

FCC TEST REPORT (PART 24)

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120713C03-1	Original release	Aug. 08, 2012
RF120713C03-1	The peak-to-average ratio data has been revised.	Oct. 15, 2012



1 CERTIFICATION

PRODUCT: Smart Phone
MODEL: PM36100
BRAND: HTC
APPLICANT: HTC Corporation
TESTED: Jul. 25 ~ Jul. 30, 2012
TEST SAMPLE: Production Unit
STANDARDS: FCC Part 24, Subpart E

The above equipment (model: PM36100) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY

, DATE : Oct. 15, 2012 Andrea Hsia / Specialis

APPROVED BY

Gary Chang / Technical Manager

, DATE : Oct. 15, 2012



2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

	APPLIED STANDARD: FCC Part 24 & Part 2					
STANDARD SECTION	TEST TYPE	RESULT	REMARK			
2.1046 24.232	Equivalent isotropically radiated power	PASS	Meet the requirement of limit.			
2.1055 24.235	Frequency Stability	PASS	Meet the requirement of limit.			
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit.			
24.238(b)	Band Edge Measurements	PASS	Meet the requirement of limit.			
24.232(d)	Peak to average ratio	PASS	Meet the requirement of limit.			
2.1051 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit.			
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -26.38dB at 30.00MHz.			

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
	30MHz ~ 200MHz	2.93 dB
Radiated emissions	200MHz ~1000MHz	2.95 dB
Radiated emissions	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



2.2 TEST SITE AND INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver Agilent	N9038A	MY51210203	Dec. 22, 2011	Dec. 21, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2011	Dec. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 20, 2011	Dec. 19, 2012
Preamplifier EMCI	EMC 012645	980115	Dec. 30, 2011	Dec. 29, 2012
Preamplifier EMCI	EMC 330H	980112	Dec. 30, 2011	Dec. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 21, 2011	Oct. 20, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Jan. 02, 2012	Jan. 01, 2013
RF signal cable Worken	RG-213	NA	Jan. 02, 2012	Jan. 01, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Mar. 23, 2012	Mar. 22, 2013
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
Communications Tester-Wireless	E5515C	MY50266653	Sep. 28, 2011	Sep. 27, 2012
Radio Communication Analyzer	MT8820C	6201010284	Aug. 01, 2011	Jul. 31, 2012

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

- 2. The test was performed in HwaYa Chamber 9.
- 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 4. The FCC Site Registration No. is 460141.
- 5. The IC Site Registration No. is IC 7450F-4.



3 GENERAL INFORMATION 3.1 GENERAL DESCRIPTION OF FUT

EUT	Smart Phone				
MODEL NO.	PM36100				
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (battery)				
	GSM/GPRS	GMSK			
MODULATION TYPE	EDGE	8PSK			
	WCDMA	BPSK			
	LTE	QPSK, 16QAM			
	GSM/GPRS/EDGE	1850.2MHz ~ 1909.8MHz			
	WCDMA	1852.4MHz ~ 1907.6MHz			
FREQUENCY RANGE	LTE (Channel Bandwidth: 5MHz)	1852.5MHz ~ 1907.5MHz			
	LTE (Channel Bandwidth: 10MHz)	1855MHz ~ 1905MHz			
	GSM	659.17mW			
	EDGE	234.42mW			
	WCDMA	123.88mW			
MAX. EIRP POWER	LTE (Channel Bandwidth: 5MHz)	125.31mW			
	LTE (Channel Bandwidth: 10MHz)	131.52mW			
	GSM	247KGXW			
	EDGE	246KG7W			
EMISSION	WCDMA	4M19F9W			
DESIGNATOR	LTE (Channel Bandwidth: 5MHz)	4M50G7D			
	LTE (Channel Bandwidth: 10MHz)	8M93W7D			
MULTI-SLOTS CLASS	10				
WCDMA RELEASE VERSION	6				
	GSM				
ANTENNA TYPE	EDGE	Fixed Internal antenna with -3.15dBi			
	WCDMA	gain			
	LTE				
I/O PORTS	Refer to users' manual				
DATA CABLE	Refer to NOTE as below				
ACCESSORY DEVICES	Refer to NOTE as below				

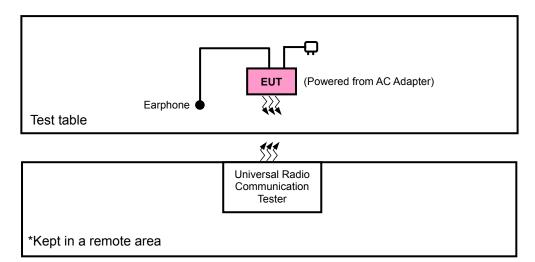


NOTE:

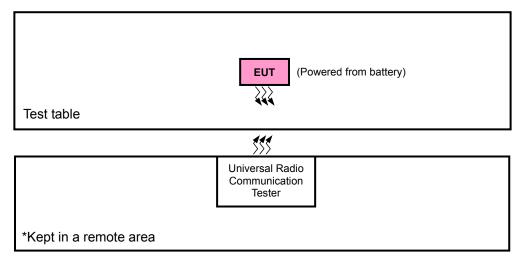
- 1. The EUT's accessories list refers to Ext Pho.pdf.
- 2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR E.I.R.P. TEST





3.3 DESCRIPTION OF SUPPORT UNITS

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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Earphone	Merry	HS S250	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.1m non-shielded cable

NOTE: All power cords of the above support units are non shielded (1.8m).

3.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case was found when positioned on X-plane for EIRP and Z-axis for GSM/EDGE/WCDMA and Y-axis for LTE for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
EIRP	512 to 810	512, 661, 810	GSM, EDGE
FREQUENCY STABILITY	512 to 810	661	GSM, EDGE
OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM, EDGE
BAND EDGE	512 to 810	512, 810	GSM, EDGE
CONDCUDETED EMISSION	512 to 810	661	GSM
RADIATED EMISSION	512 to 810	661	GSM, EDGE

GSM MODE

WCDMA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
FREQUENCY STABILITY	9262 to 9538	9400	WCDMA
OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
BAND EDGE	9262 to 9538	9262, 9538	WCDMA
CONDCUDETED EMISSION	9262 to 9538	9400	WCDMA
RADIATED EMISSION	9262 to 9538	9400	WCDMA



LTE BAND 2 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	18625 to 19175	18625, 18900, 19175	5MHz	QPSK	1 RB / 24 RB Offset
LINF	18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 49 RB Offset
FREQUENCY STABILITY	18625 to 19175	18900	5MHz	QPSK	1 RB / 24 RB Offset
FREQUENCESTABLE	18650 to 19150	18900	10MHz	QPSK	1 RB / 49 RB Offset
OCCUPIED BANDWIDTH	18625 to 19175	18900	5MHz	QPSK	25 RB / 0 RB Offset
OCCOPIED BANDWIDTH	18650 to 19150	18900	10MHz	QPSK	50 RB / 0 RB Offset
	19975 to 20375	18625, 18900, 19175	5MHz	QPSK, 16QAM	1 RB / 24 RB Offset
PEAK TO AVERAGE RATIO	20000 to 20350	18650, 18900, 19150	10MHz	QPSK, 16QAM	1 RB / 49 RB Offset
	10005 10 10175	40005 40475		QPSK	1 RB, / 24 RB Offset
	18625 to 19175	18625, 19175	5MHz	QFON	25 RB, / 0 RB Offset
BAND EDGE	18650 to 19150	18650, 19150	10MHz	QPSK	1 RB / 49 RB Offset
					50 RB / 0 RB Offset
	18625 to 19175	18900	5MHz	QPSK	1 RB / 24 RB Offset
CONDCUDETED EMISSION	18650 to 19150	18900	10MHz	QPSK	1 RB / 49 RB Offset
				ODOK	1 RB / 24 RB Offset
	10005 10 10175	10000		QPSK	25 RB / 0 RB Offset
	18625 to 19175	18900	5MHz		1 RB / 24 RB Offset
				16QAM	25 RB / 0 RB Offset
RADIATED EMISSION					1 RB / 49 RB Offset
		10000		QPSK	50 RB / 0 RB Offset
	18650 to 19150) to 19150 18900	10MHz		1 RB / 49 RB Offset
				16QAM	50 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	26deg. C, 58%RH	3.8Vdc	Phoenix Chen
FREQUENCY STABILITY	26deg. C, 58%RH	3.8Vdc	Phoenix Chen
OCCUPIED BANDWIDTH	26deg. C, 58%RH	3.8Vdc	Phoenix Chen
BAND EDGE	26deg. C, 58%RH	3.8Vdc	Phoenix Chen
CONDCUDETED EMISSION	26deg. C, 58%RH	3.8Vdc	Phoenix Chen
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu



3.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2 FCC 47 CFR Part 24 ANSI/TIA/EIA-603-C 2004

NOTE: All test items have been performed and recorded as per the above standards.



4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP

4.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM, GPRS & EDGE, 5MHz for WCDMA, and 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d. EIRP = Output power level of S.G TX cable loss + Antenna gain of substitution horn.

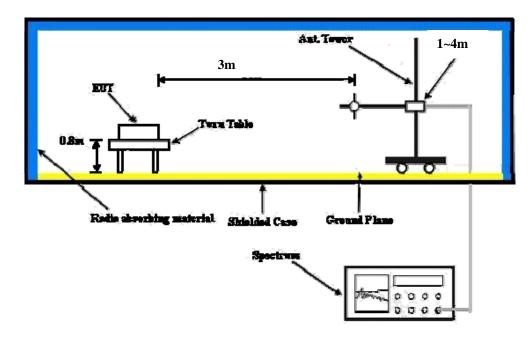
CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with GSM, GPRS, EDGE & WCDMA & LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



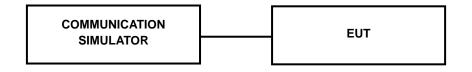
4.1.3 TEST SETUP

EIRP MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).



4.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band		GSM1900	
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM (1 Uplink)	30.81	31.36	30.94
GPRS 8 (1 Uplink)	30.93	31.34	31.04
GPRS 10 (2 Uplink)	29.41	29.65	29.62
EDGE 8 (1 Uplink)	30.85	31.26	30.95
EDGE 10 (2 Uplink)	29.35	29.49	29.55
EDGE 8 (8PSK, 1 slot)	26.87	26.94	26.86
EDGE 10 (8PSK, 2 slot)	26.56	26.62	26.53

Band		WCDMA II	
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	24.03	24.16	23.82
HSDPA Subtest-1	23.18	23.09	22.96
HSDPA Subtest-2	23.19	23.30	22.95
HSDPA Subtest-3	22.58	22.74	22.55
HSDPA Subtest-4	22.66	22.74	22.48
HSUPA Subtest-1	23.04	22.56	22.63
HSUPA Subtest-2	20.97	21.28	21.03
HSUPA Subtest-3	21.91	21.93	21.91
HSUPA Subtest-4	22.12	22.13	21.88
HSUPA Subtest-5	23.20	23.23	22.94



				LTE Band	2			
D 14/	Madadadaa	011	Frequency			MDD	Target	Measured
BW	Modulation	СН	(MHz)	RB	RB Offset	MPR	Power	Power
		18625	1852.5	1	0	0	24.5	24.27
		18900	1880	1	0	0	24.5	24.37
		19175	1907.5	1	0	0	24.5	24.23
		18625	1852.5	1	24	0	24.5	24.43
		18900	1880	1	24	0	24.5	24.23
	QPSK	19175	1907.5	1	24	0	24.5	23.76
	QPSK	18625	1852.5	12	6	1	24.5	23.42
		18900	1880	12	6	1	24.5	23.34
		19175	1907.5	12	6	1	24.5	23.18
		18625	1852.5	25	0	1	24.5	23.27
		18900	1880	25	0	1	24.5	23.24
5 MHz		19175	1907.5	25	0	1	24.5	23.14
		18625	1852.5	1	0	1	24.5	23.08
		18900	1880	1	0	1	24.5	23.47
		19175	1907.5	1	0	1	24.5	23.13
		18625	1852.5	1	24	1	24.5	23.51
		18900	1880	1	24	1	24.5	23.48
	16QAM	19175	1907.5	1	24	1	24.5	22.83
	TOQAW	18625	1852.5	12	6	2	24.5	22.37
		18900	1880	12	6	2	24.5	22.25
		19175	1907.5	12	6	2	24.5	22.17
		18625	1852.5	25	0	2	24.5	22.34
		18900	1880	25	0	2	24.5	22.17
		19175	1907.5	25	0	2	24.5	22.05



				LTE Band	2			
D 14/	Madadadaa	011	Frequency			MDD	Target	Measured
BW	Modulation	СН	(MHz)	RB	RB Offset	MPR	Power	Power
		18650	1855	1	0	0	24.5	24.5
		18900	1880	1	0	0	24.5	24.2
		19150	1905	1	0	0	24.5	24.27
		18650	1855	1	49	0	24.5	24.44
		18900	1880	1	49	0	24.5	24.39
	QPSK	19150	1905	1	49	0	24.5	23.87
	QPSK	18650	1855	25	12	1	24.5	23.22
		18900	1880	25	12	1	24.5	23.1
		19150	1905	25	12	1	24.5	23.15
		18650	1855	50	0	1	24.5	23.18
		18900	1880	50	0	1	24.5	22.98
10MHz		19150	1905	50	0	1	24.5	23.06
TUMHZ		18650	1855	1	0	1	24.5	23.26
		18900	1880	1	0	1	24.5	23.12
		19150	1905	1	0	1	24.5	23.15
		18650	1855	1	49	1	24.5	23.33
		18900	1880	1	49	1	24.5	23.11
	100.000	19150	1905	1	49	1	24.5	22.84
	16QAM	18650	1855	25	12	2	24.5	22.2
		18900	1880	25	12	2	24.5	22.08
		19150	1905	25	12	2	24.5	22.13
		18650	1855	50	0	2	24.5	22.17
		18900	1880	50	0	2	24.5	22.38
		19150	1905	50	0	2	24.5	21.9



EIRP POWER (dBm)

GSM

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
	512	1850.2	-10.23	38.19	27.96	625.17	Н
	661	1880.0	-11.16	38.70	27.54	567.54	Н
x	810	1909.8	-11.16	39.35	28.19	659.17	Н
^	512	1850.2	-14.13	38.48	24.35	272.27	V
	661	1880.0	-13.50	38.59	25.09	322.85	V
	810	1909.8	-13.40	38.87	25.47	352.37	V

EDGE

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
	512	1850.2	-15.06	38.19	23.13	205.59	Н
	661	1880.0	-15.00	38.70	23.70	234.42	Н
x	810	1909.8	-15.70	39.35	23.65	231.74	Н
^	512	1850.2	-18.85	38.48	19.63	91.83	V
	661	1880.0	-18.75	38.59	19.84	96.38	V
	810	1909.8	-18.63	38.87	20.24	105.68	V

WCDMA

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
	9262	1852.4	-17.26	38.19	20.93	123.88	Н
	9400	1880.0	-17.90	38.70	20.80	120.23	Н
x	9538	1907.6	-18.74	39.35	20.61	115.08	Н
^	9262	1852.4	-22.20	38.48	16.28	42.46	V
	9400	1880.0	-21.00	38.59	17.59	57.41	V
	9538	1907.6	-21.64	38.87	17.23	52.84	V



LTE BAND 2

CHANNEL BANDWIDTH: 5MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
	18625	1852.5	-17.33	38.19	20.86	121.90	Н
	18900	1880.0	-17.72	38.70	20.98	125.31	Н
x	19175	1907.5	-18.95	39.35	20.40	109.65	Н
^	18625	1852.5	-18.89	38.48	19.59	90.99	V
	18900	1880.0	-18.87	38.59	19.72	93.76	V
	19175	1907.5	-19.52	38.87	19.35	86.10	V

CHANNEL BANDWIDTH: 10MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
	18625	1855.0	-17.40	38.19	20.79	119.95	Н
	18900	1880.0	-17.51	38.70	21.19	131.52	Н
x	19175	1905.0	-18.32	39.35	21.03	126.77	Н
^	18625	1855.0	-19.42	38.48	19.06	80.54	V
	18900	1880.0	-19.22	38.59	19.37	86.50	V
	19175	1905.0	-19.02	38.87	19.85	96.61	V



4.2 FREQUENCY STABILITY MEASUREMENT

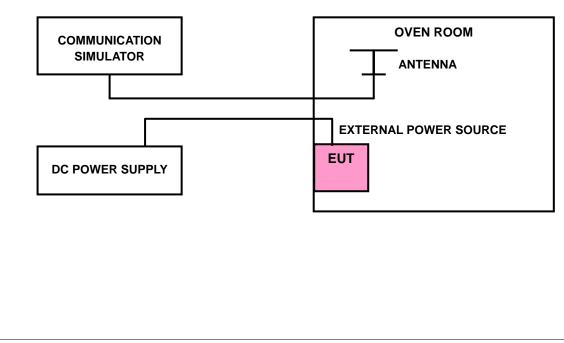
4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

4.2.2 TEST PROCEDURE

- a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}$ C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.



4.2.3 TEST SETUP



4.2.4 TEST RESULTS

FREQUENCY ERROR VS. VOLTAGE

		FREQUE		R (ppm)		
VOLTAGE (Volts)	CDDC	GPRS EDGE WC		LTE B	and 5	LIMIT (ppm)
	GPK5		WCDMA	5MHz	10MHz	
3.8	-0.01	0.01	-0.02	-0.01	0.00	2.5
3.6	-0.01	0.01	-0.02	-0.01	0.00	2.5
4.2	0.01	0.01	-0.02	-0.01	0.00	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

		FREQUE		R (ppm)		
TEMP. (℃)	GPRS	EDGE	WCDMA	LTE B	and 5	LIMIT (ppm)
	GFK3	LDOL	WODINA	5MHz	10MHz	
-10	0.01	0.01	0.02	0.00	-0.01	2.5
0	0.01	0.01	0.02	0.00	-0.01	2.5
10	-0.01	0.01	0.03	0.00	-0.01	2.5
20	-0.01	0.01	-0.03	0.00	0.00	2.5
30	-0.01	0.01	-0.03	0.00	0.00	2.5
40	-0.01	0.01	-0.03	0.00	0.00	2.5
50	-0.01	0.01	-0.03	0.00	0.00	2.5
55	-0.01	0.01	-0.03	0.00	0.00	2.5

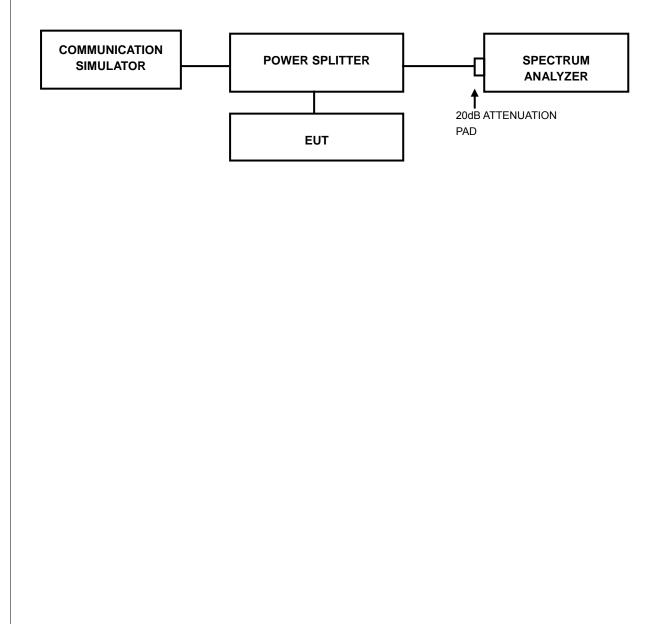


4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

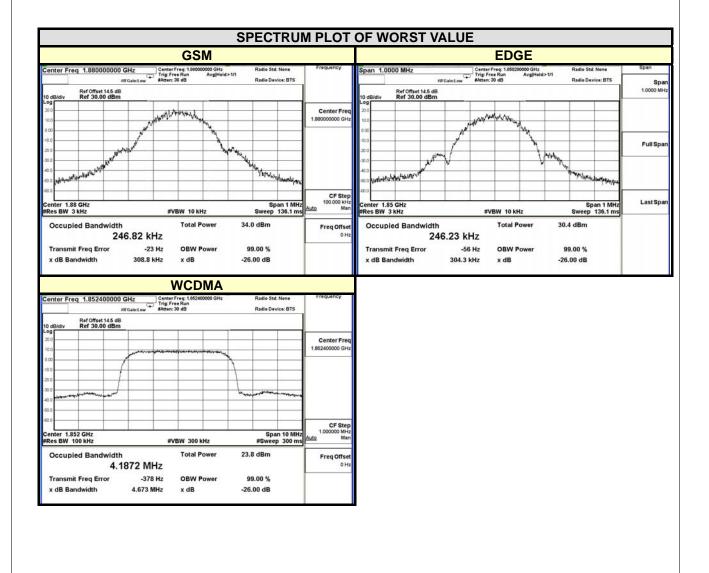
4.3.2 TEST SETUP





4.3.3 TEST RESULTS

CHANNEL	FREQUENCY	99% OC BANDWII	CUPIED DTH (kHz)	CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
	(MHz)	GSM	EDGE			WCDMA
512	1850.2	246.73	246.23	9262	1852.4	4.1872
661	1880.0	246.82	242.32	9400	1880.0	4.1695
810	1909.8	245.92	242.27	9538	1907.6	4.1740





	LTE BAND 2													
С	HANNEL BAND	WIDTH: 5MHz	CHANNEL BANDWIDTH: 10MHz											
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)									
18625	1852.5	4.5029	18650	1855	8.9232									
18900	1880	4.4994	18900	1880	8.9289									
19175	1907.5	4.5045	19150	1905	8.9333									

				Hz	10M										Ηz	5Mł					
Frequency		Radio Std Radio Dev	п	Avg Held>	Freq: 1.90500 ee Run 30 dB		GHZ FGain:Low		req 1.90	Center Fr	Frequency	303	Radio Std: Radio Devi	-1/1	Avg Helds	Freq: 1.90750 ee Run 30 dB	Trig:F	GHz IFGain:L		q 1.907	enter F
						-		et 14.5 dB .00 dBm		10 dB/div									t 14.5 dB 00 dBm	Ref Offse Ref 30.0	dB/div
Center F 1.905000000			1	-			-	-	_	20.0 10.0	Center Freq 907500000 GHz			7				~~	-		
			1				-		-	-10.0				1		-	-	-	1		00
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	h		-		-	arrive				hanne	m	h			_	+	nd -	man	0.0
										-40.0 -50.0						-	-	-	-	-	0
CF S 2.0000001 Auto	n 20 MHz 2.533 ms	Spa Sweep	3	KHZ	BW 300 F	#V				Center 1. #Res BW	CF Step 1.000000 MHz Man	n 10 MHz 1.267 ms	Spai Sweep		Hz	/BW 300 k	#			08 GHz 100 kHz	
FreqOf		dBm	30.0	ower	Total P	Hz	333 M	dwidth 8.9	oied Bar	Occup	Freq Offset 0 Hz		dBm	30.5	0.000072	Total P	MHz			ied Band	
		.00 % 00 dB		ower	OBW P		7.480		nit Freq E andwidth				.00 % 00 dB		ower	OBW P	68 kHz 82 MHz		ror	it Freq Er ndwidth	

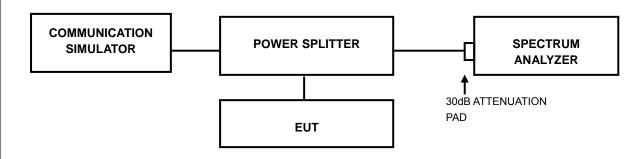


## 4.4 PEAK TO AVERAGE RATIO

## 4.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

## 4.4.2 TEST SETUP



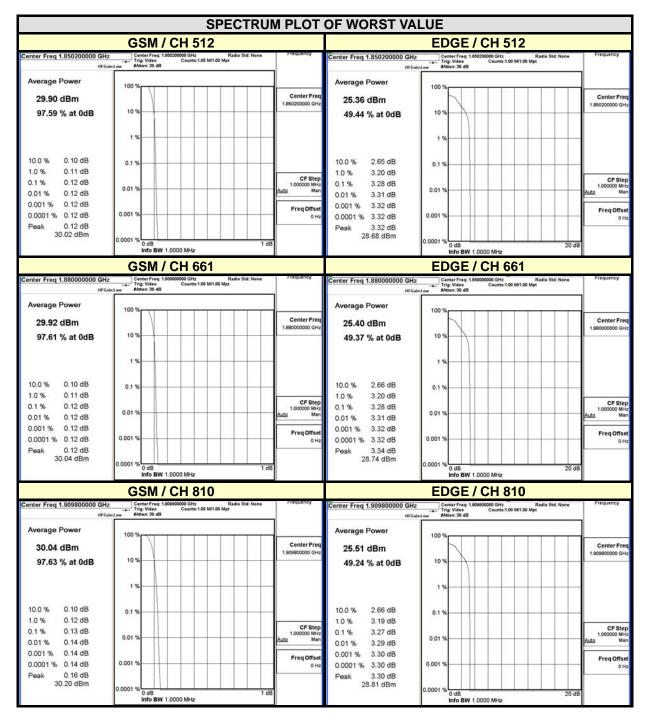
### 4.4.3 TEST PROCEDURES

- 1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve;
- 3. Record the maximum PAPR level associated with a probability of 0.1%.



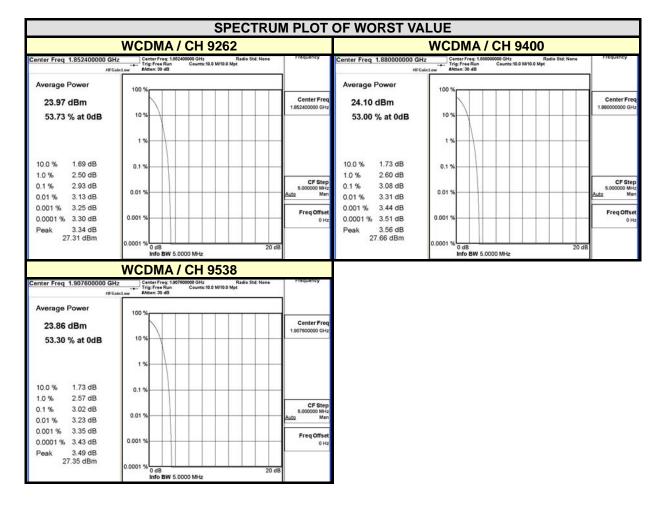
## 4.4.4 TEST RESULTS

		PEAK TO AVER	AGE RATIO (dB)
CHANNEL	FREQUENCY (MHz)	GSM	EDGE
512	1850.2	0.12	3.28
661	1880.0	0.12	3.28
810	1909.8	0.13	3.27



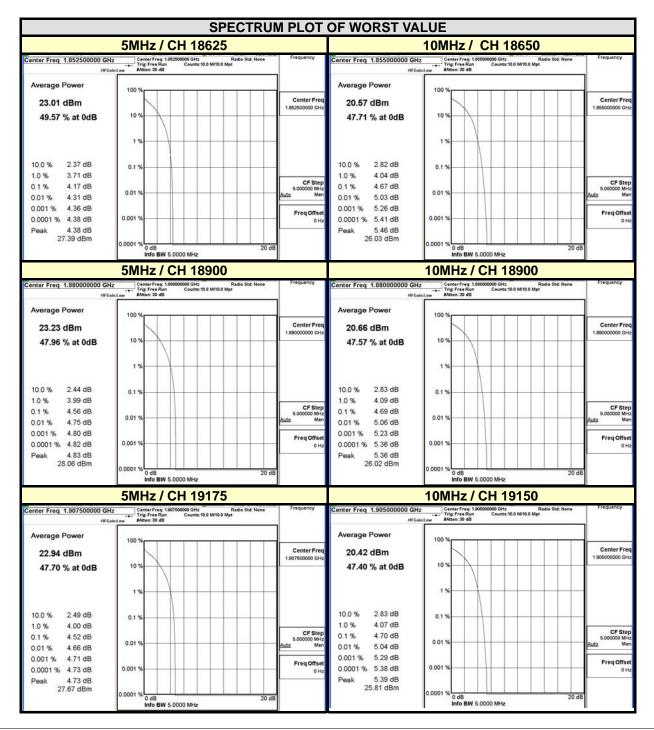


		PEAK TO AVERAGE RATIO (dB)
CHANNEL	FREQUENCY (MHz)	WCDMA
9262	1852.4	2.93
9400	1880.0	3.08
9538	1907.6	3.02





	LTE BAND 2													
С	HANNEL BAND	WIDTH: 5MHz	CHANNEL BANDWIDTH: 10MHz											
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)									
18625	1852.5	4.17	18650	1855	4.67									
18900	1880	4.56	18900	1880	4.69									
19175	1907.5													



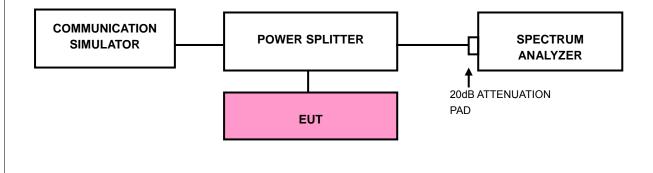


## 4.5 BAND EDGE MEASUREMENT

#### 4.5.1 LIMITS OF BAND EDGE MEASUREMENT

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

### 4.5.2 TEST SETUP

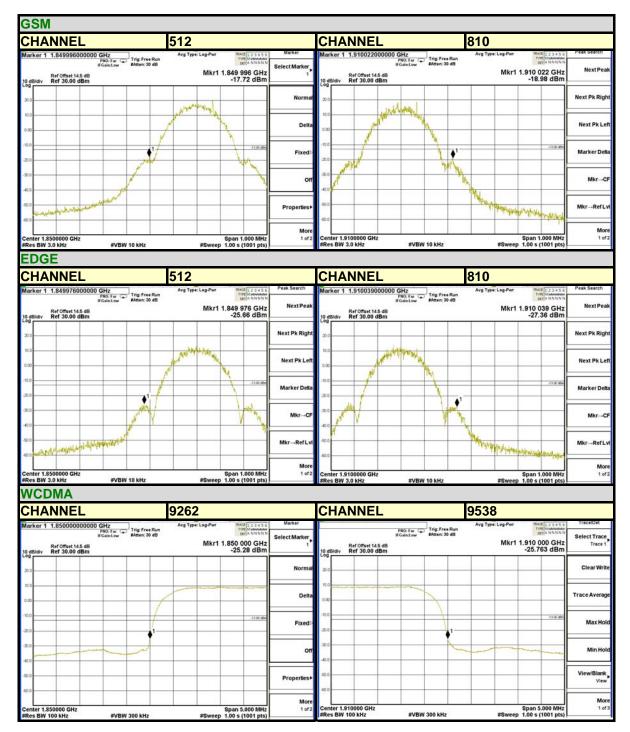


### 4.5.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/ EDGE).
- c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA/LTE).
- d. Record the max trace plot into the test report.



## 4.5.4 TEST RESULTS





CHANNEL	dwidth: 5MHz 18625	1 RB		CHANNEL	19175	1 RB	
_		g type: Log-PWP PALE 123456		Marker 1 1.91000000000		Ava Type: Log-Pwr TRACE 123456	Peak Search
Ref Offset 14.5 dB 0 dB/div Ref 30.00 dBm	PN0: Far Trig: Free Run FGaint.ow #Atten: 30 dB	Mkr1 1.850 000 GHz -14.877 dBm	Select Trace		GHZ PHO: Fat If GalasLew #Atten: 30 dB	Mkr1 1.910 000 GHz -15.46 dBm	NextPea
20.0			Clear Write	20.0			Next Pk Rig
0.00			Trace Average	0.00			Next Pk Le
20.0	1	-13.00 dBe	Max Hold	-10.0		-13.00 dBm	Marker De
40.0			Min Hold	-30.0			MkrC
50.0			View/Blank View	-60.0			Mkr→RefL
60.0				-60.0			-000
Center 1.8500000 GHz	#VBW 300 kHz	Span 1.000 MHz #Sweep 1.00 s (1001 pts)	More 1 of 3	Center 1.9100000 GHz	#VBW 300 kHz	Span 1.000 MHz #Sween 1.00 s (1001 pts)	Mo 1 of
Center 1.8500000 GHz Res BW 100 kHz	#VBW 300 kHz 18625	Span 1.000 MHz #Sweep 1.00 s (1001 pts)		Center 1.9100000 GHz #Res BW 100 kHz CHANNEL	#VBW 300 kHz	Span 1.000 MHz #Sweep 1.00 s (1001 pts) 25 RB	
Res BW 100 kHz CHANNEL Marker 1 1.850000000000 ( Ref Offset 14.5 dB	18625	#Sweep 1.00 s (1001 pts) 25 RB g Type: Log Pwr Mkr1 1.850 000 GHz		#Res BW 100 kHz CHANNEL Bef Offset 145 dB		#Sweep 1.00 s (1001 pts)	1 o Haceber Select Trace
Res BW 100 kHz CHANNEL Marker 1 1.85000000000 ( Bodbidiv Ref Offset 14.5 dB Ref 30.00 dBm	18625	#Sweep 1.00 s (1001 pts) 25 RB g Type: Log Pwr ref ANNINN	1 of 3 Peak Search	#Res BW 100 kHz	19175	#Sweep 1.00 s (1001 pts) 25 RB Avg Type: Leg-Pwr Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Triff (Marchine)	1 o Traceitoet Select Trace Trace
Res BW 100 kHz CHANNEL Marker 1 1.850000000000 ( Ref Offset 14.5 dB	18625	#Sweep 1.00 s (1001 pts) 25 RB g Type: Log Pwr Mkr1 1.850 000 GHz	1 of 3 Peak Search Next Peak	#Res BW 100 kHz CHANNEL Ref Offset 14.5 dB 10 dB/div Ref 30.00 dBm	19175	#Sweep 1.00 s (1001 pts) 25 RB Avg Type: Leg-Pwr Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Triff (Marchine)	
Res BW 100 kHz CHANNEL Aarker 1 1.850000000000 Ref Offset 14.5 dB 0.4Bkdiv Ref 30.00 dBm 200 200 200 200 200 200 200 200 200 20	18625	#Sweep 1.00 s (1001 pts) 25 RB g Type: Log Pwr Mkr1 1.850 000 GHz	1 of 3 Peak Search Next Peak Next Pk Right	Ref Offset 14.5 dB 10 dB/dlv Ref 30.00 dBm 200	19175	#Sweep 1.00 s (1001 pts) 25 RB Avg Type: Leg-Pwr Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Birdf (1 2 3 4 5 6 Triff (Marchine) Birdf (1 2 3 4 5 6 Triff (Marchine)	1 c Hacebet Select Trac Trace Clear Wr
Res BW 100 kHz CHANNEL Larker 1 1.850000000000 Backer 1 1.850000000000 Backer 1 1.850000000000 Backer 1 1.8500	18625	#Sweep 1.00 s (1001 pts) 25 RB 3 Type: Leg-Pwr Mkr1 1.850 000 GHz -23.58 dBm	1 of 3 Pear Search Next Peak Next Pk Right Next Pk Left	Ref Offset 14.5 dB	19175	#5weep 1.00 s (1001 pts) 25 RB Avg Type:Leg=Pwr Mkr1 1.910 000 GHz -24.041 dBm	Trace Avera
Res BW 100 kHz CHANNEL Larker 1 1.850000000000 Backer 1 1.850000000000 Backer 1 1.850000000000 Backer 1 1.65 dB Backer 1 1.65	18625	#Sweep 1.00 s (1001 pts) 25 RB 3 Type: Leg-Pwr Mkr1 1.850 000 GHz -23.58 dBm	1 or3 Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta	Ref Offset 14.5 dB 10 dBidly Ref 30.00 dBm	19175	#5weep 1.00 s (1001 pts) 25 RB Avg Type:Leg=Pwr Mkr1 1.910 000 GHz -24.041 dBm	1 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII



HANNEL	18650	1 RB		CHANNEL	19150	1 RB	
arker 1 1.850000000000	PNO: Far Trig: Free Run	vg Type: Log-Pwr TRACE 1 2 3 4 5 6	Peak Search	Marker 1 1.910000000000	PNO: East Trig: Free Run	Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 TIPE MWWWWW CEELA NINNN	Peak Search
Ref Offset 14.5 dB dB/div Ref 30.00 dBm	IFGals:Low IAtten: 30 dB	Mkr1 1.850 000 GHz -30.84 dBm	NextPeak	Ref Offset 14.5 dB	IFGain:Low IAtten: 30 dB	Mkr1 1.910 000 GHz -30.58 dBm	NextPea
.0			Next Pk Right				Next Pk Rig
			Next Pk Left	0.00			Next Pk Lo
0		-13.00 @	Marker Delta	-10.0		13 00 dbm	Marker De
0			Mkr→CF	-30.0			MkrG
0			Mkr⊸RefLvi	-60.0			Mkr→RefL
nter 1.8500000 GHz	#VBW 300 kHz	Span 1.000 MHz	Mkr⊸RefLvl More 1 of 2	60.0 Center 1.9100000 GHz	#VBW 300 kHz	Span 1.000 MHz #Sweep 1.00 s (1001 pts)	Мо
nter 1.8500000 GHz es BW 100 kHz	#VBW 300 KHz 18650	span 1.000 MHz ≢Sweep 1.00 s (1001 pts) 50 RB	More	-60.0	#VBW 300 kHz 19150	Span 1.000 MHz #Sweep 1.00 s (1001 pts) 50 RB	Mkr⊸RefL Moi 1 of
nter 1.8500000 GHz	18650	#Sweep 1.00 s (1001 pts)	More	40.0 Center 1.9100000 GHz #Res BW 100 kHz	19150 GHz	#Sweep 1.00 s (1001 pts)	Мо
Inter 1.8500000 GHz es BW 100 kHz HANNEL arker 1 1.850000000000	18650	#Sweep 1.00 s (1001 pts)	More 1 of 2	Center 1.9100000 GHz #Res BW 100 kHz CHANNEL Marker 1 1.910000000000 Ref 30.00 dBm	19150	#Sweep 1.00 s (1001 pts)	Mo 1 o Peak Search
es BW 100 kHz EN	18650	#Sweep 1.00 s (1001 pts) 50 RB wg Type: Log-Pwr Mkr1 1.850 000 GHz	More 1 of 2 Peak Search	Center 1,9100000 GHz Res BW 100 kHz CHANNEL Marker 1 1,910000000000 Ref Offset 14.5 dB	19150	#Sweep 1.00 s (1001 pts) 50 RB Avg Type: Leg-Pur Wkr1 1.910 000 GHz	Mo 1 o Peak Search Next Pea
Binter 1.8500000 GHz tes BW 100 kHz CHANNEL Arker 1 1.850000000000 Ref Officet 14.5 dB gelddy Ref 30.00 dBm	18650	#Sweep 1.00 s (1001 pts) 50 RB wg Type: Log-Pwr Mkr1 1.850 000 GHz	More 1 of 2 Peak Search Next Peak	Center 1.9100000 GHz #Res BW 100 kHz CHANNEL Marker 1 1.910000000000 Marker 1 1.9100000000000 Ref Offset 14.5 dB Log 10 dB/dw Ref 30.00 dBm	19150	#Sweep 1.00 s (1001 pts) 50 RB Avg Type: Leg-Pur Wkr1 1.910 000 GHz	<b>Mo</b> 1 ol
atter 1.8500000 GHz es BW 100 kHz HANNEL Arker 1 1.8500000000000 atter 1 1.85000000000000 Atter 1 1.85000000000000000000000000000000000000	18650	#Sweep 1.00 s (1001 pts) 50 RB wg Type: Log-Pwr Mkr1 1.850 000 GHz	More 1 of 2 Peak Search Next Peak	400 Center 1,9100000 GHz RRes BW 100 kHz CHANNEL Marker 1 1,910000000000 Marker 1 1,910000000000 Ref Offset 14.5 dB 10 dB/dv Ref 30.00 dBm	19150	#Sweep 1.00 s (1001 pts) 50 RB Avg Type: Leg-Pur Wkr1 1.910 000 GHz	Mo 1 o Peak Search Next Pe Next Pk Rig
Binding Ref 0ffset 14.5 dB	18650	#Sweep 1.00 s (1001 pts) 50 RB vg Type: Log Pwr Mkr1 1.850 000 GHz -31.26 dBm	More 1 of 2 Peak Search Next Peak Next Pk Right Next Pk Left	400         Center 1.9100000 GHz           #Res BW 100 kHz         Center 1.910000000000           Marker 1 1.910000000000         Ref Offset 14.5 dB           10 dB/dv         Ref Offset 14.5 dB           000         000           000         000	19150	#Sweep 1.00 s (1001 pts)	Mi 11 Peak Search Next Pe Next Pk Riy Next Pk L



## 4.6 CONDUCTED SPURIOUS EMISSIONS

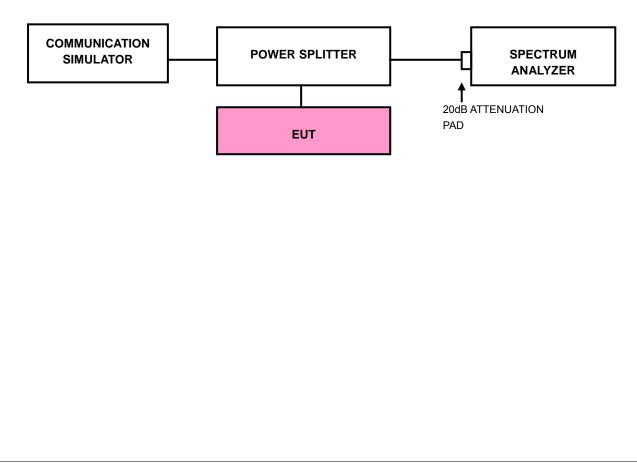
#### 4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ . The emission limit equal to -13 dBm.

#### 4.6.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 19.1GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

#### 4.6.3 TEST SETUP





## 4.6.4 TEST RESULTS

90	SM									EDGE								
CH	IANN	NEL 66	1							CHAN	INEL (	661						
FR	EQU	JENCY	RAN	IGE :	30MH	z~19	9.1GH	Ηz		FREC	UENC	Y RA	NGE	: 30MI	Hz~1	9.1G	Hz	
	Ref O	25421271064 I Miset 14.5 dB 34.50 dBm	GHz PNO: Fast 😱 FGain:Low	Trig: Free Run #Atten: 30 dB	Ауд Тур	e: Log-Pwr Mkr	1 16.525 4	4 GHz 7 dBm	Peak Search Next Peak	F	6.496814840 ef Offset 14.5 dB ef 34.50 dBm	PNO: Fast C IFGain:Low	Trig: Free R #Atten: 30 d	lun	ype: Leg-Pwr Mki	r1 16.49	6 8 GHz 08 dBm	Next Peak
24.5		34.30 UBII							Next Pk Right	24.5								Next Pk Righ
4 50									Next Pk Left	4.50				-				Next Pk Le
5 50 -							-1	-13.00 dBm	Marker De <mark>lt</mark> a	-5.50							-13.00 dDm	Marker Delt
25.5		Marine Marine				-			Mkr→CF	-25.5					-			Mkr→C
35.5 45.5									Mkr→Ref Lvi	-45.5						-		Mkr→RefL
55.5		-								-55.5								Mor
Res	30 MHz BW 1.0 Mi	<u> </u>	#VBW	3.0 MHz	3	#Sweep 5	Stop 19.10 503 ms (200	00 GHz 000 pts)	More 1 of 2	Start 30 MH #Res BW 1.0		#VB	W 3.0 MHz	27	#Sweep	Stop 19 503 ms (2	.100 GHz 0000 pts)	
Res NO		A <mark>IEL 94</mark>	00			•	503 ms (200	000 pts)				#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	.100 GHz 20000 pts)	
Res NO CH		A NEL 94 JENCY	00 RAN	IGE :	30MH	•	503 ms (200 9.1GF	000 pts)  				#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	.100 GHz 0000 pts)	
Res NC CH FR Mark	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN		30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GF	-12 NNNNN	1 of 2			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	.100 GHz 0000 pts)	1 of:
	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN	IGE :	30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GF		1 of 2			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	100 GHz 20000 pts)	
Res NC CH FR	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN	IGE :	30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GF		1 of 2 Peak Search Next Peak			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	100 GHz 00000 pts)	
Res NC CH FR Mark 0 dB/ 245 	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN	IGE :	30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GF		1 of 2 Park Search Next Peak Next Pk Right			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	.100 GHz 0000 pts)	
Res N( CH FR Mark 0 dBJ 245 	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN	IGE :	30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GH	HZ 123456 P NAMA 0 GHz 1 dBm	1 of 2 Peak Search Next Peak Next Pk Right Next Pk Left			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	100 GHz	
0 dBA	EW 1.0 MI CDM	A NEL 94 JENCY 95030251513	00 RAN	IGE :	30MH	<b> Z~1</b> 9 He: Log-Pwr	9.1GH	HZ 123456 P NAMA 0 GHz 1 dBm	1 of 2 Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta			#VB	W 3.0 MHz		#Sweep	Stop 19 503 ms (2	100 GHz	

.TE	Band 2 (Channel Bandwidth: 5MHz)									L	re e	Band	2 (0	Char	nnel	Bar	ndw	idth	: 10	MHz)	
CHA	NNEL 18900									C	HAN	INE	L 18	900							
RE	QUE	QUENCY RANGE : 30MHz~19.1GHz								F	REC	UE	NCY	RA	NGE	: 30	)MH	z~1	9.1G	Hz	
Marker 1	16.5301		GHz NO: Fast	Trig:Free	Run	Avg Type	Log-Pwr	TRACE 1 2 3	456 Peak Search	Ma	rker 1 1	6.40813	4906745	GHz NO: Fast	Trig Fre	Run	Avg Typ	e: Log-Pwr	tha Ti	CE 123456	Peak Search
0 dBldiv	Ref Offset Ref 34.5	14.5 dB	Gaintow	#Atten: 30	dB		Mkr1	16.530 2 G -21.54 d	Hz NextPeal	10 d		tef Offset 1-	IFI 4.5 dB	Gaintow	#Atten: 3	Bb (B		Mki	1 16.40	8 1 GHz 39 dBm	Next Peak
24.5									Next Pk Righ	24.5											Next Pk Right
4.50									Next Pk Let	14.5 4.50	5										Next Pk Left
5.50								-130	o den Marker Delt	-6.50										-13.00 dBm	Marker Delta
255		متعديه		alle e state			~	-	Mkr→Cl	-25.5			N. LORAN	-	-		a la mainte	~			Mkr→CF
45.5									Mkr→RefLy	-45.5											Mkr→RefLvi
55.5 Start 30 M								Stop 19,100 0	Mor Hz 1 of	-55.5 Cto	rt 30 MH								Stop 44	0.100 GHz	More 1 of 2
	NHZ 1.0 MHZ		#VBW	3.0 MHz	8	#		03 ms (20000			s BW 1.			#VBW	3.0 MHz	8	3	#Sweep		20000 pts)	1012



## 4.7 RADIATED EMISSION MEASUREMENT

#### 4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ . The emission limit equal to -13 dBm.

#### 4.7.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c. EIRP = Output power level of S.G TX cable loss + Antenna gain of substitution horn.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

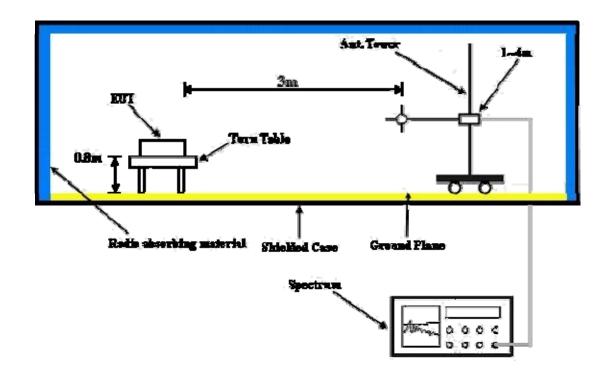
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.7.3 DEVIATION FROM TEST STANDARD

No deviation



#### 4.7.4 TEST SETUP

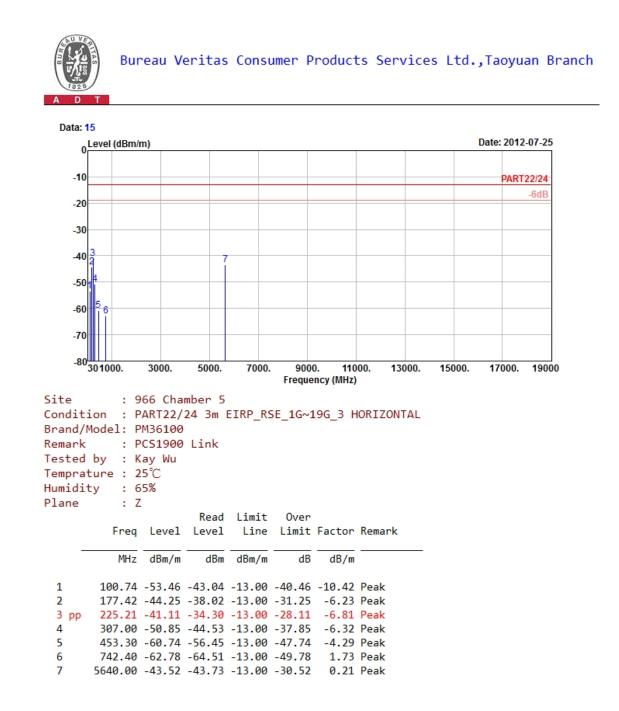


For the actual test configuration, please refer to the attached file (Test Setup Photo).



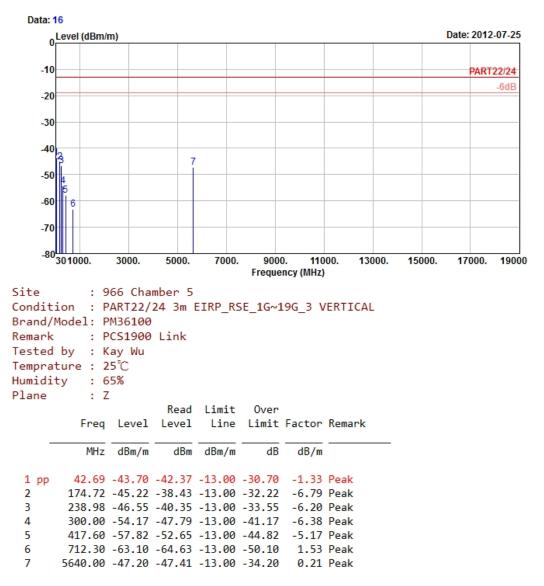
#### 4.7.5 TEST RESULTS

GSM:











## EDGE:

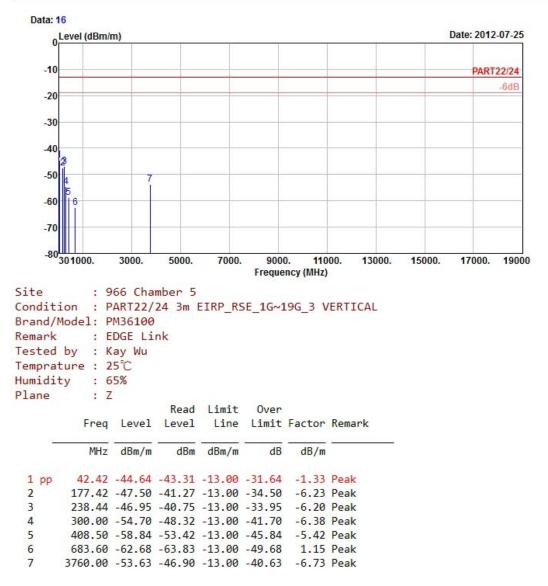
7

Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 15 0 Level (dBm/m) Date: 2012-07-25 -10 PART22/24 -6dB -20 -30 -40 -50 -60 e -70 -80^{301000.} 3000. 5000. 7000. 9000. 11000. 13000. 15000. 17000. 19000 Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 HORIZONTAL Brand/Model: PM36100 Remark : EDGE Link Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Z Read Limit **Over** Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 98.85 -52.83 -42.41 -13.00 -39.83 -10.42 Peak 1 177.69 -45.88 -39.65 -13.00 -32.88 -6.23 Peak 2 3 pp 225.21 -44.33 -37.52 -13.00 -31.33 -6.81 Peak 4 313.30 -53.57 -47.29 -13.00 -40.57 -6.28 Peak 5 399.40 -59.71 -54.07 -13.00 -46.71 -5.64 Peak 702.50 -63.29 -64.75 -13.00 -50.29 1.46 Peak 6

3760.00 -53.55 -46.82 -13.00 -40.55 -6.73 Peak

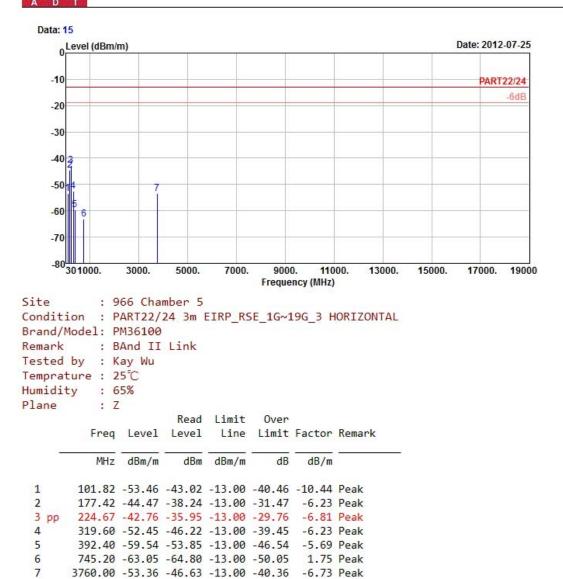






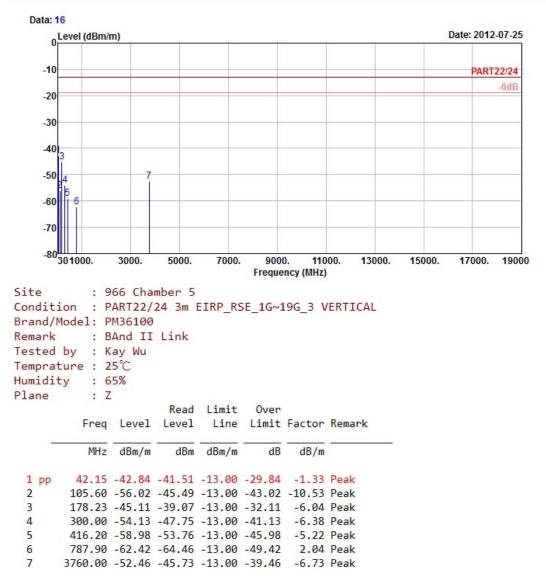


## WCDMA:







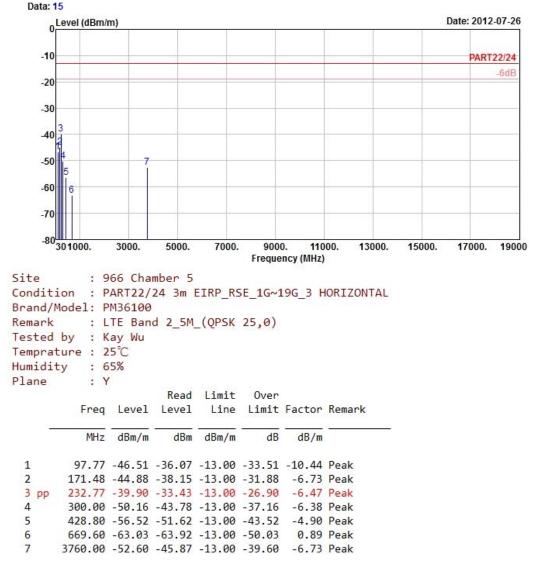




## LTE BAND 2 CHANNEL BANDWIDTH: 5MHz / QPSK









#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-26 -10 PART22/24 -6dB -20 -30 -40 -50 -60 6 -70 -80 3000. 9000. 11000. 13000. 15000. 17000. 19000 301000. 5000. 7000. Frequency (MHz) : 966 Chamber 5 Site Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 Remark : LTE Band 2_5M_(QPSK 25,0) Tested by : Kay Wu Temprature : 25°C Humidity : 65% Plane : Y Over Read Limit Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 30.00 -39.38 -40.45 -13.00 -26.38 1 pp 1.07 Peak 2 172.29 -47.05 -40.30 -13.00 -34.05 -6.75 Peak 231.96 -47.39 -40.88 -13.00 -34.39 -6.51 Peak 3 300.00 -54.43 -48.05 -13.00 -41.43 -6.38 Peak 4 5 407.10 -59.78 -54.34 -13.00 -46.78 -5.44 Peak 6 643.70 -63.09 -63.53 -13.00 -50.09 0.44 Peak

3760.00 -53.30 -46.57 -13.00 -40.30 -6.73 Peak

7



#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 15 0 Level (dBm/m) Date: 2012-07-26 -10 PART22/24 -6dB -20 -30 -40 -50 -60 -70 -80 301000. 11000. 13000. 17000. 19000 3000. 5000. 7000. 9000. 15000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 HORIZONTAL Brand/Model: PM36100 : LTE Band 2_5M_(QPSK1,24) Remark Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit Over Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB/m dB 1 98.04 -46.55 -36.11 -13.00 -33.55 -10.44 Peak 2 172.29 -44.91 -38.16 -13.00 -31.91 -6.75 Peak 230.34 -40.37 -33.82 -13.00 -27.37 -6.55 Peak 3 pp 312.60 -50.40 -44.11 -13.00 -37.40 -6.29 Peak 4 5 403.60 -56.26 -50.72 -13.00 -43.26 -5.54 Peak 6 659.80 -61.51 -62.23 -13.00 -48.51 0.72 Peak 7 3764.40 -51.47 -44.86 -13.00 -38.47 -6.61 Peak



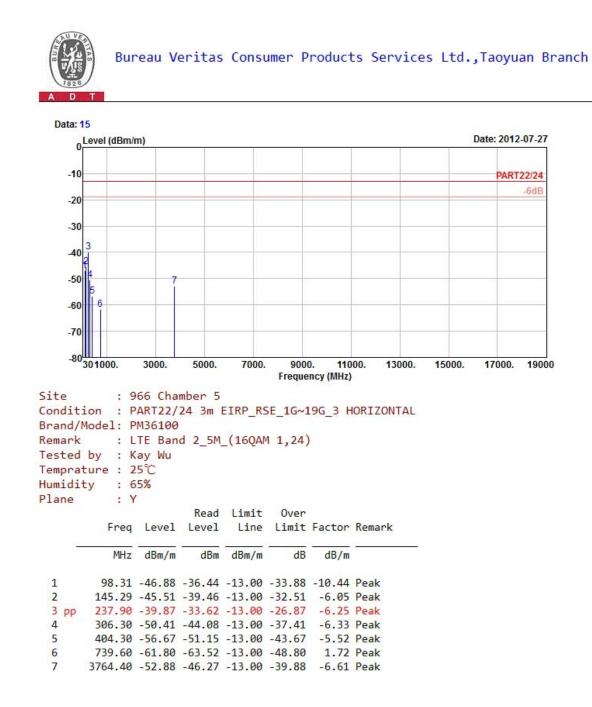
#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-26 -10 PART22/24 -6dB -20 -30 -40 -50 -60 -70 -80 301000. 11000. 13000. 17000. 19000 3000. 5000. 7000. 9000. 15000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 : LTE Band 2_5M_(QPSK1,24) Remark Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit Over Line Limit Factor Remark Freq Level Level MHz dBm/m dBm dBm/m dB/m dB 1 pp 42.15 -40.67 -39.34 -13.00 -27.67 -1.33 Peak 97.23 -53.25 -42.80 -13.00 -40.25 -10.45 Peak 2 172.02 -47.47 -40.74 -13.00 -34.47 -6.73 Peak 3 4 300.00 -54.45 -48.07 -13.00 -41.45 -6.38 Peak 5 395.20 -60.42 -54.74 -13.00 -47.42 -5.68 Peak 638.10 -63.29 -63.62 -13.00 -50.29 0.33 Peak 6

7

3764.40 -53.48 -46.87 -13.00 -40.48 -6.61 Peak



### CHANNEL BANDWIDTH: 5MHz / 16QAM





#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -50 6 -60 -70 -80 3000. 5000. 7000. 9000 11000. 13000. 15000. 17000. 19000 301000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 Remark : LTE Band 2_5M_(16QAM 1,24) Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit 0ver Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 42.42 -41.21 -39.88 -13.00 -28.21 -1.33 Peak 1 pp 171.21 -47.58 -40.85 -13.00 -34.58 -6.73 Peak 2 238.71 -47.53 -41.33 -13.00 -34.53 -6.20 Peak 3 300.00 -54.75 -48.37 -13.00 -41.75 -6.38 Peak 4 5 399.40 -60.34 -54.70 -13.00 -47.34 -5.64 Peak 713.70 -61.84 -63.38 -13.00 -48.84 1.54 Peak 6 7 3764.40 -53.60 -46.99 -13.00 -40.60 -6.61 Peak



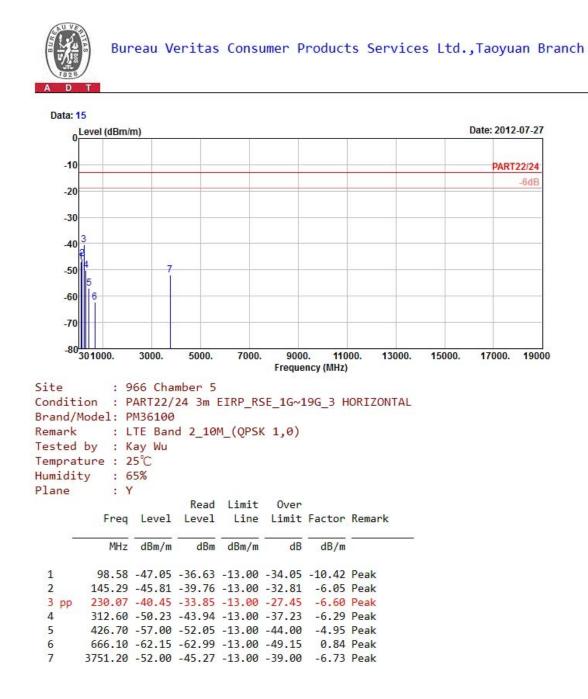
#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 15 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 40 -50 -60 6 -70 -80 3000. 9000. 11000. 13000. 15000. 17000. 19000 301000. 5000. 7000. Frequency (MHz) : 966 Chamber 5 Site Condition : PART22/24 3m EIRP_RSE_1G~19G_3 HORIZONTAL Brand/Model: PM36100 Remark : LTE Band 2_5M_(16QAM 25,0) Tested by : Kay Wu Temprature : 25°C Humidity : 65% Plane : Y Read Limit Over Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 98.04 -46.39 -35.95 -13.00 -33.39 -10.44 Peak 1 2 145.29 -45.64 -39.59 -13.00 -32.64 -6.05 Peak 232.23 -40.17 -33.66 -13.00 -27.17 -6.51 Peak 3 pp 304.90 -50.91 -44.57 -13.00 -37.91 -6.34 Peak 4 5 426.00 -56.63 -51.65 -13.00 -43.63 -4.98 Peak 6 730.50 -62.26 -63.91 -13.00 -49.26 1.65 Peak 7 3760.00 -51.95 -45.22 -13.00 -38.95 -6.73 Peak



#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -50 -60 6 -70 -80 3000. 9000. 11000. 13000. 15000. 17000. 19000 301000. 5000. 7000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 : LTE Band 2_5M_(16QAM 25,0) Remark Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit Over Line Limit Factor Remark Freq Level Level MHz dBm/m dB dBm dBm/m dB/m 1 pp 42.69 -41.68 -40.35 -13.00 -28.68 -1.33 Peak 172.02 -47.16 -40.43 -13.00 -34.16 -6.73 Peak 2 3 236.28 -47.75 -41.46 -13.00 -34.75 -6.29 Peak 4 300.00 -54.70 -48.32 -13.00 -41.70 -6.38 Peak 5 396.60 -60.04 -54.38 -13.00 -47.04 -5.66 Peak 699.70 -63.04 -64.47 -13.00 -50.04 1.43 Peak 6 7 3760.00 -51.02 -44.29 -13.00 -38.02 -6.73 Peak



### CHANNEL BANDWIDTH: 10MHz / QPSK





#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 40 -50 -60 -70 -80 13000. 301000. 3000. 5000. 7000. 9000. 11000. 15000. 17000. 19000 Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 : LTE Band 2_10M_(QPSK 1,0) Remark Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Over Read Limit Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB/m dB 42.42 -41.28 -39.95 -13.00 -28.28 -1.33 Peak 1 pp 172.02 -47.29 -40.56 -13.00 -34.29 -6.73 Peak 2 233.58 -47.41 -40.99 -13.00 -34.41 -6.42 Peak 3 302.10 -54.51 -48.15 -13.00 -41.51 -6.36 Peak 4 5 395.90 -59.82 -54.15 -13.00 -46.82 -5.67 Peak 454.00 -60.82 -56.55 -13.00 -47.82 -4.27 Peak 6 7 3751.20 -52.68 -45.95 -13.00 -39.68 -6.73 Peak



#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 15 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -50 -60 6 -70 -80 11000. 3000. 5000. 9000. 13000. 15000. 17000. 19000 301000. 7000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 HORIZONTAL Brand/Model: PM36100 Remark : LTE Band 2_10M_(QPSK 50,0) Tested by : Kay Wu Temprature : 25°C Humidity : 65% Plane : Y Read Limit 0ver Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 97.77 -46.32 -35.88 -13.00 -33.32 -10.44 Peak 1 2 172.02 -44.60 -37.87 -13.00 -31.60 -6.73 Peak 225.75 -40.24 -33.47 -13.00 -27.24 -6.77 Peak 3 pp 312.60 -50.58 -44.29 -13.00 -37.58 -6.29 Peak 4 5 387.50 -56.50 -50.77 -13.00 -43.50 -5.73 Peak 680.80 -62.50 -63.60 -13.00 -49.50 1.10 Peak 6 7 3760.00 -52.74 -46.01 -13.00 -39.74 -6.73 Peak



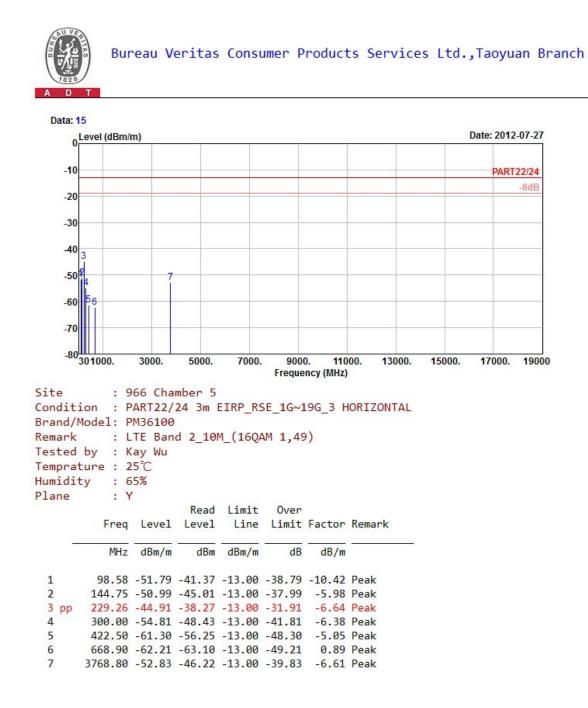
#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -50 6 -60 -70 -80 9000. 11000. 13000. 15000. 17000. 19000 301000. 3000. 5000. 7000. Frequency (MHz) : 966 Chamber 5 Site Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 Remark : LTE Band 2_10M_(QPSK 50,0) Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit Over Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 30.54 -41.01 -41.35 -13.00 -28.01 0.34 Peak 1 pp 2 172.29 -47.20 -40.45 -13.00 -34.20 -6.75 Peak 233.31 -47.18 -40.76 -13.00 -34.18 -6.42 Peak 3 4 300.70 -58.50 -52.13 -13.00 -45.50 -6.37 Peak 5 387.50 -60.36 -54.63 -13.00 -47.36 -5.73 Peak 6 737.50 -61.30 -63.00 -13.00 -48.30 1.70 Peak

3760.00 -52.97 -46.24 -13.00 -39.97 -6.73 Peak

7



### CHANNEL BANDWIDTH: 10MHz / 16QAM





#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -50 3 -60 -70 -80 3000. 9000. 11000. 13000. 15000. 17000. 19000 301000. 5000. 7000. Frequency (MHz) : 966 Chamber 5 Site Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 Remark : LTE Band 2_10M_(16QAM 1,49) Tested by : Kay Wu Temprature : 25°C Humidity : 65% Plane : Y Read Limit Over Line Limit Factor Remark Freq Level Level MHz dBm/m dBm dBm/m dB dB/m 30.27 -45.78 -46.85 -13.00 -32.78 1 pp 1.07 Peak 2 172.02 -53.62 -46.89 -13.00 -40.62 -6.73 Peak 236.01 -52.20 -45.87 -13.00 -39.20 -6.33 Peak 3 4 300.00 -59.23 -52.85 -13.00 -46.23 -6.38 Peak 5 397.30 -64.14 -58.49 -13.00 -51.14 -5.65 Peak 6 659.10 -62.52 -63.24 -13.00 -49.52 0.72 Peak

3768.80 -52.62 -46.01 -13.00 -39.62 -6.61 Peak

7



#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 15 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 3 -50 -60 6 -70 -80 11000. 13000. 17000. 19000 301000. 3000. 5000. 7000. 9000. 15000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 HORIZONTAL Brand/Model: PM36100 : LTE Band 2_10M_(16QAM 50,0) Remark Tested by : Kay Wu Temprature : 25℃ Humidity : 65% Plane : Y Read Limit Over Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB/m dB 1 99.66 -53.63 -43.23 -13.00 -40.63 -10.40 Peak 171.21 -49.73 -43.00 -13.00 -36.73 -6.73 Peak 2 228.45 -44.90 -38.26 -13.00 -31.90 -6.64 Peak 3 pp 300.70 -55.19 -48.82 -13.00 -42.19 -6.37 Peak 4 5 407.80 -60.13 -54.69 -13.00 -47.13 -5.44 Peak 6 700.40 -62.67 -64.12 -13.00 -49.67 1.45 Peak 7 3760.00 -52.76 -46.03 -13.00 -39.76 -6.73 Peak



#### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch Data: 16 0 Level (dBm/m) Date: 2012-07-27 -10 PART22/24 -6dB -20 -30 -40 -502 -60 6 -70 -80 3000. 5000. 9000. 11000. 13000. 15000. 17000. 19000 301000. 7000. Frequency (MHz) Site : 966 Chamber 5 Condition : PART22/24 3m EIRP_RSE_1G~19G_3 VERTICAL Brand/Model: PM36100 Remark : LTE Band 2_10M_(16QAM 50,0) Tested by : Kay Wu Temprature : 25°C Humidity : 65% Plane : Y Read Limit 0ver Freq Level Level Line Limit Factor Remark MHz dBm/m dBm dBm/m dB dB/m 42.96 -49.04 -47.71 -13.00 -36.04 -1.33 Peak 1 pp 173.10 -52.50 -45.73 -13.00 -39.50 -6.77 Peak 2 233.58 -52.20 -45.78 -13.00 -39.20 -6.42 Peak 3 300.00 -58.13 -51.75 -13.00 -45.13 -6.38 Peak 4 5 393.80 -63.56 -57.88 -13.00 -50.56 -5.68 Peak 698.30 -62.71 -64.13 -13.00 -49.71 1.42 Peak 6 7 3760.00 -52.74 -46.01 -13.00 -39.74 -6.73 Peak



# 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



# 6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab: Tel: 886-2-26052180 Fax: 886-2-26051924 Hsin Chu EMC/RF Lab: Tel: 886-3-5935343 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab: Tel: 886-3-3183232 Fax: 886-3-3270892 Email: <u>service.adt@tw.bureauveritas.com</u> Web Site: <u>www.adt.com.tw</u>

The address and road map of all our labs can be found in our web site also.



# 7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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