



# Part 15C

# TEST REPORT

<b>Product Name</b>	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
<b>Model</b>	ZTE V788
<b>FCC ID</b>	Q78-ZTEV788
<b>Client</b>	ZTE CORPORATION

**TA Technology (Shanghai) Co., Ltd.**

**TA Technology (Shanghai) Co., Ltd.**  
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**GENERAL SUMMARY**

<b>Product Name</b>	WCDMA/GSM ( GPRS ) Dual-Mode Digital Mobile Phone	<b>Model</b>	ZTE V788
<b>FCC ID</b>	Q78-ZTEV788	<b>Report No.</b>	RZA1204-0004RF01R3
<b>Client</b>	ZTE CORPORATION		
<b>Manufacturer</b>	ZTE CORPORATION		
<b>Reference Standard(s)</b>	<p><b>FCC CFR47 Part 15C (2010-12)</b> Radio Frequency Devices  <b>15.205</b> Restricted bands of operation;  <b>15.207</b> Conducted limits;  <b>15.209</b> Radiated emission limits; general requirements;  <b>15.247</b> Operation within the bands 902-928 MHz,2400-2483.5 MHz, and 5725-5850MHz.  <b>ANSI C63.4</b> Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz. (2009)  <b>KDB 558074 D01 DTS Meas Guidance v01</b> Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247</p>		
<b>Conclusion</b>	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: <b>Pass</b></p> <div style="text-align: center;">             (Stamp) <b>报告专用章</b>  <b>Date of issue: May 21<sup>st</sup>,2012</b> </div>		
<b>Comment</b>	The test result only responds to the measured sample.		

Approved by 柏伟冲  
Director

Revised by 徐凯  
RF Manager

Performed by 王峰  
RF Engineer

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## 1. General Information

### 1.1. Notes of the test report

**TA Technology (Shanghai) Co., Ltd.** guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

**TA Technology (Shanghai) Co., Ltd.** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

### 1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
Contact: Yang Weizhong  
Telephone: +86-021-50791141/2/3  
Fax: +86-021-50791141/2/3-8000  
Website: <http://www.ta-shanghai.com>  
E-mail: [yangweizhong@ta-shanghai.com](mailto:yangweizhong@ta-shanghai.com)

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**1.3. Applicant Information**

Company: ZTE CORPORATION  
Address: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District,  
Shenzhen, Guangdong, 518057, P.R. China  
City: Shenzhen  
Postal Code: 518057  
Country: P.R. China  
Contact: Zhang Min  
Telephone: 021-68897541  
Fax: 021-50801070

**1.4. Manufacturer Information**

Company: ZTE CORPORATION  
Address: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District,  
Shenzhen, Guangdong, 518057, P.R. China  
City: Shenzhen  
Postal Code: 518057  
Country: P.R. China  
Telephone: 021-68897541  
Fax: 021-50801070

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### 1.5. Information of EUT

#### General information

Name of EUT:	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
IMEI:	863185010003130
Hardware Version:	y50A
Software Version:	GB_AM_P752A11V1.0.0B01
Antenna Type:	Internal Antenna
Device Operating Configurations:	
Network Standards:	802.11b, 802.11g, 802.11n(HT20); (tested)
Test Modulation:	(802.11b)DSSS; (802.11g)OFDM
Power Supply:	Battery or Adapter
Max Conducted Power	18.12 dBm
Extreme Voltage:	Minimum: 3.5 V    Maximum: 4.2 V
Extreme Temperature:	Lowest:-10°C    Highest: +55°C
Operating Frequency Range(s)	2400MHz~ 2483.5 MHz

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### Auxiliary Equipment Details

#### AE1: Charger

Model: /  
Manufacturer: ZTE CORPORATION  
S/N: /

Equipment Under Test (EUT) is WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone. The detail about these is in chapter 1.5 in this report. The EUT supports WiFi.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

### 1.6. Test Date

The test is performed from April 23, 2012 to May 20, 2012.

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## 2. Test Information

### 2.1. Summary of test results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output –Conducted	15.247(b)(3)	PASS
2	Minimum 6dB bandwidth	15.247(a)(2)	PASS
3	Band Edges compliance	15.247(d)	PASS
4	Spurious Radiated Emissions in the restricted band	15.247(d),15.205,15.209	PASS
5	Power spectral Density	15.247(e)	PASS
6	Conducted Spurious Emission	15.247	PASS
7	Radiates Emission	15.247(d),15.205,15.209	PASS
8	Conducted Emissions	15.207,15.107	PASS

**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

**2.2. Peak Power Output –Conducted**

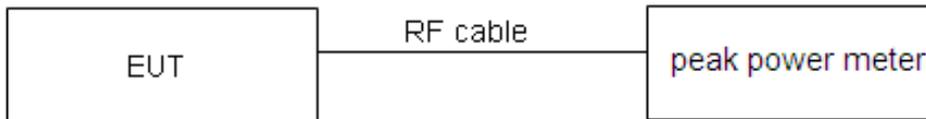
**Ambient condition**

Temperature	Relative humidity	Pressure
23°C ~ 25°C	45% ~ 50%	101.5kPa

**Methods of Measurement**

During the process of the testing, The EUT was connected to the peak power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use 5.2.1 Maximum Peak Conducted Output Power Level Method in KDB 558074 D01 for this test.

**Test Setup**



**Limits**

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt."

Peak Output Power	$\leq 1W$ (30dBm)
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**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.44$  dB.

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## Test Report

**Test Results: Pass**

Network Standards	Data Rate	Peak Output Power (dBm)		
		CH 1	CH 6	CH 11
802.11b	1 Mbps	<b>17.55</b>	<b>18.12</b>	<b>17.86</b>
	2 Mbps	17.21	17.78	17.47
	5.5 Mbps	17.29	17.95	17.72
	11 Mbps	17.38	17.72	17.53
802.11g	6 Mbps	15.79	15.58	15.38
	9 Mbps	15.81	15.56	15.43
	12 Mbps	15.88	15.69	15.48
	18 Mbps	15.85	15.58	15.37
	24 Mbps	<b>17.07</b>	<b>17.25</b>	<b>16.95</b>
	36 Mbps	16.96	17.06	16.78
	48 Mbps	16.85	16.57	16.66
	54 Mbps	16.78	16.64	16.41
802.11n HT20	MCS0	<b>15.37</b>	<b>15.12</b>	<b>14.66</b>
	MCS1	14.96	15.08	14.55
	MCS2	14.07	14.12	13.68
	MCS3	14.91	15.02	14.51
	MCS4	13.51	13.58	13.57
	MCS5	13.38	13.46	13.38
	MCS6	13.47	13.45	13.34
	MCS7	12.38	12.44	12.43

Note: 1. The following testing items should be tested at the data rate with the maximum output power.

2. The maximum output power values are marked in bold.

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### 2.3. Occupied Bandwidth (6dB)

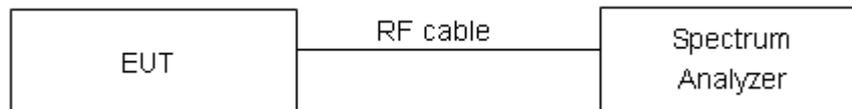
#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 200 kHz((RBW) = 1-5 % of (EBW)), VBW is set to 620 kHz on spectrum analyzer.

#### Test Setup



#### Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz
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#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

# TA Technology (Shanghai) Co., Ltd. Test Report

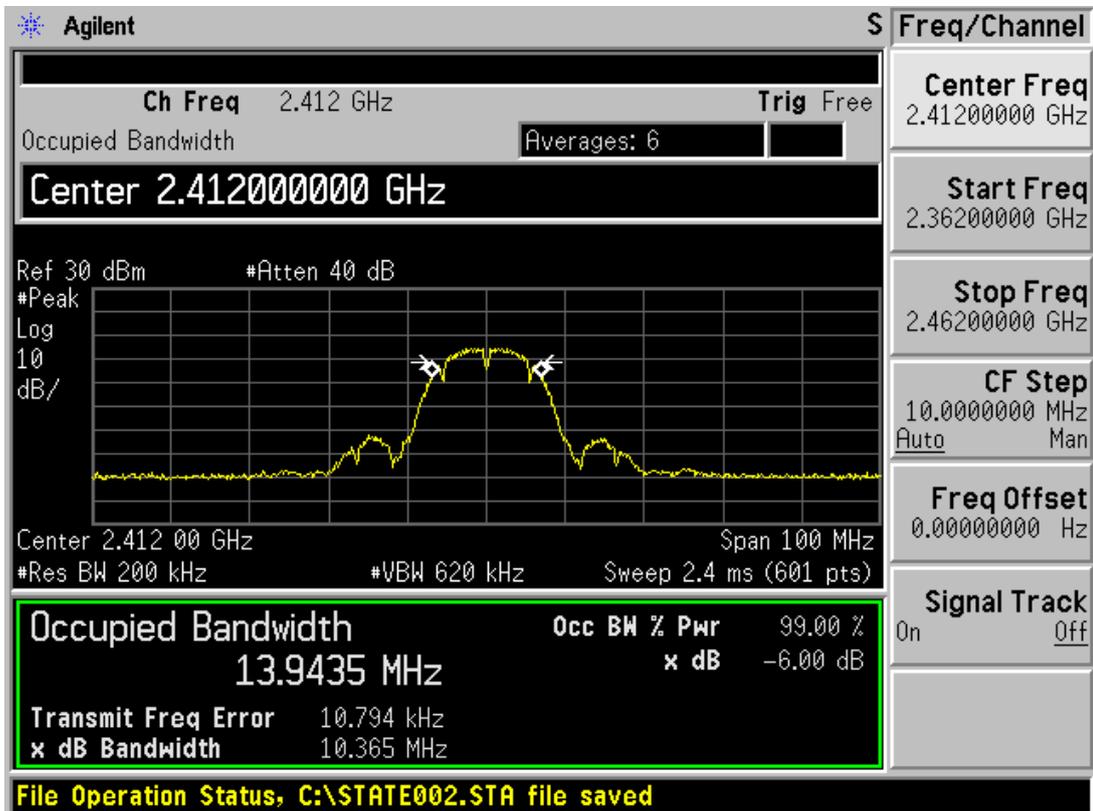
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**Test Results:**

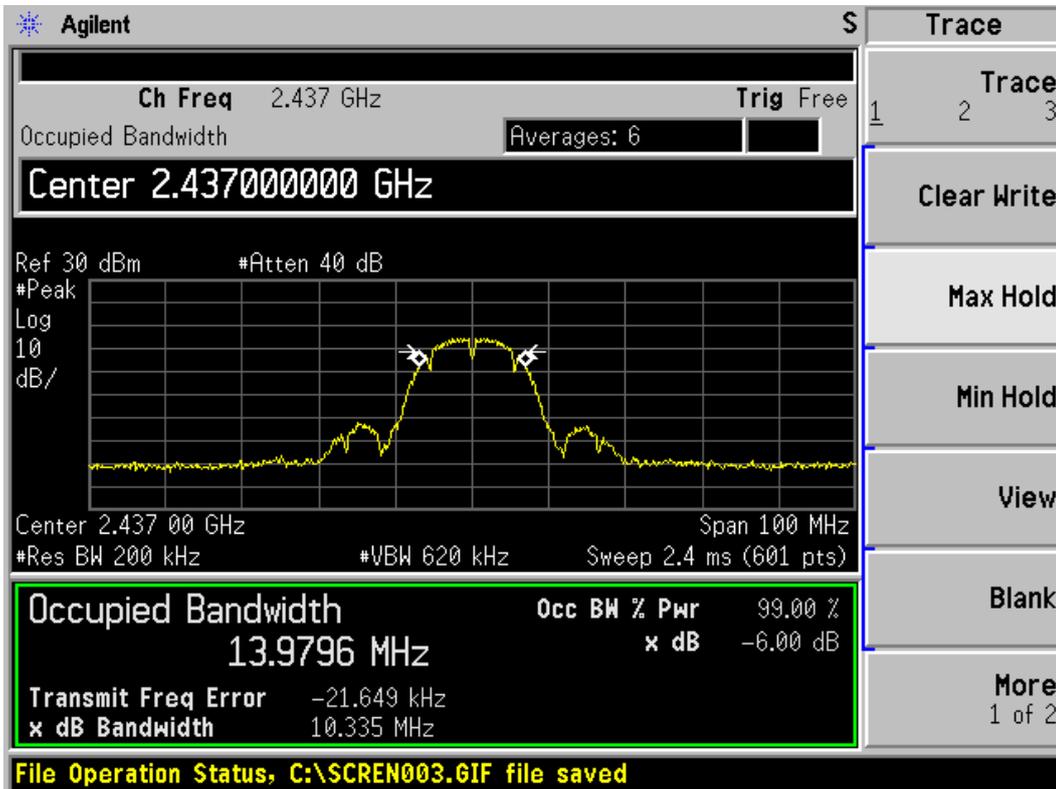
Network Standards	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Conclusion
802.11b	2412	10.365	PASS
	2437	10.335	PASS
	2462	10.300	PASS
802.11g	2412	16.532	PASS
	2437	16.552	PASS
	2462	16.590	PASS
802.11n HT20	2412	17.648	PASS
	2437	17.789	PASS
	2462	17.750	PASS

802.11b

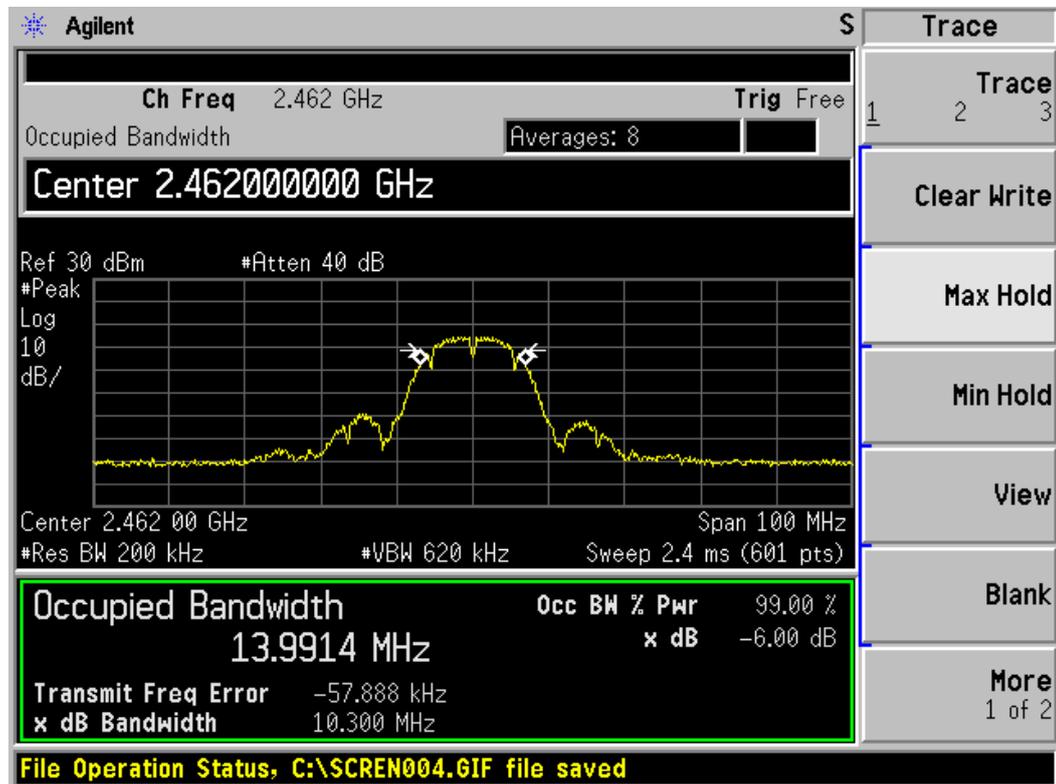


802.11b, Carrier frequency (MHz): 2412

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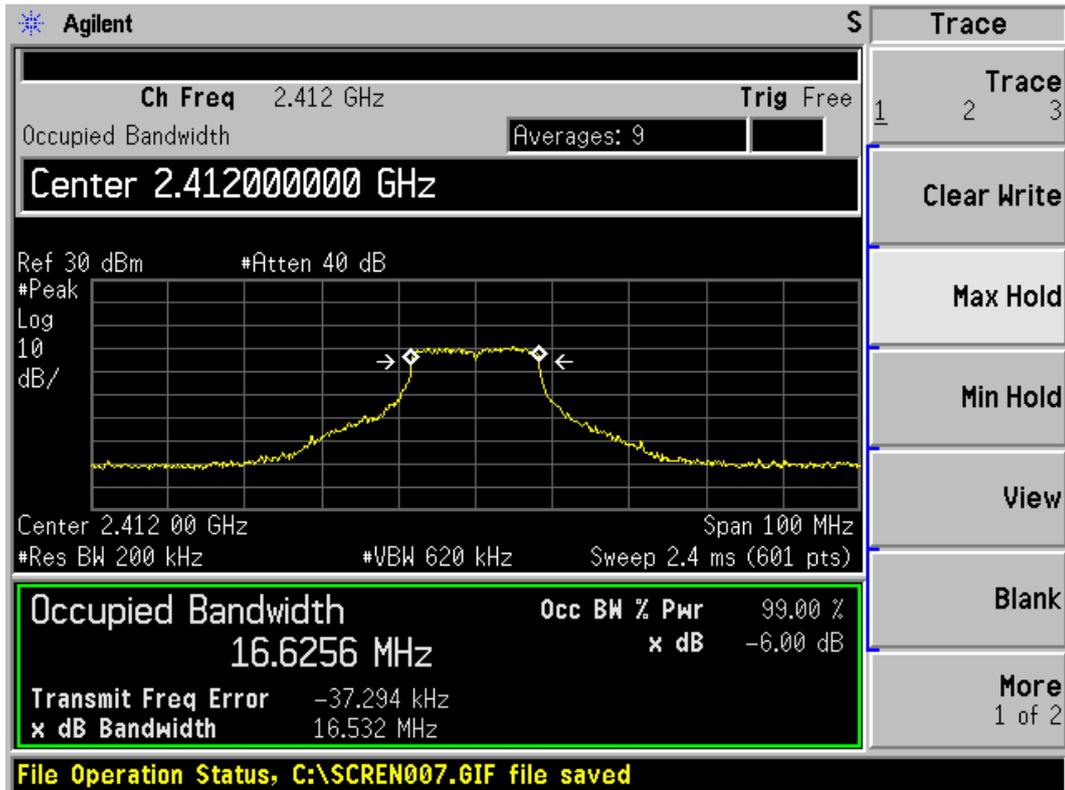
802.11b, Carrier frequency (MHz): 2437



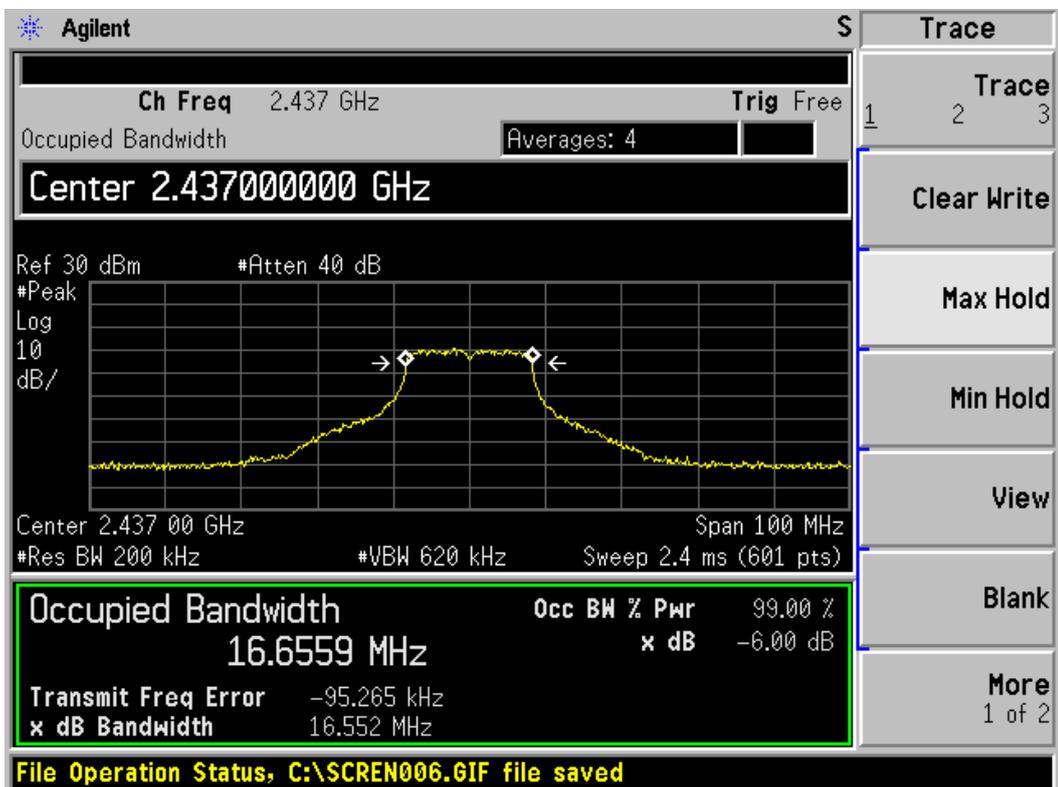
802.11b, Carrier frequency (MHz):2462

# TA Technology (Shanghai) Co., Ltd. Test Report

802.11g

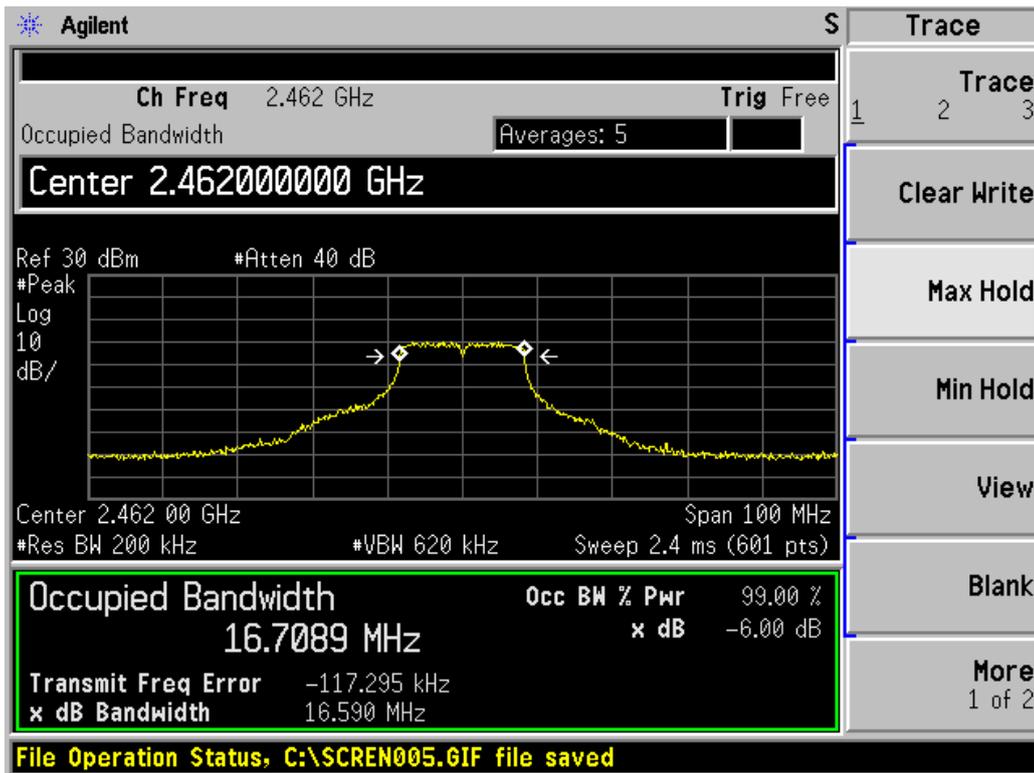


802.11g, Carrier frequency (MHz): 2412



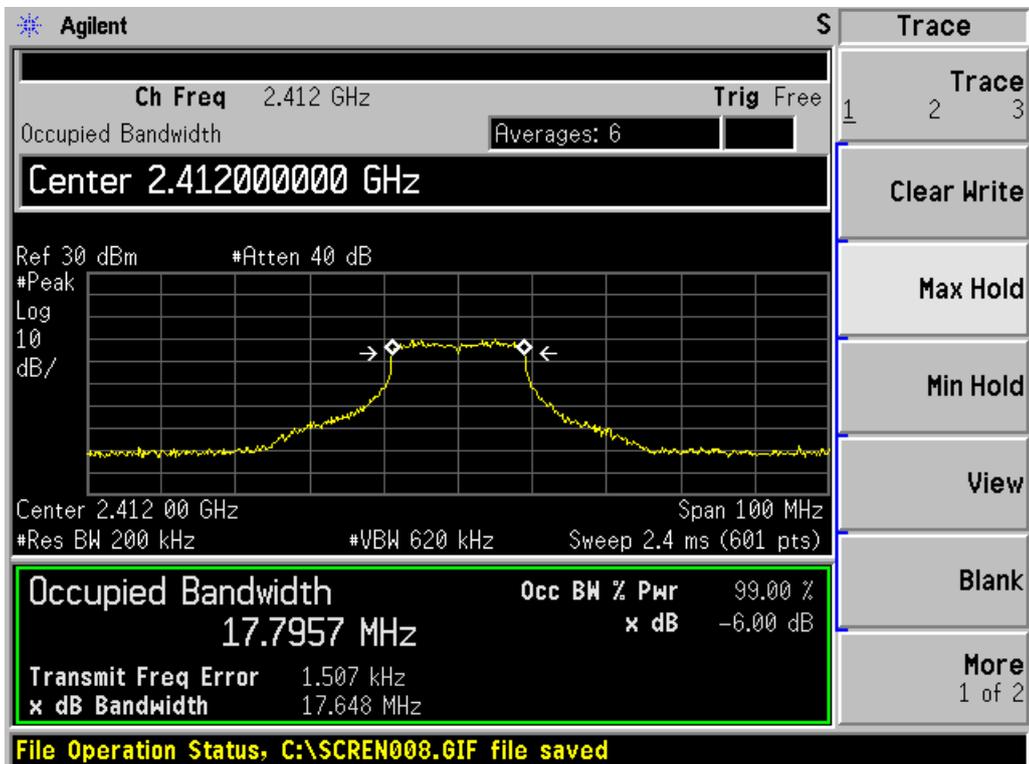
802.11g, Carrier frequency (MHz): 2437

# TA Technology (Shanghai) Co., Ltd. Test Report



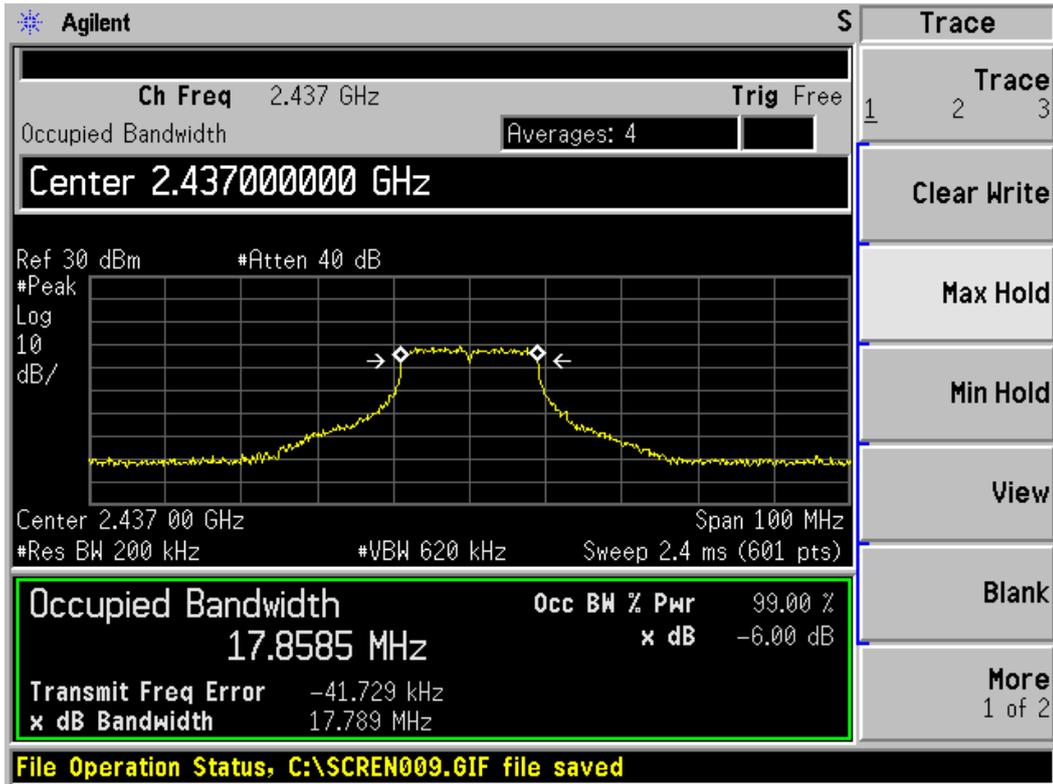
802.11g, Carrier frequency (MHz):2462

802.11n

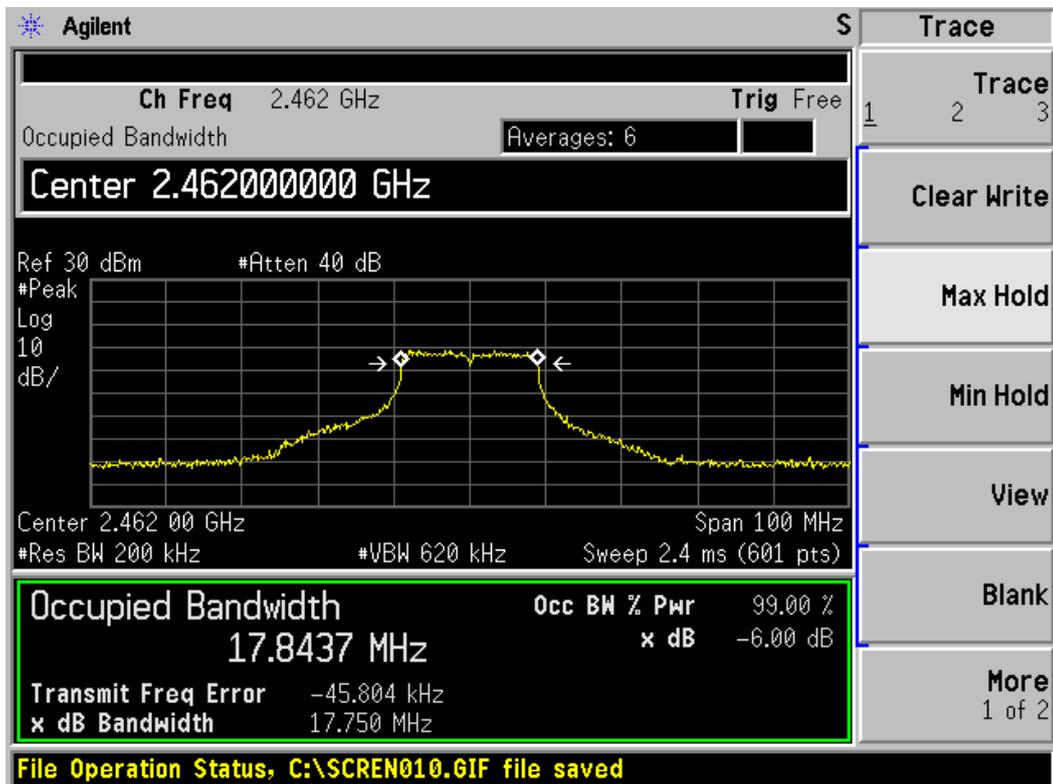


802.11n, Carrier frequency (MHz): 2412

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802.11n, Carrier frequency (MHz): 2437



802.11n, Carrier frequency (MHz):2462

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### 2.4. Band Edge Compliance

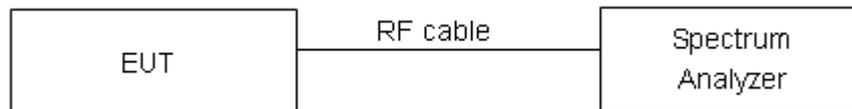
#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 200kHz and VBW is set to 620kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

#### Test Setup



#### Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.”

Limit	$\geq 20$ dB
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#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

Frequency	Uncertainty
2GHz-3GHz	1.407 dB

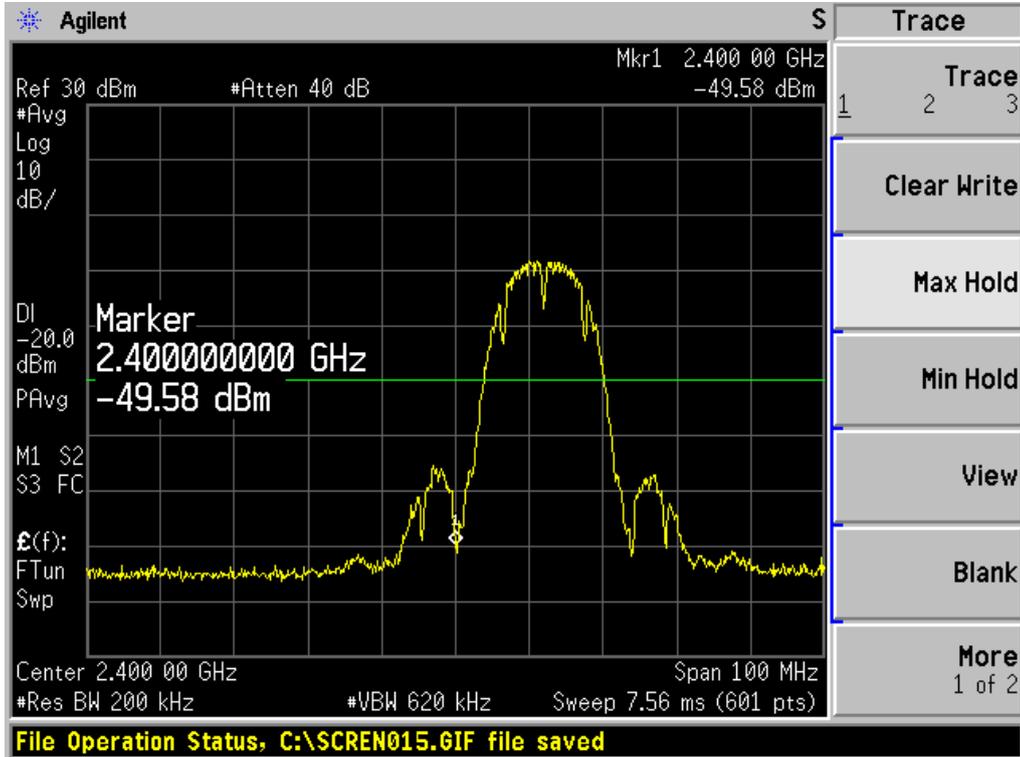
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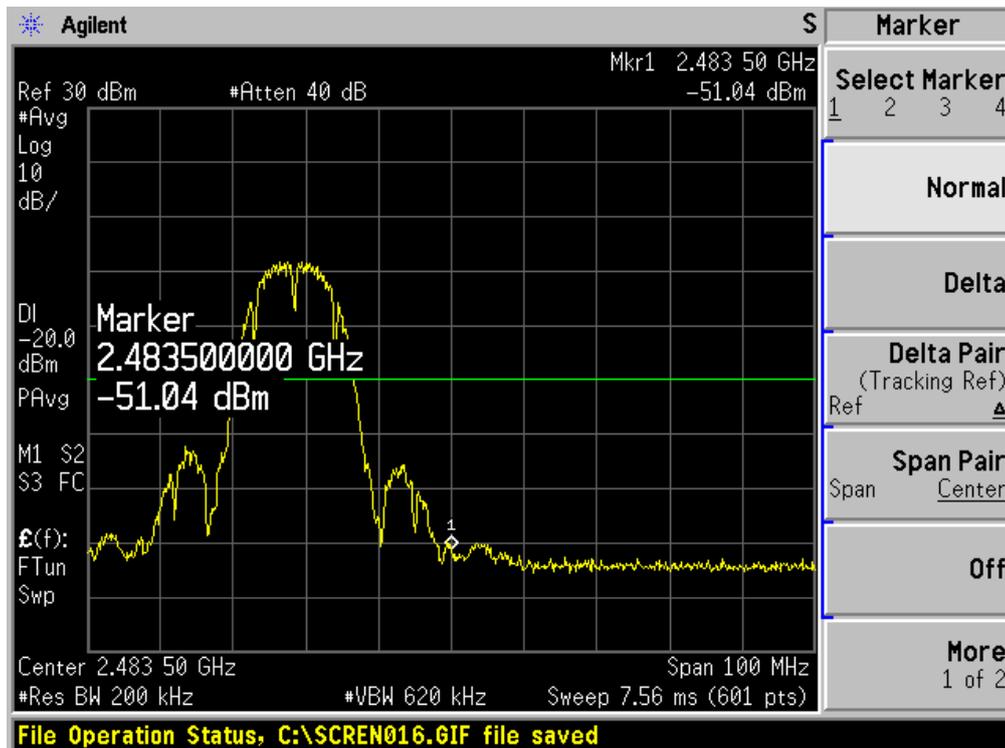
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**Test Results: PASS**

