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FCC TEST REPORT (PART 22)

REPORT NO.: RF141203C11

MODEL NO.: 0PJA200

FCC ID: NM80PJA200

RECEIVED: Dec. 03, 2014

TESTED: Jan. 04, 2015 ~ Jan. 14, 2015

ISSUED: Feb. 05, 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 Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141203C11	Original release	Feb. 05, 2015



1 CERTIFICATION

PRODUCT: Smartphone

MODEL: 0PJA200

BRAND: HTC

APPLICANT: HTC Corporation

TESTED: Jan. 04, 2015 ~ Jan. 14, 2015

TEST SAMPLE: Production Unit

STANDARDS: FCC PART 22, Subpart H

The above equipment (model: 0PJA200) 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 : Ivonne Wu , **DATE** : Feb. 05, 2015
Ivonne Wu / Supervisor

APPROVED BY : Sam Chen , **DATE** : Feb. 05, 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 -26.06dB at 2509.56MHz.

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 ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2014	Apr. 14, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 27, 2014	Feb. 26, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 19, 2014	Feb. 18, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Aug. 27, 2014	Aug. 26, 2015
Preamplifier EMCI	EMC 012645	980115	Dec. 12, 2014	Dec. 11, 2015
Preamplifier EMCI	EMC184045B	980235	Nov. 13, 2014	Nov. 12, 2015
Preamplifier EMCI	EMC184045B	980235	Nov. 13, 2014	Nov. 12, 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 signal cable Worken	RG-213	NA	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
Power Splitter Woken	2-18GHz 2Way SMA Fwd.:30W/Rev.:2W Isolated Power	COM412W5E3	Apr. 17, 2014	Apr. 16, 2015
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
Communications Tester-Wireless	E5515C	MY52102544	Sep. 11, 2014	Sep. 10, 2016
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

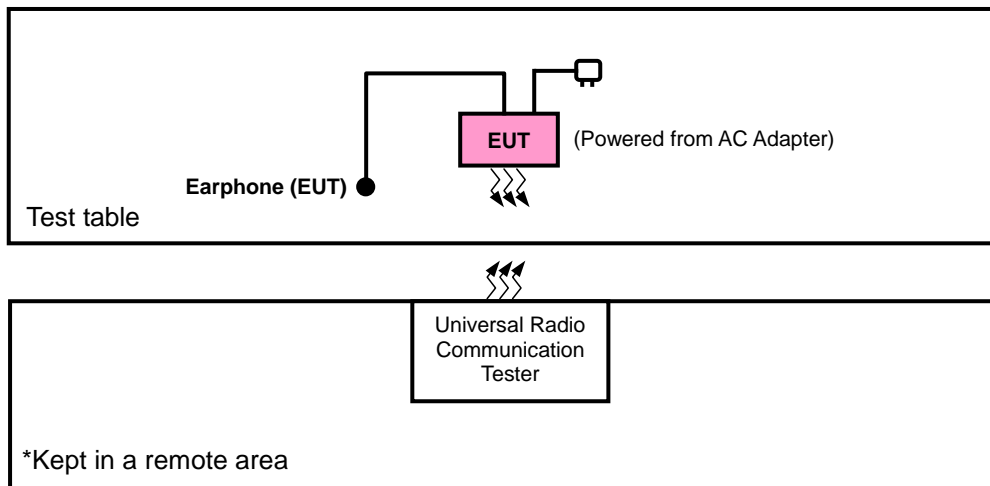
EUT	Smartphone	
MODEL NO.	0PJA200	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.83Vdc (battery)	
MODULATION TYPE	CDMA	QPSK, OQPSK, HPSK
	LTE	QPSK, 16QAM
FREQUENCY RANGE	CDMA	824.7MHz ~ 848.31MHz
	LTE 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 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	123.54mW
	LTE 26 (Channel Bandwidth: 1.4MHz)	57.12mW
	LTE 26 (Channel Bandwidth: 3MHz)	60.56mW
	LTE 26 (Channel Bandwidth: 5MHz)	60.65mW
	LTE 26 (Channel Bandwidth: 10MHz)	54.70mW
	LTE 26 (Channel Bandwidth: 15MHz)	62.92mW
EMISSION DESIGNATOR	CDMA	1M28F9W
	LTE 26 (Channel Bandwidth: 1.4MHz)	1M16G7D
	LTE 26 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE 26 (Channel Bandwidth: 5MHz)	4M49G7D
	LTE 26 (Channel Bandwidth: 15MHz)	8M98G7D
	LTE 26 (Channel Bandwidth: 10MHz)	13M5G7D
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:

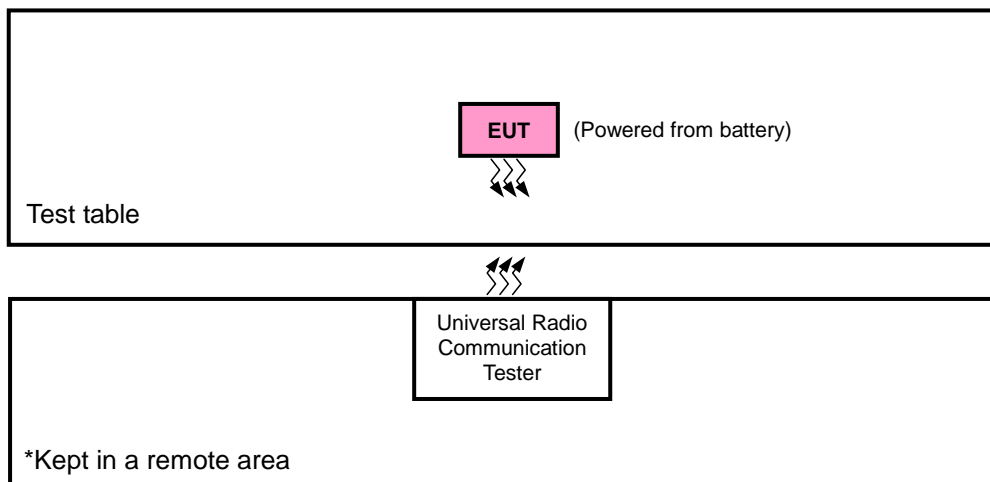
1. The EUT's accessories list refers to Ext. Pho.
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR E.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 when positioned on X-plane for ERP and X-axis for radiated emission for antenna 0. Following channel(s) was (were) selected for the final test as listed below:

CDMA MODE

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



LTE BAND 26 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE		
-	ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset		
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset		
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset		
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset		
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset		
-	FREQUENCY STABILITY	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset		
		26805 to 27025	26915	3MHz	QPSK	1 RB / 0 RB Offset		
		26815 to 27015	26915	5MHz	QPSK	1 RB / 0 RB Offset		
		26840 to 26990	26915	10MHZ	QPSK	1 RB / 0 RB Offset		
		26865 to 26965	26915	15MHZ	QPSK	1 RB / 0 RB Offset		
-	OCCUPIED BANDWIDTH	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	25 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		
-	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		
		-	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		
-	RADIATED EMISSION	26865 to 26965	26915	15MHZ	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.



TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	26deg. C, 58%RH	3.82Vdc	Will Chen
FREQUENCY STABILITY	26deg. C, 58%RH	3.82Vdc	Luke Chen
OCCUPIED BANDWIDTH	26deg. C, 58%RH	3.82Vdc	Luke Chen
BAND EDGE	26deg. C, 58%RH	3.82Vdc	Luke Chen
CONDUCTED EMISSION	26deg. C, 58%RH	3.82Vdc	Luke Chen
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Will Chen

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:

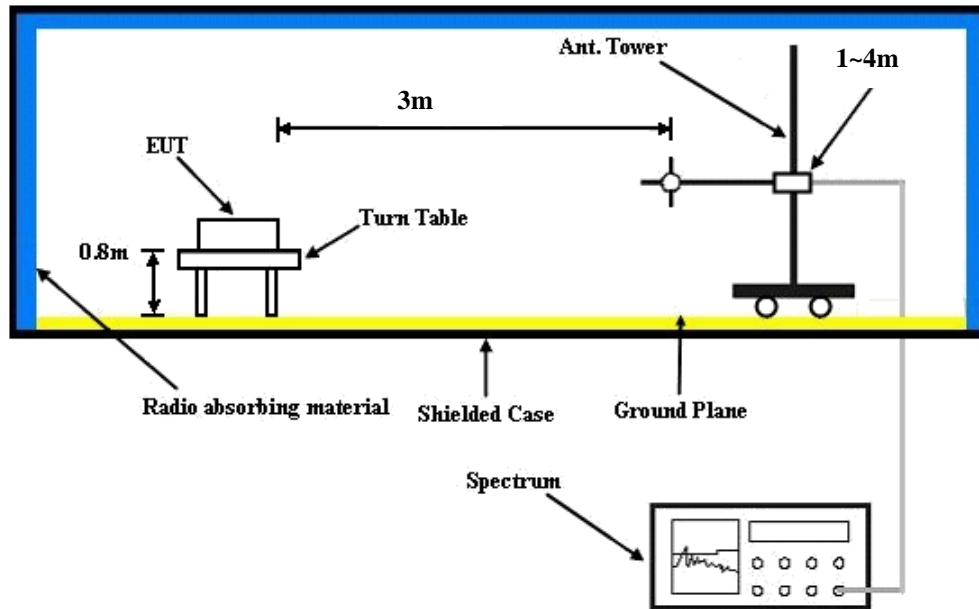
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for CDMA and 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees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

