JAPAN TEST REPORT

Report No: FCS202604314W06

Issued for

Applicant:	TRMNL Holdings LLC
Address:	480 Stewart Road, LaGrange, GA 30241
Product Name:	TRMNL
Brand Name:	TRMNL
Model Name:	X
Series Model:	TRMNL
Test Standard：	Article 2 Paragraph 1 of Item 19-3, annex 45 and annex 1

Issued By: Flux Compliance Service Laboratory
Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
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複製禁止

TEST RESULT CERTIFICATION

Applicant's Name..... :	TRMNL Holdings LLC
Address..... :	480 Stewart Road, LaGrange, GA 30241
Manufacture's Name..... :	TRMNL Holdings LLC
Address..... :	480 Stewart Road, LaGrange, GA 30241

Product Description

Product Name..... :	TRMNL
Brand Name .....:	TRMNL
Model Name..... :	X
Series Model.....:	TRMNL
Test Standards..... :	Article 2 Paragraph 1 of Item 19-3, annex 45 and annex 1

This device described above has been tested by FCS, the test results show that the equipment under test (EUT) is in compliance with Article 2 Paragraph 1 of Item 19-3, annex 45 and annex 1 requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....:

Date (s) of performance of tests. :	Apr. 24 2026 ~ May. 26, 2026
Date of Issue.....:	May. 26, 2026
Test Result.....:	Pass

Tested by : orange OuYang

(orange OuYang)

Reviewed by : jayden

(jayden)

Approved by :

(Jack Wang)

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Revision History

Rev.	Issue Date	Effect Page	Contents
00	May. 26, 2026	N/A	Initial Issue

1. SUMMARY OF TEST RESULTS

Description of Test	Result	Remark
Frequency Error	PASS	--
Occupied Bandwidth (99%)	PASS	--
Unwanted Emission Intensity	PASS	--
Antenna Power Error	PASS	--
Limitation of Collateral Emission of Receiver	PASS	--
High Frequency/modulation section cannot be opened easily	PASS	--
Communication Method	PASS	--
Modulation method	PASS	--
Signal tranmission rate	PASS	--
Burst Length	PASS	--
Isotropically radiated power	PASS	--
Adjacent channel power tolerance	PASS	--
Interference prevention function	PASS	--
Carrier sense capability	PASS	--
Out-band emission power	PASS	--
Number of carrier	PASS	--

NOTE:
(1) N/A means test is not applicable in this Test Report
(2) Article 2 Paragraph 1 of Item 19-3, annex 45 and annex 1
(3) This device has more than 1 subcarrier in 1MHz, complicances with the requirement.

1.1 TEST FACTORY

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Registration Number: 514908 CNAS Number： L15566 Designation number：CN0127 A2LA accreditation number：5545.01 ISED Number：25801	

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ±U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainty
1	RF output power, conducted	±0.71dB
2	Unwanted Emissions, conducted	±2.98 dB
3	Conducted Emission (9KHz-150KHz)	±4.13 dB
4	Conducted Emission (150KHz-30MHz)	±4.74 dB
5	All emissions,radiated(<1G) 30MHz-1000MHz	±3.2 dB
6	All emissions,radiated (1GHz -18GHz)	±3.66 dB
7	All emissions,radiated (18GHz -40GHz)	±4.31 dB
8	Frequency Tolerance	± 1.01 KHz
9	Temperature	±0.09 ℃
10	Humidity	±0.6%
11	Voltage(dc)	±0.1V

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Equipment</td><td>TRMNL</td></tr>
<tr><td>Brand name</td><td>TRMNL</td></tr>
<tr><td>Model Name</td><td>X</td></tr>
<tr><td>Series Model</td><td>TRMNL</td></tr>
<tr><td>Model Difference</td><td>Black, White, Green, Grey, Transparent plastic cases</td></tr>
<tr><td>Product Description</td><td>
<table>
<tr><td rowspan="3">Operation Frequency:</td><td>IEEE 802.11a/n/ac/20M</td><td>5.180GHz-5.240GHz</td></tr>
<tr><td>IEEE 802.11n/ac/40M</td><td>5.190GHz-5.230GHz</td></tr>
<tr><td>IEEE 802.11ac/80M</td><td>5.210GHz</td></tr>
<tr><td>Modulation Type:</td><td colspan="2">802.11a(OFDM):BPSK,QPSK,16-QAM,64-QAM
802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM
802.11ac(OFDM):BPSK,QPSK,16-QAM,64-QAM,256-QAM</td></tr>
<tr><td>Antenna Gain (dBi)</td><td colspan="2">2.33dBi</td></tr>
</table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
</td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Power supply</td><td>Input: 5V⎓ 3A
Output: 5V⎓ 1.2A
Power: 15W</td></tr>
<tr><td>Battery</td><td>3.85V 6000mAh 23.1Wh</td></tr>
<tr><td>Hardware version</td><td>V1.0</td></tr>
<tr><td>Software version</td><td>V1.0</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. **Channel List**

Channel List for 802.11a/n/ac							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220	48	5240

Channel List for 802.11n/ac							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	--	--	--	--

Channel List for 802.11ac							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	--	--	--	--	--	--

Note:
Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middlefrequency, and the highest frequency of channel were selected to perform the test, and theselected channel see below:Carrier Frequency Channe
5GHz:

Channel List for 802.11a/n/ac(20MHz)		
Frequency Band	EUT Channel	Test Frequency (MHz)
Band I	CH36	5180
Band I	CH40	5200
Band I	CH48	5240

Channel List for 802.11 n/ac (40MHz)		
Frequency Band	EUT Channel	Test Frequency (MHz)
Band I	CH 38	5190
Band I	CH46	5230

Channel List for 802.11ac (80MHz)		
Frequency Band	EUT Channel	Test Frequency (MHz)
Band I	CH 42	5210

3.Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Dipole	N/A	2.33	Antenna

2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively

Test software: Win7_MP_Kit_RTL11n_8723FU_USB_v0.41_20221202

The test softeware was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 3	TX IEEE 802.11ac HT20 CH36&CH40&CH48	NSS1 MCS0
Mode 4	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 5	TX IEEE 802.11ac HT40 CH38&CH46	NSS1 MCS0
Mode 6	TX IEEE 802.11ac HT80 CH42	NSS1 MCS0

2.3 TEST CONDITIONS

The EUT was tested while in a continuous transmitter/receiver mode.
The EUT was tuned to a low, middle, and high channel for all tests.
For all test case pre/scans were completed in allModes to determine worst case levels.

EUT and Module Power tables				
Module Vdd Power		Normal	Hight(+10%)	Low(-10%)
Measurement Value (Vdc)		5	5.5	4.5
Voltage error (%)	Result	Ref. level	0	0
	Limit	----	±1	
Judgment		----	Pass	Pass

When the input supply voltage to the EUT from the external power source is varied by +/- 10%, the fluctuation of input voltage to the circuit of the radio part of the test equipment (excluding the power supply) has been confirmed is less than +/- 1%.

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Mode 1:

2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
1	Notebook	Lenovo	ThinkPad E495	N/A	N/A

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.4 EQUIPMENTS LIST

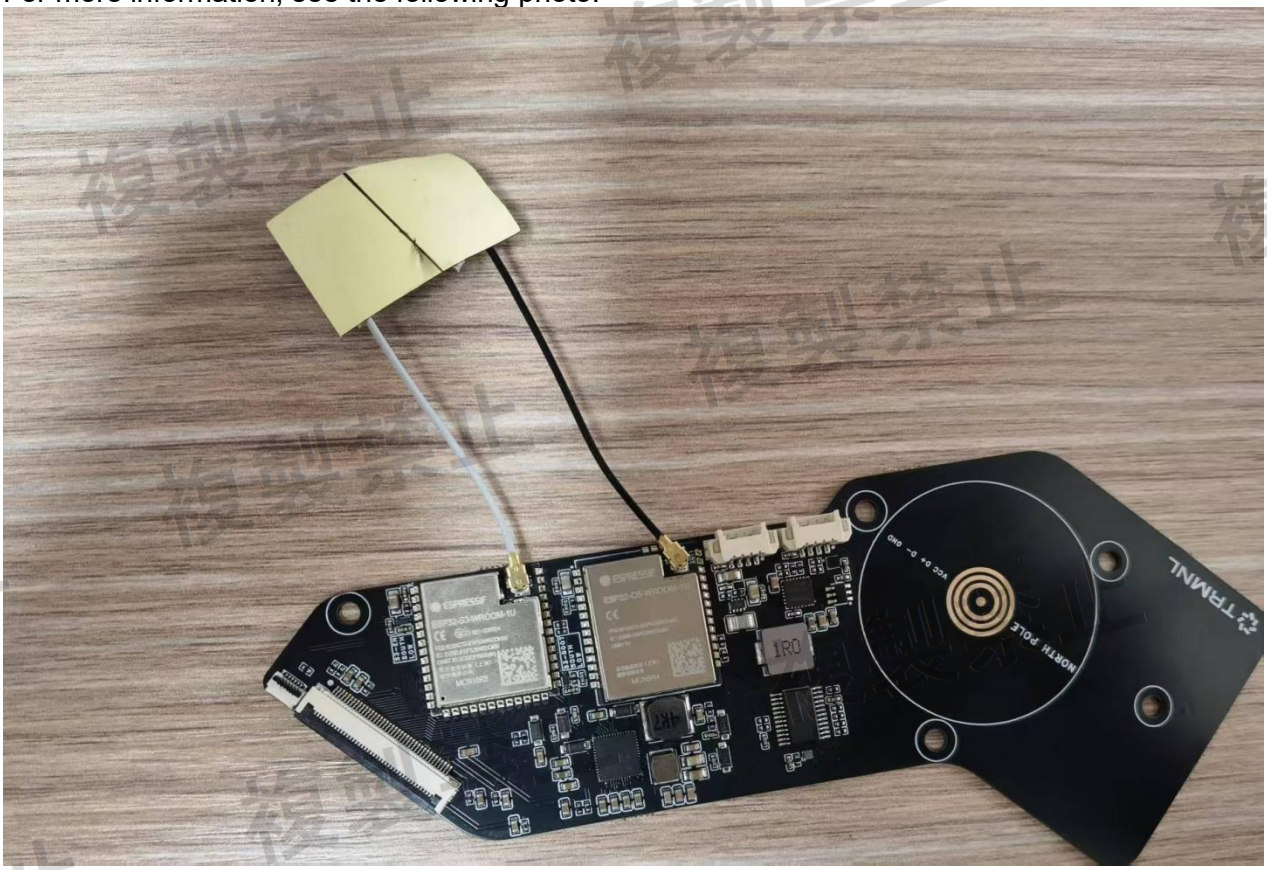
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2025.08.25	2026.08.24
Signal Generator	Agilent	N5182A	MY46240556	2025.08.25	2026.08.24
Signal Analyzer	Agilent	N9020A	MY49100060	2025.08.25	2026.08.24
Wireless Communications Test Set	R&S	CMW 500	133884	2025.08.25	2026.08.24
Temperature & Humidity	HH660	Mieo	N/A	2025.08.25	2026.08.24
Temperature& Humidity test chamber	Safety test	AG80L	171200018	2025.08.25	2026.08.24
programmable power supply	Agilent	E3642A	MY40002025	2025.08.25	2026.08.24
Attenuator	HP	8494B	DC-18G	2025.08.25	2026.08.24
Power Sensor	Agilent	UX2021XA	FCS-E021	2025.08.25	2026.08.24

Test Equipment Calibration
All of the test equipment is effective use and calibration certification institution, GRGT, the address is 163 tianhe district in huangpu road xiping cloud road .Guangzhou,China

3 .CONSTRUCTION PROTECTION CONFIRMATION

3.1 Our products apply for Japanese Radio frequency (rf) certification, the RF and modulation We use the following methods to prevent unauthorized access and modification of RF and modulation parts.

This wireless module uses a shielding cover to prevent users from disassembling and modifying it. For more information, see the following photo.



4. FREQUENCY ERROR

4.1 LIMIT

Item	Limits
Frequency Error	±20ppm

4.2 TEST PROCEDURES

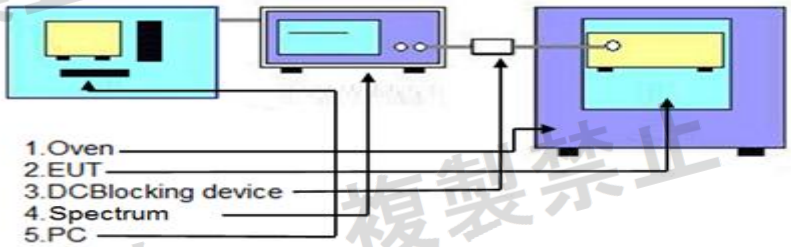
The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

(1)In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.
(2)In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.
(3)In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.
(4)In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

4.3 TEST SETUP

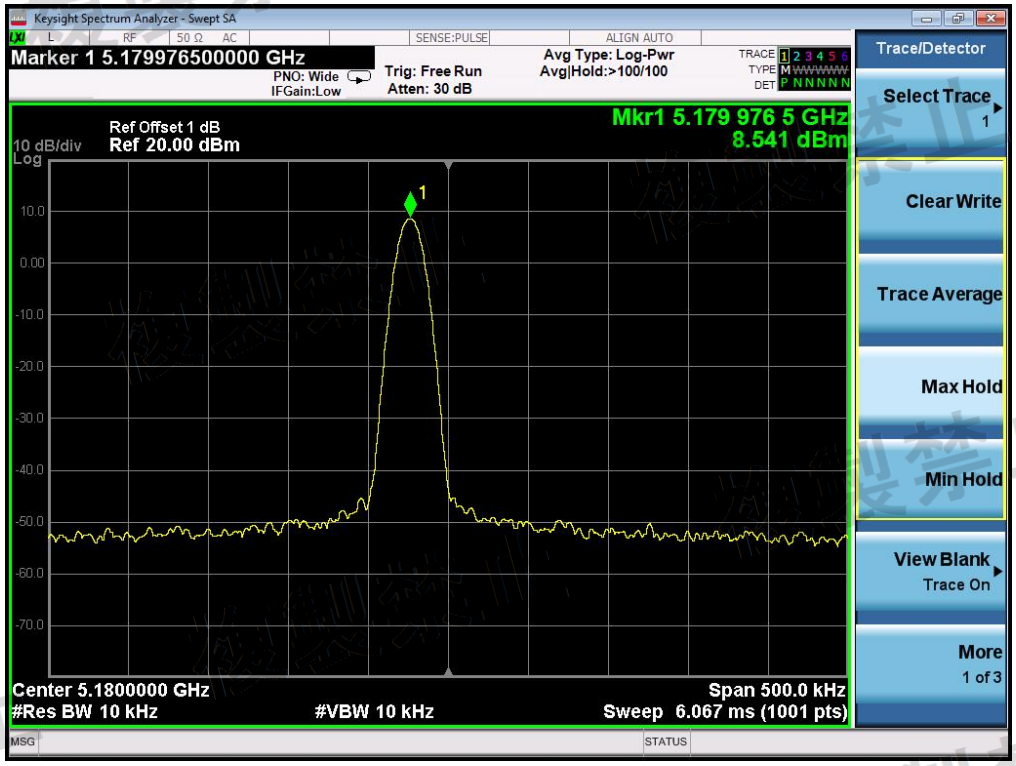


4.4 TEST RESULT

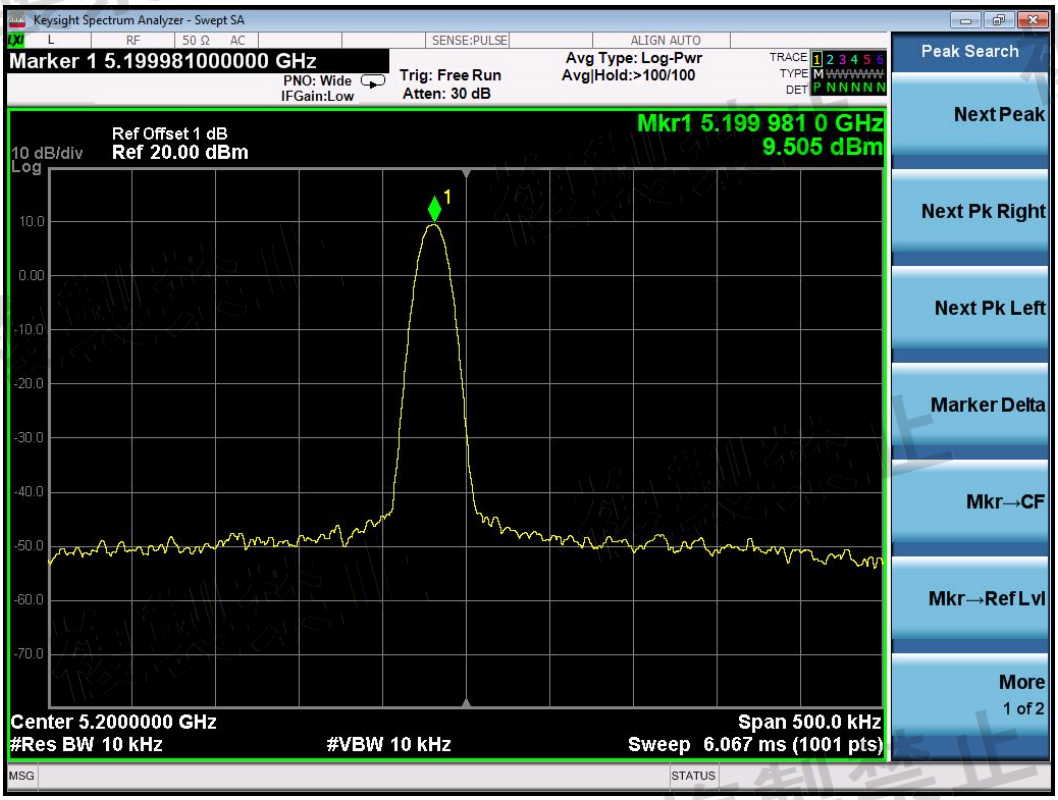
Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage		

