FCC Test Report

Applicant	:	**SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.**
Address	:	**Bld.2, Yingfeng Industrial Zone, Tantou Community, Songgang Street, Bao'an, Shenzhen, China.**
Product Name	:	**Smart Home**
Report Date	:	**Jun. 24, 2024**

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Manufacturer	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Product Name	:	Smart Home
Test Model No.	:	SMT156
Reference Model No.	:	SMT97, SMT101
Trade Mark	:	N/A
Rating(s)	:	SMT156: DC Input: 12V⎓ 2A POE Input: 48V⎓ SMT97/SMT101: DC Input: 12V⎓ 1.5A POE Input: 48V⎓
Test Standard(s)	:	**47 CFR Part 15E** **ANSI C63.10-2020** **KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

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: Mar. 12, 2024

Date of Test: Mar. 12, 2024 to May 21, 2024

Prepared By: Ella Liang

(Ella Liang)

Approved & Authorized Signer: Edward pan

(Edward Pan)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Jun. 24, 2024

1. General Information

1.1. Client Information

Applicant	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2, Yingfeng Industrial Zone, Tantou Community, Songgang Street, Bao'an, Shenzhen, China.
Manufacturer	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2, Yingfeng Industrial Zone, Tantou Community, Songgang Street, Bao'an, Shenzhen, China.
Factory	:	SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.
Address	:	Bld.2, Yingfeng Industrial Zone, Tantou Community, Songgang Street, Bao'an, Shenzhen, China.

1.2. Description of Device (EUT)

Product Name	:	Smart Home
Test Model No.	:	SMT156
Reference Model No.	:	SMT97, SMT101 (Note: According to the model differences on page 7, we prepare "SMT156" for all tests, and prepared SMT97, SMT101 for conducted emission and radiated spurious emissions (below 1GHz) difference testing.)
Trade Mark	:	N/A
Test Power Supply	:	DC 12V from adapter input AC 120V/60Hz
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
RF Specification		
Operation Frequency	:	802.11a/n(HT20)/ac(VHT20)/ax(HEW20): U-NII Band 1: 5180MHz to 5240MHz; U-NII Band 3: 5745MHz to 5825MHz; 802.11n(HT40)/ac(VHT40)/ax(HEW40): U-NII Band 1: 5190MHz to 5230MHz; U-NII Band 3: 5755MHz to 5795MHz; 802.11ac(VHT80)/ax(HEW80): U-NII Band 1: 5210MHz; U-NII Band 3: 5775MHz
Number of Channel	:	802.11a/n(HT20)/ac(VHT20)/ax(HEW20): U-NII Band 1: 4; U-NII Band 3: 5; 802.11n(HT40)/ac(VHT40)/ax(HEW40): U-NII Band 1: 2; U-NII Band 3: 2;

		802.11ac(VHT80)/ax(HEW80): U-NII Band 1: 1; U-NII Band 3: 1
Modulation Type	:	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)
Antenna Type	:	FPC Antenna
Antenna Gain(Peak)	:	Wi-Fi 5.2G: 2.08dBi Wi-Fi 5.8G: 1.7dBi
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.		

Model differences

Model	Display screen size	Input	Adapter
SMT156	15.6-inch	DC Input: 12V⎓ 2A POE Input: 48V⎓	Manufacturer: SHENZHEN FUJIA APPLIANCE CO., LTD. Model No.: FJ-SW126G1202000U Input: 100-240V~50/60Hz 0.6A Max Output: 12V⎓ 2A
SMT97	9.7-inch	DC Input: 12V⎓ 1.5A POE Input: 48V⎓	Manufacturer: SHENZHEN FUJIA APPLIANCE CO., LTD. Model No.: FJ-SW126G1201500U Input: 100-240V~50/60Hz 0.6A Max Output: 12V⎓ 1.5A
SMT101	10.1-inch		

1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

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	/	/	/	/

Operation Band: 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	/	/	/	/

1.5. Description of Test Modes

Pretest Modes	Descriptions
TM1	Keep the EUT 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 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.
TM3	Keep the EUT 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 in continuously transmitting mode with 802.11ax 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.

1.6. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.4dB
Conducted Output Power	0.76dB
Power Spectral Density	0.76dB
Occupied Bandwidth	925Hz
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
Radiated emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB
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.	

1.7. Test Summary

Test Items	Test Modes	Status
Conducted Emission at AC power line	Mode1,2,3,4	P
Duty Cycle	Mode1,2,3,4	P
Maximum conducted output power	Mode1,2,3,4	P
Power spectral density	Mode1,2,3,4	P
Emission bandwidth and occupied bandwidth	Mode1,2,3,4	P
Band edge emissions (Radiated)	Mode1,2,3,4	P
Band edge emissions (Conducted)	Mode1,2,3,4	P
Undesirable emission limits (below 1GHz)	Mode1,2,3,4	P
Undesirable emission limits (above 1GHz)	Mode1,2,3,4	P
Note: 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.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

1.9. Disclaimer

1. 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

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	2024-01-18	2025-01-17
2	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	2024-01-17	2025-01-16
3	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/
4	EMI Test Receiver	Rohde & Schwarz	ESPI3	100926	2023-10-12	2024-10-11

Duty Cycle Maximum conducted output power Power spectral density Emission bandwidth and occupied bandwidth Band edge emissions (Conducted)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	2023-10-16	2024-10-15
2	DC Power Supply	IVYTECH	IV3605	1804D360510	2023-10-20	2024-10-19
3	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY50531823	2024-02-22	2025-02-21
5	Oscilloscope	Tektronix	MDO3012	C020298	2023-10-12	2024-10-11
6	MXG RF Vector Signal Generator	Agilent	N5182A	MY47420647	2024-02-04	2025-02-03

Band edge emissions (Radiated) Undesirable emission limits (above 1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
2	EMI Preamplifier	SKET Electronic	LNPA-0118G-45	SKET-PA-002	2024-01-17	2025-01-16
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	/	/
5	Horn Antenna	A-INFO	LB-180400-KF	J211060628	2023-10-12	2024-10-11
6	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
7	Amplifier	Talent Microwave	TLLA18G40G-50-30	23022802	2023-05-25	2024-05-24

Undesirable emission limits (below 1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
2	Pre-amplifier	SONOMA	310N	186860	2024-01-17	2025-01-16
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Loop Antenna (9K-30M)	Schwarzbeck	FMZB1519B	00053	2023-10-12	2024-10-11
5	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	/	/

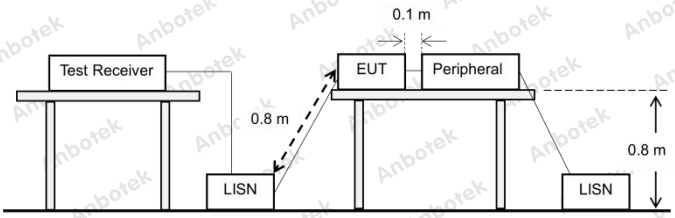
2. Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)
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 Method:	ANSI C63.10-2020 section 6.2

2.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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.

