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Test Report No.: PSU-NQN2504020214RF01



Certificate #6613.01

# FCC TEST REPORT

## (Part 15, Subpart C)

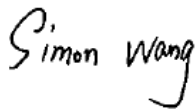

Applicant:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China

Manufacturer or Supplier:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China
Product:	WiFi Module
Brand Name:	Hisense
Model Name:	MWH552B
FCC ID:	2AJVQ-MWH552B
Date of tests:	Apr.01, 2025 ~ Apr.11, 2025

The tests have been carried out according to the requirements of the following standard:

- ☒ **FCC Part 15, Subpart C, Section 15.247**  
☒ **ANSI C63.10-2020**

**CONCLUSION:** The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Apr.15, 2025	 Date: Apr.15, 2025

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2504020214RF01	Original release	Apr. 15, 2025



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## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
15.207	AC Power Conducted Emission	N/A
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

Note: 1.Except RSE, other data please refer to Appendix1.

### \*Test Lab Information Reference

#### Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

#### Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

#### Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

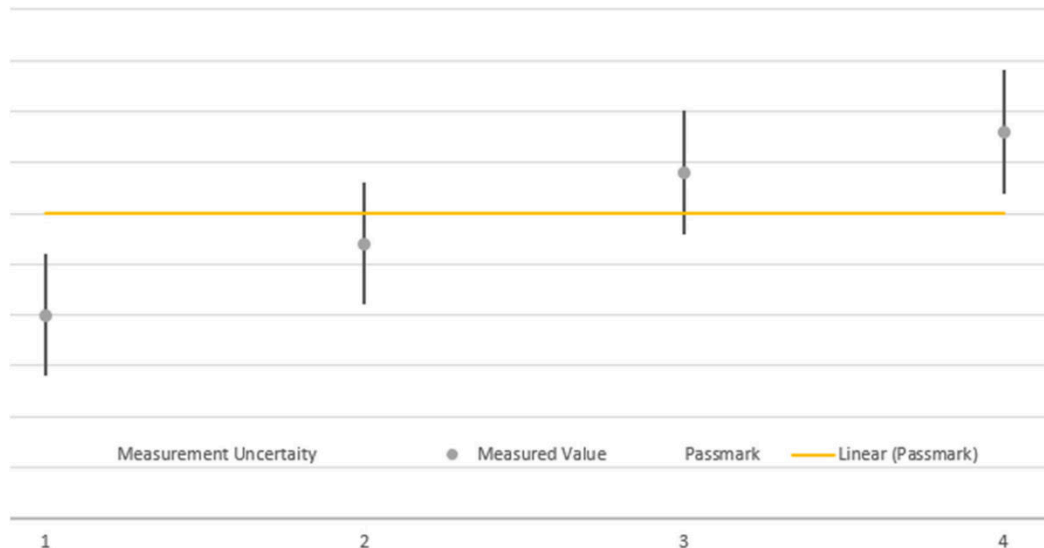


## 1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (9kHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Radiated emissions (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58kHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT*</b>	WiFi Module
<b>BRAND NAME*</b>	Hisense
<b>MODEL NAME*</b>	MWH552B
<b>NOMINAL VOLTAGE*</b>	3.3Vdc (DC supply)
<b>MODULATION *</b>	DSSS ,OFDM
<b>TRANSMISSION RATE</b>	802.11b: 11/ 5.5/ 2 / 1 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n(HT20): up to 144.4 Mbps 802.11n(HT40): up to 300 Mbps
<b>OPERATING FREQUENCY</b>	2412-2462MHz for 11b/g/n(HT20/40)
<b>MAX. OUTPUT POWER</b>	WLAN: 319.15 mW (Maximum)
<b>ANTENNA TYPE*</b>	Inverted F PCB Antenna
<b>ANTENNA GAIN*</b>	For Power/PSD: Chain0: 2.32dBi Chain1: 2.93dBi
<b>Directional Gain:</b>	2.64dBi(Uncorrelated)
<b>HW VERSION*</b>	V1.00
<b>SW VERSION*</b>	N/A
<b>I/O PORTS*</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	N/A



**NOTE:**

1. \*Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a MIMO function. Physically, the EUT provides two transmitter and two receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	2TX /2RX
802.11g	2TX /2RX
802.11n(HT20)/11ac(VHT20)	2TX /2RX
802.11n(HT40)/11ac(VHT40)	2TX /2RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
5. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.



## 2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		



## 2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 4 photographs of the test configuration for reference.

## 2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE>1G	PLC	APCM	
-	√	√	N/A	√	-

Where **RE<1G**: Radiated Emission below 1GHz

**RE>1G**: Radiated Emission above 1GHz

**PLC**: Power Line Conducted Emission

**APCM**: Antenna Port Conducted Measurement

**NOTE**: No need to concern of Conducted Emission due to the EUT is powered by battery.

### RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0

**BANDEDGE MEASUREMENT:**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0

**ANTENNA PORT CONDUCTED MEASUREMENT:**

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0

**TEST CONDITION:**



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APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 60%RH	DC 3.3V DC Supply	Simon Wang
RE <sup>3</sup> 1G	23deg. C, 60%RH	DC 3.3V DC Supply	Simon Wang
APCM	25deg. C, 65%RH	DC 3.6V By DC Supply	Simon Wang



## 2.3 DUTY CYCLE OF TEST SIGNAL

Please Refer to Appendix1 Of this test report.

## 2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C, Section 15.247**

**KDB 558074 D01 DTS Meas Guidance v05r02**

**ANSI C63.10-2020**

Note:

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

## 2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Laptop	Lenovo	Thinkpad E14	SL10W47313	N/A



### 3 TEST TYPES AND RESULTS

#### 3.1 RADIATED EMISSION MEASUREMENT

##### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



## 3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,23	Aug.29,25
Pre-Amplifier	R&S	SCU08F1	101028	Jan.22,24	Jan.21,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,23	Aug.21,25
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,23	Aug.21,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,25	Feb.22,27
WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,23	Aug.30,25
Hygrothermograph	DELI	20210528	SZ014	Sep.06,23	Sep.05,25
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25

- NOTE:**
1. The calibration interval of the above test instruments is 12/ 24/ 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Chamber.
  3. The FCC Site Registration No. is 434559; The Designation No. is CN1325.





### 3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

#### **Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

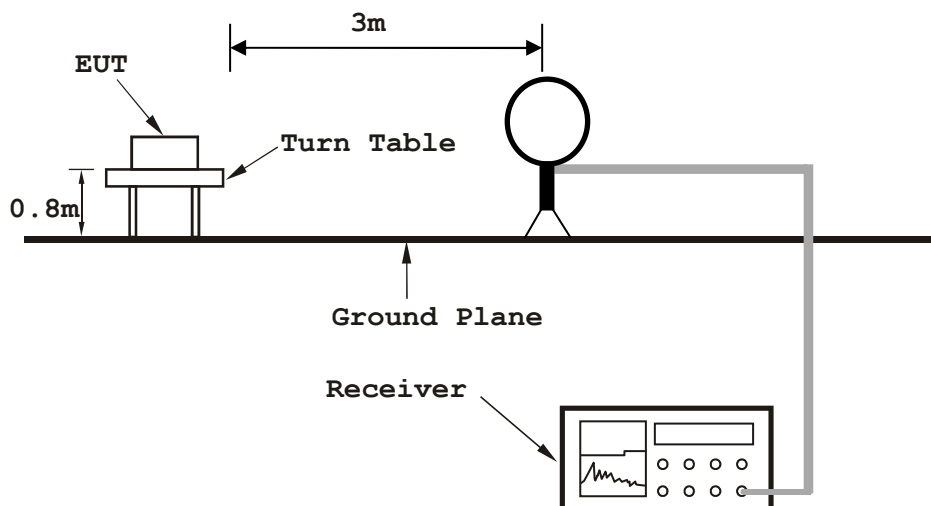
### 3.2.4 DEVIATION FROM TEST STANDARD

No deviation

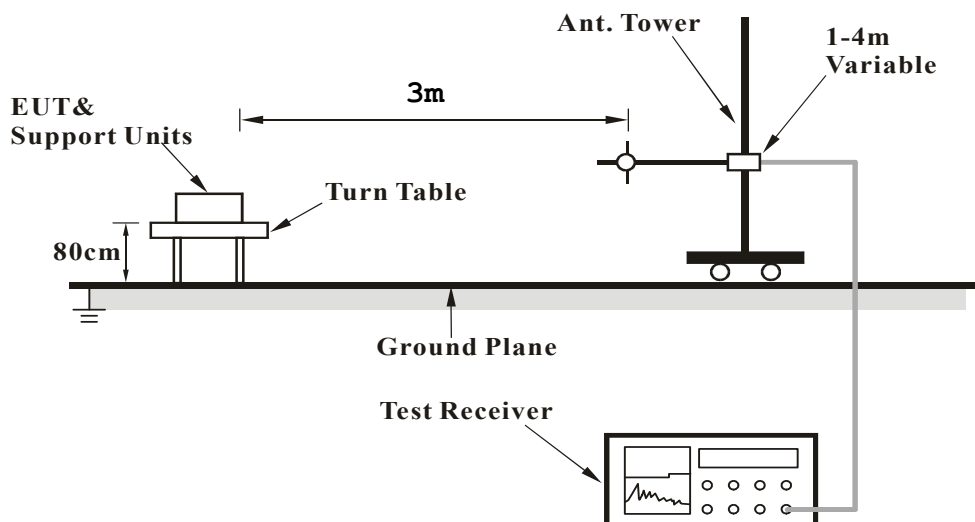


### 3.2.5 TEST SETUP

#### <Frequency Range 9kHz~30MHz >

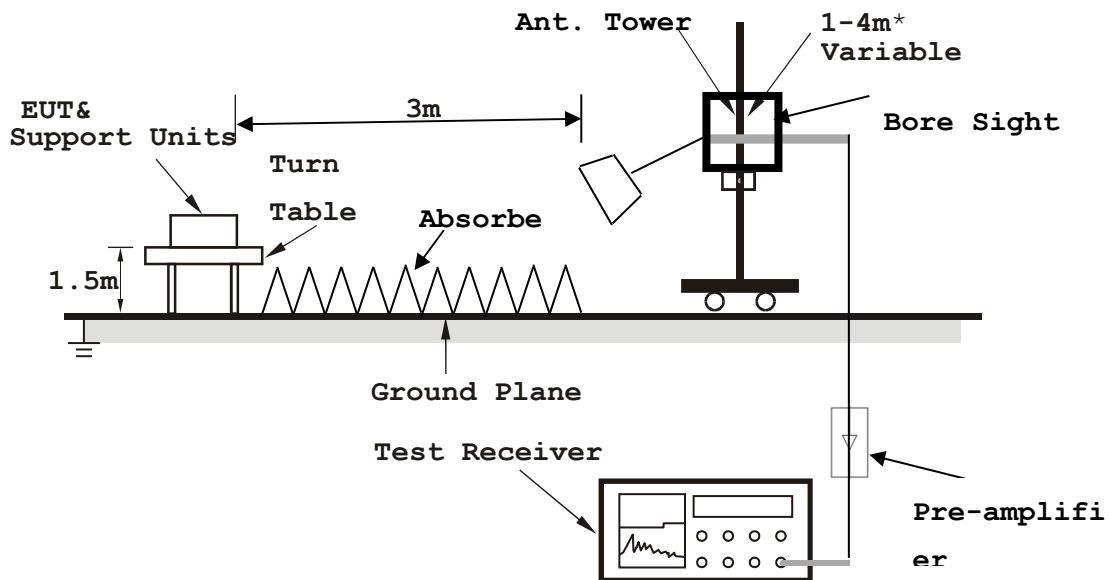


#### < Frequency Range 30MHz~1GHz >





### <Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 3.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

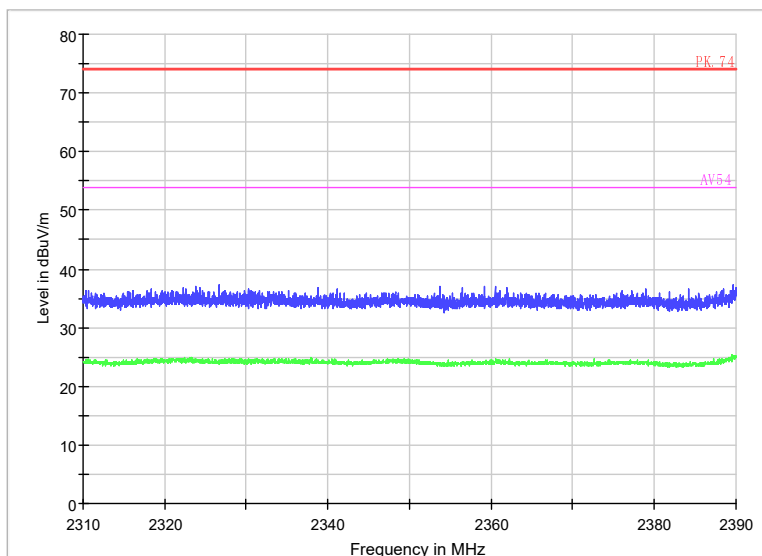
### 3.2.7 TEST RESULTS



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## Radiated Emission Band Edge for WIFI

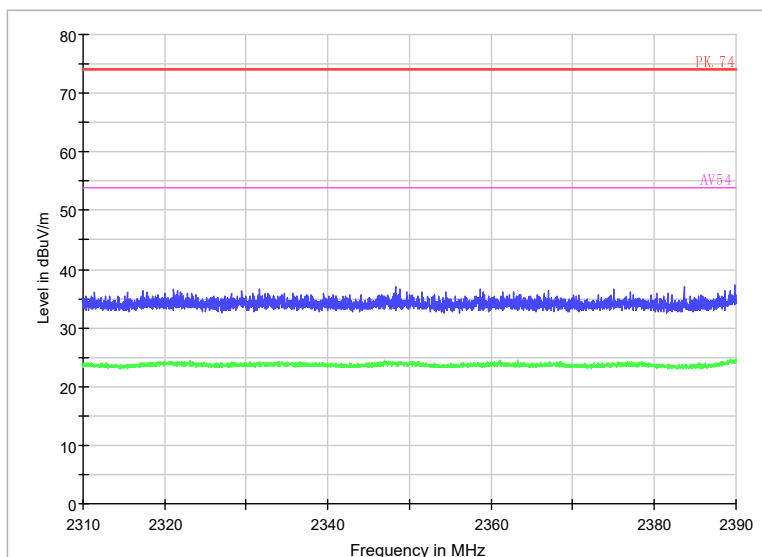


### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11b

Polarization: V

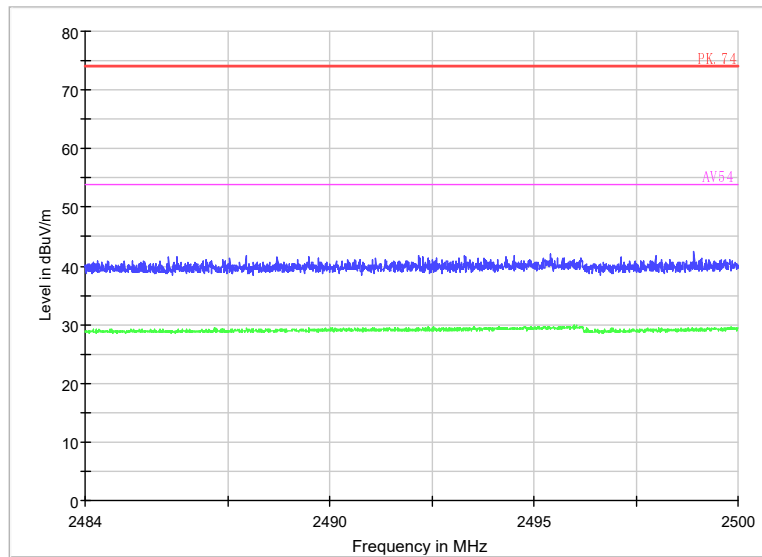


### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11b

Polarization: H

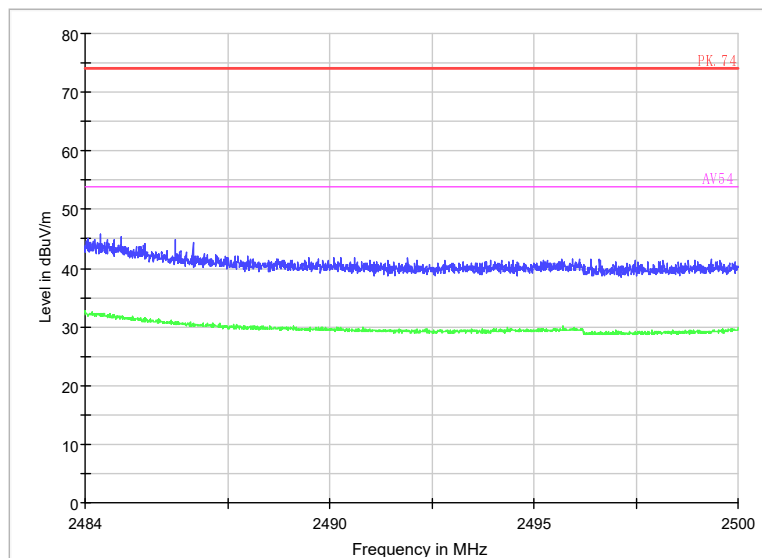


### Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11b

Polarization: V



### Radiated Emission Band Edge

Channel No.:11

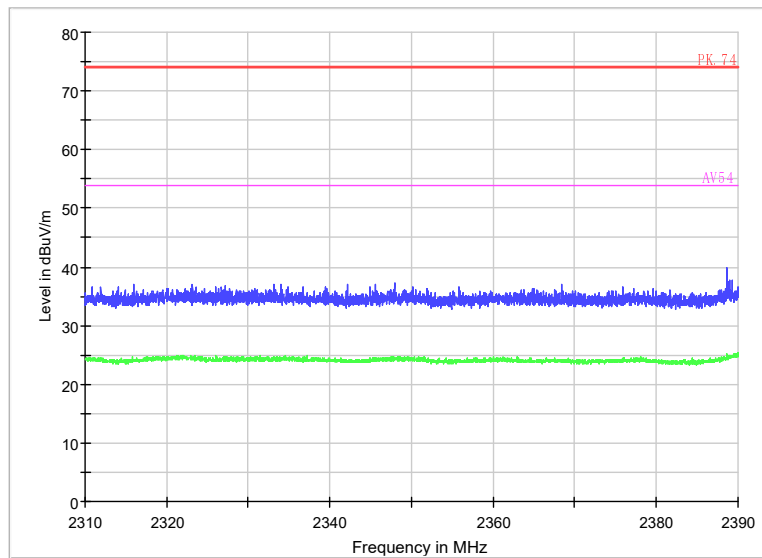
Test Mode: 802.11b

Polarization: H



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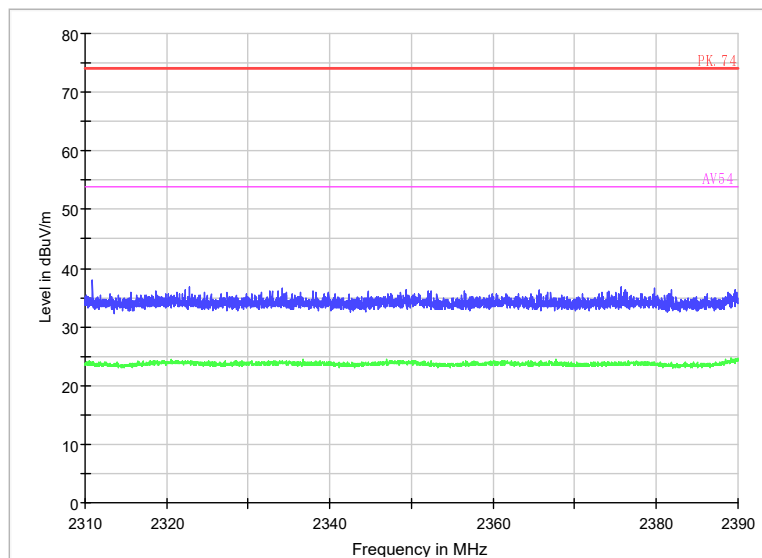


### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11g

Polarization: V

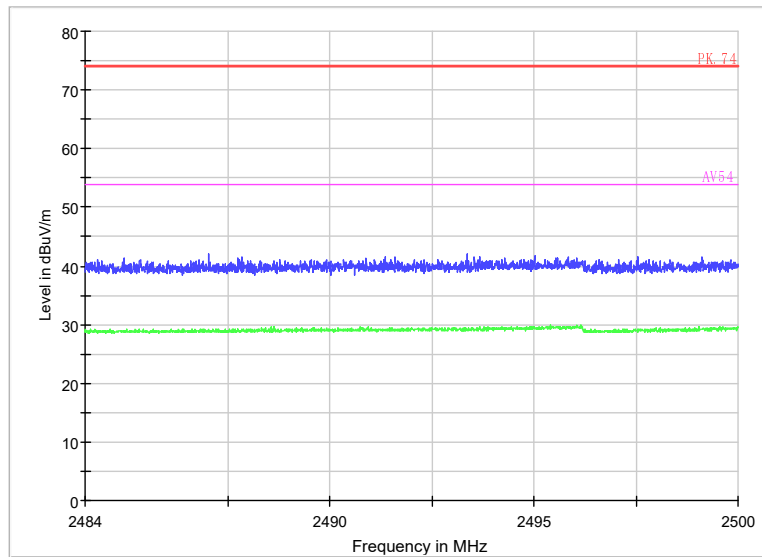


### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11g

Polarization: H

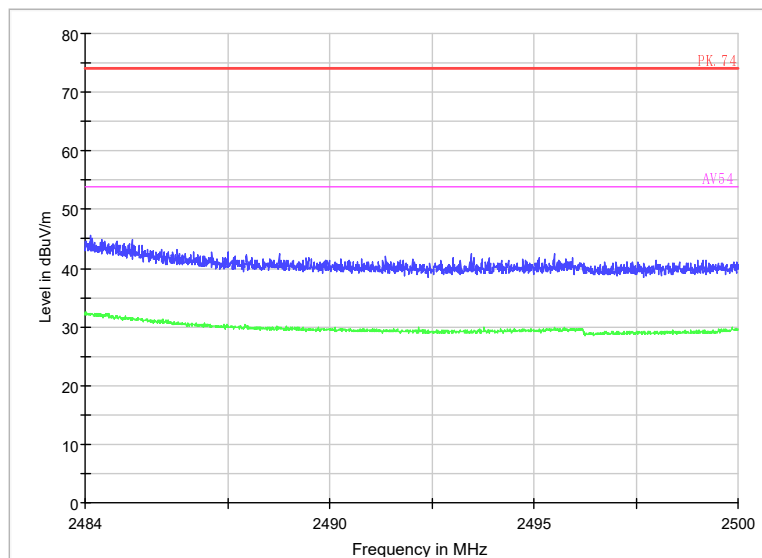


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11g

Polarization: V

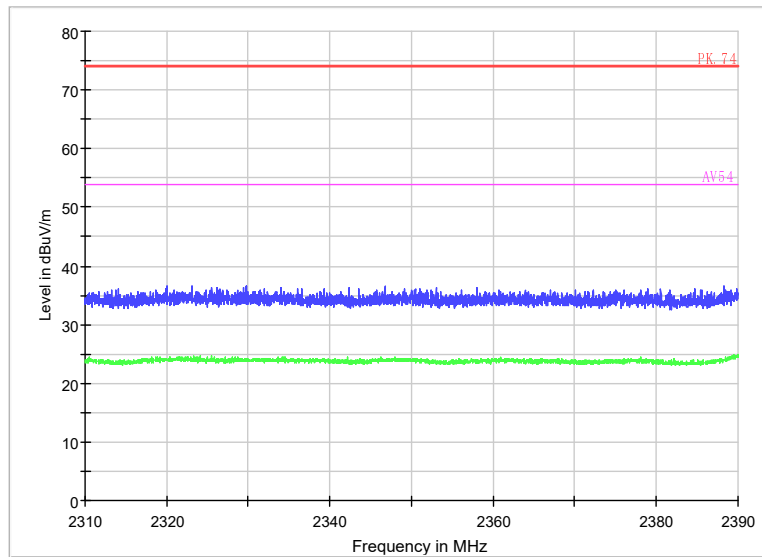


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11g

Polarization: H

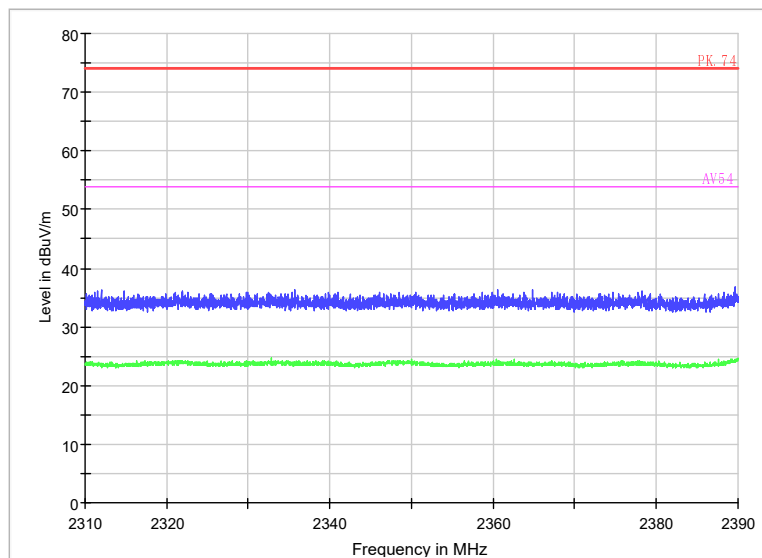


### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11n(HT20)

Polarization: V



### Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11n(HT20)

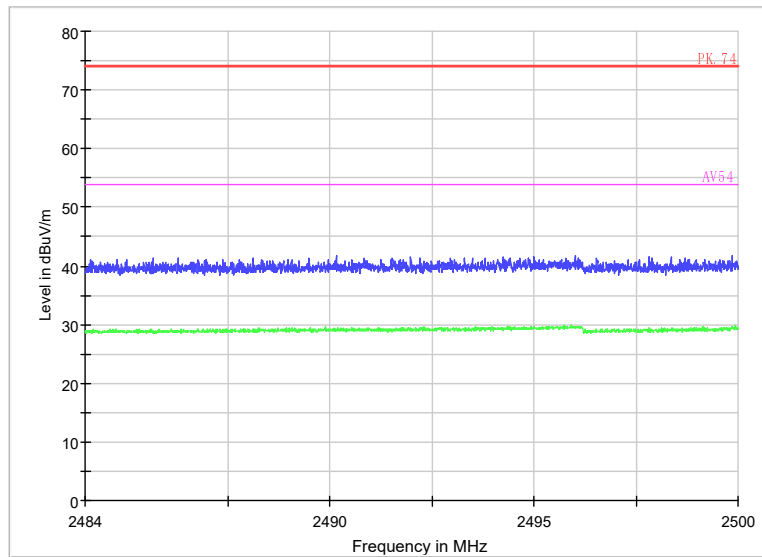
Polarization: H





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Test Report No.: PSU-NQN2504020214RF01

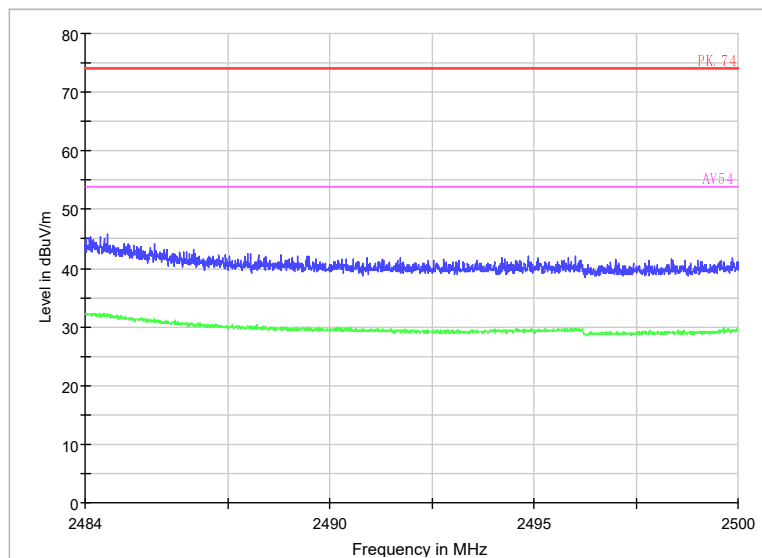


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11n(HT20)

Polarization: V

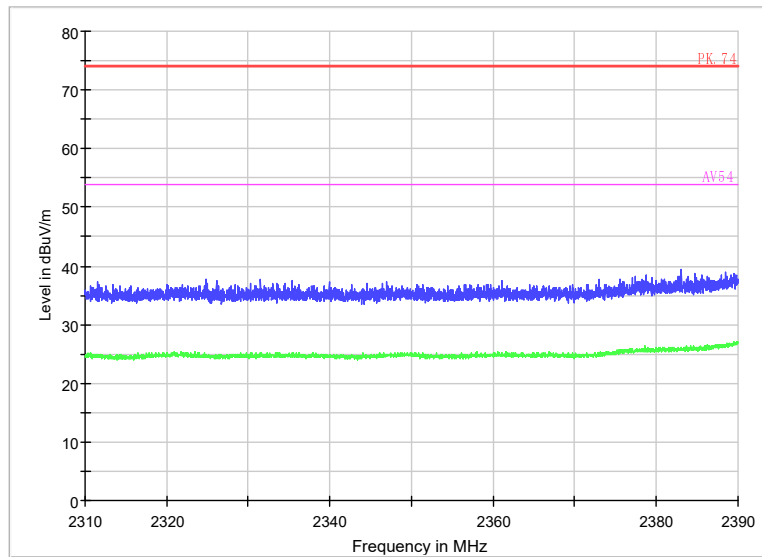


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11n(HT20)

Polarization: H

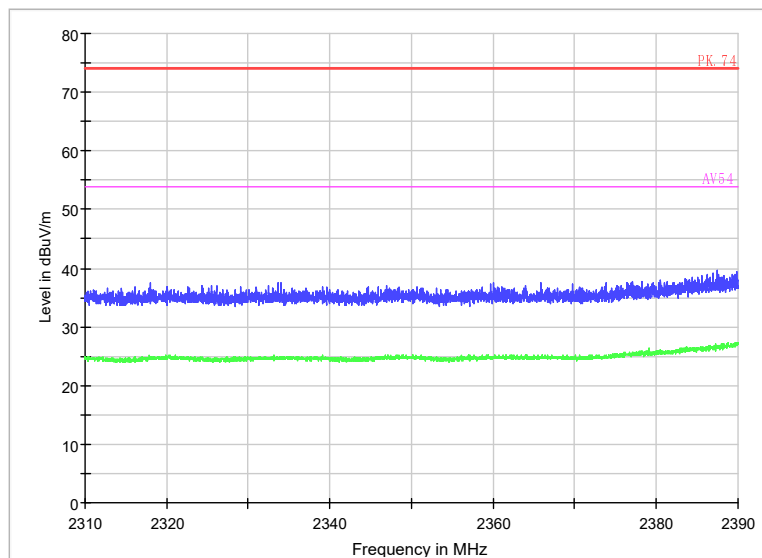


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11n(HT40)

Polarization: V

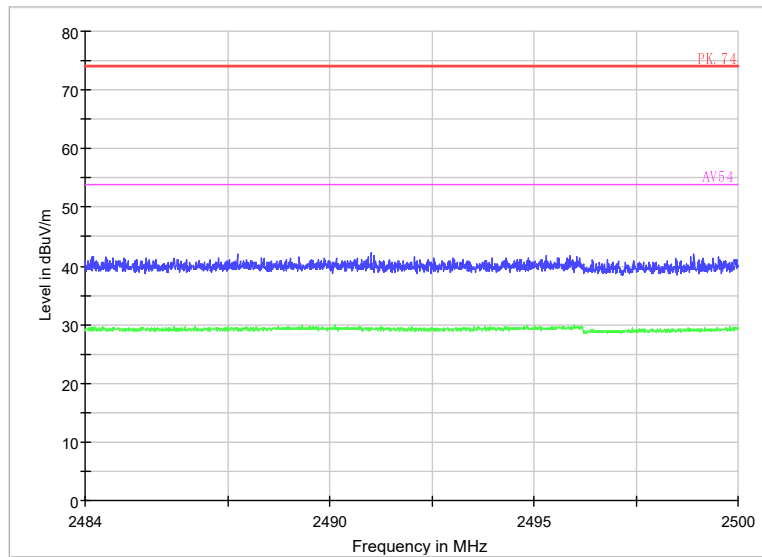


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11n(HT40)

Polarization: H

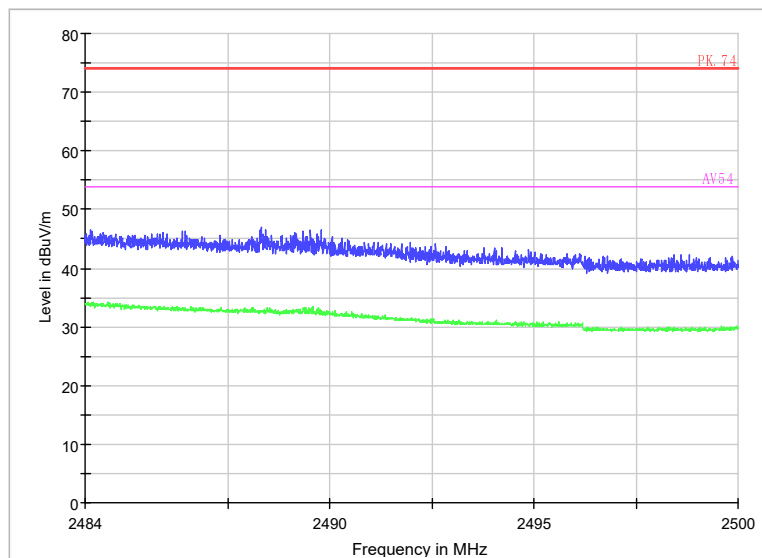


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11n(HT40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11n(HT40)

Polarization: H

**Radiated Emission for WIFI**

After comparison, the worst case attitude is EUT lay down.

**Determining Spurious Emissions Levels**

A “reference path loss” is established and the  $A_{Rpl}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

Sample calculation:  $(19.92\text{dB}\mu\text{V/m}) = (38.82\text{dB}\mu\text{V}) + (-18.9\text{dB/m})$ , the corresponding frequency is 30.5335MHz.

For 802.11b Channel No.:1

Frequency(MHz)	Result(dBuV/m)	$A_{Rpl}$ (dB)	$P_{\text{mea}}$ (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.5335	19.92	-18.9	38.82	Vertical	40	20.08
58.033	16.76	-16	32.76	Vertical	40	23.24
122.441	14.98	-19.4	34.38	Vertical	43.5	28.52
199.9925	20.35	-16.6	36.95	Vertical	43.5	23.15
436.3815	26.82	-10.4	37.22	Vertical	46	19.18
744.017	23.28	-4.2	27.48	Vertical	46	22.72

For 802.11g Channel No.:1

Frequency(MHz)	Result(dBuV/m)	$A_{Rpl}$ (dB)	$P_{\text{mea}}$ (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.582	17.5	-18.9	36.4	Vertical	40	22.5
60.458	13.17	-16.4	29.57	Vertical	40	26.83
125.157	9.71	-19.8	29.51	Vertical	43.5	33.79
199.9925	20.57	-16.6	37.17	Vertical	43.5	22.93
436.333	23.82	-10.4	34.22	Vertical	46	22.18
744.017	22.99	-4.2	27.19	Vertical	46	23.01



## For 802.11n(HT20) Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30	18.17	-18.7	36.87	Vertical	40	21.83
62.301	10.75	-16.9	27.65	Vertical	40	29.25
123.896	13.28	-19.6	32.88	Vertical	43.5	30.22
199.9925	17.48	-16.6	34.08	Vertical	43.5	26.02
436.3815	24.38	-10.4	34.78	Vertical	46	21.62
872.736	22.78	-2.4	25.18	Vertical	46	23.22

## For 802.11b Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.1455	17.23	-18.8	36.03	Vertical	40	22.77
60.652	9.77	-16.4	26.17	Vertical	40	30.23
124.963	12.23	-19.8	32.03	Vertical	43.5	31.27
199.9925	17.65	-16.6	34.25	Vertical	43.5	25.85
436.333	23.59	-10.4	33.99	Vertical	46	22.41
791.9835	23.63	-3.8	27.43	Vertical	46	22.37

## For 802.11g Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.3395	18.45	-18.8	37.25	Vertical	40	21.55
58.906	13.2	-16.2	29.4	Vertical	40	26.8
123.9445	13.65	-19.6	33.25	Vertical	43.5	29.85
194.415	9.76	-16.9	26.66	Vertical	43.5	33.74
436.333	23.5	-10.4	33.9	Vertical	46	22.5
869.9715	19.56	-2.4	21.96	Vertical	46	26.44



For 802.11n(HT20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
51.6795	13.48	-15.4	28.88	Vertical	40	26.52
60.2155	11.78	-16.4	28.18	Vertical	40	28.22
154.16	11.86	-20.4	32.26	Vertical	43.5	31.64
196.937	11.07	-16.5	27.57	Vertical	43.5	32.43
436.333	23.39	-10.4	33.79	Vertical	46	22.61
928.317	19.56	-1.7	21.26	Vertical	46	26.44

For 802.11b Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.3395	18.35	-18.8	37.15	Vertical	40	21.65
58.906	13.16	-16.2	29.36	Vertical	40	26.84
123.8475	12.16	-19.6	31.76	Vertical	43.5	31.34
199.9925	17.16	-16.6	33.76	Vertical	43.5	26.34
436.333	23.37	-10.4	33.77	Vertical	46	22.63
832.966	18.99	-3.3	22.29	Vertical	46	27.01

For 802.11g Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.097	16.7	-18.7	35.4	Vertical	40	23.3
57.451	13.28	-15.9	29.18	Vertical	40	26.72
121.9075	12.96	-19.3	32.26	Vertical	43.5	30.54
199.9925	17.03	-16.6	33.63	Vertical	43.5	26.47
436.333	23.16	-10.4	33.56	Vertical	46	22.84
744.017	21.88	-4.2	26.08	Vertical	46	24.12



## For 802.11n(HT20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.067	17.33	-19.1	36.43	Vertical	40	22.67
58.7605	11.65	-16.2	27.85	Vertical	40	28.35
120.986	11.22	-19.1	30.32	Vertical	43.5	32.28
199.9925	17.27	-16.6	33.87	Vertical	43.5	26.23
436.333	23.33	-10.4	33.73	Vertical	46	22.67
797.9005	17.56	-3.9	21.46	Vertical	46	28.44

## For 802.11n(HT40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.97	16.26	-19.1	35.36	Vertical	40	23.74
60.3125	13.17	-16.4	29.57	Vertical	40	26.83
123.411	13.2	-19.6	32.8	Vertical	43.5	30.3
199.9925	17.28	-16.6	33.88	Vertical	43.5	26.22
436.333	23.33	-10.4	33.73	Vertical	46	22.67
920.654	19.42	-1.7	21.12	Vertical	46	26.58

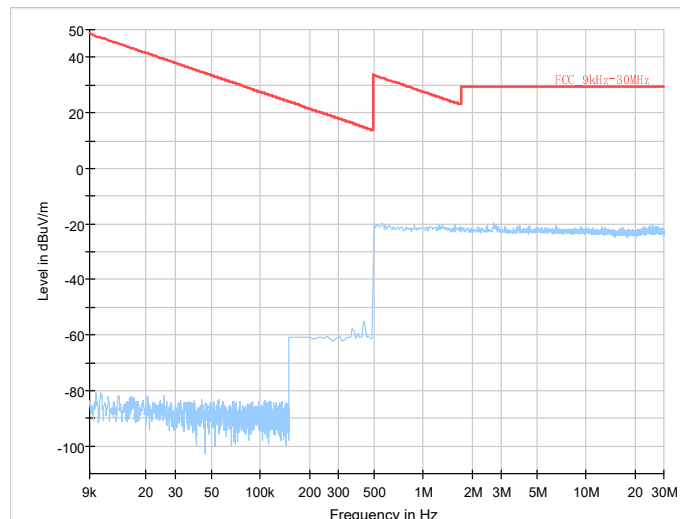
## For 802.11n(HT40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.164	17.02	-19.1	36.12	Vertical	40	22.98
61.913	11.99	-16.8	28.79	Vertical	40	28.01
166.5275	8.8	-19.7	28.5	Vertical	43.5	34.7
212.6995	10.32	-17.1	27.42	Vertical	43.5	33.18
436.3815	24.15	-10.4	34.55	Vertical	46	21.85



For 802.11n(HT40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
52.2615	17.79	-15.4	33.19	Vertical	40	22.21
60.4095	15.17	-16.4	31.57	Vertical	40	24.83
154.6935	13.94	-20.4	34.34	Vertical	43.5	29.56
269.2505	19.89	-15	34.89	Vertical	46	26.11
424.2565	23.75	-10.6	34.35	Vertical	46	22.25
918.3745	19.07	-1.8	20.87	Vertical	46	26.93



Frequency Range: 9kHz -30MHz

Detector: QP mode

Note: The relevant tests have been performed in order to verify in which mode would have the worst features, the result show above is the worst case.



