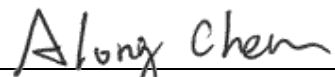


FCC/IC Test Report

FCC ID : RI7LE910C1NS
IC : 5131A-LE910C1NS
Equipment : LTE Module
Model No. : LE910C1-NS
Brand Name : Telit
Applicant : TELIT COMMUNICATIONS S.P.A.
Address : Viale Stazione di Prosecco 5/B, Trieste 34010
Italy
Standard : 47 CFR FCC Part 27
RSS-130 Issue 1 October 2013
Received Date : Apr. 07, 2017
Tested Date : Apr. 07 ~ Apr. 18, 2017

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



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Release Record

Report No.	Version	Description	Issued Date
FG740703P27-1	Rev. 01	Initial issue	May 02, 2017

Summary of Test Results

FCC Rules	IC Rules	Test Items	Measured	Result
2.1046 / 27.50(c)(10)	---	Effective Radiated Power	Power[dBm] : 21.55	Pass
---	RSS-130 Section 4.4	Equivalent Isotropically Radiated Power	Power[dBm] : 23.70	Pass
2.1053 / 27.53(g)	RSS-130 Section 4.6	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 27.53(g)	RSS-130 Section 4.6	Conducted Emissions	Meet the requirement of limit	Pass
27.53(g)	RSS-130 Section 4.6	Band Edge	Meet the requirement of limit	Pass
2.1049 / 27.53(g)	RSS-130 Section 4.3	Occupied Bandwidth	Meet the requirement of limit	Pass
2.1055 / 27.54	RSS-130 Section 4.3	Frequency Stability	Meet the requirement of limit	Pass
27.50(d)(5)	RSS-130 Section 4.4	Peak to Average Ratio	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

Operating Frequency (MHz)	LTE Band 12: Channel Bandwidth: 1.4MHz: 699.7 MHz ~ 715.3 MHz Channel Bandwidth: 3MHz: 700.5 MHz ~ 714.5 MHz Channel Bandwidth: 5MHz: 701.5 MHz ~ 713.5 MHz Channel Bandwidth: 10MHz: 704.0 MHz ~ 711.0 MHz
Modulation	QPSK, 16QAM (Uplink)
Release Version	10
Duplex Mode	FDD
UE Category	Cat. 1
H/W Version	CS1762C
S/W Version	25.00.241

1.1.2 Maximum ERP and Emission Designator

Mode	Modulation	Maximum ERP (W)	Emission Designator
LTE Band 12, CB: 1.4MHz	QPSK	0.138	1M08G7D
LTE Band 12, CB: 1.4MHz	16QAM	0.114	1M09W7D
LTE Band 12, CB: 3MHz	QPSK	0.137	2M69G7D
LTE Band 12, CB: 3MHz	16QAM	0.119	2M69W7D
LTE Band 12, CB: 5MHz	QPSK	0.135	4M48G7D
LTE Band 12, CB: 5MHz	16QAM	0.108	4M48W7D
LTE Band 12, CB: 10MHz	QPSK	0.143	8M96G7D
LTE Band 12, CB: 10MHz	16QAM	0.130	4M95W7D

1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remark
1	Dipole	R-SMA	0.84	---

1.1.4 EUT Operational Condition

Supply Voltage	3.8Vdc from host		
Operational Voltage	☒ Vnom (3.8 V)	☒ Vmax (4.2 V)	☒ Vmin (3.4 V)
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (85°C)	☒ Tmin (-40°C)

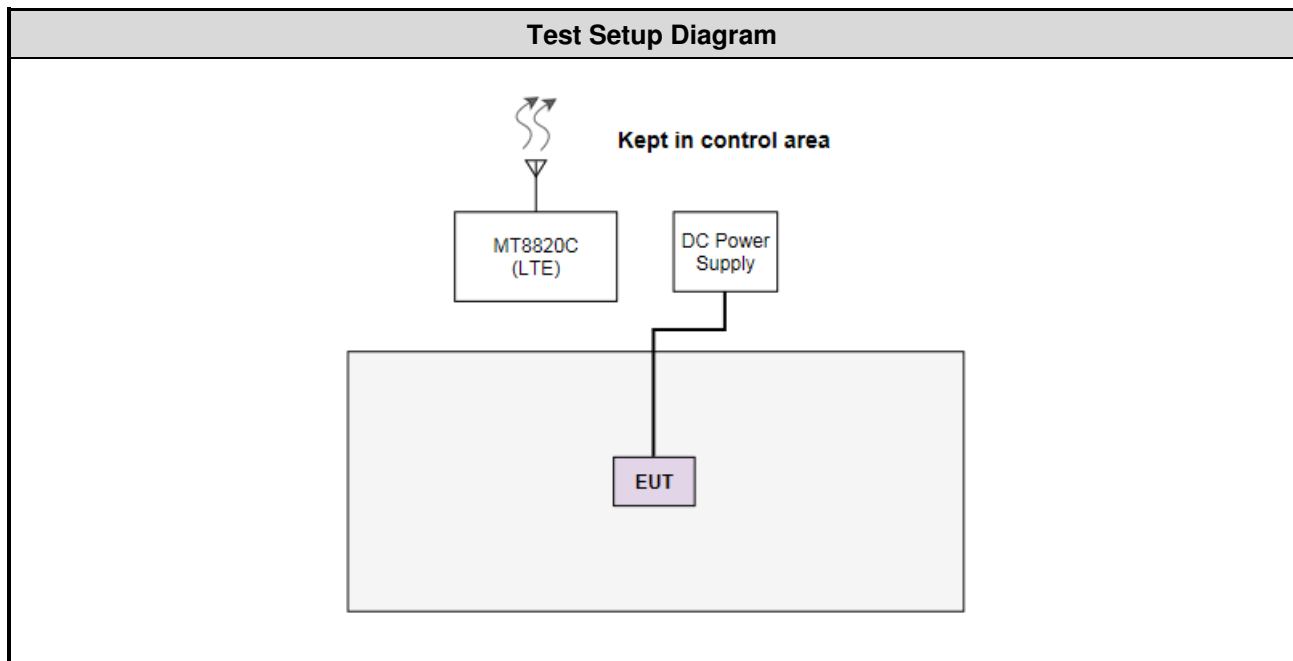
1.1.5 Operating Channel List

LTE Band 12		
Channel Bandwidths (MHz)	Channel	Frequency (MHz)
1.4	23017	699.7
1.4	23095	707.5
1.4	23173	715.5
3	23025	700.5
3	23095	707.5
3	23165	714.5
5	23035	701.5
5	23095	707.5
5	23155	713.5
10	23060	704.0
10	23095	707.5
10	23130	711.0

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	DC Power Supply	GW INSTEK	GPC-6030D	---	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Mar. 15, 2017	Mar. 14, 2018
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 09, 2016	Sep. 08, 2017
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 21, 2016	Nov. 20, 2017
Power Meter	Anritsu	ML2495A	1241002	Oct. 06, 2016	Oct. 05, 2017
Power Sensor	Anritsu	MA2411B	1207366	Oct. 06, 2016	Oct. 05, 2017
Radio Communication Analyzer	Anritsu	MT8820C	6201465544	Aug. 19, 2016	Aug. 18, 2017
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

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	Nov. 25, 2016	Nov. 24, 2017
Receiver	R&S	ESR3	101658	Nov. 24, 2016	Nov. 23, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 04, 2016	Aug. 03, 2017
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 21, 2016	Dec. 20, 2017
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017
Preamplifier	EMC	EMC02325	980225	Aug. 05, 2016	Aug. 04, 2017
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2016	Oct. 05, 2017
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 09, 2016	Dec. 08, 2017
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	16052	Dec. 09, 2016	Dec. 08, 2017
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 09, 2016	Dec. 08, 2017
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 09, 2016	Dec. 08, 2017
Radio Communication Analyzer	Anritsu	MT8820C	6201465544	Aug. 19, 2016	Aug. 18, 2017
Measurement Software	AUDIX	e3	6.120210g	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

RSS-130 Issue 1 October 2013

RSS-Gen Issue 4 November 2014

SRSP-518 Issue 1 October 2013

ANSI C63.4-2014

ANSI C63.26-2015

ANSI/TIA-603-D 2010

FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

FCC KDB 971168 D02 Misc OOB License Digital Systems v01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 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	± 34.134 Hz
Conducted power	± 0.808 dB
Frequency error	± 34.134 Hz
Temperature	± 0.6 °C
Conducted emission	± 2.670 dB
Radiated emission ≤ 1 GHz	± 3.66 dB
Radiated emission > 1 GHz	± 5.63 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 / 60-62%	Kevin Lee Vincent Yeh
RF Conducted	TH01-WS	22°C / 63%	Alex Huang

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

LTE Band 12			
Test item	Channel Bandwidths	Modulation	Test channel
Effective Radiated Power	1.4 MHz	QPSK / 16QAM	23017 / 23095 / 23173
Conducted Emissions	3 MHz	QPSK / 16QAM	23025 / 23095 / 23165
Occupied Bandwidth	5 MHz	QPSK / 16QAM	23035 / 23095 / 23155
Peak to Average Ratio	10 MHz	QPSK / 16QAM	23060 / 23095 / 23130
Radiated Emission ≤ 1GHz	1.4 MHz	QPSK	23095
	3 MHz	QPSK	23165
	5 MHz	QPSK	23095
	10 MHz	QPSK	23060
Radiated Emission > 1GHz	1.4 MHz	QPSK	23017 / 23095 / 23173
	3 MHz	QPSK	23025 / 23095 / 23165
	5 MHz	QPSK	23035 / 23095 / 23155
	10 MHz	QPSK	23060 / 23095 / 23130
Band Edge	1.4 MHz	QPSK / 16QAM	23017 / 23173
	3 MHz	QPSK / 16QAM	23025 / 23165
	5 MHz	QPSK / 16QAM	23035 / 23155
	10 MHz	QPSK / 16QAM	23060 / 23130
Frequency Stability	1.4 MHz	QPSK	23017
	3 MHz	QPSK	23025
	5 MHz	QPSK	23035
	10 MHz	QPSK	23060
Note:			
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Y-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) transmitting in the 698~746 MHz bands are limited to 3 watts ERP.

3.1.2 Test Procedures

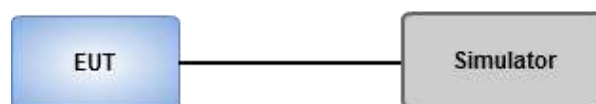
For Conducted power measurement:

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:

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. The EUT is placed at a height of 0.8 m test table above the ground plane.
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:
$$E.R.P = E.I.R.P - 2.15dB$$

3.1.3 Test Setup



3.1.4 Test Result of Effective Radiated Power (dBm)

Channel Bandwidth: 1.4MHz

Mode	Channel	RB	RB Offset	Conducted Average Power (dBm)	Ant. Gain (dB)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23017	1	0	22.32	0.84	23.16	21.01	0.126	3
		1	2	22.46	0.84	23.30	21.15	0.130	3
		1	5	22.37	0.84	23.21	21.06	0.128	3
		3	0	22.37	0.84	23.21	21.06	0.128	3
		3	1	22.44	0.84	23.28	21.13	0.130	3
		3	2	22.42	0.84	23.26	21.11	0.129	3
		6	0	21.28	0.84	22.12	19.97	0.099	3
	23095	1	0	22.58	0.84	23.42	21.27	0.134	3
		1	2	22.70	0.84	23.54	21.39	0.138	3
		1	5	22.55	0.84	23.39	21.24	0.133	3
		3	0	22.52	0.84	23.36	21.21	0.132	3
		3	1	22.57	0.84	23.41	21.26	0.134	3
		3	2	22.52	0.84	23.36	21.21	0.132	3
		6	0	21.47	0.84	22.31	20.16	0.104	3
	23173	1	0	22.48	0.84	23.32	21.17	0.131	3
		1	2	22.66	0.84	23.50	21.35	0.136	3
		1	5	22.46	0.84	23.30	21.15	0.130	3
		3	0	22.52	0.84	23.36	21.21	0.132	3
		3	1	22.55	0.84	23.39	21.24	0.133	3
		3	2	22.45	0.84	23.29	21.14	0.130	3
		6	0	21.48	0.84	22.32	20.17	0.104	3
16QAM	23017	1	0	21.24	0.84	22.08	19.93	0.098	3
		1	2	21.59	0.84	22.43	20.28	0.107	3
		1	5	21.47	0.84	22.31	20.16	0.104	3
		3	0	21.32	0.84	22.16	20.01	0.100	3
		3	1	21.45	0.84	22.29	20.14	0.103	3
		3	2	21.37	0.84	22.21	20.06	0.101	3
		6	0	20.22	0.84	21.06	18.91	0.078	3
	23095	1	0	21.77	0.84	22.61	20.46	0.111	3
		1	2	21.89	0.84	22.73	20.58	0.114	3
		1	5	21.64	0.84	22.48	20.33	0.108	3
		3	0	21.57	0.84	22.41	20.26	0.106	3
		3	1	21.66	0.84	22.50	20.35	0.108	3
		3	2	21.65	0.84	22.49	20.34	0.108	3
		6	0	20.51	0.84	21.35	19.20	0.083	3
	23173	1	0	21.23	0.84	22.07	19.92	0.098	3
		1	2	21.29	0.84	22.13	19.98	0.100	3
		1	5	21.14	0.84	21.98	19.83	0.096	3
		3	0	21.19	0.84	22.03	19.88	0.097	3
		3	1	21.13	0.84	21.97	19.82	0.096	3
		3	2	21.22	0.84	22.06	19.91	0.098	3
		6	0	20.57	0.84	21.41	19.26	0.084	3

Channel Bandwidth: 3MHz

Mode	Channel	RB	RB Offset	Conducted Average Power (dBm)	Ant. Gain (dB)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23025	1	0	22.48	0.84	23.32	21.17	0.131	3
		1	7	22.62	0.84	23.46	21.31	0.135	3
		1	14	22.46	0.84	23.30	21.15	0.130	3
		8	0	21.32	0.84	22.16	20.01	0.100	3
		8	4	21.34	0.84	22.18	20.03	0.101	3
		8	7	21.35	0.84	22.19	20.04	0.101	3
		15	0	21.26	0.84	22.10	19.95	0.099	3
	23095	1	0	22.58	0.84	23.42	21.27	0.134	3
		1	7	22.63	0.84	23.47	21.32	0.136	3
		1	14	22.46	0.84	23.30	21.15	0.130	3
		8	0	21.50	0.84	22.34	20.19	0.104	3
		8	4	21.39	0.84	22.23	20.08	0.102	3
		8	7	21.30	0.84	22.14	19.99	0.100	3
		15	0	21.51	0.84	22.35	20.20	0.105	3
	23165	1	0	22.28	0.84	23.12	20.97	0.125	3
		1	7	22.69	0.84	23.53	21.38	0.137	3
		1	14	22.45	0.84	23.29	21.14	0.130	3
		8	0	21.36	0.84	22.20	20.05	0.101	3
		8	4	21.57	0.84	22.41	20.26	0.106	3
		8	7	21.52	0.84	22.36	20.21	0.105	3
		15	0	21.52	0.84	22.36	20.21	0.105	3
16QAM	23025	1	0	21.74	0.84	22.58	20.43	0.110	3
		1	7	21.79	0.84	22.63	20.48	0.112	3
		1	14	21.62	0.84	22.46	20.31	0.107	3
		8	0	20.10	0.84	20.94	18.79	0.076	3
		8	4	20.24	0.84	21.08	18.93	0.078	3
		8	7	20.11	0.84	20.95	18.80	0.076	3
		15	0	20.17	0.84	21.01	18.86	0.077	3
	23095	1	0	22.07	0.84	22.91	20.76	0.119	3
		1	7	21.73	0.84	22.57	20.42	0.110	3
		1	14	21.36	0.84	22.20	20.05	0.101	3
		8	0	20.74	0.84	21.58	19.43	0.088	3
		8	4	20.51	0.84	21.35	19.20	0.083	3
		8	7	20.23	0.84	21.07	18.92	0.078	3
		15	0	20.52	0.84	21.36	19.21	0.083	3
	23165	1	0	21.07	0.84	21.91	19.76	0.095	3
		1	7	21.74	0.84	22.58	20.43	0.110	3
		1	14	21.19	0.84	22.03	19.88	0.097	3
		8	0	20.36	0.84	21.20	19.05	0.080	3
		8	4	20.64	0.84	21.48	19.33	0.086	3
		8	7	20.60	0.84	21.44	19.29	0.085	3
		15	0	20.31	0.84	21.15	19.00	0.079	3

Channel Bandwidth: 5MHz

Mode	Channel	RB	RB Offset	Conducted Average Power (dBm)	Ant. Gain (dB)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23035	1	0	22.47	0.84	23.31	21.16	0.131	3
		1	12	22.54	0.84	23.38	21.23	0.133	3
		1	24	22.44	0.84	23.28	21.13	0.130	3
		12	0	21.22	0.84	22.06	19.91	0.098	3
		12	6	21.47	0.84	22.31	20.16	0.104	3
		12	11	21.36	0.84	22.20	20.05	0.101	3
		25	0	21.35	0.84	22.19	20.04	0.101	3
	23095	1	0	22.56	0.84	23.40	21.25	0.133	3
		1	12	22.61	0.84	23.45	21.30	0.135	3
		1	24	22.37	0.84	23.21	21.06	0.128	3
		12	0	21.38	0.84	22.22	20.07	0.102	3
		12	6	21.45	0.84	22.29	20.14	0.103	3
		12	11	21.41	0.84	22.25	20.10	0.102	3
		25	0	21.48	0.84	22.32	20.17	0.104	3
	23155	1	0	21.96	0.84	22.80	20.65	0.116	3
		1	12	22.42	0.84	23.26	21.11	0.129	3
		1	24	22.39	0.84	23.23	21.08	0.128	3
		12	0	21.29	0.84	22.13	19.98	0.100	3
		12	6	21.33	0.84	22.17	20.02	0.100	3
		12	11	21.48	0.84	22.32	20.17	0.104	3
		25	0	21.24	0.84	22.08	19.93	0.098	3
16QAM	23035	1	0	21.49	0.84	22.33	20.18	0.104	3
		1	12	21.59	0.84	22.43	20.28	0.107	3
		1	24	21.49	0.84	22.33	20.18	0.104	3
		12	0	20.33	0.84	21.17	19.02	0.080	3
		12	6	20.52	0.84	21.36	19.21	0.083	3
		12	11	20.37	0.84	21.21	19.06	0.081	3
		25	0	20.43	0.84	21.27	19.12	0.082	3
	23095	1	0	21.39	0.84	22.23	20.08	0.102	3
		1	12	21.64	0.84	22.48	20.33	0.108	3
		1	24	21.32	0.84	22.16	20.01	0.100	3
		12	0	20.40	0.84	21.24	19.09	0.081	3
		12	6	20.29	0.84	21.13	18.98	0.079	3
		12	11	20.36	0.84	21.20	19.05	0.080	3
		25	0	20.62	0.84	21.46	19.31	0.085	3
	23155	1	0	21.04	0.84	21.88	19.73	0.094	3
		1	12	21.33	0.84	22.17	20.02	0.100	3
		1	24	21.32	0.84	22.16	20.01	0.100	3
		12	0	20.29	0.84	21.13	18.98	0.079	3
		12	6	20.44	0.84	21.28	19.13	0.082	3
		12	11	20.41	0.84	21.25	19.10	0.081	3
		25	0	20.15	0.84	20.99	18.84	0.077	3

Channel Bandwidth: 10MHz

Mode	Channel	RB	RB Offset	Conducted Average Power (dBm)	Ant. Gain (dB)	E.I.R.P Power (dBm)	E.R.P Power (dBm)	E.R.P Power (W)	E.R.P Limit (W)
QPSK	23060	1	0	22.36	0.84	23.20	21.05	0.127	3
		1	24	22.86	0.84	23.70	21.55	0.143	3
		1	49	22.36	0.84	23.20	21.05	0.127	3
		25	0	21.39	0.84	22.23	20.08	0.102	3
		25	12	21.44	0.84	22.28	20.13	0.103	3
		25	24	21.33	0.84	22.17	20.02	0.100	3
		50	0	21.26	0.84	22.10	19.95	0.099	3
	23095	1	0	22.38	0.84	23.22	21.07	0.128	3
		1	24	22.46	0.84	23.30	21.15	0.130	3
		1	49	22.40	0.84	23.24	21.09	0.129	3
		25	0	21.46	0.84	22.30	20.15	0.104	3
		25	12	21.42	0.84	22.26	20.11	0.103	3
		25	24	21.32	0.84	22.16	20.01	0.100	3
		50	0	21.47	0.84	22.31	20.16	0.104	3
	23130	1	0	22.18	0.84	23.02	20.87	0.122	3
		1	24	22.72	0.84	23.56	21.41	0.138	3
		1	49	22.58	0.84	23.42	21.27	0.134	3
		25	0	21.30	0.84	22.14	19.99	0.100	3
		25	12	21.33	0.84	22.17	20.02	0.100	3
		25	24	21.46	0.84	22.30	20.15	0.104	3
		50	0	21.40	0.84	22.24	20.09	0.102	3
16QAM	23060	1	0	21.57	0.84	22.41	20.26	0.106	3
		1	24	22.45	0.84	23.29	21.14	0.130	3
		1	49	21.41	0.84	22.25	20.10	0.102	3
		27	0	20.47	0.84	21.31	19.16	0.082	3
		27	12	20.44	0.84	21.28	19.13	0.082	3
		27	23	20.31	0.84	21.15	19.00	0.079	3
	23095	1	0	21.51	0.84	22.35	20.20	0.105	3
		1	24	21.61	0.84	22.45	20.30	0.107	3
		1	49	21.46	0.84	22.30	20.15	0.104	3
		27	0	20.50	0.84	21.34	19.19	0.083	3
		27	12	20.39	0.84	21.23	19.08	0.081	3
		27	23	20.37	0.84	21.21	19.06	0.081	3
	23130	1	0	21.09	0.84	21.93	19.78	0.095	3
		1	24	20.66	0.84	21.50	19.35	0.086	3
		1	49	20.98	0.84	21.82	19.67	0.093	3
		27	0	20.52	0.84	21.36	19.21	0.083	3
		27	12	20.49	0.84	21.33	19.18	0.083	3
		27	23	20.67	0.84	21.51	19.36	0.086	3

Note: Uplink support to 5Mbps only, RB setup of 16QAM is up to 27RB.

3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

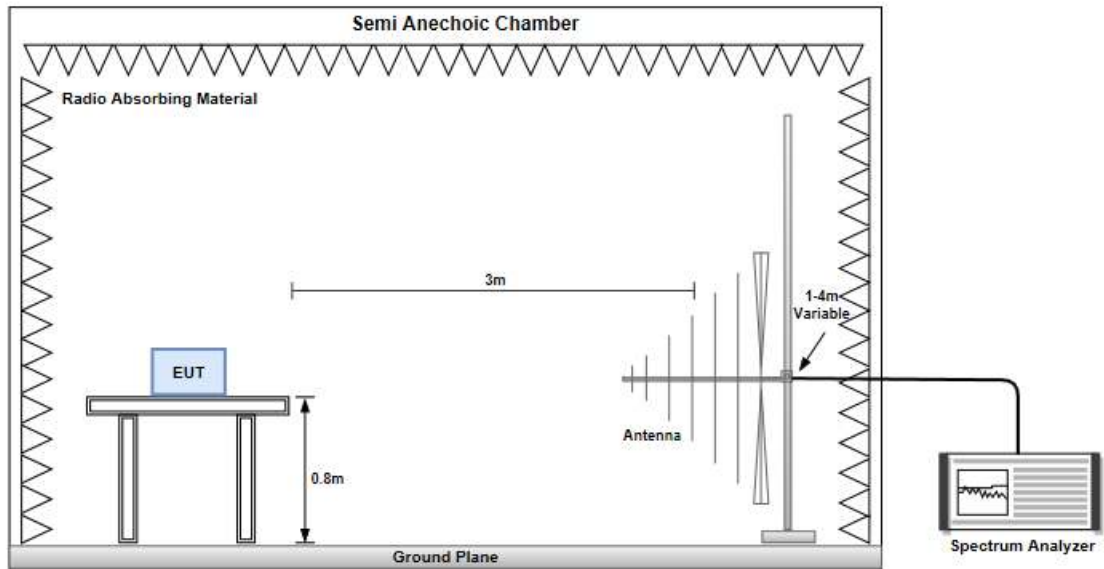
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB equal to -13dBm.

3.2.2 Test Procedures

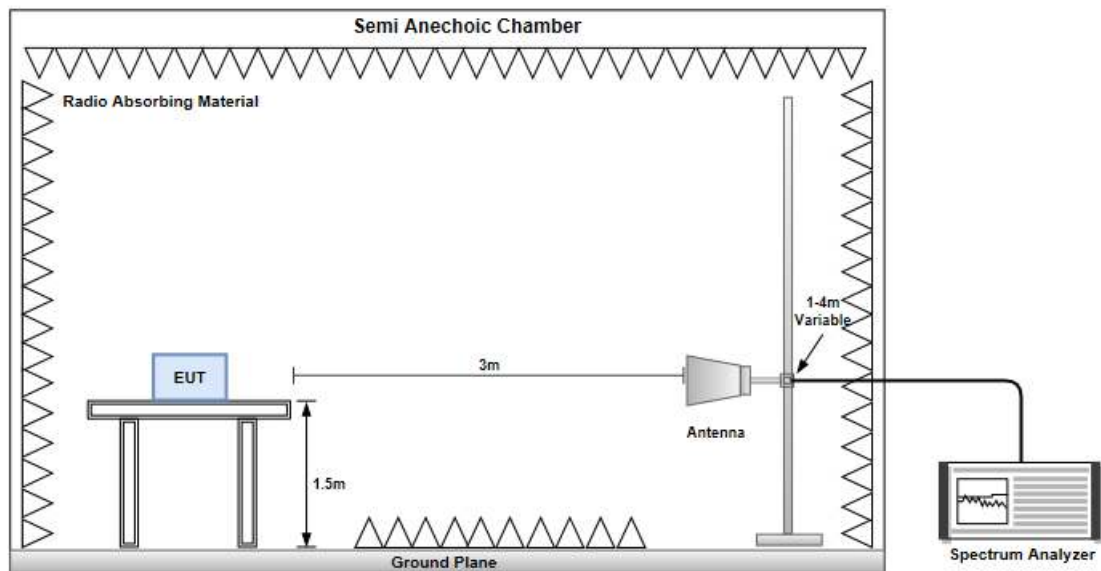
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. 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. $E.I.R.P = \text{output power of step 4} + \text{gain of substitution antenna} - \text{cable loss of RF cable}$. ERP can be calculated by below formula:
 $E.R.P = E.I.R.P - 2.15\text{dB}$

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 12, CB:1.4MHz, 1RB, Offset 2, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
30.97	H	-58.75	-13.00	-45.75	-64.52	-42.63	-13.97
138.64	H	-67.15	-13.00	-54.15	-64.80	-63.68	-1.32
189.08	H	-59.45	-13.00	-46.45	-54.85	-60.52	3.22
364.65	H	-67.08	-13.00	-54.08	-67.25	-69.26	4.33
440.31	H	-65.64	-13.00	-52.64	-66.89	-67.55	4.06
602.30	H	-63.56	-13.00	-50.56	-67.26	-64.96	3.55
32.91	V	-59.99	-13.00	-46.99	-55.42	-44.34	-13.50
90.14	V	-61.55	-13.00	-48.55	-59.65	-60.18	0.78
236.61	V	-62.67	-13.00	-49.67	-62.84	-64.95	4.43
440.31	V	-64.72	-13.00	-51.72	-66.20	-66.63	4.06
568.35	V	-61.42	-13.00	-48.42	-67.47	-63.08	3.81
625.74	V	-60.27	-13.00	-47.27	-67.36	-61.96	3.84

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

Mode	LTE Band 12, CB:3MHz, 1RB, Offset 7, Channel:23165						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
39.70	H	-59.03	-13.00	-46.03	-64.64	-44.55	-12.33
149.31	H	-68.70	-13.00	-55.70	-66.33	-65.70	-0.85
292.87	H	-69.23	-13.00	-56.23	-65.91	-71.39	4.31
411.21	H	-66.36	-13.00	-53.36	-67.28	-68.44	4.23
543.13	H	-64.70	-13.00	-51.70	-67.51	-66.54	3.99
662.44	H	-62.84	-13.00	-49.84	-67.25	-64.51	3.82
33.88	V	-58.18	-13.00	-45.18	-53.63	-42.76	-13.27
90.14	V	-61.20	-13.00	-48.20	-59.30	-59.83	0.78
236.04	V	-61.85	-13.00	-48.85	-62.02	-64.13	4.43
352.04	V	-66.33	-13.00	-53.33	-66.78	-68.52	4.34
559.62	V	-61.34	-13.00	-48.34	-67.04	-63.08	3.89
680.87	V	-59.82	-13.00	-46.82	-66.77	-61.43	3.76

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

Mode	LTE Band 12, CB:5MHz, 1RB, Offset 12, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
30.97	H	-57.69	-13.00	-44.69	-63.46	-41.57	-13.97
123.12	H	-67.95	-13.00	-54.95	-64.58	-64.89	-0.91
288.99	H	-68.48	-13.00	-55.48	-65.04	-70.65	4.32
368.53	H	-65.71	-13.00	-52.71	-65.95	-67.88	4.32
495.60	H	-64.46	-13.00	-51.46	-66.66	-66.61	4.30
609.09	H	-62.91	-13.00	-49.91	-66.69	-64.36	3.60
32.91	V	-59.47	-13.00	-46.47	-54.90	-43.82	-13.50
90.14	V	-61.16	-13.00	-48.16	-59.26	-59.79	0.78
151.25	V	-64.86	-13.00	-51.86	-64.71	-61.97	-0.74
236.61	V	-62.72	-13.00	-49.72	-62.89	-65.00	4.43
362.71	V	-60.83	-13.00	-47.83	-61.37	-63.01	4.33
603.27	V	-59.53	-13.00	-46.53	-66.83	-60.94	3.56

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

Mode	LTE Band 12, CB:10MHz, 1RB, Offset 24, Channel:23060						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
31.94	H	-59.89	-13.00	-46.89	-65.64	-44.01	-13.73
151.25	H	-68.18	-13.00	-55.18	-65.78	-65.29	-0.74
291.90	H	-68.28	-13.00	-55.28	-64.93	-70.44	4.31
378.23	H	-61.22	-13.00	-48.22	-61.63	-63.38	4.31
465.53	H	-65.43	-13.00	-52.43	-67.08	-67.33	4.05
583.87	H	-62.35	-13.00	-49.35	-65.77	-63.88	3.68
32.91	V	-61.07	-13.00	-48.07	-56.50	-45.42	-13.50
90.14	V	-62.03	-13.00	-49.03	-60.13	-60.36	0.48
143.49	V	-65.17	-13.00	-52.17	-64.52	-61.85	-1.17
235.64	V	-62.05	-13.00	-49.05	-62.20	-64.32	4.42
440.31	V	-65.26	-13.00	-52.26	-66.74	-67.17	4.06
567.38	V	-60.76	-13.00	-47.76	-66.78	-62.43	3.82

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

3.2.5 Test Result of Radiated Emissions above 1GHz

Mode	LTE Band 12, CB:1.4MHz, 1RB, Offset 2, Channel:23017						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1399.40	H	-56.54	-13.00	-43.54	-60.97	-58.52	4.13
2099.10	H	-56.95	-13.00	-43.95	-64.30	-60.65	5.85
3498.50	H	-53.87	-13.00	-40.87	-64.35	-58.41	6.69
1399.40	V	-53.79	-13.00	-40.79	-57.97	-55.77	4.13
2099.10	V	-55.79	-13.00	-42.79	-62.90	-59.49	5.85
3498.50	V	-54.55	-13.00	-41.55	-65.21	-59.09	6.69

Mode	LTE Band 12, CB:1.4MHz, 1RB, Offset 2, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1415.00	H	-56.18	-13.00	-43.18	-60.50	-58.20	4.17
2122.50	H	-56.61	-13.00	-43.61	-64.38	-60.33	5.87
3537.50	H	-54.69	-13.00	-41.69	-65.51	-59.26	6.72
1415.00	V	-52.41	-13.00	-39.41	-56.49	-54.43	4.17
2122.50	V	-54.98	-13.00	-41.98	-62.24	-58.70	5.87
3537.50	V	-52.20	-13.00	-39.20	-63.22	-56.77	6.72

Mode	LTE Band 12, CB:1.4MHz, 1RB, Offset 2, Channel:23173						
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1430.60	H	-57.24	-13.00	-44.24	-61.45	-59.30	4.21
2145.90	H	-56.87	-13.00	-43.87	-65.05	-60.60	5.88
3576.50	H	-53.43	-13.00	-40.43	-64.60	-58.02	6.74
1430.60	V	-57.24	-13.00	-44.24	-61.45	-59.30	4.21
2145.90	V	52.57	-13.00	65.57	-65.05	48.84	5.88
3576.50	V	-53.43	-13.00	-40.43	-64.60	-58.02	6.74

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

Mode	LTE Band 12, CB:3MHz, 1RB, Offset 7, 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)
1401.00	H	-56.28	-13.00	-43.28	-60.70	-58.26	4.13
2101.50	H	-56.61	-13.00	-43.61	-64.00	-60.32	5.86
3502.50	H	-53.73	-13.00	-40.73	-64.24	-58.27	6.69
1401.00	V	-53.56	-13.00	-40.56	-57.73	-55.54	4.13
2101.50	V	-55.57	-13.00	-42.57	-62.83	-59.28	5.86
3502.50	V	-54.71	-13.00	-41.71	-65.41	-59.25	6.69

Mode	LTE Band 12, CB:3MHz, 1RB, Offset 7, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1415.00	H	-56.00	-13.00	-43.00	-60.32	-58.02	4.17
2122.50	H	-56.46	-13.00	-43.46	-64.23	-60.18	5.87
3537.50	H	-54.57	-13.00	-41.57	-65.39	-59.14	6.72
1415.00	V	-52.27	-13.00	-39.27	-56.35	-54.29	4.17
2122.50	V	-54.83	-13.00	-41.83	-62.49	-58.55	5.87
3537.50	V	-52.06	-13.00	-39.06	-63.08	-56.63	6.72

Mode	LTE Band 12, CB:3MHz, 1RB, Offset 7, Channel:23165						
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1429.00	H	-56.31	-13.00	-43.31	-60.54	-58.37	4.21
2143.50	H	-56.43	-13.00	-43.43	-64.57	-60.16	5.88
3572.50	H	-54.54	-13.00	-41.54	-65.67	-59.13	6.74
1429.00	V	-52.52	-13.00	-39.52	-56.51	-54.58	4.21
2143.50	V	-54.81	-13.00	-41.81	-62.86	-58.54	5.88
3572.50	V	-52.39	-13.00	-39.39	-63.74	-56.98	6.74

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

Mode	LTE Band 12, CB:5MHz, 1RB, Offset 12, Channel:23035						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1403.00	H	-56.68	-13.00	-43.68	-61.09	-58.67	4.14
2104.50	H	-57.13	-13.00	-44.13	-64.57	-60.84	5.86
3507.50	H	-53.78	-13.00	-40.78	-64.33	-58.33	6.70
1403.00	V	-53.72	-13.00	-40.72	-57.88	-55.71	4.14
2104.50	V	-55.53	-13.00	-42.53	-62.84	-59.24	5.86
3507.50	V	-54.44	-13.00	-41.44	-65.18	-58.99	6.70

Mode	LTE Band 12, CB:5MHz, 1RB, Offset 12, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1415.00	H	-56.04	-13.00	-43.04	-60.36	-58.06	4.17
2122.50	H	-56.47	-13.00	-43.47	-64.24	-60.19	5.87
3537.50	H	-54.59	-13.00	-41.59	-65.41	-59.16	6.72
1415.00	V	-52.26	-13.00	-39.26	-56.34	-54.28	4.17
2122.50	V	-54.81	-13.00	-41.81	-62.47	-58.53	5.87
3537.50	V	-52.07	-13.00	-39.07	-63.09	-56.64	6.72

Mode	LTE Band 12, CB:5MHz, 1RB, Offset 12, Channel:23155						
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1427.00	H	-57.38	-13.00	-44.38	-61.62	-59.43	4.20
2140.50	H	-56.77	-13.00	-43.77	-64.85	-60.50	5.88
3567.50	H	-53.61	-13.00	-40.61	-64.70	-58.20	6.74
1427.00	V	-54.74	-13.00	-41.74	-58.74	-56.79	4.20
2140.50	V	-56.55	-13.00	-43.55	-65.54	-60.28	5.88
3567.50	V	-52.46	-13.00	-39.46	-63.77	-57.05	6.74

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

Mode	LTE Band 12, CB:10MHz, 1RB, Offset 24, Channel:23060						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1408.00	H	-56.51	-13.00	-43.51	-60.88	-58.51	4.15
2112.00	H	-56.93	-13.00	-43.93	-64.50	-60.64	5.86
3520.00	H	-53.67	-13.00	-40.67	-64.34	-58.22	6.70
1408.00	V	-53.62	-13.00	-40.62	-57.74	-55.62	4.15
2112.00	V	-55.33	-13.00	-42.33	-62.78	-59.04	5.86
3520.00	V	-54.56	-13.00	-41.56	-65.43	-59.11	6.70

Mode	LTE Band 12, CB:10MHz, 1RB, Offset 24, Channel:23095						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1415.00	H	-55.88	-13.00	-42.88	-60.20	-57.90	4.17
2122.50	H	-56.41	-13.00	-43.41	-64.18	-60.13	5.87
3537.50	H	-54.45	-13.00	-41.45	-65.27	-59.02	6.72
1415.00	V	-52.07	-13.00	-39.07	-56.15	-54.09	4.17
2122.50	V	-54.64	-13.00	-41.64	-62.30	-58.36	5.87
3537.50	V	-51.90	-13.00	-38.90	-62.92	-56.47	6.72

Mode	LTE Band 12, CB:10MHz, 1RB, Offset 24, Channel:23130						
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
1422.00	H	-57.31	-13.00	-44.31	-61.58	-59.35	4.19
2133.00	H	-56.67	-13.00	-43.67	-64.62	-60.39	5.87
3555.00	H	-53.44	-13.00	-40.44	-64.42	-58.02	6.73
1422.00	V	-54.61	-13.00	-41.61	-58.64	-56.65	4.19
2133.00	V	-56.43	-13.00	-43.43	-64.28	-60.15	5.87
3555.00	V	-52.31	-13.00	-39.31	-63.50	-56.89	6.73

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

3.3 Conducted Emissions

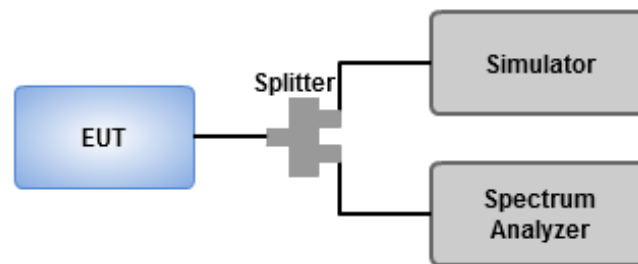
3.3.1 Limit of Conducted Emissions

On any frequency outside the 698~746 MHz band, 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.

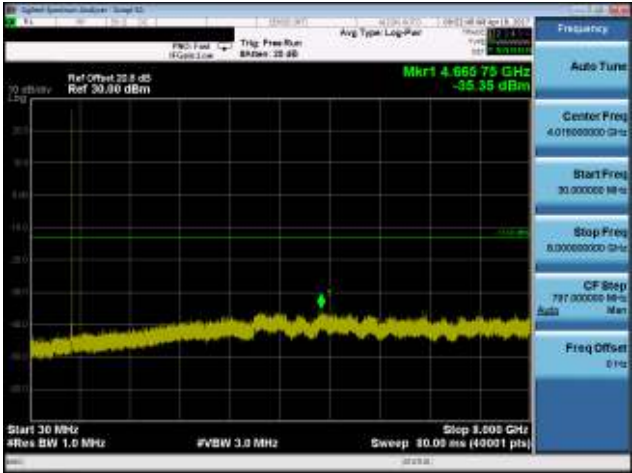
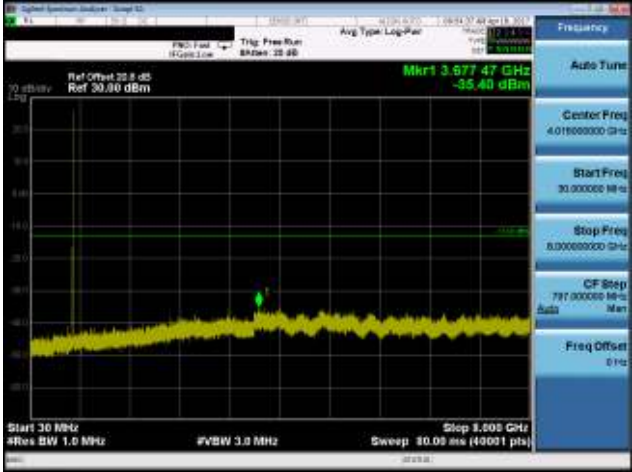
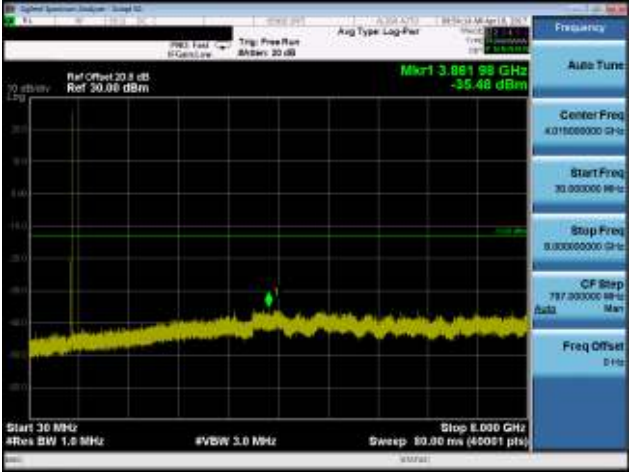
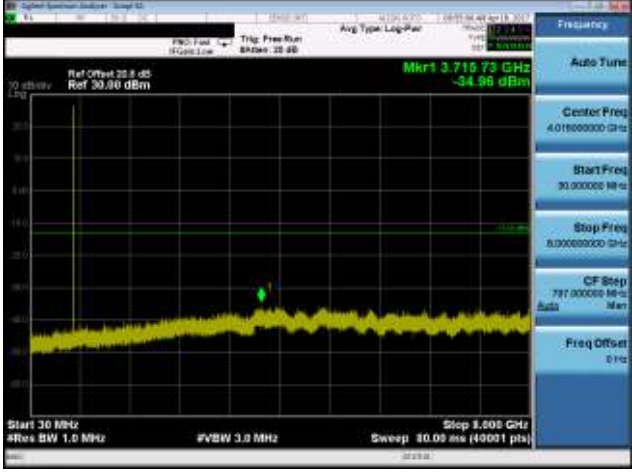
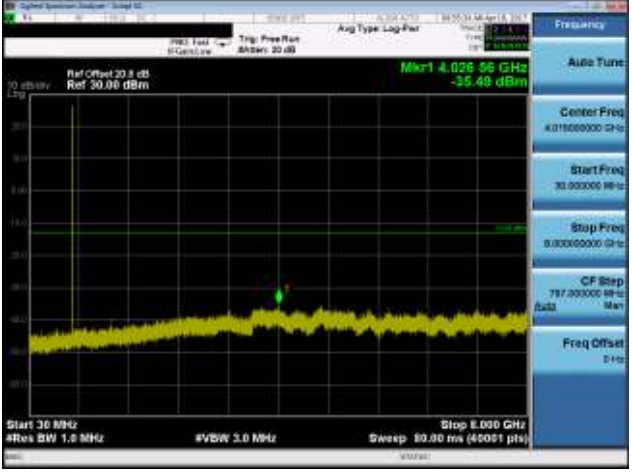
3.3.2 Test Procedures

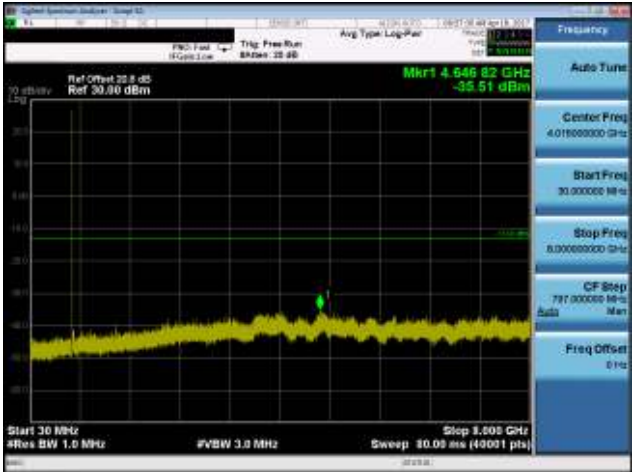
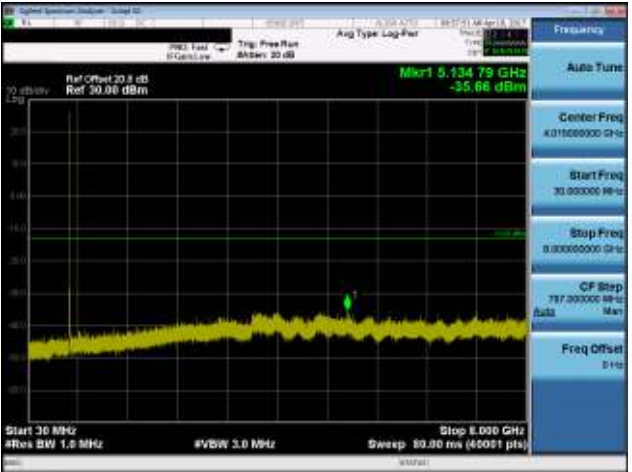
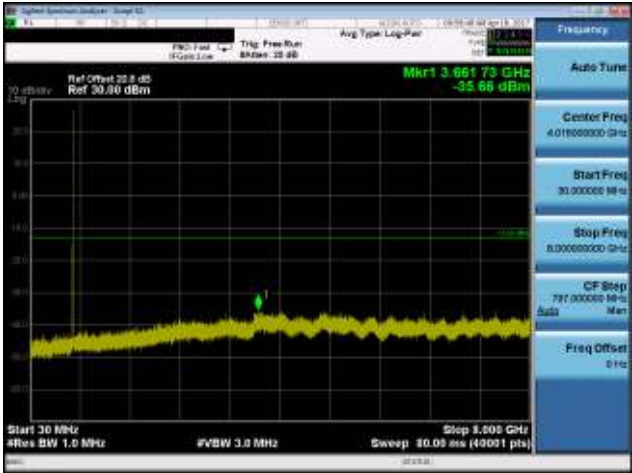
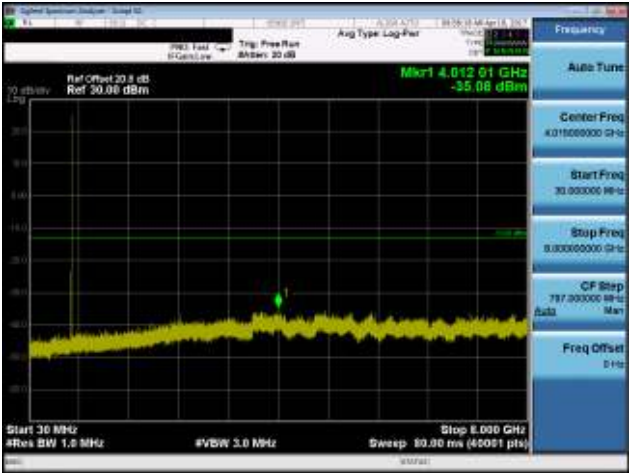
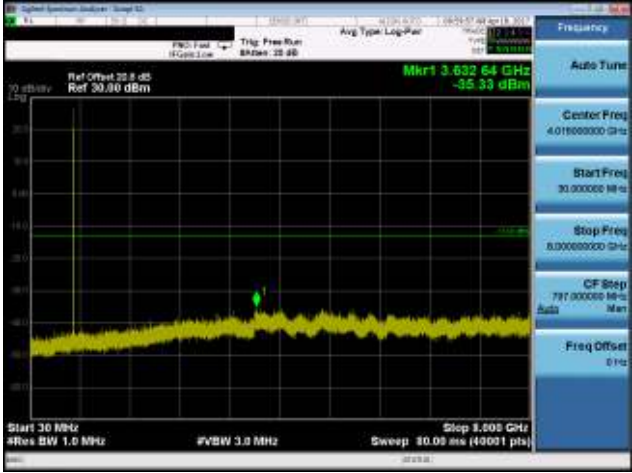
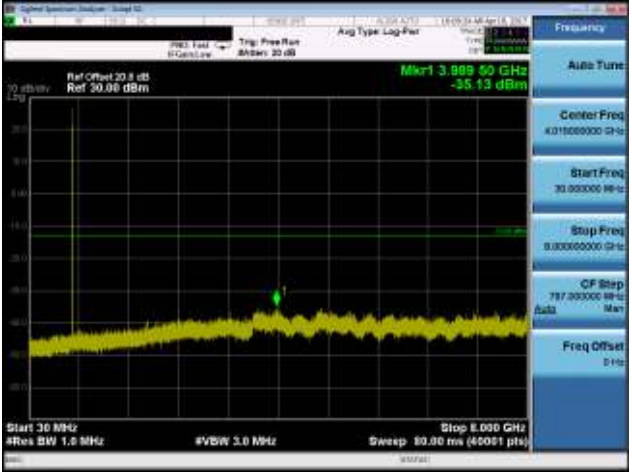
1. Lowest and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~8GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

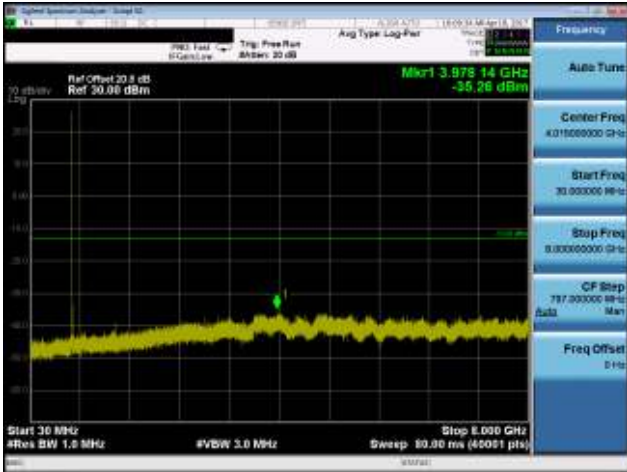
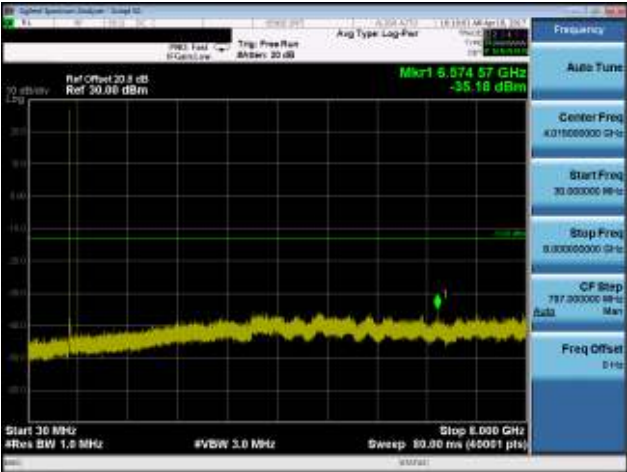
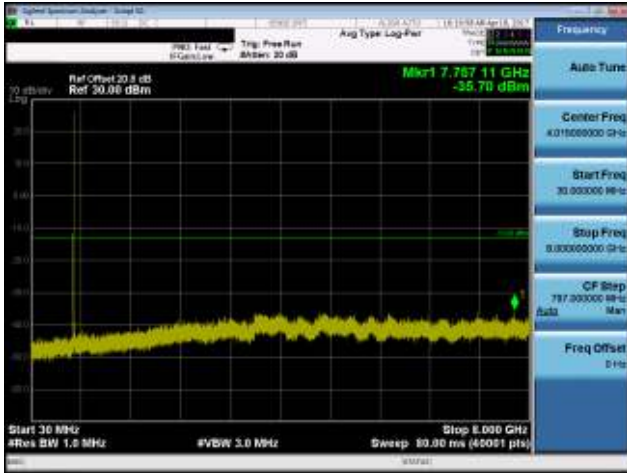
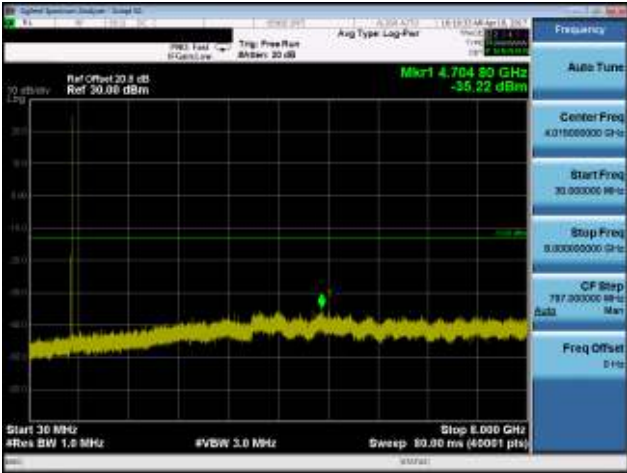
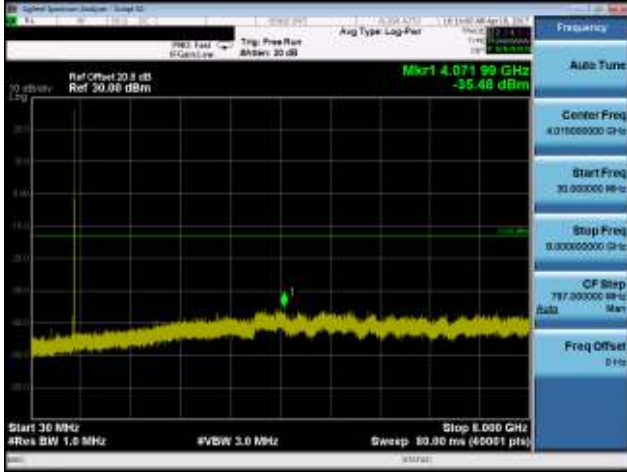
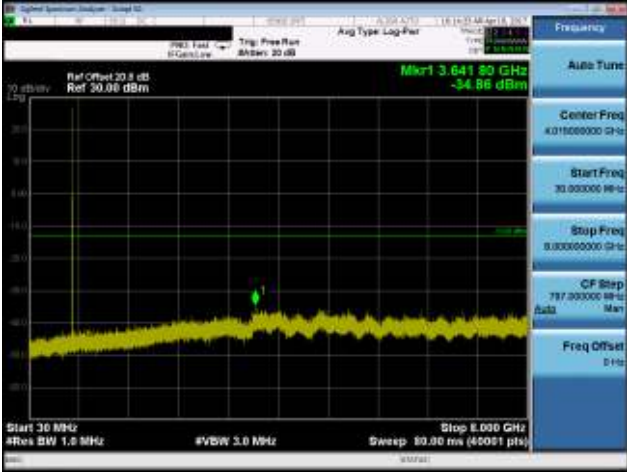
3.3.3 Test Setup

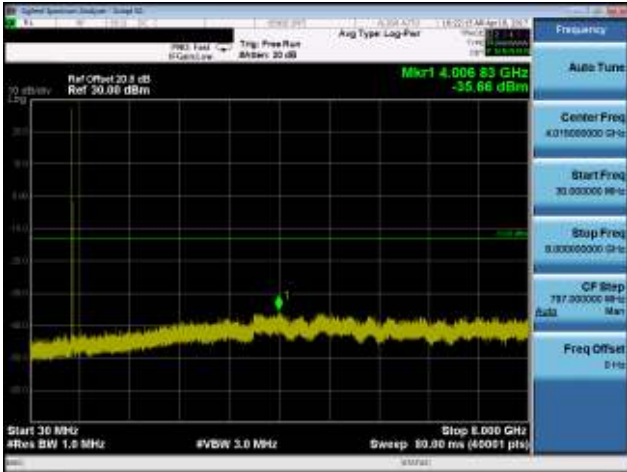
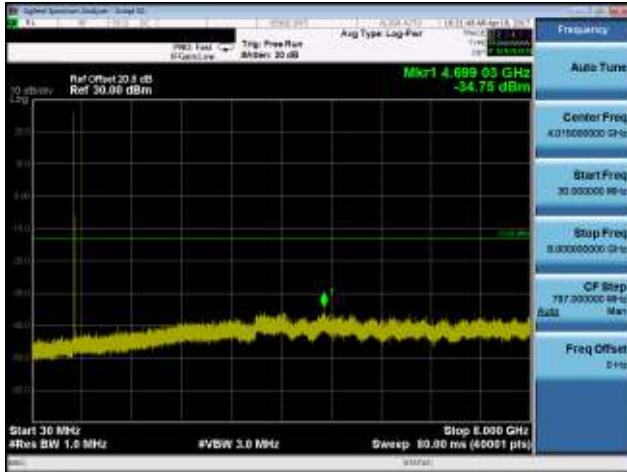
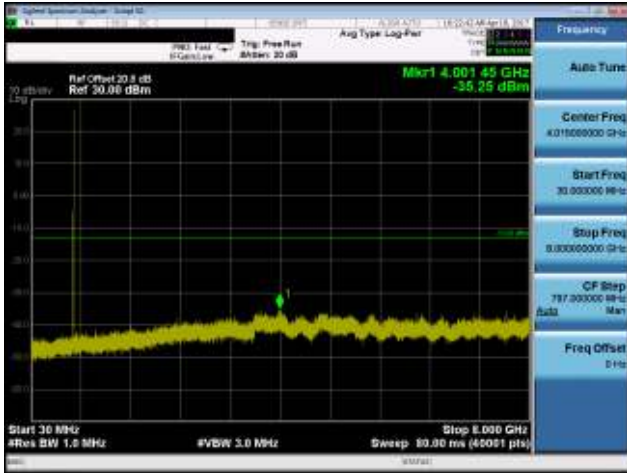
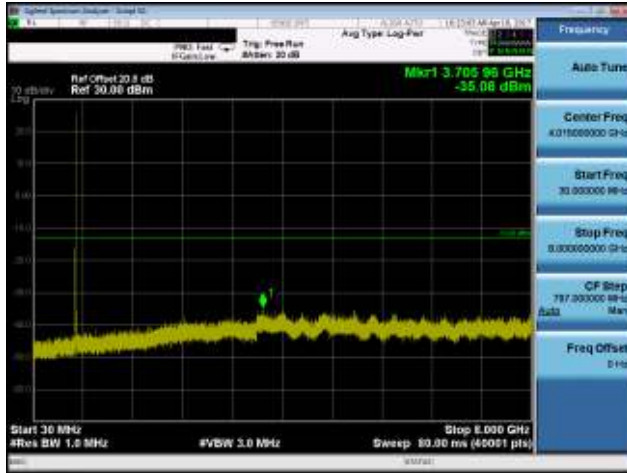
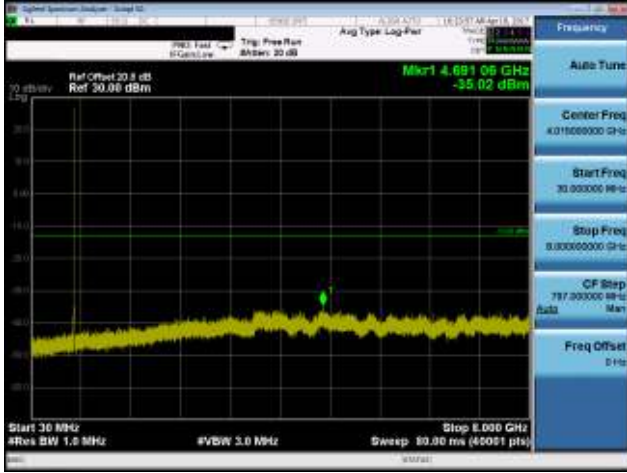
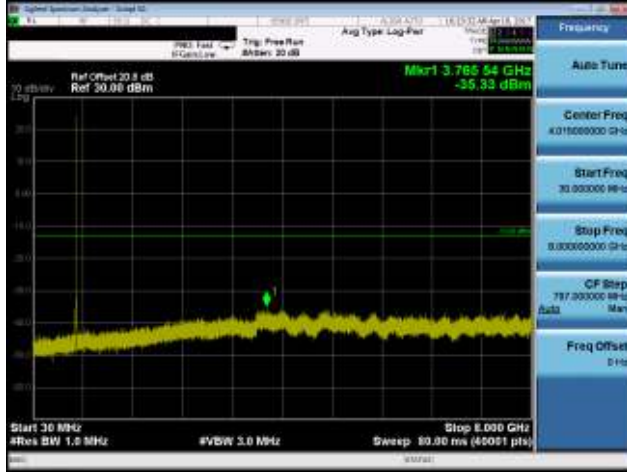


3.3.4 Test Result of Conducted Emissions

Mode	LTE Band 12, CB: 1.4MHz, QPSK	Mode	LTE Band 12, CB: 1.4MHz, 16QAM
Channel	23017	Channel	23017
			
Channel	23095	Channel	23095
			
Channel	23173	Channel	23173
			

Mode	LTE Band 12, CB: 3MHz, QPSK	Mode	LTE Band 12, CB: 3MHz, 16QAM
Channel	23025	Channel	23025
			
Channel	23095	Channel	23095
			
Channel	23165	Channel	23165
			

Mode	LTE Band 12, CB: 5MHz, QPSK	Mode	LTE Band 12, CB: 5MHz, 16QAM
Channel	23035	Channel	23035
			
Channel	23095	Channel	23095
			
Channel	23155	Channel	23155
			

Mode	LTE Band 12, CB: 10MHz, QPSK	Mode	LTE Band 12, CB: 10MHz, 16QAM
Channel	23060	Channel	23060
			
Channel	23095	Channel	23095
			
Channel	23095	Channel	23095
			

3.4 Band Edge

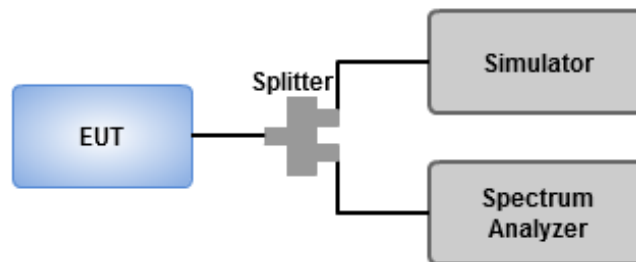
3.4.1 Limit of Band Edge

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.

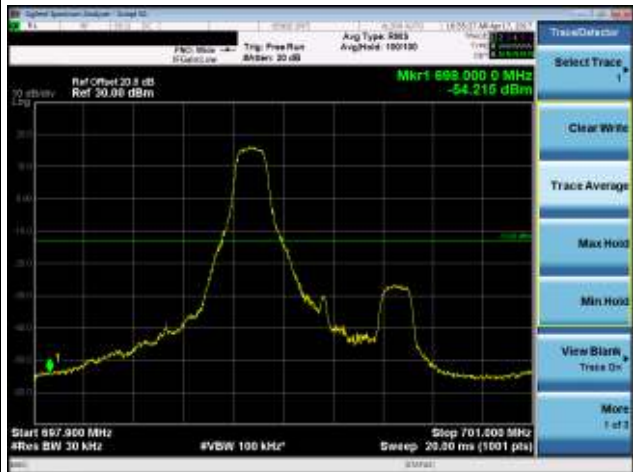
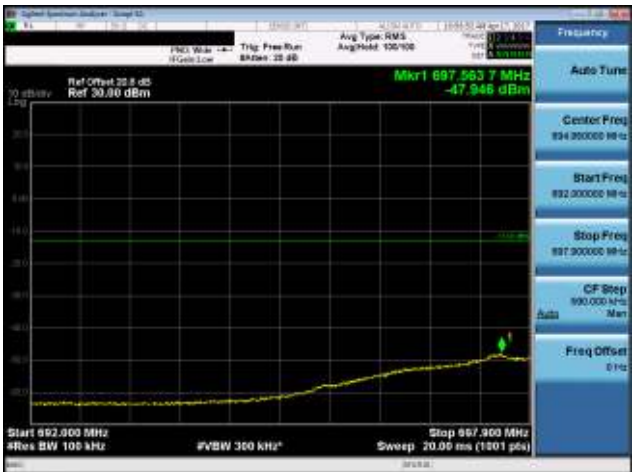
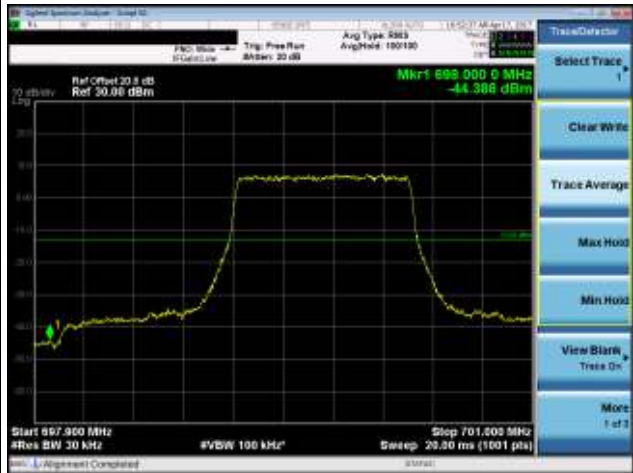
3.4.2 Test Procedures

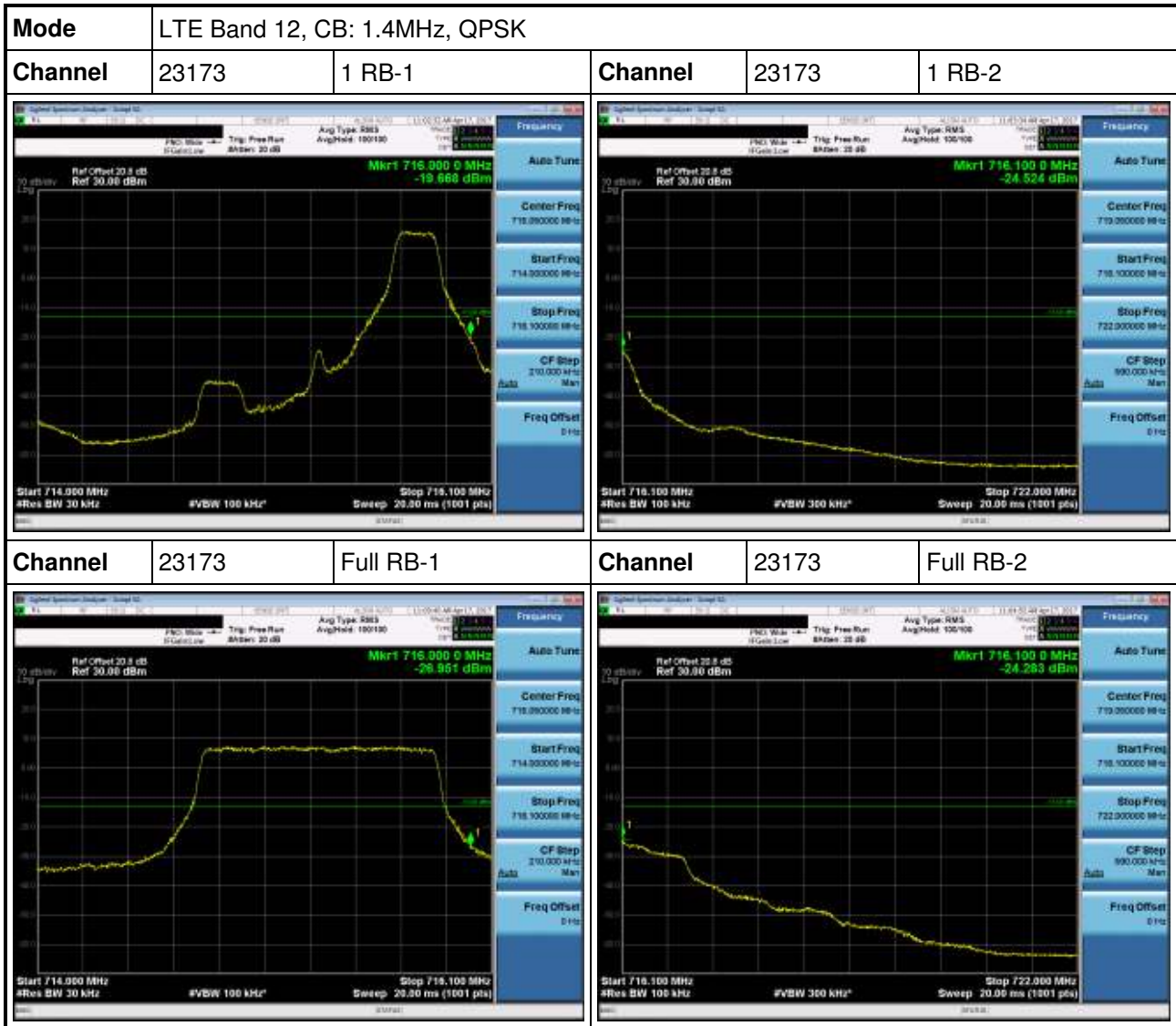
- 1 Lowest and highest operating channels are tested for this item.
- 2 Set RBW = 30 / 30 / 51 / 100 kHz, VBW = 100 / 100 / 160 / 300 kHz for LTE channel bandwidth 1.4 / 3 / 5 / 10 MHz, detector = RMS, sweep time = auto to measure trace in 100kHz bands immediately outside and adjacent to the frequency block..
- 3 Set RBW = 100 kHz, VBW = 300 kHz for LTE channel bandwidth 1.4 / 3 / 5 / 10 MHz, detector = RMS for other frequency bands

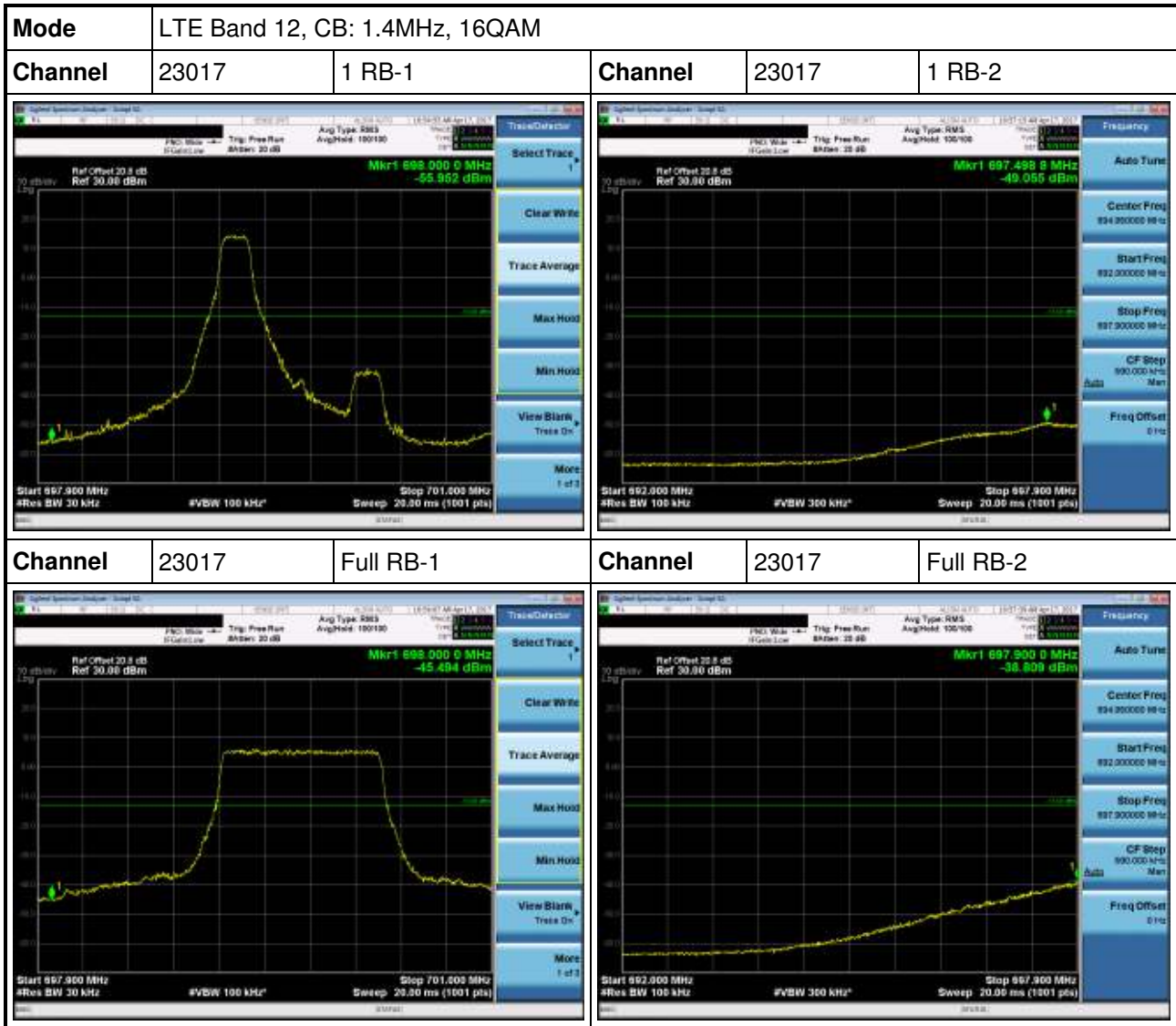
3.4.3 Test Setup

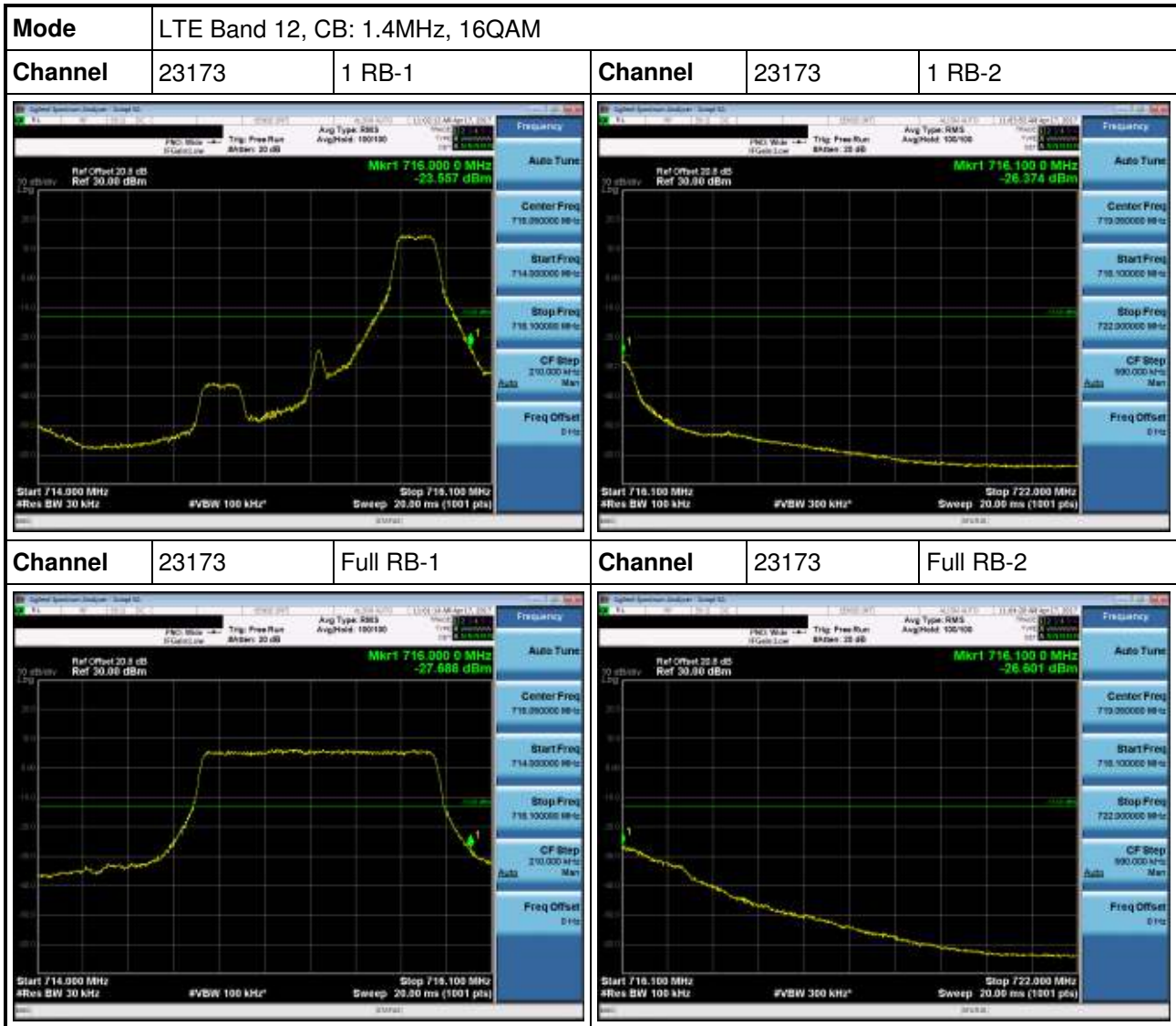


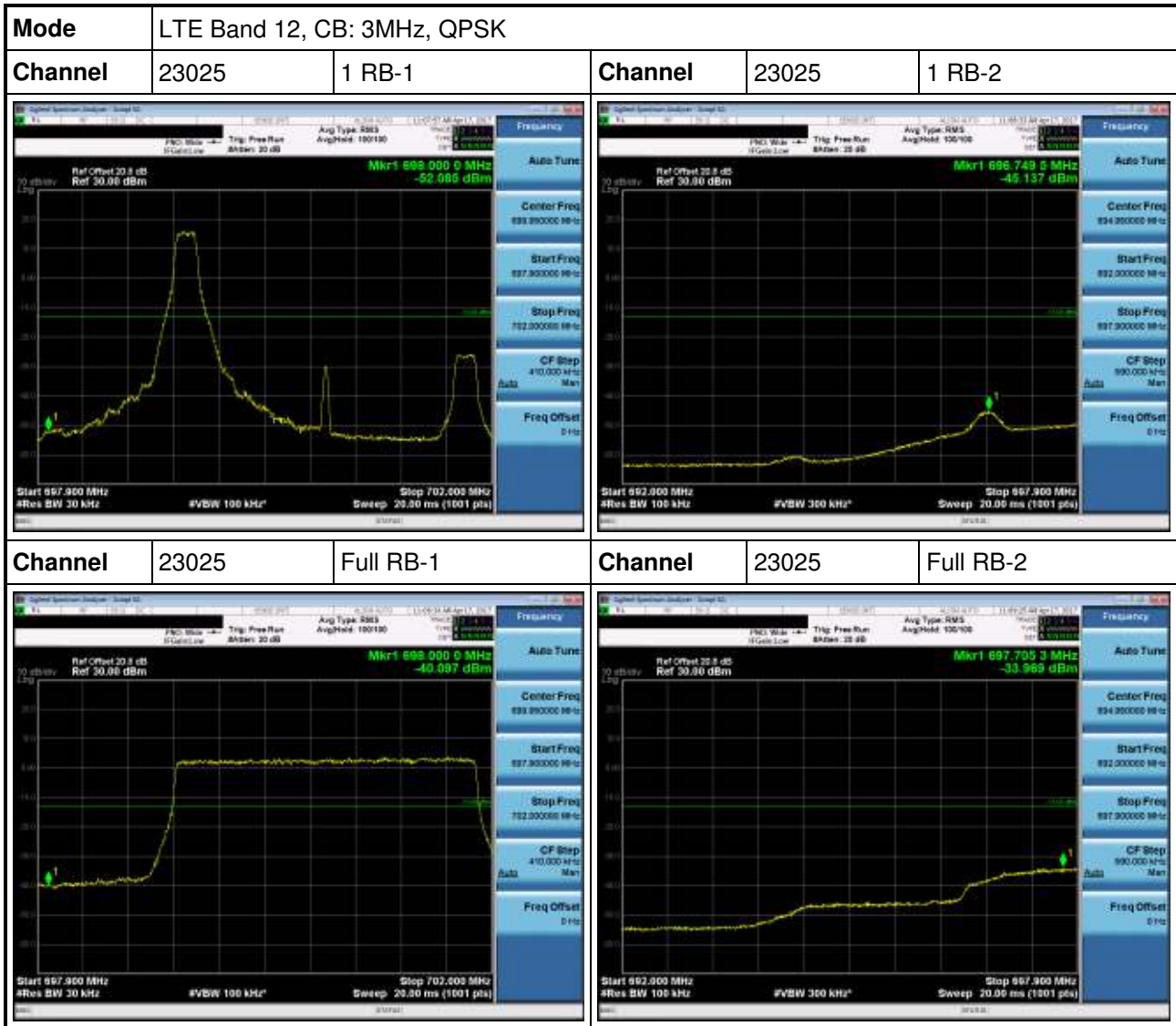
3.4.4 Test Result of Band Edge

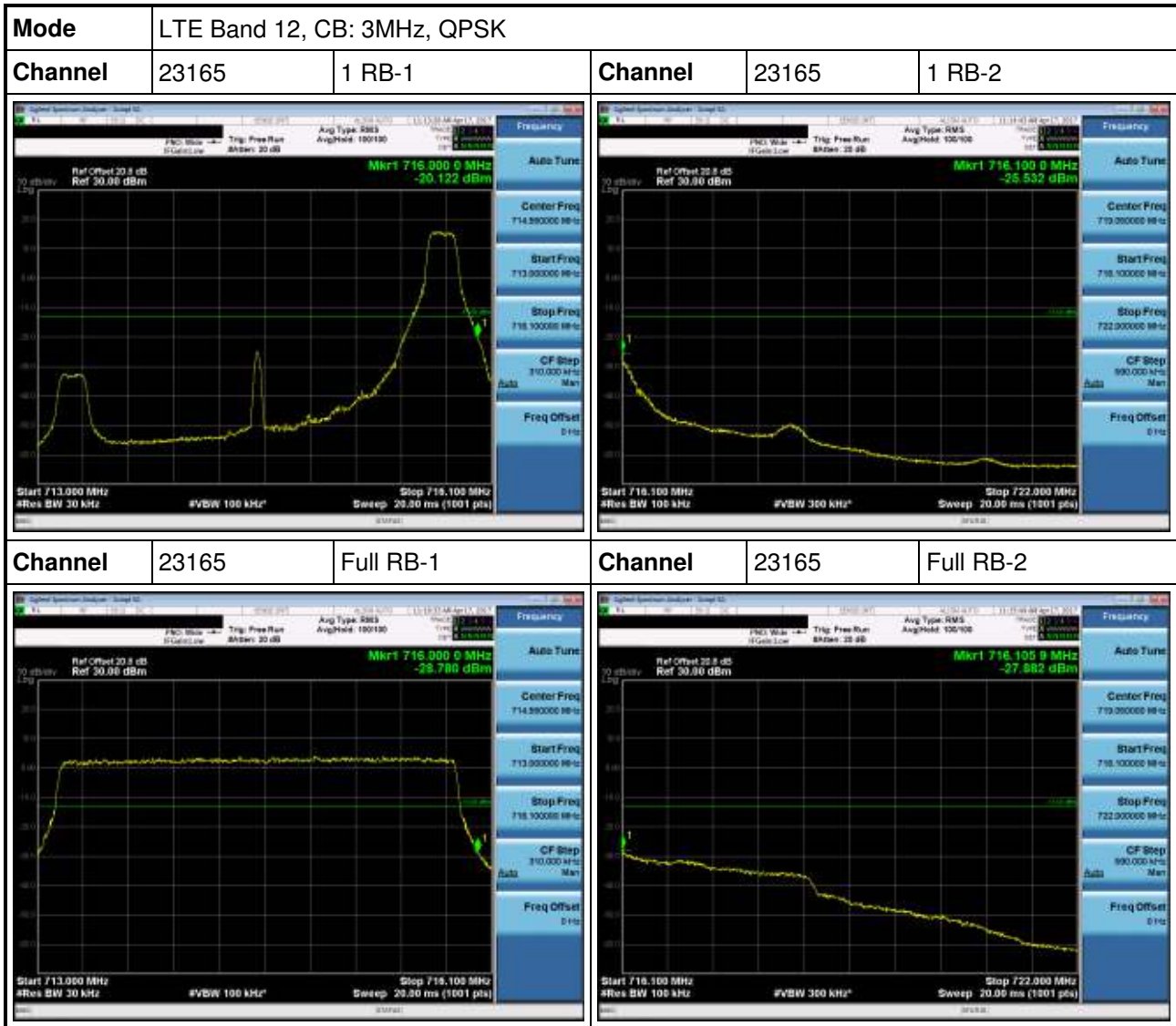
Mode	LTE Band 12, CB: 1.4MHz, QPSK				
Channel	23017	1 RB-1	Channel	23017	1 RB-2
					
Channel	23017	Full RB-1	Channel	23017	Full RB-2
					

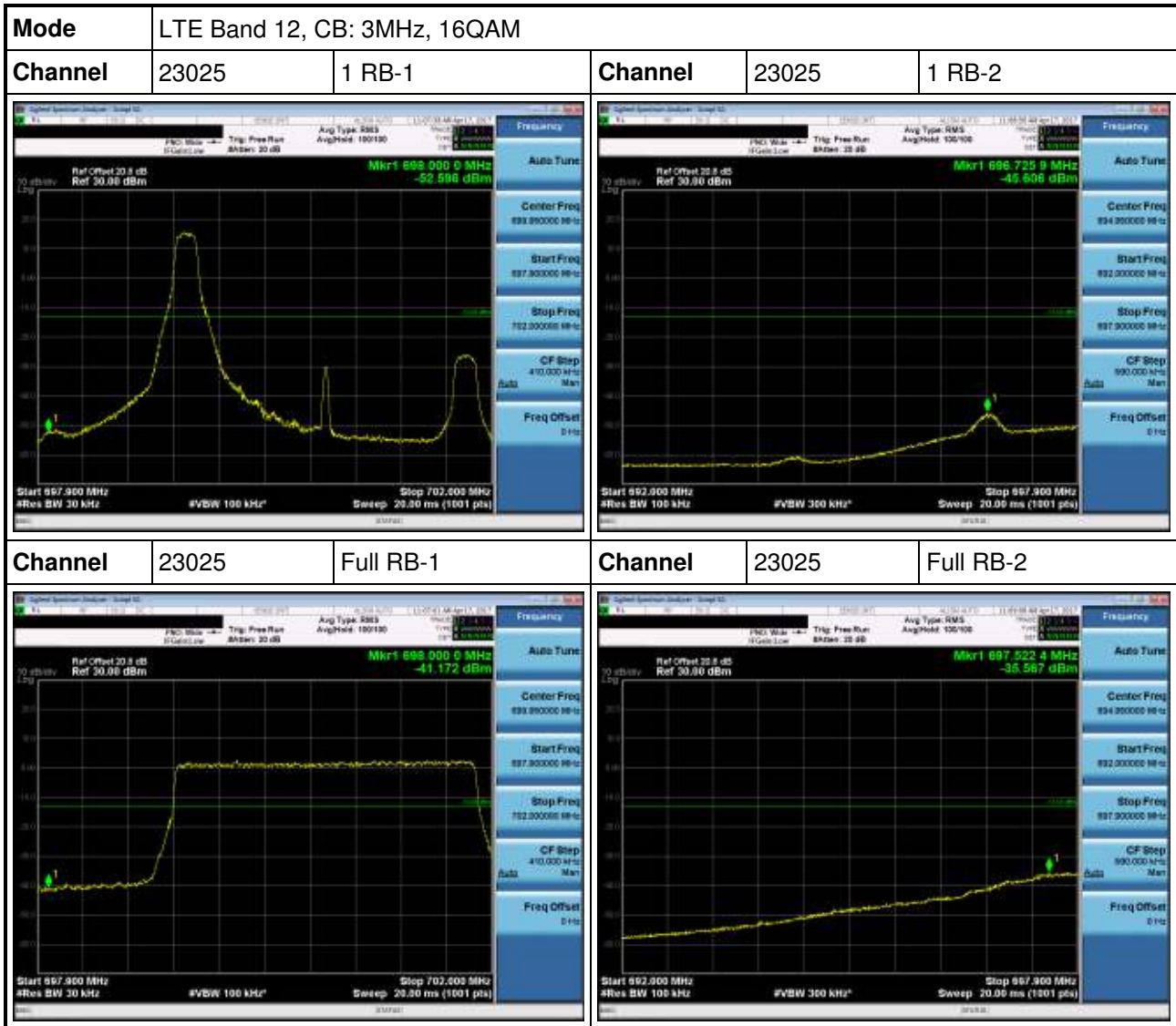


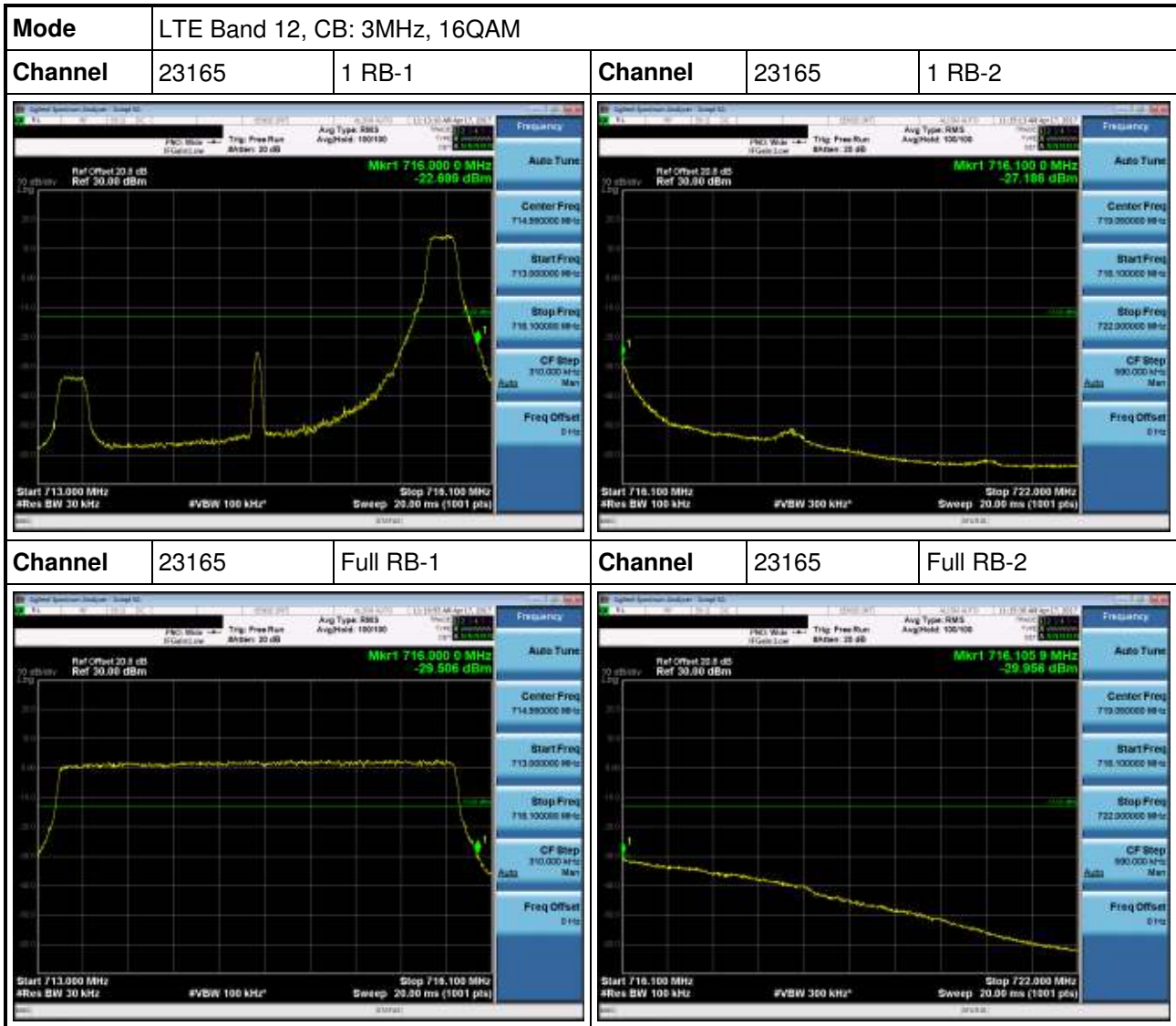


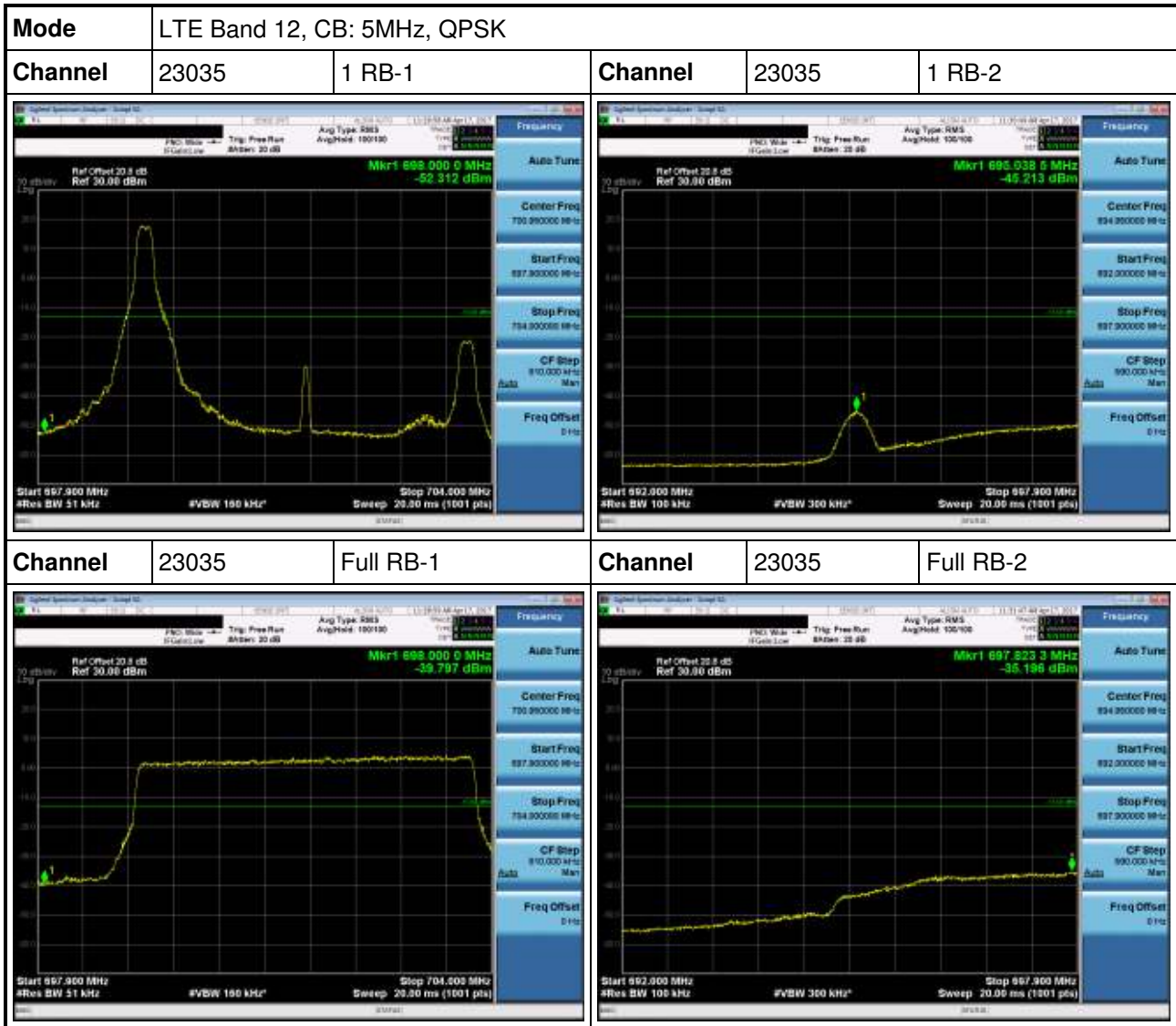


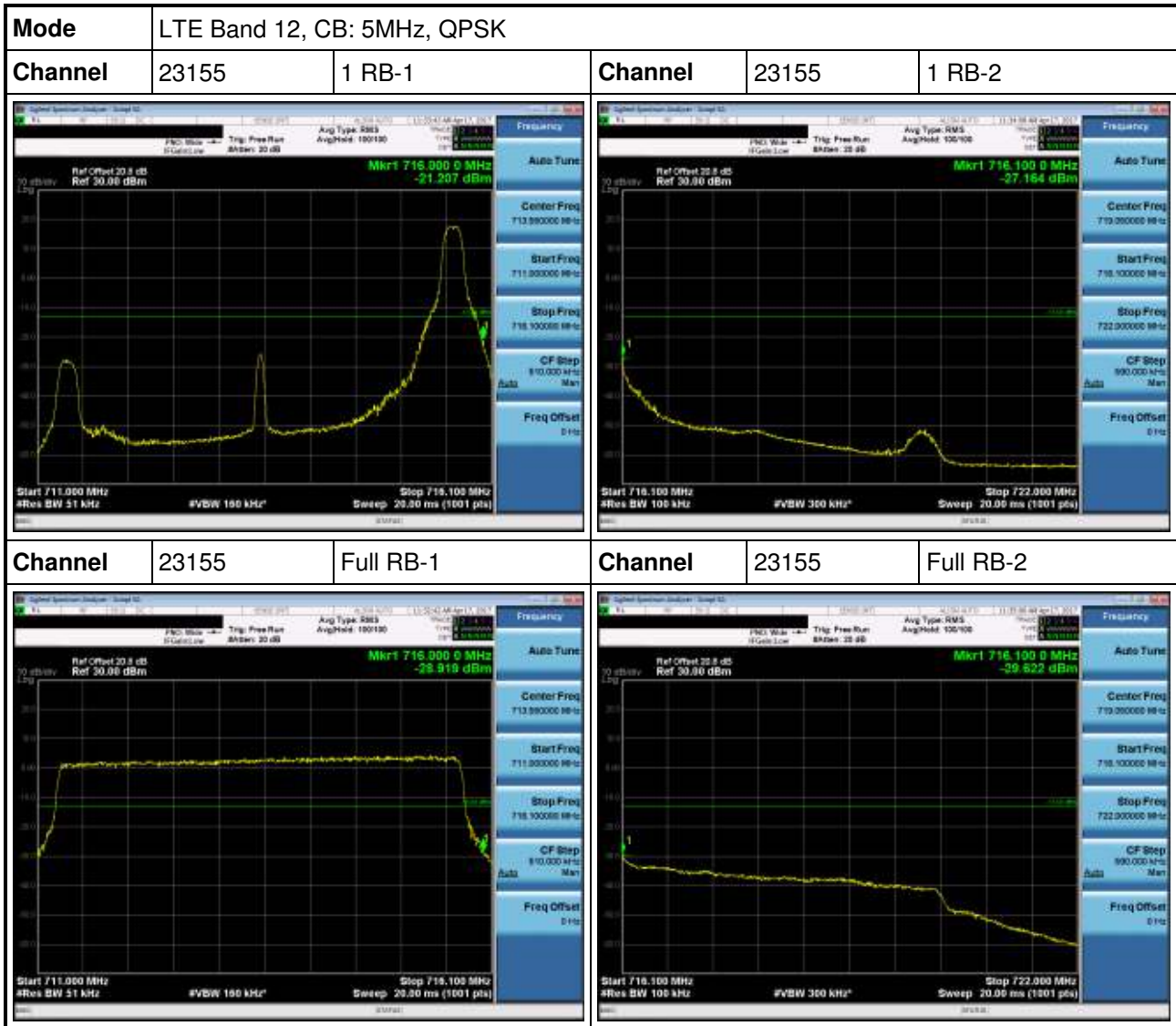


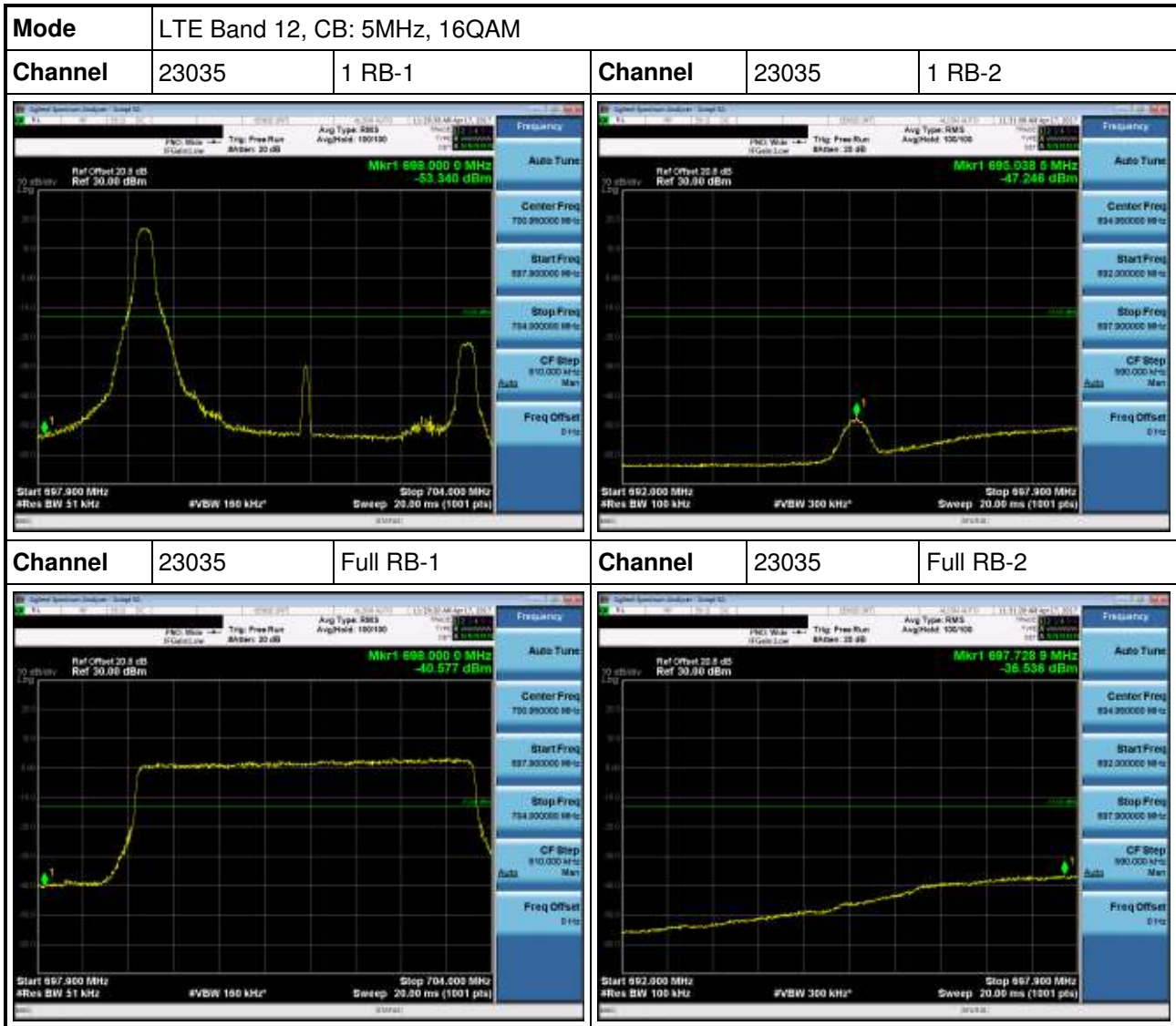


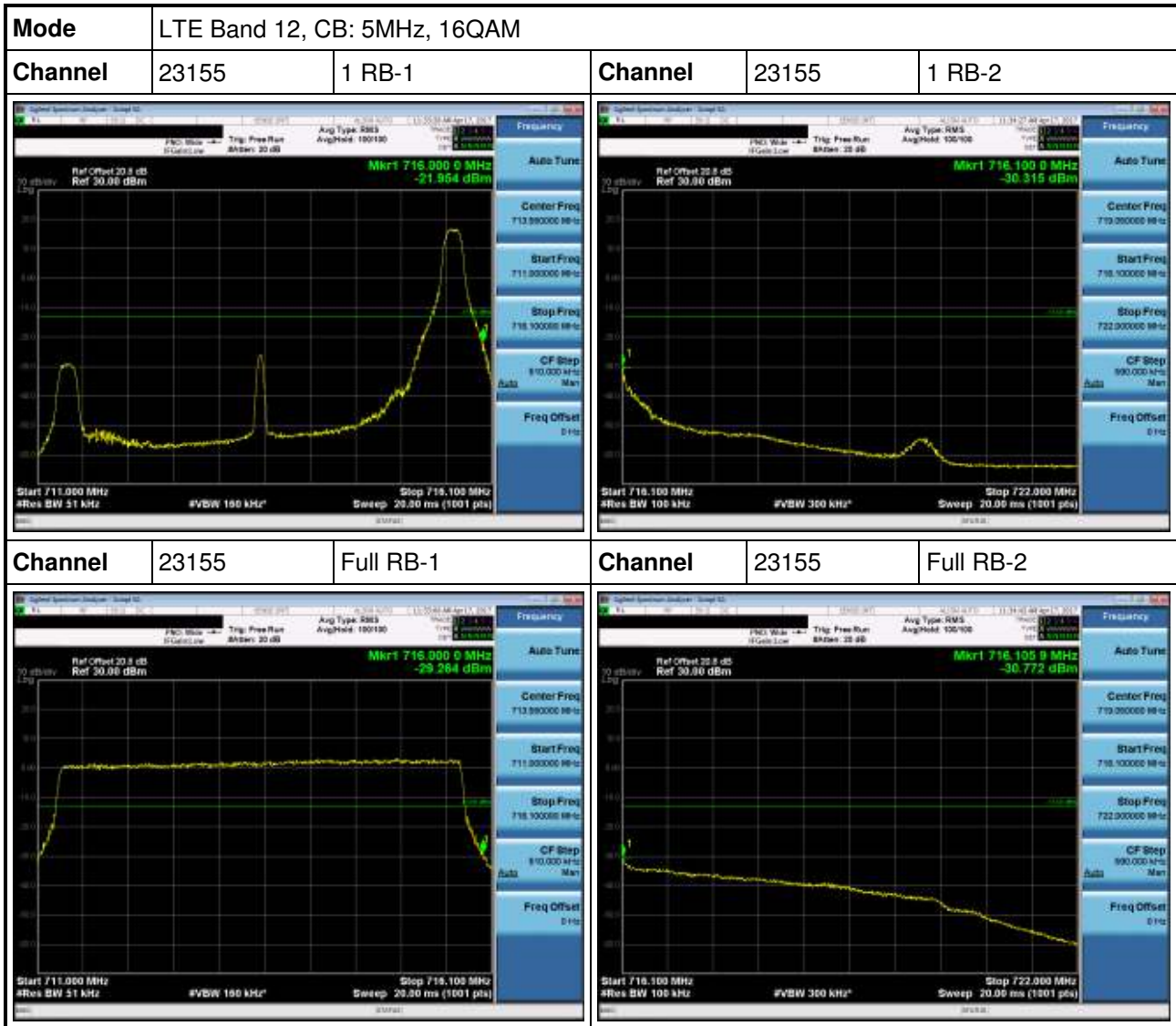


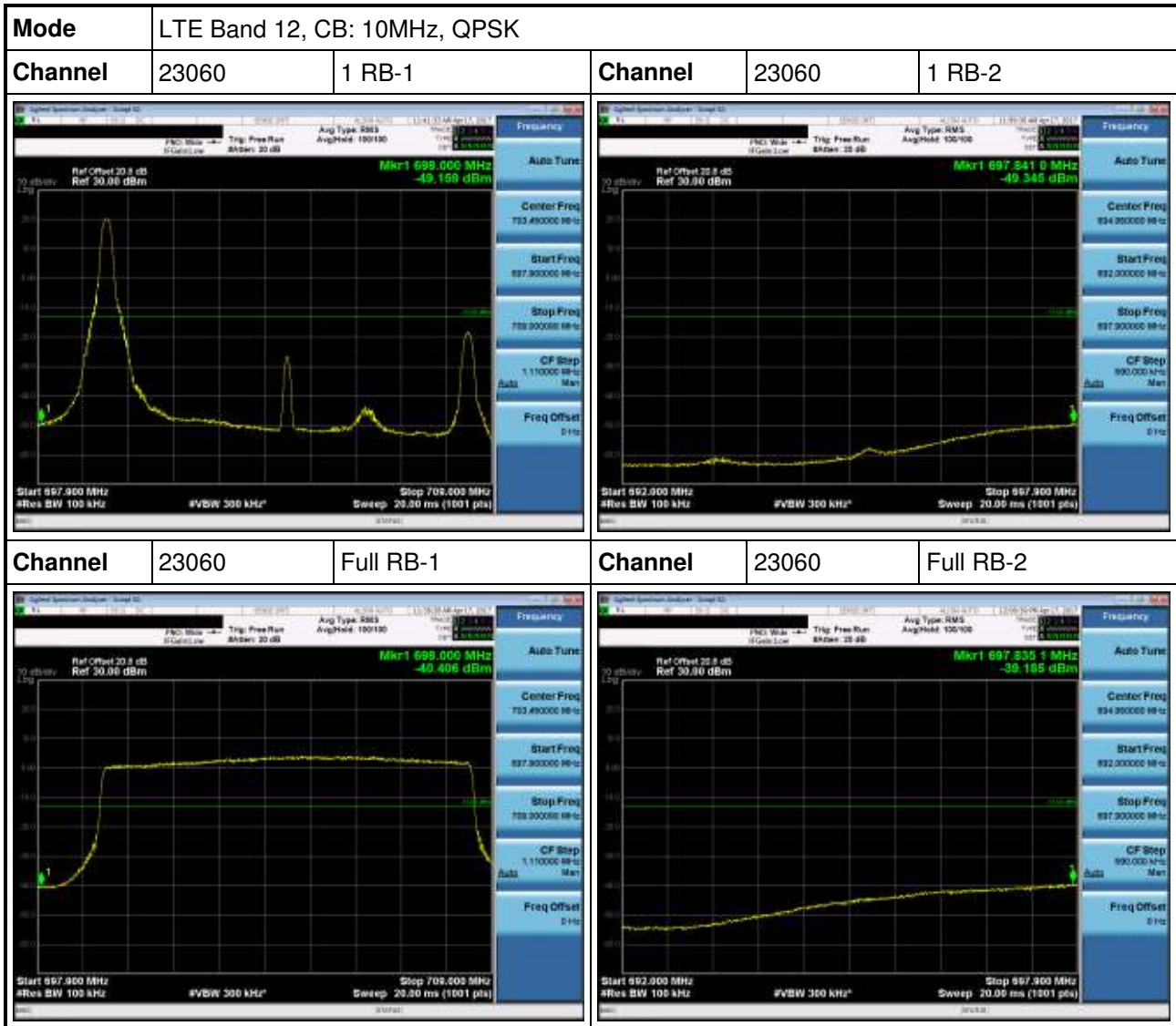


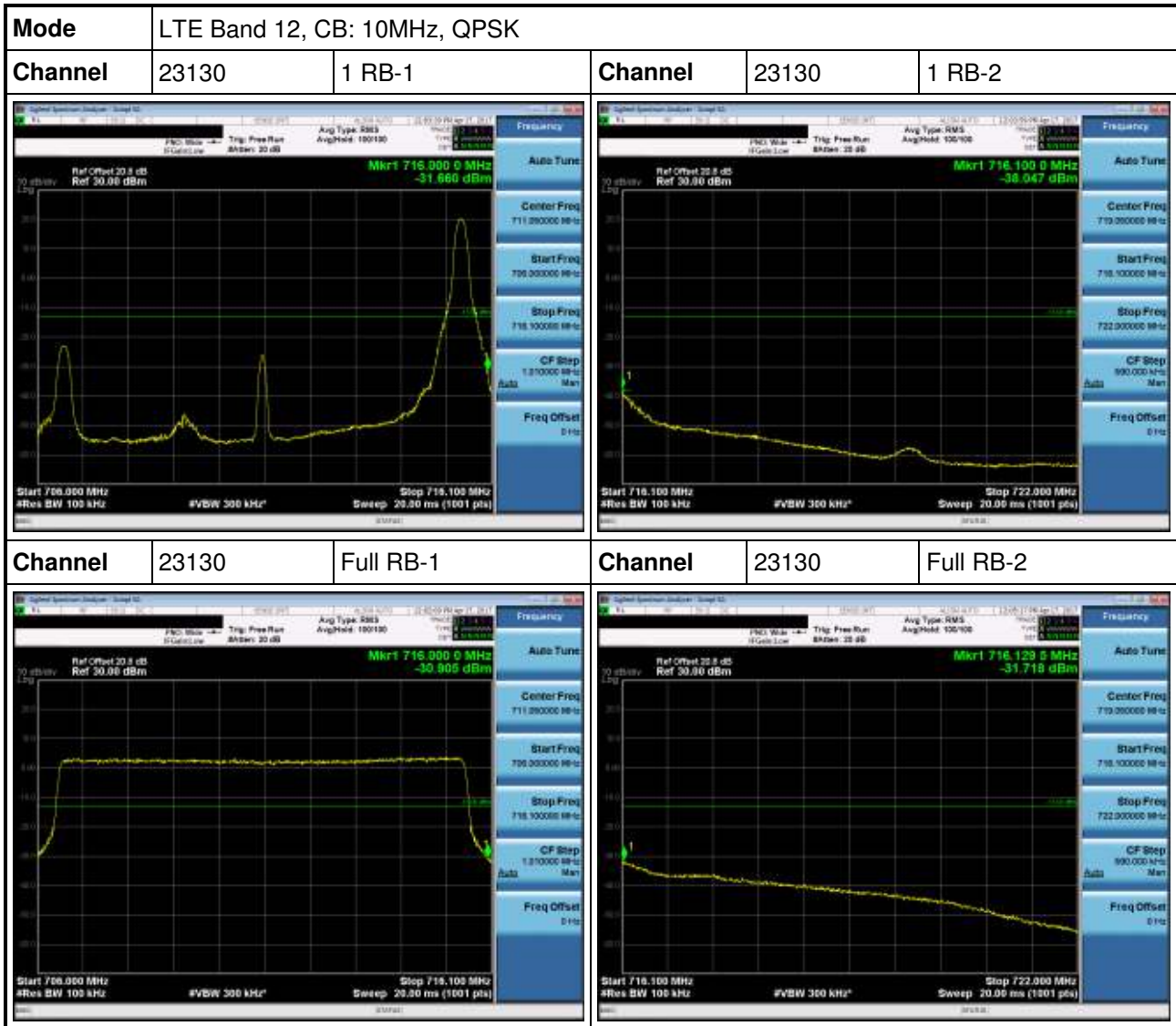


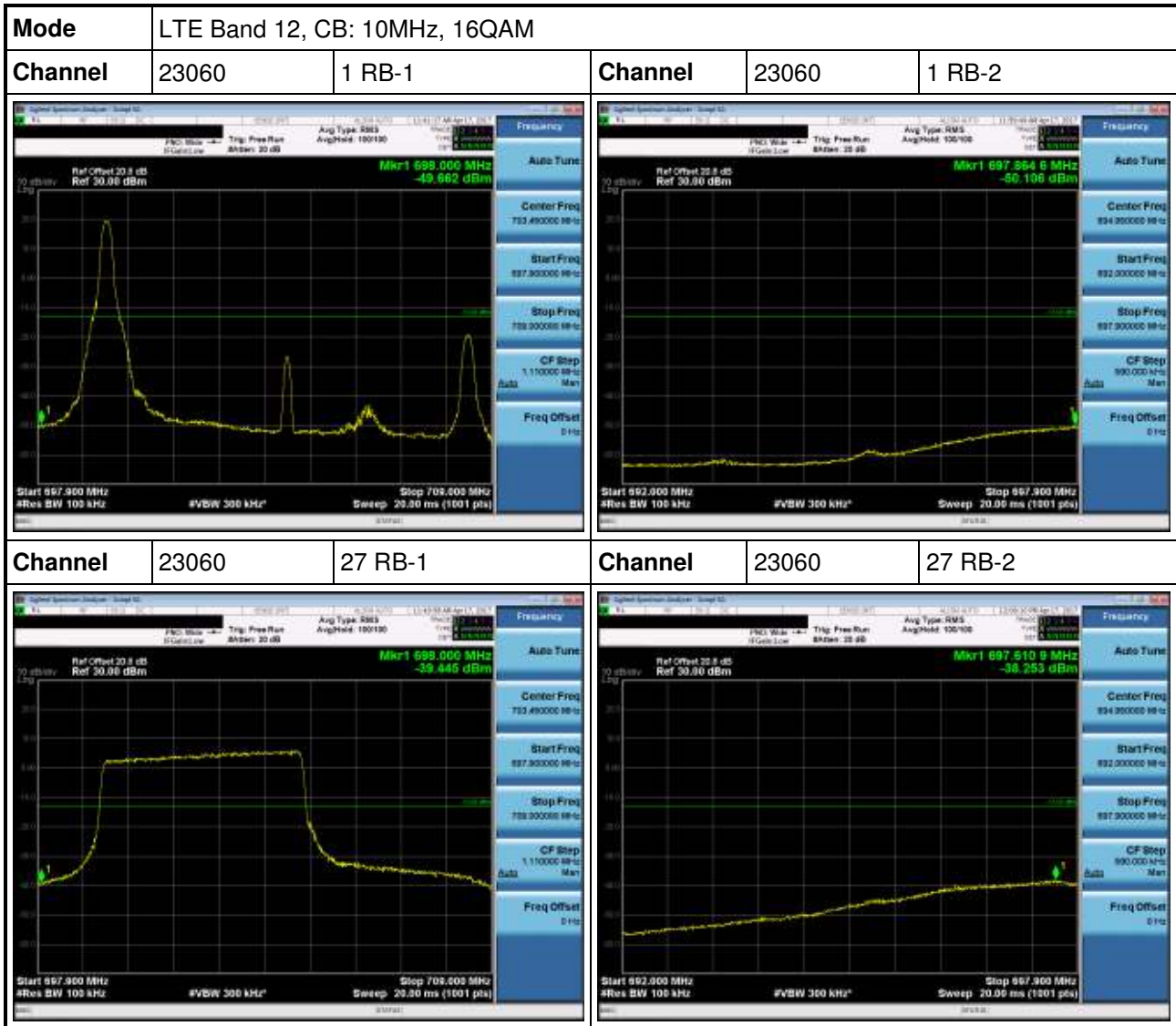


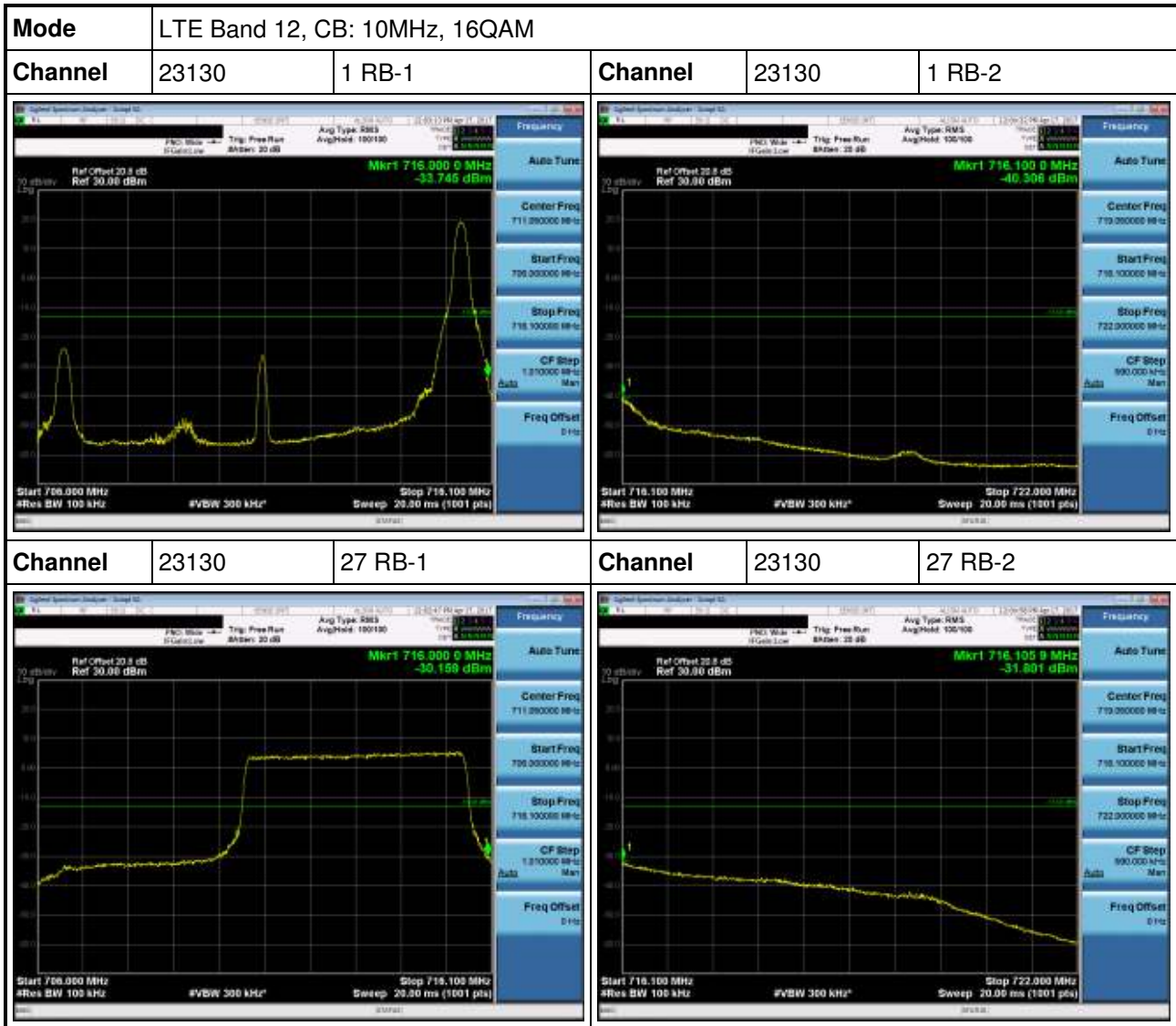










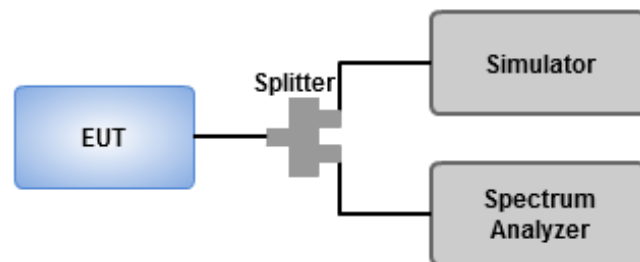


3.5 Occupied Bandwidth

3.5.1 Test Procedures

1. Set RBW = 15 / 30 / 51 / 100 kHz, VBW = 51 / 100 / 160 / 300 kHz for LTE channel bandwidth 1.4 / 3 / 5 / 10 MHz.
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.

3.5.2 Test Setup



3.5.3 Test Result of Occupied Bandwidth

Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 12	1.4	QPSK	23017	699.7	1.2540	1.0799
LTE Band 12	1.4	QPSK	23095	707.5	1.2520	1.0797
LTE Band 12	1.4	QPSK	23173	715.3	1.2650	1.0751
LTE Band 12	1.4	16QAM	23017	699.7	1.2650	1.0860
LTE Band 12	1.4	16QAM	23095	707.5	1.2560	1.0790
LTE Band 12	1.4	16QAM	23173	715.3	1.2500	1.0799



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 12	3	QPSK	23025	700.5	2.9520	2.6928
LTE Band 12	3	QPSK	23095	707.5	2.9260	2.6807
LTE Band 12	3	QPSK	23165	714.5	2.9300	2.6811
LTE Band 12	3	16QAM	23025	700.5	2.9450	2.6874
LTE Band 12	3	16QAM	23095	707.5	2.9210	2.6796
LTE Band 12	3	16QAM	23165	714.5	2.9390	2.6800



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 12	5	QPSK	23035	701.5	4.8860	4.4723
LTE Band 12	5	QPSK	23095	707.5	4.9080	4.4744
LTE Band 12	5	QPSK	23155	713.5	4.8830	4.4753
LTE Band 12	5	16QAM	23035	701.5	4.9190	4.4798
LTE Band 12	5	16QAM	23095	707.5	4.8970	4.4842
LTE Band 12	5	16QAM	23155	713.5	4.9120	4.4816



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
LTE Band 12	10	QPSK	23060	704.0	9.7000	8.8950
LTE Band 12	10	QPSK	23095	707.5	9.6660	8.9190
LTE Band 12	10	QPSK	23130	711.0	9.7590	8.9567
LTE Band 12	10	16QAM	23060	704.0	5.8720	4.8957
LTE Band 12	10	16QAM	23095	707.5	5.9890	4.8976
LTE Band 12	10	16QAM	23130	711.0	6.1720	4.9477



3.6 Frequency Stability

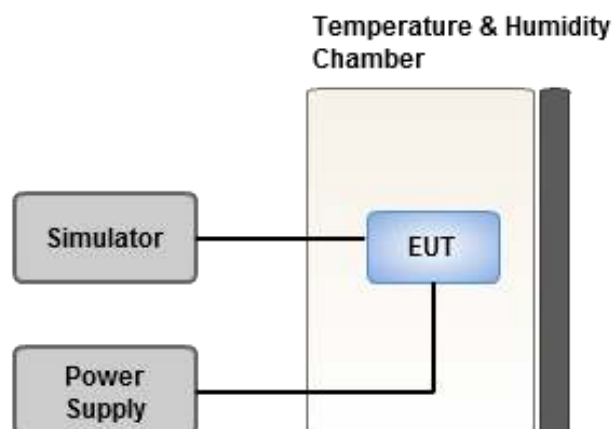
3.6.1 Limit of Frequency Stability

The frequency stability shall be less $\pm 2.5\text{ppm}$.

3.6.2 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 $-40\sim 85^{\circ}\text{C}$ 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.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Channel Bandwidth: 1.4MHz

Frequency: 699.7MHz	Frequency Drift (ppm)	
Temperature (°C)	Frequency Error (ppm)	Limit (ppm)
T20°C Vmax	-0.0474	2.5
T20°C Vmin	-0.0412	2.5
T85°C Vnom	-0.0264	2.5
T80°C Vnom	-0.0154	2.5
T70°C Vnom	-0.0507	2.5
T60°C Vnom	-0.0299	2.5
T50°C Vnom	-0.0161	2.5
T40°C Vnom	-0.0379	2.5
T30°C Vnom	-0.0560	2.5
T20°C Vnom	-0.0329	2.5
T10°C Vnom	-0.0280	2.5
T0°C Vnom	-0.0169	2.5
T-10°C Vnom	-0.0246	2.5
T-20°C Vnom	-0.0264	2.5
T-30°C Vnom	-0.0302	2.5
T-40°C Vnom	-0.0397	2.5
Vnom [Vdc]: 3.8	Vmax [Vdc]: 4.2	Vmin [Vdc]: 3.4
Tnom [°C]: 20	Tmax [°C]: 85	Tmin [°C]: -40

Channel Bandwidth: 3MHz

Frequency: 700.5MHz	Frequency Drift (ppm)	
Temperature (°C)	Frequency Error (ppm)	Limit (ppm)
T20°C Vmax	-0.0441	2.5
T20°C Vmin	-0.0167	2.5
T85°C Vnom	-0.0220	2.5
T80°C Vnom	-0.0273	2.5
T70°C Vnom	-0.0263	2.5
T60°C Vnom	-0.0378	2.5
T50°C Vnom	-0.0465	2.5
T40°C Vnom	-0.0330	2.5
T30°C Vnom	-0.0524	2.5
T20°C Vnom	-0.0180	2.5
T10°C Vnom	-0.0514	2.5
T0°C Vnom	-0.0431	2.5
T-10°C Vnom	-0.0231	2.5
T-20°C Vnom	-0.0260	2.5
T-30°C Vnom	-0.0230	2.5
T-40°C Vnom	-0.0371	2.5
Vnom [Vdc]: 3.8	Vmax [Vdc]: 4.2	Vmin [Vdc]: 3.4
Tnom [°C]: 20	Tmax [°C]: 85	Tmin [°C]: -40

Channel Bandwidth: 5MHz

Frequency: 701.5MHz	Frequency Drift (ppm)	
Temperature (°C)	Frequency Error (ppm)	Limit (ppm)
T20°C Vmax	-0.0336	2.5
T20°C Vmin	-0.0510	2.5
T85°C Vnom	-0.0325	2.5
T80°C Vnom	-0.0160	2.5
T70°C Vnom	-0.0557	2.5
T60°C Vnom	-0.0305	2.5
T50°C Vnom	-0.0401	2.5
T40°C Vnom	-0.0211	2.5
T30°C Vnom	-0.0469	2.5
T20°C Vnom	-0.0339	2.5
T10°C Vnom	-0.0224	2.5
T0°C Vnom	-0.0184	2.5
T-10°C Vnom	-0.0369	2.5
T-20°C Vnom	-0.0284	2.5
T-30°C Vnom	-0.0455	2.5
T-40°C Vnom	-0.0188	2.5
Vnom [Vdc]: 3.8	Vmax [Vdc]: 4.2	Vmin [Vdc]: 3.4
Tnom [°C]: 20	Tmax [°C]: 85	Tmin [°C]: -40

Channel Bandwidth: 10MHz

Frequency: 704.0MHz	Frequency Drift (ppm)	
Temperature (°C)	Frequency Error (ppm)	Limit (ppm)
T20°C Vmax	-0.0219	2.5
T20°C Vmin	-0.0264	2.5
T85°C Vnom	-0.0170	2.5
T80°C Vnom	-0.0286	2.5
T70°C Vnom	-0.0180	2.5
T60°C Vnom	-0.0520	2.5
T50°C Vnom	-0.0462	2.5
T40°C Vnom	-0.0161	2.5
T30°C Vnom	-0.0501	2.5
T20°C Vnom	-0.0257	2.5
T10°C Vnom	-0.0254	2.5
T0°C Vnom	-0.0365	2.5
T-10°C Vnom	-0.0315	2.5
T-20°C Vnom	-0.0257	2.5
T-30°C Vnom	-0.0425	2.5
T-40°C Vnom	-0.0487	2.5
Vnom [Vdc]: 3.8	Vmax [Vdc]: 4.2	Vmin [Vdc]: 3.4
Tnom [°C]: 20	Tmax [°C]: 85	Tmin [°C]: -40

3.7 Peak to Average Ratio

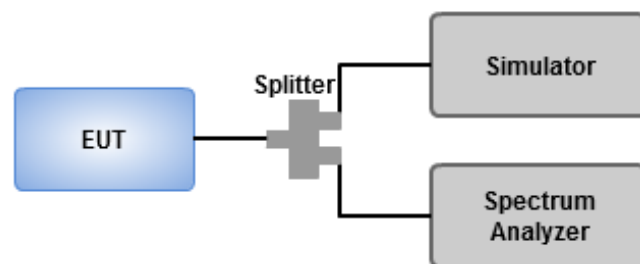
3.7.1 Limit of Peak to Average Ratio

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

3.7.2 Test Procedures

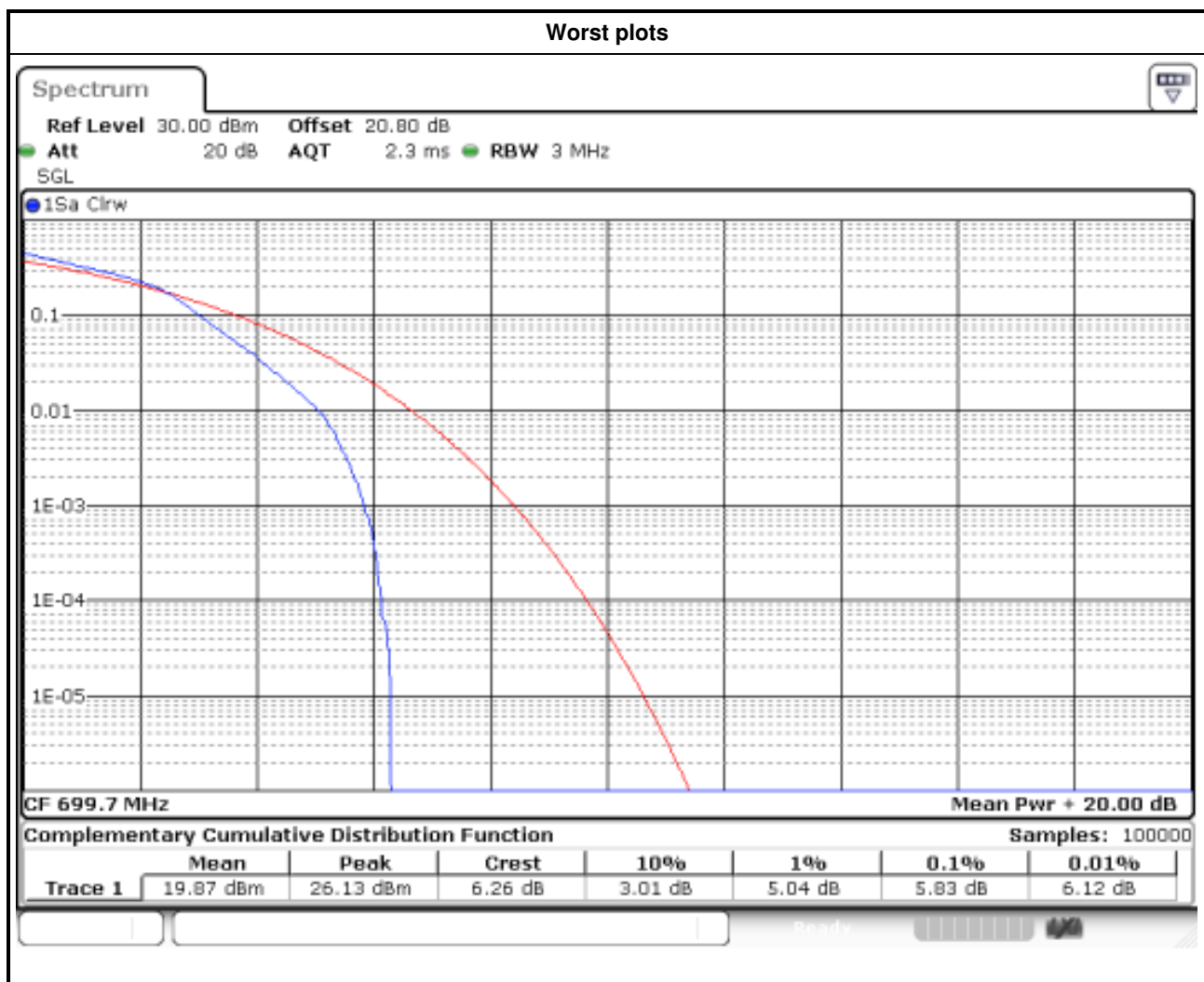
1. Set the number of counts to a value that stabilizes the measured CCDF curve.
2. Set the measurement interval to 1 ms.
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.3 Test Setup

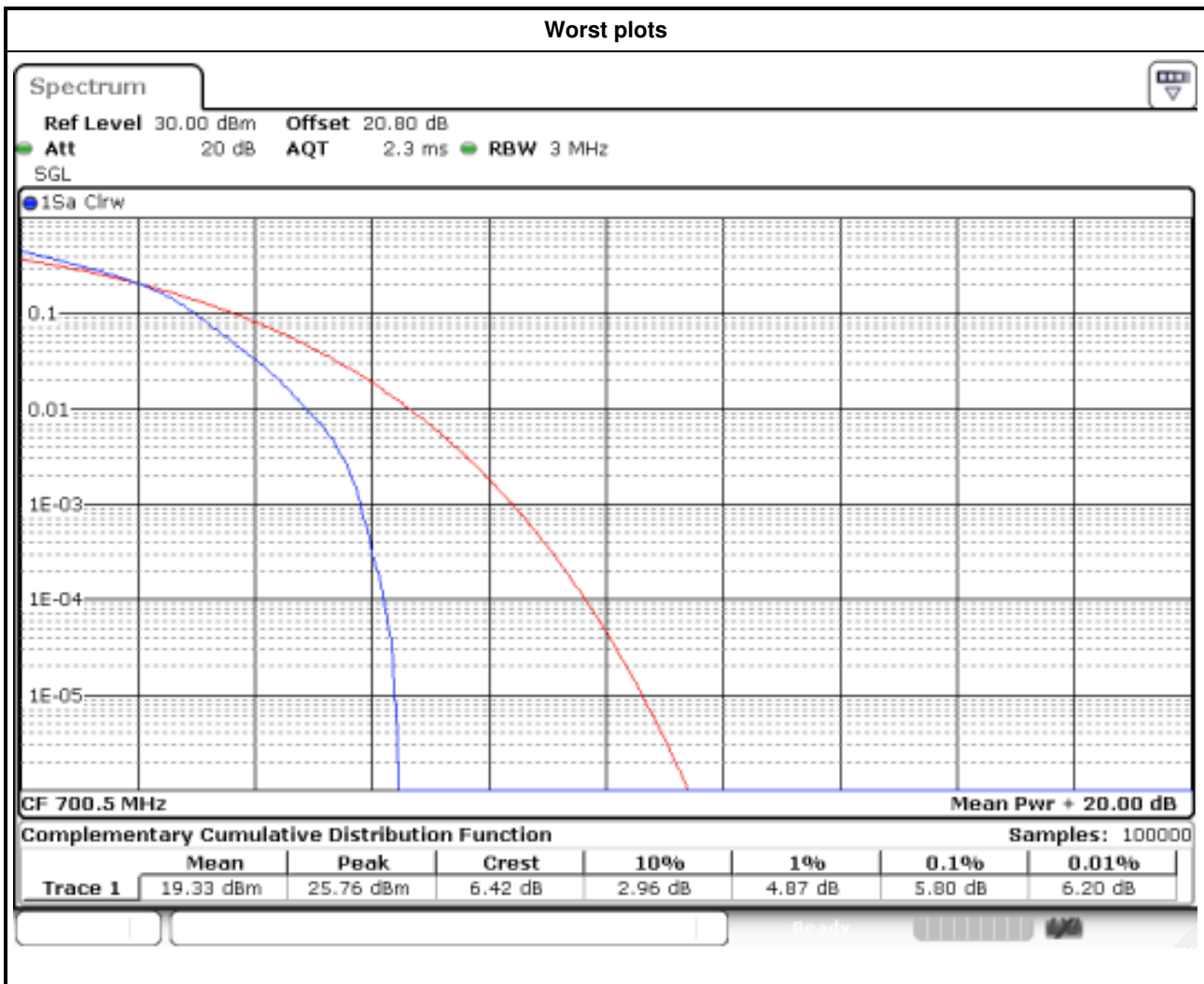


3.7.4 Test Result of Peak to Average Ratio

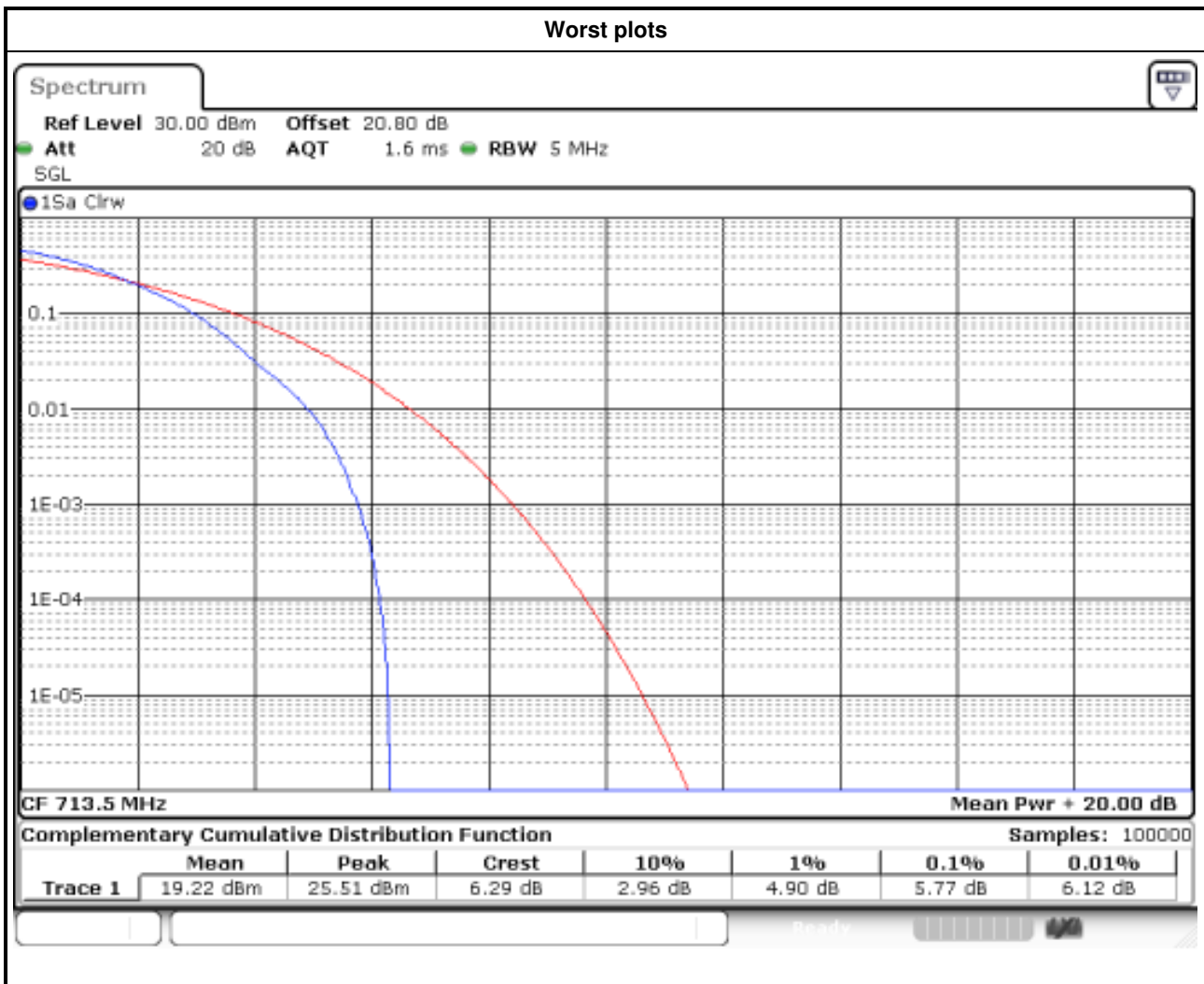
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 12	1.4	QPSK	23017	699.7	5.04
LTE Band 12	1.4	QPSK	23095	707.5	4.78
LTE Band 12	1.4	QPSK	23173	715.3	4.52
LTE Band 12	1.4	16QAM	23017	699.7	5.83
LTE Band 12	1.4	16QAM	23095	707.5	5.74
LTE Band 12	1.4	16QAM	23173	715.3	5.51



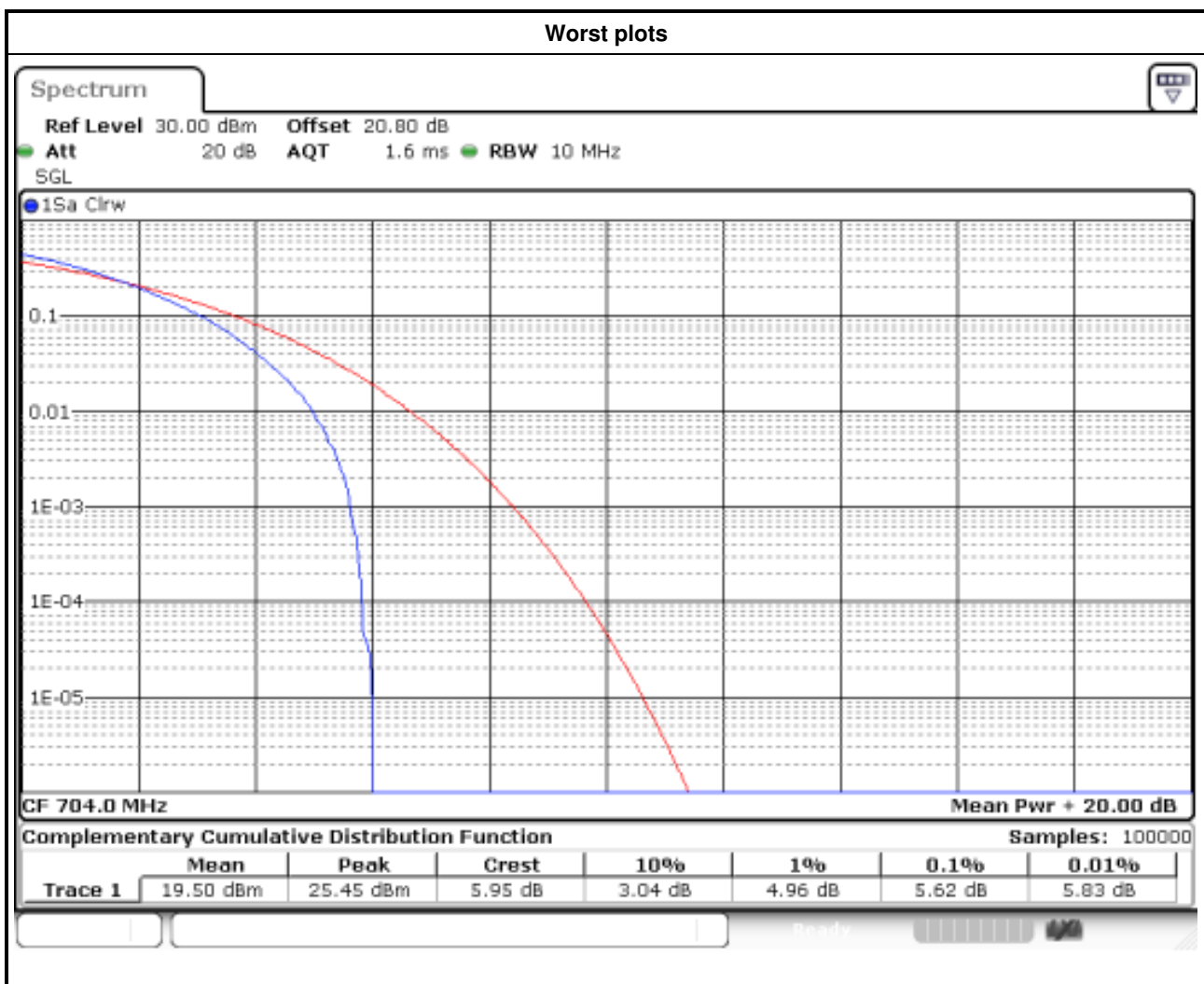
Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 12	3	QPSK	23025	700.5	4.87
LTE Band 12	3	QPSK	23095	707.5	4.70
LTE Band 12	3	QPSK	23165	714.5	4.52
LTE Band 12	3	16QAM	23025	700.5	5.80
LTE Band 12	3	16QAM	23095	707.5	5.71
LTE Band 12	3	16QAM	23165	714.5	5.51



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 12	5	QPSK	23035	701.5	4.70
LTE Band 12	5	QPSK	23095	707.5	4.58
LTE Band 12	5	QPSK	23155	713.5	4.67
LTE Band 12	5	16QAM	23035	701.5	5.74
LTE Band 12	5	16QAM	23095	707.5	5.74
LTE Band 12	5	16QAM	23155	713.5	5.77



Mode	CB (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average ratio (dB)
LTE Band 12	10	QPSK	23060	704.0	4.49
LTE Band 12	10	QPSK	23095	707.5	4.55
LTE Band 12	10	QPSK	23130	711.0	4.84
LTE Band 12	10	16QAM	23060	704.0	5.62
LTE Band 12	10	16QAM	23095	707.5	5.51
LTE Band 12	10	16QAM	23130	711.0	5.59



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

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