

FCC Test Report

FCC ID : 2ALIY-GCM7243I
Equipment : GCM7243iVZ_APB
Model No. : GCM7243iVZ_APB
Brand Name : GCT
Applicant : GCT Semiconductor, Inc
Address : 10F Construction Financial Building 15,
Boramae-ro 5-gil, Dongjak-gu, Seoul, South
Korea, 07071
Standard : 47 CFR FCC Part 27 Subpart B
Received Date : Apr. 18, 2019
Tested Date : Apr. 20 ~ Apr. 26, 2019

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:

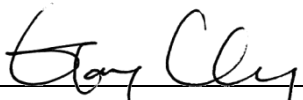

Gary Chang / Manager



Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Local Support Equipment List	7
1.3	Test Setup Chart	7
1.4	The Equipment List	8
1.5	Test Standards	9
1.6	Deviation from Test Standard and Measurement Procedure.....	9
1.7	Measurement Uncertainty	9
2	TEST CONFIGURATION	10
2.1	Testing Condition and Location Information.....	10
2.2	The Worst Test Modes and Channel Details	10
3	TEST RESULTS.....	11
3.1	Effective Radiated Power	11
3.2	Radiated Emissions.....	15
3.3	Conducted Emissions & Band Edge	21
3.4	Occupied Bandwidth and 26 dB Bandwidth	38
3.5	Frequency Stability.....	43
3.6	Peak to Average Ratio	45
4	TEST LABORATORY INFORMATION	48

Release Record

Report No.	Version	Description	Issued Date
FG940809	Rev. 01	Initial issue	May 08, 2019

Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 27.50(b)(10)	Effective Radiated Power	ERP[dBm]: 20.31	Pass
2.1053 / 27.53(c)	Radiated Emissions	Meet the requirement of limit	Pass
2.1053 / 27.53(e)	Radiated Spurious Emission in the 1559-1610MHz band	Meet the requirement of limit	Pass
2.1051 / 27.53(c)	Conducted Emissions	Meet the requirement of limit	Pass
27.53 (c)	Band Edge	Meet the requirement of limit	Pass
2.1049 / 27.53	Occupied Bandwidth	Meet the requirement of limit	Pass
2.1055 / 27.54	Frequency Stability	Meet the requirement of limit	Pass
27.50(d)(5)	Peak to Average Ratio	Meet the requirement of limit	Pass

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared values of gain for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of the gain.

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

Operating Frequency	Channel Bandwidth: 5MHz: 779.5 MHz ~ 784.5 MHz Channel Bandwidth: 10MHz: 782 MHz
Modulation Type	QPSK, 16QAM (Uplink)
Duplex Mode	FDD
H/W Version	1.0
S/W Version	1.3

1.1.2 Maximum Conducted Power and Emission Designator

Mode	Modulation	Conducted Power (W)	Emission Designator
CB: 5MHz	QPSK	0.177	1M09G7D
CB: 5MHz	16QAM	0.166	929KW7D
CB: 10MHz	QPSK	0.182	1M10G7D
CB: 10MHz	16QAM	0.174	940KW7D

1.1.3 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	Dipole	-0.15	SMA	---

1.1.4 EUT Operational Condition

Power Supply Type	3.5Vdc from host		
Operational Voltage	☒ Vnom (3.5 V)	☒ Vmax (3.8 V)	☒ Vmin (3.3 V)
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (85°C)	☒ Tmin (-30°C)

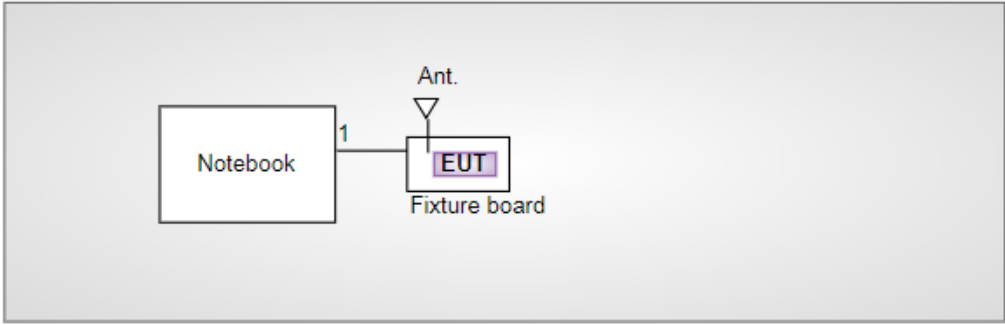
1.1.5 Operating Channel List

LTE Band 13		
Channel Bandwidth (MHz)	Channel	Frequency (MHz)
5	23205	779.5
5	23230	782.0
5	23255	784.5
10	23230	782.0

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E6430	DoC	---
2	Fixture board	---	---	---	Provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram	
	
No.	Signal cable / Length (m)
1	RJ45, 1m non-shielded without core

1.4 The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 27, 2018	Dec. 26, 2019
Receiver	R&S	ESR3	101658	Dec. 11, 2018	Dec. 10, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 18, 2018	Jul. 17, 2019
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 18, 2018	Dec. 17, 2019
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2018	Nov. 14, 2019
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 09, 2018	Nov. 08, 2019
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 08, 2018	Oct. 07, 2019
Preamplifier	EMC	EMC02325	980225	Jul. 20, 2018	Jul. 19, 2019
Preamplifier	Agilent	83017A	MY39501308	Oct. 04, 2018	Oct. 03, 2019
Preamplifier	EMC	EMC184045B	980192	Aug. 09, 2018	Aug. 08, 2019
RF Cable	EMC	EMC104-SM-SM-80 00	181106	Oct. 08, 2018	Oct. 07, 2019
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 08, 2018	Oct. 07, 2019
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 08, 2018	Oct. 07, 2019
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 08, 2018	Oct. 07, 2019
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 08, 2018	Oct. 07, 2019
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Oct. 08, 2018	Oct. 07, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Jan. 07, 2019	Jan. 06, 2020
Spectrum Analyzer	Agilent	N9010A	MY54200247	Sep. 17, 2018	Sep. 16, 2019
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 05, 2018	Dec. 04, 2019
Power Meter	Anritsu	ML2495A	1241002	Oct. 09, 2018	Oct. 08, 2019
Power Sensor	Anritsu	MA2411B	1207366	Oct. 09, 2018	Oct. 08, 2019
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 25, 2018	Oct. 24, 2019
Measurement Software	Sporton	SENSE-FCC_2G-4 G	V5.10.2	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 27 Subpart B

ANSI C63.4-2014

ANSI C63.26-2015

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Frequency error	$\pm 1 \times 10^{-9}$
Temperature	± 0.4 °C
Conducted emission	± 2.715 dB
Radiated emission ≤ 1 GHz	± 3.41 dB
Radiated emission > 1 GHz	± 4.59 dB

2 Test Configuration

2.1 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
Radiated Emissions	03CH01-WS	24°C / 65%	Roger Lu
RF conducted	TH01-WS	24°C / 66%	Aska Huang

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Channel Bandwidth	Modulation	Test channel
E.R.P Conducted Emissions Occupied Bandwidth Peak to Average Ratio	5 MHz 10 MHz	QPSK / 16QAM QPSK / 16QAM	23205 / 23230 / 23255 23230
Radiated Emission ≤ 1GHz	5 MHz 10 MHz	QPSK QPSK	23230 23230
Radiated Emission > 1GHz	5 MHz 10 MHz	QPSK QPSK	23205 / 23230 / 23255 23230
Band Edge	5 MHz 10 MHz	QPSK / 16QAM QPSK / 16QAM	23205 / 23255 23230
Frequency Stability	5 MHz 10 MHz	QPSK QPSK	23230 23230
NOTE:			
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.			

3 Test Results

3.1 Effective Radiated Power

3.1.1 Limit of Effective Radiated Power

Portable stations (hand-held devices) are limited to 3 watts ERP.

3.1.2 Test Procedures

For Conducted power measurement:

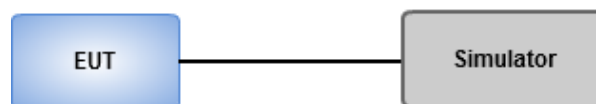
1. The EUT links up with simulator and is set to maximum output power level at low / middel / high channel.
2. Measure the output power of low / middle / high channel of the EUT.

For ERP measurement:

ERP can be calculated by below formula from KDB 412172 D01.

1. $EIRP = P_T + G_T - L_C$
 P_T = transmitter output power, in dBm.
 G_T = gain of the transmitting antenna, in dBi (EIRP).
 L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.
2. $ERP = EIRP - 2.15 \text{ dB}$.

3.1.3 Test Setup



3.1.4 Test Result of Effective Radiated Power (dBm)

Mode	LTE Band 13, CB: 5MHz									
Modulation	Channel	Frequency (MHz)	RB size #RB start	RB Index	Conducted Average Power (dBm)	Max Antenna Gain (dBi)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23205	779.5	1#0	0	22.32	-0.15	22.17	20.02	0.100	3
			1#0	1	22.28	-0.15	22.13	19.98	0.100	3
			1#5	1	22.47	-0.15	22.32	20.17	0.104	3
			1#5	3	22.27	-0.15	22.12	19.97	0.099	3
			3#0	0	22.42	-0.15	22.27	20.12	0.103	3
			3#3	3	22.40	-0.15	22.25	20.10	0.102	3
			6#0	0	22.21	-0.15	22.06	19.91	0.098	3
			6#0	3	22.19	-0.15	22.04	19.89	0.097	3
	23230	782.0	1#0	0	22.28	-0.15	22.13	19.98	0.100	3
			1#0	1	22.26	-0.15	22.11	19.96	0.099	3
			1#5	1	22.41	-0.15	22.26	20.11	0.103	3
			1#5	3	22.27	-0.15	22.12	19.97	0.099	3
			3#0	0	22.40	-0.15	22.25	20.10	0.102	3
			3#3	3	22.34	-0.15	22.19	20.04	0.101	3
			6#0	0	22.17	-0.15	22.02	19.87	0.097	3
			6#0	3	22.26	-0.15	22.11	19.96	0.099	3
	23255	784.5	1#0	0	22.25	-0.15	22.10	19.95	0.099	3
			1#0	1	22.22	-0.15	22.07	19.92	0.098	3
			1#5	1	22.39	-0.15	22.24	20.09	0.102	3
			1#5	3	22.24	-0.15	22.09	19.94	0.099	3
			3#0	0	22.35	-0.15	22.20	20.05	0.101	3
			3#3	3	22.32	-0.15	22.17	20.02	0.100	3
			6#0	0	22.28	-0.15	22.13	19.98	0.100	3
			6#0	3	22.27	-0.15	22.12	19.97	0.099	3