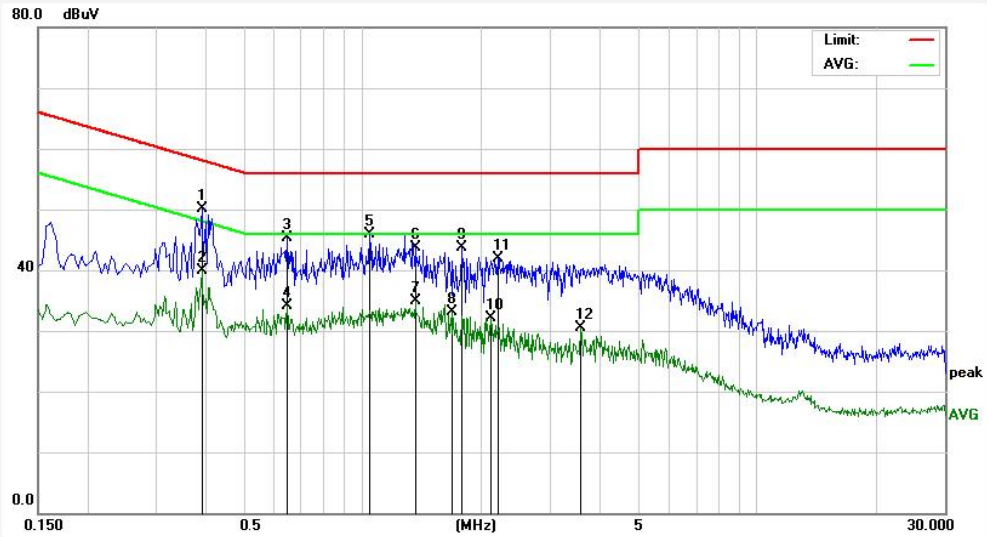
2.2. Test Setup



2.3. Test Data

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT156				

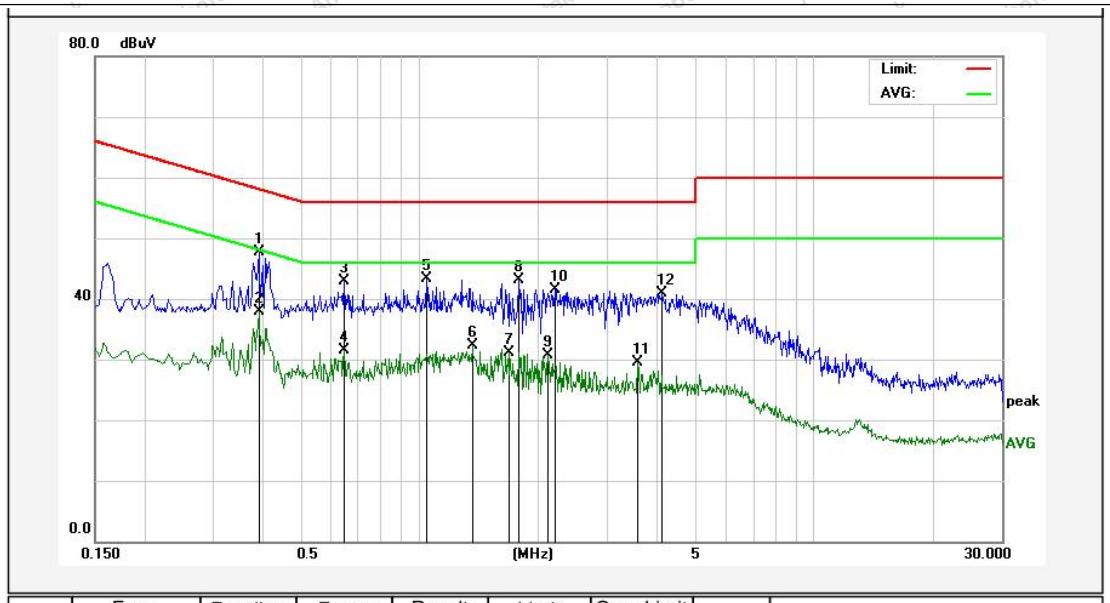
TM4 / Line: Line / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3899	32.32	17.81	50.13	58.06	-7.93	QP	
2	0.3899	22.06	17.81	39.87	48.06	-8.19	AVG	
3	0.6460	27.50	17.87	45.37	56.00	-10.63	QP	
4	0.6460	16.20	17.87	34.07	46.00	-11.93	AVG	
5	1.0460	27.97	17.86	45.83	56.00	-10.17	QP	
6	1.3619	25.77	17.86	43.63	56.00	-12.37	QP	
7	1.3619	17.02	17.86	34.88	46.00	-11.12	AVG	
8	1.6937	15.25	17.85	33.10	46.00	-12.90	AVG	
9	1.7900	25.79	17.86	43.65	56.00	-12.35	QP	
10	2.1179	14.33	17.85	32.18	46.00	-13.82	AVG	
11	2.2019	24.10	17.85	41.95	56.00	-14.05	QP	
12	3.5659	12.72	17.86	30.58	46.00	-15.42	AVG	

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT156				

TM4 / Line: Neutral / Band: 5150-5250 MHz / BW: 80

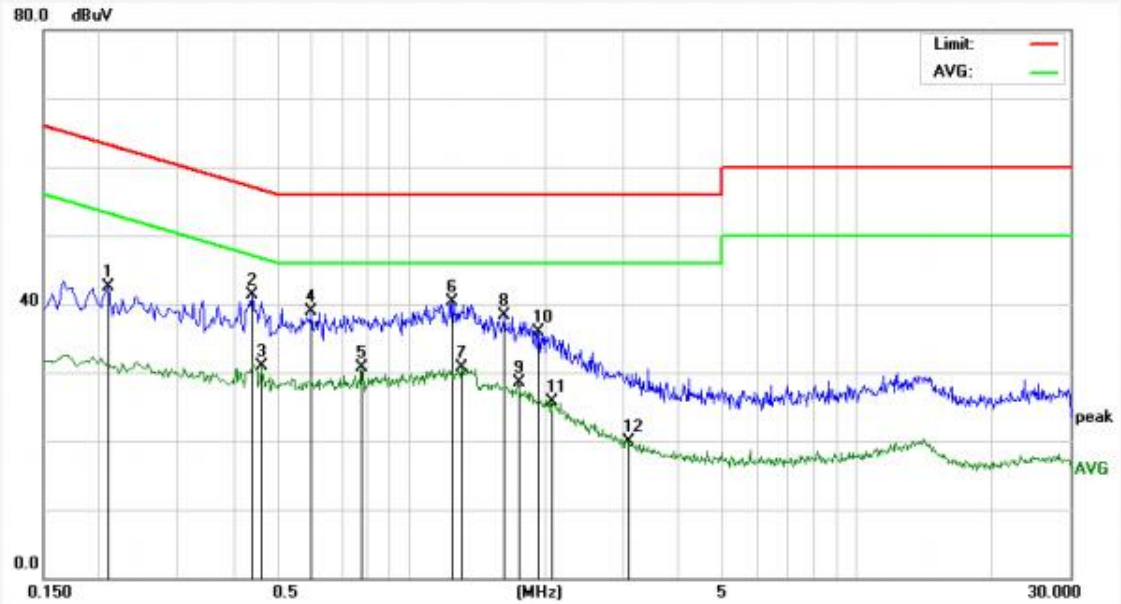


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3899	29.82	17.81	47.63	58.06	-10.43	QP	
2	0.3899	20.06	17.81	37.87	48.06	-10.19	AVG	
3	0.6460	25.00	17.87	42.87	56.00	-13.13	QP	
4	0.6460	13.70	17.87	31.57	46.00	-14.43	AVG	
5	1.0460	25.47	17.86	43.33	56.00	-12.67	QP	
6	1.3619	14.52	17.86	32.38	46.00	-13.62	AVG	
7	1.6937	13.25	17.85	31.10	46.00	-14.90	AVG	
8	1.7900	25.29	17.86	43.15	56.00	-12.85	QP	
9	2.1179	12.83	17.85	30.68	46.00	-15.32	AVG	
10	2.2019	23.60	17.85	41.45	56.00	-14.55	QP	
11	3.5659	11.72	17.86	29.58	46.00	-16.42	AVG	
12	4.1177	23.09	17.85	40.94	56.00	-15.06	QP	

Note: Only record the worst data (802.11ax(HEW80)) in the report.