802.11b



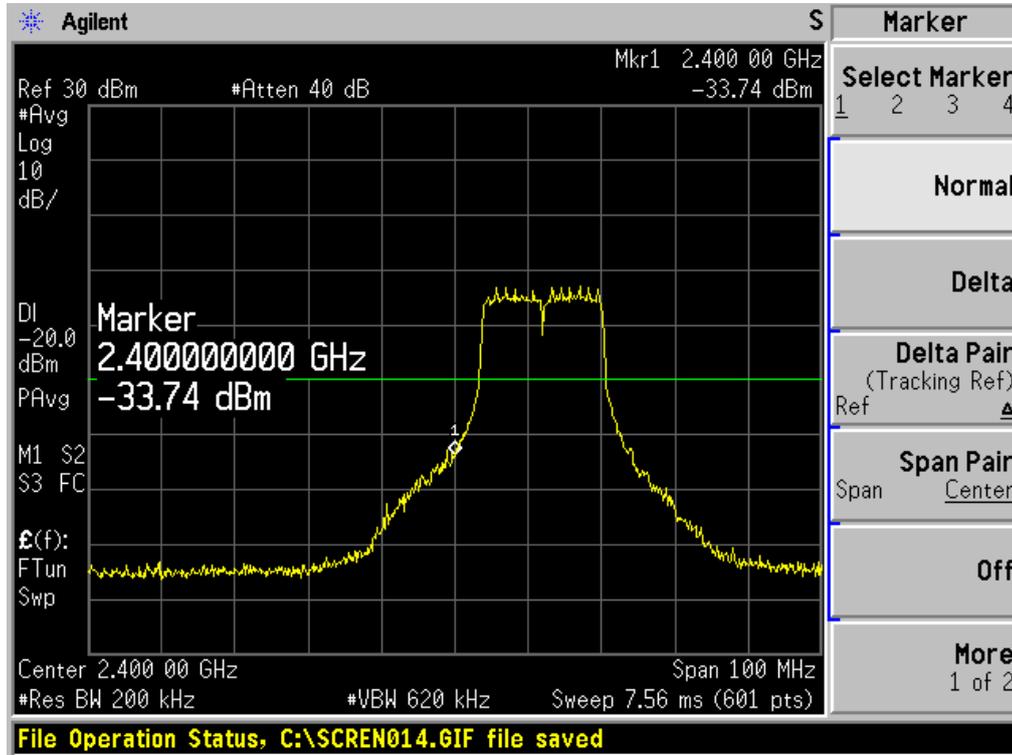
802.11b, Channel No.: 1



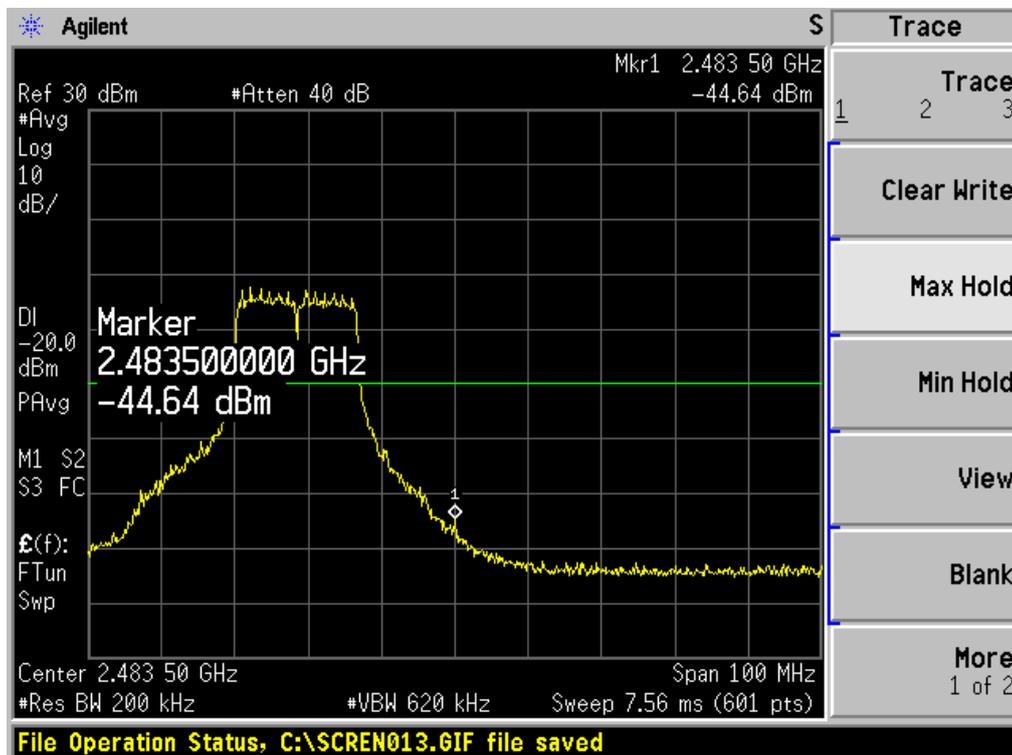
802.11b, Channel No.: 11

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802.11g



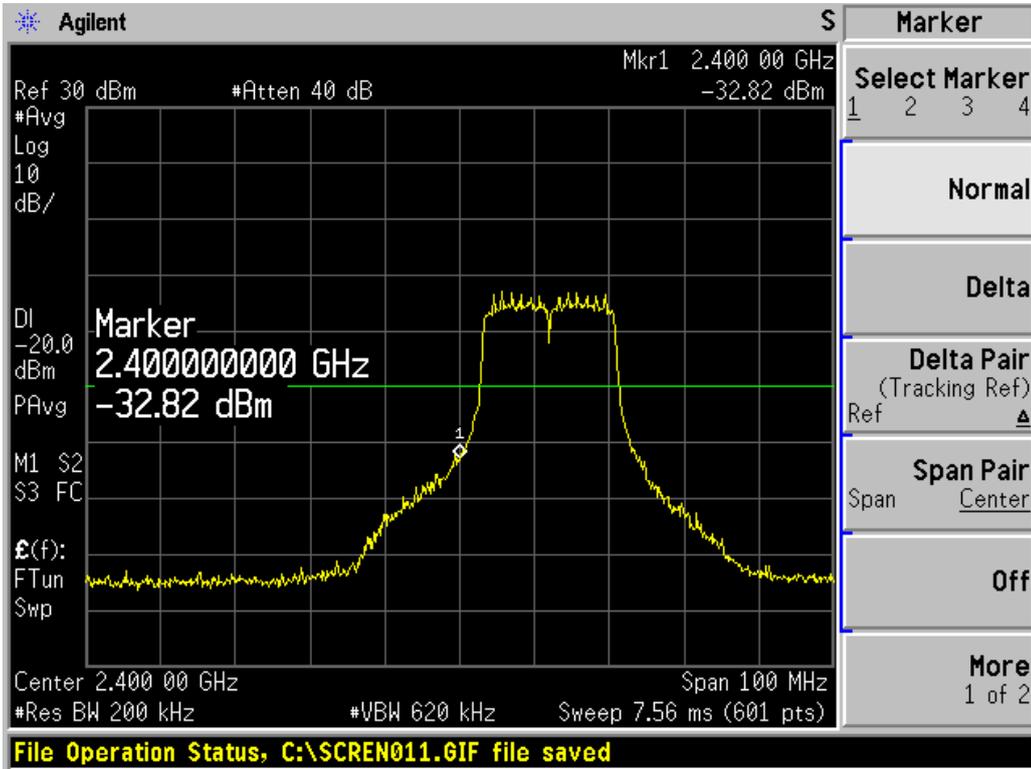
802.11g, Channel No.: 1



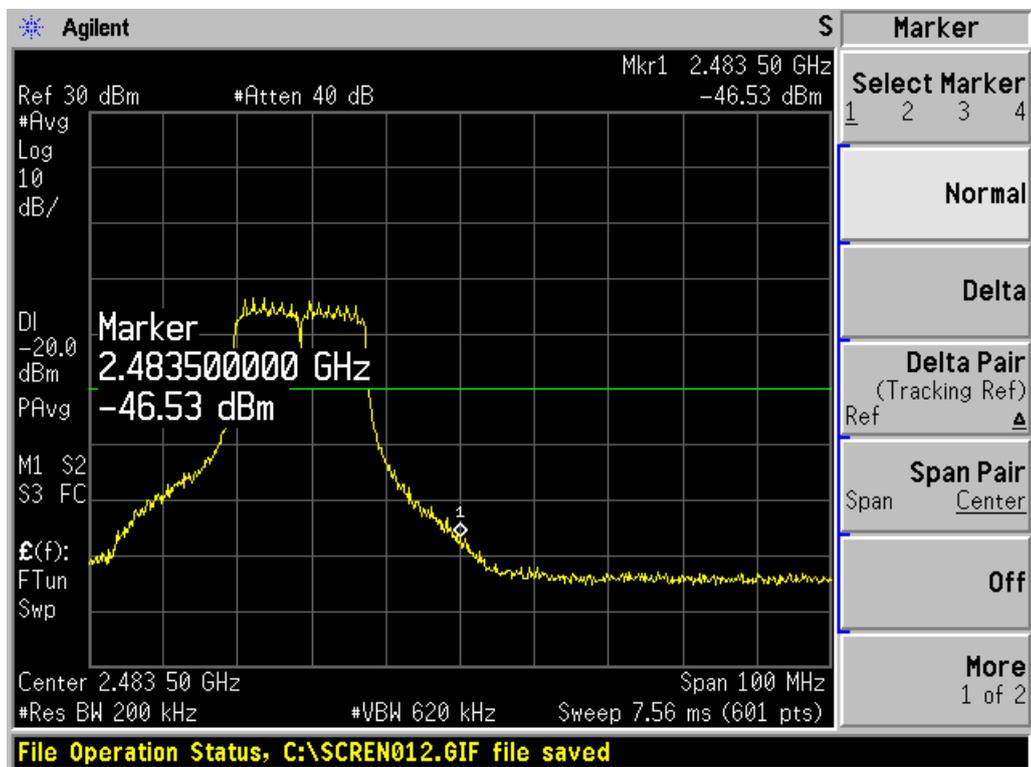
802.11g, Channel No.: 11

# TA Technology (Shanghai) Co., Ltd. Test Report

802.11n



802.11n, Channel No.: 1



802.11n, Channel No.: 11

## 2.5. Spurious Radiated Emissions in the restricted band

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. RBW is set to 100kHz. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

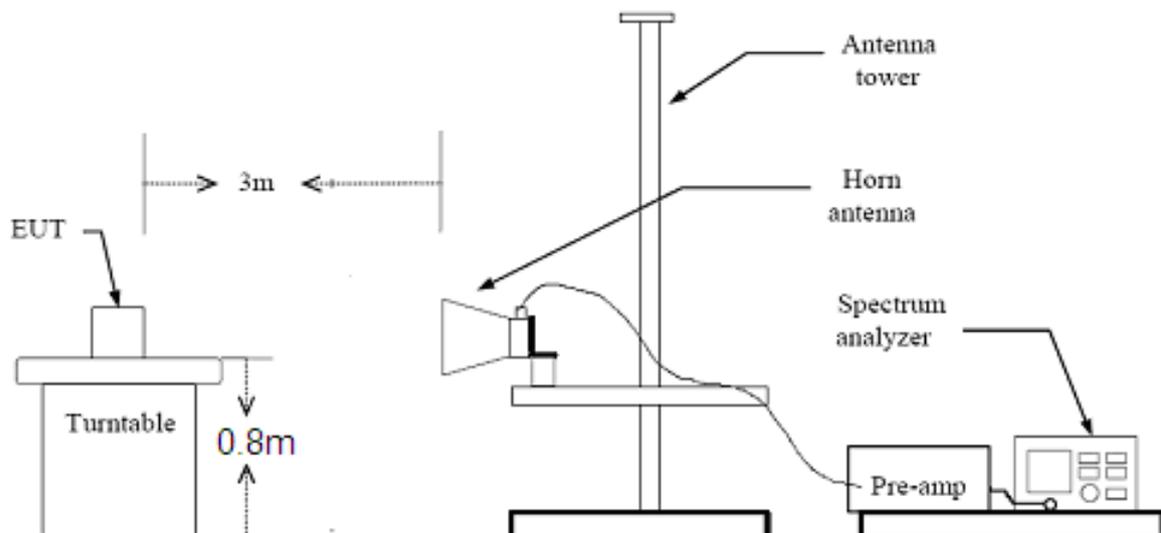
- (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

This setting method can refer to **KDB 558074**.

EUT in X-axis orientation is the worst case, the test is only for this case.

The test is in transmit mode.

### Test setup



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**Limits**

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

Limit in restricted band

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
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBuV/m

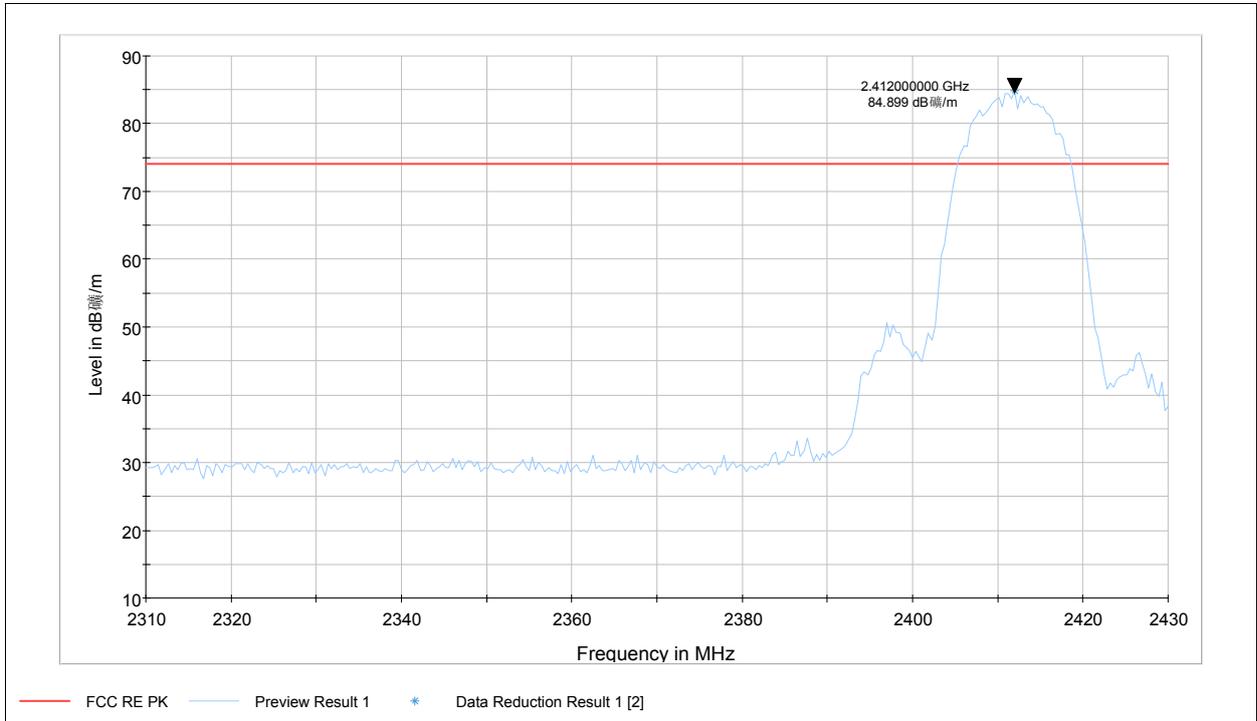
Average Limit=54 dBuV/m

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 3.55$  dB.

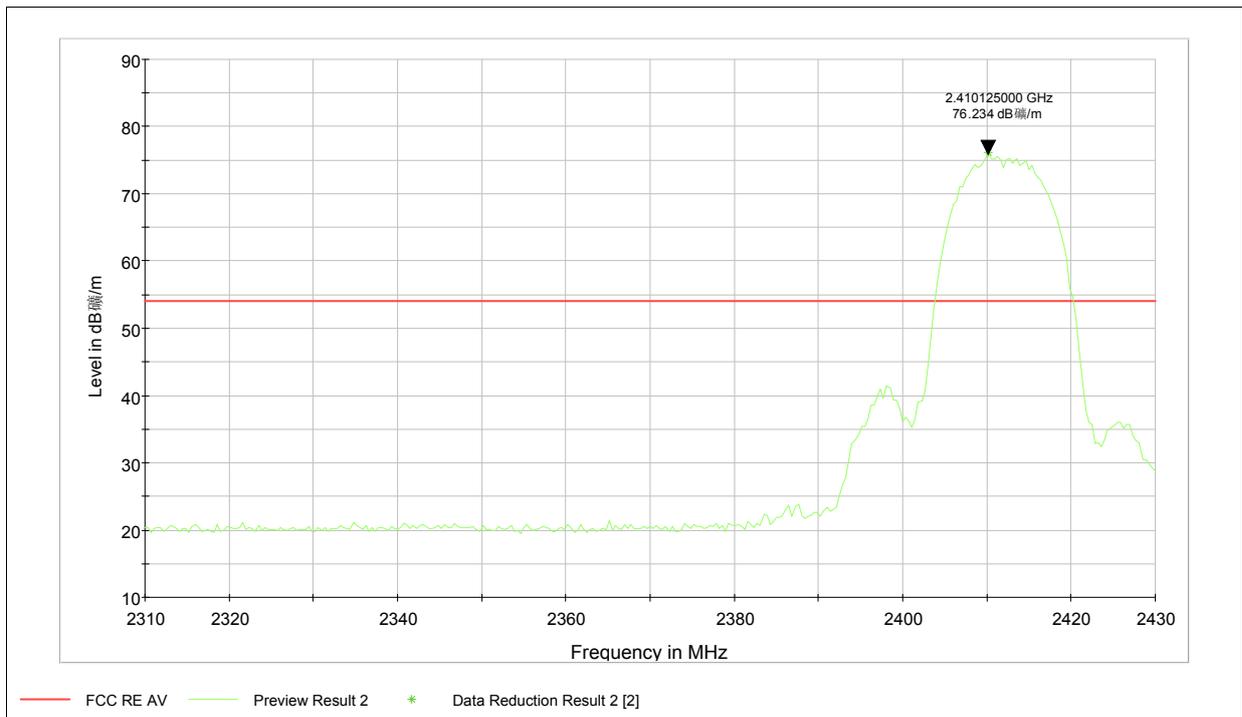
Test Results: PASS  
802.11b-Channel 1:

Peak



Note: The signal beyond the limit is carrier  
Channel 1

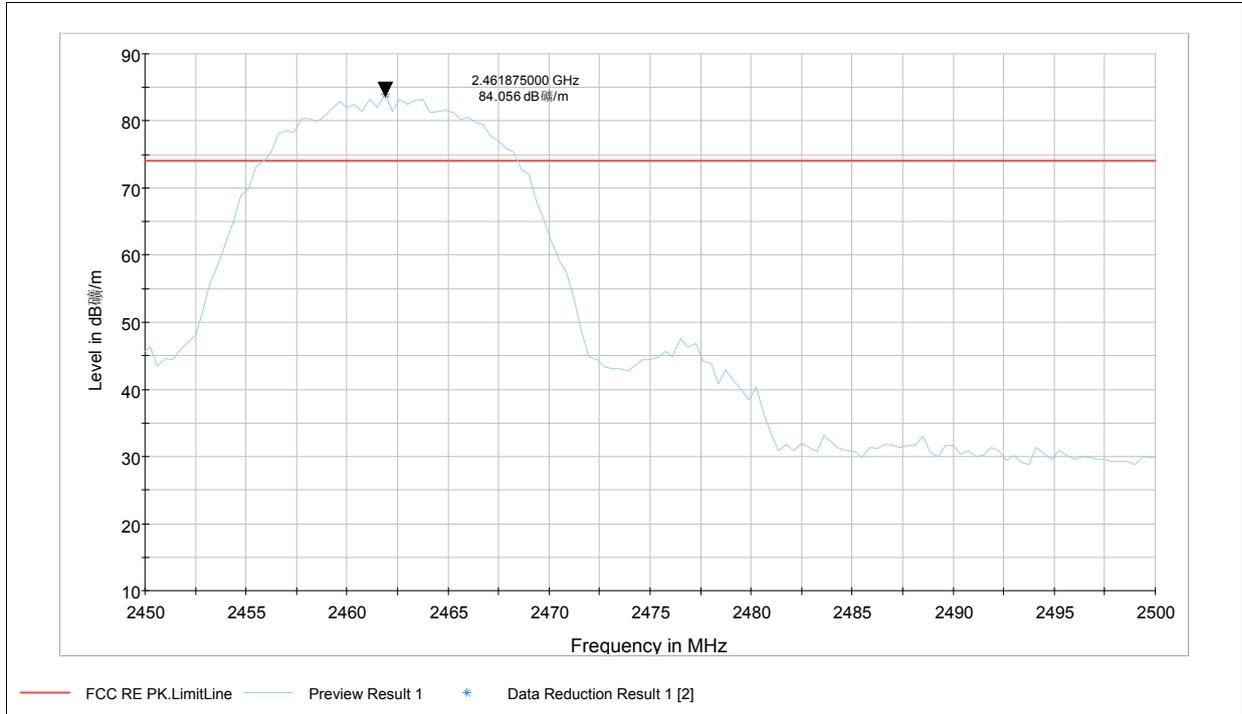
Average



Note: The signal beyond the limit is carrier  
Channel 1

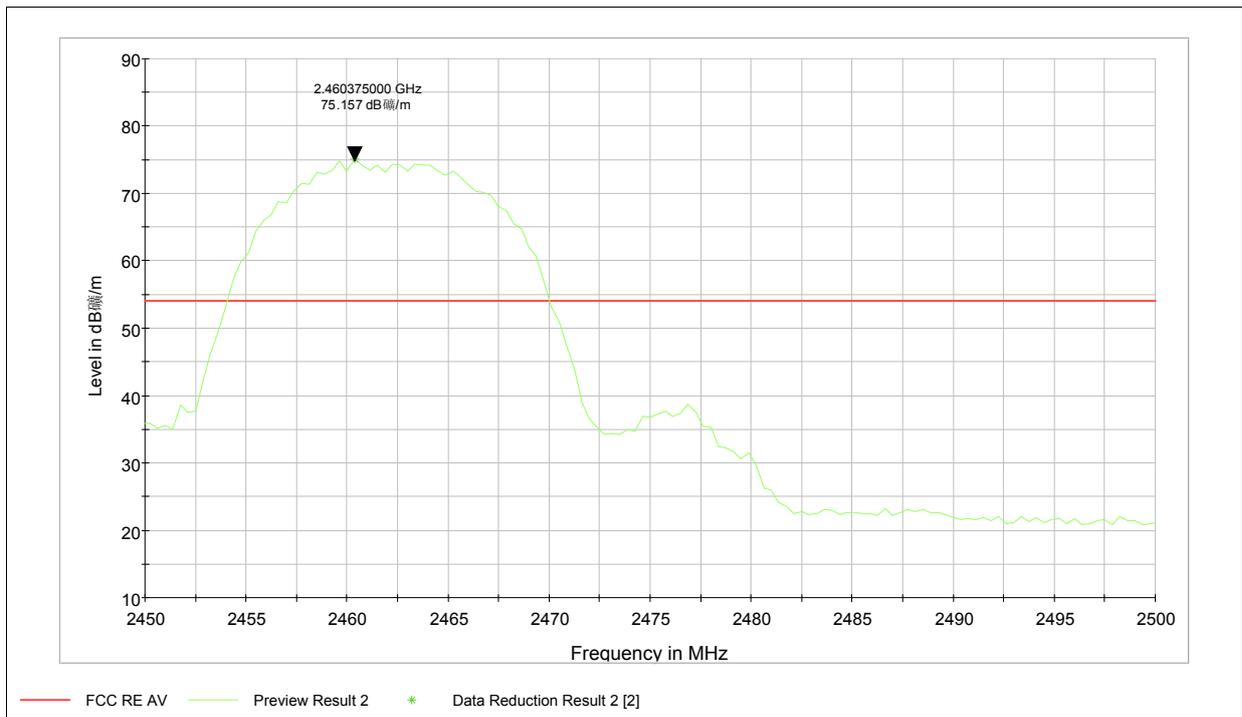
802.11b-Channel 11:

Peak



Note: The signal beyond the limit is carrier  
Channel 11

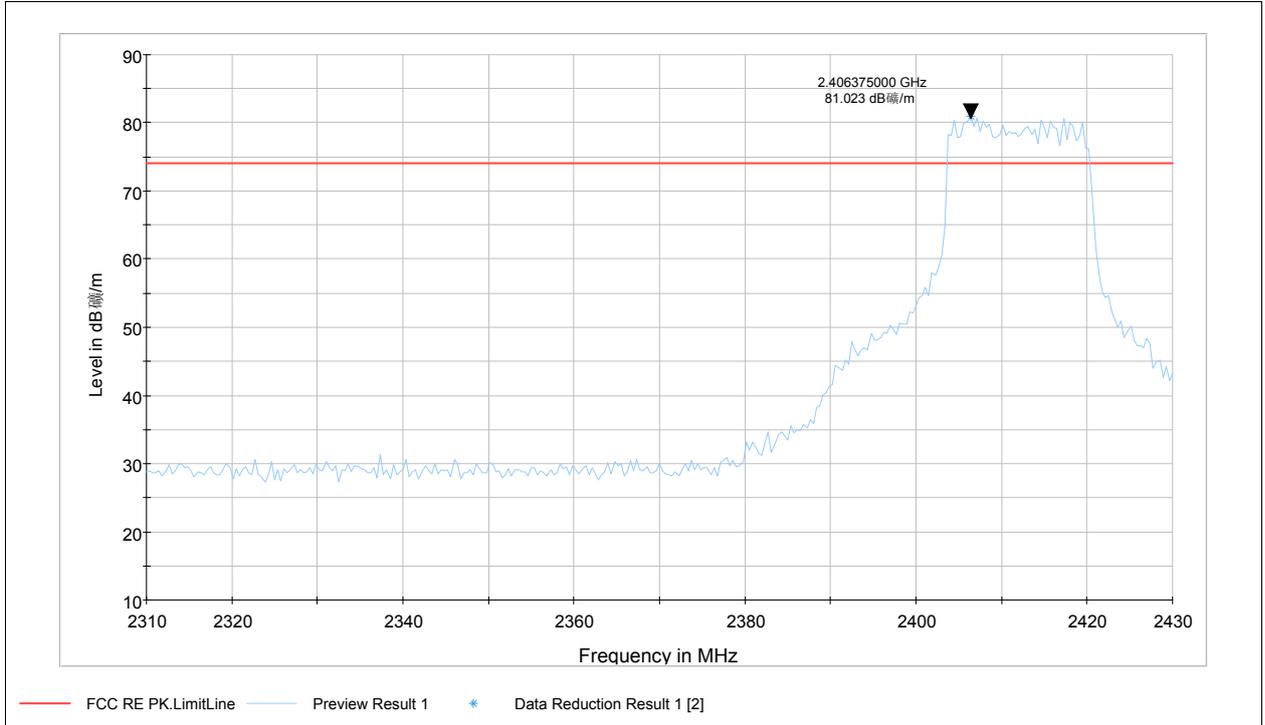
Average



Note: The signal beyond the limit is carrier  
Channel 11

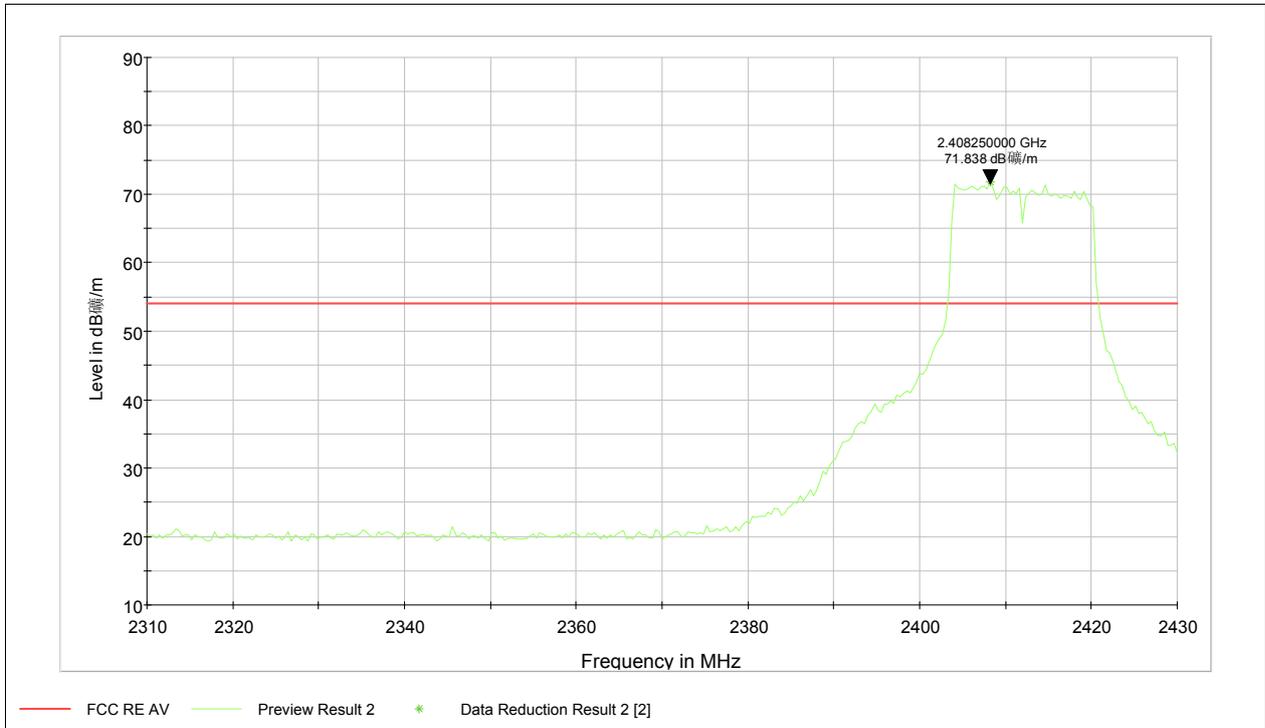
802.11g-Channel 1:

Peak



Note: The signal beyond the limit is carrier  
Channel 1

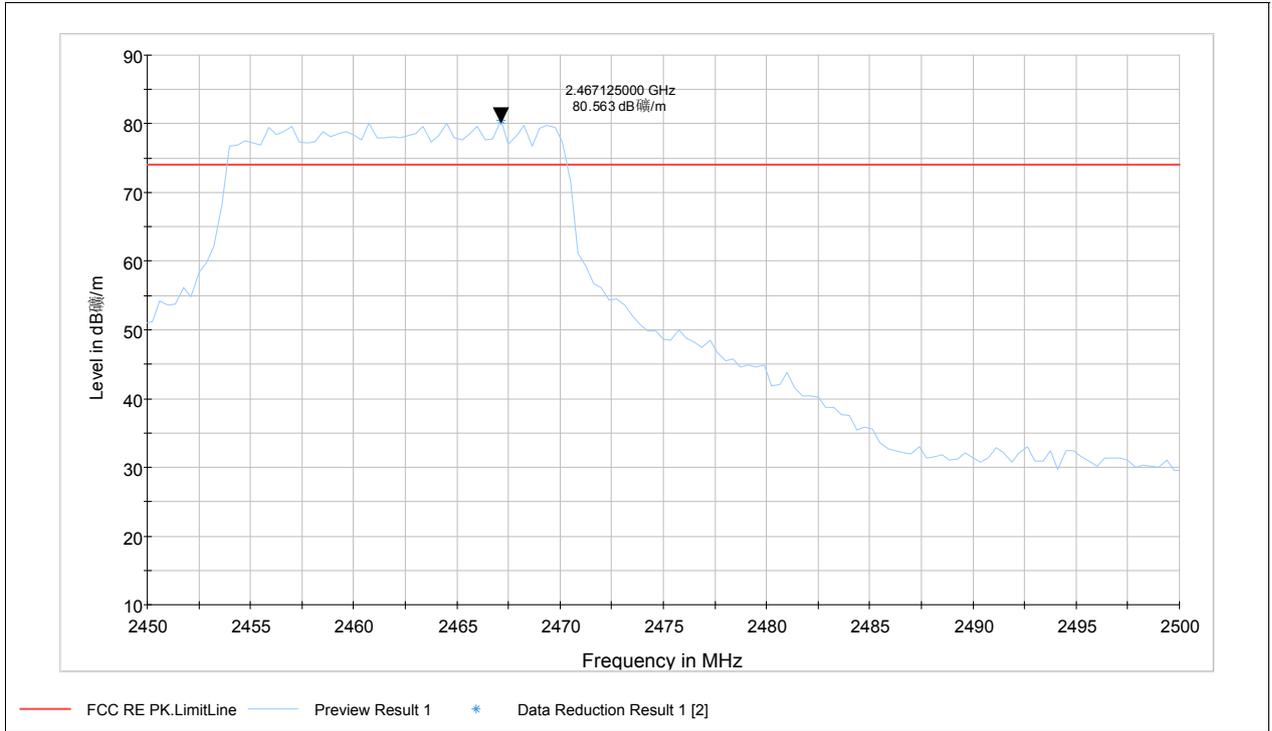
Average



Note: The signal beyond the limit is carrier  
Channel 1

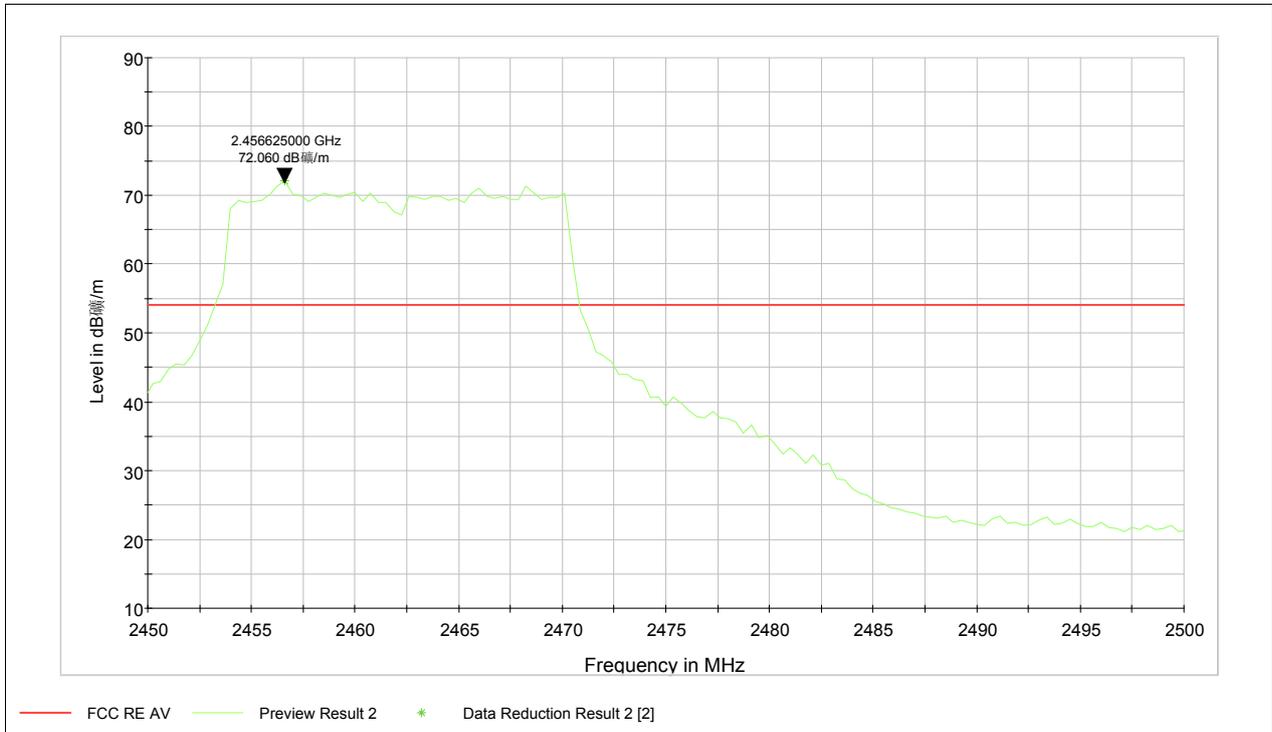
802.11g-Channel 11:

Peak



Note: The signal beyond the limit is carrier  
Channel 11

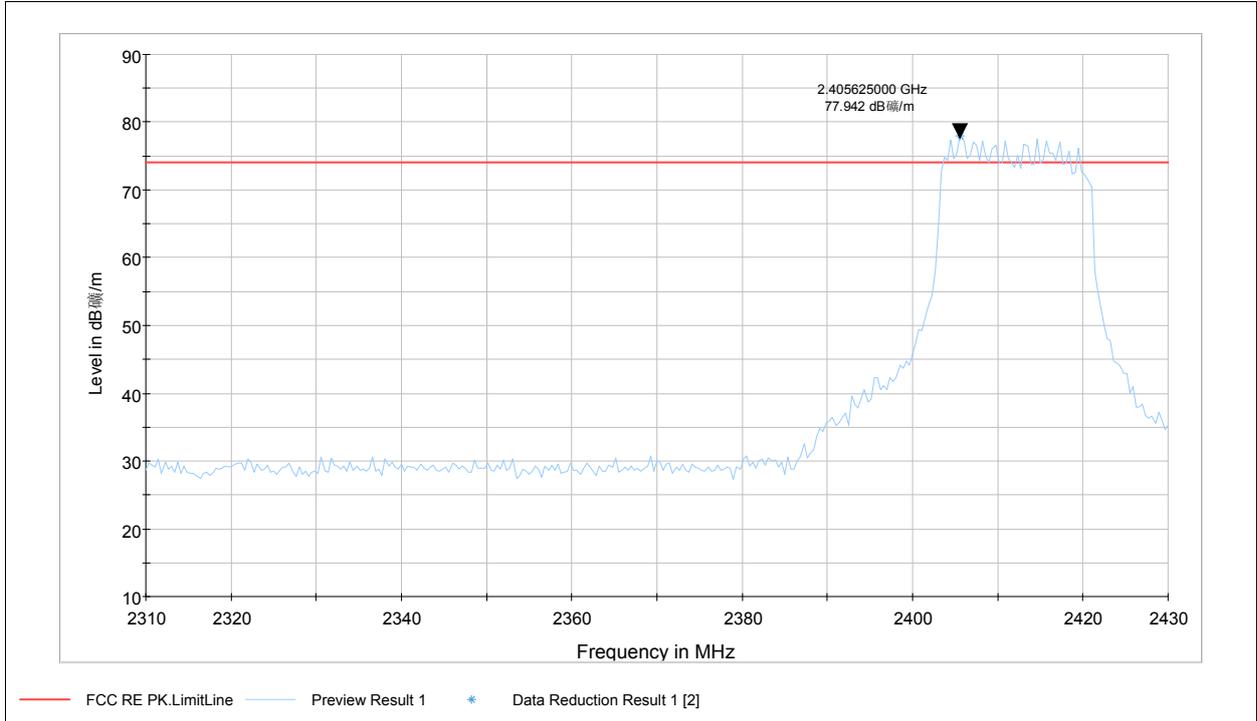
Average



Note: The signal beyond the limit is carrier  
Channel 11

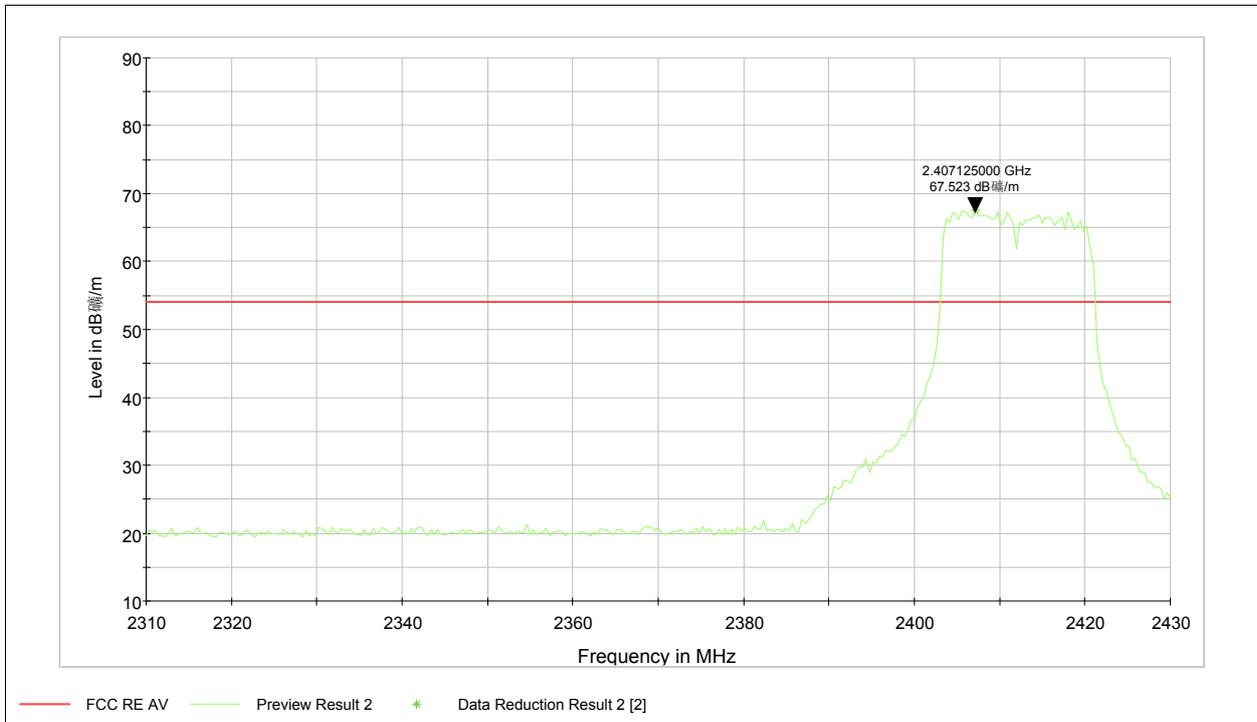
802.11n-Channel 1:

Peak



Note: The signal beyond the limit is carrier  
Channel 1

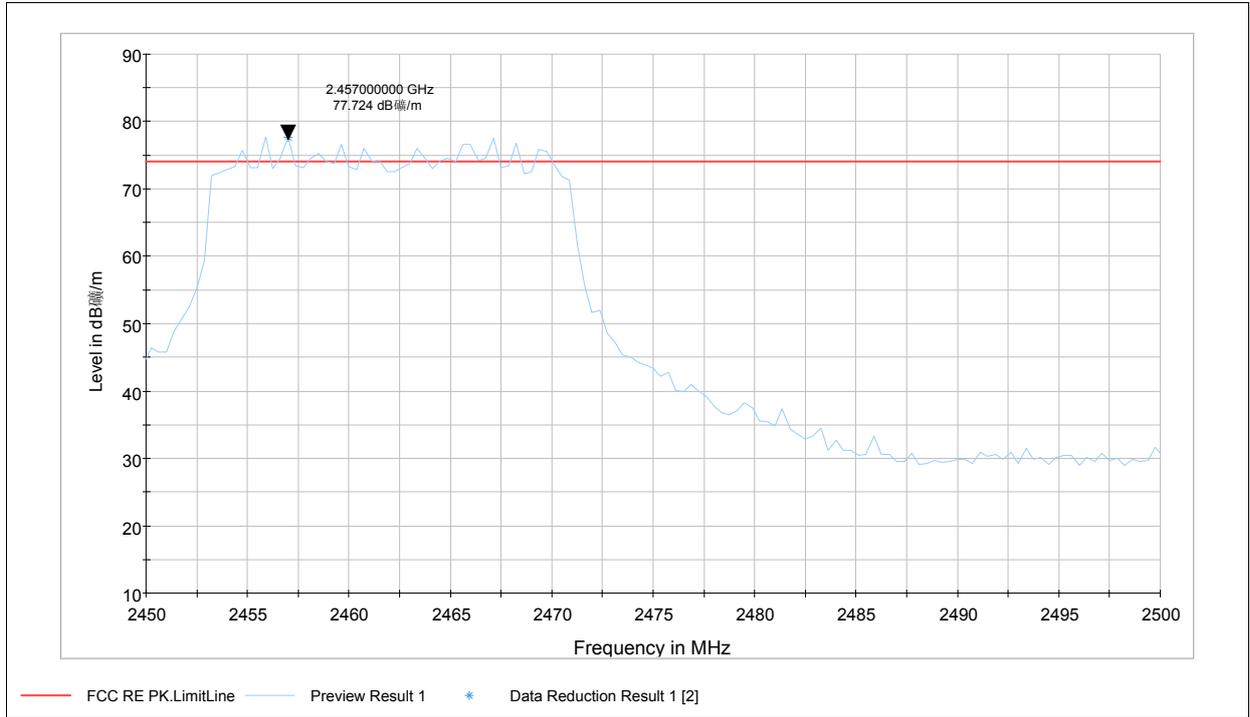
Average



Note: The signal beyond the limit is carrier  
Channel 1

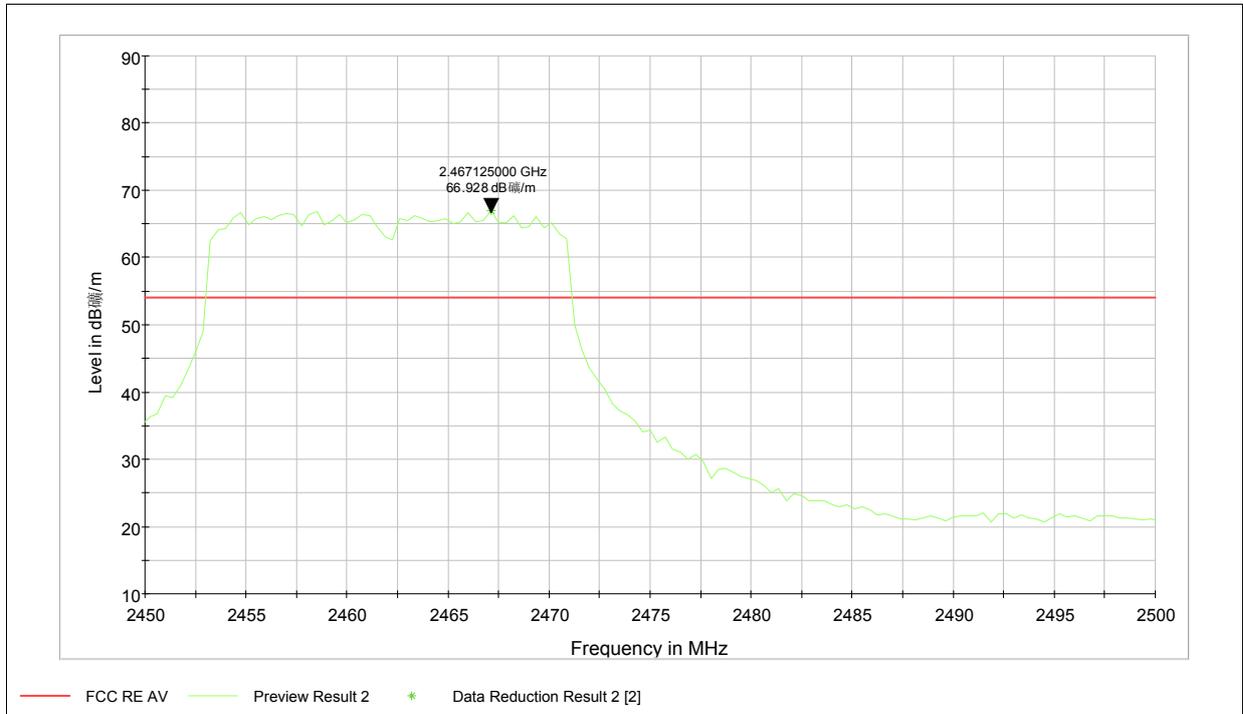
802.11n-Channel 11:

Peak



Note: The signal beyond the limit is carrier  
Channel 11

Average



Note: The signal beyond the limit is carrier  
Channel 11

## 2.6. Power Spectral Density

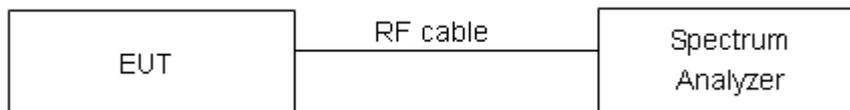
### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100kHz and VBW is set to 300kHz on spectrum analyzer. Set the span is 1MHz and the sweep time is 10s. The peak power spectral density is recorded. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{kHz} = -15.2\text{ dB})$ .

