



# FCC PART 15C TEST REPORT

No. I18Z60073-IOT05

for

**TCL Communication Ltd.**

**GSM Quad-band/HSPA-UMTS Six-band/ LTE 19-band mobile phone**

**With**

**BBF100-1**

**FCC ID: 2ACCJN026**

**Hardware Version:09**

**Software Version: AAX573**

**Issued Date: 2018-05-09**



**Note:**

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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>
I18Z60073-IOT05	Rev.0	1st edition	2018-05-09

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## **1. TEST LATORATORY**

### **1.1. 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

### **1.2. Testing Environment**

Normal Temperature: 15-35°C

Extreme Temperature: -20/+55°C

Relative Humidity: 20-75%

### **1.3. Project data**

Testing Start Date: 2018-04-08

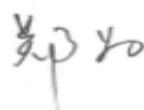
Testing End Date: 2018-05-04

### **1.4. Signature**



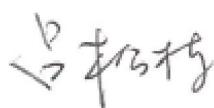
Jiang Xue

( Prepared this test report )



Zheng Wei

(Reviewed this test report)



Lv Songdong

(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: TCL Communication Ltd.  
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Nanshan District, Shenzhen, Guangdong, P.R. China 518052  
Shenzhen, Guangdong  
City: Shenzhen  
Postal Code: 518052  
Country: China  
Telephone: 0086-755-36611722  
Fax: 0086-75536612000-81722

### **2.2. Manufacturer Information**

Company Name: TCL Communication Ltd.  
Address: 7/F, Block F4, TCL International E City, Zhong Shan Yuan Road,  
Nanshan District, Shenzhen, Guangdong, P.R. China 518052  
Shenzhen, Guangdong  
City: Shenzhen  
Postal Code: 518052  
Country: China  
Telephone: 0086-755-36611722  
Fax: 0086-75536612000-81722

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

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

Description	GSM Quad-band/HSPA-UMTS Six-band/ LTE 19-band mobile phone
Model name	BBF100-1
FCC ID	2ACCJN026
WLAN Frequency Range	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.85V DC by Battery

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

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

EUT ID*	SN or IMEI	HW Version	SW Version
EUT5	/	09	AAX573
EUT2	/	09	AAX573

\*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	/	Inbuilt
AE2	Charger	/	18TCT-CH-0157
AE3	USB Cable	/	18TCT-DC-0049
AE1			
Model	TLp035B1		
Manufacturer	BYD		
Capacitance	3360mAh		
Nominal voltage	3.85V		
AE2			
Model	CBA0064AGBC1(QC13US)		
Manufacturer	BYD		
Length of cable	/		
AE3			
Model	CDA0000105CF(DC10)		
Manufacturer	LUXSHARE		
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 GSM Quad-band/HSPA-UMTS Six-band/ LTE 19-band mobile phone 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.

### 3.5. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.11	EUT5+ AE1+ AE2+ AE3	WIFI

## 4. REFERENCE DOCUMENTS

### 4.1. Documents supplied by applicant

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

### 4.2. Reference Documents for testing

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

FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	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	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2014-06

## 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	15.247 (a)	/	P
Band Edges Compliance	15.209 (b)	/	P
Transmitter Spurious Emission - Conducted	15.407	/	P
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P
Transmitter Spurious Emission - Radiated < 30MHz	15.247, 15.209	/	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.

This model is a variant product which model name is BBF100-2.;all the test result has been derived from test report of BBF100-2.

### **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	3.85V
Humidity	44%

## **7. TEST EQUIPMENTS UTILIZED**

### **Conducted test system**

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2017-06-02	2018-06-01
2	Test Receiver	ESCI 3	100344	Rohde & Schwarz	1 year	2019-02-28
3	LISN	ENY216	101200	Rohde & Schwarz	1 year	2019-04-15
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	2018-12-30
2	BiLog Antenna	VULB9163	514	Schwarzbeck	3 years	2021-01-03
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	3 years	2020-05-31
6	EMI Antenna	3117	00139065	ETS-Lindgren	3 Years	2020-11-15
7	Spectrum Analyzer	FSV40	101047	Rohde & Schwarz	1 year	2018-07-22

## 8. Measurement Uncertainty

### 8.1. Transmitter Output Power

Measurement Uncertainty: 0.339dB, k=1.96

### 8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dBm/MHz, k=1.96

### 8.3. Occupied 6dB Bandwidth

Measurement Uncertainty: 60.80Hz, k=1.96

### 8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dBm, k=1.96

### 8.5. Spurious Emissions

#### Conducted (k=1.96)

Frequency Range	Uncertainty(dBm)
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(dBm)
9kHz-30MHz	
30MHz ≤ f ≤ 1GHz	4.86
1GHz ≤ f ≤ 18GHz	5.26
18GHz ≤ f ≤ 40GHz	5.28

### 8.6. AC Power-line Conducted Emission

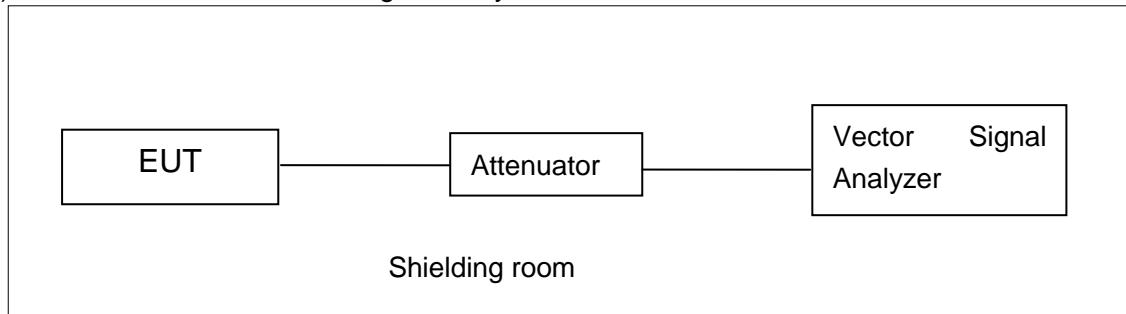
Measurement Uncertainty : 3.38dBm, k=2

## 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

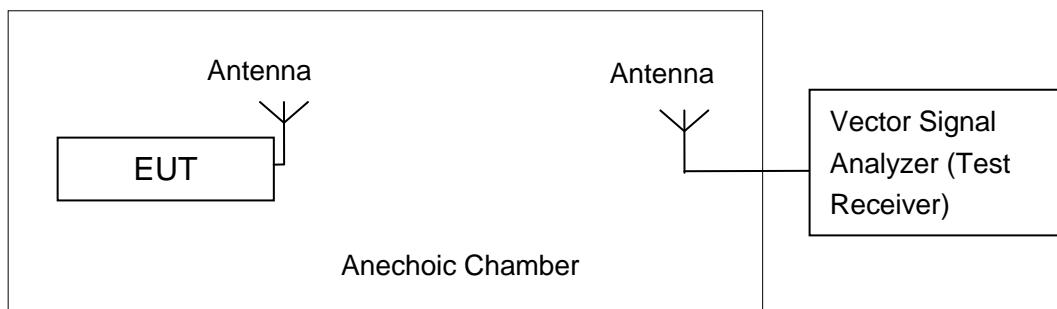


#### A.1.2. Radiated Emission Measurements

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 Peak Output Power

### Measurement Limit and Method:

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

### A.2.1 Antenna Gain

Antenna gain is dB<sub>i</sub> and the value is supplied by the applicant or manufacturer.

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

#### Measurement Results:

##### 802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	25.38	/	/
	9	25.45	/	/
	12	25.16	/	/
	18	25.86	/	/
	24	26.14	26.11	25.68
	36	25.96	/	/
	48	26.13	/	/
	54	26.01	/	/

The data rate 24Mbps 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	24.12	/	/
	MCS1	23.82	/	/
	MCS2	24.61	/	/
	MCS3	24.94	24.95	24.53
	MCS4	24.74	/	/
	MCS5	24.92	/	/
	MCS6	24.87	/	/
	MCS7	24.84	/	/

The data rate MCS3 is selected as worse condition, and the following cases are performed with this condition.







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

##### Measurement Limit:

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

The measurement is made according to KDB789033 D02 .

##### Measurement Uncertainty:

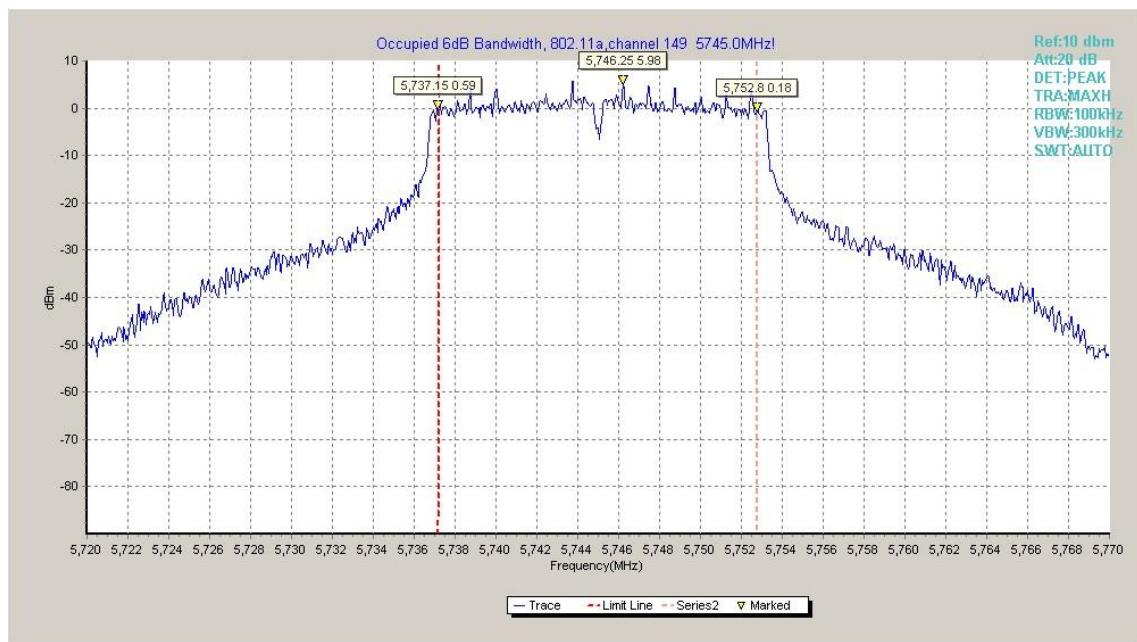
Measurement Uncertainty	60.80Hz
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##### Measurement Result:

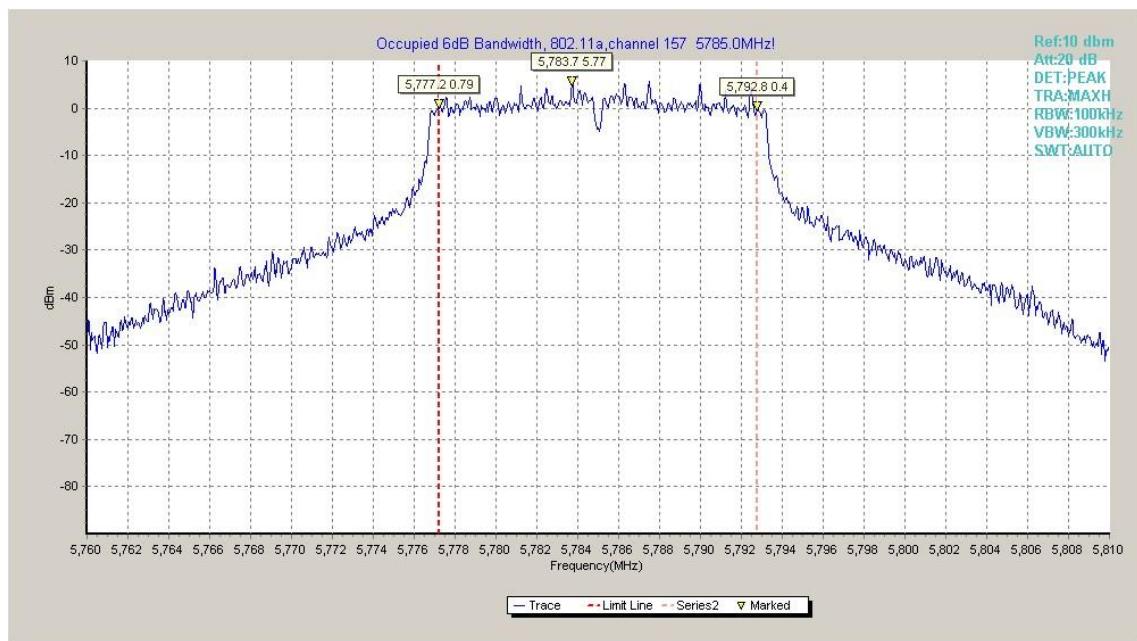
Mode	Channel	Occupied 6dB Bandwidth ( MHz)		conclusion
802.11a	149	Fig.1	15.65	P
	157	Fig.2	15.60	P
	165	Fig.3	15.30	P
802.11n HT20	149	Fig.4	15.40	P
	157	Fig.5	15.70	P
	165	Fig.6	16.95	P
802.11ac HT20	149	Fig.7	17.00	P
	157	Fig.8	16.95	P
	165	Fig.9	15.95	P
802.11n HT40	151	Fig.10	35.36	P
	159	Fig.11	35.36	P
802.11ac HT40	151	Fig.12	35.92	P
	159	Fig.13	35.28	P
802.11ac HT80	155	Fig.14	72.64	P

**Conclusion: PASS**

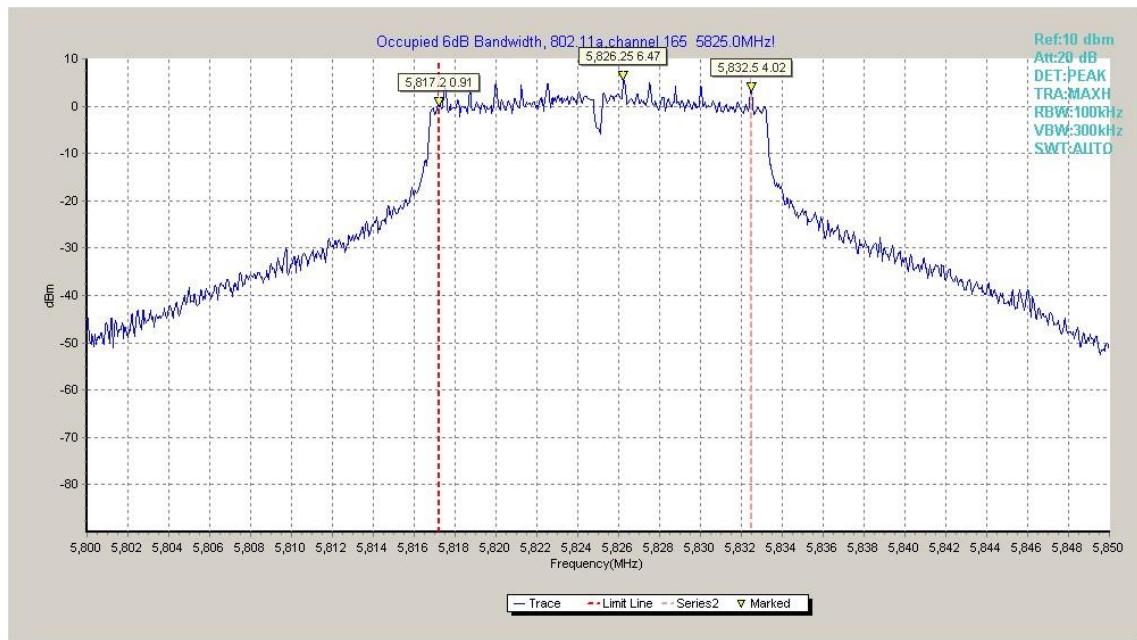
**Test graphs as below:**



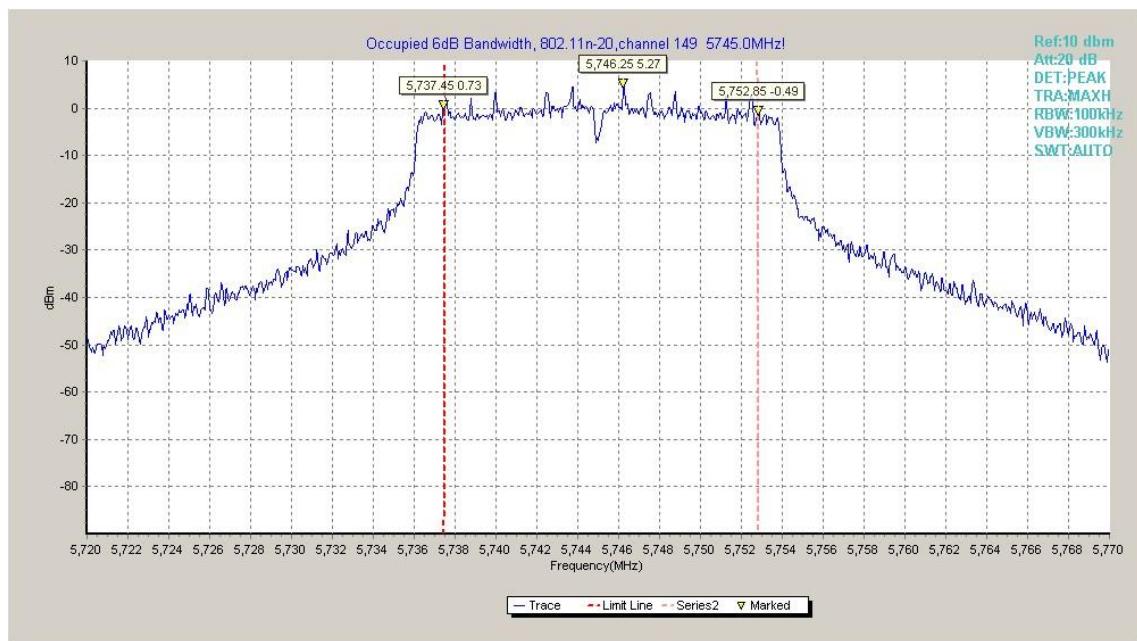
**Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)**



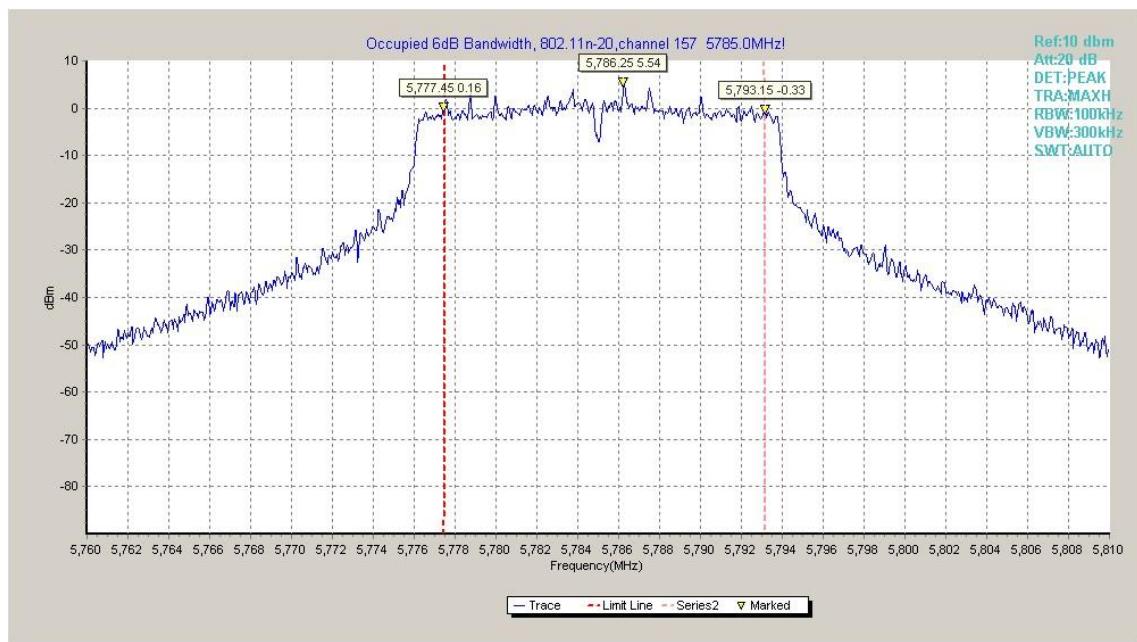
**Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)**



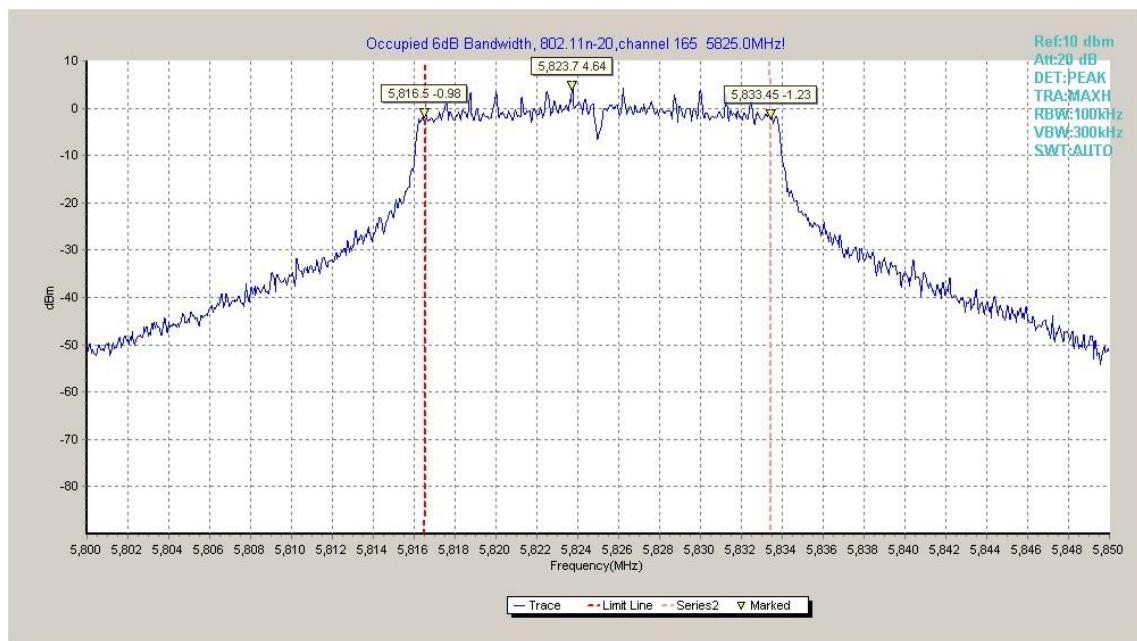
**Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)**



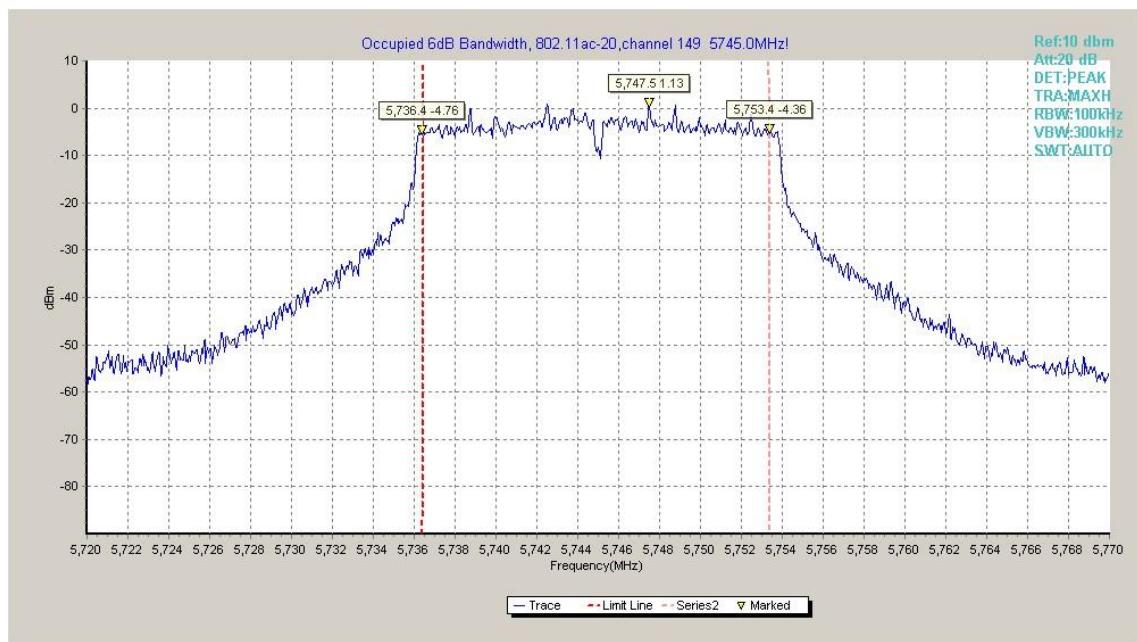
**Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)**



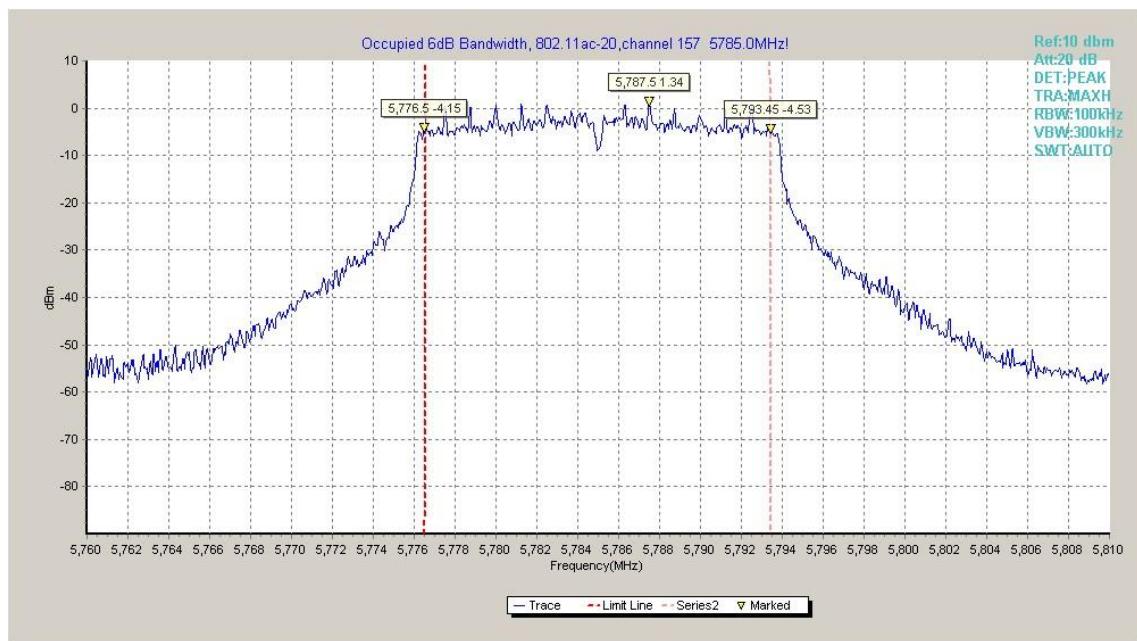
**Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)**



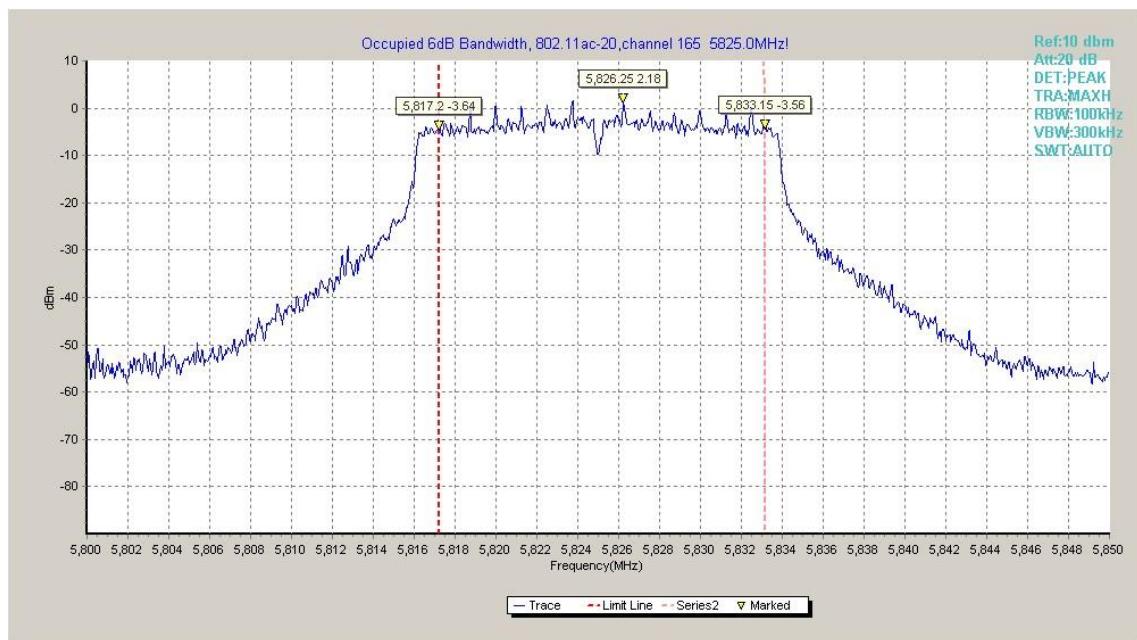
**Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)**



