

FCC TEST REPORT

Product Name: Mobile Phone
Trade Mark: MI
Model No.: MDE5
Report Number: 170726002RFM-1
Test Standards: FCC 47 CFR Part 22 Subpart H
FCC 47 CFR Part 2
FCC ID: 2AFZZ-XMSD5
Test Result: PASS
Date of Issue: September 4, 2017

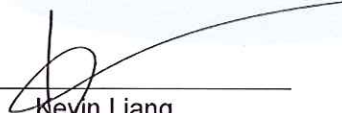
Prepared for:

Xiaomi Communications Co., Ltd.
The Rainbow City of China Resources, NO.68, Qinghe Middle Street,
Haidian District, Beijing, China

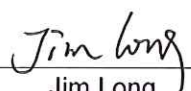
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Version

Version No.	Date	Description
V1.0	September 4, 2017	Original



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CONTENTS

1. GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.2.1 GENERAL DESCRIPTION OF EUT	4
1.2.2 DESCRIPTION OF ACCESSORIES	5
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	6
1.4 DESCRIPTION OF SUPPORT UNITS	7
1.5 TEST LOCATION	8
1.6 TEST FACILITY	8
1.7 DEVIATION FROM STANDARDS	8
1.8 ABNORMALITIES FROM STANDARD CONDITIONS	8
1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER	8
1.10 MEASUREMENT UNCERTAINTY	9
2. TEST SUMMARY	10
3. EQUIPMENT LIST	11
4. TEST CONFIGURATION	12
4.1 ENVIRONMENTAL CONDITIONS FOR TESTING	12
4.1.1 NORMAL OR EXTREME TEST CONDITIONS	12
4.2 TEST SETUP	12
4.2.1 FOR RADIATED EMISSIONS TEST SETUP	12
4.2.2 FOR CONDUCTED RF TEST SETUP	13
4.3 TEST CHANNELS	14
4.4 SYSTEM TEST CONFIGURATION	15
4.5 PRE-SCAN	15
5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION	21
5.1 REFERENCE DOCUMENTS FOR TESTING	21
5.2 EFFECTIVE RADIATED POWER (ERP)	21
5.3 CONDUCTED OUTPUT POWER	24
5.4 PEAK-TO-AVERAGE RATIO	25
5.5 99%&26dB BANDWIDTH	34
5.6 BAND EDGE AT ANTENNA TERMINALS	52
5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS	82
5.8 FIELD STRENGTH OF SPURIOUS RADIATION	99
5.7.1 RADIATED EMISSION TEST DATA (30 MHz TO 1 GHz)	100
5.7.2 RADIATED EMISSION TEST DATA (ABOVE 1GHz)	112
5.9 FREQUENCY STABILITY	124
APPENDIX 1 PHOTOS OF TEST SETUP	128
APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS	128

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	MDE5		
Add. Model No.:	N/A		
Trade Mark:	MI		
DUT Stage:	Identical Prototype		
EUT Supports Function:	GSM Bands:	GSM 850/ PCS 1900	
	UTRA Bands:	Band II/ Band IV/ Band V	
	CDMA2000 Band:	BC0/ BC1/ BC10	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7/ Band 12/ Band 13/ Band 17/ Band 25/ Band 26/ Band 30	
		TDD Band 38/ Band 41	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth V3.0+EDR/ Bluetooth V4.1 LE/ Bluetooth V5.0 LE	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
RNSS Bands:	1559 MHz to 1610 MHz	GPS/GLONASS/Galileo	
NFC:	13.553 MHz to 13.567 MHz		
Software Version:	MIUI 8		
Hardware Version:	P2.0		
Sample Received Date:	July 27, 2017		
Sample Tested Date:	July 27, 2017 to August 28, 2017		

1.2.2 Description of Accessories

Adapter	
Trade Mark:	XIAOMI
Model No.:	MDY-08-EY
Input:	100-240V~50/60 Hz 0.5A
Output:	5V $\equiv$ 3A/9V $\equiv$ 2A/12V $\equiv$ 1.5A
AC Cable:	N/A
DC Cable:	N/A

Battery	
Trade Mark:	MI
Model No.:	BM3B
Battery Type:	Lithium-ion Polymer Rechargeable Battery
Rated Voltage:	3.85 Vdc
Limited Charge Voltage:	4.4 Vdc
Rated Capacity:	3300 mAh

Cable(1)	
Trade Mark:	MI
Model No.:	L6BU2018-CS-H
Description:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.0 Meter

Cable(2)	
Trade Mark:	MI
Model No.:	KLC-2588-1
Description:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.0 Meter

Cable(3)	
Trade Mark:	MI
Model No.:	KLC-2469
Description:	USB Type-C to 3.5 mm Headphone Jack Adapter
Cable Type:	Unshielded without ferrite

Cable(4)	
Trade Mark:	MI
Model No.:	0QT000XI0007
Description:	USB Type-C to 3.5 mm Headphone Jack Adapter
Cable Type:	Unshielded without ferrite

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:		GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA, DC-HSDPA, CDMA2000, LTE	
Type of Modulation:	GSM/GPRS:		GMSK
	EDGE:		GMSK, 8PSK
	WCDMA		BPSK
	HSDPA/DC-HSDPA:		QPSK
	HSUPA:		QPSK
	DC-HSDPA:		16QAM, 64QAM
	CDMA2000 BC0 1xRTT:		QPSK
	CDMA2000 BC0 1xEV-DO:		QPSK, 8PSK
	LTE Band 5:		QPSK, 16QAM, 64QAM
	LTE Band 26:		QPSK, 16QAM, 64QAM
Frequency Range:	GSM/GPRS/EDGE 850:		824.2-848.8 MHz
	WCDMA Band V:		826.4-846.6 MHz
	CDMA2000 BC0:		824.7-848.31 MHz
	LTE Band 5 (Channel Bandwidth: 1.4 MHz):		824.7-848.3 MHz
	LTE Band 5 (Channel Bandwidth: 3 MHz):		825.5-847.5MHz
	LTE Band 5 (Channel Bandwidth: 5 MHz):		826.5-846.5 MHz
	LTE Band 5 (Channel Bandwidth: 10 MHz):		829-844 MHz
	LTE Band 26 (Channel Bandwidth: 1.4 MHz):		824.7-848.3 MHz
	LTE Band 26 (Channel Bandwidth: 3 MHz):		825.5-847.5MHz
	LTE Band 26 (Channel Bandwidth: 5 MHz):		826.5-846.5 MHz
Max RF Output Power:	GSM/GPRS 850:		32.78dBm
	EDGE 850:		26.78dBm
	WCDMA Band V:		23.85dBm
	CDMA2000 BC0:		24.01dBm
	LTE Band 5 (Channel Bandwidth: 1.4 MHz):		22.79dBm
	LTE Band 5 (Channel Bandwidth: 3 MHz):		22.83dBm
	LTE Band 5 (Channel Bandwidth: 5 MHz):		22.89dBm
	LTE Band 5 (Channel Bandwidth: 10 MHz):		22.92dBm
	LTE Band 26 (Channel Bandwidth: 1.4 MHz):		22.56dBm
	LTE Band 26 (Channel Bandwidth: 3 MHz):		22.59dBm
Type of Emission:	GSM/GPRS 850:		247KGXW
	EDGE 850:		252KG7W
	WCDMA Band V:		4M14F9W
	CDMA2000 BC0:		1M28F9W
	LTE Band 5 QPSK	Channel Bandwidth: 1.4 MHz	1M10G7W
		Channel Bandwidth: 3 MHz	2M71G7W
		Channel Bandwidth: 5 MHz	4M53G7W
		Channel Bandwidth: 10 MHz	9M01G7W
	LTE Band 5	Channel Bandwidth: 1.4 MHz	1M09D7W

	16QAM	Channel Bandwidth: 3 MHz	2M70D7W
		Channel Bandwidth: 5 MHz	4M52D7W
		Channel Bandwidth: 10 MHz	9M02D7W
	LTE Band 5 64QAM	Channel Bandwidth: 1.4 MHz	1M10D7W
		Channel Bandwidth: 3 MHz	2M71D7W
		Channel Bandwidth: 5 MHz	4M53D7W
		Channel Bandwidth: 10 MHz	9M00D7W
	LTE Band 26 QPSK	Channel Bandwidth: 1.4 MHz	1M10G7W
		Channel Bandwidth: 3 MHz	2M71G7W
		Channel Bandwidth: 5 MHz	4M51G7W
		Channel Bandwidth: 10 MHz	9M01G7W
		Channel Bandwidth: 15 MHz	13M5G7W
	LTE Band 26 16QAM	Channel Bandwidth: 1.4 MHz	1M10D7W
		Channel Bandwidth: 3 MHz	2M70D7W
		Channel Bandwidth: 5 MHz	4M53D7W
		Channel Bandwidth: 10 MHz	8M99D7W
		Channel Bandwidth: 15 MHz	13M5D7W
	LTE Band 26 64QAM	Channel Bandwidth: 1.4 MHz	1M10D7W
		Channel Bandwidth: 3 MHz	2M70D7W
		Channel Bandwidth: 5 MHz	4M52D7W
Channel Bandwidth: 10 MHz		8M99D7W	
Channel Bandwidth: 15 MHz		13M5D7W	
IEMI:	Conducted: 865736030026044, 865736030026051		
	Radiation: 865736030023801, 865736030023819		
MEID:	Conducted: 99001021001303		
	Radiation: 99001021001191		
Antenna Type:	PIFA Antenna		
Antenna Gain:	-1.8 dBi		
GPRS/EDGE Class:	Class 33		
Normal Test Voltage:	3.85 Vdc		
Extreme Test Voltage:	3.7 to 4.4Vdc		
Extreme Test Temperature:	-30 °C to +50 °C		

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
N/A	N/A	N/A	N/A	N/A

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.30 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

2. TEST SUMMARY

FCC 47 CFR Part 22 Subpart H Test Cases			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(d)	KDB 971168 D01v02r02	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Note: 1) N/A: In this whole report not application.			

