



# FCC PART 15 TEST REPORT

No.I19Z60845-IOT02

For

**Samsung Electronics Co Ltd**

**Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN**

**SM-T295C**

With

**FCC ID: ZCASMT295C**

**Hardware Version: REV0.4**

**Software Version: T295CZCU0ASEA**

**Issued Date: 2019-06-14**



**Note:**

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

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

**Test Laboratory:**

CTTL, Telecommunication Technology Labs, CAICT  
No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.  
Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504  
Email: [ctl\\_terminals@caict.ac.cn](mailto:ctl_terminals@caict.ac.cn), website: [www.caict.ac.cn](http://www.caict.ac.cn)



## REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z60845-IOT02	Rev.0	1st edition	2019-06-14

## **CONTENTS**

<b>CONTENTS .....</b>	<b>3</b>
<b>1. TEST LATORATORY.....</b>	<b>5</b>
<b>1.1. INTRODUCTION &amp; ACCREDITATION.....</b>	<b>5</b>
<b>1.2. TESTINGLOCATION .....</b>	<b>6</b>
<b>1.3. TESTINGENVIRONMENT .....</b>	<b>6</b>
<b>1.4. PROJECT DATA .....</b>	<b>6</b>
<b>1.5. SIGNATURE .....</b>	<b>7</b>
<b>2. CLIENT INFORMATION.....</b>	<b>7</b>
<b>2.1. APPLICANT INFORMATION.....</b>	<b>7</b>
<b>2.2. MANUFACTURER INFORMATION.....</b>	<b>8</b>
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARYEQUIPMENT(AE) .....</b>	<b>8</b>
<b>3.1. ABOUT EUT .....</b>	<b>8</b>
<b>3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST .....</b>	<b>9</b>
<b>3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST .....</b>	<b>9</b>
<b>3.4. GENERAL DESCRIPTION.....</b>	<b>10</b>
<b>3.5. INTERPRETATION OF THE TEST ENVIRONMENT .....</b>	<b>10</b>
<b>4. REFERENCE DOCUMENTS .....</b>	<b>10</b>
<b>4.1. DOCUMENTS SUPPLIED BY APPLICANT .....</b>	<b>10</b>
<b>4.2. REFERENCE DOCUMENTS FOR TESTING .....</b>	<b>10</b>
<b>5. LABORATORY ENVIRONMENT.....</b>	<b>11</b>
<b>6. SUMMARY OF TEST RESULTS .....</b>	<b>11</b>
<b>6.1. SUMMARY OF TEST RESULTS .....</b>	<b>11</b>
<b>6.2. STATEMENTS .....</b>	<b>12</b>
<b>6.3. EXPLANATION OF RE-USE OF TEST DATA .....</b>	<b>12</b>
<b>7. TEST EQUIPMENTS UTILIZED .....</b>	<b>12</b>
<b>8. MEASUREMENT UNCERTAINTY .....</b>	<b>14</b>
<b>8.1. TRANSMITTER OUTPUT POWER .....</b>	<b>14</b>
<b>8.2. PEAK POWER SPECTRAL DENSITY.....</b>	<b>14</b>
<b>8.3. OCCUPIED CHANNEL BANDWIDTH.....</b>	<b>14</b>
<b>8.4. BAND EDGES COMPLIANCE .....</b>	<b>14</b>
<b>8.5. SPURIOUS EMISSIONS .....</b>	<b>14</b>
<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>15</b>

A.1. MEASUREMENT METHOD .....	15
A.2. MAXIMUM OUTPUT POWER .....	16
A.3. PEAK POWER SPECTRAL DENSITY (CONDUCTED).....	18
A.4. OCCUPIED 26dB BANDWIDTH(CONDUCTED).....	19
Fig. 1    Occupied 26dB Bandwidth (802.11a, 5180MHz).....	20
Fig. 2    Occupied 26dB Bandwidth (802.11a, 5200MHz).....	20
Fig. 3    Occupied 26dB Bandwidth (802.11a, 5240MHz).....	21
Fig. 4    Occupied 26dB Bandwidth (802.11a, 5260MHz).....	21
Fig. 5    Occupied 26dB Bandwidth (802.11a, 5280MHz).....	22
Fig. 6    Occupied 26dB Bandwidth (802.11a, 5320MHz).....	22
Fig. 7    Occupied 26dB Bandwidth (802.11a, 5500MHz).....	23
Fig. 8    Occupied 26dB Bandwidth (802.11a, 5580MHz).....	23
Fig. 9    Occupied 26dB Bandwidth (802.11a, 5700MHz).....	24
Fig. 10   Occupied 26dB Bandwidth (802.11n20, 5180MHz).....	24
Fig. 11   Occupied 26dB Bandwidth (802.11n20, 5200MHz).....	25
Fig. 12   Occupied 26dB Bandwidth (802.11n20, 5240MHz).....	25
Fig. 13   Occupied 26dB Bandwidth (802.11n20, 5260MHz).....	26
Fig. 14   Occupied 26dB Bandwidth (802.11n20, 5280MHz).....	26
Fig. 15   Occupied 26dB Bandwidth (802.11n20, 5320MHz).....	27
Fig. 16   Occupied 26dB Bandwidth (802.11n20, 5500MHz).....	27
Fig. 17   Occupied 26dB Bandwidth (802.11n20, 5580MHz).....	28
Fig. 18   Occupied 26dB Bandwidth (802.11n20, 5700MHz).....	28
Fig. 19   Occupied 26dB Bandwidth (802.11n40, 5190MHz).....	29
Fig. 20   Occupied 26dB Bandwidth (802.11n40, 5230MHz).....	29
Fig. 21   Occupied 26dB Bandwidth (802.11n40, 5270MHz).....	30
Fig. 22   Occupied 26dB Bandwidth (802.11n40, 5310MHz).....	30
Fig. 23   Occupied 26dB Bandwidth (802.11n40, 5510MHz).....	31
Fig. 24   Occupied 26dB Bandwidth (802.11n40, 5550MHz).....	31
Fig. 25   Occupied 26dB Bandwidth (802.11n40, 5670MHz).....	32
A.5. BAND EDGES COMPLIANCE .....	33
A5.1 BAND EDGES - RADIATED .....	33
FIG. 26    BAND EDGES (802.11A, 5180MHz) .....	34
FIG. 27    BAND EDGES (802.11A, 5320MHz) .....	34
FIG. 28    BAND EDGES (802.11A, 5500MHz) .....	35
FIG. 29    BAND EDGES (802.11A, 5700MHz) .....	35
FIG. 30    BAND EDGES (802.11N-HT20, 5180MHz) .....	36
FIG. 31    BAND EDGES (802.11N-HT20, 5320MHz) .....	36
FIG. 32    BAND EDGES (802.11N-HT20, 5500MHz) .....	37
FIG. 33    BAND EDGES (802.11N-HT20, 5700MHz) .....	37
FIG. 34    BAND EDGES (802.11N-HT40, 5190MHz) .....	38
FIG. 35    BAND EDGES (802.11N-HT40, 5310MHz) .....	38
FIG. 36    BAND EDGES (802.11N-HT40, 5510MHz) .....	39
FIG. 37    BAND EDGES (802.11N-HT40, 5670MHz) .....	39
A.6. TRANSMITTER SPURIOUS EMISSION .....	40

A.7. AC POWERLINE CONDUCTED EMISSION (150KHz- 30MHz).....	58
FIG. 38 CONDUCTED EMISSION(802.11A, CH40, TX).....	59
FIG. 39 CONDUCTED EMISSION(802.11A, IDLE).....	60
FIG. 40 CONDUCTED EMISSION(802.11A, CH40, TX).....	61
A.8. 99% OCCUPIED BANDWIDTH .....	62
Fig. 41 99% Occupied bandwidth (802.11a, 5180MHz).....	63
Fig. 42 99% Occupied bandwidth (802.11a, 5200MHz).....	63
Fig. 43 99% Occupied bandwidth (802.11a, 5240MHz).....	64
Fig. 44 99% Occupied bandwidth (802.11n20, 5180MHz).....	64
Fig. 45 99% Occupied bandwidth (802.11n20, 5200MHz).....	65
Fig. 46 99% Occupied bandwidth (802.11n20, 5240MHz).....	65
Fig. 47 99% Occupied bandwidth (802.11n40, 5190MHz).....	66
Fig. 48 99% Occupied bandwidth (802.11n40, 5230MHz).....	66
A.9. FREQUENCY STABILITY .....	67
A.10. POWER CONTROL.....	67
<b>ANNEX B: ACCREDITATION CERTIFICATE.....</b>	<b>68</b>

## 1. TEST LATORATORY

### 1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory  
©Copyright. All rights reserved by CTTL.



under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

### **1.2. TestingLocation**

Location 1:CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

Location 2:CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,  
Haidian District, Beijing, P. R. China100191

Location 3:CTTL(Yuetan)

Address: No. 11 Yue Tan Nan Jie, Xicheng District, Beijing, P. R.  
China100045

Location 4:CTTL(BDA)

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

Location 5:CTTL(South Branch)

Address: No.12, ShangSha Innovation and Technology Park,  
Futian District, Shenzhen, Guangdong, P. R.  
China518048

### **1.3. TestingEnvironment**

Normal Temperature: 15-35°C

Extreme Temperature: -10/+55°C

Relative Humidity: 20-75%

### **1.4. Project data**

Testing Start Date: 2019-04-09

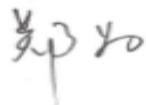
Testing End Date: 2019-05-27

### 1.5. Signature



Jiang Xue

( Prepared this test report )



Zheng Wei

(Reviewed this test report)



Gao Hong

(Approved this test report)

## 2. CLIENT INFORMATION

### 2.1. Applicant Information

Company Name: Samsung Electronics Co Ltd

Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058

Contact: Jenni Chun

Email: /



Tel: /  
Fax: /

## **2.2. Manufacturer Information**

Company Name: Jiaxing Yongrui Electron Technology Co., Ltd.  
Address: NO.777 Yazhong Road, Daqiao Town, Nanhu District, Jiaxing City ,Zhejiang  
Contact: /  
Email: /  
Tel: /  
Fax: /

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

### **3.1. About EUT**

Description	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model name	SM-T295C
FCC ID	ZCASMT295C
IC ID	/
WLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz

	-5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Normal Voltage	3.8V
Extreme Low Voltage	3.6V
Extreme High Voltage	4.2V

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer.

### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	/	REV0.4	T295CZCU0ASEA
EUT2	/	REV0.4	T295CZCU0ASEA

\*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	Battery	Inbuilt
AE2	Battery	Inbuilt
AE3	Charger	/
AE4	Charger	/
AE5	USB Cable	/

#### AE1

Model	SWD-WT-N8
Manufacturer	Sunwoda Electronic Co., Ltd .
Capacitance	4980mAh
Nominal voltage	3.82 V

#### AE2

Model	SCUD-WT-N8
Manufacturer	SCUD(Fujian) Electronic Co., Ltd.
Capacitance	4980mAh
Nominal voltage	3.82V

#### AE3

Model	EP-TA50JWS
Manufacturer	RFTECH ELECTRONICS (HuiZhou) Co.,Ltd.
Length of cable	/

#### AE4

Model	EP-TA50JWE
Manufacturer	RFTECH ELECTRONICS (HuiZhou) Co.,Ltd.
Length of cable	/

AE5

Model GH39-02004A  
Manufacturer RFTECH ELECTRONICS (HuiZhou) Co.,Ltd.  
Length of cable /

\*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 Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN with integrated antenna and inbuilt battery.

It has Bluetooth (EDR)function.

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

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

Samples undergoing test were selected by the client.

### 3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

## 4. REFERENCE DOCUMENTS

### 4.1. Documents supplied by applicant

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

### 4.2. Reference Documents for testing

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

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2016
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	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

## 5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

## 6. SUMMARY OF TEST RESULTS

### 6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	BR
Power Spectral Density	15.407	/	BR
Occupied 26dB Bandwidth	15.403	/	BR
Band edge compliance	15.209	/	BR
Transmitter spurious emissions radiated	15.407	/	BR
Spurious emissions radiated < 30 MHz	15.407	/	BR
Spurious emissions conducted < 30 MHz	15.407	/	BR
Frequency Stability	15.407	/	BR
Transmit Power Control	15.407	/	BR

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 CTTL
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

CTTL 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. Explanation of re-use of test data

The Equipment Under Test (EUT) model SM-T295C (FCC ID: ZCASMT295C) is a variant product of SM-T295 (FCC ID: ZCASMT295), according to the declaration of changes provided by the applicant and FCC KDB publication 484596 D01, spot check measurements were performed on this device, all the test results are derived from test report No. I19Z60464-IOT09. Please refer Annex A for detail spot check verification data and reference data.the spot check test results are consistent with basic model.

For detail differences between two models please refer the Declaration of Changes document.

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°C

Voltage 3.8V

Humidity 44%

## 7. TEST EQUIPMENTS UTILIZED

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2020-05-15
2	LISN	ESH3-Z5	825562/028	Rohde & Schwarz	1 year	2019-08-22
3	Test Receiver	ESCI	100766	Rohde & Schwarz	1 year	2020-03-20
4	Shielding room	NQ(3.2*5.5*2.7)M	P1154	hankering	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	1 year	2019-11-27
2	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	1 year	2019-09-21



3	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	1 year	2019-10-15
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	1 year	2019-07-09
5	Vector Signal Analyzer	FSV40	101047	Rohde & Schwarz	1 year	2019-07-21

## **8. Measurement Uncertainty**

### **8.1. Transmitter Output Power**

Measurement Uncertainty: 0.387dB,k=1.96

### **8.2. Peak Power Spectral Density**

Measurement Uncertainty: 0.705dB,k=1.96

### **8.3. Occupied Channel Bandwidth**

Measurement Uncertainty: 60.80Hz,k=1.96

### **8.4. Band Edges Compliance**

Measurement Uncertainty : 0.62dB,k=1.96

### **8.5. Spurious Emissions**

#### **Conducted (k=1.96)**

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤ 3.6GHz	1.22
3.6GHz ≤ f ≤ 8GHz	1.22
8GHz ≤ f ≤ 12.75GHz	1.51
12.75GHz ≤ f ≤ 26GHz	1.51
26GHz ≤ f ≤ 40GHz	1.59

#### **Radiated (k=2)**

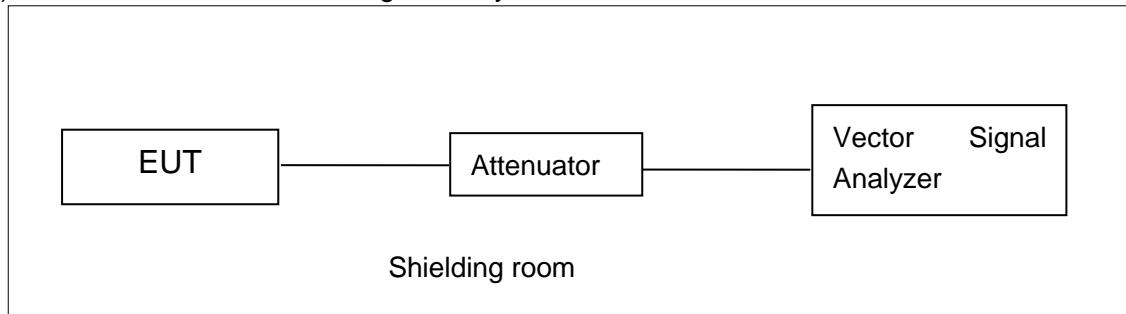
Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
30MHz ≤ f ≤ 1GHz	5.40
1GHz ≤ f ≤ 18GHz	4.32
18GHz ≤ f ≤ 40GHz	5.26

## 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

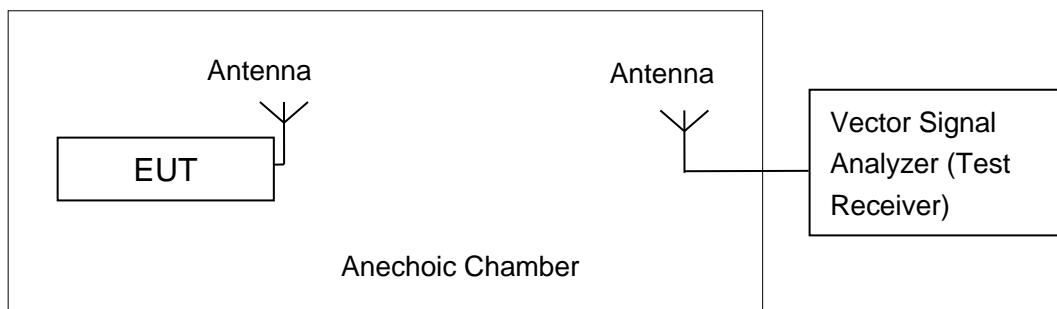


#### A.1.2. Radiated Emission Measurements

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 KDB 789033

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

## A.2. Maximum output Power

### Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	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 measurementmethod SA-1 is made according to KDB 789033

### Measurement Results:

#### 802.11a mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	16.57	16.14	16.10	15.55	15.51	15.06	15.03	14.41
	5200MHz	16.39	/	/	/	/	/	/	/
	5240MHz	15.74	/	/	/	/	/	/	/
	5260MHz	15.73	/	/	/	/	/	/	/
	5280MHz	16.08	/	/	/	/	/	/	/
	5320MHz	17.06	/	/	/	/	/	/	/
	5500MHz	17.09	/	/	/	/	/	/	/
	5580MHz	16.31	/	/	/	/	/	/	/
	5700MHz	16.22	/	/	/	/	/	/	/

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

#### 802.11n-HT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	15.65	15.19	15.18	15.14	14.52	14.50	14.48	13.81
	5200MHz	15.25	/	/	/	/	/	/	/
	5240MHz	14.84	/	/	/	/	/	/	/
	5260MHz	14.96	/	/	/	/	/	/	/
	5280MHz	15.26	/	/	/	/	/	/	/
	5320MHz	16.10	/	/	/	/	/	/	/
	5500MHz	16.54	/	/	/	/	/	/	/
	5580MHz	15.76	/	/	/	/	/	/	/
	5700MHz	15.71	/	/	/	/	/	/	/

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

**802.11n-HT40 mode**

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	13.80	13.12	13.10	12.98	12.44	12.41	12.40	11.81
	5230MHz	13.15	/	/	/	/	/	/	/
	5270MHz	13.40	/	/	/	/	/	/	/
	5310MHz	13.97	/	/	/	/	/	/	/
	5510MHz	15.19	/	/	/	/	/	/	/
	5550MHz	14.38	/	/	/	/	/	/	/
	5670MHz	14.56	/	/	/	/	/	/	/

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

The spot check point is 802.11a Ch64 6Mbps, and the result is 16.99dBm.

