

	    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.C																												
<table><tr><td>Date/s Tested</td><td>: 31-March-2022 - 25-June-2022</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>: Hand-held</td></tr><tr><td>Product Version (PMN)</td><td>: MSLB-MKZ920</td></tr><tr><td>Model Number (HVIN)</td><td>: AAH90UCU9RH1AN</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>: D02.22.01.0103 (BP), D00.01.86 (AP)</td></tr></table>  The equipment was tested accordance to the requirement listed below: <table><tr><td>(LTE Band 12) FCC 47 CFR Part 2 / 27 ISED RSS GEN / 130</td><td>PASS</td></tr></table>		Date/s Tested	: 31-March-2022 - 25-June-2022	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	: Hand-held	Product Version (PMN)	: MSLB-MKZ920	Model Number (HVIN)	: AAH90UCU9RH1AN	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)	: D02.22.01.0103 (BP), D00.01.86 (AP)	(LTE Band 12) FCC 47 CFR Part 2 / 27 ISED RSS GEN / 130	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	29-June-2022	Lim Khay Kwang
Rev B.	Updated Start Frequency from 698MHz to 699MHz	26-July-2022	Lim Khay Kwang
Rev C.	Update Frequency Stability Spec Limit	27-July-2022	Lim Khay Kwang

1.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Results	Remarks	Serial Number Tested
2.1046	RSS-Gen 6.12 RSS-130 4.1	Conducted RF Output Power	Pass	Meet the requirement of limit	734TYF0012
-	RSS 130 4.4	Peak-to-Average Power Ratio	Pass	Meet the requirement of limit	734TYF0012
2.1046	RSS-Gen 6.7	Occupied Bandwidth (26dBc, 99%)	Pass	Meet the requirement of limit	734TYF0012
2.1055 27.54	RSS-130 4.3	Frequency Stability	Pass	Meet the requirement of limit	734TYF0012
2.1051 27.53(g)	RSS-Gen 6.13 RSS-130 4.6	Band Edge Conducted Spurious Emission	Pass	Meet the requirement of limit	734TYF0012
2.1051 27.53(g)	RSS-Gen 6.13 RSS-130 4.6	Conducted Spurious Emissions	Pass	Meet the requirement of limit	734TYF0012
2.1053 27.53 (g)	RSS-130 4.6	Radiated Spurious Emission	Pass	Meet the requirement of limit	734TYF0069
2.1049 27.50(c)(9) (10)	RSS-130 4.4	Effective Radiated Power (ERP)	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 Thermohygrometer	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 8/900 NAG MODEL			
Brand	Motorola Solutions			
Test Model	AAH90UCU9RH1AN			
Power Supply Rating	7.5Vdc			
Mode of operation	LTE Band 12			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 12	Channel Bandwidth 1.4MHz	699.7MHz~715.3MHz	
		Channel Bandwidth 3MHz	700.5MHz~714.5MHz	
		Channel Bandwidth 5MHz	701.5MHz~713.5MHz	
		Channel Bandwidth 10MHz	704.0MHz~711.0MHz	
Max. ERP Power	LTE Band 12 QPSK	Channel Bandwidth 1.4MHz	21.832dBm (0.152W)	
		Channel Bandwidth 3MHz	21.96dBm (0.157W)	
		Channel Bandwidth 5MHz	22.019dBm (0.159W)	
		Channel Bandwidth 10MHz	21.959dBm (0.157W)	
	LTE Band 12 16QAM	Channel Bandwidth 1.4MHz	20.991dBm (0.126w)	
		Channel Bandwidth 3MHz	21.179dBm (0.131W)	
		Channel Bandwidth 5MHz	21.132dBm (0.130W)	
		Channel Bandwidth 10MHz	21.264dBm (0.134W)	
Emission Designator	LTE Band 12		QPSK	16QAM
		Channel Bandwidth 1.4MHz	1M09G7D	1M08D7W
		Channel Bandwidth 3MHz	2M68G7D	2M68D7W
		Channel Bandwidth 5MHz	4M47G7D	4M48D7W

		Channel Bandwidth 10MHz	8M95G7D	8M93D7W
Antenna Type	LTE Band 12	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 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc OOB License Digital Systems v02r01

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 12	1.4 MHz	23017 ~ 23173	23017	23095	23173	699.7	707.5	715.3
	3 MHz	23025 ~ 23165	23025	23095	23165	700.5	707.5	714.5
	5 MHz	23035 ~ 23155	23035	23095	23155	701.5	707.5	713.5
	10 MHz	23060 ~ 23130	23060	23095	23130	704.0	707.5	711.0

1.5. Test Mode Applicability and Tested Channel Detail.

LTE Band 12

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Uplink Modulation	Mode
Conducted RF Output Power	23017 ~ 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	As per table 1.6.3
	23025 ~ 23165	23025, 23095, 23165	3 MHz		
	23035 ~ 23155	23035, 23095, 23155	5 MHz		
	23060 ~ 23130	23060, 23095, 23130	10 MHz		
Peak to Average Power Ratio	23017 ~ 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	23025 ~ 23165	23025, 23095, 23165	3 MHz		15 RB / 0 RB Offset
	23035 ~ 23155	23035, 23095, 23155	5 MHz		25 RB / 0 RB Offset
	23060 ~ 23130	23060, 23095, 23130	10 MHz		50 RB / 0 RB Offset
Occupied Bandwidth	23017 ~ 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	23025 ~ 23165	23025, 23095, 23165	3 MHz		15 RB / 0 RB Offset
	23035 ~ 23155	23035, 23095, 23155	5 MHz		25 RB / 0 RB Offset
	23060 ~ 23130	23060, 23095, 23130	10 MHz		50 RB / 0 RB Offset
Frequency Stability	23017 ~ 23173	23017, 23173	1.4 MHz	QPSK	6 RB / 0 RB Offset
	23025 ~ 23165	23025, 23165	3 MHz		15 RB / 0 RB Offset
	23035 ~ 23155	23035, 23155	5 MHz		25 RB / 0 RB Offset
	23060 ~ 23130	23060, 23130	10 MHz		50 RB / 0 RB Offset
Band Edge Conducted Spurious	23017 ~ 23173	23017, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
					1 RB / 5 RB Offset

Emission					6 RB / 0 RB Offset
					1 RB / 0 RB Offset
	23025 ~ 23165	23025, 23165	3 MHz		1 RB / 14 RB Offset
					15 RB / 0 RB Offset
	23035 ~ 23155	23035, 23155	5 MHz		1 RB / 0 RB Offset
					1 RB / 24 RB Offset
					25 RB / 0 RB Offset
	23060 ~ 23130	23060, 23130	10 MHz		1 RB / 0 RB Offset
					1 RB / 49 RB Offset
					50 RB / 0 RB Offset
Conducted Spurious Emission	23017 ~ 23173	23017, 23095, 23173	1.4 MHz	QPSK	1 RB / 3 RB Offset
	23025 ~ 23165	23025, 23095, 23165	3 MHz		1 RB / 14 RB Offset
	23035 ~ 23155	23035, 23095, 23155	5 MHz		1 RB / 13 RB Offset
	23060 ~ 23130	23060, 23095, 23130	10 MHz		1 RB / 25 RB Offset
Radiated Spurious Emission	23035 ~ 23155	23035	5 MHz	QPSK	1 RB / 13 RB Offset
	23060 ~ 23130	23095	10 MHz		1 RB / 0 RB Offset
	23060 ~ 23130	23130	10 MHz		1 RB / 49 RB Offset
Effective Radiated Power (ERP)	23017 ~ 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	As per table 1.6.4
	23025 ~ 23165	23025, 23095, 23165	3 MHz		
	23035 ~ 23155	23035, 23095, 23155	5 MHz		
	23060 ~ 23130	23060, 23095, 23130	10 MHz		

NOTE:

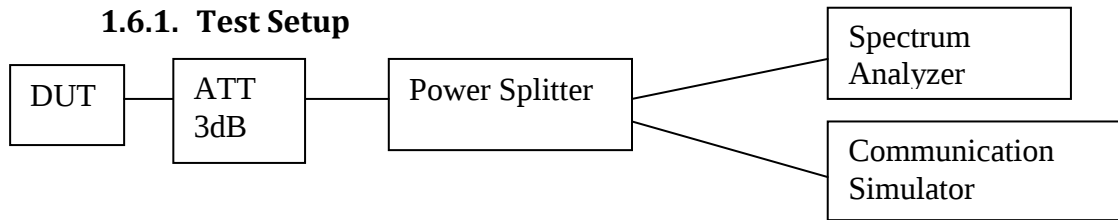
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK mode is higher than 16QAM mode. Therefore, only Conducted Spurious Emission and Radiated Emission had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating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

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: Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

ISED: The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

1.6.3. Conducted RF Output Power – LTE Band 12 (699-716MHz)

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
			23017	23095	23173	23017	23095	23173
			699.7 MHz	707.5 MHz	715.3 MHz	699.7 MHz	707.5 MHz	715.3 MHz
Band 12 / 1.4 MHz	1	0	22.712	23.654	23.614	21.745	22.709	22.621
	1	3	22.9	23.692	23.648	21.992	22.787	22.671
	1	5	22.783	23.627	23.604	21.869	22.713	22.611
	3	0	22.655	23.545	23.558	21.921	22.795	22.802
	3	2	22.76	23.607	23.622	22.008	22.849	22.851
	3	3	22.813	23.556	23.551	21.975	22.776	22.771
	6	0	21.63	22.6	22.547	20.845	21.728	21.692

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
			23025	23095	23165	23025	23095	23165
			700.5 MHz	707.5 MHz	714.5 MHz	700.5 MHz	707.5 MHz	714.5 MHz
Band 12 / 3MHz	1	0	22.751	23.597	23.57	21.795	22.983	22.677
	1	7	23.173	23.67	23.725	22.224	23.039	22.855
	1	14	23.82	23.559	23.649	22.829	22.86	22.724
	8	0	21.809	22.682	22.571	20.962	21.9	21.621
	8	4	22.024	22.671	22.704	21.213	21.892	21.732
	8	7	22.392	22.639	22.655	21.472	21.854	21.665
	15	0	22.189	22.685	22.603	21.184	21.813	21.612

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
			23035	23095	23155	23035	23095	23155
			701.5 MHz	707.5 MHz	713.5 MHz	701.5 MHz	707.5 MHz	713.5 MHz
Band 12 / 5MHz	1	0	22.74	23.7	23.437	21.77	22.963	22.438
	1	13	23.879	23.71	23.586	22.922	22.992	22.601
	1	25	23.71	23.63	23.581	22.857	22.913	22.608
	12	0	21.94	22.712	22.647	21.043	21.75	21.704
	12	6	22.608	22.717	22.645	21.602	21.757	21.716
	12	13	22.73	22.698	22.606	21.743	21.704	21.639
	25	0	22.737	22.706	22.614	21.787	21.761	21.667

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
			23060	23095	23130	23060	23095	23130
			704.0 MHz	707.5 MHz	711.0 MHz	704.0 MHz	707.5MHz	711.0 MHz
Band 12 / 10MHz	1	0	22.774	23.735	23.646	21.775	23.124	22.779
	1	25	23.819	23.584	23.553	22.837	22.96	22.721
	1	49	23.769	23.645	23.731	22.793	22.94	22.864
	25	0	22.833	22.724	22.72	21.961	21.839	21.852
	25	13	22.854	22.729	22.68	21.976	21.821	21.813
	25	25	22.824	22.678	22.735	21.916	21.784	21.861
	50	0	22.842	22.71	22.69	21.94	21.813	21.744

1.6.4. Effective Radiated Power (ERP) - LTE Band 12 (699-716MHz)

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
			23017	23095	23173	23017	23095	23173
			699.7 MHz	707.5 MHz	715.3 MHz	699.7 MHz	707.5 MHz	715.3 MHz
Band 12 / 1.4 MHz	1	0	20.852	21.794	21.754	19.885	20.849	20.761
	1	3	21.04	21.832	21.788	20.132	20.927	20.811
	1	5	20.923	21.767	21.744	20.009	20.853	20.751
	3	0	20.795	21.685	21.698	20.061	20.935	20.942
	3	2	20.9	21.747	21.762	20.148	20.989	20.991
	3	3	20.953	21.696	21.691	20.115	20.916	20.911
	6	0	19.77	20.74	20.687	18.985	19.868	19.832

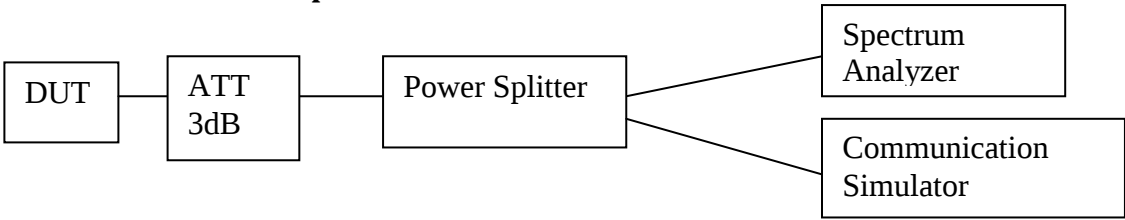
Effective Radiated Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			23025	23095	23165	23025	23095	23165
			700.5 MHz	707.5 MHz	714.5 MHz	700.5 MHz	707.5 MHz	714.5 MHz
Band 12 / 3MHz	1	0	20.891	21.737	21.71	19.935	21.123	20.817
	1	7	21.313	21.81	21.865	20.364	21.179	20.995
	1	14	21.96	21.699	21.789	20.969	21	20.864
	8	0	19.949	20.822	20.711	19.102	20.04	19.761
	8	4	20.164	20.811	20.844	19.353	20.032	19.872
	8	7	20.532	20.779	20.795	19.612	19.994	19.805
	15	0	20.329	20.825	20.743	19.324	19.953	19.752

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
			23035	23095	23155	23035	23095	23155
			701.5 MHz	707.5 MHz	713.5 MHz	701.5 MHz	707.5 MHz	713.5 MHz
Band 12 / 5MHz	1	0	20.88	21.84	21.577	19.91	21.103	20.578
	1	13	22.019	21.85	21.726	21.062	21.132	20.741
	1	25	21.85	21.77	21.721	20.997	21.053	20.748
	12	0	20.08	20.852	20.787	19.183	19.89	19.844
	12	6	20.748	20.857	20.785	19.742	19.897	19.856
	12	13	20.87	20.838	20.746	19.883	19.844	19.779
	25	0	20.877	20.846	20.754	19.927	19.901	19.807

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
			23060	23095	23130	23060	23095	23130
			704.0 MHz	707.5 MHz	711.0 MHz	704.0 MHz	707.5MHz	711.0 MHz
Band 12 / 10MHz	1	0	20.914	21.875	21.786	19.915	21.264	20.919
	1	25	21.959	21.724	21.693	20.977	21.1	20.861
	1	49	21.909	21.785	21.871	20.933	21.08	21.004
	25	0	20.973	20.864	20.86	20.101	19.979	19.992
	25	13	20.994	20.869	20.82	20.116	19.961	19.953
	25	25	20.964	20.818	20.875	20.056	19.924	20.001
	50	0	20.982	20.85	20.83	20.08	19.953	19.884

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



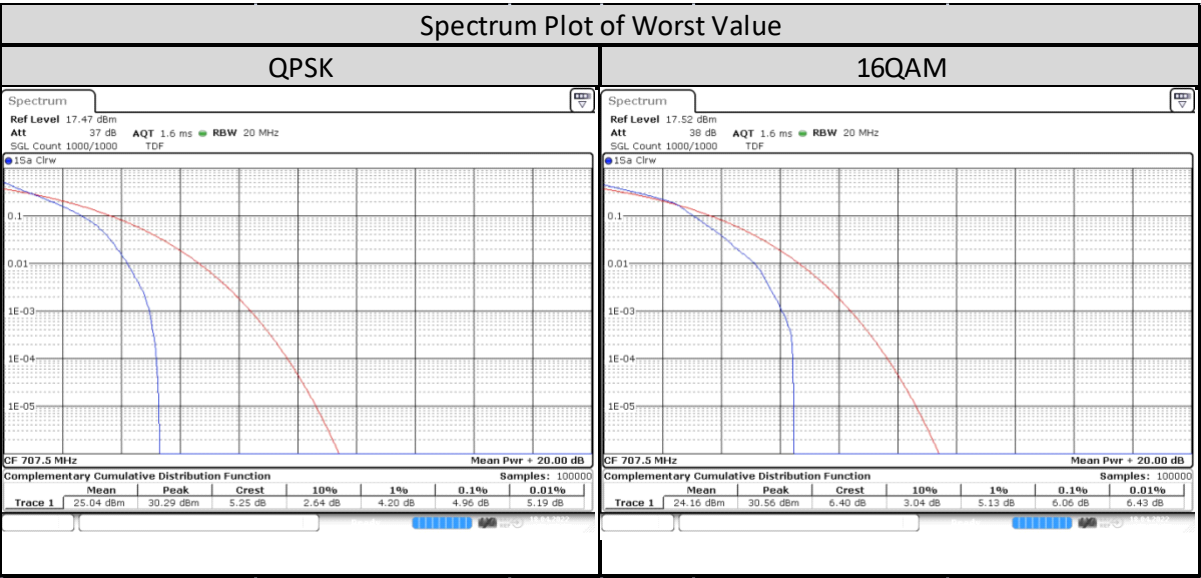
- 1. The DUT transmitter output port was connected to communication simulator with above setup.
- 2. Path loss for the measurement included.
- 3. Set DUT to transmit maximum power through communication simulator
- 4. Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum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