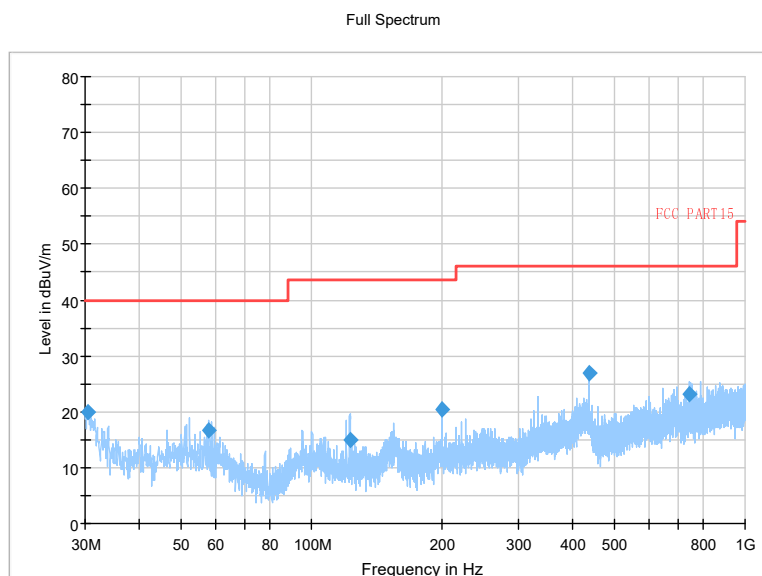


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Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2412

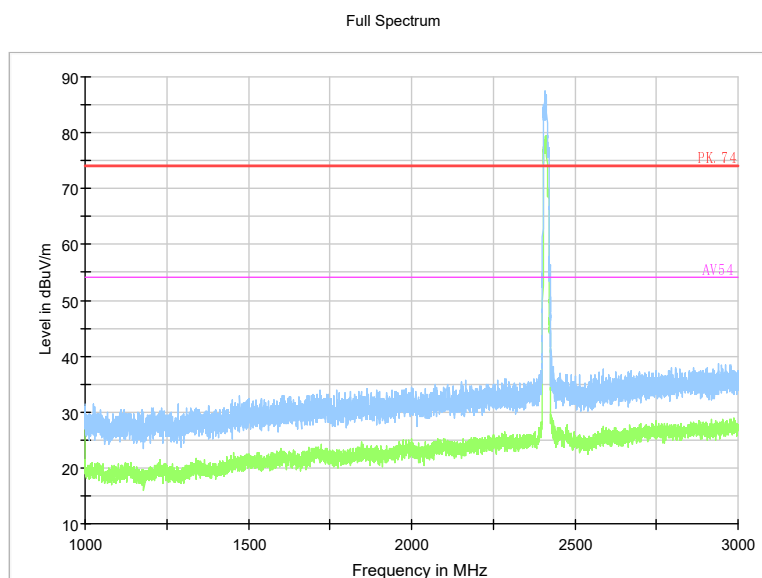
Channel No.:1



Frequency Range 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11b



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

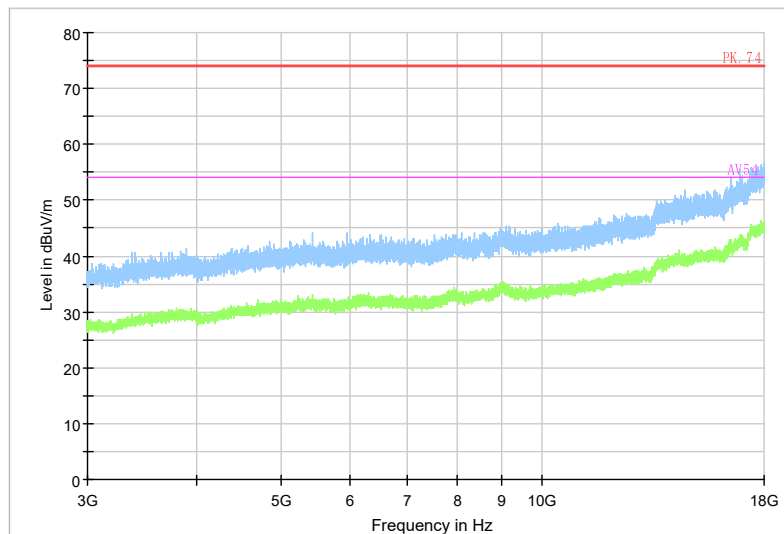
Modulation type: 802.11b



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

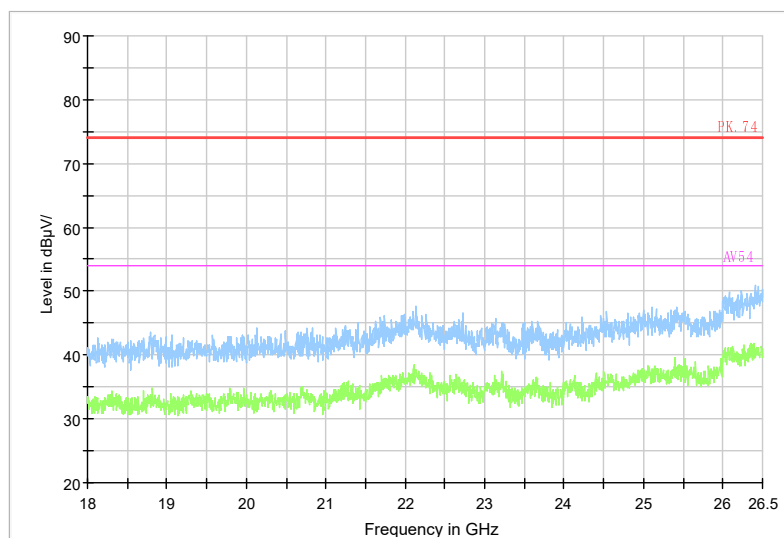


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

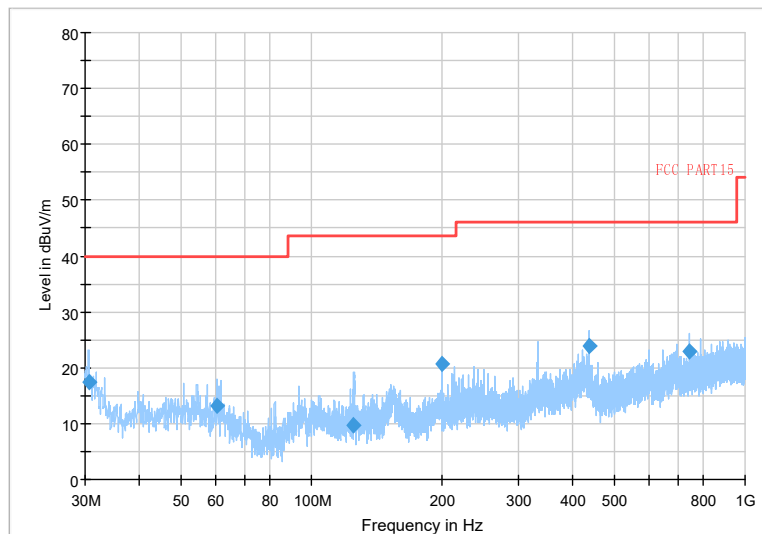
Modulation type: 802.11b



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

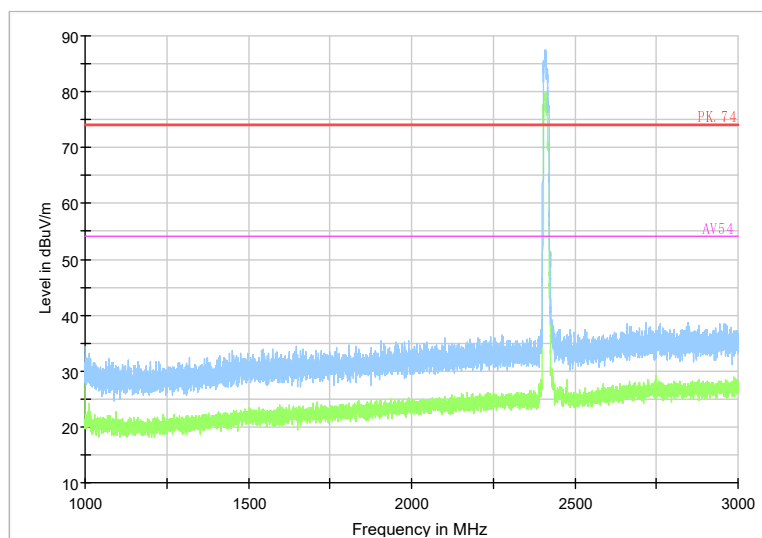


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

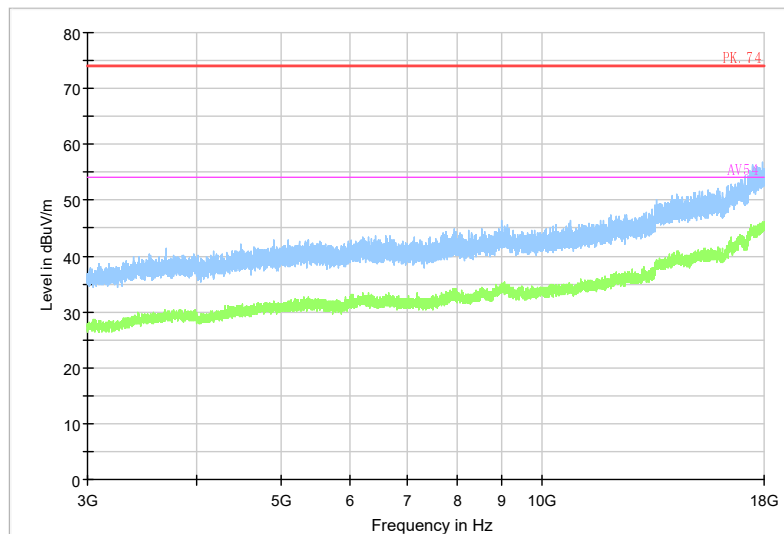
Modulation type: 802.11g



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

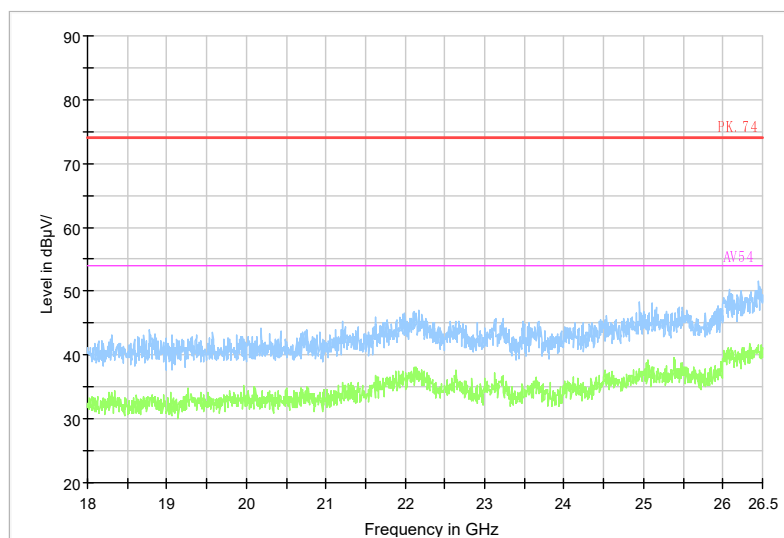


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

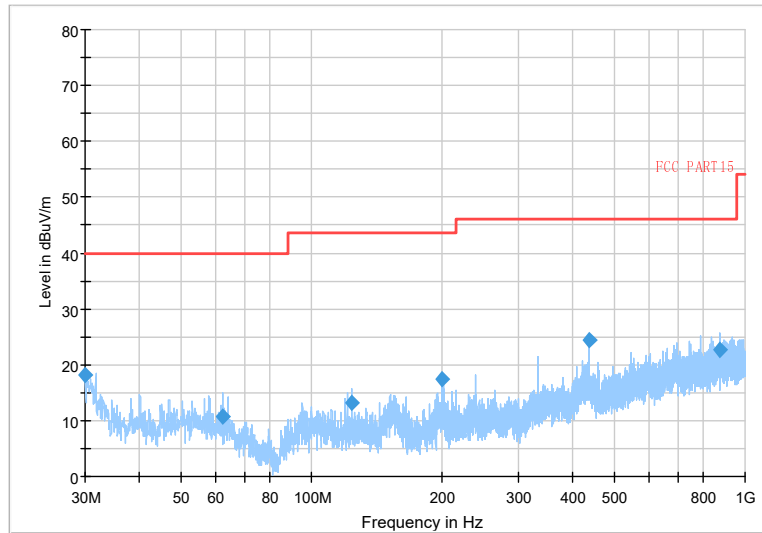
Modulation type: 802.11g



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

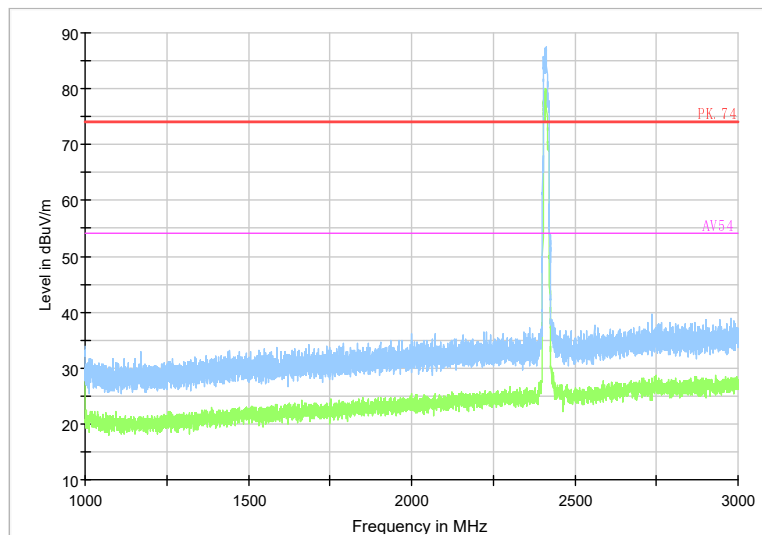


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

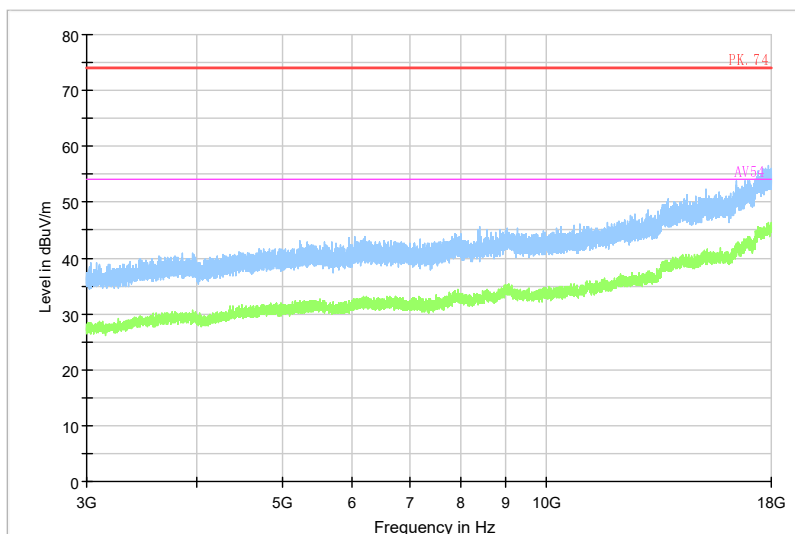
Modulation type: 802.11n(HT20)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

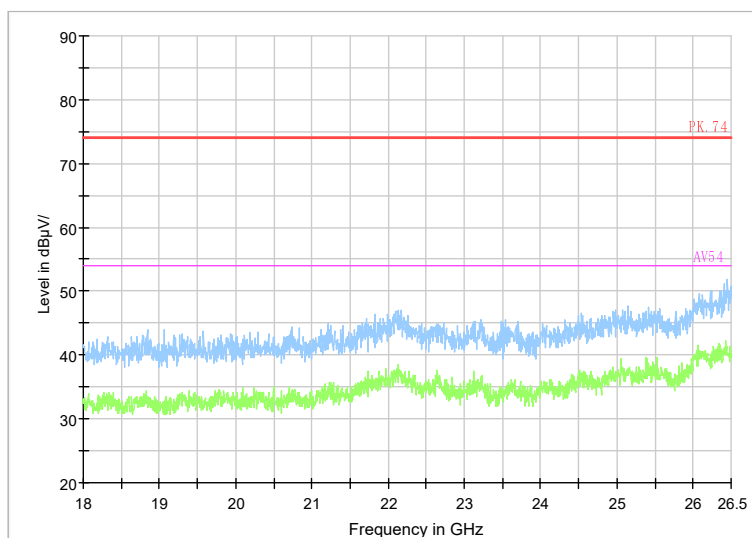


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)



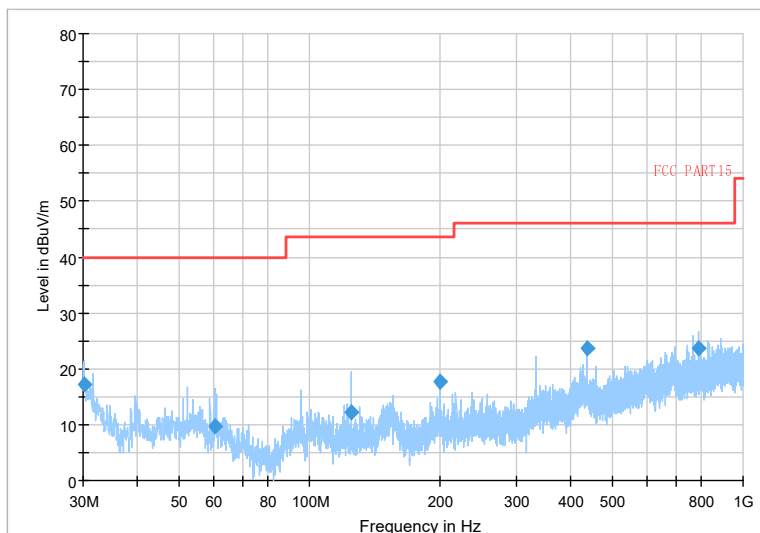
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Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2437

Channel No.:6

Full Spectrum

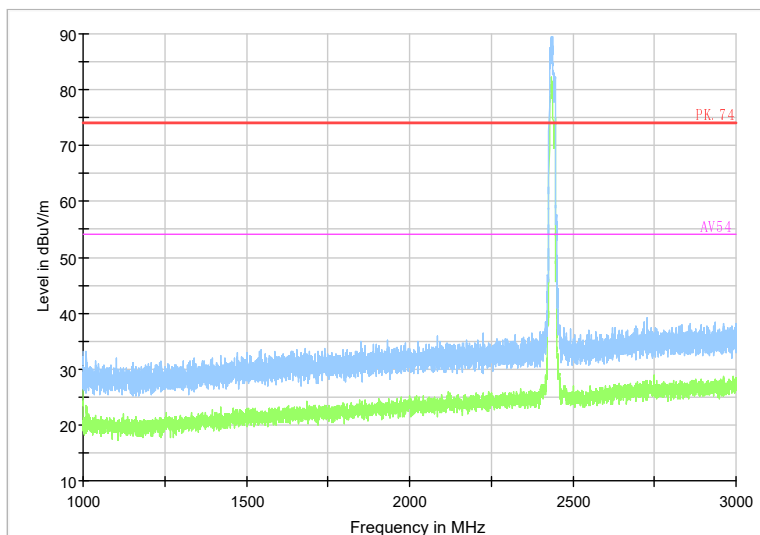


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

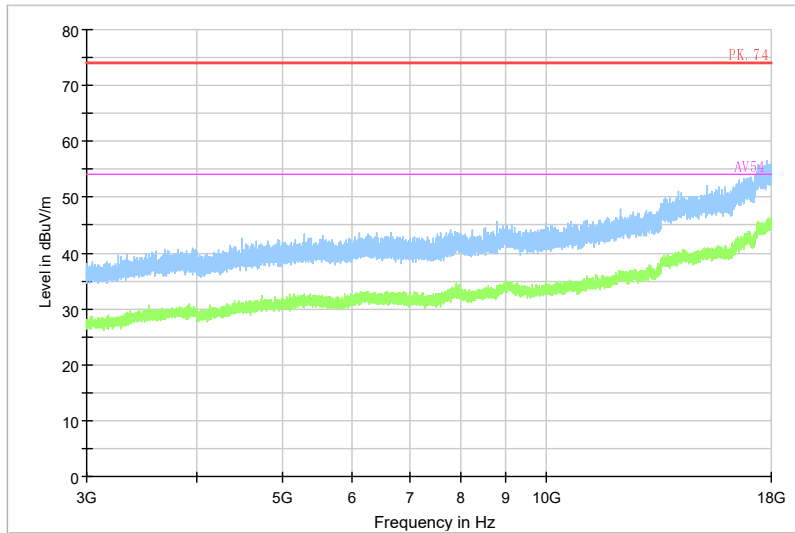
Modulation type: 802.11b



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

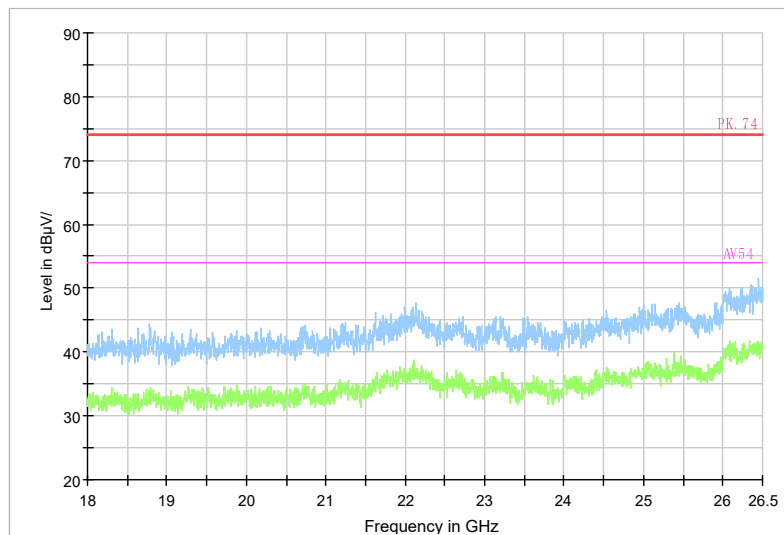


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

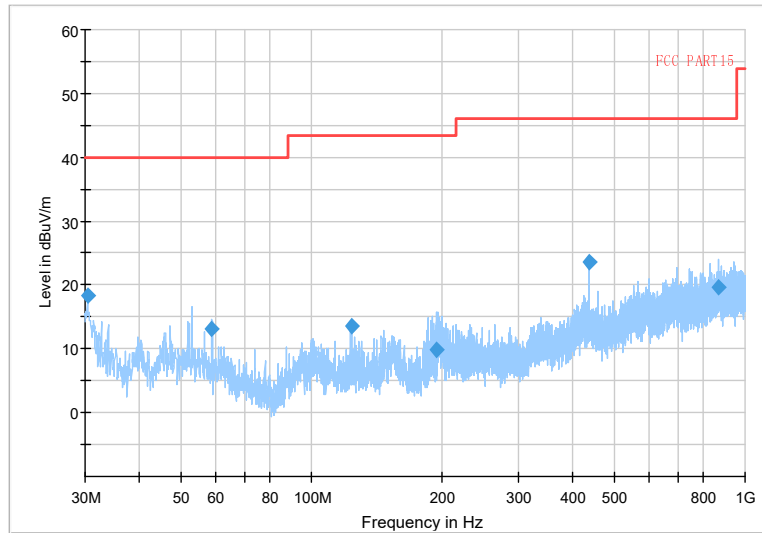




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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