### A.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
------	---------	----------------------------------	------------

802.11a	5180 MHz	6.13	P
	5200 MHz	5.98	P
	5240 MHz	6.15	P
	5260 MHz	6.25	P
	5280 MHz	5.78	P
	5320 MHz	6.31	P
	5500 MHz	6.54	P
	5580 MHz	6.21	P
	5700 MHz	6.12	P

802.11n HT20	5180 MHz	4.61	P
	5200 MHz	4.69	P
	5240 MHz	4.53	P
	5260 MHz	4.67	P
	5280 MHz	4.48	P
	5320 MHz	5.00	P
	5500 MHz	5.67	P
	5580 MHz	5.31	P
	5700 MHz	5.14	P

802.11n HT40	5190 MHz	-0.18	P
	5230 MHz	-0.17	P
	5270 MHz	0.10	P
	5310 MHz	0.12	P
	5510 MHz	1.35	P
	5550 MHz	0.84	P
	5670 MHz	1.05	P

**Conclusion: PASS**
**A.4. Occupied 26dB Bandwidth(conducted)**
**Measurement Limit:**

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

The measurement is made according to KDB 789033

**Measurement Uncertainty:**

Measurement Uncertainty	60.80Hz
-------------------------	---------

**Measurement Result:**

Mode	Channel	Occupied 26dB Bandwidth (MHz)	conclusion
------	---------	-------------------------------	------------

802.11a	5180 MHz	Fig.1	23.15	P
	5200 MHz	Fig.2	23.10	P
	5240 MHz	Fig.3	23.00	P
	5260 MHz	Fig.4	23.05	P
	5280 MHz	Fig.5	23.20	P
	5320 MHz	Fig.6	23.20	P
	5500 MHz	Fig.7	23.15	P
	5580 MHz	Fig.8	23.25	P
	5700 MHz	Fig.9	23.35	P

802.11n HT20	5180 MHz	Fig.10	23.25	P
	5200 MHz	Fig.11	23.40	P
	5240 MHz	Fig.12	23.60	P
	5260 MHz	Fig.13	23.30	P
	5280 MHz	Fig.14	23.20	P
	5320 MHz	Fig.15	23.25	P
	5500 MHz	Fig.16	23.35	P
	5580 MHz	Fig.17	23.65	P
	5700 MHz	Fig.18	23.35	P

802.11n HT40	5190 MHz	Fig.19	44.48	P
	5230 MHz	Fig.20	44.08	P
	5270 MHz	Fig.21	44.16	P
	5310 MHz	Fig.22	44.32	P
	5510 MHz	Fig.23	44.32	P
	5550 MHz	Fig.24	43.92	P
	5670 MHz	Fig.25	44.40	P

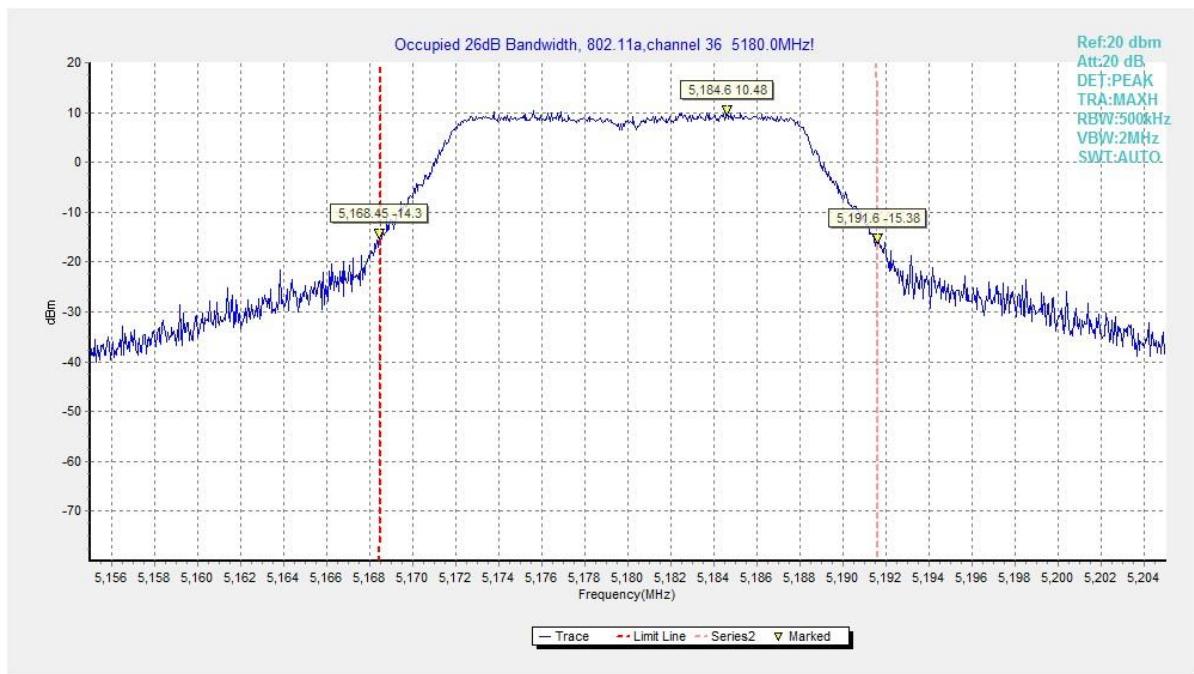
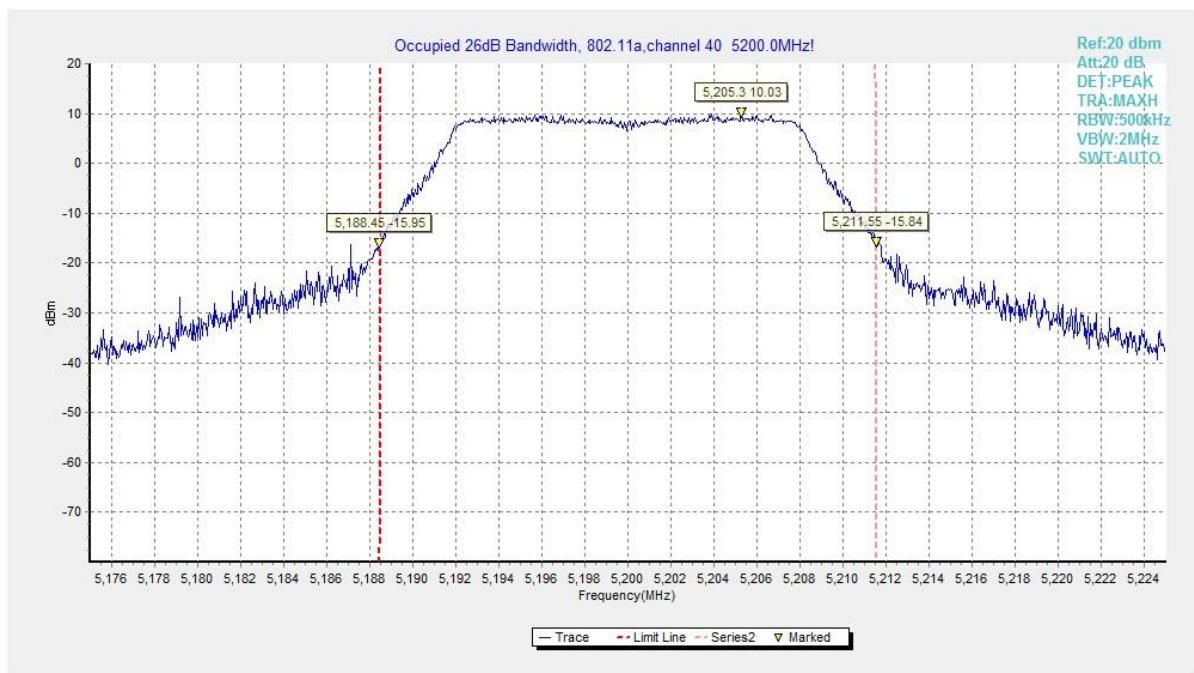
**Conclusion: PASS**
**Test graphs as below:**

**Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)**

**Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)**



Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

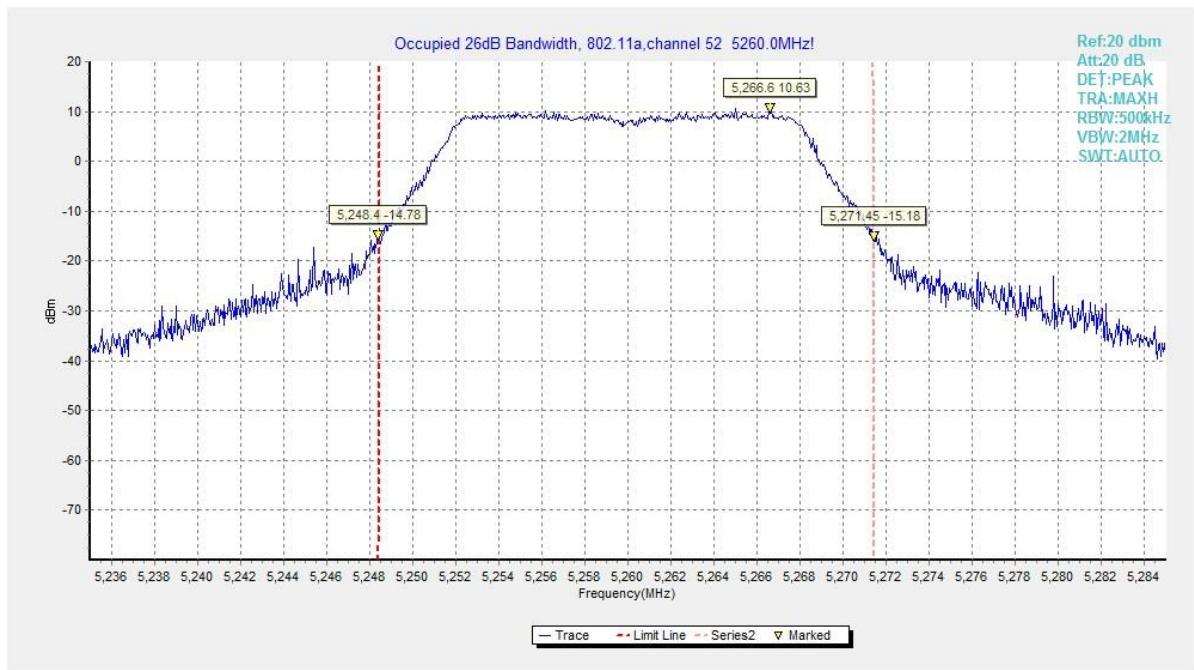
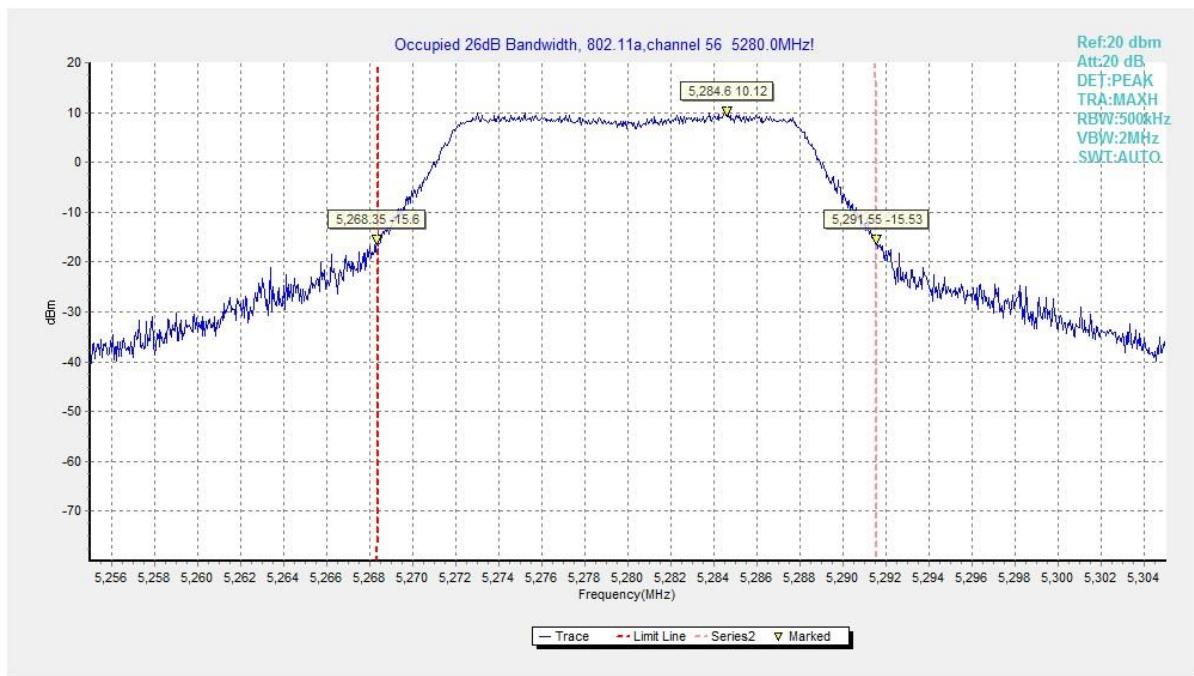
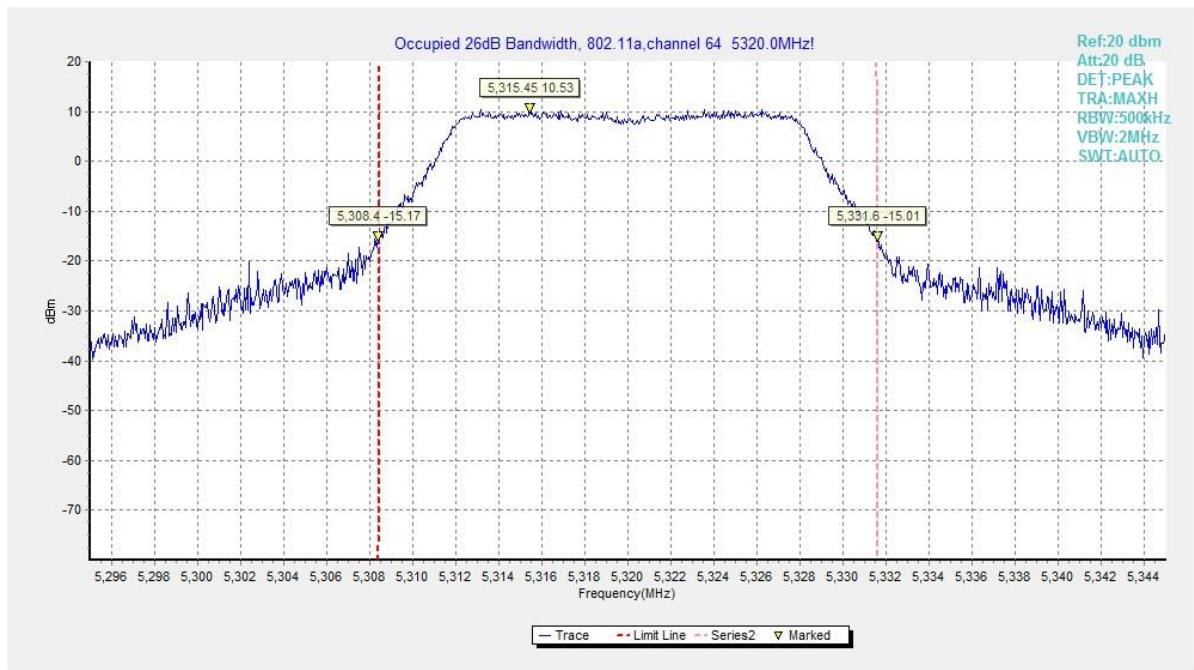


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)


**Fig. 5      Occupied 26dB Bandwidth (802.11a, 5280MHz)**

**Fig. 6      Occupied 26dB Bandwidth (802.11a, 5320MHz)**

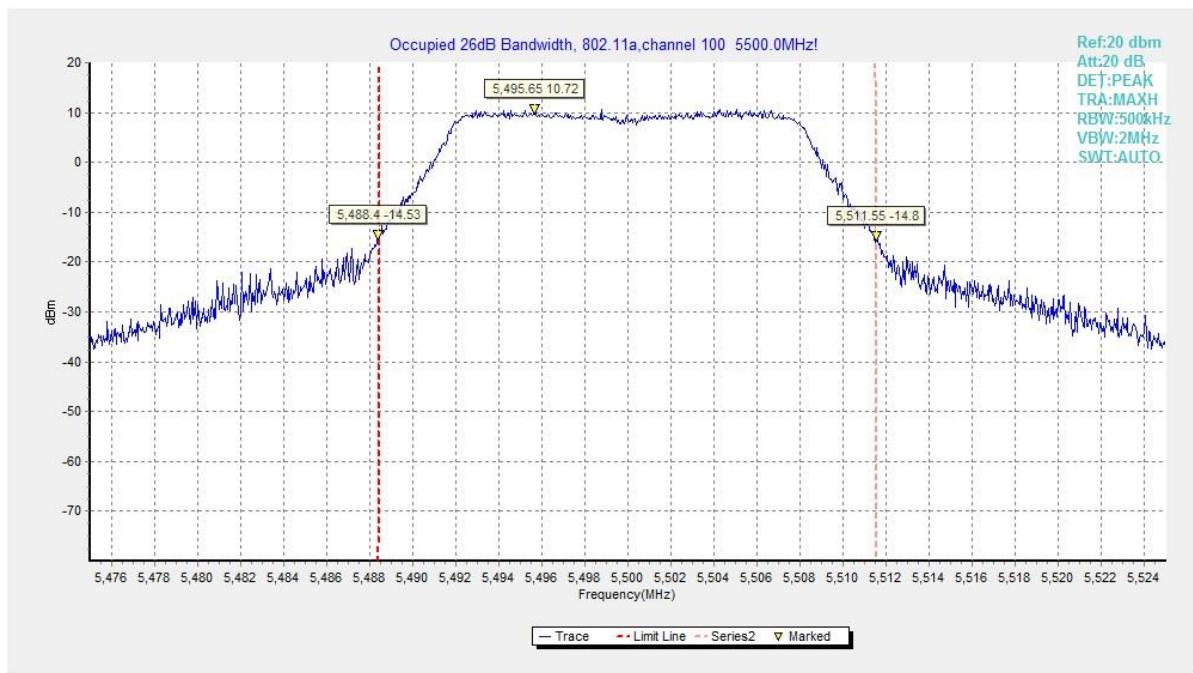


Fig. 7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

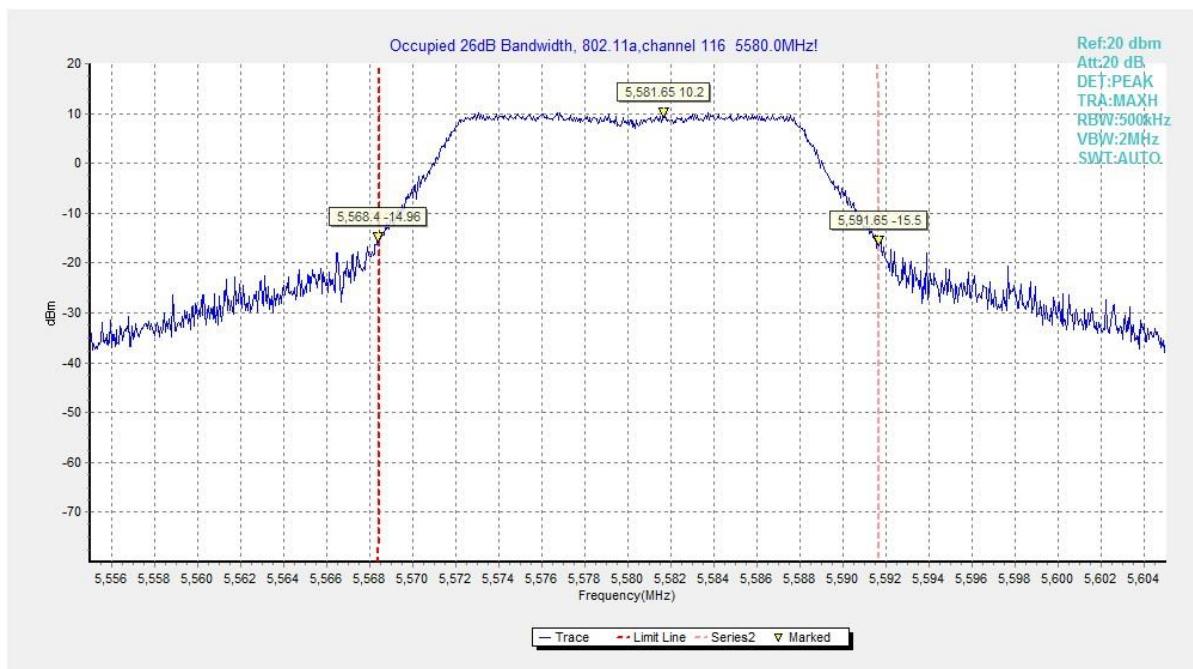


Fig. 8 Occupied 26dB Bandwidth (802.11a, 5580MHz)

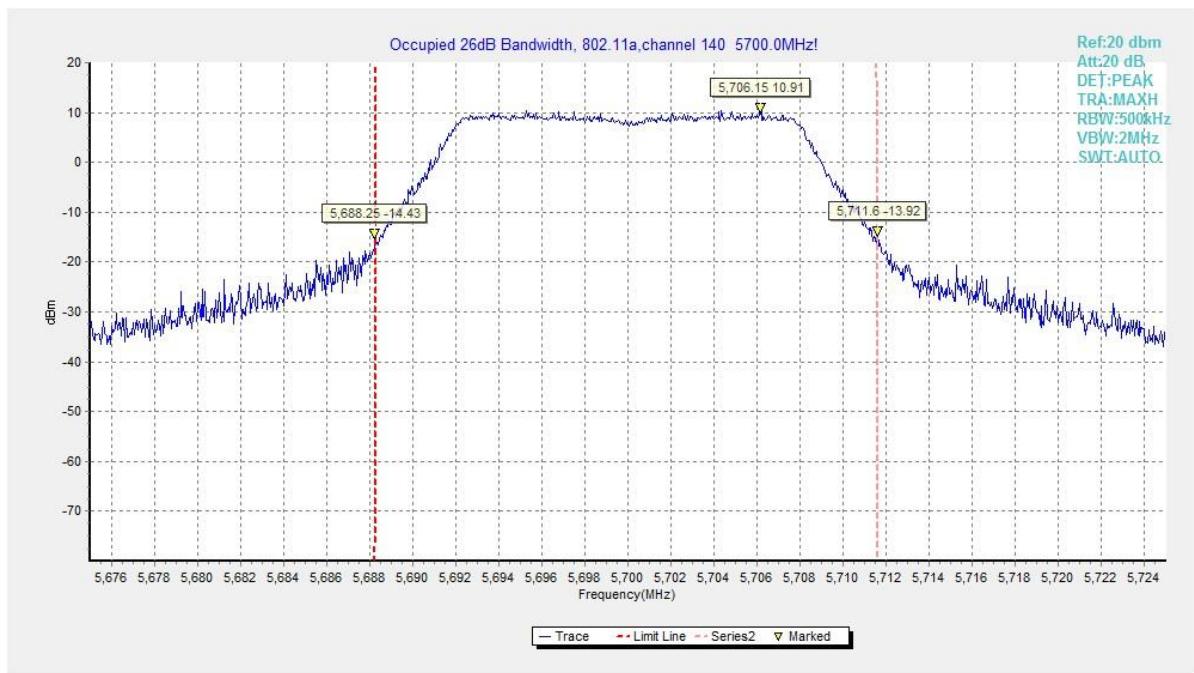


Fig. 9      Occupied 26dB Bandwidth (802.11a, 5700MHz)

