



KSIGN (Guangdong) Testing Co., Ltd.

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TEST REPORT

Report No. : **KS2101S0424E03**
FCC ID..... : **2AKZY-JZ708**
Applicant : SHENZHEN JIZHAO INFORMATION TECHNOLOGY CO.,LTD.
Address..... : BUILDING NO.1ZHONGKENUO INDUSTRIAL PARK,HEZHOU ROAD
XIXIANG STREET BAOAN DISTRICT,SHENZHEN CITY,CHINA
Manufacturer..... : SHENZHEN JIZHAO INFORMATION TECHNOLOGY CO.,LTD.
Address..... : BUILDING NO.1ZHONGKENUO INDUSTRIAL PARK,HEZHOU ROAD
XIXIANG STREET BAOAN DISTRICT,SHENZHEN CITY,CHINA
Product Name : **Tablet PC**
Trade Mark..... : /
Model/Type reference : JZ708
Listed Model(s) : AMICUS-Prime,PowerPong-Omega, JZ807, JZ100
Standard : **FCC Part 15, Subpart E (15.407:2017)**
Date of Receipt : Jan. 21, 2021
Date of Test Date : Jan. 21, 2021~Jan. 29, 2021
Date of issue : Feb. 01, 2021
Test result..... : **Pass**

Compiled by:
(Printed name+signature) Rory Huang
Supervised by:
(Printed name+signature) Kelly Cheng
Approved by:
(Printed name+signature) Cary Luo



Testing Laboratory Name..... : **KSIGN(Guangdong) Testing Co., Ltd.**
Address..... : West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu
Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen,
Guangdong, People's Republic of China

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Part 15, Subpart E(15.407) - for 802.11a/n/ac, the test procedure follows the FCC KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

KDB 789033: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E .

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Feb. 01, 2021	Original

1.3. Test Description

FCC Part 15 Subpart E(15.407)			
Test Item	Test require	Result	Test Engineer
Antenna Requirement	15.203	Pass	Rory Huang
Conducted Emission	15.207	Pass	Rory Huang
Band Edge Emissions	15.407(b)	Pass	Rory Huang
26dB Bandwidth & 99% Bandwidth	15.407(a)	Pass	Rory Huang
6dB Bandwidth (only for UNII-3)	15.407(e)	N/A	N/A
Maximum Conducted Output Power	15.407(a)	Pass	Rory Huang
Maximum Power Spectral Density	15.407(a)	Pass	Rory Huang
Transmitter Radiated Spurious Emission	15.407(b)	Pass	Rory Huang
Peak Excursion	15.407(a)	Pass	Rory Huang
Frequency Stability	15.407(g)	Pass	Rory Huang
Transmitter Power Control	15.407(h)(1)	N/A	N/A

Note:

- 1.The measurement uncertainty is not included in the test result.
2. Transmit Power Control was not tested as the maximum EIRP is less than 500mW (27dBm) in U-NII Bands 2&3.
3. "N/A" is an abbreviation for "Not Applicable".

1.4. Test Facility

Address of the report laboratory

KSIGN(Guangdong) Testing Co., Ltd.

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: CN0096

The 3m alternate test site of KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: CN0096

FCC-Registration No.: CN1272

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the KSIGN(Guangdong) Testing Co., Ltd. system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. Below is the best measurement capability for KSIGN(Guangdong) Testing Co., Ltd.

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth	2.80 dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

Normal Condition	Temperature	15 °C to +35 °C
	Relative humidity	20 % to 75 %.
	Voltage	The equipment shall be the nominal voltage for which the equipment was designed.
Extreme Condition	Temperature	Measurements shall be made over the extremes of the operating temperature range as declared by the manufacturer
	Voltage	Measurements shall be made over the extremes of the operating temperature range as declared by the manufacturer

Normal Condition	T _N =Normal Temperature	25 °C
Extreme Condition	T _L =Lower Temperature	-20 °C
	T _H =Higher Temperature	50 °C

2. GENERAL INFORMATION

2.1. General Description of EUT

Test Sample Number:	1-1-1(Normal Sample),1-1-2(Engineering Sample)
Product Name:	Tablet PC
Trademark:	/
Model/Type reference:	JZ708
Listed models:	AMICUS-Prime,PowerPong-Omega , JZ807, JZ100
Model Difference:	The difference of product model only depends on the screen size, model name and appearance color vary according to market demand.Other power supply methods, safety structure and key components are the same, which do not affect the safety and electromagnetic compatibility performance.
Power Supply(Adapter):	INPUT:100-240V~50/60Hz 0.3A Max OUTPUT:5V---2A
Power Supply (Battery) :	DC 3.7V 3000mAh 11.1Wh
Hardware version:	BND-MT8168-P863 V1.1
Software version:	V1.0