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT97				

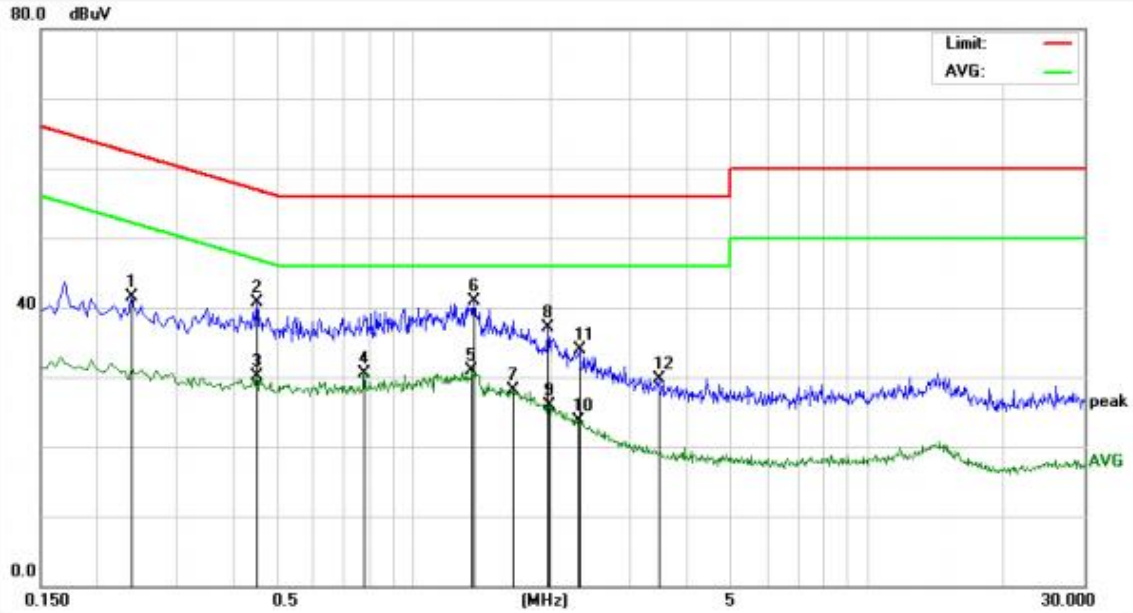
TM4 / Line: Line / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2100	24.65	17.83	42.48	63.20	-20.72	QP	
2	0.4420	23.49	17.83	41.32	57.02	-15.70	QP	
3	0.4620	13.02	17.83	30.85	46.66	-15.81	AVG	
4	0.5980	20.98	17.86	38.84	56.00	-17.16	QP	
5	0.7780	12.83	17.86	30.69	46.00	-15.31	AVG	
6	1.2380	22.54	17.84	40.38	56.00	-15.62	QP	
7	1.2980	12.79	17.84	30.63	46.00	-15.37	AVG	
8	1.6220	20.44	17.84	38.28	56.00	-17.72	QP	
9	1.7420	10.63	17.84	28.47	46.00	-17.53	AVG	
10	1.9300	18.11	17.83	35.94	56.00	-20.06	QP	
11	2.0620	7.79	17.83	25.62	46.00	-20.38	AVG	
12	3.0820	2.04	17.84	19.88	46.00	-26.12	AVG	

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT97				

TM4 / Line: Neutral / Band: 5150-5250 MHz / BW: 80

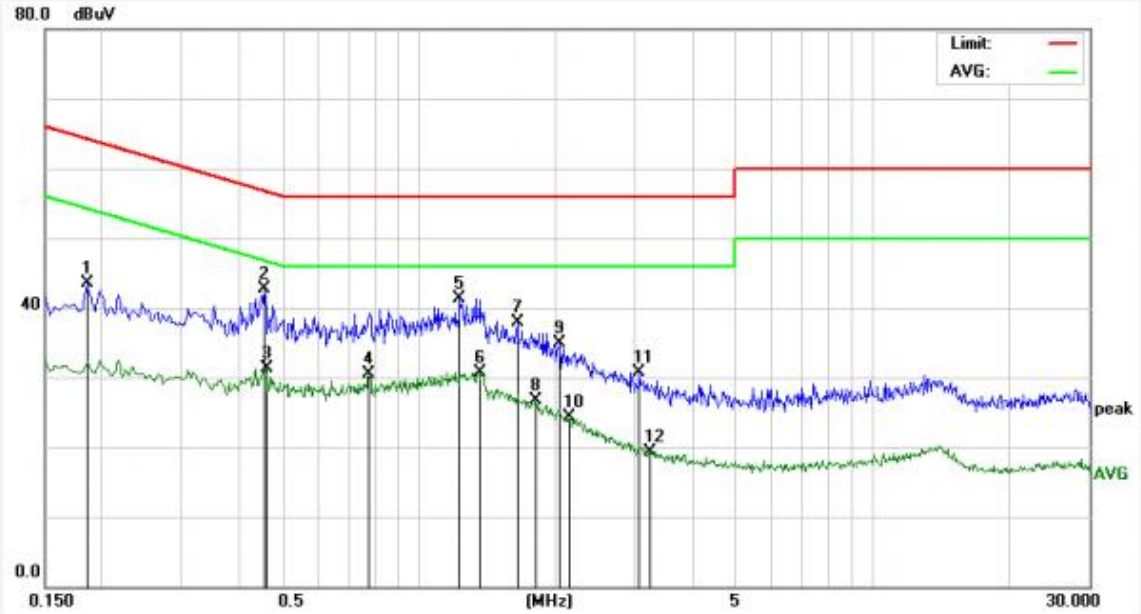


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2380	23.75	17.83	41.58	62.16	-20.58	QP	
2	0.4500	22.95	17.83	40.78	56.87	-16.09	QP	
3	0.4500	12.25	17.83	30.08	46.87	-16.79	AVG	
4	0.7780	12.60	17.86	30.46	46.00	-15.54	AVG	
5	1.3380	13.04	17.84	30.88	46.00	-15.12	AVG	
6	1.3540	22.99	17.84	40.83	56.00	-15.17	QP	
7	1.6460	10.29	17.84	28.13	46.00	-17.87	AVG	
8	1.9740	19.34	17.83	37.17	56.00	-18.83	QP	
9	1.9860	8.10	17.83	25.93	46.00	-20.07	AVG	
10	2.2980	5.86	17.83	23.69	46.00	-22.31	AVG	
11	2.3140	16.08	17.83	33.91	56.00	-22.09	QP	
12	3.4660	11.92	17.84	29.76	56.00	-26.24	QP	

Note: Only record the worst data (802.11ax(HEW80)) in the report.

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT101				

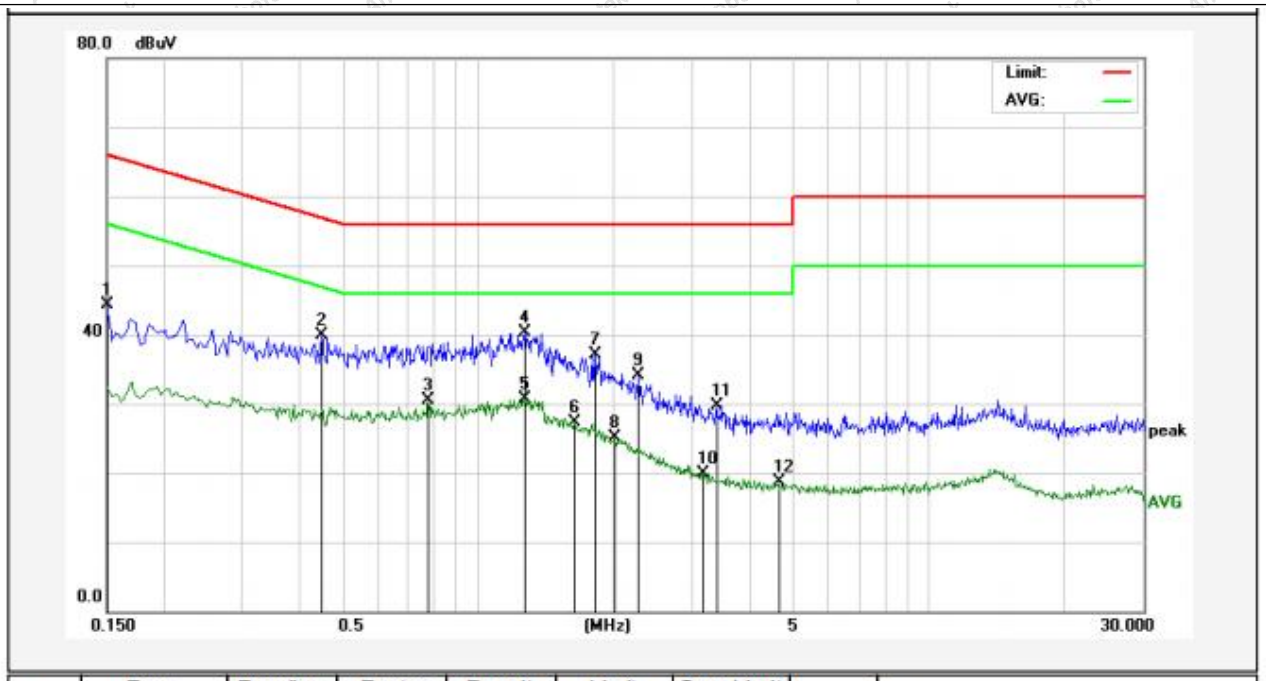
TM4 / Line: Line / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1860	25.60	17.83	43.43	64.21	-20.78	QP	
2	0.4580	24.88	17.83	42.71	56.73	-14.02	QP	
3	0.4620	13.39	17.83	31.22	46.66	-15.44	AVG	
4	0.7780	12.73	17.86	30.59	46.00	-15.41	AVG	
5	1.2340	23.53	17.84	41.37	56.00	-14.63	QP	
6	1.3660	12.92	17.84	30.76	46.00	-15.24	AVG	
7	1.6500	20.11	17.84	37.95	56.00	-18.05	QP	
8	1.8100	8.91	17.84	26.75	46.00	-19.25	AVG	
9	2.0460	16.98	17.83	34.81	56.00	-21.19	QP	
10	2.1619	6.52	17.83	24.35	46.00	-21.65	AVG	
11	3.0579	12.86	17.84	30.70	56.00	-25.30	QP	
12	3.2300	1.55	17.84	19.39	46.00	-26.61	AVG	

