

	    CERTIFICATE 2518.08 SAMM 825
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.B
Date/s Tested : 04-March-2024 - 31-May-2024 Report Issue Date : 1-June-2024 Manufacturer/Location : Motorola Solutions Malaysia Sdn Bhd Manufacturer Address : Plot 2A, Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia Requestor : HOMICIL HARLY Product Type : Hand-held Product Version (PMN) : APX N70 Model Number (HVIN) : H35XDT9PW8AN & H35XDT9PW8AN-H Frequency Band : Refer to section 1.4 Rated / Max RF Output Power : 199.53mW / 252mW Applicant Name : Motorola Solutions Inc Applicant Address : Plot 2A, Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia FCC Registrations : 461337 ISED Registrations : MY0001 Firmware Version (FVIN) : D02.75.76 (BP), R02.00.00 (AP) The equipment was tested accordance to the requirement listed below: (LTE Band 14) FCC 47 CFR Part 2 / 90 ISED RSS GEN / 140 PASS	
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Prepared By:  _____ Awatif Rahman Technician	Approve Signatory:  _____ Maheshvaran A/L Rajagopal Responsible Engineer

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev A.	Initial Report	04-April-2024	Awatif Rahman
Rev. B	Include additional test data (Peak-to-Average Power Ratio, Frequency Stability, Band Edge Conducted Spurious Emission, and Conducted Spurious Emission).	31-May-2024	Awatif Rahman

1.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Results	Remarks	Serial Number Tested
2.1046	RSS-140 3.1	Conducted RF Output Power	Pass	Meet the requirement of limit	022TAB0501
2.1046	RSS 140 4.3	Peak-to-Average Power Ratio	Pass	Meet the requirement of limit	022TAB0501
2.1049 90.209(7)	RSS-Gen 6.7	Occupied Bandwidth (-26dBc, 99%)	Pass	Meet the requirement of limit	022TAB0501
2.1055 90.213	RSS-140 4.2	Frequency Stability	Pass	Meet the requirement of limit	022TAB0501
2.1051 90.543(e)	RSS-Gen 6.13 RSS-140 4.4	Band Edge/Emission Mask Conducted Spurious Emission	Pass	Meet the requirement of limit	022TAB0501
2.1051 90.543(e)	RSS-Gen 6.13 RSS-140 4.4	Conducted Spurious Emissions	Pass	Meet the requirement of limit	022TAB0501
2.1051 90.543(e)	RSS-140 4.4	Radiated Spurious Emission	Pass	- 40.634 dBm (Margin: 27.634 dBm, Noise Floor)	022TAB0346
90.635(b)	RSS-140 4.3	Effective Radiated Power (ERP)	Pass	Meet the requirement of limit	022TAB0501
90.543(f)	RSS-140 4.4(b)	GNSS (EIRP for 1599 – 1610MHz)	Pass	Meet the requirement of limit	022TAB0346

1.1. Measurement Uncertainty

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

1.2.Equipment List

DESCRIPTION	MODEL	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
BROADBAND ATE 1 (RF CONDUCTED TESTS)				
Wideband Radio Communication Tester	CMW500	154550	09-Aug-23	08-Aug-24
Signal Analyzer	FSV40	101431	07-Aug-23	06-Aug-24
Chamber	SH-641	92003150	15-Sep-23	15-Sep-24
Power Supply	6652A	3640A02967	15-Oct-23	15-Oct-24
Test Software	R&S CMWrun			
Version	V.1.9.8			
RADIATED SPURIOUS EMISSION (EMC CHAMBER 1)				
Drg Horn Freq.	SAS-571	1143	08-Mar-23	08-Mar-25
Drg Horn Freq.	SAS-571	720	18-Apr-23	18-Apr-25
Power Supply	NR973A	MY54180189	30-Aug-23	30-Aug-24
Signal Generator	SMB 100A	182511	04-Jun-21	04-Jun-24
Emi Test Receiver	ESW44	101731	11-Aug-23	11-Aug-24
Bilog Antenna	CBL6112B	2950	14-Dec-23	14-Dec-24
Bilog Antenna	CBL6112B	2964	25-Sep-23	25-Sep-24
Data Logger Thermohygrometer	SDL500	A.016800	21-Jun-23	21-Jun-24
Broad-Band Horn Antenna	BBHA9170	BBHA9170143	28-Aug-23	28-Aug-24
Preamplifier	PAM-0118P	361	29-Sep-23	29-Sep-26
Loop Antenna	6502	00208416	26-Oct-23	26-Oct-24
5m Semi-Anechoic Chamber	S800-HX	J2308	Not Required	Not Required
System Controller	SC104V	050806-1	Not Required	Not Required
Turntable Flush Mount 2m	FM2011	NA	Not Required	Not Required
Antenna Positioning Tower	TLT2	NA	Not Required	Not Required
Preamplifier 18-40Ghz	Miteq Hi Gain Sucoflex	002	Not Required	Not Required
Test Software	EMC_FCC_IC_BLUETOOTH_RE_TEST			
Version	EMC_FCC_RE_v1.6.5			

1.3.General Information

General Description of EUT

Product	ALOHA UHF			
Brand	Motorola Solutions			
Test Model	H35XDT9PW8AN, H35XDT9PW8AN-H			
Power Supply Rating	7.5 Vdc			
Mode of Operation	LTE Band 14			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 14	Channel Bandwidth 5MHz	790.5MHz~795.5MHz	
		Channel Bandwidth 10MHz	793.0MHz	
Max. Conducted RF Output Power	LTE Band 14 QPSK	Channel Bandwidth 5MHz	23.793dBm (0.239W)	
		Channel Bandwidth 10MHz	23.923dBm (0.247W)	
	LTE Band 14 16QAM	Channel Bandwidth 5MHz	23.059dBm (0.202W)	
		Channel Bandwidth 10MHz	22.996dBm (0.199W)	
Emission Designator	LTE Band 14		QPSK	16QAM
		Channel Bandwidth 5MHz	4M47G7D	4M47D7W
		Channel Bandwidth 10MHz	8M91G7D	8M91D7W
Antenna Type	LTE Band 14	Antenna LTE Low Band 788 – 798MHz (-1.7dBi)		
SW Version	D02.75.76 (BP), R02.00.00 (AP)			
HW Version	P2			

Note:

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

Item	Brand	Model or P/N	Specification
Li-Ion Battery	MOTOROLA	PMNN4818A	UL 3650mAH (using RN 2170 Li-Ion cell)

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 90

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 14	5 MHz	23305 ~ 23355	23305	23330	23355	790.5	793.0	795.5
	10 MHz	23330	-	23330	-	-	793.0	-

1.5. Test Mode Applicability and Tested Channel Detail

Pre-scan also have been conducted with the accessory devices listed in section table 1.3, only the worst case radiated emission results of the combination test configuration is reported in this report.

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

LTE Band 14

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted RF Output Power	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM	As per table 1.6.3
	23330	23330	10 MHz		
Peak-to-Average Power Ratio	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
	23330	23330	10 MHz		50 RB / 0 RB Offset
Occupied Bandwidth	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	23330	23330	10 MHz		50 RB / 0 RB Offset
Frequency Stability	23305 ~ 23355	23305, 23355	5 MHz	QPSK	25 RB / 0 RB Offset
	23330	23330	10 MHz		50 RB / 0 RB Offset
Band Edge / Emission Mask Conducted Spurious Emission	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset 1 RB / 24 RB Offset 12 RB / 6 RB Offset
	23330	23330	10 MHz		1 RB / 0 RB Offset 50 RB / 0 RB Offset 1 RB / 49 RB Offset 25 RB / 12 RB Offset
Conducted Spurious Emission	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK	1 RB / 24 RB Offset
	23330	23330	10 MHz		1 RB / 0 RB Offset
Radiated Spurious Emission	23305 ~ 23355	23305	5 MHz	QPSK	1 RB / 24 RB Offset
		23330	10 MHz		1 RB / 0 RB Offset
		23355	5 MHz		1 RB / 0 RB Offset
Effective Radiated Power (ERP)	23305 ~ 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM	As per table 1.6.4
	23330	23330	10 MHz		
GNSS (EIRP for 1599 – 1610MHz)	23305 ~ 23355	23305	5 MHz	QPSK	1 RB / 24 RB Offset
		23355	5 MHz		1 RB / 0 RB Offset

NOTE:

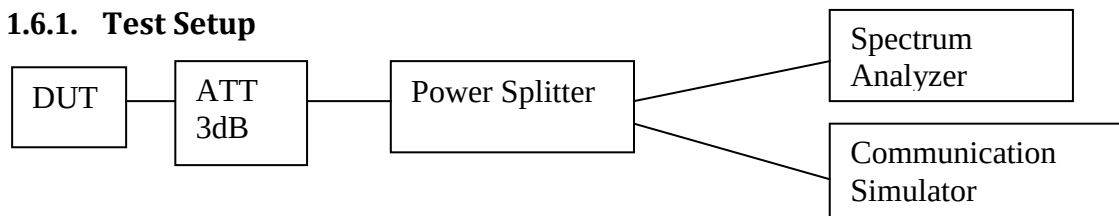
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Conducted Spurious Emission, Radiated Emission and GNSS (EIRP for 1599 – 1610MHz) had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating frequency band.
3. The Effective Radiated Power (ERP) was calculated from Conducted RF Output Power in QPSK and 16QAM modulation.
4. The Peak to Average and Occupied Bandwidth was 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	7.5 Vdc	Awatif Rahman
Peak-to-Average Power Ratio	25°C, 50% RH	7.5 Vdc	Awatif Rahman
Occupied Bandwidth	25°C, 50% RH	7.5 Vdc	Awatif Rahman
Frequency Stability	-30°C ~ 60°C	7.5 Vdc	Awatif Rahman
Band Edge / Emission Mask Conducted Spurious Emission	25°C, 50% RH	7.5 Vdc	Awatif Rahman
Conducted Spurious Emssion	25°C, 50% RH	7.5 Vdc	Awatif Rahman
Radiated Spurious Emission	23.4°C, 69.3% RH	7.5 Vdc	Nazrin & Fuad
Equivalent Isotropically Radiated Power (EIRP)	25°C, 50% RH	7.5 Vdc	Awatif Rahman

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 were 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 Limits

FCC: Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

ISED: The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

1.6.3. Conducted RF Output Power – LTE Band 14 (788-798MHz)

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
			23305	23330	23355	23305	23330	23355
			790.5MHz	793.0MHz	795.5 MHz	790.5 MHz	793.0MHz	795.5 MHz
Band 14 / 5MHz	1	0	23.777	23.545	23.579	22.928	22.687	22.769
	1	13	23.643	23.586	23.554	22.866	22.631	22.581
	1	24	23.793	23.607	23.519	23.059	22.703	22.638
	12	0	22.632	22.554	22.703	21.67	21.519	21.685
	12	6	22.597	22.571	22.796	21.586	21.514	21.767
	12	13	22.67	22.562	22.616	21.646	21.506	21.611
	25	0	22.606	22.575	22.691	21.634	21.575	21.605

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
				23330			23330	
Band 14 / 10MHz				793.0MHz			793.0MHz	
	1	0		23.923			22.996	
	1	25		23.657			22.713	
	1	49		23.699			22.851	
	25	0		22.612			21.741	
	25	13		22.64			21.685	
	25	25		22.63			21.64	
	50	0		22.611			21.582	

1.6.4. Effective Radiated Power - LTE Band 14 (788-798MHz)

ERP (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			23305	23330	23355	23305	23330	23355
			790.5MHz	793.0MHz	795.5 MHz	790.5 MHz	793.0MHz	795.5 MHz
Band 14 / 5MHz	1	0	19.927	19.695	19.729	19.078	18.837	18.919
	1	13	19.793	19.736	19.704	19.016	18.781	18.731
	1	24	19.943	19.757	19.669	19.209	18.853	18.788
	12	0	18.782	18.704	18.853	17.82	17.669	17.835
	12	6	18.747	18.721	18.946	17.736	17.664	17.917
	12	13	18.82	18.712	18.766	17.796	17.656	17.761
	25	0	18.756	18.725	18.841	17.784	17.725	17.755

ERP (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
				23330			23330	
				793.0MHz			793.0MHz	
Band 14 / 10MHz	1	0		20.073			19.146	
	1	25		19.807			18.863	
	1	49		19.849			19.001	
	25	0		18.762			17.891	
	25	13		18.79			17.835	
	25	25		18.78			17.79	
	50	0		18.761			17.732	

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

$$\text{EIRP} = \text{P}_{\text{Meas}} + \text{GT}$$

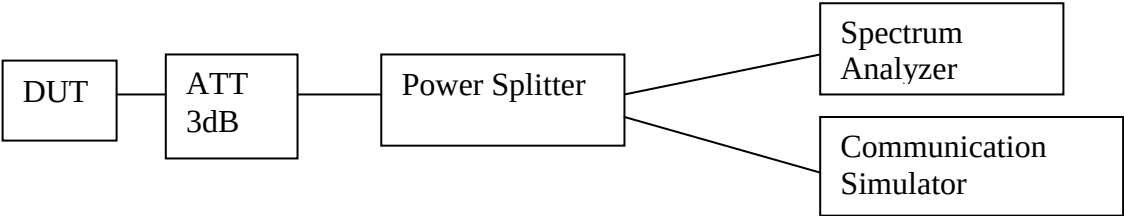
$$\text{ERP} = \text{EIRP} - 2.15$$

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

P_{Meas} measured transmitter output power, in dBm
GT gain of the transmitting antenna, in dBi (EIRP)

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



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

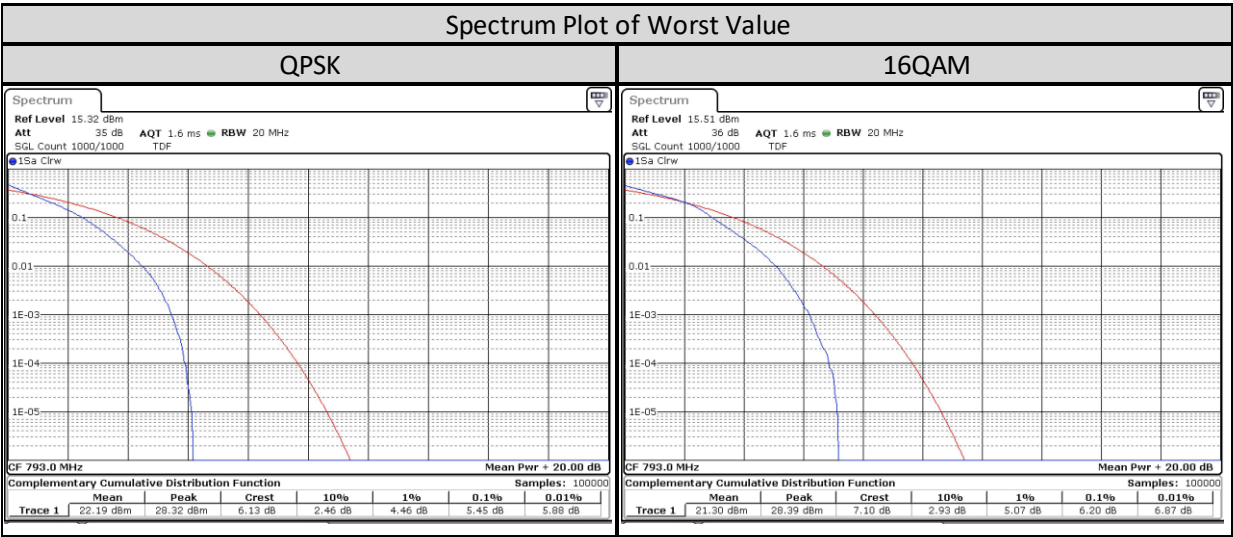
1.7.2. Test Limit

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

1.7.3. Peak To Average Power Ratio – LTE Band 14 (788-798MHz)

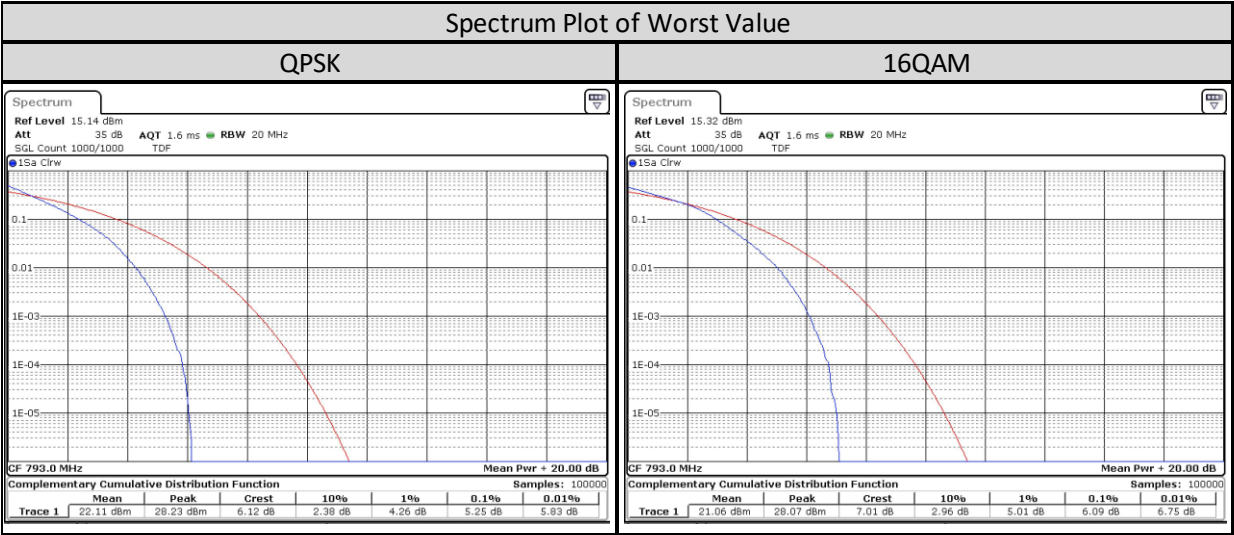
5MHz

LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 14/5MHz/25/0	Low CH 23305	790.5 MHz	5.159	6
	Mid CH 23330	793 MHz	5.449	6.203
	High CH 23355	795.5 MHz	5.188	6.203



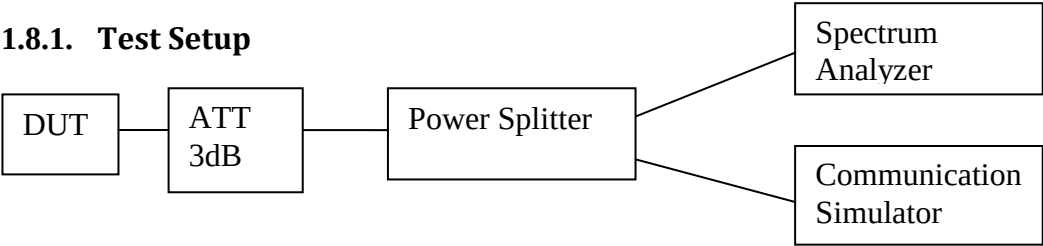
10MHz

LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	Peak To Average (dB)	
			QPSK Modulation	16QAM Modulation
Band 14/10MHz/50/0	Low CH			
	Mid CH 23330	793 MHz	5.246	6.087
	High CH			



1.8.Occupied Bandwidth

1.8.1. Test Setup



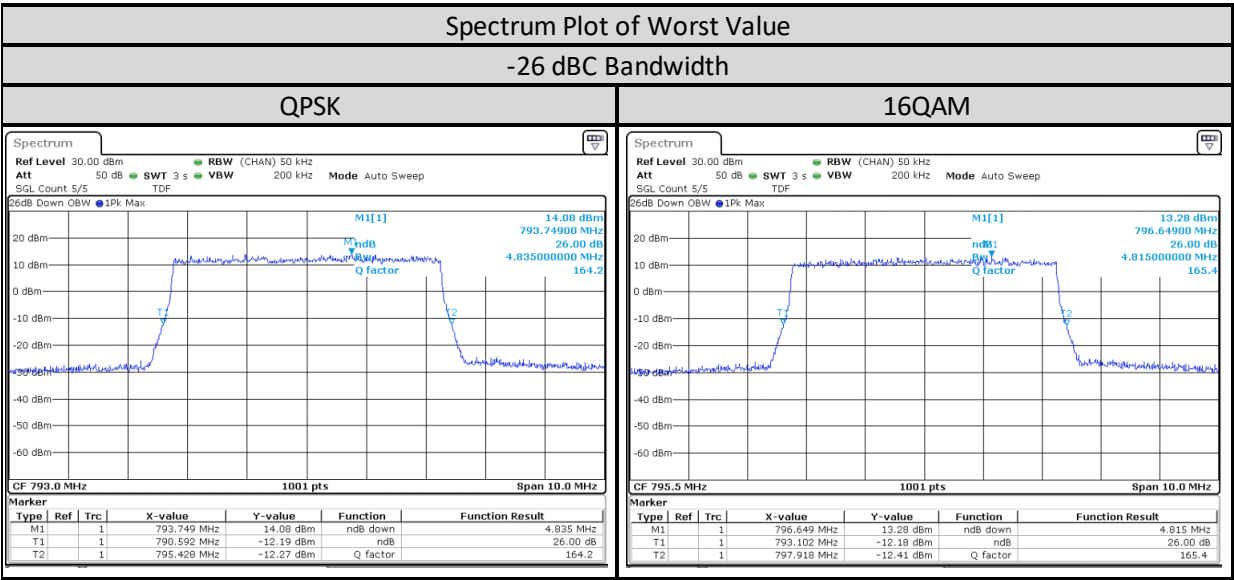
- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) For LTE measurement, set DUT to transmit maximum power & full RB size through communication simulator.
- 4) For LTE measurement, set DUT to transmit maximum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

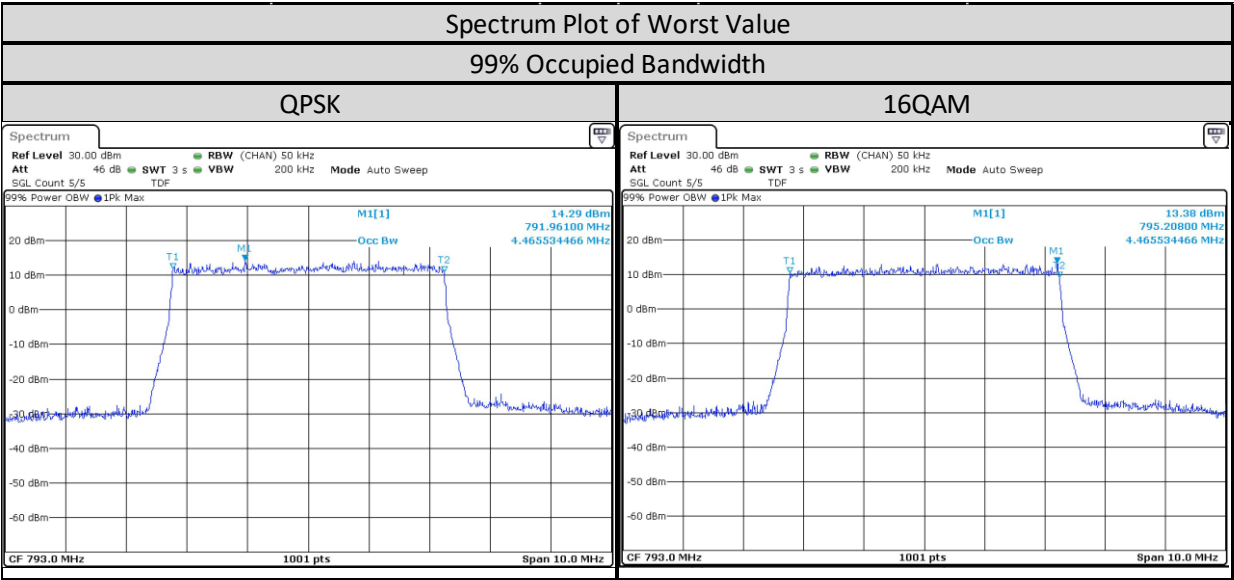
For measurement 99% of occupied bandwidth that is required by FCC 2.1049 and RSS Gen 6.7.

1.8.3. Occupied Bandwidth - LTE Band 14 (788-798MHz)

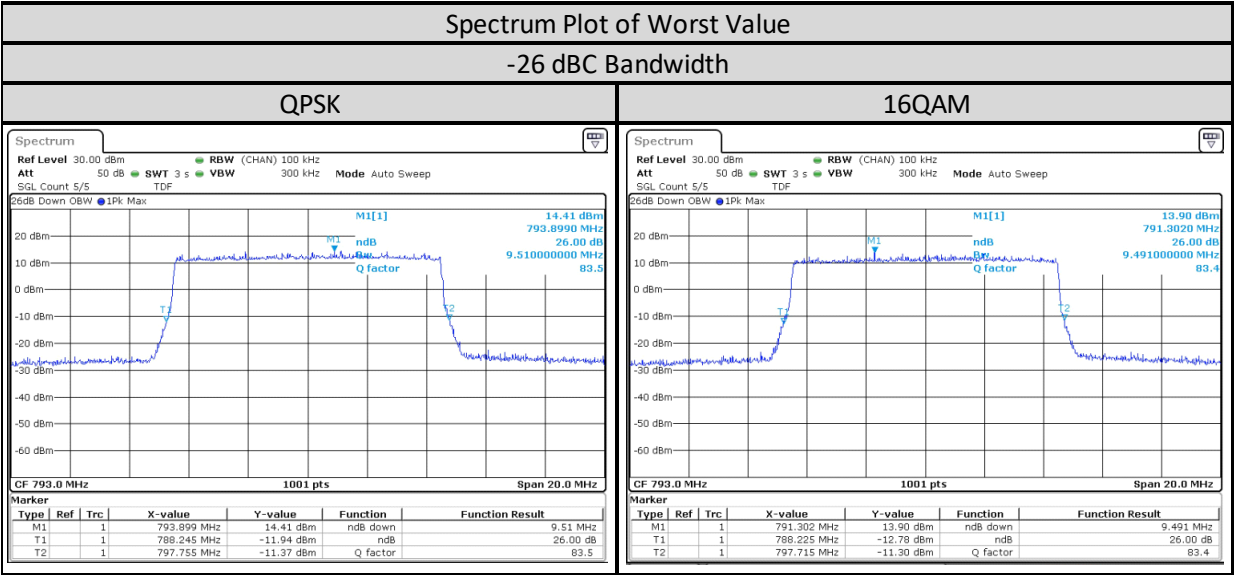
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 14/5MHz/25/0	Low CH 23305	790.5 MHz	4.825	4.795
	Mid CH 23330	793 MHz	4.835	4.805
	High CH 23355	795.5 MHz	4.795	4.815



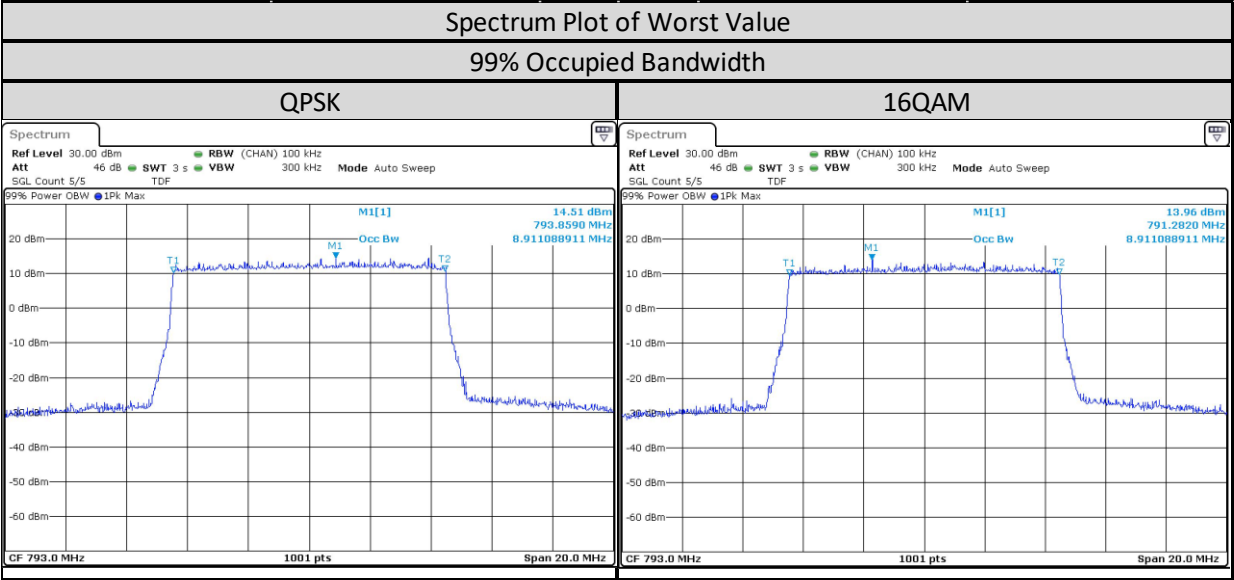
LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 14/5MHz/25/0	Low CH 23305	790.5 MHz	4.456	4.456
	Mid CH 23330	793 MHz	4.466	4.466
	High CH 23355	795.5 MHz	4.466	4.466



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 14/10MHz/50/0	Low CH			
	Mid CH 23330	793 MHz	9.51	9.491
	High CH			

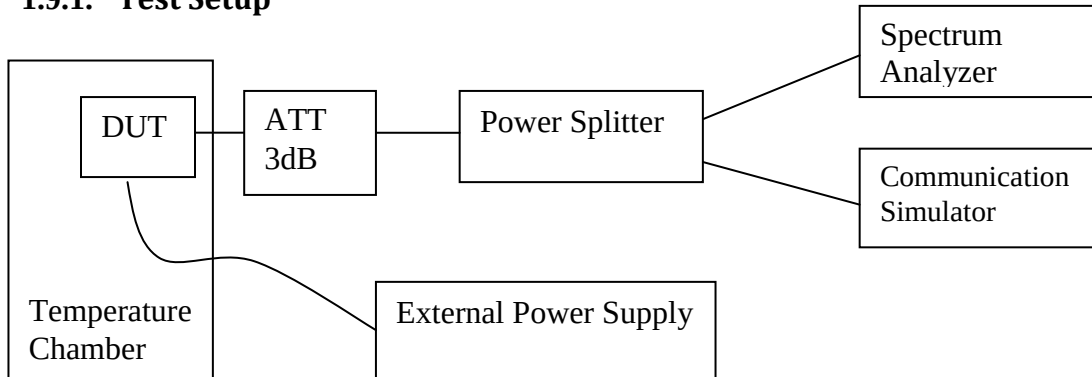


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 14/10MHz/50/0	Low CH			
	Mid CH 23330	793 MHz	8.911	8.911
	High CH			



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 ~ 50 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

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

1.9.3. Frequency Stability - LTE Band 14 (788-798MHz)

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		790.5MHz		795.5MHz	
LTE Band 14		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	60	790.499997	-0.003891	795.500006	0.007858
	50	790.499996	-0.005212	795.500005	0.006797
	40	790.499997	-0.003963	795.500005	0.00588
	30	790.500005	0.005845	795.500004	0.005125
	20	790.500004	0.005121	795.500007	0.008326
	10	790.500004	0.004542	795.500008	0.010124
	0	790.500007	0.009374	795.500007	0.008991
	-10	790.500007	0.008541	795.500008	0.009603
	-20	790.499987	-0.016739	795.500007	0.008308
	-30	790.500006	0.007582	795.500008	0.01052

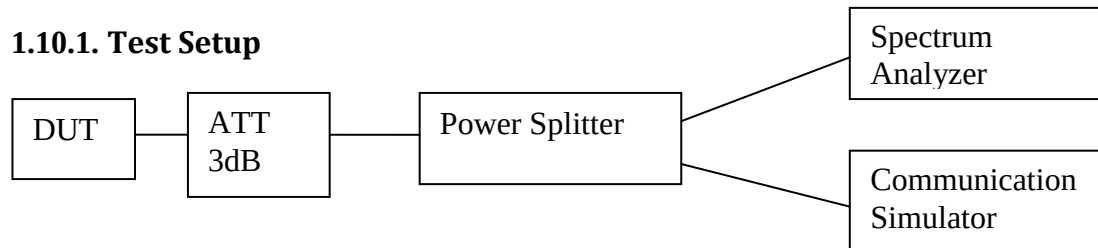
Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		790.5MHz		795.5MHz	
LTE Band 14		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	790.500004	-0.005393	795.500007	0.00642
	7.5	790.500004	-0.00608	795.500007	0.00874
	6	790.500004	-0.00608	795.500008	0.008416

Band	Temp (Deg C)	Frequency Error VS Temperature	
		Channel Bandwidth: 10 MHz	
		Mid Channel	
		793MHz	
LTE Band 14		Frequency (MHz)	Frequency Error (ppm)
	60	793.000005	0.006133
	50	793.000005	0.006115
	40	792.999996	-0.005394
	30	793.000005	0.005755
	20	793.000005	0.006458
	10	793.000004	0.005646
	0	793.000005	0.006278
	-10	793.000005	0.006927
	-20	793.000006	0.007035
	-30	793.000005	0.00635

Band	Voltage (V)	Frequency Error VS Voltage	
		Channel Bandwidth: 10 MHz	
		Mid Channel	
		793MHz	
LTE Band 14		Frequency (MHz)	Frequency Error (ppm)
	9	793.000004	0.004907
	7.5	793.000005	-0.004925
	6	793.000005	-0.004239

1.10. Band Edge/Emission Mask 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, RBW is 1~3% of OBW and VBW is 3 times of RBW.
- 6) Record the maximum trace plot into the test report.

1.10.2. Test Limit

FCC:

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

ISED:

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

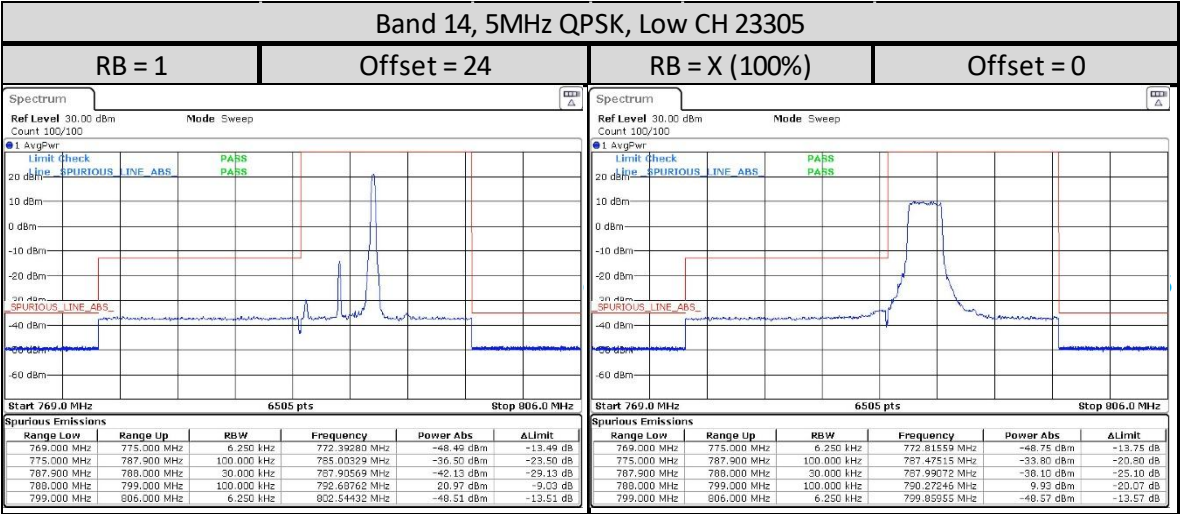
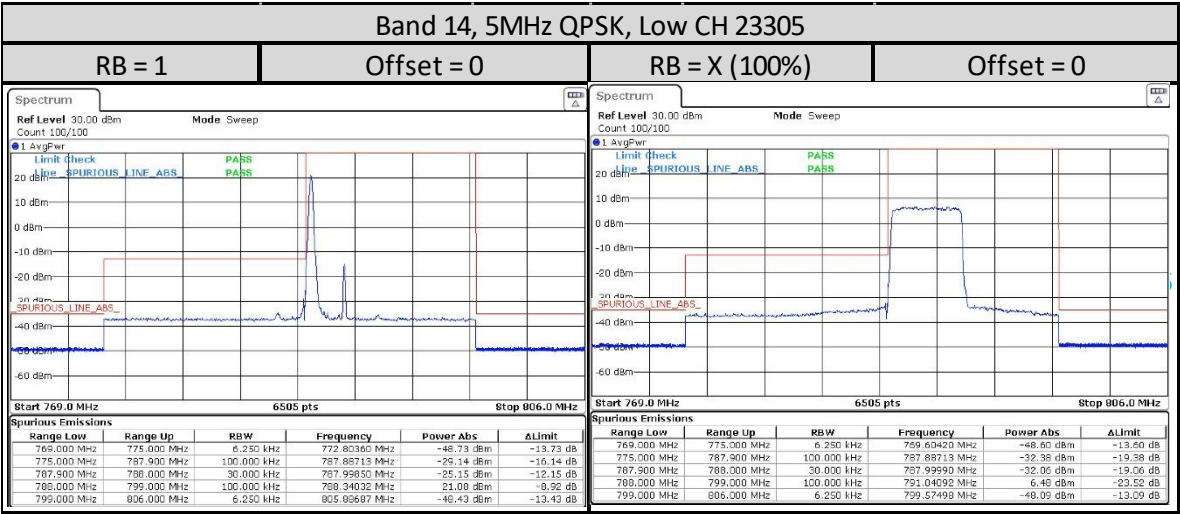
$76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment

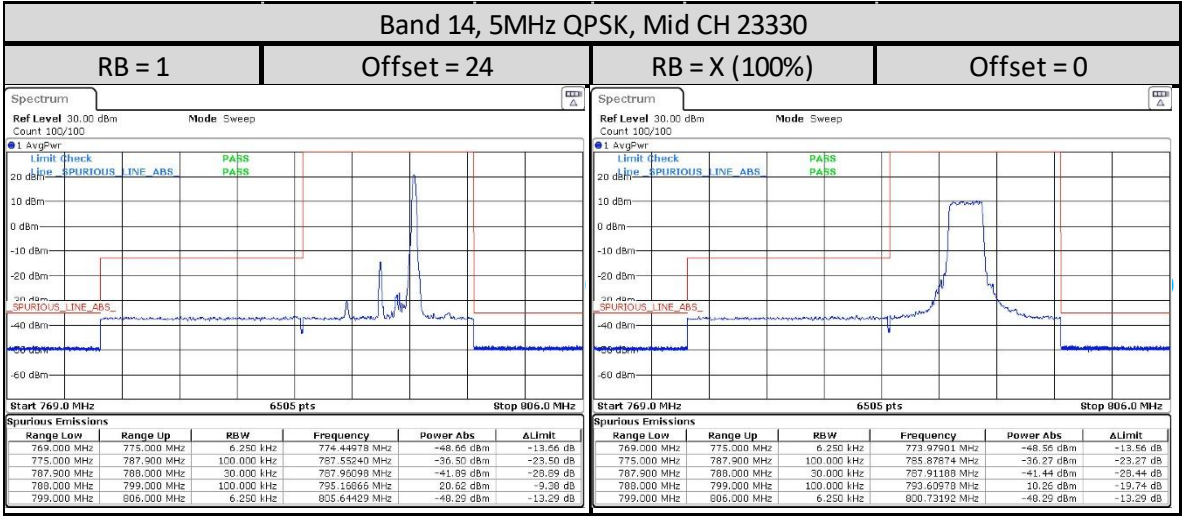
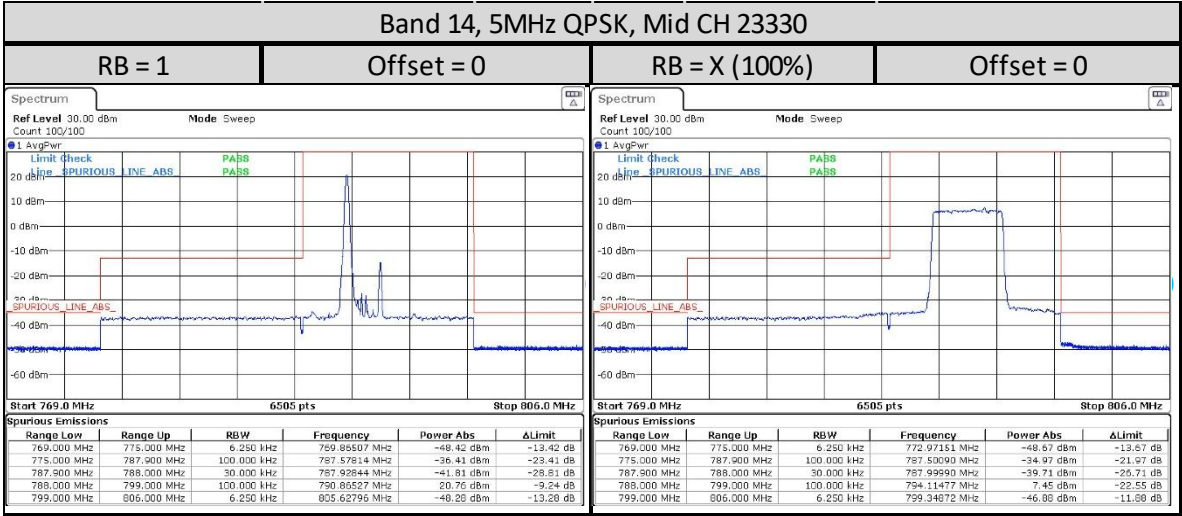
$65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment

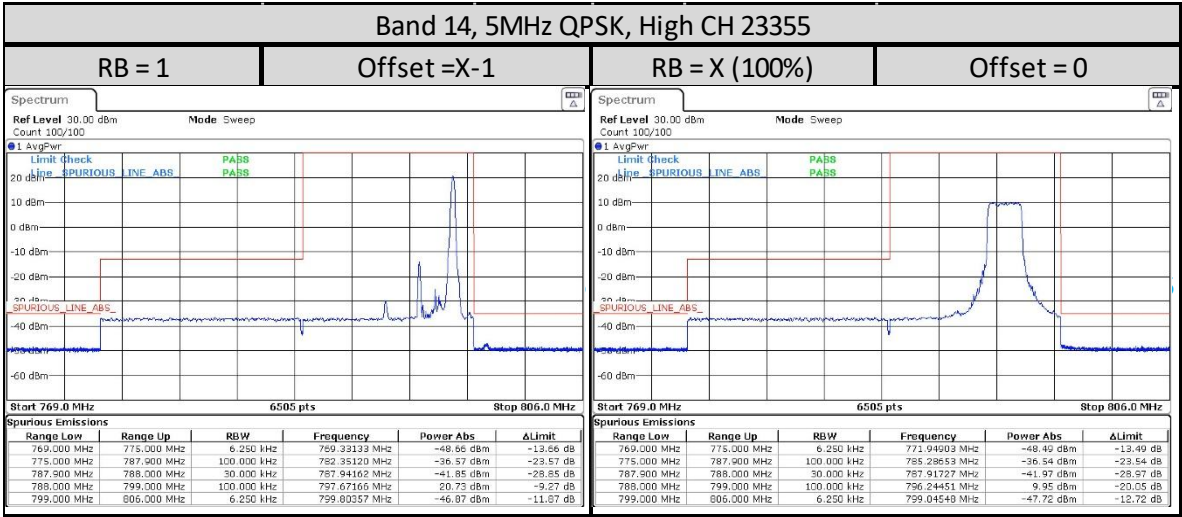
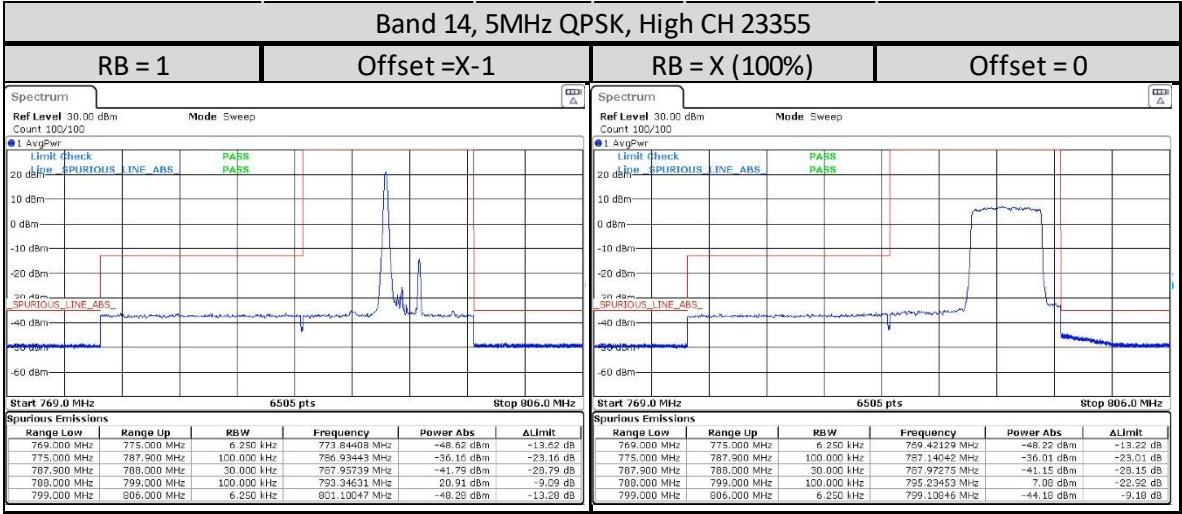
For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

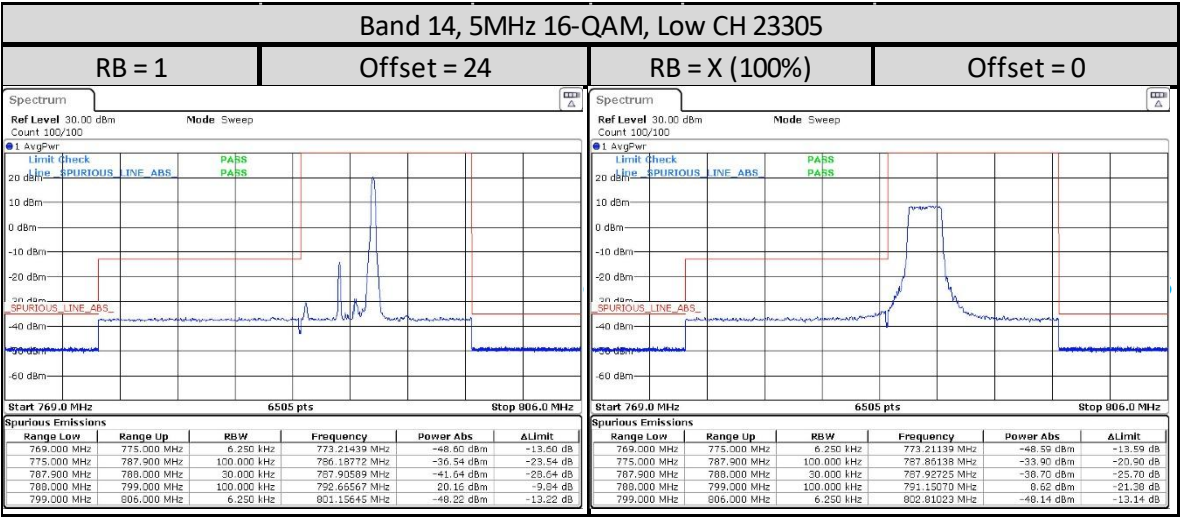
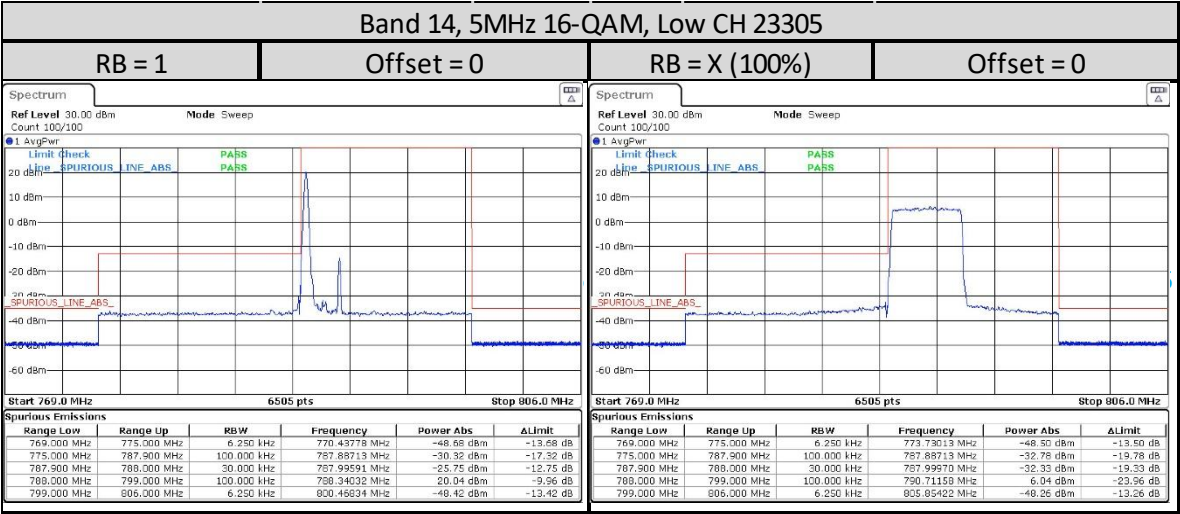
1.10.3. Band Edge/Emission Mask Conducted Spurious Emission - LTE Band 14 (788-798MHz)

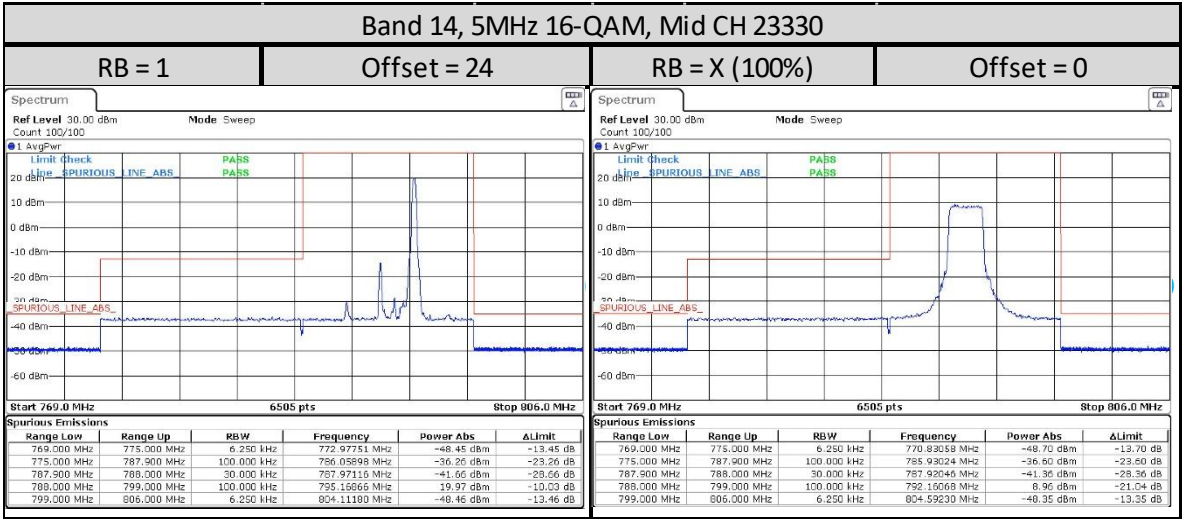
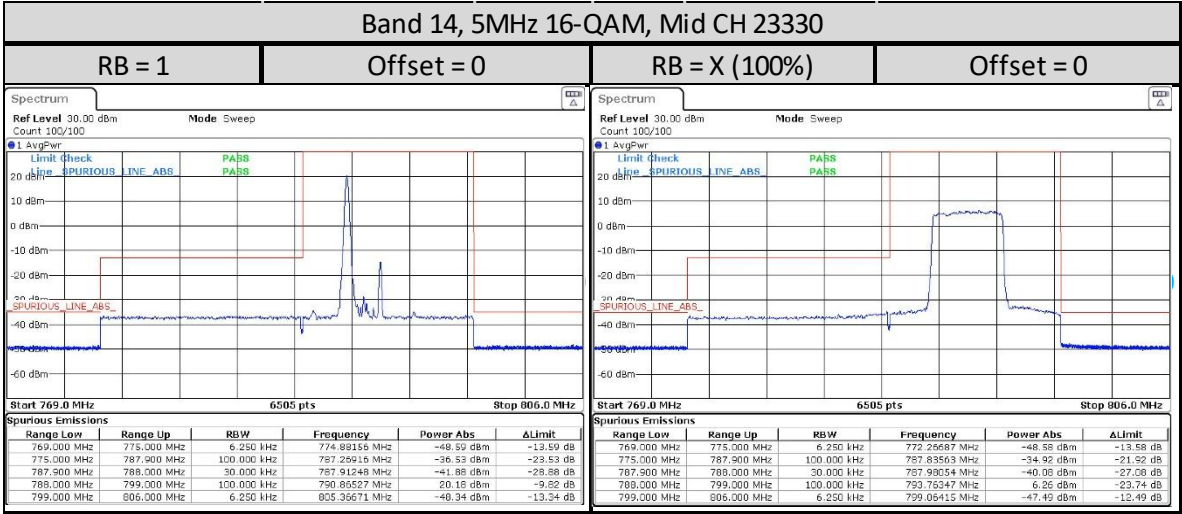
5MHz

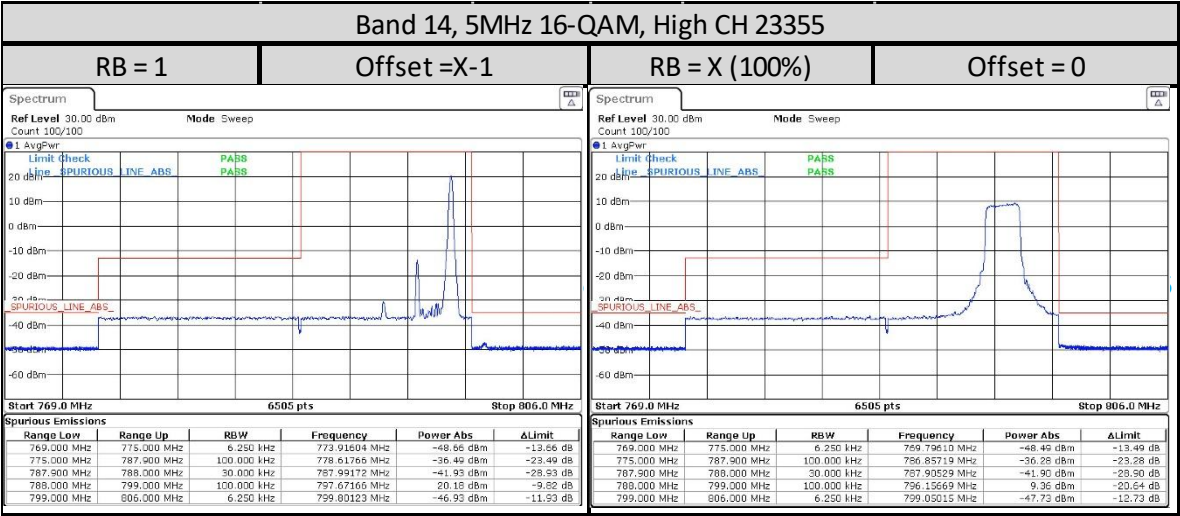
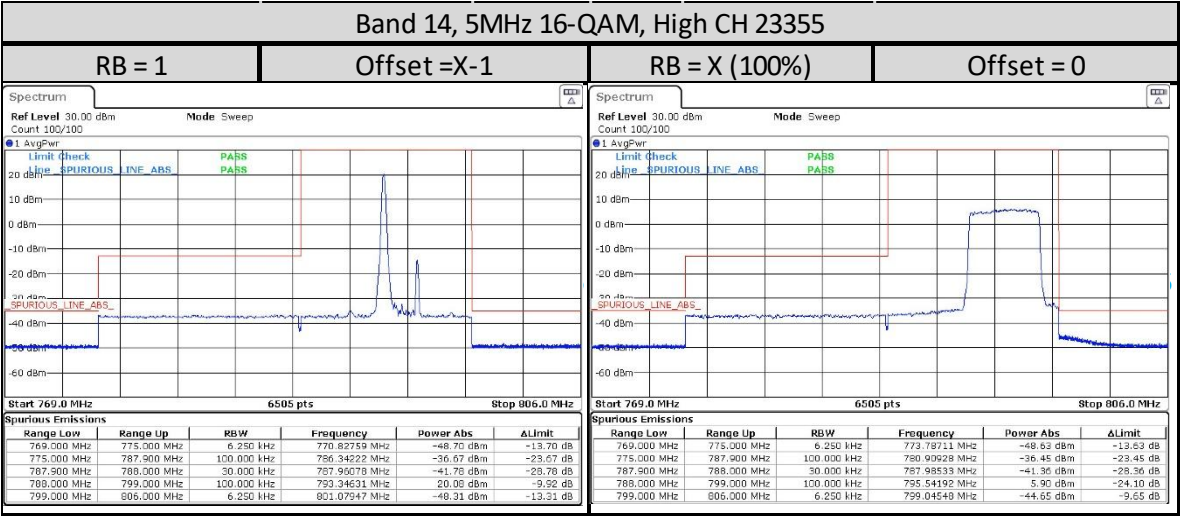




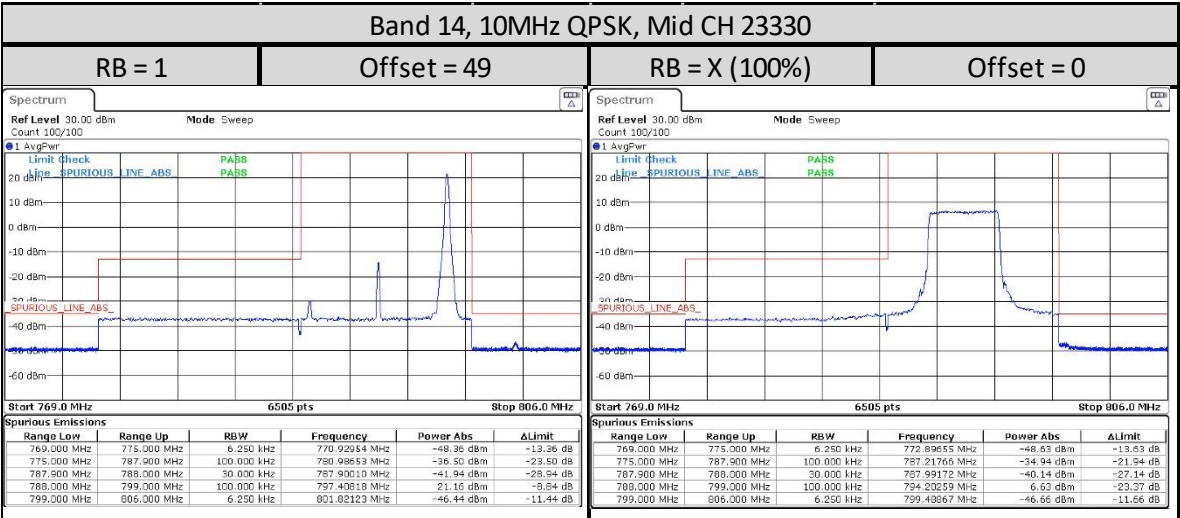
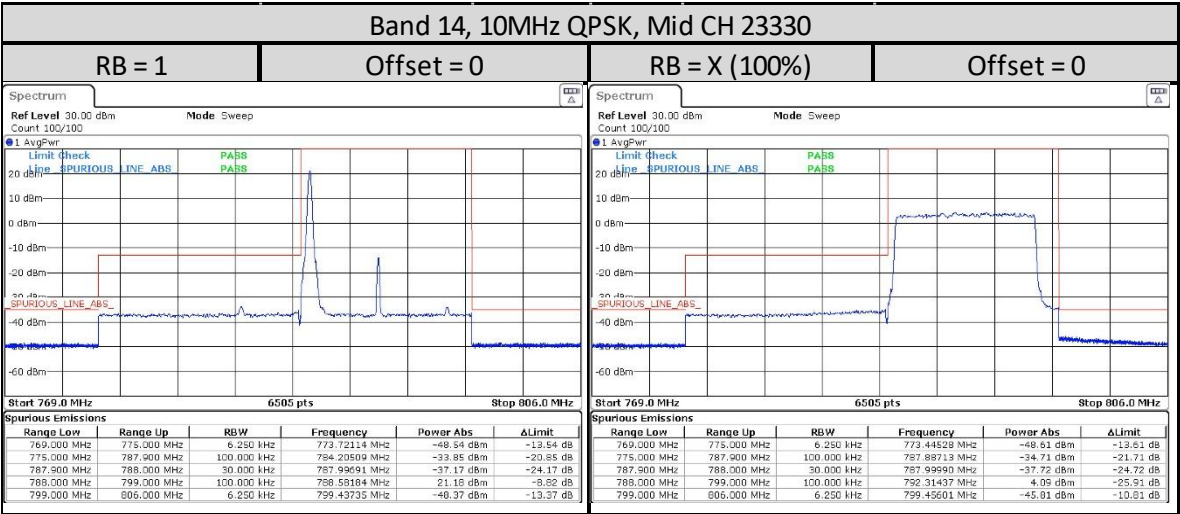


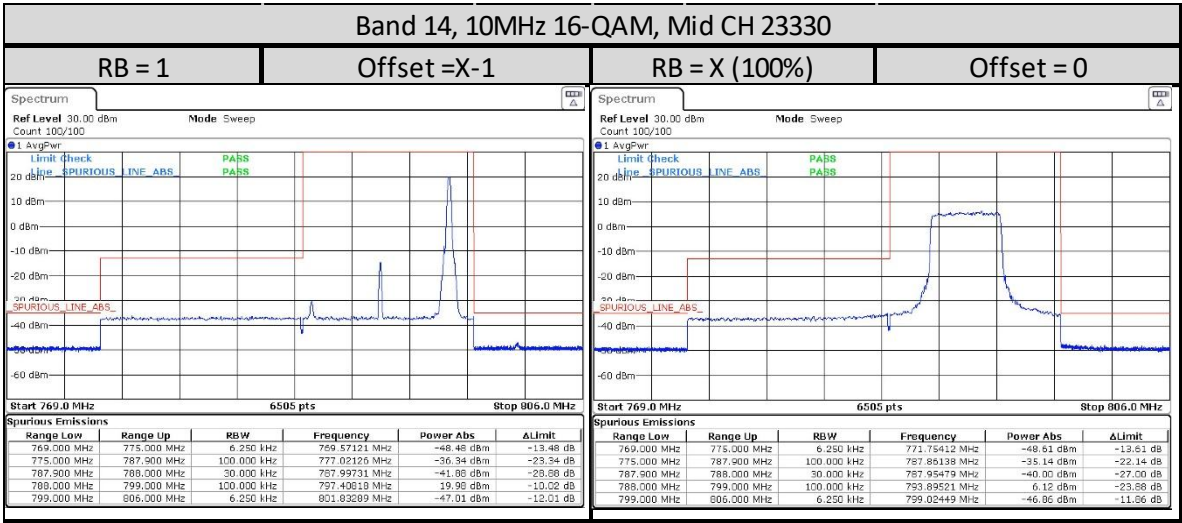
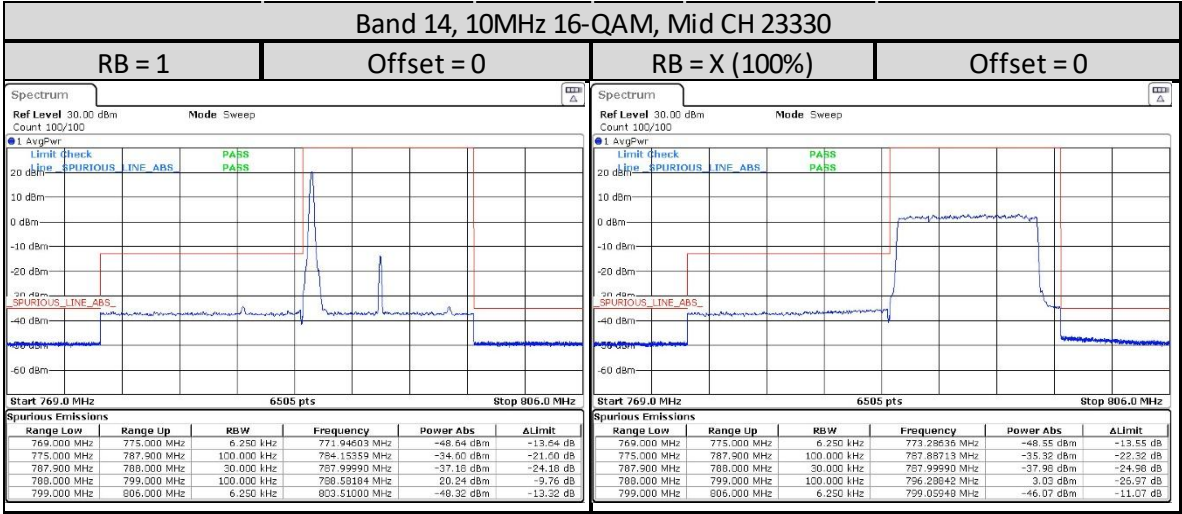






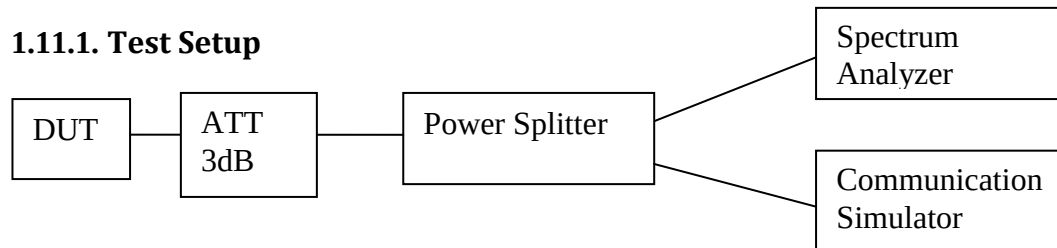
10MHz





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 = 1 MHz, 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

FCC:

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

ISED:

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

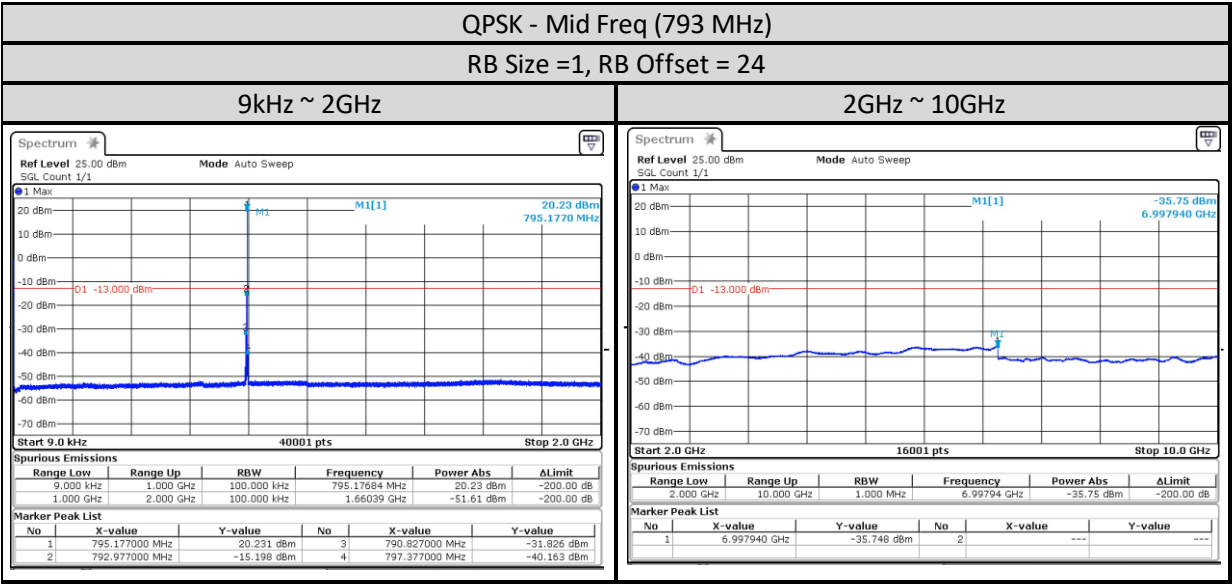
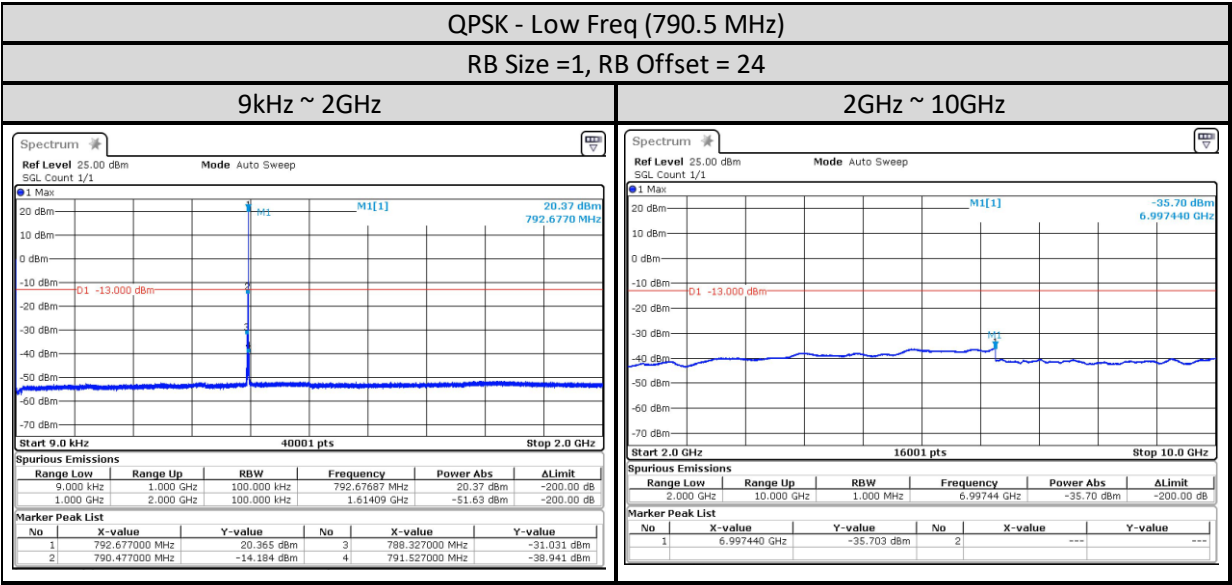
$76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment

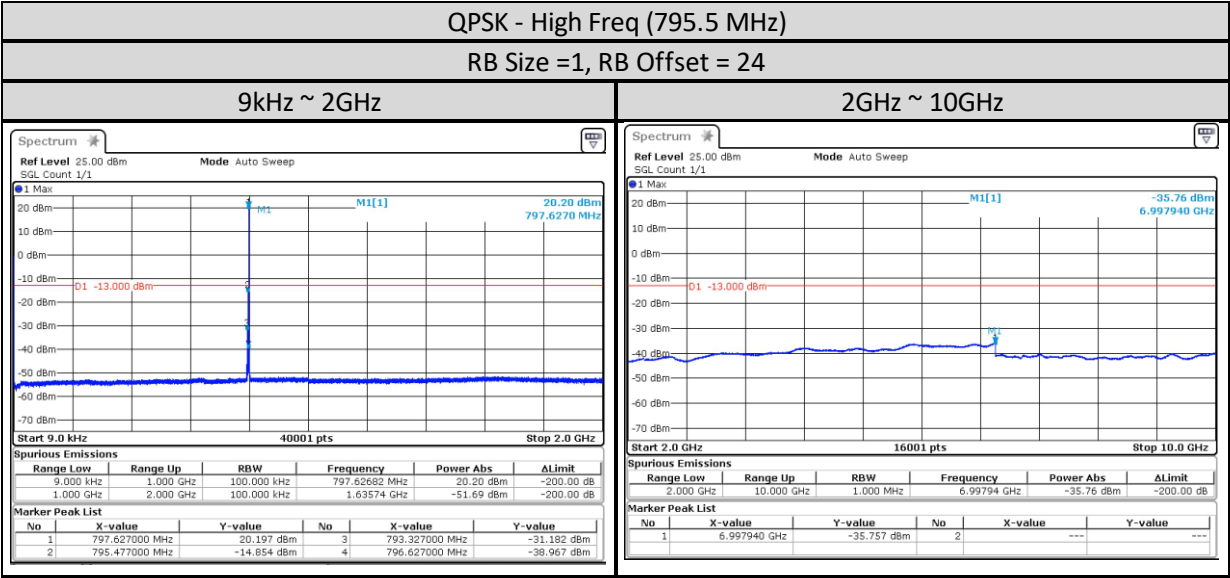
$65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment

For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

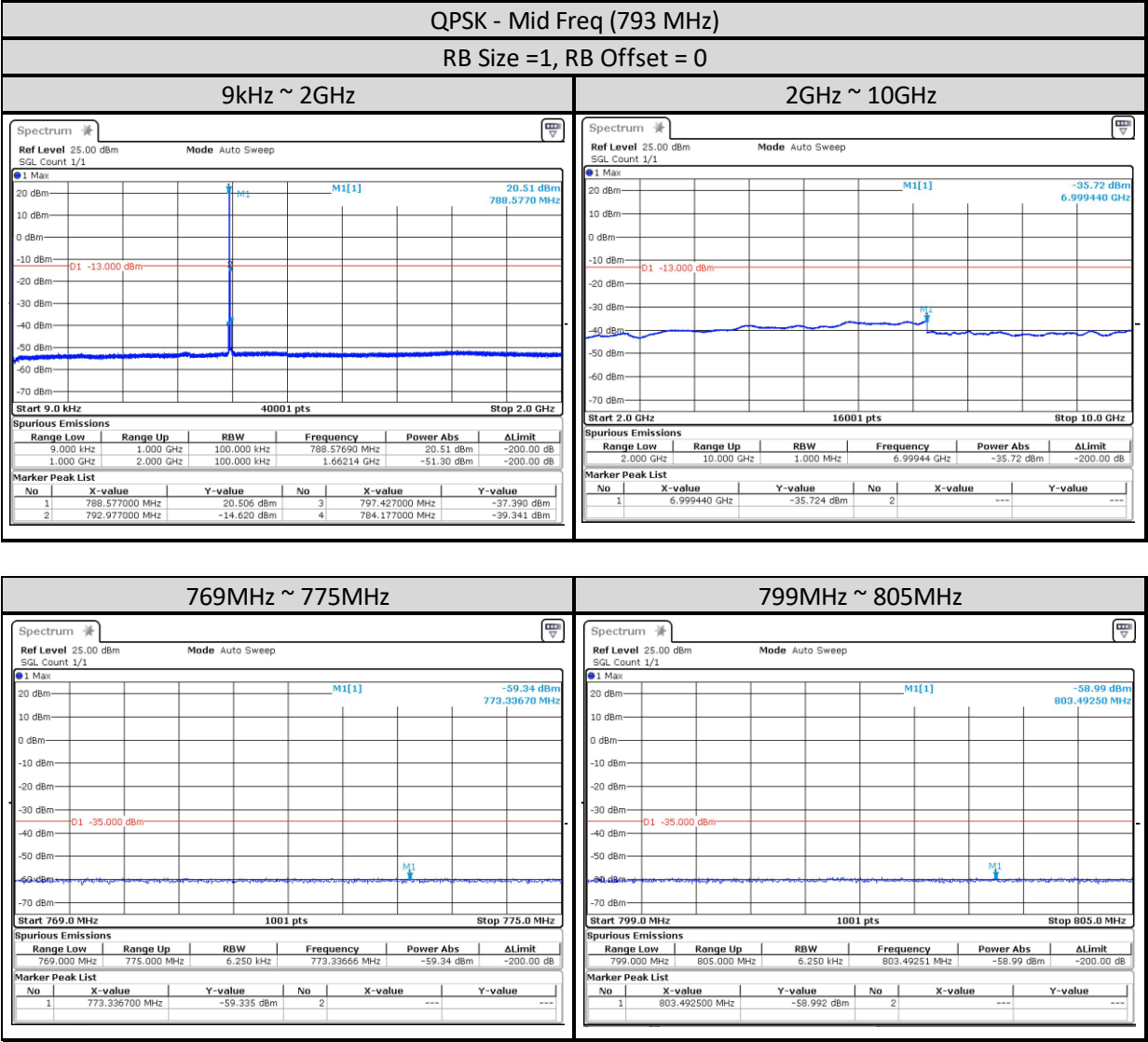
1.11.3. Conducted Spurious Emission - LTE Band 14 (788-798MHz)

5MHz



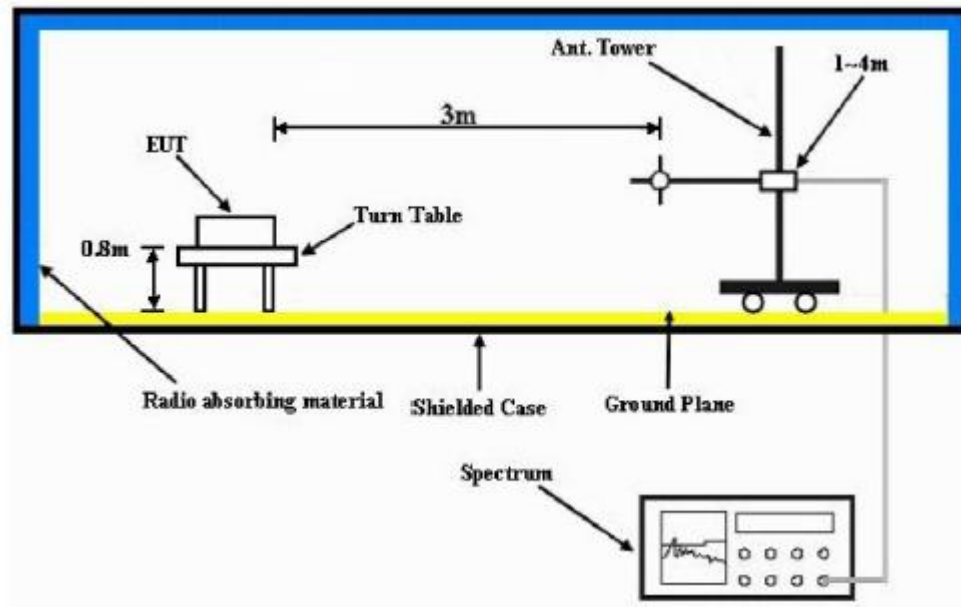


10MHz



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

FCC:

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

ISED:

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

For any frequency between 769-775 MHz and 799-806 MHz:

$76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment

$65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment

For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

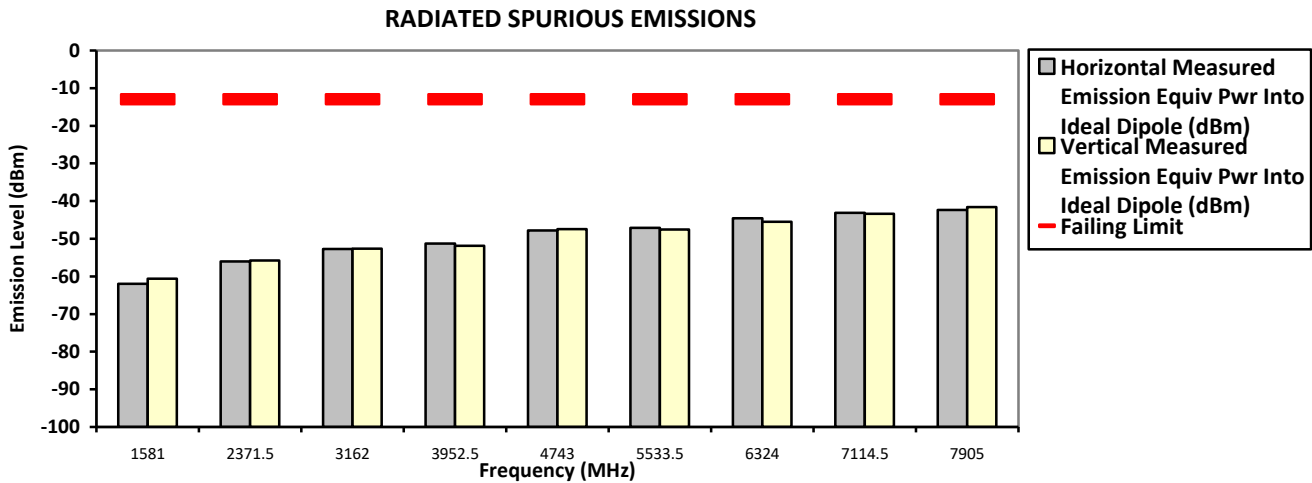
1.12.3. Radiated Spurious Emission – LTE Band 14 (788-798MHz)

SAC Transmitter Radiated Emission:
Model Number: H35XDT9PW8AN-H
Battery Part No: PMNN4818A
790.500000 MHz (Low)

S/N: 022TAB0346
Accy Part No: AN000452A01
Test Mode: TX LTE (Band 14) X-Plane
Bandwidth 5MHz

SR: 40793-EMC-00074
0.252 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)
1581.0000	-13.0000	-61.9390 **	-60.6304 **
2371.5000	-13.0000	-56.0313 **	-55.7678 **
3162.0000	-13.0000	-52.6775 **	-52.5898 **
3952.5000	-13.0000	-51.2585 **	-51.8511 **
4743.0000	-13.0000	-47.7968 **	-47.4355 **
5533.5000	-13.0000	-47.0895 **	-47.5680 **
6324.0000	-13.0000	-44.5843 **	-45.5107 **
7114.5000	-13.0000	-43.1018 **	-43.4110 **
7905.0000	-13.0000	-42.3224 **	-41.6364 **



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: Nazrin & Fuad
Sat, 30 Mar, 2024

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): 23.4 Hum(%RH): 69.3

System MU: 4.03 dB

Remarks:

Passed Results

Marginal Results

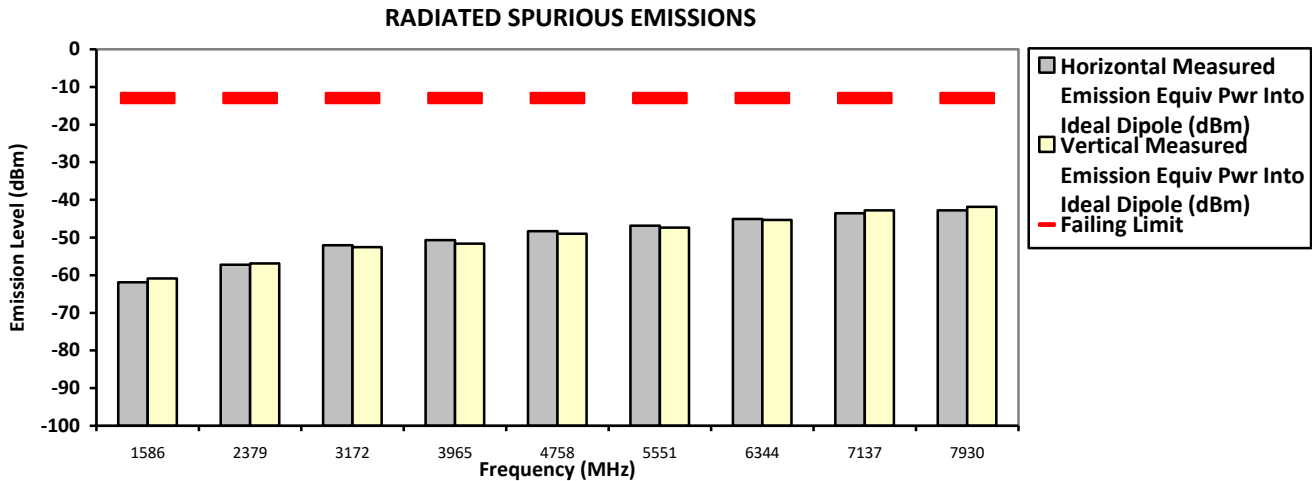
Failed Results

SAC Transmitter Radiated Emission:
Model Number: H35XDT9PW8AN-H
Battery Part No: PMNN4818A
793.000000 MHz (Mid)

S/N: 022TAB0346
Accy Part No: AN000452A01
Test Mode: TX LTE (Band 14) X-Plane
Bandwidth 10MHz

SR: 40793-EMC-00074
0.252 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)
1586.0000	-13.0000	-61.8980 **	-60.8905 **
2379.0000	-13.0000	-57.2272 **	-56.8860 **
3172.0000	-13.0000	-52.0080 **	-52.5528 **
3965.0000	-13.0000	-50.6453 **	-51.6412 **
4758.0000	-13.0000	-48.2622 **	-48.9499 **
5551.0000	-13.0000	-46.8500 **	-47.3456 **
6344.0000	-13.0000	-45.0594 **	-45.3348 **
7137.0000	-13.0000	-43.5105 **	-42.7584 **
7930.0000	-13.0000	-42.8217 **	-41.8858 **



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: Nazrin & Fuad
Sat, 30 Mar, 2024

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): 23.4 Hum(%RH): 69.3

System MU: 4.03 dB

Remarks:	Passed Results	Marginal Results	Failed Results
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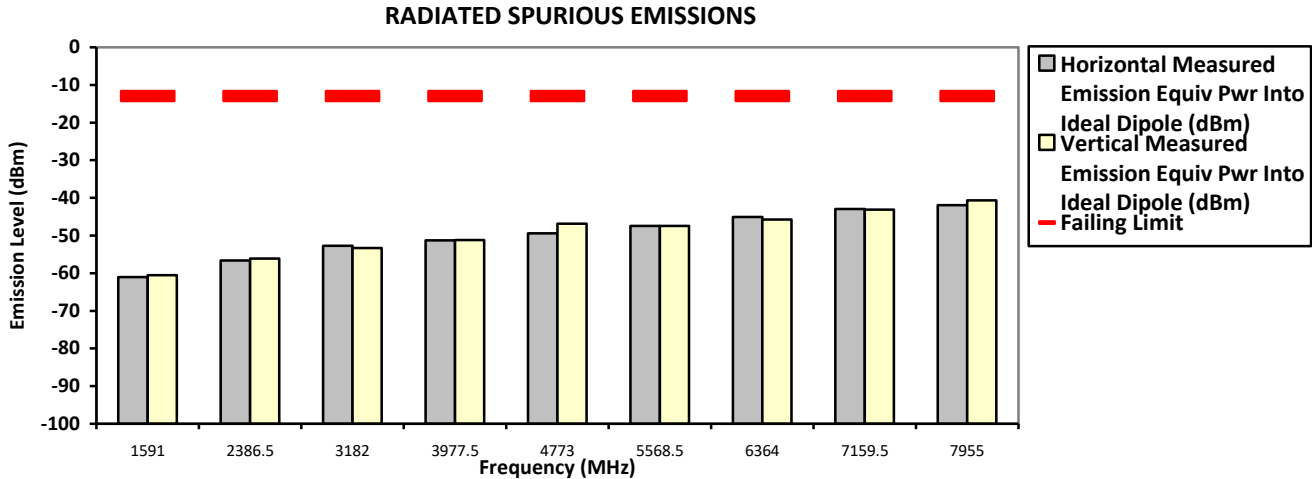
SAC Transmitter Radiated Emission:

Model Number: H35XDT9PW8AN-H
Battery Part No: PMNN4818A
795.500000 MHz (High)

S/N: 022TAB0346
Accy Part No: AN000452A01
Test Mode: TX LTE (Band 14) X-Plane
Bandwidth 5MHz

SR: 40793-EMC-00074
0.252 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)
1591.0000	-13.0000	-61.0682 **	-60.4960 **
2386.5000	-13.0000	-56.6058 **	-56.1309 **
3182.0000	-13.0000	-52.7556 **	-53.3398 **
3977.5000	-13.0000	-51.2315 **	-51.2250 **
4773.0000	-13.0000	-49.3920 **	-46.8703 **
5568.5000	-13.0000	-47.4589 **	-47.4874 **
6364.0000	-13.0000	-45.0934 **	-45.7933 **
7159.5000	-13.0000	-42.9933 **	-43.1442 **
7955.0000	-13.0000	-41.9632 **	-40.6342 **



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: Nazrin & Fuad
Sat, 30 Mar, 2024

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): 23.4 Hum(%RH): 69.3

System MU: 4.03 dB

Remarks:

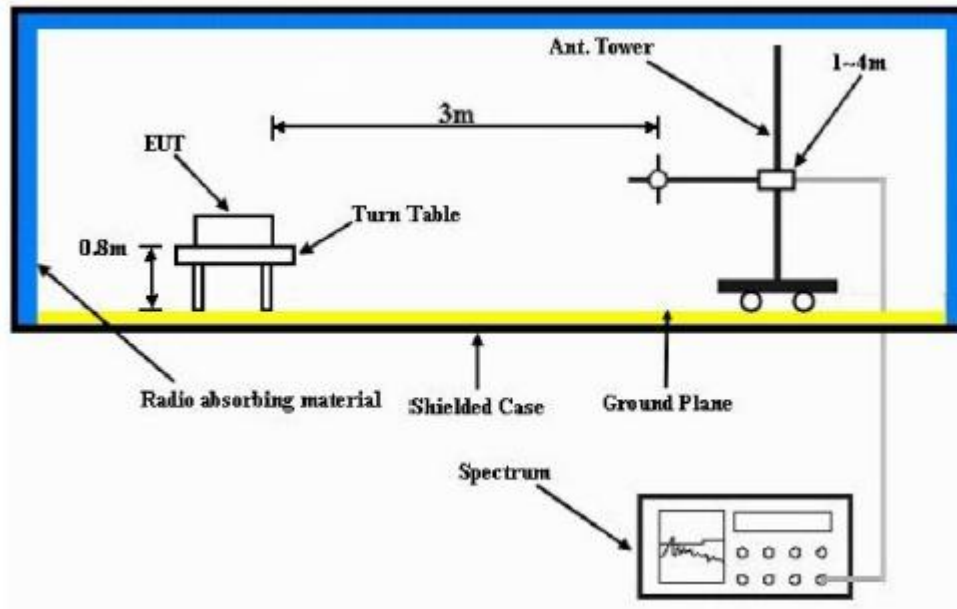
Passed Results

Marginal Results

Failed Results

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) $ERP = \text{“Read Value”} + \text{Measured substitution value.}$

1.13.2. Test Limit

FCC: Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

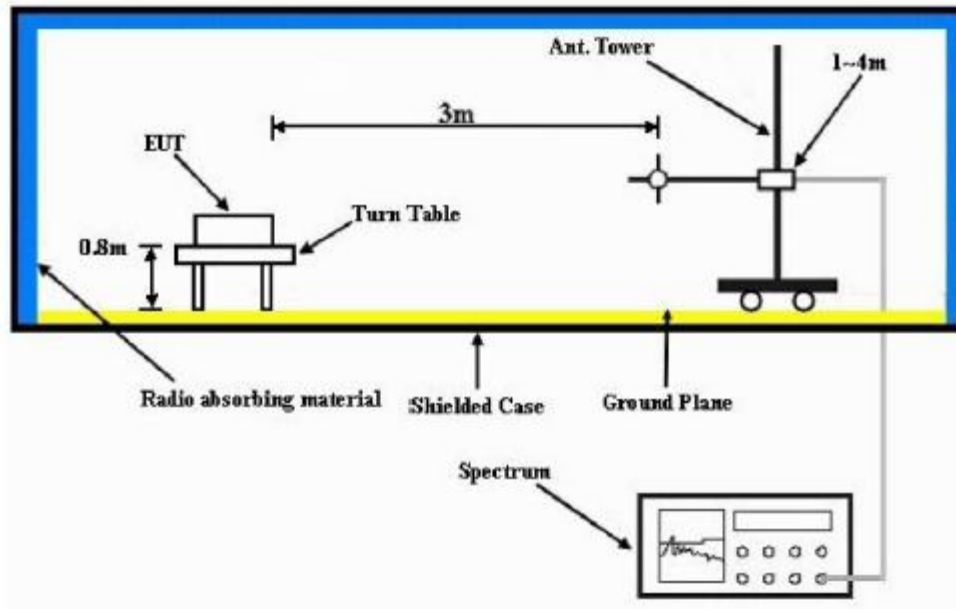
ISED: The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

1.13.3. Effective Radiated Power (ERP) - LTE Band 14 (788-798MHz)

[Refer to 1.6.4 / Not Performed.](#)

1.14. GNSS (EIRP for 1599 – 1610MHz) – LTE Band 14 (788-798MHz)

1.14.1. Test Setup



- 1) The Resolution Bandwidth for Equivalent Isotropically Radiated Power (EIRP) below 1 GHz is 100 kHz with Video Bandwidth = 300 kHz and Resolution Bandwidth for EIRP above 1 GHz is 1 MHz with Video Bandwidth = 3 MHz. Detector Mode is RMS.
- 2) In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval 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 for each degree interval. The “Read Value” is the spectrum reading of maximum power value.
- 3) The substitution antenna is substituted for DUT 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) $EIRP = \text{“Read Value”} + \text{Measured substitution value} + 2.15$.

1.14.2. Test Limit

FCC: For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

ISED: The equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

1.14.3. GNSS (EIRP for 1599 – 1610MHz) – LTE Band 14 (788-798MHz)

EiRP in RNSS band (1.581GHz)
S/N: 022TAB0346
Channel BW: 5 MHz
Accessory: AN000452A01
Battery: PMNN4818A

Tx Power: 0.252 Watts
Modulation: QPSK

Frequency Channel: 790.5000 MHz (LTE Band 14)

Antenna Polarization	2Fc (MHz)	EIRP (dBm)	Limit (dBm)
Horizontal	1581.0000	-57.82	-40
Vertical	1581.0000	-58.37	-40

EiRP in RNSS band (1.581GHz)
S/N: 022TAB0346
Channel BW: 5 MHz
Accessory: AN000452A01
Battery: PMNN4818A

Tx Power: 0.252 Watts
Modulation: QPSK

Frequency Channel: 795.5000 MHz (LTE Band 14)

Antenna Polarization	2Fc (MHz)	EIRP (dBm)	Limit (dBm)
Horizontal	1591.0000	-58.04	-40
Vertical	1591.0000	-58.18	-40

--End of Test Report--