### Test setup



### Limits

Rule Part 15.247(e) specifies that " For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. "

Limits	$\leq 8\text{ dBm} / 3\text{kHz}$
--------	-----------------------------------

### Measurement Uncertainty

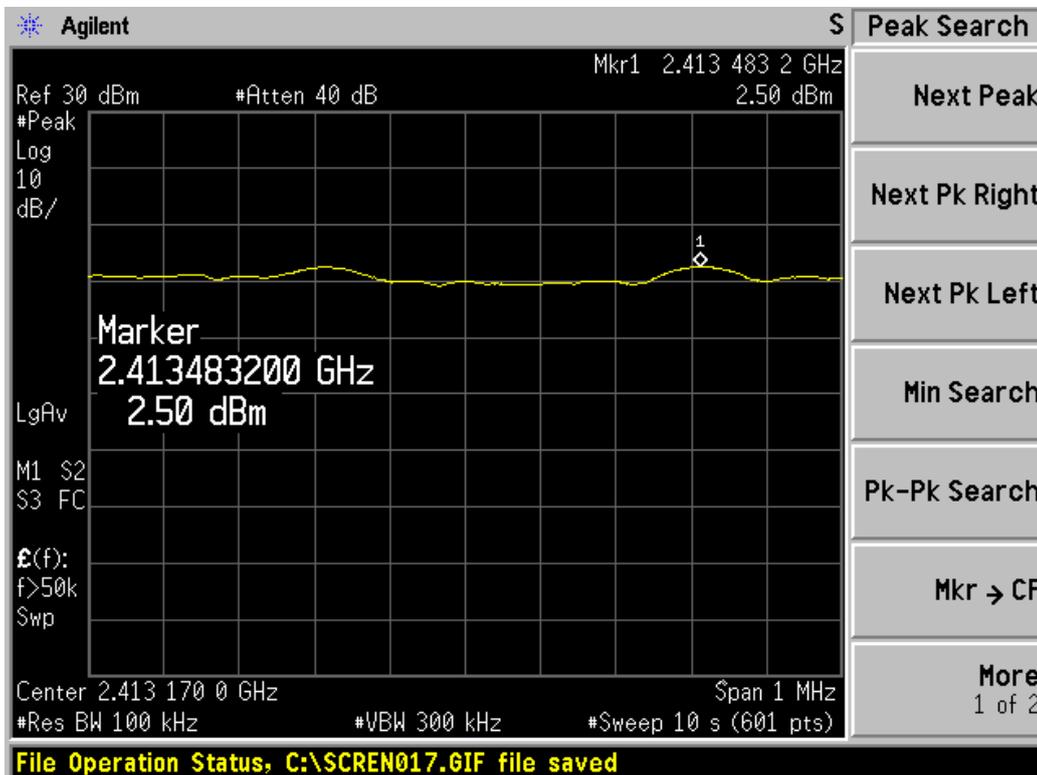
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.75\text{dB}$ .

# TA Technology (Shanghai) Co., Ltd. Test Report

**Test Results:**

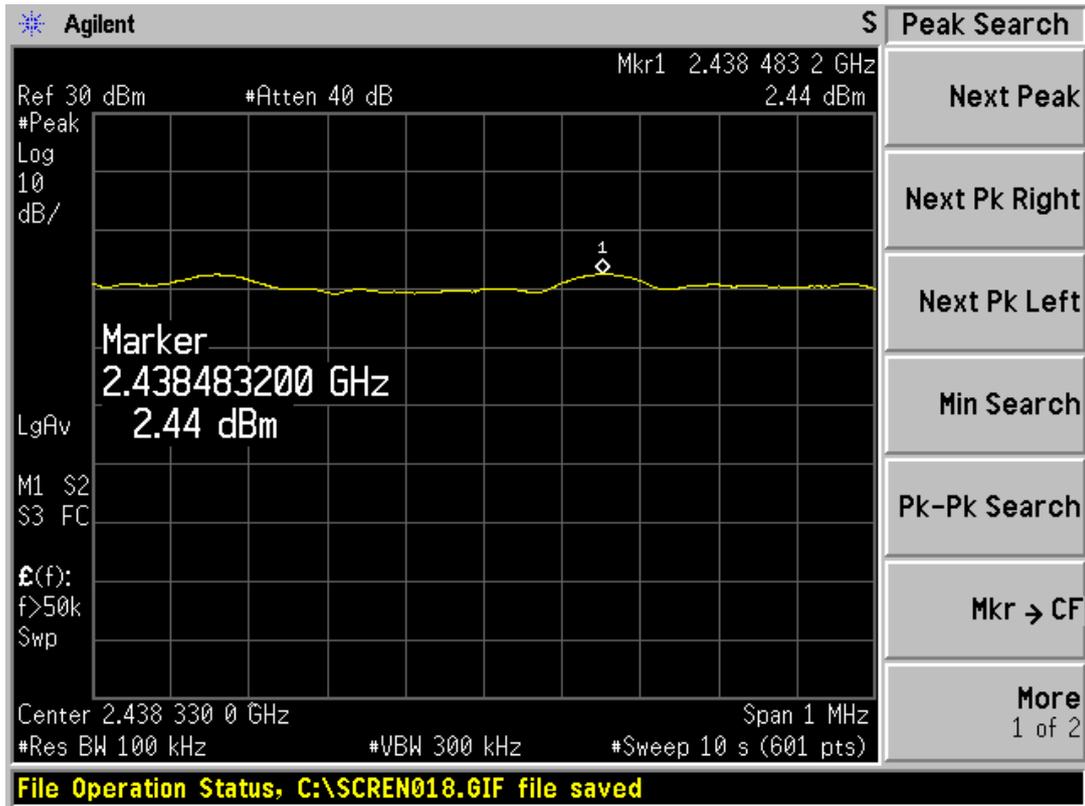
Network Standards	Channel Number	Power Spectral Density dBm / 3kHz	Conclusion
802.11b	1	-12.7	PASS
	6	-12.76	PASS
	11	-12.83	PASS
802.11g	1	-16.91	PASS
	6	-16.06	PASS
	11	-15.92	PASS
802.11n HT20	1	-17.51	PASS
	6	-17.42	PASS
	11	-18.07	PASS

802.11b

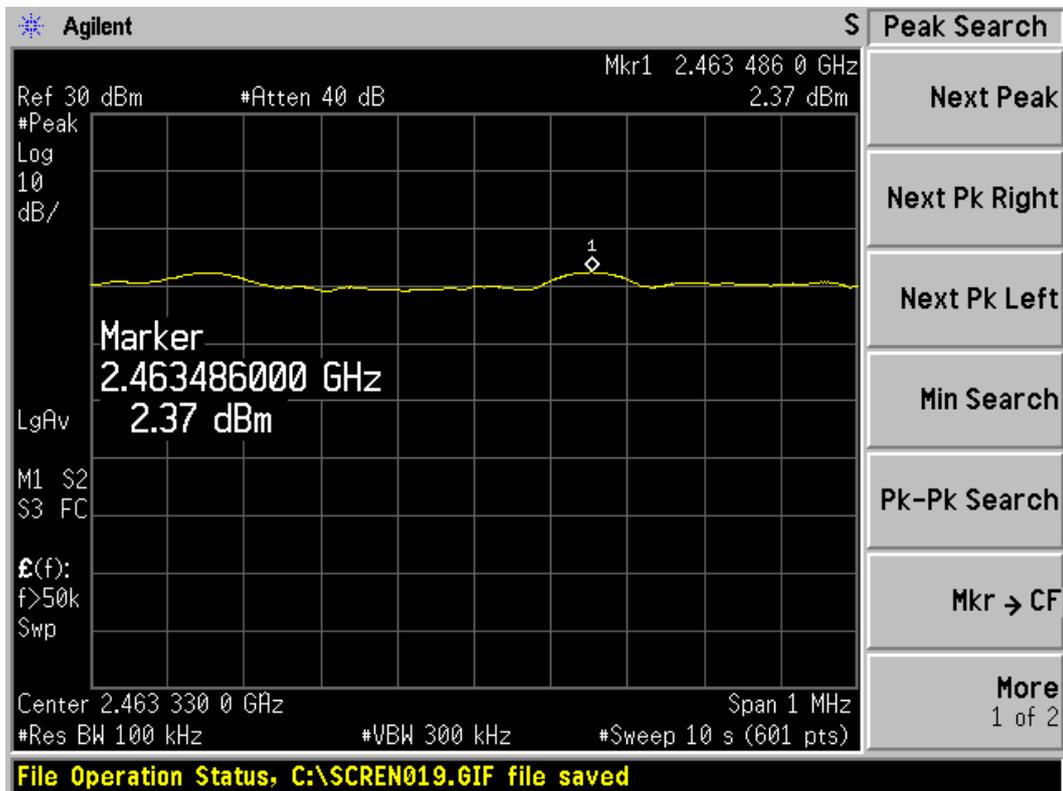


802.11b, Channel No.: 1

# TA Technology (Shanghai) Co., Ltd. Test Report



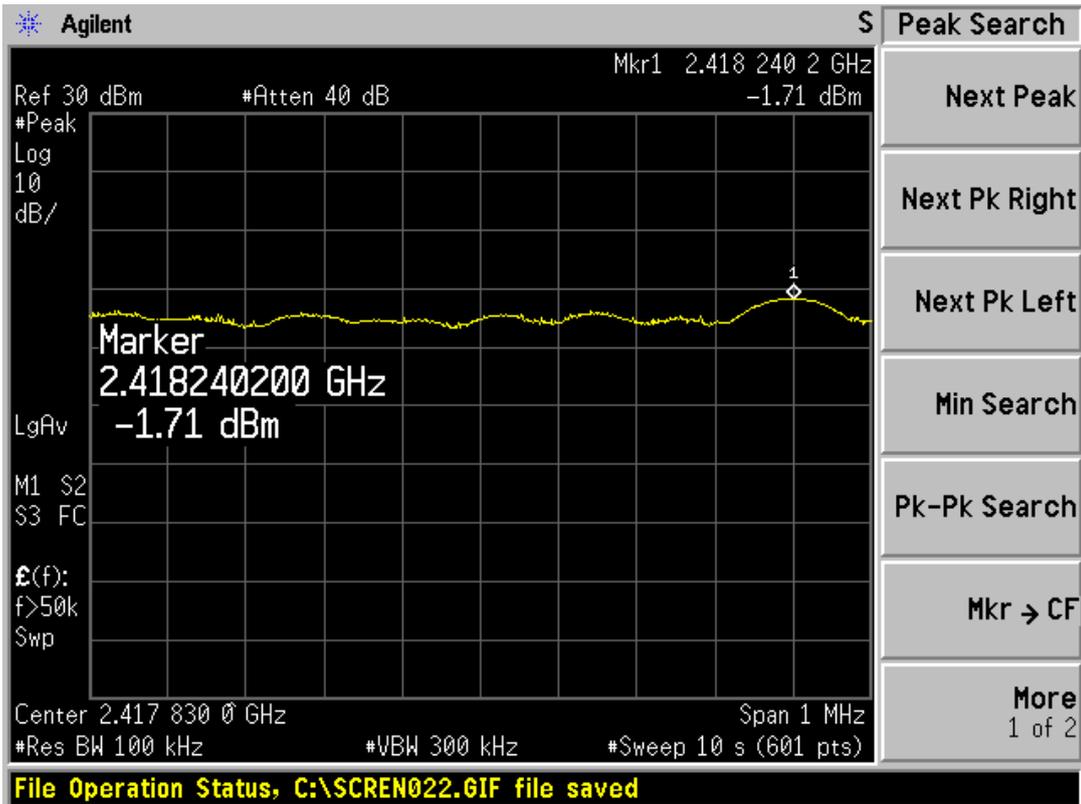
802.11b, Channel No.: 6



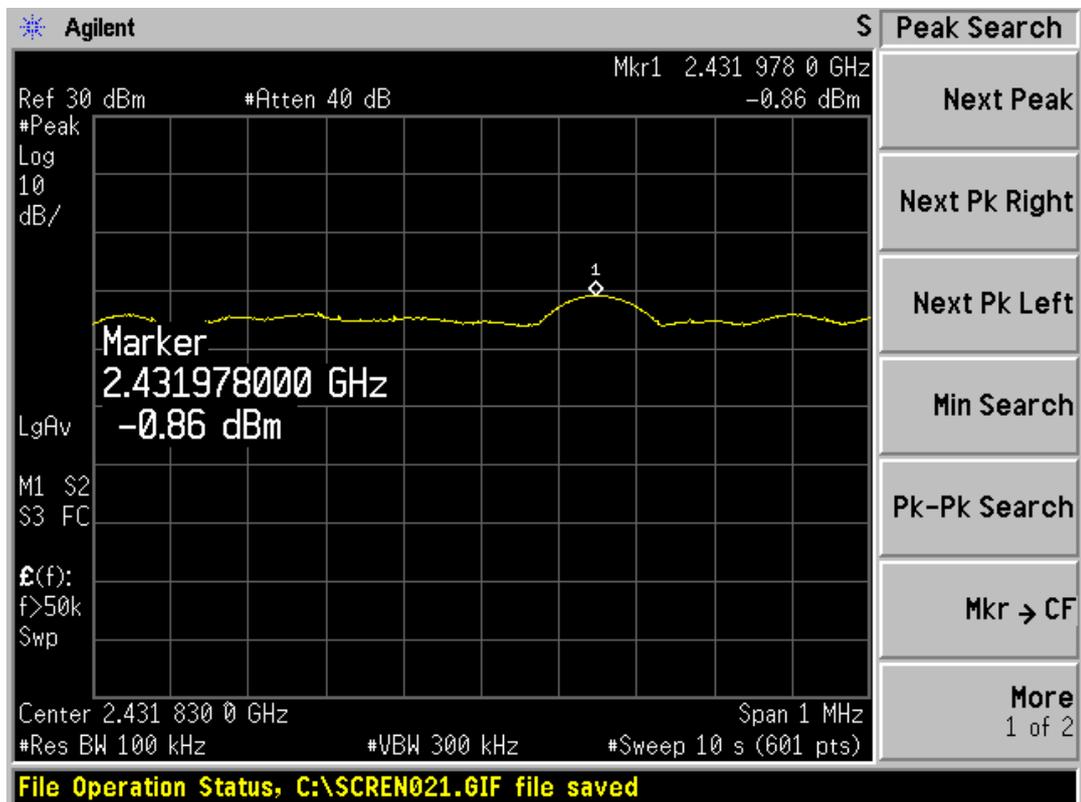
802.11b, Channel No.: 11

# TA Technology (Shanghai) Co., Ltd. Test Report

802.11g



802.11g, Channel No.: 1

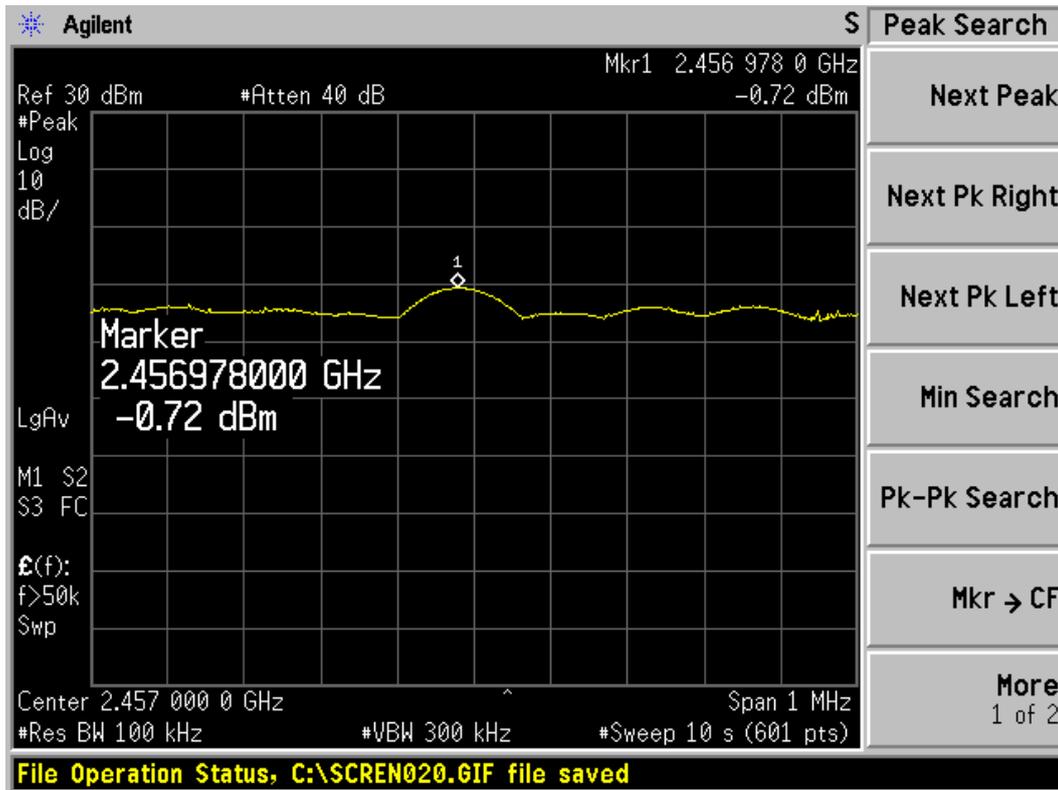


802.11g, Channel No.: 6

# TA Technology (Shanghai) Co., Ltd. Test Report

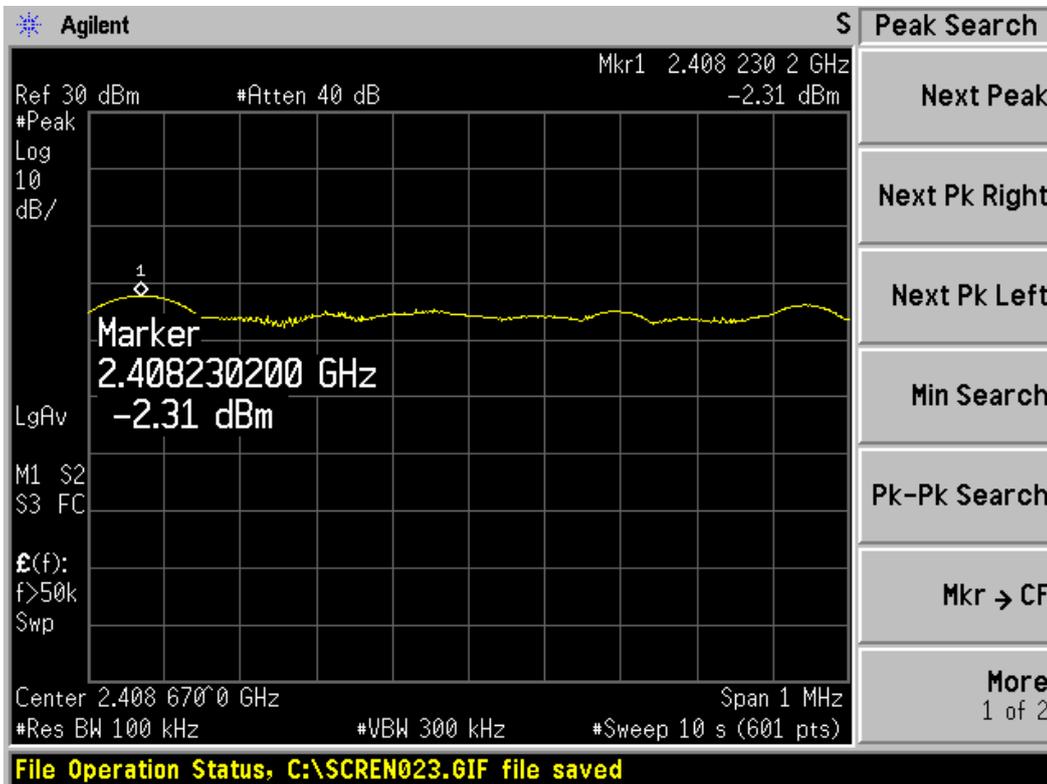
Report No.: RZA1204-0004RF01R3

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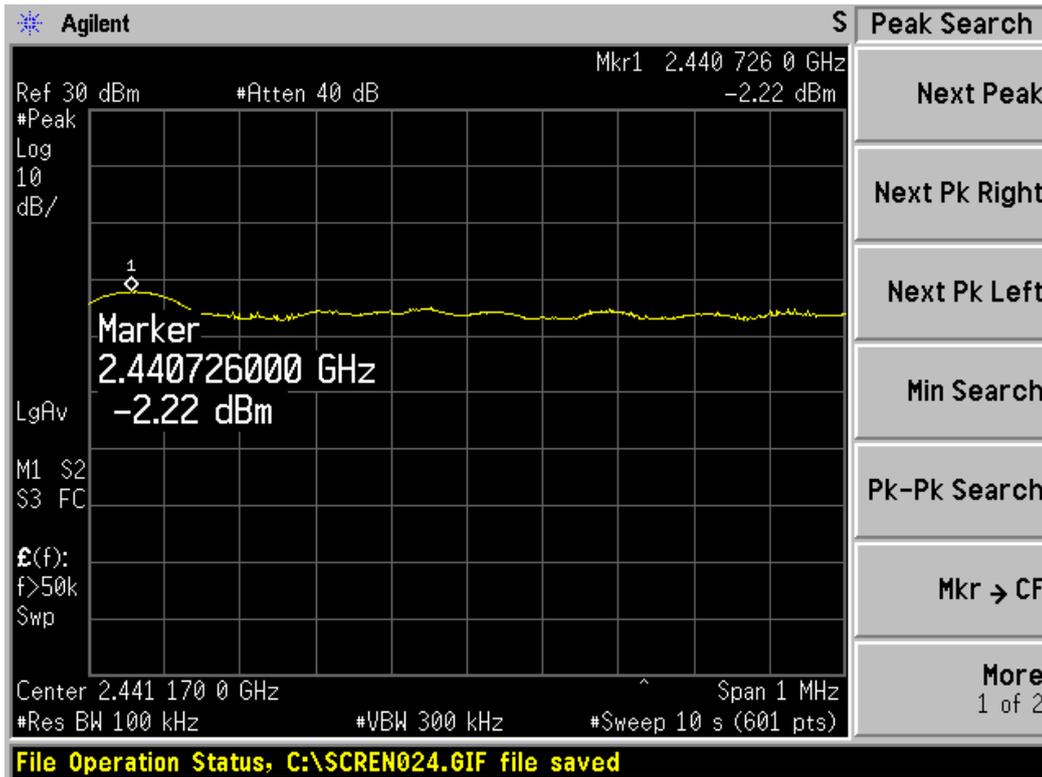
802.11g, Channel No.: 11

802.11n

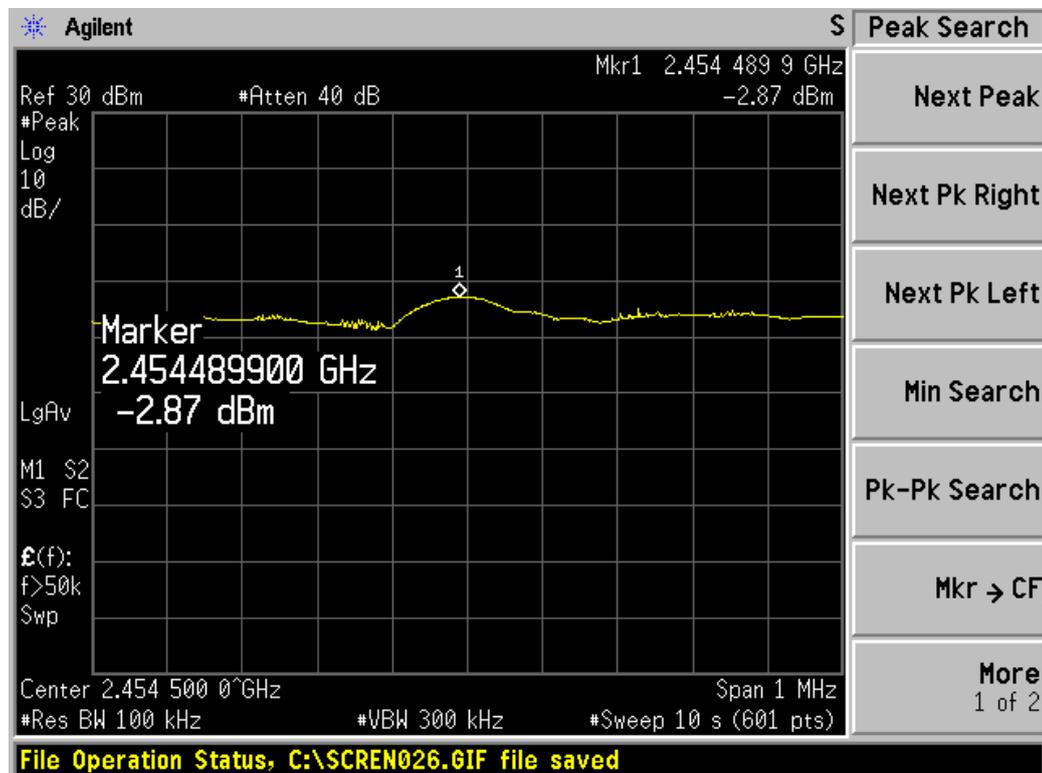


802.11n, Channel No.: 1

# TA Technology (Shanghai) Co., Ltd. Test Report



802.11n, Channel No.: 6



802.11n, Channel No.: 11

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### 2.7. Spurious RF Conducted Emissions

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO. The test is in transmit mode.

#### Test setup



#### Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	17.38	≤-2.62
	2437	18.12	≤-1.88
	2462	17.86	≤-2.14
802.11g	2412	16.78	≤-3.22
	2437	16.64	≤-3.36
	2462	16.41	≤-3.59
802.11n HT20	2412	12.38	≤-7.62
	2437	12.44	≤-7.56
	2462	12.43	≤-7.57

**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

Report No.: RZA1204-0004RF01R3

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**Measurement Uncertainty**

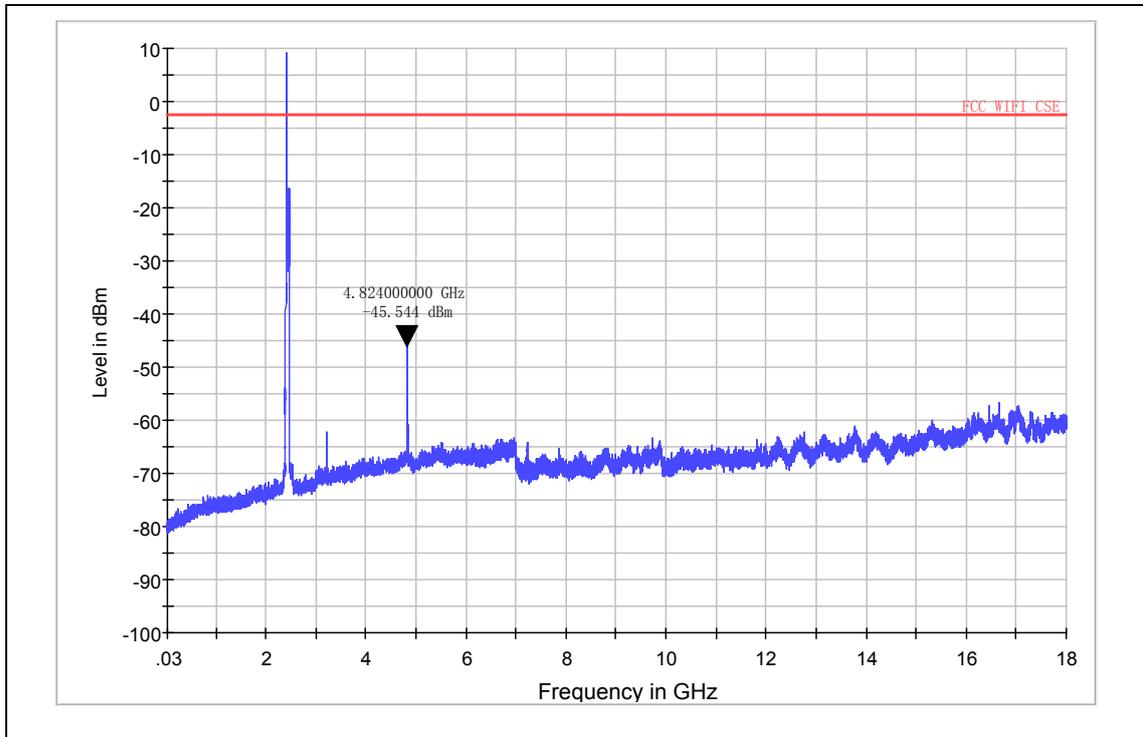
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26.5GHz	1.407 dB

# TA Technology (Shanghai) Co., Ltd. Test Report

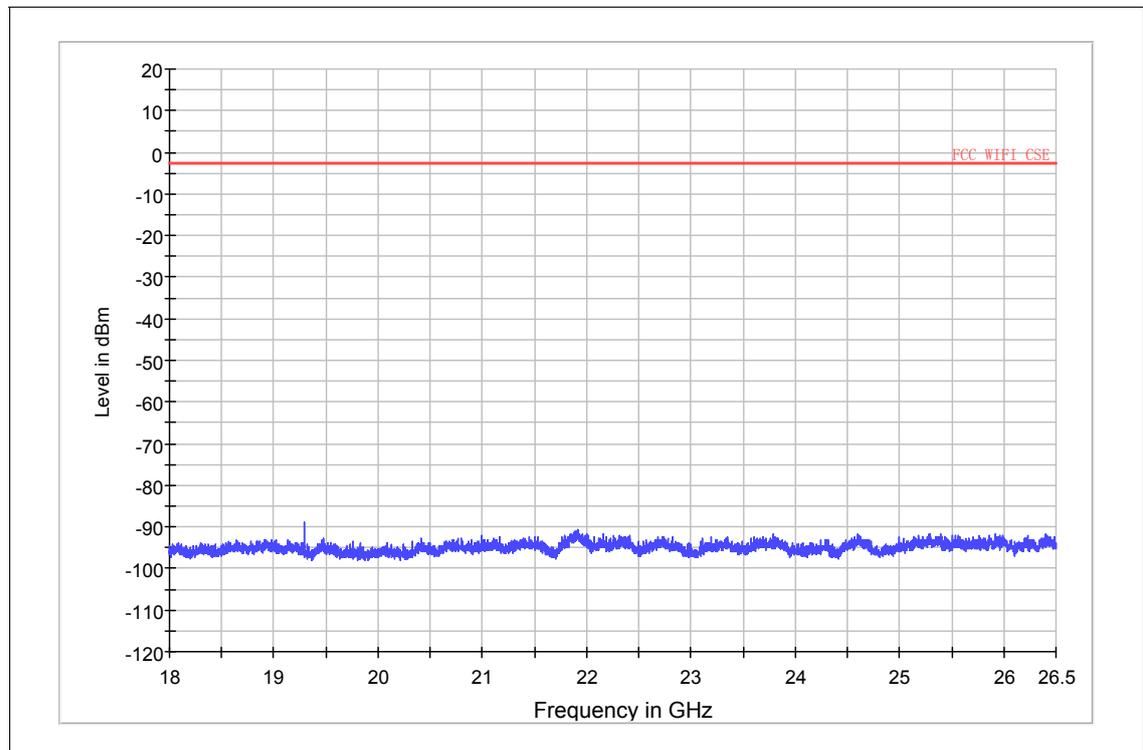
## Test Results:

802.11b CH1



Note: The signal beyond the limit is carrier

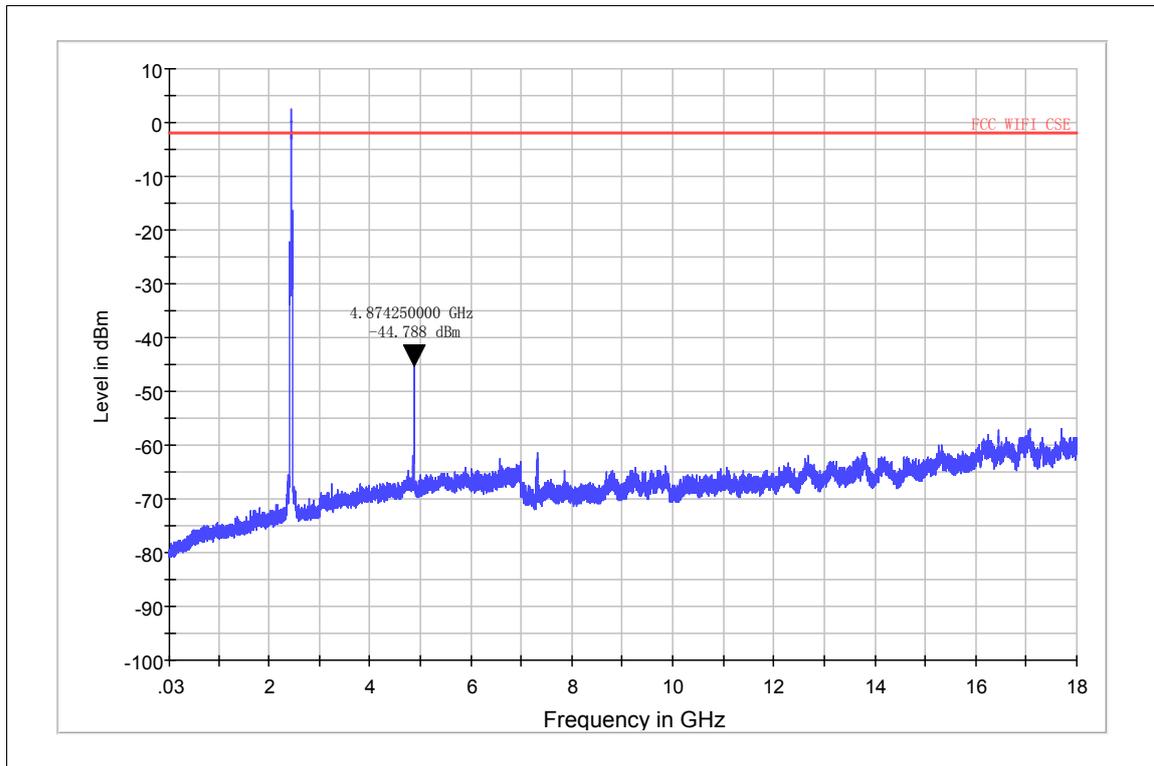
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

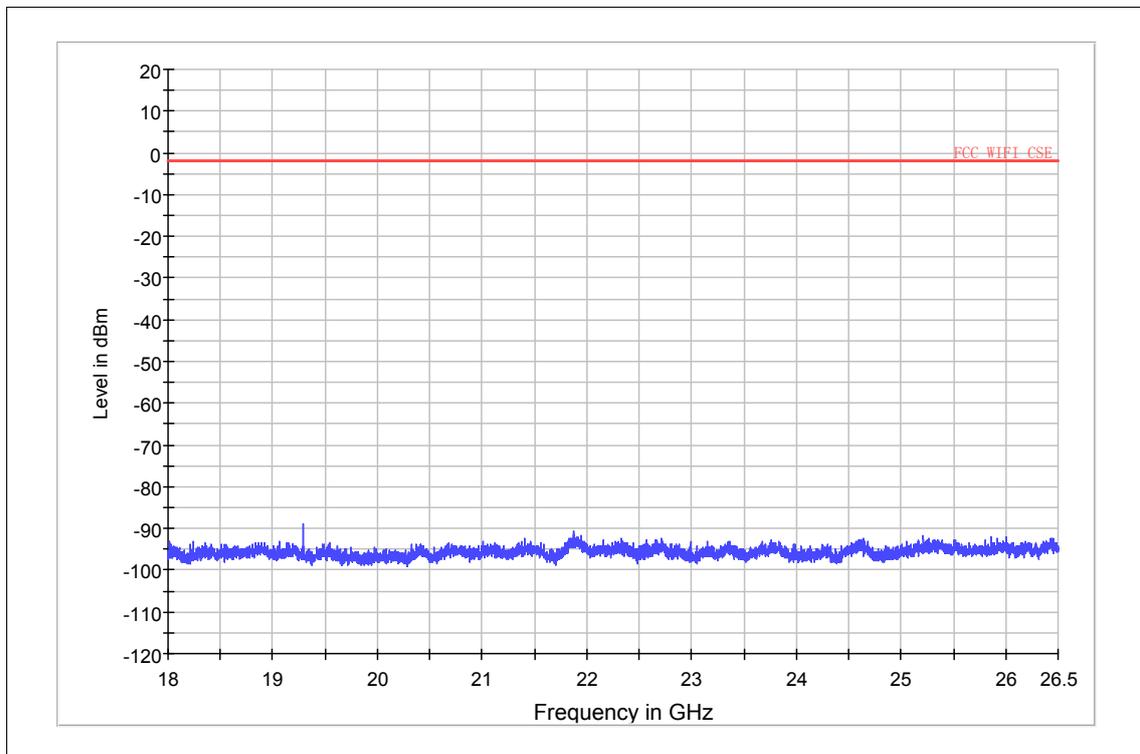
# TA Technology (Shanghai) Co., Ltd. Test Report