Technical index for 5G WIFI					
Operation Band:	☒ U-NII-1	☐ U-NII-2A	☐ U-NII-2C	☐ U-NII-3	
Operation Frequency Range:	U-NII-1:	5150MHz~5250MHz			
	U-NII-2A:	/			
	U-NII-2C:	/			
	U-NII-3:	/			
Support bandwidth:	802.11a	☒ 20MHz			
	802.11n	☒ 20MHz	☒ 40MHz		
	802.11ac	☒ 20MHz	☒ 40MHz	☒ 80MHz	☐ 160MHz
Modulation:	802.11a: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM)				
Bit Rate of Transmitter:	802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 150Mbps 802.11ac: at most 433.3 Mbps				
Max Peak Output Power:	802.11a: 8.57dBm 802.11n (HT20): 9.30dBm 802.11n (HT40): 7.49dBm 802.11ac (HT20):8.31dBm 802.11ac (HT40): 7.47dBm 802.11ac (HT80): 6.32dBm				
Antenna type:	PIFA Antenna				
Antenna gain:	0.8dBi				

2.2. Operation state

➤ Frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Band	Test Channel	20MHz		40MHz		80MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH _L	36	5180	38	5190	-	-
	CH _M	44	5220	-	-	42	5210
	CH _H	48	5240	46	5230	-	-

➤ Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)	MCS0
802.11n(HT40)	MCS0
802.11ac(HT20)/(HT40)/(HT80)	MCS0

➤ Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit(duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

2.3. Measurement Instruments List

Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	Spectrum Analyzer	R&S	FSV40-N	101798	04/07/2021
2	Vector Signal Generator	Agilent	N5182A	MY50142520	04/07/2021
3	Analog Signal Generator	HP	83752A	3344A00337	04/07/2021
4	Power Sensor	Agilent	E9304A	MY50390009	04/07/2021
5	Power Sensor	Agilent	E9300A	MY41498315	04/07/2021
6	Wideband Radio Communication Tester	R&S	CMW500	157282	04/07/2021
7	Climate Chamber	Angul	AGNH80L	1903042120	04/07/2021
8	Dual Output DC Power Supply	Agilent	E3646A	MY40009992	04/07/2021
9	RF Control Unit	Tonscend	JS0806-2	/	04/07/2021

Transmitter spurious emissions & Receiver spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	EMI Test Receiver	R&S	ESR	102525	04/07/2021
2	High Pass Filter	Chengdu E-Microwave	OHF-3-18-S	0E01901038	03/27/2021
3	High Pass Filter	Chengdu E-Microwave	OHF-6.5-18-S	0E01901039	03/27/2021
4	Spectrum Analyzer	HP	8593E	3831U02087	04/07/2021
5	Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	01230	03/29/2023
6	Loop Antenna	Beijin ZHINAN	ZN30900C	18050	03/25/2021
7	Spectrum Analyzer	R&S	FSV40-N	101798	04/07/2021
8	Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	03/29/2023
9	Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	04/07/2021
10	Pre-Amplifier	EMCI	EMC051835SE	980662	04/07/2021

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	LISN	R&S	ENV432	1326.6105.02	03/27/2021
2	EMI Test Receiver	R&S	ESR	102524	04/07/2021
3	Manual RF Switch	JS TOYO	/	MSW-01/002	04/07/2021

Note:

1)The Cal. Interval was one year.

2)The cable loss has calculated in test result which connection between each test instruments.

2.4. Test Software

Software name	Model	Version
Conducted emission Measurement Software	EZ-EMC	EMC-Con 3A1.1
Radiated emission Measurement Software	EZ-EMC	FA-03A.2.RE
Bluetooth and WIFI Test System	JS1120-3	2.5.77.0418

3. TEST ITEM AND RESULTS

3.1. Antenna Requirement

Standard Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

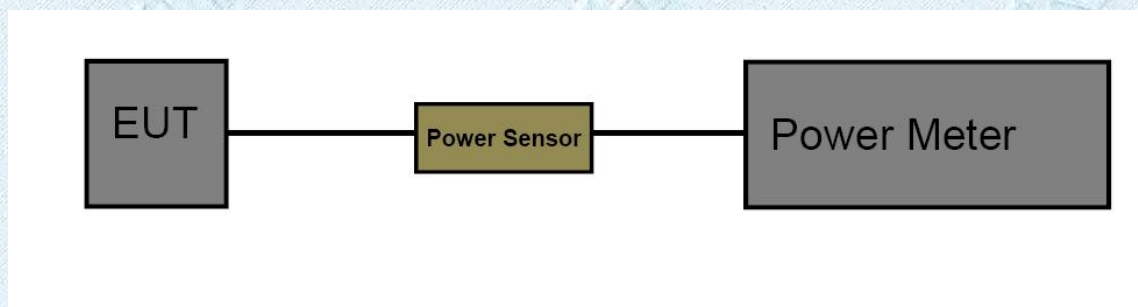
3.2. Conducted Output Power Test

Limit

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

FCC Part 15 Subpart E(15.407)		
Test Item	Limit	Frequency Range(MHz)
Conducted Output Power	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250
	250mW (24dBm)	5250~5350
	250mW (24dBm)	5470~5725
	1 Watt (30dBm)	5725~5850

Test Configuration



Test Procedure

1. The EUT was tested according to according to section 3 of KDB 789033 D02 General UNII Test Procedures New Rules V02r01.
2. The maximum conducted output power may be measured using a broadband AVG RF power meter.
3. Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
4. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
5. Record the measurement data.

Test Mode

Please refer to the clause 2.2.

Test Result

Band	Test Mode	Channel (MHz)	Output Power (dBm)	Limit(MHz)	Result
U-NII-1	802.11a	5180	7.77	24	Pass
		5220	8.57		
		5240	8.22		
	802.11n(HT20)	5180	7.63		
		5220	9.30		
		5240	7.99		
	802.11n(HT40)	5190	7.01		
		5230	7.49		
	802.11ac(HT20)	5180	7.72		
		5220	8.31		
		5240	8.06		
	802.11ac(HT40)	5190	7.13		
		5230	7.47		
	802.11ac(HT80)	5210	6.32		
Remark: The EUT provides one antennas for transmitting and receiving. Gain=0.8dBi< 6dBi So P _{out} =P _{limit}					

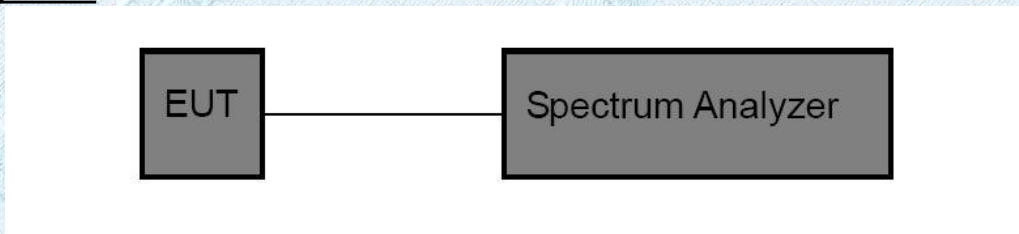
3.3. Maximum Power Spectral Density Test

Limit

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

FCC Part 15 Subpart E(15.407)		
Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	Other than Mobile and Portable : 17dBm/MHz Mobile and Portable : 11dBm/MHz	5150~5250
	11dBm/MHz	5250~5350
	11dBm/MHz	5470~5725
	30dBm/500kHz	5725~5850

Test Configuration



Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Set analyser centre frequency to transmitting frequency.

(3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.

(4) Set the RBW to: 1 MHz

(5) Set the VBW to: 3 MHz

(6) Detector: RMS

(7) Trace: Max Hold

(7) Sweep time: auto

(8) Trace average at least 100 traces in power averaging.

(9) User the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.

