


	    <p style="text-align: center;">CERTIFICATE 2518.08</p> <p style="text-align: right;">MS ISO/IEC 17025 TESTING SAMM NO. 0825</p>
<p>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.</p>	<p style="text-align: center;">FCC / ISED TEST REPORT</p> <p style="text-align: center;">Report Revision : Rev.B</p>

<p>Date/s Tested : 31-March-2022 - 25-June-2022</p> <p>Manufacturer/Location : Motorola Solutions Malaysia Sdn Bhd</p> <p>Manufacturer Address : Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</p> <p>Requestor : SIEW KHENG TAN</p> <p>Product Type : Hand-held</p> <p>Product Version (PMN) : MSLB-MKZ920</p> <p>Model Number (HVIN) : AAH90UCU9RH1AN</p> <p>Frequency Band : Refer to section 1.4</p> <p>Applicant Name : Motorola Solutions Inc</p> <p>Applicant Address : 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322.</p> <p>FCC Registrations : 461337</p> <p>ISED Registrations : MY0001</p> <p>Firmware Version (FVIN) : D02.22.01.0103 (BP), D00.01.86 (AP)</p> <p>The equipment was tested accordance to the requirement listed below:</p> <p>LTE Band 5 FCC 47 CFR Part 2 / 22 ISED RSS GEN / 132</p>	 <p style="text-align: center;">PASS</p>
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<p>Prepared By:</p> <p>_____</p> <p>Lim Khay Kwang Technician</p>	<p>Approve Signatory:</p> <p>_____</p> <p>Ho Sze Khian Responsible Engineer</p>
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REVISION HISTORY

Revision History	Description	Date	Originator
Rev A.	Initial Report	29-June-2022	Lim Khay Kwang
Rev B.	Update Frequency Stability Limit	27-July-2022	Lim Khay Kwang

1.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Result	Remark	Serial Number Tested
2.1046	RSS-Gen 6.12 RSS-132 5.4	Conducted RF Output Power	Pass	Meet the requirement of limit	734TYF0012
22.913(d)	RSS-132 5.4	Peak-to-Average Power Ratio	Pass	Meet the requirement of limit	734TYF0012
2.1049 22.917	RSS-Gen 6.6	Occupied Bandwidth (26dBc, 99%)	Pass	Meet the requirement of limit	734TYF0012
2.1055 22.355	RSS-Gen 6.11 RSS-132 5.3	Frequency Stability	Pass	Meet the requirement of limit	734TYF0012
2.1051 22.917	RSS-Gen 6.13 RSS-132 5.5	Band Edge Conducted Spurious Emission	Pass	Meet the requirement of limit	734TYF0012
2.1051 22.917	RSS-Gen 6.13 RSS-132 5.5	Conducted Spurious Emissions	Pass	Meet the requirement of limit	734TYF0012
22.913(a)(2)	RSS-132 5.4	Effective Radiated Power (ERP)	Pass	Meet the requirement of limit	734TYF0069
2.1053 22.917	RSS-132 5.5	Radiated Spurious Emissions	Pass	Meet the requirement of limit	734TYF0012

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	02-Dec-21	02-Dec-23
Chamber	SH-641	92003150	17-Sep-21	17-Sep-22
Wideband Radio Communication Tester	CMW500	154550	07-Mar-21	07-Mar-23
Power Supply	6652A	MY40001437	26-Aug-21	26-Aug-22
Radiated Spurious Emission (EMC Chamber 1); Test Software Version: EMC_FCC_RE_v1.6.2				
Drg Horn Freq.	SAS-571	720	06-Apr-21	06-Apr-23
Drg Horn Freq.	SAS-571	719	13-Sep-21	13-Sep-22
Power Supply	N7977A	MY54420118	17-Aug-21	17-Aug-22
Signal Generator	SMB 100A	182511	4-Jun-21	4-Jun-24
Emi Test Receiver	ESW44	101731	5-Nov-21	5-Nov-22

5m Semi-Anechoic Chamber	S800-HX	J2308	No Cal. Req'd	No Cal. Req'd
Bilog Antenna	CBL6112D	2950	30-Jul-21	30-Jul-22
Bilog Antenna	CBL6112D	30991	05-Oct-21	05-Oct-22
Data Logger Thermohyrometer	SDL500	A.016800	13-Jun-21	13-Jun-23
System Controller	SC104V	050806-1	No Cal. Req'd	No Cal. Req'd
Turntable Flush Mount 2m	FM2011	NA	No Cal. Req'd	No Cal. Req'd
Antenna Positioning Tower	TLT2	NA	No Cal. Req'd	No Cal. Req'd
Broad-Band Horn Antenna	BBHA9170	BBHA9170143	3-Aug-21	3-Aug-22
Preamplifier 18-40ghz	BBV9721	9721-007	No Cal. Req'd	No Cal. Req'd
Preamplifier	PAM-0118P	361	11-Sep-20	11-Sep-23
Loop Antenna	6502	00208416	8-Oct-21	8-Oct-22

1.3. General Information

General Description of EUT

Product	MACKENZIE 8/900MHZ NAG MODEL			
Brand	Motorola Solutions			
Test Model	AAH90UCU9RH1AN			
Power Supply Rating	7.5Vdc			
Mode of operation	LTE Band 5			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 5	Channel Bandwidth 1.4MHz	824.7MHz~848.3MHz	
		Channel Bandwidth 3MHz	825.5MHz~847.5MHz	
		Channel Bandwidth 5MHz	826.5MHz~846.5MHz	
		Channel Bandwidth 10MHz	829.0MHz~844.0MHz	
Max. ERP Power	LTE Band 5 QPSK	Channel Bandwidth 1.4MHz	21.987dBm (0.158W)	
		Channel Bandwidth 3MHz	21.944dBm (0.156W)	
		Channel Bandwidth 5MHz	21.974dBm (0.158W)	
		Channel Bandwidth 10MHz	21.902dBm (0.155W)	
	LTE Band 5 16QAM	Channel Bandwidth 1.4MHz	21.105dBm (0.129W)	
		Channel Bandwidth 3MHz	21.274dBm (0.134W)	
		Channel Bandwidth 5MHz	21.237dBm (0.133W)	
		Channel Bandwidth 10MHz	21.179dBm (0.131W)	
Emission Designator	LTE Band 5		QPSK	16QAM
		Channel Bandwidth 1.4MHz	1M07G7D	1M07D7W
		Channel Bandwidth 3MHz	2M68G7D	2M68D7W
		Channel Bandwidth 5MHz	4M49G7D	4M48D7W
		Channel Bandwidth 10MHz	8M95G7D	8M93D7W
Antenna Type	LTE Band 5	LTE LOW BAND MAIN ANTENNA (0.29dBi)		
SW Version	D02.22.01.0103 (BP), D00.01.86 (AP)			
HW Version	P2			

Note:

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

Item	Brand	Model or P/N	Specification
Li-Ion	MOTOROLA	PMNN4805A	BATTERY PACK,BATTERY PACK,IMPRES GEN2, LIION,IP68, 4400T

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 22

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.

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 5	1.4 MHz	20407~ 20643	20407	20525	20643	824.7	836.5	848.3
	3 MHz	20415~ 20635	20415	20525	20635	825.5	836.5	847.5
	5 MHz	20425~20625	20425	20525	20625	826.5	836.5	846.5
	10 MHz	20450~ 20600	20450	20525	20600	829	836.5	844

1.5. Test Mode Applicability and Tested Channel Detail.

LTE Band 5

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Uplink Modulation	Mode
Conducted RF Output Power	20407~ 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	As per table 1.6.3
	20415~ 20635	20415, 20525, 20635	3 MHz		
	20425~ 20625	20425, 20525, 20625	5 MHz		
	20450~ 20600	20450, 20525, 20600	10 MHz		
Peak to Average Power Ratio	20407~ 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	20415~ 20635	20415, 20525, 20635	3 MHz		15 RB / 0 RB Offset
	20425~ 20625	20425, 20525, 20625	5 MHz		25 RB / 0 RB Offset
	20450~ 20600	20450, 20525, 20600	10 MHz		50 RB / 0 RB Offset
Occupied Bandwidth	20407~ 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	20415~ 20635	20415, 20525, 20635	3 MHz		15 RB / 0 RB Offset
	20425~ 20625	20425, 20525, 20625	5 MHz		25 RB / 0 RB Offset
	20450~ 20600	20450, 20525, 20600	10 MHz		50 RB / 0 RB Offset
Frequency Stability	20407~ 20643	20407, 20643	1.4 MHz	QPSK	6 RB / 0 RB Offset
	20415~ 20635	20415, 20635	3 MHz		15 RB / 0 RB Offset
	20425~ 20625	20425, 20625	5 MHz		25 RB / 0 RB Offset
	20450~ 20600	20450, 20600	10 MHz		50 RB / 0 RB Offset
Band Edge Conducted Spurious Emission	20407~ 20643	20407, 20643	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
	20415~ 20635	20415, 20635	3 MHz		1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
	20425~ 20625	20425, 20625	5 MHz		1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
	20450~ 20600	20450, 20600	10 MHz		1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
Conducted Spurious Emission	20407~ 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 3 RB Offset
	20415~ 20635	20415, 20525, 20635	3 MHz		1 RB / 7 RB Offset
	20425~ 20625	20425, 20525, 20625	5 MHz		1 RB / 13 RB Offset
	20450~ 20600	20450, 20525, 20600	10 MHz		1 RB / 0 RB Offset
Radiated Spurious Emission	20407~ 20643	20415	3 MHz	QPSK	1 RB / 7 RB Offset
	20450~ 20600	20525	1.4 MHz		1 RB / 3 RB Offset
	20415~ 20635	20600	10 MHz		1 RB / 0 RB Offset
Effective Radiated Power (ERP)	20407~ 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	As per table 1.6.4
	20415~ 20635	20415, 20525, 20635	3 MHz		
	20425~ 20625	20425, 20525, 20625	5 MHz		
	20450~ 20600	20450, 20525, 20600	10 MHz		

NOTE:

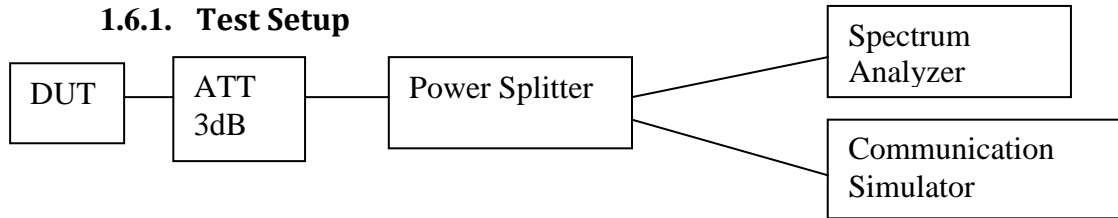
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK mode is higher than 16QAM mode. Therefore, only Conducted Spurious Emission and Radiated Emission had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating frequency band.
3. The Effective Radiated Power (ERP) 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	-30°C ~ 60°C	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	Azil&Qawiman
Equivalent Isotropically Radiated Power (EIRP)	25°C, 50% 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. Test Limit

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

ISED: The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

1.6.3. Conducted RF Output Power – LTE Band 5 (824-849MHz)

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
			20407	20525	20643	20407	20525	20643
			824.7MHz	836.5MHz	848.3 MHz	824.7 MHz	836.5MHz	848.3 MHz
Band 5 / 1.4 MHz	1	0	23.563	23.776	23.401	22.693	22.826	22.426
	1	3	23.59	23.847	23.147	22.734	22.931	22.496
	1	5	23.57	23.794	22.631	22.683	22.861	21.948
	3	0	23.542	23.705	23.304	22.812	22.888	22.451
	3	2	23.594	23.744	23.071	22.836	22.965	22.341
	3	3	23.624	23.691	22.895	22.789	22.924	22.12
	6	0	22.596	22.706	22.25	21.774	21.818	21.417

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
			20415	20525	20635	20415	20525	20635
			825.5MHz	836.5MHz	847.5MHz	825.5 MHz	836.5MHz	847.5 MHz
Band 5 / 3MHz	1	0	23.533	23.396	22.681	22.722	22.81	21.798
	1	7	23.797	23.804	23.519	22.804	23.134	22.478
	1	14	23.707	23.718	22.644	22.677	23.038	21.879
	8	0	22.674	22.749	21.884	21.824	21.961	20.859
	8	4	22.734	22.766	22.416	21.826	21.986	21.288
	8	7	22.716	22.739	22.482	21.808	21.941	21.47
	15	0	22.709	22.766	22.293	21.798	21.879	21.312

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
			20425	20525	20625	20425	20525	20625
			826.5MHz	836.5MHz	846.5MHz	826.5 MHz	836.5MHz	846.5 MHz
Band 5 / 5MHz	1	0	23.538	23.112	23.648	22.671	22.422	22.641
	1	13	23.745	23.834	22.522	22.8	23.097	21.441
	1	25	23.738	23.726	22.66	22.785	22.968	21.87
	12	0	22.682	22.586	22.376	21.716	21.751	21.422
	12	6	22.824	22.781	21.788	21.814	21.838	20.915
	12	13	22.742	22.722	22.141	21.733	21.783	21.262
	25	0	22.788	22.765	22.787	21.827	21.794	21.702

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
			20450	20525	20600	20450	20525	20600
			829 MHz	836.5MHz	844 MHz	829 MHz	836.5MHz	844 MHz
Band 5 / 10MHz	1	0	23.519	23.317	23.762	22.571	22.749	22.868
	1	25	23.758	23.7	23.735	22.752	23.039	22.807
	1	49	22.947	23.688	23.023	22	22.993	22.265
	25	0	22.767	22.522	22.722	21.857	21.551	21.834
	25	13	22.759	22.767	22.86	21.85	21.876	21.975
	25	25	22.798	22.728	22.808	21.901	21.809	21.71
	50	0	22.623	22.743	22.685	21.825	21.816	21.675

1.6.4. Effective Radiated Power (ERP) - LTE Band 5 (824-849MHz)

Effective 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
			20407	20525	20643	20407	20525	20643
			824.7MHz	836.5MHz	848.3 MHz	824.7 MHz	836.5MHz	848.3 MHz
Band 5 / 1.4 MHz	1	0	21.703	21.916	21.541	20.833	20.966	20.566
	1	3	21.73	21.987	21.287	20.874	21.071	20.636
	1	5	21.71	21.934	20.771	20.823	21.001	20.088
	3	0	21.682	21.845	21.444	20.952	21.028	20.591
	3	2	21.734	21.884	21.211	20.976	21.105	20.481
	3	3	21.764	21.831	21.035	20.929	21.064	20.26
	6	0	20.736	20.846	20.39	19.914	19.958	19.557

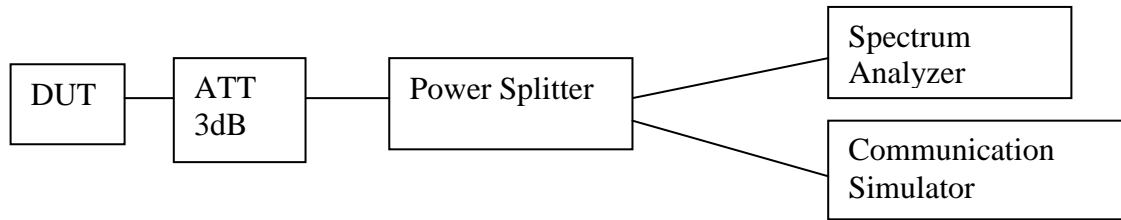
Effective Radiated Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20415	20525	20635	20415	20525	20635
			825.5MHz	836.5MHz	847.5MHz	825.5 MHz	836.5MHz	847.5 MHz
Band 5 / 3MHz	1	0	21.673	21.536	20.821	20.862	20.95	19.938
	1	7	21.937	21.944	21.659	20.944	21.274	20.618
	1	14	21.847	21.858	20.784	20.817	21.178	20.019
	8	0	20.814	20.889	20.024	19.964	20.101	18.999
	8	4	20.874	20.906	20.556	19.966	20.126	19.428
	8	7	20.856	20.879	20.622	19.948	20.081	19.61
	15	0	20.849	20.906	20.433	19.938	20.019	19.452

Effective 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
			20425	20525	20625	20425	20525	20625
			826.5MHz	836.5MHz	846.5MHz	826.5 MHz	836.5MHz	846.5 MHz
Band 5 / 5MHz	1	0	21.678	21.252	21.788	20.811	20.562	20.781
	1	13	21.885	21.974	20.662	20.94	21.237	19.581
	1	25	21.878	21.866	20.8	20.925	21.108	20.01
	12	0	20.822	20.726	20.516	19.856	19.891	19.562
	12	6	20.964	20.921	19.928	19.954	19.978	19.055
	12	13	20.882	20.862	20.281	19.873	19.923	19.402
	25	0	20.928	20.905	20.927	19.967	19.934	19.842

Effective 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
			20450	20525	20600	20450	20525	20600
			829 MHz	836.5MHz	844 MHz	829 MHz	836.5MHz	844 MHz
Band 5 / 10MHz	1	0	21.659	21.457	21.902	20.711	20.889	21.008
	1	25	21.898	21.84	21.875	20.892	21.179	20.947
	1	49	21.087	21.828	21.163	20.14	21.133	20.405
	25	0	20.907	20.662	20.862	19.997	19.691	19.974
	25	13	20.899	20.907	21	19.99	20.016	20.115
	25	25	20.938	20.868	20.948	20.041	19.949	19.85
	50	0	20.763	20.883	20.825	19.965	19.956	19.815

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



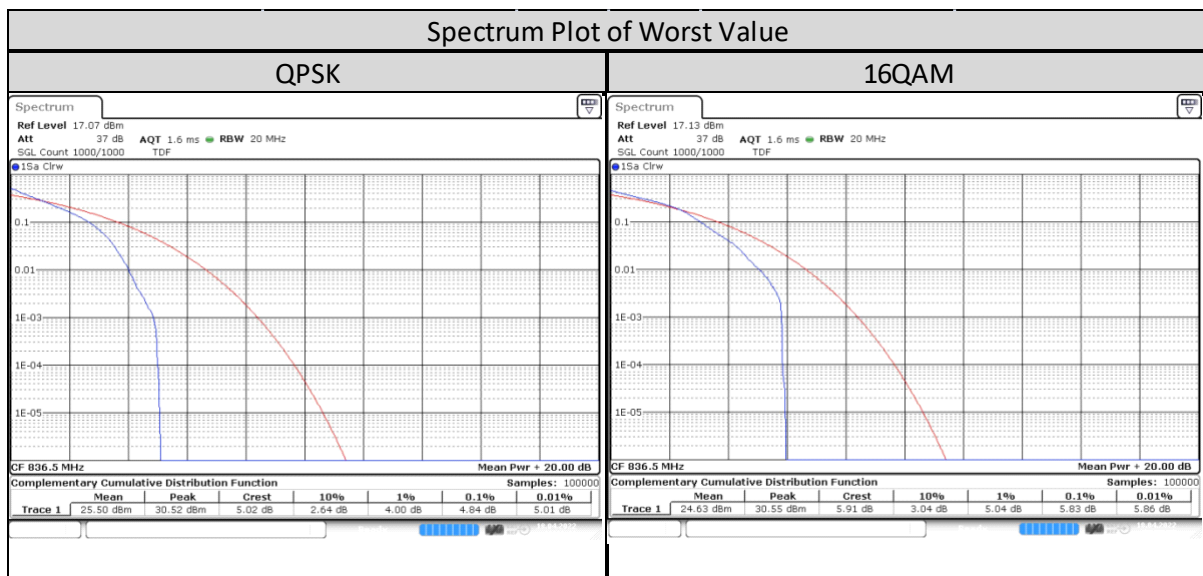
1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum analyzer.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

