

FCC Test Report

Report No. : 1812C50021012502

Applicant : DDPAI Technology Co., Ltd.

Address 28F, Building 8A International Innovation Valley,

Nanshan District, Shenzhen, China

Product Name : Dash Cam

Report Date : Mar. 04, 2025





Contents

1. General Information	6
1.1. Client Information 1.2. Description of Device (EUT) 1.3. Auxiliary Equipment Used During Test 1.4. Operation channel list 1.5. Description of Test Modes	6 8 9
1.6. Measurement Uncertainty 1.7. Test Summary 1.8. Description of Test Facility 1.9. Disclaimer 1.10. Test Equipment List	11 12 12 13
2. Conducted Emission at AC power line	
2.1. EUT Operation	15
3. Duty Cycle	16
3.1. EUT Operation	16
4. Emission bandwidth and occupied bandwidth	17
4.1. EUT Operation 4.2. Test Setup 4.3. Test Data	18
5. Maximum conducted output power	
5.1. EUT Operation	19
6. Power spectral density	20
6.1. EUT Operation	20
7. Band edge emissions (Conducted)	21
7.1. EUT Operation	23
8. Band edge emissions (Radiated)	24
8.1. EUT Operation	26
9. Undesirable emission limits (below 1GHz)	30
9.1 FUT Operation	32



	9.2. Test Setup	33
	9.3. Test Data	34
10. l	Jndesirable emission limits (above 1GHz)	36
	10.1. EUT Operation	38
	10.2. Test Setup	38
	10.3. Test Data	39
APP	ENDIX I TEST SETUP PHOTOGRAPH	40
APP	ENDIX II EXTERNAL PHOTOGRAPH	40
APP	ENDIX III INTERNAL PHOTOGRAPH	40



Report No.:1812C50021012502

FCC ID: 2AJFX-Z60PRO

TEST REPORT

Applicant DDPAI Technology Co., Ltd.

Manufacturer DDPAI Technology Co., Ltd.

Dash Cam **Product Name**

DR2008, DR200801, DR200802, DR200803, DR200804, DR200805,

DR200806, DR200807, DR200808, DR200809, DR200810, DR200811, Model No.

DR200812, DR200813, DR200814, DR200815, DR200816, DR200817,

DR200818, DR200819

: DDPAI Trade Mark

Data of Descipti

: Input: 5V-2A Rating(s)

47 CFR Part 15E

: ANSI C63.10-2020 Test Standard(s)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

lan 15 2025

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt.	Jan. 15, 2025
Date of Test:	Jan. 15, 2025 to Feb. 05, 2025
Prepared By:	Tu 7u Hong
	(TuTu Hong)
Approved & Authorized Signer:	Augo Chen
	(Hugo Chen)



Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Mar. 04, 2025



1. General Information

1.1. Client Information

Applicant	:	DDPAI Technology Co., Ltd.
Address : 28F, Building 8A International Innovation Valley, Nanshan District, Shenzhen, China		
Manufacturer	:	DDPAI Technology Co., Ltd.
Address 28F, Building 8A International Innovation Valley, Nanshan District, Shenzhen, China		
Factory	:	DDPai vision equipment Co.,Ltd
Address : Building A, Futai Industrial Park, Qingfeng south Road, Keyuanche Tangxia Town, Dongguan city, Guangdong province, China		Building A, Futai Industrial Park, Qingfeng south Road, Keyuancheng, Tangxia Town, Dongguan city, Guangdong province, China

1.2. Description of Device (EUT)

Product Name	:	Dash Cam	
Model No.		DR2008, DR200801, DR200802, DR200803, DR200804, DR200805, DR200806, DR200807, DR200808, DR200809, DR200810, DR200811, DR200812, DR200813, DR200814, DR200815, DR200816, DR200817, DR200818, DR200819 (Note: All samples are the same except the model number, so we prepare "DR2008" for test only.)	
Trade Mark	:	DDPAI	
Test Power Supply	:	DC 12V/1.5A	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Adapter	:	N/A	
RF Specification			
Operation Frequency	:	802.11a/n(HT20)/ac(VHT20): U-NII Band 1: 5180MHz to 5240MHz; 802.11n(HT40)/ac(VHT40): U-NII Band 1: 5190MHz to 5230MHz; 802.11ac(VHT80): U-NII Band 1: 5210MHz;	
Number of Channel	:	802.11a/n(HT20)/ac(VHT20): U-NII Band 1: 4; 802.11n(HT40)/ac(VHT40): U-NII Band 1: 2; 802.11ac(VHT80): U-NII Band 1: 1; 802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM);	
Modulation Type	:	802.11a. OFDM(BPSK, QPSK, 16QAM, 64QAM);	





		802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM);
Device Type	:	Client Devices
DFS Type	:	Slave without radar detection
Antenna Type	:	FPC Antenna
Antenna Gain(Peak)	:	1.98dBi

