



Full

TEST REPORT

No. I18D00212-SRD06

For

Client : Hisense International Co., Ltd.

Production : Mobile Phone

Model Name : KS907

Brand Name : Hisense

FCC ID : 2ADOBKS907

Hardware Version: V1.00

Software Version: Hisense_F17_4G_40_S02_20181018

Issued date: 2018-12-13

Note:

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

The standards accredited by A2LA except KDB 789033.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

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

Revision Version

Report Number	Revision	Date	Memo
I18D00212-SRD06	00	2018-12-04	Initial creation of test report
I18D00212-SRD06	01	2018-12-11	Second creation of test report
I18D00212-SRD06	02	2018-12-13	Third creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301
FCC registration No	958356

1.2. Testing Environment

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

1.3. Project data

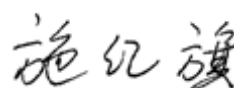
Project Leader:	Xu Yuting
Testing Start Date:	2018-11-01
Testing End Date:	2018-11-29

1.4. Signature



Yang Dejun

(Prepared this test report)



Shi Hongqi

(Reviewed this test report)



Zheng Zhongbin

(Approved this test report)

2. Client Information

2.1. Applicant Information

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

2.2. Manufacturer Information

Company Name: Hisense Communications Co., Ltd.
Address: 218 Qianwangang Road, Qingdao Economic & Technological
Development Zone, Qingdao, China
Telephone: /
Postcode: /

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

3.1. About EUT

EUT Description	Mobile Phone
Model name	KS907
WLAN Frequency Range(5G)	ISM Bands: 5150MHz-5250MHz 5250MHz-5350MHz
GSM Frequency Band	GSM850/GSM900/GSM1900
UMTS Frequency Band	Band 1/2/5
CDMA Frequency Band	N/A
LTE Frequency Band	Band 2/4/5/7/28
Additional Communication Function	BT/BLE/2.4G WLAN 802.11 b/g/n20/5G WLAN 802.11 a/n20
WLAN type of modulation	OFDM
Extreme Temperature	-30/+50°C
Nominal Voltage	3.8V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.5V

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

3.2. Internal Identification of EUT used during the test

EUT ID*	Model Name	SN or IMEI	HW Version	SW Version	Date of receipt
N29	KS907	868806030189 949	V1.00	Hisense_F17_4G_40_S0 2_20181018	2018-10 -29
N24	KS907	868806030189 576	V1.00	Hisense_F17_4G_40_S0 2_20181018	2018-10 -29
N34	KS907	/	V1.00	Hisense_F17_4G_40_S0 2_20181018	2018-11 -26

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	RF cable	---

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

3.4. The difference between two models

Main supply is same as Secondary supply, the two samples are only different on the



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supplier of TP/LCM/Front and Real CAM/Flash.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2017
ANSI 63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033	Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2017
KDB905462	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION	2016

5. Summary of Test Results

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

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Verdict
Maximum Output Power	15.407	P
Power Spectral Density	15.407	P
Occupied 26dB Bandwidth	15.403	P
Band edge compliance	15.407	P
Transmitter spurious emissions radiated	15.407	P
Spurious emissions radiated < 30 MHz	15.407	P
Spurious emissions conducted < 30 MHz	15.407	P
Peak Excursion	15.407	P
Frequency Stability	15.407	NA
Transmit Power Control	15.407	NA
Automatically Discontinue Transmission	15.407	NA

Please refer to section 6 for detail.

Terms used in Verdict column

P	Pass, the EUT complies with the essential requirements in the standard.
NP	Not Perform, the test was not performed by ECIT.
NA	Not Applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

Test Conditions

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

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

Temperature	Tnom	25°C
Voltage	Vnom	3.8V
Humidity	Hnom	47%

5.1. Notes

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

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

5.2. Statements

The KS907, supporting GSM/GPRS/EDGE/WCDMA/LTE/BT/BLE/WLAN, manufactured by Hisense Communications Co., Ltd., which is a new product for testing.

Note: The product has two prototypes, the two samples are only different on the supplier of TP/LCM/Front and Real CAM/Flash. In this report, we test all cases about main supply, and we only test worse case about secondary supply.

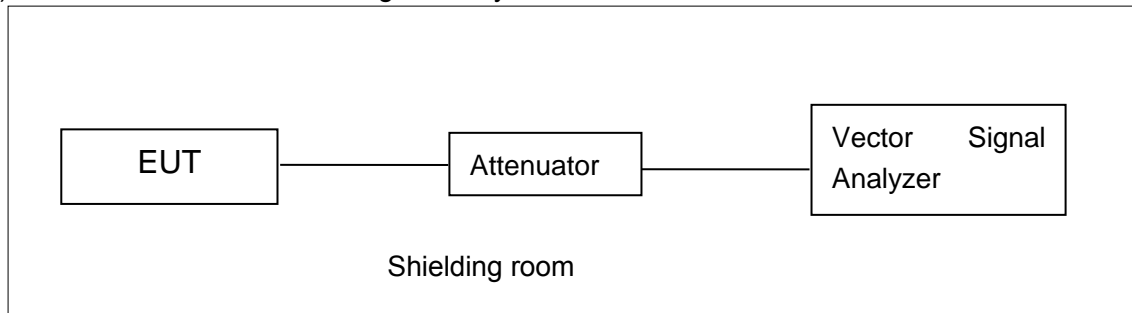
ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

6. Test result

6.1. Measurement Method

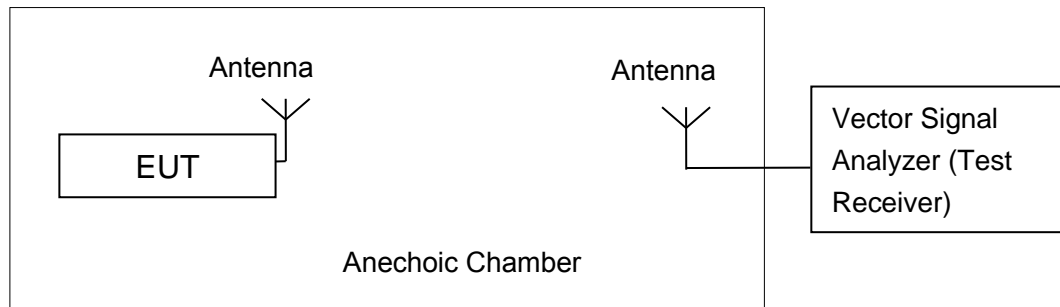
6.1.1. Conducted Measurements

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



6.1.2. Radiated Emission Measurements

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



The measurement is made according to 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.

6.2. Maximum output Power
Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	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.

Set the spectrum analyzer in the following:

Detector: RMS.

RBW=1MHz.

VBW=3MHz.

Sweep time = AUTO.

Span:30MHz (for 20MHz); 50MHz (for 40MHz).

Measurement Results:
802.11a mode
U-NII-1

Mode	Data Rate(Mbps)	Teat Result(dBm)		
		5180MHz	5200MHz	5240MHz
802.11a	6	12.8	12.02	11.97

U-NII-2

Mode	Data Rate(Mbps)	Teat Result(dBm)		
		5260MHz(Ch52)	5300MHz(Ch60)	5320MHz(Ch64)
802.11a	6	11.37	11.33	11.53

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

802.11n-HT20 mode
U-NII-1

Mode	Data Rate(Index)	Teat Result(dBm)		
		5180MHz	5200MHz	5240MHz
802.11n(20MHz)	MCS0	9.43	9.11	9.47

U-NII-2A

Mode	Data Rate(Index)	Test Result(dBm)		
		5260MHz	5300MHz	5320MHz
802.11n(20MHz)	MCS0	8.54	8.44	8.3

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

6.3. Peak Power Spectral Density (conducted)
Measurement Limit:

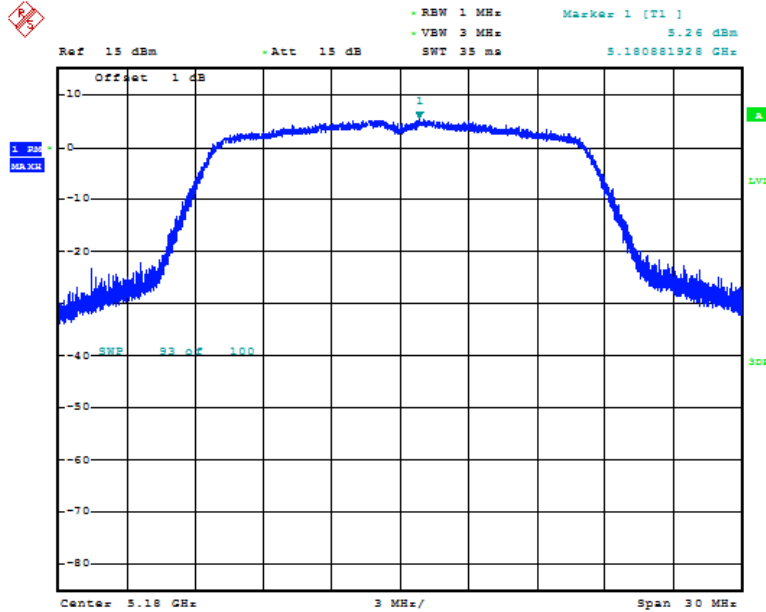
Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

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

Measurement Results:

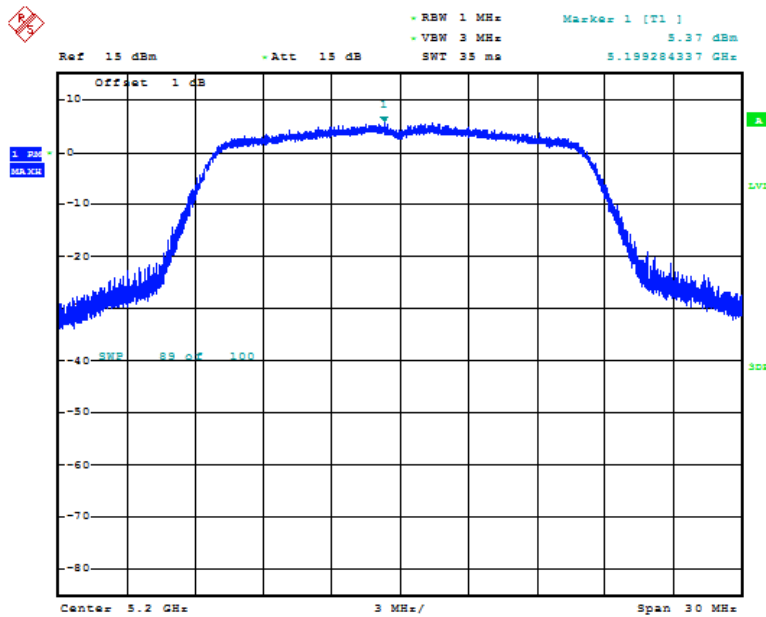
Mode	Channel	Power Spectral Density (dBm/MHz)		Conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	5.373	P
	5200 MHz	Fig.2	5.48	P
	5240 MHz	Fig.3	5.353	P
	5260 MHz	Fig.4	1.962	P
	5300 MHz	Fig.5	2.082	P
	5320 MHz	Fig.6	1.366	P
802.11n HT20	5180 MHz	Fig.7	1.137	P
	5200 MHz	Fig.8	1.457	P
	5240 MHz	Fig.9	0.629	P
	5260 MHz	Fig.10	-2.196	P
	5300 MHz	Fig.11	-2.12	P
	5320 MHz	Fig.12	-1.793	P

Conclusion: PASS



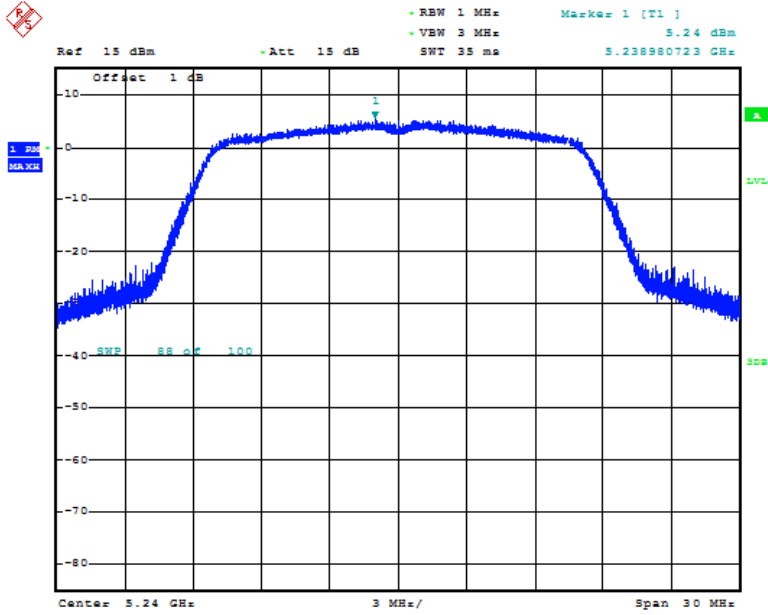
Date: 11.NOV.2018 09:03:53

Fig. 1 Power Spectral Density (802.11a, 5180MHz)



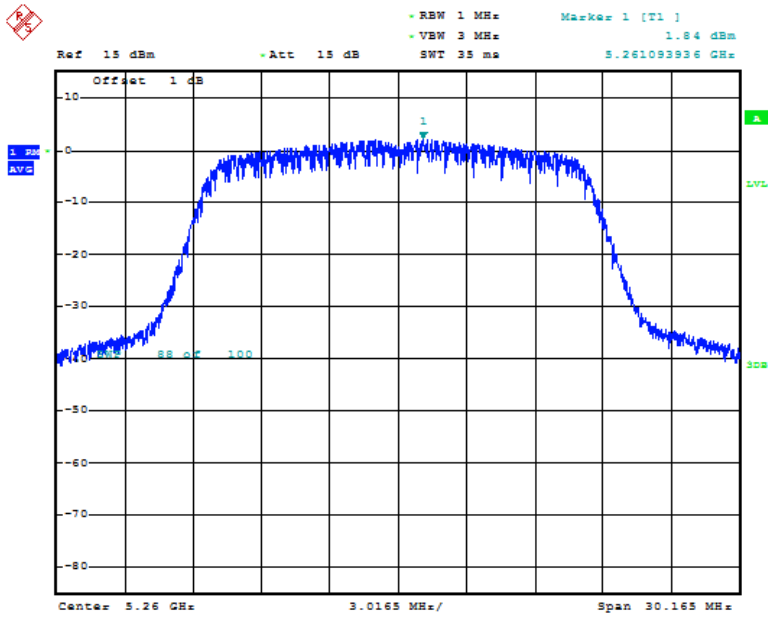
Date: 11.NOV.2018 09:04:46

Fig. 2 Power Spectral Density (802.11a, 5200MHz)



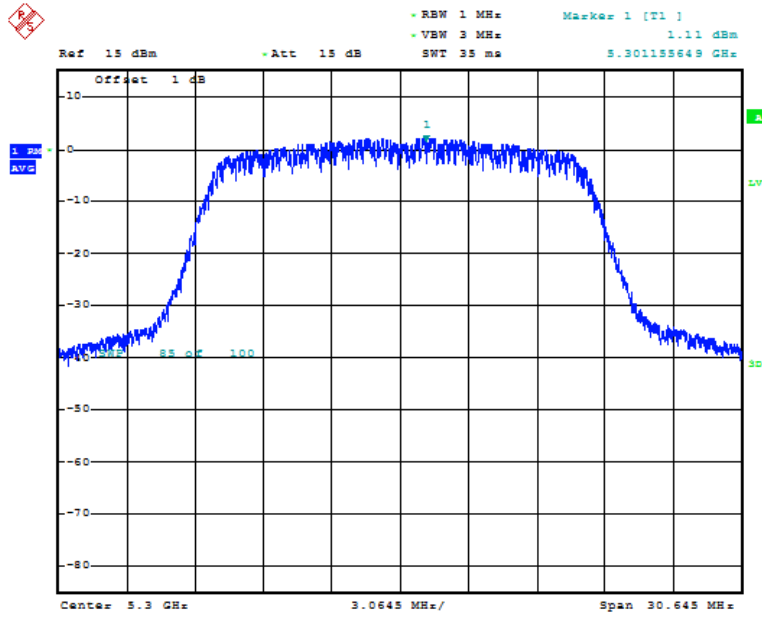
Date: 11.NOV.2018 09:06:42

Fig. 3 Power Spectral Density (802.11a, 5240MHz)



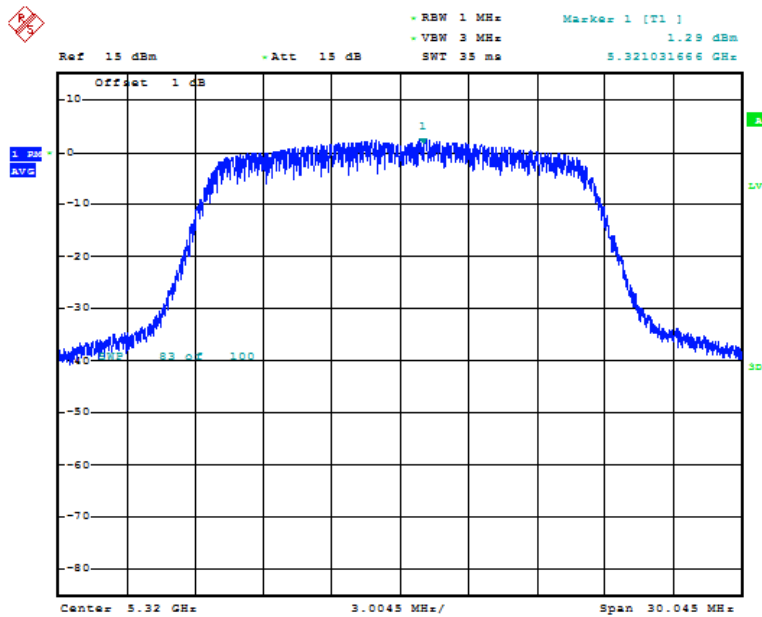
Date: 12.NOV.2018 14:25:06

Fig. 4 Power Spectral Density (802.11a, 5260MHz)



