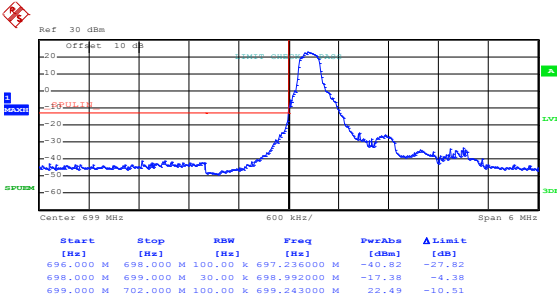
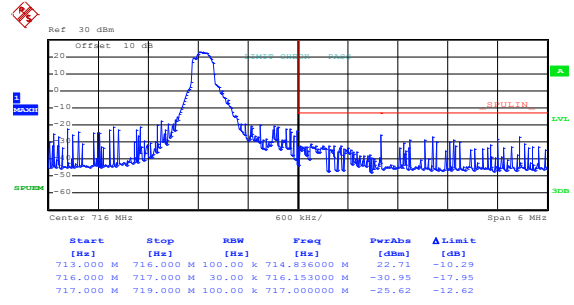


## LTE Band 12, BW: 1.4MHz QPSK & RB Size 1



Date: 3.JAN.2019 18:57:45

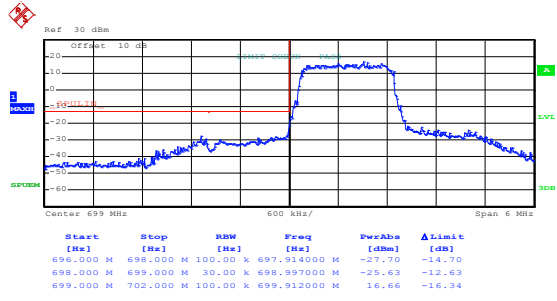
Lowest channel



Date: 3.JAN.2019 18:58:35

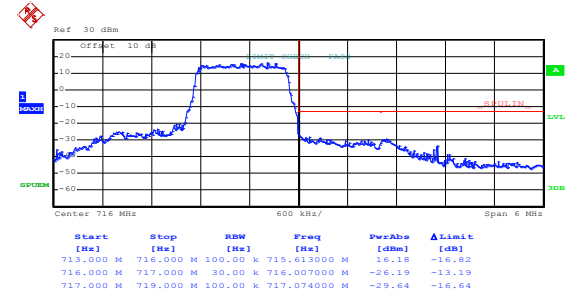
Highest channel

## QPSK & RB Size 6



Date: 3.JAN.2019 18:58:06

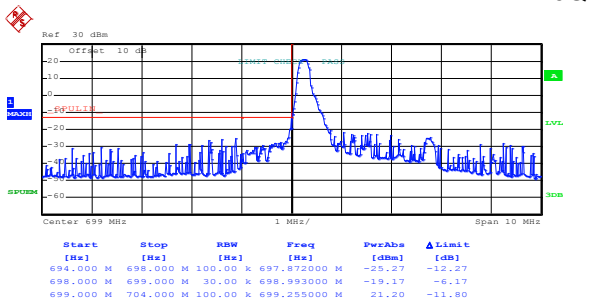
Lowest channel



Date: 3.JAN.2019 18:58:53

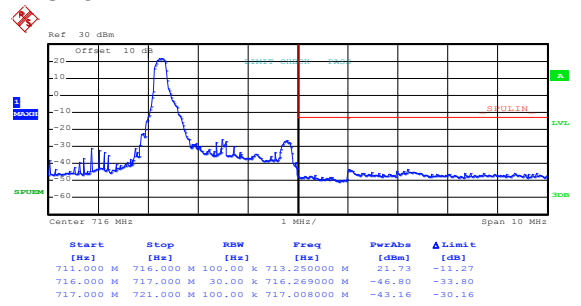
Highest channel

## LTE Band 12, BW: 3MHz 16QAM & RB Size 1



Date: 3.JAN.2019 18:59:49

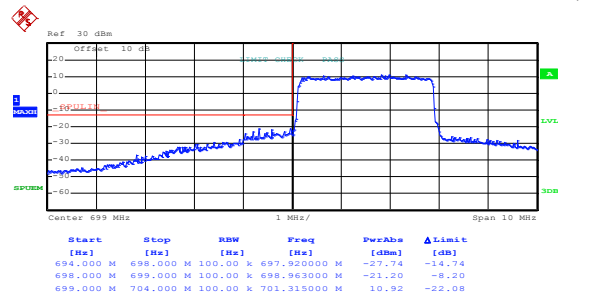
Lowest channel



Date: 3.JAN.2019 19:00:37

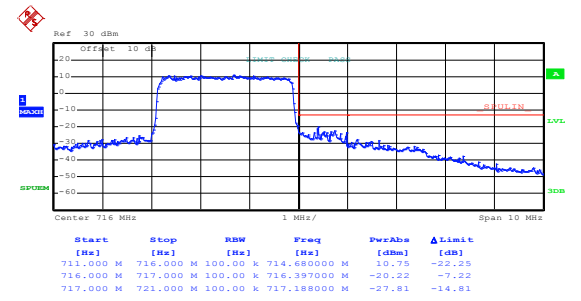
Highest channel

## 16QAM & RB Size 15



Date: 3.JAN.2019 19:00:09

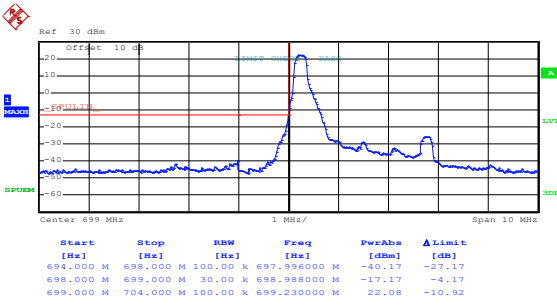
Lowest channel



Date: 3.JAN.2019 19:01:11

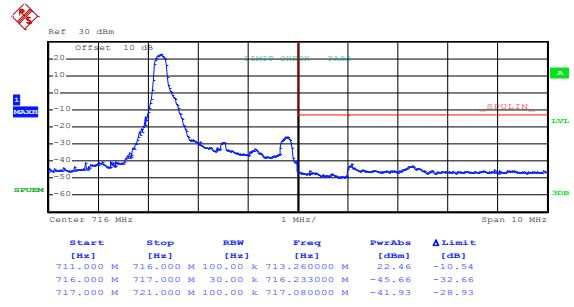
Highest channel

## LTE Band 12, BW: 3MHz QPSK & RB Size 1



Date: 3.JAN.2019 16:59:42

