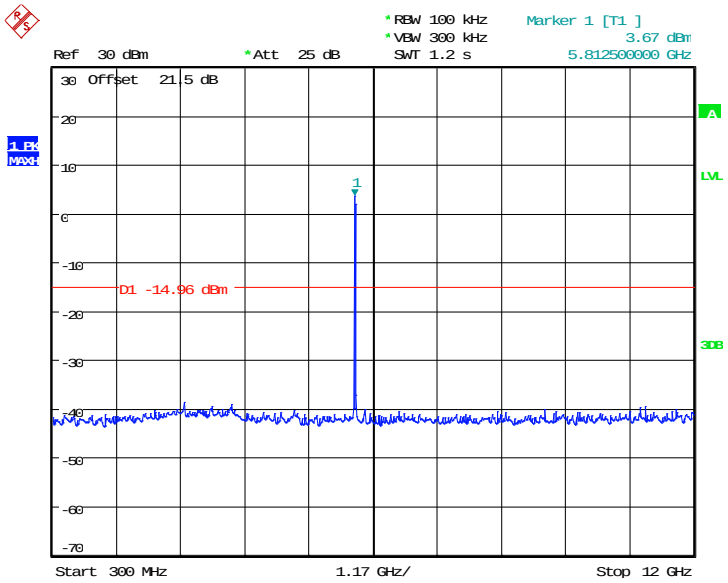
Fig. 18 Conducted Spurious Emission (802.11a, Ch165, Center Frequency)



Date: 7.AUG.2014 09:59:38

Fig. 19 Conducted Spurious Emission (802.11a, Ch165, 30 MHz-12 GHz)

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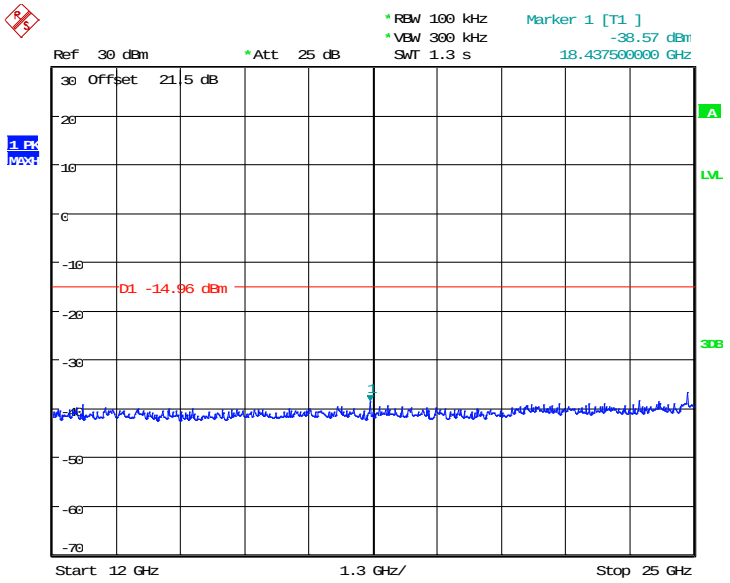

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Fig. 20 Conducted Spurious Emission (802.11a, Ch165, 12 GHz-25 GHz)

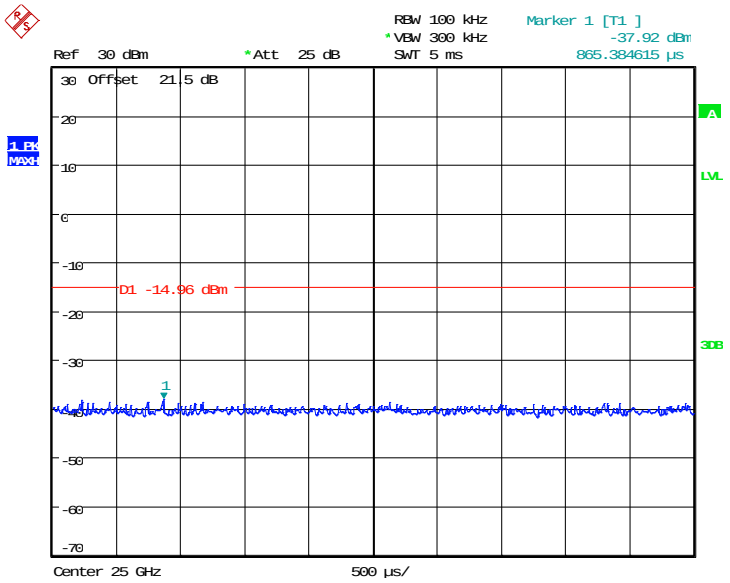

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Fig. 21 Conducted Spurious Emission (802.11a, Ch165, 25 GHz-40 GHz)

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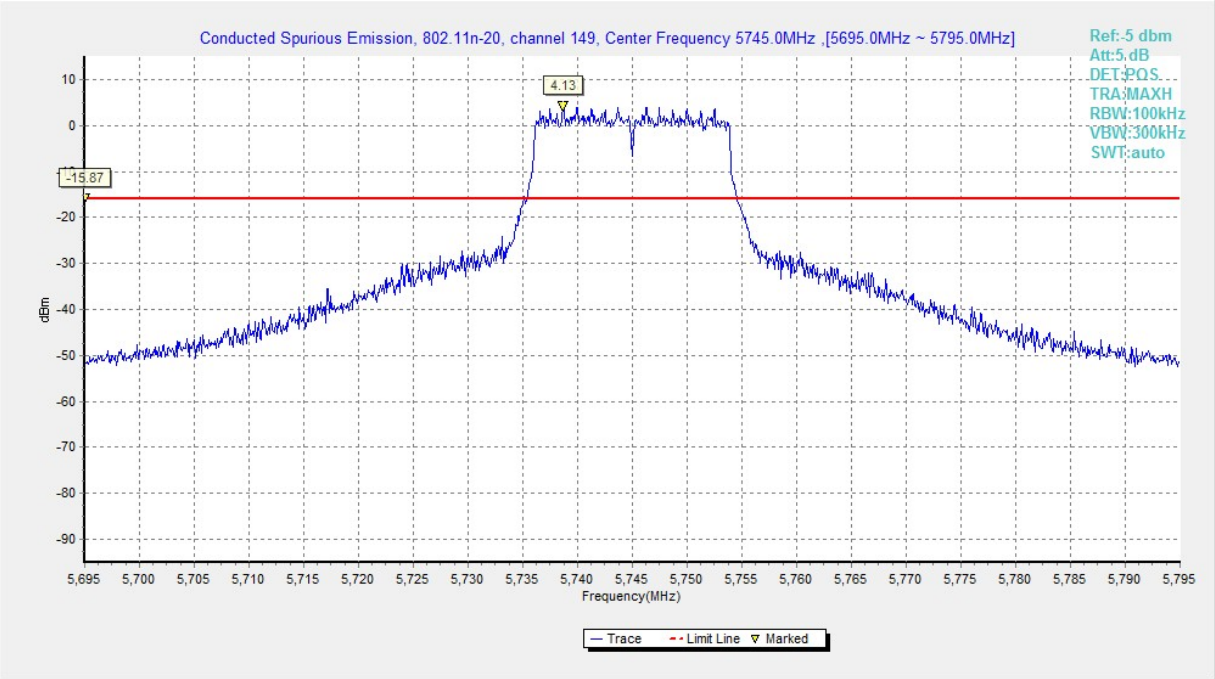

Fig. 22 Conducted Spurious Emission (802.11n-HT20, Ch149, Center Frequency)

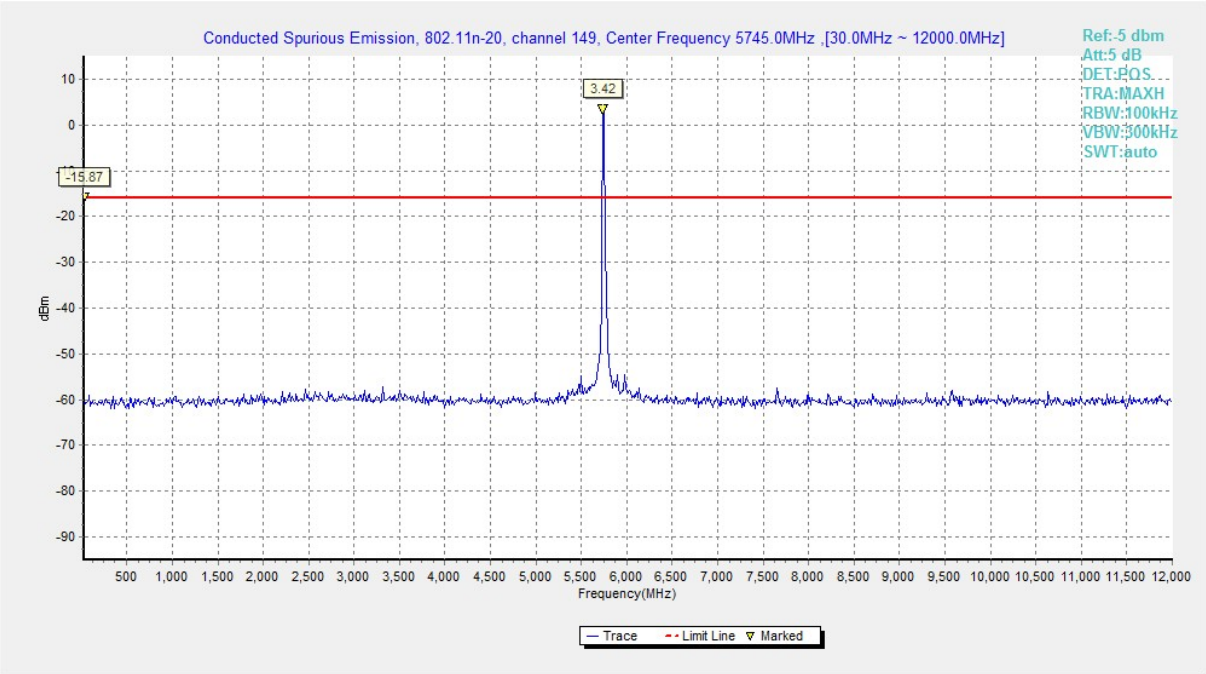

Fig. 23 Conducted Spurious Emission (802.11n-HT20, Ch149, 30 MHz-12 GHz)

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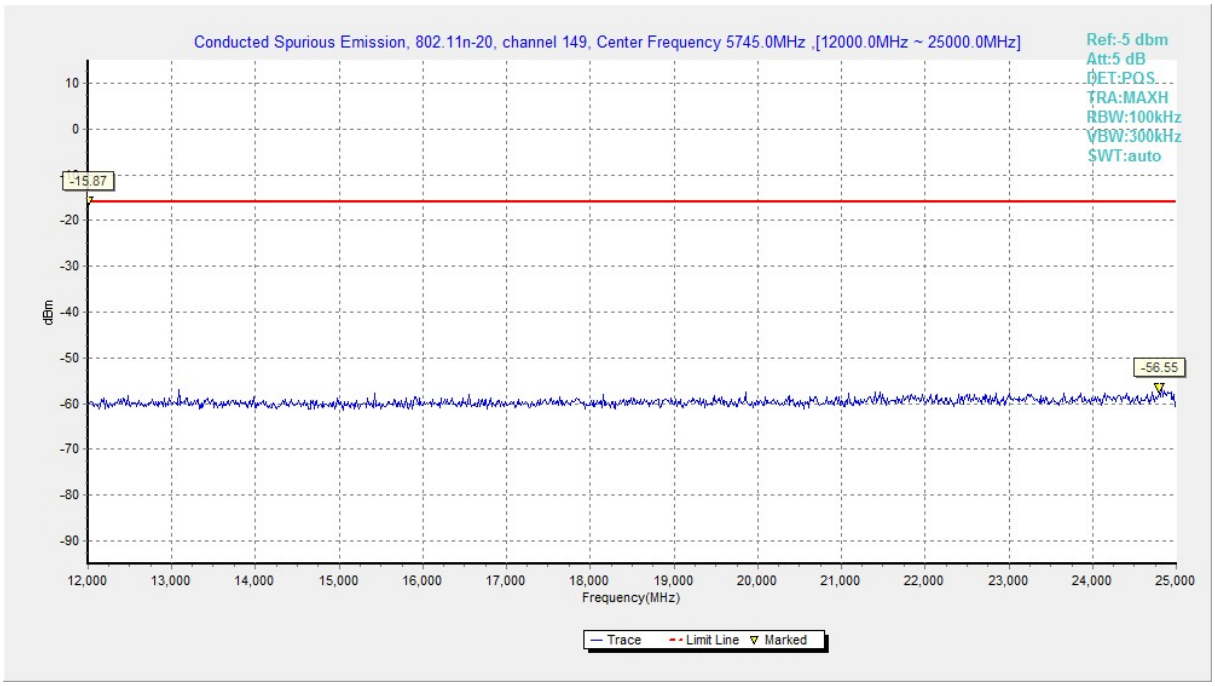

Fig. 24 Conducted Spurious Emission (802.11n-HT20, Ch149, 12 GHz-25 GHz)

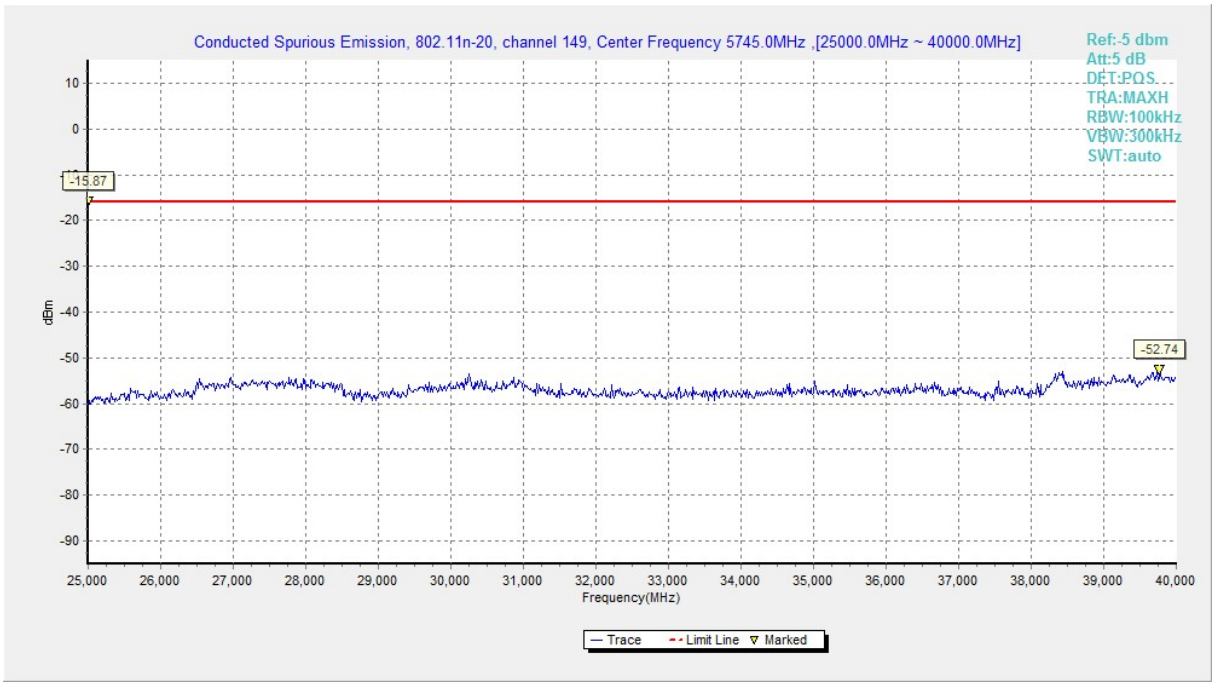

Fig. 25 Conducted Spurious Emission (802.11n-HT20, Ch149, 25 GHz-40 GHz)

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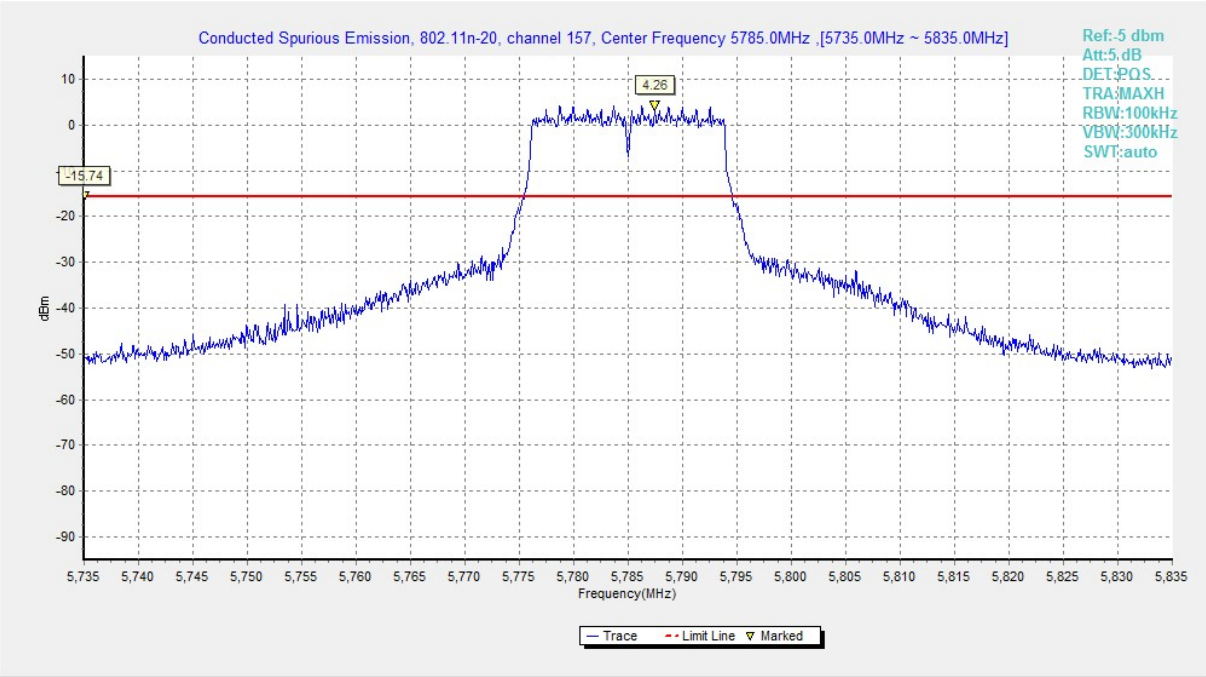

Fig. 26 Conducted Spurious Emission (802.11n-HT20, Ch157, Center Frequency)

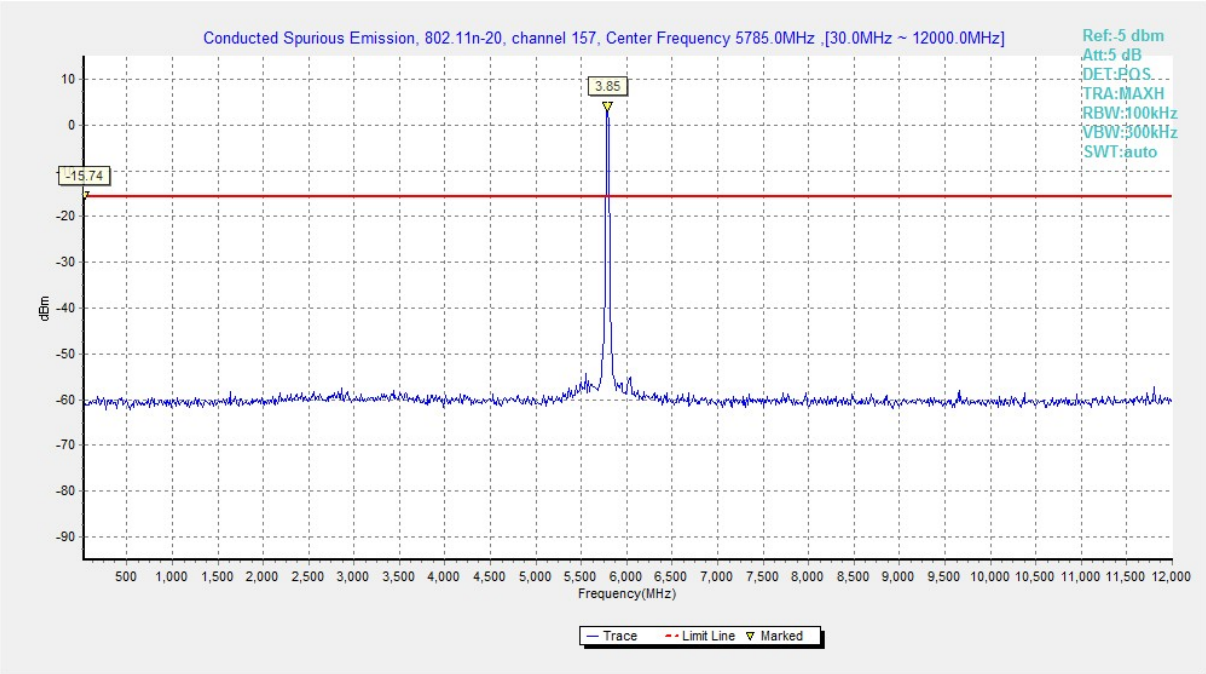

Fig. 27 Conducted Spurious Emission (802.11n-HT20, Ch157, 30 MHz-12 GHz)