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with CDMA and 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:





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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	24.31	24.78	24.52
RC3+SO55	24.26	24.88	24.46
RC3+SO32(+ F-SCH)	24.51	24.81	24.33
RC3+SO32(+SCH)	24.45	24.72	24.36
RTAP 153.6	23.57	23.64	23.98
RETAP 4096	23.51	23.60	23.82

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	22.17	22.12	22.25	0	21.17	21.12	21.25	1
	1	2	21.68	21.63	21.75	0	20.68	20.63	20.75	1
	1	5	22.16	22.11	22.21	0	21.16	21.11	21.21	1
	3	0	21.17	21.12	21.25	0	20.17	20.12	20.25	1
	3	1	20.68	20.63	20.75	0	19.68	19.63	19.75	1
	3	3	21.17	21.12	21.21	0	20.17	20.12	20.21	1
	6	0	21.12	21.07	21.15	1	20.12	20.07	20.15	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	22.18	22.15	22.26	0	21.18	21.15	21.26	1
	1	7	21.69	21.66	21.76	0	20.69	20.66	20.76	1
	1	14	22.17	22.14	22.22	0	21.17	21.14	21.22	1
	8	0	21.18	21.15	21.26	1	20.18	20.15	20.26	2
	8	3	20.69	20.66	20.76	1	19.69	19.66	19.76	2
	8	7	21.18	21.15	21.22	1	20.18	20.15	20.22	2
	15	0	21.13	21.10	21.16	1	20.13	20.10	20.16	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	22.19	22.18	22.28	0	21.19	21.18	21.28	1
	1	12	21.70	21.69	21.78	0	20.70	20.69	20.78	1
	1	24	22.18	22.17	22.24	0	21.18	21.17	21.24	1
	12	0	21.19	21.18	21.28	1	20.19	20.18	20.28	2
	12	6	20.70	20.69	20.78	1	19.70	19.69	19.78	2
	12	13	21.19	21.18	21.24	1	20.19	20.18	20.24	2
	25	0	21.14	21.13	21.18	1	20.14	20.13	20.18	2



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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	22.1	22.19	22.29	0	21.1	21.19	21.29	1
	1	24	21.51	21.7	21.79	0	20.51	20.7	20.79	1
	1	49	22.08	22.18	22.25	0	21.08	21.18	21.25	1
	25	0	21.06	21.19	21.29	1	20.06	20.19	20.29	2
	25	12	20.61	20.7	20.79	1	19.61	19.7	19.79	2
	25	25	21.08	21.19	21.25	1	20.08	20.19	20.25	2
	50	0	21.06	21.14	21.19	1	20.06	20.14	20.19	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	22.20	22.30	0	21.14	21.2	21.30	1
	1	37	21.75	21.71	21.80	0	20.64	20.71	20.80	1
	1	74	22.21	22.19	22.26	0	21.10	21.19	21.26	1
	36	0	21.25	21.20	21.30	1	20.14	20.2	20.30	2
	36	19	20.75	20.71	20.80	1	19.64	19.71	19.80	2
	36	39	21.21	21.20	21.26	1	20.10	20.2	20.26	2
	75	0	21.12	21.15	21.20	1	20.05	20.15	20.20	2



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ERP POWER (dBm)

CDMA							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	1013	824.7	-8.14	31.208	20.92	123.54	H
	384	836.52	-8.25	31.3	20.90	123.03	H
	777	848.31	-8.36	31.222	20.71	117.81	H
	1013	824.7	-14.92	31.504	14.43	27.76	V
	384	836.52	-14.52	31.117	14.45	27.84	V
	777	848.31	-15.74	31.922	14.03	25.30	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	-11.49	31.208	17.57	57.12	H
	26915	836.5	-11.63	31.3	17.52	56.49	H
	27033	848.3	-11.52	31.222	17.55	56.91	H
	26797	824.7	-19.75	31.504	9.60	9.13	V
	26915	836.5	-19.65	31.117	9.32	8.54	V
	27033	848.3	-19.83	31.922	9.94	9.87	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	-12.38	31.208	16.68	46.54	H
	26915	836.5	-12.66	31.3	16.49	44.57	H
	27033	848.3	-12.98	31.222	16.09	40.66	H
	26797	824.7	-20.38	31.504	8.97	7.90	V
	26915	836.5	-20.65	31.117	8.32	6.79	V
	27033	848.3	-21.38	31.922	8.39	6.91	V



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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	-11.96	31.208	17.10	51.26	H
	26915	836.5	-11.59	31.3	17.56	57.02	H
	27025	847.5	-11.25	31.222	17.82	60.56	H
	26805	825.5	-20.09	31.504	9.26	8.44	V
	26915	836.5	-19.90	31.117	9.07	8.07	V
	27025	847.5	-20.15	31.922	9.62	9.17	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	-12.71	31.208	16.35	43.13	H
	26915	836.5	-12.65	31.3	16.50	44.67	H
	27025	847.5	-12.44	31.222	16.63	46.05	H
	26805	825.5	-21.07	31.504	8.28	6.74	V
	26915	836.5	-20.87	31.117	8.10	6.45	V
	27025	847.5	-21.09	31.922	8.68	7.38	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	-11.23	31.208	17.83	60.65	H
	26915	836.5	-12.01	31.3	17.14	51.76	H
	27015	846.5	-11.82	31.222	17.25	53.11	H
	26815	826.5	-19.39	31.504	9.96	9.92	V
	26919	836.5	-19.31	31.117	9.66	9.24	V
	27015	846.5	-20.57	31.922	9.20	8.32	V



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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	-12.91	31.208	16.15	41.19	H
	26915	836.5	-12.72	31.3	16.43	43.95	H
	27015	846.5	-12.58	31.222	16.49	44.59	H
	26815	826.5	-20.81	31.504	8.54	7.15	V
	26919	836.5	-20.97	31.117	8.00	6.31	V
	27015	846.5	-21.34	31.922	8.43	6.97	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	-12.02	31.208	17.04	50.56	H
	26915	836.5	-11.77	31.3	17.38	54.70	H
	26990	844.0	-11.71	31.222	17.36	54.48	H
	26840	829.0	-19.85	31.504	9.50	8.92	V
	26919	836.5	-19.22	31.117	9.75	9.43	V
	26990	844.0	-20.58	31.922	9.19	8.30	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	-12.97	31.208	16.09	40.63	H
	26915	836.5	-12.65	31.3	16.50	44.67	H
	26990	844.0	-12.18	31.222	16.89	48.89	H
	26840	829.0	-20.63	31.504	8.72	7.45	V
	26919	836.5	-19.98	31.117	8.99	7.92	V
	26990	844.0	-21.28	31.922	8.49	7.07	V



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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	-11.07	31.208	17.99	62.92	H
	26915	836.5	-11.62	31.3	17.53	56.62	H
	26965	841.5	-11.77	31.222	17.30	53.73	H
	26865	831.5	-19.83	31.504	9.52	8.96	V
	26915	836.5	-19.93	31.117	9.04	8.01	V
	26965	841.5	-20.68	31.922	9.09	8.11	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	-12.22	31.208	16.84	48.28	H
	26915	836.5	-12.65	31.3	16.50	44.67	H
	26965	841.5	-12.19	31.222	16.88	48.78	H
	26865	831.5	-20.68	31.504	8.67	7.37	V
	26915	836.5	-20.01	31.117	8.96	7.87	V
	26965	841.5	-21.31	31.922	8.46	7.02	V

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

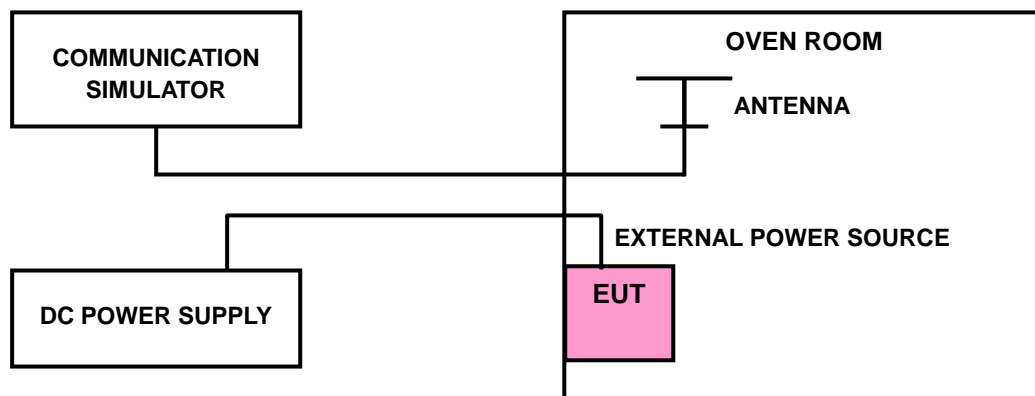
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 $\pm 0.5^{\circ}\text{C}$ 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	15MHz	
3.82	0.004	0.005	0.005	0.005	-0.004	0.005	2.5
3.6	0.006	0.003	0.002	0.005	-0.005	0.001	2.5
4.40	0.002	-0.004	-0.003	0.003	-0.002	-0.003	2.5

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

FREQUENCY ERROR vs. TEMPERATURE

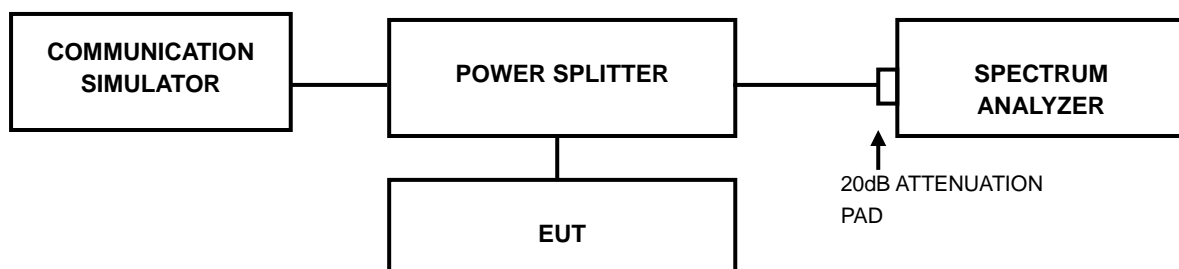
TEMP. (°C)	FREQUENCY ERROR (ppm)						LIMIT (ppm)
	CDMA	LTE Band 26					
		1.4MHz	3MHz	5MHz	10MHz	15MHz	
-30	0.005	-0.004	0.003	0.004	-0.004	0.004	2.5
-20	0.004	-0.003	0.004	0.005	-0.006	0.002	2.5
-10	0.006	-0.002	0.002	0.006	-0.003	0.003	2.5
0	0.003	0.003	-0.003	-0.003	-0.002	0.005	2.5
10	0.002	0.004	-0.005	-0.004	0.003	-0.003	2.5
20	-0.004	-0.002	0.002	-0.003	0.005	-0.006	2.5
30	-0.003	-0.006	-0.004	-0.002	0.004	-0.004	2.5
40	-0.005	-0.003	0.005	0.005	0.003	-0.001	2.5
50	-0.002	0.002	0.004	0.006	0.006	0.002	2.5
60	0.003	0.005	0.003	0.003	-0.001	0.003	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 TEST PROCEDURES

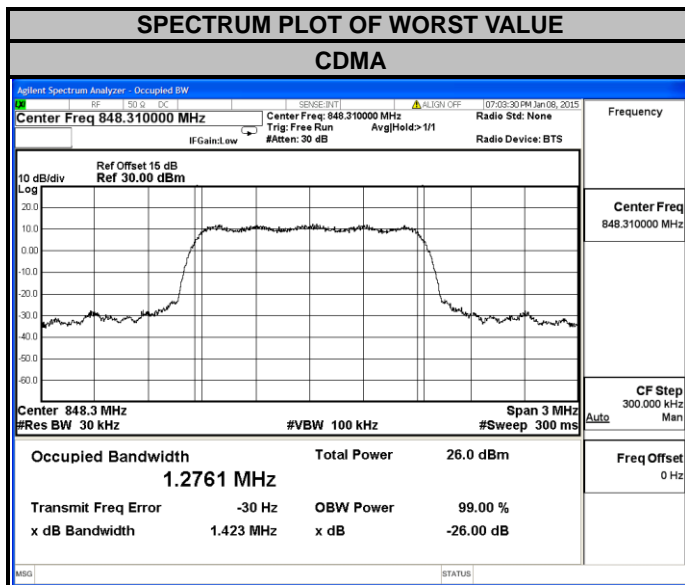
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

4.3.2 TEST SETUP



4.3.3 TEST RESULTS

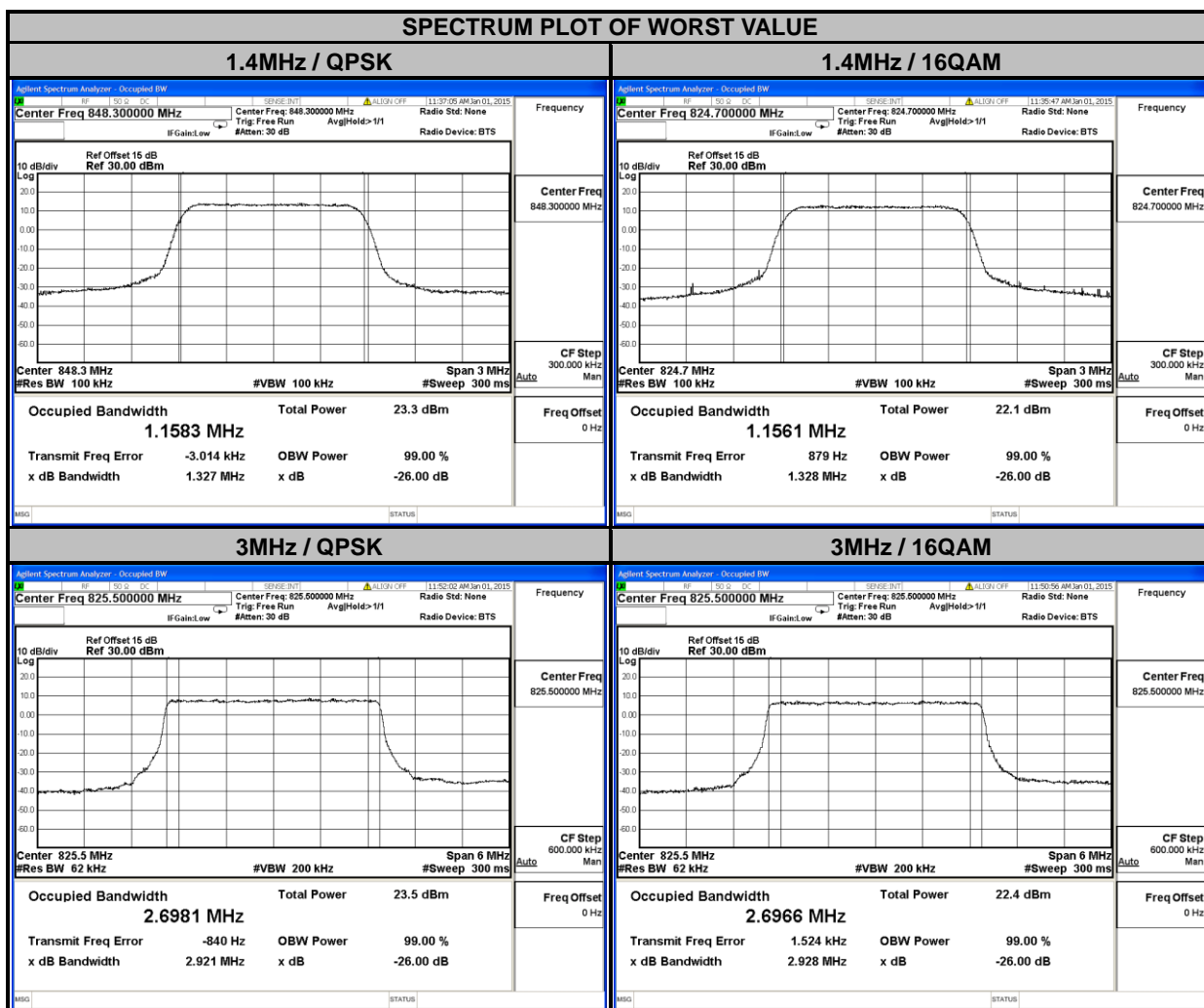
CDMA			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	26dB BANDWIDTH (MHz)
1013	824.70	1.2746	1.423
384	836.52	1.2759	1.422
777	848.31	1.2761	1.423





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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	1.1577	1.1561	26805	825.5	2.6981	2.6966
26915	836.5	1.1575	1.1547	26915	836.5	2.6959	2.6957
27033	848.3	1.1583	1.1531	27025	847.5	2.6966	2.6953
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	1.332	1.328	26805	825.5	2.921	2.928
26915	836.5	1.330	1.318	26915	836.5	2.925	2.929
27033	848.3	1.327	1.326	27025	847.5	2.915	2.922

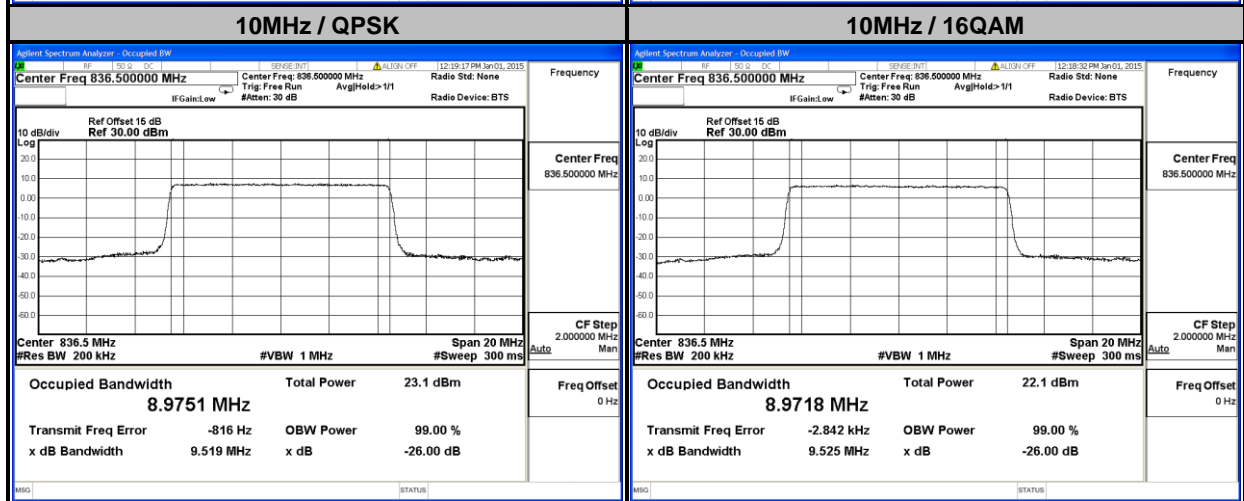
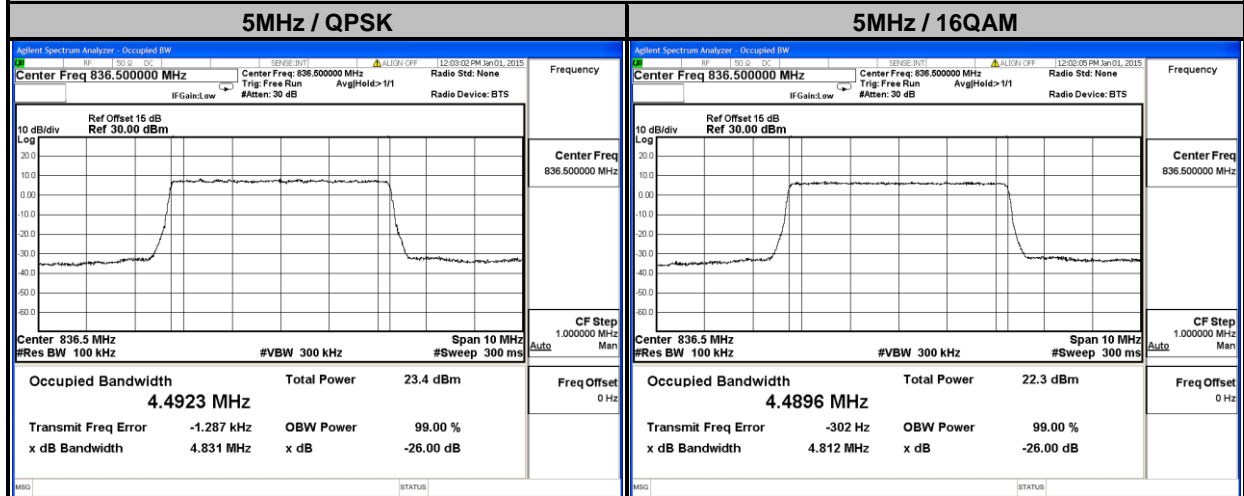




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LTE BAND 26							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.4912	4.4892	26840	829.0	8.9676	8.9623
26915	836.5	4.4923	4.4896	26915	836.5	8.9751	8.9718
27015	846.5	4.4889	4.4884	26990	844.0	8.9615	8.9578
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.817	4.796	26840	829.0	9.498	9.514
26915	836.5	4.831	4.812	26915	836.5	9.519	9.525
27015	846.5	4.814	4.807	26990	844.0	9.520	9.508

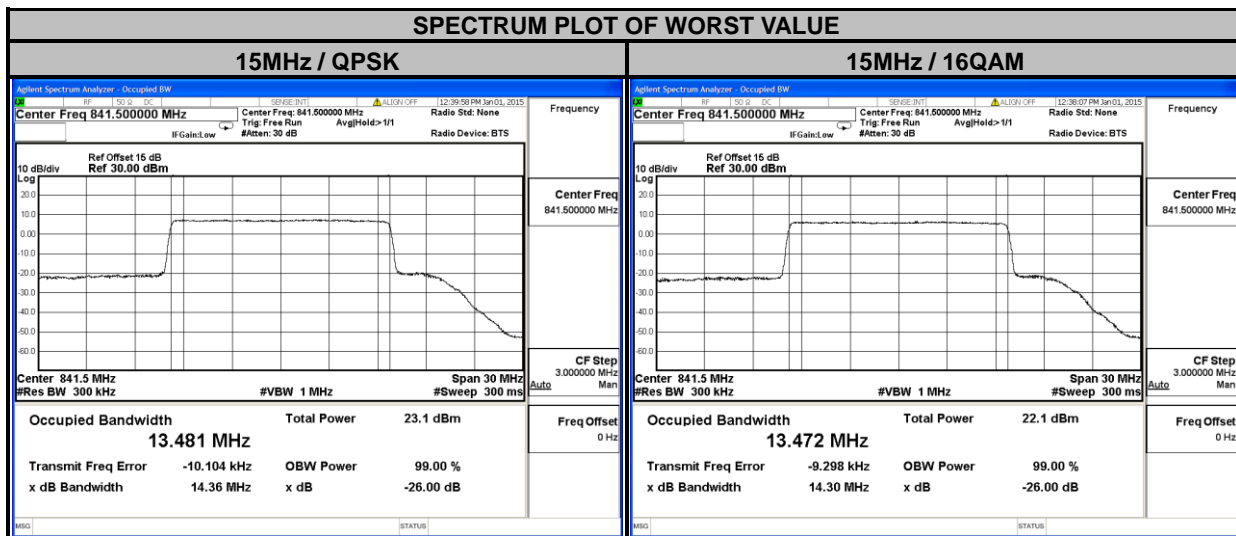
SPECTRUM PLOT OF WORST VALUE





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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	13.445	13.448	26865	831.5	14.24	14.25
26915	836.5	13.467	13.467	26915	836.5	14.27	14.27
26965	841.5	13.481	13.472	26965	841.5	14.36	14.30

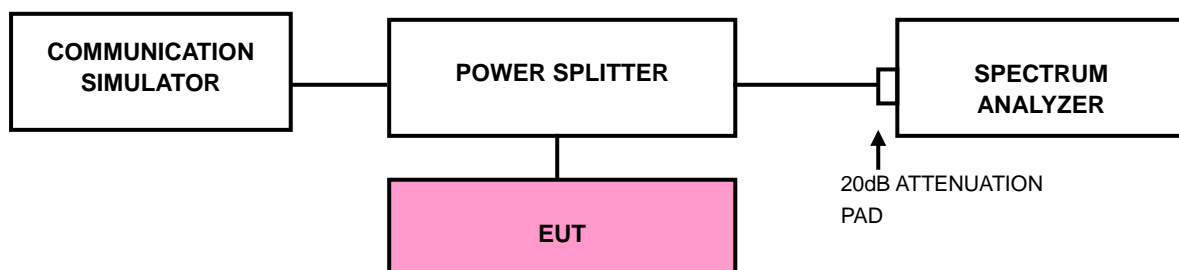


4.4 BAND EDGE MEASUREMENT

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



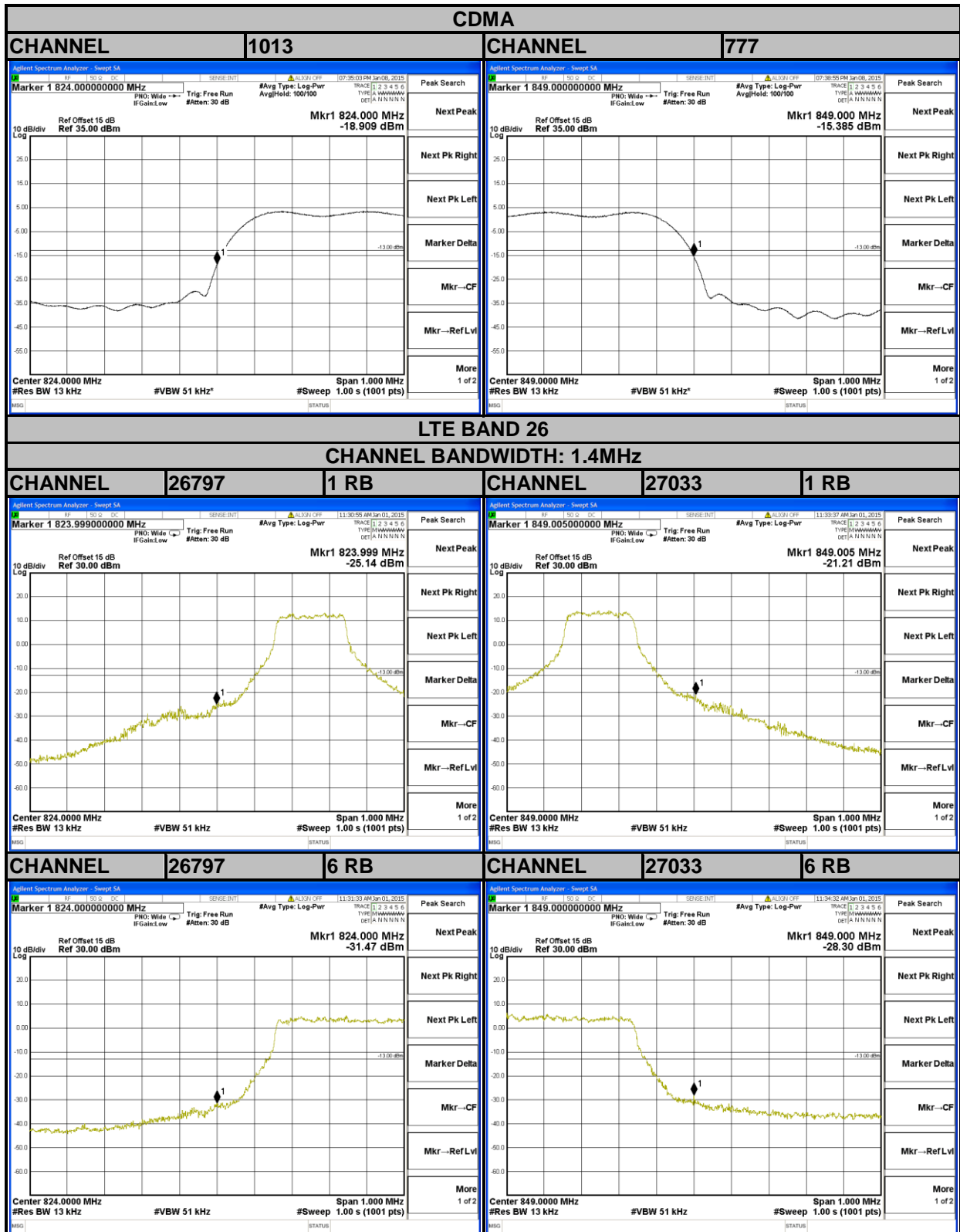
4.4.3 TEST PROCEDURES

- All measurements were done at low and high operational frequency range.
- 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 Bandwidth 1.4MHz).
- 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 Bandwidth 3MHz).
- 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 Bandwidth 5MHz / 10MHz).
- 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 Bandwidth 15MHz).
- Record the max trace plot into the test report.



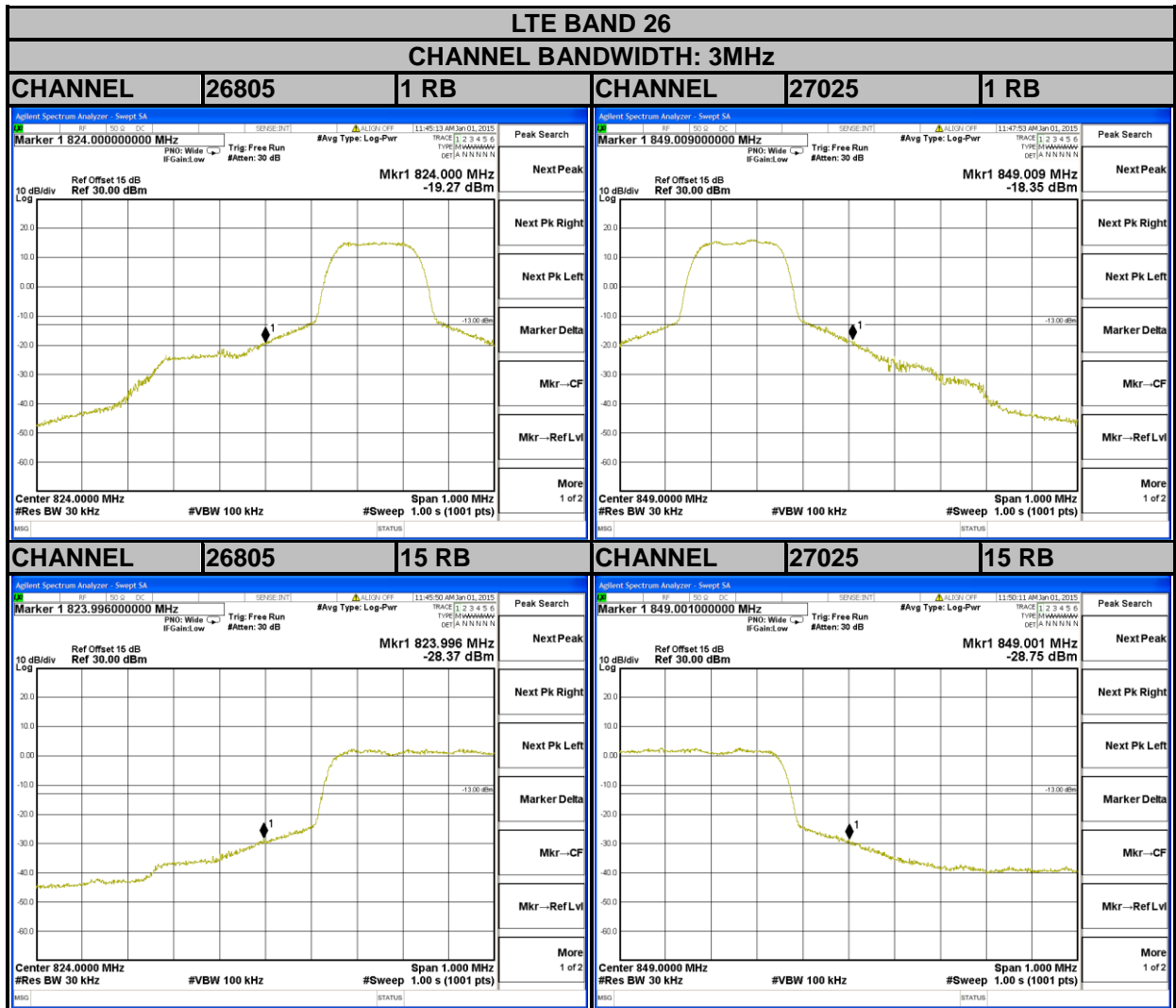
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4.4.4 TEST RESULTS



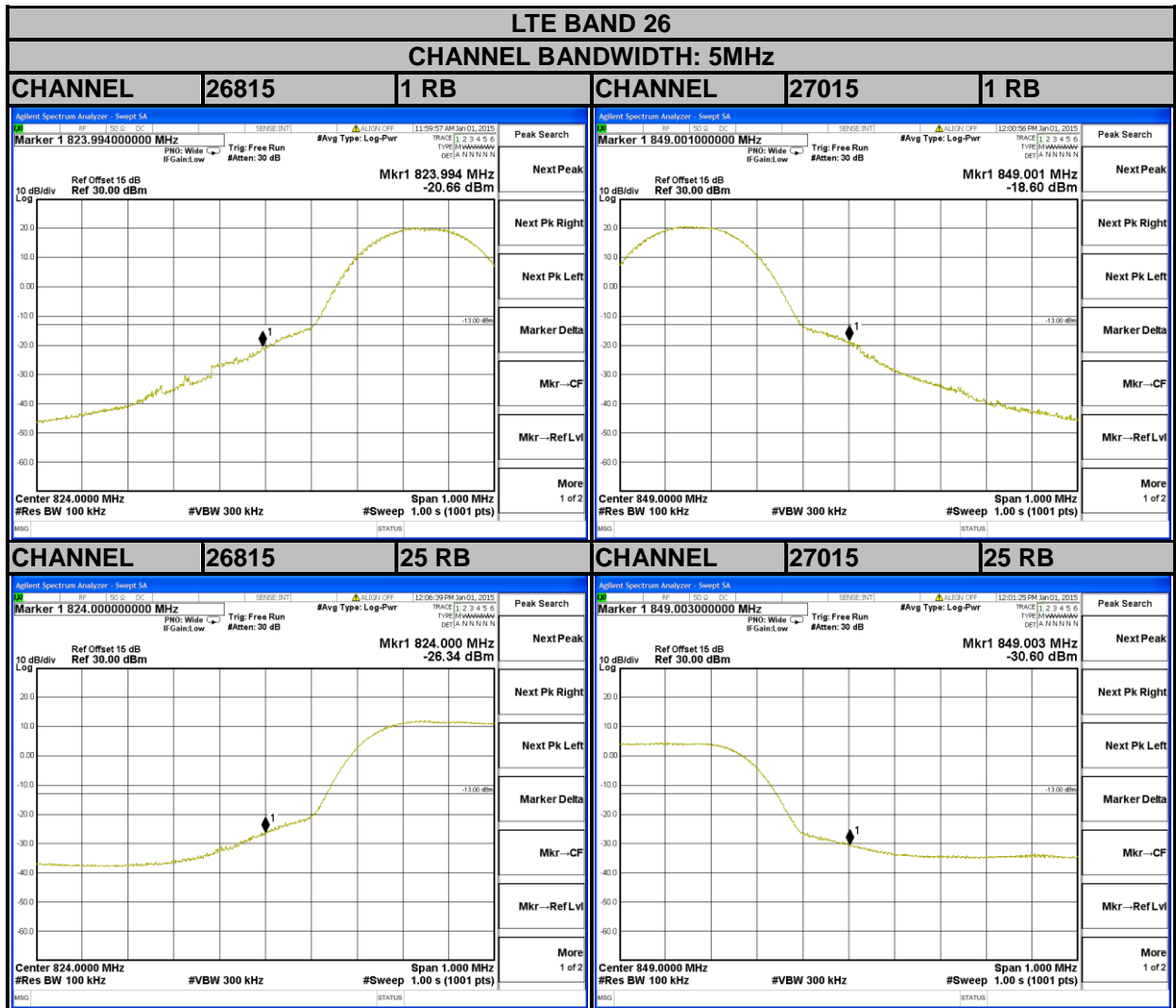


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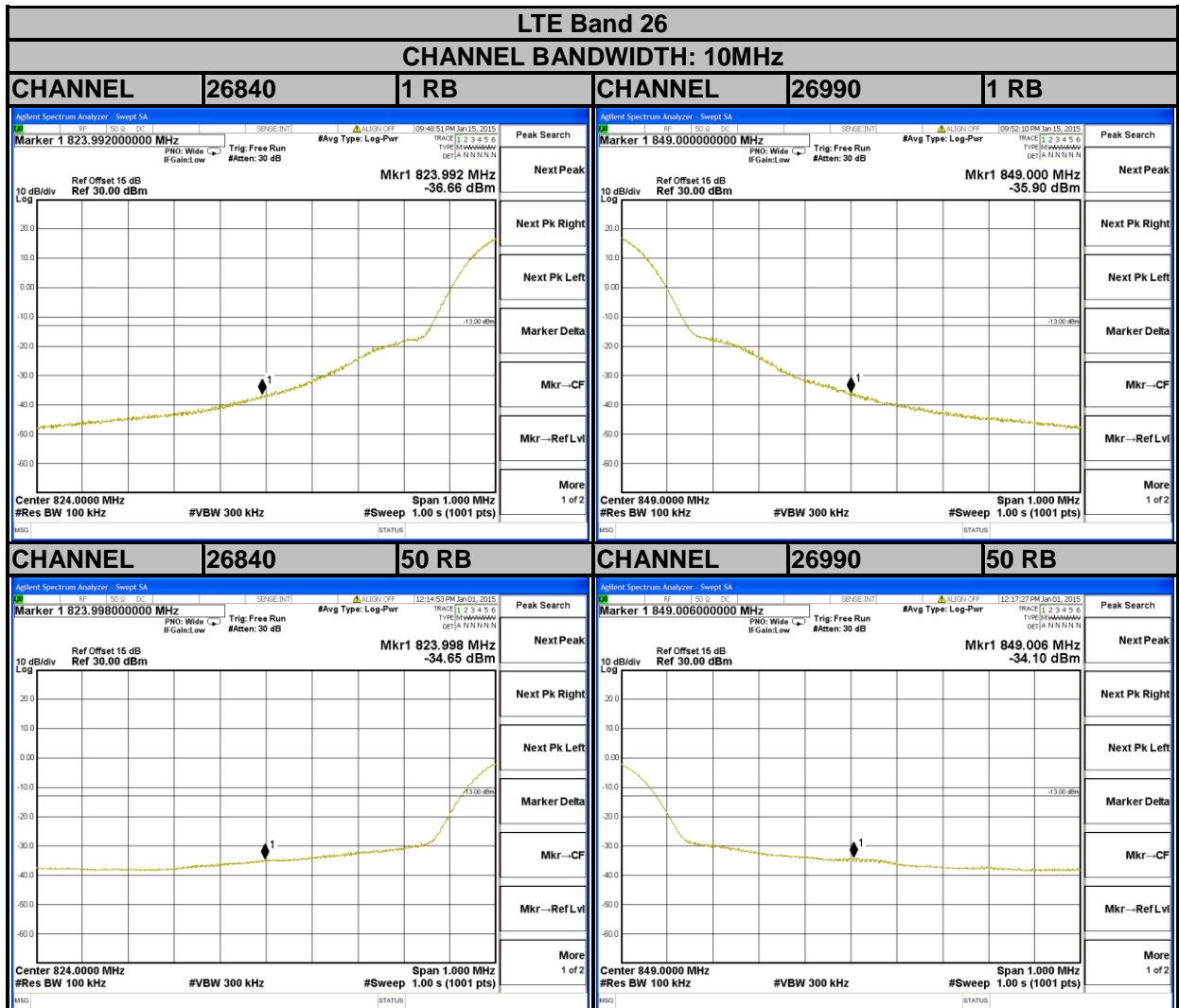


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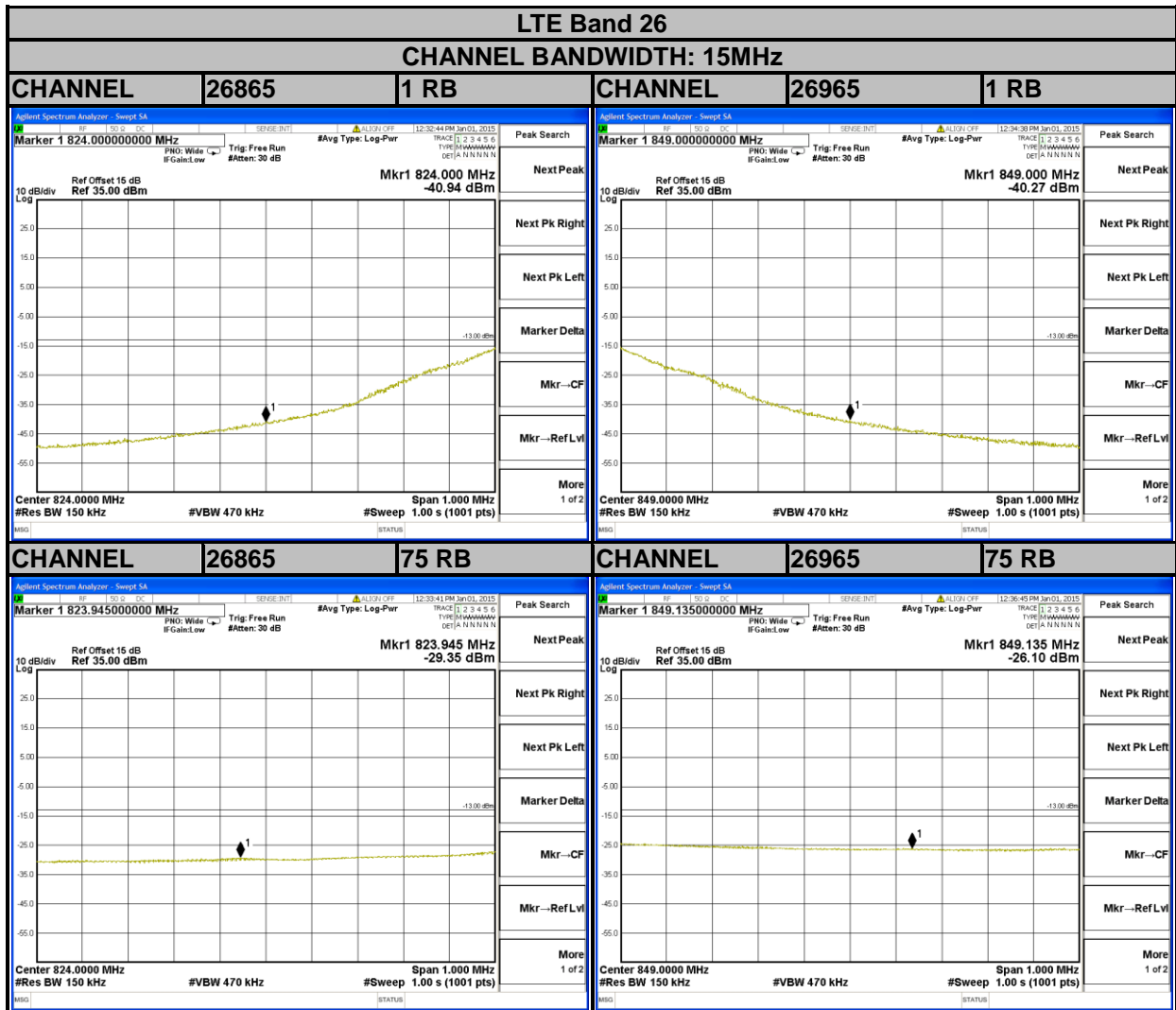


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4.5 CONDUCTED SPURIOUS EMISSIONS

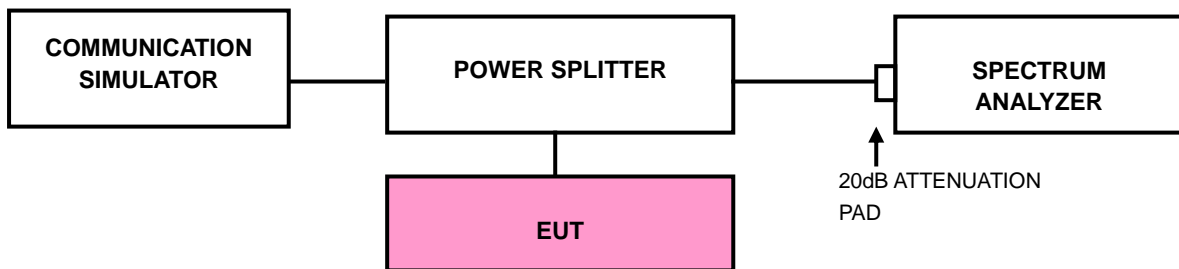
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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.

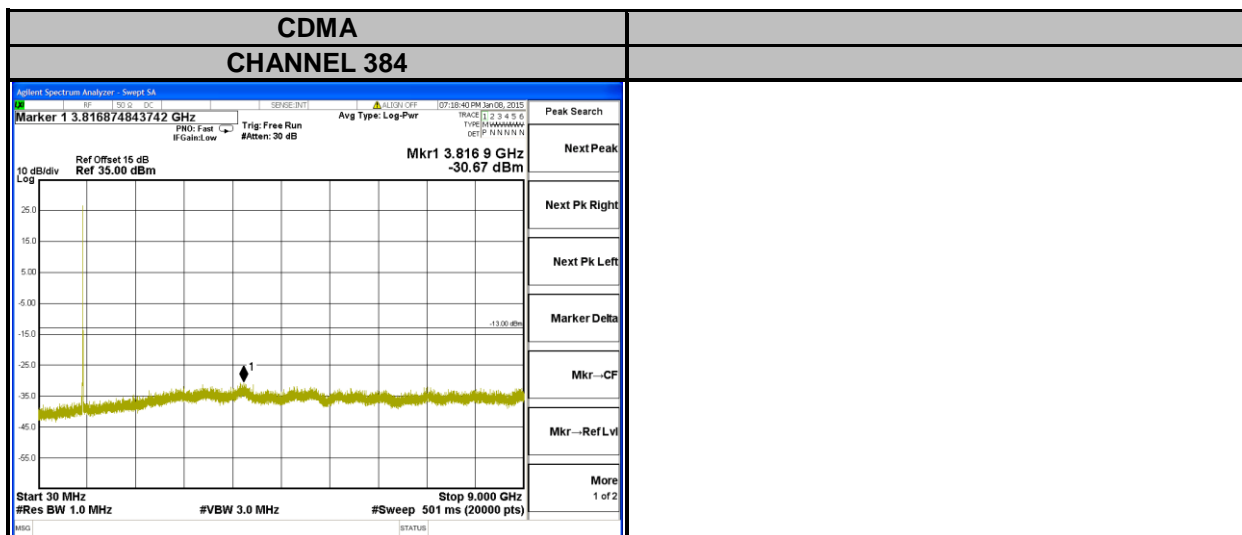
4.5.2 TEST PROCEDURE

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

4.5.3 TEST SETUP

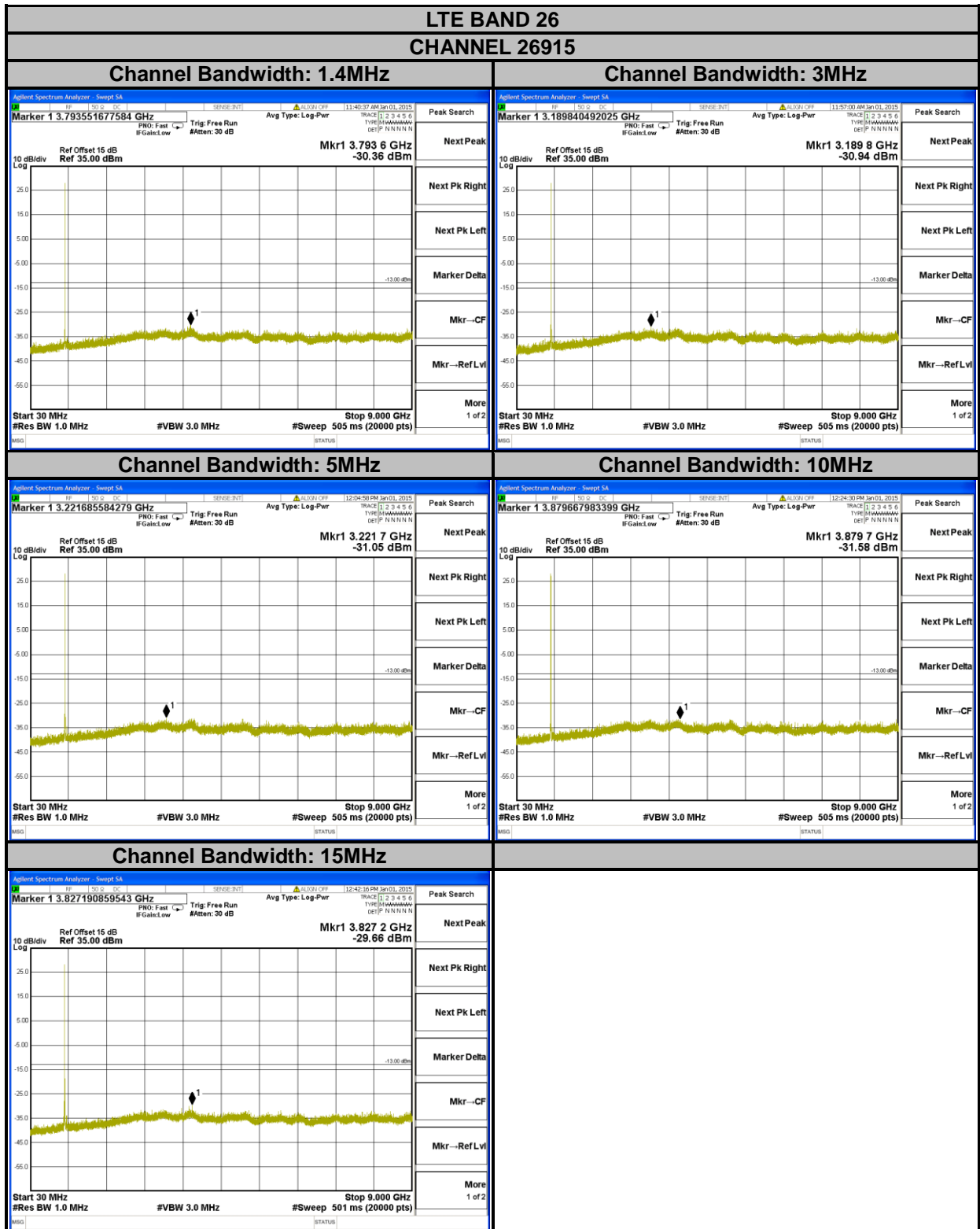


4.5.4 TEST RESULTS





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4.6 RADIATED EMISSION MEASUREMENT

4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

4.6.2 TEST PROCEDURES

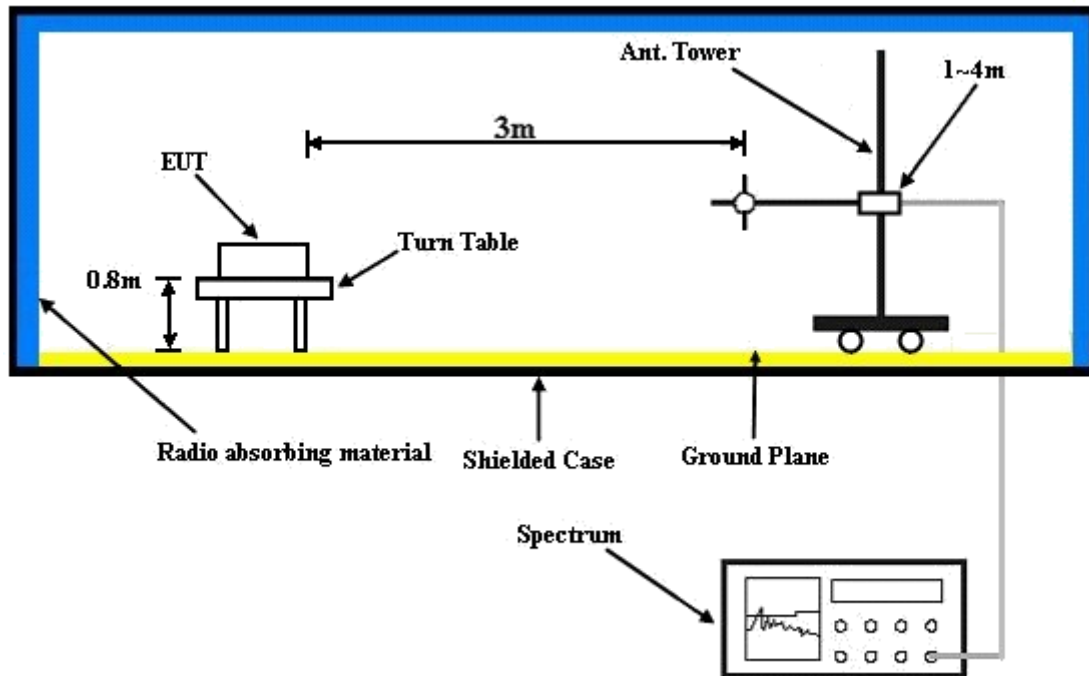
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from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

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

4.6.3 DEVIATION FROM TEST STANDARD

No deviation

4.6.4 TEST SETUP



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

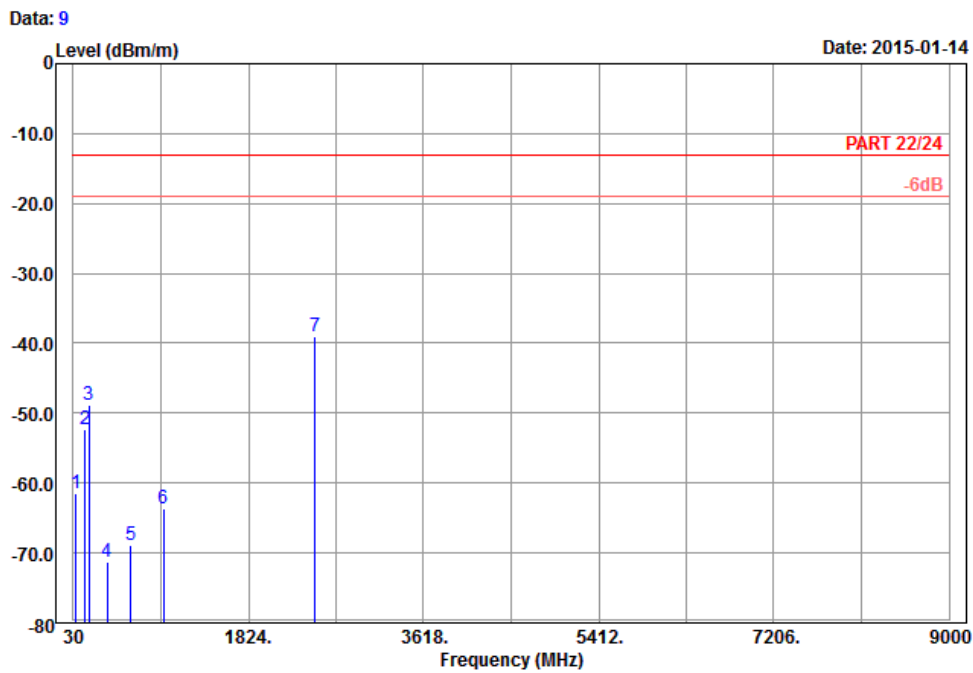
4.6.5 TEST RESULTS

CDMA:



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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

	Read	Limit	Over				
Freq	Level	Level	Line	Limit	Factor	Remark	
MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	59.43	-61.38	-47.32	-13.00	-48.38	-14.06	Peak
2	150.96	-52.34	-44.42	-13.00	-39.34	-7.92	Peak
3	190.11	-48.84	-43.11	-13.00	-35.84	-5.73	Peak
4	373.50	-71.27	-67.13	-13.00	-58.27	-4.14	Peak
5	620.60	-68.79	-68.99	-13.00	-55.79	0.20	Peak
6	951.70	-63.55	-68.66	-13.00	-50.55	5.11	Peak
7 pp	2509.56	-39.06	-50.34	-13.00	-26.06	11.28	Peak

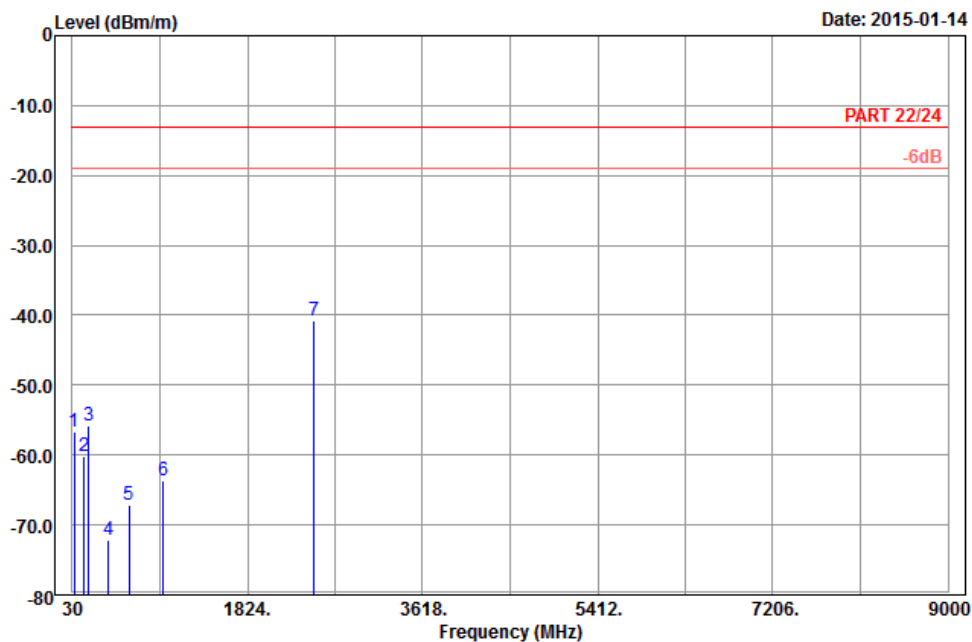


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 10

Date: 2015-01-14



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

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	47.01	-56.59	-43.48	-13.00	-43.59	-13.11	Peak
2	147.99	-60.20	-52.30	-13.00	-47.20	-7.90	Peak
3	194.97	-55.80	-49.84	-13.00	-42.80	-5.96	Peak
4	400.80	-72.13	-69.37	-13.00	-59.13	-2.76	Peak
5	615.00	-67.04	-67.30	-13.00	-54.04	0.26	Peak
6	962.20	-63.64	-68.79	-13.00	-50.64	5.15	Peak
7 pp	2509.56	-40.86	-52.14	-13.00	-27.86	11.28	Peak

LTE BAND 26
CHANNEL BANDWIDTH: 15MHz / QPSK

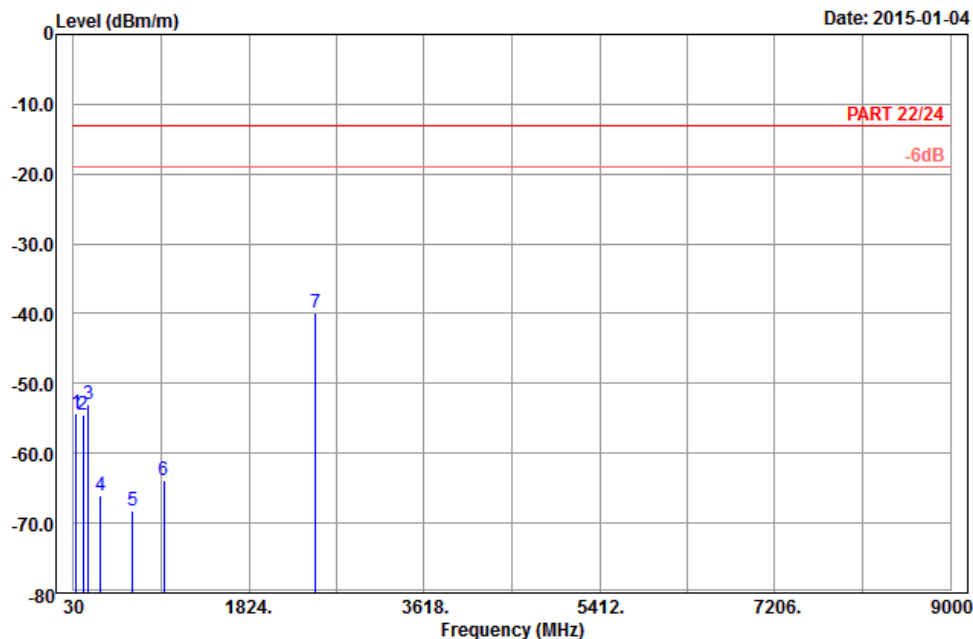


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 9

Date: 2015-01-04



Site : 966 chamber 1
 Condition: PART 22/24 3m Horizontal
 Remark : LTE_Band 26_QPSK(1,0)_15M_CH26915
 Tested by: Will Chen
 Plane : X

	Freq	Level	Read Level	Limit	Over	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	56.46	-54.26	-40.20	-13.00	-41.26	-14.06	Peak
2	124.23	-54.58	-46.57	-13.00	-41.58	-8.01	Peak
3	182.28	-52.92	-47.31	-13.00	-39.92	-5.61	Peak
4	307.00	-66.04	-60.17	-13.00	-53.04	-5.87	Peak
5	636.00	-68.20	-68.22	-13.00	-55.20	0.02	Peak
6	958.00	-63.82	-68.95	-13.00	-50.82	5.13	Peak
7 pp	2509.50	-39.96	-51.24	-13.00	-26.96	11.28	Peak

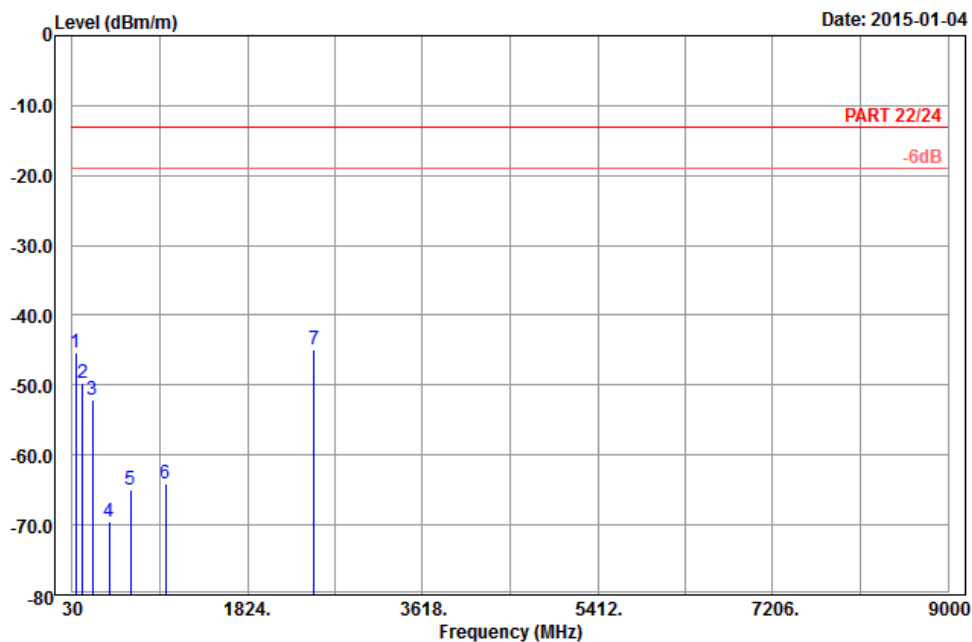


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 10

Date: 2015-01-04



Site : 966 chamber 1
 Condition: PART 22/24 3m Vertical
 Remark : LTE_Band 26_QPSK(1,0)_15M_CH26915
 Tested by: Will Chen
 Plane : X

	Freq	Level	Read Level	Limit	Over	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	63.48	-45.37	-31.86	-13.00	-32.37	-13.51	Peak
2	135.57	-49.79	-42.12	-13.00	-36.79	-7.67	Peak
3	239.52	-52.12	-46.47	-13.00	-39.12	-5.65	Peak
4	406.40	-69.56	-66.67	-13.00	-56.56	-2.89	Peak
5	624.80	-65.00	-65.15	-13.00	-52.00	0.15	Peak
6	986.70	-64.02	-69.24	-13.00	-51.02	5.22	Peak
7 pp	2509.50	-44.95	-56.23	-13.00	-31.95	11.28	Peak



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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
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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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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---