802.11b CH6



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



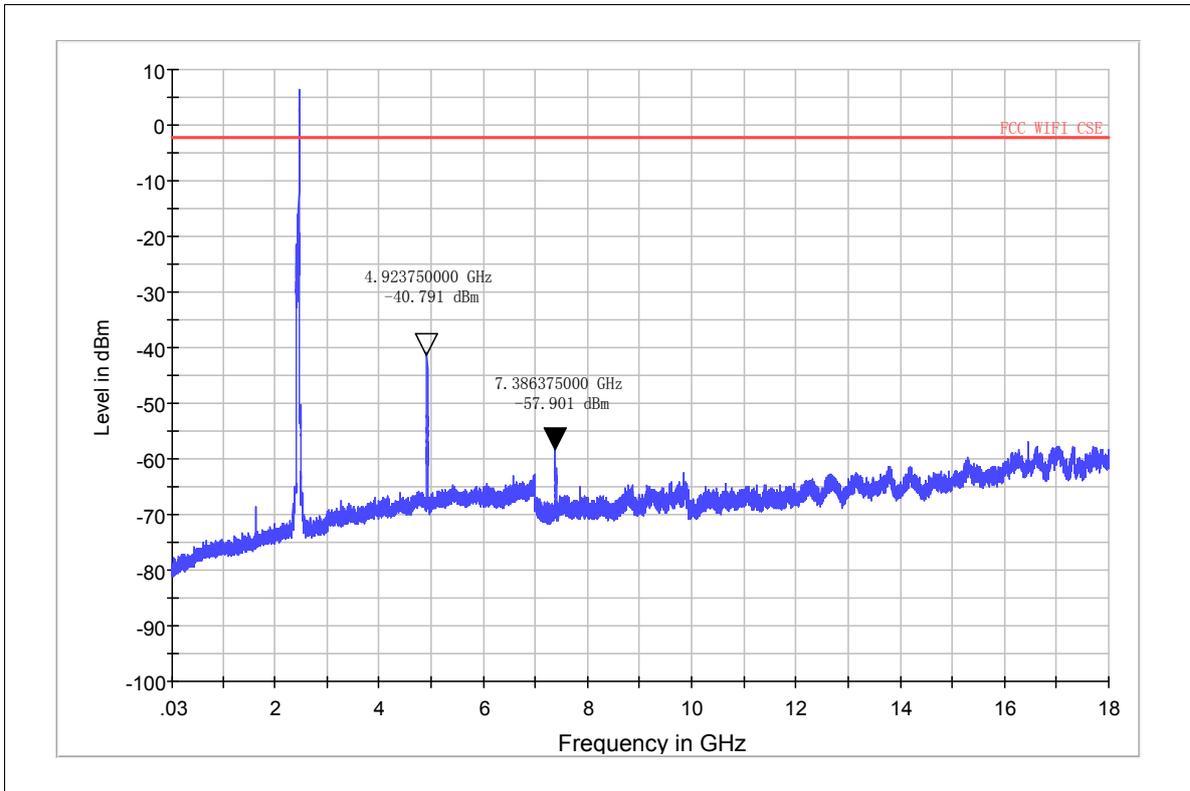
Spurious RF conducted emissions from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RZA1204-0004RF01R3

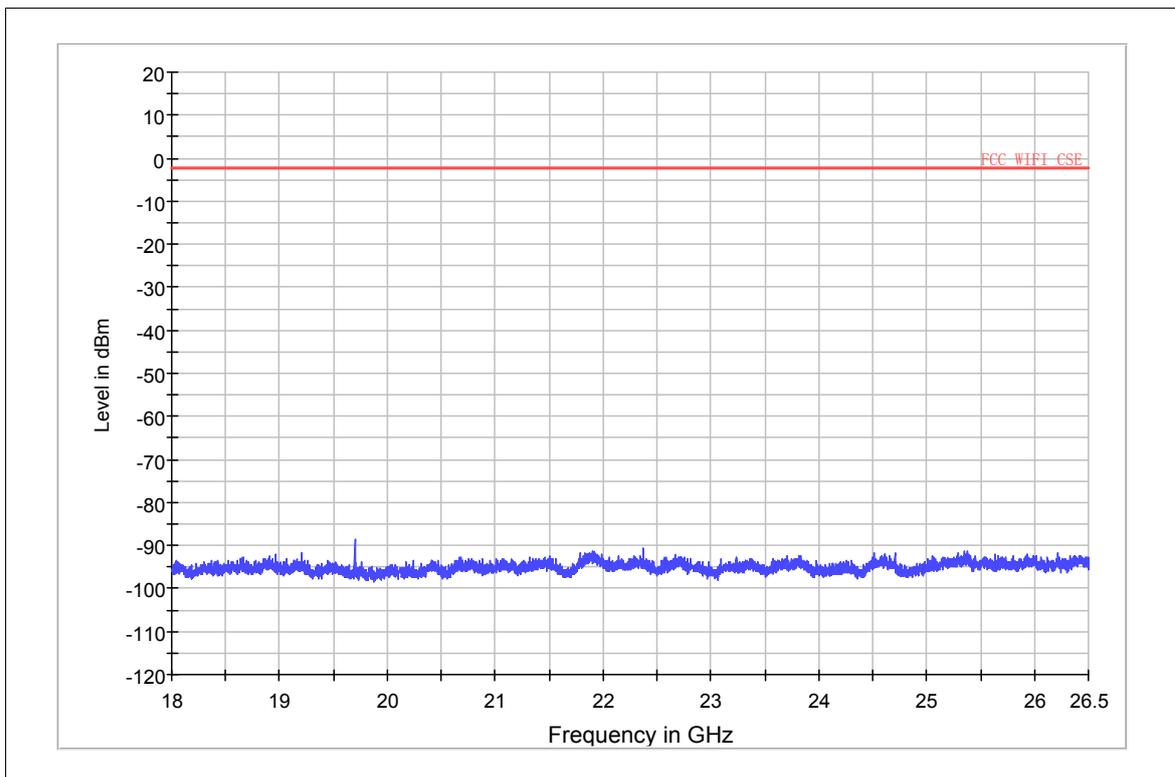
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802.11b CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



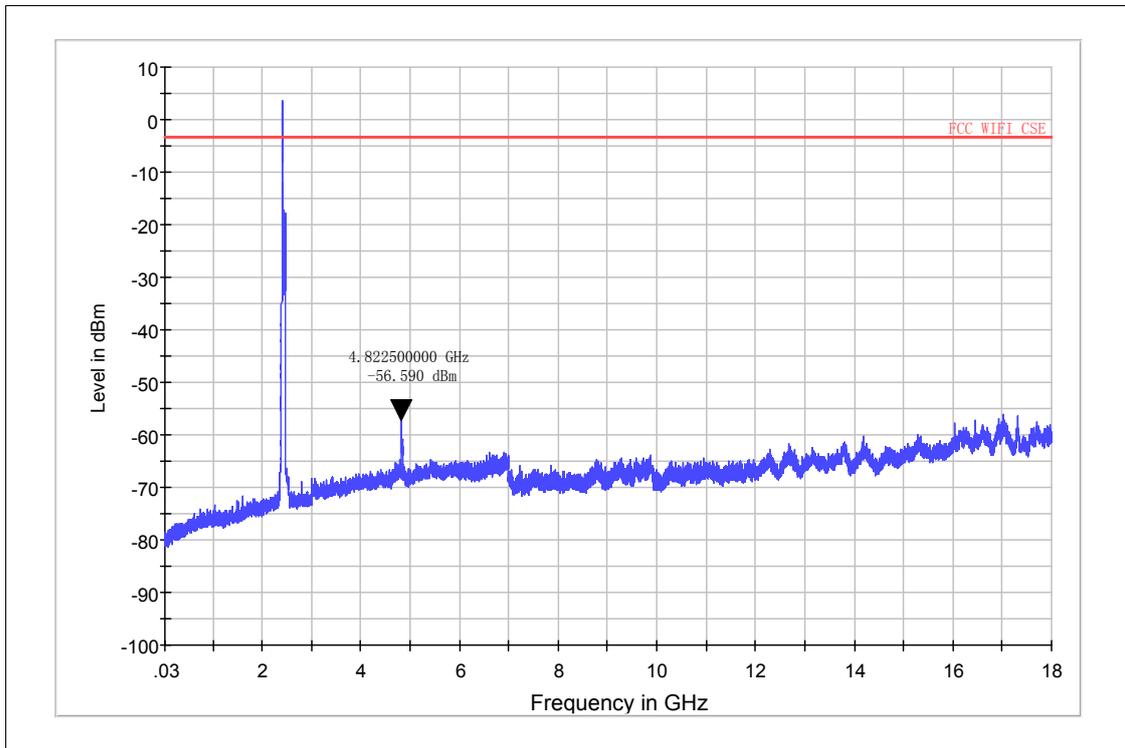
Spurious RF conducted emissions from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RZA1204-0004RF01R3

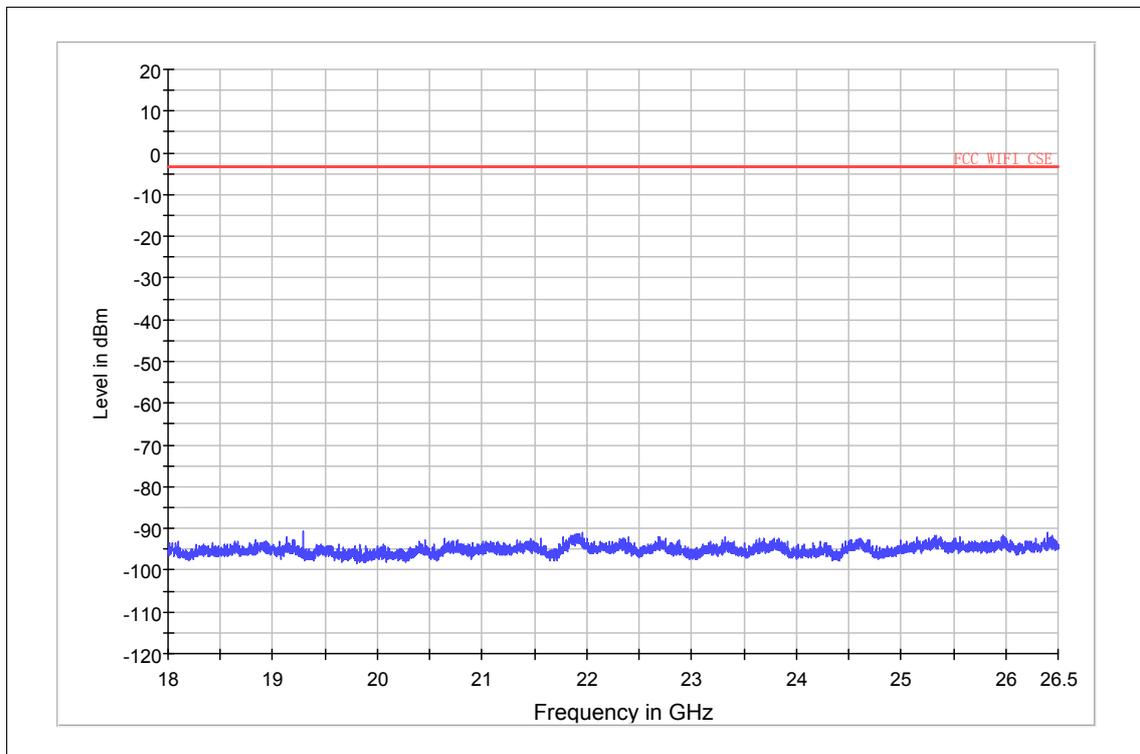
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802.11g CH1



Note: The signal beyond the limit is carrier

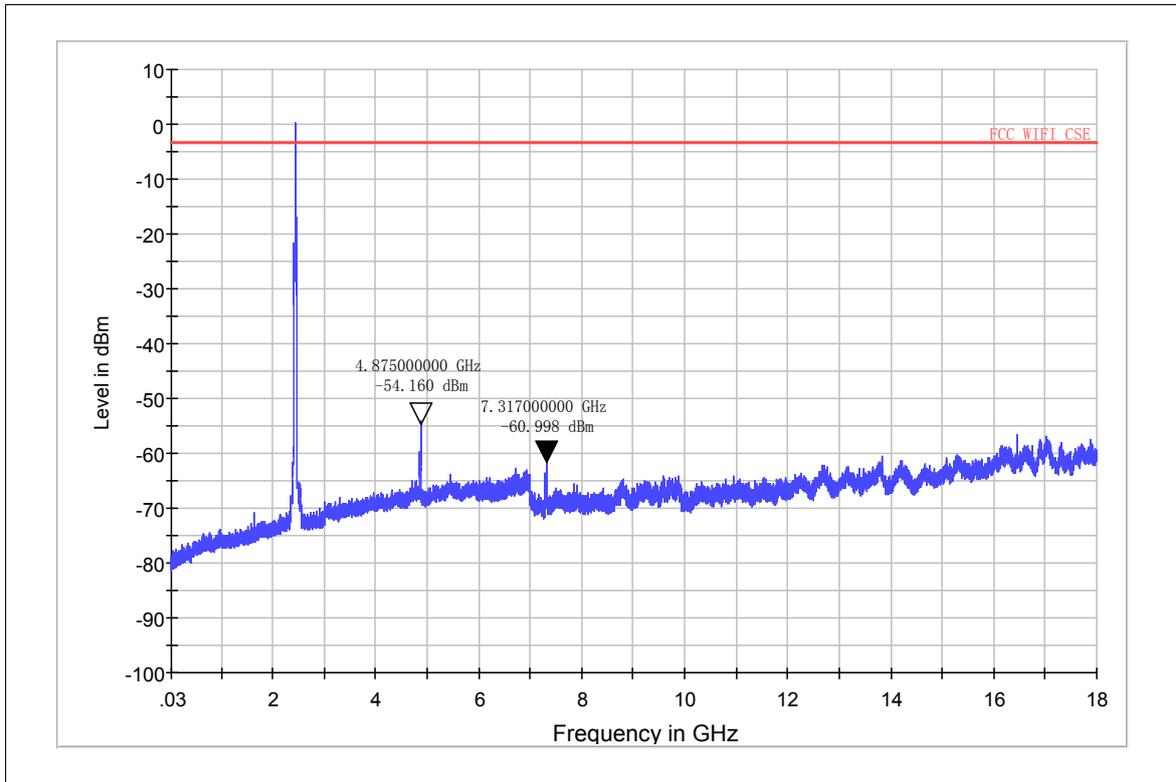
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

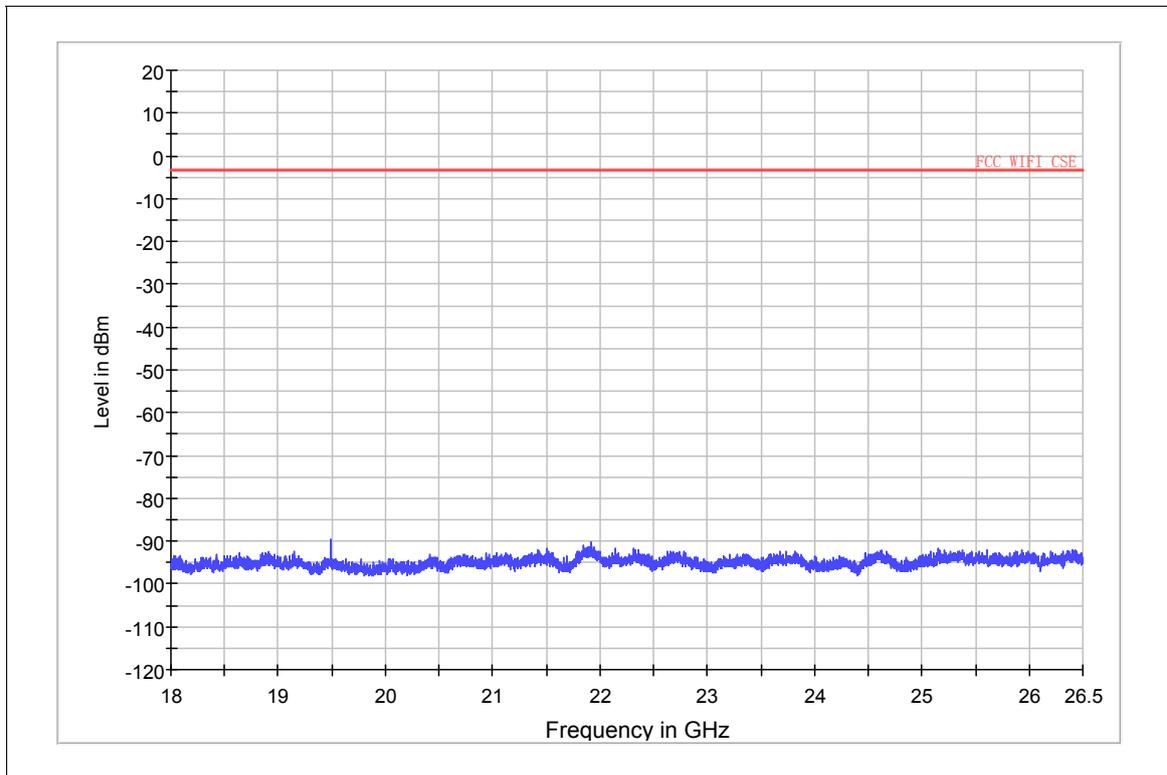
# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11g CH6



Note: The signal beyond the limit is carrier

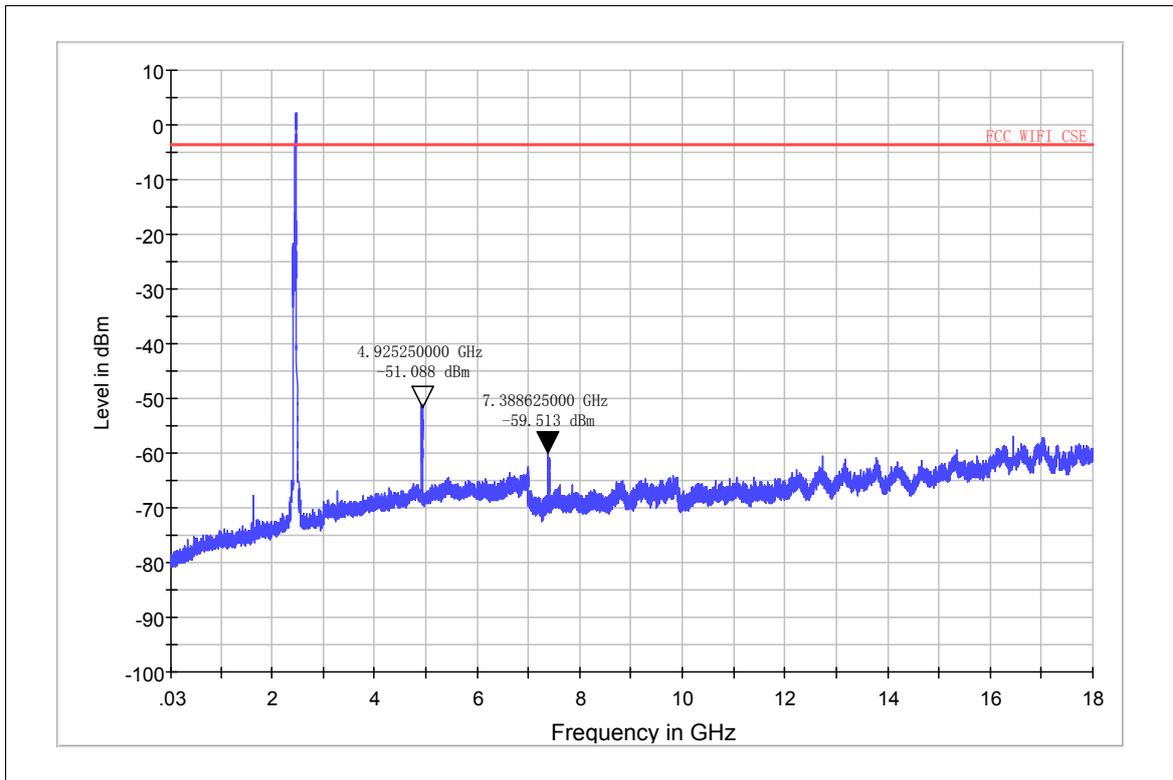
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

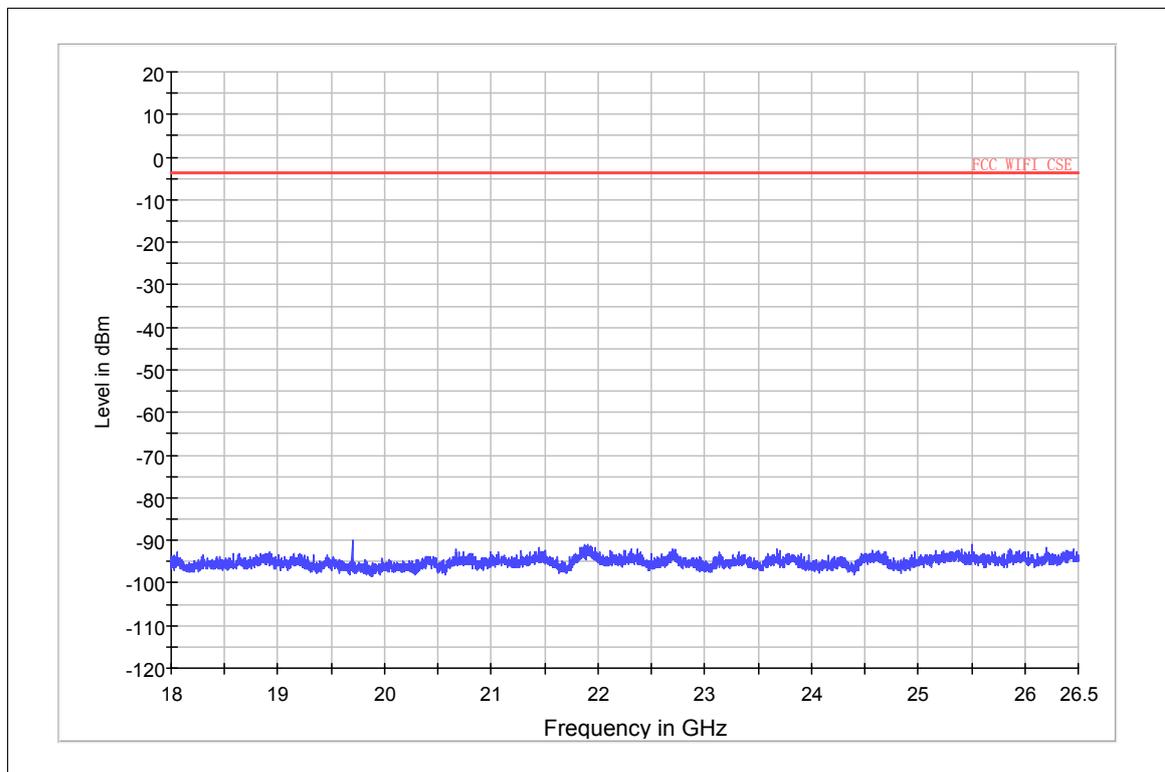
# TA Technology (Shanghai) Co., Ltd. Test Report

802.11g CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



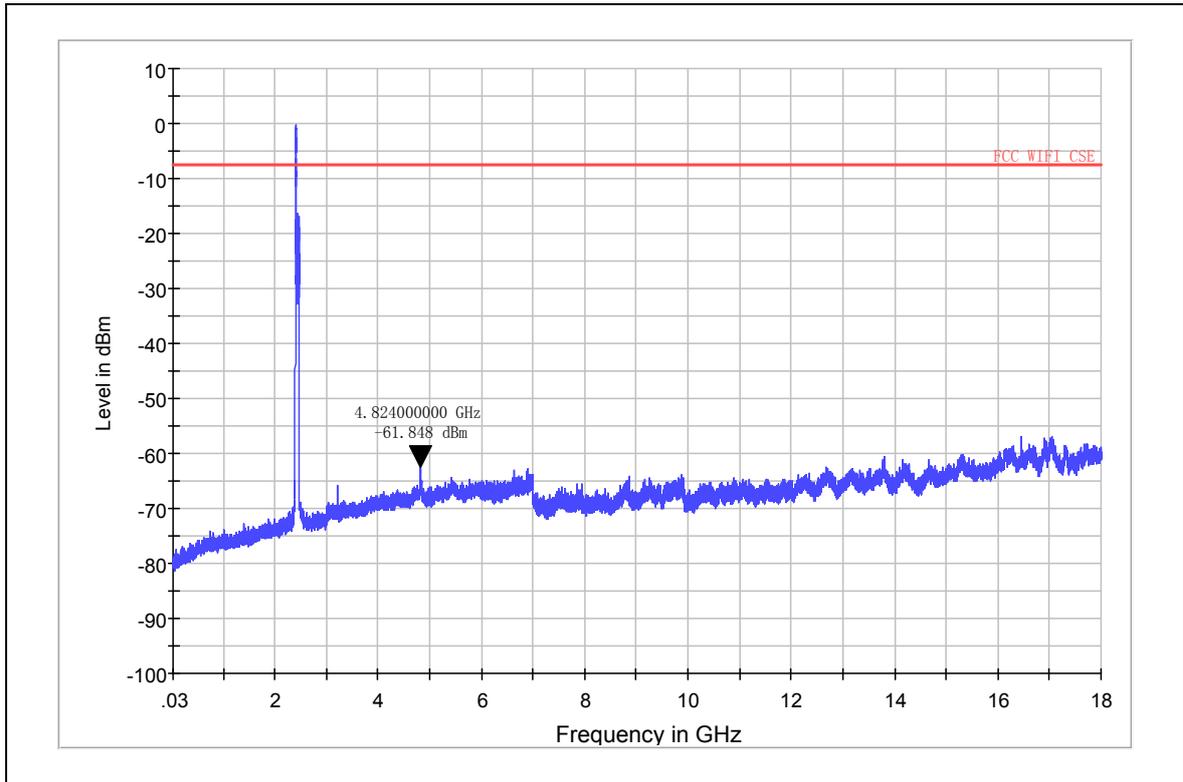
Spurious RF conducted emissions from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RZA1204-0004RF01R3

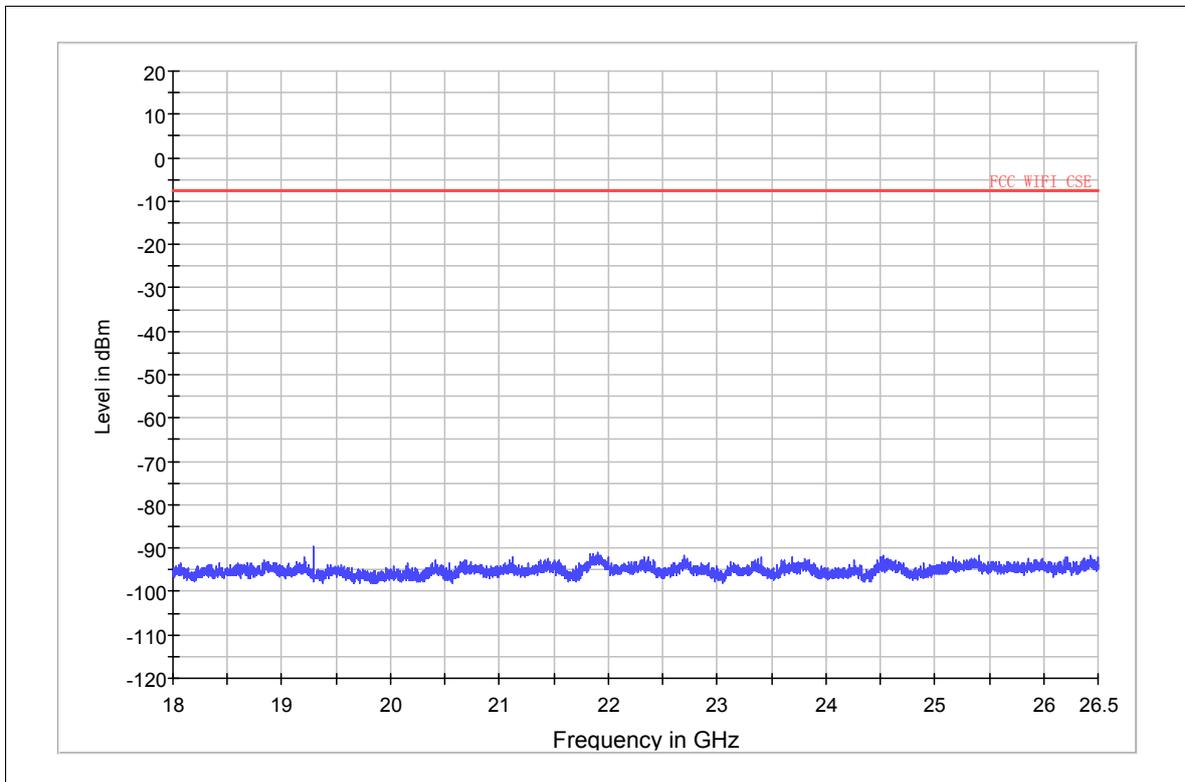
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802.11n CH1



Note: The signal beyond the limit is carrier

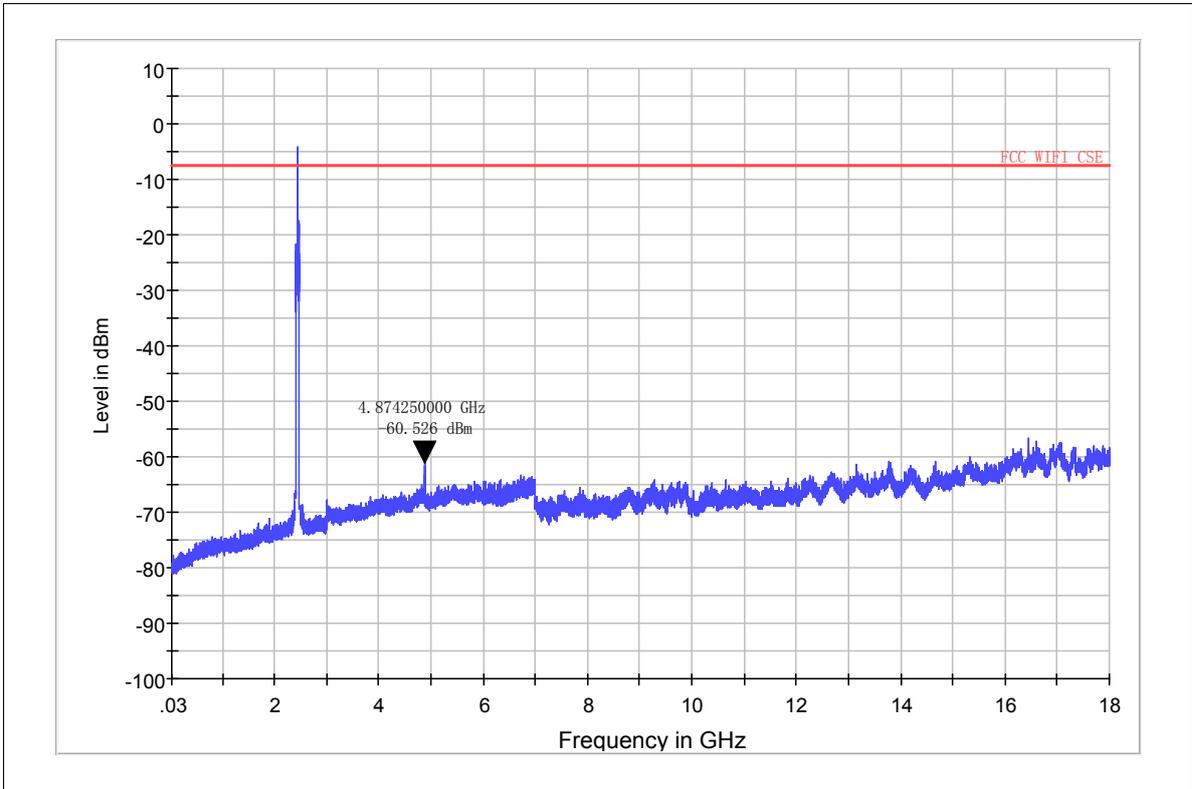
Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

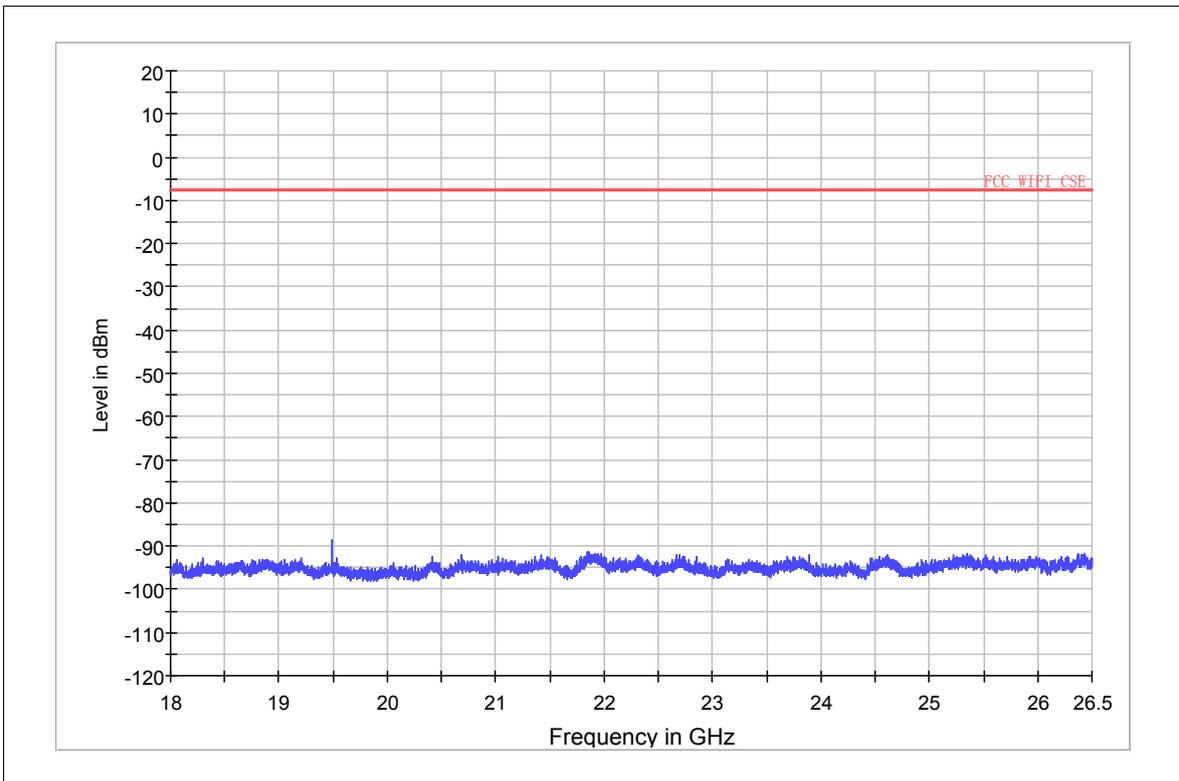
# TA Technology (Shanghai) Co., Ltd. Test Report

802.11n CH6



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



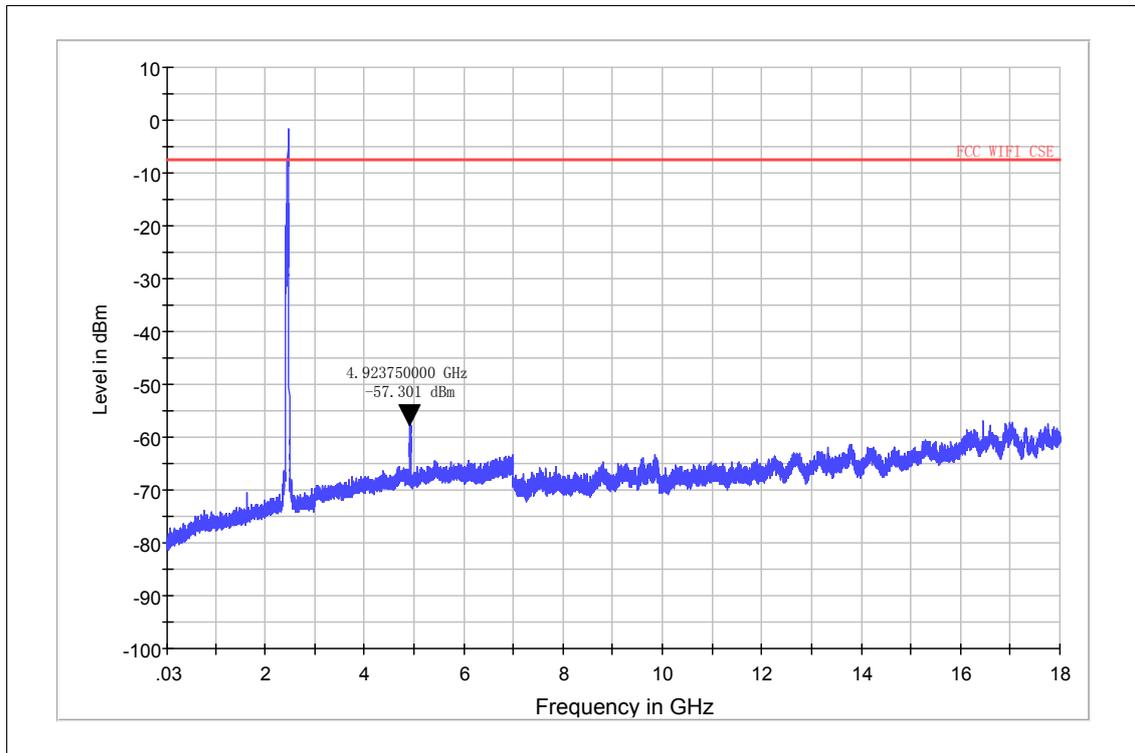
Spurious RF conducted emissions from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RZA1204-0004RF01R3

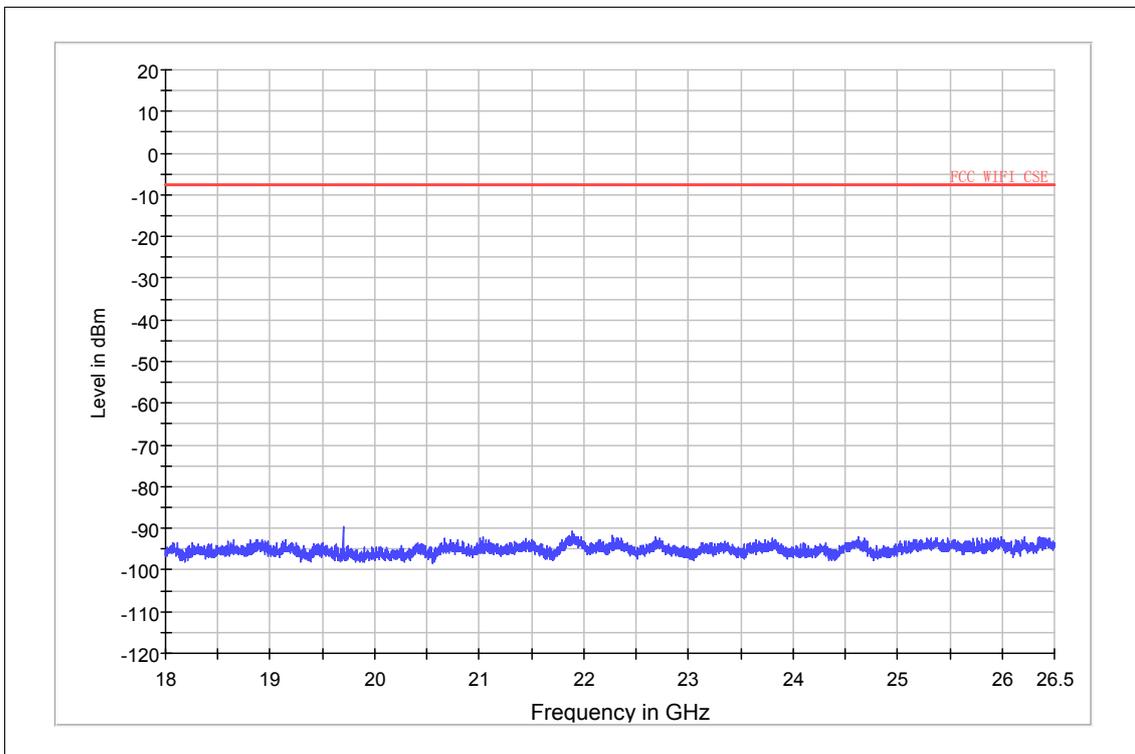
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802.11n CH11



Note: The signal beyond the limit is carrier

Spurious RF conducted emissions from 30MHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

## 2.8. Radiates Emission

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.4-2009. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration. Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

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

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

Above 1GHz(detector: Peak):

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

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

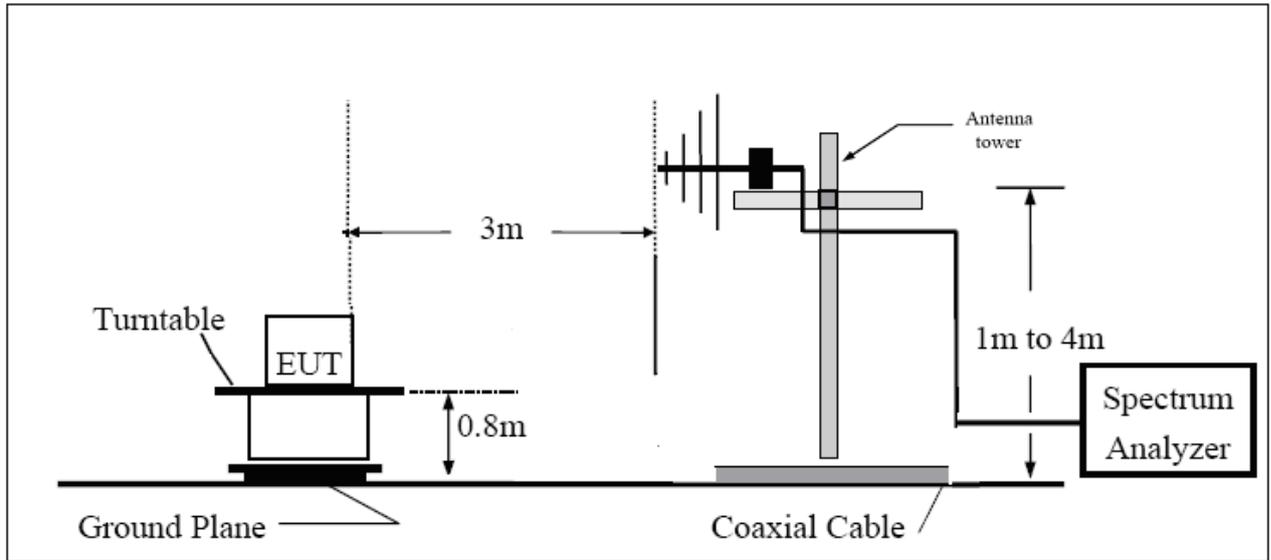
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

The test is in transmit mode.