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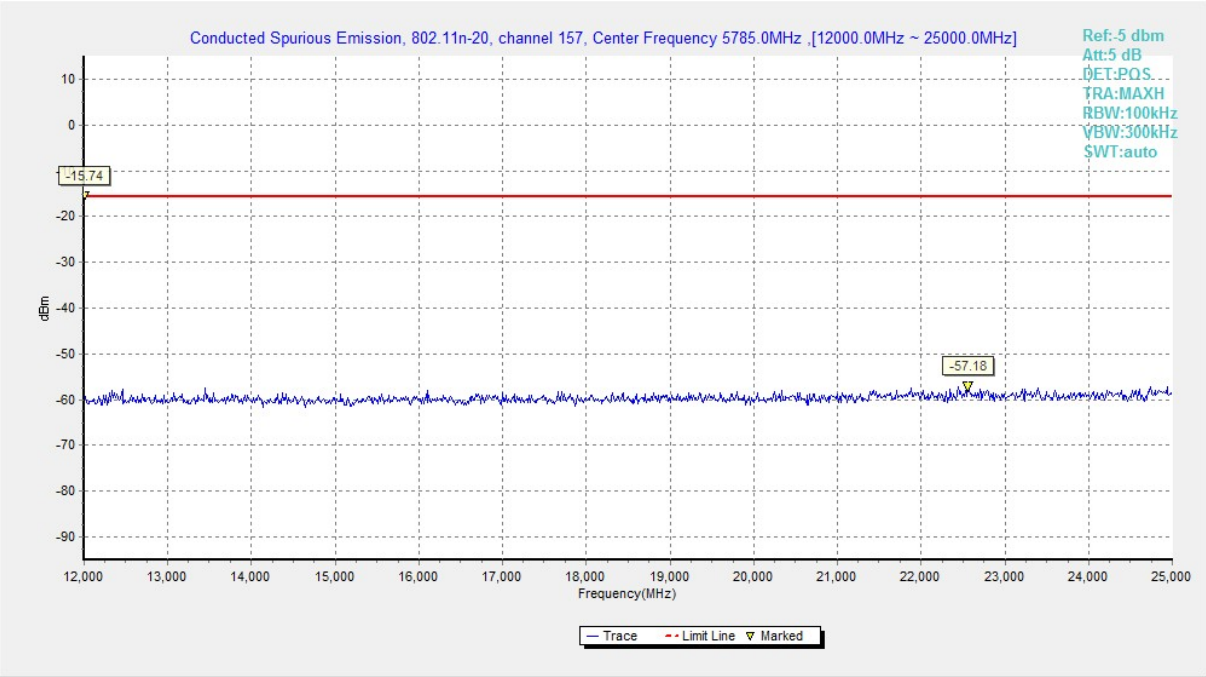

Fig. 28 Conducted Spurious Emission (802.11n-HT20, Ch157, 12 GHz-25 GHz)

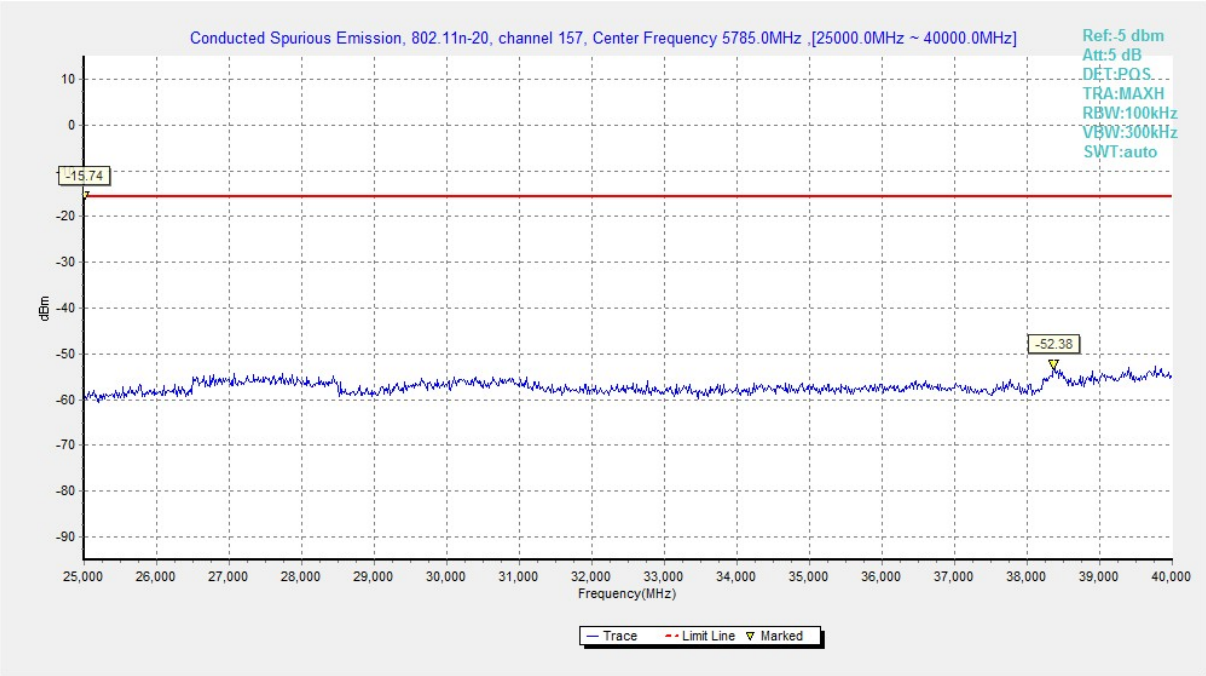

Fig. 29 Conducted Spurious Emission (802.11n-HT20, Ch157, 25 GHz-40 GHz)

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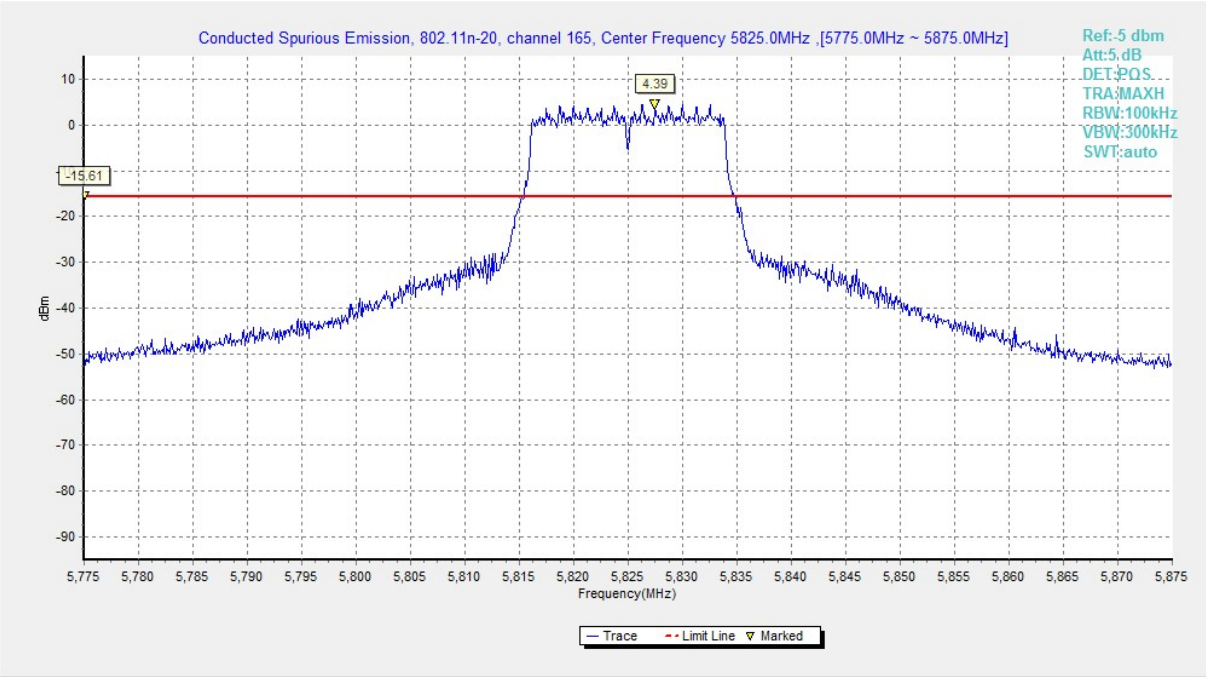

Fig. 30 Conducted Spurious Emission (802.11n-HT20, Ch165, Center Frequency)

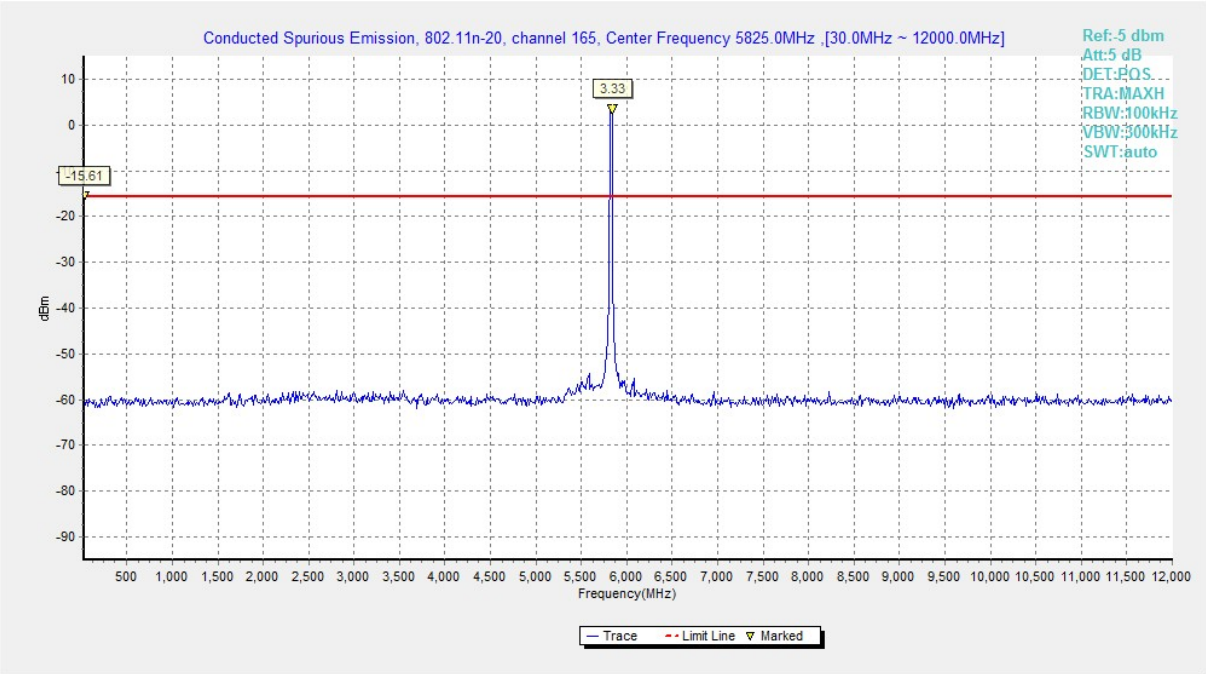

Fig. 31 Conducted Spurious Emission (802.11n-HT20, Ch165, 30 MHz-12 GHz)

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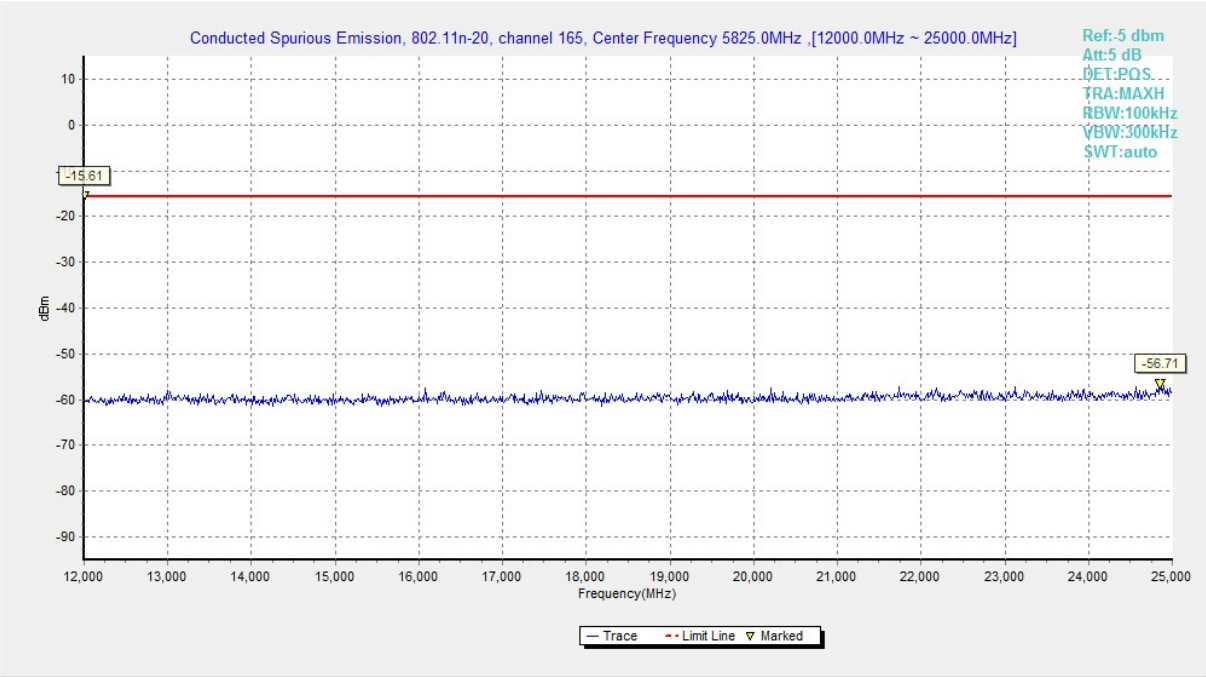
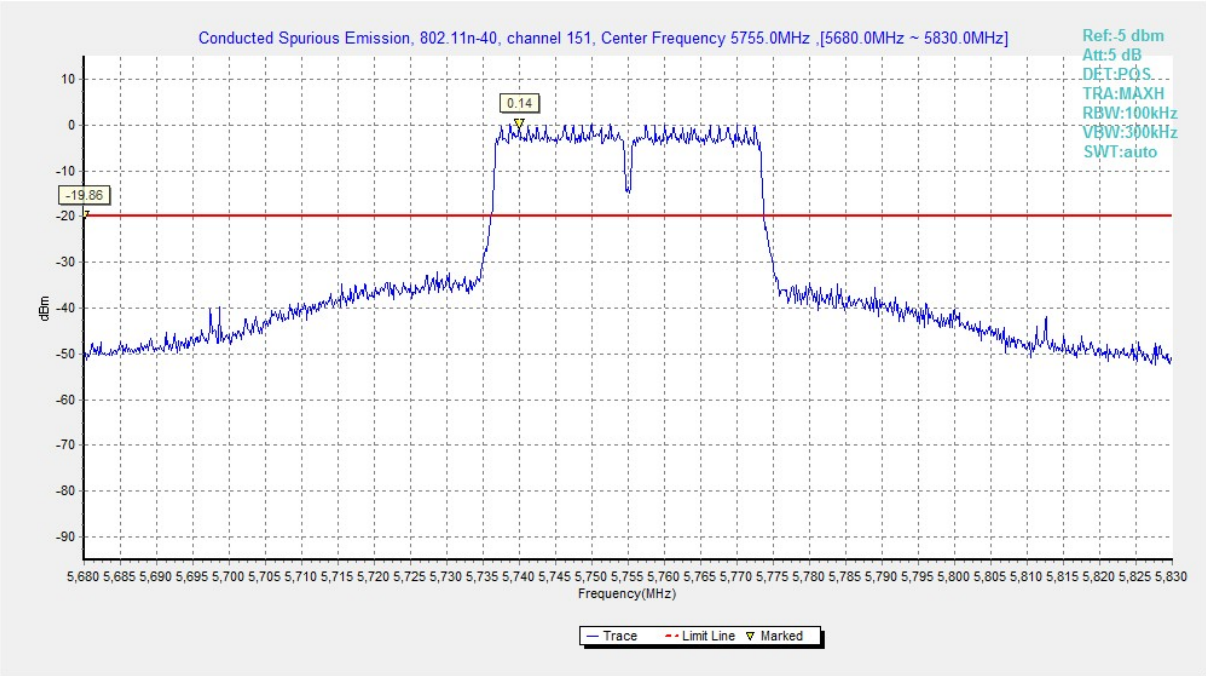


Fig. 32 Conducted Spurious Emission (802.11n-HT20, Ch165, 12 GHz-25 GHz)



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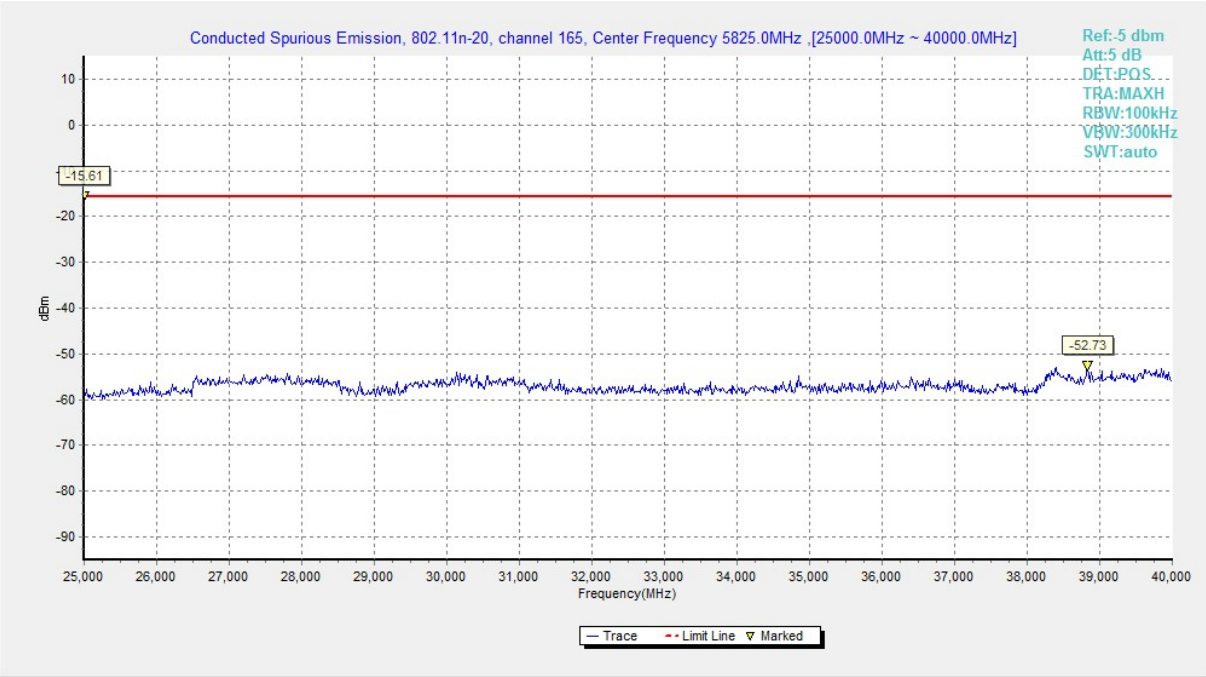

Fig. 33 Conducted Spurious Emission (802.11n-HT20, Ch165, 25 GHz-40 GHz)

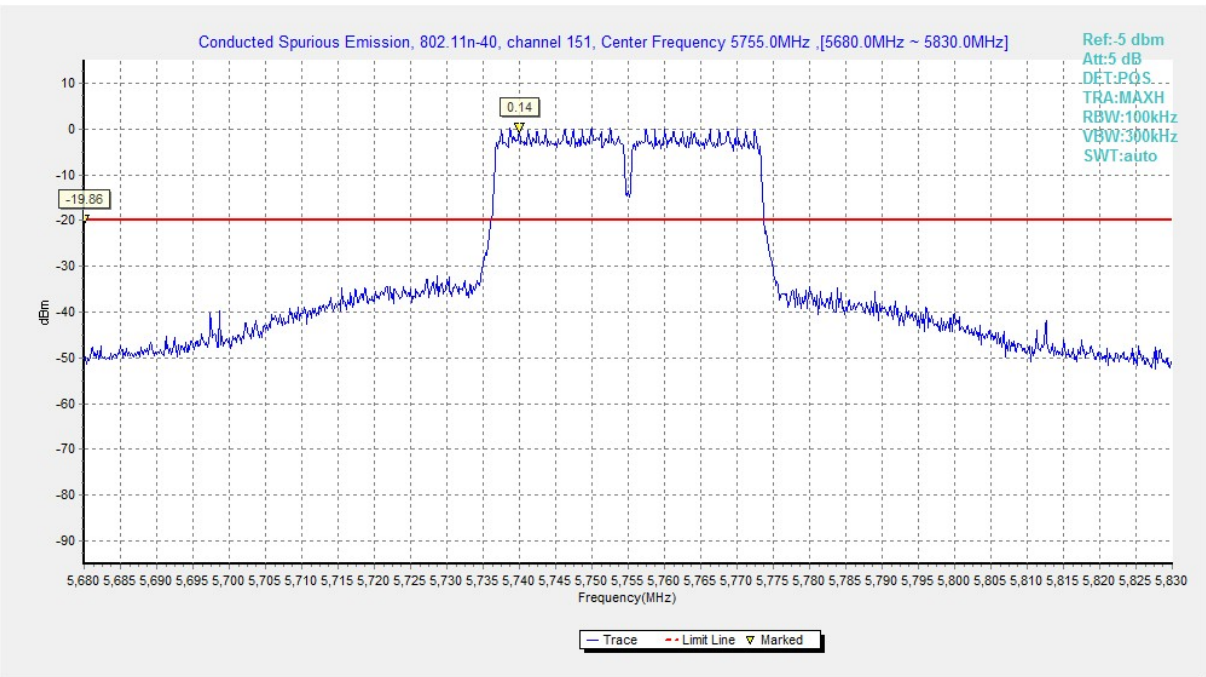

Fig. 34 Conducted Spurious Emission (802.11n-HT40, Ch151, Center Frequency)

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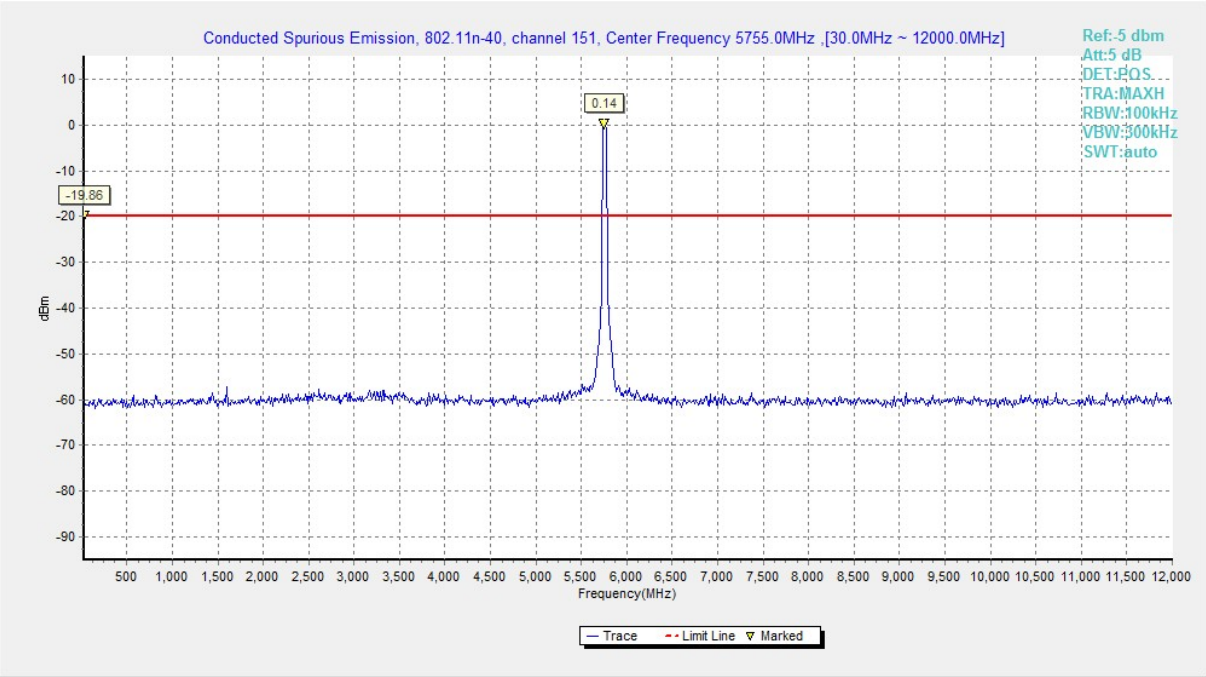

Fig. 35 Conducted Spurious Emission (802.11n-HT40, Ch151, 30 MHz-12 GHz)

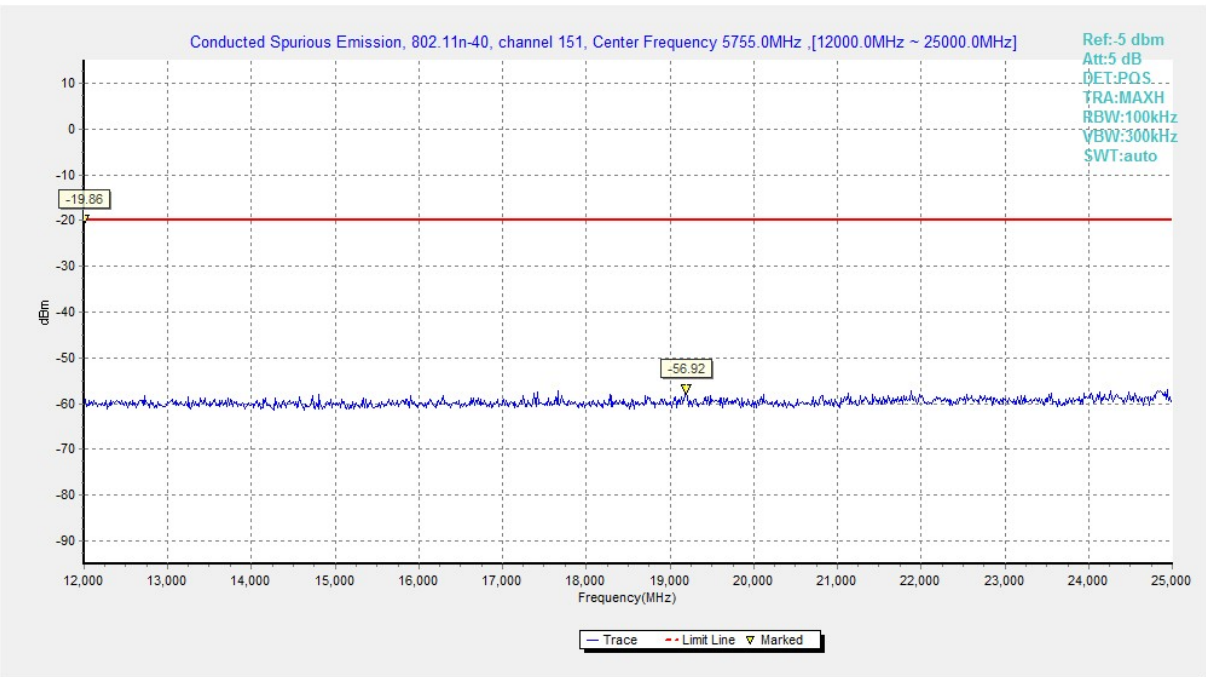

Fig. 36 Conducted Spurious Emission (802.11n-HT40, Ch151, 12 GHz-25 GHz)

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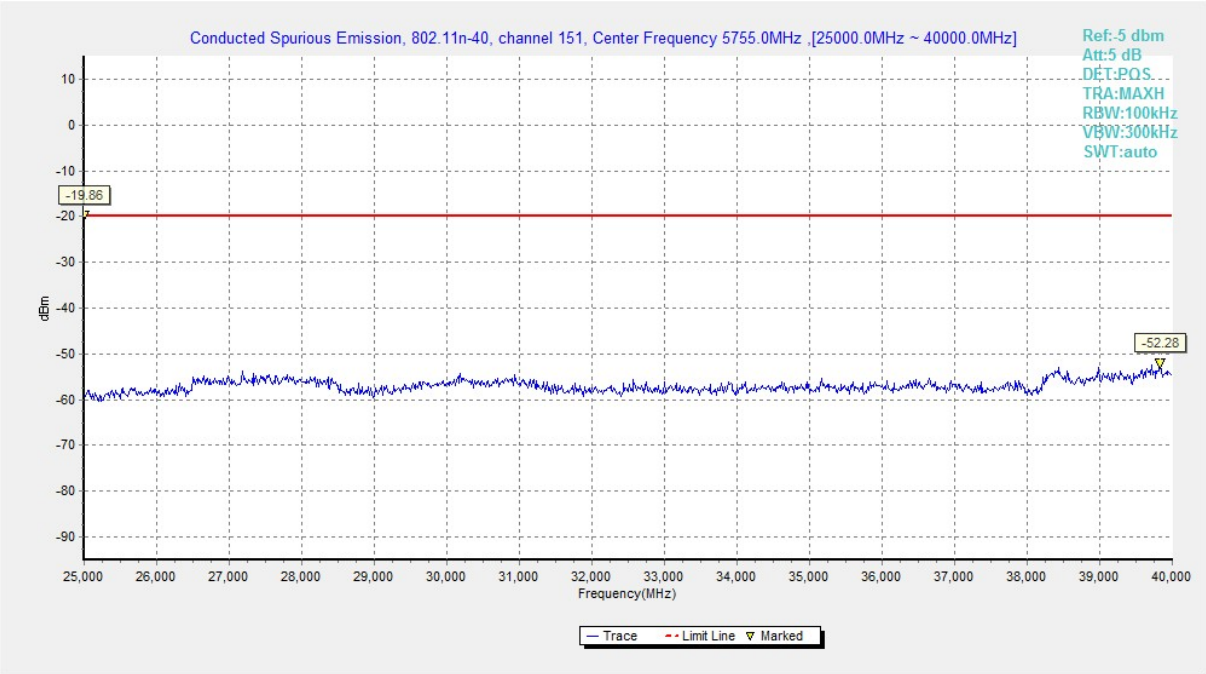

Fig. 37 Conducted Spurious Emission (802.11n-HT40, Ch151, 25 GHz-40 GHz)

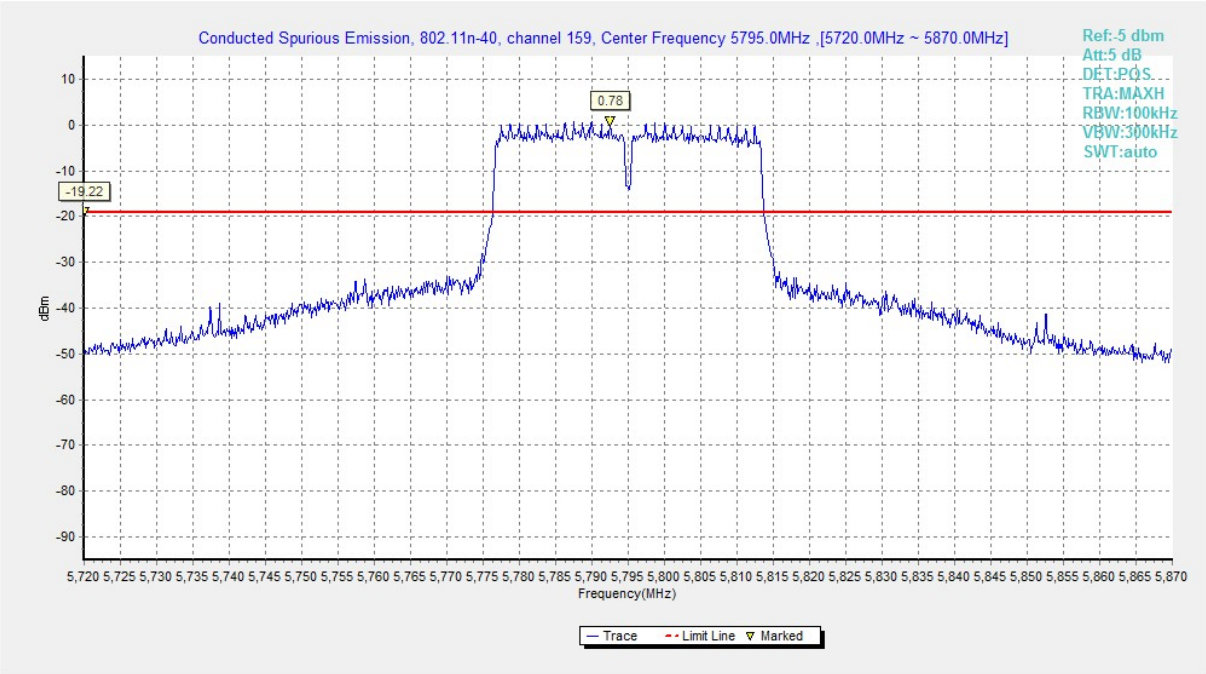

Fig. 38 Conducted Spurious Emission (802.11n-HT40, Ch159, Center Frequency)

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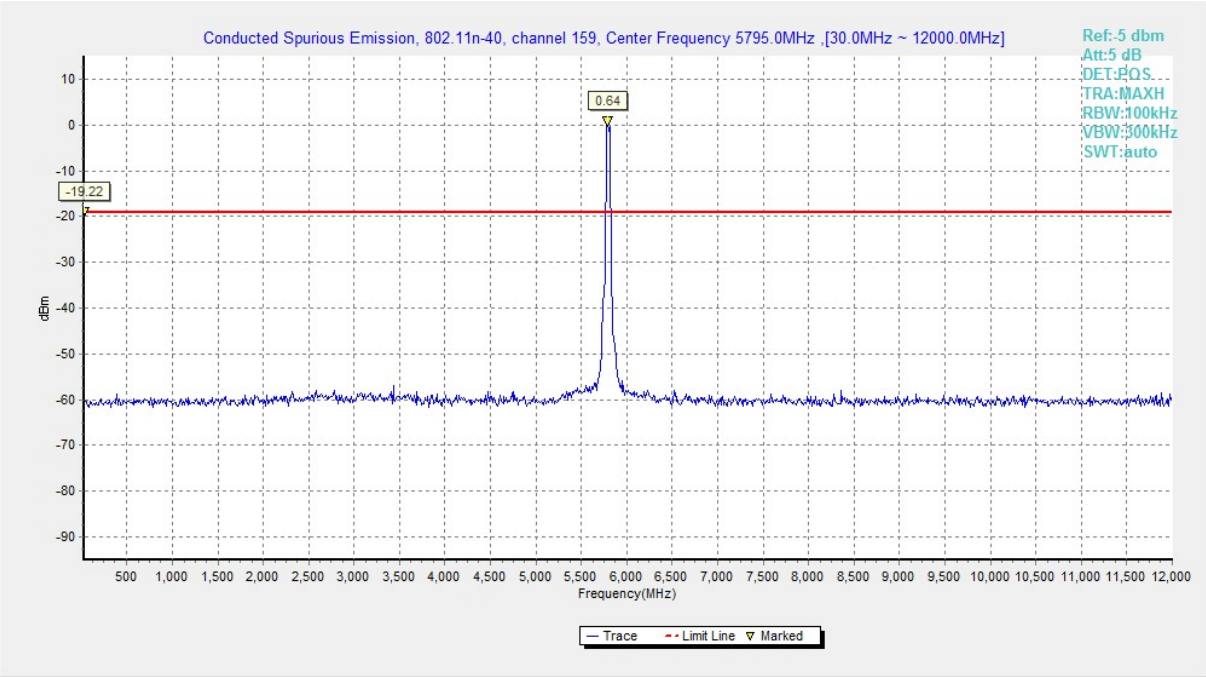

Fig. 39 Conducted Spurious Emission (802.11n-HT40, Ch159, 30 MHz-12 GHz)

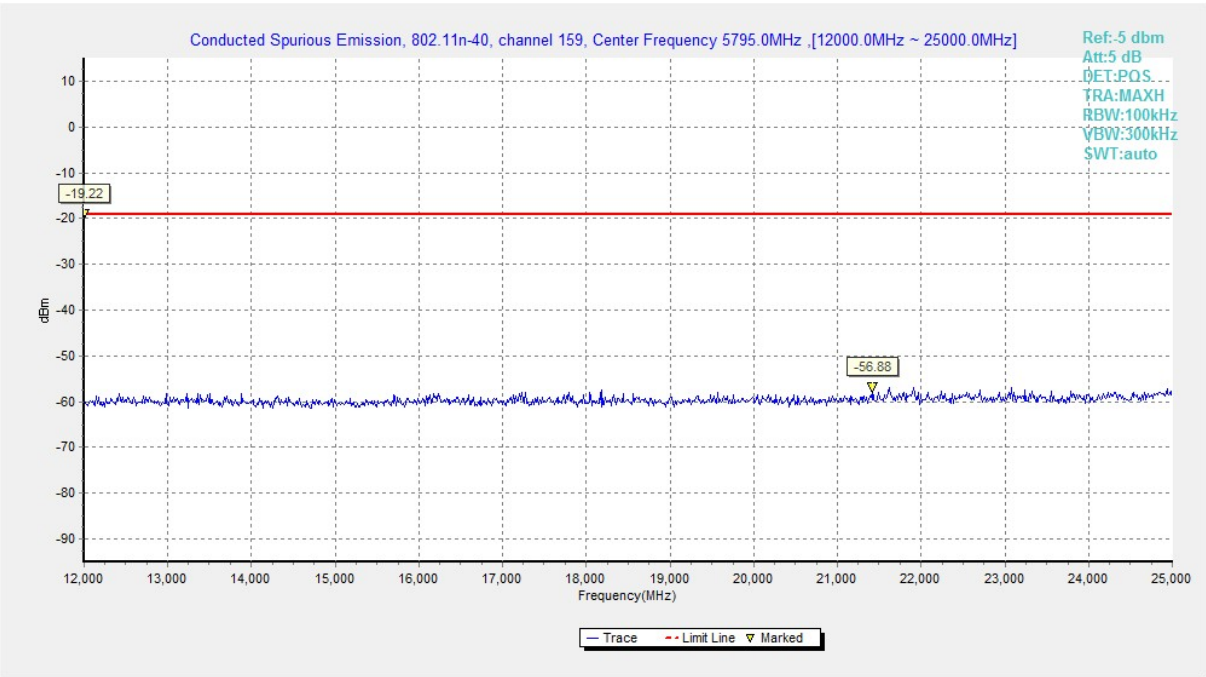

Fig. 40 Conducted Spurious Emission (802.11n-HT40, Ch159, 12 GHz-25 GHz)

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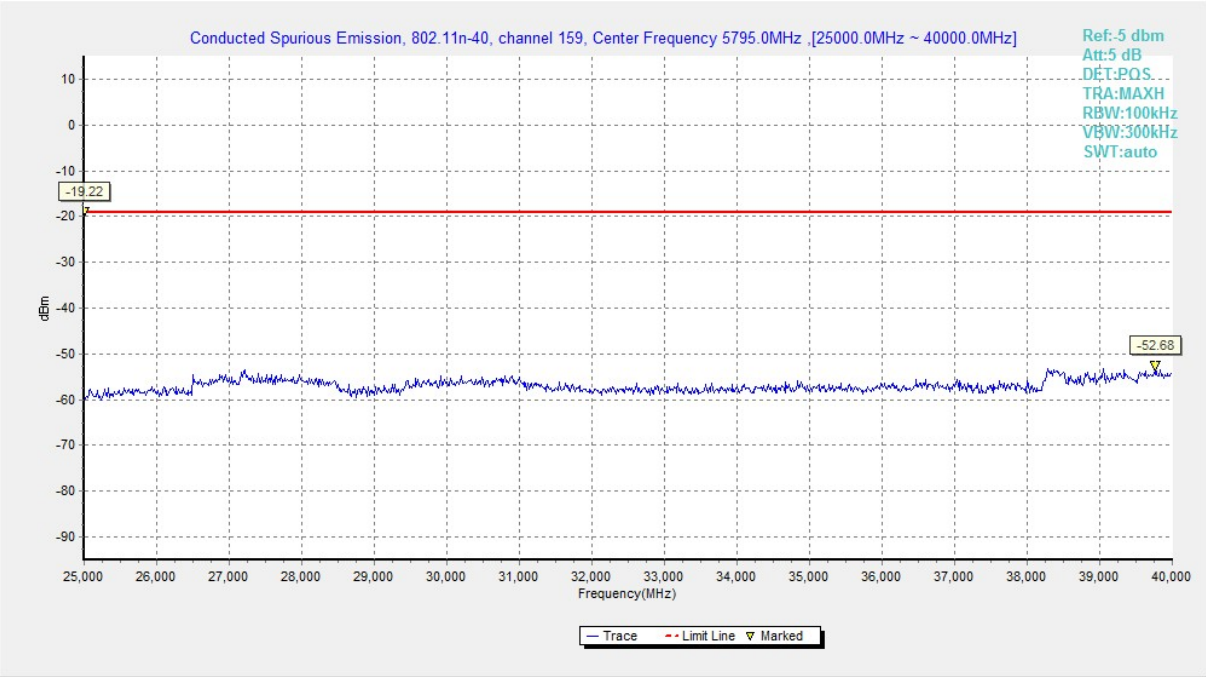

Fig. 41 Conducted Spurious Emission (802.11n-HT40, Ch159, 25 GHz-40 GHz)

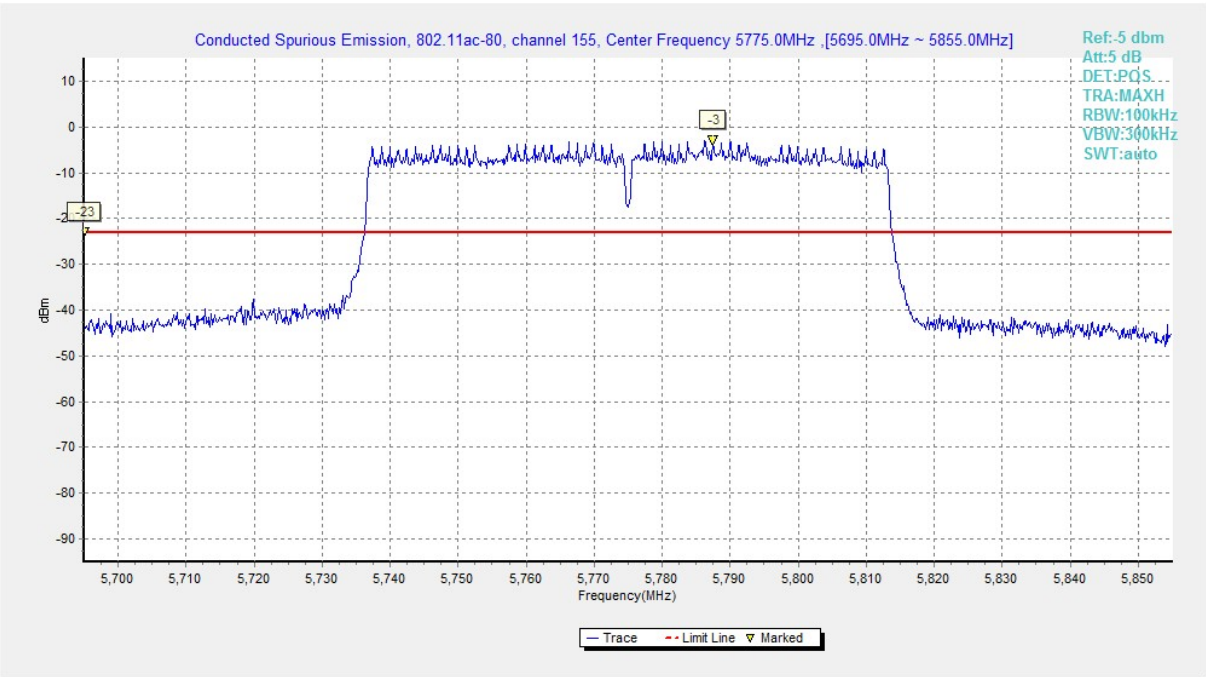

Fig. 42 Conducted Spurious Emission (802.11ac-HT80, Ch155, Center Frequency)

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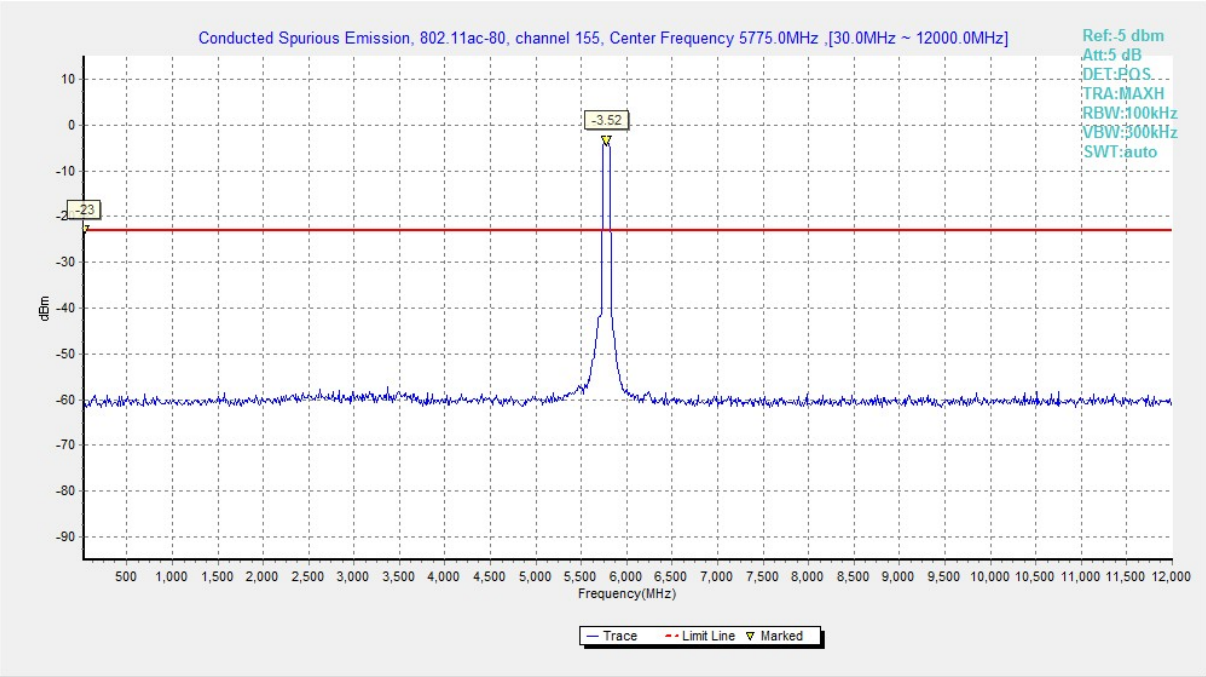

Fig. 43 Conducted Spurious Emission (802.11ac-HT80, Ch155, 30 MHz-12 GHz)

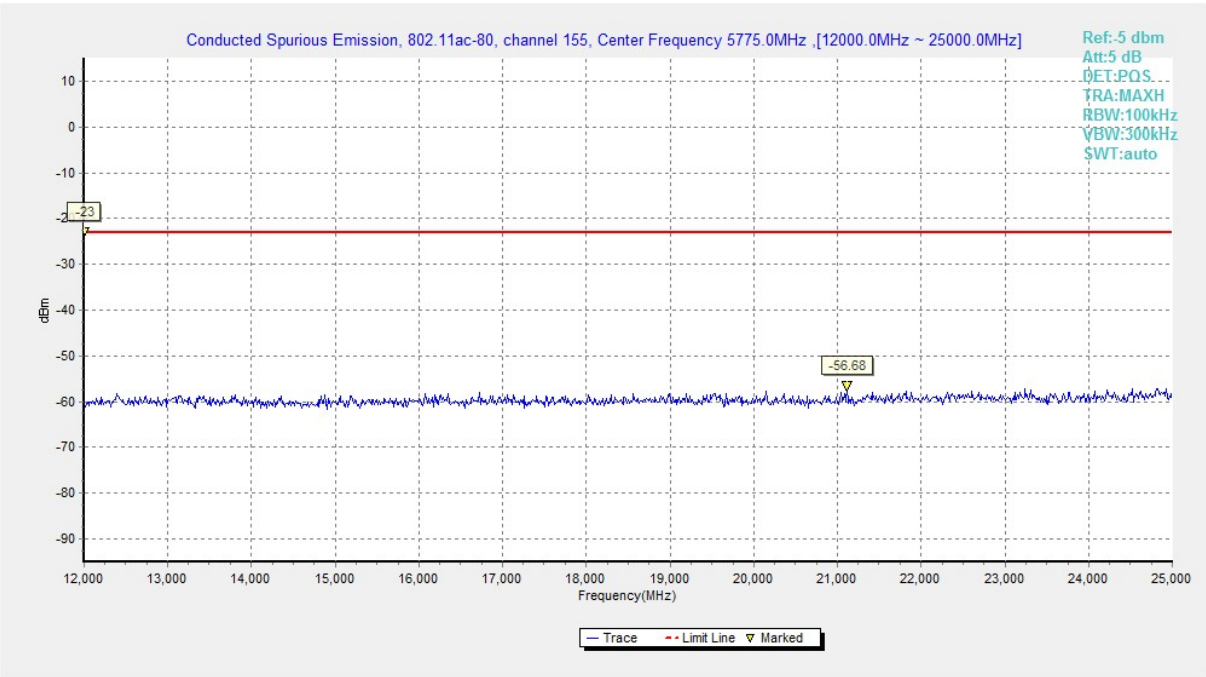

Fig. 44 Conducted Spurious Emission (802.11ac-HT80, Ch155, 12 GHz-25 GHz)

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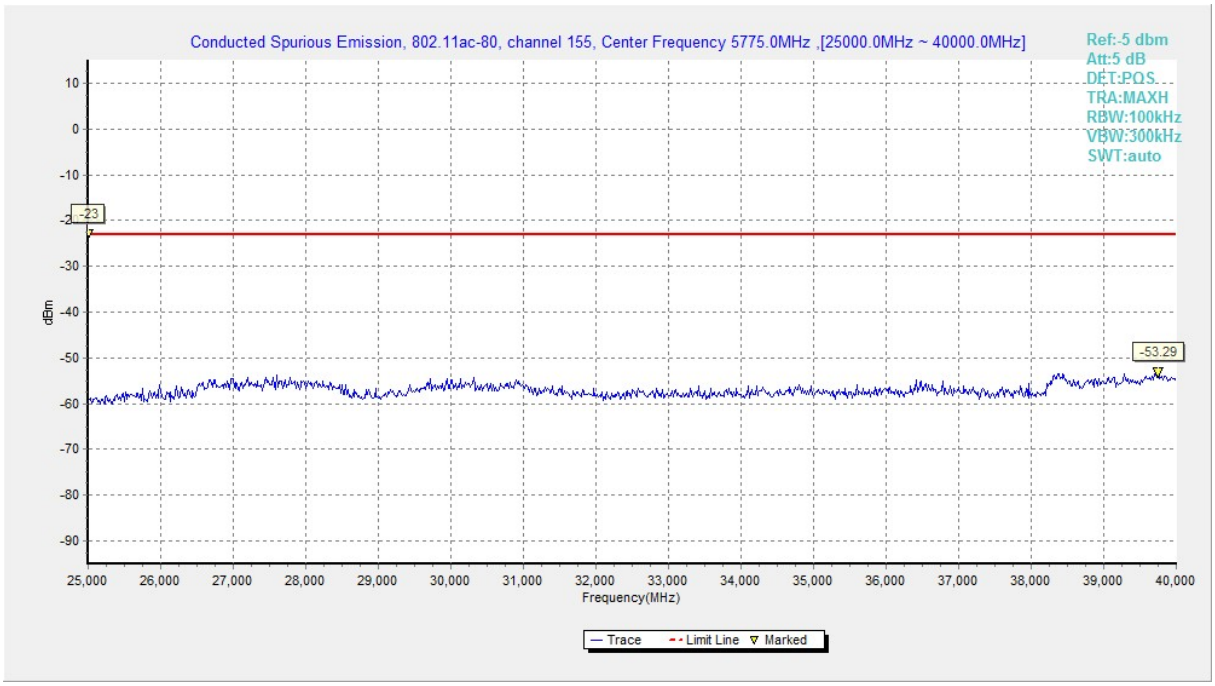

Fig. 45 Conducted Spurious Emission (802.11ac-HT80, Ch155, 25 GHz-40 GHz)

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A.5.2 Transmitter Spurious Emission - Radiated

Measurement Uncertainty:

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

Measurement Results:

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 6 GHz	Fig.46	P
		6 GHz ~ 18 GHz	Fig.47	P
	157	30 MHz ~1 GHz	Fig.48	P
		1 GHz ~ 6 GHz	Fig.49	P
		6 GHz ~ 18 GHz	Fig.50	P
		18 GHz ~ 26.5 GHz	Fig.51	P
		26.5 GHz~ 40 GHz	Fig.52	P
	165	1 GHz ~ 6 GHz	Fig.53	P
		6 GHz ~ 18 GHz	Fig.54	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 6 GHz	Fig.55	P
		6 GHz ~ 18 GHz	Fig.56	P
	157	30 MHz ~1 GHz	Fig.57	P
		1 GHz ~ 6 GHz	Fig.58	P
		6 GHz ~ 18 GHz	Fig.59	P
		18 GHz ~ 26.5 GHz	Fig.60	P
		26.5 GHz~ 40 GHz	Fig.61	P
	165	1 GHz ~ 6 GHz	Fig.62	P
		6 GHz ~ 18 GHz	Fig.63	P

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802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	30 MHz ~1 GHz	Fig.64	P
		1 GHz ~ 6 GHz	Fig.65	P
		6 GHz ~ 18 GHz	Fig.66	P
		18 GHz ~ 26.5 GHz	Fig.67	P
		26.5 GHz~ 40 GHz	Fig.68	P
	159	30 MHz ~1 GHz	Fig.69	P
		1 GHz ~ 6 GHz	Fig.70	P
		6 GHz ~ 18 GHz	Fig.71	P

802.11ac-HT80 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT80)	155	1 GHz ~ 6 GHz	Fig.72	P
		6 GHz ~ 18 GHz	Fig.73	P
		18 GHz ~ 26.5 GHz	Fig.74	P
		26.5 GHz~ 40 GHz	Fig.75	P

Conclusion: PASS

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.

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802.11a

Ch149

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17997.000	44.6	-17.7	45.6	16.700	H
17988.000	44.3	-17.7	45.6	16.400	V
17991.000	44.3	-17.7	45.6	16.400	V
17994.000	44.3	-17.7	45.6	16.400	H
18000.000	44.3	-17.7	44.5	17.500	V
17992.500	44.1	-17.7	45.6	16.200	H

Ch157

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17994.000	44.8	-17.7	45.6	16.900	H
17995.500	44.6	-17.7	45.6	16.700	V
17997.000	44.6	-17.7	45.6	16.700	V
18000.000	44.6	-17.7	44.5	17.800	V
17985.000	44.4	-17.7	45.6	16.500	H
17988.000	44.4	-17.7	45.6	16.500	V

Ch165

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17997.000	44.7	-17.7	45.6	16.800	V
17994.000	44.6	-17.7	45.6	16.700	V
17991.000	44.5	-17.7	45.6	16.600	H
17986.500	44.4	-17.7	45.6	16.500	H
17980.500	44.3	-17.7	45.6	16.400	V
17992.500	44.2	-17.7	45.6	16.300	H

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802.11n-HT20

Ch149

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
18000.000	44.6	-17.7	44.5	17.800	V
17986.500	44.5	-17.7	45.6	16.600	V
17991.000	44.5	-17.7	45.6	16.600	V
17994.000	44.4	-17.7	45.6	16.500	V
17998.500	44.4	-17.7	45.6	16.500	H
17995.500	44.4	-17.7	45.6	16.500	H

Ch157

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17995.500	44.6	-17.7	45.6	16.700	H
17994.000	44.6	-17.7	45.6	16.700	H
17998.500	44.5	-17.7	45.6	16.600	V
17989.500	44.5	-17.7	45.6	16.600	V
17983.500	44.4	-17.7	45.6	16.500	H
17991.000	44.4	-17.7	45.6	16.500	H

Ch165

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17986.500	44.6	-17.7	45.6	16.700	V
17994.000	44.5	-17.7	45.6	16.600	H
17998.500	44.5	-17.7	45.6	16.600	H
17991.000	44.5	-17.7	45.6	16.600	V
17989.500	44.4	-17.7	45.6	16.500	V
17997.000	44.4	-17.7	45.6	16.500	V

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802.11n-HT40

Ch151

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17997.000	44.7	-17.7	45.6	16.800	H
17988.000	44.5	-17.7	45.6	16.600	H
17995.500	44.5	-17.7	45.6	16.600	H
17986.500	44.4	-17.7	45.6	16.500	V
17994.000	44.4	-17.7	45.6	16.500	H
17998.500	44.3	-17.7	45.6	16.400	V

Ch159

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17994.000	44.6	-17.7	45.6	16.700	V
17986.500	44.5	-17.7	45.6	16.600	H
17991.000	44.4	-17.7	45.6	16.500	H
17995.500	44.4	-17.7	45.6	16.500	H
17997.000	44.4	-17.7	45.6	16.500	H
17988.000	44.4	-17.7	45.6	16.500	H

802.11ac-HT80

Ch155

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17998.500	44.7	-17.7	45.6	16.800	V
17994.000	44.7	-17.7	45.6	16.800	V
17997.000	44.5	-17.7	45.6	16.600	H
17985.000	44.4	-17.7	45.6	16.500	H
17989.500	44.4	-17.7	45.6	16.500	V
17986.500	44.4	-17.7	45.6	16.500	H

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Test graphs as below:

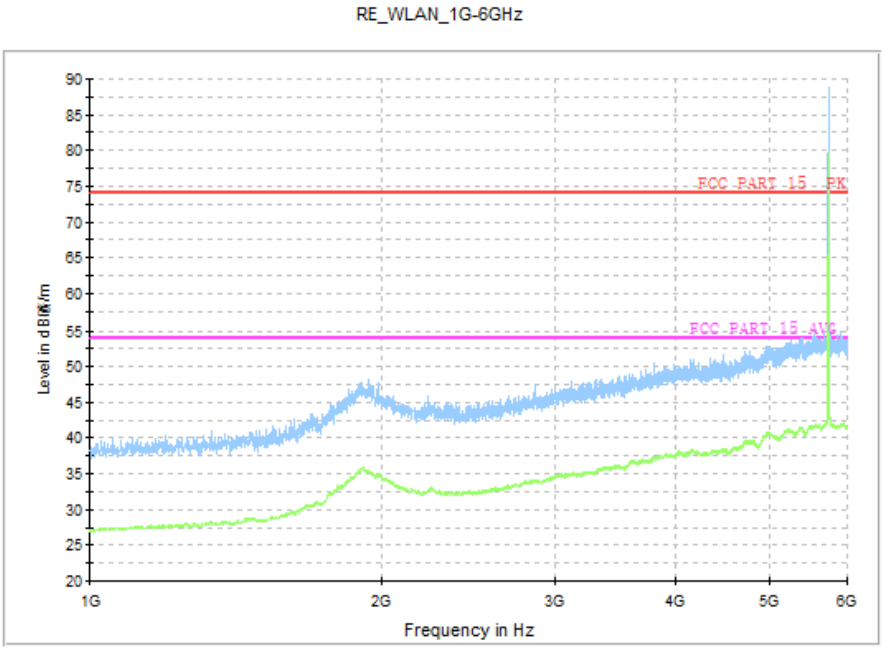
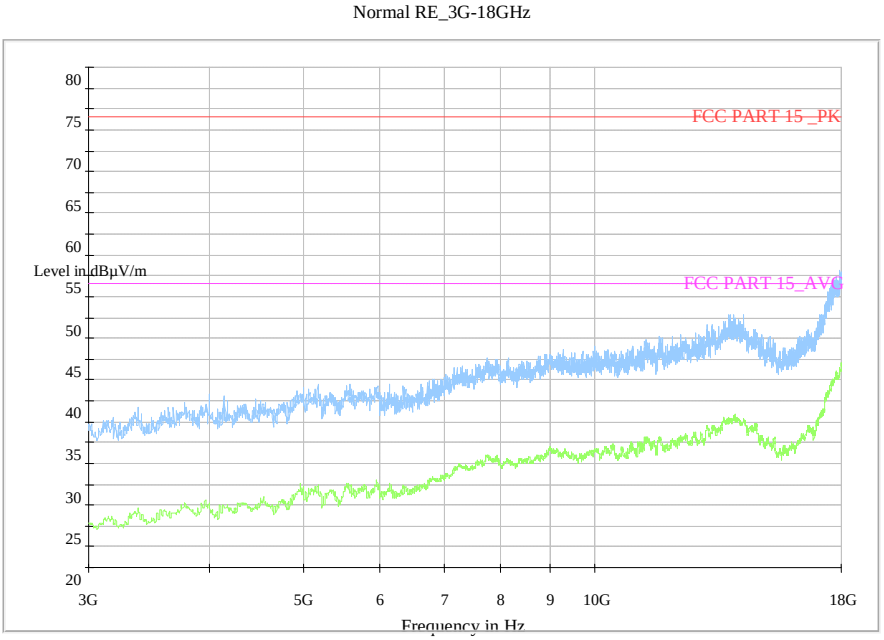


Fig. 46 Radiated Spurious Emission (802.11a, Ch149, 1 GHz-6 GHz)



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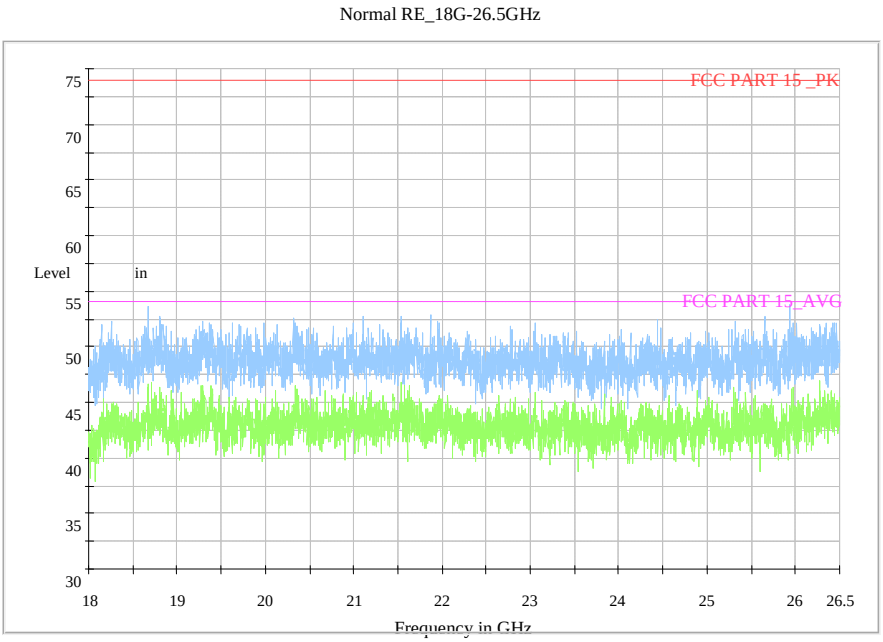

Fig. 47 Radiated Spurious Emission (802.11a, Ch149, 3 GHz-18 GHz)

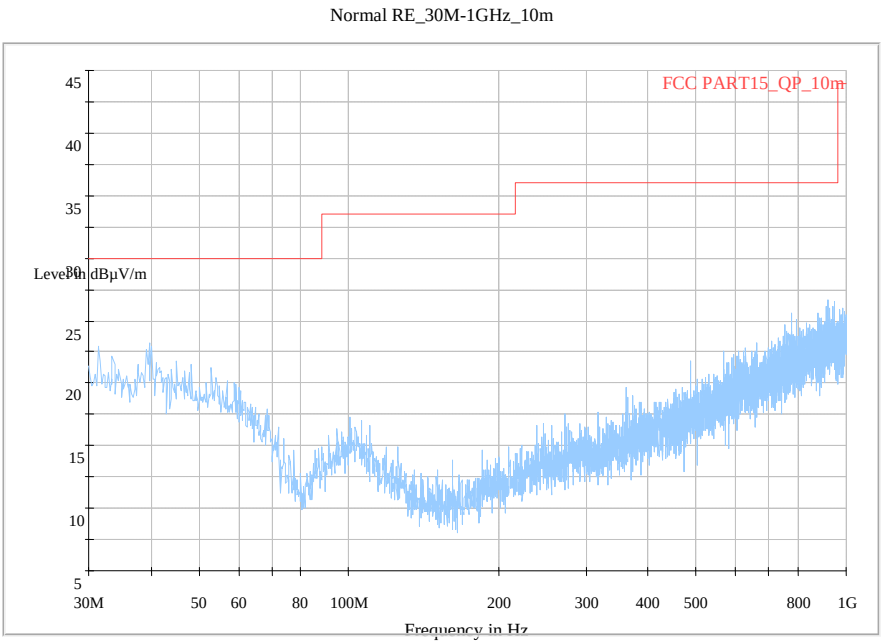

Fig. 48 Radiated Spurious Emission (802.11a, Ch157, 30 MHz-1 GHz)

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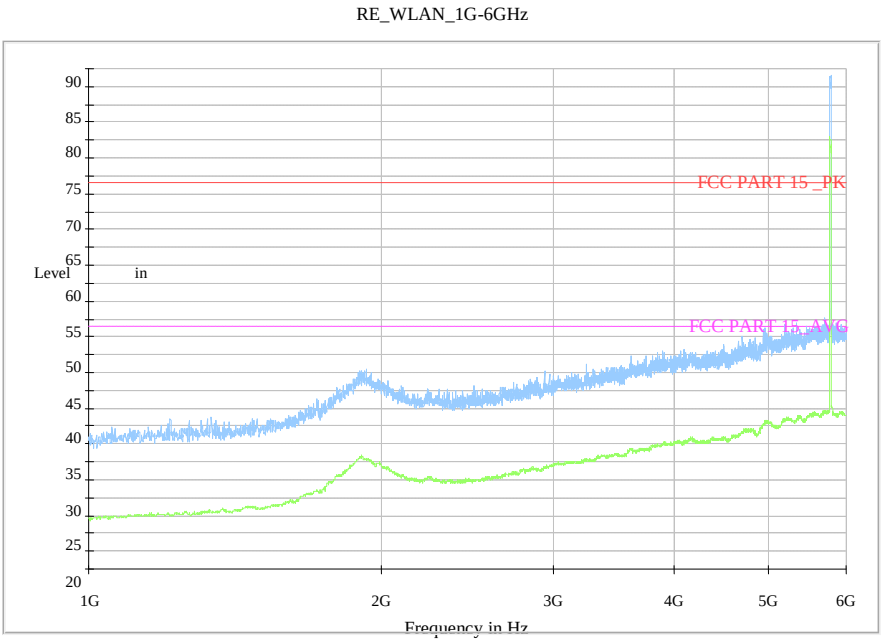

Fig. 49 Radiated Spurious Emission (802.11a, Ch157, 1 GHz-6 GHz)

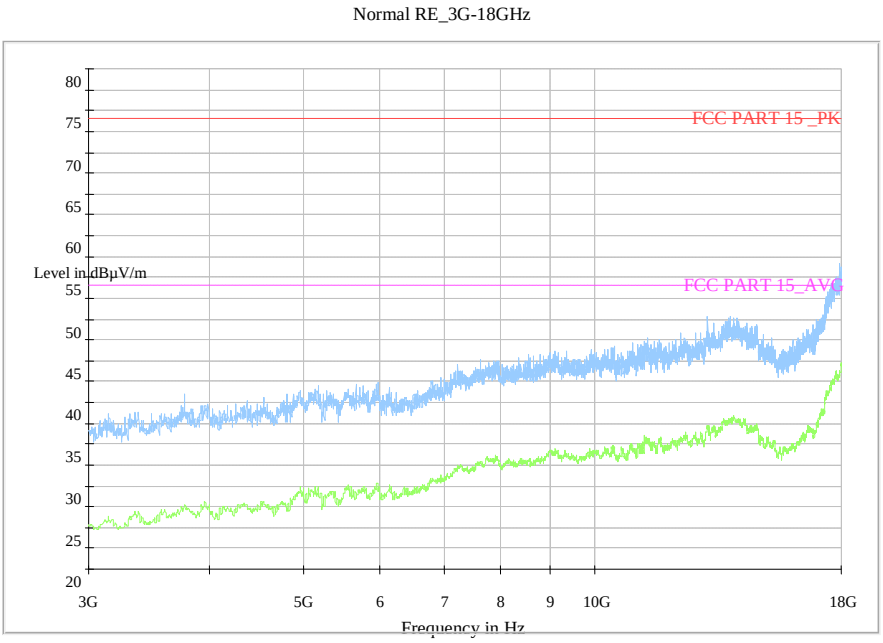

Fig. 50 Radiated Spurious Emission (802.11a, Ch157, 3 GHz-18 GHz)

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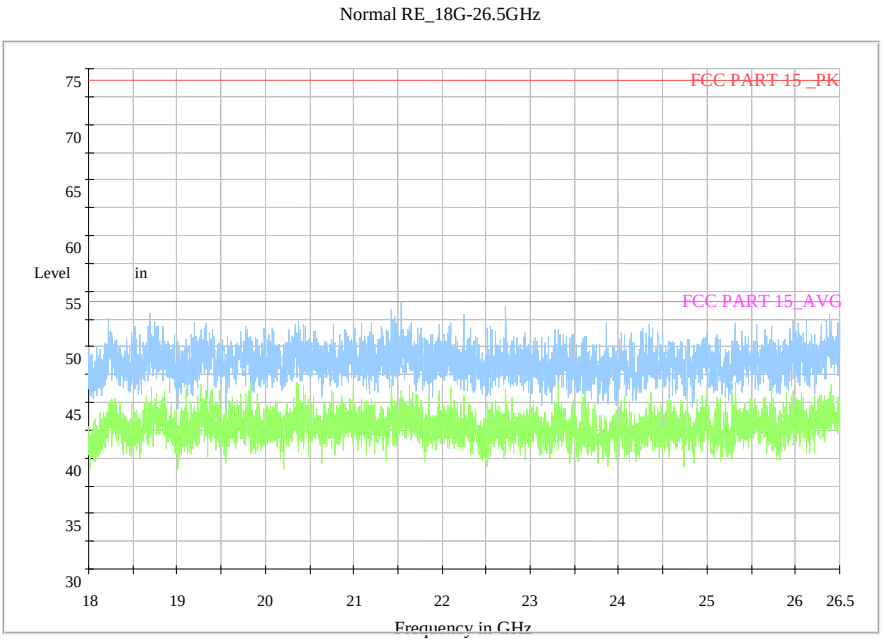

Fig. 51 Radiated Spurious Emission (802.11a, Ch157, 18 GHz-26.5 GHz)

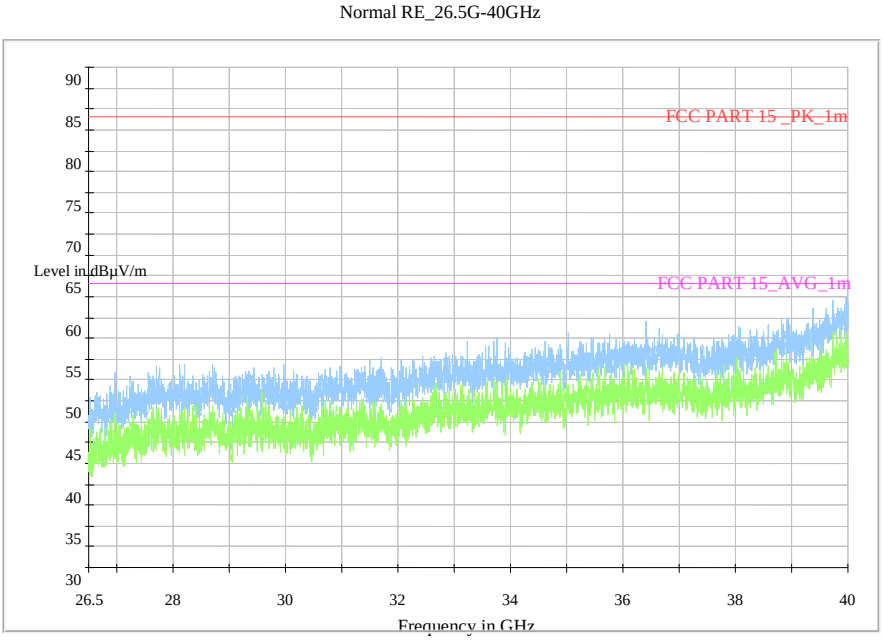

Fig. 52 Radiated emission: 802.11n, (802.11a, Ch157, 26.5 GHz - 40 GHz)

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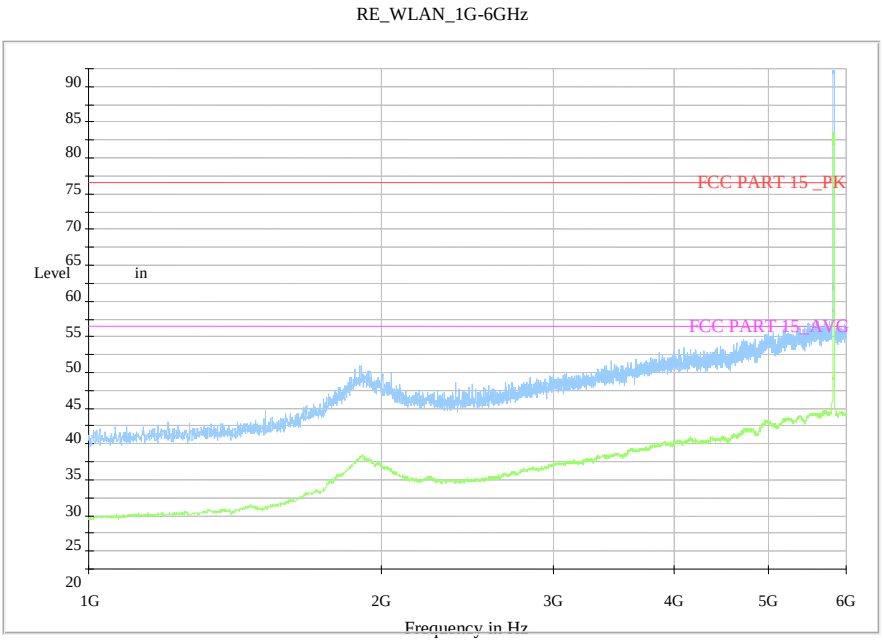

Fig. 53 Radiated Spurious Emission (802.11a, Ch165, 1 GHz-6 GHz)

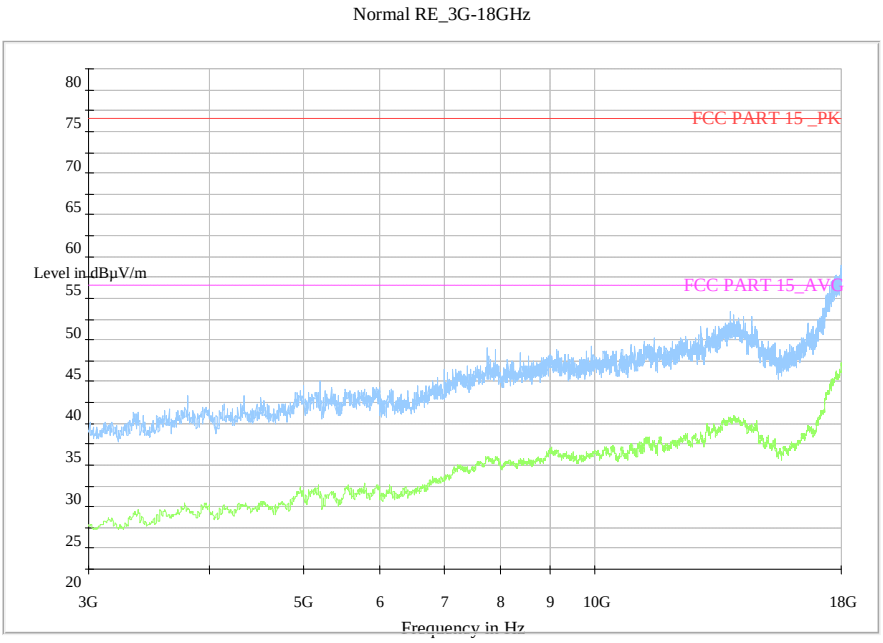

Fig. 54 Radiated Spurious Emission (802.11a, Ch165, 3 GHz-18 GHz)

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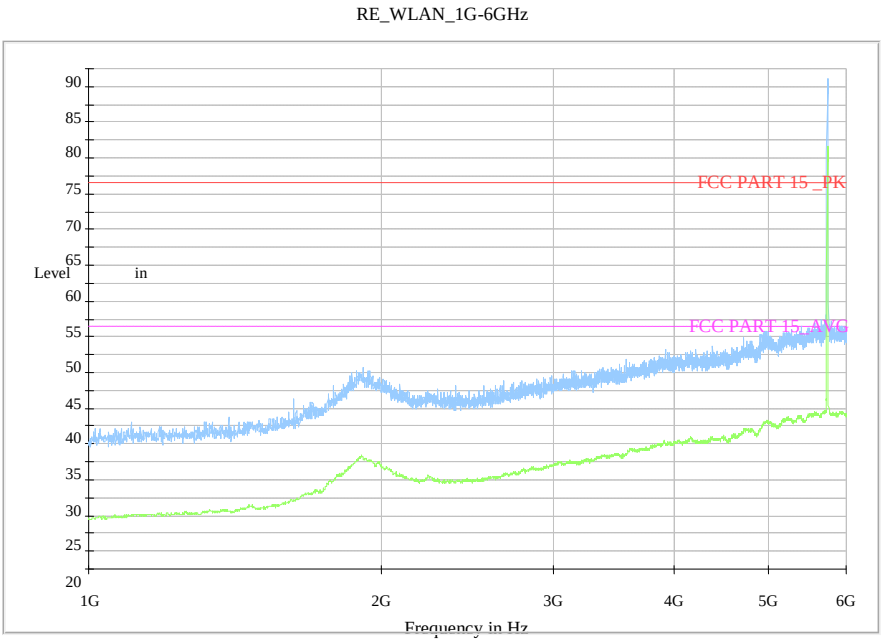

Fig. 55 Radiated Spurious Emission (802.11n-HT20, Ch149, 1 GHz-6 GHz)

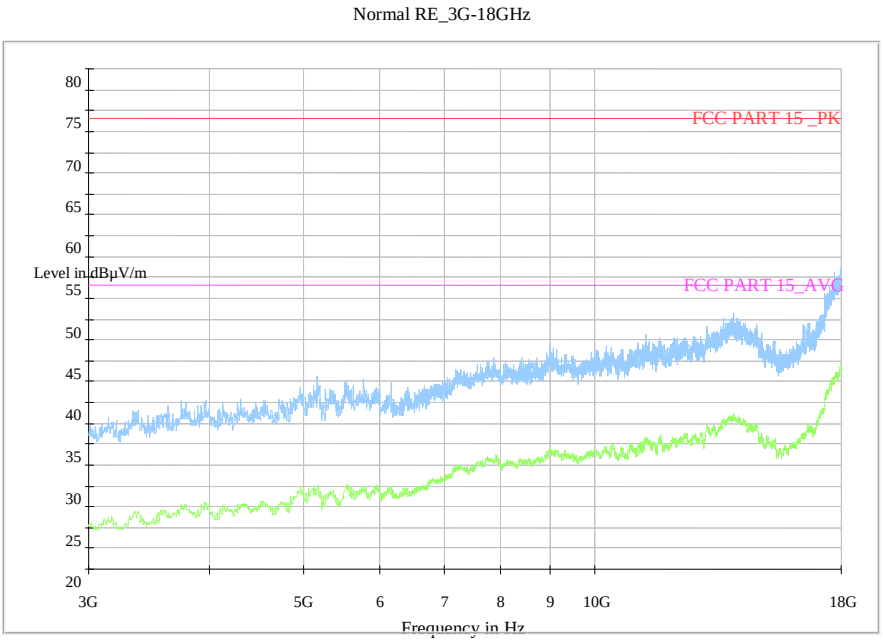

Fig. 56 Radiated Spurious Emission (802.11n-HT20, Ch149, 3 GHz-18 GHz)

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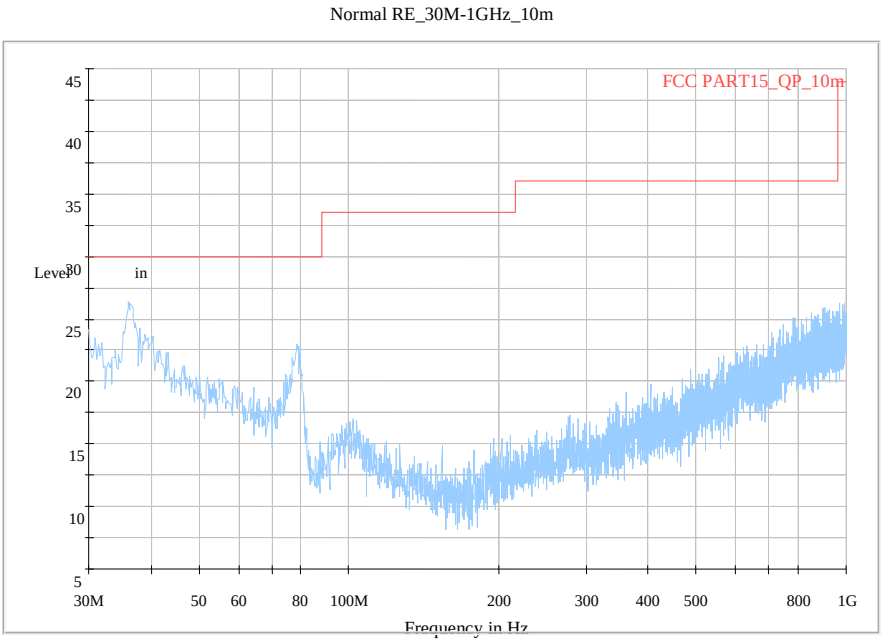

Fig. 57 Radiated Spurious Emission (802.11n-HT20, Ch157, 30 MHz-1 GHz)

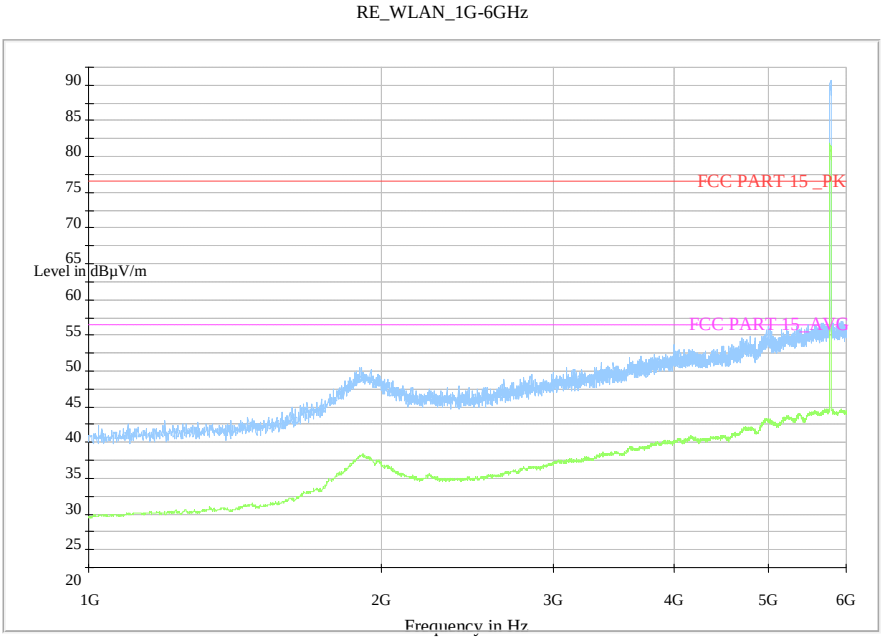

Fig. 58 Radiated Spurious Emission (802.11n-HT20, Ch157, 1 GHz-6 GHz)

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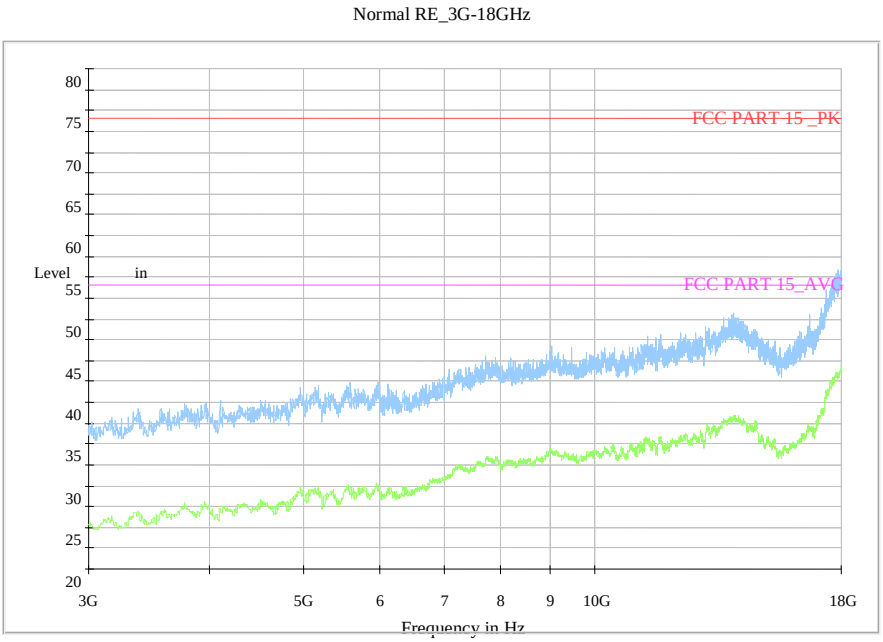

Fig. 59 Radiated Spurious Emission (802.11n-HT20, Ch157, 3 GHz-18 GHz)

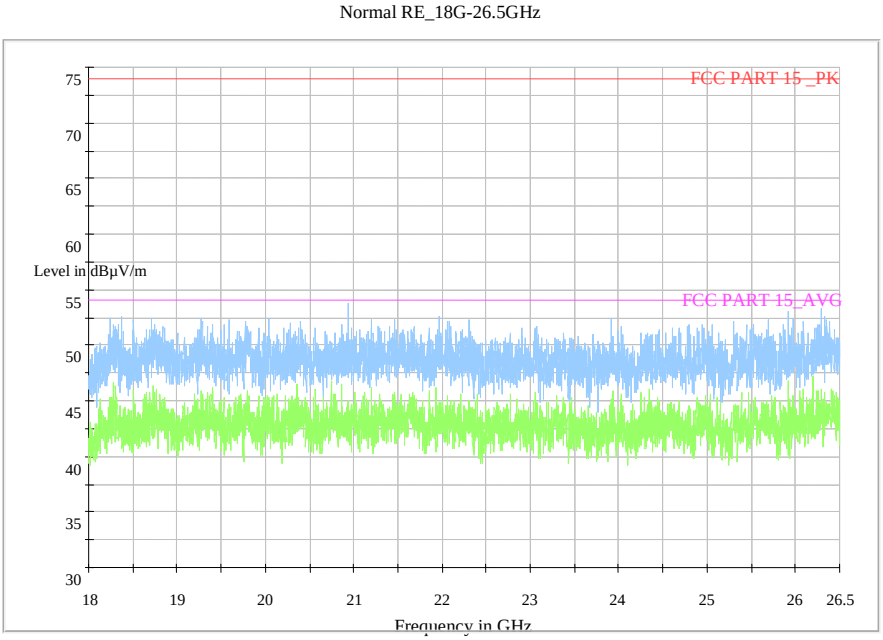

Fig. 60 Radiated Spurious Emission (802.11n-HT20, Ch157, 18 GHz-26.5 GHz)

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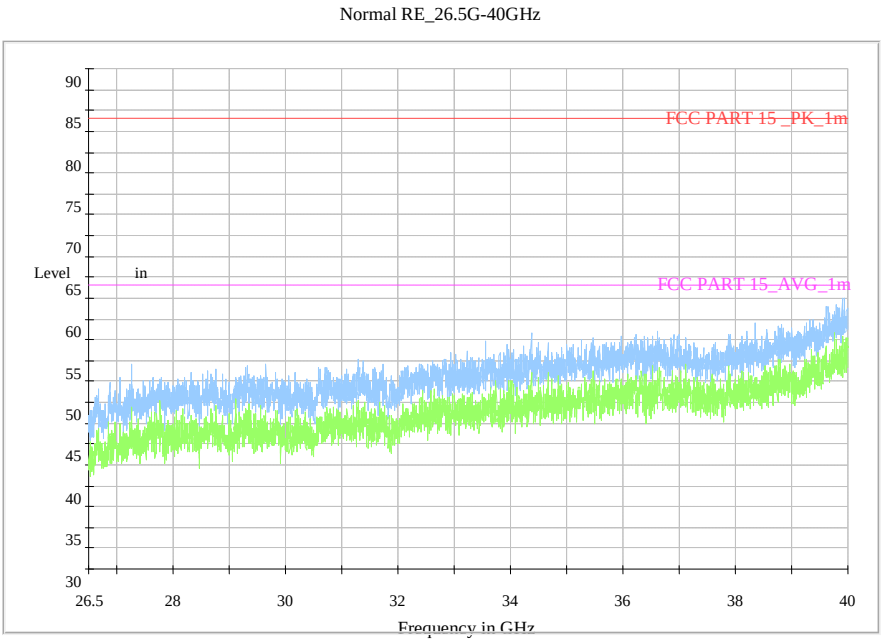

Fig. 61 Radiated emission: 802.11n, (802.11n-HT20, Ch157, 26.5 GHz - 40 GHz)

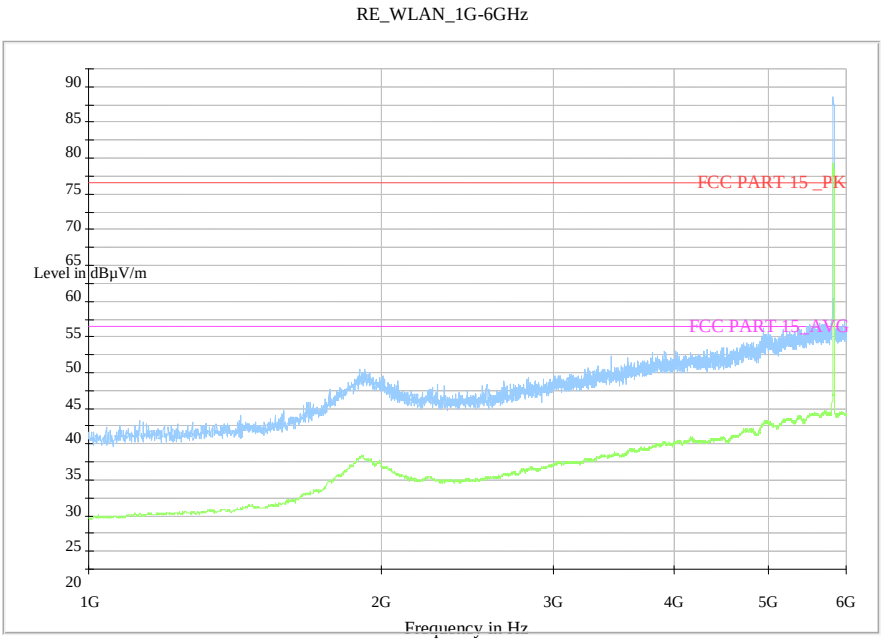

Fig. 62 Radiated Spurious Emission (802.11n-HT20, Ch165, 1 GHz-6 GHz)

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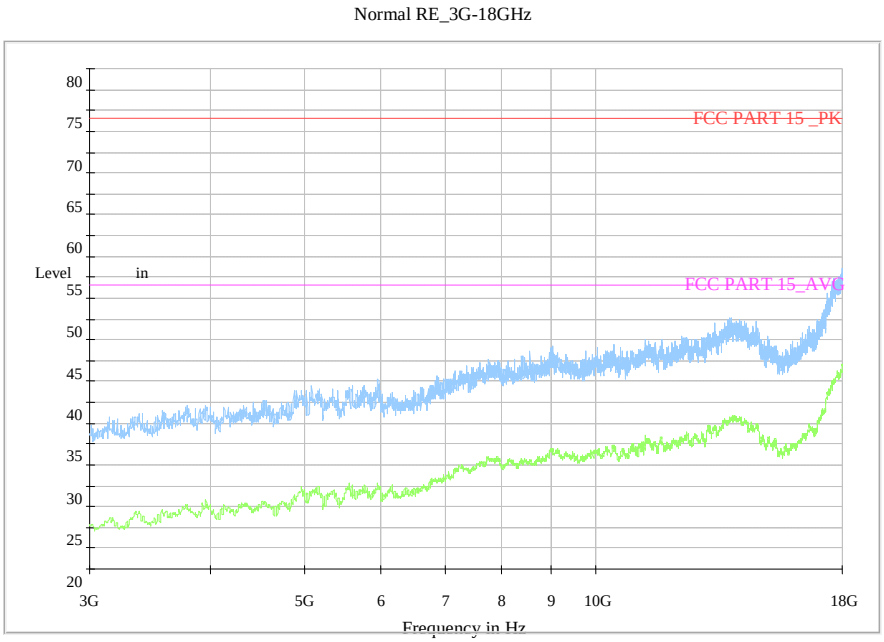

Fig. 63 Radiated Spurious Emission (802.11n-HT20, Ch165, 3 GHz-18 GHz)

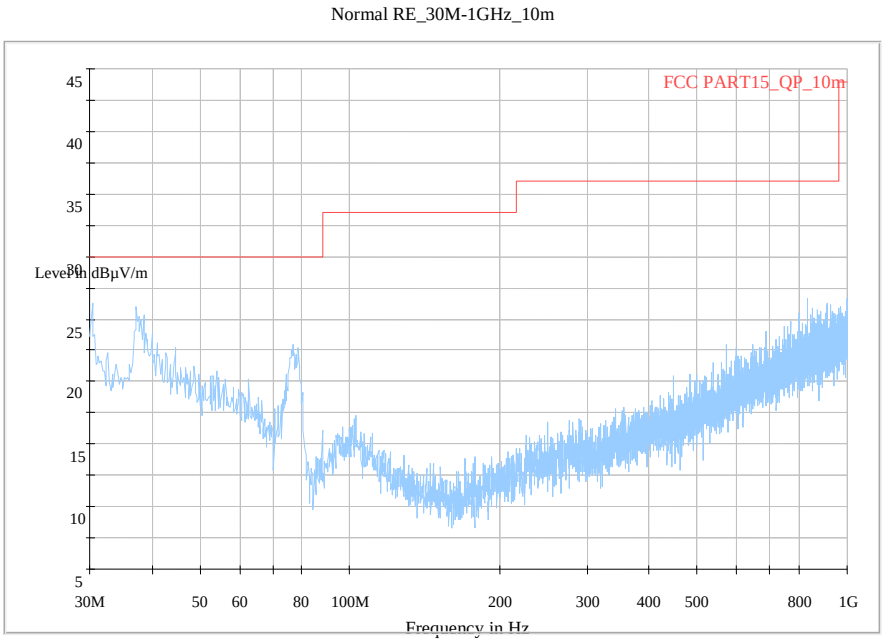

Fig. 64 Radiated Spurious Emission (802.11n-HT40, Ch151, 30 MHz-1 GHz)

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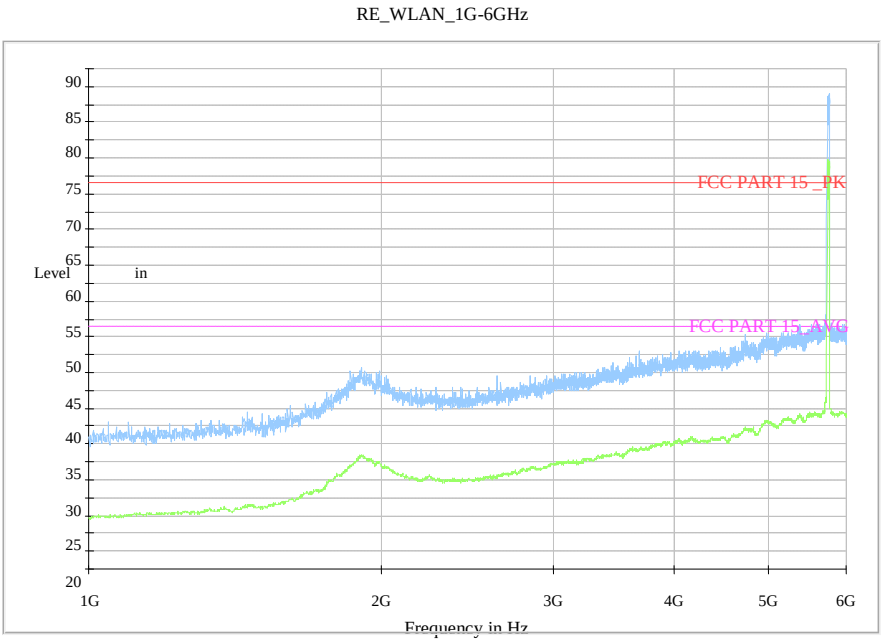

Fig. 65 Radiated Spurious Emission (802.11n-HT40, Ch151, 1 GHz-6 GHz)

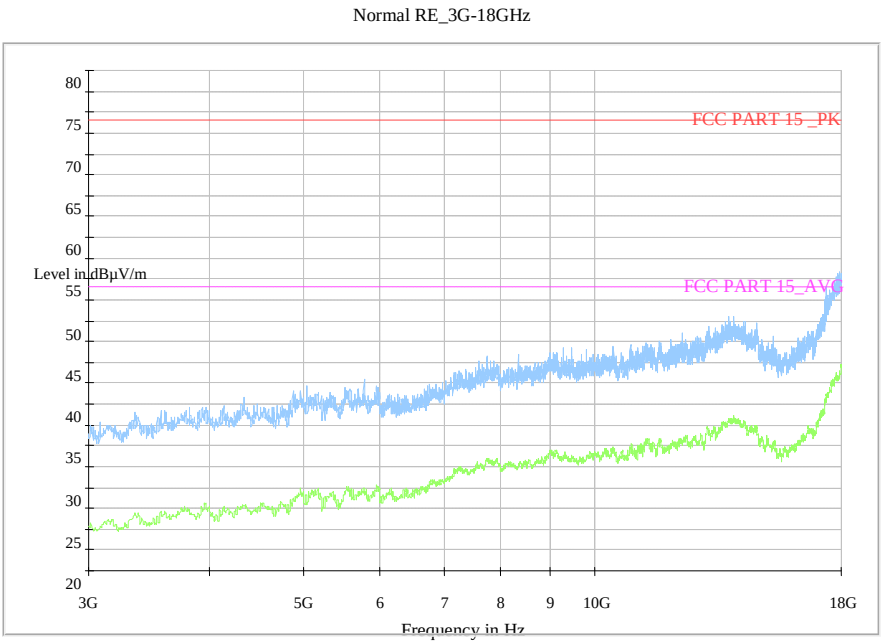

Fig. 66 Radiated Spurious Emission (802.11n-HT40, Ch151, 3 GHz-18 GHz)

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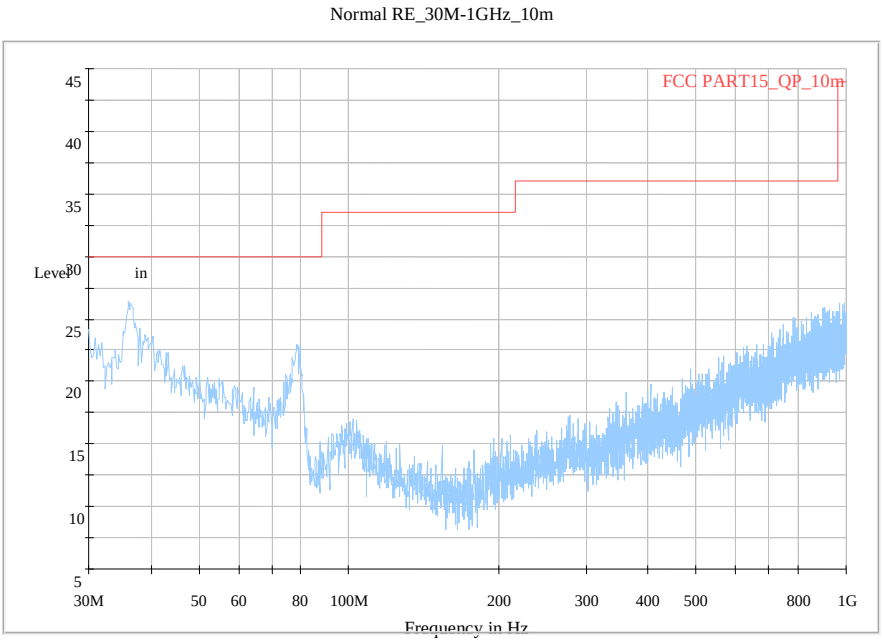

Fig. 67 Radiated Spurious Emission (802.11n-HT40, Ch151, 18 GHz-26.5 GHz)

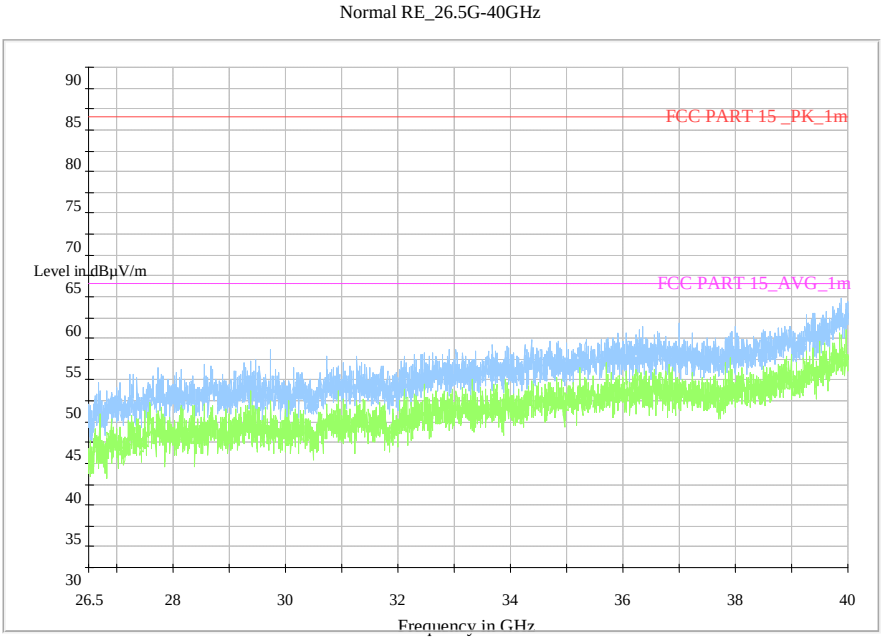

Fig. 68 Radiated emission: 802.11n, (802.11n-HT40, Ch151, 26.5 GHz - 40 GHz)

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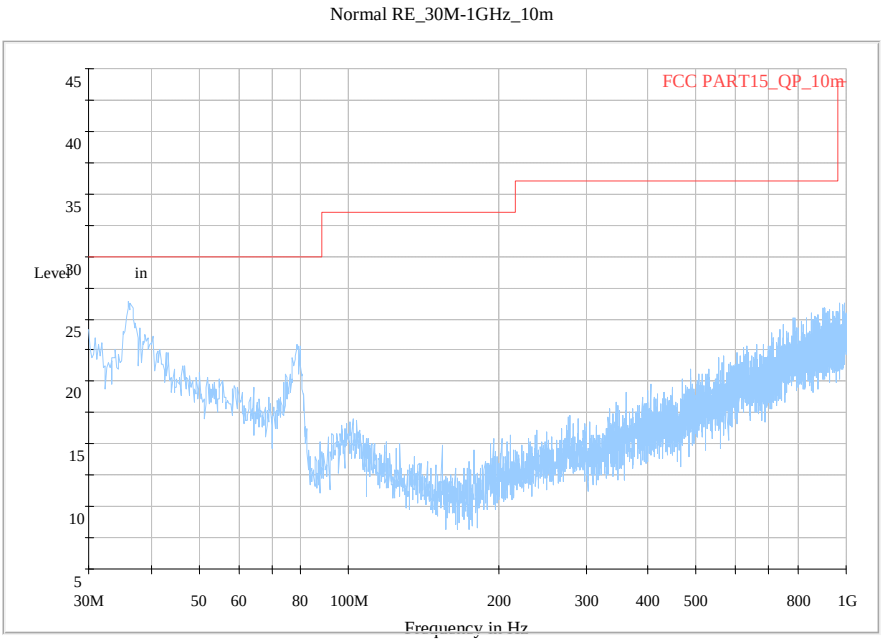

Fig. 69 Radiated Spurious Emission (802.11n-HT40, Ch159, 30 MHz-1 GHz)

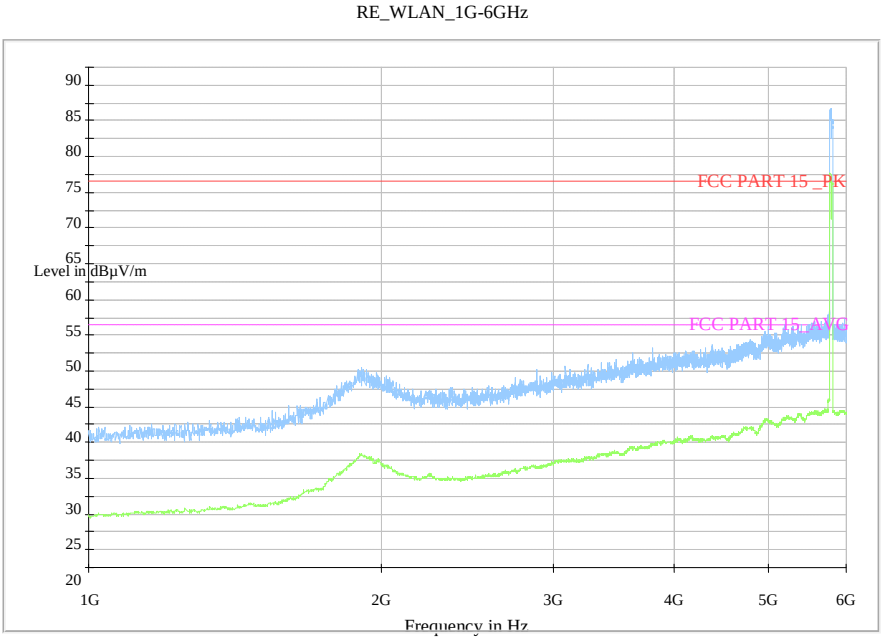

Fig. 70 Radiated Spurious Emission (802.11n-HT40, Ch159 1 GHz-6 GHz)

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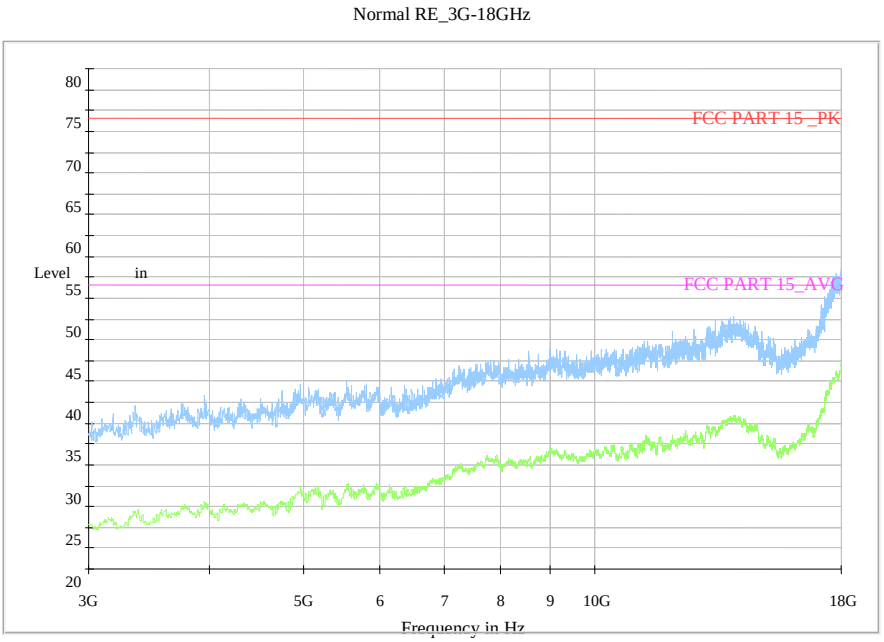

Fig. 71 Radiated Spurious Emission (802.11n-HT40, Ch159, 3 GHz-18 GHz)

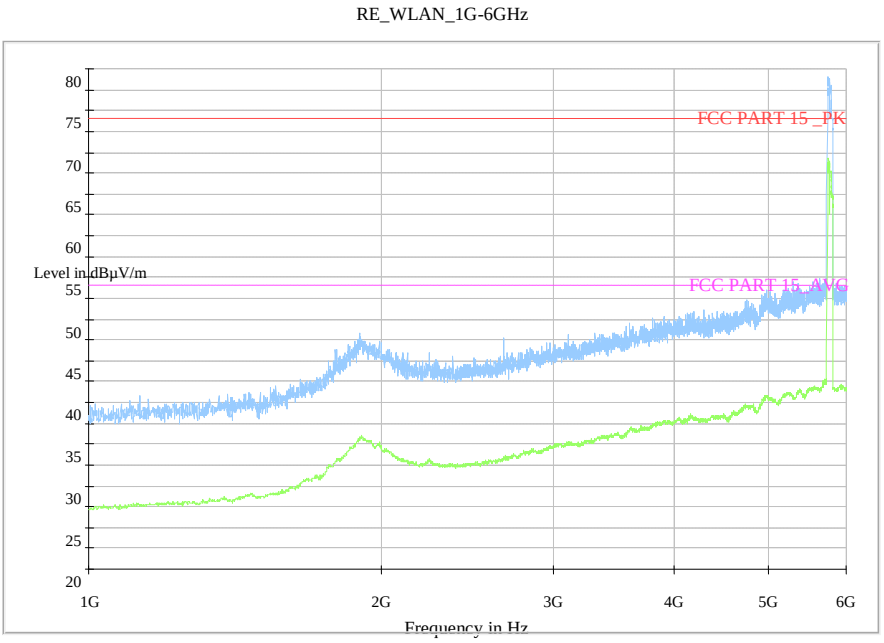

Fig. 72 Radiated Spurious Emission (802.11ac-HT80, Ch155, 1 GHz-6 GHz)

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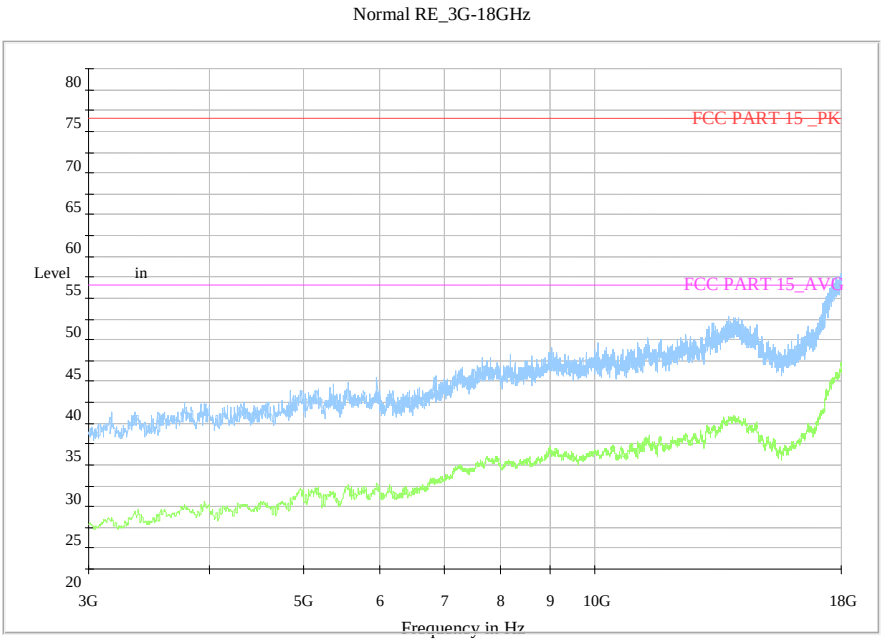

Fig. 73 Radiated Spurious Emission (802.11ac-HT80, Ch155, 3 GHz-18 GHz)

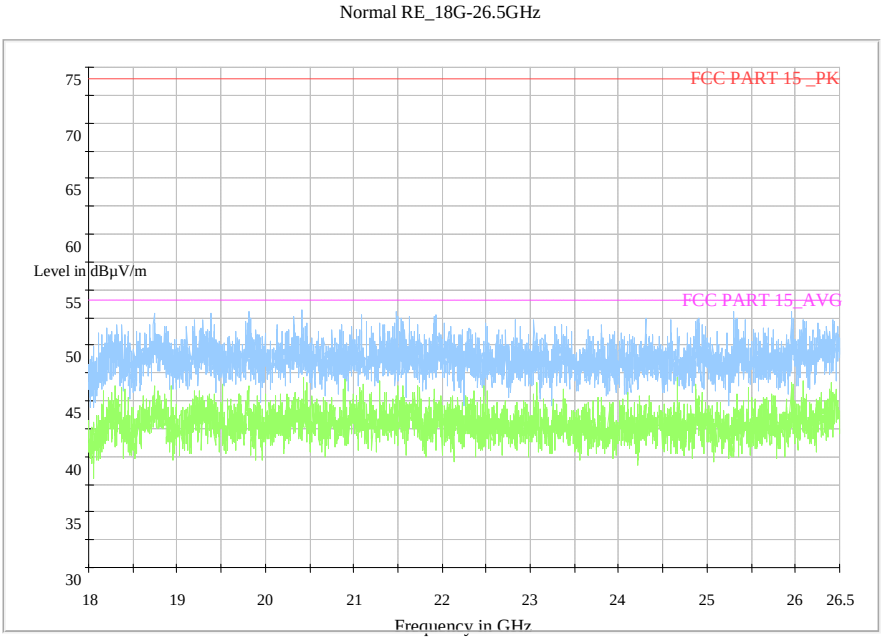

Fig. 74 Radiated Spurious Emission (802.11ac-HT80, Ch155, 18 GHz-26.5 GHz)

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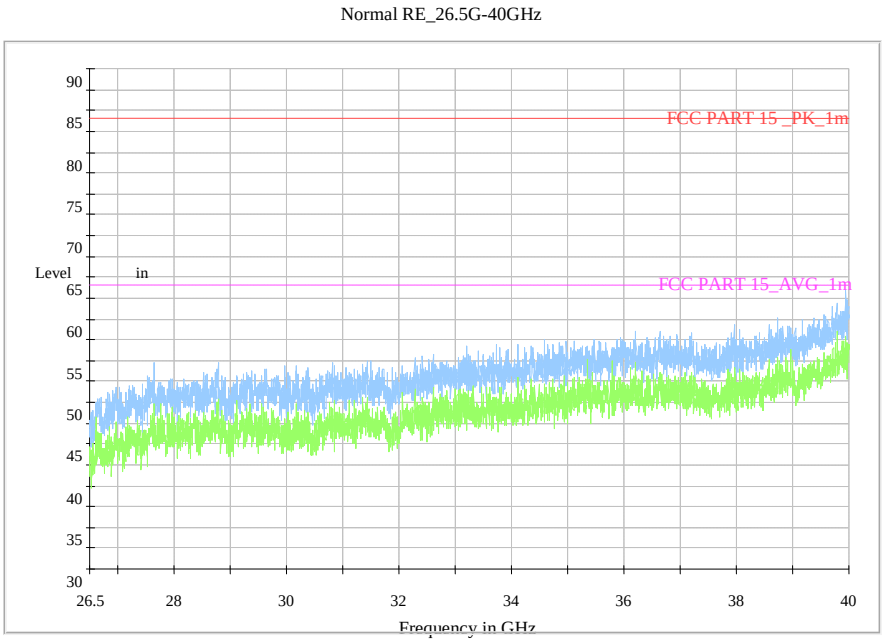

Fig. 75 Radiated emission: 802.11n, (802.11ac-HT80, Ch155, 26.5 GHz - 40 GHz)

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A.6. Band Edges Compliance

A6.1 Band Edges - conducted

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC 47 CFR Part 15.407	5715MHz~5860MHz	< -17
	Below 5715MHz, Above5860MHz	< -27

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.76	P
	5825 MHz	Fig.77	P
802.11n HT20	5745 MHz	Fig.78	P
	5825 MHz	Fig.79	P
802.11n HT40	5755 MHz	Fig.80	P
	5795 MHz	Fig.81	P
802.11ac HT80	5775 MHz	Fig.82	P
	5775 MHz	Fig.83	P

Conclusion: PASS

Test graphs as below:

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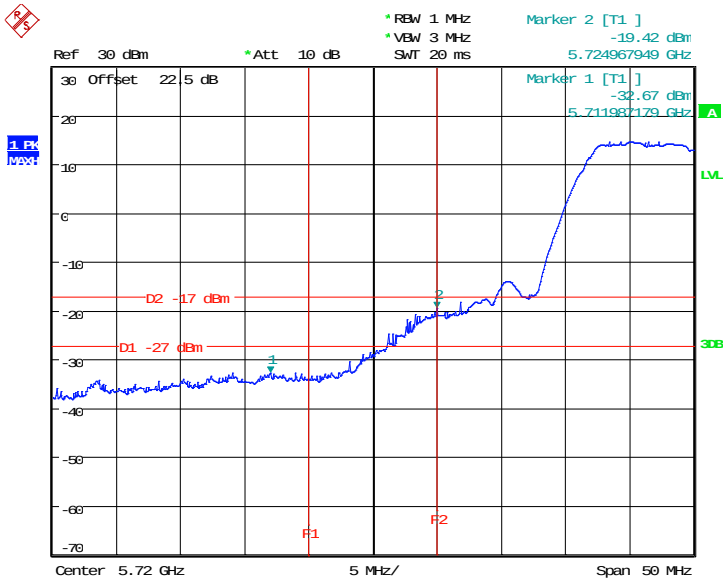
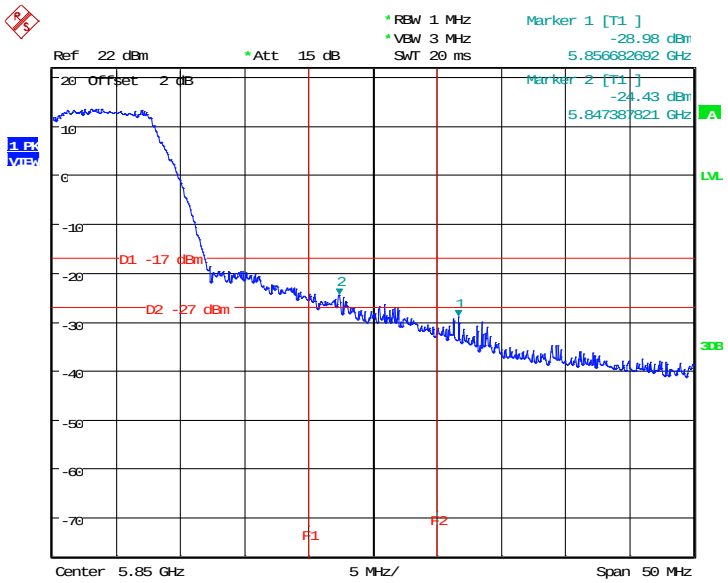


Date: 25.AUG.2014 08:22:51

Fig. 76 Band Edges (802.11a, 5745MHz)



Date: 25.AUG.2014 08:39:38

Fig. 77 Band Edges (802.11a, 5825MHz)

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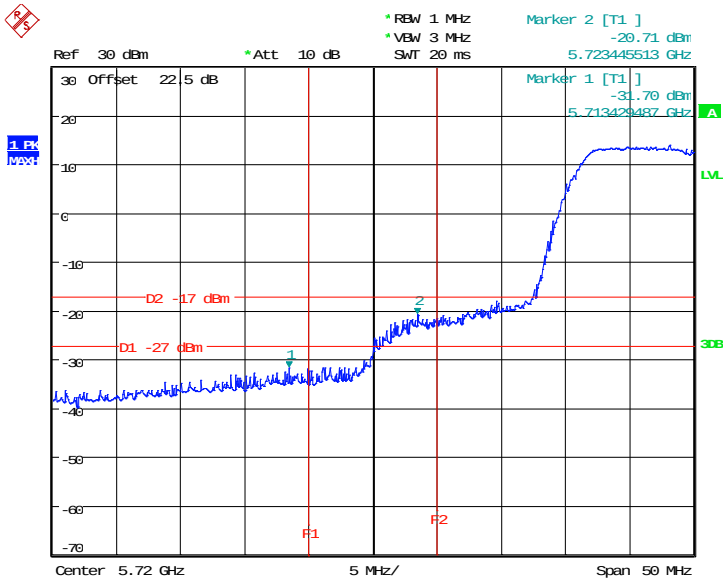
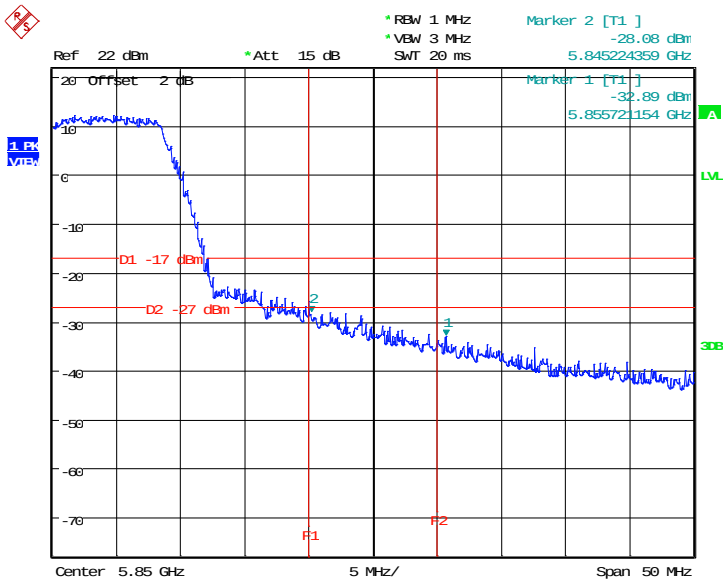


Date: 25.AUG.2014 08:23:42

Fig. 78 Band Edges (802.11n-HT20, 5745MHz)



Date: 25.AUG.2014 08:40:36

Fig. 79 Band Edges (802.11n-HT20, 5825MHz)

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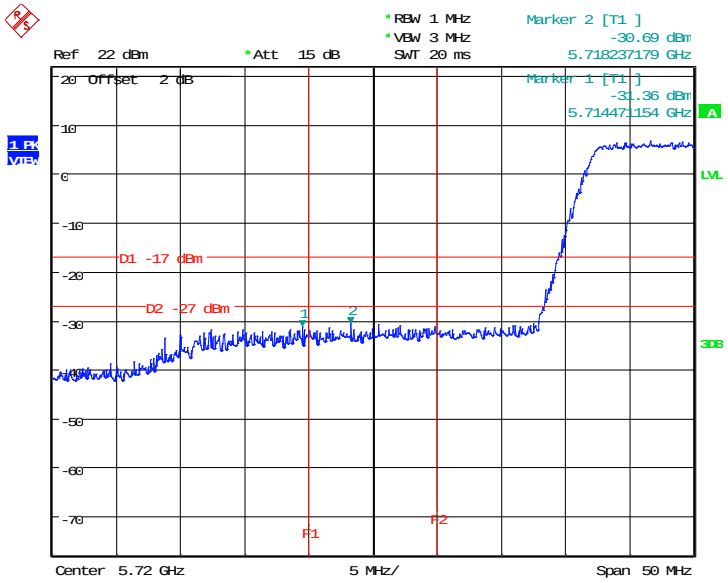
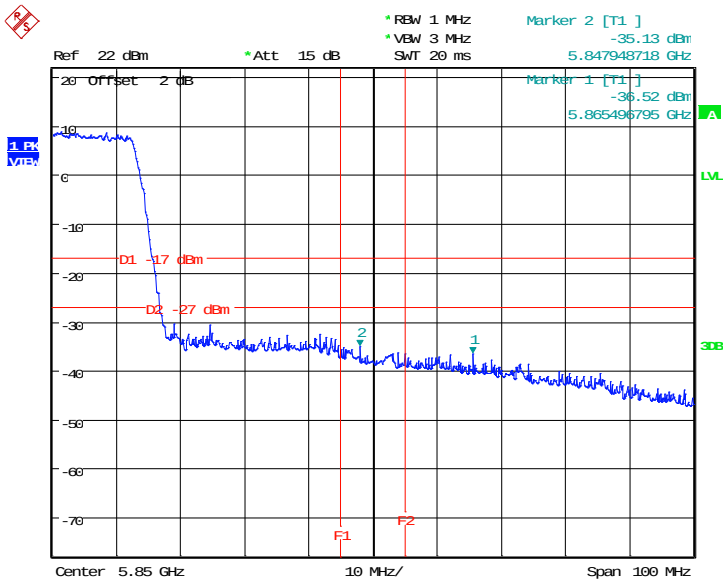


Date: 25.AUG.2014 08:36:33

Fig. 80 Band Edges (802.11n-HT40, 5755MHz)



Date: 25.AUG.2014 08:41:54

Fig. 81 Band Edges (802.11n-HT40, 5795MHz)

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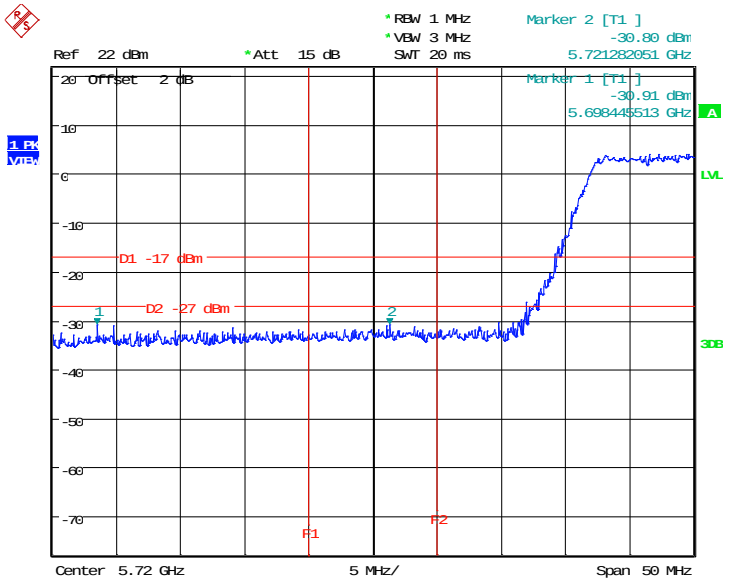
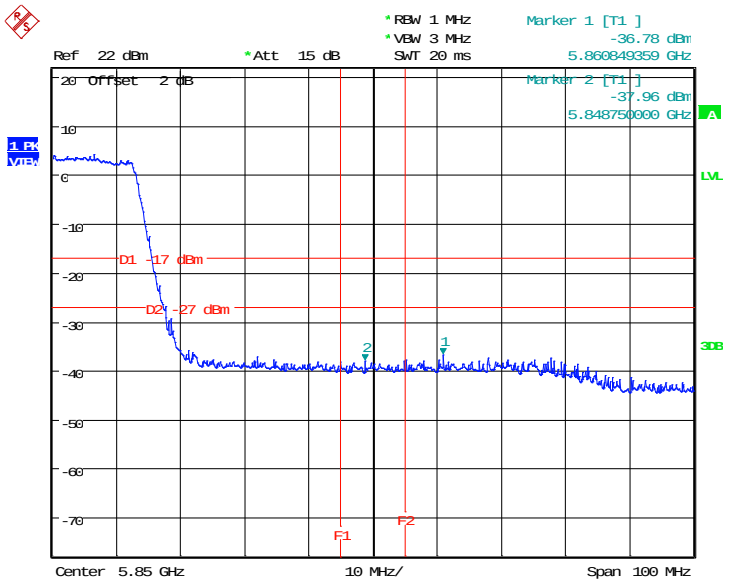


Date: 25.AUG.2014 08:37:40

Fig. 82 Band Edges (802.11ac-HT80, 5775MHz)



Date: 25.AUG.2014 08:42:36

Fig. 83 Band Edges (802.11ac-HT80, 5775MHz)

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A6.2 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.209	> 20

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)).

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.84	P
	5825 MHz	Fig.85	P
802.11n HT20	5745 MHz	Fig.86	P
	5825 MHz	Fig.87	P
802.11n HT40	5755 MHz	Fig.88	P
	5795 MHz	Fig.89	P
802.11ac HT80	5775 MHz	Fig.90	P
	5775 MHz	Fig.91	P

Conclusion: PASS

Test graphs as below:

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RE-Power_5.685G-5.765GHz

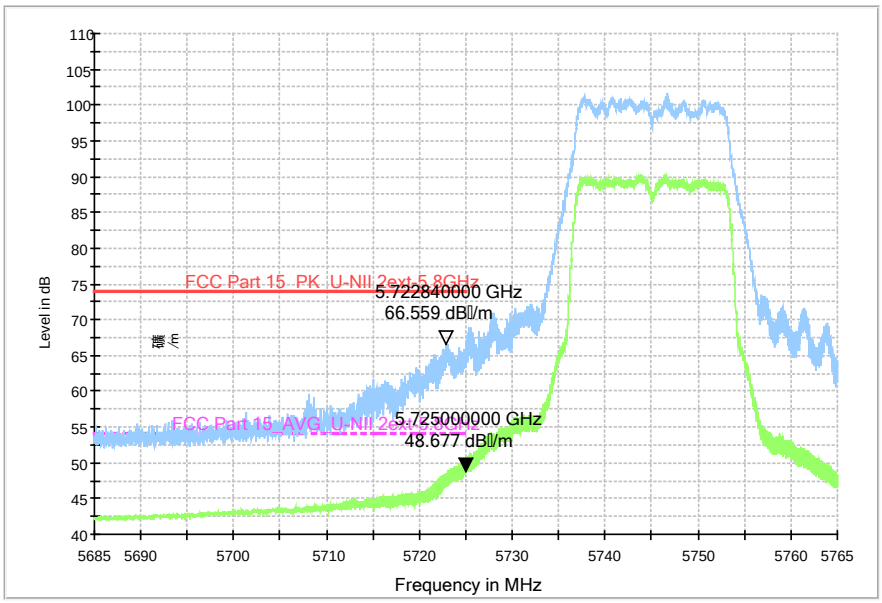

Fig. 84 Band Edges (802.11a, 5745MHz)

RE-Power_5.810G-5.890GHz

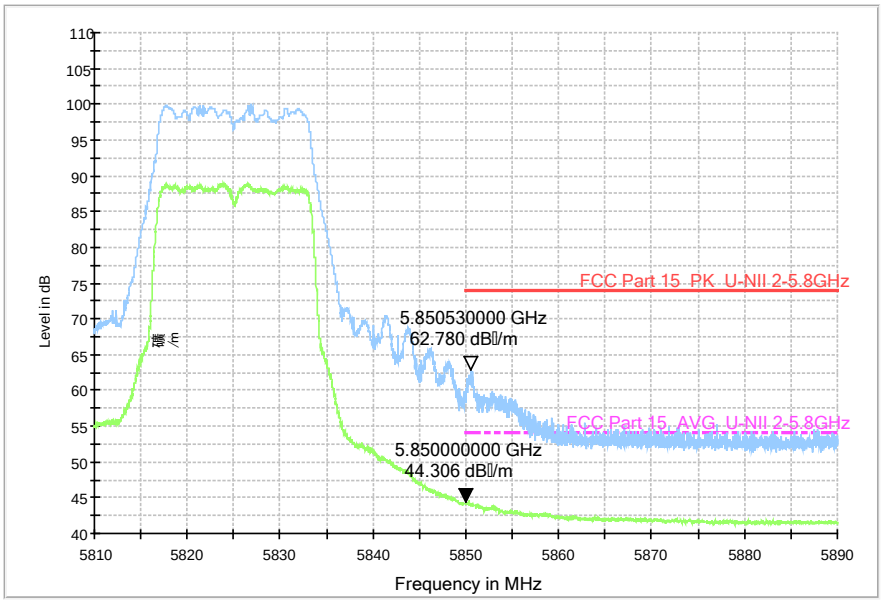

Fig. 85 Band Edges (802.11a, 5825MHz)

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RE-Power_5.685G-5.765GHz

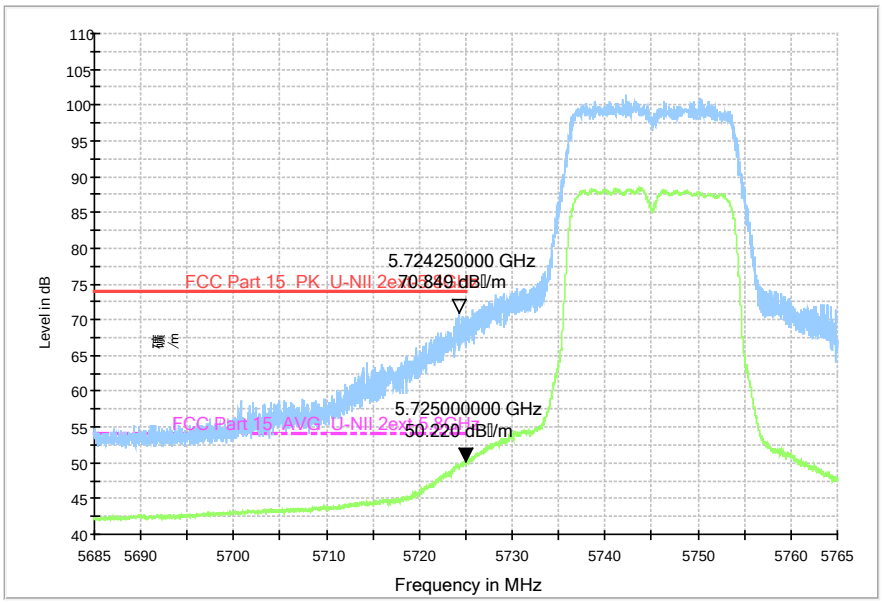

Fig. 86 Band Edges (802.11n-HT20, 5745MHz)

RE-Power_5.810G-5.890GHz

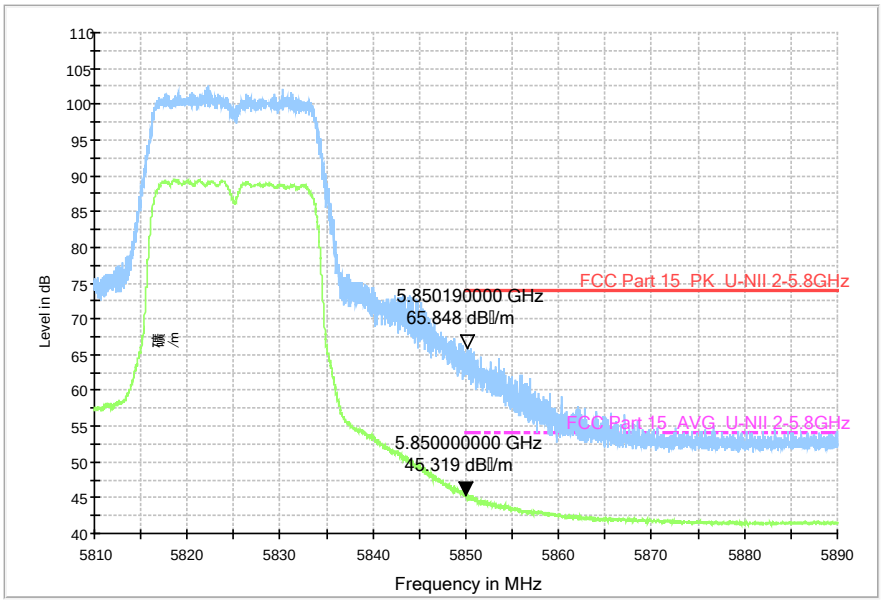

Fig. 87 Band Edges (802.11n-HT20, 5825MHz)

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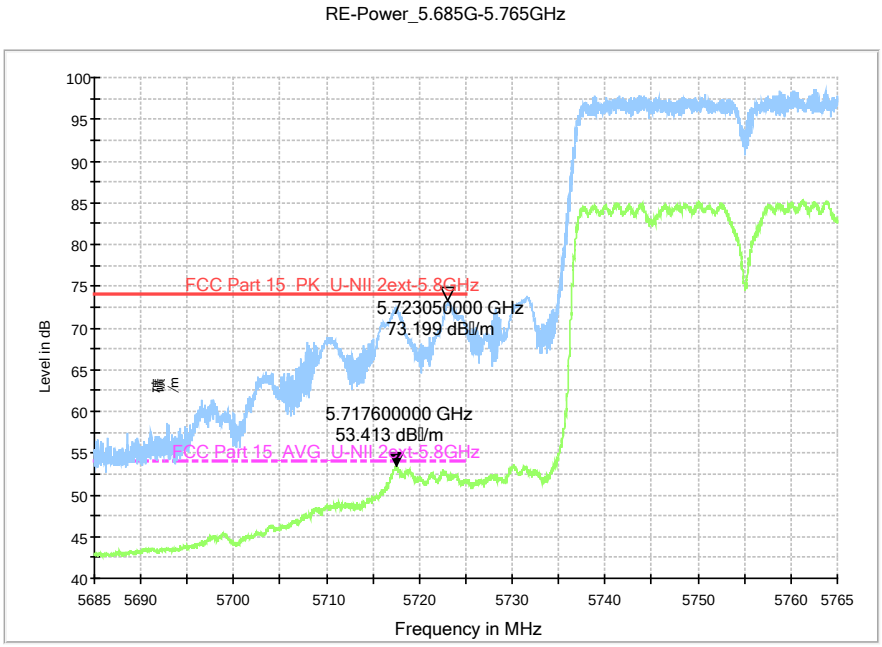

Fig. 88 Band Edges (802.11n-HT40, 5755MHz)

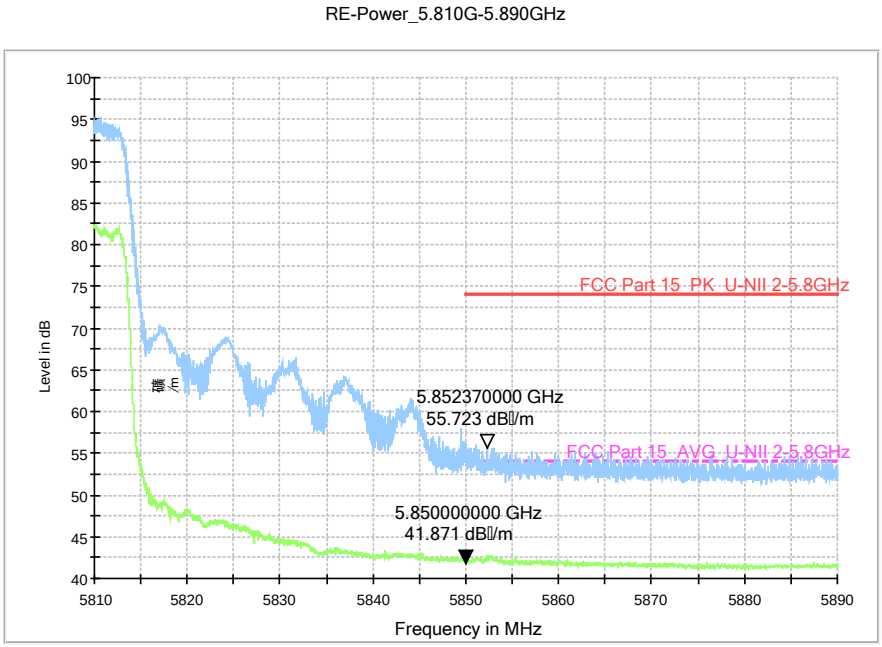

Fig. 89 Band Edges (802.11n-HT40, 5795MHz)

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RE-Power_5.685G-5.765GHz

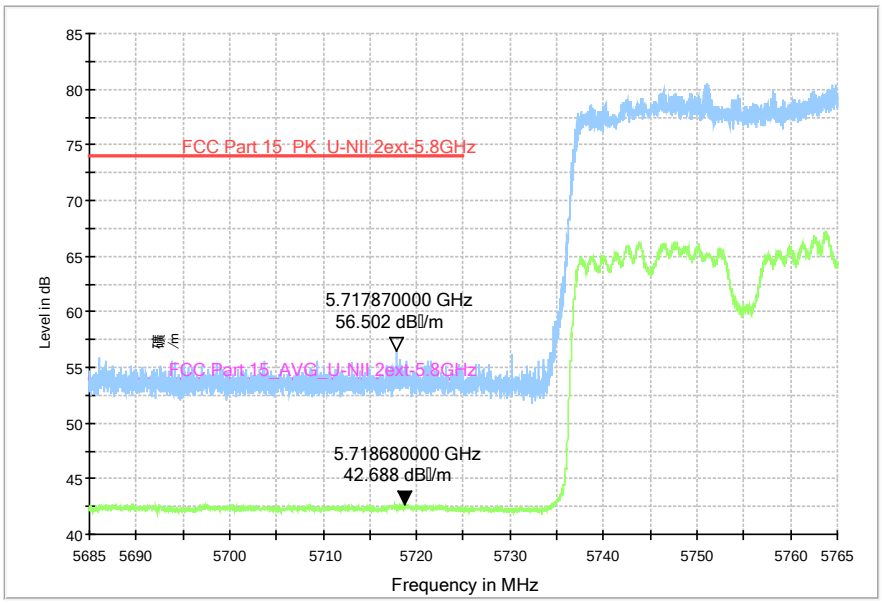

Fig. 90 Band Edges (802.11ac-HT80, 5775MHz)

RE-Power_5.810G-5.890GHz

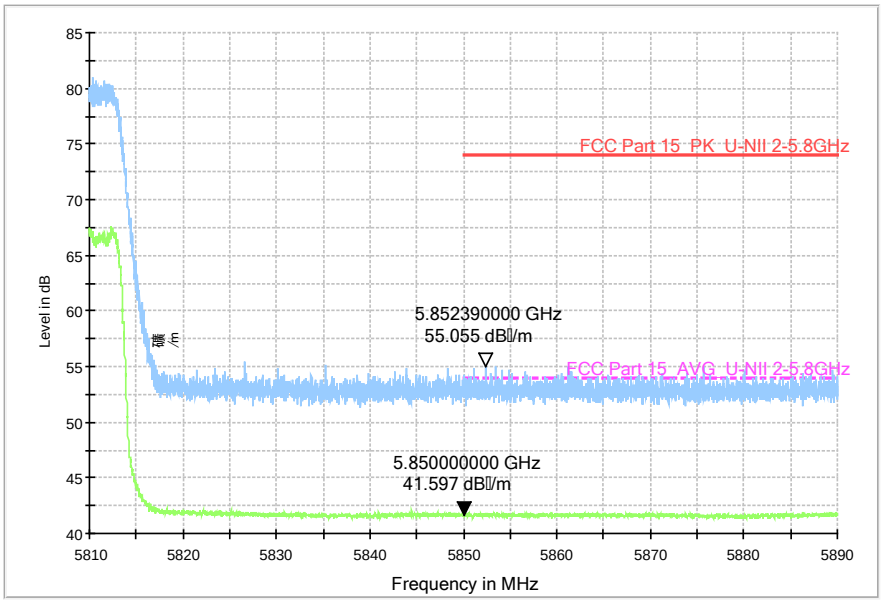

Fig. 91 Band Edges (802.11ac-HT80, 5775MHz)

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A.7. AC Powerline Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
110	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) With charger		Conclusion
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.92	Fig.93	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) With charger		Conclusion
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.92	Fig.93	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:

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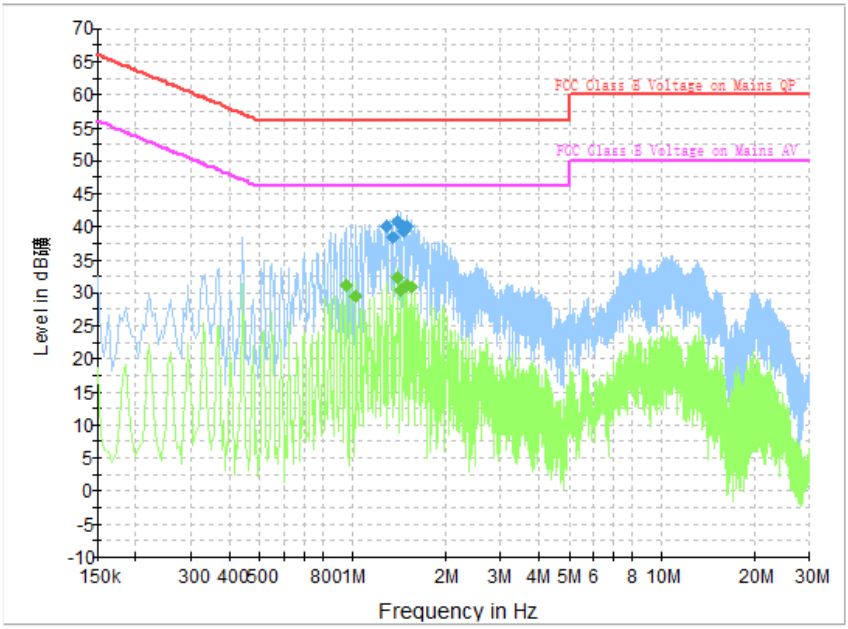

Fig. 92 AC Powerline Conducted Emission-802.11a

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.288500	40.1	GND	L1	9.7	15.9	56.0
1.365000	38.3	GND	L1	9.7	17.7	56.0
1.396500	40.8	GND	L1	9.7	15.2	56.0
1.437000	40.1	GND	L1	9.7	15.9	56.0
1.468500	39.2	GND	L1	9.7	16.8	56.0
1.509000	40.1	GND	L1	9.7	15.9	56.0

Measurement Result 2:

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.955500	31.2	GND	L1	9.7	14.8	46.0
1.032000	29.4	GND	L1	9.7	16.6	46.0
1.396500	32.3	GND	L1	9.7	13.7	46.0
1.437000	30.3	GND	L1	9.7	15.7	46.0
1.509000	31.1	GND	L1	9.7	14.9	46.0
1.545000	30.7	GND	L1	9.7	15.3	46.0

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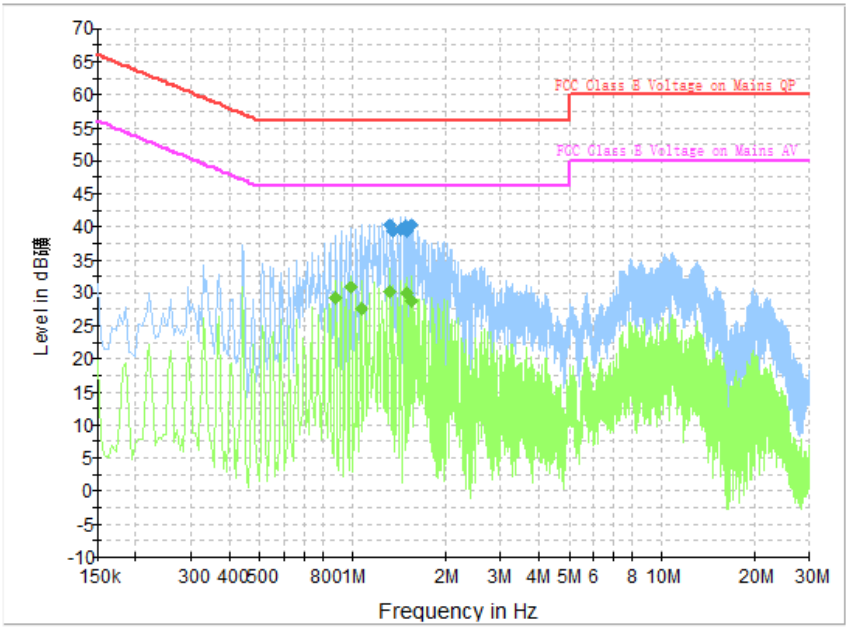

Fig. 93 AC Powerline Conducted Emission-Idle

Measurement Result 1:

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.324500	40.2	GND	L1	9.7	15.8	56.0
1.365000	39.3	GND	L1	9.7	16.8	56.0
1.437000	39.7	GND	L1	9.7	16.3	56.0
1.473000	40.0	GND	L1	9.7	16.0	56.0
1.504500	39.2	GND	L1	9.7	16.8	56.0
1.545000	40.1	GND	L1	9.7	15.9	56.0

Measurement Result 2:

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.883500	29.3	GND	L1	9.7	16.7	46.0
0.991500	30.8	GND	L1	9.7	15.2	46.0
1.068000	27.6	GND	L1	9.7	18.4	46.0
1.324500	30.1	GND	L1	9.7	15.9	46.0
1.504500	30.0	GND	L1	9.7	16.0	46.0
1.545000	28.7	GND	L1	9.7	17.3	46.0

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