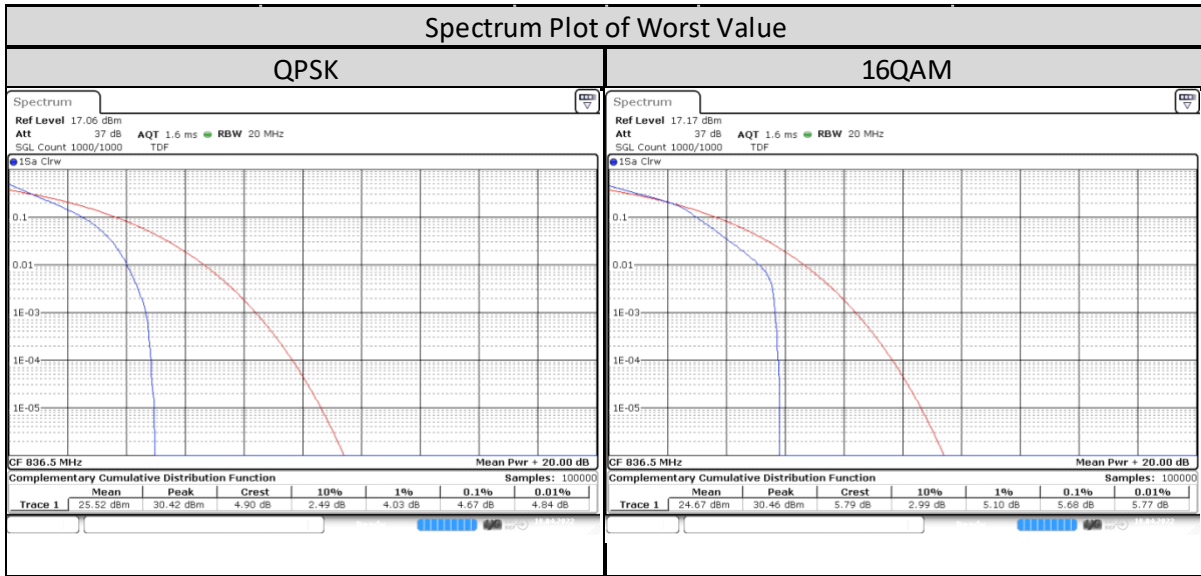
The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

1.7.3. Peak To Average Power Ratio - LTE Band 5 (824-849MHz)

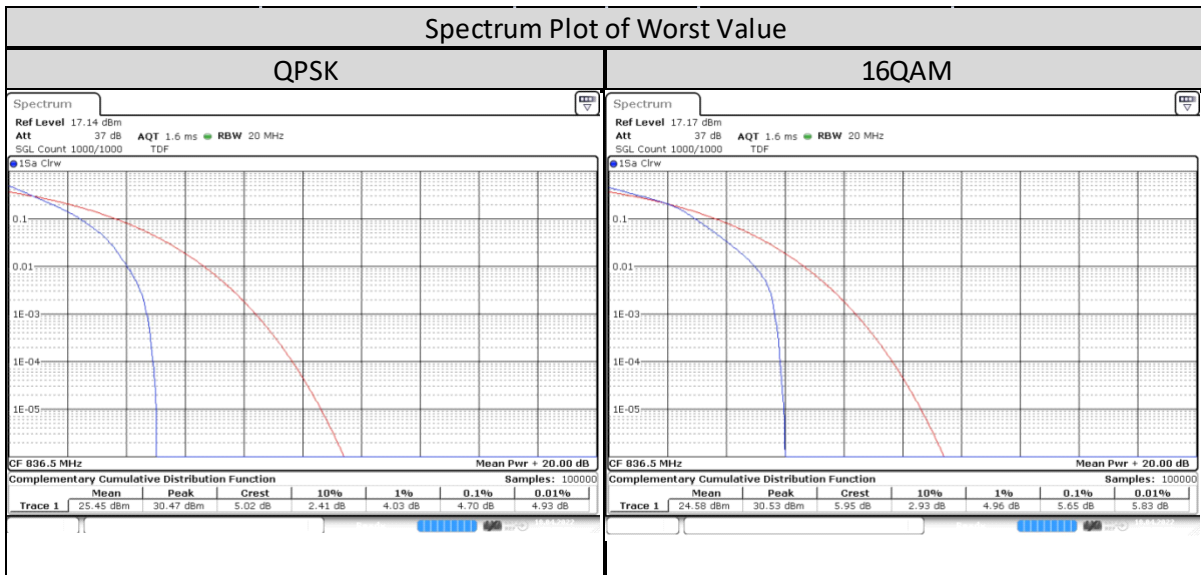
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 5/1.4MHz/6/0	Low CH 20407	824.7 MHz	4.406	5.275
	Mid CH 20525	836.5 MHz	4.841	5.826
	High CH 20643	848.3 MHz	4.377	5.246



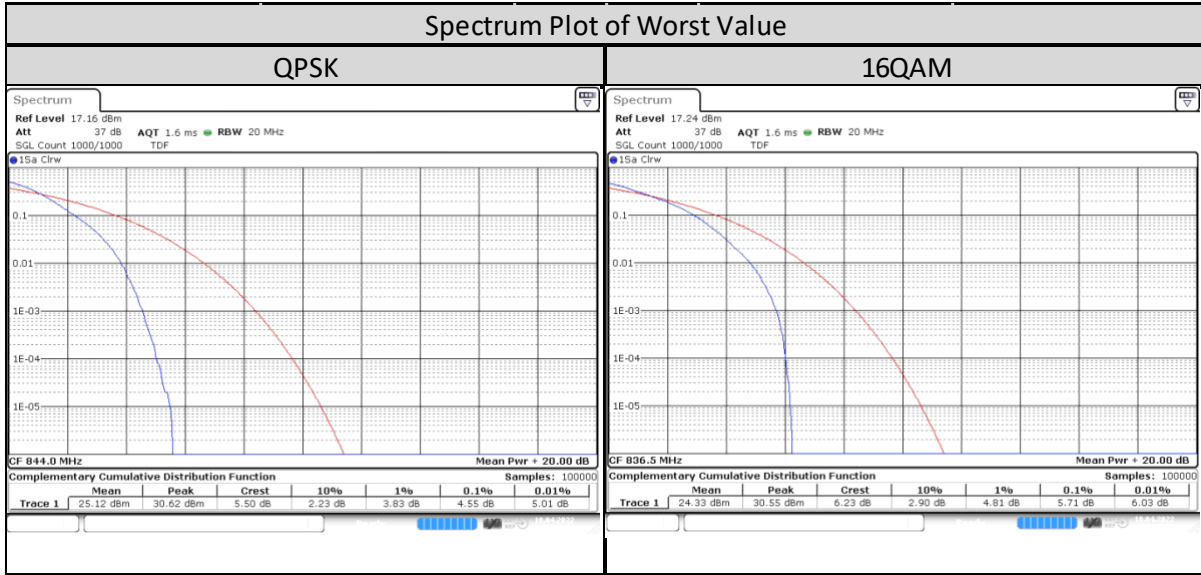
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 5/3MHz/15/0	Low CH 20415	825.5 MHz	4.319	5.217
	Mid CH 20525	836.5 MHz	4.667	5.681
	High CH 20635	847.5 MHz	4.377	5.391



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 5/5MHz/25/0	Low CH 20425	826.5 MHz	4.551	5.478
	Mid CH 20525	836.5 MHz	4.696	5.652
	High CH 20625	846.5 MHz	4.609	5.623

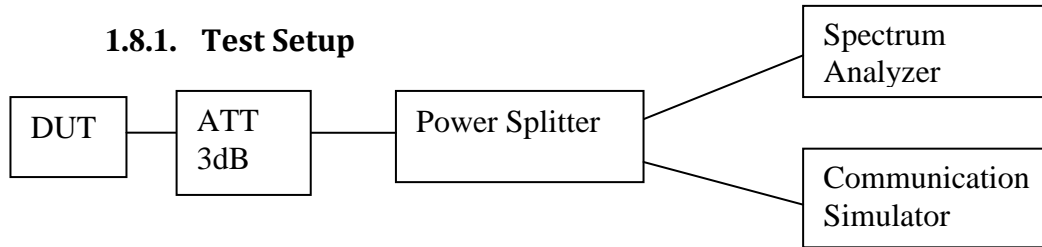


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 5/10MHz/50/0	Low CH 20450	829MHz	4.406	5.42
	Mid CH 20525	836.5 MHz	4.522	5.71
	High CH 20600	844MHz	4.551	5.71



1.8. Occupied Bandwidth

1.8.1. Test Setup



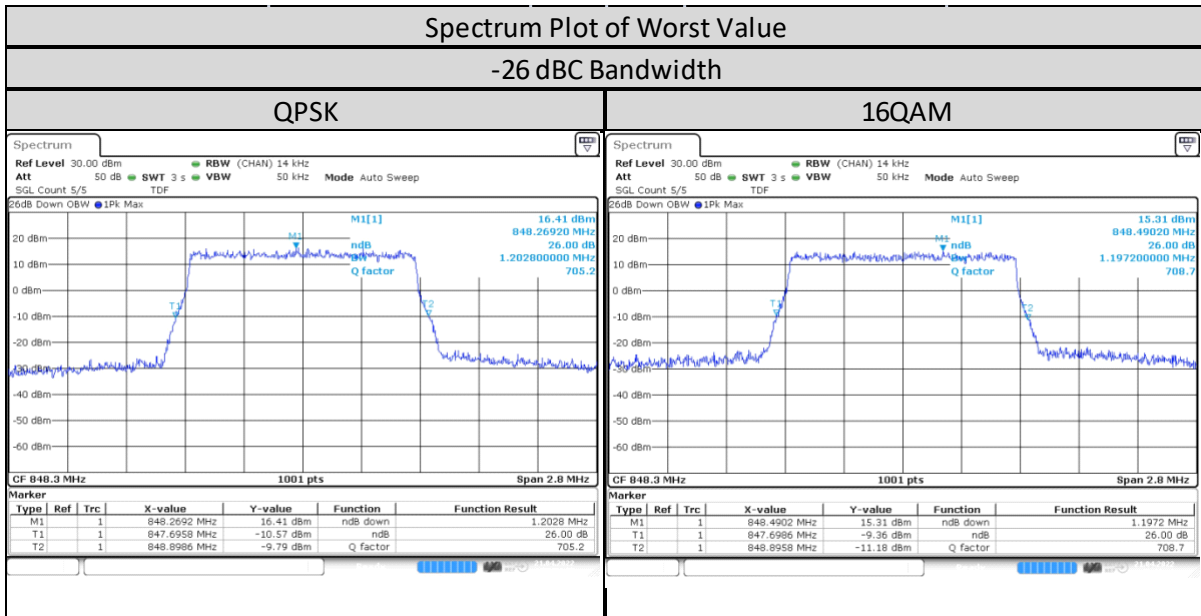
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) For LTE measurement, set DUT to transmit maximum power & full RB size through communication simulator.
- 4) For LTE measurement, set DUT to transmit maximum 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

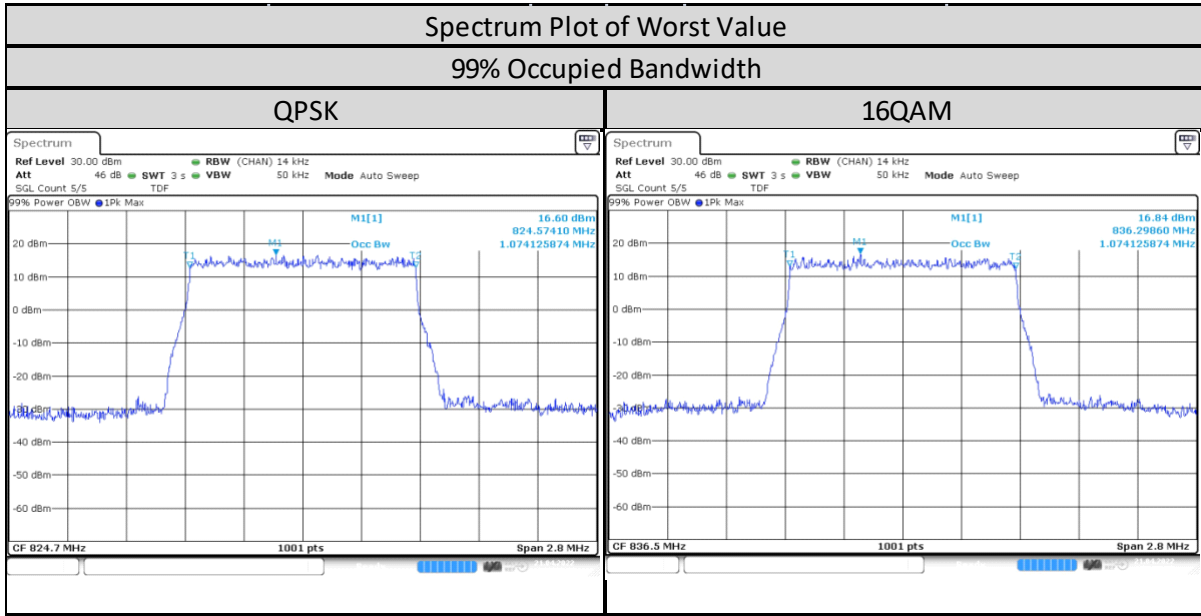
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

1.8.3. Occupied Bandwidth - LTE Band 5 (824-849MHz)

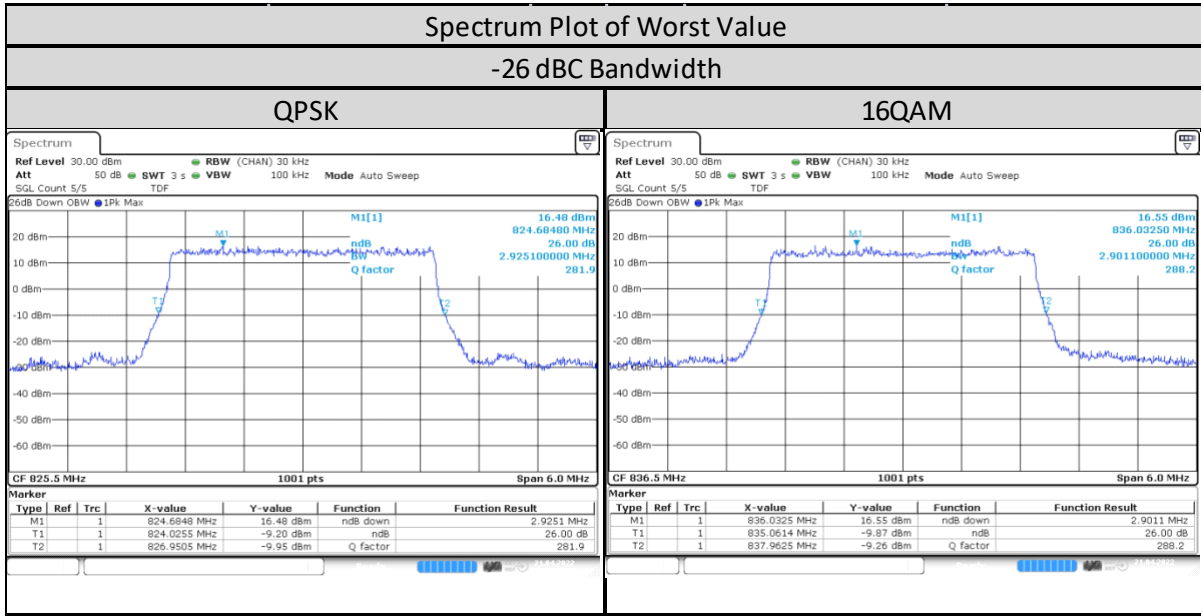
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/1.4MHz/6/0	Low CH 20407	824.7 MHz	1.197	1.178
	Mid CH 20525	836.5 MHz	1.183	1.194
	High CH 20643	848.3 MHz	1.203	1.197



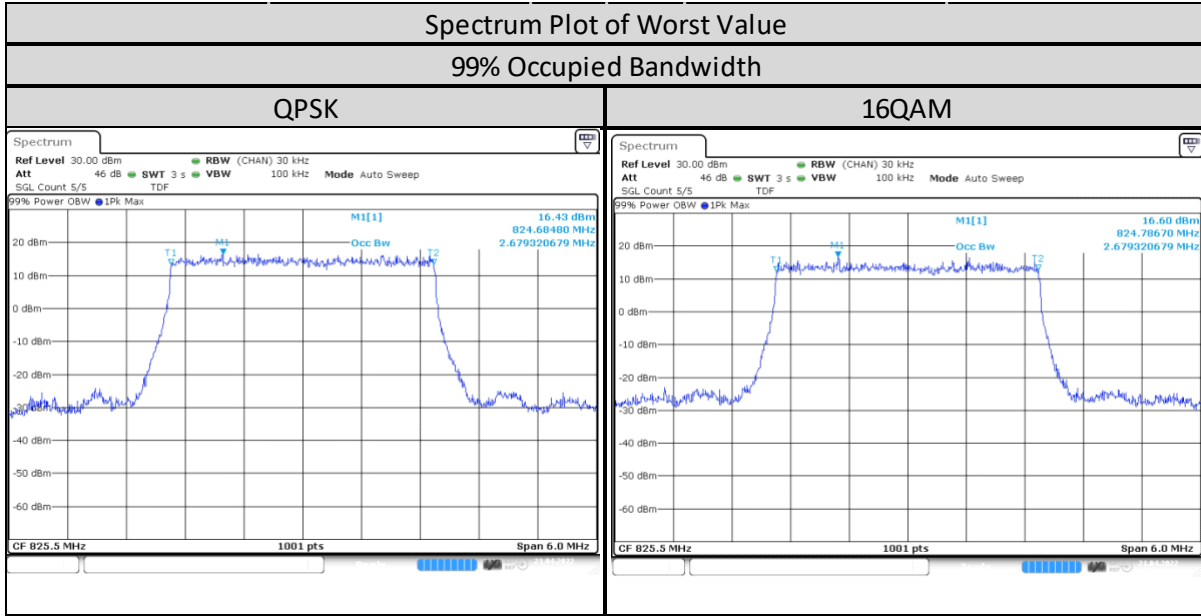
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/1.4MHz/6/0	Low CH 20407	824.7 MHz	1.074	1.069
	Mid CH 20525	836.5 MHz	1.071	1.074
	High CH 20643	848.3 MHz	1.069	1.074



