

	 MS ISO/IEC 17025 TESTING SAMM No. 0825																										
MOTOROLA PENANG ADV. COMM. LABORATORY Motorola Solutions Malaysia Sdn Bhd, Innoplex Plot 2A, Medan Bayan Lepas, Mukim 12 S.W.D, 11900 Bayan Lepas, Penang, Malaysia.	FCC / ISED TEST REPORT Report Revision : Rev.A																										
<table><tr><td>Date/s Tested</td><td>: 27-Dec-2018 - 23-Jan-2019</td></tr><tr><td>Manufacturer/Location</td><td>: Motorola Solutions - Schaumburg</td></tr><tr><td>Requestor</td><td>: HOPKINS, SEAN</td></tr><tr><td>Product Type</td><td>: Hand-held</td></tr><tr><td>Product Version (PMN)</td><td>: P1B</td></tr><tr><td>Model Number (HVIN)</td><td>: H55TGT9PW8AN</td></tr><tr><td>Frequency Band</td><td>: Refer to section 1.4</td></tr><tr><td>Applicant Name</td><td>: Motorola Solutions, Inc</td></tr><tr><td>Applicant Address</td><td>: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322</td></tr><tr><td>FCC Registrations</td><td>: 461337</td></tr><tr><td>ISED Registrations</td><td>: 109AK</td></tr><tr><td>Firmware Version (FVIN)</td><td>: D00.00.31</td></tr></table> The equipment was tested accordance to the requirement listed below: <table><tr><td>(LTE Band 2) FCC 47 CFR Part 2 / 24 ISED RSS GEN Issue 5, April 2018 ISED RSS 133 Issue 6, January 2018</td><td>PASS</td></tr></table> 		Date/s Tested	: 27-Dec-2018 - 23-Jan-2019	Manufacturer/Location	: Motorola Solutions - Schaumburg	Requestor	: HOPKINS, SEAN	Product Type	: Hand-held	Product Version (PMN)	: P1B	Model Number (HVIN)	: H55TGT9PW8AN	Frequency Band	: Refer to section 1.4	Applicant Name	: Motorola Solutions, Inc	Applicant Address	: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322	FCC Registrations	: 461337	ISED Registrations	: 109AK	Firmware Version (FVIN)	: D00.00.31	(LTE Band 2) FCC 47 CFR Part 2 / 24 ISED RSS GEN Issue 5, April 2018 ISED RSS 133 Issue 6, January 2018	PASS
Date/s Tested	: 27-Dec-2018 - 23-Jan-2019																										
Manufacturer/Location	: Motorola Solutions - Schaumburg																										
Requestor	: HOPKINS, SEAN																										
Product Type	: Hand-held																										
Product Version (PMN)	: P1B																										
Model Number (HVIN)	: H55TGT9PW8AN																										
Frequency Band	: Refer to section 1.4																										
Applicant Name	: Motorola Solutions, Inc																										
Applicant Address	: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322																										
FCC Registrations	: 461337																										
ISED Registrations	: 109AK																										
Firmware Version (FVIN)	: D00.00.31																										
(LTE Band 2) FCC 47 CFR Part 2 / 24 ISED RSS GEN Issue 5, April 2018 ISED RSS 133 Issue 6, January 2018	PASS																										
This report shall not be reproduced without written approval from an officially designated representative of the Motorola Penang Adv. Comm. Laboratory. The results and statements contained in this report pertain only to the device(s) evaluated.																											
Prepared By: Maheshvaran Rajagopal Technician	Approved By: Goh Aik Hong Responsible Engineer																										

Table of Contents

1.0.	Summary of Test Results	3
1.1.	Measurement Uncertainty	3
1.2.	Equipment List.....	3
1.3.	General Information.....	4
1.4.	Channel number and frequency info	5
1.5.	Test Mode Applicability and Tested Channel Detail.....	6
1.6.	Conducted RF Output Power	8
1.6.1.	Test Setup.....	8
1.6.2.	Limits	8
1.6.3.	Conducted RF Output Power – LTE Band 2(1850-1910MHz)	8
1.7.	Peak-to-Average Power Ratio.....	11
1.7.1.	Test Setup.....	11
1.7.2.	Test Limit	11
1.7.3.	Peak-to-Average Power Ratio – LTE Band 2(1850-1910MHz).....	11
1.8.	Occupied Bandwidth.....	15
1.8.1.	Test Setup.....	15
1.8.2.	Test Limit	15
1.8.3.	Occupied Bandwidth – LTE Band 2 (1850 -1910 MHz)	16
1.9.	Frequency Stability	26
1.9.1.	Test Setup.....	26
1.9.2.	Test Limit	26
1.9.3.	Frequency Stability – LTE Band 2 (1850 -1910 MHz)	26
1.10.	Band Edge Conducted Spurious Emission	31
1.10.1.	Test Setup	31
1.10.2.	Test Limit	31
1.10.3.	Band Edge Conducted Spurious Emission – LTE Band 2 (1850 -1910 MHz)	31
1.11.	Conducted Spurious Emission	40
1.11.1.	Test Setup	40
1.11.2.	Test Limit	40
1.11.3.	Conducted Spurious Emissions – LTE Band 2 (1850 -1910 MHz)	40
1.12.	Radiated Spurious Emission	58
1.12.1.	Test Setup	58
1.12.2.	Test Limit	58
1.12.3.	Radiated Spurious Emission – LTE Band 2 (1850-1910MHz).....	58
1.13.	Equivalent Isotropically Radiated Power (EIRP)	59
1.13.1.	Test Setup	59
1.13.2.	Test Limit	59
1.13.3.	Equivalent Isotropically Radiated Power (EIRP)- LTE Band 2 (1850-1910MHz).....	59

REVISION HISTORY

Revision History	Description	Date	Originator
Rev A.	Initial Report	26-Feb-2019	Maheshvaran Rajagopal

1.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Results	Remarks	Serial Number Tested
2.1046 24.232(e)	RSS-Gen 6.12 RSS-133 4.1	Conducted RF Output Power	Pass	Meet the requirement of limit.	437P1B0011
24.232(d)	RSS-133 6.4	Peak-to-Average Power Ratio	Pass	Meet the requirement of limit.	437P1B0011
2.1049 24.238(b)	RSS-Gen 6.7 RSS-133 2.3	Occupied Bandwidth (26dBc, 20dBc, 99%)	Pass	Meet the requirement of limit.	437P1B0011
2.1055 24.235	RSS-Gen 6.11 RSS-133 6.3	Frequency Stability	Pass	Meet the requirement of limit.	437P1B0011
2.1051 24.238(a)(b)	RSS-Gen 6.13 RSS-133 6.5	Band Edge Conducted Spurious Emission	Pass	Meet the requirement of limit.	437P1B0011
2.1051 24.238(a)(b)	RSS-Gen 6.13 RSS-133 6.5	Conducted Spurious Emissions	Pass	Meet the requirement of limit.	437P1B0011
2.1053 24.236, 24.238	RSS-133 6.5	Radiated Spurious Emission	Not Performed.	Not Performed.	Not Performed.
24.232 (c)	RSS-133 6.4	Equivalent Isotropically Radiated Power (EIRP)	Not Performed.	Not Performed.	Not Performed.

1.1. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±dB)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

1.2. Equipment List

Description	Model	Serial Number	Calibration Date	Calibration Due Date
Broadband ATE 1 (Test Software Version : R&S CMWRun 1.8.9)				
Wideband Radio Communication Tester	CMW500	153174	12-Apr-17	12-Apr-19
Signal Analyzer	FSV40	101431	13-Jul-17	12-Jul-19
Chamber	SH-641	92002651	5-Mar-18	5-Mar-19
Power Supply	6623A	3417A03546	15-Nov-17	15-Nov-19

1.3. General Information

General Description of EUT

Product	Hand-held			
Brand	Motorola Solutions			
Test Model	H55TGT9PW8AN			
Power Supply Rating	7.5 Vdc			
Mode of operation	LTE Band 2			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 2	Channel Bandwidth 1.4MHz	1850.7MHz~1909.3MHz	
		Channel Bandwidth 3MHz	1851.5MHz~1908.5MHz	
		Channel Bandwidth 5MHz	1852.5MHz~1907.5MHz	
		Channel Bandwidth 10MHz	1855.0MHz~1905.0MHz	
		Channel Bandwidth 15MHz	1857.5MHz~1902.5MHz	
		Channel Bandwidth 20MHz	1860.0MHz~1900.0MHz	
Max. Conducted RF Output Power	LTE Band 2 QPSK	Channel Bandwidth 1.4MHz	22.64dBm (0.184W)	
		Channel Bandwidth 3MHz	22.692dBm (0.186W)	
		Channel Bandwidth 5MHz	22.732dBm (0.188W)	
		Channel Bandwidth 10MHz	22.87dBm (0.194W)	
		Channel Bandwidth 15MHz	22.783dBm (0.190W)	
		Channel Bandwidth 20MHz	22.86dBm (0.193W)	
	LTE Band 2 16QAM	Channel Bandwidth 1.4MHz	21.846dBm (0.153W)	
		Channel Bandwidth 3MHz	22.073dBm (0.161W)	
		Channel Bandwidth 5MHz	21.992dBm (0.158W)	
		Channel Bandwidth 10MHz	22.044dBm (0.160W)	
		Channel Bandwidth 15MHz	22.097dBm (0.162W)	
		Channel Bandwidth 20MHz	22.466dBm (0.176W)	
Emission Designator	LTE Band 2		QPSK	16QAM
		Channel Bandwidth 1.4MHz	1M07G7D	1M07D7W
		Channel Bandwidth 3MHz	2M68G7D	2M68D7W
		Channel Bandwidth 5MHz	4M47G7D	4M48D7W
		Channel Bandwidth 10MHz	8M91G7D	8M93D7W
		Channel Bandwidth 15MHz	13M37G7D	13M37D7W
		Channel Bandwidth 20MHz	17M86G7D	17M82D7W
Antenna Type	LTE Band 2	Stamped Metal with 2.15dBi gain		
SW Version	D00.00.31			
HW Version	P1B			

Note:

1. The EUT contains following accessory devices and data cable.

Item	Brand	Model or P/N	Specification
DMR Portable Programming Cable	Motorola Solutions	PMKN4012B	-

Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.
The following support units or accessories were used to form a representative test configuration during the tests.

NO.	Product	Brand	Model No.	Serial No.	FCC ID
1	Wideband Radio Communication Tester	R&S	CMW500	153174	NA

Note:

- Item 1 acted as a communication partner to transfer data.

EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

Deviation from standard

Not applicable as no deviation from standard test method.

1.4. Channel number and frequency info

Band	Bandwidth supported	Available Channel Number	Test Channel Number			Test Channel Frequency (MHz)		
			Low Channel	Mid Channel	High Channel	Low Channel	Mid Channel	High Channel
LTE Band 2	1.4 MHz	18607 ~ 19193	18607	18900	19193	1850.7	1880.0	1909.3
	3 MHz	18615 ~ 19185	18615	18900	19185	1851.5	1880.0	1908.5
	5 MHz	18625 ~ 19175	18625	18900	19175	1852.5	1880.0	1907.5
	10 MHz	18650 ~ 19150	18650	18900	19150	1855.0	1880.0	1905.0
	15 MHz	18675 ~ 19125	18675	18900	19125	1857.5	1880.0	1902.5
	20 MHz	18700 ~ 19100	18700	18900	19100	1860.0	1880.0	1900.0

1.5. Test Mode Applicability and Tested Channel Detail

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

The following channel(s) was (were) selected for the final test as listed below:

LTE Band 2

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Uplink Modulation	Mode
Conducted RF Output Power	18607 ~ 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM	As per table 1.6.2
	18615 ~ 19185	18615, 18900, 19185	3 MHz		
	18625 ~ 19175	18625, 18900, 19175	5 MHz		
	18650 ~ 19150	18650, 18900, 19150	10 MHz		
	18675 ~ 19125	18675, 18900, 19125	15 MHz		
	18700 ~ 19100	18700, 18900, 19100	20 MHz		
Peak to Average Power Ratio	18607 ~ 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	18615 ~ 19185	18615, 18900, 19185	3 MHz		15 RB / 0 RB Offset
	18625 ~ 19175	18625, 18900, 19175	5 MHz		25 RB / 0 RB Offset
	18650 ~ 19150	18650, 18900, 19150	10 MHz		50 RB / 0 RB Offset
	18675 ~ 19125	18675, 18900, 19125	15 MHz		75 RB / 0 RB Offset
	18700 ~ 19100	18700, 18900, 19100	20 MHz		100 RB / 0 RB Offset
Occupied Bandwidth	18607 ~ 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	18615 ~ 19185	18615, 18900, 19185	3 MHz		15 RB / 0 RB Offset
	18625 ~ 19175	18625, 18900, 19175	5 MHz		25 RB / 0 RB Offset
	18650 ~ 19150	18650, 18900, 19150	10 MHz		50 RB / 0 RB Offset
	18675 ~ 19125	18675, 18900, 19125	15 MHz		75 RB / 0 RB Offset
	18700 ~ 19100	18700, 18900, 19100	20 MHz		100 RB / 0 RB Offset
Frequency Stability	18607 ~ 19193	18607, 19193	1.4 MHz	QPSK	6 RB / 0 RB Offset
	18615 ~ 19185	18615, 19185	3 MHz		15 RB / 0 RB Offset
	18625 ~ 19175	18625, 19175	5 MHz		25 RB / 0 RB Offset
	18650 ~ 19150	18650, 19150	10 MHz		50 RB / 0 RB Offset
	18675 ~ 19125	18675, 19125	15 MHz		75 RB / 0 RB Offset
	18700 ~ 19100	18700, 19100	20 MHz		100 RB / 0 RB Offset
Band Edge Conducted Spurious Emission	18607 ~ 19193	18607, 19193	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
	18615 ~ 19185	18615, 19185	3 MHz		1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
	18625 ~ 19175	18625, 19175	5 MHz		1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
	18650 ~ 19150	18650, 19150	10 MHz		1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
	18675 ~ 19125	18675, 19125	15 MHz		1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
	18700 ~ 19100	18700, 19100	20 MHz		1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
Conducted Spurious	18607 ~ 19193	18607, 18900, 19193	1.4 MHz	QPSK	1 RB / 3 RB Offset
	18615 ~ 19185	18615, 18900, 19185	3 MHz		1 RB / 7 RB Offset

Emission	18625 ~ 19175	18625, 18900, 19175	5 MHz		1 RB / 24 RB Offset
	18650 ~ 19150	18650, 18900, 19150	10 MHz		1 RB / 0 RB Offset
	18675 ~ 19125	18675, 18900, 19125	15 MHz		1 RB / 0 RB Offset
	18700 ~ 19100	18700, 18900, 19100	20 MHz		1 RB / 0 RB Offset
Radiated Spurious Emission	18625 ~ 19175	18625, 18900, 19175	5 MHz	QPSK	Not Performed.
	18650 ~ 19150	18650, 18900, 19150	10 MHz		
	18675 ~ 19125	18675, 18900, 19125	15 MHz		
	18700 ~ 19100	18700, 18900, 19100	20 MHz		
	18625 ~ 19175	18625, 18900, 19175	5 MHz		
	18650 ~ 19150	18650, 18900, 19150	10 MHz		
Equivalent Isotropically Radiated Power	18675 ~ 19125	18675, 18900, 19125	15 MHz	QPSK, 16QAM	Not Performed.
	18700 ~ 19100	18700, 18900, 19100	20 MHz		
	18625 ~ 19175	18625, 18900, 19175	5 MHz		
	18650 ~ 19150	18650, 18900, 19150	10 MHz		
	18675 ~ 19125	18675, 18900, 19125	15 MHz		
	18700 ~ 19100	18700, 18900, 19100	20 MHz		

NOTE:

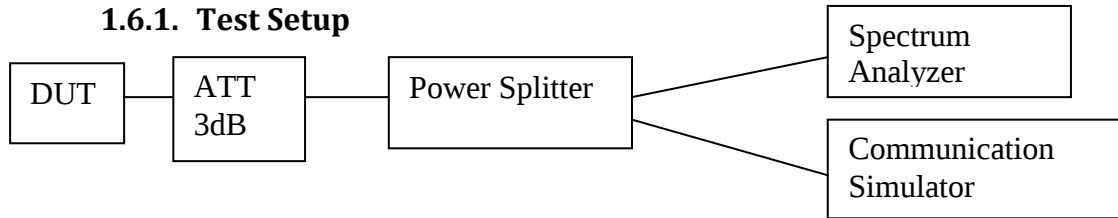
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK mode is higher than 16QAM mode. Therefore, only Conducted Spurious Emission had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating frequency band.
3. Peak to Average and Occupied Bandwidth were performed with full Resource Block which is the worst case.
4. Frequency stability was performed with full Resource Block in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
Conducted RF Output Power	25°C, 50% RH	7.5V DC	Maheshvaran
Peak-to-Average Power Ratio	25°C, 50% RH	7.5V DC	Maheshvaran
Occupied Bandwidth	25°C, 50% RH	7.5V DC	Maheshvaran
Frequency Stability	25°C, 50% RH	7.5V DC	Maheshvaran
Band Edge Conducted Spurious Emission	25°C, 50% RH	7.5V DC	Maheshvaran
Conducted Spurious Emission	25°C, 50% RH	7.5V DC	Maheshvaran
Radiated Spurious Emission	Not Performed.		
Equivalent Isotropically Radiated Power (EIRP)	Not Performed.		