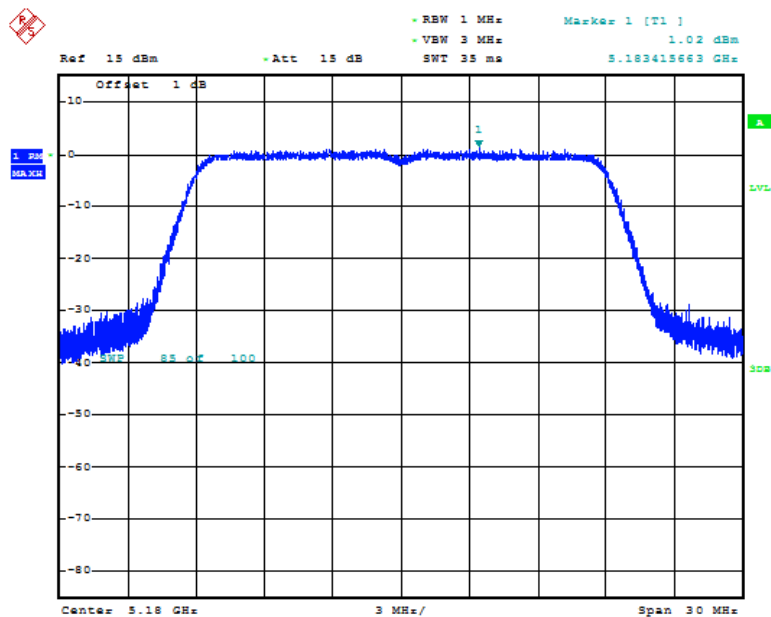
Date: 12.NOV.2018 14:26:04

Fig. 5 Power Spectral Density (802.11a, 5300MHz)



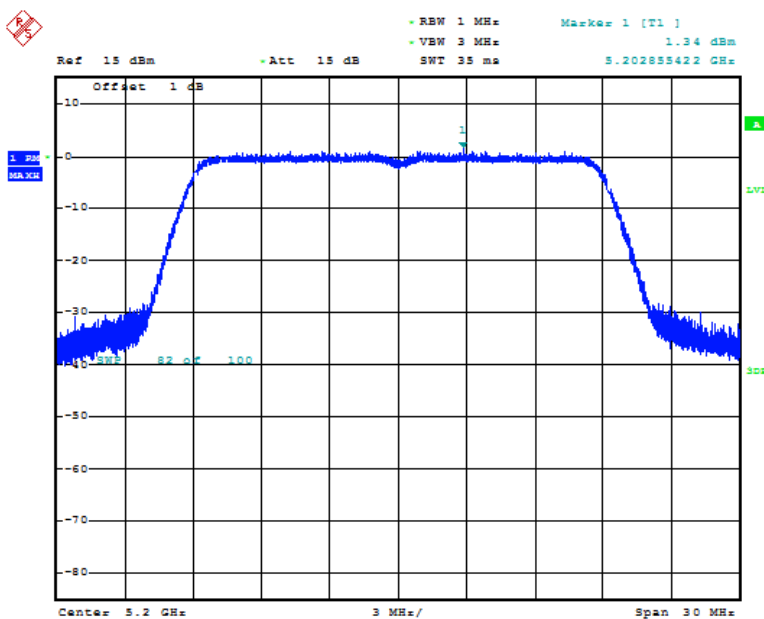
Date: 12.NOV.2018 14:26:49

Fig. 6 Power Spectral Density (802.11a, 5320MHz)



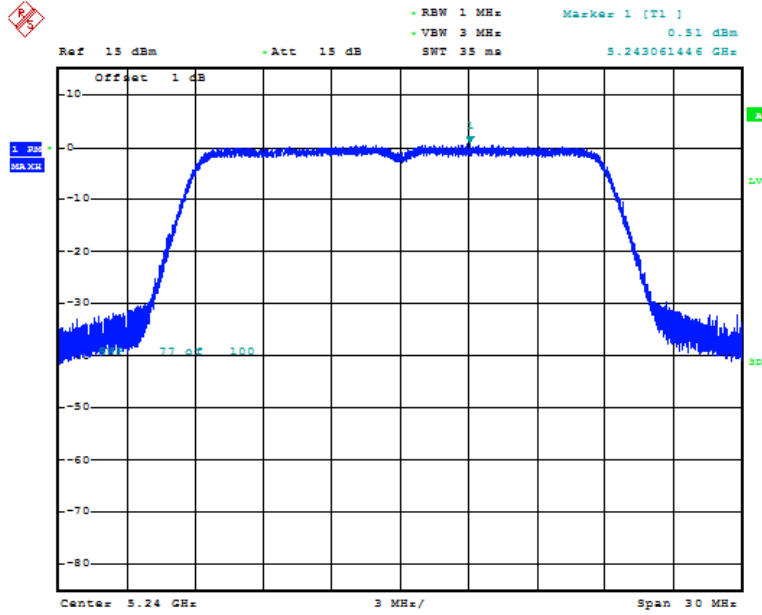
Date: 12.NOV.2018 13:35:12

Fig. 7 Power Spectral Density (802.11n-HT20, 5180MHz)



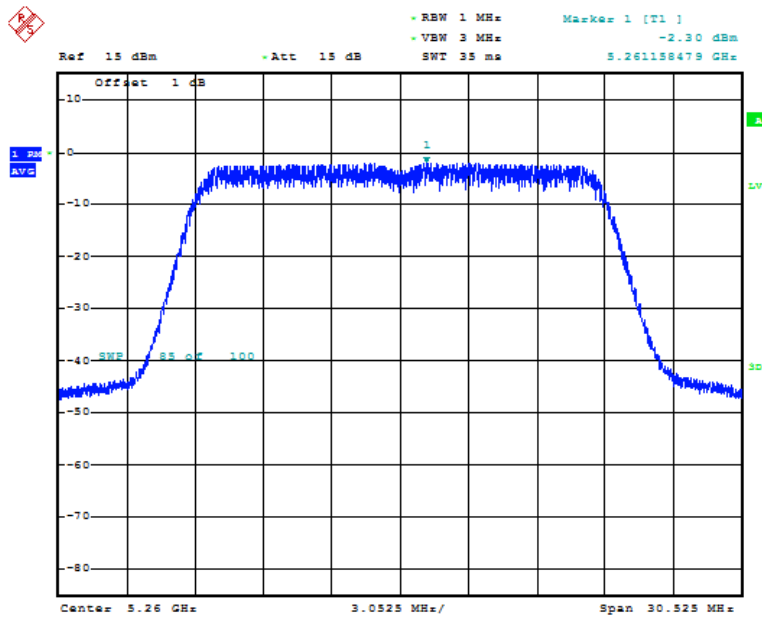
Date: 12.NOV.2018 13:36:11

Fig. 8 Power Spectral Density (802.11n-HT20, 5200MHz)



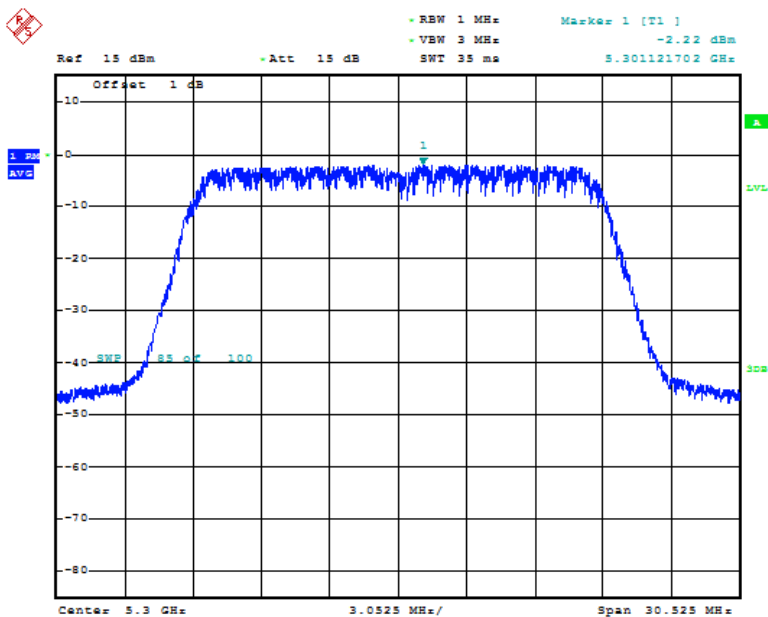
Date: 12.NOV.2018 13:36:58

Fig. 9 Power Spectral Density (802.11n-HT20, 5240MHz)

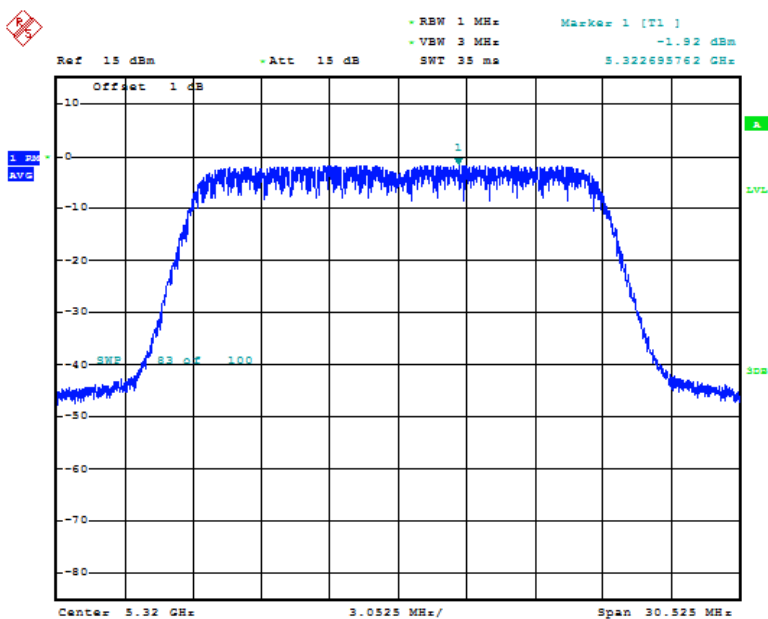


Date: 12.NOV.2018 14:28:14

Fig. 10 Power Spectral Density (802.11n-HT20, 5260MHz)



Date: 12.NOV.2018 14:31:53

Fig. 11 Power Spectral Density (802.11n-HT20, 5300MHz)

Date: 12.NOV.2018 14:33:28

Fig. 12 Power Spectral Density (802.11n-HT20, 5320MHz)

6.4. Occupied 26dB Bandwidth(conducted)

Measurement Limit:

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

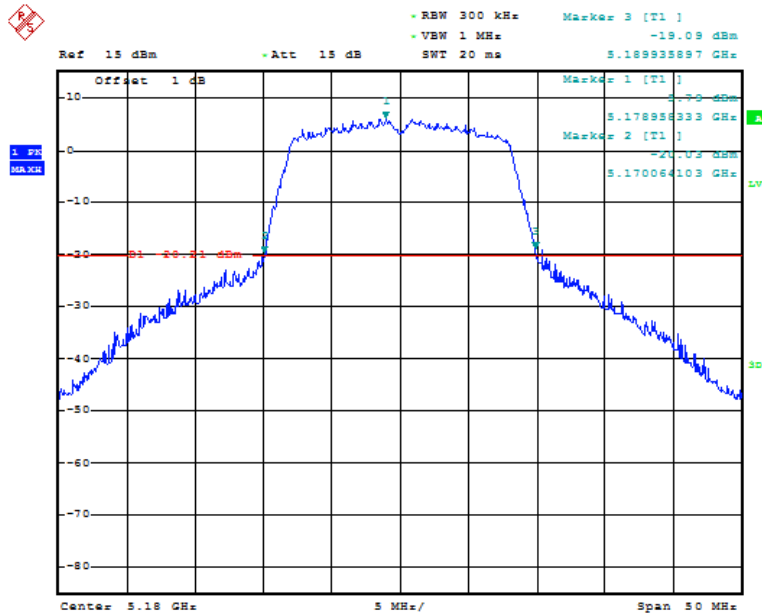
The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.13	19.87	P
	5200 MHz	Fig.14	20.11	P
	5240 MHz	Fig.15	20.03	P
	5260 MHz	Fig.16	20.11	P
	5300 MHz	Fig.17	20.43	P
	5320 MHz	Fig.18	20.03	P
802.11n HT20	5180 MHz	Fig.19	20.43	P
	5200 MHz	Fig.20	20.43	P
	5240 MHz	Fig.21	20.35	P
	5260 MHz	Fig.22	20.35	P
	5300 MHz	Fig.23	20.35	P
	5320 MHz	Fig.24	20.35	P

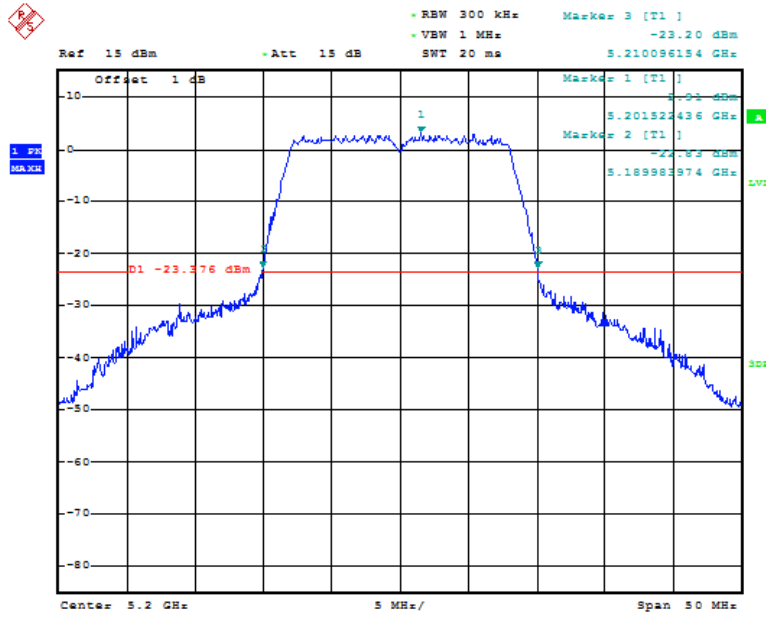
Conclusion: PASS

Test graphs as below:



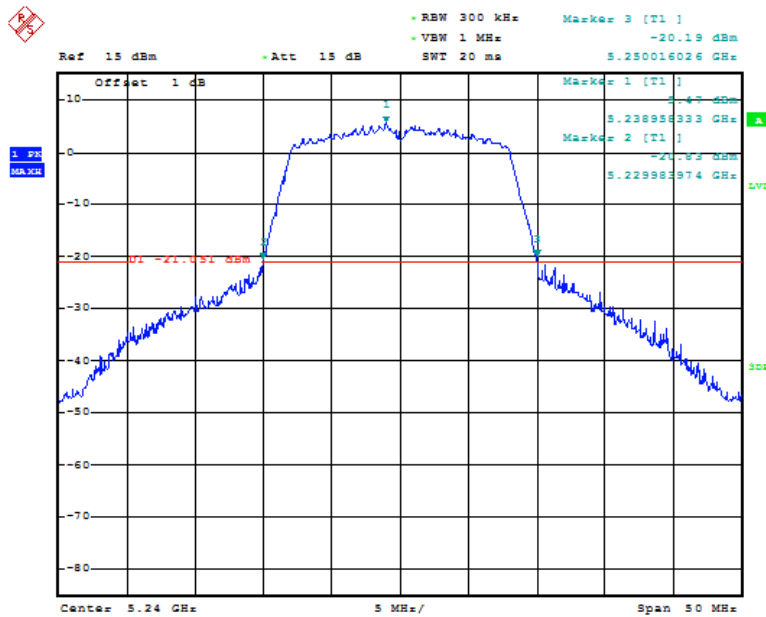
Date: 11.NOV.2018 09:00:31

Fig. 13 Occupied 26dB Bandwidth (802.11a, 5180MHz)



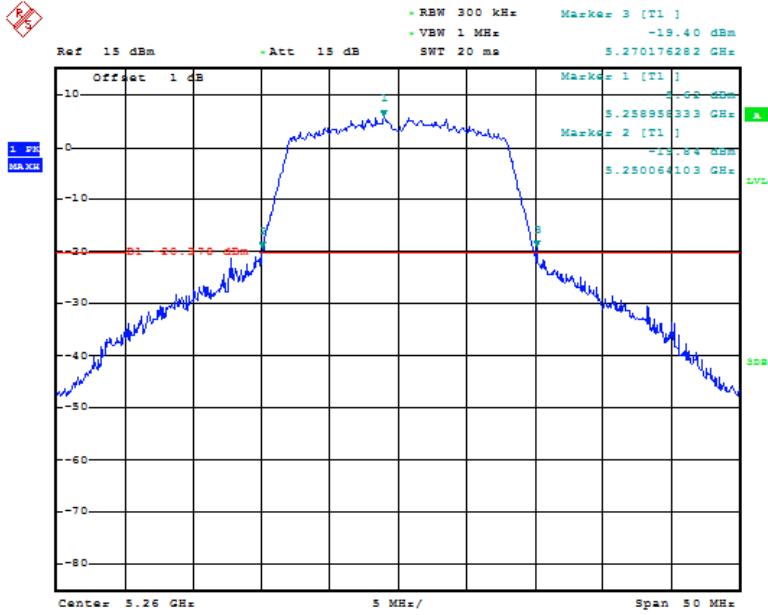
Date: 11.NOV.2018 09:01:27

Fig. 14 Occupied 26dB Bandwidth (802.11a, 5200MHz)



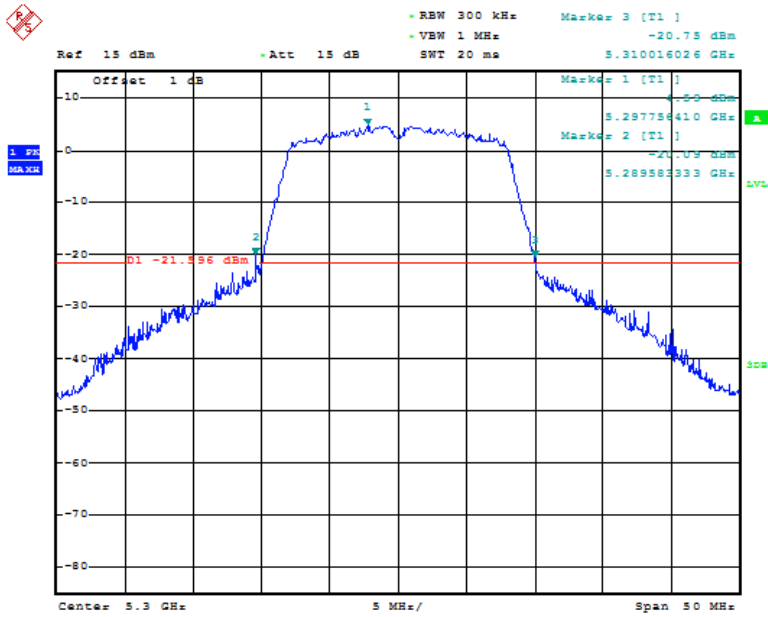
Date: 11.NOV.2018 09:02:35

Fig. 15 Occupied 26dB Bandwidth (802.11a, 5240MHz)



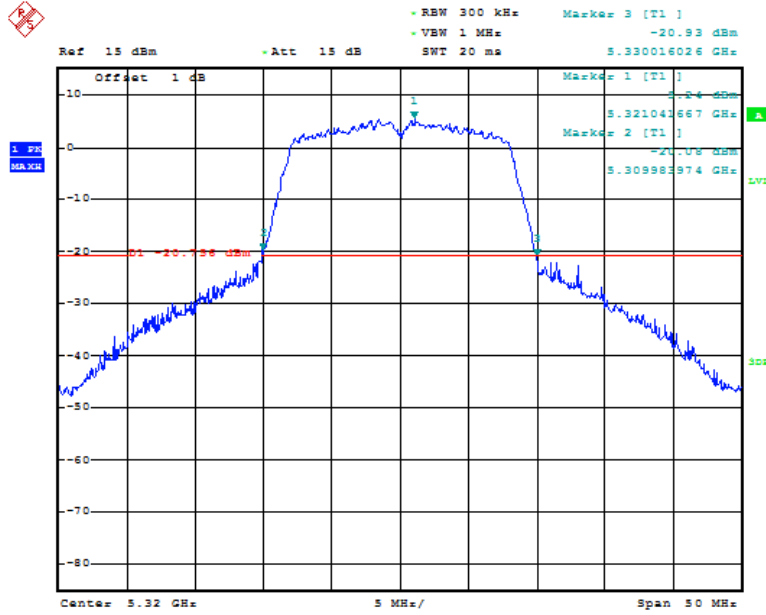
Date: 12.NOV.2018 14:01:39

Fig. 16 Occupied 26dB Bandwidth (802.11a, 5260MHz)



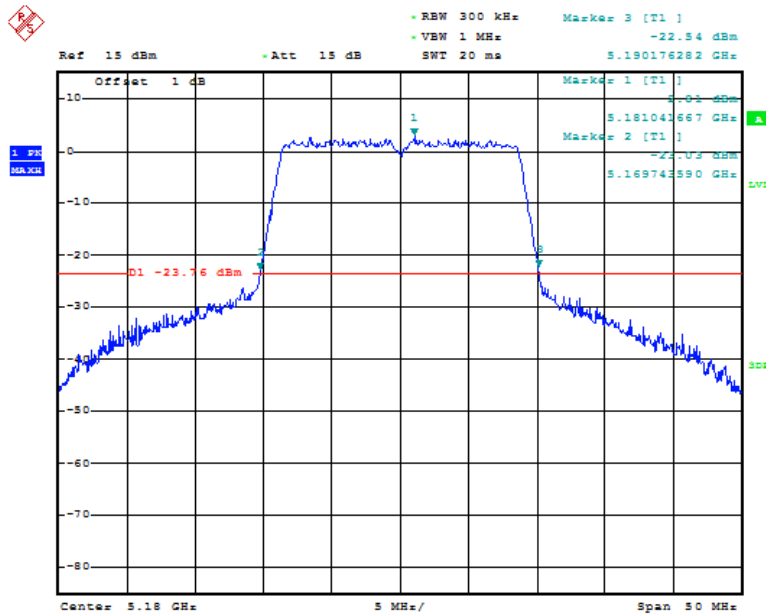
Date: 12.NOV.2018 14:03:13

Fig. 17 Occupied 26dB Bandwidth (802.11a, 5300MHz)



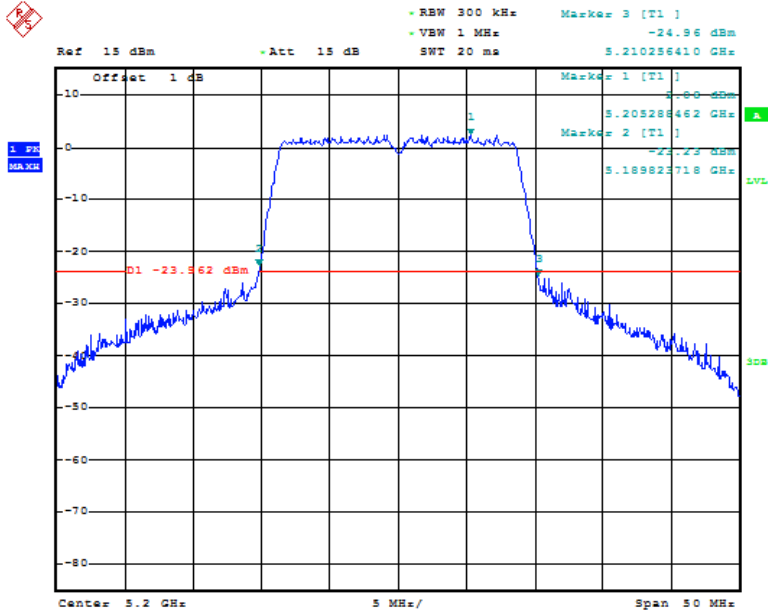
Date: 12.NOV.2018 14:04:18

Fig. 18 Occupied 26dB Bandwidth (802.11a, 5320MHz)



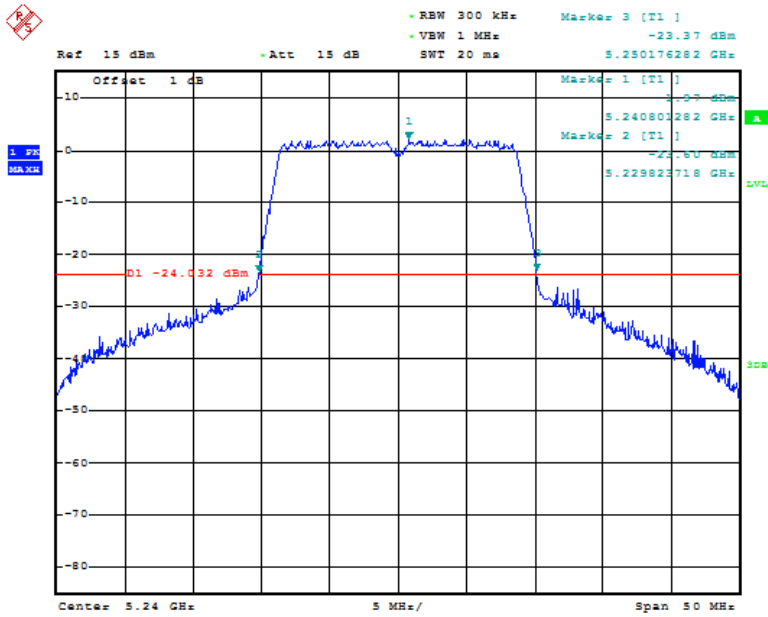
Date: 26.NOV.2018 14:17:45

Fig. 19 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)



Date: 26.NOV.2018 14:18:33

Fig. 20 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)



Date: 26.NOV.2018 14:19:18

Fig. 21 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

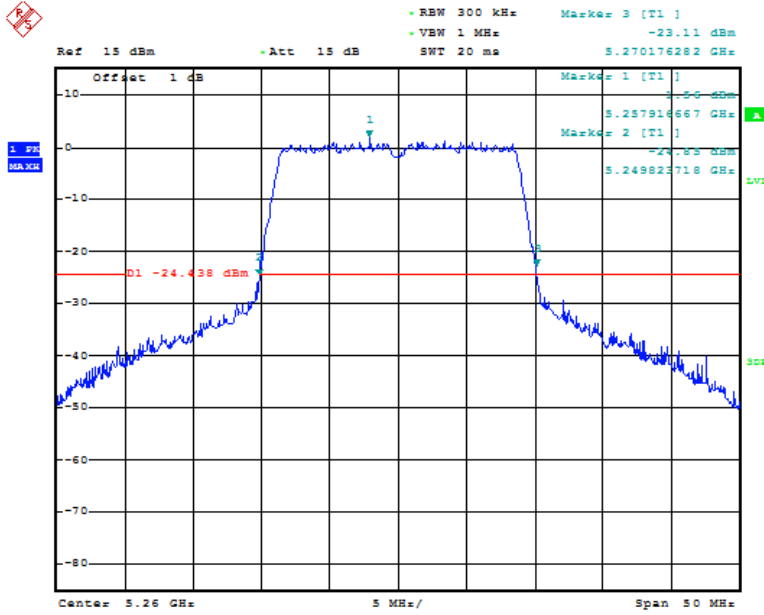


Fig. 22 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

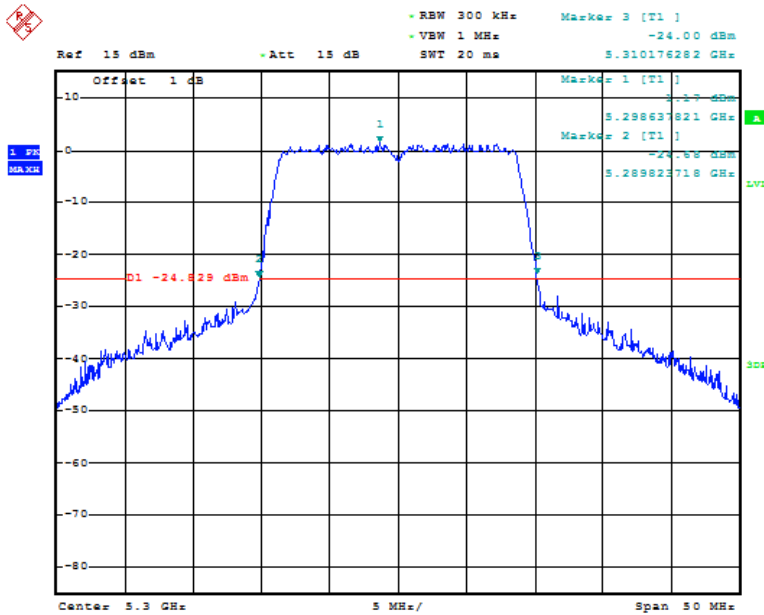
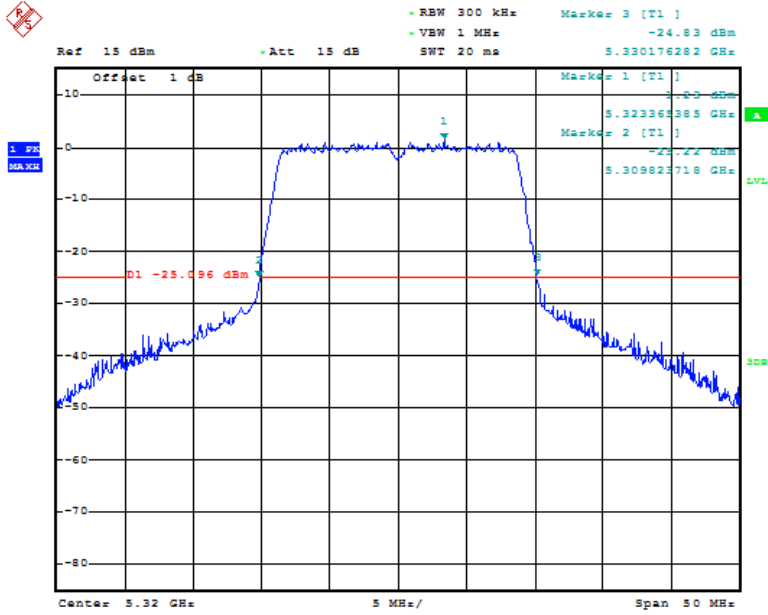


Fig. 23 Occupied 26dB Bandwidth (802.11n-HT20, 5300MHz)



Date: 12.NOV.2018 14:07:40

Fig. 24 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

6.5. 99% Occupied Bandwidth(conducted)

Measurement Limit:

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

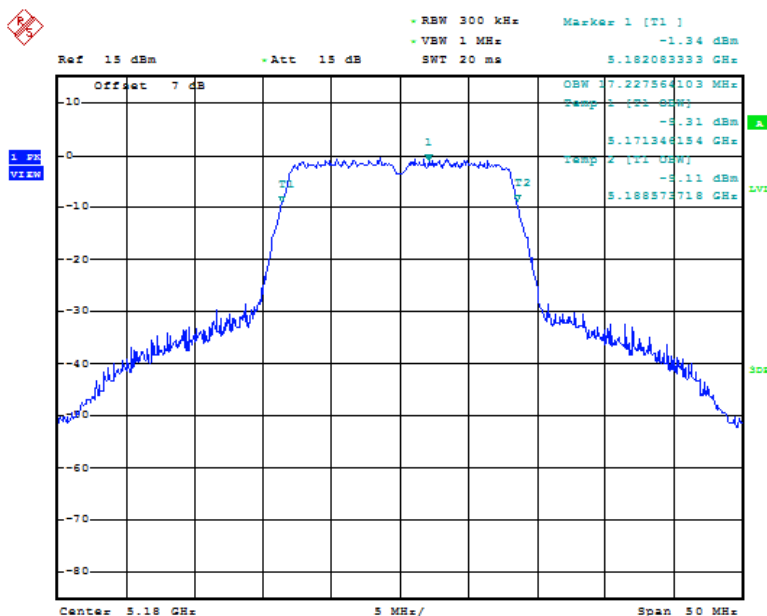
The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	99% Occupied Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.25	17.228	P
	5200 MHz	Fig.26	17.228	P
	5240 MHz	Fig.27	17.228	P
	5260 MHz	Fig.28	16.987	P
	5300 MHz	Fig.29	16.987	P
	5320 MHz	Fig.30	16.987	P
802.11n HT20	5180 MHz	Fig.31	18.269	P
	5200 MHz	Fig.32	17.949	P
	5240 MHz	Fig.33	18.029	P
	5260 MHz	Fig.34	18.109	P
	5300 MHz	Fig.35	18.029	P
	5320 MHz	Fig.36	18.029	P

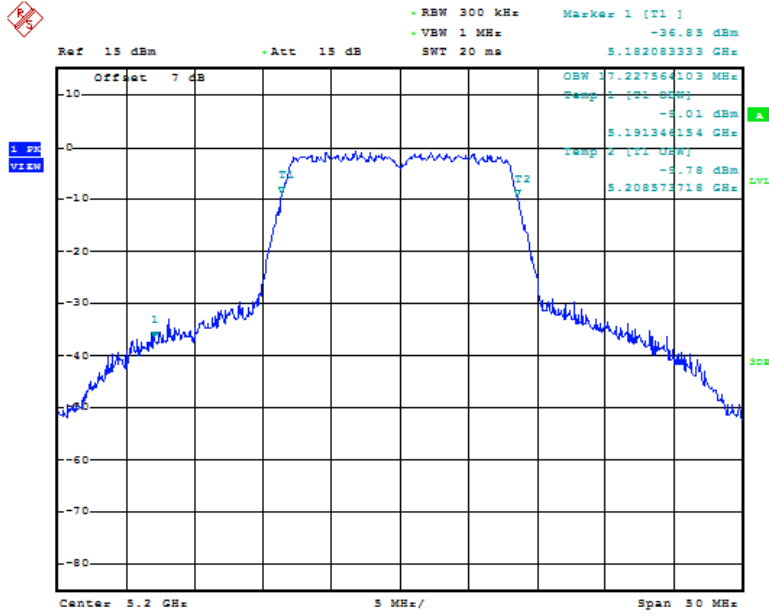
Conclusion: PASS

Test graphs as below:



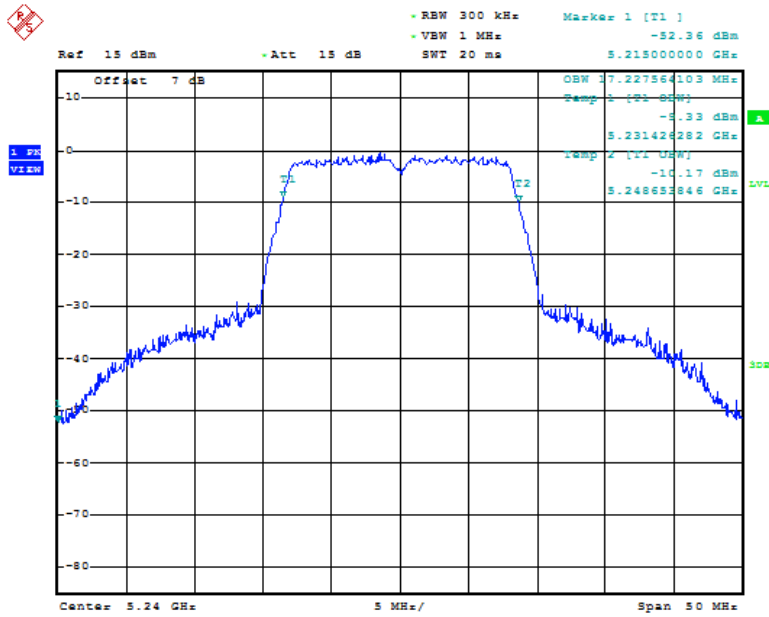
Date: 2.NOV.2018 16:31:44

Fig. 25 99% Occupied Bandwidth (802.11a, 5180MHz)



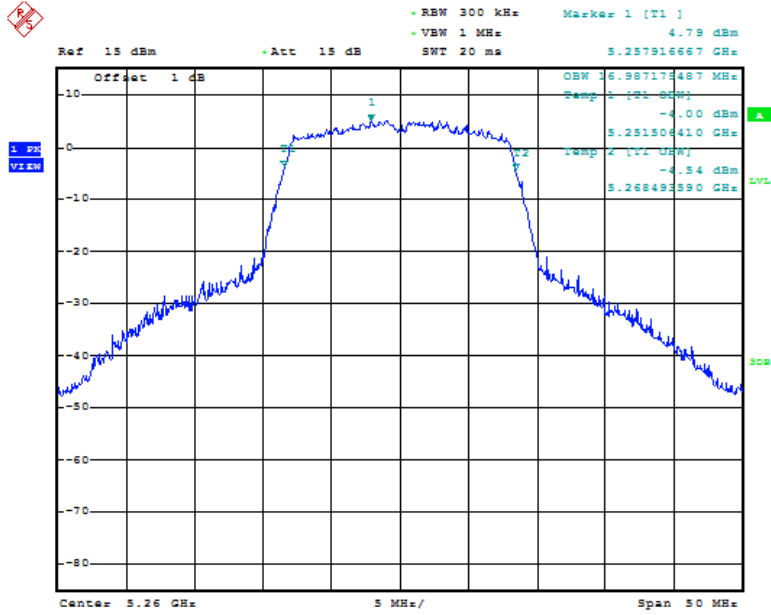
Date: 2.NOV.2018 16:32:55

Fig. 26 99% Occupied Bandwidth (802.11a, 5200MHz)



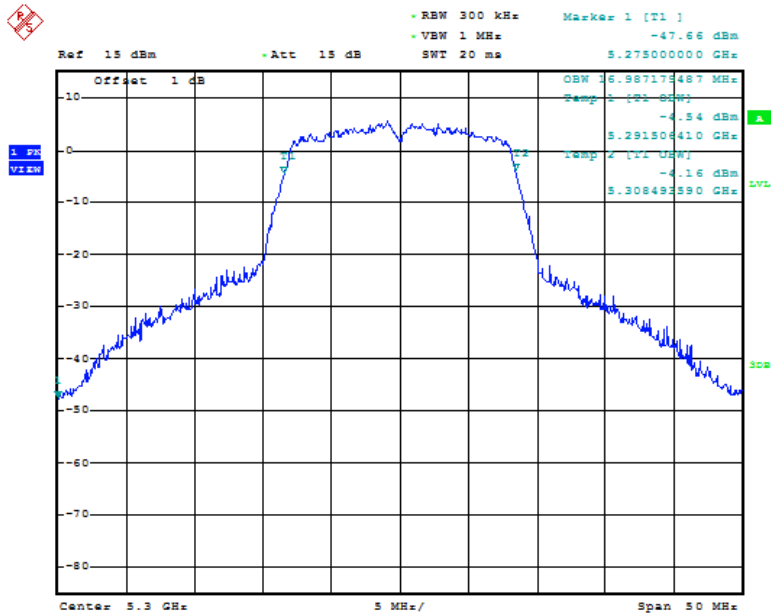
Date: 2.NOV.2018 16:36:17

Fig. 27 99% Occupied Bandwidth (802.11a, 5240MHz)



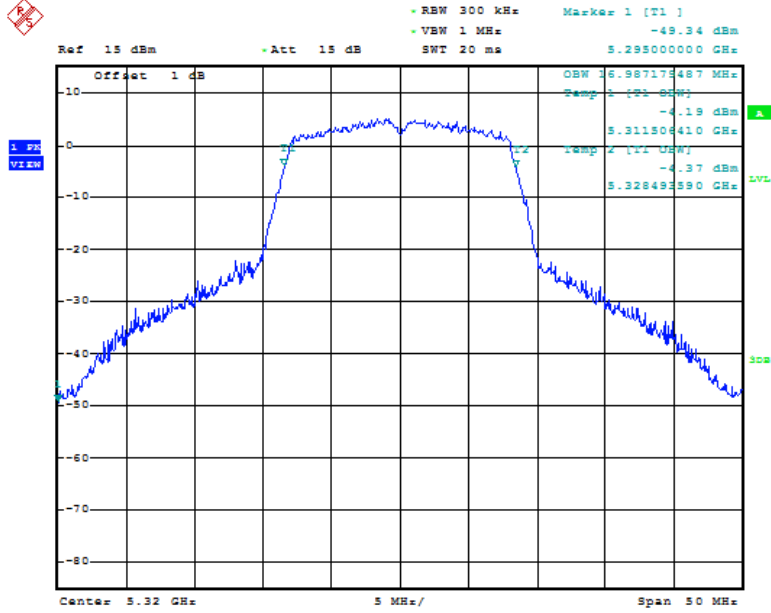
Date: 8.NOV.2018 09:00:31

Fig. 28 99% Occupied Bandwidth (802.11a, 5260MHz)



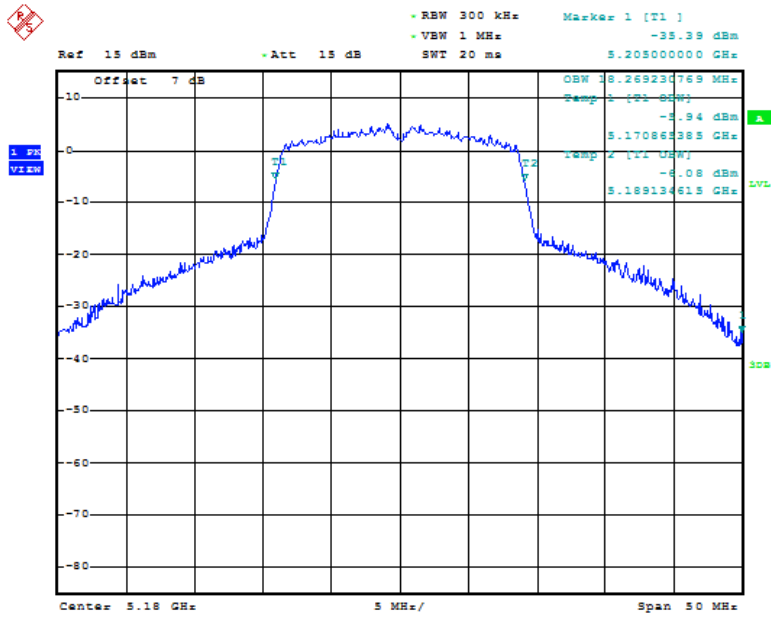
Date: 8.NOV.2018 09:01:54

Fig. 29 99% Occupied Bandwidth (802.11a, 5300MHz)



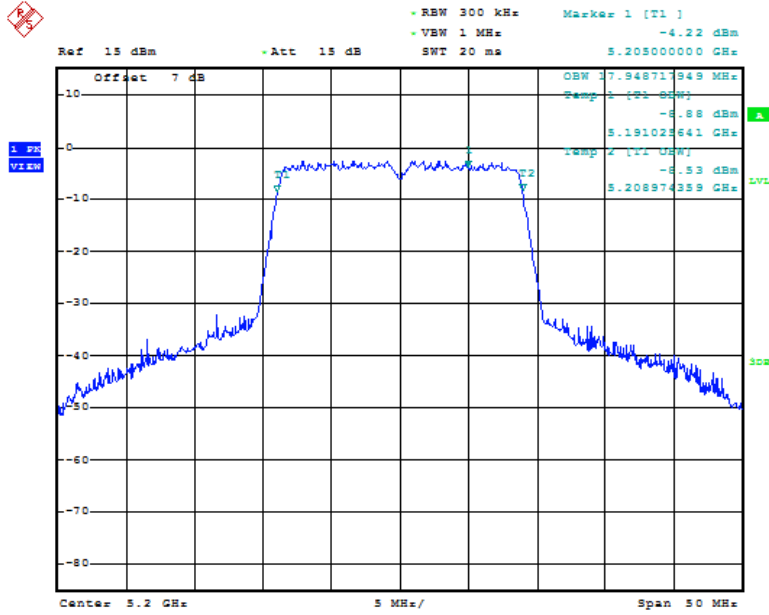
Date: 8.NOV.2018 09:02:52

Fig. 30 99% Occupied Bandwidth (802.11a, 5320MHz)



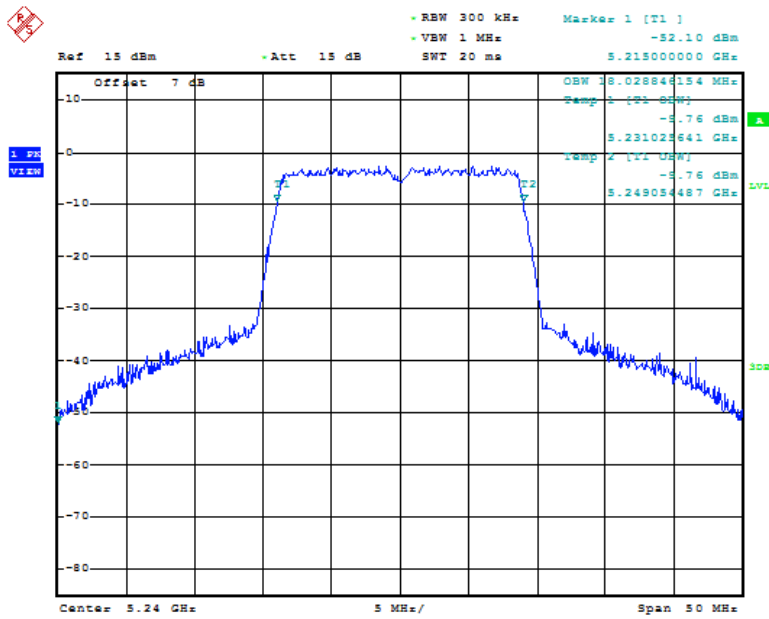
Date: 2.NOV.2018 16:49:43

Fig. 31 99% Occupied Bandwidth (802.11n-HT20, 5180MHz)



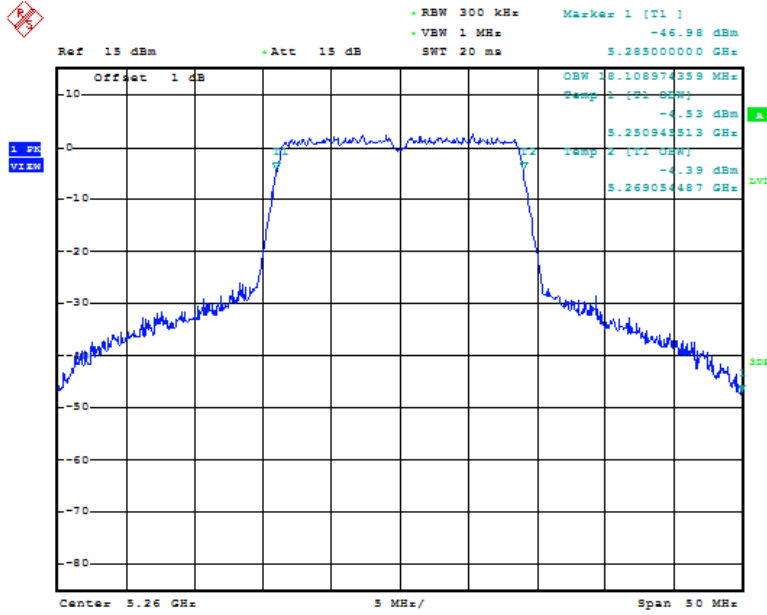
Date: 2.NOV.2018 16:51:20

Fig. 32 99% Occupied Bandwidth (802.11n-HT20, 5200MHz)



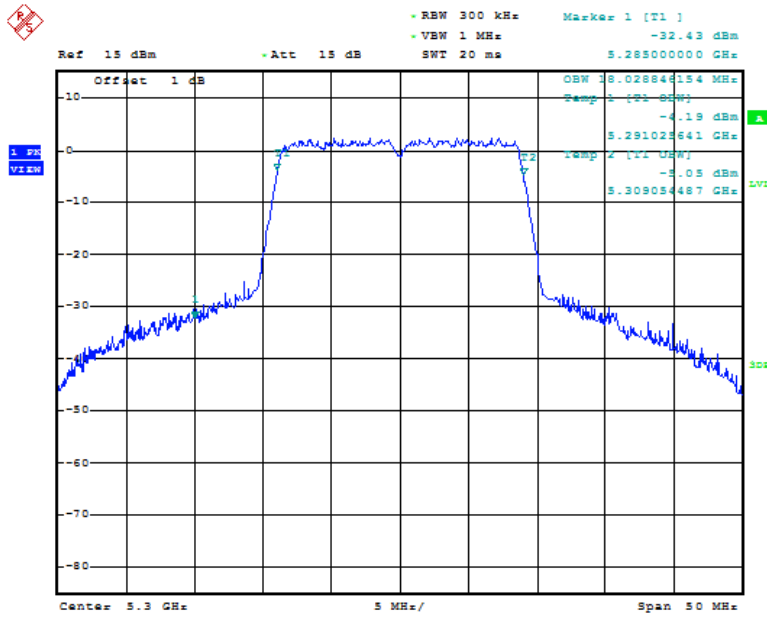
Date: 2.NOV.2018 16:52:33

Fig. 33 99% Occupied Bandwidth (802.11n-HT20, 5240MHz)



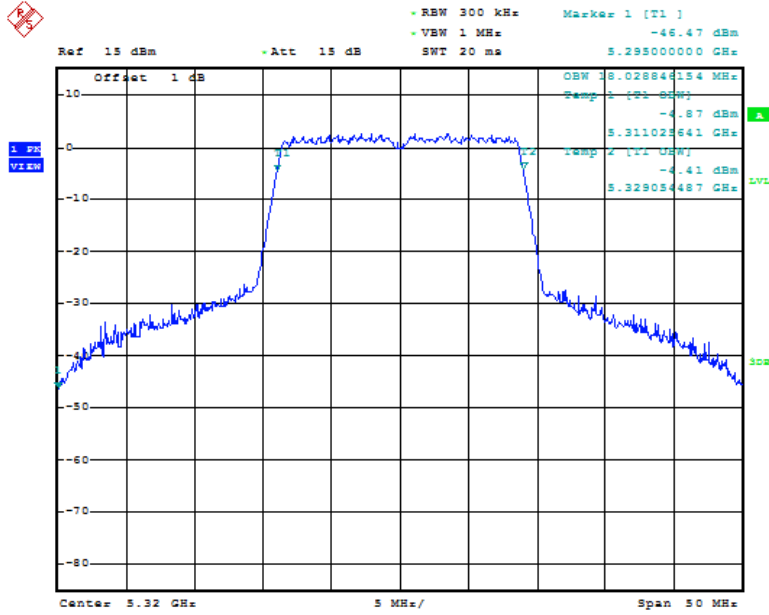
Date: 8.NOV.2018 09:04:24

Fig. 34 99% Occupied Bandwidth (802.11n-HT20, 5260MHz)



Date: 8.NOV.2018 09:05:35

Fig. 35 99% Occupied Bandwidth (802.11n-HT20, 5300MHz)



Date: 8.NOV.2018 09:07:35

Fig. 36 99% Occupied Bandwidth (802.11n-HT20, 5320MHz)

6.6. Band Edges Compliance

6.6.1 Band Edges - conducted

Measurement Limit:

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

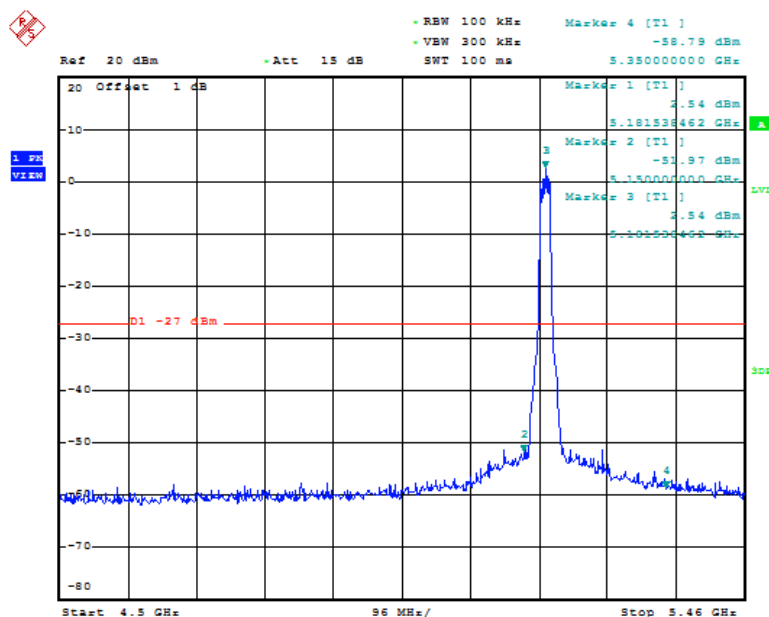
The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.37	P
	5320 MHz	Fig.38	P
802.11n HT20	5180 MHz	Fig.39	P
	5320 MHz	Fig.40	P

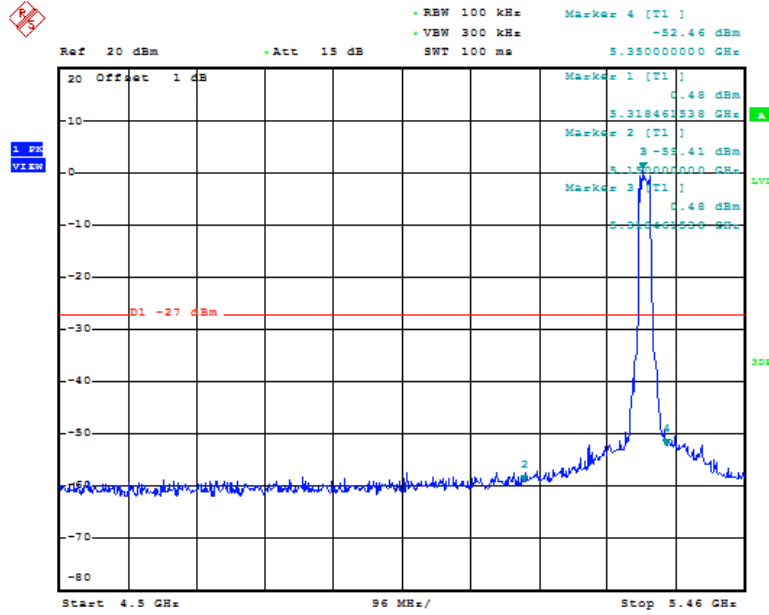
Conclusion: PASS

Test graphs as below:



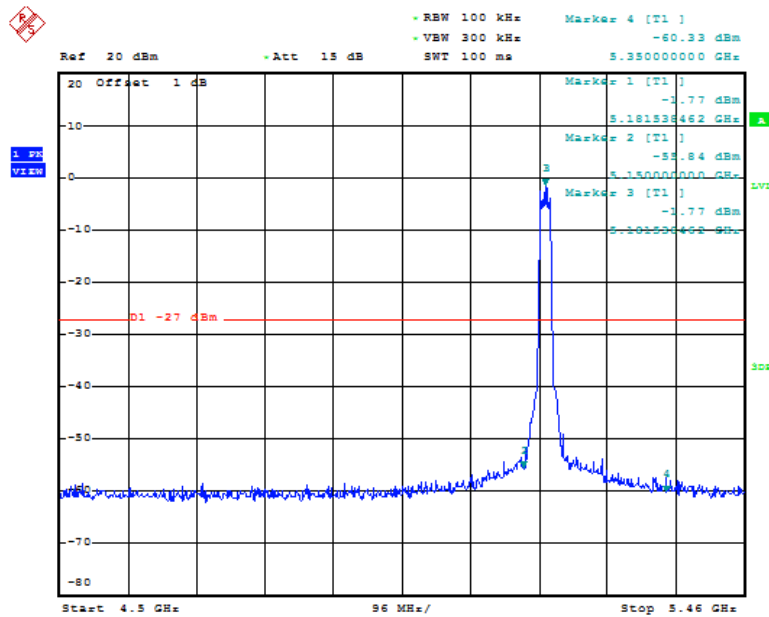
Date: 11. NOV. 2018 09:07:53

Fig. 37 Band Edges (802.11a, 5180MHz)