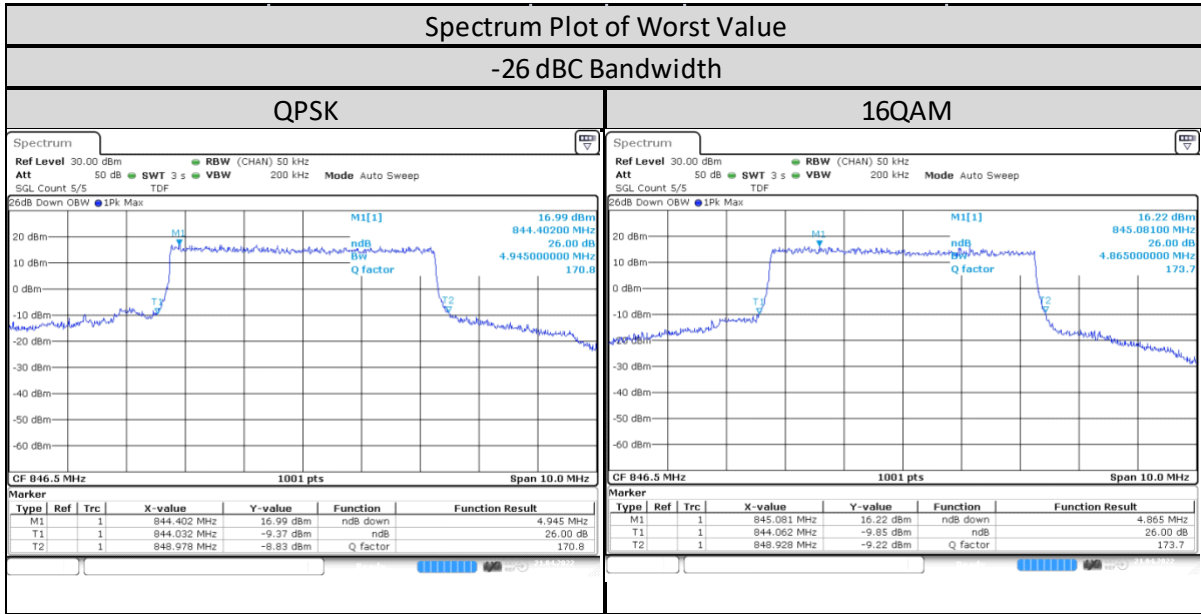
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/3MHz/15/0	Low CH 20415	825.5 MHz	2.925	2.895
	Mid CH 20525	836.5 MHz	2.901	2.901
	High CH 20635	847.5 MHz	2.895	2.883



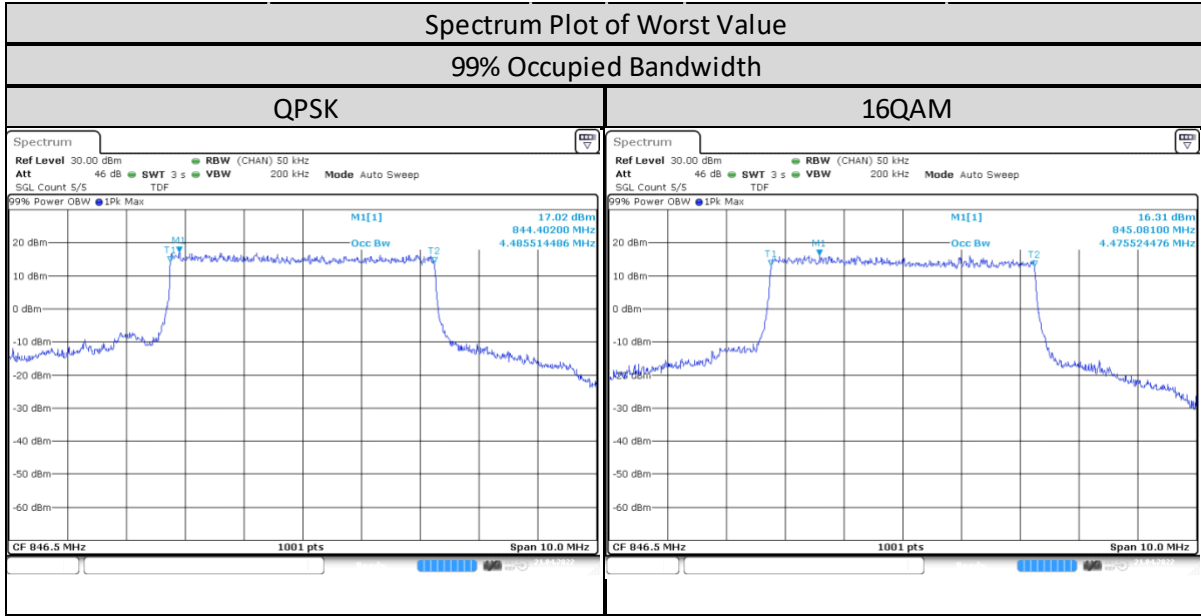
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/3MHz/15/0	Low CH 20415	825.5 MHz	2.679	2.679
	Mid CH 20525	836.5 MHz	2.679	2.679
	High CH 20635	847.5 MHz	2.679	2.679



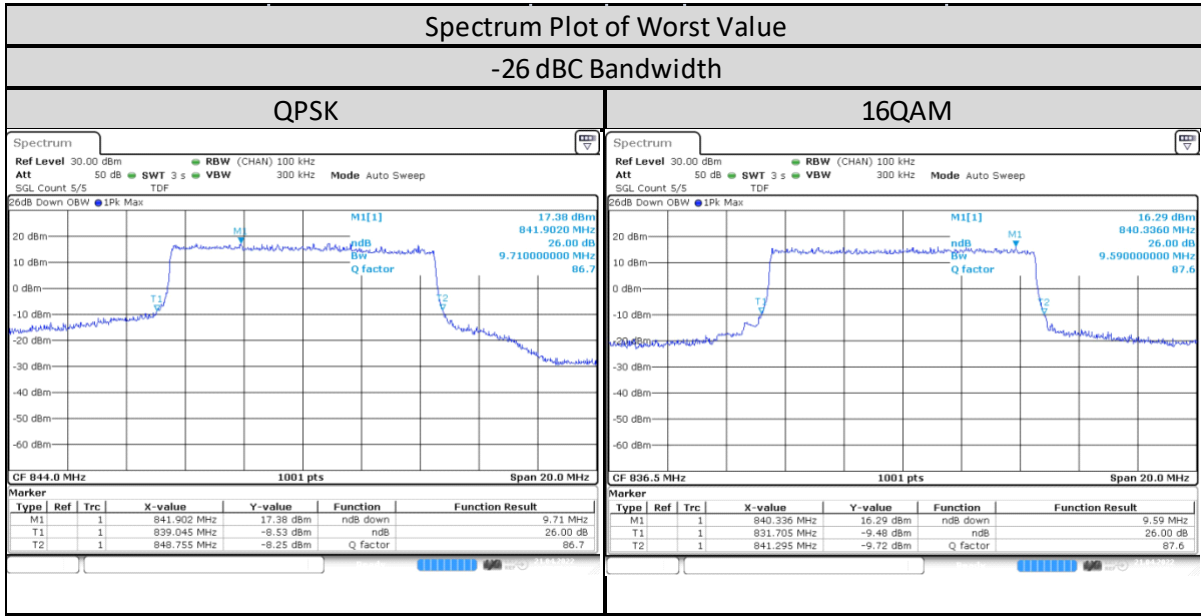
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/5MHz/25/0	Low CH 20425	826.5 MHz	4.825	4.795
	Mid CH 20525	836.5 MHz	4.825	4.825
	High CH 20625	846.5 MHz	4.945	4.865



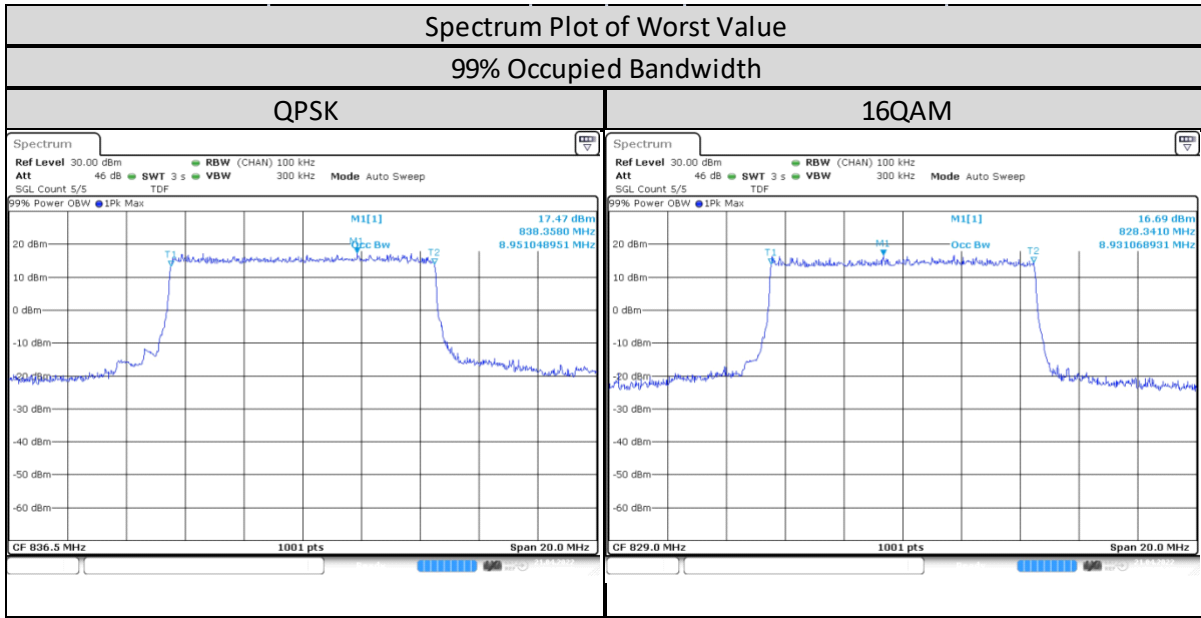
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/5MHz/25/0	Low CH 20425	826.5 MHz	4.466	4.466
	Mid CH 20525	836.5 MHz	4.476	4.466
	High CH 20625	846.5 MHz	4.486	4.476



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/10MHz/50/0	Low CH 20450	829MHz	9.55	9.55
	Mid CH 20525	836.5 MHz	9.67	9.59
	High CH 20600	844MHz	9.71	9.53

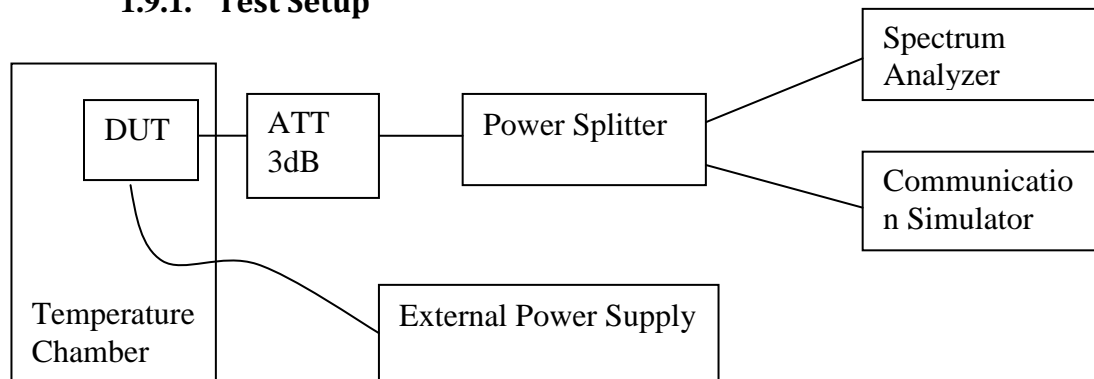


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 5/10MHz/50/0	Low CH 20450	829MHz	8.931	8.931
	Mid CH 20525	836.5 MHz	8.951	8.931
	High CH 20600	844MHz	8.931	8.911



1.9. Frequency Stability

1.9.1. Test Setup



- 1) The DUT is placed in the temperature chamber and DUT is power up by external power supply to control the DC input voltage.
- 2) The temperature chamber could control the temperature and humidity and external power supply could control the test voltage range from minimum to maximum operating voltage.
- 3) Measured frequency error from the communication simulator by vary below step :
 - i. Vary temperature of the temperature chamber from -30 ~ 60 deg C (10 deg C / Step) and set external supply voltage constant at nominal voltage.
 - ii. Vary external supply voltage from minimum to maximum operation voltage support by DUT and set temperature chamber constant at room temp.
- 4) All the measurement was done at mid channel for each band.

1.9.2. Test Limit

As per manufacturer declared product operating at -30 to 60 deg C with spec of +/- 0.1ppm.

1.9.3. Frequency Stability - LTE Band 5 (824-849MHz)

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		824.7MHz		848.3MHz	
		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
LTE Band 5	60	824.699986	-0.016548	848.299988	-0.014266
	50	824.699984	-0.019618	848.299989	-0.012951
	40	824.700009	0.011049	848.299999	-0.011416
	30	824.699988	-0.014553	848.299988	-0.014351
	20	824.699986	-0.016843	848.299989	-0.013288
	10	824.699992	-0.009714	848.299988	-0.014216
	0	824.699987	-0.01549	848.299991	-0.01032
	-10	824.699989	-0.013599	848.299999	-0.011905
	-20	824.699991	-0.010824	848.299987	-0.014975
	-30	824.699999	-0.01157	848.299988	-0.014216

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		824.7MHz		848.3MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	824.699984	-0.019826	848.299988	-0.014249
	7.5	824.699987	-0.016305	848.299999	-0.012007
	6	824.699979	-0.025013	848.299987	-0.015177

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		825.5MHz		847.5MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	825.500012	0.014643	847.500009	0.010803
	50	825.500011	0.013898	847.499993	-0.008558
	40	825.500013	0.015856	847.50001	0.011225
	30	825.50001	0.012668	847.500008	0.009621
	20	825.500015	0.018733	847.500008	0.009959
	10	825.500013	0.015804	847.500008	0.009064
	0	825.500011	0.013811	847.50001	0.011984
	-10	825.500015	0.017814	847.500009	0.0106
	-20	825.500013	0.016029	847.500009	0.010094
	-30	825.500011	0.013465	847.500008	0.009047

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		825.5MHz		847.5MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	825.500012	0.014643	847.500009	0.010803
	50	825.500011	0.013898	847.499993	-0.008558
	40	825.500013	0.015856	847.50001	0.011225
	30	825.50001	0.012668	847.500008	0.009621
	20	825.500015	0.018733	847.500008	0.009959
	10	825.500013	0.015804	847.500008	0.009064
	0	825.500011	0.013811	847.50001	0.011984
	-10	825.500015	0.017814	847.500009	0.0106
	-20	825.500013	0.016029	847.500009	0.010094
	-30	825.500011	0.013465	847.500008	0.009047

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		825.5MHz		847.5MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	825.500012	0.014938	847.499857	-0.16864
	7.5	825.500011	0.013742	847.500008	0.009064
	6	825.500013	0.016272	847.499988	-0.013858

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		826.5MHz		846.5MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	826.499991	-0.010731	846.500012	0.014077
	50	826.499993	-0.008619	846.50001	0.011863
	40	826.499986	-0.01665	846.500012	0.014094
	30	826.500009	0.010419	846.500011	0.012742
	20	826.500008	0.009537	846.500011	0.01286
	10	826.50001	0.011666	846.500012	0.014229
	0	826.500012	0.015006	846.500012	0.014263
	-10	826.500012	0.014071	846.499988	-0.013992
	-20	826.500008	0.010143	846.500012	0.013705
	-30	826.500009	0.010714	846.500011	0.013249

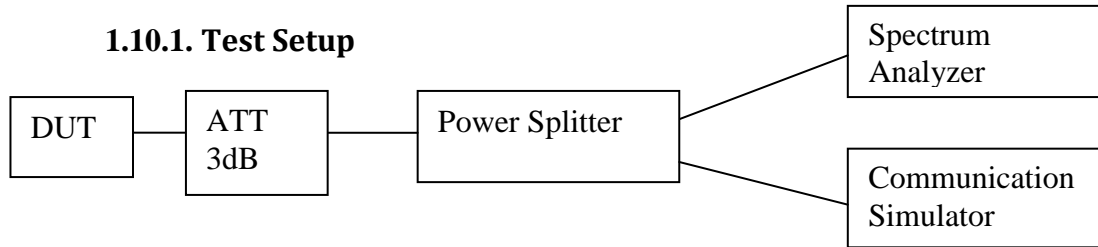
Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		826.5MHz		846.5MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	826.50001	0.012393	846.500013	0.015784
	7.5	826.500008	0.009779	846.500009	0.010951
	6	826.49999	-0.011769	846.500012	0.014314

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		829MHz		844MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	828.999988	-0.014409	843.999989	-0.013576
	50	828.999987	-0.015254	843.999989	-0.012746
	40	828.999991	-0.010854	843.99999	-0.011949
	30	828.999989	-0.01346	843.999987	-0.015237
	20	828.99999	-0.012062	843.999991	-0.010966
	10	828.99999	-0.011734	843.999992	-0.009627
	0	828.999991	-0.011096	843.99999	-0.011373
	-10	828.999992	-0.009957	843.999991	-0.010678
	-20	828.99999	-0.011717	843.999989	-0.013373
-30	828.999991	-0.010888	843.999988	-0.013644	

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		829MHz		844MHz	
LTE Band 5		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	828.999989	-0.012683	843.999991	-0.010746
	7.5	828.999989	-0.013667	843.999989	-0.013271
	6	828.999987	-0.015806	843.999988	-0.013797

1.10. Band Edge Conducted Spurious Emission

1.10.1. Test Setup

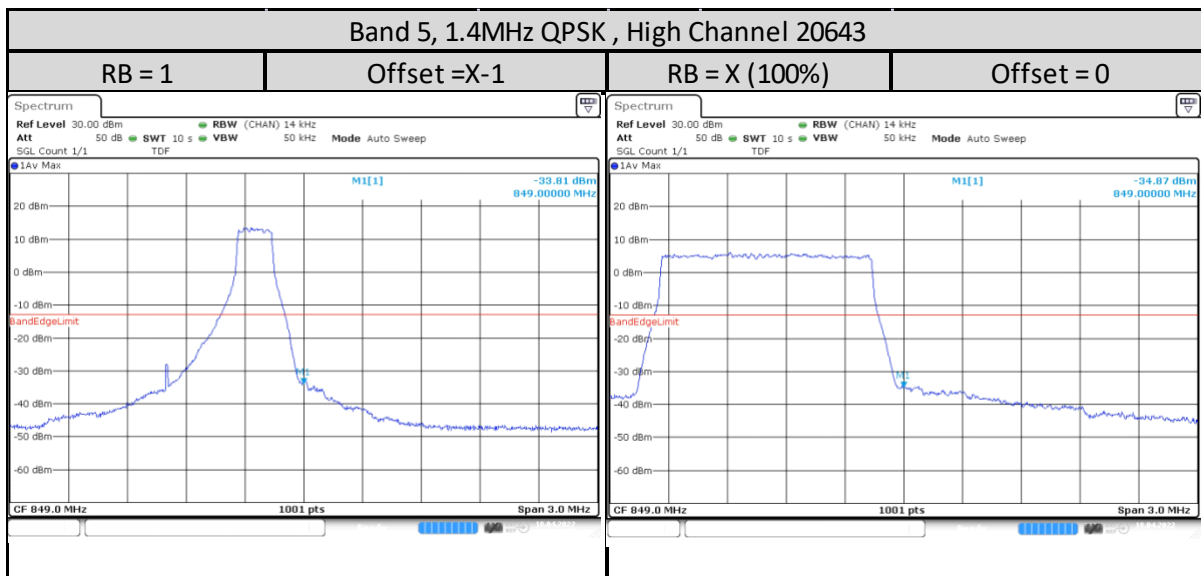
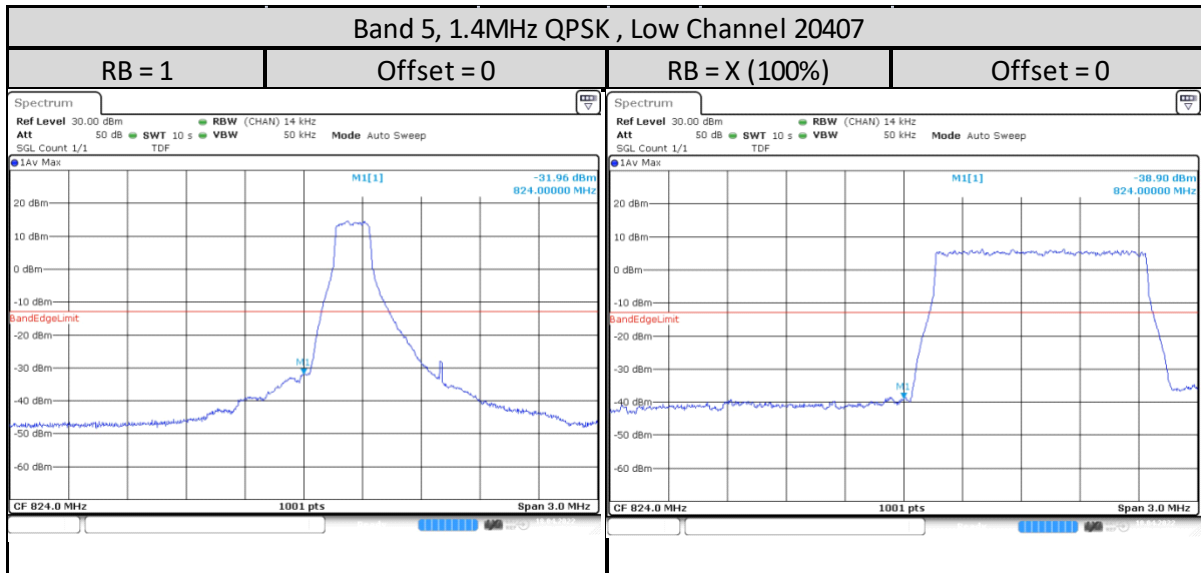


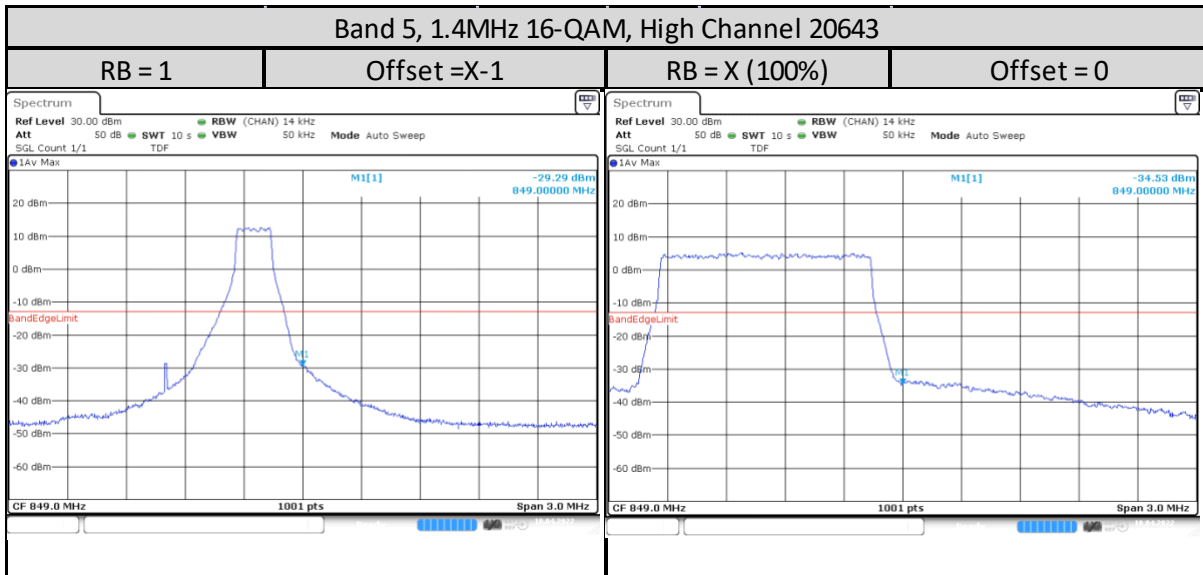
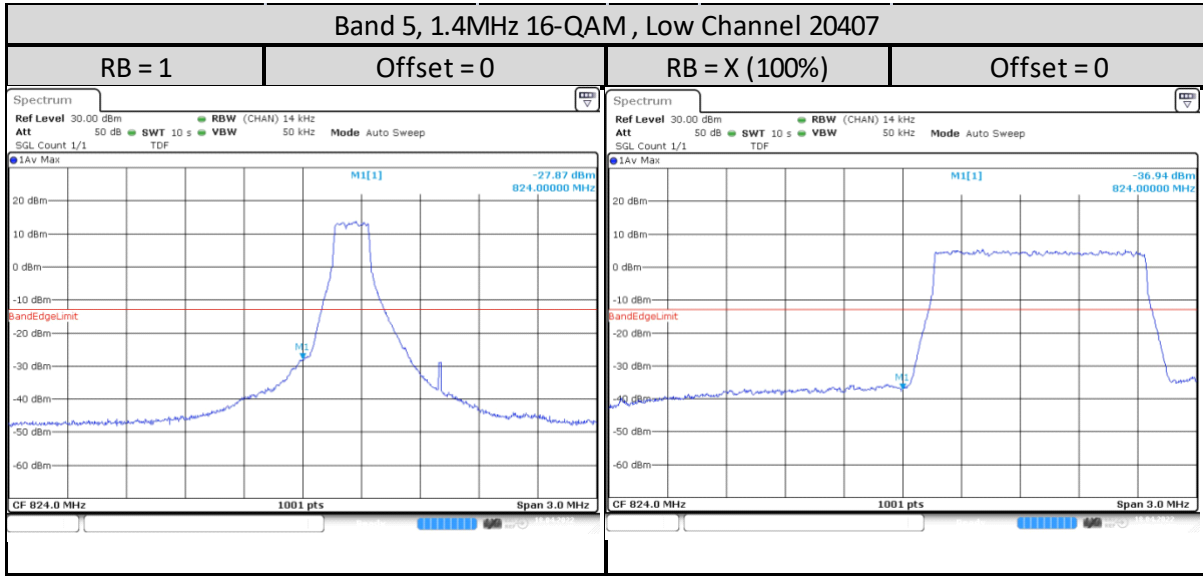
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) Set DUT to transmit maximum power through communication simulator.
- 4) The band edges of lowest and highest channels with the highest RF powers were measured.
- 5) The center frequency of spectrum is the band edge frequency, span is 3MHz, RBW is 1~3% of EBW and VBW is 3 times of RBW.
- 6) Record the maximum trace plot into the test report.

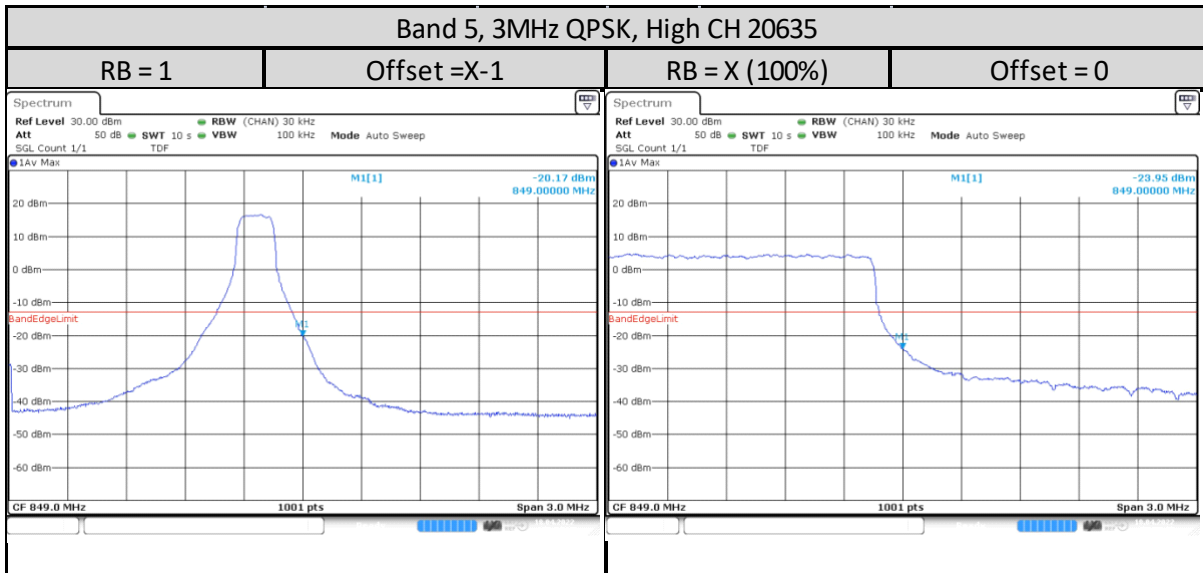
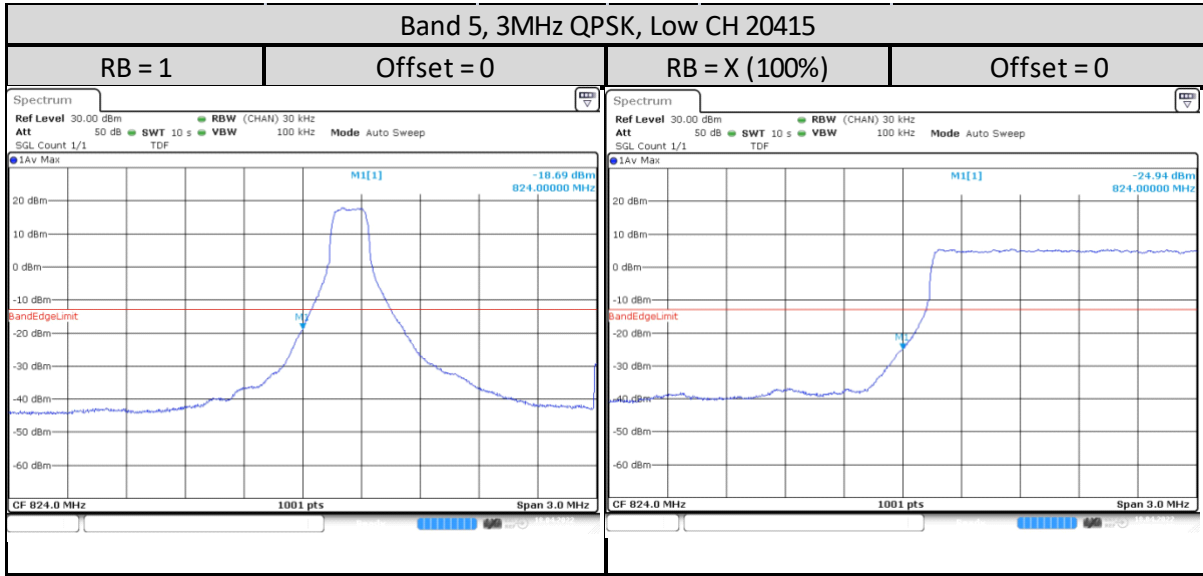
1.10.2. Test Limit

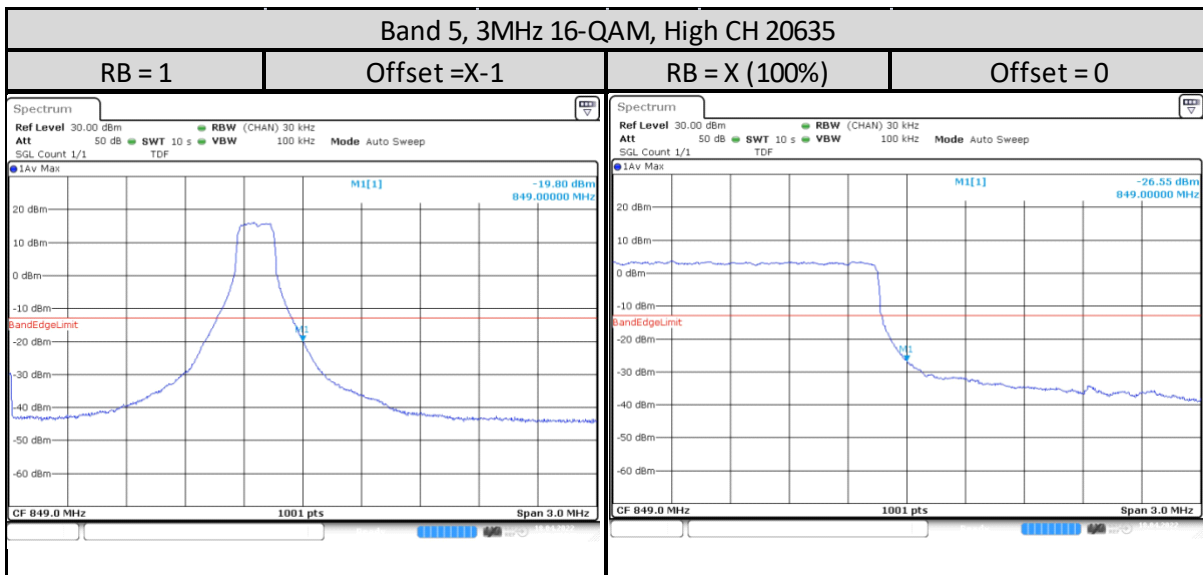
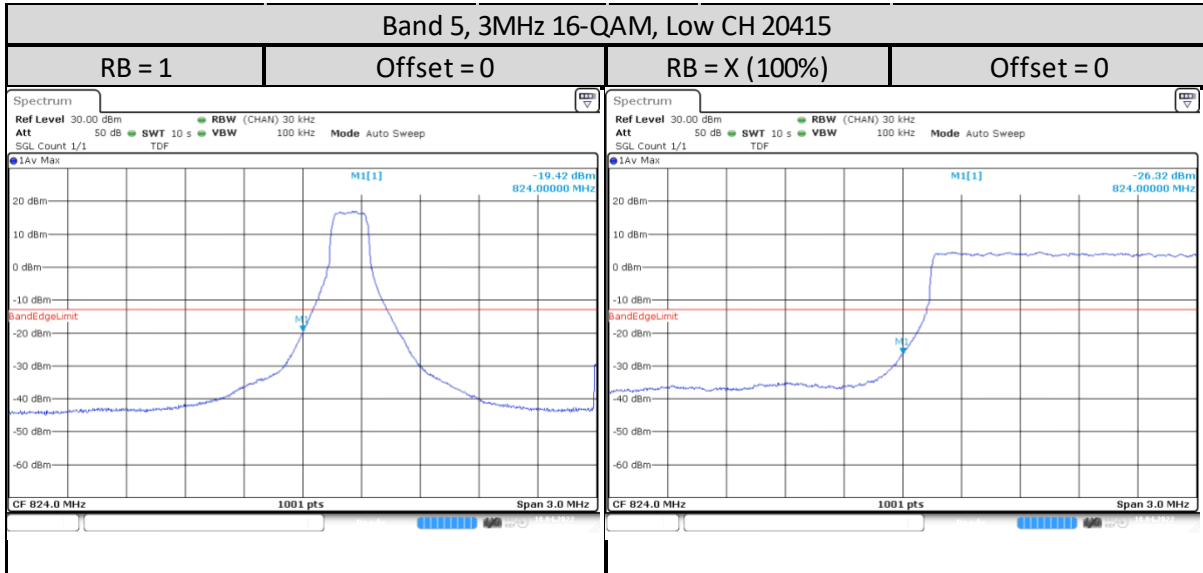
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed

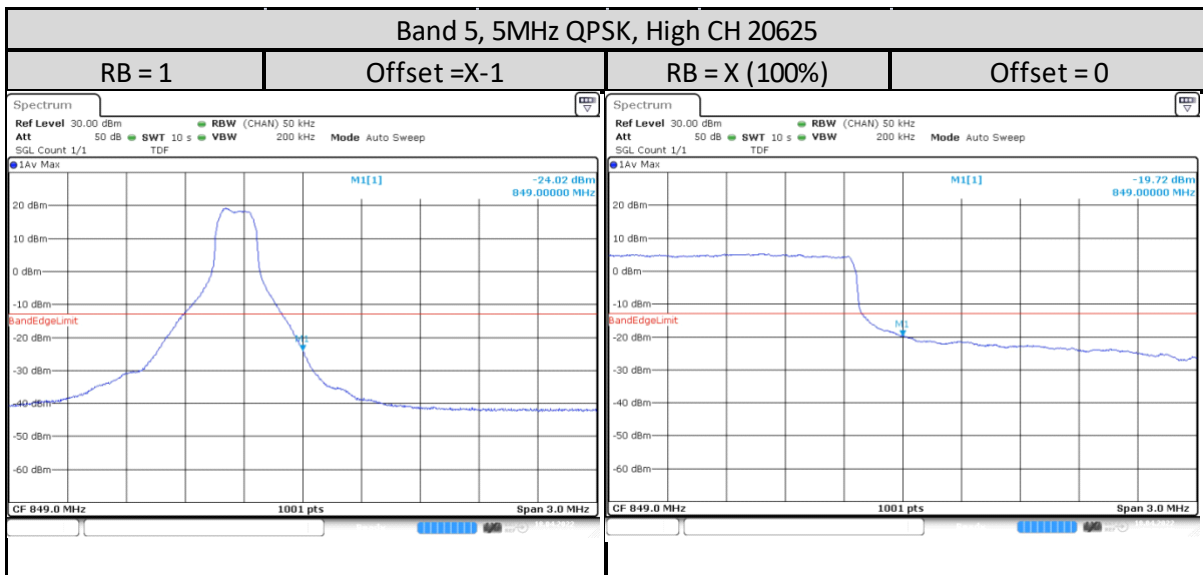
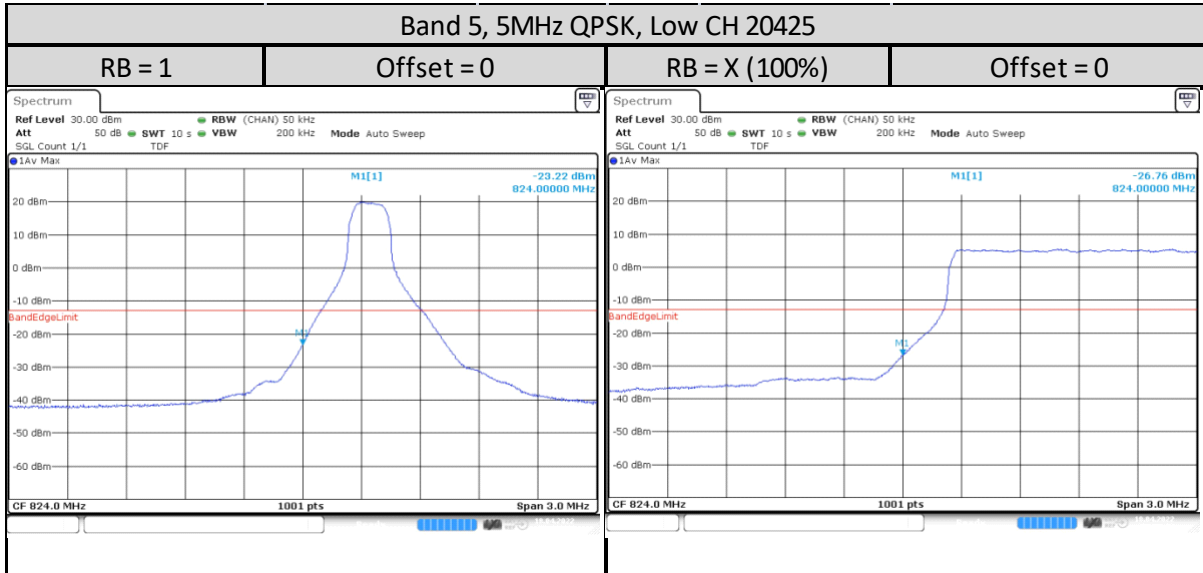
1.10.3. Band Edge Conducted Spurious Emission - LTE Band 5 (824-849MHz)

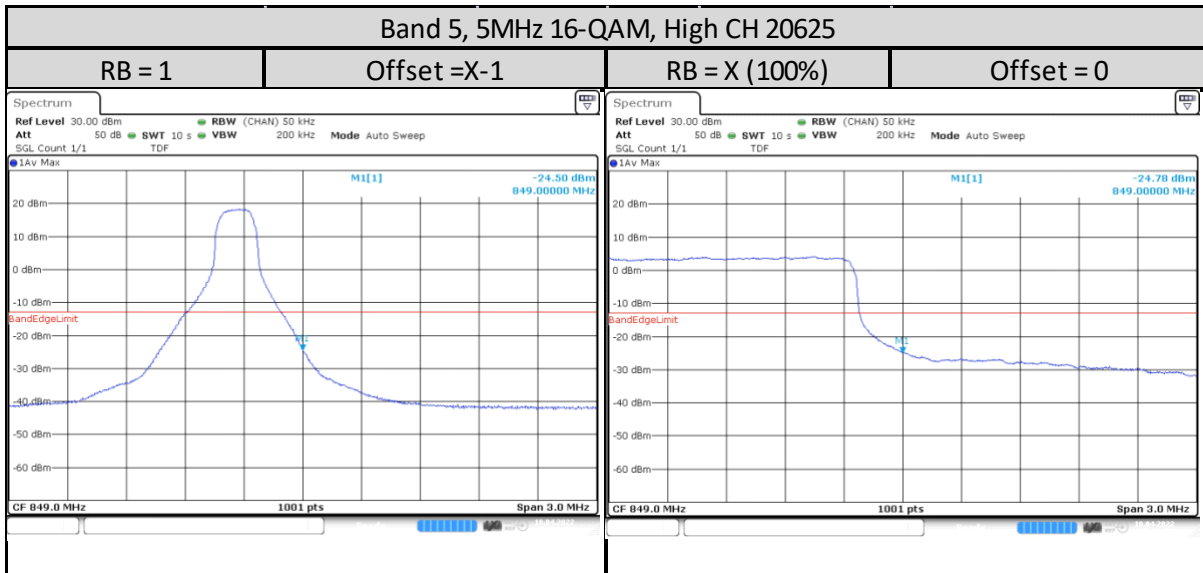
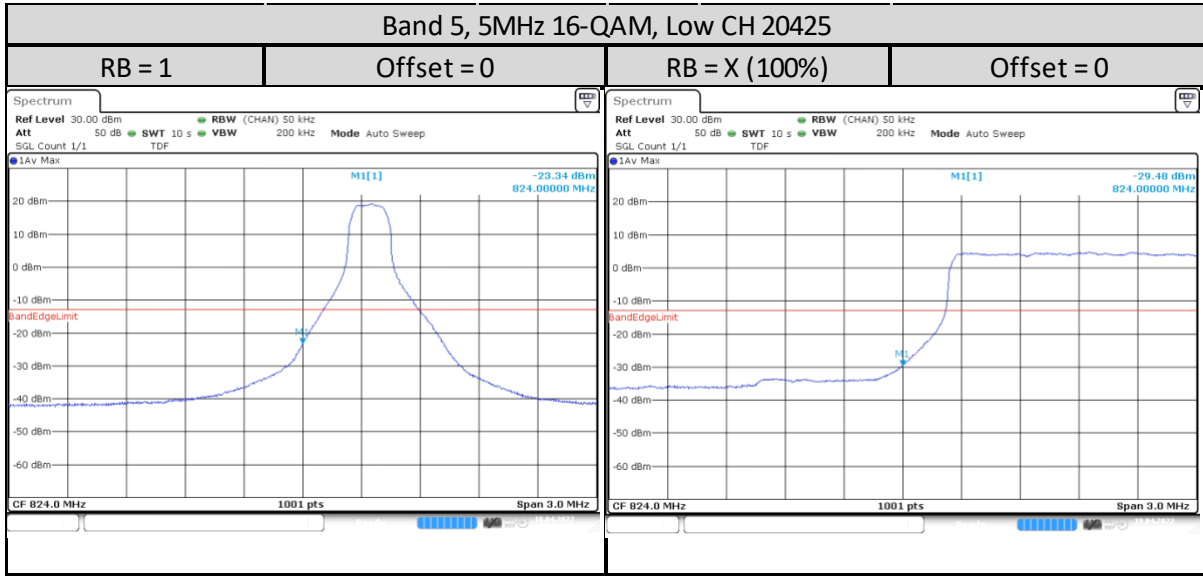


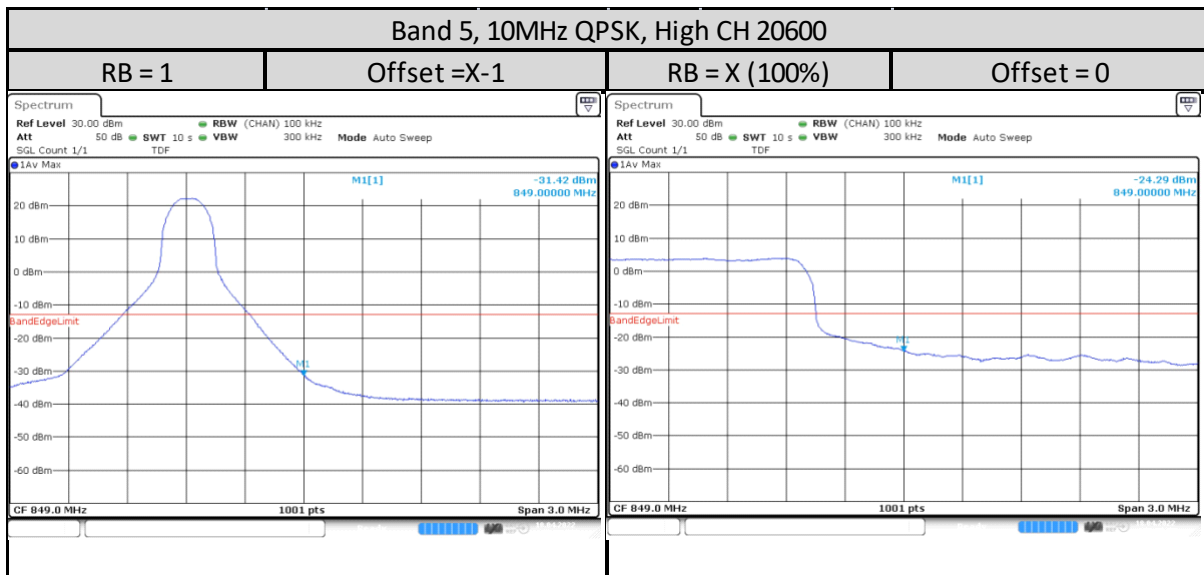
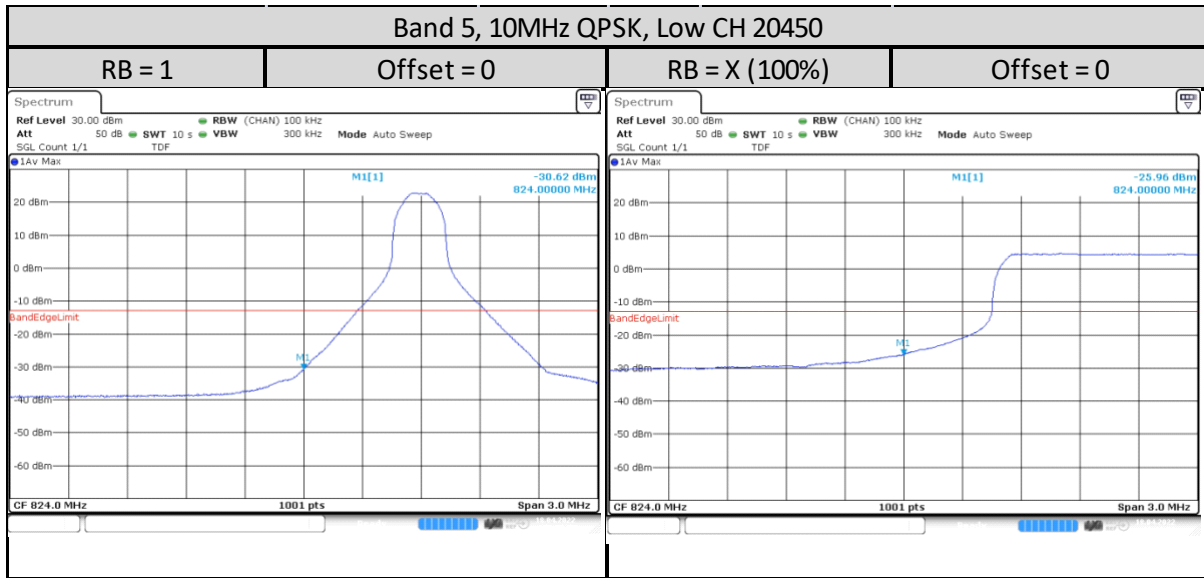


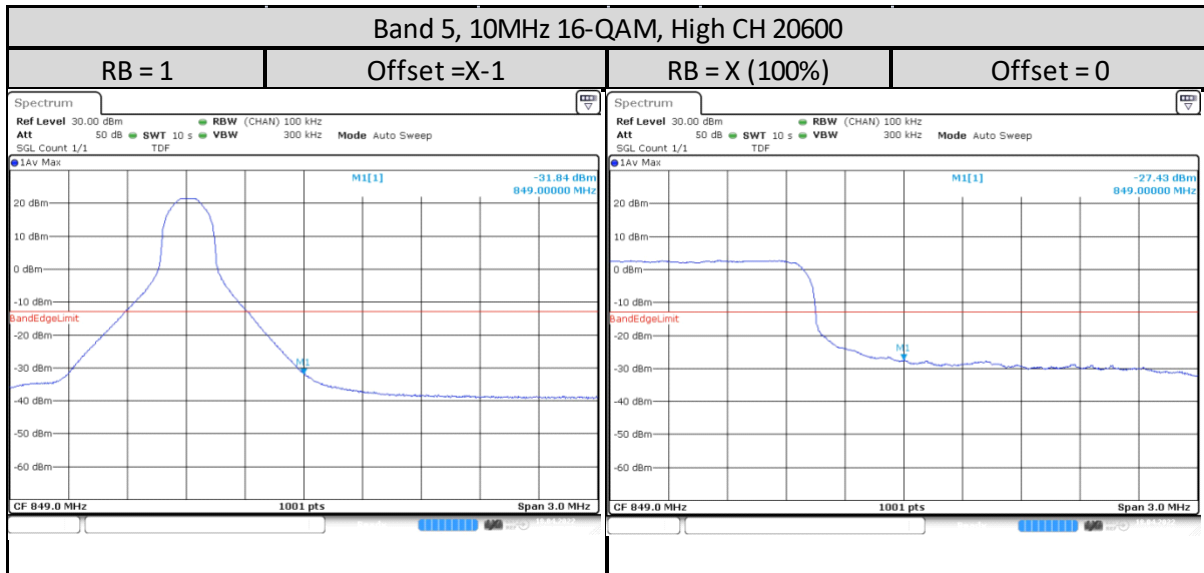
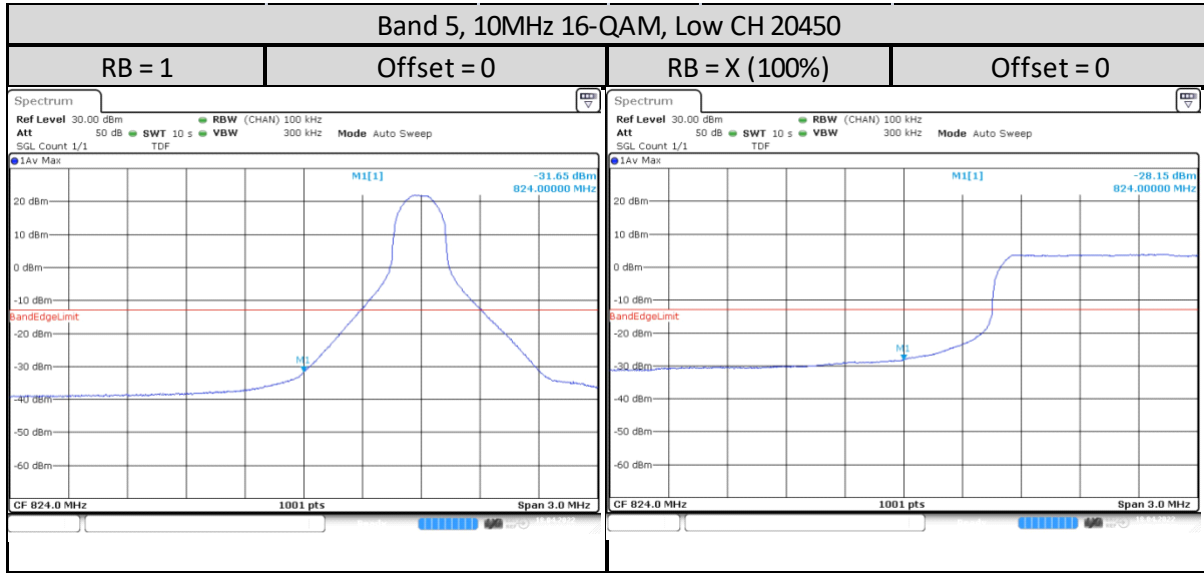






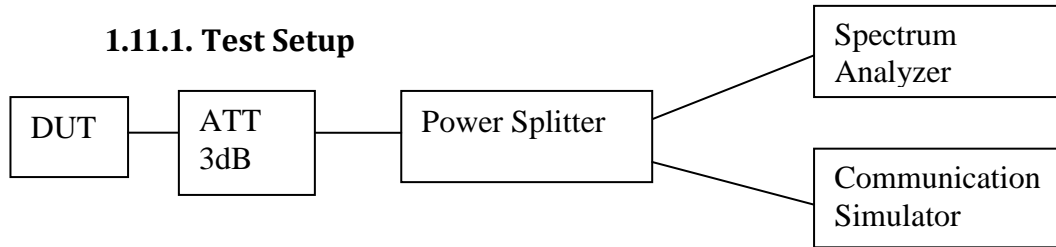






1.11. Conducted Spurious Emission

1.11.1. Test Setup



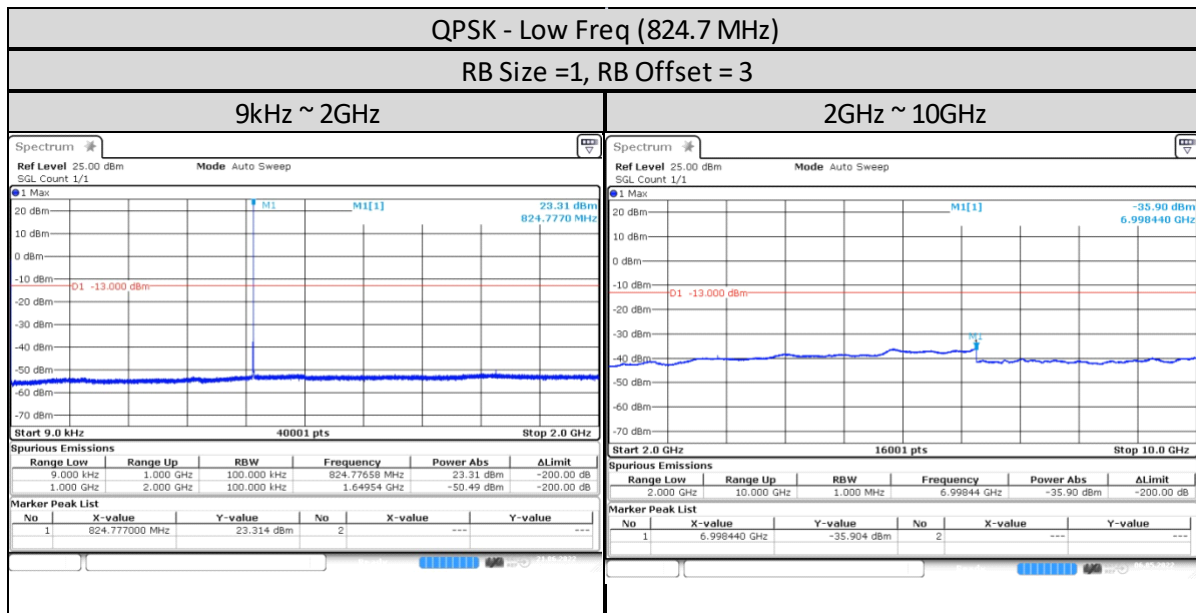
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) Set DUT to transmit maximum power through communication simulator.
- 4) Spectrum Analyzer setting, RBW = 100 kHz or greater, VBW = 3*RBW.
- 5) The spurious emission of lowest, middle and highest channels with the highest RF powers were measured.
- 6) Record the maximum trace plot into the test report.

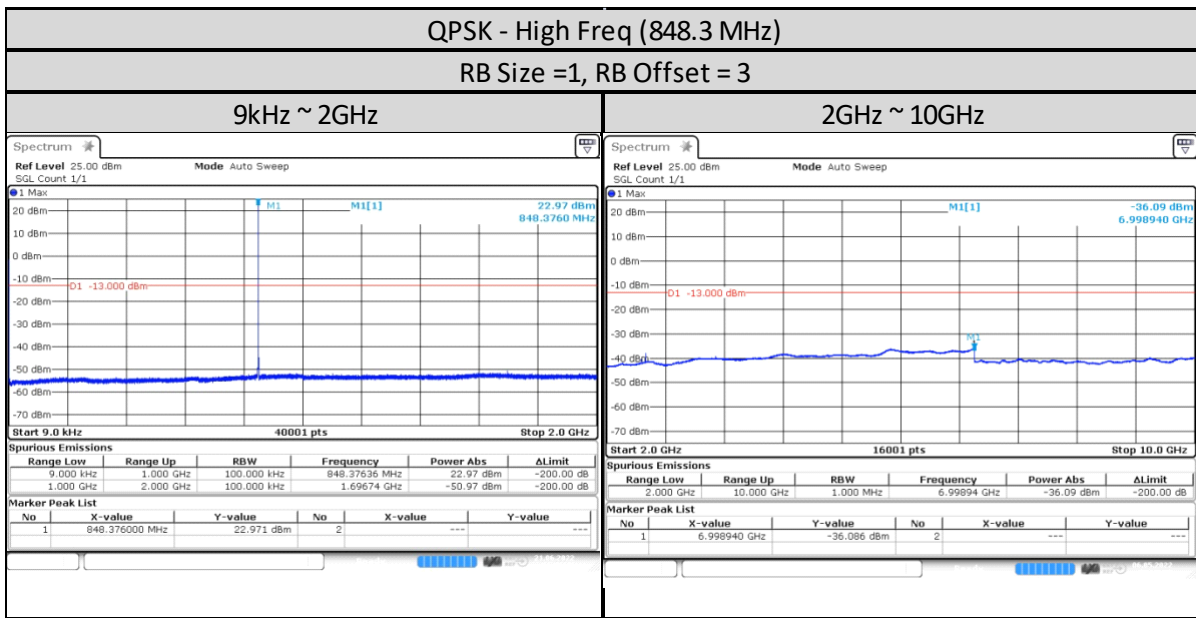
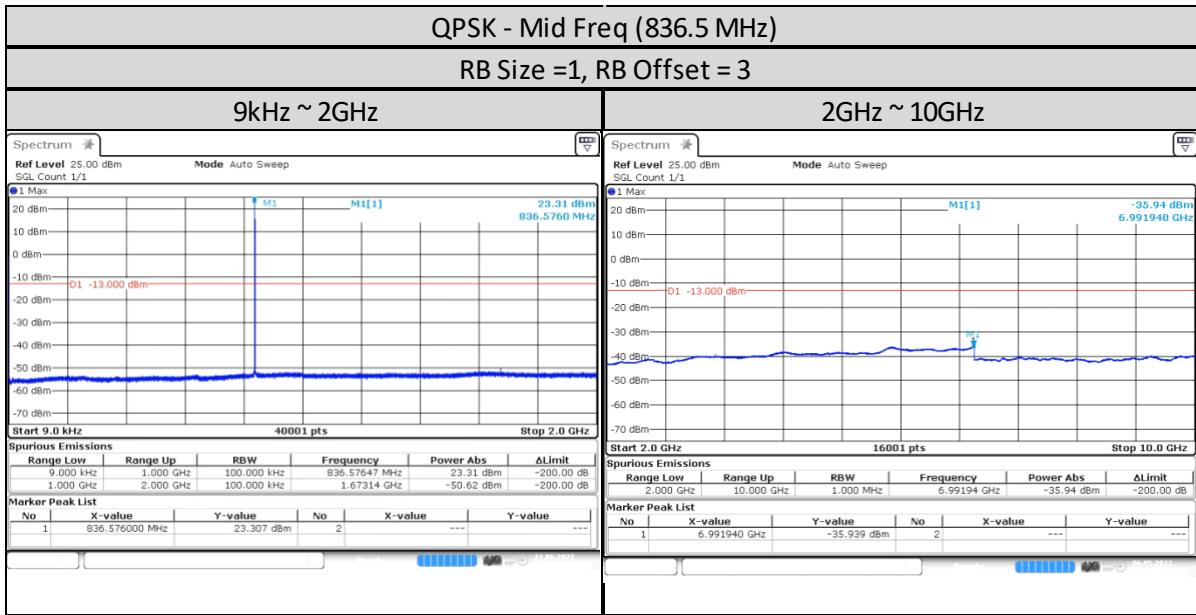
1.11.2. Test Limit

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

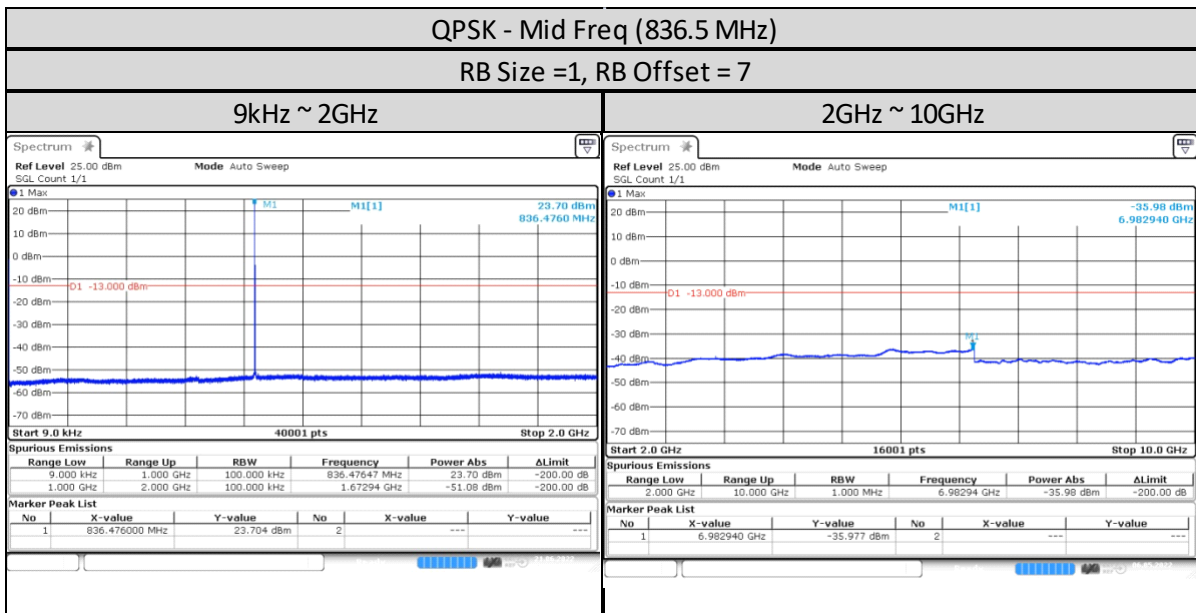
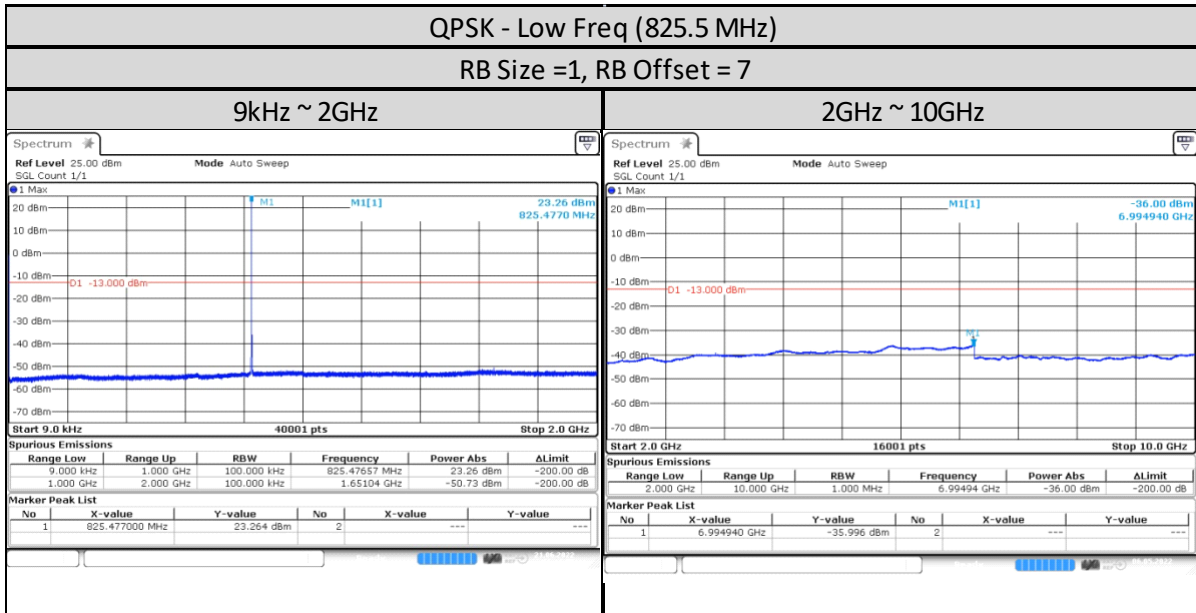
1.11.3. Conducted Spurious Emission - LTE Band 5 (824-849MHz)

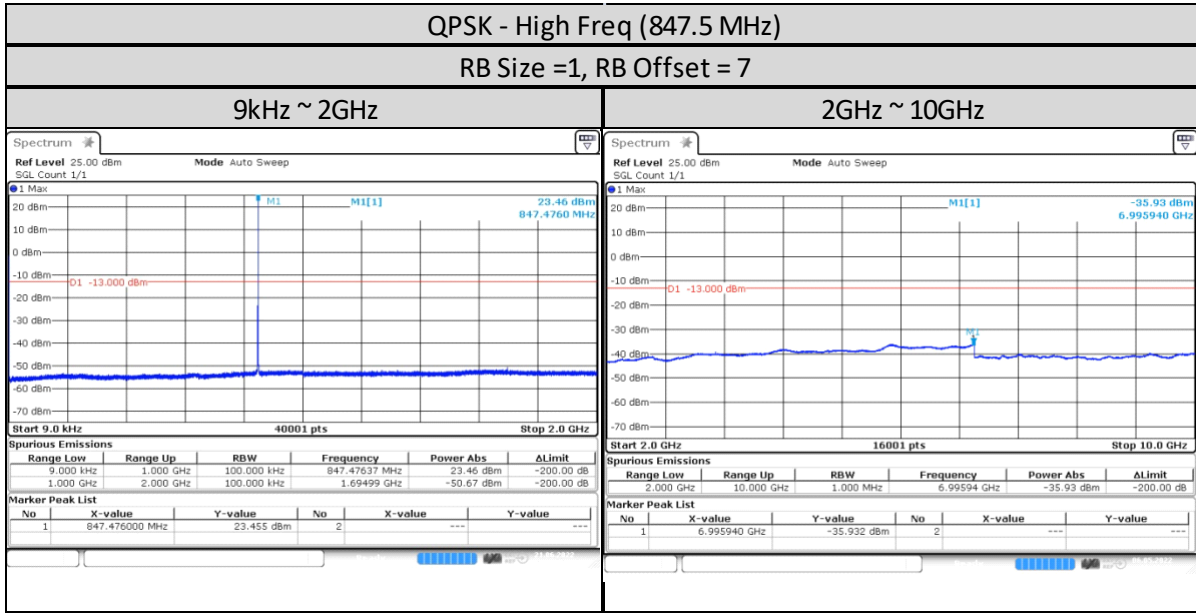
1.4MHz



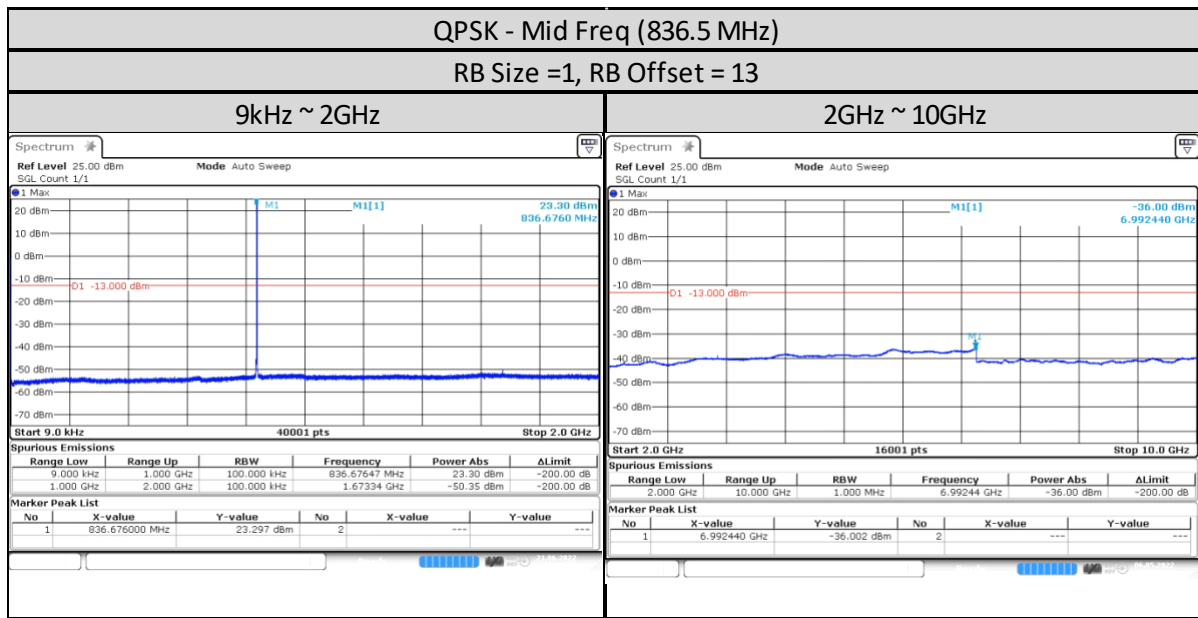
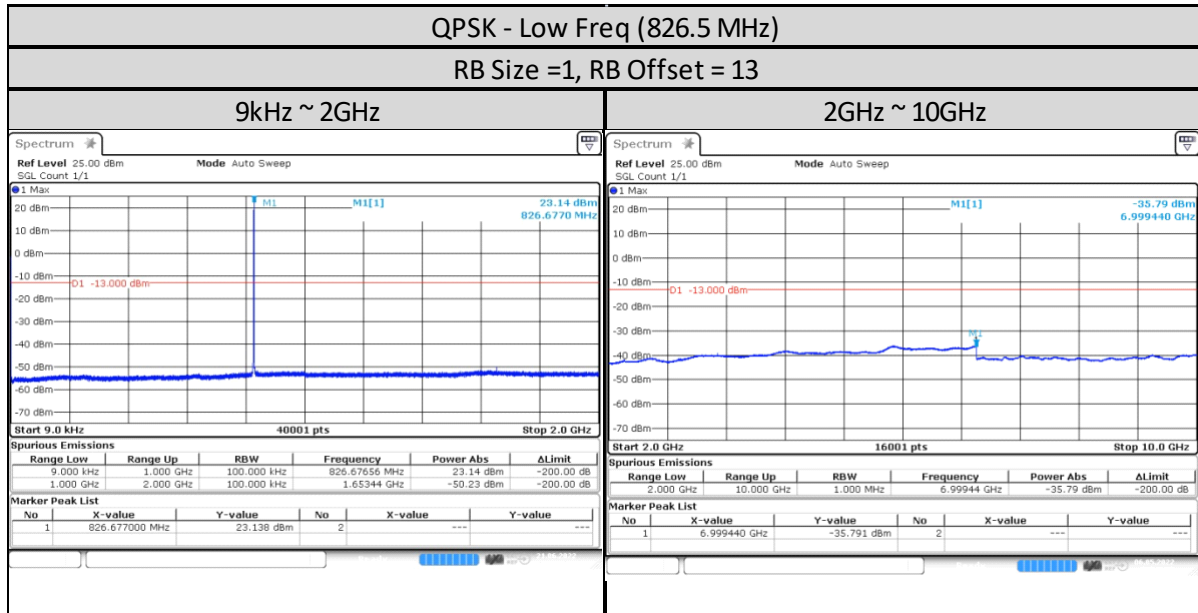


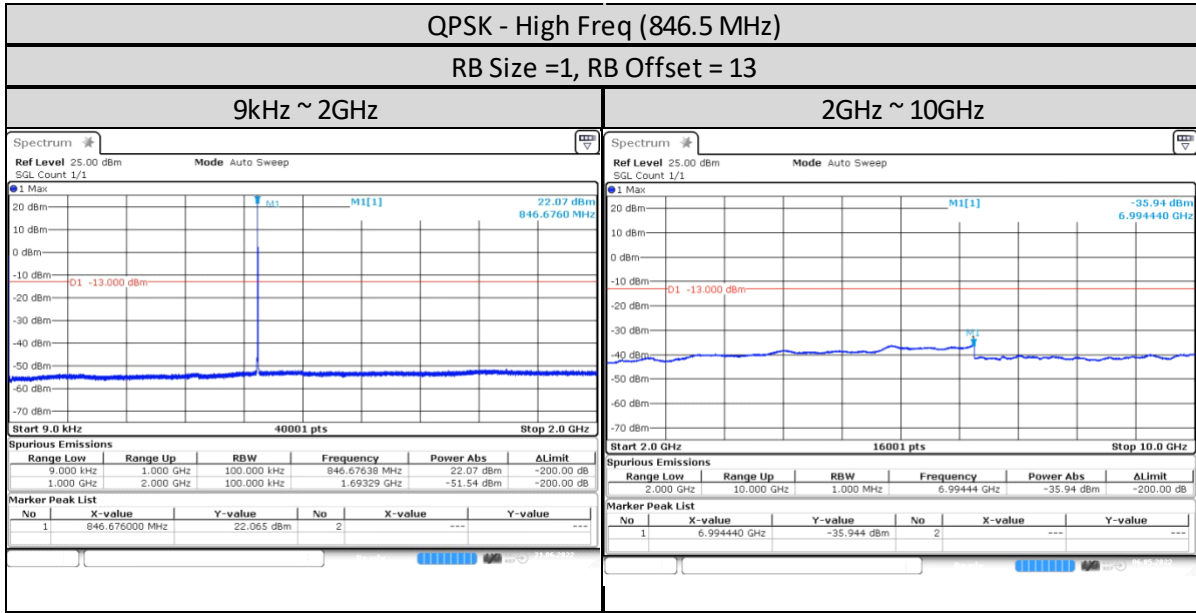
3MHz



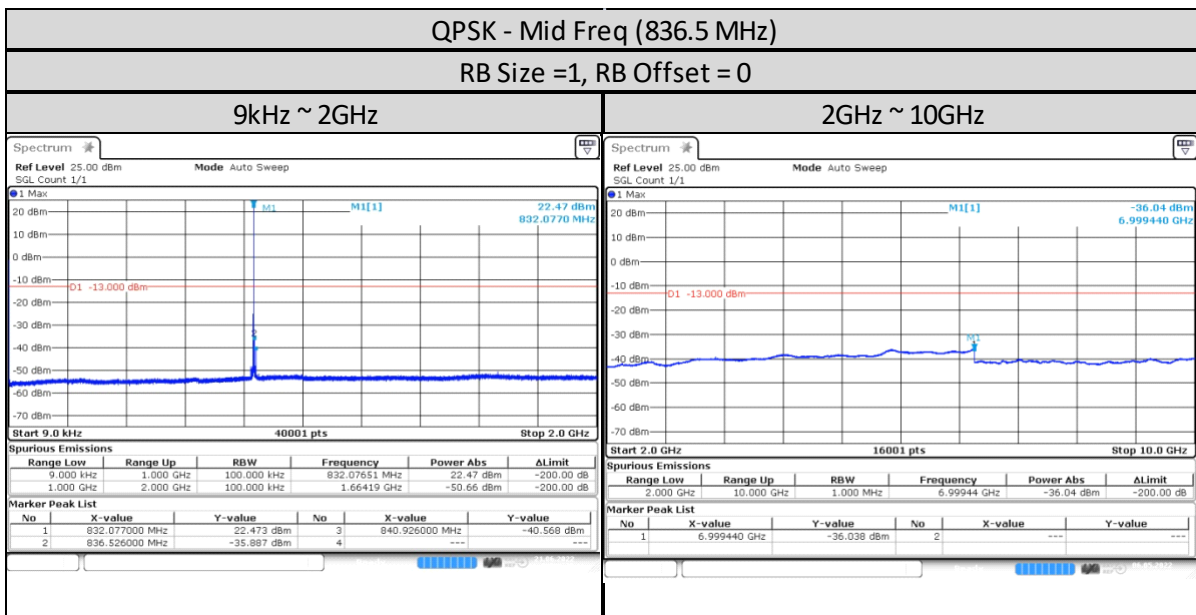
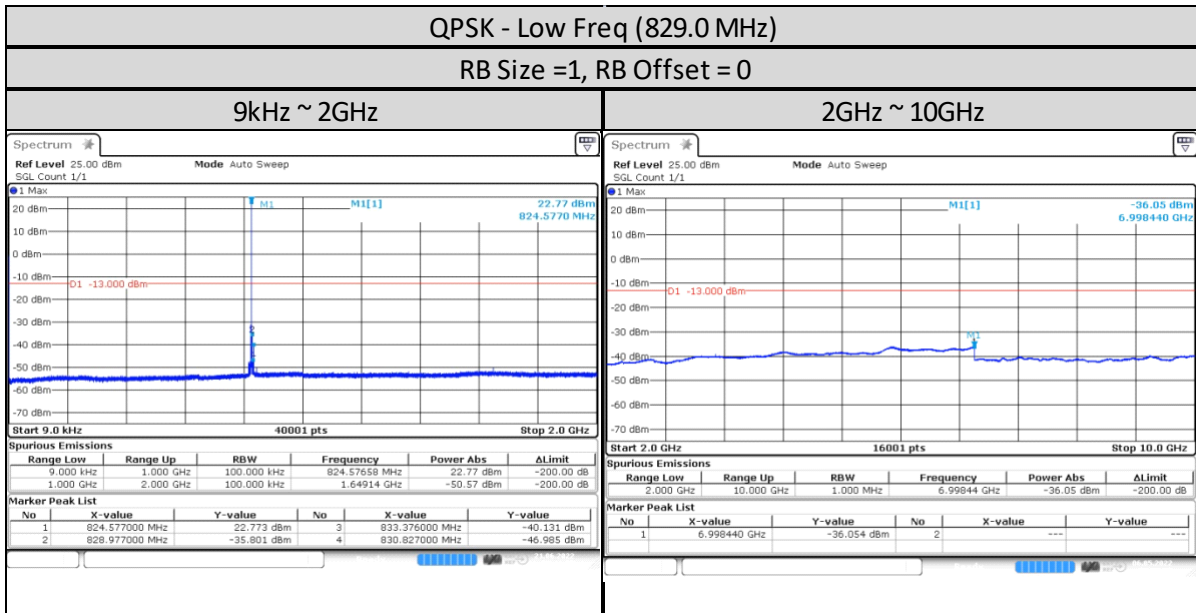


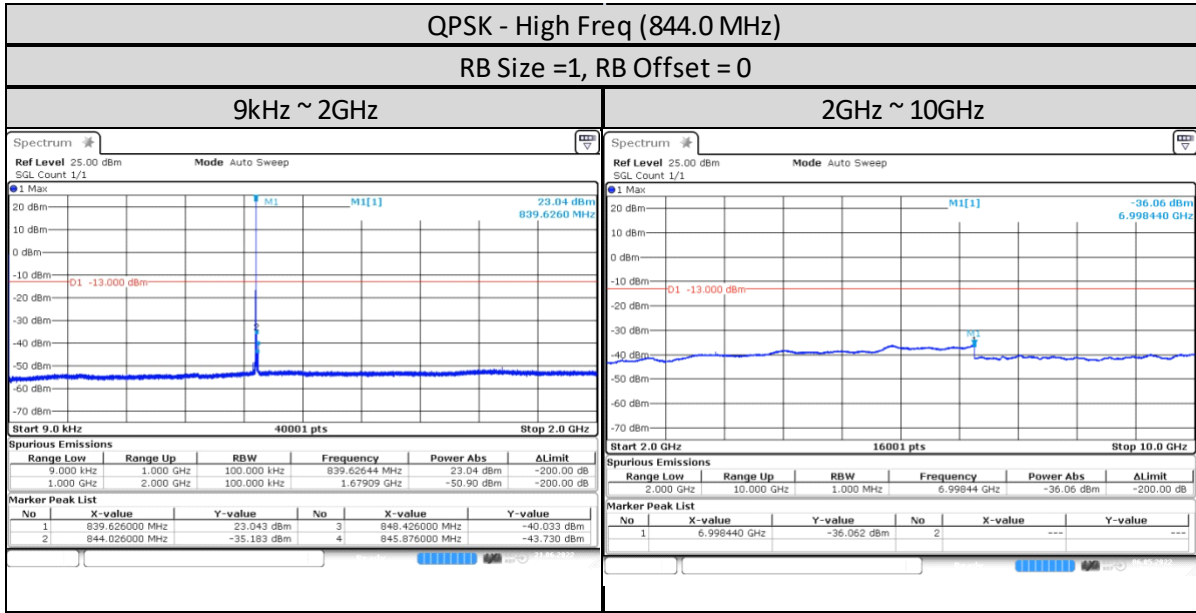
5MHz





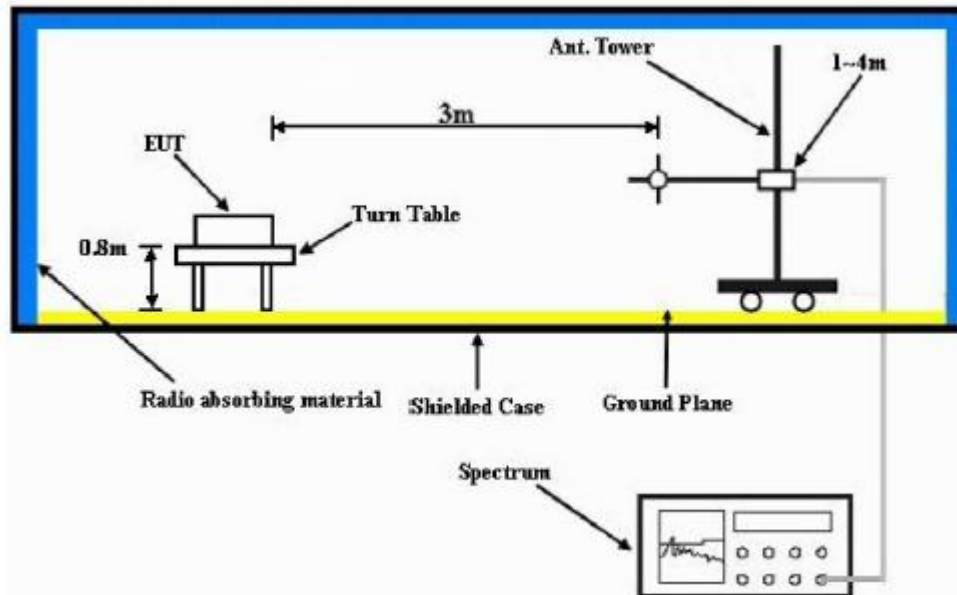
10MHz





1.12. Radiated Spurious Emission

1.12.1. Test Setup



- 1) The spectrum setting for scanning Radiated Emission below 1 GHz is RBW = 100 kHz, VBW = 300 kHz and above 1 GHz is RBW = 1MHz, VBW = 3MHz. Detector mode is positive peak.
- 2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the Turn Table at 0.8m height for below 1Ghz measurement and at 1.5m height for above 1GHz measurement, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
- 4) Final Radiated Spurious Emission = “Read Value” + Measured substitution value.

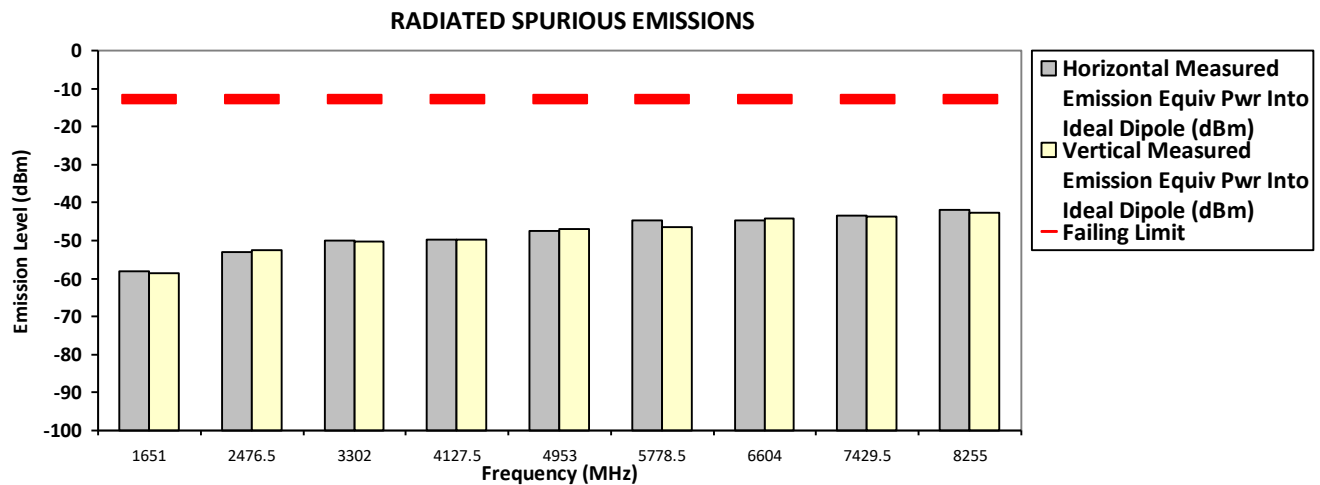
1.12.2. Test Limit

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

1.12.3. Radiated Spurious Emission – LTE Band 5 (824-849MHz)

SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N: 734TYF0069** **SR:27331-EMC-00029**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 5) X-Plane
825.500000 MHz (Low) **Bandwidth 3MHz** **0.270 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1651.0000	-13.0000	-57.9595 **	-58.5235 **
2476.5000	-13.0000	-52.9118 **	-52.5918 **
3302.0000	-13.0000	-49.9002 **	-50.2167 **
4127.5000	-13.0000	-49.7082 **	-49.8659 **
4953.0000	-13.0000	-47.3898 **	-46.9752 **
5778.5000	-13.0000	-44.7124 **	-46.5302 **
6604.0000	-13.0000	-44.7115 **	-44.3152 **
7429.5000	-13.0000	-43.4412 **	-43.7781 **
8255.0000	-13.0000	-41.9345 **	-42.5766 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

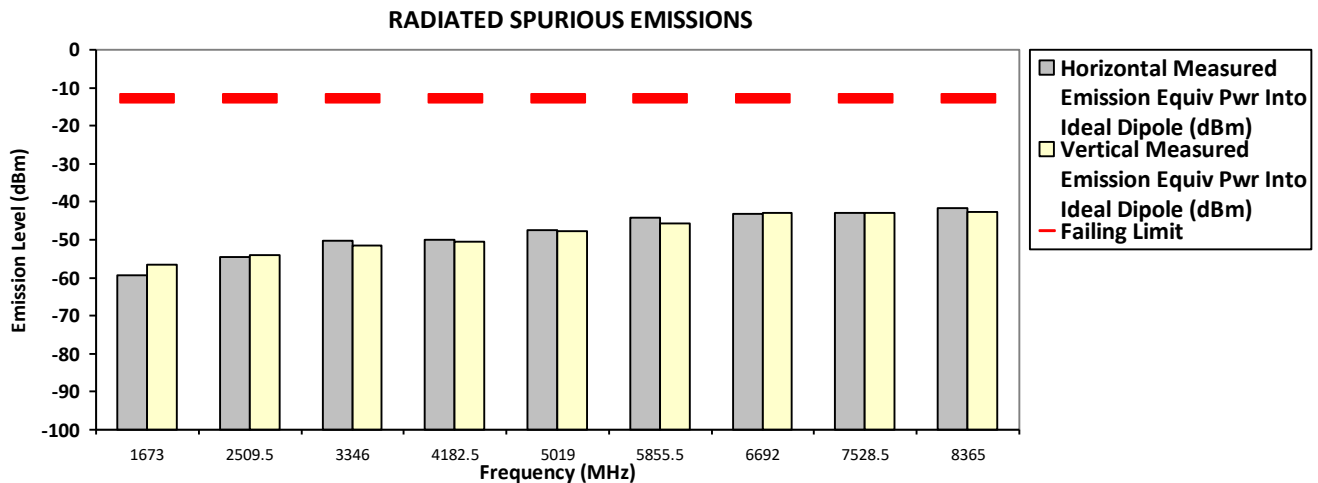
Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) X-Plane
 836.500000 MHz (Mid) Bandwidth 1.4MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1673.0000	-13.0000	-59.4138 **	-56.6741 **
2509.5000	-13.0000	-54.5069 **	-53.9261 **
3346.0000	-13.0000	-50.1916 **	-51.3927 **
4182.5000	-13.0000	-49.8781 **	-50.5203 **
5019.0000	-13.0000	-47.5409 **	-47.8166 **
5855.5000	-13.0000	-44.2374 **	-45.6845 **
6692.0000	-13.0000	-43.1293 **	-42.8633 **
7528.5000	-13.0000	-43.0436 **	-43.0342 **
8365.0000	-13.0000	-41.6883 **	-42.6856 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

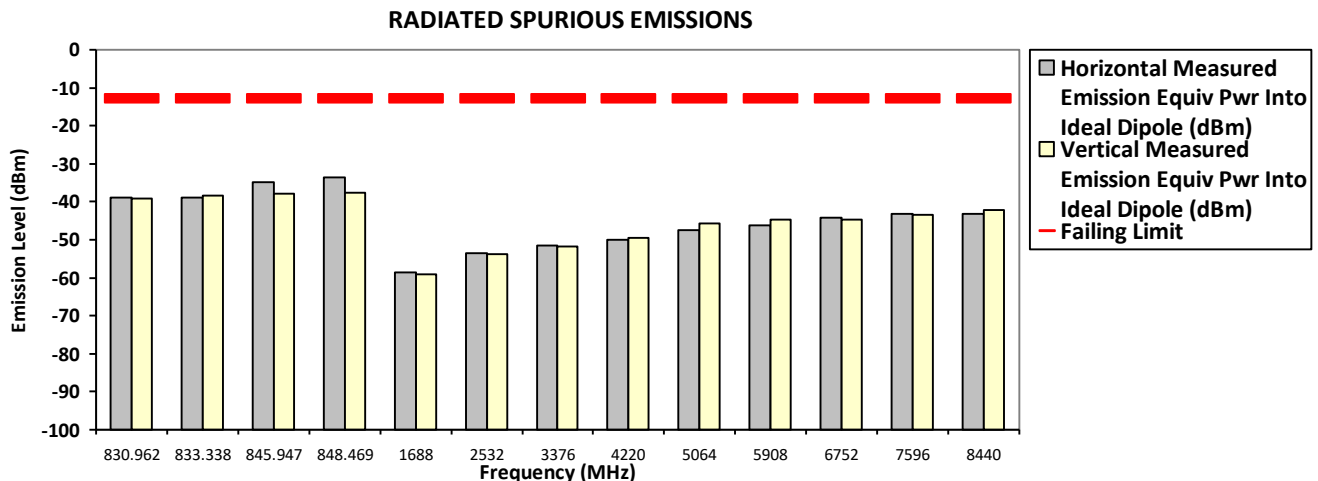
Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) X-Plane
 844.000000 MHz (High) Bandwidth 10MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1688.0000	-13.0000	-58.6139 **	-59.1421 **
2532.0000	-13.0000	-53.4458 **	-53.7701 **
3376.0000	-13.0000	-51.5160 **	-51.6433 **
4220.0000	-13.0000	-49.9356 **	-49.4566 **
5064.0000	-13.0000	-47.4537 **	-45.6784 **
5908.0000	-13.0000	-46.1579 **	-44.6949 **
6752.0000	-13.0000	-44.1714 **	-44.8078 **
7596.0000	-13.0000	-43.2887 **	-43.4141 **
8440.0000	-13.0000	-43.1172 **	-42.1269 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