TEST CONDITIONGS	Frequency (MHz)	Result (MHz)	Tolerance (kHz)	Tolerance (ppm)	Limit(ppm)
(Nom) (DC 5V)	5180	5179.9765	2.35	4.54	±20
	5200	5199.9810	1.90	3.65	±20
	5240	5239.9755	2.45	4.68	±20

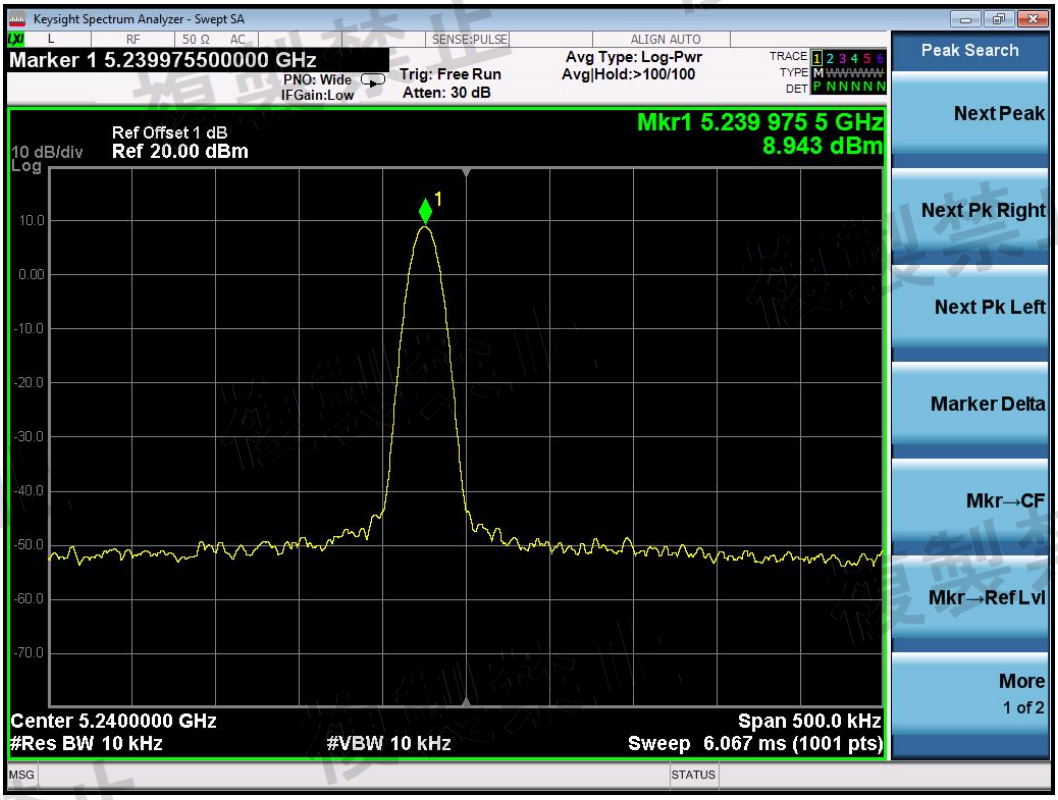
CH36 Worst Mode



CH40 Worst Mode

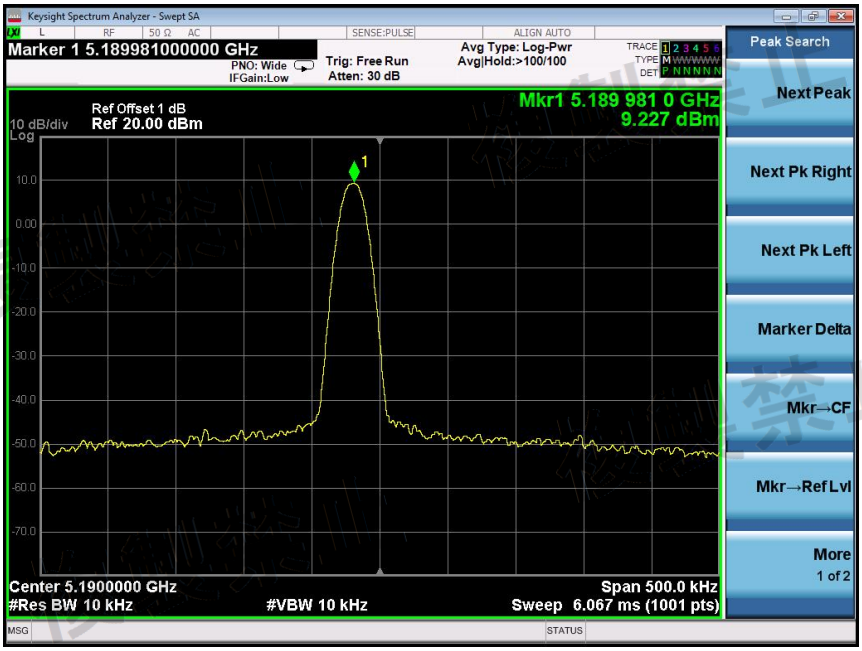


CH48 Worst Mode

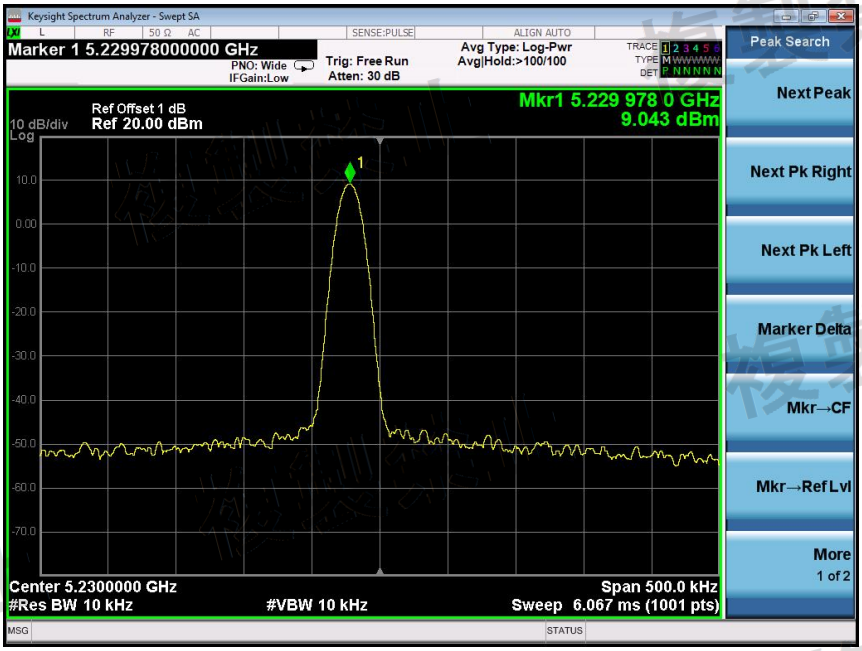


TEST CONDITIONGS	Frequency (MHz)	Result (MHz)	Tolerance (kHz)	Tolerance (ppm)	Limit(ppm)
(Nom) (DC 5V)	5190	5189.9810	1.90	3.66	±20
	5230	5229.9780	2.20	4.21	±20

CH38 Worst Mode

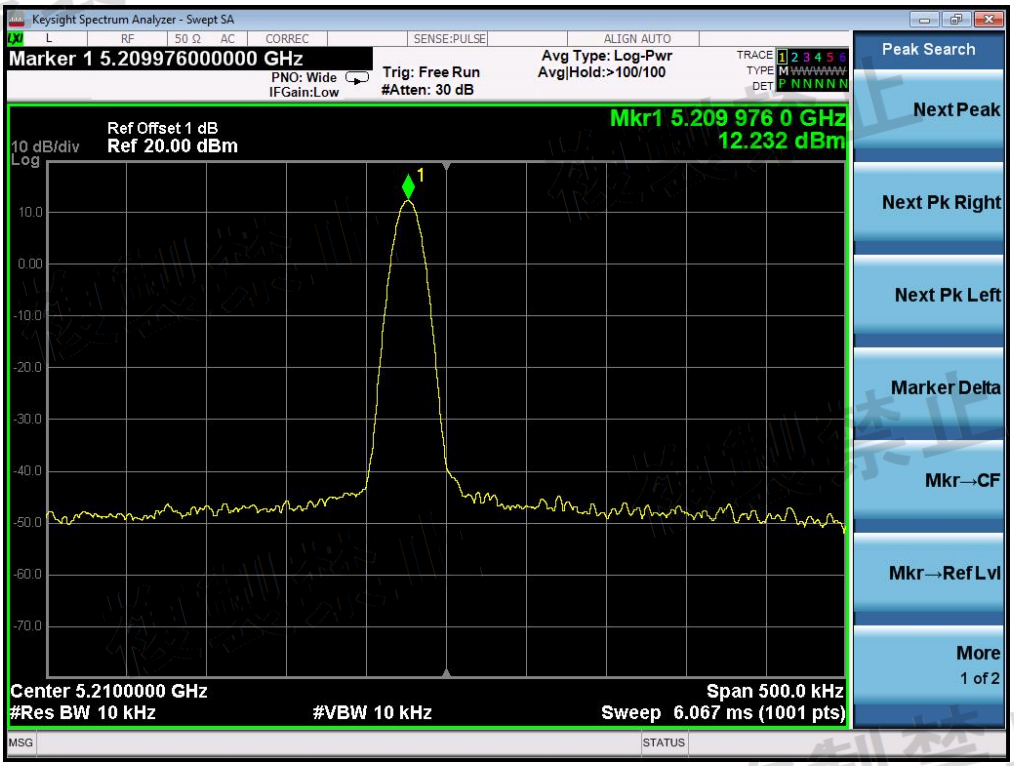


CH46 Worst Mode



TEST CONDITIONGS		Frequency (MHz)	Result (MHz)	Tolerance (kHz)	Tolerance (ppm)	Limit(ppm)
(Nom) (DC 5V)	5	5210	5209.9760	2.40	4.61	±20

CH42 Worst Mode



5. ANTENNA POWER

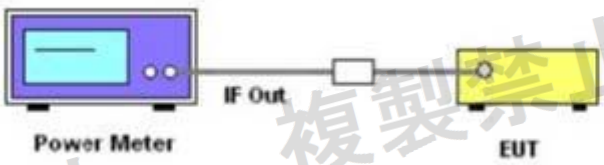
5.1 LIMIT

Item	Operation Band	Limits		
		20MHz system	40MHz system	80MHz system
Antenna Power	W52/W53	10mW/MHz or less	5mW/MHz or less	2.5mW/MHz or less
	W56	10mW/MHz or less	5mW/MHz or less	2.5mW/MHz or less
Radiation power EIRP	W52	10mW/MHz or less	5mW/MHz or less	2.5mW/MHz or less
	W53	10mW/MHz or less:with TPC 5mW/MHz or less:without TPC	5mW/MHz or less:with TPC 2.5mW/MHz or less:without TPC	2.5mW/MHz or less:with TPC 1.25mW/MHz or less:without TPC
	W56	50mW/MHz or less:with TPC 25mW/MHz or less:without TPC	25mW/MHz or less:with TPC 12.5mW/MHz or less:without TPC	12.5mW/MHz or less:with TPC 6.25mW/MHz or less:without TPC
Antenna Power Error	W52/W53	+20%, -80% (Base on manufacturer declare Antenna power density)		
	W56	+50%, -50% (Base on manufacturer declare Antenna power density)		

5.2 TEST PROCEDURE

1. A power meter is connected on the EUT
2. EUT turn to test frequency channel and keep continuous transmiting
3 The antenna power of EUT is “P” .
4 EIRP power=“P”+antenna gain

5.3 TEST SETUP



5.3 TEST DEVIATION

There is no deviation with the original standard.

5.4 TEST RESULT

Temperature:	25°C	Pressure :	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11a mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	output power (dBm/MHz)	output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5180	2.97	1.982	2.00	-23.05%
	5200	2.57	1.807	2.00	-19.22%
	5240	2.13	1.633	2.00	-8.46%
Limit : (1) Antenna Power Density Limit is 10mW/MHz. (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 3.71Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain(dBi)		ANT EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5180	2.97	2.33	3.3884
	5200	2.57	2.33	3.0903
	5240	2.13	2.33	2.7925
Limit : (1) EIRP limit is 10mW/MHz.				

Temperature:	25°C	Pressure :	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage-802.11n(HT20) mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	Ant output power (dBm/MHz)	Ant output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5180	2.77	1.892	2.50	-11.84%
	5200	3.25	2.113	2.50	-8.68%
	5240	2.74	1.879	2.50	-12.36%
Limit : (1) Antenna Power Density Limit is 10mW/MHz. (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 1.0Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain(dBi)		ANT EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5180	2.77	2.33	3.2359
	5200	3.25	2.33	3.6141
	5240	2.74	2.33	3.2137
Limit : (1) EIRP limit is 10mW/MHz.				

Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage-802.11ac(VHT20) mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	Ant output power (dBm/MHz)	Ant output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5180	2.00	1.585	2.00	-16.19%
	5200	2.67	1.849	2.00	-25.70%
	5240	2.37	1.726	2.00	-8.57%
Limit : (1) Antenna Power Density Limit is 10mW/MHz. (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 1.0Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain (dBi)		ANT EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5180	2.00	2.33	2.7102
	5200	2.67	2.33	3.1623
	5240	2.37	2.33	2.9512
Limit : (1) EIRP limit is 10mW/MHz.				

Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage-802.11n(HT40) mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	Ant output power (dBm/MHz)	Ant output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5190	2.13	1.351	2.00	-25.43%
	5230	2.35	1.485	2.00	-10.28%
Limit : (1) Antenna Power Density Limit is 5mW/MHz. (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 1.0Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain(dBi)		ANT A EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5190	2.13	2.33	2.7925
	5230	2.35	2.33	2.9376
Limit : (1) EIRP limit is 5mW.				

Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage-802.11ac(VHT40) mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	Ant output power (dBm/MHz)	Ant output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5190	2.12	1.629	2.00	-28.62%
	5230	1.92	1.556	2.00	-15.32%
Limit : (1) Antenna Power Density Limit is 5mW/MHz. (2) Tolerance +20%, (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 1.0Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain(dBi)		ANT A EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5190	2.12	2.33	4.9431
	5230	1.92	2.33	4.7206
Limit : (1) EIRP limit is 5mW/MHz.				

Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor) Voltage-802.11ac(VHT80) mode		

Antenna Power Density

TEST CONDITIONS	Channel (MHz)	Ant output power (dBm/MHz)	Ant output power (mW/MHz)	Declared Power (mW/MHz)	Tolerance (%)
Vnom(DC 5V)	5210	-1.12	0.772	1.50	-22.93%
Limit : (1) Antenna Power Density Limit is 2.5mW/MHz. (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)					

EIRP power = Antenna power density+Gain.
Gain = 1.0Bi
Equivalent Isotropically Radiated Power

TEST CONDITIONS	Channel (MHz)	ANT Power Density(dBm/MHz)+Gain(dBi)		ANT EIRP output (mW/MHz)
		Power	Gain	
Vnom(DC 5V)	5210	-1.12	2.33	1.3213
Limit : (1) EIRP limit is 2.5mW/MHz.				

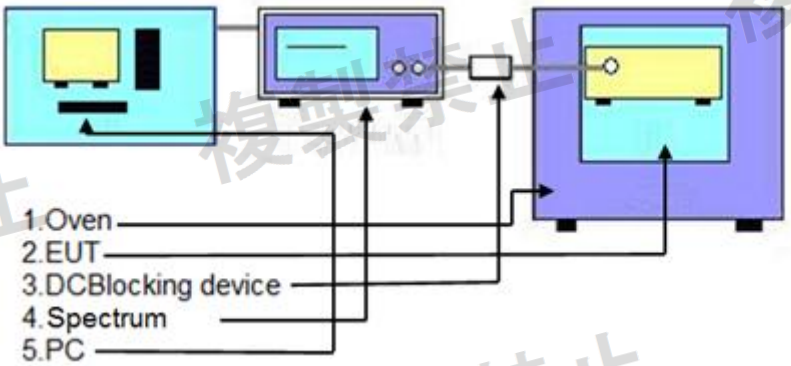
6. OCCUPIED BANDWITH

6.1 LIMIT

Item	Operation Band	Limits		
		20MHz system	40MHz system	80MHz system
Occupied BandWidth:	W52	⩽20MHz	⩽40MHz	⩽80MHz

6.2 TEST PROCEDURES

1. Setting of SA is following as: 802.11a/n/ac RB: 300KHz / VB:300KHz / SPAN: 40/80/160MHz Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
2. EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode(For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth.



6.3 TEST DEVIATION

There is no deviation with the original standard.

6.4 EUT OPERATION DURING TEST

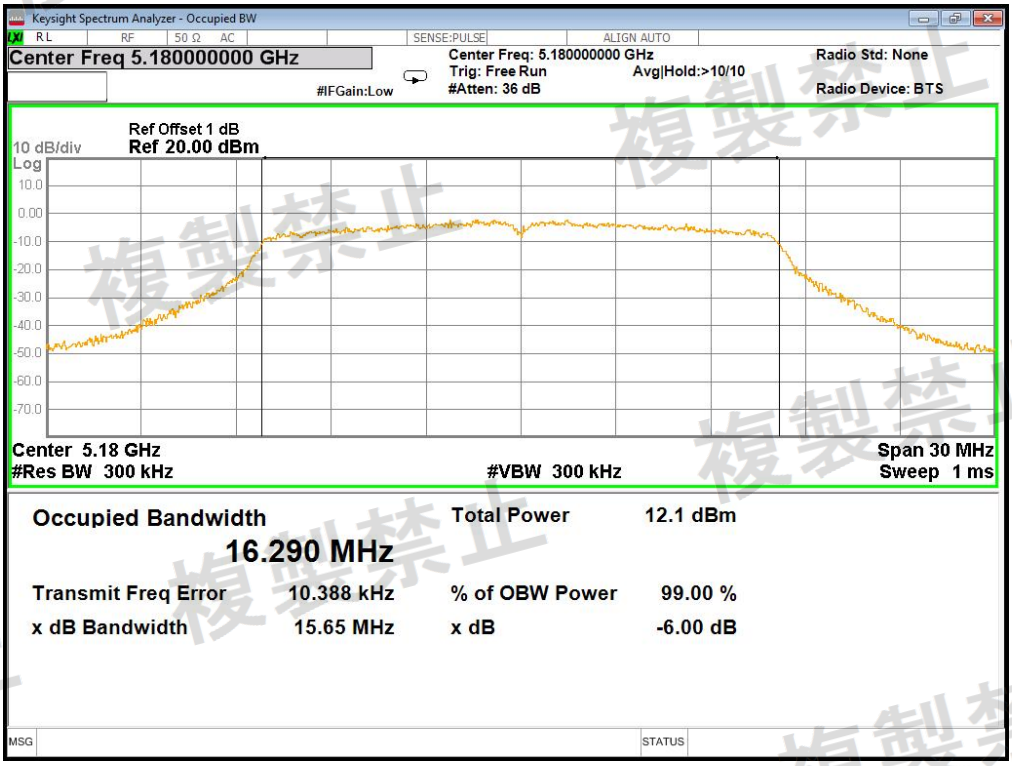
The EUT was programmed to be in continuously transmitting mode.

6.5 TEST RESULT

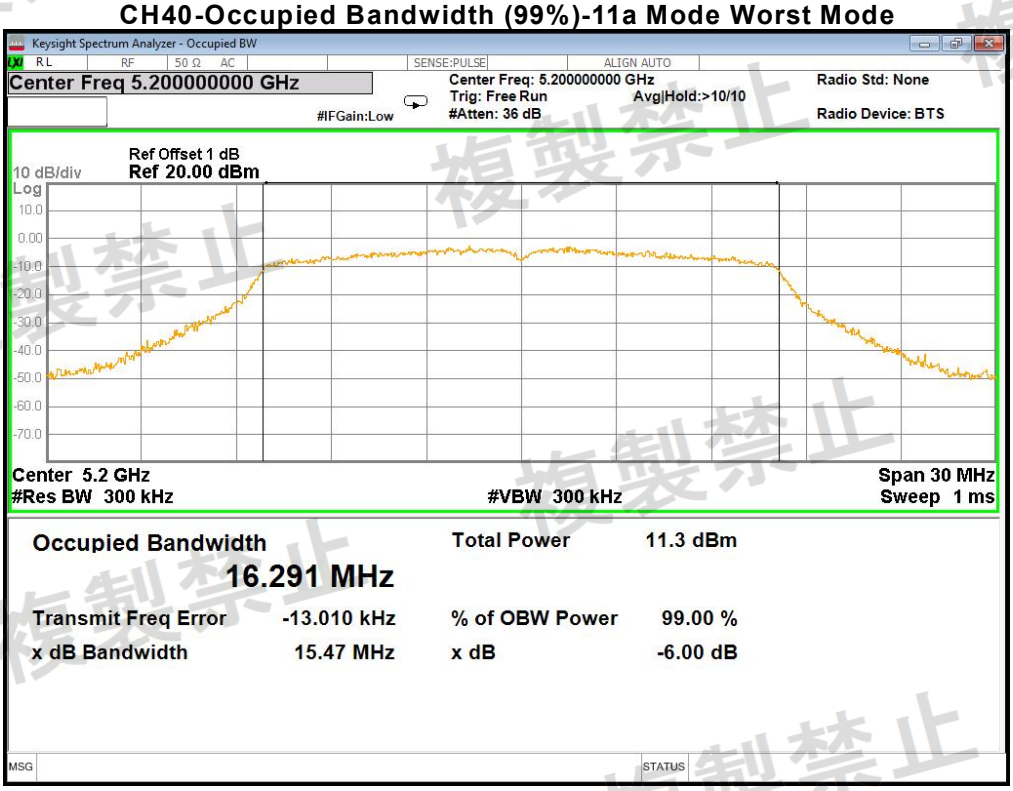
Temperature:	25°C	Pressure :	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11a mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5180	16.290
	5200	16.291
	5240	16.299

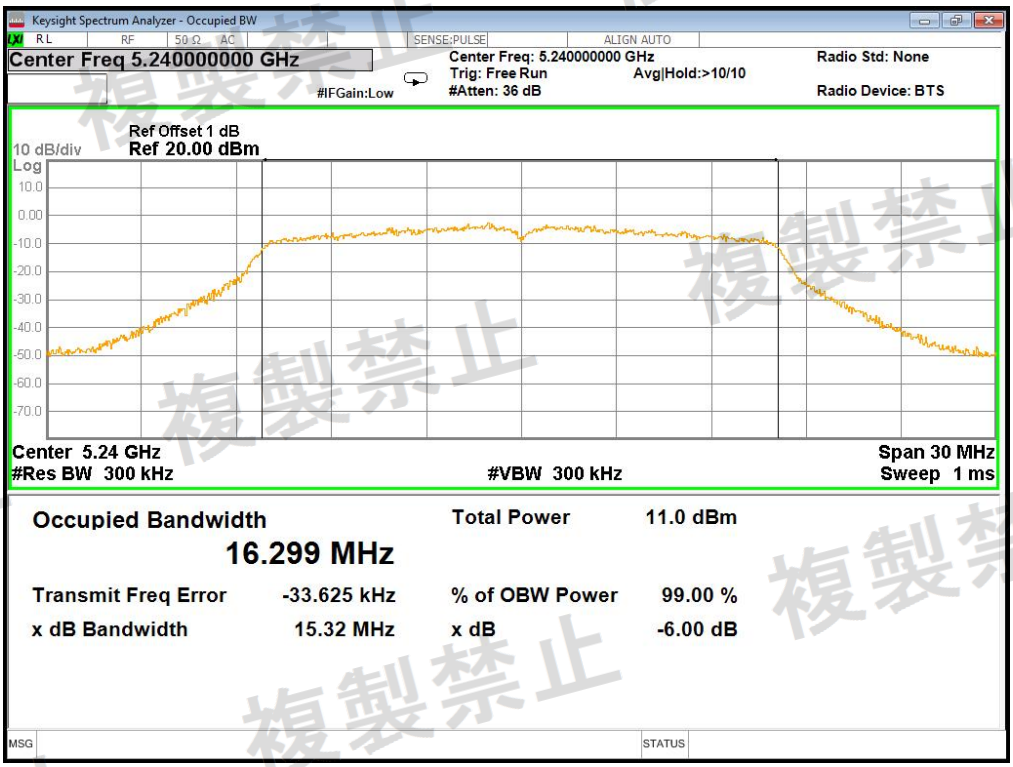
CH36-Occupied Bandwidth (99%)-11a Mode Worst Mode



CH40-Occupied Bandwidth (99%)-11a Mode Worst Mode



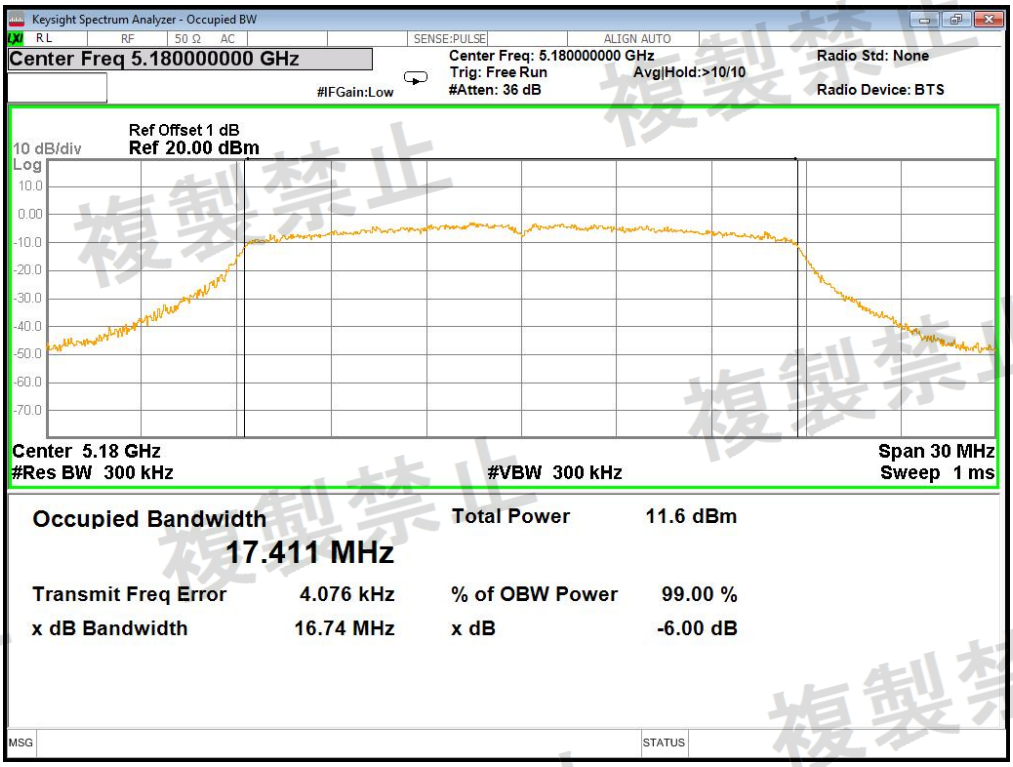
CH48-Occupied Bandwidth (99%)-11a Mode Worst Mode



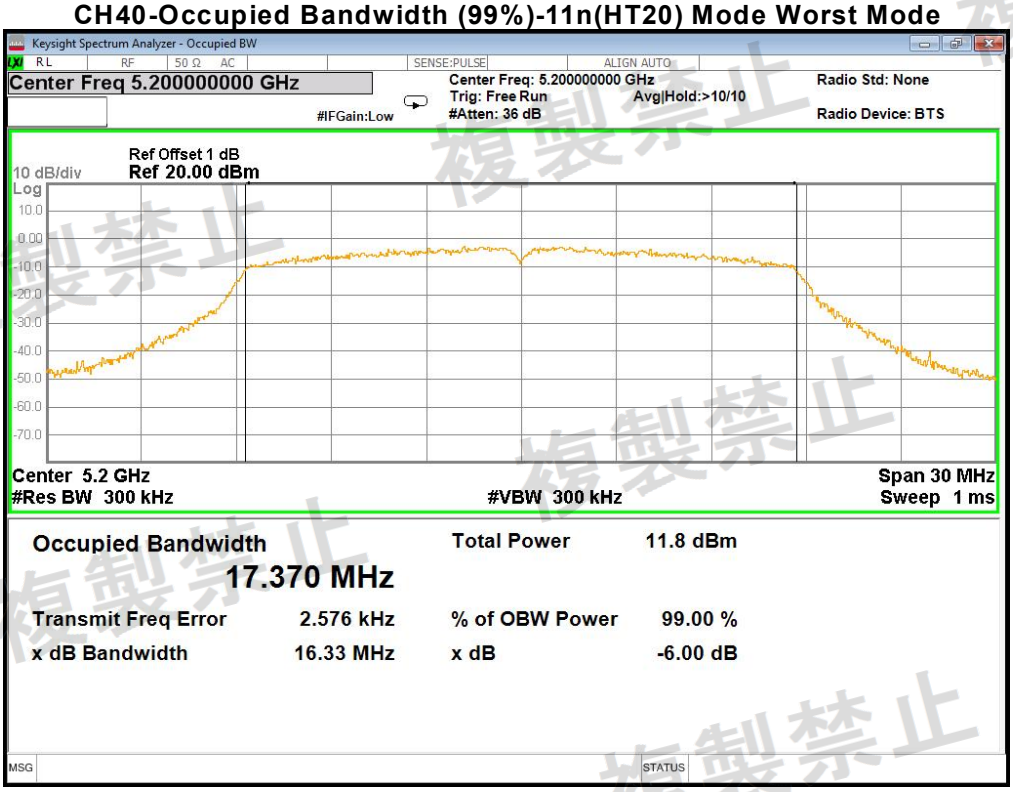
Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11n(HT20)mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5180	17.411
	5200	17.370
	5240	17.384