Mode	LTE Band 13, CB: 5MHz									
Modulation	Channel	Frequency (MHz)	RB size #RB start	RB Index	Conducted Average Power (dBm)	Max Antenna Gain (dBi)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
16QAM	23205	779.5	1#0	0	22.15	-0.15	22.00	19.85	0.097	3
			1#0	1	22.13	-0.15	21.98	19.83	0.096	3
			1#5	1	22.21	-0.15	22.06	19.91	0.098	3
			1#5	3	22.08	-0.15	21.93	19.78	0.095	3
			3#0	0	22.16	-0.15	22.01	19.86	0.097	3
			3#3	3	22.03	-0.15	21.88	19.73	0.094	3
			5#0	0	22.19	-0.15	22.04	19.89	0.097	3
			5#0	3	22.12	-0.15	21.97	19.82	0.096	3
	23230	782.0	1#0	0	22.14	-0.15	21.99	19.84	0.096	3
			1#0	1	22.12	-0.15	21.97	19.82	0.096	3
			1#5	1	22.16	-0.15	22.01	19.86	0.097	3
			1#5	3	22.07	-0.15	21.92	19.77	0.095	3
			3#0	0	22.11	-0.15	21.96	19.81	0.096	3
			3#3	3	22.13	-0.15	21.98	19.83	0.096	3
			5#0	0	22.11	-0.15	21.96	19.81	0.096	3
			5#0	3	22.10	-0.15	21.95	19.80	0.095	3
	23255	784.5	1#0	0	22.09	-0.15	21.94	19.79	0.095	3
			1#0	1	22.07	-0.15	21.92	19.77	0.095	3
			1#5	1	22.10	-0.15	21.95	19.80	0.095	3
			1#5	3	22.02	-0.15	21.87	19.72	0.094	3
			3#0	0	22.06	-0.15	21.91	19.76	0.095	3
			3#3	3	21.98	-0.15	21.83	19.68	0.093	3
			5#0	0	22.02	-0.15	21.87	19.72	0.094	3
			5#0	3	22.06	-0.15	21.91	19.76	0.095	3

Mode	LTE Band 13, CB: 10MHz									
Modulation	Channel	Frequency (MHz)	RB size #RB start	RB Index	Conducted Average Power (dBm)	Max Antenna Gain (dBi)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23230	782.0	1#0	0	22.54	-0.15	22.39	20.24	0.106	3
			1#0	3	22.47	-0.15	22.32	20.17	0.104	3
			1#5	3	22.61	-0.15	22.46	20.31	0.107	3
			1#5	7	22.43	-0.15	22.28	20.13	0.103	3
			3#0	0	22.55	-0.15	22.40	20.25	0.106	3
			3#3	7	22.46	-0.15	22.31	20.16	0.104	3
			6#0	0	22.52	-0.15	22.37	20.22	0.105	3
			6#0	7	22.39	-0.15	22.24	20.09	0.102	3
16QAM	23230	782.0	1#0	0	22.38	-0.15	22.23	20.08	0.102	3
			1#0	3	22.32	-0.15	22.17	20.02	0.100	3
			1#5	3	22.41	-0.15	22.26	20.11	0.103	3
			1#5	7	22.26	-0.15	22.11	19.96	0.099	3
			3#0	0	22.38	-0.15	22.23	20.08	0.102	3
			3#3	7	22.18	-0.15	22.03	19.88	0.097	3
			5#0	0	22.35	-0.15	22.20	20.05	0.101	3
			5#0	7	22.32	-0.15	22.17	20.02	0.100	3

3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

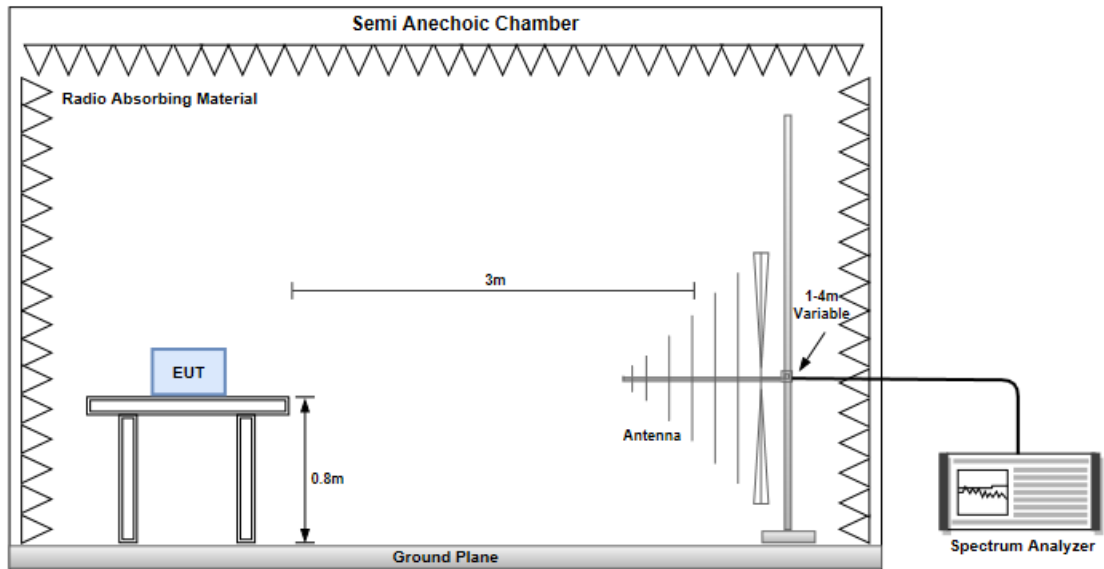
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB equal to -13dBm. Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP)

3.2.2 Test Procedures

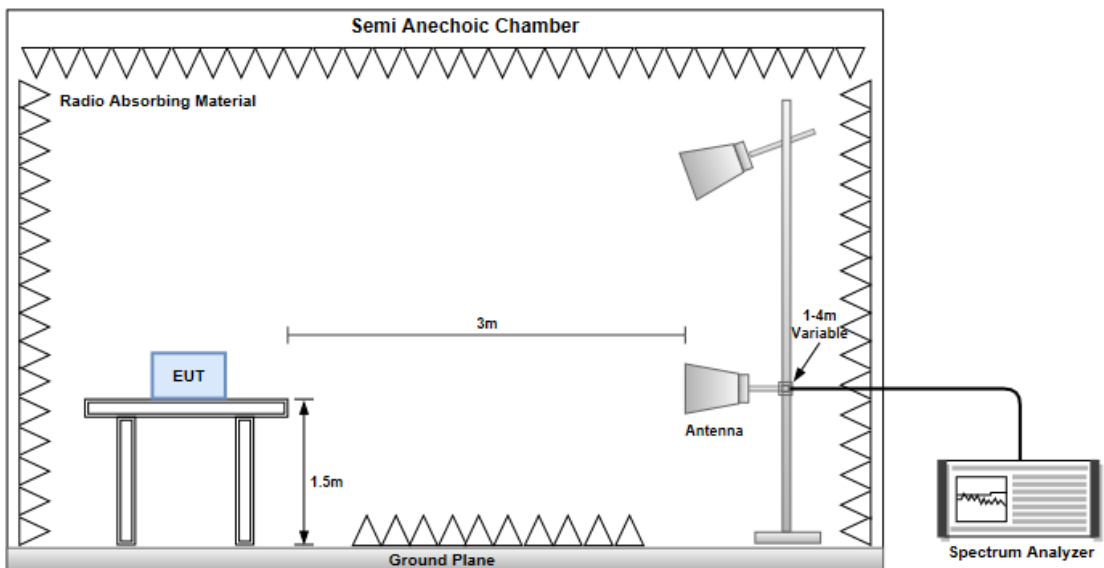
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable. ERP can be calculated by below formula:
 $E.R.P = E.I.R.P - 2.15dB$

3.2.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.2.4 Test Result of Radiated Emissions below 1GHz

Mode	LTE Band 13, QPSK, CB:5 MHz, Channel : 23025						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
64.92	H	-61.86	-13	-48.86	-60.21	-47.54	-12.17
146.4	H	-54.4	-13	-41.4	-51.65	-45.84	-6.41
161.92	H	-54.47	-13	-41.47	-51.7	-46.82	-5.5
221.09	H	-61.99	-13	-48.99	-56.04	-58.65	-1.19
474.26	H	-67.13	-13	-54.13	-67.64	-63.47	-1.51
959.26	H	-62.85	-13	-49.85	-70.05	-57.72	-2.98
64.92	V	-66.31	-13	-53.31	-64.72	-51.99	-12.17
149.31	V	-57.88	-13	-44.88	-58.17	-49.47	-6.26
161.92	V	-56.22	-13	-43.22	-56.92	-48.57	-5.5
233.7	V	-62.79	-13	-49.79	-62.16	-59.47	-1.17
589.69	V	-65.78	-13	-52.78	-71.25	-61.82	-1.81
959.26	V	-59.68	-13	-46.68	-68.99	-54.55	-2.98

Mode	LTE Band 13, QPSK, CB:10 MHz, Channel : 23230						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
64.88	H	-61.96	-13	-48.96	-60.31	-47.63	-12.18
146.39	H	-54.56	-13	-41.56	-51.81	-46	-6.41
161.87	H	-54.61	-13	-41.61	-51.84	-46.95	-5.51
221.12	H	-61.9	-13	-48.9	-55.95	-58.56	-1.19
474.33	H	-66.5	-13	-53.5	-67.01	-62.84	-1.51
959.36	H	-62.77	-13	-49.77	-69.97	-57.64	-2.98
64.85	V	-66.41	-13	-53.41	-64.81	-52.07	-12.19
149	V	-57.78	-13	-44.78	-58.06	-49.35	-6.28
161.88	V	-56.42	-13	-43.42	-57.12	-48.76	-5.51
233.65	V	-62.68	-13	-49.68	-62.05	-59.36	-1.17
589.55	V	-65.64	-13	-52.64	-71.1	-61.68	-1.81
959.33	V	-59.57	-13	-46.57	-68.88	-54.44	-2.98

NOTE: ERP = S.G power value + correction factor - 2.15

3.2.5 Test Result of Radiated Emissions above 1GHz

Mode	LTE Band 13, QPSK, CB:5 MHz, Channel : 23025						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
2338.5	H	-51.61	-13	-38.61	-59.25	-55.12	5.66
3118	H	-49.9	-13	-36.9	-59.25	-54.29	6.54
3897.5	H	-53.06	-13	-40.06	-64.85	-57.91	7
2338.5	V	-46.54	-13	-33.54	-54.21	-50.05	5.66
3118	V	-44.92	-13	-31.92	-54.12	-49.31	6.54
3897.5	V	-53.73	-13	-40.73	-65.47	-58.58	7

Mode	LTE Band 13, QPSK, CB:5 MHz, Channel : 23230						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
2346	H	-52.72	-13	-39.72	-60.31	-56.28	5.71
3128	H	-50.09	-13	-37.09	-59.47	-54.49	6.55
3910	H	-53.2	-13	-40.2	-64.99	-58.06	7.01
2346	V	-47.86	-13	-34.86	-55.49	-51.42	5.71
3128	V	-45.15	-13	-32.15	-54.42	-49.55	6.55
3910	V	-53.79	-13	-40.79	-65.55	-58.65	7.01

Mode	LTE Band 13, QPSK, CB:5 MHz, Channel : 23255						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
2353.5	H	-53.75	-13	-40.75	-61.29	-57.35	5.75
3138	H	-49.89	-13	-36.89	-59.3	-54.3	6.56
3922.5	H	-53.35	-13	-40.35	-65.12	-58.22	7.02
2353.5	V	-48.53	-13	-35.53	-56.11	-52.13	5.75
3138	V	-45.36	-13	-32.36	-54.68	-49.77	6.56
3922.5	V	-53.65	-13	-40.65	-65.42	-58.52	7.02

NOTE: ERP = S.G power value + correction factor - 2.15

Mode	LTE Band 13, QPSK, CB:10 MHz, Channel : 23230						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
2346	H	-52.86	-13	-39.86	-60.45	-56.42	5.71
3128	H	-49.83	-13	-36.83	-59.21	-54.23	6.55
3910	H	-53.07	-13	-40.07	-64.86	-57.93	7.01
2346	V	-47.96	-13	-34.96	-55.59	-51.52	5.71
3128	V	-45	-13	-32	-54.27	-49.4	6.55
3910	V	-53.67	-13	-40.67	-65.43	-58.53	7.01
2346	H	-52.86	-13	-39.86	-60.45	-56.42	5.71
3128	H	-49.83	-13	-36.83	-59.21	-54.23	6.55
3910	H	-53.07	-13	-40.07	-64.86	-57.93	7.01

NOTE: ERP = S.G power value + correction factor - 2.15

3.2.6 Test Result of Radiated Emissions in the 1559-1610MHz band

Mode LTE Band 13, QPSK, CB:5 MHz, Channel : 23025							
Frequency (MHz)	Antenna Polarity	E.I.R.P. (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1559	H	-54.97	-40	-14.97	-59.2	-60.25	5.28
1559	V	-47.05	-40	-7.05	-51.37	-52.33	5.28

Mode LTE Band 13, QPSK, CB:5 MHz, Channel : 23230							
Frequency (MHz)	Antenna Polarity	E.I.R.P. (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1564	H	-56.17	-40	-16.17	-60.35	-61.49	5.32
1564	V	-48.53	-40	-8.53	-52.77	-53.85	5.32

Mode LTE Band 13, QPSK, CB:5 MHz, Channel : 23255							
Frequency (MHz)	Antenna Polarity	E.I.R.P. (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1569	H	-57.1	-40	-17.1	-61.22	-62.46	5.36
1569	V	-48.93	-40	-8.93	-53.12	-54.29	5.36

Mode LTE Band 13, QPSK, CB:10 MHz, Channel : 23230							
Frequency (MHz)	Antenna Polarity	E.I.R.P. (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1572.8	H	-56.25	-40	-16.25	-60.43	-61.57	5.32
1572.8	V	-48.41	-40	-8.41	-52.65	-53.73	5.32

NOTE: ERP = S.G power value + correction factor - 2.15

3.3 Conducted Emissions & Band Edge

3.3.1 Limit of Conducted Emissions & Band Edge

- 1) The power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB equal to -13dBm.
- 2) On all frequencies between 763 ~ 775 MHz and 793 ~ 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.

3.3.2 Test Procedures

Out of Band Emission

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30 MHz ~ 10 GHz.
3. Set RBW = 100 kHz, VBW = 300 kHz, detector = rms, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

Band Edge – 100 kHz band immediately outside the Frequency Band

1. Lowest and highest operating channels are tested for this item.
2. Set RBW = 30 kHz, VBW = 100 kHz, detector = RMS, sweep time = auto to measure trace.

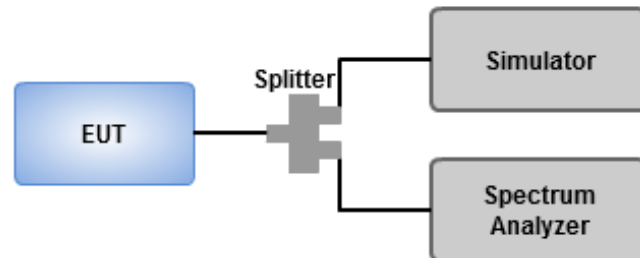
Band Edge - Other frequency

1. Lowest and highest operating channels are tested for this item.
2. Set RBW = 30 kHz, VBW = 100 kHz, detector = RMS and use channel power measurement function of spectrum analyzer to integrate power over 100 kHz.

763 ~ 775 MHz / 793 ~ 806 MHz

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 763 MHz ~ 806 MHz.
3. Set RBW = 10 kHz, VBW = 30 kHz, detector = rms, sweep time = auto.

3.3.3 Test Setup

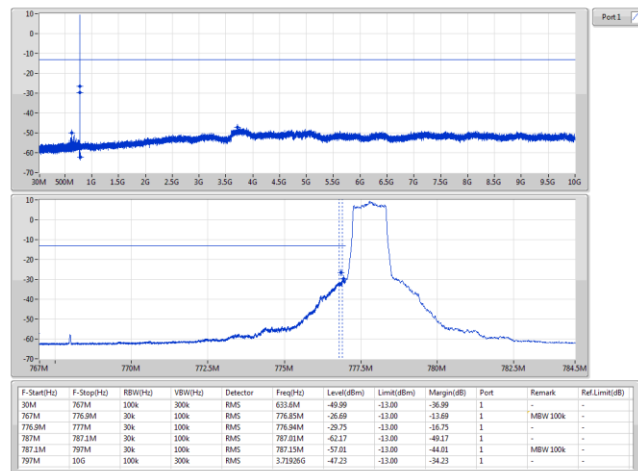


3.3.4 Test Result of Conducted Emissions

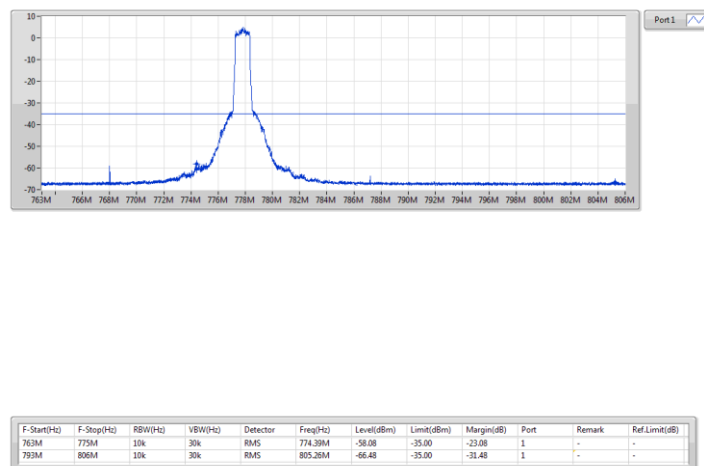
Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Port	Remark	Ref.Limit (dB)
Band 13_LTE-M1_5MHz _Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
779.5MHz_16QAM _RB 5,#RB 0,NB 0	Pass	767M	776.9M	30k	100k	RMS	776.85M	-23.40	-13.00	-10.40	1	MBW 100k	-
Band 13_LTE-M1_10MHz _Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
782MHz_QPSK _RB 6,#RB 0,NB 0	Pass	757M	776.9M	30k	100k	RMS	776.85M	-31.89	-13.00	-18.89	1	MBW 100k	-

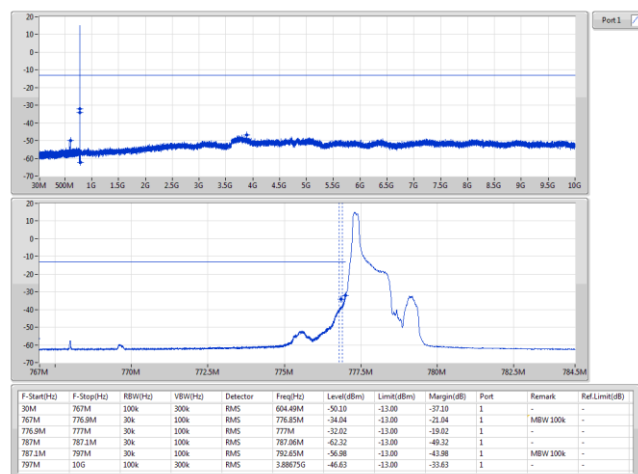
Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_QPSK_RB 6,#RB 0,NB 0



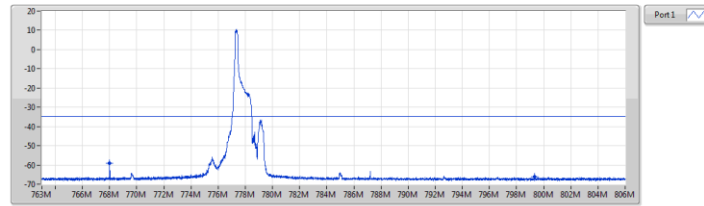
Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_QPSK_RB 6,#RB 0,NB 0



Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_QPSK_RB 1,#RB 0,NB 0

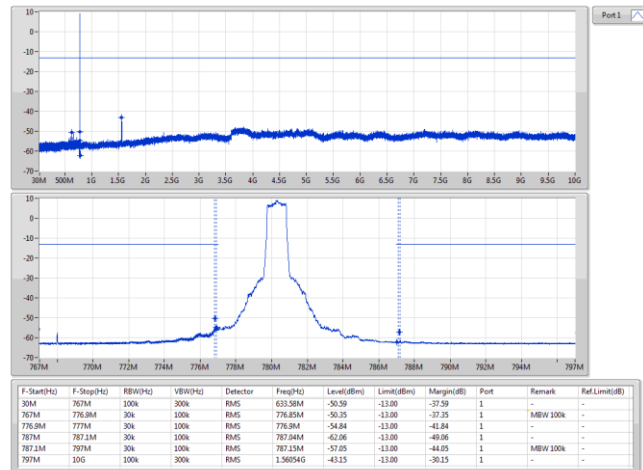


Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz QPSK_RB 1,#RB 0,NB 0



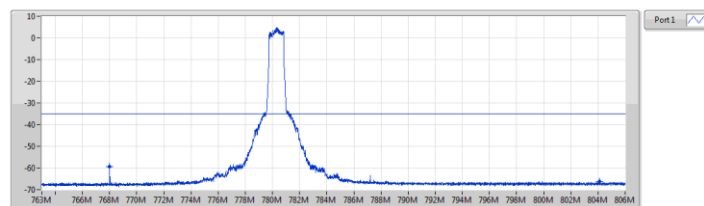
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10k	30k	RMS	768M	-59.12	-35.00	-24.12	1	-	-
793M	806M	10k	30k	RMS	799.32M	-66.30	-35.00	-31.30	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz QPSK_RB 6,#RB 0,NB 0



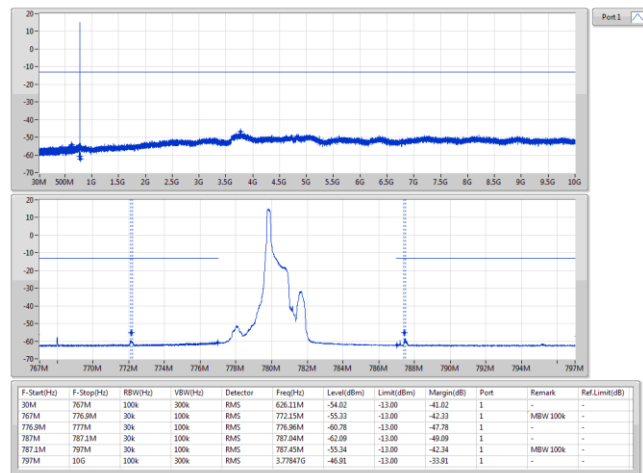
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	767M	100k	300k	RMS	633.58M	-50.59	-13.00	-37.59	1	-	-
767M	776.8M	30k	100k	RMS	776.85M	-50.35	-13.00	-37.35	1	MBW 100k	-
776.8M	777M	30k	100k	RMS	776.9M	-54.84	-13.00	-41.84	1	-	-
777M	787.13M	30k	100k	RMS	787.84M	-42.06	-13.00	-29.06	1	-	-
787.13M	797M	30k	100k	RMS	787.15M	-57.05	-13.00	-44.05	1	MBW 100k	-
797M	10G	100k	300k	RMS	1.58054G	-43.15	-13.00	-30.15	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz QPSK_RB 6,#RB 0,NB 0

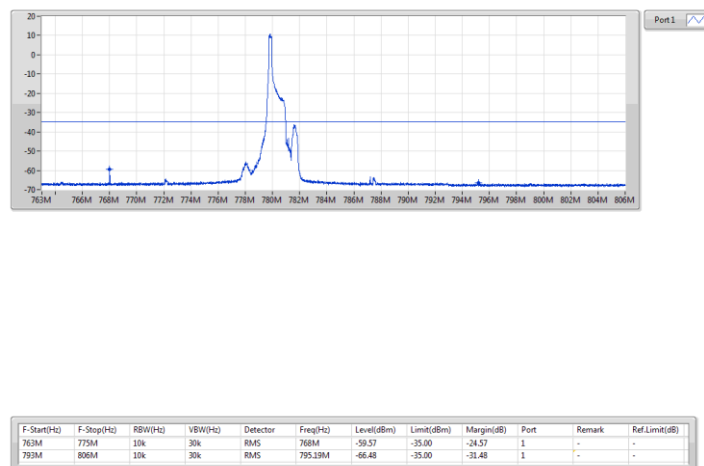


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10k	30k	RMS	768M	-59.47	-35.00	-24.47	1	-	-
793M	806M	10k	30k	RMS	804.12M	-66.27	-35.00	-31.27	1	-	-

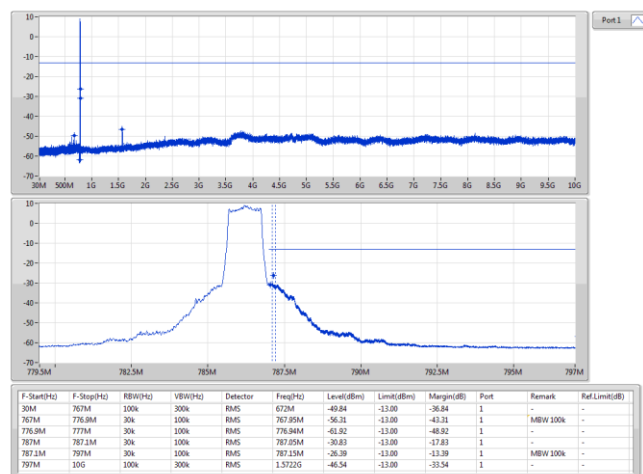
Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz_QPSK_RB 1,#RB 0,NB 0



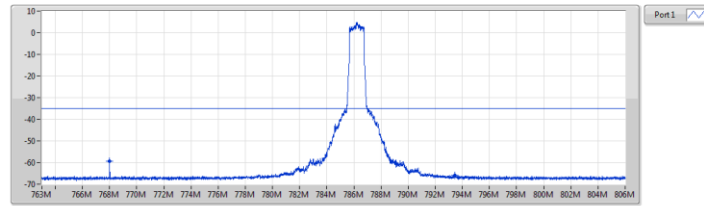
Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz_QPSK_RB 1,#RB 0,NB 0



Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_QPSK_RB 6,#RB 0,NB 3

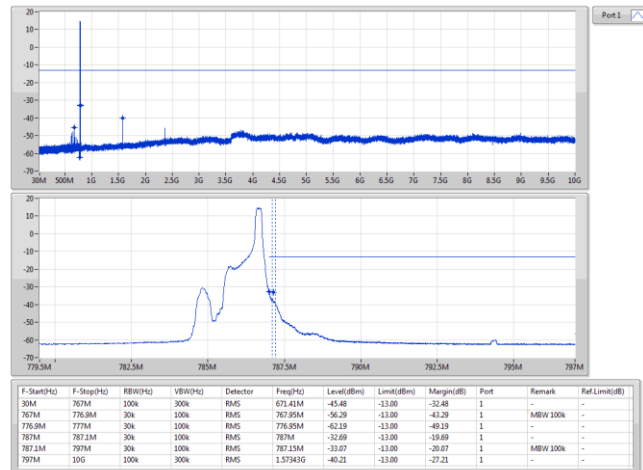


Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_QPSK_RB 6,#RB 0,NB 3



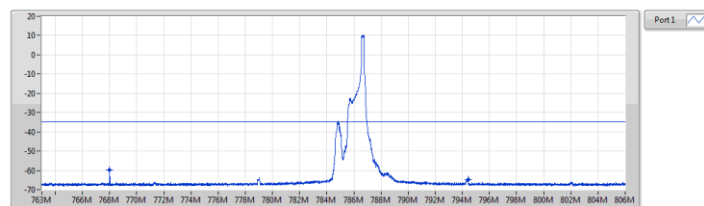
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	784M	-59.46	-35.00	-24.46	1	-	-
793M	806M	10K	30K	RMS	784.43M	-45.88	-35.00	-10.88	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_QPSK_RB 1,#RB 5,NB 3



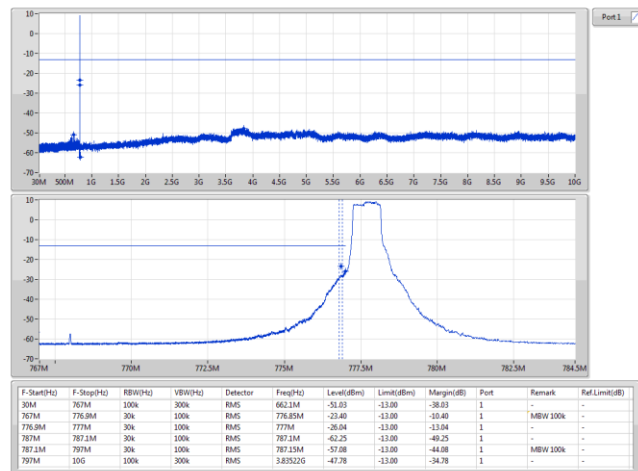
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	767M	100K	300K	RMS	671.41M	-45.48	-13.00	-32.48	1	-	-
767M	776.8M	30K	100K	RMS	767.85M	-56.29	-13.00	-43.29	1	MBW 100K	-
776.8M	777M	30K	100K	RMS	776.95M	-62.19	-13.00	-49.19	1	-	-
777M	787.1M	30K	100K	RMS	787M	-32.69	-13.00	-19.69	1	-	-
787.1M	797M	30K	100K	RMS	787.15M	-33.07	-13.00	-20.07	1	MBW 100K	-
797M	10G	100K	300K	RMS	1.57343G	-40.21	-13.00	-27.21	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_QPSK_RB 1,#RB 5,NB 3

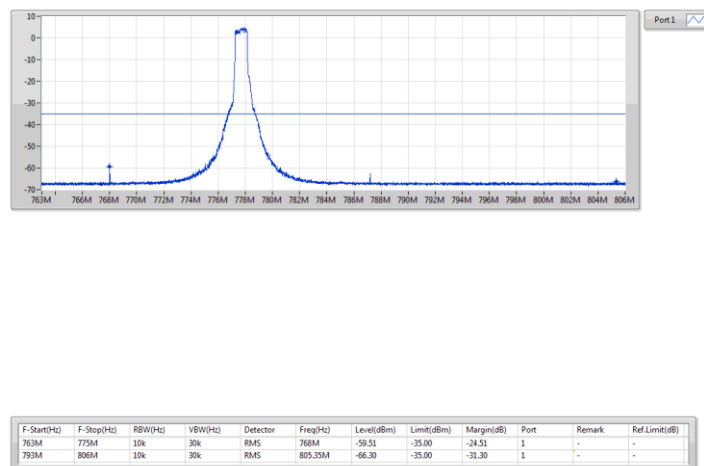


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	784M	-59.63	-35.00	-24.63	1	-	-
793M	806M	10K	30K	RMS	794.42M	-64.66	-35.00	-29.66	1	-	-

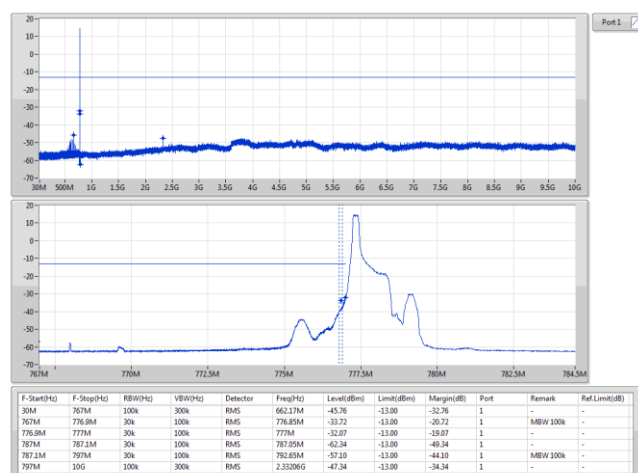
Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_16QAM_RB 5,#RB 0,NB 0



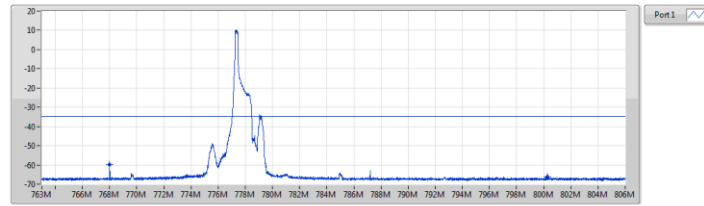
Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_16QAM_RB 5,#RB 0,NB 0



Band 13 LTE-M1_5MHz_Nss1_1TX
779.5MHz_16QAM_RB 1,#RB 0,NB 0

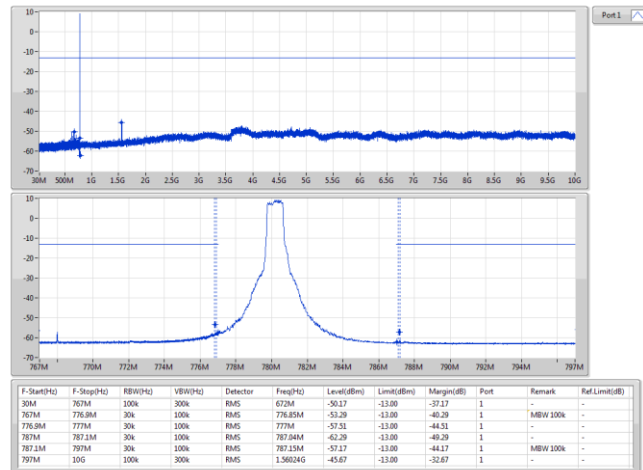


Band 13_LTE-M1_5MHz_Nss1_1TX
779.5MHz_16QAM_RB 1,#RB 0,NB 0



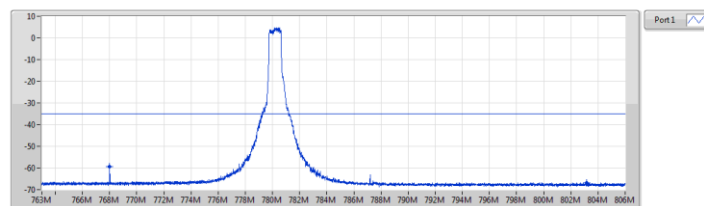
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	768M	-59.87	-35.00	-24.87	1	-	-
793M	806M	10K	30K	RMS	800.28M	-45.96	-35.00	-10.96	1	-	-

Band 13_LTE-M1_5MHz_Nss1_1TX
782MHz_16QAM_RB 5,#RB 0,NB 0



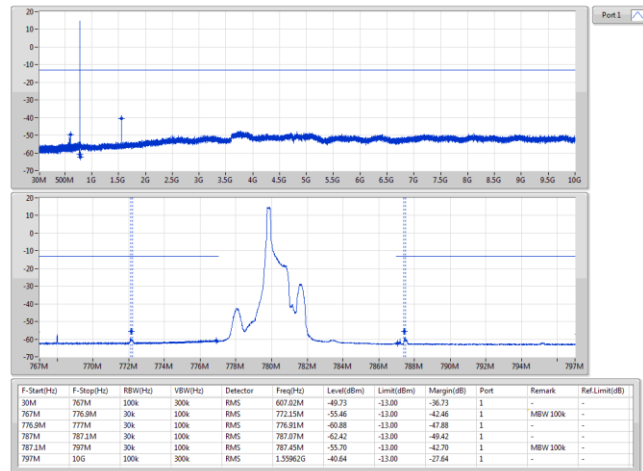
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	767M	100K	300K	RMS	672M	-50.17	-13.00	-37.17	1	-	-
767M	776.8M	30K	100K	RMS	776.85M	-51.29	-13.00	-40.29	1	MBW 100K	-
776.8M	777M	30K	100K	RMS	777M	-57.51	-13.00	-44.51	1	-	-
777M	787.1M	30K	100K	RMS	787.04M	-41.26	-13.00	-40.26	1	-	-
787.1M	797M	30K	100K	RMS	787.15M	-57.17	-13.00	-44.17	1	MBW 100K	-
797M	10G	100K	300K	RMS	1.58024G	-45.67	-13.00	-32.67	1	-	-

Band 13_LTE-M1_5MHz_Nss1_1TX
782MHz_16QAM_RB 5,#RB 0,NB 0

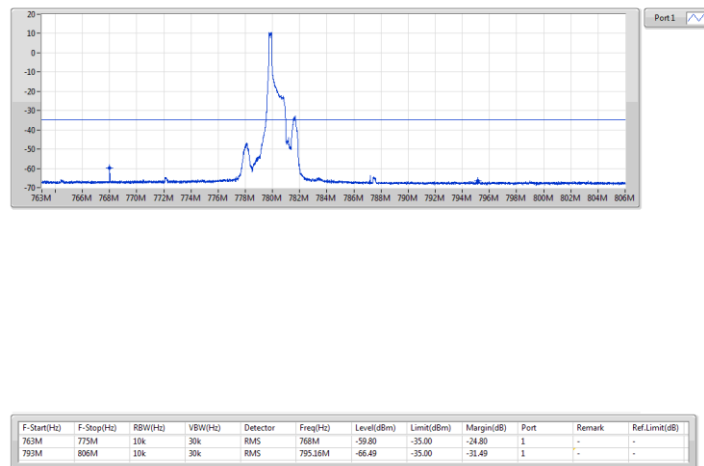


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	768M	-59.28	-35.00	-24.28	1	-	-
793M	806M	10K	30K	RMS	803.16M	-66.79	-35.00	-31.79	1	-	-

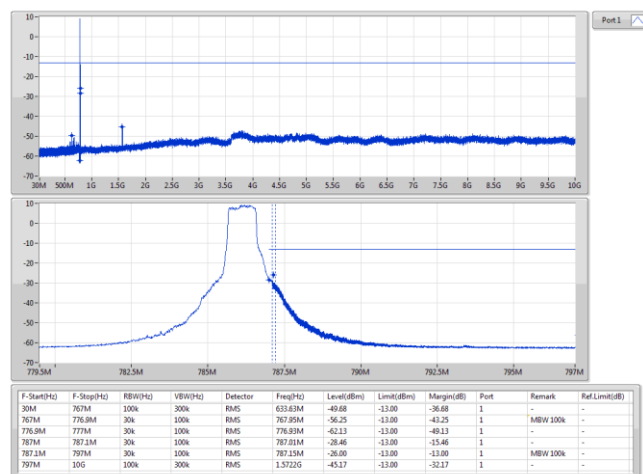
Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz_16QAM_RB 1,#RB 0,NB 0



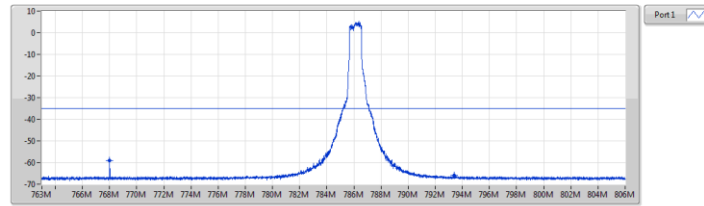
Band 13 LTE-M1_5MHz_Nss1_1TX
782MHz_16QAM_RB 1,#RB 0,NB 0



Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_16QAM_RB 5,#RB 0,NB 3

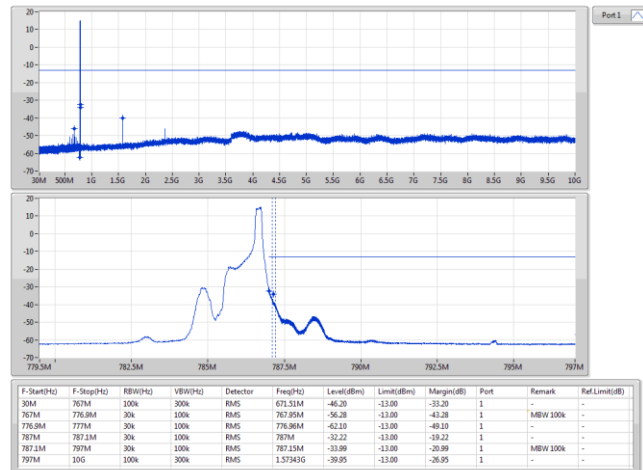


Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_16QAM_RB 5,#RB 0,NB 3



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	788M	-59.19	-35.00	-24.19	1	-	-
793M	806M	10K	30K	RMS	793.38M	-45.92	-35.00	-10.92	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_16QAM_RB 1,#RB 5,NB 3



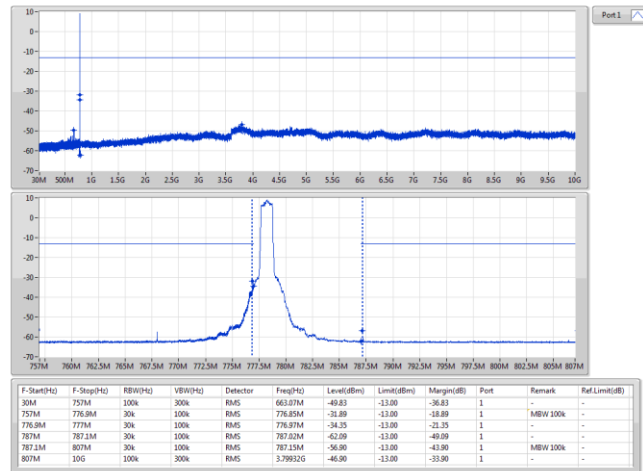
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	767M	100K	300K	RMS	671.51M	-46.20	-13.00	-33.20	1	-	-
767M	776.8M	30K	100K	RMS	767.85M	-56.28	-13.00	-43.28	1	MBW 100K	-
776.8M	777M	30K	100K	RMS	776.96M	-62.10	-13.00	-49.10	1	-	-
777M	787.1M	30K	100K	RMS	787M	-32.22	-13.00	-19.22	1	-	-
787.1M	797M	30K	100K	RMS	787.15M	-33.99	-13.00	-20.99	1	MBW 100K	-
797M	10G	100K	300K	RMS	1.57343G	-39.95	-13.00	-26.95	1	-	-

Band 13 LTE-M1_5MHz_Nss1_1TX
784.5MHz_16QAM_RB 1,#RB 5,NB 3

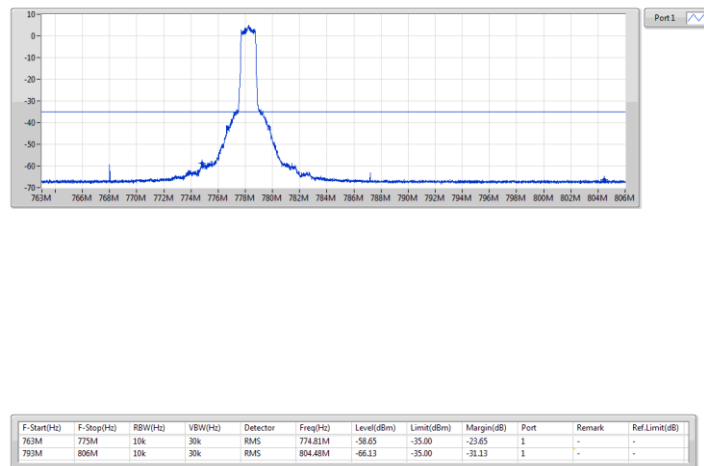


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	768M	-59.82	-35.00	-24.82	1	-	-
793M	806M	10K	30K	RMS	794.42M	-64.54	-35.00	-29.54	1	-	-

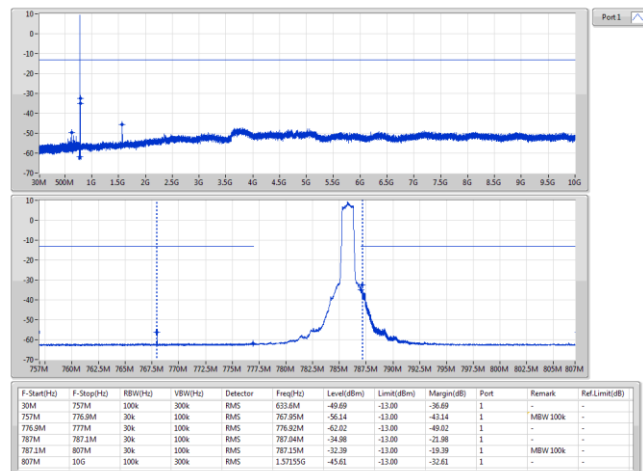
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz QPSK_RB 6,#RB 0,NB 0



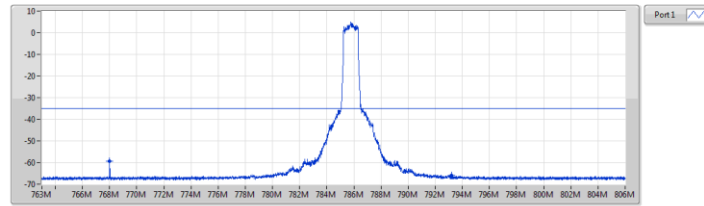
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz QPSK_RB 6,#RB 0,NB 0



Band 13 LTE-M1_10MHz Nss1_1TX
782MHz QPSK_RB 6,#RB 0,NB 7

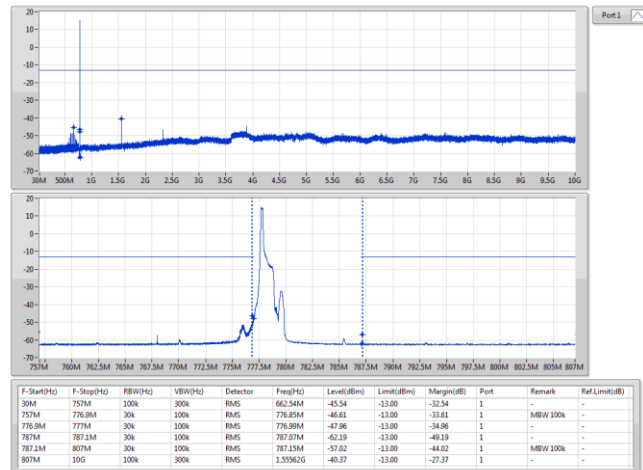


Band 13 LTE-M1_10MHz_Nss1_1TX
782MHz_QPSK_RB 6,#RB 0,NB 7



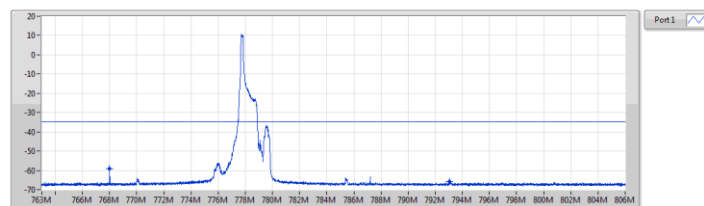
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10k	30k	RMS	768M	-59.51	-35.00	-24.51	1	-	-
793M	806M	10k	30k	RMS	792.2M	-45.98	-35.00	-10.98	1	-	-

Band 13 LTE-M1_10MHz_Nss1_1TX
782MHz_QPSK_RB 1,#RB 0,NB 0



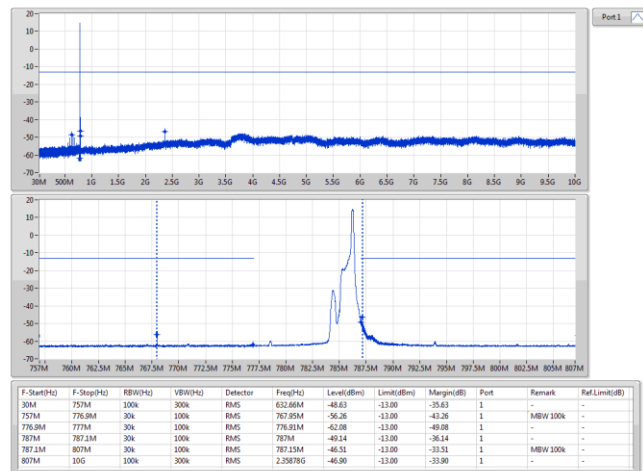
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	757M	100k	300k	RMS	662.54M	-45.54	-13.00	-32.54	1	-	-
757M	776.8M	30k	100k	RMS	776.85M	-46.61	-13.00	-33.61	1	MBW 100k	-
776.8M	777M	30k	100k	RMS	776.89M	-47.96	-13.00	-34.96	1	-	-
777M	787.15M	30k	100k	RMS	787.87M	-42.19	-13.00	-29.19	1	-	-
787.15M	807M	30k	100k	RMS	787.15M	-57.02	-13.00	-44.02	1	MBW 100k	-
807M	10G	100k	300k	RMS	1.55962G	-40.37	-13.00	-27.37	1	-	-

Band 13 LTE-M1_10MHz_Nss1_1TX
782MHz_QPSK_RB 1,#RB 0,NB 0

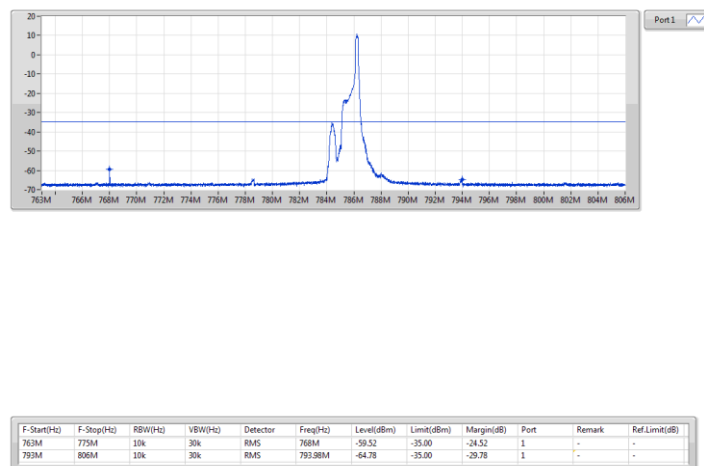


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10k	30k	RMS	768M	-59.18	-35.00	-24.18	1	-	-
793M	806M	10k	30k	RMS	792.05M	-45.91	-35.00	-10.91	1	-	-

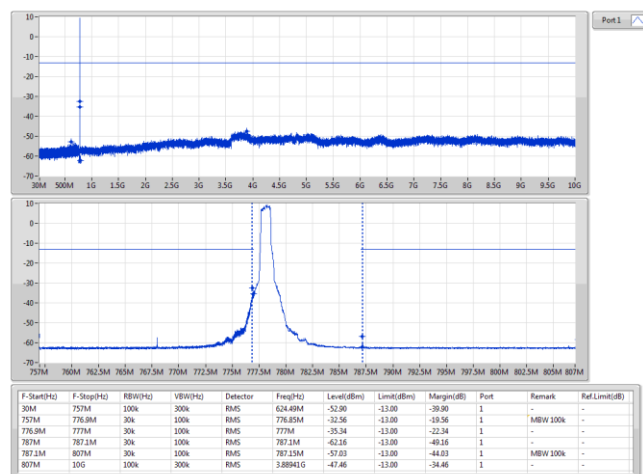
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz QPSK_RB 1,#RB 5,NB 7



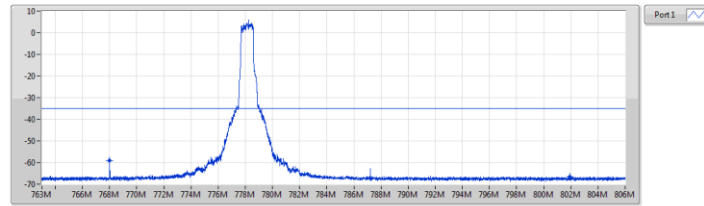
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz QPSK_RB 1,#RB 5,NB 7



Band 13 LTE-M1_10MHz Nss1_1TX
782MHz 16QAM_RB 5,#RB 0,NB 0

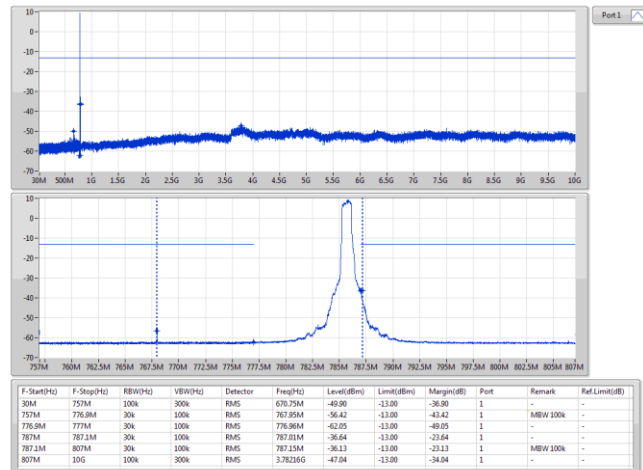


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782MHz_16QAM_RB 5,#RB 0,NB 0



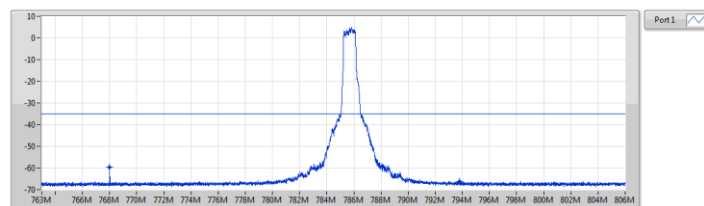
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	782M	-59.19	-35.00	-24.19	1	-	-
793M	806M	10K	30K	RMS	801.9M	-66.50	-35.00	-31.50	1	-	-

Band 13 LTE-M1_10MHz_Nss1_1TX
782MHz_16QAM_RB 5,#RB 0,NB 7



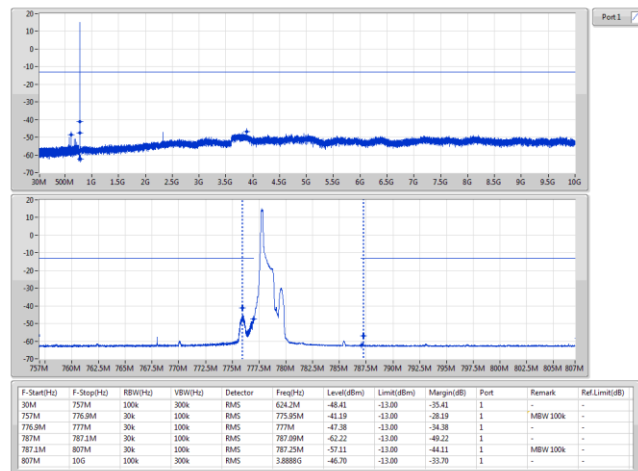
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
30M	757M	100K	300K	RMS	676.75M	-49.90	-13.00	-36.90	1	-	-
757M	776.8M	30K	100K	RMS	767.85M	-56.42	-13.00	-43.42	1	MBW 100K	-
776.8M	777M	30K	100K	RMS	776.96M	-62.05	-13.00	-49.05	1	-	-
787M	787.1M	30K	100K	RMS	787.81M	-36.64	-13.00	-23.64	1	-	-
787.1M	807M	30K	100K	RMS	787.15M	-36.13	-13.00	-23.13	1	MBW 100K	-
807M	10G	100K	300K	RMS	3.78216G	-47.04	-13.00	-34.04	1	-	-

Band 13 LTE-M1_10MHz_Nss1_1TX
782MHz_16QAM_RB 5,#RB 0,NB 7

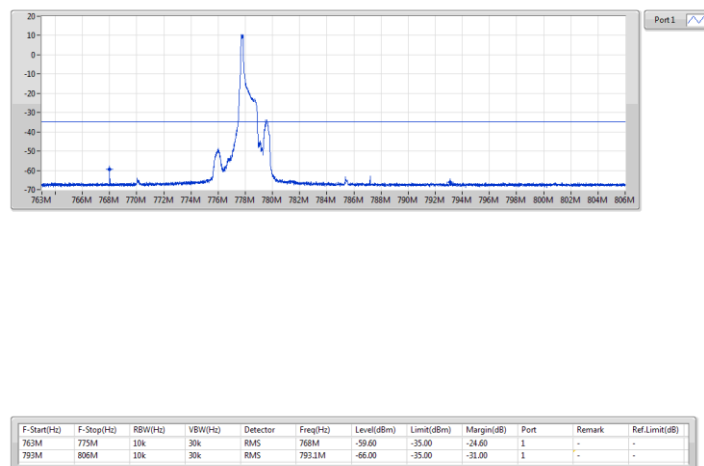


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10K	30K	RMS	782M	-59.64	-35.00	-24.64	1	-	-
793M	806M	10K	30K	RMS	793.79M	-66.13	-35.00	-31.13	1	-	-

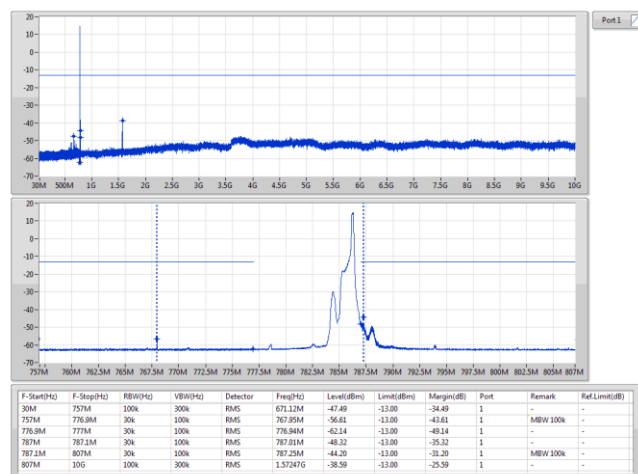
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz_16QAM_RB 1,#RB 0,NB 0



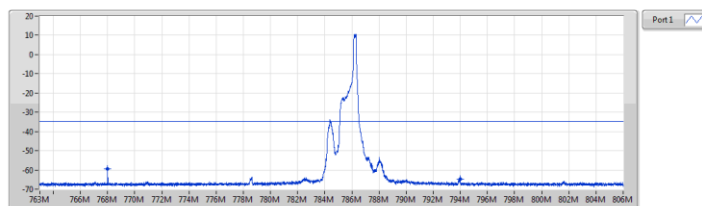
Band 13 LTE-M1_10MHz Nss1_1TX
782MHz_16QAM_RB 1,#RB 0,NB 0



Band 13 LTE-M1_10MHz Nss1_1TX
782MHz_16QAM_RB 1,#RB 5,NB 7



Band 13_LTE-M1_10MHz_Nss1_1TX
782MHz_16QAM_RB 1,#RB 5,NB 7



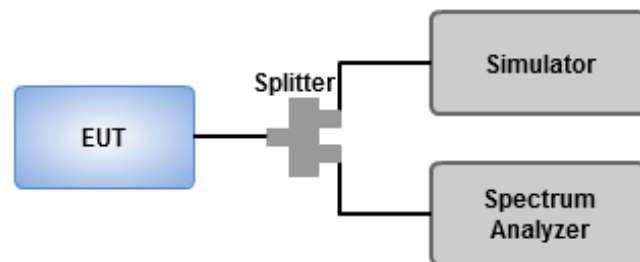
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark	Ref.Limit(dB)
763M	775M	10k	30k	RBAS	768M	-59.46	-35.00	-24.46	1	-	-
793M	806M	10k	30k	RBAS	795.88M	-64.61	-35.00	-29.61	1	-	-

3.4 Occupied Bandwidth and 26 dB Bandwidth

3.4.1 Test Procedures

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26dB relative to the maximum level measured in the fundamental emission.

3.4.2 Test Setup



3.4.3 Test Result of Occupied Bandwidth

Summary

Mode	Max-OBW (Hz)	ITU-Code	Min-OBW (Hz)
Band 13		-	
Band 13_LTE-M1_5MHz_Nss1_1TX	1.093M	1M09	923.397k
Band 13_LTE-M1_10MHz_Nss1_1TX	1.103	1M10	940.351k

Max-N dB = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

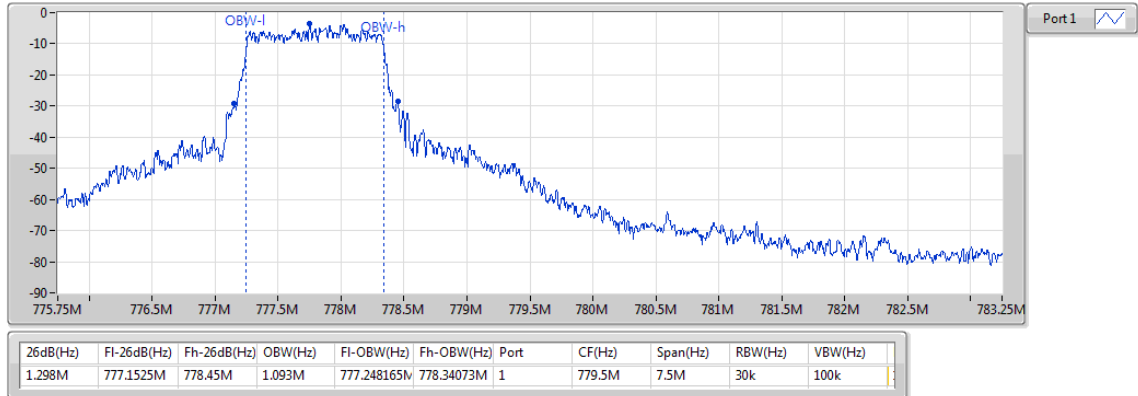
Mode	Result	Limit (Hz)	Port 1-NdB (Hz)	Port 1-OBW (Hz)
LTE-M1_5MHz_Nss1_1TX	-	-	-	-
779.5MHz_QPSK_RB 6,#RB 0,NB 0	Pass	Inf	1.298M	1.093M
782MHz_QPSK_RB 6,#RB 0,NB 0	Pass	Inf	1.245M	1.083M
784.5MHz_QPSK_RB 6,#RB 0,NB 3	Pass	Inf	1.286M	1.088M
779.5MHz_16QAM_RB 5,#RB 0,NB 0	Pass	Inf	1.249M	928.999k
782MHz_16QAM_RB 5,#RB 0,NB 0	Pass	Inf	1.249M	927.423k
784.5MHz_16QAM_RB 5,#RB 0,NB 3	Pass	Inf	1.249M	923.397k
LTE-M1_10MHz_Nss1_1TX	-	-	-	-
782MHz_QPSK_RB 6,#RB 0,NB 0	Pass	Inf	1.268M	1.103M
782MHz_16QAM_RB 5,#RB 0,NB 0	Pass	Inf	1.283M	940.351k