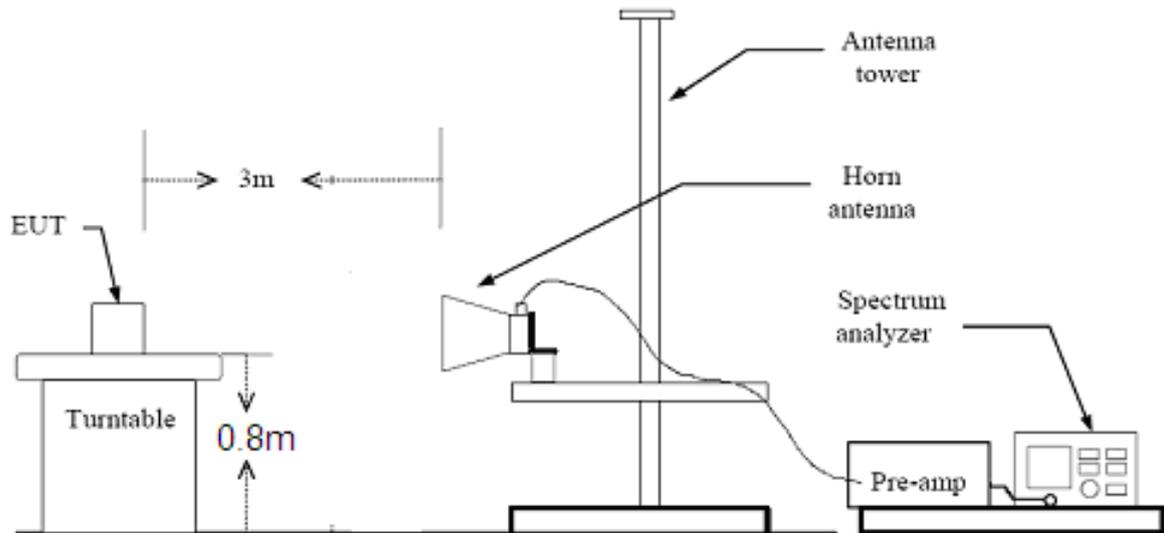
### Test setup

#### Below 1GHz

TA Technology (Shanghai) Co., Ltd.  
Test Report



Above 1GHz



# TA Technology (Shanghai) Co., Ltd.

## Test Report

Report No.: RZA1204-0004RF01R3

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### Limits

Rule Part 15.247(d) specifies that “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(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

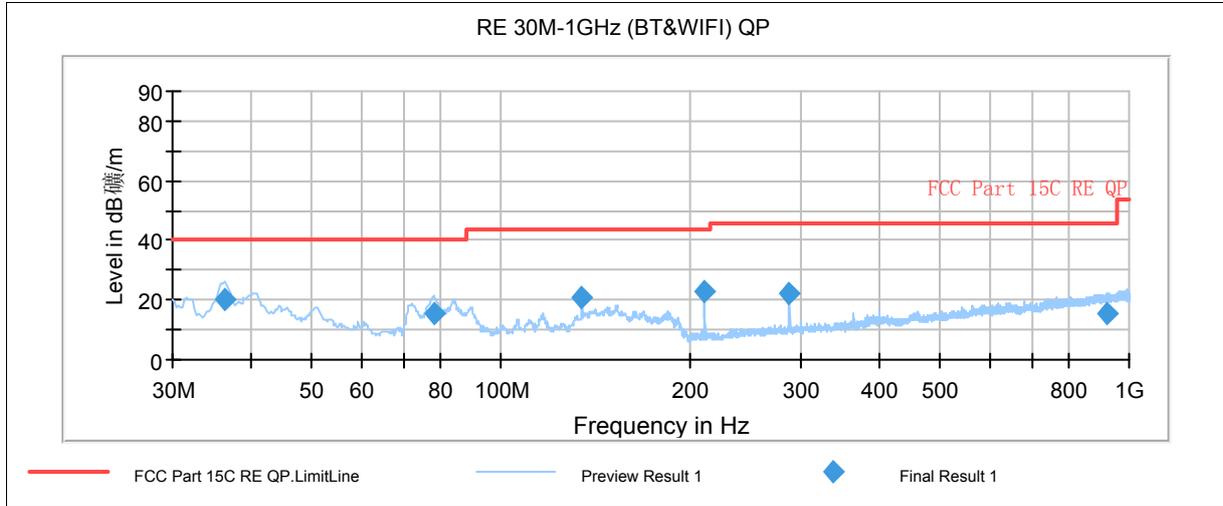
### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

Frequency	Uncertainty
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
1GHz – 6GHz	3.68 dB

# TA Technology (Shanghai) Co., Ltd. Test Report

**Test result**  
**802.11b CH1**

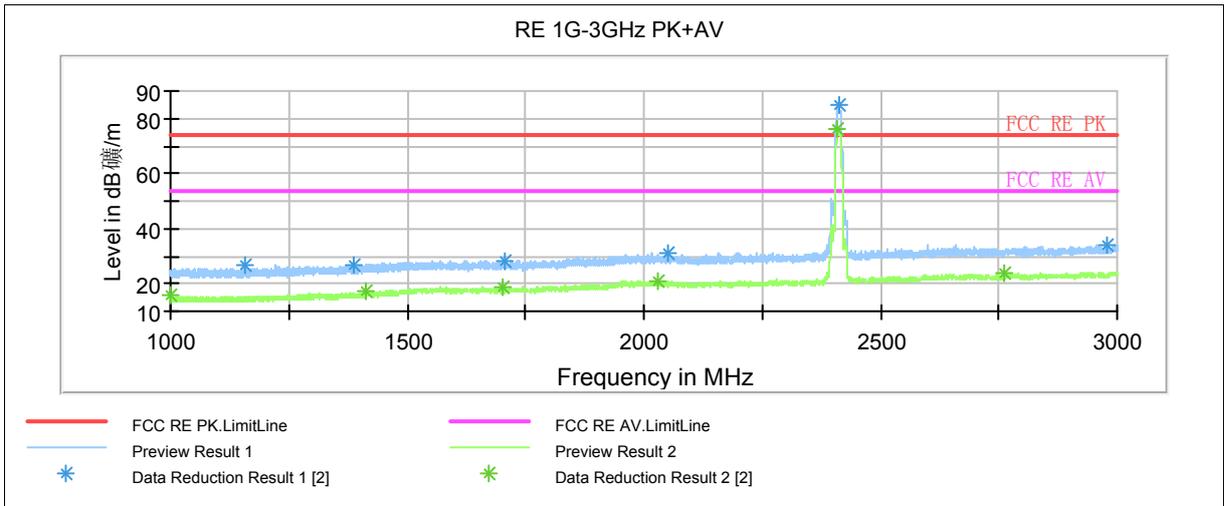


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.265000	19.9	120.0	V	352.0	44.2	-24.3	20.1	40.0
78.497500	15.6	121.0	V	68.0	47.6	-32.0	24.4	40.0
134.395000	21.0	100.0	V	260.0	53.3	-32.3	22.5	43.5
211.187500	22.5	100.0	V	157.0	52.1	-29.6	21.0	43.5
287.980000	22.1	100.0	H	17.0	49.6	-27.5	23.9	46.0
919.860000	15.6	121.0	H	55.0	31.8	-16.2	30.4	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
  2. Correction Factor = Antenna factor+ Insertion loss(cable loss+ amplifier gain)
  3. Margin = Limit – Quasi-Peak

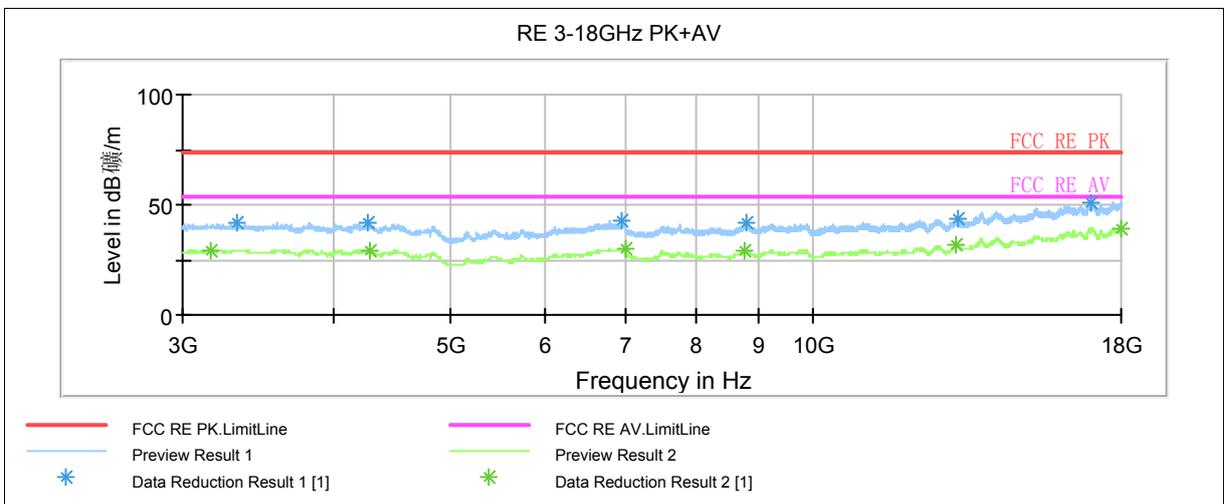
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1157.750000	26.5	13.8	200.0	H	225.0	-13.9
1386.500000	27.1	15.7	200.0	H	322.0	-12.8
1708.125000	28.4	17.1	200.0	H	0.0	-10.0
2052.750000	31.2	19.1	100.0	V	0.0	-8.0
2412.000000	84.9	73.9	100.0	V	0.0	-6.3
2977.125000	34.2	22.8	100.0	V	0.0	-4.0

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

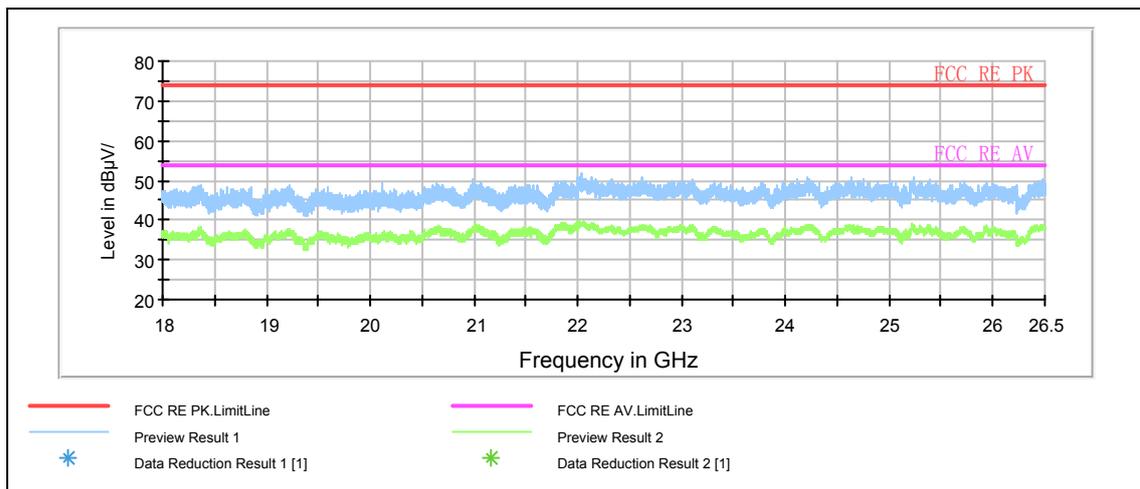


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3322.500000	41.5	28.7	150.0	V	0.0	1.0
4280.625000	42.2	28.7	100.0	H	5.0	3.1
6935.625000	42.3	29.0	99.0	V	260.0	8.2
8810.625000	41.4	28.7	99.0	V	354.0	10.3
13164.37500	43.2	31.2	150.0	H	0.0	12.1
17015.62500	51.2	38.3	99.0	V	203.0	16.2

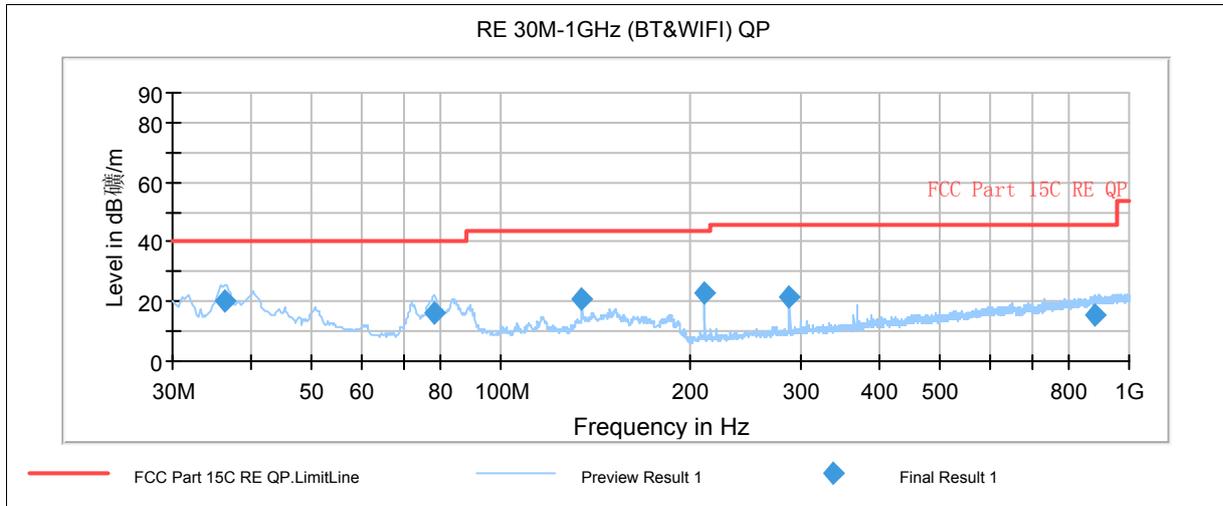
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11b CH6

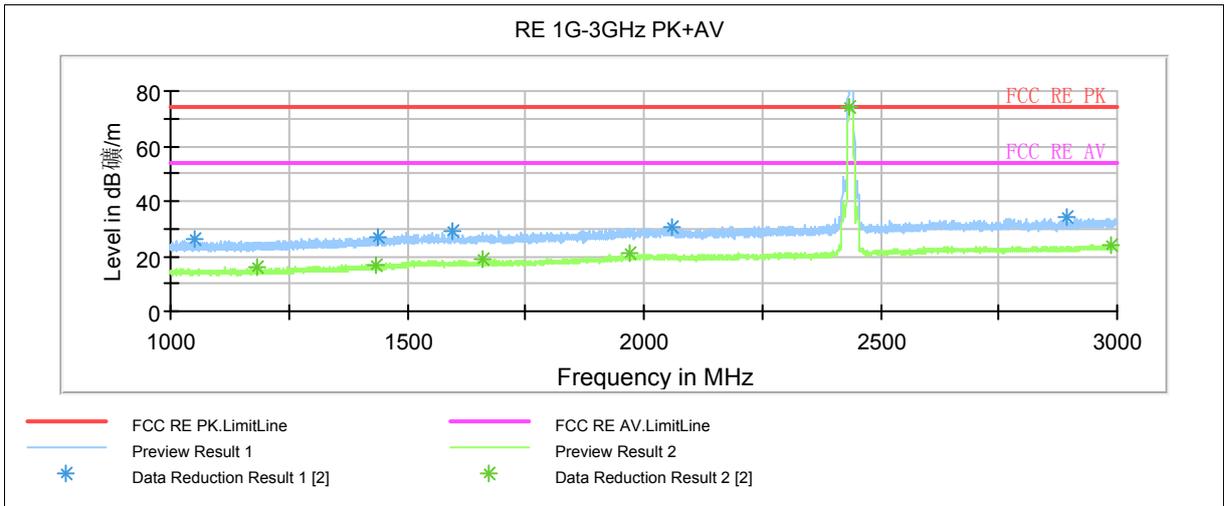


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.305000	20.3	100.0	V	0.0	44.6	-24.3	19.7	40.0
78.340000	16.1	100.0	V	86.0	48.1	-32.0	23.9	40.0
134.395000	20.5	100.0	V	0.0	52.8	-32.3	23.0	43.5
211.187500	22.5	100.0	V	160.0	52.1	-29.6	21.0	43.5
287.980000	21.3	125.0	H	216.0	48.8	-27.5	24.7	46.0
885.097500	15.7	100.0	V	21.0	32.1	-16.4	30.3	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
  2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
  3. Margin = Limit – Quasi-Peak

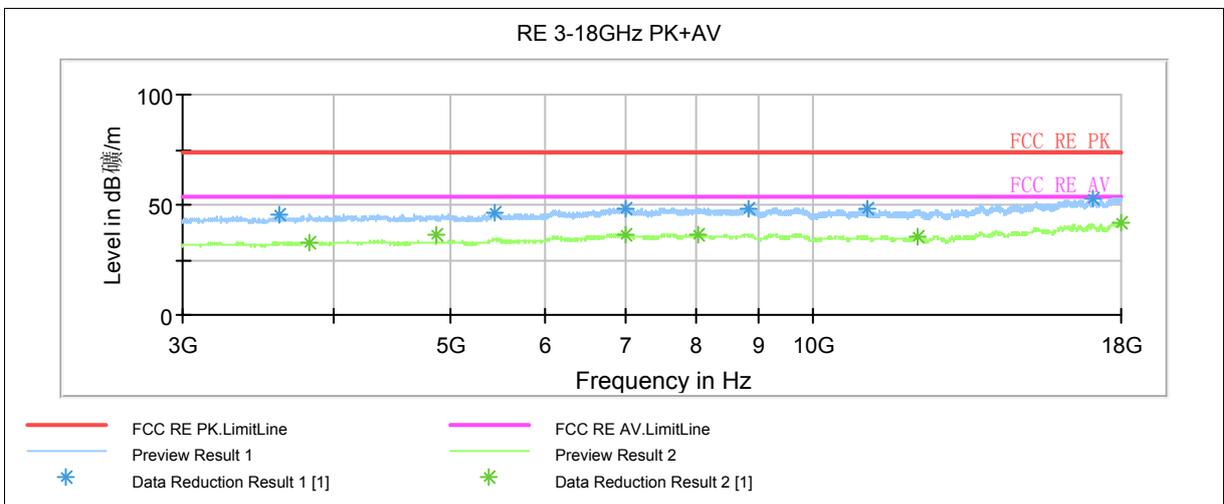
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1051.875000	25.9	13.8	100.0	H	179.0	-13.8
1439.500000	27.0	16.4	100.0	V	0.0	-12.3
1597.500000	29.1	16.6	100.0	V	0.0	-10.1
2059.875000	30.8	20.0	100.0	V	0.0	-8.0
2436.750000	83.3	73.7	100.0	H	0.0	-6.5
2893.875000	34.0	22.5	100.0	V	0.0	-4.7

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

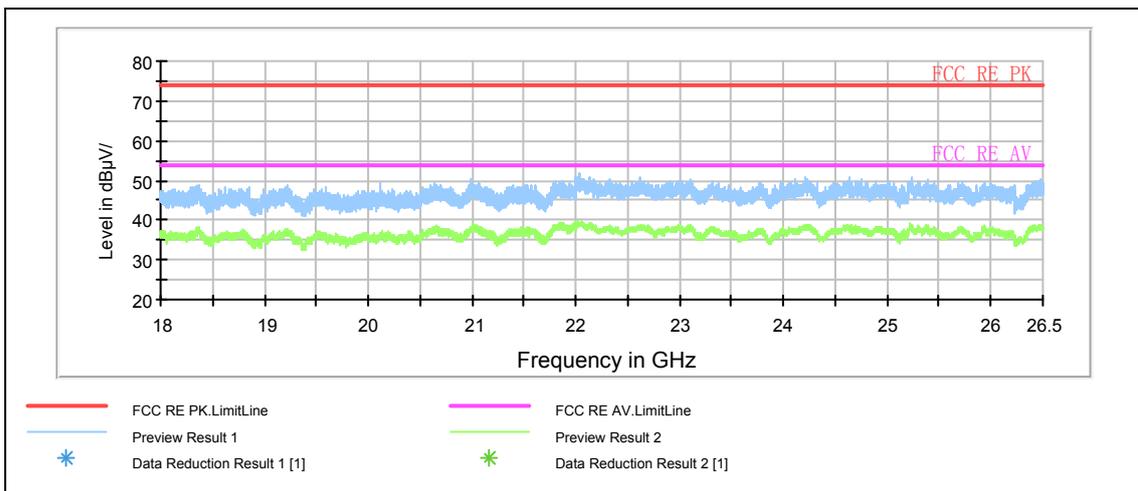


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3603.750000	45.0	32.2	150.0	H	0.0	1.3
5435.625000	46.2	34.0	100.0	V	-1.0	4.9
6991.875000	48.4	36.0	100.0	V	0.0	8.5
8825.625000	48.6	36.3	150.0	H	23.0	10.3
11079.37500	48.4	34.9	150.0	V	0.0	11.1
17025.00000	53.1	40.7	100.0	H	0.0	16.2

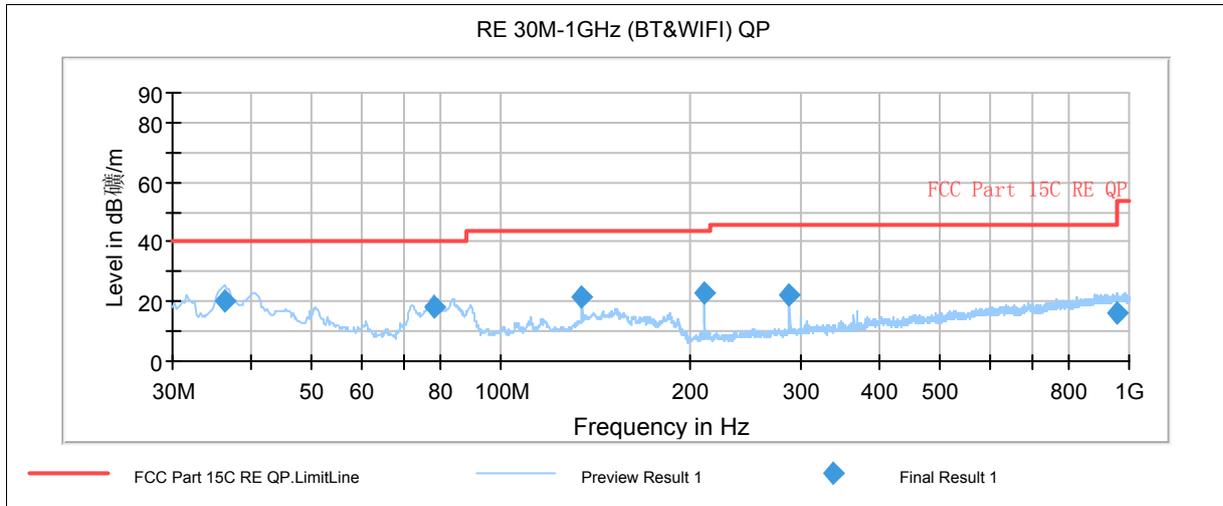
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11b CH11

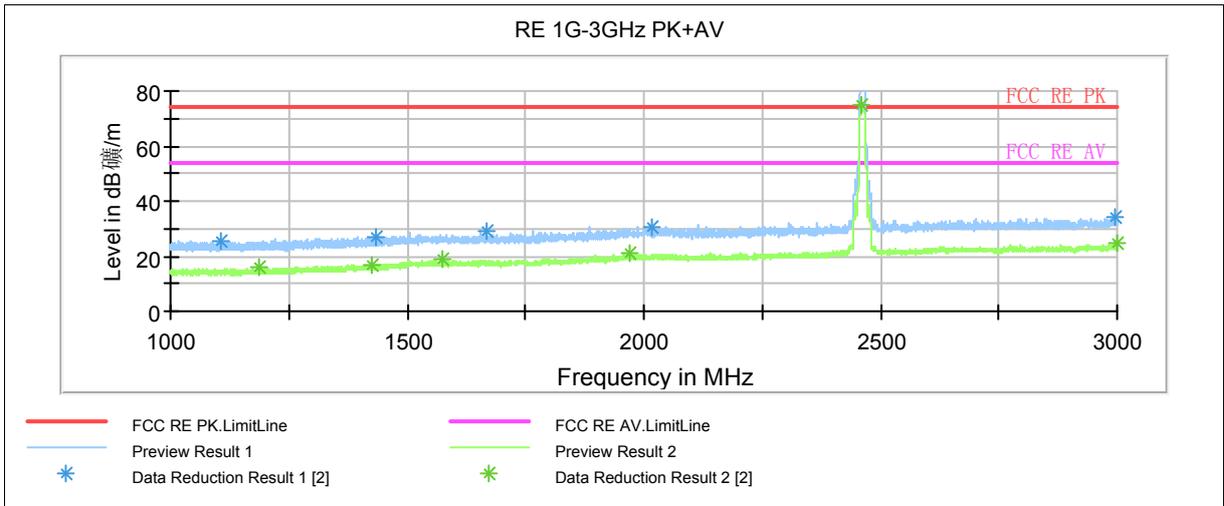


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.345000	20.3	100.0	V	0.0	44.6	-24.3	19.7	40.0
78.297500	18.4	100.0	V	45.0	50.4	-32.0	21.6	40.0
134.397500	21.2	100.0	V	248.0	53.5	-32.3	22.3	43.5
211.187500	22.7	100.0	V	145.0	52.3	-29.6	20.8	43.5
287.980000	22.0	100.0	H	14.0	49.5	-27.5	24.0	46.0
957.645000	16.1	209.0	H	207.0	31.8	-15.7	29.9	46.0

- Remark: 1. Quasi-Peak = Reading value + Correction factor**  
**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**  
**3. Margin = Limit – Quasi-Peak**

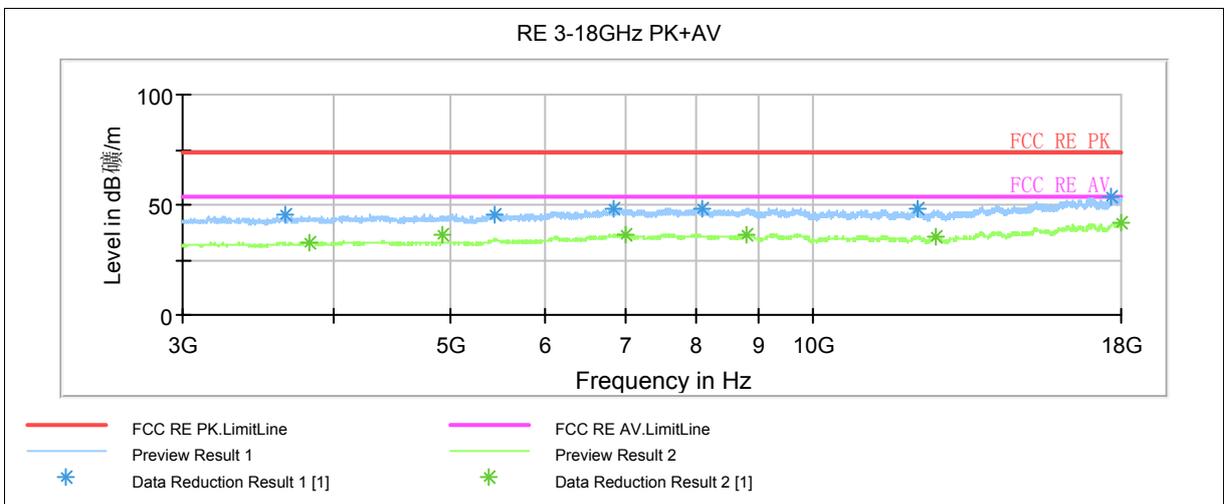
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1106.500000	25.4	14.3	100.0	H	65.0	-13.9
1435.875000	27.1	15.1	100.0	H	5.0	-12.3
1666.875000	28.9	16.9	100.0	V	0.0	-10.1
2016.000000	30.5	18.9	100.0	V	0.0	-8.1
2461.875000	84.1	73.2	100.0	H	0.0	-6.6
2995.500000	34.1	22.7	100.0	H	0.0	-3.7

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

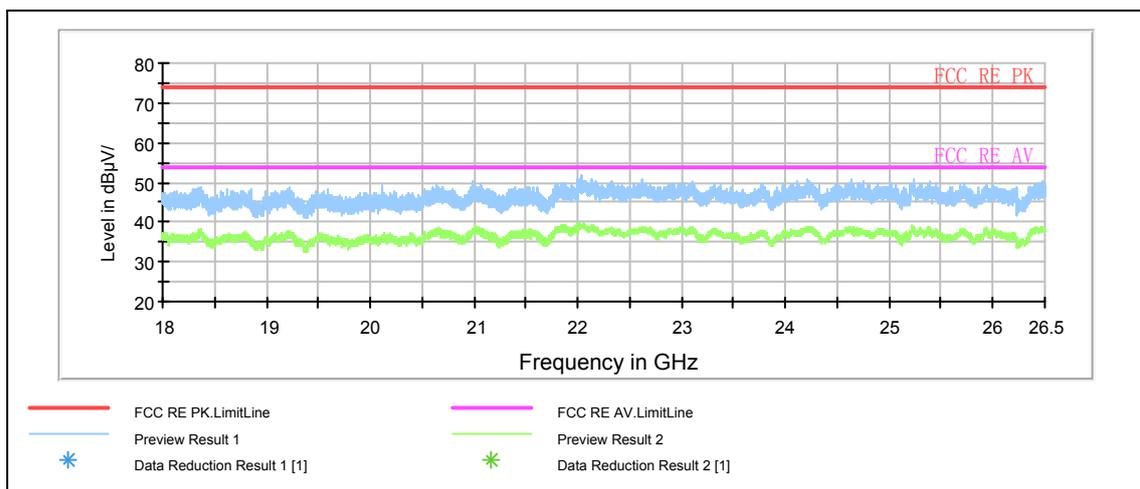


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3645.000000	45.1	32.4	100.0	V	236.0	1.6
5441.250000	45.7	34.4	100.0	H	229.0	5.1
6841.875000	48.3	35.5	100.0	H	29.0	7.9
8090.625000	48.4	35.9	100.0	V	132.0	9.6
12185.62500	48.0	35.3	100.0	V	294.0	11.3
17677.50000	53.7	40.4	100.0	V	0.0	17.0

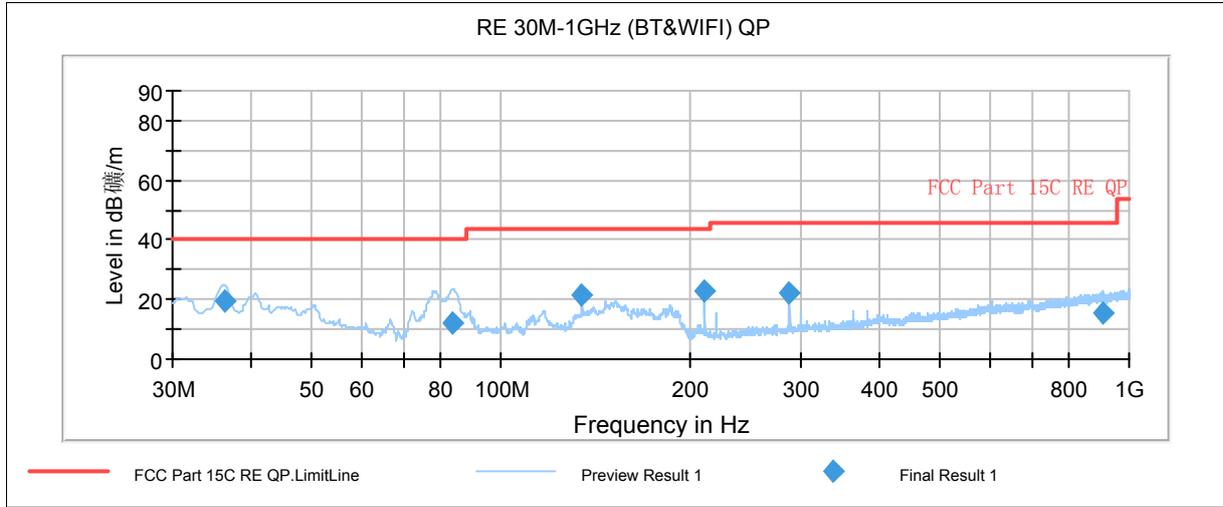
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11g CH1



Radiates Emission from 30MHz to 1GHz

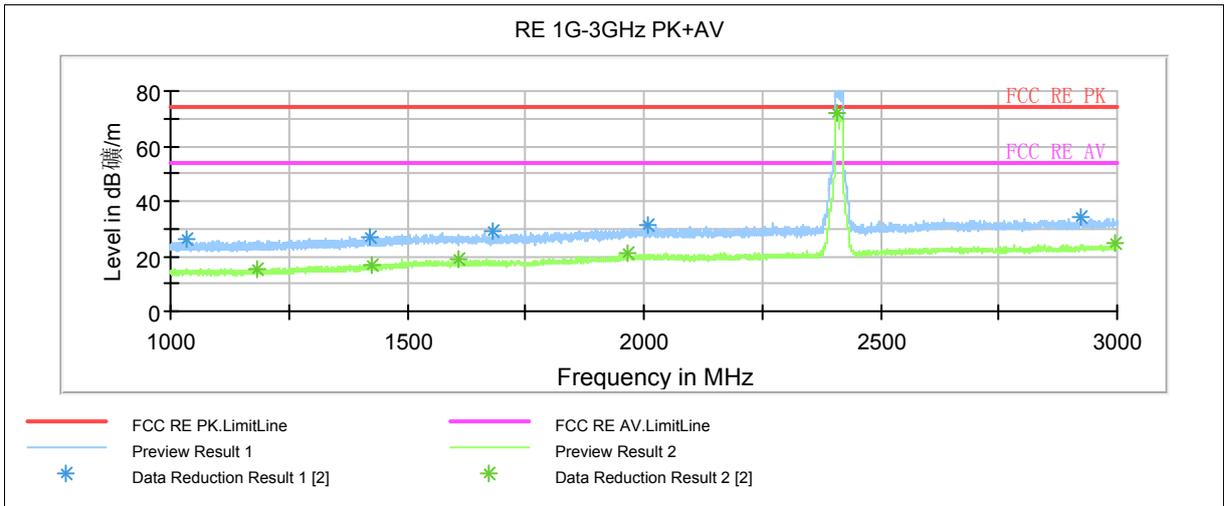
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.462500	19.7	100.0	V	0.0	43.9	-24.2	20.3	40.0
83.835000	12.1	100.0	V	73.0	42.9	-30.8	27.9	40.0
134.395000	21.4	100.0	V	252.0	53.7	-32.3	22.1	43.5
211.187500	23.0	100.0	V	147.0	52.6	-29.6	20.5	43.5
288.020000	22.2	100.0	H	13.0	49.7	-27.5	23.8	46.0
906.195000	15.7	200.0	V	244.0	32.1	-16.4	30.3	46.0

**Remark: 1. Quasi-Peak = Reading value + Correction factor**

**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

**3. Margin = Limit – Quasi-Peak**

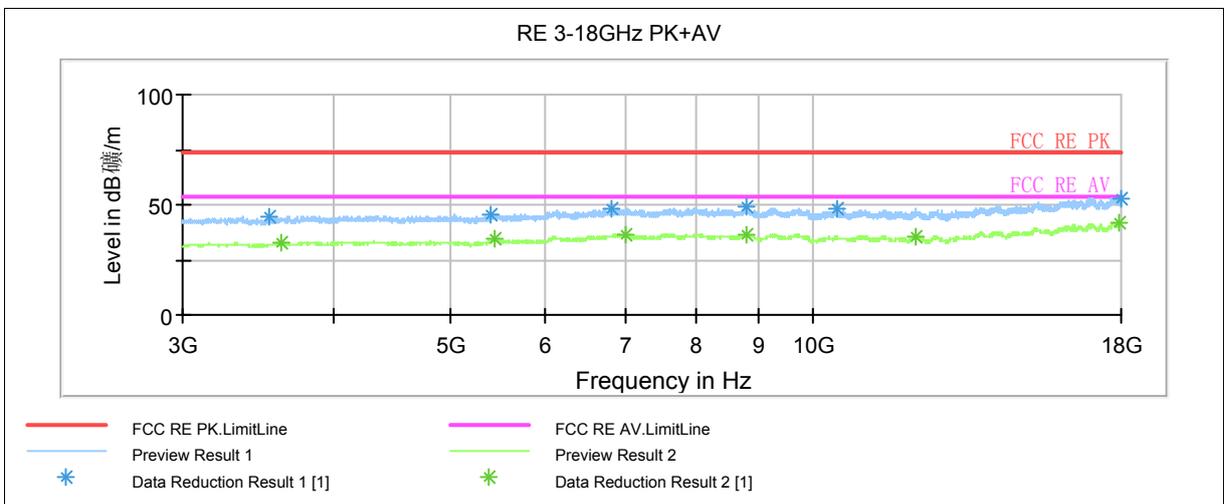
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1032.000000	25.9	14.4	100.0	H	342.0	-13.8
1421.250000	26.8	15.7	100.0	V	265.0	-12.4
1681.125000	29.2	16.6	100.0	V	0.0	-10.6
2007.375000	31.0	20.2	100.0	H	0.0	-8.1
2406.375000	81.0	71.0	100.0	V	0.0	-6.4
2922.375000	33.8	22.9	100.0	H	0.0	-4.0

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

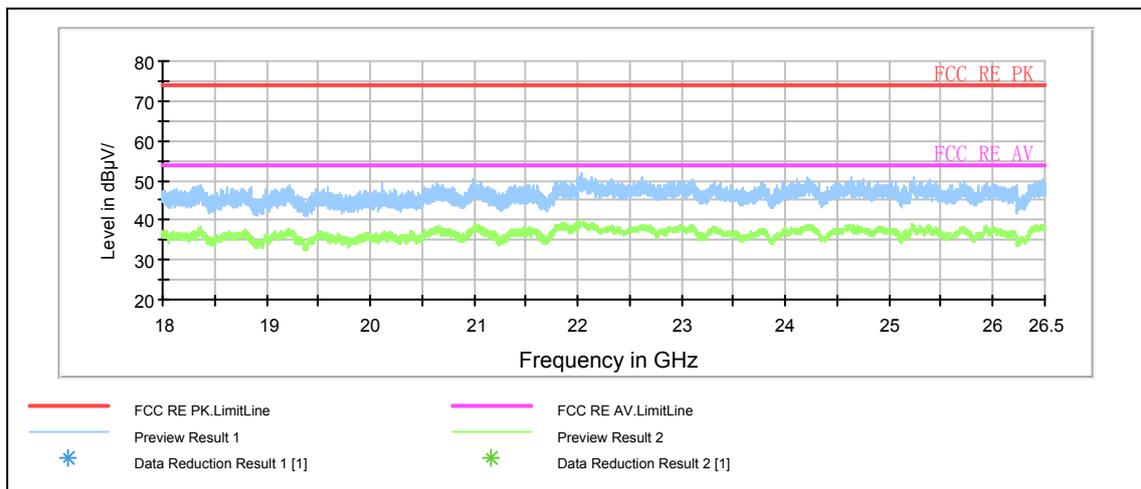


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3545.625000	44.5	31.7	100.0	H	13.0	1.0
5407.500000	45.3	33.3	100.0	H	87.0	4.4
6806.250000	48.1	35.8	100.0	V	0.0	7.8
8803.125000	48.8	36.0	100.0	V	0.0	10.3
10464.37500	48.0	35.1	100.0	H	39.0	10.8
18000.00000	53.1	41.3	100.0	V	84.0	17.9

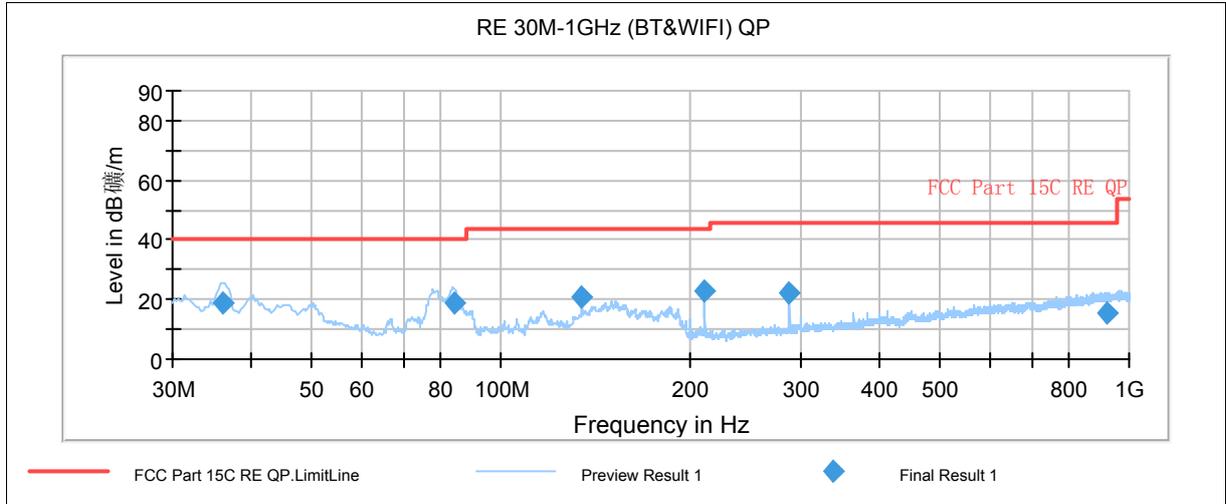
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11g CH6