Temperature:	24.1 °C	Humidity:	52.6 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT101				

TM4 / Line: Neutral / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	26.52	17.82	44.34	66.00	-21.66	QP	
2	0.4500	22.01	17.83	39.84	56.87	-17.03	QP	
3	0.7780	12.63	17.86	30.49	46.00	-15.51	AVG	
4	1.2700	22.51	17.84	40.35	56.00	-15.65	QP	
5	1.2700	12.94	17.84	30.78	46.00	-15.22	AVG	
6	1.6420	9.46	17.84	27.30	46.00	-18.70	AVG	
7	1.8220	19.34	17.84	37.18	56.00	-18.82	QP	
8	2.0140	7.21	17.83	25.04	46.00	-20.96	AVG	
9	2.2780	16.18	17.83	34.01	56.00	-21.99	QP	
10	3.1700	2.14	17.84	19.98	46.00	-26.02	AVG	
11	3.3980	11.91	17.84	29.75	56.00	-26.25	QP	
12	4.6659	0.88	17.85	18.73	46.00	-27.27	AVG	

Note: Only record the worst data (802.11ax(HEW80)) in the report.

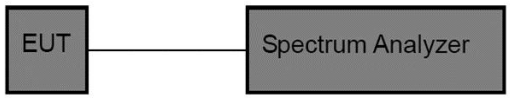
3. Duty Cycle

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 Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.

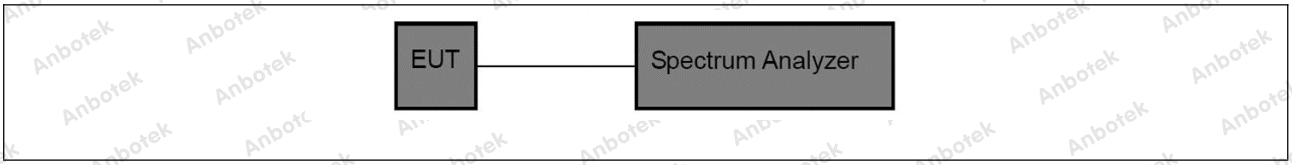
4. Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
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. 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.
Test Method:	ANSI C63.10-2013, section 12.4
Procedure:	Refer to ANSI C63.10-2020 section 12.4

4.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.

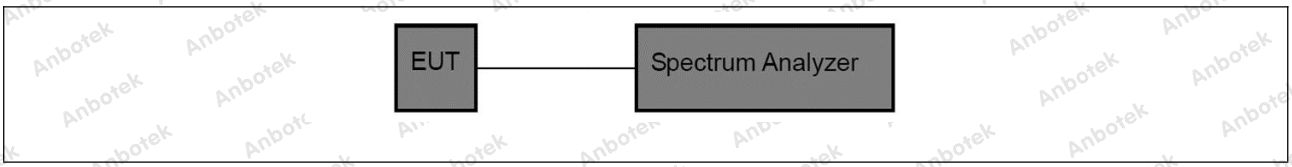
5. Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
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. 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.
Test Method:	ANSI C63.10-2020, section 12.6
Procedure:	Refer to ANSI C63.10-2020, section 12.6

5.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.

6. Emission bandwidth and occupied bandwidth

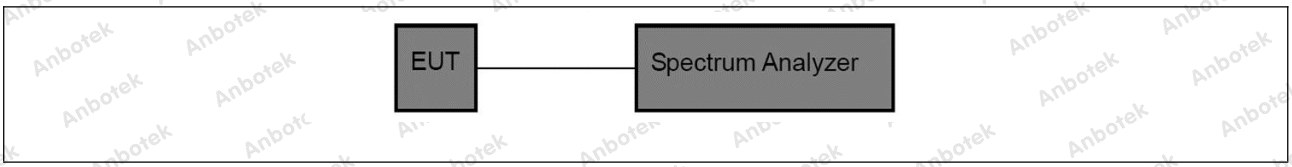
Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2
Procedure:	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. c) 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. 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 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). 6 dB emission bandwidth: a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) ≥ 3 >= RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) 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.

6.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.

7. Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)
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 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 § 15.209shall 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

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 (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.

Test Method: ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7

Procedure:

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.

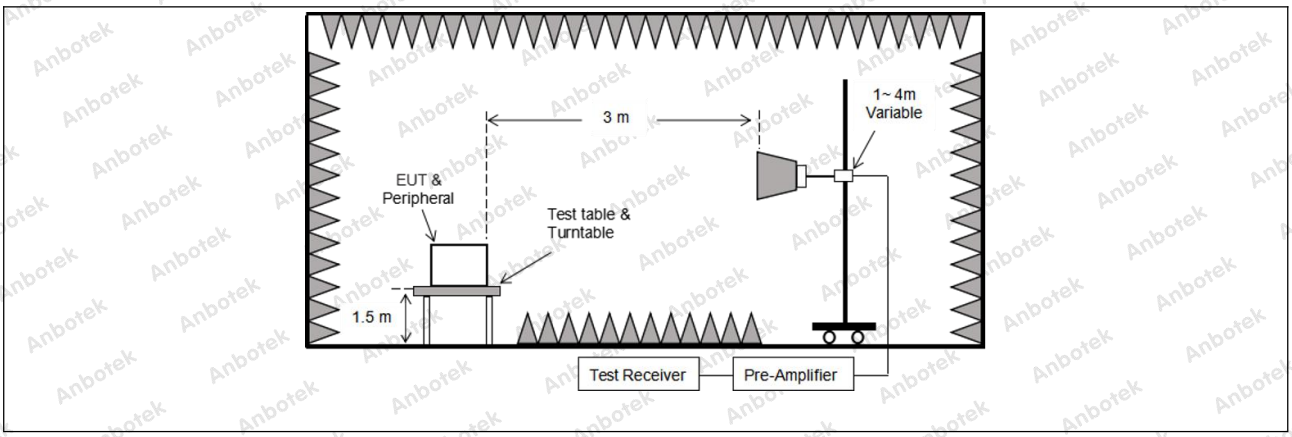
g. Test the EUT in the lowest channel, the middle channel, the Highest

	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.

7.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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:	25.3 °C	Humidity:	49 %	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	36.80	15.99	52.79	68.20	-15.41	H	Peak
5150.00	38.84	15.99	54.83	68.20	-13.37	V	Peak
5150.00	26.79	15.99	42.78	54.00	-11.22	H	AVG
5150.00	28.79	15.99	44.78	54.00	-9.22	V	AVG
TM1 / Band: 5150-5250 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.30	16.43	53.73	68.20	-14.47	H	Peak
5250.00	40.13	16.43	56.56	68.20	-11.64	V	Peak
5250.00	28.56	16.43	44.99	54.00	-9.01	H	AVG
5250.00	29.52	16.43	45.95	54.00	-8.05	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	35.81	15.99	51.80	68.20	-16.40	H	Peak
5150.00	37.16	15.99	53.15	68.20	-15.05	V	Peak
5150.00	26.53	15.99	42.52	54.00	-11.48	H	AVG
5150.00	27.54	15.99	43.53	54.00	-10.47	V	AVG
TM2 / Band: 5150-5250 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.60	16.43	54.03	68.20	-14.17	H	Peak
5250.00	38.67	16.43	55.10	68.20	-13.10	V	Peak
5250.00	27.62	16.43	44.05	54.00	-9.95	H	AVG
5250.00	29.02	16.43	45.45	54.00	-8.55	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	36.28	15.99	52.27	68.20	-15.93	H	Peak
5150.00	38.14	15.99	54.13	68.20	-14.07	V	Peak
5150.00	26.83	15.99	42.82	54.00	-11.18	H	AVG
5150.00	28.66	15.99	44.65	54.00	-9.35	V	AVG
TM2 / Band: 5150-5250 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.95	16.43	54.38	68.20	-13.82	H	Peak
5250.00	36.86	16.43	53.29	68.20	-14.91	V	Peak
5250.00	28.08	16.43	44.51	54.00	-9.49	H	AVG
5250.00	29.25	16.43	45.68	54.00	-8.32	V	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	36.72	15.99	52.71	68.20	-15.49	H	Peak
5150.00	38.44	15.99	54.43	68.20	-13.77	V	Peak
5150.00	26.44	15.99	42.43	54.00	-11.57	H	AVG
5150.00	28.57	15.99	44.56	54.00	-9.44	V	AVG
TM3 / Band: 5150-5250 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.76	16.43	54.19	68.20	-14.01	H	Peak
5250.00	38.03	16.43	54.46	68.20	-13.74	V	Peak
5250.00	27.64	16.43	44.07	54.00	-9.93	H	AVG
5250.00	28.14	16.43	44.57	54.00	-9.43	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	35.69	15.99	51.68	68.20	-16.52	H	Peak
5150.00	36.20	15.99	52.19	68.20	-16.01	V	Peak
5150.00	25.79	15.99	41.78	54.00	-12.22	H	AVG
5150.00	26.61	15.99	42.60	54.00	-11.40	V	AVG
TM3 / Band: 5150-5250 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.87	16.43	54.30	68.20	-13.90	H	Peak
5250.00	37.06	16.43	53.49	68.20	-14.71	V	Peak
5250.00	27.37	16.43	43.80	54.00	-10.20	H	AVG
5250.00	27.21	16.43	43.64	54.00	-10.36	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	35.90	15.99	51.89	68.20	-16.31	H	Peak
5150.00	36.18	15.99	52.17	68.20	-16.03	V	Peak
5150.00	26.31	15.99	42.30	54.00	-11.70	H	AVG
5150.00	26.65	15.99	42.64	54.00	-11.36	V	AVG
TM3 / Band: 5150-5250 MHz / BW: 80 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	38.04	16.43	54.47	68.20	-13.73	H	Peak
5250.00	37.24	16.43	53.67	68.20	-14.53	V	Peak
5250.00	28.48	16.43	44.91	54.00	-9.09	H	AVG
5250.00	27.92	16.43	44.35	54.00	-9.65	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / 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	36.76	15.99	52.75	68.20	-15.45	H	Peak
5150.00	38.79	15.99	54.78	68.20	-13.42	V	Peak
5150.00	26.75	15.99	42.74	54.00	-11.26	H	AVG
5150.00	28.75	15.99	44.74	54.00	-9.26	V	AVG
TM4 / Band: 5150-5250 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.26	16.43	53.69	68.20	-14.51	H	Peak
5250.00	40.07	16.43	56.50	68.20	-11.70	V	Peak
5250.00	28.51	16.43	44.94	54.00	-9.06	H	AVG
5250.00	29.48	16.43	45.91	54.00	-8.09	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / 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	35.78	15.99	51.77	68.20	-16.43	H	Peak
5150.00	37.12	15.99	53.11	68.20	-15.09	V	Peak
5150.00	26.50	15.99	42.49	54.00	-11.51	H	AVG
5150.00	27.51	15.99	43.50	54.00	-10.50	V	AVG
TM4 / Band: 5150-5250 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.57	16.43	54.00	68.20	-14.20	H	Peak
5250.00	38.64	16.43	55.07	68.20	-13.13	V	Peak
5250.00	27.58	16.43	44.01	54.00	-9.99	H	AVG
5250.00	28.97	16.43	45.40	54.00	-8.60	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / 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	36.23	15.99	52.22	68.20	-15.98	H	Peak
5150.00	38.10	15.99	54.09	68.20	-14.11	V	Peak
5150.00	26.78	15.99	42.77	54.00	-11.23	H	AVG
5150.00	28.64	15.99	44.63	54.00	-9.37	V	AVG
TM4 / Band: 5150-5250 MHz / BW: 80 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.91	16.43	54.34	68.20	-13.86	H	Peak
5250.00	36.84	16.43	53.27	68.20	-14.93	V	Peak
5250.00	28.03	16.43	44.46	54.00	-9.54	H	AVG
5250.00	29.19	16.43	45.62	54.00	-8.38	V	AVG

Remark: 1. Result=Reading + Factor

TM1 / Band: 5725-5850 MHz / BW: 20 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.30	16.37	54.67	68.20	-13.53	H	Peak
5725.00	39.73	16.37	56.10	68.20	-12.10	V	Peak
5725.00	29.13	16.70	45.83	54.00	-8.17	H	AVG
5725.00	30.25	16.70	46.95	54.00	-7.05	V	AVG
TM1 / Band: 5725-5850 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	39.27	17.21	56.48	68.20	-11.72	H	Peak
5850.00	39.66	17.21	56.87	68.20	-11.33	V	Peak
5850.00	29.23	17.21	46.44	54.00	-7.56	H	AVG
5850.00	29.22	17.21	46.43	54.00	-7.57	V	AVG

Remark: 1. Result=Reading + Factor

TM2 / Band: 5725-5850 MHz / BW: 20 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.29	17.05	55.34	68.20	-12.86	H	Peak
5725.00	38.90	17.05	55.95	68.20	-12.25	V	Peak
5725.00	27.67	17.05	44.72	54.00	-9.28	H	AVG
5725.00	28.23	17.05	45.28	54.00	-8.72	V	AVG
TM2 / Band: 5725-5850 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.51	17.21	54.72	68.20	-13.48	H	Peak
5850.00	38.09	17.21	55.30	68.20	-12.90	V	Peak
5850.00	27.82	17.21	45.03	54.00	-8.97	H	AVG
5850.00	28.60	17.21	45.81	54.00	-8.19	V	AVG

Remark: 1. Result=Reading + Factor

TM2 / Band: 5725-5850 MHz / BW: 40 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.87	17.05	54.92	68.20	-13.28	H	Peak
5725.00	38.78	17.05	55.83	68.20	-12.37	V	Peak
5725.00	27.15	17.05	44.20	54.00	-9.80	H	AVG
5725.00	28.47	17.05	45.52	54.00	-8.48	V	AVG
TM2 / Band: 5725-5850 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.23	17.21	55.44	68.20	-12.76	H	Peak
5850.00	38.57	17.21	55.78	68.20	-12.42	V	Peak
5850.00	28.41	17.21	45.62	54.00	-8.38	H	AVG
5850.00	29.47	17.21	46.68	54.00	-7.32	V	AVG

Remark: 1. Result=Reading + Factor

TM3 / Band: 5725-5850 MHz / BW: 20 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.49	17.05	54.54	68.20	-13.66	H	Peak
5725.00	37.58	17.05	54.63	68.20	-13.57	V	Peak
5725.00	28.37	17.05	45.42	54.00	-8.58	H	AVG
5725.00	29.24	17.05	46.29	54.00	-7.71	V	AVG
TM3 / Band: 5725-5850 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.23	17.21	55.44	68.20	-12.76	H	Peak
5850.00	39.09	17.21	56.30	68.20	-11.90	V	Peak
5850.00	28.08	17.21	45.29	54.00	-8.71	H	AVG
5850.00	29.20	17.21	46.41	54.00	-7.59	V	AVG

Remark: 1. Result=Reading + Factor

TM3 / Band: 5725-5850 MHz / BW: 40 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	36.42	17.05	53.47	68.20	-14.73	H	Peak
5725.00	37.91	17.05	54.96	68.20	-13.24	V	Peak
5725.00	27.65	17.05	44.70	54.00	-9.30	H	AVG
5725.00	28.33	17.05	45.38	54.00	-8.62	V	AVG
TM3 / Band: 5725-5850 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.76	17.21	54.97	68.20	-13.23	H	Peak
5850.00	38.64	17.21	55.85	68.20	-12.35	V	Peak
5850.00	27.77	17.21	44.98	54.00	-9.02	H	AVG
5850.00	27.43	17.21	44.64	54.00	-9.36	V	AVG

Remark: 1. Result=Reading + Factor

TM3 / Band: 5725-5850 MHz / BW: 80 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	35.69	17.05	52.74	68.20	-15.46	H	Peak
5725.00	37.25	17.05	54.30	68.20	-13.90	V	Peak
5725.00	26.76	17.05	43.81	54.00	-10.19	H	AVG
5725.00	27.28	17.05	44.33	54.00	-9.67	V	AVG
TM3 / Band: 5725-5850 MHz / BW: 80 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.81	17.21	55.02	68.20	-13.18	H	Peak
5850.00	38.06	17.21	55.27	68.20	-12.93	V	Peak
5850.00	28.26	17.21	45.47	54.00	-8.53	H	AVG
5850.00	28.42	17.21	45.63	54.00	-8.37	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / Band: 5725-5850 MHz / BW: 20 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.26	16.37	54.63	68.20	-13.57	H	Peak
5725.00	39.68	16.37	56.05	68.20	-12.15	V	Peak
5725.00	29.10	16.70	45.80	54.00	-8.20	H	AVG
5725.00	30.22	16.70	46.92	54.00	-7.08	V	AVG
TM4 / Band: 5725-5850 MHz / BW: 20 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	39.23	17.21	56.44	68.20	-11.76	H	Peak
5850.00	39.61	17.21	56.82	68.20	-11.38	V	Peak
5850.00	29.19	17.21	46.40	54.00	-7.60	H	AVG
5850.00	29.19	17.21	46.40	54.00	-7.60	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / Band: 5725-5850 MHz / BW: 40 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.24	17.05	55.29	68.20	-12.91	H	Peak
5725.00	38.85	17.05	55.90	68.20	-12.30	V	Peak
5725.00	27.65	17.05	44.70	54.00	-9.30	H	AVG
5725.00	28.20	17.05	45.25	54.00	-8.75	V	AVG
TM4 / Band: 5725-5850 MHz / BW: 40 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.47	17.21	54.68	68.20	-13.52	H	Peak
5850.00	38.05	17.21	55.26	68.20	-12.94	V	Peak
5850.00	27.76	17.21	44.97	54.00	-9.03	H	AVG
5850.00	28.55	17.21	45.76	54.00	-8.24	V	AVG

Remark: 1. Result=Reading + Factor

TM4 / Band: 5725-5850 MHz / BW: 80 / L							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.82	17.05	54.87	68.20	-13.33	H	Peak
5725.00	38.73	17.05	55.78	68.20	-12.42	V	Peak
5725.00	27.12	17.05	44.17	54.00	-9.83	H	AVG
5725.00	28.45	17.05	45.50	54.00	-8.50	V	AVG
TM4 / Band: 5725-5850 MHz / BW: 80 / H							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.18	17.21	55.39	68.20	-12.81	H	Peak
5850.00	38.54	17.21	55.75	68.20	-12.45	V	Peak
5850.00	28.37	17.21	45.58	54.00	-8.42	H	AVG
5850.00	29.43	17.21	46.64	54.00	-7.36	V	AVG

Remark: 1. Result=Reading + Factor

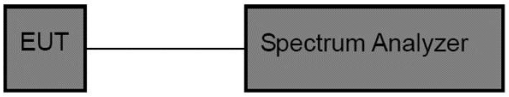
8. Band edge emissions (Conducted)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2)
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.
Test Method:	Peak emission levels are measured by setting the instrument as follows: RBW = 1 MHz. VBW ≥ [3 × RBW] Detector = peak. Sweep time = auto. Trace mode = max hold.

8.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.

9. Undesirable emission limits (below 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15.407(b)(9)</td></tr>
<tr><td>Test Limit:</td><td>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:
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** 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.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2020, section 12.7.4, 12.7.5</td></tr>
<tr><td>Procedure:</td><td>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</td></tr>
</table>

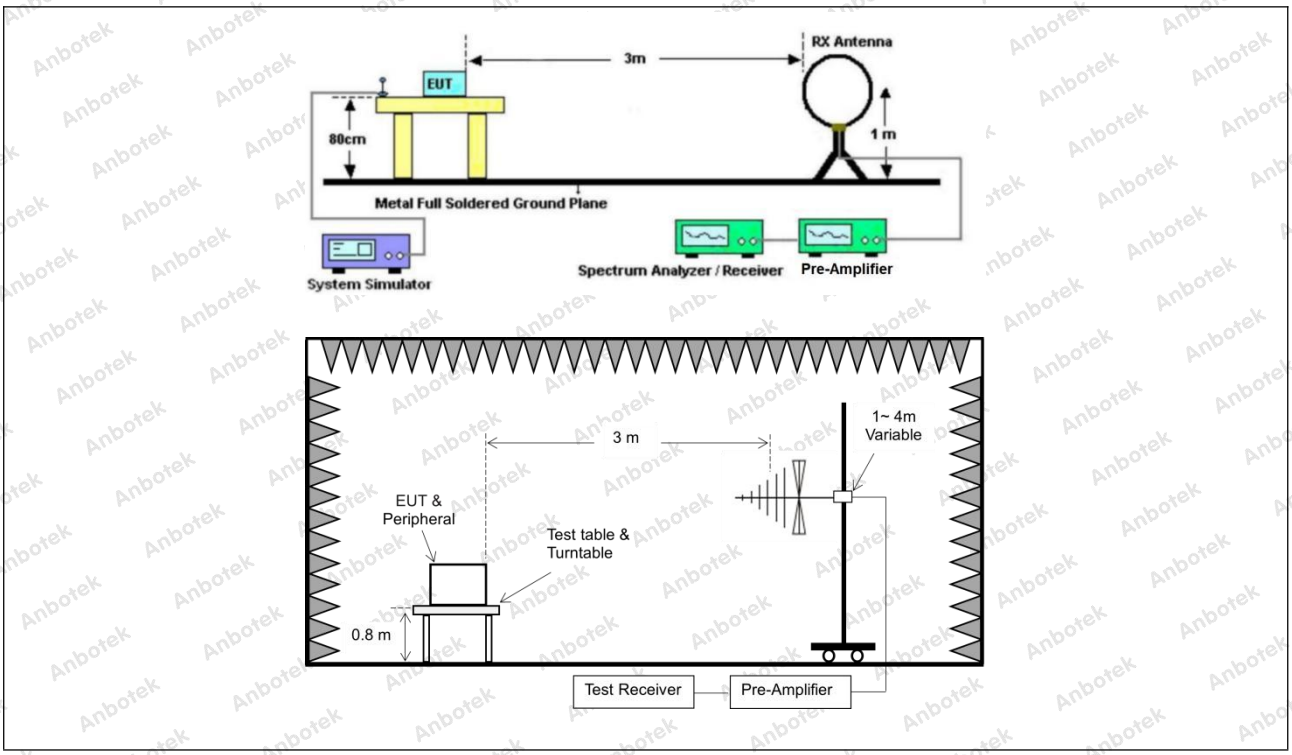
	would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in 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:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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.

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT156				

TM4 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 80

No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	100.2286	43.38	-17.28	26.10	43.50	-17.40	QP			
2	138.3873	47.85	-21.57	26.28	43.50	-17.22	QP			
3	189.7385	46.78	-19.08	27.70	43.50	-15.80	QP			
4	215.2678	51.17	-17.86	33.31	43.50	-10.19	QP			
5	419.1081	46.25	-12.66	33.59	46.00	-12.41	QP			
6	524.5541	40.42	-10.71	29.71	46.00	-16.29	QP			

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT156				

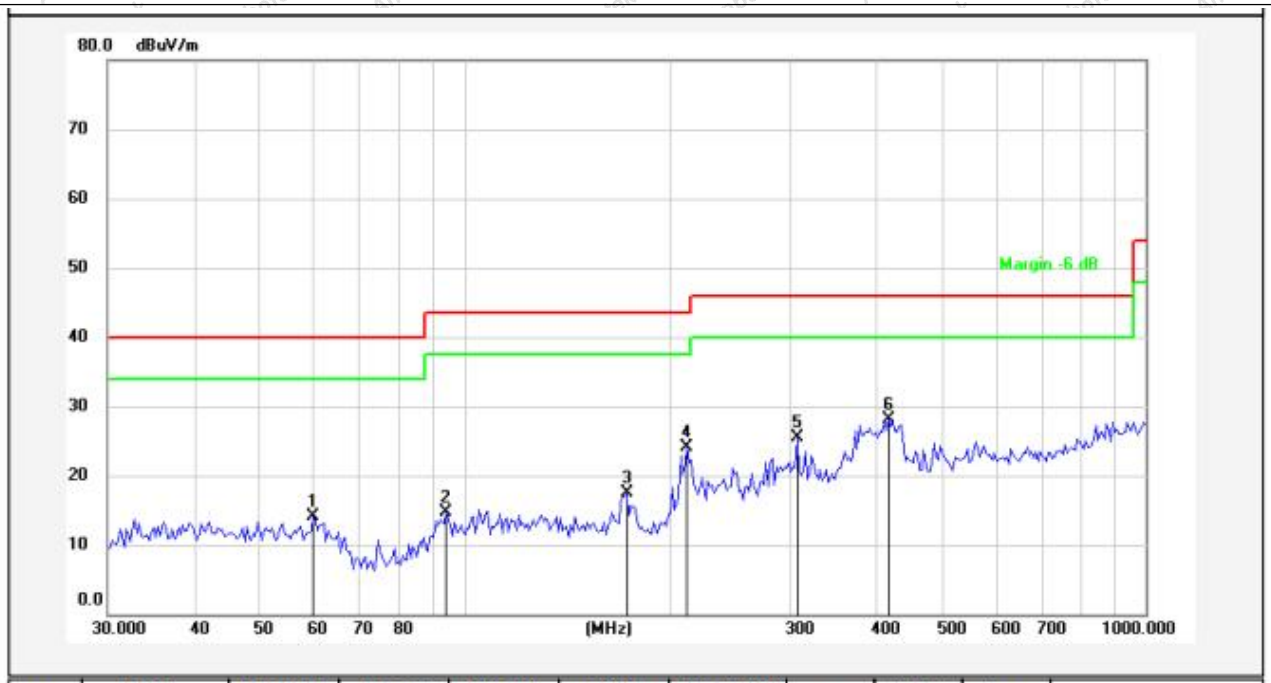
TM4 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 80

No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	59.2325	42.45	-17.88	24.57	40.00	-15.43	QP			
2	134.5592	48.91	-21.36	27.55	43.50	-15.95	QP			
3	226.0994	42.28	-17.42	24.86	46.00	-21.14	QP			
4	382.5879	47.81	-13.38	34.43	46.00	-11.57	QP			
5	513.6331	48.77	-10.96	37.81	46.00	-8.19	QP			
6	625.0780	47.94	-8.83	39.11	46.00	-6.89	QP			

Note: Only record the worst data (802.11ax(HEW80)) in the report.

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT97				

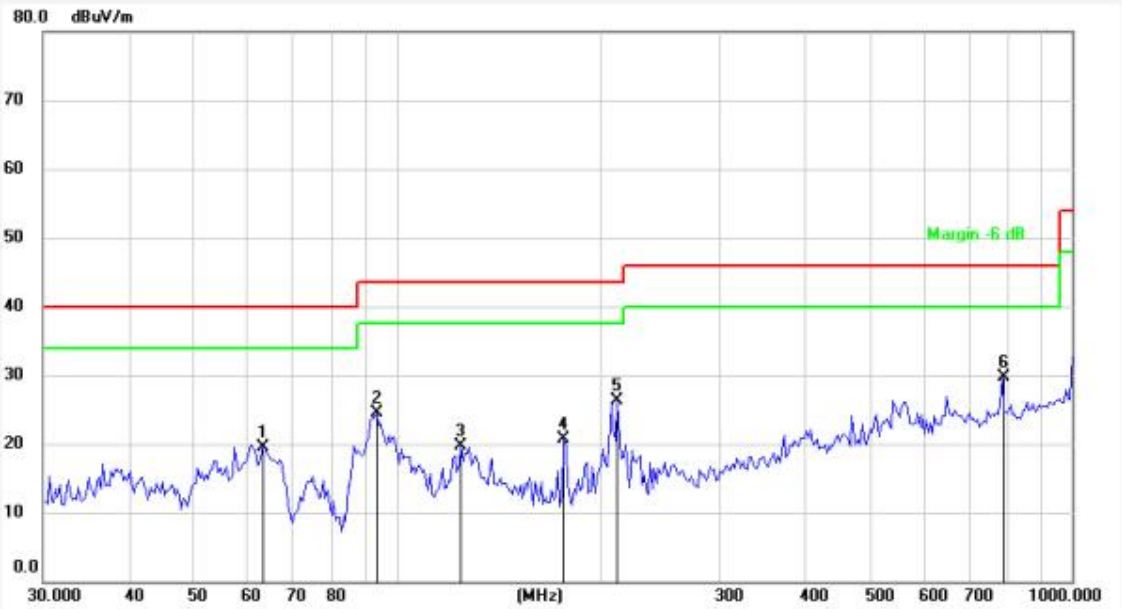
TM4 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	60.0690	32.12	-17.95	14.17	40.00	-25.83	QP			
2	94.0978	32.85	-18.05	14.80	43.50	-28.70	QP			
3	173.2050	37.64	-20.06	17.58	43.50	-25.92	QP			
4	212.2694	42.03	-17.98	24.05	43.50	-19.45	QP			
5	307.8312	40.58	-15.10	25.48	46.00	-20.52	QP			
6	419.1080	40.77	-12.66	28.11	46.00	-17.89	QP			

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT97				

TM4 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 80

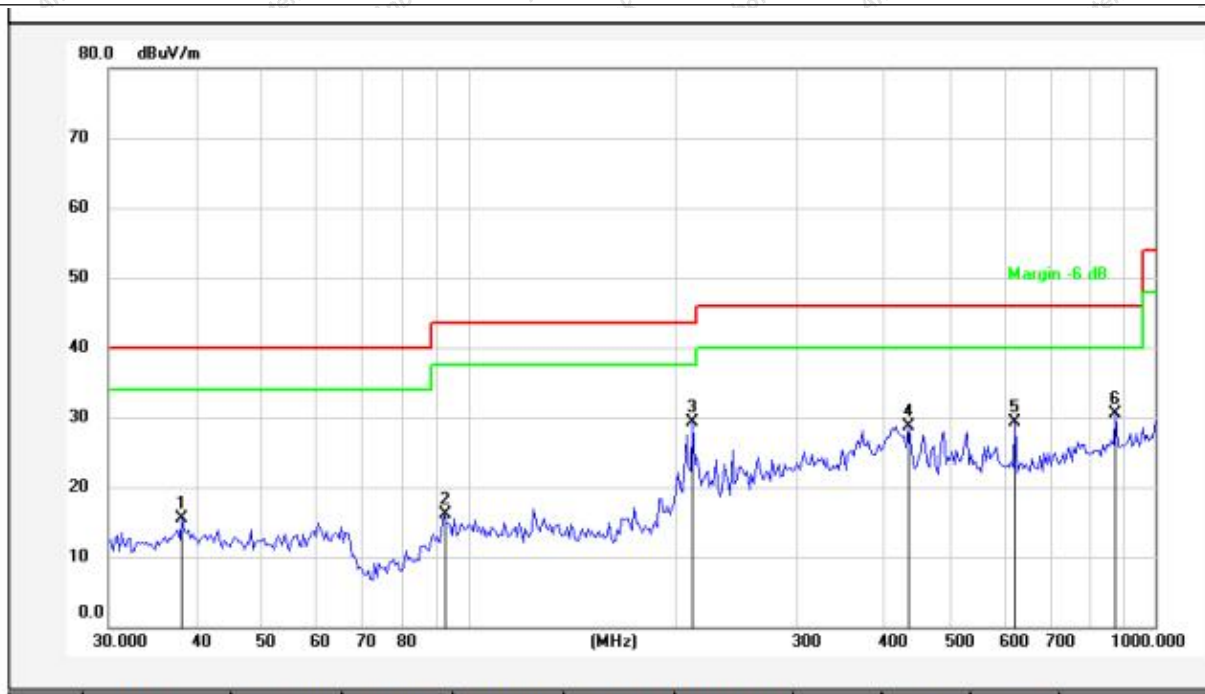


No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	63.5356	38.92	-19.32	19.60	40.00	-20.40	QP			
2	93.4402	42.68	-18.14	24.54	43.50	-18.96	QP			
3	124.5690	40.11	-20.42	19.69	43.50	-23.81	QP			
4	176.8877	40.51	-19.84	20.67	43.50	-22.83	QP			
5	212.2694	44.35	-17.98	26.37	43.50	-17.13	QP			
6	787.8513	36.67	-7.02	29.65	46.00	-16.35	QP			

Note: Only record the worst data (802.11ax(HEW80)) in the report.

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT101				

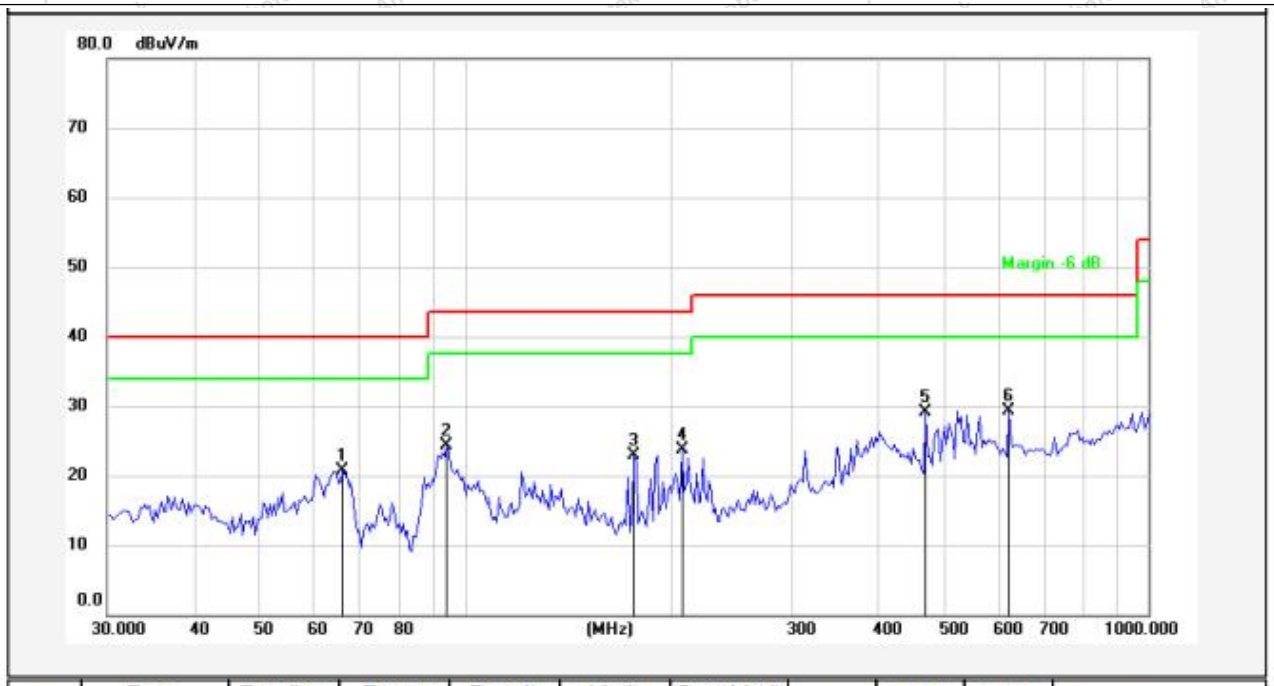
TM4 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	38.3462	33.01	-17.56	15.45	40.00	-24.55	QP			
2	92.1388	34.40	-18.31	16.09	43.50	-27.41	QP			
3	212.2694	47.27	-17.98	29.29	43.50	-14.21	QP			
4	437.1198	41.10	-12.34	28.76	46.00	-17.24	QP			
5	625.0779	38.10	-8.83	29.27	46.00	-16.73	QP			
6	875.2469	36.41	-5.82	30.59	46.00	-15.41	QP			

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa
Test Model:	SMT101				

TM4 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 80



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	66.2661	41.11	-20.41	20.70	40.00	-19.30	QP			
2	94.0978	42.30	-18.05	24.25	43.50	-19.25	QP			
3	176.8877	42.68	-19.84	22.84	43.50	-20.66	QP			
4	207.8500	41.85	-18.16	23.69	43.50	-19.81	QP			
5	472.1759	40.76	-11.74	29.02	46.00	-16.98	QP			
6	625.0779	38.06	-8.83	29.23	46.00	-16.77	QP			

Note: Only record the worst data (802.11ax(HEW80)) in the report.

10. Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)
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 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 § 15.209shall 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

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 (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.

Test Method: ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7

Procedure:

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.

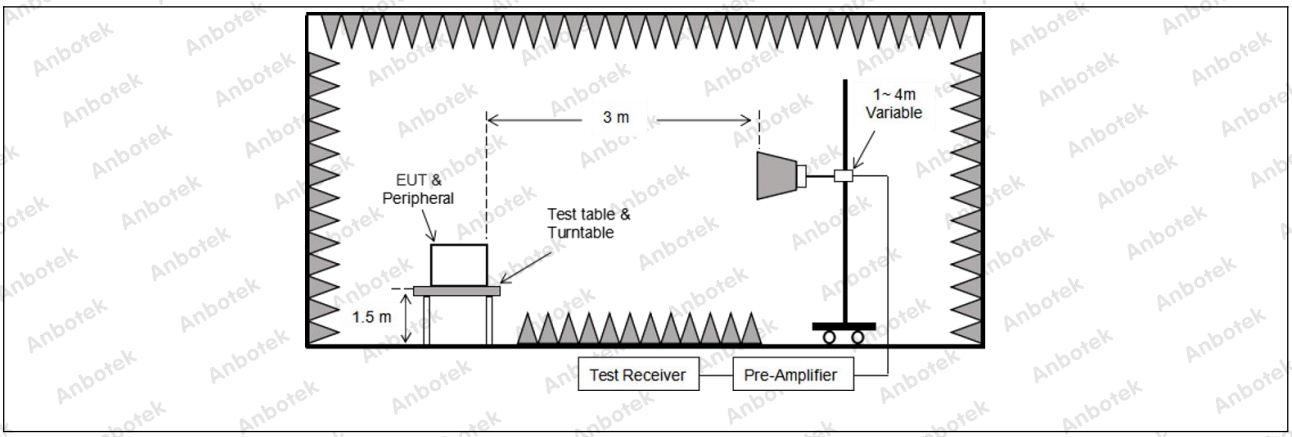
g. Test the EUT in the lowest channel, the middle channel, the Highest

	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.

10.1. EUT Operation

Operating Environment:	
Test mode:	1: 802.11a mode: Keep the EUT 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 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 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: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax 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

Temperature:	25.3 °C	Humidity:	49 %	Atmospheric Pressure:	101 kPa

TM4 / Band: 5150-5250 MHz / BW: 80							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
10420.00	30.03	23.81	53.84	68.20	-14.36	V	Peak
15630.00	30.72	29.36	60.08	68.20	-8.12	V	Peak
10420.00	30.96	23.81	54.77	68.20	-13.43	H	Peak
15630.00	32.21	29.36	61.57	68.20	-6.63	H	Peak
10420.00	20.53	23.81	44.34	54.00	-9.66	V	AVG
15630.00	21.46	29.36	50.82	54.00	-3.18	V	AVG
10420.00	20.65	23.81	44.46	54.00	-9.54	H	AVG
15630.00	21.64	29.36	51.00	54.00	-3.00	H	AVG

Remark:
1. Result =Reading + Factor
2. Only record the worst data (802.11ax(HEW80)) in the report.

TM4 / Band: 5725-5850 MHz / BW: 80							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11550.000	30.17	23.40	53.57	68.20	-14.63	V	Peak
17325.000	30.94	32.13	63.07	68.20	-5.13	V	Peak
11550.000	31.20	23.40	54.60	68.20	-13.60	H	Peak
17325.000	31.45	32.13	63.58	68.20	-4.62	H	Peak
11550.000	17.69	23.40	41.09	54.00	-12.91	V	AVG
17325.000	18.28	32.13	50.41	54.00	-3.59	V	AVG
11550.000	17.79	23.40	41.19	54.00	-12.81	H	AVG
17325.000	18.82	32.13	50.95	54.00	-3.05	H	AVG

Remark:
1. Result =Reading + Factor

2. Only record the worst data (802.11ax(HEW80)) in the report.

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

---------- End of Report ----------