

RF Test Report

For

Applicant name: SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address: 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
EUT name: BE5010 Dual-band Wi-Fi 7 Ceiling Access Point
Brand name: Tenda
Model number: i36
Series model number: N/A
FCC ID: V7TI36

Issued By

Company name: BTF Testing Lab (Shenzhen) Co., Ltd.
Address: 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China

Report number: BTF250603R01002
Test standards: 47 CFR Part 15E
Test conclusion: Pass

Date of sample receipt: 2025-06-03
Test date: 2025-06-04 to 2025-08-14
Date of issue: 2025-08-15

Prepared by:

Chris Liu

Chris Liu / Project engineer



Ryan.CJ / EMC Manager

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Revision History		
Version	Issue Date	Revisions Content
R_V0	2025-08-15	Original
<i>Note:</i> <i>Once the revision has been made, then previous versions reports are invalid.</i>		

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1 Introduction

1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

1.2 Laboratory Facility

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

- **FCC - Designation No.: CN1409**
BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 695374.
- **CNAS - Registration No.: CNAS L17568**
BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.
- **A2LA - Registration No.: 6660.01**
BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.
- (7) All entrusted information in this report is provided by the client and has been confirmed through consultation with the client; The testing items for this report have been discussed and confirmed with the client, and our company is only responsible for the content reflected in the report.

2 Product Information

2.1 Application Information

Company name:	SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address:	6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

2.2 Manufacturer Information

Company name:	SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address:	6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

2.3 General Description of Equipment under Test (EUT)

EUT name:	BE5010 Dual-band Wi-Fi 7 Ceiling Access Point
Under test model name:	i36
Series model name:	N/A
Description of model name differentiation:	N/A
Ratings:	Power:48V=800mA Adapter: MODLE:BN017-A38048U INPUT:100-240V~ 50/60Hz 1.0A OUTPUT:48V=800mA

2.4 Technical Information

Operation Frequency:	802.11a/n(HT20)/ac(HT20)/ax(HE20)/be(ETH20): U-NII Band 1: 5180MHz to 5240MHz; U-NII Band 2A: 5260MHz to 5320MHz; U-NII Band 3: 5745MHz to 5825MHz; 802.11n(HT40)/ac(HT40)/ax(HE40)/ be(ETH40): U-NII Band 1: 5190MHz to 5230MHz; U-NII Band 2A: 5270MHz to 5310MHz; U-NII Band 3: 5755MHz to 5795MHz; 802.11ac(HT80)/ax(HE80)/ be(ETH80): U-NII Band 1: 5210MHz; U-NII Band 2A: 5290MHz; U-NII Band 3: 5775MHz 802.11ac(VHT160)/ 802.11ax(HEW160)/ 802.11be(EHT160): U-NII Band 1& U-NII Band 2A:5250MHz
Channel numbers:	802.11a/n(HT20)/ac(HT20)/ax(HE20)/ be(ETH20): U-NII Band 1: 4; U-NII Band 2A: 4; U-NII Band 3: 5; 802.11n(HT40)/ac(HT40)/ax(HE40)/ be(ETH40): U-NII Band 1: 2; U-NII Band 2A: 2; U-NII Band 3: 2; 802.11ac(HT80)/ax(HE80)/ be(ETH80): U-NII Band 1: 1; U-NII Band 2A: 1; U-NII Band 3: 1 V-802.11ac(HT160)/ax(HE160)/ be(ETH160): U-NII Band 1& U-NII Band 2A: 1;
Channel separation:	802.11a/n(HT20)/ac(HT20)/ax(HE20)/ be(ETH20): 20MHz 802.11n(HT40)/ac(HT40)/ax(HE40)/ be(ETH40): 40MHz 802.11ac(HT80)/ax(HE80)/ be(ETH80): 80MHz 802.11ac(HT160)/ax(HE160)/ be(ETH160): 160MHz
Modulation technology:	802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM); 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
Max. Conducted Power:	10.84dBm
Antenna type:	Internal Antenna
Antenna gain:	ANT1: 5.5dBi, ANT2:5.57dBi, ANT3:5.99dBi
Antenna transmit mode:	MIMO (3TX, 3RX)

Channel List:

U-NII Band 1

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/

U-NII Band 2A

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310	/	/
60	5300	/	/	/	/
64	5320	/	/	/	/

U-NII Band 3

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/

U-NII Band 1&Band 2A

Bandwidth:	160MHz				
Channel	Frequency (MHz)				
50	5250				

3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15E: Unlicensed National Information Infrastructure Devices

3.2 Uncertainty of Test

Measurement	Value
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Time	±5 %
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15E	Part 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15E	47 CFR Part 15.207(a)	Pass
Duty Cycle	47 CFR Part 15E		Pass
Emission bandwidth and occupied bandwidth	47 CFR Part 15E	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. 47 CFR Part 15.407(e)	Pass
Maximum conducted output power	47 CFR Part 15E	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)	Pass
Power spectral density	47 CFR Part 15E	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part	Pass

		15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)	
Channel Availability Check Time	47 CFR Part 15E	47 CFR Part 15.407(h)(2)(ii)	Pass
U-NII Detection Bandwidth	47 CFR Part 15E	47 CFR Part 15.407(h)(2)	Pass
Statistical Performance Check	47 CFR Part 15E	KDB 935210 D02, Clause 5.1 Table 2	Pass
Channel Move Time, Channel Closing Transmission Time	47 CFR Part 15E	47 CFR Part 15.407(h)(2)(iii)	Pass
Non-Occupancy Period Test	47 CFR Part 15E	47 CFR Part 15.407(h)(2)(iv)	Pass
DFS Detection Thresholds	47 CFR Part 15E	KDB 905462 D02, Clause 5.2 Table 3	Pass
Band edge emissions (Radiated)	47 CFR Part 15E	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
Undesirable emission limits (below 1GHz)	47 CFR Part 15E	47 CFR Part 15.407(b)(9)	Pass
Undesirable emission limits (above 1GHz)	47 CFR Part 15E	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
Remark: 1. Pass: Meet the requirements. 2. N/A: not applicable.			

3.4 Additions to, deviations, or exclusions from the method

None

4 Test Configuration

4.1 Test Equipment List

Conducted Emission at AC power line					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Pulse Limiter	Schwarzbeck	VTSD 9561-F	953	/	/
Coaxial Switcher	Schwarzbeck	CX210	CX210	/	/
V-LISN	Schwarzbeck	NSLK 8127	1073	2024-10-25	2025-10-24
EMI Receiver	Rohde & Schwarz	ESCI3	101422	2024-10-25	2025-10-24
Test Software	Frad	EZ_EMC	Version: EMC-CON 3A1.1+	/	/

Duty Cycle Maximum conducted output power Power spectral density Channel Availability Check Time U-NII Detection Bandwidth Statistical Performance Check Channel Move Time, Channel Closing Transmission Time Emission bandwidth and occupied bandwidth Non-Occupancy Period Test DFS Detection Thresholds					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
RF Control Unit	Techy	TR1029-1	/	2024-10-25	2025-10-24
RF Sensor Unit	Techy	TR1029-2	/	2024-10-25	2025-10-24
Temperature Humidity Chamber	ZZCKONG	ZZ-K02A	20210928007	2024-10-25	2025-10-24
DC Power Supply	Tongmen	etm-6050c	20211026123	2024-10-25	2025-10-24
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	161997	2024-10-25	2025-10-24
Spectrum Analyzer	Keysight	N9020A	MY50410020	2024-10-25	2025-10-24
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2024-10-25	2025-10-24
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2024-10-25	2025-10-24
Test Software	TST Pass	/	Version: 2.0	/	/

Band edge emissions (Radiated) Undesirable emission limits (below 1GHz) Undesirable emission limits (above 1GHz)					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2024-10-25	2025-10-24
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2024-10-25	2025-10-24
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2024-10-30	2025-10-29
Log periodic antenna	Schwarzbeck	VULB 9168	1328	2024-10-28	2025-10-27
Preamplifier(30MHz ~ 1GHz)	Schwarzbeck	BBV9744	246	2024-09-24	2025-09-23
Preamplifier(1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	8	2024-09-24	2025-09-23
Test Software	Frad	EZ EMC	Version: FA-03A2 RE+	/	/

4.2 Test Auxiliary Equipment

The EUT has been tested as an independent unit.

4.3 Test Modes

No.	Test Modes
TM1	802.11a mode
TM2	802.11n mode
TM3	802.11ac mode
TM4	802.11ax mode
TM5	Normal Operating

4.4 Test Channel of EUT

Operation Band: 5150-5250 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
20	5180	5200	5240
40	5190	/	5230
80	/	5210	/

Operation Band: 5250-5350 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
20	5260	5300	5320
40	5270	/	5310
80	/	5290	/

Operation Band: 5725-5850 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
20	5745	5785	5825

40	5755	/	5795
80	/	5775	/

Operation Band: 5180-5320 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
160	/	5250	/

4.5 Test software

Test software:	QATool	Version:	20231030
Power Class:	9		

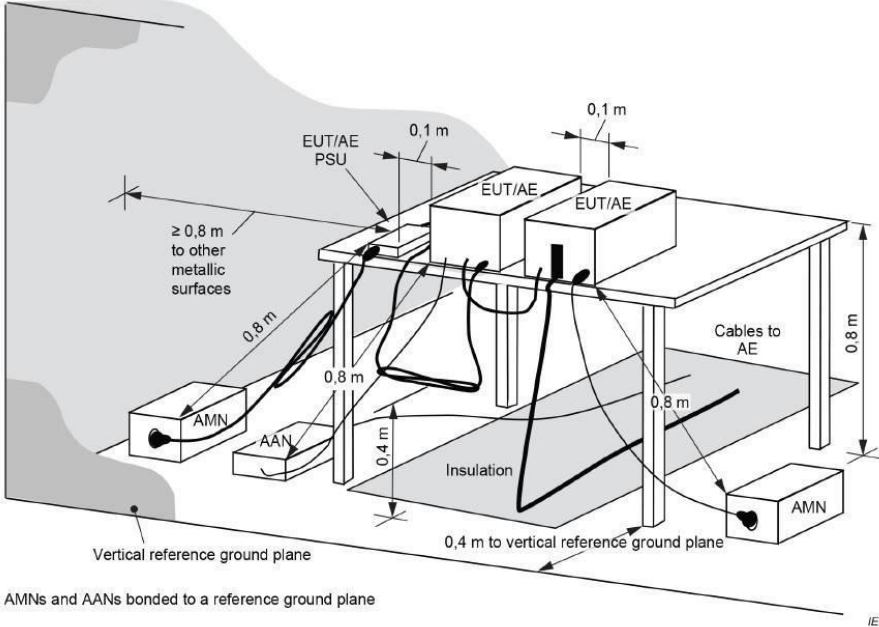
5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 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 shall be considered sufficient to comply with the provisions of this section.
Operating Environment:	
Temperature:	25.8 °C
Humidity:	54 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6 Radio Spectrum Matter Test Results (RF)