Radiates Emission from 30MHz to 1GHz

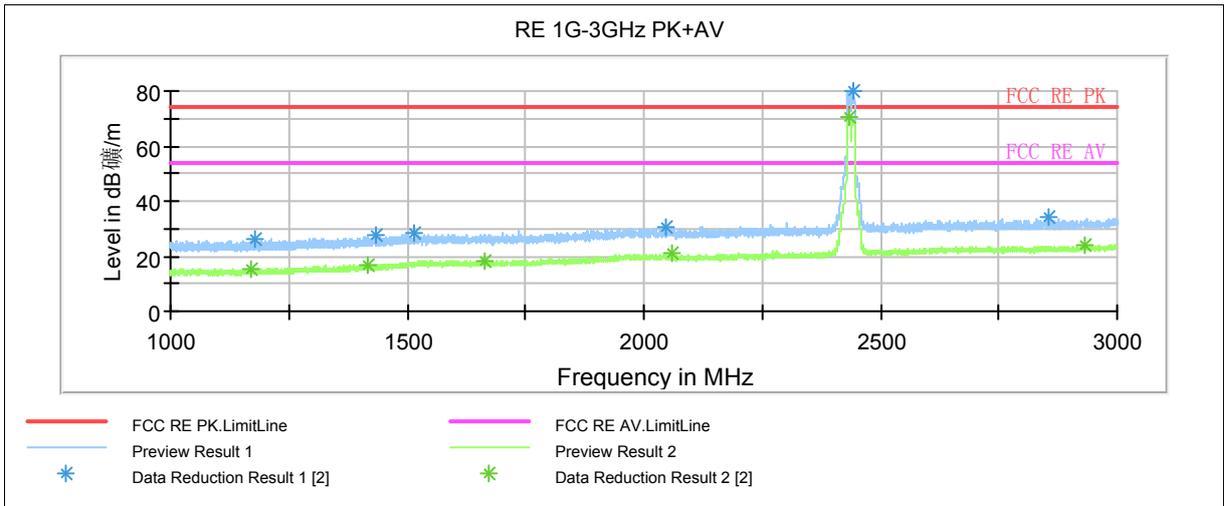
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.182500	18.8	120.0	V	0.0	43.1	-24.3	21.2	40.0
84.275000	19.0	120.0	V	78.0	49.6	-30.6	21.0	40.0
134.395000	20.7	100.0	V	261.0	53	-32.3	22.8	43.5
211.187500	22.9	100.0	V	140.0	52.5	-29.6	20.6	43.5
287.980000	22.3	100.0	H	13.0	49.8	-27.5	23.7	46.0
922.840000	15.6	120.0	H	268.0	31.8	-16.2	30.4	46.0

**Remark: 1. Quasi-Peak = Reading value + Correction factor**

**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

**3. Margin = Limit – Quasi-Peak**

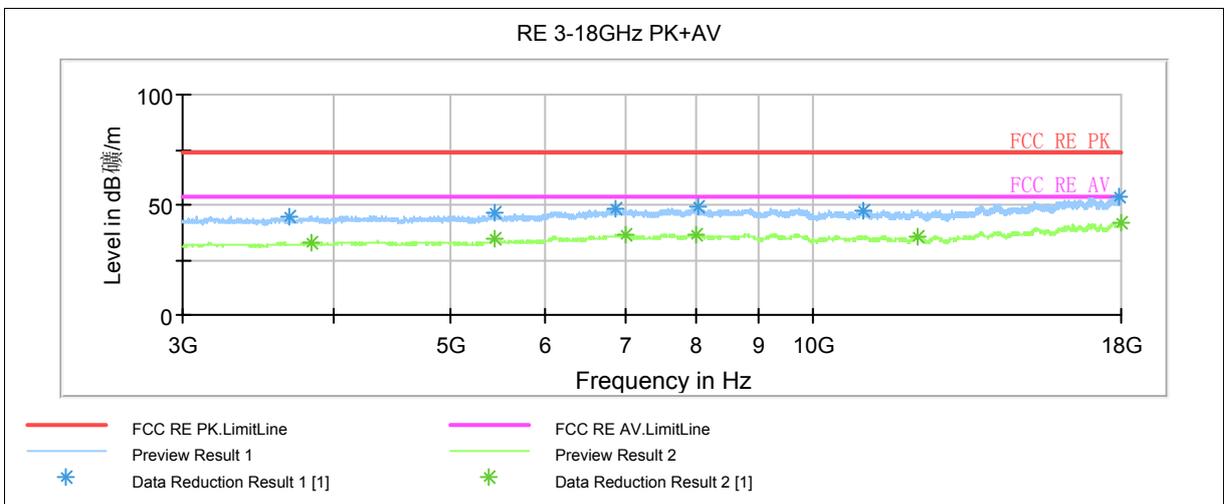
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1178.750000	25.9	13.9	100.0	V	294.0	-13.4
1432.000000	27.5	15.5	100.0	V	27.0	-12.4
1516.125000	28.4	16.4	100.0	V	0.0	-10.4
2047.125000	30.4	20.0	100.0	V	0.0	-7.9
2442.000000	79.9	70.0	100.0	H	0.0	-6.5
2856.000000	34.3	22.2	100.0	H	0.0	-5.1

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

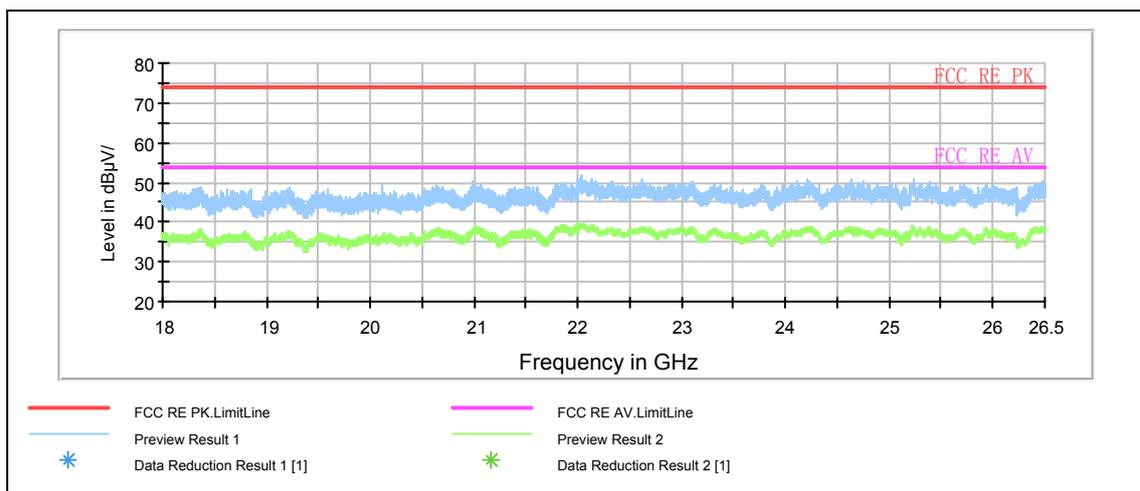


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3673.125000	45.0	32.1	100.0	H	0.0	1.7
5448.750000	46.0	34.1	100.0	H	0.0	5.1
6856.875000	48.3	35.5	100.0	V	0.0	7.9
8030.625000	49.0	35.9	100.0	V	352.0	9.5
11010.000000	47.3	34.7	100.0	H	7.0	11.1
17956.875000	53.8	40.8	100.0	V	213.0	17.7

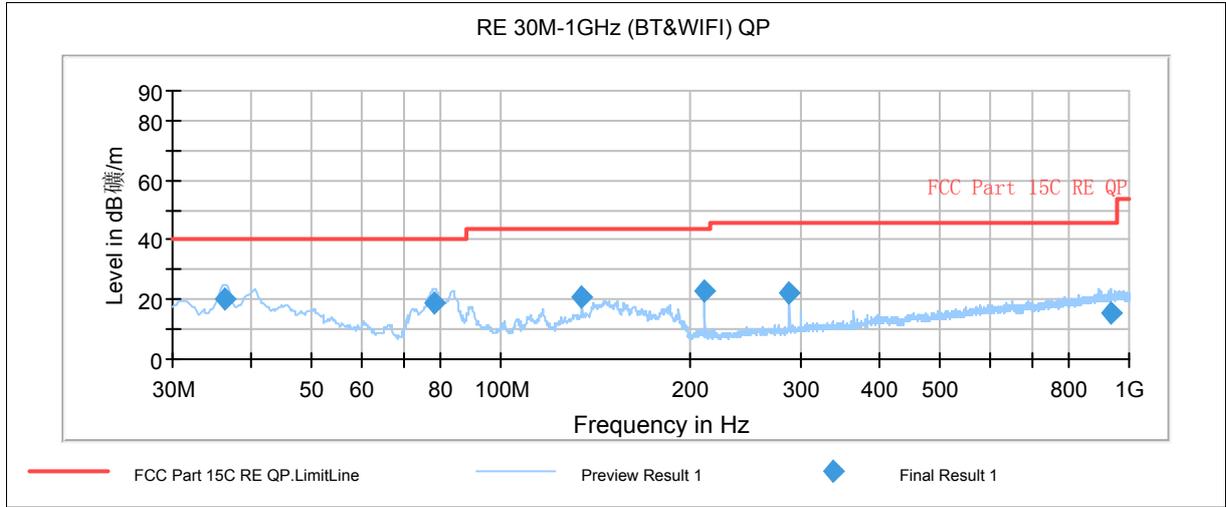
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11g CH11

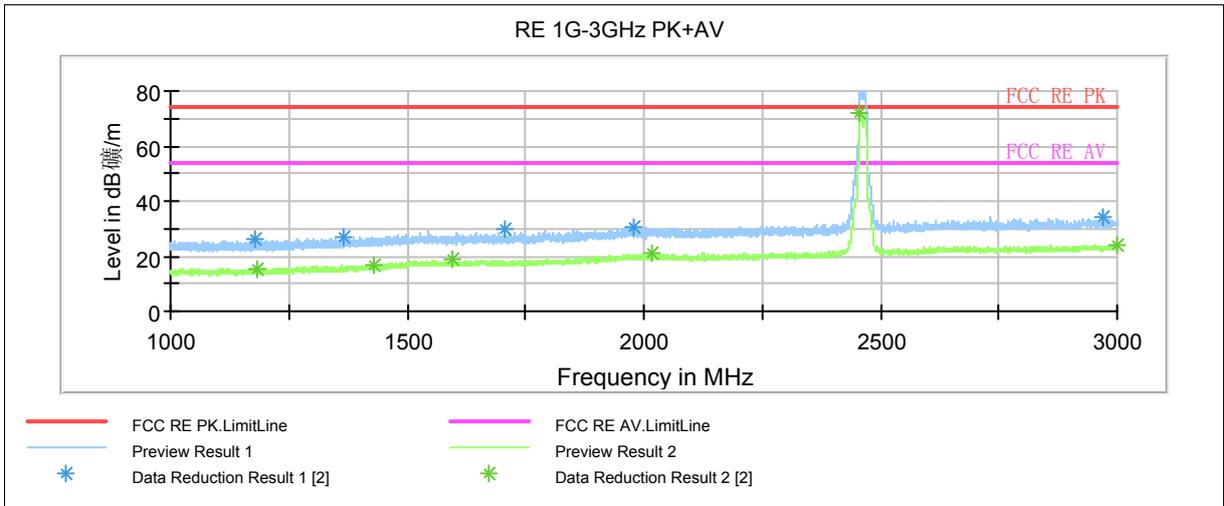


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.382500	20.0	100.0	V	0.0	44.3	-24.3	20.0	40.0
78.495000	18.6	100.0	V	43.0	50.6	-32.0	21.4	40.0
134.395000	20.9	100.0	V	247.0	53.2	-32.3	22.6	43.5
211.187500	22.8	100.0	V	153.0	52.4	-29.6	20.7	43.5
287.980000	22.2	100.0	H	14.0	49.7	-27.5	23.8	46.0
934.685000	15.8	100.0	V	137.0	31.9	-16.1	30.2	46.0

- Remark: 1. Quasi-Peak = Reading value + Correction factor**  
**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**  
**3. Margin = Limit – Quasi-Peak**

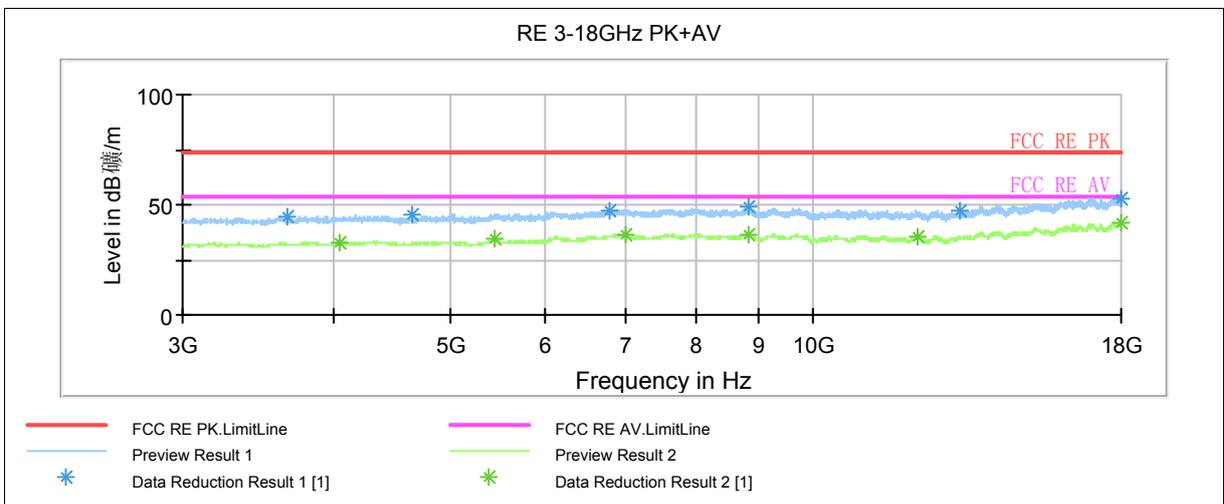
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1178.500000	26.0	14.1	100.0	H	21.0	-13.4
1366.375000	26.8	14.9	100.0	V	240.0	-12.7
1708.125000	29.5	16.9	100.0	V	0.0	-10.0
1980.000000	30.6	19.0	100.0	V	0.0	-8.1
2467.125000	80.6	69.8	100.0	H	0.0	-6.6
2968.500000	34.2	22.5	100.0	H	0.0	-4.1

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

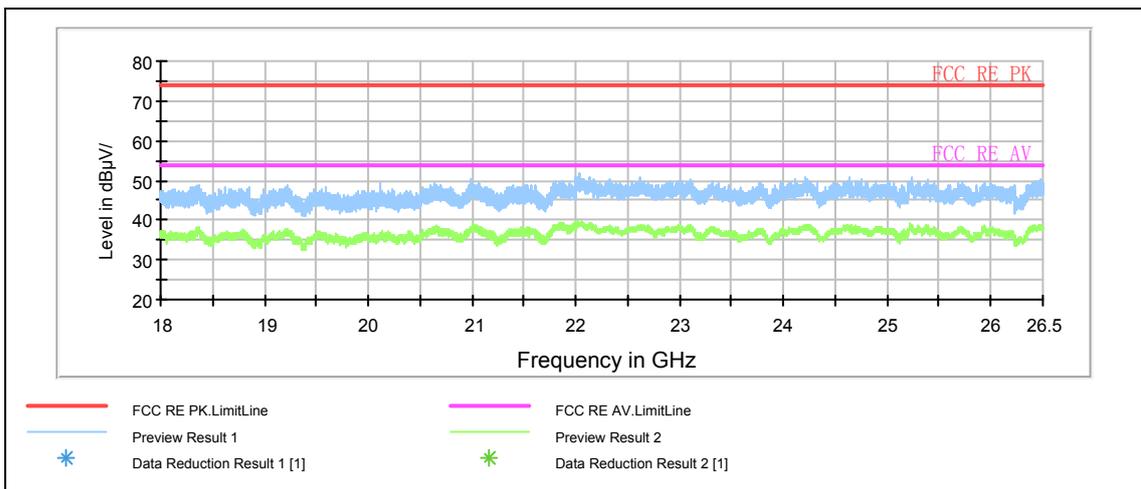


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3660.000000	44.4	31.8	100.0	H	54.0	1.7
4644.375000	45.5	31.9	100.0	V	250.0	2.7
6785.625000	47.6	35.5	100.0	H	148.0	7.9
8831.250000	49.0	35.9	100.0	H	0.0	10.3
13241.25000	47.7	34.6	100.0	H	8.0	12.2
18000.00000	52.8	41.3	100.0	V	0.0	17.9

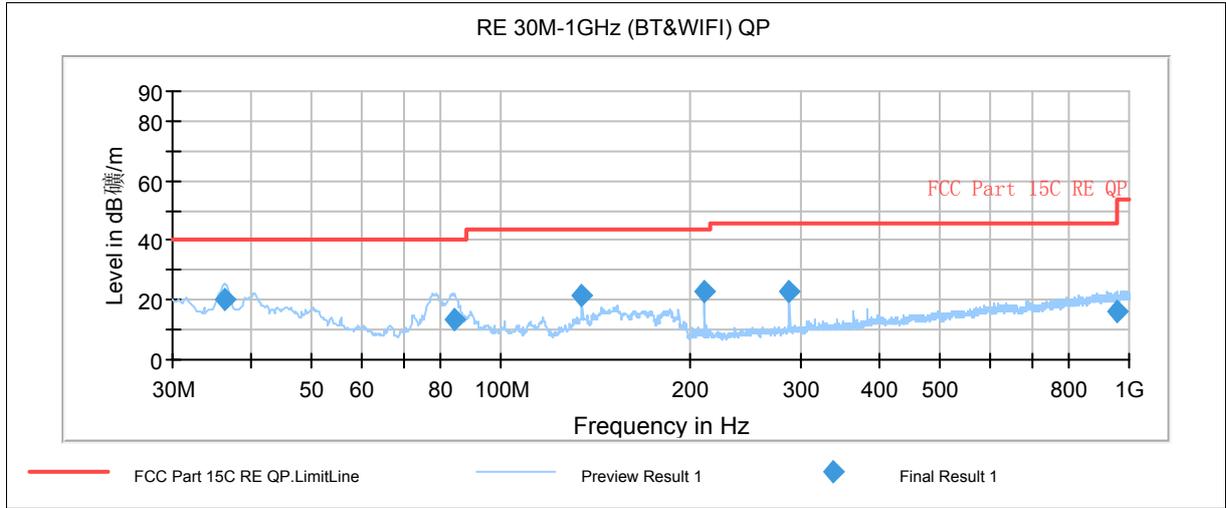
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11n CH1



Radiates Emission from 30MHz to 1GHz

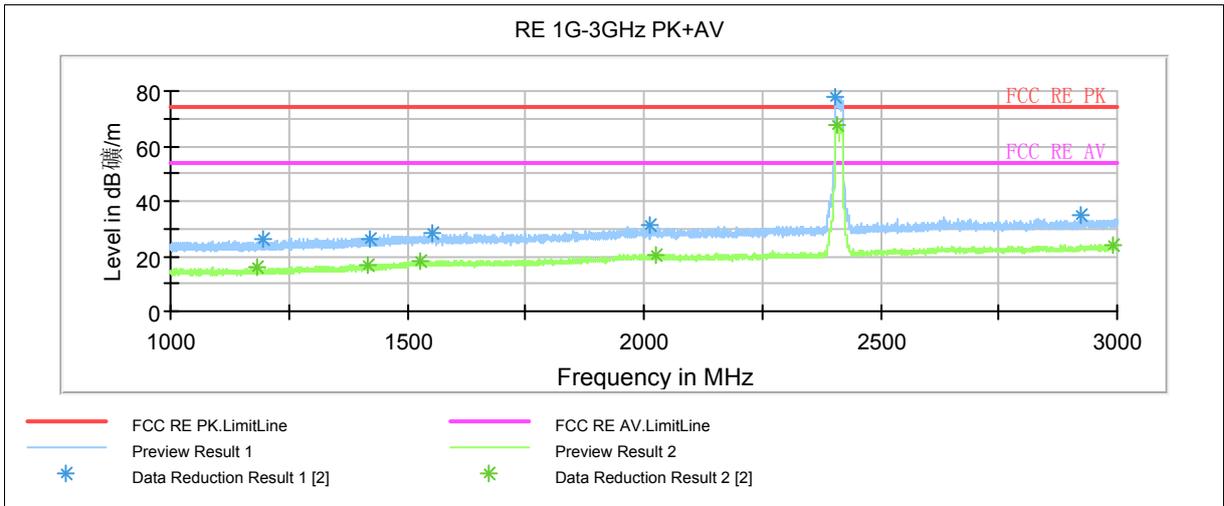
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.345000	20.4	100.0	V	343.0	44.7	-24.3	19.6	40.0
84.202500	13.5	125.0	V	71.0	44.1	-30.6	26.5	40.0
134.395000	21.3	100.0	V	258.0	53.6	-32.3	22.2	43.5
211.187500	22.9	100.0	V	163.0	52.5	-29.6	20.6	43.5
287.980000	22.9	100.0	H	14.0	50.4	-27.5	23.1	46.0
958.497500	16.1	200.0	H	170.0	31.8	-15.7	29.9	46.0

**Remark: 1. Quasi-Peak = Reading value + Correction factor**

**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

**3. Margin = Limit – Quasi-Peak**

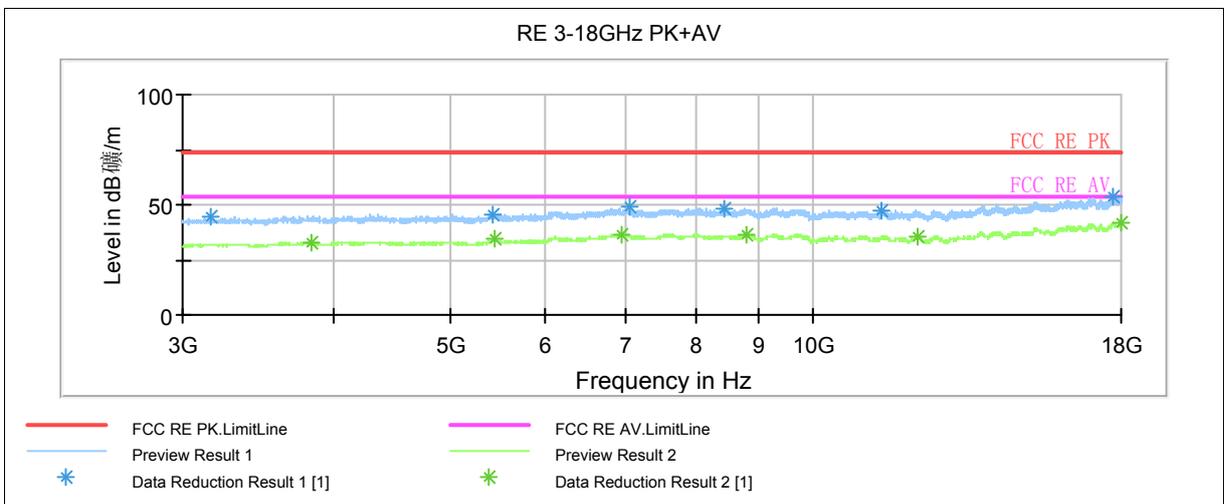
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1197.250000	26.2	13.9	100.0	V	0.0	-13.7
1421.250000	26.5	15.3	100.0	V	0.0	-12.4
1552.875000	28.3	16.8	100.0	H	0.0	-10.4
2012.250000	31.0	19.6	100.0	V	0.0	-8.1
2405.625000	77.9	67.5	100.0	V	0.0	-6.4
2925.000000	34.6	23.2	100.0	V	0.0	-3.9

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

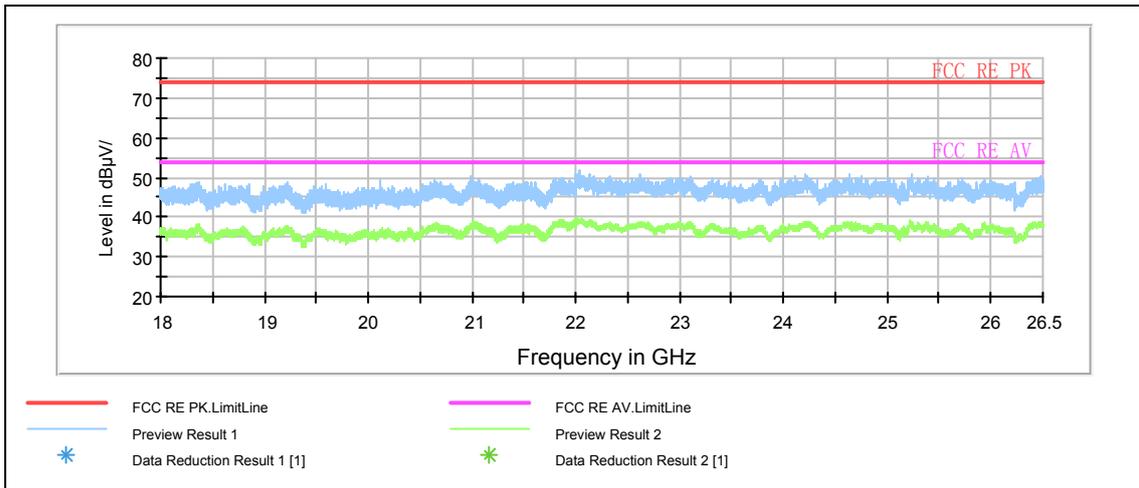


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3165.000000	44.8	32.1	100.0	V	296.0	0.8
5430.000000	45.8	33.6	100.0	V	272.0	4.8
7053.750000	48.7	35.4	100.0	V	284.0	8.8
8430.000000	48.5	35.4	100.0	H	0.0	9.8
11411.250000	47.7	35.2	100.0	H	0.0	11.1
17741.250000	53.2	40.8	100.0	V	354.0	17.2

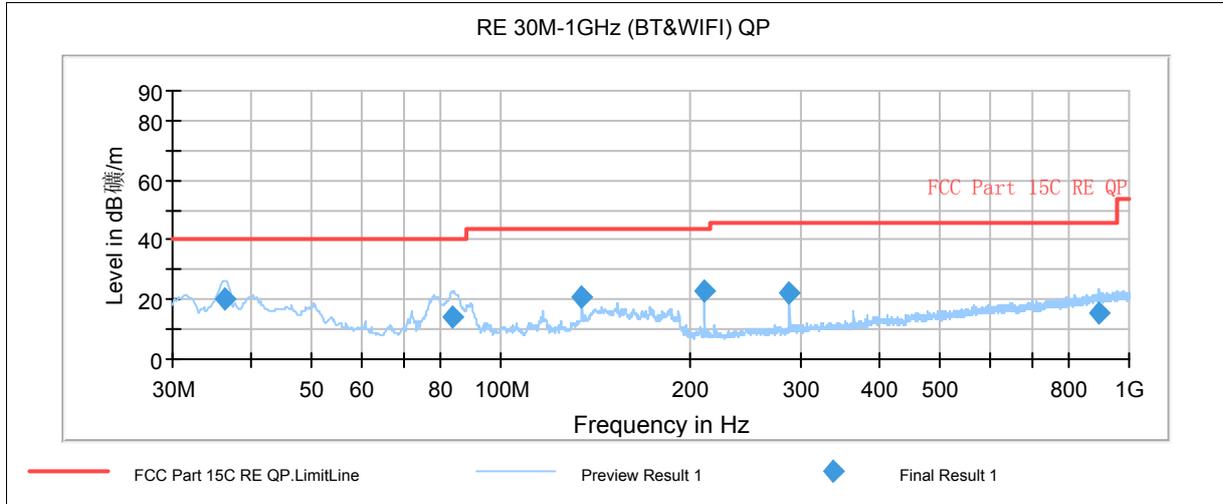
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11n CH6

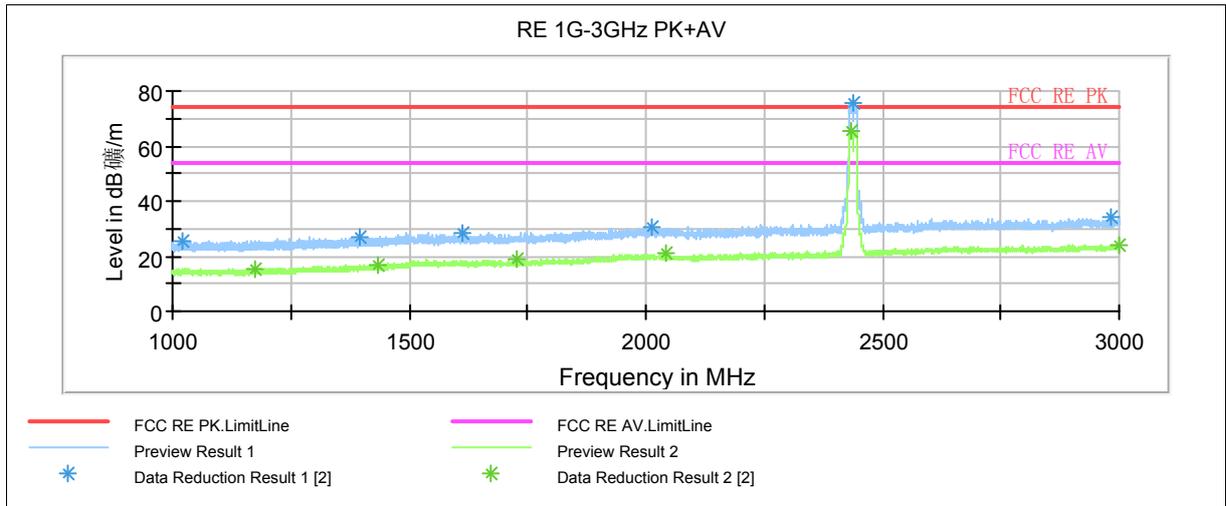


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.342500	19.9	100.0	V	99.0	44.2	-24.3	20.1	40.0
83.797500	14.2	125.0	V	39.0	45	-30.8	25.8	40.0
134.395000	20.9	100.0	V	274.0	53.2	-32.3	22.6	43.5
211.187500	23.0	100.0	V	165.0	52.6	-29.6	20.5	43.5
287.980000	22.5	100.0	H	14.0	50	-27.5	23.5	46.0
895.962500	15.7	125.0	V	345.0	32	-16.3	30.3	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
  2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
  3. Margin = Limit – Quasi-Peak

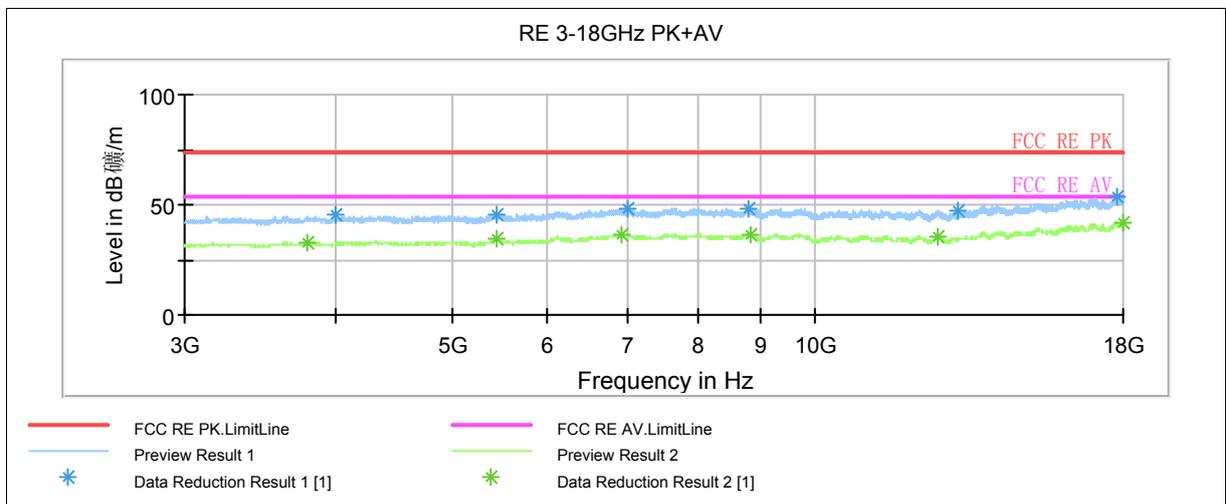
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1019.625000	25.7	14.0	100.0	H	47.0	-13.7
1394.750000	27.2	15.3	100.0	V	150.0	-12.6
1611.375000	28.3	17.6	100.0	H	0.0	-10.5
2013.750000	30.4	19.6	100.0	V	0.0	-8.1
2439.750000	76.0	64.8	100.0	H	0.0	-6.5
2983.500000	34.0	22.4	100.0	V	0.0	-3.9

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

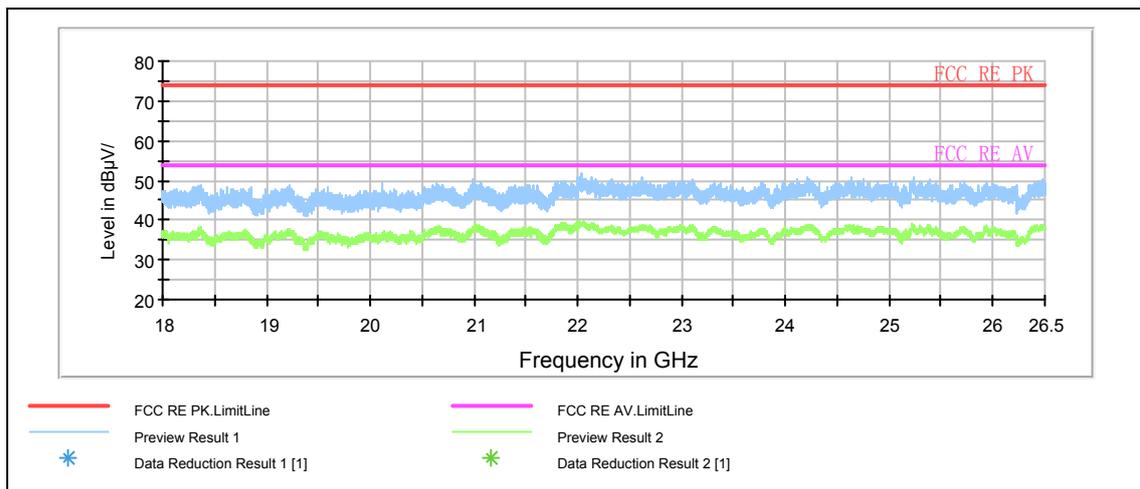


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
4003.125000	45.5	32.1	100.0	V	0.0	2.2
5435.625000	45.6	33.8	100.0	H	31.0	4.9
7003.125000	47.8	35.9	100.0	H	158.0	8.7
8820.000000	48.5	35.9	100.0	H	123.0	10.3
13145.62500	47.2	34.6	100.0	V	0.0	12.0
17810.62500	53.5	40.0	100.0	H	8.0	17.3

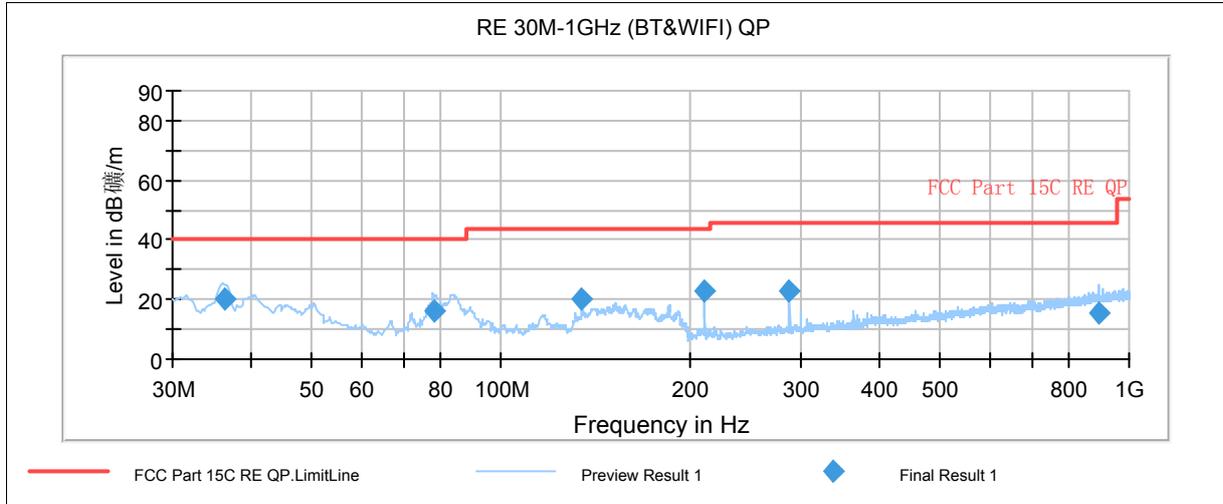
**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

## 802.11n CH11



Radiates Emission from 30MHz to 1GHz

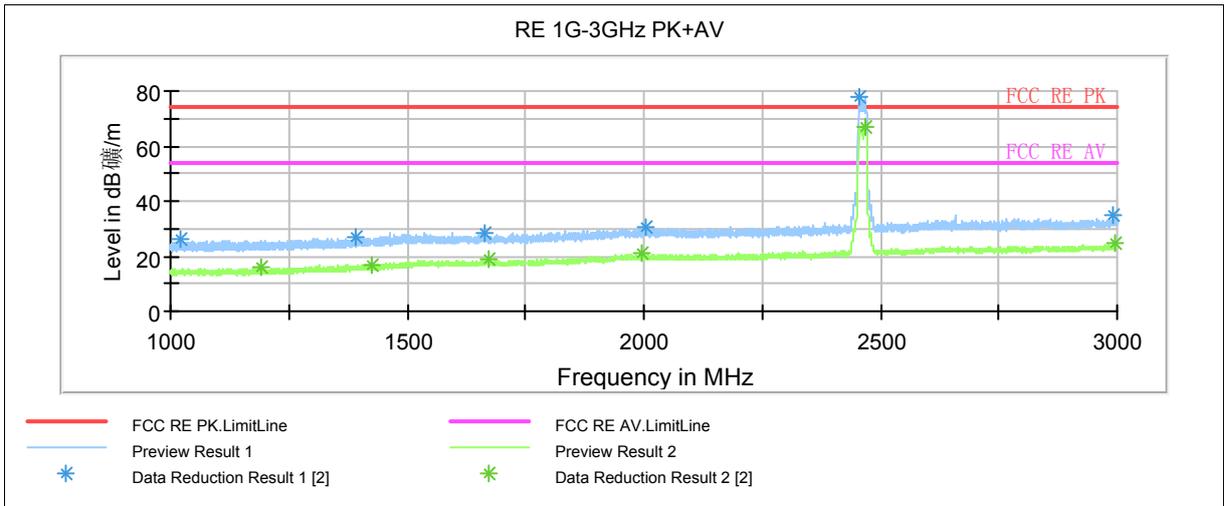
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.422500	20.2	100.0	V	45.0	44.4	-24.2	19.8	40.0
78.375000	16.1	100.0	V	349.0	48.1	-32.0	23.9	40.0
134.395000	20.4	100.0	V	257.0	52.7	-32.3	23.1	43.5
211.187500	22.9	100.0	V	166.0	52.5	-29.6	20.6	43.5
287.980000	22.5	100.0	H	18.0	50	-27.5	23.5	46.0
897.102500	15.6	175.0	H	140.0	31.9	-16.3	30.4	46.0

**Remark: 1. Quasi-Peak = Reading value + Correction factor**

**2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

**3. Margin = Limit – Quasi-Peak**

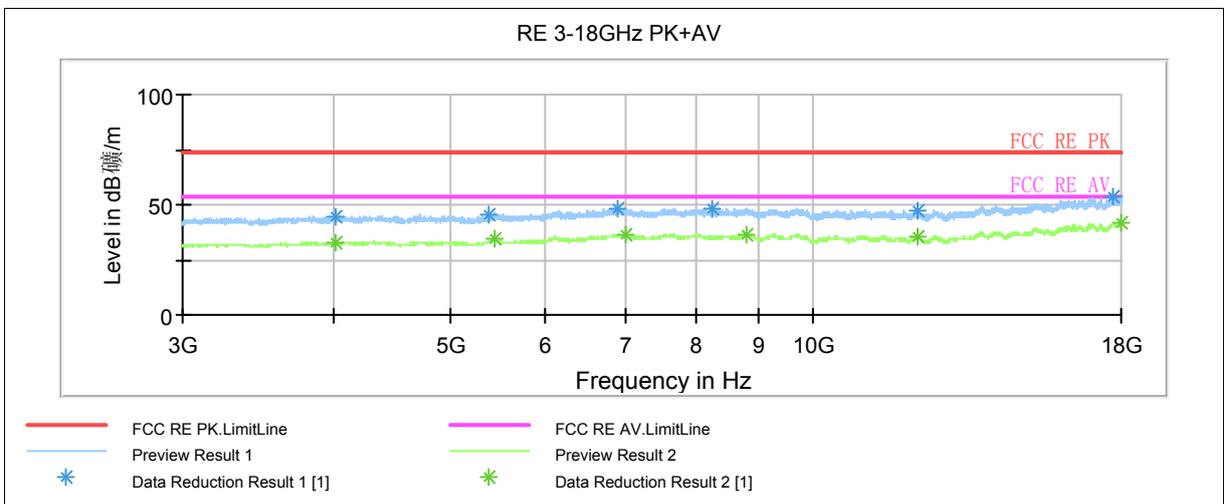
# TA Technology (Shanghai) Co., Ltd. Test Report



Note: The signal beyond the limit is carrier.  
Radiates Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1020.250000	25.9	14.0	100.0	H	0.0	-13.7
1390.625000	26.7	15.0	100.0	H	0.0	-12.8
1665.750000	28.6	17.3	100.0	V	0.0	-10.1
2002.500000	30.9	19.6	100.0	H	0.0	-8.2
2457.000000	77.7	66.6	100.0	H	0.0	-6.6
2991.375000	34.7	22.5	100.0	V	0.0	-3.8

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**

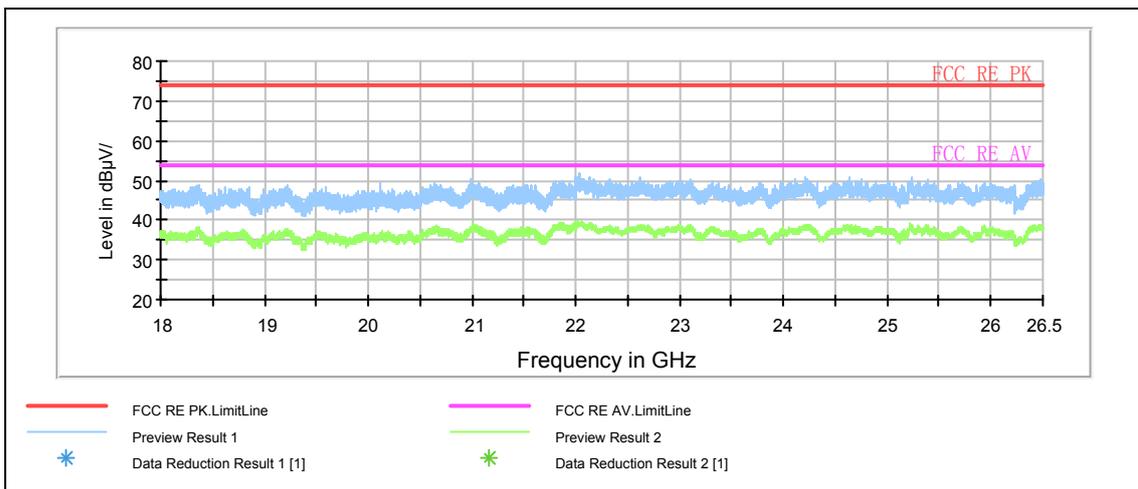


Radiates Emission from 3GHz to 18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
4012.500000	44.3	32.1	100.0	V	193.0	2.2
5375.625000	45.8	32.8	100.0	V	240.0	4.1
6879.375000	47.9	35.3	100.0	H	239.0	7.9
8244.375000	48.2	35.0	100.0	V	297.0	9.8
12210.000000	47.2	35.0	100.0	V	354.0	11.3
17750.625000	53.3	40.7	100.0	V	111.0	17.2

**Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)**



Radiates Emission from 18GHz to 26.5GHz

## 2.9. Conducted Emissions

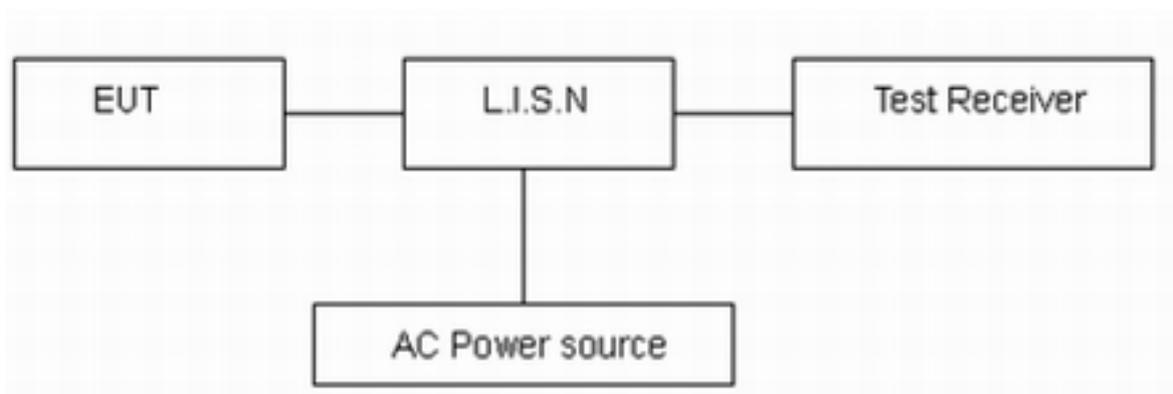
### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT IS placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSIC63.4-2009. Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9kHz,VBW is set to 30kHz The measurement result should include both L line and N line. The test is in transmit mode.

