
Remark:

Pretest 9kHz to 25GHz, find the highest point when testing, so only the worst data were shown in the test report. Per FCC Part 15.33 (a) and 15.31 (o), The amplitude of spurious emissions from intentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

5.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Test Setup:

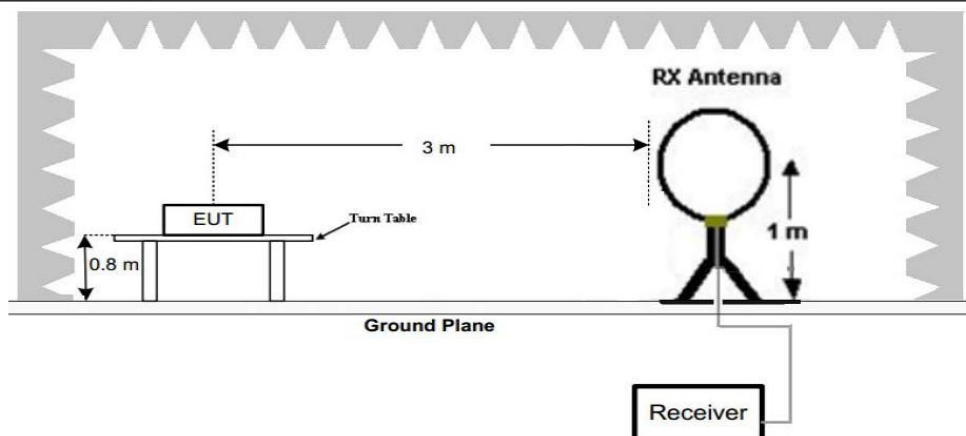


Figure 1. Below 30MHz

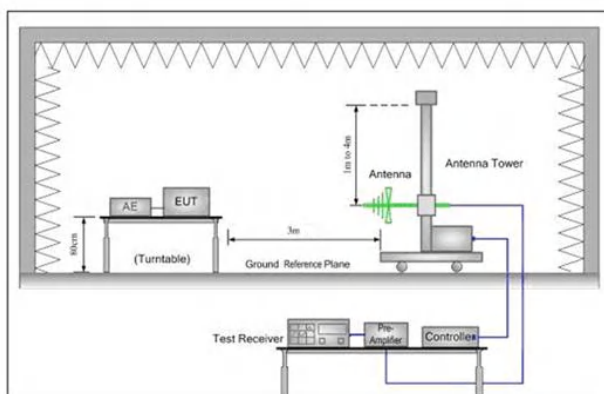


Figure 2. 30MHz to 1GHz

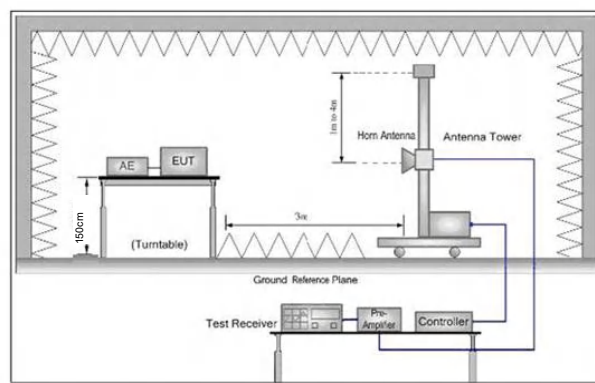


Figure 3. Above 1 GHz

Test Procedure:

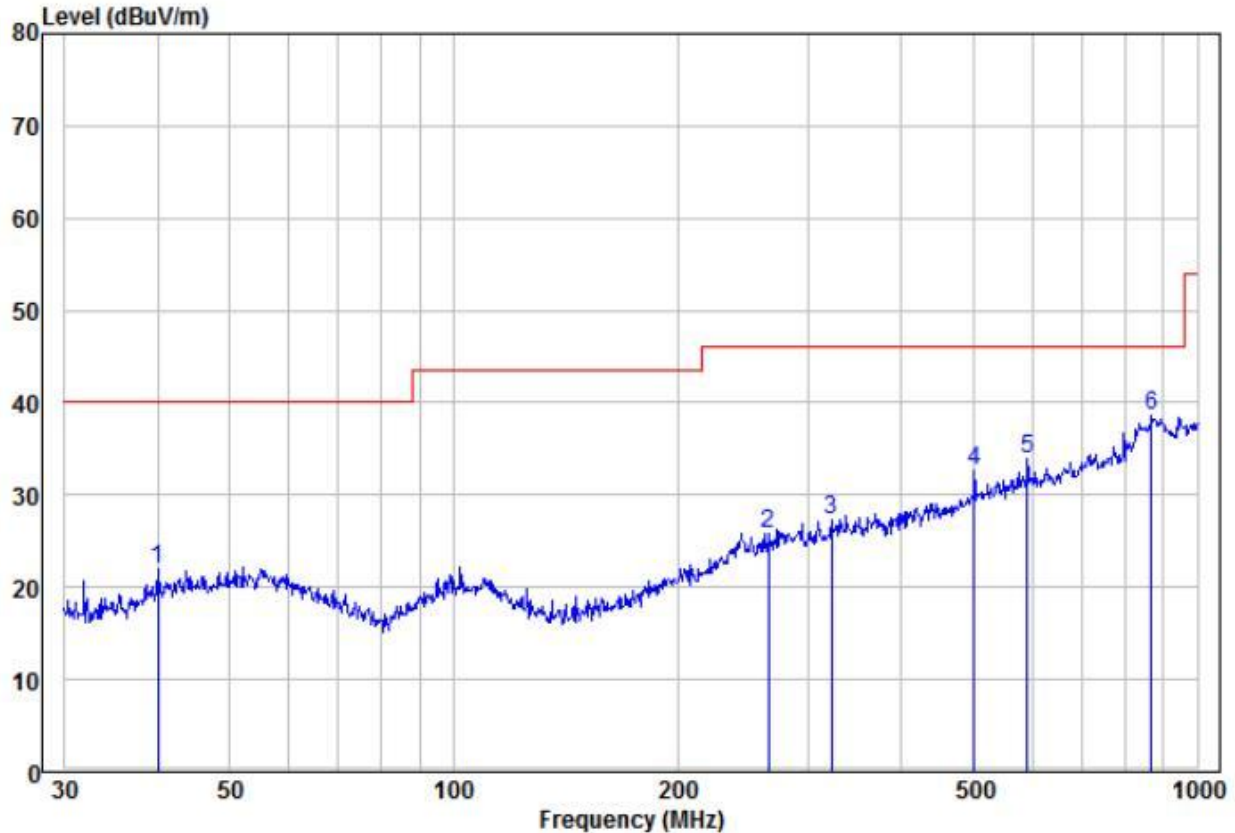
- a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 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, quasi-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 worse case . i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

5.9.1 Radiated emission below 1GHz

30MHz~1GHz

Vertical



	Read Freq	Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	39.99	11.34	10.65	21.99	40.00	-18.01	Peak	VERTICAL
2	264.75	9.80	16.05	25.85	46.00	-20.15	Peak	VERTICAL
3	322.19	9.95	17.44	27.39	46.00	-18.61	Peak	VERTICAL
4	501.18	11.80	20.94	32.74	46.00	-13.26	Peak	VERTICAL
5	590.97	11.75	22.09	33.84	46.00	-12.16	Peak	VERTICAL
6 pp	869.13	9.89	28.78	38.67	46.00	-7.33	Peak	VERTICAL

Remark:

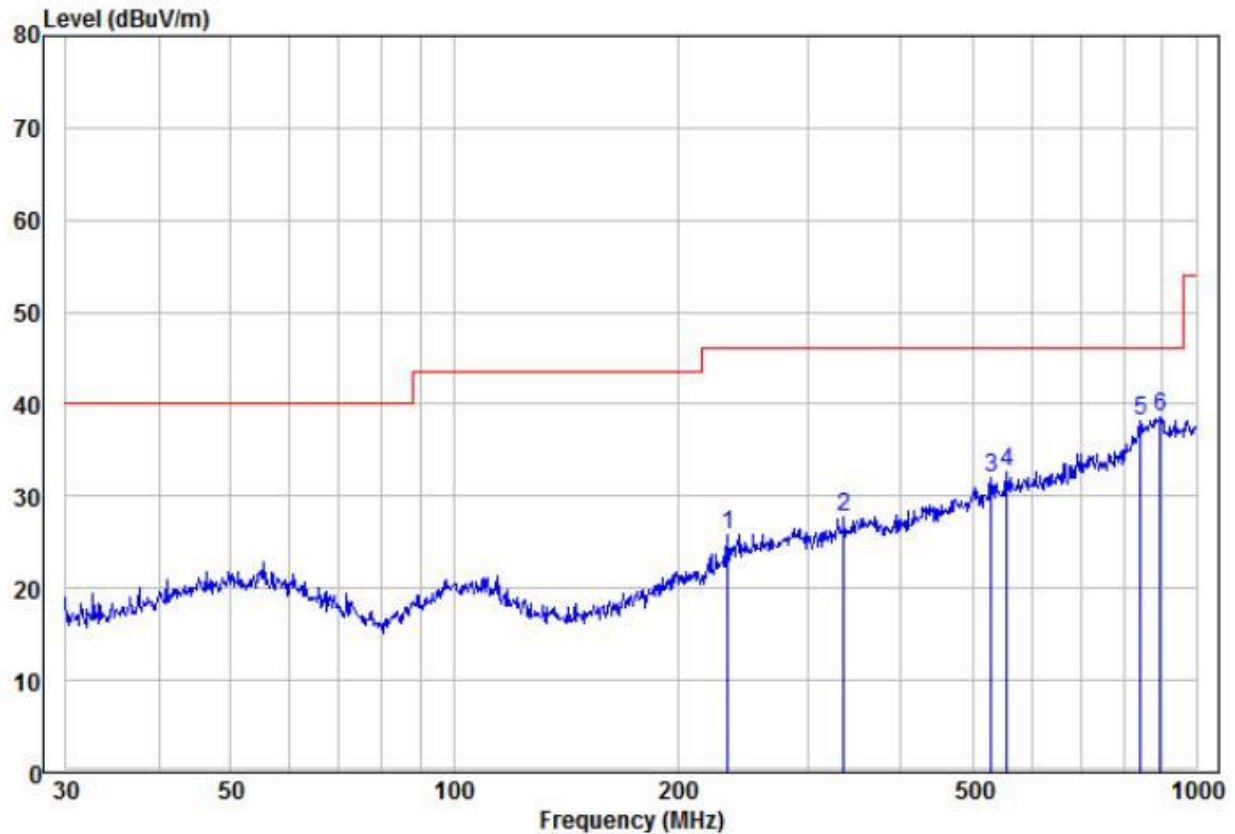
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