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
☒	Receiver	R&S	ESIB26	100114	Dec. 22, 2016	Dec. 22, 2017
☐	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	Jun. 24, 2015	Jun. 23, 2018
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Jul. 24, 2015	Jul. 23, 2018
☒	Preamplifier	HP	8447F	2805A02960	Dec. 22, 2016	Dec. 22, 2017
☒	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	Dec. 30, 2016	Dec. 30, 2017
☒	Horn Antenna	ETS-LINDGREN	3117	00164202	Jul. 24, 2015	Jul. 23, 2018
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Dec. 30, 2016	Dec. 30, 2017
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	Jul. 28, 2015	Jul. 27, 2018
☐	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Jul. 29, 2015	Jul. 28, 2018
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Highpass Filter (1.2GHz~18GHz)	Micro-Tronics	HPM50108	G552	Jan. 19, 2017	Jan. 19, 2018
☐	Highpass Filter (3GHz~18GHz)	Micro-Tronics	HPM50117	G005	Jan. 30, 2017	Jan. 30, 2018
☒	Test Software	Audix	e3	Software Version: 9.160323		

2/3/4G RF Test System Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☐	Spectrum Analyzer	R&S	FSP 13	1164.4391.13	Mar. 22, 2017	Mar. 21, 2018
☒	Spectrum Analyzer	R&S	FSV 13	1307.9002K13-101620-cJ	Aug. 09, 2017	Aug. 08, 2018
☐	Receiver	R&S	ESR7	1316.3003K07-101181-K3	Dec. 22, 2016	Dec. 22, 2017
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017
☒	Wideband Radio Communication Tester	R&S	CMW500	116254	Mar. 22, 2017	Mar. 21, 2018
☒	Universal Radio Communication Tester	R&S	CMU200	114713	Dec. 22, 2016	Dec. 22, 2017
☒	DC Source	KIKUSUI	PWR400L	LK003024	Sep. 21, 2016	Sep. 20, 2017
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	Jun. 19, 2017	Jun. 18, 2018
☐	Temp & Humidity chamber	Ispec	GL(U)04KA(W)	1692H201P3	Sep. 21, 2016	Sep. 20, 2017
☒	Test Software	ECIT	AutomationTestSystem	Software Version: 2.170530		

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.7	20 to 75
TL/VL	-30	3.7	20 to 75
TH/VL	+50	3.7	20 to 75
TL/VH	-30	4.4	20 to 75
TH/VH	+50	4.4	20 to 75

Remark:

- 1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 3.7 V to 4.4 V, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 3.7 V to 4.4 V.
- 2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

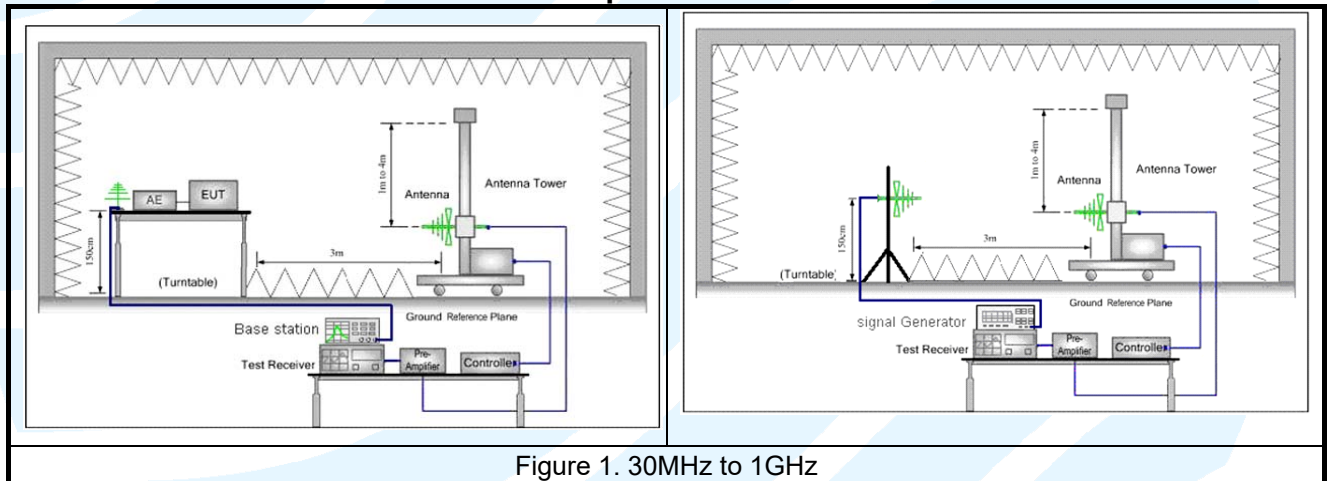


Figure 1. 30MHz to 1GHz

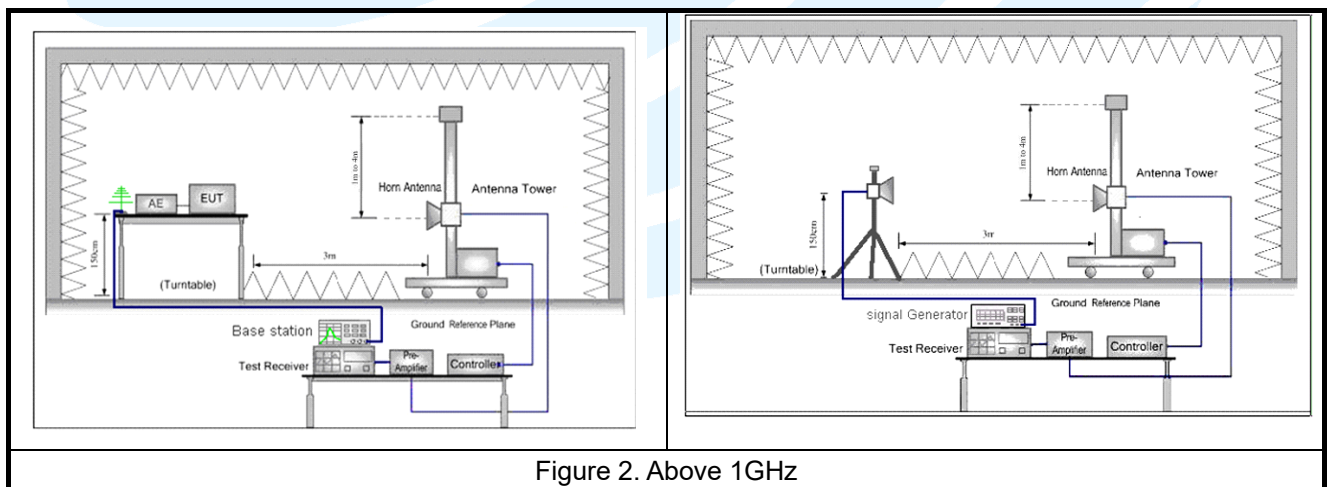
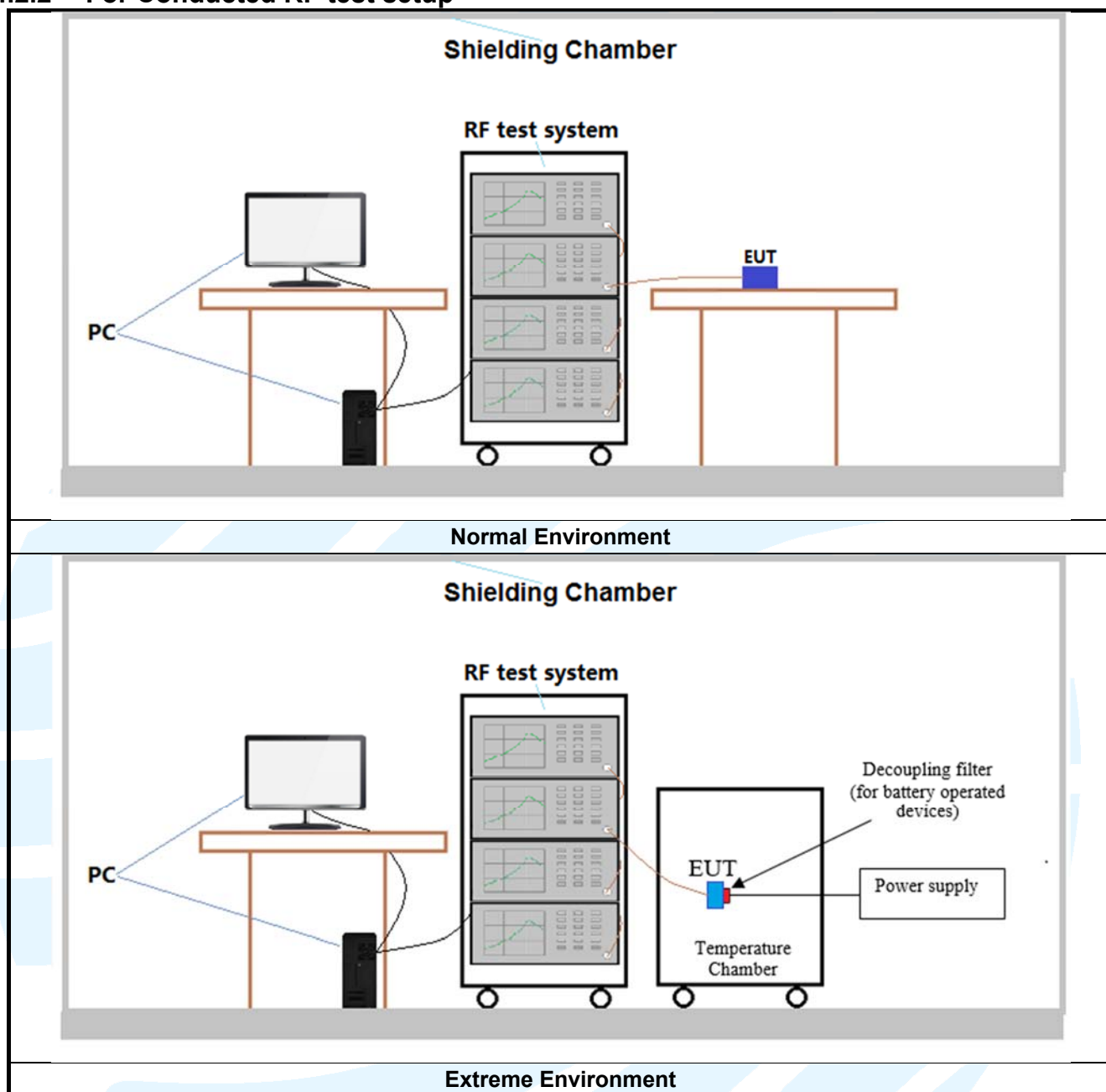


