

# FCC TEST REPORT (PART 90S)

**REPORT NO.:** RF131114C03-3

**MODEL NO.:** C6730

FCC ID: V65C6730

**RECEIVED:** Nov. 14, 2013

**TESTED:** Nov. 29, 2013 ~ Feb. 14, 2014

**ISSUED:** Feb. 24, 2014

**APPLICANT:** Kyocera Communications, Inc. c/o Kyocera Corporation

ADDRESS: 8611 Balboa Ave. San Diego, CA 92123

**ISSUED BY:** Bureau Veritas Consumer Products Services

(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New

Taipei City, Taiwan (R.O.C.)

**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei

Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## **RELEASE CONTROL RECORD**

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131114C03-3	Original release	Feb. 24, 2014

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## 1 CERTIFICATION

**PRODUCT:** Kyocera phone

**MODEL:** C6730

**BRAND**: Kyocera

**APPLICANT:** Kyocera Communications, Inc. c/o Kyocera Corporation

**TESTED:** Nov. 29, 2013 ~ Feb. 14, 2014

**TEST SAMPLE:** Identical Prototype

STANDARDS: FCC PART 90, Subpart S

The above equipment (model: C6730) 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**: Feb. 24, 2014

Vera Huang / Specialist

Sam Chen / Senior Project Engineer



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 90 & Part 2						
STANDARD SECTION	TEST TYPE	RESULT	REMARK			
2.1046 90.635 (b)	Effective radiated power		Meet the requirement of limit.			
2.1055 90.213 Frequency Stability		PASS	Meet the requirement of limit.			
2.1049 90.209	Occupied Bandwidth (*)	PASS	Meet the requirement of limit.			
2.1051 90.210	Emission Masks	PASS	Meet the requirement of limit.			
2.1051 90.691	Conducted Spurious Emissions	PASS	Meet the requirement of limit.			
2.1053 90.691	Radiated Spurious Emissions		Meet the requirement of limit. Minimum passing margin is -31.64dB at 40.26MHz.			

#### 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 ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer Agilent	E4446A	MY51100039	Jul. 31, 2013	Jul. 30, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D- 209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 18, 2013	Dec. 17, 2014
Loop Antenna	3127-836	00099258	Aug. 09, 2013	Aug. 08, 2014
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2013	Dec. 26, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable Worken	RG-213	NA	Nov. 07, 2013	Nov. 06, 2014
Software BV ADT	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	Jul. 18, 2013	Jul. 17, 2014
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
Communications Tester-Wireless	E5515C	MY52102544	Sep. 05, 2012	Sep. 04, 2014
Radio Communication Analyzer	MT8820C	6201300640	Aug. 01, 2013	Jul. 31, 2014

**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 10.
- 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 690701.
- 5. The IC Site Registration No. is IC 7450F-10.



## **3 GENERAL INFORMATION**

## 3.1 GENERAL DESCRIPTION OF EUT

EUT	Kyocera phone				
MODEL NO.	C6730				
POWER SUPPLY	POWER SUPPLY 5.0Vdc (adapter or host equipment) 3.8Vdc (battery)				
MODULATION	CDMA BC10	QPSK, OQPSK, HPSK			
TYPE	LTE Band 26	QPSK, 16QAM			
	CDMA BC10	817.9MHz ~ 823.1MHz			
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	814.7MHz ~ 823.3MHz			
FREQUENCY RANGE	LTE Band 26 (Channel Bandwidth: 3MHz)	815.5MHz ~ 822.5MHz			
KANOL	LTE Band 26 (Channel Bandwidth: 5MHz)	816.5MHz ~ 821.5MHz			
	LTE Band 26 (Channel Bandwidth: 10MHz)	819MHz			
	CDMA BC10	76.56mW			
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	73.11mW			
MAX. ERP POWER	LTE Band 26 (Channel Bandwidth: 3MHz)	74.13mW			
	LTE Band 26 (Channel Bandwidth: 5MHz)	75.51mW			
	LTE Band 26 (Channel Bandwidth: 10MHz)	69.66mW			
	CDMA BC10	1M28F9W			
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	1M09G7D			
EMISSION DESIGNATOR	LTE Band 26 (Channel Bandwidth: 3MHz)	2M69G7D			
DESIGNATOR	LTE Band 26 (Channel Bandwidth: 5MHz)	4M50G7D			
	LTE Band 26 (Channel Bandwidth: 10MHz)	8M94W7D			
ANTENNA TYPE	CDMA BC10: Fixed Internal antenna with -2.0dBi gain LTE Band 26: Fixed Internal antenna with -2.0dBi gain				
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 has following accessories.

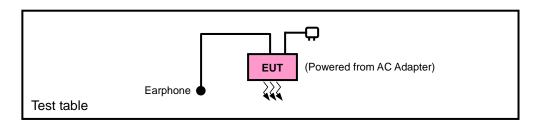
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ITEM	BRAND	MODEL	DESCRIPTION				
AC Adapter	Kyocera	SCP-42ADT	I/P: 100-240Vac, 50/60Hz, 200mA O/P: 5Vdc, 1000mA				
Li-ion Battery	Kyocera	SCP-59LBPS	Rating: 3.8Vdc, 2000mAh				
USB cable	Kyocera	SCP-11SDC	1.2m non-shielded cable w/o ferrite core				

<sup>2.</sup> The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

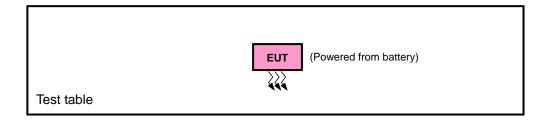


## 3.2 CONFIGURATION OF SYSTEM UNDER TEST

#### FOR RADIATION EMISSION TEST



## **FOR E.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	GALIEN	HF-HB04D	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

## NOTE:

- 1. All power cords of the above support units are non-shielded (1.8m).
- 2. Item 1 was provided by client.



## 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 Y-plane for CDMA and X-plane for LTE for ERP, and Y-axis for CDMA and LTE for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

#### **CDMA MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
-	ERP	476 to 684	476, 580, 684	1xRTT
-	FREQUENCY STABILITY	476 to 684	580	1xRTT
-	OCCUPIED BANDWIDTH	476 to 684	476, 580, 684	1xRTT
-	EMISSION MASK	476 to 684	476, 580, 684	1xRTT
-	CONDCUDETED EMISSION	476 to 684	580	1xRTT
-	RADIATED EMISSION	476 to 684	580	1xRTT



## LTE BAND 26 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
		26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM	1 RB / 2 RB Offset
	EDD	26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM	1 RB / 7 RB Offset
-	ERP	26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	1 RB / 49 RB Offset
		26697 to 26783	26740	1.4MHz	QPSK	1 RB / 2 RB Offset
	FREQUENCY	26705 to 26775	26740	3MHz	QPSK	1 RB / 7 RB Offset
-	STABILITY	26715 to 26765	26740	5MHz	QPSK	1 RB / 12 RB Offset
		26740	26740	10MHZ	QPSK	1 RB / 49 RB Offset
		26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	OCCUPIED	26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
-	BANDWIDTH	26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
					QPSK, 16QAM	1 RB / 0 RB Offset
	EMISSION MASK		26697	1.4MHz		6 RB / 0 RB Offset
		26697 to 26783	26740	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
			26783	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			26705 3MH	OM I -	3MHz QPSK, 16QAM	1 RB / 0 RB Offset
				3MHz		15 RB / 0 RB Offset
		26705 to 26775	26740	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
			00775	OMI I-	ODCK 4COAM	1 RB / 0 RB Offset
-			26775	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
			26715 5M	ENAL I—	0001/ 400414	1 RB / 0 RB Offset
			26715	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26715 to 26765	26740	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
			00775	CM I	QPSK, 16QAM	1 RB / 0 RB Offset
			26775	5MHz		25 RB / 0 RB Offset
						1 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26697 to 26783	26740	1.4MHz	QPSK	1 RB / 0 RB Offset
	CONDCUDETED	26705 to 26775	26740	3MHz	QPSK	1 RB / 0 RB Offset
	EMISSION	26715 to 26765	26740	5MHz	QPSK	1 RB / 0 RB Offset
		26740	26740	10MHZ	QPSK	1 RB / 0 RB Offset
		26697 to 26783	26740	1.4MHz	QPSK	1 RB / 2 RB Offset
_	RADIATED	26705 to 26775	26740	3MHz	QPSK	1 RB / 7 RB Offset
	EMISSION	26715 to 26765	26740	5MHz	QPSK	1 RB / 12 RB Offset
		26740	26740	10MHZ	QPSK	1 RB / 49 RB Offset

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



#### **TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	26deg. C, 58%RH	3.8Vdc	Howard Kao
FREQUENCY STABILITY	26deg. C, 58%RH	3.8Vdc	Howard Kao
OCCUPIED BANDWIDTH	26deg. C, 58%RH	3.8Vdc	Howard Kao
EMISSION MASK	26deg. C, 58%RH	3.8Vdc	Howard Kao
CONDCUDETED EMISSION	26deg. C, 58%RH	3.8Vdc	Howard Kao
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin / David Huang

## 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 90
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 / Portable station are limited to 100 watts e.r.p.

#### 4.1.2 TEST PROCEDURES

#### **EIRP MEASUREMENT:**

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for CDMA mode, 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.

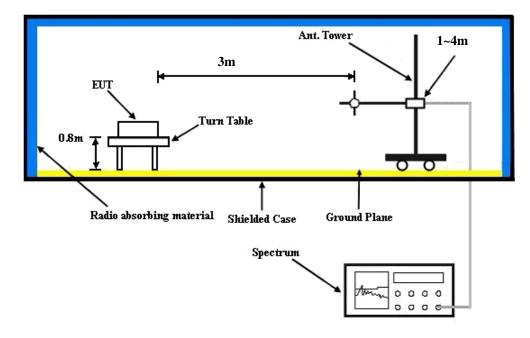
#### CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with CDMA & 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.

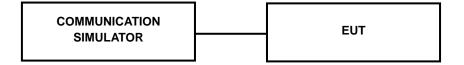


## 4.1.3 TEST SETUP

#### **EIRP / ERP MEASUREMENT:**



## **CONDUCTED POWER MEASUREMENT:**





## 4.1.4 TEST RESULTS

## **CONDUCTED OUTPUT POWER (dBm)**

Band		CDMA	
Channel	476	580	684
Frequency (MHz)	817.9	820.5	823.1
RC1+SO55	25.12	25.09	25.08
RC3+SO55	25.14	25.11	25.10
RC3+SO32(+ F-SCH)	25.11	25.08	25.07
RC3+SO32(+SCH)	25.10	25.07	25.06
RTAP 153.6	25.08	25.05	25.04
RETAP 4096	25.04	25.01	25.00

Band / BW	Modulation	RB Size	RB Offset	Low CH 26697 Frequency 814.7 MHz	Mid CH 26740 Frequency 819.0 MHz	High CH 26783 Frequency 823.3 MHz	3PGG MPR (dB)
		1	0	22.24	21.86	22.16	0
		1	2	22.20	22.05	22.58	0
		1	5	22.28	22.12	22.56	0
	QPSK	3	0	22.17	22.01	22.45	0
		3	1	22.06	21.90	22.34	0
		3	3	21.95	21.79	22.23	0
26 / 1.4M		6	0	21.33	20.87	21.20	1
20 / 1.4IVI		1	0	21.23	20.76	21.06	1
		1	2	21.19	20.95	21.48	1
		1	5	21.27	21.02	21.46	1
	16QAM	3	0	21.16	20.91	21.35	1
		3	1	21.05	20.80	21.24	1
		3	3	20.97	20.72	21.13	1
		6	0	20.32	19.77	20.10	2

Band / BW	Modulation	RB Size	RB Offset	Low CH 26705 Frequency 815.5 MHz	Mid CH 26740 Frequency 819.0 MHz	High CH 26775 Frequency 822.5 MHz	3PGG MPR (dB)
		1	0	22.25	21.87	22.17	0
		1	7	22.21	22.06	22.59	0
		1	14	22.29	22.13	22.57	0
	QPSK	8	0	21.32	20.88	21.23	1
		8	3	21.31	20.98	21.38	1
		8	7	21.45	21.09	21.28	1
26 / 3M		15	0	21.34	20.88	21.21	1
20 / SIVI		1	0	21.24	20.77	21.07	1
		1	7	21.20	20.96	21.49	1
		1	14	21.28	21.03	21.47	1
	16QAM	8	0	20.31	19.78	20.13	2
		8	3	20.30	19.88	20.28	2
		8	7	20.44	19.99	20.16	2
		15	0	20.33	19.78	20.11	2



Band / BW	Modulation	RB Size	RB Offset	Low CHG 26715 Frequency 816.5 MHz	Mid CH 26740 Frequency 819.0 MHz	High CH 26765 Frequency 821.5 MHz	3PGG MPR (dB)
		1	0	22.26	21.88	22.18	0
		1	12	22.22	22.07	22.60	0
		1	24	22.30	22.14	22.58	0
	QPSK	12	0	21.33	20.89	21.24	1
		12	6	21.32	20.99	21.39	1
		12	13	21.46	21.10	21.29	1
26 / 5M		25	0	21.35	20.89	21.22	1
20 / SIVI		1	0	21.25	20.78	21.08	1
		1	12	21.21	20.97	21.50	1
		1	24	21.29	21.04	21.48	1
	16QAM	12	0	20.32	19.79	20.14	2
		12	6	20.31	19.89	20.29	2
		12	13	20.45	20.00	20.19	2
		25	0	20.34	19.79	20.12	2

Band / BW	Modulation	RB Size	RB Offset	Mid CH 26740 Frequency 819.0 MHz	3PGG MPR (dB)
		1	0	21.95	0
		1	24	22.08	0
		1	49	22.15	0
	QPSK	25	0	20.91	1
		25	12	21.00	1
		25	25	21.11	1
26 / 10M		50	0	20.93	1
26 / TUIVI		1	0	20.92	1
		1	24	20.98	1
		1	49	21.05	1
	16QAM	25	0	19.93	2
		25	12	20.02	2
		25	25	20.01	2
		50	0	19.96	2



## **ERP POWER (dBm)**

## **CDMA**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	476	817.9	-11.74	32.62	18.73	74.64	Н
	580	820.5	-11.53	32.52	18.84	76.56	Н
v	684	823.1	-11.93	32.65	18.57	71.94	Н
Ť	476	817.9	-21.73	32.76	8.88	7.73	V
	580	820.5	-21.92	32.39	8.32	6.79	V
	684	823.1	-21.63	32.54	8.76	7.52	V

#### LTE Band 26

## **CHANNEL BANDWIDTH: 1.4MHz QPSK**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26697	814.7	-12.14	32.02	17.73	59.29	Н
	26740	819	-11.32	32.11	18.64	73.11	Н
x	26783	823.3	-11.76	32.18	18.27	67.14	Н
^	26697	814.7	-18.24	32.5	12.11	16.26	V
	26740	819	-18.75	32.51	11.61	14.49	V
	26783	823.3	-18.59	32.47	11.73	14.89	V

## **CHANNEL BANDWIDTH: 1.4MHZ 16QAM**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26697	814.7	-12.42	32.02	17.45	55.59	Н
	26740	819	-12.33	32.11	17.63	57.94	Н
x	26783	823.3	-12.58	32.18	17.45	55.59	Н
^	26697	814.7	-18.83	32.5	11.52	14.19	V
	26740	819	-18.75	32.51	11.61	14.49	V
	26783	823.3	-18.63	32.47	11.69	14.76	V



## **CHANNEL BANDWIDTH: 3MHz QPSK**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26705	815.5	-12.07	32.02	17.80	60.26	Н
	26740	819	-11.26	32.11	18.70	74.13	Н
x	26775	822.5	-11.68	32.18	18.35	68.39	Н
^	26705	815.5	-18.17	32.5	12.18	16.52	V
	26740	819	-18.95	32.51	11.41	13.84	V
	26775	822.5	-18.66	32.47	11.66	14.66	V

## **CHANNEL BANDWIDTH: 3MHz 16QAM**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26705	815.5	-12.30	32.02	17.57	57.15	Н
	26740	819	-12.13	32.11	17.83	60.67	Н
x	26775	822.5	-12.78	32.18	17.25	53.09	Н
^	26705	815.5	-18.90	32.5	11.45	13.96	V
	26740	819	-18.89	32.51	11.47	14.03	V
	26775	822.5	-18.77	32.47	11.55	14.29	V



## **CHANNEL BANDWIDTH: 5MHz QPSK**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26715	816.5	-11.45	32.04	18.44	69.82	Н
	26740	819	-11.18	32.11	18.78	75.51	Н
v	26765	821.5	-11.06	31.79	18.58	72.11	Н
Х	26715	816.5	-18.86	32.52	11.51	14.16	V
	26740	819	-18.98	32.51	11.38	13.74	V
	26765	821.5	-18.85	32.17	11.17	13.09	V

## **CHANNEL BANDWIDTH: 5MHz 16QAM**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
	26715	816.5	-12.93	32.04	16.96	49.66	Н
	26740	819	-12.47	32.11	17.49	56.10	Н
x	26765	821.5	-12.88	31.79	16.76	47.42	Н
^	26715	816.5	-18.55	32.52	11.82	15.21	V
	26740	819	-18.88	32.51	11.48	14.06	V
	26765	821.5	-18.80	32.17	11.22	13.24	V

## **CHANNEL BANDWIDTH: 10MHz QPSK**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
v	26740	819	-11.53	32.11	18.43	69.66	Н
^	26740	819	-18.90	32.51	11.46	14.00	V

#### **CHANNEL BANDWIDTH: 10MHz 16QAM**

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
_	26740	819	-12.92	32.11	17.04	50.58	Н
^	26740	819	-18.54	32.51	11.82	15.21	V



#### 4.2 FREQUENCY STABILITY MEASUREMENT

#### 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

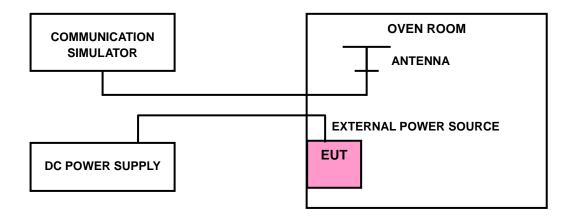
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

#### 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

		FREQUI	ENCY ERRO	R (ppm)			
VOLTAGE (Volts)	CDMA		LTE B	and 26		LIMIT (ppm)	
	CDIVIA	1.4MHz	3MHz	5MHz	10MHz		
3.7	0.008	-0.001	-0.004	-0.005	0.001	2.5	
3.3	0.011	-0.004	-0.007	-0.007	-0.002	2.5	
4.2	-0.011	-0.010	0.002	-0.002	-0.003	2.5	

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.3Vdc to 4.2Vdc.

## FREQUENCY ERROR vs. TEMPERATURE

		FREQUI				
TEMP. (°C)	CDMA		LIMIT (ppm)			
	CDIVIA	1.4MHz	3MHz	5MHz	10MHz	
-30	-0.004	0.004	-0.005	-0.004	0.009	2.5
-20	-0.003	-0.002	-0.004	-0.002	-0.002	2.5
-10	0.008	-0.005	-0.002	0.004	-0.001	2.5
0	-0.002	-0.008	0.006	-0.002	-0.004	2.5
10	0.002	0.004	-0.003	-0.001	0.009	2.5
20	-0.005	-0.008	-0.002	-0.003	0.014	2.5
30	-0.004	-0.003	-0.005	-0.004	0.017	2.5
40	-0.007	-0.003	0.005	-0.003	0.014	2.5
50	-0.011	-0.004	0.004	-0.003	0.017	2.5

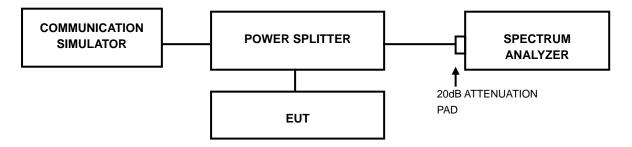


#### 4.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 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.

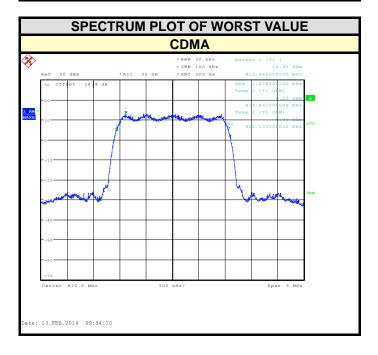
#### 4.3.2 TEST SETUP





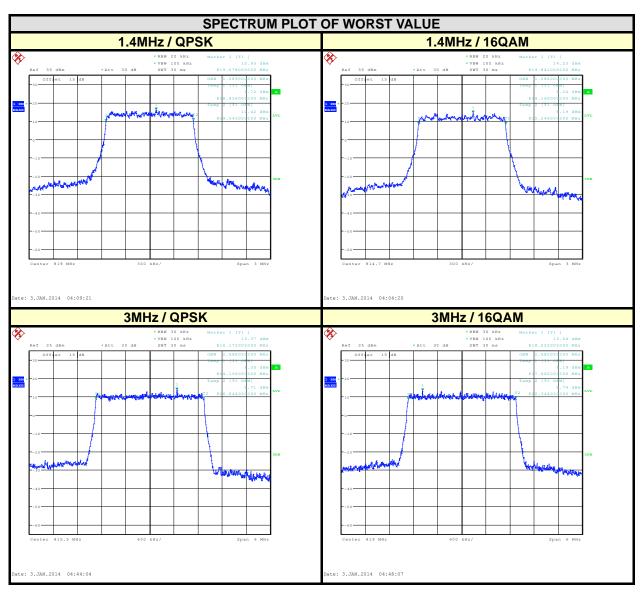
## 4.3.3 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz) CDMA
476	817.9	1.275
580	820.5	1.278
684	823.1	1.275



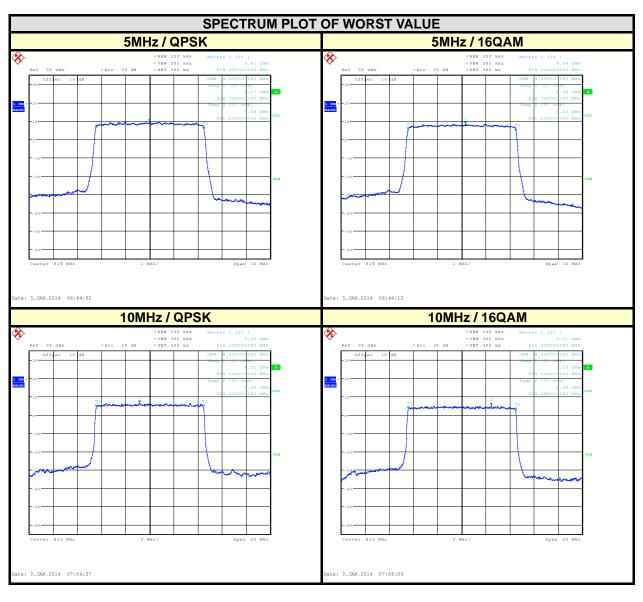


LTE BAND 26										
CI	HANNEL BAND	WIDTH: 1.4MI	Hz		FREQUENCY (MHz)  99% OCCUPIED BANDWIDTH (MHz)  QPSK 16QAM					
CHANNEL	FREQUENCY	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL						
	(MHz)	QPSK	16QAM		(MHz)	QPSK	16QAM			
26697	814.7	1.086	1.086	26705	815.5	2.688	2.682			
26740	819	1.089	1.083	26740	819	2.676	2.682			
26783	823.3	1.086	1.083	26775	822.5	2.688	2.682			





LTE BAND 26										
C	HANNEL BAND	WIDTH: 5MH	z		CHANNEL BANDWIDTH: 10MHz  99% OCCUPIED					
CHANNEL	FREQUENCY		CUPIED OTH (MHz)	CHANNEL	FREQUENCY	99% OCCUPIED BANDWIDTH (MHz)				
	(MHz)	QPSK	16QAM		(MHz)	QPSK	16QAM			
26715	816.5	4.49	4.49		819	8.92	8.94			
26740	819	4.50	4.49	26740						
26765	821.5	4.49	4.48							



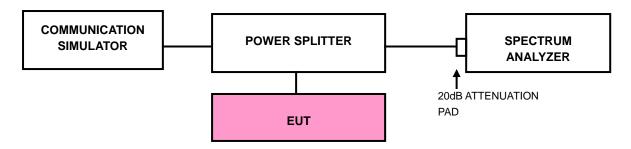


#### 4.4 EMISSION MASK MEASUREMENT

#### 4.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC part 90.691 shall be tested the emission mask. For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

#### 4.4.2 TEST SETUP

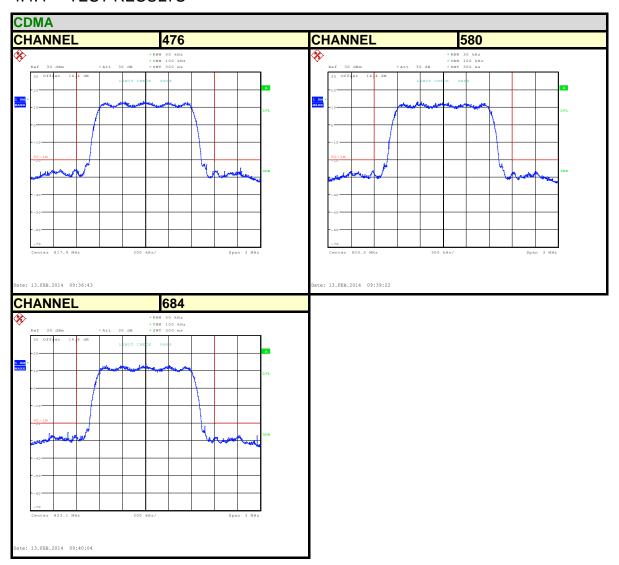


## 4.4.3 TEST PROCEDURES

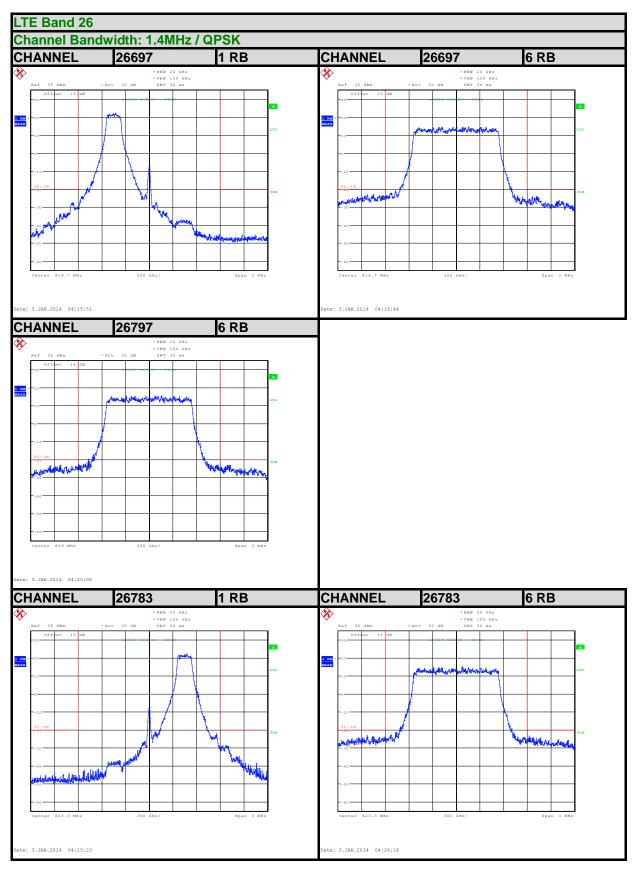
- a. The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- b. Record the test plot.



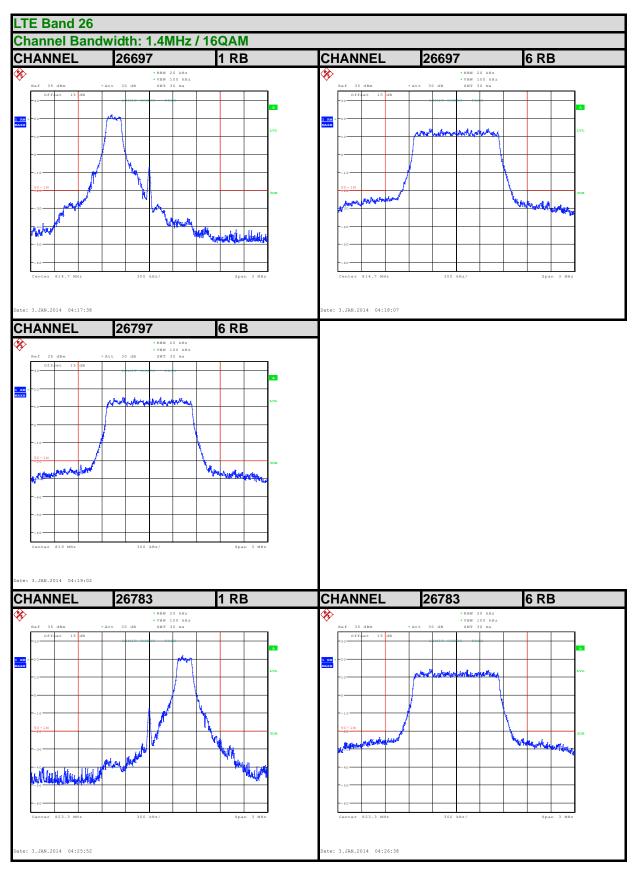
## 4.4.4 TEST RESULTS



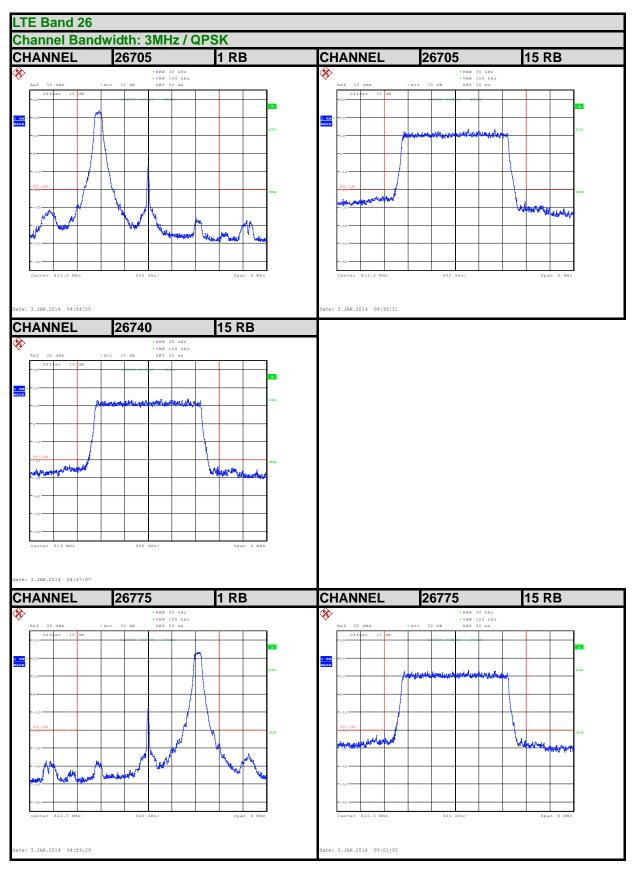




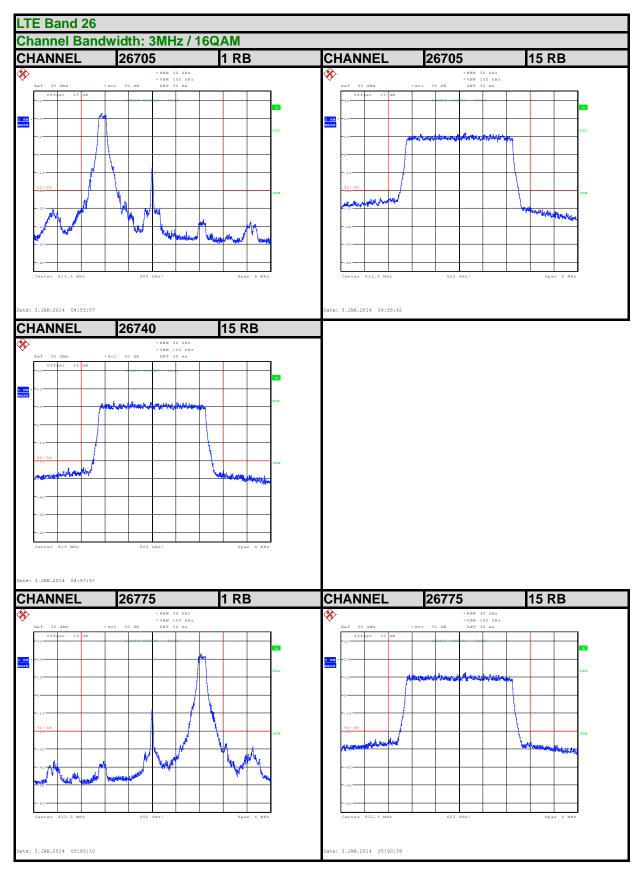




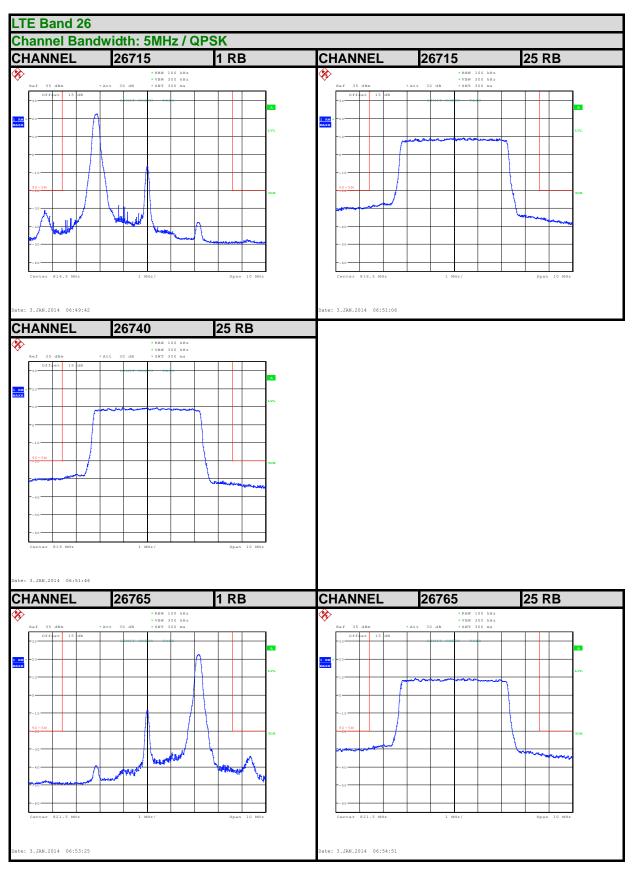




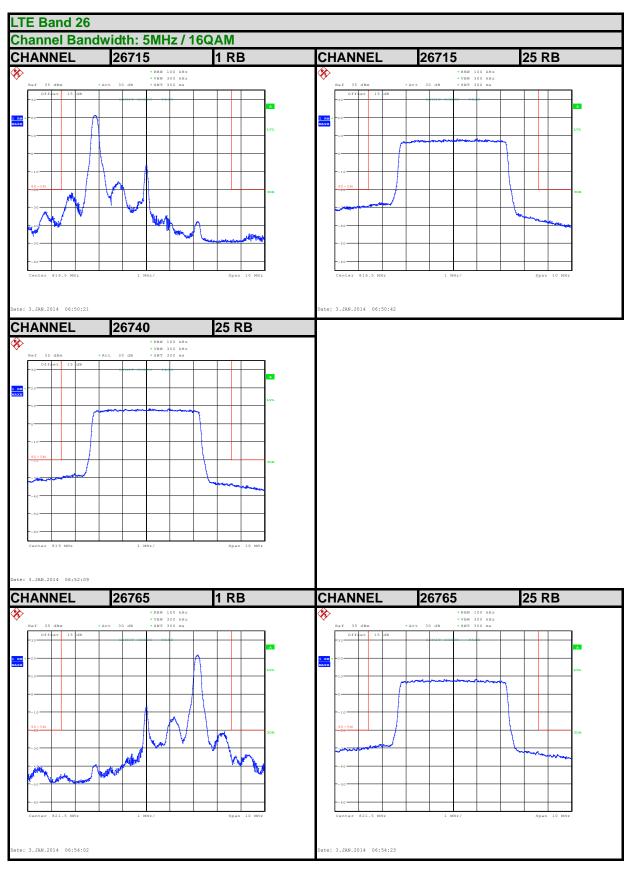




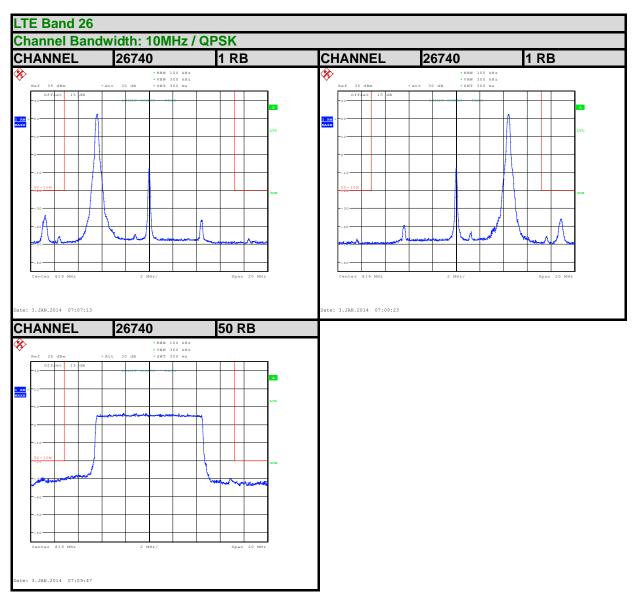




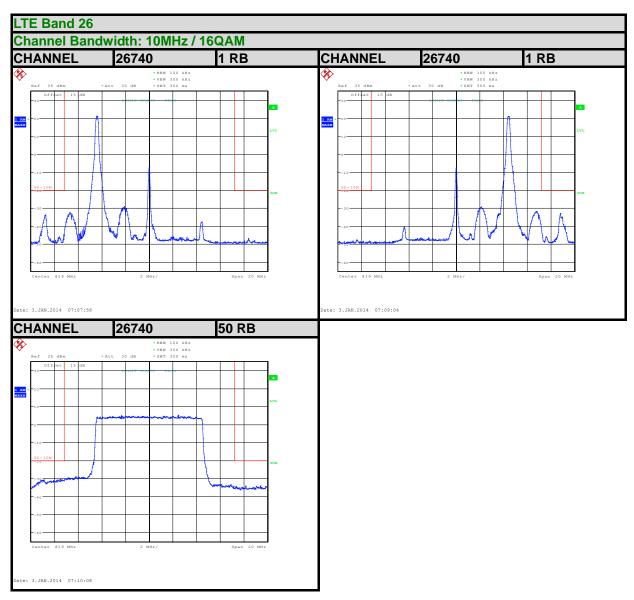














#### 4.5 CONDUCTED SPURIOUS EMISSIONS

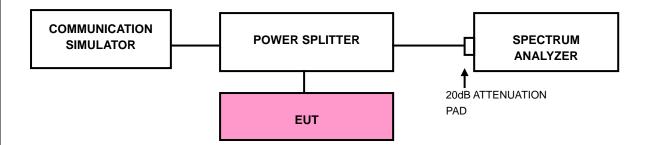
#### 4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 -13dBm.

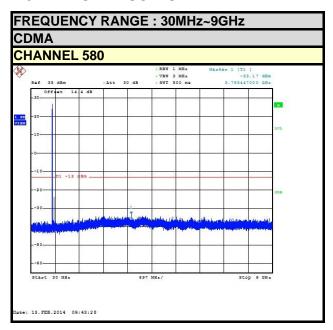
#### 4.5.2 TEST PROCEDURE

- 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 9GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

#### 4.5.3 TEST SETUP

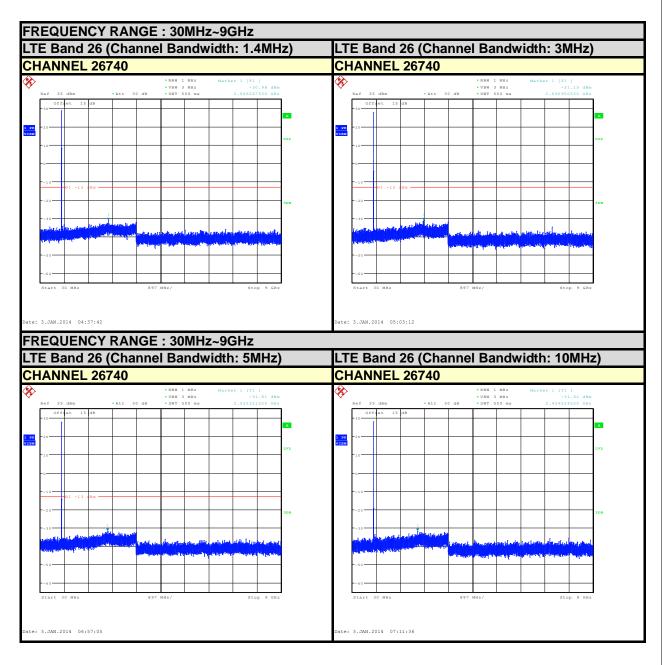


#### 4.5.4 TEST RESULTS



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### 4.6 RADIATED EMISSION MEASUREMENT

### 4.6.1 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 -13dBm.

### 4.6.2 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.R.P power 2.15dBi.

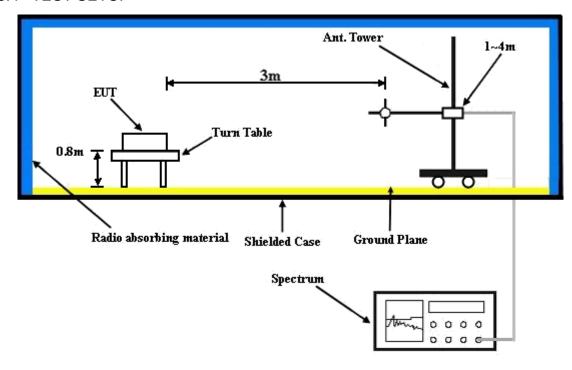
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.6.3 DEVIATION FROM TEST STANDARD

No deviation



# 4.6.4 TEST SETUP



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

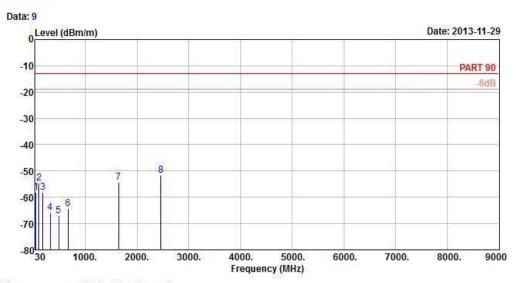


## 4.6.5 TEST RESULTS

### CDMA:



# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition : PART 90 3m HORIZONTAL

Brand/Model: G81-C6730 Remark : 1xRTT800 Link Tested by : Anson Lin

Temprature : 25℃ Humidity : 65% Plane : Y

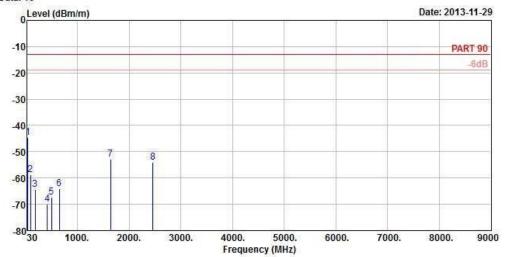
Sample No : C131120-004-024-003

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
8	MHz	dBm/m	dBm	dBm/m	dB	dB/m	8 8
1	40.26	-58.29	-56.83	-13.00	-45.29	-1.46	Peak
2	96.69	-54.66	-44.21	-13.00	-41.66	-10.45	Peak
3	178.77	-58.29	-52.25	-13.00	-45.29	-6.04	Peak
4 5	316.80	-65.94	-59.69	-13.00	-52.94	-6.25	Peak
5	485.50	-67.07	-63.61	-13.00	-54.07	-3.46	Peak
6	664.00	-64.43	-65.23	-13.00	-51.43	0.80	Peak
7	1641.00	-54.29	-40.44	-13.00	-41.29	-13.85	Peak
8 pp	2461.50	-51.66	-41.60	-13.00	-38.66	-10.06	Peak









Site : 966 Chamber 5 Condition : PART 90 3m VERTICAL

Brand/Model: G81-C6730 Remark : 1xRTT800 Link Tested by : Anson Lin

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-004-024-003

Read Limit Over

Freq Level Line Limit Factor Remark

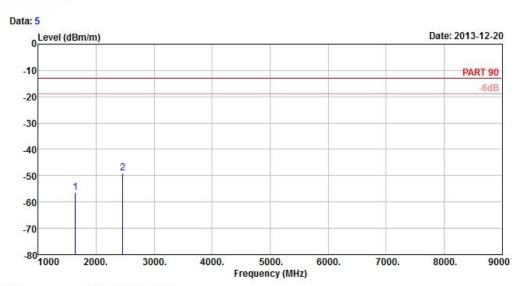
8.	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 00	10.26	-44.64	12 10	12 00	21 61	1 16	Doole
1 pp		-58.83					
3		-64.46					
4	413.40	-69.84	-64.54	-13.00	-56.84	-5.30	Peak
5	501.60	-67.22	-64.16	-13.00	-54.22	-3.06	Peak
6	649.30	-64.04	-64.56	-13.00	-51.04	0.52	Peak
7	1641.00	-52.76	-38.91	-13.00	-39.76	-13.85	Peak
8	2461.50	-53.88	-43.82	-13.00	-40.88	-10.06	Peak



### **CHANNEL BANDWIDTH: 1.4MHz/QPSK**



### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition : PART 90 3m HORIZONTAL

Brand/Model: G81-C6730

Remark : Band 26 1.4M QPSK(1,2) Link

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Line Limit Factor Remark

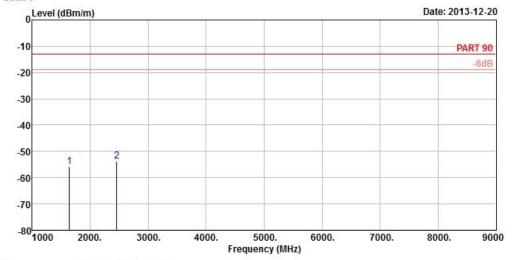
MHz dBm/m dBm dBm/m dB dB/m

1 1638.00 -56.37 -42.50 -13.00 -43.37 -13.87 Peak 2 pp 2457.00 -48.92 -38.86 -13.00 -35.92 -10.06 Peak









Site : 966 Chamber 5 Condition : PART 90 3m VERTICAL

Brand/Model: G81-C6730

Remark : Band 26 1.4M QPSK(1,2) Link

Tested by : David Huang

Temprature : 25°C Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm/m dBm dBm/m dB dB/m

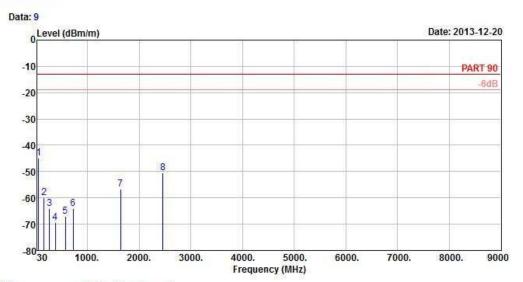
1 1638.00 -55.91 -42.04 -13.00 -42.91 -13.87 Peak 2 pp 2457.00 -53.71 -43.65 -13.00 -40.71 -10.06 Peak



### **CHANNEL BANDWIDTH: 3MHz / QPSK**



## Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition : PART 90 3m HORIZONTAL

Brand/Model: G81-C6730

Remark : Band 26 3M QPSK(1,7) Link

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

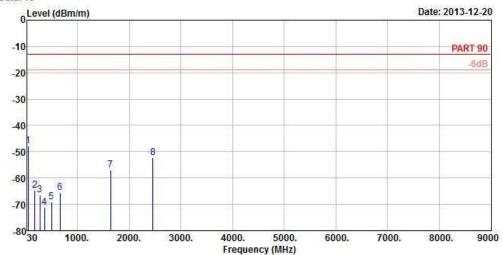
Read Limit Over
Freq Level Level Line Limit Factor Remark

8	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	56.46	-44.81	-39.31	-13.00	-31.81	-5.50	Peak
2	158.79	-59.98	-53.48	-13.00	-46.98	-6.50	Peak
3	261.93	-64.00	-58.16	-13.00	-51.00	-5.84	Peak
4	374.90	-69.49	-63.67	-13.00	-56.49	-5.82	Peak
5	575.10	-66.90	-65.86	-13.00	-53.90	-1.04	Peak
6	725.60	-64.10	-65.72	-13.00	-51.10	1.62	Peak
7	1638.00	-56.61	-42.74	-13.00	-43.61	-13.87	Peak
8	2457.00	-50.57	-40.51	-13.00	-37.57	-10.06	Peak









Site : 966 Chamber 5 Condition : PART 90 3m VERTICAL

Brand/Model: G81-C6730

Remark : Band 26 3M QPSK(1,7) Link

Tested by : David Huang

Temprature : 25°C Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Line Limit Factor Remark

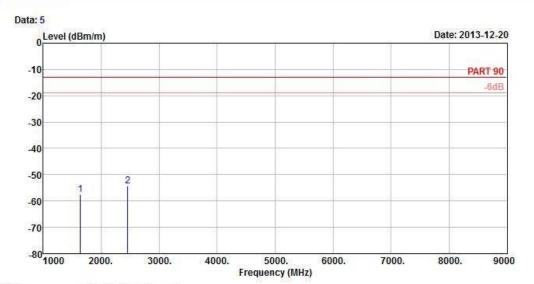
8	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	43.77	-47.71	-46.45	-13.00	-34.71	-1.26	Peak
2	178.23	-64.70	-58.66	-13.00	-51.70	-6.04	Peak
3	271.65	-66.50	-60.52	-13.00	-53.50	-5.98	Peak
4	360.20	-71.11	-65.18	-13.00	-58.11	-5.93	Peak
4 5	500.90	-69.16	-66.07	-13.00	-56.16	-3.09	Peak
6	661.20	-65.62	-66.37	-13.00	-52.62	0.75	Peak
7	1638.00	-57.11	-43.24	-13.00	-44.11	-13.87	Peak
8	2457.00	-52.29	-42.23	-13.00	-39.29	-10.06	Peak



### **CHANNEL BANDWIDTH: 5MHz / QPSK**



### Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5

Condition : PART 90 3m HORIZONTAL

Brand/Model: G81-C6730

Remark : Band 26 5M QPSK(1,12) Link

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

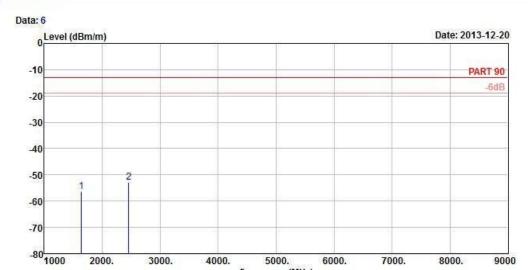
Freq Level Line Limit Factor Remark

MHz dBm/m dBm dBm/m dB dB/m

1 1638.00 -57.48 -43.61 -13.00 -44.48 -13.87 Peak 2 pp 2457.00 -54.42 -44.36 -13.00 -41.42 -10.06 Peak







Frequency (MHz)

Site : 966 Chamber 5 Condition : PART 90 3m VERTICAL

Brand/Model: G81-C6730

Remark : Band 26 5M QPSK(1,12) Link

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm/m dBm dBm/m dB dB/m

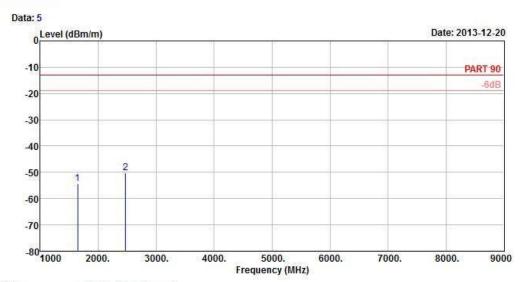
1 1638.00 -56.41 -42.54 -13.00 -43.41 -13.87 Peak 2 pp 2457.00 -52.74 -42.68 -13.00 -39.74 -10.06 Peak



### **CHANNEL BANDWIDTH: 10MHz / QPSK**



## Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch



Site : 966 Chamber 5 Condition : PART 90 3m HORIZONTAL

Brand/Model: G81-C6730

: Band 26 10M QPSK(1,49) Link Remark

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Level Line Limit Factor Remark

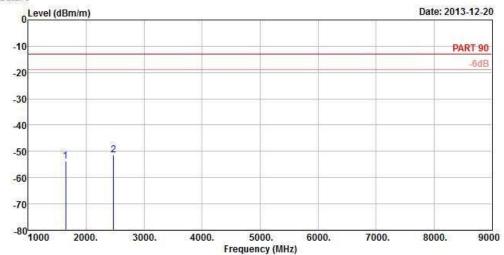
MHz dBm/m dBm dBm/m dB dB/m

1646.80 -54.40 -40.55 -13.00 -41.40 -13.85 Peak 2 pp 2470.20 -50.12 -40.13 -13.00 -37.12 -9.99 Peak









Site : 966 Chamber 5 Condition : PART 90 3m VERTICAL

Brand/Model: G81-C6730

Remark : Band 26 10M QPSK(1,49) Link

Tested by : David Huang

Temprature : 25℃ Humidity : 65% Plane : Y

Sample No : C131120-002-024-006

Read Limit Over

Freq Level Line Limit Factor Remark

MHz dBm/m dBm dBm/m dB dB/m

1 1646.80 -53.67 -39.82 -13.00 -40.67 -13.85 Peak 2 pp 2470.20 -51.35 -41.36 -13.00 -38.35 -9.99 Peak



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: Hsin Chu EMC/RF Lab:

Tel: 886-2-26052180 Tel: 886-3-5935343 Fax: 886-2-26051924 Fax: 886-3-5935342

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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.
END