FCC Part 27
Canada RSS 130
Test Report

Product Name	:	module
Trade Name	:	Telit
Model No.	:	ME910C1-NA
FCC ID	:	RI7ME910C1NA
IC ID.	:	5131A-ME910C1NA

Applicant	:	Telit communications Spa
Address	:	Via Stazione di Prosecco 5/B 34010 Sgonico Trieste-Italy

Date of Receipt	:	Apr. 08, 2018
Issued Date	:	Apr. 09, 2019
Report No.	:	1840048R-HPUSP40V00
Report Version	:	V3.0

ilac-MRA TAF Testing Laboratory 3024

Test Report Certification

Issued Date : Apr. 09, 2019
Report No. : 1840048R-HPUSP40V00

Product Name	:	module
Applicant	:	Telit communications Spa
Address	:	Via Stazione di Prosecco 5/B 34010 Sgonico Trieste-Italy
Manufacturer	:	TELIT WIRELESS SOLUTIONS CO., LTD
Model No.	:	ME910C1-NA
FCC ID	:	RI7ME910C1NA
IC ID		5131A-ME910C1NA
EUT Voltage	:	DC 3.8V
Testing Voltage	:	DC 3.8V
Trade Name	:	Telit
Applicable Standard	:	FCC CFR Title 47 Part 27 Subpart C & Part 2 ANSI/TIA-603-D-2010 RSS Gen Issue 4 Industry Canada RSS 130, Issue 1
Test Lab	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Carol Tsai

(Carol Tsai / Senior Engineering Adm. Specialist)

Tested By : Ricky Lee

(Ricky Lee / Senior Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1840048R-HPUSP40V00	V3.0	Initial issue of report	Apr. 09, 2019

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	module
Model No.	ME910C1-NA
Trade Name	Telit
Tx Frequency Range/ Channel number	LTE Band 13: 777MHz~787MHz
Rx Frequency Range/ Channel number	LTE Band 13: 746 MHz~756MHz
HW	0.0
SW	M0B.100003

Note:

1. This module supports LTE Cat-M1 with Band 13
2. Regarding frequency band operation, the lowest, middle and highest frequency of channel were selected to perform the test, and the details were shown on this report.

1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: LTE_Cat-M1_Band 13_Link

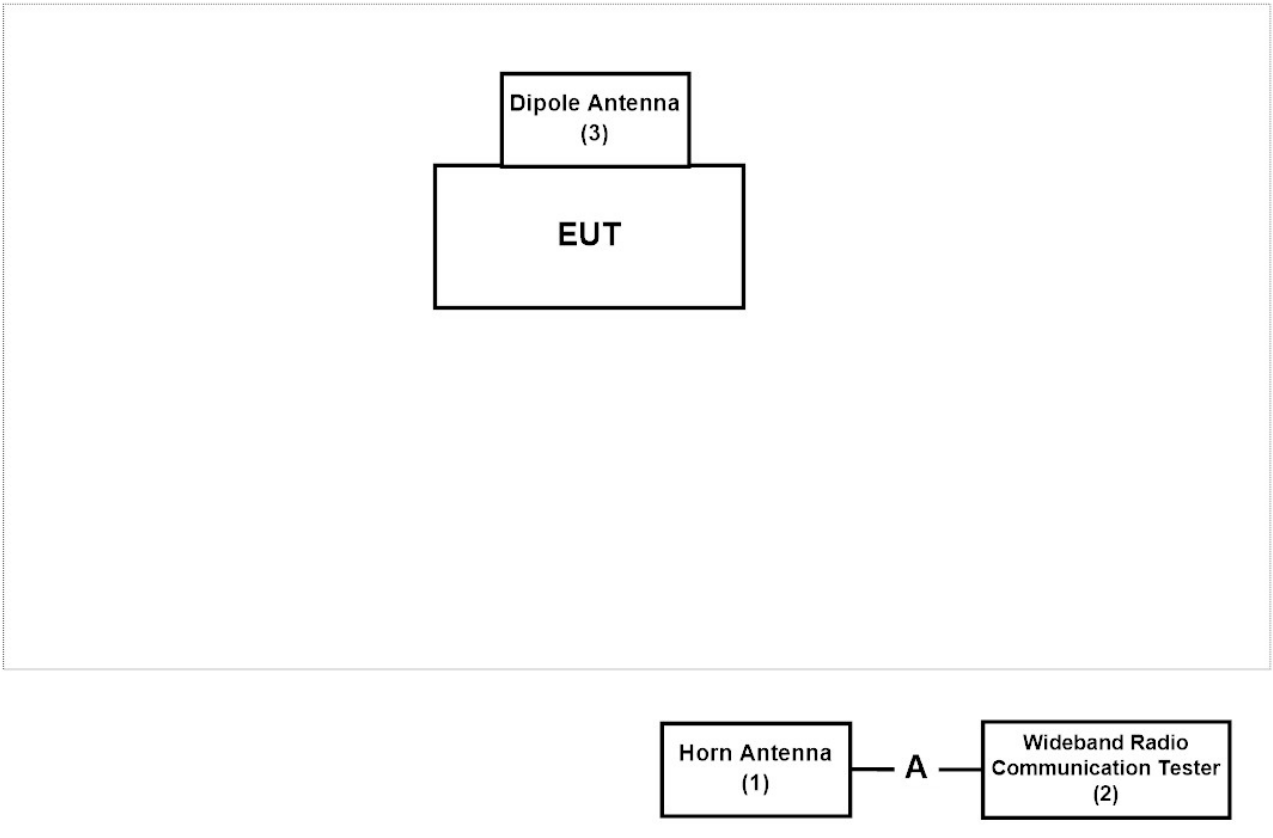
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Horn Antenna	Schwarzbeck	BBHA 9120D	639	--
2	Wideband Radio Communication Tester	R&S	CMW500	150246	--
3	Dipole Antenna (2.14dBi)	ATEL-CAB	T-AT305	--	--

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	RF Cable	Shielded, 2m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	The EUT will continue receive the signal from LTE Cat-M1 function.
4	Repeat the above procedure (3)

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

(FCC CFR Title 47 Part 27, Industry Canada RSS 130, Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result	Test Site
Maximum Output Power	§2.1046 §27.50(C)(10)	RSS-139 §6.5	< 3 Watts	Pass	2/3
Occupied Bandwidth	§2.1049 §27.53(l)(6)	RSS-GEN §4.2	N/A	Pass	2
Peak To Average Ratio	§27.50	RSS-139 §6.5	<13dB	Pass	2
Spurious Emission	§2.1051 §27.53(l)(4)(6)	RSS-139 §6.6	< -13dBm	Pass	3
Spurious Emission at Antenna Terminals	§27.53	RSS-139 §6.6	< -13dBm	Pass	3
Frequency Stability	§2.1055(a)(l) §27.54	RSS-139 §6.4	< 2.5 ppm	Pass	2

Note: Test site information refers to Laboratory Information.

2.2. List of Test Equipment

RF Output Power / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/02	2019/01/01
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Peak To Average Ratio / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Conducted Spurious Emission / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Radiated Spurious Emission / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2018/01/31	2019/01/30
Pre-Amplifier	Dekra	AP-025C	201801236	2018/02/26	2019/02/25
Pre-Amplifier	EMCI	EMC11830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	Dekra	AP-400C	201801231	2017/12/13	2018/12/12
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Spurious Emissions at Antenna Terminals / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

Frequency Stability Under Temperature & Voltage Variations / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Wideband Radio Communication Tester	R&S	CMW500	150246	2018/03/30	2019/03/29
Directional Coupler	Agilent	778D	20402	2017/09/25	2018/09/24
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04

2.3. Measurement Uncertainty

RF Output Power	±1.27dB.
Occupied Bandwidth	± 10 Hz
Peak To Average Ratio	not exceed 13 dB.
Spurious Emission	± 1.27 dB for Conducted Measurement. ± 3.2 dB for Radiated Measurement.
Spurious Emissions at Antenna Terminals	± 3.2 dB.
Frequency Stability	± 10 Hz.

2.4. Test Environment

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	RF Output Power	15 - 35	25	3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	Occupied Bandwidth	15 - 35	25	3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	Peak To Average Ratio	15 - 35	25	3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	Spurious Emission	15 - 35	25	2/3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	Spurious Emissions at Antenna Terminals	15 - 35	25	3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	Frequency Stability	15 - 35	25	3
Humidity (%RH)		20 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	

Note: Test site information refers to Laboratory Information.

USA : FCC, Registration Number: TW3024

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

1 No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan (R.O.C.)
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : info.tw@dekra.com
2 No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
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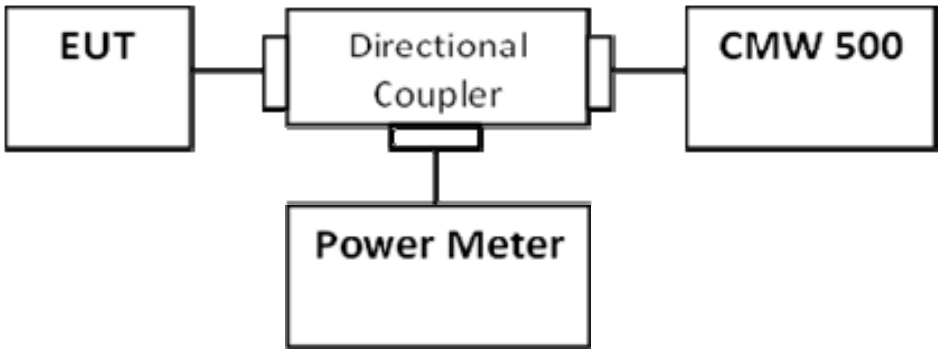
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com

3. RF Output Power

3.1. Test Setup



3.2. Test Procedure

a) The RF output of the transmitter was connected to base station simulator.
b) The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement..
c) Set EUT at maximum average power by base station emulator.
d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi)

Effective Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi) - 2.15dB

3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.2.4
ANSI C63.26-2015 Sub-clause 5.2.4.2

3.4. Test Result

Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2019/04/09	Test Site	SR10-H

LTE_Band 13_5M_QPSK_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (note2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
779.5	23.56	2.14	23.55	0.23	3
782.0	22.72	2.14	22.71	0.19	3
784.5	22.47	2.14	22.46	0.18	3

LTE_Band 13_10M_QPSK_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi) (note2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782.0	22.15	2.14	22.14	0.16	3

LTE Band 13_5M_16-QAM_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi)(note2)	Measure Level (dBm)ERP	Measure Level (W) ERP	
779.5	23.540	2.14	23.530	0.230	3
782.0	24.070	2.14	24.060	0.250	3
784.5	23.075	2.14	23.065	0.230	3

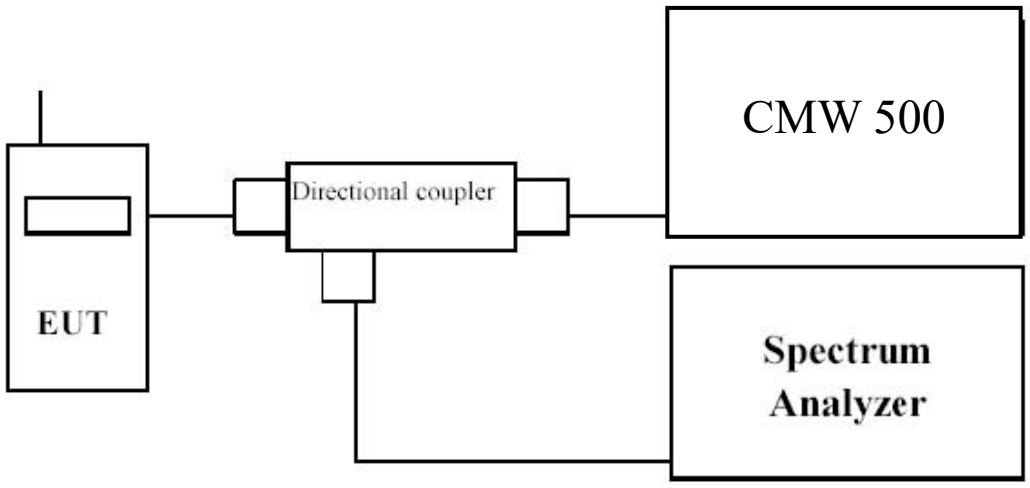
LTE Band 13_10M_16-QAM_Link					
Frequency (MHz)	Average Power				Limit (W) ERP
	Reading Level (dBm)	Antenna Gain (dBi)(note2)	Measure Level (dBm) ERP	Measure Level (W) ERP	
782.0	23.780	2.14	23.770	0.240	3

Note:

1. Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) - 2.15dB
2. The usable maximum antenna gain is 2dBi.

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

4.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause4.2 & 4.3
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

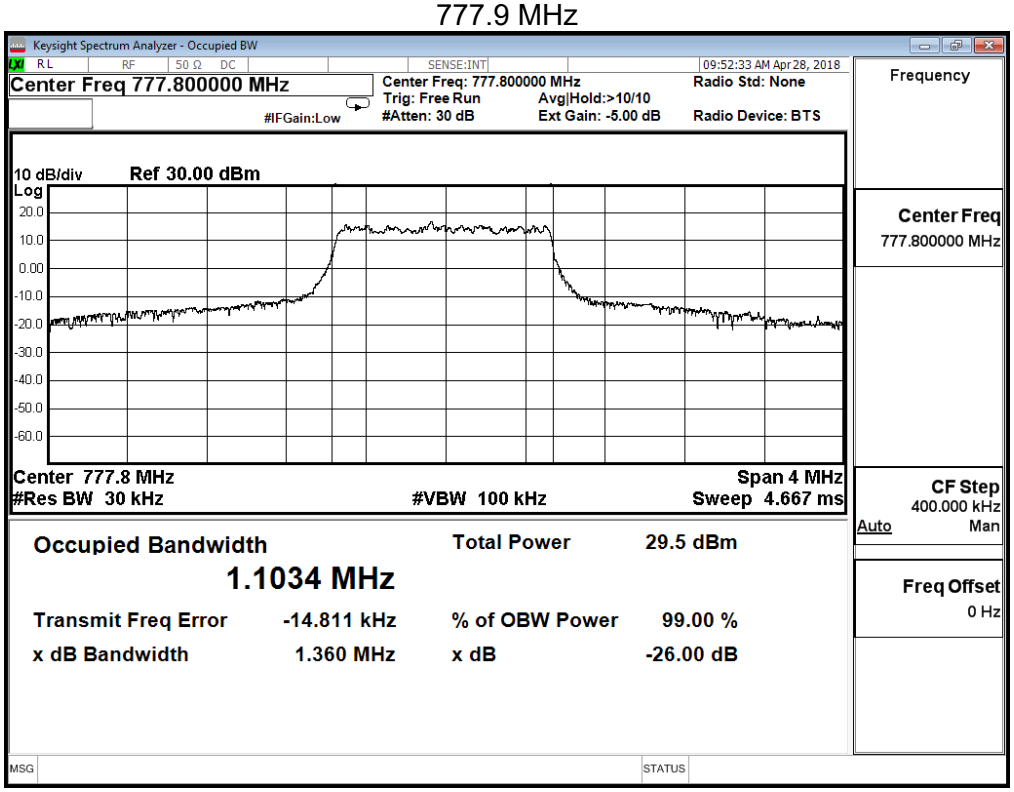
4.4. Test Result

Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/05/05	Test Site	SR10-H

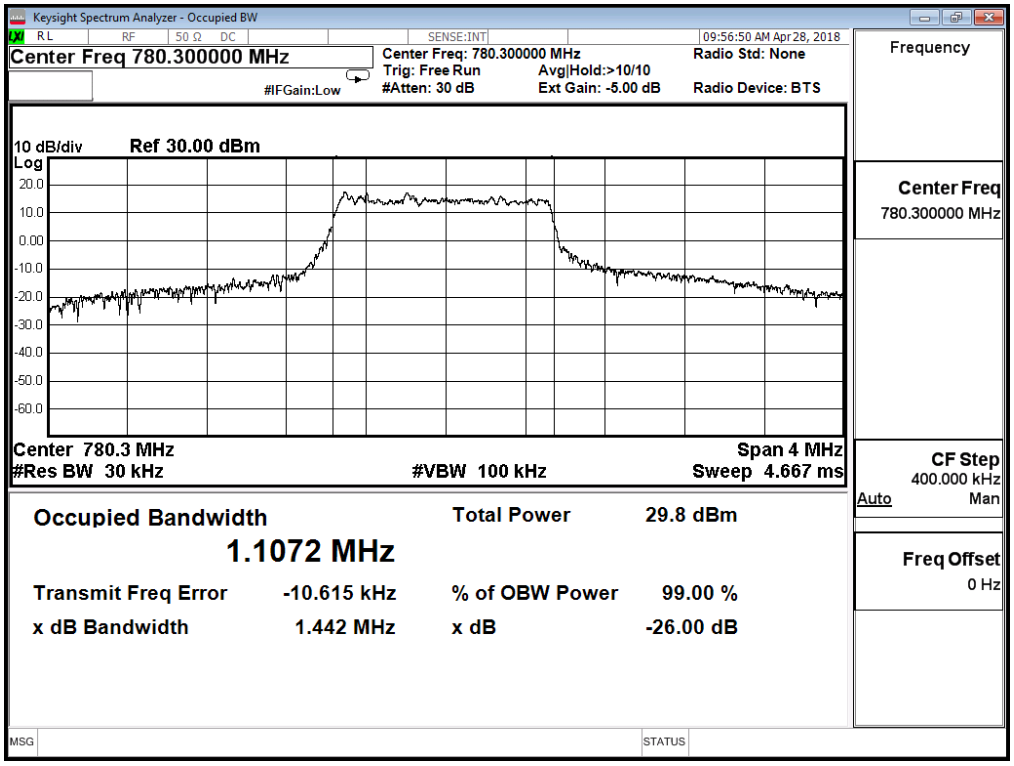
LTE_Band 13_5M_QPSK_Link

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
779.5	1.360	1.103	N/A
782.0	1.442	1.107	N/A
784.5	1.710	1.115	N/A

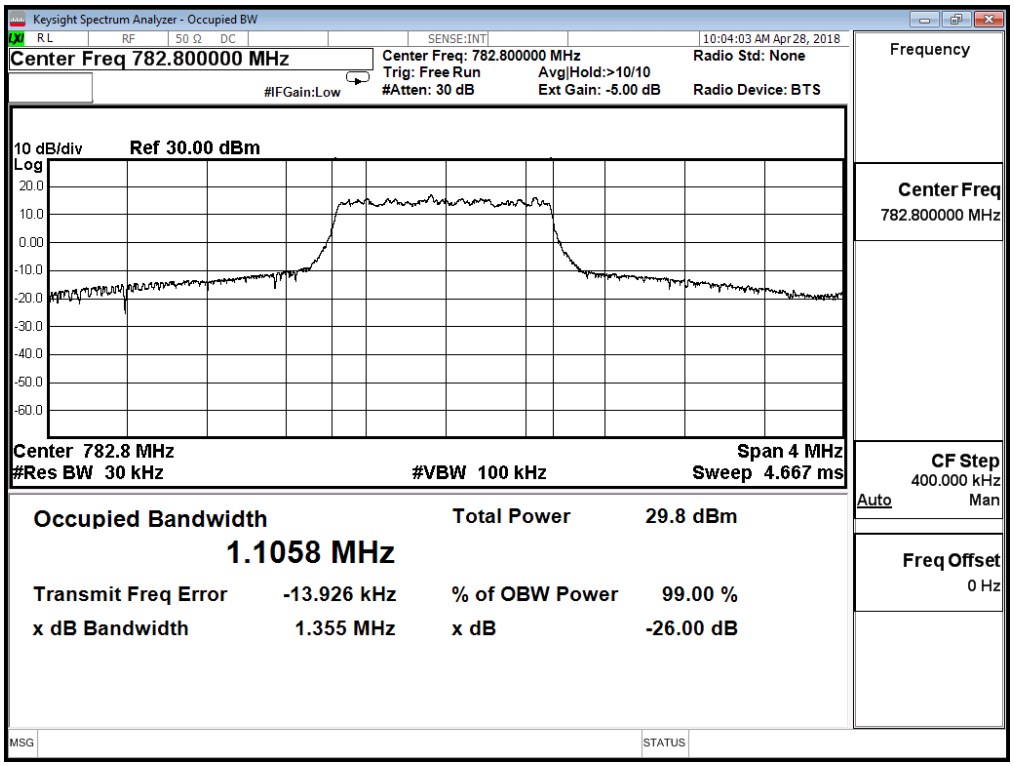
777.9 MHz



782.0 MHz



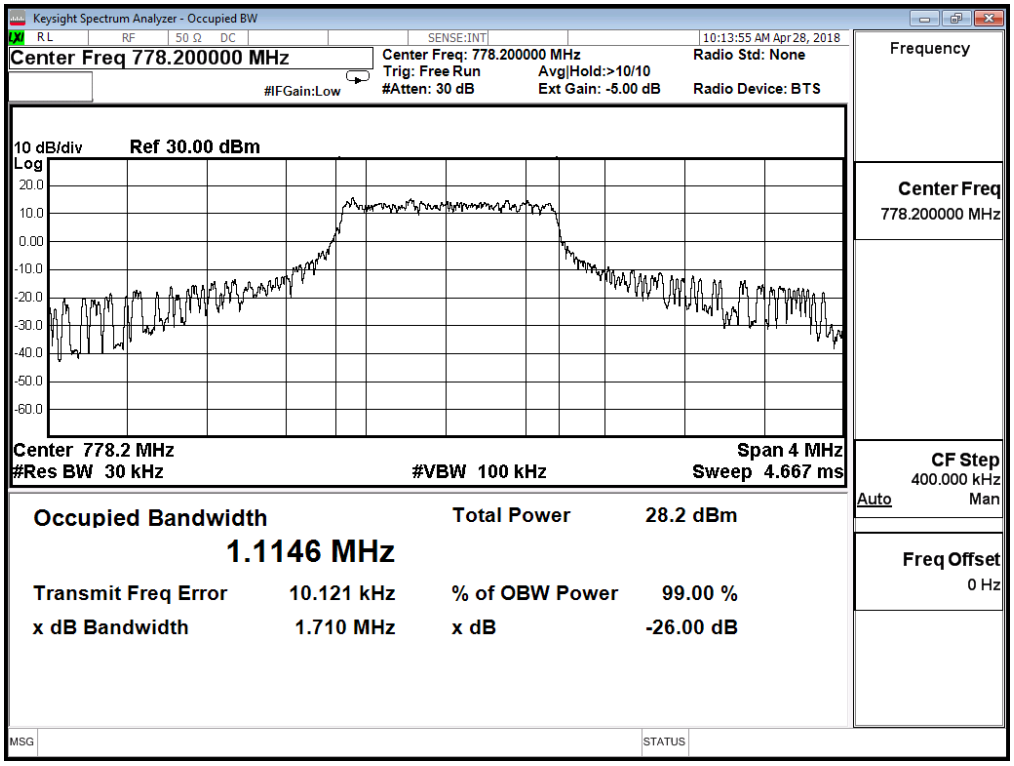
784.5MHz



LTE_Band 13_5M_QPSK_Link

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
782.0	1.355	1.106	N/A

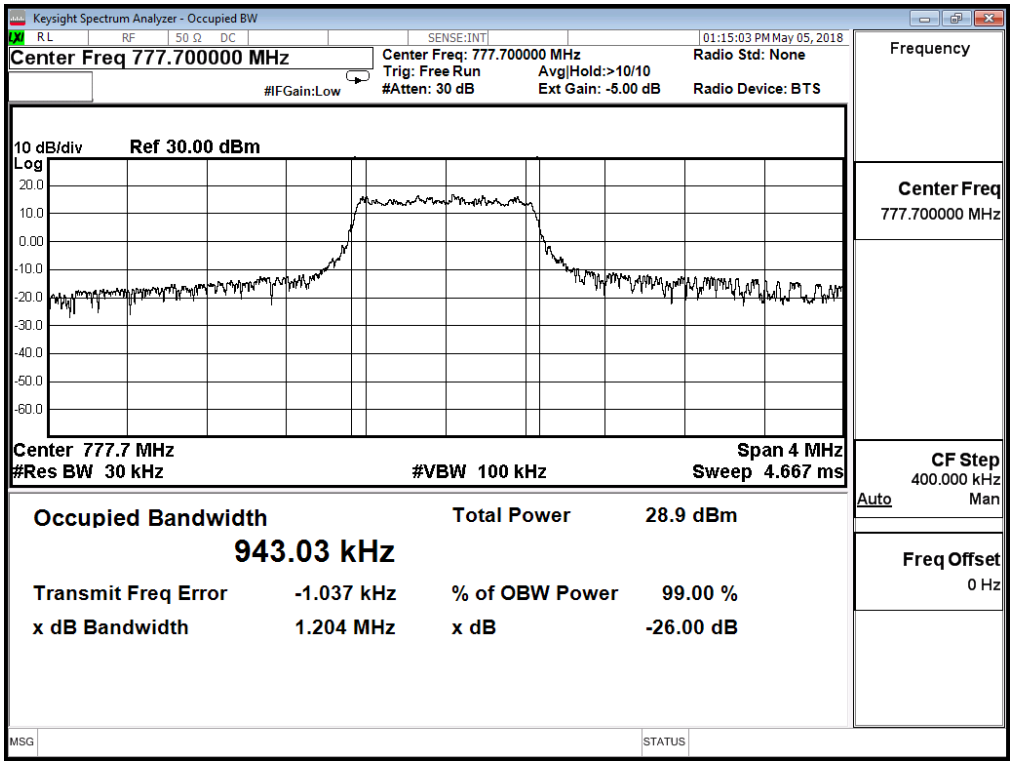
782.0 MHz



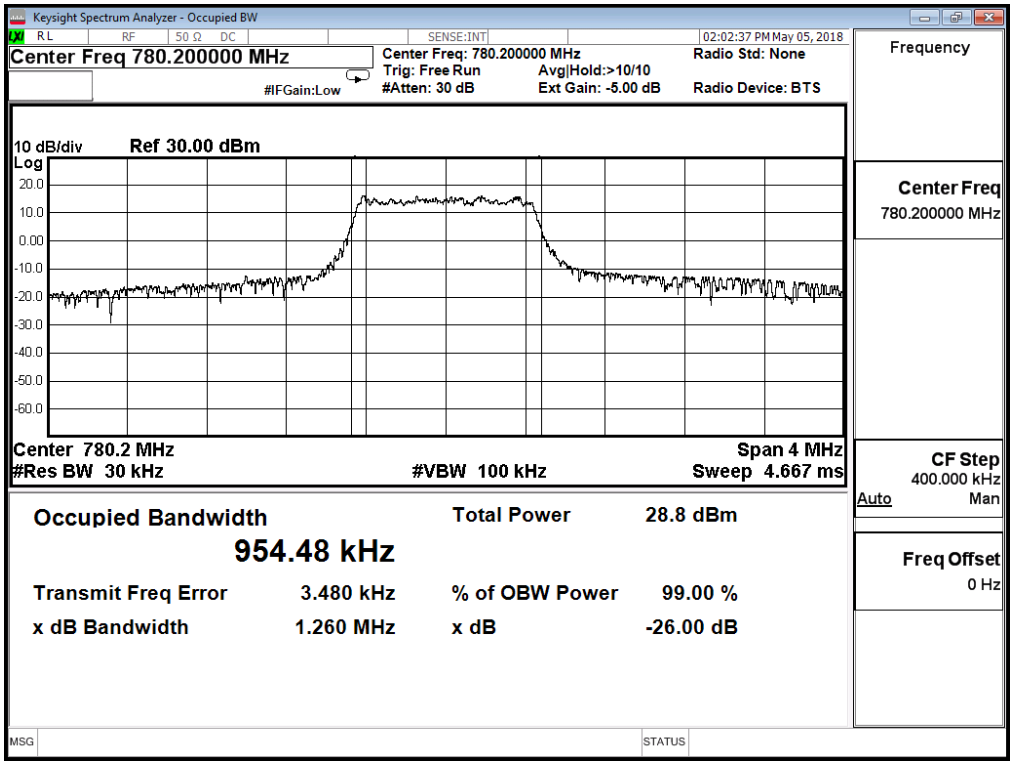
CAT_M1_Band 13_5M_16-QAM_Link

Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
779.5	1.204	0.943	N/A
782	1.260	0.954	N/A
784.5	1.246	0.944	N/A

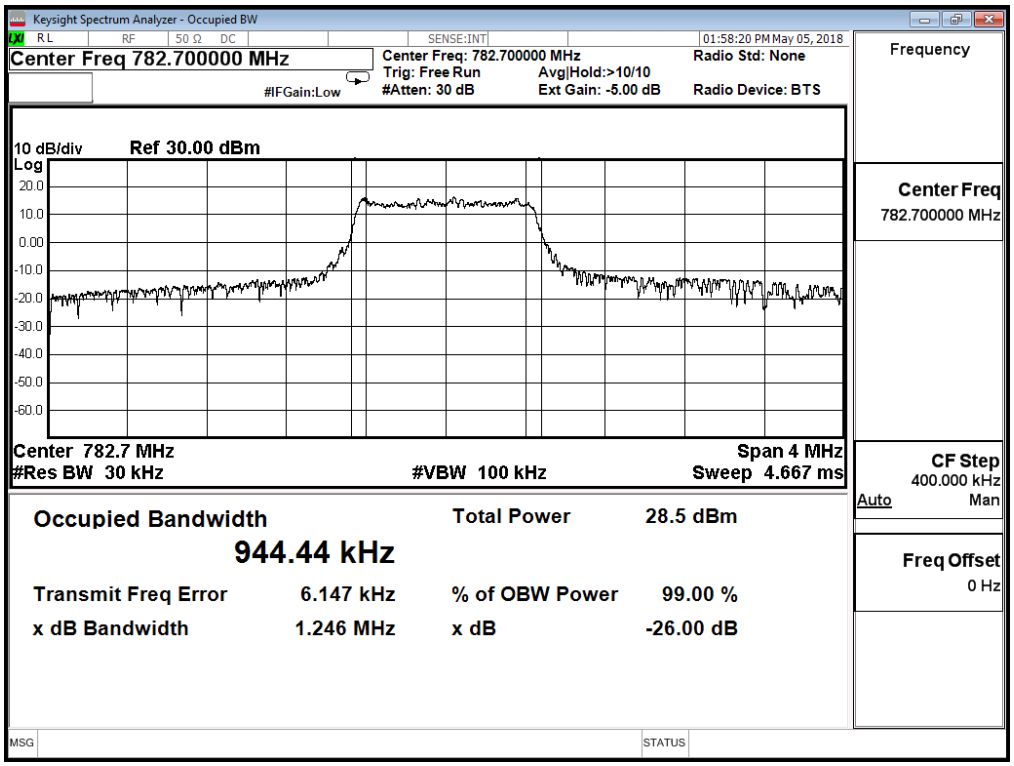
777.9 MHz



782.0 MHz



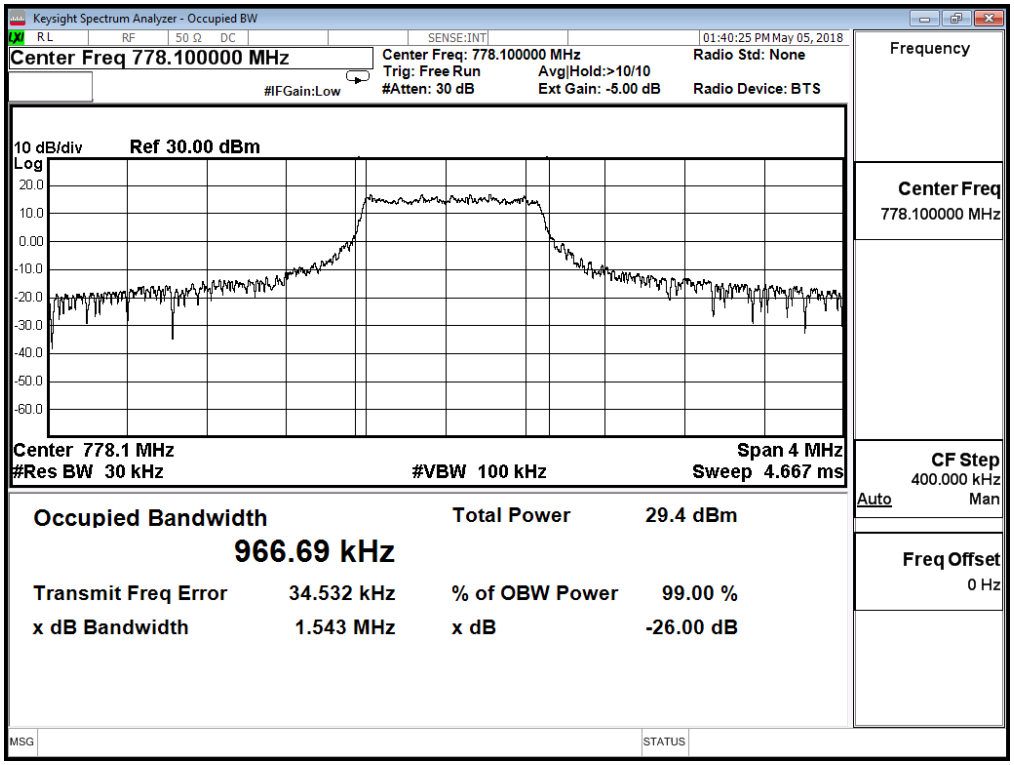
784.5MHz



CAT_M1_Band 13_10M_16-QAM_Link

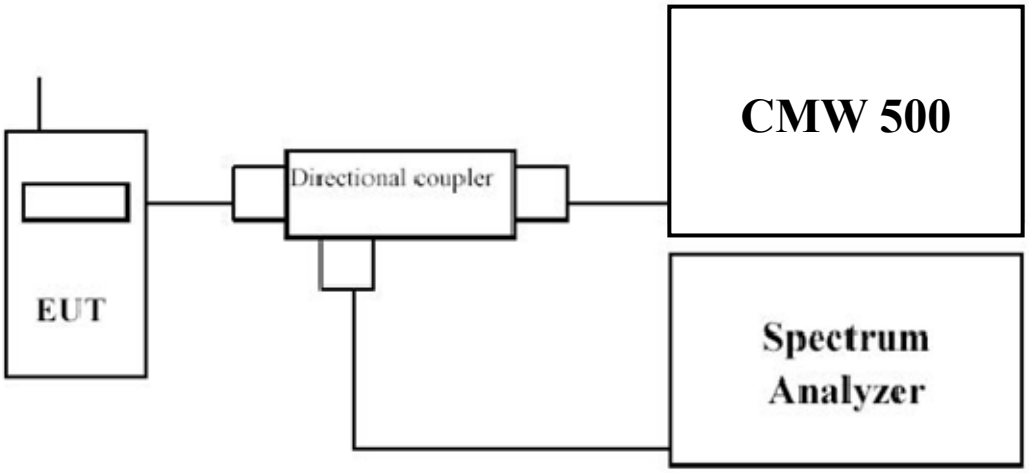
Frequency (MHz)	-26dB BW Measure Level (MHz)	99% BW Measure Level (MHz)	Limit (MHz)
782	1.543	0.966	N/A

782.0 MHz



5. Peak To Average Ratio

5.1. Test Setup



5.2. Test Procedure

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1 %.

5.3. Test Method

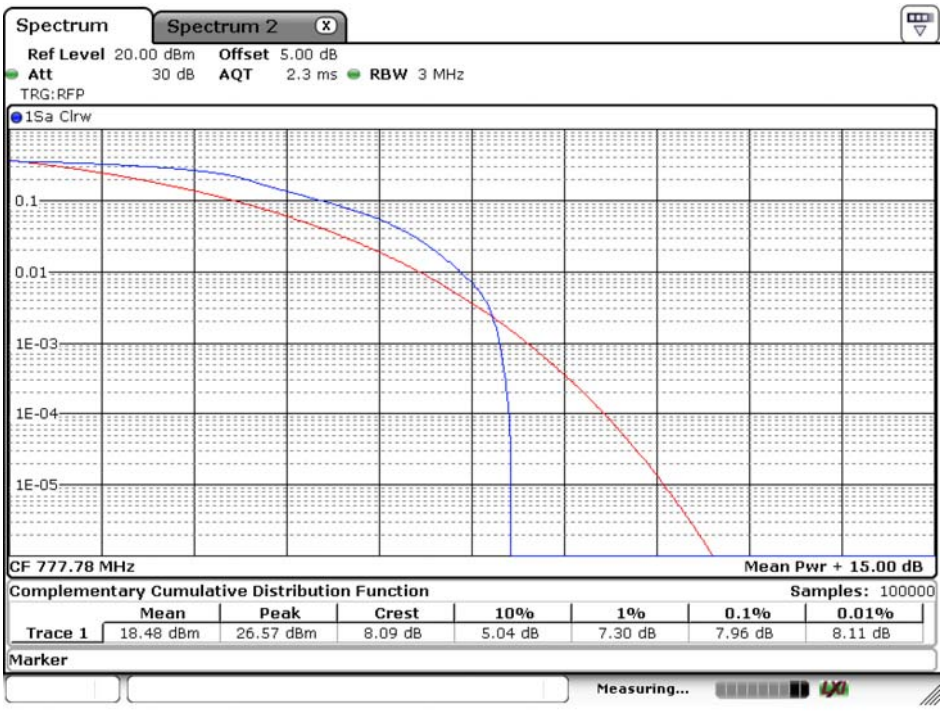
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.7.2
ANSI C63.26-2015 Sub-clause 5.2.3.4

5.4. Test Result

Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/05/03	Test Site	SR10-H

LTE_Band 13_5M_QPSK_Link

779.5MHz



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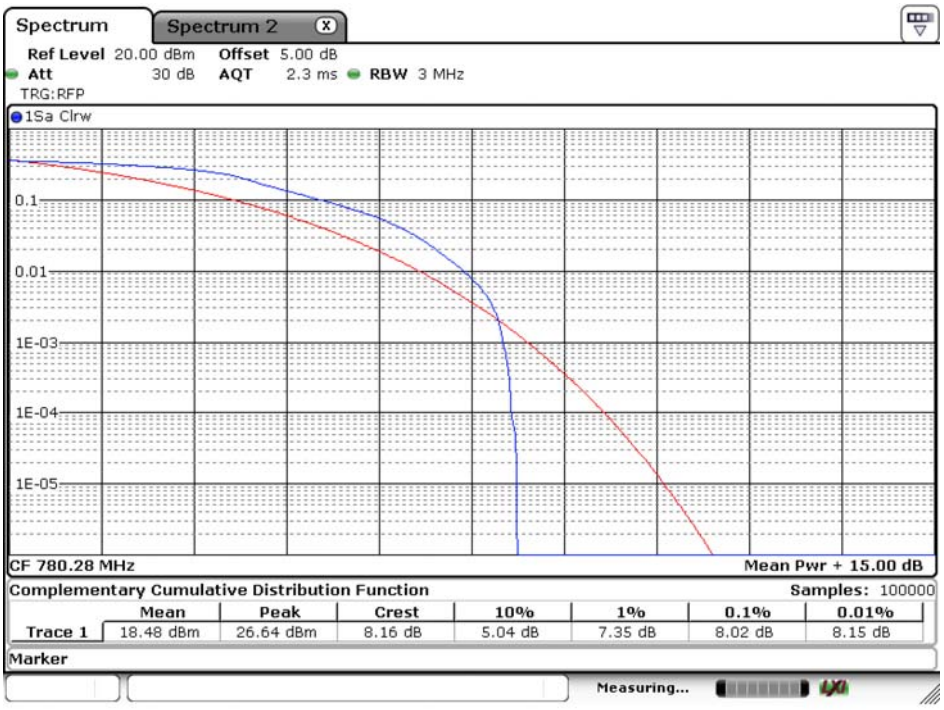
782.0MHz



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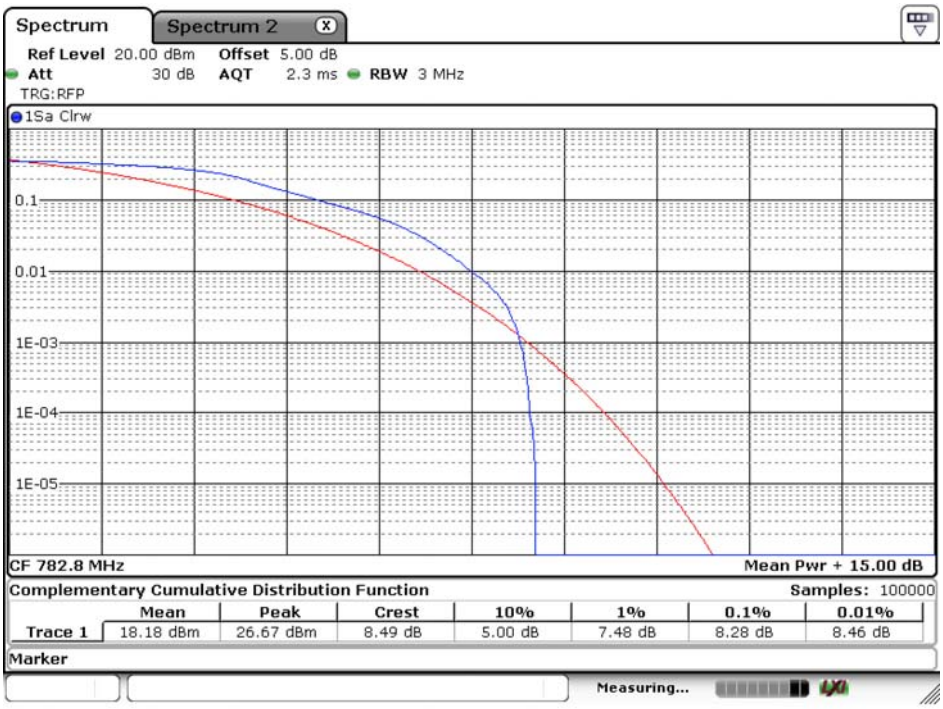
784.5MHz



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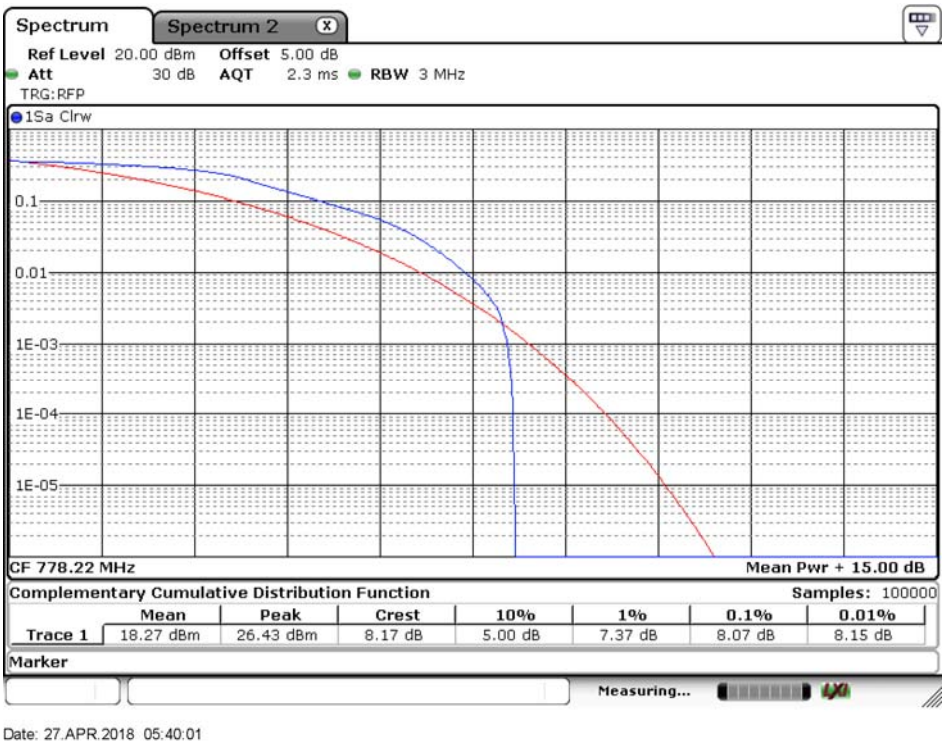
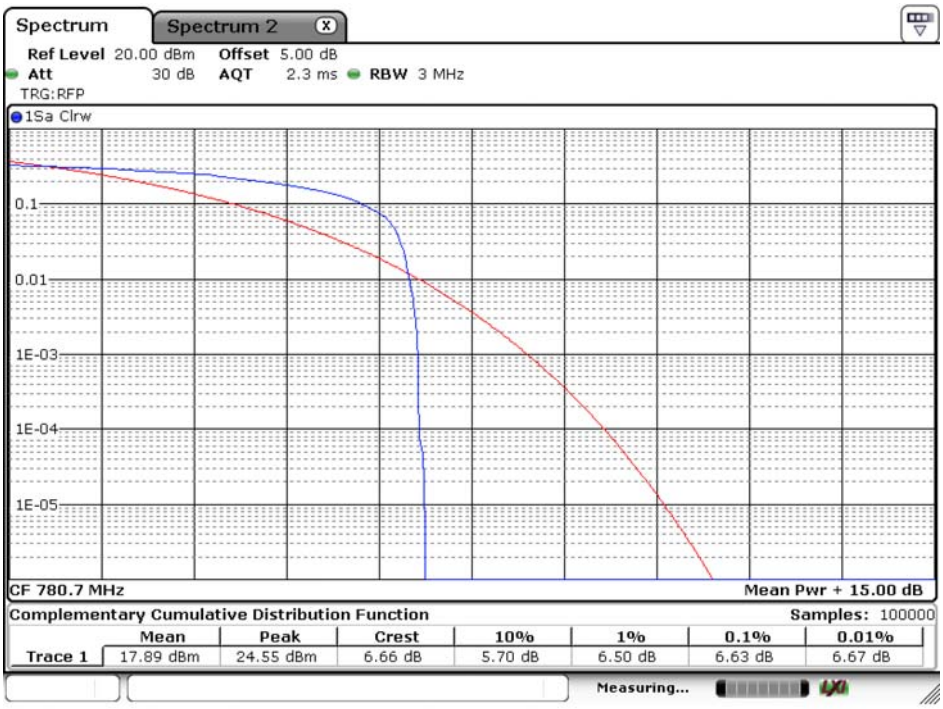
LTE_Band 13_10M_QPSK_Link

782.0MHz



LTE_Band 13_5M_16-QAM_Link

779.5MHz



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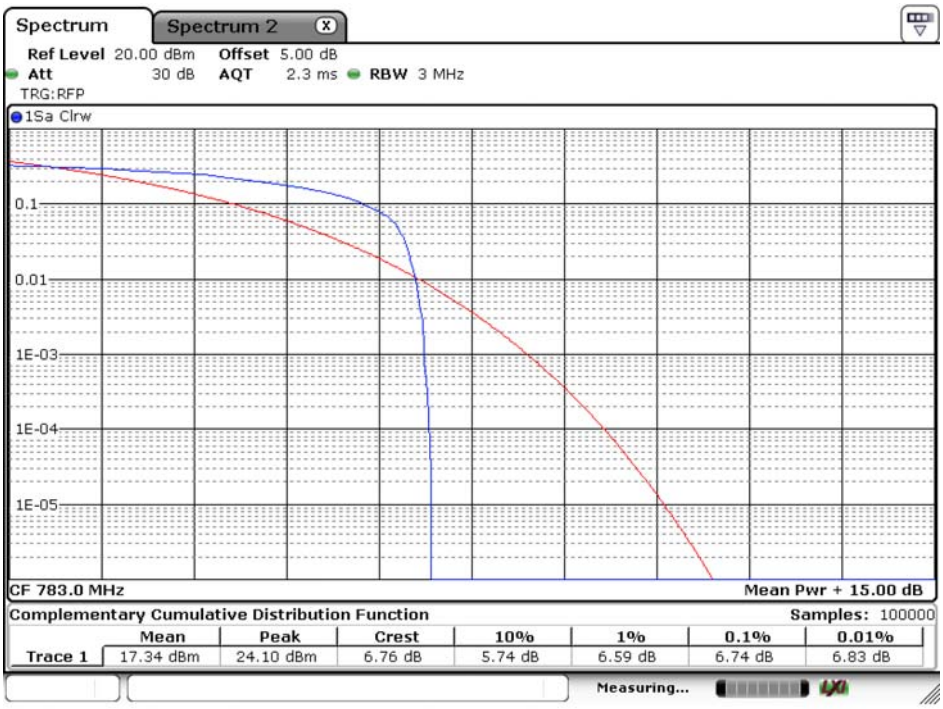
782.0MHz



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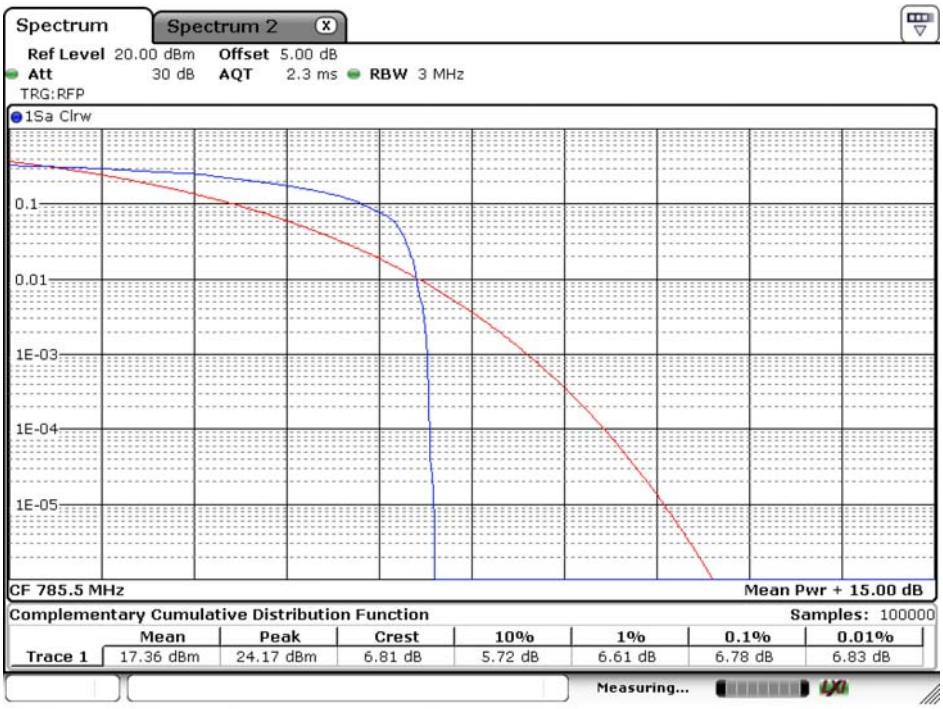
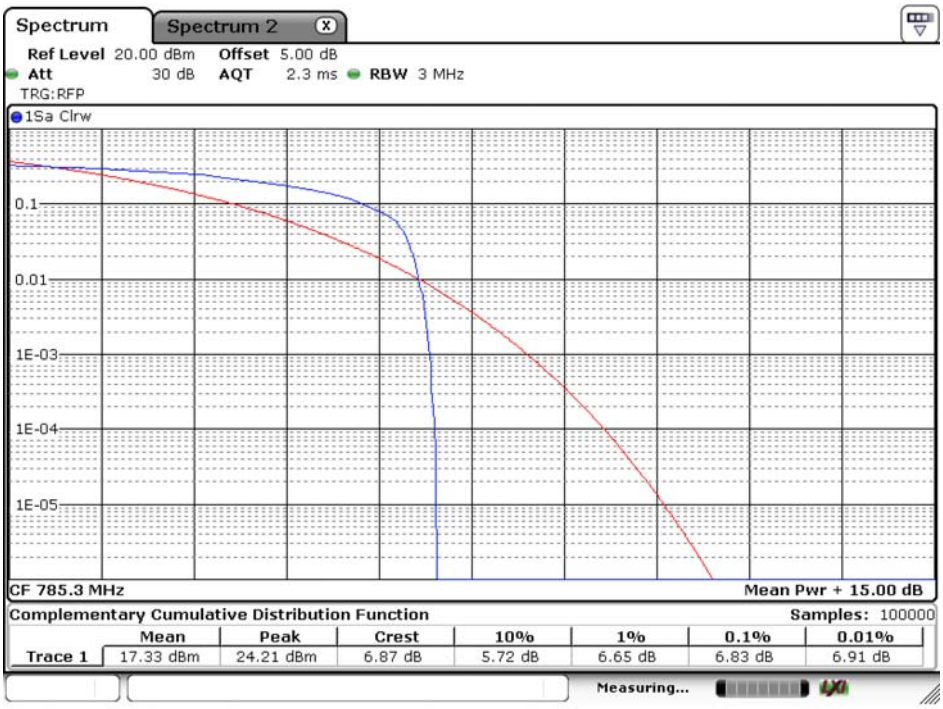
784.5MHz


Spectrum
Spectrum 2
Ref Level 20.00 dBm Offset 5.00 dB
Att 30 dB AQT 2.3 ms RBW 3 MHz
TRG:RFP
1Sa Clrw
0.1
0.01
1E-03
1E-04
1E-05
CF 785.5 MHz
Mean Pwr + 15.00 dB
Complementary Cumulative Distribution Function
Samples: 100000
Mean Peak Crest 10% 1% 0.1% 0.01%
Trace 1 17.36 dBm 24.17 dBm 6.81 dB 5.72 dB 6.61 dB 6.78 dB 6.83 dB
Measuring...
Date: 3.MAY.2018 11:14:25

LTE_Band 13_10M_16-QAM_Link

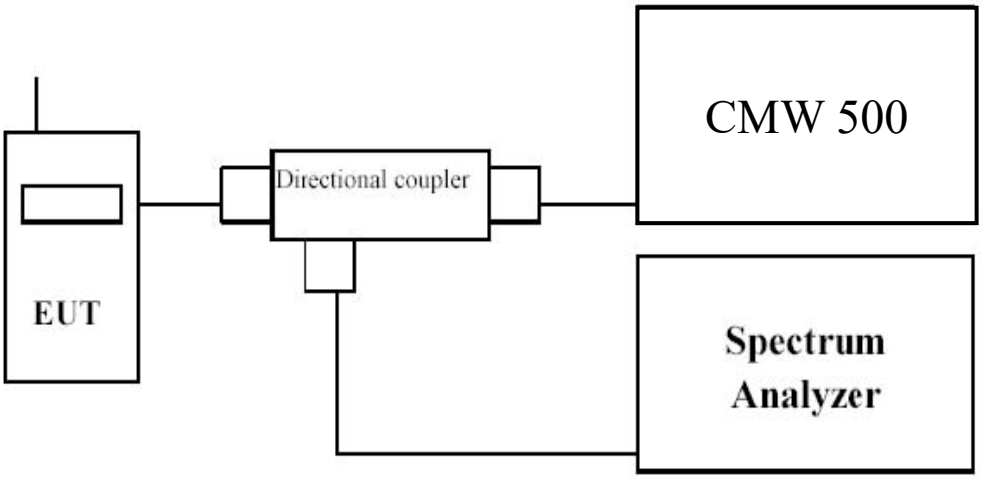
782.0MHz



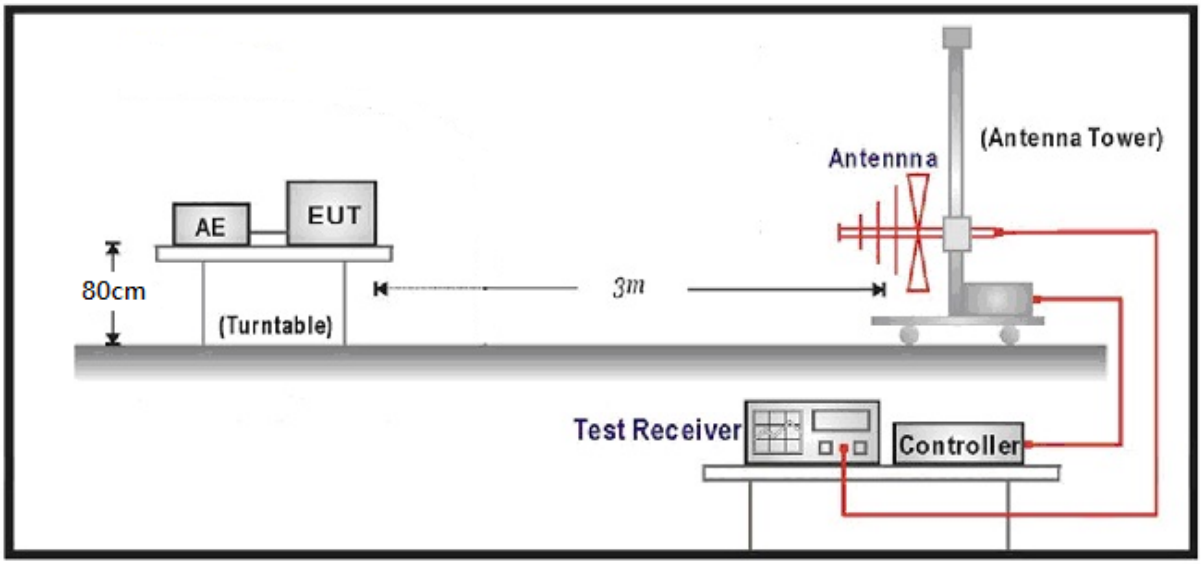
6. Spurious Emissions

6.1. Test Setup

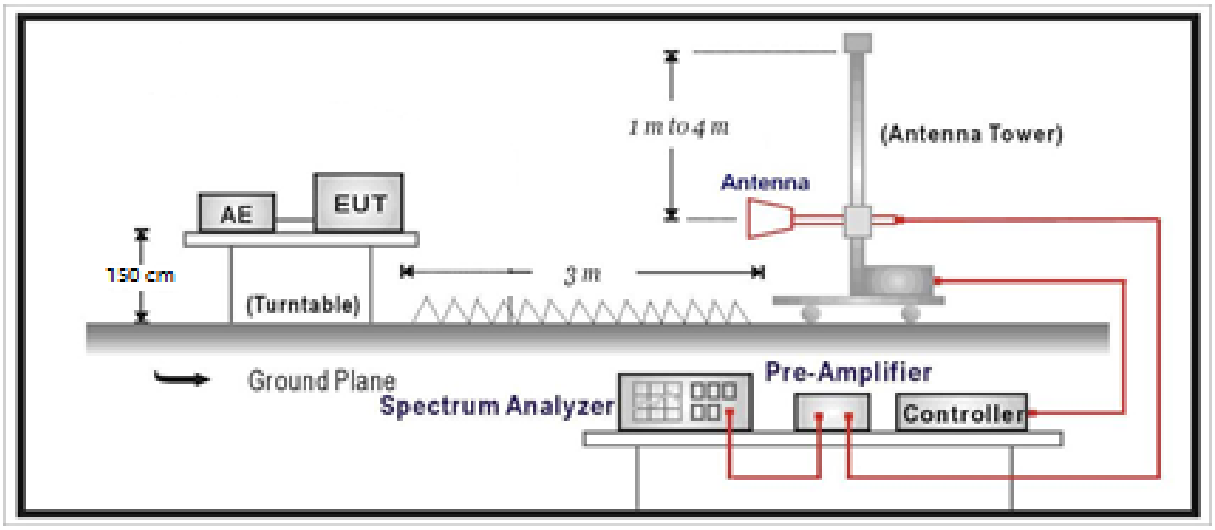
Conducted Spurious Measurement: below 1GHz



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



6.2. Test Procedure

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
c) EUT Communicate with CMW500, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10^{th} harmonic.

Radiated Spurious Measurement:

a) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
b) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
c) The table was rotated 360 degrees to determine the position of the highest spurious emission.
d) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
e) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
f) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
g) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
h) Taking the record of output power at antenna port.
i) Repeat step 7 to step 8 for another polarization.
j) EIRP = SG - Cable loss + Antenna Gain

6.3. Test Method

Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1
ANSI C63.26-2015 Sub-clause 5.7

Radiated Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8
ANSI C63.26-2015 Sub-clause 5.5.3.2

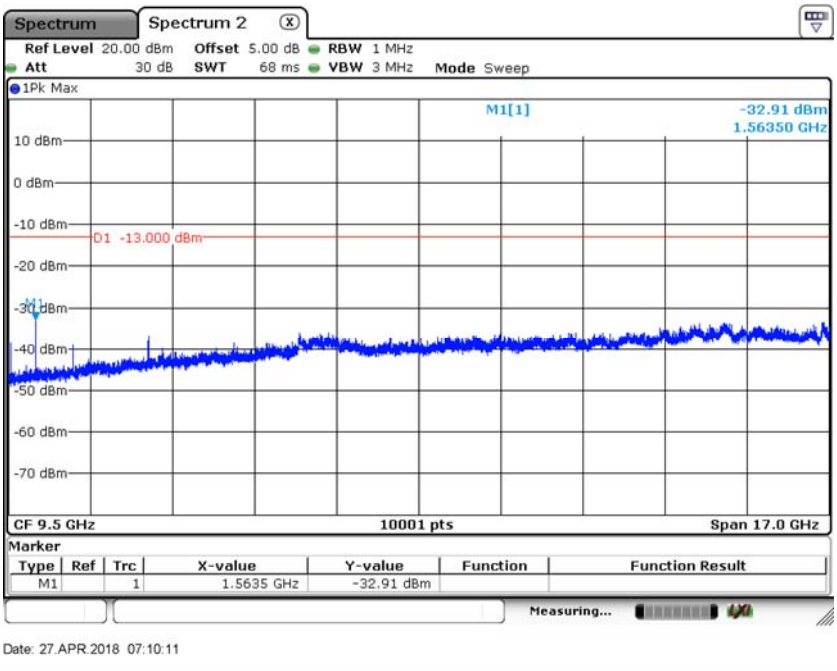
6.4. Test Result

Conducted Spurious Emission

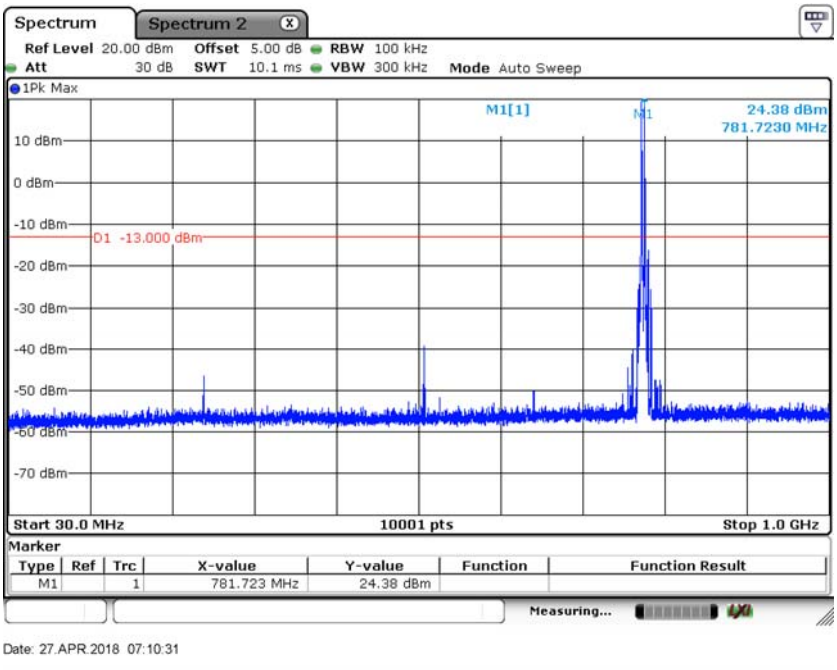
Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/04/27	Test Site	SR10-H

LTE_Band 13_5M_QPSK_Link

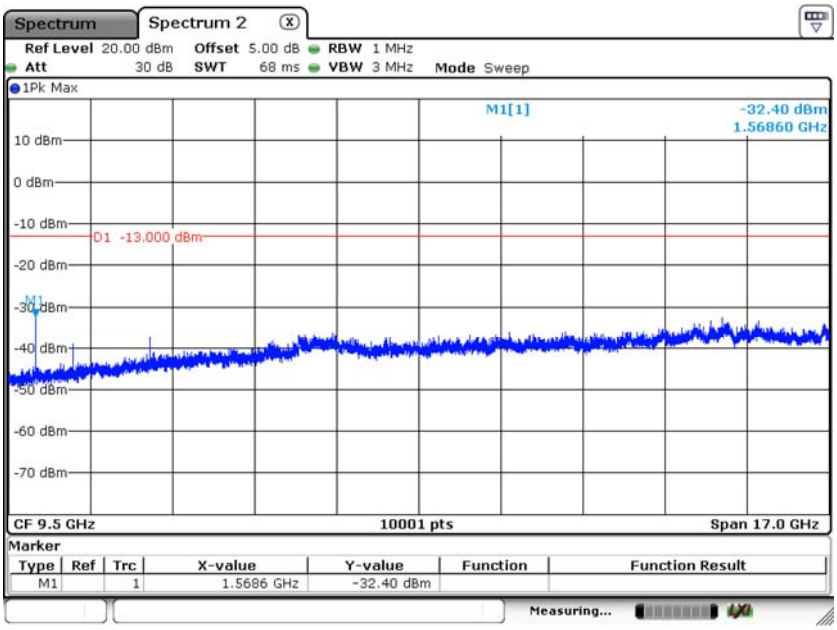
779.5MHz above 1GHz



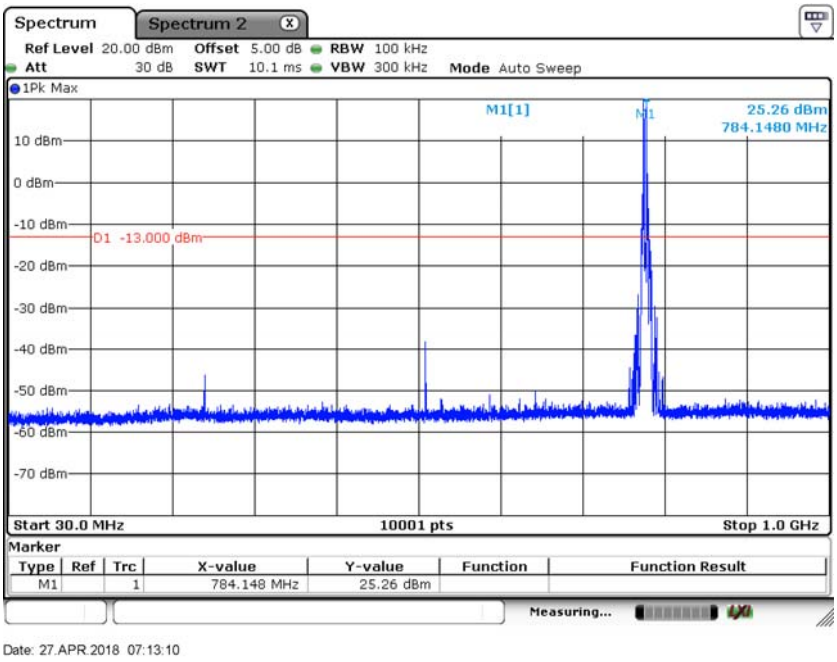
779.5MHz under 1GHz



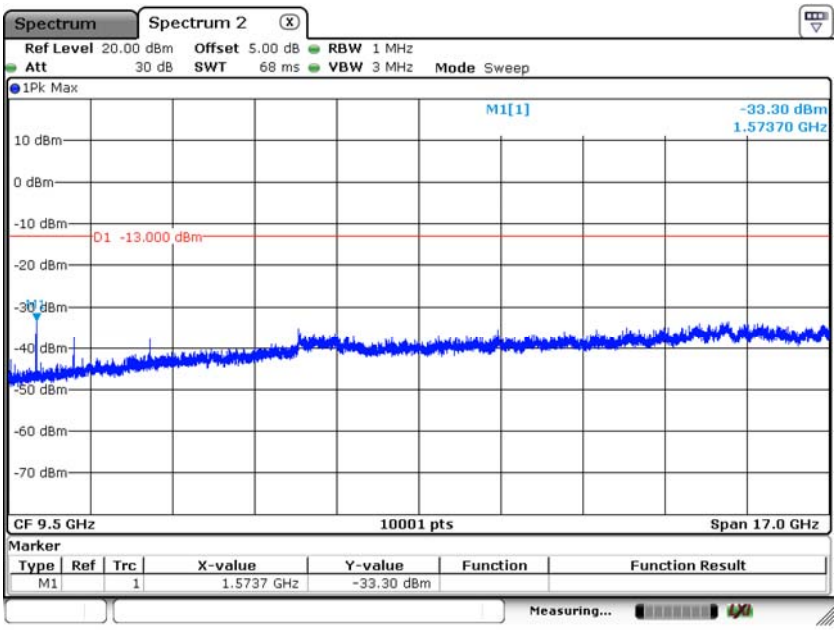
782.0MHz above 1GHz



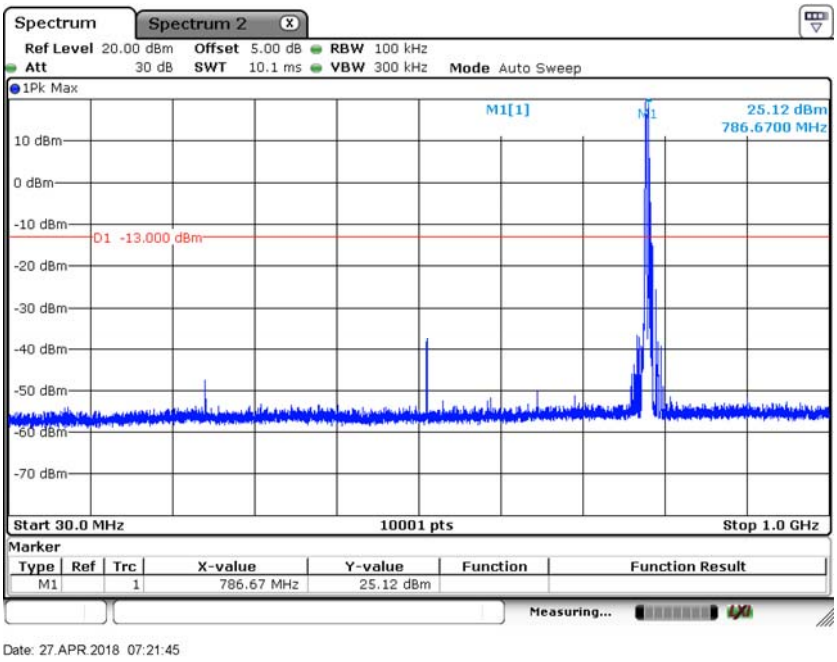
782.0MHz under 1GHz



784.5MHz above 1GHz

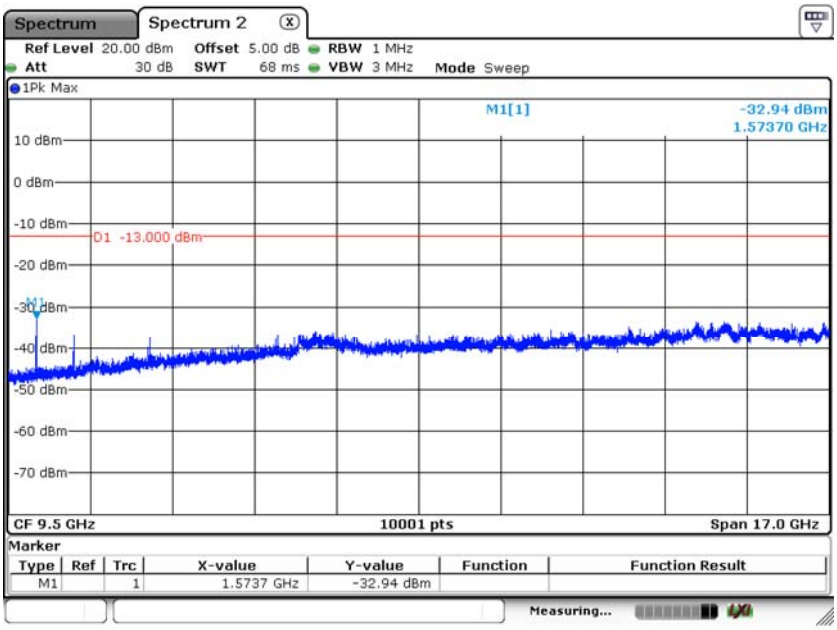


784.5MHz under 1GHz

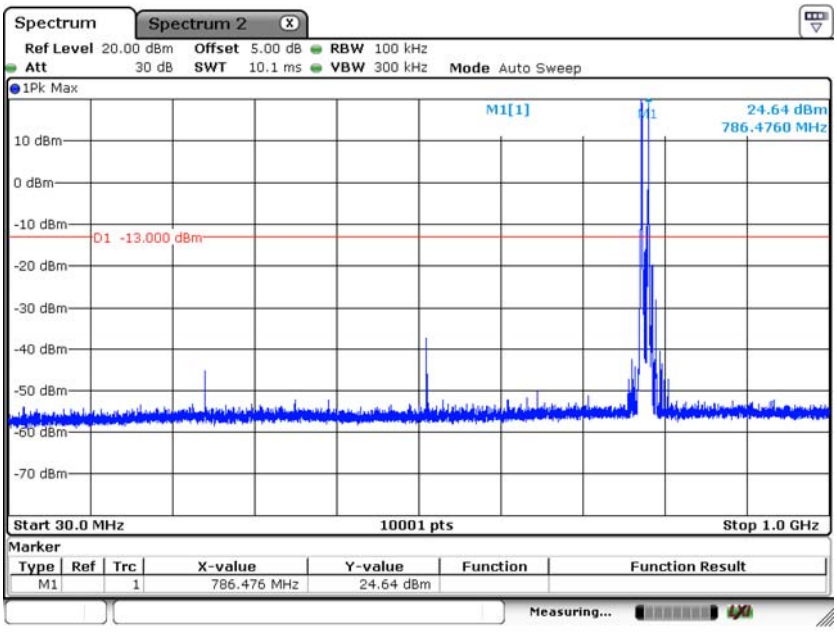


LTE_Band 13_10M_QPSK_Link

782.0MHz above 1GHz

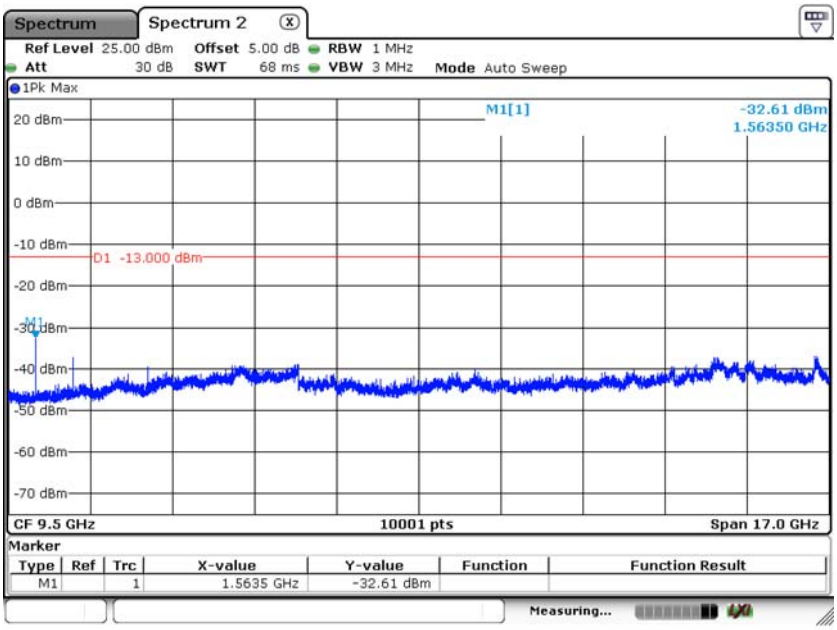


782.0MHz under 1GHz

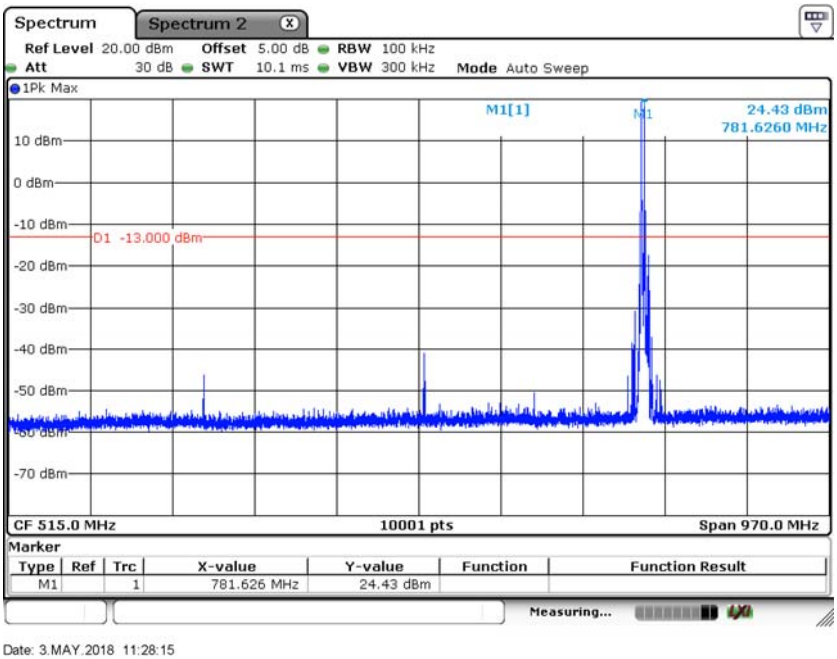


LTE_Band 13_5M_16-QAM_Link

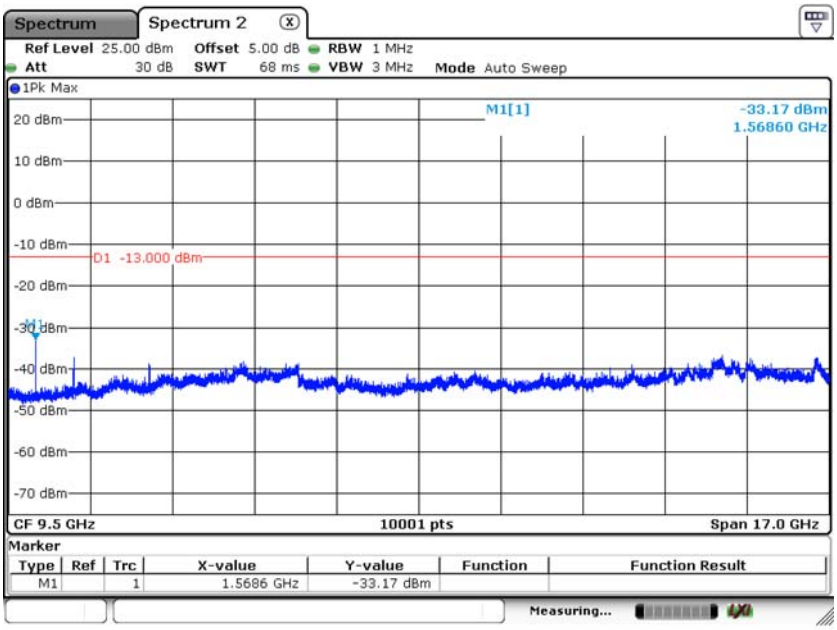
779.5MHz above 1GHz



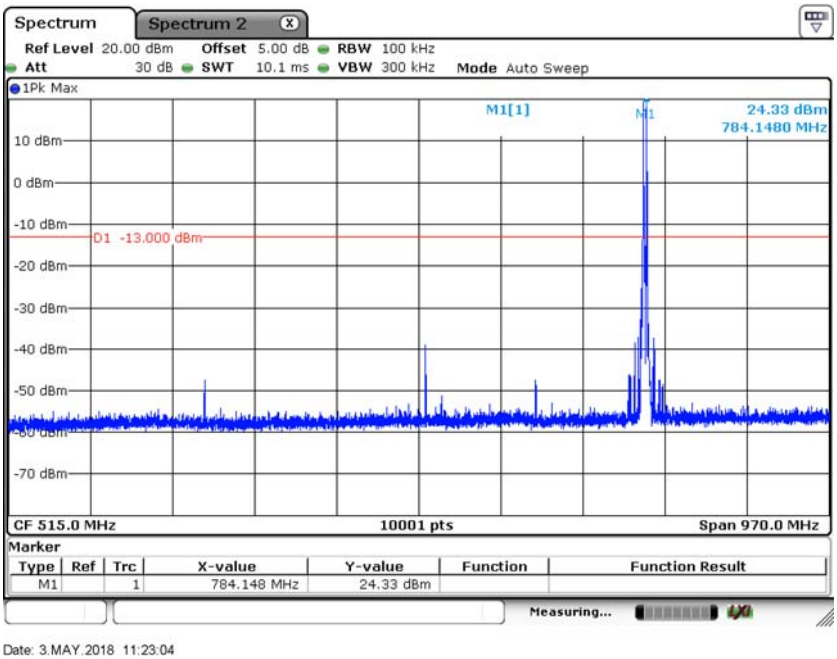
779.5MHz under 1GHz



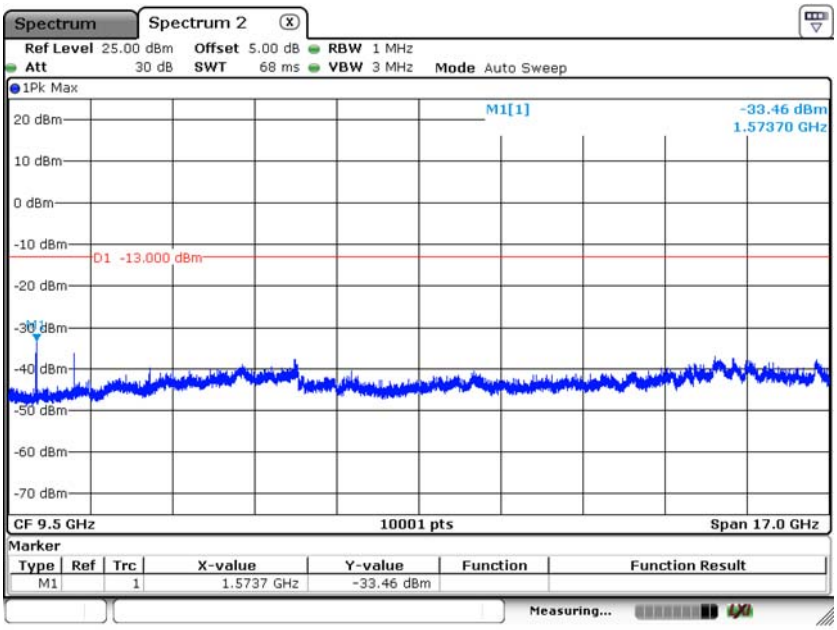
782.0MHz above 1GHz



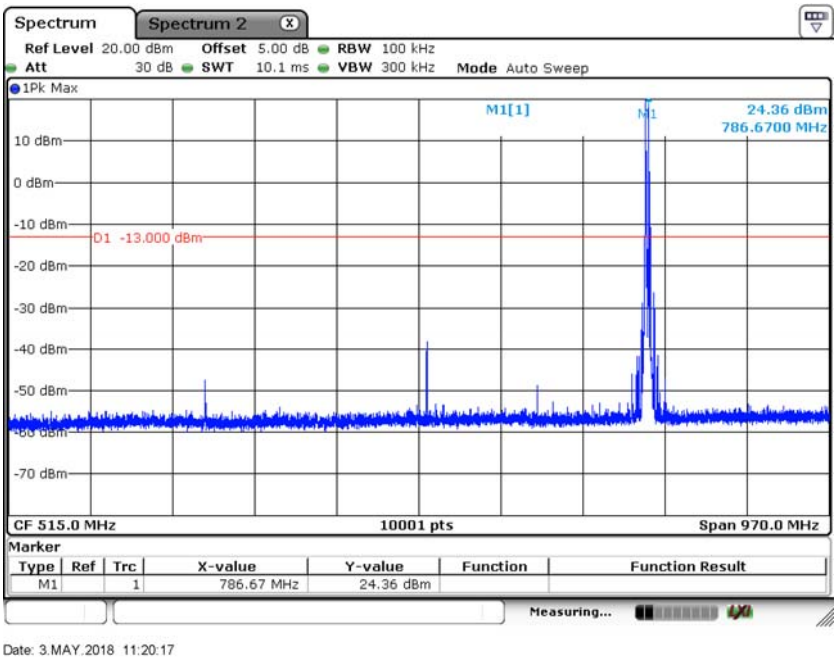
782.0MHz under 1GHz



784.5MHz above 1GHz

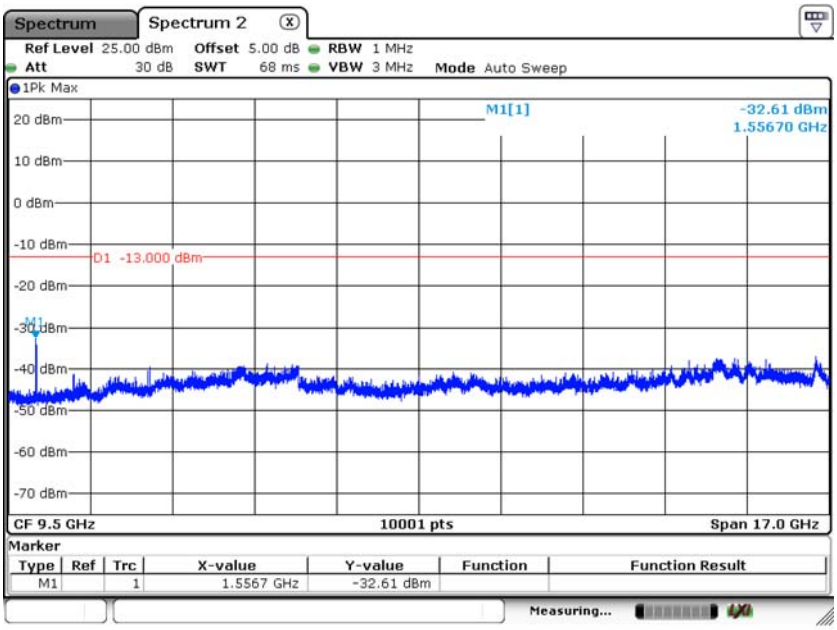


784.5MHz under 1GHz

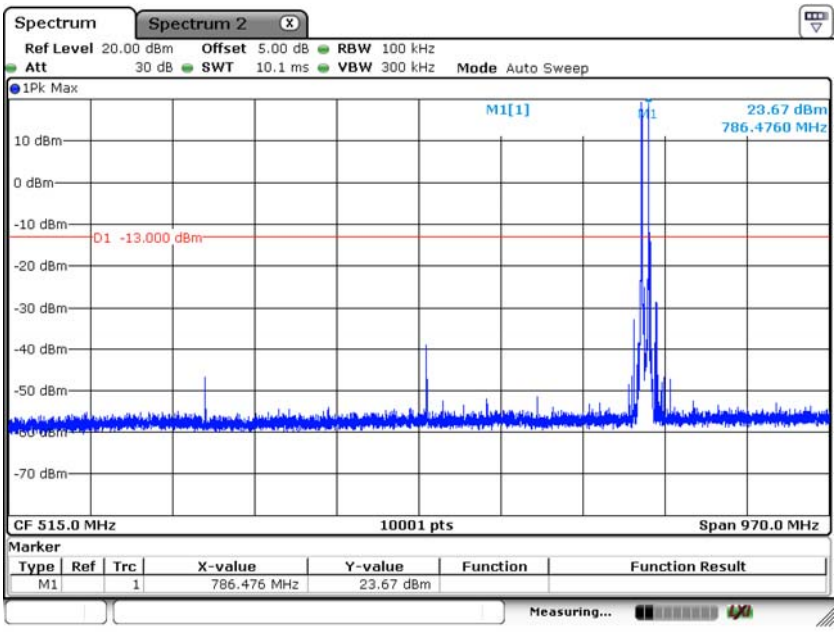


LTE_Band 13_10M_16-QAM_Link

782.0MHz above 1GHz



782.0MHz under 1GHz



Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/04/27	Test Site	CB4-H

LTE_Band 13_5M_QPSK_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
779.5MHz								
1559.00	-52.930	H	-52.403	2.709	8.477	-46.635	-13	-33.635
2338.50	-69.620	H	-65.768	3.344	10.342	-58.771	-13	-45.771
1559.00	-51.720	V	-51.447	2.709	8.477	-45.679	-13	-32.679
2338.50	-56.760	V	-52.547	3.344	10.342	-45.550	-13	-32.550
782MHz								
1564.00	-53.650	H	-53.132	2.713	8.492	-47.353	-13	-34.353
2346.00	-67.770	H	-63.970	3.349	10.354	-56.966	-13	-43.966
1564.00	-52.510	V	-52.239	2.713	8.492	-46.460	-13	-33.460
2346.00	-54.500	V	-50.344	3.349	10.354	-43.340	-13	-30.340
784.5MHz								
1569.00	-52.730	H	-52.219	2.718	8.507	-46.430	-13	-33.430
2353.50	-69.270	H	-65.521	3.355	10.366	-58.510	-13	-45.510
1569.00	-52.290	V	-52.020	2.718	8.507	-46.231	-13	-33.231
2353.50	-54.390	V	-50.291	3.355	10.366	-43.280	-13	-30.280

LTE_Band 13_10M_QPSK_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
782MHz								
1564.00	-52.820	H	-52.302	2.713	8.492	-46.523	-13	-33.523
2346.00	-69.670	H	-65.870	3.349	10.354	-58.866	-13	-45.866
1564.00	-51.370	V	-51.099	2.713	8.492	-45.320	-13	-32.320
2346.00	-54.580	V	-50.424	3.349	10.354	-43.420	-13	-30.420

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

LTE_Band 13_5M_16-QAM_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
779.5MHz								
1559.00	-52.790	H	-52.744	2.709	8.477	-46.976	-13	-33.976
2338.50	-53.580	H	-50.445	3.344	10.342	-43.448	-13	-30.448
1559.00	-52.790	V	-53.125	2.709	8.477	-47.357	-13	-34.357
2338.50	-54.760	V	-51.305	3.344	10.342	-44.308	-13	-31.308
782MHz								
1564.00	-52.320	H	-52.290	2.713	8.492	-46.511	-13	-33.511
2346.00	-63.650	H	-60.553	3.349	10.354	-53.549	-13	-40.549
1564.00	-52.620	V	-52.966	2.713	8.492	-47.187	-13	-34.187
2346.00	-64.250	V	-60.847	3.349	10.354	-53.843	-13	-40.843
784.5MHz								
1569.00	-52.630	H	-52.616	2.718	8.507	-46.827	-13	-33.827
2353.50	-57.670	H	-54.610	3.355	10.366	-47.599	-13	-34.599
1569.00	-52.400	V	-52.757	2.718	8.507	-46.968	-13	-33.968
2353.50	-54.670	V	-51.319	3.355	10.366	-44.308	-13	-31.308

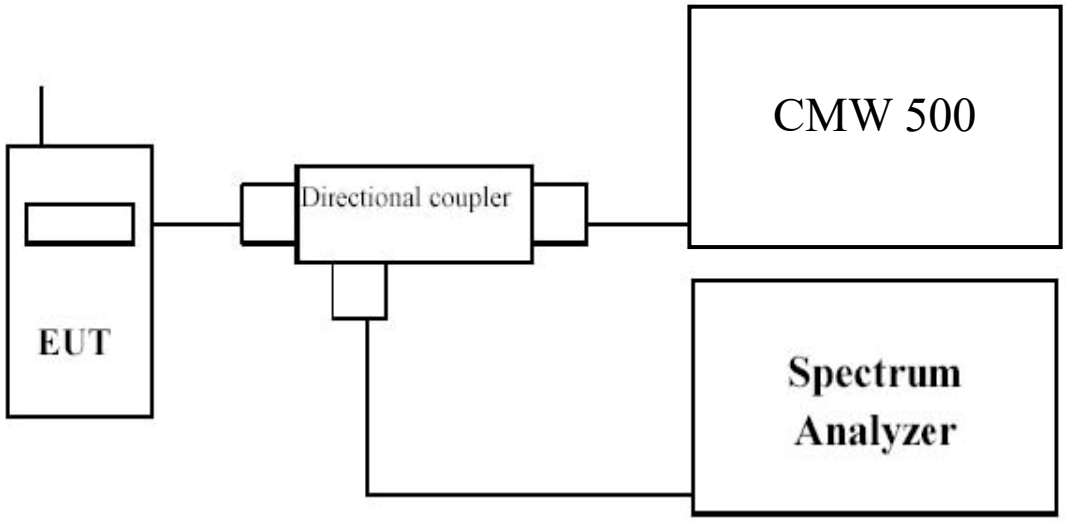
LTE_Band 13_10M_16-QAM_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
782MHz								
1564.00	-52.950	H	-52.920	2.713	8.492	-47.141	-13	-34.141
2346.00	-54.810	H	-51.713	3.349	10.354	-44.709	-13	-31.709
1564.00	-52.400	V	-52.746	2.713	8.492	-46.967	-13	-33.967
2346.00	-55.060	V	-51.657	3.349	10.354	-44.653	-13	-31.653

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

7. Spurious Emissions at Antenna Terminals

7.1. Test Setup



7.2. Test Procedure

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
c) EUT Communicate with CMW500, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

7.3. Test Method

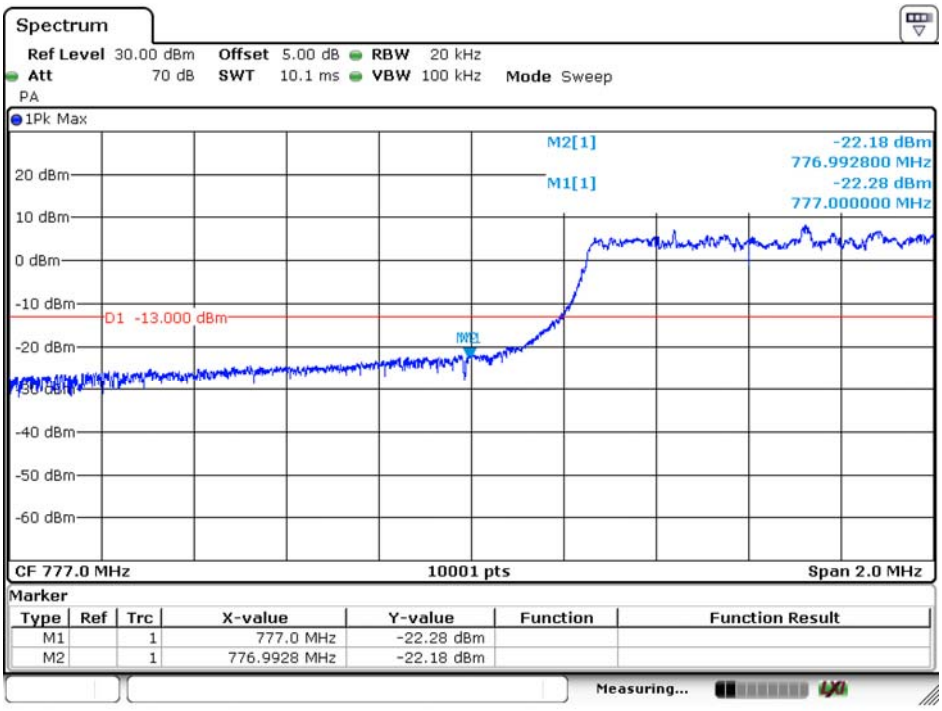
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 6.1
ANSI C63.26-2015 Sub-clause 5.7

7.4. Test Result

Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/05/04	Test Site	SR10-H

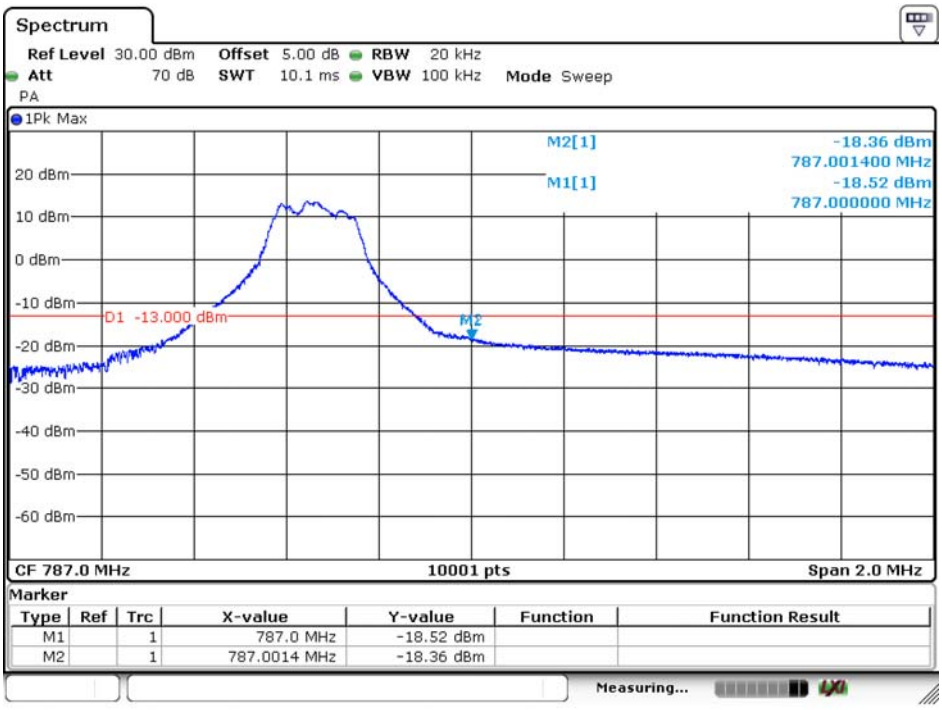
LTE_Band 13_5M_QPSK_Link

779.5MHz



Date: 27.APR.2018 07:41:15

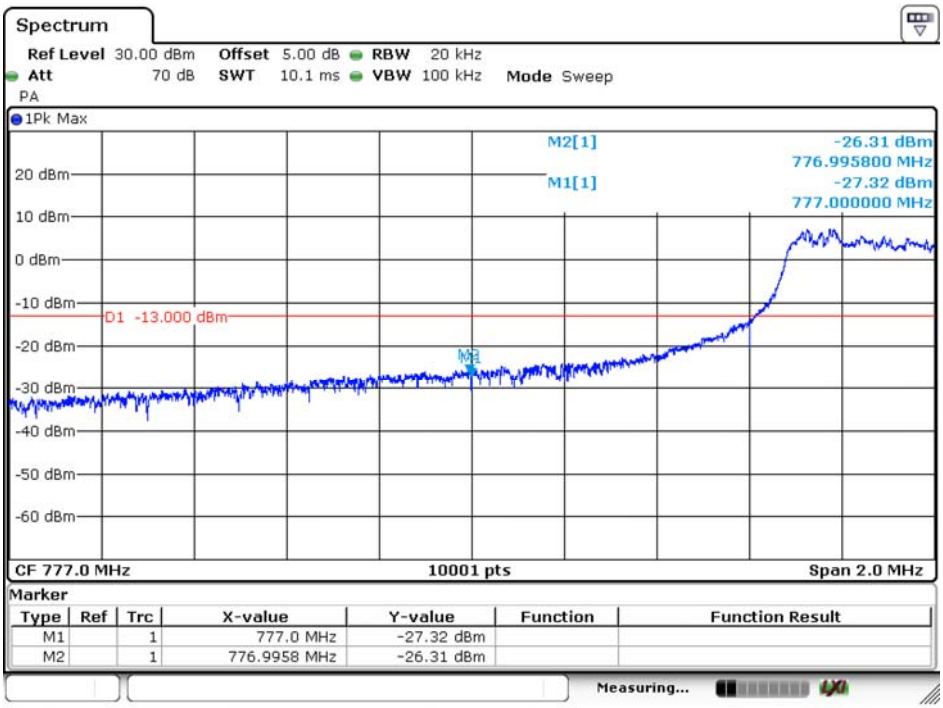
784.5MHz



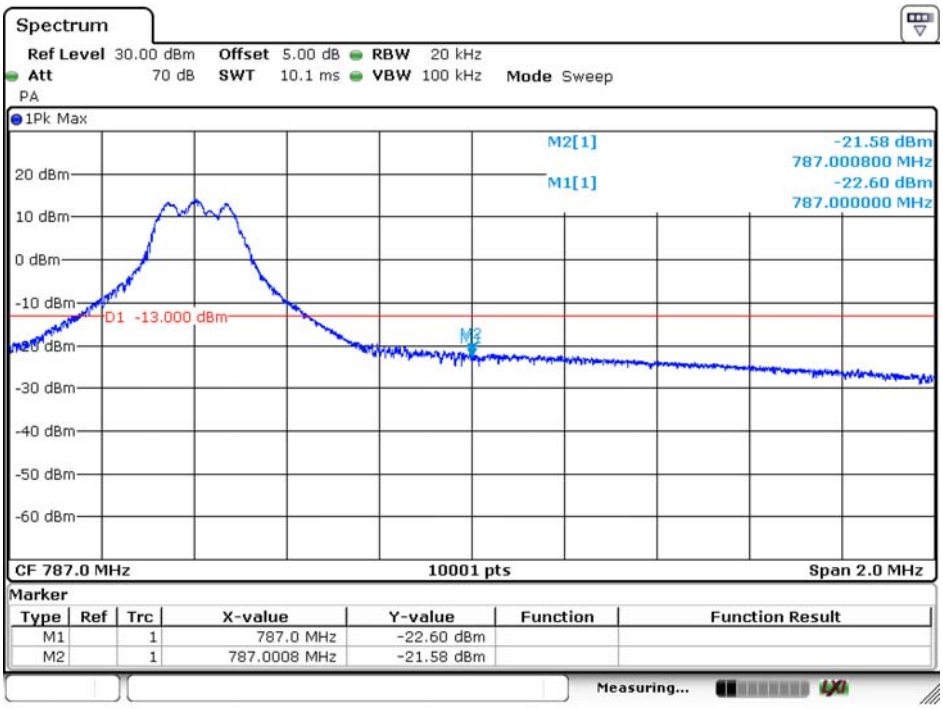
Date: 27.APR.2018 07:45:40

LTE_Band 13_10M_QPSK_Link

782.0MHzMHz



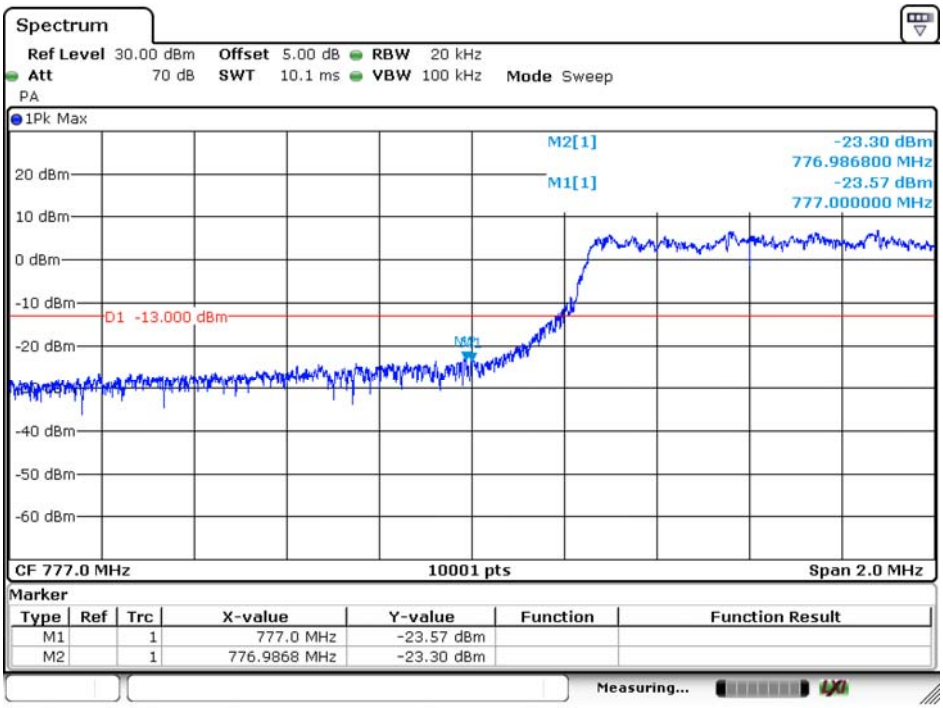
Date: 27.APR.2018 23:13:39



Date: 27.APR.2018 23:15:36

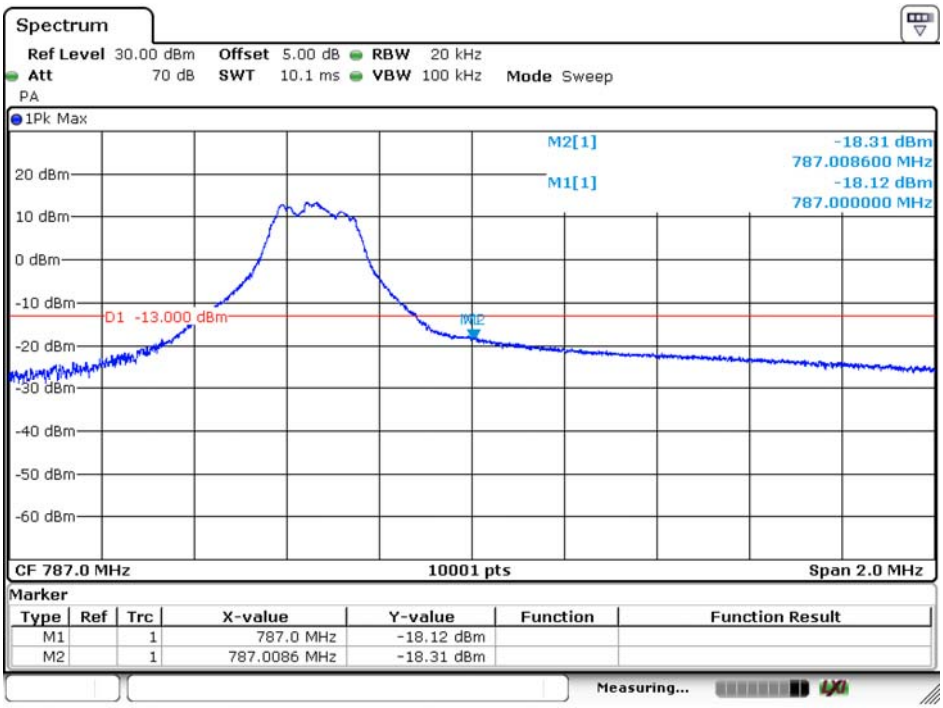
LTE_Band 13_5M_16-QAM_Link

779.5MHz



Date: 4.MAY.2018 22:58:51

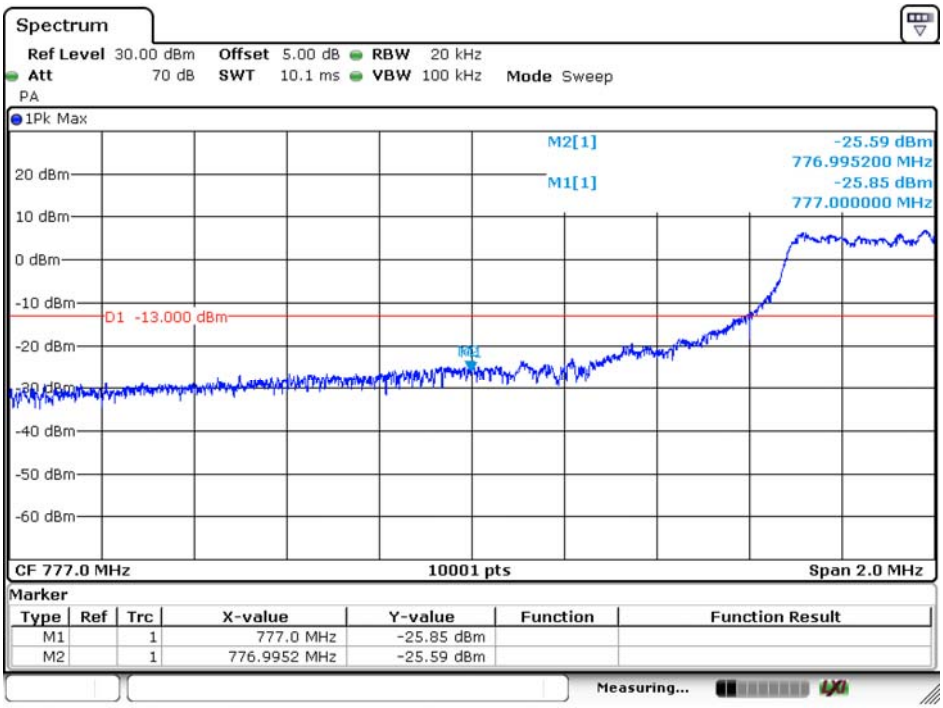
784.5MHz



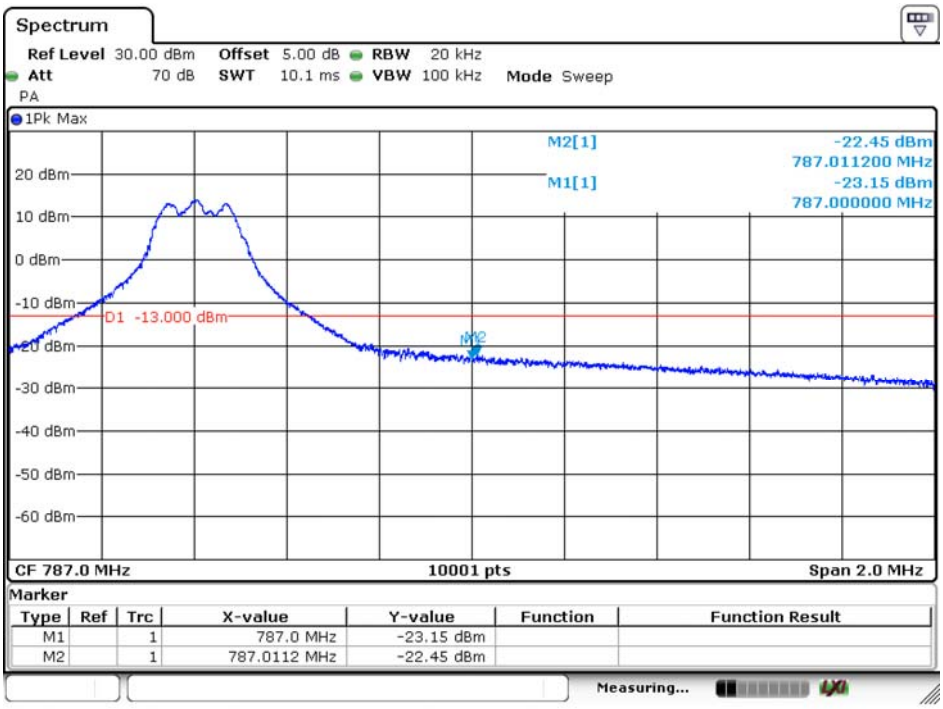
Date: 4.MAY.2018 23:18:34

LTE_Band 13_10M_16-QAM_Link

782.0MHzMHz



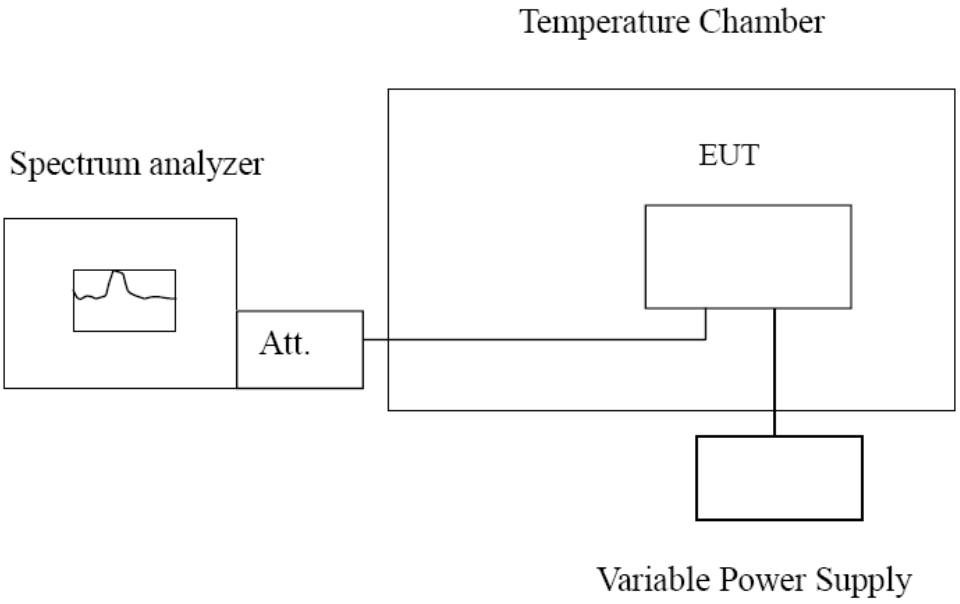
Date: 4.MAY.2018 23:08:52



Date: 4.MAY.2018 23:11:45

8. Frequency Stability

8.1. Test Setup



8.2. Test Procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9
ANSI C63.26-2015 Sub-clause 5.6

8.4. Test Result

Test Mode	Mode 1: LTE_Cat-M1_Band 13_Link		
Date of Test	2018/05/04	Test Site	SR10-H

LTE_Band 13_5M_QPSK_Link

779.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	437	-0.5606
3.8	-126	0.1616
3.4	442	-0.5670

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-353	0.4529
-20	-502	0.6440
-10	198	-0.2540
0	676	-0.8672
+10	588	-0.7543
+20	-812	1.0417
+30	-858	1.1007
+40	116	-0.1488
+50	719	-0.9224

782.0MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-323	0.4130
3.8	-807	1.0320
3.4	605	-0.7737

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-985	1.2596
-20	650	-0.8312
-10	703	-0.8990
0	360	-0.4604
+10	424	-0.5422
+20	656	-0.8389
+30	759	-0.9706
+40	728	-0.9309
+50	-154	0.1969

784.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	117	-0.1491
3.8	-94	0.1198
3.4	471	-0.6004

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	103	-0.1313
-20	-878	1.1192
-10	-902	1.1498
0	131	-0.1670
+10	-214	0.2728
+20	573	-0.7304
+30	389	-0.4959
+40	-761	0.9700
+50	482	-0.6144

LTE_Band 13_5M_QPSK_Link

782.0MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-71	0.0914
3.8	1056	-1.3504
3.4	-928	1.1867

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
4.2	-71	0.0914
3.8	1056	-1.3504
3.4	-928	1.1867
4.2	-71	0.0914
3.8	1056	-1.3504
3.4	-928	1.1867
4.2	-71	0.0914
3.8	1056	-1.3504
3.4	-928	1.1867

LTE_Band 13_5M_16-QAM_Link

779.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-172	0.2207
3.8	-191	0.2450
3.4	307	-0.3938

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-269	0.3451
-20	-490	0.6286
-10	193	-0.2476
0	-347	0.4452
+10	-174	0.2232
+20	230	-0.2951
+30	167	-0.2142
+40	-170	0.2181
+50	259	-0.3323

782.0MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-283	0.3619
3.8	-312	0.3990
3.4	-252	0.3223

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-199	0.2545
-20	-163	0.2084
-10	107	-0.1368
0	315	-0.4028
+10	153	-0.1957
+20	178	-0.2276
+30	232	-0.2967
+40	324	-0.4143
+50	-145	0.1854

784.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-109	0.1389
3.8	-277	0.3531
3.4	241	-0.3072

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	461	-0.5876
-20	253	-0.3225
-10	353	-0.4500
0	-112	0.1428
+10	-229	0.2919
+20	362	-0.4614
+30	194	-0.2473
+40	-166	0.2116
+50	-102	0.1300

LTE_Band 13_5M_16-QAM_Link

782.0MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.2	-385	0.4923
3.8	-315	0.4028
3.4	244	-0.3120

Temperature

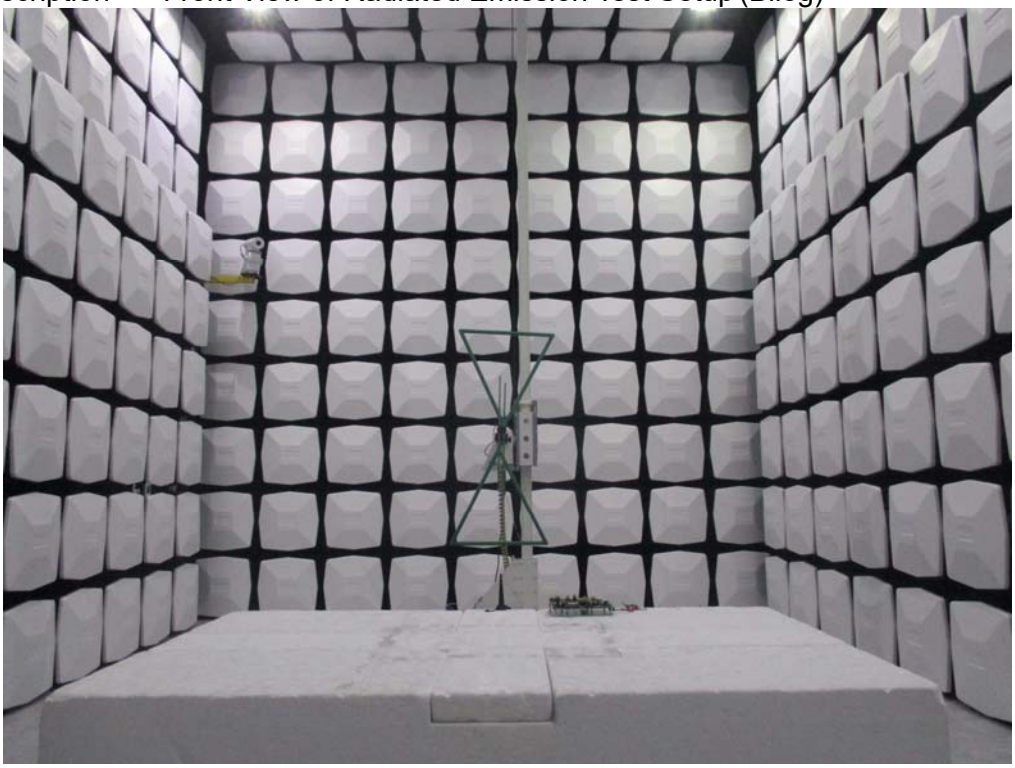
TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	140	-0.1790
-20	158	-0.2020
-10	-182	0.2327
0	140	-0.1790
+10	-143	0.1829
+20	-365	0.4668
+30	-320	0.4092
+40	102	-0.1304
+50	151	-0.1931

Attachment 1

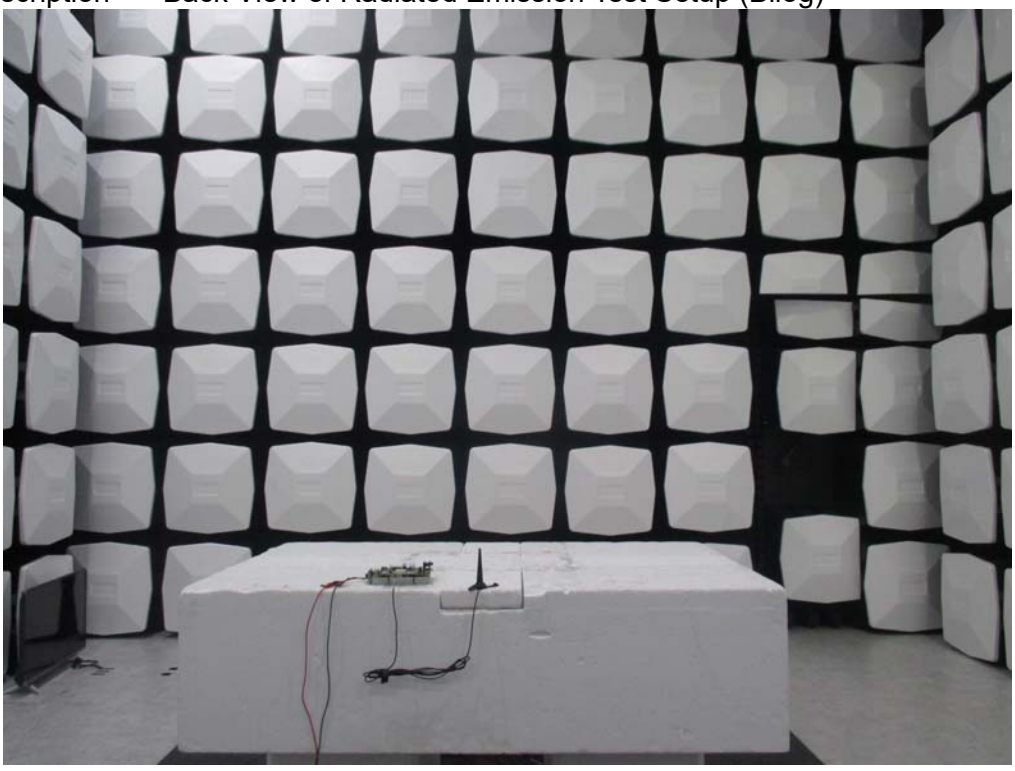
- **Test Setup Photograph**

<Radiated Emission>

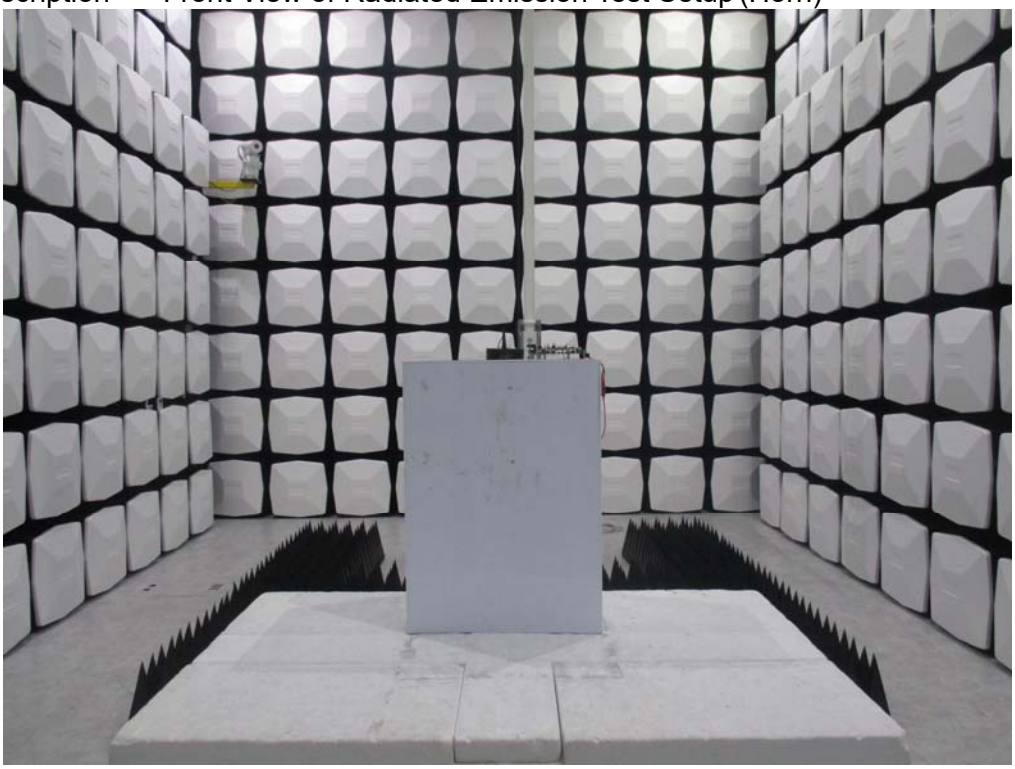
Description： Front View of Radiated Emission Test Setup (Bilog)



Description： Back View of Radiated Emission Test Setup (Bilog)



Description： Front View of Radiated Emission Test Setup (Horn)



Description： Back View of Radiated Emission Test Setup (Horn)