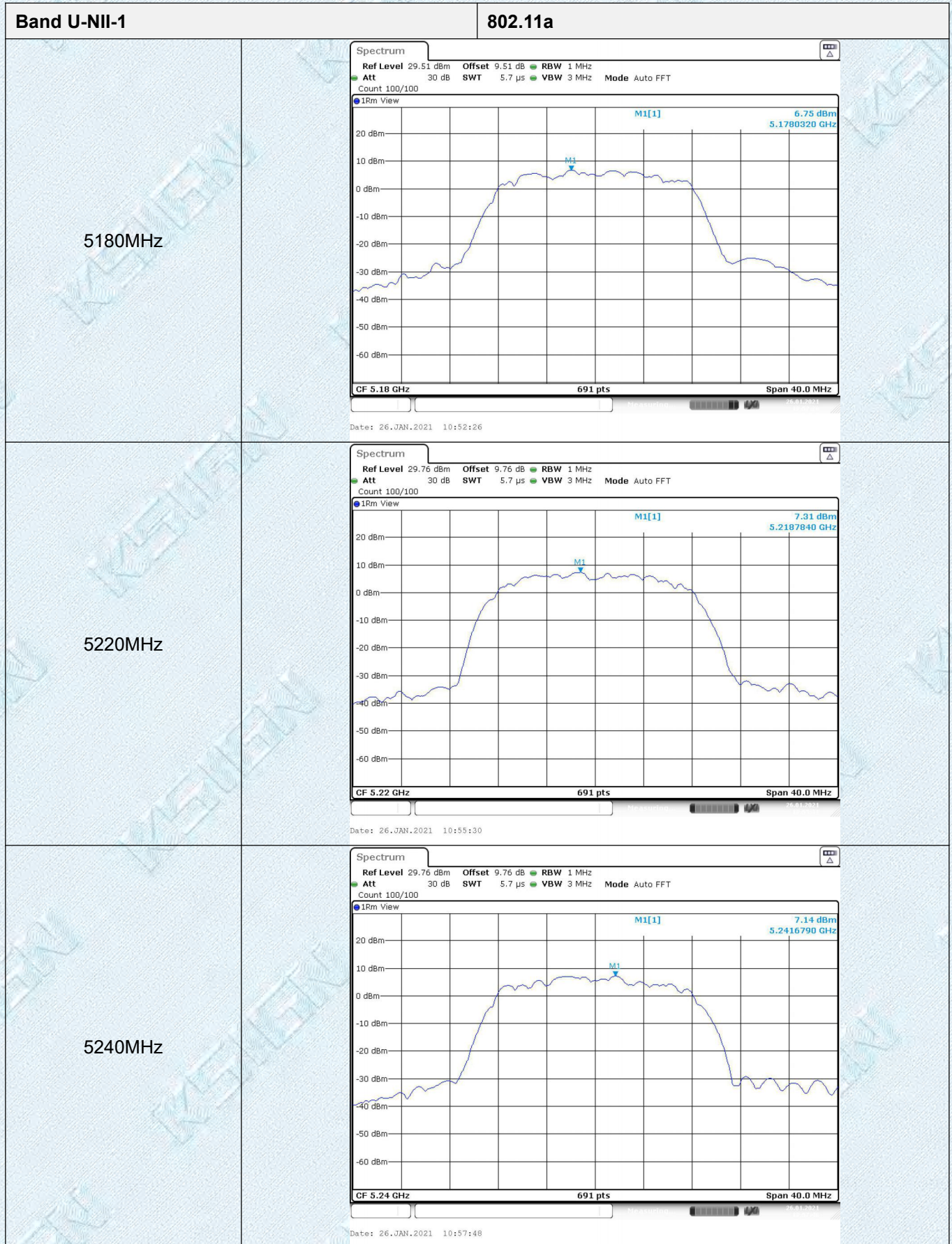
NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

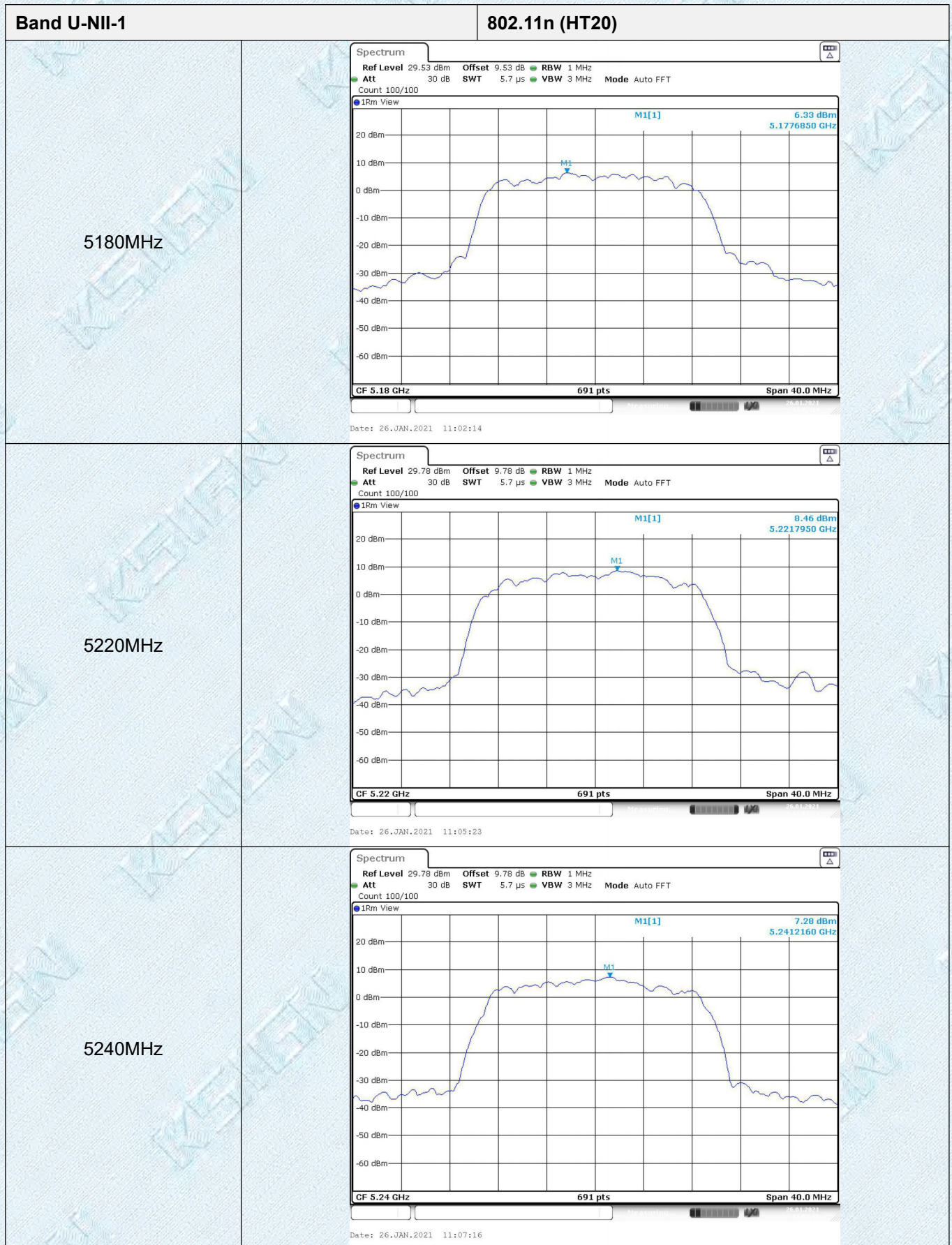
Test Mode

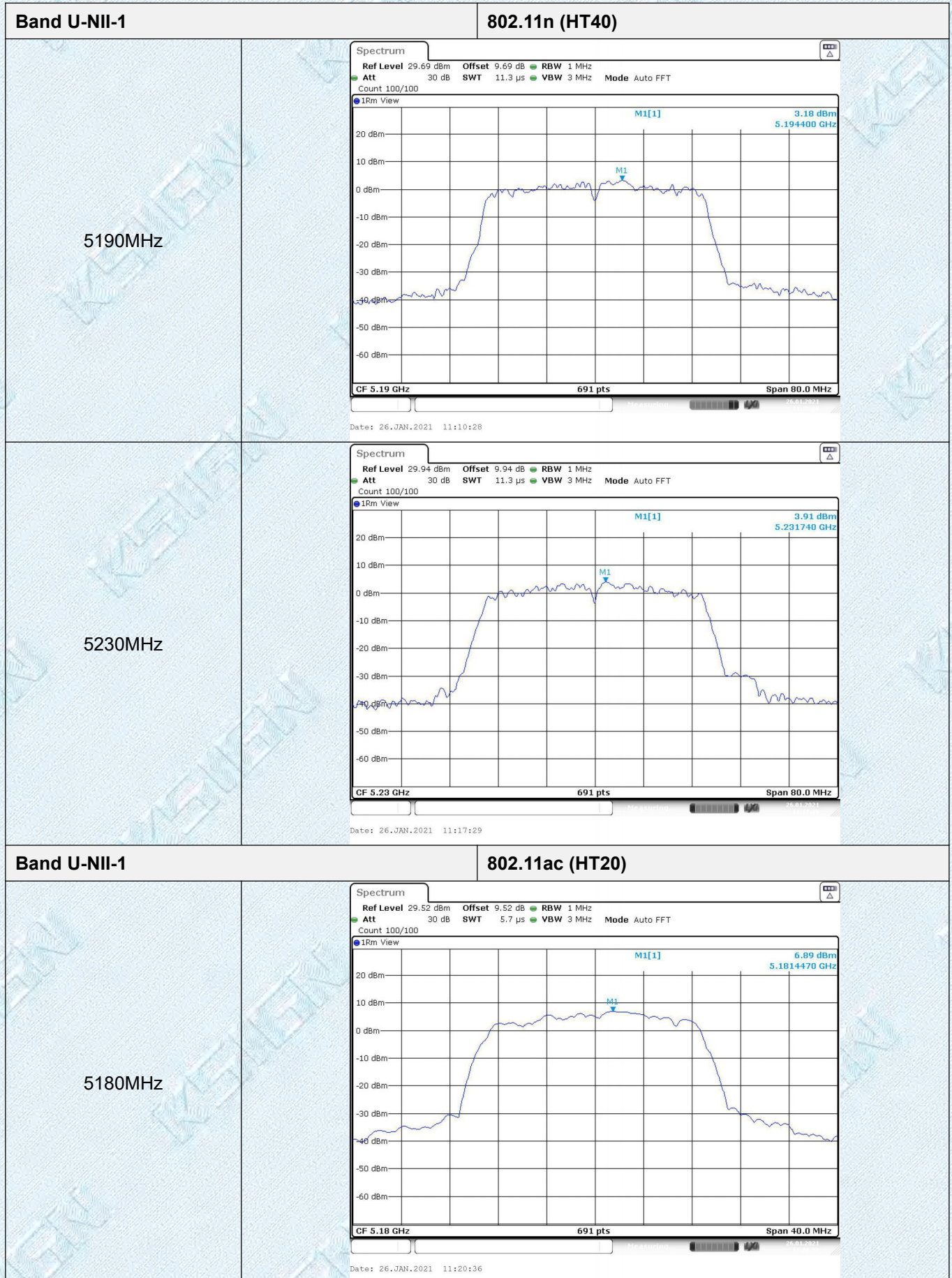
Please refer to the clause 2.2.

Test Result

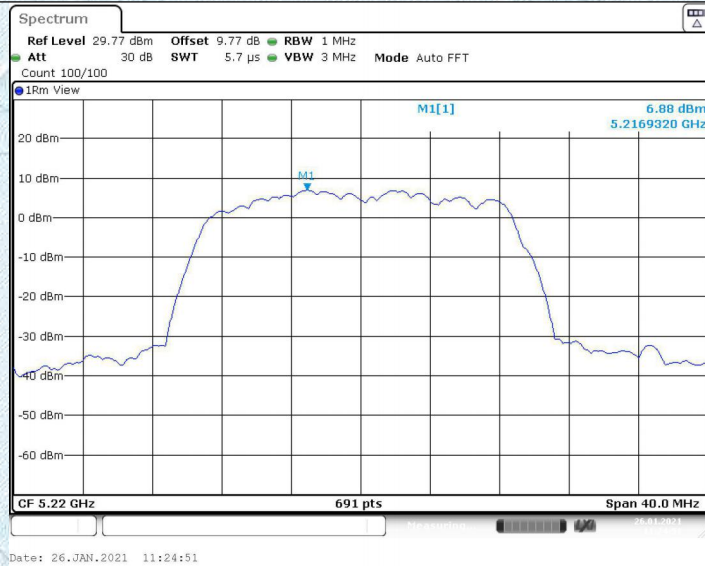
Band	Test Mode	Channel (MHz)	Power Spectral Density (dBm/MHz)	Limit(dBm/MHz)	Result
U-NII-1	802.11a	5180	6.75	11	Pass
		5220	7.31		
		5240	7.14		
	802.11n(HT20)	5180	6.33		
		5220	8.46		
		5240	7.28		
	802.11n(HT40)	5190	3.18		
		5230	3.91		
	802.11ac(HT20)	5180	6.89		
		5220	6.88		
		5240	7.09		
	802.11ac(HT40)	5190	3.23		
		5230	3.68		
	802.11ac(HT80)	5210	1.51		