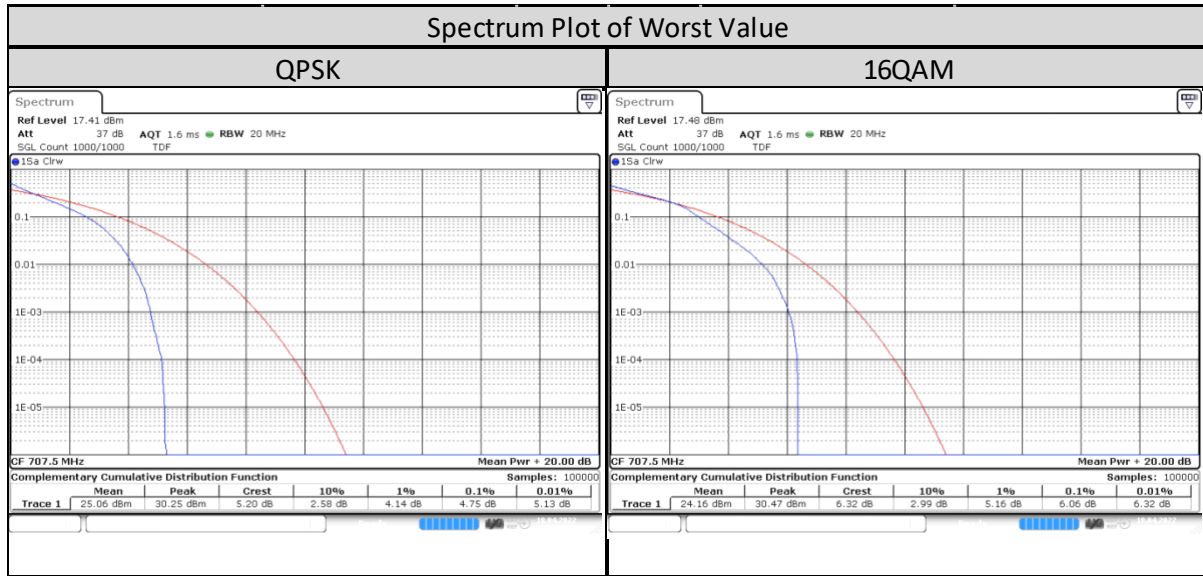
In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

1.7.3. Peak-to-Average Power Ratio - LTE Band 12 (699-716MHz)

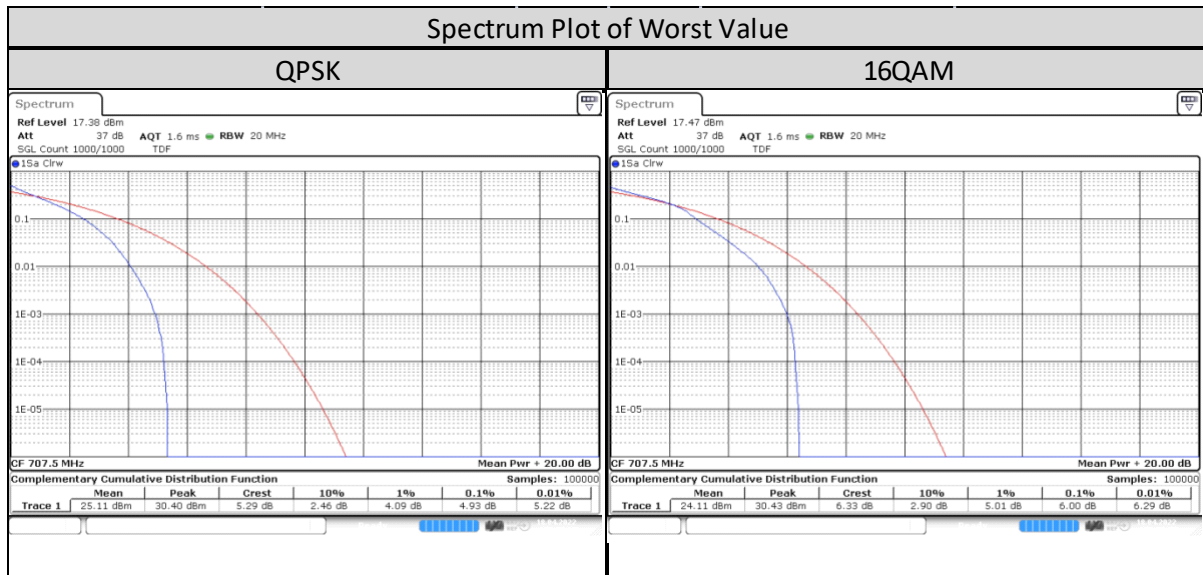
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 12/1.4MHz/6/0	Low CH 23017	699.7 MHz	4.464	5.449
	Mid CH 23095	707.5 MHz	4.957	6.058
	High CH 23173	715.3 MHz	0.232	5.971



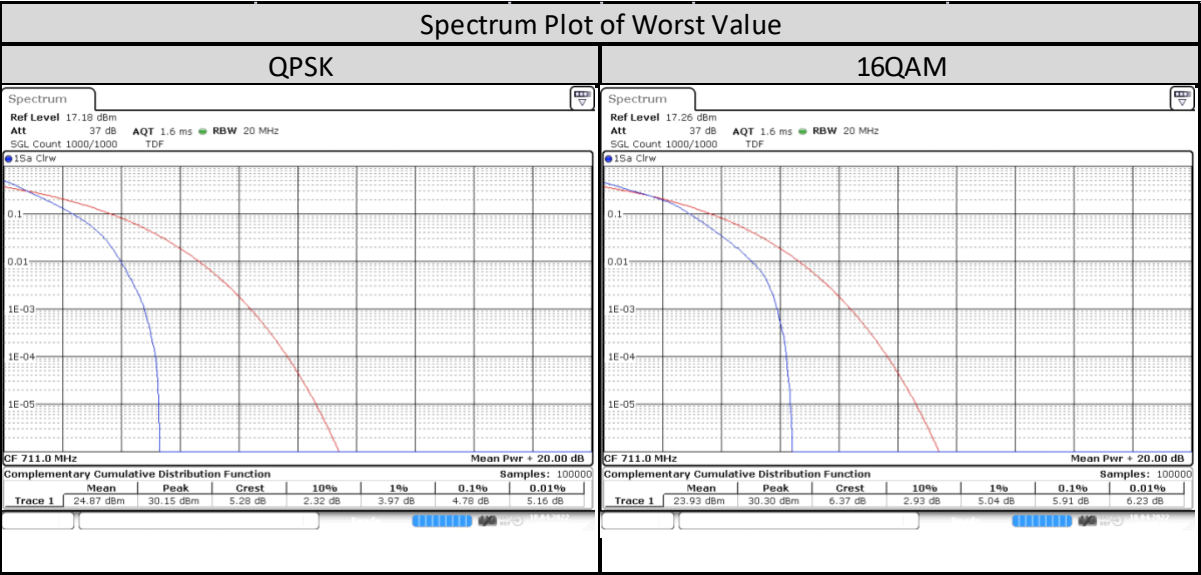
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 12/3MHz/15/0	Low CH 23025	700.5 MHz	4.435	5.304
	Mid CH 23095	707.5 MHz	4.754	6.058
	High CH 23165	714.5 MHz	4.754	5.971



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 12/5MHz/25/0	Low CH 23035	701.5 MHz	4.435	5.391
	Mid CH 23095	707.5 MHz	4.928	6
	High CH 23155	713.5 MHz	4.812	5.942

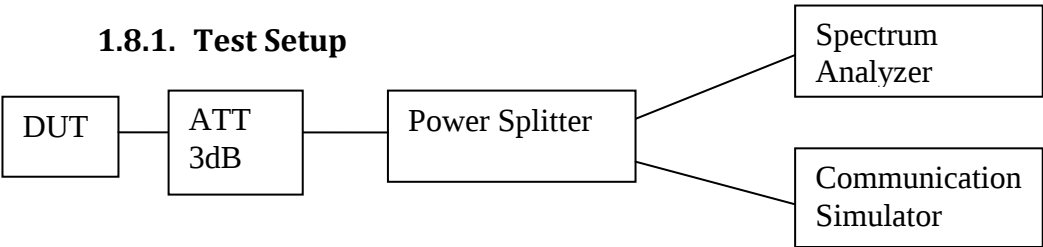


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 12/10MHz/50/0	Low CH 23060	704 MHz	4.609	5.797
	Mid CH 23095	707.5 MHz	4.754	5.797
	High CH 23130	711 MHz	4.783	5.913



1.8. Occupied Bandwidth

1.8.1. Test Setup



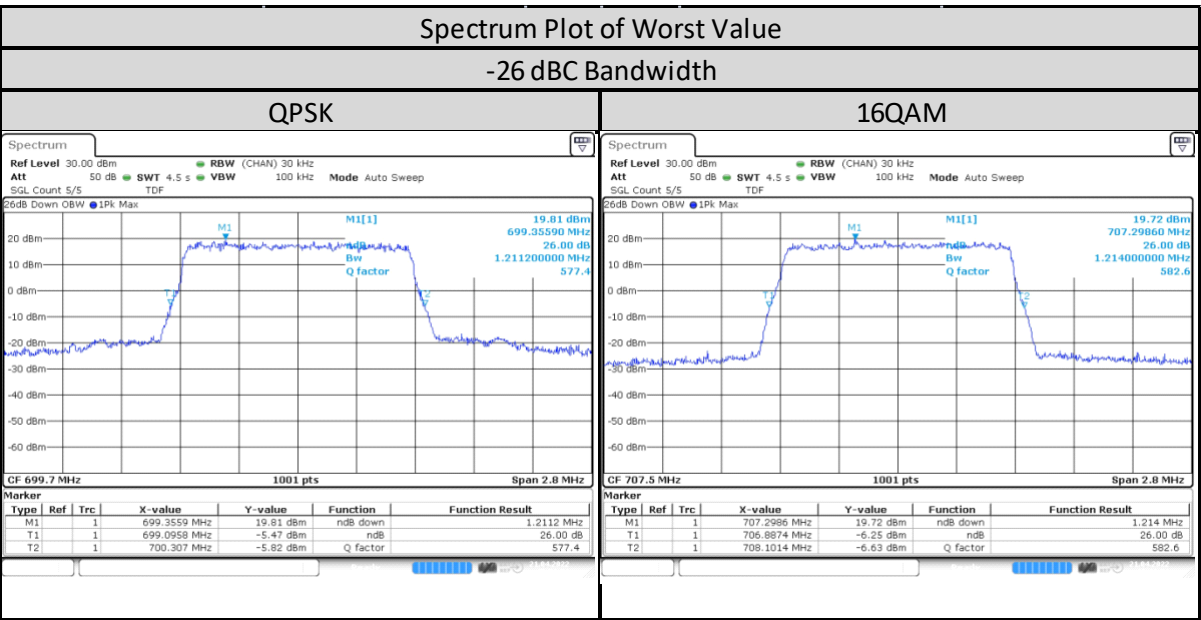
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) For LTE measurement, set DUT to transmit maximum power & full RB size through communication simulator.
- 4) For LTE measurement, set DUT to transmit maximum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

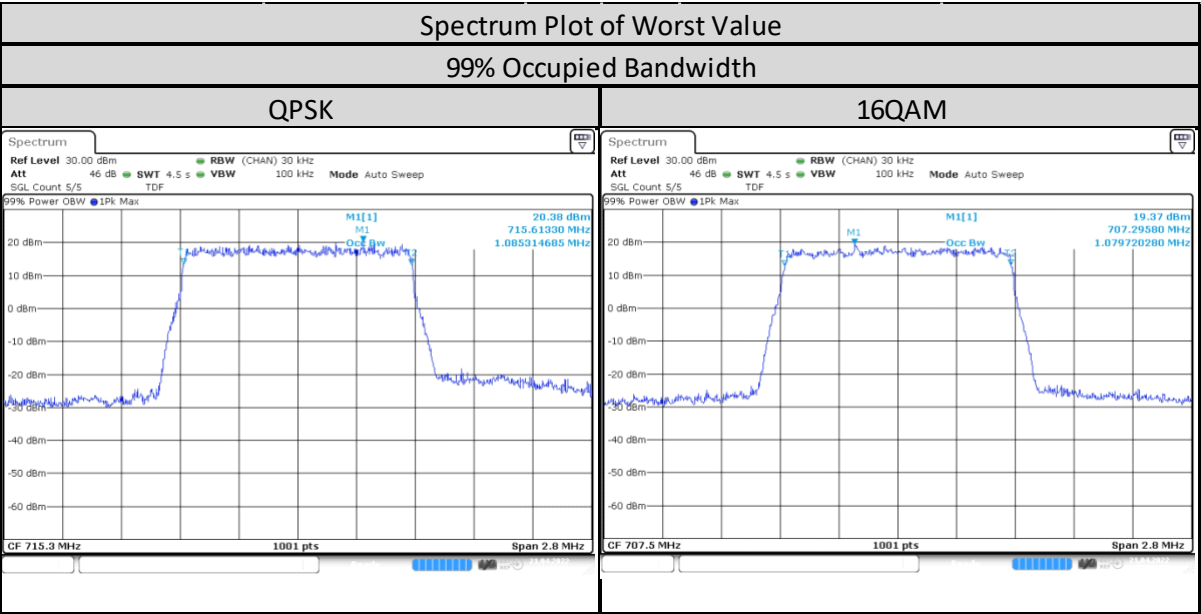
For measurement 99% of occupied bandwidth that is required by FCC 2.1049 and RSS Gen 6.6.

1.8.3. Occupied Bandwidth – LTE Band 12 (699-716MHz)

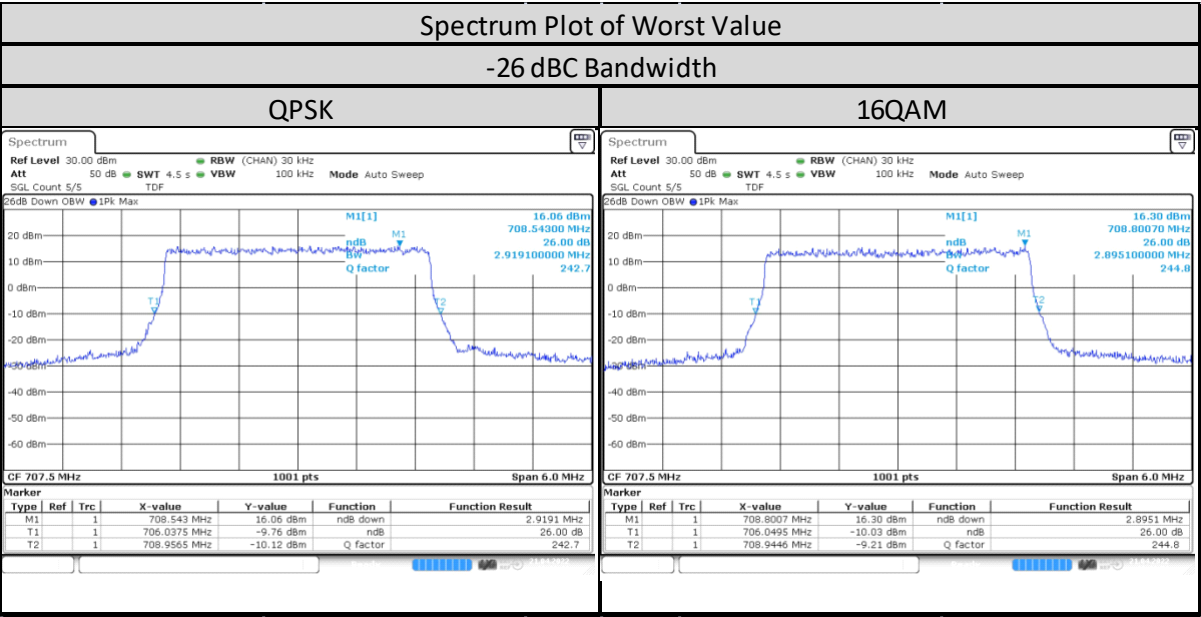
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/1.4MHz/6/0	Low CH 23017	699.7 MHz	1.211	1.211
	Mid CH 23095	707.5 MHz	1.206	1.214
	High CH 23173	715.3 MHz	1.211	1.203



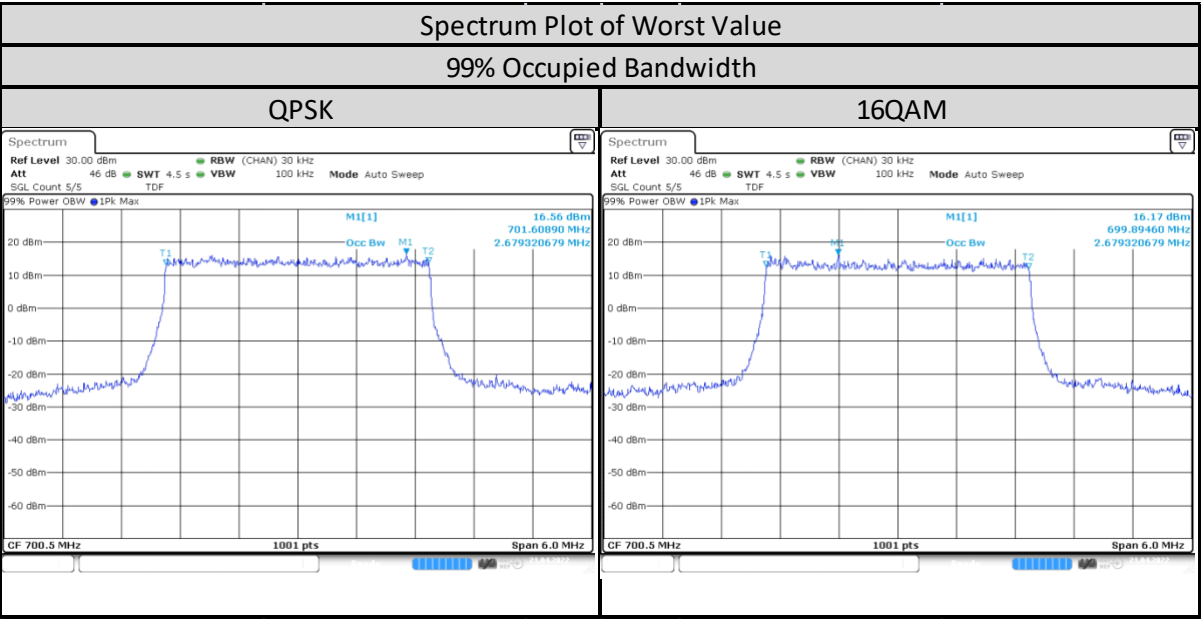
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/1.4MHz/6/0	Low CH 23017	699.7 MHz	1.08	1.077
	Mid CH 23095	707.5 MHz	1.08	1.08
	High CH 23173	715.3 MHz	1.085	1.08