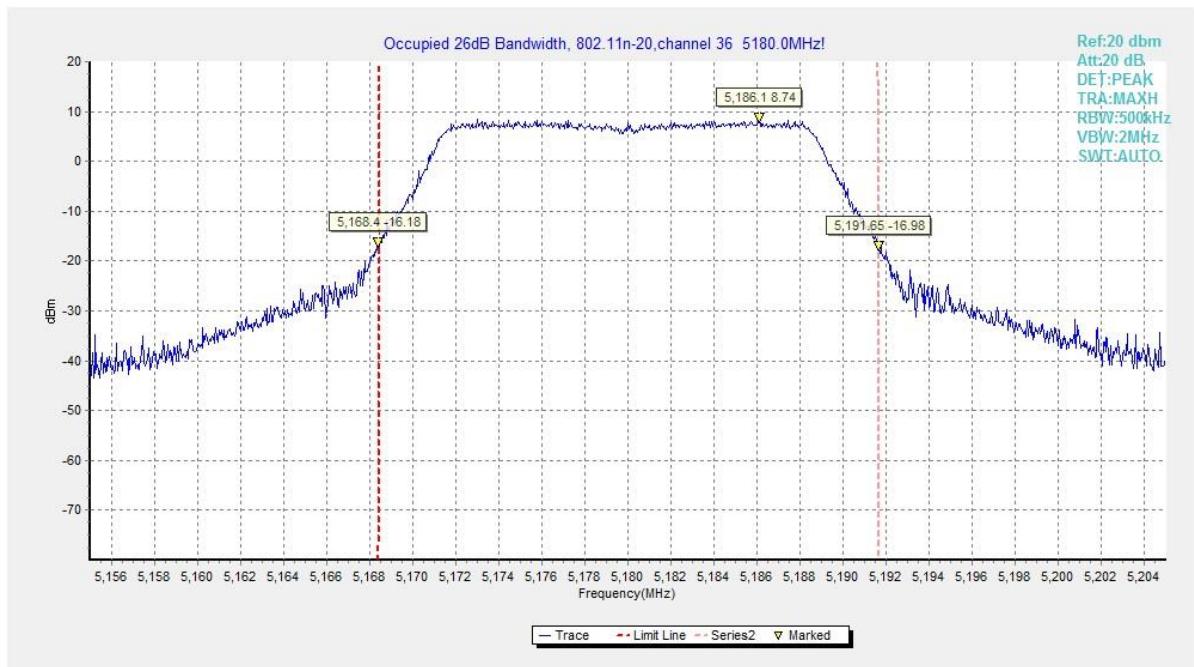
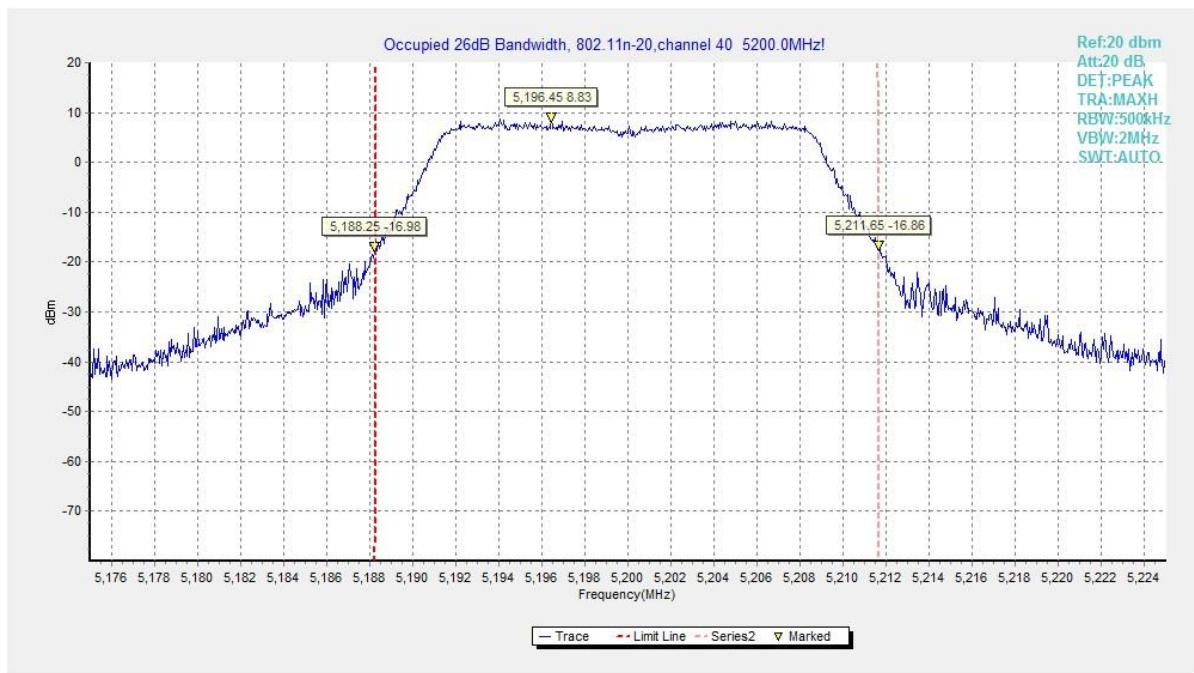
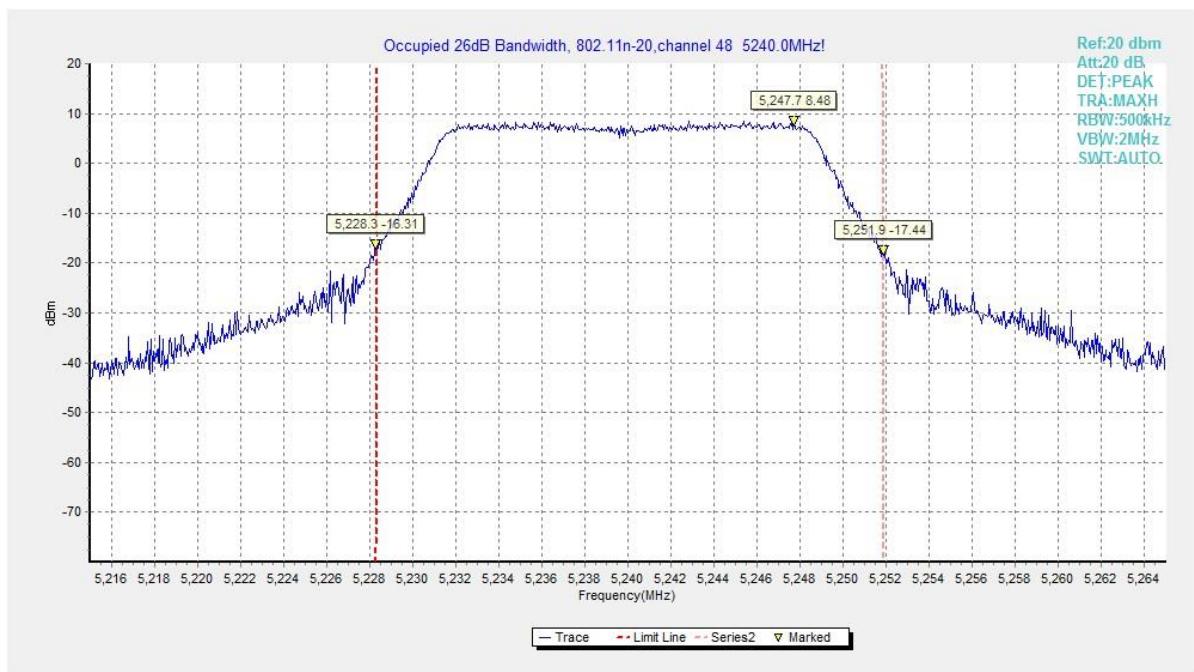


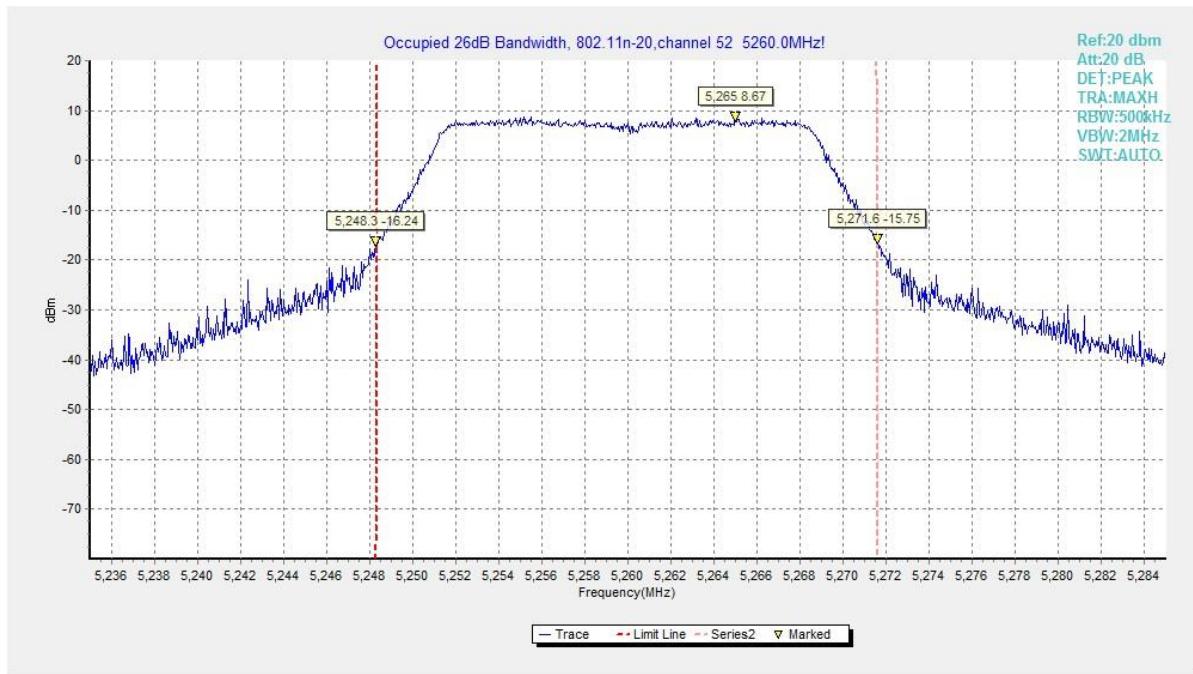
Fig. 10      Occupied 26dB Bandwidth (802.11n20, 5180MHz)



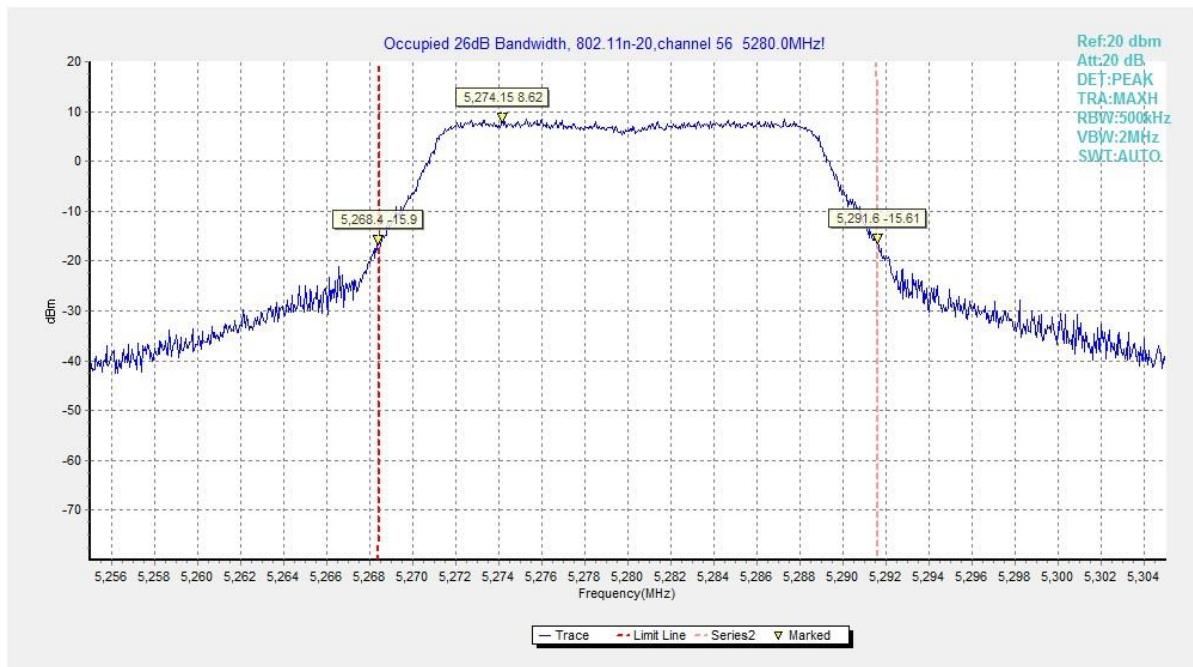
**Fig. 11 Occupied 26dB Bandwidth (802.11n20, 5200MHz)**



**Fig. 12 Occupied 26dB Bandwidth (802.11n20, 5240MHz)**



**Fig. 13 Occupied 26dB Bandwidth (802.11n20, 5260MHz)**



**Fig. 14 Occupied 26dB Bandwidth (802.11n20, 5280MHz)**

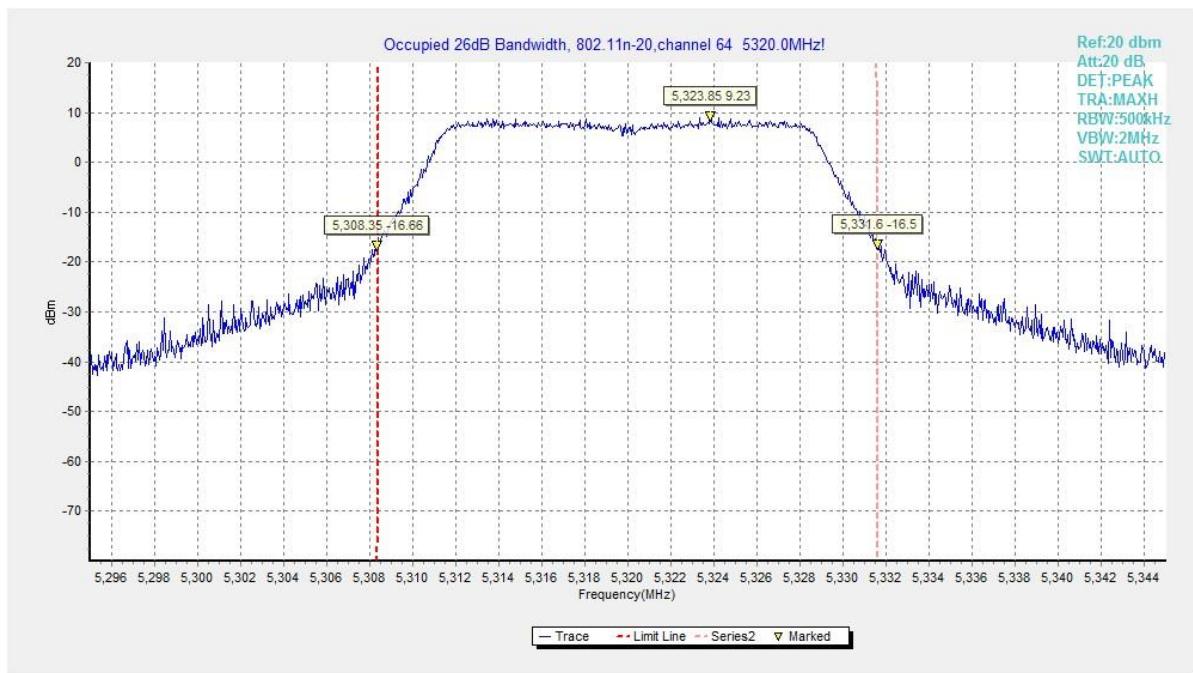


Fig. 15 Occupied 26dB Bandwidth (802.11n20, 5320MHz)

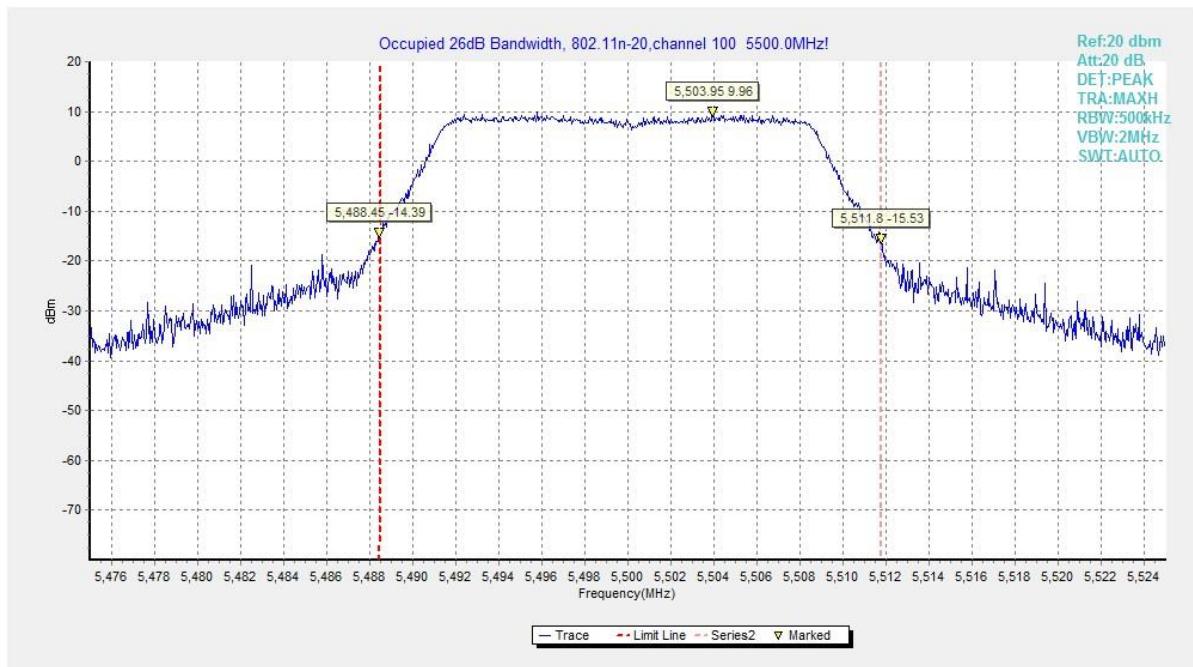
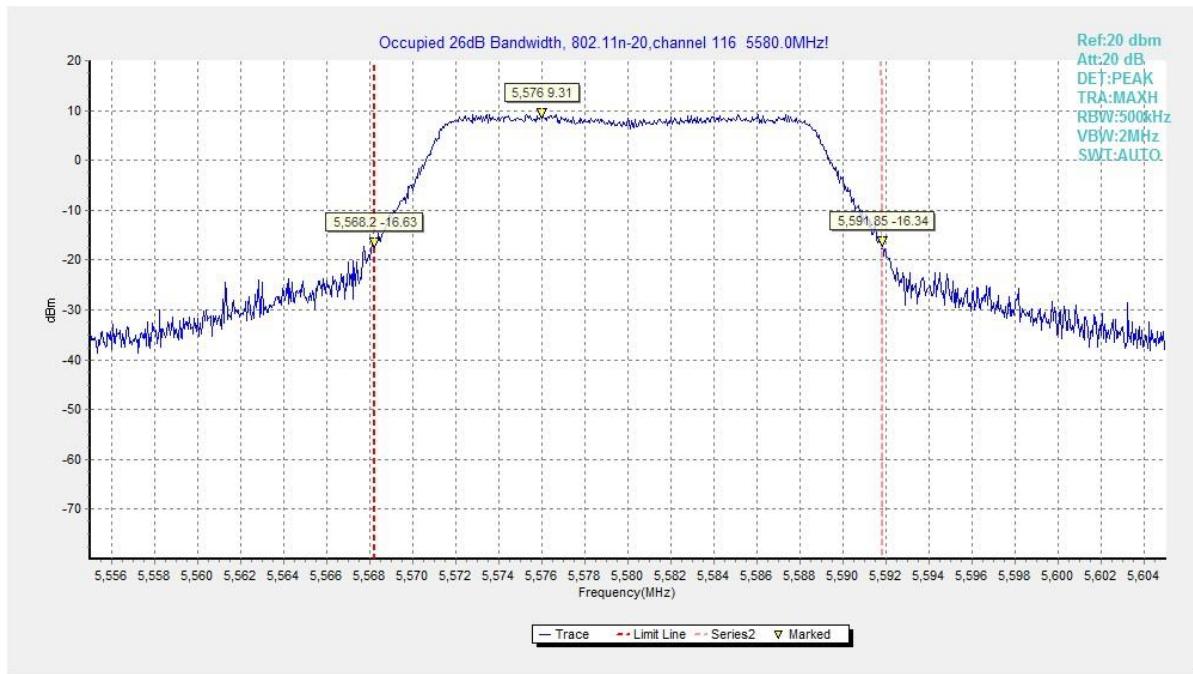
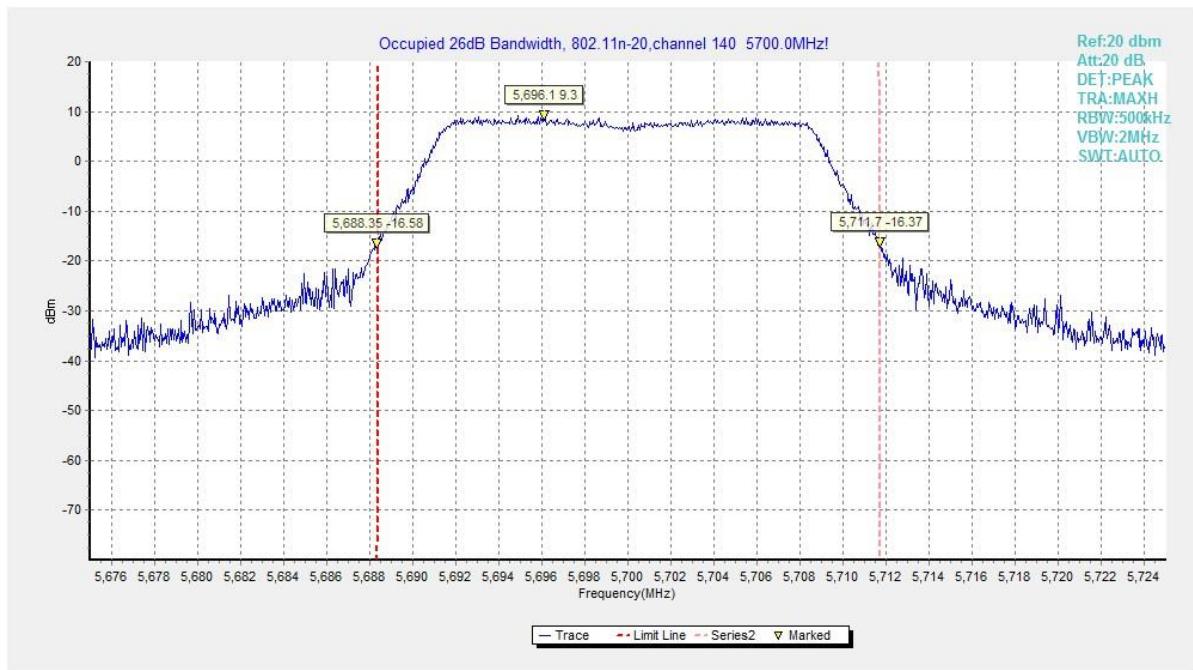