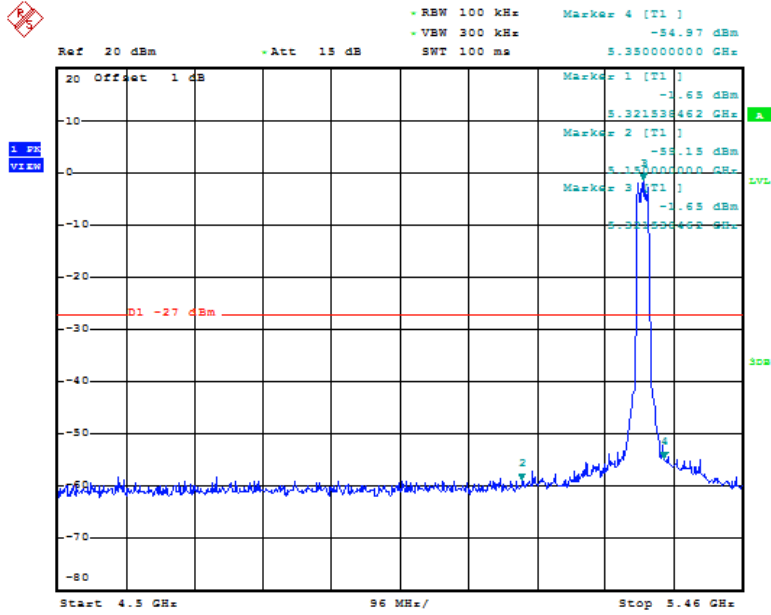
Date: 12.NOV.2018 14:48:06

Fig. 38 Band Edges (802.11a, 5320MHz)



Date: 12.NOV.2018 13:38:13

Fig. 39 Band Edges (802.11n-HT20, 5180MHz)



Date: 12.NOV.2018 14:56:56

Fig. 40 Band Edges (802.11n-HT20, 5320MHz)

6.6.2 Band Edges - Radiated
Measurement Limit:

Standard	Limit (dB μ V/m)	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

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 Uncertainty:

Measurement Uncertainty	0.75dB
-------------------------	--------

Measurement Result:
N24 (Main supply) :

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.41	P
	5320 MHz	Fig.42	P
802.11n HT20	5180 MHz	Fig.43	P
	5320 MHz	Fig.44	P

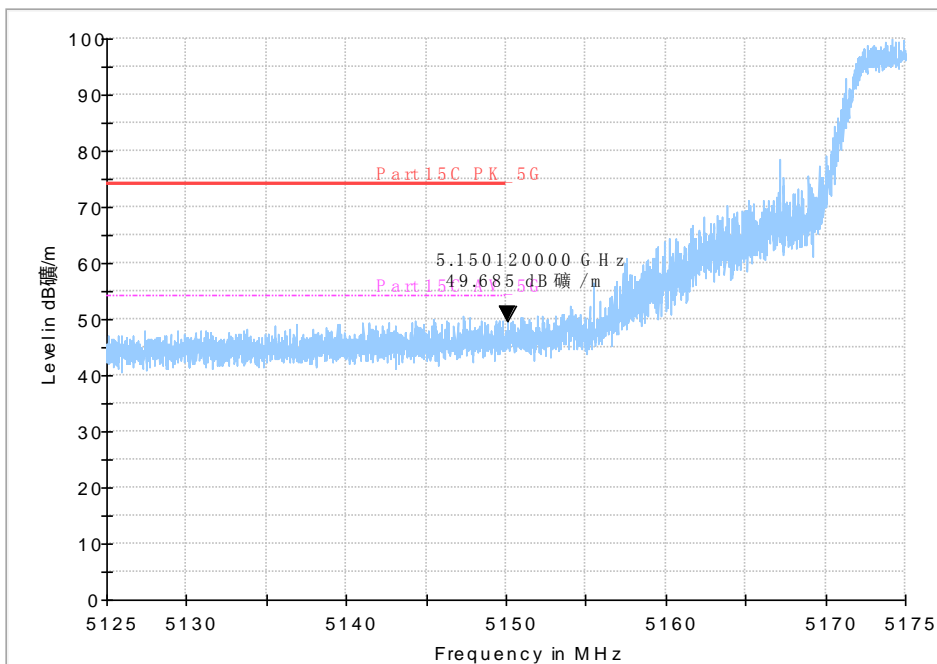
N34 (Secondary supply) :

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.45	P
	5320 MHz	Fig.46	P

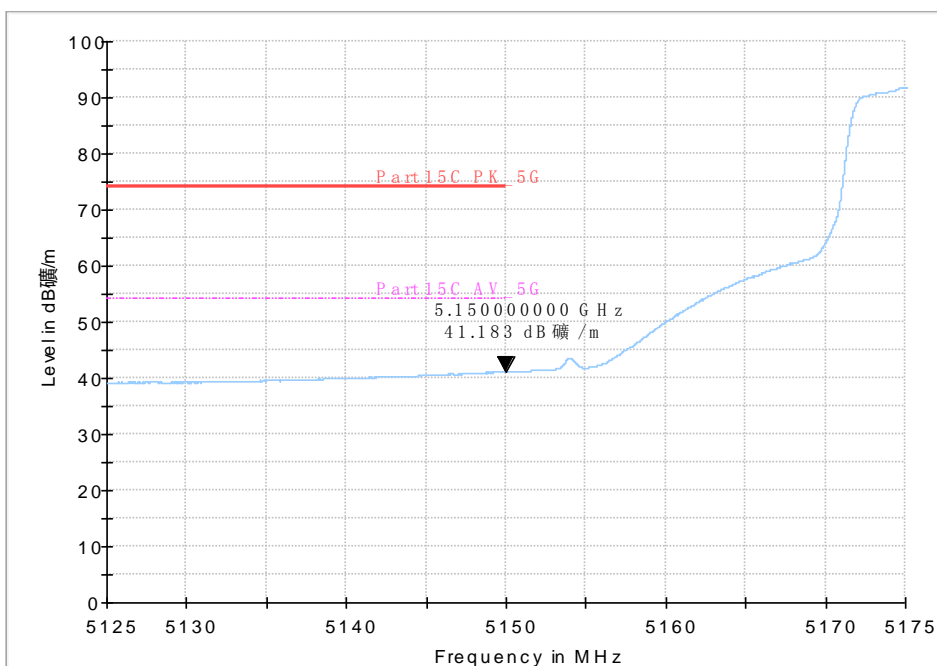
Conclusion: PASS

Test graphs as below:

N24 (Main supply) :

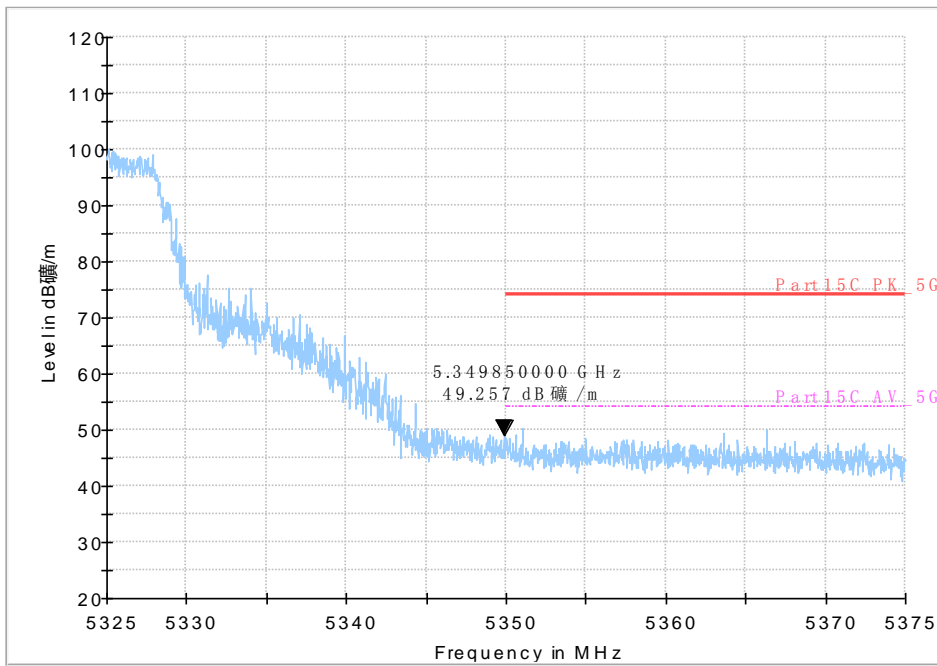


Peak

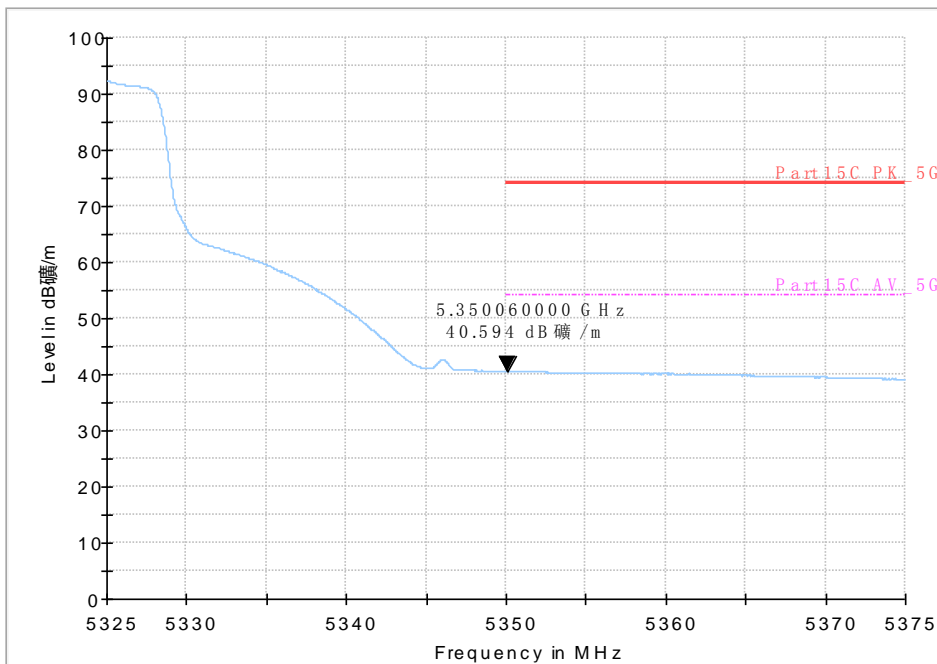


Average

Fig. 41 Band Edges (802.11a, 5180MHz)

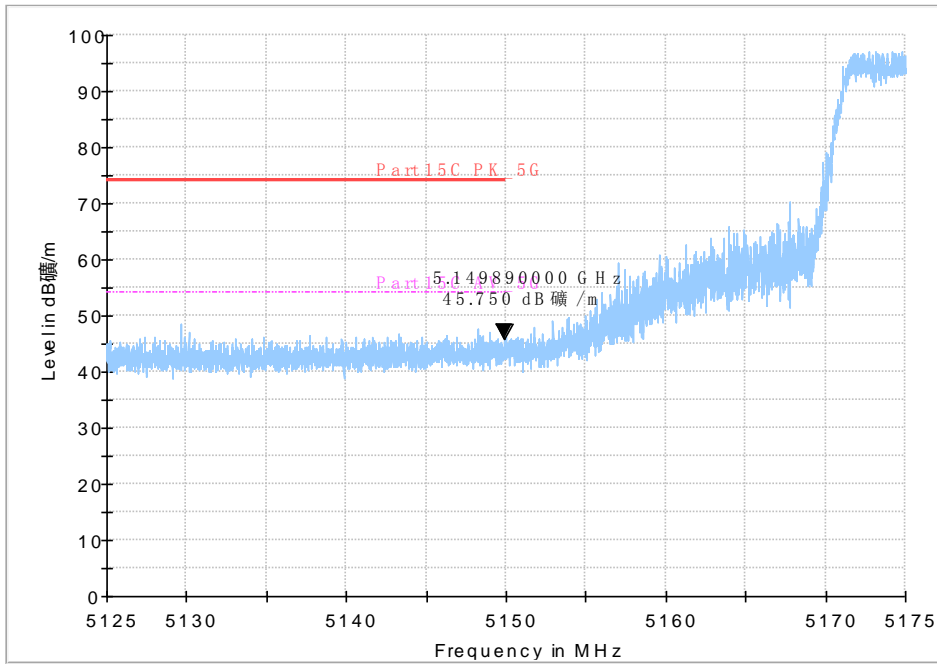


Peak

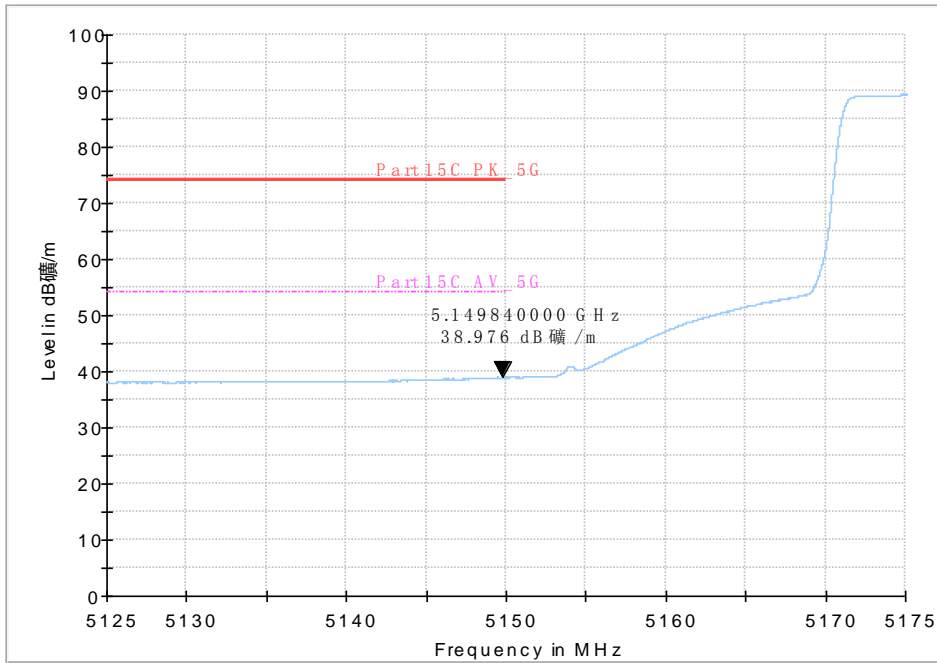


Average

Fig. 42 Band Edges (802.11a, 5320MHz)

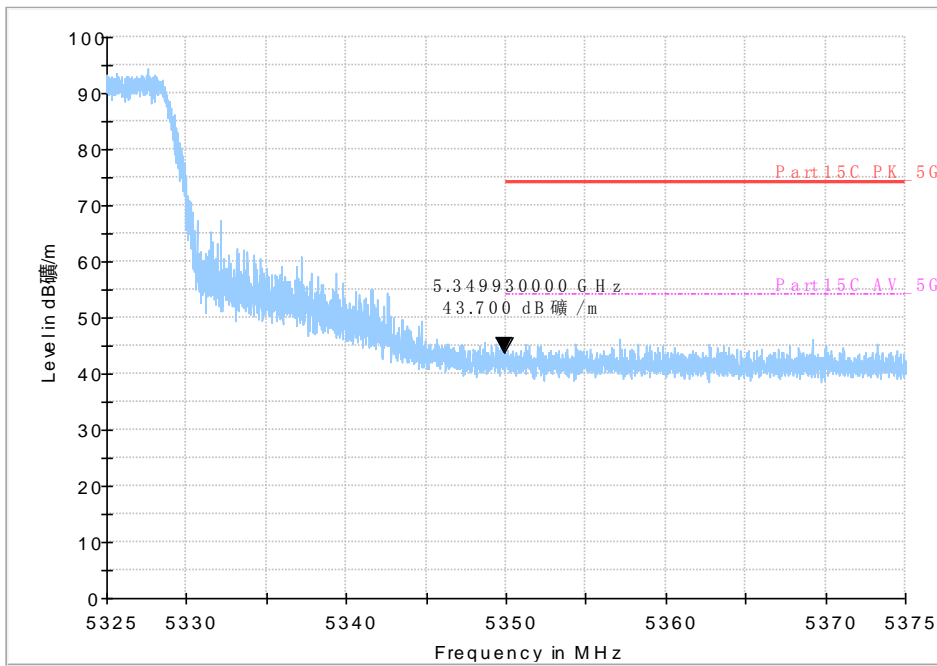


Peak

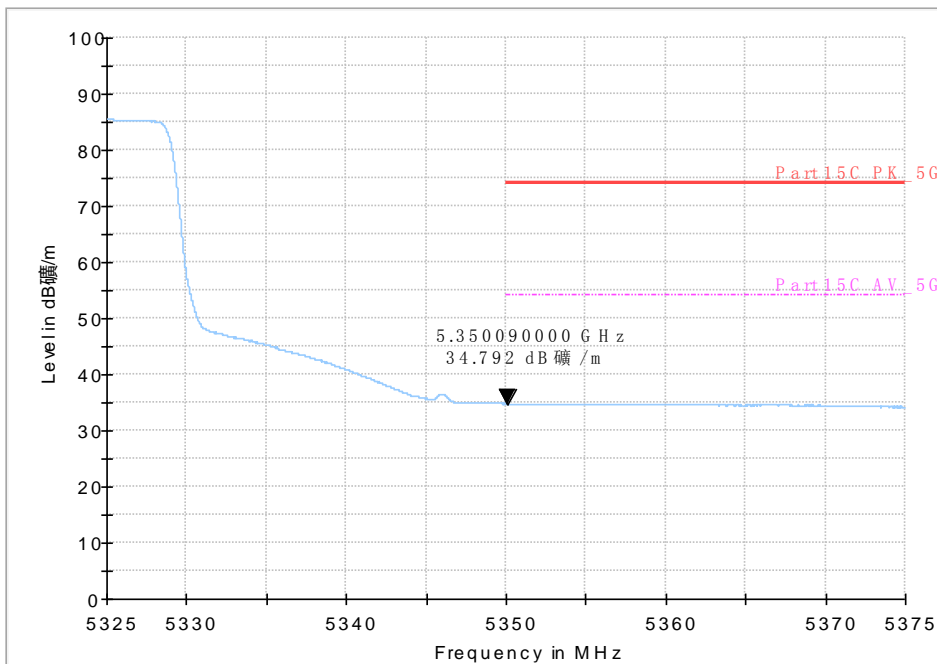


Average

Fig. 43 Band Edges (802.11n-HT20, 5180MHz)



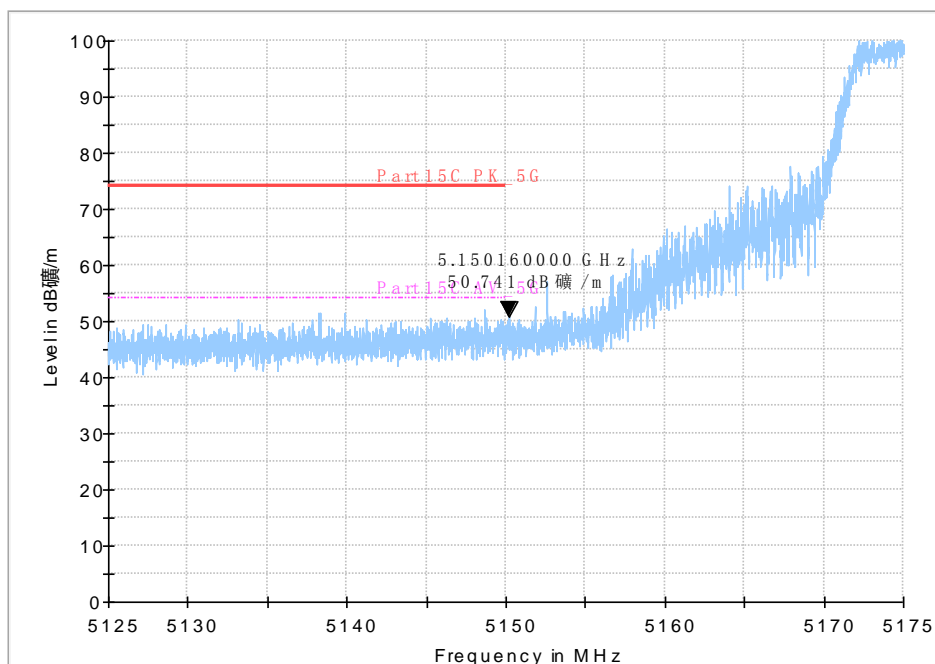
Peak



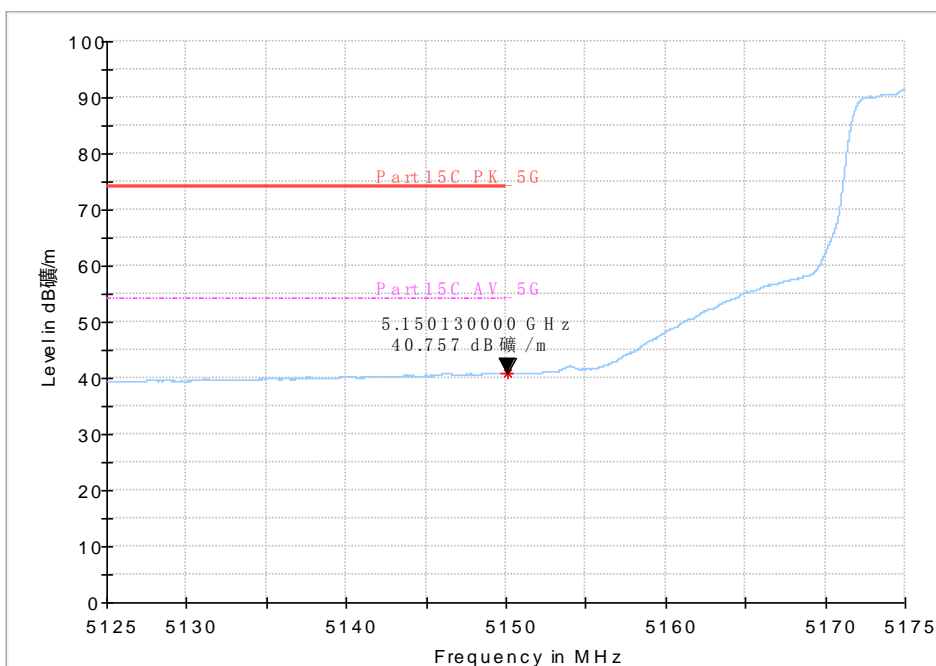
Average

Fig. 44 Band Edges (802.11n-HT20, 5320MHz)

N34 (Secondary supply) :

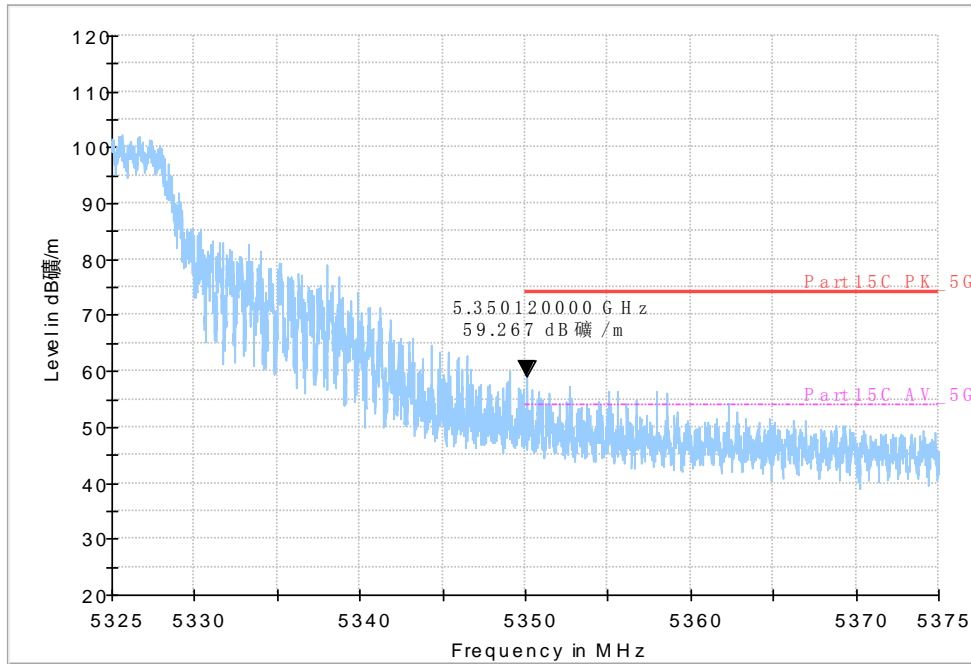


Peak

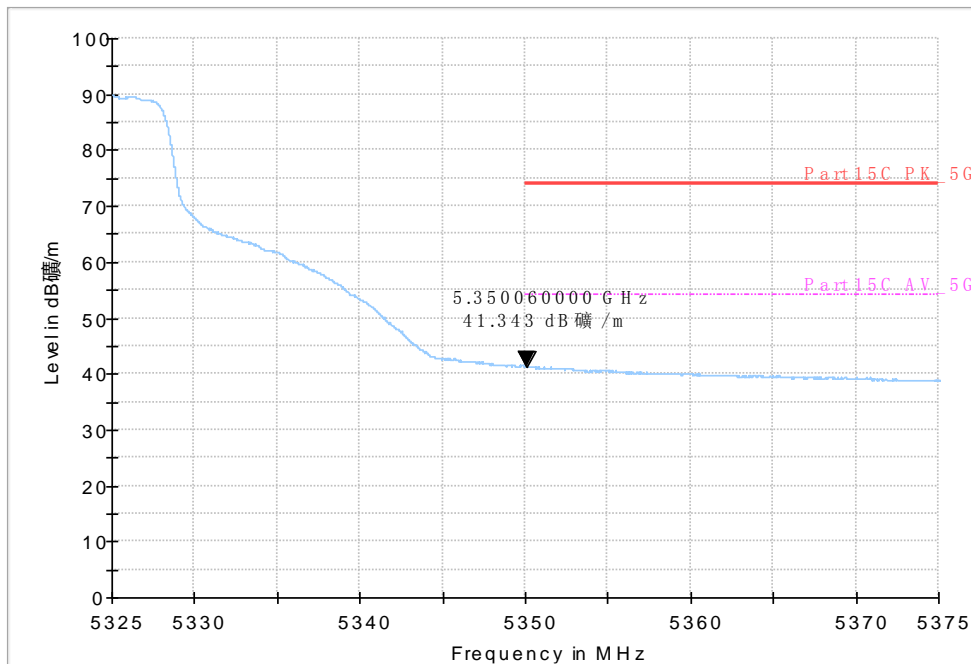


Average

Fig. 45 Band Edges (802.11a, 5180MHz)



Peak



Average

Fig. 46 Band Edges (802.11a, 5320MHz)

6.7. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-27 dBm/MHz

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)).

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

Below 1GHz(detector: Peak and Quasi-Peak)

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz(detector: Peak):

(a) PEAK: RBW=1MHz / VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep= AUTO

Limit in restricted band:

Frequency of emission (MHz)	Field strength(dBμV/m)	Measurement distance(m)
0.009-0.490	129-94	3
0.490-1.705	74-63	3
1.705-30	70	3
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

Modulation type and data rate tested (worse case):

N24 (Main supply) :

Mode	Data rate	Channel
802.11a	6Mbps	36(5180MHz)
802.11n-HT20	MCS0	36(5180MHz)

N34 (Secondary supply) :

Mode	Data rate	Channel
802.11a	6Mbps	36(5180MHz)

Measurement Results:
N24 (Main supply) :
802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	30 MHz ~ 1 GHz	Fig.47	P
		1 GHz ~ 8 GHz	Fig.48	P
		8 GHz ~ 18 GHz	Fig.49	P
		18 GHz ~ 26.5 GHz	Fig.50	P
		26.5 GHz ~ 40 GHz	Fig.51	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n-HT20	36(5180MHz)	30 MHz ~ 1 GHz	Fig.52	P
		1 GHz ~ 8 GHz	Fig.53	P
		8 GHz ~ 18 GHz	Fig.54	P
		18 GHz ~ 26.5 GHz	Fig.55	P
		26.5 GHz ~ 40 GHz	Fig.56	P

N34 (Secondary supply) :
802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	30 MHz ~ 1 GHz	Fig.57	P
		1 GHz ~ 8 GHz	Fig.58	P
		8 GHz ~ 18 GHz	Fig.59	P
		18 GHz ~ 26.5 GHz	Fig.60	P
		26.5 GHz ~ 40 GHz	Fig.61	P

Radiated Spurious Emission (9kHz-30MHz)

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	9kHz~30 MHz	Fig.62	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.

The measurement results are obtained as described below:

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

N24 (Main supply) :
802.11a

Channel 36 (30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
34.0	20.99	-22	42.99	V
35.5	15.9	-21.9	37.8	V
44.0	11.96	-20.4	32.36	V
102.7	8.77	-23.6	32.37	H
306.1	11.7	-21.7	33.4	H
603.2	18.36	-14.6	32.96	H

Channel 36 (1GHz ~ 8GHz) (Peak)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
5521.2	47.07	4.6	42.47	V
6261.4	45.84	5.4	40.44	V
6581.2	46.36	6.3	40.06	V
6943.4	46.09	7.1	38.99	V
7363.8	46.54	7.3	39.24	V
7755.8	47.94	8.4	39.54	V

Channel 36 (8GHz ~ 18GHz) (Peak)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
15627.4	55.48	21.5	33.98	H
16152.0	55.76	22.4	33.36	V
16703.2	56.42	23.5	32.92	V
17166.2	56.97	24.1	32.87	V

17581.2	56.84	24.6	32.24	H
17927.6	56.81	24.5	32.31	V

Channel 36 (8GHz ~ 18GHz)(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
15627.4	43.08	21.5	21.58	H
16152.0	43.91	22.4	21.51	V
16703.2	44	23.5	20.5	V
17166.2	44.5	24.1	20.4	V
17581.2	44.96	24.6	20.36	H
17927.6	44.78	24.5	20.28	V

Channel 36 (18GHz ~ 26.5GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
18977.5	39.52	-5.4	44.92	H
20489.6	40.31	-4.3	44.61	H
21605.7	43.9	-3.4	47.3	V
23071.1	43.94	-3.1	47.04	V
24698.0	44.13	-2.3	46.43	V
26122.6	48.78	-2	50.78	H

Channel 36 (26.5GHz ~ 40GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
27442.3	44.64	-0.9	45.54	H
29459.2	43.12	-0.8	43.92	H
31739.4	44.59	0.5	44.09	V
32944.9	44.94	1	43.94	H
34564.9	46.17	0.7	45.47	V
36920.6	47.03	1.8	45.23	H

802.11n-HT20

Channel 36 (30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
34.2	24.71	-22	46.71	V
35.0	23.02	-22	45.02	V
41.7	29.73	-20.7	50.43	V
83.3	27.94	-26.6	54.54	H
92.3	31.28	-24.8	56.08	V
101.2	28.72	-23.6	52.32	H

Channel 36 (1GHz ~ 8GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
5504.4	47.25	4.6	42.65	V
5835.0	44.77	4.6	40.17	V
6444.0	45.35	5.9	39.45	V
6787.2	47.13	6.7	40.43	V
7067.8	46.91	7.3	39.61	V
7539.0	47.34	7.5	39.84	V

Channel 36 (8GHz ~ 18GHz) (Peak)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
15326.2	54.54	20.9	33.64	V
16206.0	55.86	22.3	33.56	V
16281.2	55.32	22.6	32.72	V
16747.6	55.67	23.5	32.17	V
17221.0	56.97	24.2	32.77	H
17562.6	57.6	24.6	33	H

Channel 36 (8GHz ~ 18GHz)(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
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15326.2	42.03	20.9	21.13	V
16206.0	43.45	22.3	21.15	V
16281.2	43.35	22.6	20.75	V
16747.6	43.54	23.5	20.04	V
17221.0	44.44	24.2	20.24	H
17562.6	44.95	24.6	20.35	H

Channel 36 (18GHz ~ 26.5GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
18910.4	40.03	-5.4	45.43	V
19720.4	40.62	-5.1	45.72	V
20887.4	42.28	-4	46.28	V
22562.0	44.49	-2.9	47.39	H
24177.8	44.76	-2.9	47.66	V
26007.0	47.63	-2	49.63	V

Channel 36 (26.5GHz ~ 40GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
27570.6	43.94	-0.8	44.74	H
30801.1	45.5	0.2	45.3	V
33480.8	45.15	1.2	43.95	V
35519.4	47.37	1.5	45.87	V
36932.8	49.44	1.7	47.74	H
39127.9	50.56	4.2	46.36	H

N34 (Secondary supply) :
802.11a

Channel 36 (30MHz ~1GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
33.7	19.1	-22	41.1	V
33.9	20.94	-22	42.94	V

34.5	18.2	-22	40.2	V
34.8	17.43	-22	39.43	V
53.6	11.65	-20.8	32.45	V
416.3	14.36	-18.8	33.16	V

Channel 36 (1GHz ~ 8GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
5678.0	45.73	4.7	41.03	H
5924.8	44.31	4.7	39.61	H
6347.0	46.18	5.6	40.58	H
6663.6	46.94	6.5	40.44	H
6992.0	47.03	7.2	39.83	H
7365.2	47.3	7.3	40	H

Channel 36 (8GHz ~ 18GHz) (Peak)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
16069.2	56.23	22.5	33.73	H
16327.6	55.44	22.8	32.64	H
16746.6	55.99	23.5	32.49	H
16950.2	56.35	23.6	32.75	H
17217.8	57.06	24.2	32.86	H
17649.0	56.68	24.4	32.28	H

Channel 36 (8GHz ~ 18GHz)(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
16069.2	44.44	22.5	21.94	H
16327.6	43.38	22.8	20.58	H
16746.6	43.85	23.5	20.35	H
16950.2	44.52	23.6	20.92	H
17217.8	44.52	24.2	20.32	H
17649.0	44.56	24.4	20.16	H

Channel 36 (18GHz ~ 26.5GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
18511.7	38.37	-5.8	44.17	H
20186.2	41.2	-4.8	46	V
21724.7	43.27	-3.4	46.67	V
23055.0	42.53	-3	45.53	V
24445.6	43.27	-2.7	45.97	V
26073.3	46.92	-2	48.92	V

Channel 36 (26.5GHz ~ 40GHz)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
27423.4	44.23	-0.9	45.13	V
30782.2	47.07	0.2	46.87	H
33576.7	44.68	1.3	43.38	H
35451.8	47.35	1.5	45.85	V
37960.2	45.5	1.4	44.1	V
39892.0	52.3	5.6	46.7	H

Test graphs as below:

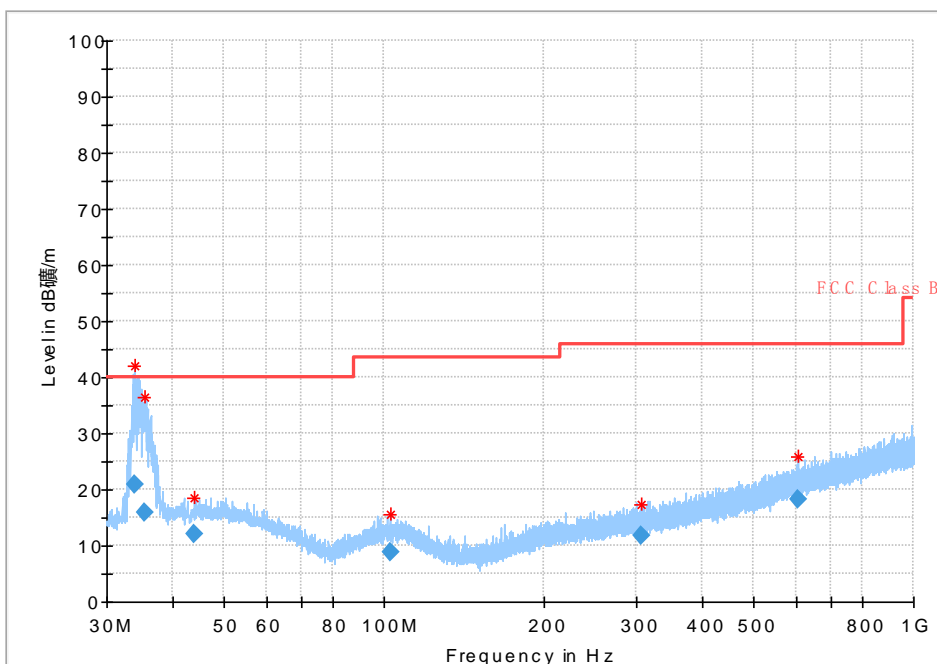


Fig. 47 Radiated Spurious Emission (802.11a, ch36, 30 MHz-1 GHz)

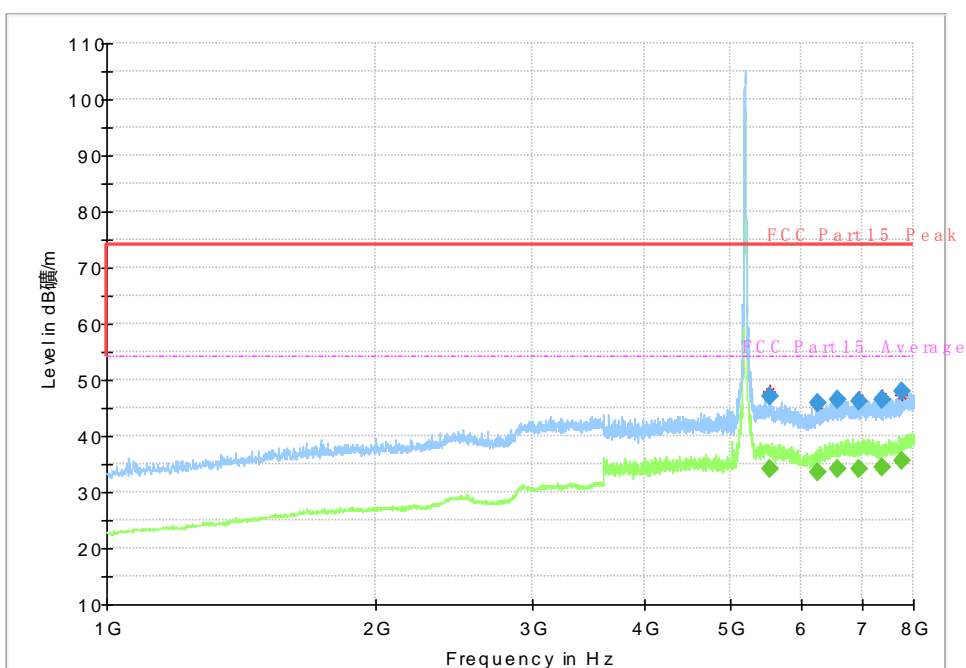


Fig. 48 Radiated Spurious Emission (802.11a, ch36, 1 GHz-8 GHz)

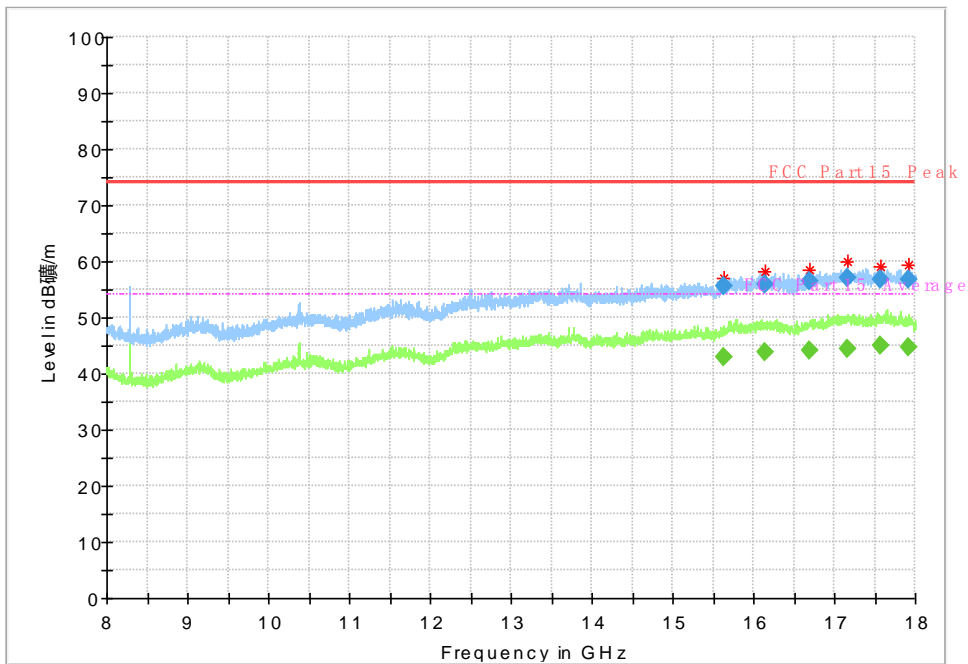


Fig. 49 Radiated Spurious Emission (802.11a, ch36, 8 GHz-18 GHz)

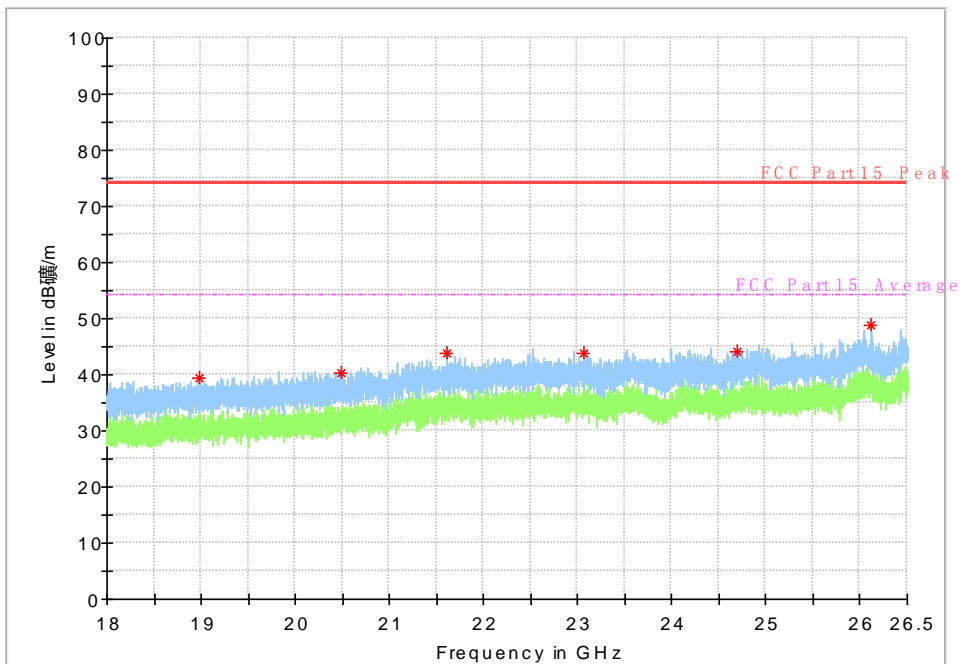


Fig. 50 Radiated Spurious Emission (802.11a, ch36, 18 GHz-26.5 GHz)

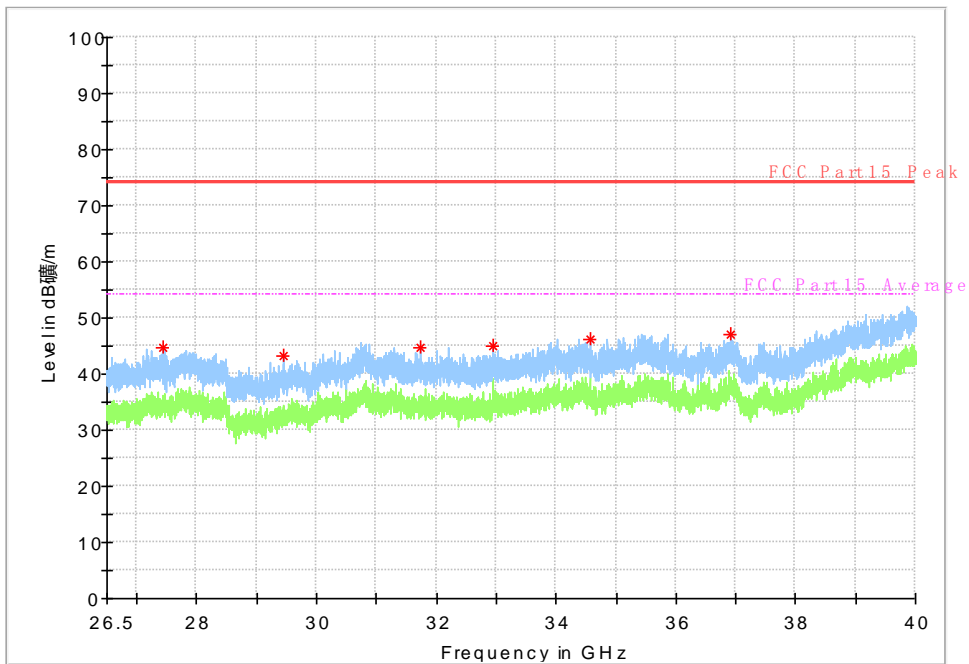


Fig. 51 Radiated Spurious Emission (802.11a, ch36, 26.5 GHz-40 GHz)

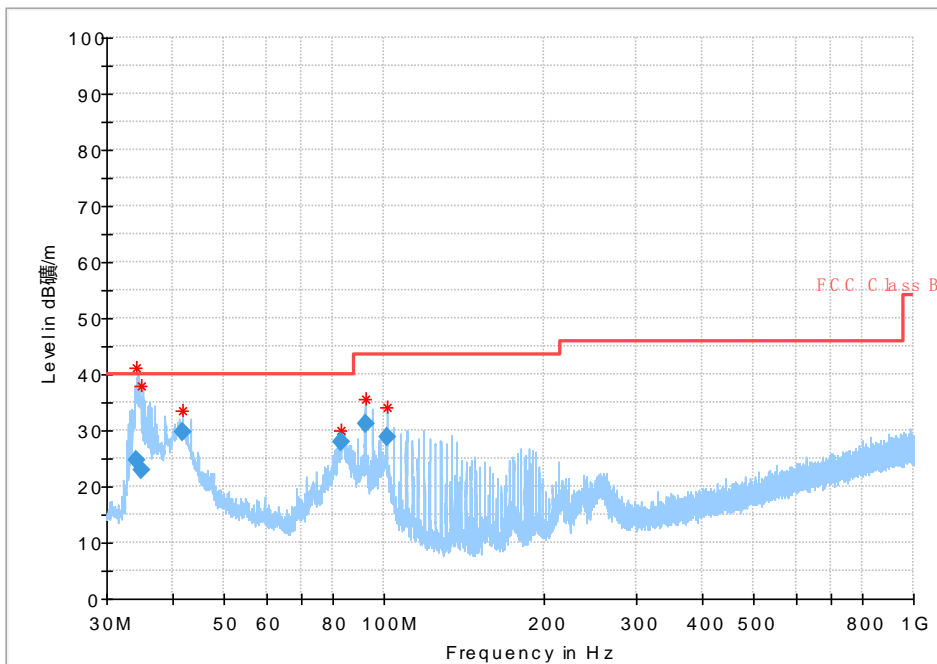


Fig. 52 Radiated Spurious Emission (802.11n-HT20, ch36, 30 MHz-1 GHz)

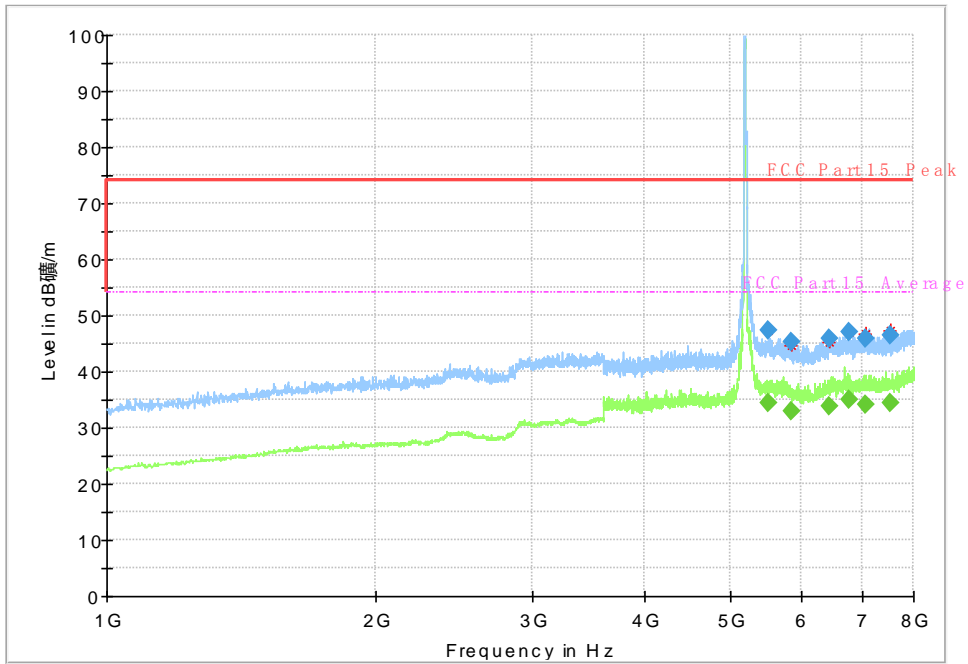


Fig. 53 Radiated Spurious Emission (802.11n-HT20, ch36, 1 GHz-8 GHz)

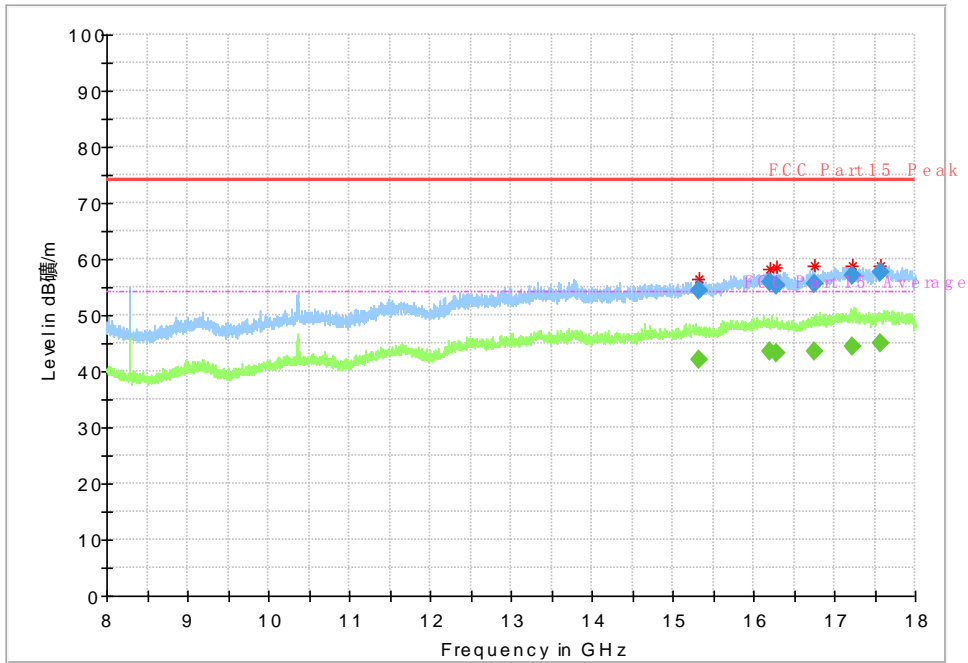


Fig. 54 Radiated Spurious Emission (802.11n-HT20, ch36, 8 GHz-18 GHz)

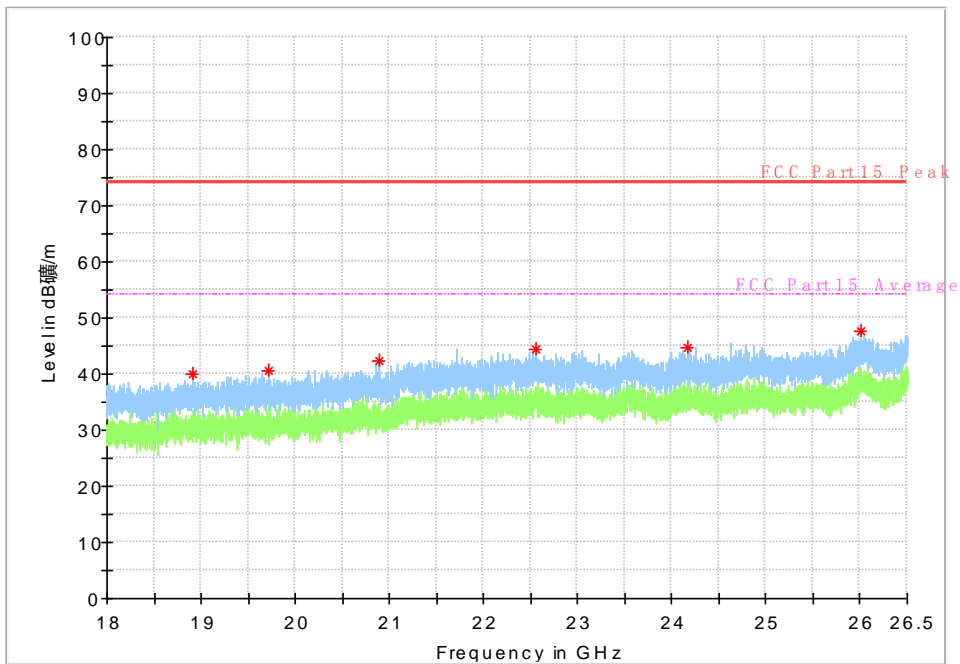


Fig. 55 Radiated Spurious Emission (802.11n-HT20, ch36, 18 GHz-26.5 GHz)

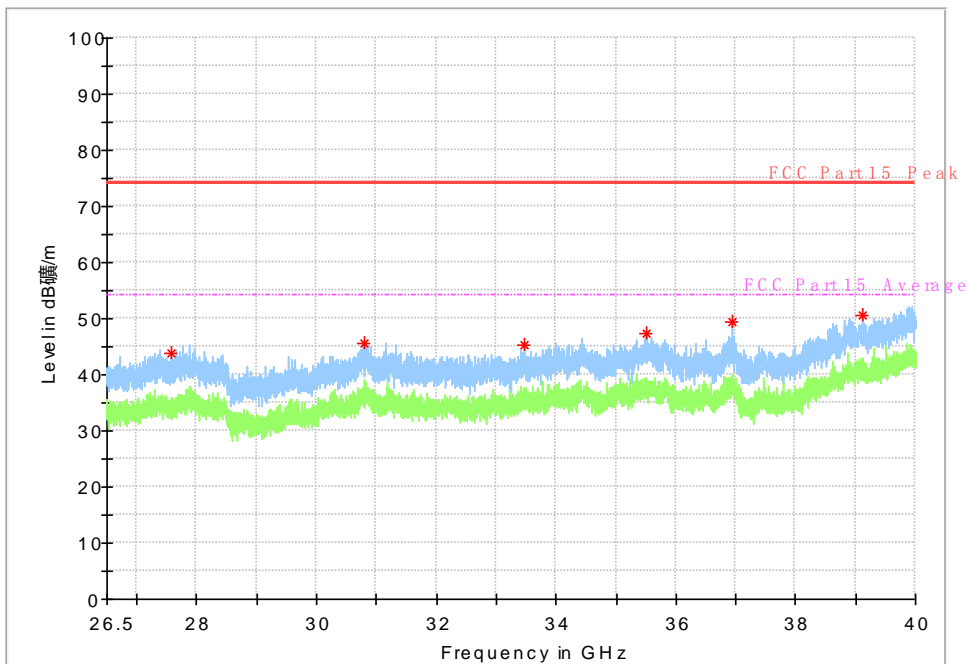


Fig. 56 Radiated Spurious Emission (802.11n-HT20, ch36, 26.5 GHz-40 GHz)

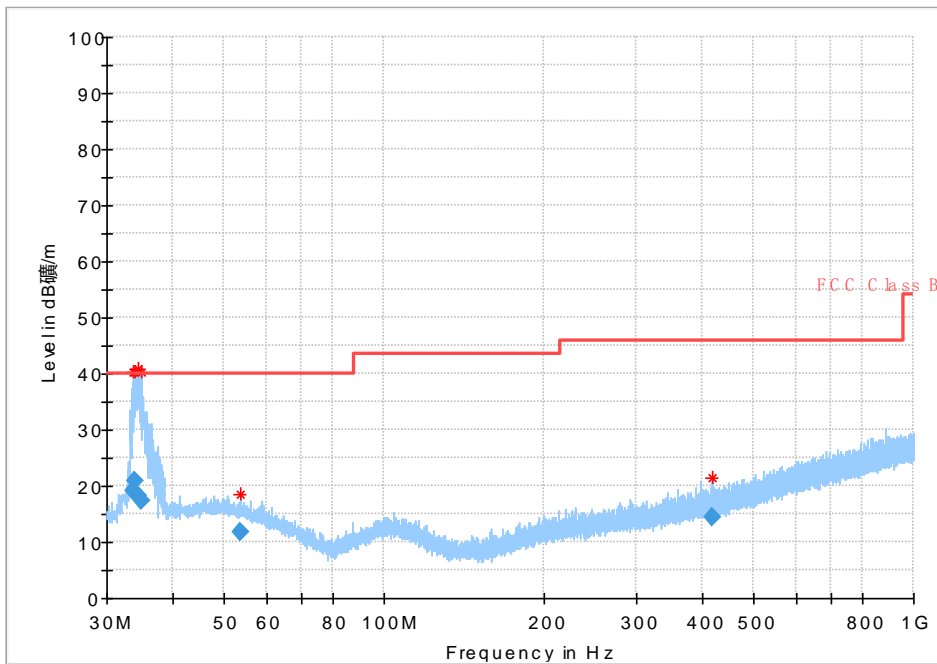


Fig. 57 Radiated Spurious Emission (802.11a, ch36, 30 MHz-1 GHz)

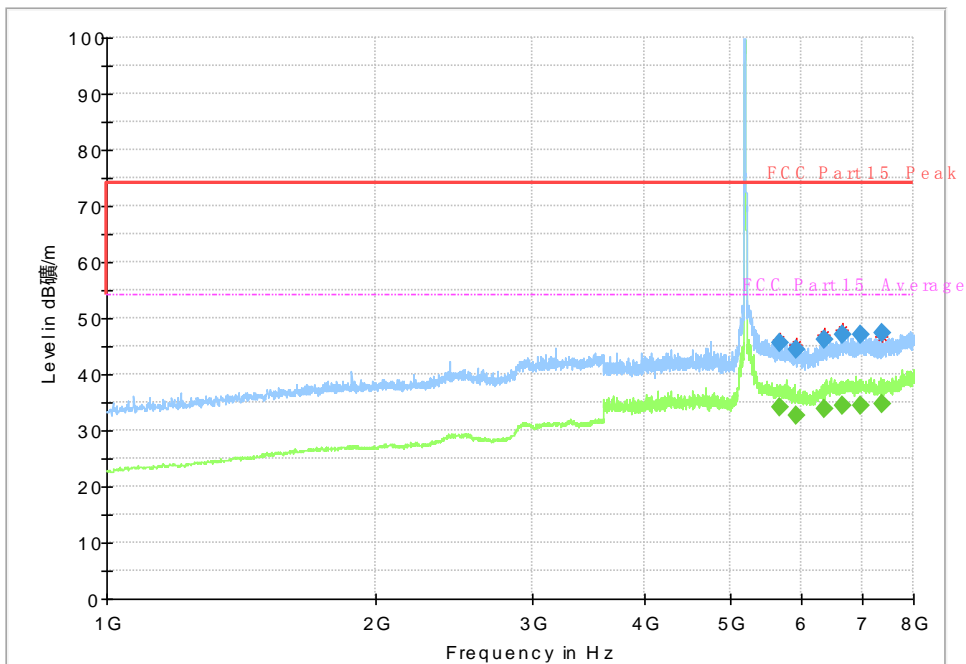


Fig. 58 Radiated Spurious Emission (802.11a, ch36, 1 GHz-8 GHz)

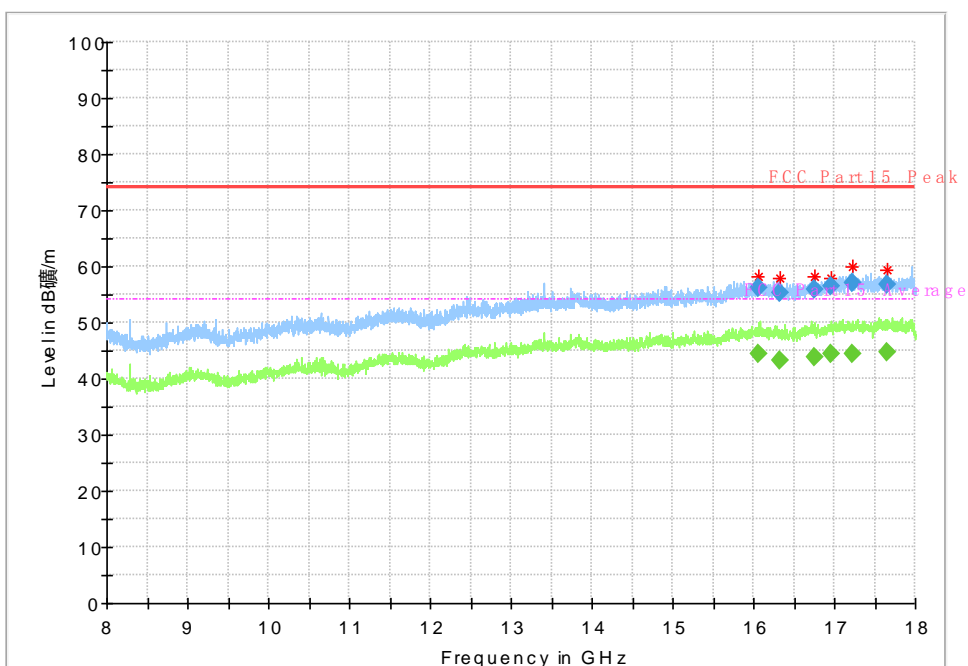


Fig. 59 Radiated Spurious Emission (802.11a, ch36, 8 GHz-18 GHz)

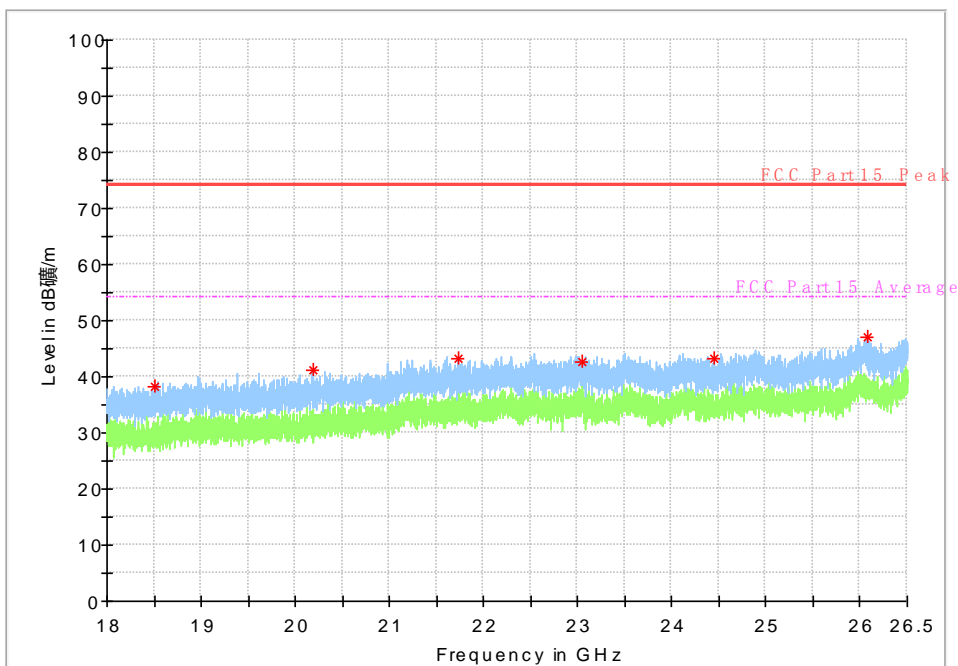


Fig. 60 Radiated Spurious Emission (802.11a, ch36, 18 GHz-26.5 GHz)

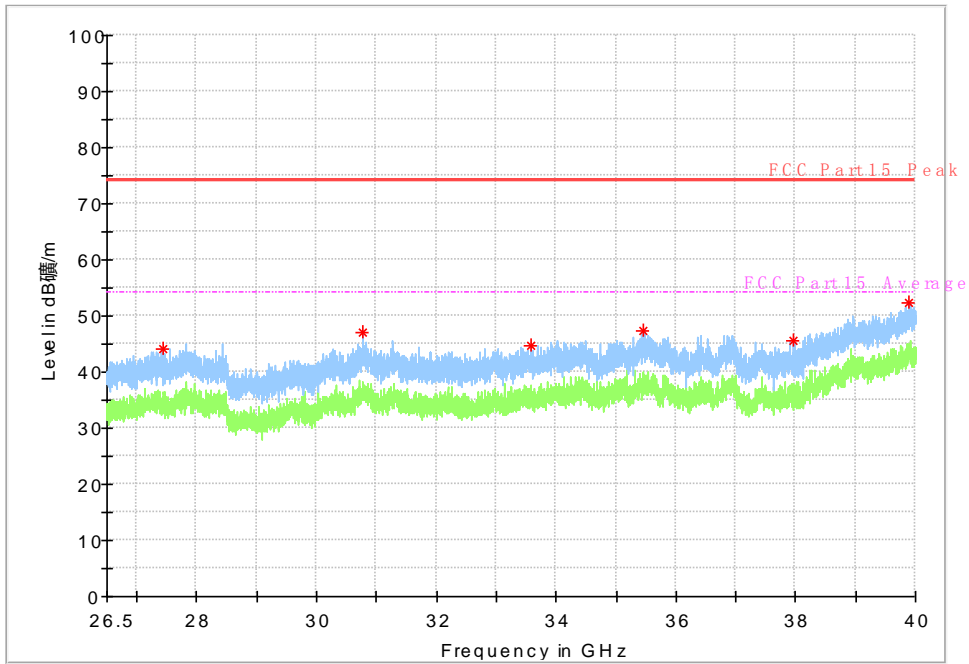


Fig. 61 Radiated Spurious Emission (802.11a, ch36, 26.5 GHz-40 GHz)

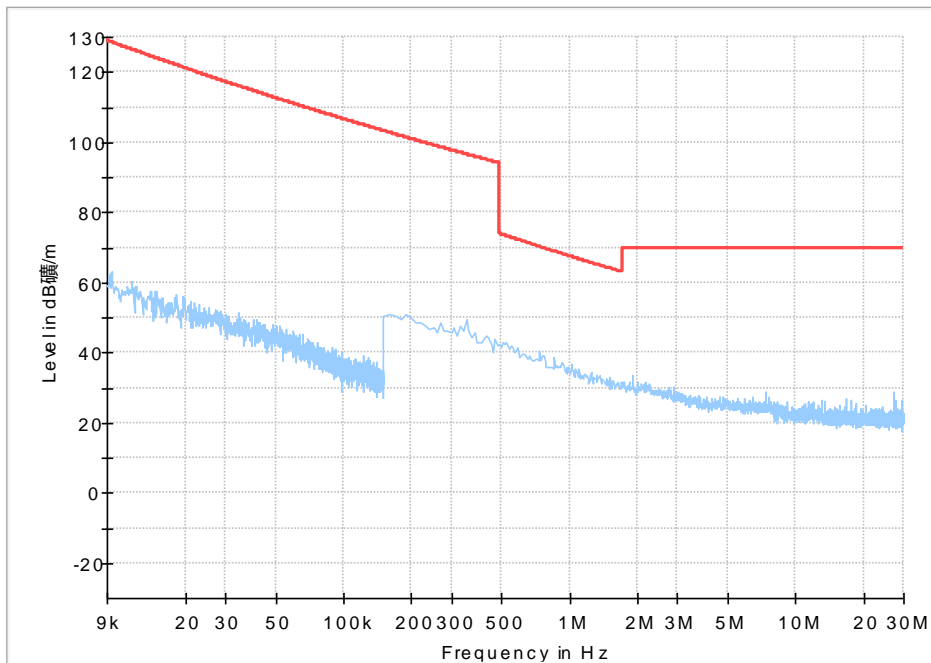


Fig. 62 Radiated Spurious Emission (9kHz-30MHz)

6.8. Conducted Emission (150kHz- 30MHz)
Test Condition:

Voltage (V)	Frequency (Hz)
110	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.63		P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.63		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:

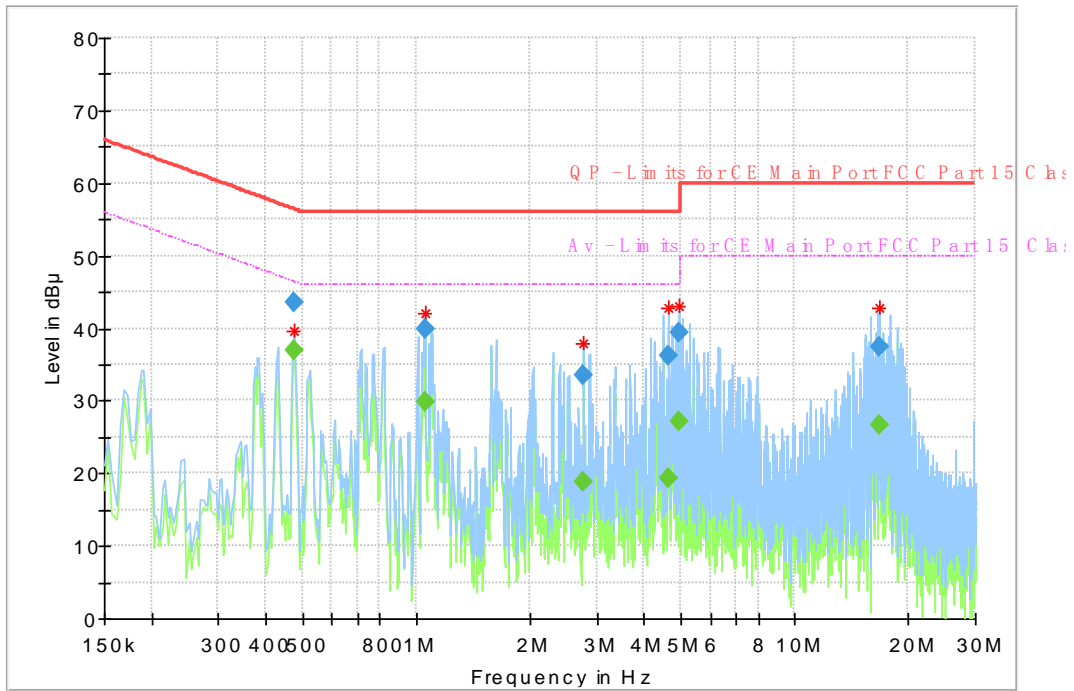


Fig. 63 Conducted Emission(802.11a, TX)

Measurement Result:

Frequency (MHz)	Quasi Peak (dBμV)	Average (dBμV)	Limit (dBμV)	Marg in (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.478350	---	37.00	46.37	9.37	1000.0	9.000	L1	ON	9.7
0.478350	43.48	---	56.37	12.8	1000.0	9.000	L1	ON	9.7
1.052963	---	29.86	46.00	16.1	1000.0	9.000	L1	ON	9.7
1.052963	39.84	---	56.00	16.1	1000.0	9.000	L1	ON	9.7
2.765606	---	18.80	46.00	27.2	1000.0	9.000	L1	ON	9.7
2.765606	33.56	---	56.00	22.4	1000.0	9.000	L1	ON	9.7
4.623769	---	19.35	46.00	26.6	1000.0	9.000	L1	ON	9.8
4.623769	36.17	---	56.00	19.8	1000.0	9.000	L1	ON	9.8
4.970775	---	27.05	46.00	18.9	1000.0	9.000	L1	ON	9.8
4.970775	39.45	---	56.00	16.5	1000.0	9.000	L1	ON	9.8
16.746600	---	26.60	50.00	23.4	1000.0	9.000	L1	ON	9.9
16.746600	37.48	---	60.00	22.5	1000.0	9.000	L1	ON	9.9

6.9. 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.

6.10. Power control

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

6.11. Automatically discontinue transmission

6.11.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

6.11.2 Test Result of Automatically Discontinue Transmission

Once the process halted for operational failure, corresponding data stream will be closed. The device periodically scans surrounding pair devices to update pair devices list when RF module is turned on and will not transmit useless packet.

7. Test Equipment and Ancillaries Used For Tests

The test equipment and ancillaries used are as follows.

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Vector Signal Analyzer	FSQ40	200063	Rohde&Schwarz	2017-12-17	1 Year
2	DC Power Supply	ZUP60-14	LOC-220Z006	TDL-Lambda	2018-05-11	1 Year
3	Universal Radio Communication Tester	CMW50	104178	R&S	2018-05-11	1 Year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2018-05-11	1 Year
2	EMI Test Receiver	ESU40	100307	R&S	2018-05-11	1 Year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2017-02-25	3 Year
4	Double-ridged Waveguide Antenna	ETS-3117	00135890	ETS	2017-01-11	3 Year
5	2-Line V-Network	ENV216	101380	R&S	2018-05-11	1 Year

6	Loop Antenna	AL-130R	121083	COM-POWER	2016-11-21	3 Year
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Anechoic chamber

Fully anechoic chamber by Frankonia German.

8. Test Environment

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

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

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

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

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

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

9. Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in ECIT documents. The detailed measurement uncertainty to see the column, k=2

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Maximum Peak Output Power	3600MHz-8000MHz	95%	$\pm 0.92\text{db}$
EBW and VBW	3600MHz-8000MHz	95%	$\pm 0.031\text{MHz}$
Transmitter Spurious Emission-Conducted	9KHz-10000MHz	95%	$\pm 4.56\text{db}$
Transmitter Spurious Emission-Conducted	10000 MHz -40000MHz	95%	$\pm 5.34\text{db}$
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	$\pm 5.66\text{db}$
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	$\pm 4.98\text{db}$
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	$\pm 5.06\text{db}$
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	$\pm 5.20\text{db}$
AC Power line Conducted Emission	0.15MHz-30MHz	95%	$\pm 5.66\text{ db}$
Peak Power Spectral Density	3600MHz-8000MHz	95%	$\pm 0.92\text{db}$

ANNEX A. Accreditation Certificate



Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

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



Presented this 15th day of March 2017.



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

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



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