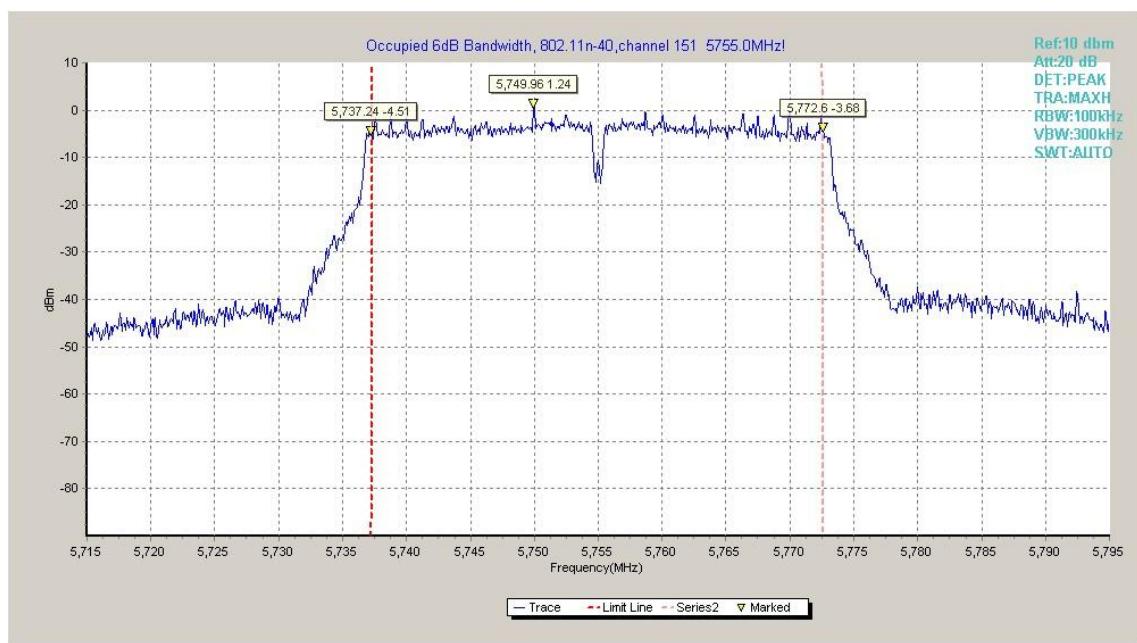
**Fig. 7 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 149)**



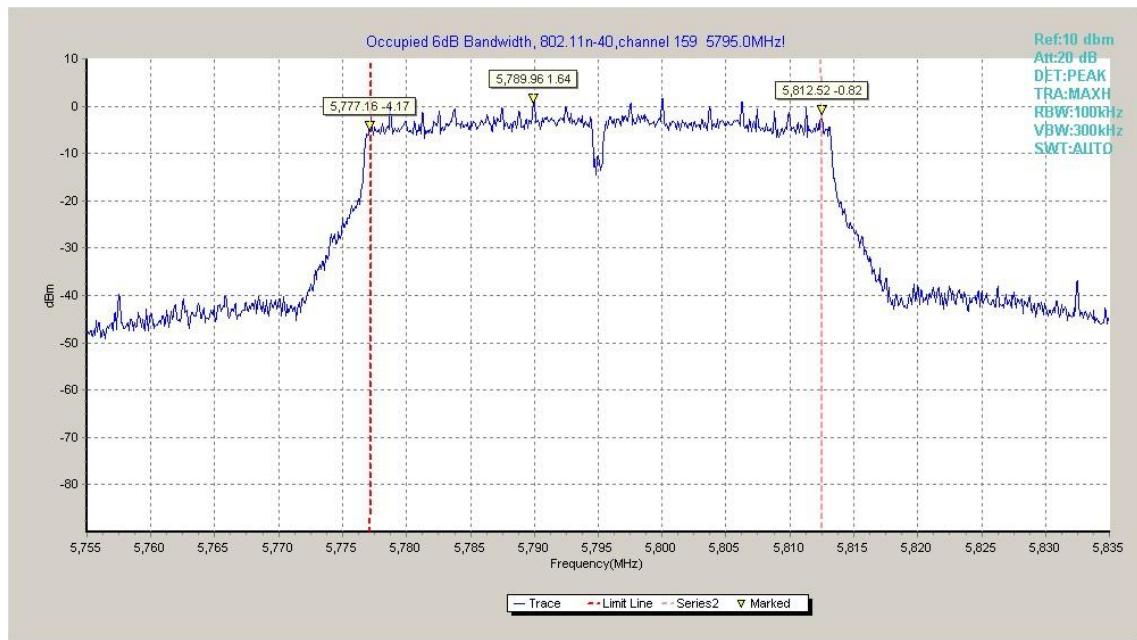
**Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 157)**



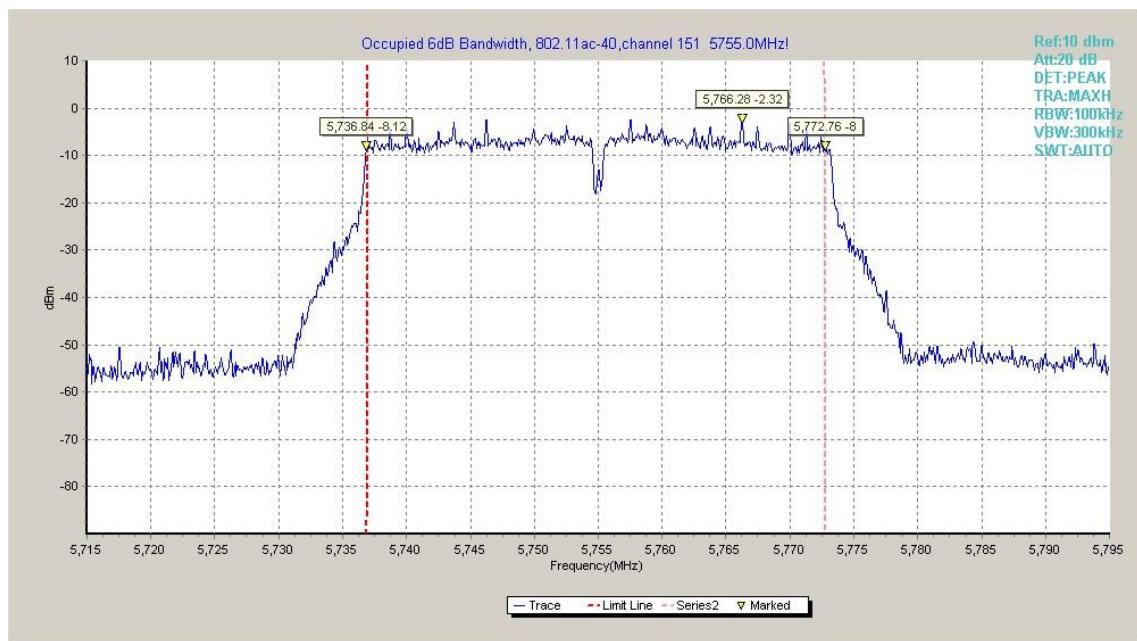
**Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 165)**



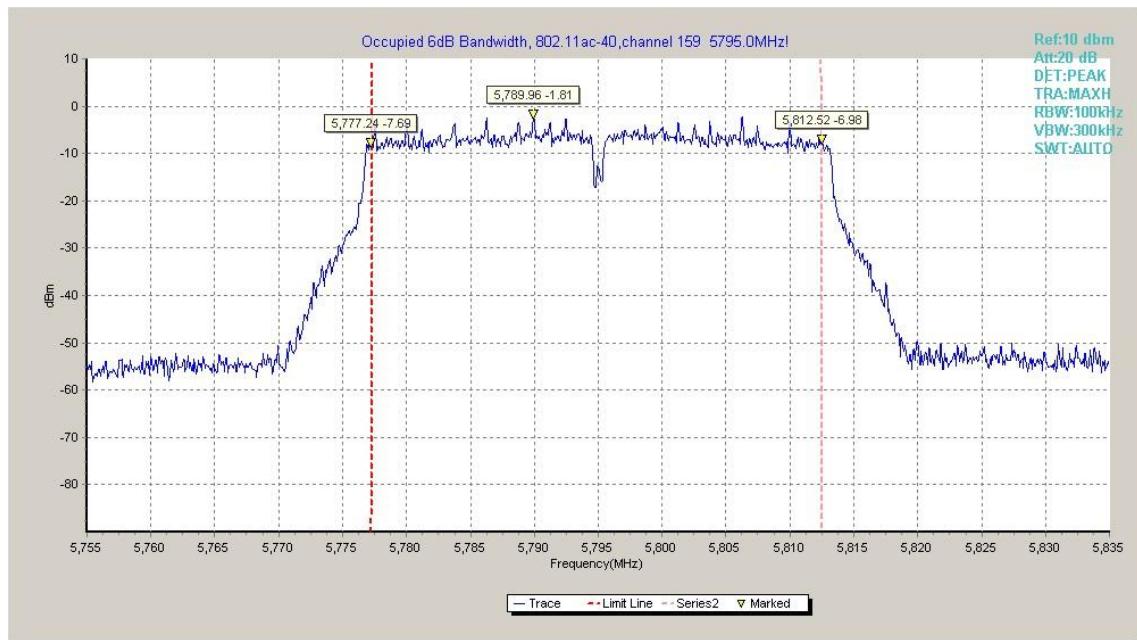
**Fig. 10 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)**



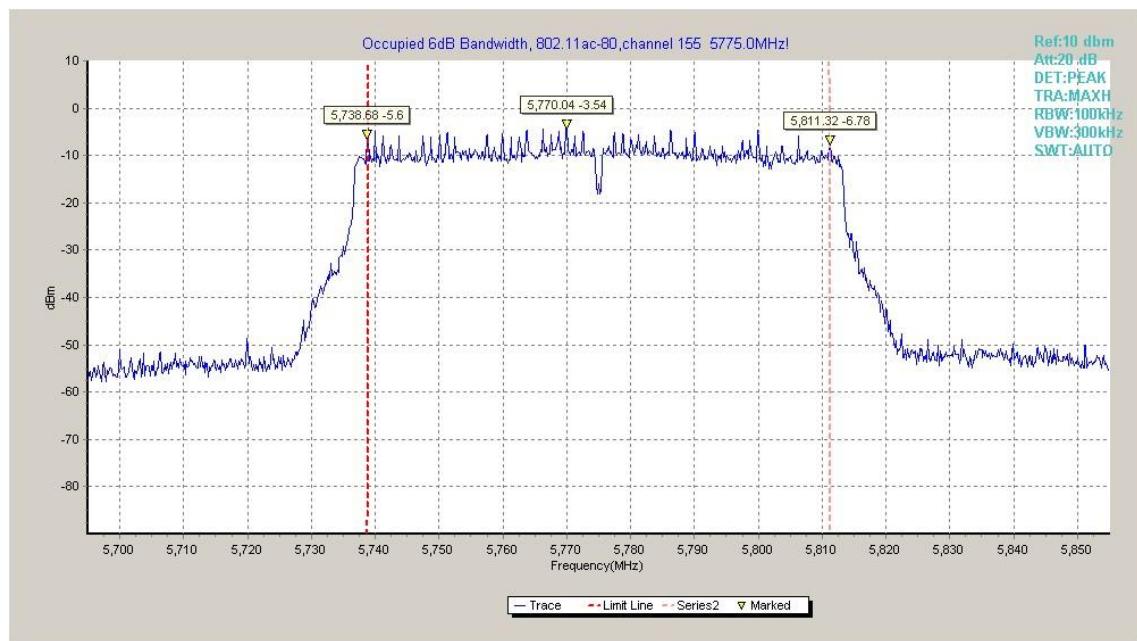
**Fig. 11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)**