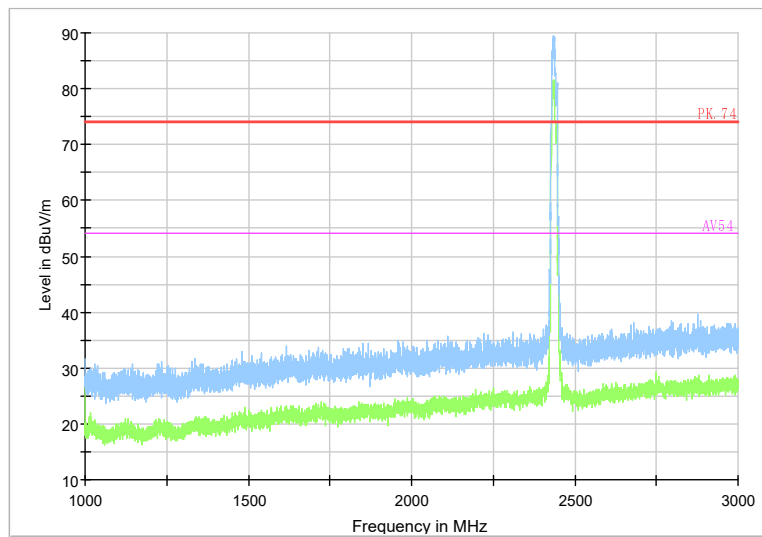


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

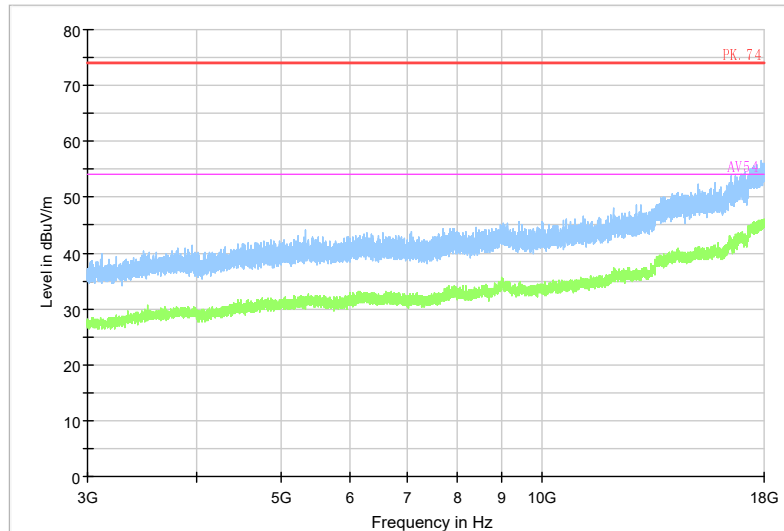
Modulation type: 802.11g



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

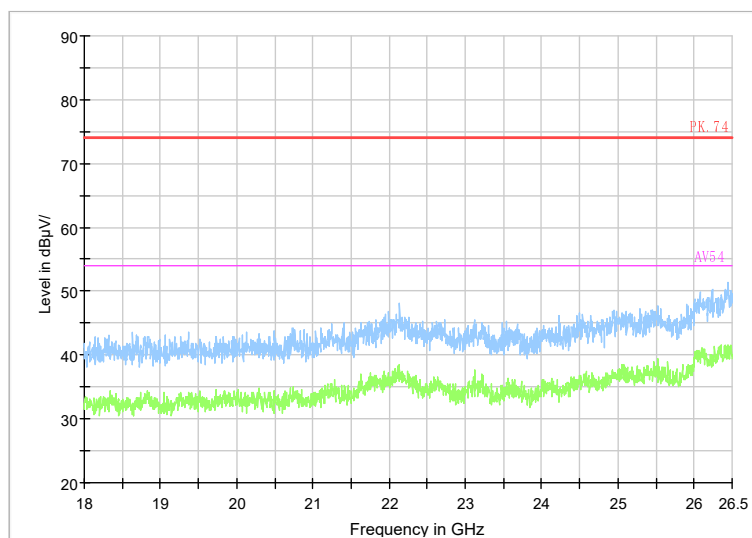


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

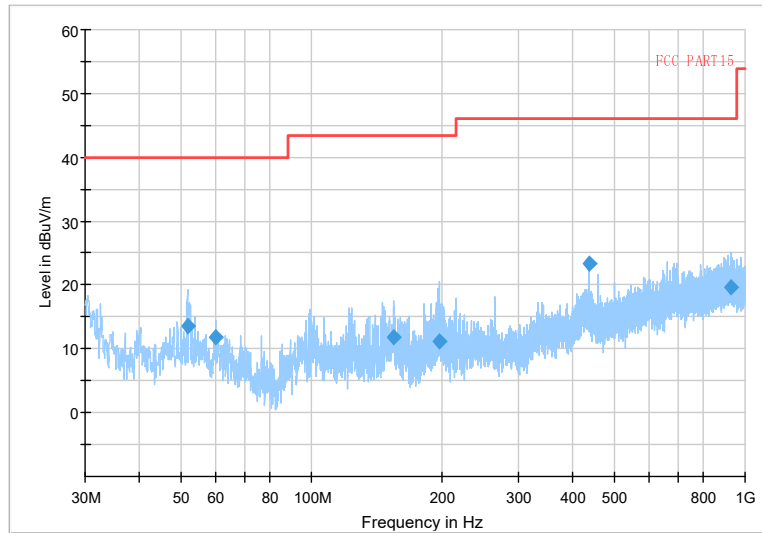
Modulation type: 802.11g



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

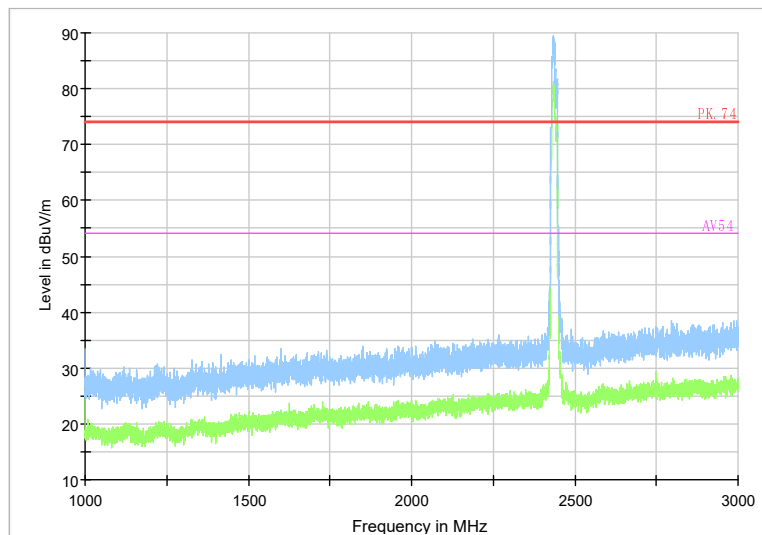


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

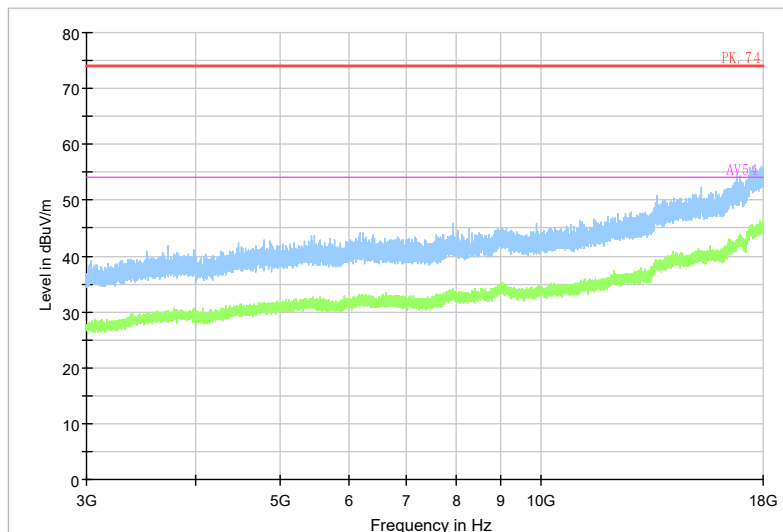
Modulation type: 802.11n(HT20)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

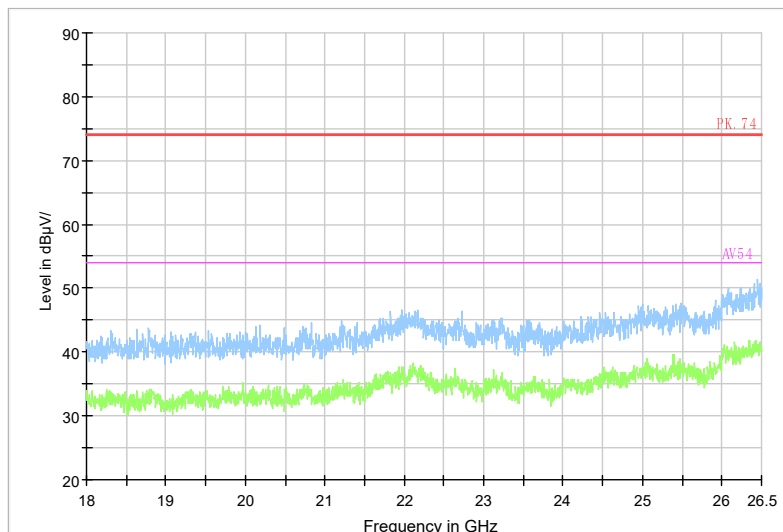


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

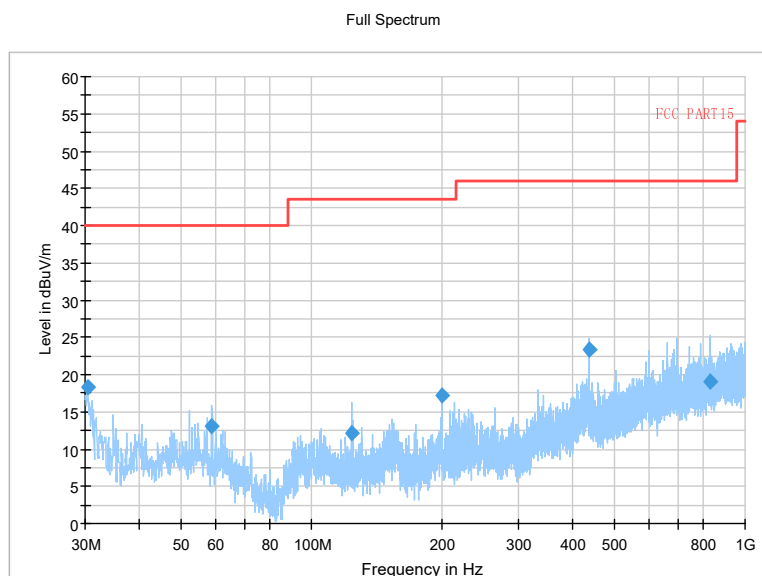
Modulation type: 802.11n(HT20)



**BUREAU VERITAS** Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2462

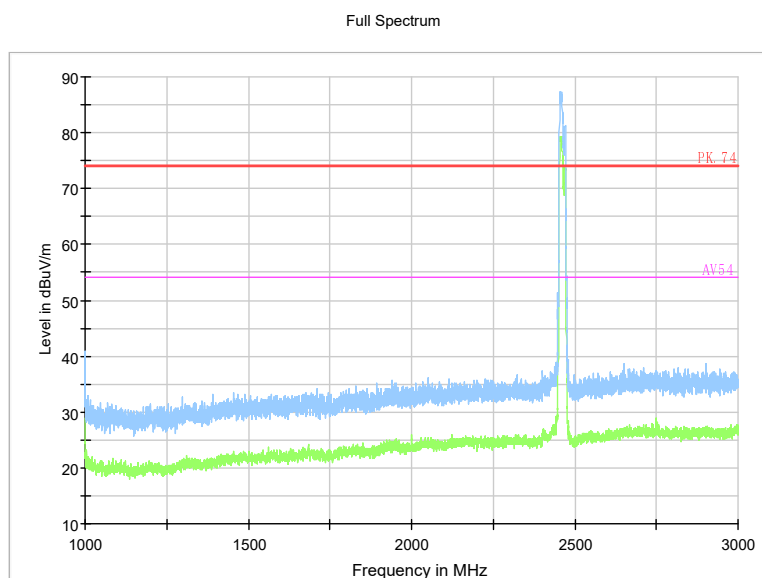
Channel No.:11



Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11b



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

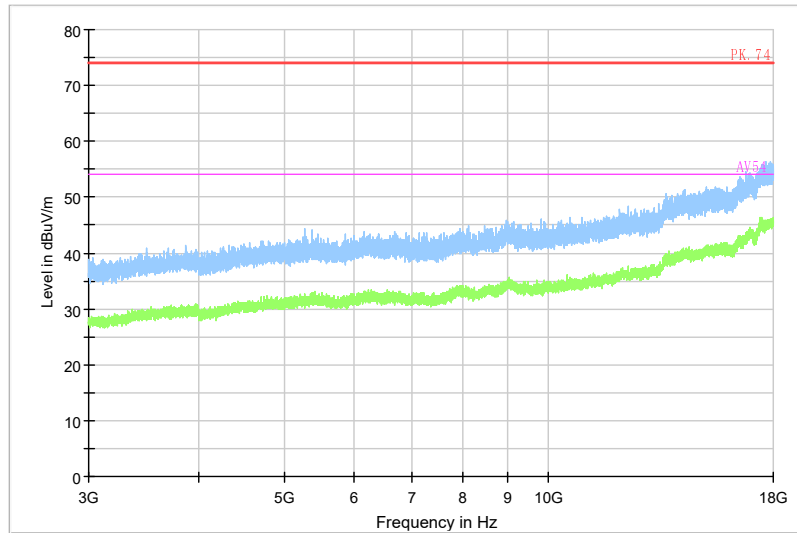
Modulation type: 802.11b



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

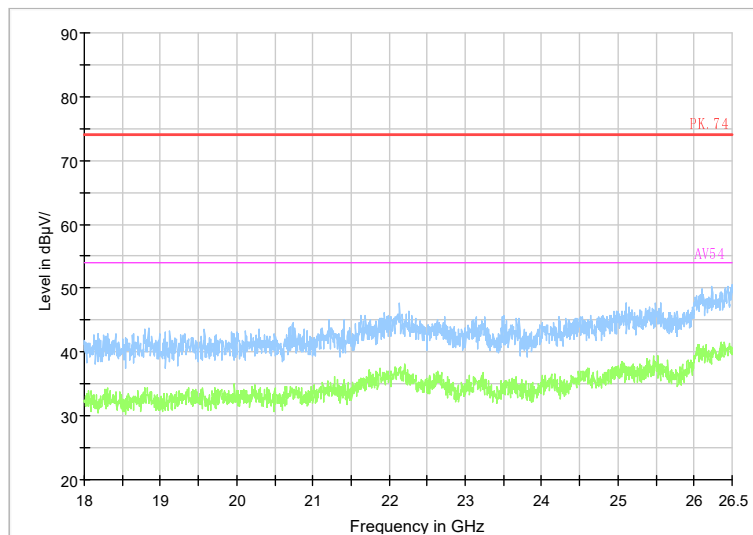


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

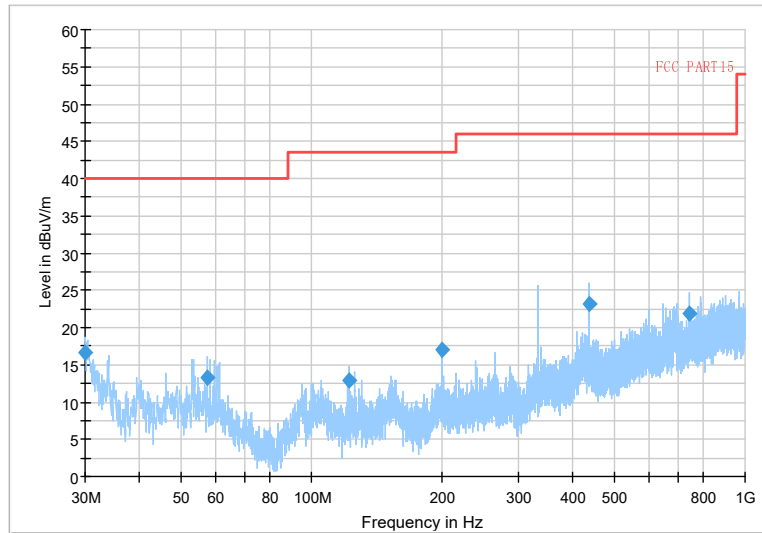
Modulation type: 802.11b



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

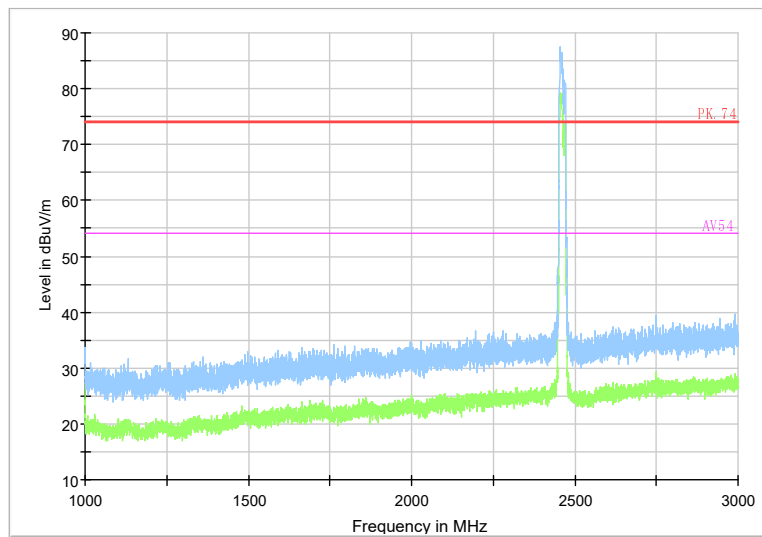


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

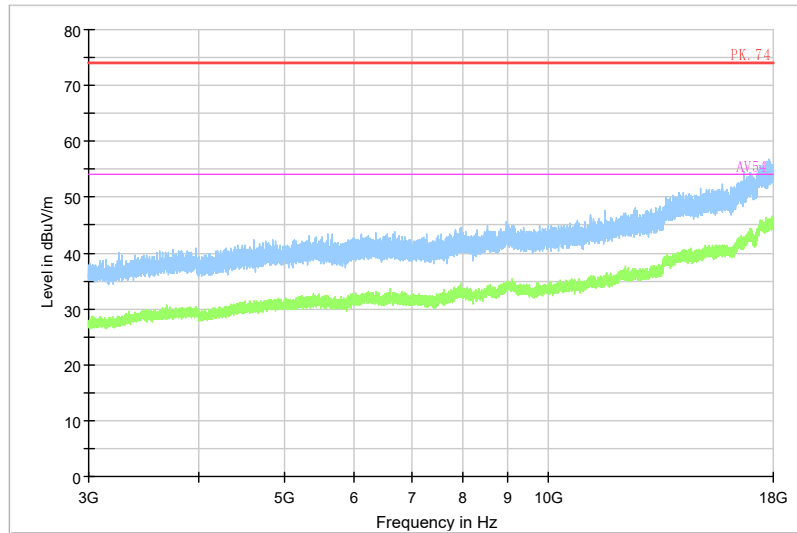
Modulation type: 802.11g



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

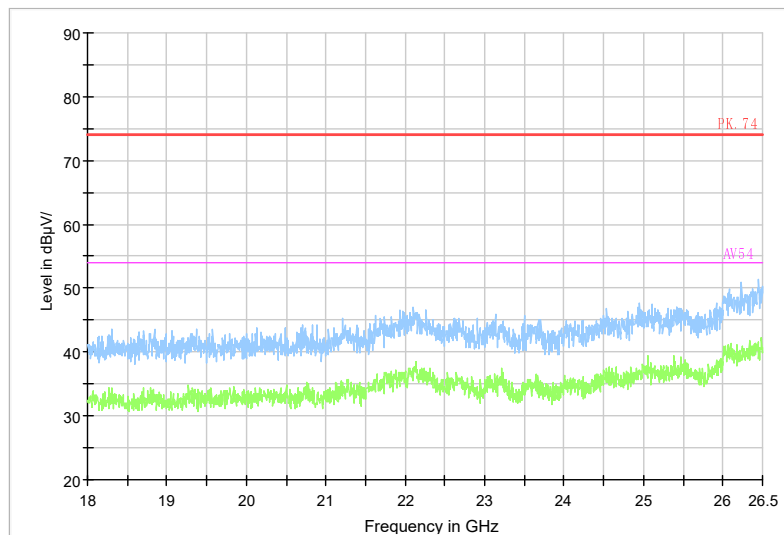


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

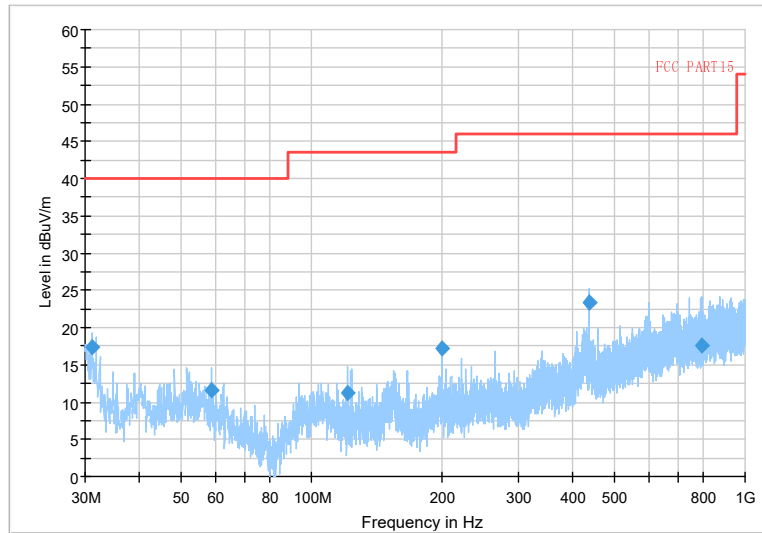




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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

