Certificate Number: 5055.02

TEST REPORT FOR WLAN TESTING

Report No: SRTC2020-9004(F)-20101501(G)

Product Name: LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone

Product Model: ZTE A2121L

Applicant: ZTE CORPORATION

Manufacturer: ZTE CORPORATION

Specification: FCC Part 15 Subpart E (2019)

ANSI C63.10 (2013)

FCC ID: SRQ-ZTEA2121L

The State Radio_monitoring_center Testing Center (SRTC)

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1. GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, P.R.China
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1.3 Applicant's details

Company:	ZTE CORPORATION
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili street, Nanshan District
City:	Shenzhen
Country or Region:	Guangdong, China
Contacted person:	Ren Shijia
Tel:	13709193069
Email:	---
	ren.shijia@zte.com.cn

1.4 Manufacturer's details

Company:	ZTE CORPORATION
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili street, Nanshan District
City:	Shenzhen
Country or Region:	Guangdong, China
Contacted person:	Ren Shijia
Tel:	13709193069
Email:	---
	ren.shijia@zte.com.cn

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2020-10-15
Testing Start Date:	2020-10-15
Testing End Date:	2020-11-02

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	47
Maximum Extreme	55	---
Minimum Extreme	-10	---

Normal Supply Voltage (V d.c.):	3.80
Maximum Extreme Supply Voltage (V d.c.):	4.20
Minimum Extreme Supply Voltage (V d.c.):	3.60

2. DESCRIPTION OF THE DEVICE UNDER TEST

2.1Final Equipment Build Status

Frequency Band(s)	U-NII-1:5150MHz-5250MHz U-NII-3:5725MHz-5850MHz
DFS	Client Without Radar Detection
Modulation Type	802.11a 802.11n (HT20/HT40) 802.11ac (VHT20/VHT40/VHT80)
Antenna Type	Fixed Internal Antenna
Antenna Gain	-1.36dBi
Power Supply	Battery/Charger
Hardware Version	zd1B
Software Version	TEL_MX_ZTE_A2121LV1.0
IMEI	868933050002347

2.2Wireless Technology and Frequency Range

Wireless Technology		Bandwidth	Channel	Frequency (MHz)
Wi-Fi	U-NII-1	20MHz	36	5180
			40	5200
			44	5220
			48	5240
		40MHz	38	5190
			46	5230
		80MHz	42	5210
	U-NII-3	20MHz	149	5745
			153	5765
			157	5785
			161	5805
			165	5825
		40MHz	151	5755
			159	5795
		80MHz	155	5775

2.3 Support Equipment

The following support equipment was used to exercise the DUT during testing:

Equipment	Battery
Manufacturer	Zhuhai CosMX Battery Co., Ltd.
Model Number	Li3941T44P4h836249
Equipment	Charger
Manufacturer	RUIJING
Model Number	STC-A5930A1-Z
Equipment	Headset 1
Manufacturer	JUWEI ELECTRONICS CO.,LTD
Model Number	DEM-66C
Equipment	Headset 2
Manufacturer	Shen zhen FDC Electronic Co.,Ltd
Model Number	JWEP1183-Z01R
Equipment	USB Cable 1
Manufacturer	Luxshare-ICT Co., Ltd
Model Number	USB-TC20-W-100-M-L-HF
Equipment	USB Cable 2
Manufacturer	King Power Electronics Co., Ltd
Model Number	USB-TC20-W-100-M-L-HF

2.4Note

Automatically Discontinue Transmission	
Description	The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.
Result	While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

Antenna requirement (FCC part 15.203)

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section.

•The antenna(s) of the EUT are permanently attached.

•There are no provisions for connection to an external antenna.

Note: The antenna provides to the EUT, please refer to the following table:

Brand	Model	Antenna gain	Frequency Bands (GHz)	Antenna type	Connecter Type
N/A	N/A	-1.36dBi	5150MHz-5250MHz 5725MHz-5850MHz	Fixed Internal Antenna	N/A
Manufacturers ensure that their designs will not be modified by the user or third party's arbitrary antenna parameters and performance.The EUT complies with the requirement of §15.203.					

3 REFERENCE SPECIFICATION

Specification	Version	Title
FCC part 15 Subpart E	2019	Unlicensed national information infrastructure devices
ANSI C63.10	2013	Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 644545 D03	August 14, 2014	Guidance for IEEE std 802.11actm devices emission testing
KDB 905462 D03	August 22, 2016	U-NIIclient devices without radar detection capability
KDB 905462 D02	April 8, 2016	Compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection
KDB 662911 D01	October 31, 2013	Emissions testing of transmitters with multiple outputs in the same band
KDB 789033 D02	December 14, 2017	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) devices part 15, subpart e

4 KEY TO NOTES AND RESULT CODES

The following are the definition of the test result.

Code	Meaning
PASS	Test result shows that the requirements of the relevant specification have been met.
FAIL	Test result shows that the requirements of the relevant specification have not been met.
NT	Normal Temperature
NV	Nominal voltage
HV	High voltage
LV	Low voltage

5. RESULT SUMMARY

No.	Test case	FCC reference	Verdict
1.	26dB Bandwidth	N/A	Pass
2.	Maximum Conducted Output Power	15.407 (a.1.iv),(a.2),(a.3)	Pass
3.	Maximum Power Spectral Density	15.407 (a.1.iv),(a.2),(a.3)	Pass
4.	Frequency Stability	15.407(g)	Pass
5.	Unwanted Radiated Emission Measurement	15.205 15.209 15.35(b)	Pass
6.	AC Power line Conducted Emission	15.207	Pass
7.	DFS	15.407(h)	N/A
8.	Automatically Discontinue Transmission	15.407(c)	Pass (See 2.4Note)
9.	Antenna Requirements	15.407(a) &15.203	Pass (See 2.4Note)

This Test Report Is Issued by: Mr. Peng Zhen	Checked by: Mr. Li Bin
Tested by: Mr. He Dengshun	Issued date: 20201102

6 TEST RESULT

6.1 26dB Bandwidth

6.1.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	101.5kPa

6.1.2Test 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 ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.
The 26dB bandwidth is used to determine the conducted power limits.

6.1.3 Test Procedure Used

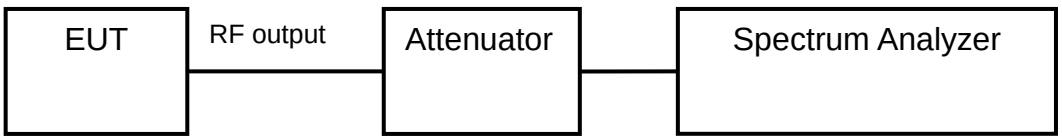
ANSI C63.10-2013 – Section 12.4
KDB 789033 D02 v02r01 – Section C

6.1.4 Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW > 3 x RBW
4. Detector = Peak
5. Trace mode = max hold

6.1.5Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



6.1.6 Test result

The test results are shown in Appendix A.

6.2 6dB Bandwidth(Only for 5.725 – 5.850GHz band)

6.2.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	101.5kPa

6.2.2Test limit

In the 5.725 – 5.850GHz band, the 6dB bandwidth must be ≥ 500 kHz.

6.2.3 Test Procedure Used

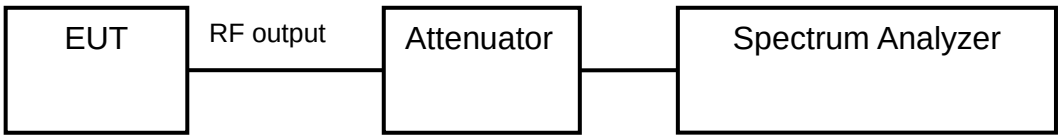
ANSI C63.10-2013 – Section 6.9.2
KDB 789033 D02 v02r01 – Section C

6.2.4 Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW > 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

6.2.5Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



6.2.6 Test result

The test results are shown in Appendix A.

6.3Maximum Conducted Output Power

6.3.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	101.5kPa

6.3.2Test limit

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm). The maximum e.i.r.p. shall not exceed the lesser of 200 mW or 10 + 10 log10B, dBm.
In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and 11 dBm + 10log10 (26dB BW). The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.
In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and 11 dBm + 10log10 (26dB BW). The maximum e.i.r.p. shall not exceed the lesser of 1.0 W or 17 + 10 log10B, dBm.
In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm). The maximum e.i.r.p. is 36 dBm.

6.3.3Test Procedure Used

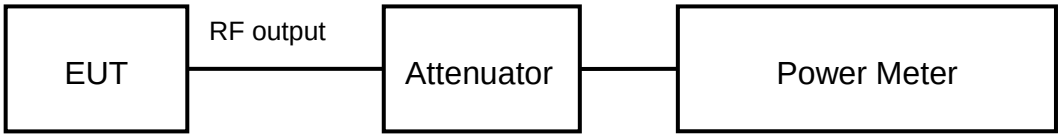
ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G
KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G
ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

6.3.4 Test Settings

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. 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. The trace was averaged over 100 traces to obtain the final measured average power.

6.3.5 Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



6.3.6 Test result

The test results are shown in Appendix A.

6.4Maximum Power Spectral Density

6.4.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	101.5kPa

6.4.2Test limit

In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz
In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

6.4.3 Test Procedure Used

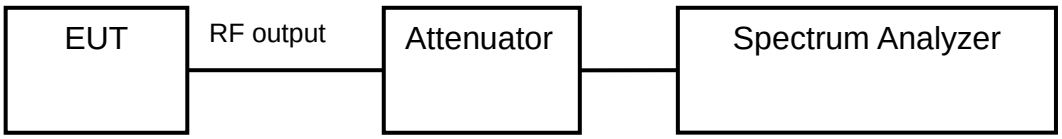
ANSI C63.10-2013 – Section 12.3.2.2
KDB 789033 D02 v02r01 – Section F
ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique.

6.4.4 Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. Set RBW = 500 kHz, VBW =1.5MHz for the band 5.725-5.85 GHz
4. Set RBW = 1 MHz, VBW =3MHz for the band 5.150-5.250 GHz，5.250-5.350 GHz and 5.470-5.725 GHz
5. Number of sweep points > 2 x (span/RBW)
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

6.4.5Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



6.4.6 Test result

The test results are shown in Appendix A.

6.5 Frequency Stability

6.5.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	100.9kPa

6.5.2 Test limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.5.3 Test Procedure Used

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two.

6.5.4 Test result

The test results are shown in Appendix A.

6.6Unwanted Radiated Emission Measurement

6.6.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	100.9kPa

6.6.2 Test Description

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

6.6.3 Test limit

FCC Part15.205, 15.209,;

In addition, 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) (see Section 15.205(c)).All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in below Table per Section 15.209. The spectrum shall be investigated from the lowest radio frequency signal generated in the device

Frequency [MHz]	Field strength [μV/m]	Measured 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

Radiated Limits

FCC Part15.35(b):

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

Used conversion factor: Limit (dBμV/m) = 20 log (Limit (μV/m)/1μV/m)

Frequency [MHz]	Detector	Unit (dBμV/m)
30～88	Quasi-peak	40.0
88～216	Quasi-peak	43.5
216～960	Quasi-peak	46.0
960～1000	Quasi-peak	54.0
1000～5th harmonic of the highest frequency or 40GHz, whichever is lower	Average	54.0
	Peak	74.0

Conversion Radiated limits

6.6.4 Test Procedure Used

KDB 789033 D02 v02r01,Sections G.3, G.4, G.5, and G.6.

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case 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 Quasi-Peak Detect Function and recorded the reading with Maximum Hold Mode.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer complied the following setting:

Frequency	RBW
9-150kHz	200-300Hz
0.15-30MHz	9-10kHz

For Radiated emission above 30MHz
a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground in 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 height of antenna 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 quasi-peak detect function and recorded the reading with Maximum Hold Mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detector and recorded the reading with Maximum Hold Mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is

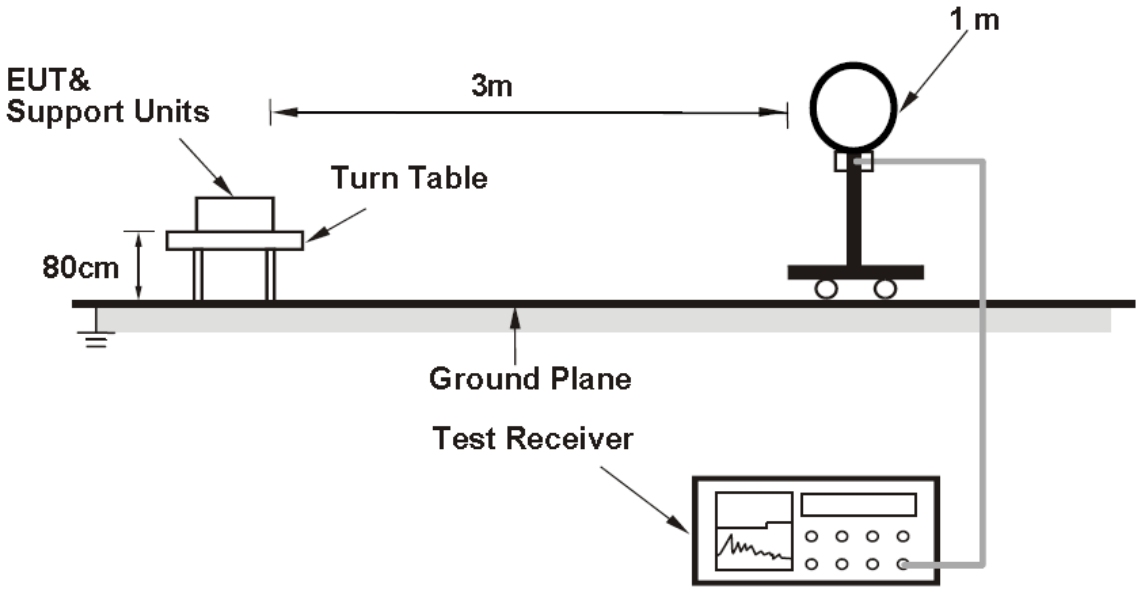
120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1GHz. If duty cycle of test signal is < 98%, the duty factor needs added to measured value.ForAverage detect，Reading Level including Duty Cycle Correction Factor(if any).
4. All modes of operation were investigated and the worst-case emissions are reported.

6.6.5 Test Settings

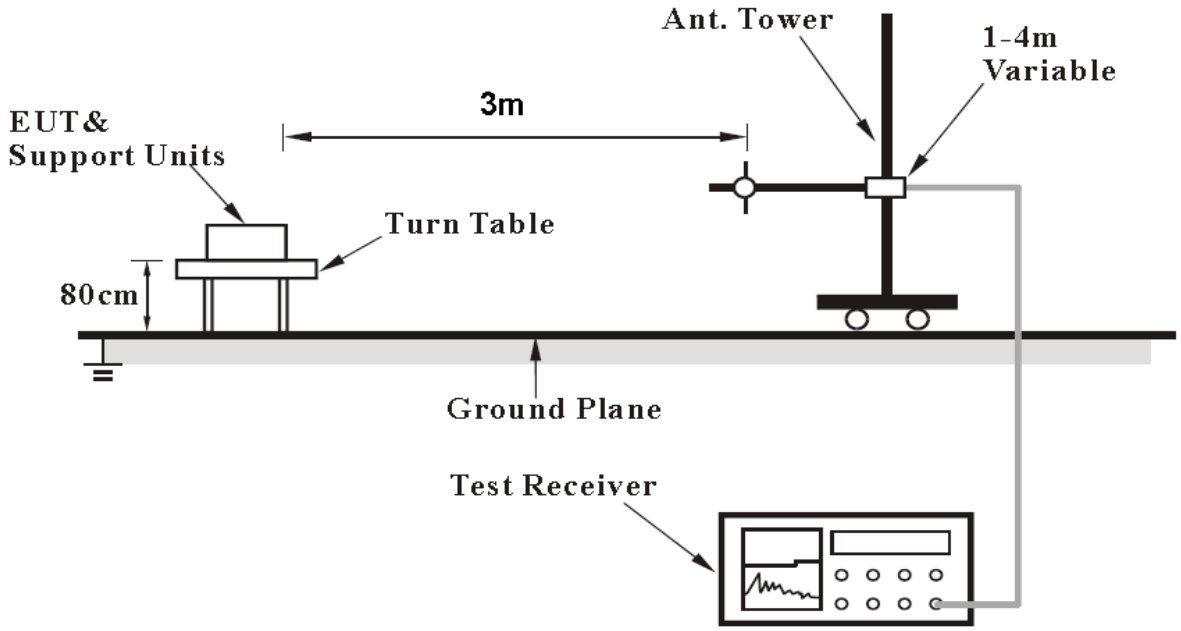
Frequency	Detector
＜1000MHz	Quasi-peak
>1000MHz	Peak and average

Frequency	RBW
9-150kHz	200-300Hz
0.15-30MHz	9-10kHz
30-1000MHz	100-120kHz
>1000MHz	1MHz

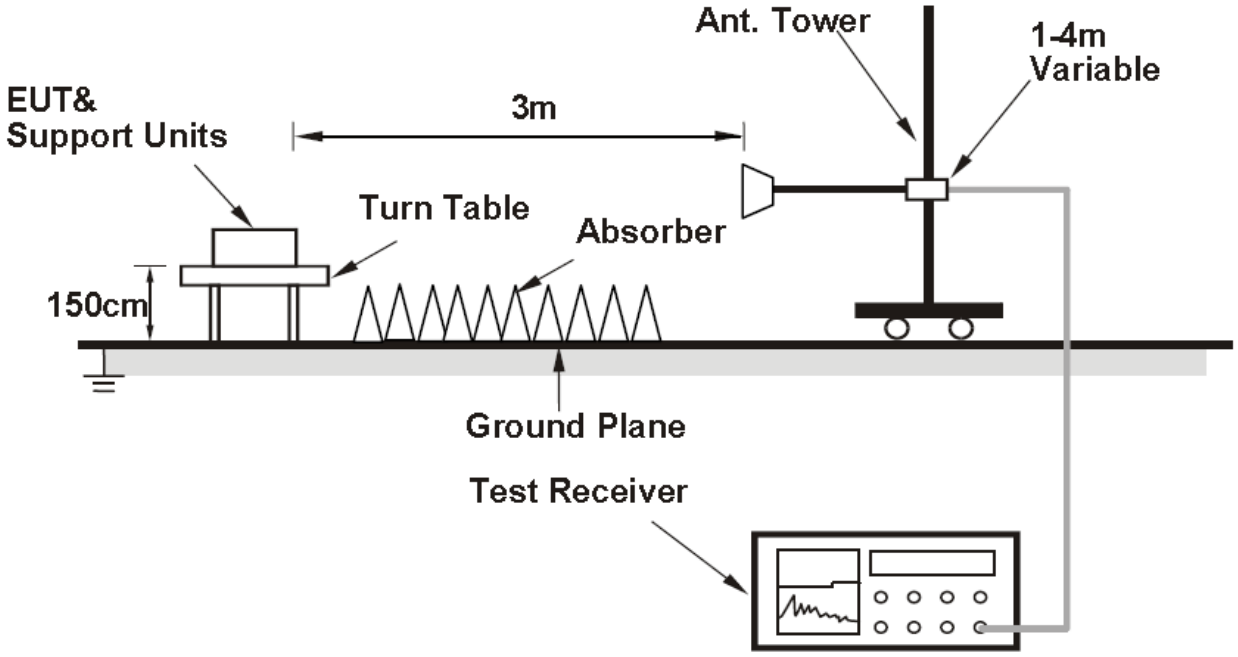
6.6.6 Test Setup
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



6.6.7 Test result

The test results are shown in Appendix B.

6.7 AC Power line Conducted Emission

6.7.1 Ambient condition

Temperature	Relative humidity	Pressure
24°C	36%	100.9kPa

6.7.2 Test limit

FCC Part 15.207(a) ,

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

The measurement is made according to ANSI C63.10-2013

6.7.3 Test result

The test results are shown in Appendix B.

6.8 Dynamic Frequency Selection

6.8.1 Ambient condition

Temperature	Relative humidity	Pressure
25°C	47%	101.5kPa

6.8.2 Test limit

FCC Part 15.407(h) and FCC 06-96 APPENDIX “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION”.

6.8.3 DFS Overview

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	**Value (See Notes 1, 2, and 3)**
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 4: DFS Response Requirement Values

Parameter	**Value**
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 6 – Long Pulse Radar Test Waveform

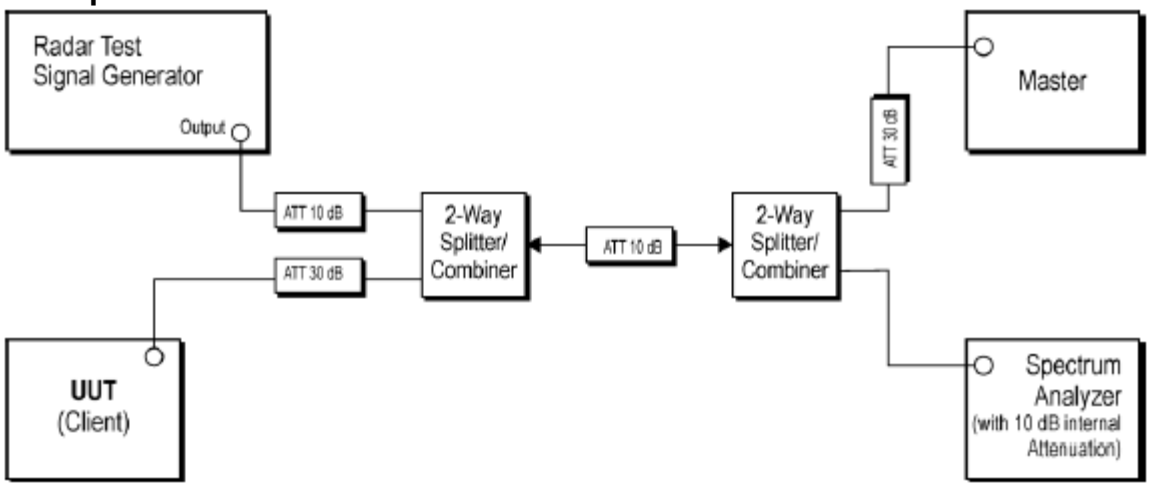
Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Waveform

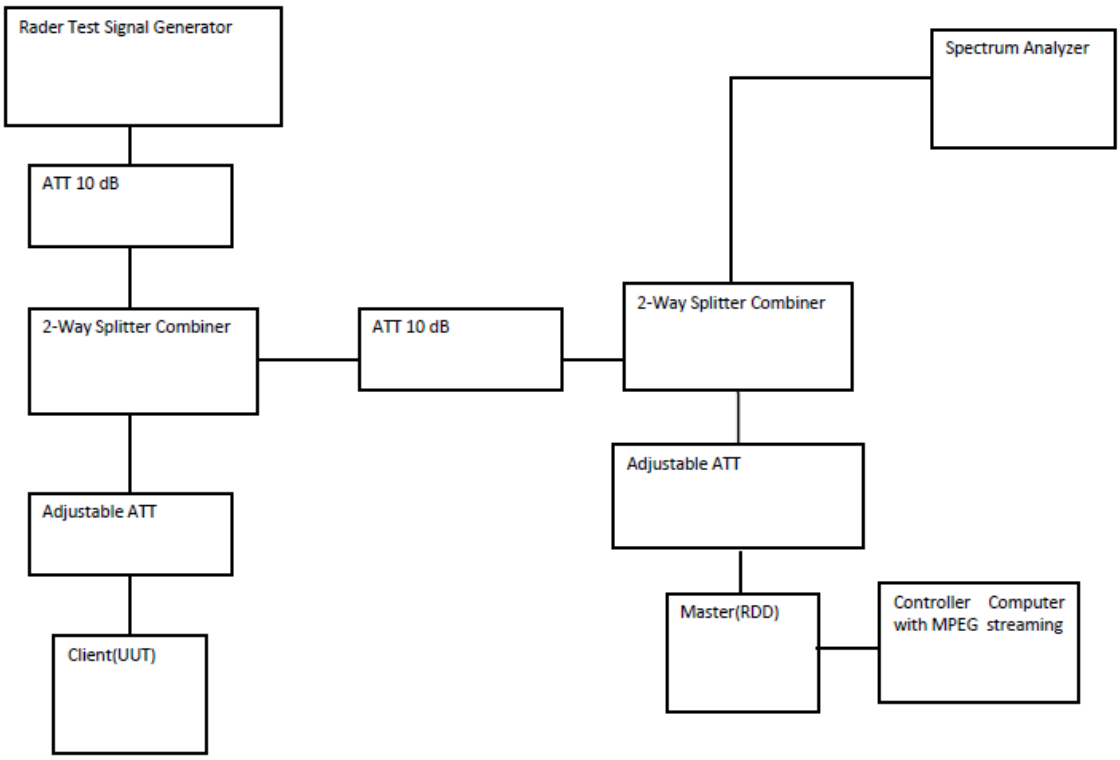
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

6.8.4 TEST AND MEASUREMENT SYSTEM

Principle



Setup for Client with injection at the Master



Client Devices

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

Test Setup Operation

System testing was performed with the designated MPEG-4 (1080P,WEBRip,DD5.1.x264-btbta) test file that streams full motion video from the Access Point to the Client in full motion video mode using the media player with the V2.61 Codec package.

This file is used by IP and Frame based systems for loading the test channel during the In-service compliance testing of the device.

The waveform parameters from within the bounds of the signal type are selected randomly using uniform distribution.

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move. It is also used to monitor EUT transmissions during the Channel Availability Check Time.

6.8.5 Test Procedure Used

(i) Operational Modes. The DFS requirement applies to the following operational modes:
(A) The requirement for channel availability check time applies in the master operational mode.
(B) The requirement for channel move time applies in both the master and slave operational modes.
(ii) Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this section, is detected within 60 seconds.
(iii) Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.
(iv) Non-occupancy Period. A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

6.8.6 Test result

The test results are shown in Appendix A.

7 MEASUREMENT UNCERTAINTIES

Items	Uncertainty	
Occupied Bandwidth	3kHz	
Output Power	0.67dB	
Transmitter Power Spectral Density	0.75dB/MHz	
Frequency stability	0.1ppm	
Spurious emissions	30MHz～1GHz	2.83dB
	1GHz～12.75GHz	2.50dB
	12.75GHz～40GHz	2.75dB

8 TEST EQUIPMENTS

No.	Name/ Model	Manufacturer	S/N	Cal date	Cal Due date
1.	Spectrum Analyzer FSV	ROHDE&SCHWARZ	101065	2020.08.20	2021.08.19
2.	Signal Analyzer N9020A	Agilent	MY48010771	2020.08.20	2021.08.19
3.	Chamber SH-241	ESPEC	92013758	2020.08.20	2021.08.19
4.	DC Power Apply E3645A	Agilent	MY40000741	2020.03.01	2021.02.28
5.	Power Meter E4416A	Agilent	MY52370013	2020.03.01	2021.02.28
6.	Power Sensor E9327A	Agilent	MY52420006	2020.03.01	2021.02.28
7.	12.65m×8.03m×7.50m Fully-Anechoic Chamber	FRANKONIA	-----	-----	-----
8.	23.18m×16.88m×9.60m Semi-Anechoic Chamber	FRANKONIA	---	-----	-----
9.	Turn table Diameter:1m	HD	-----	-----	-----
10.	Turn table Diameter:5m	HD	-----	-----	-----
11.	Antenna master FAC(MA4.0)	MATURO	-----	-----	-----
12.	Antenna master SAC(MA4.0)	MATURO	-----	-----	-----
13.	9.080m×5.255m×3.525 m Shielding room	FRANKONIA	-----	-----	-----
14.	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	2020.08.20	2021.08.19
15.	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	2020.08.20	2021.08.19
16.	HL562 Ultra log antenna	R&S	100016	2020.08.20	2021.08.19
17.	3160-09 Receive antenna	SCHWARZ-BECK	002058-002	2020.08.20	2021.08.19
18.	ESI 40 EMI test receiver	R&S	100015	2020.08.20	2021.08.19
19.	Radio tester	CMU 200	114667	2020.08.20	2021.08.19
20.	ESCS30 EMI test receiver	R&S	100029	2020.08.20	2021.08.19
21.	HL562 Receive antenna	R&S	100167	2020.08.20	2021.08.19
22.	ESH3-Z5 LISN	R&S	100020	2020.08.20	2021.08.19
23.	Spectrum Analyzer N9020A	Agilent	MY48010771	2020.08.20	2021.08.19

24.	Signal Generator SMBV100A	R&S	260910	2020.08.20	2021.08.19
25.	Bluetooth Test Set MT8852B	Anritsu	1142010	2020.03.01	2021.02.28
26.	Cable 104EA	SUCOFLEX	9272/4EA	2020.03.01	2021.02.28
27.	Cable 104EA	SUCOFLEX	9266/4EA	2020.03.01	2021.02.28
28.	WLAN AP WIA3300-20	SKSpruce	8152017060700339	---	---
29.	Notebook E470c	Lenovo	PF10UZW7	---	---

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Data rate below means worst-case rate of each test item.
Worst-case data rates are shown as following table.

Test Mode	Data Rate
802.11a	6Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11acVHT20	MCS0
802.11acVHT40	MCS0
802.11acVHT80	MCS0

We chose the Worst-modes are shown as following table:

Test Mode	Chain	Note
802.11a	Chian0	---
802.11n HT20	Chian0	Cover 802.11ac VHT20
802.11n HT40	Chian0	Cover 802.11ac VHT40
802.11ac VHT80	Chian0	---

Dutycycle

Test Mode	Duty Cycle (%)	Correction Factor(dB)
802.11a	90.86	0.42
802.11n HT20	89.46	0.48
802.11n HT40	80.50	0.94
802.11ac VHT20	89.50	0.48
802.11ac VHT40	80.60	0.94
802.11ac VHT80	66.12	1.80

Output Power

UNII-1

Mode	Frequency(MHz)	Average power output(dBm)
802.11a	5180	11.51
	5220	10.28
	5240	10.25
802.11nHT20	5180	11.50
	5220	10.61
	5240	10.44
802.11nHT40	5190	11.09
	5230	10.41
802.11acVHT20	5180	11.49
	5220	10.53
	5240	10.35
802.11acVHT40	5190	11.05
	5230	10.36
802.11acVHT80	5210	10.49

UNII-3

Mode	Frequency(MHz)	Average power output(dBm)
802.11a	5745	11.77
	5785	10.44
	5825	11.11
802.11nHT20	5745	11.72
	5785	10.73
	5825	11.44
802.11nHT40	5755	11.49
	5795	11.17
802.11acVHT20	5745	11.66
	5785	10.63
	5825	11.31
802.11acVHT40	5755	11.33
	5795	11.15
802.11acVHT80	5775	10.47

Occupied Bandwidth

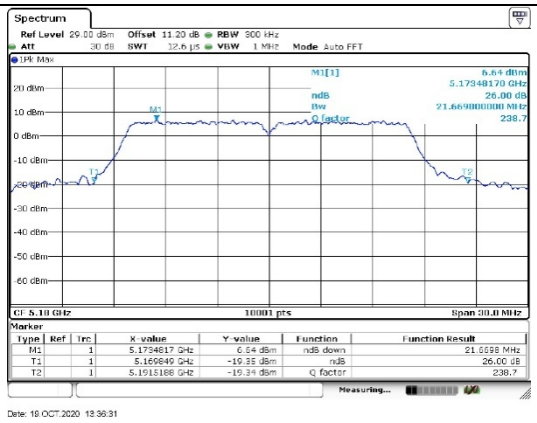
UNII-1

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

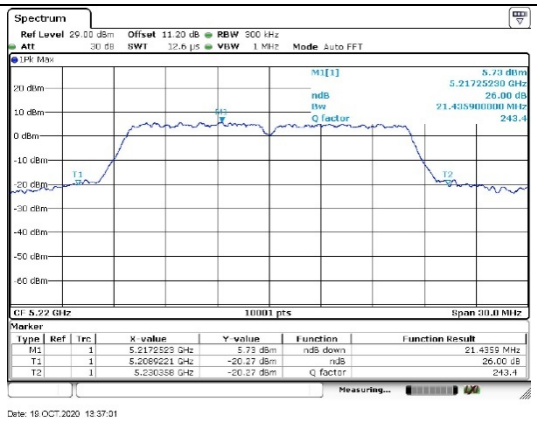
Test Mode: 802.11a

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5180	36	21.6698
5220	44	21.4359
5240	48	21.9908

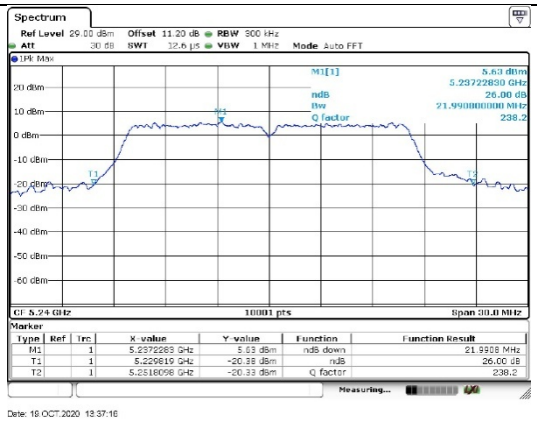
Test Mode: 802.11a



Test Mode: 802.11a



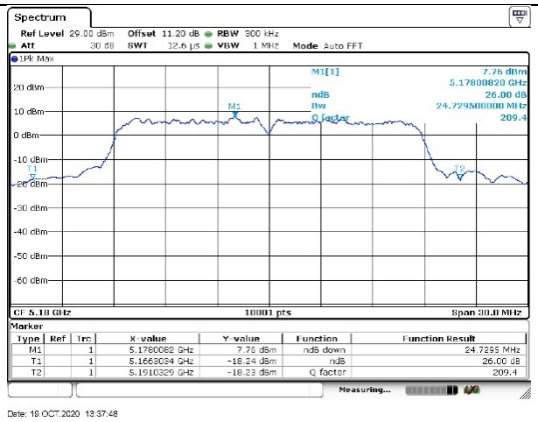
Test Mode: 802.11a



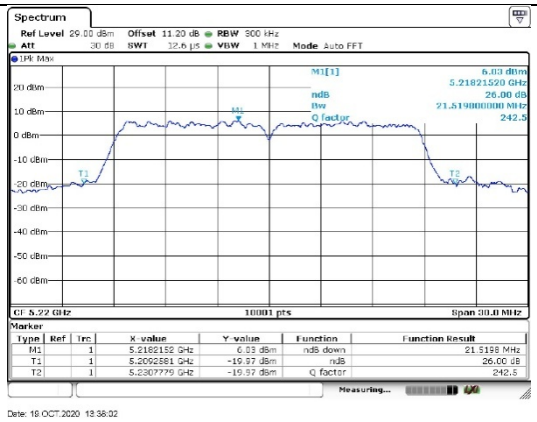
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5180	36	24.7295
5220	44	21.5198
5240	48	20.6829

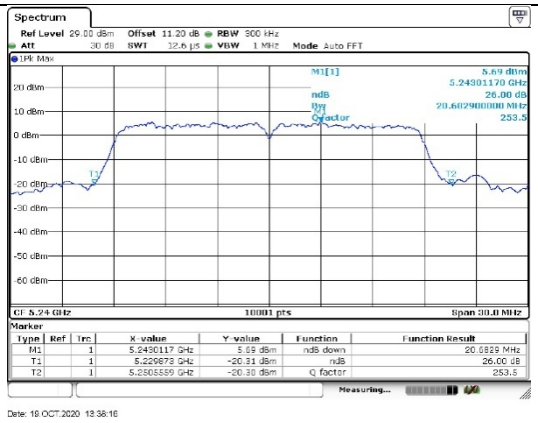
Test Mode: 802.11n HT20



Test Mode: 802.11n HT20



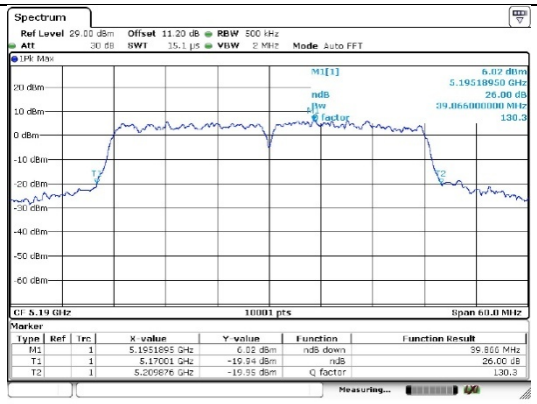
Test Mode: 802.11n HT20



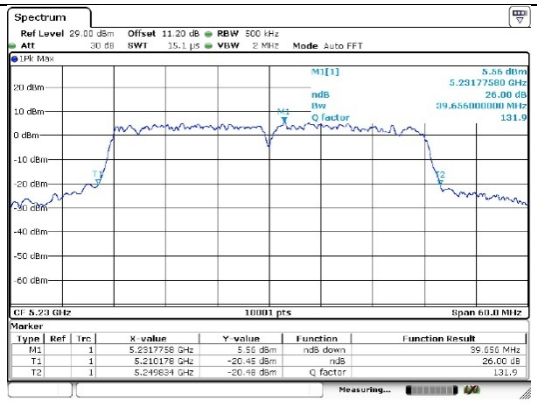
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5190	38	69.886
5230	46	39.656

Test Mode: 802.11n HT40



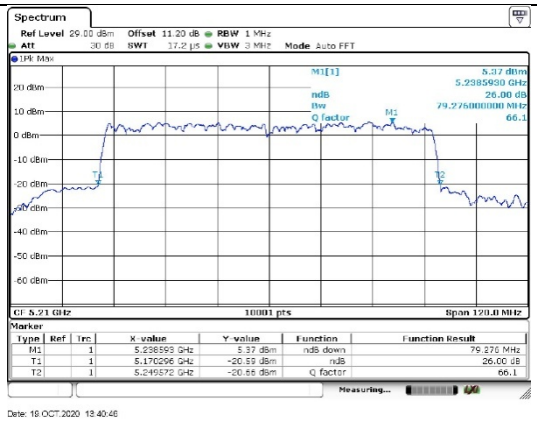
Test Mode: 802.11n HT40



Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5190	42	79.276

Test Mode: 802.11ac VHT80



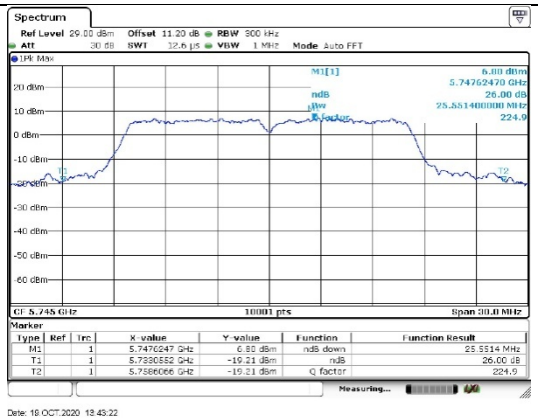
UNII-3

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

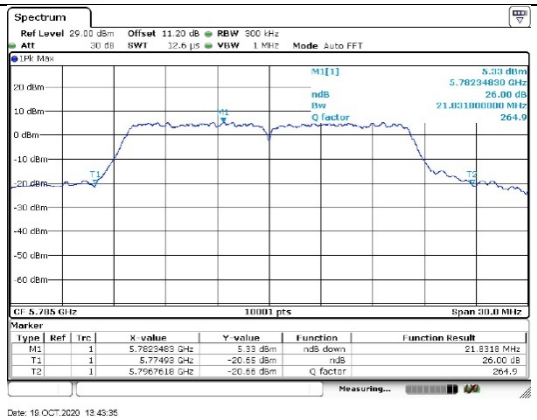
Test Mode: 802.11a

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5745	149	25.5514
5785	157	21.8318
5825	165	21.2859

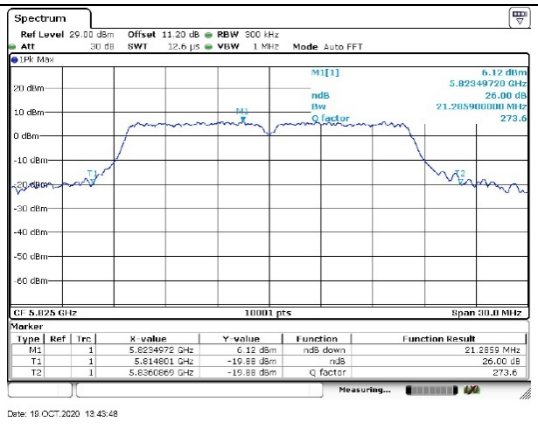
Test Mode: 802.11a



Test Mode: 802.11a



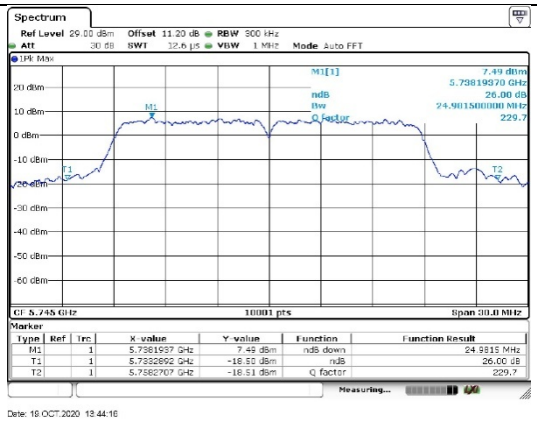
Test Mode: 802.11a



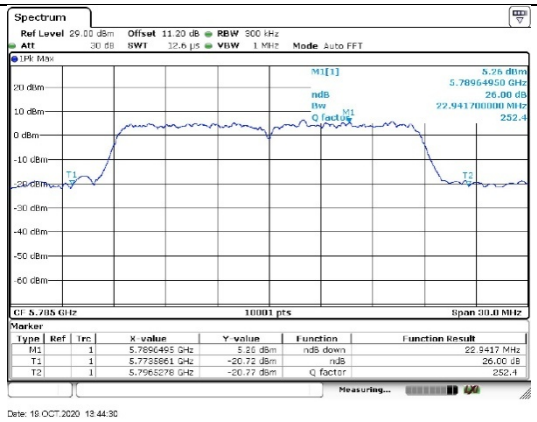
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5745	149	24.9815
5785	157	22.9417
5825	165	26.1604

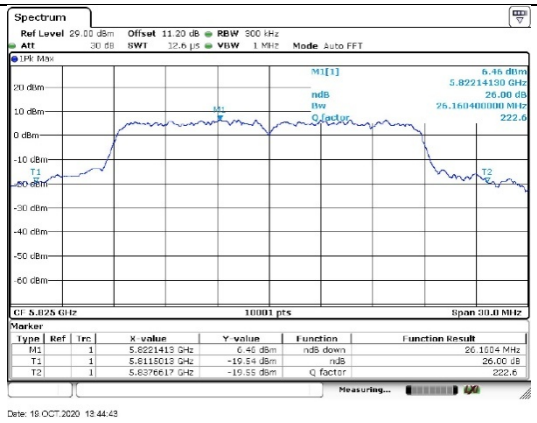
Test Mode: 802.11n HT20



Test Mode: 802.11n HT20



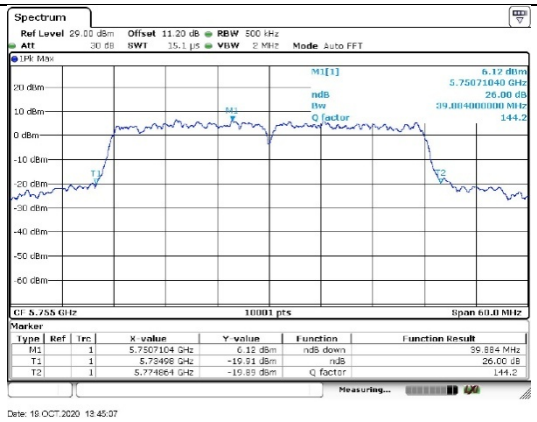
Test Mode: 802.11n HT20



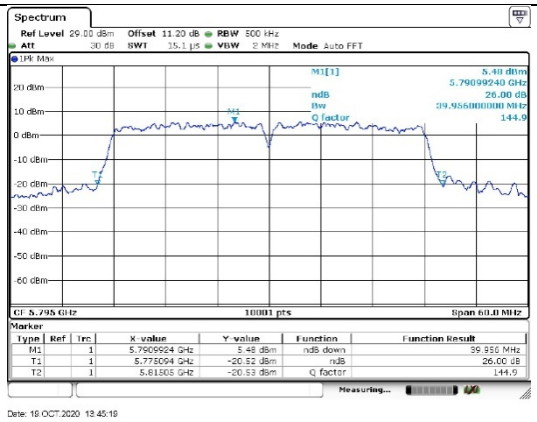
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5755	151	39.884
5795	159	39.956

Test Mode: 802.11n HT40



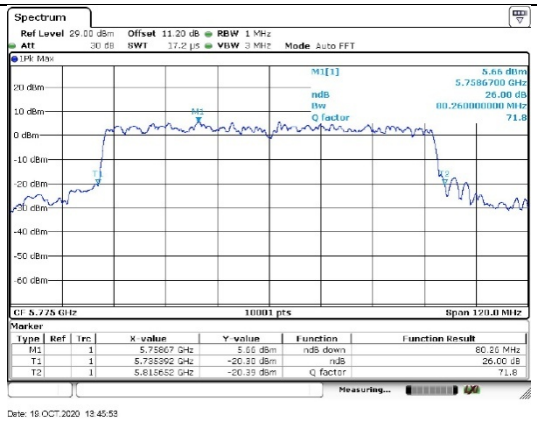
Test Mode: 802.11n HT40



Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Channel No.	26dB Bandwidth (MHz)
5775	155	80.260

Test Mode: 802.11ac VHT80



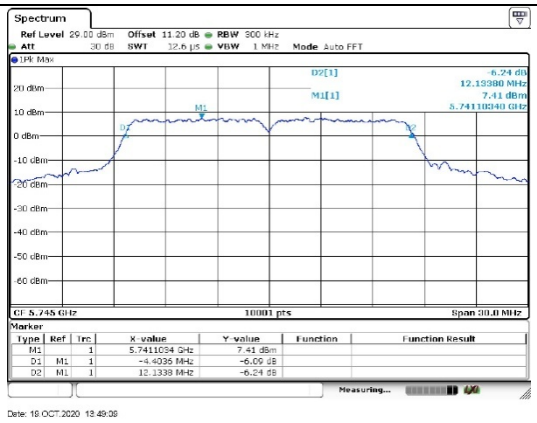
6dB Bandwidth
UNII-3

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

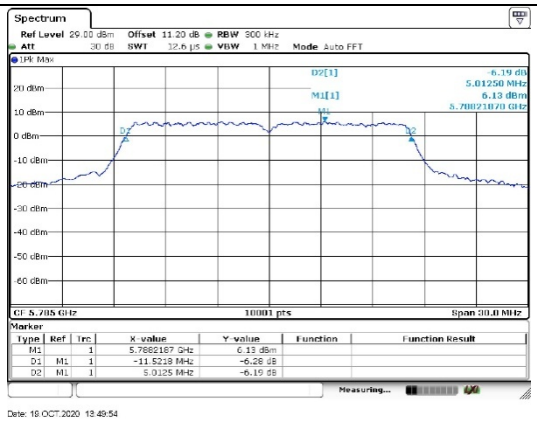
Test Mode: 802.11a

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5745	149	16.5374
5785	157	16.5343
5825	165	16.5133

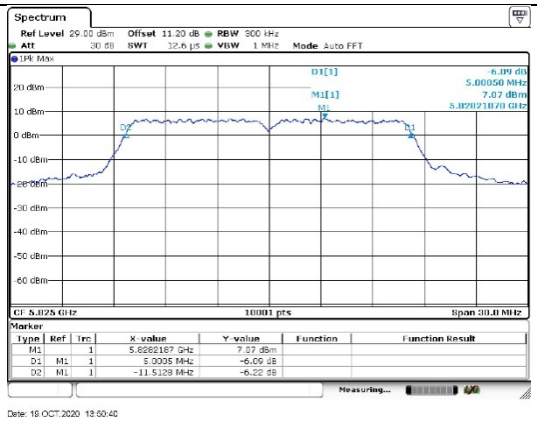
Test Mode: 802.11a



Test Mode: 802.11a



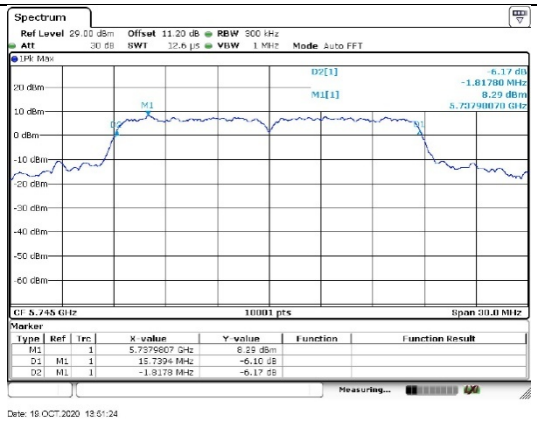
Test Mode: 802.11a



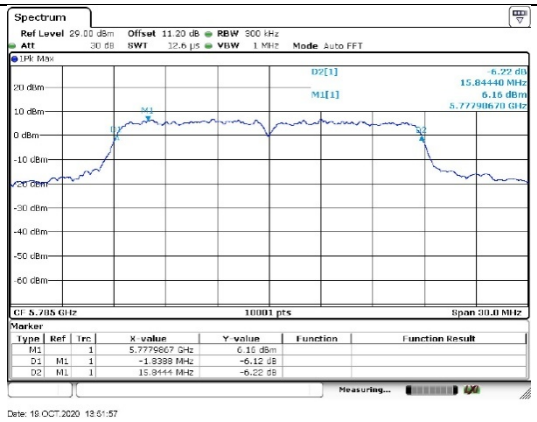
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5745	149	17.5572
5785	157	17.6832
5825	165	17.6592

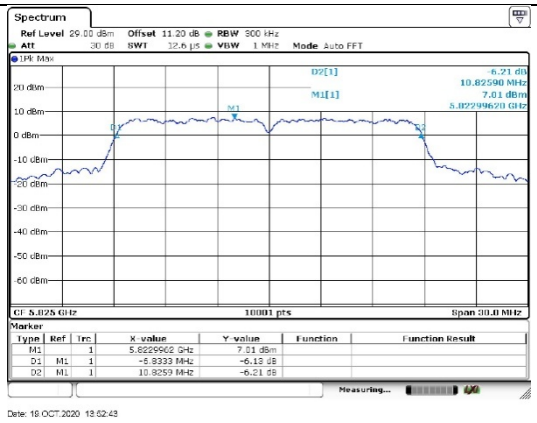
Test Mode: 802.11n HT20



Test Mode: 802.11n HT20



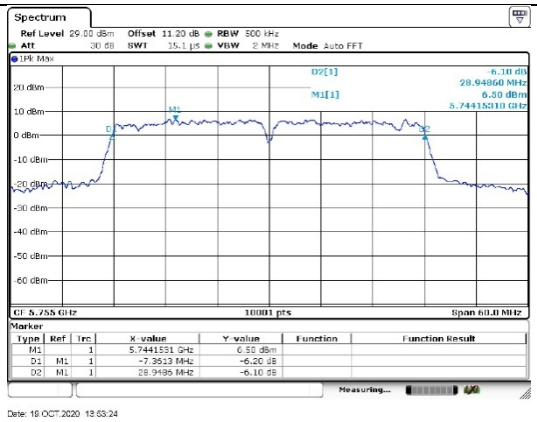
Test Mode: 802.11n HT20



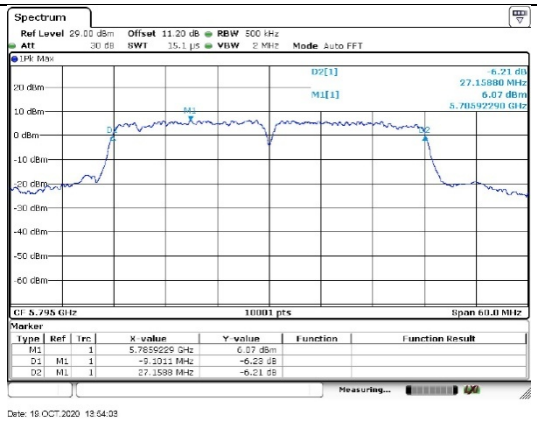
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5755	151	36.3099
5795	159	36.2599

Test Mode: 802.11n HT40



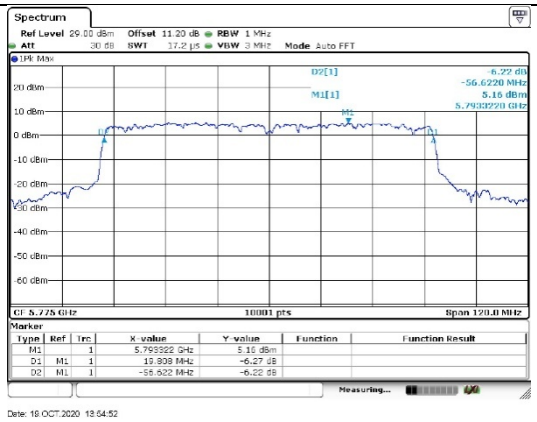
Test Mode: 802.11n HT40



Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Channel No.	6dB Bandwidth (MHz)
5775	155	76.430

Test Mode: 802.11ac VHT80



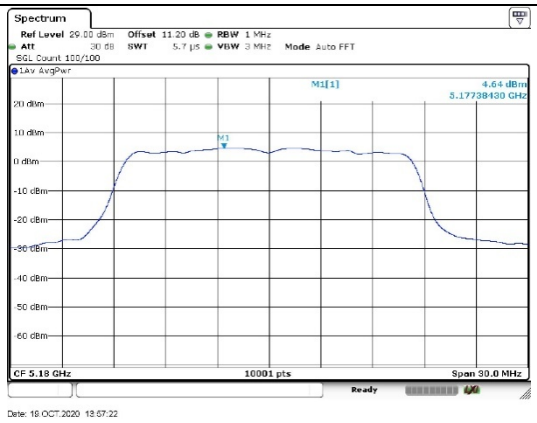
Transmitter Power Spectral Density
UNII-1

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

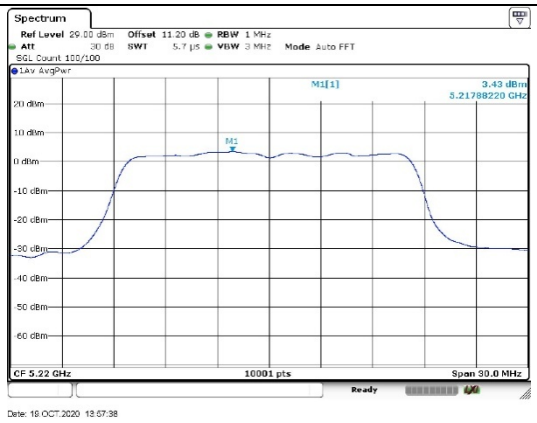
Test Mode: 802.11a

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5180	0.42	5.06
5220	0.42	3.85
5240	0.42	3.44

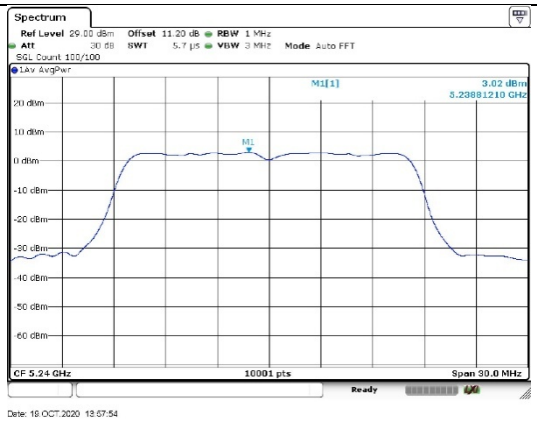
Test Mode: 802.11a



Test Mode: 802.11a



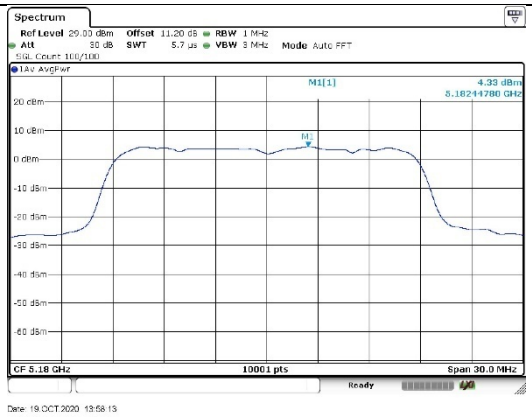
Test Mode: 802.11a



Test Mode: 802.11n HT20

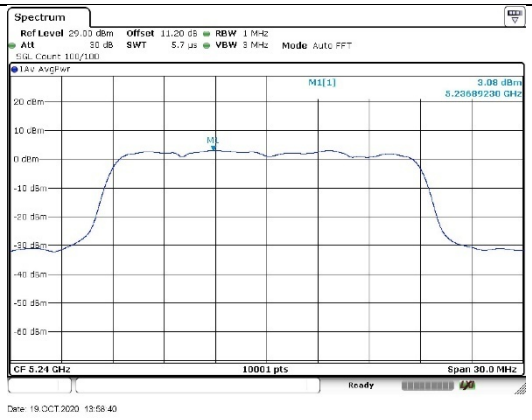
Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5180	0.48	4.81
5220	0.48	3.60
5240	0.48	3.56

Test Mode: 802.11n HT20



Test Mode: 802.11n HT20

Test Mode: 802.11n HT20



Test Mode: 802.11n HT40

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5190	0.94	1.41
5230	0.94	0.31

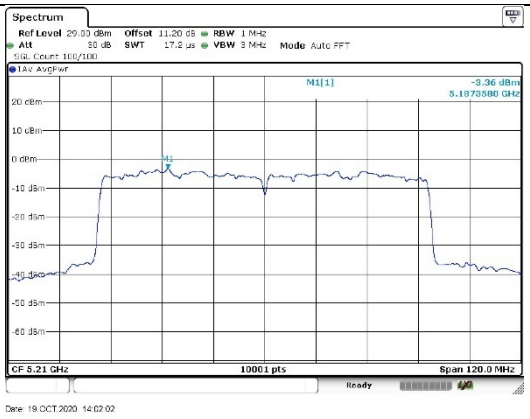
Test Mode: 802.11n HT40

Test Mode: 802.11n HT40

Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5210	1.80	-1.56

Test Mode: 802.11acVHT80



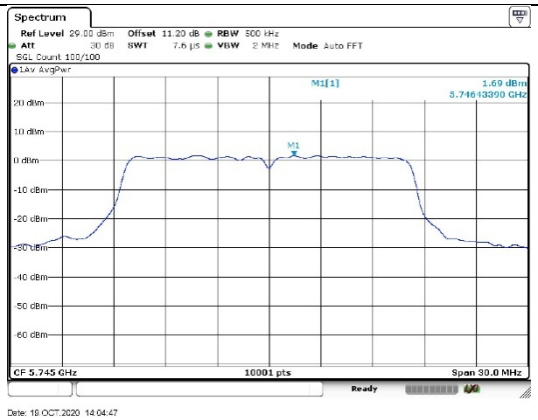
UNII-3

Offset 11.5dB = Attenuator 10dB+ Temporary antenna connector loss 0.5dB+ Cable loss 1dB

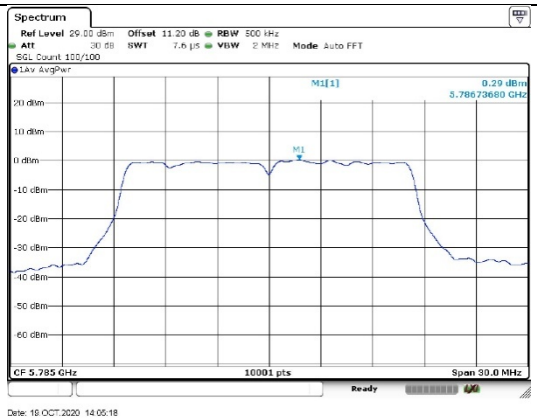
Test Mode: 802.11a

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5745	0.42	2.11
5785	0.42	0.71
5825	0.42	1.90

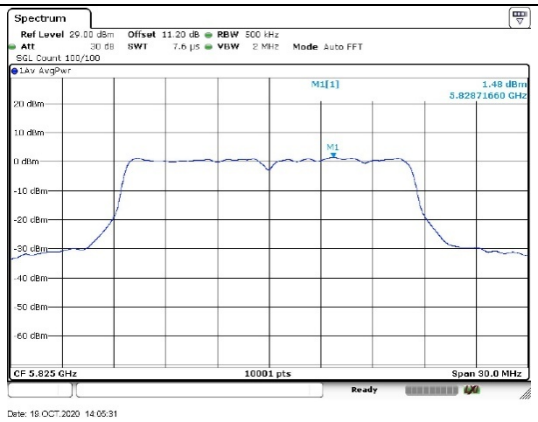
Test Mode: 802.11a



Test Mode: 802.11a



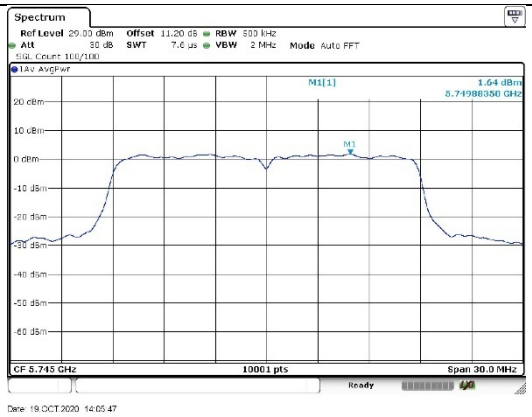
Test Mode: 802.11a



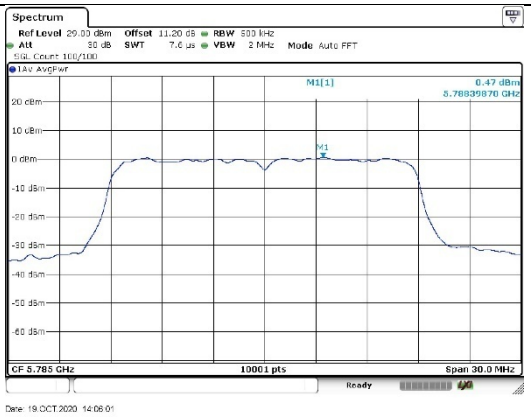
Test Mode: 802.11n HT20

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5745	0.48	2.12
5785	0.48	0.95
5825	0.48	1.83

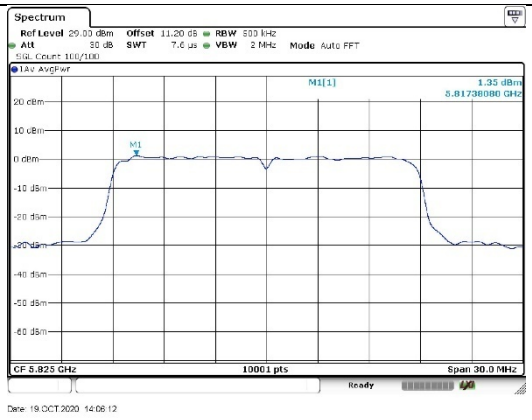
Test Mode: 802.11n HT20



Test Mode: 802.11n HT20



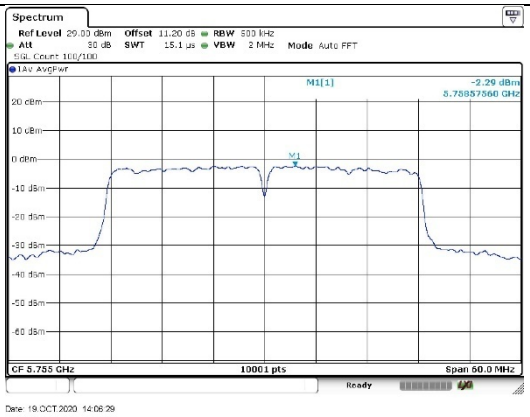
Test Mode: 802.11n HT20



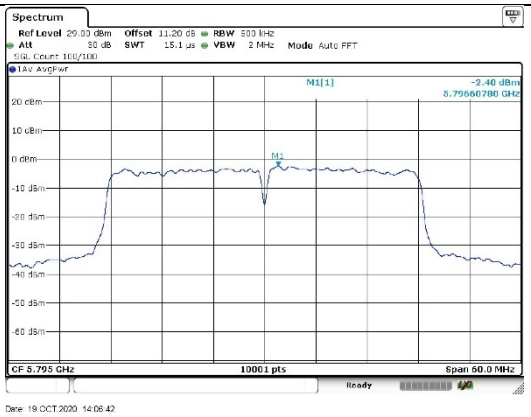
Test Mode: 802.11n HT40

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5755	0.94	-1.35
5795	0.94	-1.46

Test Mode: 802.11n HT40



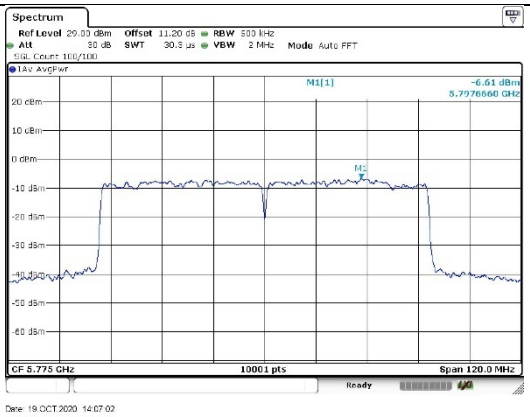
Test Mode: 802.11n HT40



Test Mode: 802.11ac VHT80

Carrier frequency (MHz)	Correction Factor(dB)	Power Density (dBm)
5775	1.80	-4.81

Test Mode: 802.11acVHT80



Frequency Stability

U-NII-1

Mode	Data Rate	CenterFrequency (MHz)	MeasuredFrequency (MHz)	Frequency Stability (ppm)	Voltage (V)	Temperature (°C)
802.11a	6Mbps	5180	5179.995701	-0.83	NV	-10
		5180	5179.994095	-1.14	NV	0
		5180	5179.992334	-1.48	NV	+10
		5180	5179.992541	-1.44	NV	+20
		5180	5180.006009	1.16	HV	+20
		5180	5179.995390	-0.89	LV	+20
		5180	5180.001917	0.37	NV	+30
		5180	5179.996270	-0.72	NV	+40
		5180	5179.993784	-1.20	NV	+50
		5180	5180.001865	0.36	NV	+55

U-NII-3

Mode	Data Rate	CenterFrequency (MHz)	MeasuredFrequency (MHz)	Frequency Stability (ppm)	Voltage (V)	Temperature (°C)
802.11a	6Mbps	5745	5745.002758	0.48	NV	-10
		5745	5744.996323	-0.64	NV	0
		5745	5744.992244	-1.35	NV	+10
		5745	5745.009824	1.71	NV	+20
		5745	5744.994312	-0.99	HV	+20
		5745	5744.998104	-0.33	LV	+20
		5745	5745.007354	1.28	NV	+30
		5745	5745.008560	1.49	NV	+40
		5745	5745.010284	1.79	NV	+50
		5745	5745.010054	1.75	NV	+55

APPENDIX B – TEST DATA OF RADIATED EMISSION

Radiated Emission Band Edge

The worst case attitude: The mobile lay down.
The measurement results are obtained as described below:
Measure Level = Reading Level + cable loss + antenna factor
Sample calculation: (95.59 dBμV/m) = (48.69dBμV) + (12.4 dB)+ (34.5 dB), the corresponding frequency is 5180MHz.
Carrier frequency (MHz): 5180 MHz
Channel No.:36
Test Mode: 802.11a
Polarity:Vertical
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	95.59	48.69	N/A	N/A	12.4	34.5
2	5150	45.79	-1.11	-22.41	68.2	12.4	34.5

Carrier frequency (MHz): 5180
Channel No.:36
Test Mode: 802.11a
Polarity:Horizontal
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	91.18	44.28	N/A	N/A	12.4	34.5
2	5150	54.15	7.25	-14.05	68.2	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11a
Polarity:Vertical
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	89.89	42.99	N/A	N/A	12.4	34.5
2	5150	41.04	-5.86	-12.96	54	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11a
Polarity:Horizontal
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	85.18	38.28	N/A	N/A	12.4	34.5
2	5150	40.88	-6.02	-13.12	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11a
Polarity:Vertical
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	93.82	46.92	N/A	N/A	12.4	34.5
2	5250	43.98	-2.92	-24.22	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11a
Polarity:Horizontal
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	89.01	42.11	N/A	N/A	12.4	34.5
2	5250	54.17	7.27	-14.03	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11a
Polarity:Vertical
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	87.51	40.61	N/A	N/A	12.4	34.5
2	5250	40.64	-6.26	-13.36	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11a
Polarity:Horizontal
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	83.01	36.11	N/A	N/A	12.4	34.5
2	5250	40.15	-6.75	-13.85	54	12.4	34.5

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11a
Polarity: Vertical
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	95.69	48.09	N/A	N/A	12.9	34.7
2	5725	46.12	-1.48	-22.08	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11a
Polarity: Horizontal
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	90.91	43.31	N/A	N/A	12.9	34.7
2	5725	45.21	-2.39	-22.99	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11a
Polarity: Vertical
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	88.67	41.07	N/A	N/A	12.9	34.7
2	5725	34.33	-13.27	-19.67	54	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11a
Polarity: Horizontal
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	84.36	36.76	N/A	N/A	12.9	34.7
2	5725	34.23	-13.37	-19.77	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11a
Polarity:Vertical
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	93.54	45.94	N/A	N/A	12.9	34.7
2	5850	44.19	-3.41	-24.01	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11a
Polarity:Horizontal
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	88.96	41.36	N/A	N/A	12.9	34.7
2	5850	44.14	-3.46	-24.06	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11a
Polarity:Vertical
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	86.59	38.99	N/A	N/A	12.9	34.7
2	5850	32.67	-14.93	-21.33	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11a
Polarity:Horizontal
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	82.05	34.45	N/A	N/A	12.9	34.7
2	5850	32.24	-15.36	-21.76	54	12.9	34.7

Carrier frequency (MHz): 5180 MHz
Channel No.:36
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	96.96	50.06	N/A	N/A	12.4	34.5
2	5150	47.98	1.08	-20.22	68.2	12.4	34.5

Carrier frequency (MHz): 5180
Channel No.:36
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	92.84	45.94	N/A	N/A	12.4	34.5
2	5150	54.38	7.48	-13.82	68.2	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	90.55	43.65	N/A	N/A	12.4	34.5
2	5150	40.99	-5.91	-13.01	54	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	86.49	39.59	N/A	N/A	12.4	34.5
2	5150	40.47	-6.43	-13.53	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	94.62	47.72	N/A	N/A	12.4	34.5
2	5250	45.70	-1.20	-22.50	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	90.08	43.18	N/A	N/A	12.4	34.5
2	5250	53.59	6.69	-14.61	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	88.60	41.70	N/A	N/A	12.4	34.5
2	5250	40.28	-6.62	-13.72	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	83.82	36.92	N/A	N/A	12.4	34.5
2	5250	40.27	-6.63	-13.73	54	12.4	34.5

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11n（HT20）
Polarity: Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	96.60	49.00	N/A	N/A	12.9	34.7
2	5725	47.08	-0.52	-21.12	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11n（HT20）
Polarity: Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	92.05	44.45	N/A	N/A	12.9	34.7
2	5725	46.80	-0.80	-21.40	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11n（HT20）
Polarity: Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	89.68	42.08	N/A	N/A	12.9	34.7
2	5725	35.52	-12.08	-18.48	54	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11n（HT20）
Polarity: Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	85.16	37.56	N/A	N/A	12.9	34.7
2	5725	34.88	-12.72	-19.12	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	94.69	47.09	N/A	N/A	12.9	34.7
2	5850	45.79	-1.81	-22.41	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	89.82	42.22	N/A	N/A	12.9	34.7
2	5850	45.05	-2.55	-23.15	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11n（HT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	87.18	39.58	N/A	N/A	12.9	34.7
2	5850	32.89	-14.71	-21.11	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11n（HT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	83.04	35.44	N/A	N/A	12.9	34.7
2	5850	32.66	-14.94	-21.34	54	12.9	34.7

Carrier frequency (MHz): 5190 MHz
Channel No.:38
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5190	93.28	46.38	N/A	N/A	12.4	34.5
2	5150	44.29	-2.61	-23.91	68.2	12.4	34.5

Carrier frequency (MHz): 5190 MHz
Channel No.:38
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5190	89.15	42.25	N/A	N/A	12.4	34.5
2	5150	54.08	7.18	-14.12	68.2	12.4	34.5

Carrier frequency (MHz): 5190 MHz
Channel No.:38
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5190	87.82	40.92	N/A	N/A	12.4	34.5
2	5150	40.58	-6.32	-13.42	54	12.4	34.5

Carrier frequency (MHz): 5190 MHz
Channel No.:38
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5190	83.17	36.27	N/A	N/A	12.4	34.5
2	5150	40.57	-6.33	-13.43	54	12.4	34.5

Carrier frequency (MHz): 5230 MHz
Channel No.:46
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5230	90.06	43.16	N/A	N/A	12.4	34.5
2	5250	41.16	-5.74	-27.04	68.2	12.4	34.5

Carrier frequency (MHz): 5230 MHz
Channel No.:46
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5230	85.13	38.23	N/A	N/A	12.4	34.5
2	5250	53.78	6.88	-14.42	68.2	12.4	34.5

Carrier frequency (MHz): 5230 MHz
Channel No.:46
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5230	84.79	37.89	N/A	N/A	12.4	34.5
2	5250	40.92	-5.98	-13.08	54	12.4	34.5

Carrier frequency (MHz): 5230 MHz
Channel No.:46
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5230	80.74	33.84	N/A	N/A	12.4	34.5
2	5250	40.19	-6.71	-13.81	54	12.4	34.5

Carrier frequency (MHz): 5755 MHz
Channel No.:151
Test Mode: 802.11n(HT40)
Polarity: Vertical
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5755	93.72	46.12	N/A	N/A	12.9	34.7
2	5725	44.97	-2.63	-23.23	68.2	12.9	34.7

Carrier frequency (MHz): 5755 MHz
Channel No.:151
Test Mode: 802.11n(HT40)
Polarity: Horizontal
Detector: Peak

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5755	89.56	41.96	N/A	N/A	12.9	34.7
2	5725	44.77	-2.83	-23.43	68.2	12.9	34.7

Carrier frequency (MHz): 5755 MHz
Channel No.:151
Test Mode: 802.11n(HT40)
Polarity: Vertical
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5755	87.00	39.40	N/A	N/A	12.9	34.7
2	5725	33.37	-14.23	-20.63	54	12.9	34.7

Carrier frequency (MHz): 5755 MHz
Channel No.:151
Test Mode: 802.11n(HT40)
Polarity: Horizontal
Detector: Average

No	Frequency （MHz）	Measure Level （dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5755	82.56	34.96	N/A	N/A	12.9	34.7
2	5725	33.00	-14.60	-21.00	54	12.9	34.7

Carrier frequency (MHz): 5795 MHz
Channel No.:159
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5795	93.46	45.86	N/A	N/A	12.9	34.7
2	5850	44.03	-3.57	-24.17	68.2	12.9	34.7

Carrier frequency (MHz): 5795 MHz
Channel No.:159
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5795	88.51	40.91	N/A	N/A	12.9	34.7
2	5850	43.03	-4.57	-25.17	68.2	12.9	34.7

Carrier frequency (MHz): 5795 MHz
Channel No.:159
Test Mode: 802.11n（HT40）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5795	86.89	39.29	N/A	N/A	12.9	34.7
2	5850	33.11	-14.49	-20.89	54	12.9	34.7

Carrier frequency (MHz): 5795 MHz
Channel No.:159
Test Mode: 802.11n（HT40）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5795	82.75	35.15	N/A	N/A	12.9	34.7
2	5850	32.20	-15.40	-21.80	54	12.9	34.7

Carrier frequency (MHz): 5180 MHz
Channel No.:36
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	95.75	48.85	N/A	N/A	12.4	34.5
2	5150	46.80	-0.10	-21.40	68.2	12.4	34.5

Carrier frequency (MHz): 5180
Channel No.:36
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	91.43	44.53	N/A	N/A	12.4	34.5
2	5150	54.34	7.44	-13.86	68.2	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	89.19	42.29	N/A	N/A	12.4	34.5
2	5150	40.96	-5.94	-13.04	54	12.4	34.5

Carrier frequency (MHz): 5180 MHz
Channel No.: 36
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5180	84.30	37.40	N/A	N/A	12.4	34.5
2	5150	40.13	-6.77	-13.87	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	91.76	44.86	N/A	N/A	12.4	34.5
2	5250	42.56	-4.34	-25.64	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	87.25	40.35	N/A	N/A	12.4	34.5
2	5250	54.01	7.11	-14.19	68.2	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	85.63	38.73	N/A	N/A	12.4	34.5
2	5250	40.95	-5.95	-13.05	54	12.4	34.5

Carrier frequency (MHz): 5240 MHz
Channel No.:48
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5240	81.43	34.53	N/A	N/A	12.4	34.5
2	5250	40.90	-6.00	-13.10	54	12.4	34.5

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11ac（VHT20）
Polarity: Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	97.49	49.89	N/A	N/A	12.9	34.7
2	5725	48.58	0.98	-19.62	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11ac（VHT20）
Polarity: Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	92.69	45.09	N/A	N/A	12.9	34.7
2	5725	48.38	0.78	-19.82	68.2	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11ac（VHT20）
Polarity: Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV)	cable loss (dB)	antenna factor (dB)
1	5745	90.30	42.70	N/A	N/A	12.9	34.7
2	5725	36.04	-11.56	-17.96	54	12.9	34.7

Carrier frequency (MHz): 5745 MHz
Channel No.:149
Test Mode: 802.11ac（VHT20）
Polarity: Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5745	85.60	38.00	N/A	N/A	12.9	34.7
2	5725	35.16	-12.44	-18.84	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	94.73	47.13	N/A	N/A	12.9	34.7
2	5850	46.06	-1.54	-22.14	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Peak

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	89.86	42.26	N/A	N/A	12.9	34.7
2	5850	45.83	-1.77	-22.37	68.2	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11ac（VHT20）
Polarity:Vertical
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	87.19	39.59	N/A	N/A	12.9	34.7
2	5850	32.70	-14.90	-21.30	54	12.9	34.7

Carrier frequency (MHz): 5825 MHz
Channel No.:165
Test Mode: 802.11ac（VHT20）
Polarity:Horizontal
Detector: Average

No	Frequency（MHz）	Measure Level（dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	cable loss (dB)	antenna factor (dB)
1	5825	82.28	34.68	N/A	N/A	12.9	34.7
2	5850	32.05	-15.55	-21.95	54	12.9	34.7