Horizontal



	Read Freq	Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	234.17	11.23	14.61	25.84	46.00	-20.16	Peak	HORIZONTAL
2	334.86	10.04	17.76	27.80	46.00	-18.20	Peak	HORIZONTAL
3	530.10	10.72	21.34	32.06	46.00	-13.94	Peak	HORIZONTAL
4	556.77	10.85	21.78	32.63	46.00	-13.37	Peak	HORIZONTAL
5	842.13	9.94	28.33	38.27	46.00	-7.73	Peak	HORIZONTAL
6 pp	893.86	9.34	29.20	38.54	46.00	-7.46	Peak	HORIZONTAL

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

5.9.2 Transmitter emission above 1GHz

Test mode:		802.11b(1Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	54.16	-4.26	49.90	74	-24.10	peak	H	1.5	221
4824.000	37.59	-4.26	33.33	54	-20.67	AVG	H	1.5	229
7236.000	51.76	1.18	52.94	74	-21.06	peak	H	1.5	103
7236.000	37.08	1.18	38.26	54	-15.74	AVG	H	1.5	52
4824.000	54.61	-4.26	50.35	74	-23.65	peak	V	1.5	317
4824.000	38.95	-4.26	34.69	54	-19.31	AVG	V	1.5	98
7236.000	51.78	1.18	52.96	74	-21.04	peak	V	1.5	64
7236.000	35.69	1.18	36.87	54	-17.13	AVG	V	1.5	24

Test mode:		802.11b(1Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	51.90	-4.12	47.78	74	-26.22	peak	H	1.5	260
4874.000	37.18	-4.12	33.06	54	-20.94	AVG	H	1.5	336
7311.000	49.11	1.46	50.57	74	-23.43	peak	H	1.5	55
7311.000	36.86	1.46	38.32	54	-15.68	AVG	H	1.5	53
4874.000	52.94	-4.12	48.82	74	-25.18	peak	V	1.5	246
4874.000	37.62	-4.12	33.50	54	-20.50	AVG	V	1.5	280
7311.000	48.70	1.46	50.16	74	-23.84	peak	V	1.5	263
7311.000	35.09	1.46	36.55	54	-17.45	AVG	V	1.5	173

Test mode:		802.11b(1Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	53.17	-4.03	49.14	74	-24.86	peak	H	1.5	136
4924.000	38.86	-4.03	34.83	54	-19.17	AVG	H	1.5	114
7386.000	49.90	1.66	51.56	74	-22.44	peak	H	1.5	35
7386.000	36.13	1.66	37.79	54	-16.21	AVG	H	1.5	73
4924.000	54.69	-4.03	50.66	74	-23.34	peak	V	1.5	60
4924.000	38.92	-4.03	34.89	54	-19.11	AVG	V	1.5	291
7386.000	49.72	1.66	51.38	74	-22.62	peak	V	1.5	38
7386.000	36.43	1.66	38.09	54	-15.91	AVG	V	1.5	92

Remark:

- 1) The 1Mbps of rate of 802.11b is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11g(6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	54.06	-4.26	49.80	74	-24.20	peak	H	1.5	80
4824.000	36.55	-4.26	32.29	54	-21.71	AVG	H	1.5	0
7236.000	51.77	1.18	52.95	74	-21.05	peak	H	1.5	68
7236.000	37.90	1.18	39.08	54	-14.92	AVG	H	1.5	49
4824.000	55.91	-4.26	51.65	74	-22.35	peak	V	1.5	239
4824.000	39.57	-4.26	35.31	54	-18.69	AVG	V	1.5	329
7236.000	51.98	1.18	53.16	74	-20.84	peak	V	1.5	21
7236.000	35.13	1.18	36.31	54	-17.69	AVG	V	1.5	244

Test mode:		802.11g(6Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	51.27	-4.12	47.15	74	-26.85	peak	H	1.5	16
4874.000	36.23	-4.12	32.11	54	-21.89	AVG	H	1.5	17
7311.000	48.86	1.46	50.32	74	-23.68	peak	H	1.5	306
7311.000	35.63	1.46	37.09	54	-16.91	AVG	H	1.5	210
4874.000	54.18	-4.12	50.06	74	-23.94	peak	V	1.5	151
4874.000	37.60	-4.12	33.48	54	-20.52	AVG	V	1.5	283
7311.000	49.15	1.46	50.61	74	-23.39	peak	V	1.5	54
7311.000	35.43	1.46	36.89	54	-17.11	AVG	V	1.5	215

Test mode:		802.11g(6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol. H/V	Antenna Height (m)	Table Angle (Degree)
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)				
4924.000	53.15	-4.03	49.12	74	-24.88	peak	H	1.5	296
4924.000	38.66	-4.03	34.63	54	-19.37	AVG	H	1.5	205
7386.000	50.23	1.66	51.89	74	-22.11	peak	H	1.5	299
7386.000	36.18	1.66	37.84	54	-16.16	AVG	H	1.5	96
4924.000	54.15	-4.03	50.12	74	-23.88	peak	V	1.5	15
4924.000	37.56	-4.03	33.53	54	-20.47	AVG	V	1.5	151
7386.000	49.82	1.66	51.48	74	-22.52	peak	V	1.5	290
7386.000	37.79	1.66	39.45	54	-14.55	AVG	V	1.5	76

Remark:

- 1) The 6Mbps of rate of 802.11g is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11n20(6.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	52.62	-4.26	48.36	74	-25.64	peak	H	1.5	313
4824.000	36.06	-4.26	31.80	54	-22.20	AVG	H	1.5	335
7236.000	52.05	1.18	53.23	74	-20.77	peak	H	1.5	65
7236.000	38.69	1.18	39.87	54	-14.13	AVG	H	1.5	297
4824.000	54.89	-4.26	50.63	74	-23.37	peak	V	1.5	275
4824.000	39.51	-4.26	35.25	54	-18.75	AVG	V	1.5	63
7236.000	51.63	1.18	52.81	74	-21.19	peak	V	1.5	34
7236.000	36.83	1.18	38.01	54	-15.99	AVG	V	1.5	17

Test mode:		802.11n20(6.5Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	51.66	-4.12	47.54	74	-26.46	peak	H	1.5	101
4874.000	37.15	-4.12	33.03	54	-20.97	AVG	H	1.5	357
7311.000	48.86	1.46	50.32	74	-23.68	peak	H	1.5	25
7311.000	35.84	1.46	37.30	54	-16.70	AVG	H	1.5	198
4874.000	54.03	-4.12	49.91	74	-24.09	peak	V	1.5	249
4874.000	36.75	-4.12	32.63	54	-21.37	AVG	V	1.5	132
7311.000	48.46	1.46	49.92	74	-24.08	peak	V	1.5	252
7311.000	35.04	1.46	36.50	54	-17.50	AVG	V	1.5	71

Test mode:		802.11n20(6.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	51.84	-4.03	47.81	74	-26.19	peak	H	1.5	169
4924.000	38.76	-4.03	34.73	54	-19.27	AVG	H	1.5	29
7386.000	50.22	1.66	51.88	74	-22.12	peak	H	1.5	45
7386.000	37.41	1.66	39.07	54	-14.93	AVG	H	1.5	105
4924.000	55.19	-4.03	51.16	74	-22.84	peak	V	1.5	352
4924.000	38.98	-4.03	34.95	54	-19.05	AVG	V	1.5	4
7386.000	49.99	1.66	51.65	74	-22.35	peak	V	1.5	238
7386.000	36.42	1.66	38.08	54	-15.92	AVG	V	1.5	203

Remark:

- 1) The MCS0 of rate of 802.11n20 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11n40(13.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	52.76	-4.24	48.52	74	-25.48	peak	H	1.5	298
4824.000	36.90	-4.24	32.66	54	-21.34	AVG	H	1.5	326
7236.000	50.92	1.2	52.12	74	-21.88	peak	H	1.5	274
7236.000	37.07	1.2	38.27	54	-15.73	AVG	H	1.5	100
4824.000	54.70	-4.24	50.46	74	-23.54	peak	V	1.5	38
4824.000	38.35	-4.24	34.11	54	-19.89	AVG	V	1.5	104
7236.000	51.60	1.2	52.80	74	-21.20	peak	V	1.5	233
7236.000	35.76	1.2	36.96	54	-17.04	AVG	V	1.5	108

Test mode:		802.11n40(13.5Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	52.29	-4.12	48.17	74	-25.83	peak	H	1.5	207
4874.000	37.21	-4.12	33.09	54	-20.91	AVG	H	1.5	75
7311.000	49.18	1.46	50.64	74	-23.36	peak	H	1.5	267
7311.000	35.01	1.46	36.47	54	-17.53	AVG	H	1.5	247
4874.000	52.26	-4.12	48.14	74	-25.86	peak	V	1.5	347
4874.000	37.17	-4.12	33.05	54	-20.95	AVG	V	1.5	219
7311.000	49.93	1.46	51.39	74	-22.61	peak	V	1.5	223
7311.000	35.07	1.46	36.53	54	-17.47	AVG	V	1.5	213

Test mode:		802.11n40(13.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	54.01	-4.05	49.96	74	-24.04	peak	H	1.5	18
4924.000	37.92	-4.05	33.87	54	-20.13	AVG	H	1.5	227
7386.000	51.66	1.64	53.30	74	-20.70	peak	H	1.5	51
7386.000	37.21	1.64	38.85	54	-15.15	AVG	H	1.5	329
4924.000	54.97	-4.05	50.92	74	-23.08	peak	V	1.5	200
4924.000	39.87	-4.05	35.82	54	-18.18	AVG	V	1.5	108
7386.000	51.25	1.64	52.89	74	-21.11	peak	V	1.5	250
7386.000	35.04	1.64	36.68	54	-17.32	AVG	V	1.5	232

Remark:

- 1) The MCS0 of rate of 802.11n40 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	53.00	-4.26	48.74	74	-25.26	peak	H	1.5	181
4824.000	37.82	-4.26	33.56	54	-20.44	AVG	H	1.5	350
7236.000	50.27	1.18	51.45	74	-22.55	peak	H	1.5	140
7236.000	37.82	1.18	39.00	54	-15.00	AVG	H	1.5	154
4824.000	56.16	-4.26	51.90	74	-22.10	peak	V	1.5	162
4824.000	38.59	-4.26	34.33	54	-19.67	AVG	V	1.5	185
7236.000	51.12	1.18	52.30	74	-21.70	peak	V	1.5	189
7236.000	36.62	1.18	37.80	54	-16.20	AVG	V	1.5	166

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	52.23	-4.12	48.11	74	-25.89	peak	H	1.5	110
4874.000	37.47	-4.12	33.35	54	-20.65	AVG	H	1.5	183
7311.000	49.41	1.46	50.87	74	-23.13	peak	H	1.5	207
7311.000	35.35	1.46	36.81	54	-17.19	AVG	H	1.5	181
4874.000	52.46	-4.12	48.34	74	-25.66	peak	V	1.5	307
4874.000	36.92	-4.12	32.80	54	-21.20	AVG	V	1.5	77
7311.000	50.12	1.46	51.58	74	-22.42	peak	V	1.5	309
7311.000	35.66	1.46	37.12	54	-16.88	AVG	V	1.5	282

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	52.19	-4.03	48.16	74	-25.84	peak	H	1.5	30
4924.000	37.13	-4.03	33.10	54	-20.90	AVG	H	1.5	76
7386.000	49.36	1.66	51.02	74	-22.98	peak	H	1.5	242
7386.000	37.04	1.66	38.70	54	-15.30	AVG	H	1.5	213
4924.000	53.55	-4.03	49.52	74	-24.48	peak	V	1.5	256
4924.000	37.76	-4.03	33.73	54	-20.27	AVG	V	1.5	343
7386.000	49.95	1.66	51.61	74	-22.39	peak	V	1.5	62
7386.000	36.26	1.66	37.92	54	-16.08	AVG	V	1.5	310

Remark:

- 1) The MCS0 of rate of 802.11ax20 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

5.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10 2020		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

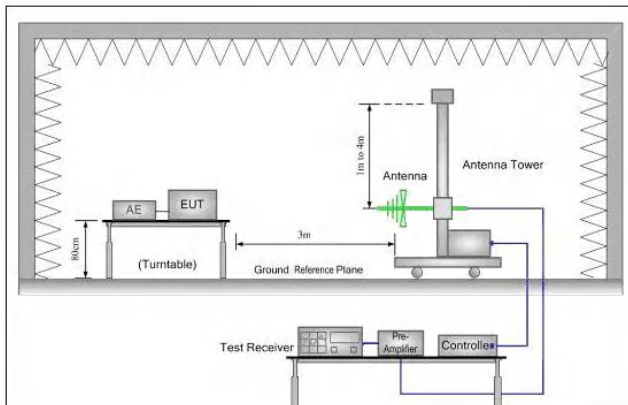


Figure 1. 30MHz to 1GHz

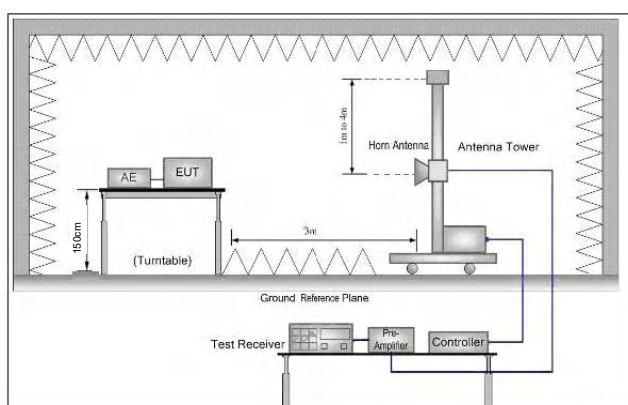


Figure 2. Above 1 GHz

Test Procedure:

- 1) Below 1G: 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.
 - 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 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.
- Note: For the radiated emission test above 1GHz:
- Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - 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.
 - For each suspected emission, the EUT was arranged to its worst case and

	then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel 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 worse case . i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode, found the Transmitting mode which it is worse case. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8.6Mbps of rate is the worst case of 802.11ax(HE20) Only the worst case is recorded in the report.
Test Results:	Pass

Test data:

Worse case mode:		802.11b(1Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2390.000	58.90	-9.2	49.70	74	-24.30	peak	H	1.5	76
2390.000	44.76	-9.2	35.56	54	-18.44	AVG	H	1.5	249
2400.000	59.50	-9.39	50.11	74	-23.89	peak	H	1.5	33
2400.000	46.17	-9.39	36.78	54	-17.22	AVG	H	1.5	130
2390.000	58.96	-9.2	49.76	74	-24.24	peak	V	1.5	169
2390.000	44.71	-9.2	35.51	54	-18.49	AVG	V	1.5	180
2400.000	59.54	-9.39	50.15	74	-23.85	peak	V	1.5	169
2400.000	46.30	-9.39	36.91	54	-17.09	AVG	V	1.5	186

Worse case mode:		802.11b(1Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2483.500	57.83	-9.29	48.54	74	-25.46	peak	H	1.5	226
2483.500	43.67	-9.29	34.38	54	-19.62	AVG	H	1.5	85
2483.500	58.15	-9.29	48.86	74	-25.14	peak	V	1.5	239
2483.500	45.53	-9.29	36.24	54	-17.76	AVG	V	1.5	74

Worse case mode:		802.11g(6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2390.000	58.64	-9.2	49.44	74	-24.56	peak	H	1.5	337
2390.000	44.90	-9.2	35.70	54	-18.30	AVG	H	1.5	45
2400.000	59.54	-9.39	50.15	74	-23.85	peak	H	1.5	205
2400.000	46.17	-9.39	36.78	54	-17.22	AVG	H	1.5	185
2390.000	58.98	-9.2	49.78	74	-24.22	peak	V	1.5	156
2390.000	44.82	-9.2	35.62	54	-18.38	AVG	V	1.5	75
2400.000	59.74	-9.39	50.35	74	-23.65	peak	V	1.5	186
2400.000	46.37	-9.39	36.98	54	-17.02	AVG	V	1.5	123

Worse case mode:		802.11g(6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2483.500	58.33	-9.29	49.04	74	-24.96	peak	H	1.5	51
2483.500	43.57	-9.29	34.28	54	-19.72	AVG	H	1.5	184
2483.500	57.58	-9.29	48.29	74	-25.71	peak	V	1.5	125
2483.500	45.87	-9.29	36.58	54	-17.42	AVG	V	1.5	29

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	58.80	-9.2	49.60	74	-24.40	peak	H	1.5	289
2390.000	44.28	-9.2	35.08	54	-18.92	AVG	H	1.5	110
2400.000	59.56	-9.39	50.17	74	-23.83	peak	H	1.5	264
2400.000	46.64	-9.39	37.25	54	-16.75	AVG	H	1.5	352
2390.000	58.68	-9.2	49.48	74	-24.52	peak	V	1.5	121
2390.000	44.05	-9.2	34.85	54	-19.15	AVG	V	1.5	284
2400.000	60.18	-9.39	50.79	74	-23.21	peak	V	1.5	138
2400.000	46.26	-9.39	36.87	54	-17.13	AVG	V	1.5	223

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	57.95	-9.29	48.66	74	-25.34	peak	H	1.5	120
2483.500	44.17	-9.29	34.88	54	-19.12	AVG	H	1.5	288
2483.500	57.75	-9.29	48.46	74	-25.54	peak	V	1.5	129
2483.500	46.41	-9.29	37.12	54	-16.88	AVG	V	1.5	316

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	58.63	-9.2	49.43	74	-24.57	peak	H	1.5	178
2390.000	44.69	-9.2	35.49	54	-18.51	AVG	H	1.5	217
2400.000	59.76	-9.39	50.37	74	-23.63	peak	H	1.5	178
2400.000	46.28	-9.39	36.89	54	-17.11	AVG	H	1.5	140
2390.000	59.05	-9.2	49.85	74	-24.15	peak	V	1.5	297
2390.000	44.45	-9.2	35.25	54	-18.75	AVG	V	1.5	342
2400.000	59.30	-9.39	49.91	74	-24.09	peak	V	1.5	353
2400.000	46.12	-9.39	36.73	54	-17.27	AVG	V	1.5	258

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	57.91	-9.29	48.62	74	-25.38	peak	H	1.5	86
2483.500	43.65	-9.29	34.36	54	-19.64	AVG	H	1.5	339
2483.500	57.76	-9.29	48.47	74	-25.53	peak	V	1.5	330
2483.500	45.83	-9.29	36.54	54	-17.46	AVG	V	1.5	45

Worse case mode:		802.11ax(HE20)(8.6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	58.85	-9.2	49.65	74	-24.35	peak	H	1.5	287
2390.000	44.24	-9.2	35.04	54	-18.96	AVG	H	1.5	65
2400.000	60.12	-9.39	50.73	74	-23.27	peak	H	1.5	274
2400.000	46.91	-9.39	37.52	54	-16.48	AVG	H	1.5	54
2390.000	59.23	-9.2	50.03	74	-23.97	peak	V	1.5	126
2390.000	44.54	-9.2	35.34	54	-18.66	AVG	V	1.5	32
2400.000	59.93	-9.39	50.54	74	-23.46	peak	V	1.5	76
2400.000	46.84	-9.39	37.45	54	-16.55	AVG	V	1.5	98

Worse case mode:		802.11ax(HE20)(8.6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	57.82	-9.29	48.53	74	-25.47	peak	H	1.5	45
2483.500	44.08	-9.29	34.79	54	-19.21	AVG	H	1.5	248
2483.500	57.53	-9.29	48.24	74	-25.76	peak	V	1.5	214
2483.500	45.88	-9.29	36.59	54	-17.41	AVG	V	1.5	202

Note:

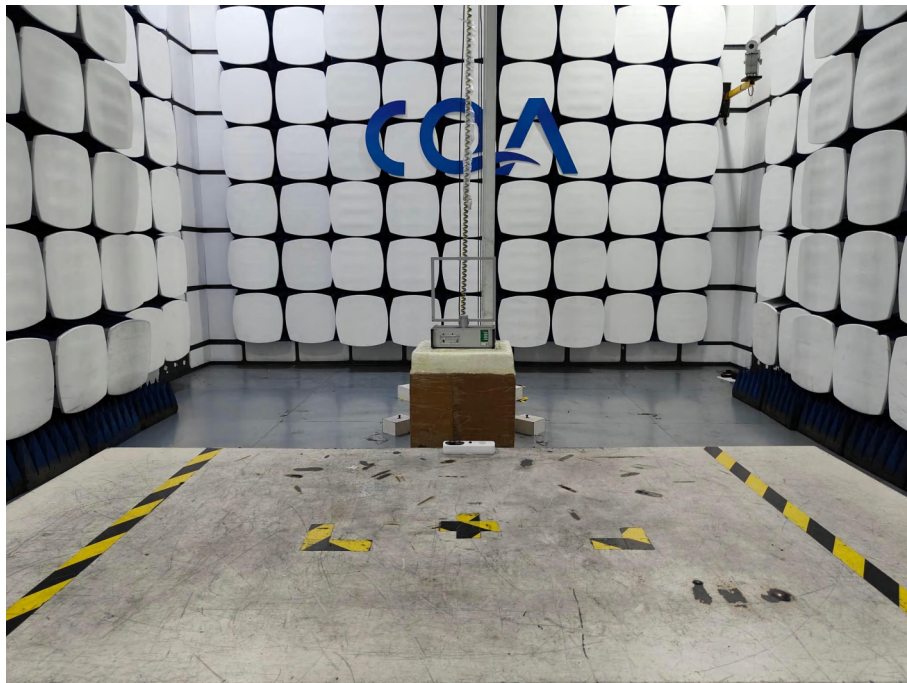
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

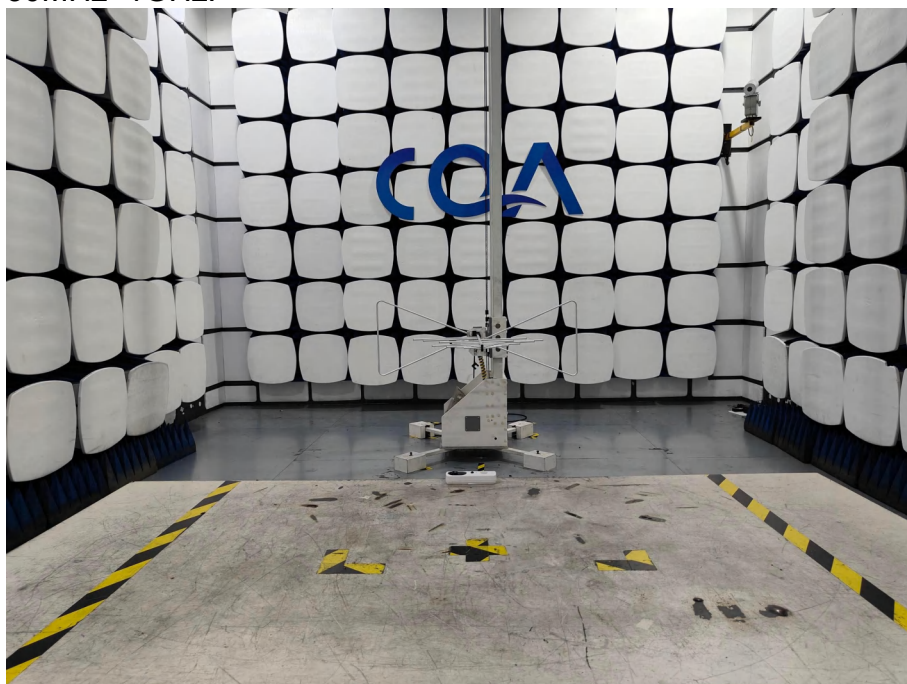
6 Photographs - EUT Test Setup

6.1 Radiated Spurious Emission

9kHz~30MHz:



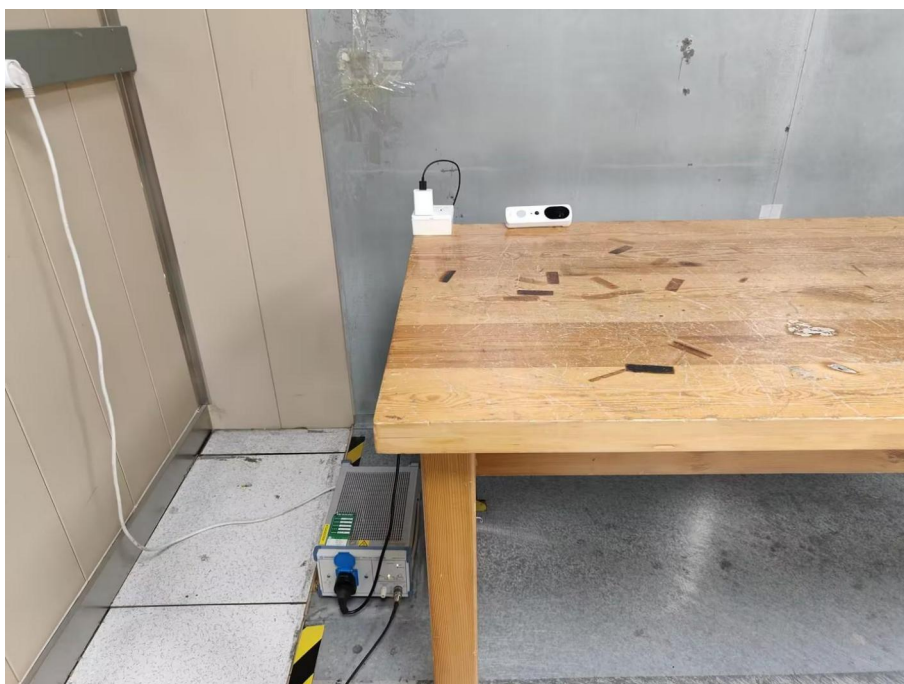
30MHz~1GHz:



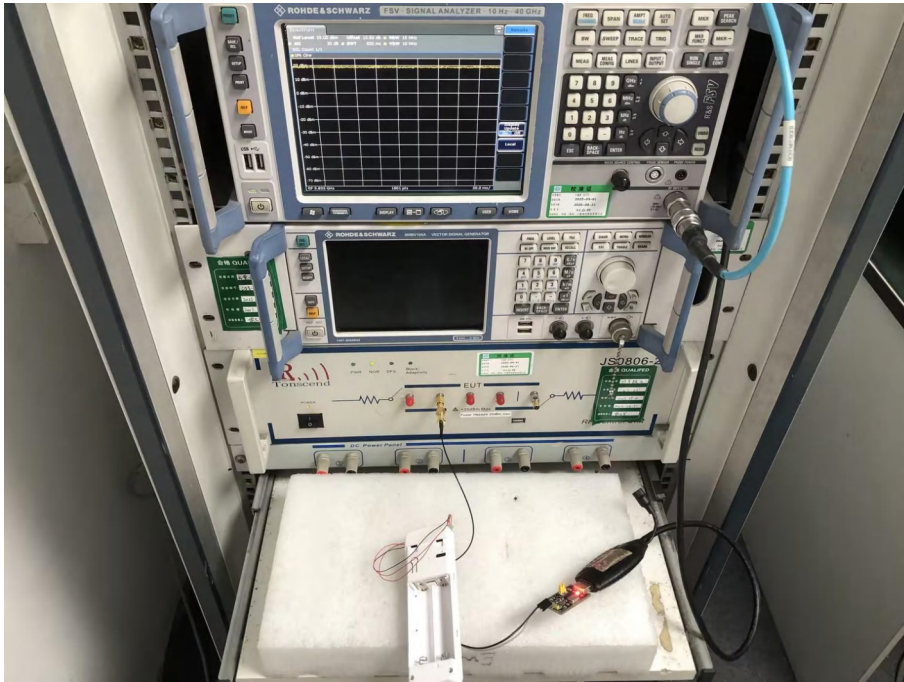
Above 1GHz:



6.2 Conducted Emission



6.3 RF Conducted measurement



7 Photographs - EUT Constructional Details

Refer to PHOTOGRAPHS OF EUT for CQASZ20260300617E-01.

*** END OF REPORT ***