Remark:

- (1) All of the RF specification are provided by customer.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
1	1	1	1



1.4. Operation channel list

Operation Band: 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	1	1	1	1		

1.5. Description of Test Modes

Pretest Modes	Descriptions
TM1	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.
TM2	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
ТМЗ	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
TM4	Keep the EUT works in normal operating mode and connect to companion device



1.6. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.2dB
Dwell Time	2%
Occupied Bandwidth	925Hz
Conducted Output Power	0.76dB
Power Spectral Density	0.76dB
Conducted Spurious Emission	1.24dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.64dB; 6G-18GHz: 4.82dB 18G-40GHz: 5.62dB
Radiated emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.70dB; Vertical: 4.42dB

The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

400-003-0500

www.anbotek.com



1.7. Test Summary

Test Items	Test Modes	Status
Conducted Emission at AC power line	1	N
Duty Cycle	Mode1,2,3	Р
Emission bandwidth and occupied bandwidth	Mode1,2,3	Р
Maximum conducted output power	Mode1,2,3	Р
Power spectral density	Mode1,2,3	Р
Band edge emissions (Conducted)	Mode1,2,3	Р
Band edge emissions (Radiated)	Mode1,2,3	Р
Undesirable emission limits (below 1GHz)	Mode1,2,3	Р
Undesirable emission limits (above 1GHz)	Mode1,2,3	Р
Note:	·	1

P: Pass

N: N/A, not applicable



1.8. Description of Test Facility

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

FCC-Registration No.:434132

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

1.9. Disclaimer

- The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- 2. The test report is invalid if there is any evidence and/or falsification.
- 3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- 4. This document may not be altered or revised in any way unless done so by Anbotek 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 authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.



1.10. Test Equipment List

Cond	Conducted Emission at AC power line					
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2024-09-09	2025-09-08
2	Three Phase V- type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	2025-01-13	2026-01-12
3	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	1	1
4	EMI Test Receiver(CE2#)	Rohde & Schwarz	ESPI3	100926	2024-09-09	2025-09-08

Maximum conducted output power

Power spectral density

Band edge emissions (Conducted)

Duty Cycle

Emission bandwidth and occupied bandwidth

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ- KHWS80B	N/A	2024-10-14	2025-10-13
2	DC Power Supply	IVYTECH	IV3605	1804D360 510	2024-09-09	2025-09-08
3	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102150	2024-05-06	2025-05-05
4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY505318 23	2024-09-09	2025-09-08
5	Oscilloscope	Tektronix	MDO3012	C020298	2024-10-10	2025-10-09
6	MXG RF Vector Signal Generator	Agilent	N5182A	MY474206 47	2025-02-05	2026-02-04



	Band edge emissions (Radiated) Undesirable emission limits (above 1GHz)					
Item					Cal.Due Date	
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2025-01-14	2026-01-13
2	EMI Preamplifier	SKET Electronic	LNPA- 0118G-45	SKET-PA- 002	2025-01-13	2026-01-12
3	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
4	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	1	1
5	Horn Antenna	A-INFO	LB-180400- KF	J2110606 28	2024-01-22	2027-01-21
6	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102150	2024-05-06	2025-05-05
7	Amplifier	Talent Microwave	TLLA18G40 G-50-30	23022802	2024-05-07	2025-05-06

Unde	Undesirable emission limits (below 1GHz)					
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2025-01-14	2026-01-13
2	Pre-amplifier	SONOMA	310N	186860	2025-01-14	2026-01-13
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Loop Antenna (9K-30M)	Schwarzbeck	FMZB1519 B	00053	2024-09-12	2025-09-11
5	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	1	1



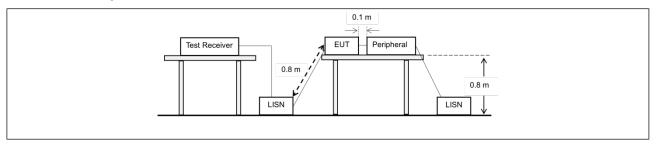
2. Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)		
	Frequency of emission (MHz)	Conducted limit (dBµV)	
		Quasi-peak	Average
T (12)	0.15-0.5	66 to 56*	56 to 46*
Test Limit:	0.5-5	56	46
	5-30	60	50
	*Decreases with the logarithm of	the frequency.	
Test Method:	ANSI C63.10-2020 section 6.2		

2.1. EUT Operation

Operating Envir	Operating Environment:				
Test mode:	1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report. 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.				