6.1 Conducted Emission at AC power line

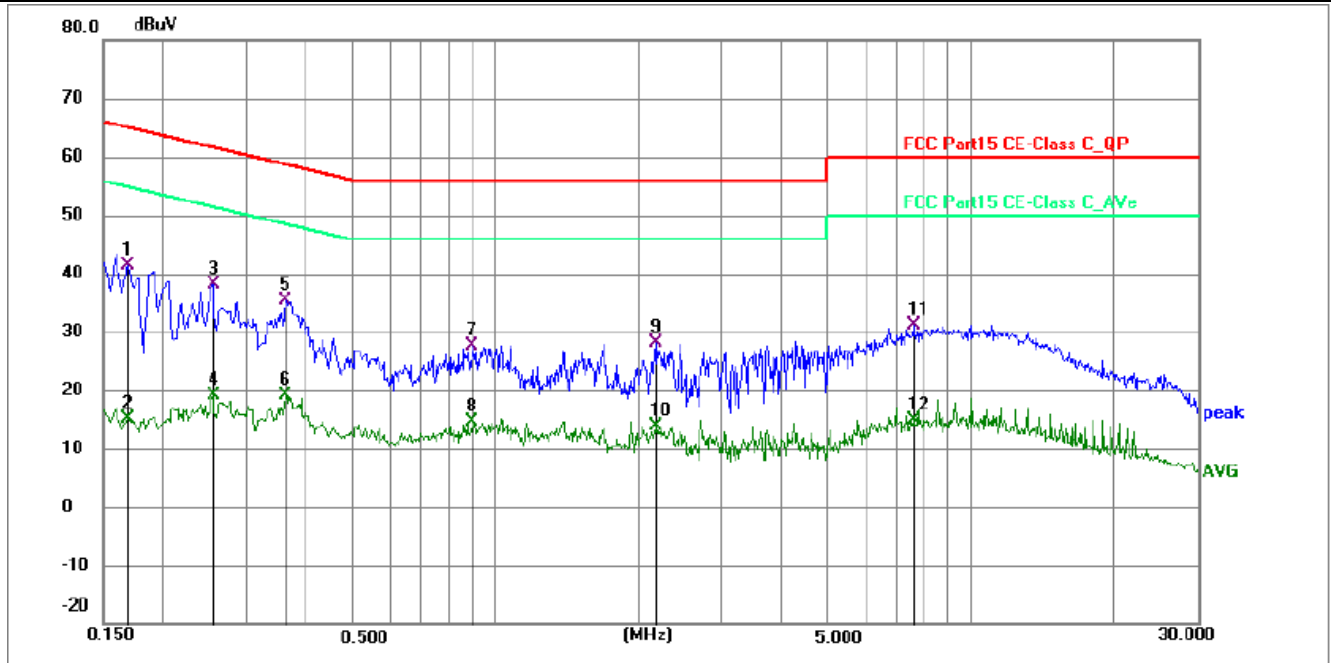
Test Requirement:	47 CFR Part 15.207(a)		
Test Method:	ANSI C63.10-2020 section 6.2		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBμV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
*Decreases with the logarithm of the frequency.			
Test Setup:			
	Operating Environment:		
Temperature:	25.8 °C		
Humidity:	54 %		
Atmospheric Pressure:	1010 mbar		

Test voltage:	AC 120V 60Hz
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6.1.1 Test Data

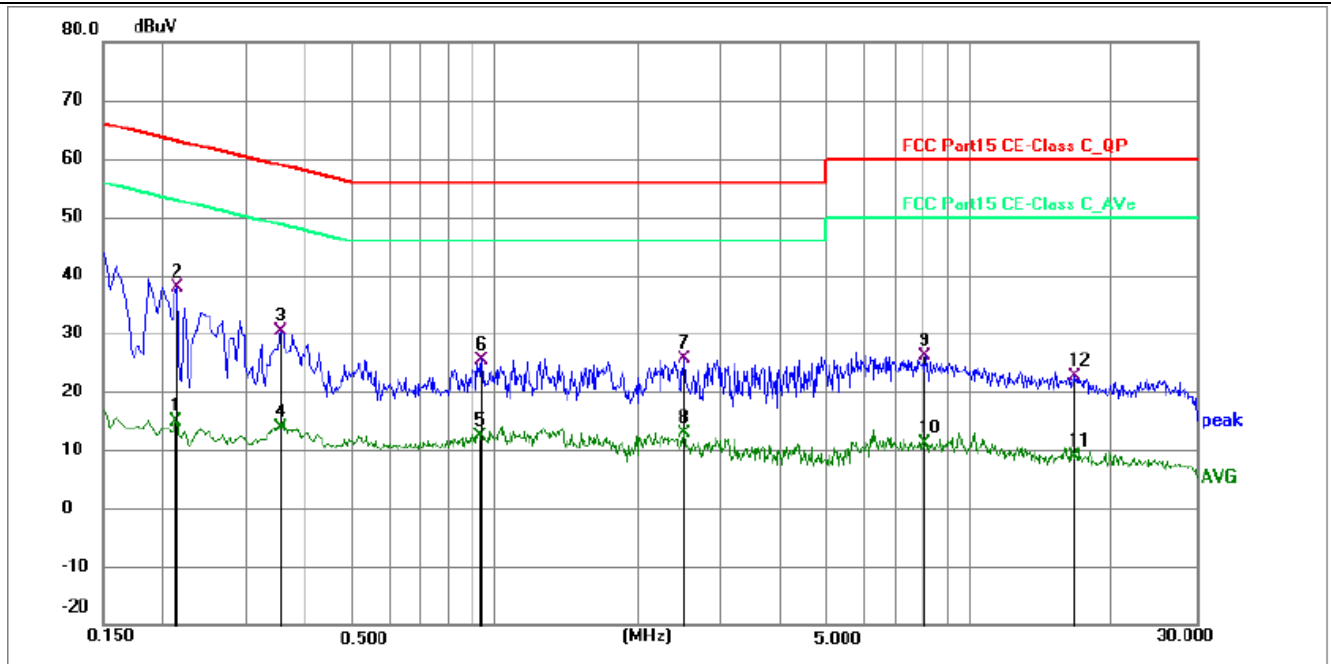
Remark: The report only reflects the test data of worst mode.

TM1 / Line: Line / Band: 5150-5250 MHz / BW: 20 / CH: L



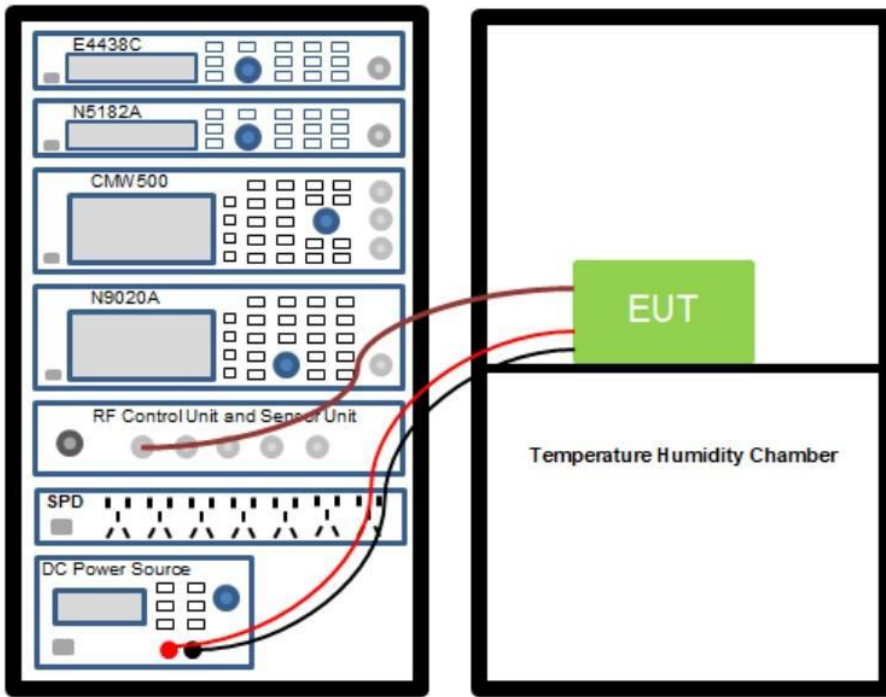
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1680	30.89	10.59	41.48	65.06	-23.58	QP	P	
2	0.1680	4.52	10.59	15.11	55.06	-39.95	AVG	P	
3	0.2535	27.50	10.66	38.16	61.64	-23.48	QP	P	
4	0.2535	8.37	10.66	19.03	51.64	-32.61	AVG	P	
5 *	0.3613	24.74	10.67	35.41	58.70	-23.29	QP	P	
6	0.3613	8.40	10.67	19.07	48.70	-29.63	AVG	P	
7	0.8970	16.94	10.78	27.72	56.00	-28.28	QP	P	
8	0.8970	3.75	10.78	14.53	46.00	-31.47	AVG	P	
9	2.1793	17.33	10.69	28.02	56.00	-27.98	QP	P	
10	2.1793	3.12	10.69	13.81	46.00	-32.19	AVG	P	
11	7.5750	19.88	11.35	31.23	60.00	-28.77	QP	P	
12	7.5750	3.43	11.35	14.78	50.00	-35.22	AVG	P	

TM1 / Line: Neutral / Band: 5150-5250 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2127	4.27	10.57	14.84	53.10	-38.26	AVG	P	
2 *	0.2130	27.22	10.57	37.79	63.09	-25.30	QP	P	
3	0.3523	19.73	10.67	30.40	58.91	-28.51	QP	P	
4	0.3523	3.19	10.67	13.86	48.91	-35.05	AVG	P	
5	0.9375	1.51	10.87	12.38	46.00	-33.62	AVG	P	
6	0.9420	14.63	10.87	25.50	56.00	-30.50	QP	P	
7	2.5080	14.59	10.94	25.53	56.00	-30.47	QP	P	
8	2.5080	2.01	10.94	12.95	46.00	-33.05	AVG	P	
9	8.0834	14.79	11.34	26.13	60.00	-33.87	QP	P	
10	8.0834	-0.16	11.34	11.18	50.00	-38.82	AVG	P	
11	16.5975	-2.08	11.04	8.96	50.00	-41.04	AVG	P	
12	16.7370	11.51	11.05	22.56	60.00	-37.44	QP	P	

6.2 Duty Cycle

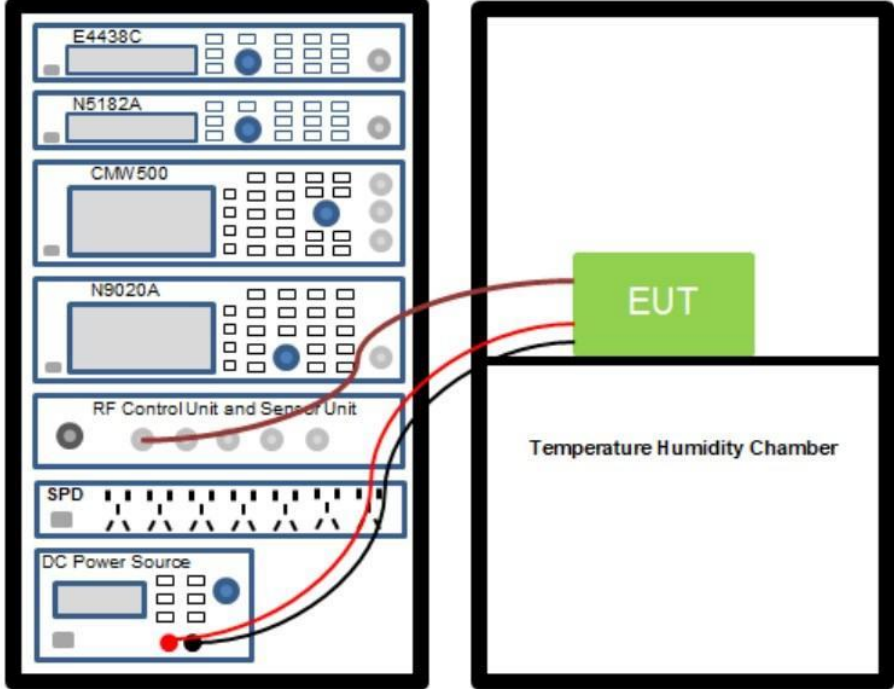
Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Method:	ANSI C63.10-2020 section 12.2 (b)
Test Limit:	No limits, only for report use.
Procedure:	i) Set the center frequency of the instrument to the center frequency of the transmission. ii) Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value. iii) Set VBW $\geq$ RBW. iv) Set detector = peak. v) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.
Test Setup:	
Operating Environment:	
Temperature:	25.8 °C
Humidity:	54 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.2.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.3 Emission bandwidth and occupied bandwidth

Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Procedure:	Emission bandwidth: - Set RBW = approximately 1% of the emission bandwidth. - Set the VBW > RBW. - Detector = peak. - Trace mode = max hold. - Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. Occupied bandwidth: - The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. - The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement. - Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2. - Step a) through step c) might require iteration to adjust within the specified range. - Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. - Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. - If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies. - The occupied bandwidth shall be reported by providing plot(s) of the measuring

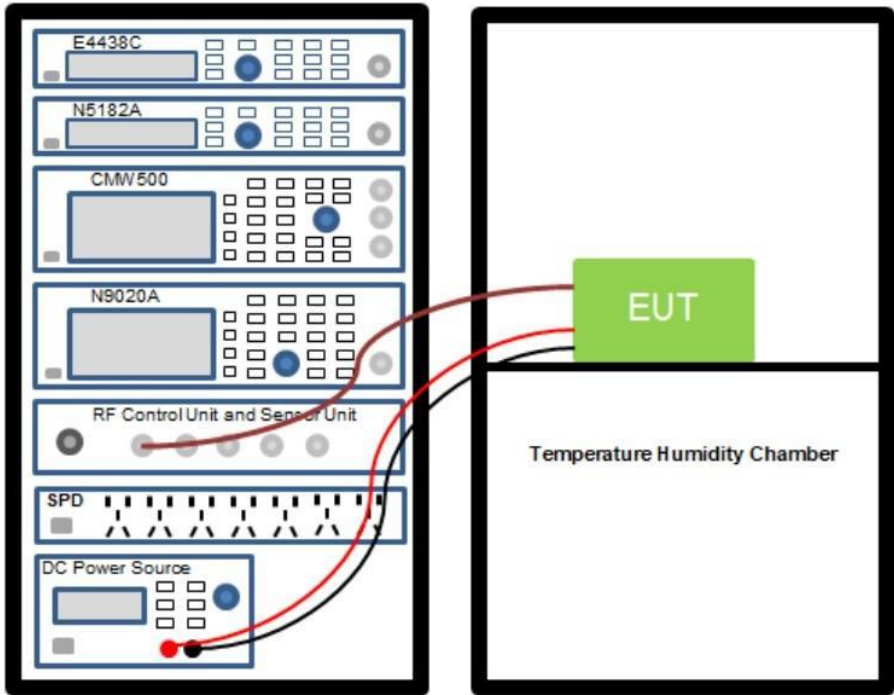
	instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s). 6 dB emission bandwidth: - Set RBW = 100 kHz. - Set the video bandwidth (VBW) $\geq 3 \times$ RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Test Setup:	 The diagram illustrates the test setup. On the left, a vertical stack of equipment includes an E4438C spectrum analyzer, an N5182A network analyzer, a CMW500 communication system, an N9020A signal generator, an RF Control Unit and Sensor Unit, an SPD (Signal Power Detector), and a DC Power Source. On the right, a Temperature Humidity Chamber contains the Equipment Under Test (EUT), represented by a green box. Red and black cables connect the EUT to the RF Control Unit and the DC Power Source within the chamber.
Operating Environment:	
Temperature:	25.8 °C
Humidity:	54 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.3.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.4 Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)
Test Method:	ANSI C63.10-2020, section 12.4
Test Limit:	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm). For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the

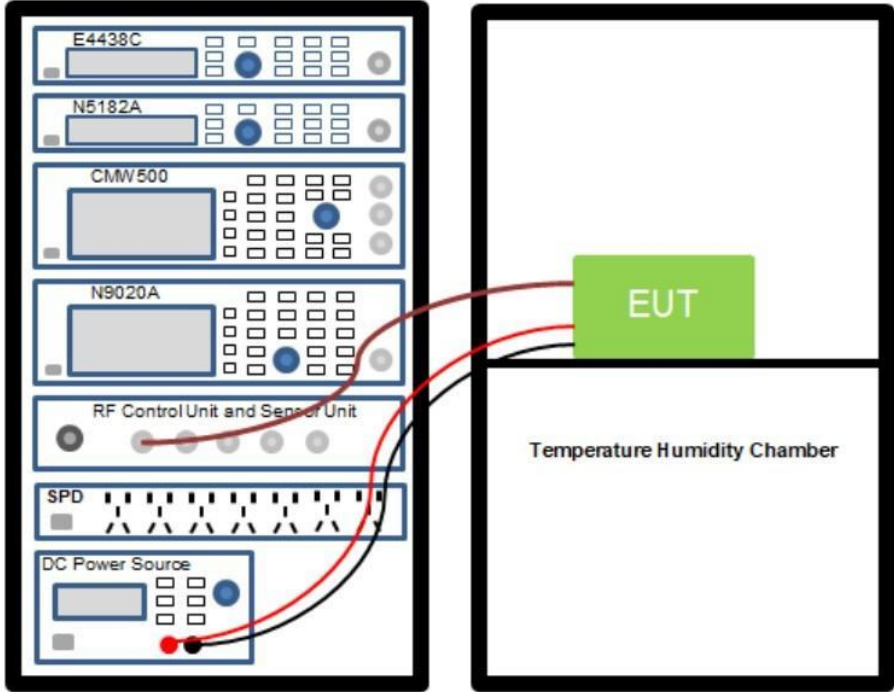
	directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Procedure:	Refer to ANSI C63.10-2020 section 12.4
Test Setup:	
Operating Environment:	
Temperature:	25.8 °C
Humidity:	54 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.4.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.5 Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)
Test Method:	ANSI C63.10-2020, section 12.6
Test Limit:	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is

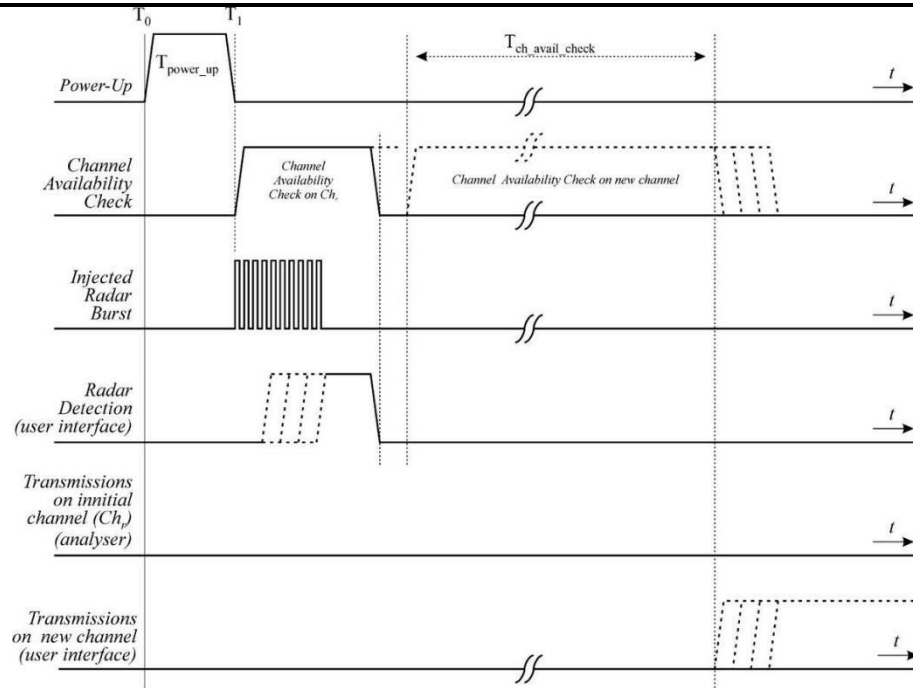
	professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Procedure:	Refer to ANSI C63.10-2020, section 12.6
Test Setup:	 The diagram illustrates the test setup. On the left, a rack of instruments includes an E4438C, N5182A, CMW500, N9020A, an RF Control Unit and Sensor Unit, an SPD, and a DC Power Source. These are connected via red and black cables to an EUT (Equipment Under Test), which is represented by a green box. The EUT is placed inside a Temperature Humidity Chamber, shown as a large white box on the right.
Operating Environment:	
Temperature:	25.8 °C
Humidity:	54 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.5.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.6 Channel Availability Check Time

Test Requirement:	47 CFR Part 15.407(h)(2)(ii)
Test Method:	KDB 905462 D02, Clause 7.8.2
Test Limit:	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.
Procedure:	Initial Channel Availability Check Time: The Initial Channel Availability Check Time tests that the UUT does not emit beacon, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms and only needs to be performed one time. a) The U-NII devices will be powered on and be instructed to operate on the appropriate U-NII Channel that must incorporate DFS functions. At the same time the UUT is powered on, the spectrum analyzer will be set to zero span mode with a 3 MHz RBW and 3 MHz VBW on the Channel occupied by the radar (Chr) with a 2.5 minute sweep time. The spectrum analyzer's sweep will be started at the same time power is applied to the U-NII device. b) The UUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle. c) Confirm that the UUT initiates transmission on the channel This measurement can be used to determine the length of the power-on cycle if it is not supplied by the manufacturer. If the spectrum analyzer sweep is started at the same time the UUT is powered on and the UUT does not begin transmissions until it has completed the cycle, the power-on time can be determined by comparing the two times. Radar Burst at the Beginning of the Channel Availability Check Time: The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB occurs at the beginning of the Channel Availability Check Time. This is illustrated in Figure 15. a) The Radar Waveform generator and UUT are connected using the applicable test setup described in the sections on configuration for Conducted Tests (7.2) or Radiated Tests (7.3) and the power of the UUT is switched off. b) The UUT is powered on at T0. T1 denotes the instant when the UUT has completed its power-up sequence (T_{power_up}). The Channel Availability Check Time commences on Chr at instant T1 and will end no sooner than T1 + T_{ch_avail_check}. c) A single Burst of one of the Short Pulse Radar Types 0-4 will commence within a 6 second window starting at T1. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors. d) Visual indication or measured results on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of Chr for UUT emissions will continue for 2.5 minutes after the radar Burst has been generated. e) Verify that during the 2.5 minute measurement window no UUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.



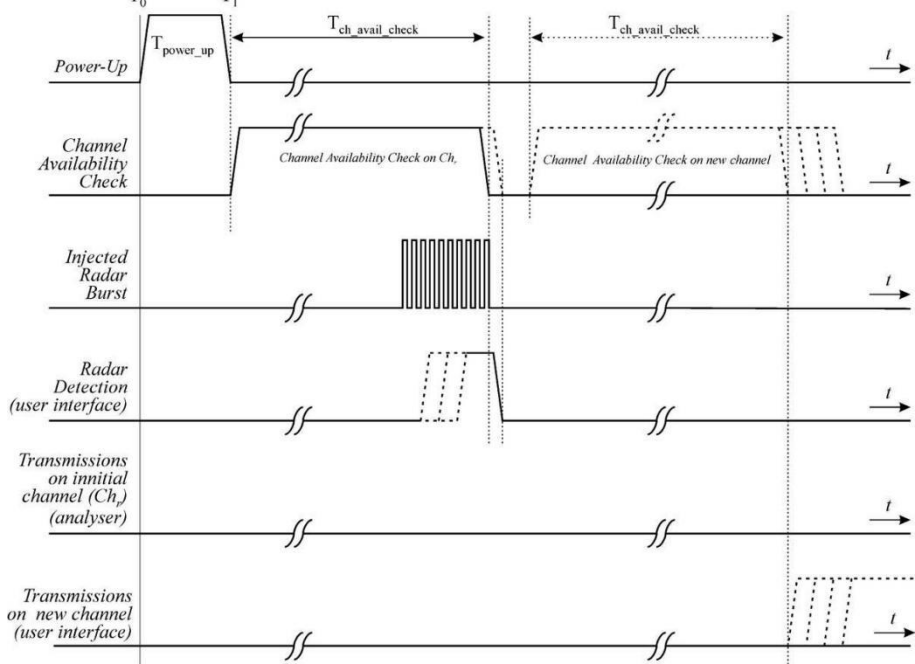
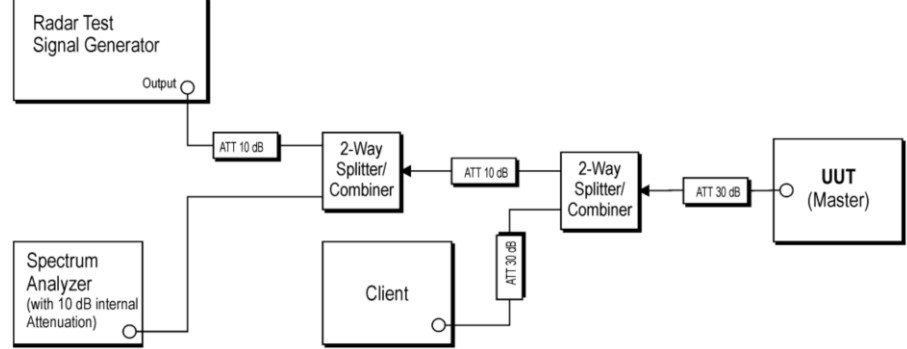
Figure

15: Example of timing for radar testing at the beginning of the Channel Availability Check Time

Radar Burst at the End of the Channel Availability Check Time:

The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1dB occurs at the end of the Channel Availability Check Time. This is illustrated in Figure 16.