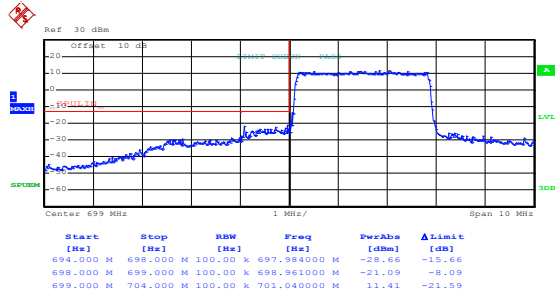
Lowest channel



Date: 3.JAN.2019 19:00:30

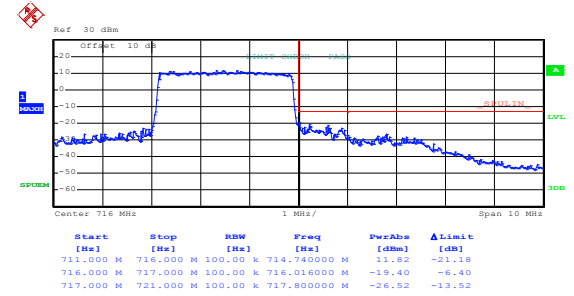
Highest channel

## QPSK & RB Size 15



Date: 3.JAN.2019 19:00:03

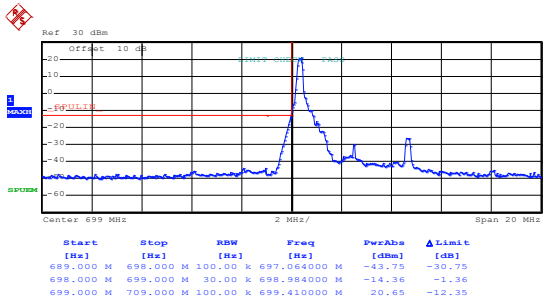
Lowest channel



Date: 3.JAN.2019 19:01:03

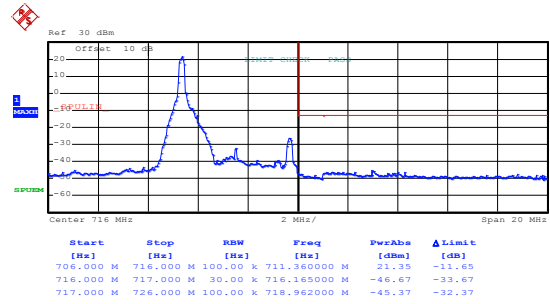
Highest channel

## LTE Band 12, BW: 5MHz 16QAM & RB Size 1



Date: 3.JAN.2019 19:01:53

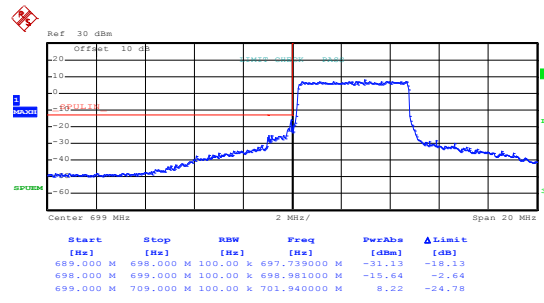
Lowest channel



Date: 3.JAN.2019 19:02:52

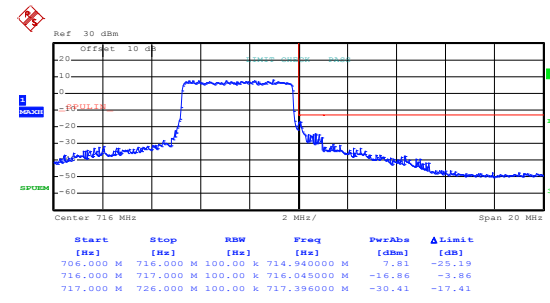
Highest channel

## 16QAM & RB Size 25



Date: 3.JAN.2019 19:02:23

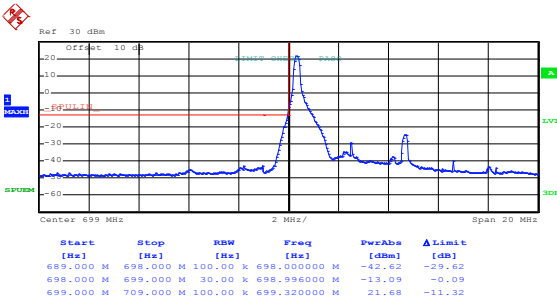
Lowest channel



Date: 3.JAN.2019 19:03:20

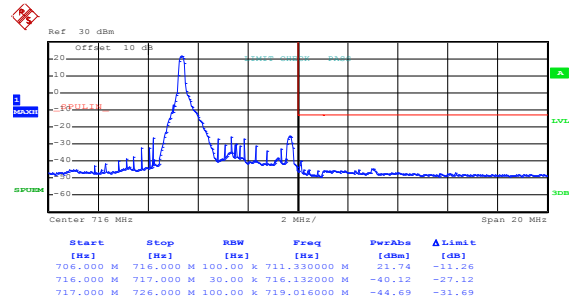
Highest channel

## LTE Band 12, BW: 5MHz QPSK & RB Size 1



Date: 3.JAN.2019 19:01:44

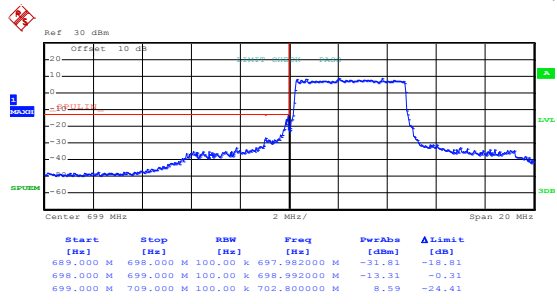
Lowest channel



Date: 3.JAN.2019 19:02:44

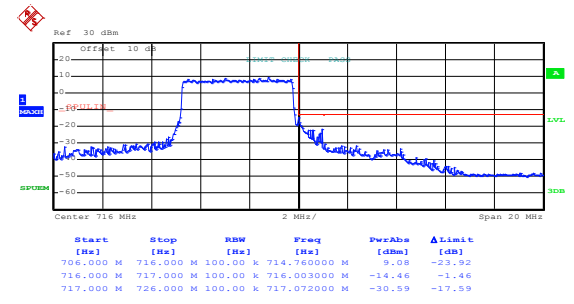
Highest channel

## QPSK & RB Size 25



Date: 3.JAN.2019 19:02:16

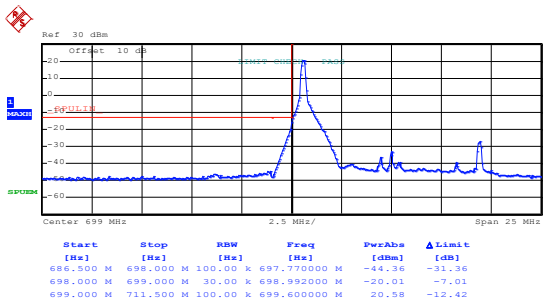
Lowest channel



Date: 3.JAN.2019 19:03:14

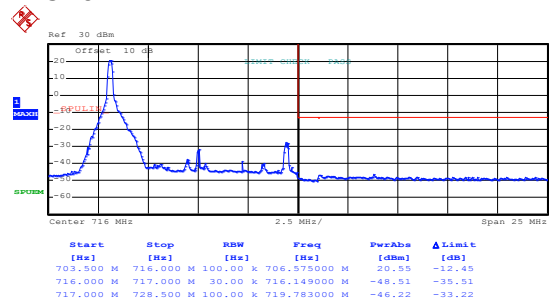
Highest channel

## LTE Band 12, BW: 10MHz 16QAM & RB Size 1



Date: 3.JAN.2019 19:04:17

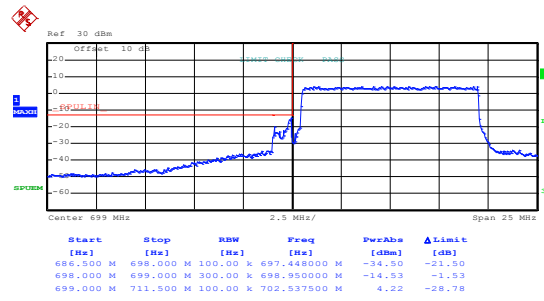
Lowest channel



Date: 3.JAN.2019 19:05:26

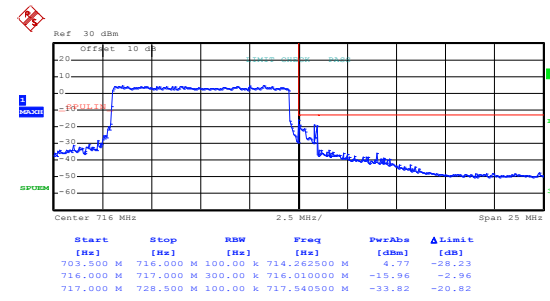
Highest channel

## 16QAM & RB Size 50



Date: 3.JAN.2019 19:04:46

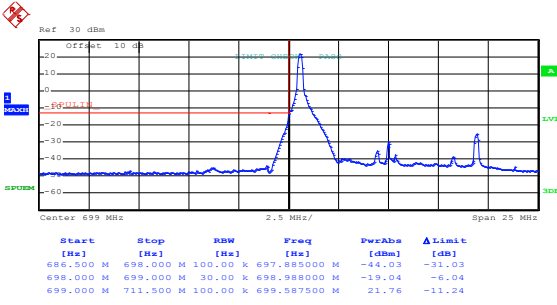
Lowest channel



Date: 3.JAN.2019 19:06:10

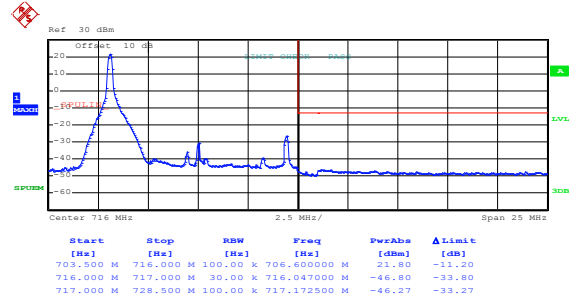
Highest channel

## LTE Band 12, BW: 10MHz QPSK & RB Size 1



Date: 3.JAN.2019 19:04:10

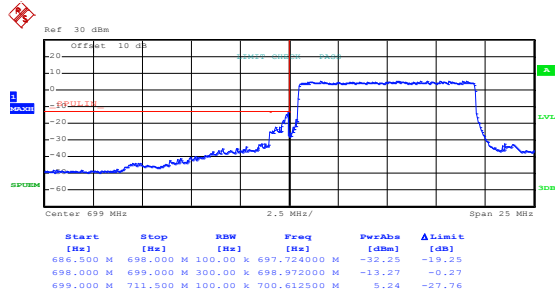
Lowest channel



Date: 3.JAN.2019 19:05:19

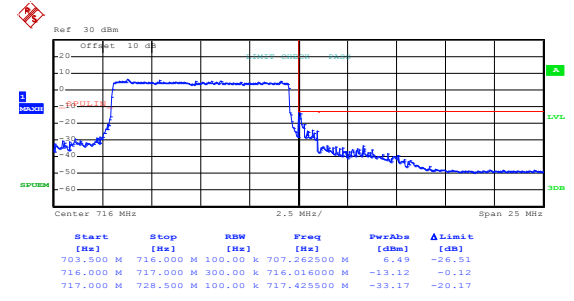
Highest channel

## QPSK & RB Size 50



Date: 3.JAN.2019 19:04:36

Lowest channel

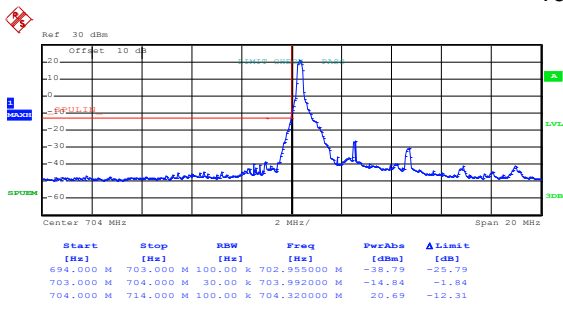


Date: 3.JAN.2019 19:06:00

Highest channel

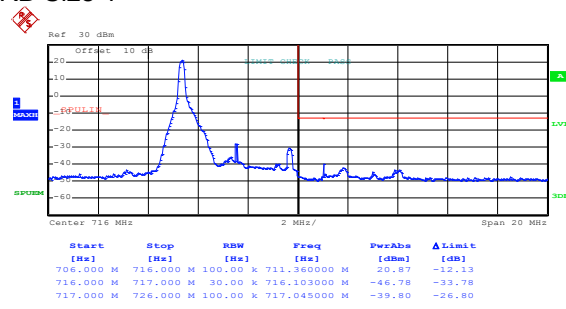
LTE Band 17 part:

LTE Band 17, BW: 5MHz  
16QAM & RB Size 1



Date: 3.JAN.2019 19:07:46

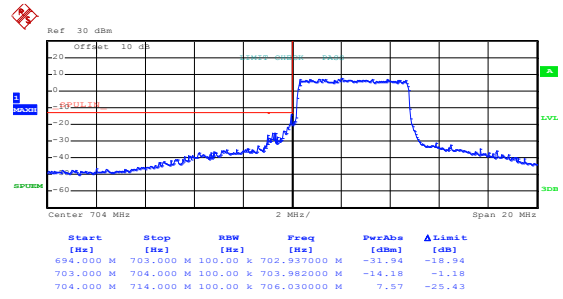
Lowest channel



Date: 3.JAN.2019 19:08:45

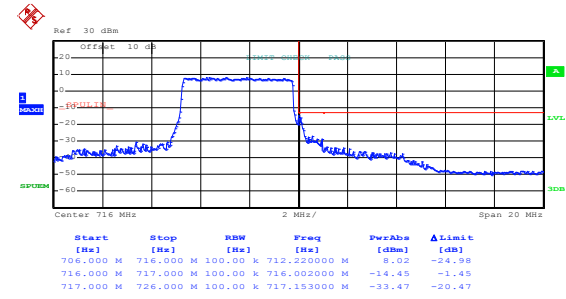
Highest channel

16QAM & RB Size 25



Date: 3.JAN.2019 19:08:11

Lowest channel

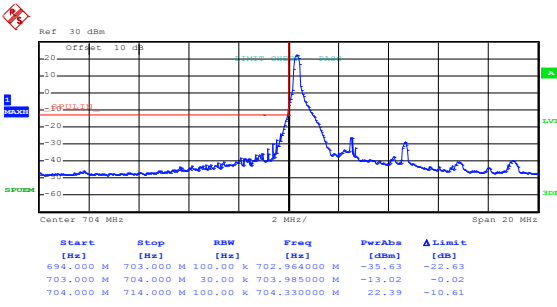


Date: 3.JAN.2019 19:09:34

Highest channel

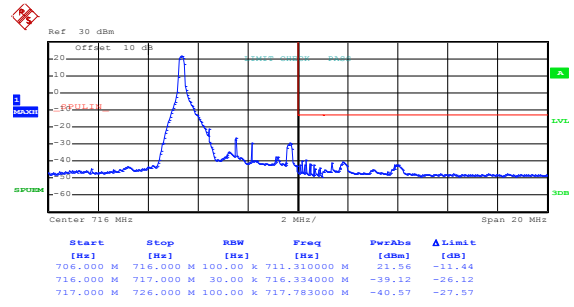


## LTE Band 17, BW: 5MHz QPSK & RB Size 1



Date: 3.JAN.2019 19:07:40

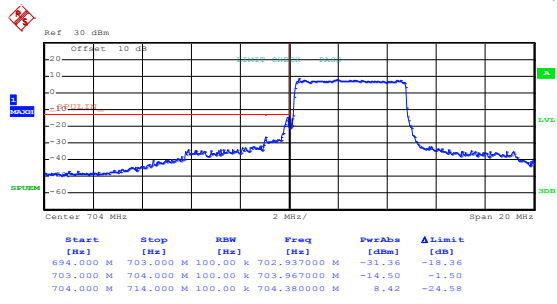
Lowest channel



Date: 3.JAN.2019 19:08:38

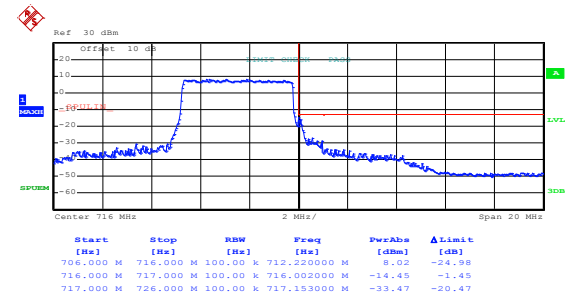
Highest channel

## QPSK & RB Size 25



Date: 3.JAN.2019 19:08:04

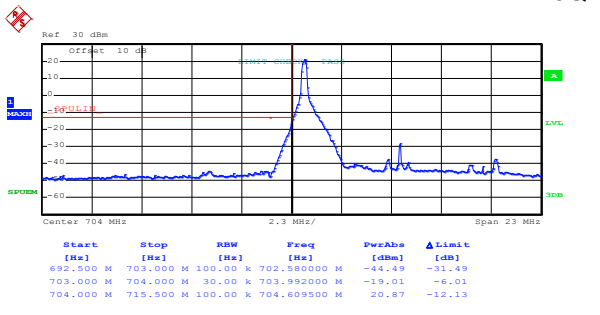
Lowest channel



Date: 3.JAN.2019 19:09:13

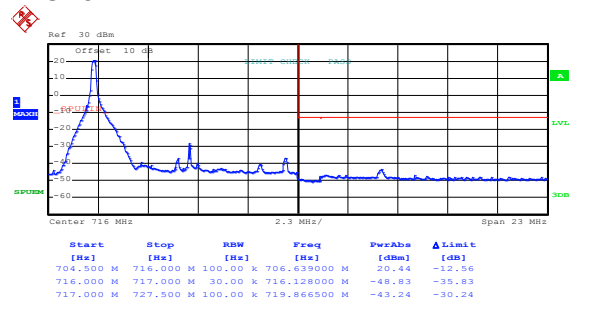
Highest channel

## LTE Band 17, BW: 10MHz 16QAM & RB Size 1



Date: 3.JAN.2019 19:10:47

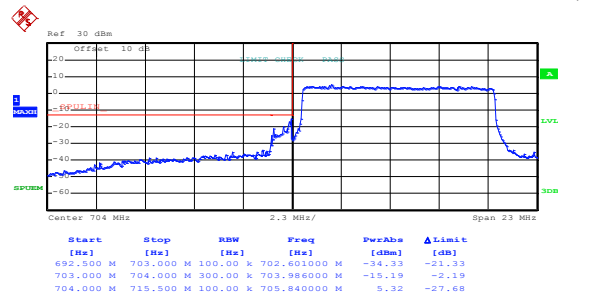
Lowest channel



Date: 3.JAN.2019 19:12:57

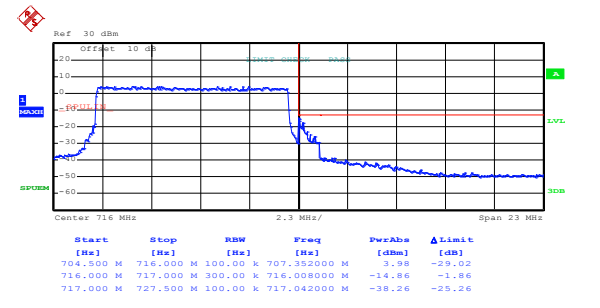
Highest channel

## 16QAM & RB Size 50



Date: 3.JAN.2019 19:11:56

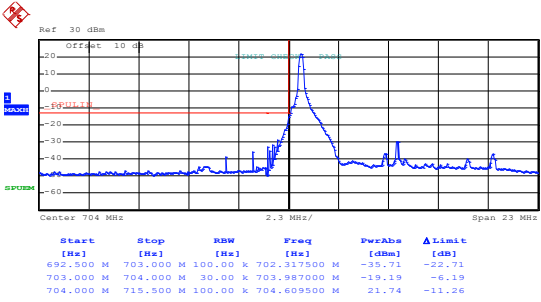
Lowest channel



Date: 3.JAN.2019 19:13:36

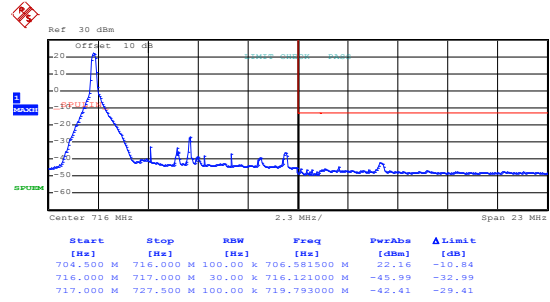
Highest channel

## LTE Band 17, BW: 10MHz QPSK & RB Size 1



Date: 3.JAN.2019 19:10:39

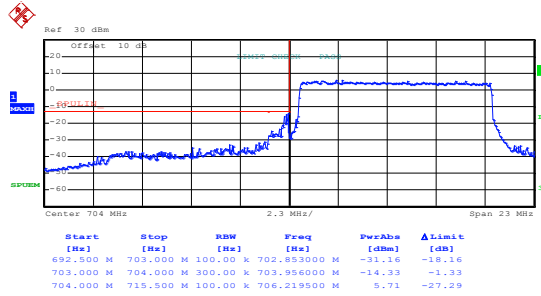
Lowest channel



Date: 3.JAN.2019 19:12:50

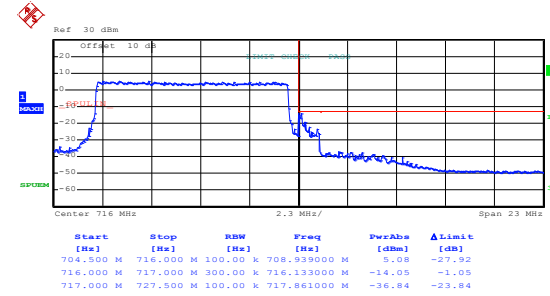
Highest channel

## QPSK & RB Size 50



Date: 3.JAN.2019 19:11:48

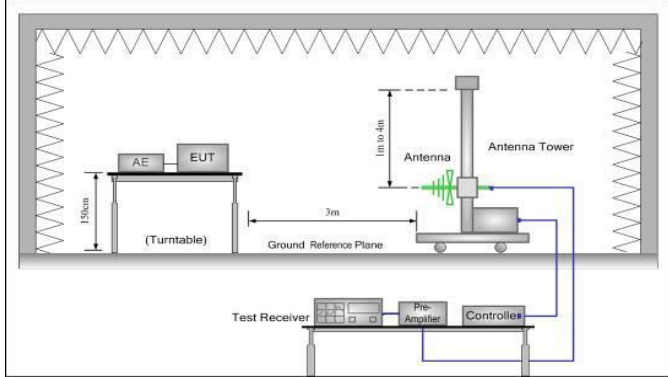
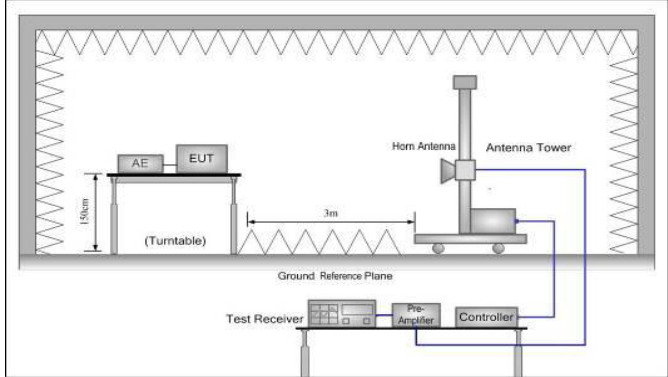
Lowest channel



Date: 3.JAN.2019 19:13:23

Highest channel

## 6.5 Field strength of spurious radiation measurement

Test Requirement:	Part 22.917(a), Part 24.238 (a), Part 27.53(g), Part 27.53(h)
Test Method:	ANSI/TIA-603-D 2010
Limit:	LTE Band 2 & 4 & 5 & 12 & 17: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB (-13 dBm).
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p> 
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.</li> <li>2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.</li> <li>3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.</li> <li>4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.  <math display="block">ERP / EIRP = S.G. \text{ output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}</math> </li> </ol>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

**Measurement Data:**

**LTE Band 2 part:**

LTE Band 2, WB: 1.4MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3701.40	Vertical	-36.62	-13.00	Pass
5552.10	V	-27.64		
7402.00	V	-26.61		
3701.40	Horizontal	-31.45		
5552.10	H	-25.69		
7402.00	H	-25.49		
<b>Middle Channel</b>				
3760.00	Vertical	-37.52	-13.00	Pass
5640.00	V	-28.47		
7520.00	V	-26.22		
3760.00	Horizontal	-31.60		
5640.00	H	-25.80		
7520.00	H	-26.37		
<b>Highest Channel</b>				
3816.60	Vertical	-36.64	-13.00	Pass
5724.90	V	-27.81		
7633.20	V	-25.44		
3816.60	Horizontal	-32.15		
5724.90	H	-25.44		
7633.20	H	-26.77		
<p>Note:</p> <ol style="list-style-type: none"> <li>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</li> <li>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</li> </ol>				

LTE Band 2, WB: 3MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3703.00	Vertical	-33.92	-13.00	Pass
5554.50	V	-25.12		
7406.00	V	-24.19		
3703.00	Horizontal	-29.15		
5554.50	H	-24.62		
7406.00	H	-23.19		
<b>Middle Channel</b>				
3760.00	Vertical	-35.62	-13.00	Pass
5640.00	V	-24.10		
7520.00	V	-23.69		
3760.00	Horizontal	-30.22		
5640.00	H	-23.45		
7520.00	H	-23.41		
<b>Highest Channel</b>				
3817.00	Vertical	-34.75	-13.00	Pass
5725.50	V	-23.56		
7634.00	V	-25.19		
3817.00	Horizontal	-31.44		
5725.50	H	-23.59		
7634.00	H	-23.42		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 2, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3705.00	Vertical	-35.65	-13.00	Pass
5557.50	V	-26.48		
7410.00	V	-25.75		
3705.00	Horizontal	-31.45		
5557.50	H	-25.77		
7410.00	H	-25.49		
<b>Middle Channel</b>				
3760.00	Vertical	-36.25	-13.00	Pass
5640.00	V	-25.64		
7520.00	V	-25.61		
3760.00	Horizontal	-32.22		
5640.00	H	-26.37		
7520.00	H	-25.78		
<b>Highest Channel</b>				
3815.00	Vertical	-35.98	-13.00	Pass
5722.50	V	-26.44		
7630.00	V	-24.15		
3815.00	Horizontal	-31.44		
5722.50	H	-25.76		
7630.00	H	-25.49		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 2, WB: 10MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3710.00	Vertical	-34.27	-13.00	Pass
5565.00	V	-25.34		
7420.00	V	-24.15		
3710.00	Horizontal	-30.75		
5565.00	H	-25.49		
7420.00	H	-24.12		
<b>Middle Channel</b>				
3760.00	Vertical	-36.52	-13.00	Pass
5640.00	V	-24.64		
7520.00	V	-24.15		
3760.00	Horizontal	-31.29		
5640.00	H	-25.67		
7520.00	H	-24.87		
<b>Highest Channel</b>				
3810.00	Vertical	-35.95	-13.00	Pass
5715.00	V	-24.51		
7620.00	V	-26.69		
3810.00	Horizontal	-32.24		
5715.00	H	-24.61		
7620.00	H	-23.98		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				



LTE Band 2, WB: 15MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3715.00	Vertical	-34.22	-13.00	Pass
5572.50	V	-25.16		
7430.00	V	-24.63		
3715.00	Horizontal	-32.20		
5572.50	H	-24.61		
7430.00	H	-23.87		
<b>Middle Channel</b>				
3760.00	Vertical	-35.19	-13.00	Pass
5640.00	V	-24.61		
7520.00	V	-24.57		
3760.00	Horizontal	-31.36		
5640.00	H	-26.53		
7520.00	H	-25.44		
<b>Highest Channel</b>				
3805.00	Vertical	-36.95	-13.00	Pass
5707.50	V	-25.46		
7610.00	V	-23.12		
3805.00	Horizontal	-32.98		
5707.50	H	-24.55		
7610.00	H	-24.19		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 2, WB: 20MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3720.00	Vertical	-33.12	-13.00	Pass
5580.00	V	-24.69		
7440.00	V	-26.63		
3720.00	Horizontal	-39.21		
5580.00	H	-24.44		
7440.00	H	-23.19		
<b>Middle Channel</b>				
3760.00	Vertical	-35.69	-13.00	Pass
5640.00	V	-24.56		
7520.00	V	-23.46		
3760.00	Horizontal	-30.58		
5640.00	H	-24.12		
7520.00	H	-23.57		
<b>Highest Channel</b>				
3800.00	Vertical	-35.49	-13.00	Pass
5700.00	V	-23.11		
7600.00	V	-25.49		
3800.00	Horizontal	-31.63		
5700.00	H	-23.55		
7600.00	H	-24.72		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

**LTE Band 4 part:**

LTE Band 4, WB: 1.4MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3421.40	Vertical	-46.83	-13.00	Pass
5132.10	V	-22.72		
6842.80	V	-22.09		
3421.40	Horizontal	-43.65		
5132.10	H	-26.92		
6842.80	H	-15.39		
<b>Middle Channel</b>				
3465.00	Vertical	-45.56	-13.00	Pass
5197.50	V	-21.60		
6930.00	V	-22.75		
3465.00	Horizontal	-42.26		
5197.50	H	-25.64		
6930.00	H	-16.43		
<b>Highest Channel</b>				
3508.60	Vertical	-46.21	-13.00	Pass
5262.90	V	-21.47		
7017.20	V	-21.45		
3508.60	Horizontal	-42.19		
5262.90	H	-25.24		
7017.20	H	-17.49		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 4, WB: 3MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3423.00	Vertical	-44.51	-13.00	Pass
5134.50	V	-23.62		
6846.00	V	-21.44		
3423.00	Horizontal	-43.15		
5134.50	H	-25.79		
6846.00	H	-16.95		
<b>Middle Channel</b>				
3465.00	Vertical	-45.21	-13.00	Pass
5197.50	V	-22.63		
6930.00	V	-23.98		
3465.00	Horizontal	-41.52		
5197.50	H	-24.51		
6930.00	H	-17.49		
<b>Highest Channel</b>				
3507.00	Vertical	-45.22	-13.00	Pass
5260.50	V	-21.34		
7014.00	V	-23.69		
3507.00	Horizontal	-42.55		
5260.50	H	-23.47		
7014.00	H	-16.79		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 4, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3425.00	Vertical	-45.69	-13.00	Pass
5137.50	V	-21.64		
6850.00	V	-22.36		
3425.00	Horizontal	-43.55		
5137.50	H	-26.78		
6850.00	H	-16.45		
<b>Middle Channel</b>				
3465.00	Vertical	-46.62	-13.00	Pass
5197.50	V	-21.55		
6930.00	V	-22.74		
3465.00	Horizontal	-42.11		
5197.50	H	-25.78		
6930.00	H	-16.35		
<b>Highest Channel</b>				
3505.00	Vertical	-45.95	-13.00	Pass
5257.50	V	-22.56		
7010.00	V	-21.49		
3505.00	Horizontal	-42.36		
5257.50	H	-25.78		
7010.00	H	-16.49		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 4, WB: 10MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3430.00	Vertical	-45.22	-13.00	Pass
5145.00	V	-23.69		
6860.00	V	-21.57		
3430.00	Horizontal	-42.56		
5145.00	H	-24.67		
6860.00	H	-15.44		
<b>Middle Channel</b>				
3465.00	Vertical	-43.69	-13.00	Pass
5197.50	V	-21.53		
6930.00	V	-24.55		
3465.00	Horizontal	-42.53		
5197.50	H	-23.75		
6930.00	H	-16.79		
<b>Highest Channel</b>				
3500.00	Vertical	-46.52	-13.00	Pass
5250.00	V	-21.44		
7000.00	V	-23.22		
3500.00	Horizontal	-41.75		
5250.00	H	-23.49		
7000.00	H	-17.45		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 4, WB: 15MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3435.00	Vertical	-45.22	-13.00	Pass
5152.50	V	-21.36		
6870.00	V	-22.65		
3435.00	Horizontal	-43.46		
5152.50	H	-26.48		
6870.00	H	-15.49		
<b>Middle Channel</b>				
3465.00	Vertical	-45.22	-13.00	Pass
5197.50	V	-21.67		
6930.00	V	-23.62		
3465.00	Horizontal	-42.55		
5197.50	H	-26.79		
6930.00	H	-15.46		
<b>Highest Channel</b>				
3495.00	Vertical	-45.19	-13.00	Pass
5242.50	V	-21.36		
6990.00	V	-22.46		
3495.00	Horizontal	-43.57		
5242.50	H	-24.16		
6990.00	H	-17.49		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 4, WB: 20MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
3440.00	Vertical	-44.51	-13.00	Pass
5160.00	V	-23.54		
6880.00	V	-21.74		
3440.00	Horizontal	-42.53		
5160.00	H	-23.64		
6880.00	H	-16.49		
<b>Middle Channel</b>				
3465.00	Vertical	-42.22	-13.00	Pass
5197.50	V	-22.19		
6930.00	V	-23.49		
3465.00	Horizontal	-42.75		
5197.50	H	-22.41		
6930.00	H	-15.49		
<b>Highest Channel</b>				
3490.00	Vertical	-45.19	-13.00	Pass
5235.00	V	-23.62		
6980.00	V	-21.45		
3490.00	Horizontal	-42.75		
5235.00	H	-23.79		
6980.00	H	-46.89		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				



**LTE Band 5 part:**

LTE Band 5, WB: 1.4MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1649.40	Vertical	-41.44	-13.00	Pass
2474.10	V	-29.41		
3298.80	V	-36.53		
1649.40	Horizontal	-44.62		
2474.10	H	-24.49		
3298.80	H	-34.27		
<b>Middle Channel</b>				
1673.00	Vertical	-42.22	-13.00	Pass
2509.50	V	-28.56		
3346.00	V	-35.77		
1673.00	Horizontal	-45.22		
2509.50	H	-24.95		
3346.00	H	-36.69		
<b>Highest Channel</b>				
1696.60	Vertical	-43.62	-13.00	Pass
2544.90	V	-27.64		
3393.20	V	-36.56		
1696.60	Horizontal	-44.51		
2544.90	H	-25.97		
3393.20	H	-35.44		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</li> <li>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</li> </ol>				