**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)**



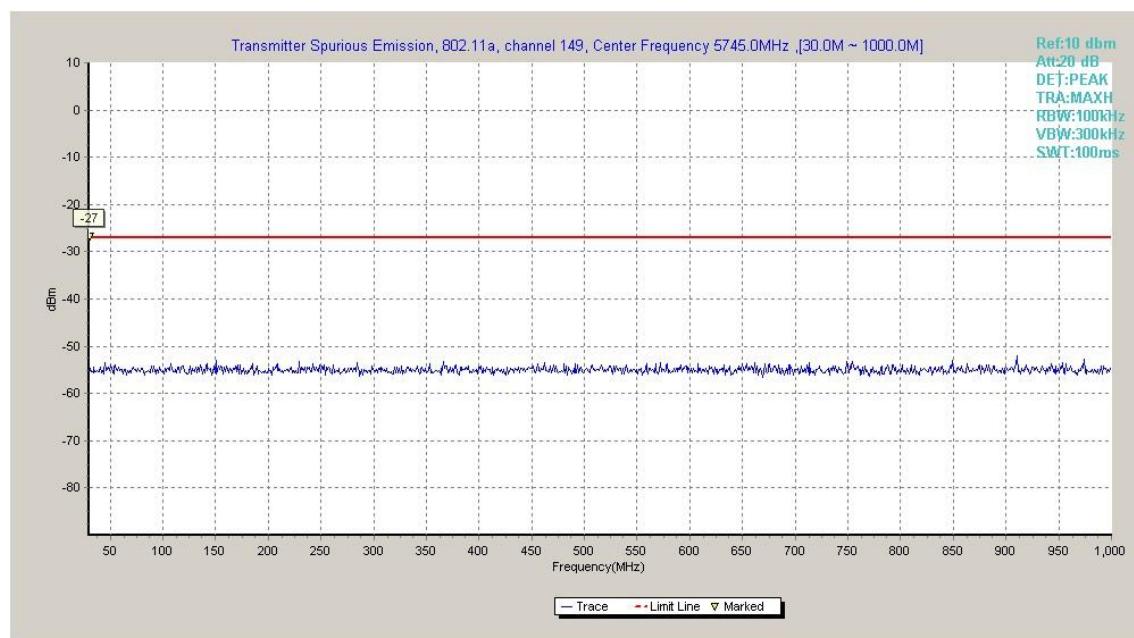


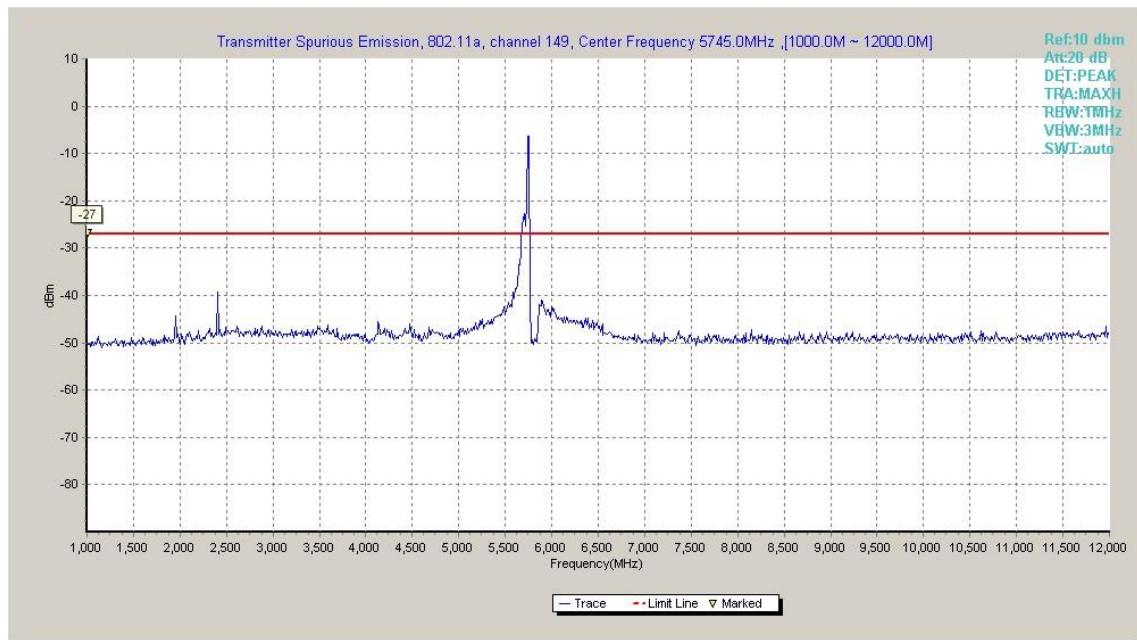
**802.11ac-HT40 mode**

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11ac HT40	151	30 MHz ~ 1 GHz	Fig.59	P
		1 GHz ~ 12 GHz	Fig.60	P
		12 GHz ~ 25 GHz	Fig.61	P
		25 GHz ~ 40 GHz	Fig.62	P
	159	30 MHz ~ 1 GHz	Fig.63	P
		1 GHz ~ 12 GHz	Fig.64	P
		12 GHz ~ 25 GHz	Fig.65	P
		25 GHz ~ 40 GHz	Fig.66	P

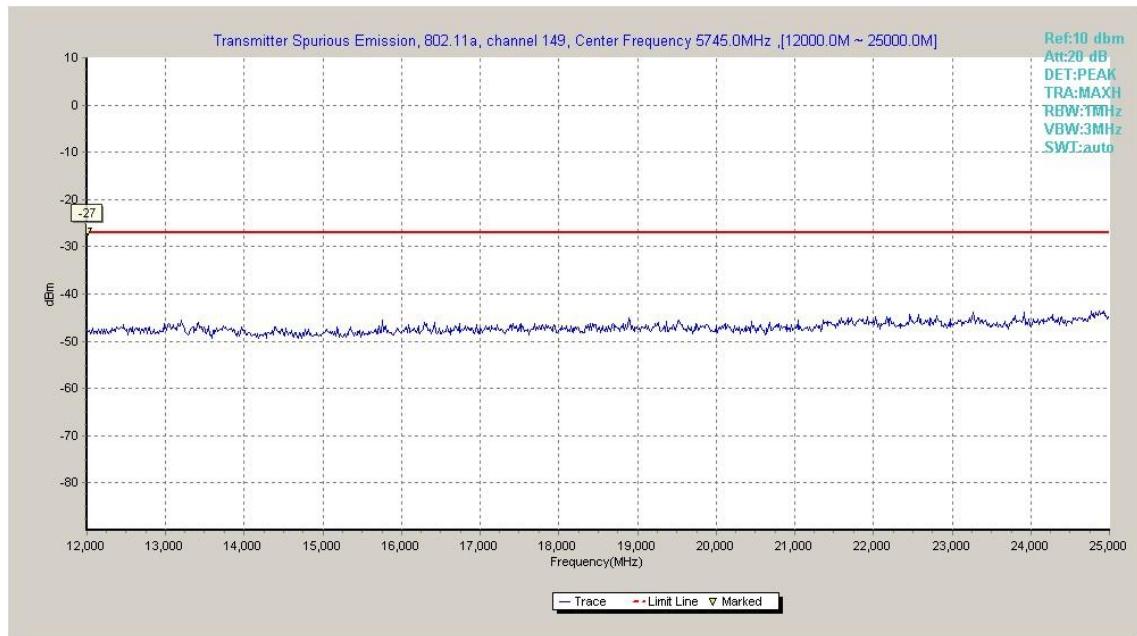
**802.11ac-HT80 mode**

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11ac HT80	155	30 MHz ~ 1 GHz	Fig.67	P
		1 GHz ~ 12 GHz	Fig.68	P
		12 GHz ~ 25 GHz	Fig.69	P
		25 GHz ~ 40 GHz	Fig.70	P

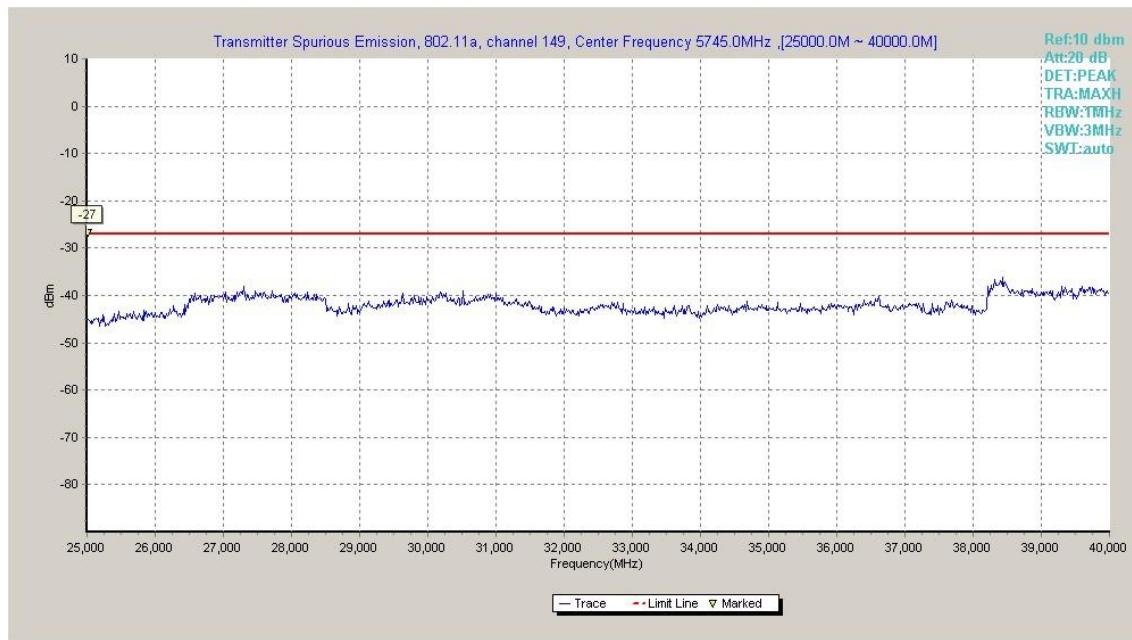
**Conclusion: PASS**
**Test graphs as below:**

**Fig. 15 Conducted Spurious Emission (802.11a, Ch149, 30 MHz-1 GHz)**



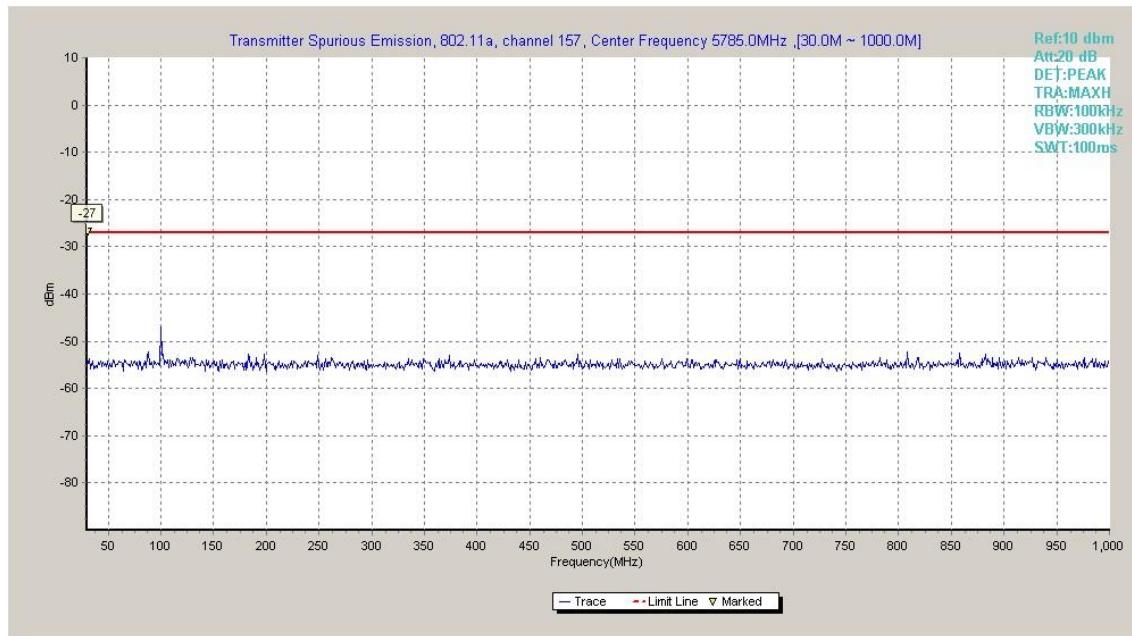
**Fig. 16 Conducted Spurious Emission (802.11a, Ch149, 1 GHz -12 GHz)**



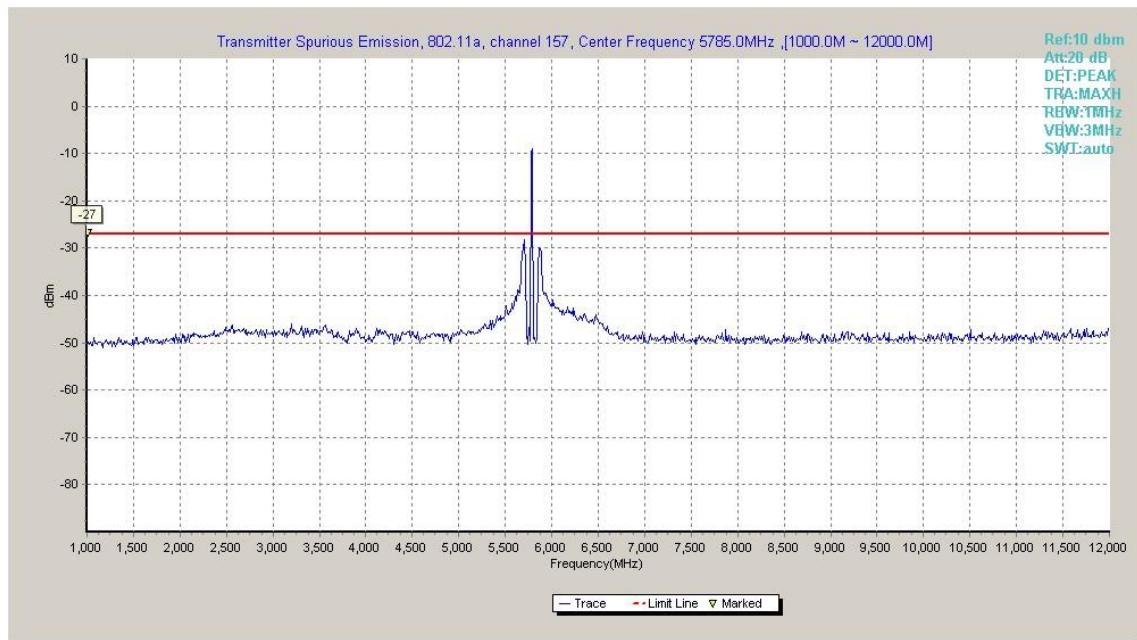
**Fig. 17 Conducted Spurious Emission (802.11a, Ch149, 12 GHz-25 GHz)**



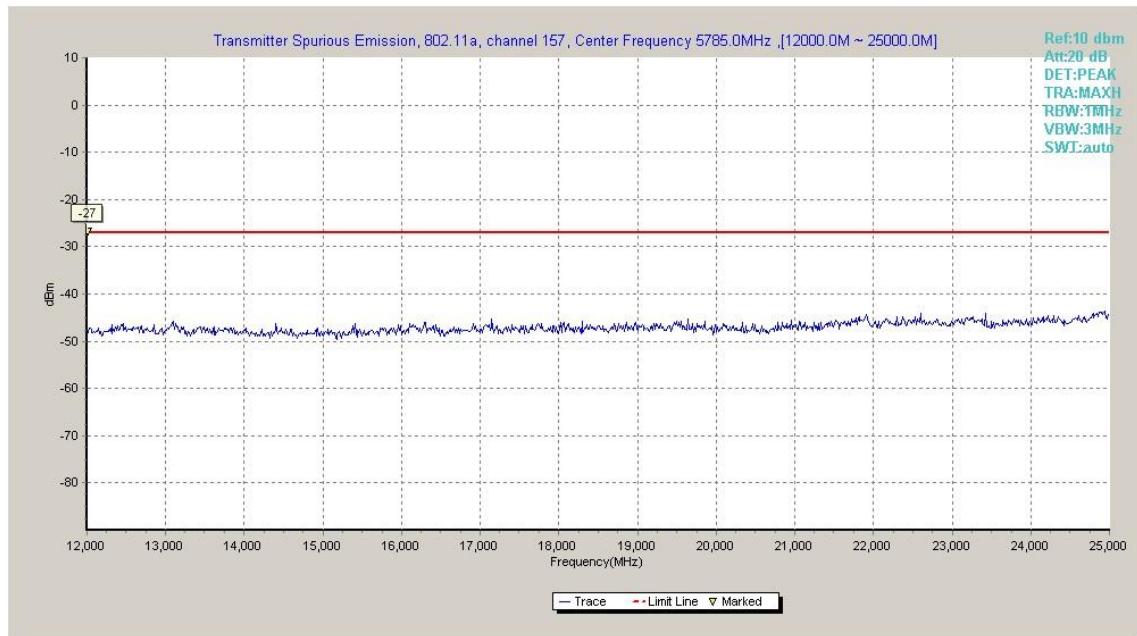
**Fig. 18 Conducted Spurious Emission (802.11a, Ch149, 25 GHz-40 GHz)**