Figure 2. Above 1GHz

4.2.2 For Conducted RF test setup



4.3 TEST CHANNELS

Band	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRS/ EDGE850	Tx (824 MHz ~ 849 MHz)	Channel 128	Channel 190	Channel 251
		824.2 MHz	836.6 MHz	848.8 MHz
WCDMA Band V	Tx (824 MHz ~ 849 MHz)	Channel 4132	Channel 4182	Channel 4233
		826.4 MHz	836.4 MHz	846.6 MHz
CDMA2000 BC0	Tx (824 MHz ~ 849 MHz)	Channel 1013	Channel 384	Channel 777
		824.7 MHz	836.52 MHz	848.31 MHz

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE band 5 TX:824-849 MHz	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Middle Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844
		15	20575	843
LTE band 26 TX:824-849 MHz	Low Range	1.4	26797	824.7
		3	26805	825.5
		5	26815	826.5
		10	26840	829
		15	26865	831.5
	Middle Range	1.4/3/5/10/15	26915	836.5
	High Range	1.4	27033	848.3
		3	27025	847.5
		5	27015	846.5
		10	26990	844
		15	26965	841.5

4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85Vdc rechargeable Li-on battery. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

The worst case was found when positioned as the table below.

Band	Mode	Antenna Port	Worst-case axis positioning
GSM 850	1TX	Chain 0	Y axis
EDGE 850	1TX	Chain 0	Y axis
WCDMA Band V	1TX	Chain 0	Y axis
CDMA2000 BC0 1xRTT	1TX	Chain 0	Y axis
LTE Band 5	1TX	Chain 0	Y axis
LTE Band 26	1TX	Chain 0	Y axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below:

SM 850 Maximum Average Power (dBm)			
Channel	128	190	251
Frequency(MHz)	824.2 MHz	836.6 MHz	848.8 MHz
GSM (GMSK, 1Tx-slot)	32.54	32.52	32.78
GPRS (GMSK, 1Tx-slot)	32.53	32.51	32.77
GPRS (GMSK, 2Tx-slot)	32.43	32.41	32.67
GPRS (GMSK, 3Tx-slot)	31.26	31.24	31.50
GPRS (GMSK, 4Tx-slot)	30.10	30.08	30.34
EDGE (8PSK, 1Tx-slot)	26.54	26.52	26.78
EDGE (8PSK, 2Tx-slot)	26.46	26.44	26.70
EDGE (8PSK, 3Tx-slot)	26.31	26.29	26.55
EDGE (8PSK, 4Tx-slot)	26.10	26.08	26.34

WCDMA Band V Maximum Average Power (dBm)			
Channel	4132	4182	4233
Frequency(MHz)	826.4 MHz	836.4 MHz	846.6 MHz
RMC 12.2K	23.77	23.83	23.85
HSDPA Subtest-1	22.82	22.83	22.83
HSDPA Subtest-2	22.84	22.85	22.83
HSDPA Subtest-3	22.37	22.38	22.40
HSDPA Subtest-4	22.43	22.40	22.37
HSUPA Subtest-1	22.69	22.75	22.68
HSUPA Subtest-2	20.79	20.75	20.76
HSUPA Subtest-3	21.71	21.80	21.70
HSUPA Subtest-4	20.75	20.75	20.79
HSUPA Subtest-5	22.76	22.73	22.72
DC-HSDPA Subtest-1	22.87	22.90	22.95
DC-HSDPA Subtest-2	23.01	22.99	22.92
DC-HSDPA Subtest-3	22.42	22.43	22.45
DC-HSDPA Subtest-4	22.49	22.43	22.46

CDMA2000 BC0 Maximum Average Power (dBm)			
Channel	1013	384	777
Frequency(MHz)	824.7 MHz	836.52 MHz	848.31 MHz
1xRTT RC1+SO55	23.84	23.86	23.93
1xRTT RC3+SO55	23.86	23.88	23.95
1xRTT RC3+SO32 (+ F-SCH)	23.92	23.94	24.01
1xRTT RC3+SO32(+SCH)	23.85	23.87	23.94
1xEVDO RTAP 153.6 Kbps	23.84	23.86	23.93
1xEVDO RETAP 4096 Bits	23.68	23.70	23.77
1xRTT RC8+SO75 (1X advance)	23.80	23.82	23.91

LTE Band 5 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.66	22.79	22.72	1	0	22.70	22.83	22.76
	1	2	22.60	22.73	22.66	1	7	22.64	22.77	22.70
	1	5	22.55	22.68	22.61	1	14	22.59	22.72	22.65
	3	0	22.64	22.77	22.70	8	0	21.76	21.89	21.82
	3	1	22.58	22.71	22.64	8	3	21.72	21.85	21.78
	3	3	22.53	22.66	22.59	8	7	21.65	21.78	21.71
16QAM	6	0	21.67	21.80	21.73	15	0	21.71	21.84	21.77
	1	0	21.76	21.89	21.82	1	0	21.80	21.93	21.86
	1	2	21.71	21.84	21.77	1	7	21.75	21.88	21.81
	1	5	21.66	21.79	21.72	1	14	21.70	21.83	21.76
	3	0	21.75	21.88	21.81	8	0	20.71	20.84	20.77
	3	1	21.70	21.83	21.76	8	3	20.67	20.80	20.73
64QAM	3	3	21.65	21.78	21.71	8	7	20.64	20.77	20.70
	6	0	20.66	20.79	20.72	15	0	20.70	20.83	20.76
	1	0	20.82	20.95	20.88	1	0	20.86	20.99	20.92
	1	2	20.70	20.83	20.76	1	7	20.74	20.87	20.80
	1	5	20.67	20.80	20.73	1	14	20.71	20.84	20.77
	3	0	20.81	20.94	20.87	8	0	19.73	19.86	19.79
Channel Bandwidth: 5 MHz	3	1	20.69	20.82	20.75	8	3	19.68	19.81	19.74
	3	3	20.66	20.79	20.72	8	7	19.63	19.76	19.69
	6	0	19.54	19.67	19.60	15	0	19.58	19.71	19.64
	1	0	22.76	22.89	22.82	1	0	22.79	22.92	22.85
	1	12	22.70	22.83	22.76	1	24	22.73	22.86	22.79
	1	24	22.65	22.78	22.71	1	49	22.68	22.81	22.74
Channel Bandwidth: 10 MHz	12	0	21.82	21.95	21.88	25	0	21.85	21.98	21.91
	12	6	21.78	21.91	21.84	25	12	21.81	21.94	21.87
	12	13	21.71	21.84	21.77	25	25	21.74	21.87	21.80
	25	0	21.77	21.90	21.83	50	0	21.80	21.93	21.86
	1	0	21.86	21.99	21.92	1	0	21.89	22.02	21.95
	1	12	21.81	21.94	21.87	1	24	21.84	21.97	21.90
16QAM	1	24	21.76	21.89	21.82	1	49	21.79	21.92	21.85
	12	0	20.77	20.90	20.83	25	0	20.80	20.93	20.86
	12	6	20.73	20.86	20.79	25	12	20.76	20.89	20.82
	12	13	20.70	20.83	20.76	25	25	20.73	20.86	20.79
	25	0	20.76	20.89	20.82	50	0	20.79	20.92	20.85
	1	0	20.92	21.05	20.98	1	0	20.95	21.08	21.01
64QAM	1	12	20.80	20.93	20.86	1	24	20.83	20.96	20.89
	1	24	20.77	20.90	20.83	1	49	20.80	20.93	20.86
	12	0	19.79	19.92	19.85	25	0	19.82	19.95	19.88
	12	6	19.74	19.87	19.80	25	12	19.77	19.90	19.83
	12	13	19.69	19.82	19.75	25	25	19.72	19.85	19.78
	25	0	19.64	19.77	19.70	50	0	19.67	19.80	19.73

