FCC TEST REPORT

(PART 22)

REPORT NO.:	RF150324C18
MODEL NAME:	0PM9200
FCC ID:	NM80PM9200
RECEIVED:	Mar. 24, 2015
TESTED:	Apr. 16, 2015 ~ Jun. 04, 2015
ISSUED:	Jun. 04, 2015

APPLICANT:	HTC Corporation
ADDRESS:	1F, 6-3 Baoqiang Road, Xindian District, New Taipei City, Taiwan 231

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47-2, 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 Vil., Kwei Shan Dist., Taoyuan City 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150324C18	Original release	Jun. 04, 2015

1 CERTIFICATION

PRODUCT:	Smartphone
MODEL:	0PM9200
BRAND:	HTC
APPLICANT:	HTC Corporation
TESTED:	Apr. 16, 2015 ~ Jun. 04, 2015
TEST SAMPLE:	Production Unit
STANDARDS:	**FCC PART 22, Subpart H**

The above equipment (model: 0PM9200) 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 :** Jun. 04, 2015

Ivonne Wu / Supervisor

APPROVED BY : _____ **, DATE :** Jun. 04, 2015

Sam Chen / Senior Project Engineer

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
2.1046 22.913 (a)	Effective Radiated Power	PASS	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	PASS	Meet the requirement of limit.
2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
22.917	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -27.50dB at 31.89MHz.

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	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	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	Jan. 21, 2015	Jan. 21, 2016
Spectrum Analyzer Agilent	N9010A	MY52220314	Sep. 03, 2014	Sep. 02, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 09, 2015	Feb. 09, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Feb. 04, 2015	Feb. 04, 2016
Preamplifier EMCI	EMC 012645	980115	Dec. 12, 2014	Dec. 11, 2015
Preamplifier EMCI	EMC 184045	980116	Jan. 09, 2015	Jan. 08, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2014	Dec. 26, 2015
Power Meter Anritsu	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor Anritsu	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2014	Oct. 17, 2015
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Nov. 07, 2014	Nov. 06, 2015
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
Radio Communication Analyzer	MT8820C	6201300640	Aug. 01, 2013	Jul. 31, 2015

NOTE: 1. The calibration interval of the above test instruments is 12 / 24 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	Smartphone	
MODEL NAME	0PM9200	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.85Vdc or 3.8Vdc (battery)	
MODULATION TYPE	**CDMA**	QPSK, OQPSK, HPSK
	LTE	QPSK, 16QAM
FREQUENCY RANGE	**CDMA**	824.7MHz ~ 848.31MHz
	LTE 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE 26 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE 26 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE 26 (Channel Bandwidth: 15MHz)	831.5MHz ~ 841.5MHz
MAX. ERP POWER	**CDMA**	126.77mW
	LTE 5 (Channel Bandwidth: 1.4MHz)	93.07mW
	LTE 5 (Channel Bandwidth: 3MHz)	98.40mW
	LTE 5 (Channel Bandwidth: 5MHz)	95.46mW
	LTE 5 (Channel Bandwidth: 10MHz)	100.69mW
	LTE 26 (Channel Bandwidth: 1.4MHz)	77.09mW
	LTE 26 (Channel Bandwidth: 3MHz)	82.04mW
	LTE 26 (Channel Bandwidth: 5MHz)	83.56mW
	LTE 26 (Channel Bandwidth: 10MHz)	77.13mW
	LTE 26 (Channel Bandwidth: 15MHz)	90.78mW

EMISSION DESIGNATOR	**CDMA**	1M27F9W
	LTE 5 (Channel Bandwidth: 1.4MHz)	1M09W7D
	LTE 5 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE 5 (Channel Bandwidth: 5MHz)	4M50G7D
	LTE 5 (Channel Bandwidth: 10MHz)	8M97G7D
	LTE 26 (Channel Bandwidth: 1.4MHz)	1M09W7D
	LTE 26 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE 26 (Channel Bandwidth: 5MHz)	4M50G7D
	LTE 26 (Channel Bandwidth: 10MHz)	8M97W7D
	LTE 26 (Channel Bandwidth: 15MHz)	13M5W7D
ANTENNA TYPE	Fixed Internal Antenna	
I/O PORTS	Refer to users' manual	
DATA CABLE	Refer to NOTE as below	
ACCESSORY DEVICES	Refer to NOTE as below	

NOTE:

1. There're 2 configurations for the EUT listed as below.

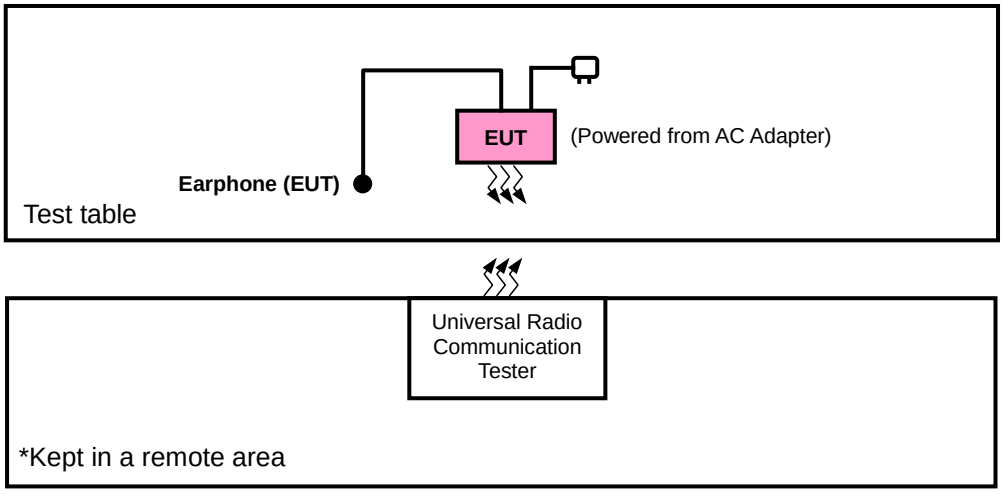
   Main sample (A): Phone + Battery 1 + LCD Panel 1

   2nd sample (B): Phone + Battery 2 + LCD Panel 2

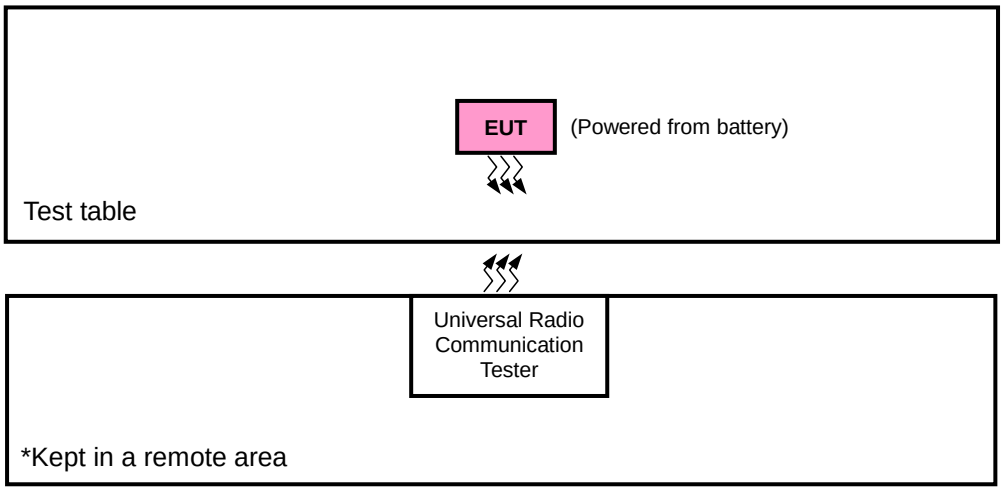
   ✧Only the worst test data was presented in the report.
2. The EUT's accessories list refers to Ext. Pho.
3. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR E.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.

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 as the list below. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	Main sample
B	2nd sample

EUT CONFIGURE MODE	ERP	RADIATED EMISSION
A	Y-plane (CDMA) X-plane (LTE)	X-axis
B	Y-plane (CDMA) X-plane (LTE 5 & LTE 26)	Z-axis (CDMA) Y-axis (LTE 5)

CDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A, B	ERP	1013 to 777	1013, 384, 777	1xRTT
A	FREQUENCY STABILITY	1013 to 777	384	1xRTT
A	OCCUPIED BANDWIDTH	1013 to 777	1013, 384, 777	1xRTT
A	BAND EDGE	1013 to 777	1013, 777	1xRTT
A	CONDUCTED EMISSION	1013 to 777	384	1xRTT
A, B	RADIATED EMISSION	1013 to 777	384	1xRTT

LTE BAND 5 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
B	ERP	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20525	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20525	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20525	10MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
A	BAND EDGE	20407 to 20643	20407	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20643	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20415 to 20635	20415	3MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			20635	3MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		20425 to 20626	20425	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			20600	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20450 to 20600	20450	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			20600	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDUCTED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 2 RB Offset
		20415 to 20635	20525	3MHz	QPSK	1 RB / 7 RB Offset
		20425 to 20625	20525	5MHz	QPSK	1 RB / 12 RB Offset
		20450 to 20600	20525	10MHz	QPSK	1 RB / 24 RB Offset
A, B	RADIATED EMISSION	20450 to 20600	20525	10MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 26 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	1 RB / 2 RB Offset
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	1 RB / 7 RB Offset
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	1 RB / 37 RB Offset
B	ERP	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	1 RB / 37 RB Offset
A	FREQUENCY STABILITY	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 2 RB Offset
		26805 to 27025	26915	3MHz	QPSK	1 RB / 7 RB Offset
		26815 to 27015	26915	5MHz	QPSK	1 RB / 12 RB Offset
		26840 to 26990	26915	10MHZ	QPSK	1 RB / 24 RB Offset
		26865 to 26965	26915	15MHZ	QPSK	1 RB / 37 RB Offset
A	OCCUPIED BANDWIDTH	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
A	BAND EDGE	26797 to 27033	26797	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			27033	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26805 to 27025	26805	3MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			27025	3MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26815 to 27015	26815	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			27015	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26840 to 26990	26840	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26990	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26865 to 26965	26865	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			26965	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
A	CONDUCTED EMISSION	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset
		26805 to 27025	26915	3MHz	QPSK	15 RB / 0 RB Offset
		26815 to 27015	26915	5MHz	QPSK	25 RB / 0 RB Offset
		26840 to 26990	26915	10MHZ	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26915	15MHZ	QPSK	1 RB / 37 RB Offset
A	RADIATED EMISSION	26865 to 26965	26915	15MHZ	QPSK	1 RB / 37 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	Hwa Chiang
FREQUENCY STABILITY	26deg. C, 58%RH	3.8Vdc	Taylor Liu
OCCUPIED BANDWIDTH	26deg. C, 58%RH	3.8Vdc	Taylor Liu
BAND EDGE	26deg. C, 58%RH	3.8Vdc	Taylor Liu
CONDUCTED EMISSION	26deg. C, 58%RH	3.8Vdc	Taylor Liu
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Hwa Chiang / Harry Hsueh

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 22
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 7 watts e.r.p.

4.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

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

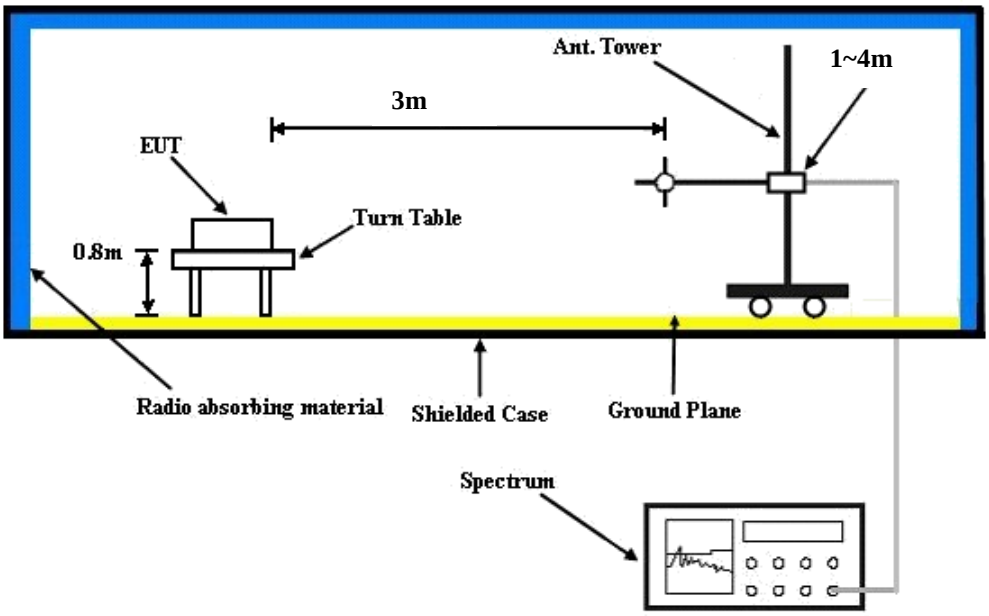
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

CONDUCTED POWER MEASUREMENT:

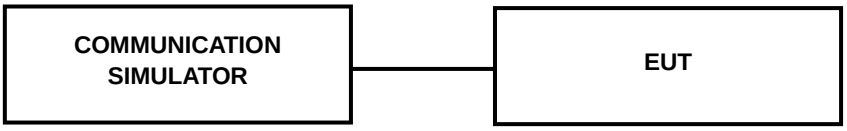
The EUT was set up for the maximum power with CDMA & LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 TEST SETUP

EIRP / ERP MEASUREMENT:



CONDUCTED POWER MEASUREMENT:



4.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	CDMA		
Channel	1013	384	777
Frequency (MHz)	824.70	836.52	848.31
RC1+SO55	23.91	23.81	23.83
RC3+SO55	**23.99**	23.89	23.91
RC3+SO32(+ F-SCH)	23.97	23.87	23.89
RC3+SO32(+SCH)	23.92	23.82	23.84
RTAP 153.6	23.94	23.84	23.86
RETAP 4096	23.93	23.83	23.85

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20407	Mid CH 20525	High CH 20643		Low CH 20407	Mid CH 20525	High CH 20643	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
5 / 1.4M	1	0	22.14	22.36	22.38	0	21.13	21.35	21.37	1
	1	2	21.99	22.21	22.23	0	20.98	21.20	21.22	1
	1	5	21.84	22.06	22.08	0	20.83	21.05	21.07	1
	3	0	21.72	21.94	21.96	0	20.71	20.93	20.95	1
	3	1	21.67	21.89	21.91	0	20.66	20.88	20.90	1
	3	3	21.60	21.82	21.84	0	20.59	20.81	20.83	1
	6	0	20.88	21.10	21.12	1	19.87	20.09	20.11	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20415	Mid CH 20525	High CH 20635		Low CH 20415	Mid CH 20525	High CH 20635	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
5 / 3M	1	0	22.21	22.43	22.45	0	21.20	21.42	21.44	1
	1	7	22.06	22.28	22.30	0	21.05	21.27	21.29	1
	1	14	21.91	22.13	22.15	0	20.90	21.12	21.14	1
	8	0	20.99	21.21	21.23	1	19.98	20.20	20.22	2
	8	3	20.94	21.16	21.18	1	19.93	20.15	20.17	2
	8	7	20.87	21.09	21.11	1	19.86	20.08	20.10	2
	15	0	20.95	21.17	21.19	1	19.94	20.16	20.18	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20425	Mid CH 20525	High CH 20625		Low CH 20425	Mid CH 20525	High CH 20625	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
5 / 5M	1	0	22.26	22.48	22.50	0	21.25	21.47	21.49	1
	1	12	22.11	22.33	22.35	0	21.10	21.32	21.34	1
	1	24	21.96	22.18	22.20	0	20.95	21.17	21.19	1
	12	0	21.04	21.26	21.28	1	20.03	20.25	20.27	2
	12	6	20.99	21.21	21.23	1	19.98	20.20	20.22	2
	12	13	20.92	21.14	21.16	1	19.91	20.13	20.15	2
	25	0	21.00	21.22	21.24	1	19.99	20.21	20.23	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20450	Mid CH 20525	High CH 20600		Low CH 20450	Mid CH 20525	High CH 20600	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
5 / 10M	1	0	22.35	22.57	22.59	0	21.34	21.56	21.58	1
	1	24	22.20	22.42	22.44	0	21.19	21.41	21.43	1
	1	49	22.05	22.27	22.29	0	21.04	21.26	21.28	1
	25	0	21.13	21.35	21.37	1	20.12	20.34	20.36	2
	25	12	21.08	21.30	21.32	1	20.07	20.29	20.31	2
	25	25	21.01	21.23	21.25	1	20.00	20.22	20.24	2
	50	0	21.09	21.31	21.33	1	20.08	20.30	20.32	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26797	Mid CH 26915	High CH 27033		Low CH 26797	Mid CH 26915	High CH 27033	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
26 / 1.4M	1	0	22.09	22.15	22.00	0	21.04	21.10	20.95	1
	1	2	21.94	22.00	22.27	0	20.99	21.37	21.22	1
	1	5	21.89	21.95	22.04	0	20.92	20.99	20.99	1
	3	0	20.83	20.89	21.85	0	19.86	20.80	20.80	1
	3	1	20.77	20.83	21.89	0	19.80	20.84	20.84	1
	3	3	20.76	20.82	21.82	0	19.79	20.77	20.77	1
	6	0	20.63	20.69	21.08	1	19.66	20.03	20.03	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26805	Mid CH 26915	High CH 27025		Low CH 26805	Mid CH 26915	High CH 27025	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
26 / 3M	1	0	21.89	22.13	22.12	0	20.69	21.08	21.07	1
	1	7	22.74	22.37	22.39	0	20.96	20.97	21.34	1
	1	14	20.80	21.04	22.16	0	20.89	20.89	21.11	1
	8	0	19.74	19.98	21.17	1	19.90	19.90	20.12	2
	8	3	19.68	19.68	21.21	1	19.94	19.94	20.16	2
	8	7	19.67	19.67	21.14	1	19.87	19.87	20.09	2
	15	0	19.50	19.50	21.20	1	19.93	19.93	20.15	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26815	Mid CH 26915	High CH 27015		Low CH 26815	Mid CH 26915	High CH 27015	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
26 / 5M	1	0	22.01	22.12	22.19	0	19.67	19.60	21.14	1
	1	12	22.28	22.39	22.46	0	19.97	19.90	21.41	1
	1	24	21.91	21.91	22.23	0	20.96	20.96	21.18	1
	12	0	20.92	20.92	21.24	1	19.97	19.97	20.19	2
	12	6	20.96	20.96	21.28	1	20.01	20.01	20.23	2
	12	13	20.89	20.89	21.21	1	19.94	19.94	20.16	2
	25	0	20.95	20.95	21.27	1	20.00	20.00	20.22	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26840	Mid CH 26915	High CH 26990		Low CH 26840	Mid CH 26915	High CH 26990	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
26 / 10M	1	0	22.12	22.21	22.30	0	21.07	21.16	21.25	1
	1	24	22.39	22.48	22.57	0	21.34	21.43	21.52	1
	1	49	22.12	22.12	22.34	0	21.07	21.29	21.29	1
	25	0	21.13	21.13	21.35	1	20.08	20.3	20.30	2
	25	12	21.17	21.17	21.39	1	20.12	20.34	20.34	2
	25	25	21.1	21.1	21.32	1	20.05	20.27	20.27	2
	50	0	21.16	21.16	21.38	1	20.11	20.33	20.33	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26865	Mid CH 26915	High CH 26965		Low CH 26865	Mid CH 26915	High CH 26965	
			831.5 MHz	836.5 MHz	841.5 MHz		831.5 MHz	836.5 MHz	841.5 MHz	
26 / 15M	1	0	22.25	22.38	22.35	0	21.08	21.48	21.30	1
	1	37	22.52	22.23	22.62	0	21.35	21.33	21.57	1
	1	74	22.29	22.17	22.39	0	21.12	22.16	21.34	1
	36	0	21.30	21.11	21.40	1	20.13	21.1	20.35	2
	36	19	21.34	21.05	21.44	1	20.17	21.06	20.39	2
	36	39	21.27	21.04	21.37	1	20.10	21.01	20.32	2
	75	0	21.33	20.91	21.43	1	20.16	20.88	20.38	2

ERP POWER (dBm)

MODE A

CDMA							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
Y	1013	824.7	-8.48	31.208	20.58	114.24	H
	384	836.52	-8.33	31.3	20.82	120.78	H
	777	848.31	-8.96	31.222	20.11	102.61	H
	1013	824.7	-16.06	31.504	13.29	21.35	V
	384	836.52	-15.51	31.117	13.46	22.17	V
	777	848.31	-16.38	31.922	13.39	21.84	V

LTE Band 5							
Channel Bandwidth: 1.4MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
X	20407	824.7	-9.37	31.208	19.69	93.07	H
	20525	836.5	-9.56	31.3	19.59	90.99	H
	20643	848.3	-9.60	31.222	19.47	88.55	H
	20407	824.7	-18.59	31.504	10.76	11.92	V
	20525	836.5	-18.78	31.117	10.19	10.44	V
	20643	848.3	-18.80	31.922	10.97	12.51	V

LTE Band 5							
Channel Bandwidth: 1.4MHz / 16QAM							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
X	20407	824.7	-10.16	31.208	18.90	77.59	H
	20525	836.5	-10.33	31.3	18.82	76.21	H
	20643	848.3	-10.91	31.222	18.16	65.49	H
	20407	824.7	-19.39	31.504	9.96	9.92	V
	20525	836.5	-19.23	31.117	9.74	9.41	V
	20643	848.3	-20.62	31.922	9.15	8.23	V

LTE Band 5							
Channel Bandwidth: 3MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20415	825.5	-9.88	31.208	19.18	82.76	H
	20525	836.5	-9.22	31.3	19.93	98.40	H
	20635	847.5	-9.87	31.222	19.20	83.21	H
	20415	825.5	-18.55	31.504	10.80	12.03	V
	20525	836.5	-18.20	31.117	10.77	11.93	V
	20635	847.5	-19.14	31.922	10.63	11.57	V

LTE Band 5							
Channel Bandwidth: 3MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20415	825.5	-10.15	31.208	18.91	77.77	H
	20525	836.5	-10.57	31.3	18.58	72.11	H
	20635	847.5	-10.28	31.222	18.79	75.72	H
	20415	825.5	-19.59	31.504	9.76	9.47	V
	20525	836.5	-19.74	31.117	9.23	8.37	V
	20635	847.5	-20.24	31.922	9.53	8.98	V

LTE Band 5							
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20425	826.5	-9.26	31.208	19.80	95.46	H
	20525	836.5	-9.45	31.3	19.70	93.33	H
	20625	846.5	-9.97	31.222	19.10	81.32	H
	20425	826.5	-19.07	31.504	10.28	10.68	V
	20525	836.5	-18.60	31.117	10.37	10.88	V
	20625	846.5	-19.42	31.922	10.35	10.84	V

LTE Band 5							
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20425	826.5	-10.39	31.208	18.67	73.59	H
	20525	836.5	-10.60	31.3	18.55	71.61	H
	20625	846.5	-10.79	31.222	18.28	67.33	H
	20425	826.5	-20.09	31.504	9.26	8.44	V
	20525	836.5	-19.81	31.117	9.16	8.24	V
	20625	846.5	-20.59	31.922	9.18	8.28	V

LTE Band 5							
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20450	829.0	-9.14	31.208	19.92	98.13	H
	20525	836.5	-9.12	31.3	20.03	100.69	H
	20600	844.0	-9.77	31.222	19.30	85.15	H
	20450	829.0	-18.17	31.504	11.18	13.13	V
	20525	836.5	-18.05	31.117	10.92	12.35	V
	20600	844.0	-18.56	31.922	11.21	13.22	V

LTE Band 5							
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20450	829.0	-10.08	31.208	18.98	79.03	H
	20525	836.5	-10.47	31.3	18.68	73.79	H
	20600	844.0	-10.33	31.222	18.74	74.85	H
	20450	829.0	-19.73	31.504	9.62	9.17	V
	20525	836.5	-19.59	31.117	9.38	8.66	V
	20600	844.0	-20.35	31.922	9.42	8.75	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)
X	26797	824.7	-10.40	31.208	18.66	73.42	H
	26915	836.5	-10.28	31.3	18.87	77.09	H
	27033	848.3	-10.72	31.222	18.35	68.42	H
	26797	824.7	-18.50	31.504	10.85	12.17	V
	26915	836.5	-17.79	31.117	11.18	13.11	V
	27033	848.3	-18.82	31.922	10.95	12.45	V

LTE Band 26							
Channel Bandwidth: 1.4MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26797	824.7	-11.51	31.208	17.55	56.86	H
	26915	836.5	-11.67	31.3	17.48	55.98	H
	27033	848.3	-11.52	31.222	17.55	56.91	H
	26797	824.7	-19.59	31.504	9.76	9.47	V
	26915	836.5	-19.01	31.117	9.96	9.90	V
	27033	848.3	-20.56	31.922	9.21	8.34	V

LTE Band 26							
Channel Bandwidth: 3MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26805	825.5	-10.53	31.208	18.53	71.25	H
	26915	836.5	-10.01	31.3	19.14	82.04	H
	27025	847.5	-10.70	31.222	18.37	68.74	H
	26805	825.5	-18.50	31.504	10.85	12.17	V
	26915	836.5	-18.15	31.117	10.82	12.07	V
	27025	847.5	-18.61	31.922	11.16	13.07	V

LTE Band 26							
Channel Bandwidth: 3MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26805	825.5	-11.49	31.208	17.57	57.12	H
	26915	836.5	-11.01	31.3	18.14	65.16	H
	27025	847.5	-11.05	31.222	18.02	63.42	H
	26805	825.5	-19.96	31.504	9.39	8.70	V
	26915	836.5	-18.84	31.117	10.13	10.30	V
	27025	847.5	-19.99	31.922	9.78	9.51	V

LTE Band 26							
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26815	826.5	-10.56	31.208	18.50	70.76	H
	26915	836.5	-9.93	31.3	19.22	83.56	H
	27015	846.5	-10.48	31.222	18.59	72.31	H
	26815	826.5	-18.49	31.504	10.86	12.20	V
	26919	836.5	-18.57	31.117	10.40	10.96	V
	27015	846.5	-19.16	31.922	10.61	11.51	V

LTE Band 26							
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26815	826.5	-11.32	31.208	17.74	59.40	H
	26915	836.5	-11.58	31.3	17.57	57.15	H
	27015	846.5	-11.50	31.222	17.57	57.17	H
	26815	826.5	-19.16	31.504	10.19	10.46	V
	26919	836.5	-18.85	31.117	10.12	10.27	V
	27015	846.5	-20.10	31.922	9.67	9.27	V

LTE Band 26							
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26840	829.0	-10.62	31.208	18.44	69.79	H
	26915	836.5	-10.40	31.3	18.75	74.99	H
	26990	844.0	-10.20	31.222	18.87	77.13	H
	26840	829.0	-18.48	31.504	10.87	12.23	V
	26919	836.5	-18.04	31.117	10.93	12.38	V
	26990	844.0	-18.76	31.922	11.01	12.62	V

LTE Band 26							
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26840	829.0	-11.33	31.208	17.73	59.27	H
	26915	836.5	-10.97	31.3	18.18	65.77	H
	26990	844.0	-11.72	31.222	17.35	54.35	H
	26840	829.0	-19.09	31.504	10.26	10.63	V
	26919	836.5	-18.74	31.117	10.23	10.54	V
	26990	844.0	-19.40	31.922	10.37	10.89	V

LTE Band 26							
Channel Bandwidth: 15MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26865	831.5	-9.79	31.208	19.27	84.49	H
	26915	836.5	-9.96	31.3	19.19	82.99	H
	26965	841.5	-10.08	31.222	18.99	79.29	H
	26865	831.5	-18.29	31.504	11.06	12.78	V
	26915	836.5	-17.89	31.117	11.08	12.81	V
	26965	841.5	-19.15	31.922	10.62	11.54	V

LTE Band 26							
Channel Bandwidth: 15MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26865	831.5	-11.07	31.208	17.99	62.92	H
	26915	836.5	-11.58	31.3	17.57	57.15	H
	26965	841.5	-11.66	31.222	17.41	55.11	H
	26865	831.5	-19.41	31.504	9.94	9.87	V
	26915	836.5	-19.40	31.117	9.57	9.05	V
	26965	841.5	-19.34	31.922	10.43	11.05	V

MODE B

CDMA							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
Y	1013	824.7	-8.06	31.208	21.00	125.83	H
	384	836.52	-8.12	31.3	21.03	126.77	H
	777	848.31	-8.72	31.222	20.35	108.44	H
	1013	824.7	-15.59	31.504	13.76	23.79	V
	384	836.52	-15.56	31.117	13.41	21.91	V
	777	848.31	-16.66	31.922	13.11	20.47	V

LTE Band 5							
Channel Bandwidth: 10MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
X	20450	829.0	-9.29	31.208	19.77	94.80	H
	20525	836.5	-9.21	31.3	19.94	98.63	H
	20600	844.0	-9.59	31.222	19.48	88.76	H
	20450	829.0	-18.31	31.504	11.04	12.72	V
	20525	836.5	-18.14	31.117	10.83	12.10	V
	20600	844.0	-18.78	31.922	10.99	12.57	V

LTE Band 5							
Channel Bandwidth: 10MHz / 16QAM							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor(dB)**	**ERP(dBm)**	**ERP(mW)**	**Polarization (H/V)**
X	20450	829.0	-10.38	31.208	18.68	73.76	H
	20525	836.5	-10.59	31.3	18.56	71.78	H
	20600	844.0	-10.47	31.222	18.60	72.48	H
	20450	829.0	-19.88	31.504	9.47	8.86	V
	20525	836.5	-19.69	31.117	9.28	8.47	V
	20600	844.0	-20.46	31.922	9.31	8.53	V

LTE Band 26							
Channel Bandwidth: 15MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26865	831.5	-9.87	31.208	19.19	82.95	H
	26915	836.5	-9.57	31.3	19.58	90.78	H
	26965	841.5	-9.92	31.222	19.15	82.26	H
	26865	831.5	-18.79	31.504	10.56	11.39	V
	26915	836.5	-18.33	31.117	10.64	11.58	V
	26965	841.5	-19.13	31.922	10.64	11.59	V

LTE Band 26							
Channel Bandwidth: 15MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	26865	831.5	-11.55	31.208	17.51	56.34	H
	26915	836.5	-11.37	31.3	17.78	59.98	H
	26965	841.5	-11.24	31.222	17.83	60.70	H
	26865	831.5	-19.17	31.504	10.18	10.43	V
	26915	836.5	-19.24	31.117	9.73	9.39	V
	26965	841.5	-20.17	31.922	9.60	9.12	V

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

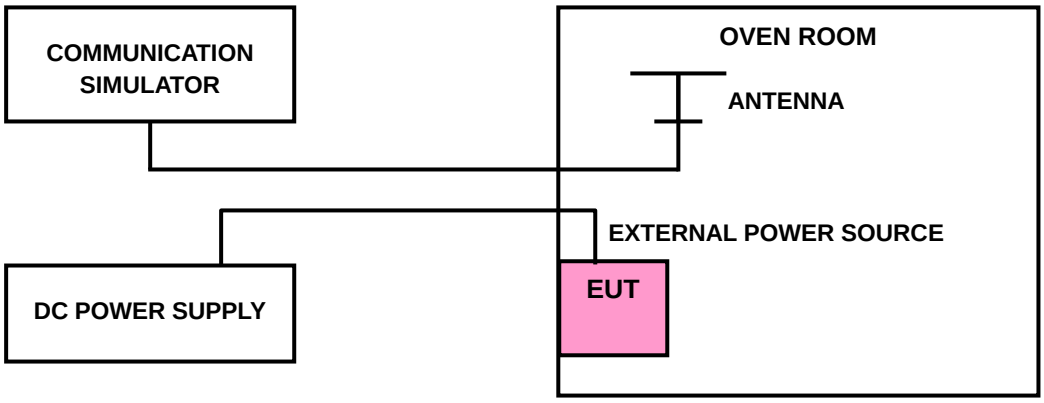
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 ±0.5℃ 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

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	CDMA	LTE Band 5				
		1.4MHz	3MHz	5MHz	10MHz	
3.8	0.004	0.003	0.003	0.003	0.003	2.5
3.6	0.002	0.002	0.002	0.002	0.002	2.5
4.4	0.003	0.004	0.004	0.004	0.004	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.4Vdc.

FREQUENCY ERROR vs. TEMPERATURE

TEMP. (℃)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	CDMA	LTE Band 5				
		1.4MHz	3MHz	5MHz	10MHz	
-30	0.003	0.004	-0.003	0.003	-0.004	2.5
-20	0.003	0.003	0.002	0.003	0.004	2.5
-10	0.002	0.002	-0.003	-0.003	0.003	2.5
0	0.004	0.004	-0.002	-0.002	0.004	2.5
10	-0.003	-0.003	-0.004	-0.004	0.002	2.5
20	-0.005	-0.002	-0.001	-0.005	-0.005	2.5
30	-0.002	-0.004	-0.003	-0.001	-0.004	2.5
40	-0.002	-0.005	0.002	0.005	-0.002	2.5
50	-0.003	-0.002	0.005	0.003	-0.003	2.5
55	0.005	0.002	0.003	0.004	-0.002	2.5

FREQUENCY ERROR vs. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	LTE Band 26					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	
3.8	0.004	0.004	0.003	0.004	0.004	2.5
3.6	0.003	0.002	0.002	0.002	0.002	2.5
4.4	0.002	0.003	0.004	0.003	0.003	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.4Vdc.

FREQUENCY ERROR vs. TEMPERATURE

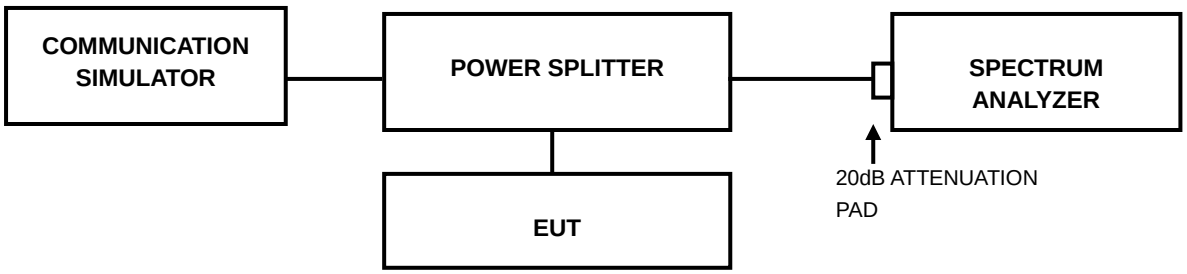
TEMP. (℃)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	LTE Band 26					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	
-30	0.003	0.002	0.004	-0.003	-0.005	2.5
-20	0.002	0.004	0.003	0.001	0.003	2.5
-10	0.003	0.002	0.002	0.004	-0.002	2.5
0	-0.002	0.003	0.004	-0.003	-0.003	2.5
10	-0.003	-0.005	-0.002	-0.004	-0.004	2.5
20	-0.004	-0.002	-0.004	-0.002	-0.003	2.5
30	-0.002	-0.003	-0.003	-0.003	-0.001	2.5
40	-0.004	-0.001	-0.002	-0.002	0.005	2.5
50	0.003	-0.004	-0.003	0.003	0.002	2.5
55	0.002	0.003	0.005	0.002	0.003	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.

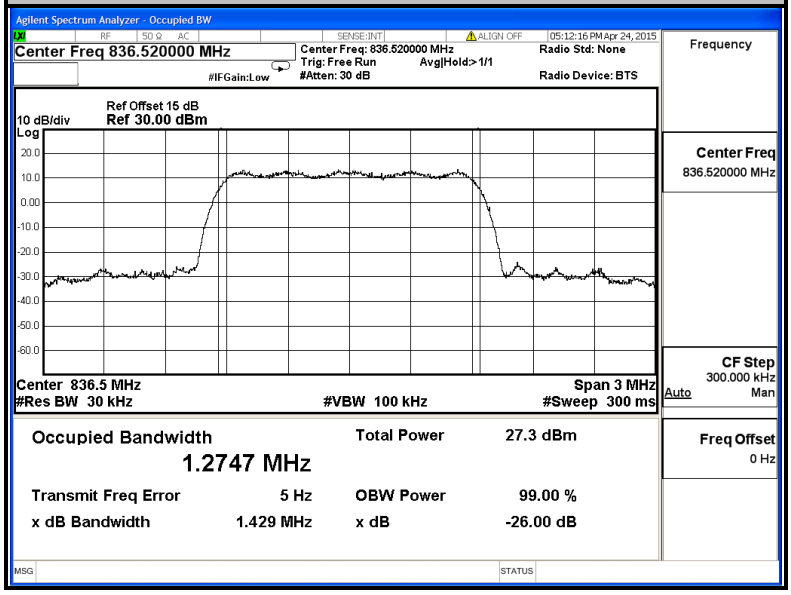
4.3.2 TEST SETUP



4.3.3 TEST RESULTS

CDMA			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	26dB BANDWIDTH (MHz)
1013	824.70	1.2729	1.422
384	836.52	1.2747	1.429
777	848.31	1.2740	1.425

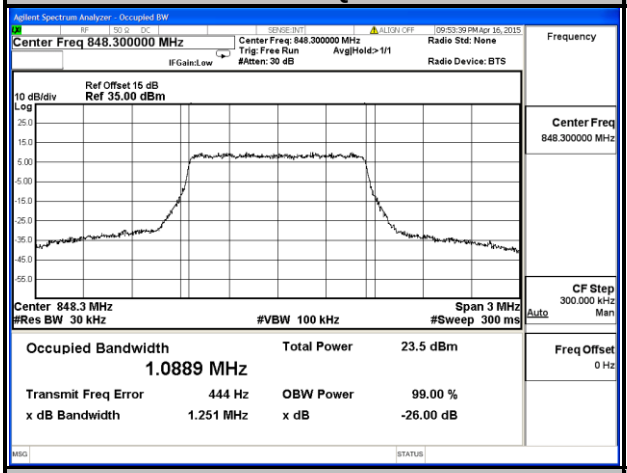
SPECTRUM PLOT OF WORST VALUE
CDMA



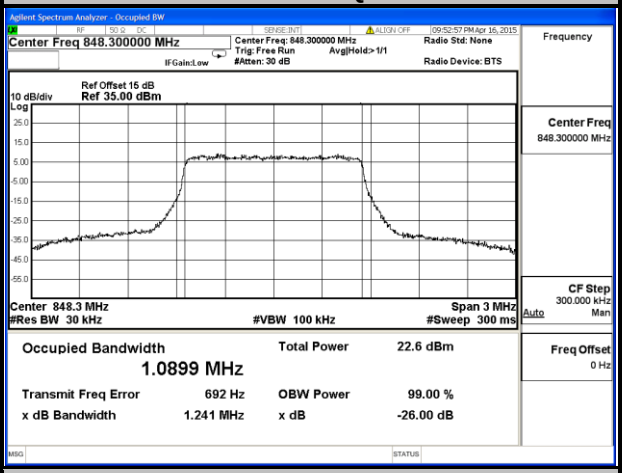
LTE BAND 5							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	1.0885	1.0892	20415	825.5	2.7008	2.6985
20525	836.5	1.0885	1.0892	20525	836.5	2.7028	2.6978
20643	848.3	1.0889	1.0899	20635	847.5	2.7014	2.6979
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	1.250	1.241	20415	825.5	2.918	2.910
20525	836.5	1.238	1.242	20525	836.5	2.929	2.917
20643	848.3	1.251	1.241	20635	847.5	2.932	2.921

SPECTRUM PLOT OF WORST VALUE

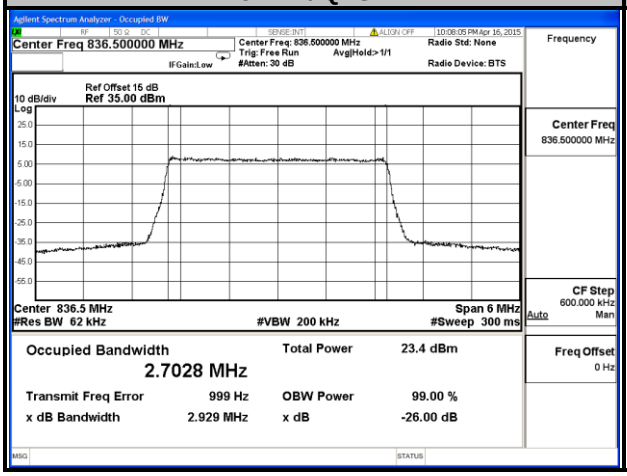
1.4MHz / QPSK



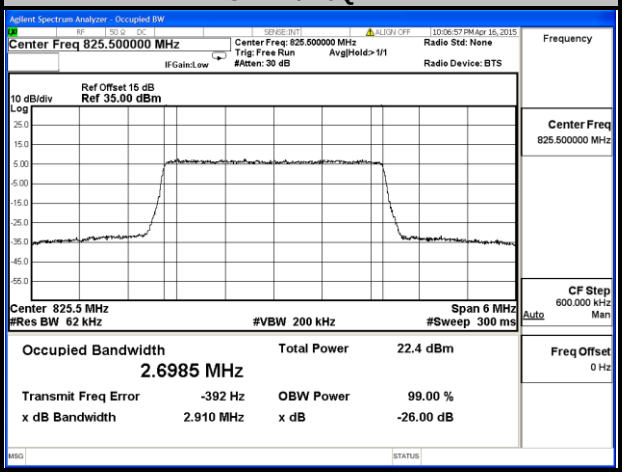
1.4MHz / 16QAM



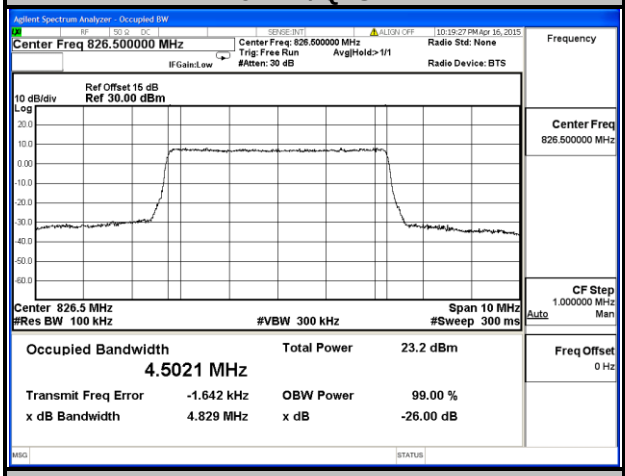
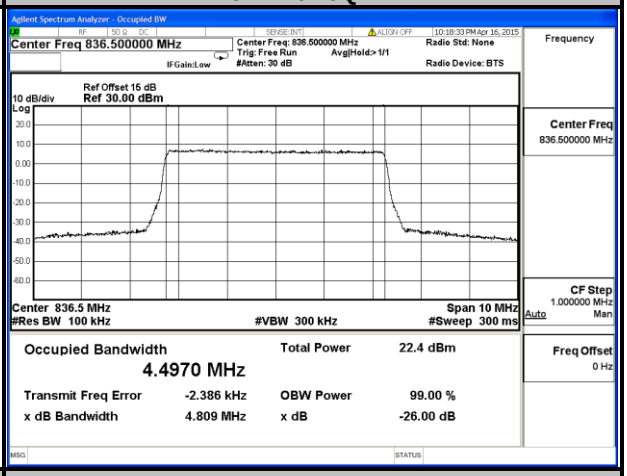
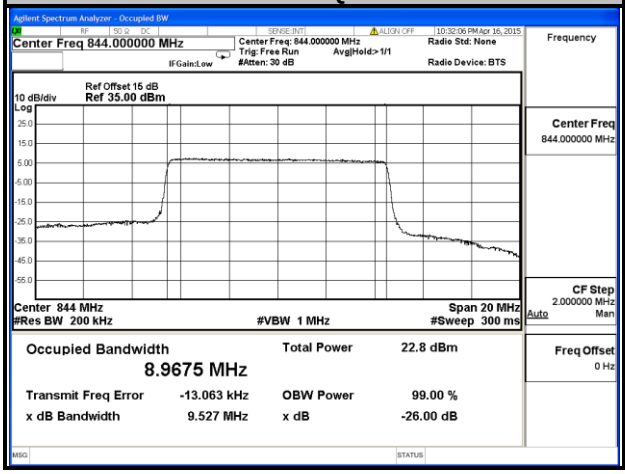
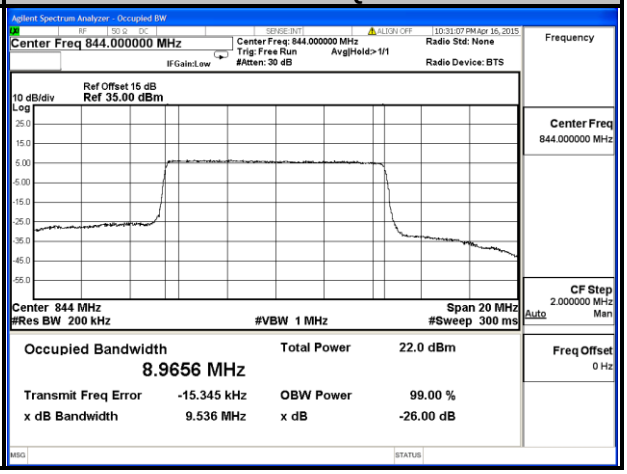
3MHz / QPSK



3MHz / 16QAM



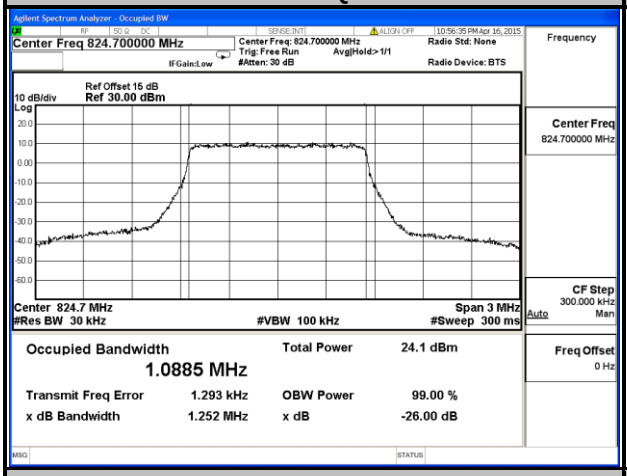
LTE BAND 5							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.5021	4.4964	20450	829.0	8.9604	8.9584
20525	836.5	4.5011	4.4970	20525	836.5	8.9533	8.9566
20625	846.5	4.4990	4.4965	20600	844.0	8.9675	8.9656
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.829	4.833	20450	829.0	9.522	9.524
20525	836.5	4.813	4.809	20525	836.5	9.525	9.495
20625	846.5	4.819	4.820	20600	844.0	9.527	9.536

SPECTRUM PLOT OF WORST VALUE	
5MHz / QPSK	5MHz / 16QAM
	
10MHz / QPSK	10MHz / 16QAM
	

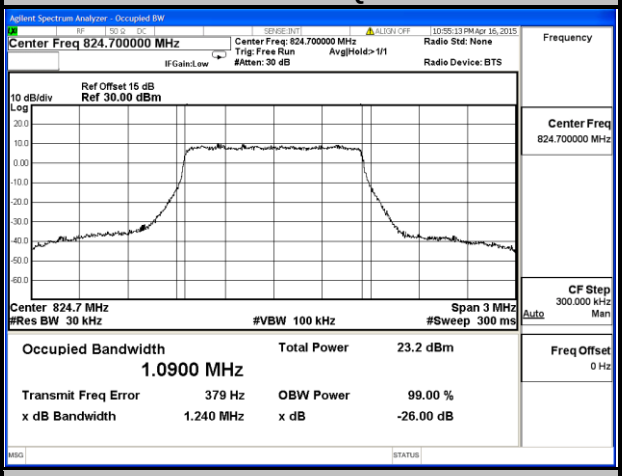
LTE BAND 26							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	1.0885	1.0900	26805	825.5	2.7010	2.6961
26915	836.5	1.0880	1.0885	26915	836.5	2.7036	2.6976
27033	848.3	1.0878	1.0890	27025	847.5	2.6978	2.6986
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	1.252	1.240	26805	825.5	2.938	2.913
26915	836.5	1.243	1.252	26915	836.5	2.936	2.921
27033	848.3	1.251	1.240	27025	847.5	2.929	2.922

SPECTRUM PLOT OF WORST VALUE

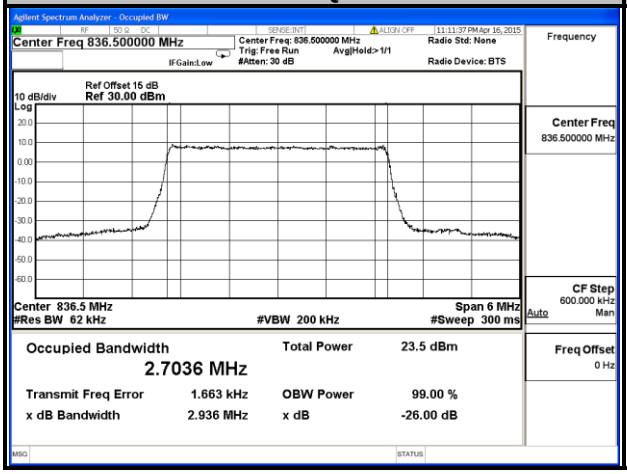
1.4MHz / QPSK



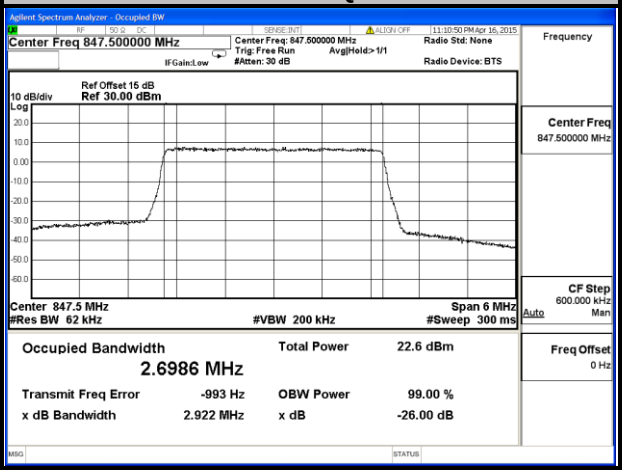
1.4MHz / 16QAM



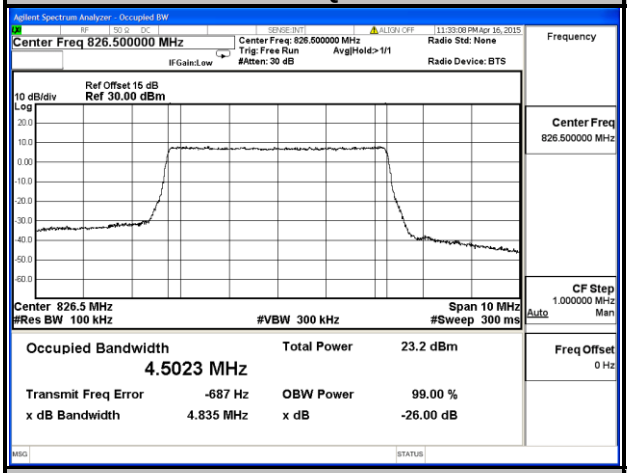
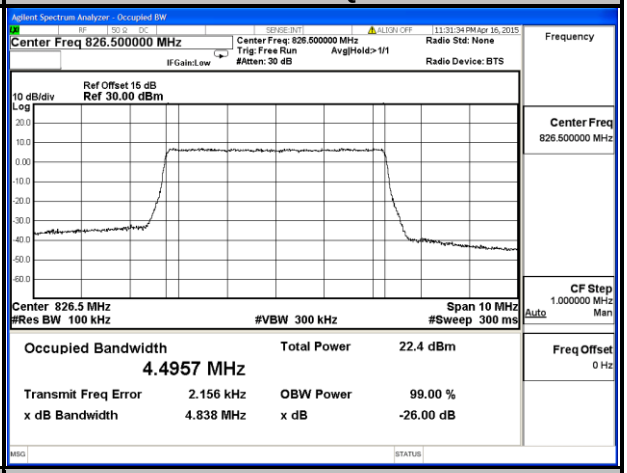
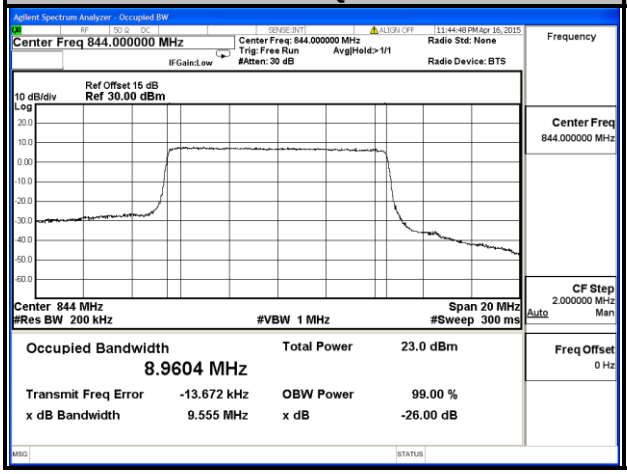
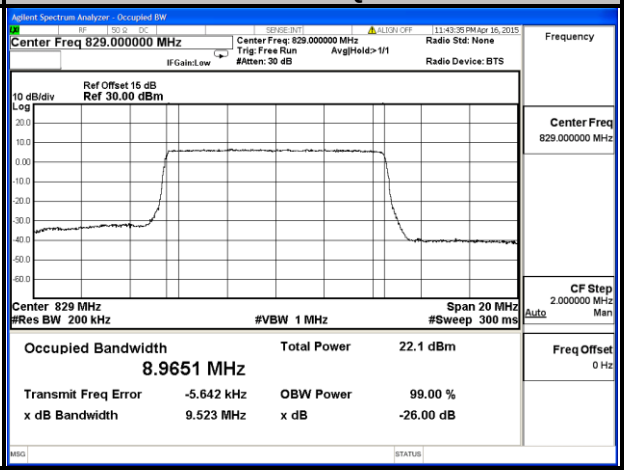
3MHz / QPSK



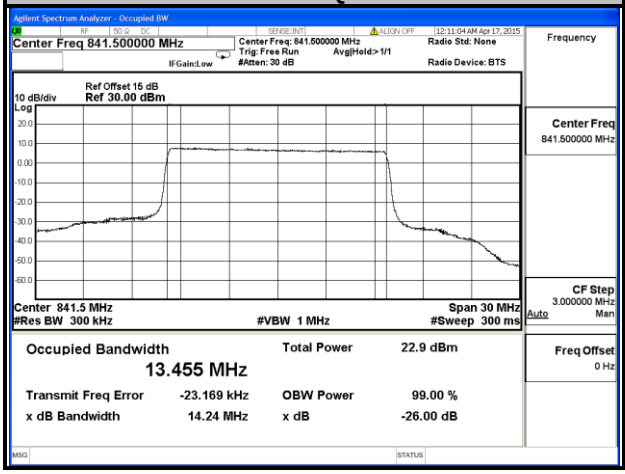
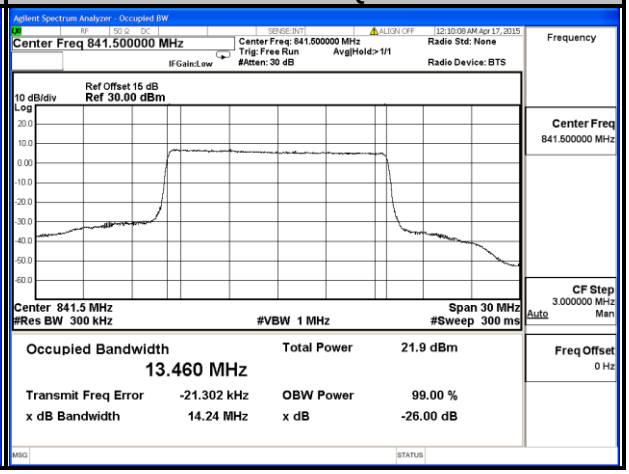
3MHz / 16QAM



LTE BAND 26							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.5023	4.4957	26840	829.0	8.9557	8.9651
26915	836.5	4.5008	4.4943	26915	836.5	8.9583	8.9519
27015	846.5	4.4988	4.4955	26990	844.0	8.9604	8.9640
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.835	4.838	26840	829.0	9.531	9.523
26915	836.5	4.819	4.826	26915	836.5	9.511	9.493
27015	846.5	4.812	4.820	26990	844.0	9.555	9.512

SPECTRUM PLOT OF WORST VALUE	
5MHz / QPSK	5MHz / 16QAM
	
10MHz / QPSK	10MHz / 16QAM
	

LTE BAND 26							
CHANNEL BANDWIDTH: 15MHz							
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26865	831.5	13.440	13.436	26865	831.5	14.23	14.23
26915	836.5	13.443	13.442	26915	836.5	14.24	14.20
26965	841.5	13.455	13.460	26965	841.5	14.24	14.24

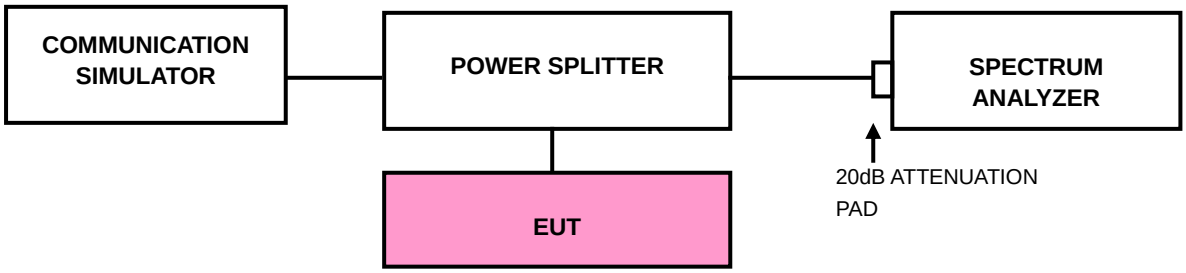
SPECTRUM PLOT OF WORST VALUE	
15MHz / QPSK	15MHz / 16QAM
	

4.4 BAND EDGE MEASUREMENT

4.4.1 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.

4.4.2 TEST SETUP

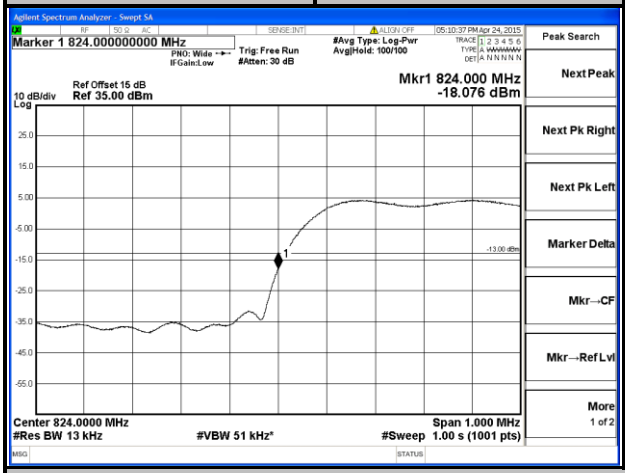


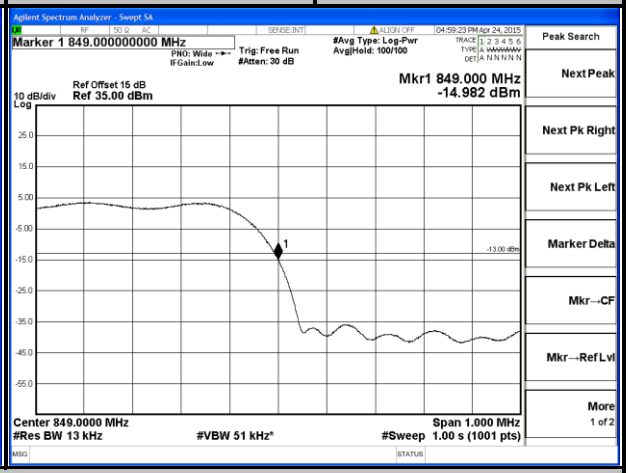
4.4.3 TEST PROCEDURES

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 1MHz. RB of the spectrum is 13kHz and VB of the spectrum is 51kHz (CDMA/LTE Channel Bandwidth 1.4MHz).
c. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
d. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 5MHz/10MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
f. Record the max trace plot into the test report.

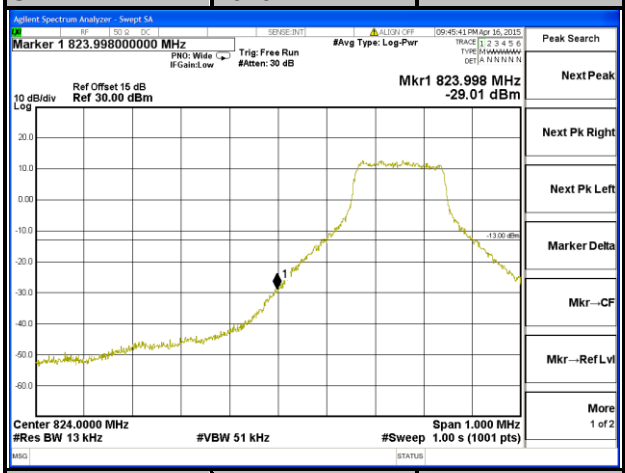
4.4.4 TEST RESULTS

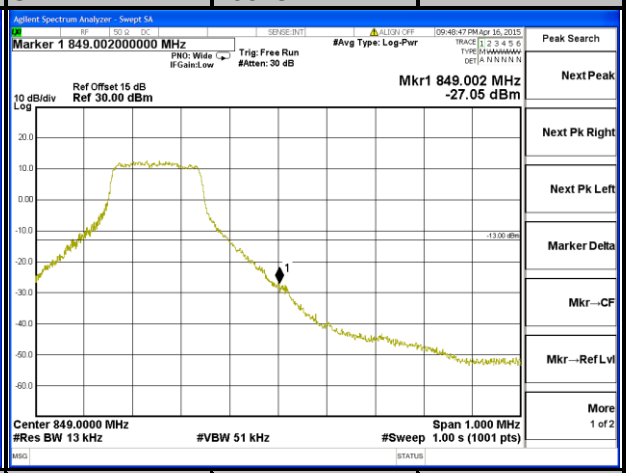
CDMA			
CHANNEL	1013	CHANNEL	777



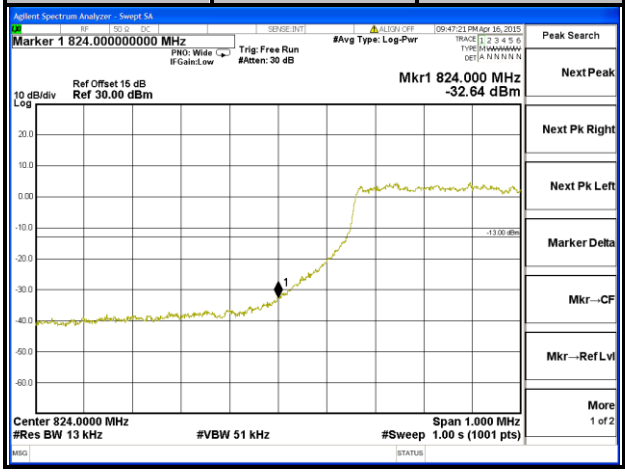


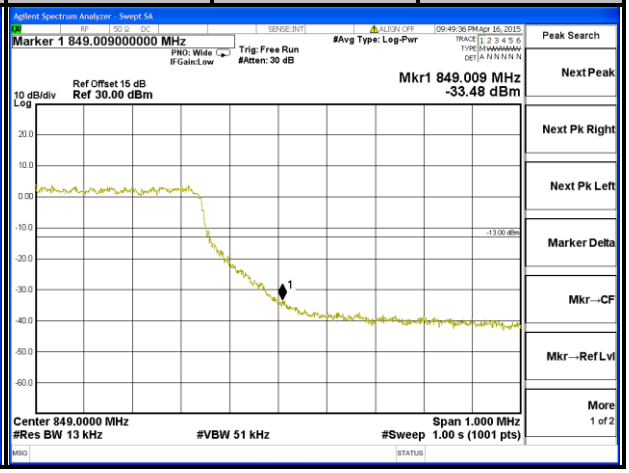
LTE BAND 5					
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	20407	1 RB	CHANNEL	20643	1 RB

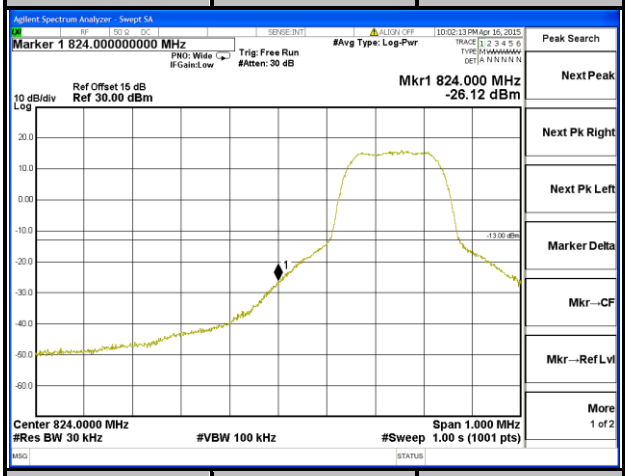
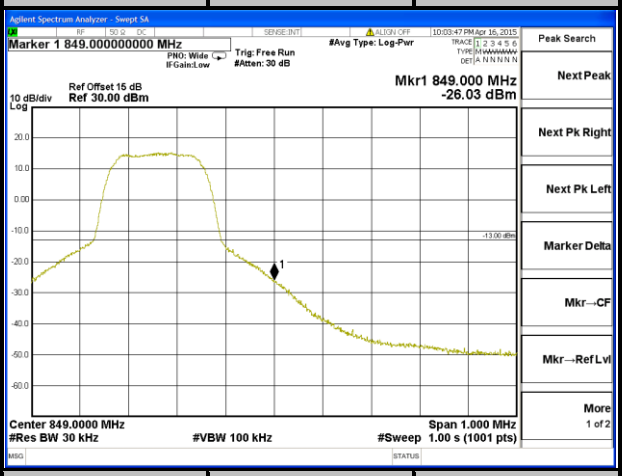
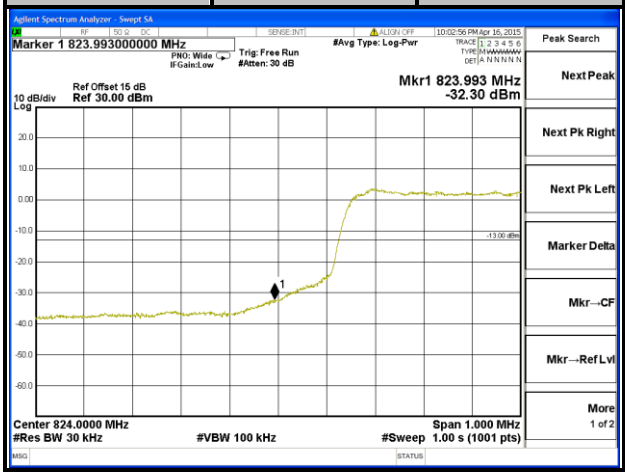
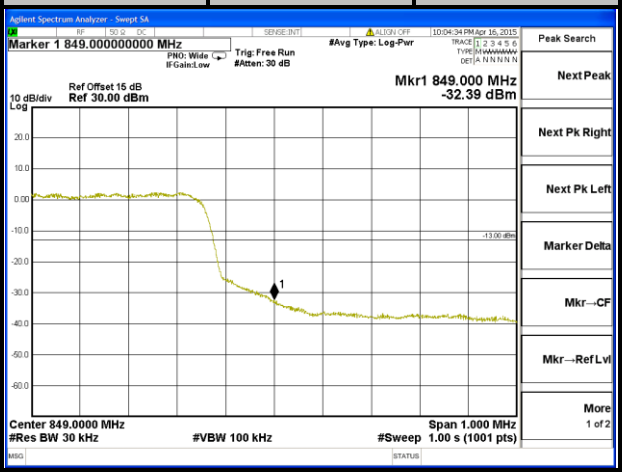


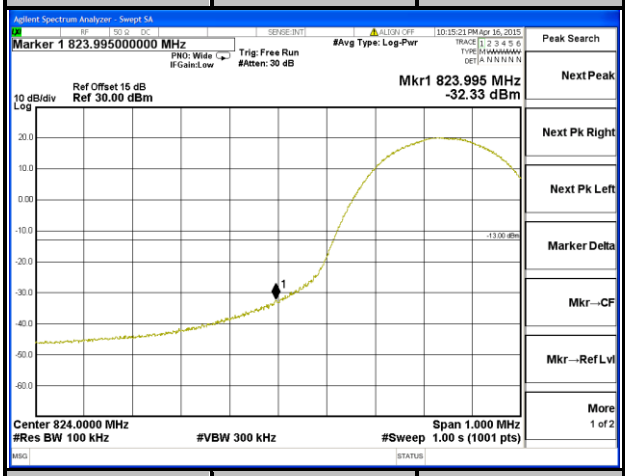
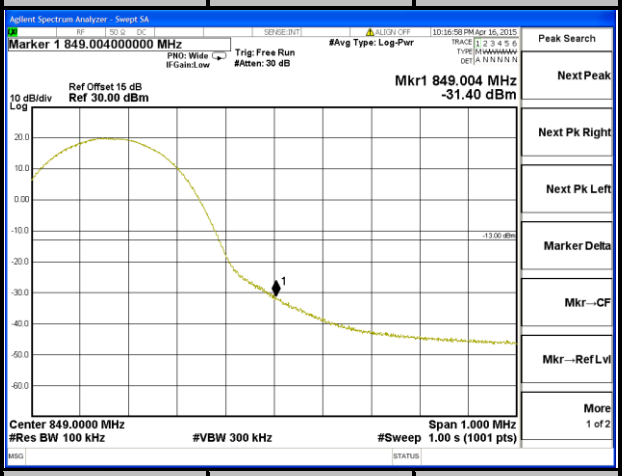
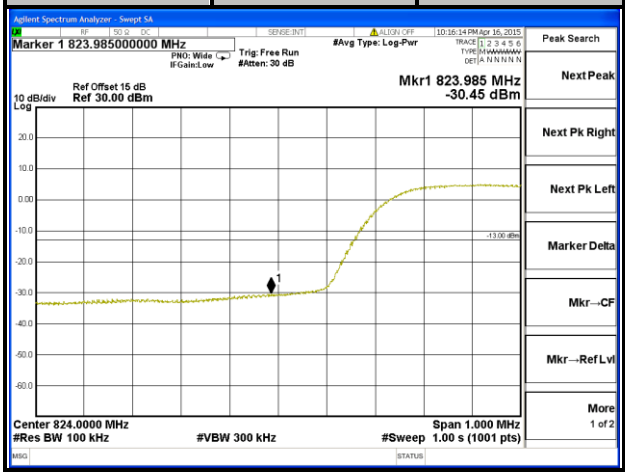
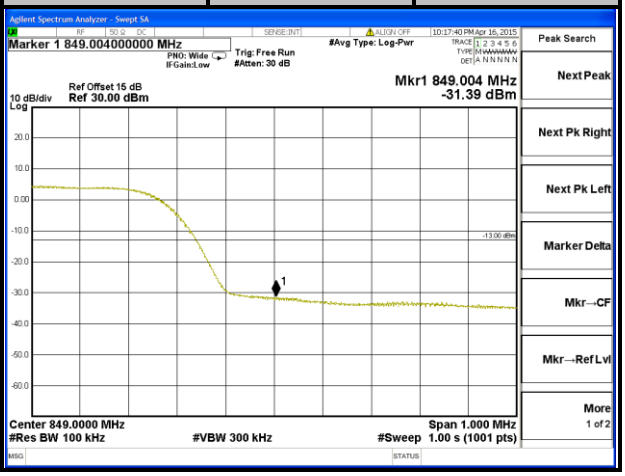


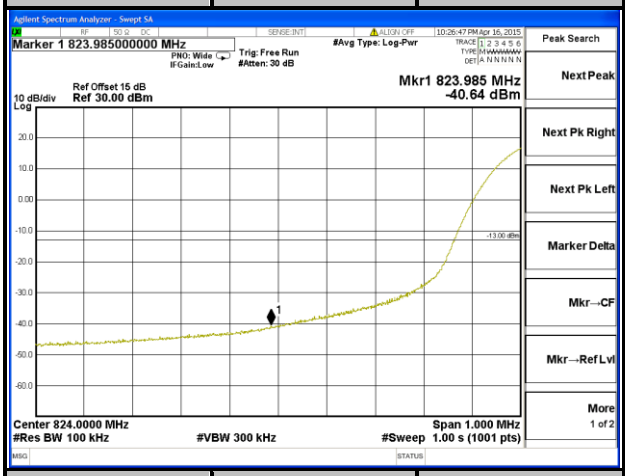
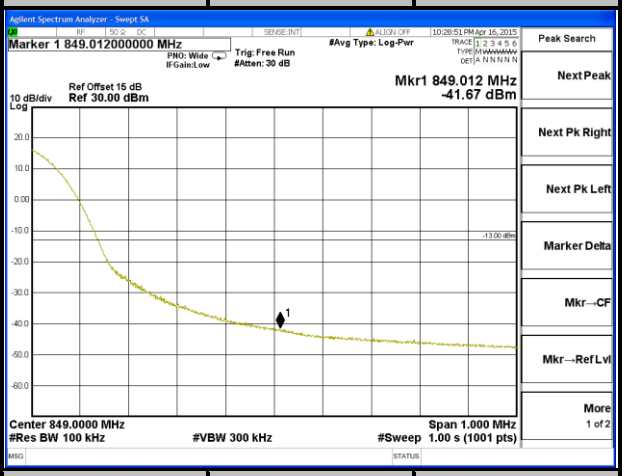
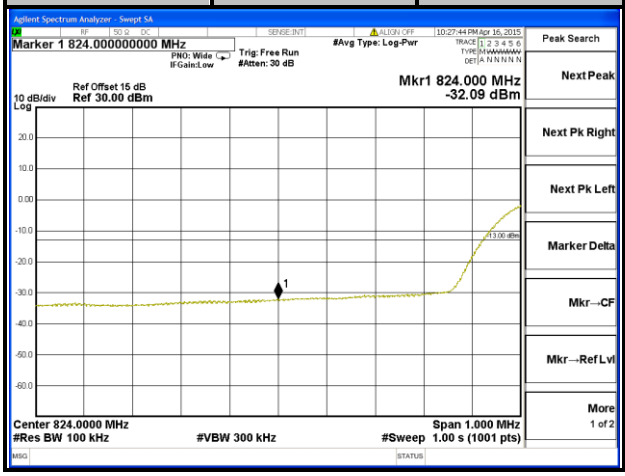
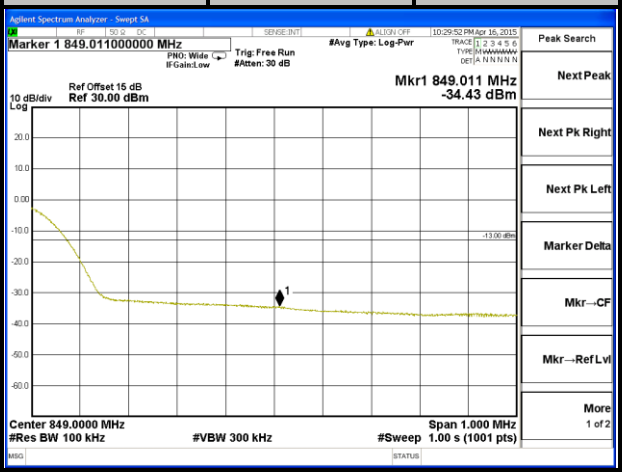
CHANNEL	20407	6 RB	CHANNEL	20643	6 RB

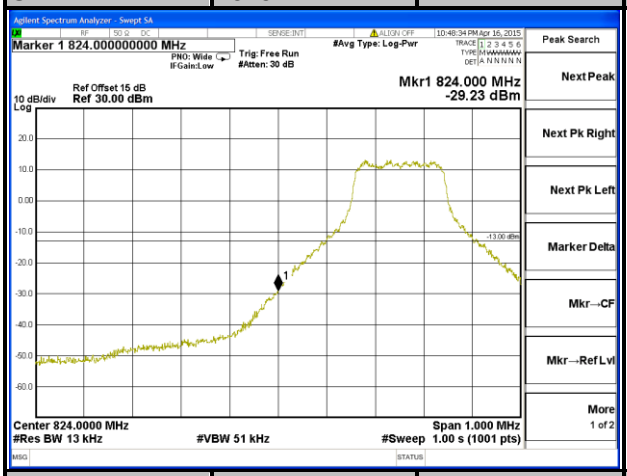
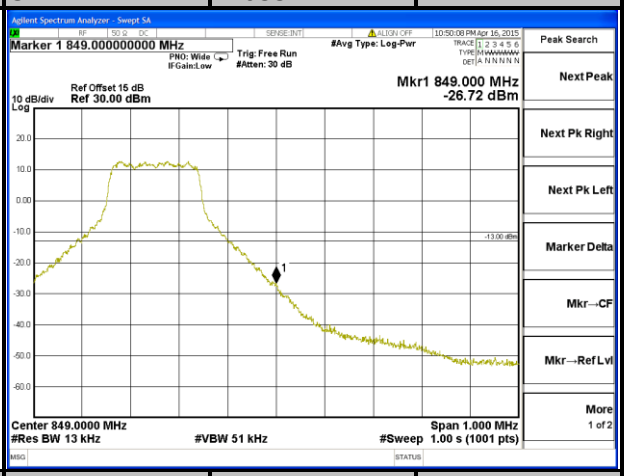
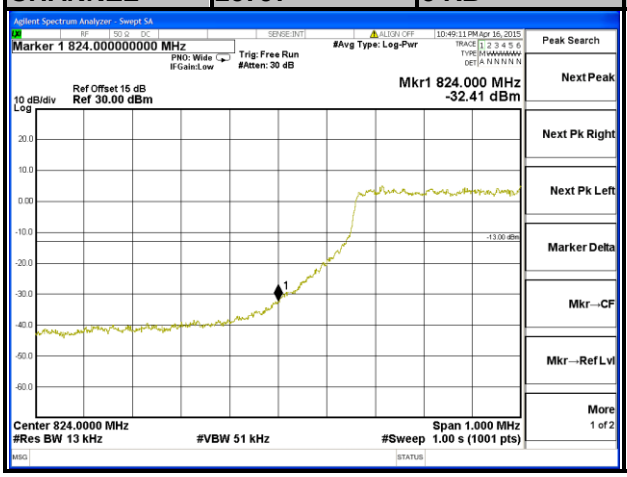
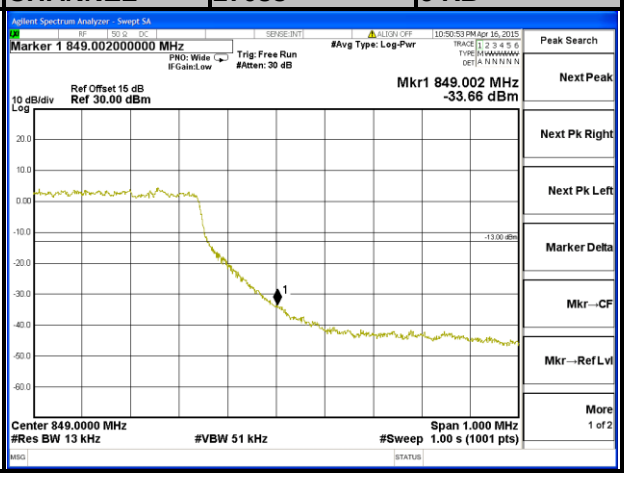


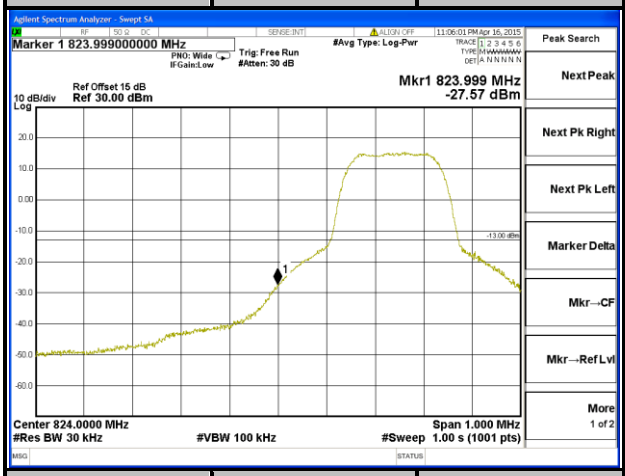
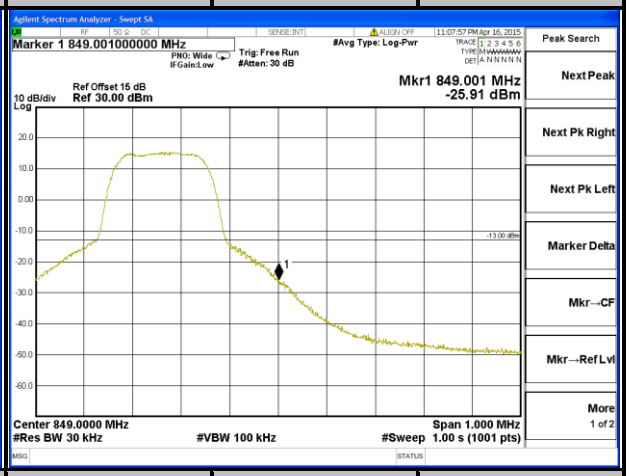
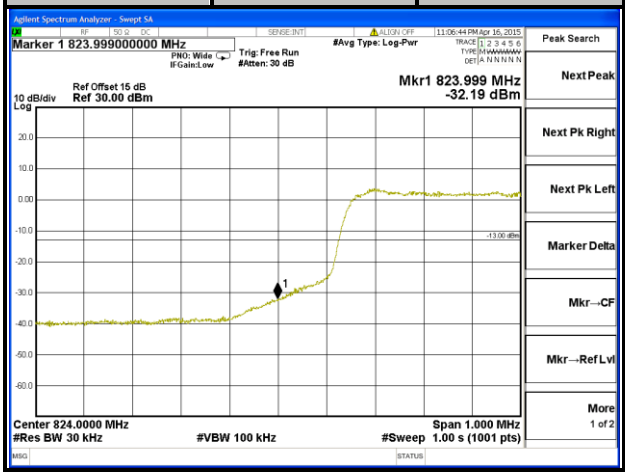
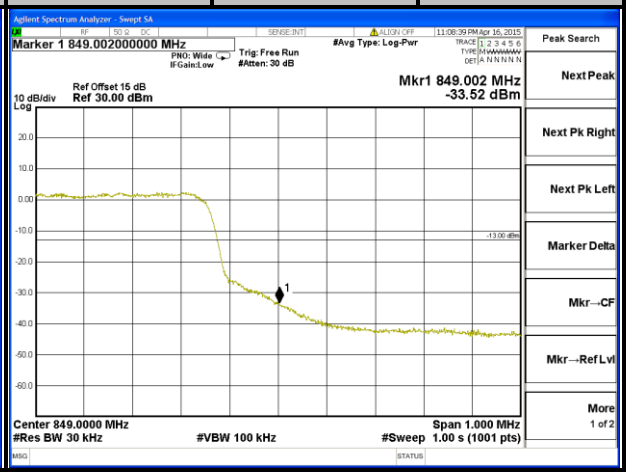


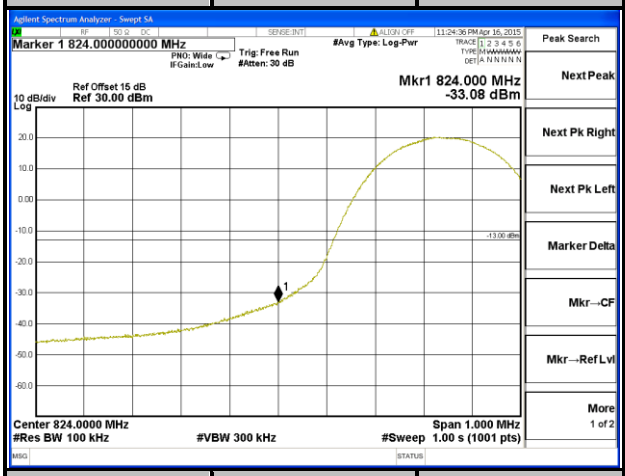
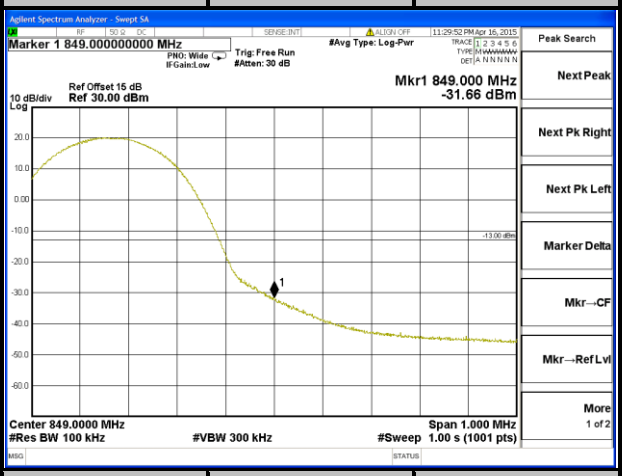
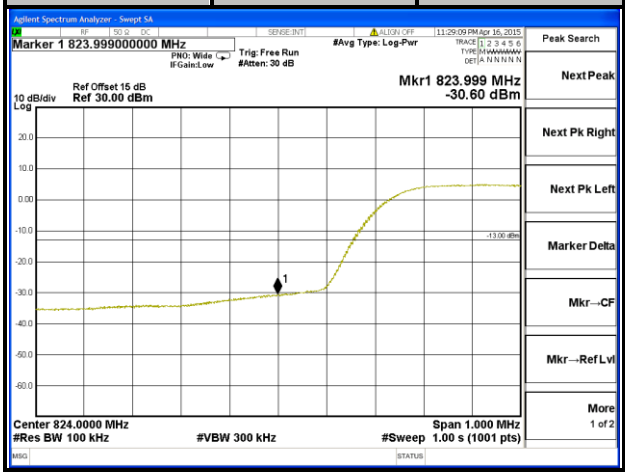
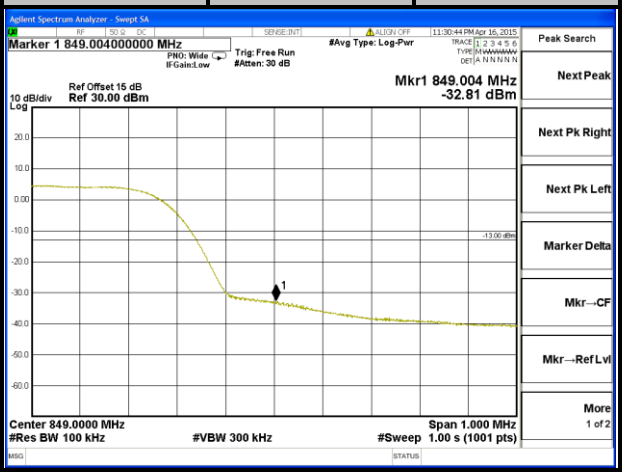
LTE BAND 5					
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	20415	1 RB	CHANNEL	20635	1 RB
					
CHANNEL	20415	15 RB	CHANNEL	20635	15 RB
					

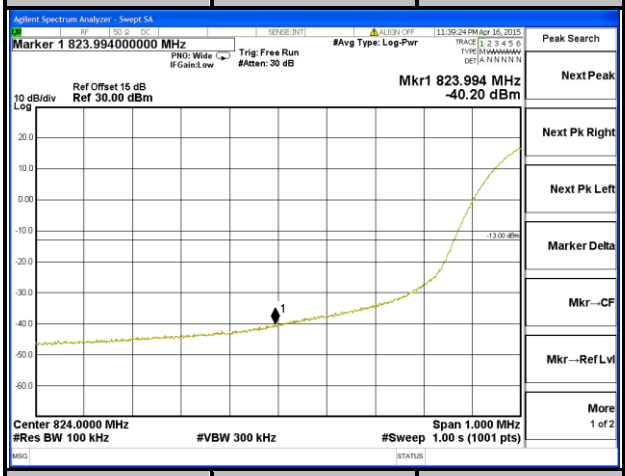
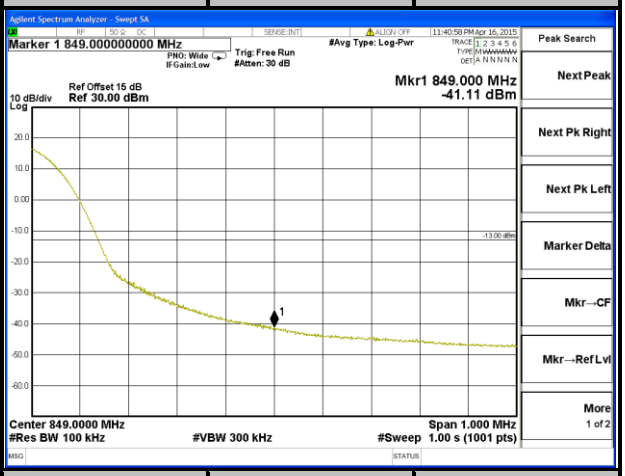
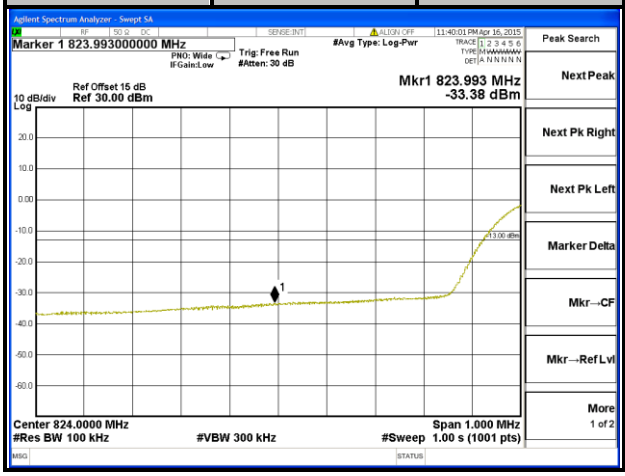
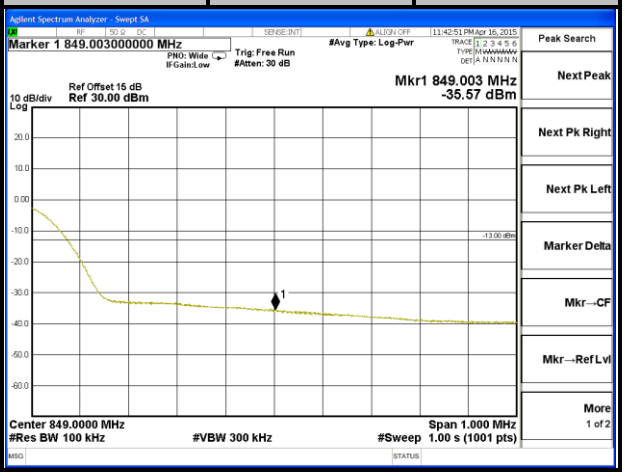
LTE BAND 5					
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	20425	1 RB	CHANNEL	20625	1 RB
					
CHANNEL	20425	25 RB	CHANNEL	20625	25 RB
					

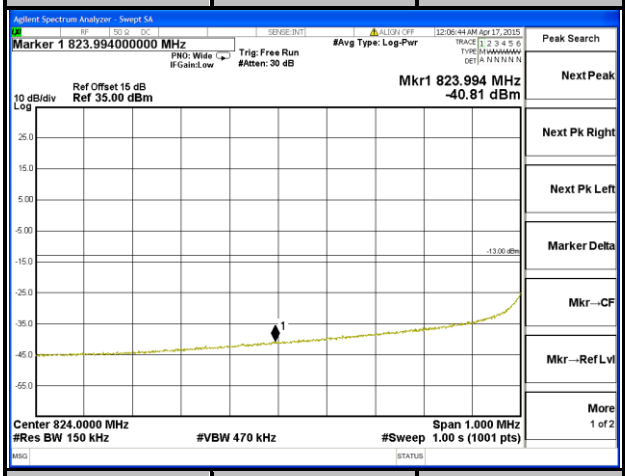
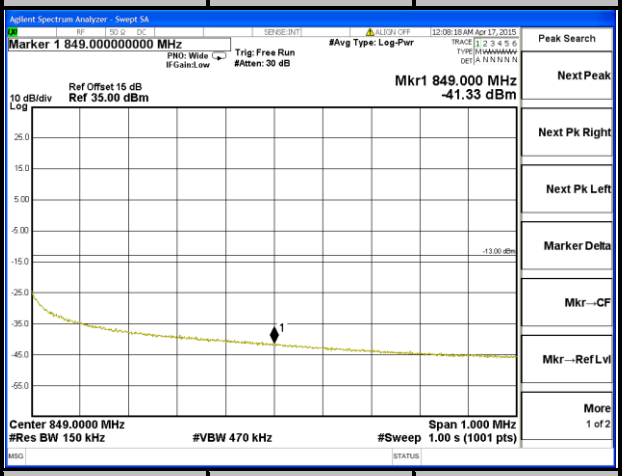
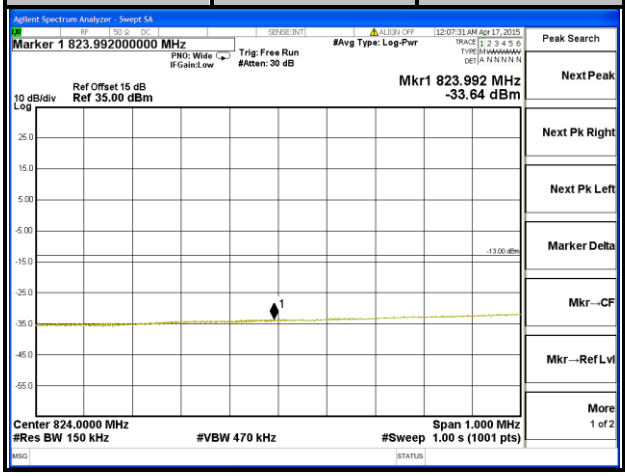
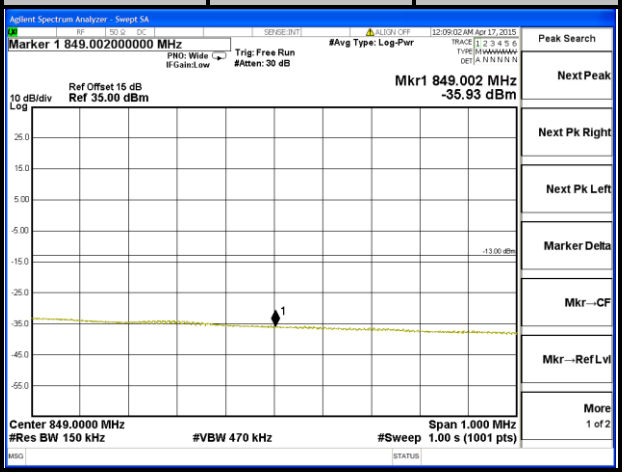
LTE BAND 5					
CHANNEL BANDWIDTH: 10MHz					
CHANNEL	20450	1 RB	CHANNEL	20600	1 RB
					
CHANNEL	20450	50 RB	CHANNEL	20600	50 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	26797	1 RB	CHANNEL	27033	1 RB
					
CHANNEL	26797	6 RB	CHANNEL	27033	6 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	26805	1 RB	CHANNEL	27025	1 RB
					
CHANNEL	26805	15 RB	CHANNEL	27025	15 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	26815	1 RB	CHANNEL	27015	1 RB
					
CHANNEL	26815	25 RB	CHANNEL	27015	25 RB
					

LTE Band 26					
CHANNEL BANDWIDTH: 10MHz					
CHANNEL	26840	1 RB	CHANNEL	26990	1 RB
					
CHANNEL	26840	50 RB	CHANNEL	26990	50 RB
					

LTE Band 26					
CHANNEL BANDWIDTH: 15MHz					
CHANNEL	26865	1 RB	CHANNEL	26965	1 RB
					
CHANNEL	26865	75 RB	CHANNEL	26965	75 RB
					

4.5 CONDUCTED SPURIOUS EMISSIONS

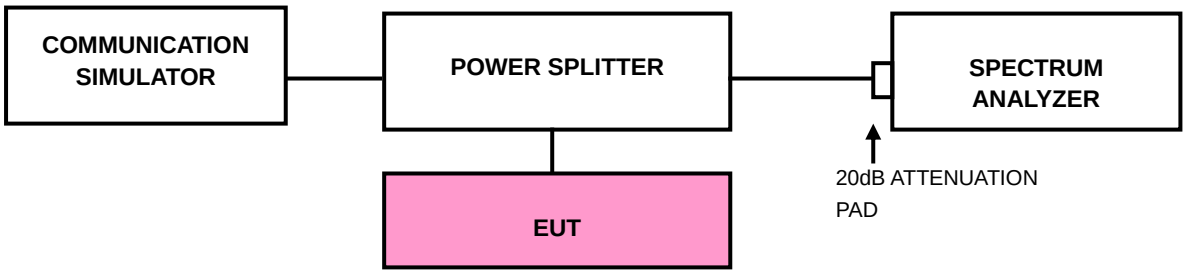
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 is equal to -13dBm.

4.5.2 TEST PROCEDURE

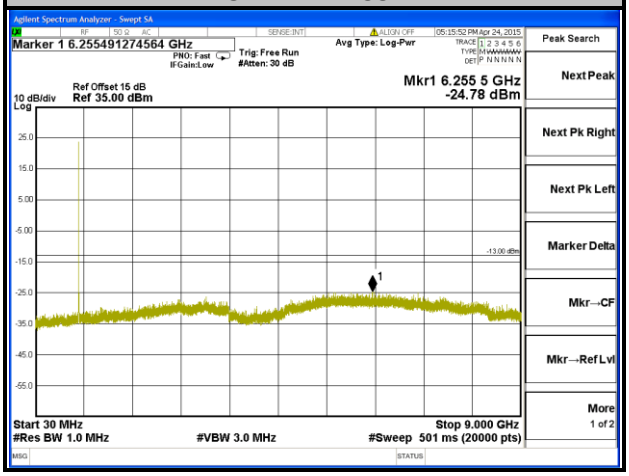
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 30 MHz to 9GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.5.3 TEST SETUP

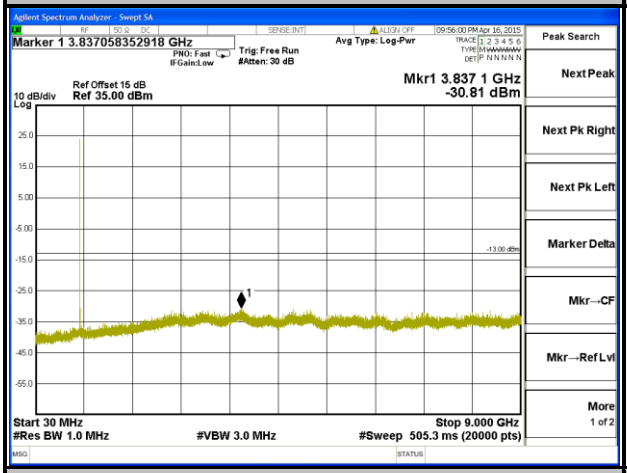


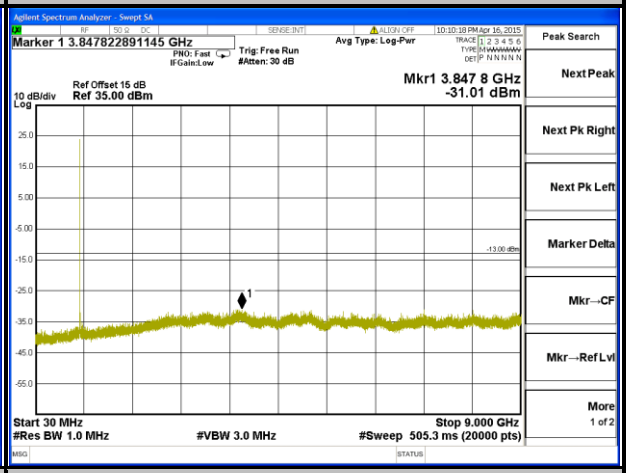
4.5.4 TEST RESULTS

CDMA
CHANNEL 384

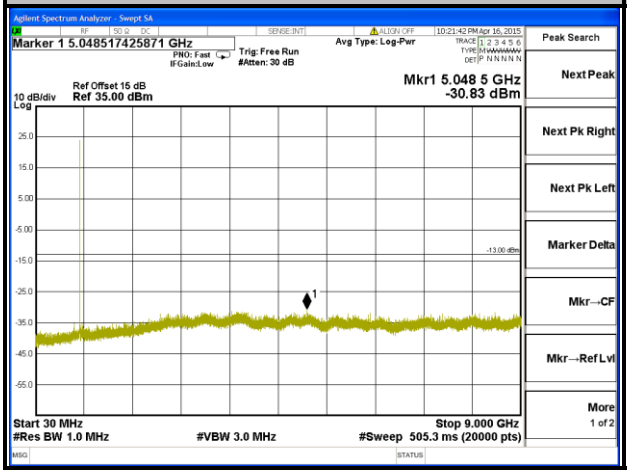


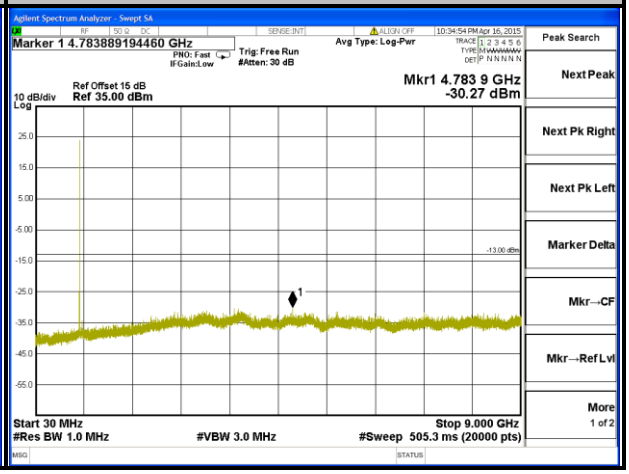
LTE BAND 5	
CHANNEL 20525	
Channel Bandwidth: 1.4MHz	Channel Bandwidth: 3MHz

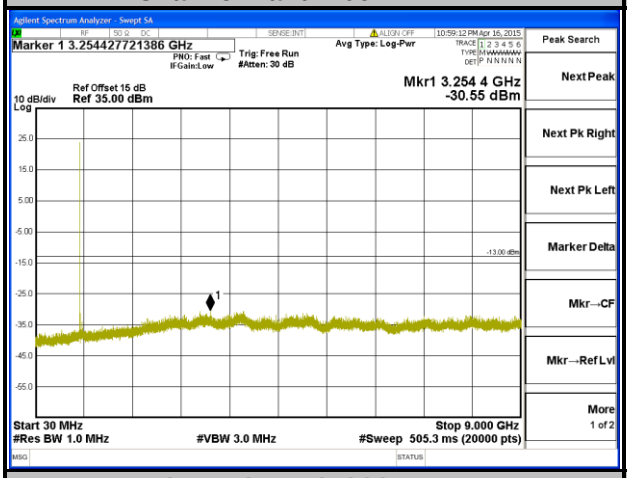
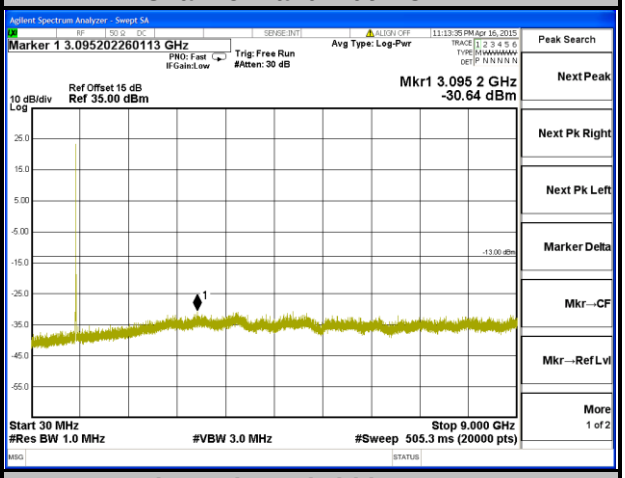
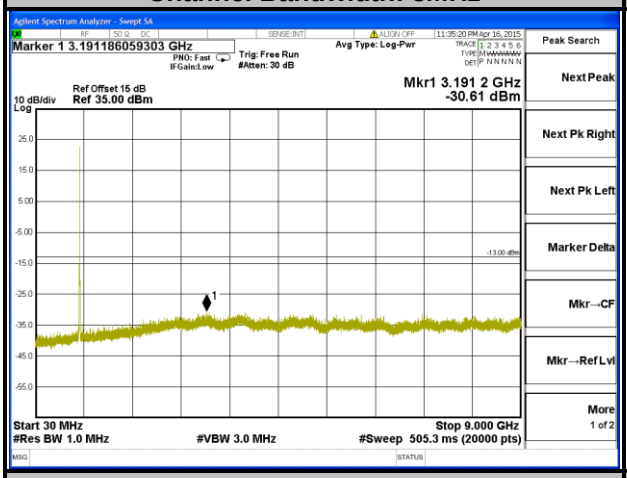
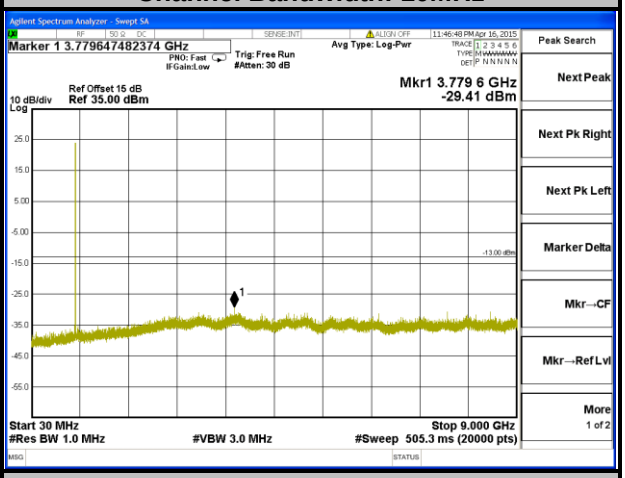
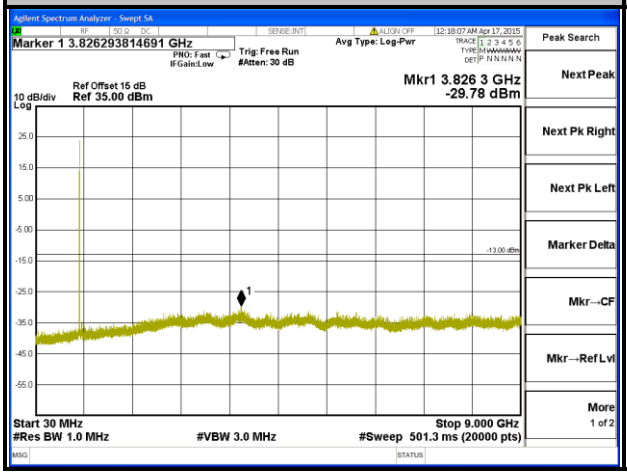




Channel Bandwidth: 5MHz	Channel Bandwidth: 10MHz





LTE BAND 26	
CHANNEL 26915	
Channel Bandwidth: 1.4MHz	Channel Bandwidth: 3MHz
	
Channel Bandwidth: 5MHz	Channel Bandwidth: 10MHz
	
Channel Bandwidth: 15MHz	
	

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 is equal to -13dBm.

4.6.2 TEST PROCEDURES

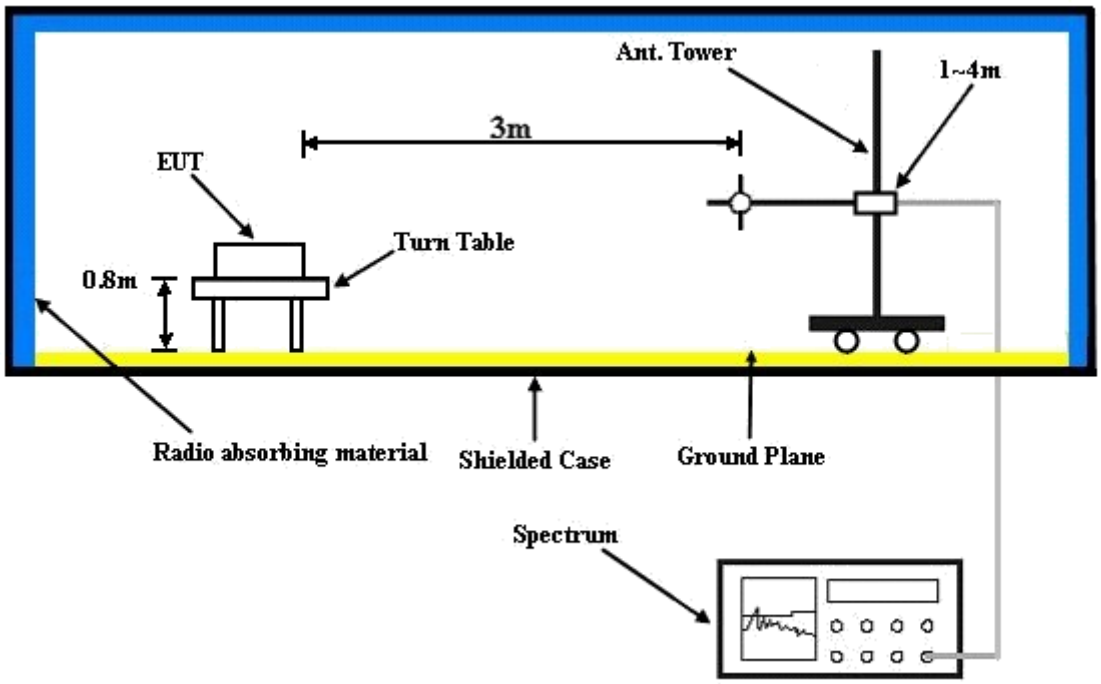
a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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



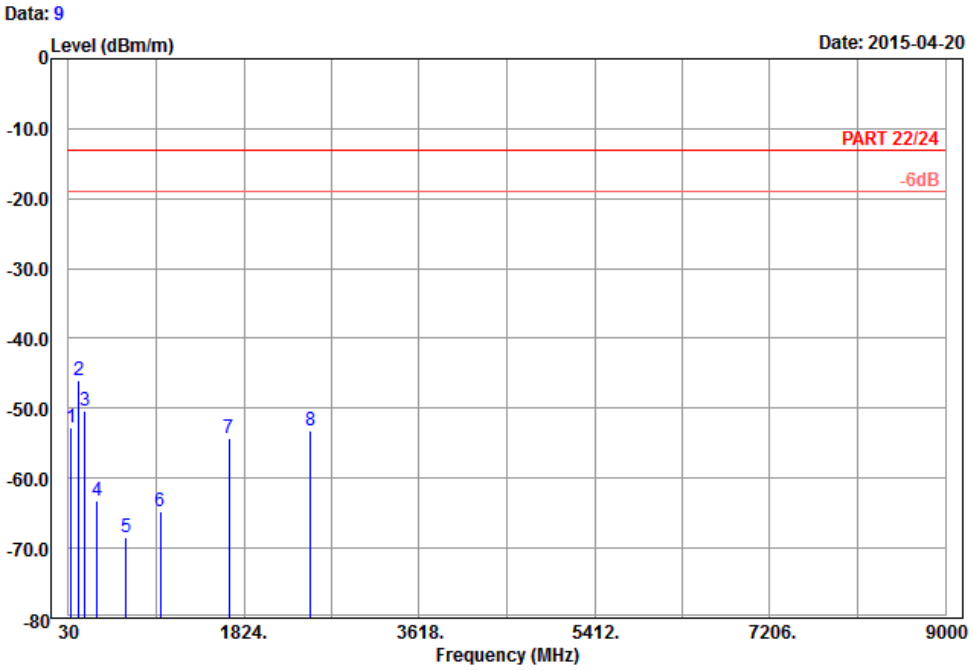
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.6.5 TEST RESULTS

MODE A

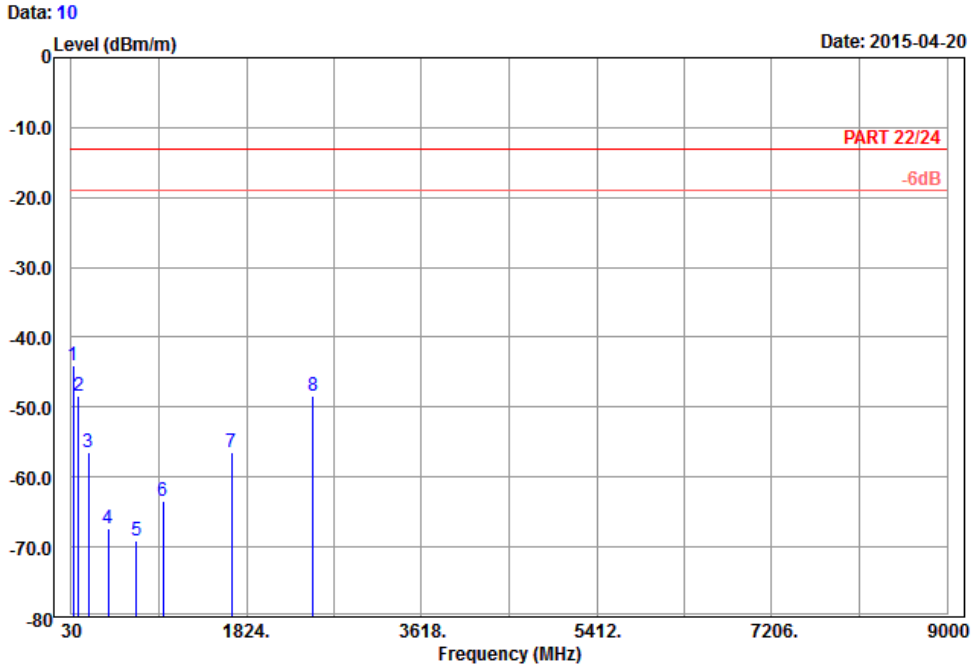
CDMA:

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : BC0_Link_CH384
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	58.35	-52.79	-38.73	-13.00	-39.79	-14.06	Peak
2 pp	136.65	-45.97	-38.29	-13.00	-32.97	-7.68	Peak
3	196.86	-50.27	-44.22	-13.00	-37.27	-6.05	Peak
4	322.40	-63.11	-57.41	-13.00	-50.11	-5.70	Peak
5	620.60	-68.45	-68.65	-13.00	-55.45	0.20	Peak
6	966.40	-64.68	-69.84	-13.00	-51.68	5.16	Peak
7	1673.04	-54.17	-62.08	-13.00	-41.17	7.91	Peak
8	2509.56	-53.20	-64.48	-13.00	-40.20	11.28	Peak



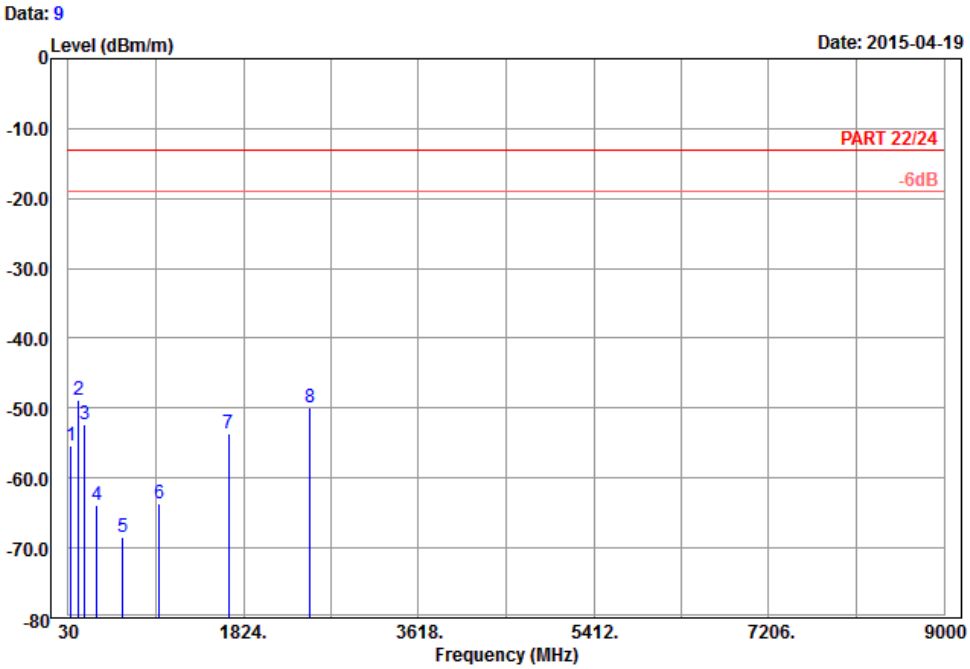
Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : BC0_Link_CH384
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	46.20	-43.96	-31.16	-13.00	-30.96	-12.80	Peak
2	102.09	-48.41	-38.52	-13.00	-35.41	-9.89	Peak
3	203.07	-56.48	-50.34	-13.00	-43.48	-6.14	Peak
4	409.90	-67.45	-64.48	-13.00	-54.45	-2.97	Peak
5	696.20	-69.06	-68.70	-13.00	-56.06	-0.36	Peak
6	967.80	-63.40	-68.57	-13.00	-50.40	5.17	Peak
7	1673.04	-56.49	-64.40	-13.00	-43.49	7.91	Peak
8	2509.56	-48.35	-59.63	-13.00	-35.35	11.28	Peak

LTE BAND 5

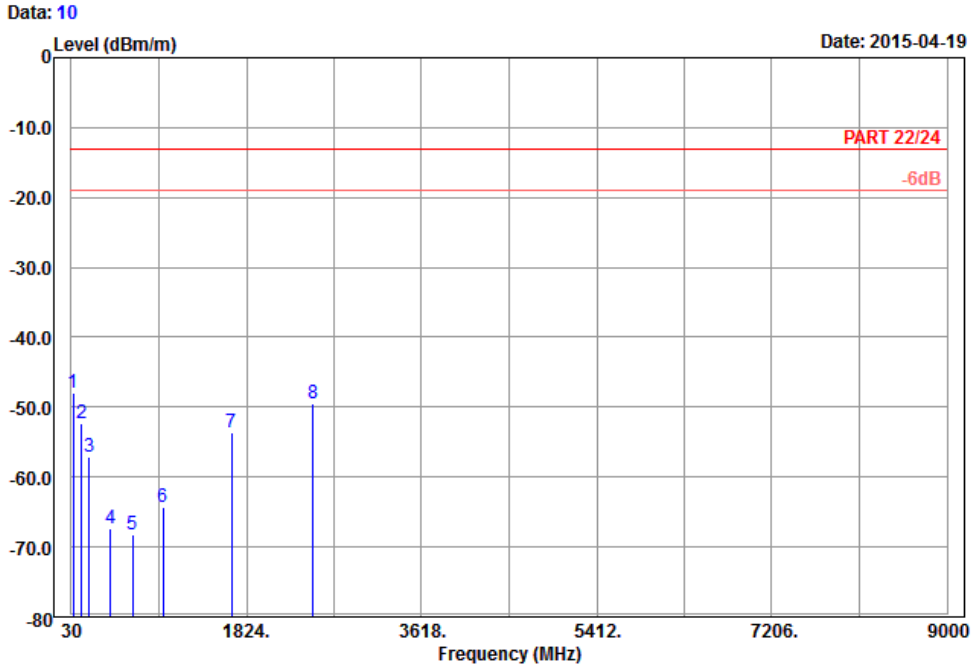
CHANNEL BANDWIDTH: 10MHz / QPSK

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : LTE_Band 5_QPSK(1,0)_10M_CH20525
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	58.35	-55.44	-41.38	-13.00	-42.44	-14.06	Peak
2 pp	138.27	-48.73	-41.04	-13.00	-35.73	-7.69	Peak
3	194.43	-52.23	-46.27	-13.00	-39.23	-5.96	Peak
4	318.90	-63.95	-58.21	-13.00	-50.95	-5.74	Peak
5	584.90	-68.34	-68.12	-13.00	-55.34	-0.22	Peak
6	963.60	-63.74	-68.89	-13.00	-50.74	5.15	Peak
7	1673.00	-53.58	-61.49	-13.00	-40.58	7.91	Peak
8	2509.50	-49.84	-61.12	-13.00	-36.84	11.28	Peak



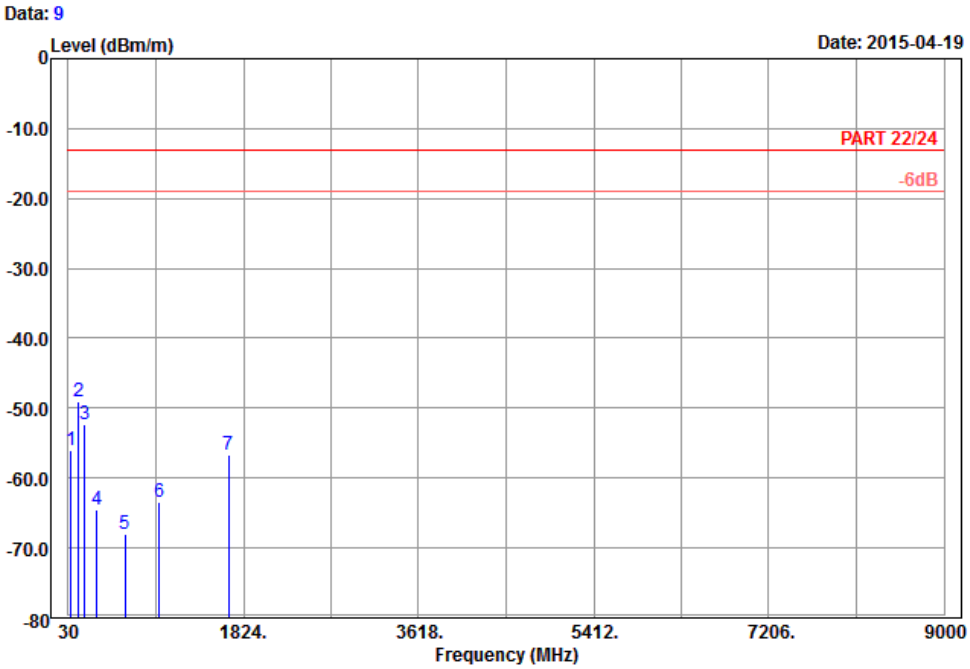
Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : LTE_Band 5_QPSK(1,0)_10M_CH20525
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	48.09	-47.89	-34.46	-13.00	-34.89	-13.43	Peak
2	139.08	-52.35	-44.66	-13.00	-39.35	-7.69	Peak
3	211.71	-57.05	-51.02	-13.00	-44.05	-6.03	Peak
4	429.50	-67.43	-64.03	-13.00	-54.43	-3.40	Peak
5	658.40	-68.26	-68.08	-13.00	-55.26	-0.18	Peak
6	966.40	-64.25	-69.41	-13.00	-51.25	5.16	Peak
7	1673.00	-53.71	-61.62	-13.00	-40.71	7.91	Peak
8	2509.50	-49.52	-60.80	-13.00	-36.52	11.28	Peak

LTE BAND 26

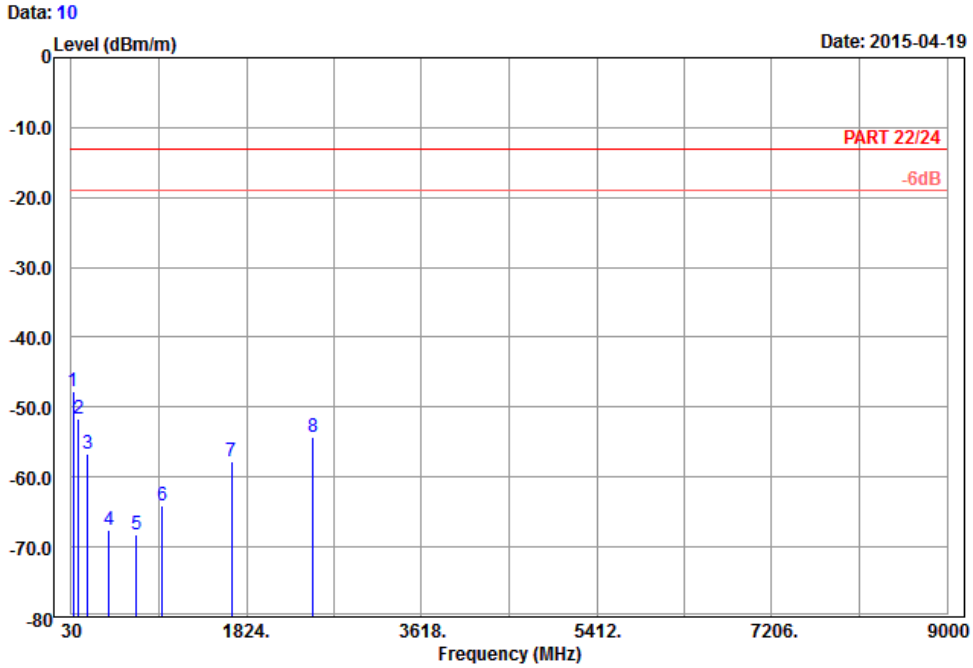
CHANNEL BANDWIDTH: 15MHz / QPSK

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : LTE_Band 26_QPSK(1,37)_15M_CH26915
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	58.08	-55.93	-41.87	-13.00	-42.93	-14.06	Peak
2 pp	137.46	-49.15	-41.47	-13.00	-36.15	-7.68	Peak
3	196.59	-52.42	-46.37	-13.00	-39.42	-6.05	Peak
4	321.00	-64.47	-58.76	-13.00	-51.47	-5.71	Peak
5	613.60	-68.11	-68.38	-13.00	-55.11	0.27	Peak
6	964.30	-63.37	-68.52	-13.00	-50.37	5.15	Peak
7	1673.00	-56.68	-64.59	-13.00	-43.68	7.91	Peak



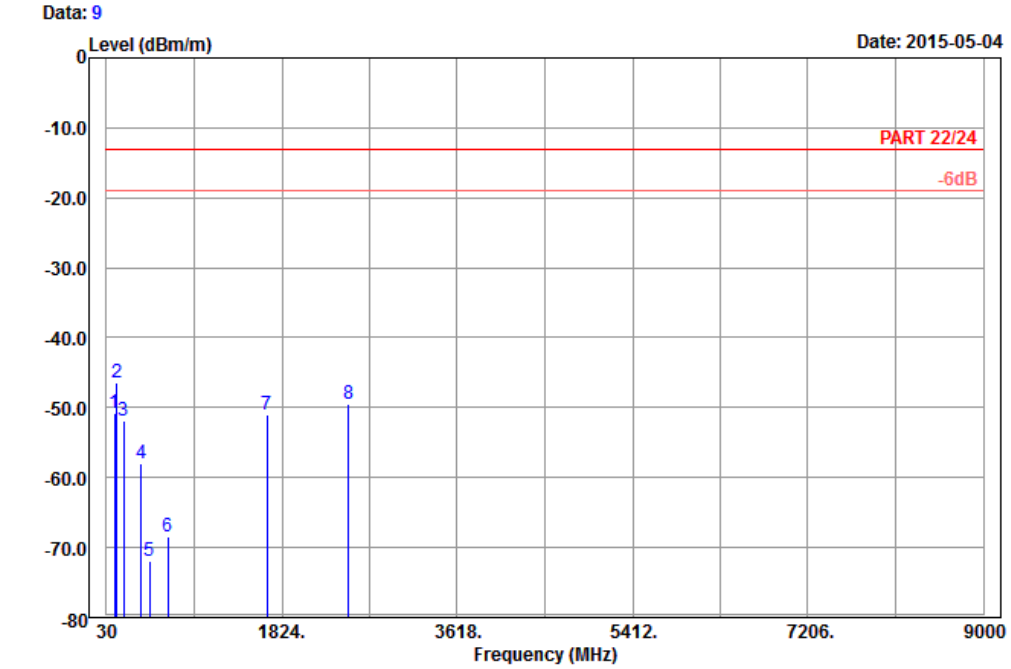
Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : LTE_Band 26_QPSK(1,37)_15M_CH26915
Tested by: Hwa Chiang
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	48.36	-47.75	-34.32	-13.00	-34.75	-13.43	Peak
2	101.28	-51.76	-41.76	-13.00	-38.76	-10.00	Peak
3	198.48	-56.75	-50.61	-13.00	-43.75	-6.14	Peak
4	419.70	-67.60	-64.41	-13.00	-54.60	-3.19	Peak
5	699.70	-68.16	-67.79	-13.00	-55.16	-0.37	Peak
6	958.70	-64.13	-69.26	-13.00	-51.13	5.13	Peak
7	1673.00	-57.75	-65.66	-13.00	-44.75	7.91	Peak
8	2509.50	-54.26	-65.54	-13.00	-41.26	11.28	Peak

MODE B

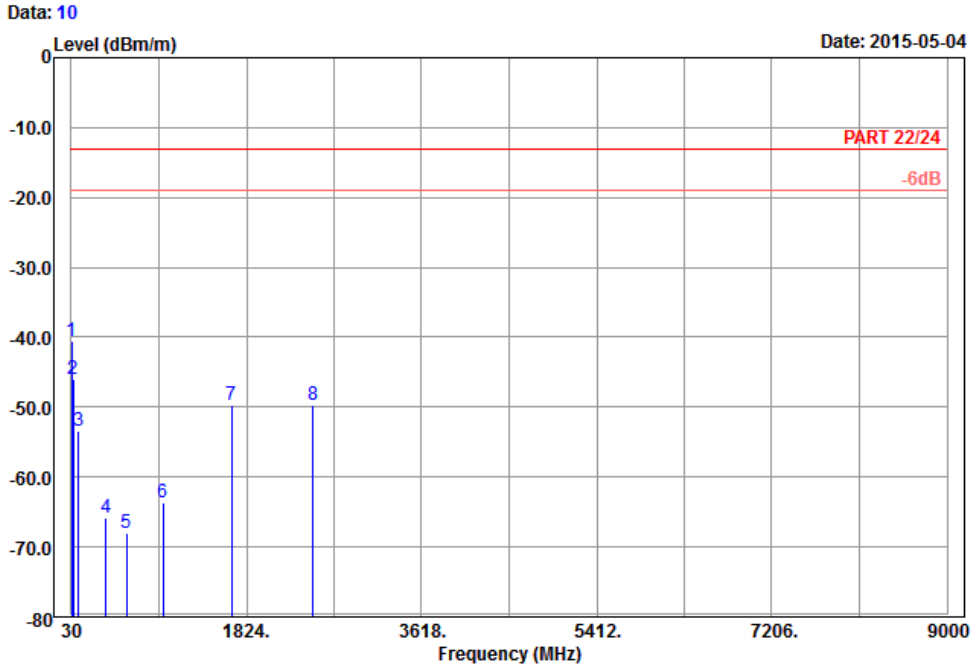
CDMA:

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : BC0_Link_CH384
Tested by: Hwa Chiang
Plane : Z

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	108.30	-50.83	-41.76	-13.00	-37.83	-9.07	Peak
2 pp	138.27	-46.45	-38.76	-13.00	-33.45	-7.69	Peak
3	209.28	-51.80	-45.75	-13.00	-38.80	-6.05	Peak
4	384.00	-58.04	-54.47	-13.00	-45.04	-3.57	Peak
5	472.20	-71.83	-67.35	-13.00	-58.83	-4.48	Peak
6	656.30	-68.52	-68.35	-13.00	-55.52	-0.17	Peak
7	1673.04	-50.91	-58.82	-13.00	-37.91	7.91	Peak
8	2509.56	-49.38	-60.66	-13.00	-36.38	11.28	Peak



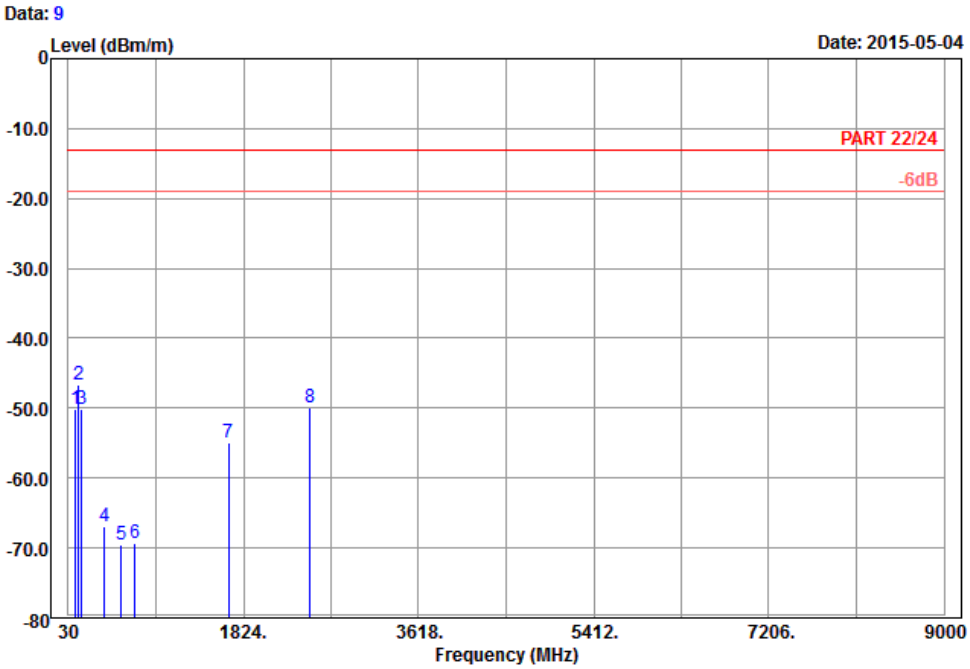
Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : BC0_Link_CH384
Tested by: Hwa Chiang
Plane : Z

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	31.62	-40.57	-29.81	-13.00	-27.57	-10.76	Peak
2	46.20	-46.08	-33.28	-13.00	-33.08	-12.80	Peak
3	103.98	-53.47	-43.82	-13.00	-40.47	-9.65	Peak
4	384.00	-65.91	-62.34	-13.00	-52.91	-3.57	Peak
5	598.90	-68.08	-68.43	-13.00	-55.08	0.35	Peak
6	972.70	-63.63	-68.81	-13.00	-50.63	5.18	Peak
7	1673.04	-49.71	-57.62	-13.00	-36.71	7.91	Peak
8	2509.56	-49.75	-61.03	-13.00	-36.75	11.28	Peak

LTE BAND 5

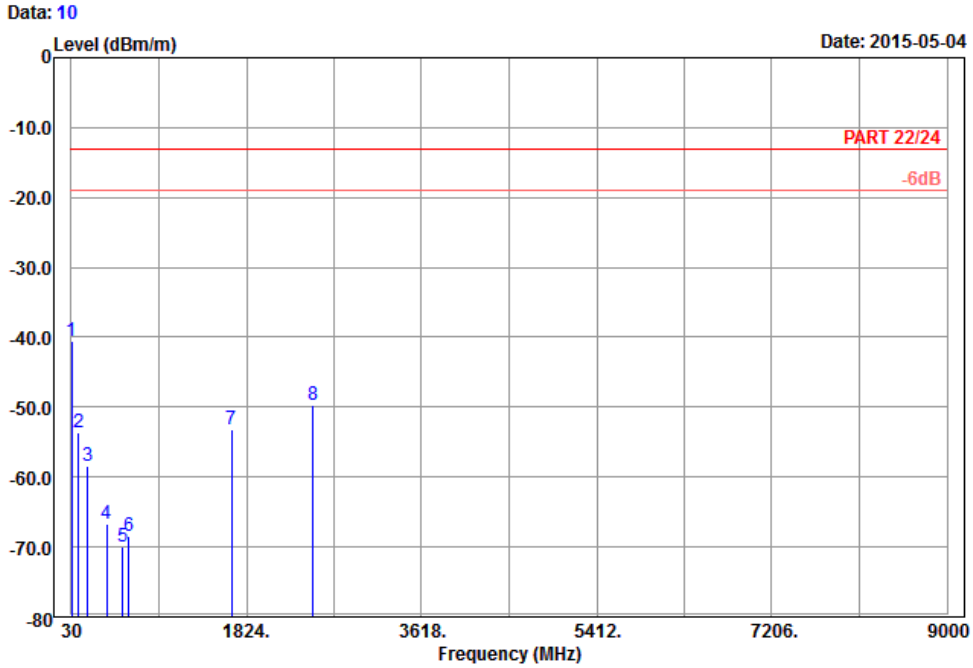
CHANNEL BANDWIDTH: 10MHz / QPSK

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 3m Horizontal
Remark : LTE_Band 5_QPSK(1,0)_10M_CH20525
Tested by: Harry Hsueh
Plane : Y

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	107.76	-50.08	-40.90	-13.00	-37.08	-9.18	Peak
2 pp	138.54	-46.57	-38.88	-13.00	-33.57	-7.69	Peak
3	163.38	-50.11	-42.83	-13.00	-37.11	-7.28	Peak
4	400.80	-66.96	-64.20	-13.00	-53.96	-2.76	Peak
5	573.70	-69.45	-68.79	-13.00	-56.45	-0.66	Peak
6	709.50	-69.33	-68.77	-13.00	-56.33	-0.56	Peak
7	1673.00	-55.03	-62.94	-13.00	-42.03	7.91	Peak
8	2509.50	-49.86	-61.14	-13.00	-36.86	11.28	Peak



Site : 966 chamber 1
Condition: PART 22/24 3m Vertical
Remark : LTE_Band 5_QPSK(1,0)_10M_CH20525
Tested by: Harry Hsueh
Plane : Y

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	31.89	-40.50	-29.74	-13.00	-27.50	-10.76	Peak
2	104.79	-53.65	-44.12	-13.00	-40.65	-9.53	Peak
3	200.10	-58.33	-52.15	-13.00	-45.33	-6.18	Peak
4	396.60	-66.70	-63.80	-13.00	-53.70	-2.90	Peak
5	557.60	-70.02	-68.68	-13.00	-57.02	-1.34	Peak
6	619.90	-68.46	-68.67	-13.00	-55.46	0.21	Peak
7	1673.00	-53.25	-61.16	-13.00	-40.25	7.91	Peak
8	2509.50	-49.71	-60.99	-13.00	-36.71	11.28	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/Telecom Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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---