### Test setup



Note: AC Power source is used to change the voltage from 220V/50Hz to 110V/60Hz.

### Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

\*: Decreases with the logarithm of the frequency.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 2.69$  dB.

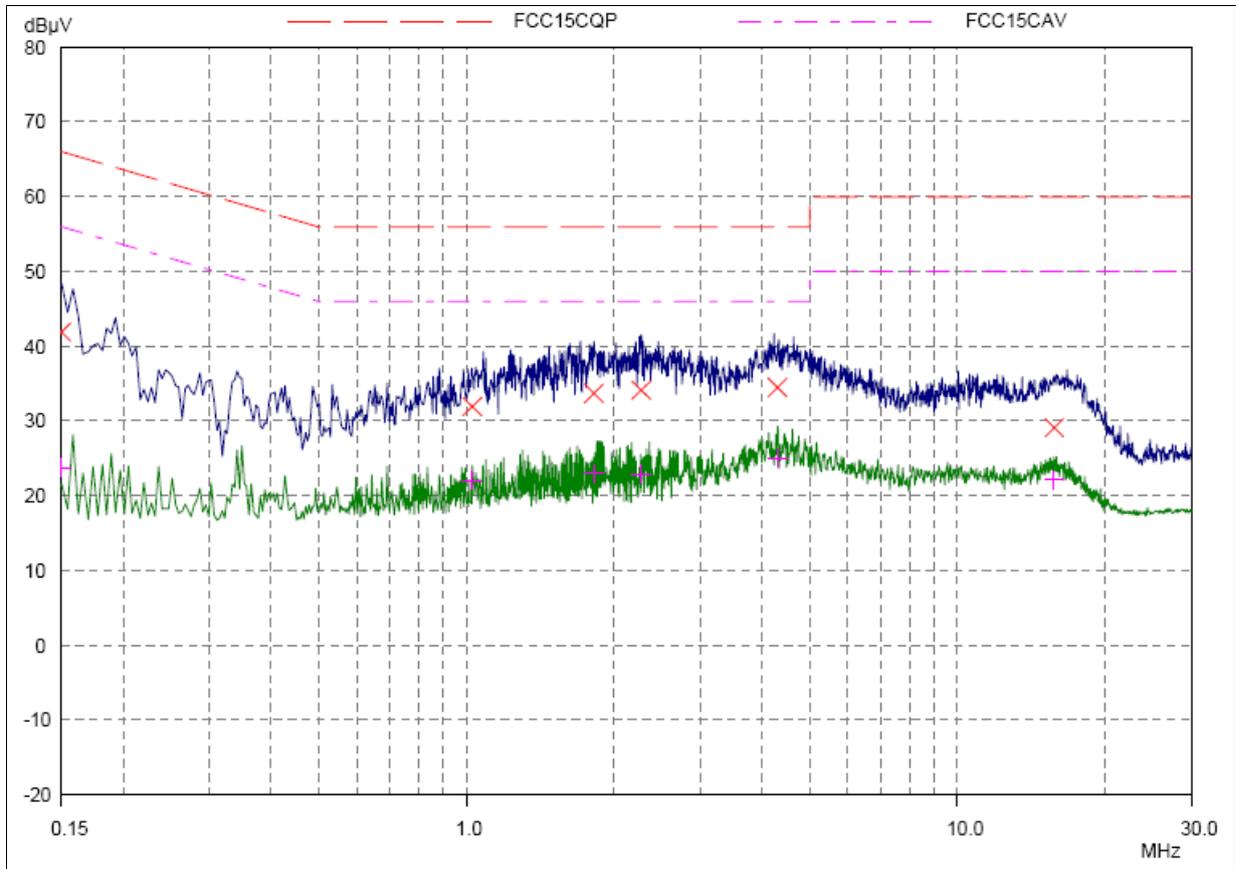
# TA Technology (Shanghai) Co., Ltd. Test Report

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## Test Results:

802.11b CH1



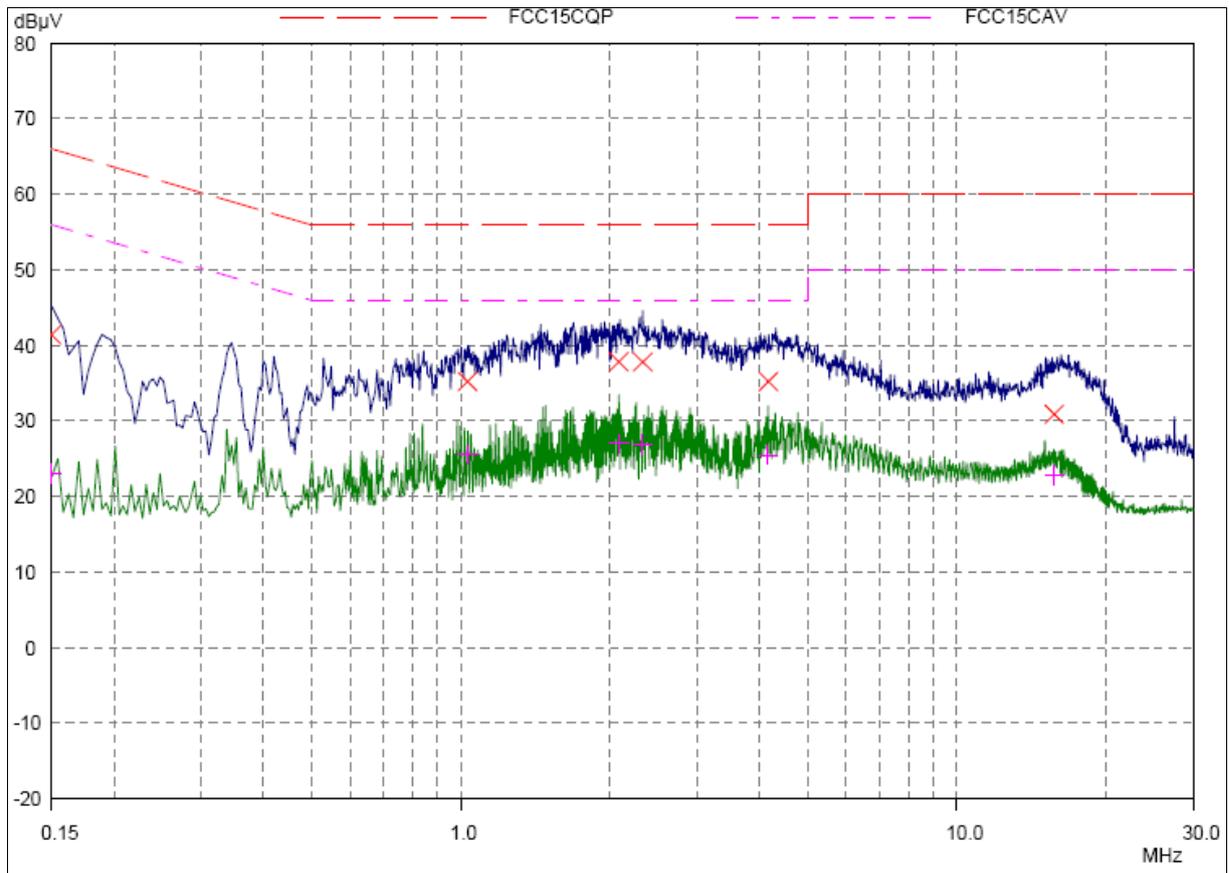
L Line

Final Measurement Results				
Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -
0.15	41.86	66.00	24.14	L1
1.02889	31.92	56.00	24.08	L1
1.81796	33.70	56.00	22.30	L1
2.27109	34.14	56.00	21.86	L1
4.30625	34.48	56.00	21.52	L1
15.77109	29.08	60.00	30.92	L1
Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -
0.15	23.74	56.00	32.26	L1
1.02889	22.08	46.00	23.92	L1
1.81796	22.92	46.00	23.08	L1
2.27109	22.87	46.00	23.13	L1
4.30625	25.09	46.00	20.91	L1
15.77109	22.13	50.00	27.87	L1

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N Line

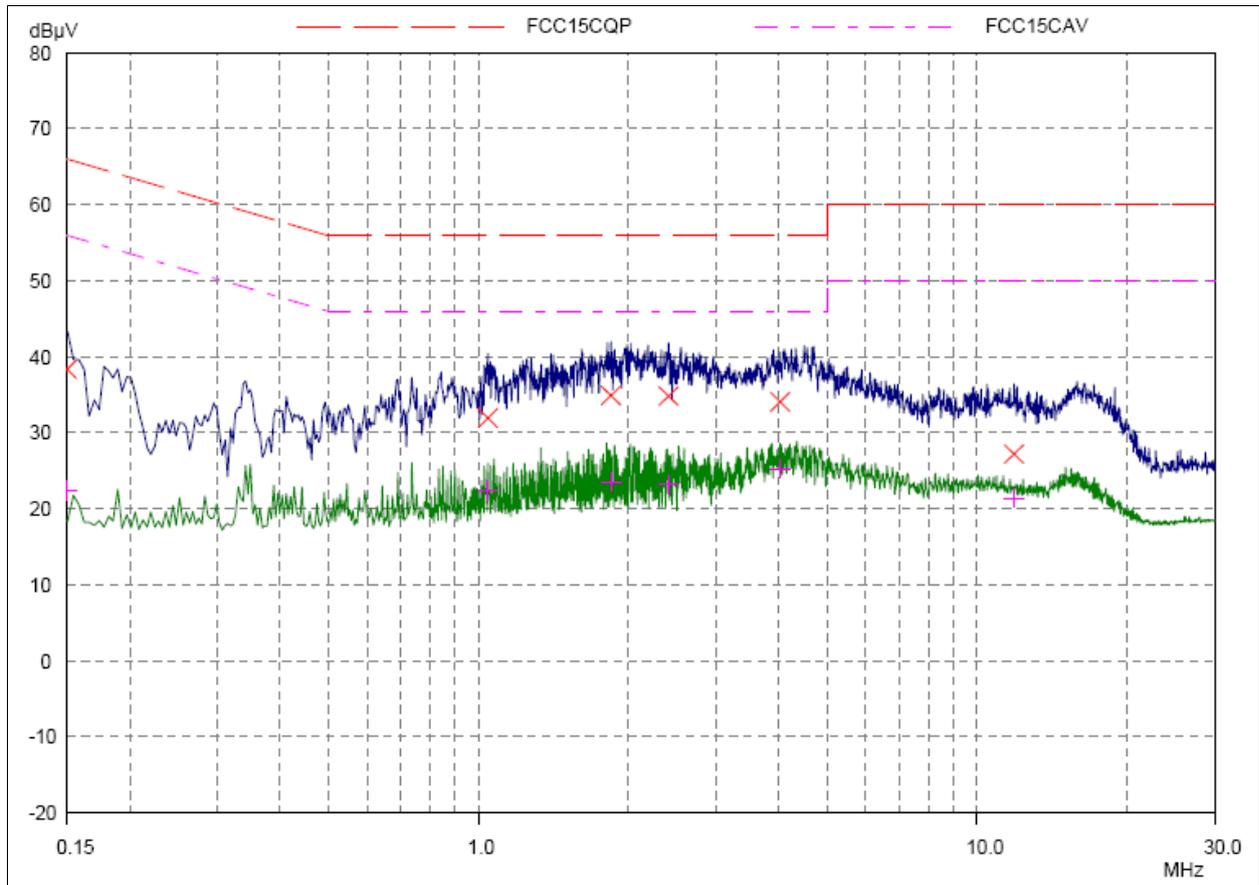
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	41.44	66.00	24.56	N
1.03281	35.22	56.00	20.78	N
2.08359	37.84	56.00	18.16	N
2.32968	37.80	56.00	18.20	N
4.16171	35.24	56.00	20.76	N
15.68906	30.92	60.00	29.08	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	23.02	56.00	32.98	N
1.03281	25.54	46.00	20.46	N
2.08359	27.04	46.00	18.96	N
2.32968	26.91	46.00	19.09	N
4.16171	25.47	46.00	20.53	N
15.68906	22.82	50.00	27.18	N

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802.11b CH6



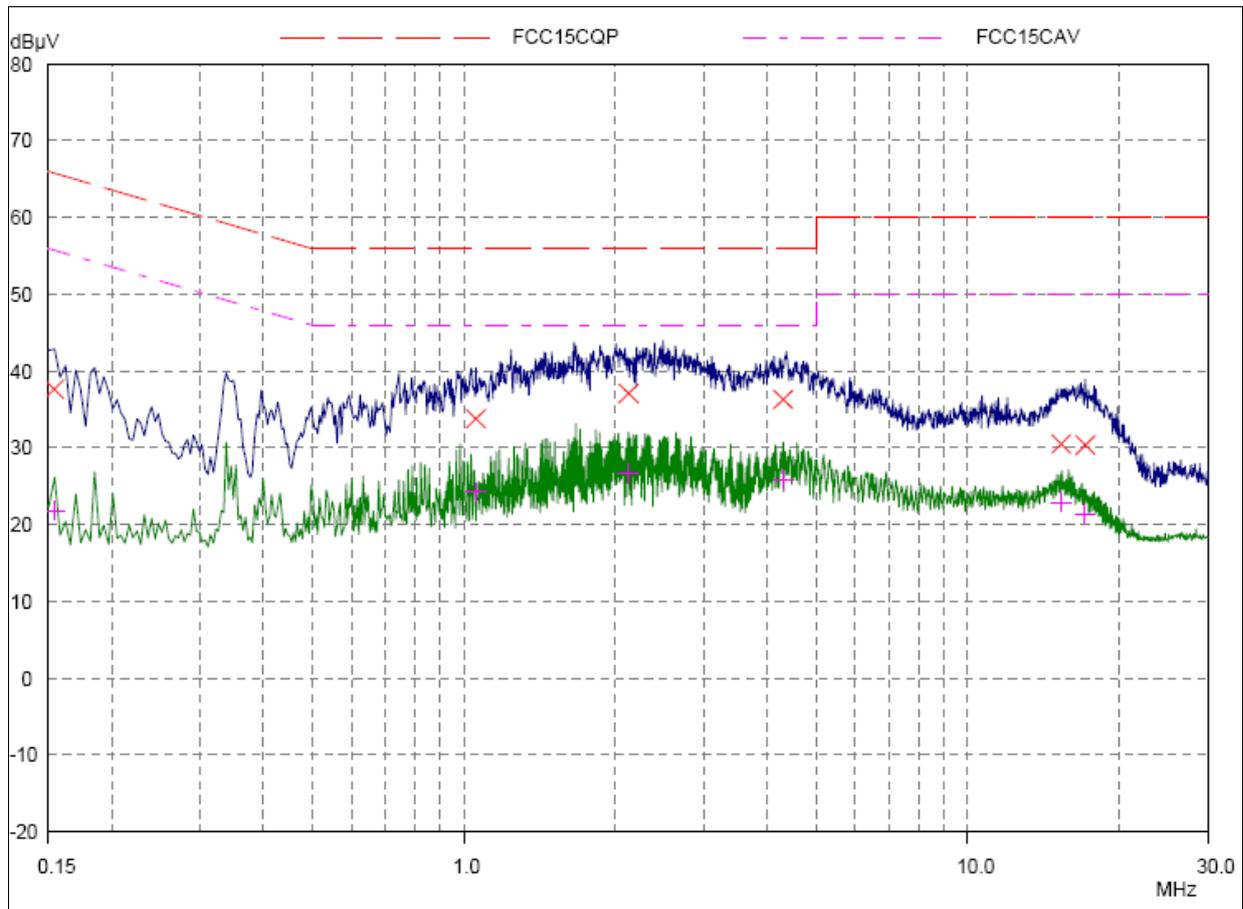
L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	38.34	66.00	27.66	L1
1.04453	31.96	56.00	24.04	L1
1.84531	34.92	56.00	21.08	L1
2.40781	34.84	56.00	21.16	L1
4.0328	34.08	56.00	21.92	L1
11.88046	27.22	60.00	32.78	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.46	56.00	33.54	L1
1.04453	22.40	46.00	23.60	L1
1.84531	23.60	46.00	22.40	L1
2.40781	23.22	46.00	22.78	L1
4.0328	25.24	46.00	20.76	L1
11.88046	21.39	50.00	28.61	L1

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N Line

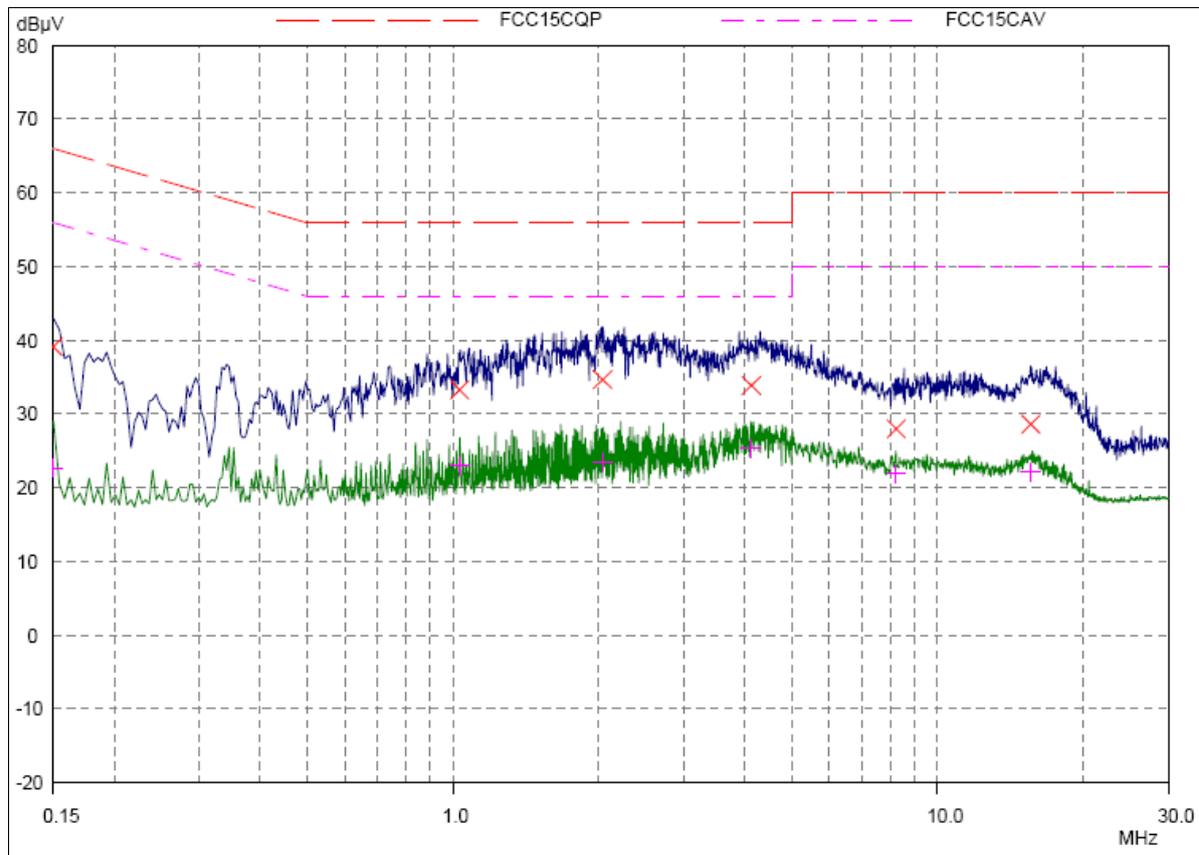
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.1539	37.66	65.79	28.13	N
1.05625	33.82	56.00	22.18	N
2.12656	37.10	56.00	18.90	N
4.31015	36.30	56.00	19.70	N
15.32187	30.52	60.00	29.48	N
17.10703	30.32	60.00	29.68	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.1539	21.80	55.79	33.99	N
1.05625	24.27	46.00	21.73	N
2.12656	26.72	46.00	19.28	N
4.31015	25.91	46.00	20.09	N
15.32187	22.87	50.00	27.13	N
17.10703	21.39	50.00	28.61	N

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802.11b CH11



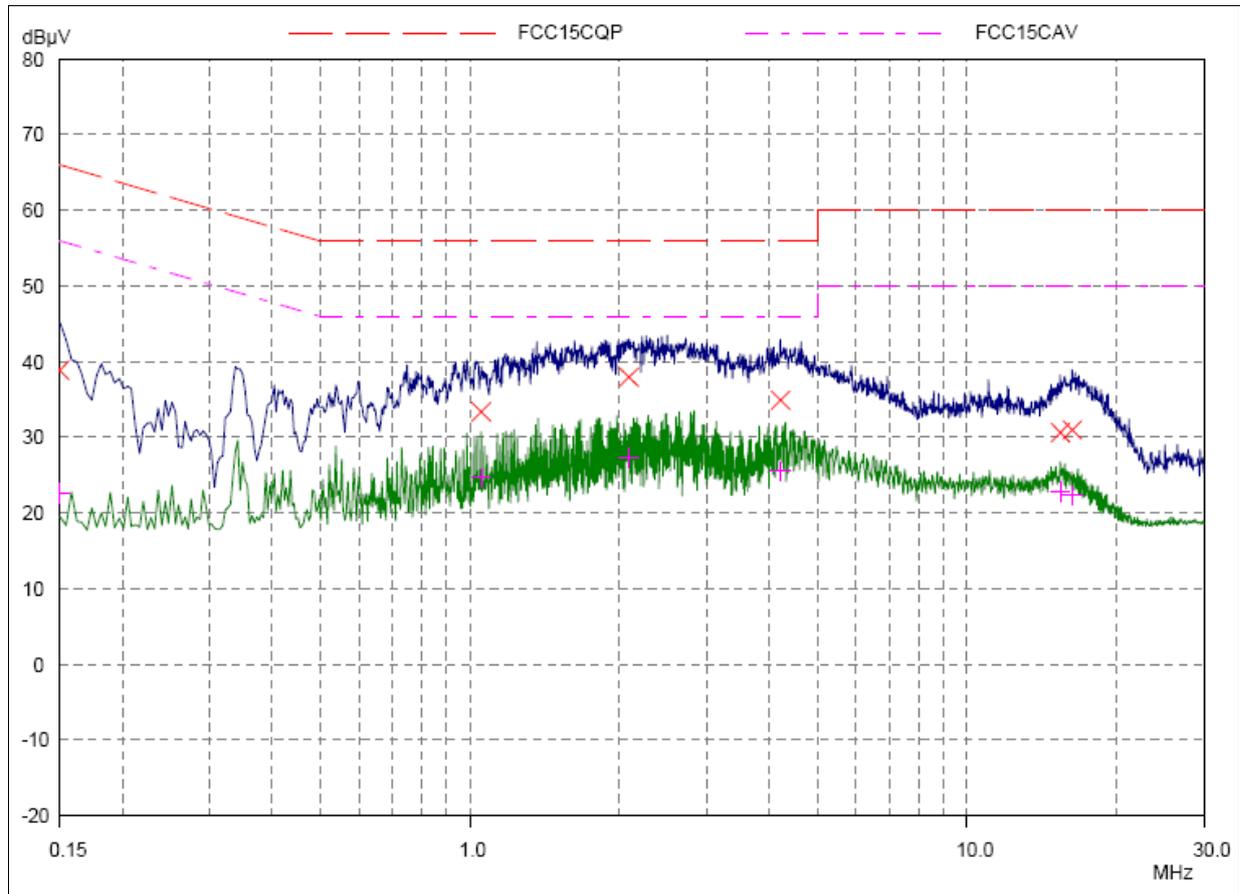
L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	39.12	66.00	26.88	L1
1.03281	33.30	56.00	22.70	L1
2.0367	34.64	56.00	21.36	L1
4.13436	33.90	56.00	22.10	L1
8.2164	27.98	60.00	32.02	L1
15.56015	28.62	60.00	31.38	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.67	56.00	33.33	L1
1.03281	22.92	46.00	23.08	L1
2.0367	23.55	46.00	22.45	L1
4.13436	25.32	46.00	20.68	L1
8.2164	21.91	50.00	28.09	L1
15.56015	22.13	50.00	27.87	L1

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N Line

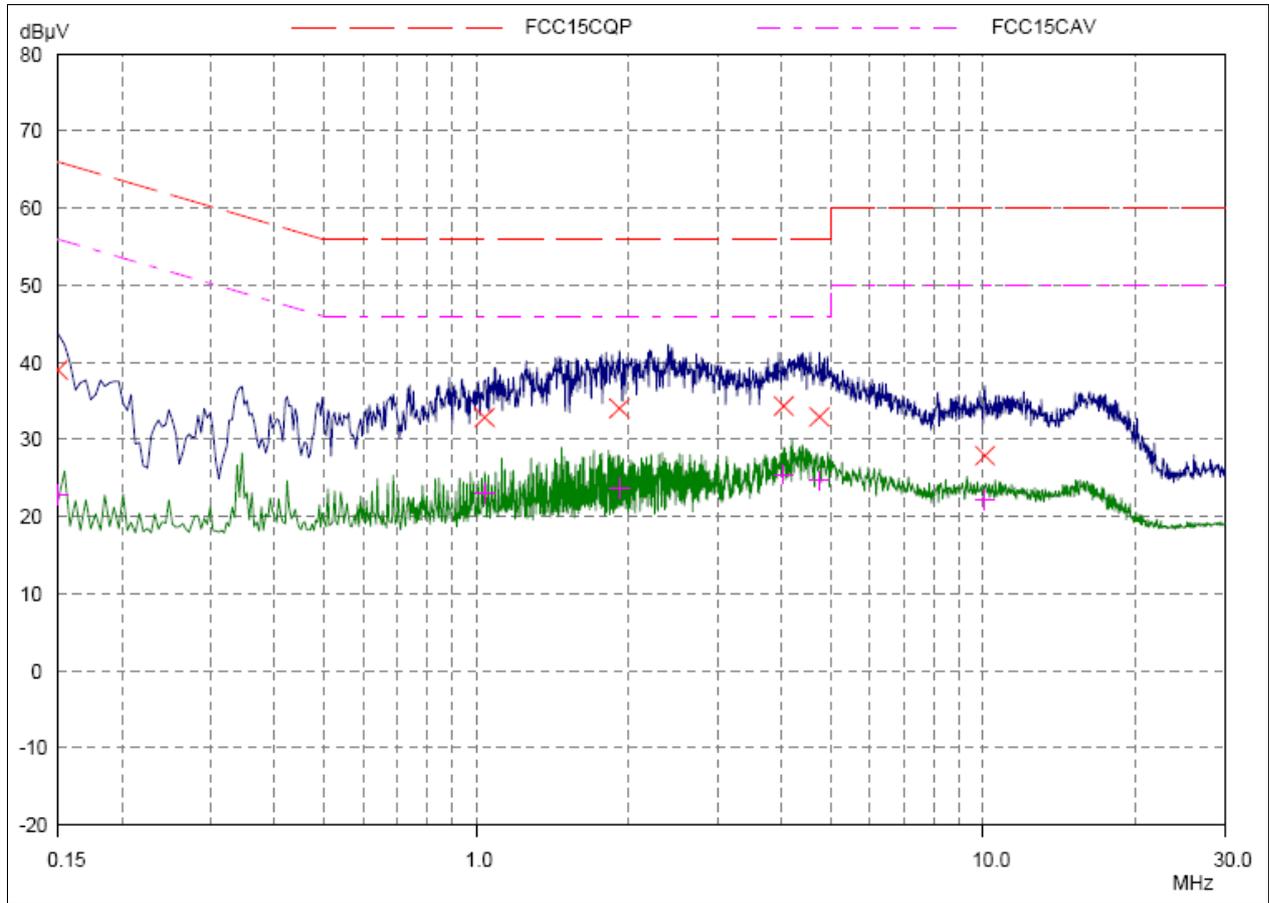
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	38.88	66.00	27.12	N
1.05234	33.36	56.00	22.64	N
2.0914	37.94	56.00	18.06	N
4.20859	34.92	56.00	21.08	N
15.4039	30.64	60.00	29.36	N
16.30234	30.96	60.00	29.04	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.56	56.00	33.44	N
1.05234	24.69	46.00	21.31	N
2.0914	27.29	46.00	18.71	N
4.20859	25.54	46.00	20.46	N
15.4039	22.77	50.00	27.23	N
16.30234	22.30	50.00	27.70	N

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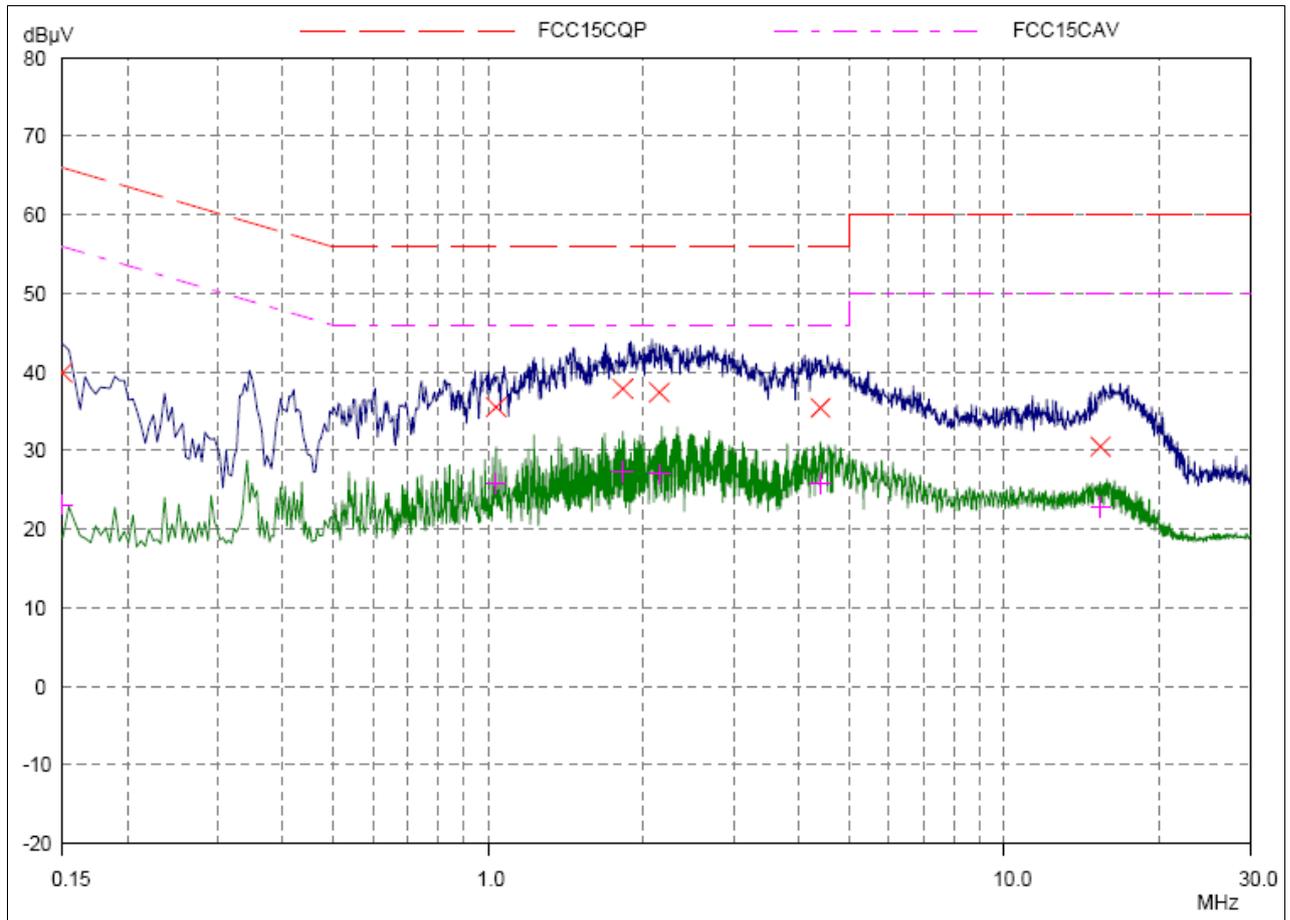
L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	39.02	66.00	26.98	L1
1.04062	32.86	56.00	23.14	L1
1.91953	34.02	56.00	21.98	L1
4.03671	34.34	56.00	21.66	L1
4.76328	32.96	56.00	23.04	L1
10.07187	27.94	60.00	32.06	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.82	56.00	33.18	L1
1.04062	23.02	46.00	22.98	L1
1.91953	23.69	46.00	22.31	L1
4.03671	25.47	46.00	20.53	L1
4.76328	24.69	46.00	21.31	L1
10.07187	22.19	50.00	27.81	L1

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### N Line

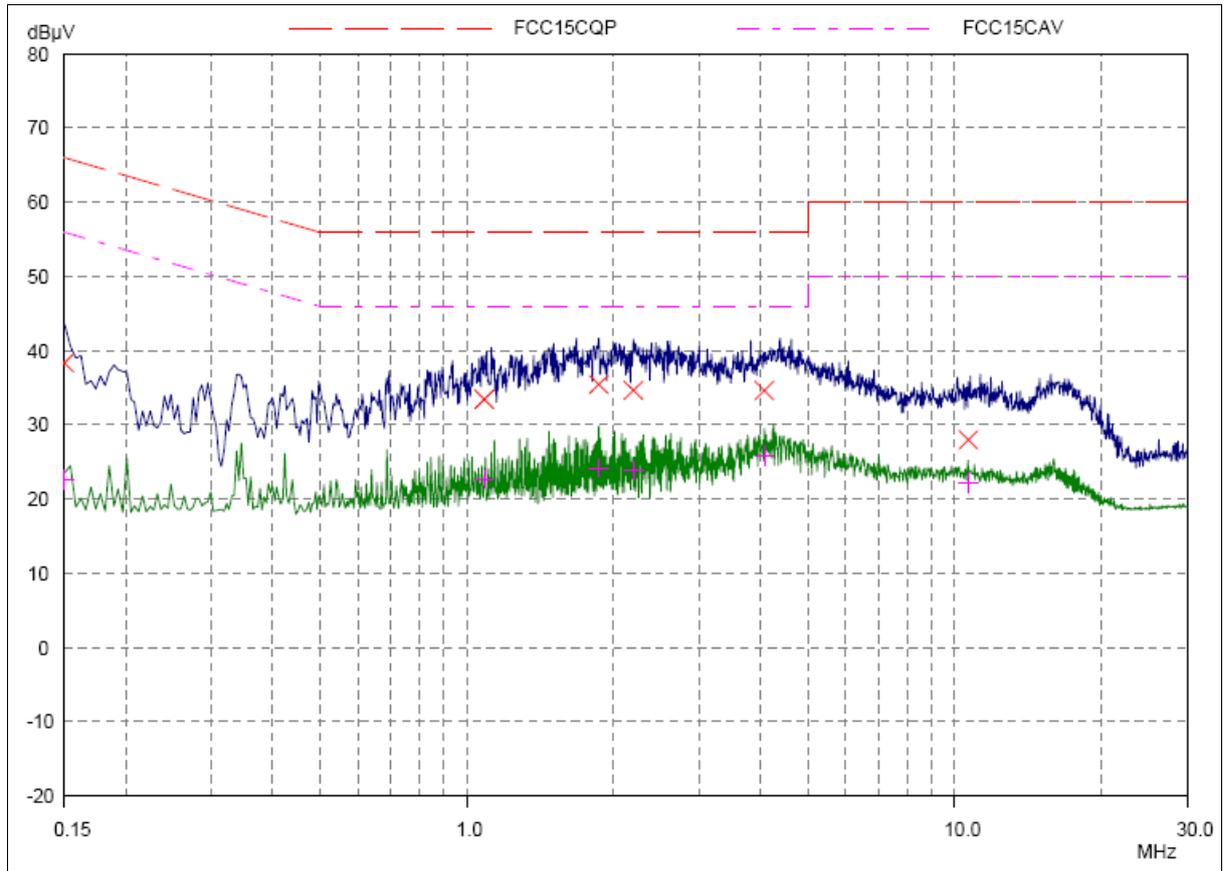
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	39.90	66.00	26.10	N
1.03671	35.54	56.00	20.46	N
1.82578	37.86	56.00	18.14	N
2.15	37.40	56.00	18.60	N
4.4	35.42	56.00	20.58	N
15.38437	30.52	60.00	29.48	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	23.12	56.00	32.88	N
1.03671	25.84	46.00	20.16	N
1.82578	27.29	46.00	18.71	N
2.15	27.04	46.00	18.96	N
4.4	25.84	46.00	20.16	N
15.38437	22.77	50.00	27.23	N