LTE Band 26 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.51	22.55	22.56	1	0	22.54	22.58	22.59
	1	2	22.51	22.52	22.50	1	7	22.54	22.55	22.53
	1	5	22.45	22.46	22.47	1	14	22.48	22.49	22.50
	3	0	22.49	22.53	22.54	8	0	21.65	21.67	21.66
	3	1	22.49	22.50	22.48	8	3	21.61	21.61	21.65
	3	3	22.43	22.44	22.45	8	7	21.44	21.46	21.64
16QAM	6	0	21.47	21.50	21.54	15	0	21.50	21.53	21.57
	1	0	22.14	22.12	21.70	1	0	22.17	22.15	21.73
	1	2	22.05	22.03	21.68	1	7	22.08	22.06	21.71
	1	5	22.01	22.01	21.59	1	14	22.04	22.04	21.62
	3	0	22.13	22.11	21.69	8	0	20.57	20.60	20.61
	3	1	22.04	22.02	21.67	8	3	20.58	20.62	20.64
64QAM	3	3	22.00	22.00	21.58	8	7	20.56	20.61	20.66
	6	0	20.49	20.53	20.59	15	0	20.52	20.56	20.62
	1	0	21.13	21.08	20.66	1	0	21.16	21.11	20.69
	1	2	20.98	21.02	20.63	1	7	21.01	21.05	20.66
	1	5	20.90	20.95	20.57	1	14	20.93	20.98	20.60
	3	0	21.12	21.07	20.65	8	0	19.57	19.59	19.53
Channel Bandwidth: 5 MHz	3	1	20.97	21.01	20.62	8	3	19.54	19.56	19.58
	3	3	20.89	20.94	20.56	8	7	19.53	19.60	19.62
	6	0	19.42	19.50	19.58	15	0	19.45	19.53	19.61
	Channel Bandwidth: 10 MHz									
QPSK	1	0	22.56	22.60	22.61	1	0	22.60	22.64	22.65
	1	12	22.56	22.57	22.55	1	24	22.60	22.61	22.59
	1	24	22.50	22.51	22.52	1	49	22.54	22.55	22.56
	12	0	21.67	21.69	21.68	25	0	21.71	21.73	21.72
	12	6	21.63	21.63	21.67	25	12	21.67	21.67	21.71
	12	13	21.46	21.48	21.66	25	25	21.50	21.52	21.70
16QAM	25	0	21.52	21.55	21.59	50	0	21.56	21.59	21.63
	1	0	22.19	22.17	21.75	1	0	22.23	22.21	21.79
	1	12	22.10	22.08	21.73	1	24	22.14	22.12	21.77
	1	24	22.06	22.06	21.64	1	49	22.10	22.10	21.68
	12	0	20.59	20.62	20.63	25	0	20.63	20.66	20.67
	12	6	20.60	20.64	20.66	25	12	20.64	20.68	20.70
64QAM	12	13	20.58	20.63	20.68	25	25	20.62	20.67	20.72
	25	0	20.54	20.58	20.64	50	0	20.58	20.62	20.68
	1	0	21.18	21.13	20.71	1	0	21.22	21.17	20.75
	1	12	21.03	21.07	20.68	1	24	21.07	21.11	20.72
	1	24	20.95	21.00	20.62	1	49	20.99	21.04	20.66
	12	0	19.59	19.61	19.55	25	0	19.63	19.65	19.59
Channel Bandwidth: 10 MHz	12	6	19.56	19.58	19.60	25	12	19.60	19.62	19.64
	12	13	19.55	19.62	19.64	25	25	19.59	19.66	19.68
	25	0	19.47	19.55	19.63	50	0	19.51	19.59	19.67

LTE Band 26					
Modulation	RB		Test Channel		
	Size	Offset	Low	Mid	High
Channel Bandwidth: 15 MHz					
QPSK	1	0	22.71	22.70	22.71
	1	12	22.69	22.67	22.65
	1	24	22.62	22.61	22.62
	12	0	21.81	21.79	21.78
	12	6	21.73	21.73	21.77
	12	13	21.59	21.58	21.76
	25	0	21.64	21.65	21.69
16QAM	1	0	22.31	22.27	21.85
	1	12	22.23	22.18	21.83
	1	24	22.17	22.16	21.74
	12	0	20.71	20.72	20.73
	12	6	20.75	20.74	20.76
	12	13	20.69	20.73	20.78
	25	0	20.69	20.68	20.74
64QAM	1	0	21.28	21.23	20.81
	1	12	21.16	21.17	20.78
	1	24	21.09	21.10	20.72
	12	0	19.69	19.71	19.65
	12	6	19.67	19.68	19.70
	12	13	19.68	19.72	19.74
	25	0	19.61	19.65	19.73

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

Band	Radiated	Conducted
GSM/GPRS/EDGE 850	1) GSM (GMSK, 1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link	1) GSM (GMSK, 1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link
CDMA2000 BC0	1xRTT	1xRTT

LTE worse case mode applicability and tested channel detail as below:

Item	Channel Bandwidth(MHz)						Modulation			RB #			Test		
	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
LTE Band 5															
Effective Radiated Power	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
99%&26dB Bandwidth	☒	☒	☒	☒	--	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
Band Edge at antenna terminals	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
Field strength of spurious radiation	☒	☒	☒	☒	--	--	☒	☐	☐	☒	☐	☐	☐	☒	☐
Frequency stability	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
LTE Band 26															
Effective Radiated Power	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
99%&26dB Bandwidth	☒	☒	☒	☒	☒	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
Band Edge at antenna terminals	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
Field strength of spurious radiation	☒	☒	☒	☒	☒	--	☒	☐	☐	☒	☐	☐	☐	☒	☐
Frequency stability	☐	☐	☐	☐	☒	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
Remark: The mark " ☒ " means is chosen for testing; The mark " ☐ " means is not chosen for testing; The mark "--" means is not supported bandwidth.															

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2 Subpart J	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22 Subpart H	Cellular Radiotelephone Service
3	ANSI/TIA-603-D 2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
4	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v02r02

5.2 EFFECTIVE RADIATED POWER (ERP)

Test Requirement: FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)

Test Method: KDB 971168 D01v02r02 & ANSI/TIA/EIA-603-D 2010

Limit:

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Test Procedure:

Test procedure as below:

- The EUT was powered ON and placed on a 0.8/1.5m high table at a 3 meter semi/fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
- A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
- The output power into the substitution antenna was then measured.
- Steps 6) and 7) were repeated with both antennas polarized.
- Calculate power in dBm by the following formula:

$$ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$EIRP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$EIRP = ERP + 2.15dB$$

where:

Pg is the generator output power into the substitution antenna.

- Test the EUT in the lowest channel, the middle channel the Highest channel
- The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the Y axis positioning which it is worse case.
- Repeat above procedures until all frequencies measured was complete.

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup: Refer to section 4.2.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: See table below

Maximum ERP (dBm)						
Channel	GSM 1Tx-slot	EDGE 1Tx-slot	WCDMA RMC 12.2Kbps	CDMA2000 BC0 1xRTT	Limit (dBm)	Result
Lowest	28.87	23.01	20.97	19.3	38.45	Pass
Middle	28.91	22.69	20.96	19.9	38.45	Pass
Highest	29.20	23.20	20.80	20.2	38.45	Pass

LTE Band 5 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	21.20	20.25	19.30	38.45	Pass
Middle	21.22	20.33	19.28	38.45	Pass
Highest	21.28	20.33	19.12	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	21.04	20.45	19.56	38.45	Pass
Middle	21.17	20.51	19.64	38.45	Pass
Highest	21.30	20.52	19.22	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	21.30	20.51	19.55	38.45	Pass
Middle	21.20	20.68	19.27	38.45	Pass
Highest	21.26	20.46	19.39	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	21.16	20.23	19.49	38.45	Pass
Middle	21.26	20.41	19.74	38.45	Pass
Highest	21.50	20.33	19.52	38.45	Pass

LTE Band 26 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	20.86	20.65	19.35	38.45	Pass
Middle	20.87	20.54	19.31	38.45	Pass
Highest	20.96	20.30	18.86	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.85	20.74	19.74	38.45	Pass
Middle	21.16	20.62	19.60	38.45	Pass
Highest	20.92	20.30	19.22	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	21.01	20.54	19.83	38.45	Pass
Middle	20.92	20.45	19.71	38.45	Pass
Highest	21.02	20.19	19.37	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	21.11	20.71	19.55	38.45	Pass
Middle	21.02	20.90	19.49	38.45	Pass
Highest	21.30	20.12	19.04	38.45	Pass
Channel Bandwidth: 15MHz					
Lowest	21.12	20.89	19.57	38.45	Pass
Middle	21.06	20.58	19.56	38.45	Pass
Highest	21.36	20.21	19.20	38.45	Pass

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit:

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Test Procedure:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA2000, 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.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: The full result refer to section 4.5 for details.

