

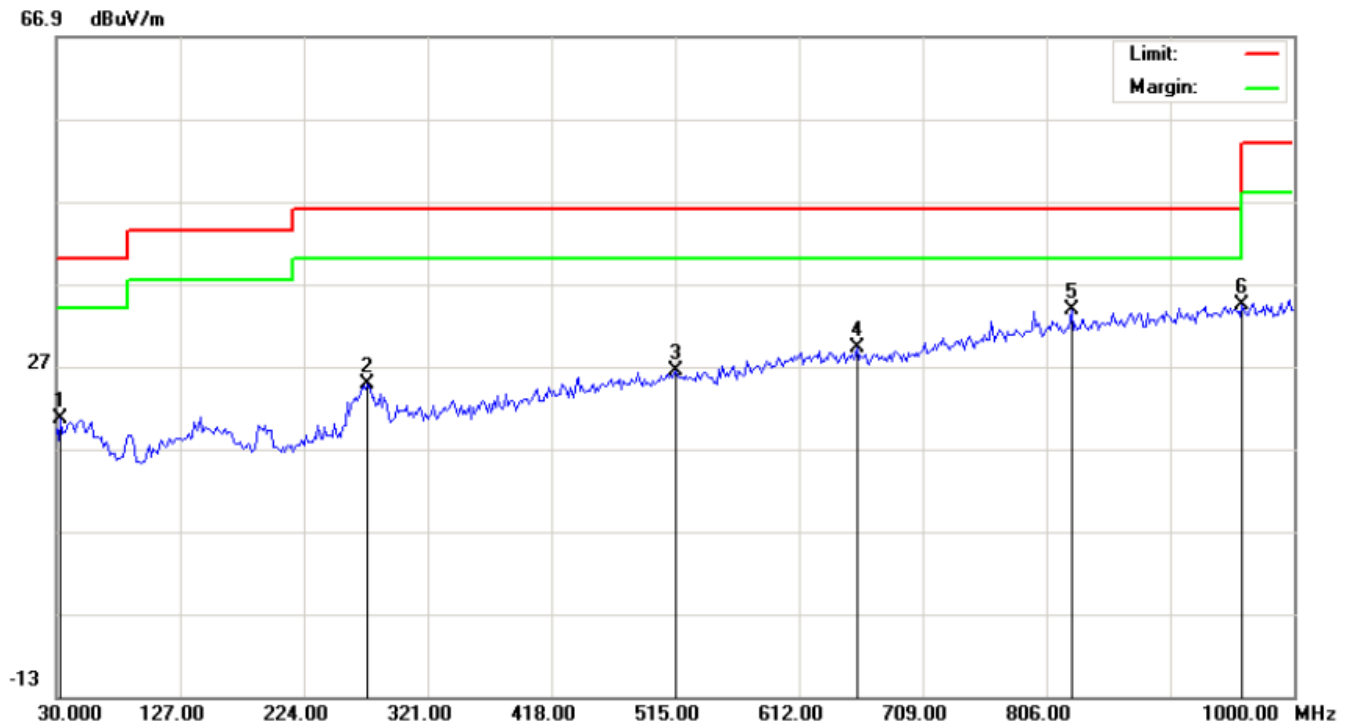
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

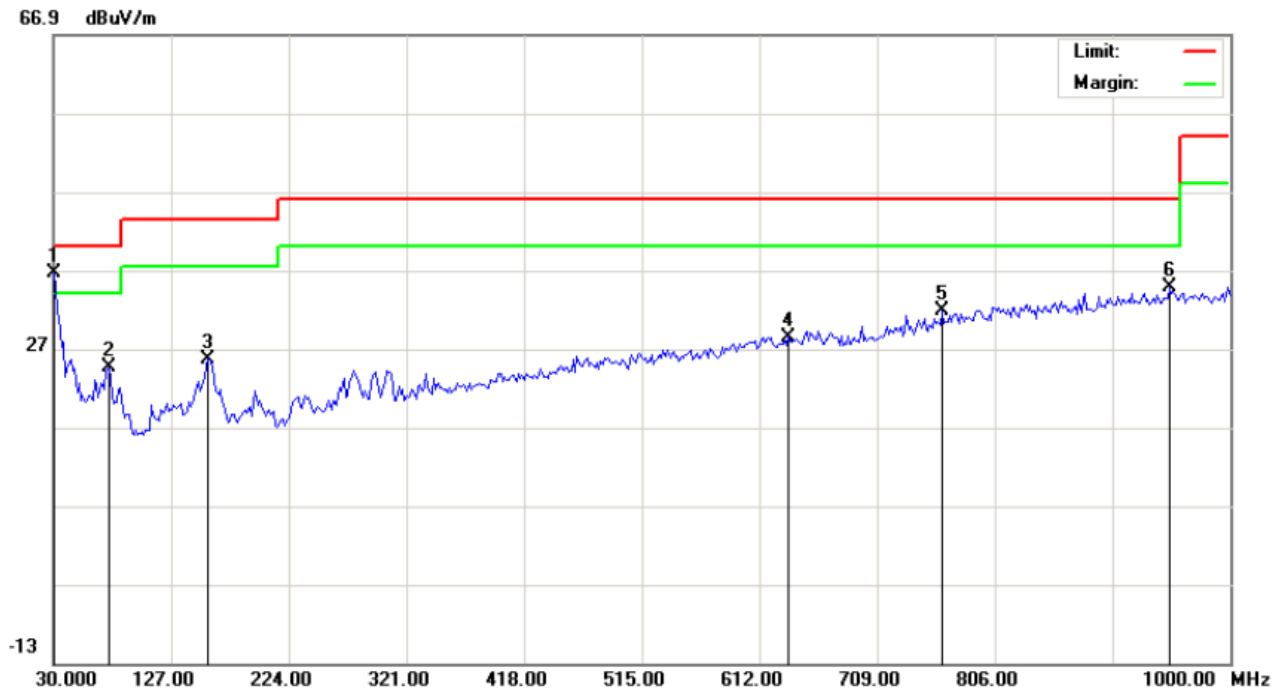
RADIATED EMISSION TEST- (30MHZ-1GHZ) -HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		33.2333	2.33	18.27	20.60	40.00	-19.40	peak			
2		274.1167	5.27	19.46	24.73	46.00	-21.27	peak			
3		515.0000	1.21	25.28	26.49	46.00	-19.51	peak			
4		657.2667	1.65	27.64	29.29	46.00	-16.71	peak			
5		825.4000	3.14	30.74	33.88	46.00	-12.12	peak			
6	*	959.5833	2.16	32.21	34.37	46.00	-11.63	peak			

RESULT: PASS

RADIATED EMISSION TEST- (30MHZ-1GHZ) -VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	30.0000	18.44	18.17	36.61	40.00	-3.39	peak			
2		75.2667	8.66	15.97	24.63	40.00	-15.37	peak			
3		157.7167	6.44	19.19	25.63	43.50	-17.87	peak			
4		636.2500	1.12	27.38	28.50	46.00	-17.50	peak			
5		762.3500	2.20	29.56	31.76	46.00	-14.24	peak			
6		949.8833	2.58	32.13	34.71	46.00	-11.29	peak			

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Result -Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

RADIATED EMISSION ABOVE 1GHZ

Frequency	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz					
4824	49.51	74	-24.49	Pk	Horizontal
4824	35.64	54	-18.36	AV	Horizontal
7236	51.24	74	-22.76	pk	Horizontal
7236	33.16	54	-20.84	AV	Horizontal
4824	51.42	74	-22.58	Pk	Vertical
4824	33.78	54	-20.22	AV	Vertical
7236	48.60	74	-25.40	Pk	Vertical
7236	38.44	54	-15.56	AV	Vertical
TX 11b 2437MHz					
4874	50.10	74	-23.9	Pk	Horizontal
4874	31.86	54	-22.14	AV	Horizontal
7311	47.64	74	-26.36	Pk	Horizontal
7311	33.49	54	-20.51	AV	Horizontal
4874	49.76	74	-24.24	Pk	Vertical
4874	39.72	54	-14.28	AV	Vertical
7311	45.73	74	-28.27	Pk	Vertical
7311	38.11	54	-15.89	AV	Vertical
TX 11b 2462MHz					
4924	49.51	74	-24.49	Pk	Horizontal
4924	31.78	54	-22.22	AV	Horizontal
7386	47.74	74	-26.26	Pk	Horizontal
7386	33.24	54	-20.76	AV	Horizontal
4924	50.88	74	-23.12	Pk	Vertical
4924	38.85	54	-15.15	AV	Vertical
7386	45.95	74	-28.05	Pk	Vertical
7386	37.13	54	-16.87	AV	Vertical

RESULT: PASS

Note:

1. Margin = Emission Level - Limit

2.1GHz-25GHz(All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report. No recording in the test report at least have 20dB margin).

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=1MHz, VBW=3MHz

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

12.2. TEST SET-UP

Radiated same as 11.2

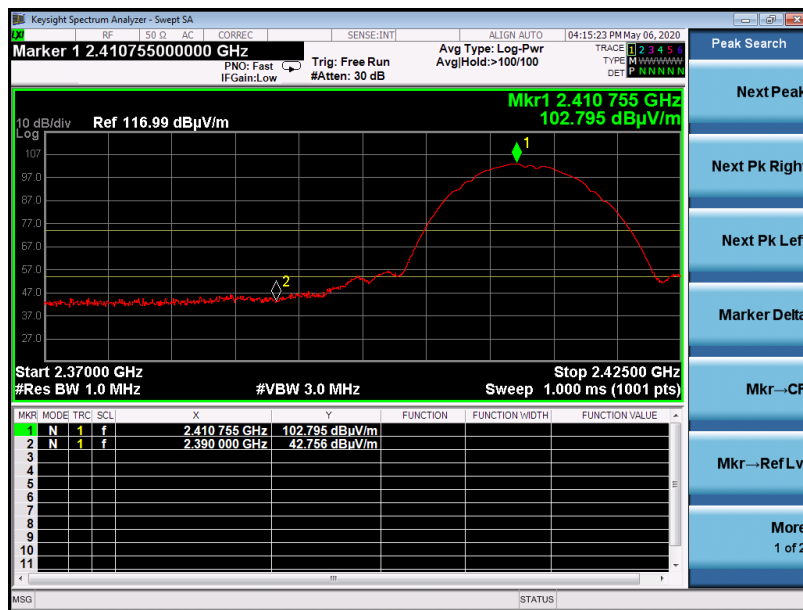
Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μ V) to represent the Amplitude. Use the F dB(μ V/m) to represent the Field Strength. So A=F.

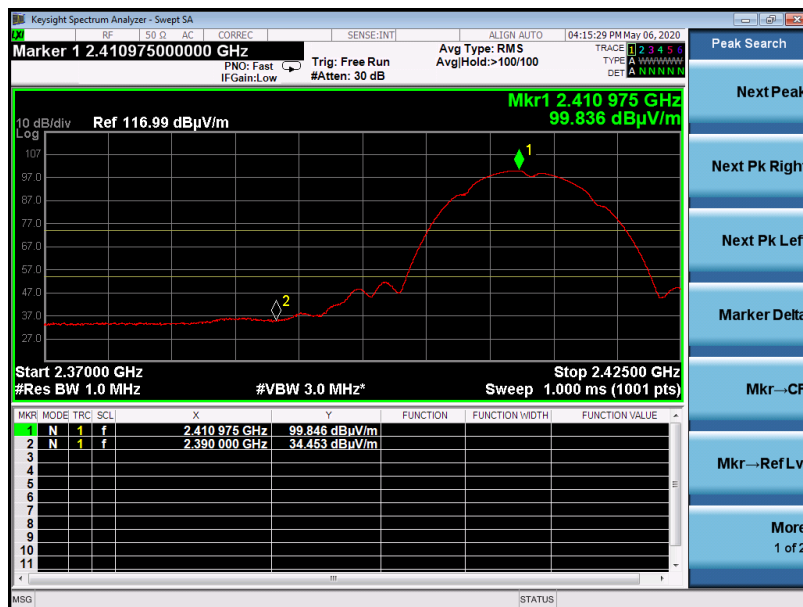
12.3. TEST RESULT

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal

PK



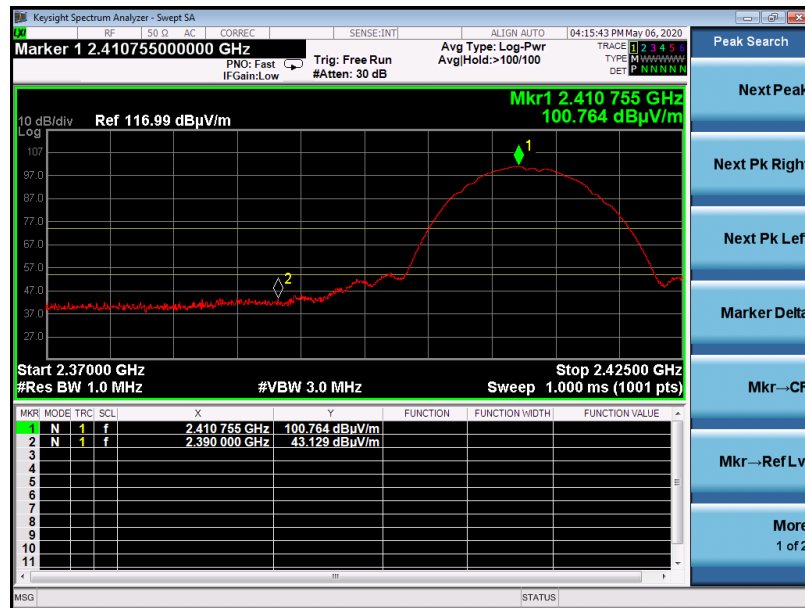
AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Horizontal

PK



AV



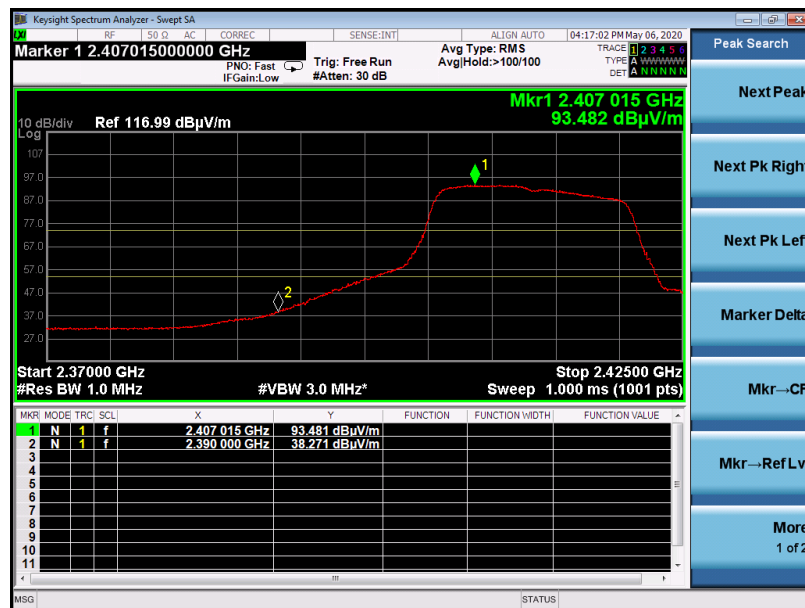
RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Horizontal

PK



AV



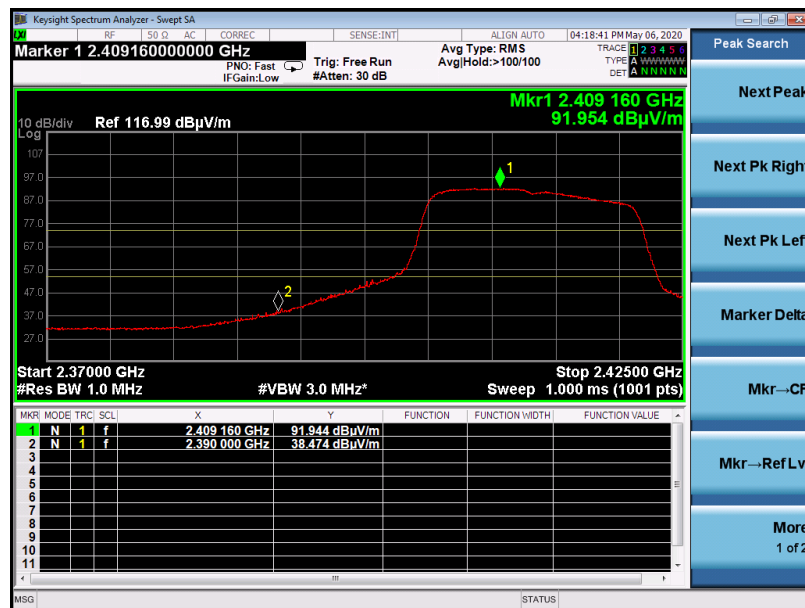
RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2412MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Mara Phones X1	Model Name	Mara Phones X1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 20 with data rate 6.5 2462MHZ	Antenna	Vertical

PK



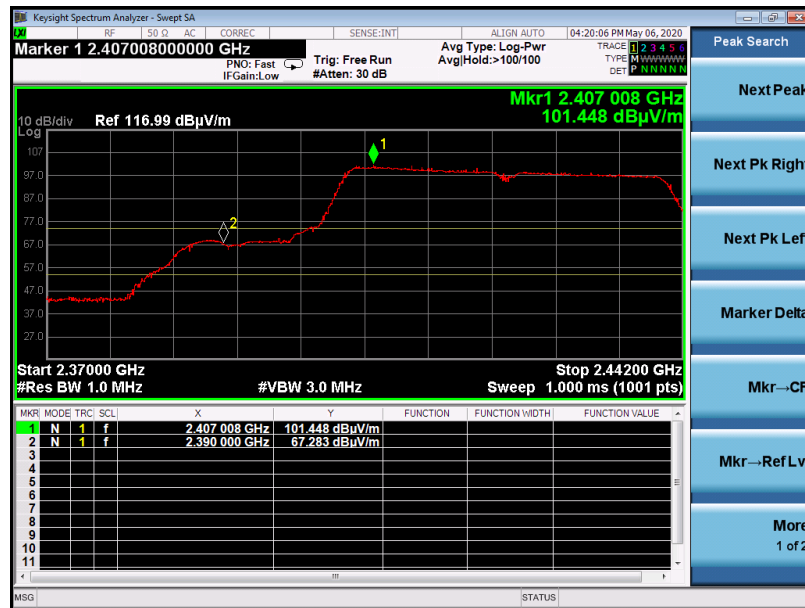
AV



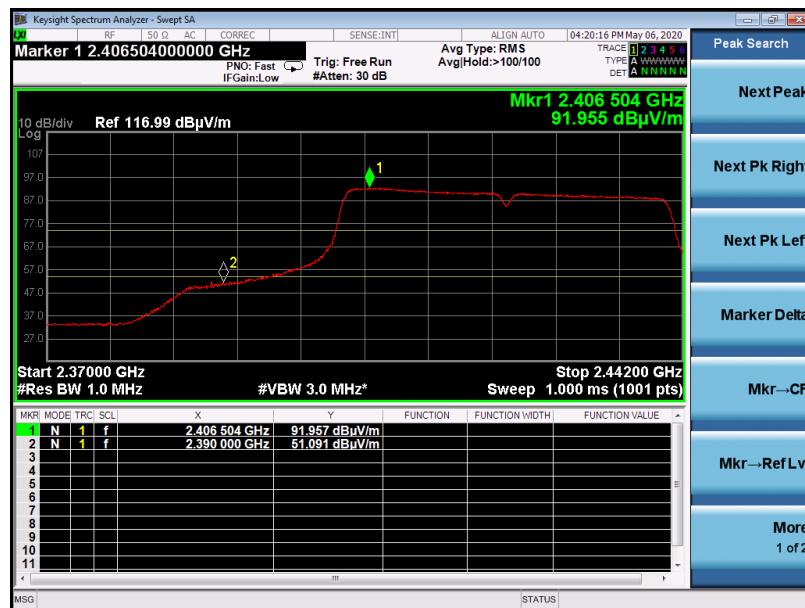
RESULT: PASS

EUT	Smart phone	Model Name	X2
Temperature	25°C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Horizontal

PK



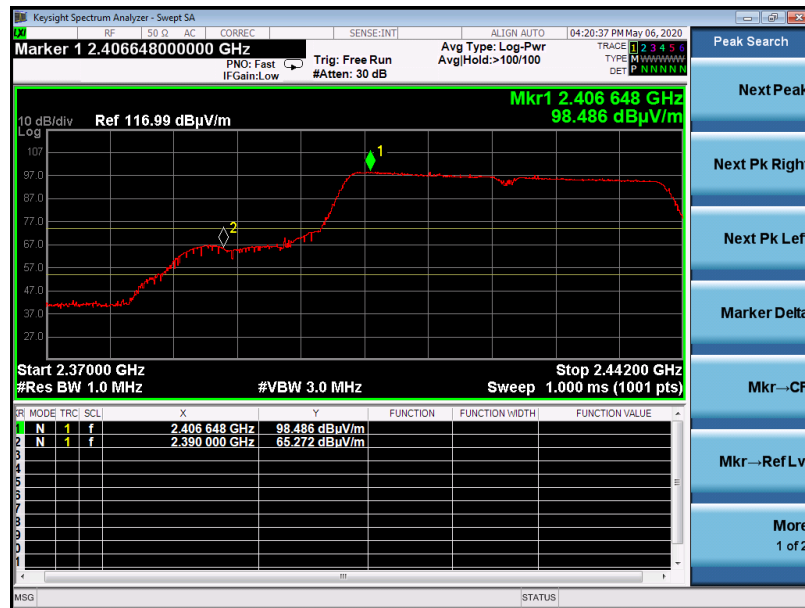
AV



RESULT: PASS

EUT	Smart phone	Model Name	X2
Temperature	25°C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Vertical

PK



AV



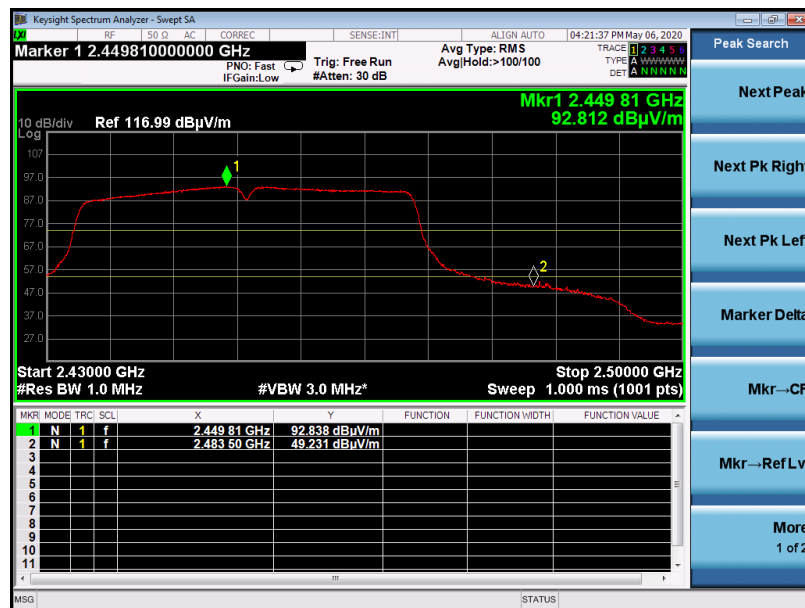
RESULT: PASS

EUT	Smart phone	Model Name	X2
Temperature	25°C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40with data rate 13.5 2452MHZ	Antenna	Horizontal

PK



AV



RESULT: PASS

EUT	Smart phone	Model Name	X2
Temperature	25°C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Vertical

PK



AV



RESULT: PASS

13. FCC LINE CONDUCTED EMISSION TEST

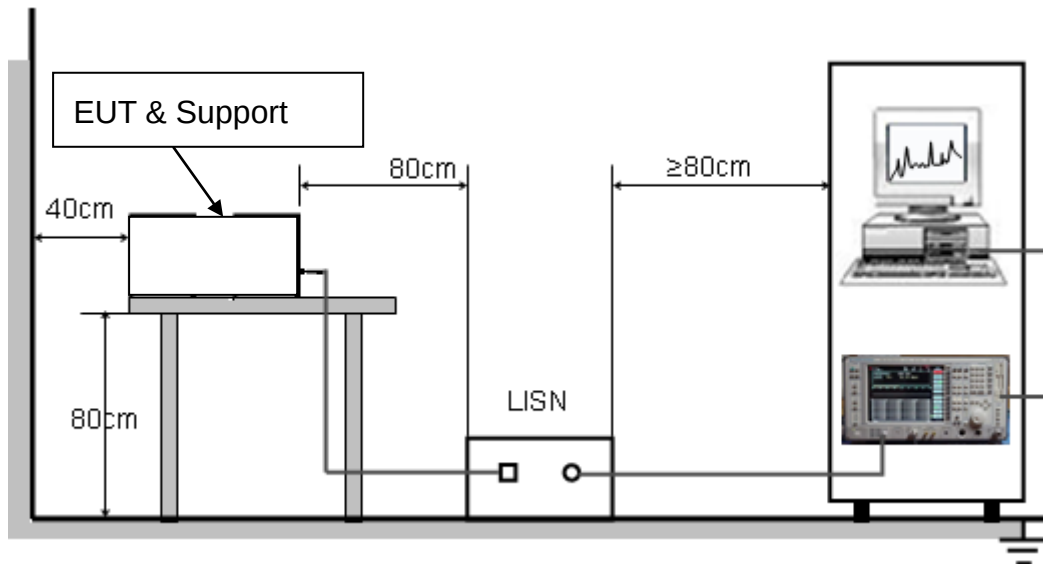
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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 Mara Phones X1 op 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/60Hz power 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.

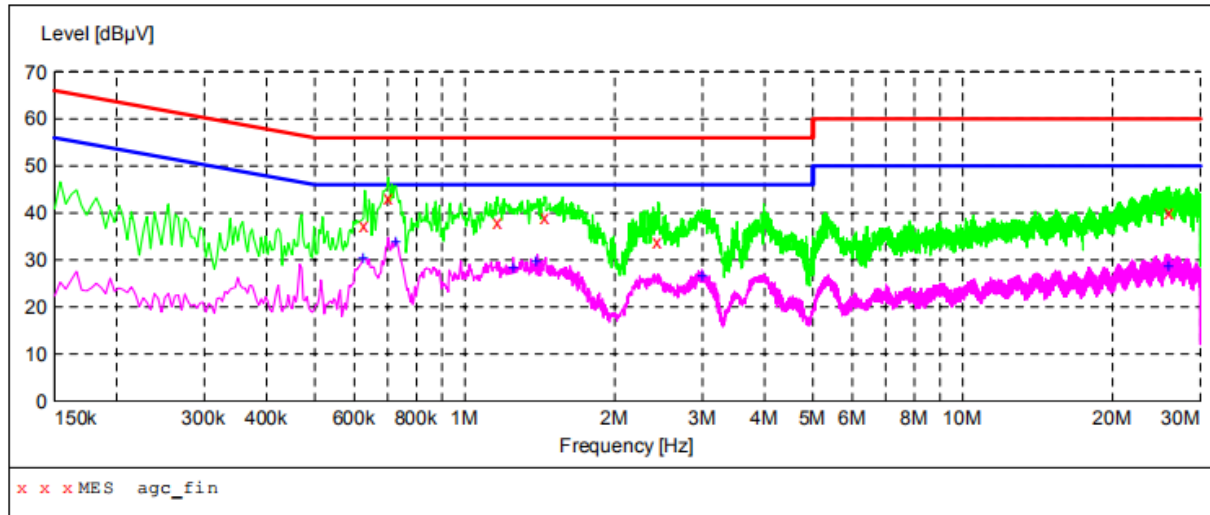
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

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



MEASUREMENT RESULT: "agc_fin"

2020/4/16 19:42

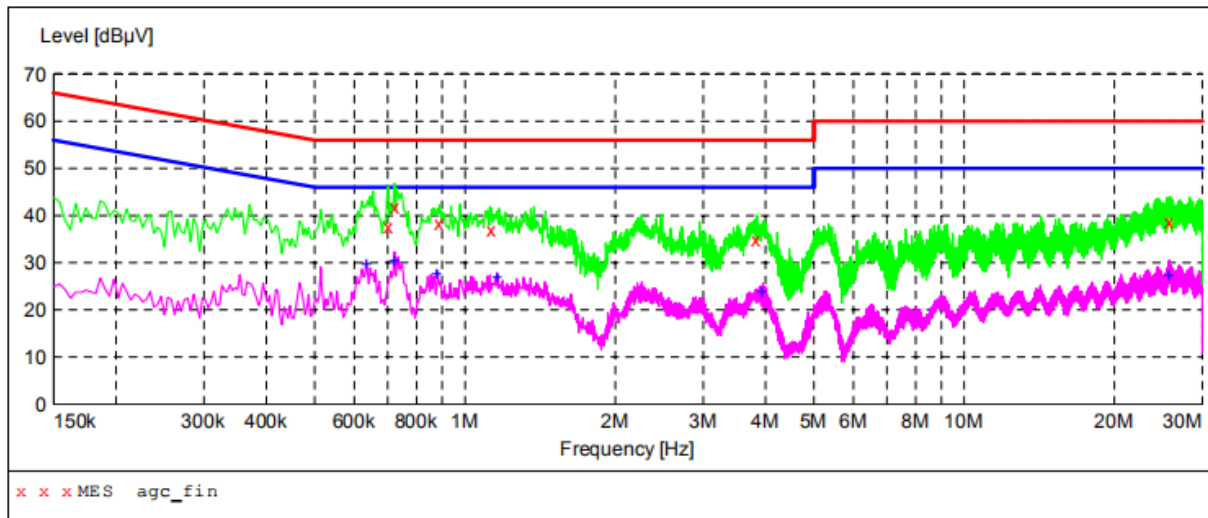
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.630000	37.30	11.3	56	18.7	QP	L1	FLO
0.702000	43.20	11.3	56	12.8	QP	L1	FLO
1.162000	38.00	11.3	56	18.0	QP	L1	FLO
1.454000	39.10	11.3	56	16.9	QP	L1	FLO
2.446000	33.90	11.4	56	22.1	QP	L1	FLO
25.962000	39.90	12.6	60	20.1	QP	L1	FLO

MEASUREMENT RESULT: "agc_fin2"

2020/4/16 19:42

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.626000	30.20	11.3	46	15.8	AV	L1	FLO
0.726000	33.80	11.3	46	12.2	AV	L1	FLO
1.250000	28.40	11.3	46	17.6	AV	L1	FLO
1.398000	29.50	11.3	46	16.5	AV	L1	FLO
2.994000	26.40	11.4	46	19.6	AV	L1	FLO
25.902000	28.70	12.6	50	21.3	AV	L1	FLO

Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

2020/4/16 19:45

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.702000	37.70	11.3	56	18.3	QP	N	FLO
0.722000	41.60	11.3	56	14.4	QP	N	FLO
0.890000	38.30	11.3	56	17.7	QP	N	FLO
1.130000	36.90	11.3	56	19.1	QP	N	FLO
3.846000	34.90	11.4	56	21.1	QP	N	FLO
25.774000	38.50	12.6	60	21.5	QP	N	FLO

MEASUREMENT RESULT: "agc_fin2"

2020/4/16 19:45

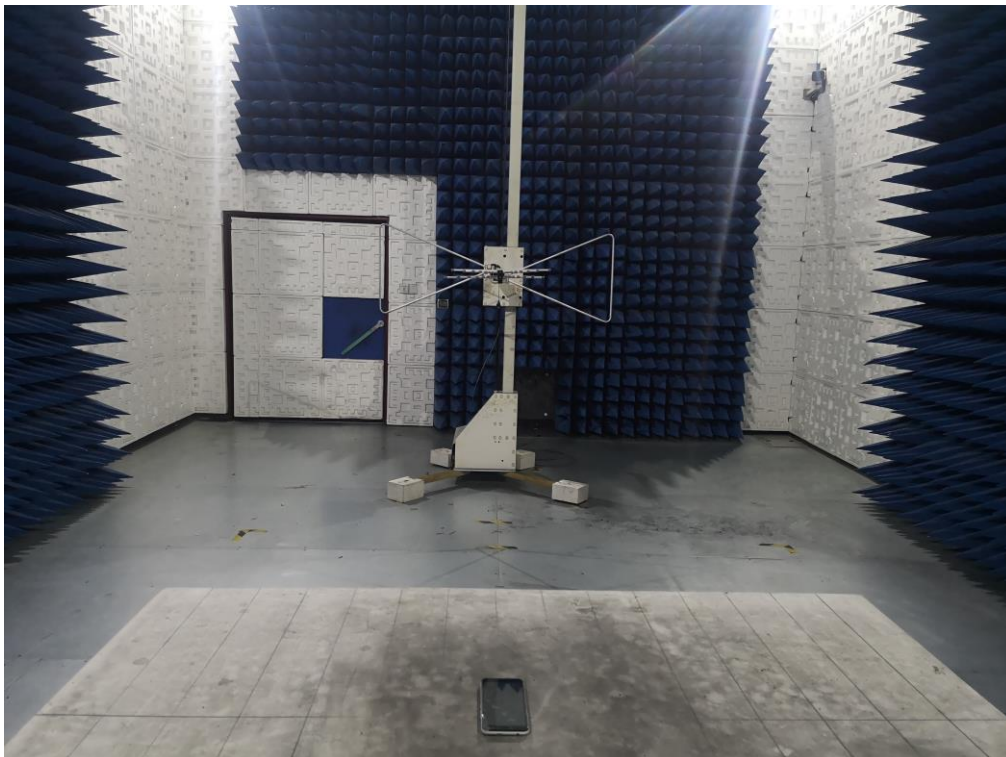
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.634000	29.70	11.3	46	16.3	AV	N	FLO
0.722000	30.50	11.3	46	15.5	AV	N	FLO
0.882000	27.50	11.3	46	18.5	AV	N	FLO
1.162000	26.80	11.3	46	19.2	AV	N	FLO
3.954000	23.70	11.4	46	22.3	AV	N	FLO
25.774000	27.30	12.6	50	22.7	AV	N	FLO

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP



RADIATED EMISSION ABOVE 1G TEST SETUP



----END OF REPORT----