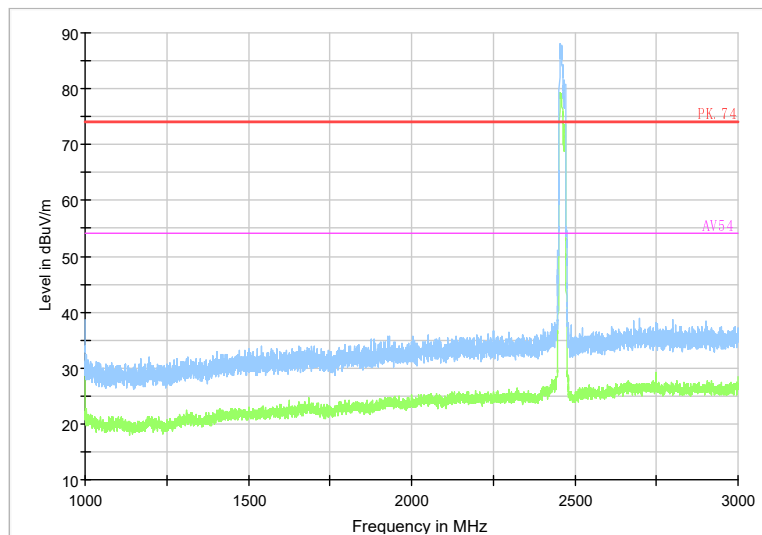


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

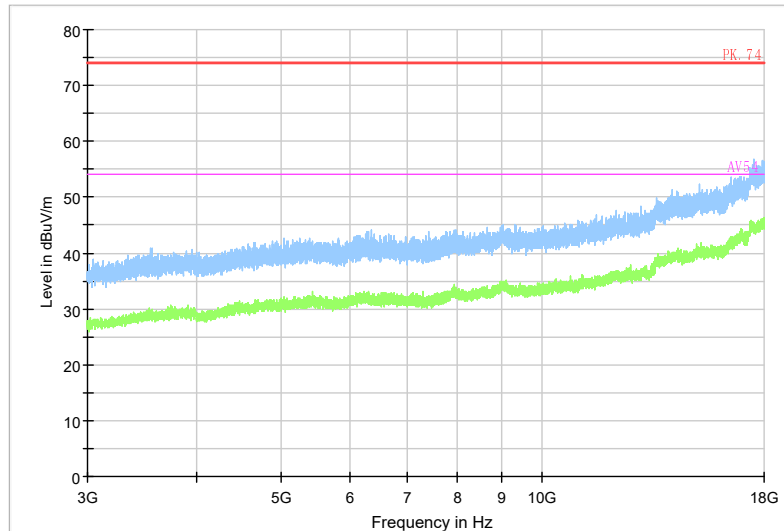
Modulation type: 802.11n(HT20)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

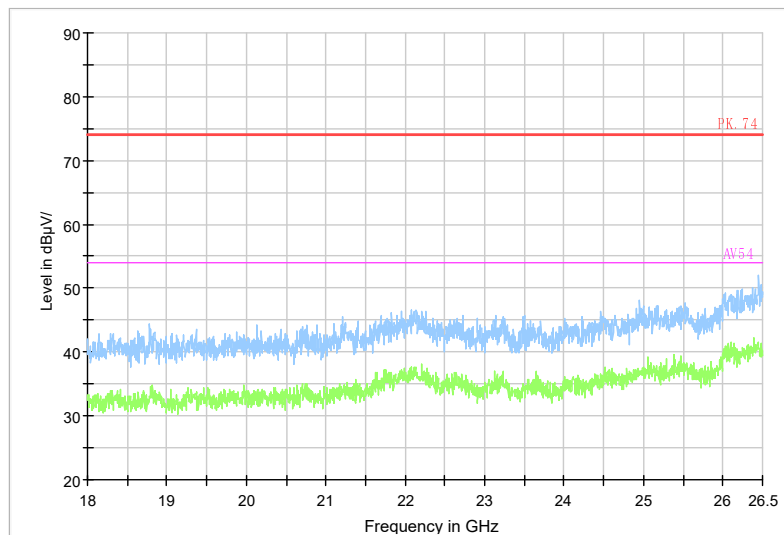


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)



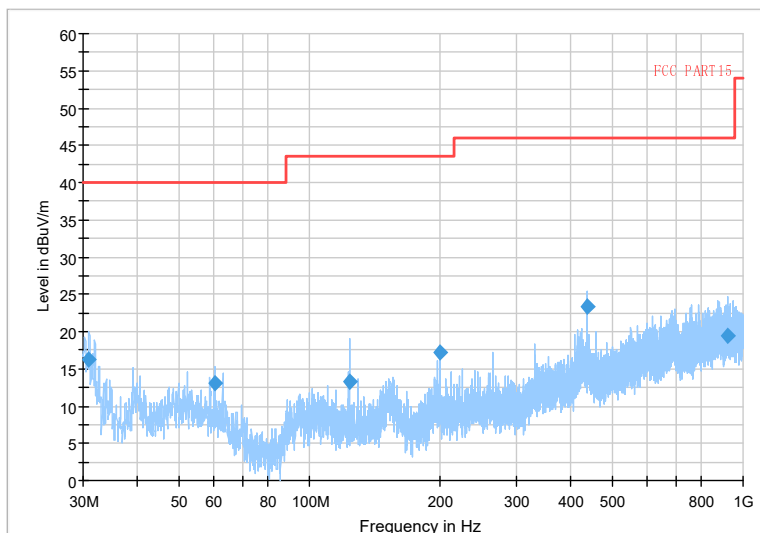
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Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2422

Channel No.:3

Full Spectrum

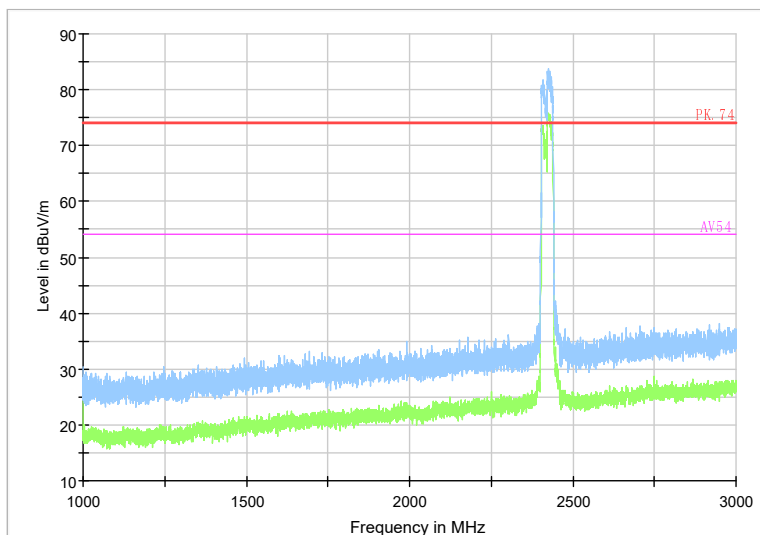


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

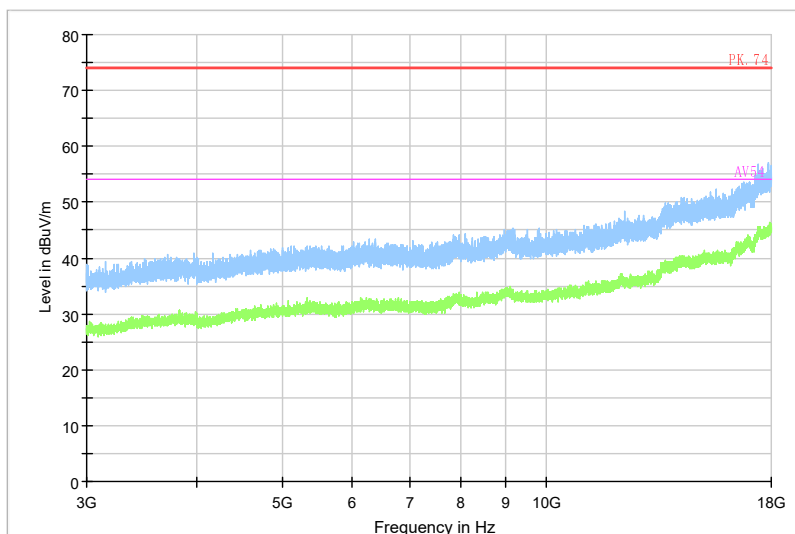
Modulation type: 802.11n(HT40)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

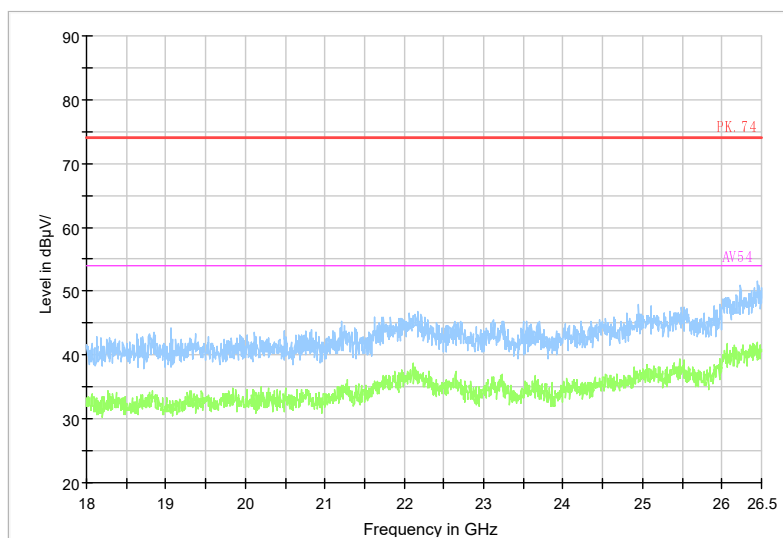


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)



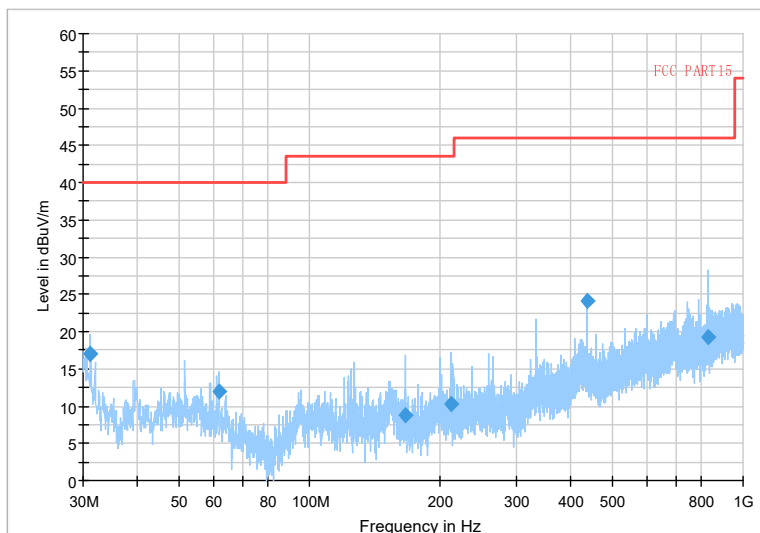
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VERITAS

Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2437

Channel No.:6

Full Spectrum

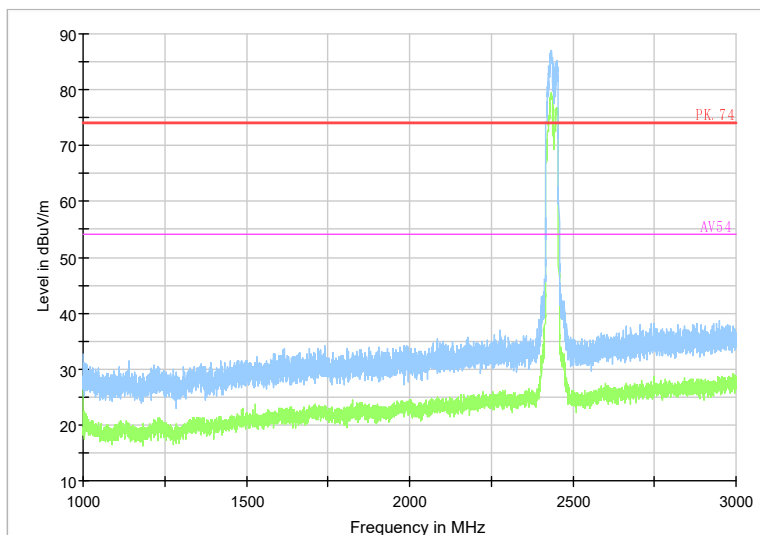


Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

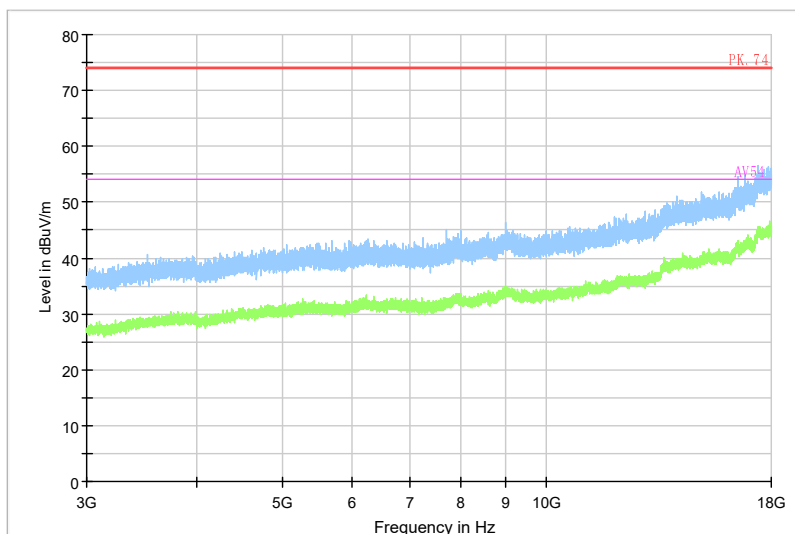
Modulation type: 802.11n(HT40)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

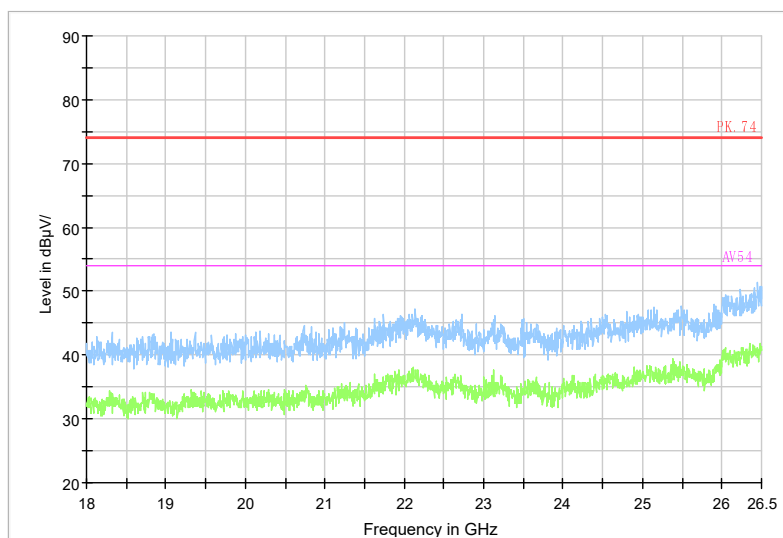


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

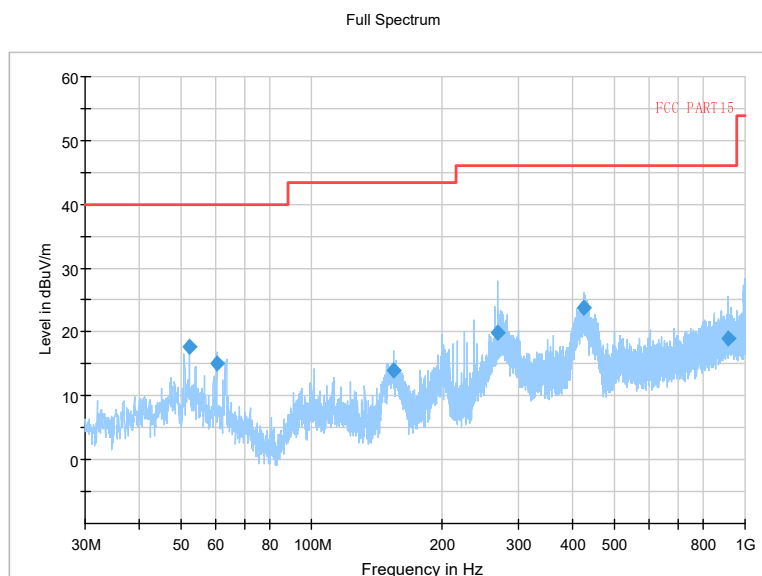


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Test Report No.: PSU-NQN2504020214RF01

Carrier frequency (MHz): 2452

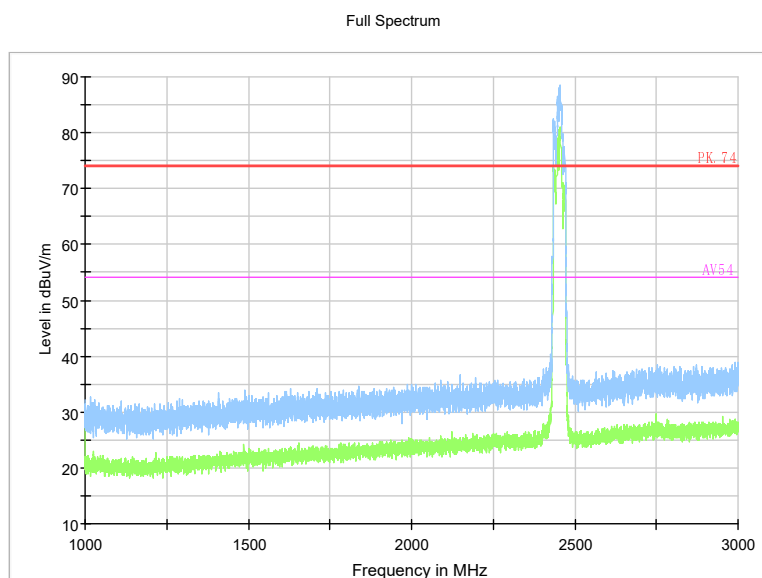
Channel No.:9



Frequency Range: 30MHz -1GHz

Detector: QP mode

Modulation type: 802.11n(HT40)



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

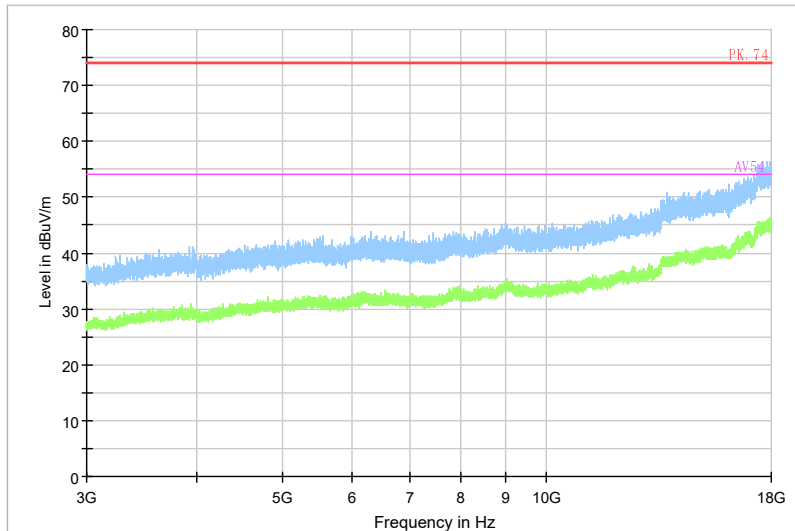
Modulation type: 802.11n(HT40)



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Test Report No.: PSU-NQN2504020214RF01

Full Spectrum

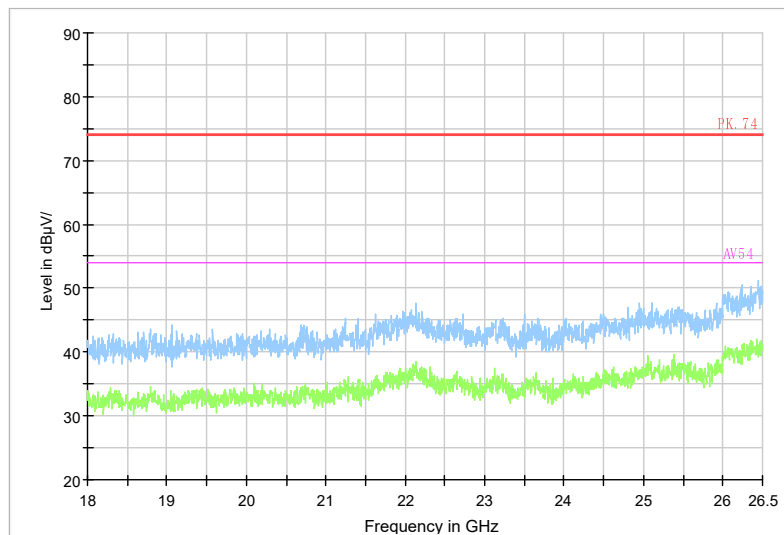


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)





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### 3.2 6 dB BANDWIDTH MEASUREMENT

#### 3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Mar.28,24	Mar.27,26
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A03	182185	Mar.29,24	Mar.28,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Hygrothermograph	DELI	20210528	SZ015	Sep.06,23	Sep.05,25
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26
Power Meter	R&S	NRX	102380	Mar.28,24	Mar.27,26
Power Meter probe	R&S	NRP6A	102942	Mar.28,24	Mar.27,26

#### NOTE:

1. The calibration interval of the above test instruments is 12/ 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

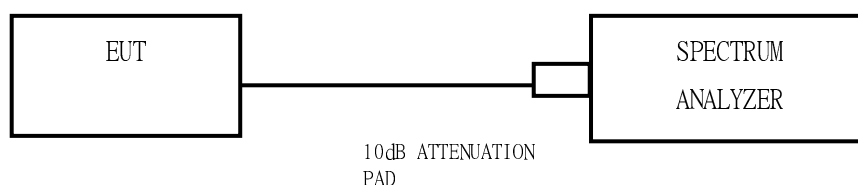
### 3.3.3 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

### 3.3.5 TEST SETUP



### 3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 3.3.7 TEST RESULTS

Please Refer to Appendix1 Of this test report.

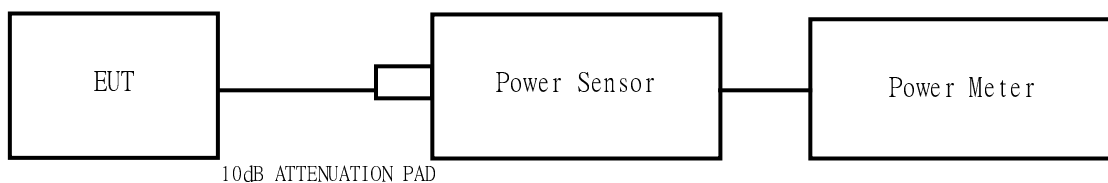


### 3.3 CONDUCTED OUTPUT POWER

#### 3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

#### 3.4.2 TEST SETUP



#### 3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

#### 3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 3.4.7 TEST RESULTS

##### 3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix1 Of this test report.



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#### 3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

Please Refer to Appendix1 Of this test report.

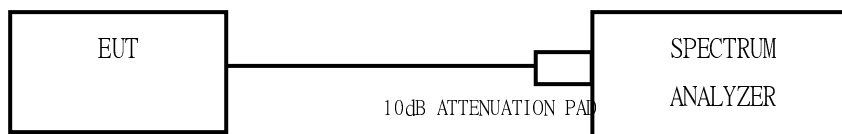


### 3.4 POWER SPECTRAL DENSITY MEASUREMENT

#### 3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3kHz.

#### 3.5.2 TEST SETUP



#### 3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW  $\geq 3 \times$  RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

#### 3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



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### 3.5.7 TEST RESULTS

Please Refer to Appendix1 Of this test report.

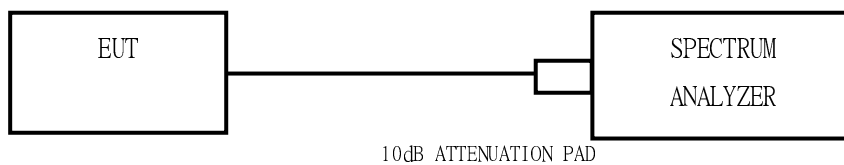


### 3.5 OUT OF BAND EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

#### 3.6.2 TEST SETUP



#### 3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.6.4 TEST PROCEDURE

##### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



## MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

### 3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix1 Of this test report.





### 3.6 ANTENNA REQUIREMENTS

#### 3.6.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.6.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

#### 3.6.3 ANTENNA GAIN

According to FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain=GANT +Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain= 10 log(NANT/ Nss) dB;

For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT≤ 4;

The EUT supports Cyclic Delay Diversity (CDD) mode,

For power measurements, the directional GANT is set equal to the antenna having the highest gain as following formulas.

Directional Gain = Max.Gain + Array Gain.

For PSD measurements, the directional GANT is calculation is following F)2)f)ii of KDB 662911 D01 v02r01.

The directional gain is calculated as following table.

2.4GHz	Ant 1 (dBi)	Ant 2 (dBi)	DG For Power (dBi)	DG For PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	2.32	2.93	2.64	2.64	0.00	0.00

NOTE : DG= directional gain, Power Limit Reduction = DG For Power Gain -6dbi<0

PSD Limit Reduction = DG For PSD – 6dBi<0. Therefore, it is not necessary to reduce maximum peak output power and PSD limit.



Test Report No.: PSU-NQN2504020214RF01

## **4 PHOTOGRAPHS OF THE TEST CONFIGURATION**

Please refer to the attached file (Test Setup Photo).

## **5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.



## 6 APPENDIX1

### WLAN 2.4G DTS BANDWIDTH

#### TEST RESULT

Test Mode	Antenna	6 dB bandwidth(MHz)		
		Channel No.1	Channel No.6	Channel No.11
		2412MHz	2437MHz	2462MHz
802.11b	Chain0	9.06	8.57	7.77
802.11b	Chain1	9.04	9.57	7.65
802.11g	Chain0	14.68	16.33	14.79
802.11g	Chain1	16.38	13.58	16.39
802.11n HT20	Chain0	16.97	15.62	17.57
802.11n HT20	Chain1	17.53	17.58	17.59

Test Mode	Antenna	6 dB bandwidth(MHz)		
		Channel No.3	Channel No.6	Channel No.9
		2422MHz	2437MHz	2452MHz
802.11n HT40	Chain0	32.64	31.69	32.25
802.11n HT40	Chain1	34.92	30.06	33.86

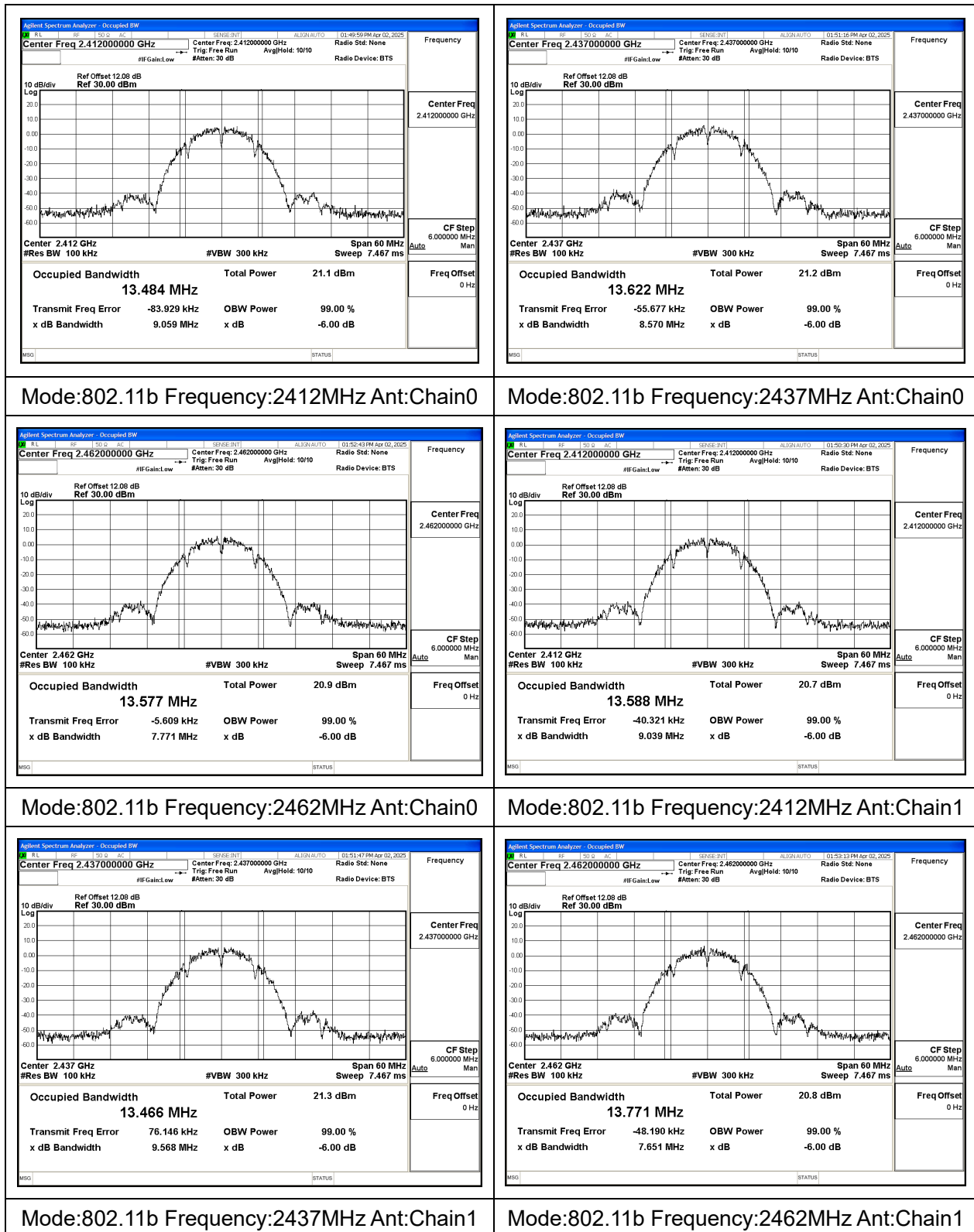


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Test Report No.: PSU-NQN2504020214RF01

## TEST GRAPHS

Test Mode: 802.11b



Mode: 802.11b Frequency: 2437 MHz Ant: Chain1

Mode: 802.11b Frequency: 2462 MHz Ant: Chain1

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(Suzhou) Co., Ltd.

Tower N, Innovation Center, 88 Zuyi Road, High-tech  
District, Suzhou City, Anhui Province

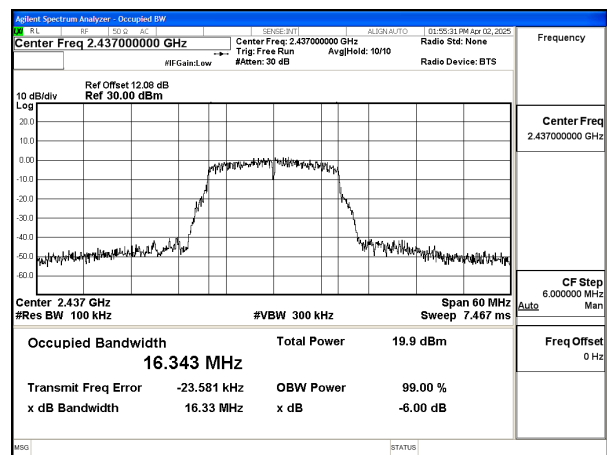
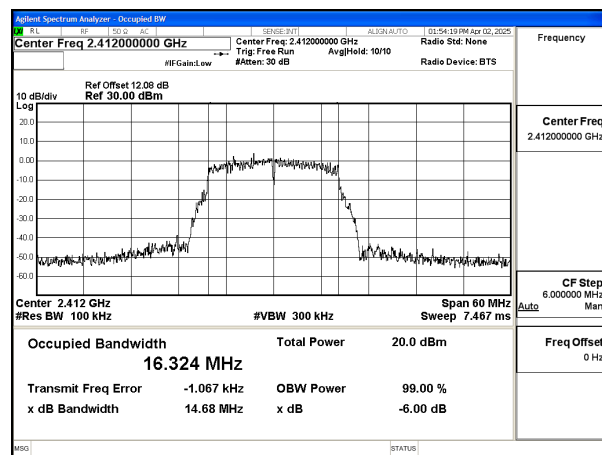
Tel: +86 (0557) 368 1008



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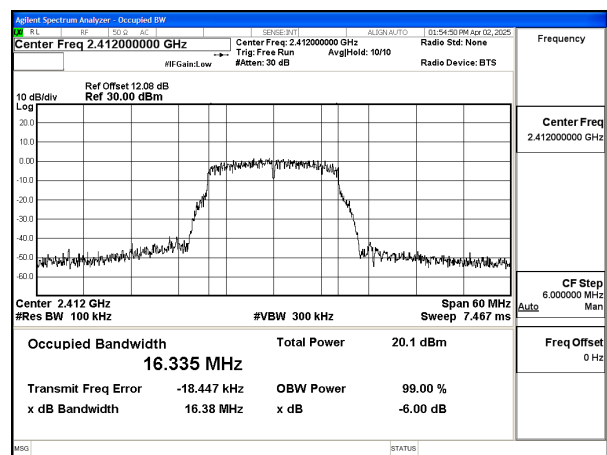
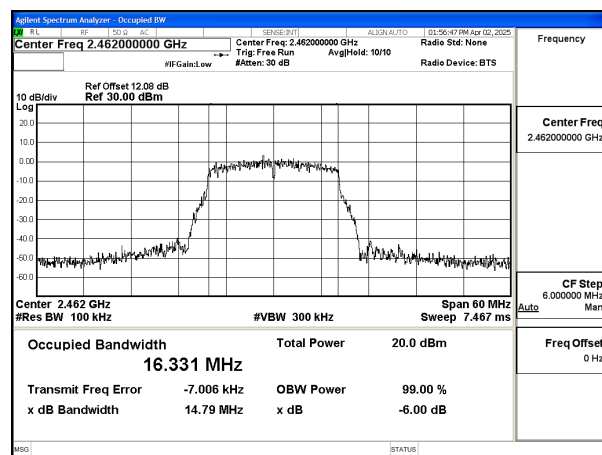
Test Report No.: PSU-NQN2504020214RF01

Test Mode: 802.11g



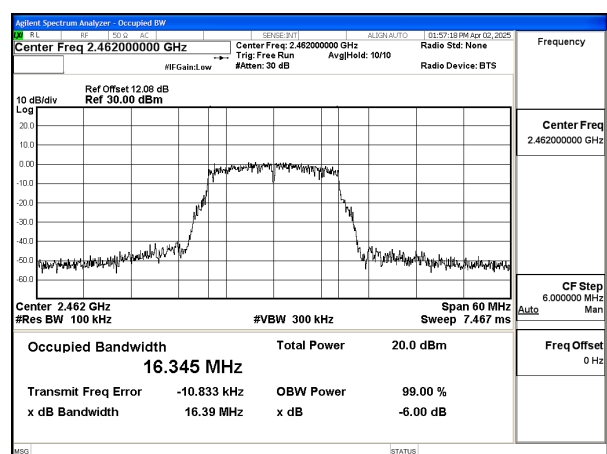
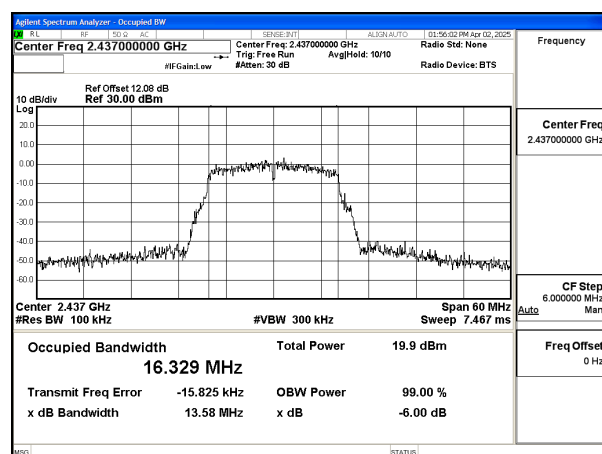
Mode:802.11g Frequency:2412MHz Ant:Chain0

Mode:802.11g Frequency:2437MHz Ant:Chain0



Mode:802.11g Frequency:2462MHz Ant:Chain0

Mode:802.11g Frequency:2412MHz Ant:Chain1



Mode:802.11g Frequency:2437MHz Ant:Chain1

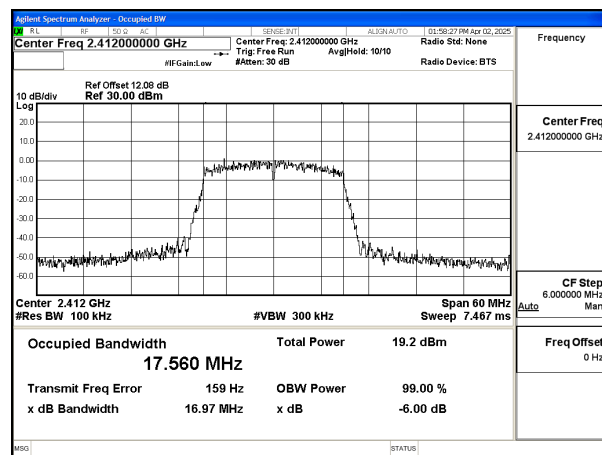
Mode:802.11g Frequency:2462MHz Ant:Chain1



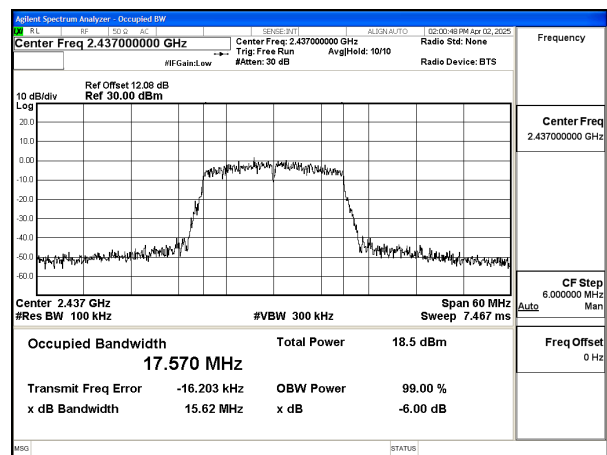
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Test Report No.: PSU-NQN2504020214RF01

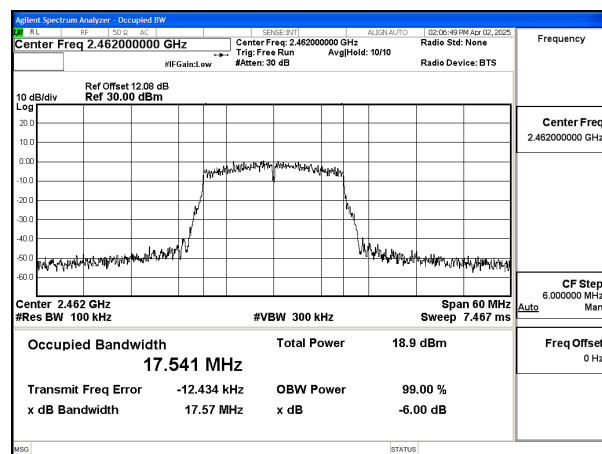
Test Mode: 802.11n HT20



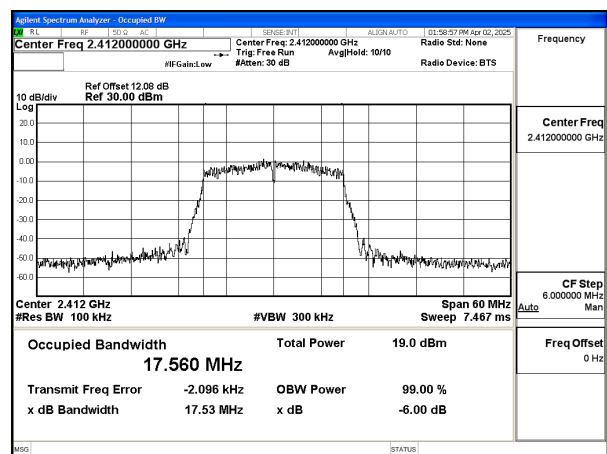
Mode:802.11n HT20 Frequency:2412MHz  
Ant:Chain0



Mode:802.11n HT20 Frequency:2437MHz  
Ant:Chain0



Mode:802.11n HT20 Frequency:2462MHz  
Ant:Chain0

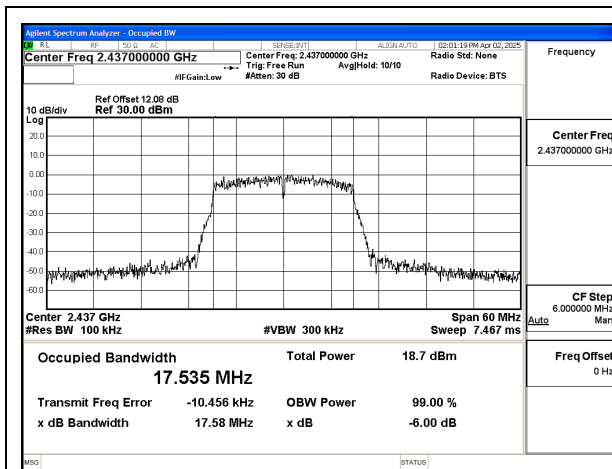


Mode:802.11n HT20 Frequency:2412MHz  
Ant:Chain1



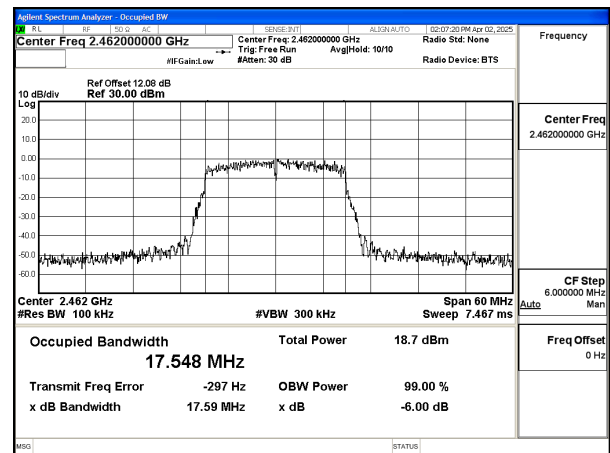
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Test Report No.: PSU-NQN2504020214RF01



Mode:802.11n HT20 Frequency:2437MHz

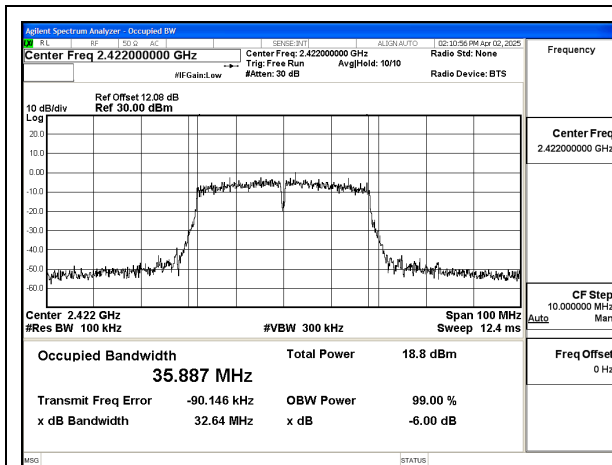
Ant:Chain1



Mode:802.11n HT20 Frequency:2462MHz

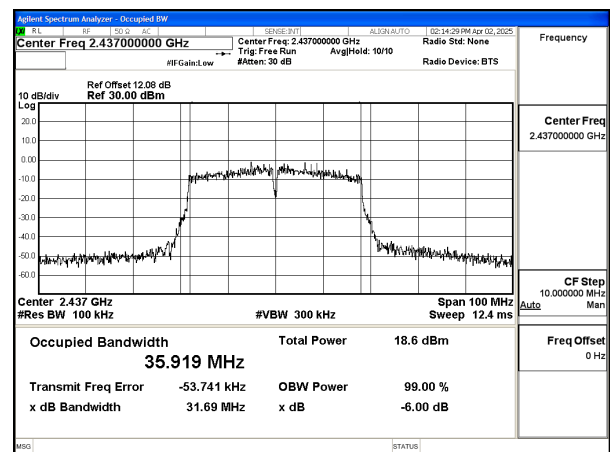
Ant:Chain1

Test Mode: 802.11n HT40



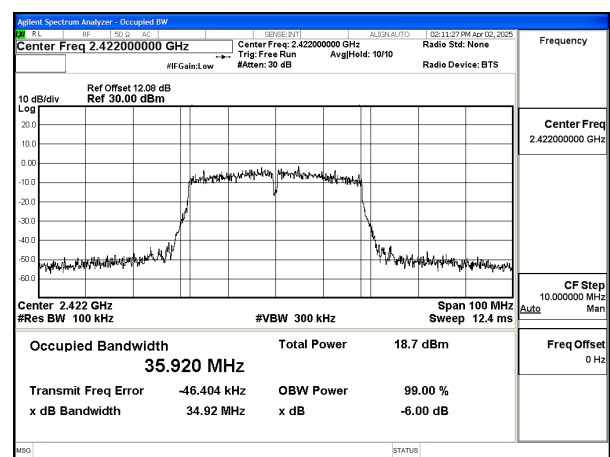
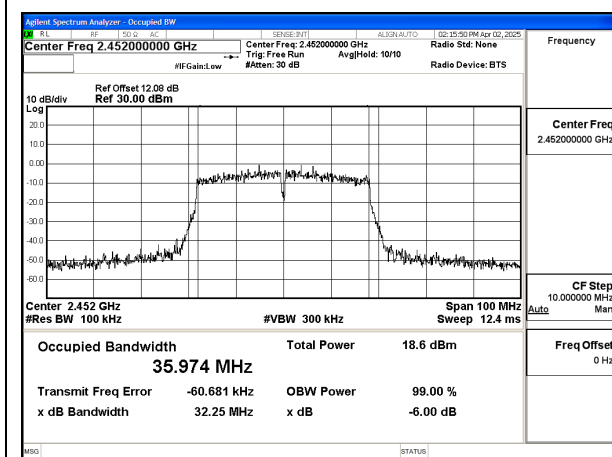
Mode:802.11n HT40 Frequency:2422MHz

Ant:Chain0



Mode:802.11n HT40 Frequency:2437MHz

Ant:Chain0



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(Suzhou) Co., Ltd.

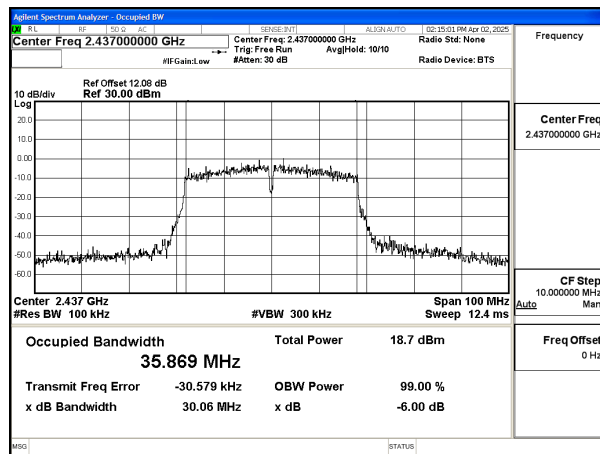
Tower N, Innovation Center, 88 Zuyi Road, High-tech  
District, Suzhou City, Anhui Province

Tel: +86 (0557) 368 1008



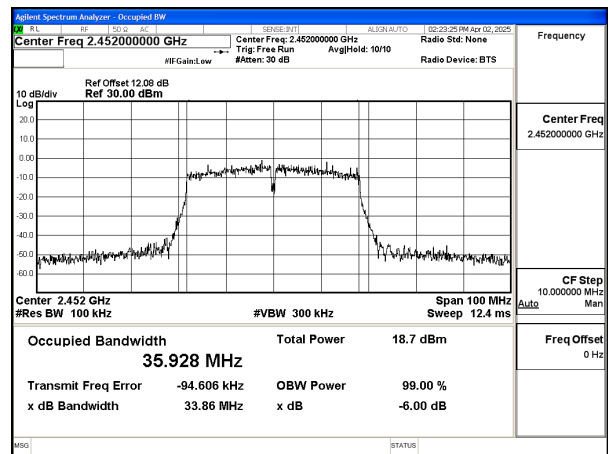
Mode:802.11n HT40 Frequency:2452MHz

Ant:Chain0



Mode:802.11n HT40 Frequency:2422MHz

Ant:Chain1



Mode:802.11n HT40 Frequency:2437MHz

Ant:Chain1

Mode:802.11n HT40 Frequency:2452MHz

Ant:Chain1





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## OCCUPIED CHANNEL BANDWIDTH

### TEST RESULT

Test Mode	Antenna	99% bandwidth(MHz)		
		Channel No.1	Channel No.6	Channel No.11
		2412MHz	2437MHz	2462MHz
802.11b	Chain0	13.510	13.589	13.631
802.11b	Chain1	13.563	13.600	13.609
802.11g	Chain0	16.612	16.604	16.646
802.11g	Chain1	16.576	16.635	16.471
802.11n HT20	Chain0	17.656	17.652	17.721
802.11n HT20	Chain1	17.778	17.682	17.648

Test Mode	Antenna	99% bandwidth(MHz)		
		Channel No.3	Channel No.6	Channel No.9
		2422MHz	2437MHz	2452MHz
802.11n HT40	Chain0	35.964	35.915	35.947
802.11n HT40	Chain1	35.927	35.858	35.992

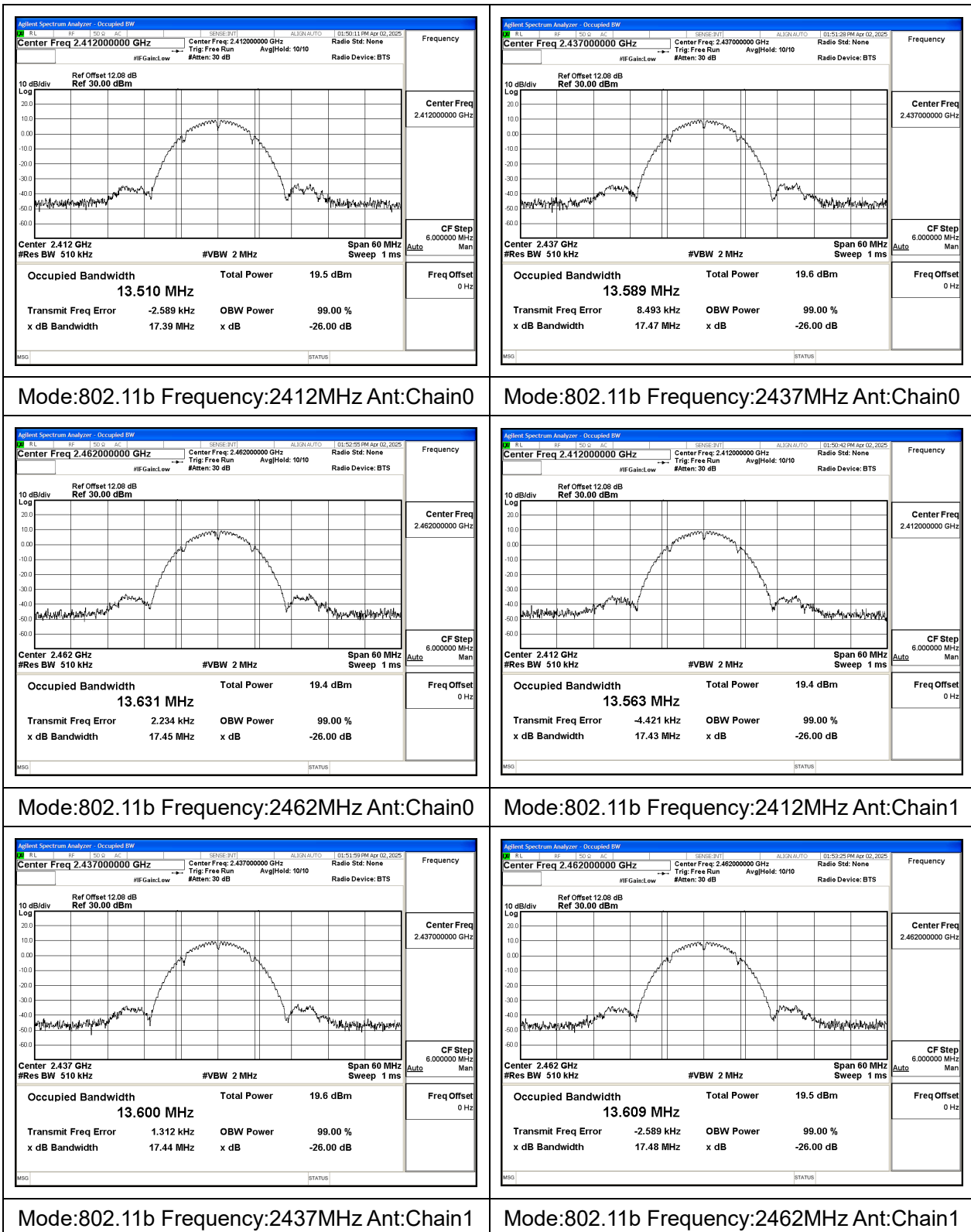


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Test Report No.: PSU-NQN2504020214RF01

## TEST GRAPHS

Test Mode: 802.11b

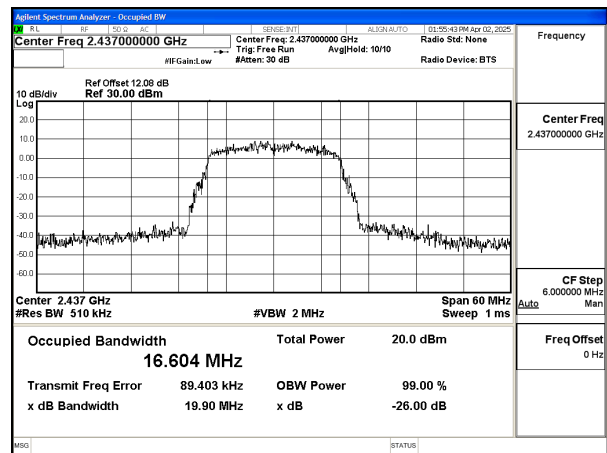
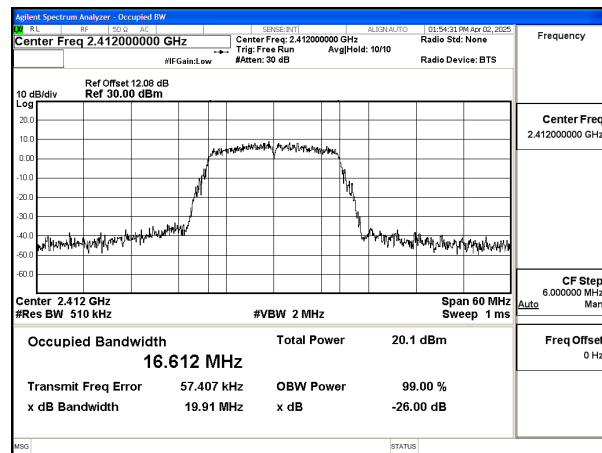




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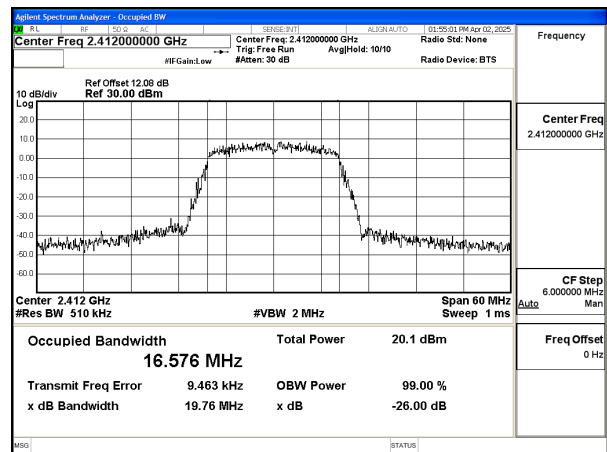
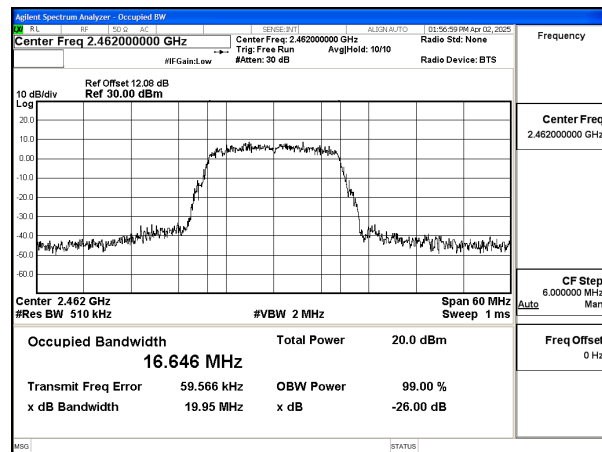
Test Report No.: PSU-NQN2504020214RF01

Test Mode: 802.11g



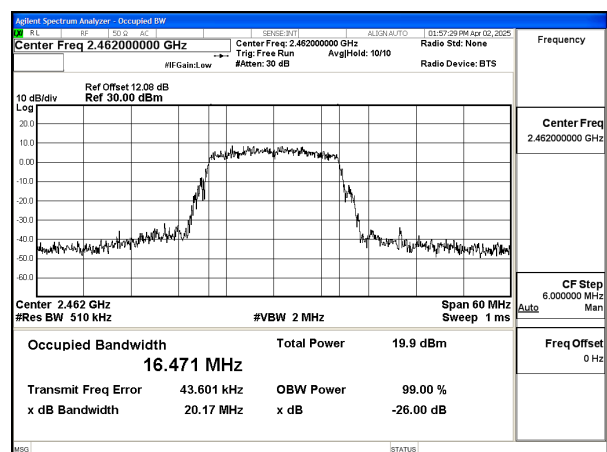
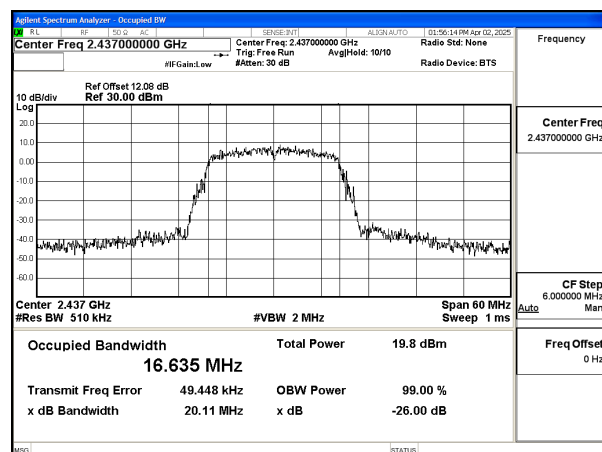
Mode:802.11g Frequency:2412MHz Ant:Chain0

Mode:802.11g Frequency:2437MHz Ant:Chain0



Mode:802.11g Frequency:2462MHz Ant:Chain0

Mode:802.11g Frequency:2412MHz Ant:Chain1



Mode:802.11g Frequency:2437MHz Ant:Chain1

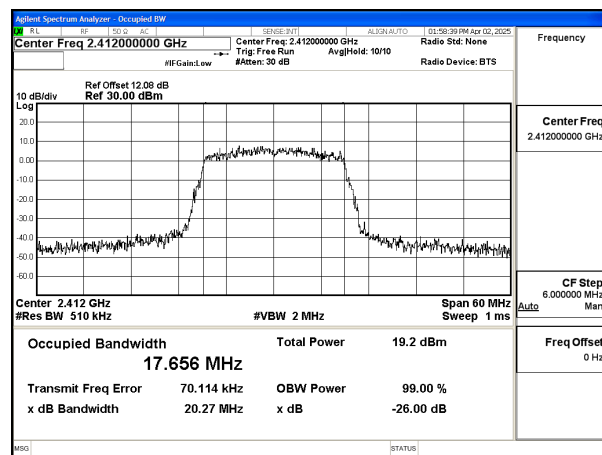
Mode:802.11g Frequency:2462MHz Ant:Chain1



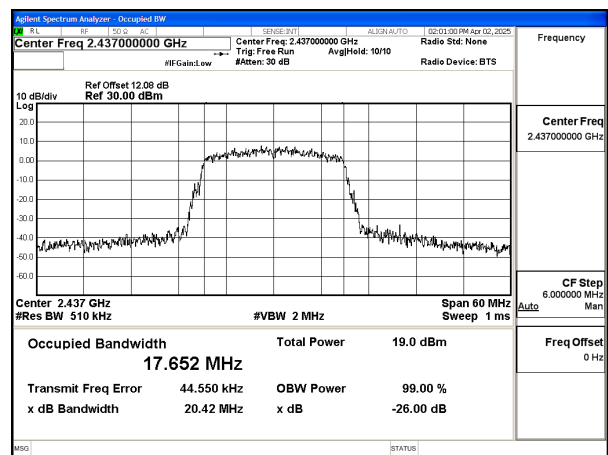
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Test Report No.: PSU-NQN2504020214RF01

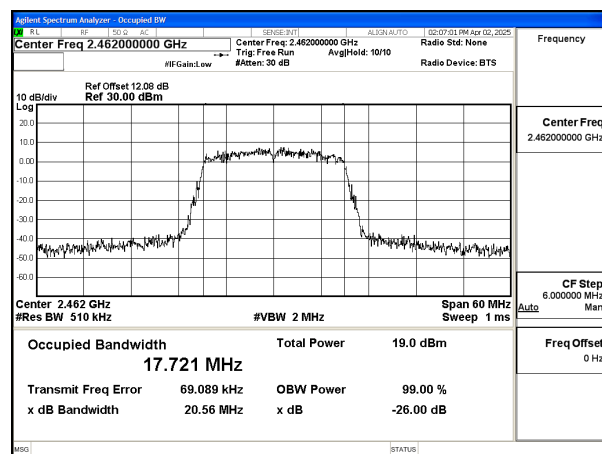
Test Mode: 802.11n HT20



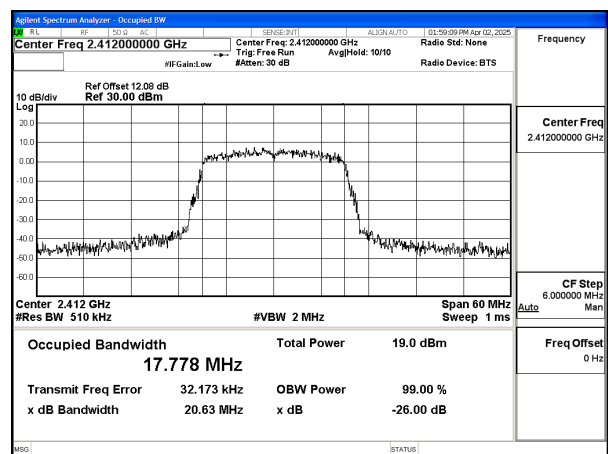
Mode:802.11n HT20 Frequency:2412MHz  
Ant:Chain0



Mode:802.11n HT20 Frequency:2437MHz  
Ant:Chain0



Mode:802.11n HT20 Frequency:2462MHz  
Ant:Chain0

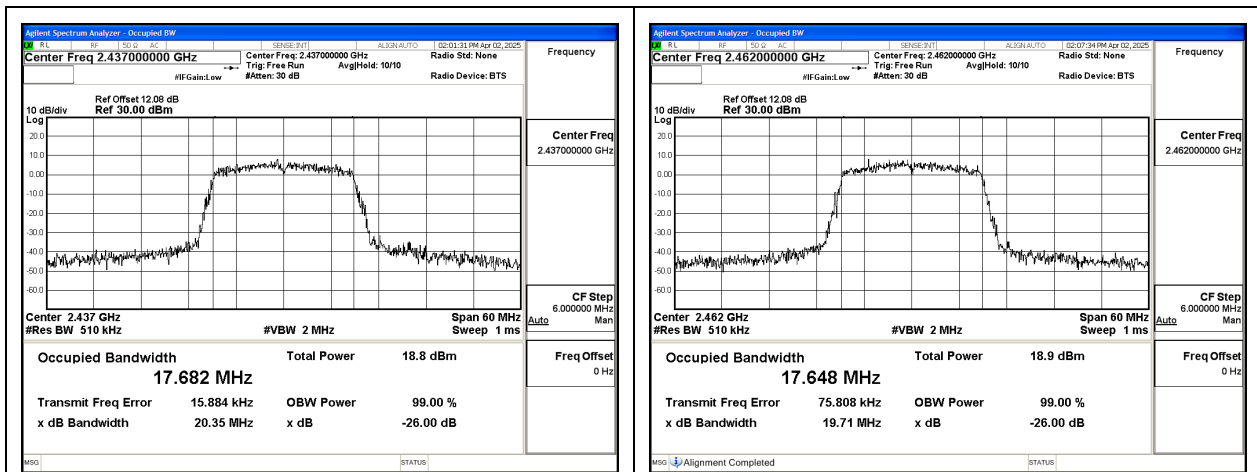


Mode:802.11n HT20 Frequency:2412MHz  
Ant:Chain1



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Test Report No.: PSU-NQN2504020214RF01



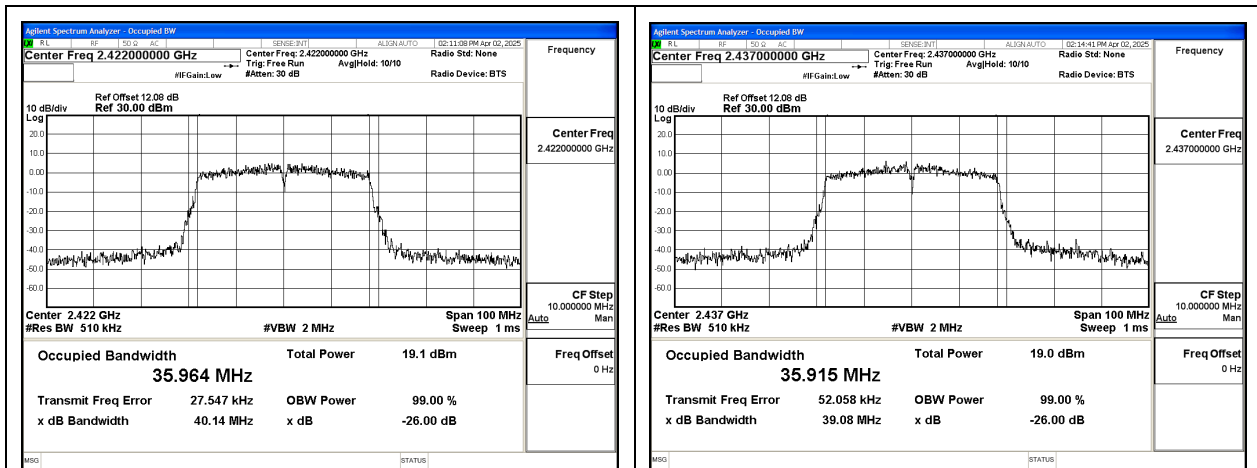
Mode:802.11n HT20 Frequency:2437MHz

Ant:Chain1

Mode:802.11n HT20 Frequency:2462MHz

Ant:Chain1

Test Mode: 802.11n HT40

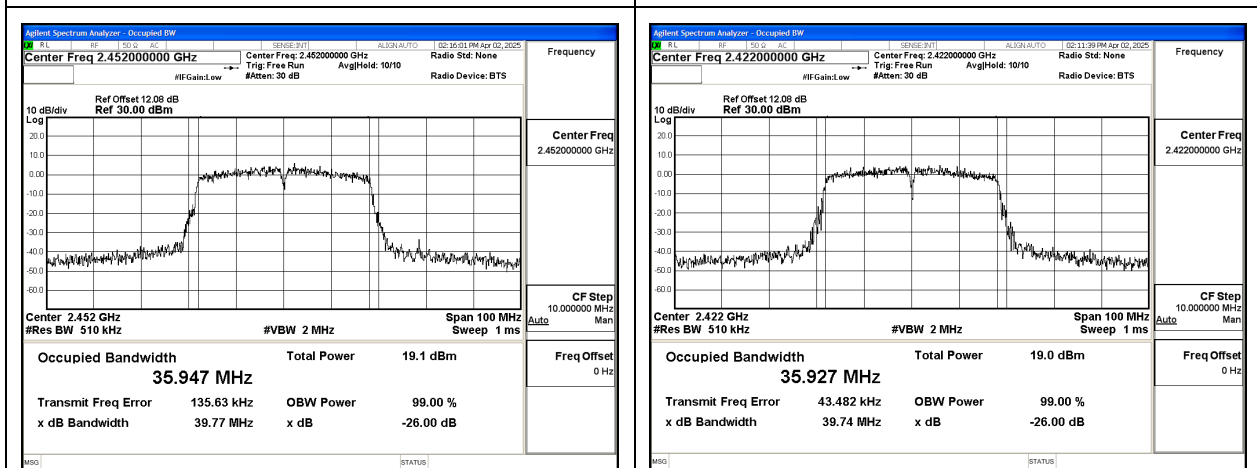


Mode:802.11n HT40 Frequency:2422MHz

Ant:Chain0

Mode:802.11n HT40 Frequency:2437MHz

Ant:Chain0



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(Suzhou) Co., Ltd.

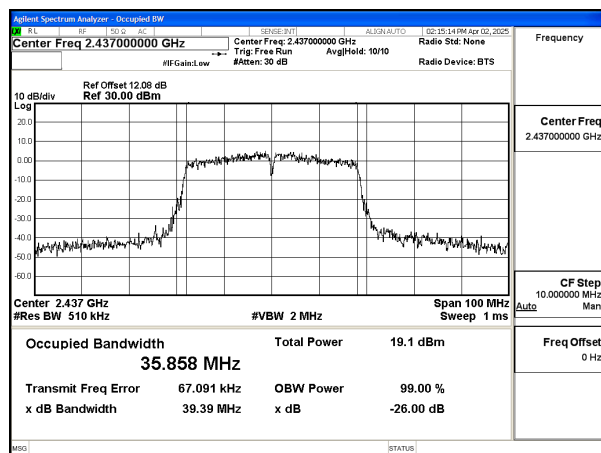
Tower N, Innovation Center, 88 Zuyi Road, High-tech  
District, Suzhou City, Anhui Province

Tel: +86 (0557) 368 1008



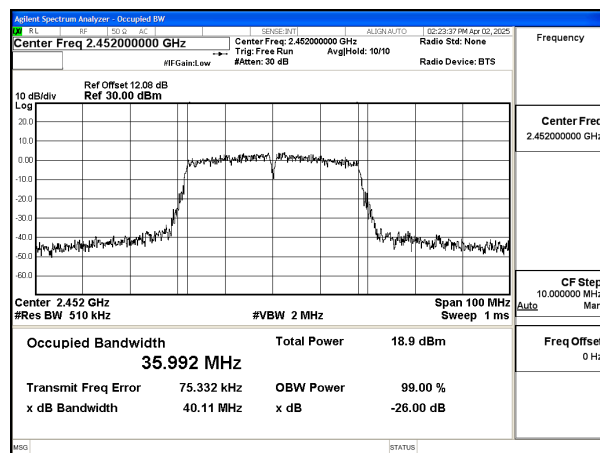
Mode:802.11n HT40 Frequency:2452MHz

Ant:Chain0



Mode:802.11n HT40 Frequency:2422MHz

Ant:Chain1



Mode:802.11n HT40 Frequency:2437MHz

Ant:Chain1



Mode:802.11n HT40 Frequency:2452MHz

Ant:Chain1





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## MAXIMUM CONDUCTED OUTPUT POWER

### TEST RESULT

NOTE: EIRP = Peak Power + Gain

Test Mode	Tones/ RU Index	Frequency (MHz)	Antenna	Peak power output (dBm)	Average power output (dBm)	EIRP (dBm)
802.11b	NA	2412	Chain0	18.95	16.83	19.15
802.11b	NA	2412	Chain1	18.76	16.65	19.58
802.11b	NA	2437	Chain0	19.13	17.08	19.40
802.11b	NA	2437	Chain1	19.01	16.96	19.89
802.11b	NA	2462	Chain0	19.14	17.03	19.35
802.11b	NA	2462	Chain1	18.91	16.79	19.72
802.11g	NA	2412	Chain0	22.73	16.20	18.52
802.11g	NA	2412	Chain1	22.51	16.06	18.99
802.11g	NA	2437	Chain0	22.54	16.02	18.34
802.11g	NA	2437	Chain1	22.32	15.76	18.69
802.11g	NA	2462	Chain0	22.57	16.05	18.37
802.11g	NA	2462	Chain1	22.49	15.98	18.91
802.11n HT20	NA	2412	Chain0	22.11	15.61	17.93
802.11n HT20	NA	2412	Chain1	21.95	15.44	18.37
802.11n HT20	NA	2412	MIMO	<b>25.04</b>	18.54	21.18
802.11n HT20	NA	2437	Chain0	21.95	15.32	17.64
802.11n HT20	NA	2437	Chain1	21.77	15.14	18.07
802.11n HT20	NA	2437	MIMO	24.87	18.24	20.88
802.11n HT20	NA	2462	Chain0	21.94	15.42	17.74
802.11n HT20	NA	2462	Chain1	21.71	15.23	18.16
802.11n HT20	NA	2462	MIMO	24.84	18.34	20.98
802.11n HT40	NA	2422	Chain0	21.59	14.91	17.23
802.11n HT40	NA	2422	Chain1	21.45	14.79	17.72
802.11n HT40	NA	2422	MIMO	24.53	17.96	20.60
802.11n HT40	NA	2437	Chain0	21.60	14.67	16.99
802.11n HT40	NA	2437	Chain1	21.41	14.86	17.79
802.11n HT40	NA	2437	MIMO	24.52	17.68	20.32



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802.11n HT40	NA	2452	Chain0	21.71	15.00	17.32
802.11n HT40	NA	2452	Chain1	21.56	14.87	17.80
802.11n HT40	NA	2452	MIMO	24.65	17.95	20.59

## MAXIMUM POWER SPECTRAL DENSITY

### TEST RESULT

Test Mode	Antenna	Tones	Power Density(dBm/3KHz)		
			Channel No.1	Channel No.6	Channel No.11
			2412MHz	2437MHz	2462MHz
802.11b	Chain0	NA	-8.737	-9.350	-9.567
802.11b	Chain1	NA	-8.891	-9.723	-8.963
802.11g	Chain0	NA	-12.404	-11.613	-12.501
802.11g	Chain1	NA	-11.136	-11.788	-12.381
802.11n HT20	Chain0	NA	-13.706	-13.443	-12.607
802.11n HT20	Chain1	NA	-12.329	-12.847	-12.526
802.11n HT20	MIMO	NA	-9.953	-10.124	-9.556

Test Mode	Antenna	Tones	Power Density(dBm/3KHz)		
			Channel No.3	Channel No.6	Channel No.9
			2422MHz	2437MHz	2452MHz
802.11n HT40	Chain0	NA	-17.705	-18.253	-18.681
802.11n HT40	Chain1	NA	-17.663	-17.706	-16.822
802.11n HT40	MIMO	NA	-14.674	-14.961	-14.642

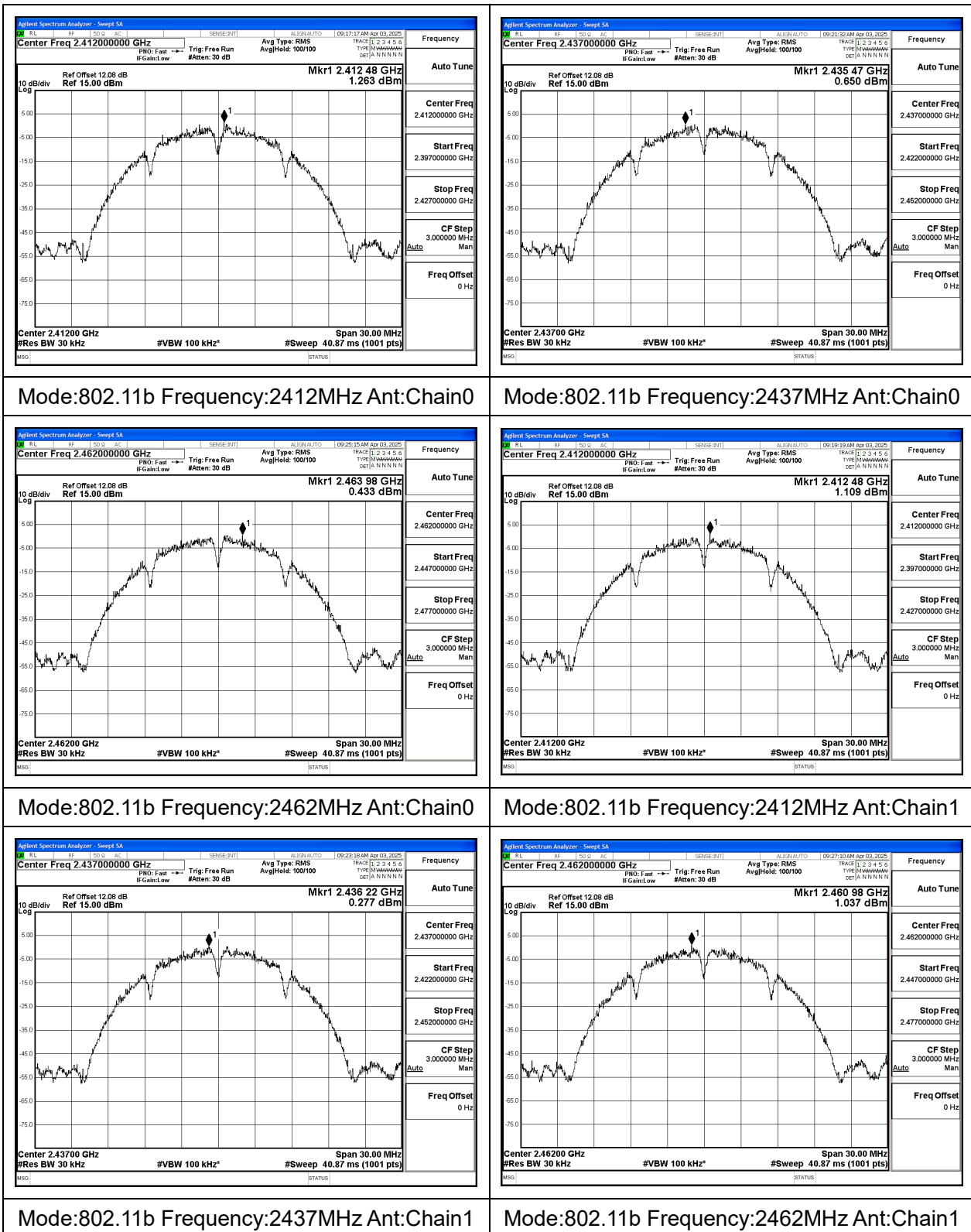




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## TEST GRAPHS

Test Mode: 802.11b

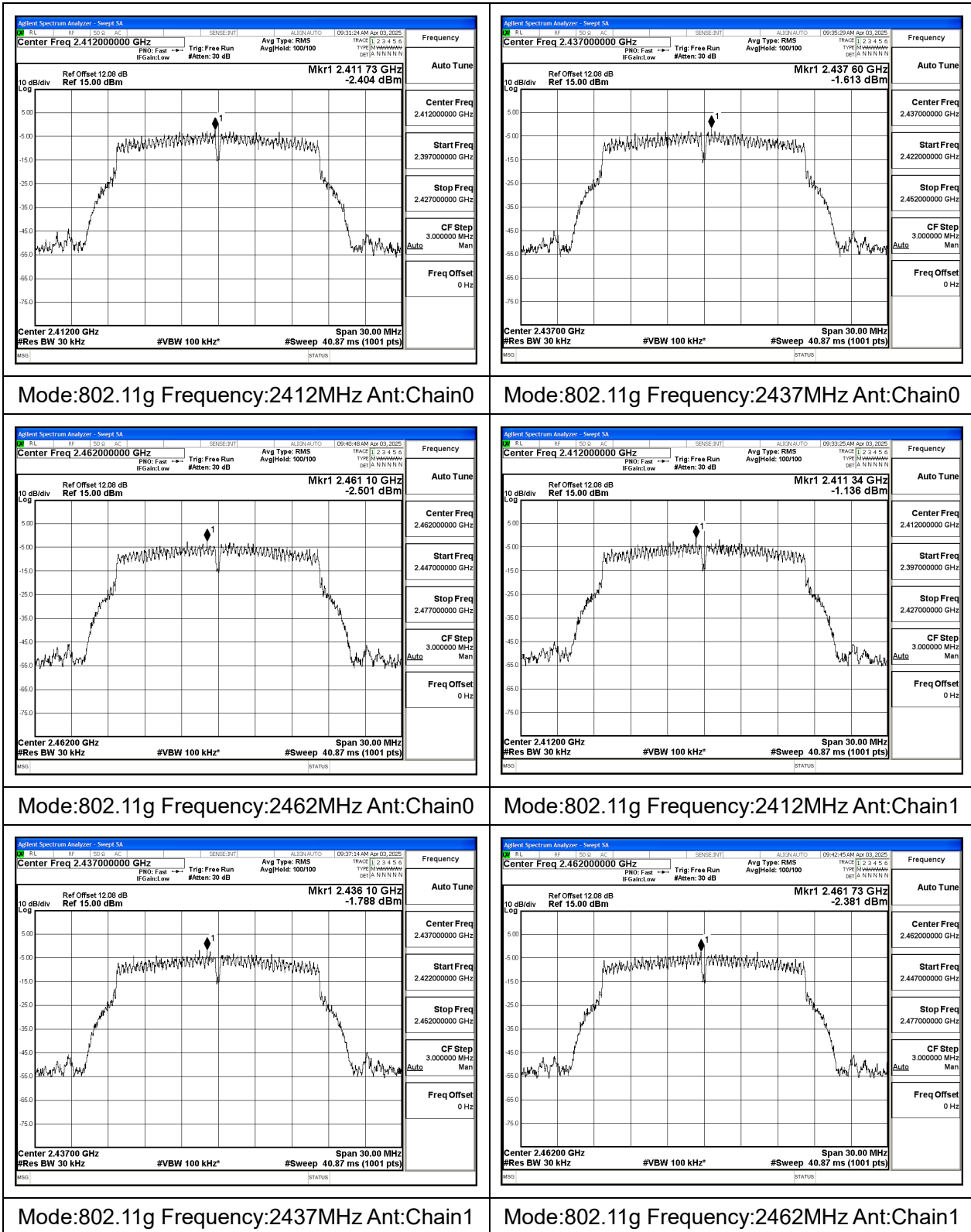




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Test Mode: 802.11g





**BUREAU VERITAS** Test Report No.: PSU-NQN2504020214RF01  
Test Mode: 802.11n HT20