5.4 PEAK-TO-AVERAGE RATIO

Test Requirement: FCC 47 CFR Part 22.913(d)

Test Method: KDB 971168 D01v02r02

Limit: The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

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

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

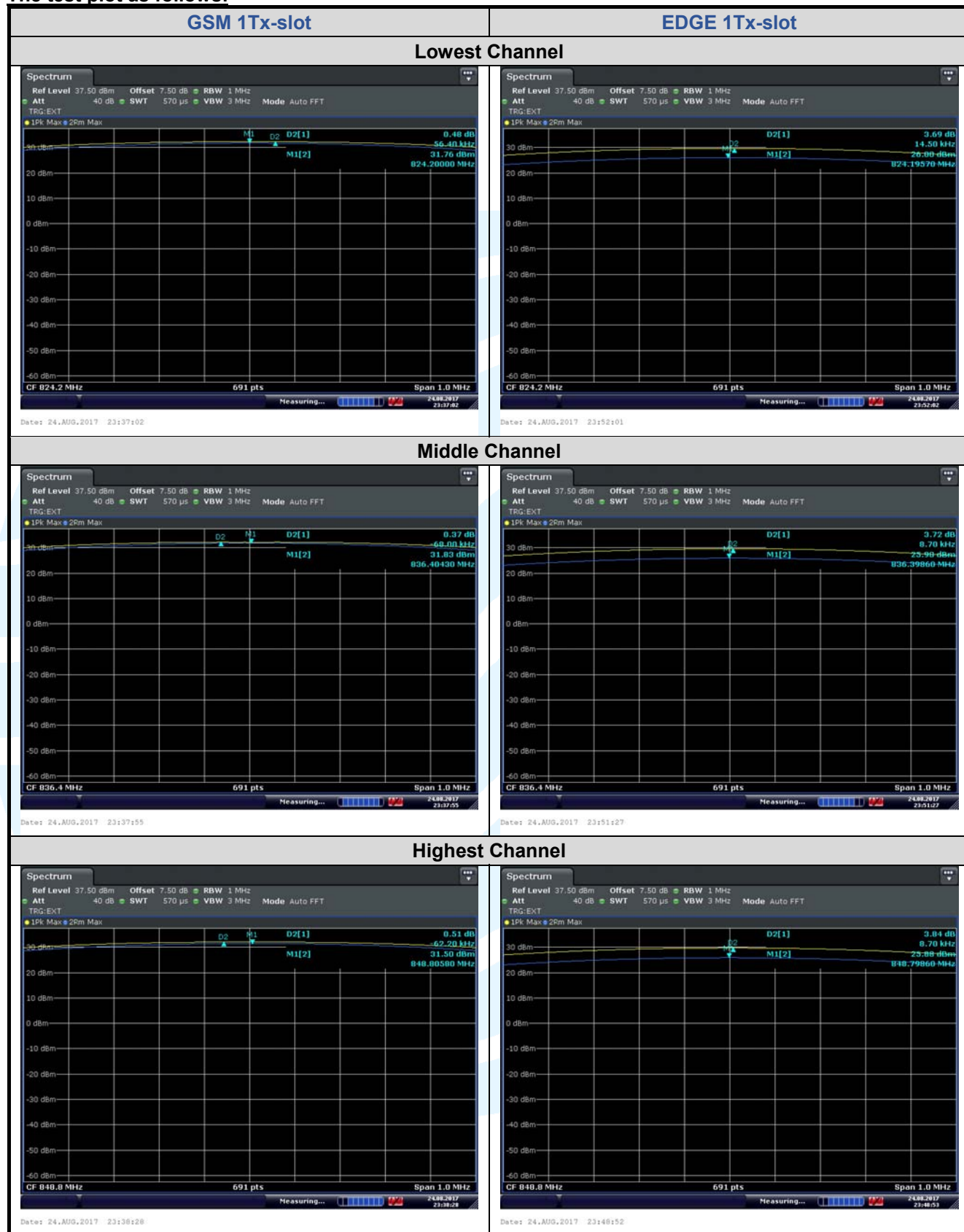
Test Data: See table below

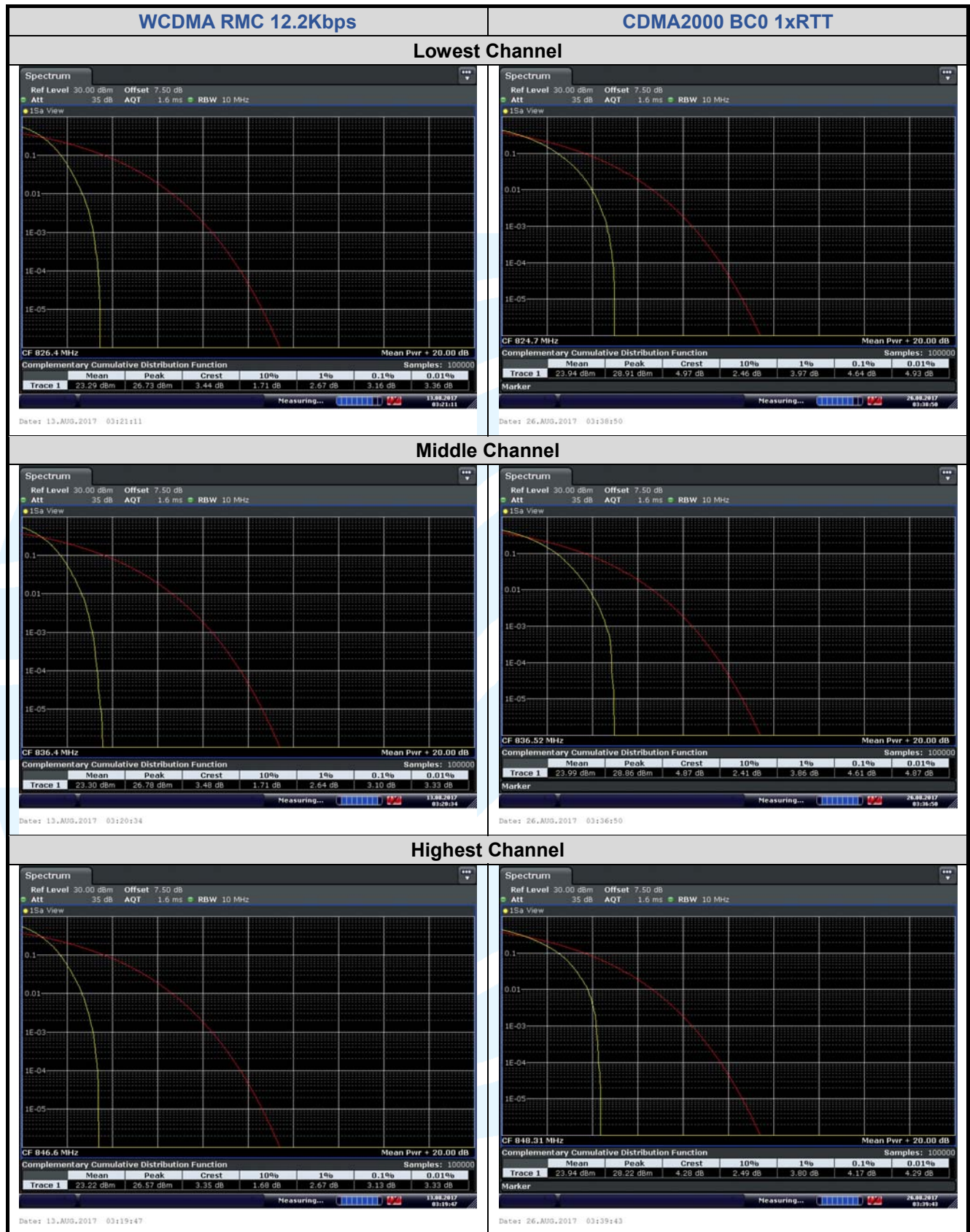
Peak-to-average ratio (dB)						
Channel	GSM 1Tx-slot	EDGE 1Tx-slot	WCDMA RMC 12.2Kbps	CDMA2000 BC0 1xRTT	Limit (dBm)	Result
Lowest	0.48	3.69	3.16	4.64	13	Pass
Middle	0.37	3.72	3.10	4.61	13	Pass
Highest	0.51	3.84	3.13	4.17	13	Pass

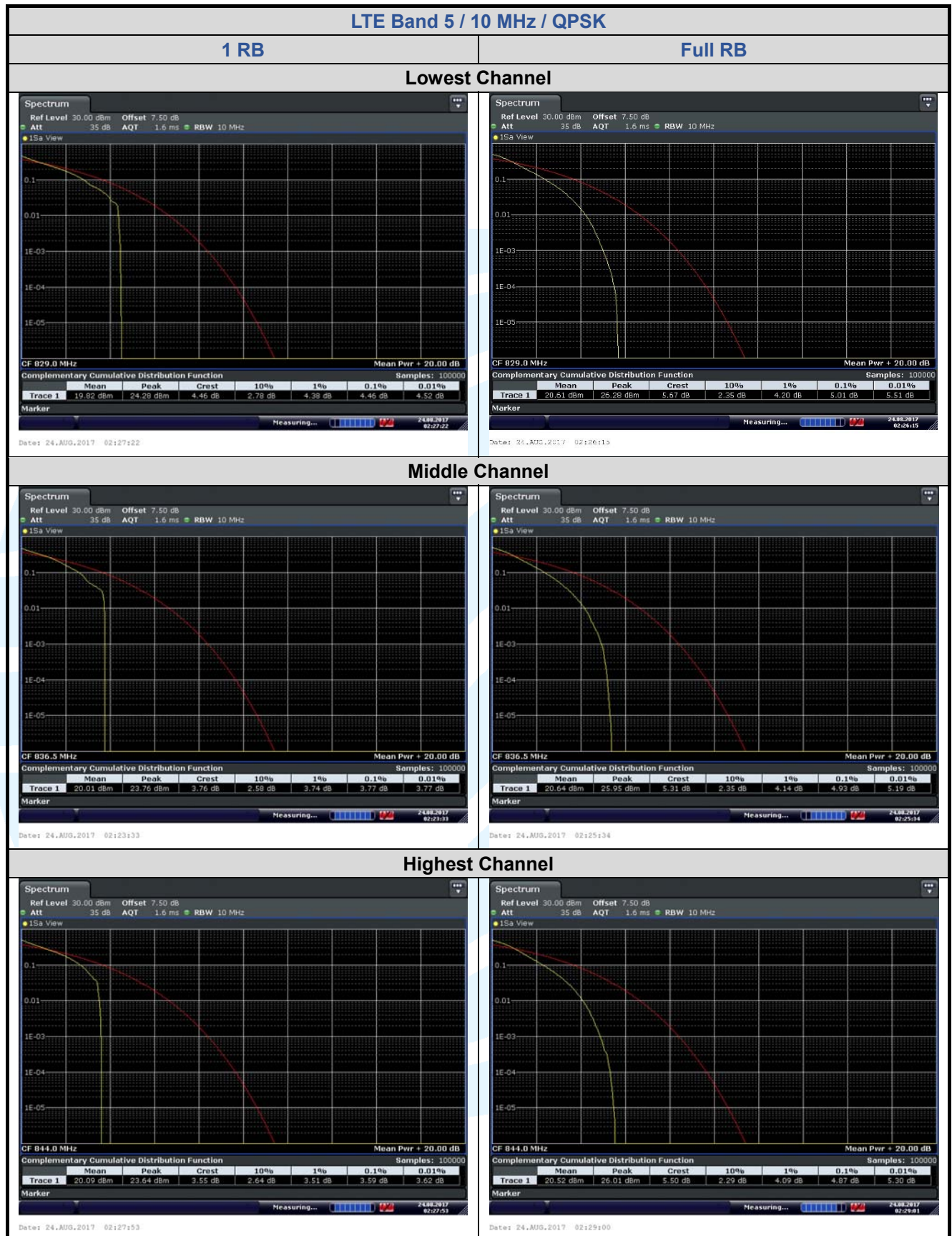
LTE Band 5 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	4.46	5.07	5.04	13	Pass
	Full RB	5.01	5.97	5.94	13	Pass
Middle	1 RB	3.77	4.75	4.64	13	Pass
	Full RB	4.93	4.93	5.88	13	Pass
Highest	1 RB	3.59	4.49	4.46	13	Pass
	Full RB	4.87	5.83	5.91	13	Pass

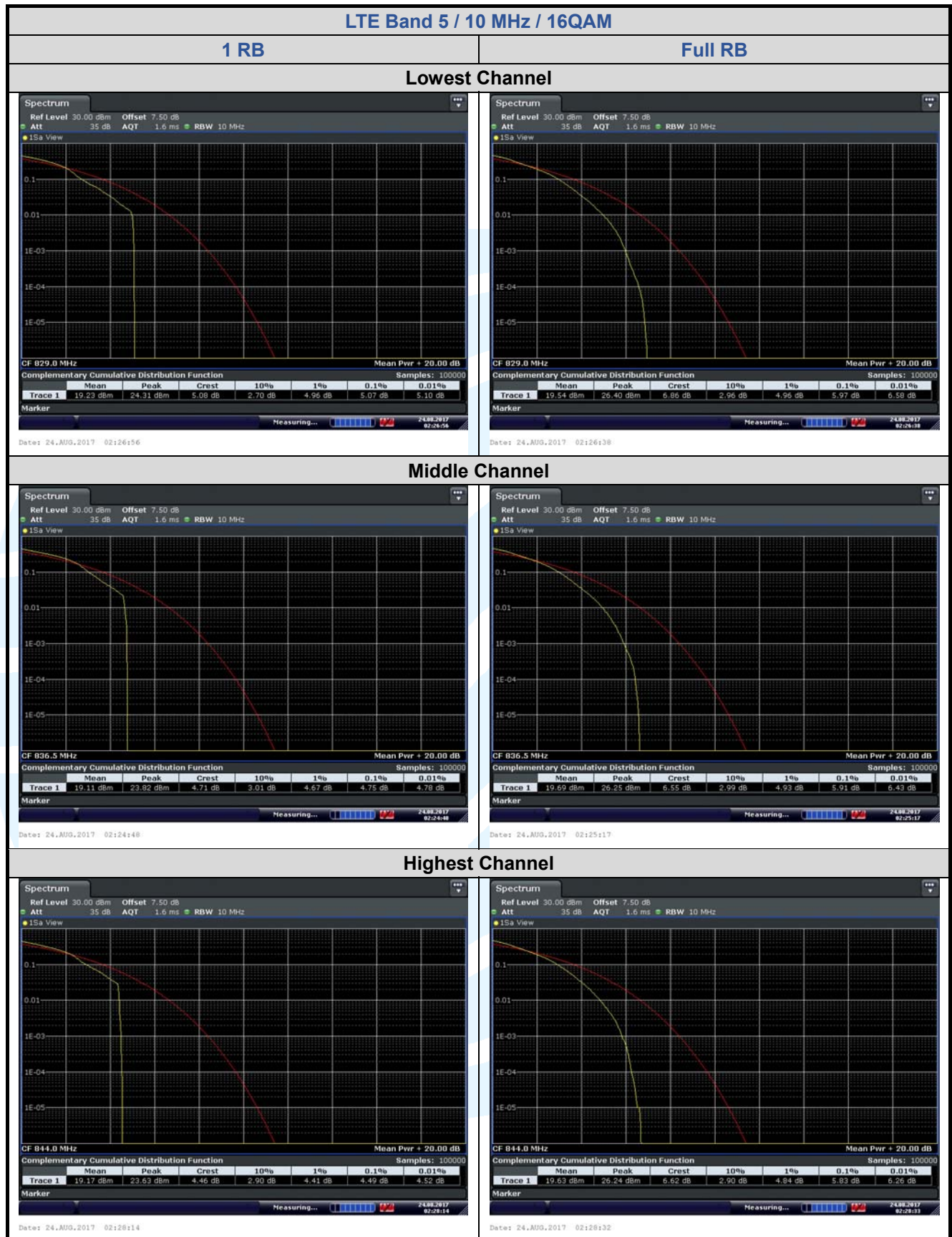
LTE Band 26 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.68	4.32	4.49	13	Pass
	Full RB	5.19	6.09	6.03	13	Pass
Middle	1 RB	4.58	5.48	5.45	13	Pass
	Full RB	4.99	5.94	5.94	13	Pass
Highest	1 RB	4.55	5.51	5.13	13	Pass
	Full RB	5.30	5.97	6.09	13	Pass

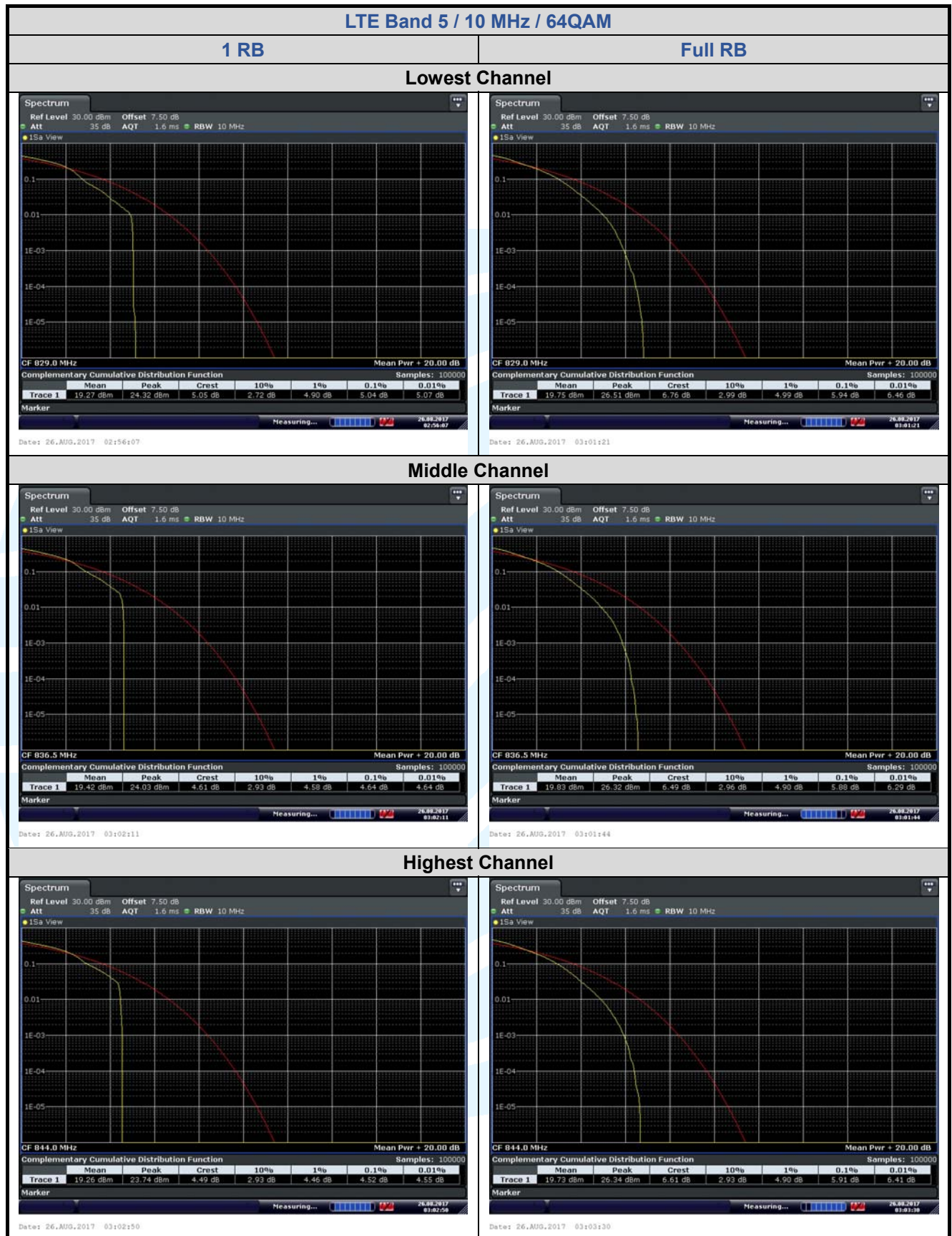
The test plot as follows:

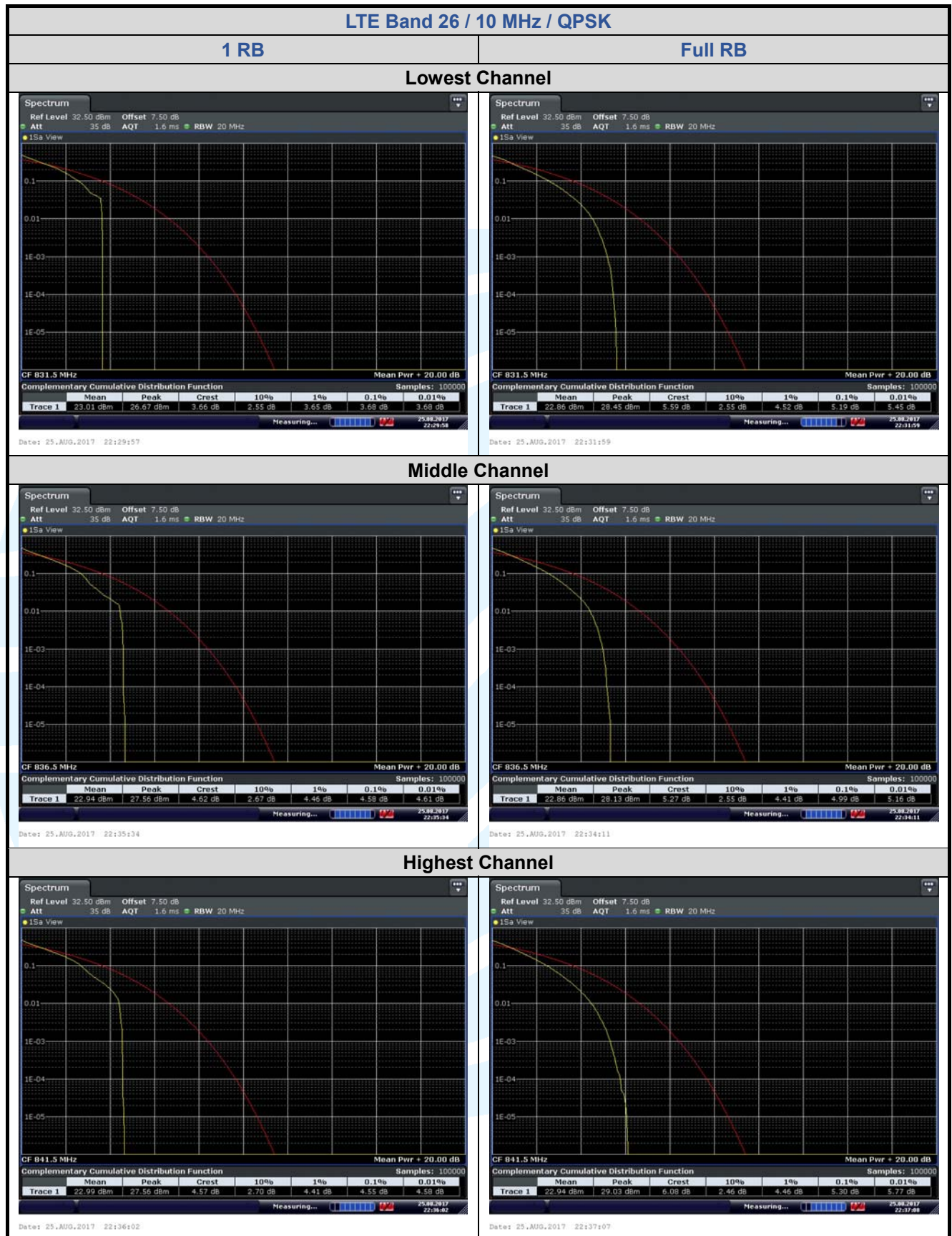


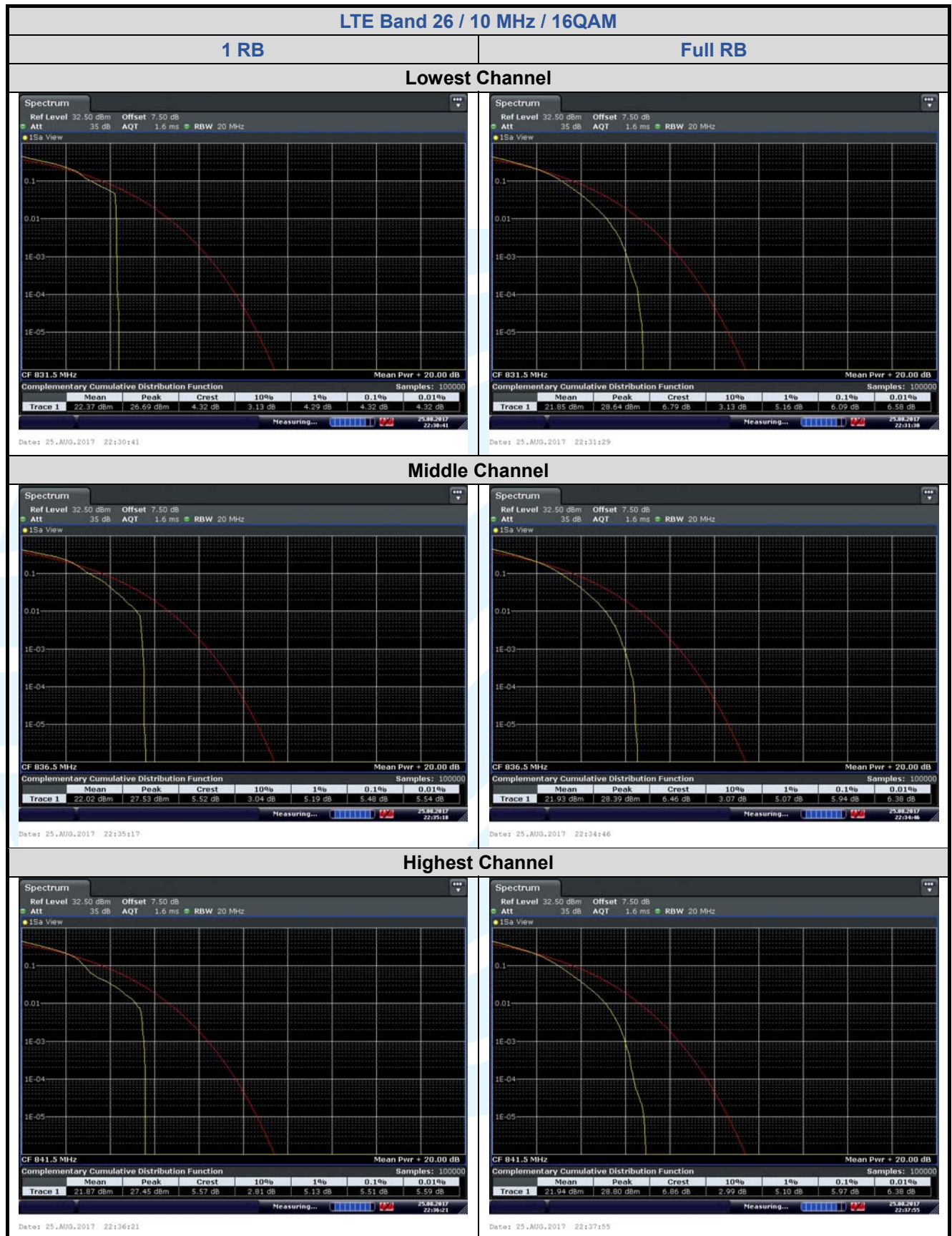


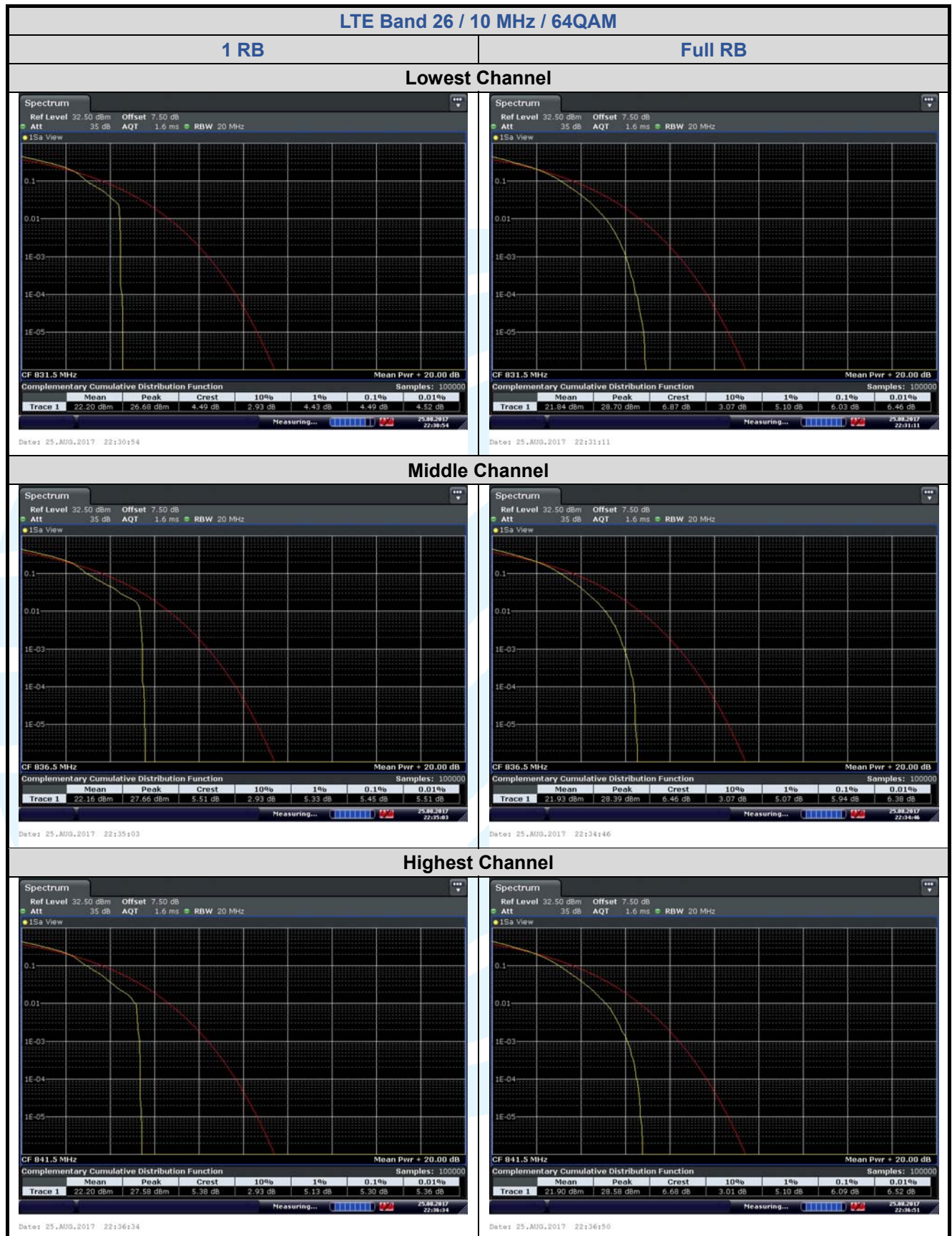












5.599%&26DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 22.917(b)

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit: No Limit

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: See table below

99% & 26 dB Bandwidth				
Test Mode	Channel	Frequency (MHz)	26 dB BW (kHz)	99% BW (kHz)
GSM 1Tx-slot	128	824.2	313.1	244.98
	190	836.6	315.5	246.94
	251	848.8	317.7	247.37
EDGE 1Tx-slot	128	824.2	305.2	237.34
	190	836.6	307.8	247.09
	251	848.8	314.4	251.54

99% & 26 dB Bandwidth				
Test Mode	Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
WCDMA RMC 12.2Kbps	4132	826.4	4.723	4.1352
	4182	836.4	4.710	4.1290
	4233	846.6	4.716	4.1222
CDMA2000 BC0 1xRTT	1013	824.7	1.423	1.2745
	384	836.52	1.427	1.2751
	777	848.31	1.430	1.2795

LTE Band 5								
Channel	RB Configuration		26 dB BW (MHz)			99% BW (MHz)		
	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Channel Bandwidth: 1.4 MHz								
Lowest	6	0	1.241	1.237	1.226	1.0900	1.0906	1.0881
Middle	6	0	1.243	1.252	1.246	1.0853	1.0919	1.0945
Highest	6	0	1.237	1.242	1.239	1.0900	1.0921	1.0951
Channel Bandwidth: 3 MHz								
Lowest	15	0	3.016	2.973	2.981	2.7086	2.7038	2.6951
Middle	15	0	3.004	3.001	3.005	2.7050	2.7041	2.7054
Highest	15	0	3.001	3.020	3.015	2.7018	2.7008	2.7022
Channel Bandwidth: 5 MHz								
Lowest	25	0	5.003	4.948	4.938	4.5271	4.5158	4.4991
Middle	25	0	4.968	4.966	4.976	4.5091	4.5198	4.5329
Highest	25	0	4.986	4.985	4.944	4.5070	4.5216	4.5141
Channel Bandwidth: 10 MHz								
Lowest	50	0	9.870	9.811	9.805	9.0019	9.0168	8.9717
Middle	50	0	9.855	9.782	9.714	8.9578	8.9702	8.9603
Highest	50	0	9.850	9.828	9.775	9.0074	8.9915	8.9989

LTE Band 26								
Channel	RB Configuration		26 dB BW (MHz)			99% BW (MHz)		
	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Channel Bandwidth: 1.4 MHz								
Lowest	6	0	1.242	1.250	1.243	1.0932	1.0974	1.0967
Middle	6	0	1.236	1.241	1.246	1.0951	1.0950	1.0956
Highest	6	0	1.244	1.225	1.221	1.0970	1.0887	1.0905
Channel Bandwidth: 3 MHz								
Lowest	15	0	2.986	3.020	3.007	2.7132	2.6986	2.7017
Middle	15	0	3.017	3.018	3.031	2.7121	2.0748	2.7027
Highest	15	0	2.984	3.023	3.024	2.7024	2.6932	2.7027
Channel Bandwidth: 5 MHz								
Lowest	25	0	4.971	4.987	4.989	4.5076	4.5297	4.5246
Middle	25	0	4.968	4.945	4.928	4.5114	4.5071	4.5076
Highest	25	0	4.952	4.967	4.951	4.5037	4.5134	4.5030
Channel Bandwidth: 10 MHz								
Lowest	50	0	9.767	9.787	9.843	8.9982	8.9931	8.9745
Middle	50	0	9.915	9.805	9.844	8.9684	8.9581	8.9717
Highest	50	0	9.823	9.833	9.757	9.0097	8.9860	8.9929
Channel Bandwidth: 15 MHz								
Lowest	75	0	14.71	14.66	14.69	13.473	13.481	13.461
Middle	75	0	14.63	14.61	14.69	13.410	13.441	13.447
Highest	75	0	14.81	14.54	14.65	13.500	13.455	13.483

The test plot as follows:

