10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of AVGPSD in the KDB 558074 item 10.3 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

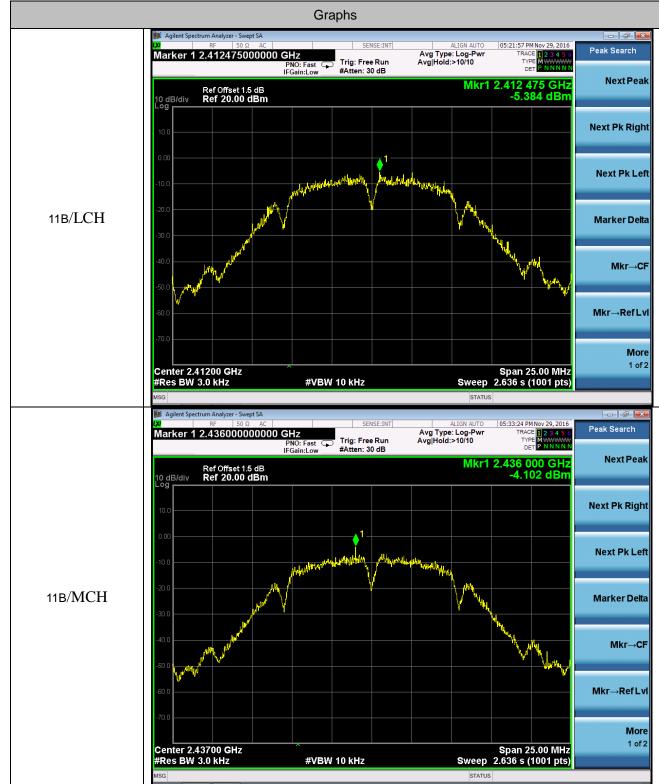
Refer To Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

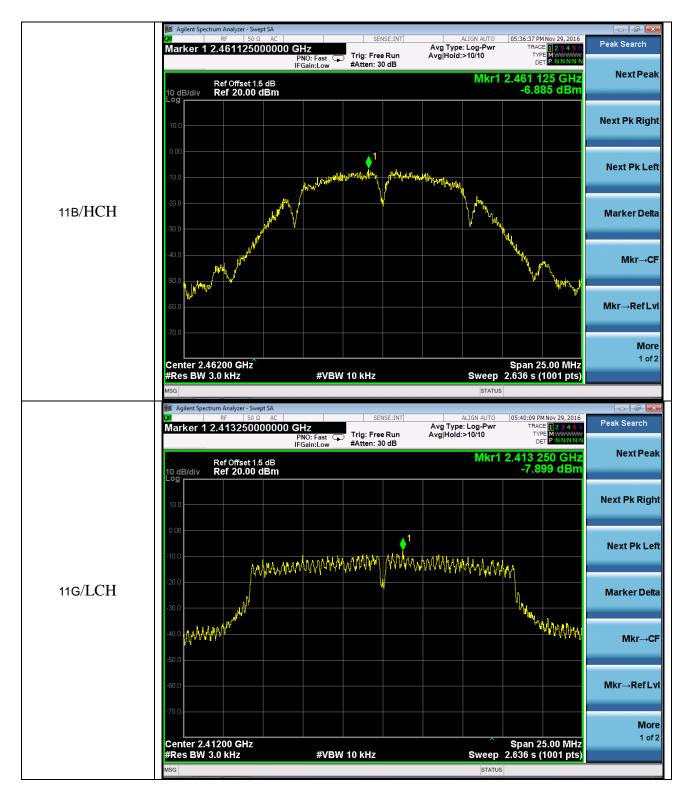
10.4 LIMITS AND MEASUREMENT RESULT

Mode	Channel	PSD [dBm/3kHz]	Limit[dBm/3kHz]	Verdict
	LCH	-5.384	8	PASS
11B	MCH	-4.102	8	PASS
	HCH	-6.885	8	PASS
	LCH	-7.899	8	PASS
11G	MCH	-7.212	8	PASS
	HCH	-7.160	8	PASS
	LCH	-8.993	8	PASS
11N20SISO	MCH	-7.542	8	PASS
	HCH	-7.676	8	PASS
	LCH	-10.791	8	PASS
11N40SISO	MCH	-11.190	8	PASS
	HCH	-10.530	8	PASS

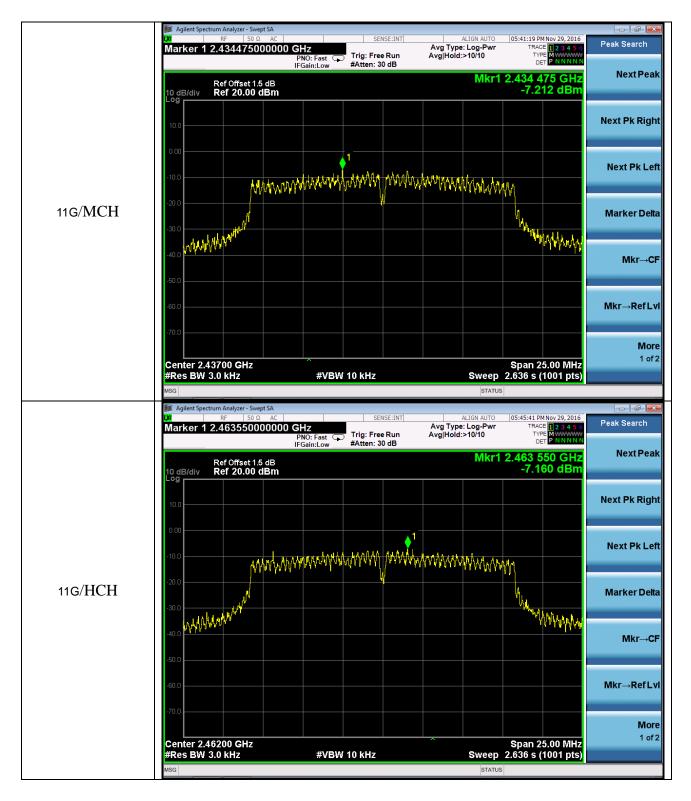


Test Graph

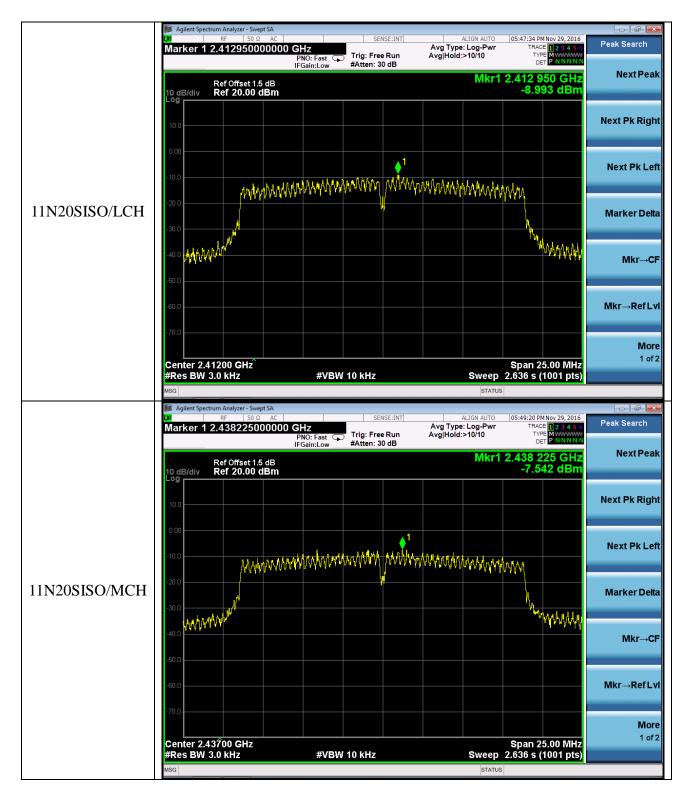
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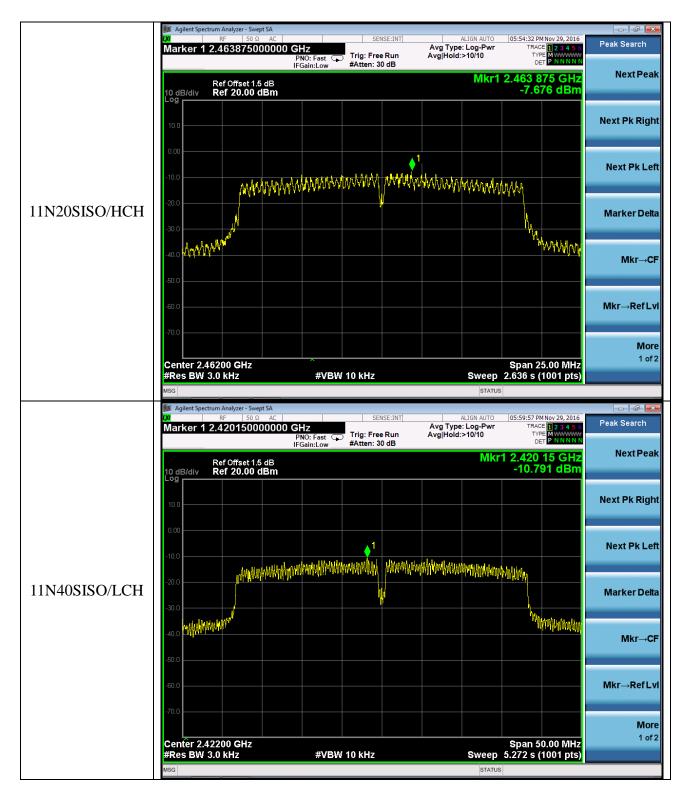
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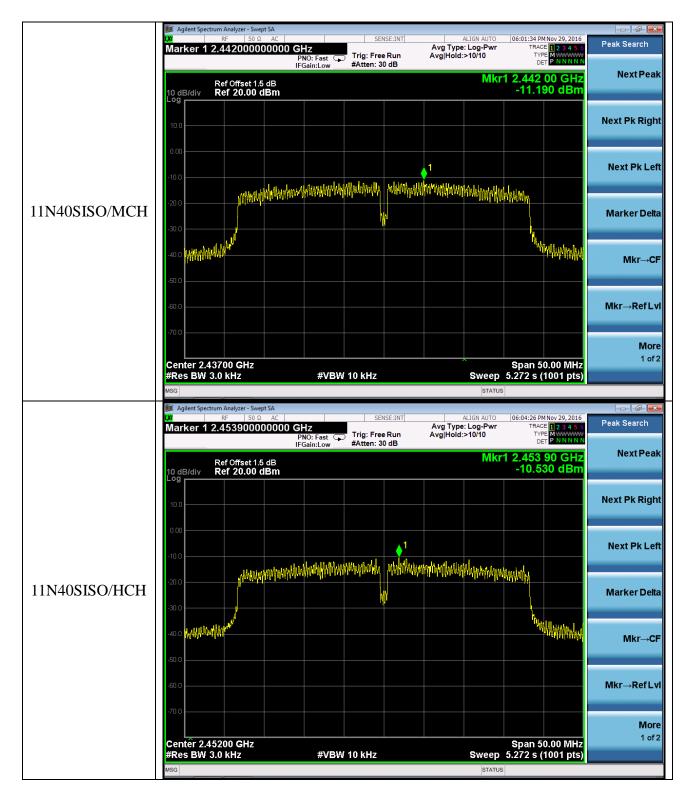
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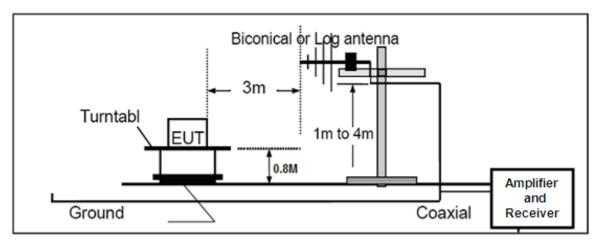


11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

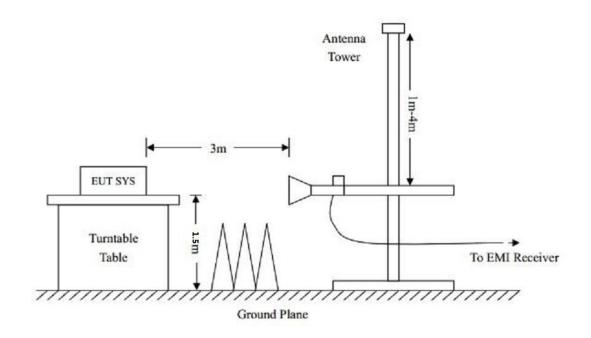
- 1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

11.2. TEST SETUP



RADIATED EMISSION TEST SETUP 30MHz-1000MHz





11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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

Note: All modes were tested For restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

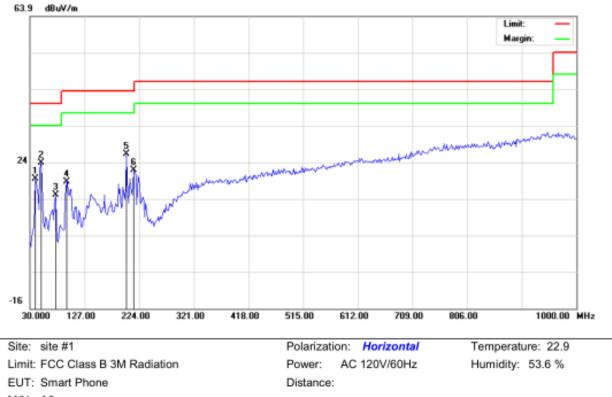
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

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

EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

RADIATED EMISSION BELOW 1GHZ

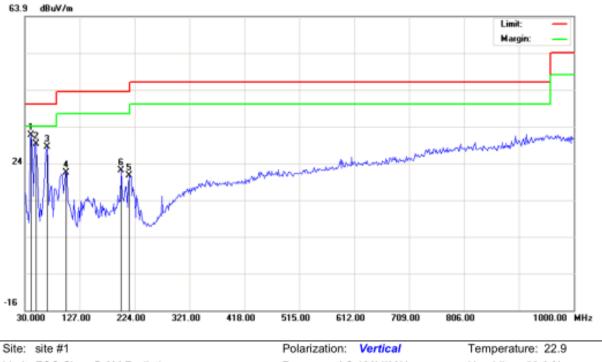


M/N: A8 Mode: Low channel Tx Note:

Antenna Table Measurement Limit Freq. Reading Factor Over Mk Height Degree No. Detector Comment MHz dBuV dB/m dBuV/m dBuV/m dB cm degree 1 39.7000 7.80 11.51 19.31 40.00 -20.69 peak 2 49.4000 12.55 11.28 23.83 40.00 -16.17 peak 3 75.2667 9.91 5.12 15.03 40.00 -24.97 peak 4 94.6667 13.36 5.16 18.52 43.50 -24.98peak 5 201.3667 14.43 11.86 26.29 43.50 -17.21 peak 6 214.3000 11.34 10.54 21.88 43.50 -21.62 peak

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EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



Limit: FCC Class B 3M Radiation EUT: Smart Phone M/N: A8 Mode: Low channel Tx Note:

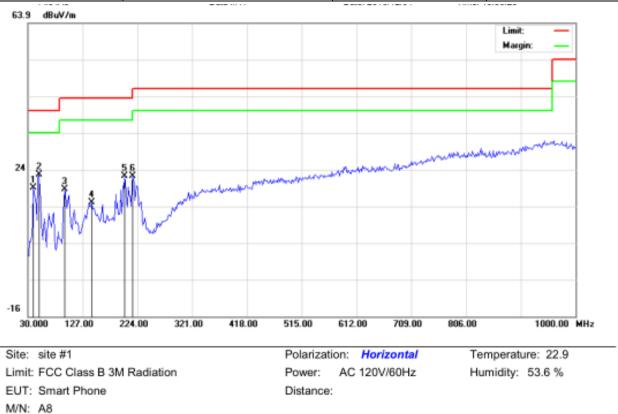
AC 120V/60Hz Power: Distance:

Humidity: 53.6 %

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	•	41.3167	19.77	11.81	31.58	40.00	-8.42	peak			
2		49.4000	17.94	11.28	29.22	40.00	-10.78	peak			
3		68.8000	19.38	9.09	28.47	40.00	-11.53	peak			
4		102.7500	11.48	9.84	21.32	43.50	-22.18	peak			
5		214.3000	10.03	10.54	20.57	43.50	-22.93	peak			
6		199.7500	10.10	11.99	22.09	43.50	-21.41	peak			

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EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal

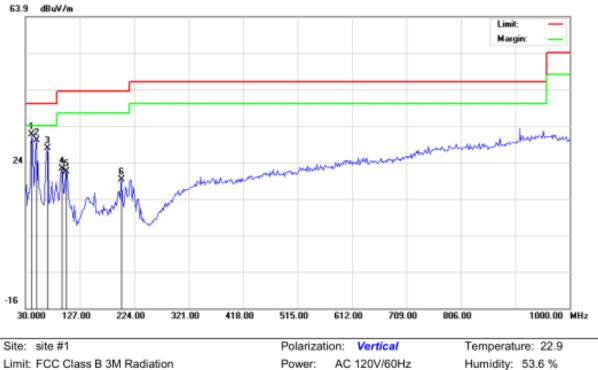


Mode: Middle channel Tx Note:

Antenna Table Reading Factor Measurement Limit Over Freq. Mk Height Degree No. Detector Comment MHz dBuV dB/m dBuV/m dBuV/m dB cm degree 1 39.7000 7.53 11.51 19.04 40.00 -20.96 peak 11.25 2 49.4000 11.28 22.53 40.00 -17.47 peak 3 94.6667 13.39 5.16 18.55 43.50 -24.95 peak 4 143.1667 0.65 14.43 15.08 43.50 -28.42 peak 5 201.3667 10.26 11.86 22.12 43.50 -21.38 peak 6 215.9167 11.74 10.38 22.12 43.50 -21.38 peak

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EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical



EUT: Smart Phone M/N: A8 Mode: Middle channel Tx Note:

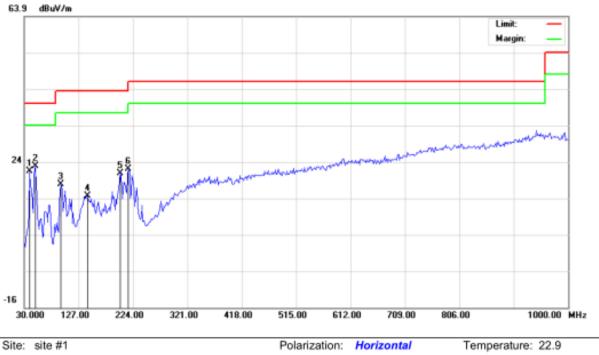
Power: AC 120V/60Hz Distance:

Humidity: 53.6 %

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	•	41.3167	19.82	11.81	31.63	40.00	-8.37	peak			
2		49.4000	18.66	11.28	29.94	40.00	-10.06	peak			
3		68.8000	18.62	9.09	27.71	40.00	-12.29	peak			
4		94.6667	17.12	5.16	22.28	43.50	-21.22	peak			
5		102.7500	11.63	9.84	21.47	43.50	-22.03	peak			
6		201.3667	7.33	11.86	19.19	43.50	-24.31	peak			

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EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal

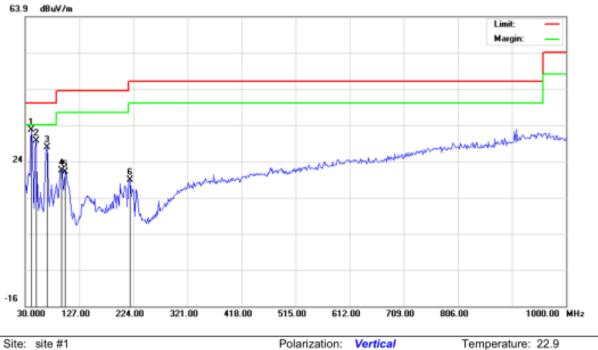


Limit: FCC Class B 3M Radiation EUT: Smart Phone M/N: A8 Mode: High channel Tx Note: Polanzation: Horizontal Power: AC 120V/60Hz Distance: Temperature: 22.9 Humidity: 53.6 %

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		39.7000	9.83	11.51	21.34	40.00	-18.66	peak			
2	*	49.4000	11.50	11.28	22.78	40.00	-17.22	peak			
3		94.6667	12.66	5.16	17.82	43.50	-25.68	peak			
4		143.1667	0.21	14.43	14.64	43.50	-28.86	peak			
5		201.3667	9.04	11.86	20.90	43.50	-22.60	peak			
6		215.9167	11.64	10.38	22.02	43.50	-21.48	peak			

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EUT	Smart Phone	Model Name	A8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical



Limit: FCC Class B 3M Radiation EUT: Smart Phone M/N: A8 Mode: High channel Tx Note: Power: AC 120V/60Hz Distance: Temperature: 22.9 Humidity: 53.6 %

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	*	41.3167	20.79	11.81	32.60	40.00	-7.40	peak			
2		49.4000	18.23	11.28	29.51	40.00	-10.49	peak			
3		68.8000	18.69	9.09	27.78	40.00	-12.22	peak			
4		94.6667	16.27	5.16	21.43	43.50	-22.07	peak			
5		101.1333	10.85	10.22	21.07	43.50	-22.43	peak			
6		217.5333	8.50	10.21	18.71	46.00	-27.29	peak			

- **Note:** 1. Factor=Antenna Factor + Cable loss, Margin= Result -Limit.
 - 2. The "Factor" value can be calculated automatically by software of measurement system.
 - 3. 30MHz~1GHz:(Scan with 11b,11g,11n, the worst case is 11b Mode)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Common			
TX 11b 2412MHz										
4824.092	40.26	10.44	50.70	74	-23.3	Pk	Horizontal			
4824.092	34.10	10.44	44.54	54	-9.46	AV	Horizontal			
7236.127	44.96	10.39	55.35	74	-18.65	pk	Horizontal			
7236.127	33.48	10.39	43.87	54	-10.13	AV	Horizontal			
4824.098	42.97	10.39	53.36	74	-20.64	Pk	Vertical			
4824.082	29.04	10.39	39.43	54	-14.57	AV	Vertical			
7236.110	43.46	10.68	54.14	74	-19.86	Pk	Vertical			
7236.054	31.54	10.68	42.22	54	-11.78	AV	Vertical			
			TX 11b 2437M	Hz						
4874.072	44.34	10.39	54.73	74	-19.27	Pk	Horizontal			
4874.108	33.14	10.39	43.53	54	-10.47	AV	Horizontal			
7311.092	40.63	12.68	53.31	74	-20.69	Pk	Horizontal			
7311.131	32.38	12.68	45.06	54	-8.94	AV	Horizontal			
4874.098	47.12	10.39	57.51	74	-16.49	Pk	Vertical			
4874.044	34.48	10.39	44.87	54	-9.13	AV	Vertical			
7311.145	45.84	12.68	58.52	74	-15.48	Pk	Vertical			
7311.104	31.67	12.68	44.35	54	-9.65	AV	Vertical			
			TX 11b 2462M	Hz						
4924.128	43.01	10.39	53.40	74	-20.6	pk	Horizontal			
4924.083	33.08	10.39	43.47	54	-10.53	AV	Horizontal			
7386.071	42.51	12.68	55.19	74	-18.81	pk	Horizontal			
7386.134	31.59	12.68	44.27	54	-9.73	AV	Horizontal			
4924.042	43.67	10.39	54.06	74	-19.94	pk	Vertical			
4924.060	35.00	10.39	45.39	54	-8.61	AV	Vertical			
7386.051	44.28	12.68	56.96	74	-17.04	pk	Vertical			
7386.054	30.28	12.68	42.96	54	-11.04	AV	Vertical			

RADIATED EMISSION ABOVE 1GHZ

RESULT: PASS

Note: 1~25GHz scan with 11b. No recording in the test report at least have 20dB margin.

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Meter Reading + Factor

Margin = Emission Leve - Limit

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

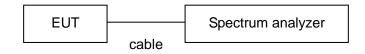
b)Set RBW=100kHz,VBW=300kHz

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

12.2. TEST SET-UP

Radiated same as 11.2

Conducted set up



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре				
TX 11b 2412MHz										
2399.9	73.35	-13	60.35	74	-13.65	peak	Horizontal			
2399.9	55.66	-13	42.66	54	-11.34	AVG	Horizontal			
2400	73.8	-12.99	60.81	74	-13.19	peak	Horizontal			
2400	54.9	-12.99	41.91	54	-12.09	AVG	Horizontal			
2399.9	74.54	-12.97	61.57	74	-12.43	peak	Vertical			
2399.9	52.98	-12.97	40.01	54	-13.99	AVG	Vertical			
2400	74.63	-12.94	61.69	74	-12.31	peak	Vertical			
2400	52.86	-12.94	39.92	54	-14.08	AVG	Vertical			
			TX 11b 2	2462MHz						
2483.5	71.73	-12.78	58.73	74	-15.27	peak	Horizontal			
2483.5	54.02	-12.78	41.02	54	-12.98	AVG	Horizontal			
2483.6	71.73	-12.77	58.74	74	-15.26	peak	Horizontal			
2483.6	52.03	-12.77	39.04	54	-14.96	AVG	Horizontal			
2483.5	75.33	-12.76	62.36	74	-11.64	peak	Vertical			
2483.5	54.03	-12.76	41.06	54	-12.94	AVG	Vertical			
2483.6	72.88	-12.72	59.94	74	-14.06	peak	Vertical			
2483.6	56.48	-12.72	43.54	54	-10.46	AVG	Vertical			

12.3. Radiated Test Result

RESULT: PASS

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

Factor=Antenna Factor + Cable loss - Amplifier gain,

Emission Level = Meter Reading + Factor

Margin= Emission Level -Limit.

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

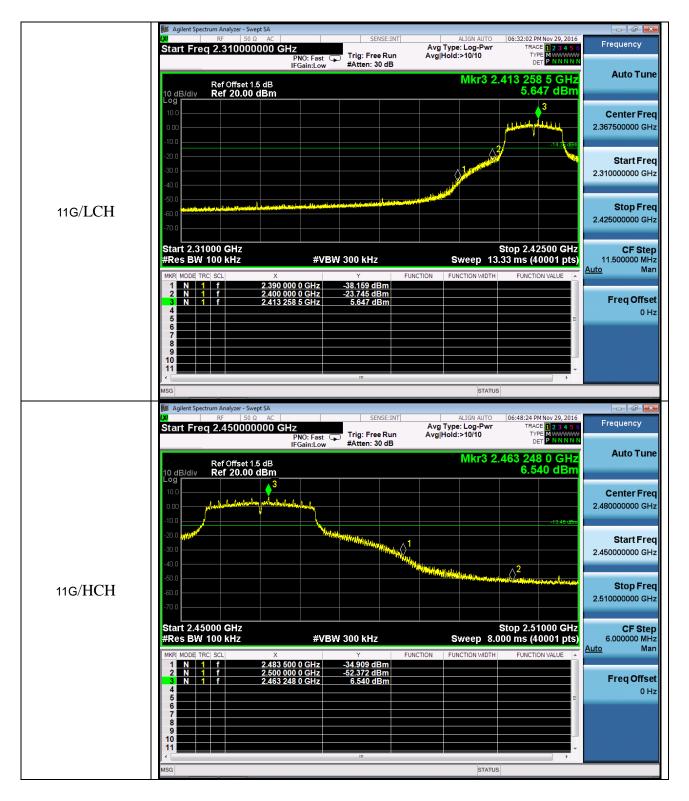
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
44.0	LCH	8.009	-29.156	-11.99	PASS
11B	HCH	7.124	-50.913	-12.88	PASS
11G	LCH	5.647	-23.745	-14.35	PASS
IIG	HCH	6.540	-34.909	-13.46	PASS
11N20SISO	LCH	5.635	-23.672	-14.37	PASS
1111205150	HCH	6.828	-28.977	-13.17	PASS
11N40SISO	LCH	0.921	-27.521	-19.08	PASS
1111405150	HCH	0.026	-29.248	-19.97	PASS

12.4. Conducted Test Result

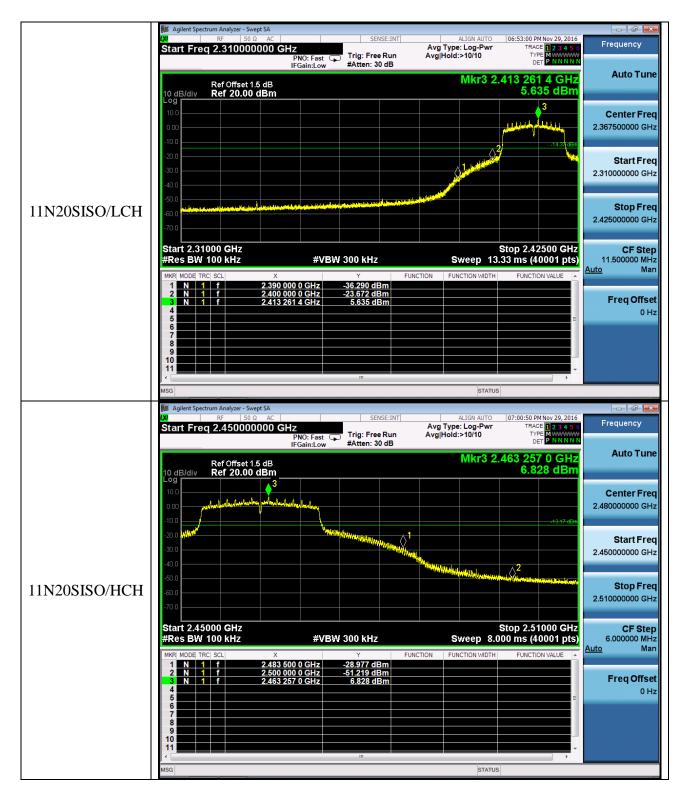
Test Graph



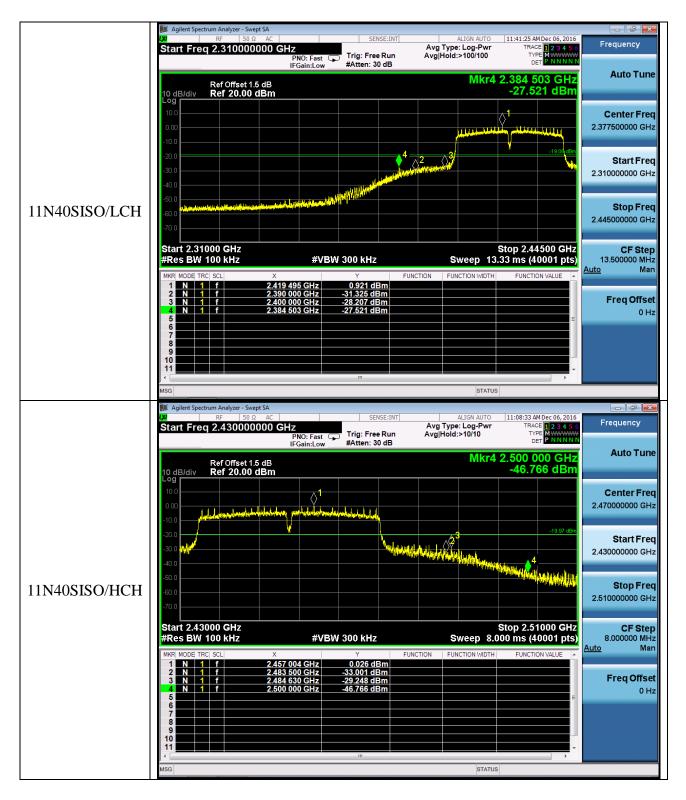
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13. FCC LINE CONDUCTED EMISSION TEST

13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

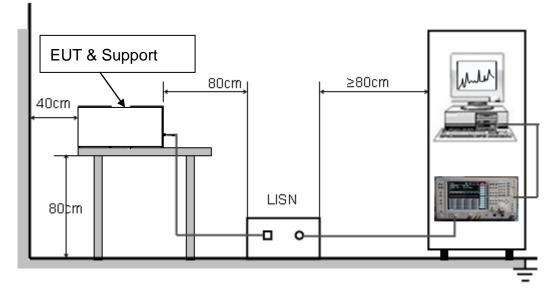
Frequency	Maximum RF Line Voltage					
Frequency	Q.P.(dBuV)	Average(dBuV)				
150kHz~500kHz	66-56	56-46				
500kHz~5MHz	56	46				
5MHz~30MHz	60	50				

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

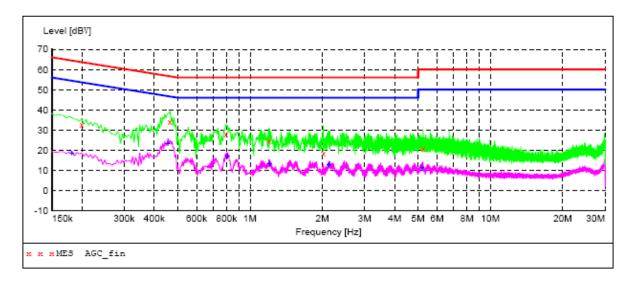
- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground 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.
- 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



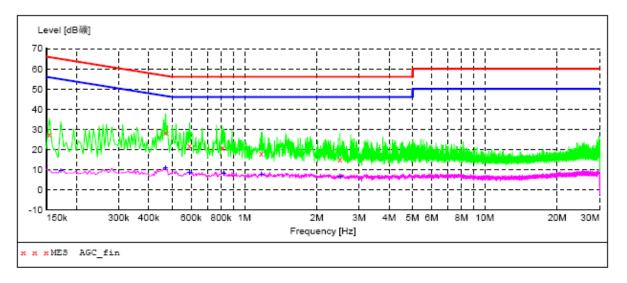
LINE CONDUCTED EMISSION TEST LINE 1-L

MEASUREMENT RESULT: "AGC fin"

2016/12/2 9:55 Frequency Level Transd Limit Margin Detector Line PE AUX STATE MHz dBV dB dBV dB 10.3 10.3 0.199500 32.90 64 30.7 QP L1GND ON 34.00 0.465000 57 22.6 QP L1GND ON 0.793500 28.10 10.3 56 27.9 QP L1 GND ON 10.4 GND 1.198500 24.60 56 31.4 QP L1ON 37.4 QP 39.2 QP 2.017500 18.60 10.4 56 L1GND ON L1GND ON 5.244000 10.6 20.80 60

MEASUREMENT RESULT: "AGC fin2"

2016/12/2 9:55 Frequency		Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBV	dB	dBV	dB				UINIL
0.181500 0.456000 0.807000 1.207500 2.130000 5.203500	18.30 23.00 17.00 13.30 12.60 11.50	10.3 10.3 10.3 10.4 10.5 10.6	54 47 46 46 46 50	36.1 23.8 29.0 32.7 33.4 38.5	AV AV AV AV AV AV	L1 L1 L1 L1 L1 L1	GND GND GND GND GND GND	ON ON ON ON ON



Line Conducted Emission Test Line 2-N

MEASUREMENT RESULT: "AGC fin"

2016/12/2 10:0 Frequency		Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBV	dB	dBV	dB				SIAIE
0.154500 0.469500 0.591000 0.811500 1.176000 2.499000	27.30 28.50 22.00 20.90 18.20 15.20	10.3 10.3 10.3 10.3 10.4 10.5	66 57 56 56 56	38.5 28.0 34.0 35.1 37.8 40.8	QP QP QP QP QP QP	N N N N N	GND GND GND GND GND GND	ON ON ON ON ON

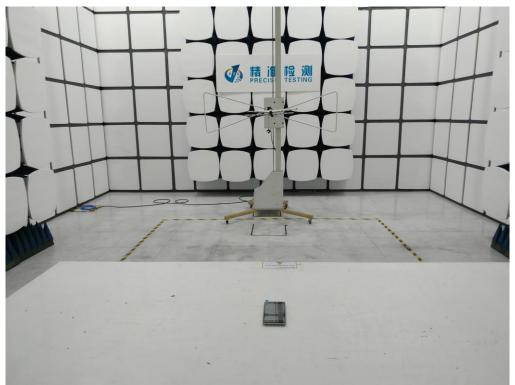
MEASUREMENT RESULT: "AGC fin2"

2016/12/2 10:0 Frequency		Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBV	dB	dBV	dB				SIRIE
0.172500 0.469500 0.591000 0.820500 1.176000 2.499000	9.50 11.00 8.70 8.10 7.70 6.60	10.3 10.3 10.3 10.3 10.4 10.5	55 47 46 46 46	45.3 35.5 37.3 37.9 38.3 39.4	AV AV AV AV AV AV	N N N N N	GND GND GND GND GND GND	ON ON ON ON ON

APPENDIX A: PHOTOGRAPHS OF TEST SETUP FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP







APPENDIX B: PHOTOGRAPHS OF EUT

TOTAL VIEW OF EUT

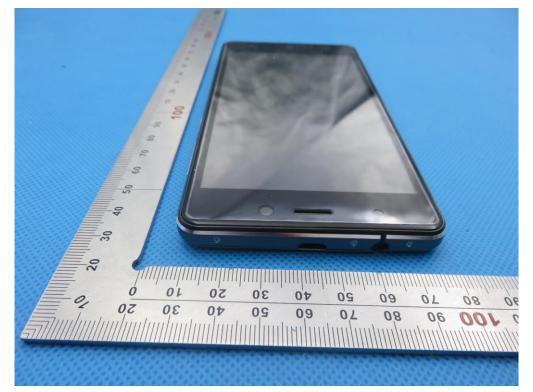
THE LABEL OF ADAPTER

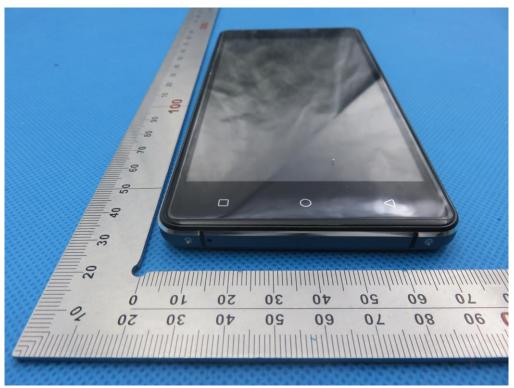




THE LABEL OF BATTERY

TOP VIEW OF EUT





BOTTOM VIEW OF EUT

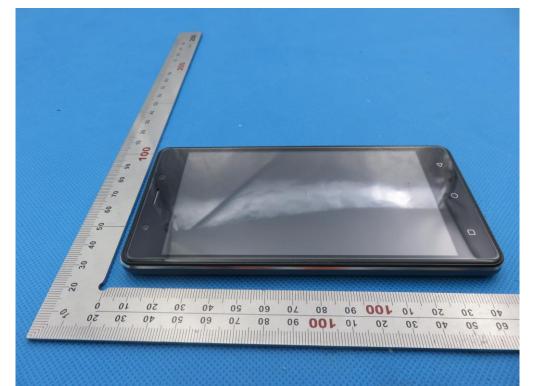
FRONT VIEW OF EUT





BACK VIEW OF EUT

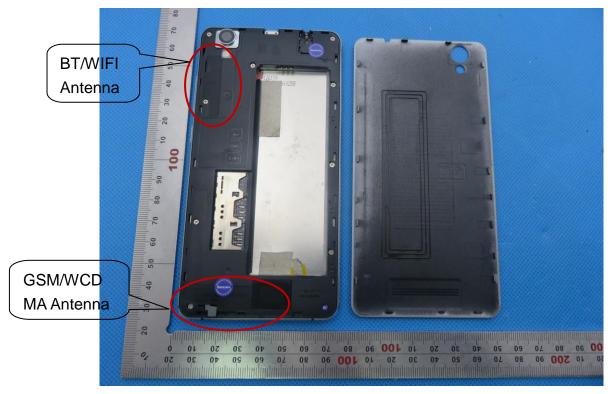
LEFT VIEW OF EUT





RIGHT VIEW OF EUT

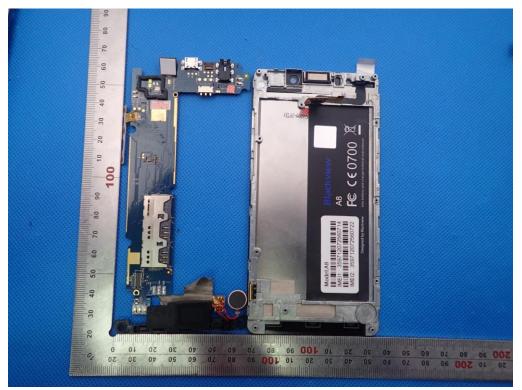
OPEN VIEW OF EUT-1

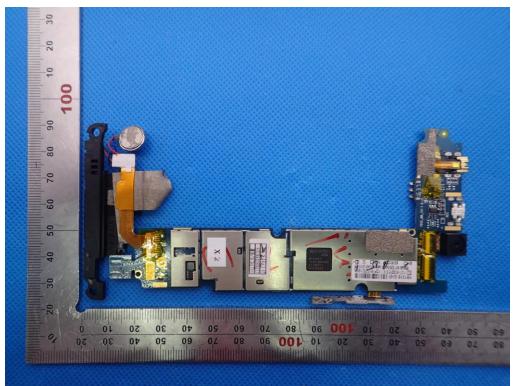




OPEN VIEW OF EUT-2

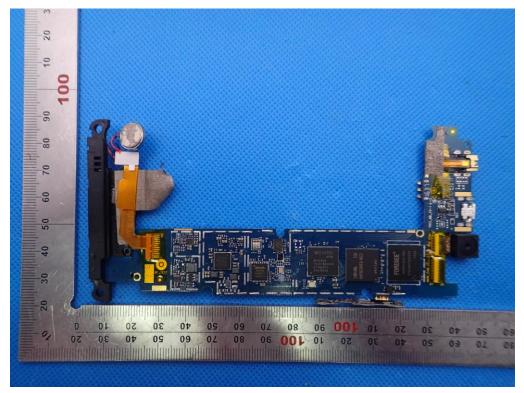
OPEN VIEW OF EUT-3





INTERNAL VIEW OF EUT-1

INTERNAL VIEW OF EUT-2



----END OF REPORT----