

FCC Test Report

(PART 90S)

Report No.: RF150727C10-4

FCC ID: NM82PQ9300

Test Model: 2PQ9300

Received Date: Jul. 27, 2015

Test Date: Aug. 02, 2015 ~ Sep. 02, 2015

Issued Date: Sep. 17, 2015

Applicant: HTC Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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(R.O.C)

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Release Control Record

Issue No.	Description	Date Issued
RF150727C10-4	Original Release	Sep. 17, 2015

1 Certificate of Conformity

Product: Smartphone

Brand: HTC

Test Model: 2PQ9300

Sample Status: Identical Prototype

Applicant: HTC Corporation

Test Date: Aug. 02, 2015 ~ Sep. 02, 2015

Standards: FCC Part 90, Subpart S

The above equipment 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:

Sep. 17, 2015

Ivonne Wu / Supervisor

Approved by :



Date:

Sep. 17, 2015

Kay Wu / Supervisor

2 Summary of Test Results

Applied Standard: FCC Part 90 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 90.635 (b)	Effective Radiated Power	PASS	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 90.209	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	PASS	Meet the requirement of limit. Minimum passing margin is -31.72dB at 2457.00MHz.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

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, 2015	Sep. 02, 2016
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
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Radio Communication Analyzer Anritsu	MT8820C	6201240432	Jul. 06, 2015	Jul. 05, 2017

- 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 preamplifier (model: EMC 184045) 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 IC7450F-10.

3 General Information

3.1 General Description of EUT

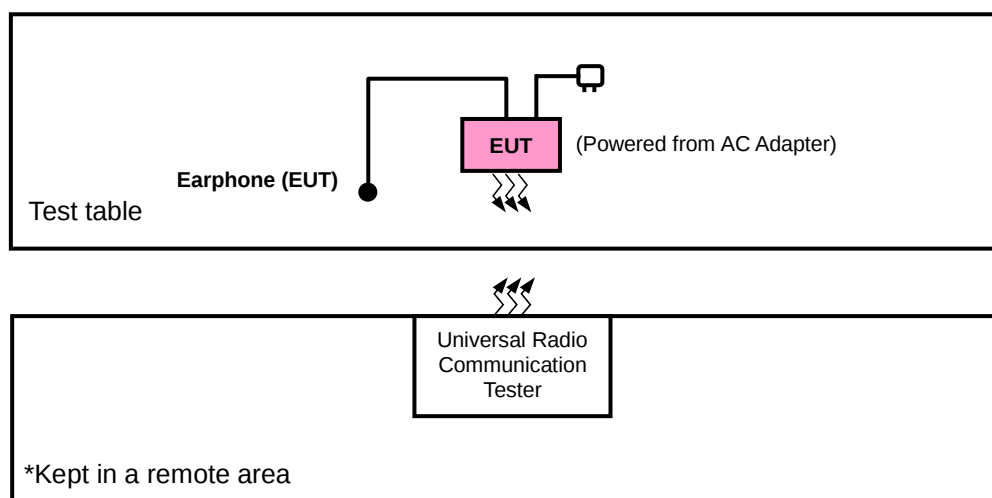
Product	Smartphone	
Brand	HTC	
Test Model	2PQ9300	
Status of EUT	Identical Prototype	
Power Supply Rating	5.0Vdc (adapter or host equipment) 3.85Vdc (Li-ion battery)	
Modulation Type	CDMA	QPSK, OQPSK, HPSK
	LTE	QPSK, 16QAM
Frequency Range	CDMA BC10	817.9 ~ 823.1 MHz
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	814.7 ~ 823.3 MHz
	LTE Band 26 (Channel Bandwidth: 3MHz)	815.5 ~ 822.5 MHz
	LTE Band 26 (Channel Bandwidth: 5MHz)	816.5 ~ 821.5 MHz
	LTE Band 26 (Channel Bandwidth: 10MHz)	819 MHz
Emission Designator	CDMA BC10	1M27F9W
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	1M09G7D
	LTE Band 26 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE Band 26 (Channel Bandwidth: 5MHz)	4M49G7D
	LTE Band 26 (Channel Bandwidth: 10MHz)	8M96G7D
Max. ERP Power	CDMA BC10	70.95mW
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	47.86mW
	LTE Band 26 (Channel Bandwidth: 3MHz)	48.87mW
	LTE Band 26 (Channel Bandwidth: 5MHz)	50.70mW
	LTE Band 26 (Channel Bandwidth: 10MHz)	50.48mW
Antenna Type	Fixed Internal Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

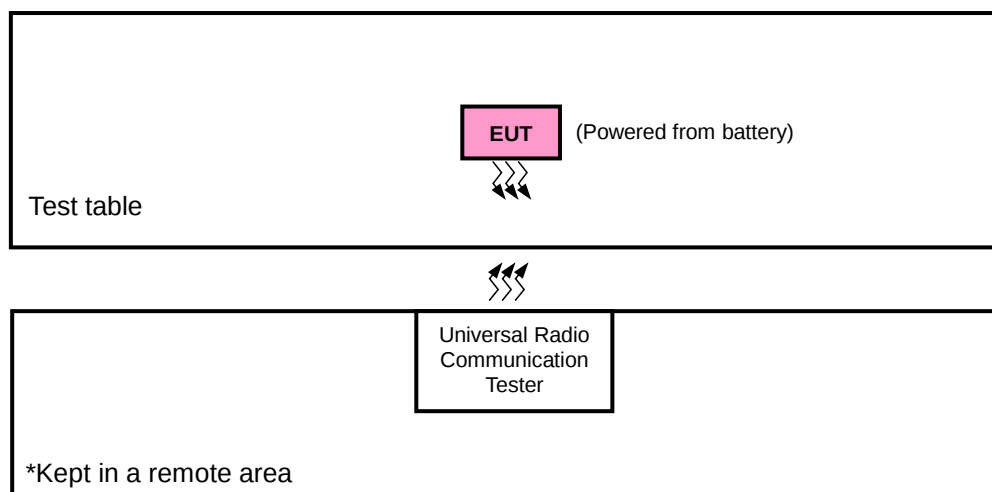
1. The EUT's accessories list refers to Ext. Pho.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Configuration of System Under Test

<Radiated Emission Test>



<E.R.P. Test>



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3 Test Mode Applicability and Tested Channel Detail

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

Band	ERP	Radiated Emission
CDMA	X-plane	X-axis
LTE Band 26	Y-plane	Y-axis

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, 684	1xRTT
-	CONDUCTED EMISSION	476 to 684	580	1xRTT
-	RADIATED EMISSION	476 to 684	580	1xRTT

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM	1 RB / 2 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM	1 RB / 7 RB Offset
		26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
-	Frequency Stability	26697 to 26783	26740	1.4MHz	QPSK	1 RB / 2 RB Offset
		26705 to 26775	26740	3MHz	QPSK	1 RB / 7 RB Offset
		26715 to 26765	26740	5MHz	QPSK	1 RB / 12 RB Offset
		26740	26740	10MHz	QPSK	1 RB / 24 RB Offset
-	Occupied Bandwidth	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Emission Mask	26697 to 26783	26697, 26783	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		26705 to 26775	26705, 26775	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26715 to 26765	26715, 26765	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26740	26740	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Conducted Emission	26697 to 26783	26740	1.4MHz	QPSK	1 RB / 2 RB Offset
		26705 to 26775	26740	3MHz	QPSK	1 RB / 7 RB Offset
		26715 to 26765	26740	5MHz	QPSK	1 RB / 12 RB Offset
		26740	26740	10MHz	QPSK	1 RB / 24 RB Offset
-	Radiated Emission	26740	26740	10MHz	QPSK	1 RB / 24 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	25deg. C, 65%RH	3.85Vdc	Anson Lin
Frequency Stability	25deg. C, 65%RH	3.85Vdc	Howard Kao
Occupied Bandwidth	25deg. C, 65%RH	3.85Vdc	Howard Kao
Band Edge	25deg. C, 65%RH	3.85Vdc	Howard Kao
Peak to Average Ratio	25deg. C, 65%RH	3.85Vdc	Howard Kao
Condcudeted Emission	25deg. C, 65%RH	3.85Vdc	Howard Kao
Radiated Emission	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin

3.4 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

3.5 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 27

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 / ERP Measurement:

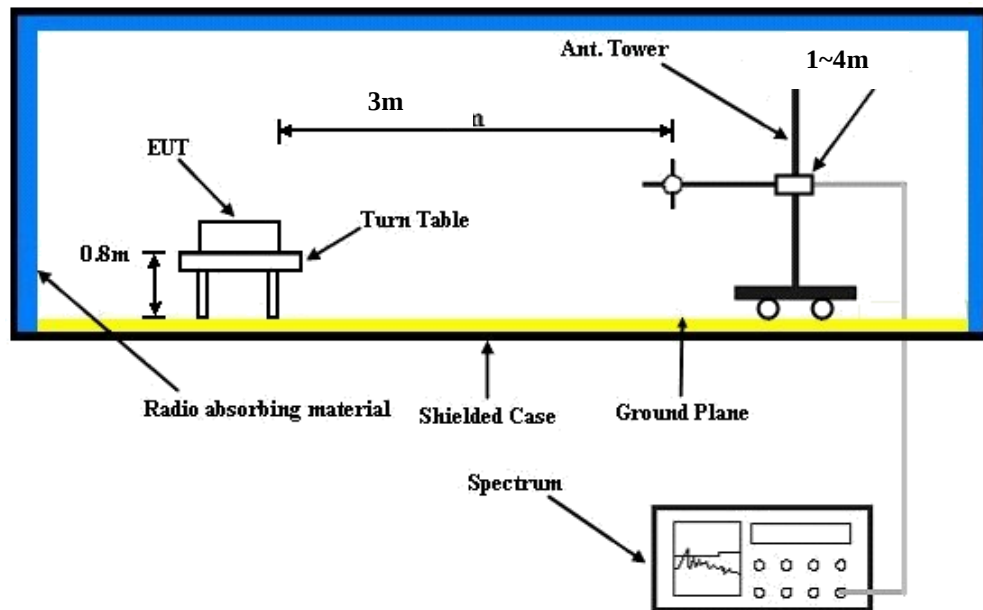
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for CDMA and 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi}$.

Conducted Power Measurement:

- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. 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:



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

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	24.10	24.01	24.09
RC3+SO55	24.13	24.04	24.12
RC3+SO32(+ F-SCH)	24.12	24.03	24.11
RC3+SO32(+SCH)	24.08	23.99	24.07
RTAP 153.6	24.11	24.02	24.10
RETAP 4096	24.11	24.02	24.10

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 26697	Mid Ch 26740	High Ch 26783		Low Ch 26697	Mid Ch 26740	High Ch 26783	
			814.7 MHz	819.0 MHz	823.3 MHz		814.7 MHz	819.0 MHz	823.3 MHz	
26 / 1.4M	1	0	22.04	22.10	22.03	0	21.03	21.09	21.02	1
	1	2	22.95	23.01	22.94	0	21.94	22.00	21.93	1
	1	5	21.95	22.01	21.94	0	20.94	21.00	20.93	1
	3	0	21.25	21.31	21.24	0	20.24	20.30	20.23	1
	3	1	21.22	21.28	21.21	0	20.21	20.27	20.20	1
	3	3	21.09	21.15	21.08	0	20.08	20.14	20.07	1
	6	0	21.17	21.23	21.16	1	20.16	20.22	20.15	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 26705	Mid Ch 26740	High Ch 26775		Low Ch 26705	Mid Ch 26740	High Ch 26775	
			815.5 MHz	819.0 MHz	822.5 MHz		815.5 MHz	819.0 MHz	822.5 MHz	
26 / 3M	1	0	22.13	22.19	22.15	0	21.12	21.18	21.14	1
	1	7	23.04	23.10	23.06	0	22.03	22.09	22.05	1
	1	14	22.04	22.10	22.06	0	21.03	21.09	21.05	1
	8	0	21.34	21.40	21.36	1	20.33	20.39	20.35	2
	8	3	21.31	21.37	21.33	1	20.30	20.36	20.32	2
	8	7	21.18	21.24	21.20	1	20.17	20.23	20.19	2
	15	0	21.26	21.32	21.28	1	20.25	20.31	20.27	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 26715	Mid Ch 26740	High Ch 26765		Low Ch 26715	Mid Ch 26740	High Ch 26765	
			816.5 MHz	819.0 MHz	821.5 MHz		816.5 MHz	819.0 MHz	821.5 MHz	
26 / 5M	1	0	22.20	22.12	22.09	0	21.19	21.11	21.08	1
	1	12	23.10	23.11	23.00	0	22.10	22.02	21.99	1
	1	24	22.11	22.06	22.00	0	21.10	21.02	20.99	1
	12	0	21.41	21.33	21.30	1	20.40	20.32	20.29	2
	12	6	21.38	21.30	21.27	1	20.37	20.29	20.26	2
	12	13	21.25	21.17	21.14	1	20.24	20.16	20.13	2
	25	0	21.33	21.25	21.22	1	20.32	20.24	20.21	2

Band / BW	RB Size	RB Offset	QPSK	3GPP MPR (dB)	16QAM	3GPP MPR (dB)
			Mid Ch 26740		Mid Ch 26740	
			819.0 MHz		819.0 MHz	
26 / 10M	1	0	22.29	0	21.28	1
	1	24	23.20	0	22.19	1
	1	49	22.20	0	21.19	1
	25	0	21.50	1	20.49	2
	25	12	21.47	1	20.46	2
	25	25	21.34	1	20.33	2
	50	0	21.42	1	20.41	2

ERP Power (dBm)

CDMA							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	476	817.9	-11.96	32.62	18.51	70.95	H
	580	820.5	-12.02	32.52	18.35	68.37	
	684	823.1	-12.10	32.65	18.40	69.14	
	476	817.9	-25.17	32.76	5.44	3.50	V
	580	820.5	-24.97	32.39	5.27	3.37	
	684	823.1	-25.04	32.54	5.35	3.43	

LTE Band 26							
Channel Bandwidth: 1.4MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26697	814.7	-13.38	32.02	16.49	44.57	H
	26740	819.0	-13.80	32.11	16.16	41.30	
	26783	823.3	-13.23	32.18	16.80	47.86	
	26697	814.7	-26.26	32.5	4.09	2.56	V
	26740	819.0	-26.19	32.51	4.17	2.61	
	26783	823.3	-26.12	32.47	4.20	2.63	

LTE Band 26							
Channel Bandwidth: 1.4MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26697	814.7	-14.29	32.02	15.58	36.14	H
	26740	819.0	-14.70	32.11	15.26	33.57	
	26783	823.3	-14.09	32.18	15.94	39.26	
	26697	814.7	-27.19	32.5	3.16	2.07	V
	26740	819.0	-27.06	32.51	3.30	2.14	
	26783	823.3	-26.94	32.47	3.38	2.18	

LTE Band 26							
Channel Bandwidth: 3MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26705	815.5	-13.48	32.02	16.39	43.55	H
	26740	819.0	-13.87	32.11	16.09	40.64	
	26775	822.5	-13.14	32.18	16.89	48.87	
	26705	815.5	-26.05	32.5	4.30	2.69	V
	26740	819.0	-26.03	32.51	4.33	2.71	
	26775	822.5	-26.27	32.47	4.05	2.54	

LTE Band 26							
Channel Bandwidth: 3MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26705	815.5	-14.48	32.02	15.39	34.59	H
	26740	819.0	-14.82	32.11	15.14	32.66	
	26775	822.5	-14.52	32.18	15.51	35.56	
	26705	815.5	-27.02	32.5	3.33	2.15	V
	26740	819.0	-26.96	32.51	3.40	2.19	
	26775	822.5	-27.04	32.47	3.28	2.13	

LTE Band 26							
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26715	816.5	-12.97	32.04	16.92	49.20	H
	26740	819.0	-12.91	32.11	17.05	50.70	
	26765	821.5	-12.73	31.79	16.91	49.09	
	26715	816.5	-25.51	32.52	4.86	3.06	V
	26740	819.0	-25.87	32.51	4.49	2.81	
	26765	821.5	-25.09	32.17	4.93	3.11	

LTE Band 26							
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26715	816.5	-14.79	32.04	15.10	32.36	H
	26740	819.0	-14.47	32.11	15.49	35.40	
	26765	821.5	-14.00	31.79	15.64	36.64	
	26715	816.5	-27.32	32.52	3.05	2.02	V
	26740	819.0	-26.73	32.51	3.63	2.31	
	26765	821.5	-26.86	32.17	3.16	2.07	

LTE Band 26							
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26740	819.0	-12.93	32.11	17.03	50.48	H
	26740	819.0	-26.25	32.51	4.11	2.58	V

LTE Band 26							
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
Y	26740	819.0	-14.04	32.11	15.92	39.08	H
	26740	819.0	-26.49	32.51	3.87	2.44	V

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stability Measurement

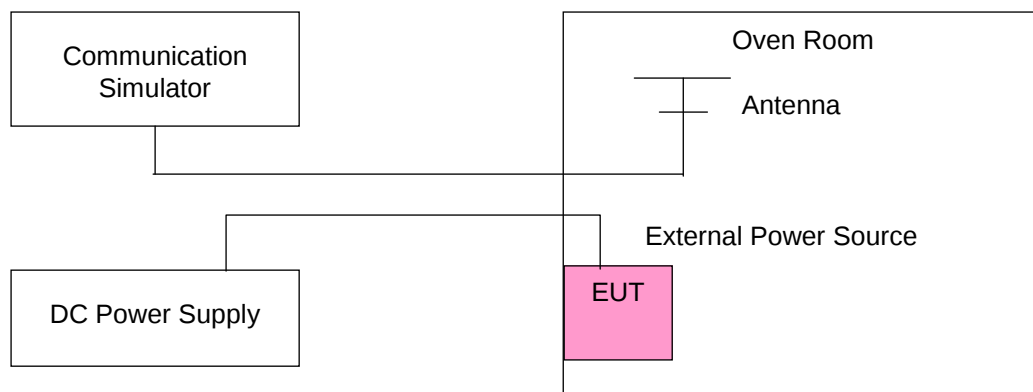
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 Test Procedure

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °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

Voltage (Volts)	Frequency Error (ppm)					Limit (ppm)
	CDMA	LTE Band 26				
		1.4MHz	3MHz	5MHz	10MHz	
3.85	-0.005	-0.0029	0.0021	-0.0039	-0.0042	2.5
3.6	0.012	-0.0038	-0.0032	0.0009	-0.0031	2.5
4.40	0.021	-0.0020	0.0038	-0.0034	-0.0021	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.40Vdc.

Frequency Error vs. Temperature

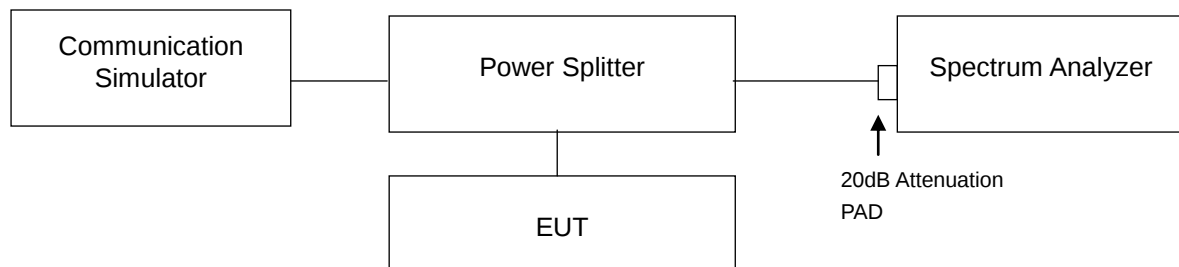
Temp. (°C)	Frequency Error (ppm)					Limit (ppm)
	CDMA	LTE Band 26				
		1.4MHz	3MHz	5MHz	10MHz	
-30	-0.020	0.0056	-0.0018	-0.0032	-0.0016	2.5
-20	0.026	-0.0038	0.0020	-0.0044	-0.0039	2.5
-10	-0.005	-0.0029	-0.0040	0.0026	0.0004	2.5
0	0.015	-0.0005	0.0018	-0.0021	0.0005	2.5
10	-0.020	-0.0035	0.0012	-0.0018	-0.0034	2.5
20	-0.012	0.0087	0.0001	-0.0024	0.0004	2.5
30	-0.021	0.0045	0.0006	0.0013	-0.0013	2.5
40	-0.013	-0.0070	-0.0037	-0.0015	0.0007	2.5
50	0.028	-0.0076	-0.0016	-0.0017	-0.0060	2.5
60	-0.012	-0.0046	-0.0013	-0.0027	-0.0021	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

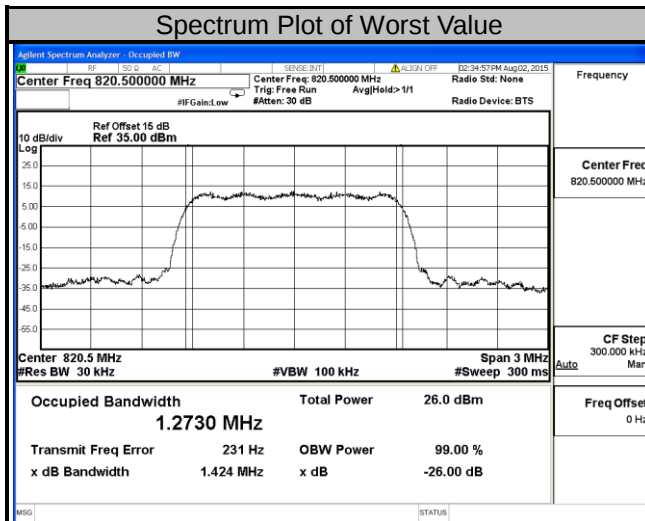
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

4.3.2 Test Setup



4.3.3 Test Result

CDMA		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
476	817.9	1.2728
580	820.5	1.2730
684	823.1	1.2711



LTE Band 26

Channel Bandwidth: 1.4MHz

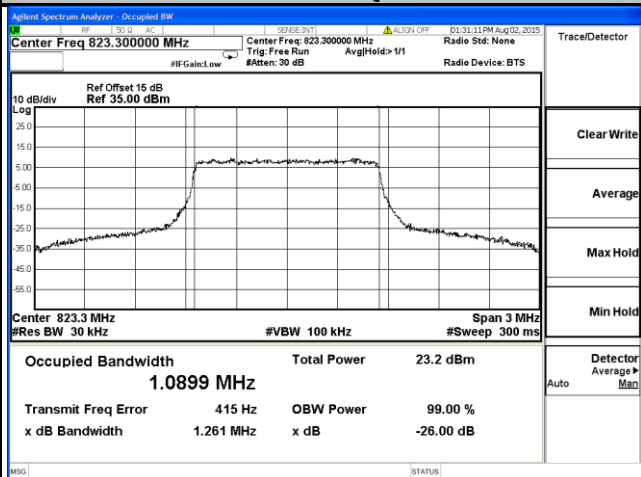
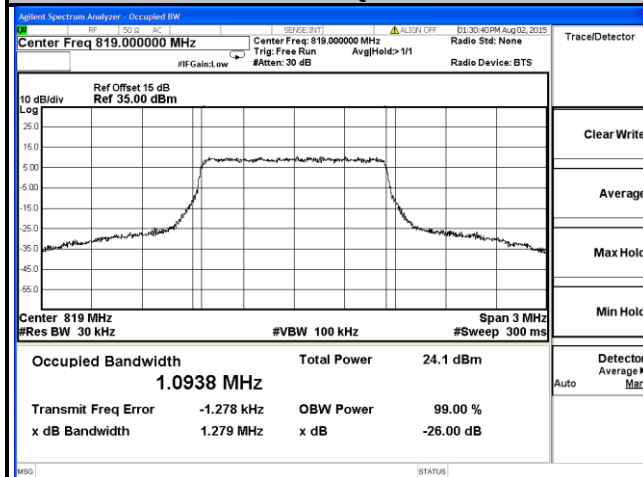
Channel Bandwidth: 3MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
26697	814.7	1.0929	1.0895	26705	815.5	2.7006	2.6962
26740	819.0	1.0938	1.0893	26740	819.0	2.6973	2.6952
26783	823.3	1.0900	1.0899	26775	822.5	2.6949	2.6965

Spectrum Plot of Worst Value

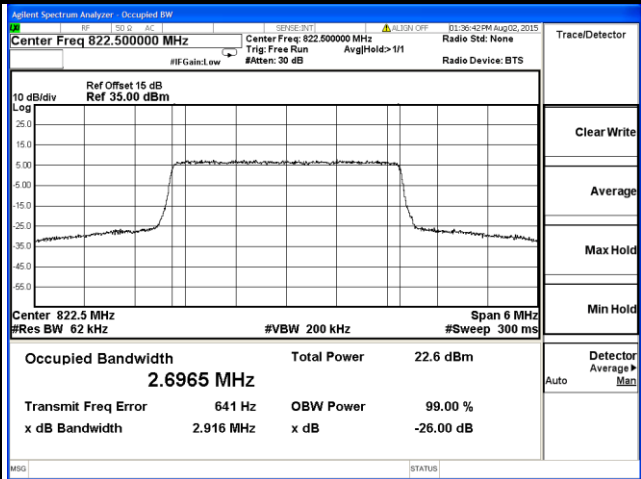
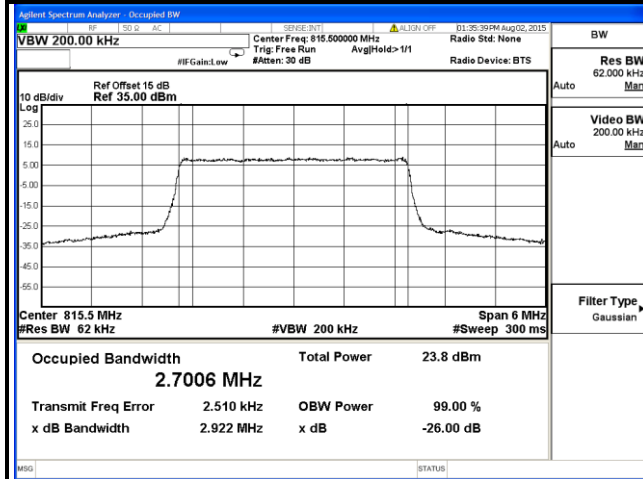
1.4MHz / QPSK

1.4MHz / 16QAM

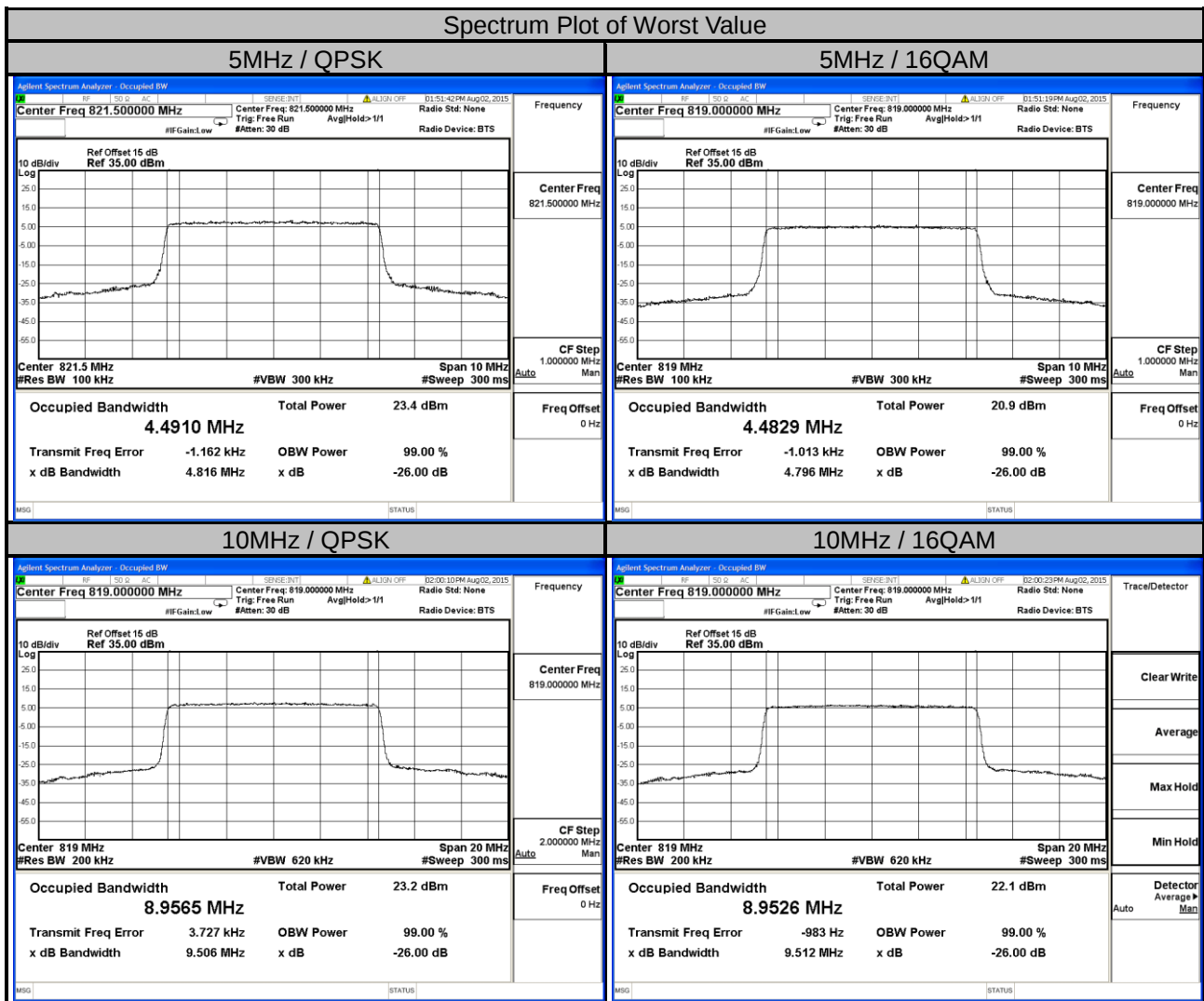


3MHz / QPSK

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
26715	816.5	4.4875	4.4796	26740	819.0	8.9565	8.9526
26740	819.0	4.4865	4.4829				
26765	821.5	4.4910	4.4827				

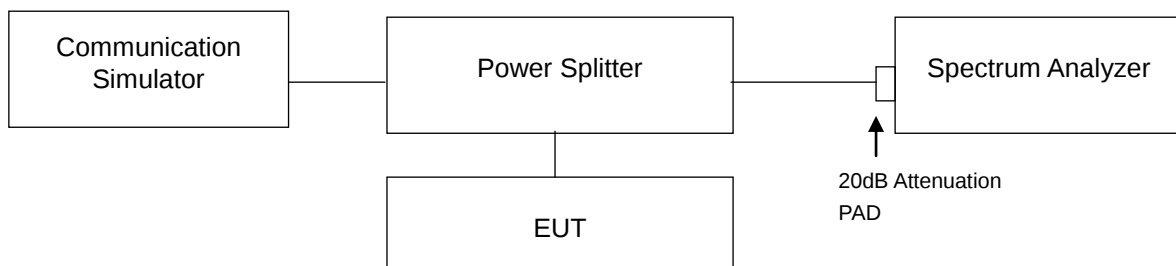


4.4 Emission Mask Measurement

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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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.

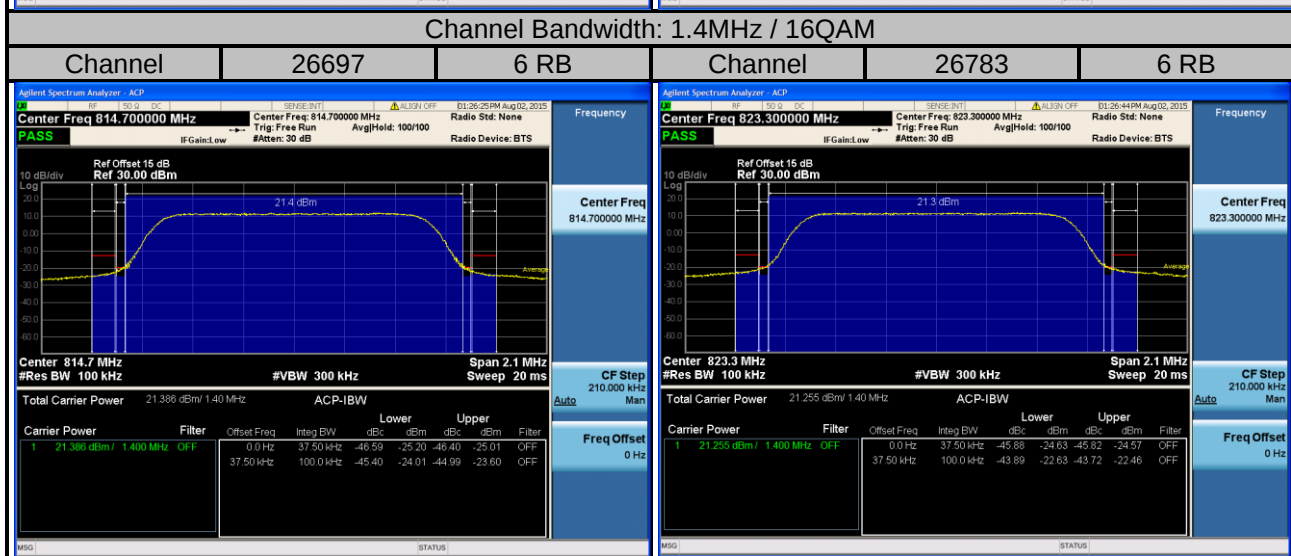
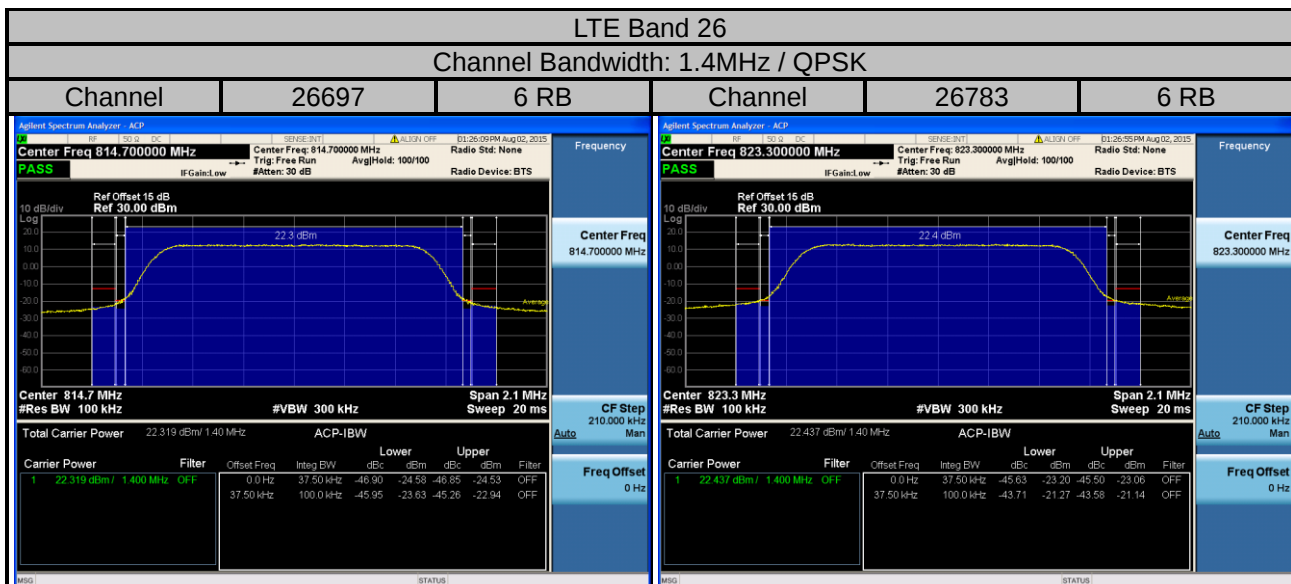
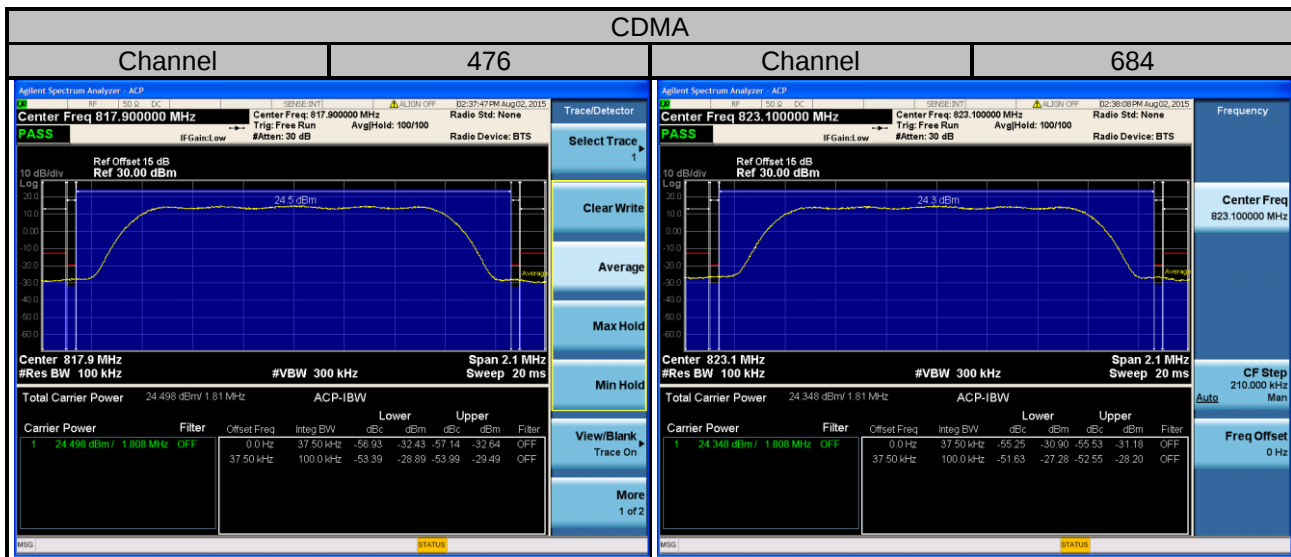
4.4.2 Test Setup

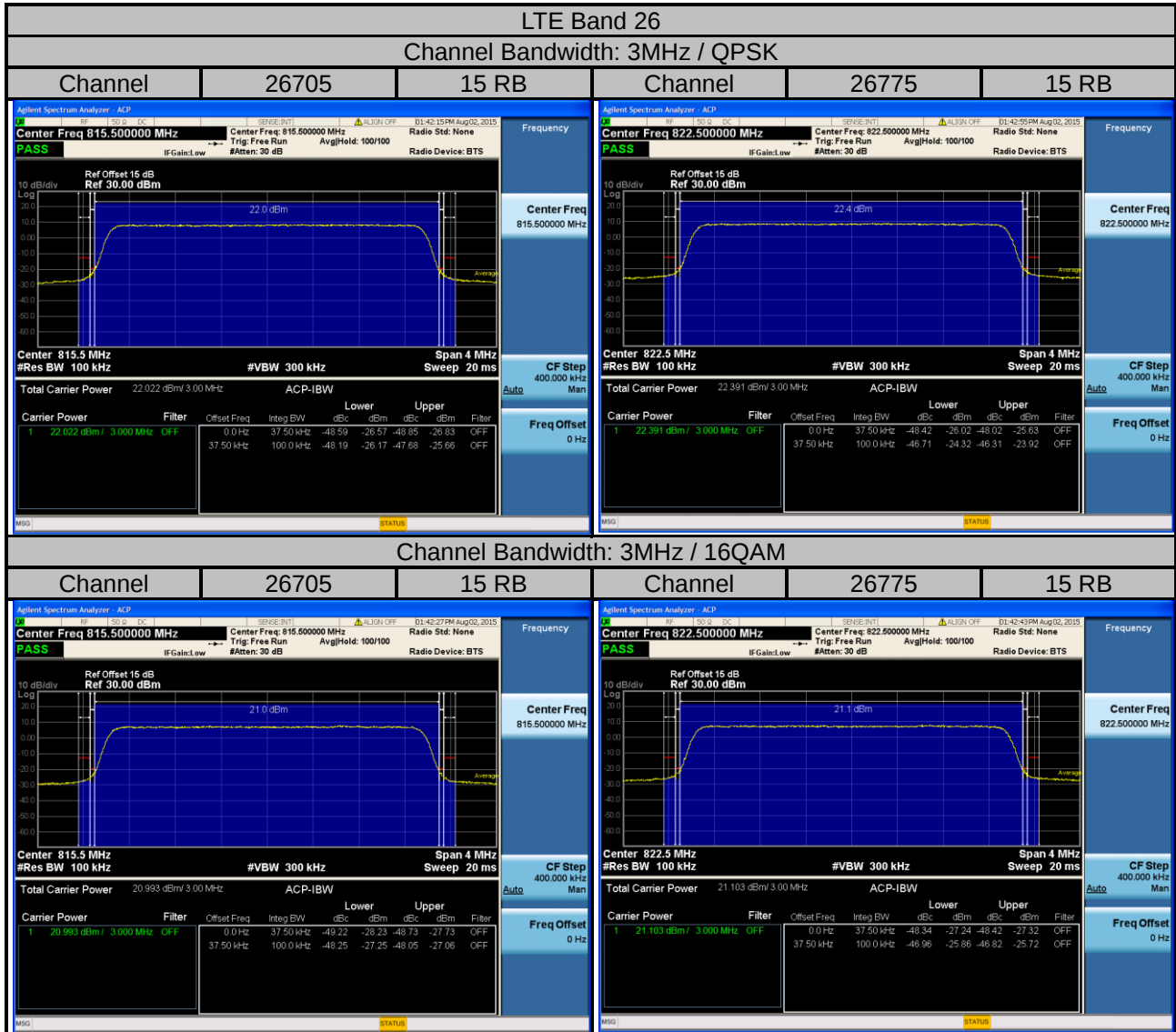


4.4.3 Test Procedures

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

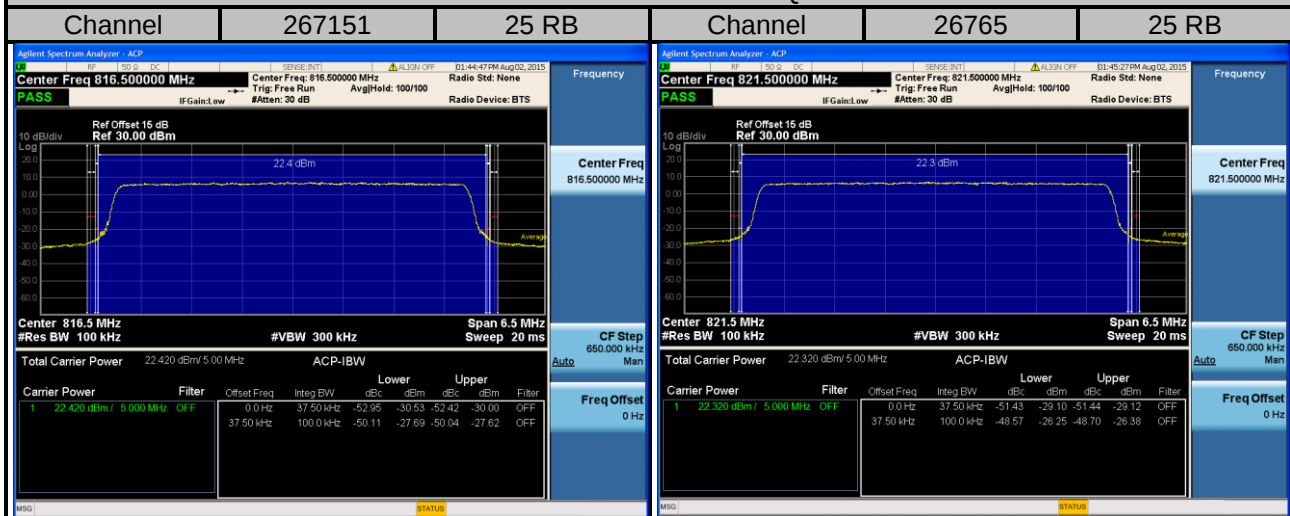
4.4.4 Test Results



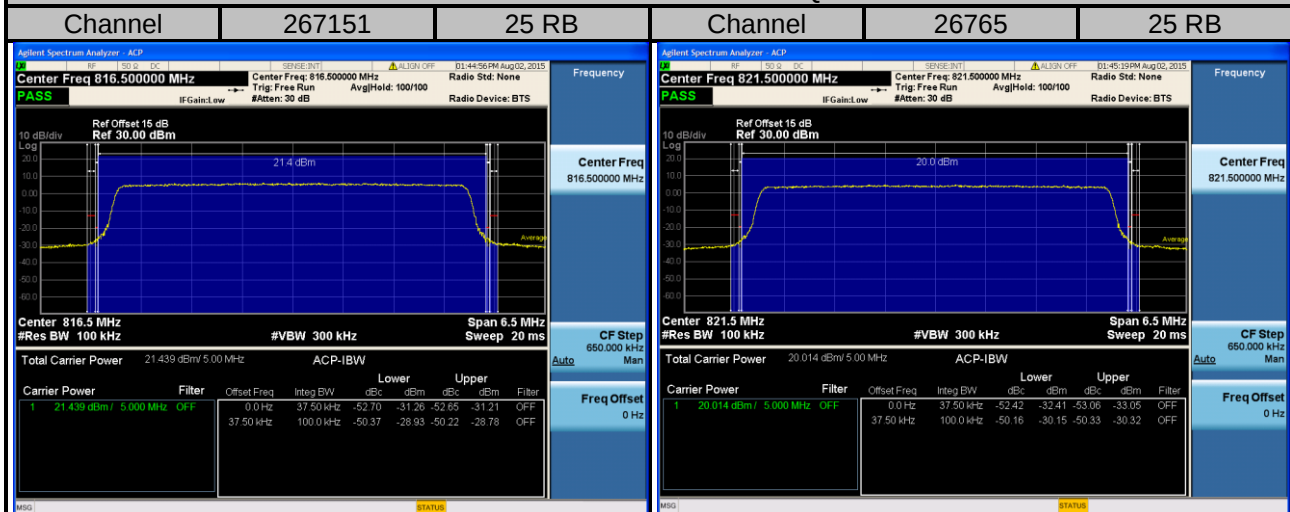


LTE Band 26

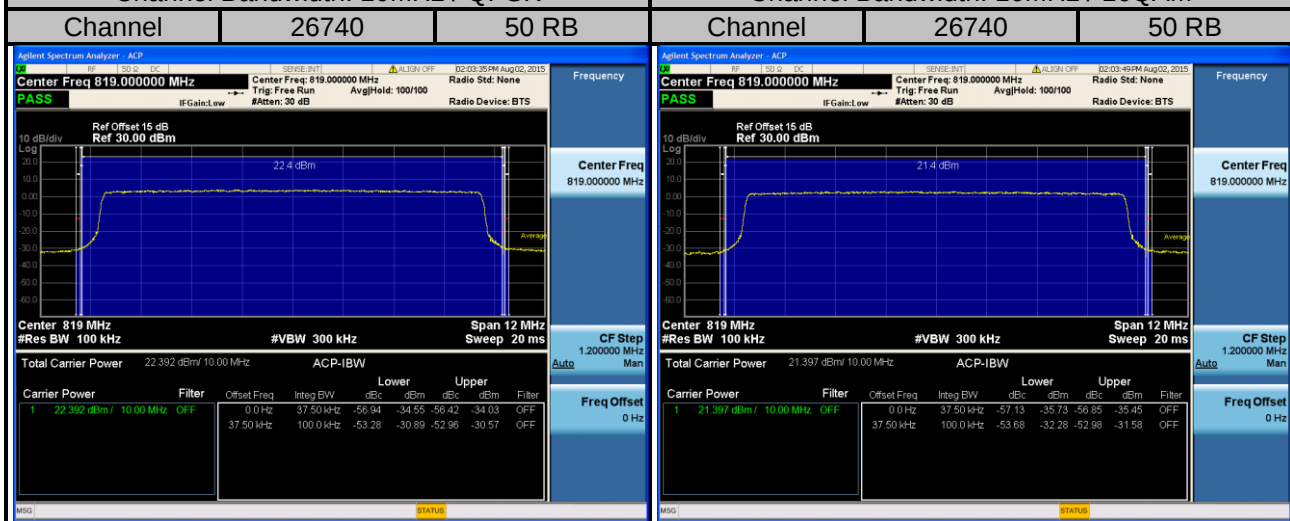
Channel Bandwidth: 5MHz / QPSK



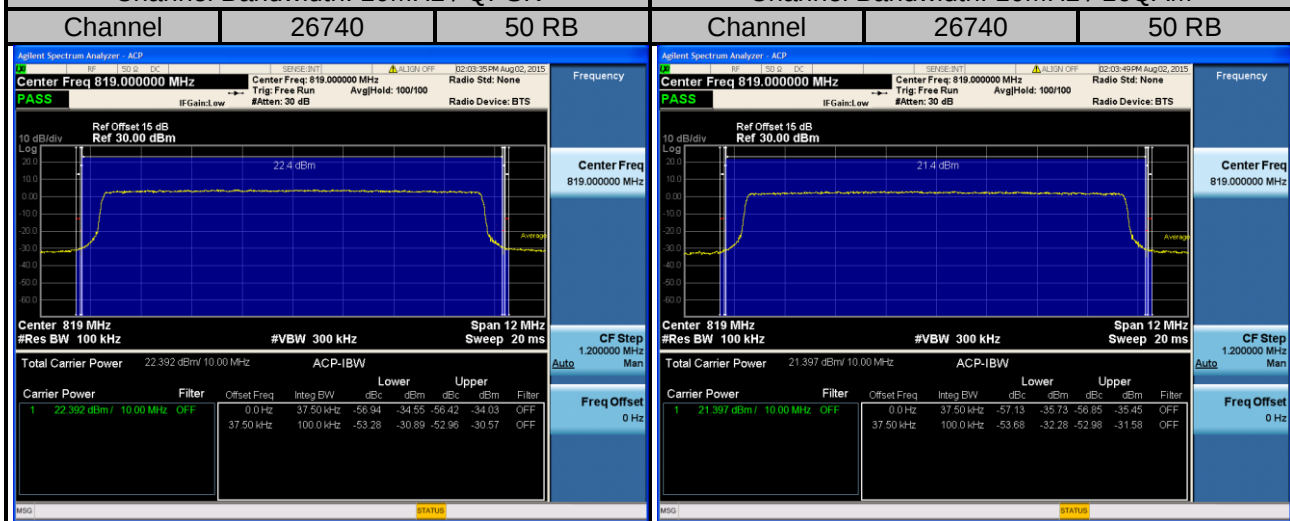
Channel Bandwidth: 5MHz / 16QAM



Channel Bandwidth: 10MHz / QPSK



Channel Bandwidth: 10MHz / 16QAM

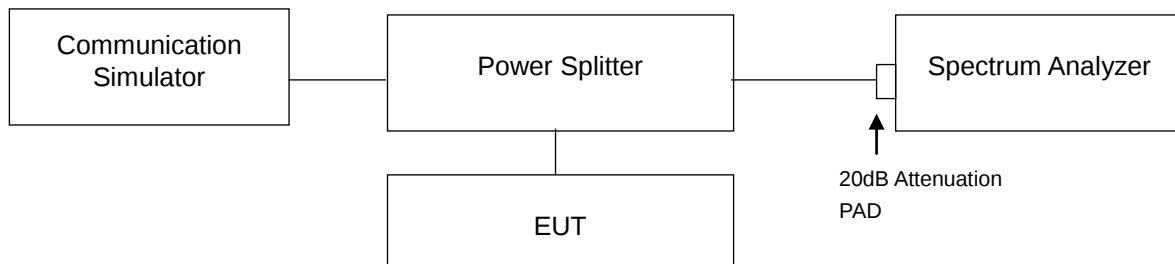


4.5 Conducted Spurious Emissions

4.5.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -13dBm.

4.5.2 Test Setup

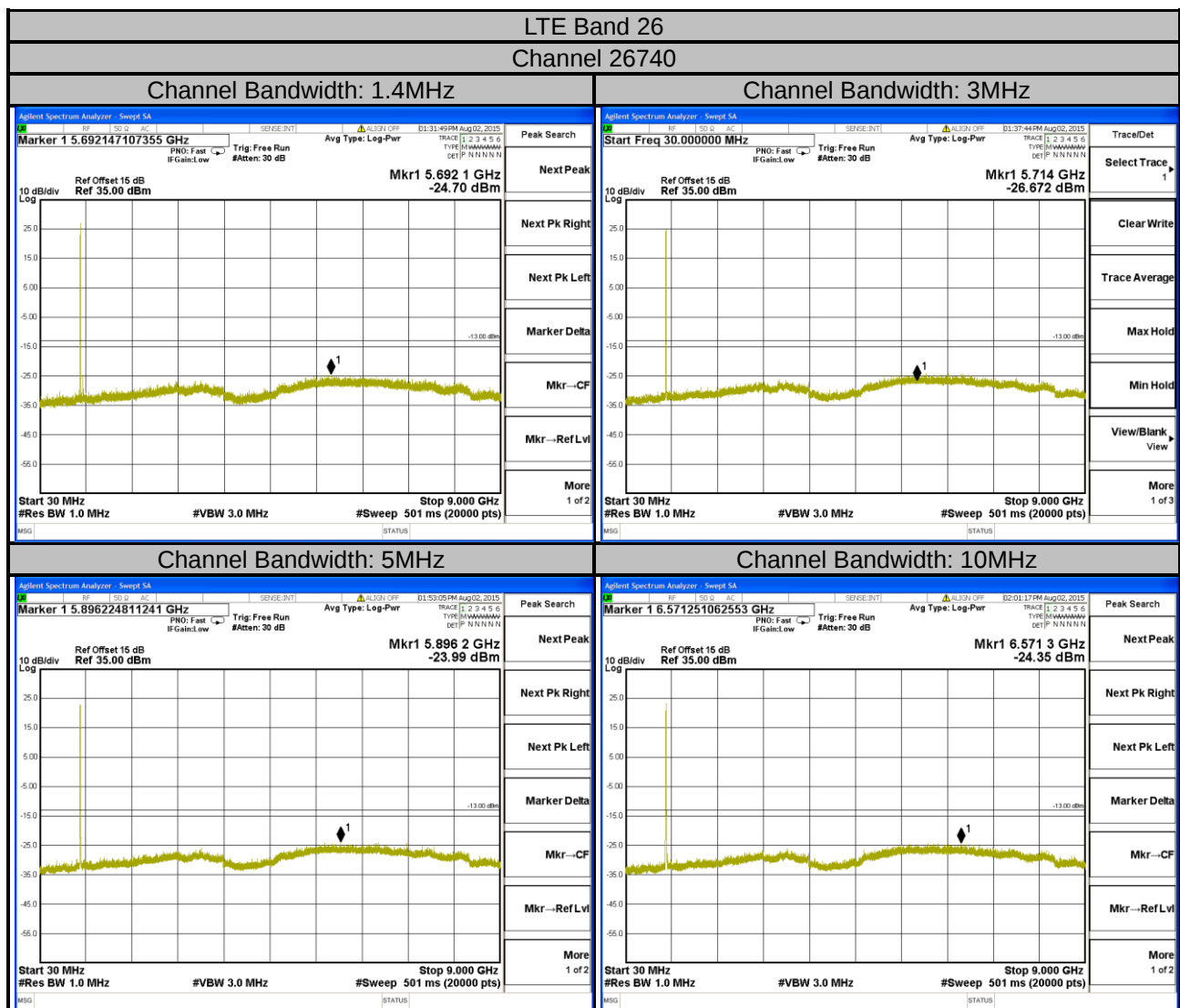
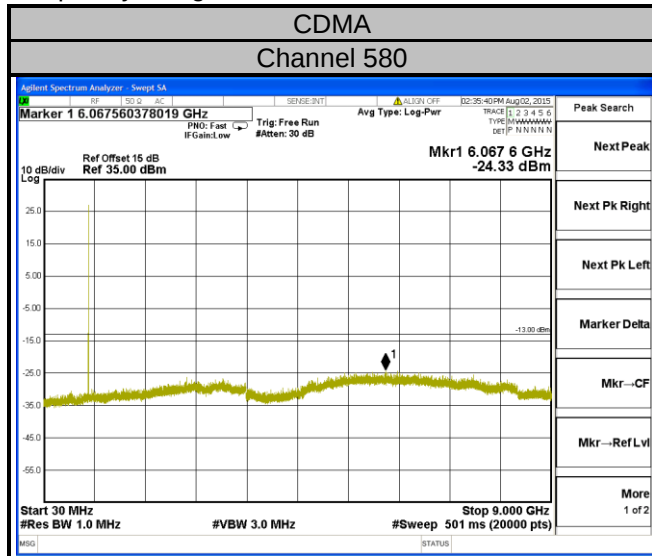


4.5.3 Test Procedure

- 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 are used for conducted emission measurement.

4.5.4 Test Results

Frequency Range: 30MHz~8GHz



4.6 Radiated Emission Measurement

4.6.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm.

4.6.2 Test Procedure

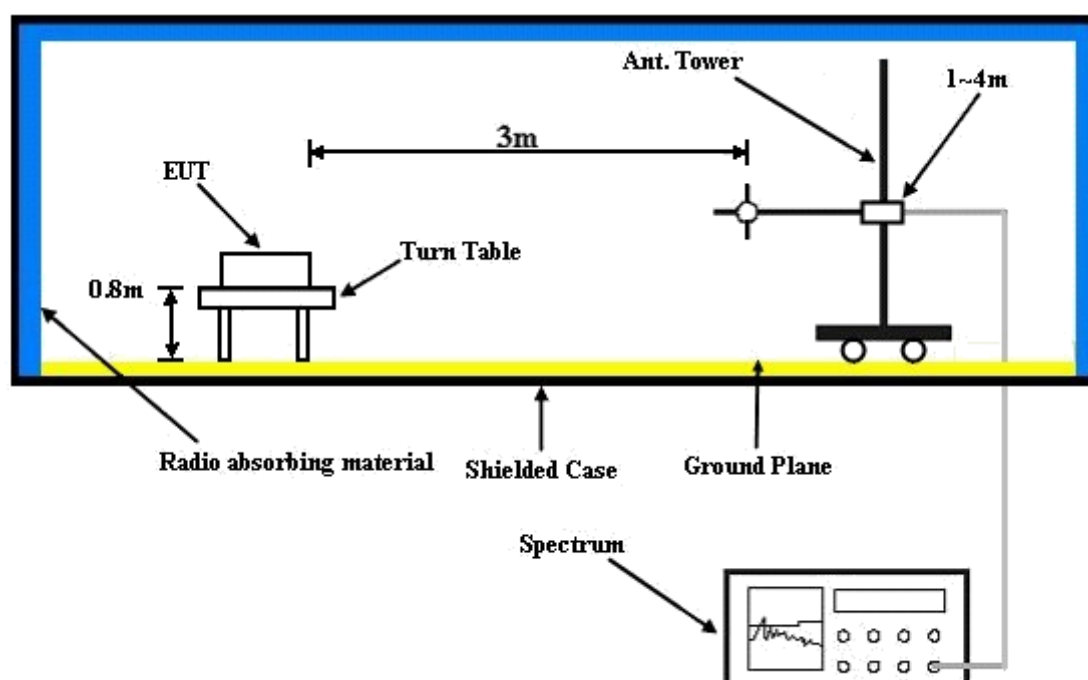
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- 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
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi.}$

NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

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

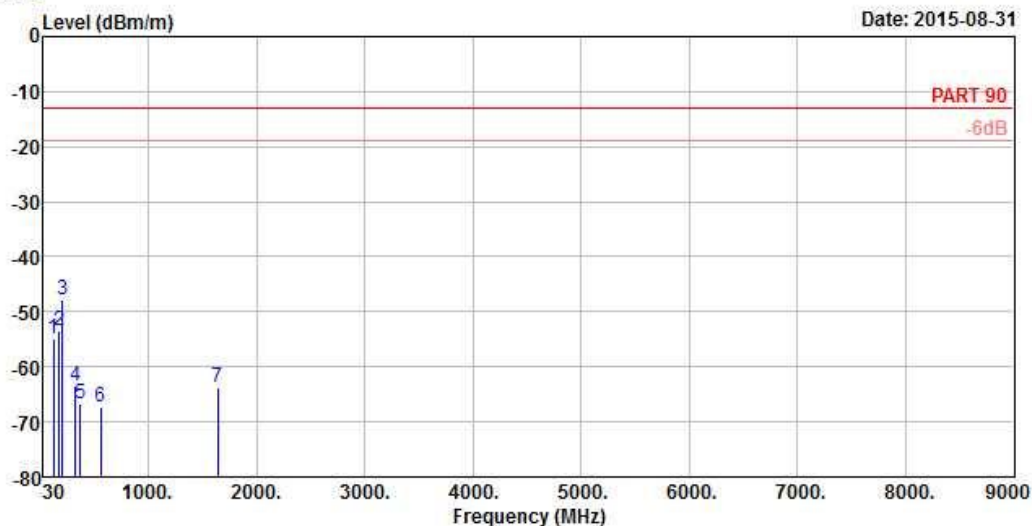
CDMA:



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 Chamber 5
Condition: PART 90 3m HORIZONTAL
Remark : CDMA 2000 BC10
Tested by: Anson Lin
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	125.85	-54.94	-45.79	-13.00	-41.94	-9.15	Peak
2	176.88	-53.29	-46.57	-13.00	-40.29	-6.72	Peak
3 pp	208.20	-47.73	-40.06	-13.00	-34.73	-7.67	Peak
4	324.50	-63.53	-56.90	-13.00	-50.53	-6.63	Peak
5	368.60	-66.62	-60.49	-13.00	-53.62	-6.13	Peak
6	559.00	-67.44	-64.95	-13.00	-54.44	-2.49	Peak
7	1640.65	-63.66	-48.93	-13.00	-50.66	-14.73	Peak

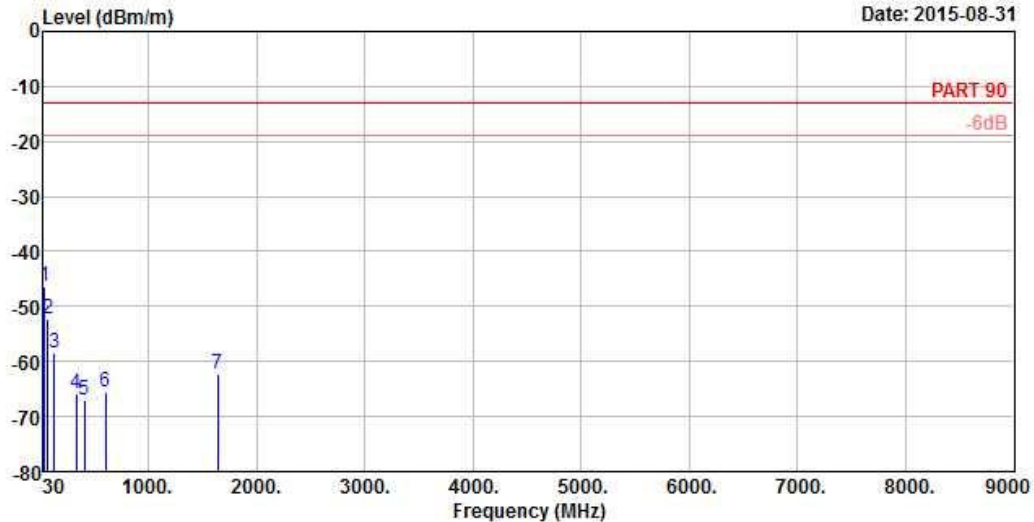


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2015-08-31



Site : 966 Chamber 5
Condition: PART 90 3m VERTICAL
Remark : CDMA 2000 BC10
Tested by: Anson Lin
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	42.15	-46.49	-45.55	-13.00	-33.49	-0.94	Peak
2	69.96	-52.29	-43.89	-13.00	-39.29	-8.40	Peak
3	126.39	-58.36	-49.21	-13.00	-45.36	-9.15	Peak
4	330.10	-65.97	-59.42	-13.00	-52.97	-6.55	Peak
5	409.20	-67.04	-61.17	-13.00	-54.04	-5.87	Peak
6	600.30	-65.48	-64.73	-13.00	-52.48	-0.75	Peak
7	1640.65	-62.38	-47.65	-13.00	-49.38	-14.73	Peak

LTE Band 26

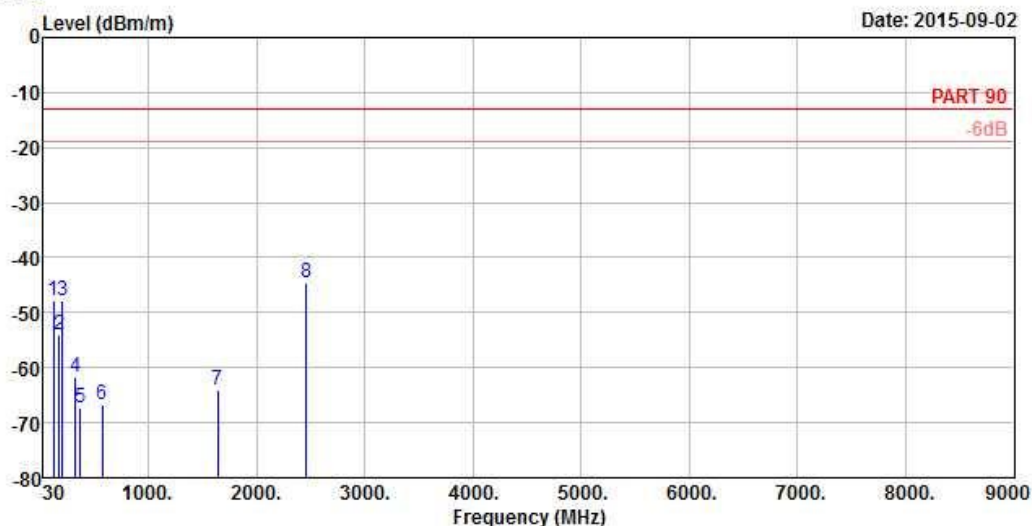
Channel Bandwidth: 10MHz / QPSK



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 Chamber 5
Condition: PART 90 3m HORIZONTAL
Remark : LTE Band 26_QPSK_15M_(1,37)
Tested by: Anson Lin
Plane : Y

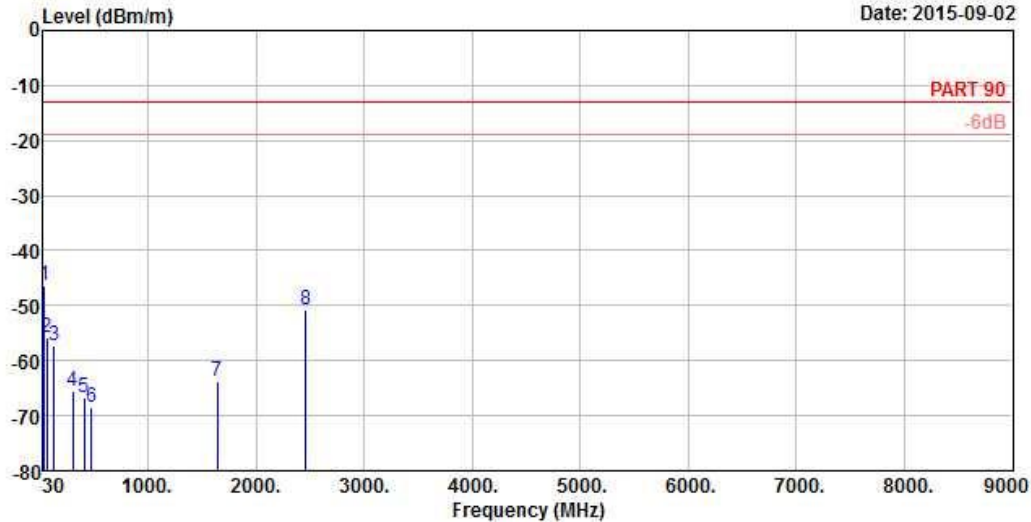
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	121.80	-47.94	-38.32	-13.00	-34.94	-9.62	Peak
2	174.99	-54.01	-47.63	-13.00	-41.01	-6.38	Peak
3	206.31	-47.78	-40.03	-13.00	-34.78	-7.75	Peak
4	322.40	-61.78	-55.11	-13.00	-48.78	-6.67	Peak
5	370.70	-67.16	-61.04	-13.00	-54.16	-6.12	Peak
6	573.70	-66.75	-64.91	-13.00	-53.75	-1.84	Peak
7	1638.00	-64.17	-49.38	-13.00	-51.17	-14.79	Peak
8 pp	2457.00	-44.72	-34.28	-13.00	-31.72	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10



Site : 966 Chamber 5
Condition: PART 90 3m VERTICAL
Remark : LTE Band 26_QPSK_15M_(1,37)
Tested by: Anson Lin
Plane : Y

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1 pp	41.61	-46.41	-46.00	-13.00	-33.41	-0.41	Peak
2	64.02	-55.83	-47.87	-13.00	-42.83	-7.96	Peak
3	127.47	-57.19	-48.15	-13.00	-44.19	-9.04	Peak
4	302.80	-65.46	-58.49	-13.00	-52.46	-6.97	Peak
5	408.50	-66.82	-60.94	-13.00	-53.82	-5.88	Peak
6	479.20	-68.40	-63.39	-13.00	-55.40	-5.01	Peak
7	1638.00	-63.67	-48.88	-13.00	-50.67	-14.79	Peak
8	2457.00	-50.80	-40.36	-13.00	-37.80	-10.44	Peak

5 Pictures of Test Arrangements

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

Appendix – 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:

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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

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Tel: 886-3-3183232

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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.

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