FCC RADIO TEST REPORT

FCC ID	:	**QISLYA-L0C**
Equipment	:	**Smart Phone**
Brand Name	:	**HUAWEI**
Model Name	:	**LYA-L0C**
Applicant	:	**Huawei Technologies Co., Ltd. Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C**
Manufacturer	:	**Huawei Technologies Co., Ltd. Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C**
Standard	:	**47 CFR Part 2, 27**

The product was received on Aug. 17, 2018 and testing was started from Aug. 29, 2018 and completed on Sep. 02, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.

Eric Shih

NVLAP TESTING
NVLAP LAB CODE 600156-0

Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
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Appendix B. Test Results of ERP/EIRP and Radiated Test

History of this test report

Report No.	Version	Description	Issued Date
FG881704A	01	Initial issue of report	Sep. 19, 2018

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power (Band 66)	Reporting only	-
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 66)	Pass	
3.3	§27.50 (d)(5)	Peak-to-Average Ratio(Band 66)	Pass	-
3.4	§2.1049	Occupied Bandwidth (Band 66)	Reporting only	-
3.5	§2.1051 §27.53 (h)	Conducted Band Edge Measurement (Band 66)	Pass	-
3.6	§2.1051 §27.53 (h)	Conducted Spurious Emission (Band 66)	Pass	-
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage (Band 66)	Pass	-
4.2	§2.1053 §27.53 (h)	Radiated Spurious Emission (Band 66)	Pass	Under limit 43.88 dB at 5283.000 MHz
Remark: This is a variant report which can be referred to the Table for Multiple Listing. All the test cases were performed on original report which can be referred to Sporton Report Number FG880204A and FG880204C. Based on the original report, the test cases were verified.				

Reviewed by: Wii Chang

Report Producer: Maggie Chiang

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	HUAWEI
Model Name	LYA-L0C
FCC ID	QISLYA-L0C
EUT supports Radios application	GSM/WCDMA/HSPA/LTE/NFC/GNSS/WPC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 Bluetooth BR/EDR/LE
HW Version	HL2LAYAM
SW Version	5.0.1.82 (C792E4R1P9log)
EUT Stage	Identical Prototype

Accessories Information				
AC Adapter 1	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-100400U00
	Manufacturer	Huawei Technologies Co., Ltd.		
	Power Rating	I/P: 100 - 240 Vac~50/60Hz, 1.2 A; O/P: 5V⎓2A or 9V⎓2A or 10V⎓4A		
AC Adapter 2	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-100400E00
	Manufacturer	Huawei Technologies Co., Ltd.		
	Power Rating	I/P: 100 - 240 Vac~50/60Hz, 1.2 A; O/P: 5V⎓2A or 9V⎓2A or 10V⎓4A		
AC Adapter 3	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-100400B00
	Manufacturer	Huawei Technologies Co., Ltd.		
	Power Rating	I/P: 100 - 240 Vac~50/60Hz, 1.2 A; O/P: 5V⎓2A or 9V⎓2A or 10V⎓4A		
AC Adapter 4	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HW-100400A00
	Manufacturer	Huawei Technologies Co., Ltd.		
	Power Rating	I/P: 100 - 240 Vac~50/60Hz, 1.2 A; O/P: 5V⎓2A or 9V⎓2A or 10V⎓4A		
Battery 1	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HB486486ECW
	Power Rating	Nominal Voltage: ⎓+3.82Vdc Charging Voltage: ⎓+4.4V Rated Capacity: 4100mAh	Type	Li-ion Polymer
Battery 2	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HB486486ECW
	Power Rating	Nominal Voltage: ⎓+3.82Vdc Charging Voltage: ⎓+4.4V Rated Capacity: 4100mAh	Type	Li-ion Polymer
Battery 3	Brand Name	Huawei Technologies Co., Ltd.	Model Name	HB486486ECW
	Power Rating	Nominal Voltage: ⎓+3.82Vdc Charging Voltage: ⎓+4.4V Rated Capacity: 4100mAh	Type	Li-ion Polymer
Earphone 1	Brand Name	Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD		
	Model Name	MEND1632B729003		
Earphone 2	Brand Name	GoerTek Inc.		
	Model Name	Windy-S		
Earphone 3	Brand Name	Boluo County Quancheng Electronic Co., ltd		
	Model Name	1331-3301-6001-TC-088		
Earphone 4	Brand Name	Foster Electric Co.,(GuangZhou)LTD.Sales Dep.		
	Model Name	630276		

Note: Regarding to more detail and other information, please refer to user manual.

1.2 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

<table>
<tr><th>Model</th><th>LYA-L29</th><th>LYA-L0C</th></tr>
<tr><td>PCB</td><td>The same</td><td>The same</td></tr>
<tr><td>Frequency-GSM</td><td>The same</td><td>The same</td></tr>
<tr><td>Frequency-WCDMA</td><td>The same</td><td>The same</td></tr>
<tr><td>Frequency-LTE</td><td>Different B2/4/5/7/12/17/38/40/41 (2545~2655MHz，support AXGP)</td><td>Different B2/4/5/7/12/17/38/40/41 (2545~2655MHz，support AXGP)/B66</td></tr>
<tr><td>4*4 Mimo</td><td>Different
Support B3、B7、B1</td><td>Different
Support B2、B7、B66(B4)
Replace TRI SAW filters of B1/B3/B7 with SAW filters of B2/B66/B7.
Replace</td></tr>
<tr><td>SIM Card</td><td>Dual</td><td>Single</td></tr>
<tr><td>RF NV parameters</td><td>Different</td><td>Different
The power of LYA-L0C is different from LYA-L29 by change RF NV parameters.
• Down antenna（Primary）
① 0mm body Scenario
<table><tr><td></td><td>WB2</td><td>WB4</td><td>LTEB2</td><td>LTEB4</td></tr><tr><td>reduce</td><td>0.5dB</td><td>0.5dB</td><td>0.5dB</td><td>1.5dB</td></tr></table>
② 10mm hotspot Scenario
<table><tr><td></td><td>LTEB4</td></tr><tr><td>reduce</td><td>0.5dB</td></tr></table>
• Up antenna (Secondary)
Head Scenario
<table><tr><td></td><td>WB2</td><td>WB4</td><td>LTEB2</td></tr><tr><td>rise</td><td>1dB</td><td>1dB</td><td>1dB</td></tr></table></td></tr>
</table>

Hardware	Different Location ID: Z4102, Z4302, Z4401 Description:B1/3/7 Tri saw filter,2140MHz. Location ID: Z4103 Description: SAW filter -1960MHz	Different 1) Replace TRI SAW filters of B1/B3/B7 with SAW filters of B2/B66/B7. Replace Location ID: Z4102,Z4302,Z4401 Description:B2/B66/B7 Tri saw filter ,2655MHz. 2)Delete some chip inductors in Peripheral RF Matching circuits of the diversity circuit, MIMO main circuit, and MIMO diversity circuit. Delete Location ID: L4126 L4127 L4130 L3506 Description: Chip inductor 0.018uH/0.001uH/0.0022uH/0.0039uH 3) Delete The circuits related to the B32 frequency band. Delete: Location ID: Z3502,Z4104 Description: B32 saw filter 1474MHz Location ID: C3512,C5401,C5405 Description: Ceramic capacitor 0.033nF Location ID: Z5403 Description: Ceramic filter -1710MHz Location ID: U3503,U4101 Description: RF low noise amplifier -1559~1610MHz 4)Replace B3 SAW filter with B2 SAW filter and slight change of Peripheral RF matching circuits. Replace: Location ID: Z4103 Description: SAW filter -1842.5MHz Delete: Location ID:L3502 L3516 L4129 Description: Chip inductor 0.0056uH/0.002uH/0.0075uH Location ID:C3514,C4110 Description: Ceramic capacitor 0.018nF
Software	Different	Different
Dimensions	The same	The same

Appearance	The same	The same
main antenna	The same	The same
BT/Wi-Fi antenna	The same	The same
DIV antenna	The same	The same
Supported CA configurations for DL CA	Different support:CA_1A-3A CA_1C-3A CA_1A-3C CA_1A-3A-3A CA_1C-3C CA_1A-3D CA_1C-3D CA_1A-7A-7A CA_1A-32A CA_1A-38A CA_1A-38C CA_1A-40A CA_1A-40C CA_1A-41A CA_1A-41C CA_3A-3A-7A CA_3A-7A-7A CA_3A-3A-7A-7A CA_3A-3A-8A CA_3A-32A CA_3C-32A CA_3A-38A CA_3C-38A CA_3A-38C CA_3C-38C CA_3A-40A CA_3A-40C CA_3A-40D CA_3A-41A CA_7A-7A-8A CA_7A-32A CA_8A-32A CA_20A-32A CA_1A-3A-5A CA_1A-3C-5A CA_1A-3A-7A CA_1C-3A-7A CA_1A-3C-7A CA_1A-3A-3A-7A CA_1A-3A-7C CA_1A-3A-7A-7A CA_1C-3C-7A CA_1A-3A-3A-7A-7A CA_1A-3A-8A CA_1A-3C-8A CA_1A-3A-19A CA_1A-3A-20A CA_1A-3C-20A CA_1A-3A-26A CA_1A-3A-28A CA_1A-3C-28A CA_1A-3A-32A CA_1A-3A-38A CA_1A-3C-38A CA_1A-3A-38C CA_1A-3C-38C CA_1A-28A-40C CA_3A-3A-7A-8A CA_3A-7A-7A-8A CA_3A-3A-7A-7A-8A CA_3A-3A-7A-20A CA_3A-7A-32A CA_3C-7A-32A CA_3A-8A-38A CA_3C-8A-38A CA_3A-20A-32A CA_3A-28A-40A CA_3A-28A-40C CA_3A-28A-40D CA_7A-8A-32A CA_7A-20A-32A CA_1A-3A-7A-8A CA_1A-3C-7A-8A CA_1A-3A-7A-20A CA_1A-3C-7A-20A CA_1A-3A-7A-28A CA_1A-3A-7C-28A CA_1A-3A-7A-32A CA_1A-3A-8A-38A CA_1A-3A-20A-32A CA_1A-3A-28A-40A CA_1A-3A-28A-40C CA_1A-7A-20A-32A CA_3A-7A-20A-32A CA_1A-3A-7A-20A-32A unsupport:CA_66B CA_66C CA_66D CA_2A-2A	Different unsupport:CA_1A-3A CA_1C-3A CA_1A-3C CA_1A-3A-3A CA_1C-3C CA_1A-3D CA_1C-3D CA_1A-7A-7A CA_1A-32A CA_1A-38A CA_1A-38C CA_1A-40A CA_1A-40C CA_1A-41A CA_1A-41C CA_3A-3A-7A CA_3A-7A-7A CA_3A-3A-7A-7A CA_3A-3A-8A CA_3A-32A CA_3C-32A CA_3A-38A CA_3C-38A CA_3A-38C CA_3C-38C CA_3A-40A CA_3A-40C CA_3A-40D CA_3A-41A CA_7A-7A-8A CA_7A-32A CA_8A-32A CA_20A-32A CA_1A-3A-5A CA_1A-3C-5A CA_1A-3A-7A CA_1C-3A-7A CA_1A-3C-7A CA_1A-3A-3A-7A CA_1A-3A-7C CA_1A-3A-7A-7A CA_1C-3C-7A CA_1A-3A-3A-7A-7A CA_1A-3A-8A CA_1A-3C-8A CA_1A-3A-19A CA_1A-3A-20A CA_1A-3C-20A CA_1A-3A-26A CA_1A-3A-28A CA_1A-3C-28A CA_1A-3A-32A CA_1A-3A-38A CA_1A-3C-38A CA_1A-3A-38C CA_1A-3C-38C CA_1A-28A-40C CA_3A-3A-7A-8A CA_3A-7A-7A-8A CA_3A-3A-7A-7A-8A CA_3A-3A-7A-20A CA_3A-7A-32A CA_3C-7A-32A CA_3A-8A-38A CA_3C-8A-38A CA_3A-20A-32A CA_3A-28A-40A CA_3A-28A-40C CA_3A-28A-40D CA_7A-8A-32A CA_7A-20A-32A CA_1A-3A-7A-8A CA_1A-3C-7A-8A CA_1A-3A-7A-20A CA_1A-3C-7A-20A CA_1A-3A-7A-28A CA_1A-3A-7C-28A CA_1A-3A-7A-32A CA_1A-3A-8A-38A CA_1A-3A-20A-32A CA_1A-3A-28A-40A CA_1A-3A-28A-40C CA_1A-7A-20A-32A CA_3A-7A-20A-32A CA_1A-3A-7A-20A-32A support:CA_66B CA_66C CA_66D CA_2A-2A CA_4A-4A CA_12A-12A CA_66A-66A CA_2A-4A

	CA_4A-4A CA_12A-12A CA_66A-66A CA_2A-4A CA_2C-4A CA_2A-4A-4A CA_2A-5A CA_2A-7A CA_2A-7C CA_2A-7A-7A CA_2A-12A CA_2A-2A-12A CA_2A-12B CA_2A-12A-12A CA_2A-17A CA_2A-28A CA_2A-66A CA_2A-2A-66A CA_4A-5A CA_4A-4A-5A CA_4A-7A CA_4A-4A-7A CA_4A-7C CA_4A-7A-7A CA_4A-12A CA_4A-4A-12A CA_4A-12B CA_4A-12A-12A CA_4A-17A CA_4A-28A CA_7A-12A CA_7A-12B CA_7A-12A-12A CA_7A-66A CA_7C-66A CA_7A-66A-66A CA_7C-66A-66A CA_12A-66A CA_12B-66A CA_12A-66A-66A CA_2A-4A-5A CA_2A-4A-7A CA_2A-4A-7C CA_2A-4A-7A-7A CA_2A-4A-12A CA_2A-4A-12A-12A CA_2A-4A-28A CA_2A-7A-12A CA_2A-7A-12B CA_2A-7A-12A-12A CA_2A-7A-66A CA_2A-12A-66A CA_2A-2A-12A-66A CA_2A-12B-66A CA_4A-5A-7A CA_4A-7A-12A CA_4A-7A-12B CA_4A-7A-12A-12A CA_7A-12A-66A CA_7A-12B-66A CA_2A-4A-7A-12A CA_2A-7A-12A-66A CA_2A-7A-12B-66A	CA_2C-4A CA_2A-4A-4A CA_2A-5A CA_2A-7A CA_2A-7C CA_2A-7A-7A CA_2A-12A CA_2A-2A-12A CA_2A-12B CA_2A-12A-12A CA_2A-17A CA_2A-28A CA_2A-66A CA_2A-2A-66A CA_4A-5A CA_4A-4A-5A CA_4A-7A CA_4A-4A-7A CA_4A-7C CA_4A-7A-7A CA_4A-12A CA_4A-4A-12A CA_4A-12B CA_4A-12A-12A CA_4A-17A CA_4A-28A CA_7A-12A CA_7A-12B CA_7A-12A-12A CA_7A-66A CA_7C-66A CA_7A-66A-66A CA_7C-66A-66A CA_12A-66A CA_12B-66A CA_12A-66A-66A CA_2A-4A-5A CA_2A-4A-7A CA_2A-4A-7C CA_2A-4A-7A-7A CA_2A-4A-12A CA_2A-4A-12A-12A CA_2A-4A-28A CA_2A-7A-12A CA_2A-7A-12B CA_2A-7A-12A-12A CA_2A-7A-66A CA_2A-12A-66A CA_2A-2A-12A-66A CA_2A-12B-66A CA_4A-5A-7A CA_4A-7A-12A CA_4A-7A-12B CA_4A-7A-12A-12A CA_7A-12A-66A CA_7A-12B-66A CA_2A-4A-7A-12A CA_2A-7A-12A-66A CA_2A-7A-12B-66A CA_2A-7A-7A-66A-66A CA_2A-7A-7A-66A CA_2A-7A-66A-66A CA_7A-7A-66A CA_7A-7A-66A-66A CA_2A-66A-66A
Supported CA configurations for UL CA	Different support:CA_3A-20A CA_7A-20A	Different Unsupport:CA_3A-20A CA_7A-20A
Others	NA	NA

1.3 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz
Rx Frequency	LTE Band 66 : 2110.7 MHz ~ 2199.3 MHz
Bandwidth	LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	**<For Up Antenna>** LTE Band 66 : 23.15 dBm **<For Down Antenna>** LTE Band 66 : 23.45 dBm
Antennta Type	IFA Antenna
Antenna Gain	**<For Up Antenna>** LTE Band 66 : -5.78 dBi **<For Down Antenna>** LTE Band 66 : -0.27 dBi
Type of Modulation	QPSK / 16QAM / 64QAM

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

<For Up Antenna>

LTE Band 66		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1710.7 ~ 1779.3	1M10G7D	-	0.0537	1M10W7D	-	0.0468	1M09W7D	-	0.0371
3	1711.5 ~ 1778.5	2M75G7D	-	0.0518	2M73W7D	-	0.0449	2M73W7D	-	0.0354
5	1712.5 ~ 1777.5	4M50G7D	-	0.0532	4M52W7D	-	0.0427	4M51W7D	-	0.0371
10	1715.0 ~ 1775.0	9M09G7D	0.0019	0.0531	9M09W7D	-	0.0457	9M03W7D	-	0.0372
15	1717.5 ~ 1772.5	13M6G7D	-	0.0540	13M5W7D	-	0.0412	13M5W7D	-	0.0360
20	1720.0 ~ 1770.0	18M4G7D	-	0.0546	18M5W7D	-	0.0452	18M5W7D	-	0.0357

<For Down Antenna>

LTE Band 66		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1710.7 ~ 1779.3	1M10G7D	-	0.2028	1M10W7D	-	0.1710	1M09W7D	-	0.1483
3	1711.5 ~ 1778.5	2M75G7D	-	0.2051	2M73W7D	-	0.1795	2M73W7D	-	0.1327
5	1712.5 ~ 1777.5	4M50G7D	-	0.2023	4M52W7D	-	0.1734	4M51W7D	-	0.1396
10	1715.0 ~ 1775.0	9M09G7D	0.0019	0.2000	9M09W7D	-	0.1746	9M03W7D	-	0.1334
15	1717.5 ~ 1772.5	13M6G7D	-	0.2023	13M5W7D	-	0.1718	13M5W7D	-	0.1400
20	1720.0 ~ 1770.0	18M4G7D	-	0.2080	18M5W7D	-	0.1660	18M5W7D	-	0.1393

1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No. is CN5013.

Test Site	Sporton International (Kunshan) Inc.	
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	TH01-KS	630927

Note: The test site complies with ANSI C63.4 2014 requirement.

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	337463/577730

Note: The test site complies with ANSI C63.4 2014 requirement.

1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26-2015
- ANSI / TIA-603-E
- 47 CFR Part 2, 27
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

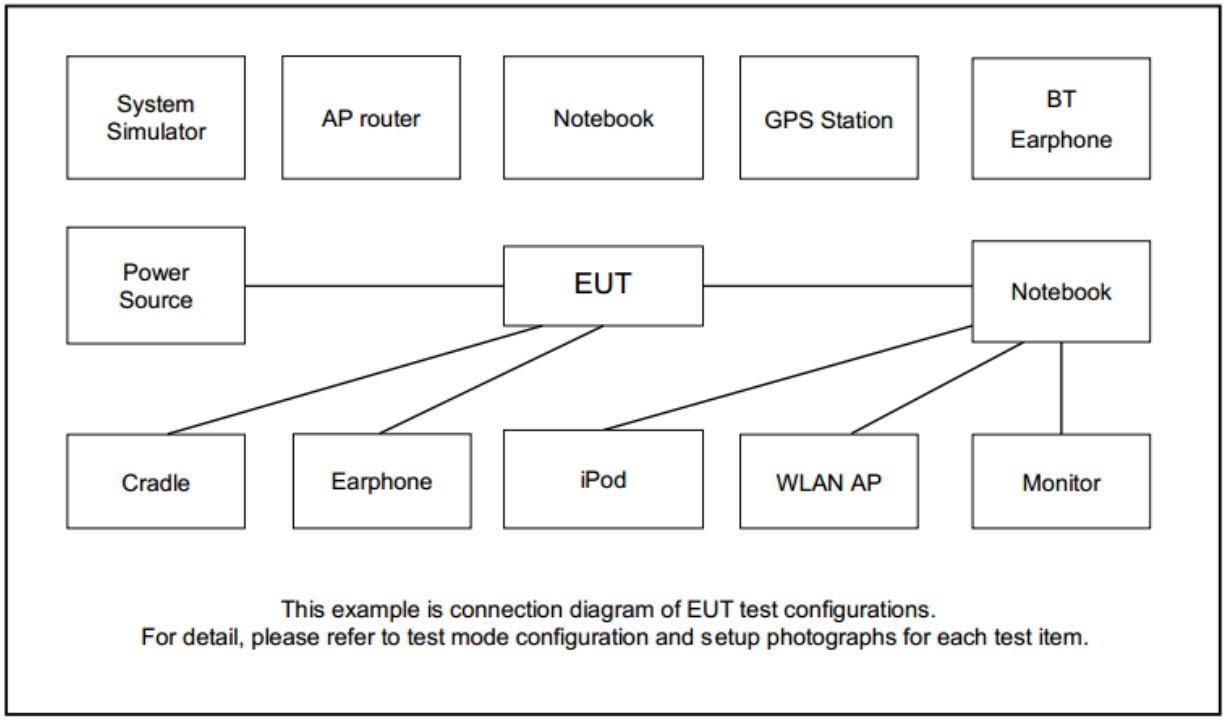
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	66						v	v	v	v	v		v	v	v	v
26dB and 99% Bandwidth	66	v	v	v	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	66	v	v	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	66	v	v	v	v	v	v	v	v	v	v			v	v	v
Frequency Stability	66				v			v					v		v	
E.R.P / E.I.R.P	66	v	v	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	66	Worst Case												v	v	v
Remark	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with USB Cable 1 and Earphone 1.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 66 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3

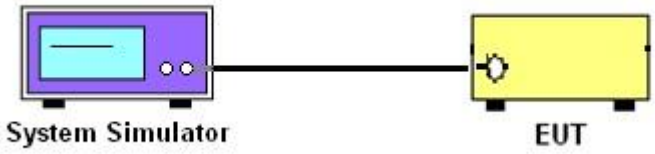
3 Conducted Test Items

3.1 Measuring Instruments

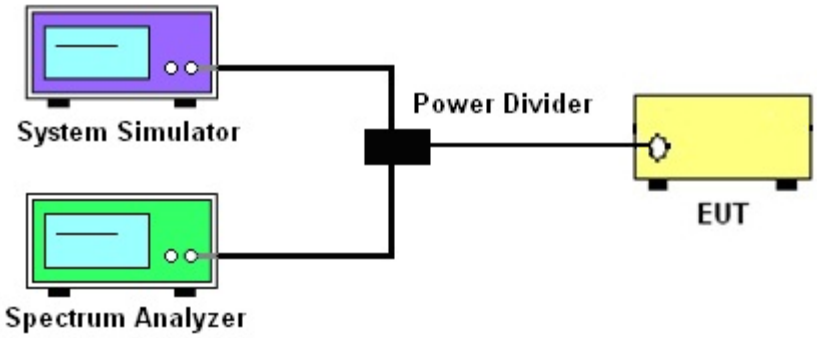
See list of measuring instruments of this test report.

3.1.1 Test Setup

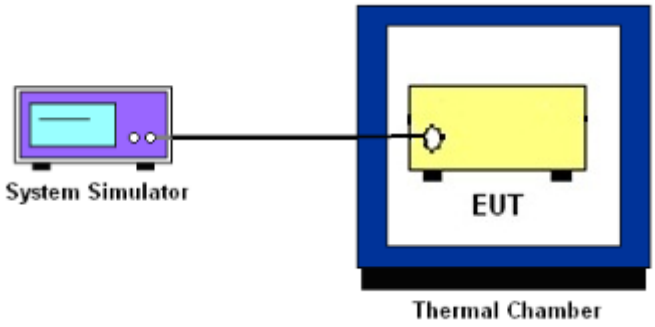
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 66.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.3.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.7.1

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 4.2

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

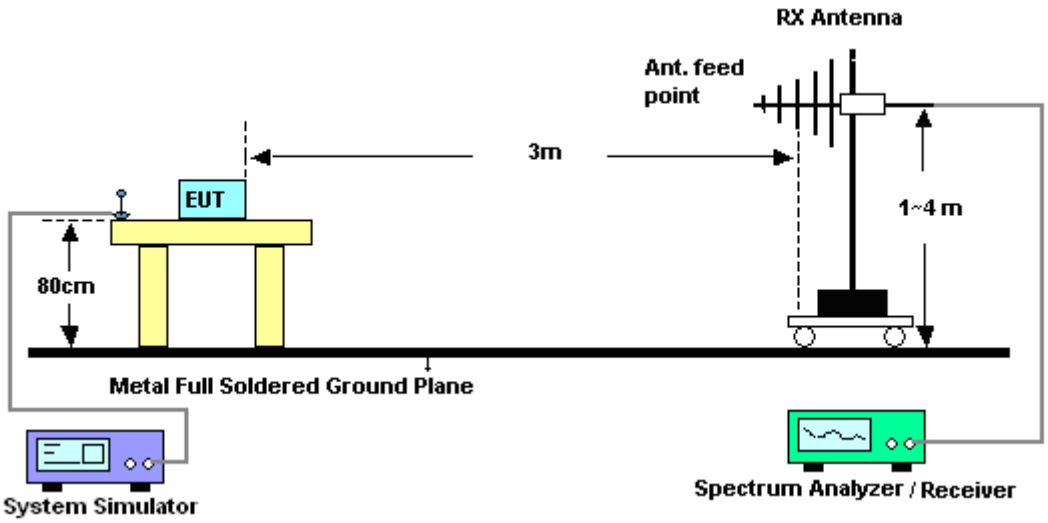
4 Radiated Test Items

4.1 Measuring Instruments

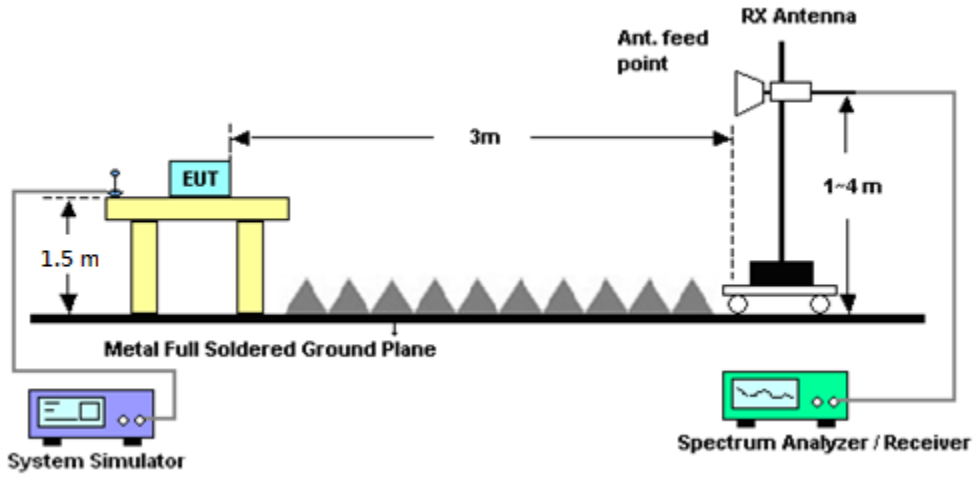
See list of measuring instruments of this test report.

4.1.1 Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

4.2 Radiated Spurious Emission

4.2.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 19, 2018	Sep. 01, 2018~ Sep. 02, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
DC Power Supply	GWINSTEK	AnritsuGPS-3030D	EM882636	Max 30V	Apr. 19, 2018	Sep. 01, 2018~ Sep. 02, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	HD20120425	-40~+150°C	Dec. 26, 2017	Sep. 01, 2018~ Sep. 02, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Apr. 19, 2018	Aug. 29, 2018~ Aug. 31, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Apr. 19, 2018	Aug. 29, 2018~ Aug. 31, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jul. 28, 2018	Aug. 29, 2018~ Aug. 31, 2018	Jul. 27, 2019	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Mar. 30, 2018	Aug. 29, 2018~ Aug. 31, 2018	Mar. 29, 2019	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 19, 2018	Aug. 29, 2018~ Aug. 31, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1707137	1GHz~18GHz	Oct.19, 2017	Aug. 29, 2018~ Aug. 31, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5Ghz	Oct.19, 2017	Aug. 29, 2018~ Aug. 31, 2018	Oct. 18, 2018	Radiation (03CH01-SZ
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 30, 2018	Aug. 29, 2018~ Aug. 31, 2018	Jul. 30, 2019	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Aug. 29, 2018~ Aug. 31, 2018	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Aug. 29, 2018~ Aug. 31, 2018	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Aug. 29, 2018~ Aug. 31, 2018	NCR	Radiation (03CH01-SZ)

6 Uncertainty of Evaluation

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.5**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.5**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.0**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

<For Up Antenna>

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	**23.15**	23.11	23.08
20	1	49		22.69	22.79	22.59
20	1	99		22.99	22.89	22.84
20	50	0		22.03	22.01	21.89
20	50	24		21.96	21.80	22.02
20	50	50		21.89	21.95	21.88
20	100	0		21.98	22.05	21.95
20	1	0	16-QAM	22.12	22.33	22.21
20	1	49		22.05	22.08	22.23
20	1	99		22.13	22.23	21.93
20	50	0		21.02	20.97	20.82
20	50	24		20.78	20.88	20.71
20	50	50		20.83	20.87	20.73
20	100	0		20.79	20.86	20.95
20	1	0	64-QAM	21.31	21.29	21.23
20	1	49		21.01	21.16	21.02
20	1	99		21.09	21.06	21.22
20	50	0		20.12	20.11	20.08
20	50	24		20.03	20.19	20.23
20	50	50		19.89	19.99	19.91
20	100	0		19.98	19.88	20.00
15	1	0	QPSK	23.01	23.08	23.10
15	1	37		22.89	22.68	22.73
15	1	74		22.75	22.90	22.87
15	36	0		22.02	22.01	21.87
15	36	20		22.06	21.87	21.93
15	36	39		21.92	21.99	21.91
15	75	0		22.19	21.97	21.96
15	1	0	16-QAM	21.56	21.85	21.89
15	1	37		21.55	21.63	21.58
15	1	74		21.78	21.93	21.88
15	36	0		20.98	20.92	20.88
15	36	20		20.93	20.90	20.96
15	36	39		20.91	20.91	20.89
15	75	0		20.89	20.87	20.90
15	1	0	64-QAM	21.23	21.34	21.01
15	1	37		21.12	21.19	21.08
15	1	74		20.98	21.10	21.18
15	36	0		20.18	20.20	20.14
15	36	20		19.96	20.30	19.91
15	36	39		19.99	20.01	20.03
15	75	0		19.99	20.13	20.02

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.99	23.02	23.03
10	1	25		22.64	22.55	22.49
10	1	49		22.96	22.93	22.87
10	25	0		22.05	22.01	21.97
10	25	12		21.90	21.86	21.87
10	25	25		21.91	21.86	21.89
10	50	0		21.98	21.92	21.89
10	1	0	16-QAM	22.31	22.38	22.21
10	1	25		22.03	22.08	22.19
10	1	49		22.22	22.22	22.16
10	25	0		20.93	20.98	20.90
10	25	12		20.85	20.92	20.91
10	25	25		20.96	20.90	20.76
10	50	0		20.89	20.91	20.82
10	1	0	64-QAM	21.37	21.49	21.01
10	1	25		20.71	20.89	20.86
10	1	49		21.14	21.09	20.99
10	25	0		20.17	20.13	20.01
10	25	12		19.95	20.01	19.94
10	25	25		19.98	19.99	19.96
10	50	0		20.02	20.03	19.82
5	1	0	QPSK	22.93	23.04	22.92
5	1	12		22.98	22.56	22.68
5	1	24		22.95	22.88	22.83
5	12	0		22.04	22.00	21.98
5	12	7		21.96	21.87	21.92
5	12	13		22.05	21.80	21.75
5	25	0		21.95	21.84	21.90
5	1	0	16-QAM	21.97	22.03	21.98
5	1	12		21.63	21.79	21.65
5	1	24		21.97	22.08	21.89
5	12	0		21.05	20.92	20.85
5	12	7		21.03	21.02	20.99
5	12	13		20.89	20.94	20.84
5	25	0		20.95	20.85	20.83
5	1	0	64-QAM	21.33	21.41	21.21
5	1	12		21.01	21.33	21.47
5	1	24		21.32	21.17	21.09
5	12	0		20.12	20.33	20.19
5	12	7		20.14	20.17	20.43
5	12	13		20.43	20.29	20.21
5	25	0		20.11	20.06	20.17

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.73	22.85	22.91
3	1	8		22.66	22.76	22.53
3	1	14		22.92	22.82	22.84
3	8	0		21.85	21.92	21.91
3	8	4		21.89	21.78	21.70
3	8	7		21.86	21.86	21.88
3	15	0		22.03	22.02	21.81
3	1	0	16-QAM	22.25	22.16	22.18
3	1	8		22.30	22.27	22.14
3	1	14		22.11	22.09	22.10
3	8	0		20.66	20.83	20.82
3	8	4		20.62	20.88	20.89
3	8	7		20.79	20.96	20.74
3	15	0		20.93	20.82	20.87
3	1	0	64-QAM	21.05	21.19	21.25
3	1	8		21.18	21.06	21.06
3	1	14		21.27	21.24	21.01
3	8	0		20.08	20.33	20.21
3	8	4		20.11	20.48	20.41
3	8	7		20.21	20.19	20.14
3	15	0		20.45	20.32	20.37
1.4	1	0	QPSK	23.08	22.98	22.97
1.4	1	3		22.56	22.40	22.65
1.4	1	5		23.01	22.96	22.89
1.4	3	0		22.96	22.69	22.84
1.4	3	1		22.42	22.67	22.84
1.4	3	3		22.58	22.55	22.72
1.4	6	0		22.03	22.00	21.87
1.4	1	0	16-QAM	21.72	22.38	22.25
1.4	1	3		22.45	22.00	22.48
1.4	1	5		22.06	22.31	22.15
1.4	3	0		21.80	21.88	21.75
1.4	3	1		21.80	22.04	21.82
1.4	3	3		21.26	21.74	21.68
1.4	6	0		20.81	20.81	20.88
1.4	1	0	64-QAM	21.38	21.32	21.41
1.4	1	3		21.11	21.08	21.23
1.4	1	5		21.10	21.39	21.46
1.4	3	0		21.42	21.31	21.14
1.4	3	1		21.38	21.45	21.43
1.4	3	3		21.16	21.47	21.32
1.4	6	0		20.13	20.24	20.10

<For Down Antenna>

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	23.30	**23.45**	23.43
20	1	49		22.87	23.02	23.08
20	1	99		23.38	23.37	23.11
20	50	0		22.36	22.32	22.35
20	50	24		22.28	22.17	22.18
20	50	50		22.25	22.14	22.02
20	100	0		22.30	22.39	22.34
20	1	0	16-QAM	22.23	22.47	22.18
20	1	49		21.68	22.04	21.76
20	1	99		22.28	22.20	21.99
20	50	0		21.36	21.36	21.22
20	50	24		21.17	21.18	21.14
20	50	50		21.18	21.15	20.98
20	100	0		21.23	21.25	21.26
20	1	0	64-QAM	21.35	21.41	21.49
20	1	49		21.35	21.20	21.15
20	1	99		21.64	21.71	21.66
20	50	0		20.38	20.40	20.35
20	50	24		20.31	20.23	20.18
20	50	50		20.51	20.43	20.35
20	100	0		20.34	20.18	20.30
15	1	0	QPSK	23.33	23.29	23.32
15	1	37		23.11	23.08	23.18
15	1	74		23.25	23.09	22.93
15	36	0		22.33	22.37	22.33
15	36	20		22.32	22.20	22.18
15	36	39		22.33	22.22	22.09
15	75	0		22.28	22.22	22.25
15	1	0	16-QAM	22.40	22.56	22.62
15	1	37		22.09	22.10	22.18
15	1	74		22.41	22.10	22.14
15	36	0		21.25	21.24	21.25
15	36	20		21.19	21.12	21.05
15	36	39		21.28	21.10	21.06
15	75	0		21.28	21.10	21.28
15	1	0	64-QAM	21.46	21.55	21.59
15	1	37		21.08	21.13	21.02
15	1	74		21.73	21.68	21.52
15	36	0		20.45	20.37	20.28
15	36	20		20.33	20.21	20.10
15	36	39		20.40	20.19	20.17
15	75	0		20.29	20.19	20.31

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	23.18	23.18	23.12
10	1	25		23.27	22.92	23.20
10	1	49		23.21	23.28	22.94
10	25	0		22.31	22.26	22.14
10	25	12		22.30	22.14	22.07
10	25	25		22.30	22.19	22.07
10	50	0		22.27	22.14	22.11
10	1	0	16-QAM	22.66	22.47	22.33
10	1	25		22.69	22.58	22.33
10	1	49		22.42	22.41	22.17
10	25	0		21.30	21.26	21.13
10	25	12		21.11	21.07	21.08
10	25	25		21.16	20.98	21.11
10	50	0		21.18	21.11	21.09
10	1	0	64-QAM	21.38	21.14	21.28
10	1	25		21.45	21.33	21.38
10	1	49		21.52	21.28	21.21
10	25	0		20.32	20.20	20.16
10	25	12		20.42	20.39	20.19
10	25	25		20.31	20.17	20.14
10	50	0		20.30	20.15	20.21
5	1	0	QPSK	23.27	23.32	23.10
5	1	12		23.10	23.25	23.33
5	1	24		23.26	23.17	23.16
5	12	0		22.34	22.45	22.14
5	12	7		22.37	22.26	22.13
5	12	13		22.32	22.22	22.05
5	25	0		22.33	22.20	22.06
5	1	0	16-QAM	22.53	22.66	22.26
5	1	12		22.01	22.11	22.09
5	1	24		22.52	22.24	22.47
5	12	0		21.36	21.36	21.18
5	12	7		21.29	21.25	21.16
5	12	13		21.36	21.13	21.14
5	25	0		21.22	21.14	21.07
5	1	0	64-QAM	21.56	21.42	21.39
5	1	12		21.72	21.65	21.44
5	1	24		21.43	21.39	21.22
5	12	0		20.47	20.19	20.33
5	12	7		20.15	20.19	20.16
5	12	13		20.40	20.32	20.19
5	25	0		20.20	20.16	20.09

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	23.38	23.24	23.07
3	1	8		23.11	23.02	23.09
3	1	14		23.39	23.30	23.16
3	8	0		22.24	22.20	21.87
3	8	4		22.07	22.21	22.09
3	8	7		22.34	22.13	22.05
3	15	0		22.35	22.07	22.07
3	1	0	16-QAM	22.39	22.81	22.76
3	1	8		22.78	22.48	22.05
3	1	14		22.40	22.62	22.59
3	8	0		21.26	21.33	21.07
3	8	4		21.29	21.00	21.22
3	8	7		20.96	21.27	20.96
3	15	0		21.32	21.17	20.86
3	1	0	64-QAM	21.33	21.50	21.36
3	1	8		21.39	21.41	21.09
3	1	14		21.22	21.41	21.03
3	8	0		20.21	20.17	20.56
3	8	4		20.44	20.36	20.49
3	8	7		20.06	20.19	20.32
3	15	0		20.11	20.09	20.02
1.4	1	0	QPSK	23.24	23.31	23.18
1.4	1	3		22.94	22.92	22.89
1.4	1	5		23.31	23.19	23.22
1.4	3	0		23.26	23.34	23.12
1.4	3	1		23.15	23.31	23.14
1.4	3	3		23.01	22.98	22.98
1.4	6	0		22.24	22.20	22.12
1.4	1	0	16-QAM	22.19	22.06	22.23
1.4	1	3		22.33	22.60	22.54
1.4	1	5		22.28	22.36	22.25
1.4	3	0		21.98	21.97	21.77
1.4	3	1		21.52	21.54	21.78
1.4	3	3		21.63	21.57	21.54
1.4	6	0		21.14	20.90	20.98
1.4	1	0	64-QAM	21.55	21.44	21.75
1.4	1	3		21.33	21.66	21.49
1.4	1	5		21.61	21.85	21.45
1.4	3	0		21.69	21.56	21.61
1.4	3	1		21.95	21.98	21.91
1.4	3	3		21.88	21.78	21.87
1.4	6	0		20.13	20.20	20.13

LTE Band 66

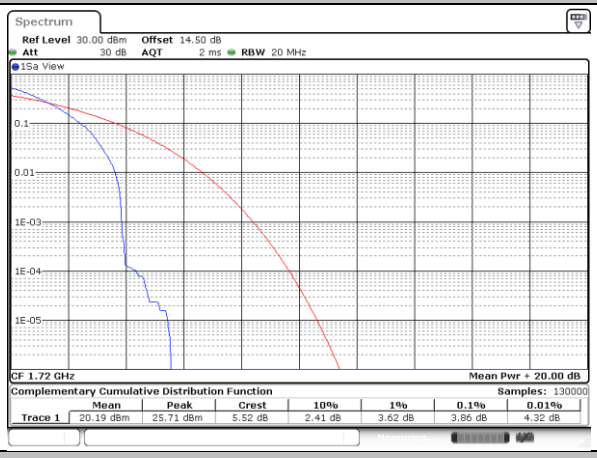
Peak-to-Average Ratio

Mode	LTE Band 66 / 20MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	3.86	4.93	4.75	5.86	PASS
Middle CH	4.49	4.81	5.36	5.68	
Highest CH	5.16	4.75	6.12	5.77	

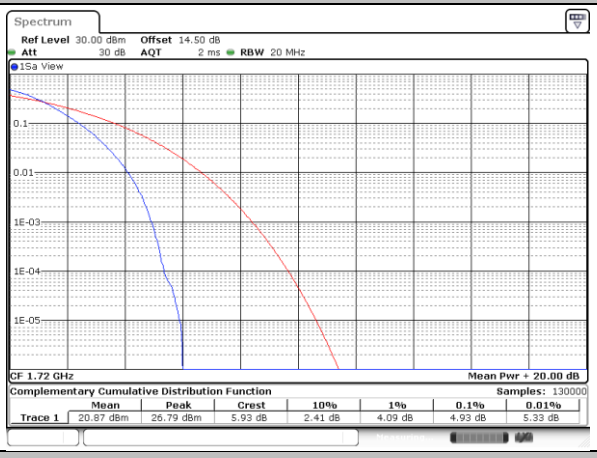
Mod.	64QAM		Limit: 13dB
RB Size	1RB	Full RB	Result
Lowest CH	4.84	5.91	PASS
Middle CH	5.33	5.68	
Highest CH	6.03	5.71	

LTE Band 66 / 20MHz / QPSK

Lowest Channel / 1RB

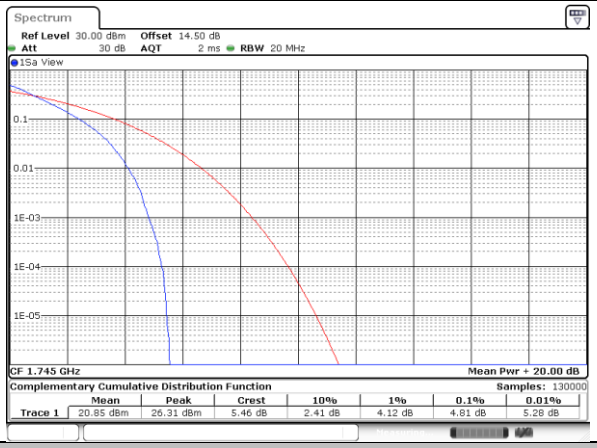


Lowest Channel / Full RB

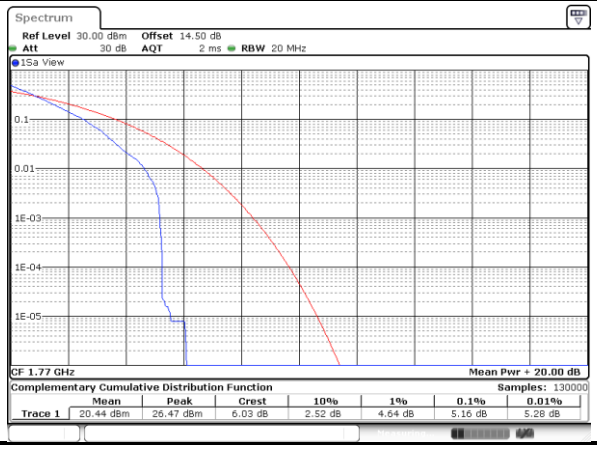


Middle Channel / 1RB

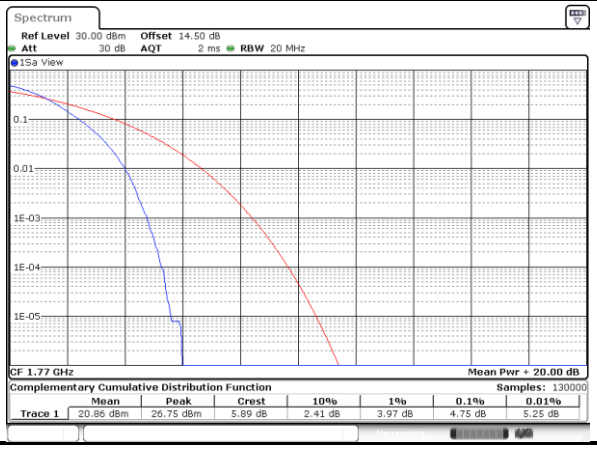
Middle Channel / Full RB



Highest Channel / 1RB

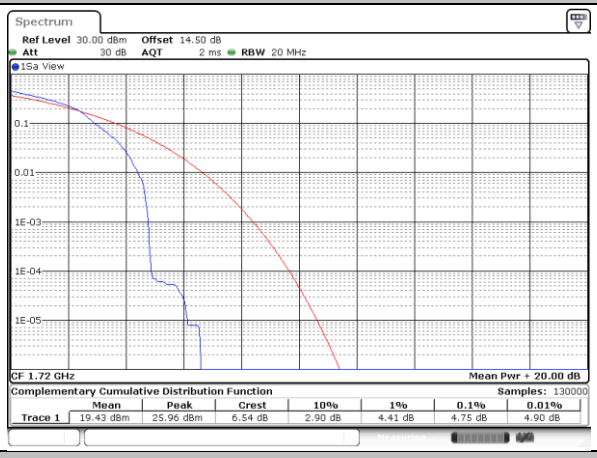


Highest Channel / Full RB

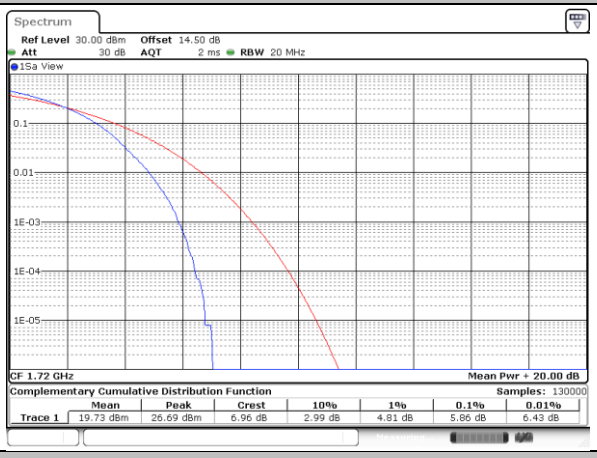


LTE Band 66 / 20MHz / 16QAM

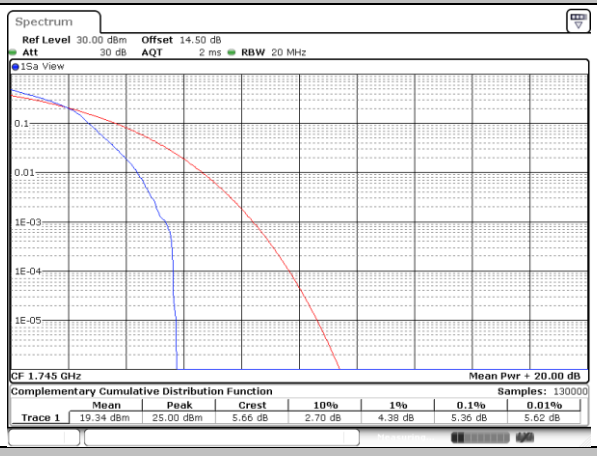
Lowest Channel / 1RB



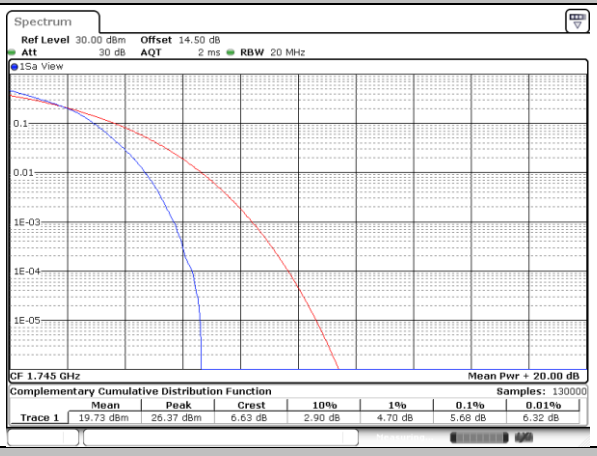
Lowest Channel / Full RB



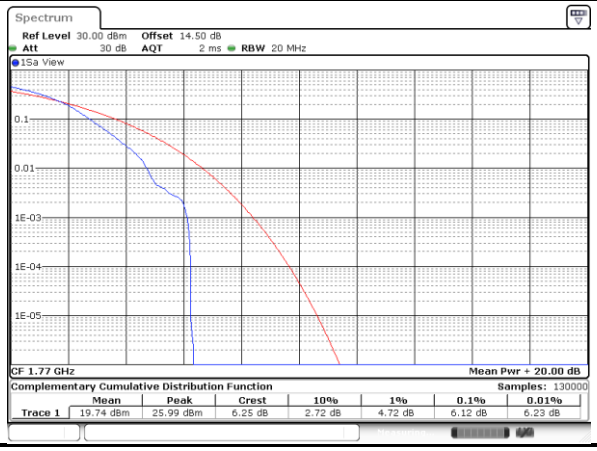
Middle Channel / 1RB



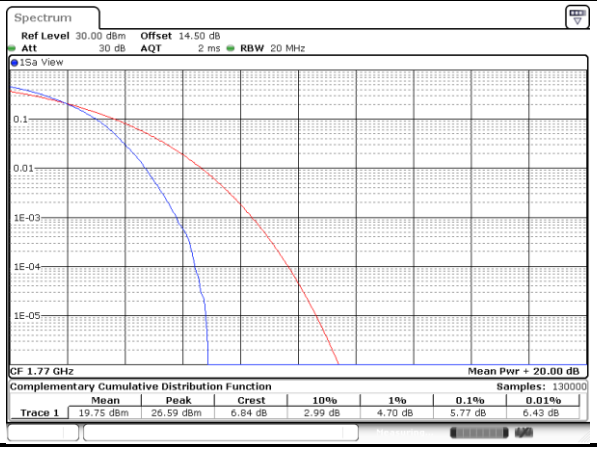
Middle Channel / Full RB

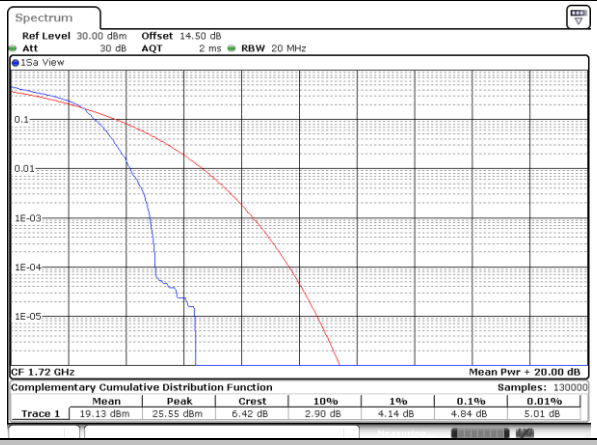
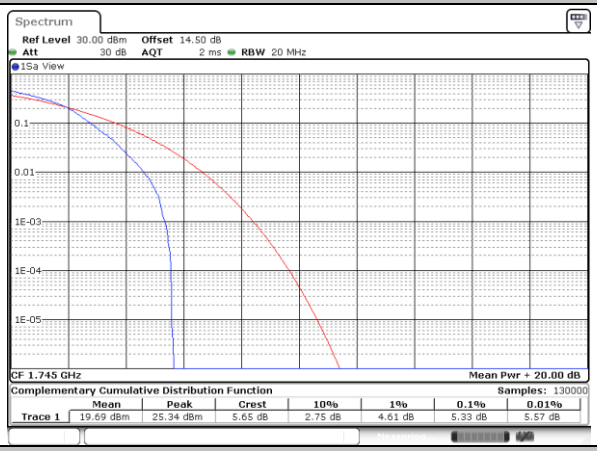
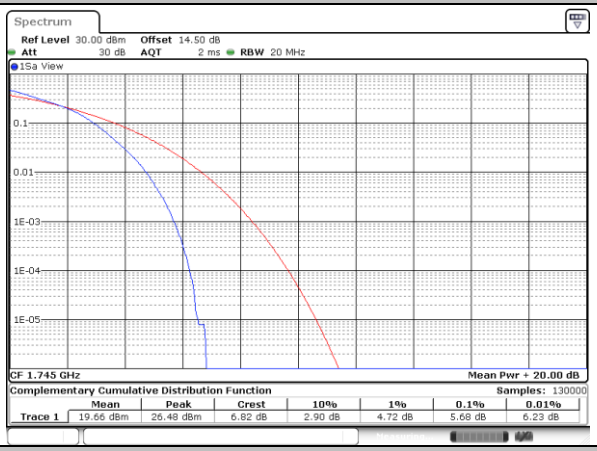
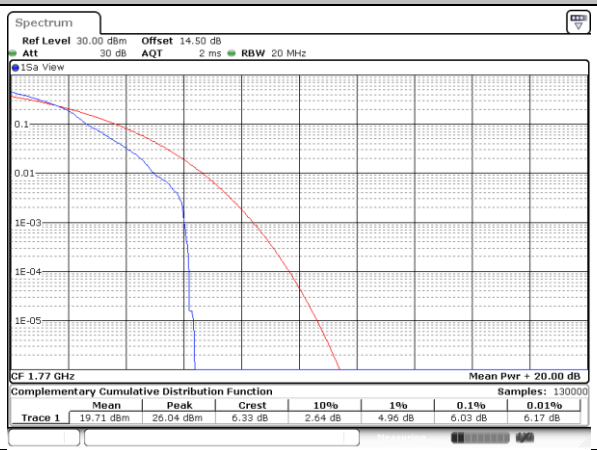
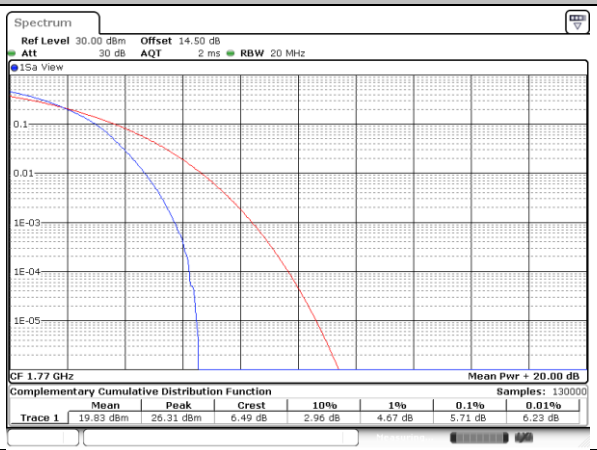


Highest Channel / 1RB



Highest Channel / Full RB



LTE Band 66 / 20MHz / 64QAM	
Lowest Channel / 1RB	**Lowest Channel / Full RB**
	
Middle Channel / 1RB	**Middle Channel / Full RB**
	
Highest Channel / 1RB	**Highest Channel / Full RB**
	

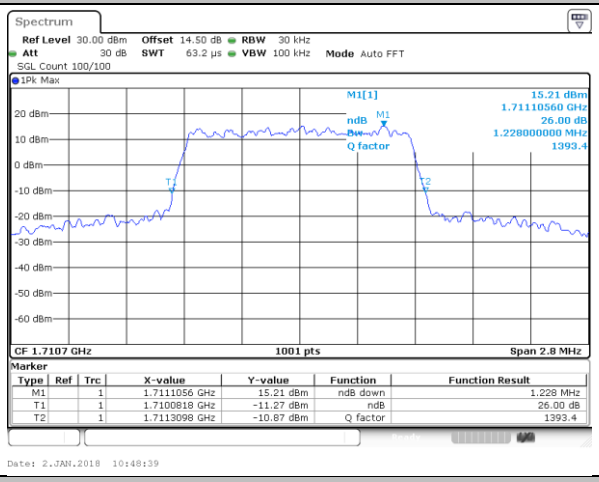
26dB Bandwidth

Mode	LTE Band 66 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.228	1.250	3.027	2.991	4.895	4.925	10.07	9.89	14.446	14.565	20.18	20.18
Middle CH	1.242	1.239	3.015	3.021	4.745	4.885	9.75	9.83	15.015	14.895	20.58	20.66
Highest CH	1.245	1.236	2.979	3.003	4.835	4.905	9.87	9.87	14.595	14.266	20.18	20.34

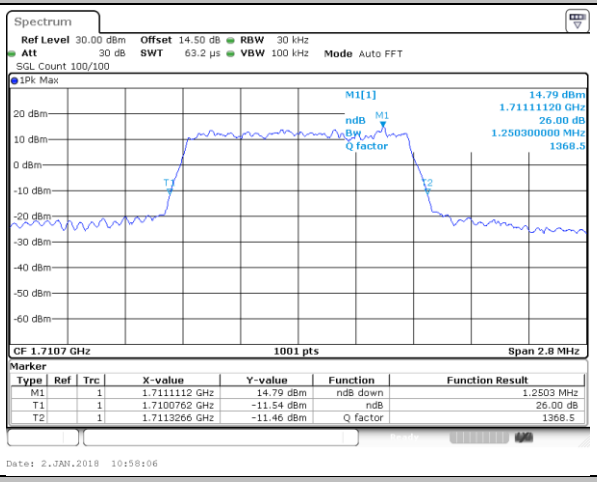
BW	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
Mod.	64QAM	64QAM	64QAM	64QAM	64QAM	64QAM
Lowest CH	1.242	3.015	4.925	9.77	14.356	20.18
Middle CH	1.250	3.009	4.875	9.75	14.955	20.34
Highest CH	1.234	2.985	4.855	9.83	14.476	19.98

LTE Band 66

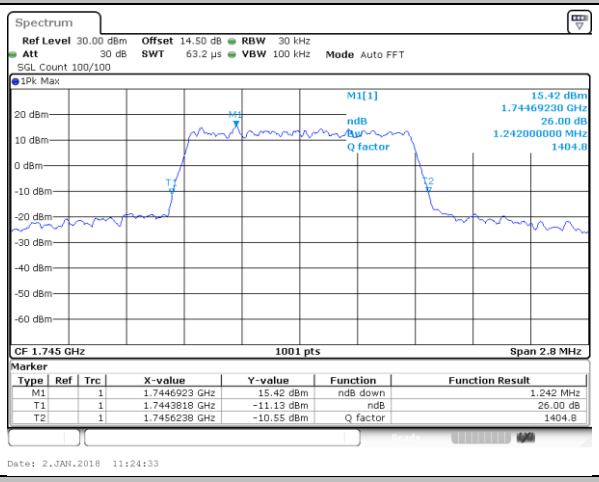
Lowest Channel / 1.4MHz / QPSK



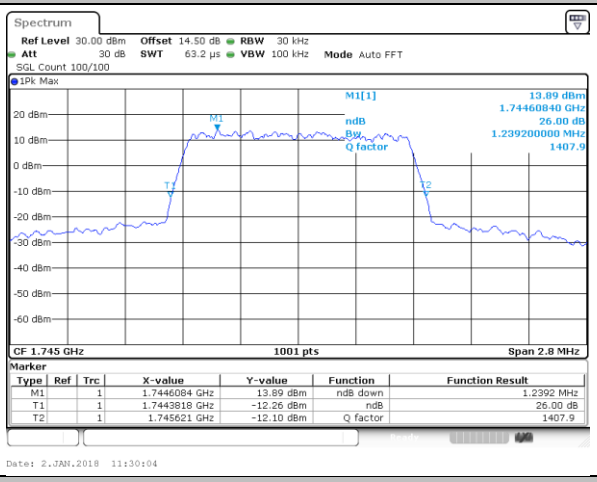
Lowest Channel / 1.4MHz / 16QAM



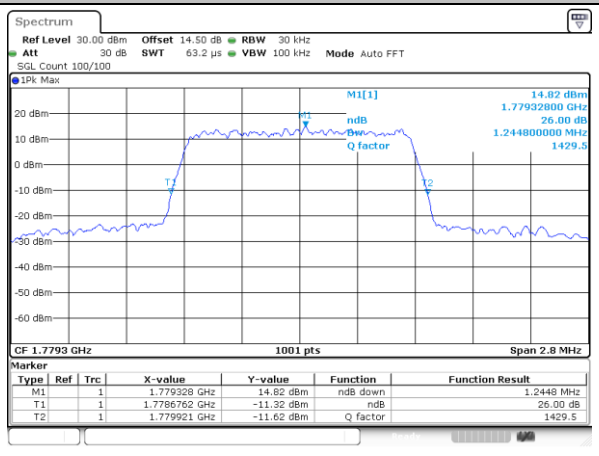
Middle Channel / 1.4MHz / QPSK



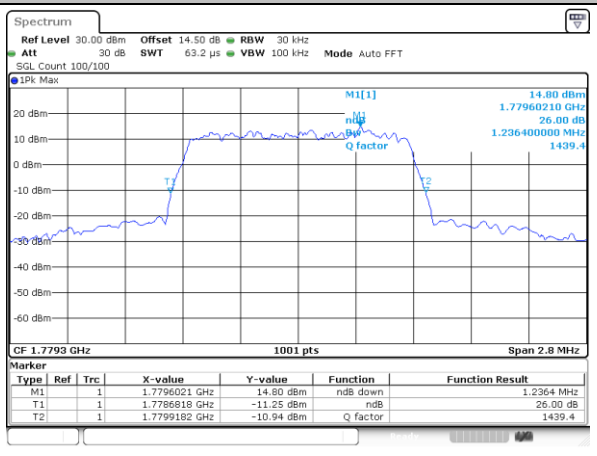
Middle Channel / 1.4MHz / 16QAM



Highest Channel / 1.4MHz / QPSK

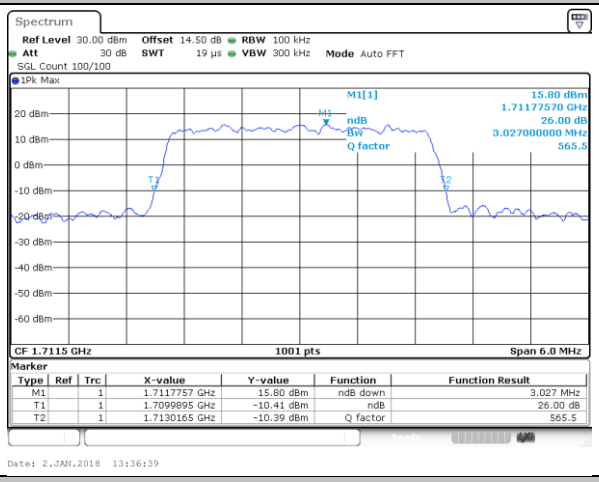


Highest Channel / 1.4MHz / 16QAM

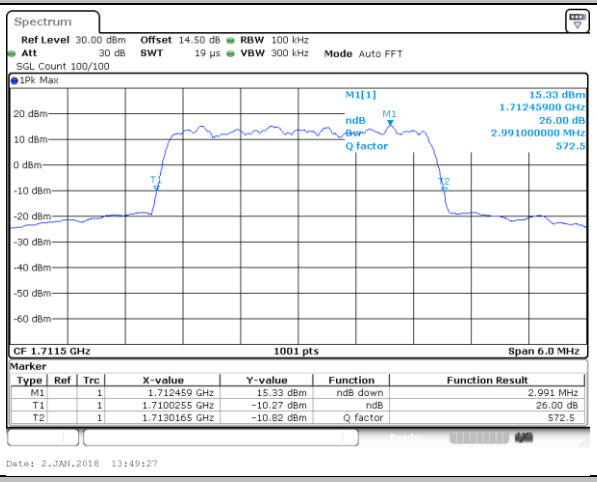


LTE Band 66

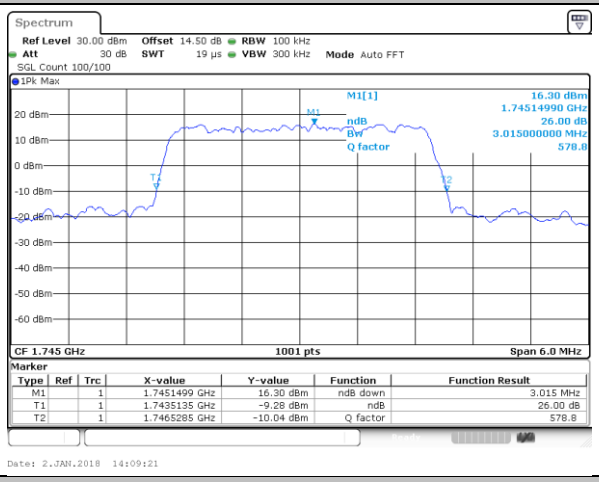
Lowest Channel / 3MHz / QPSK



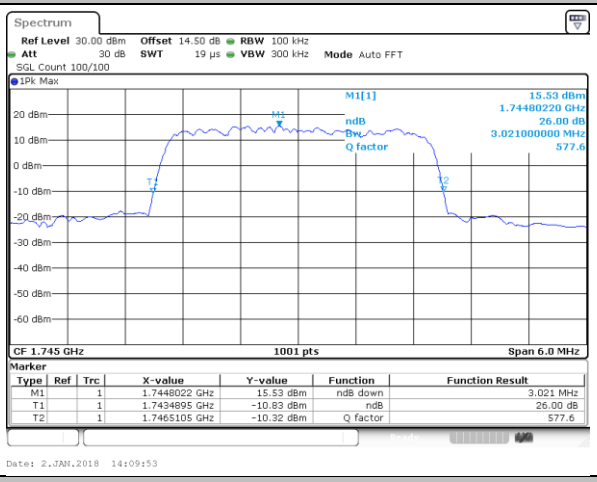
Lowest Channel / 3MHz / 16QAM



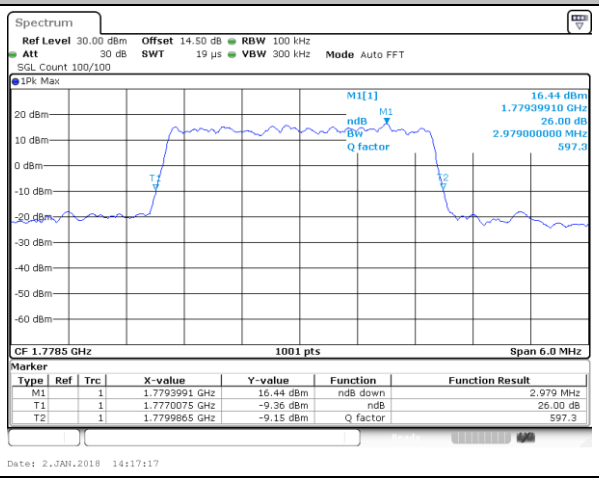
Middle Channel / 3MHz / QPSK



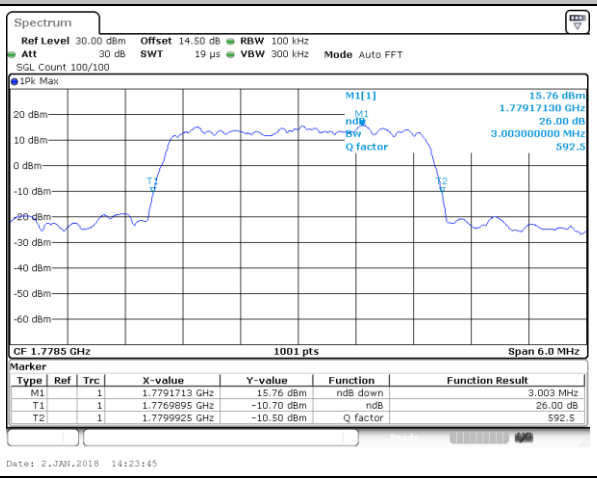
Middle Channel /3MHz / 16QAM



Highest Channel /3MHz / QPSK

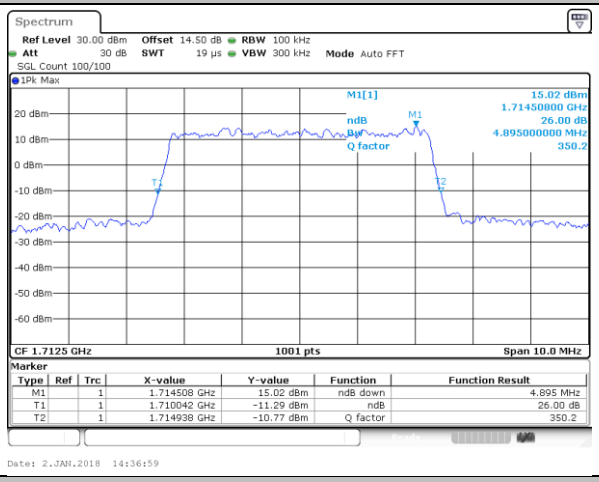


Highest Channel /3MHz / 16QAM

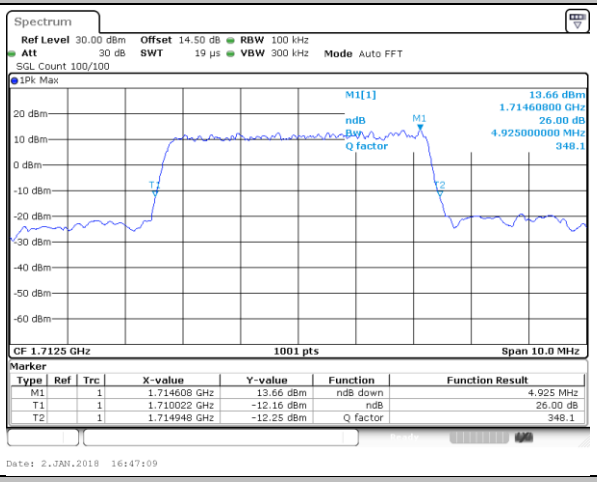


LTE Band 66

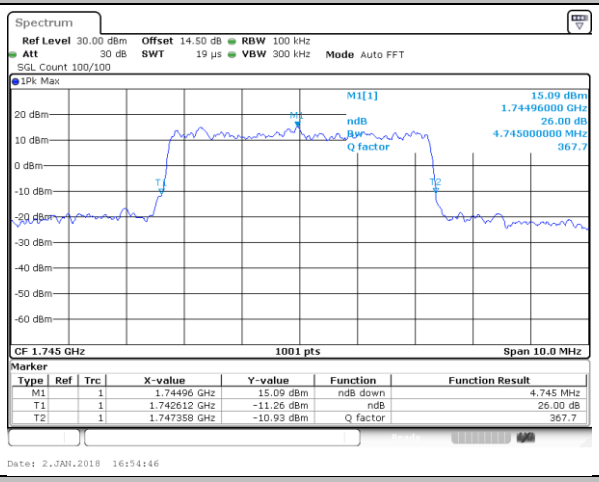
Lowest Channel / 5MHz / QPSK



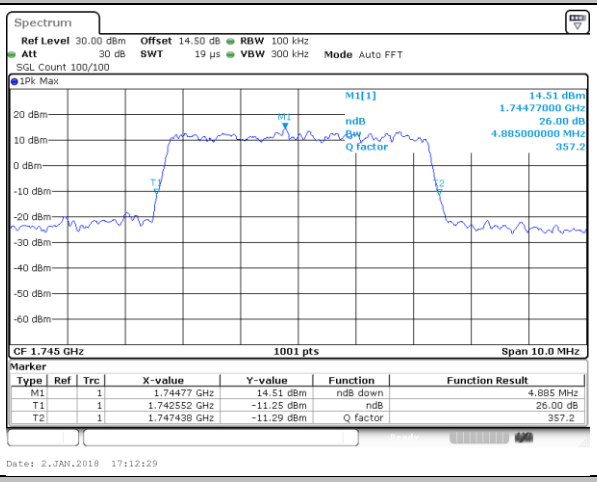
Lowest Channel / 5MHz / 16QAM



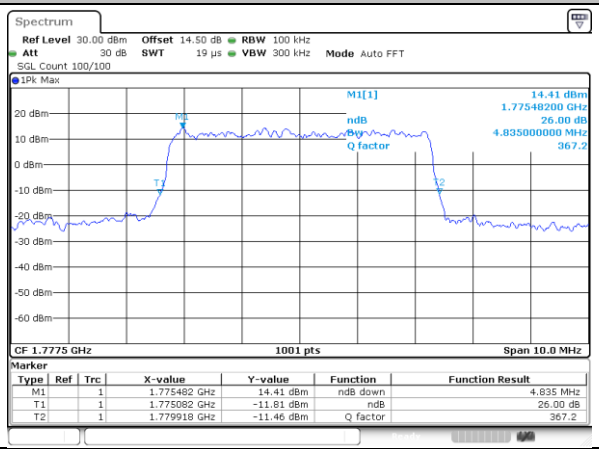
Middle Channel / 5MHz / QPSK



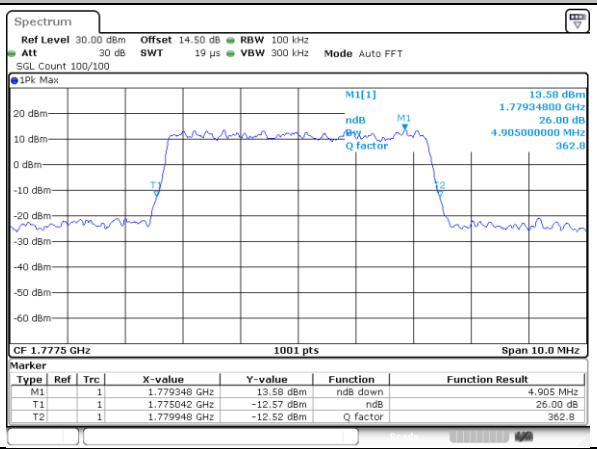
Middle Channel / 5MHz / 16QAM



Highest Channel / 5MHz / QPSK

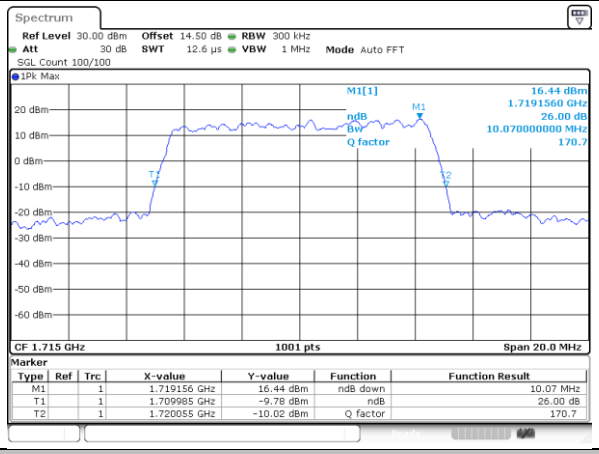


Highest Channel / 5MHz / 16QAM

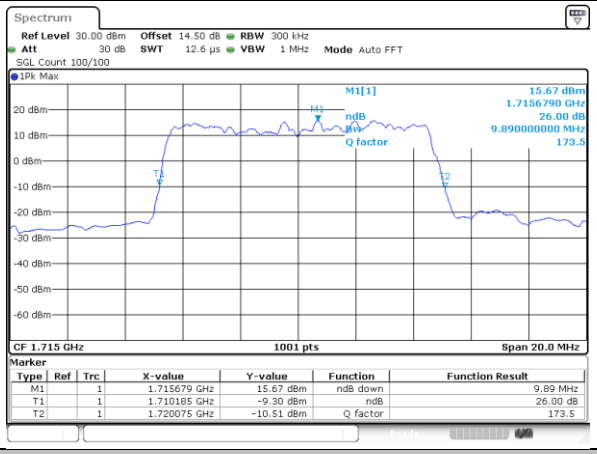


LTE Band 66

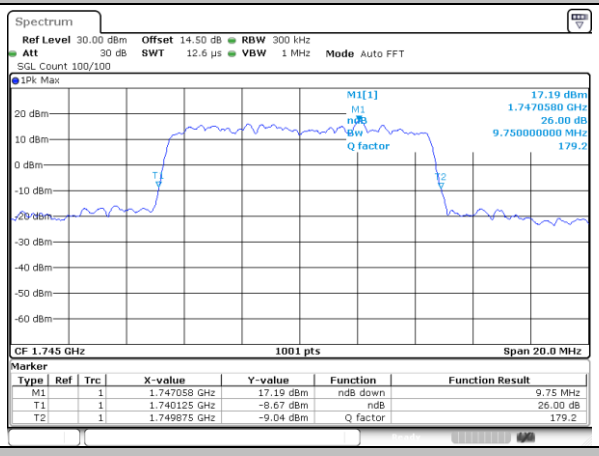
Lowest Channel / 10MHz / QPSK



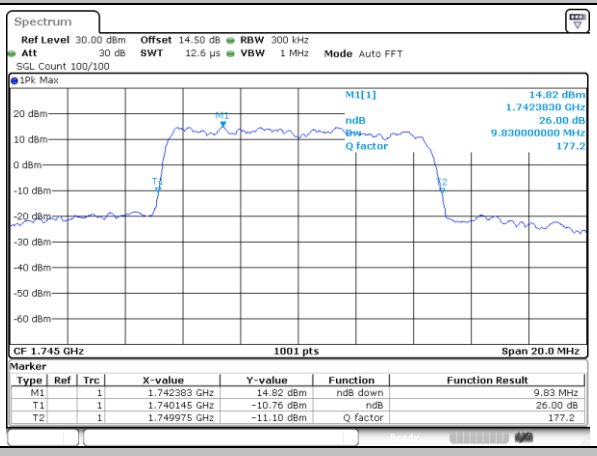
Lowest Channel / 10MHz / 16QAM



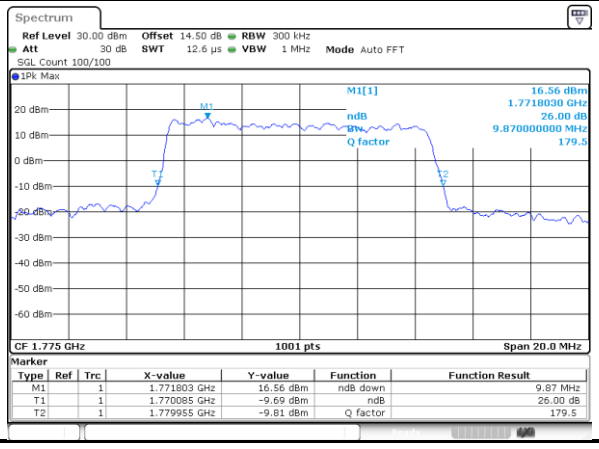
Middle Channel / 10MHz / QPSK



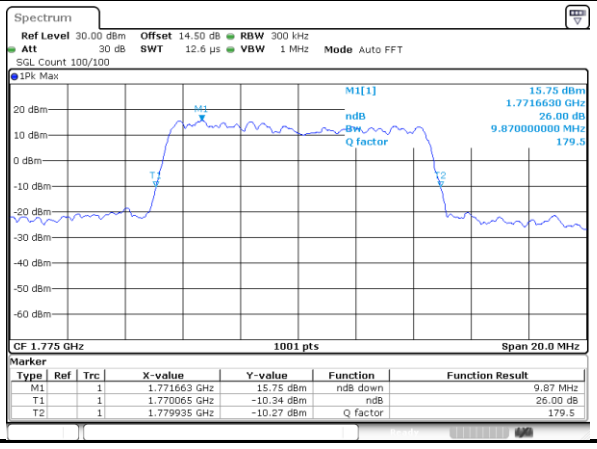
Middle Channel / 10MHz / 16QAM



Highest Channel / 10MHz / QPSK

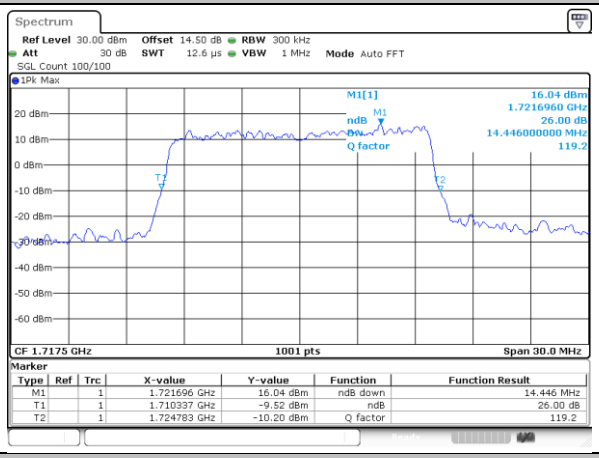


Highest Channel / 10MHz / 16QAM

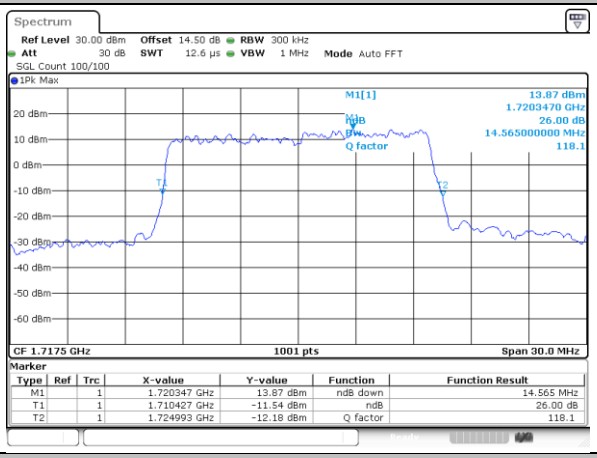


LTE Band 66

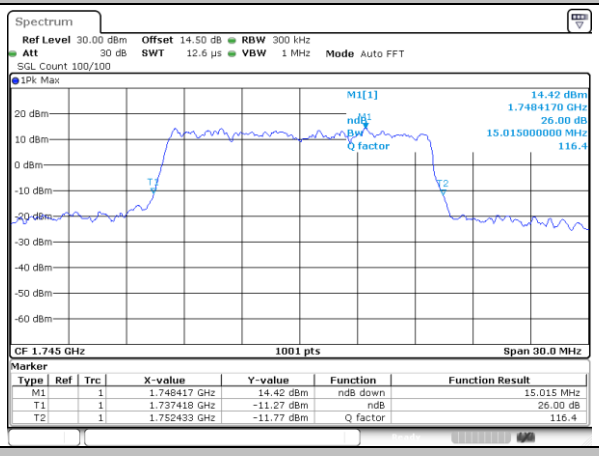
Lowest Channel / 15MHz / QPSK



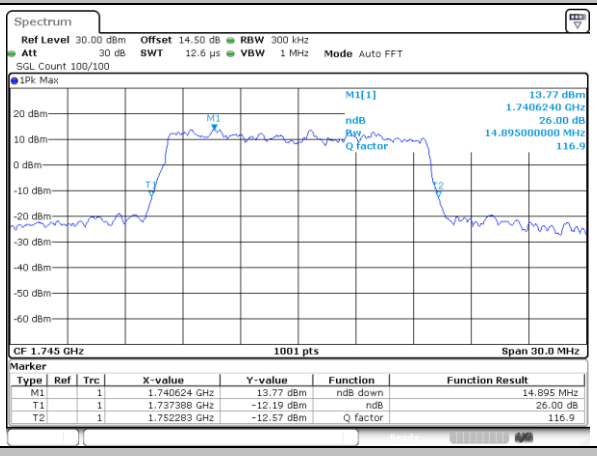
Lowest Channel / 15MHz / 16QAM



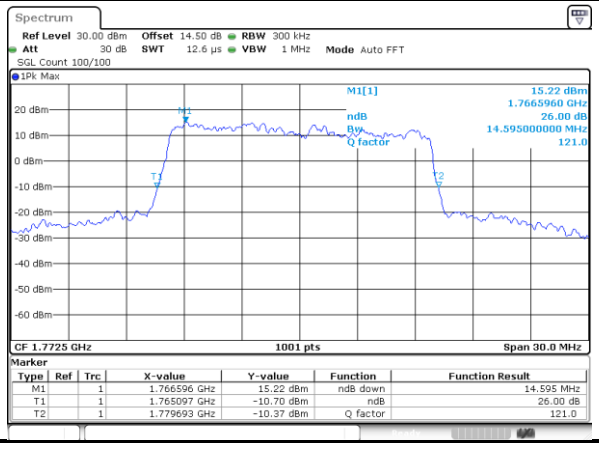
Middle Channel / 15MHz / QPSK



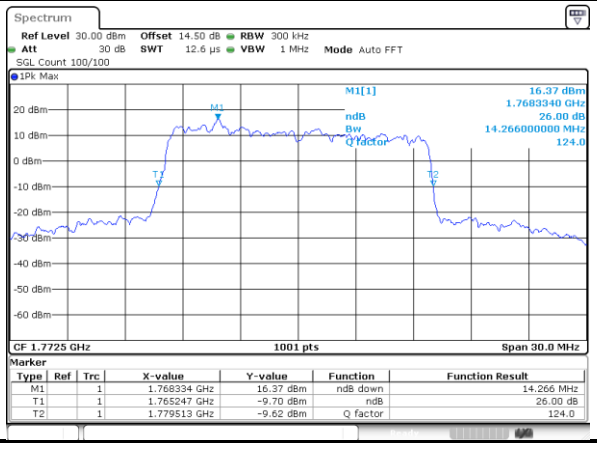
Middle Channel / 15MHz / 16QAM



Highest Channel / 15MHz / QPSK

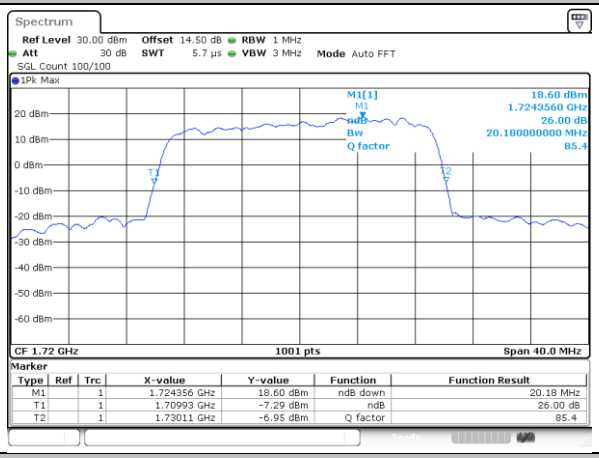


Highest Channel / 15MHz / 16QAM

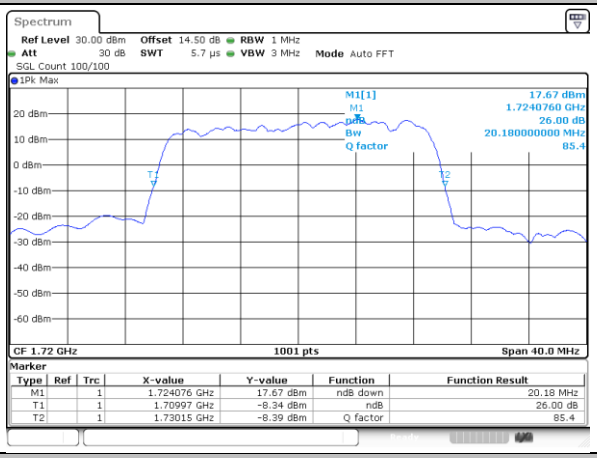


LTE Band 66

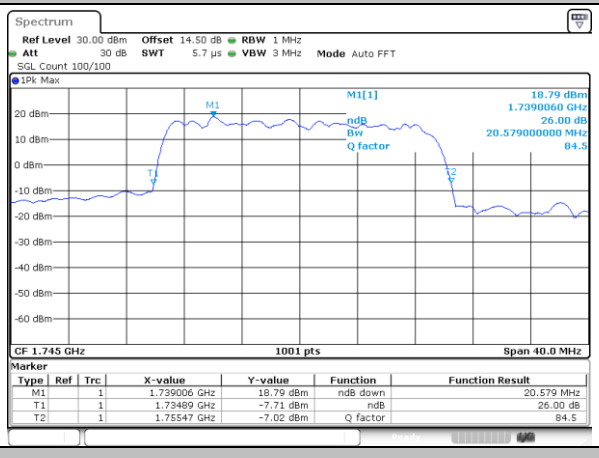
Lowest Channel / 20MHz / QPSK



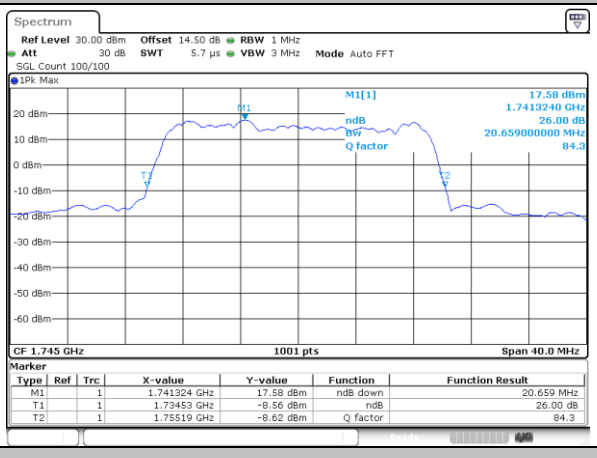
Lowest Channel / 20MHz / 16QAM



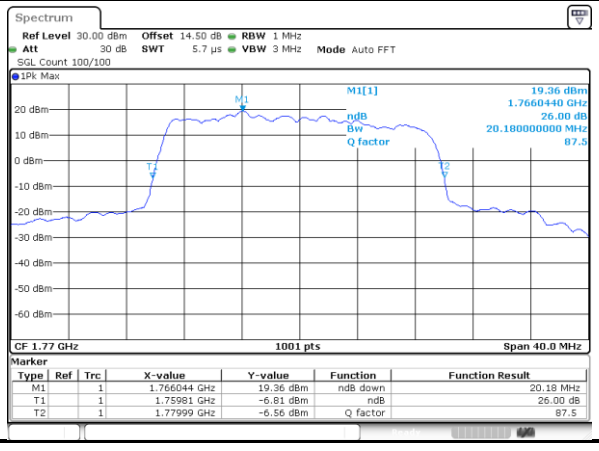
Middle Channel / 20MHz / QPSK



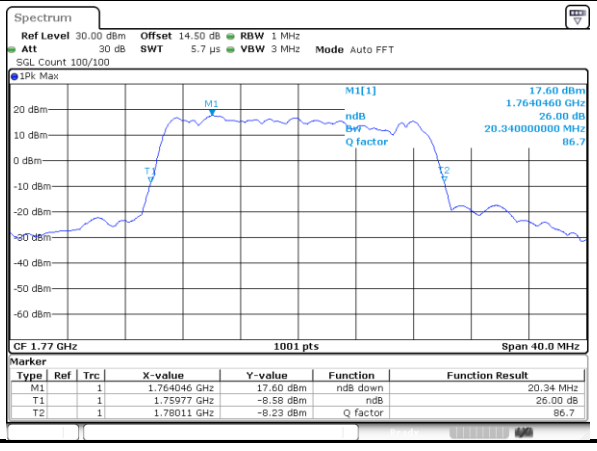
Middle Channel / 20MHz / 16QAM



Highest Channel / 20MHz / QPSK

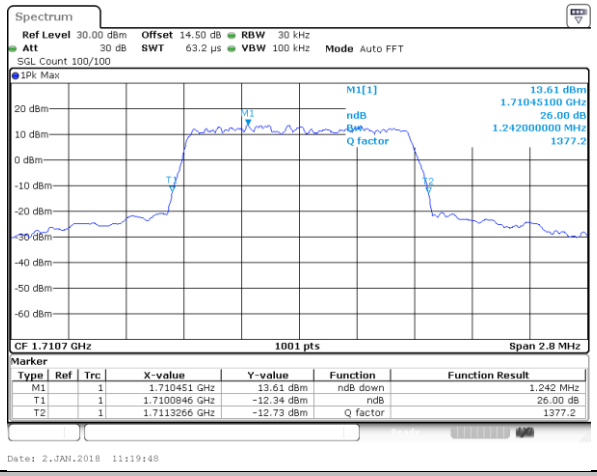


Highest Channel / 20MHz / 16QAM

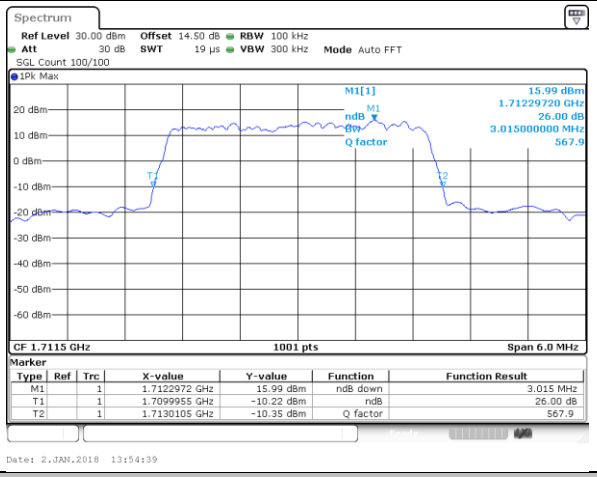


LTE Band 66

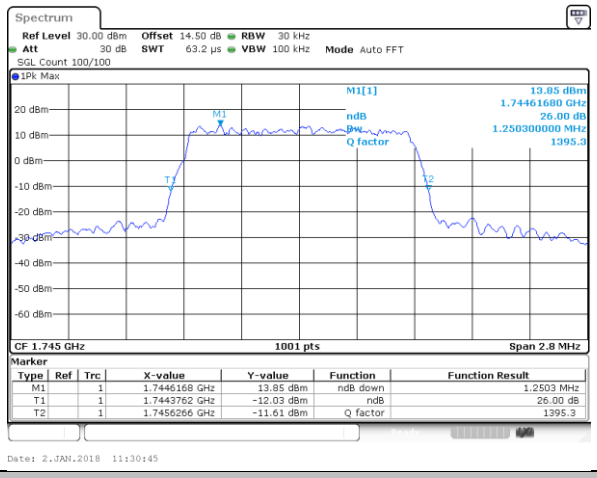
Lowest Channel / 1.4MHz / 64QAM



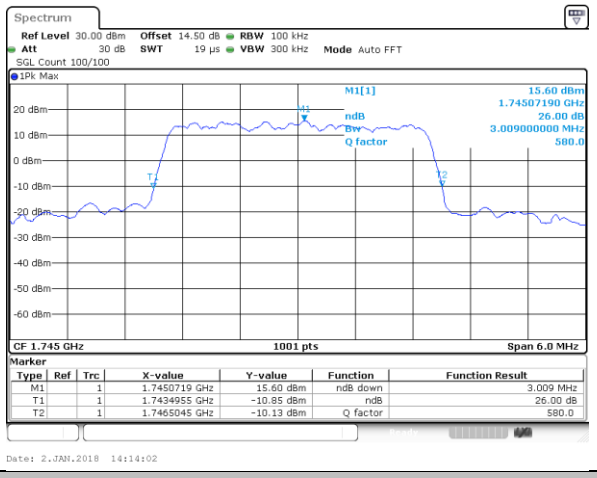
Lowest Channel / 3MHz / 64QAM



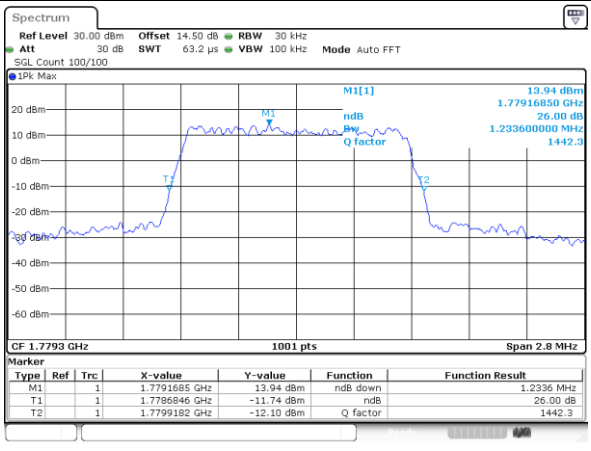
Middle Channel / 1.4MHz / 64QAM



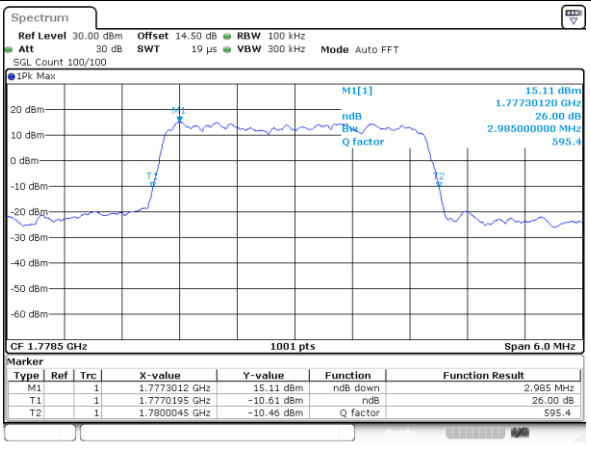
Middle Channel /3MHz / 64QAM



Highest Channel / 1.4MHz / 64QAM

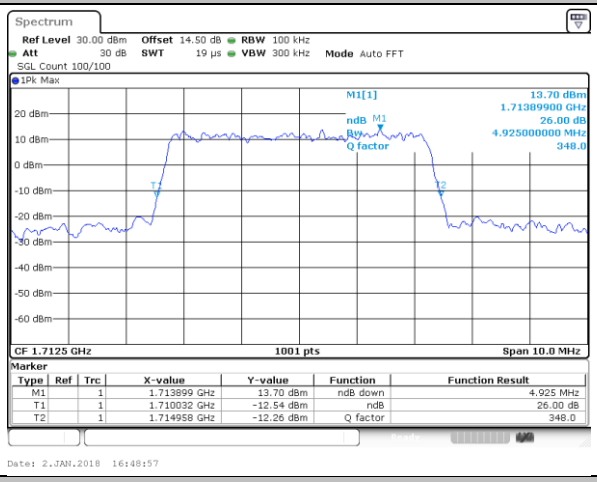


Highest Channel /3MHz / 64QAM

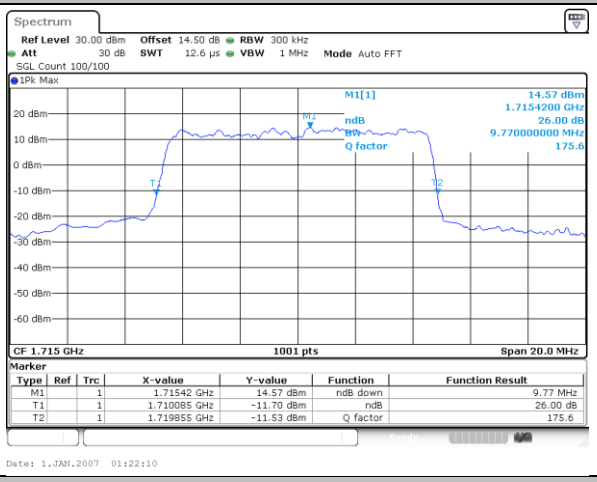


LTE Band 66

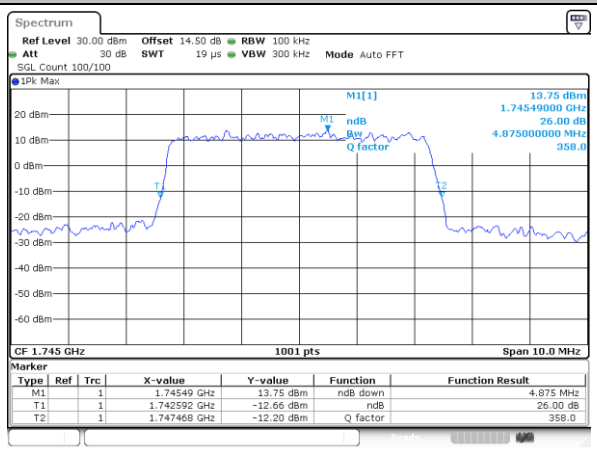
Lowest Channel / 5MHz / 64QAM



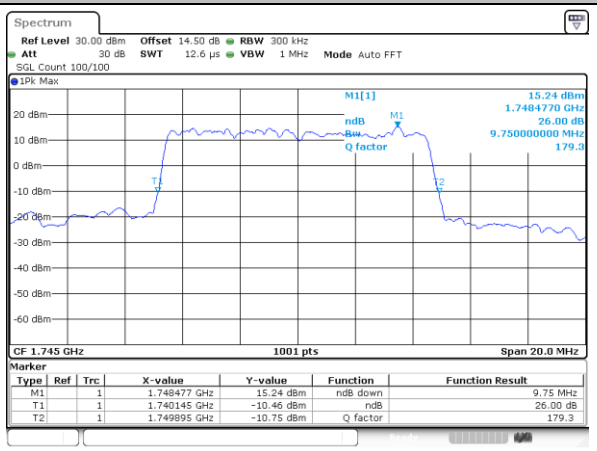
Lowest Channel / 10MHz / 64QAM



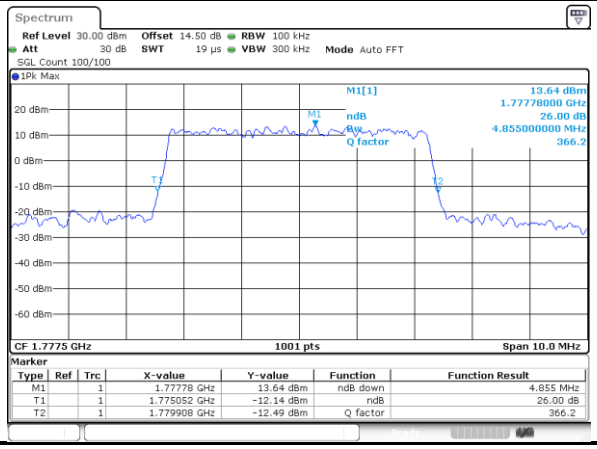
Middle Channel / 5MHz / 64QAM



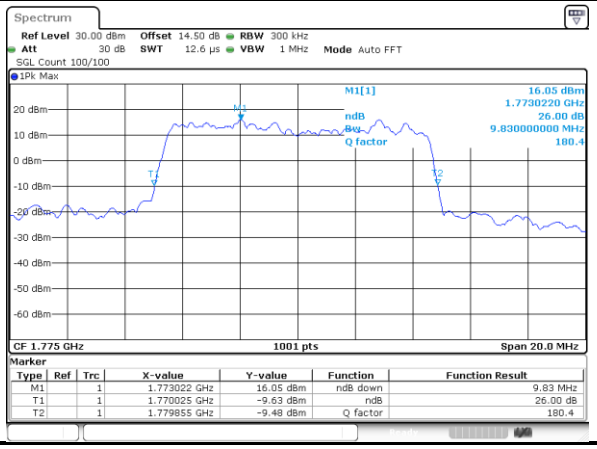
Middle Channel / 10MHz / 64QAM



Highest Channel / 5MHz / 64QAM

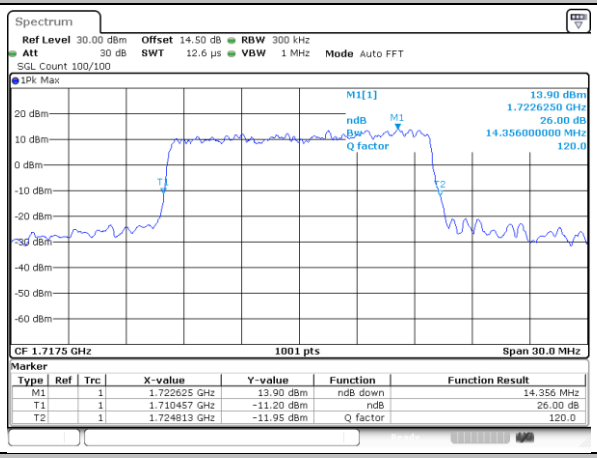


Highest Channel / 10MHz / 64QAM

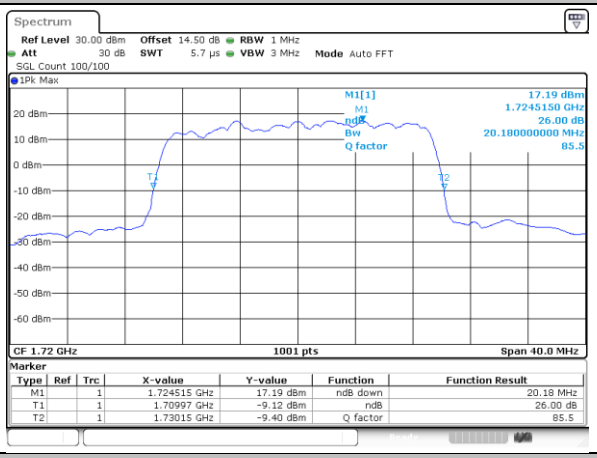


LTE Band 66

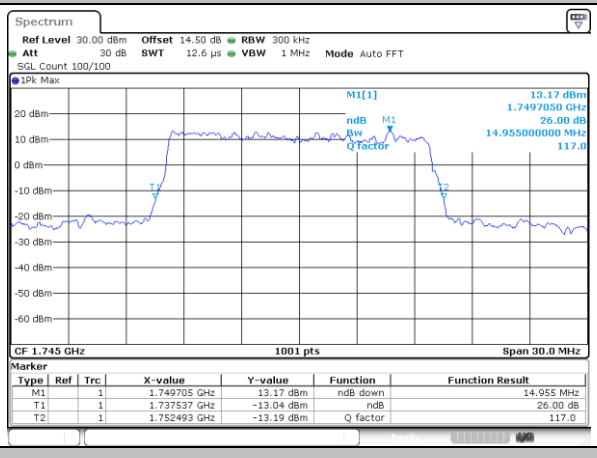
Lowest Channel / 15MHz / 64QAM



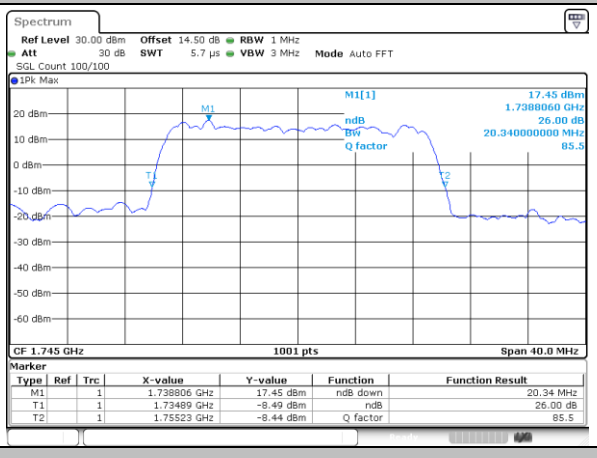
Lowest Channel / 20MHz / 64QAM



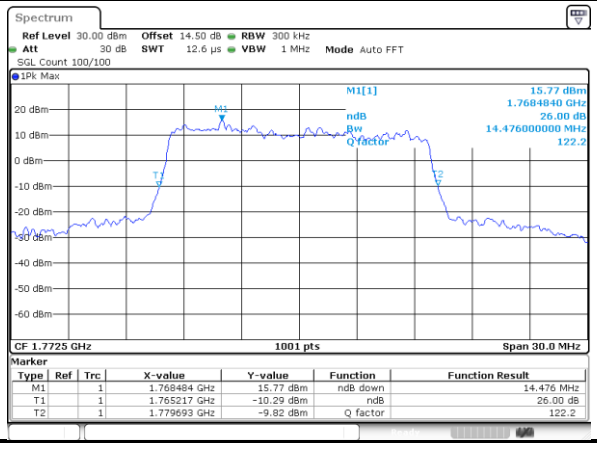
Middle Channel / 15MHz / 64QAM



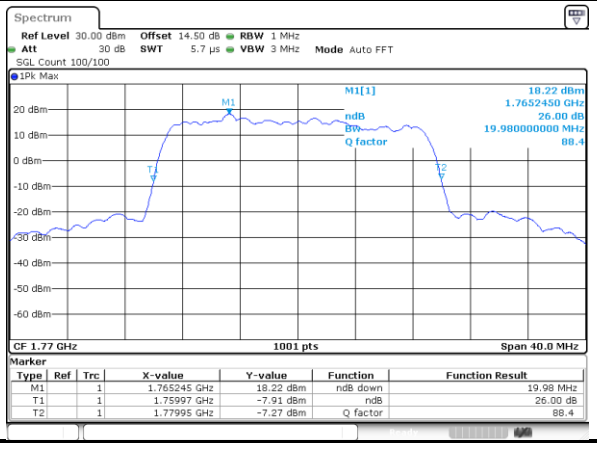
Middle Channel / 20MHz / 64QAM



Highest Channel / 15MHz / 64QAM



Highest Channel / 20MHz / 64QAM



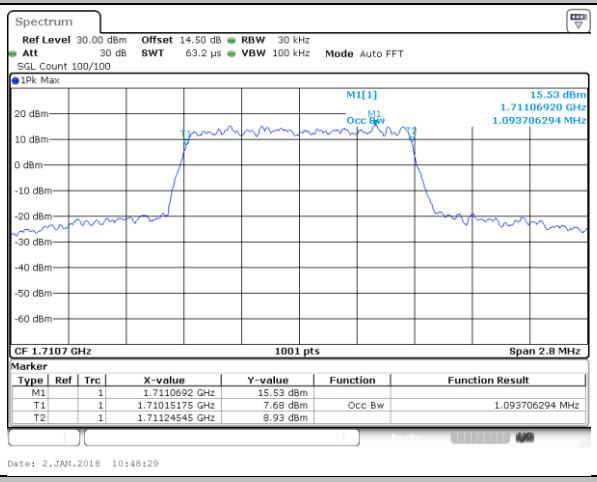
Occupied Bandwidth

Mode	LTE Band 66 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.09	1.1	2.71	2.72	4.50	4.52	9.03	9.05	13.37	13.43	18.38	18.22
Middle CH	1.1	1.09	2.75	2.72	4.49	4.49	9.09	9.05	13.55	13.46	18.30	18.46
Highest CH	1.1	1.1	2.74	2.73	4.50	4.50	9.01	9.09	13.43	13.46	18.30	18.30

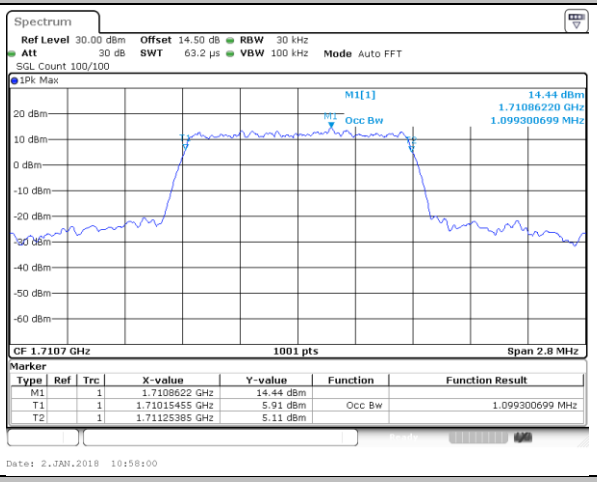
BW	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
Mod.	64QAM	64QAM	64QAM	64QAM	64QAM	64QAM
Lowest CH	1.09	2.70	4.46	9.01	13.46	18.42
Middle CH	1.09	2.72	4.51	9.03	13.52	18.50
Highest CH	1.09	2.73	4.50	9.03	13.46	18.34

LTE Band 66

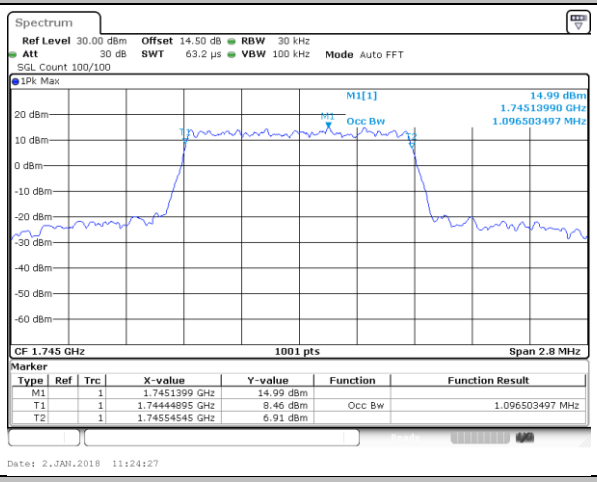
Lowest Channel / 1.4MHz / QPSK



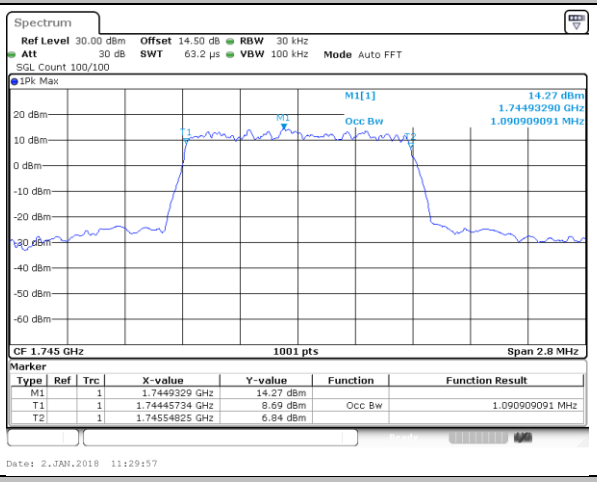
Lowest Channel / 1.4MHz / 16QAM



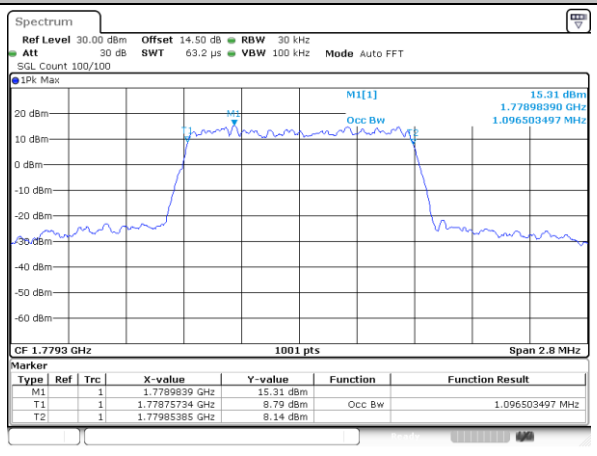
Middle Channel / 1.4MHz / QPSK



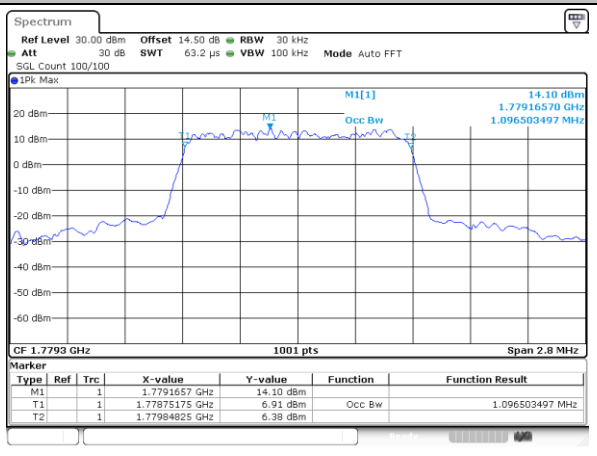
Middle Channel / 1.4MHz / 16QAM



Highest Channel / 1.4MHz / QPSK

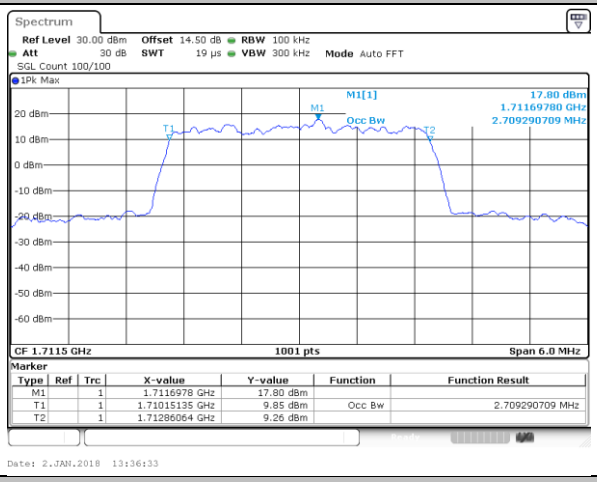


Highest Channel / 1.4MHz / 16QAM

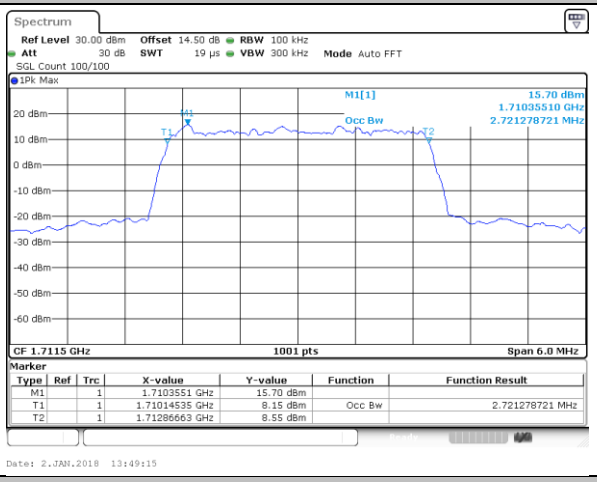


LTE Band 66

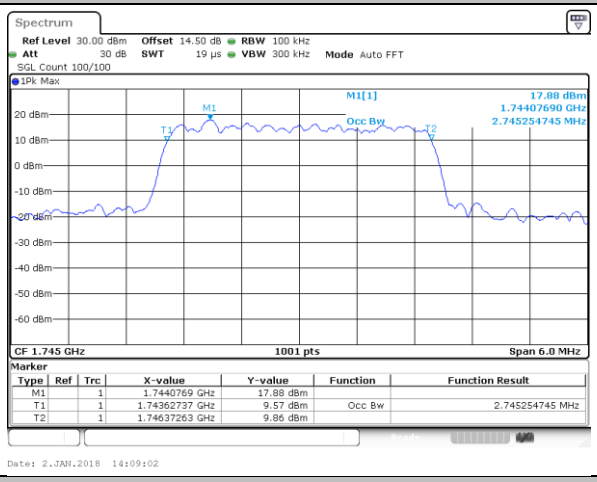
Lowest Channel / 3MHz / QPSK



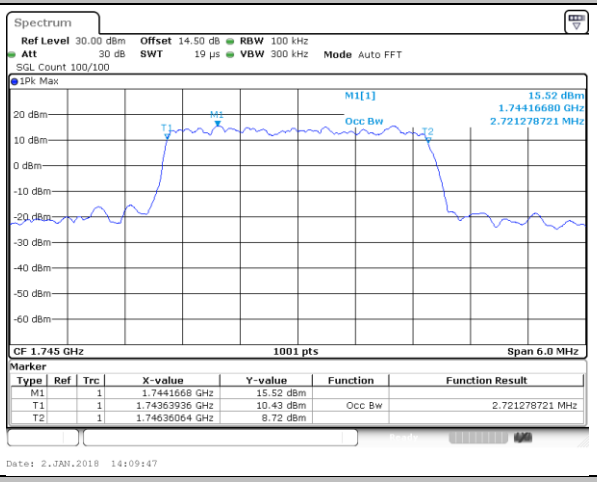
Lowest Channel / 3MHz / 16QAM



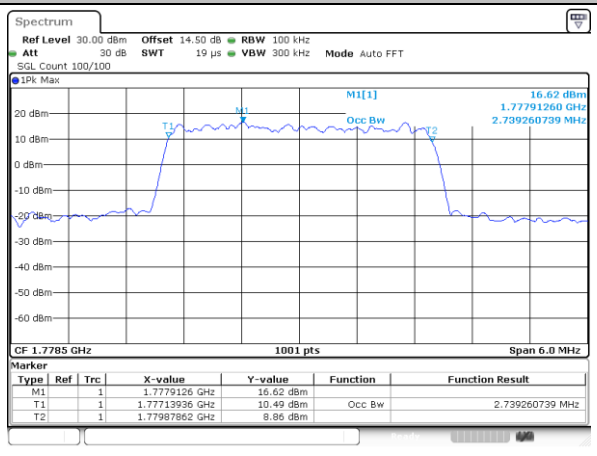
Middle Channel / 3MHz / QPSK



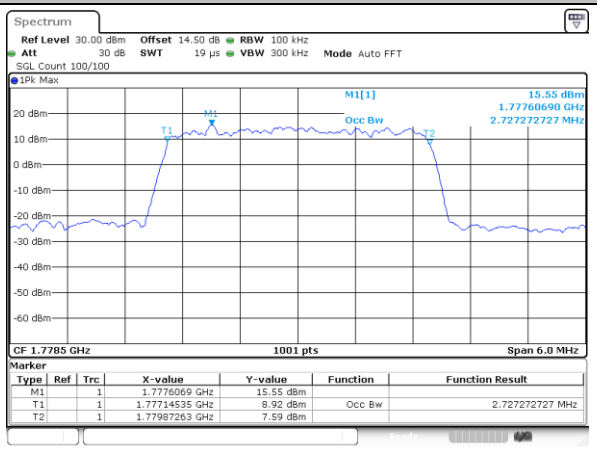
Middle Channel / 3MHz / 16QAM



Highest Channel / 3MHz / QPSK

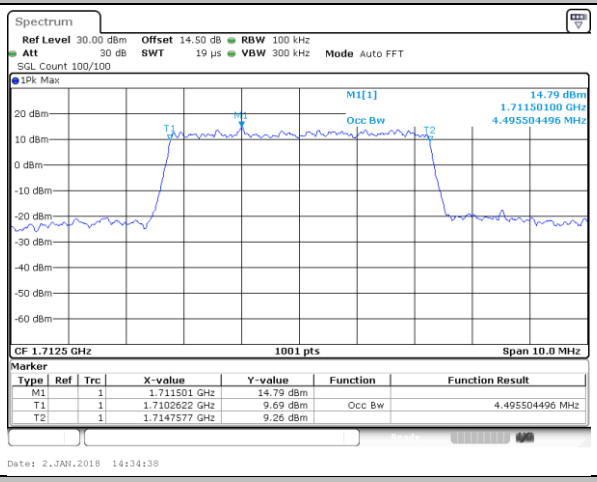


Highest Channel / 3MHz / 16QAM

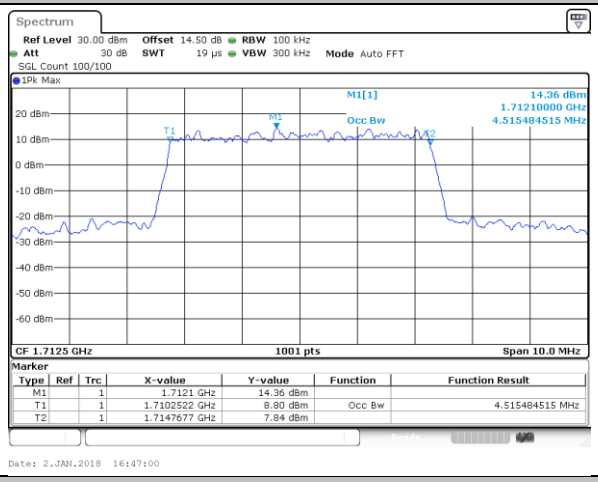


LTE Band 66

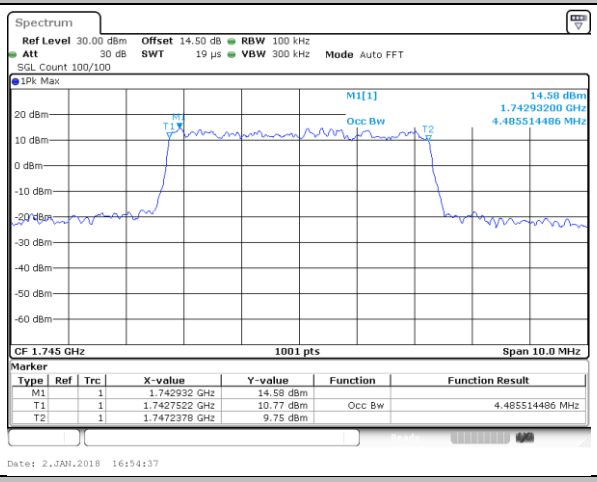
Lowest Channel / 5MHz / QPSK



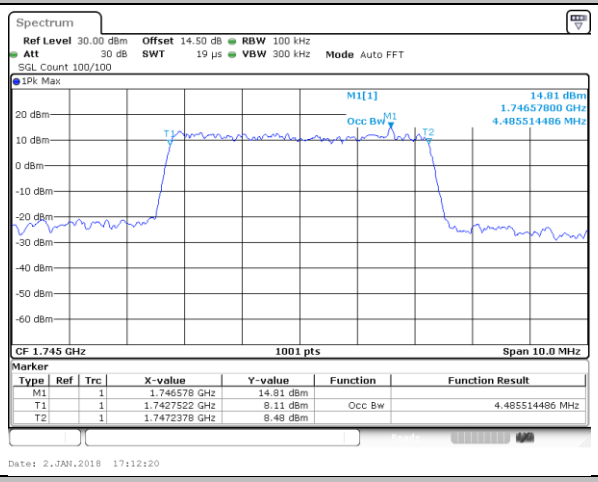
Lowest Channel / 5MHz / 16QAM



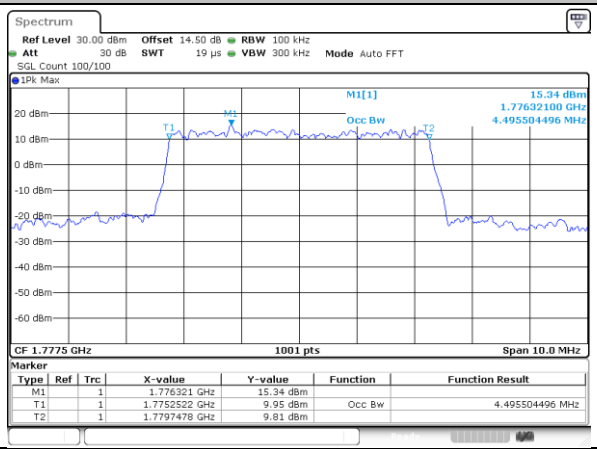
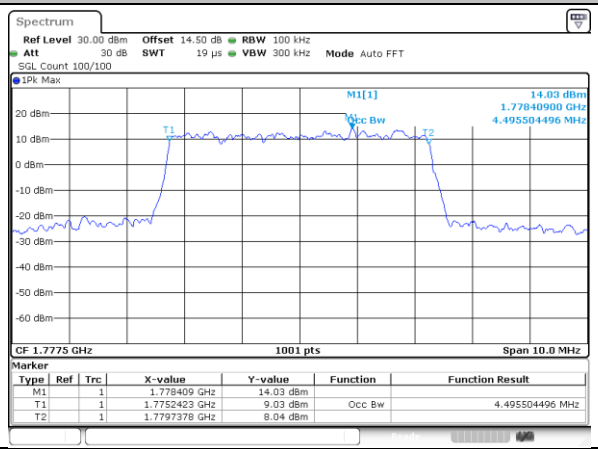
Middle Channel / 5MHz / QPSK



Middle Channel / 5MHz / 16QAM



Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM