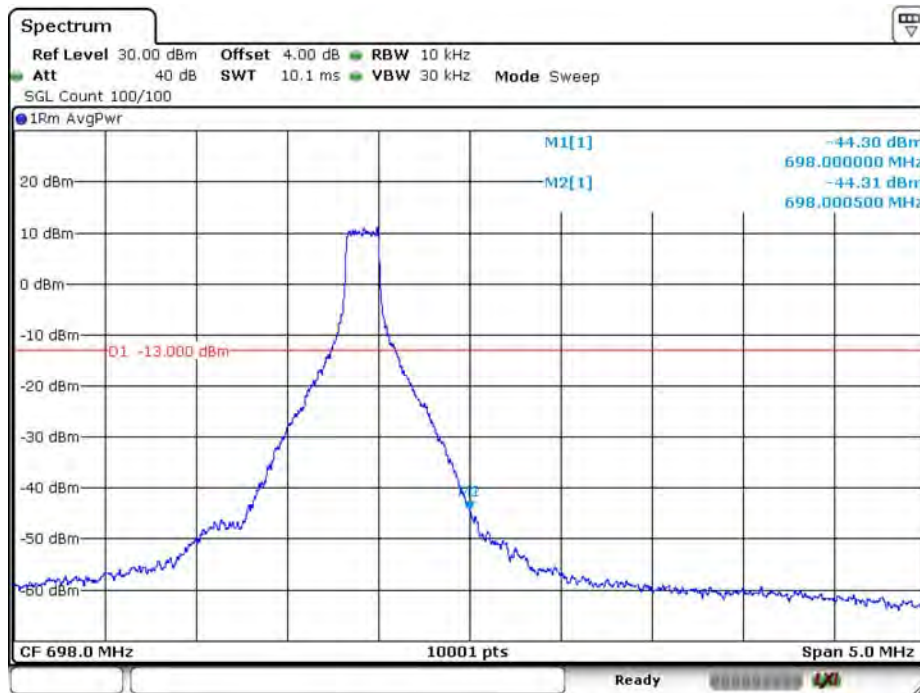
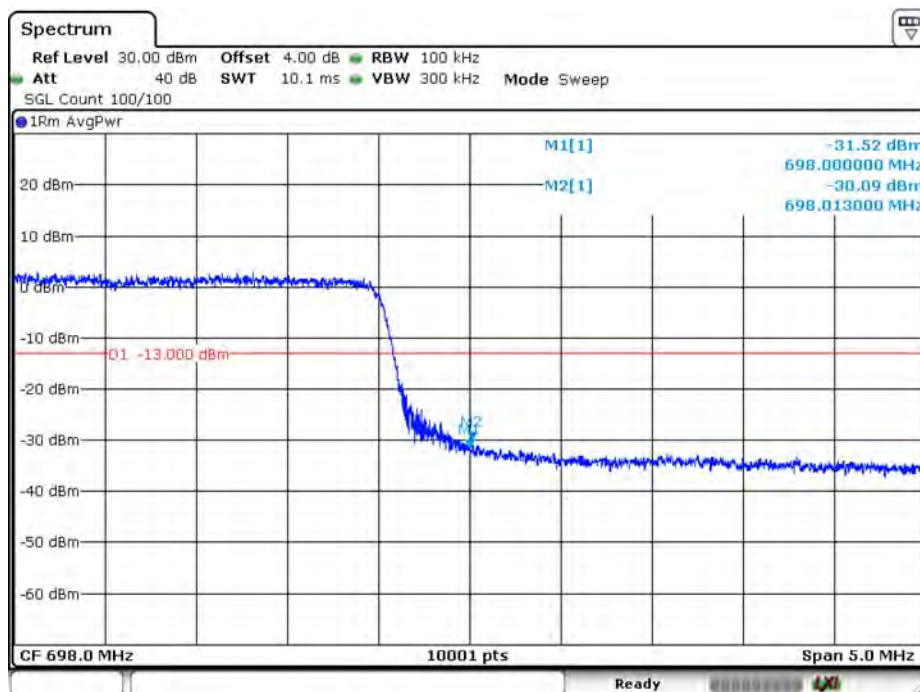


LTE_B71_CH133421_10M_16-QAM_1RB49



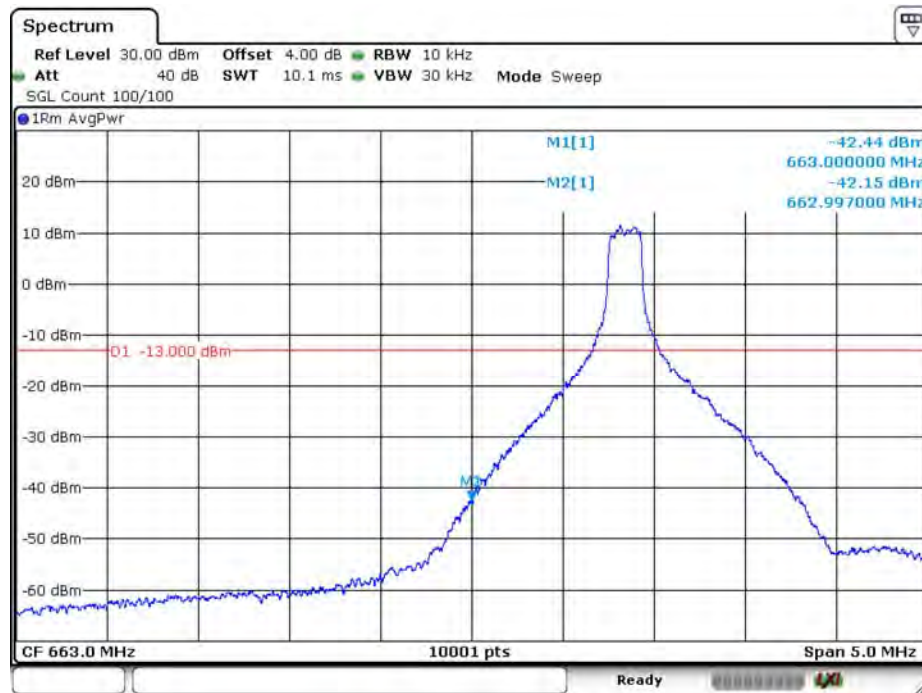
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LTE_B71_CH133421_10M_16-QAM_50RB0



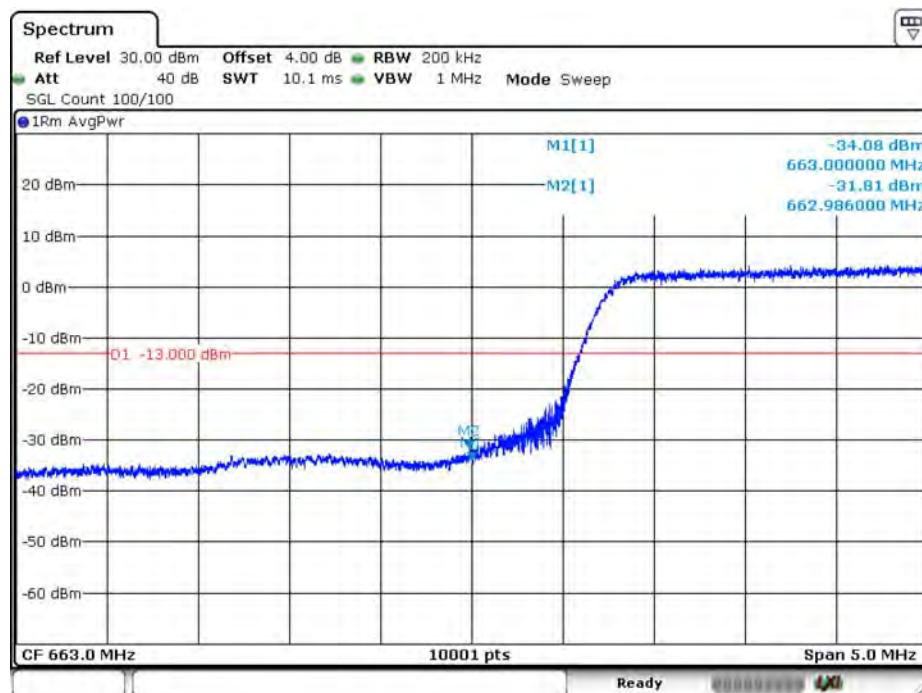
Date: 14.DEC.2019 14:57:15

LTE_B71_CH133197_15M_QPSK_1RB0



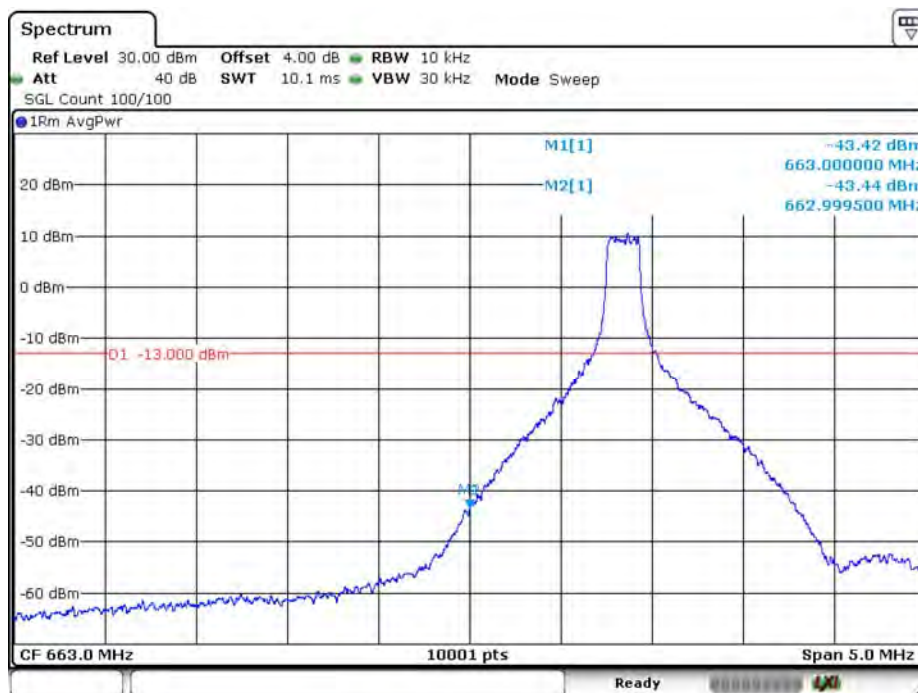
Date: 14, DEC, 2019 14:52:33

LTE_B71_CH133197_15M_QPSK_75RB0



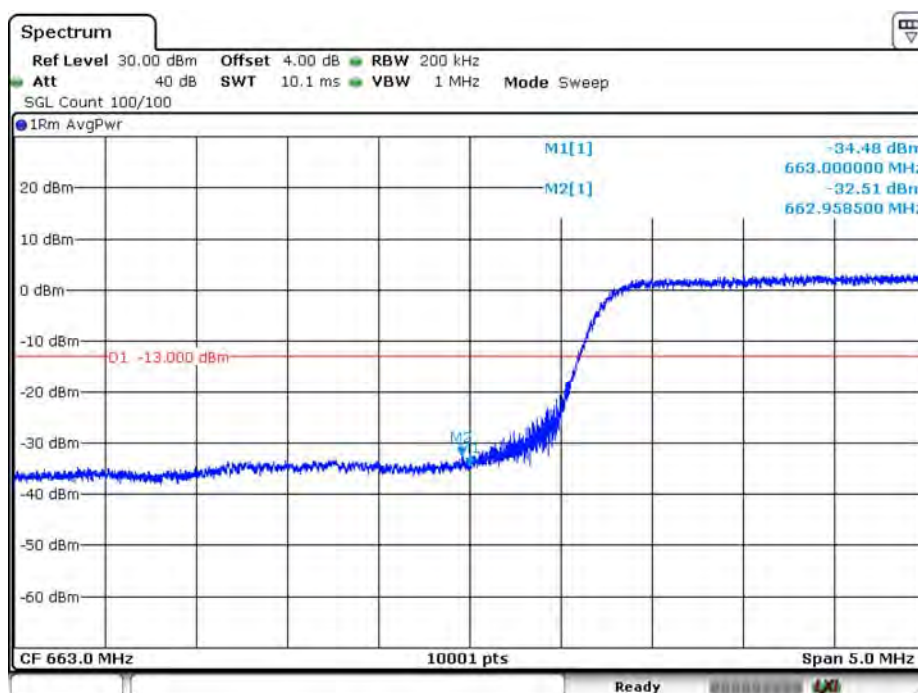
Date: 14, DEC, 2019 14:51:36

LTE_B71_CH133197_15M_16-QAM_1RB0



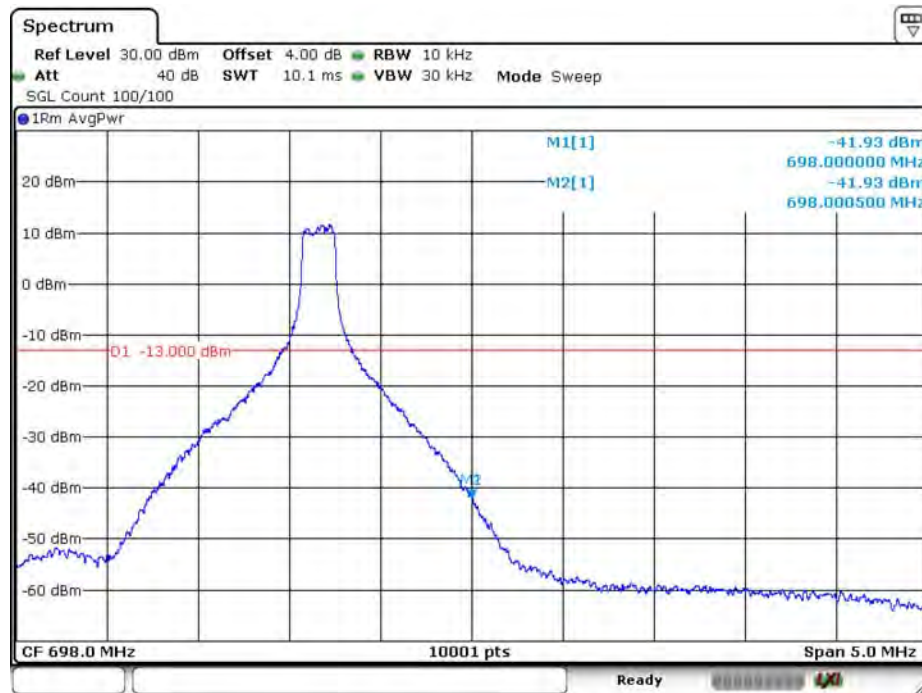
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LTE_B71_CH133197_15M_16-QAM_75RB0



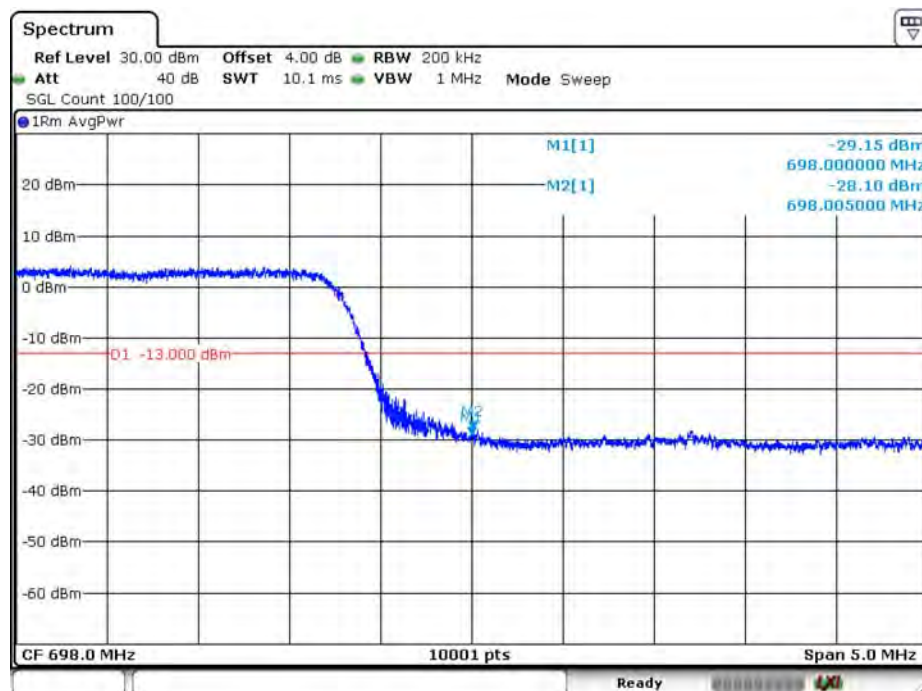
Date: 14.DEC.2019 14:51:52

LTE_B71_CH133397_15M_QPSK_1RB74



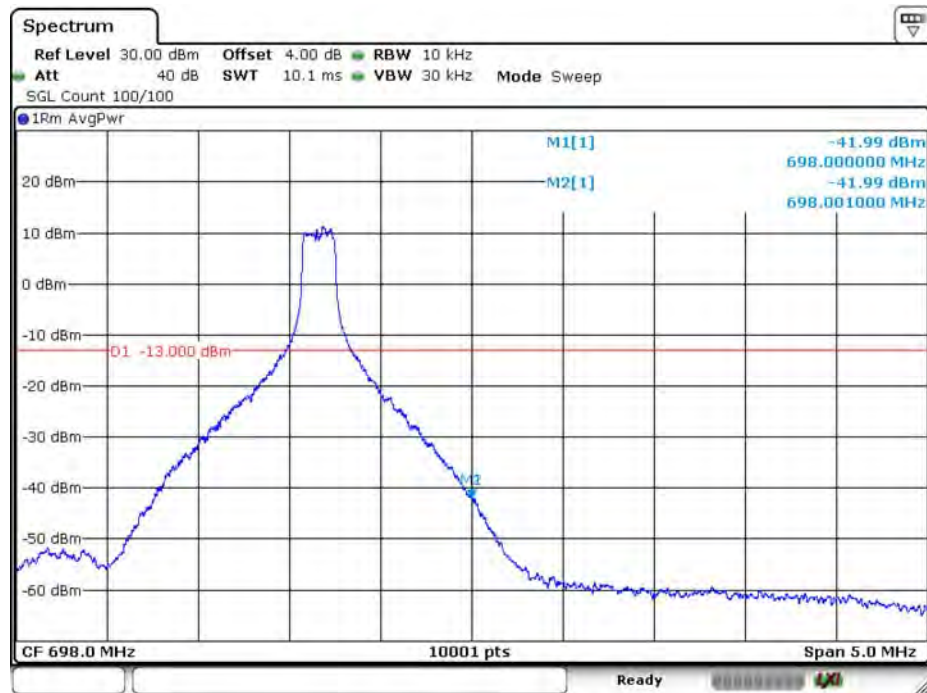
Date: 14, DEC, 2019 14:47:28

LTE_B71_CH133397_15M_QPSK_75RB0



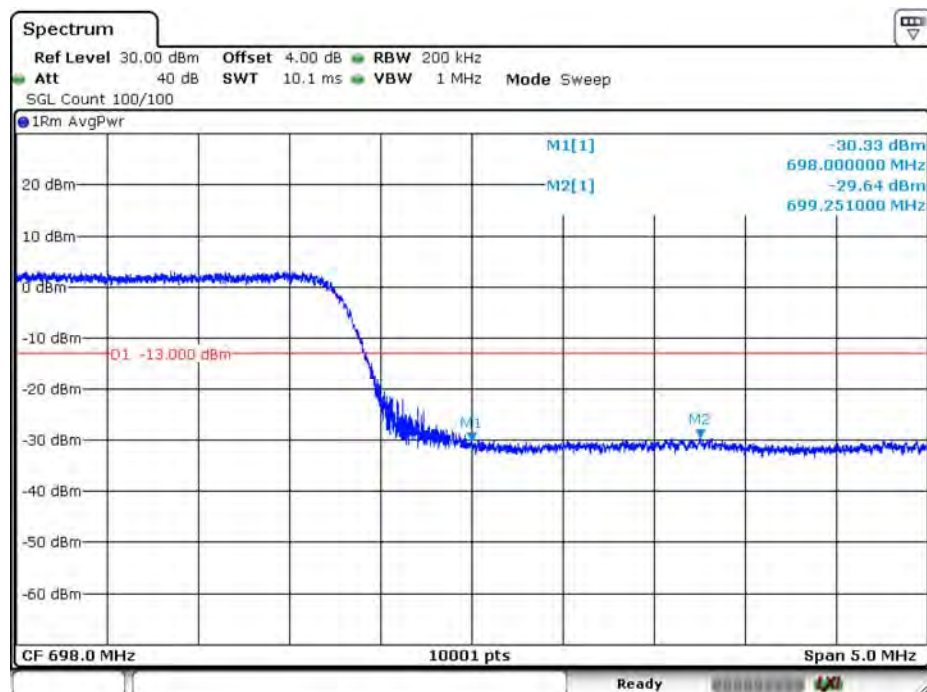
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LTE_B71_CH133397_15M_16-QAM_1RB74



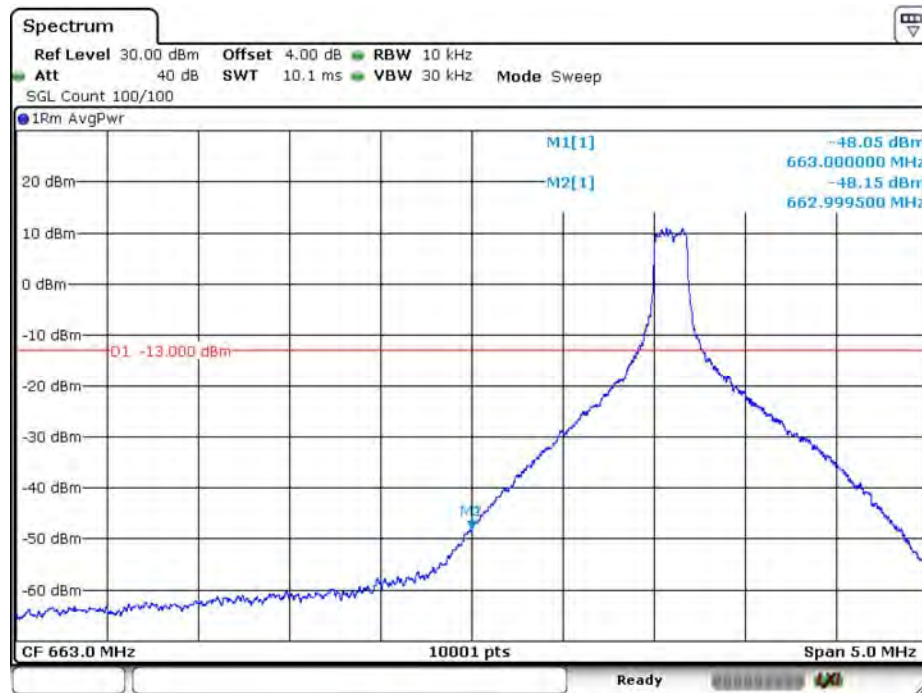
Date: 14.DEC.2019 14:48:07

LTE_B71_CH133397_15M_16-QAM_75RB0



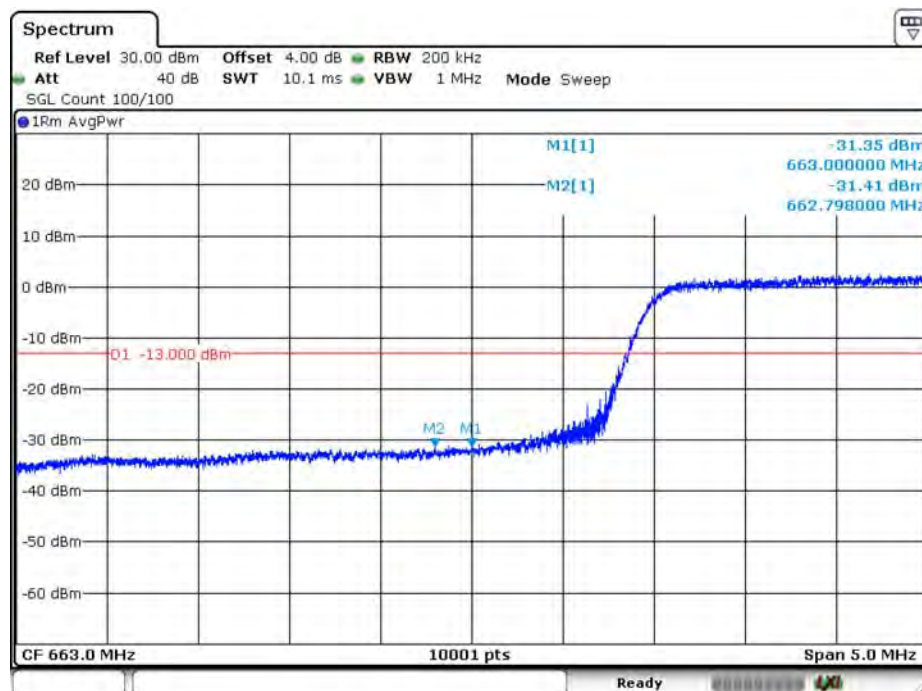
Date: 14.DEC.2019 14:49:23

LTE_B71_CH133222_20M_QPSK_1RB0



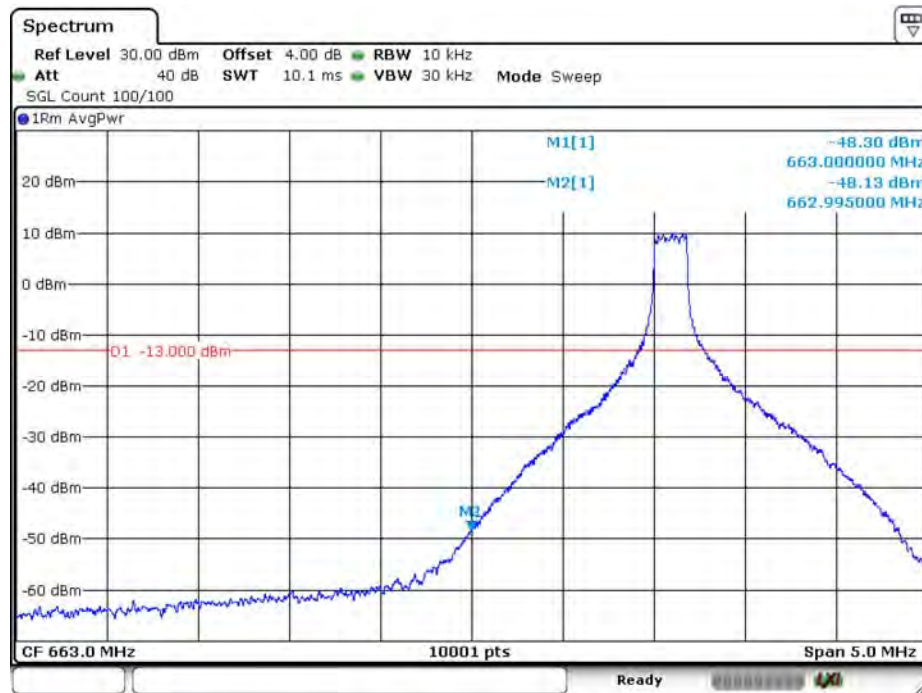
Date: 14.DEC.2019 14:27:34

LTE_B71_CH133222_20M_QPSK_100RB0



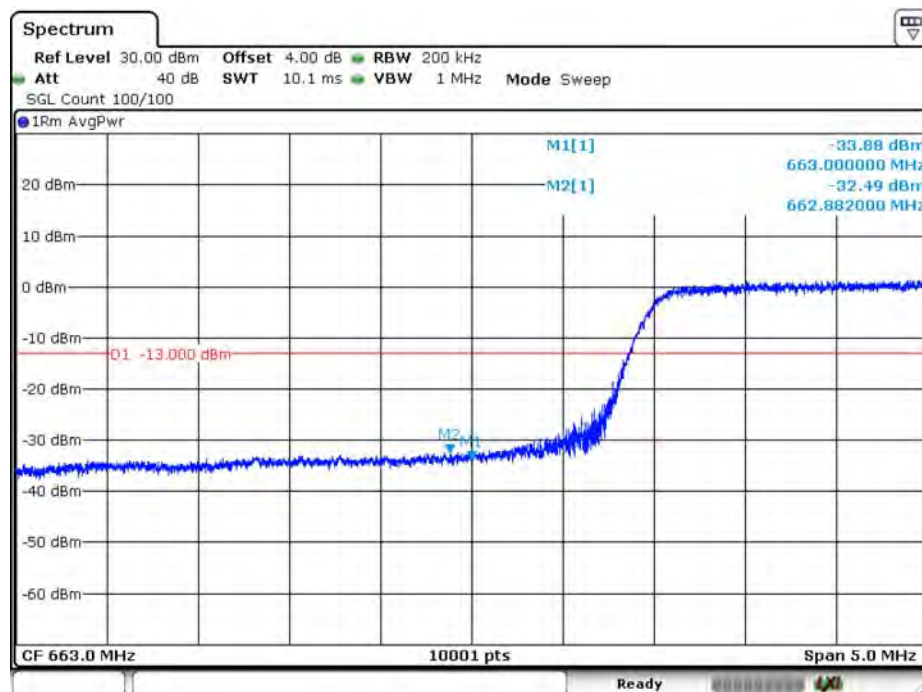
Date: 14.DEC.2019 14:41:14

LTE_B71_CH133222_20M_16-QAM_1RB0



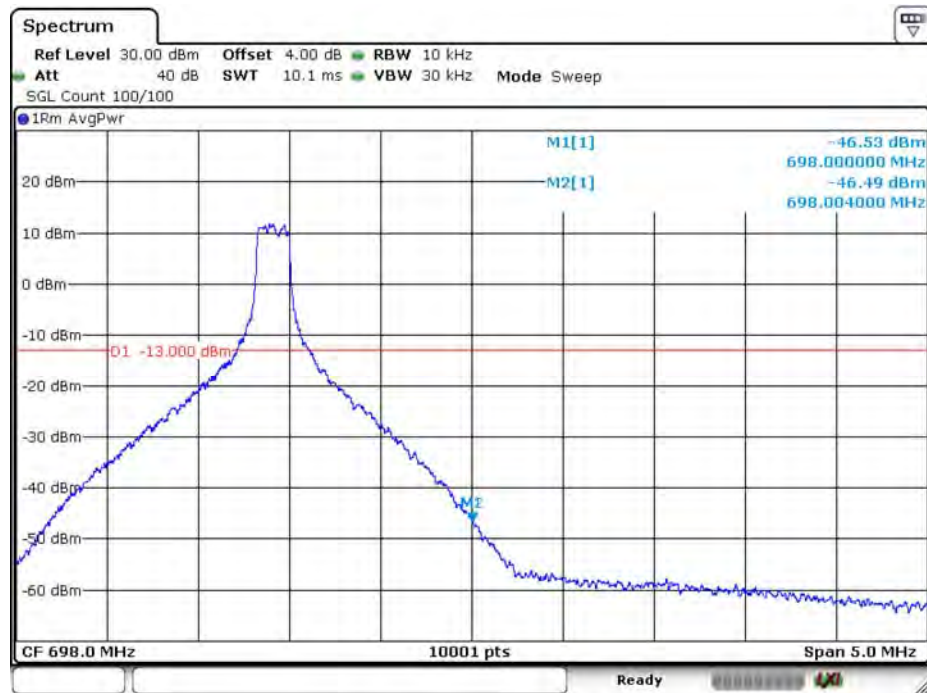
Date: 14, DEC, 2019 14:33:22

LTE_B71_CH133222_20M_16-QAM_100RB0



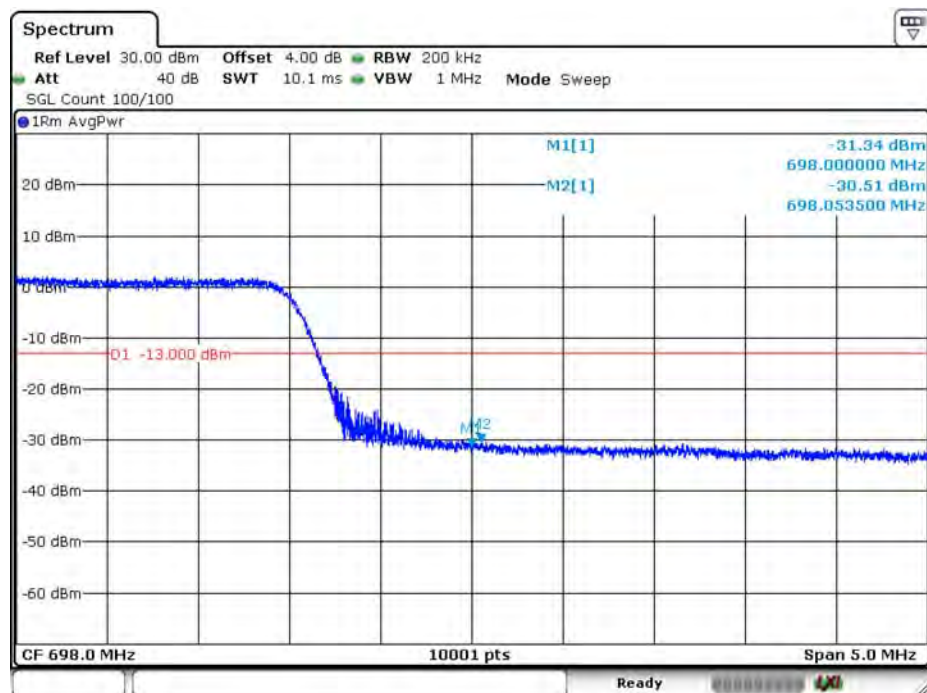
Date: 14, DEC, 2019 14:40:54

LTE_B71_CH133371_20M_QPSK_1RB99



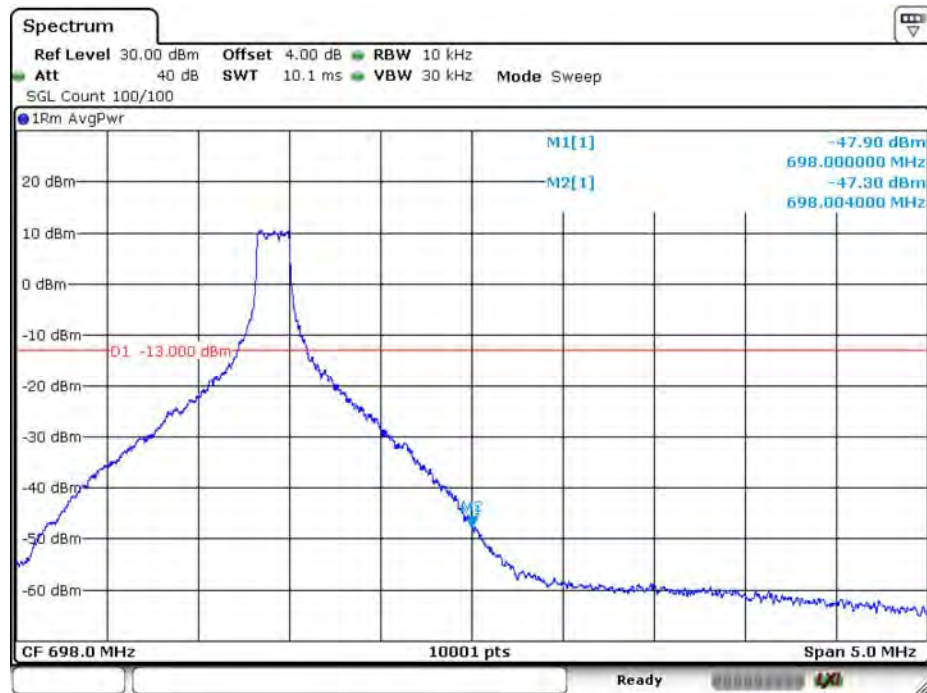
Date: 14, DEC, 2019 14:43:36

LTE_B71_CH133371_20M_QPSK_100RB0



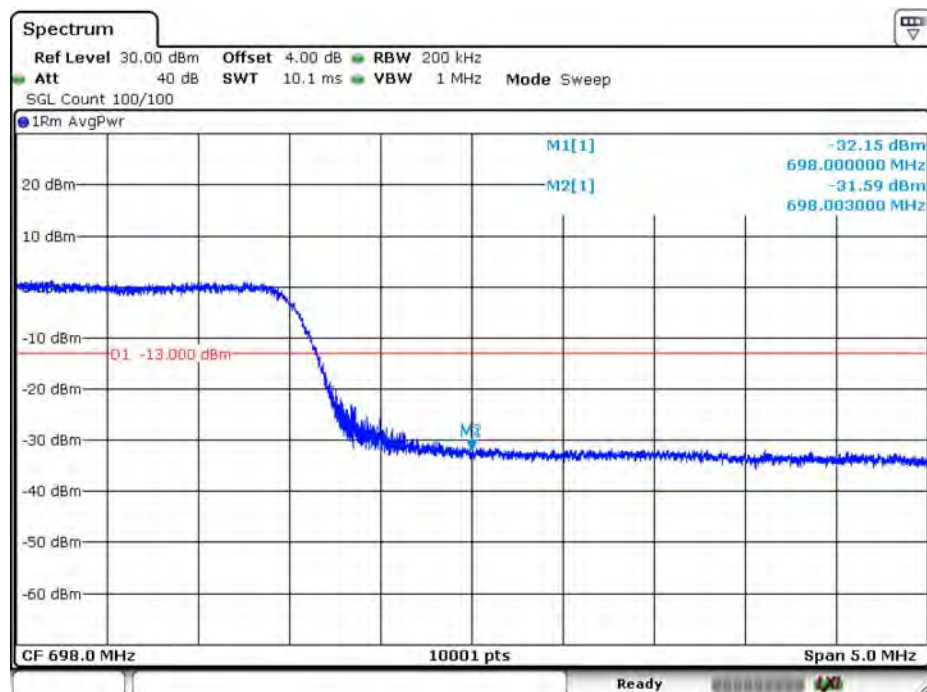
Date: 14, DEC, 2019 14:42:13

LTE_B71_CH133371_20M_16-QAM_1RB99



Date: 14.DEC.2019 14:42:59

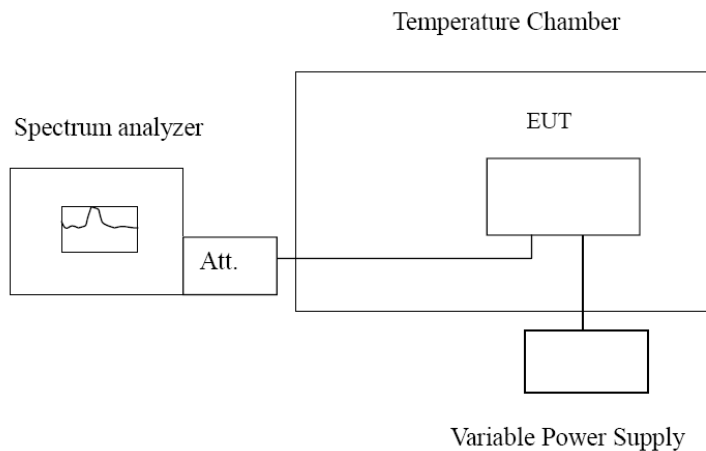
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Date: 14.DEC.2019 14:42:30

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°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. 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 ($\pm 15\%$) 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

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band 2		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 2 1860MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.30	-0.0012
3.70	2.04	-0.0012
3.15	2.18	-0.0010

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.82	-0.0003
0	0.99	-0.0007
10	1.94	-0.0010
20	1.67	-0.0004
30	1.90	-0.0015
40	2.02	-0.0010
50	1.70	-0.0010
55	2.07	-0.0013

LTE-Band 2 1880MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.69	-0.0003
3.70	1.87	-0.0006
3.15	1.21	-0.0005

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	2.20	-0.0001
0	1.36	-0.0006
10	2.17	-0.0006
20	0.78	-0.0001
30	1.30	-0.0007
40	1.46	-0.0002
50	1.84	0.0000
55	1.75	-0.0008

LTE-Band 2 1900MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.71	-0.0011
3.70	1.72	-0.0012
3.15	1.62	-0.0007

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.73	-0.0012
0	1.41	-0.0014
10	1.31	-0.0004
20	2.07	-0.0004
30	0.78	-0.0008
40	1.17	-0.0011
50	0.24	-0.0008
55	0.42	-0.0006

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 2: LTE Band 4		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 4 1720MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.40	-0.0004
3.70	1.86	-0.0009
3.15	1.37	-0.0011

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.14	-0.0007
0	1.11	-0.0006
10	0.26	-0.0002
20	1.25	-0.0007
30	0.67	-0.0004
40	1.13	-0.0007
50	1.14	-0.0007
55	0.10	-0.0001

LTE-Band 4 1732.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.69	-0.0004
3.70	1.02	-0.0006
3.15	0.12	-0.0001

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.70	-0.0004
0	-0.09	0.0001
10	0.26	-0.0002
20	0.99	-0.0006
30	0.27	-0.0002
40	0.42	-0.0002
50	0.18	-0.0001
55	0.46	-0.0003

LTE-Band 4 1745MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.59	-0.0003
3.70	1.06	-0.0006
3.15	0.76	-0.0004

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.94	-0.0005
0	-0.27	0.0002
10	1.20	-0.0007
20	0.16	-0.0001
30	0.27	-0.0002
40	0.28	-0.0002
50	1.09	-0.0006
55	-0.23	0.0001

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 3: LTE Band 5		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 5 829MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.25	-0.0015
3.70	1.68	-0.0020
3.15	1.53	-0.0018

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.16	-0.0014
0	1.02	-0.0012
10	1.34	-0.0016
20	0.74	-0.0009
30	1.96	-0.0024
40	0.08	-0.0001
50	2.02	-0.0024
55	1.90	-0.0023

LTE-Band 5 836.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.47	-0.0006
3.70	0.84	-0.0010
3.15	-0.02	0.0000

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.78	-0.0009
0	-0.03	0.0000
10	0.29	-0.0003
20	0.60	-0.0007
30	-0.08	0.0001
40	-0.24	0.0003
50	0.46	-0.0005
55	0.58	-0.0007

LTE-Band 5 844MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.28	-0.0003
3.70	0.43	-0.0005
3.15	-0.72	0.0009

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	-0.44	0.0005
0	0.21	-0.0002
10	0.62	-0.0007
20	0.44	-0.0005
30	-0.92	0.0011
40	0.46	-0.0005
50	0.51	-0.0006
55	0.11	-0.0001

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 4: LTE Band 12		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 12 704MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	-0.12	0.0002
3.70	1.42	-0.0020
3.15	1.34	-0.0019

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.70	-0.0010
0	1.26	-0.0018
10	1.02	-0.0014
20	0.77	-0.0011
30	1.48	-0.0021
40	1.28	-0.0018
50	0.33	-0.0005
55	0.75	-0.0011

LTE-Band 12 707.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.96	-0.0014
3.70	1.05	-0.0015
3.15	0.29	-0.0004

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.39	-0.0006
0	0.79	-0.0011
10	0.99	-0.0014
20	1.30	-0.0018
30	0.53	-0.0007
40	0.40	-0.0006
50	1.01	-0.0014
55	1.07	-0.0015

LTE-Band 12 711MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.88	-0.0012
3.70	1.74	-0.0024
3.15	1.05	-0.0015

Temperature

Max

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.94	-0.0013
0	2.00	-0.0028
10	1.38	-0.0019
20	0.80	-0.0011
30	1.63	-0.0023
40	1.46	-0.0021
50	0.70	-0.0010
55	1.74	-0.0025

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 5: LTE Band 13		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 13 782MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.68	-0.0021
3.70	1.59	-0.0020
3.15	1.51	-0.0019

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.57	-0.0020
0	0.89	-0.0011
10	0.58	-0.0007
20	1.60	-0.0020
30	1.39	-0.0018
40	1.42	-0.0018
50	1.36	-0.0017
55	1.05	-0.0013

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 6: LTE Band 25		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 25 1860MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.14	-0.0006
3.70	1.35	-0.0007
3.15	0.47	-0.0003

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.28	-0.0007
0	1.46	-0.0008
10	1.06	-0.0006
20	0.30	-0.0002
30	0.53	-0.0003
40	0.77	-0.0004
50	1.64	-0.0009
55	0.56	-0.0003

LTE-Band 25 1882.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.67	-0.0004
3.70	1.46	-0.0008
3.15	0.31	-0.0002

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.97	-0.0010
0	0.89	-0.0005
10	1.66	-0.0009
20	0.27	-0.0001
30	-0.09	0.0000
40	1.69	-0.0009
50	-0.11	0.0001
55	1.23	-0.0007

LTE-Band 25 1905MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.86	-0.0005
3.70	1.57	-0.0008
3.15	1.15	-0.0006

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.96	-0.0005
0	1.24	-0.0007
10	1.29	-0.0007
20	1.39	-0.0007
30	-0.11	0.0001
40	1.61	-0.0008
50	1.45	-0.0008
55	1.27	-0.0007

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations (Part 22)		
Test Mode	Mode 7: LTE Band 26		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 26 (Part 22) 831.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.33	-0.0016
3.70	1.55	-0.0019
3.15	0.95	-0.0011

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.23	-0.0015
0	1.45	-0.0017
10	1.13	-0.0014
20	1.31	-0.0016
30	0.82	-0.0010
40	1.47	-0.0018
50	1.76	-0.0021
55	1.17	-0.0014

LTE-Band 26 (Part 22) 836.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	-1.10	0.0013
3.70	0.56	-0.0007
3.15	-0.17	0.0002

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.24	-0.0003
0	-0.11	0.0001
10	-0.71	0.0008
20	0.48	-0.0006
30	-0.19	0.0002
40	0.58	-0.0007
50	-0.27	0.0003
55	-1.02	0.0012

LTE-Band 26 (Part 22) 841.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.45	-0.0005
3.70	1.01	-0.0012
3.15	-0.06	0.0001

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.80	-0.0010
0	-0.74	0.0009
10	1.29	-0.0015
20	-0.15	0.0002
30	0.86	-0.0010
40	1.52	-0.0018
50	0.66	-0.0008
55	0.74	-0.0009

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations (Part 90)		
Test Mode	Mode 7: LTE Band 26		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 26 (Part 90) 819MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.43	-0.0017
3.70	1.88	-0.0023
3.15	1.36	-0.0017

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.21	-0.0015
0	1.93	-0.0024
10	0.35	-0.0004
20	2.08	-0.0025
30	1.01	-0.0012
40	1.47	-0.0018
50	1.66	-0.0020
55	1.78	-0.0022

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 8: LTE Band 66		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 66 1720MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.98	-0.0007
3.70	1.94	-0.0009
3.15	0.22	-0.0005

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.64	-0.0002
0	1.02	-0.0010
10	2.09	-0.0004
20	0.87	-0.0003
30	1.13	-0.0008
40	1.78	-0.0008
50	1.54	-0.0012
55	1.78	-0.0011

LTE-Band 66 1745MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.70	-0.0004
3.70	1.16	-0.0007
3.15	0.55	-0.0003

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.89	-0.0005
0	-0.48	0.0003
10	0.89	-0.0005
20	0.12	-0.0001
30	1.68	-0.0010
40	0.46	-0.0003
50	0.34	-0.0002
55	1.10	-0.0006

LTE-Band 66 1770MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.28	-0.0007
3.70	1.04	-0.0006
3.15	0.53	-0.0003

Temperature

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	0.38	-0.0002
0	0.69	-0.0004
10	0.90	-0.0005
20	0.56	-0.0003
30	0.10	-0.0001
40	0.84	-0.0005
50	-0.44	0.0002
55	0.28	-0.0002

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 9: LTE Band 71		
Date of Test	2019/12/24	Test Site	SR12-H
Temperature (°C)	22.0°C	Humidity (%RH)	60%RH

LTE-Band 71 665.5MHz

Voltage

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.26	-0.0019
3.70	2.04	-0.0031
3.15	1.58	-0.0024

Temperature

Max

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.65	-0.0025
0	0.79	-0.0012
10	1.30	-0.0020
20	1.82	-0.0027
30	1.90	-0.0029
40	0.92	-0.0014
50	1.44	-0.0022
55	1.68	-0.0025

LTE-Band 71 680.5MHz

Voltage

Max

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	1.56	-0.0023
3.70	1.94	-0.0029
3.15	1.48	-0.0022

Temperature

Max

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	1.54	-0.0023
0	1.35	-0.0020
10	1.08	-0.0016
20	1.75	-0.0026
30	0.69	-0.0010
40	1.80	-0.0026
50	1.50	-0.0022
55	1.25	-0.0019

LTE-Band 71 695.5MHz

Voltage

Max

Voltage (VDC)	Frequency Error(Hz)	Frequency Error(ppm)
4.26	0.12	-0.0002
3.70	1.04	-0.0015
3.15	1.36	-0.0020

Temperature

Max

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-10	-0.50	0.0007
0	0.94	-0.0014
10	0.75	-0.0011
20	1.62	-0.0023
30	0.42	-0.0006
40	0.80	-0.0012
50	0.76	-0.0011
55	0.11	-0.0002

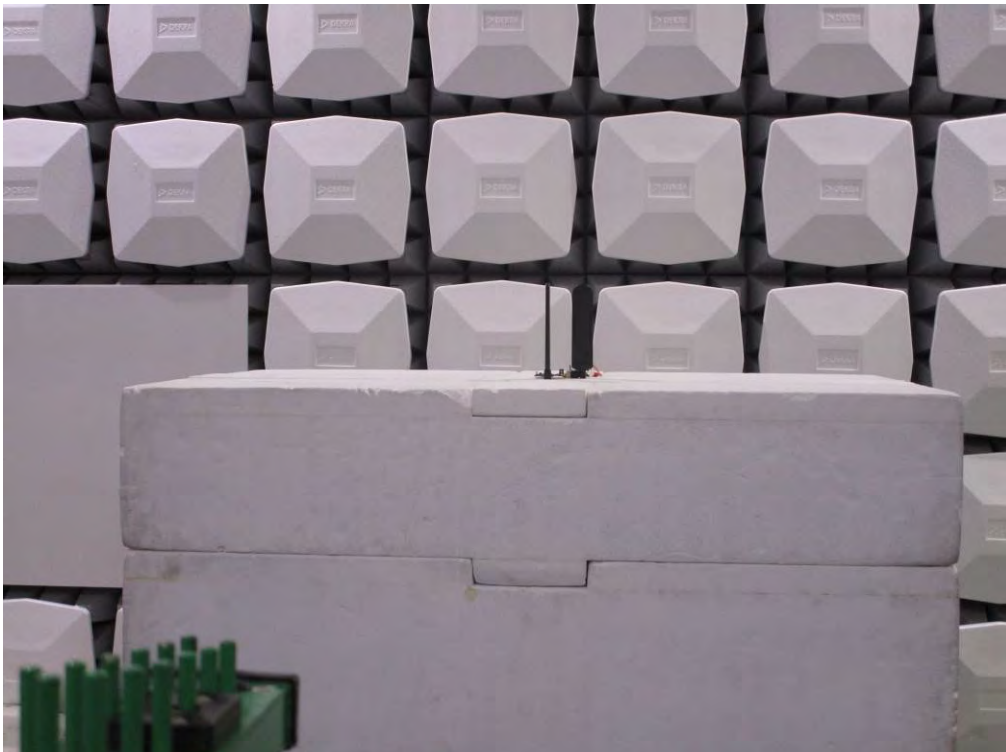
Attachment 1

➤ Test Setup Photograph <Radiated Emission>

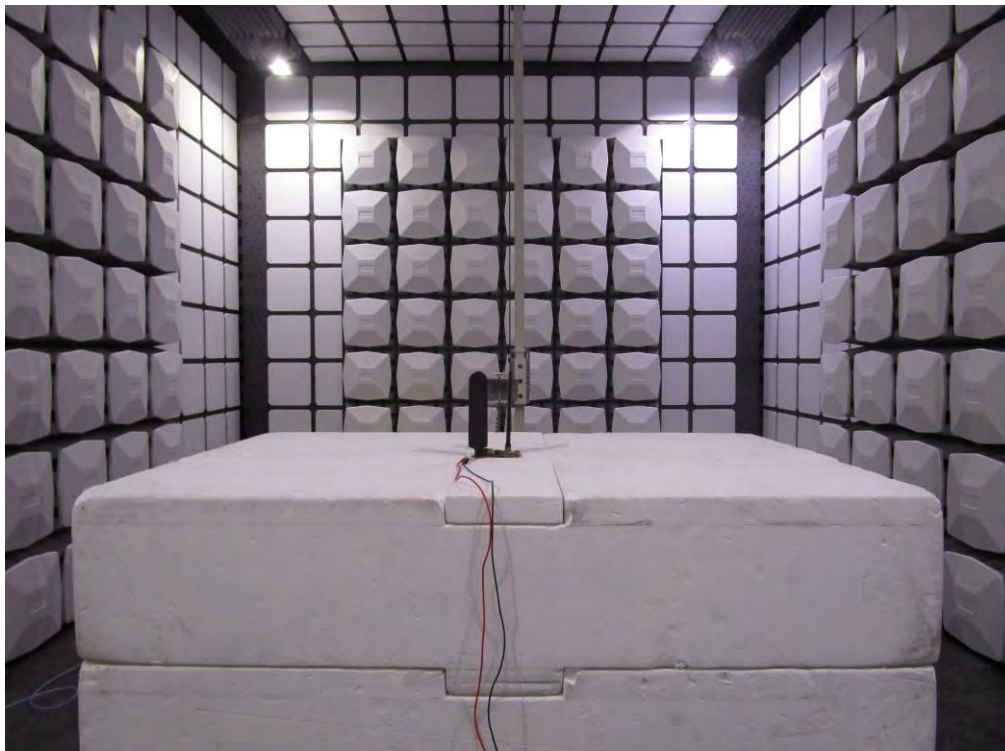
Description: Front View of Radiated Spurious Emission Test Setup



Description: Back View of Radiated Spurious Emission Test Setup



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



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



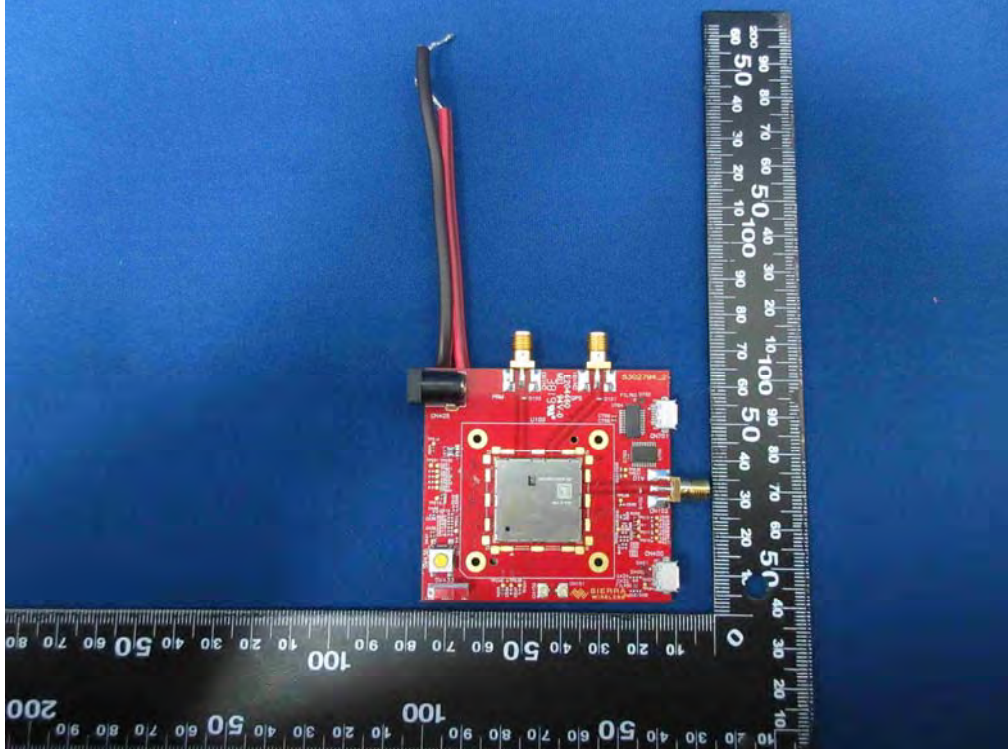
Description: Detailed View of Radiated emission Test Setup



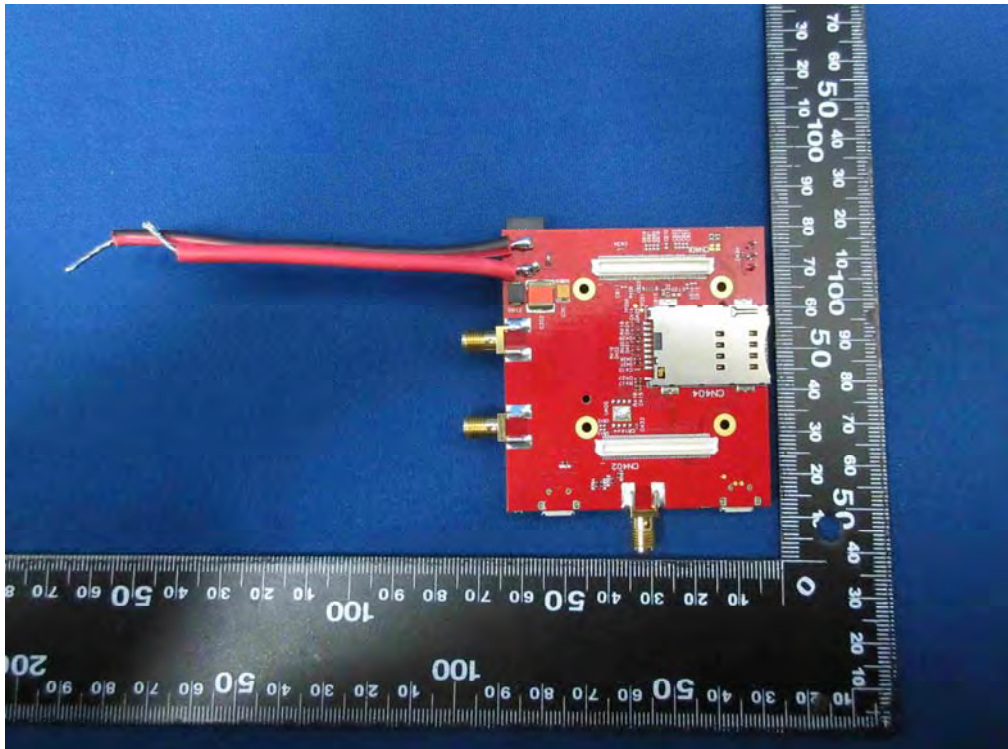
Attachment 2

➤ EUT External Photograph

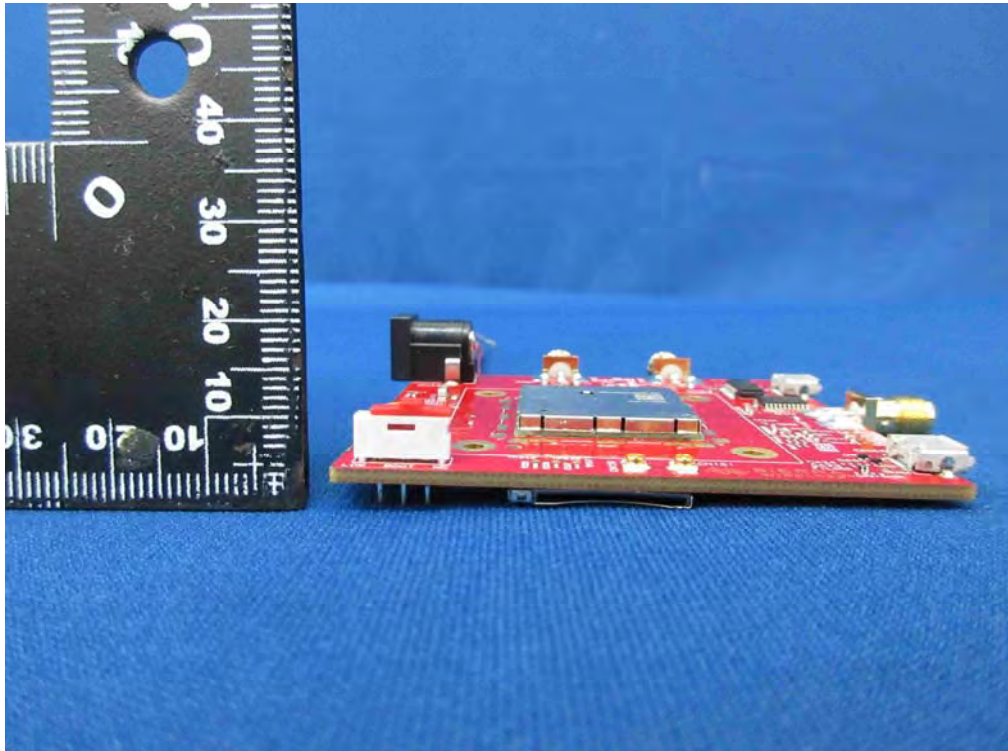
(1) EUT Photo



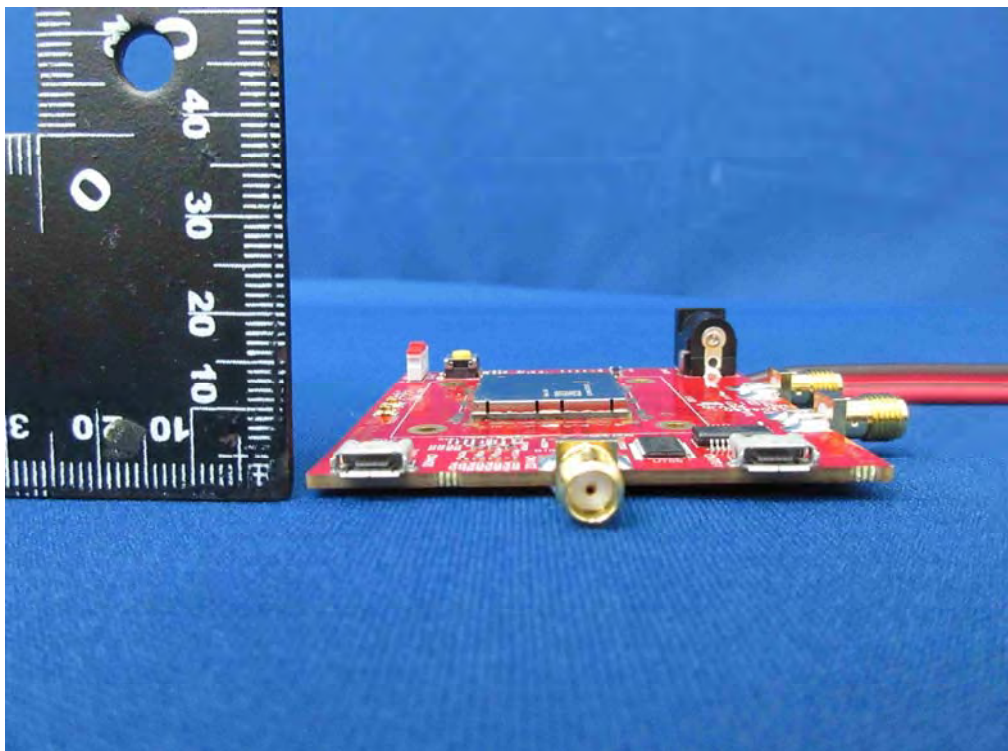
(2) EUT Photo



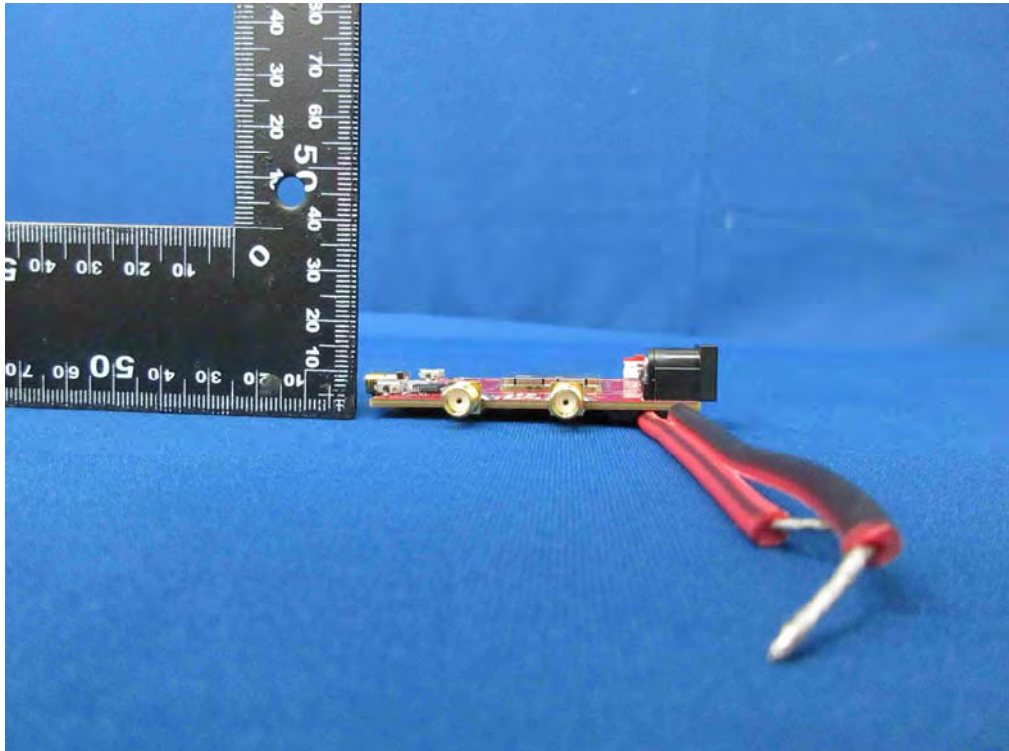
(3) EUT Photo



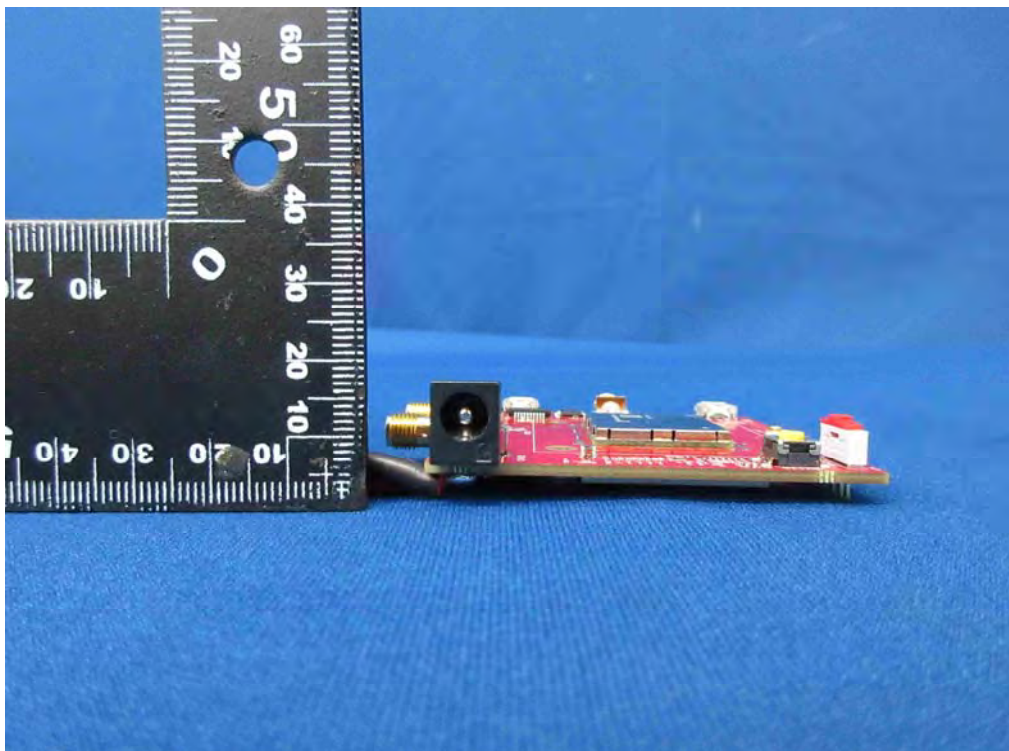
(4) EUT Photo



(5) EUT Photo



(6) EUT Photo



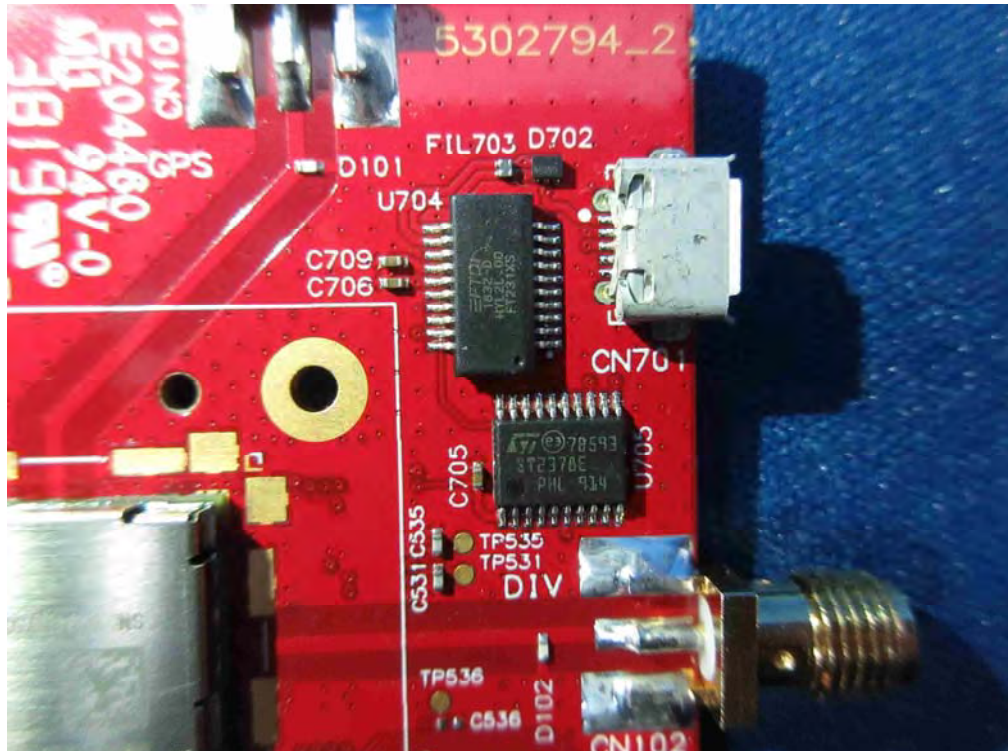
(7) EUT Photo (Antenna)



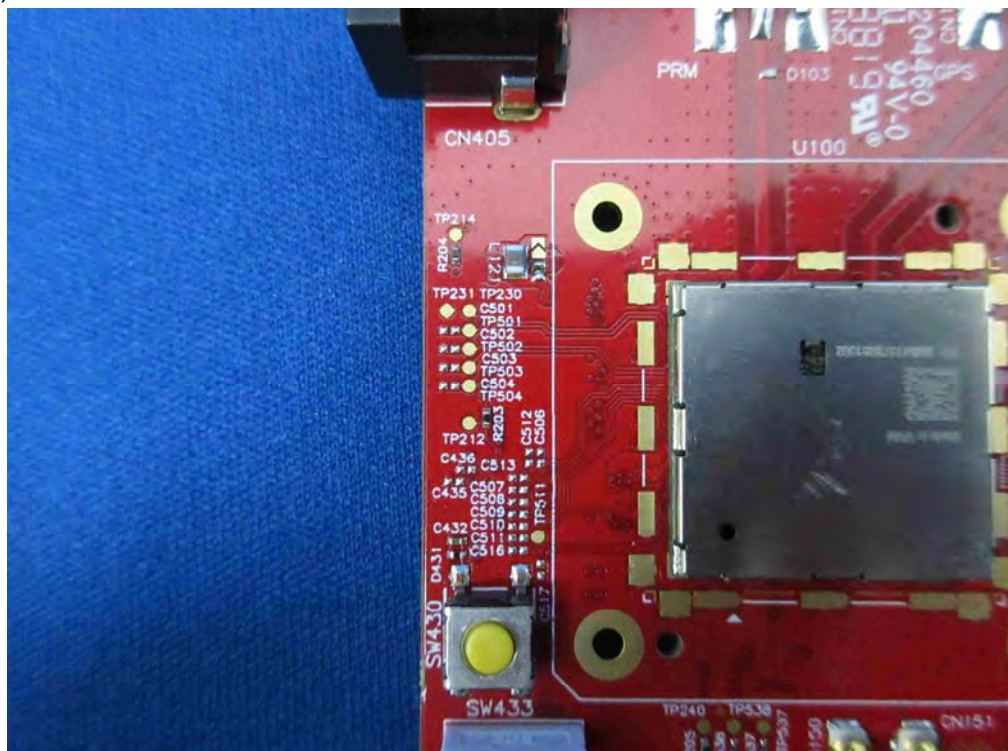
Attachment 3

➤ EUT Internal Photograph

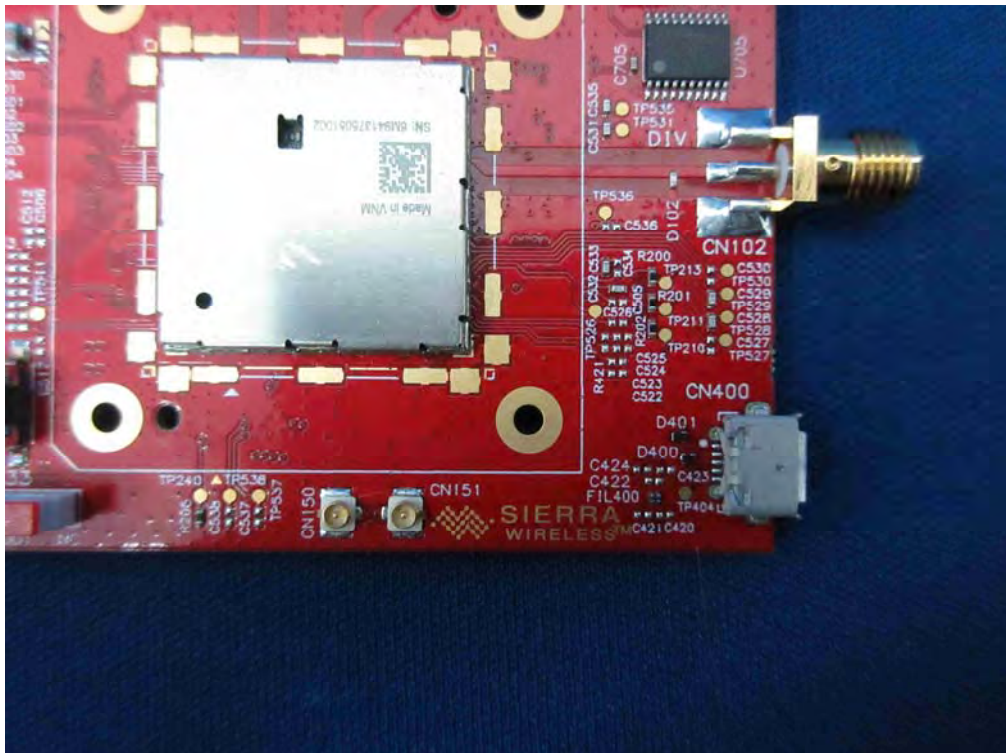
(1) EUT Photo



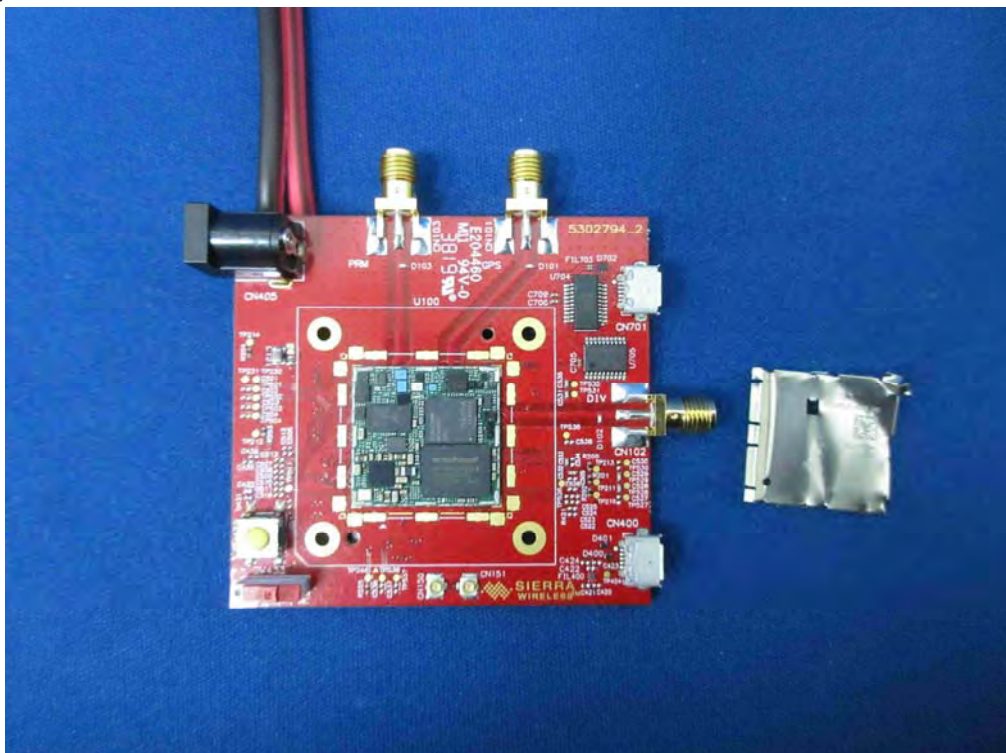
(2) EUT Photo



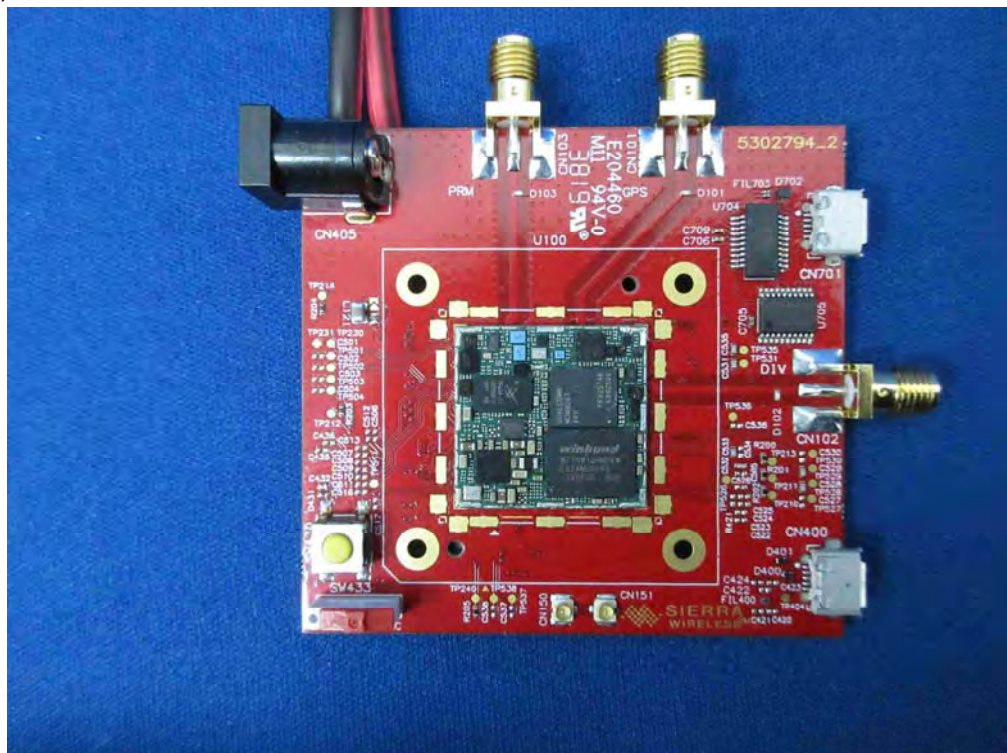
(3) EUT Photo



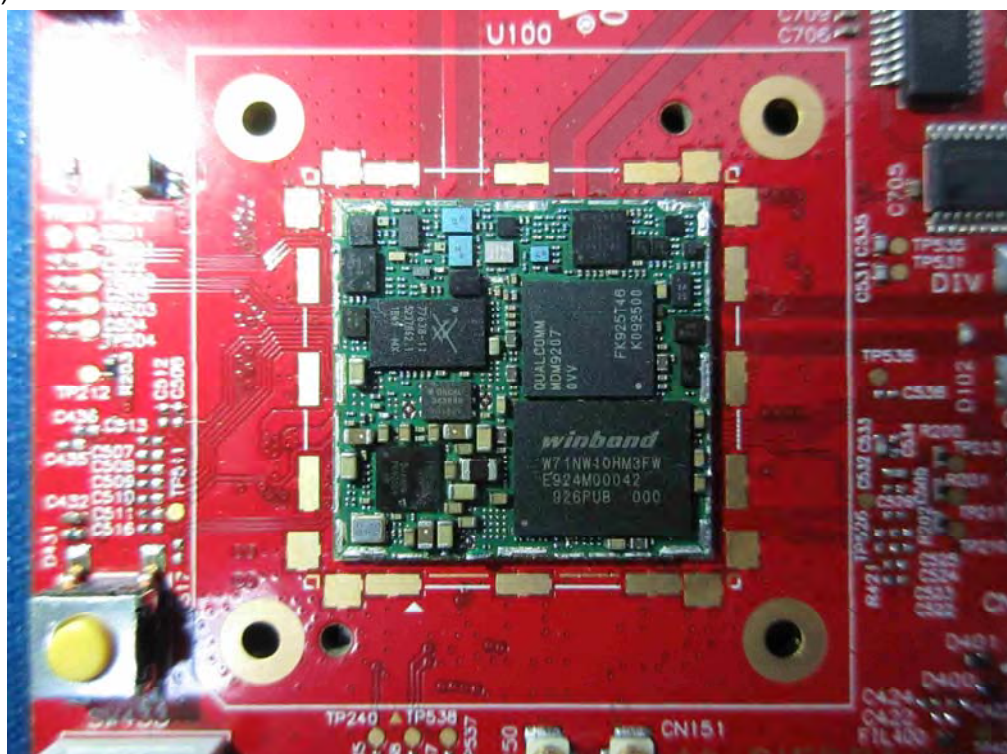
(4) EUT Photo



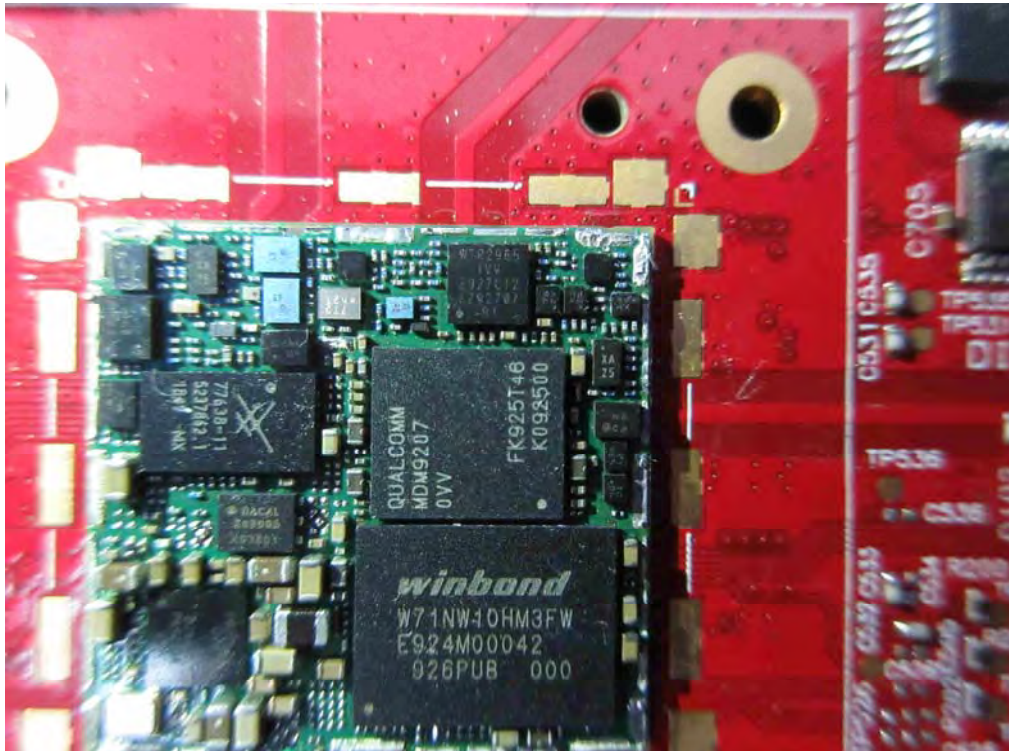
(5) EUT Photo



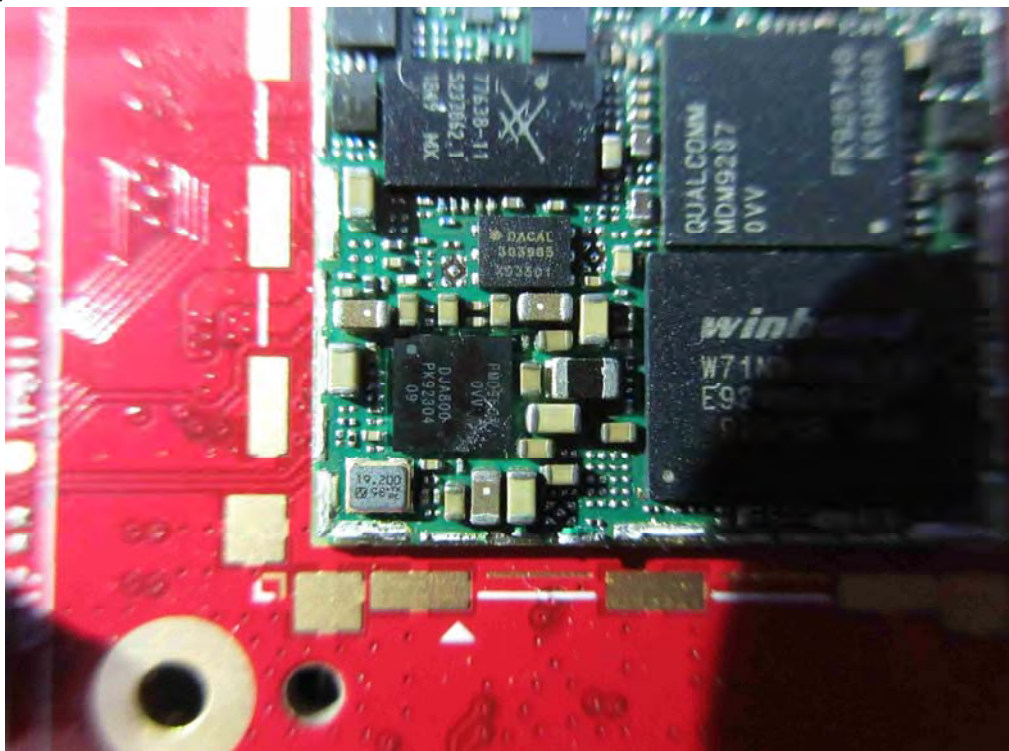
(6) EUT Photo



(7) EUT Photo



(8) EUT Photo



(9) EUT Photo