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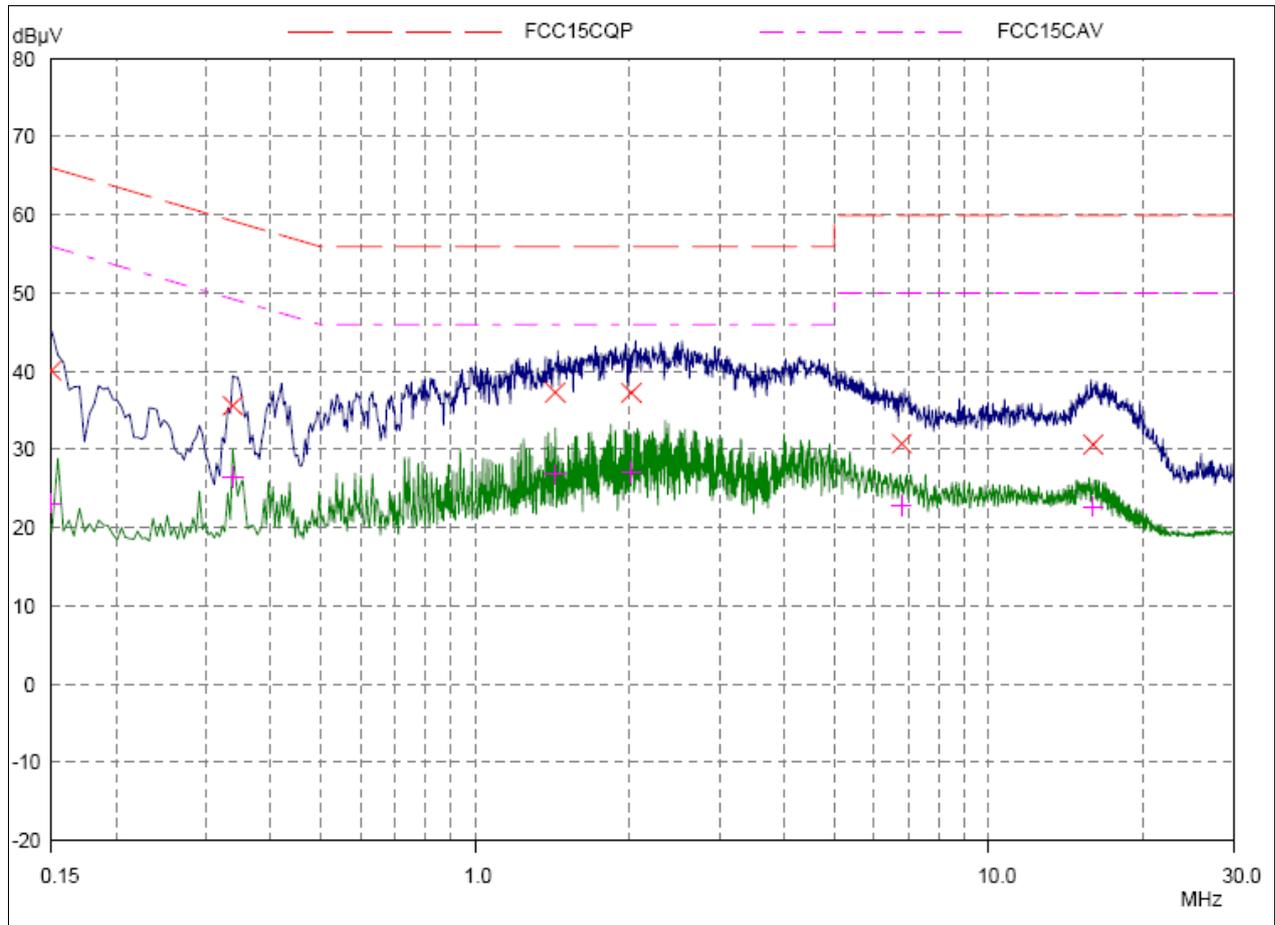
### L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	38.36	66.00	27.64	L1
1.0875	33.44	56.00	22.56	L1
1.86484	35.46	56.00	20.54	L1
2.19687	34.66	56.00	21.34	L1
4.07186	34.62	56.00	21.38	L1
10.64609	28.00	60.00	32.00	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.61	56.00	33.39	L1
1.0875	22.67	46.00	23.33	L1
1.86484	24.18	46.00	21.82	L1
2.19687	23.78	46.00	22.22	L1
4.07186	25.76	46.00	20.24	L1
10.64609	22.19	50.00	27.81	L1

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N Line

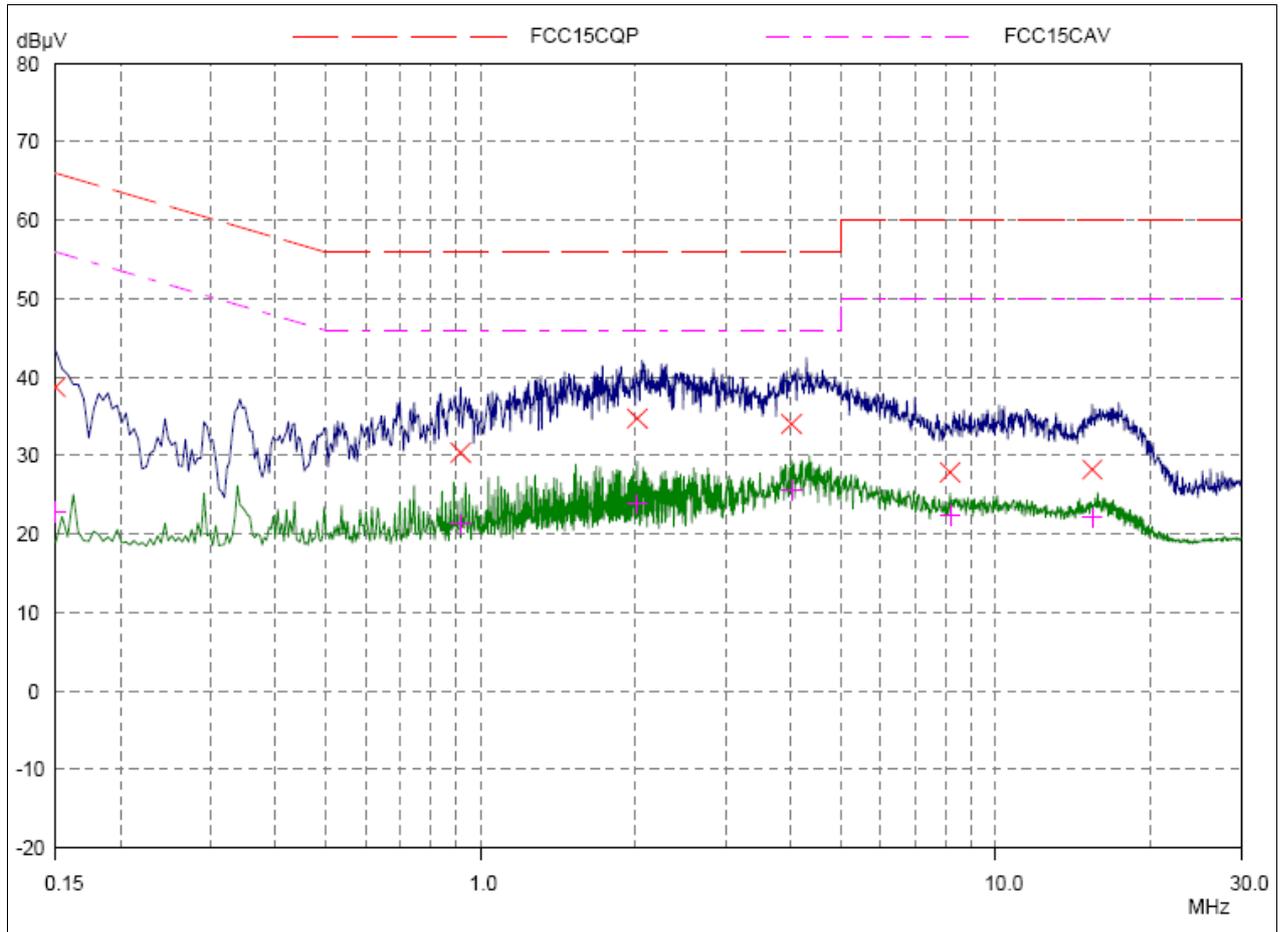
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	40.08	66.00	25.92	N
0.3375	35.64	59.26	23.62	N
1.43515	37.30	56.00	18.70	N
2.017	37.26	56.00	18.74	N
6.759	30.72	60.00	29.28	N
15.9625	30.64	60.00	29.36	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	23.12	56.00	32.88	N
0.3375	26.39	49.26	22.87	N
1.43515	26.85	46.00	19.15	N
2.017	27.16	46.00	18.84	N
6.759	22.82	50.00	27.18	N
15.9625	22.67	50.00	27.33	N

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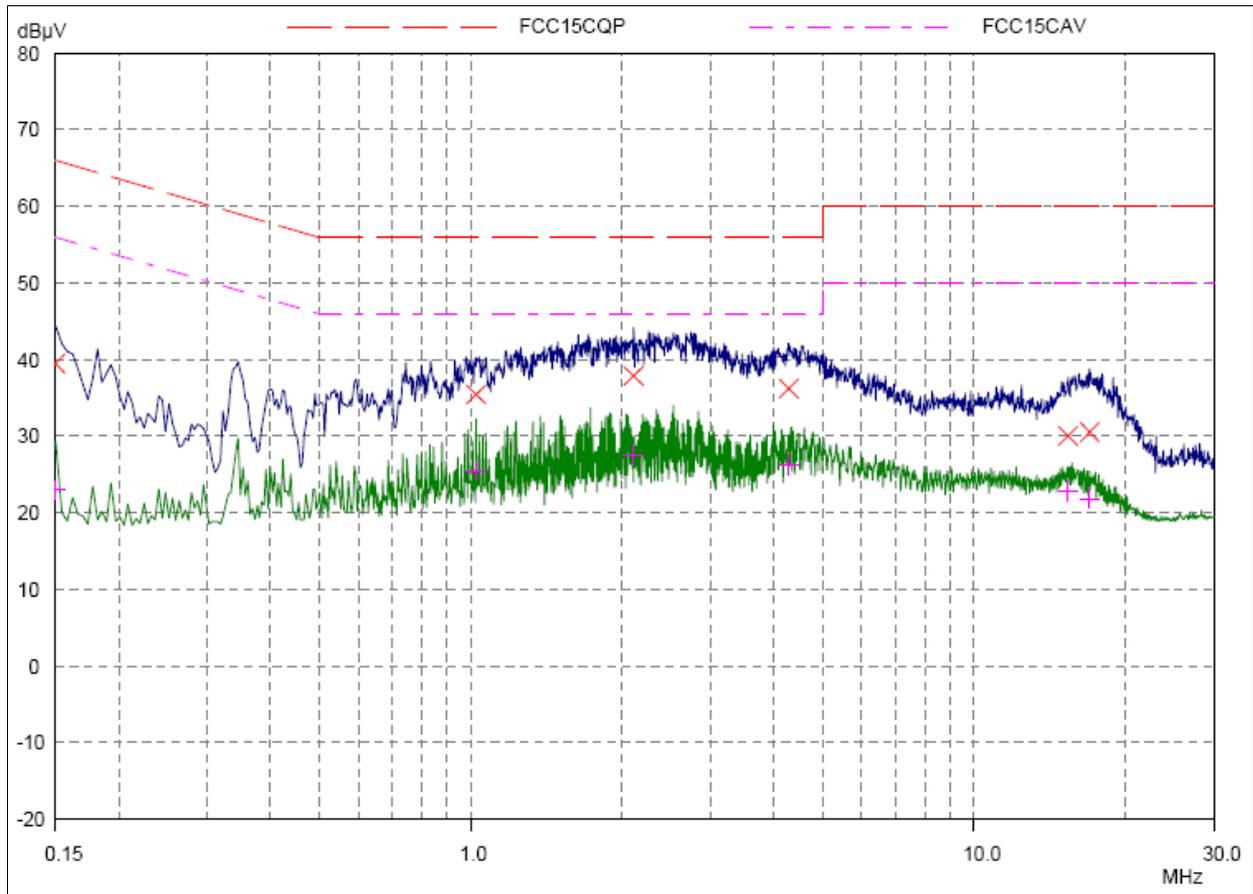
L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	38.74	66.00	27.26	L1
0.91562	30.40	56.00	25.60	L1
2.01328	34.72	56.00	21.28	L1
4.02109	34.02	56.00	21.98	L1
8.17733	27.90	60.00	32.10	L1
15.38828	28.24	60.00	31.76	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.77	56.00	33.23	L1
0.91562	21.27	46.00	24.73	L1
2.01328	23.78	46.00	22.22	L1
4.02109	25.62	46.00	20.38	L1
8.17733	22.40	50.00	27.60	L1
15.38828	22.13	50.00	27.87	L1

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N Line

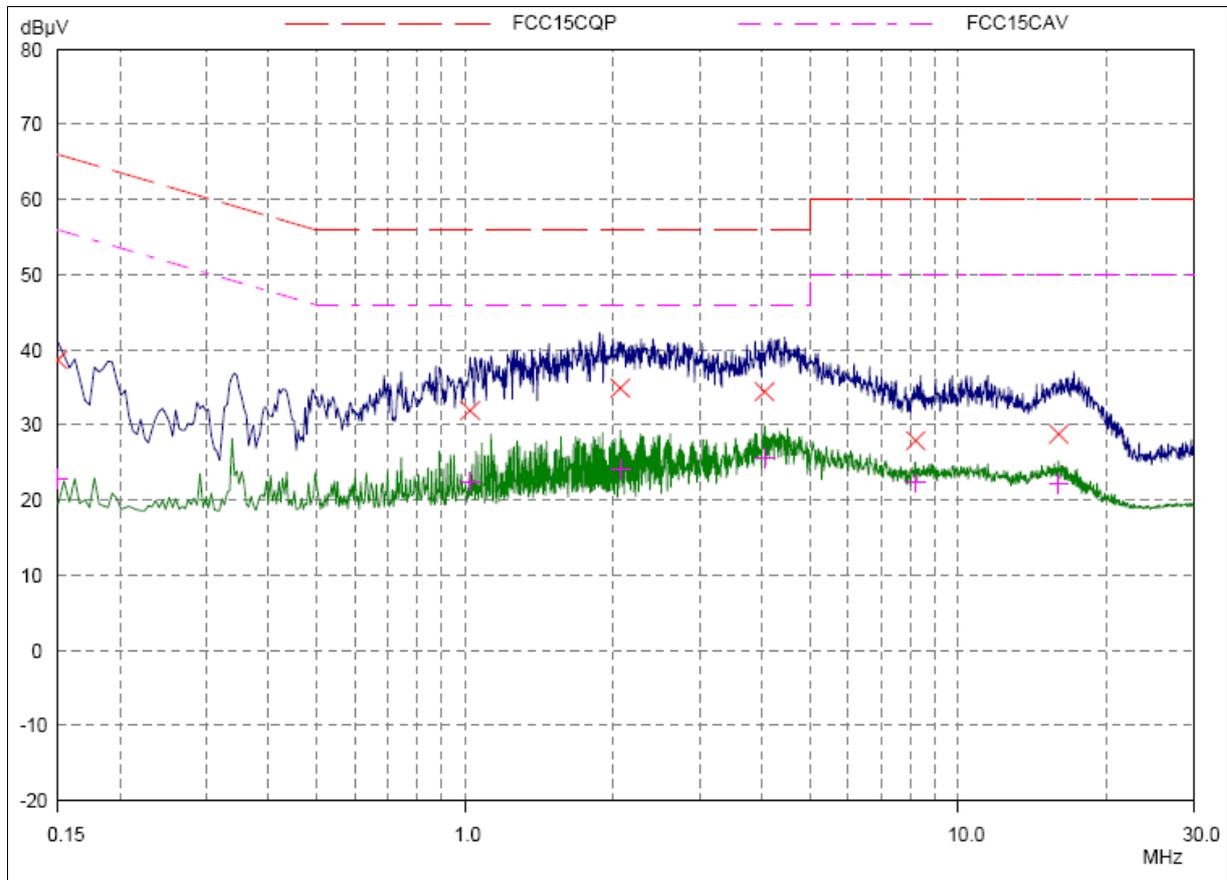
Final Measurement Results				
Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -
0.15	39.50	66.00	26.50	N
1.02499	35.42	56.00	20.58	N
2.10703	37.88	56.00	18.12	N
4.2789	36.22	56.00	19.78	N
15.34531	30.02	60.00	29.98	N
16.95859	30.56	60.00	29.44	N
Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -
0.15	22.97	56.00	33.03	N
1.02499	25.47	46.00	20.53	N
2.10703	27.53	46.00	18.47	N
4.2789	26.26	46.00	19.74	N
15.34531	22.82	50.00	27.18	N
16.95859	21.85	50.00	28.15	N

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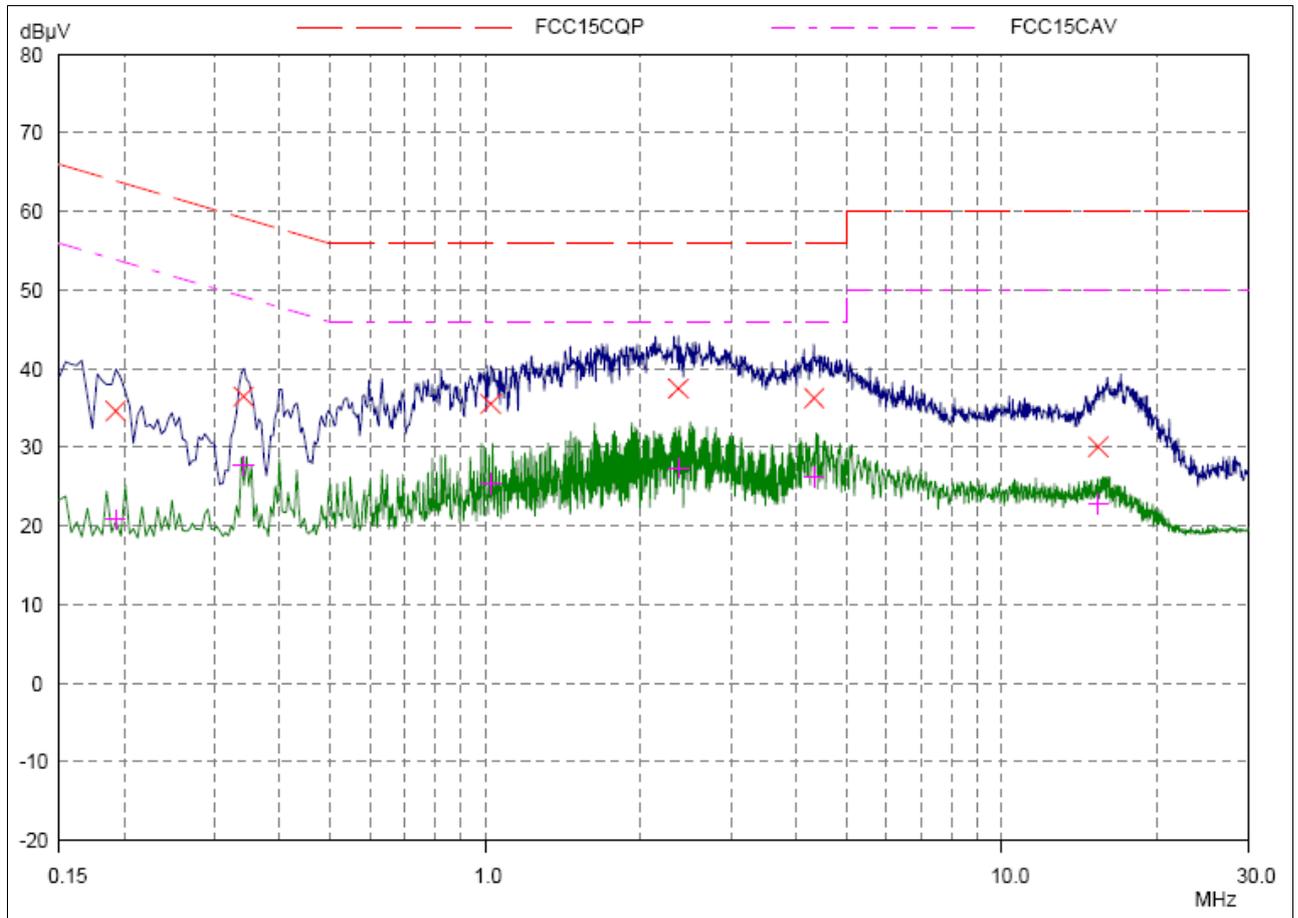
### L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	38.64	66.00	27.36	L1
1.02499	31.90	56.00	24.10	L1
2.06406	34.92	56.00	21.08	L1
4.05234	34.46	56.00	21.54	L1
8.19295	27.94	60.00	32.06	L1
15.98203	28.80	60.00	31.20	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.82	56.00	33.18	L1
1.02499	22.46	46.00	23.54	L1
2.06406	24.09	46.00	21.91	L1
4.05234	25.62	46.00	20.38	L1
8.19295	22.35	50.00	27.65	L1
15.98203	22.19	50.00	27.81	L1

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### N Line

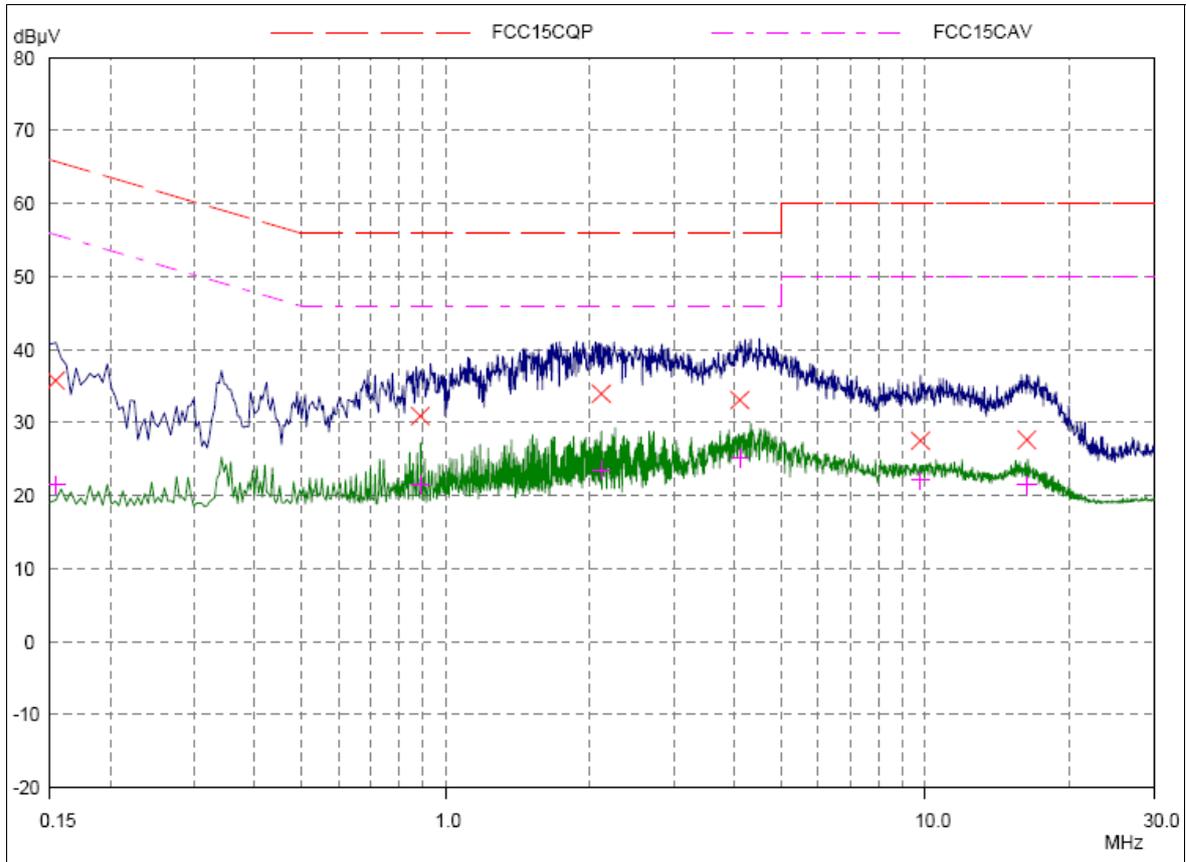
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.19296	34.62	63.91	29.29	N
0.3414	36.48	59.17	22.69	N
1.02499	35.56	56.00	20.44	N
2.36875	37.46	56.00	18.54	N
4.33359	36.28	56.00	19.72	N
15.37265	30.08	60.00	29.92	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.19296	20.83	53.91	33.08	N
0.3414	27.70	49.17	21.47	N
1.02499	25.39	46.00	20.61	N
2.36875	27.35	46.00	18.65	N
4.33359	26.26	46.00	19.74	N
15.37265	22.77	50.00	27.23	N

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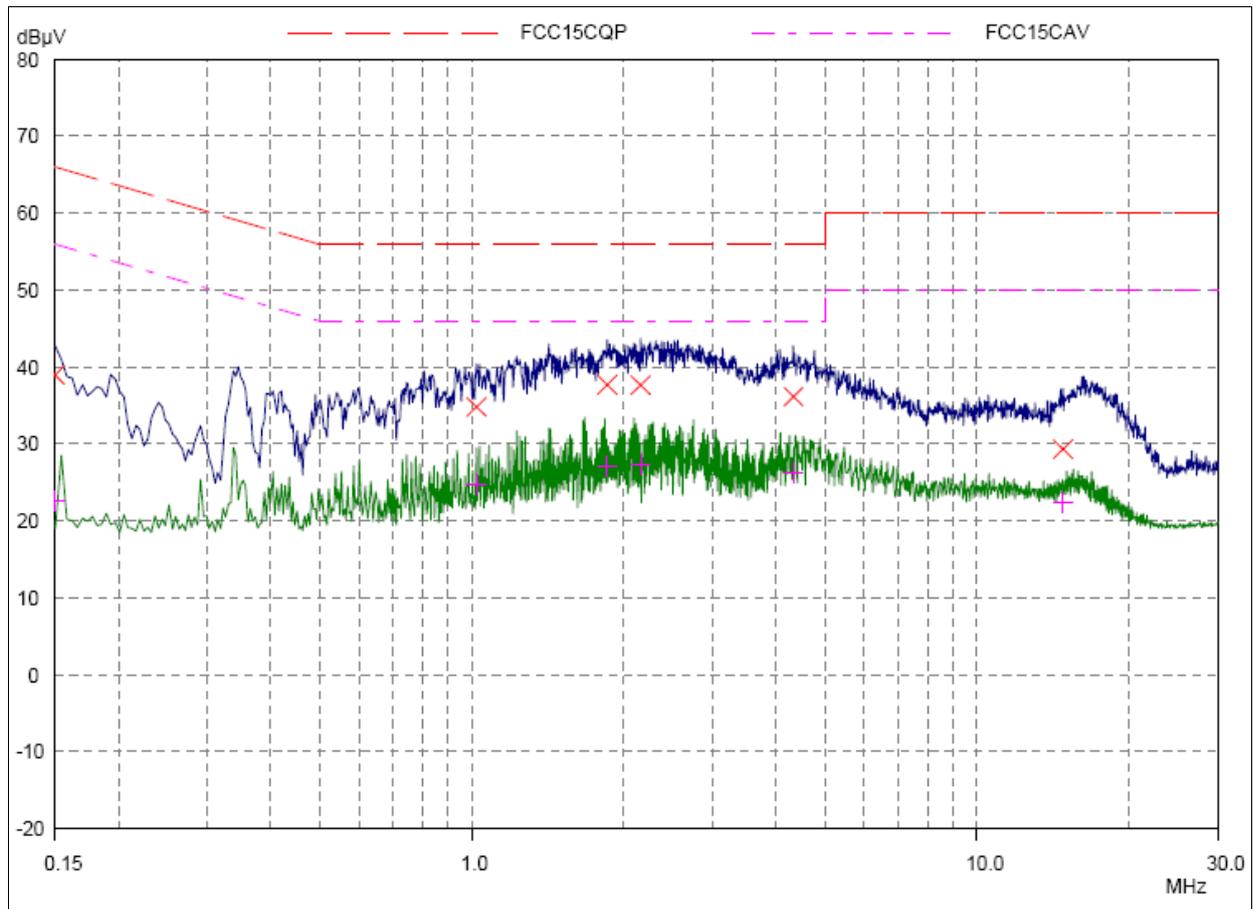
L Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.1539	35.76	65.79	30.03	L1
0.88828	30.88	56.00	25.12	L1
2.11093	33.96	56.00	22.04	L1
4.10703	33.12	56.00	22.88	L1
9.7789	27.54	60.00	32.46	L1
16.2789	27.64	60.00	32.36	L1
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.1539	21.45	55.79	34.34	L1
0.88828	21.45	46.00	24.55	L1
2.11093	23.55	46.00	22.45	L1
4.10703	25.16	46.00	20.84	L1
9.7789	22.13	50.00	27.87	L1
16.2789	21.45	50.00	28.55	L1

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N Line

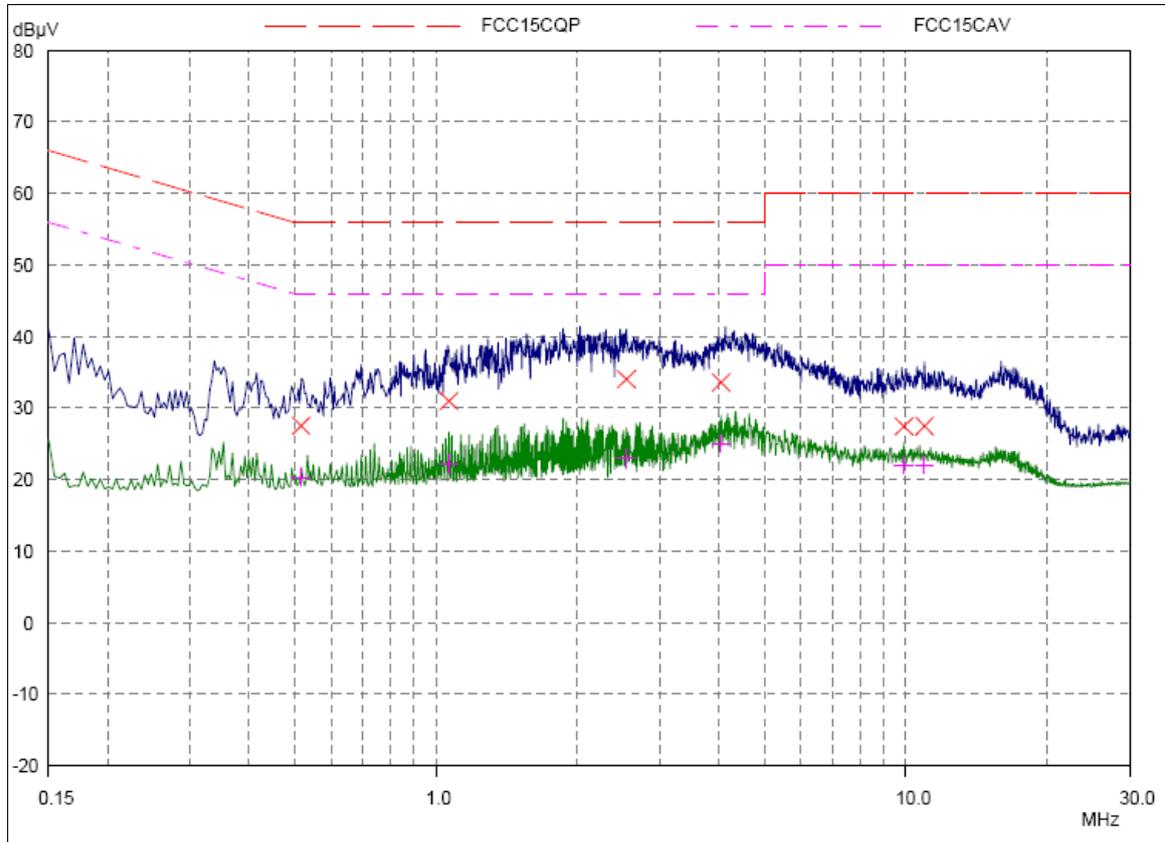
Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	39.00	66.00	27.00	N
1.02109	34.84	56.00	21.16	N
1.85312	37.68	56.00	18.32	N
2.15781	37.66	56.00	18.34	N
4.32578	36.16	56.00	19.84	N
14.82968	29.36	60.00	30.64	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	22.61	56.00	33.39	N
1.02109	24.77	46.00	21.23	N
1.85312	27.16	46.00	18.84	N
2.15781	27.29	46.00	18.71	N
4.32578	26.26	46.00	19.74	N
14.82968	22.46	50.00	27.54	N

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802.11n CH11



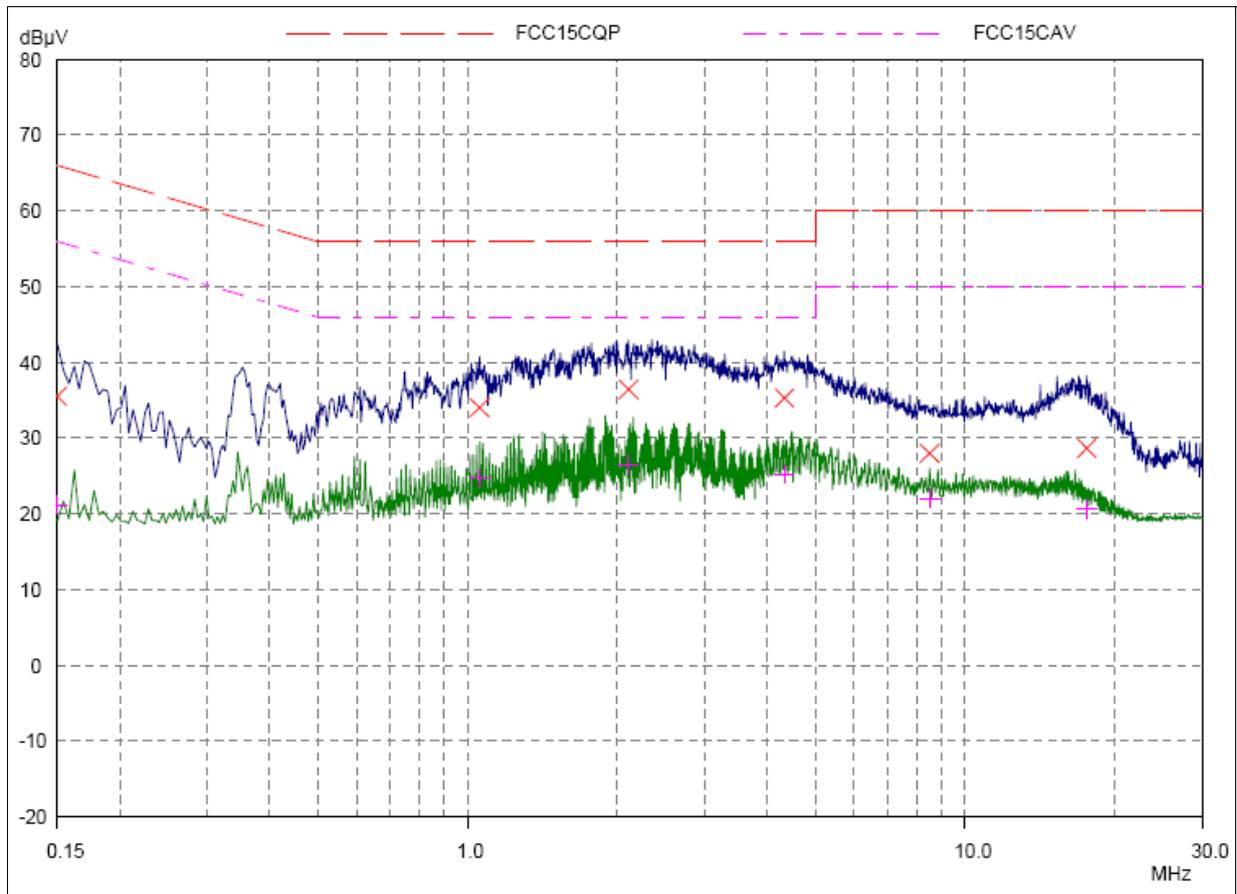
L Line

Final Measurement Results				
Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -
0.51717	27.52	56.00	28.48	L1
1.06406	31.00	56.00	25.00	L1
2.54062	34.06	56.00	21.94	L1
4.03671	33.58	56.00	22.42	L1
9.91171	27.44	60.00	32.56	L1
10.9664	27.48	60.00	32.52	L1
Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -
0.51717	20.30	46.00	25.70	L1
1.06406	22.19	46.00	23.81	L1
2.54062	23.02	46.00	22.98	L1
4.03671	25.01	46.00	20.99	L1
9.91171	22.02	50.00	27.98	L1
10.9664	22.02	50.00	27.98	L1

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N Line

Final Measurement Results				
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -
0.15	35.56	66.00	30.44	N
1.05625	34.04	56.00	21.96	N
2.10703	36.44	56.00	19.56	N
4.32968	35.28	56.00	20.72	N
8.50156	28.02	60.00	31.98	N
17.56015	28.68	60.00	31.32	N
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -
0.15	21.21	56.00	34.79	N
1.05625	24.69	46.00	21.31	N
2.10703	26.59	46.00	19.41	N
4.32968	25.24	46.00	20.76	N
8.50156	22.02	50.00	27.98	N
17.56015	20.57	50.00	29.43	N

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**2. Main Test Instruments**

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Peak Power Analyzer	8990B	Agilent	51000109	2011-06-01	One year
02	Wideband Power Sensors	N1923A	Agilent	MY51220004	2011-06-01	One year
03	EMI Test Receiver	ESCI	R&S	100948	2011-06-30	One year
04	TRILOG Broadband Antenna	VULB 9163	Schwarzbeck	9163-201	2010-06-20	Three years
05	Double Ridged Waveguide Horn Antenna	HF907	R&S	100126	2009-07-02	Three years
06	EMI Test Receiver	ESCS30	R&S	100138	2012-01-16	One year
07	LISN	ENV216	R&S	101171	2010-04-16	Three years
08	PSG Analog Signal Generator	E8257D	Agilent	MY49281101	2011-06-29	One year
09	ESG Vector Signal Generator	E4438C	Agilent	MY49070900	2011-07-01	One year
10	Spectrum Analyzer	E4445A	Agilent	MY46181146	2011-06-07	One year
11	Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
12	MOB COMMS DC SUPPLY	66319D	Agilent	MY43004105	2011-06-30	One year
13	Power Sensor	E9304A	Agilent	MY50220022	2011-06-01	One year
14	Power Meter	E4418B	Agilent	MY50000623	2011-06-07	One year
15	Vibration table	ESS-050-120	dongling	D1007126	2010-08-23	Three years
16	Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2011-06-04	One year

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

## ANNEX A: EUT Appearance and Test Setup

### A.1 EUT Appearance



a: EUT



b: Charger



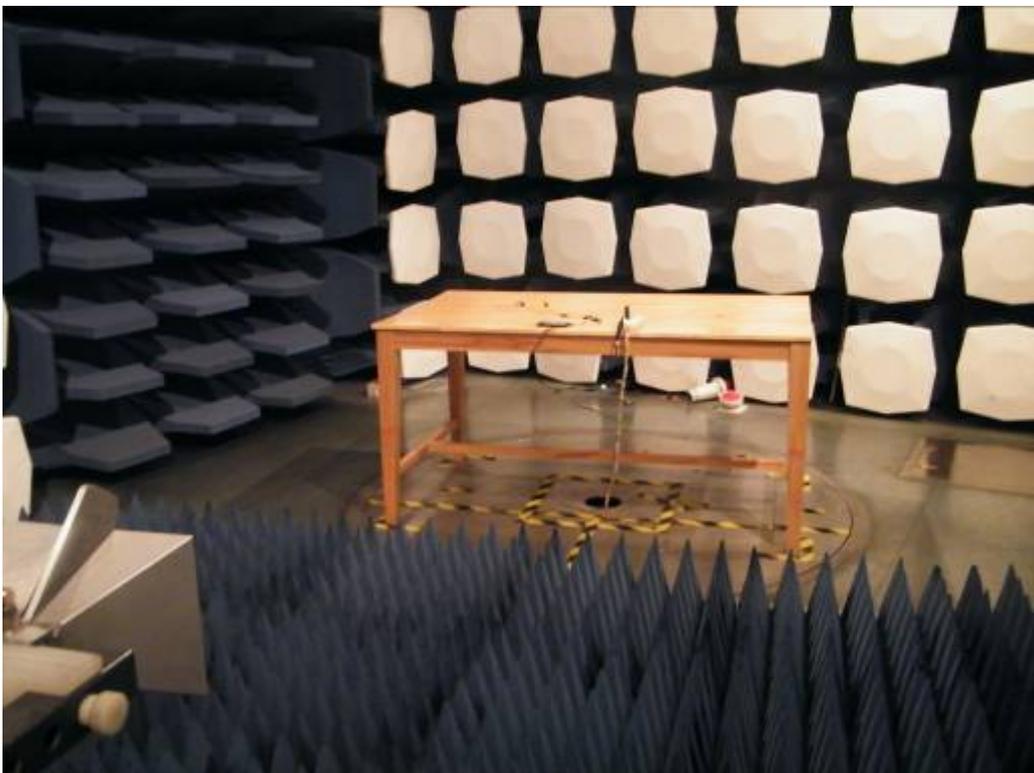
c: Earphone

Picture 1 Constituents of EUT

## A.2 Test Setup



Picture 2-1: Below 1GHz



Picture 2-2: Above 1GHz  
Picture 2 Radiated Emission Test Setup

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**Picture 3 Conducted Emission Test Setup**