1.6. Conducted RF Output Power

1.6.1. Test Setup



1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. All the measurement was done at low, mid, high channel for each band and different modulation.
5. Record the average power into the test report.

1.6.2. Limits

FCC: Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

ISED: Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

1.6.3. Conducted RF Output Power – LTE Band 2(1850-1910MHz)

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18607	18900	19193	18607	18900	19193
			1850.7 MHz	1880.0 MHz	1909.3 MHz	1850.7 MHz	1880.0 MHz	1909.3 MHz
Band 2 / 1.4 MHz	1	0	22.388	22.435	22.614	21.535	21.553	21.709
	1	3	22.452	22.51	22.642	21.618	21.628	21.78
	1	5	22.419	22.429	22.556	21.579	21.572	21.726
	3	0	22.398	22.452	22.56	21.609	21.477	21.792
	3	2	22.439	22.533	22.604	21.68	21.561	21.846
	3	3	22.381	22.437	22.574	21.6	21.492	21.791
	6	0	21.373	21.453	21.623	20.486	20.509	20.709

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18615	18900	19185	18615	18900	19185
			1851.5 MHz	1880.0 MHz	1908.5 MHz	1851.5 MHz	1880.0 MHz	1908.5 MHz
Band 2 / 3MHz	1	0	22.473	22.58	22.574	21.52	21.592	21.886
	1	7	22.55	22.637	22.692	21.611	21.645	22.073
	1	14	22.481	22.588	22.604	21.559	21.6	21.934
	8	0	21.477	21.55	21.652	20.498	20.634	20.831
	8	4	21.499	21.545	21.703	20.512	20.652	20.885
	8	7	21.511	21.529	21.689	20.522	20.626	20.841
	15	0	21.46	21.525	21.695	20.512	20.628	20.788

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18625	18900	19175	18625	18900	19175
			1852.5MHz	1880.0MHz	1907.5MHz	1852.5MHz	1880.0MHz	1907.5MHz
Band 2 / 5MHz	1	0	22.469	22.617	22.699	21.459	21.736	21.936
	1	13	22.546	22.608	22.73	21.511	21.708	21.959
	1	24	22.518	22.566	22.732	21.506	21.726	21.992
	12	0	21.525	21.561	21.681	20.593	20.581	20.757
	12	6	21.533	21.599	21.73	20.594	20.618	20.777
	12	13	21.55	21.543	21.73	20.615	20.58	20.758
	25	0	21.529	21.598	21.695	20.558	20.629	20.751

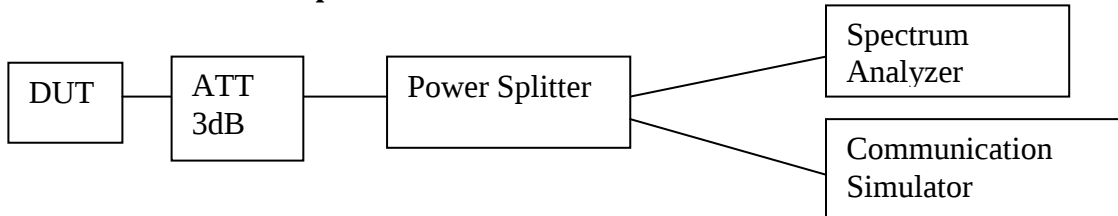
Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18650	18900	19150	18650	18900	19150
			1855.0MHz	1880.0MHz	1905.0MHz	1855.0MHz	1880.0MHz	1905.0MHz
Band 2 / 10MHz	1	0	22.778	22.87	22.602	21.945	21.874	22.008
	1	25	22.56	22.621	22.593	21.621	21.611	21.942
	1	49	22.768	22.82	22.686	21.953	21.863	22.044
	25	0	21.556	21.617	21.681	20.707	20.75	20.821
	25	13	21.591	21.625	21.701	20.744	20.752	20.799
	25	25	21.588	21.592	21.722	20.732	20.715	20.812
	50	0	21.559	21.624	21.705	20.636	20.755	20.801

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18675	18900	19125	18675	18900	19125
			1857.5MHz	1880.0MHz	1902.5MHz	1857.5MHz	1880.0MHz	1902.5MHz
Band 2 / 15MHz	1	0	22.725	22.755	22.783	22.088	22.002	22.076
	1	38	22.682	22.585	22.697	22.037	21.869	21.972
	1	74	22.753	22.627	22.781	22.051	21.892	22.097
	36	0	21.663	21.657	21.669	20.791	20.788	20.824
	36	19	21.681	21.6	21.675	20.804	20.734	20.831
	36	39	21.692	21.613	21.72	20.816	20.709	20.823
	75	0	21.662	21.609	21.705	20.786	20.728	20.809

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			18700	18900	19100	18700	18900	19100
			1860.0MHz	1880.0MHz	1900.0MHz	1860.0MHz	1880.0MHz	1900.0MHz
Band 2 / 20MHz	1	0	22.785	22.86	22.615	21.784	22.466	22.086
	1	49	22.588	22.56	22.428	21.51	22.092	21.926
	1	99	22.75	22.782	22.618	21.786	22.36	22.037
	50	0	21.668	21.678	21.714	20.757	20.774	20.79
	50	25	21.626	21.637	21.589	20.71	20.738	20.69
	50	50	21.642	21.651	21.62	20.741	20.749	20.731
	100	0	21.645	21.647	21.688	20.766	20.748	20.832

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



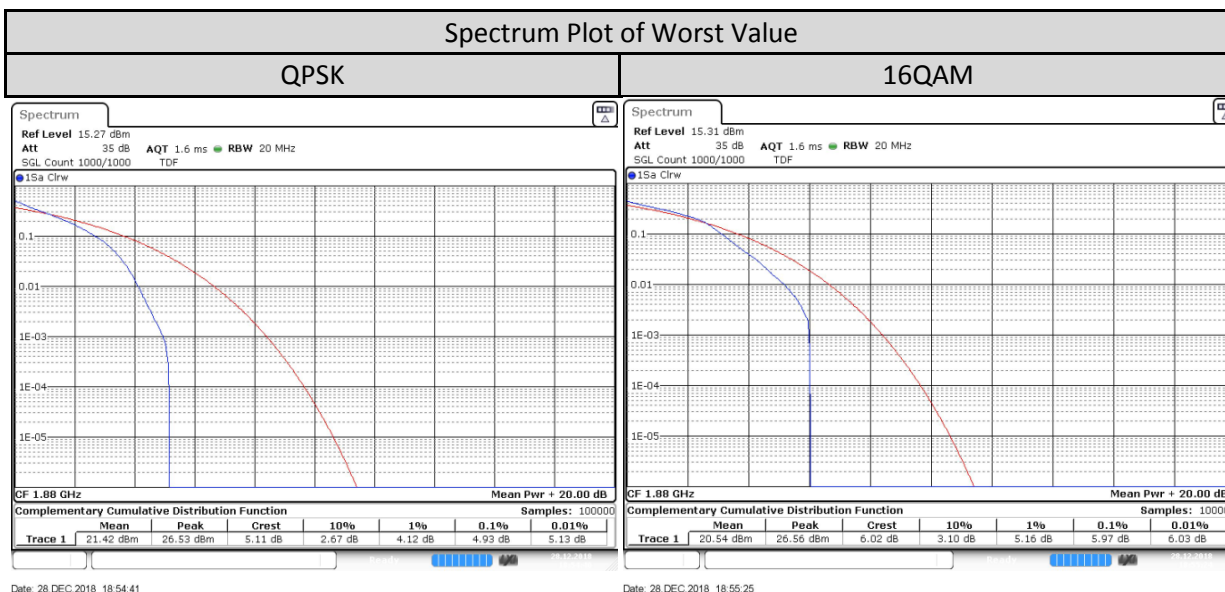
1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum analyzer.
5. Spectrum Analyzer setting, RBW = 20MHz.
6. Recorded the maximum PAR level associated with a probability of 0.1% as Peak to Average Ratio.
7. All the measurement was done at low, mid, high channel for each band and different modulation.

