S T S L A B

FCC TEST REPORT

Report No: STS1502022F04

Issued for

Amoi Technology Co., Ltd.

4/F, 22nd Building, Guanri Road, Software Park, Xiamen City, Fujian Province, P.R. China

Product Name:	WCDMA DIGITAL MOBILE PHONE
Brand Name:	N/A
Model No.:	A610
Series Model:	N/A
FCC ID:	2AD6VA610
Test Standard:	FCC Part 15.247

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TEST RESULT CERTIFICATION

Applicant's name ..... : Amoi Technology Co., Ltd.

Address..... : 4/F, 22nd Building, Guanri Road, Software Park, Xiamen City, Fujian Province, P.R. China

Manufacture's Name ..... : Amoi Technology Co., Ltd.

Address..... : 4/F, 22nd Building, Guanri Road, Software Park, Xiamen City, Fujian Province, P.R. China

Product description

Product name.....: WCDMA DIGITAL MOBILE PHONE

Model and/or type reference : A610

Serial Model .....: N/A

Standards ..... : FCC Part15.247

Test procedure ..... ANSI C63.10：2009

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test .....:

Date (s) of performance of tests.....: 04 Feb. 2015 ~09 Feb. 2015

Date of Issue .....: 09 Feb. 2015

Test Result.....: **Pass**

Testing Engineer **:** Jinming

(Jin Ming)

Report writing **:** Fern. feng

(Fern Feng)

Authorized Signatory **:** Bovey Yang

(Bovey Yang)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China.

FCC Registration No.: 842334; IC Registration No.: 12108A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	WCDMA DIGITAL MOBILE PHONE
Trade Name	N/A
Model Name	A610
Serial Model	N/A
Model Difference	N/A
Product Description	The EUT is a WCDMA DIGITAL MOBILE PHONE Operation Frequency: 2402~2480 MHz Modulation Type: GFSK Radio Technology BLE Number Of Channel 40 Antenna Designation: Please see Note 3. Antenna Gain (dBi) 0 dbi
Frequency Bands	☒GSM 850 ☒PCS 1900 (U.S. Bands) ☒GSM 900 ☒DCS 1800 (Non-U.S. Bands) U.S. Bands: ☒UMTS FDD Band II ☒UMTS FDD Band V Non-U.S. Bands: ☐UMTS FDD Band I ☐UMTS FDD Band VIII
Channel List	Please refer to the Note 2.
Adapter	Adapter Input:AC 100-240V,50/60Hz,0.10A Output:DC 5V,1000mA
Battery	Rated Voltage: 3.7V capacity :1200mAh
Hardware version number	N/A
Software versioning number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	11	2422	21	2442	31	2462
01	2404	12	2424	22	2444	32	2464
02	2406	13	2426	23	2446	33	2466
03	2408	14	2428	24	2448	34	2468
05	2410	15	2430	25	2450	35	2470
06	2412	16	2432	26	2452	36	2472
07	2414	17	2434	27	2454	37	2474
08	2416	18	2436	28	2456	38	2476
09	2418	19	2438	29	2458	39	2478
10	2420	20	2440	30	2460	40	2480

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	PIFA Antenna	N/A	0	BT 4.0 ANT

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX CH1/CH20/CH40
Mode 2	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 2	Link Mode

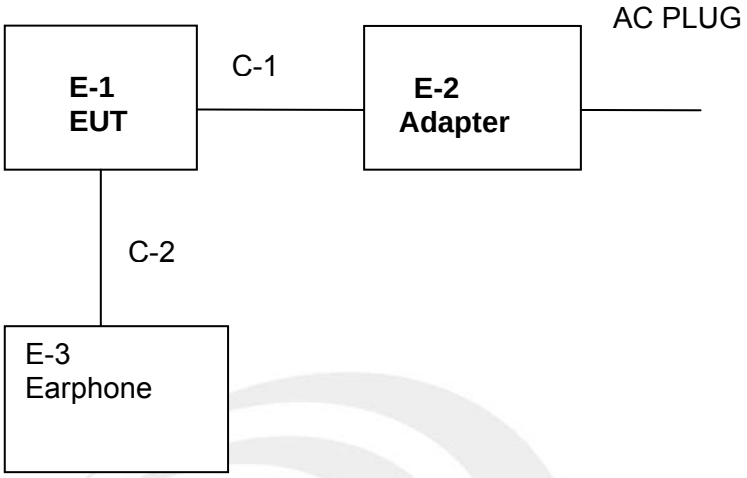
For Radiated Emission	
Final Test Mode	Description
Mode 1	TX CH1/CH20/CH40
Mode 2	Link Mode

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	WCDMA DIGITAL MOBILE PHONE	N/A	A610	N/A	EUT
E-2	Adapter	N/A		N/A	
E-3	Earphone	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	YES	1.5m	
C-2	NO	NO	1.2m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2014.10.25	2015.10.24
Test Receiver	R&S	ESCI	101427	2014.10.25	2015.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2014.10.27	2015.10.26
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.06.06	2015.06.05
Horn Antenna	R&S	9120D	152265	2014.10.27	2015.10.26
Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2014.07.06	2015.07.05
Amplifier	EM	EM-30180	060538	2014.12.22	2015.12.21
Loop Antenna	ARA	PLA-1030/B	1029	2014.06.08	2015.06.07
Power Meter	Anritsu	ML2495A	1204003	2014.10.25	2015.10.24
Power Sensor	Anritsu	MA2411B	100309	2014.10.25	2015.10.24

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	102086	2014.10.25	2015.10.24	102086
LISN	R&S	ENV216	101242	2014.10.25	2015.10.24
LISN	EMCO	3810/2NM	000-23625	2014.10.25	2015.10.24
50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.06.06	2015.06.05
Passive Voltage Probe	R&S	ESH2-Z3	100196	2014.06.06	2015.06.05
Absorbing clamp	R&S	MDS-21	100668	2014.10.27	2015.10.26

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

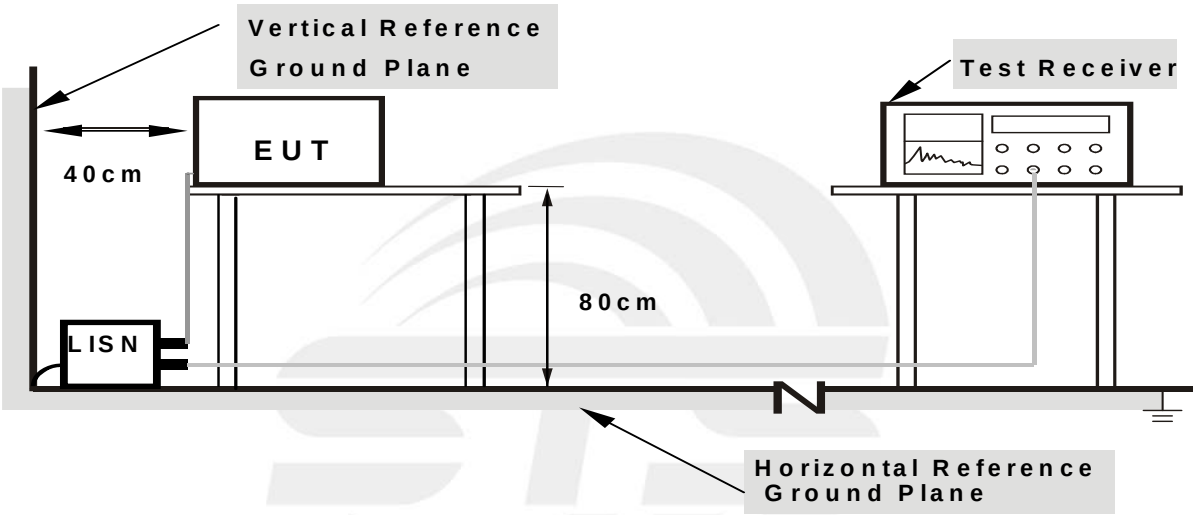
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 EUT OPERATING CONDITIONS