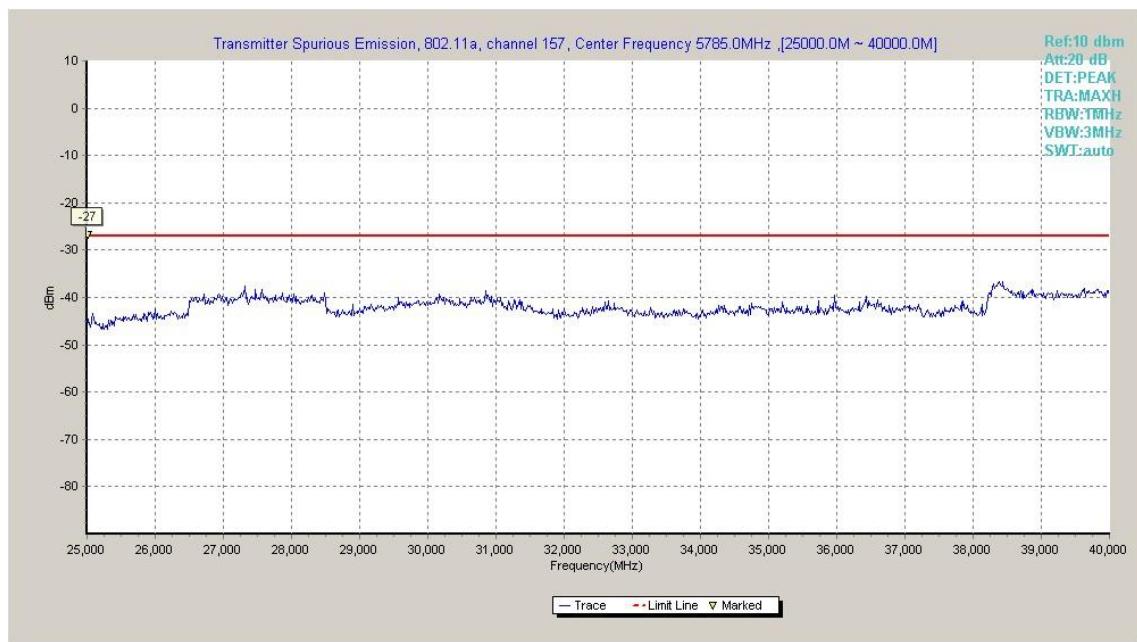
**Fig. 19 Conducted Spurious Emission (802.11a, Ch157, 30 MHz-1 GHz)**



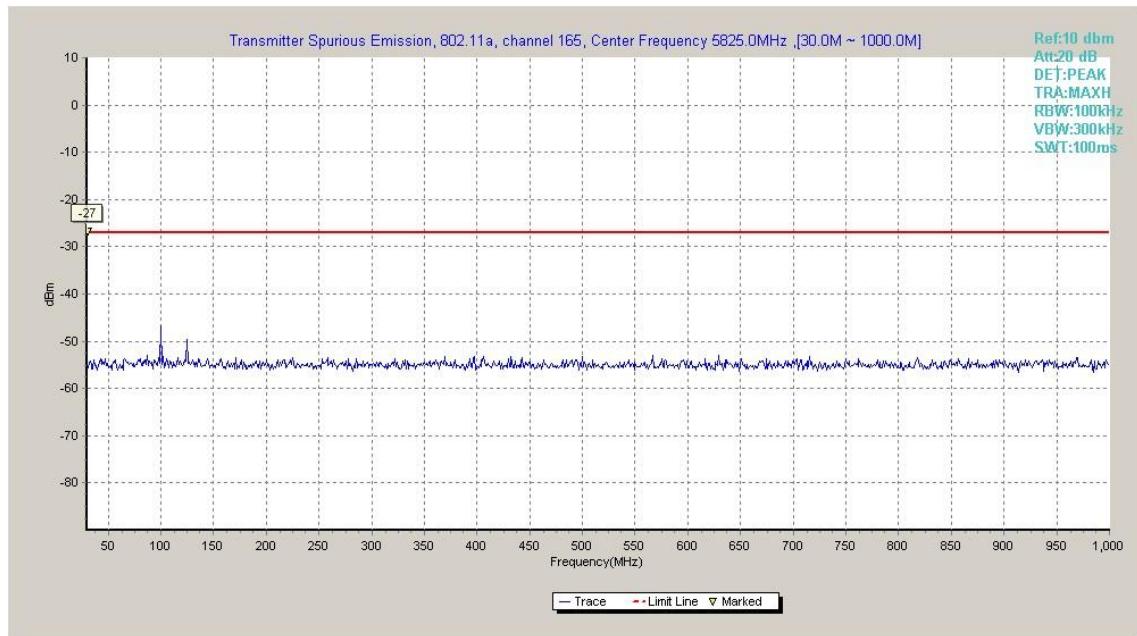
**Fig. 20 Conducted Spurious Emission (802.11a, Ch157, 1 GHz -12 GHz)**



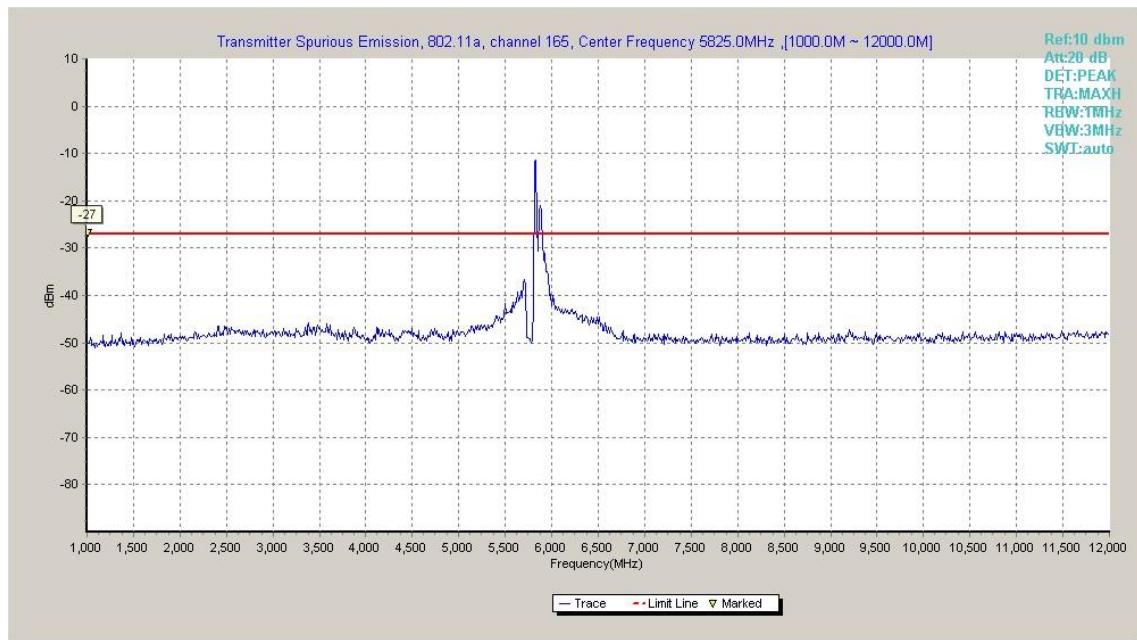
**Fig. 21 Conducted Spurious Emission (802.11a, Ch157, 12 GHz-25 GHz)**



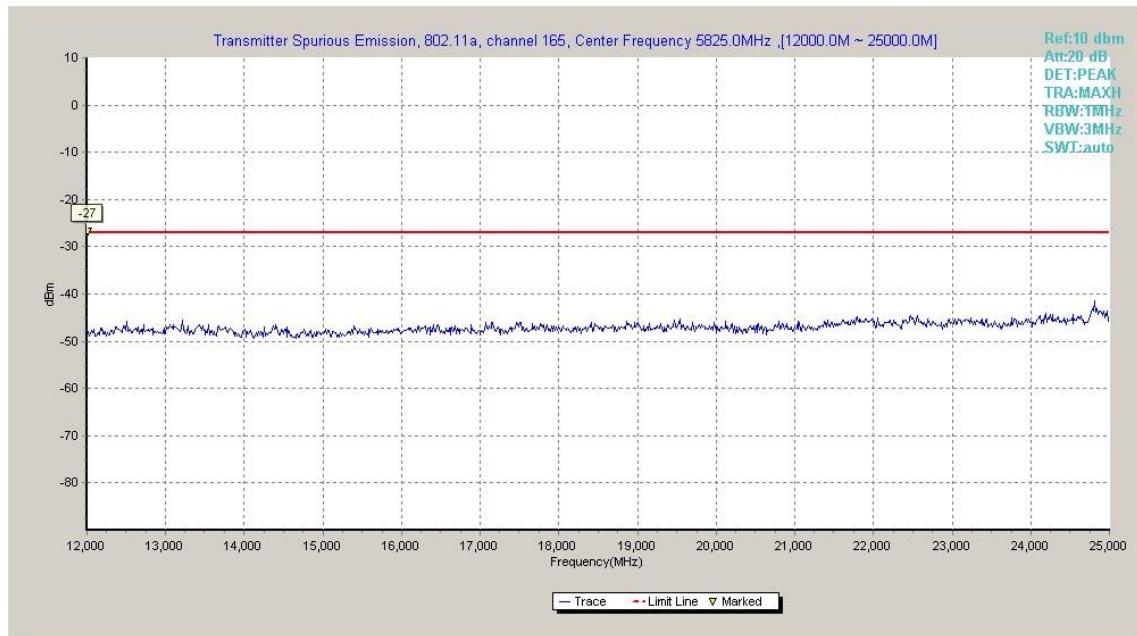
**Fig. 22 Conducted Spurious Emission (802.11a, Ch157, 25 GHz-40 GHz)**



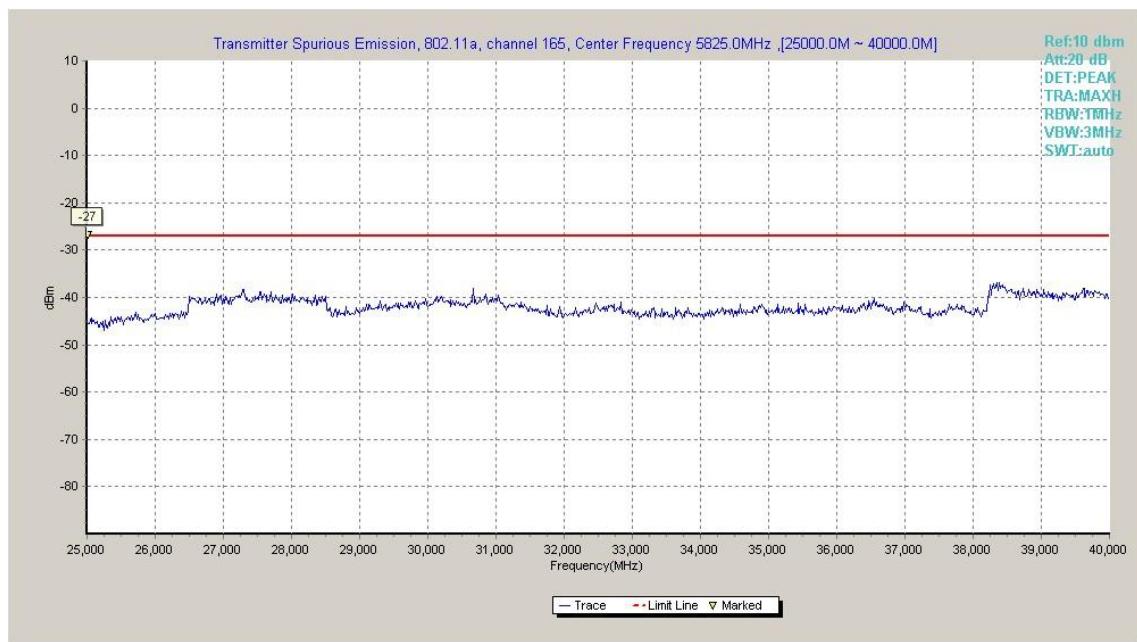
**Fig. 23 Conducted Spurious Emission (802.11a, Ch165, 30 MHz-1 GHz)**



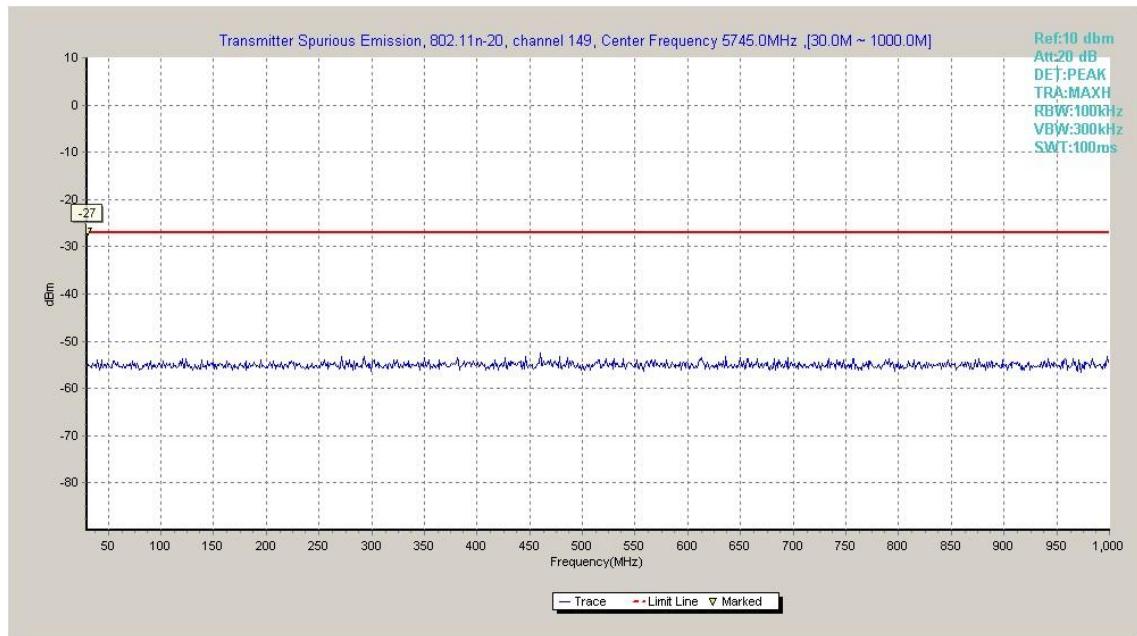
**Fig. 24 Conducted Spurious Emission (802.11a, Ch165, 1 GHz -12 GHz)**