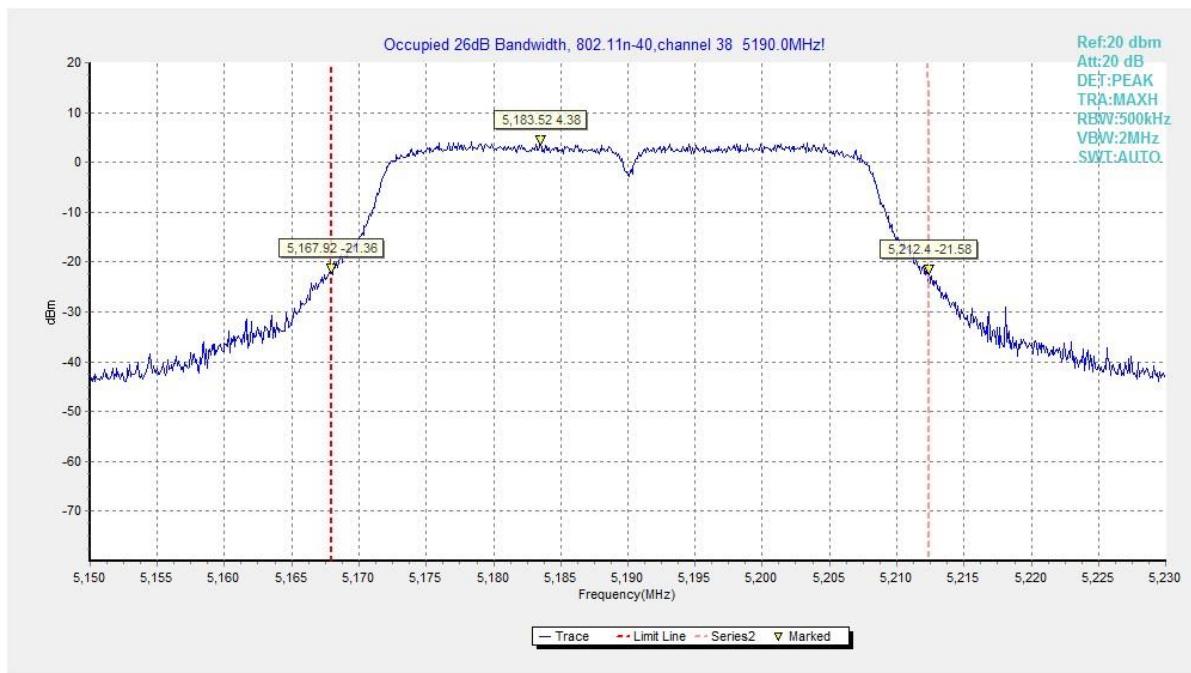
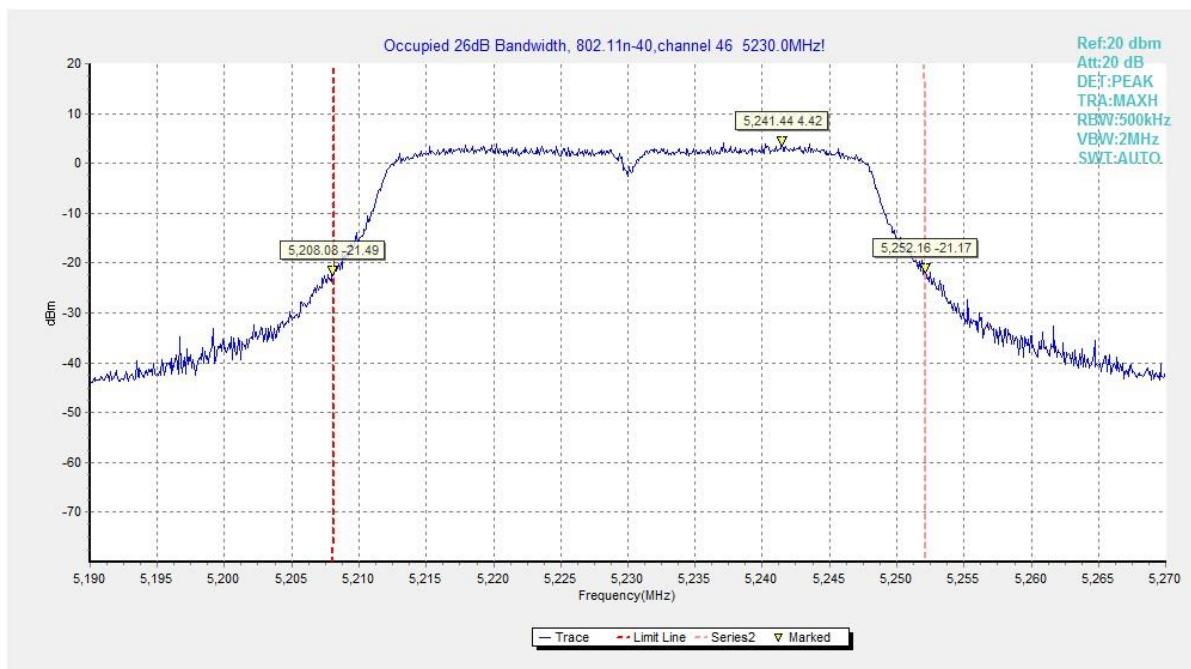
Fig. 16 Occupied 26dB Bandwidth (802.11n20, 5500MHz)

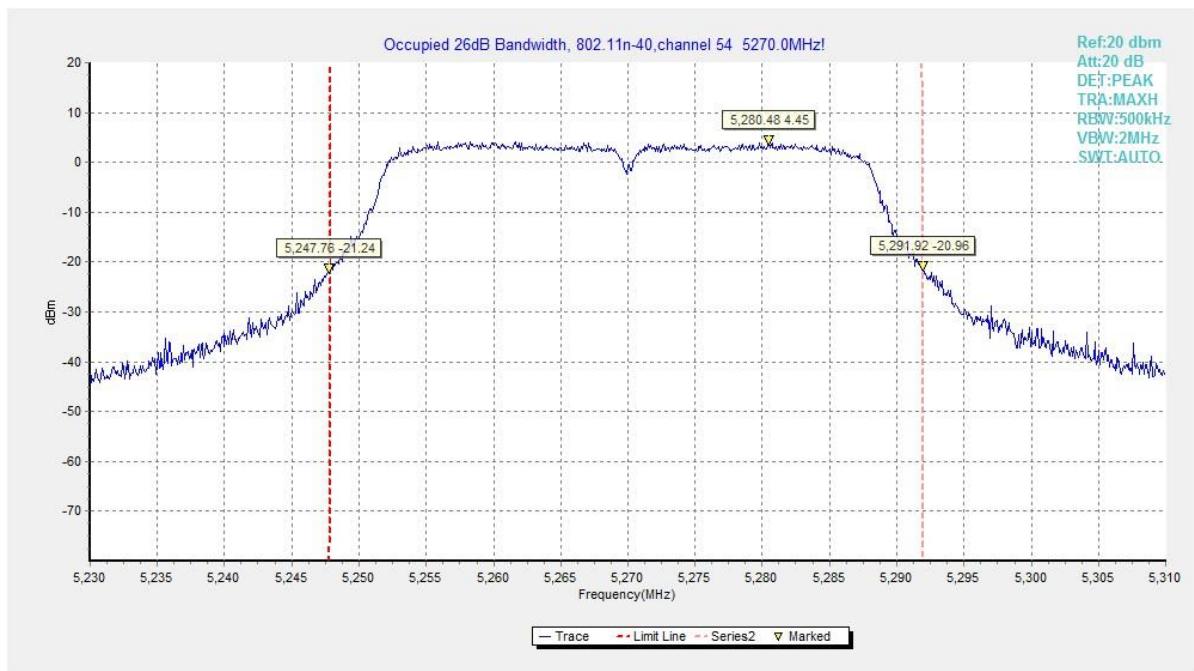


**Fig. 17 Occupied 26dB Bandwidth (802.11n20, 5580MHz)**

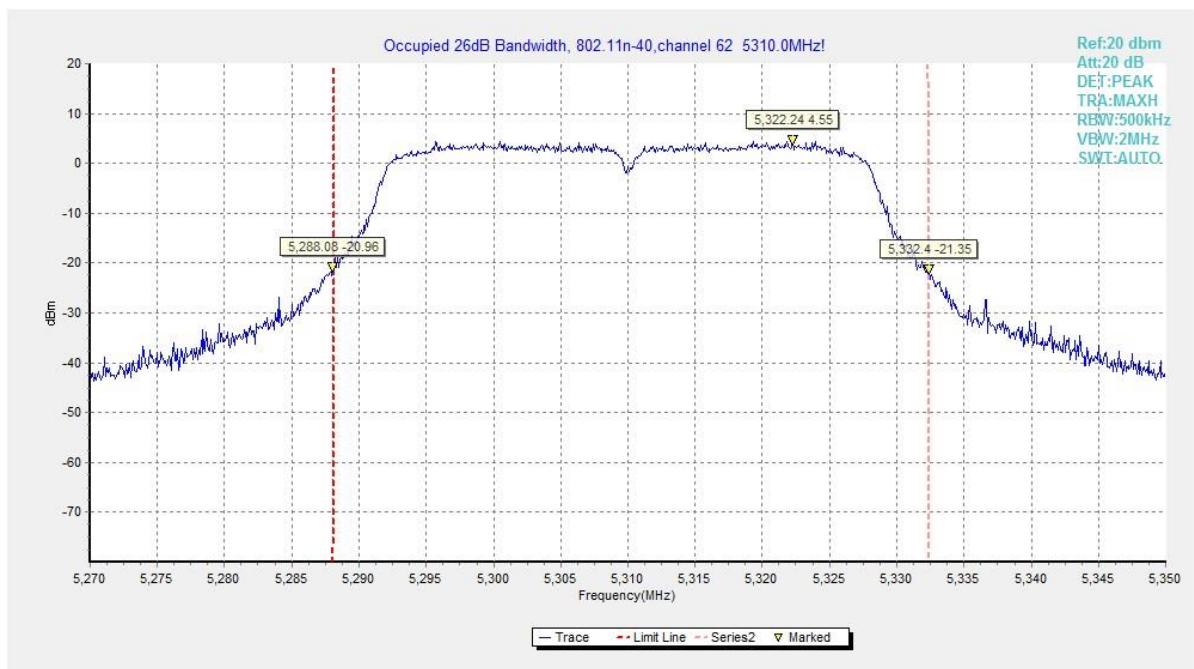


**Fig. 18 Occupied 26dB Bandwidth (802.11n20, 5700MHz)**

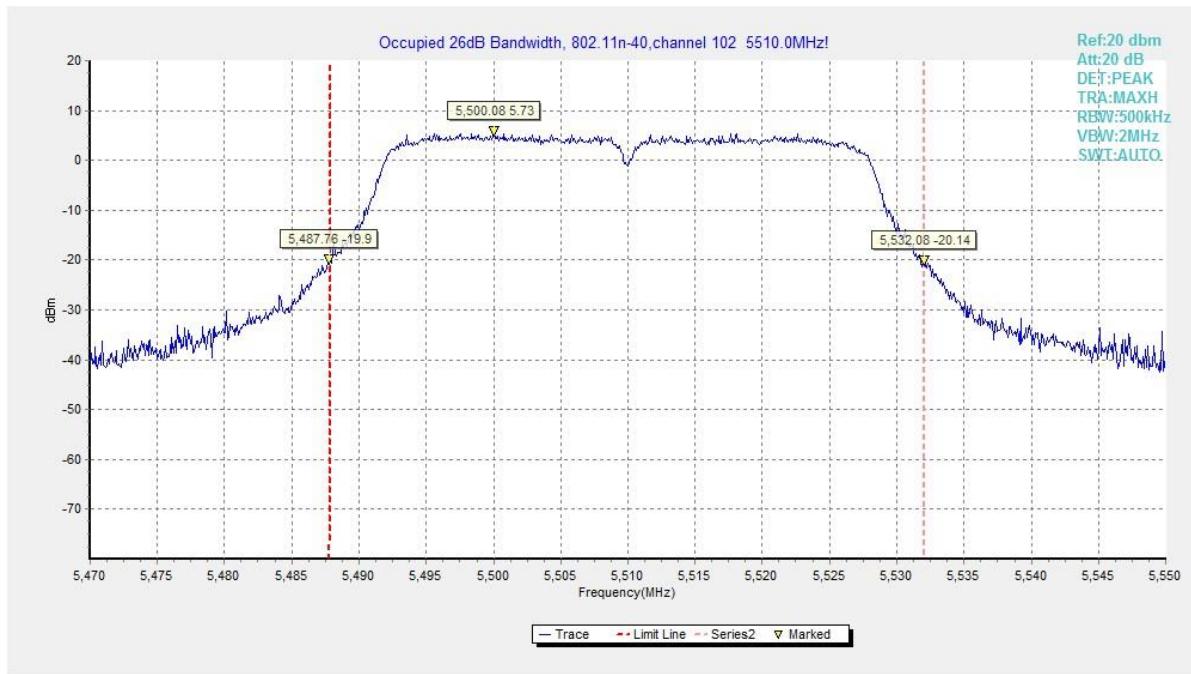
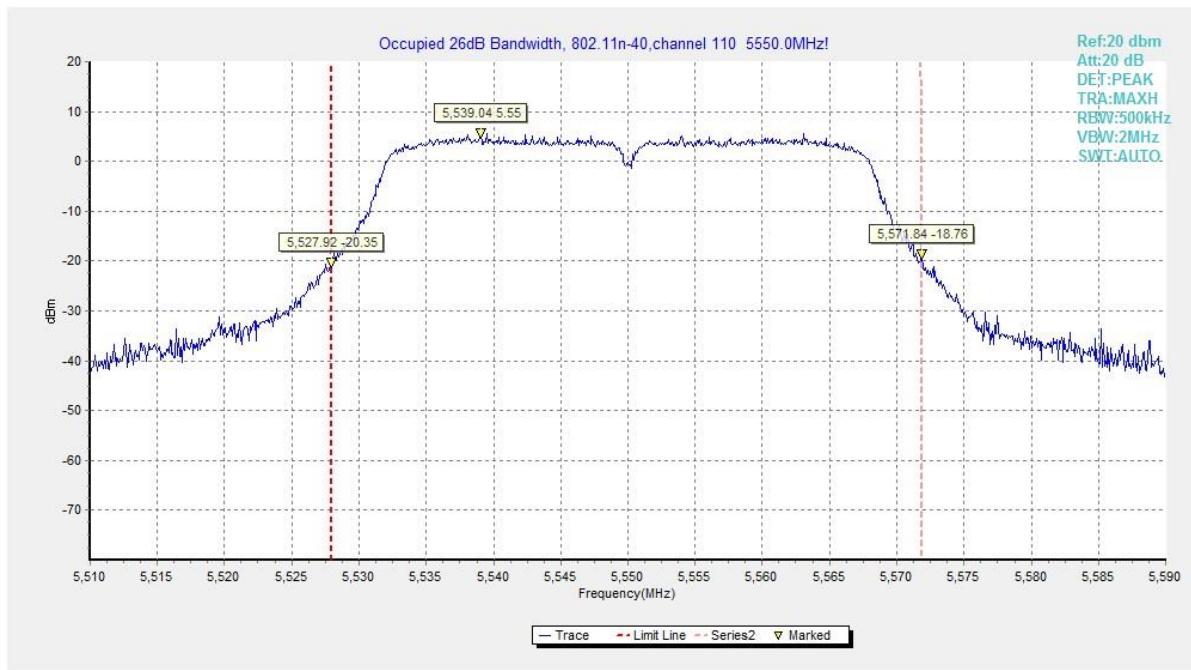

**Fig. 19 Occupied 26dB Bandwidth (802.11n40, 5190MHz)**

**Fig. 20 Occupied 26dB Bandwidth (802.11n40, 5230MHz)**



**Fig. 21 Occupied 26dB Bandwidth (802.11n40, 5270MHz)**



**Fig. 22 Occupied 26dB Bandwidth (802.11n40, 5310MHz)**


**Fig. 23 Occupied 26dB Bandwidth (802.11n40, 5510MHz)**

**Fig. 24 Occupied 26dB Bandwidth (802.11n40, 5550MHz)**

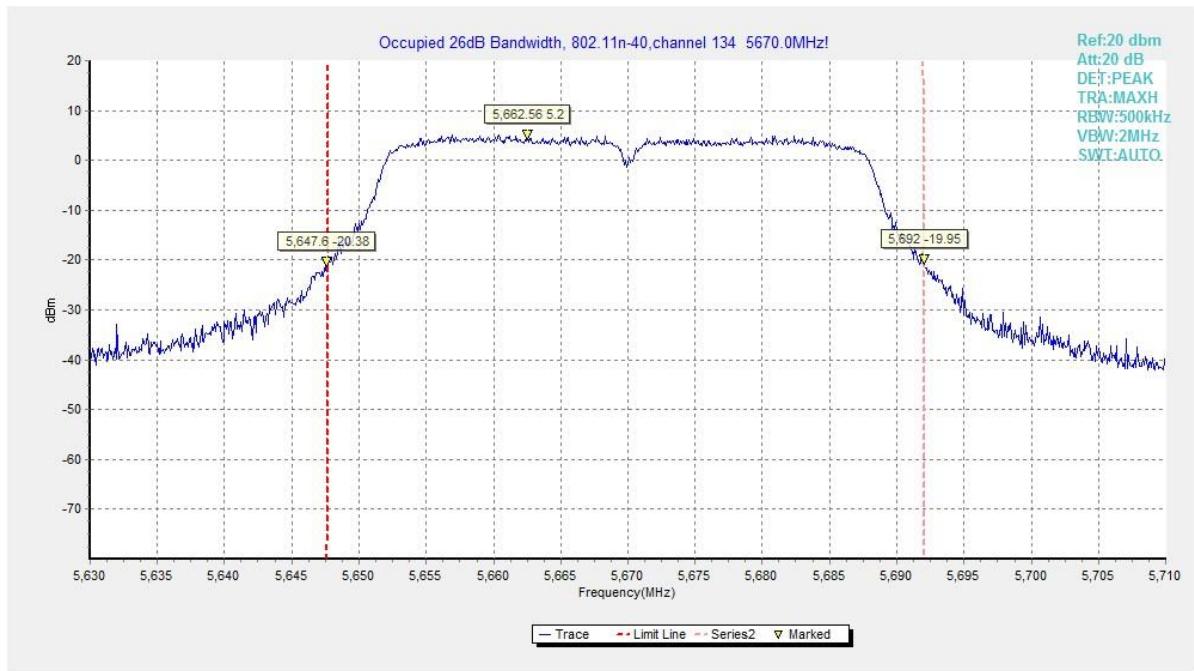


Fig. 25 Occupied 26dB Bandwidth (802.11n40, 5670MHz)