2.2. Test Setup



2.3. Test Data

Not Applicable



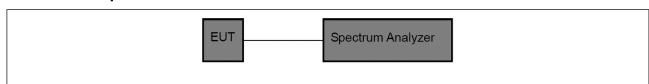
3. Duty Cycle

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 Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2020 section 12.2 (b)
Procedure:	 i) Set the center frequency of the instrument to the center frequency of the transmission. ii) Set RBW >= EBW if possible; otherwise, set RBW to the largest available value. iii) Set VBW >= 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.

3.1. EUT Operation

Operating Envi	Operating Environment:			
Test mode:	1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report. 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.			

3.2. Test Setup



3.3. Test Data

Tempera	ure: 22.3 °C	Humidity:	40 %	Atmospheric Pressure:	101 kPa
---------	--------------	-----------	------	-----------------------	---------



4. Emission bandwidth and occupied bandwidth

Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5
	Emission bandwidth: a) Set RBW = approximately 1% of the emission bandwidth. b) Set the VBW > RBW. c) Detector = peak. d) Trace mode = max hold. e) 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:
	a) 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.b) 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.
Procedure:	c) Set the reference level of the instrument as required, keeping the signal from exceeding the
Procedure.	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.
	d) Step a) through step c) might require iteration to adjust within the specified range.
	e) 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.
	f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
	g) 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

Shenzhen Anbotek Compliance Laboratory Limited

War, ribr

Report No.:1812C50021012502

FCC ID: 2AJFX-Z60PRO

total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies. h) 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).

4.1. EUT Operation

Operating Environment:

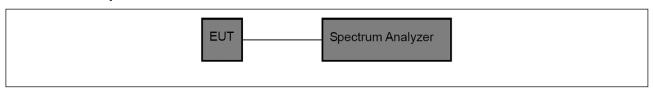
1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

4.2. Test Setup



4.3. Test Data

	Temperature:	22.3 °C	Humidity:	40 %	Atmospheric Pressure:	101 kPa
--	--------------	---------	-----------	------	-----------------------	---------



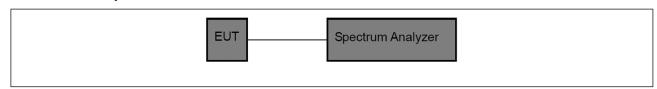
5. Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(1)(iv)
Test Limit:	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.
Test Method:	ANSI C63.10-2020, section 12.4
Procedure:	Refer to ANSI C63.10-2020 section 12.4

5.1. EUT Operation

Operating Environment:							
Test mode:	1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report. 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.						

5.2. Test Setup



5.3. Test Data

Temperature: 22.3 °C Humidity: 40 % Atmospheric Pressure: 101 kPa





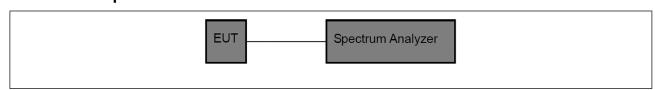
6. Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(iv)
Test Limit:	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.
Test Method:	ANSI C63.10-2020, section 12.6
Procedure:	Refer to ANSI C63.10-2020, section 12.6

6.1. EUT Operation

Operating Environment:							
Test mode:	1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report. 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report. 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.						

6.2. Test Setup



6.3. Test Data

Tei	mperature:	22.3 °C	Humidity:	40 %	Atmospheric Pressure:	101 kPa
-----	------------	---------	-----------	------	-----------------------	---------





7. Band edge emissions (Conducted)

47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(10)						
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.						
MHz	MHz	MHz	GHz			
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15			
10.495-0.505	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						
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 § 15.209shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209shall be demonstrated based on the average value of the measured						
using measurement in detector. Above 1000 15.209shall be demon	strumentation emplo MHz, compliance wit strated based on the	ying a CISPR qual thathe emission li average value o	emonstrated lasi-peak mits in § of the measured			
using measurement in detector. Above 1000	strumentation emplo MHz, compliance wit strated based on the ons in § 15.35apply sewhere in this subpa	ying a CISPR qualith the emission line average value of these measurers, the emission of strength levels	emonstrated lasi-peak mits in § of the measured ements. s from an			
	MHz 0.090-0.110 10.495-0.505 2.1735-2.1905 4.125-4.128 4.17725-4.17775 4.20725-4.20775 6.215-6.218 6.26775-6.26825 6.31175-6.31225 8.291-8.294 8.362-8.366 8.37625-8.38675 8.41425-8.41475 12.29-12.293 12.51975-12.52025 12.57675-12.57725 13.36-13.41 1 Until February 1, 199 2 Above 38.6 The field strength of elenot exceed the limits services and services are services as a service of the limits of the services are services as a services are services a	MHz 0.090-0.110 16.42-16.423 10.495-0.505 16.69475- 16.69525 2.1735-2.1905 16.80425- 16.80475 4.125-4.128 25.5-25.67 4.17725-4.17775 37.5-38.25 4.20725-4.20775 73-74.6 6.215-6.218 6.26775-6.26825 108-121.94 6.31175-6.31225 123-138 8.291-8.294 149.9-150.05 8.362-8.366 156.52475- 156.52525 8.37625-8.38675 156.7-156.9 8.41425-8.41475 162.0125-167.17 12.29-12.293 167.72-173.2 12.51975-12.52025 12.57675-12.57725 322-335.4 13.36-13.41 1 Until February 1, 1999, this restricted ban 2 Above 38.6 The field strength of emissions appearing what exceed the limits shown in § 15.209. At	MHz MHz MHz 0.090-0.110 16.42-16.423 399.9-410 1 0.495-0.505 16.69475-16.69525 608-614 2.1735-2.1905 16.80425-16.69525 960-1240 4.125-4.128 25.5-25.67 1300-1427 4.17725-4.17775 37.5-38.25 1435-1626.5 4.20725-4.20775 73-74.6 1645.5-1646.5 6.215-6.218 74.8-75.2 1660-1710 6.26775-6.26825 108-121.94 1718.8-1722.2 6.31175-6.31225 123-138 2200-2300 8.291-8.294 149.9-150.05 2310-2390 8.362-8.366 156.52475-156.9 2483.5-2500 8.37625-8.38675 156.7-156.9 2690-2900 8.41425-8.41475 162.0125-167.17 3260-3267 12.29-12.293 167.72-173.2 3332-3339 12.51975-12.52025 240-285 3345.8-3358 12.57675-12.57725 322-335.4 3600-4400 13.36-13.41 1 1 Until February 1, 1999, this restricted band shall be 0.490-2 2 Above 38.6 The f			





	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
		ragraph (g), fundamental emiss	
	frequency bands 54-72 MH However, operation within sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-190 kHz, 110–490 kHz and	ing under this section shall not be lz, 76-88 MHz, 174-216 MHz or these frequency bands is permit is 15.231 and 15.241. It is the tighter limit applies at the late in the above table are based on peak detector except for the free above 1000 MHz. Radiated emisted on measurements employing	470-806 MHz. ted under other pand edges. measurements quency bands 9– ssion limits in
Test Method:	ANSI C63.10-2020, section	1 12.7.4, 12.7.6, 12.7.7	
Procedure:	meters above the ground a was rotated 360 degrees to b. The EUT was set 3 meters which was mounted on the c. The antenna height is varying ground to determine the may and vertical polarizations of d. For each suspected emister and then the antenna was street frequency of below 301 and the rotatable table was maximum reading. e. The test-receiver system Bandwidth with Maximum F. If the emission level of the limit specified, then testing would be reported. Otherwit would be re-tested one by and then reported in a data g. Test the EUT in the lower channel. h. The radiation measurem Transmitting mode, and for case. i. Repeat above procedures Remark: 1. Level= Read Level+ Cata 2. Scan from 18GHz to 400 The points marked on above when testing, so only above	e EUT in peak mode was 10dB could be stopped and the peak ise the emissions that did not had one using peak or average methors sheet. The est channel, the middle channel, wents are performed in X, Y, Z award the X axis positioning which is until all frequencies measured only be a loss of the disturbance above 180 are plots are the highest emission in points had been displayed. The radiator which are attenuated	ber. The table ighest radiation. ecciving antenna, a tower. ers above the th. Both horizontal e measurement. its worst case 4 meters (for the heights 1 meter) legrees to find the on and Specified lower than the values of the EUT ave 10dB margin and as specified the Highest kis positioning for it is the worst was complete. The proctor of the could be found to a specified amplitude of the could be found to a specified the manufacture of the could be found to amplitude of the could be found to the could





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.

7.1. EUT Operation

Operating Environment:

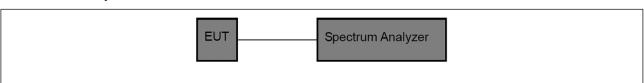
1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

7.2. Test Setup



7.3. Test Data

Temperature:	22.3 °C	Humidity:	40 %	Atmospheric Pressure:	101 kPa
--------------	---------	-----------	------	-----------------------	---------





8. Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(10)					
	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.					
	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		
Test Limit:	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					
	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 § 15.209shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209shall be demonstrated based on the average value of the measured					
	detector. Above 1000 15.209shall be demon	MHz, compliance wit strated based on the	h the emission li average value o	uasi-peak imits in § of the measured		
	detector. Above 1000	MHz, compliance wit strated based on the ions in § 15.35apply sewhere in this subpa	th the emission life average value of these measurers, the emission distrength levels	uasi-peak imits in § of the measured ements. s from an		
	detector. Above 1000 15.209shall be demon emissions. The provisi Except as provided els intentional radiator sha following table:	MHz, compliance with strated based on the strated based on the strated based on the strated based on the sewhere in this subpart of the field strength	th the emission life average value of these measurers, the emission distrength levels	uasi-peak Imits in § of the measured ements. s from an s specified in the Measurement distance		





ntional radiators operati juency bands 54-72 MH vever, operation within t	30 100 ** 150 ** 200 ** 500 ragraph (g), fundamental emissing under this section shall not be	30 3 3 3 3 ons from
-216 6-960 ove 960 except as provided in pa ntional radiators operati juency bands 54-72 MH vever, operation within t	150 ** 200 ** 500 ragraph (g), fundamental emissing under this section shall not be	3 3 3
6-960 cove 960 except as provided in pa ntional radiators operati puency bands 54-72 MH vever, operation within t	200 ** 500 ragraph (g), fundamental emissing under this section shall not be	3
ove 960 except as provided in pa ntional radiators operati puency bands 54-72 MH vever, operation within t	500 ragraph (g), fundamental emission ng under this section shall not be	3
except as provided in pa ntional radiators operati puency bands 54-72 MH vever, operation within t	ragraph (g), fundamental emissing under this section shall not be	
ntional radiators operati juency bands 54-72 MH vever, operation within t	ng under this section shall not be	ons from
vever, operation within t	z 76-88 MHz 174-216 MHz or /	e located in the
ne emission table above e emission limits shown i bloying a CISPR quasi-p kHz, 110–490 kHz and a se three bands are base	hese frequency bands is permitt § 15.231 and 15.241.	470-806 MHz. ed under other and edges. measurements uency bands 9– sion limits in
SI C63.10-2020, section	12.7.4, 12.7.6, 12.7.7	
for above 1GHz, the EU ters above the ground at a rotated 360 degrees to the EUT was set 3 meters above the antenna height is valued to determine the material vertical polarizations of for each suspected emistation the antenna was to frequency of below 30N the rotatable table was kimum reading. The test-receiver system adwidth with Maximum Hathe emission level of the tapecified, then testing all doe re-tested one by the properties of the first the EUT in the lower neal. The radiation measurement is material to 400 testing mode, and four elements above procedures mark: Level = Read Level + Cab are points marked on above the testing, so only above rious emissions from the	t a 3 meter fully-anechoic chamble determine the position of the highest away from the interference-retop of a variable-height antennaried from one meter to four meter aximum value of the field strength the antenna are set to make the sion, the EUT was arranged to it uned to heights from 1 meter to MHz, the antenna was tuned to he turned from 0 degrees to 360 degr	per. The table ghest radiation. Inceiving antenna, tower. It is above the period and the measurement. Its worst case to the measurement of the measurement of the measurement. Its worst case to find the meights 1 meter) regrees to find the measurement of the EUT of the measurement of the EUT of the measurement of the
	the emission table above the emission limits shown in ploying a CISPR quasi-packer, 110–490 kHz and a see three bands are base ector. SI C63.10-2020, section ove 1GHz: For above 1GHz: For above 1GHz, the EU ters above the ground at a rotated 360 degrees to the EUT was set 3 meters and to determine the mail and the earlier of below 30 km and the end to the end t	SI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7 Eve 1GHz: For above 1GHz, the EUT was placed on the top of a rotaters above the ground at a 3 meter fully-anechoic chambes rotated 360 degrees to determine the position of the highest the EUT was set 3 meters away from the interference-rech was mounted on the top of a variable-height antenna the antenna height is varied from one meter to four meter and to determine the maximum value of the field strength of vertical polarizations of the antenna are set to make the for each suspected emission, the EUT was arranged to a then the antenna was tuned to heights from 1 meter to a frequency of below 30MHz, the antenna was tuned to he the rotatable table was turned from 0 degrees to 360 degrinum reading. The test-receiver system was set to Peak Detect Function and the mission level of the EUT in peak mode was 10dB let to specified, then testing could be stopped and the peak would be reported. Otherwise the emissions that did not have all the reported in a data sheet. The radiation measurements are performed in X, Y, Z axinsmitting mode, and found the X axis positioning which is element above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second above procedures until all frequencies measured to the second account and the second account all the second account and the second account and the second account and the second account account and the second account and the second account and the second account account and the second account account account account as a second account and the second account ac



- 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.

8.1. EUT Operation

Operating Environment:

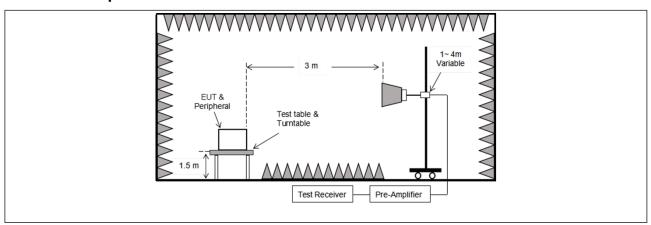
1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

8.2. Test Setup





8.3. Test Data

Temperature:	22.3 °C	Humidity:	40 %	Atmospheric Pressure:	101 kPa
--------------	---------	-----------	------	-----------------------	---------

TM1 / Band: 5150-5250 MHz / BW: 20 / L								
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector	
5150.00	37.04	15.99	53.03	68.20	-15.17	Н	Peak	
5150.00	39.13	15.99	55.12	68.20	-13.08	V	Peak	
5150.00	26.96	15.99	42.95	54.00	-11.05	Н	AVG	
5150.00	29.03	15.99	45.02	54.00	-8.98	V	AVG	
		TM1 / B	and: 5150-52	250 MHz / BV	V: 20 / H			
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector	
5250.00	37.47	16.43	53.90	68.20	-14.30	Н	Peak	
5250.00	40.46	16.43	56.89	68.20	-11.31	V	Peak	
5250.00	28.82	16.43	45.25	54.00	-8.75	Н	AVG	
5250.00	29.69	16.43	46.12	54.00	-7.88	V	AVG	

Remark: 1. Result=Reading + Factor

	TM2 / Band: 5150-5250 MHz / BW: 20 / L									
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5150.00	35.97	15.99	51.96	68.20	-16.24	Н	Peak			
5150.00	37.38	15.99	53.37	68.20	-14.83	V	Peak			
5150.00	26.69	15.99	42.68	54.00	-11.32	Н	AVG			
5150.00	27.67	15.99	43.66	54.00	-10.34	V	AVG			
		TM2 / B	and: 5150-52	250 MHz / BV	V: 20 / H					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5250.00	37.80	16.43	54.23	68.20	-13.97	Н	Peak			
5250.00	38.83	16.43	55.26	68.20	-12.94	V	Peak			
5250.00	27.84	16.43	44.27	54.00	-9.73	Н	AVG			
5250.00	29.31	16.43	45.74	54.00	-8.26	V	AVG			

Remark: 1. Result=Reading + Factor



	TM2 / Band: 5150-5250 MHz / BW: 40 / L									
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5150.00	36.54	15.99	52.53	68.20	-15.67	Н	Peak			
5150.00	38.38	15.99	54.37	68.20	-13.83	V	Peak			
5150.00	27.12	15.99	43.11	54.00	-10.89	Н	AVG			
5150.00	28.77	15.99	44.76	54.00	-9.24	V	AVG			
		TM2 / B	and: 5150-52	250 MHz / BV	V: 40 / H					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5250.00	38.12	16.43	54.55	68.20	-13.65	Н	Peak			
5250.00	36.97	16.43	53.40	68.20	-14.80	V	Peak			
5250.00	28.37	16.43	44.80	54.00	-9.20	Н	AVG			
5250.00	29.58	16.43	46.01	54.00	-7.99	٧	AVG			

Remark: 1. Result=Reading + Factor

	TM3 / Band: 5150-5250 MHz / BW: 20 / L									
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5150.00	37.01	15.99	53.00	68.20	-15.20	Н	Peak			
5150.00	38.77	15.99	54.76	68.20	-13.44	V	Peak			
5150.00	26.60	15.99	42.59	54.00	-11.41	Н	AVG			
5150.00	28.81	15.99	44.80	54.00	-9.20	V	AVG			
		TM3 / B	and: 5150-52	250 MHz / BV	V: 20 / H					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5250.00	37.92	16.43	54.35	68.20	-13.85	Н	Peak			
5250.00	38.16	16.43	54.59	68.20	-13.61	V	Peak			
5250.00	27.84	16.43	44.27	54.00	-9.73	Н	AVG			
5250.00	28.43	16.43	44.86	54.00	-9.14	V	AVG			

Remark: 1. Result=Reading + Factor



	TM3 / Band: 5150-5250 MHz / BW: 40 / L										
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector				
5150.00	35.95	15.99	51.94	68.20	-16.26	Н	Peak				
5150.00	36.37	15.99	52.36	68.20	-15.84	V	Peak				
5150.00	26.16	15.99	42.15	54.00	-11.85	Н	AVG				
5150.00	26.87	15.99	42.86	54.00	-11.14	V	AVG				
		TM3 / B	and: 5150-52	250 MHz / BV	V: 40 / H						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector				
5250.00	38.09	16.43	54.52	68.20	-13.68	Н	Peak				
5250.00	37.22	16.43	53.65	68.20	-14.55	V	Peak				
5250.00	27.53	16.43	43.96	54.00	-10.04	Н	AVG				
5250.00	27.56	16.43	43.99	54.00	-10.01	V	AVG				

Remark: 1. Result=Reading + Factor

	TM3 / Band: 5150-5250 MHz / BW: 80 / L									
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5150.00	36.06	15.99	52.05	68.20	-16.15	Н	Peak			
5150.00	36.51	15.99	52.50	68.20	-15.70	V	Peak			
5150.00	26.66	15.99	42.65	54.00	-11.35	Н	AVG			
5150.00	26.89	15.99	42.88	54.00	-11.12	V	AVG			
		TM3 / B	and: 5150-52	250 MHz / BV	V: 80 / H					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector			
5250.00	38.37	16.43	54.80	68.20	-13.40	Н	Peak			
5250.00	37.50	16.43	53.93	68.20	-14.27	V	Peak			
5250.00	28.88	16.43	45.31	54.00	-8.69	Н	AVG			
5250.00	28.16	16.43	44.59	54.00	-9.41	V	AVG			

Remark: 1. Result=Reading + Factor



9. Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)						
	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				
Test Limit:	88-216	150 **	3				
	216-960	200 **	3				
	Above 960	500	3				
	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.						
Test Method:	ANSI C63.10-2020, sec	tion 12.7.4, 12.7.5					
Procedure:	meters above the groun was rotated 360 degree b. The EUT was set 3 o antenna, which was mo c. The antenna height is ground to determine the and vertical polarization d. For each suspected e and then the antenna w test frequency of below and the rotatable table waximum reading. e. The test-receiver syst Bandwidth with Maximuf. If the emission level of	EUT was placed on the top of d at a 3 meter semi-anechoic is to determine the position of a 10 meters away from the integrated on the top of a variable-strain value of the field is softhe antenna are set to make the field in the field fi	chamber. The table the highest radiation. erference-receiving theight antenna tower. It meters above the trength. Both horizontal ake the measurement. He to its worst case the to 4 meters (for the led to heights 1 meter) 360 degrees to find the function and Specified 10dB lower than the				





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.

9.1. EUT Operation

Operating Environment:

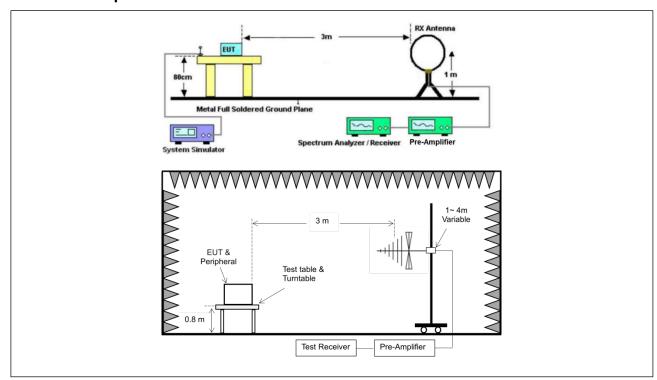
1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

- 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
- 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.



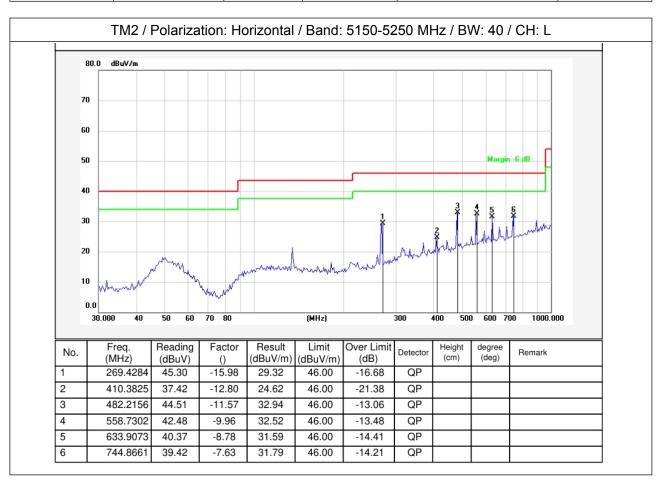
9.2. Test Setup





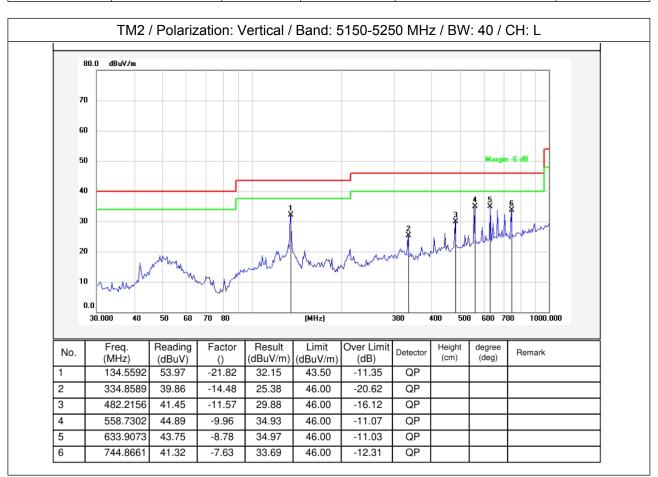
9.3. Test Data

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.





Т	emperature:	26.5 °C	Humidity:	51 %	Atmospheric Pressure:	101 kPa	
---	-------------	---------	-----------	------	-----------------------	---------	--



Note: Only the worst case data was showed in the report.



10. Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b 47 CFR Part 15.407(b	, , ,						
		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.						
	MHz	MHz	MHz	GHz				
	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15				
	10.495-0.505	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				
Test Limit:	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 §							
	15.209shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35apply 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		Measuremen				
		(microvolts/me	eter)	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				
	intentional radiators or frequency bands 54-72 However, operation wis sections of this part, e. In the emission table a The emission limits shemploying a CISPR qu 90 kHz, 110–490 kHz these three bands are detector.	* Except as provided in paragraph (g), fundamental emissions from ntentional radiators operating under this section shall not be located in the requency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other ections 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—10 kHz, 110—490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average letector.					
Test Method:	ANSI C63.10-2020, se	ection 12.7.4, 12.7.6, 12.7.7					
Procedure:	meters above the grouwas rotated 360 degree. b. The EUT was set 3 which was mounted or c. The antenna height ground to determine the and vertical polarization d. For each suspected and then the antenna test frequency of belowand the rotatable table maximum reading. e. The test-receiver sy Bandwidth with Maxim f. If the emission level limit specified, then test would be reported. Oth would be re-tested one and then reported in a g. Test the EUT in the channel. h. The radiation measuransmitting mode, an case. i. Repeat above proceines. I. Level= Read Level+ 2. Scan from 18GHz to The points marked on when testing, so only a series.	of the EUT in peak mode was sting could be stopped and the nerwise the emissions that did by one using peak or average	c chamber. The table of the highest radiation. The tence-receiving antenna, antenna tower. Our meters above the strength. Both horizontal make the measurement. Inged to its worst case meter to 4 meters (for the ned to heights 1 meter) of 360 degrees to find the Function and Specified at 10dB lower than the repeak values of the EUT of not have 10dB marging method as specified mannel, the Highest of the Worst assured was complete. The Preamp Factor ove 18GHz was very low. In missions could be found yed. The amplitude of				

Report No.:1812C50021012502

FCC ID: 2AJFX-Z60PRO

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.

10.1. EUT Operation

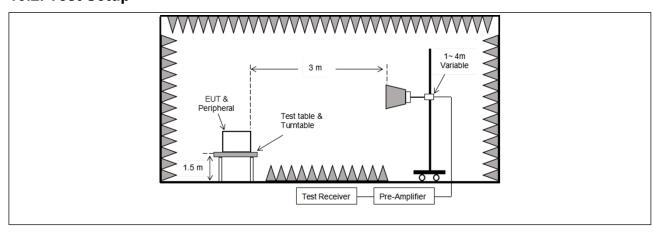
Operating Environment:

1: 802.11a mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

- 2: 802.11n mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
- 3: 802.11ac mode: Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

10.2. Test Setup





10.3. Test Data

	TM2 / Band: 5150-5250 MHz / BW: 40 / CH: L								
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector		
10380.00	29.60	23.81	53.41	68.20	-14.79	V	Peak		
15570.00	30.92	28.91	59.83	68.20	-8.37	V	Peak		
10380.00	30.75	23.81	54.56	68.20	-13.64	Н	Peak		
15570.00	31.56	28.91	60.47	68.20	-7.73	Н	Peak		
10380.00	20.34	23.81	44.15	54.00	-9.85	V	AVG		
15570.00	20.83	28.91	49.74	54.00	-4.26	V	AVG		
10380.00	20.70	23.81	44.51	54.00	-9.49	Н	AVG		
15570.00	21.00	28.91	49.91	54.00	-4.09	Н	AVG		
		TM2 / Ban	d: 5150-5250	MHz / BW:	40 / CH: H				
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector		
10460.00	29.96	23.80	53.76	68.20	-14.44	V	Peak		
15690.00	31.13	30.03	61.16	68.20	-7.04	V	Peak		
10460.00	30.46	23.80	54.26	68.20	-13.94	Н	Peak		
15690.00	31.69	30.03	61.72	68.20	-6.48	Н	Peak		
10460.00	20.59	23.80	44.39	54.00	-9.61	V	AVG		
15690.00	20.74	30.03	50.77	54.00	-3.23	V	AVG		
10460.00	20.50	23.80	44.30	54.00	-9.70	Н	AVG		
15690.00	20.66	30.03	50.69	54.00	-3.31	Н	AVG		

Remark:

- 1. Result =Reading + Factor
- 2. Only the worst case (802.11n40) is recorded in the report.
- 3. Test frequency are from 1GHz to 40GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph_RF

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