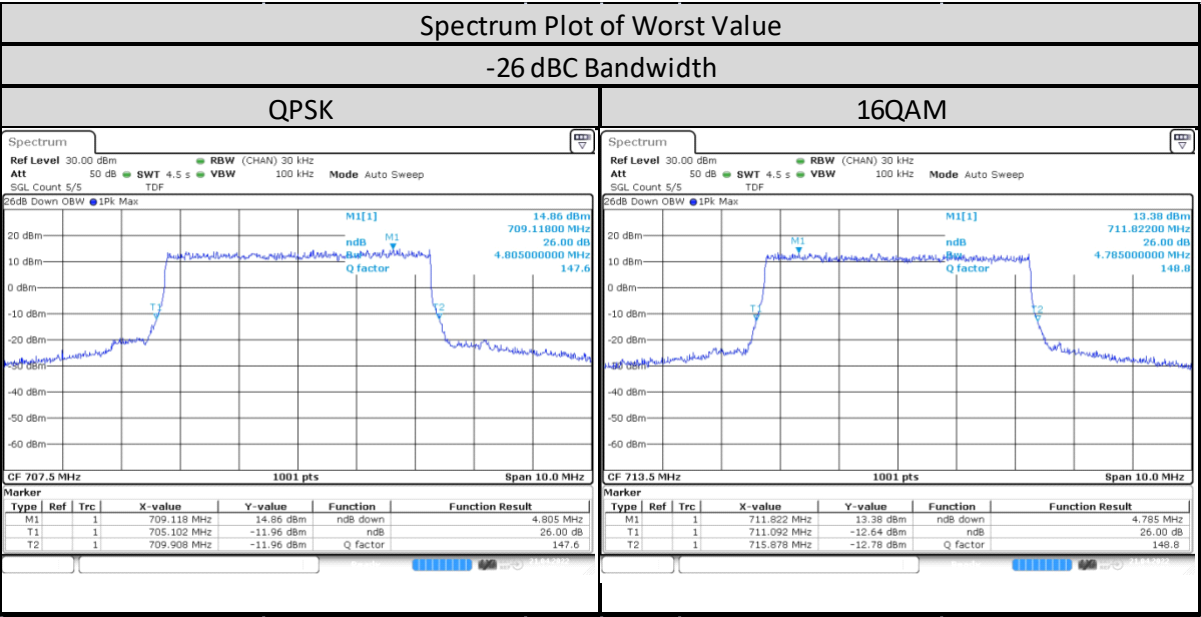
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/3MHz/15/0	Low CH 23025	700.5 MHz	2.901	2.889
	Mid CH 23095	707.5 MHz	2.919	2.895
	High CH 23165	714.5 MHz	2.895	2.895



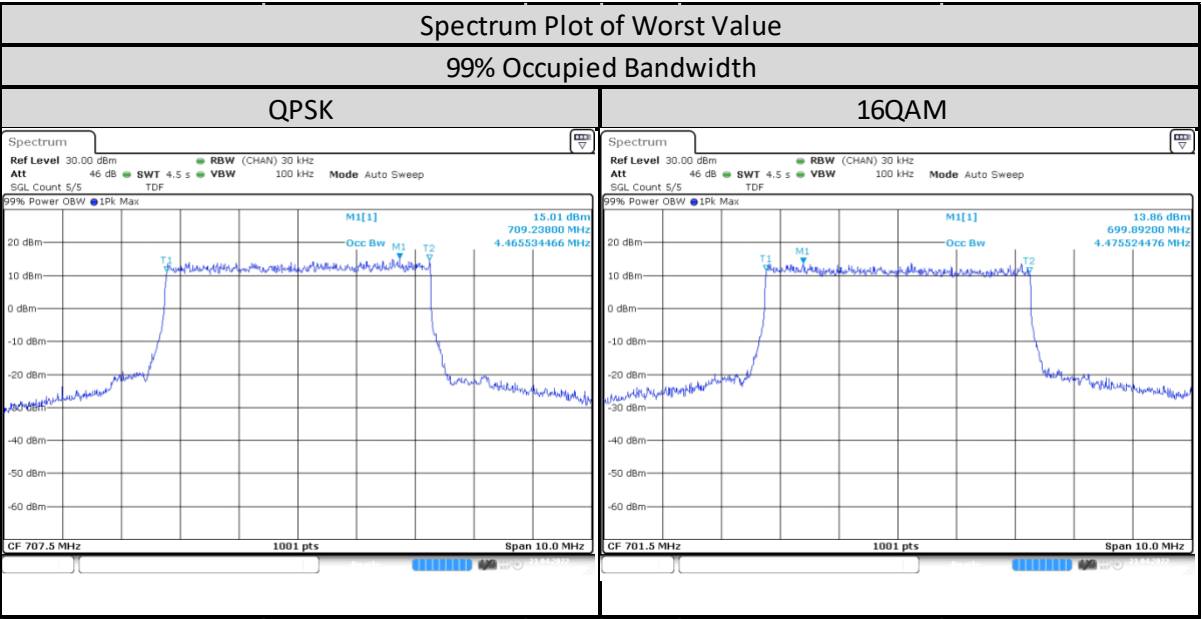
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/3MHz/15/0	Low CH 23025	700.5 MHz	2.679	2.679
	Mid CH 23095	707.5 MHz	2.673	2.679
	High CH 23165	714.5 MHz	2.679	2.673



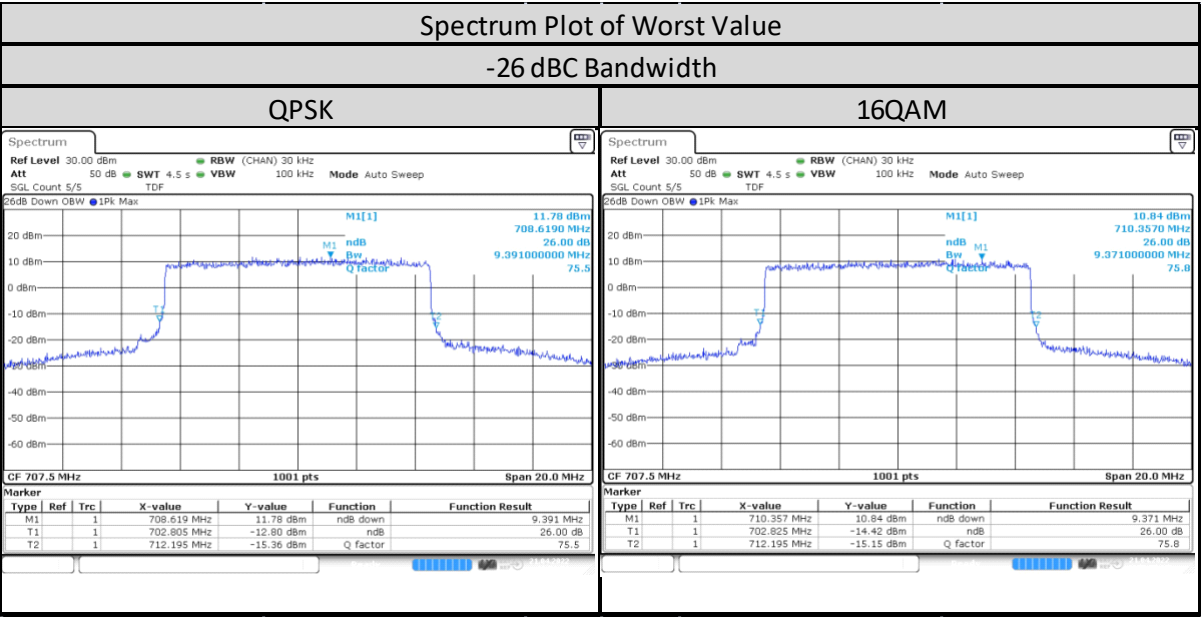
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/5MHz/25/0	Low CH 23035	701.5 MHz	4.755	4.765
	Mid CH 23095	707.5 MHz	4.805	4.745
	High CH 23155	713.5 MHz	4.775	4.785



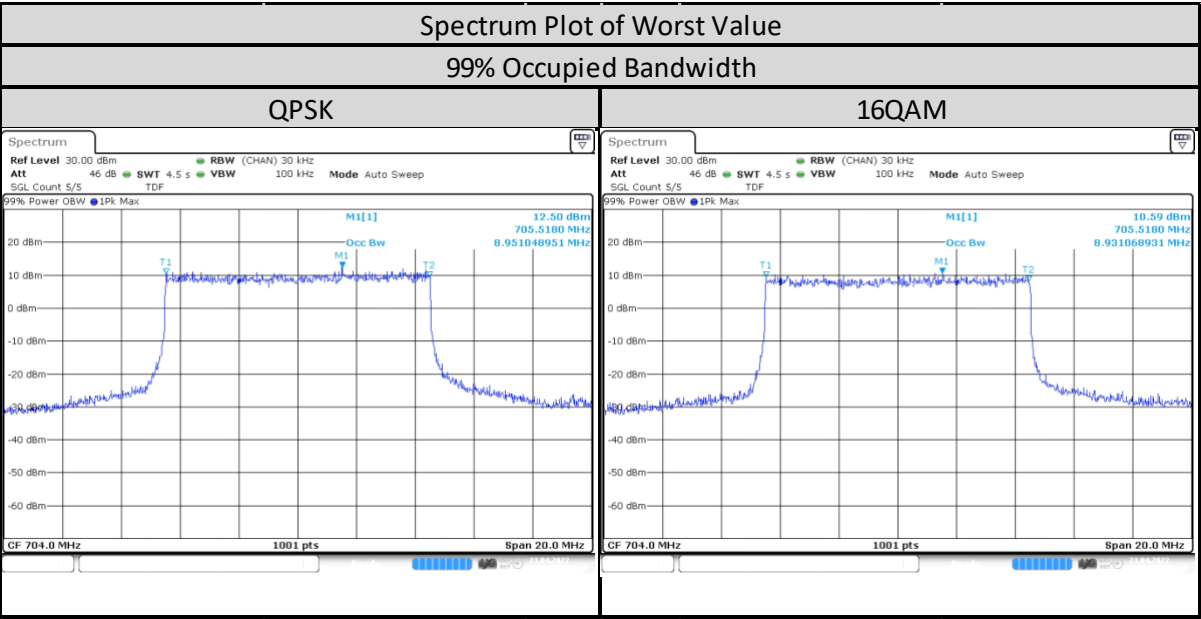
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/5MHz/25/0	Low CH 23035	701.5 MHz	4.456	4.476
	Mid CH 23095	707.5 MHz	4.466	4.466
	High CH 23155	713.5 MHz	4.466	4.466



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/10MHz/50/0	Low CH 23060	704 MHz	9.331	9.331
	Mid CH 23095	707.5 MHz	9.391	9.371
	High CH 23130	711 MHz	9.351	9.231

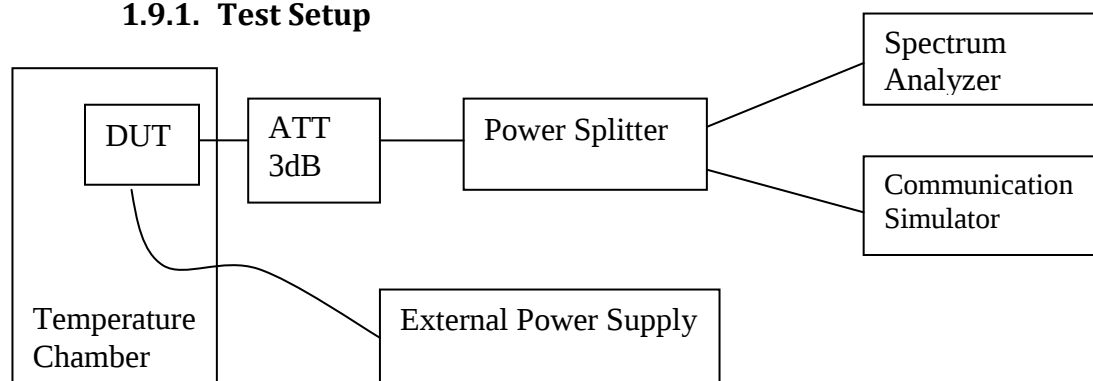


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 12/10MHz/50/0	Low CH 23060	704 MHz	8.951	8.931
	Mid CH 23095	707.5 MHz	8.911	8.911
	High CH 23130	711 MHz	8.911	8.911



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 12 (699-716MHz)

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		699.7MHz		715.3MHz	
		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
LTE Band 12	60	699.69999	-0.014516	715.299991	-0.012639
	50	699.699989	-0.016335	715.29999	-0.014419
	40	699.699985	-0.021283	715.299988	-0.017379
	30	699.699992	-0.011081	715.299989	-0.015579
	20	699.69999	-0.013964	715.29999	-0.013699
	10	699.699988	-0.016908	715.299993	-0.010459
	0	699.69999	-0.014618	715.299992	-0.011219
	-10	699.700009	0.013023	715.299991	-0.012159
	-20	699.699991	-0.013207	715.299992	-0.010499
	-30	699.699991	-0.012205	715.299988	-0.016939

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		699.7MHz		715.3MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	699.699989	-0.015088	715.299991	-0.012559
	7.5	699.699991	-0.013493	715.299993	-0.009479
	6	699.699991	-0.013289	715.299986	-0.019219

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		700.5MHz		714.5MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	700.499992	-0.011354	714.500011	0.015016
	50	700.499989	-0.015357	714.50001	0.014015
	40	700.499988	-0.017011	714.500012	0.017278
	30	700.500008	0.010782	714.500011	0.015617
	20	700.500009	0.012232	714.500014	0.020181
	10	700.500009	0.013396	714.500014	0.019501
	0	700.499992	-0.011742	714.500012	0.016778
	-10	700.500006	0.008618	714.500013	0.017539
	-20	700.500007	0.010068	714.500014	0.0189
	-30	700.50001	0.01407	714.500014	0.01906

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		700.5MHz		714.5MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	700.500007	0.01068	714.500015	0.020642
	7.5	700.500008	0.01113	714.50001	0.014115
	6	700.500008	0.011599	714.500013	0.017899

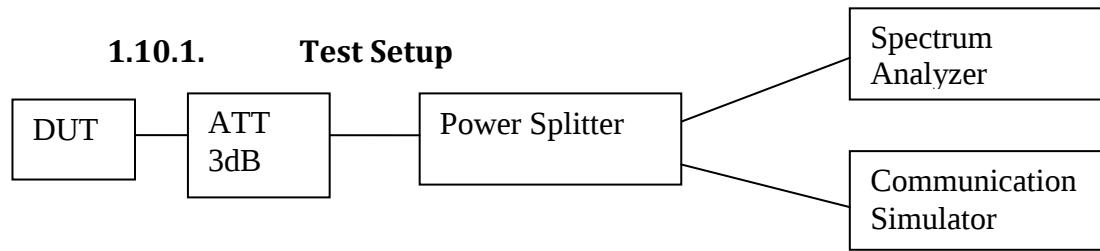
Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		701.5MHz		713.5MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	701.499991	-0.013479	713.499991	-0.01221
	50	701.499991	-0.013194	713.49999	-0.013854
	40	701.499986	-0.020147	713.49999	-0.014335
	30	701.499991	-0.013051	713.499991	-0.013192
	20	701.499991	-0.012439	713.499991	-0.012811
	10	701.499992	-0.011685	713.499989	-0.015358
	0	701.499993	-0.010074	713.499991	-0.01221
	-10	701.49999	-0.013602	713.49999	-0.014115
	-20	701.499989	-0.015335	713.499988	-0.01636
	-30	701.499991	-0.012766	713.499991	-0.012651

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		701.5MHz		713.5MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	701.499991	-0.013418	713.499992	-0.011608
	7.5	701.49999	-0.013724	713.499991	-0.01227
	6	701.49999	-0.014438	713.499988	-0.017483

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		704MHz		711MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	704.000011	0.015423	710.999993	-0.0101
	50	704.00001	0.014508	710.999989	-0.01515
	40	704.000011	0.01522	711.000007	0.010462
	30	704.000012	0.017577	710.999992	-0.010764
	20	704.000012	0.016601	711.000008	0.011287
	10	704.000012	0.017231	711.000007	0.010221
	0	704.000012	0.017333	711.000008	0.010905
	-10	704.000013	0.018552	711.000009	0.012937
	-20	704.000014	0.019487	711.000008	0.010563
	-30	704.000013	0.01904	711.000008	0.011428

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		704MHz		711MHz	
LTE Band 12		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	704.00001	0.014772	711.000009	0.012575
	7.5	704.000012	0.017333	711.000007	0.009416
	6	704.000012	0.016378	710.999992	-0.010965