5220MHz



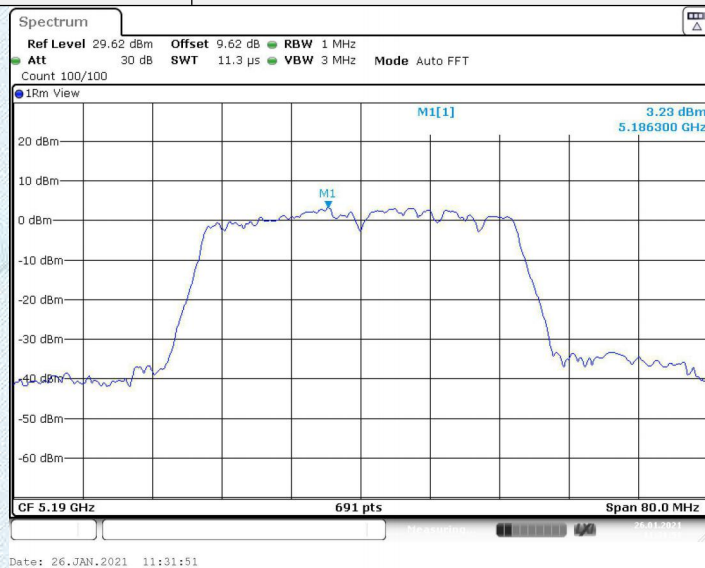
5240MHz



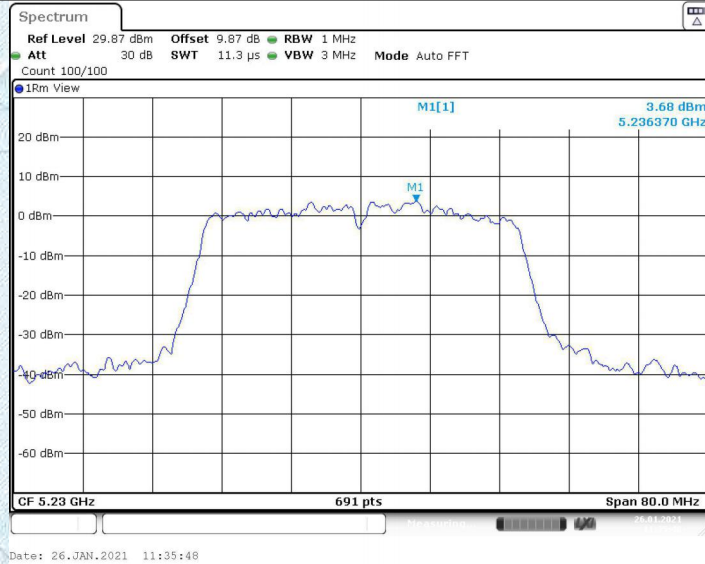
Band U-NII-1

802.11ac (HT40)

5190MHz



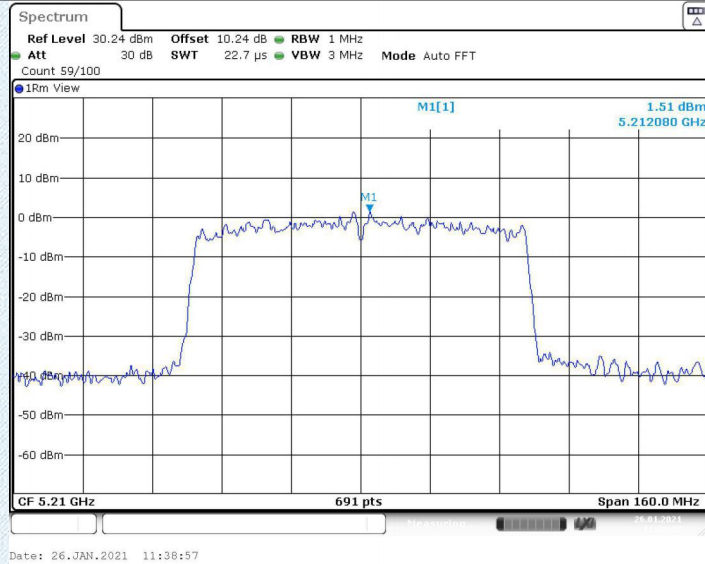
5230MHz



Band U-NII-1

802.11ac (HT80)

5210MHz



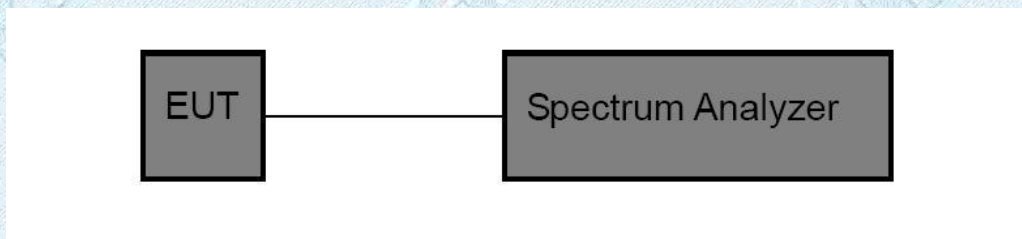
3.4. 26dB Bandwidth and 99% Occupied Bandwidth Test

Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 , and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

FCC Part 15 Subpart C(15.407)		
Test Item	Limit	Frequency Range (MHz)
26 dB Bandwidth	N/A	5150~5250
		5250~5350
		5470~5725
6 dB Bandwidth	>500kHz	5725~5850

Test Configuration



Test Procedure

1. According KDB 789033 D02 – Section C
2. Connect the antenna port(s) to the spectrum analyzer input.
3. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency =Channel center frequency

Span=2 x emission bandwidth

RBW = 1% to 5% of the emission bandwidth

VBW>3 x RBW

Sweep time= auto couple

Detector = Peak

Trace mode = max hold

4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission, and use the 99 % power bandwidth function of the instrument

The setting of the spectrum analyser as below:

26dB Bandwidth Test	
Spectrum Parameters	Setting
Attenuation	Auto
Span	>26 dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW>RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth Test	
Spectrum Parameters	Setting
Attenuation	Auto
RBW	1% to 5% of the OBW
VBW	$\geq 3\text{RBW}$
Detector	Peak
Trace	Max Hold

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.2.

Test Results

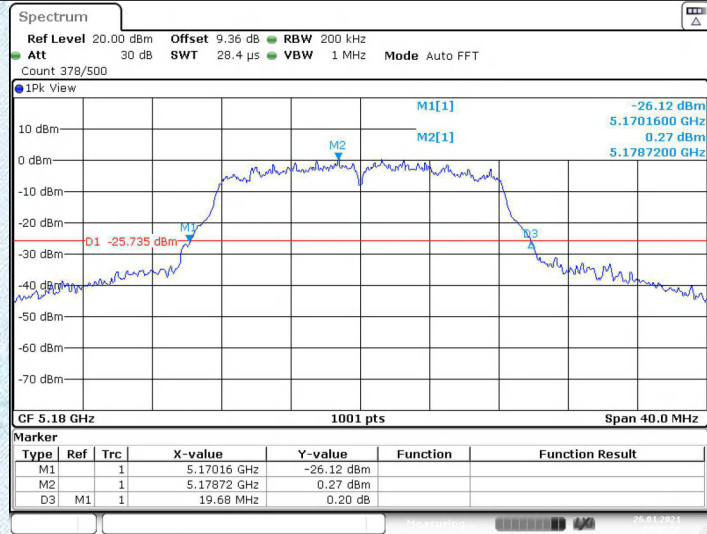
Band	Test Mode	Channel (MHz)	26dB Bandwidth [MHz]	99% Occupied bandwidth (MHz)	Result
U-NII-1	802.11a	5180	19.680	16.783	Pass
		5220	19.880	16.783	Pass
		5240	19.560	16.743	Pass
	802.11n(HT20)	5180	20.200	17.862	Pass
		5220	19.960	17.982	Pass
		5240	20.280	17.822	Pass
	802.11n(HT40)	5190	40.960	36.124	Pass
		5230	39.920	35.884	Pass
	802.11ac(HT20)	5180	20.080	17.902	Pass
		5220	20.080	18.262	Pass
		5240	20.040	18.102	Pass
	802.11ac(HT40)	5190	40.560	36.044	Pass
		5230	40.240	36.044	Pass
	802.11ac(HT80)	5210	79.520	75.285	Pass

Band U-NII-1

26dB bandwidth

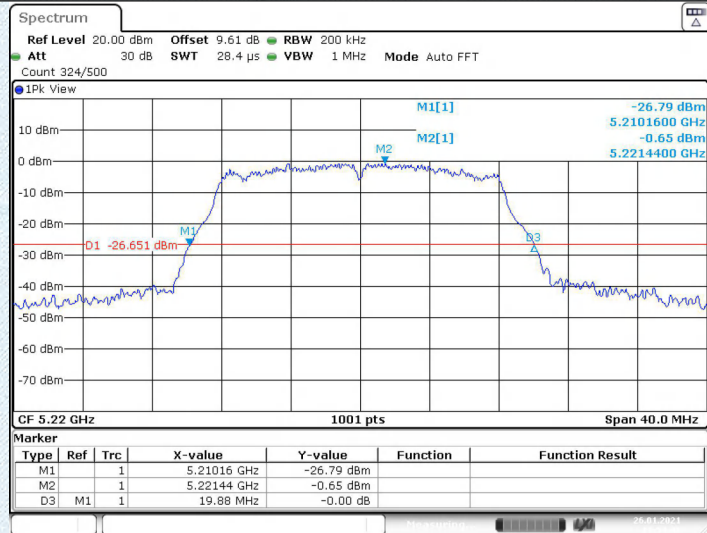
802.11a

5180MHz



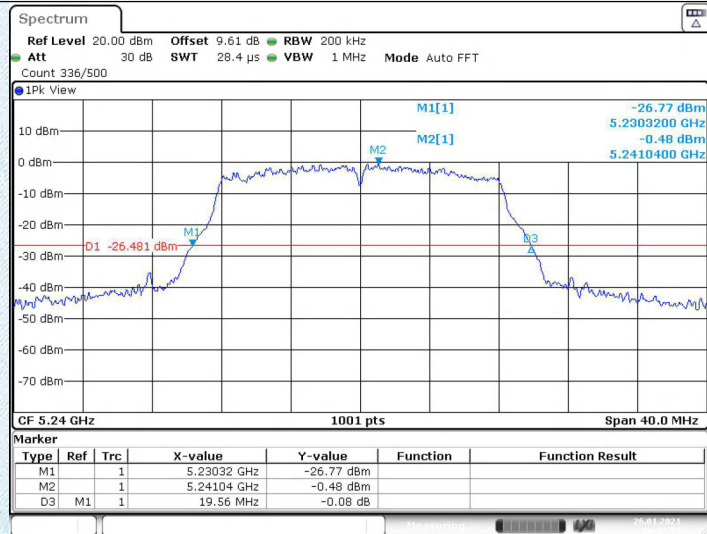
Date: 26.JAN.2021 10:47:56

5220MHz



Date: 26.JAN.2021 10:54:48

5240MHz



Date: 26.JAN.2021 10:57:06