## A.5. Band Edges Compliance

### A5.1 Band Edges - Radiated

#### Measurement Limit:

Standard	Limit (dB $\mu$ V/m)
FCC 47 CFR Part 15.407	< -27

The measurement is made according to KDB 789033

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### Measurement Uncertainty:

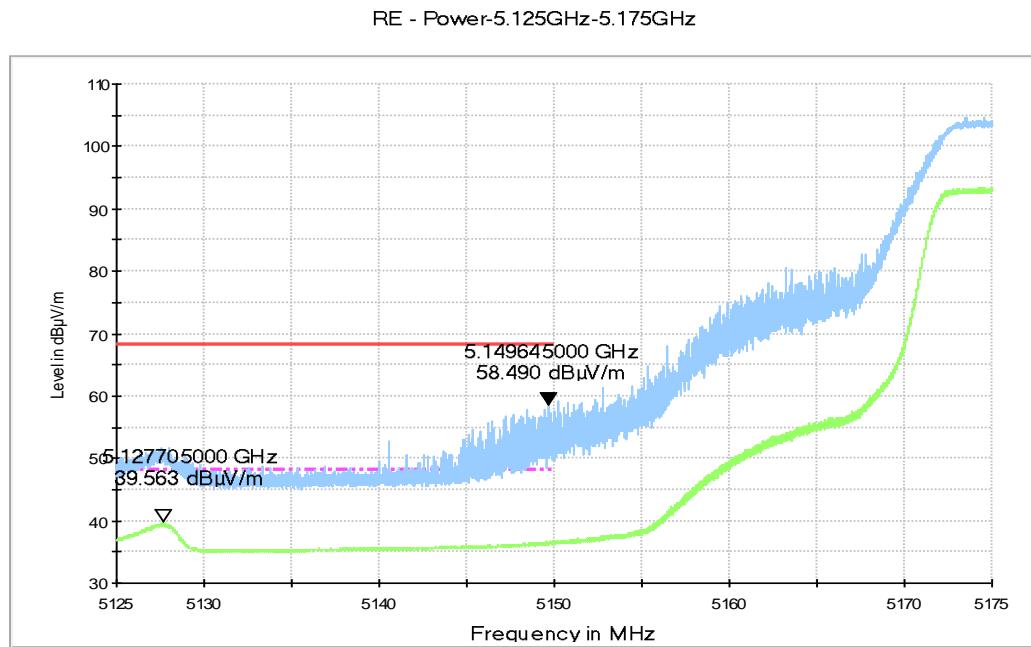
Measurement Uncertainty	5.40dB
-------------------------	--------

#### Measurement Result:

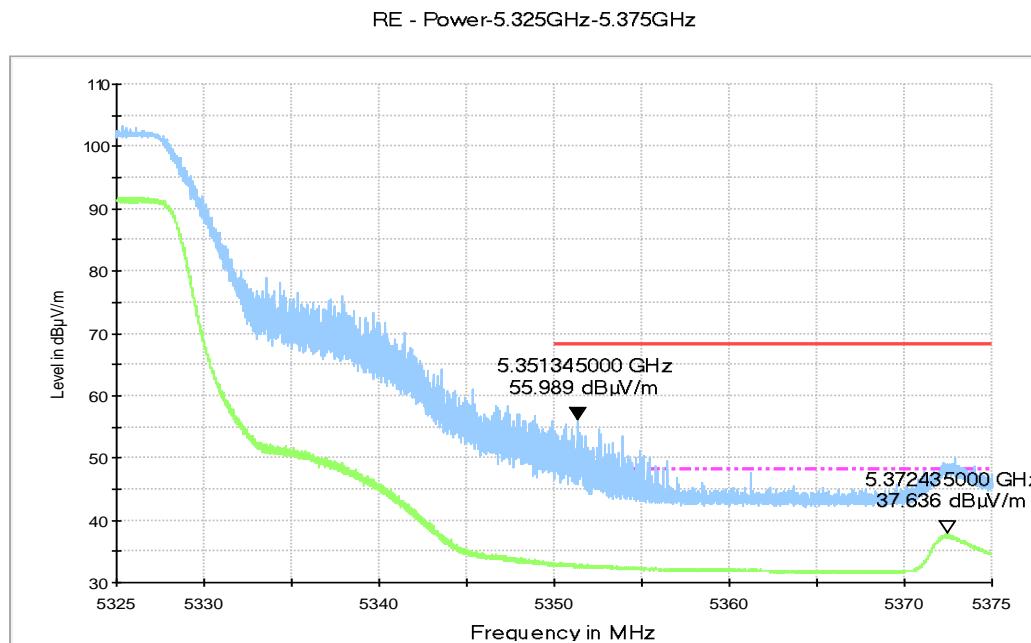
Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.26	P
	5320 MHz	Fig.27	P
	5500 MHz	Fig.28	P
	5700 MHz	Fig.29	P
802.11n HT20	5180 MHz	Fig.30	P
	5320 MHz	Fig.31	P
	5500 MHz	Fig.32	P
	5700 MHz	Fig.33	P
802.11n HT40	5190 MHz	Fig.34	P
	5310 MHz	Fig.35	P
	5510 MHz	Fig.36	P
	5670 MHz	Fig.37	P

**Conclusion: PASS**

**Test graphs as below:**

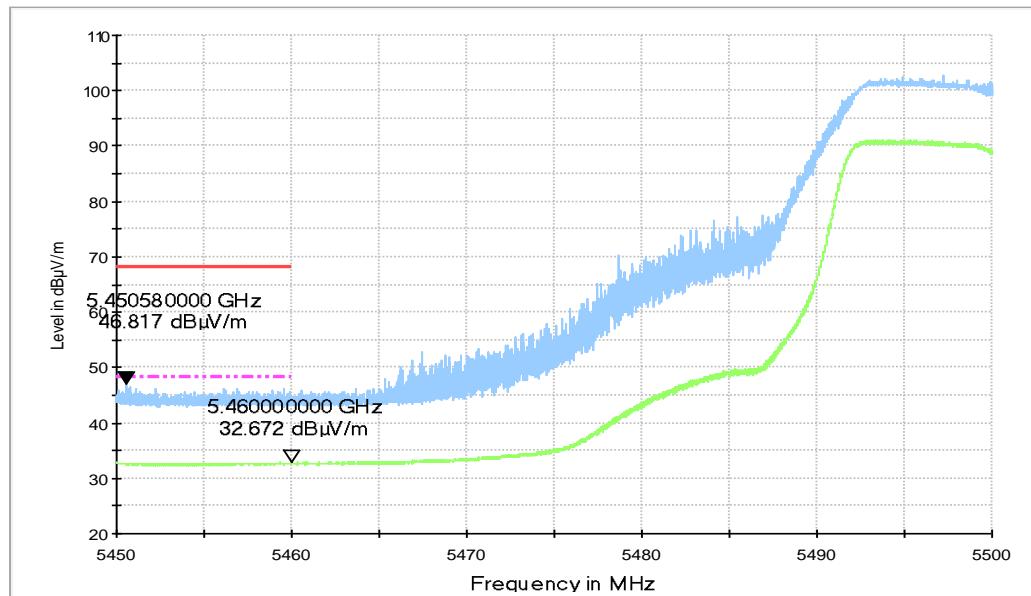


**Fig. 26 Band Edges (802.11a, 5180MHz)**



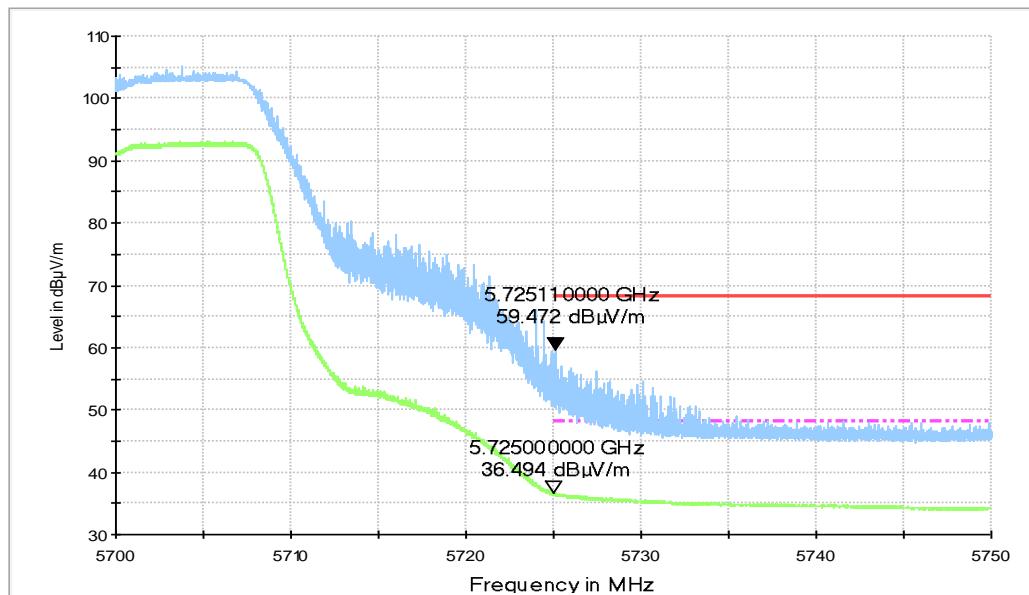
**Fig. 27 Band Edges (802.11a, 5320MHz)**

RE - Power-5.45GHz-5.50GHz



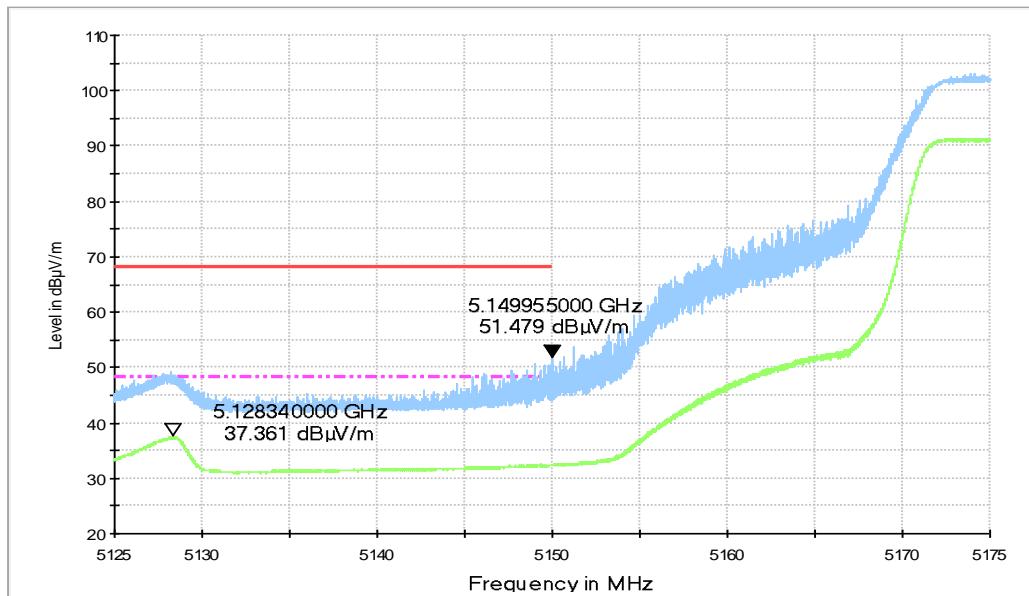
**Fig. 28 Band Edges (802.11a, 5500MHz)**

RE - Power-5.70GHz-5.75GHz



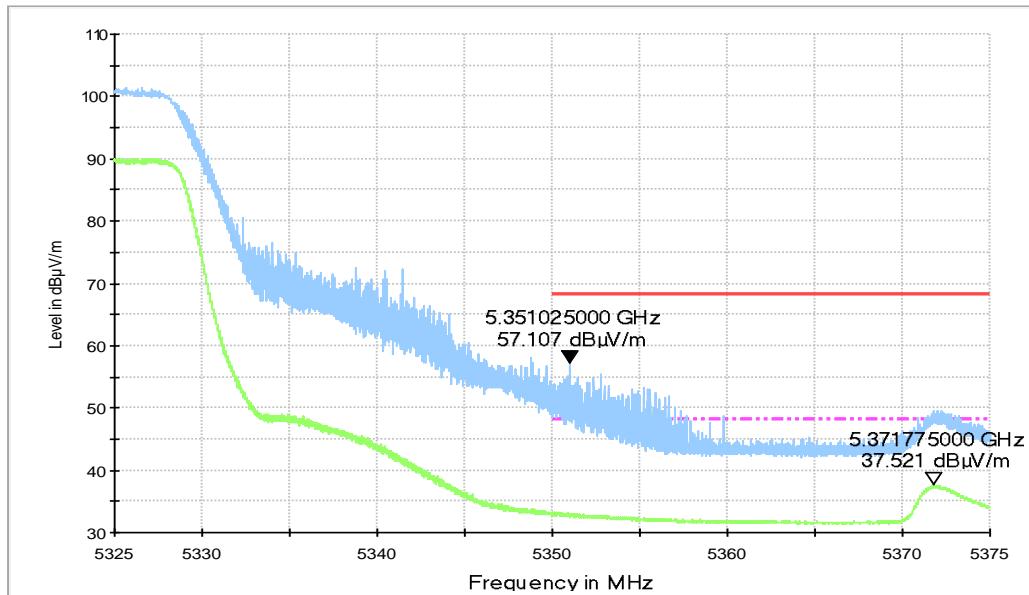
**Fig. 29 Band Edges (802.11a, 5700MHz)**

RE - Power-5.125GHz-5.175GHz



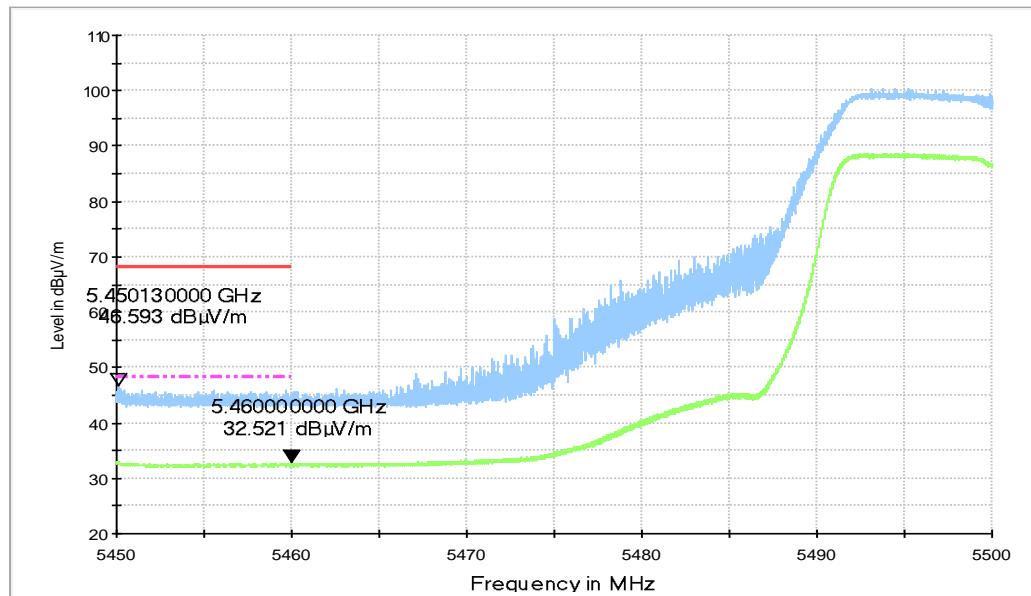
**Fig. 30 Band Edges (802.11n-HT20, 5180MHz)**

RE - Power-5.325GHz-5.375GHz



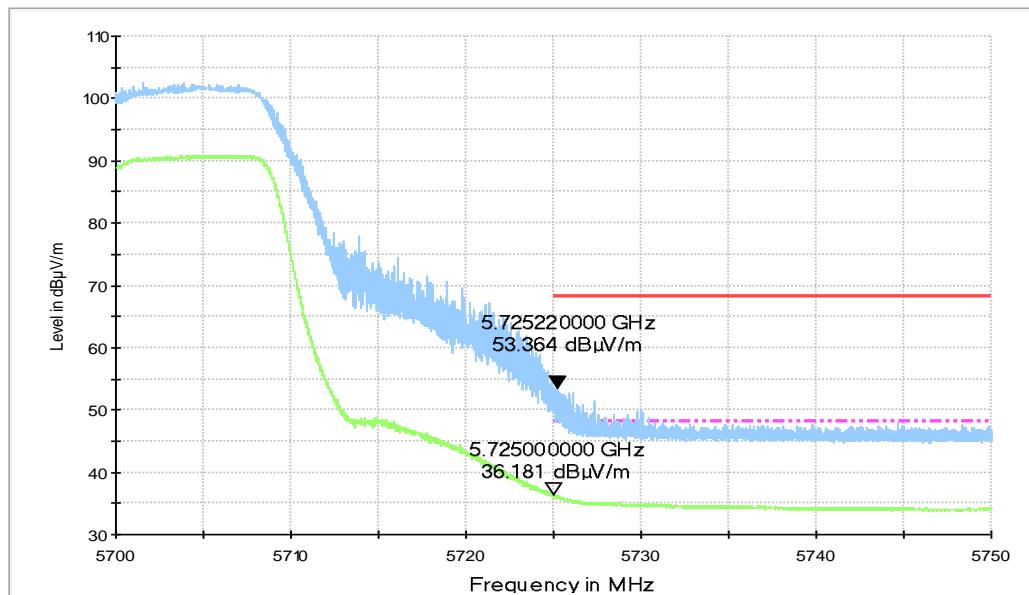
**Fig. 31 Band Edges (802.11n-HT20, 5320MHz)**

RE - Power-5.45GHz-5.50GHz



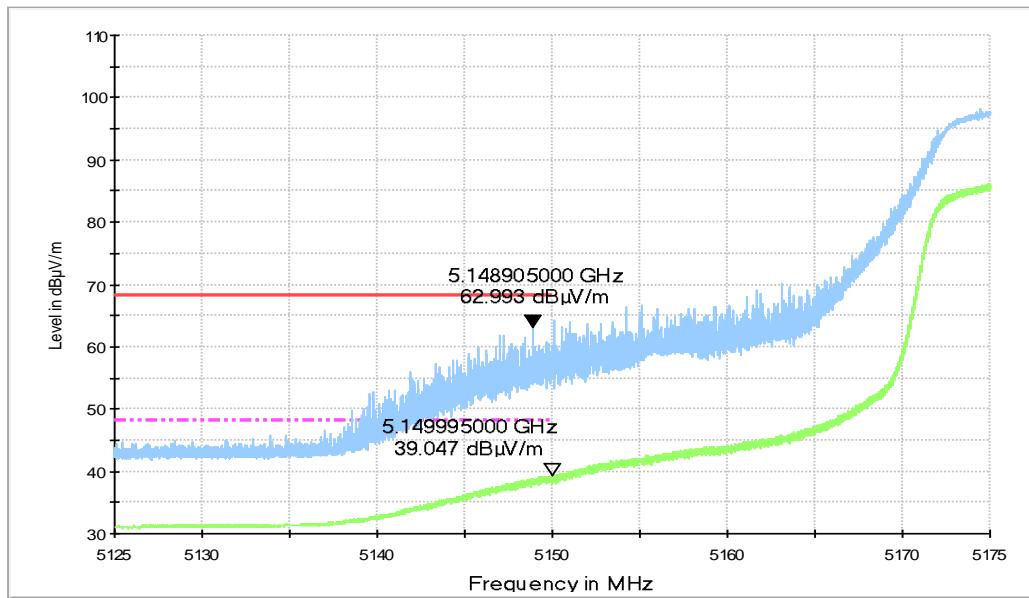
**Fig. 32 Band Edges (802.11n-HT20, 5500MHz)**

RE - Power-5.70GHz-5.75GHz



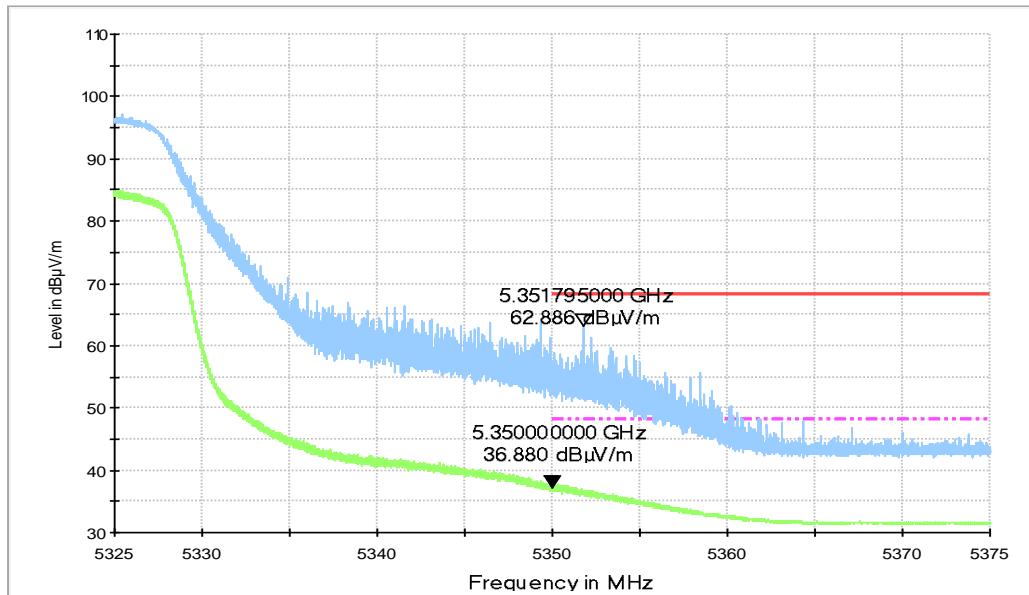
**Fig. 33 Band Edges (802.11n-HT20, 5700MHz)**