1.10. Band Edge Conducted Spurious Emission

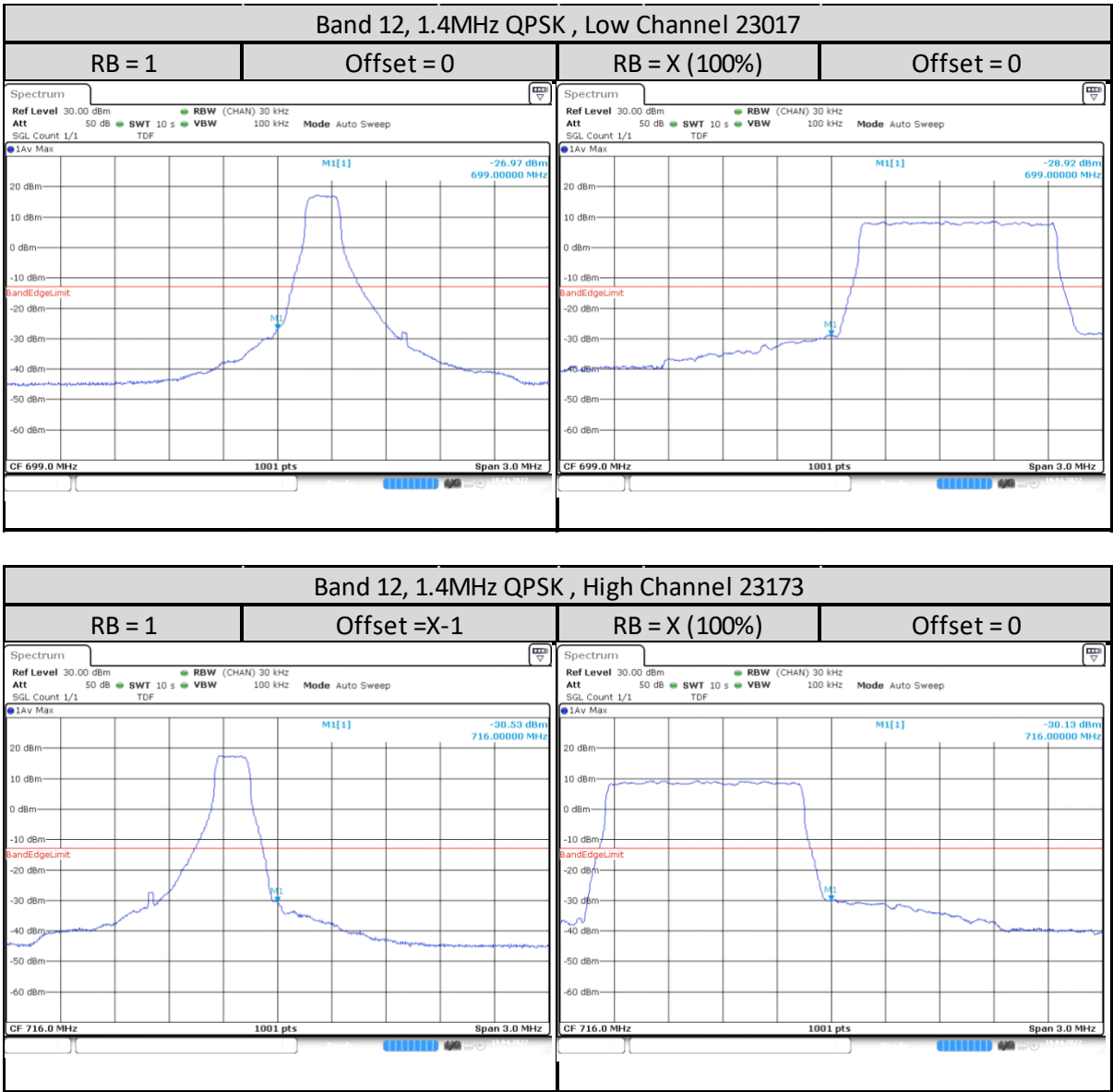


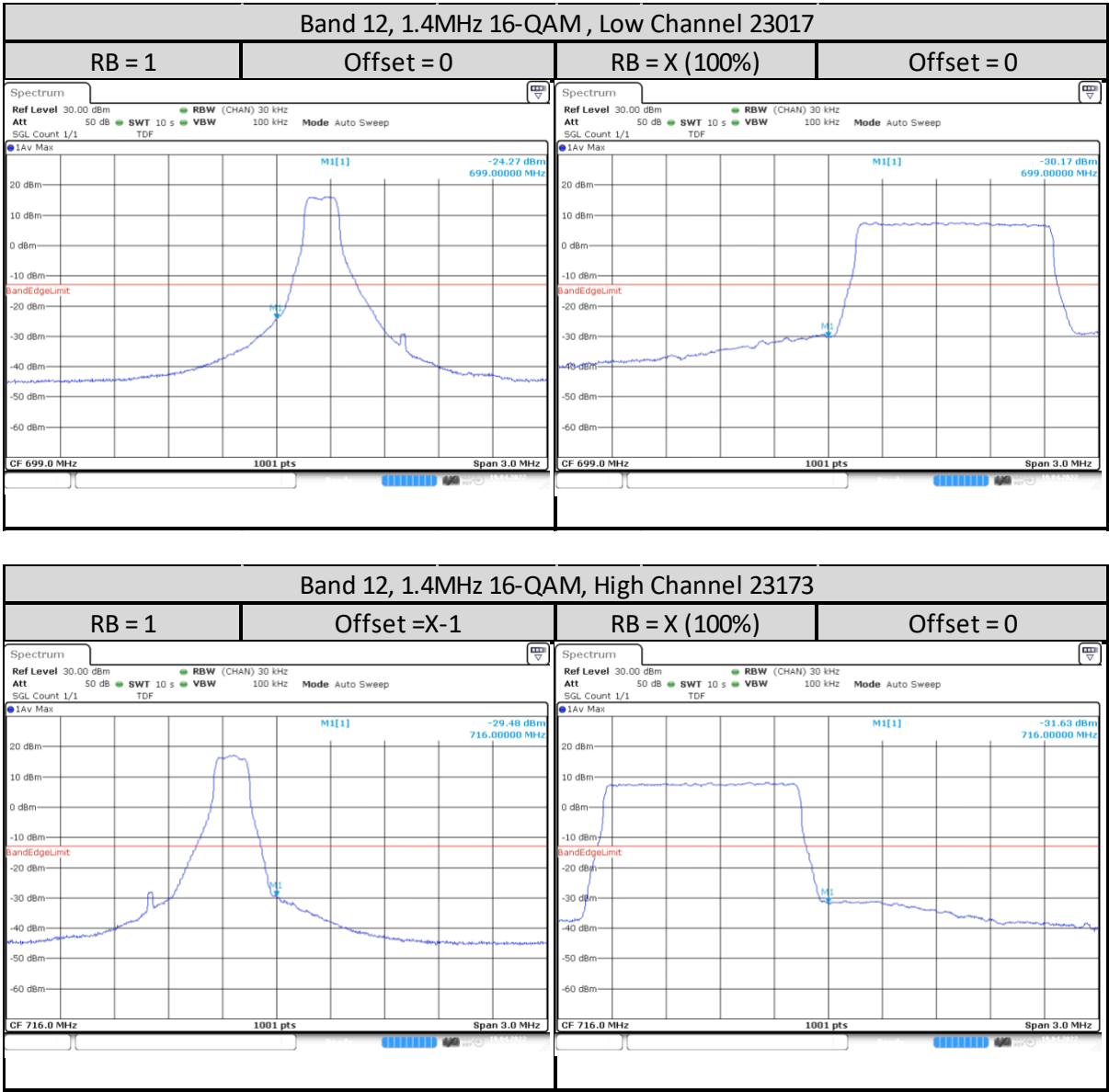
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) Set DUT to transmit maximum power through communication simulator.
- 4) The band edges of lowest and highest channels with the highest RF powers were measured.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

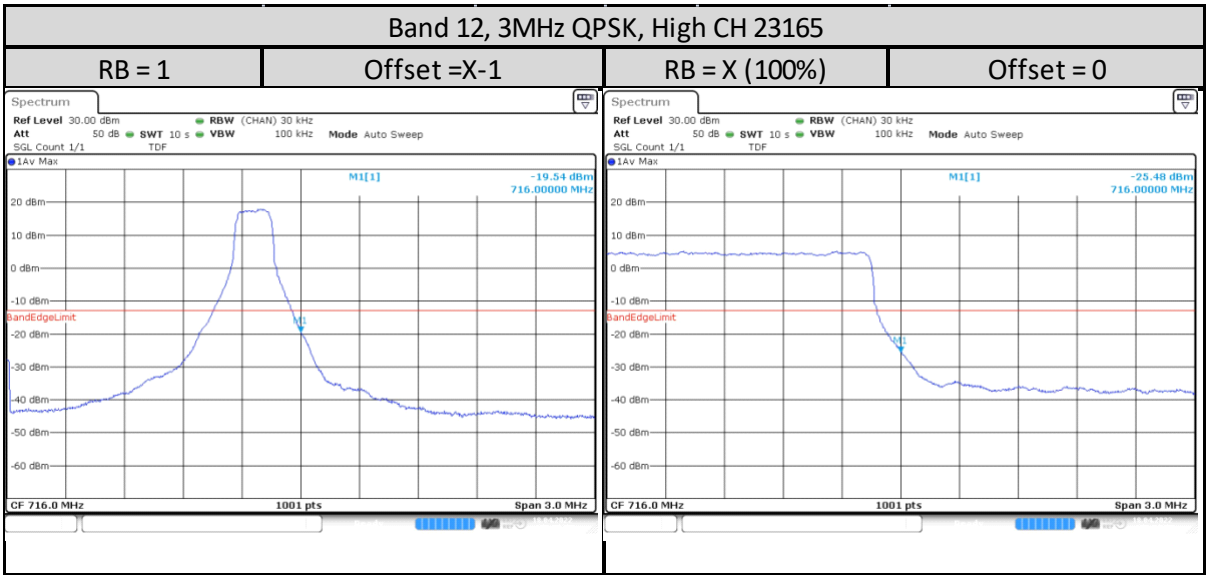
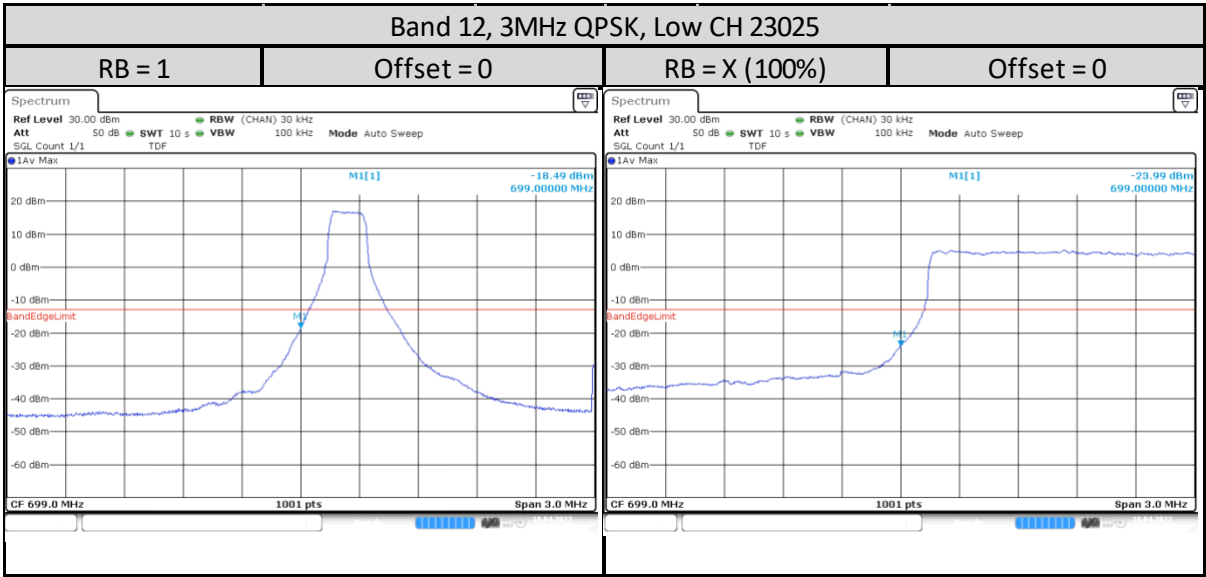
1.10.2. Test Limit

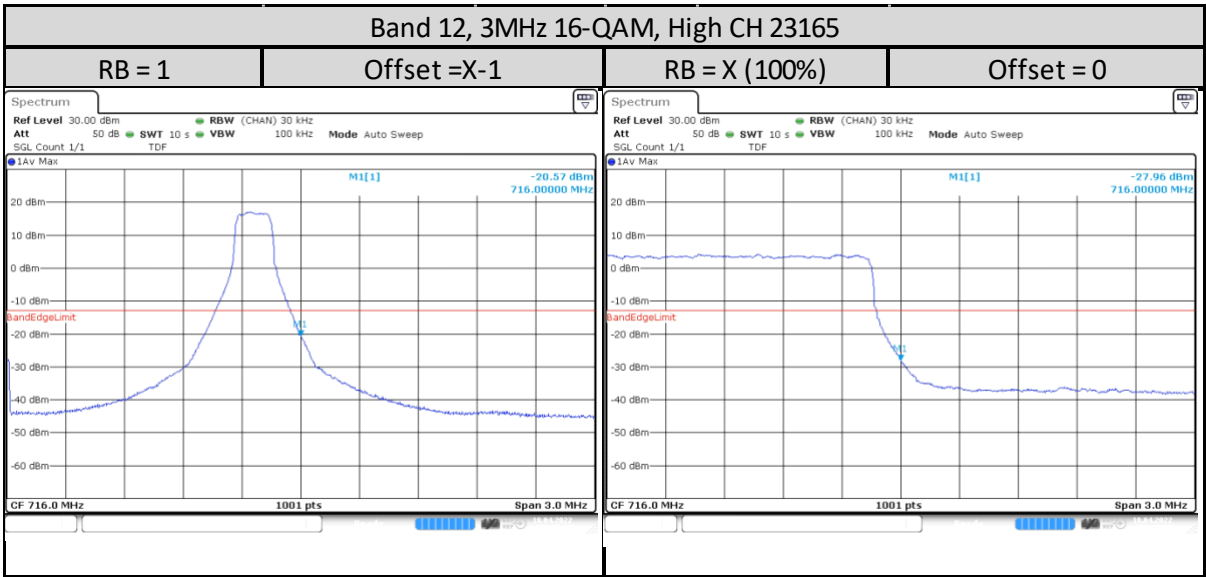
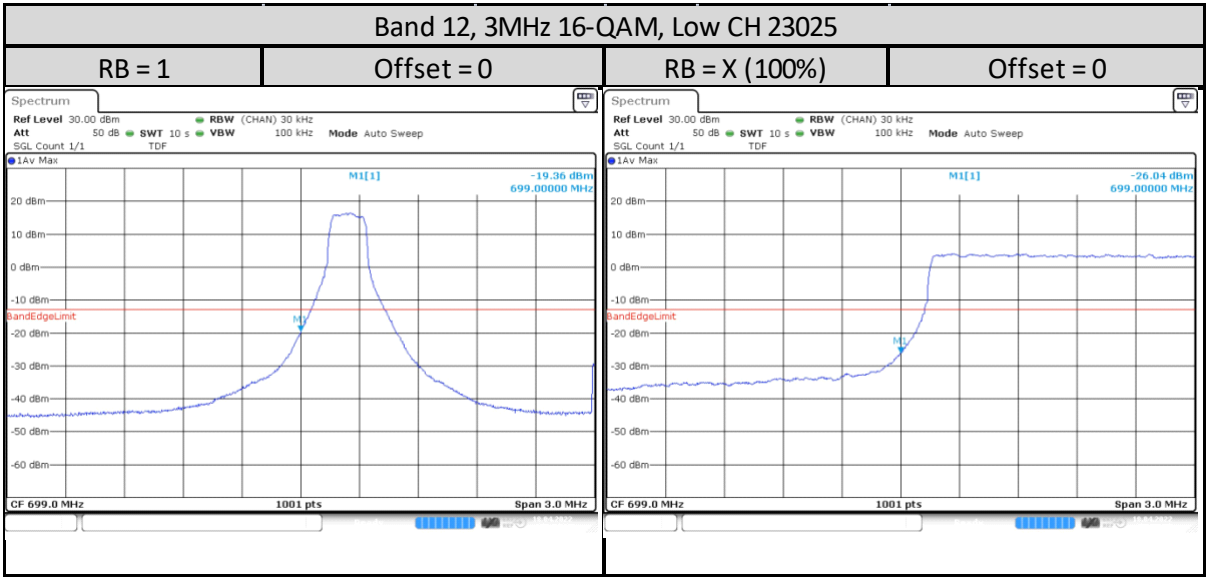
For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

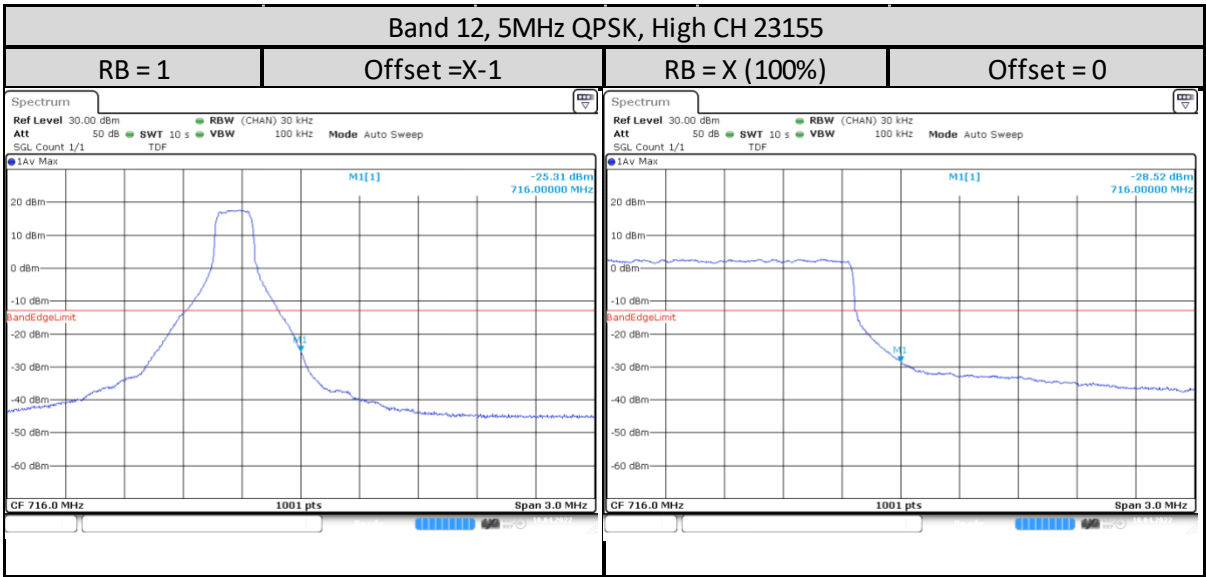
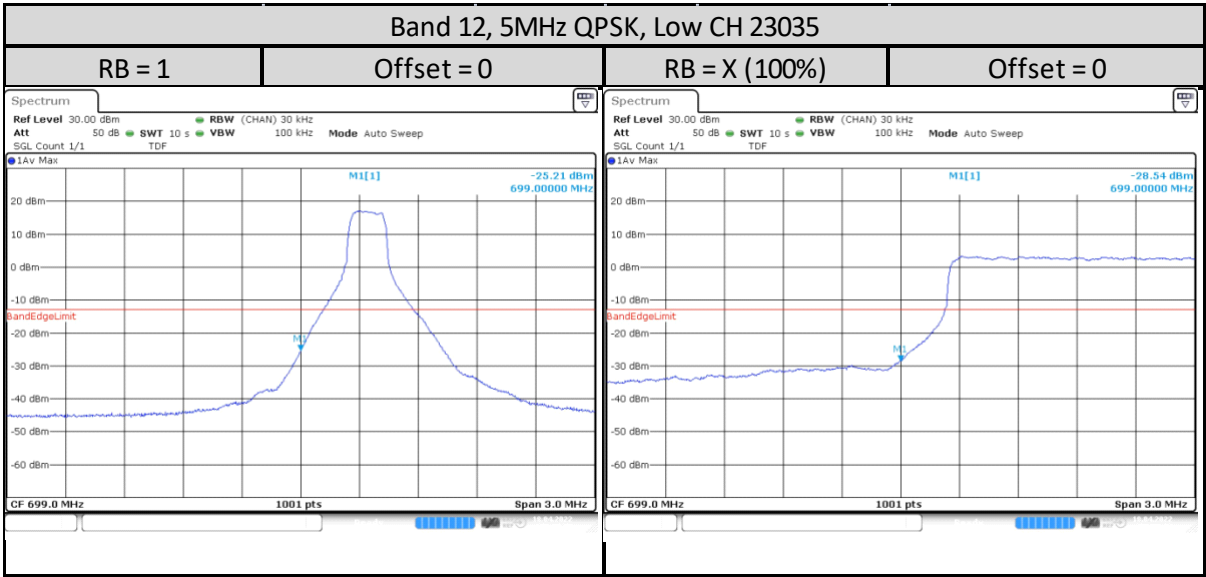
1.10.3. Band Edge / Emission Mask Conducted Spurious Emission – LTE Band 12 (699-716MHz)

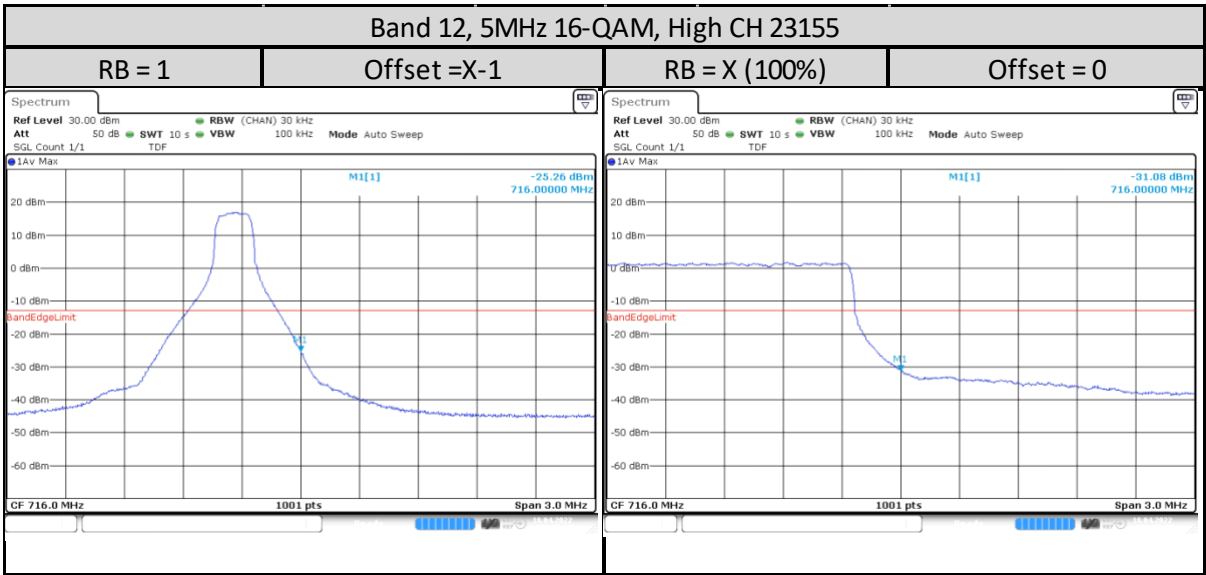
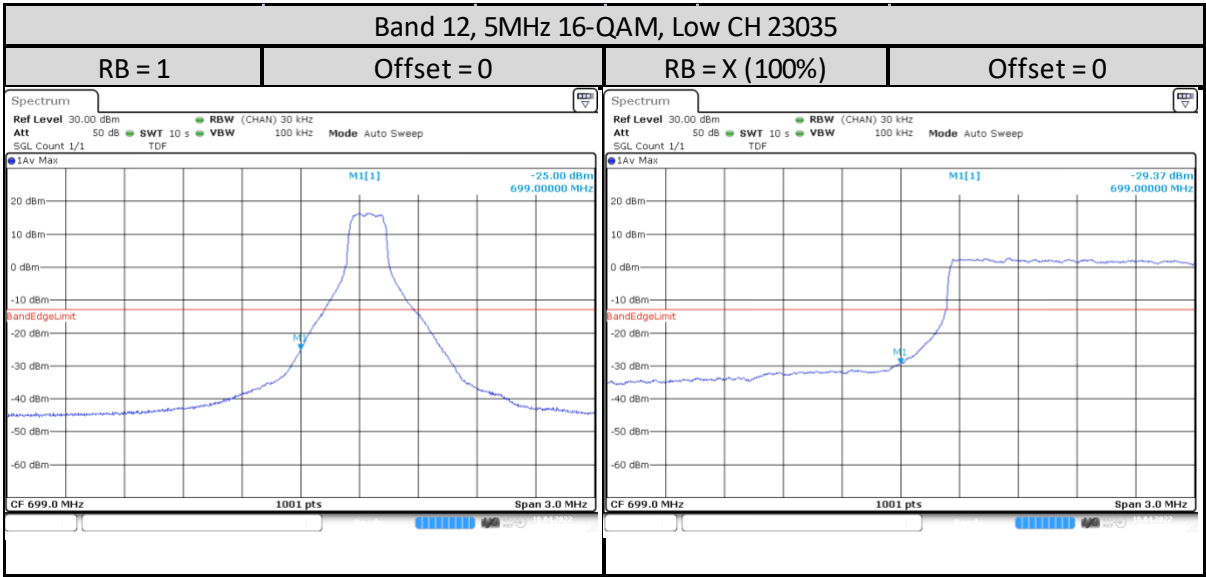


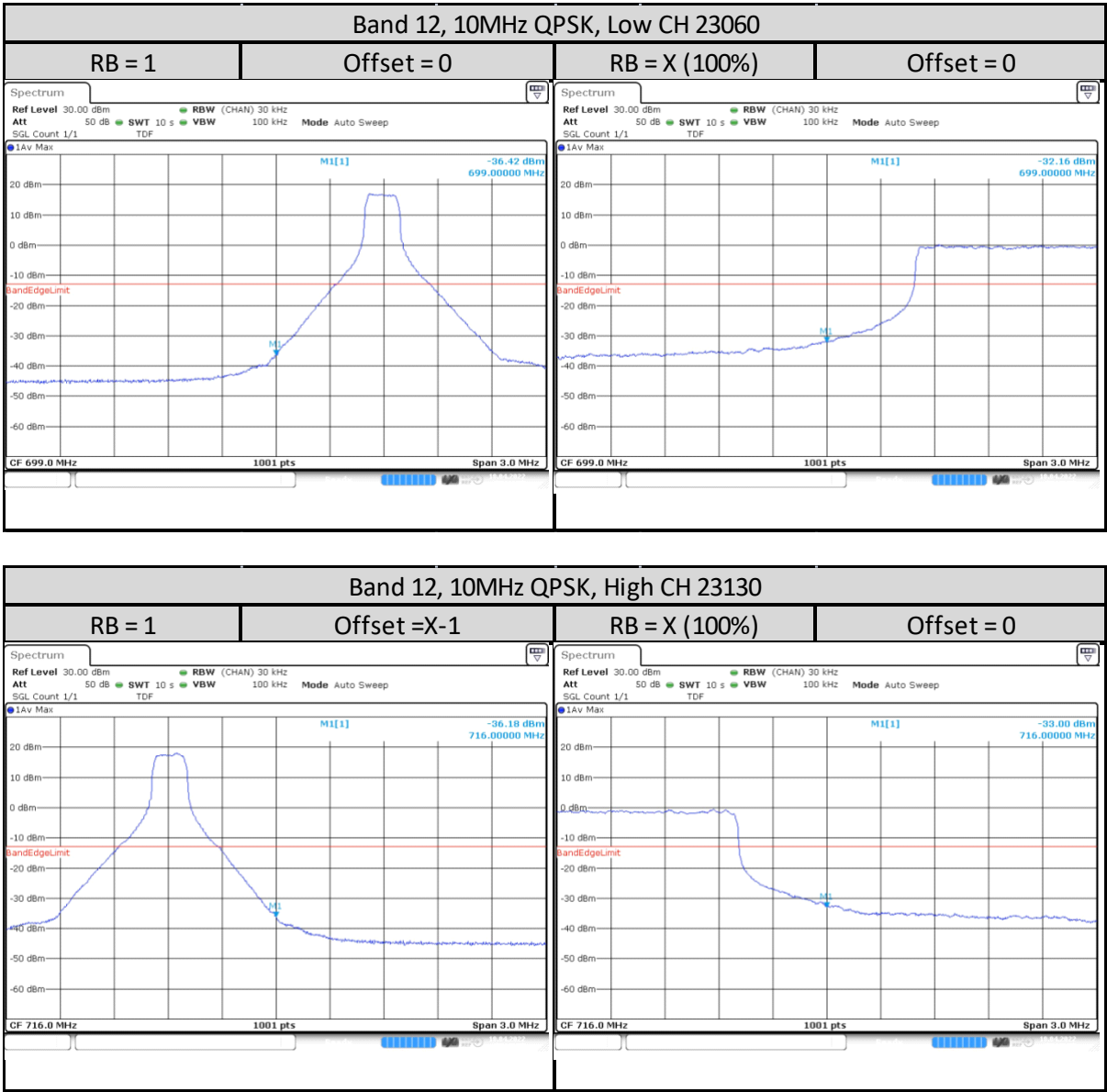


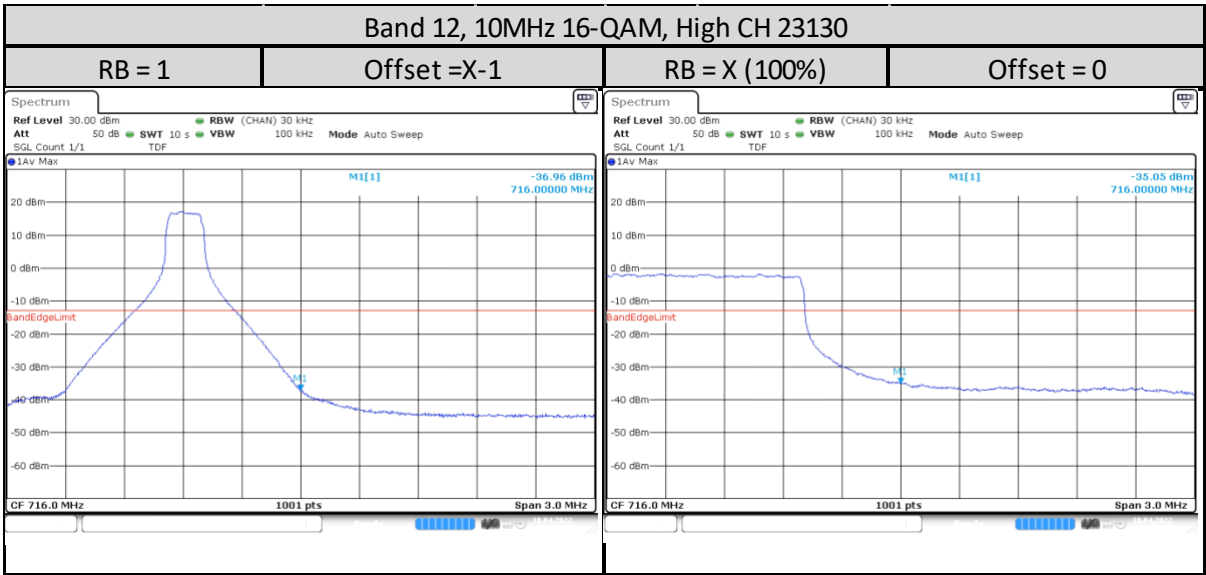
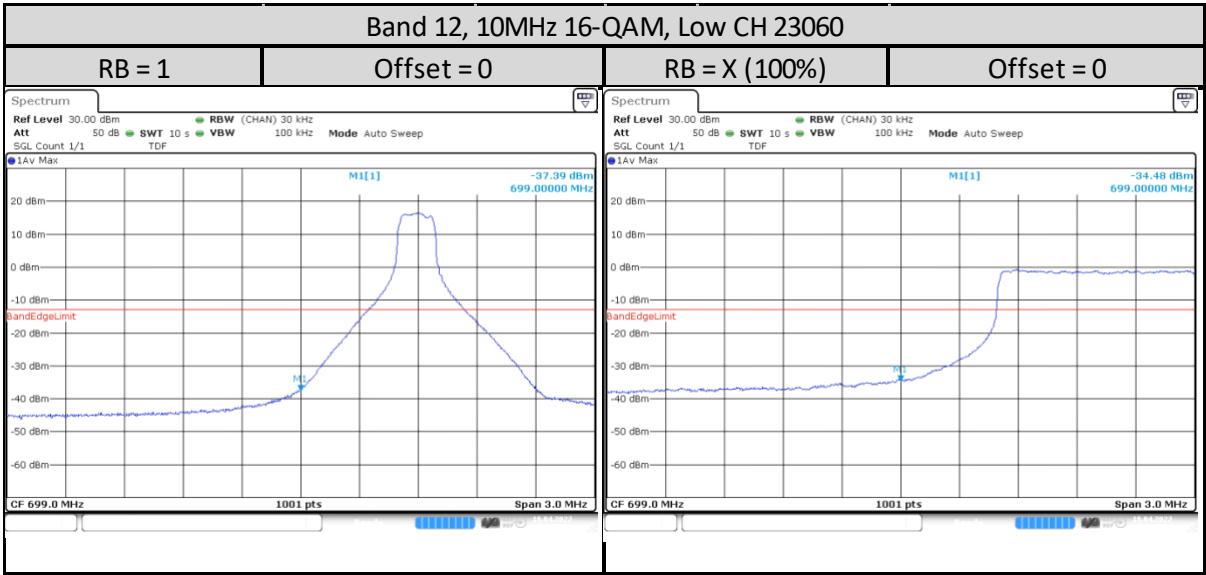




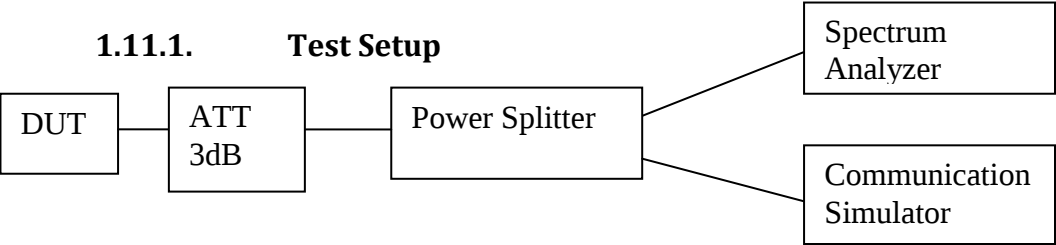








1.11. Conducted Spurious Emission



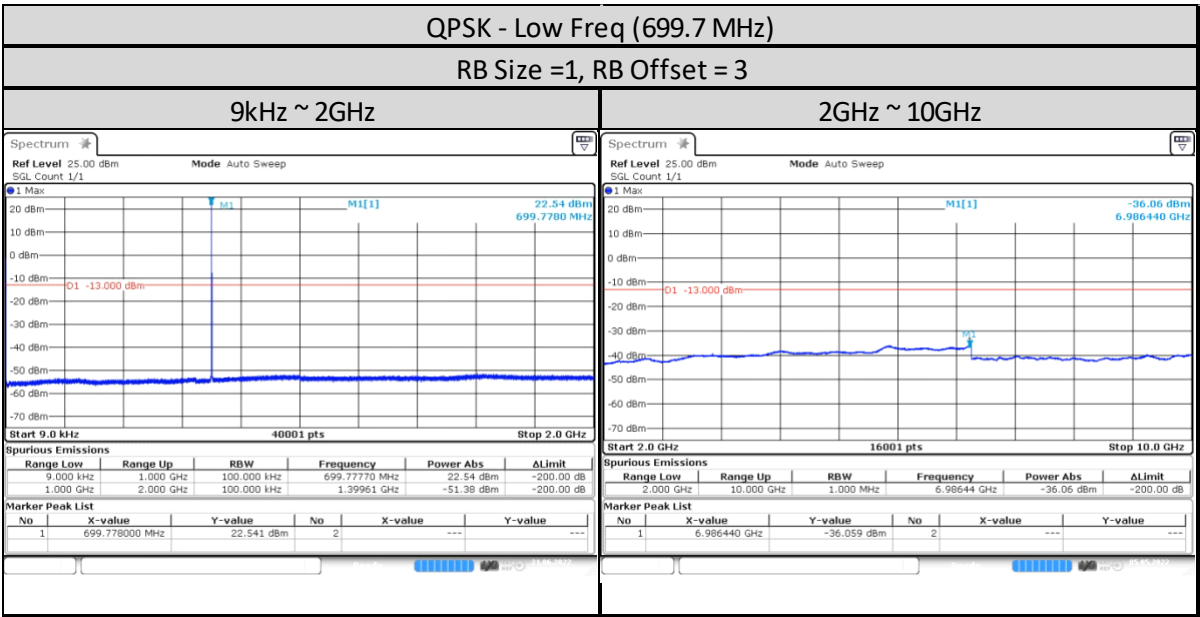
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) Set DUT to transmit maximum power through communication simulator.
- 4) Spectrum Analyzer setting, RBW = 1 MHz, VBW = 3 MHz.
- 5) The spurious emission of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

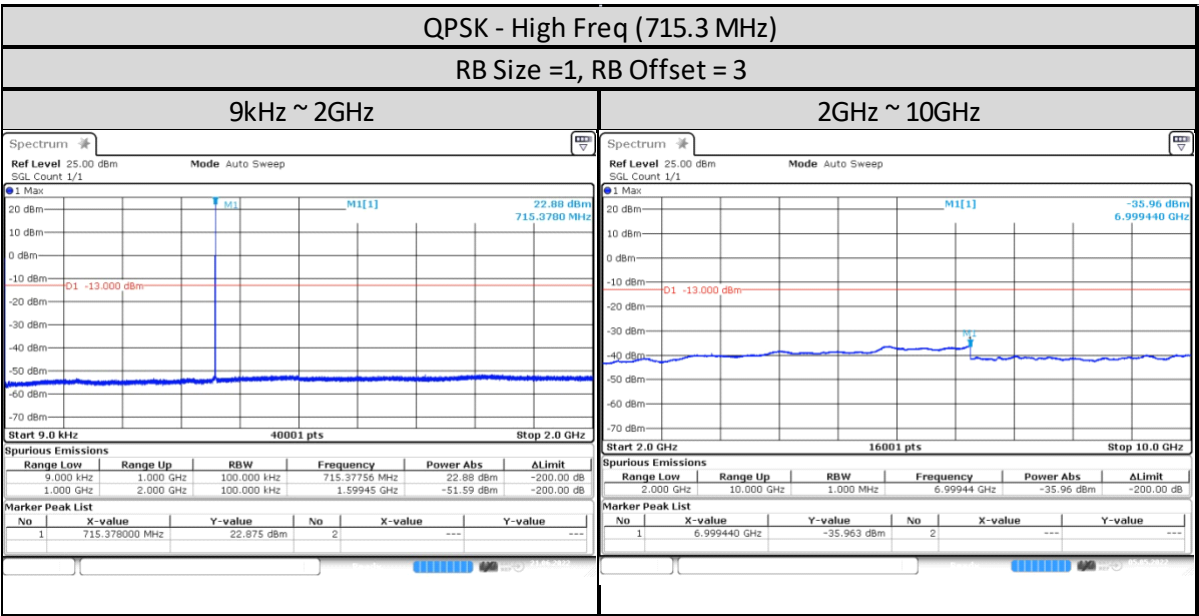
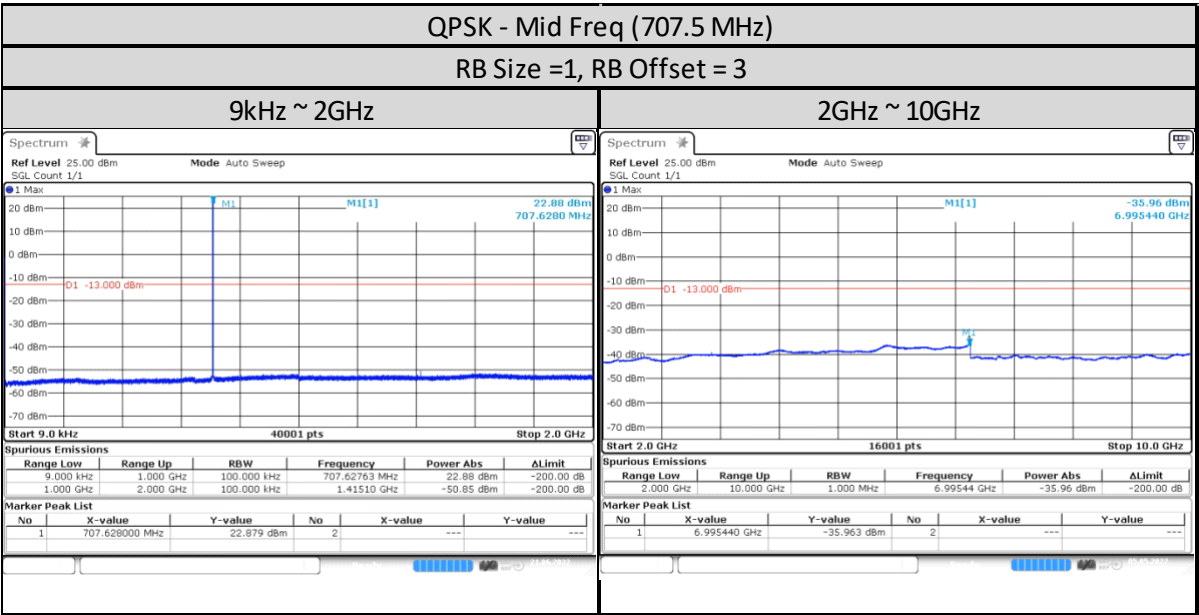
1.11.2. Test Limit

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

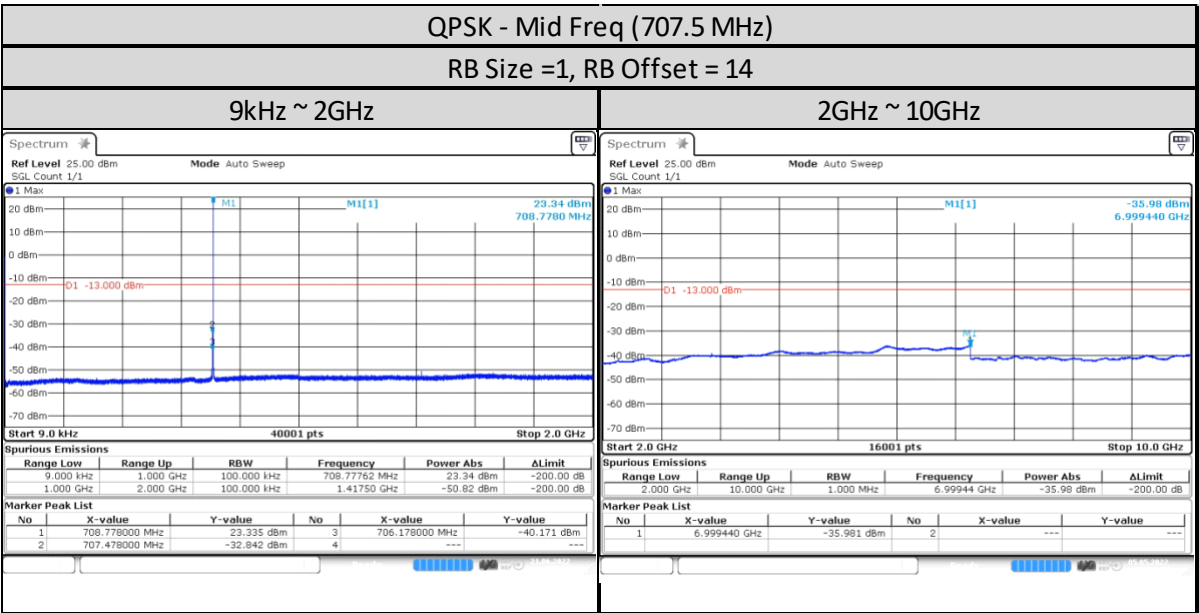
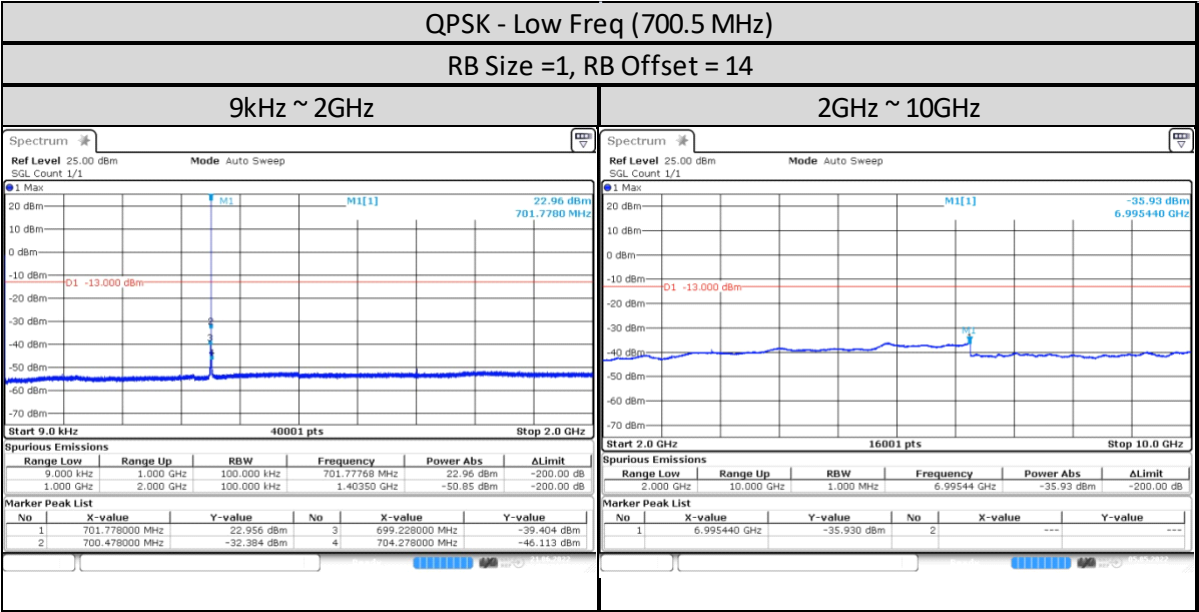
1.11.3. Conducted Spurious Emissions – LTE Band 12 (699-716MHz)

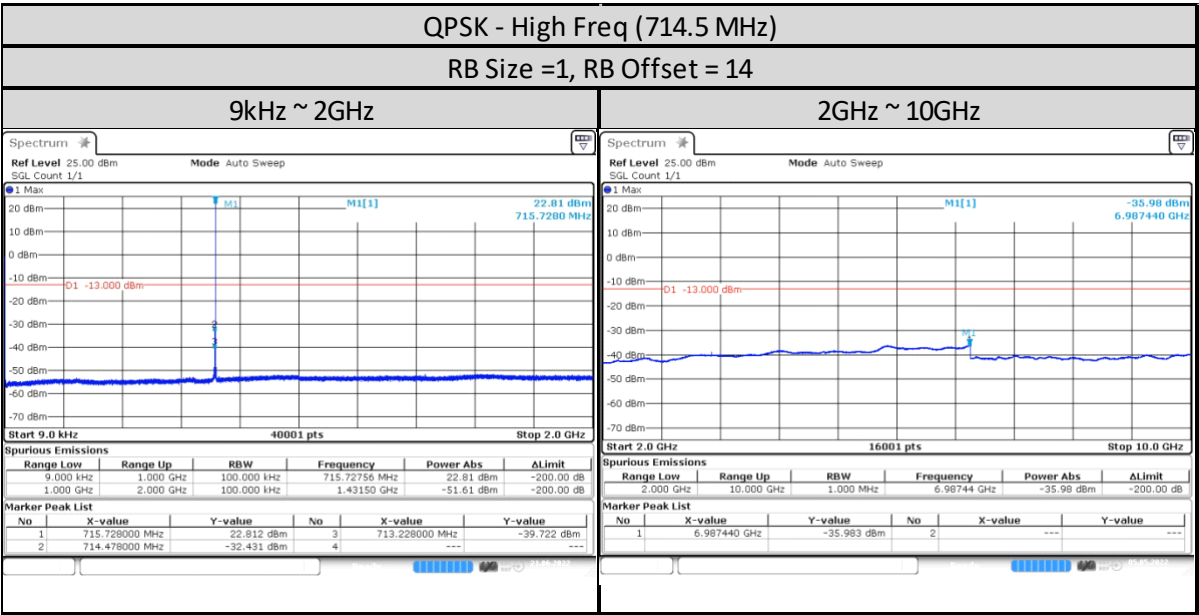
1.4MHz



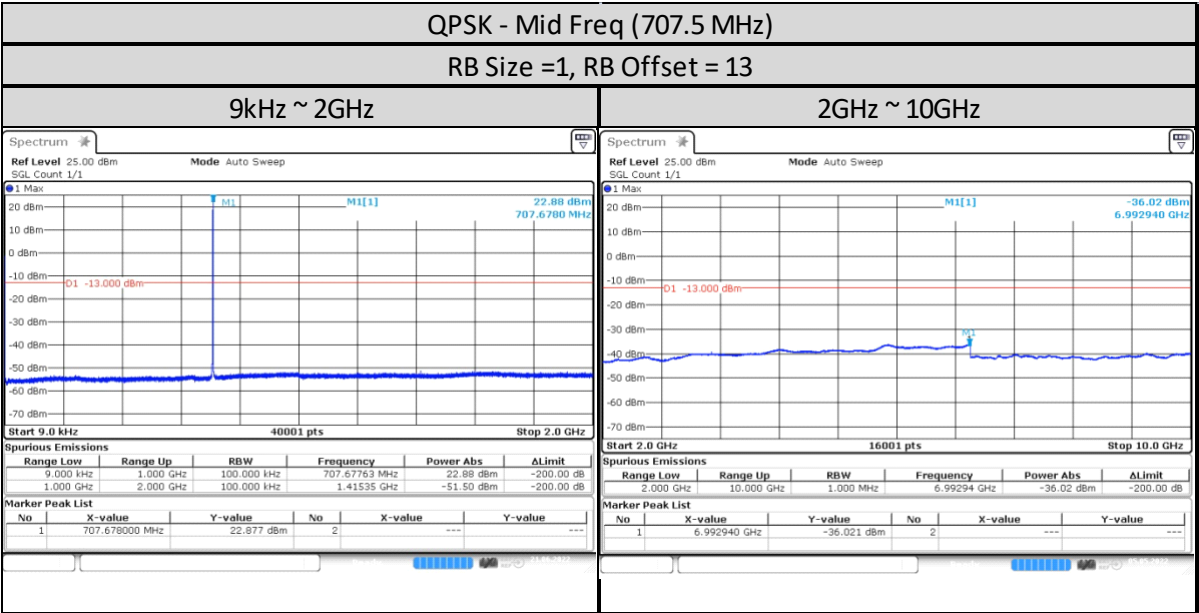
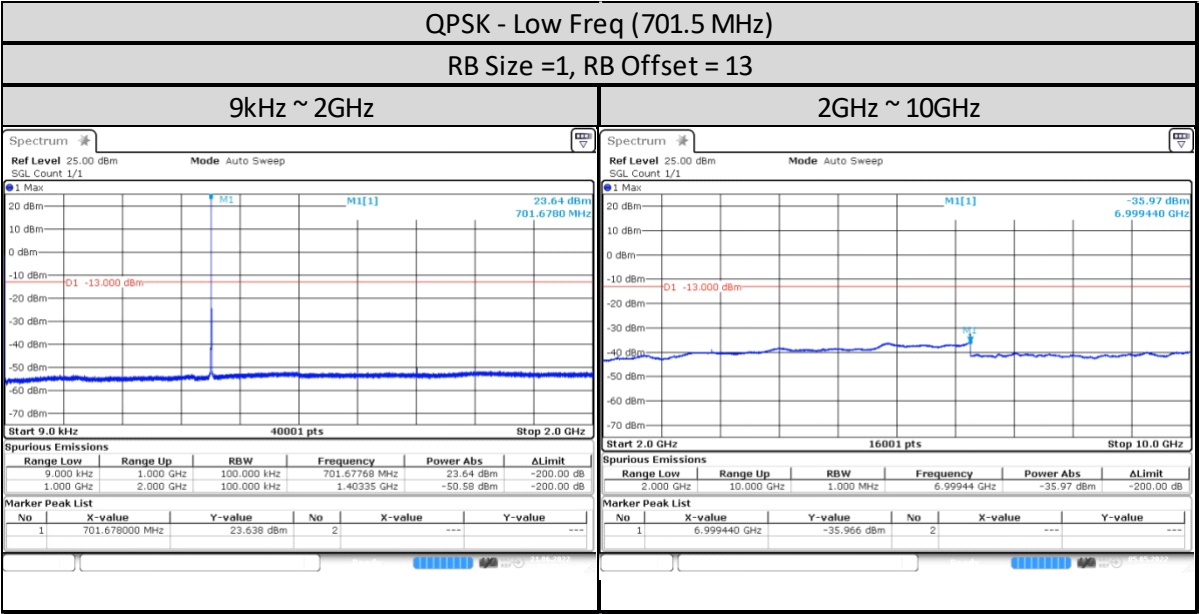


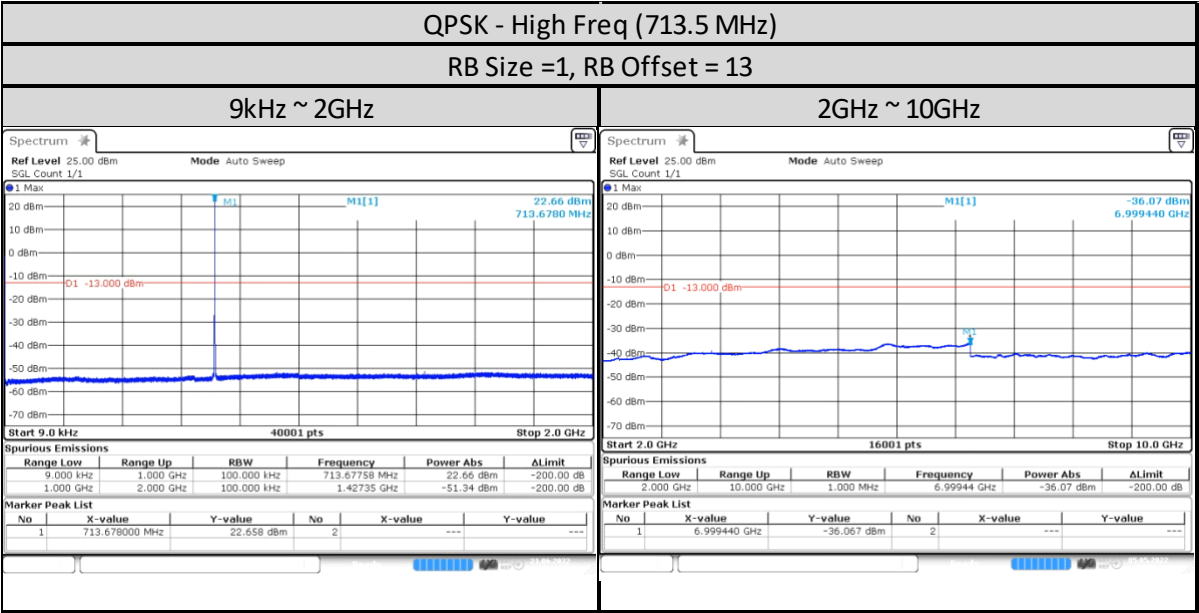
3MHz



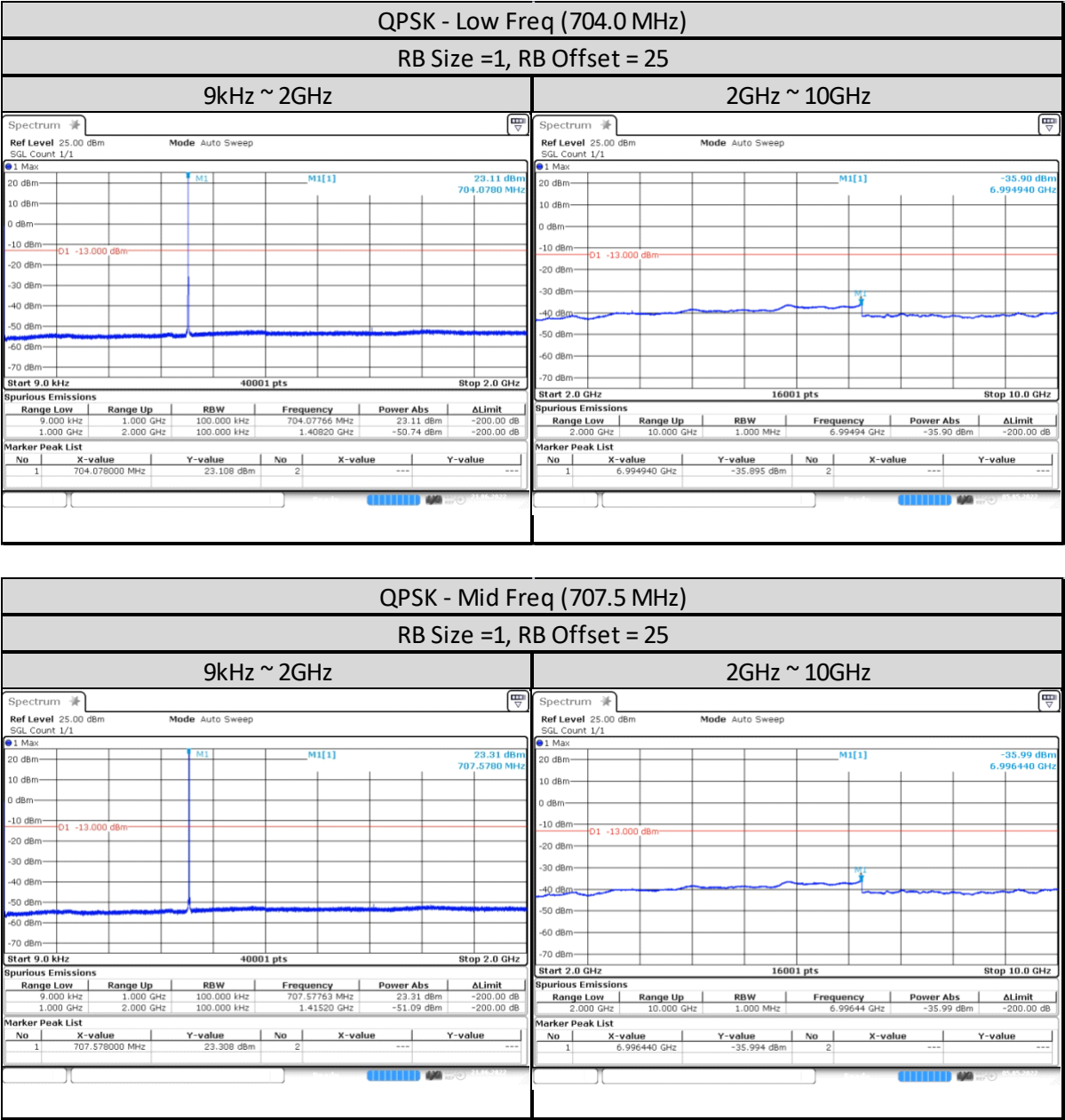


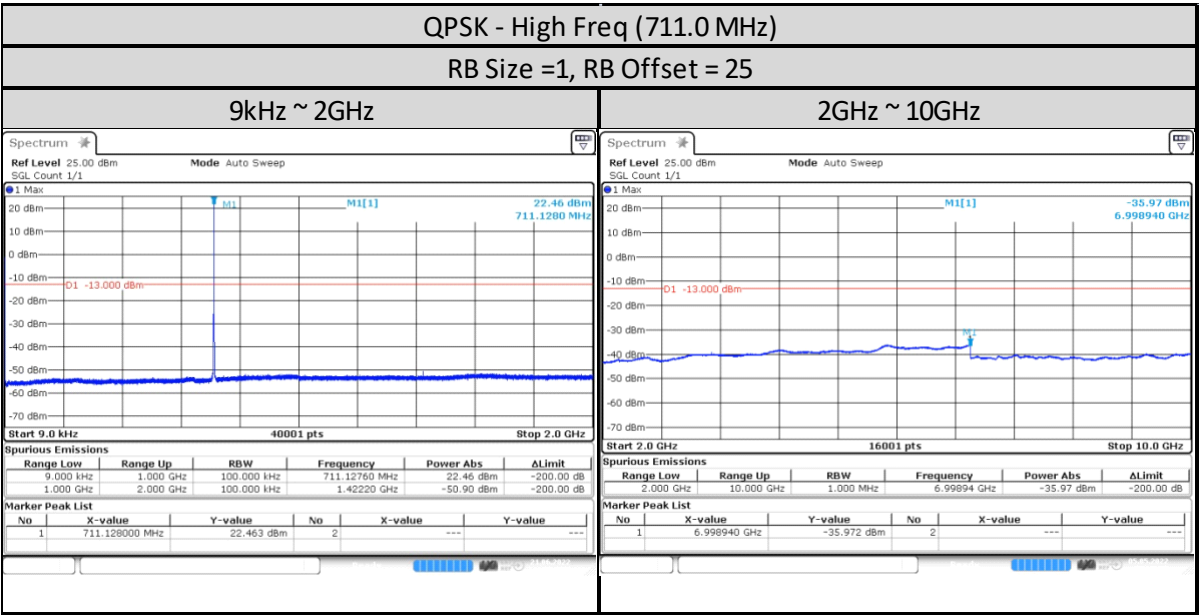
5MHz





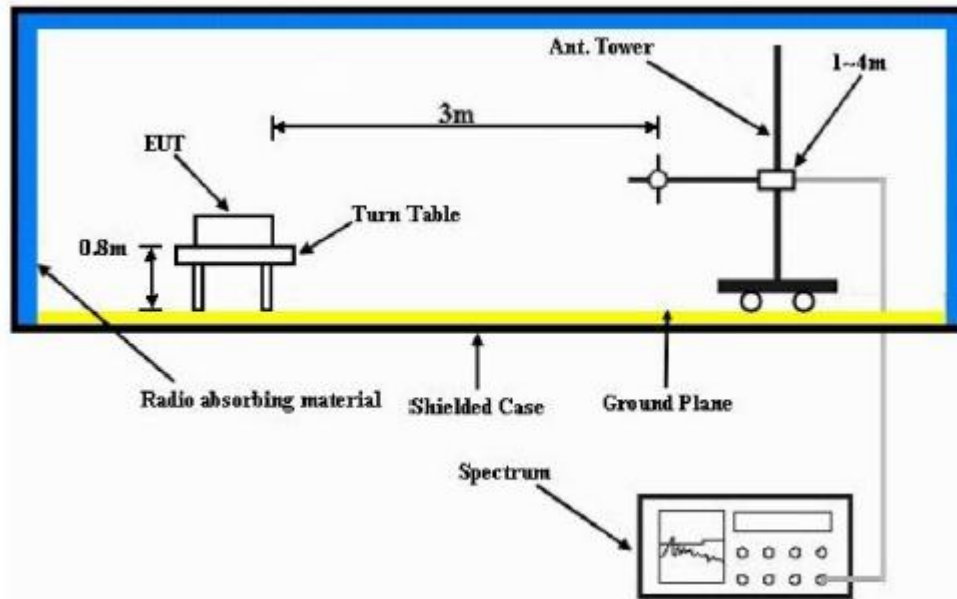
10MHz





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.

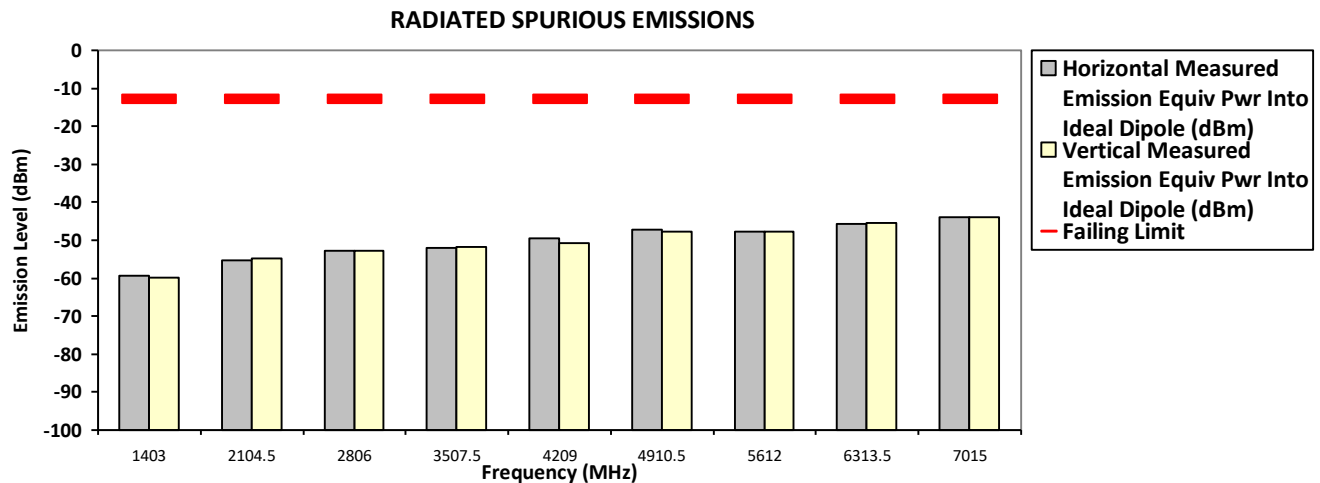
1.12.2. Test Limit

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

1.12.3. Radiated Spurious Emission – LTE Band 12 (699-716MHz)

SAC Transmitter Radiated Emission:
 Model Number: AAH90UCU9RH1AN S/N: 734TYF0069 SR:27331-EMC-00031
 Battery Part No: PMNN4805A Accy Part No: AN000415A01
 Test Mode: TX LTE (Band 12) X-Plane
 701.500000 MHz (Low) Bandwidth 5MHz 0.282 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)
1403.0000	-13.0000	-59.3441 **	-59.8631 **
2104.5000	-13.0000	-55.2104 **	-54.8201 **
2806.0000	-13.0000	-52.8056 **	-52.8725 **
3507.5000	-13.0000	-51.9446 **	-51.7523 **
4209.0000	-13.0000	-49.5455 **	-50.6435 **
4910.5000	-13.0000	-47.3113 **	-47.7680 **
5612.0000	-13.0000	-47.6696 **	-47.7345 **
6313.5000	-13.0000	-45.6839 **	-45.4852 **
7015.0000	-13.0000	-43.9051 **	-43.8238 **



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.

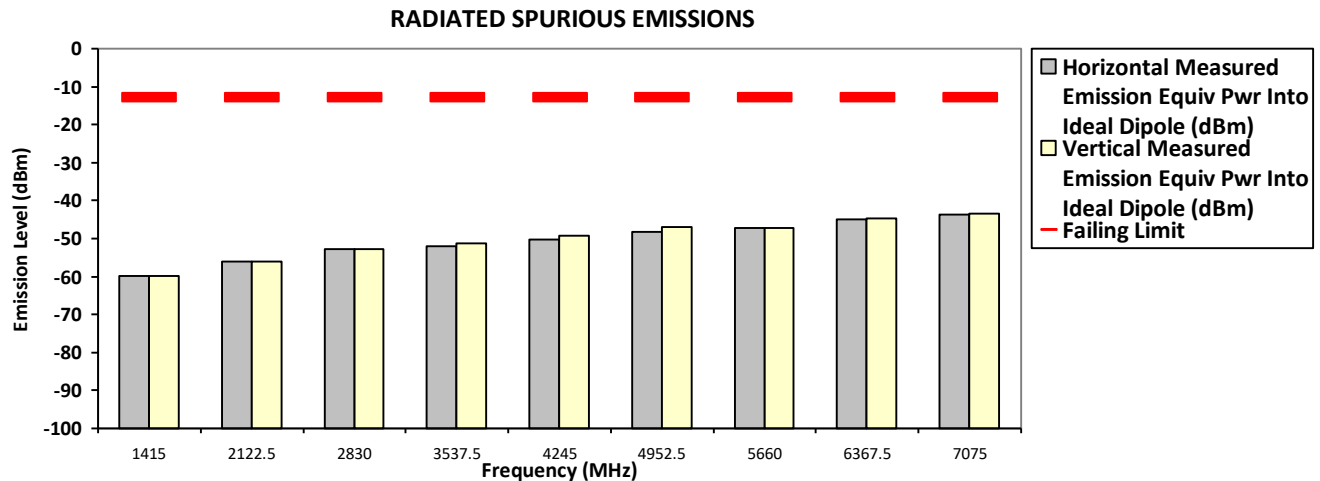
*Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported
 Temp(Deg): 23.3 Hum(%RH): 69.3

System MU: 4.03 dB

Remarks: Passed Results Marginal Results Failed Results

SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N: 734TYF0069** **SR:27331-EMC-00031**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 12) X-Plane
707.500000 MHz (Mid) **Bandwidth 10MHz** **0.282 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)
1415.0000	-13.0000	-59.8124 **	-59.7652 **
2122.5000	-13.0000	-56.1612 **	-56.0884 **
2830.0000	-13.0000	-52.7079 **	-52.7630 **
3537.5000	-13.0000	-52.0307 **	-51.2064 **
4245.0000	-13.0000	-50.2021 **	-49.2739 **
4952.5000	-13.0000	-48.2300 **	-46.9182 **
5660.0000	-13.0000	-47.1209 **	-47.2172 **
6367.5000	-13.0000	-45.0082 **	-44.8061 **
7075.0000	-13.0000	-43.7602 **	-43.3148 **



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

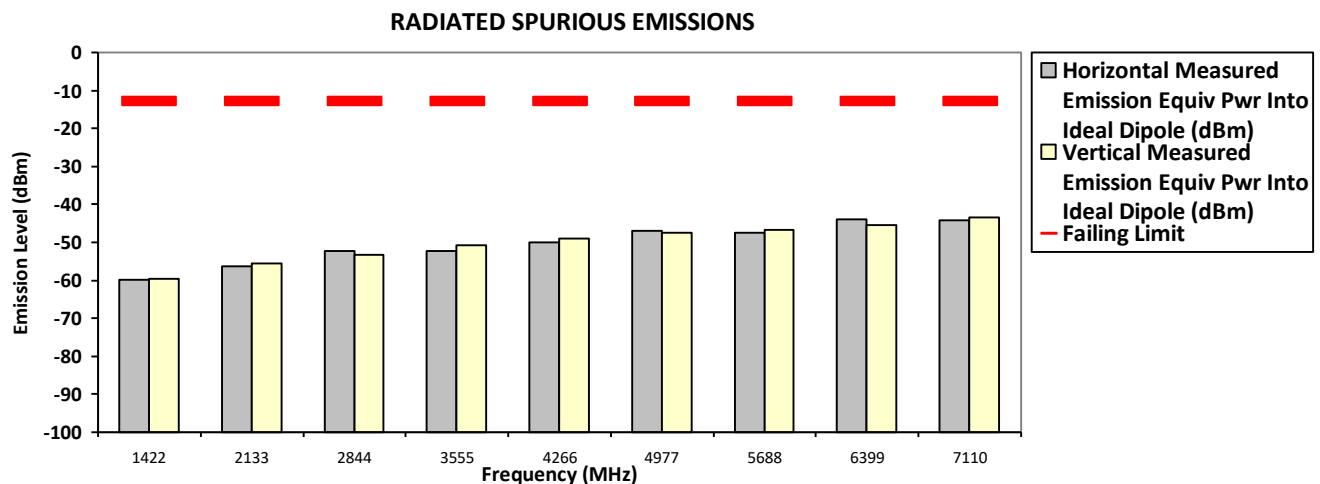
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N:** 734TYF0069 **SR:**27331-EMC-00031
Battery Part No: PMNN4805A **Accy Part No:** AN000415A01
Test Mode: TX LTE (Band 12) X-Plane
711.000000 MHz (High) **Bandwidth** 10MHz **0.282 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)
1422.0000	-13.0000	-59.7816 **	-59.6079 **
2133.0000	-13.0000	-56.2671 **	-55.6133 **
2844.0000	-13.0000	-52.2760 **	-53.1790 **
3555.0000	-13.0000	-52.1848 **	-50.6392 **
4266.0000	-13.0000	-50.0511 **	-48.9077 **
4977.0000	-13.0000	-47.0949 **	-47.5303 **
5688.0000	-13.0000	-47.5415 **	-46.6235 **
6399.0000	-13.0000	-43.8835 **	-45.3502 **
7110.0000	-13.0000	-44.1177 **	-43.5229 **



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

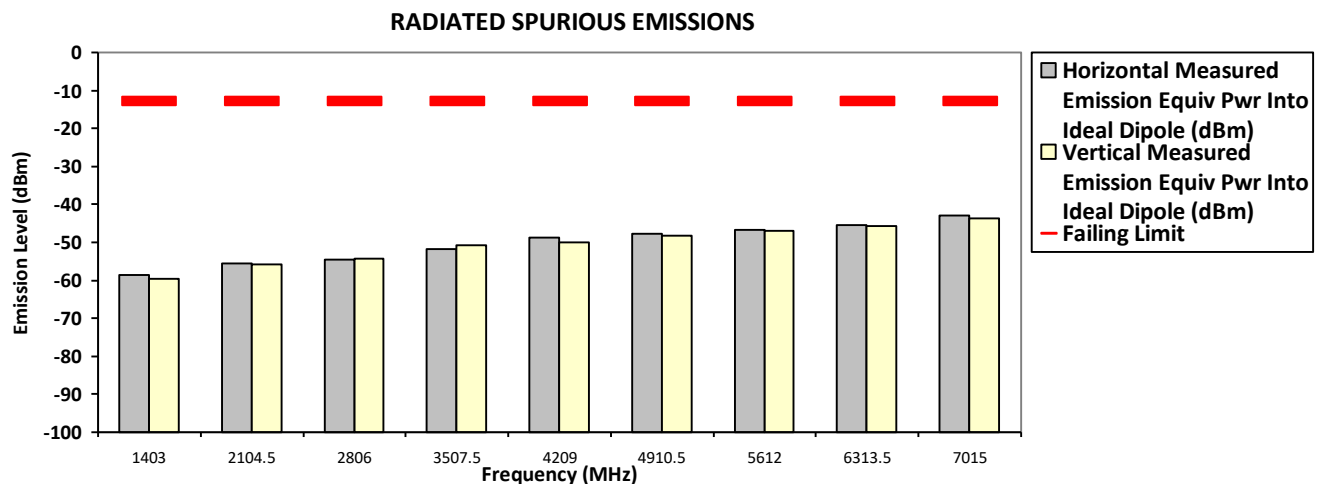
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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Model Number: AAH90UCU9RH1AN **SAC Transmitter Radiated Emission:** **S/N: 734TYF0069** **SR:27331-EMC-00031**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 12) Y-Plane
701.500000 MHz (Low) **Bandwidth 5MHz** **0.282 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)
1403.0000	-13.0000	-58.6720 **	-59.5539 **
2104.5000	-13.0000	-55.6272 **	-55.8001 **
2806.0000	-13.0000	-54.5343 **	-54.3849 **
3507.5000	-13.0000	-51.6883 **	-50.7706 **
4209.0000	-13.0000	-48.8130 **	-50.1161 **
4910.5000	-13.0000	-47.6028 **	-48.1628 **
5612.0000	-13.0000	-46.6279 **	-46.9733 **
6313.5000	-13.0000	-45.5555 **	-45.6735 **
7015.0000	-13.0000	-42.8749 **	-43.7962 **



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

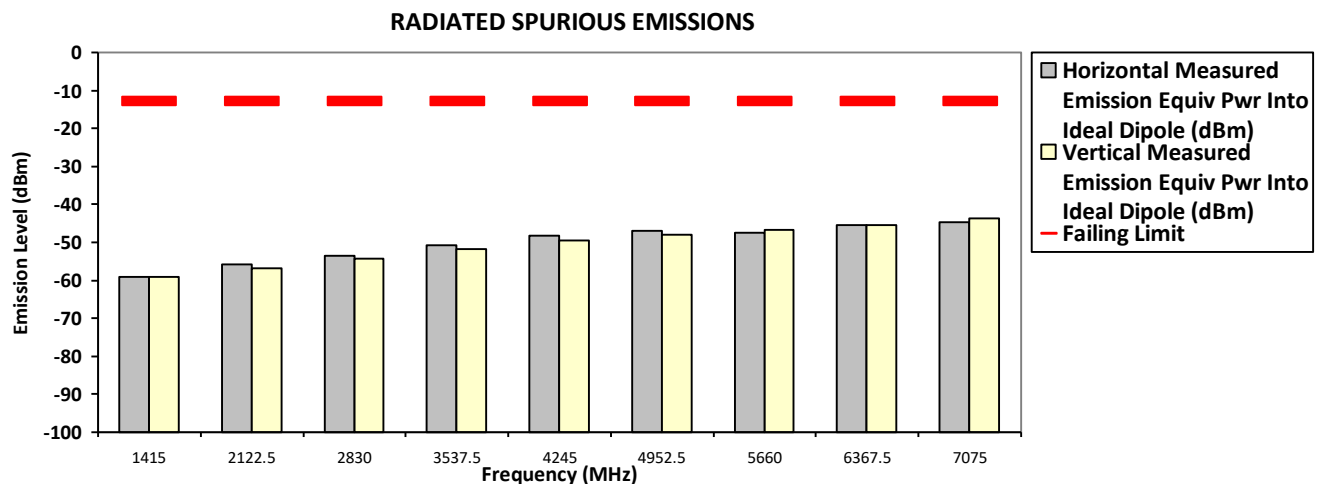
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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Model Number: AAH90UCU9RH1AN **SAC Transmitter Radiated Emission:** **S/N: 734TYF0069** **SR:27331-EMC-00031**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 12) Y-Plane
707.500000 MHz (Mid) **Bandwidth 10MHz** **0.282 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)
1415.0000	-13.0000	-59.0383 **	-59.1676 **
2122.5000	-13.0000	-55.9168 **	-56.7584 **
2830.0000	-13.0000	-53.5846 **	-54.2917 **
3537.5000	-13.0000	-50.7901 **	-51.7685 **
4245.0000	-13.0000	-48.3555 **	-49.3687 **
4952.5000	-13.0000	-47.0521 **	-48.0935 **
5660.0000	-13.0000	-47.5200 **	-46.7464 **
6367.5000	-13.0000	-45.4297 **	-45.4460 **
7075.0000	-13.0000	-44.7266 **	-43.7784 **



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

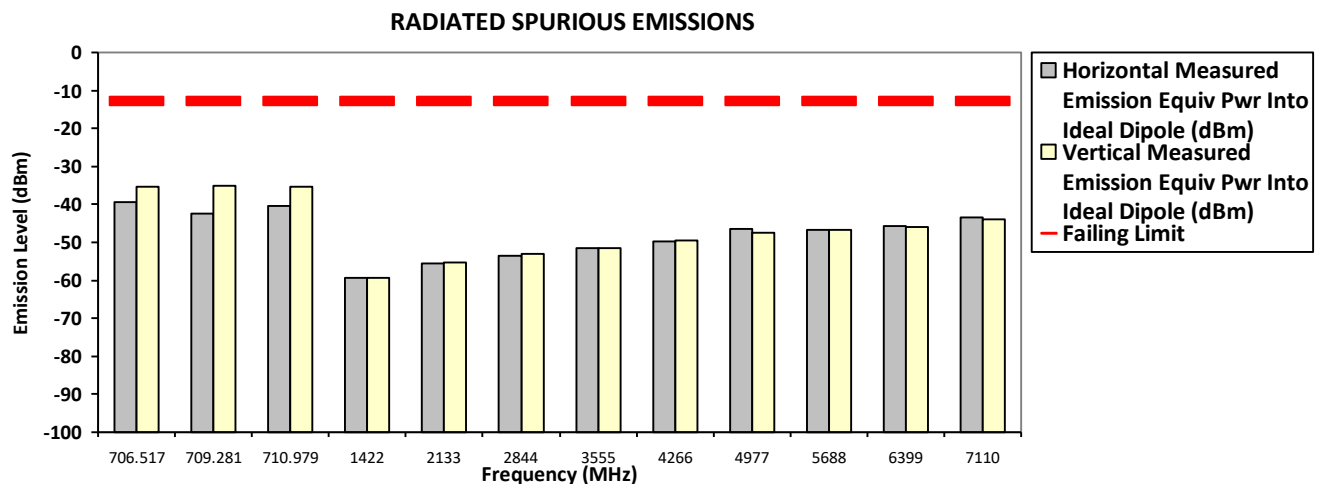
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N: 734TYF0069** **SR:27331-EMC-00031**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 12) Y-Plane
711.000000 MHz (High) **Bandwidth 10MHz** **0.282 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)
1422.0000	-13.0000	-59.4381 **	-59.3108 **
2133.0000	-13.0000	-55.6716 **	-55.2111 **
2844.0000	-13.0000	-53.4770 **	-53.0432 **
3555.0000	-13.0000	-51.5272 **	-51.4612 **
4266.0000	-13.0000	-49.6459 **	-49.4086 **
4977.0000	-13.0000	-46.4861 **	-47.5800 **
5688.0000	-13.0000	-46.8328 **	-46.7597 **
6399.0000	-13.0000	-45.7799 **	-45.8750 **
7110.0000	-13.0000	-43.4825 **	-43.8160 **



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

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN

S/N: 734TYF0069

SR:27331-EMC-00031

Battery Part No: PMNN4805A

Accy Part No: AN000415A01

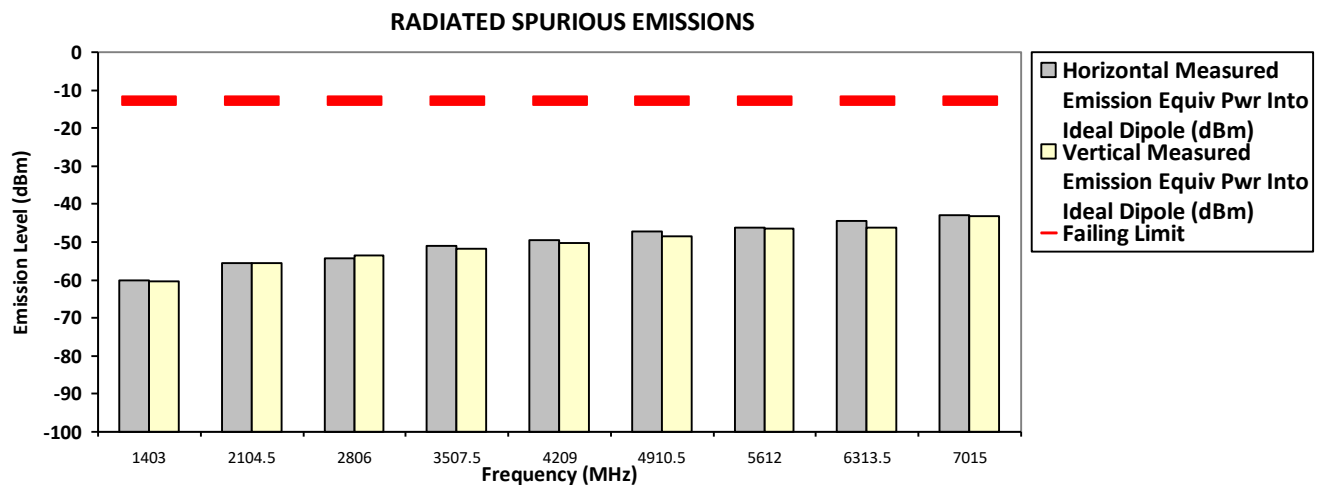
Test Mode: TX LTE (Band 12) Z-Plane

701.500000 MHz (Low)

Bandwidth 5MHz

0.282 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)
1403.0000	-13.0000	-60.0534 **	-60.4576 **
2104.5000	-13.0000	-55.5365 **	-55.4340 **
2806.0000	-13.0000	-54.1699 **	-53.6474 **
3507.5000	-13.0000	-50.8859 **	-51.7012 **
4209.0000	-13.0000	-49.3840 **	-50.1553 **
4910.5000	-13.0000	-47.2217 **	-48.5426 **
5612.0000	-13.0000	-46.1925 **	-46.3434 **
6313.5000	-13.0000	-44.5040 **	-46.1384 **
7015.0000	-13.0000	-43.0202 **	-43.2869 **



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

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

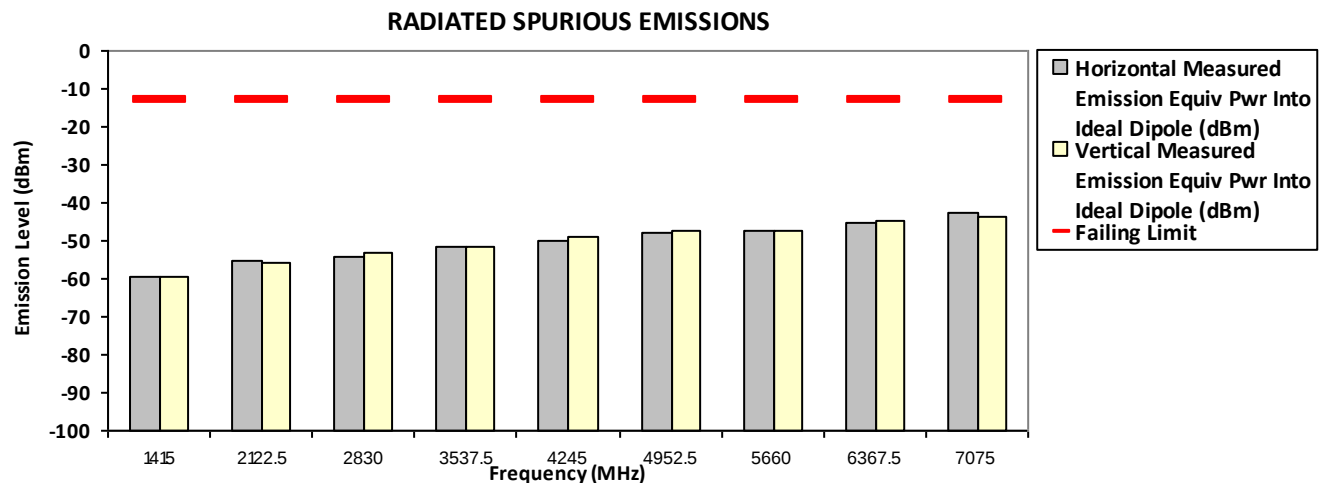
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:
Model Number: AAH90UCU9RH1AN **S/N: 734TYF0069** **SR:27331-EMC-00031**
Battery Part No: PMNN4805A **Accy Part No: AN000415A01**
Test Mode: TX LTE (Band 12) Z-Plane
707.500000 MHz (Mid) **Bandwidth 10MHz** **0.282 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)
1415.0000	-13.0000	-59.4602 **	-59.6628 **
2122.5000	-13.0000	-55.0980 **	-55.7777 **
2830.0000	-13.0000	-54.1070 **	-53.3869 **
3537.5000	-13.0000	-51.4518 **	-51.4543 **
4245.0000	-13.0000	-49.9596 **	-48.7812 **
4952.5000	-13.0000	-47.8682 **	-47.3541 **
5660.0000	-13.0000	-47.2151 **	-47.3674 **
6367.5000	-13.0000	-45.2813 **	-44.5542 **
7075.0000	-13.0000	-42.3793 **	-43.7781 **



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

System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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SAC Transmitter Radiated Emission:

Model Number: AAH90UCU9RH1AN

S/N: 734TYF0069

SR:27331-EMC-00031

Battery Part No: PMNN4805A

Accy Part No: AN000415A01

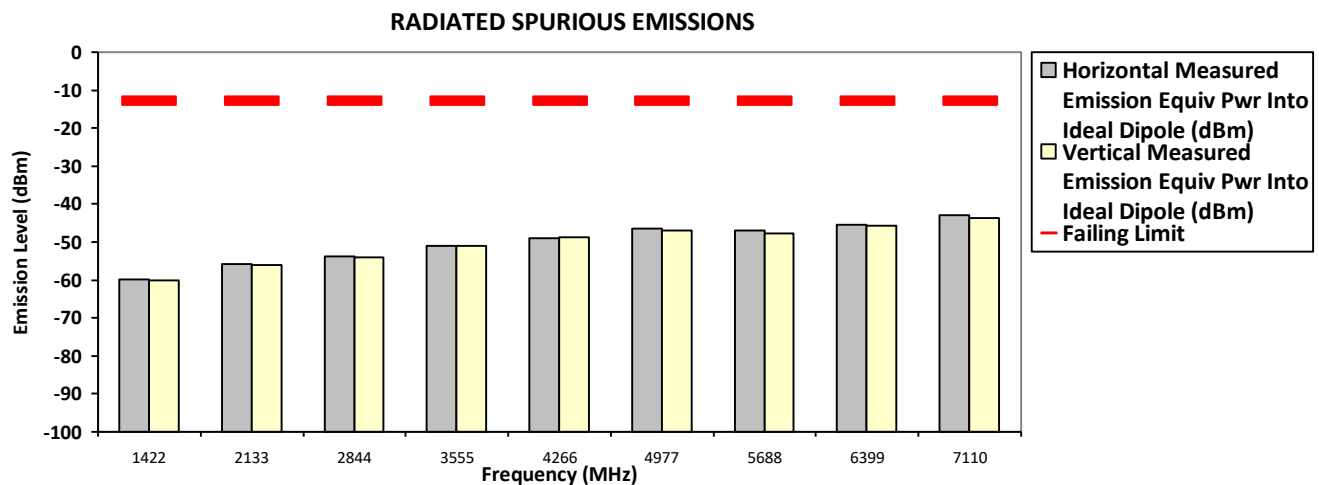
Test Mode: TX LTE (Band 12) Z-Plane

711.000000 MHz (High)

Bandwidth 10MHz

0.282 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)
1422.0000	-13.0000	-59.7458 **	-60.0605 **
2133.0000	-13.0000	-55.8764 **	-56.0447 **
2844.0000	-13.0000	-53.7170 **	-54.1092 **
3555.0000	-13.0000	-50.9391 **	-51.1318 **
4266.0000	-13.0000	-49.0807 **	-48.8083 **
4977.0000	-13.0000	-46.3600 **	-47.0154 **
5688.0000	-13.0000	-46.8868 **	-47.8297 **
6399.0000	-13.0000	-45.3375 **	-45.6452 **
7110.0000	-13.0000	-42.8476 **	-43.7349 **



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

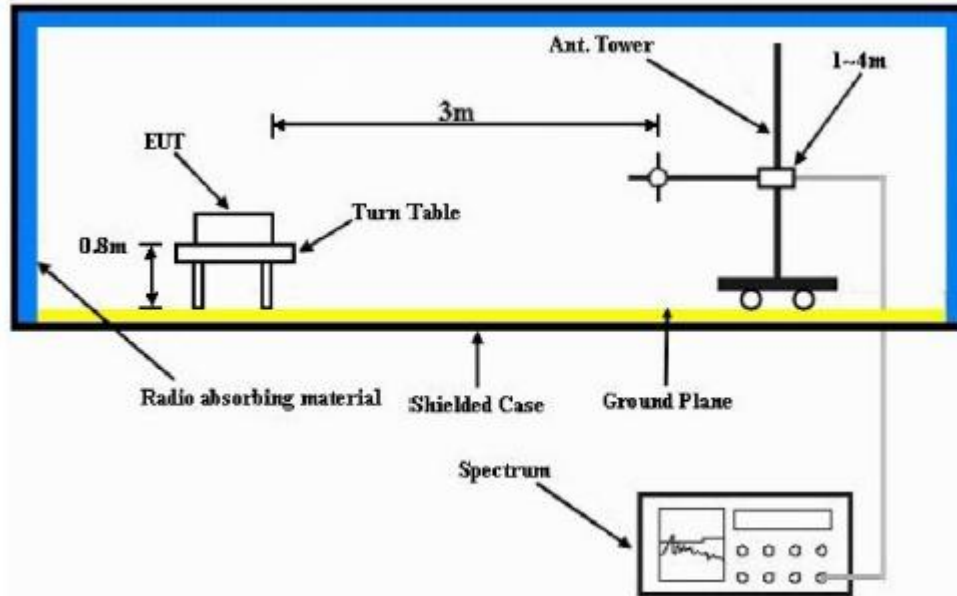
System MU: 4.03 dB

Remarks:

Passed Results	Marginal Results	Failed Results
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1.13. Effective Radiated Power (ERP)

1.13.1. 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 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) EIRP = “Read Value” + Measured substitution value.

1.13.2. Test Limit

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw). Power is given in terms of effective radiated power (ERP).

1.13.3. Effective Radiated Power (ERP) - LTE Band 12 (699-716MHz)

Not Performed.

--End of Test Report--