

	    CERTIFICATE 2518.08 MS ISO/IEC 17025 TESTING SAMM NO. 0825																												
MOTOROLA PENANG ADV. COMM. LABORATORY Motorola Solutions Malaysia Sdn Bhd, 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>: 10-August-2020 - 27-August-2020</td></tr><tr><td>Manufacturer/Location</td><td>: Motorola Solutions Malaysia Sdn Bhd</td></tr><tr><td>Manufacturer Address</td><td>: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</td></tr><tr><td>Requestor</td><td>: SIEW KHENG TAN</td></tr><tr><td>Product Type</td><td>: Portable</td></tr><tr><td>Product Version (PMN)</td><td>: P2B</td></tr><tr><td>Model Number (HVIN)</td><td>: AAH90ZDU9RH1AN</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>: MY0001</td></tr><tr><td>Firmware Version (FVIN)</td><td>: I02.21.01.0029 (BP), D00.00.65 (AP)</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 / 133</td><td>PASS</td></tr></table>		Date/s Tested	: 10-August-2020 - 27-August-2020	Manufacturer/Location	: Motorola Solutions Malaysia Sdn Bhd	Manufacturer Address	: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia	Requestor	: SIEW KHENG TAN	Product Type	: Portable	Product Version (PMN)	: P2B	Model Number (HVIN)	: AAH90ZDU9RH1AN	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	: MY0001	Firmware Version (FVIN)	: I02.21.01.0029 (BP), D00.00.65 (AP)	(LTE Band 2) FCC 47 CFR Part 2 / 24 ISED RSS GEN / 133	PASS
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Prepared By:  Lim Khay Kwang Technician	Approve Signatory:  Ho Sze Khian Technical Manager																												

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev A.	Initial Report	1-September-2020	Lim Khay Kwang

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	734TWP0386
24.232(d)	RSS-133 6.4	Peak-to-Average Power Ratio	Pass	Meet the requirement of limit	734TWP0386
2.1049 24.238(b)	RSS-Gen 6.6 RSS-133 2.3	Occupied Bandwidth (26dBc,20dBc 99%)	Pass	Meet the requirement of limit	734TWP0386
2.1055 24.235	RSS-Gen 6.11 RSS-133 6.3	Frequency Stability	Pass	Meet the requirement of limit	734TWP0386
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	734TWP0386
2.1051 24.238(a)(b)	RSS-Gen 6.13 RSS-133 6.5	Conducted Spurious Emissions	Pass	Meet the requirement of limit	734TWP0386
2.1053 24.236, 24.238	RSS-133 6.5	Radiated Spurious Emission	Pass	Meet the requirement of limit	734TWP0308
24.232 (c)	RSS-133 6.4	Equivalent Isotropically Radiated Power (EIRP)	Pass	Meet the requirement of limit	734TWP0386

1.1. Measurement Uncertainty

Measurement	Frequency	Expanded 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 (RF Conducted Tests); Test Software Version: CMWRun v1.8.9				
SIGNAL ANALYZER	FSV40	101431	16-Jul-19	16-Jul-21
CHAMBER	SH-641	92003150	25-Sep-19	25-Sep-20
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	154550	23-Jul-19	23-Jul-21
POWER SUPPLY	6652A	3117A00162	16-Mar-20	16-Mar-21
Radiated Spurious Emission (EMC Chamber 1); Test Software Version: EMC_FCC_RE_v1.6.2				
DRG HORN FREQ.	SAS-571	720	21-Mar-19	21-Mar-21
DRG HORN FREQ.	SAS-571	1143	14-Feb-19	14-Feb-21
POWER SUPPLY	6032A	2615A01178	21-MAY-20	21-MAY-21
SIGNAL GENERATOR	SMB 100A	181117	8-Nov-18	8-Nov-21
EMI TEST RECEIVER	ESW44	101750	24-Jul-19	24-Sep-20
EMI TEST RECEIVER	ESIB26	100017	19-Jul-19	19-Sep-20
5m Semi-anechoic Chamber	S800-HX	J2308	Not Required	Not Required
BILOG ANTENNA	CBL6112B	2964	23-Apr-19	23-Apr-21
BILOG ANTENNA	CBL6112B	2950	8-Jul-19	8-Jul-21
DATA LOGGER	SDL500	A.016776	4-Jun-20	4-Jun-21
SYSTEM CONTROLLER	SC104V	050806-1	Not Required	Not Required
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	Not Required	Not Required
ANTENNA POSITIONING TOWER	TLT2	NA	Not Required	Not Required
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA917025 5	27-Jan-20	27-Jan-21
18 - 40GHz PREAMPLIFIER	Miteq Hi Gain Sucoflex	001	Not Required	Not Required
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-22
LOOP ANTENNA	6502	00208416	5-Sep-19	5-Sep-20

1.3. General Information

General Description of EUT

Product	MACKENZIE UHF NAG MODEL			
Brand	Motorola Solutions			
Test Model	AAH90ZDU9RH1AN			
Power Supply Rating	7.5VDC			
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. EIRP Power	LTE Band 2 QPSK	Channel Bandwidth 1.4MHz	26.795dBm (0.478W)	
		Channel Bandwidth 3MHz	26.837dBm (0.483W)	
		Channel Bandwidth 5MHz	26.843dBm (0.483W)	
		Channel Bandwidth 10MHz	26.984dBm (0.499W)	
		Channel Bandwidth 15MHz	26.826dBm (0.482W)	
		Channel Bandwidth 20MHz	26.875dBm (0.487W)	
	LTE Band 2 16QAM	Channel Bandwidth 1.4MHz	26.000dBm (0.398W)	
		Channel Bandwidth 3MHz	25.961dBm (0.395W)	
		Channel Bandwidth 5MHz	26.129dBm (0.410W)	
		Channel Bandwidth 10MHz	26.324dBm (0.429W)	
		Channel Bandwidth 15MHz	25.919dBm (0.391W)	
		Channel Bandwidth 20MHz	26.309dBm (0.427W)	
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	8M93G7D	8M93D7W
		Channel Bandwidth 15MHz	13M4G7D	13M4D7W
		Channel Bandwidth 20MHz	17M8G7D	17M9D7W
Antenna Type	LTE Band 2	LTE MID-HIGH BAND MAIN ANTENNA (2.84dBi)		
SW Version	I02.21.01.0029 (BP), D00.00.65 (AP)			
HW Version	P2B			

Note:

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

Item	Brand	Model or P/N	Specification
Rechargeable Lithium ion battery	MOTOROLA	PMNN4804A	BATTERY PACK,BATTERY PACK,IMPRES GEN2, LIION,IP68, 2820T

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	154550	NA

NO.	Signal Cable Description of The above Support Units
1	NA

Note:

1. All power cords of the above support units are non-shielded.
2. 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

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

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

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 1.6.3
	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 Emission	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
	18625 ~ 19175	18625, 18900, 19175	5 MHz		1 RB / 13 RB Offset
	18650 ~ 19150	18650, 18900, 19150	10 MHz		1 RB / 49 RB Offset
	18675 ~ 19125	18675, 18900, 19125	15 MHz		1 RB / 74 RB Offset
	18700 ~ 19100	18700, 18900, 19100	20 MHz		1 RB / 99 RB Offset
Radiated Spurious Emission	18700 ~ 19100	18700	20 MHz	QPSK	1 RB / 99 RB Offset
	18650 ~ 19150	18900	10 MHz		1 RB / 49 RB Offset
	18700 ~ 19100	19100	20 MHz		1 RB / 0 RB Offset
Equivalent Isotropically Radiated Power (EIRP)	18607 ~ 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM	As per table 1.6.4
	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		

NOTE:

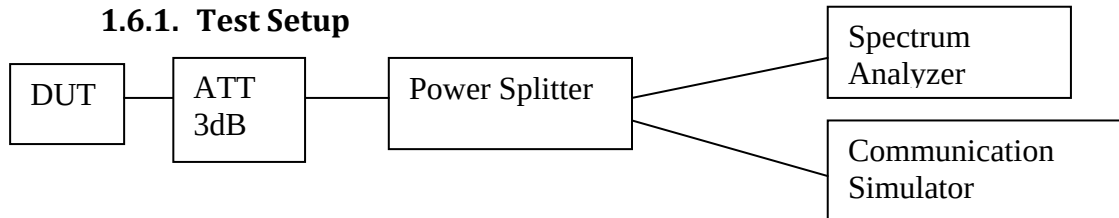
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK mode is higher than 16QAM mode. Therefore, only Conducted Spurious Emission and Radiated Emission had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating frequency band.
3. The Equivalent Isotropically Radiated Power (EIRP) was calculated from Conducted RF Output Power results in QPSK and 16QAM modulation.
4. Peak to Average and Occupied Bandwidth were performed with full Resource Block which is the worst case.
5. 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	Khay Kwang
Peak-to-Average Power Ratio	25°C, 50% RH	7.5V DC	Khay Kwang
Occupied Bandwidth	25°C, 50% RH	7.5V DC	Khay Kwang
Frequency Stability	25°C, 50% RH	7.5V DC	Khay Kwang
Band Edge Conducted Spurious Emission	25°C, 50% RH	7.5V DC	Khay Kwang
Conducted Spurious Emission	25°C, 50% RH	7.5V DC	Khay Kwang
Radiated Spurious Emission	25°C, 63.7% RH	7.5V DC	Nazrin&Fendi
Equivalent Isotropically Radiated Power (EIRP)	25°C, 63.7% RH	7.5V DC	Khay Kwang

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	23.232	23.88	23.653	22.252	22.912	22.711
	1	3	23.315	23.955	23.715	22.355	22.992	22.813
	1	5	23.252	23.875	23.668	22.289	22.934	22.712
	3	0	23.172	23.829	23.574	22.208	23.07	22.814
	3	2	23.249	23.896	23.622	22.274	23.16	22.881
	3	3	23.196	23.86	23.593	22.235	23.085	22.781
	6	0	22.15	22.772	22.568	21.242	21.936	21.675

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	23.204	23.916	23.705	22.525	23.018	22.745
	1	7	23.306	23.997	23.796	22.65	23.121	22.797
	1	14	23.232	23.876	23.651	22.523	23.028	22.602
	8	0	22.318	22.907	22.621	21.493	21.945	21.72
	8	4	22.302	22.922	22.654	21.524	21.96	21.754
	8	7	22.291	22.894	22.593	21.479	21.938	21.701
	15	0	22.281	22.914	22.642	21.374	21.945	21.712

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	23.322	23.951	23.636	22.369	23.233	22.715
	1	13	23.313	24.003	23.667	22.409	23.289	22.673
	1	24	23.31	23.965	23.598	22.407	23.242	22.578
	12	0	22.275	22.94	22.698	21.293	22.008	21.764
	12	6	22.287	22.95	22.667	21.273	22.017	21.743
	12	13	22.287	22.967	22.64	21.278	22.01	21.695
	25	0	22.282	22.979	22.685	21.344	22.025	21.714

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	23.475	24.09	23.775	22.504	23.484	22.896
	1	25	23.248	23.906	23.636	22.242	23.293	22.745
	1	49	23.543	24.144	23.572	22.527	23.424	22.722
	25	0	22.224	22.922	22.734	21.335	22.042	21.908
	25	13	22.229	22.965	22.7	21.384	22.053	21.838
	25	25	22.25	22.951	22.625	21.368	22.057	21.807
	50	0	22.262	22.946	22.706	21.387	22.05	21.769

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	23.226	23.965	23.962	22.278	23.079	22.989
	1	38	23.123	23.947	23.694	22.287	23.059	22.703
	1	74	23.209	23.986	23.569	22.446	22.999	22.621
	36	0	22.18	22.911	22.826	21.334	22.079	21.909
	36	19	22.2	22.954	22.717	21.357	22.114	21.823
	36	39	22.257	22.96	22.68	21.424	22.108	21.767
	75	0	22.219	22.937	22.796	21.383	22.075	21.868

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	23.265	23.978	23.973	22.872	23.466	22.974
	1	49	23.131	23.926	23.659	22.704	23.337	22.655
	1	99	23.694	24.035	23.582	23.23	23.391	22.594
	50	0	22.187	22.949	22.938	21.265	22.044	22.015
	50	25	22.25	22.997	22.854	21.342	22.086	21.879
	50	50	22.437	22.981	22.791	21.513	22.078	21.824
	100	0	22.359	22.943	22.879	21.473	22.064	21.954

1.6.4. Equivalent Isotropically Radiated Power (EIRP) - LTE Band 2 (1850-1910MHz)

Equivalent Isotropically Radiated 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	26.072	26.72	26.493	25.092	25.752	25.551
	1	3	26.155	26.795	26.555	25.195	25.832	25.653
	1	5	26.092	26.715	26.508	25.129	25.774	25.552
	3	0	26.012	26.669	26.414	25.048	25.91	25.654
	3	2	26.089	26.736	26.462	25.114	26	25.721
	3	3	26.036	26.7	26.433	25.075	25.925	25.621
	6	0	24.99	25.612	25.408	24.082	24.776	24.515

Equivalent Isotropically Radiated 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	26.044	26.756	26.545	25.365	25.858	25.585
	1	7	26.146	26.837	26.636	25.49	25.961	25.637
	1	14	26.072	26.716	26.491	25.363	25.868	25.442
	8	0	25.158	25.747	25.461	24.333	24.785	24.56
	8	4	25.142	25.762	25.494	24.364	24.8	24.594
	8	7	25.131	25.734	25.433	24.319	24.778	24.541
	15	0	25.121	25.754	25.482	24.214	24.785	24.552

Equivalent Isotropically Radiated 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	26.162	26.791	26.476	25.209	26.073	25.555
	1	13	26.153	26.843	26.507	25.249	26.129	25.513
	1	25	26.15	26.805	26.438	25.247	26.082	25.418
	12	0	25.115	25.78	25.538	24.133	24.848	24.604
	12	6	25.127	25.79	25.507	24.113	24.857	24.583
	12	13	25.127	25.807	25.48	24.118	24.85	24.535
	25	0	25.122	25.819	25.525	24.184	24.865	24.554

Equivalent Isotropically Radiated 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	26.315	26.93	26.615	25.344	26.324	25.736
	1	25	26.088	26.746	26.476	25.082	26.133	25.585
	1	49	26.383	26.984	26.412	25.367	26.264	25.562
	25	0	25.064	25.762	25.574	24.175	24.882	24.748
	25	13	25.069	25.805	25.54	24.224	24.893	24.678
	25	25	25.09	25.791	25.465	24.208	24.897	24.647
	50	0	25.102	25.786	25.546	24.227	24.89	24.609

Equivalent Isotropically Radiated 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	26.066	26.805	26.802	25.118	25.919	25.829
	1	38	25.963	26.787	26.534	25.127	25.899	25.543
	1	74	26.049	26.826	26.409	25.286	25.839	25.461
	36	0	25.02	25.751	25.666	24.174	24.919	24.749
	36	19	25.04	25.794	25.557	24.197	24.954	24.663
	36	39	25.097	25.8	25.52	24.264	24.948	24.607
	75	0	25.059	25.777	25.636	24.223	24.915	24.708

Equivalent Isotropically Radiated 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	26.105	26.818	26.813	25.712	26.306	25.814
	1	49	25.971	26.766	26.499	25.544	26.177	25.495
	1	99	26.534	26.875	26.422	26.07	26.231	25.434
	50	0	25.027	25.789	25.778	24.105	24.884	24.855
	50	25	25.09	25.837	25.694	24.182	24.926	24.719
	50	50	25.277	25.821	25.631	24.353	24.918	24.664
	100	0	25.199	25.783	25.719	24.313	24.904	24.794

The maximum ERP/EIRP from the measured RF output power is given in Equation as follows:

$$\mathbf{EIRP} = \mathbf{P_{Meas}} + \mathbf{GT}$$

$$\mathbf{ERP} = \mathbf{EIRP} - 2.15$$

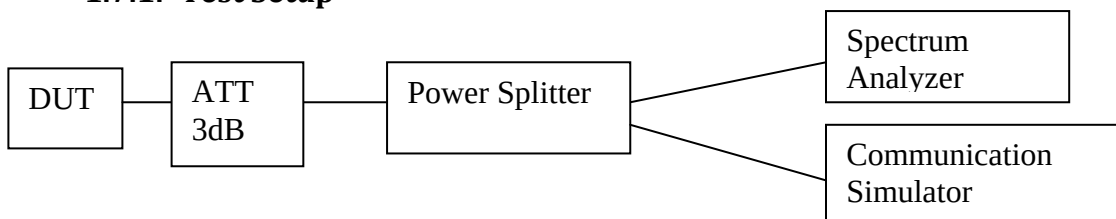
Where, ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively
(Expressed in the same units as P_{Meas}, e.g., dBm)

P_{Meas} measured transmitter output power, in dBm

GT gain of the transmitting antenna, in dBi (EIRP)

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



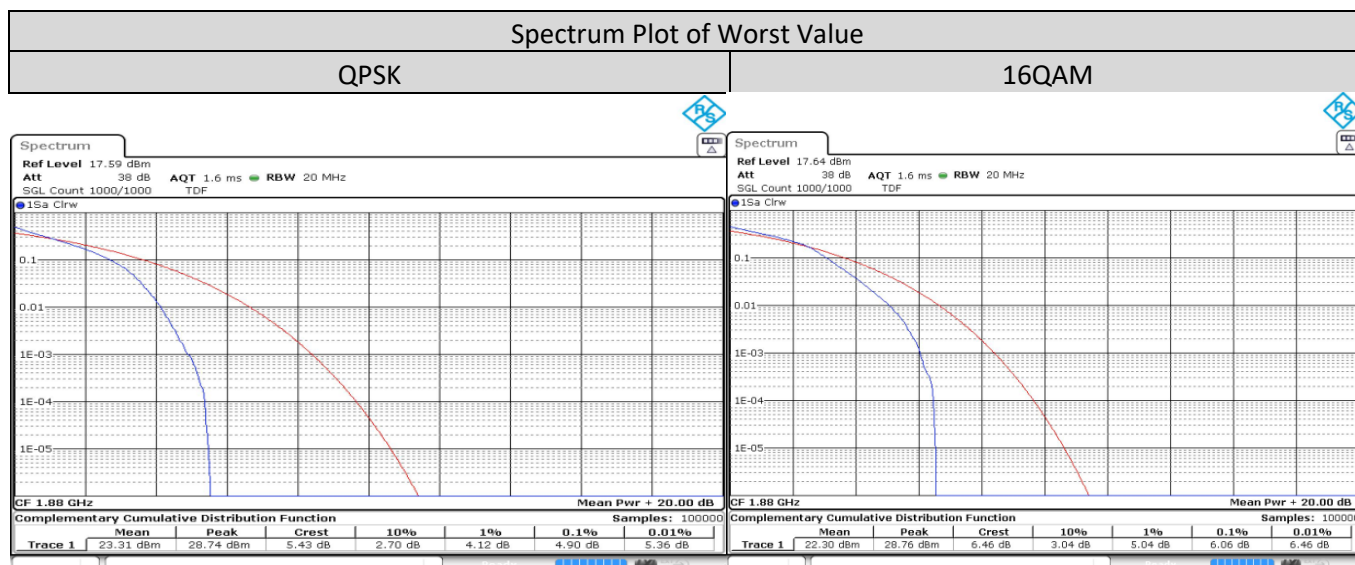
1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum analyzer.
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.

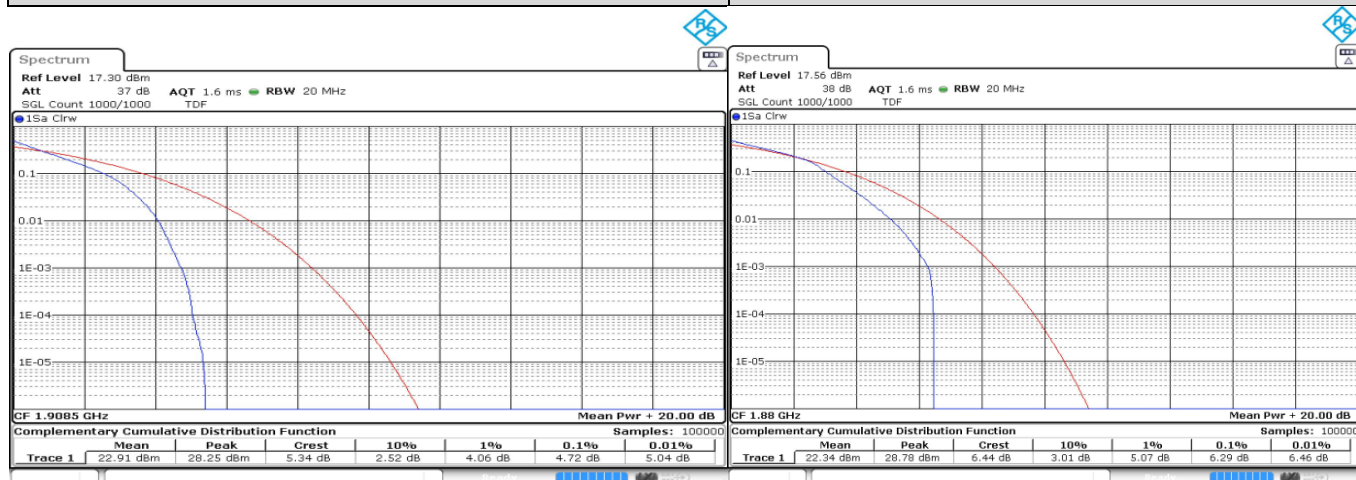
1.7.3. Peak-to-Average Power Ratio - LTE Band 2 (1850-1910MHz)

LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 1.4MHz/6/0	Low CH 18607	1850.7 MHz	4.754	5.768
	Mid CH 18900	1880 MHz	4.899	6.058
	High CH 19193	1909.3 MHz	4.899	5.275



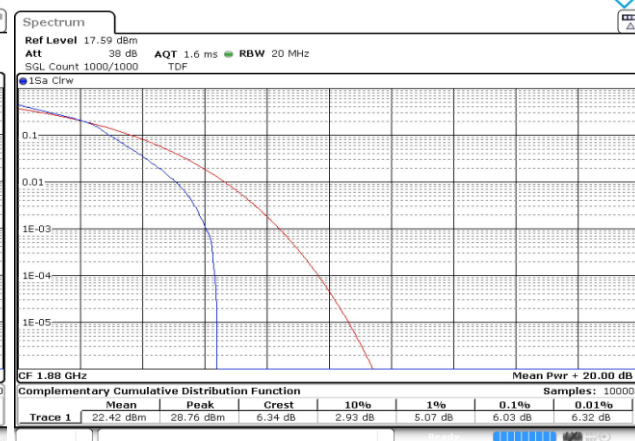
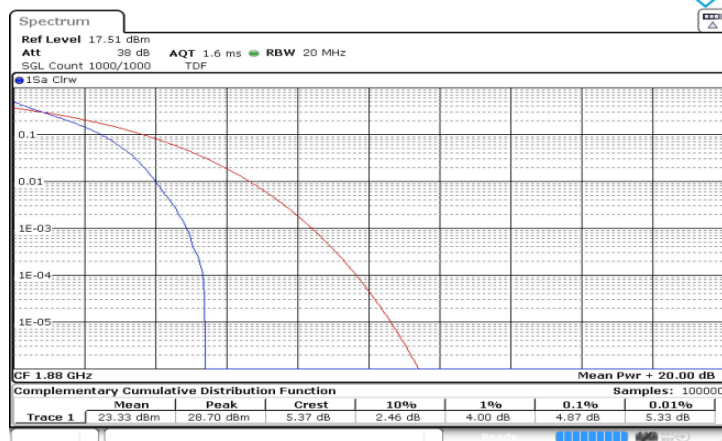
LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 3MHz/15/0	Low CH 18615	1851.5 MHz	4.638	5.797
	Mid CH 18900	1880 MHz	4.696	6.29
	High CH 19185	1908.5 MHz	4.725	6

Spectrum Plot of Worst Value	
QPSK	16QAM



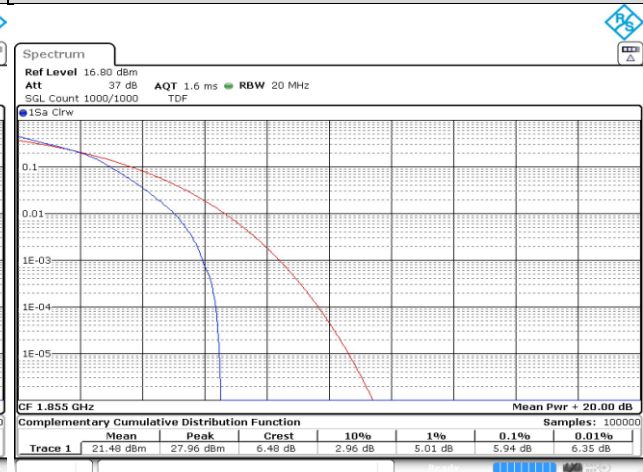
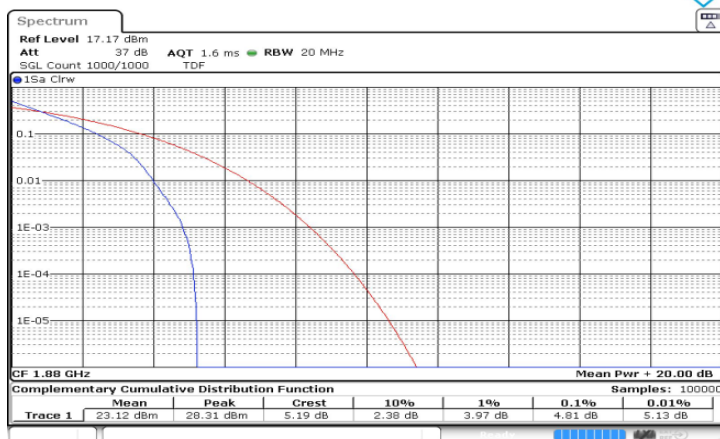
LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 5MHz/25/0	Low CH 18625	1852.5 MHz	4.783	5.913
	Mid CH 18900	1880.0 MHz	4.87	6.029
	High CH 19175	1907.5 MHz	4.87	5.971

Spectrum Plot of Worst Value	
QPSK	16QAM



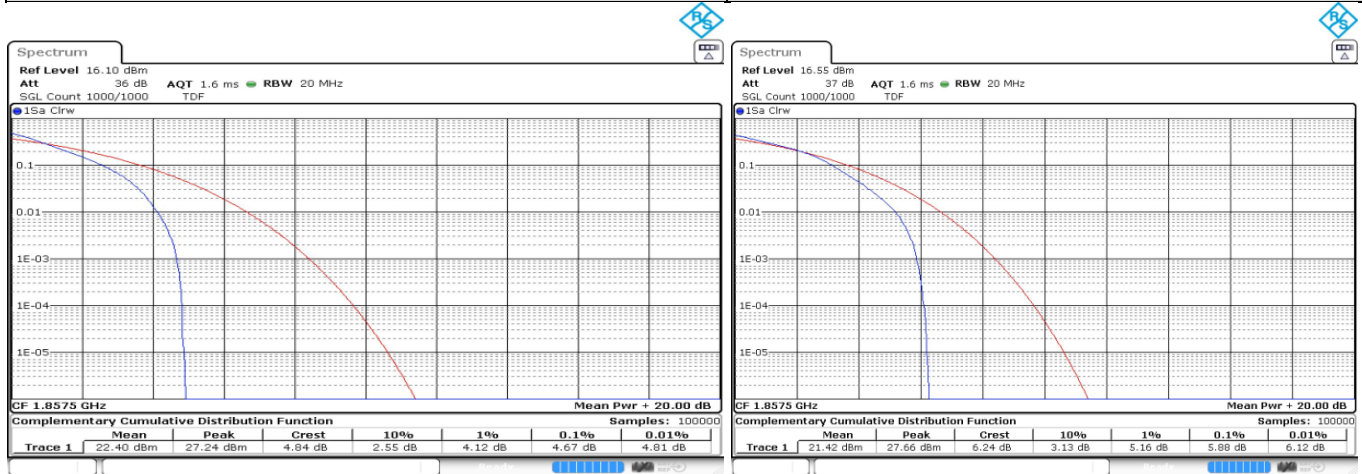
LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 10MHz/50/0	Low CH 18650	1855.0 MHz	4.696	5.942
	Mid CH 18900	1880.0 MHz	4.812	5.855
	High CH 19150	1905.0 MHz	4.783	5.913

Spectrum Plot of Worst Value	
QPSK	16QAM



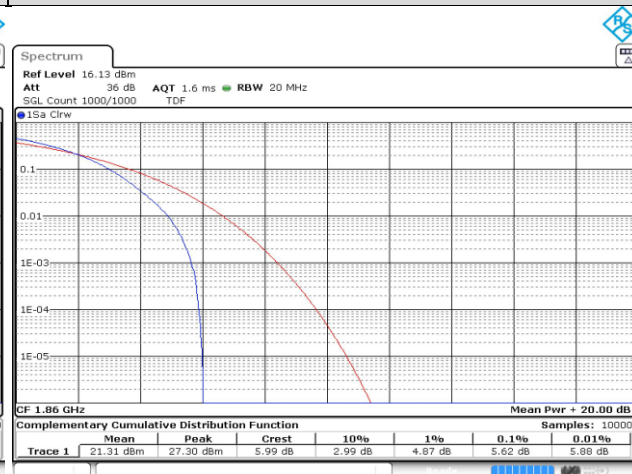
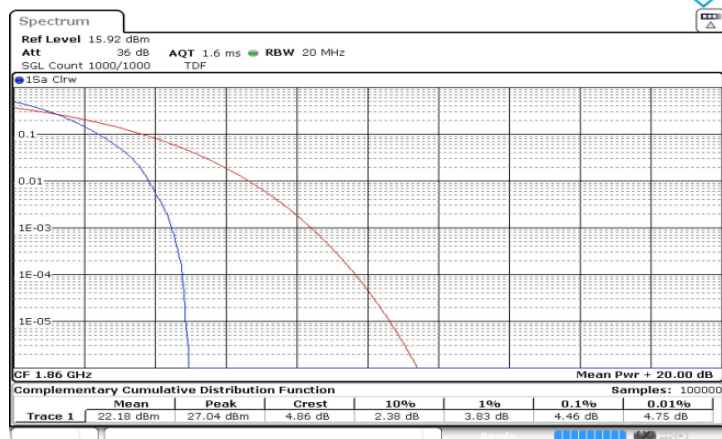
LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 15MHz/75/0	Low CH 18675	1857.5 MHz	4.667	5.884
	Mid CH 18900	1880.0 MHz	4.667	5.826
	High CH 19125	1902.5 MHz	4.609	5.768

Spectrum Plot of Worst Value	
QPSK	16QAM



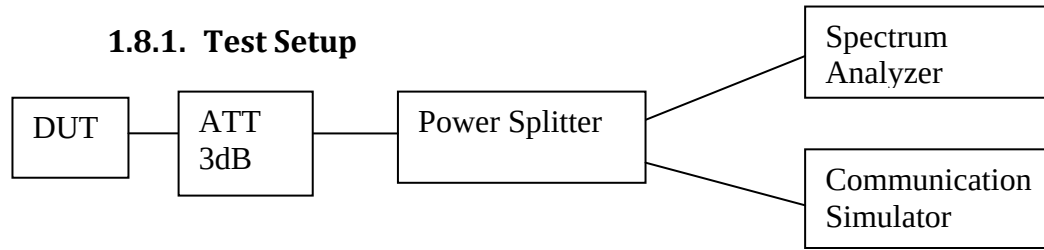
LTE Band/ BW/ RB Size/ RB Offset	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 2 / 20MHz/100/0	Low CH 18700	1860.0 MHz	4.464	5.623
	Mid CH 18900	1880.0 MHz	4.29	5.594
	High CH 19100	1900.0 MHz	4.319	5.536

Spectrum Plot of Worst Value	
QPSK	16QAM



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 -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

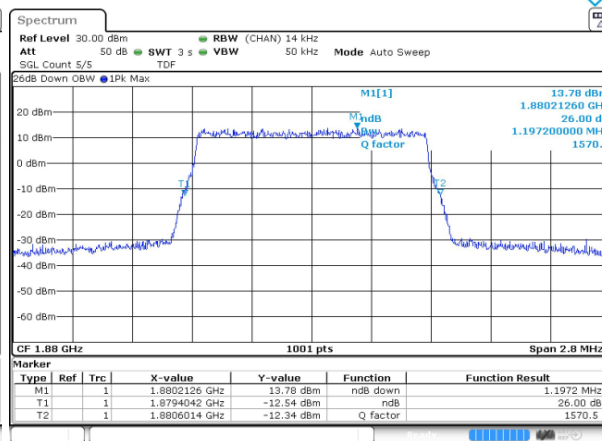
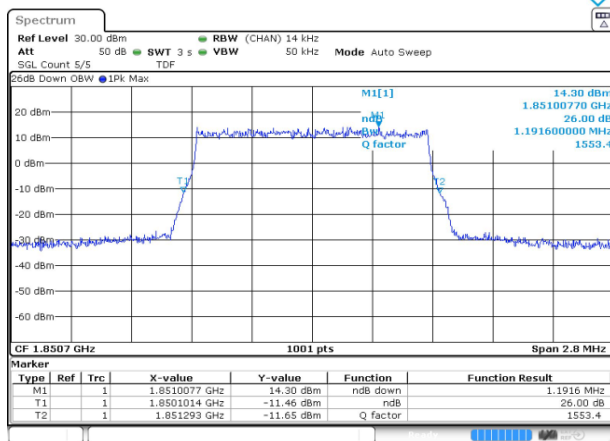
FCC: The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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)

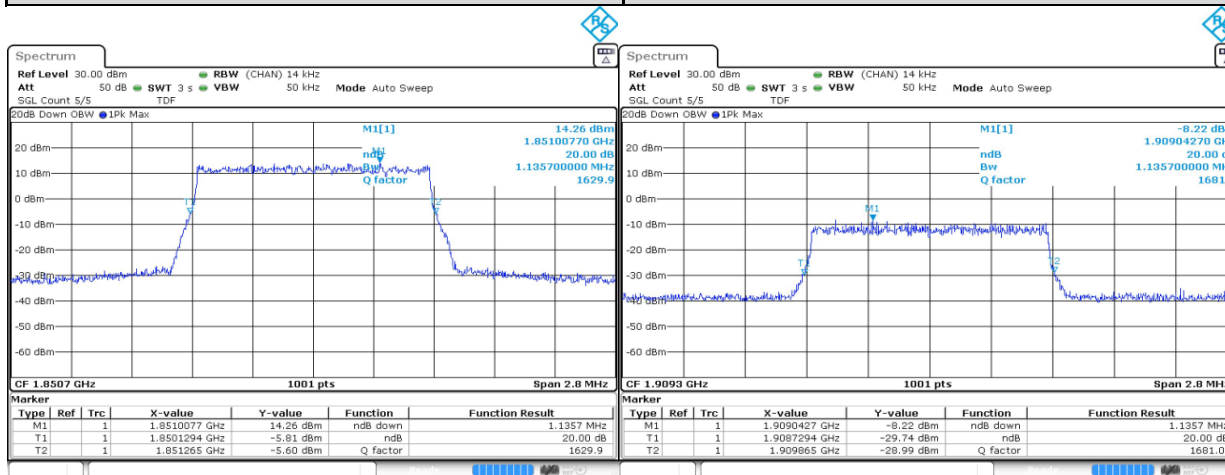
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.192	1.175
	Mid CH 18900	1880 MHz	1.18	1.197
	High CH 19193	1909.3 MHz	1.189	1.186

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



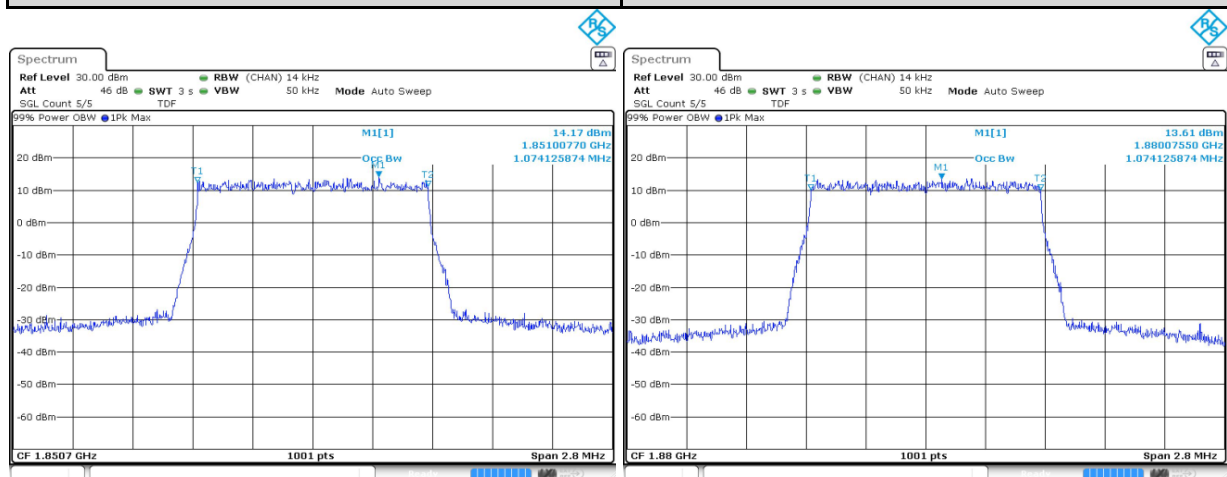
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.136	1.122
	Mid CH 18900	1880 MHz	1.127	1.13
	High CH 19193	1909.3 MHz	1.136	1.136

Spectrum Plot of Worst Value	
-20 dBc Bandwidth	
QPSK	16QAM



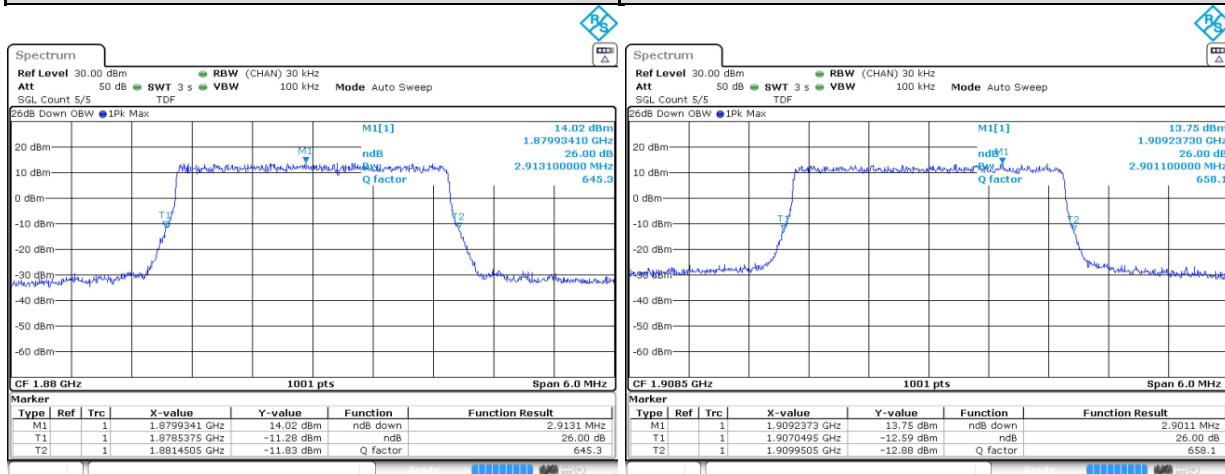
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/1.4MHz/6/0	Low CH 18607	1850.7 MHz	1.074	1.071
	Mid CH 18900	1880 MHz	1.074	1.074
	High CH 19193	1909.3 MHz	1.071	1.074

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



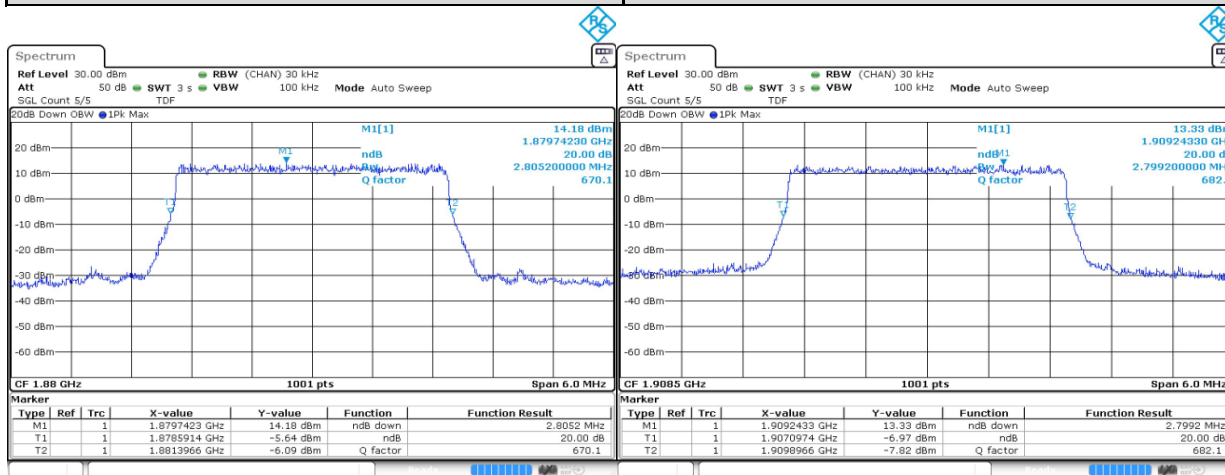
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.895	2.895
	Mid CH 18900	1880 MHz	2.913	2.883
	High CH 19185	1908.5 MHz	2.907	2.901

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



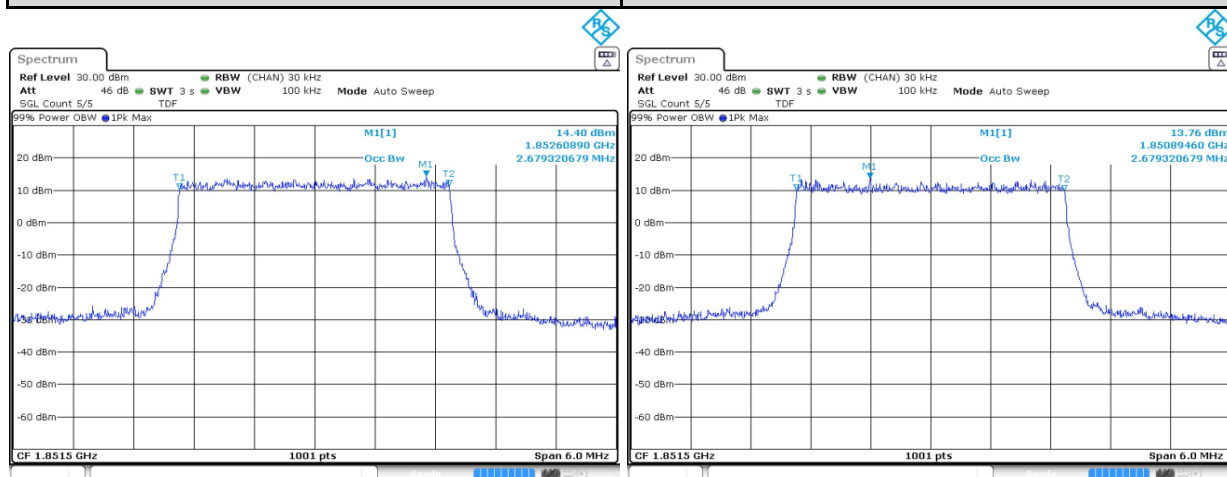
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.793	2.793
	Mid CH 18900	1880 MHz	2.805	2.787
	High CH 19185	1908.5 MHz	2.787	2.799

Spectrum Plot of Worst Value	
-20 dBc Bandwidth	
QPSK	16QAM



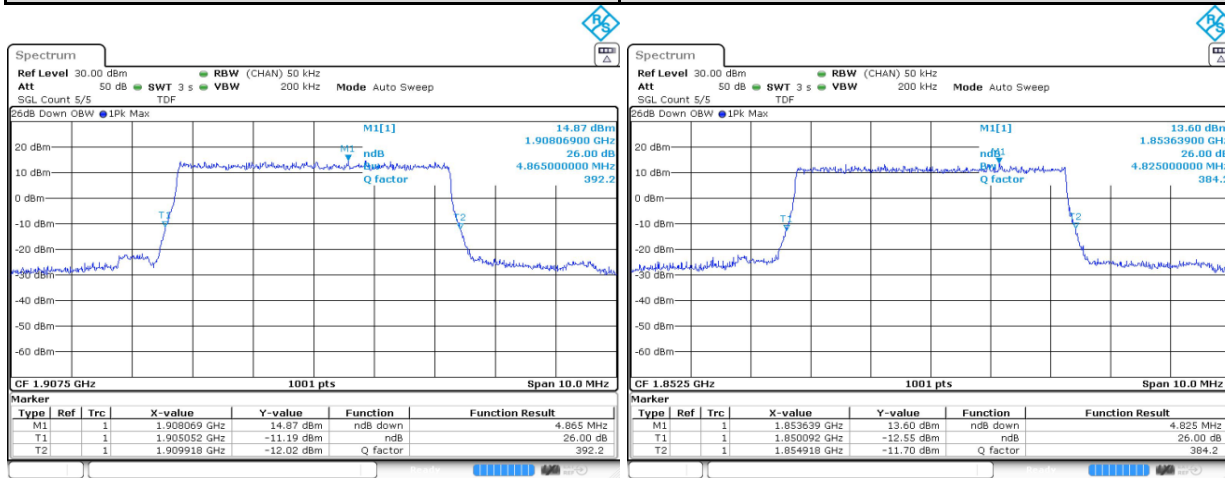
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/3MHz/15/0	Low CH 18615	1851.5 MHz	2.679	2.679
	Mid CH 18900	1880 MHz	2.673	2.679
	High CH 19185	1908.5 MHz	2.673	2.673

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



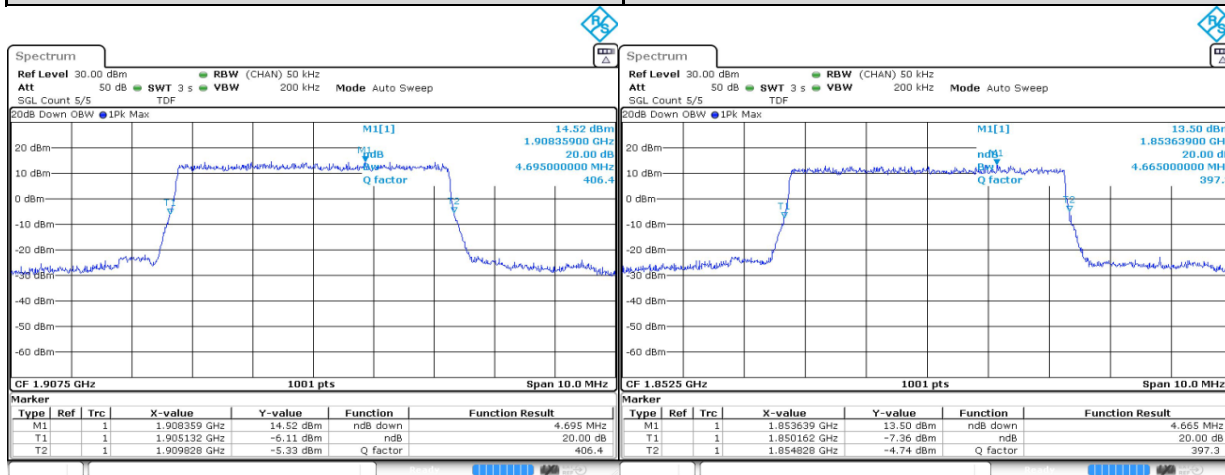
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/5MHz/25/0	Low CH 18625	1852.5 MHz	4.835	4.825
	Mid CH 18900	1880 MHz	4.775	4.785
	High CH 19175	1907.5 MHz	4.865	4.825

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



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	4.645	4.665
	Mid CH 18900	1880 MHz	4.635	4.625
	High CH 19175	1907.5 MHz	4.695	4.665

Spectrum Plot of Worst Value	
-20 dBc Bandwidth	
QPSK	16QAM



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	4.476
	Mid CH 18900	1880 MHz	4.456	4.466
	High CH 19175	1907.5 MHz	4.466	4.466

Spectrum Plot of Worst Value	
-99 dBc Bandwidth	
QPSK	16QAM