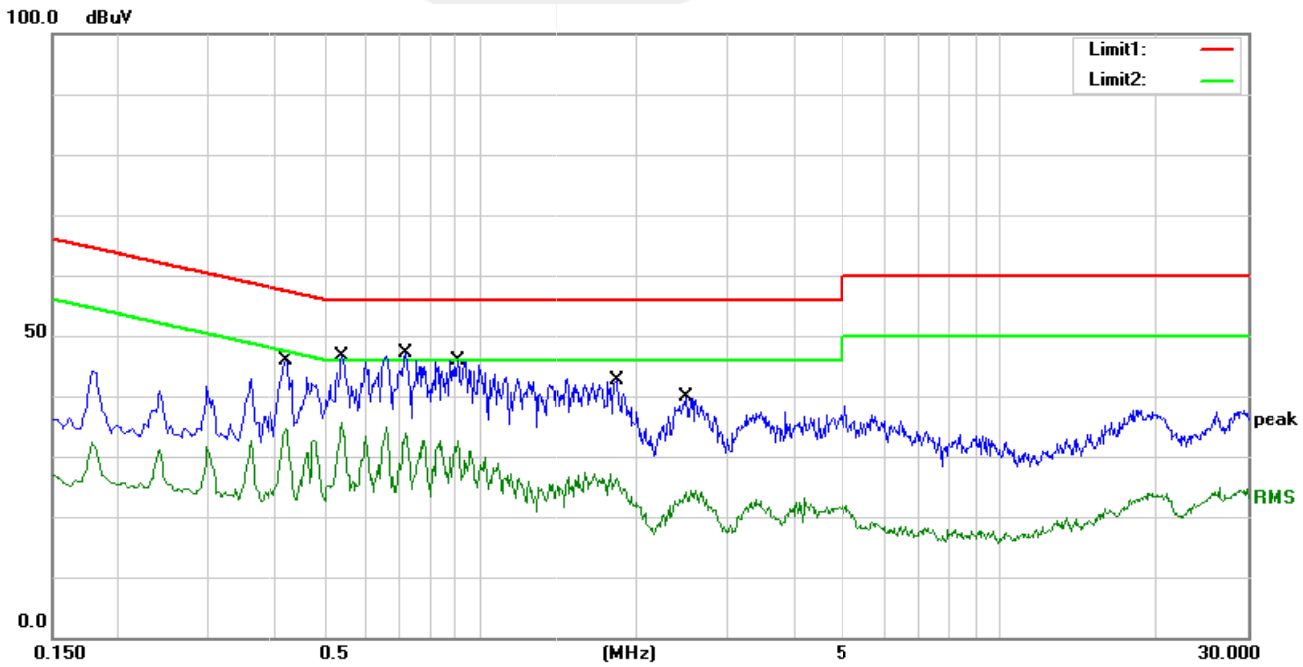
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.5 TEST RESULTS

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name. ：	A610
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz	Test Mode：	Mode 2

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4211	32.28	10.82	43.1	57.43	-14.33	QP
2	0.4211	23.69	10.82	34.51	47.43	-12.92	AVG
3	0.5373	34.59	10.83	45.42	56	-10.58	QP
4	0.5373	26.02	10.83	36.85	46	-9.15	AVG
5	0.7211	31.84	10.81	42.65	56	-13.35	QP
6	0.7211	19.62	10.81	30.43	46	-15.57	AVG
7	0.91	27.74	10.82	38.56	56	-17.44	QP
8	0.91	18.05	10.82	28.87	46	-17.13	AVG
9	1.8401	26.13	10.83	36.96	56	-19.04	QP
10	1.8401	14.71	10.83	25.54	46	-20.46	AVG
11	2.5125	20.84	10.84	31.68	56	-24.32	QP
12	2.5125	9.61	10.84	20.45	46	-25.55	AVG

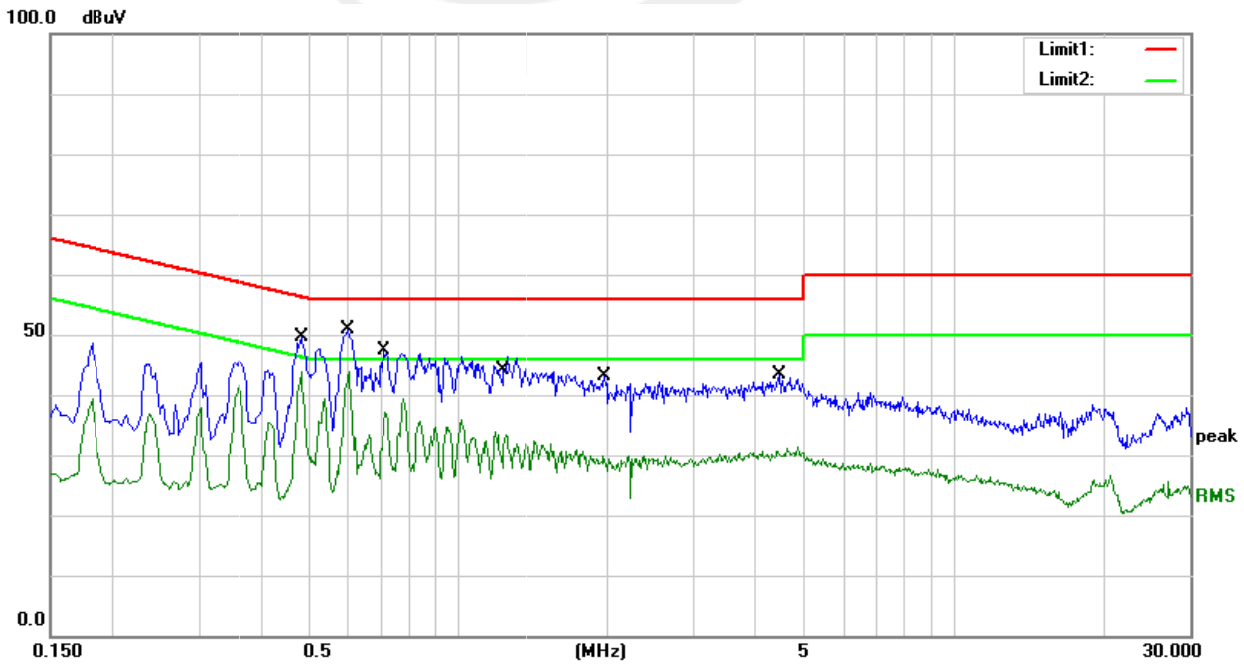
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name. ：	A610
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz	Test Mode：	Mode 2

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4852	35.68	10.82	46.5	56.25	-9.75	QP
2	0.4852	25.24	10.82	36.06	46.25	-10.19	AVG
3	0.5936	37.25	10.82	48.07	56	-7.93	QP
4	0.5936	30.74	10.82	41.56	46	-4.44	AVG
5	0.7101	30.85	10.82	41.67	56	-14.33	QP
6	0.7101	23.21	10.82	34.03	46	-11.97	AVG
7	1.2381	29.16	10.82	39.98	56	-16.02	QP
8	1.2381	17.46	10.82	28.28	46	-17.72	AVG
9	1.9726	25.95	10.83	36.78	56	-19.22	QP
10	1.9726	17.91	10.83	28.74	46	-17.26	AVG
11	4.4132	25.53	11.1	36.63	56	-19.37	QP
12	4.4132	18.46	11.1	29.56	46	-16.44	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMITS

6dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&205(a), then the Part15.247&209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (Frequency Range 9kHz-1000MHz)

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier harmonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz / 10Hz

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2 TEST PROCEDURE

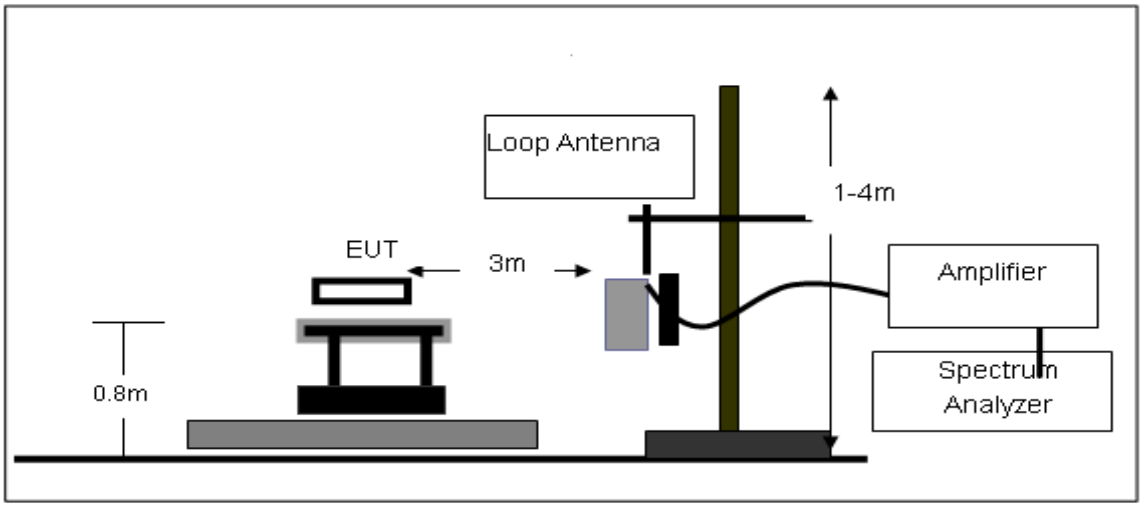
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

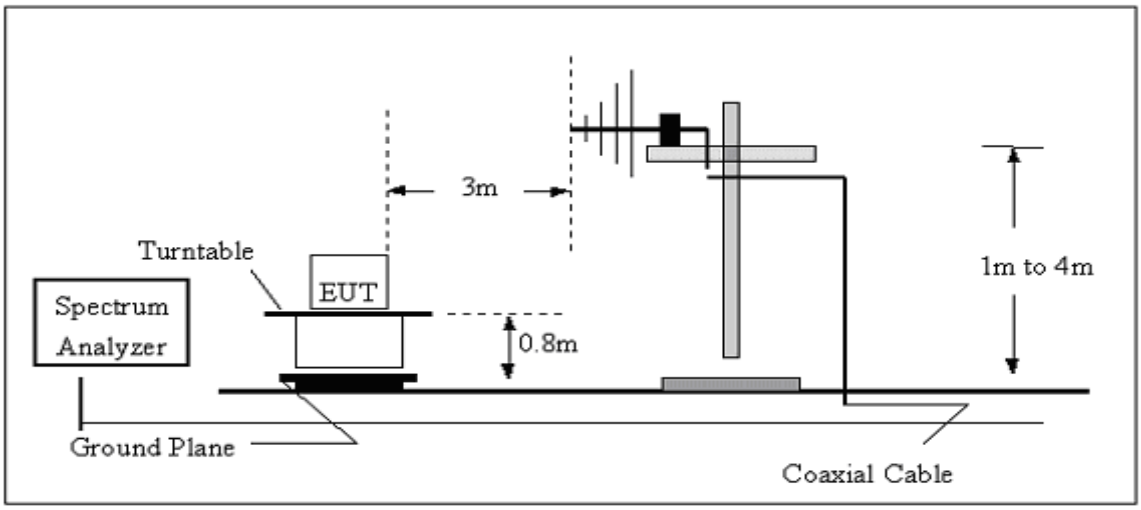
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.3 TEST SETUP

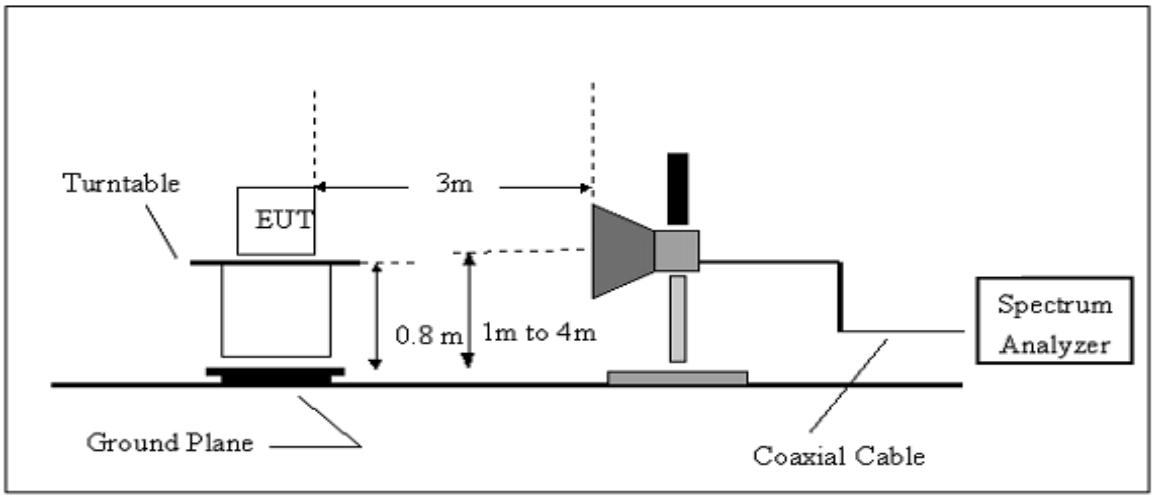
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

4.5 TEST RESULTS
(Between 9KHz – 30 MHz)

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name. ：	A610
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	Link mode	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

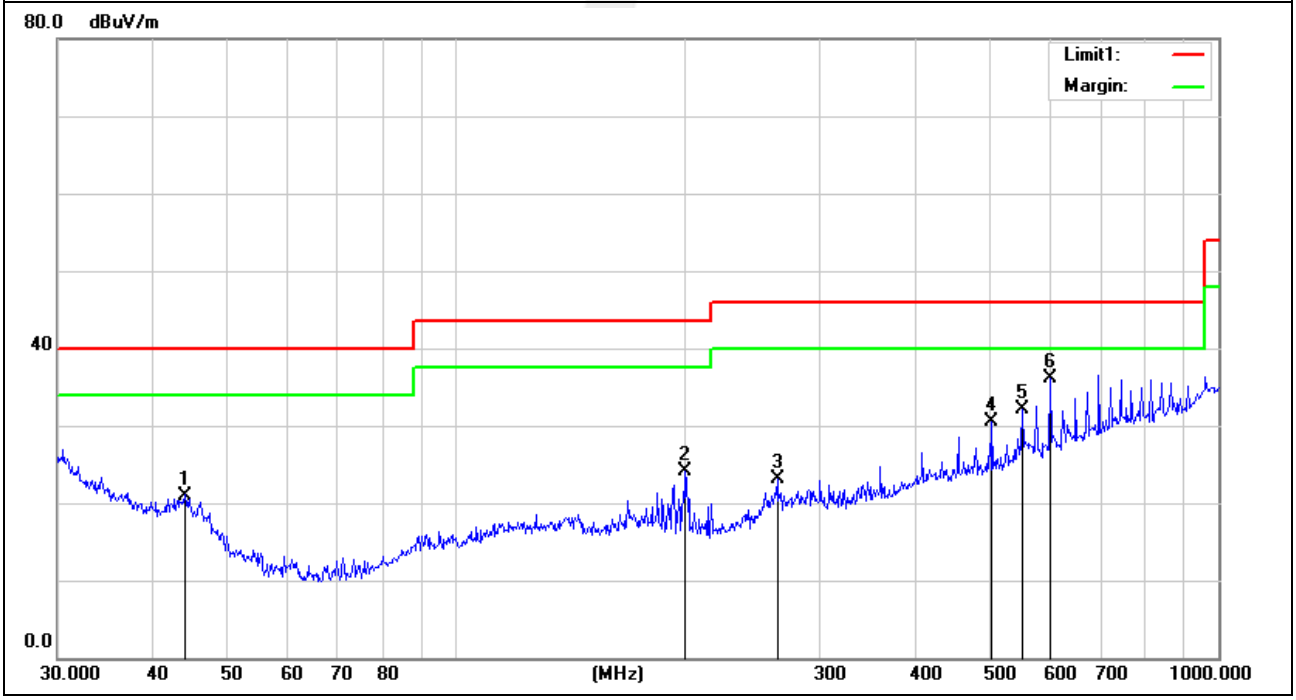
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1GHz

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	Link mode	Polarization :	Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.1202	9.48	11.52	21	40	-19	QP
2	199.9856	14.83	9.32	24.15	43.5	-19.35	QP
3	263.819	7.78	15.39	23.17	46	-22.83	QP
4	504.7062	9.85	20.73	30.58	46	-15.42	QP
5	552.8832	9.24	22.88	32.12	46	-13.88	QP
6	601.4265	13.47	22.6	36.07	46	-9.93	QP

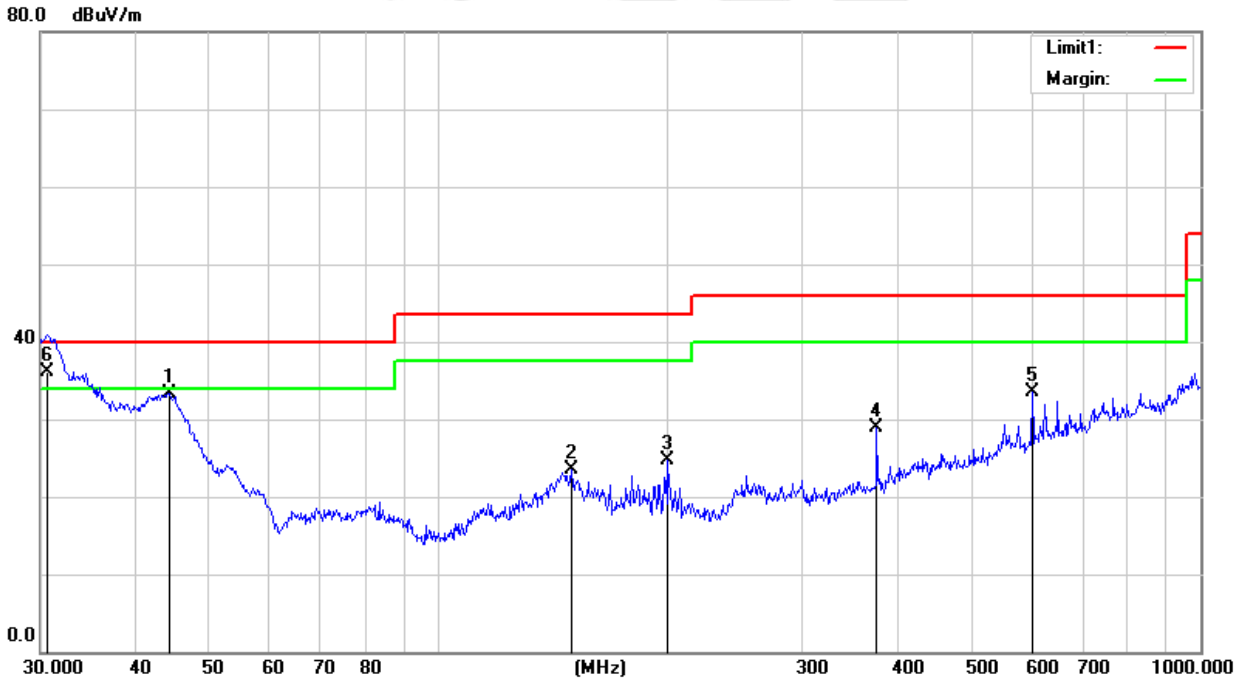
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	Link mode	Polarization :	Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2752	21.83	11.45	33.28	40	-6.72	QP
2	149.4857	11.14	12.36	23.5	43.5	-20	QP
3	199.9856	15.37	9.32	24.69	43.5	-18.81	QP
4	375.9385	11.27	17.62	28.89	46	-17.11	QP
5	601.4265	10.96	22.6	33.56	46	-12.44	QP
6	30.5398	17.5	18.67	36.17	54	-17.83	QP

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Above 1000 MHz

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH1:2402MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804	43.87	10.44	54.31	74	-19.69	peak
4804	32.23	10.44	42.67	54	-11.33	AVG
7206	41.56	12.39	53.95	74	-20.05	peak
7206	31.96	12.39	44.35	54	-9.65	AVG

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

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH1:2402MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804	41.35	10.4	51.75	74	-22.25	peak
4804	29.74	10.4	40.14	54	-13.86	AVG
7206	31.43	12.71	44.14	74	-29.86	peak
7206	25.69	12.75	38.44	54	-15.56	AVG

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

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH20:2440MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4884	43.59	10.41	54	74	-20	peak
4884	32.76	10.4	43.16	54	-10.84	AVG
7326	41.34	12.76	54.1	74	-19.9	peak
7326	32.52	12.75	45.27	54	-8.73	AVG

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

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH20:2440MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4884	45.09	10.39	55.48	74	-18.52	peak
4884	32.67	10.44	43.11	54	-10.89	AVG
7326	32.56	12.68	45.24	74	-28.76	peak
7326	32.39	12.68	45.07	54	-8.93	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH40:2480MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960	36.24	10.39	46.63	74	-27.37	peak
4960	25.36	10.39	35.75	54	-18.25	AVG
7440	42.49	12.68	55.17	74	-18.83	peak
7440	31.68	12.68	44.36	54	-9.64	AVG

Remark:
1 Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2 No emission detected above 18GHz

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH40:2480MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960	45.09	10.39	55.48	74	-18.52	peak
4960	34.76	10.39	45.15	54	-8.85	AVG
7440	44.93	12.68	57.61	74	-16.39	peak
7440	25.28	12.68	37.96	54	-16.04	AVG

Remark:
1 Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2 No emission detected above 18GHz

4.6 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH00: 2402	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
GFSK							
2399.9	77.83	-13	64.83	74	-9.17	peak	Horizontal
2399.9	55.96	-13	42.96	54	-11.04	AVG	Horizontal
2400	78.63	-12.99	65.64	74	-8.36	peak	Horizontal
2400	56.16	-12.99	43.17	54	-10.83	AVG	Horizontal

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH00: 2402	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
GFSK							
2399.9	77.07	-13	64.07	74	-9.93	peak	Vertical
2399.9	55.25	-13	42.25	54	-11.75	AVG	Vertical
2400	78.61	-12.99	65.62	74	-8.38	peak	Vertical
2400	56.47	-12.99	43.48	54	-10.52	AVG	Vertical

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH40: 2480	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
GFSK							
2483.5	78.08	-12.79	65.29	74	-8.71	peak	Horizontal
2483.5	56.26	-12.79	43.47	54	-10.53	AVG	Horizontal
2483.8	78.62	-12.77	65.85	74	-8.15	peak	Horizontal
2483.8	55.49	-12.77	42.72	54	-11.28	AVG	Horizontal

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH40: 2480	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
GFSK							
2483.5	78.96	-12.79	66.17	74	-7.83	peak	Vertical
2483.5	56.51	-12.79	43.72	54	-10.28	AVG	Vertical
2483.8	78.81	-12.77	66.04	74	-7.96	peak	Vertical
2483.8	55.33	-12.77	42.56	54	-11.44	AVG	Vertical

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.
Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

5. CONDUCTED SPURIOUS EMISSIONS

5.1 REQUIREMENT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.2 TEST PROCEDURE

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

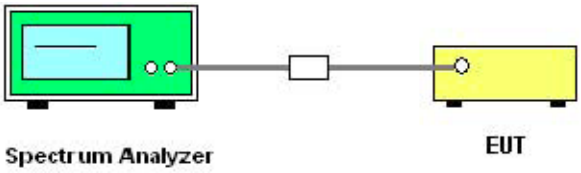
Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

.

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2310 – 2404 MHz Upper Band Edge: 2478 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

5.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

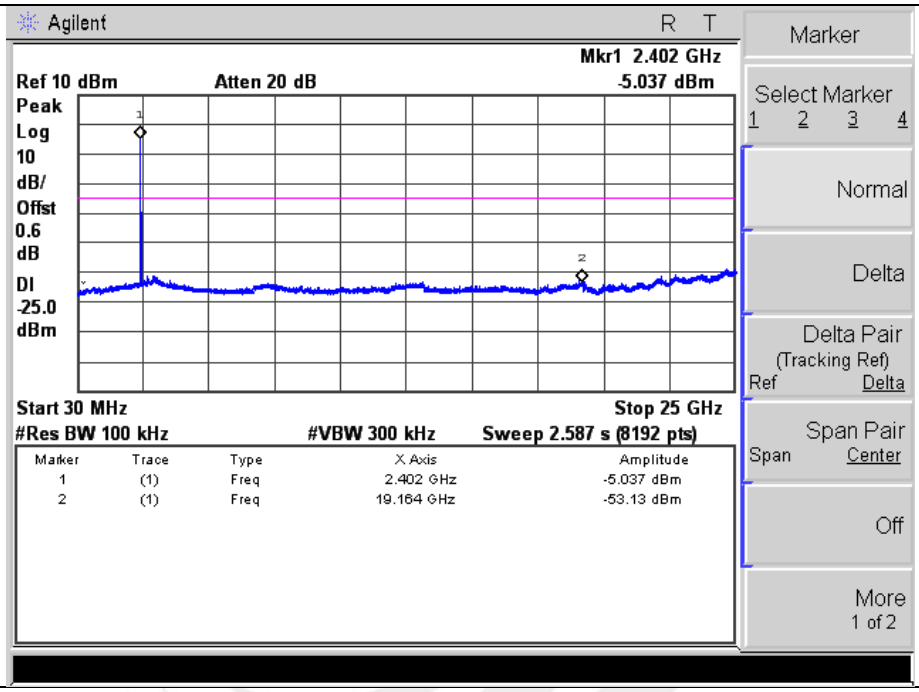
5.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

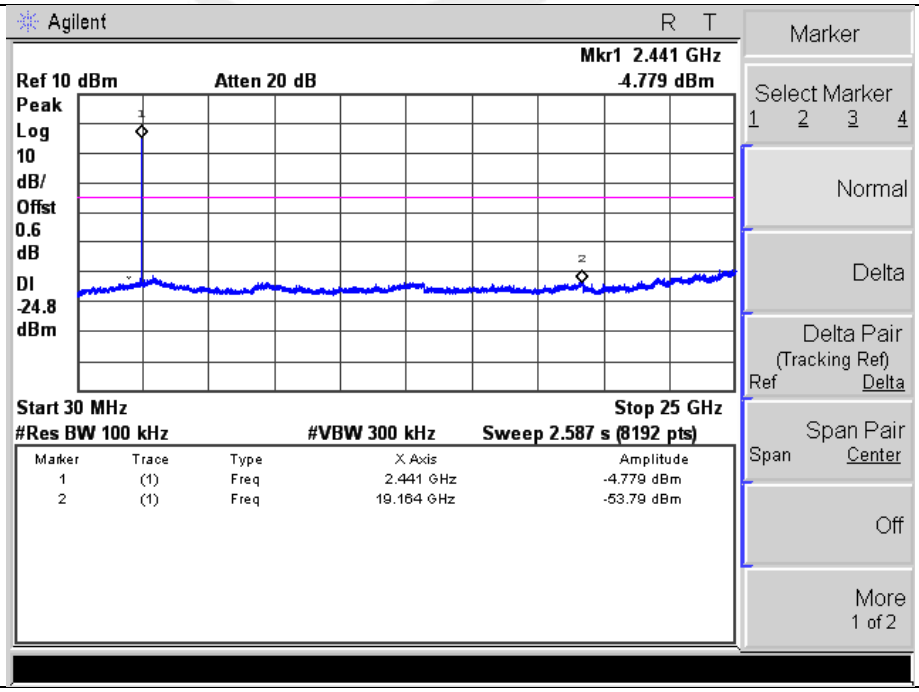
5.5 TEST RESULTS

EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	25 ℃	Relative Humidity：	50%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V
Test Mode ：	TX Mode /CH02, CH20, CH40		

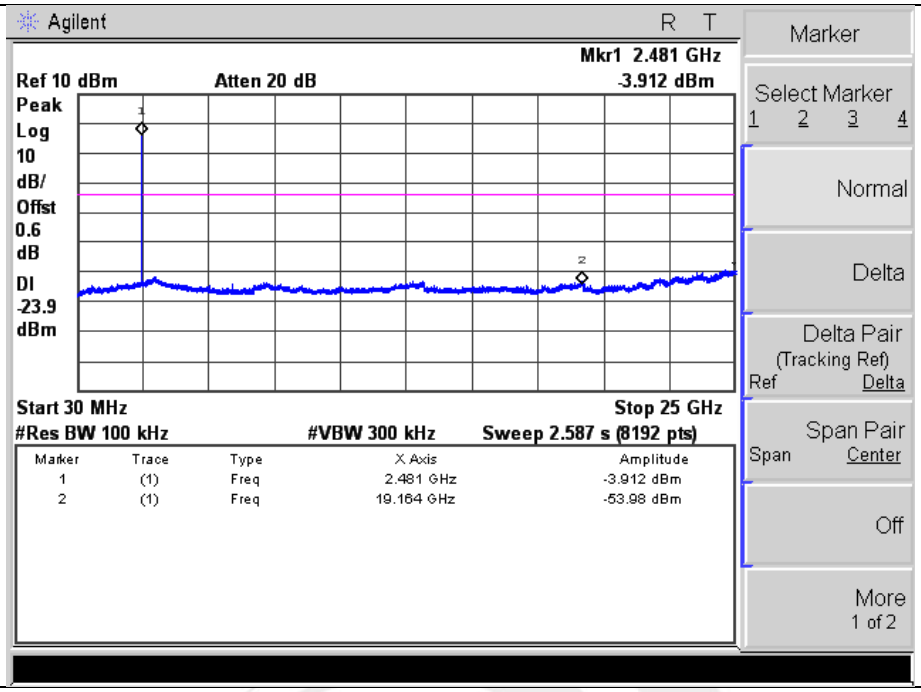
00 CH



20 CH

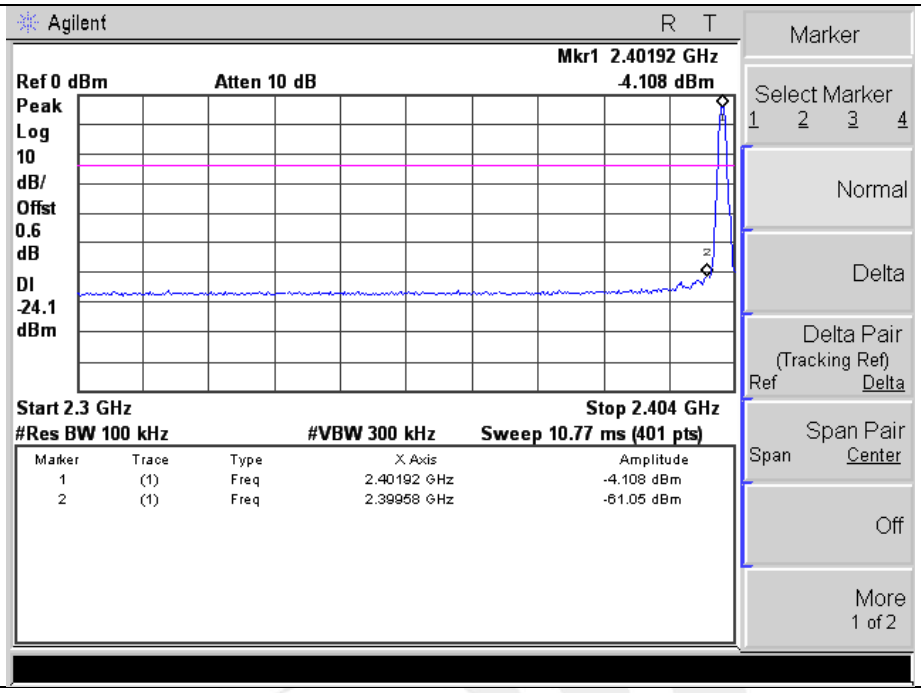


40 CH

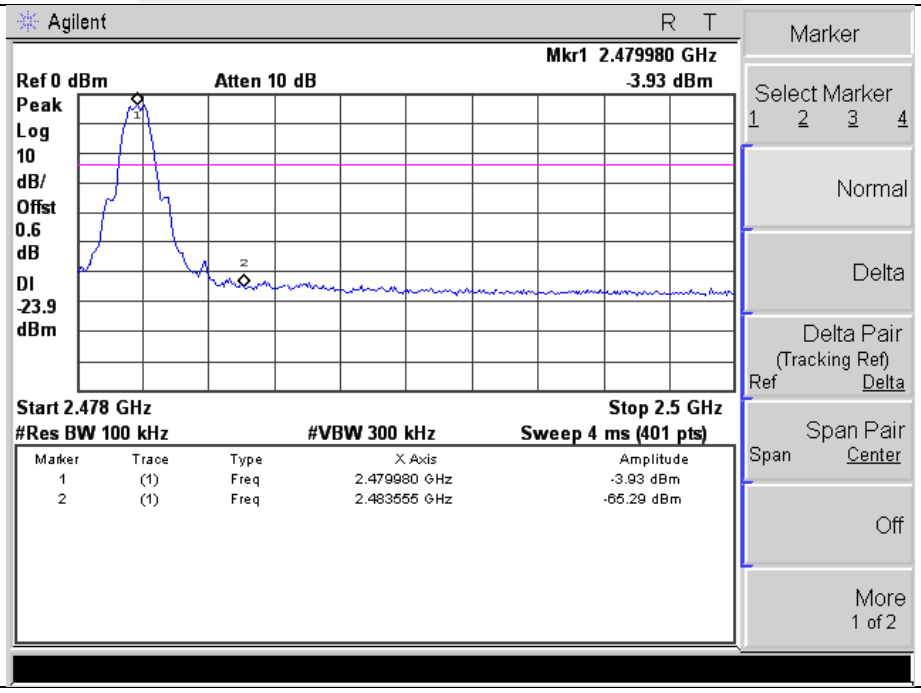

Agilent
R T
Mkr1 2.481 GHz
Ref 10 dBm
Atten 20 dB
-3.912 dBm
Peak
Log
10
dB/
Offst
0.6
dB
Dl
-23.9
dBm
Start 30 MHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.587 s (8192 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.481 GHz -3.912 dBm
2 (1) Freq 19.164 GHz -53.98 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

For Band edge

00 Channel



40 Channel



6. POWER SPECTRAL DENSITY TEST

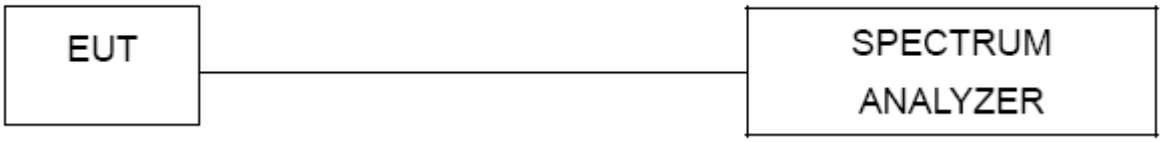
6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 TEST SETUP



6.4 EUT OPERATION CONDITIONS

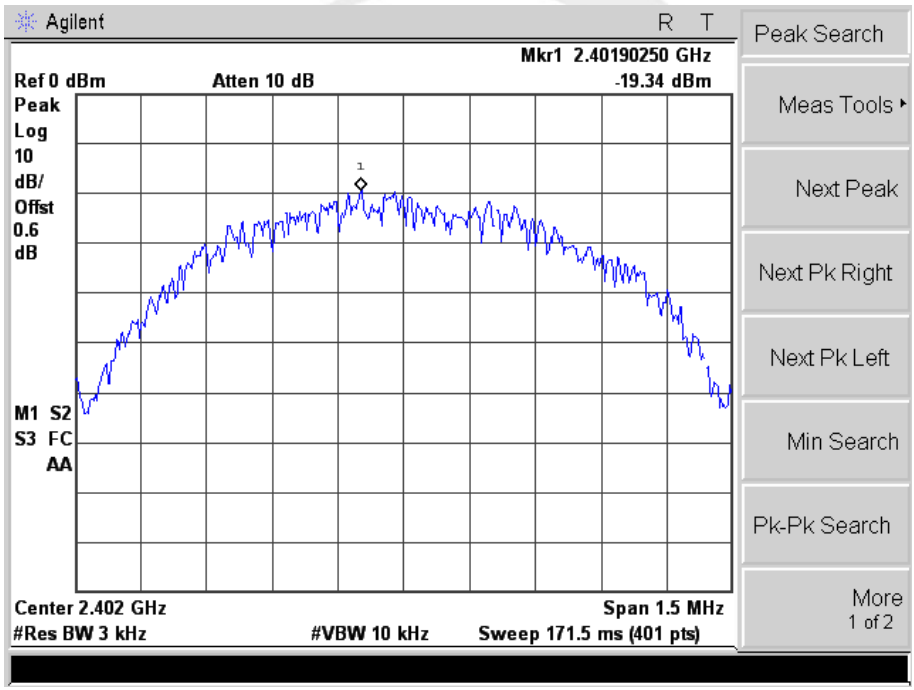
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.5 TEST RESULTS

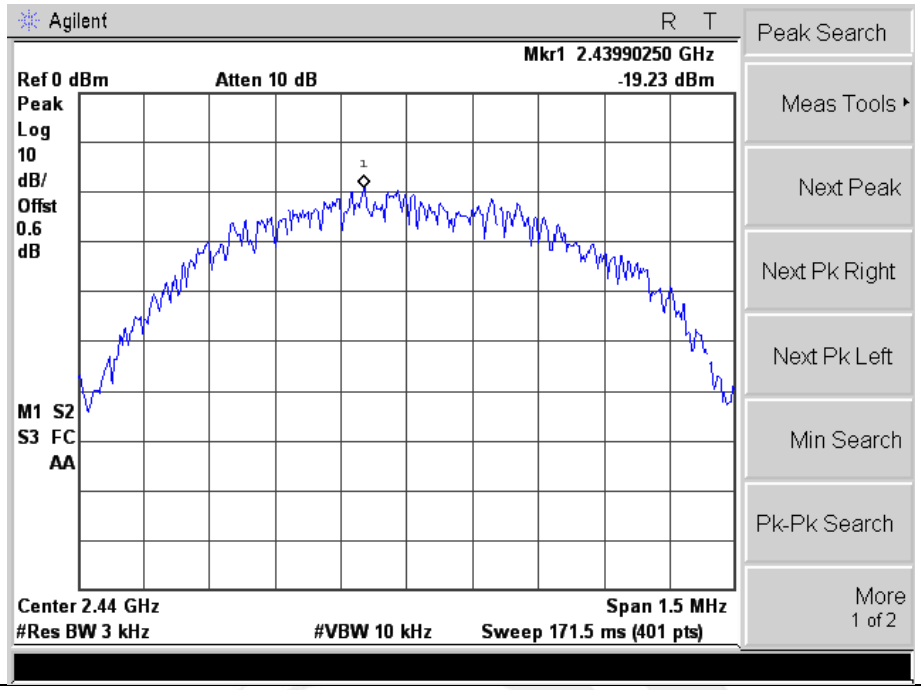
EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH02, CH20, CH40		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2402 MHz	-19.34	8	**PASS**
2440 MHz	-19.23	8	**PASS**
2480 MHz	-19.33	8	**PASS**

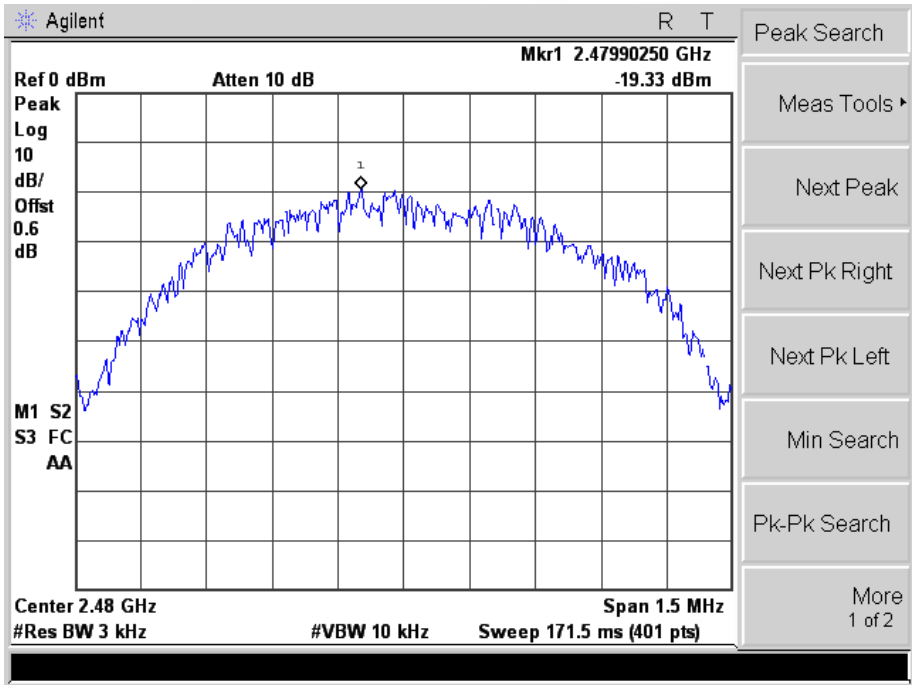
TX CH01



TX CH20



TX CH40



7. BANDWIDTH TEST

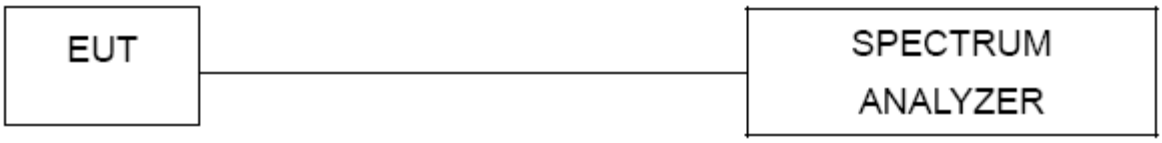
7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 ´ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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 d B relative to the maximum level measured in the fundamental emission.

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

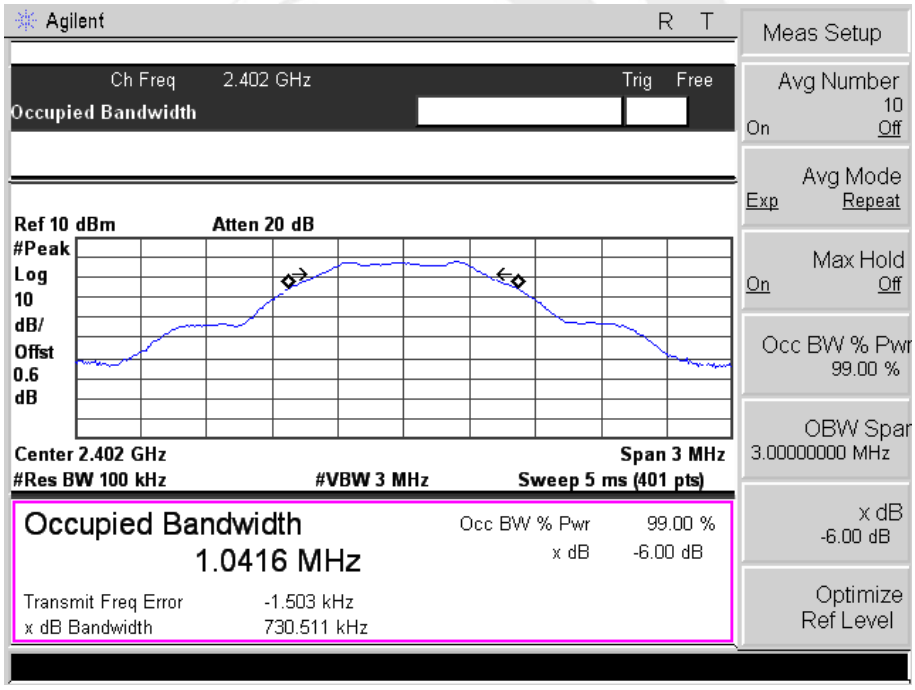
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.5 TEST RESULTS

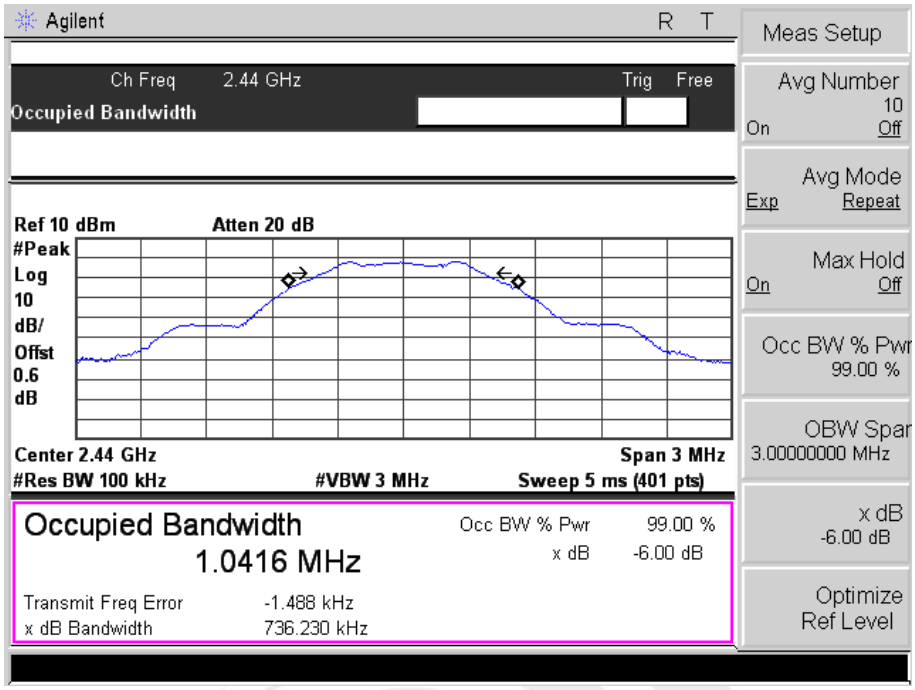
EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH01, CH20, CH40		

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2402 MHz	0.731	>=500KHz	**PASS**
2440 MHz	0.736	>=500KHz	**PASS**
2480 MHz	0.732	>=500KHz	**PASS**

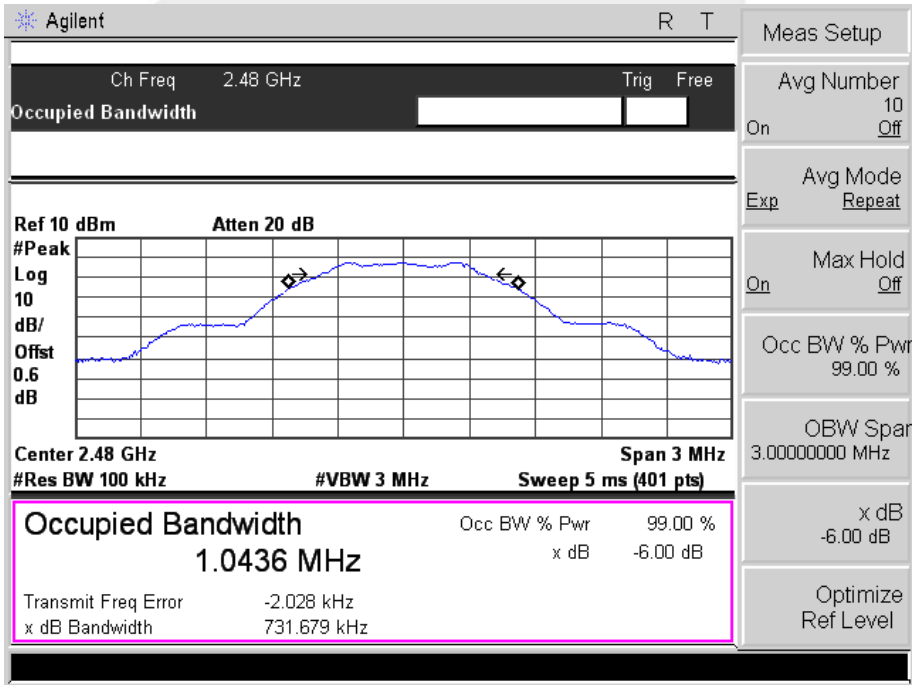
TX CH 01



TX CH 20



TX CH 40



8. PEAK OUTPUT POWER TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

8.3 TEST SETUP

8.4 EUT OPERATION CONDITIONS

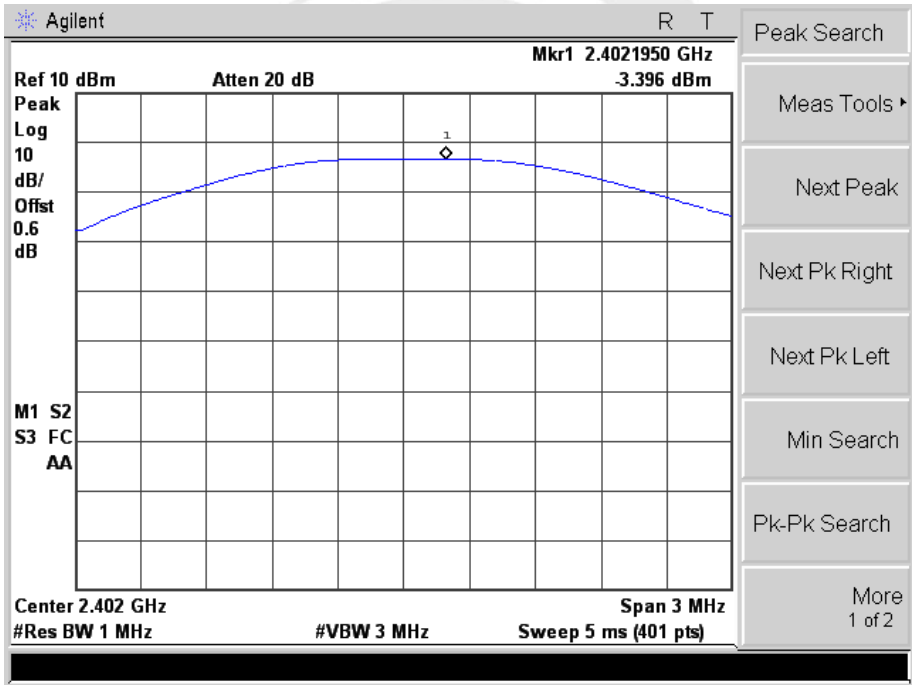
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

8.5 TEST RESULTS

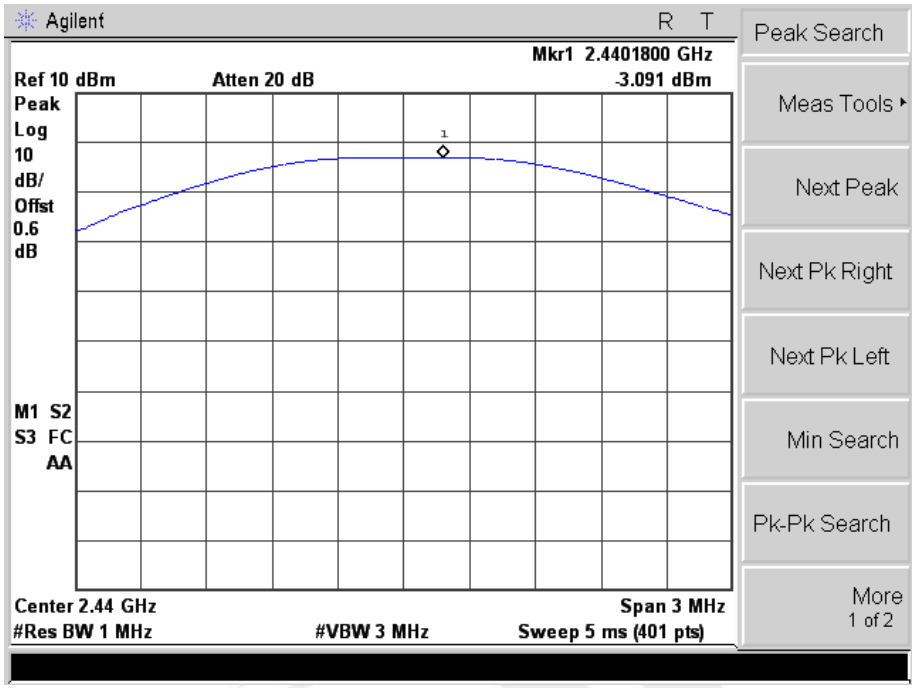
EUT：	WCDMA DIGITAL MOBILE PHONE	Model Name ：	A610
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From Adapter AC 120/60Hz
Test Mode ：	TX Mode /CH01, CH20, CH40		

TX Mode			
Test Channe	Frequency	Peak Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH01	2402	-3.396	30
CH20	2440	-3.091	30
CH40	2480	-2.996	30

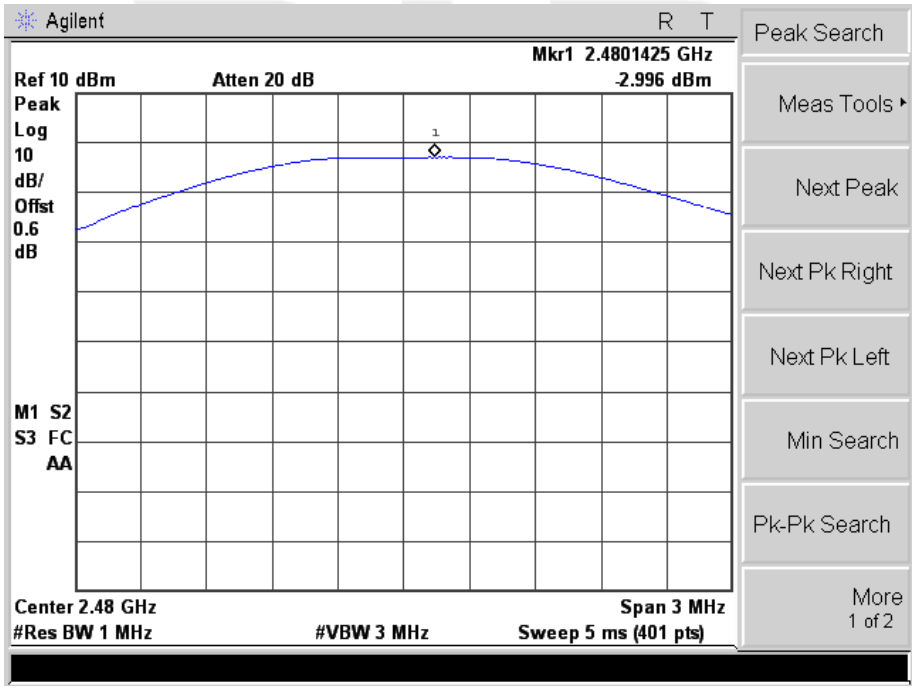
TX CH 01



TX CH 20



TX CH 40



9. ANTENNA REQUIREMENT

9.1 STANDARD REQUIREMENT

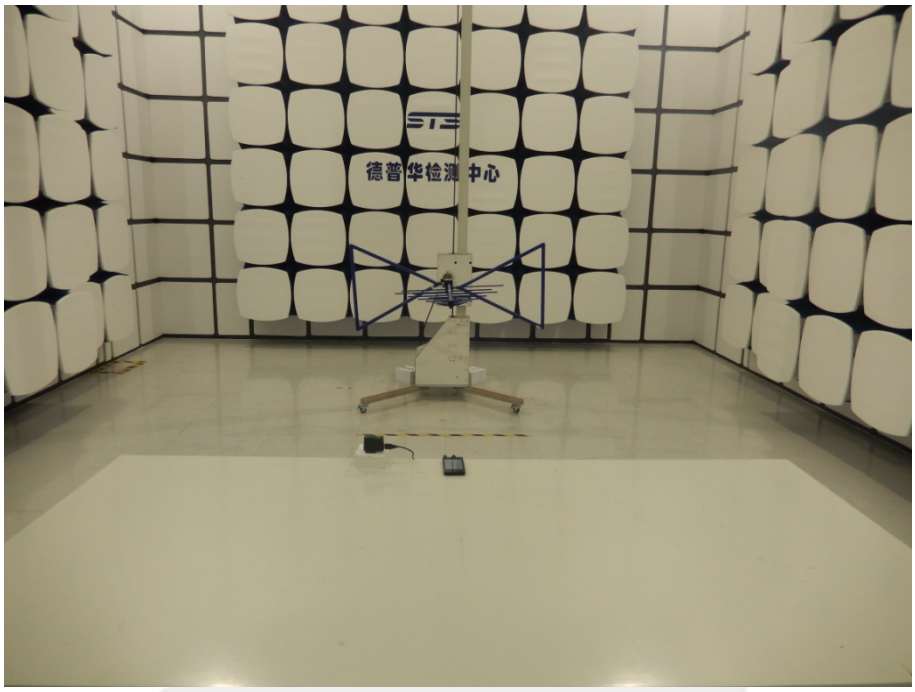
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

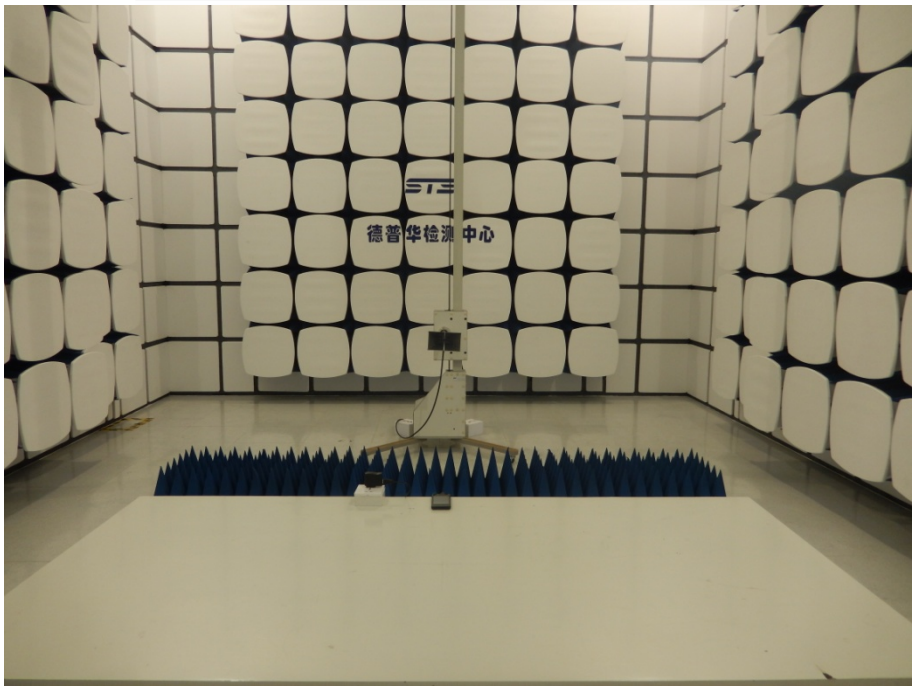
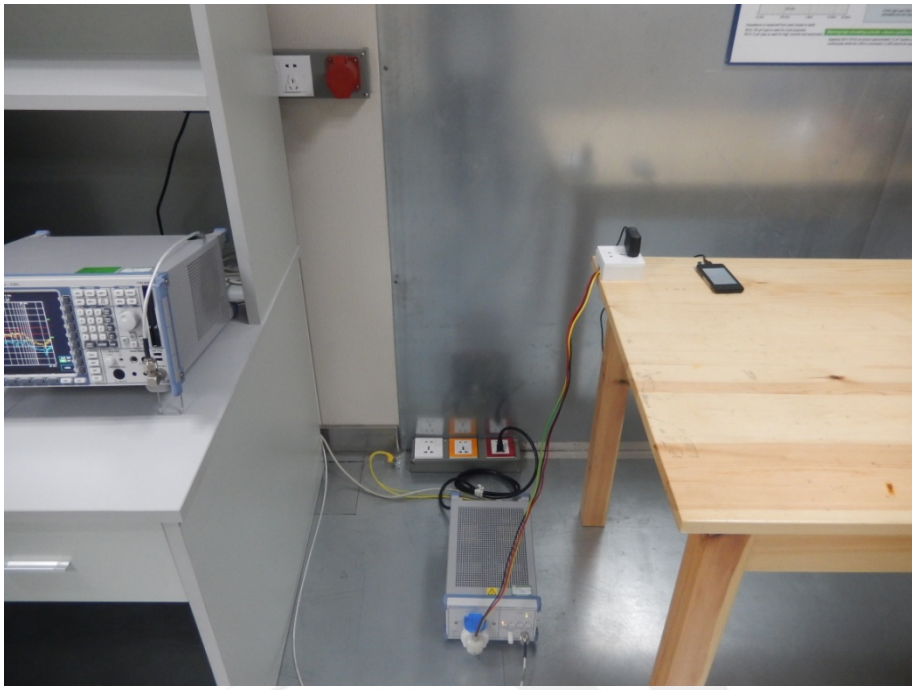
9.2 EUT ANTENNA

The EUT antenna is unique antenna. It comply with the standard requirement.

10. EUT TEST PHOTO

Radiated Measurement Photos





Conducted Measurement Photos