RE - Power-5.125GHz-5.175GHz



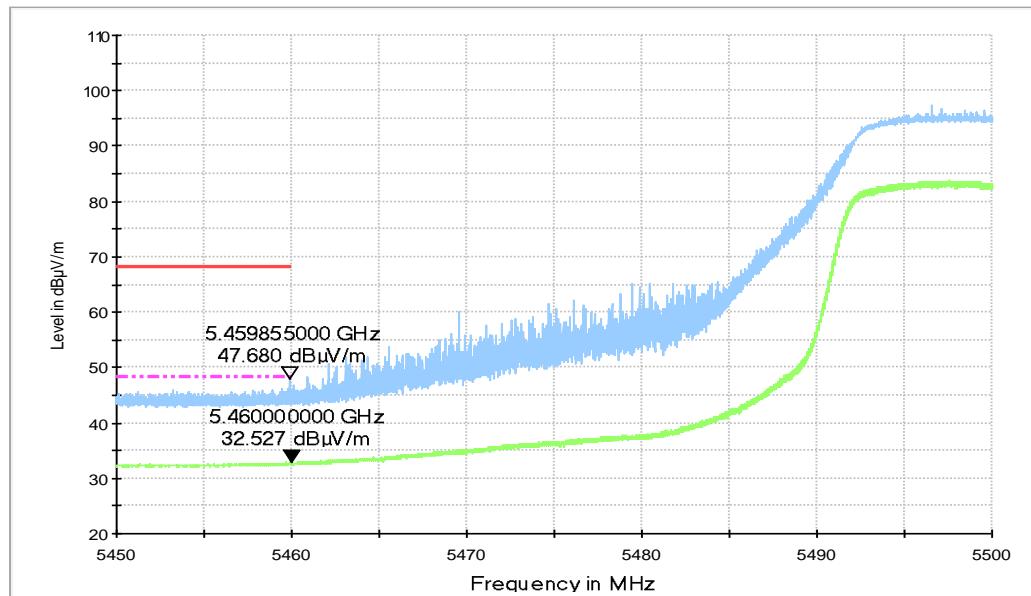
**Fig. 34 Band Edges (802.11n-HT40, 5190MHz)**

RE - Power-5.325GHz-5.375GHz

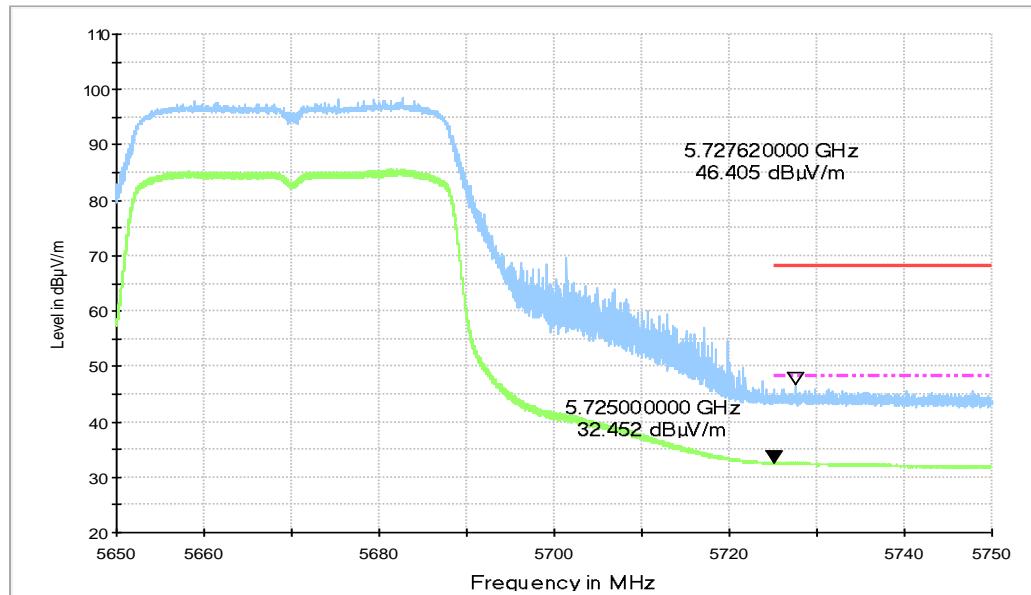


**Fig. 35 Band Edges (802.11n-HT40, 5310MHz)**

RE - Power-5.45GHz-5.50GHz


**Fig. 36 Band Edges (802.11n-HT40, 5510MHz)**

RE - Power-5.65GHz-5.75GHz


**Fig. 37 Band Edges (802.11n-HT40, 5670MHz)**

## A.6. 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)).

### Limit in restricted band:

Frequency of emission (MHz)	Field strength(dB $\mu$ V/m)	Measurement distance(m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

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

### Measurement uncertainty:

Expanded measurement uncertainty for this test item is U =5.4 dB, k=2.

### Measurement Results:

### 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:

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

**AVERAGE Results:****802.11a**

Channel 36

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5128.000	38.4	-35.0	34.2	39.19	48.3	9.9	H	155	92
5150.000	35.5	-34.7	34.2	36.07	48.3	12.8	H	155	267
10360.000	34.2	-30.0	37.5	26.67	48.3	14.1	H	155	296
15540.000	37.2	-27.6	40.1	24.67	48.3	11.1	H	155	314
13385.640	39.6	-30.5	39.0	31.11	48.3	8.7	H	155	90
16972.860	38.9	-26.9	41.7	24.09	48.3	9.4	H	155	112

Channel 40

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5147.600	39.0	-34.8	34.2	39.54	48.3	9.3	H	155	152
5252.400	38.6	-34.6	34.3	38.91	48.3	9.7	H	155	174
10400.000	39.6	-29.4	37.5	31.50	48.3	8.7	H	155	72
15600.000	38.9	-27.5	40.2	26.13	48.3	9.4	H	155	136
16937.850	38.9	-27.1	41.7	24.27	48.3	9.4	H	155	94
17911.630	38.8	-26.1	41.3	23.69	48.3	9.5	H	155	48

Channel 48

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5188.000	39.6	-34.2	34.3	39.56	48.3	8.7	H	155	28
5292.400	38.6	-35.1	34.3	39.44	48.3	9.7	H	155	49
10480.000	39.6	-31.5	37.6	33.52	48.3	8.7	H	155	246
15720.000	38.8	-27.5	40.4	25.89	48.3	9.5	H	155	182
16937.850	38.9	-27.1	41.7	24.26	48.3	9.4	H	155	94
17911.630	38.8	-26.1	41.3	23.61	48.3	9.5	H	155	42

## Channel 52

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5207.600	39.3	-34.3	34.3	39.36	48.3	9.0	H	155	48
5312.800	38.6	-35.0	34.4	39.19	48.3	9.7	H	155	6
10520.000	34.2	-32.0	37.6	28.60	48.3	14.1	H	155	312
15780.000	38.1	-27.6	40.4	25.27	48.3	10.2	H	155	48
16896.380	38.8	-27.0	41.6	24.13	48.3	9.5	H	155	68
17884.690	38.8	-26.2	41.3	23.79	48.3	9.5	H	155	80

## Channel 56

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5227.600	38.9	-34.4	34.3	39.03	48.3	9.4	H	155	92
5332.800	39.3	-34.8	34.4	39.73	48.3	9.0	H	155	26
10560.000	34.1	-30.7	37.6	27.16	48.3	14.2	H	155	222
15840.000	38.1	-27.5	40.5	25.07	48.3	10.2	H	155	248
16868.670	38.8	-26.9	41.6	24.17	48.3	9.5	H	155	46
17883.980	38.8	-26.2	41.3	23.76	48.3	9.5	H	155	68

## Channel 64

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5372.400	37.7	-34.1	34.4	37.43	48.3	10.6	H	155	48
5372.800	37.8	-34.1	34.4	37.49	48.3	10.5	H	155	6
10640.000	34.3	-29.0	37.7	25.57	48.3	14.1	H	155	312
15960.000	38.0	-27.1	40.7	24.49	48.3	10.3	H	155	48
16943.600	38.8	-27.1	41.7	24.22	48.3	9.5	H	155	68
17876.500	38.8	-26.3	41.3	23.76	48.3	9.5	H	155	80

## Channel 100

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5450.000	35.8	-33.1	34.5	34.43	48.3	12.5	H	155	92
5452.000	35.8	-33.1	34.5	34.45	48.3	12.5	H	155	26
11000.000	34.1	-30.1	37.8	26.45	48.3	14.2	H	155	222
16500.000	38.2	-27.0	41.3	23.92	48.3	10.1	H	155	248
16880.340	38.7	-26.9	41.6	24.03	48.3	9.6	H	155	46
17869.500	38.8	-26.3	41.3	23.82	48.3	9.5	H	155	68

## Channel 120

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5548.000	38.4	-34.6	34.6	38.50	48.3	9.9	H	155	8
5652.400	40.1	-33.0	34.7	38.36	48.3	8.2	H	155	28
11200.000	34.2	-30.3	38.0	26.56	48.3	14.1	H	155	6
16800.000	37.9	-26.8	41.5	23.14	48.3	10.4	H	155	278
16854.800	38.8	-26.9	41.6	24.15	48.3	9.5	H	155	122
17809.480	38.8	-26.6	41.3	24.08	48.3	9.5	H	155	245

## Channel 140

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5725.200	37.4	-33.6	34.8	36.20	48.3	10.9	H	155	25
5726.800	37.1	-33.6	34.8	35.88	48.3	11.2	H	155	49
11400.000	34.3	-30.4	38.1	26.57	48.3	14.0	H	155	4
17100.000	38.2	-26.1	41.6	22.67	48.3	10.1	H	155	6
16885.800	38.8	-27.0	41.6	24.14	48.3	9.5	H	155	25
17895.500	38.8	-26.2	41.3	23.74	48.3	9.5	H	155	186

**802.11n-HT20**

## Channel 36

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5128.000	37.5	-35.0	34.2	38.28	48.3	10.8	H	155	4
5147.600	34.7	-34.8	34.2	35.24	48.3	13.6	H	155	2
10360.000	34.2	-30.0	37.5	26.65	48.3	14.1	H	155	25
15540.000	37.2	-27.6	40.1	24.71	48.3	11.1	H	155	350
13385.640	39.5	-30.5	39.0	31.02	48.3	8.8	H	155	92
16972.860	38.9	-26.9	41.7	24.07	48.3	9.4	H	155	85

## Channel 40

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5148.400	38.7	-34.8	34.2	39.26	48.3	9.6	H	155	84
5252.000	38.6	-34.6	34.3	38.89	48.3	9.7	H	155	136
10400.000	39.5	-29.4	37.5	31.42	48.3	8.8	H	155	72
15600.000	38.8	-27.5	40.2	26.11	48.3	9.5	H	155	92
16945.680	38.8	-27.1	41.7	24.16	48.3	9.5	H	155	40
17908.630	38.8	-26.1	41.3	23.61	48.3	9.5	H	155	6

## Channel 48

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5188.400	39.5	-34.2	34.3	39.40	48.3	8.8	H	155	28
5292.000	38.5	-35.2	34.3	39.36	48.3	9.8	H	155	48
10480.000	39.6	-31.5	37.6	33.50	48.3	8.7	H	155	8
15720.000	38.7	-27.5	40.4	25.82	48.3	9.6	H	155	16
16937.850	38.8	-27.1	41.7	24.25	48.3	9.5	H	155	228
17911.630	38.8	-26.1	41.3	23.61	48.3	9.5	H	155	92

## Channel 52

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5208.400	39.4	-34.3	34.3	39.46	48.3	8.9	H	155	28
5312.000	38.4	-35.0	34.4	39.07	48.3	9.9	H	155	49
10520.000	34.3	-32.0	37.6	28.71	48.3	14.0	H	155	226
15780.000	38.2	-27.6	40.4	25.38	48.3	10.1	H	155	248
16941.000	38.7	-27.1	41.7	24.09	48.3	9.6	H	155	268
17878.800	38.9	-26.3	41.3	23.85	48.3	9.4	H	155	298

## Channel 56

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5228.400	39.1	-34.4	34.3	39.23	48.3	9.2	H	155	86
5332.000	38.4	-34.8	34.4	38.84	48.3	9.9	H	155	107
10560.000	34.1	-30.7	37.6	27.16	48.3	14.2	H	155	130
15840.000	38.3	-27.5	40.5	25.31	48.3	10.0	H	155	152
17018.650	38.8	-26.6	41.7	23.67	48.3	9.5	H	155	174
17894.680	38.7	-26.2	41.3	23.61	48.3	9.6	H	155	195

## Channel 64

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5371.600	37.8	-34.1	34.4	37.55	48.3	10.5	H	155	16
5372.000	37.9	-34.1	34.4	37.60	48.3	10.4	H	155	48
10640.000	34.3	-29.0	37.7	25.57	48.3	14.1	H	155	80
15960.000	38.0	-27.1	40.7	24.49	48.3	10.3	H	155	8
16940.600	38.8	-27.1	41.7	24.20	48.3	9.5	H	155	102
17875.890	38.8	-26.3	41.3	23.82	48.3	9.5	H	155	118

## Channel 100

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5450.800	35.8	-33.1	34.5	34.41	48.3	12.5	H	155	184
5454.400	35.7	-33.2	34.5	34.41	48.3	12.6	H	155	6
11000.000	34.3	-30.1	37.8	26.60	48.3	14.0	H	155	26
16500.000	38.5	-27.0	41.3	24.23	48.3	9.8	H	155	246
16985.000	38.7	-26.8	41.7	23.84	48.3	9.6	H	155	8
17882.500	38.8	-26.3	41.3	23.78	48.3	9.5	H	155	2

## Channel 120

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5548.000	38.4	-34.6	34.6	38.52	48.3	9.9	H	155	20
5652.000	40.3	-33.0	34.7	38.55	48.3	8.0	H	155	18
11200.000	34.2	-30.3	38.0	26.55	48.3	14.1	H	155	90
16800.000	38.4	-26.8	41.5	23.69	48.3	9.9	H	155	114
17022.580	38.7	-26.6	41.7	23.58	48.3	9.6	H	155	36
17889.500	38.7	-26.2	41.3	23.68	48.3	9.6	H	155	2

## Channel 140

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5725.600	35.7	-33.6	34.8	34.53	48.3	12.6	H	155	175
5726.800	35.7	-33.6	34.8	34.48	48.3	12.6	H	155	194
11400.000	34.3	-30.4	38.1	26.57	48.3	14.0	H	155	215
17100.000	38.2	-26.1	41.6	22.68	48.3	10.1	H	155	196
16885.500	38.8	-27.0	41.6	24.10	48.3	9.6	H	155	241
17869.500	38.7	-26.3	41.3	23.72	48.3	9.6	H	155	259

**802.11n-HT40**

## Channel 38

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5130.800	34.2	-35.0	34.2	34.99	48.3	14.1	H	155	28
5138.400	34.4	-34.9	34.2	35.14	48.3	13.9	H	155	74
10380.000	39.2	-29.7	37.5	31.43	48.3	9.1	H	155	140
15570.000	38.7	-27.6	40.2	26.12	48.3	9.6	H	155	8
13385.670	39.6	-30.5	39.0	31.11	48.3	8.7	H	155	80
17001.650	38.7	-26.7	41.7	23.70	48.3	9.6	H	155	243

## Channel 46

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5127.200	34.7	-35.0	34.2	35.48	48.3	13.6	H	155	135
5333.200	35.3	-34.8	34.4	35.73	48.3	13.0	H	155	160
10460.000	39.1	-30.9	37.6	32.43	48.3	9.2	H	155	92
15690.000	38.8	-27.4	40.3	25.95	48.3	9.5	H	155	115
13385.580	39.6	-30.5	39.0	31.10	48.3	8.7	H	155	112
17003.000	38.7	-26.7	41.7	23.70	48.3	9.6	H	155	85

## Channel 54

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5167.200	35.5	-34.5	34.2	35.71	48.3	12.8	H	155	48
5374.000	35.5	-34.1	34.4	35.15	48.3	12.8	H	155	6
10540.000	34.2	-31.3	37.6	27.93	48.3	14.1	H	155	312
15810.000	38.0	-27.6	40.5	25.14	48.3	10.3	H	155	48
16942.680	38.7	-27.1	41.7	24.10	48.3	9.6	H	155	68
17866.300	38.8	-26.3	41.3	23.83	48.3	9.5	H	155	80

## Channel 62

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5350.000	37.2	-34.6	34.4	37.42	48.3	11.1	H	155	135
5350.800	36.9	-34.6	34.4	37.03	48.3	11.4	H	155	160
10620.000	34.5	-28.8	37.6	25.64	48.3	13.9	H	155	92
15930.000	38.1	-27.2	40.6	24.69	48.3	10.2	H	155	115
17328.650	38.5	-26.7	41.4	23.81	48.3	9.8	H	155	112
17946.330	38.7	-26.0	41.3	23.35	48.3	9.7	H	155	85

## Channel 102

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5450.800	35.5	-33.1	34.5	34.14	48.3	12.8	H	155	16
5452.000	35.5	-33.1	34.5	34.13	48.3	12.8	H	155	48
11020.000	34.6	-30.7	37.8	27.51	48.3	13.7	H	155	80
16530.000	38.0	-26.9	41.3	23.58	48.3	10.3	H	155	8
17328.650	38.3	-26.7	41.4	23.67	48.3	10.0	H	155	102
17946.330	38.6	-26.0	41.3	23.29	48.3	9.7	H	155	118

## Channel 118

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5487.200	35.4	-33.8	34.5	34.74	48.3	12.9	H	155	20
5694.000	36.9	-33.0	34.8	35.08	48.3	11.4	H	155	248
11180.000	39.4	-30.1	37.9	31.61	48.3	8.9	H	155	49
16770.000	38.8	-26.7	41.5	24.00	48.3	9.5	H	155	82
16956.730	38.8	-27.0	41.7	24.16	48.3	9.5	H	155	168
17908.450	38.8	-26.1	41.3	23.68	48.3	9.5	H	155	8

## Channel 134

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5737.200	35.8	-33.8	34.8	34.74	48.3	12.5	H	155	28
5737.600	35.6	-33.8	34.8	34.59	48.3	12.7	H	155	74
11340.000	38.9	-30.5	38.1	31.30	48.3	9.4	H	155	140
17010.000	38.6	-26.6	41.7	23.52	48.3	9.7	H	155	8
16956.200	38.8	-27.0	41.7	24.12	48.3	9.5	H	155	80
17868.500	38.7	-26.3	41.3	23.72	48.3	9.6	H	155	243

**PEAK Results:****802.11a**

## Channel 36

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5149.480	57.9	-34.8	34.2	58.44	68.3	10.4	H	155	92
5149.645	58.5	-34.8	34.2	59.02	68.3	9.8	H	155	267
10360.000	49.3	-30.0	37.5	41.80	68.3	19.0	H	155	296
15540.000	53.8	-27.6	40.1	41.26	68.3	14.5	H	155	314
17013.850	56.2	-26.6	41.7	41.11	68.3	12.1	H	155	90
17952.150	53.2	-26.0	41.3	37.92	68.3	15.1	H	155	112

## Channel 40

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5147.600	49.7	-34.8	34.2	50.2	68.3	18.6	H	155	154
5252.800	48.5	-34.6	34.3	48.9	68.3	19.8	V	155	176
10400.000	48.8	-29.4	37.5	40.7	68.3	19.5	H	155	66
15600.000	51.8	-27.5	40.2	39.1	68.3	16.5	V	155	132
17681.540	54.8	-26.5	41.2	40.0	68.3	13.5	H	155	88
17992.360	55.0	-25.8	41.3	39.5	68.3	13.3	V	155	44

## Channel 48

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5187.000	50.0	-34.2	34.3	49.96	68.3	18.3	H	155	22
5292.800	49.9	-35.1	34.3	50.72	68.3	18.4	H	155	44
10480.000	48.9	-31.5	37.6	42.82	68.3	19.4	V	155	242
15720.000	51.7	-27.5	40.4	38.80	68.3	16.6	H	155	176
17679.590	54.8	-26.5	41.2	40.07	68.3	13.5	V	155	88
17989.630	55.4	-25.8	41.3	39.93	68.3	12.9	V	155	22

## Channel 52

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5207.000	51.0	-34.3	34.3	50.98	68.3	17.3	H	155	0
5312.800	49.3	-35.0	34.4	49.89	68.3	19.0	H	155	22
10520.000	49.2	-32.0	37.6	43.60	68.3	19.1	V	155	308
15780.000	53.6	-27.6	40.4	40.81	68.3	14.7	H	155	44
17013.850	56.2	-26.6	41.7	41.08	68.3	12.2	V	155	66
17952.150	53.1	-26.0	41.3	37.80	68.3	15.2	H	155	88

## Channel 56

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5227.600	50.0	-34.4	34.3	50.05	68.3	18.3	H	155	88
5332.600	50.2	-34.8	34.4	50.67	68.3	18.1	H	155	22
10560.000	49.1	-30.7	37.6	42.17	68.3	19.2	V	155	220
15840.000	53.5	-27.5	40.5	40.56	68.3	14.8	V	155	242
17013.850	56.2	-26.6	41.7	41.17	68.3	12.1	V	155	44
17952.150	53.2	-26.0	41.3	37.89	68.3	15.1	V	155	66

## Channel 64

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5350.625	55.5	-34.6	34.4	39.03	68.3	12.8	H	155	88
5351.345	56.0	-34.5	34.4	39.73	68.3	12.3	H	155	22
10640.000	49.0	-29.0	37.7	27.16	68.3	19.3	V	155	220
15960.000	53.6	-27.1	40.7	25.07	68.3	14.7	V	155	242
16987.300	56.2	-26.8	41.7	24.17	68.3	12.1	V	155	44
17945.900	53.0	-26.0	41.3	23.76	68.3	15.3	V	155	66

## Channel 100

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5450.580	46.8	-33.1	34.5	45.43	68.3	21.5	H	155	88
5452.220	46.2	-33.1	34.5	44.82	68.3	22.1	H	155	22
11000.000	49.3	-30.1	37.8	41.65	68.3	19.0	V	155	220
16500.000	53.6	-27.0	41.3	39.35	68.3	14.7	V	155	242
17025.980	56.2	-26.5	41.7	41.09	68.3	12.1	V	155	44
17954.820	53.2	-26.0	41.3	37.90	68.3	15.1	V	155	66

## Channel 120

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5546.600	48.9	-34.6	34.6	48.97	68.3	19.4	V	155	0
5652.600	51.1	-33.0	34.7	49.37	68.3	17.2	V	155	22
11200.000	49.2	-30.3	38.0	41.55	68.3	19.1	H	155	0
16800.000	53.6	-26.8	41.5	38.88	68.3	14.7	H	155	264
17033.460	56.2	-26.5	41.7	41.02	68.3	12.1	H	155	110
17948.930	53.3	-26.0	41.3	37.93	68.3	15.1	H	155	242

## Channel 140

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5725.110	59.5	-33.6	34.8	58.25	68.3	8.8	H	155	22
5725.945	56.7	-33.6	34.8	55.49	68.3	11.6	V	155	44
11400.000	49.2	-30.4	38.1	41.48	68.3	19.1	H	155	0
17100.000	53.6	-26.1	41.6	38.07	68.3	14.7	H	155	0
16969.540	56.3	-26.9	41.7	41.48	68.3	12.1	H	155	22
17952.880	53.1	-26.0	41.3	37.79	68.3	15.2	H	155	176

## 802.11n-HT20

## Channel 36

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5148.960	50.7	-34.8	34.2	51.27	68.3	17.6	H	155	0
5149.955	51.5	-34.8	34.2	52.01	68.3	16.8	H	155	0
10360.000	49.3	-30.0	37.5	41.75	68.3	19.0	V	155	22
15540.000	53.6	-27.6	40.1	41.11	68.3	14.7	V	155	352
17022.000	56.2	-26.6	41.7	41.11	68.3	12.1	V	155	88
17956.000	53.1	-25.9	41.3	37.76	68.3	15.2	V	155	88

## Channel 40

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5147.800	49.2	-34.8	34.2	49.74	68.3	19.1	H	155	88
5252.400	48.9	-34.6	34.3	49.19	68.3	19.4	H	155	132
10400.000	48.8	-29.4	37.5	40.74	68.3	19.5	V	155	66
15600.000	51.8	-27.5	40.2	39.06	68.3	16.5	H	155	88
17668.760	54.7	-26.5	41.2	39.92	68.3	13.6	V	155	44
17980.670	54.9	-25.8	41.3	39.44	68.3	13.4	V	155	0

## Channel 48

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5188.600	50.9	-34.2	34.3	50.89	68.3	17.4	H	155	22
5292.600	49.3	-35.1	34.3	50.14	68.3	19.0	H	155	44
10480.000	48.9	-31.5	37.6	42.82	68.3	19.4	V	155	0
15720.000	51.7	-27.5	40.4	38.80	68.3	16.6	H	155	22
17656.880	54.7	-26.5	41.2	39.94	68.3	13.6	H	155	242
17984.630	55.4	-25.8	41.3	39.89	68.3	12.9	H	155	88

## Channel 52

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5208.200	49.5	-34.3	34.3	49.54	68.3	18.8	H	155	22
5311.600	49.3	-35.0	34.4	49.89	68.3	19.0	H	155	44
10520.000	49.3	-32.0	37.6	43.71	68.3	19.0	V	155	220
15780.000	53.6	-27.6	40.4	40.76	68.3	14.7	V	155	242
17036.000	56.2	-26.5	41.7	41.02	68.3	12.1	H	155	264
17937.680	53.2	-26.0	41.3	37.95	68.3	15.1	H	155	286

## Channel 56

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5228.000	49.8	-34.4	34.3	49.86	68.3	18.5	V	155	88
5332.600	49.7	-34.8	34.4	50.12	68.3	18.6	H	155	110
10560.000	49.1	-30.7	37.6	42.17	68.3	19.2	V	155	132
15840.000	53.5	-27.5	40.5	40.56	68.3	14.8	H	155	154
17324.500	56.3	-26.7	41.4	41.68	68.3	12.0	V	155	176
17949.680	53.3	-26.0	41.3	38.02	68.3	15.0	V	155	198

## Channel 64

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5351.025	57.1	-34.6	34.4	57.27	68.3	11.2	H	155	22
5352.750	55.5	-34.5	34.4	55.61	68.3	12.8	H	155	66
10640.000	48.9	-29.0	37.7	40.18	68.3	19.4	V	155	88
15960.000	53.6	-27.1	40.7	40.03	68.3	14.7	V	155	0
16987.670	56.3	-26.8	41.7	41.41	68.3	12.0	H	155	110
17945.830	53.2	-26.0	41.3	37.94	68.3	15.1	H	155	132

## Channel 100

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5450.130	46.6	-33.1	34.5	45.20	68.3	21.7	H	155	176
5451.415	46.0	-33.1	34.5	44.60	68.3	22.3	H	155	0
11000.000	49.3	-30.1	37.8	41.64	68.3	19.0	V	155	22
16500.000	53.7	-27.0	41.3	39.42	68.3	14.6	V	155	352
17033.690	56.2	-26.5	41.7	41.01	68.3	12.1	V	155	0
17965.740	53.3	-25.9	41.3	37.94	68.3	15.0	H	155	0

## Channel 120

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5548.400	49.3	-34.6	34.6	49.36	68.3	19.0	H	155	22
5652.600	51.3	-33.0	34.7	49.58	68.3	17.0	H	155	22
11200.000	49.2	-30.3	38.0	41.55	68.3	19.1	H	155	88
16800.000	53.2	-26.8	41.5	38.43	68.3	15.1	V	155	110
17088.480	56.2	-26.1	41.6	40.77	68.3	12.1	V	155	44
17955.640	53.2	-25.9	41.3	37.85	68.3	15.1	H	155	0

## Channel 140

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5725.220	53.4	-33.6	34.8	52.14	68.3	14.9	V	155	176
5725.940	52.8	-33.6	34.8	51.59	68.3	15.5	H	155	198
11400.000	49.0	-30.4	38.1	41.25	68.3	19.3	V	155	220
17100.000	52.9	-26.1	41.6	37.35	68.3	15.4	H	155	198
16994.220	56.3	-26.7	41.7	41.33	68.3	12.0	H	155	242
17958.270	53.3	-25.9	41.3	37.95	68.3	15.0	V	155	264

## 802.11n-HT40

## Channel 38

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5146.950	61.9	-34.8	34.2	62.5	68.3	6.4	H	155	22
5148.905	63.0	-34.8	34.2	63.5	68.3	5.3	H	155	66
10380.000	48.7	-29.7	37.5	40.9	68.3	19.6	V	155	132
15570.000	51.9	-27.6	40.2	39.3	68.3	16.4	H	155	0
17027.640	55.6	-26.5	41.7	40.5	68.3	12.7	V	155	88
17903.860	55.8	-26.2	41.3	40.7	68.3	12.5	V	155	242

## Channel 46

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5127.600	46.0	-35.0	34.2	46.82	68.3	22.3	H	155	135
5332.800	46.2	-34.8	34.4	46.65	68.3	22.1	H	155	160
10460.000	48.6	-30.9	37.6	41.88	68.3	19.8	H	155	92
15690.000	51.8	-27.4	40.3	38.95	68.3	16.5	H	155	115
17906.780	55.9	-26.2	41.3	40.75	68.3	12.4	H	155	112
17683.560	55.0	-26.5	41.2	40.25	68.3	13.3	H	155	85

## Channel 54

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5165.600	46.2	-34.5	34.2	46.45	68.3	22.1	H	155	44
5373.400	46.1	-34.1	34.4	45.75	68.3	22.2	H	155	0
10540.000	48.3	-31.3	37.6	42.05	68.3	20.0	V	155	308
15810.000	51.8	-27.6	40.5	38.92	68.3	16.5	H	155	44
17946.860	55.3	-26.0	41.3	39.96	68.3	13.0	V	155	66
17326.890	55.8	-26.7	41.4	41.18	68.3	12.5	H	155	88

## Channel 62

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5351.795	62.9	-34.5	34.4	63.03	68.3	5.4	H	155	132
5352.200	61.3	-34.5	34.4	61.43	68.3	7.0	H	155	154
10620.000	48.9	-28.8	37.6	40.05	68.3	19.4	V	155	88
15930.000	48.0	-27.2	40.6	34.55	68.3	20.3	H	155	110
17984.960	55.4	-25.8	41.3	39.90	68.3	12.9	V	155	110
17341.650	56.0	-26.7	41.4	41.28	68.3	12.3	V	155	88

## Channel 102

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5456.575	45.7	-33.2	34.5	44.45	68.3	22.6	H	155	22
5459.855	47.7	-33.3	34.5	46.47	68.3	20.6	H	155	44
11020.000	49.2	-30.7	37.8	42.05	68.3	19.1	V	155	88
16530.000	53.4	-26.9	41.3	38.97	68.3	14.9	V	155	0
17905.700	55.4	-26.2	41.3	40.28	68.3	12.9	H	155	110
17512.500	55.7	-26.3	41.2	40.82	68.3	12.6	H	155	132

## Channel 118

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5485.400	45.7	-33.7	34.5	44.97	68.3	22.6	H	155	22
5655.400	47.4	-32.9	34.7	45.62	68.3	20.9	V	155	242
11180.000	49.1	-30.1	37.9	41.31	68.3	19.2	H	155	44
16770.000	52.3	-26.7	41.5	37.55	68.3	16.0	V	155	88
17976.840	55.4	-25.9	41.3	39.97	68.3	12.9	V	155	176
17355.260	55.9	-26.6	41.3	41.17	68.3	12.4	V	155	0

## Channel 134

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5725.910	64.7	-33.6	34.8	63.50	68.3	3.6	H	155	22
5727.620	46.4	-33.6	34.8	45.22	68.3	21.9	H	155	66
11340.000	49.2	-30.5	38.1	41.64	68.3	19.1	V	155	132
17010.000	52.7	-26.6	41.7	37.65	68.3	15.6	H	155	0
17764.500	55.8	-26.5	41.3	41.07	68.3	12.5	V	155	88
17653.240	55.9	-26.5	41.2	41.15	68.3	12.4	V	155	242

### A.7. AC Powerline Conducted Emission (150kHz- 30MHz)

**Test Condition:**

Voltage (V)	Frequency (Hz)
110	60

**Measurement uncertainty:**

Expanded measurement uncertainty for this test item is U =3.10dB, k=2.

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion	
		With charger			
		11a mode	Idle		
0.15 to 0.5	66 to 56	Fig. 38  Fig. 40	Fig. 39	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.

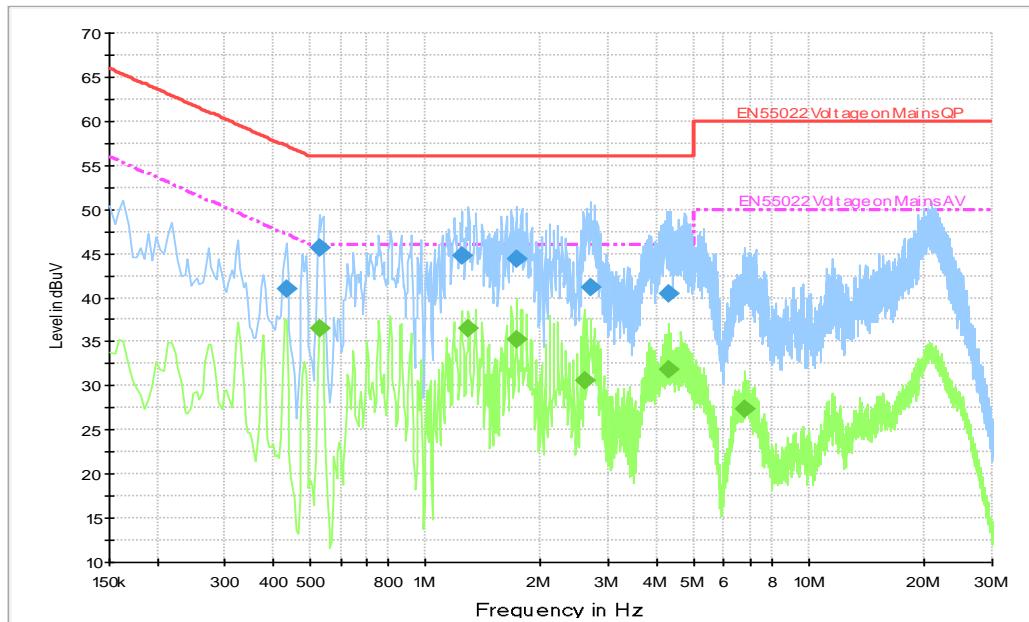
WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion	
		With charger			
		11a mode	Idle		
0.15 to 0.5	56 to 46	Fig. 38  Fig. 40	Fig. 39	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**

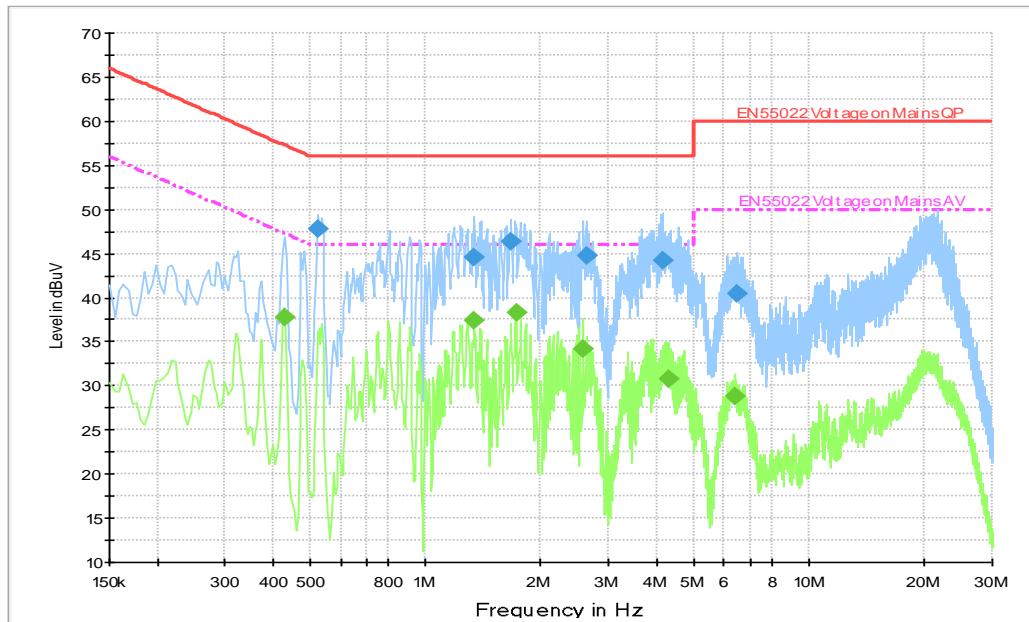
**Test graphs as below:**

**Traffic (With AE3):**

**Fig. 38 Conducted Emission(802.11a, Ch40, TX)**
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.433500	41.0	10000	9.000	GND	L1	10.3	16.2	57.2
0.528000	45.6	10000	9.000	GND	L1	10.3	10.4	56.0
1.243500	44.8	10000	9.000	GND	L1	10.4	11.2	56.0
1.729500	44.3	10000	9.000	GND	L1	10.4	11.7	56.0
2.701500	41.1	10000	9.000	GND	L1	10.5	14.9	56.0
4.321500	40.4	10000	9.000	GND	L1	10.5	15.6	56.0

**Final Result 2**

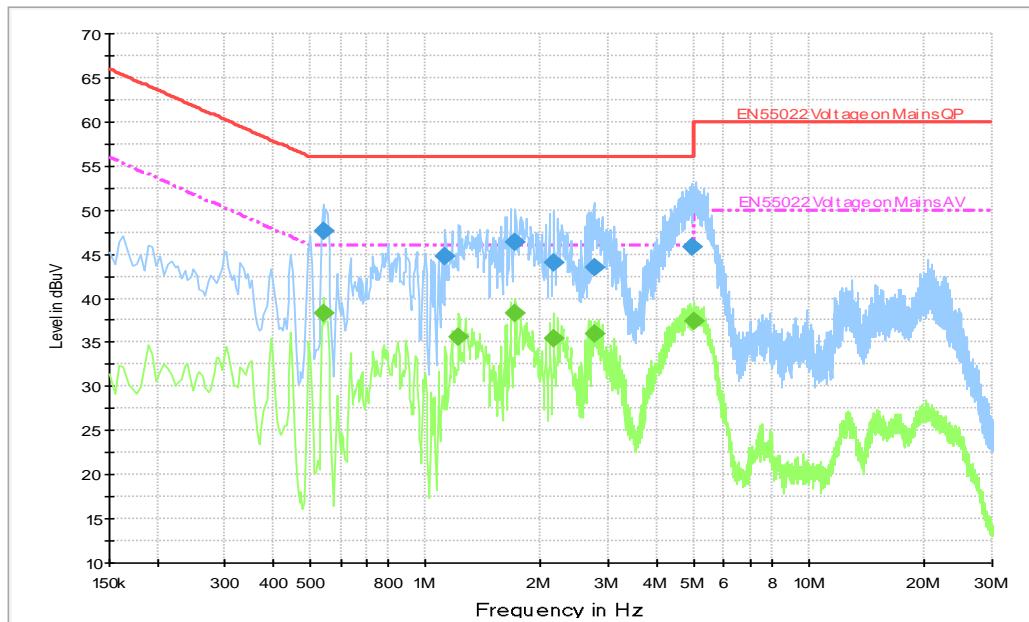
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.528000	36.4	10000	9.000	GND	L1	10.3	9.6	46.0
1.297500	36.5	10000	9.000	GND	L1	10.4	9.5	46.0
1.729500	35.3	10000	9.000	GND	L1	10.4	10.7	46.0
2.589000	30.7	10000	9.000	GND	L1	10.5	15.3	46.0
4.317000	31.9	10000	9.000	GND	L1	10.5	14.1	46.0
6.805500	27.4	10000	9.000	GND	L1	10.7	22.6	50.0

**Idle (With AE3):**

**Fig. 39 Conducted Emission(802.11a, IDLE)**
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.523500	47.7	10000	9.000	GND	L1	10.3	8.3	56.0
1.342500	44.6	10000	9.000	GND	L1	10.3	11.4	56.0
1.671000	46.4	10000	9.000	GND	L1	10.4	9.6	56.0
2.625000	44.7	10000	9.000	GND	L1	10.5	11.3	56.0
4.146000	44.1	10000	9.000	GND	L1	10.5	11.9	56.0
6.463500	40.5	10000	9.000	GND	L1	10.7	19.5	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.429000	37.8	10000	9.000	GND	L1	10.3	9.5	47.3
1.338000	37.4	10000	9.000	GND	L1	10.4	8.6	46.0
1.720500	38.3	10000	9.000	GND	L1	10.4	7.7	46.0
2.575500	34.2	10000	9.000	GND	L1	10.5	11.8	46.0
4.299000	30.7	10000	9.000	GND	L1	10.5	15.3	46.0
6.391500	28.9	10000	9.000	GND	L1	10.7	21.1	50.0

**Traffic (With AE4)::**

**Fig. 40 Conducted Emission(802.11a, Ch40, TX)**
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.541500	47.6	10000	9.000	GND	L1	10.3	8.4	56.0
1.126500	44.8	10000	9.000	GND	L1	10.4	11.2	56.0
1.716000	46.4	10000	9.000	GND	L1	10.4	9.6	56.0
2.161500	44.0	10000	9.000	GND	L1	10.4	12.0	56.0
2.746500	43.5	10000	9.000	GND	L1	10.5	12.5	56.0
4.933500	45.8	10000	9.000	GND	L1	10.5	10.2	56.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.541500	38.3	10000	9.000	GND	L1	10.3	7.7	46.0
1.221000	35.5	10000	9.000	GND	L1	10.4	10.5	46.0
1.716000	38.2	10000	9.000	GND	L1	10.4	7.8	46.0
2.161500	35.4	10000	9.000	GND	L1	10.4	10.6	46.0
2.751000	36.0	10000	9.000	GND	L1	10.5	10.0	46.0
4.992000	37.5	10000	9.000	GND	L1	10.5	8.5	46.0

### A.8. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

#### Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
-------------------------	---------

#### Measurement Result:

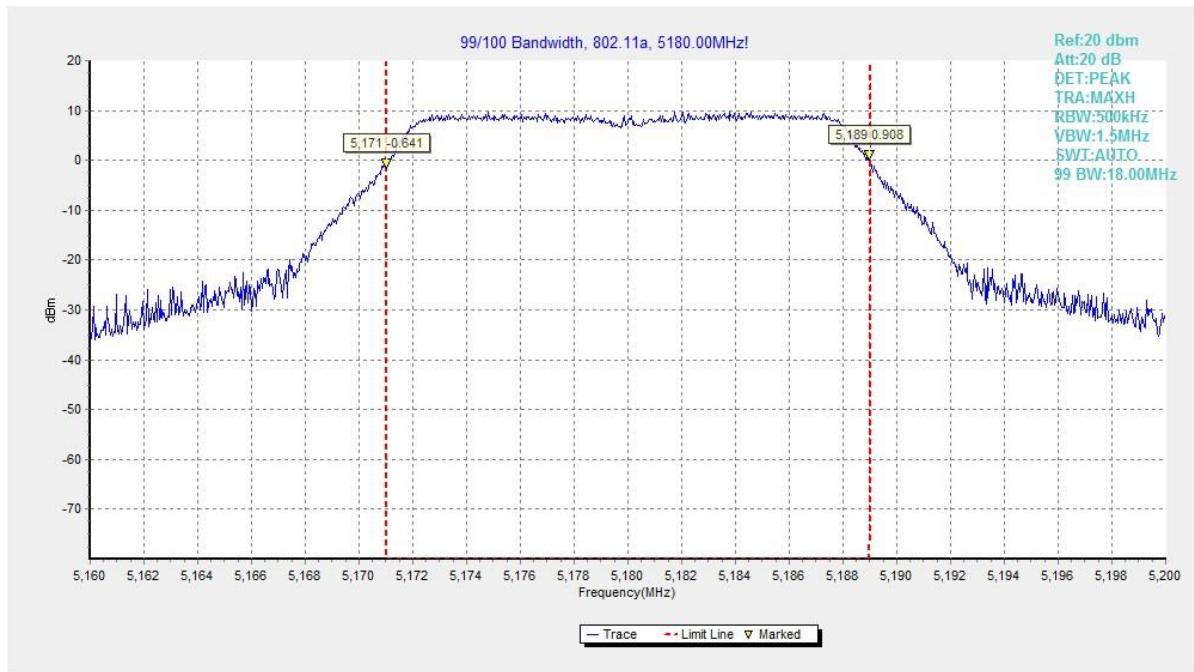
Mode	Channel	99% Occupied bandwidth (MHz)	conclusion
802.11a	5180 MHz	Fig.41	18.00
	5200 MHz	Fig.42	18.04
	5240 MHz	Fig.43	18.04

802.11n HT20	5180 MHz	Fig.44	18.76	P
	5200 MHz	Fig.45	18.80	P
	5240 MHz	Fig.46	18.80	P

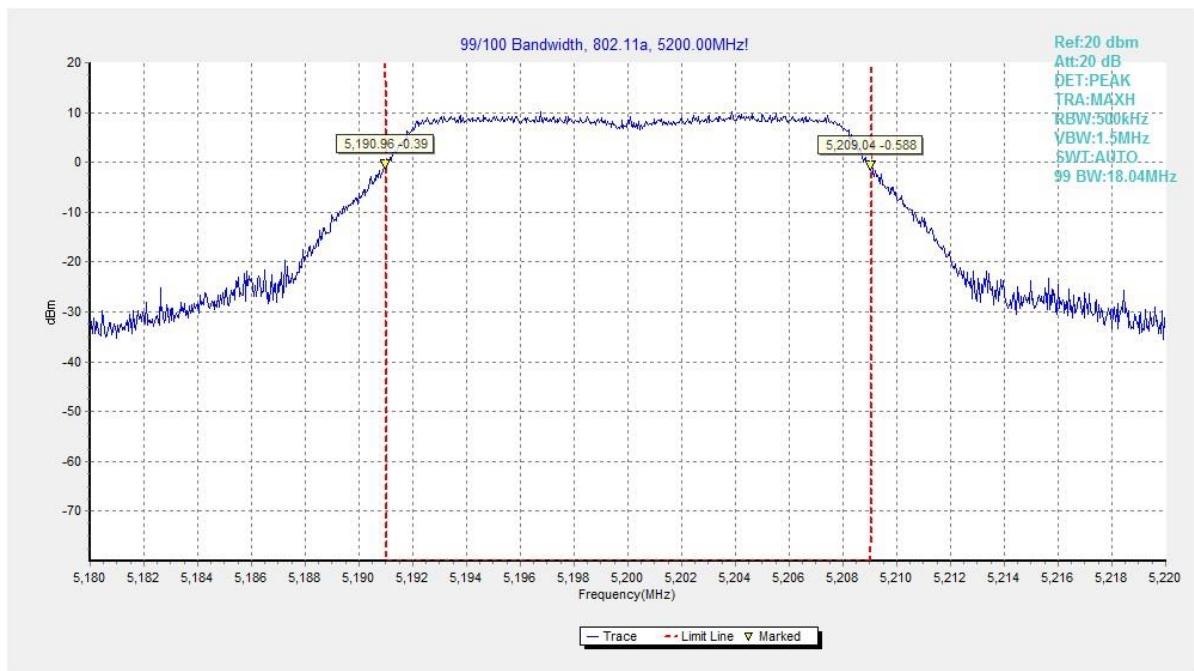
802.11n	5190 MHz	Fig.47	36.40	P
HT40	5230 MHz	Fig.48	36.48	P

**Conclusion: PASS**

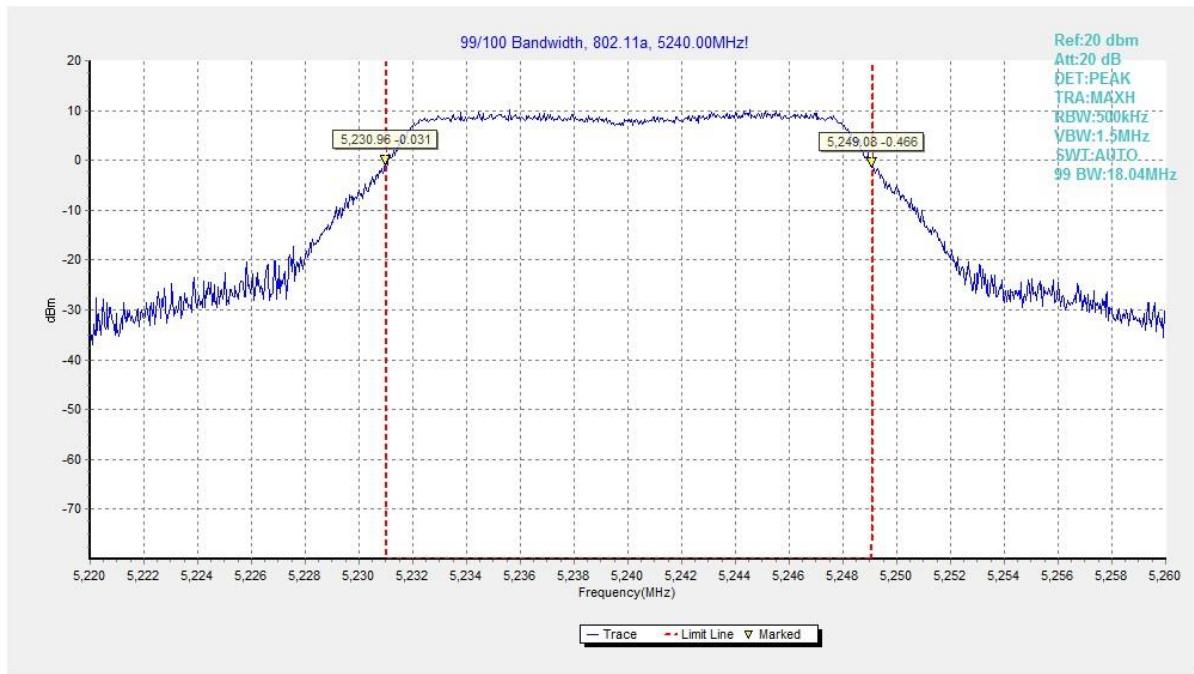
**Test graphs as below:**



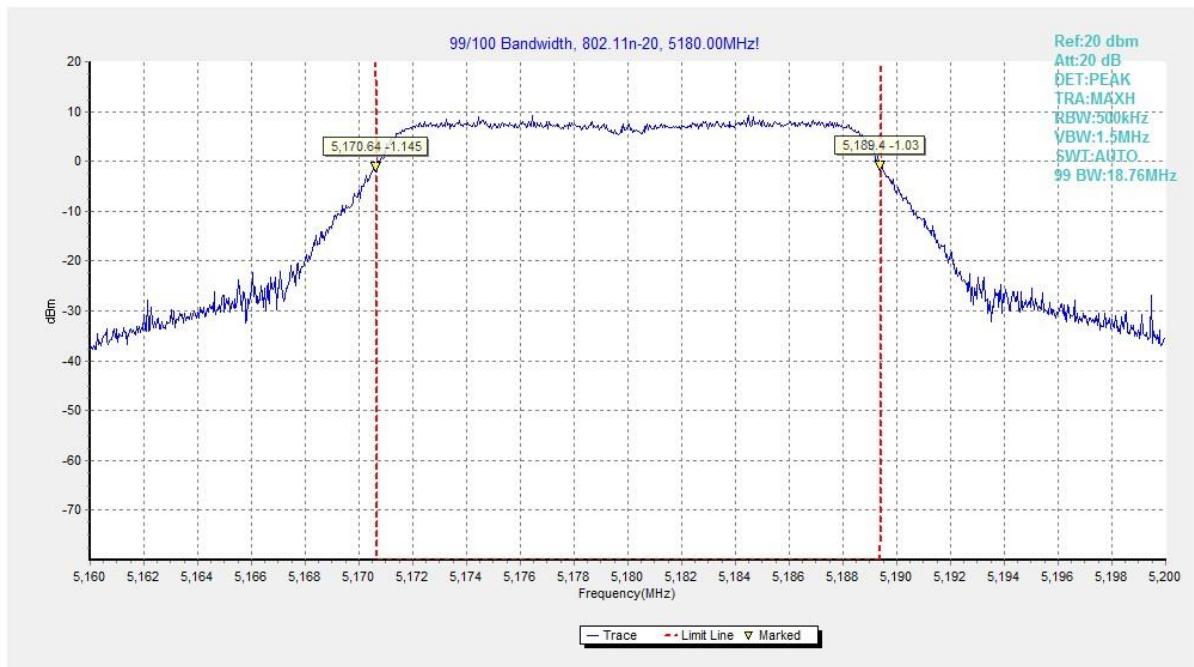
**Fig. 41 99% Occupied bandwidth (802.11a, 5180MHz)**



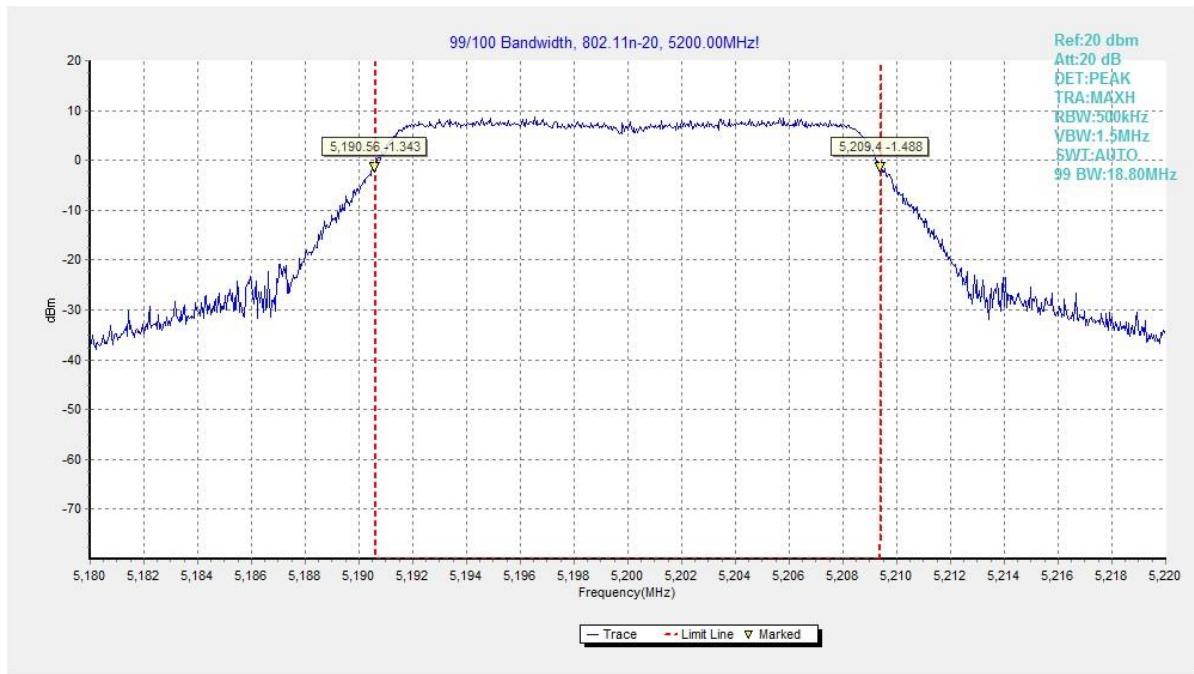
**Fig. 42 99% Occupied bandwidth (802.11a, 5200MHz)**



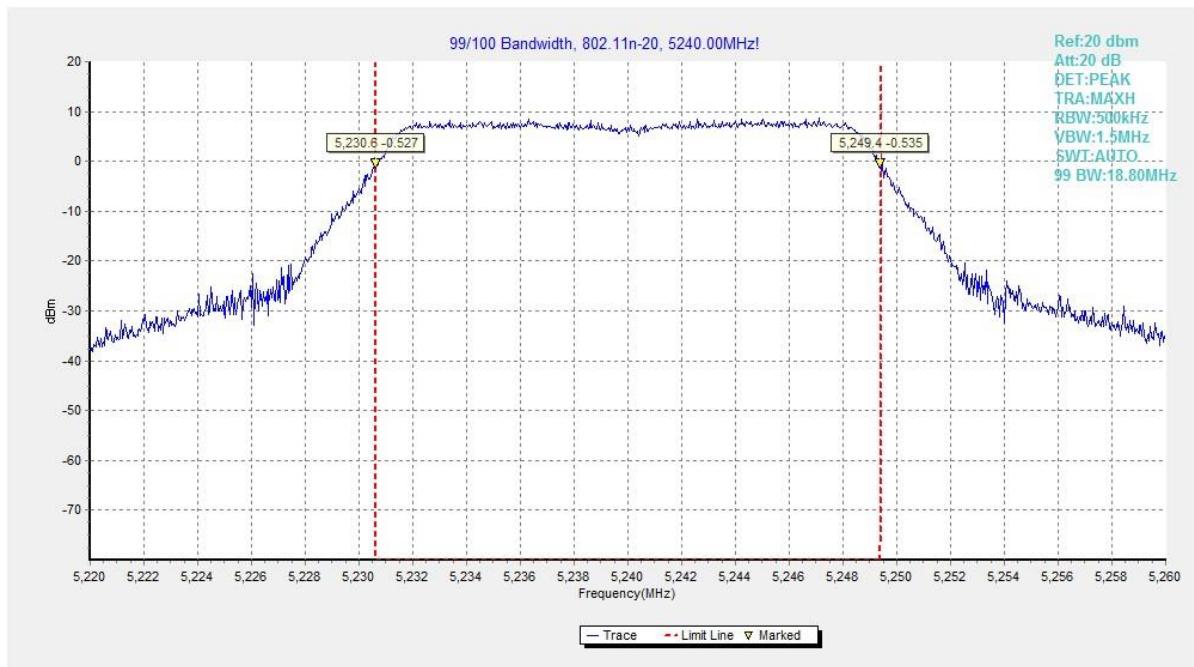
**Fig. 43 99% Occupied bandwidth (802.11a, 5240MHz)**



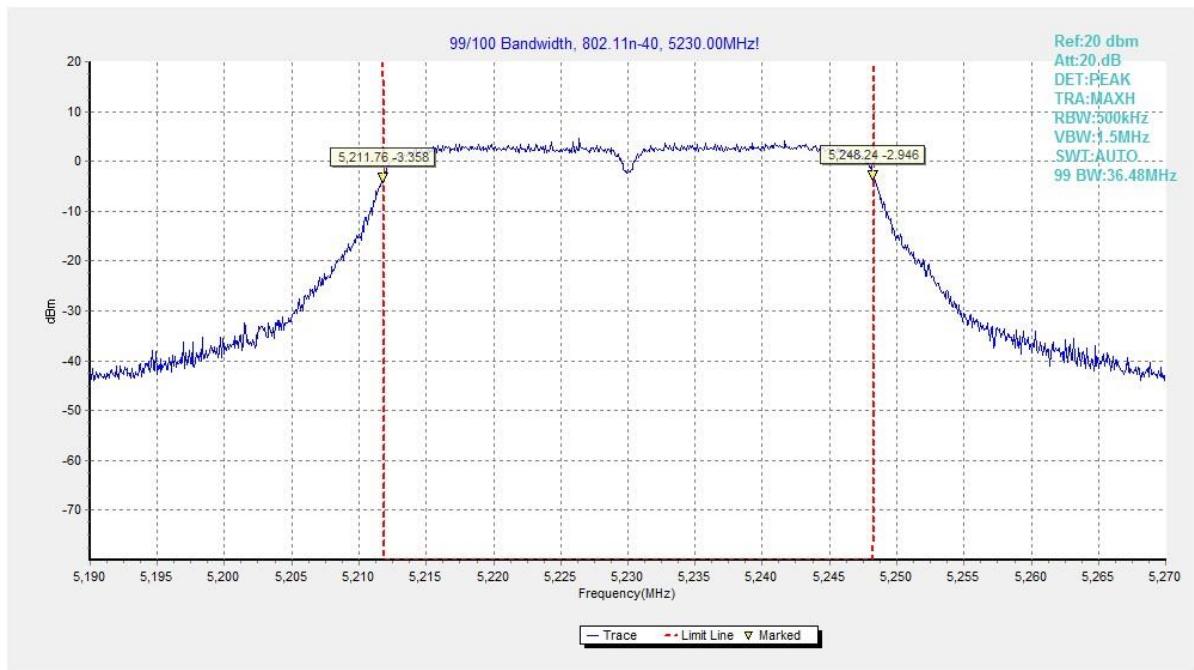
**Fig. 44 99% Occupied bandwidth (802.11n20, 5180MHz)**



**Fig. 45 99% Occupied bandwidth (802.11n20, 5200MHz)**



**Fig. 46 99% Occupied bandwidth (802.11n20, 5240MHz)**


**Fig. 47 99% Occupied bandwidth (802.11n40, 5190MHz)**

**Fig. 48 99% Occupied bandwidth (802.11n40, 5230MHz)**

### A.9. Frequency Stability

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

#### Measurement Result:

Mode	Channel	Test Condition		Result(MHz)
802.11n-HT40	5190MHz	Tnom	Vnom	0.03
		Tmax	Vnom	
		Tmin	Vnom	
		Vmax	Tnom	
		Vmin	Tnom	
802.11n-HT40	5310MHz	Tnom	Vnom	0.02
		Tmax	Vnom	
		Tmin	Vnom	
		Vmax	Tnom	
		Vmin	Tnom	
802.11n-HT40	5550MHz	Tnom	Vnom	0.03
		Tmax	Vnom	
		Tmin	Vnom	
		Vmax	Tnom	
		Vmin	Tnom	

### A.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).



## ANNEX B: Accreditation Certificate

United States Department of Commerce  
National Institute of Standards and Technology



### Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

**Telecommunication Technology Labs, CAICT**

Beijing  
China

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

**Electromagnetic Compatibility & Telecommunications**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
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 January 2009).*

2018-09-28 through 2019-09-30

Effective Dates



For the National Voluntary Laboratory Accreditation Program

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