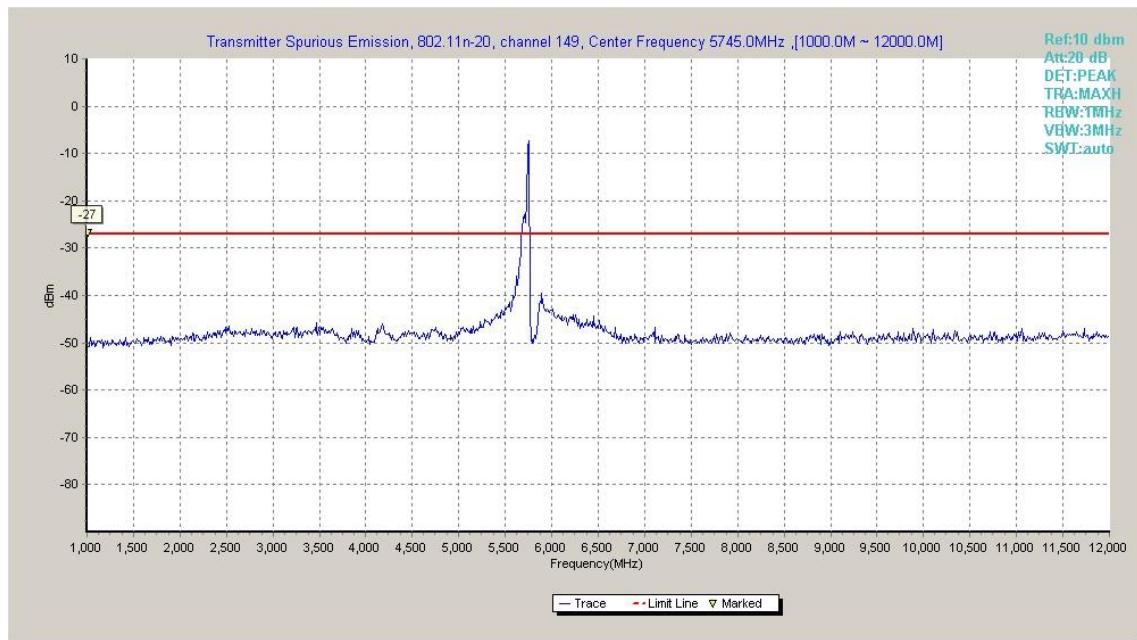
**Fig. 25 Conducted Spurious Emission (802.11a, Ch165, 12 GHz-25 GHz)**



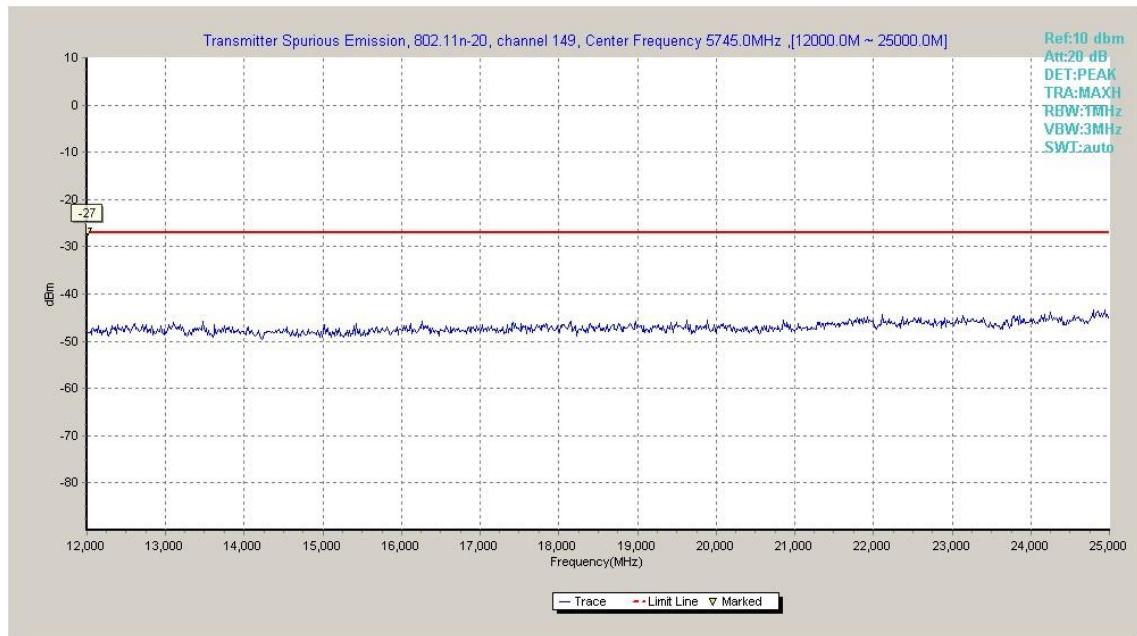
**Fig. 26 Conducted Spurious Emission (802.11a, Ch165, 25 GHz-40 GHz)**



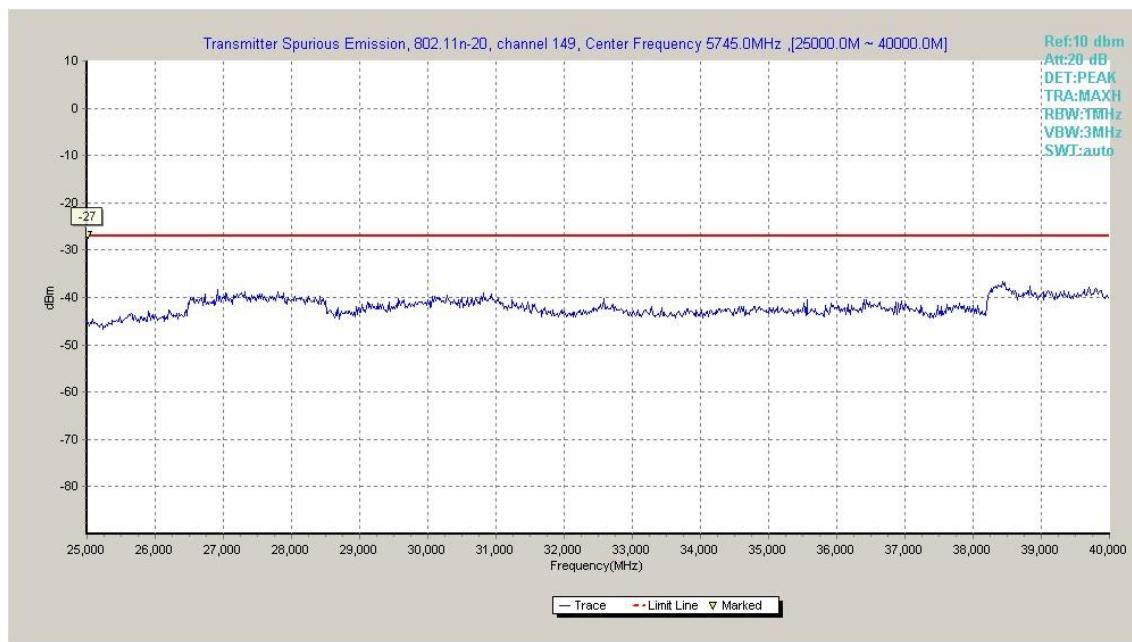
**Fig. 27 Conducted Spurious Emission (802.11n-HT20, Ch149, 30 MHz-1 GHz)**



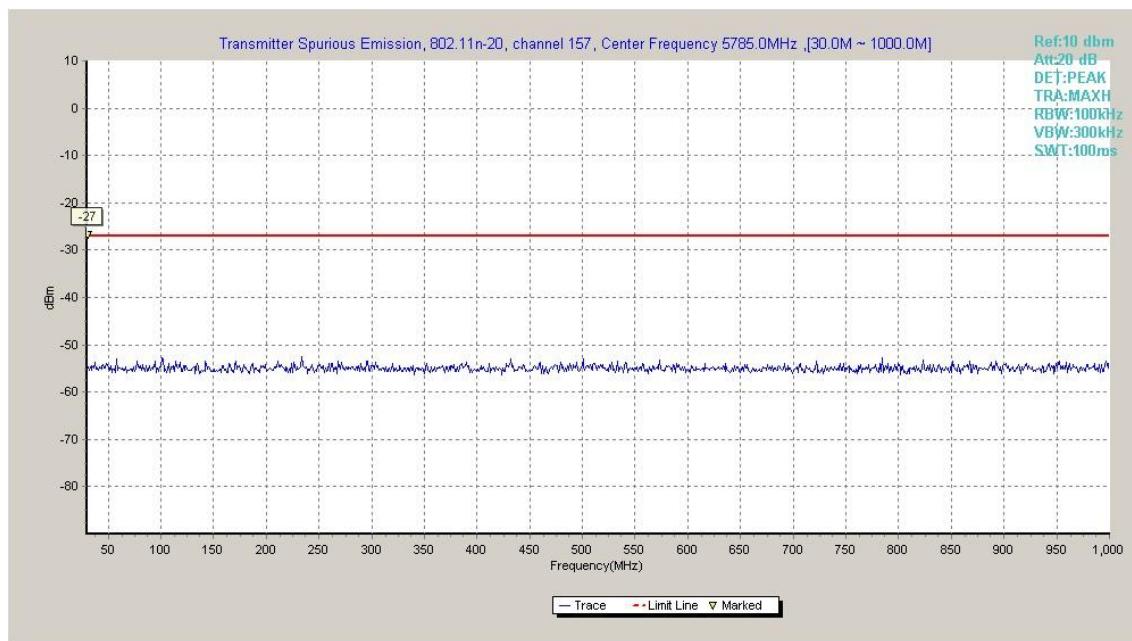
**Fig. 28 Conducted Spurious Emission (802.11n-HT20, Ch149, 1 GHz -12 GHz)**



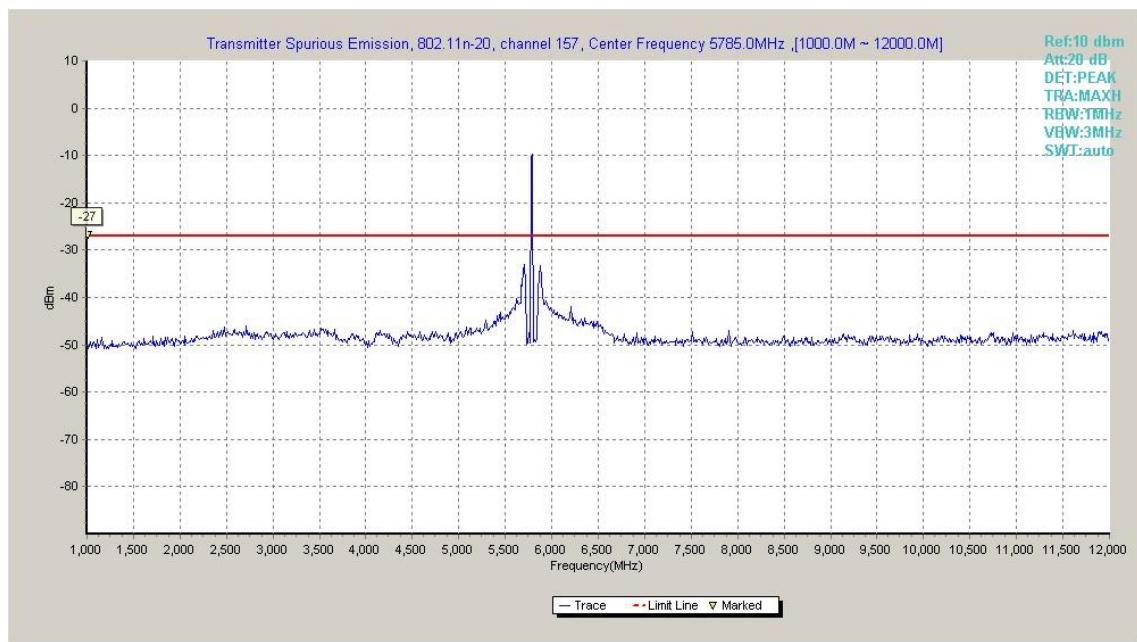
**Fig. 29 Conducted Spurious Emission (802.11n-HT20, Ch149, 12 GHz-25 GHz)**



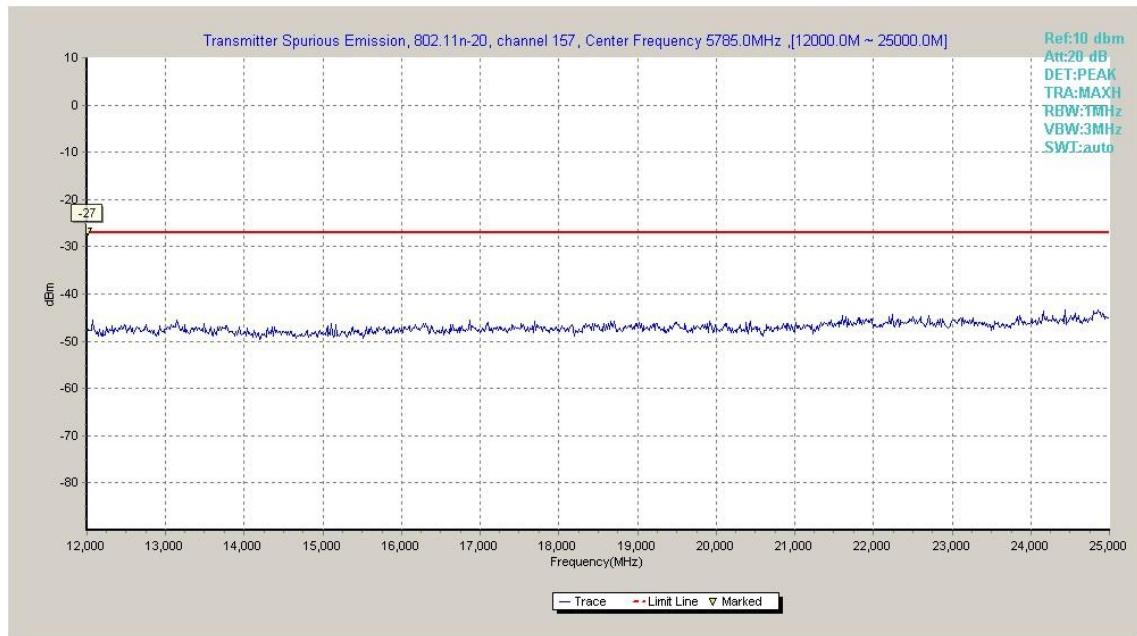
**Fig. 30 Conducted Spurious Emission (802.11n-HT20, Ch149, 25 GHz-40 GHz)**



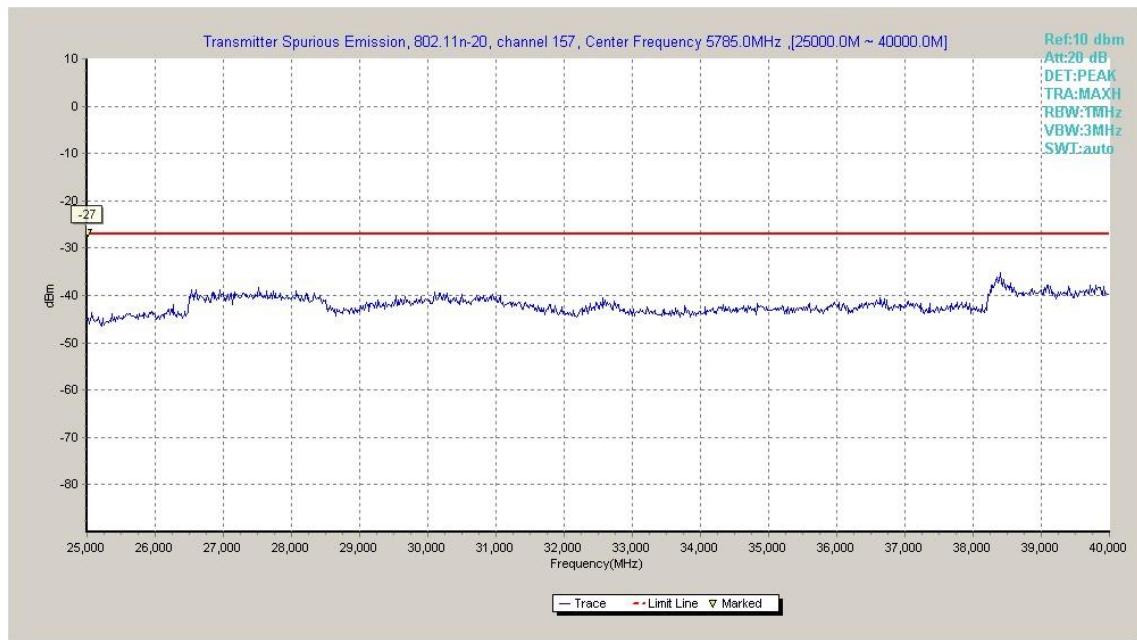
**Fig. 31 Conducted Spurious Emission (802.11n-HT20, Ch157, 30 MHz-1 GHz)**



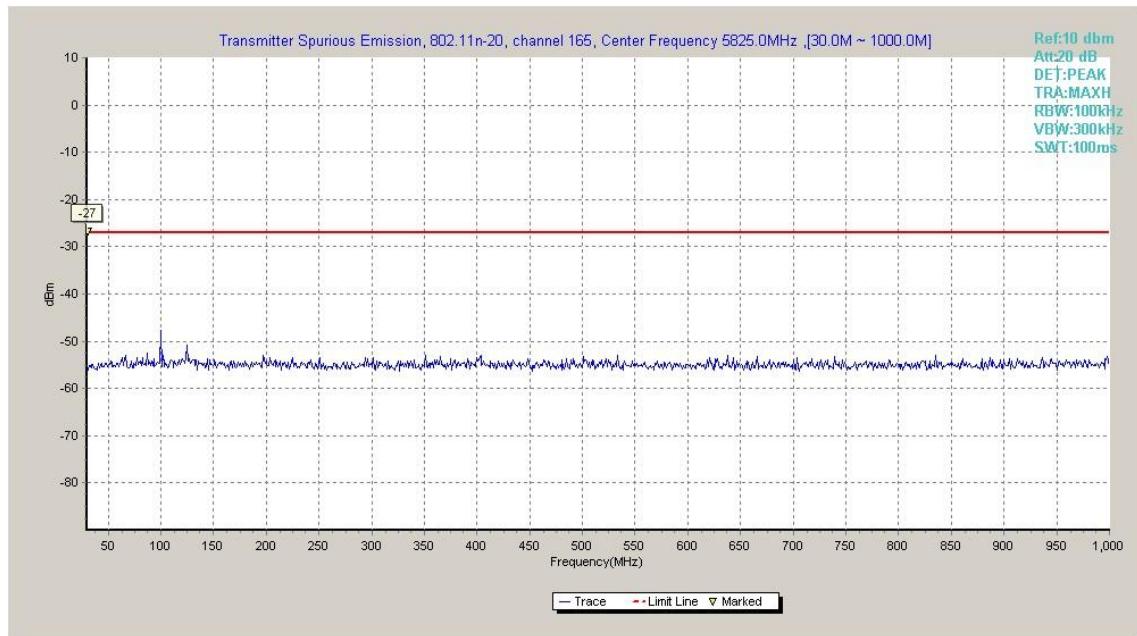
**Fig. 32 Conducted Spurious Emission (802.11n-HT20, Ch157, 1 GHz -12 GHz)**



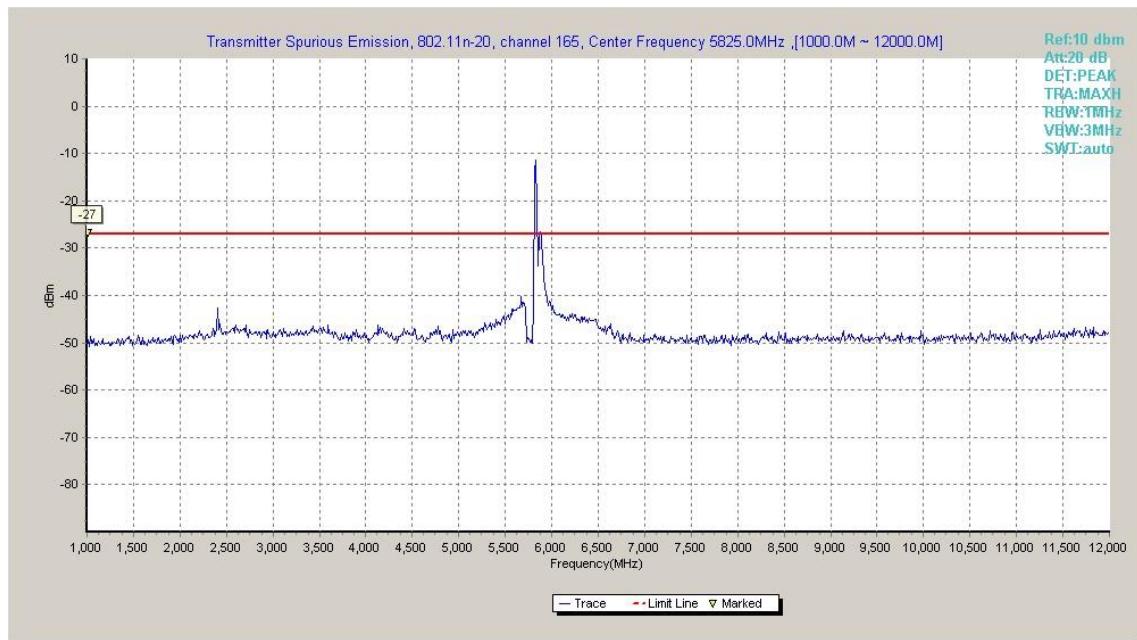
**Fig. 33 Conducted Spurious Emission (802.11n-HT20, Ch157, 12 GHz-25 GHz)**



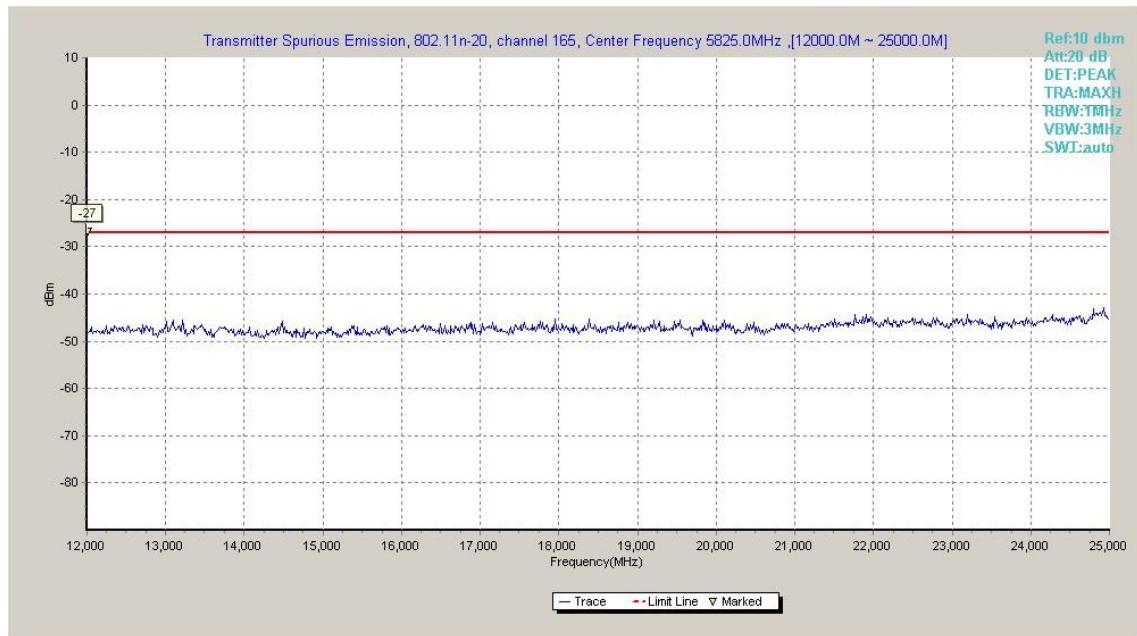
**Fig. 34 Conducted Spurious Emission (802.11n-HT20, Ch157, 25 GHz-40 GHz)**



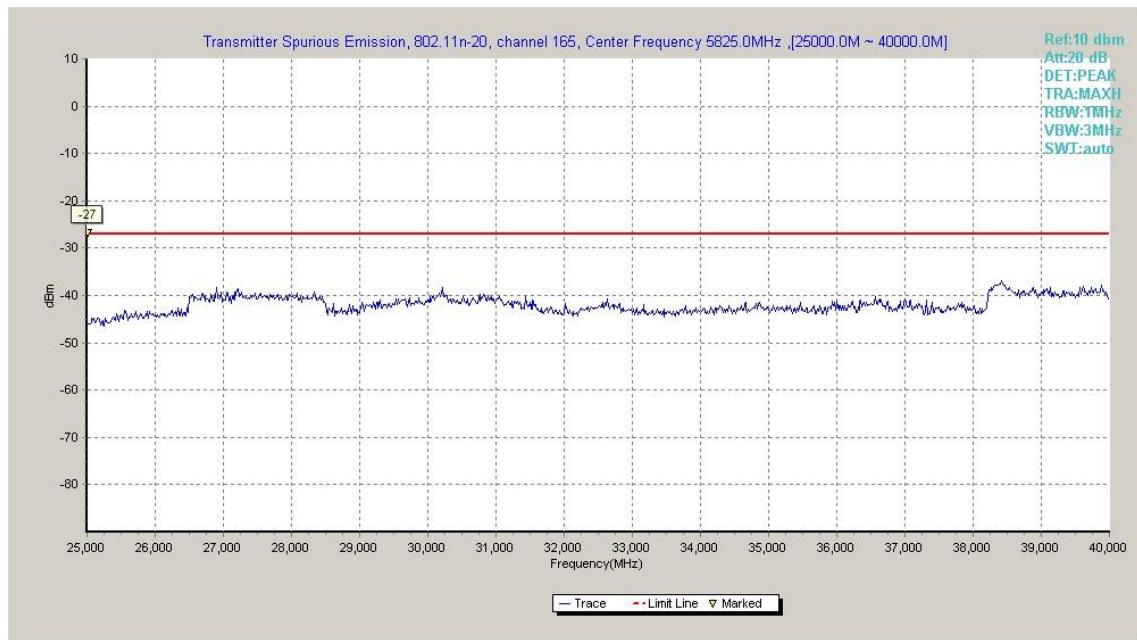
**Fig. 35 Conducted Spurious Emission (802.11n-HT20, Ch165, 30 MHz-1 GHz)**



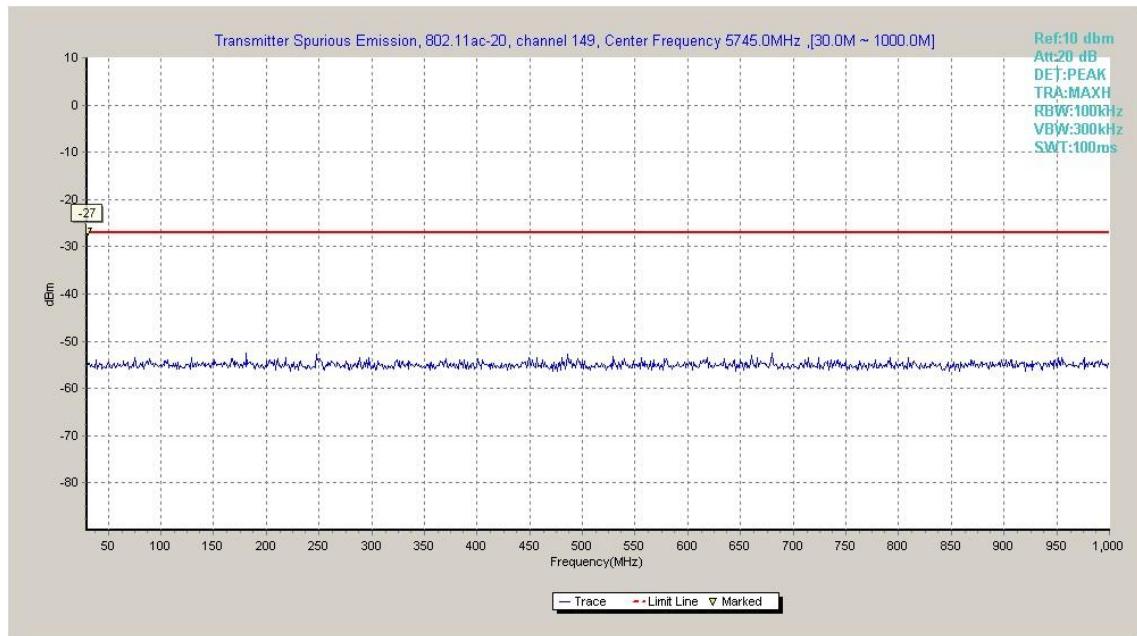
**Fig. 36 Conducted Spurious Emission (802.11n-HT20, Ch165, 1 GHz -12 GHz)**



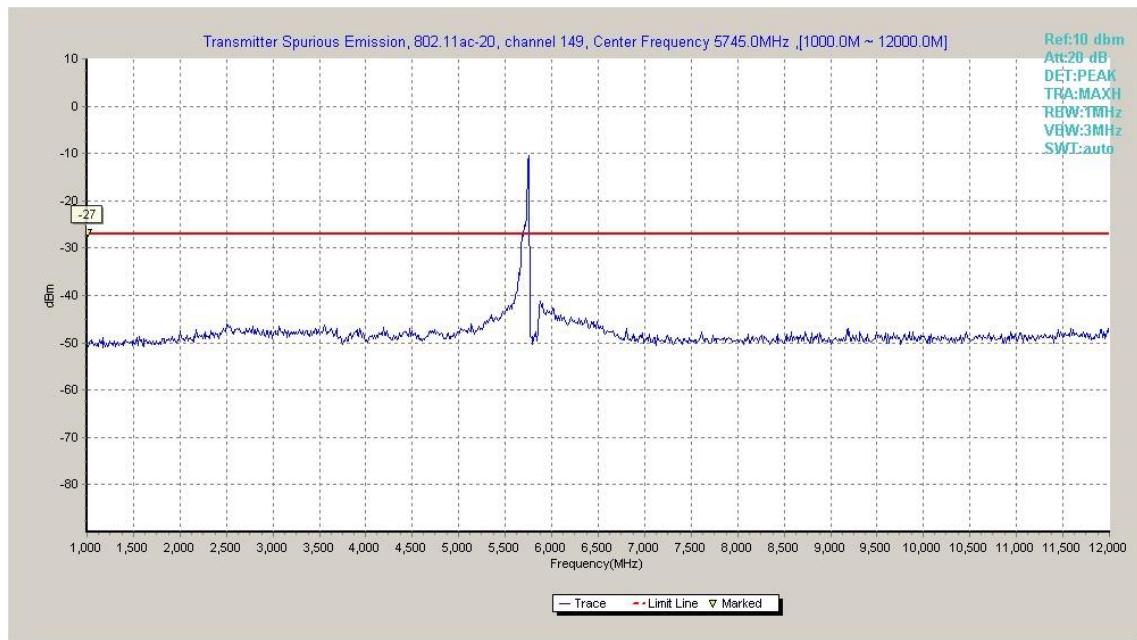
**Fig. 37 Conducted Spurious Emission (802.11n-HT20, Ch165, 12 GHz-25 GHz)**



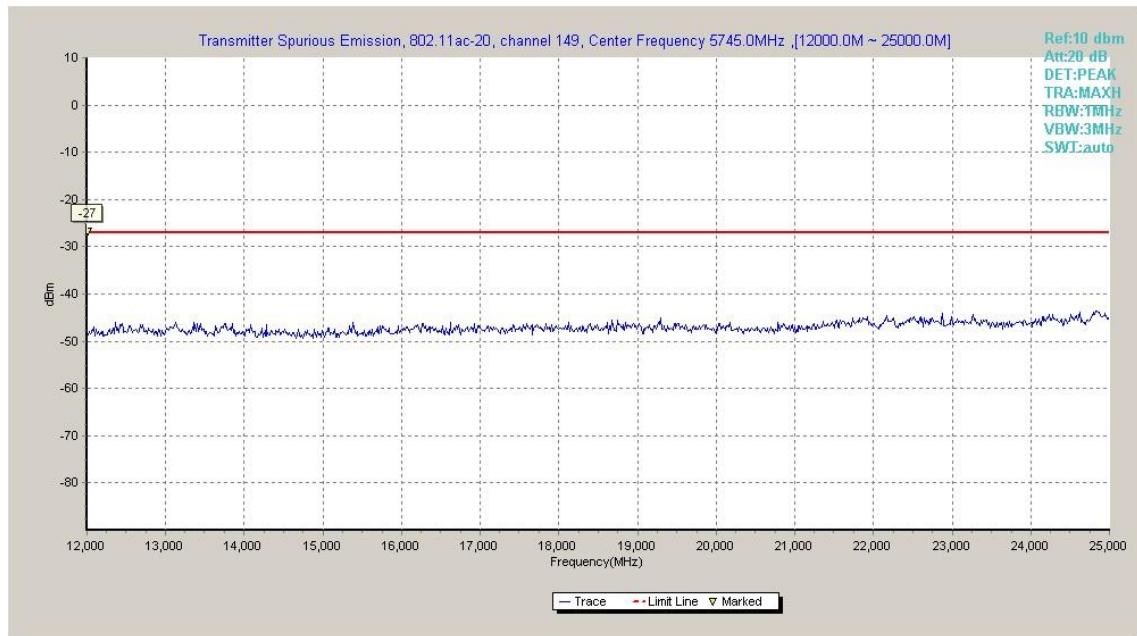
**Fig. 38 Conducted Spurious Emission (802.11n-HT20, Ch165, 25 GHz-40 GHz)**



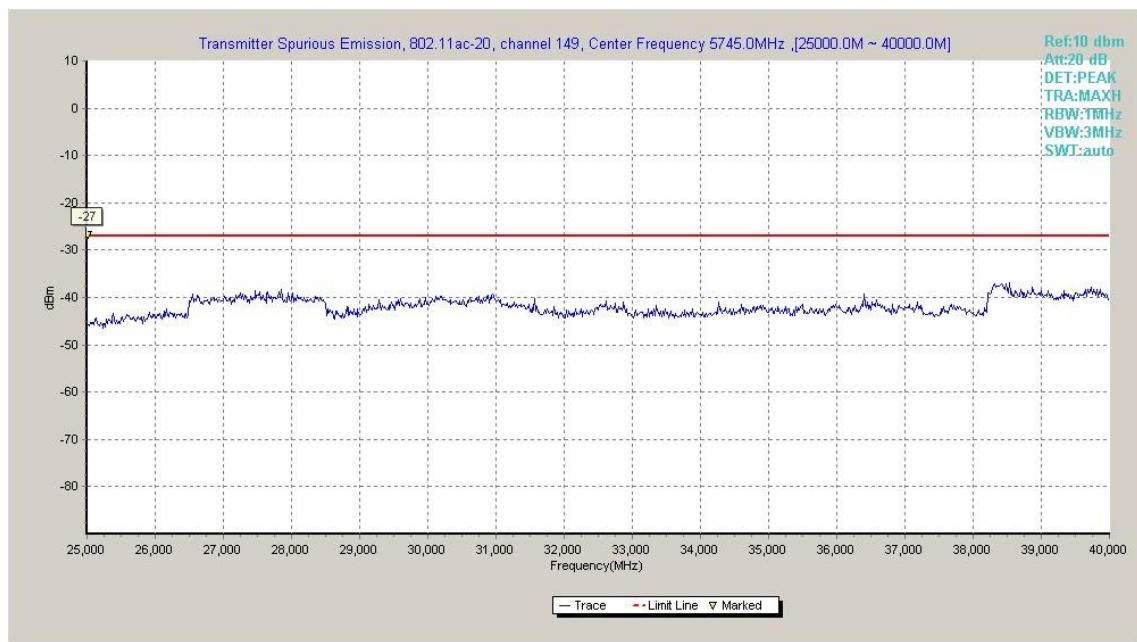
**Fig. 39 Conducted Spurious Emission (802.11ac-HT20, Ch149, 30 MHz-1 GHz)**



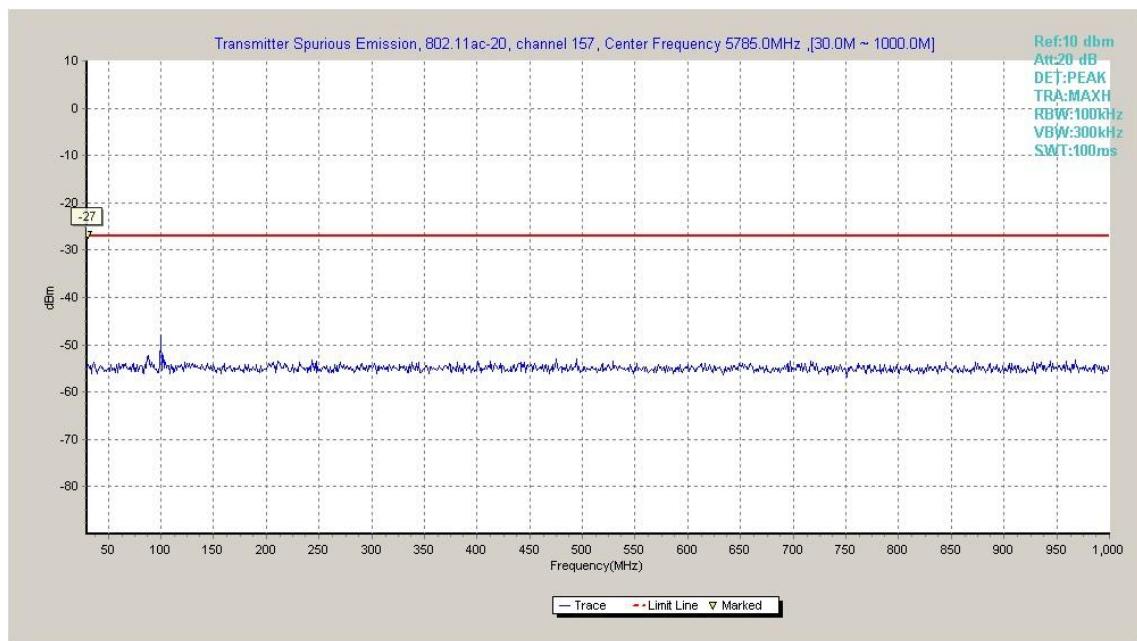
**Fig. 40 Conducted Spurious Emission (802.11ac-HT20, Ch149, 1 GHz -12 GHz)**



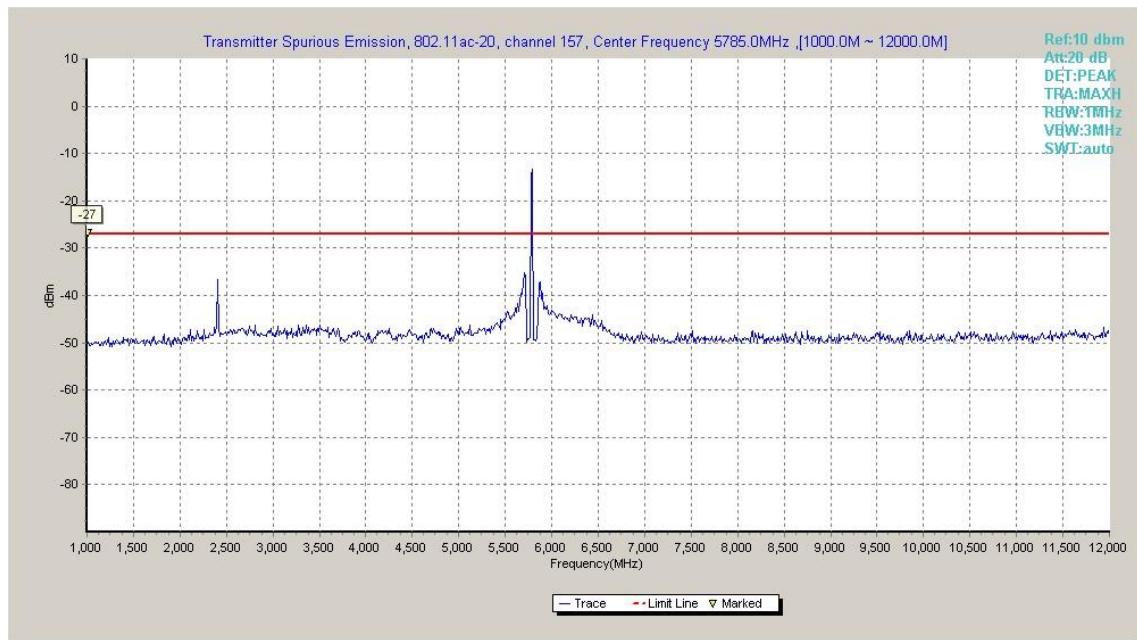
**Fig. 41 Conducted Spurious Emission (802.11ac-HT20, Ch149, 12 GHz-25 GHz)**



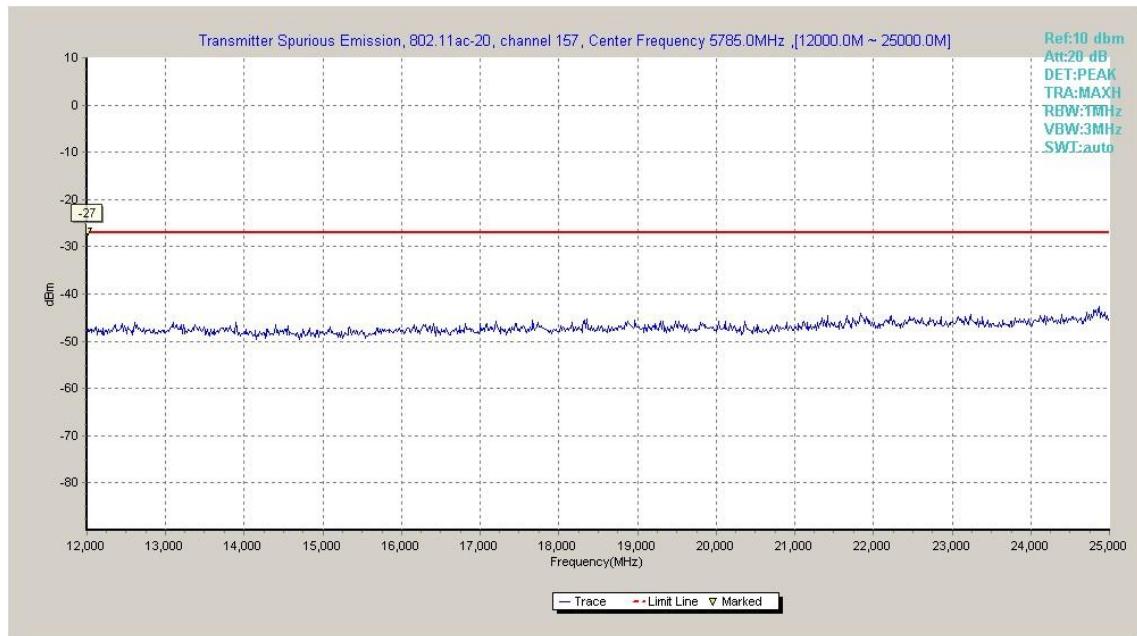
**Fig. 42 Conducted Spurious Emission (802.11ac-HT20, Ch149, 25 GHz-40 GHz)**



**Fig. 43 Conducted Spurious Emission (802.11ac-HT20, Ch157, 30 MHz-1 GHz)**



**Fig. 44 Conducted Spurious Emission (802.11ac-HT20, Ch157, 1 GHz -12 GHz)**



**Fig. 45 Conducted Spurious Emission (802.11ac-HT20, Ch157, 12 GHz-25 GHz)**