12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

1)Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

2)Conducted Emissions at the bang edge

a)The transmitter output was connected to the spectrum analyzer

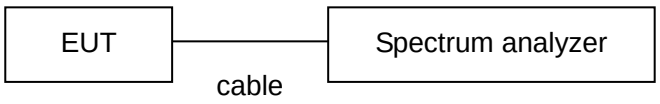
b)Set RBW=100kHz,VBW=300kHz

c)Suitable frequency span including 100kHz bandwidth from band edge

12.2. TEST SET-UP

Radiated same as 11.2

Conducted set up



12.3. RADIATED TEST RESULT

Frequency	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz					
2399.9	50.71	74	-23.29	pk	Horizontal
2399.9	36.8	54	-17.2	AV	Horizontal
2400	50.85	74	-23.15	pk	Horizontal
2400	38.7	54	-15.3	AV	Horizontal
2399.9	51.86	74	-22.14	pk	Vertical
2399.9	39.17	54	-14.83	AV	Vertical
2400	53.03	74	-20.97	pk	Vertical
2400	40.04	54	-13.96	AV	Vertical
TX 11b 2462MHz					
2483.5	48.51	74	-25.49	pk	Horizontal
2483.5	34.6	54	-19.4	AV	Horizontal
2483.6	48.65	74	-25.35	pk	Horizontal
2483.6	36.5	54	-17.5	AV	Horizontal
2483.5	49.66	74	-24.34	pk	Vertical
2483.5	36.97	54	-17.03	AV	Vertical
2483.6	50.83	74	-23.17	pk	Vertical
2483.6	37.84	54	-16.16	AV	Vertical

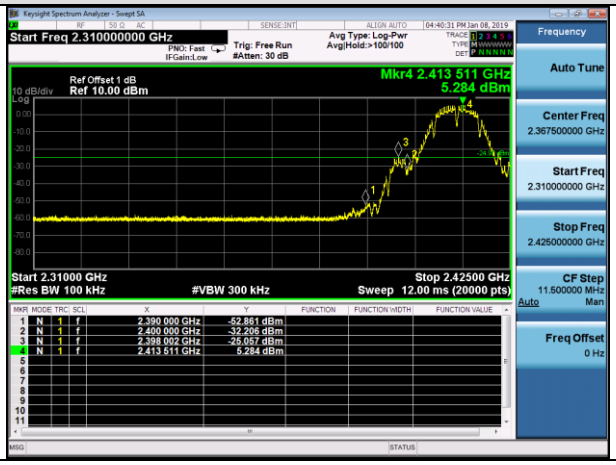
RESULT: PASS

Note: Scan with 11b,11g,11n, the worst case is 11b Mode

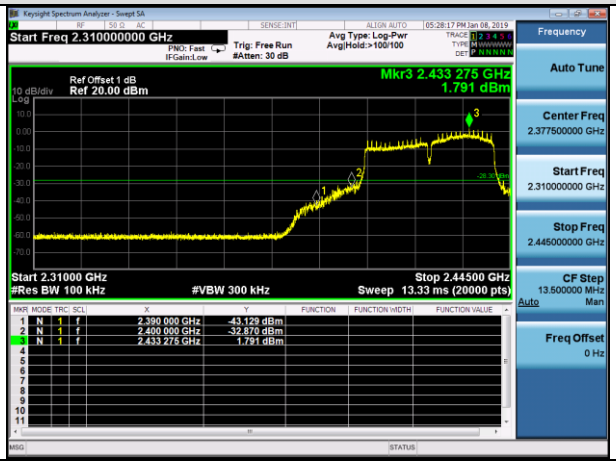
Margin= Emission Level -Limit.

12.4. CONDUCTED TEST RESULT

Test Graph

11b-LCH	11b-HCH
	

11g-LCH	11g-HCH
	

11nHT20-LCH	11nHT20-HCH
	
11nHT40-LCH	11nHT40-HCH
	

13. FCC LINE CONDUCTED EMISSION TEST

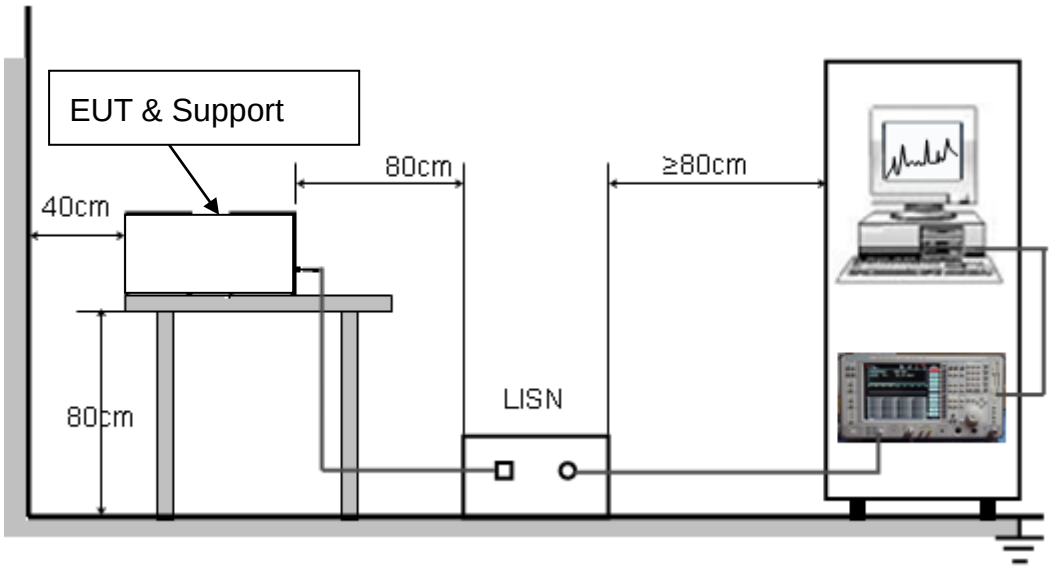
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

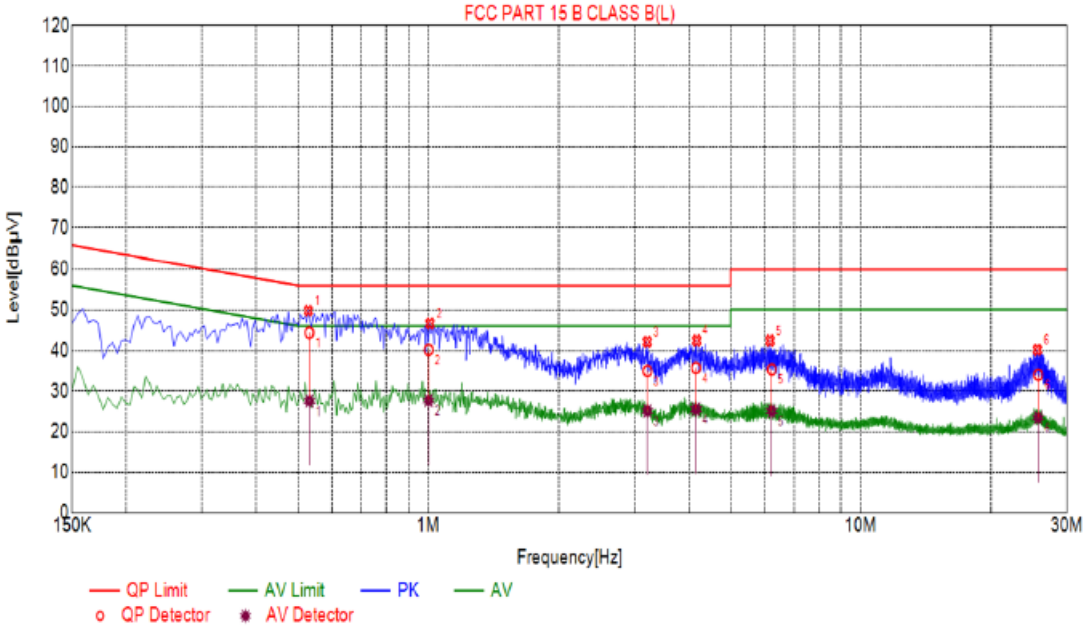
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

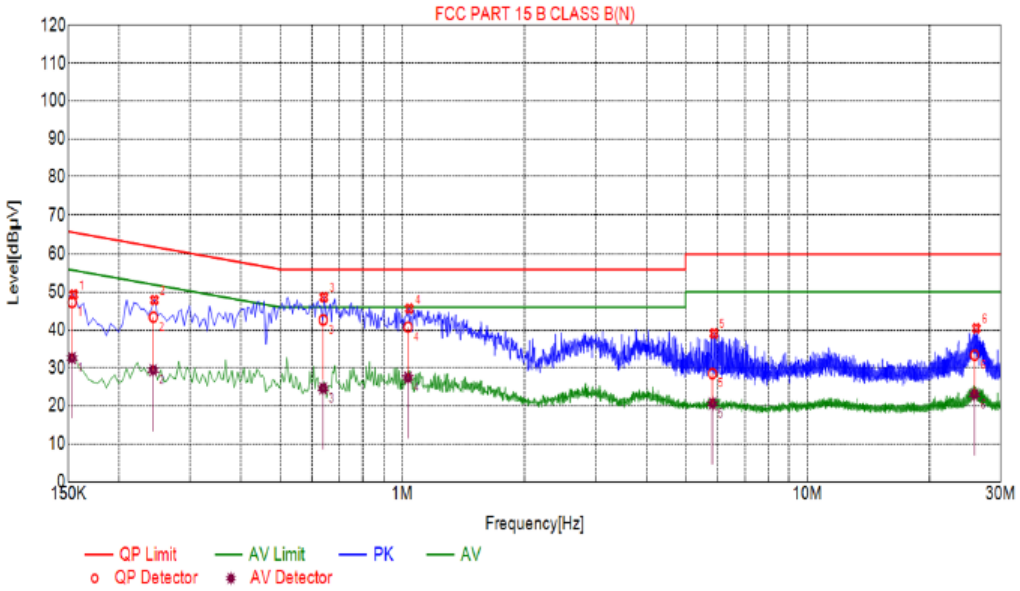
LINE CONDUCTED EMISSION TEST LINE 1-L



Suspected List						
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector
1	0.5280	49.79	10.04	56.00	6.21	PK
2	1.0095	46.61	10.06	56.00	9.39	PK
3	3.2100	42.19	10.23	56.00	13.81	PK
4	4.1775	42.49	10.25	56.00	13.51	PK
5	6.1710	42.47	10.23	60.00	17.53	PK
6	25.6290	40.24	10.25	60.00	19.76	PK

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.5309	10.04	44.40	56.00	11.60	27.57	46.00	18.43
2	1.0017	10.06	40.25	56.00	15.75	27.67	46.00	18.33
3	3.2123	10.23	35.00	56.00	21.00	25.16	46.00	20.84
4	4.1618	10.25	35.74	56.00	20.26	25.58	46.00	20.42
5	6.2253	10.22	35.36	60.00	24.64	25.12	50.00	24.88
6	25.7351	10.26	34.05	60.00	25.95	23.54	50.00	26.46

Line Conducted Emission Test Line 2-N



Suspected List

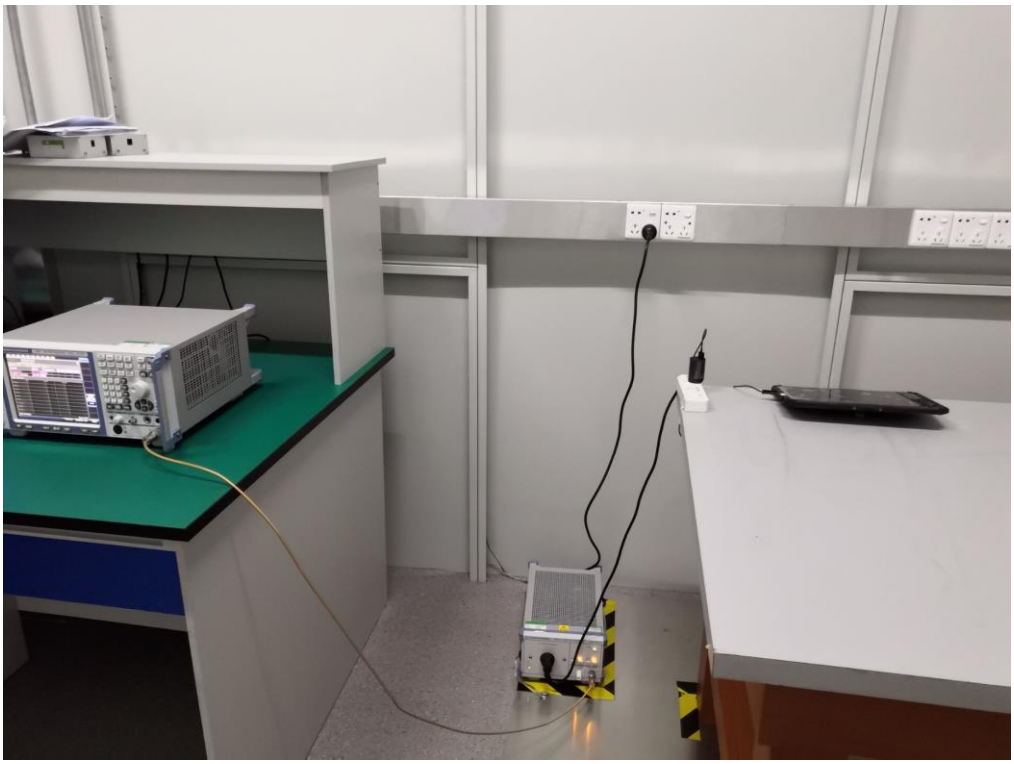
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector
1	0.1545	49.36	10.03	65.75	16.39	PK
2	0.2445	47.90	10.03	61.94	14.04	PK
3	0.6405	48.65	10.05	56.00	7.35	PK
4	1.0410	45.65	10.07	56.00	10.35	PK
5	5.8830	39.07	10.23	60.00	20.93	PK
6	26.1105	40.42	10.26	60.00	19.58	PK

Final Data List

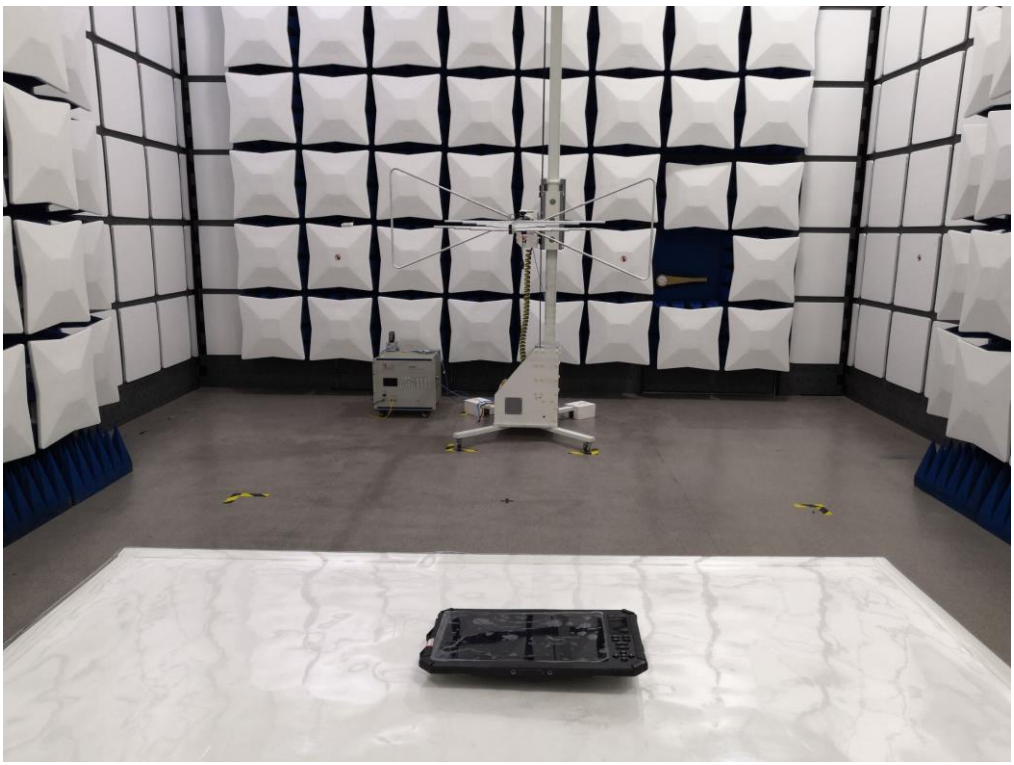
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.1530	10.03	47.27	65.84	18.57	32.58	55.84	23.26
2	0.2429	10.03	43.39	62.00	18.61	29.38	52.00	22.62
3	0.6375	10.05	42.64	56.00	13.36	24.55	46.00	21.45
4	1.0328	10.07	40.74	56.00	15.26	27.41	46.00	18.59
5	5.8292	10.24	28.46	60.00	31.54	20.62	50.00	29.38
6	25.8566	10.26	33.35	60.00	26.65	22.96	50.00	27.04

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP



RADIATED EMISSION ABOVE 1G TEST SETUP

----END OF REPORT----