Port X-N dB = Port X 26dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

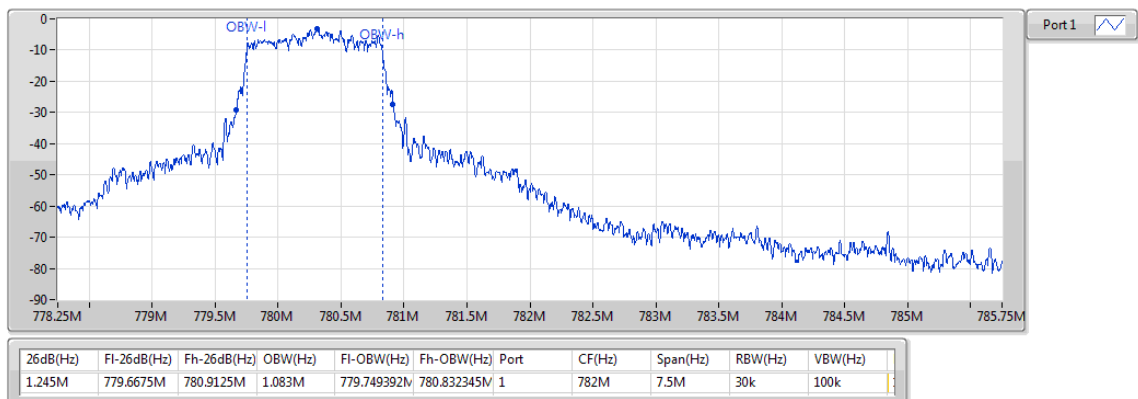
779.5MHz_QPSK_RB 6,#RB 0,NB 0



Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

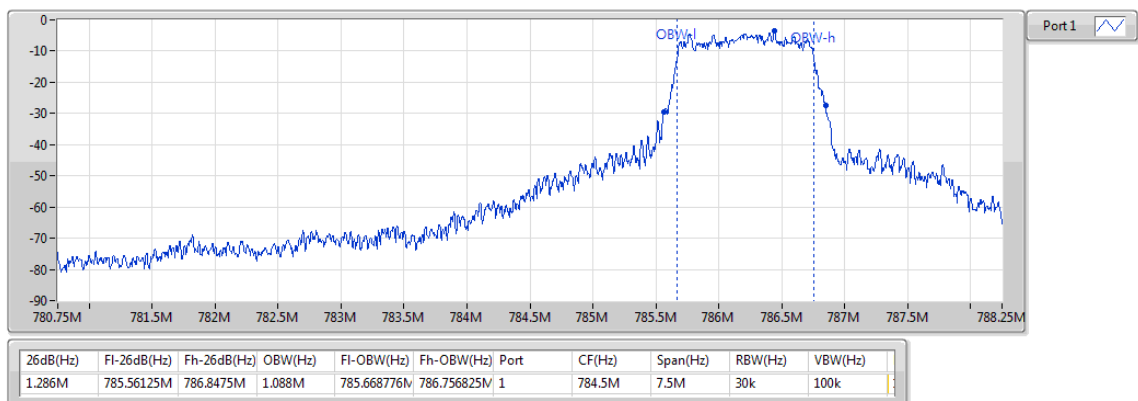
782MHz_QPSK_RB 6,#RB 0,NB 0



Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

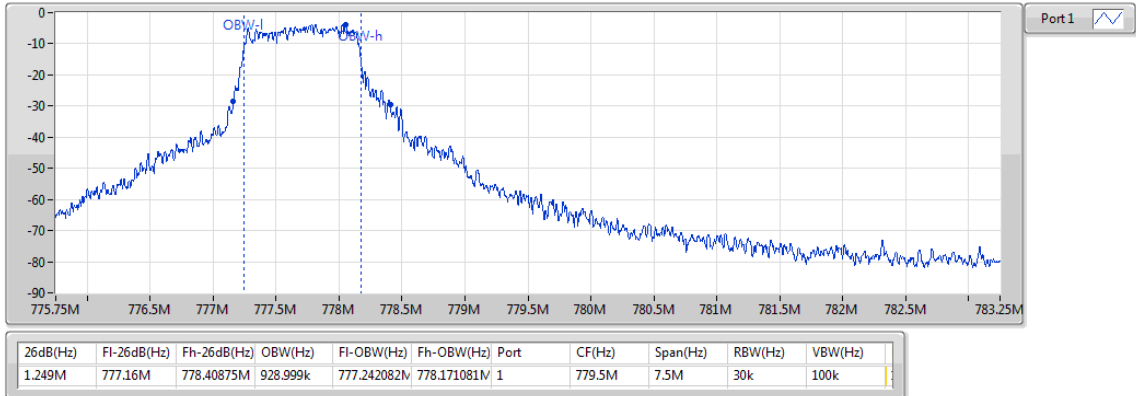
784.5MHz_QPSK_RB 6,#RB 0,NB 3



Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

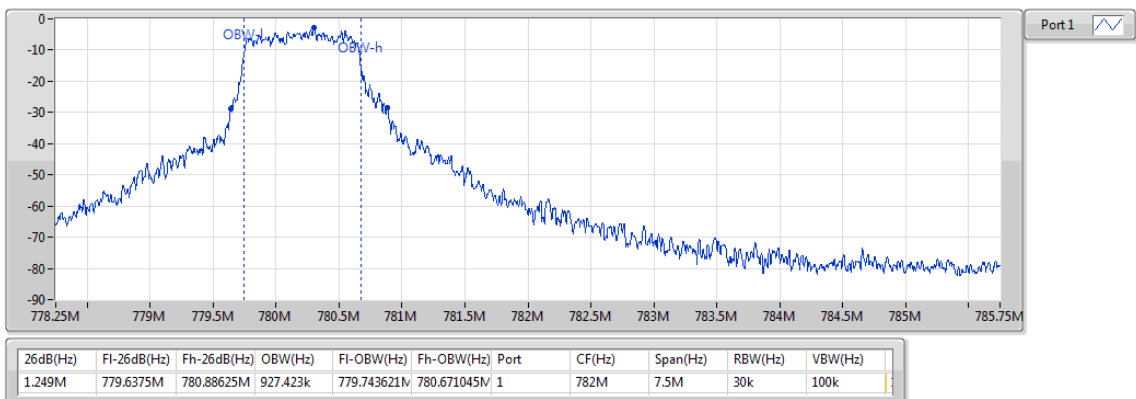
779.5MHz_16QAM_RB 5,#RB 0,NB 0



Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

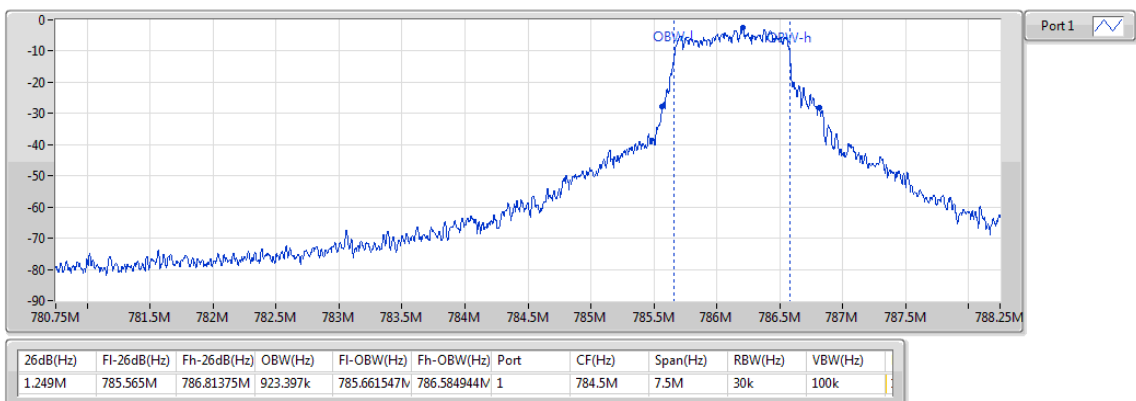
782MHz_16QAM_RB 5,#RB 0,NB 0



Band 13_LTE-M1_5MHz_Nss1_1TX

EBW

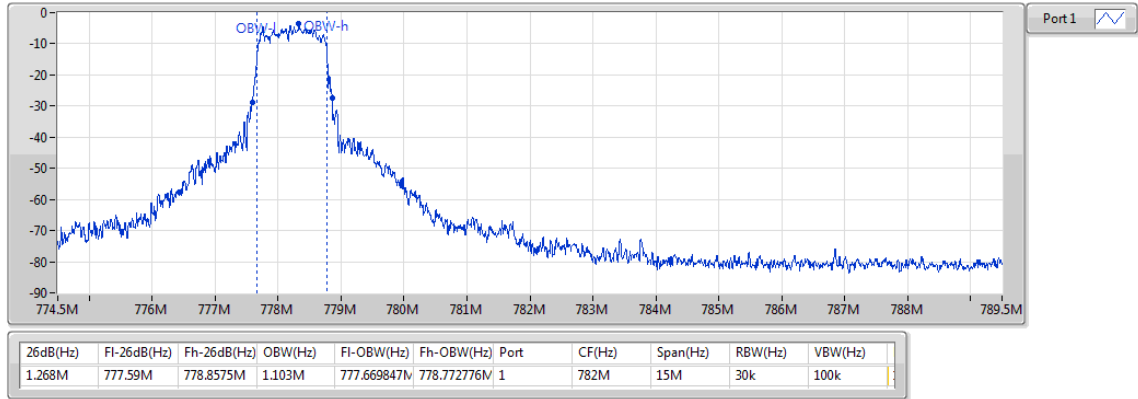
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Band 13_LTE-M1_10MHz_Nss1_1TX

EBW

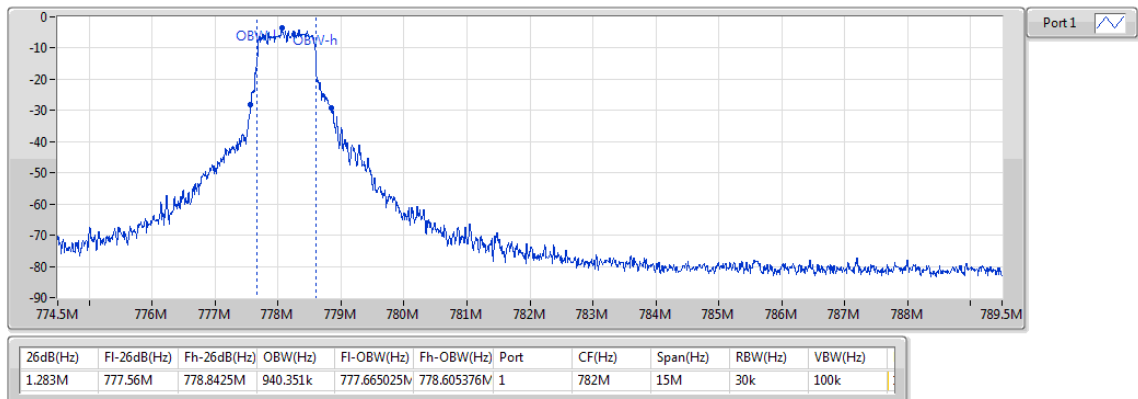
782MHz_QPSK_RB 6,#RB 0,NB 0



Band 13_LTE-M1_10MHz_Nss1_1TX

EBW

782MHz_16QAM_RB 5,#RB 0,NB 0



3.5 Frequency Stability

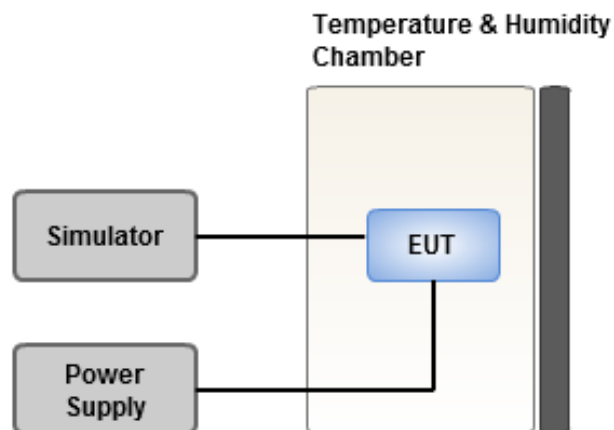
3.5.1 Limit of Frequency Stability

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

3.5.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. Temperature range is from -30 ~ 85 °C and voltage range is from lowest to highest working voltage.
4. Tem Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.5.3 Test Setup



3.5.4 Test Result of Frequency Stability

Temperature (°C)	Frequency Drift (ppm)	
	BW: 5 MHz	BW: 10 MHz
T20°CVmax	-0.05	-0.05
T20°CVmin	-0.05	-0.05
T85°CVnom	-0.08	-0.08
T80°CVnom	-0.08	-0.08
T70°CVnom	-0.08	-0.08
T60°CVnom	-0.08	-0.07
T50°CVnom	-0.08	-0.07
T40°CVnom	-0.06	-0.06
T30°CVnom	-0.05	-0.06
T20°CVnom	-0.05	-0.05
T10°CVnom	-0.04	-0.05
T0°CVnom	-0.04	-0.04
T-10°CVnom	-0.04	-0.04
T-20°CVnom	-0.03	-0.03
T-30°CVnom	-0.03	-0.03

3.6 Peak to Average Ratio

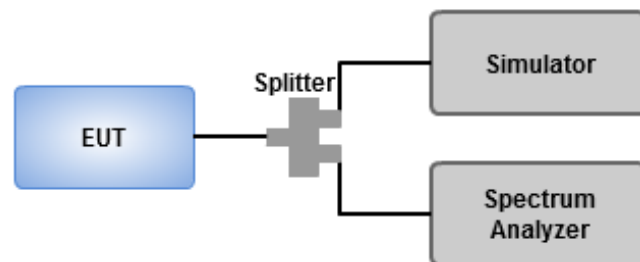
3.6.1 Limit of Peak to Average Ratio

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

3.6.2 Test Procedures

1. Set the number of counts to a value that stabilizes the measured CCDF curve.
2. Set the measurement interval to 1 ms.
3. Record the maximum PAPR level associated with a probability of 0.1%.

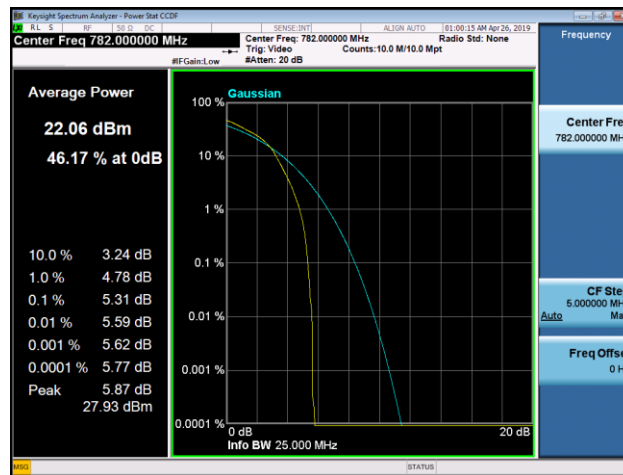
3.6.3 Test Setup



3.6.4 Test Result of Peak to Average Ratio

Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
5	QPSK	23025	779.5	4.9700
5	QPSK	23230	782	5.1100
5	QPSK	23255	784.5	5.1100
5	16QAM	23025	779.5	5.0700
5	16QAM	23230	782	5.3100
5	16QAM	23255	784.5	5.2400

Worst plot



Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
10	QPSK	23230	782	4.9800
10	16QAM	23230	782	5.2500



4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin
Kou District, New Taipei City,
Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd St.,
Kwei Shan District, Tao Yuan City
333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==