1.7.2. Test Limit

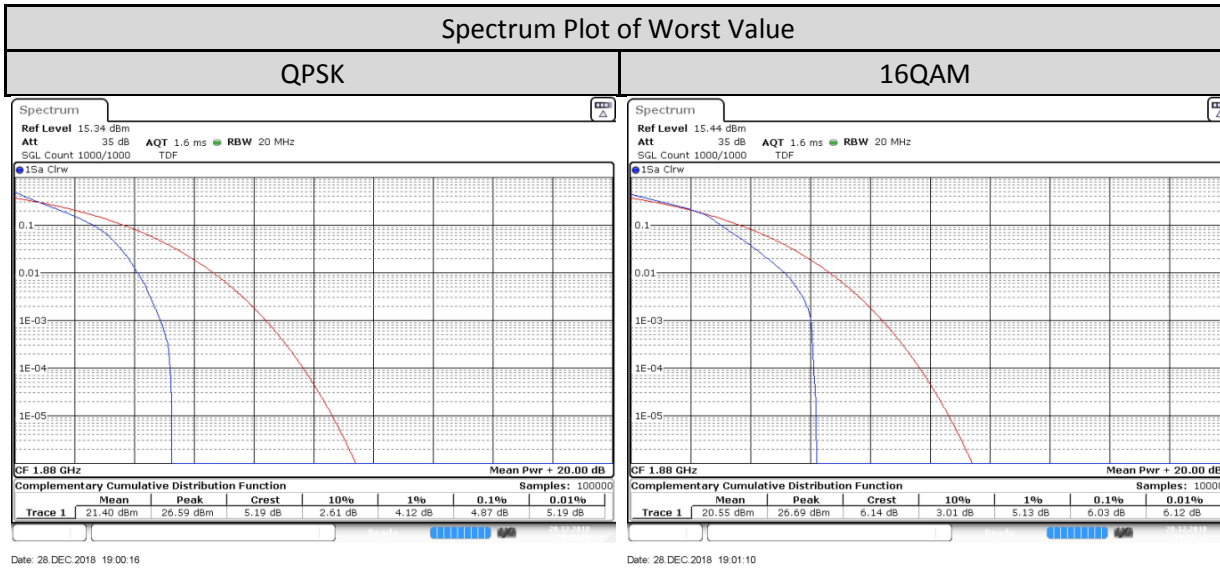
In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

1.7.3. Peak-to-Average Power Ratio - LTE Band 2(1850-1910MHz)

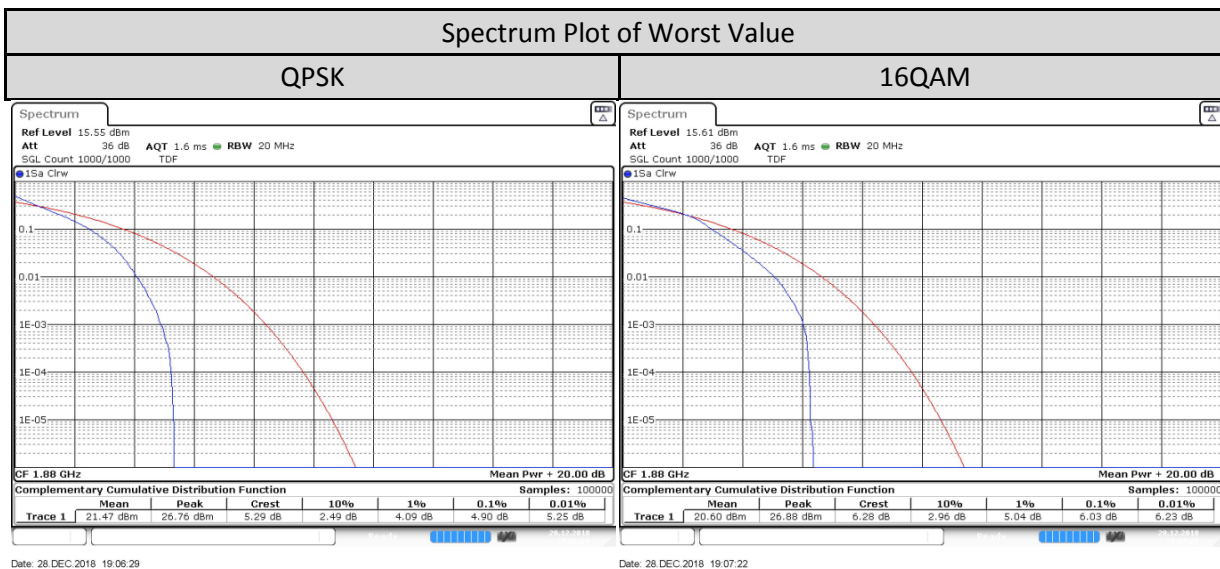
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	4.725	5.71
	Mid CH 18900	1880 MHz	4.928	5.971
	High CH 19193	1909.3 MHz	4.754	5.913



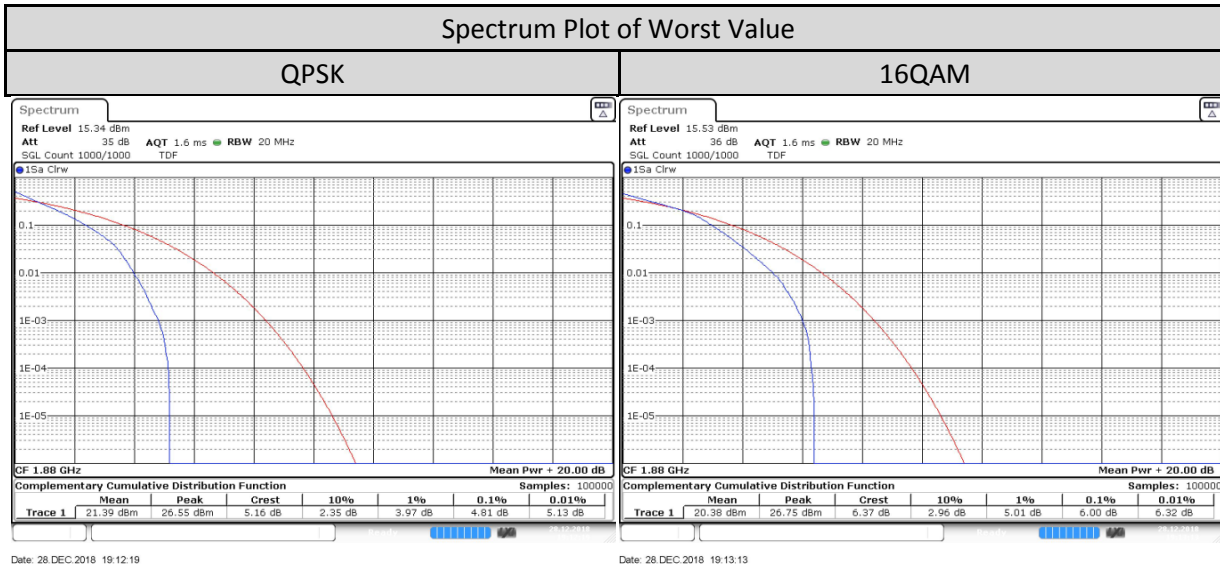
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	4.667	5.681
	Mid CH 18900	1880 MHz	4.87	6.029
	High CH 19185	1908.5 MHz	4.58	5.159



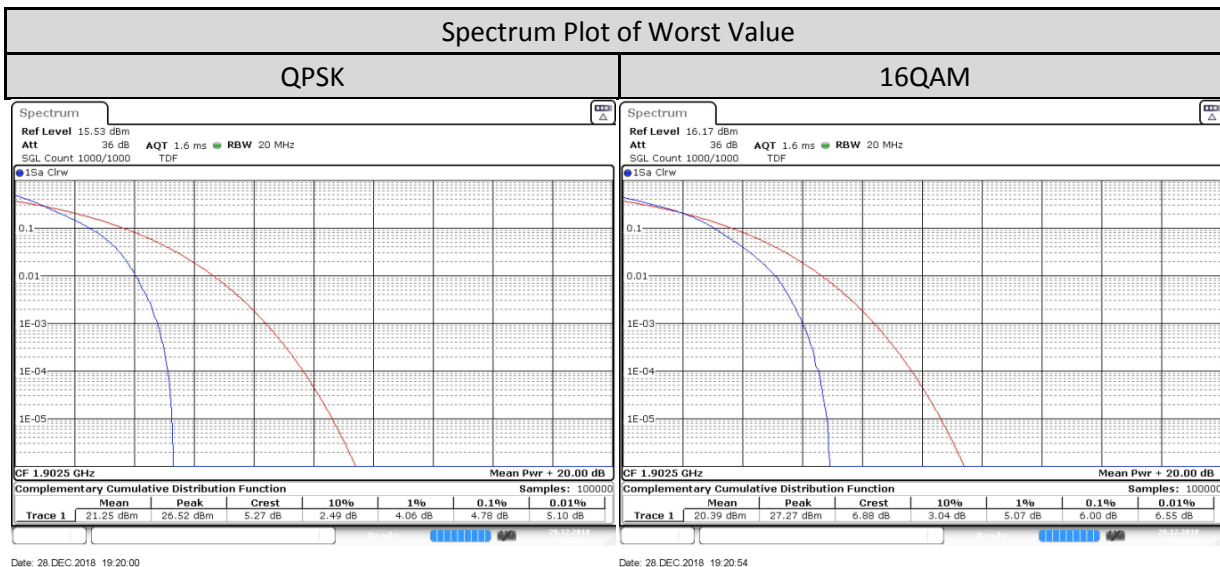
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/5MHz/25/0	Low CH 18625	1852.5 MHz	4.841	5.826
	Mid CH 18900	1880 MHz	4.899	6.029
	High CH 19175	1907.5 MHz	4.493	5.478



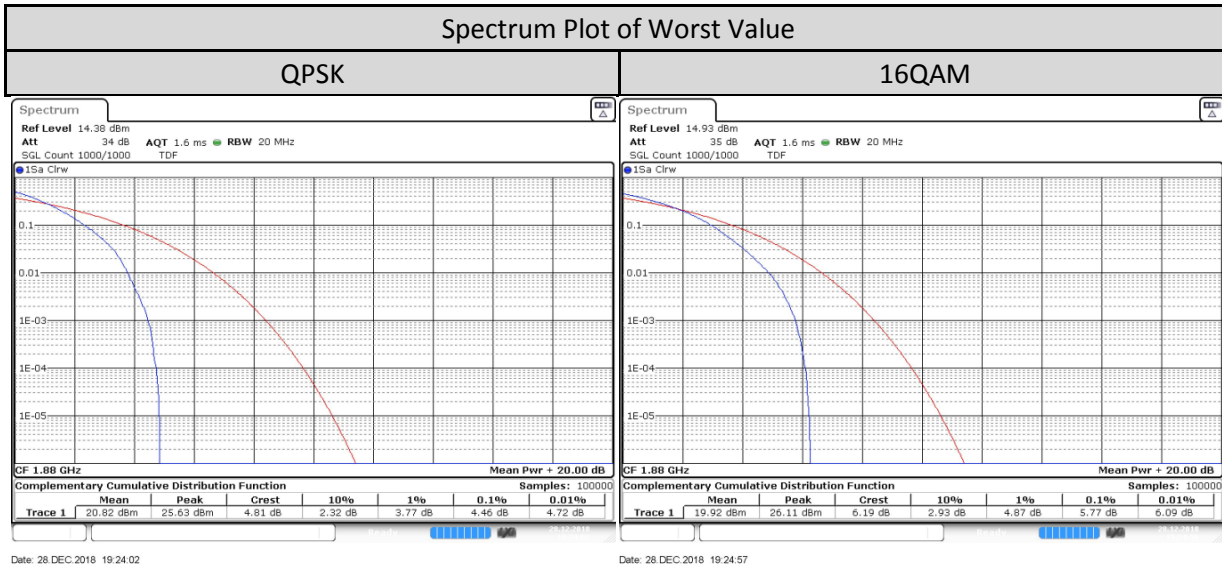
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/10MHz/50/0	Low CH 18650	1855 MHz	4.638	5.71
	Mid CH 18900	1880 MHz	4.812	6
	High CH 19150	1905 MHz	4.464	5.507



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/15MHz/75/0	Low CH 18675	1857.5 MHz	4.638	5.71
	Mid CH 18900	1880 MHz	4.754	5.913
	High CH 19125	1902.5 MHz	4.783	6

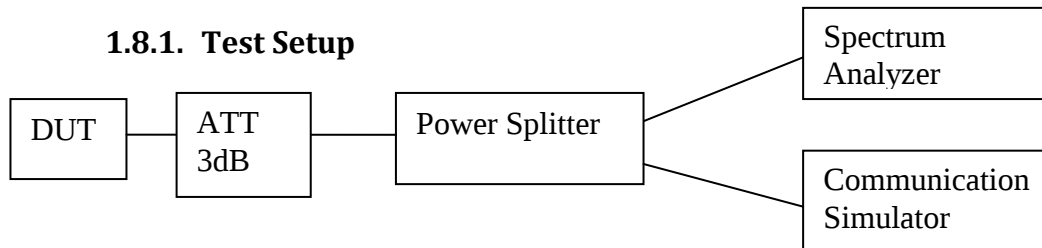


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2/ 20MHz/100/0	Low CH 18700	1860 MHz	4.377	5.652
	Mid CH 18900	1880 MHz	4.464	5.768
	High CH 19100	1900 MHz	4.464	5.623



1.8. Occupied Bandwidth

1.8.1. Test Setup



- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) For LTE measurement, set DUT to transmit maximum power & full RB size through communication simulator.
- 4) For LTE measurement, set DUT to transmit maximum power through communication simulator.
- 5) Spectrum Analyzer setting, RBW is 1% of OBW and VBW is 3 times of RBW.
- 6) Measure & record -20dBc, -26dBc and 99% occupied bandwidth (BW).
- 7) All the measurement was done at low, mid, high channel for each band and different modulation.

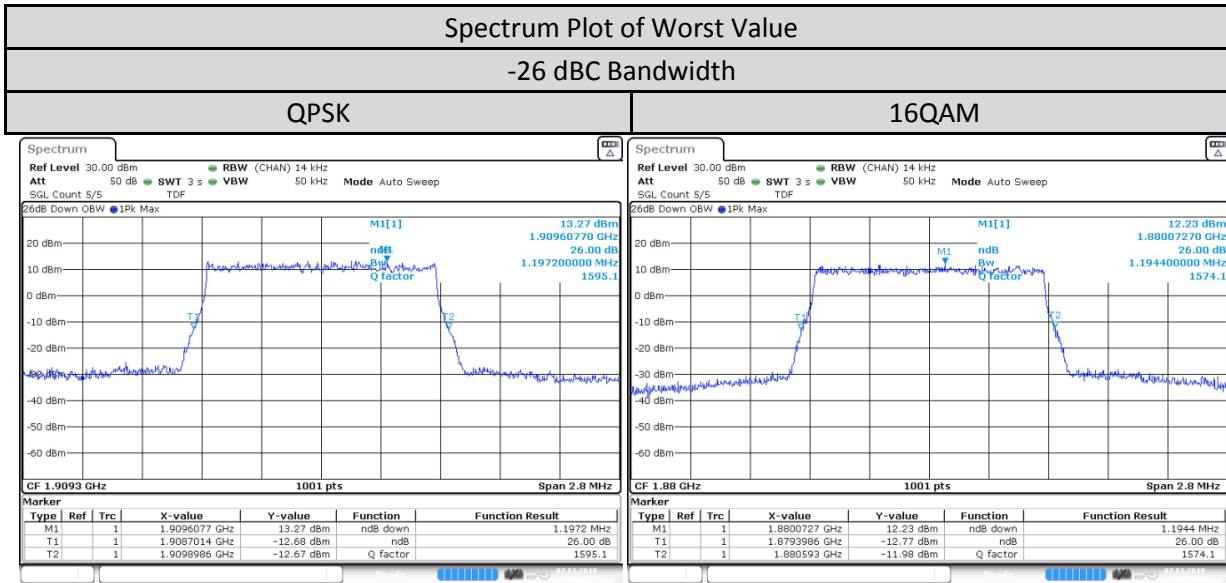
1.8.2. Test Limit

FCC: The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

ISED: Emission bandwidth is, for the purpose of this document, defined as the width of the signal between two points, one below the carrier frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 20 dB below the transmitter power (i.e. -20 dBc), when measured with a resolution bandwidth of approximately 1% of the occupied bandwidth. In lieu of the -20 dBc bandwidth, the occupied bandwidth may be used.

1.8.3. Occupied Bandwidth - LTE Band 2 (1850 -1910 MHz)

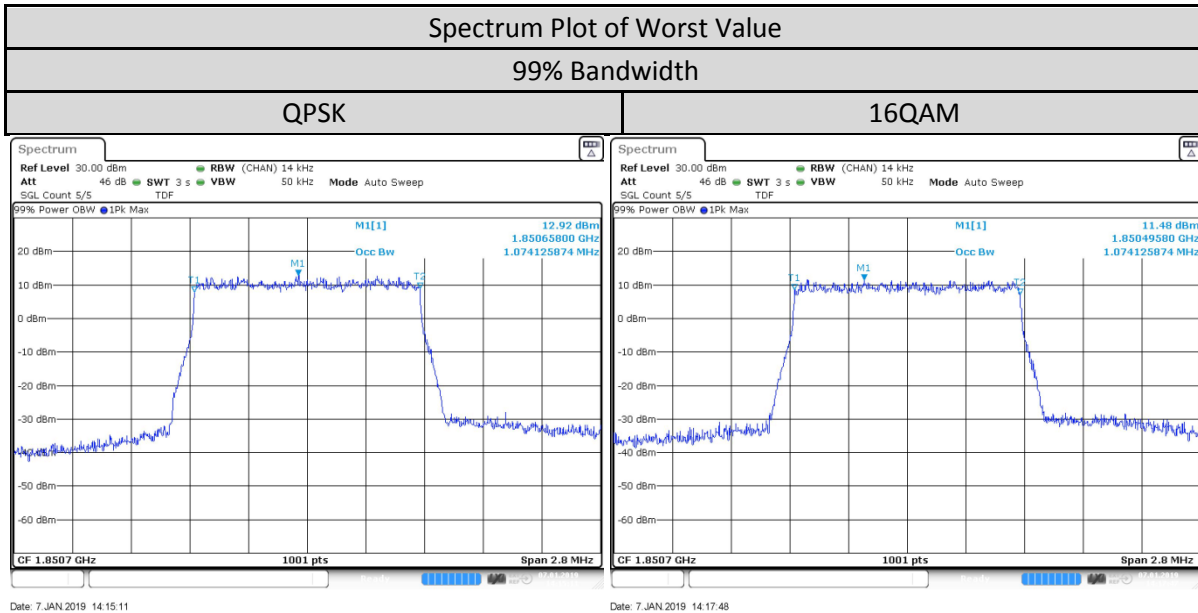
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.189	1.183
	Mid CH 18900	1880 MHz	1.183	1.194
	High CH 19193	1909.3 MHz	1.197	1.18



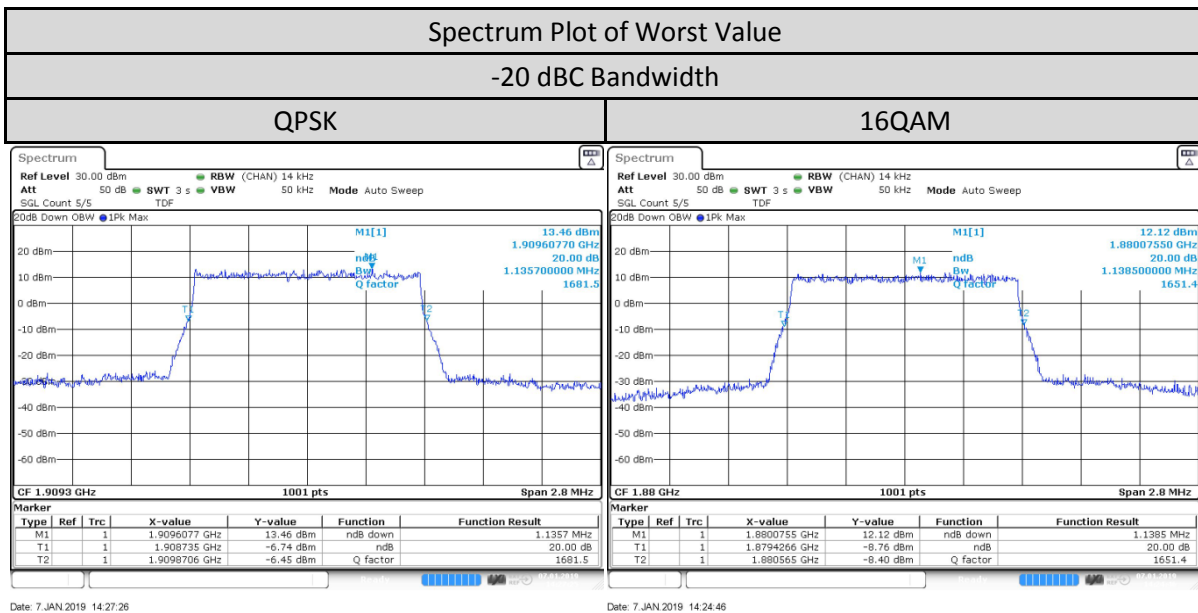
Date: 7 JAN 2019 14:26:23

Date: 7 JAN 2019 14:23:44

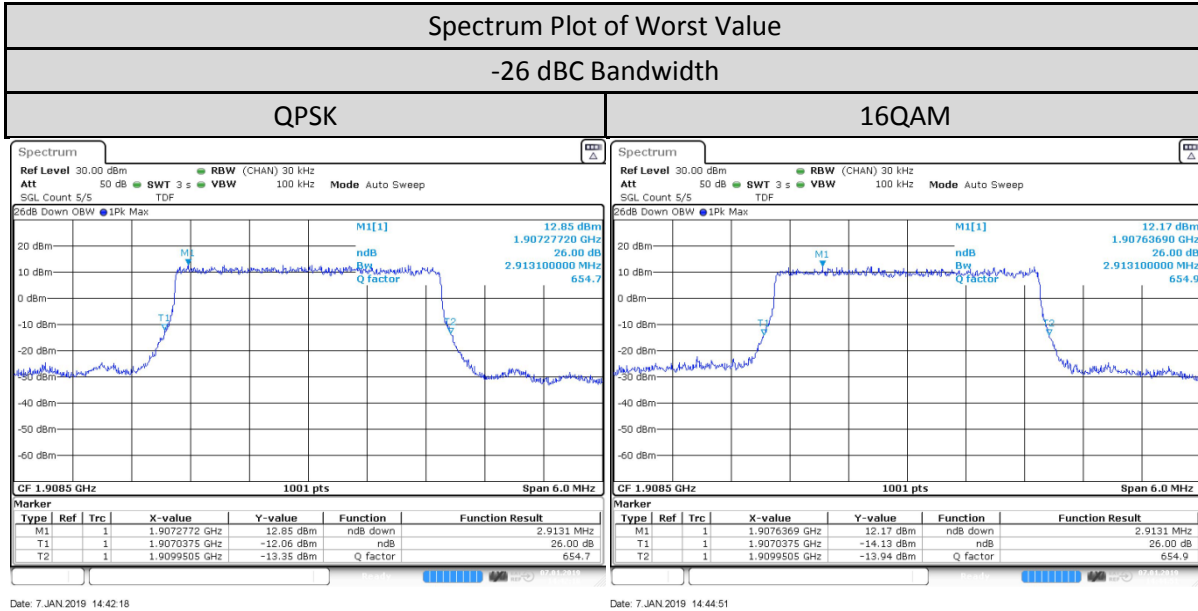
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.074	1.074
	Mid CH 18900	1880 MHz	1.074	1.074
	High CH 19193	1909.3 MHz	1.074	1.071



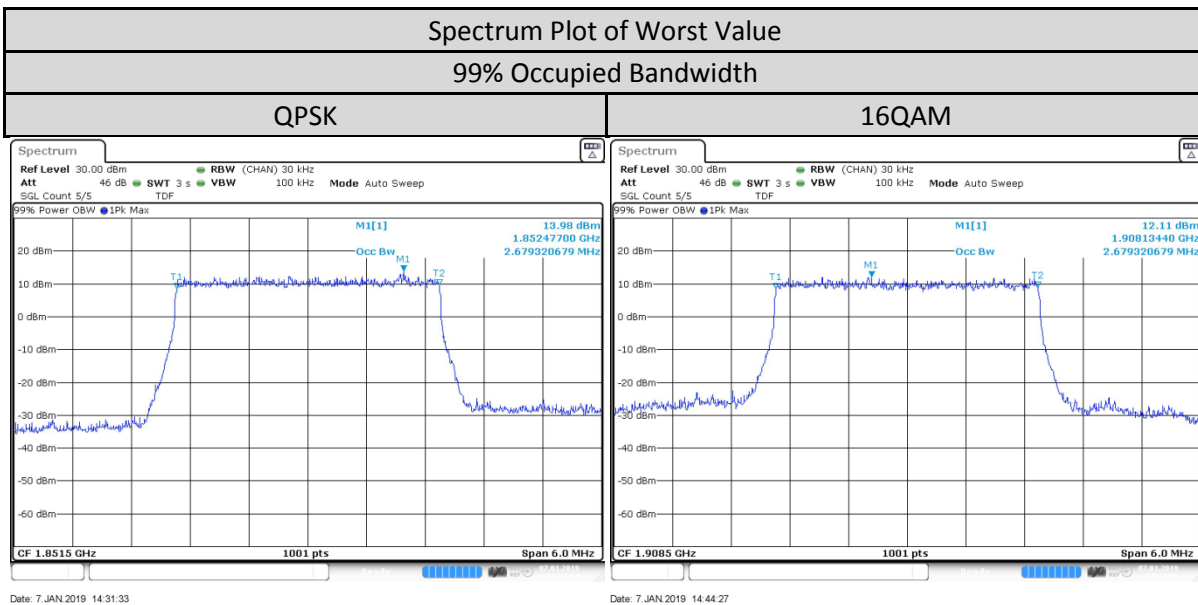
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.127	1.133
	Mid CH 18900	1880 MHz	1.122	1.139
	High CH 19193	1909.3 MHz	1.136	1.122



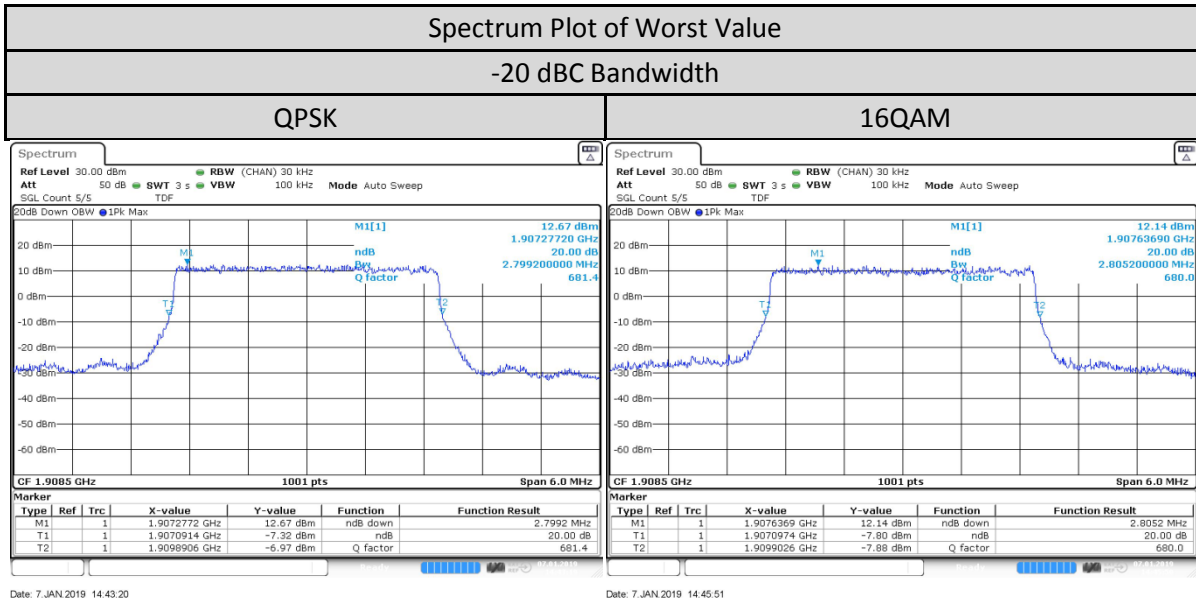
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.883	2.895
	Mid CH 18900	1880 MHz	2.865	2.871
	High CH 19185	1908.5 MHz	2.913	2.913



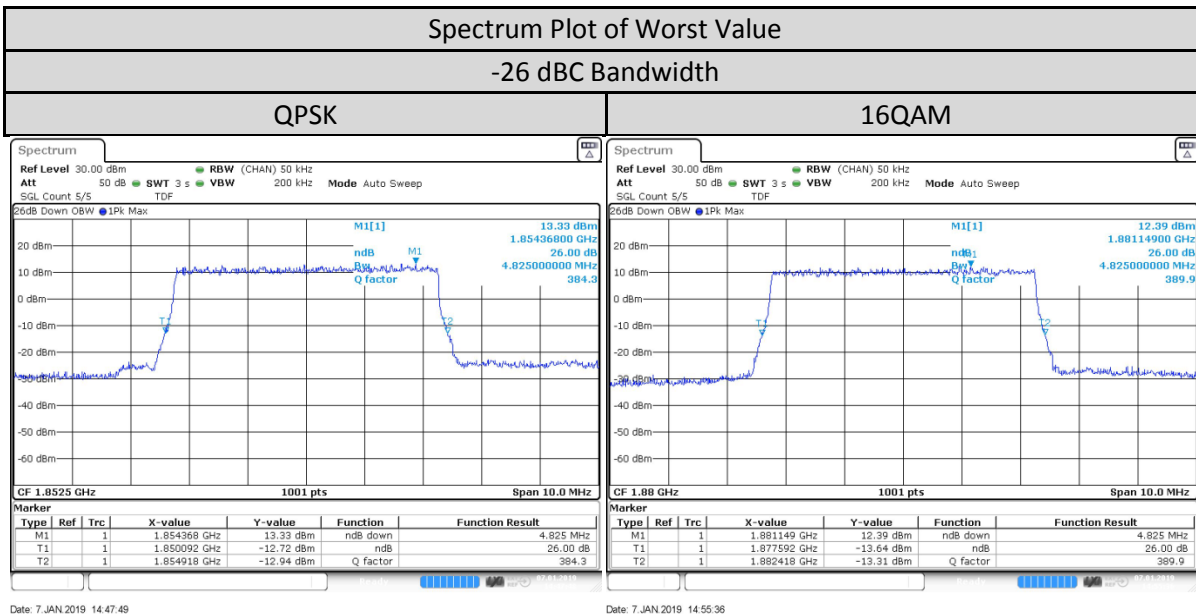
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.679	2.673
	Mid CH 18900	1880 MHz	2.679	2.673
	High CH 19185	1908.5 MHz	2.673	2.679



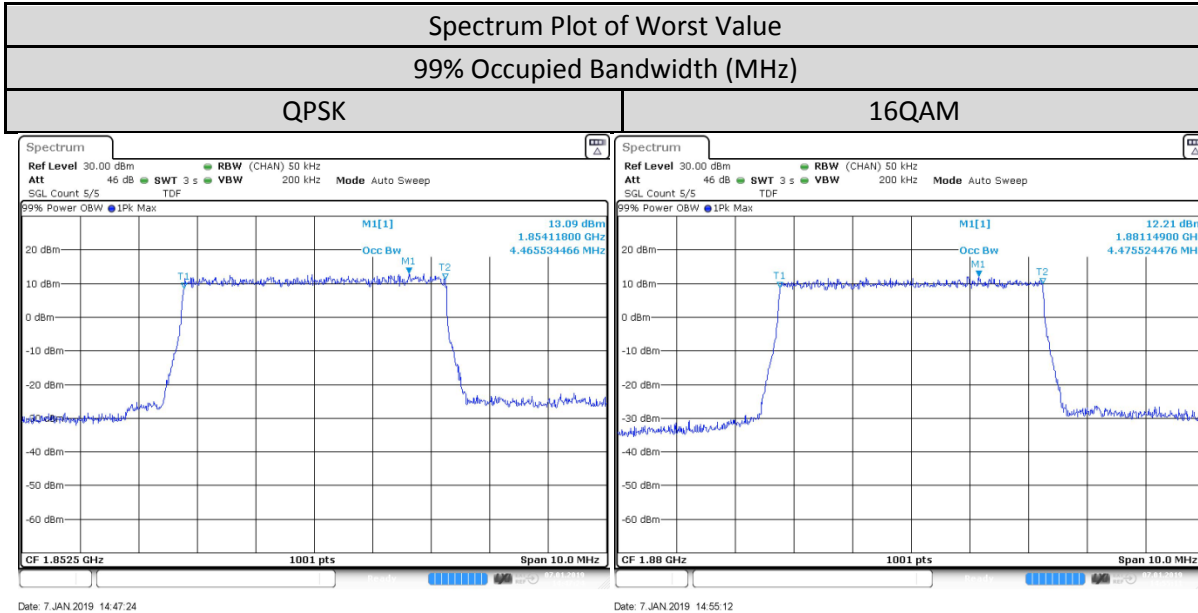
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.781	2.799
	Mid CH 18900	1880 MHz	2.775	2.787
	High CH 19185	1908.5 MHz	2.799	2.805



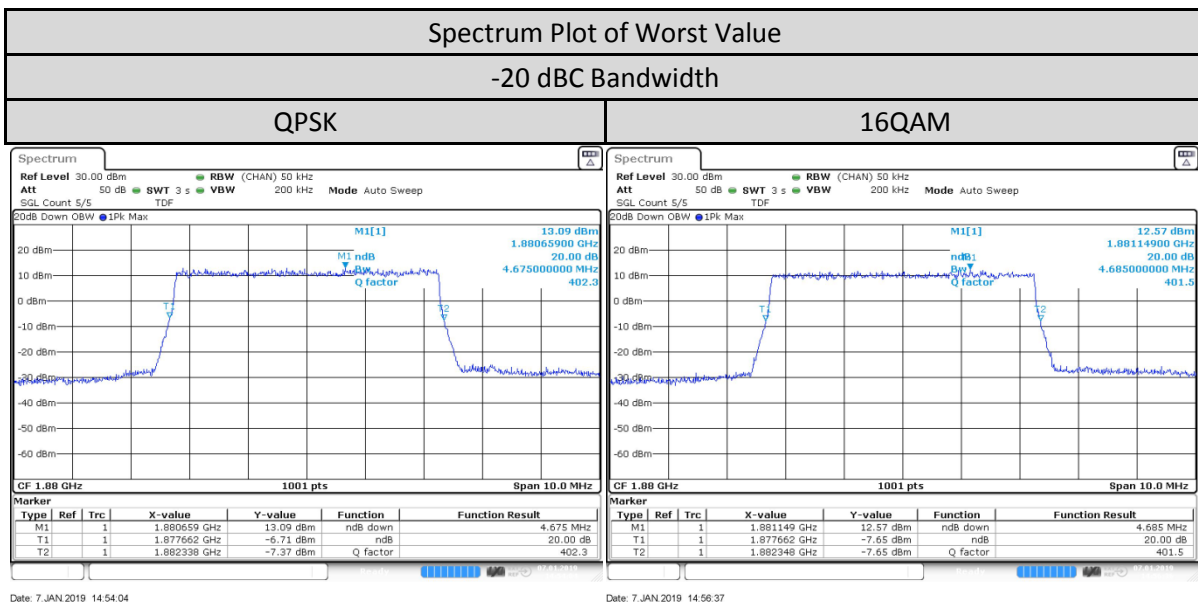
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/5MHz/25/0	Low CH 18625	1852.5 MHz	4.825	4.795
	Mid CH 18900	1880 MHz	4.815	4.825
	High CH 19175	1907.5 MHz	4.815	4.795



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/5MHz/25/0	Low CH 18625	1852.5 MHz	4.466	4.466
	Mid CH 18900	1880 MHz	4.466	4.476
	High CH 19175	1907.5 MHz	4.456	4.466

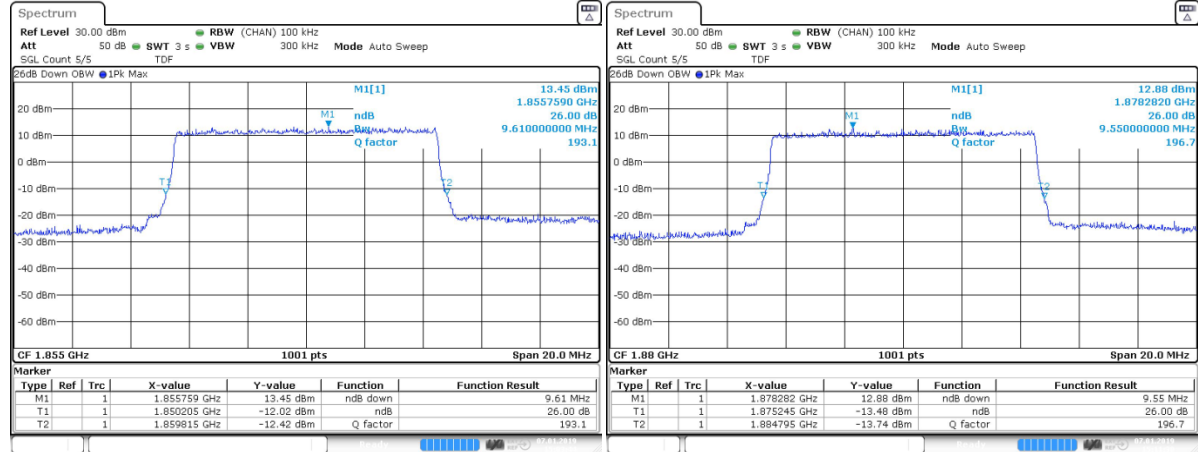


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/5MHz/25/0	Low CH 18625	1852.5 MHz	4.665	4.645
	Mid CH 18900	1880 MHz	4.675	4.685
	High CH 19175	1907.5 MHz	4.665	4.635



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/10MHz/50/0	Low CH 18650	1855 MHz	9.61	9.53
	Mid CH 18900	1880 MHz	9.55	9.55
	High CH 19150	1905 MHz	9.55	9.491

Spectrum Plot of Worst Value	
-26 dBc Bandwidth (MHz)	
QPSK	16QAM

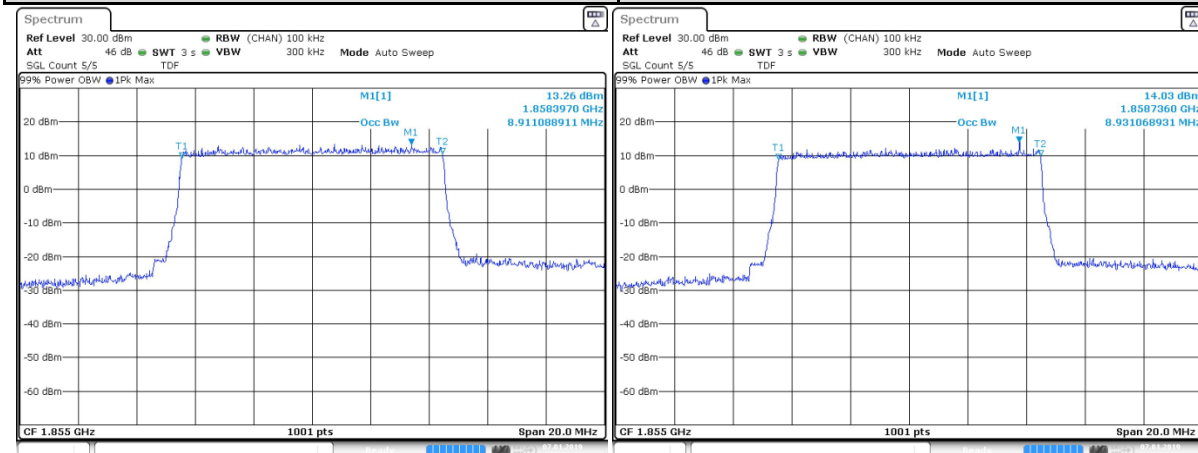


Date: 7 JAN 2019 15:03:45

Date: 7 JAN 2019 15:11:30

LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/10MHz/50/0	Low CH 18650	1855 MHz	8.911	8.931
	Mid CH 18900	1880 MHz	8.911	8.931
	High CH 19150	1905 MHz	8.911	8.931

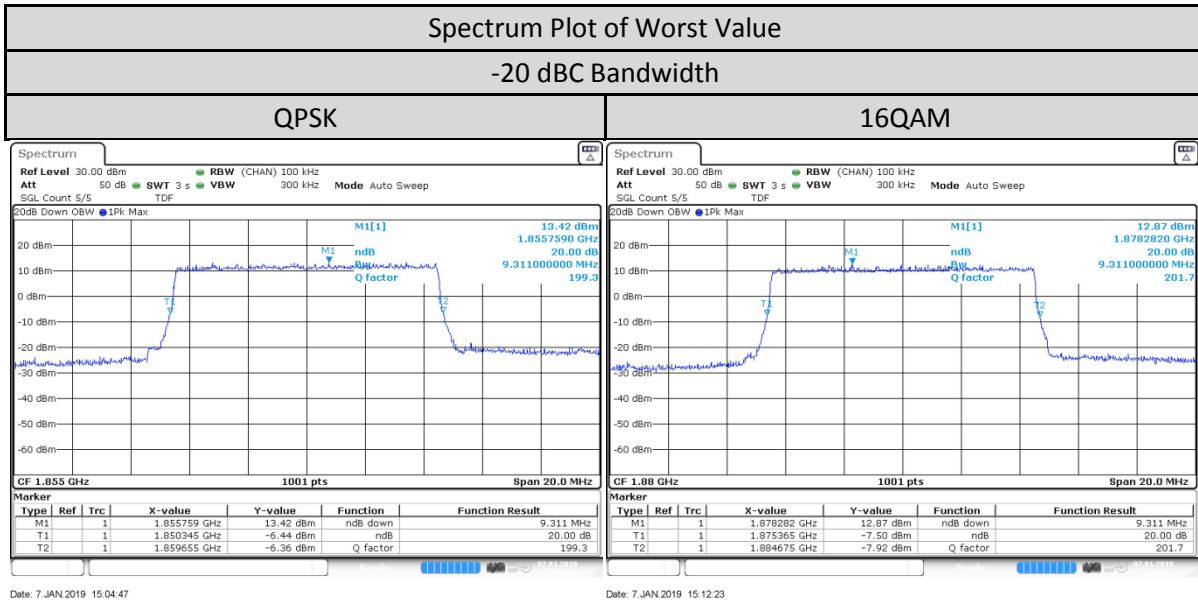
Spectrum Plot of Worst Value	
99% Occupied Bandwidth (MHz)	
QPSK	16QAM



Date: 7 JAN 2019 15:03:20

Date: 7 JAN 2019 15:05:56

LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/10MHz/50/0	Low CH 18650	1855 MHz	9.311	9.251
	Mid CH 18900	1880 MHz	9.311	9.311
	High CH 19150	1905 MHz	9.251	9.211



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/15MHz/75/0	Low CH 18675	1857.5 MHz	14.296	14.236
	Mid CH 18900	1880 MHz	14.296	14.116
	High CH 19125	1902.5 MHz	14.296	14.236