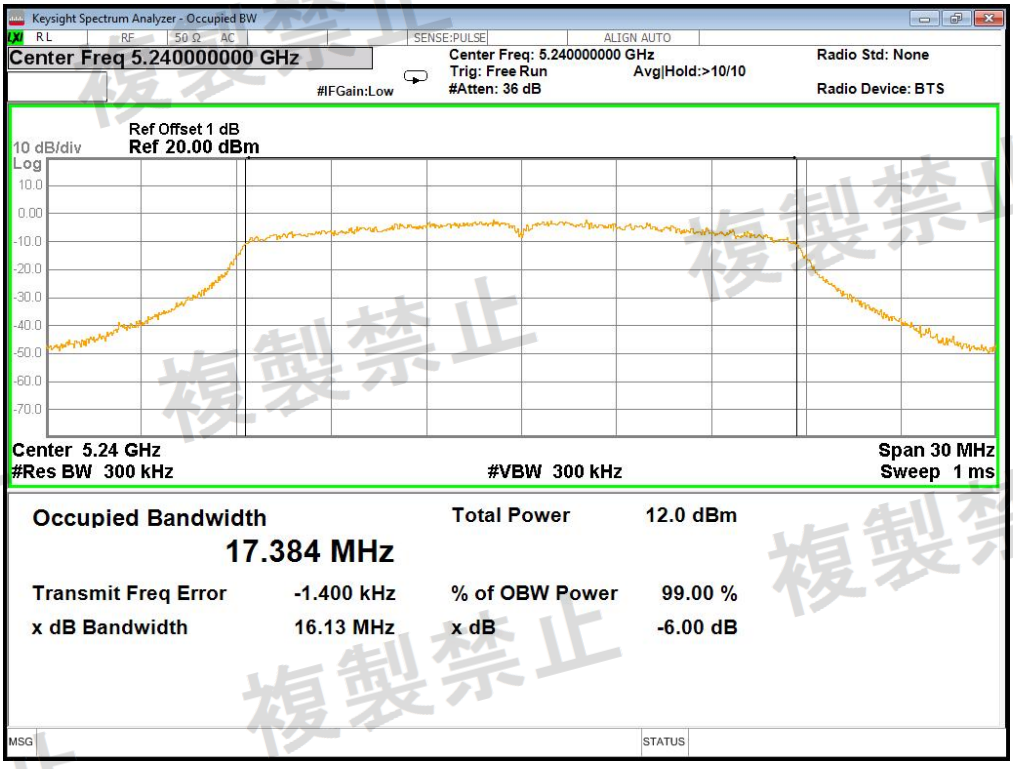
CH36-Occupied Bandwidth (99%)-11n(HT20) Mode Worst Mode



CH40-Occupied Bandwidth (99%)-11n(HT20) Mode Worst Mode



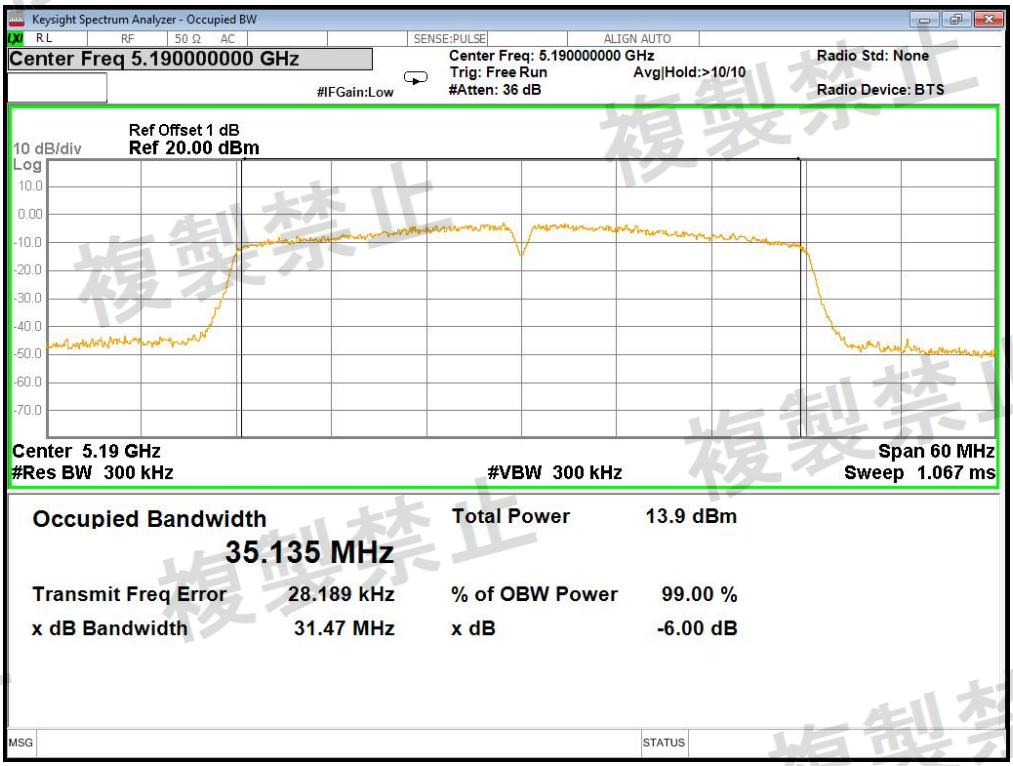
CH48-Occupied Bandwidth (99%)-11n(HT20) Mode Worst Mode



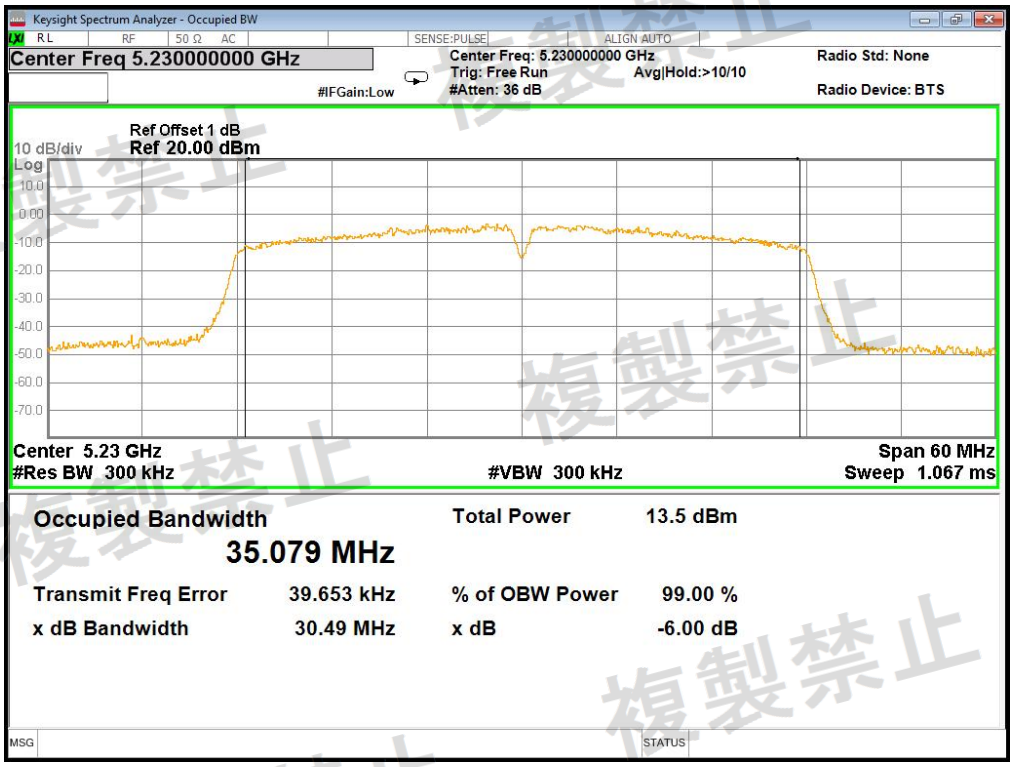
Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11n(HT40)mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5190	35.135
	5230	35.079

CH38-Occupied Bandwidth (99%)-11n(HT40) Mode Worst Mode



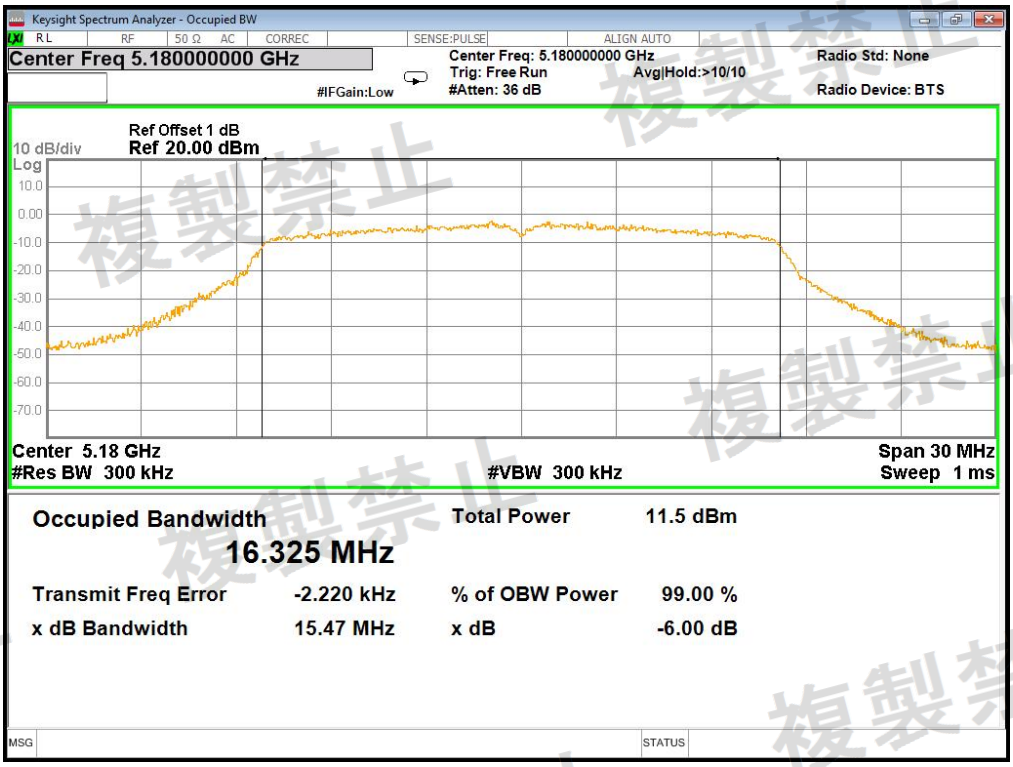
CH46-Occupied Bandwidth (99%)-11n(HT40) Mode Worst Mode



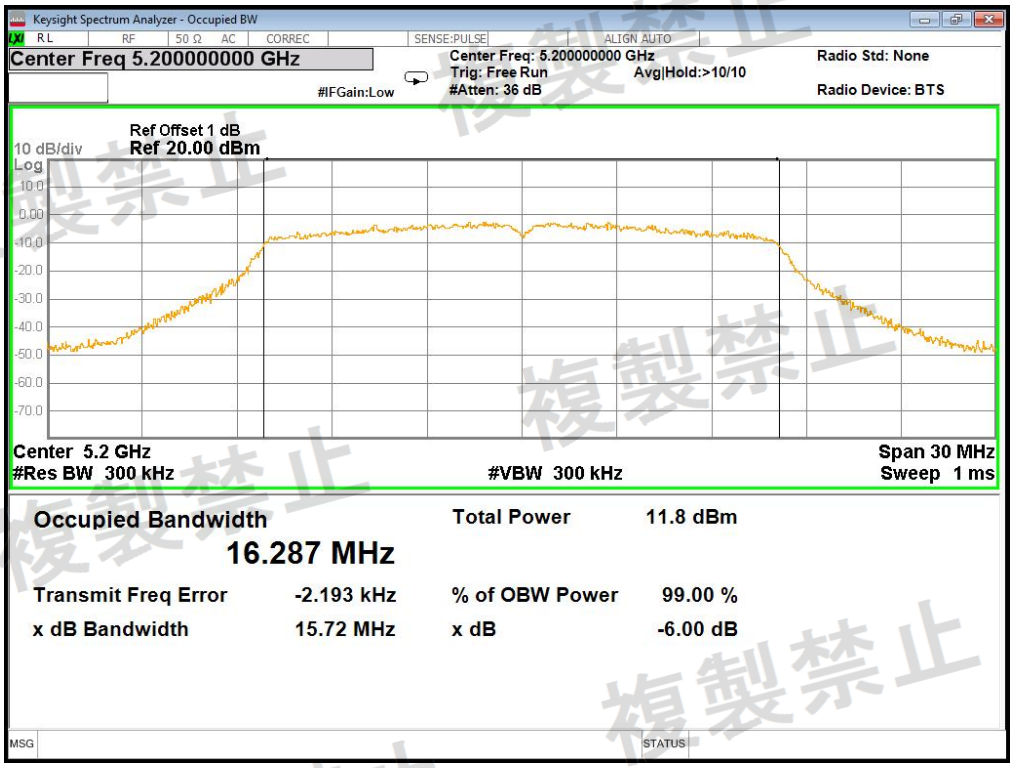
Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11ac(VHT20)mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5180	16.325
	5200	16.287
	5240	16.324

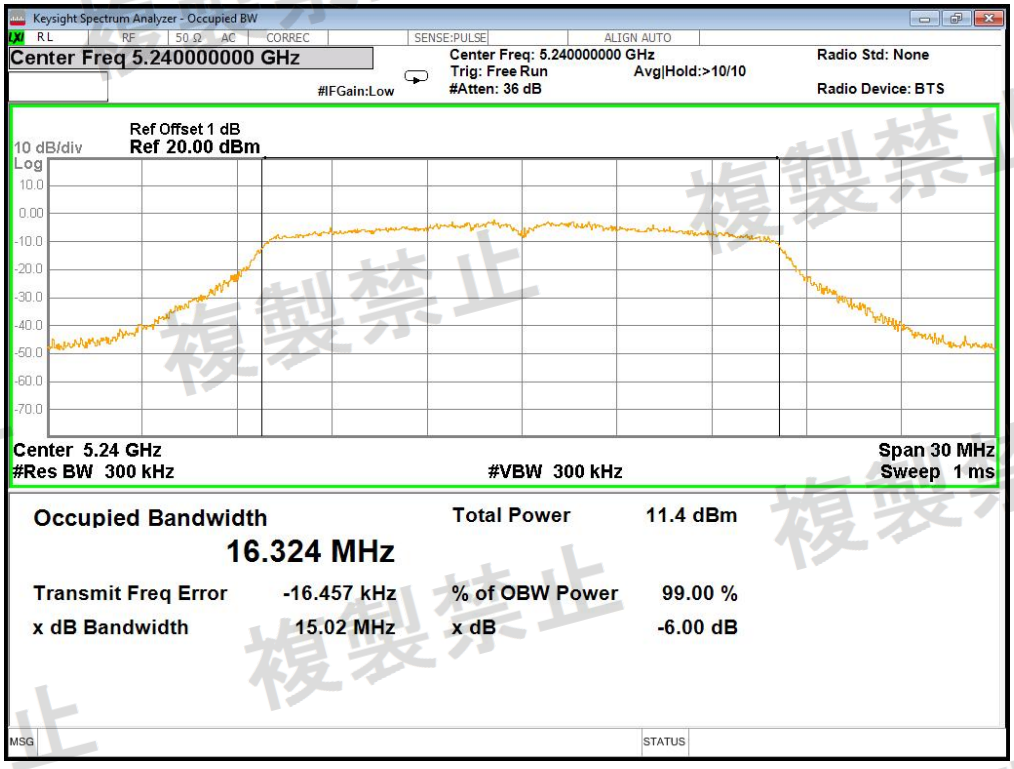
CH36-Occupied Bandwidth (99%)-11ac(VHT20) Mode Worst Mode



CH40-Occupied Bandwidth (99%)-11ac(VHT20) Mode Worst Mode



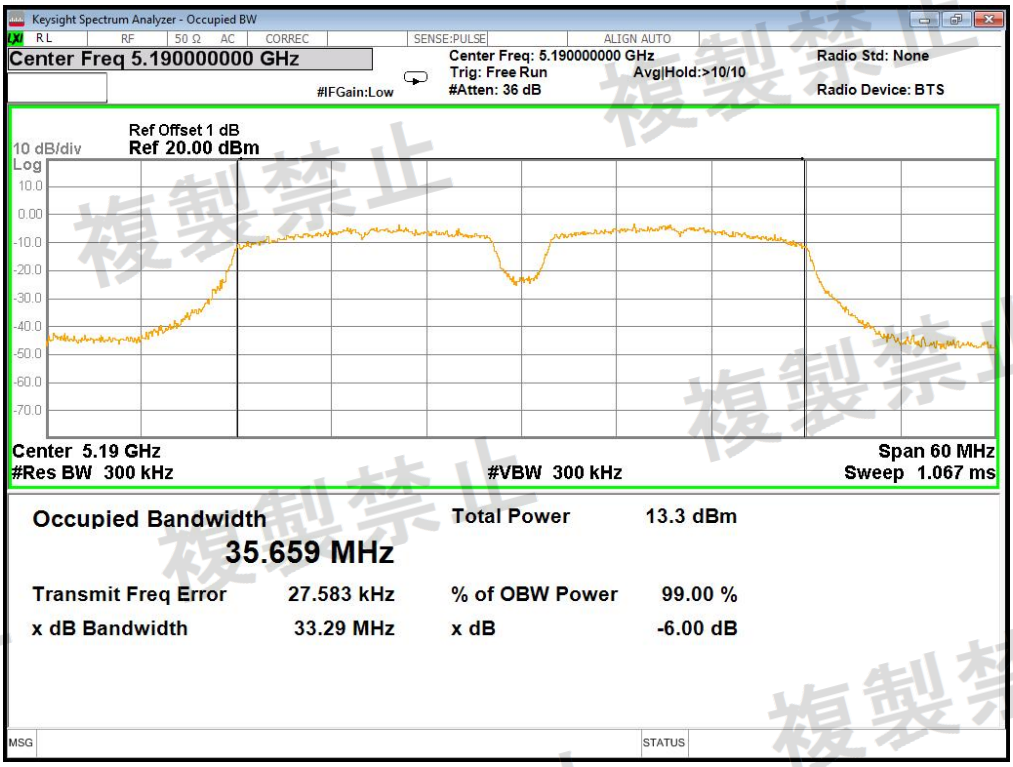
CH48-Occupied Bandwidth (99%)-11ac(VHT20) Mode Worst Mode



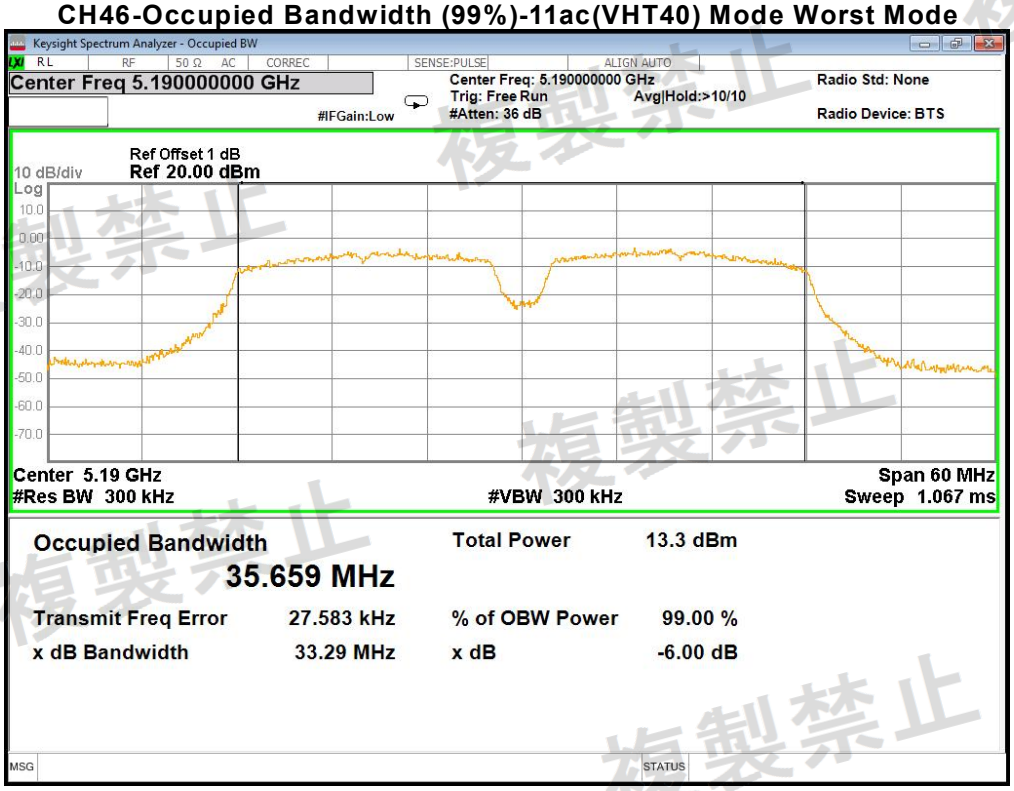
Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11ac(VHT40)mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5190	35.659
	5230	35.674

CH38-Occupied Bandwidth (99%)-11ac(VHT40) Mode Worst Mode



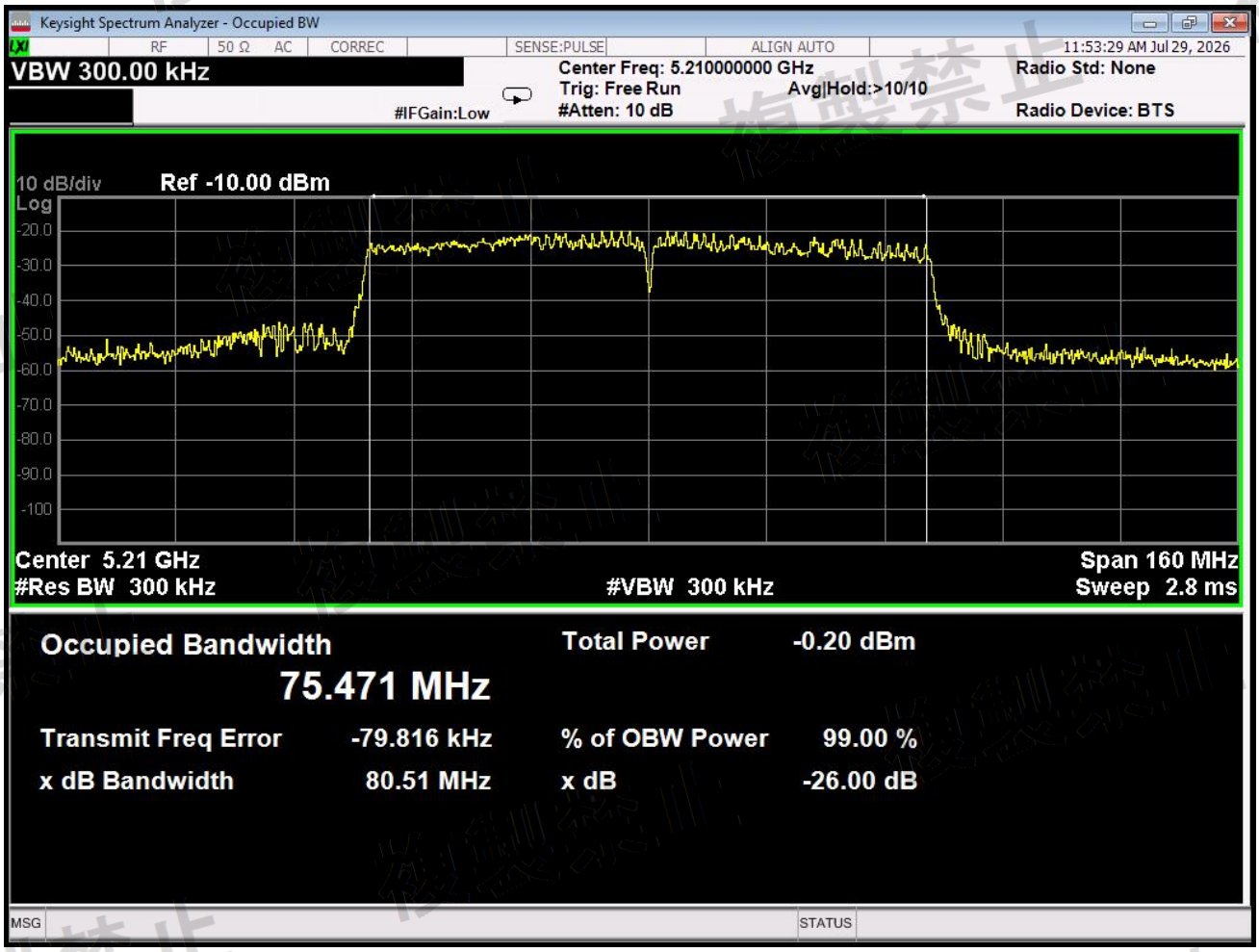
CH46-Occupied Bandwidth (99%)-11ac(VHT40) Mode Worst Mode



Temperature:	25°C	Pressure：	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor)Voltage-802.11ac(VHT80)mode		

DC Voltage	Channel (MHz)	Occupied Bandwidth(MHz)
Vnom(DC 5V)	5210	75.471

CH38-Occupied Bandwidth (99%)-11ac(VHT80) Mode Worst Mode



7. TOLERANCE OF SPURIOUS EMISSION INTENSITY

7.1 LIMIT

Item	Operation band	Limits
TX Spurious Emission	40MHz dydtem	Occupied Bandwidth≦18MHz: ≦ 2.5 μW/MHz (30MHz≦f≦5140MHz) ≦ 2.5 μW/MHz (5360MHz≦f≦26000MHz) 18MHz＜Occupied Bandwidth≦19MHz: ≦ 2.5 μW/MHz (30MHz≦f≦5135MHz) ≦ 2 5 μW/MHz (5365MHz≦f≦26000MHz)
		≦ 2.5 μW/MHz (30MHz≦f≦5100MHz) ≦ 2.5 μW/MHz (5400MHz≦f≦26000MHz)
	80MHz dydtem	≦ 2.5 μW/MHz (30MHz≦f≦5020MHz) ≦ 2.5 μW/MHz (5480MHz≦f≦26000MHz)
	20MHz dydtem	≦ 2.5 μW/MHz (30MHz≦f≦5455MHz) ≦ 2.5 μW/MHz (5745MHz≦f≦26000MHz)
	40MHz dydtem	≦ 2.5 μW/MHz (30MHz≦f≦5420MHz) ≦ 2 5 μW/MHz (5760MHz≦f≦26000MHz)
	80MHz dydtem	≦ 2.5 μW/MHz (30MHz≦f≦5340MHz) ≦ 2.5 μW/MHz (5800MHz≦f≦26000MHz)

7.2 TEST PROCEDURES

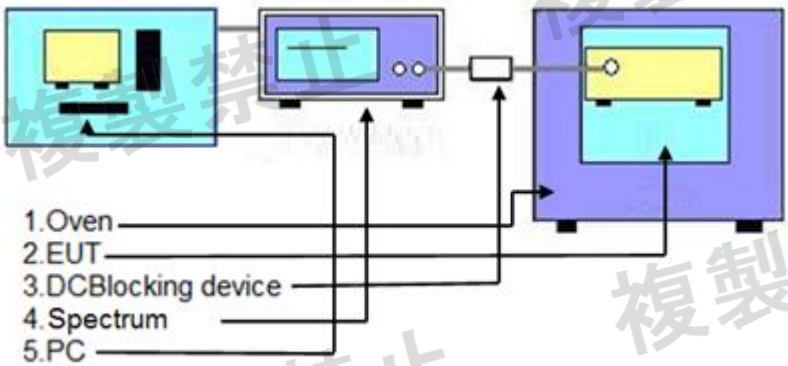
The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	100KHz /100KHz (30 MHz ≦ f ≦ 1000 MHz) 1MHz /1MHz (1000 MHz≦f)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: RB:100KHz/1MHz ,VB:100KHz/1MHz Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold

3. Setting of SA is following as 30MHz and stop frequency, Then to mark peak reading value + cable loss shall be less than 2.5μW.
4. SA adjusted to start frequency and stop frequency 26000MHz. Then to mark peak reading value + cable loss shall be less than 2.5μW.
5. Ref Offset 1.5dB = 1.0 (dBi, antenna gain) + 0.5 (dB, cable loss)

7.3 TEST SETUP



7.4 TEST DEVIATION

There is no deviation with the original standard.

7.5 TEST RESULT

Data see Attachment A.

8. OUT-BAND EMISSIONS POWER

8.1 LIMIT

Bandwidth(MHz)		Measured Frequency Range	Limit
20	OBW≦18MHz	5142.0 MHz or less	2.5 μW/MHz
		5142.0 ~ 5150.0 MHz	15.0 μW/MHz
		5250.0 ~ 5251.0 MHz	$10.0^{1-(f-9)}$ mW/MHz
		5251.0 ~ 5260.0 MHz	$10.0^{-1-(8/90)(f-11)}$ mW/MHz
		5260.0 ~ 5266.7 MHz	$10.0^{-1.8-(6/50)(f-20)}$ mW/MHz
		5266.7 MHz or more	2.5 μW/MHz
	OBW :18-20MHz	5142.0 MHz or less	2.5 μW/MHz
		5142.0 ~ 5150.0 MHz	15.0 μW/MHz
		5250.0 ~ 5250 .2 MHz	$10.0^{1-(8/3)(f-9.75)}$ mW/MHz
		5250.2 ~ 5251 .0 MHz	$10.0^{1-(f-9)}$ mW/MHz
		5251.0 ~ 5260.0 MHz	$10.0^{-1-(8/90)(f-11)}$ mW/MHz
		5260.0 ~ 5266.7 MHz	$10.0^{-1.8-(6/50)(f-20)}$ mW/MHz
		5266.7 MHz or more	2.5 μW/MHz
40		5141.6 MHz or less	2.5 μW/MHz
		5141.6 ~ 5150.0 MHz	15.0 μW/MHz
		5250.0 ~ 5251.0 MHz	$10.0^{-(f-20)+\log(1/2)}$ mW/MHz
		5251.0 ~ 5270.0 MHz	$10.0^{-(8/190)(f-21)-1+\log(1/2)}$ mW/MHz
		5270.0 ~ 5278.4 MHz	$10.0^{-(3/50)(f-40)-1.8+\log(1/2)}$ mW/MHz
		5278.4 MHz or more	2.5 μW/MHz
80		5,123.2 MHz or less	2.5 μW/MHz
		5,123.2 - 5,150 MHz	15.0 μW/MHz
		5,250 - 5,251 MHz	$10.0^{-(f-40)+\log(1/4)}$ mW/MHz
		5,251 - 5,290 MHz	$10.0^{-(8/390)(f-41)-1+\log(1/4)}$ mW/MHz
		5,290 - 5,296.7 MHz	$10.0^{-(3/100)(f-80)-1.8+\log(1/4)}$ mW/MHz
		5,296.7 MHz or more	2.5 μW/MHz

8.2 TEST PROCEDURES

Please refer to in this report. The following table is the setting of Spectrum Analyzer.

