



# FCC PART 15C TEST REPORT No.I20Z70165-IOT07

for

**Client name: Samsung Electronics. Co., Ltd.**

**Product name: Multi-band GSM/WCDMA/LTE Tablet with Bluetooth,  
WLAN**

**Model name: SM-T505**

**With**

**FCC ID: ZCASMT505**

**Hardware Version: REV1.0**

**Software Version: T505.001**

**Issued Date: 2020-07-02**

**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.

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I20Z70165-IOT07	Rev.0	1st edition	2020-07-02

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## 1. TEST LABORATORY

### 1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory 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. Testing Location

Conducted testing Location: CTTL(huayuan North Road)

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

Radiated testing Location: CTTL(Shouxiang)

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

### 1.3. Testing Environment

Normal Temperature: 15-35°C

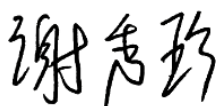
Relative Humidity: 20-75%

### 1.4. Project date

Testing Start Date: 2020-05-27

Testing End Date: 2020-07-02

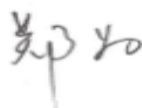
### 1.5. Signature



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Xie Xiuzhen

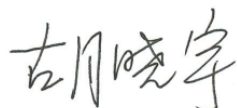
( Prepared this test report )



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Zheng Wei

(Reviewed this test report)



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Hu Xiaoyu

(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: Samsung Electronics. Co., Ltd.  
Address /Post: 19 Chapin Rd.,Building D Pine Brook, NJ 07058  
Contact: Jenni Chun  
Email: j1.chun@samsung.com  
Telephone: +1-201-937-4203

### **2.2. Manufacturer Information**

Company Name: Samsung Electronics. Co., Ltd.  
Address /Post: R5, A Tower 22 Floor A-1,(Maetan dong)  
129,Samsung-ro,Yeongtong-gu, Suwon-Si, Gyeonggi-do 16677,  
Korea  
Contact: JP KIM  
Email: jp426.kim@samsung.com  
Telephone: +82-10-4376-0326

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

#### EQUIPMENT(AE)

##### 3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE Tablet with Bluetooth, WLAN
Model name	SM-T505
FCC ID	ZCASMT505
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.8V

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

EUT ID*	IMEI	HW Version	SW Version
UT01a	2070165UT15a	REV1.0	T505.001
UT36a	2070165UT36a	REV1.0	T505.001

\*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	Remarks
AE1	Battery	/	/
AE2	Charger	/	/
AE3	Charger	/	/
AE4	Charger	/	/
AE5	USB Cable	/	/
AE6	USB Cable	/	/
AE7	Charger	/	/
AE8	Charger	/	/
AE9	Charger	/	/
AE10	Charger	/	/
AE11	Charger	/	/
AE12	Charger	/	/
AE13	USB Cable	/	/
AE14	USB Cable	/	/

##### AE1

Model	SCUD-WT-N19
Manufacturer	SCUD(Fujian) Electronics Co., Ltd
Capacitance	/
Nominal voltage	/

##### AE2

Model	EP-TA50JWE
Manufacturer	R.F.Tech

Length of cable	/
AE3	
Model	EP-TA50JWE
Manufacturer	DONGWON
Length of cable	/
AE4	
Model	EP-TA50RWS
Manufacturer	DONG YANG
Length of cable	/
AE5	
Model	EP-DT725BWE
Manufacturer	R.F.Tech
Length of cable	/
AE6	
Model	EP-DT725BWE
Manufacturer	KSD
Length of cable	/
AE7	
Model	EP-TA50JWS
Manufacturer	R.F.Tech
Length of cable	/
AE8	
Model	EP-TA50EWE
Manufacturer	R.F.Tech
Length of cable	/
AE9	
Model	EP-TA50JWS
Manufacturer	DONGWON
Length of cable	/
AE10	
Model	EP-TA50EWE
Manufacturer	DONGWON
Length of cable	/
AE11	
Model	EP-TA50EWE(Chile)
Manufacturer	DONGWON
Length of cable	/
AE12	
Model	EP-TA50EWE(Chile)
Manufacturer	DONG YANG
Length of cable	/
AE13	
Model	EP-DT725BWZ
Manufacturer	R.F.Tech



Length of cable	/
AE14	
Model	EP-DT725BWZ
Manufacturer	KSD
Length of cable	/

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

### 3.4. General Description

Equipment Under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE Tablet with Bluetooth, WLAN with integrated antenna. It consists of normal options: Battery and Charger.

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

Samples undergoing test were selected by the Client.

## 4. REFERENCE DOCUMENTS

### 4.1. Documents supplied by applicant

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

### 4.2. Reference Documents for testing

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

FCC Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	2018
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
KDB 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

## 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 Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.407 (a)	/	P
Peak Power Spectral Density	15.407 (a)	/	P
Occupied 6dB Bandwidth	15.407 (e)	/	P
Band Edges Compliance - Radiated	15.407 (b)	/	P
Transmitter Spurious Emission - Radiated	15.407, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P

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

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by 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. Test Conditions

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

Temperature	26°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	2021-05-06
2	LISN	ENV216	825562/028	R&S	1 year	2020-09-05
3	Test Receiver	ESCI	100766	R&S	1 year	2021-03-11
4	Shielding Room	S81	/	ETS-Lindgren	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	1 year	2020-10-30
2	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	1 year	2020-09-16
3	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	1 year	2020-11-10
4	Dual-Ridge Waveguide Horn Antenna	3116	2661	ETS-Lindgren	1 year	2020-10-18
5	Vector Signal Analyzer	FSV40	101047	Rohde & Schwarz	1 year	2021-05-18

## 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 6dB 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)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

#### Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.40
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.32
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.26

### 8.6. AC Power-line Conducted Emission

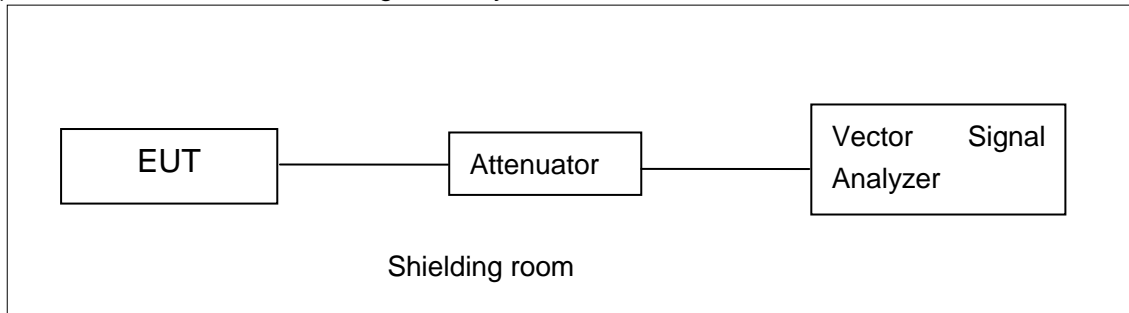
Measurement Uncertainty : 3.08dB,k=2

## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### A.1.1. Conducted Measurements

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

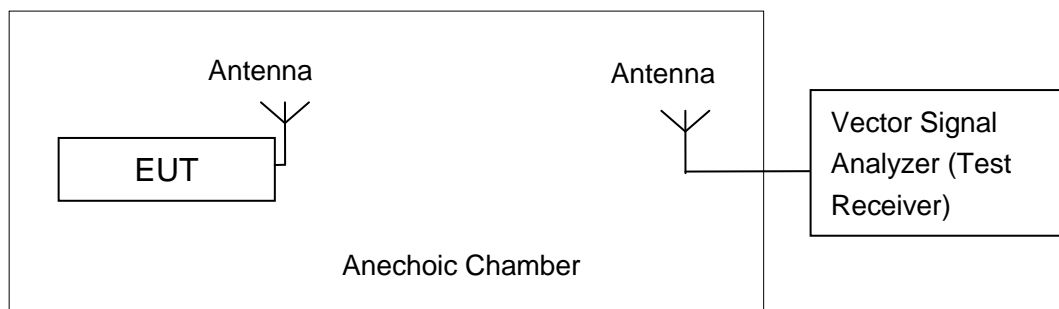


#### A.1.2. Radiated Emission Measurements

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

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

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



The measurement is made according to ANSI C63.10.

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 Average Output Power-Conducted

### Measurement Limit and Method:

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

### A.2.1 Antenna Gain

Antenna gain is dBi and the value is supplied by the applicant or manufacturer.

### A.2.2. Maximum Peak Output Power-conducted

#### Duty Cycle

11a	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps		
Duty Cycle	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98		
11n-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
Duty Cycle	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.97		
11n-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
Duty Cycle	0.99	0.99	0.99	0.98	0.98	0.97	0.96	0.96		
11ac-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	
Duty Cycle	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.97	
11ac-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Duty Cycle	0.99	0.99	0.98	0.98	0.98	0.97	0.97	0.96	0.95	0.95
11ac-80	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Duty Cycle	0.99	0.98	0.97	0.96	0.95	0.93	0.93	0.93	0.91	0.91

### Measurement Results:

#### 802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	17.42	17.49	17.95
	9	16.85	/	/
	12	16.34	/	/
	18	15.75	/	/
	24	15.21	/	/
	36	14.74	/	/
	48	14.10	/	/
	54	13.67	/	/

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

**802.11n-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n (20MHz)	MCS0	16.00	15.96	16.60
	MCS1	15.59	/	/
	MCS2	15.07	/	/
	MCS3	15.11	/	/
	MCS4	15.25	/	/
	MCS5	14.71	/	/
	MCS6	14.15	/	/
	MCS7	13.72	/	/

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

**802.11ac-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac (20MHz)	MCS0	16.12	16.02	16.49
	MCS1	15.60	/	/
	MCS2	15.10	/	/
	MCS3	15.08	/	/
	MCS4	14.72	/	/
	MCS5	14.19	/	/
	MCS6	14.14	/	/
	MCS7	13.66	/	/
	MCS8	13.25	/	/

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

**802.11n-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n (40MHz)	MCS0	15.34	15.21
	MCS1	15.24	/
	MCS2	15.27	/
	MCS3	15.23	/
	MCS4	14.40	/
	MCS5	14.43	/
	MCS6	14.40	/
	MCS7	14.39	/

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

**802.11ac-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac (40MHz)	MCS0	15.31	/
	MCS1	15.26	/
	MCS2	15.32	15.07
	MCS3	15.25	/
	MCS4	14.42	/
	MCS5	14.42	/
	MCS6	13.89	/
	MCS7	13.33	/
	MCS8	13.40	/
	MCS9	12.96	/

The data rate MCS2 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-HT80 mode**

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac (80MHz)	MCS0	15.59
	MCS1	15.74
	MCS2	14.60
	MCS3	14.36
	MCS4	14.20
	MCS5	13.30
	MCS6	13.33
	MCS7	12.86
	MCS8	12.25
	MCS9	11.71

The data rate MCS1 is selected as worse condition, and the following cases are performed with this condition.

**Conclusion: PASS**



### A.3. Peak Power Spectral Density

#### Measurement Limit:

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

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

#### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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#### Measurement Results:

Mode	Channel	Power Spectral Density ( dBm/500kHz )	Conclusion
802.11a	149	0.86	P
	157	0.82	P
	165	1.24	P
802.11n HT20	149	-0.58	P
	157	-0.79	P
	165	-0.33	P
802.11ac HT20	149	-0.50	P
	157	-0.79	P
	165	-0.29	P
802.11n HT40	151	-4.41	P
	159	-4.36	P
802.11ac HT40	151	-4.77	P
	159	-4.77	P
802.11ac HT80	155	-8.49	P

**Conclusion: PASS**

#### A.4. Occupied 6dB Bandwidth

##### Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.407 (e)	≥ 500

The measurement is made according to KDB789033 D02 .

##### Measurement Uncertainty:

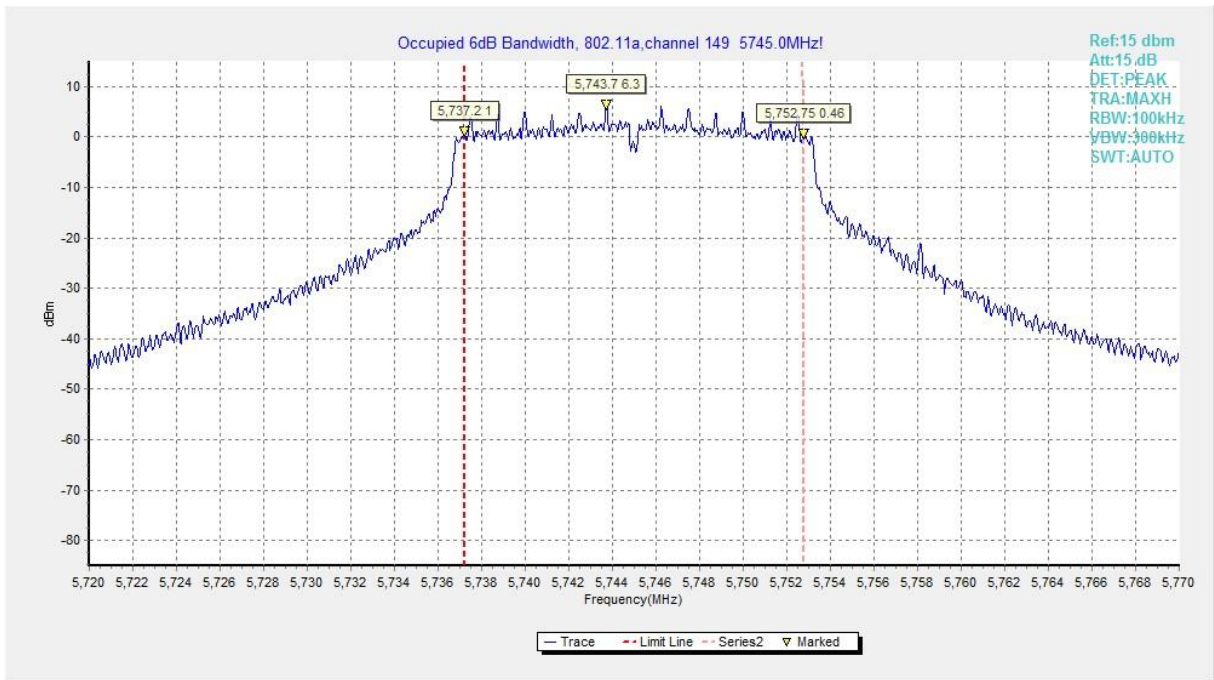
Measurement Uncertainty	60.80Hz
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##### Measurement Result:

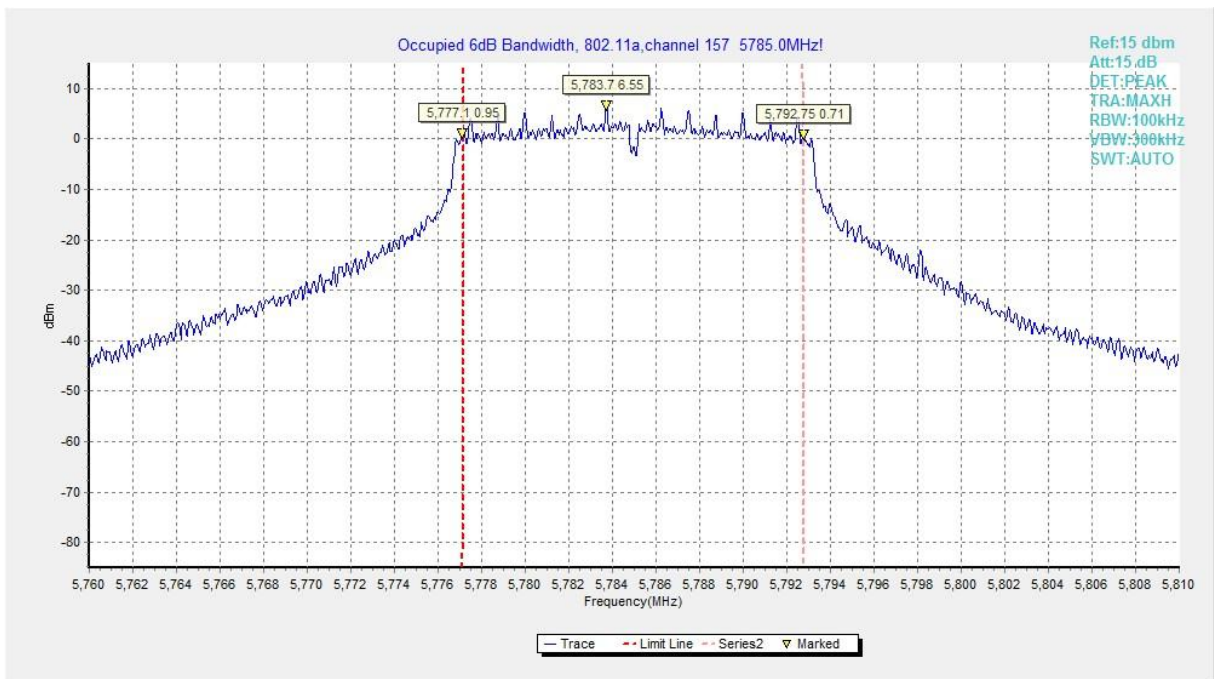
Mode	Channel	Occupied 6dB Bandwidth ( MHz)		conclusion
		Fig.	Value	
802.11a	149	Fig.1	15.55	P
	157	Fig.2	15.65	P
	165	Fig.3	15.55	P
802.11n HT20	149	Fig.4	15.90	P
	157	Fig.5	15.70	P
	165	Fig.6	16.25	P
802.11ac HT20	149	Fig.7	15.95	P
	157	Fig.8	15.85	P
	165	Fig.9	15.90	P
802.11n HT40	151	Fig.10	36.00	P
	159	Fig.11	36.32	P
802.11ac HT40	151	Fig.12	36.00	P
	159	Fig.13	36.08	P
802.11ac HT80	155	Fig.14	75.20	P

**Conclusion: PASS**

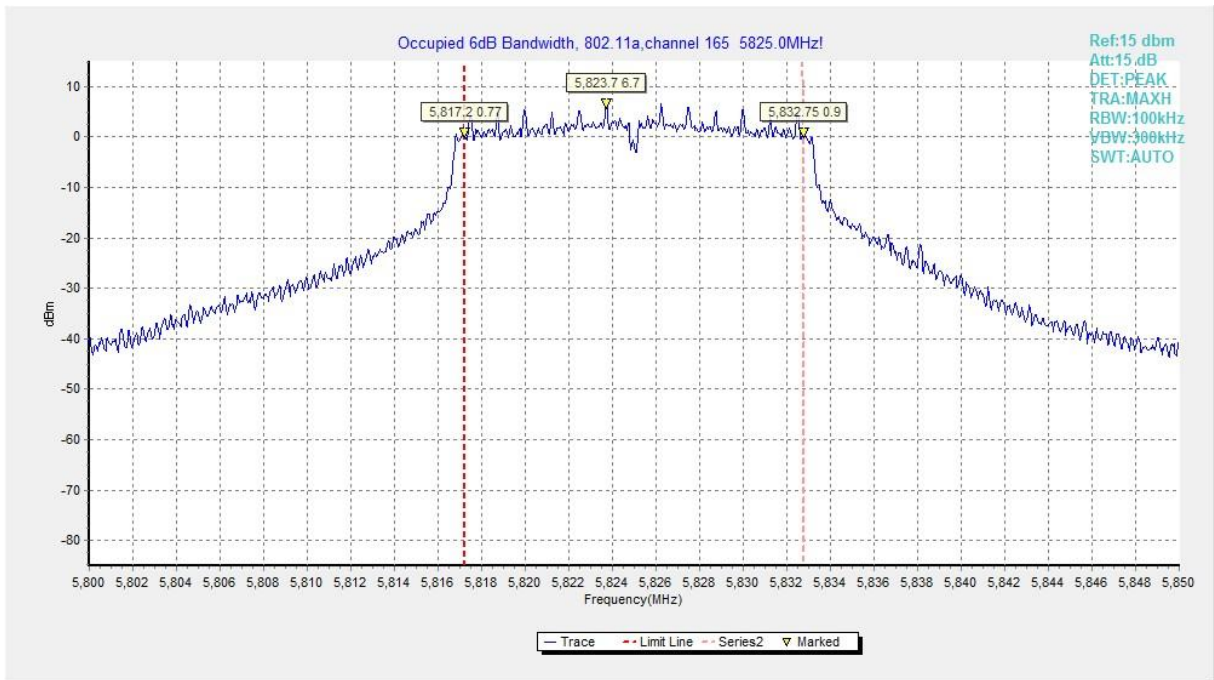
Test graphs as below:



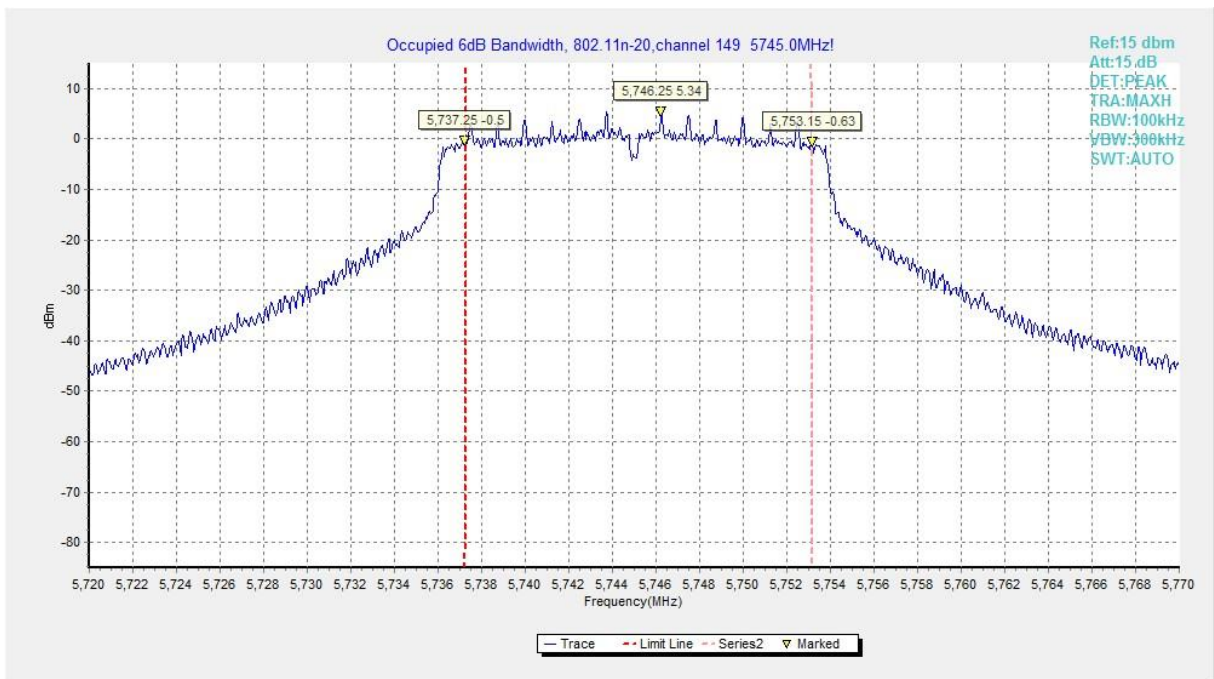
**Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)**



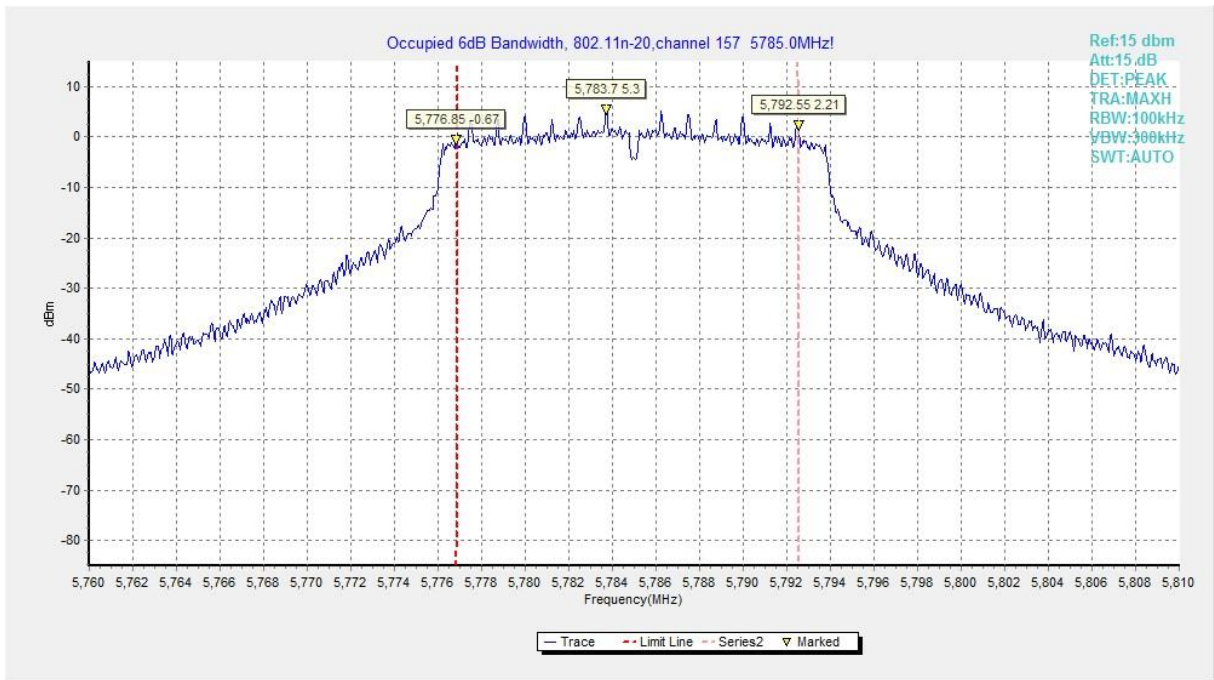
**Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)**



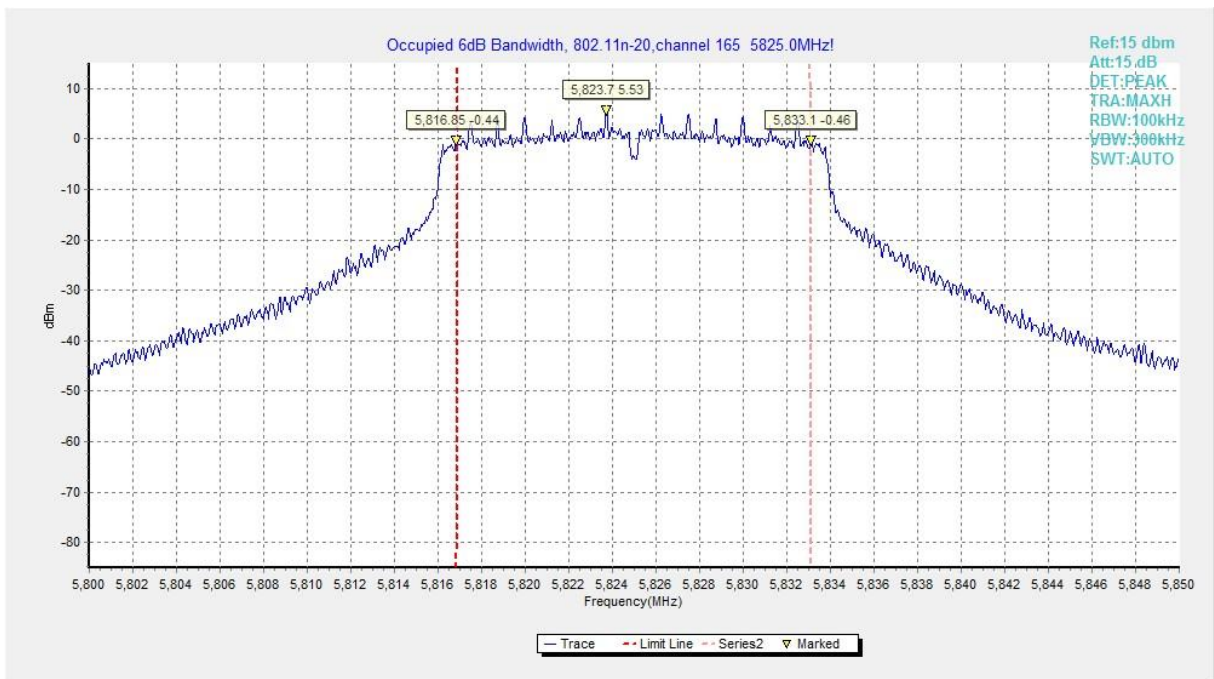
**Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)**



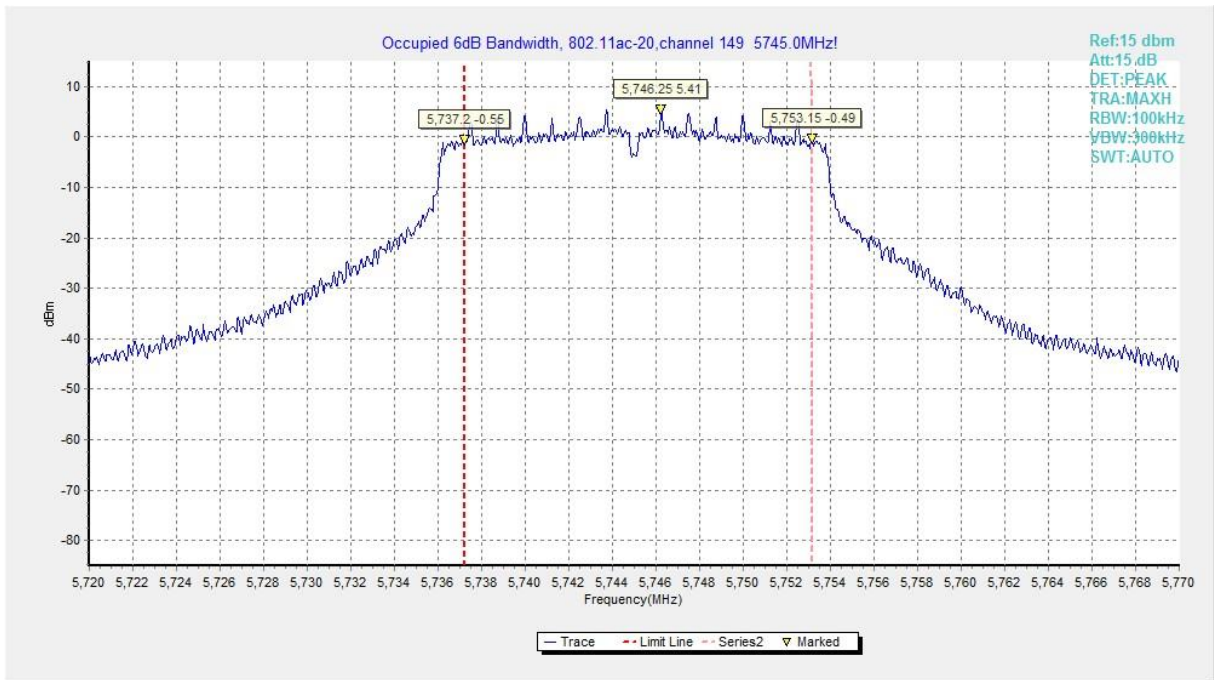
**Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)**



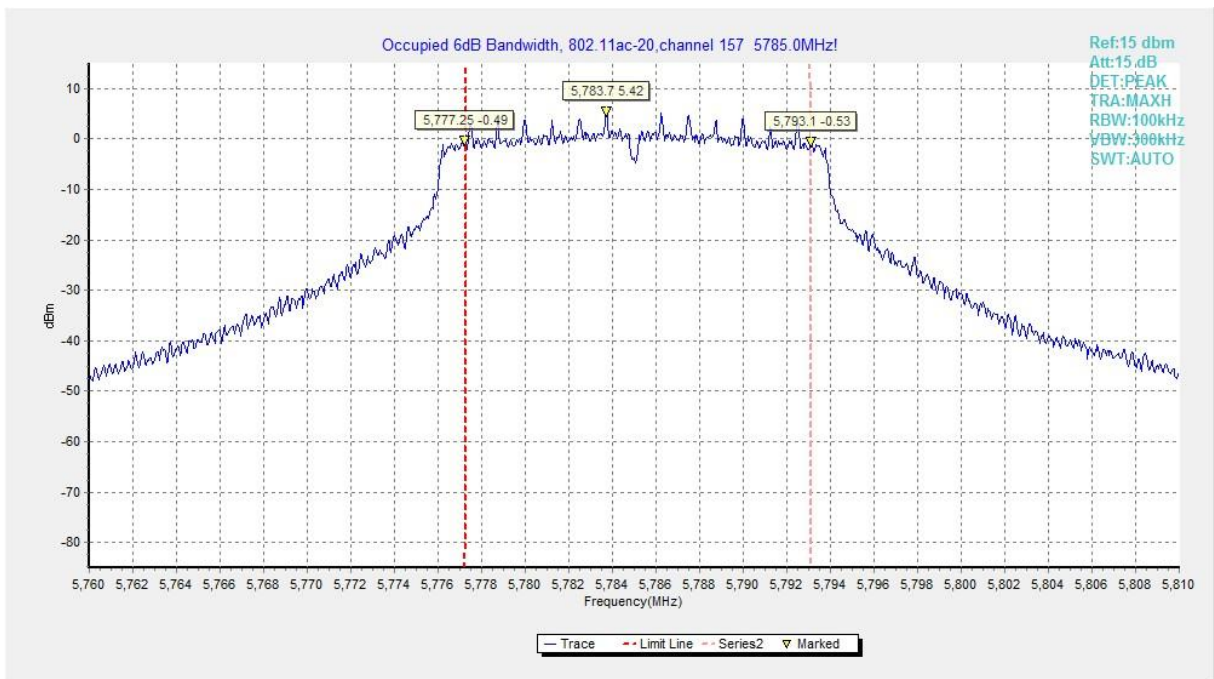
**Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)**



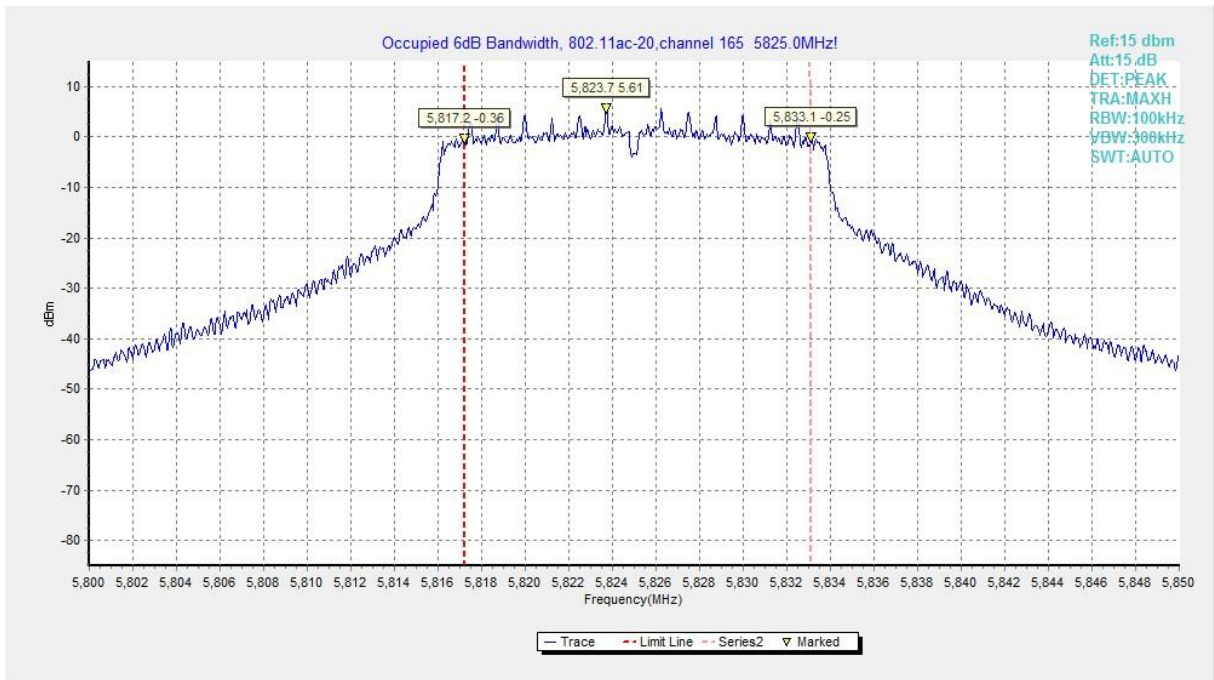
**Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)**



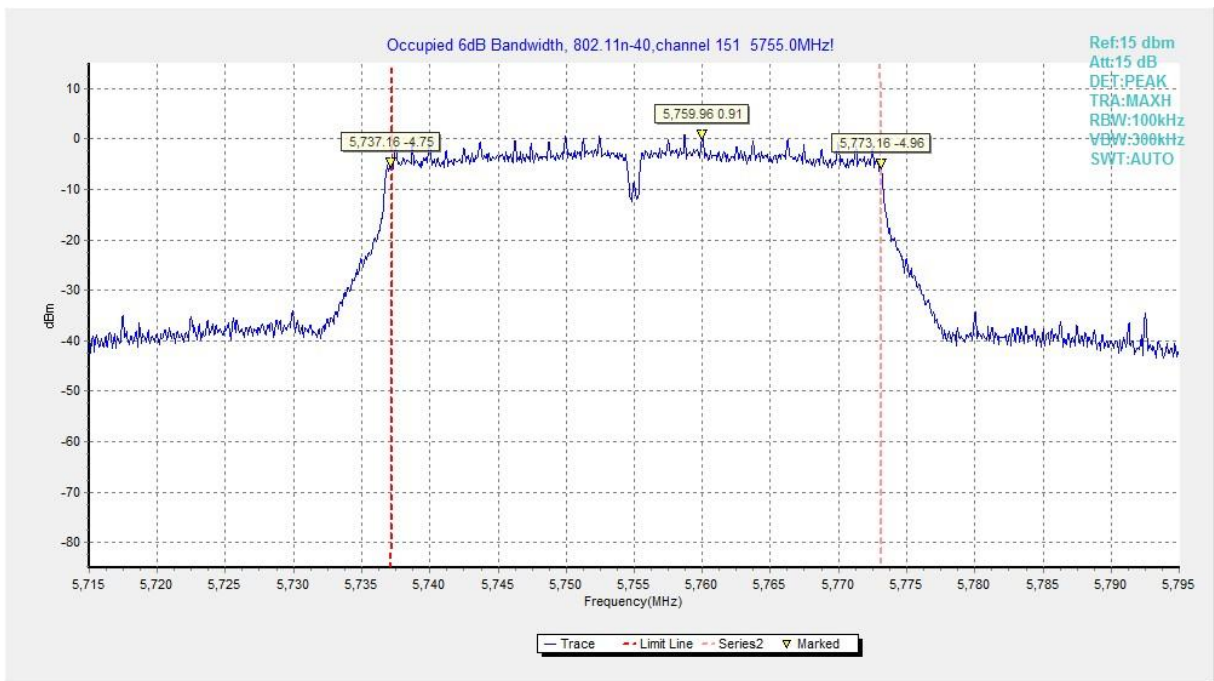
**Fig. 7 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 149)**



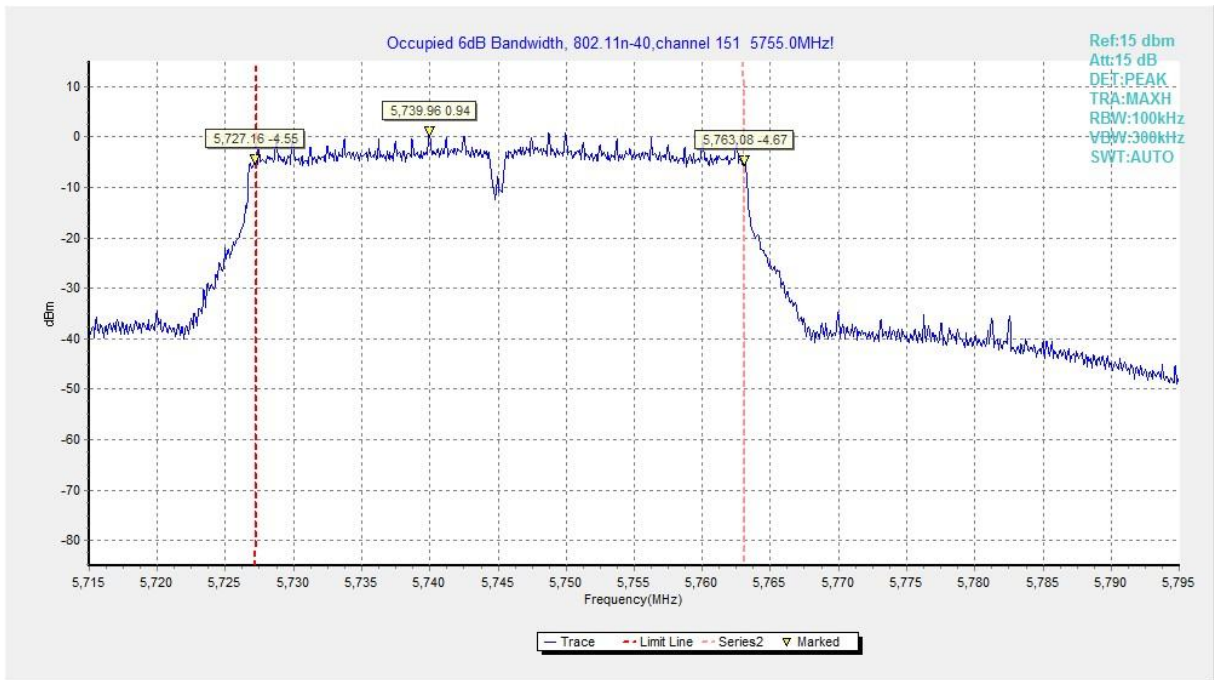
**Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 157)**



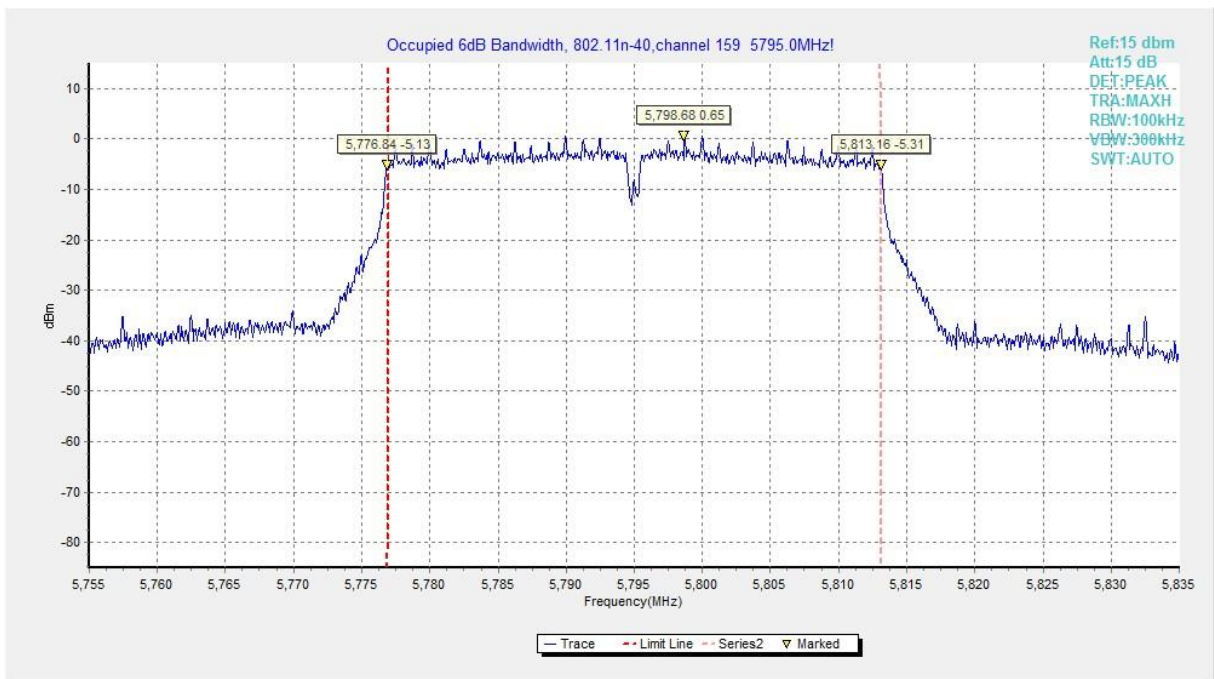
**Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 165)**



**Fig. 10 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)**

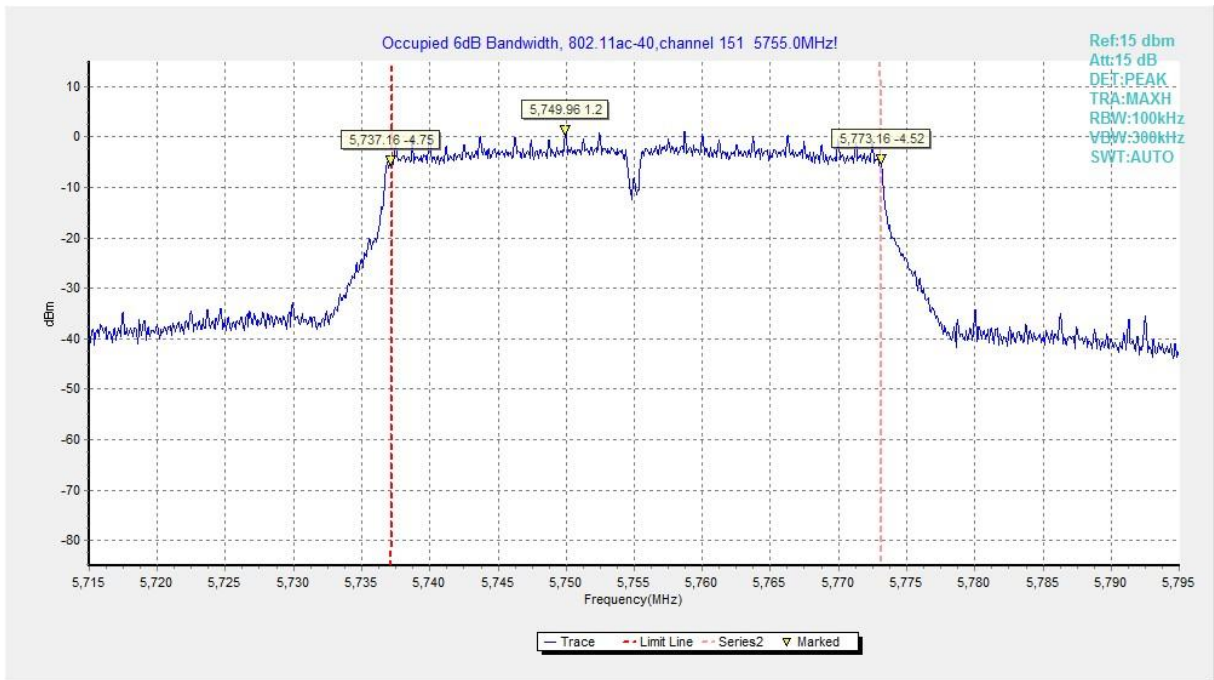


**Fig. 11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)**

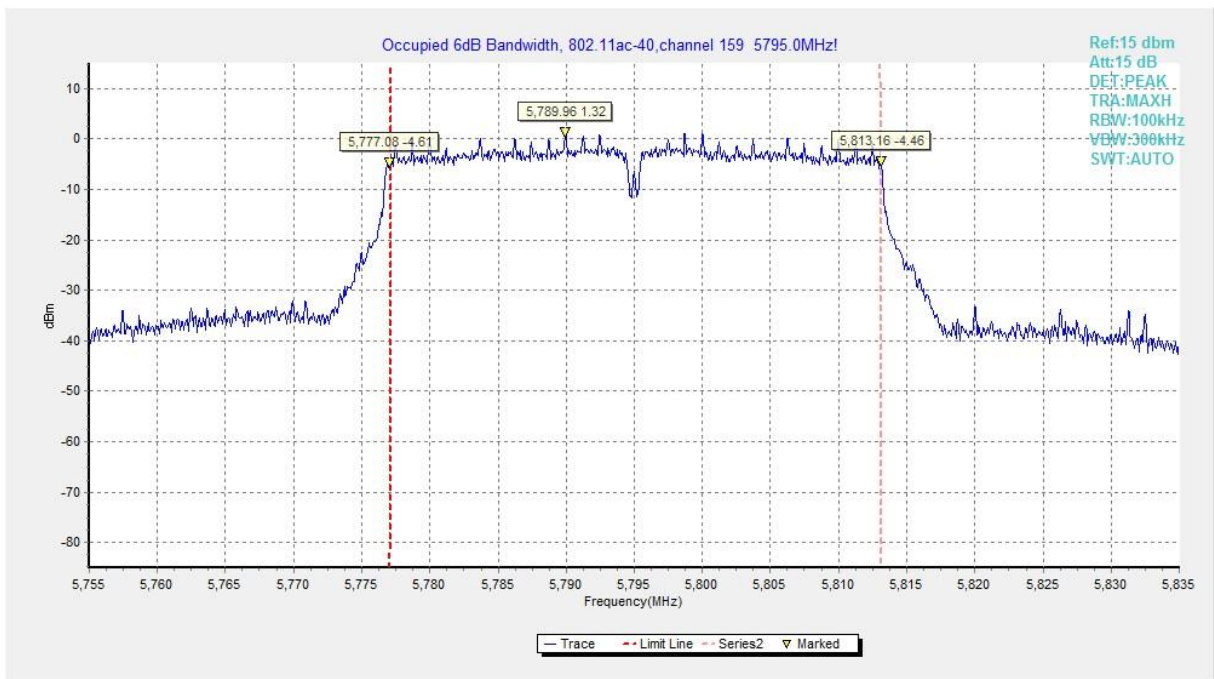


**Fig. 12 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 151)**





**Fig. 13 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 159)**



**Fig. 14 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)**

## A.5. Transmitter Spurious Emission

### Measurement Limit:

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

The measurement is made according to ANSI C63.10 .

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

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

### Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	0.63
2GHz ≤ f ≤ 3.6GHz	0.82
3.6GHz ≤ f ≤ 8GHz	1.55
8GHz ≤ f ≤ 20GHz	1.86
20GHz ≤ f ≤ 22GHz	1.90
22GHz ≤ f ≤ 26GHz	2.20

### A.5.1 Transmitter Spurious Emission - Radiated

#### Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: increasing linearly from point to point.	

The measurement is made according to KDB 789033

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

**Measurement Results:**
**802.11a mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
	165	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11n-HT20 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
		165	1 GHz ~ 3 GHz	---
	3 GHz ~ 7 GHz		---	P
	7 GHz ~ 18 GHz		---	P

**802.11n-HT40 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	159	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11ac-HT20 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
	165	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11ac-HT40 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	159	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11ac-HT80 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT80)	155	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	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.

**Average Results:**
**802.11a**
**Ch149**

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5650.500	40.7	-22.8	34.8	28.80	48.6	7.8	H	86
5653.500	40.9	-22.8	34.8	28.90	50.8	9.9	H	107
11489.100	34.5	-29.2	38.5	25.13	54.0	19.5	H	130
17235.500	37.8	-22.8	41.5	19.17	54.0	16.2	H	152
17825.100	38.6	-22.5	41.3	19.82	54.0	15.4	H	174
17903.200	38.8	-22.6	41.3	20.18	54.0	15.2	H	195

**Ch157**

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5427.600	40.5	-22.5	34.5	28.46	54.0	13.5	H	175
5388.400	40.7	-22.3	34.5	28.49	54.0	13.3	H	194
11569.400	34.1	-29.2	38.6	24.83	54.0	19.9	H	215
17355.400	37.4	-22.9	41.3	18.96	54.0	16.6	H	196
17835.000	38.6	-22.5	41.3	19.84	54.0	15.4	H	241
17902.100	39.0	-22.6	41.3	20.35	54.0	15.0	H	259

**Ch165**

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5917.500	41.3	-22.3	35.1	28.43	53.8	12.5	H	175
5925.000	41.2	-22.2	35.1	28.30	48.2	7.0	H	194
11649.700	33.8	-29.4	38.6	24.61	54.0	20.2	H	215
17475.300	37.5	-23.1	41.2	19.35	54.0	16.5	H	196
17727.200	38.6	-22.2	41.2	19.63	54.0	15.4	H	241
17910.900	38.9	-22.6	41.3	20.27	54.0	15.1	H	259

**802.11n-HT20**  
 Ch149

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)	Turntable angle (deg)
5650.500	40.9	-22.8	34.8	28.90	48.6	7.7	H	40
5656.500	40.9	-22.8	34.8	28.95	53.0	12.1	H	65
11490.200	34.2	-29.1	38.5	24.90	54.0	19.8	H	84
17235.500	37.8	-22.8	41.5	19.16	54.0	16.2	H	107
17830.600	38.6	-22.5	41.3	19.80	54.0	15.4	H	135
17928.500	38.9	-22.7	41.3	20.26	54.0	15.1	H	151

## Ch157

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)	Turntable angle (deg)
5425.500	40.8	-22.5	34.5	28.79	54.0	13.2	H	4
5389.560	40.9	-22.3	34.5	28.68	54.0	13.1	H	26
11569.400	33.9	-29.2	38.6	24.60	54.0	20.1	H	356
17355.400	37.3	-22.9	41.3	18.93	54.0	16.7	H	348
17826.200	38.6	-22.5	41.3	19.77	54.0	15.4	H	174
17919.700	38.8	-22.7	41.3	20.18	54.0	15.2	H	112

## Ch165

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)	Turntable angle (deg)
5920.500	41.4	-22.2	35.1	28.51	51.5	10.1	H	8
5925.000	41.2	-22.2	35.1	28.31	48.2	7.0	H	28
11649.700	33.9	-29.4	38.6	24.64	54.0	20.1	H	6
17475.300	37.5	-23.1	41.2	19.34	54.0	16.5	H	278
17707.400	38.7	-22.2	41.2	19.67	54.0	15.3	H	122
17910.900	38.9	-22.6	41.3	20.22	54.0	15.1	H	245

**802.11n-HT40**  
 Ch151

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5650.000	41.0	-22.8	34.8	29.07	48.2	7.2	H	40
5656.000	41.3	-22.8	34.8	29.35	52.6	11.3	H	65
11510.000	33.9	-29.1	38.5	24.49	54.0	20.1	H	84
17265.200	37.7	-22.8	41.4	19.10	54.0	16.3	H	107
17744.800	38.6	-22.3	41.2	19.64	54.0	15.4	H	135
17914.200	39.0	-22.6	41.3	20.38	54.0	15.0	H	151

## Ch159

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5922.000	41.4	-22.2	35.1	28.48	50.4	9.1	H	28
5924.800	41.3	-22.2	35.1	28.35	48.3	7.1	H	74
11590.300	33.8	-29.3	38.6	24.50	54.0	20.2	H	140
17385.100	37.4	-23.0	41.3	19.06	54.0	16.6	H	8
17732.700	38.6	-22.3	41.2	19.66	54.0	15.4	H	80
17913.100	39.0	-22.6	41.3	20.41	54.0	15.0	H	243

**802.11ac-HT20**  
 Ch149

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Turntable angle (deg)
5447.650	40.5	-22.7	34.6	28.59	54.0	13.5	H	25
5420.460	40.5	-22.5	34.5	28.46	54.0	13.5	H	49
11490.200	34.2	-29.1	38.5	24.90	54.0	19.8	H	4
17235.500	37.8	-22.8	41.5	19.20	54.0	16.2	H	6
17717.300	38.6	-22.2	41.2	19.58	54.0	15.4	H	25
17912.000	39.0	-22.6	41.3	20.36	54.0	15.0	H	186

## Ch157

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)	Turntable angle (deg)
5422.750	40.5	-22.5	34.5	28.47	54.0	13.5	H	8
5385.650	40.8	-22.3	34.5	28.60	54.0	13.2	H	52
11569.400	33.9	-29.2	38.6	24.55	54.0	20.1	H	18
17355.400	37.3	-22.9	41.3	18.92	54.0	16.7	H	6
17716.200	38.6	-22.2	41.2	19.60	54.0	15.4	H	48
17919.700	38.8	-22.7	41.3	20.21	54.0	15.2	H	128

## Ch165

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)	Turntable angle (deg)
5354.850	40.7	-22.3	34.5	28.55	54.0	13.3	H	20
5391.250	40.8	-22.3	34.5	28.55	54.0	13.2	H	248
11649.700	33.7	-29.4	38.6	24.49	54.0	20.3	H	49
17475.300	37.5	-23.1	41.2	19.34	54.0	16.5	H	82
17741.500	38.6	-22.3	41.2	19.66	54.0	15.4	H	168
17912.000	39.0	-22.6	41.3	20.36	54.0	15.0	H	8

**802.11ac-HT40**

## Ch151

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)	Turntable angle (deg)
5650.000	41.1	-22.8	34.8	29.13	48.2	7.1	H	20
5656.800	41.3	-22.8	34.8	29.39	53.2	11.9	H	18
11510.000	33.2	-29.1	38.5	23.80	54.0	20.8	H	90
17265.200	37.8	-22.8	41.4	19.16	54.0	16.2	H	114
17716.200	38.6	-22.2	41.2	19.60	54.0	15.4	H	36
17910.900	38.9	-22.6	41.3	20.26	54.0	15.1	H	2



## Ch159

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)	Turntable angle (deg)
5920.000	41.2	-22.2	35.1	28.30	51.9	10.7	H	8
5924.800	41.2	-22.2	35.1	28.26	48.3	7.2	H	46
11589.200	33.8	-29.3	38.6	24.50	54.0	20.2	H	20
17385.100	37.4	-23.0	41.3	19.10	54.0	16.6	H	118
17828.400	38.6	-22.5	41.3	19.80	54.0	15.4	H	82
17913.100	39.0	-22.6	41.3	20.36	54.0	15.0	H	46

## 802.11ac-HT80

## Ch155

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)	Turntable angle (deg)
5366.420	40.7	-22.3	34.5	28.54	54.0	13.3	H	155
5422.020	40.6	-22.5	34.5	28.51	54.0	13.4	H	155
11549.600	33.7	-29.2	38.5	24.37	54.0	20.3	H	155
17324.600	37.2	-22.9	41.4	18.68	54.0	16.8	H	155
17716.200	38.7	-22.2	41.2	19.63	54.0	15.3	H	155
17919.700	38.9	-22.7	41.3	20.32	54.0	15.1	V	155

## Peak Results:

## 802.11a

## Ch149

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)	Turntable angle (deg)
5650.759	54.2	-22.8	34.8	42.26	68.8	14.6	V	88
5662.850	55.1	-22.8	34.8	43.09	77.7	22.7	H	110
11490.200	47.3	-29.1	38.5	37.92	68.3	21.0	V	132
17234.950	55.0	-22.8	41.5	36.35	68.3	13.3	H	154
17341.100	57.3	-22.9	41.4	38.86	68.3	11.0	V	176
17956.000	57.3	-22.7	41.3	38.75	68.3	11.0	V	198

## Ch157

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)	Turntable angle (deg)
5728.860	58.8	-23.0	34.9	46.93	68.3	9.5	V	176
5848.800	56.9	-22.4	35.0	44.28	68.3	11.4	H	198
11569.950	47.9	-29.2	38.6	38.55	68.3	20.4	V	220
17354.850	54.2	-22.9	41.3	35.75	68.3	14.1	H	198
17793.750	57.7	-22.4	41.3	38.80	68.3	10.6	H	242
17980.200	57.7	-22.8	41.3	39.22	68.3	10.6	V	264

## Ch165

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)	Turntable angle (deg)
5924.425	55.0	-22.2	35.1	42.08	68.6	13.6	V	176
5922.838	55.4	-22.2	35.1	42.49	69.8	14.4	H	198
11650.250	48.6	-29.4	38.6	39.37	68.3	19.7	V	220
17050.150	57.5	-23.0	41.6	38.87	68.3	10.8	H	198
17474.750	54.6	-23.1	41.2	36.41	68.3	13.7	H	242
17813.000	57.4	-22.4	41.3	38.55	68.3	10.9	V	264

**802.11n-HT20**

## Ch149

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)	Turntable angle (deg)
5650.644	54.8	-22.8	34.8	42.87	68.7	13.9	H	88
5651.783	65.8	-22.8	34.8	53.85	69.5	3.7	H	110
11490.200	48.0	-29.1	38.5	38.65	68.3	20.3	H	88
17077.100	57.4	-23.0	41.6	38.83	68.3	10.9	V	110
17234.950	54.8	-22.8	41.5	36.23	68.3	13.5	V	132
17912.550	57.2	-22.6	41.3	38.55	68.3	11.1	H	154

## Ch157

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)	Turntable angle (deg)
5587.000	54.6	-22.7	34.7	42.60	68.3	13.7	H	0
5973.500	55.7	-21.8	35.2	42.29	68.3	12.6	V	22
11569.950	47.4	-29.2	38.6	38.08	68.3	20.9	V	352
17144.200	57.4	-23.0	41.6	38.81	68.3	10.9	V	352
17354.850	54.0	-22.9	41.3	35.57	68.3	14.3	V	176
17647.450	57.2	-22.1	41.2	38.05	68.3	11.1	V	110

## Ch165

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)	Turntable angle (deg)
5923.908	55.4	-22.2	35.1	42.48	69.0	13.6	V	0
5924.724	55.1	-22.2	35.1	42.19	68.4	13.3	V	22
11650.250	47.4	-29.4	38.6	38.16	68.3	20.9	H	0
17474.750	54.9	-23.1	41.2	36.78	68.3	13.4	H	264
17729.400	57.8	-22.2	41.2	38.82	68.3	10.5	H	110
17897.700	57.7	-22.6	41.3	38.99	68.3	10.6	H	242

**802.11n-HT40**

## Ch151

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)	Turntable angle (deg)
5650.633	55.7	-22.8	34.8	43.80	68.7	12.9	V	44
5656.521	58.2	-22.8	34.8	46.26	73.0	14.8	H	66
11510.000	48.9	-29.1	38.5	39.55	68.3	19.4	H	88
17265.200	55.3	-22.8	41.4	36.66	68.3	13.0	V	110
17583.100	57.7	-22.4	41.2	38.85	68.3	10.6	V	132
17937.300	58.2	-22.7	41.3	39.63	68.3	10.1	H	154

## Ch159

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)	Turntable angle (deg)
5921.895	55.5	-22.2	35.1	42.64	70.5	15.0	H	22
5924.621	55.3	-22.2	35.1	42.38	68.5	13.2	H	66
11589.750	47.1	-29.3	38.6	37.76	68.3	21.2	V	132
17385.100	54.7	-23.0	41.3	36.43	68.3	13.6	H	0
17741.500	57.7	-22.3	41.2	38.77	68.3	10.6	V	88
17979.650	57.3	-22.8	41.3	38.83	68.3	11.0	V	242

## 802.11ac-HT20

## Ch149

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)	Turntable angle (deg)
5650.058	54.8	-22.8	34.8	42.86	68.2	13.4	H	22
5651.638	54.4	-22.8	34.8	42.46	69.4	15.0	V	44
11490.200	47.1	-29.1	38.5	37.75	68.3	21.2	H	0
17234.950	54.2	-22.8	41.5	35.60	68.3	14.1	H	0
17733.250	57.5	-22.3	41.2	38.50	68.3	10.8	H	22
17880.650	57.7	-22.6	41.3	38.98	68.3	10.6	H	176

## Ch157

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)	Turntable angle (deg)
5606.600	54.2	-22.8	34.7	42.26	68.3	14.1	V	0
5939.250	54.9	-22.1	35.1	41.88	68.3	13.4	H	44
11569.950	47.0	-29.2	38.6	37.69	68.3	21.3	V	22
17354.850	54.1	-22.9	41.3	35.68	68.3	14.2	H	0
17674.950	58.3	-22.1	41.2	39.19	68.3	10.0	H	44
17985.700	57.1	-22.8	41.3	38.58	68.3	11.2	V	132

## Ch165

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)	Turntable angle (deg)
5922.746	55.2	-22.2	35.1	42.26	69.9	14.7	H	22
5924.230	55.0	-22.2	35.1	42.08	68.8	13.8	V	242
11650.250	47.7	-29.4	38.6	38.53	68.3	20.6	H	44
17474.750	55.3	-23.1	41.2	37.12	68.3	13.0	V	88
17701.350	58.0	-22.2	41.2	38.96	68.3	10.3	V	176
17962.050	57.7	-22.7	41.3	39.18	68.3	10.6	V	0

## 802.11ac-HT40

## Ch151

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)	Turntable angle (deg)
5650.322	55.8	-22.8	34.8	43.81	68.4	12.7	H	22
5656.072	57.7	-22.8	34.8	45.75	72.7	15.0	H	22
11510.000	47.9	-29.1	38.5	38.51	68.3	20.4	H	88
17265.200	54.6	-22.8	41.4	35.98	68.3	13.7	V	110
17586.950	57.4	-22.3	41.2	38.55	68.3	10.9	V	44
17696.400	57.5	-22.2	41.2	38.41	68.3	10.8	H	0

## Ch159

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)	Turntable angle (deg)
5923.390	55.0	-22.2	35.1	42.09	69.4	14.4	H	0
5924.678	55.0	-22.2	35.1	42.14	68.4	13.4	H	44
11589.750	46.6	-29.3	38.6	37.30	68.3	21.7	V	22
17371.350	53.9	-23.0	41.3	35.59	68.3	14.4	H	110
17385.100	57.4	-23.0	41.3	39.10	68.3	10.9	H	88
17974.700	57.1	-22.8	41.3	38.58	68.3	11.2	H	44

**802.11ac-HT80**

Ch155

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)	Turntable angle (deg)
5921.580	55.2	-22.2	35.1	42.35	70.7	15.5	H	155
5923.420	54.7	-22.2	35.1	41.83	69.4	14.6	H	155
11550.150	47.2	-29.2	38.5	37.87	68.3	21.1	V	155
17325.150	54.7	-22.9	41.4	36.16	68.3	13.6	V	155
17787.700	57.7	-22.4	41.3	38.80	68.3	10.6	H	155
17953.800	58.4	-22.7	41.3	39.80	68.3	9.9	H	155

## A.6. Band Edges Compliance

### A6.1 Band Edges - Radiated

#### Measurement Limit:

Standard	Limit (dBm/MHz)	
	FCC 47 CFR Part 15.407	at the band edge
at 5 MHz above or below the band edge		15.6
at 25 MHz above or below the band edge		10
at 75 MHz or more above or below the band edge		-27
Note: increasing linearly from point to point.		

#### Measurement Uncertainty:

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

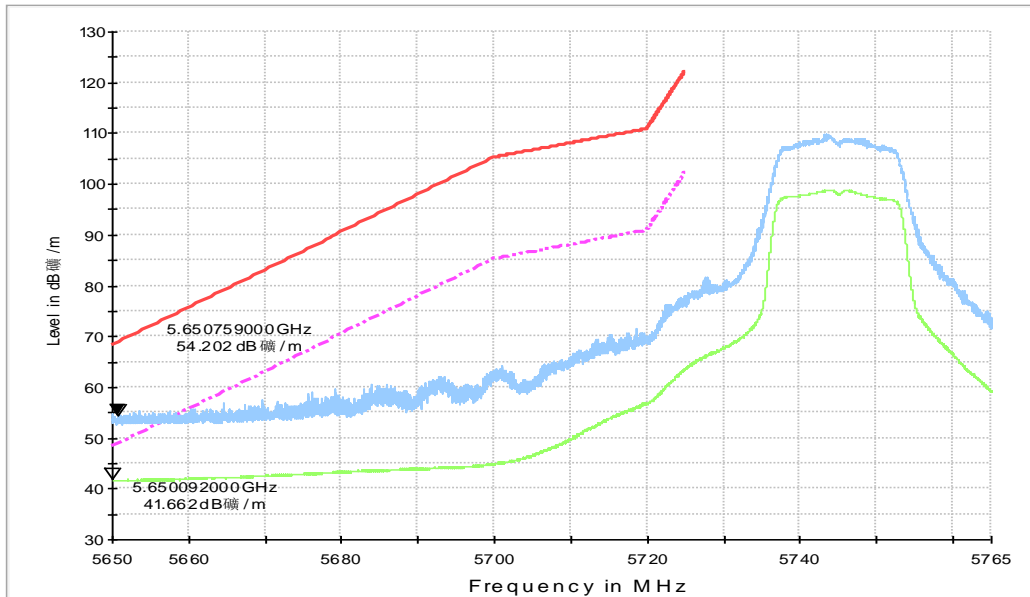
#### Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.15	P
	5825 MHz	Fig.16	P
802.11n HT20	5745 MHz	Fig.17	P
	5825 MHz	Fig.18	P
802.11n HT40	5755 MHz	Fig.19	P
	5795 MHz	Fig.20	P
802.11ac HT20	5745 MHz	Fig.21	P
	5825 MHz	Fig.22	P
802.11ac HT40	5755 MHz	Fig.23	P
	5795 MHz	Fig.24	P
802.11ac HT80	5775 MHz	Fig.25	P
		Fig.26	

**Conclusion: PASS**

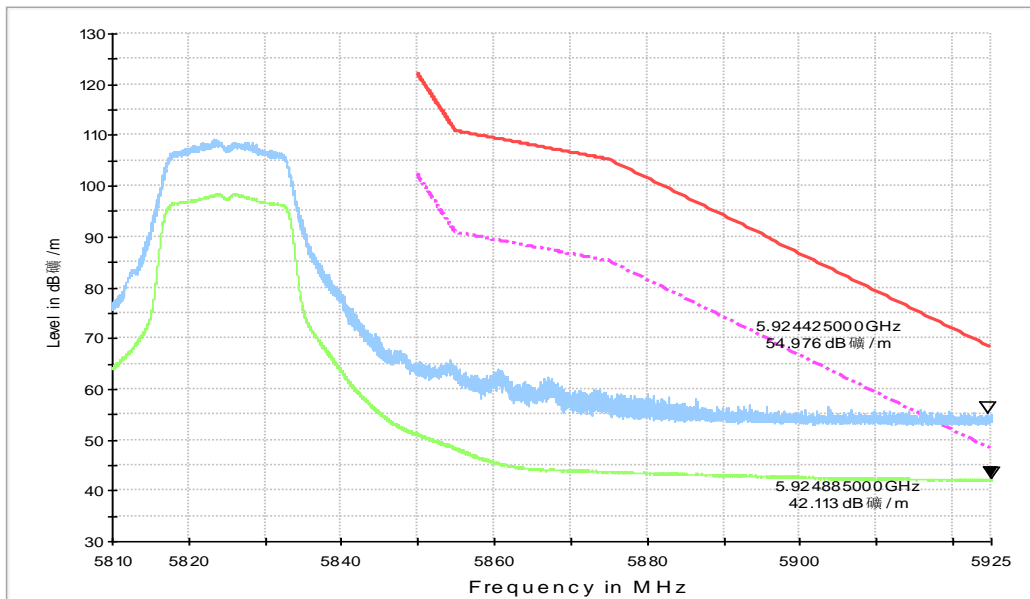
**Test graphs as below:**

RE - Power-5.650GHz-5.765 GHz



**Fig. 15 Band Edges (802.11a, 5745MHz)**

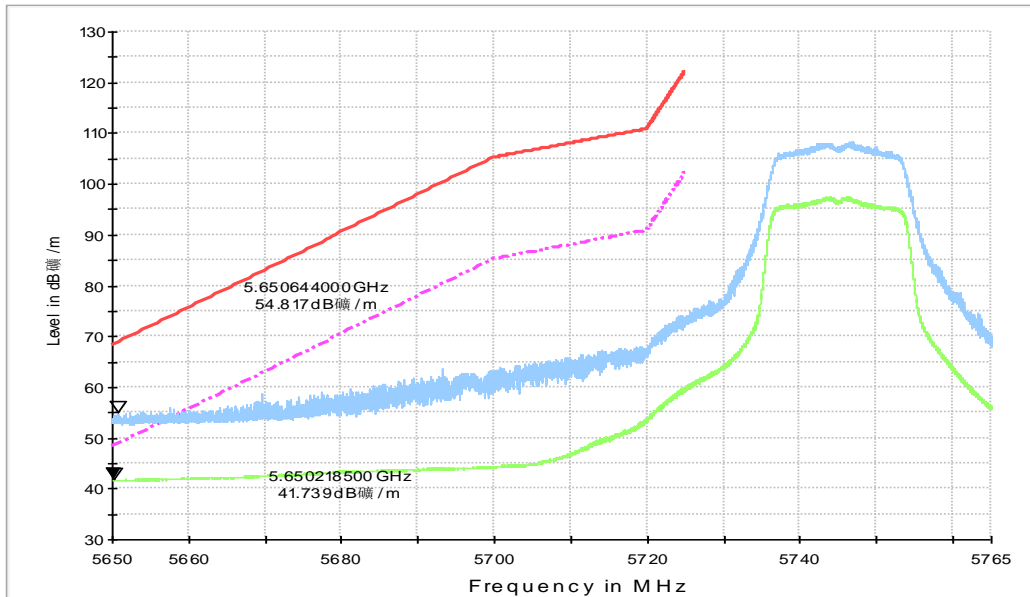
RE - Power-5.810GHz-5.925 GHz



**Fig. 16 Band Edges (802.11a, 5825MHz)**

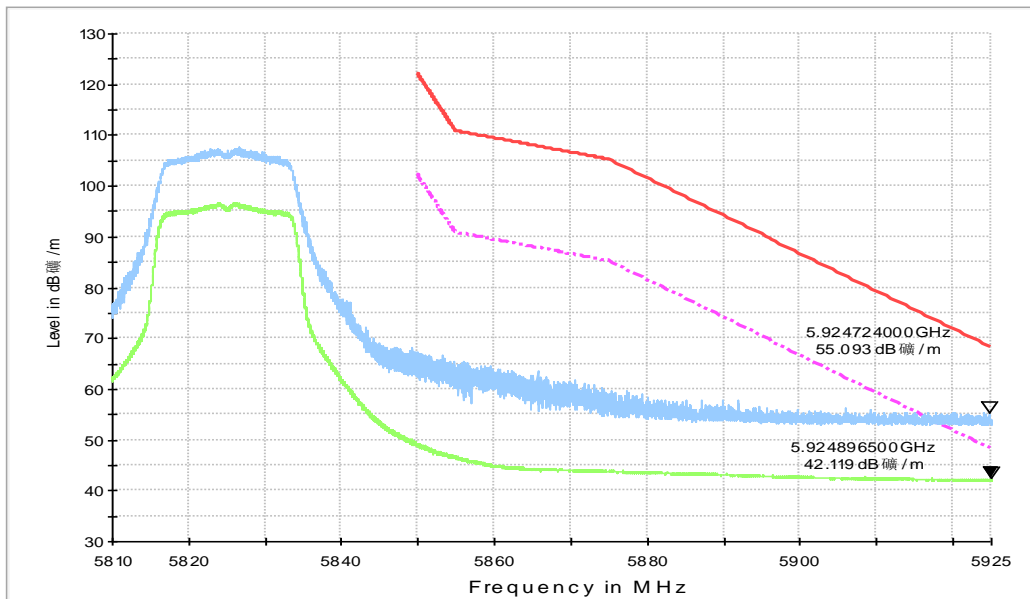


RE - Power-5.650GHz-5.765 GHz



**Fig. 17 Band Edges (802.11n-HT20, 5745MHz)**

RE - Power-5.810GHz-5.925 GHz



**Fig. 18 Band Edges (802.11n-HT20, 5825MHz)**

RE - Power-5.650GHz-5.765 GHz

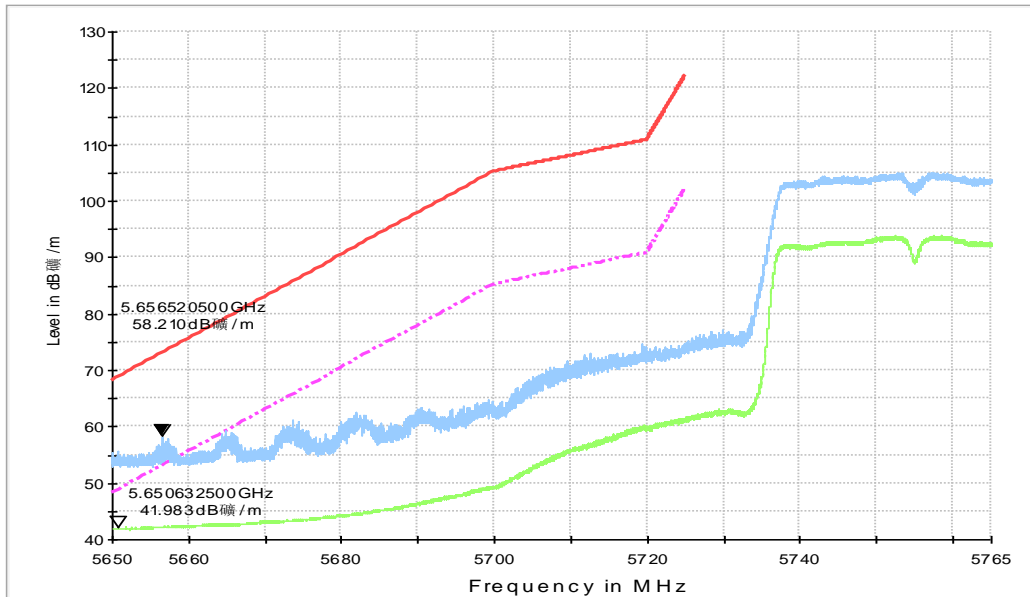


Fig. 19 Band Edges (802.11n-HT40, 5755MHz)

RE - Power-5.810GHz-5.925 GHz

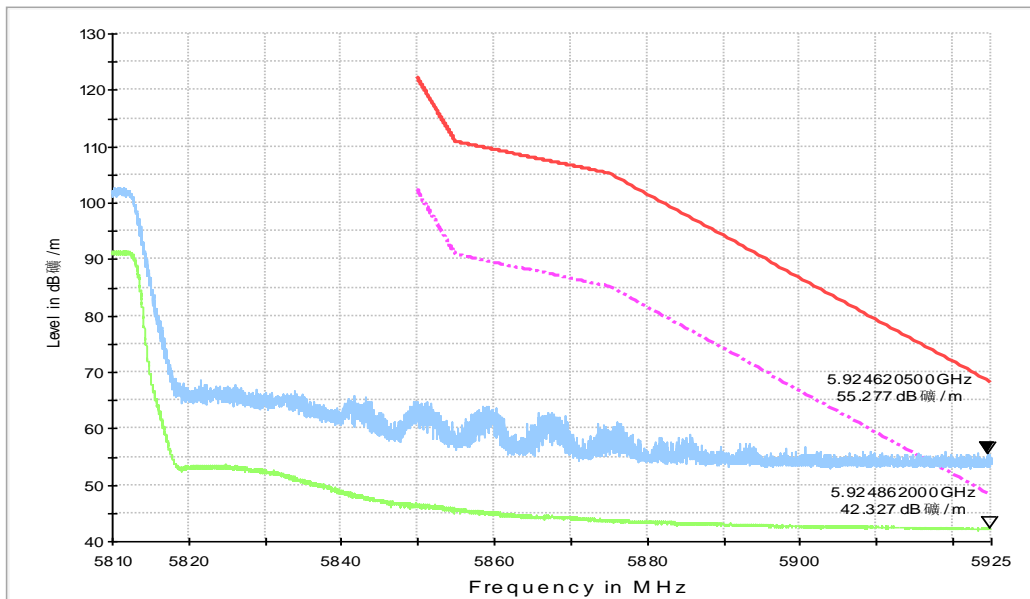
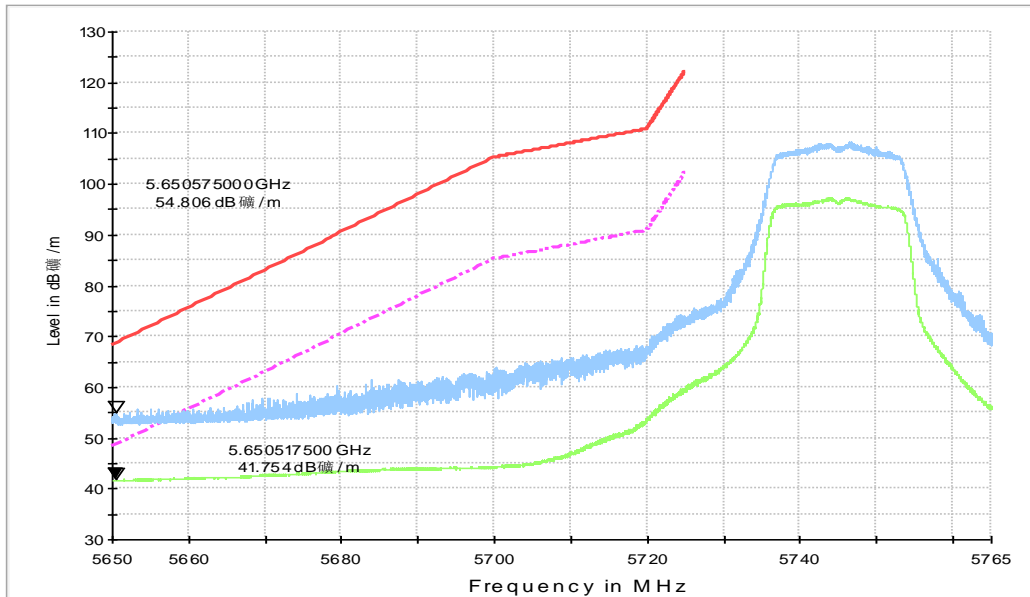


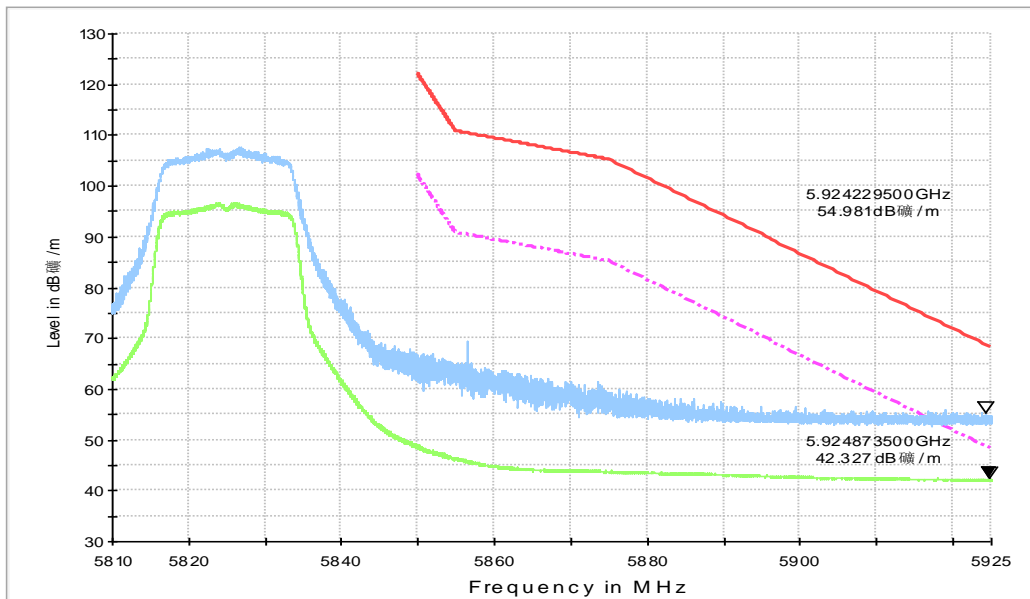
Fig. 20 Band Edges (802.11n-HT40, 5795MHz)

RE - Power-5.650GHz-5.765 GHz



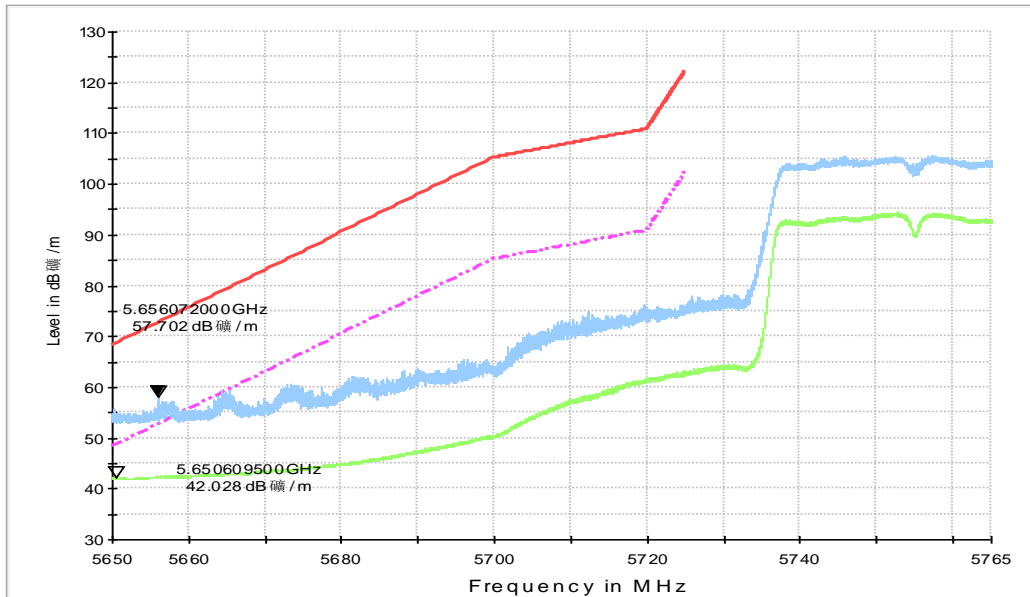
**Fig. 21 Band Edges (802.11ac-HT20, 5745MHz)**

RE - Power-5.810GHz-5.925 GHz



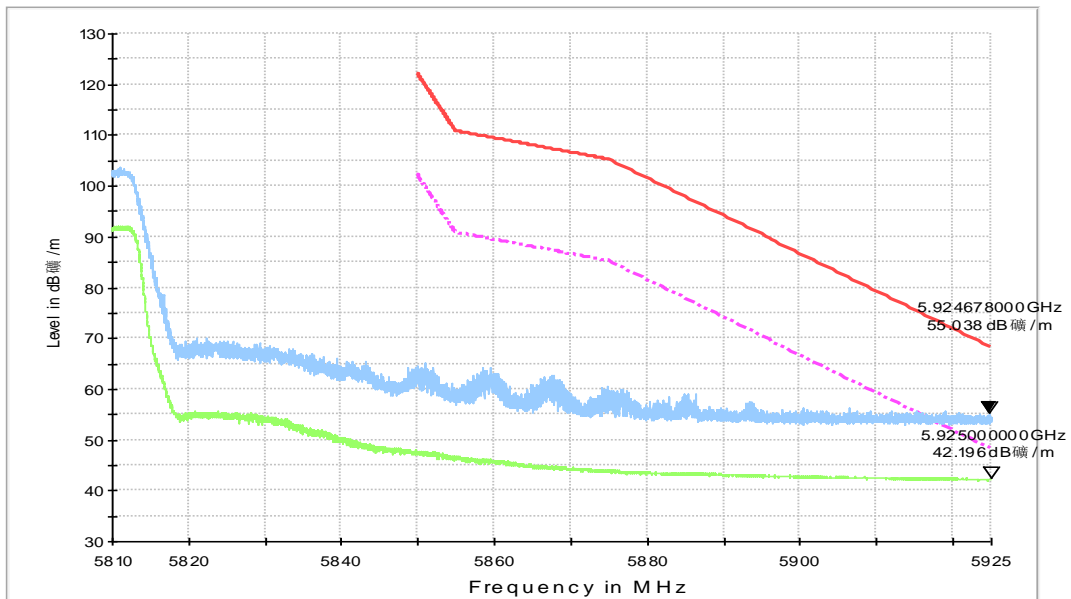
**Fig. 22 Band Edges (802.11ac-HT20, 5825MHz)**

RE - Power-5.650GHz-5.765 GHz



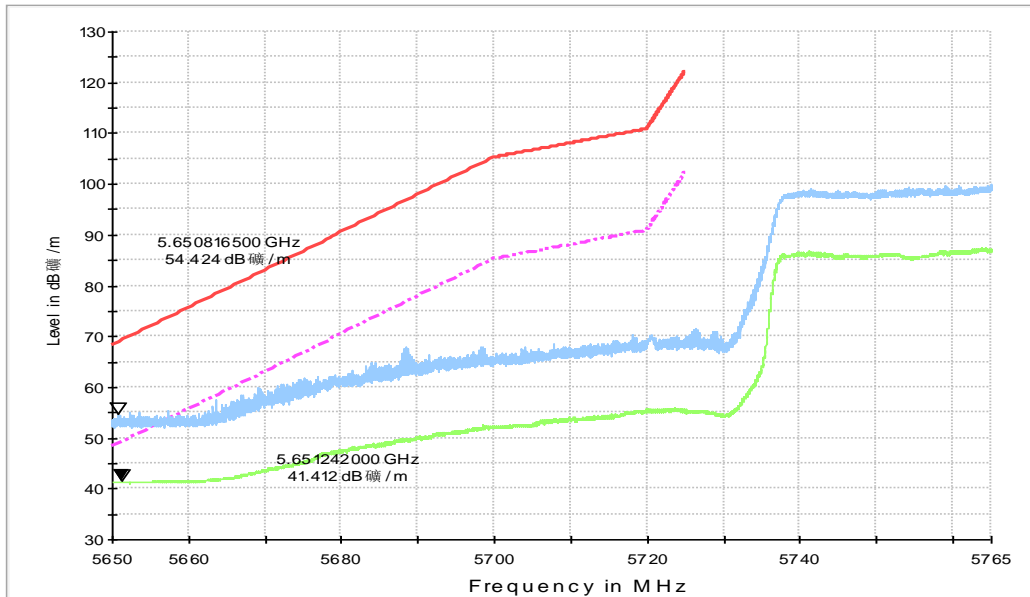
**Fig. 23 Band Edges (802.11ac-HT40, 5755MHz)**

RE - Power-5.810GHz-5.925 GHz



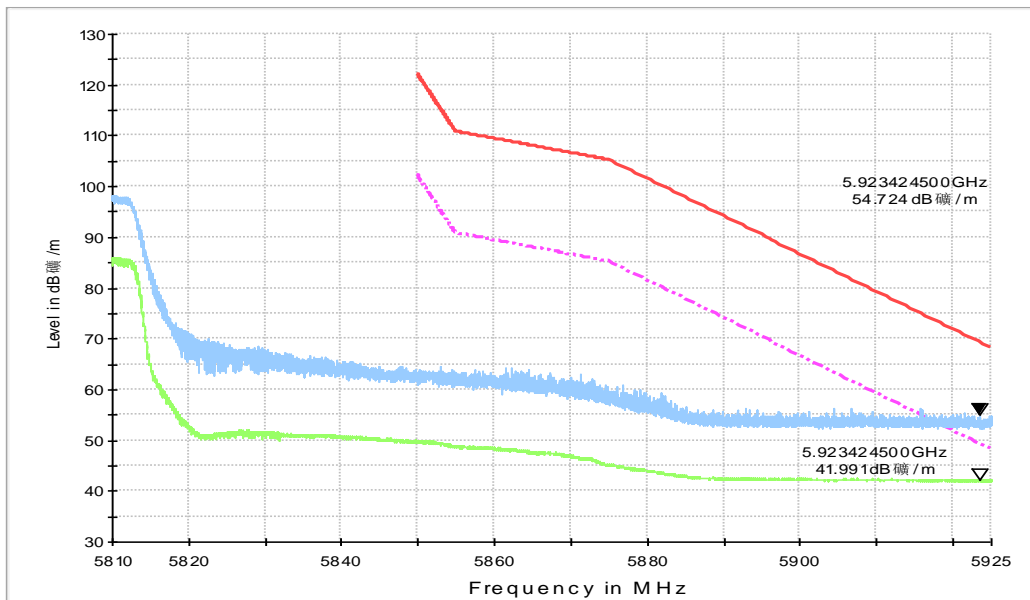
**Fig. 24 Band Edges (802.11ac-HT40, 5795MHz)**

RE - Power-5.650GHz-5.765 GHz



**Fig. 25 Band Edges (802.11ac-HT80, 5775MHz)**

RE - Power-5.810GHz-5.925 GHz



**Fig. 26 Band Edges (802.11ac-HT80, 5775MHz)**

## A.7. AC Powerline Conducted Emission

### Test Condition:

Voltage (V)	Frequency (Hz)
120	60

### Measurement uncertainty:

Expanded measurement uncertainty for this test item is  $U = 3.10\text{dB}$ ,  $k=2$ .

### Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.27	Fig.28	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		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.27	Fig.28	P
0.5 to 5	46			
5 to 30	50			

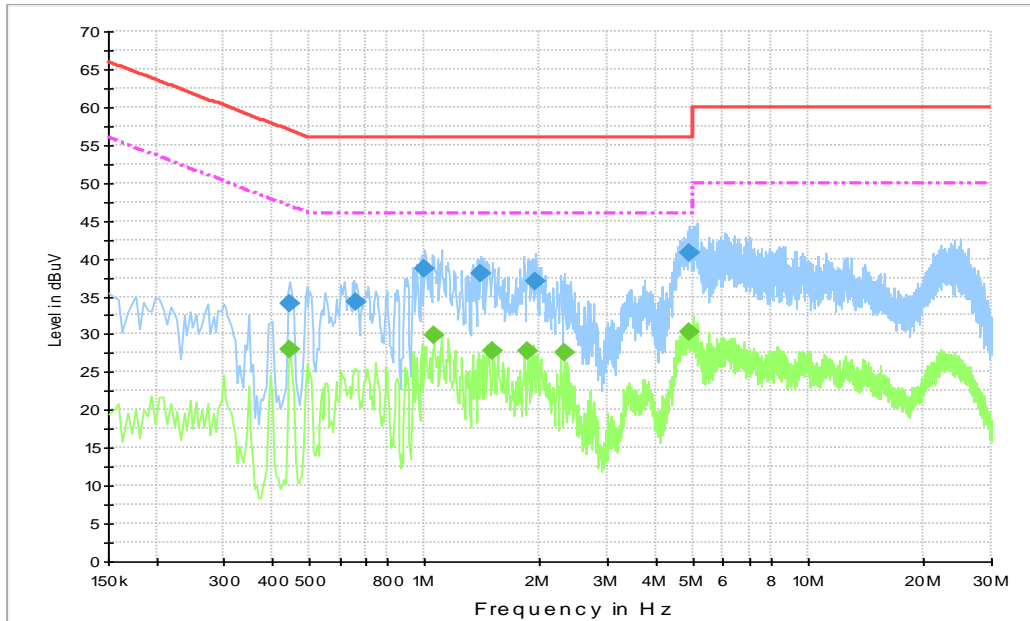
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10 .

**Conclusion: PASS**

**Test graphs as below:**

Traffic:



**Fig. 27 AC Power line Conducted Emission-802.11a**

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

### Final Result 1

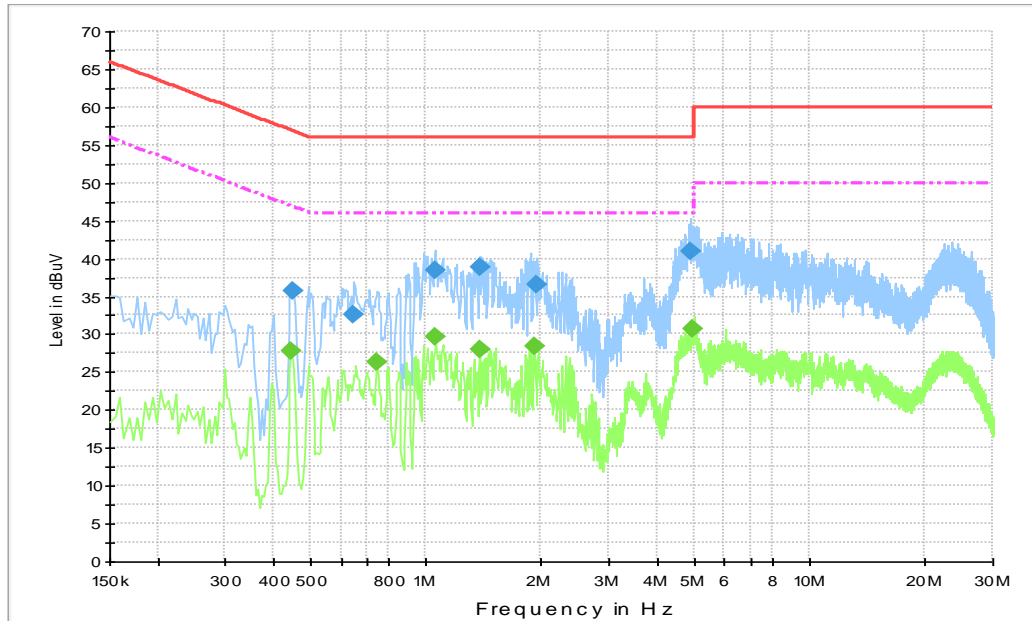
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.447000	34.0	10000.0	9.000	L1	20.0	22.9	56.9
0.663000	34.2	10000.0	9.000	L1	19.9	21.8	56.0
1.000500	38.7	10000.0	9.000	L1	19.8	17.3	56.0
1.401000	38.1	10000.0	9.000	L1	19.8	17.9	56.0
1.954500	36.9	10000.0	9.000	L1	19.8	19.1	56.0
4.915500	40.8	10000.0	9.000	L1	19.8	15.2	56.0

### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.447000	28.0	10000.0	9.000	L1	20.0	18.9	46.9
1.059000	29.9	10000.0	9.000	L1	19.8	16.1	46.0
1.504500	27.8	10000.0	9.000	L1	19.8	18.2	46.0
1.864500	27.8	10000.0	9.000	L1	19.8	18.2	46.0
2.310000	27.6	10000.0	9.000	L1	19.7	18.4	46.0
4.915500	30.3	10000.0	9.000	L1	19.8	15.7	46.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers

Idle:



**Fig. 28 AC Power line Conducted Emission-Idle**

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.451500	35.8	10000.0	9.000	L1	20.0	21.1	56.8
0.649500	32.5	10000.0	9.000	L1	19.9	23.5	56.0
1.054500	38.4	10000.0	9.000	L1	19.8	17.6	56.0
1.378500	38.8	10000.0	9.000	L1	19.8	17.2	56.0
1.954500	36.5	10000.0	9.000	L1	19.8	19.5	56.0
4.870500	41.0	10000.0	9.000	L1	19.8	15.0	56.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.447000	27.9	10000.0	9.000	L1	20.0	19.0	46.9
0.744000	26.3	10000.0	9.000	L1	19.9	19.7	46.0
1.059000	29.6	10000.0	9.000	L1	19.8	16.4	46.0
1.378500	27.9	10000.0	9.000	L1	19.8	18.1	46.0
1.918500	28.4	10000.0	9.000	L1	19.8	17.6	46.0
4.978500	30.7	10000.0	9.000	L1	19.8	15.3	46.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers



## ANNEX B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> 	
<hr/> <p><b>Certificate of Accreditation to ISO/IEC 17025:2005</b></p> <hr/>	
<p>NVLAP LAB CODE: 600118-0</p>	
<p><b>Telecommunication Technology Labs, CAICT</b> Beijing China</p>	
<p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p>	
<p><b>Electromagnetic Compatibility &amp; Telecommunications</b></p>	
<p><i>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 Communique dated January 2009).</i></p>	
<hr/> <p>2019-09-26 through 2020-09-30 <i>Effective Dates</i></p>	 <hr/> <p><i>[Signature]</i> For the National Voluntary Laboratory Accreditation Program</p>

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