

FCC RADIO TEST REPORT-BLE

FCC ID:2AFA3RLTP4028

Product : smartphone

Trade Name : N/A

Model Name : RLTP4028-BLACK

Serial Model : V41

Report No. : ISOT15070054R2

Prepared for

Shenzhen Vastking Electronic Co.,LTD.
2/F, Building 6, ZhengZhong Industrial Park, Qiaotou Community,
Fuyong, Baoan, Shenzhen, China

Prepared by

Shenzhen ISOTek Standards Technical Services Co.,Ltd.
13/F, HuaFengRui Building, XinHu Rd., XiXiang, Bao'an
District,Shenzhen,China
Tel.: +86-755- 23087378 Fax.: +86-755-23087278
[Http://www.ISOTek.com.cn](http://www.ISOTek.com.cn)

TEST RESULT CERTIFICATION

Applicant's name Shenzhen Vastking Electronic Co.,LTD.
Address 2/F, Building 6, ZhengZhong Industrial Park, Qiaotou Community,
Fuyong, Baoan, Shenzhen, China

Manufacture's Name... Shenzhen Vastking Electronic Co.,LTD.
Address 2/F, Building 6, ZhengZhong Industrial Park, Qiaotou Community,
Fuyong, Baoan, Shenzhen, China

Product description

Product name smartphone
Model and/or type RLTP4028-BLACK
reference
Serial Model V41

Standards FCC Part15.247 01 Oct. 2014

Test procedure ANSI C63.10-2013 and KDB 558074: D01V03R03

This device described above has been tested by ISOTek, and the test results show that the equipment under test (EUT) is in compliance with the Industry Canada requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of ISOTek, this document may be altered or revised by ISOTek, personal only, and shall be noted in the revision of the document.

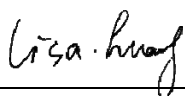
Date of Test

Date (s) of performance of tests: 06 July. 2015 ~22 July. 2015

Date of Issue.....: 22 July. 2015

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

Compiled by:



Lisa Huang/ Project Engineer

Approved by:



Richard Chen/ Manager

Table of Contents	Page
1 . SUMMARY OF TEST RESULTS	4
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	7
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	8
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	9
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	10
3 . EMC EMISSION TEST	11
3.1 CONDUCTED EMISSION MEASUREMENT	11
3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	11
3.1.2 TEST PROCEDURE	12
3.1.3 DEVIATION FROM TEST STANDARD	12
3.1.4 TEST SETUP	12
3.1.5 EUT OPERATING CONDITIONS	12
3.1.6 TEST RESULTS	13
3.2 RADIATED EMISSION MEASUREMENT	15
3.2.1 RADIATED EMISSION LIMITS	15
3.2.2 TEST PROCEDURE	16
3.2.3 DEVIATION FROM TEST STANDARD	16
3.2.4 TEST SETUP	17
3.2.5 EUT OPERATING CONDITIONS	18
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	19
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	20
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)	22
4 . POWER SPECTRAL DENSITY TEST	23
4.1 APPLIED PROCEDURES / LIMIT	23
4.1.1 TEST PROCEDURE	23
4.1.2 DEVIATION FROM STANDARD	23
4.1.3 TEST SETUP	23
4.1.4 EUT OPERATION CONDITIONS	23
4.1.5 TEST RESULTS	24
5 . BANDWIDTH TEST	26
5.1 APPLIED PROCEDURES / LIMIT	26
5.1.1 TEST PROCEDURE	26

Table of Contents	Page
TEST SETUP	26
5.1.2 EUT OPERATION CONDITIONS	26
5.1.3 TEST RESULTS	27
6 . OUTPUT POWER TEST	29
6.1 APPLIED PROCEDURES / LIMIT	29
6.1.1 TEST PROCEDURE	29
6.1.2 DEVIATION FROM STANDARD	29
6.1.3 TEST SETUP	29
6.1.4 EUT OPERATION CONDITIONS	29
6.1.5 TEST RESULTS	30
7 . 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE	31
7.1 DEVIATION FROM STANDARD	31
7.2 TEST SETUP	31
7.3 EUT OPERATION CONDITIONS	31
7.4 TEST RESULTS	32
8 . ANTENNA REQUIREMENT	34
8.1 STANDARD REQUIREMENT	34
8.2 EUT ANTENNA	34
9 . EUT TEST PHOTO	35
APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS	

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 ISOTek Standards Technical Services Co.,Ltd.

Add.: 13/F, HuaFengRui Building, XinHu Rd., XiXiang, Bao'an District,Shenzhen,China

FCC Registration No.: **918037**

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded 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	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	smart phone	
Trade Name	N/A	
Model Name	RLTP4028-BLACK	
Serial Model	V41	
Model Difference	All the model are the same circuit and RF module, except the model name and colour.	
Product Description	The EUT is a smart phone	
	Operation Frequency:	2402~2480MHz
	Modulation Type:	GFSK
	Number Of Channel	40CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain (dBi)	1.0dBi
Channel List	Please refer to the Note 2.	
Ratings	DC 3.7V	
Adapter	Input: 100-240V~, 50/60Hz, 0.15A Output: 5V $\overline{\text{---}}$, 0.5A	
Battery	DC 3.7V ,1500mAh	
Connecting I/O Port(s)	Please refer to the User's Manual	
Hardware version:	MB0MBA4C1-1(WUZHU)	
Software version:	HQD_D133_271_0000_4.4.2_1.1_0721_T05	
BT version	BT V3.0+EDR & BT V4.0 BLE	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

Channel	Frequency (MHz)
00	2402
01	2404
.....
.....
...	...
.....
38	2478
39	2480

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	FPCB Antenna	N/A	1.0	BT Antenna

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	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

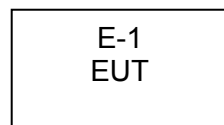
For Conducted Emission	
Final Test Mode	Description
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

Note:

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

Operated Mode for Worst Duty Cycle	
Test Signal Duty Cycle (x)	Average correction factor (dB)
100% - 1Mbps	0

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**Conducted Emission Test****Radiated Spurious Emission Test**

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	Brand	Model/Type No.	Series No.	Note
E-1	smart phone	N/A	RLTP4028-BLACK	N/A	EUT
E-2	ADAPTER	N/A	K-150500500U1	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2m	USB Cable

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 & other conducted test equipment**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4446A	US44300451	2015.07.06	2016.07.05	1 year
2	EMI Test Receiver	R&S	ESCI	101165	2015.07.06	2016.07.05	1 year
3	Loop Antenna	ARA	PLA - 1030/B	1029	2015.07.06	2016.07.05	1 year
4	Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2015.07.06	2016.07.05	1 year
5	Horn Antenna	Schwarzbeck	BBHA 9170	9170-182	2015.07.06	2016.07.05	1 year
6	Amplifier	Schwarzbeck	BBV9743	9743-019	2015.07.06	2016.07.05	1 year
7	Test Cable Below 1GHz	ATM	R-01	3564	2015.07.06	2016.07.05	1 year
8	Test Cable Above 1GHz	ATM	R-02	3565	2015.07.06	2016.07.05	1 year
9	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
11	Horn Antenna	Sunol Sciences	DRH-118	A052604	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	messtec	AN3019	NO.1	Jul. 06, 2015	Jul. 05, 2016	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8126466	Jul. 06, 2015	Jul. 05, 2016	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD9596F	9618	Jul. 06, 2015	Jul. 05, 2016	1 year
4	EMI Test Receiver	R&S	ESCI	100843	Jul. 06, 2015	Jul. 05, 2016	1 year
5	Switch	Schwarzbeck	CX - 210	100196	Jul. 06, 2015	Jul. 05, 2016	1 year
6	Test Cable 9KHz-300MHz	ATM	C01	3566	Jul. 06, 2015	Jul. 05, 2016	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	RSS-210
0.50 -5.0	73.00	60.00	56.00	46.00	RSS-210
5.0 -30.0	73.00	60.00	60.00	50.00	RSS-210