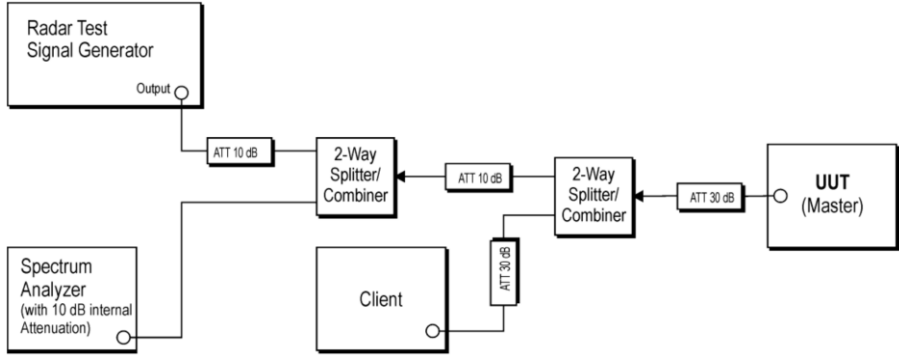
- The Radar Waveform generator and UUT are connected using the applicable test setup described in the sections for Conducted Tests (7.2) or Radiated Tests (7.3) and the power of the UUT is switched off.
- The UUT is powered on at T_0 . T_1 denotes the instant when the UUT has completed its power-up sequence ($T_{\text{power_up}}$). The Channel Availability Check Time commences on Ch_r at instant T_1 and will end no sooner than $T_1 + T_{\text{ch_avail_check}}$.
- A single Burst of one of the Short Pulse Radar Types 0-4 will commence within a 6 second window starting at $T_1 + 54$ seconds. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- Visual indication or measured results on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of Ch_r for UUT emissions will continue for 2.5 minutes after the radar Burst has been generated.
- Verify that during the 2.5 minute measurement window no UUT transmissions occurred on Ch_r . The Channel Availability Check results will be recorded.

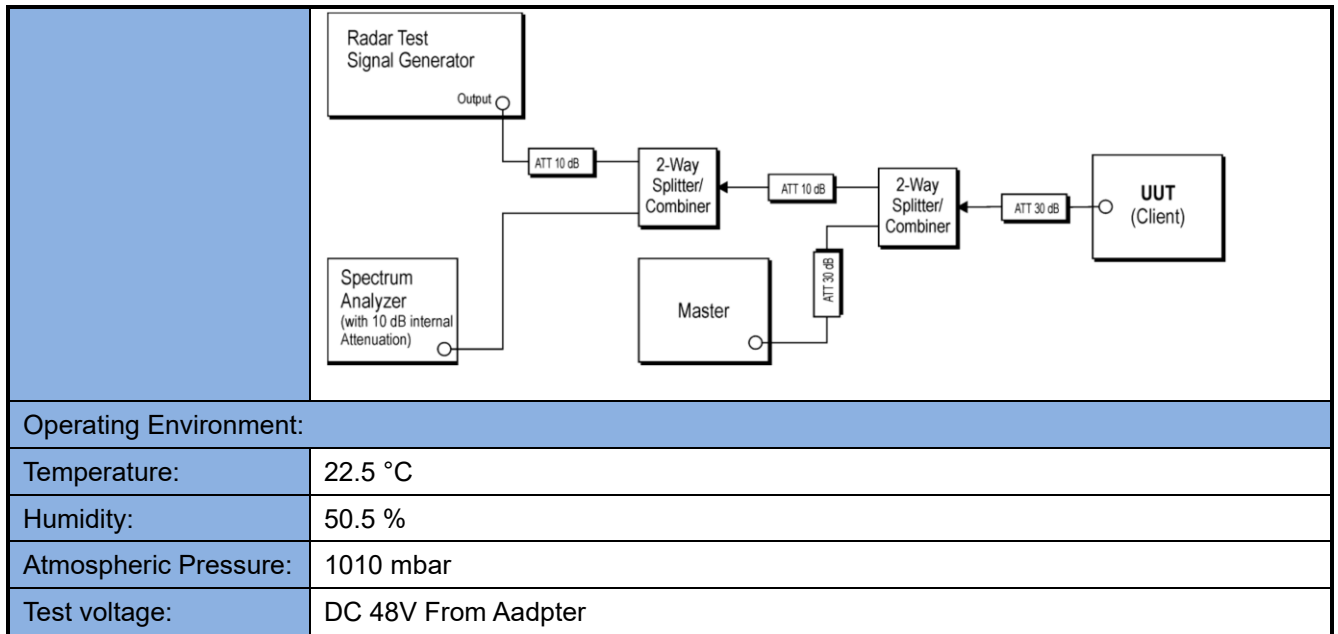
	 Figure 16: Example of timing for radar testing towards the end of the Channel Availability Check Time
Test Setup:	
Operating Environment:	
Temperature:	22.5 °C
Humidity:	50.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.6.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.7 U-NII Detection Bandwidth

Test Requirement:	47 CFR Part 15.407(h)(2)
Test Method:	KDB 905462 D02, Clause 7.8.1
Test Limit:	Minimum 100% of the U-NII 99% transmission power bandwidth. 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.
Procedure:	1. Adjust the equipment to produce a single <i>Burst</i> of any one of the Short Pulse Radar Types 0 – 4 in Table 5 at the center frequency of the UUT <i>Operating Channel</i> at the specified <i>DFS Detection Threshold</i> level found in Table 3. 2. Set the UUT up as a standalone device (no associated Client or Master, as appropriate) and no traffic. Frame based systems will be set to a talk/listen ratio reflecting the worst case (maximum) that is user configurable during this test. 3. Generate a single radar <i>Burst</i>, and note the response of the UUT. Repeat for a minimum of 10 trials. The UUT must detect the <i>Radar Waveform</i> within the DFS band using the specified <i>U-NII Detection Bandwidth</i> criterion shown in Table 4. In cases where the channel bandwidth may exceed past the DFS band edge on specific channels (i.e., 802.11ac or wideband frame based systems) select a channel that has the entire emission bandwidth within the DFS band. If this is not possible, test the detection BW to the DFS band edge. 4. Starting at the center frequency of the UUT operating <i>Channel</i>, increase the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the <i>U-NII Detection Bandwidth</i> criterion specified in Table 4. Repeat this measurement in 1MHz steps at frequencies 5 MHz below where the detection rate begins to fall. Record the highest frequency (denote as F_H) at which detection is greater than or equal to the <i>U-NII Detection Bandwidth</i> criterion. Recording the detection rate at frequencies above F_H is not required to demonstrate compliance. 5. Starting at the center frequency of the UUT operating <i>Channel</i>, decrease the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the <i>U-NII Detection Bandwidth</i> criterion specified in Table 4. Repeat this measurement in 1MHz steps at frequencies 5 MHz above where the detection rate begins to fall. Record the lowest frequency (denote as F_L) at which detection is greater than or equal to the <i>U-NII Detection Bandwidth</i> criterion. Recording the detection rate at frequencies below F_L is not required to demonstrate compliance. The <i>U-NII Detection Bandwidth</i> is calculated as follows: $U-NII\ Detection\ Bandwidth = F_H - F_L$
Test Setup:	

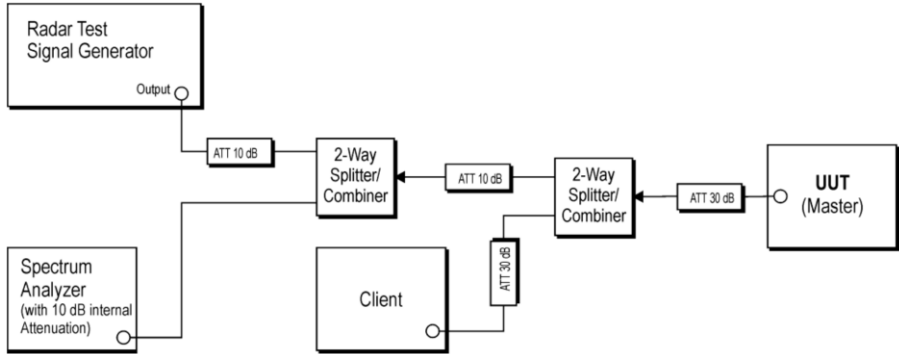


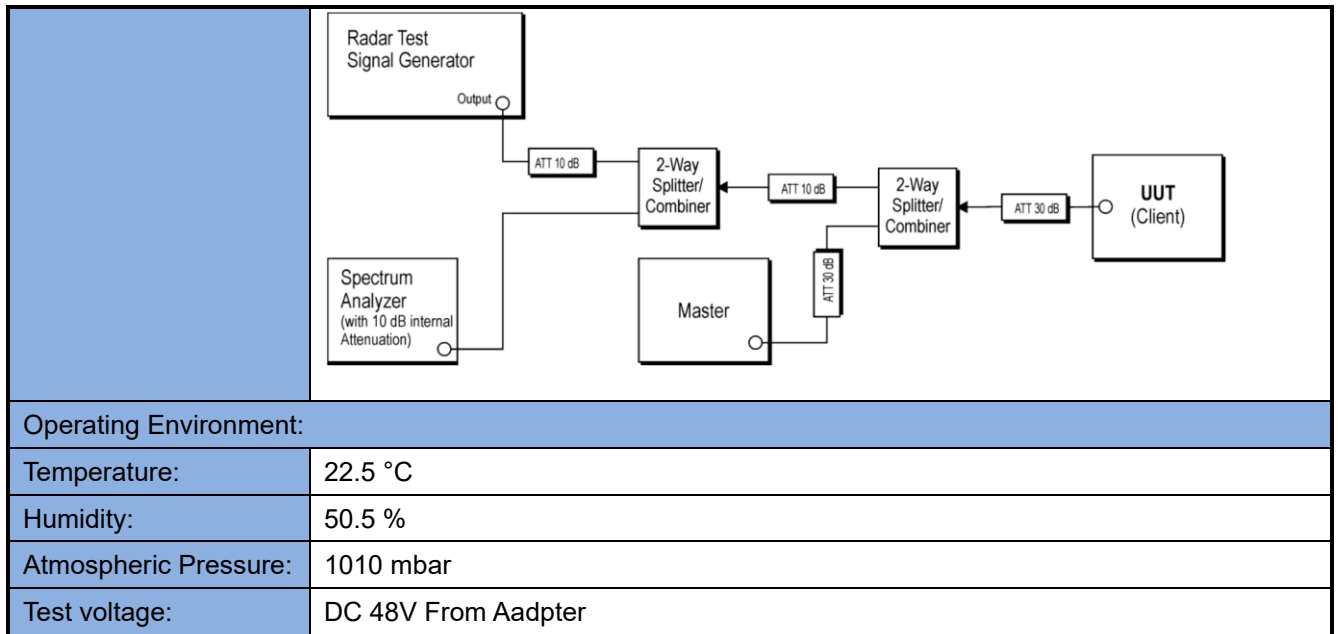
6.7.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.8 Statistical Performance Check

Test Requirement:	KDB 935210 D02, Clause 5.1 Table 2 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.																																																																										
Test Method:	KDB 935210 D02, Clause 7.8.4																																																																										
Test Limit:	Table 5 – Short Pulse Radar Test Waveforms <table><tr><th>Radar Type</th><th>Pulse Width (μsec)</th><th>PRI (μsec)</th><th>Number of Pulses</th><th>Minimum Percentage of Successful Detection</th><th>Minimum Number of Trials</th></tr><tr><td>0</td><td>1</td><td>1428</td><td>18</td><td>See Note 1</td><td>See Note 1</td></tr><tr><td>1</td><td>1</td><td>Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a 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</td><td>Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \right\}$</td><td>60%</td><td>30</td></tr><tr><td>2</td><td>1-5</td><td>150-230</td><td>23-29</td><td>60%</td><td>30</td></tr><tr><td>3</td><td>6-10</td><td>200-500</td><td>16-18</td><td>60%</td><td>30</td></tr><tr><td>4</td><td>11-20</td><td>200-500</td><td>12-16</td><td>60%</td><td>30</td></tr><tr><td colspan="4">Aggregate (Radar Types 1-4)</td><td>80%</td><td>120</td></tr></table> Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests. A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. Table 6 – Long Pulse Radar Test Waveform <table><tr><th>Radar Type</th><th>Pulse Width (μsec)</th><th>Chirp Width (MHz)</th><th>PRI (μsec)</th><th>Number of Pulses per Burst</th><th>Number of Bursts</th><th>Minimum Percentage of Successful Detection</th><th>Minimum Number of Trials</th></tr><tr><td>5</td><td>50-100</td><td>5-20</td><td>1000-2000</td><td>1-3</td><td>8-20</td><td>80%</td><td>30</td></tr></table> The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms. Table 7 – Frequency Hopping Radar Test Waveform <table><tr><th>Radar Type</th><th>Pulse Width (μsec)</th><th>PRI (μsec)</th><th>Pulses per Hop</th><th>Hopping Rate (kHz)</th><th>Hopping Sequence Length (msec)</th><th>Minimum Percentage of Successful Detection</th><th>Minimum Number of Trials</th></tr><tr><td>6</td><td>1</td><td>333</td><td>9</td><td>0.333</td><td>300</td><td>70%</td><td>30</td></tr></table> For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm: 4 The first frequency in a hopping sequence is selected randomly from the group of	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 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	Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \right\}$	60%	30	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	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	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
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 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	Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \right\}$	60%	30																																																																						
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																																																																						
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																																																																				
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																																																																				

	475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.
Procedure:	The steps below define the procedure to determine the minimum percentage of successful detection requirements found in Tables 5-7 when a radar burst with a level equal to the <i>DFS Detection Threshold</i> + 1dB is generated on the <i>Operating Channel</i> of the U-NII device (<i>In-Service Monitoring</i>). 1. One frequency will be chosen from the <i>Operating Channels</i> of the UUT within the 5250-5350 MHz or 5470-5725 MHz bands. 2. In case the UUT is a U-NII device operating as a <i>Client Device</i> (with or without Radar Detection), a U-NII device operating as a <i>Master Device</i> will be used to allow the UUT (Client device) to <i>Associate</i> with the <i>Master Device</i>. In case the UUT is a <i>Master Device</i>, a U-NII device operating as a <i>Client Device</i> will be used and it is assumed that the Client will <i>Associate</i> with the UUT (Master). In both cases for conducted tests, the <i>Radar Waveform</i> generator will be connected to the <i>Master Device</i>. For radiated tests, the emissions of the <i>Radar Waveform</i> generator will be directed towards the <i>Master Device</i>. If the <i>Master Device</i> has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing. 3. Stream the channel loading test file from the <i>Master Device</i> to the Client Device on the test <i>Channel</i> for the entire period of the test. 4. At time T0 the <i>Radar Waveform</i> generator sends the individual waveform for each of the Radar Types 1- 6 in Tables 5-7, at levels defined in Table 3, on the <i>Operating Channel</i>. An additional 1 dB is added to the radar test signal to ensure it is at or above the <i>DFS Detection Threshold</i>, accounting for equipment variations/errors. 5. Observe the transmissions of the UUT at the end of the Burst on the <i>Operating Channel</i> for duration greater than 10 seconds for Radar Type 0 to ensure detection occurs. 6. Observe the transmissions of the UUT at the end of the Burst on the <i>Operating Channel</i> for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs. 7. In case the UUT is a U-NII device operating as a <i>Client Device</i> with <i>In-Service Monitoring</i>, perform steps 1 to 6.
Test Setup:	



6.8.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.9 Channel Move Time, Channel Closing Transmission Time

Test Requirement:	47 CFR Part 15.407(h)(2)(iii)
Test Method:	KDB 905462 D02, Clause 7.8.3
Test Limit:	Channel Move Time: within 10 seconds Channel Closing Transmission Time: 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. (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.)
Procedure:	The steps below define the procedure to determine the above-mentioned parameters when a radar <i>Burst</i> with a level equal to the <i>DFS Detection Threshold</i> + 1dB is generated on the <i>Operating Channel</i> of the U-NII device (<i>In-Service Monitoring</i>). - One frequency will be chosen from the <i>Operating Channels</i> of the UUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected. - In case the UUT is a U-NII device operating as a <i>Client Device</i> (with or without DFS), a U-NII device operating as a <i>Master Device</i> will be used to allow the UUT (Client device) to <i>Associate</i> with the <i>Master Device</i>. In case the UUT is a <i>Master Device</i>, a U-NII device operating as a <i>Client Device</i> will be used and it is assumed that the Client will <i>Associate</i> with the UUT (Master). In both cases for conducted tests, the <i>Radar Waveform</i> generator will be connected to the <i>Master Device</i>. For radiated tests, the emissions of the <i>Radar Waveform</i> generator will be directed towards the <i>Master Device</i>. If the <i>Master Device</i> has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing. - Stream the channel loading test file from the <i>Master Device</i> to the <i>Client Device</i> on the test <i>Channel</i> for the entire period of the test. - At time T0 the <i>Radar Waveform</i> generator sends a <i>Burst</i> of pulses for one of the Radar Type 0 in Table 5 at levels defined in Table 3, on the <i>Operating Channel</i>. An additional 1 dB is added to the radar test signal to ensure it is at or above the <i>DFS Detection Threshold</i>, accounting for equipment variations/errors. - Observe the transmissions of the UUT at the end of the radar <i>Burst</i> on the <i>Operating Channel</i> for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (<i>Channel Move Time</i>). Measure and record the <i>Channel Move Time</i> and <i>Channel Closing Transmission Time</i> if radar detection occurs. Figure 17 illustrates <i>Channel Closing Transmission Time</i>. - When operating as a <i>Master Device</i>, monitor the UUT for more than 30 minutes following instant T2 to verify that the UUT does not resume any transmissions on this <i>Channel</i>. Perform this test once and record the measurement result. - In case the UUT is a U-NII device operating as a <i>Client Device</i> with <i>In-Service Monitoring</i>, perform steps 1 to 6.

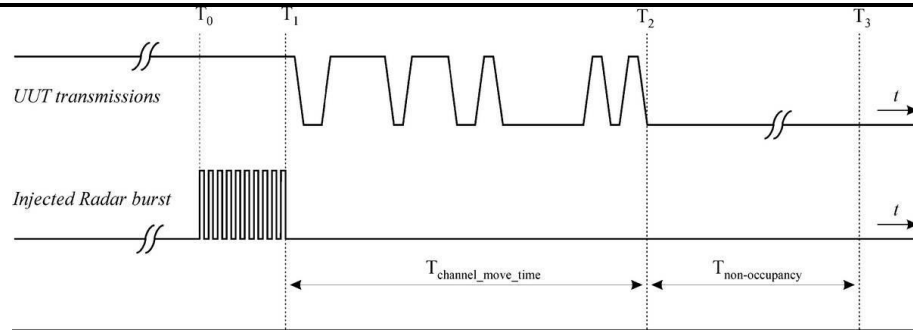
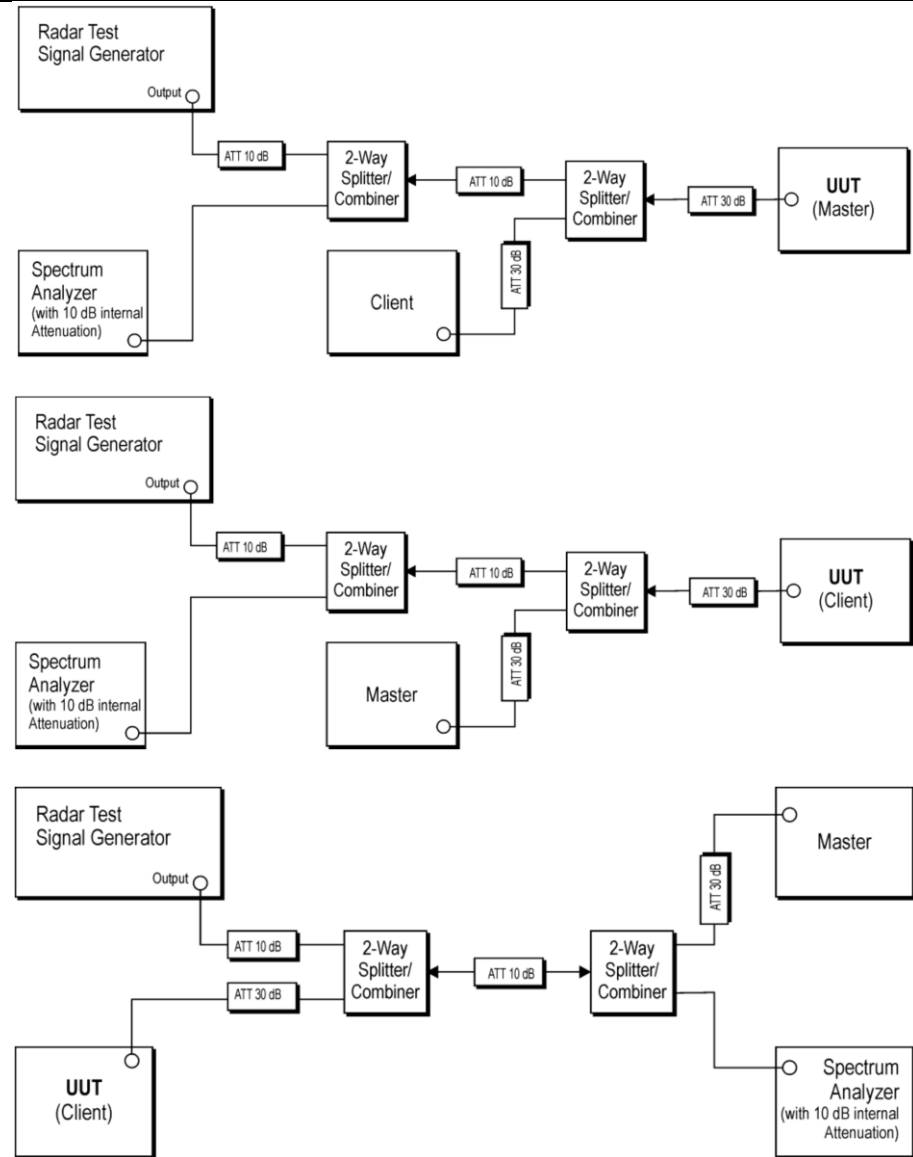


Figure 17: Example of Channel Closing Transmission Time & Channel Closing Time

Test Setup:



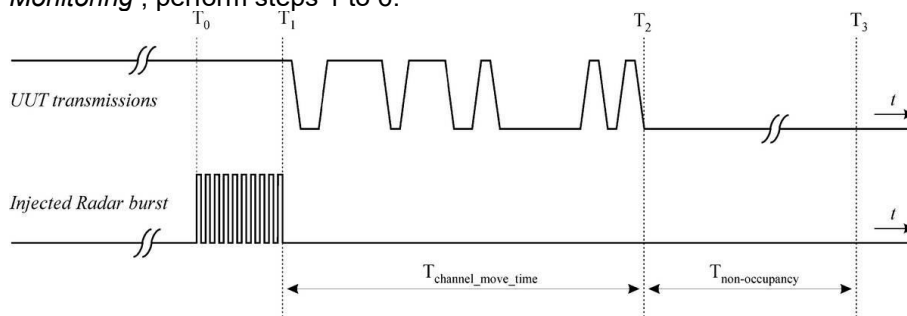
Operating Environment:

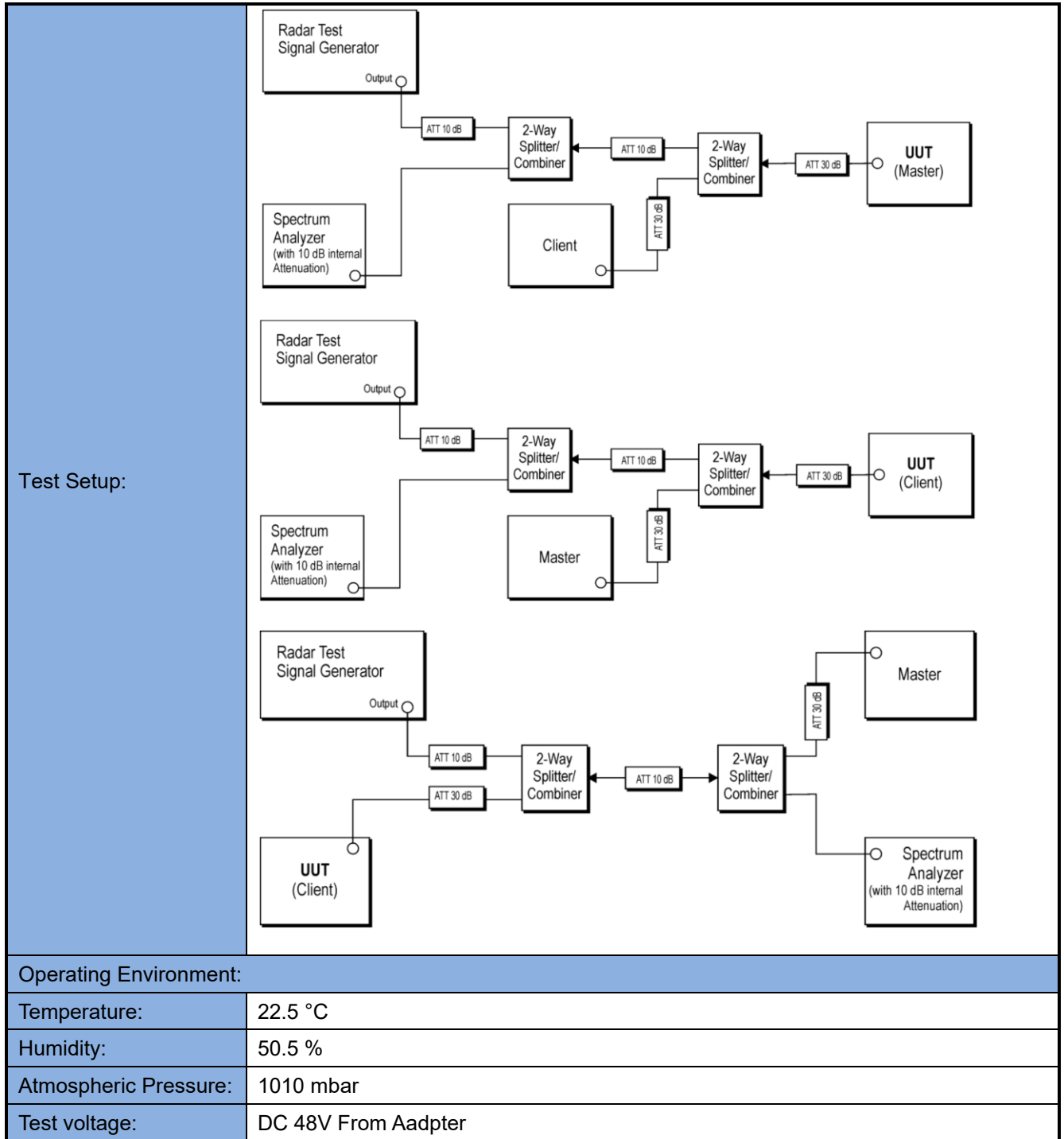
Temperature:	22.5 °C
Humidity:	50.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.9.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.10 Non-Occupancy Period Test

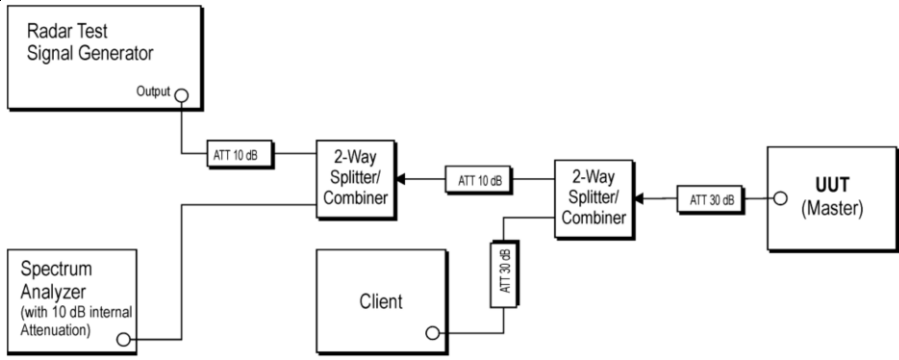
Test Requirement:	47 CFR Part 15.407(h)(2)(iv)
Test Method:	KDB 905462 D02, Clause 7.8.3
Test Limit:	A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.
Procedure:	The steps below define the procedure to determine the above-mentioned parameters when a radar <i>Burst</i> with a level equal to the <i>DFS Detection Threshold</i> + 1dB is generated on the <i>Operating Channel</i> of the U-NII device (<i>In-Service Monitoring</i>). - One frequency will be chosen from the <i>Operating Channels</i> of the UUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected. - In case the UUT is a U-NII device operating as a <i>Client Device</i> (with or without DFS), a U-NII device operating as a <i>Master Device</i> will be used to allow the UUT (Client device) to <i>Associate</i> with the <i>Master Device</i>. In case the UUT is a <i>Master Device</i>, a U-NII device operating as a <i>Client Device</i> will be used and it is assumed that the Client will <i>Associate</i> with the UUT (Master). In both cases for conducted tests, the <i>Radar Waveform</i> generator will be connected to the <i>Master Device</i>. For radiated tests, the emissions of the <i>Radar Waveform</i> generator will be directed towards the <i>Master Device</i>. If the <i>Master Device</i> has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing. - Stream the channel loading test file from the <i>Master Device</i> to the <i>Client Device</i> on the test <i>Channel</i> for the entire period of the test. - At time T_0 the <i>Radar Waveform</i> generator sends a <i>Burst</i> of pulses for one of the Radar Type 0 in Table 5 at levels defined in Table 3, on the <i>Operating Channel</i>. An additional 1 dB is added to the radar test signal to ensure it is at or above the <i>DFS Detection Threshold</i>, accounting for equipment variations/errors. - Observe the transmissions of the UUT at the end of the radar <i>Burst</i> on the <i>Operating Channel</i> for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (<i>Channel Move Time</i>). Measure and record the <i>Channel Move Time</i> and <i>Channel Closing Transmission Time</i> if radar detection occurs. Figure 17 illustrates <i>Channel Closing Transmission Time</i>. - When operating as a <i>Master Device</i>, monitor the UUT for more than 30 minutes following instant T_2 to verify that the UUT does not resume any transmissions on this <i>Channel</i>. Perform this test once and record the measurement result. - In case the UUT is a U-NII device operating as a <i>Client Device</i> with <i>In-Service Monitoring</i>, perform steps 1 to 6.  Figure 17: Example of Channel Closing Transmission Time & Channel Closing Time

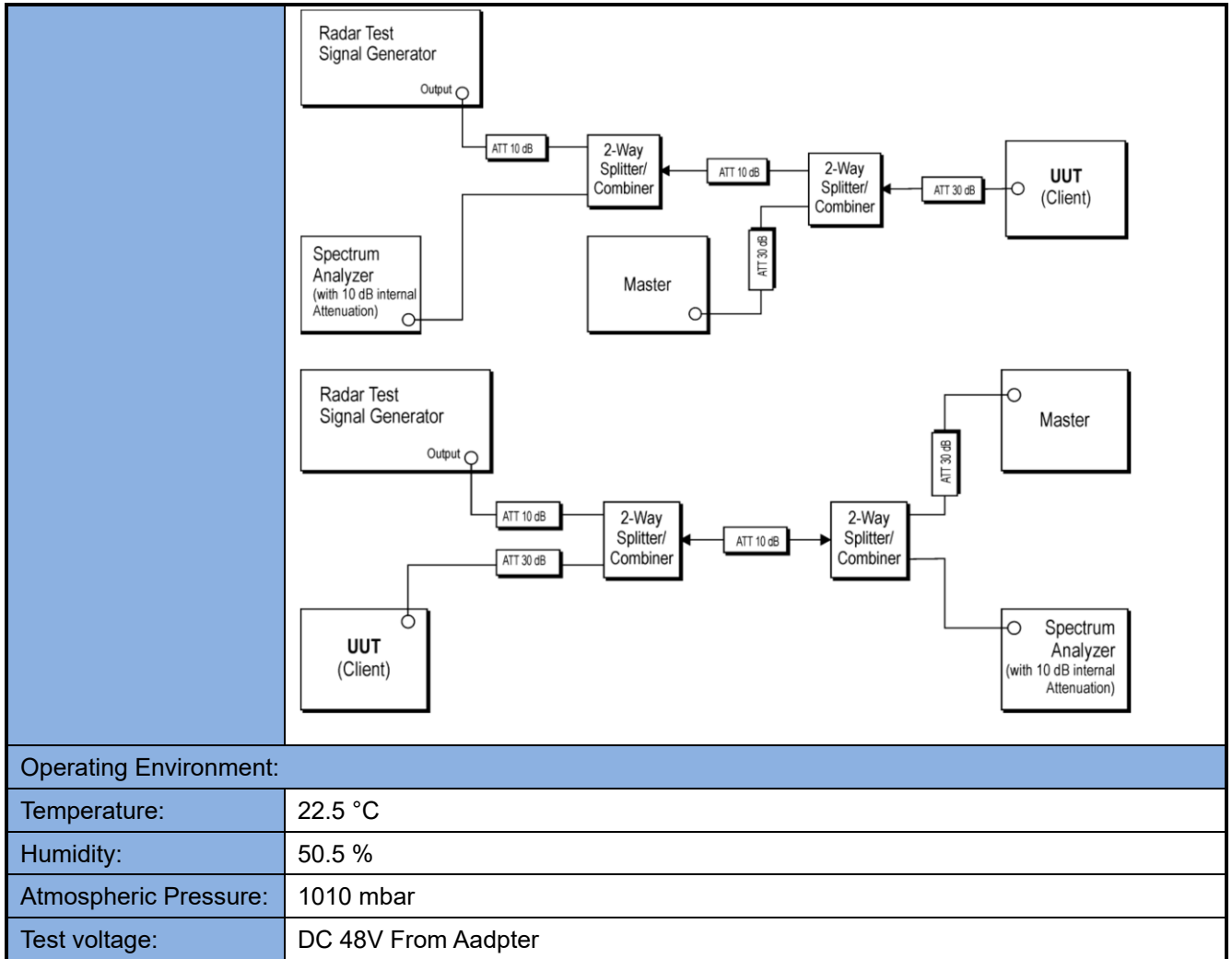


6.10.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.11 DFS Detection Thresholds

Test Requirement:	KDB 905462 D02, Clause 5.2 Table 3								
Test Method:	KDB 905462 D02, Clause 7.4.1.1								
Test Limit:	Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection <table> <tr> <th>Maximum Transmit Power</th><th>Value (See Notes 1, 2, and 3)</th></tr> <tr> <td>EIRP $\geq$ 200 milliwatt</td><td>-64 dBm</td></tr> <tr> <td>EIRP $<$ 200 milliwatt and power spectral density $<$ 10 dBm/MHz</td><td>-62 dBm</td></tr> <tr> <td>EIRP $<$ 200 milliwatt that do not meet the power spectral density requirement</td><td>-64 dBm</td></tr> </table> 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. Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	Maximum Transmit Power	Value (See Notes 1, 2, and 3)	EIRP $\geq$ 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
Maximum Transmit Power	Value (See Notes 1, 2, and 3)								
EIRP $\geq$ 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								
Procedure:	1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master 2) The interference Radar Detection Threshold Level is TH+ 0dBi +1dB that had been taken into account the output power range and antenna gain. 3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process, there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB. 4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was TH + 0dBi +1dB = -63dBm. Capture the spectrum analyzer plots on short pulse radar waveform. Note: TH=-64 dBm or -62 dBm								
Test Setup:									



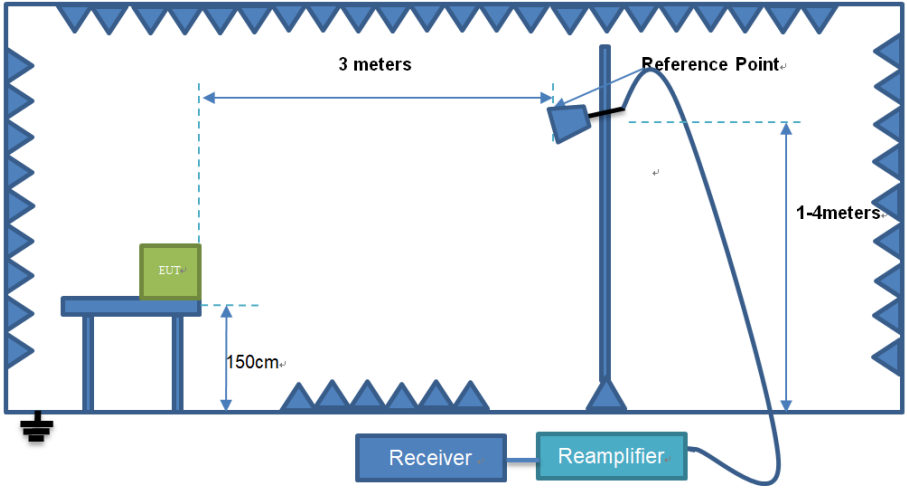
6.11.1 Test Data

Please Refer to Appendix - 5G WIFI for Details.

6.12 Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7			
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.			
	For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.			
	For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			
	MHz	MHz	MHz	GHz
	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
	6.31175-6.31225	123-138	2200-2300	14.47-14.5
	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
	12.57675-12.57725	322-335.4	3600-4400	(²)
	13.36-13.41			
	¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.			
	² Above 38.6			
The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.				
Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:				
Frequency (MHz)		Field strength (microvolts/meter)	Measurement distance	

			(meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
Procedure:	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
	Above 1GHz:		
	a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.		
	b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.		
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.		
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.		
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.		
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.		
	g. Test the EUT in the lowest channel, the middle channel, the Highest channel.		
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.		
	i. Repeat above procedures until all frequencies measured was complete.		
	Remark:		
	1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor		
	2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.		
	3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.		
	4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.		

Test Setup:	 The diagram illustrates the test setup within an anechoic chamber. An Equipment Under Test (EUT) is placed on a table at a height of 150cm. A Receiver and a Reamplifier are positioned on the floor. A horn antenna is mounted on a stand, with a 'Reference Point' indicated at a height of 1.4 meters. The horizontal distance between the EUT and the antenna is 3 meters. The Reamplifier is connected to the Receiver.
Operating Environment:	
Temperature:	22.5 °C
Humidity:	50.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.12.1 Test Data

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L							
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5097.679	42.65	5.28	47.93	74.00	-26.07	Peak	Pass
5097.679	33.58	5.28	38.86	54.00	-15.14	AV	Pass
5150.000	45.59	5.33	50.92	74.00	-23.08	Peak	Pass
5150.000	35.54	5.33	40.87	54.00	-13.13	AV	Pass

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5097.679	43.40	5.35	48.75	74.00	-25.25	Peak	Pass
5097.679	32.14	5.35	37.49	54.00	-16.51	AV	Pass
5150.000	46.07	5.33	51.40	74.00	-22.60	Peak	Pass
5150.000	35.13	5.33	40.46	54.00	-13.54	AV	Pass

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H							
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5350.000	43.71	5.45	49.16	74.00	-24.84	Peak	Pass
5350.000	34.66	5.45	40.11	54.00	-13.89	AV	Pass
5460.000	46.33	5.52	51.85	74.00	-22.15	Peak	Pass
5460.000	34.30	5.52	39.82	54.00	-14.18	AV	Pass

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H							
Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5350.000	42.82	5.45	48.27	74.00	-25.73	Peak	Pass
5350.000	33.34	5.45	38.79	54.00	-15.21	AV	Pass
5460.000	47.45	5.52	52.97	74.00	-21.03	Peak	Pass
5460.000	36.82	5.52	42.34	54.00	-11.66	AV	Pass

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L

Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5650.000	40.70	5.63	46.33	68.20	-21.87	Peak	Pass
5700.000	43.73	5.70	49.43	105.20	-55.77	Peak	Pass
5720.000	45.26	5.66	50.92	110.80	-59.88	Peak	Pass
5725.000	47.26	5.66	52.92	122.20	-69.28	Peak	Pass

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L

Band 3: 5745 MHz - 5825 MHz							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5650.000	41.48	5.63	47.11	68.20	-21.09	Peak	Pass
5700.000	44.18	5.70	49.88	105.20	-55.32	Peak	Pass
5720.000	44.78	5.66	50.44	110.80	-60.36	Peak	Pass
5725.000	46.78	5.66	52.44	122.20	-69.76	Peak	Pass

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H

Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5850.000	51.64	5.73	57.37	122.20	-64.83	Peak	Pass
5855.000	49.64	5.72	55.36	110.80	-55.44	Peak	Pass
5875.000	48.88	5.70	54.58	105.20	-50.62	Peak	Pass
5925.000	45.33	5.66	50.99	68.20	-17.21	Peak	Pass

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H

Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
5850.000	51.92	5.73	57.65	122.20	-64.55	Peak	Pass
5855.000	49.92	5.72	55.64	110.80	-55.16	Peak	Pass
5875.000	49.77	5.70	55.47	105.20	-49.73	Peak	Pass
5925.000	45.37	5.66	51.03	68.20	-17.17	Peak	Pass

6.13 Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)		
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.5		
Test Limit:	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.		
	Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.		
	In the emission table above, the tighter limit applies at the band edges.		
	The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
Procedure:	Below 1GHz:		
	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.		
	b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.		
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.		
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.		
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.		
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.		
	g. Test the EUT in the lowest channel, the middle channel, the Highest channel.		
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.		
	i. Repeat above procedures until all frequencies measured was complete.		
	Remark:		
	1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor		
	2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing. so only above points had been displayed. The amplitude of spurious		

emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Above 1GHz:

a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

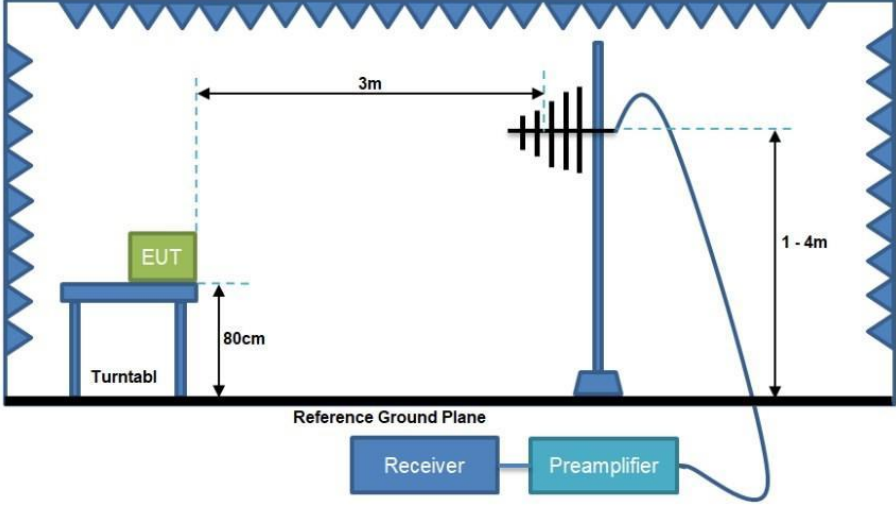
Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

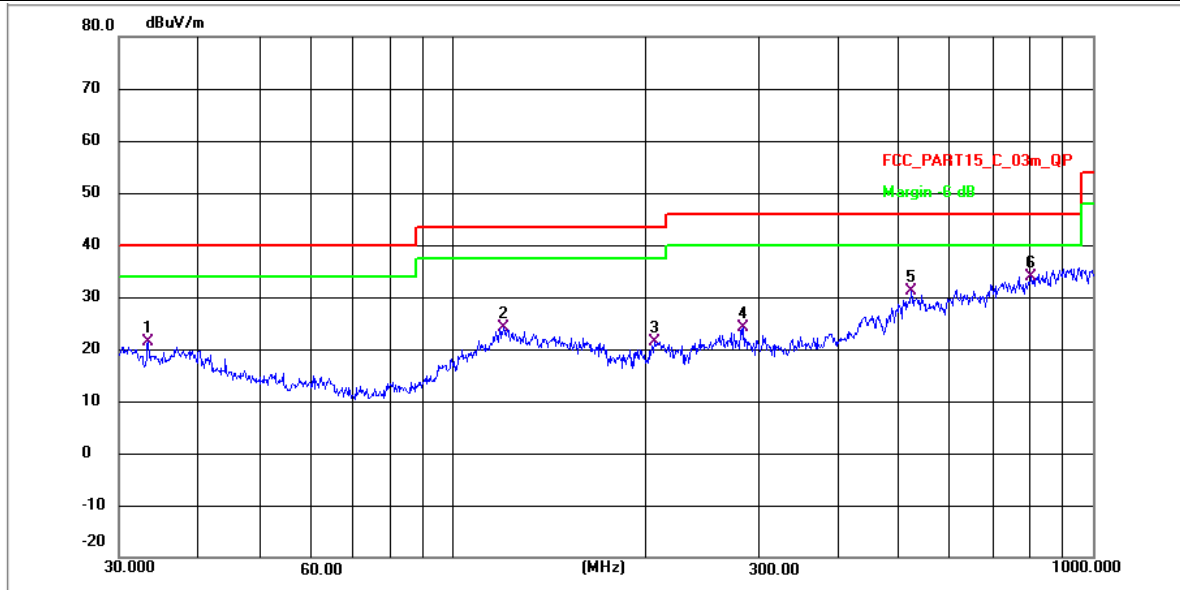
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Test Setup:	 The diagram illustrates the test setup within an anechoic chamber. An Equipment Under Test (EUT) is placed on a turntable at a height of 80cm. A horn antenna is mounted on a stand, positioned 3m away from the EUT. The antenna is oriented towards the EUT. A Receiver and Preamplifier are connected to the antenna. The distance from the antenna to the EUT is indicated as 1-4m. A Reference Ground Plane is shown at the base of the chamber.
Operating Environment:	
Temperature:	22.5 °C
Humidity:	50.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

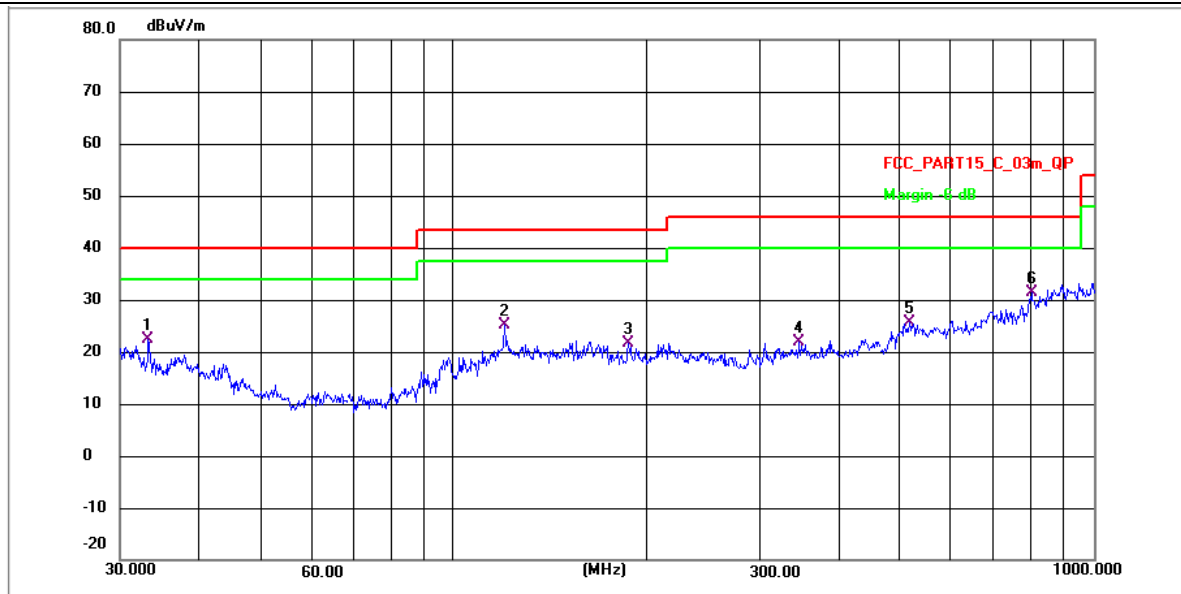
6.13.1 Test Data

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	33.3278	31.10	-9.68	21.42	40.00	-18.58	QP	P
2	119.8555	46.48	-22.29	24.19	43.50	-19.31	QP	P
3	207.1225	42.86	-21.47	21.39	43.50	-22.11	QP	P
4	283.9791	44.98	-20.75	24.23	46.00	-21.77	QP	P
5	520.8881	50.05	-18.85	31.20	46.00	-14.80	QP	P
6 *	801.7862	51.74	-17.83	33.91	46.00	-12.09	QP	P

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	33.2693	32.04	-9.68	22.36	40.00	-17.64	QP	P
2	120.0660	47.52	-22.29	25.23	43.50	-18.27	QP	P
3	187.7530	43.19	-21.66	21.53	43.50	-21.97	QP	P
4	346.2015	42.24	-20.25	21.99	46.00	-24.01	QP	P
5	517.2480	44.47	-18.88	25.59	46.00	-20.41	QP	P
6 *	800.3817	49.17	-17.85	31.32	46.00	-14.68	QP	P

6.14 Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7			
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.			
	For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.			
	For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			
	MHz	MHz	MHz	GHz
	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
	6.31175-6.31225	123-138	2200-2300	14.47-14.5
	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
	12.57675-12.57725	322-335.4	3600-4400	(²)
	13.36-13.41			
		¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.		
	² Above 38.6			
	The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.			
	Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:			
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance	

			(meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
Procedure:	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
	Above 1GHz:		
	a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.		
	b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.		
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.		
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.		
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.		
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.		
	g. Test the EUT in the lowest channel, the middle channel, the Highest channel.		
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.		
Operating Environment:	i. Repeat above procedures until all frequencies measured was complete.		
	Remark:		
	1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor		
	2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.		
	3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.		
	4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.		

Temperature:	22.5 °C
Humidity:	50.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 48V From Aadpter

6.14.1 Test Data

Remark: The report only reflects the test data of worst mode 802.11 ac(HT20)

Band 1: 5150 MHz - 5250 MHz							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10360.00	93.49	-45.18	48.31	68.20	-19.89	Peak	Pass
10360.00	82.20	-45.18	37.02	48.20	-11.18	AVG	Pass
15540.00	90.10	-42.94	47.16	74.00	-26.84	Peak	Pass
15540.00	81.46	-42.94	38.52	54.00	-15.48	AVG	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10360.00	93.00	-45.12	47.88	68.20	-20.32	Peak	Pass
10360.00	81.71	-45.18	36.53	48.20	-11.67	AVG	Pass
15540.00	89.61	-42.88	46.73	74.00	-27.27	Peak	Pass
15540.00	80.97	-42.94	38.03	54.00	-15.97	AVG	Pass
Test Channel: Middle channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10400.00	92.47	-45.18	47.29	74.00	-26.71	Peak	Pass
10400.00	81.18	-45.18	36.00	54.00	-18.00	AVG	Pass
15600.00	89.08	-42.94	46.14	74.00	-27.86	Peak	Pass
15600.00	80.44	-42.94	37.50	54.00	-16.50	AVG	Pass
Test Channel: Middle channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10400.00	92.02	-45.18	46.84	74.00	-27.16	Peak	Pass
10400.00	80.73	-45.18	35.55	54.00	-18.45	AVG	Pass
15600.00	88.63	-42.94	45.69	74.00	-28.31	Peak	Pass
15600.00	79.99	-42.94	37.05	54.00	-16.95	AVG	Pass

Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10480.00	94.43	-45.07	49.36	68.20	-18.84	Peak	Pass
10480.00	83.14	-45.18	37.96	48.20	-10.24	AVG	Pass
15720.00	91.04	-42.83	48.21	74.00	-25.79	Peak	Pass
15720.00	82.40	-42.94	39.46	54.00	-14.54	AVG	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10480.00	94.04	-45.07	48.97	68.20	-19.23	Peak	Pass
10480.00	82.75	-45.18	37.57	48.20	-10.63	AVG	Pass
15720.00	90.65	-42.83	47.82	74.00	-26.18	Peak	Pass
15720.00	82.01	-42.94	39.07	54.00	-14.93	AVG	Pass
Remark: Test frequency up to 40GHz and the emission levels of other frequencies are lower than the limit 20dB, not show in test report. Note:Margin=Level-Limit=Reading+factor-Limit							

Band 2A: 5250 MHz - 5350 MHz							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10500.00	91.74	-45.08	46.66	74.00	-27.34	Peak	Pass
10500.00	91.74	-45.08	46.66	54.00	-7.34	AVG	Pass
15750.00	88.05	-42.74	45.31	74.00	-28.69	Peak	Pass
15750.00	79.41	-42.74	36.67	54.00	-17.33	AVG	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10500.00	91.26	-45.02	46.24	74.00	-27.76	Peak	Pass
10500.00	91.26	-45.08	46.18	54.00	-7.82	AVG	Pass
15750.00	87.57	-42.68	44.89	74.00	-29.11	Peak	Pass
15750.00	78.93	-42.74	36.19	54.00	-17.81	AVG	Pass
Test Channel: Middle channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10560.00	94.71	-45.08	49.63	74.00	-24.37	Peak	Pass
10560.00	94.71	-45.08	49.63	54.00	-4.37	AVG	Pass
15840.00	91.02	-42.74	48.28	74.00	-25.72	Peak	Pass
15840.00	82.38	-42.74	39.64	54.00	-14.36	AVG	Pass
Test Channel: Middle channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10560.00	94.26	-45.08	49.18	74.00	-24.82	Peak	Pass
10560.00	94.26	-45.08	49.18	54.00	-4.82	AVG	Pass
15840.00	90.57	-42.74	47.83	74.00	-26.17	Peak	Pass
15840.00	81.93	-42.74	39.19	54.00	-14.81	AVG	Pass

Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10640.00	93.20	-44.97	48.23	74.00	-25.77	Peak	Pass
10640.00	93.20	-45.08	48.12	74.00	-25.88	AVG	Pass
15960.00	89.51	-42.63	46.88	74.00	-27.12	Peak	Pass
15960.00	80.87	-42.74	38.13	74.00	-35.87	AVG	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
10640.00	92.81	-44.97	47.84	74.00	-26.16	Peak	Pass
10640.00	92.81	-45.08	47.73	74.00	-26.27	AVG	Pass
15960.00	89.12	-42.63	46.49	74.00	-27.51	Peak	Pass
15960.00	80.48	-42.74	37.74	74.00	-36.26	AVG	Pass
Remark: Test frequency up to 40GHz and the emission levels of other frequencies are lower than the limit 20dB, not show in test report. Note:Margin=Level-Limit=Reading+factor-Limit							

Band 3: 5725 MHz - 5825 MHz							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11490.00	93.69	-44.70	48.99	74.00	-25.01	Peak	Pass
11490.00	82.99	-44.70	38.29	54.00	-15.71	AVG	Pass
17235.00	87.36	-40.61	46.75	68.20	-21.45	Peak	Pass
17235.00	76.73	-40.61	36.12	48.20	-12.08	AVG	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11490.00	93.97	-44.70	49.27	74.00	-24.73	Peak	Pass
11490.00	83.27	-44.70	38.57	54.00	-15.43	AVG	Pass
17235.00	87.64	-40.61	47.03	68.20	-21.17	Peak	Pass
17235.00	77.01	-40.61	36.40	48.20	-11.80	AVG	Pass
Test Channel: Middle channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11570.00	93.48	-44.64	48.84	74.00	-25.16	Peak	Pass
11570.00	82.78	-44.70	38.08	54.00	-15.92	AVG	Pass
17355.00	87.15	-40.55	46.60	68.20	-21.60	Peak	Pass
17355.00	76.52	-40.61	35.91	48.20	-12.29	AVG	Pass
Test Channel: Middle channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11570.00	93.02	-44.64	48.38	74.00	-25.62	Peak	Pass
11570.00	82.32	-44.70	37.62	54.00	-16.38	AVG	Pass
17355.00	86.69	-40.55	46.14	68.20	-22.06	Peak	Pass
17355.00	76.06	-40.61	35.45	48.20	-12.75	AVG	Pass

Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11650.00	97.63	-44.59	53.04	74.00	-20.96	Peak	Pass
11650.00	86.93	-44.70	42.23	54.00	-11.77	AVG	Pass
17475.00	91.30	-40.50	50.80	68.20	-17.40	Peak	Pass
17475.00	80.67	-40.61	40.06	48.20	-8.14	AVG	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
11650.00	97.28	-44.59	52.69	74.00	-21.31	Peak	Pass
11650.00	86.58	-44.70	41.88	54.00	-12.12	AVG	Pass
17475.00	90.95	-40.50	50.45	68.20	-17.75	Peak	Pass
17475.00	80.32	-40.61	39.71	48.20	-8.49	AVG	Pass
Remark: Test frequency up to 40GHz and the emission levels of other frequencies are lower than the limit 20dB, not show in test report. Note: Margin=Level-Limit=Reading+factor-Limit							

7 Test Setup Photos

Refer to Appendix - Test Setup Photos

8 EUT Constructional Details (EUT Photos)

Refer to Appendix - EUT External Photo and Appendix - EUT Internal Photo



BTF Testing Lab (Shenzhen) Co., Ltd.

101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China

www.btf-lab.com

-- END OF REPORT --