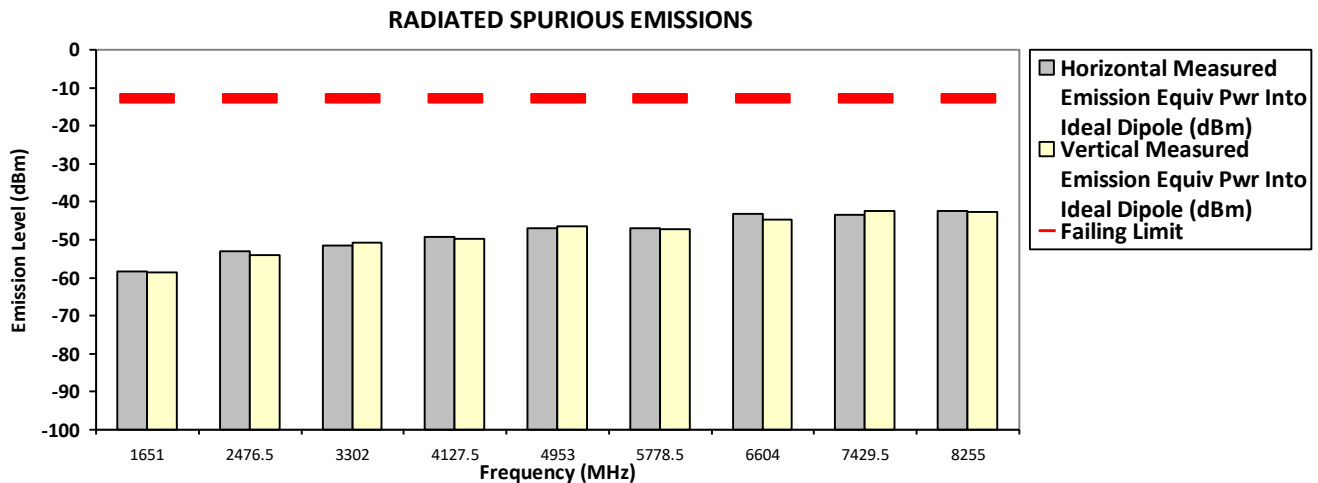
Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) Y-Plane
 825.500000 MHz (Low) Bandwidth 3MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1651.0000	-13.0000	-58.2785 **	-58.5161 **
2476.5000	-13.0000	-52.9541 **	-54.0710 **
3302.0000	-13.0000	-51.6395 **	-50.7937 **
4127.5000	-13.0000	-49.3474 **	-49.8716 **
4953.0000	-13.0000	-46.9962 **	-46.3455 **
5778.5000	-13.0000	-47.0614 **	-47.2085 **
6604.0000	-13.0000	-43.2087 **	-44.6353 **
7429.5000	-13.0000	-43.4009 **	-42.3395 **
8255.0000	-13.0000	-42.4920 **	-42.6443 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

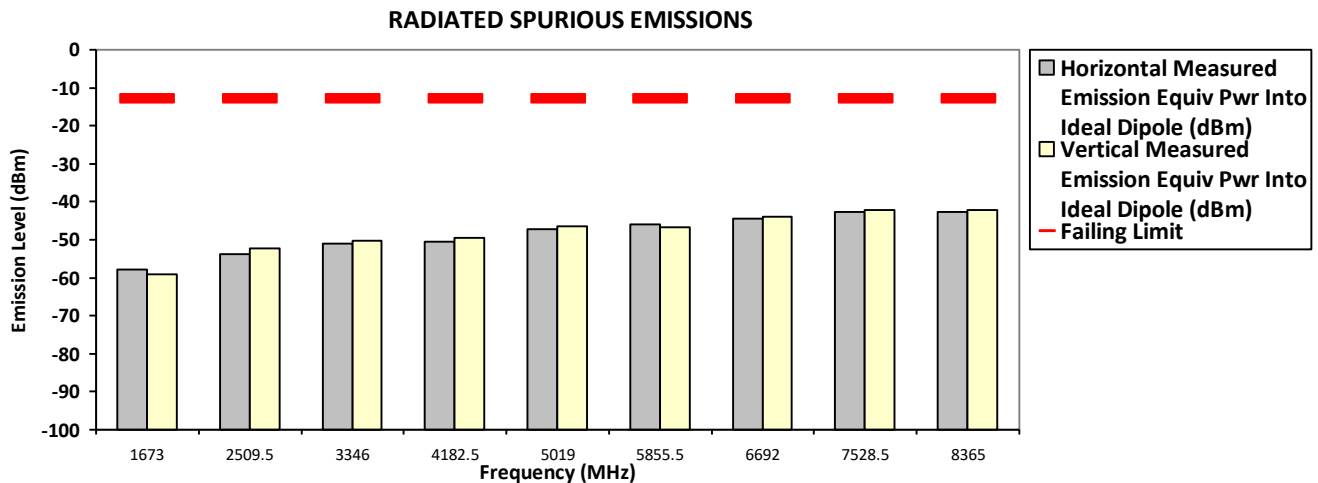
Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) Y-Plane
 836.500000 MHz (Mid) Bandwidth 1.4MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1673.0000	-13.0000	-57.7973 **	-58.9791 **
2509.5000	-13.0000	-53.7728 **	-52.3816 **
3346.0000	-13.0000	-50.9249 **	-50.3304 **
4182.5000	-13.0000	-50.4337 **	-49.4715 **
5019.0000	-13.0000	-47.1788 **	-46.4512 **
5855.5000	-13.0000	-45.9586 **	-46.6060 **
6692.0000	-13.0000	-44.3871 **	-43.8188 **
7528.5000	-13.0000	-42.7257 **	-42.1568 **
8365.0000	-13.0000	-42.5510 **	-42.2071 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

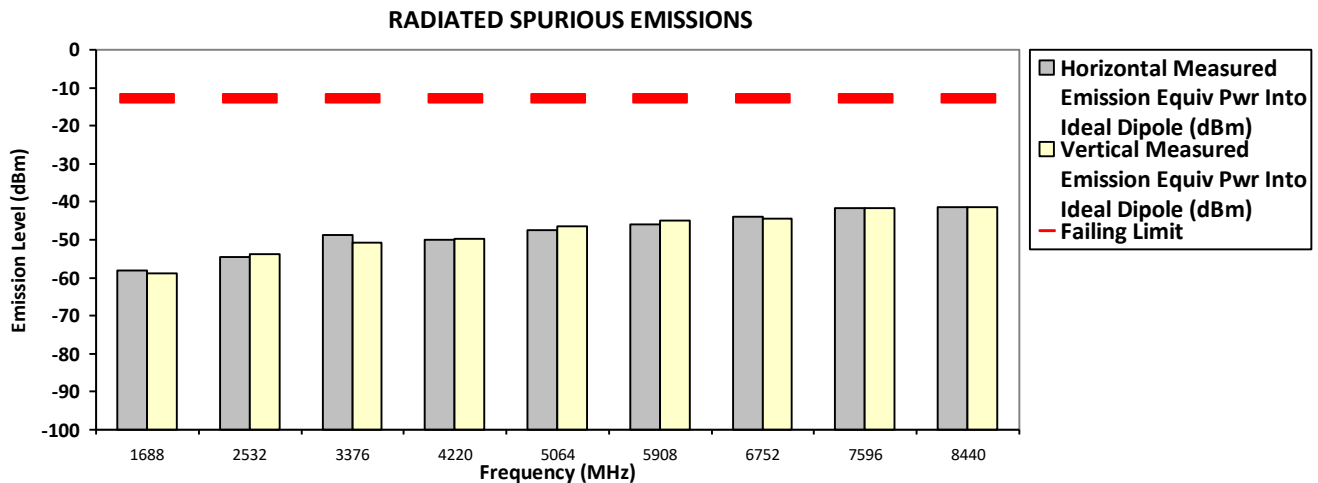
System MU: 4.03 dB

Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N: 734TYF0069** **SR:27331-EMC-00029**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 5) Y-Plane
844.000000 MHz (High) **Bandwidth 10MHz** **0.270 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1688.0000	-13.0000	-58.1025 **	-58.7297 **
2532.0000	-13.0000	-54.5320 **	-53.7355 **
3376.0000	-13.0000	-48.8095 **	-50.8413 **
4220.0000	-13.0000	-50.0364 **	-49.6745 **
5064.0000	-13.0000	-47.4321 **	-46.4488 **
5908.0000	-13.0000	-45.8610 **	-45.0204 **
6752.0000	-13.0000	-44.0314 **	-44.3223 **
7596.0000	-13.0000	-41.6203 **	-41.7436 **
8440.0000	-13.0000	-41.5303 **	-41.4429 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

Temp(Deg): 23.3 Hum(%RH): 69.3

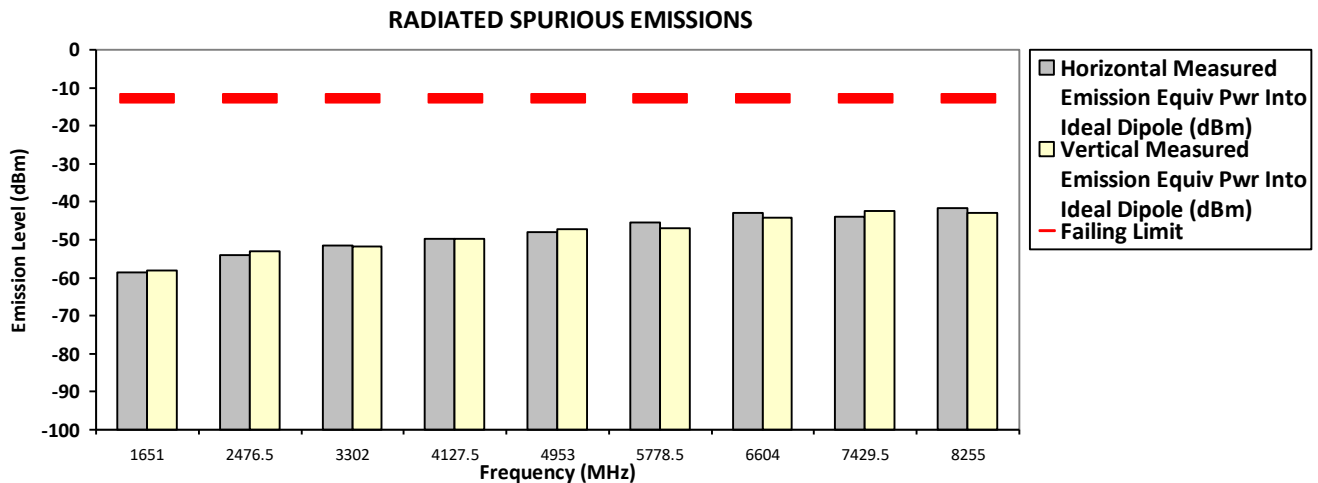
Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) Z-Plane
 825.500000 MHz (Low) Bandwidth 3MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1651.0000	-13.0000	-58.5606 **	-58.1771 **
2476.5000	-13.0000	-54.0963 **	-53.1284 **
3302.0000	-13.0000	-51.5646 **	-51.8154 **
4127.5000	-13.0000	-49.7148 **	-49.7796 **
4953.0000	-13.0000	-48.0476 **	-47.3266 **
5778.5000	-13.0000	-45.5401 **	-47.0497 **
6604.0000	-13.0000	-42.8409 **	-44.0717 **
7429.5000	-13.0000	-43.8508 **	-42.4331 **
8255.0000	-13.0000	-41.6269 **	-42.8885 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

Temp(Deg): 23.3 Hum(%RH): 69.3

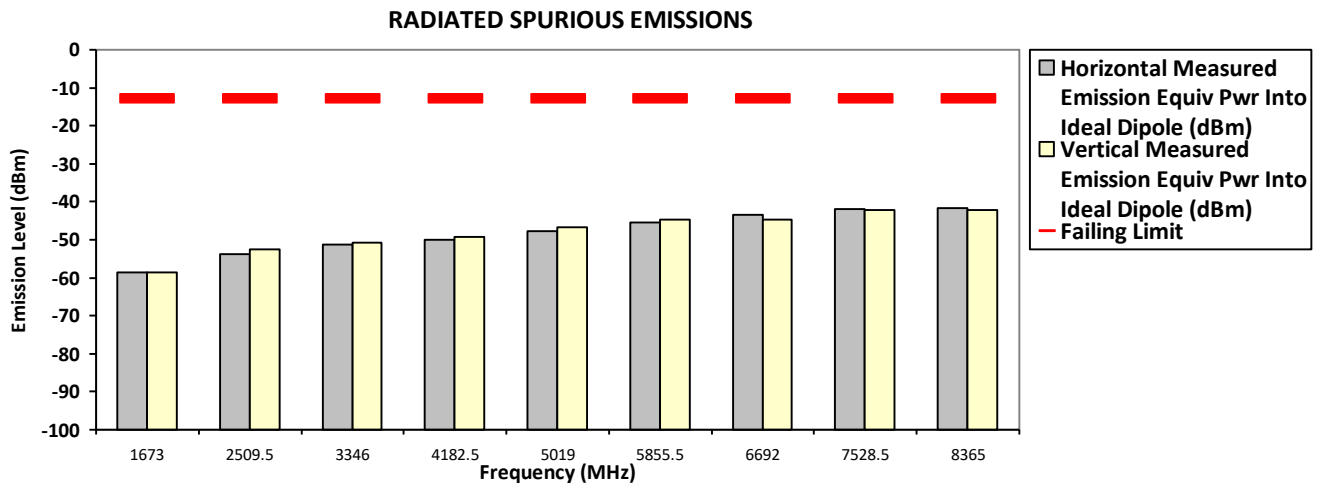
Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) Z-Plane
 836.500000 MHz (Mid) Bandwidth 1.4MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1673.0000	-13.0000	-58.5861 **	-58.4968 **
2509.5000	-13.0000	-53.7601 **	-52.6395 **
3346.0000	-13.0000	-51.3703 **	-50.8418 **
4182.5000	-13.0000	-49.9755 **	-49.1361 **
5019.0000	-13.0000	-47.8272 **	-46.7154 **
5855.5000	-13.0000	-45.5225 **	-44.7810 **
6692.0000	-13.0000	-43.5367 **	-44.7820 **
7528.5000	-13.0000	-41.8858 **	-42.1828 **
8365.0000	-13.0000	-41.6769 **	-42.2350 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

System MU: 4.03 dB

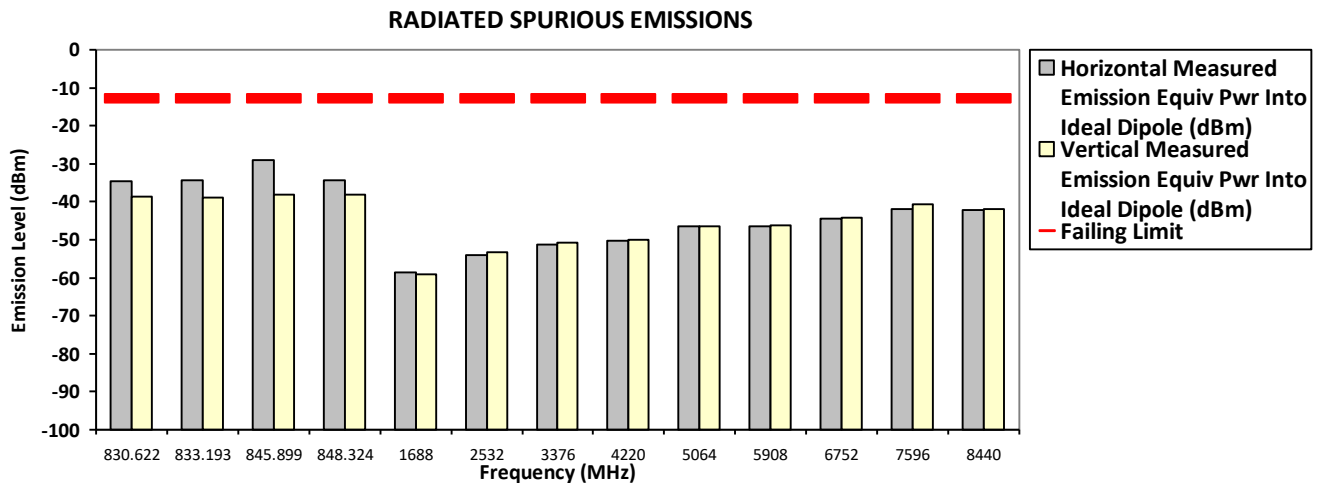
Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00029
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 5) Z-Plane
 844.000000 MHz (High) Bandwidth 10MHz 0.270 Watt(s) /Max Power

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
1688.0000	-13.0000	-58.5262 **	-58.9657 **
2532.0000	-13.0000	-54.0204 **	-53.2497 **
3376.0000	-13.0000	-51.3259 **	-50.8360 **
4220.0000	-13.0000	-50.3315 **	-49.9486 **
5064.0000	-13.0000	-46.4852 **	-46.4544 **
5908.0000	-13.0000	-46.4606 **	-46.2694 **
6752.0000	-13.0000	-44.4034 **	-44.2344 **
7596.0000	-13.0000	-41.9240 **	-40.7452 **
8440.0000	-13.0000	-42.2111 **	-41.8763 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
 Motorola Penang EMC Lab - Test Performed by: Azil&Qawiman Fri, 22 Apr, 2022

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.

*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported

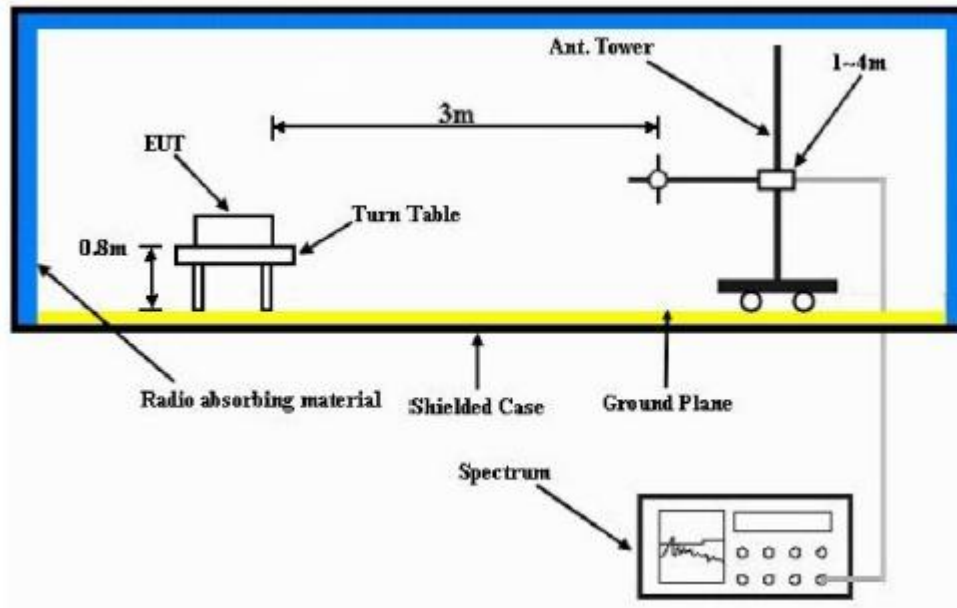
System MU: 4.03 dB

Temp(Deg): 23.3 Hum(%RH): 69.3

Remarks: Passed Results Marginal Results Failed Results

1.13. Effective Radiated Power (ERP)

1.13.1. Test Setup



- 1) The spectrum setting for Effective Radiated Power (ERP) is RBW = 100 kHz, VBW = 300 kHz. Detector Mode is RMS.
- 2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the Turn Table at 0.8m height for below 1Ghz measurement and at 1.5m height for above 1GHz measurement, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
- 4) ERP = “Read Value” + Measured substitution value.

1.13.2. Test Limit

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

1.13.3. Effective Radiated Power (ERP) - LTE Band 5 (824-849MHz)

Not Performed.

--End of Test Report--