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

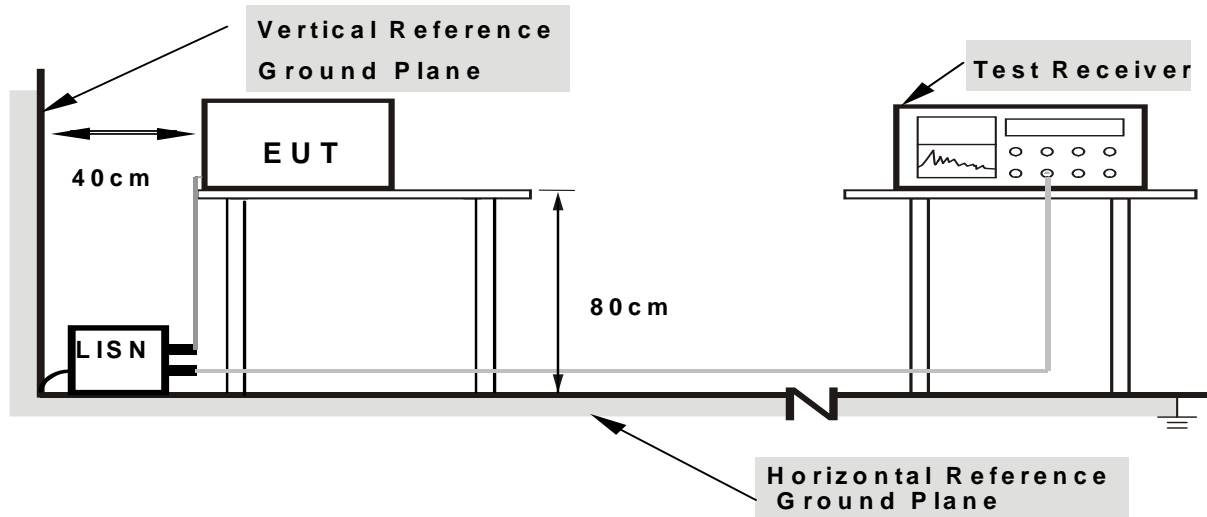
3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 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

3.1.5 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.

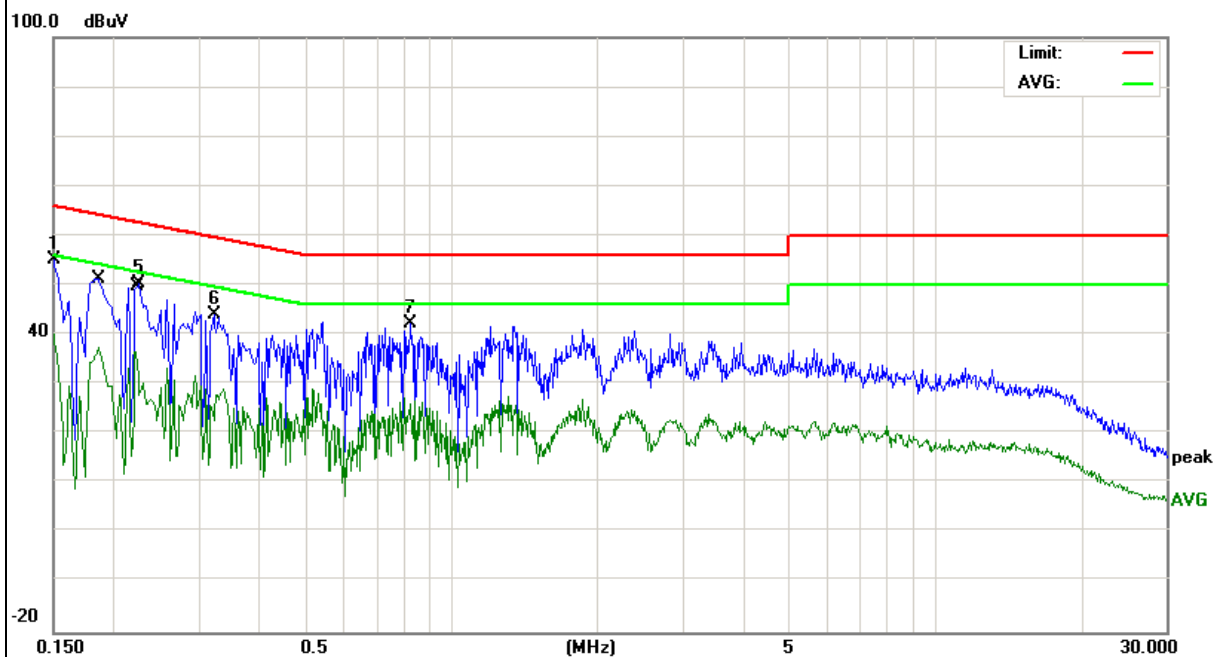
3.1.6 TEST RESULTS

EUT :	smart phone	Model Name. :	RLTP4028-BLACK
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1499	45.62	9.63	55.25	66.00	-10.75	QP
0.1499	30.40	9.63	40.03	56.00	-15.97	AVG
0.1860	27.72	9.61	37.33	54.21	-16.88	AVG
0.2220	26.96	9.64	36.60	52.74	-16.14	AVG
0.2260	40.61	9.64	50.25	62.59	-12.34	QP
0.3220	34.47	9.66	44.13	59.65	-15.52	QP
0.8260	32.49	9.77	42.26	56.00	-13.74	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