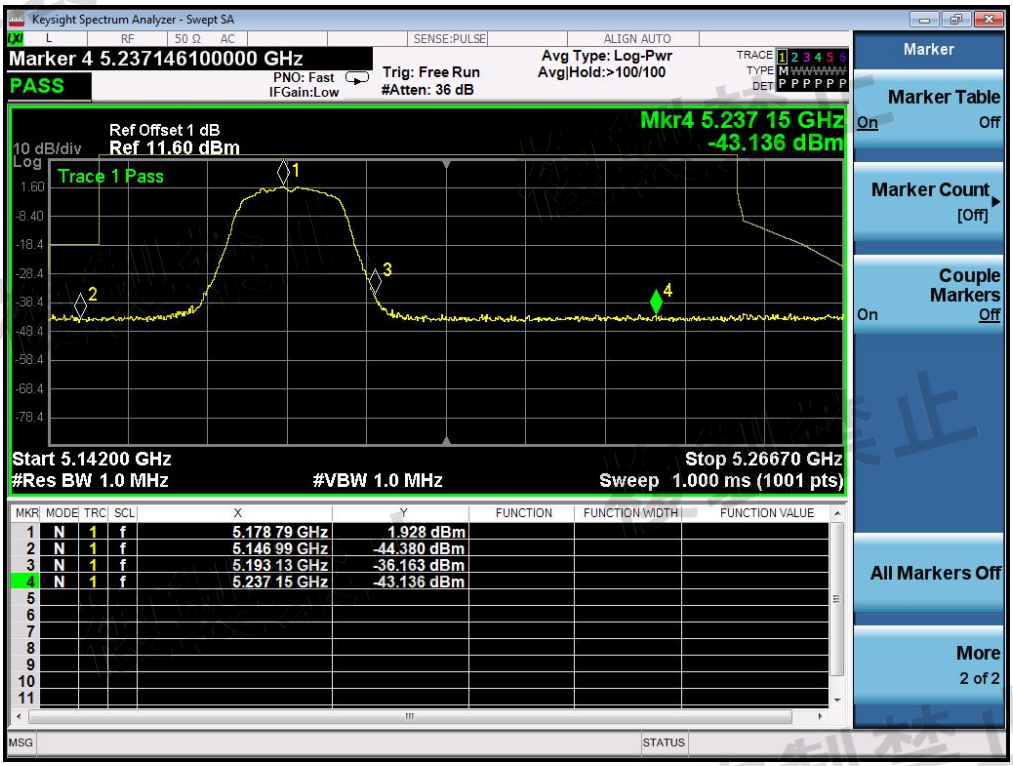
Spectrum Parameter	Setting
Attenuation	Auto
RB	1 MHz
VB	1 MHz
Detector	Sample
Trace	Max Hold
Sweep Time	Auto

1. EUT have the continuous reception mode and fixed only one channelize.
2. Configure EUT and assistant system according clause 2.3
3. Set EUT work in test mode as described in clause 2.4
4 . All spurious are measured from clause 8.1and clause 8.2 by Sample mode.
5. Ref Offset 1.5dB = 1.0 (dBi, antenna gain) + 0.5 (dB, cable loss)

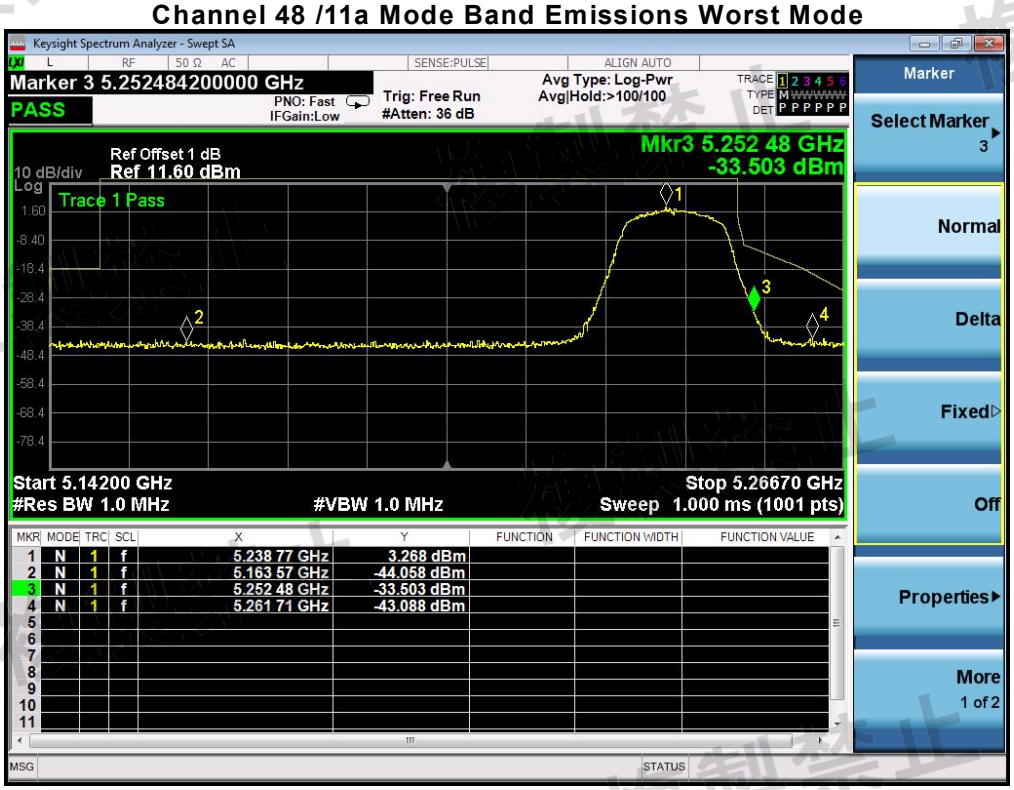
8.3 TEST RESULT

Temperature:	250C	Pressure :	1012 hPa
Humidity:	55 % RH		
Operation Mode:	(Nor/Max/Min) Voltage		

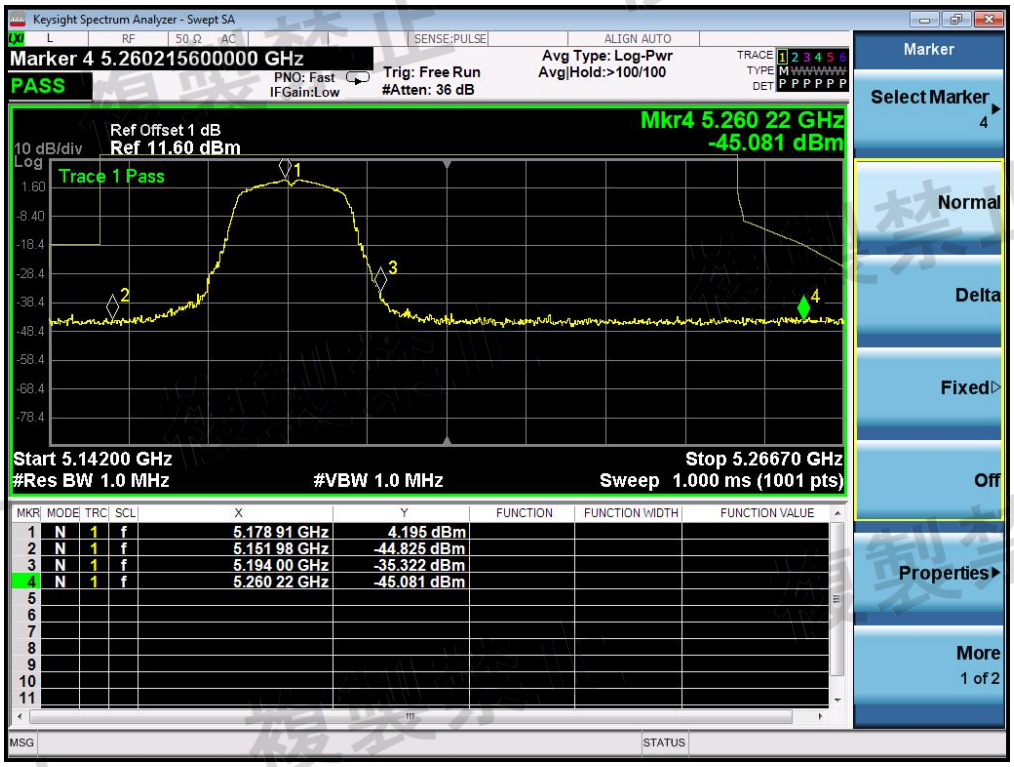
Channel 36 /11a Mode Band Emissions Worst Mode



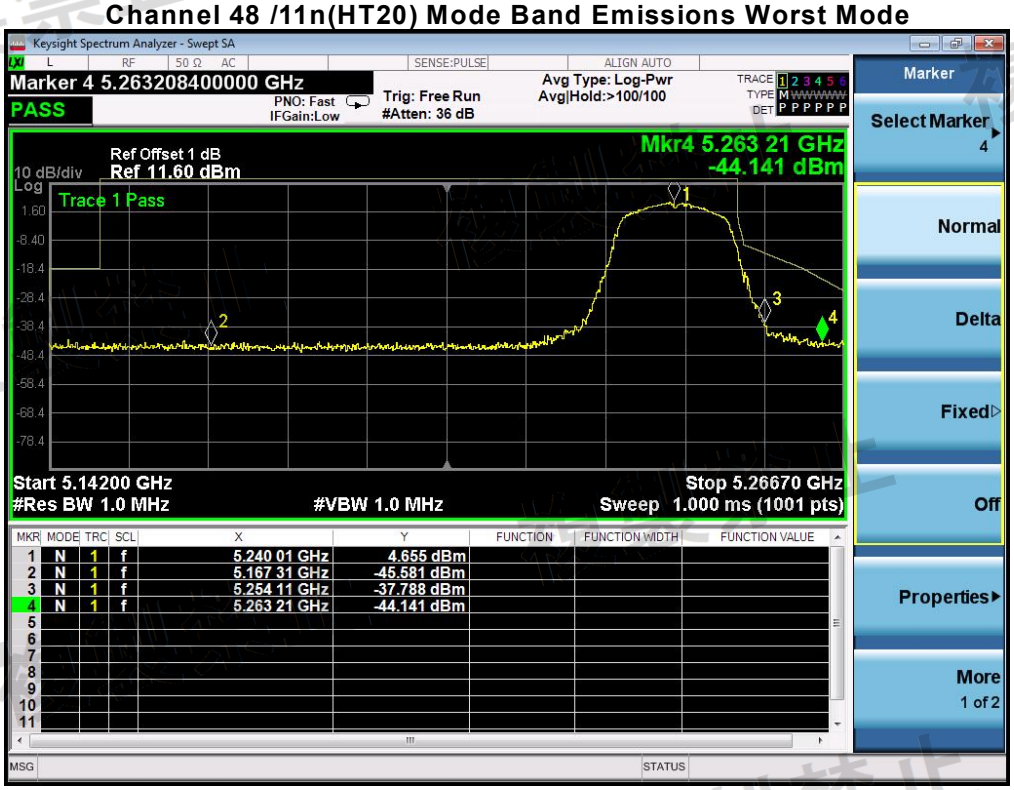
Channel 48 /11a Mode Band Emissions Worst Mode



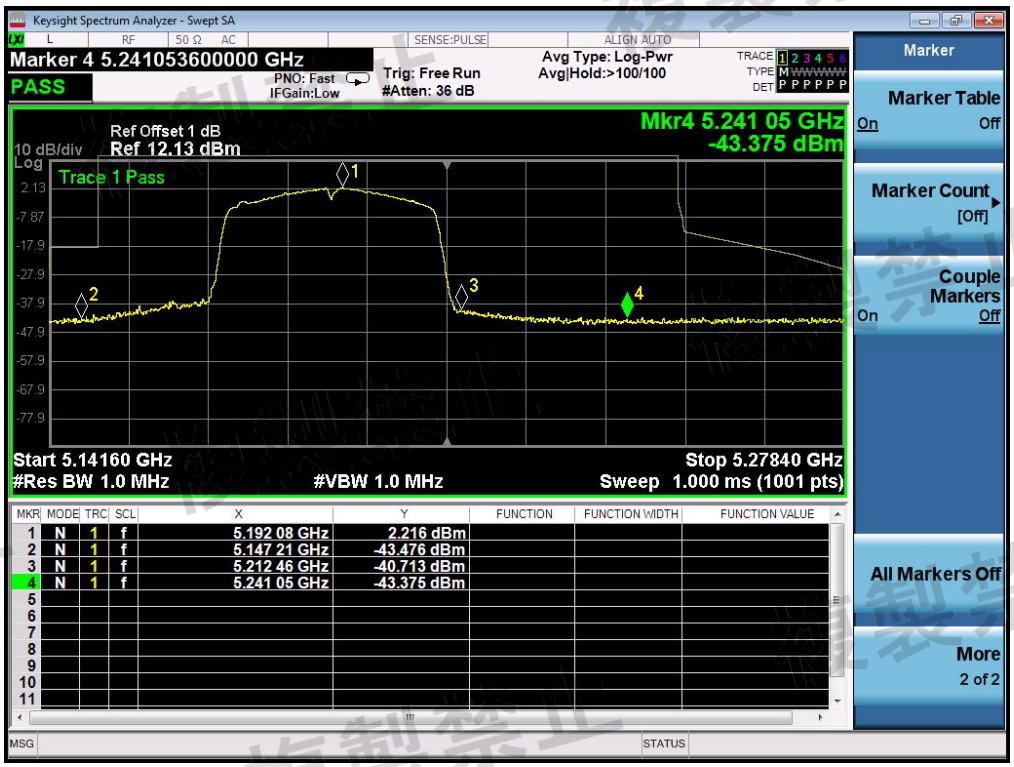
Channel 36 /11n(HT20) Mode Band Emissions Worst Mode



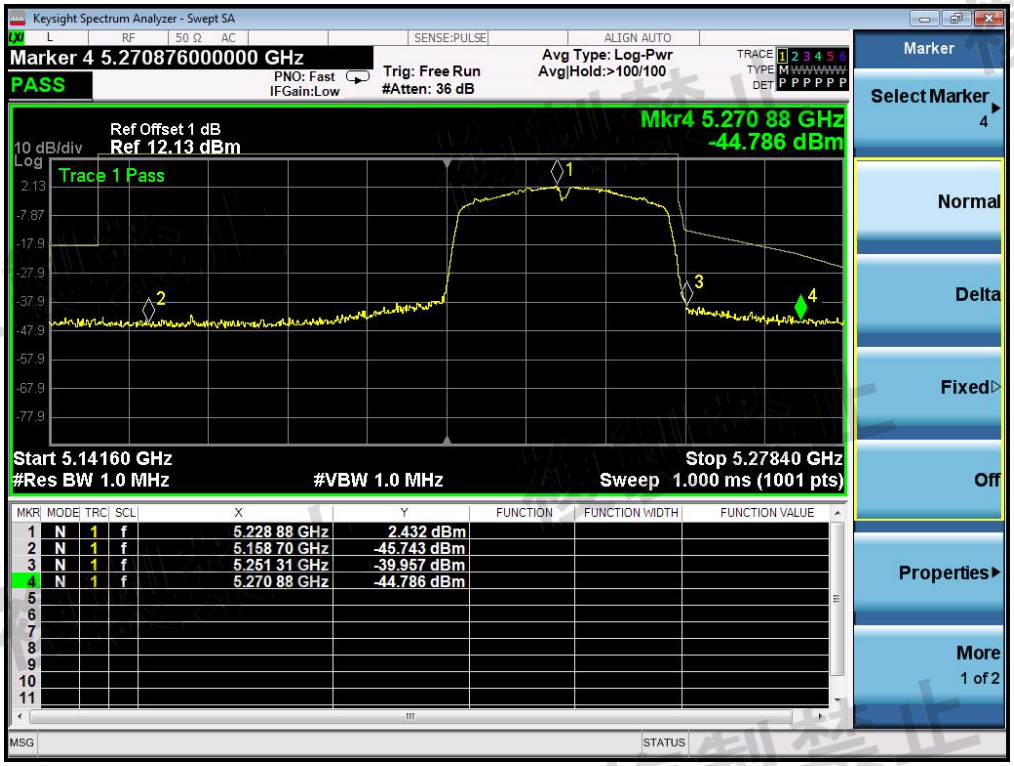
Channel 48 /11n(HT20) Mode Band Emissions Worst Mode



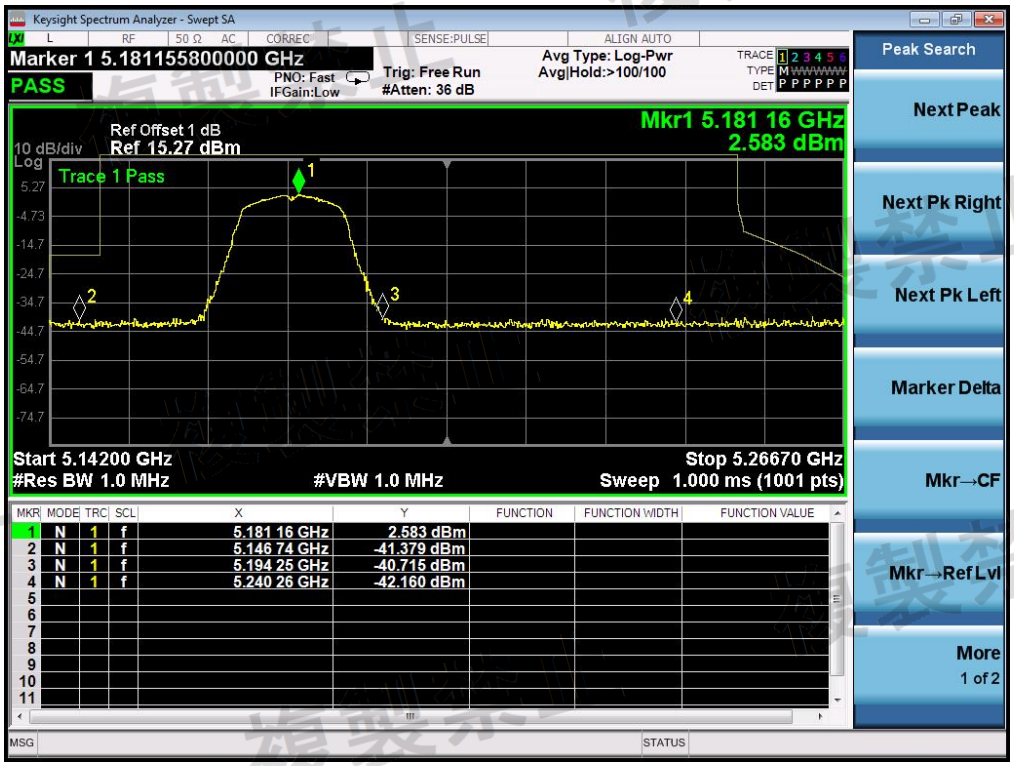
Channel 38 /11n(HT40) Mode Band Emissions Worst Mode



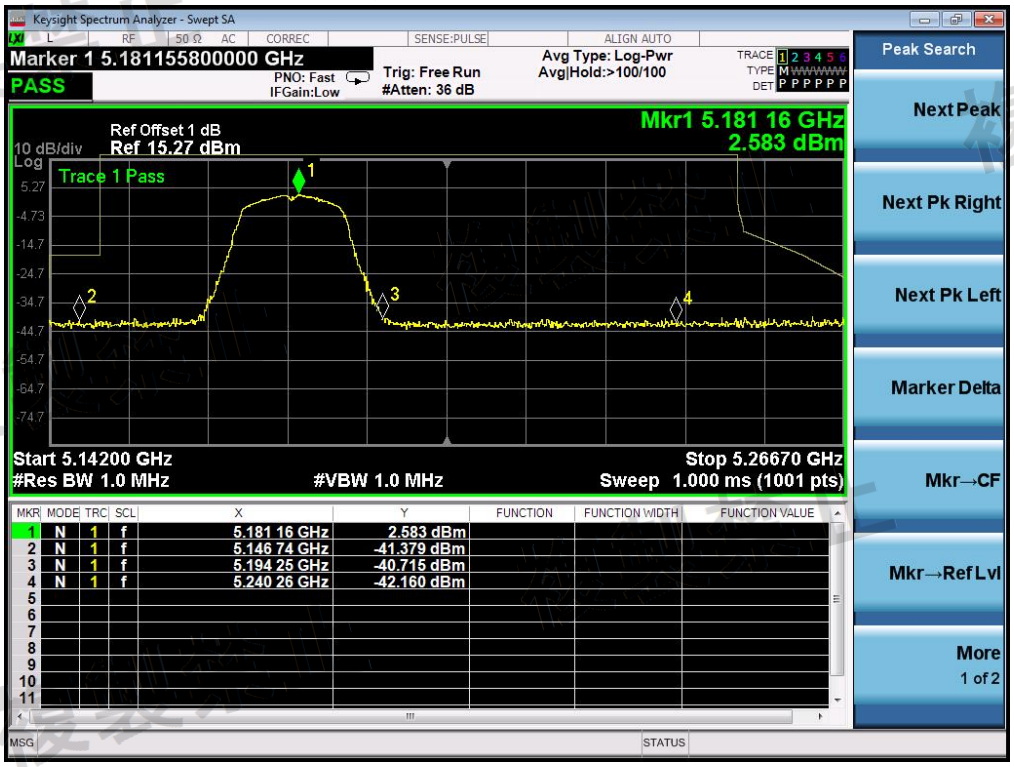
Channel 46 /11n(HT40) Mode Band EmissionsWorst Mode



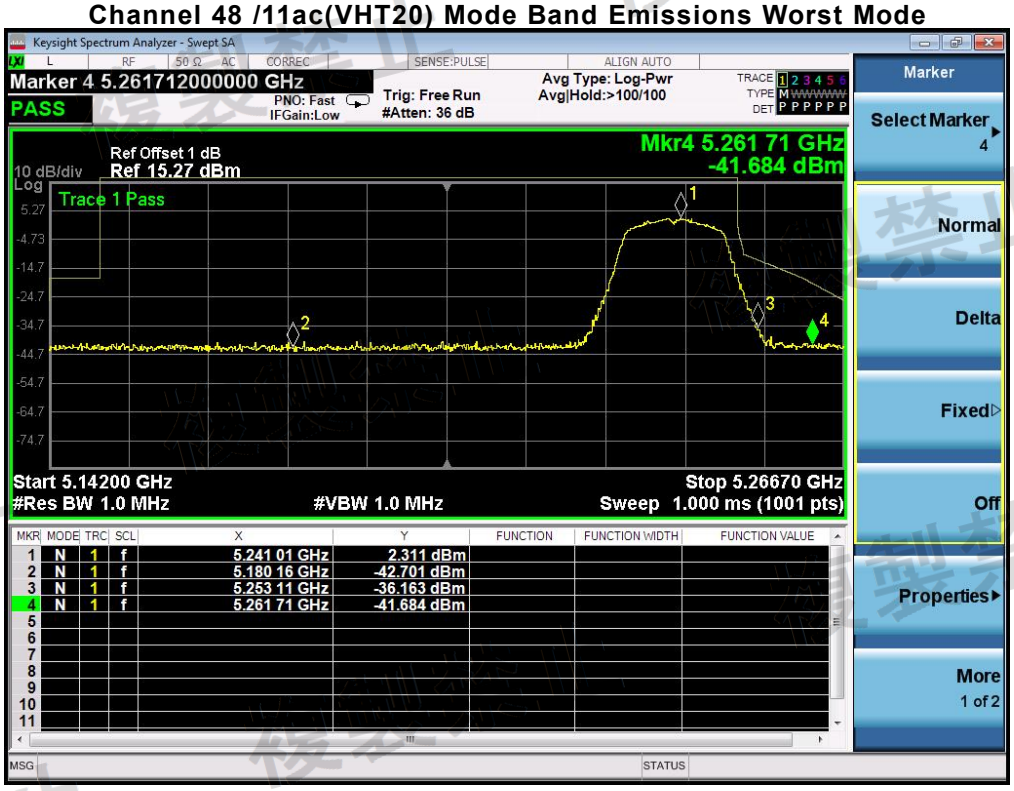
Channel 36 /11ac(VHT20) Mode Band Emissions Worst Mode



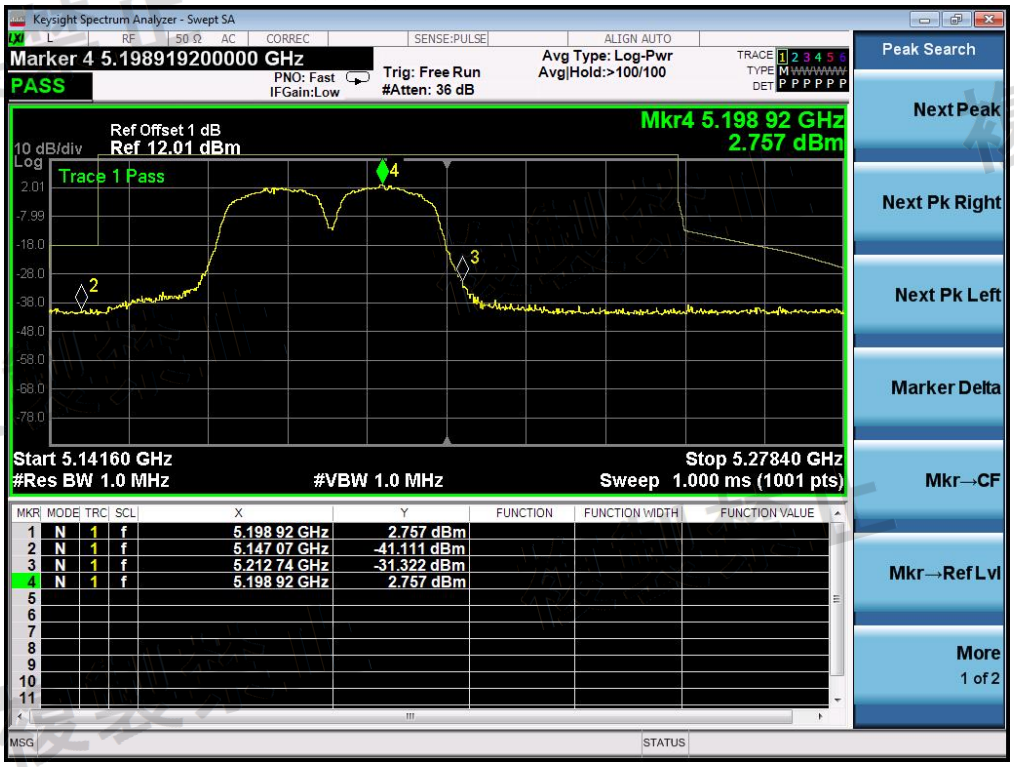
Channel 36 /11ac(VHT20) Mode Band Emissions Worst Mode



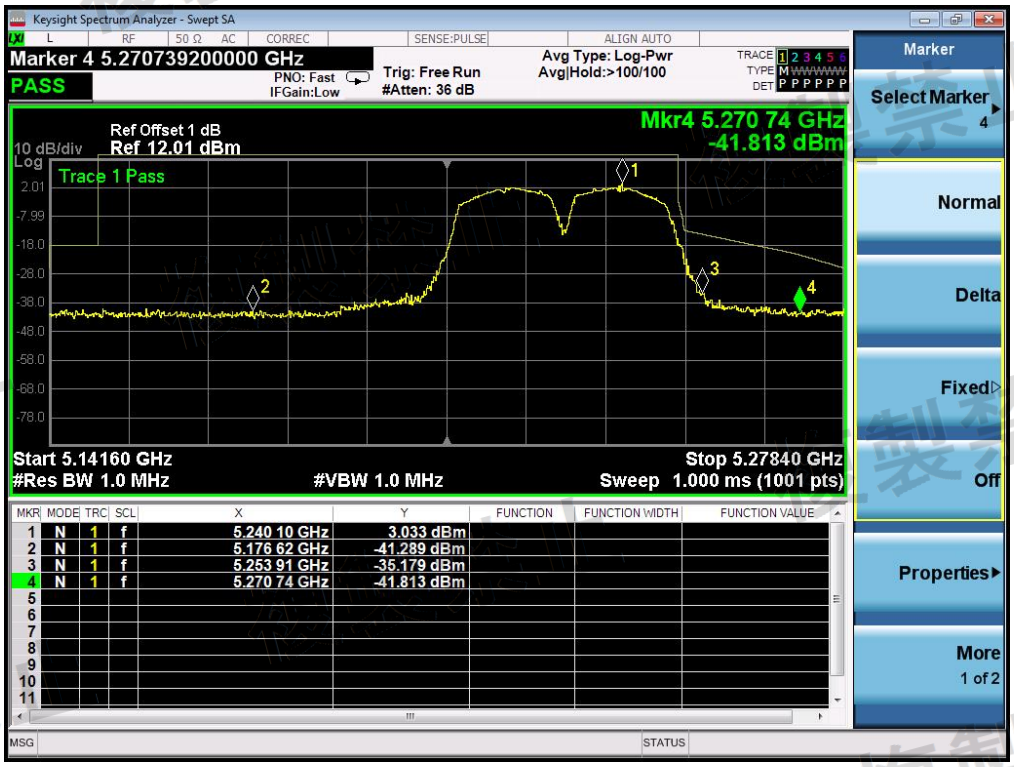
Channel 48 /11ac(VHT20) Mode Band Emissions Worst Mode



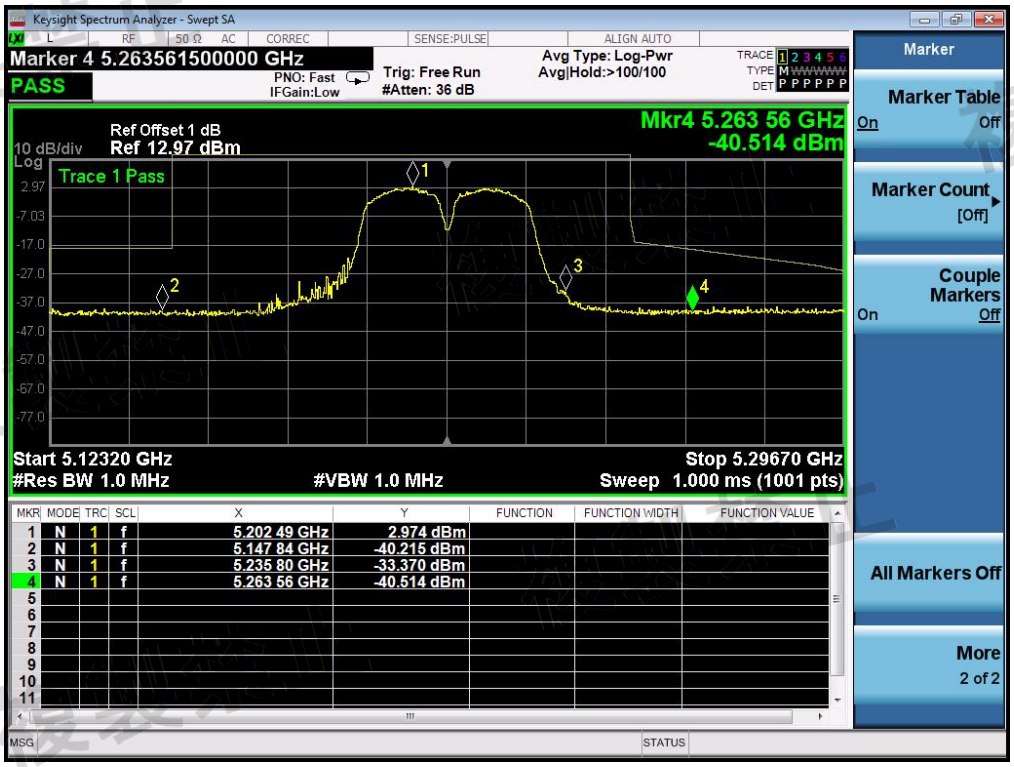
Channel 38 /11ac(VHT40) Mode Band Emissions Worst Mode



Channel 46 /11ac(VHT40) Mode Band EmissionsWorst Mode



Channel 48 /11ac(VHT80) Mode Band EmissionsWorst Mode


Keysight Spectrum Analyzer - Swept SA
Marker 4 5.263561500000 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 36 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1 dB
10 dB/div
Ref 12.97 dBm
Log
Trace 1 Pass
Mkr4 5.263 56 GHz
-40.514 dBm
Start 5.12320 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 5.29670 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 5.202 49 GHz 2.974 dBm
2 N 1 f 5.147 84 GHz -40.215 dBm
3 N 1 f 5.235 80 GHz -33.370 dBm
4 N 1 f 5.263 56 GHz -40.514 dBm
Marker
Marker Table
On Off
Marker Count
[Off]
Couple Markers
On Off
All Markers Off
More
2 of 2
MSG
STATUS

9. SECONDARY RADIATED EMISSIONS

9.1 LIMIT

Item	Limits	
RX Spurious Emission:	20MHz system	≦4nW (f≦1GHz) ≦20nW (1GHz≦f≦26.5GHz)
	40MHz system	
	80MHz system	

9.2 TEST PROCEDURES

The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
4. SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 26500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
5. If power level of lower emissions are more than 1/10 of limit (.0.4nW for f < 1GHz, 2nW for f >= 1GHz), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

9.3 TEST RESULT

Data see Attachment B.

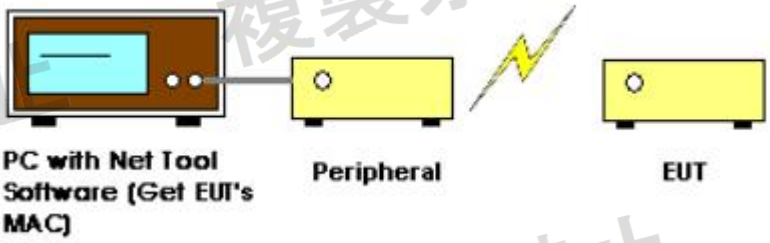
10. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

Item	Limits
Identification code	≧19 bits

10.2 TEST PROCEDURES

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification ocde: a. Transmit the predetermined identification codes form the counterpart. b . Check if communication is normal. c. Transmit the signals other than predetermined ID codes form the counterpart. d. check if the EUT stops the transmission, or if it displays
that idnetification codes are different from the predetermined ones.

10.3 TEST SETUP



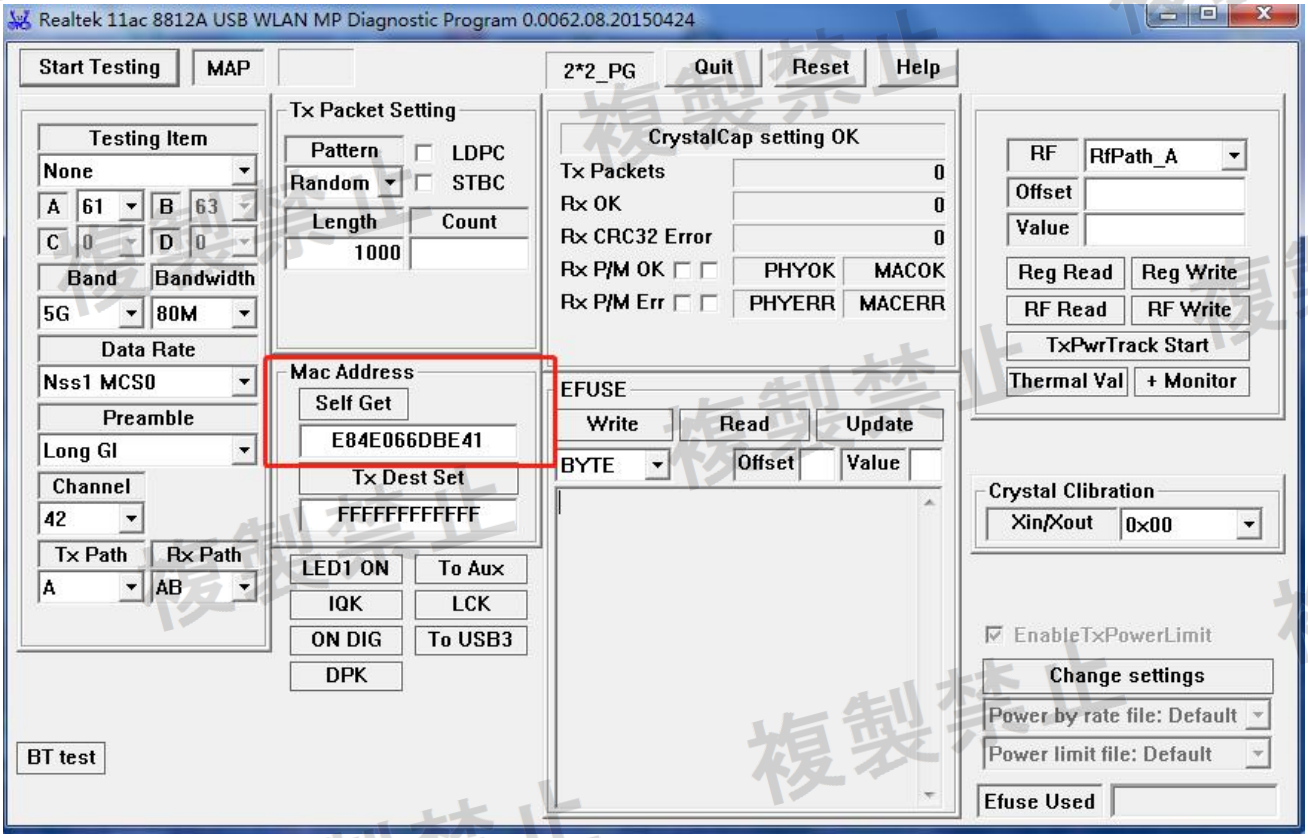
10.4 TEST DEVIATION

There is no deviation with the original standard.

10.5 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

10.6 TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT



11. CARRIER SENSE CAPABILITY

11.1 INTERFERENCE PREVENTION FUNCTION

11.2 TEST REQUIREMENT

MIC Notice No.88 Appendix No.45

Article 2, Paragraph 1, Item 19-3 Rules

11.3 TEST PROCEDURE

1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is (Equal to the value of the electric field strength to 100mV / m).

2. turn off the RF signal of the SG.

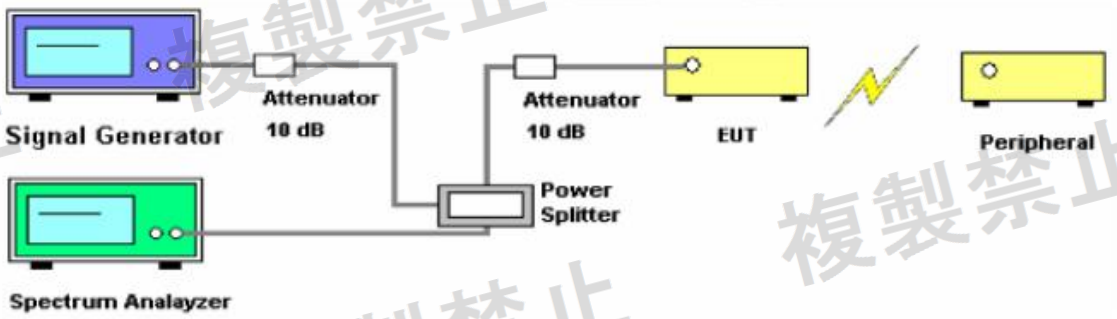
3. EUT have transmitted the maximum modulation signal and fixed channelize.

4. Setting of SA :RBW/VBW=1MHz/1MHz,,Sweep time=auto,Sweep mode=continuous, Detect mode=positive peak

5. SG RF signal on.

6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous

❖ Measurement System Diagram



❖ Conditions of Application Equipment (EUT)

- The EUT state shall be "normal mode link with wireless router".

11.4 TEST RESULT

Temperature:	25^{0}C	Presure：	1012 hPa
Humidity:	55 % RH		
Test result:	CONFORM		

12. ADJACENT CHANNEL POWER

12.1 LIMIT

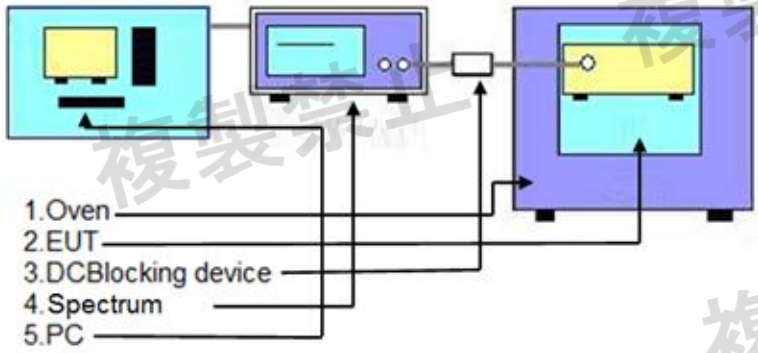
Item	Operation band	Occupied Bandwidth	Limits	
Adjacent Channel Power	20MHz system	⩽18MHz	Fc ± 20MHz ±10MHz BW	-25dBc or less
			Fc ± 40MHz ±10MHz BW	-40dBc or less
		18~19MHz	Fc ± 20MHz ±10MHz BW	-25dBc or less
			Fc ± 40MHz ±10MHz BW	-40dBc or less
	40MHz system		Fc ± 40MHz ± 20MHz BW	-25dBc or less
			Fc ± 80MHz ± 20MHz BW	-40dBc or less
	80MHz system		Fc ± 80MHz ±40MHz BW	-25dBc or less

12.2 MEASURING INSTRUMENTS AND SETTING

12.2.1 TEST PROCEDURES

1. Setting of SA is following as: 802.11a/n/ac RB: 300KHz / VB:300KHz / SPAN: 100MHz/200MHz/400MHz
Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: peak
Trace mode: Max hold/ Sweep Time Auto

12.3 TEST SETUP



12.4 TEST DEVIATION

There is no deviation with the original standard.

12.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

12.6 TEST RESULT

Data see Attachment C.

13. BURST LENGTH

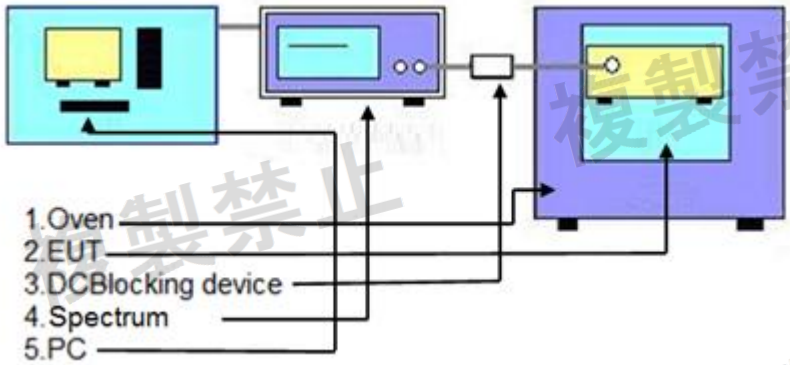
13.1 LIMIT

Item	Limits
Adjacent Channel Power:	8ms or less

13.2 MEASURING INSTRUMENTS AND SETTING

1. Connected the EUT's Antenna port to the Spectrum Analyzer by suitable attenuator, Setting of SA is following as: 802.11a/n/ac RB: 1MHz / VB:1MHz
Sweep time:3ms / Detect mode: clear write
Trace mode: normal

13.3 TEST SETUP



13.4 EUT OPERATION DURING TEST

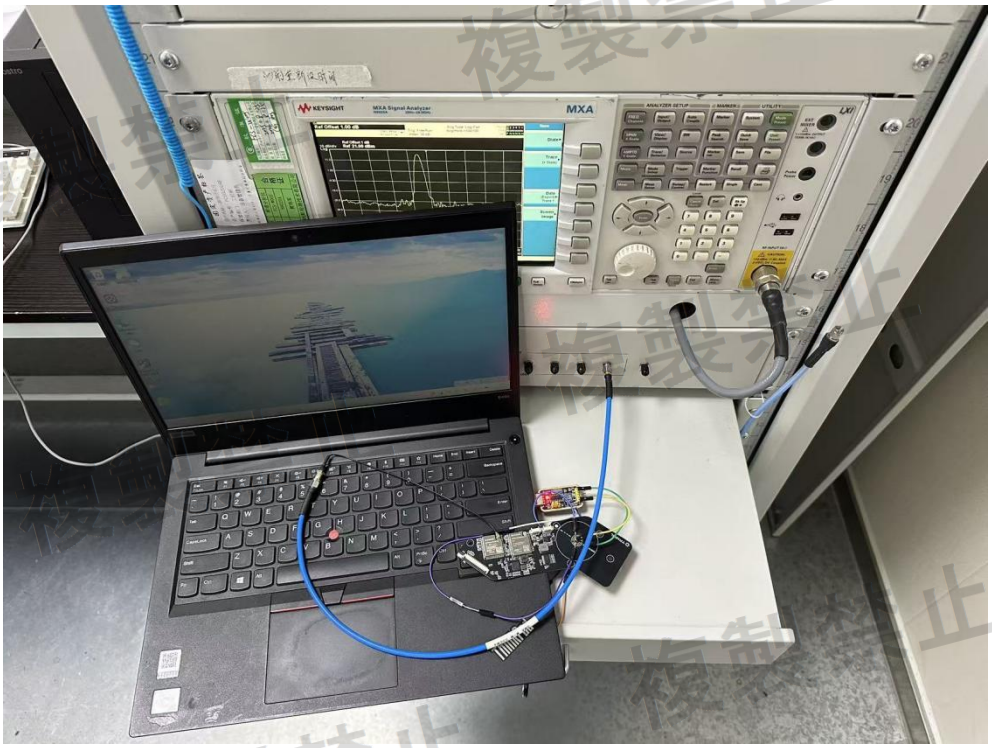
The EUT was programmed to be in continuously transmitting mode.

13.5 TEST RESULT

Data see Attachment D.

13. EUT TEST PHOTO

Measurement Photos



※※※※END OF THE REPORT※※※※※