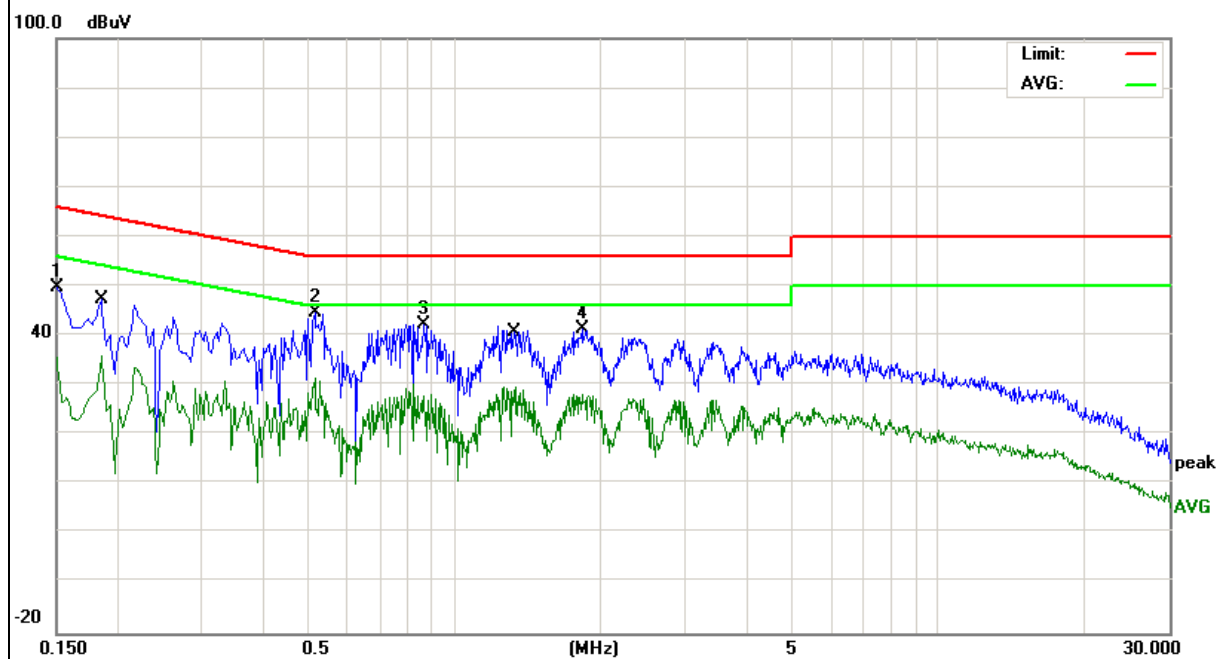


EUT :	smart phone	Model Name. :	RLTP4028-BLACK
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1499	40.14	9.60	49.74	66.00	-16.26	QP
0.5140	35.03	9.68	44.71	56.00	-11.29	QP
0.8660	32.75	9.63	42.38	56.00	-13.62	QP
1.8340	31.95	9.55	41.50	56.00	-14.50	QP
0.1860	26.26	9.61	35.87	54.21	-18.34	AVG
0.5140	21.65	9.68	31.33	46.00	-14.67	AVG
1.3380	20.15	9.59	29.74	46.00	-16.26	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

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

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micроволts/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 RSS-Gen.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

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

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

3.2.2 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 m for below 1GHz and 1.5m for above 1GHz 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 for below 1GHz and 1.5m for above 1GHz; 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:

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.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

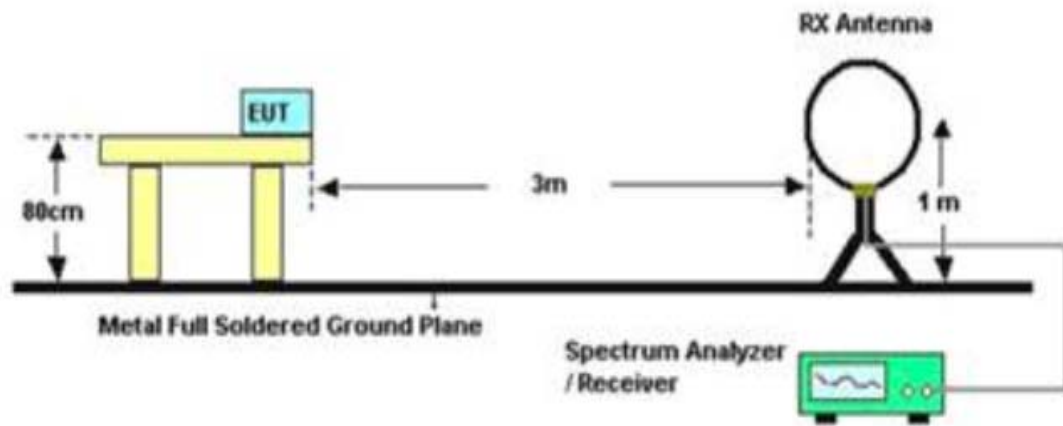
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

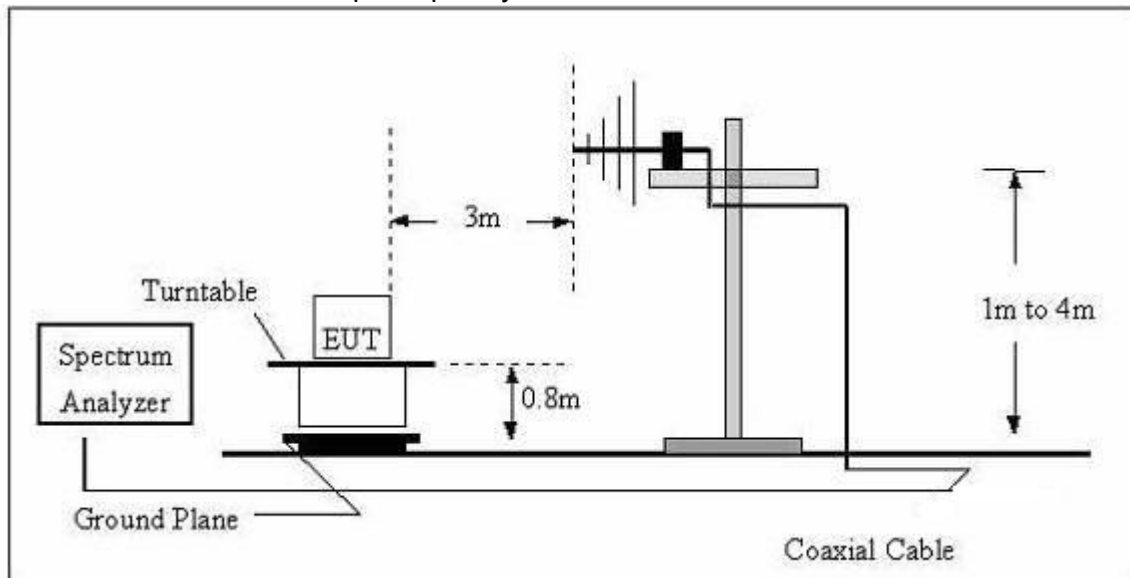
No deviation

3.2.4 TEST SETUP

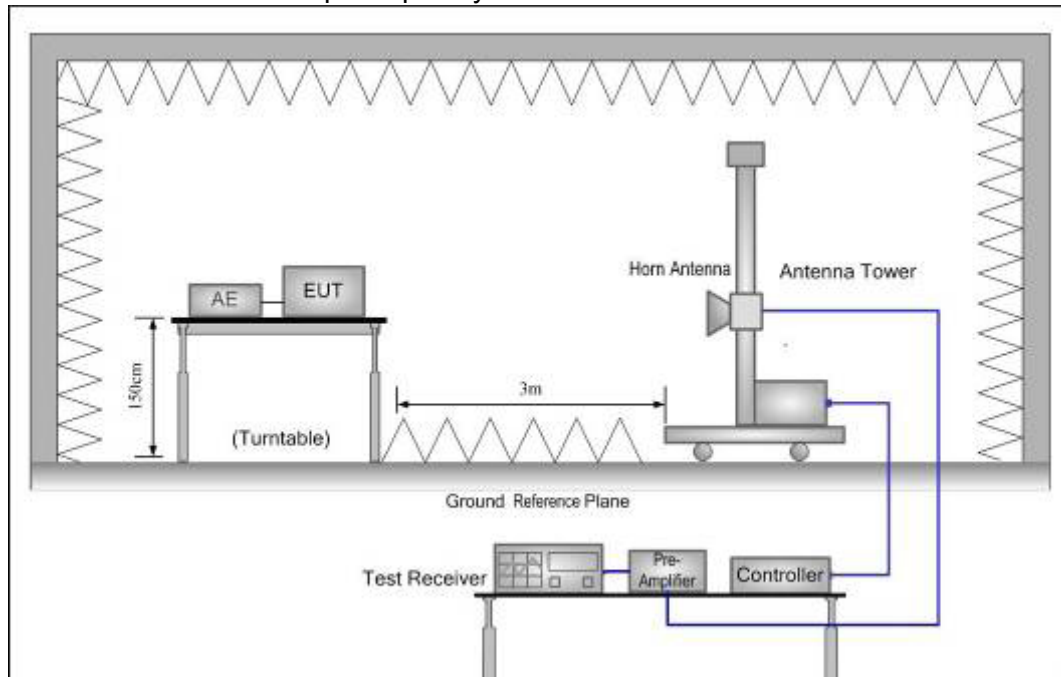
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	smart phone	Model Name. :	RLTP4028-BLACK
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX	Polarization :	--

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

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 = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

Note: High CH is the worst mode.

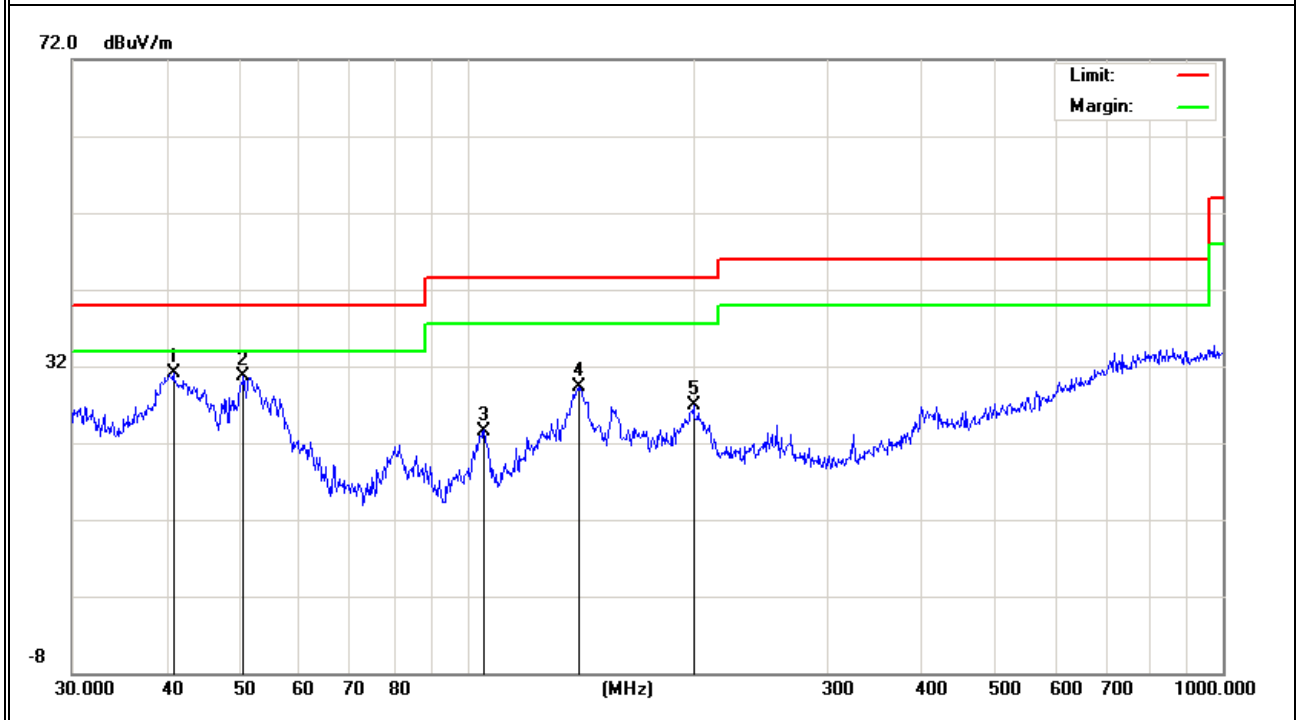
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	40.8446	17.76	13.26	31.02	40.00	-8.98	QP
V	50.5860	20.17	10.52	30.69	40.00	-9.31	QP
V	105.2716	14.11	9.49	23.60	43.50	-19.90	QP
V	140.3420	17.88	11.37	29.25	43.50	-14.25	QP
V	199.2855	16.05	10.78	26.83	43.50	-16.67	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

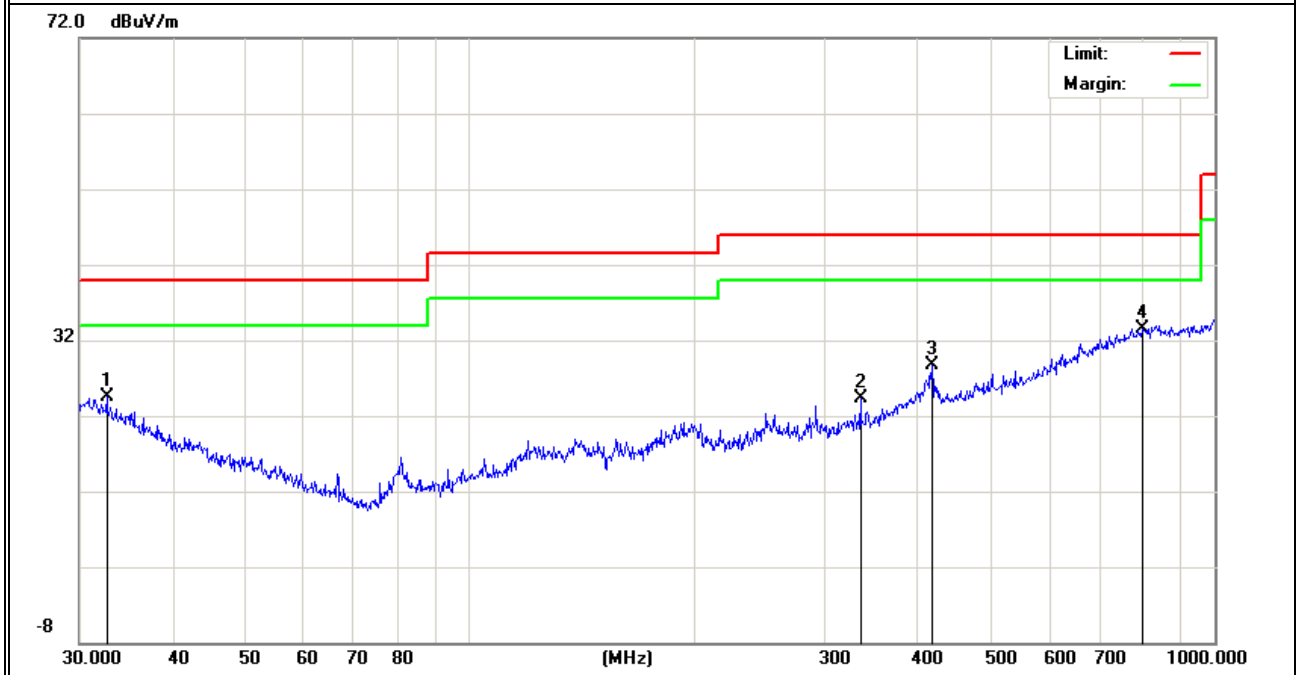


Note: High CH is the worst mode.

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBUV)	(dB)	(dBUV/m)	(dBUV/m)	(dB)	
H	32.6340	6.51	17.99	24.50	40.00	-15.50	QP
H	334.8589	8.75	15.61	24.36	46.00	-21.64	QP
H	417.6411	10.08	18.66	28.74	46.00	-17.26	QP
H	798.9797	6.16	27.38	33.54	46.00	-12.46	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Note: High CH is the worst mode.

3.2.8 TEST RESULTS (1000-25000MHZ)

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Frequency (MHz)	Reading (dBμV)	Factor (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Polar (H/V)
Low Channel (2402 MHz)-Above 1G							
4804.147	59.07	-3.64	62.71	74.00	-11.29	Pk	Vertical
4804.147	41.41	-3.64	45.05	54.00	-8.95	AV	Vertical
7206.206	59.22	-0.95	60.17	74.00	-13.83	Pk	Vertical
7206.206	37.35	-0.95	38.30	54.00	-15.70	AV	Vertical
4804.123	59.45	-3.64	63.09	74.00	-10.91	Pk	Horizontal
4804.123	42.31	-3.64	45.95	54.00	-8.05	AV	Horizontal
7206.058	57.42	-0.95	58.37	74.00	-15.63	Pk	Horizontal
7206.058	37.24	-0.95	38.19	54.00	-15.81	AV	Horizontal
Mid Channel (2440 MHz)-Above 1G							
4880.362	59.82	-3.68	63.50	74.00	-10.50	Pk	Vertical
4880.362	41.85	-3.68	45.53	54.00	-8.47	AV	Vertical
7320.261	59.21	-0.82	60.03	74.00	-13.97	Pk	Vertical
7320.261	40.05	-0.82	40.87	54.00	-13.13	AV	Vertical
4880.107	61.72	-3.68	65.40	74.00	-8.60	Pk	Horizontal
4880.107	44.85	-3.68	48.53	54.00	-5.47	AV	Horizontal
7320.165	59.15	-0.82	59.97	74.00	-14.03	Pk	Horizontal
7320.165	39.32	-0.82	40.14	54.00	-13.86	AV	Horizontal
High Channel (2480MHz)- Above 1G							
4960.158	59.14	-3.59	62.73	74.00	-11.27	Pk	Vertical
4960.158	41.99	-3.59	45.58	54.00	-8.42	AV	Vertical
7440.325	57.61	-0.68	58.29	74.00	-15.71	Pk	Vertical
7440.325	41.87	-0.68	42.55	54.00	-11.45	AV	Vertical
4960.218	58.97	-3.59	62.56	74.00	-11.44	Pk	Horizontal
4960.218	42.15	-3.59	45.74	54.00	-8.26	AV	Horizontal
7440.314	60.53	-0.68	61.21	74.00	-12.79	Pk	Horizontal
7440.314	39.34	-0.68	40.02	54.00	-13.98	AV	Horizontal

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

4. POWER SPECTRAL DENSITY TEST

4.1 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

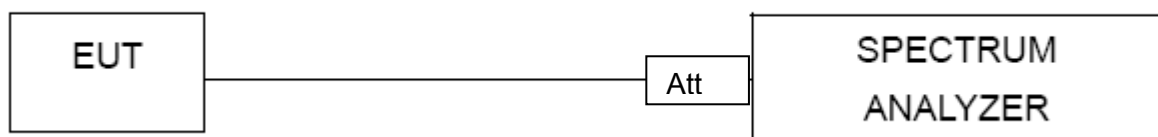
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz \leq Set the RBW \leq 100 kHz.
4. Set the VBW \geq 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 within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



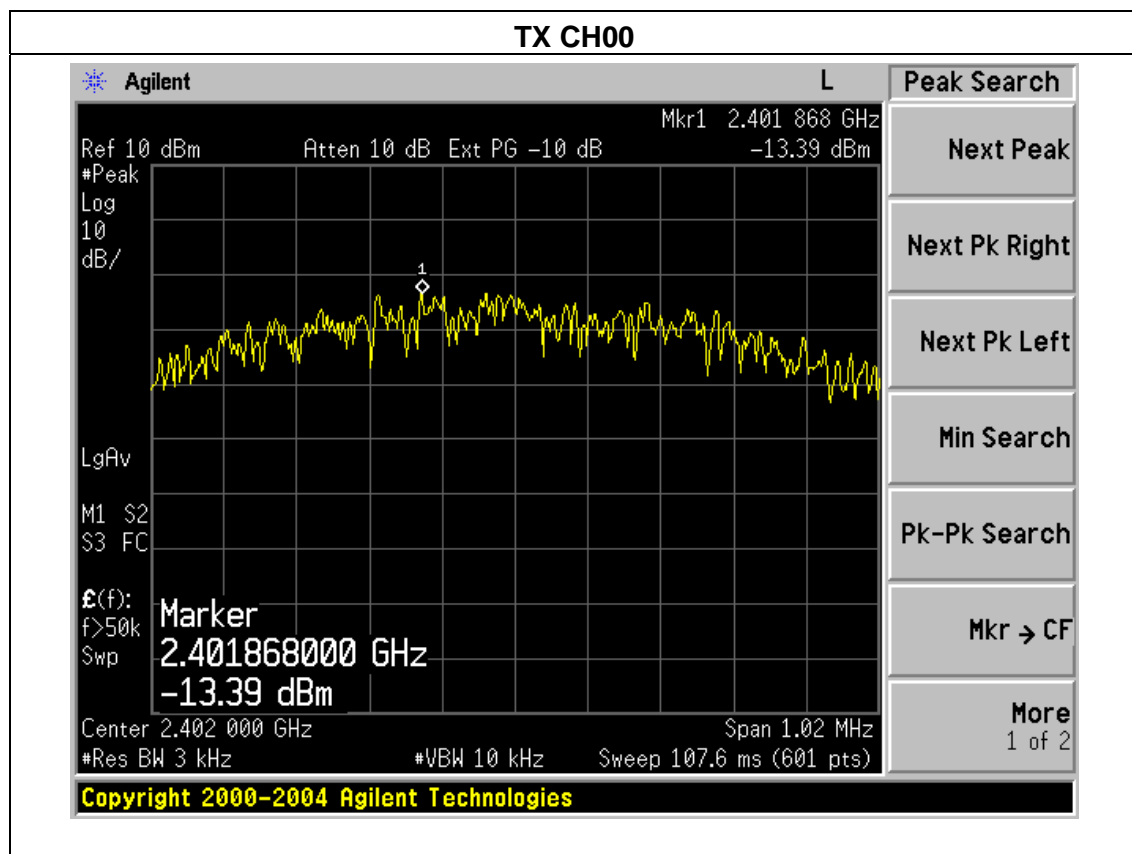
4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

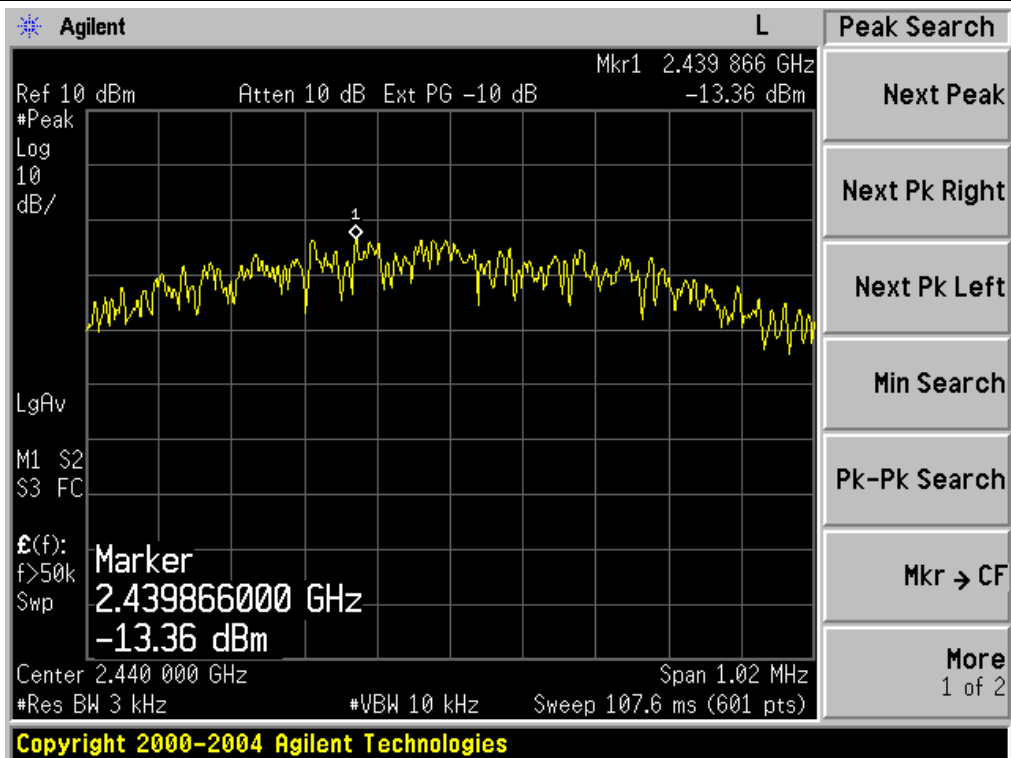
4.1.5 TEST RESULTS

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode /CH00, CH19, CH39		

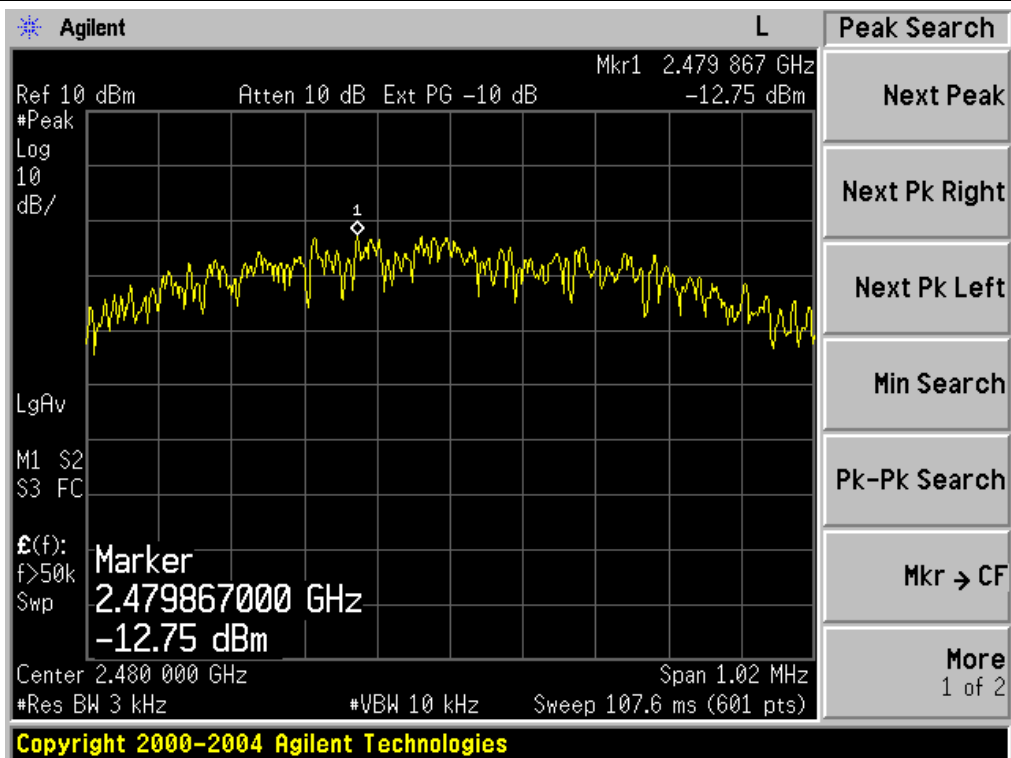
Frequency	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
2402 MHz	-13.39	8	PASS
2440 MHz	-13.36	8	PASS
2480 MHz	-12.75	8	PASS



TX CH19



TX CH39



5. BANDWIDTH TEST

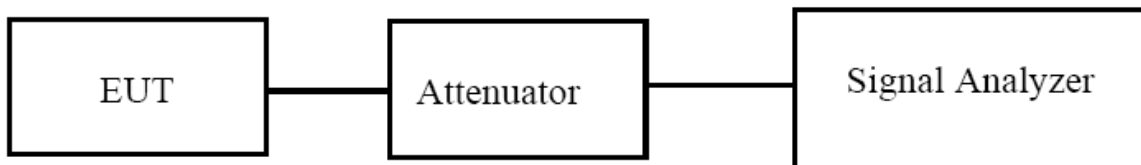
5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
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) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



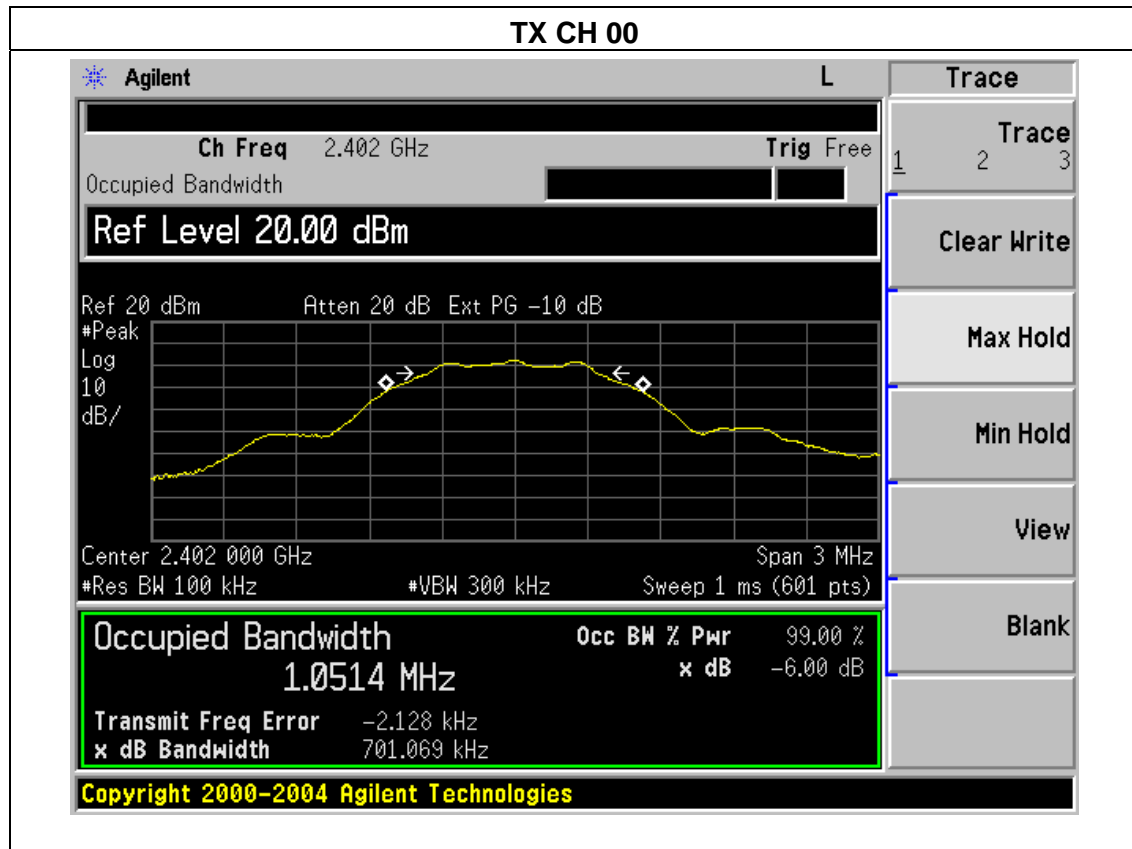
5.1.2 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

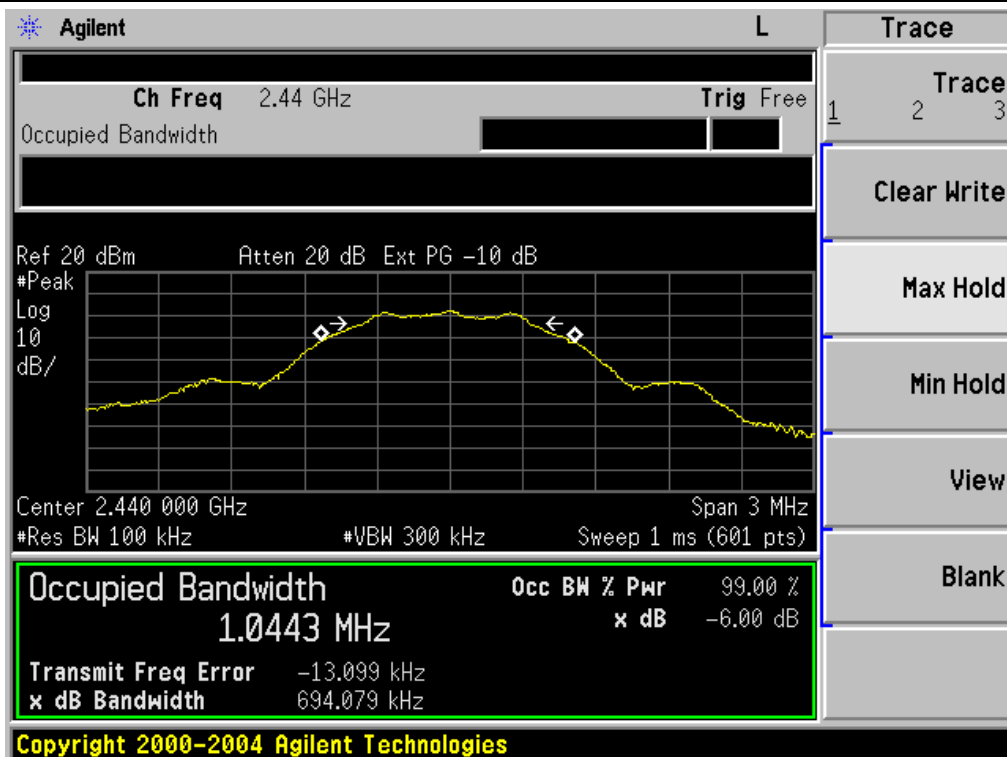
5.1.3 TEST RESULTS

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode /CH00, CH19, CH39		

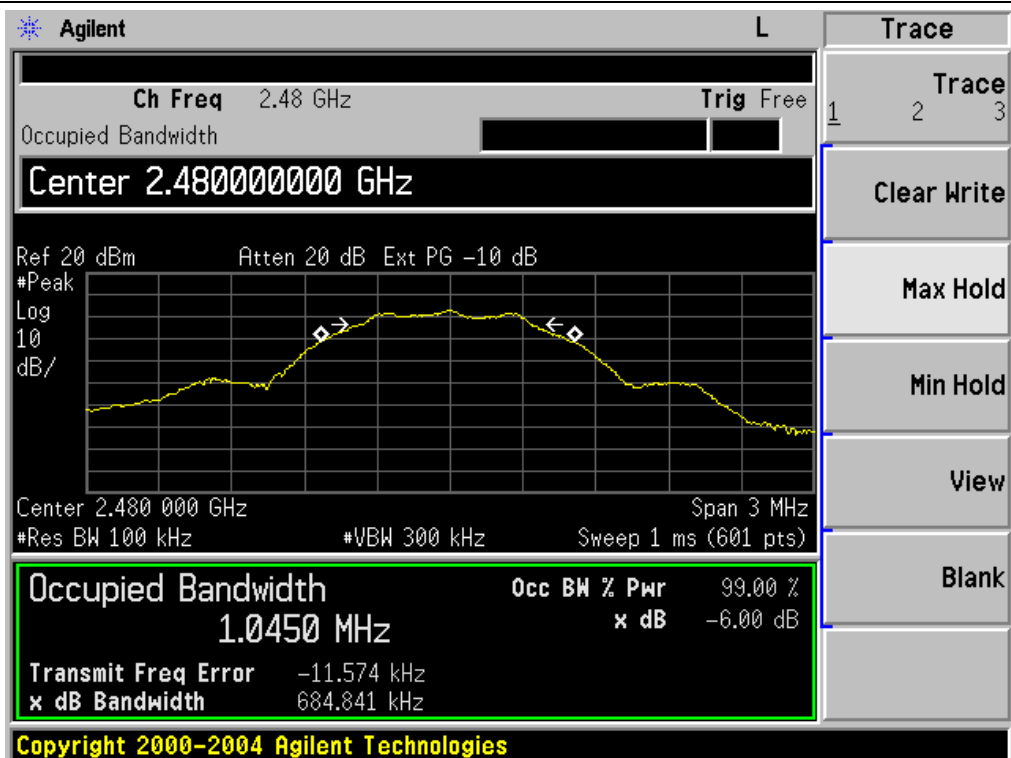
Channel	Frequency (MHz)	99% Bandwidth (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	1.0514	701.069	500	Pass
Middle	2440	1.0443	694.079	500	Pass
High	2480	1.0450	684.841	500	Pass



TX CH 19



TX CH 39



6. OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

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

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter
- b. Detector = Avg

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode		

Test Channe	Frequency	Maximum Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH00	2402	2.43	30
CH19	2440	2.38	30
CH39	2480	2.90	30

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

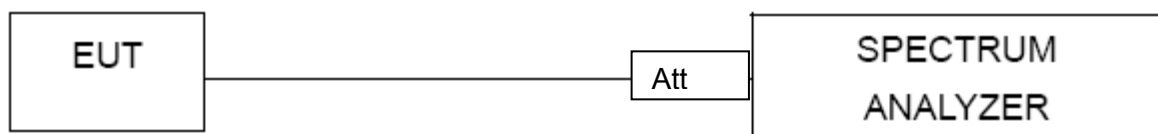
TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 TEST RESULTS

EUT :	smart phone	Model Name :	RLTP4028-BLACK
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V

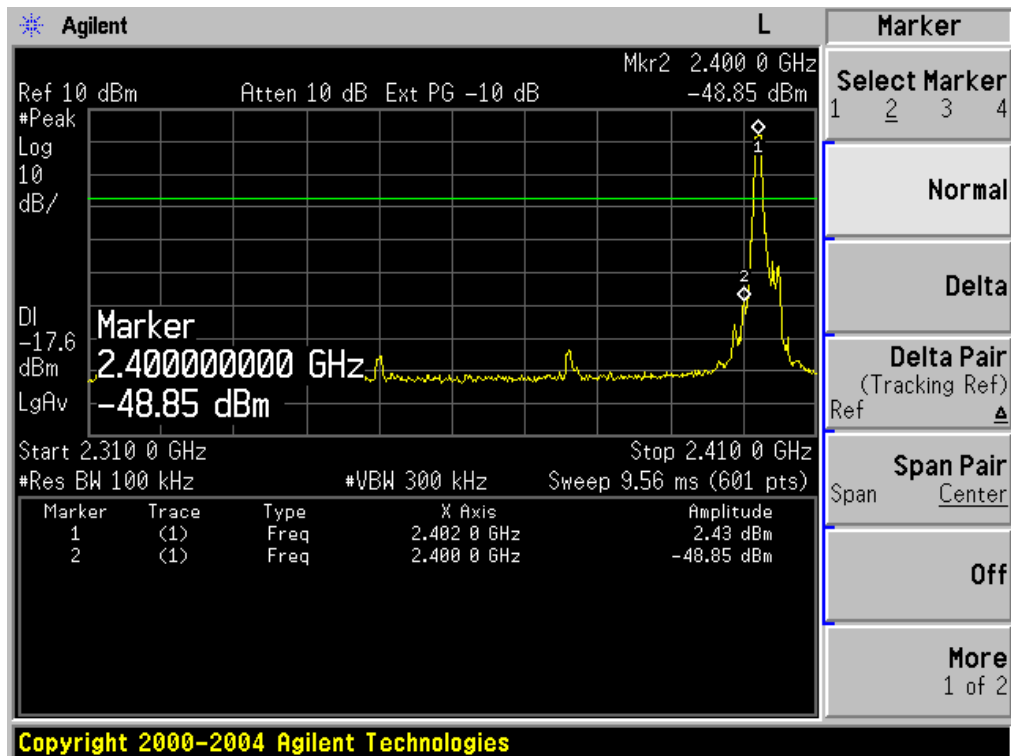
Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
2400	51.28	20	Pass
2483.5	63.21	20	Pass

Radiated band edge:

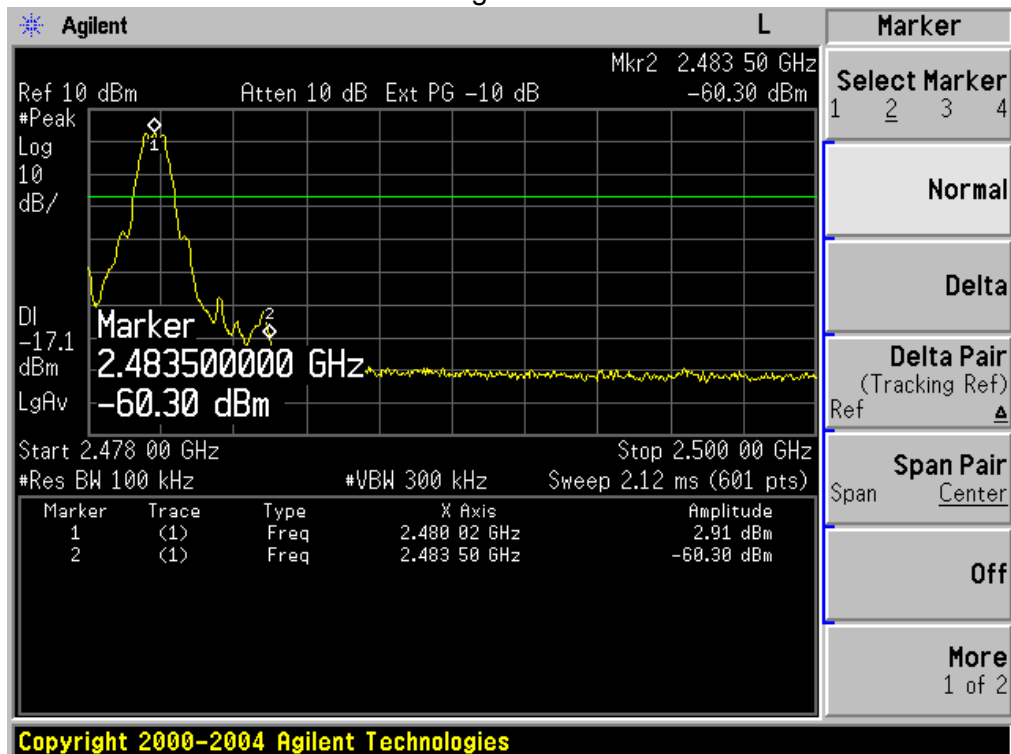
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
2390	56.66	-13.06	43.6	74	-30.40	peak	Vertical
2390	56.46	-13.06	43.4	74	-30.60	peak	Horizontal
2483.5	57.59	-12.78	44.81	74	-29.19	peak	Vertical
2483.5	57.64	-12.78	44.86	74	-29.14	peak	Horizontal

Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average not record.

Left Side



Right Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

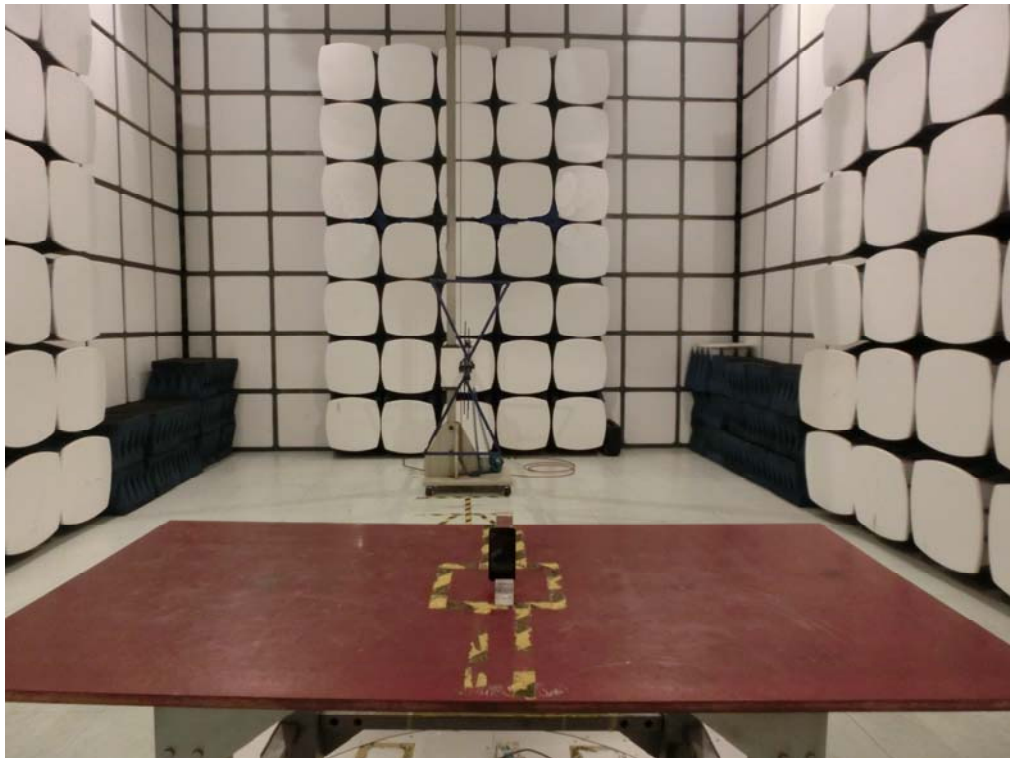
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos



CONDUCTED EMISSION Photos