LTE Band 5, WB: 3MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1651.00	Vertical	-42.22	-13.00	Pass
2476.50	V	-26.17		
3302.00	V	-35.98		
1651.00	Horizontal	-45.22		
2476.50	H	-26.95		
3302.00	H	-35.11		
<b>Middle Channel</b>				
1673.00	Vertical	-42.53	-13.00	Pass
2509.50	V	-26.48		
3346.00	V	-36.19		
1673.00	Horizontal	-44.78		
2509.50	H	-28.85		
3346.00	H	-36.79		
<b>Highest Channel</b>				
1695.00	Vertical	-41.25	-13.00	Pass
2542.50	V	-25.95		
3390.00	V	-35.79		
1695.00	Horizontal	-45.21		
2542.50	H	-28.77		
3390.00	H	-35.19		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 5, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1653.00	Vertical	-42.59	-13.00	Pass
2479.50	V	-28.69		
3306.00	V	-35.16		
1653.00	Horizontal	-45.25		
2479.50	H	-26.98		
3306.00	H	-35.77		
<b>Middle Channel</b>				
1673.00	Vertical	-41.56	-13.00	Pass
2509.50	V	-29.68		
3346.00	V	-36.63		
1673.00	Horizontal	-45.19		
2509.50	H	-29.67		
3346.00	H	-35.44		
<b>Highest Channel</b>				
1693.00	Vertical	-42.16	-13.00	Pass
2539.50	V	-26.79		
3386.00	V	-35.46		
1693.00	Horizontal	-45.12		
2539.50	H	-25.79		
3386.00	H	-36.57		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 5, WB: 10MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1658.00	Vertical	-42.19	-13.00	Pass
2487.00	V	-25.79		
3316.00	V	-36.95		
1658.00	Horizontal	-46.15		
2487.00	H	-25.77		
3316.00	H	-36.49		
<b>Middle Channel</b>				
1673.00	Vertical	-42.11	-13.00	Pass
2509.50	V	-26.25		
3346.00	V	-36.22		
1673.00	Horizontal	-45.16		
2509.50	H	-27.49		
3346.00	H	-37.55		
<b>Highest Channel</b>				
1688.00	Vertical	-42.11	-13.00	Pass
2532.00	V	-26.69		
3376.00	V	-36.62		
1688.00	Horizontal	-45.75		
2532.00	H	-27.49		
3376.00	H	-36.19		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

**LTE Band 12 part:**

LTE Band 12, WB: 1.4MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1399.40	Vertical	-45.50	-13.00	Pass
2099.10	V	-42.67		
2798.80	V	-37.13		
1399.40	Horizontal	-45.45		
2099.10	H	-46.22		
2798.80	H	-38.76		
<b>Middle Channel</b>				
1415.00	Vertical	-46.25	-13.00	Pass
2122.50	V	-41.57		
2830.00	V	-36.69		
1415.00	Horizontal	-44.51		
2122.50	H	-45.76		
2830.00	H	-39.44		
<b>Highest Channel</b>				
1430.60	Vertical	-46.23	-13.00	Pass
2145.90	V	-41.64		
2861.20	V	-36.76		
1430.60	Horizontal	-46.59		
2145.90	H	-45.51		
2861.20	H	-39.77		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 12, WB: 3MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1401.00	Vertical	-45.55	-13.00	Pass
2101.50	V	-39.16		
2802.00	V	-35.24		
1401.00	Horizontal	-45.12		
2101.50	H	-46.72		
2802.00	H	-39.55		
<b>Middle Channel</b>				
1415.00	Vertical	-46.36	-13.00	Pass
2122.50	V	-40.11		
2830.00	V	-36.67		
1415.00	Horizontal	-45.91		
2122.50	H	-45.19		
2830.00	H	-39.79		
<b>Highest Channel</b>				
1429.00	Vertical	-45.52	-13.00	Pass
2143.50	V	-39.64		
2858.00	V	-39.25		
1429.00	Horizontal	-44.61		
2143.50	H	-45.75		
2858.00	H	-40.97		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 12, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1403.00	Vertical	-44.69	-13.00	Pass
2104.50	V	-43.63		
2806.00	V	-36.56		
1403.00	Horizontal	-45.19		
2104.50	H	-47.85		
2806.00	H	-37.44		
<b>Middle Channel</b>				
1415.00	Vertical	-45.97	-13.00	Pass
2122.50	V	-42.51		
2830.00	V	-37.63		
1415.00	Horizontal	-45.19		
2122.50	H	-46.11		
2830.00	H	-39.78		
<b>Highest Channel</b>				
1427.00	Vertical	-45.50	-13.00	Pass
2410.50	V	-41.22		
2854.00	V	-36.55		
1427.00	Horizontal	-47.51		
2410.50	H	-46.19		
2854.00	H	-39.78		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

LTE Band 12, WB: 10MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1408.00	Vertical	-44.19	-13.00	Pass
2112.00	V	-39.85		
2816.00	V	-34.61		
1408.00	Horizontal	-45.55		
2112.00	H	-47.18		
2816.00	H	-39.49		
<b>Middle Channel</b>				
1415.00	Vertical	-45.56	-13.00	Pass
2122.50	V	-39.87		
2830.00	V	-36.51		
1415.00	Horizontal	-46.19		
2122.50	H	-44.55		
2830.00	H	-39.75		
<b>Highest Channel</b>				
1422.00	Vertical	-44.12	-13.00	Pass
2133.00	V	-38.79		
2844.00	V	-38.44		
1422.00	Horizontal	-45.19		
2133.00	H	-46.12		
2844.00	H	-39.65		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				



**LTE Band 17 part:**

LTE Band 17, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1413.00	Vertical	-48.51	-13.00	Pass
2119.50	V	-47.48		
2826.00	V	-35.73		
1413.00	Horizontal	-49.97		
2119.50	H	-47.28		
2826.00	H	-36.34		
<b>Middle Channel</b>				
1420.00	Vertical	-47.56	-13.00	Pass
2130.00	V	-46.69		
2840.00	V	-36.61		
1420.00	Horizontal	-49.25		
2130.00	H	-46.25		
2840.00	H	-35.98		
<b>Highest Channel</b>				
1427.00	Vertical	-47.61	-13.00	Pass
2140.50	V	-45.98		
2854.00	V	-34.15		
1427.00	Horizontal	-50.25		
2140.50	H	-46.37		
2854.00	H	-37.49		
<p>Note:</p> <ol style="list-style-type: none"> <li>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</li> <li>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</li> </ol>				

LTE Band 17, WB: 10MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
<b>Lowest Channel</b>				
1418.00	Vertical	-47.33	-13.00	Pass
2127.00	V	-46.98		
2836.00	V	-36.51		
1418.00	Horizontal	-50.77		
2127.00	H	-46.91		
2836.00	H	-36.89		
<b>Middle Channel</b>				
1420.00	Vertical	-46.95	-13.00	Pass
2130.00	V	-47.19		
2840.00	V	-36.69		
1420.00	Horizontal	-50.22		
2130.00	H	-47.98		
2840.00	H	-36.33		
<b>Highest Channel</b>				
1422.00	Vertical	-46.55	-13.00	Pass
2133.00	V	-46.19		
2844.00	V	-34.55		
1422.00	Horizontal	-49.18		
2133.00	H	-45.79		
2844.00	H	-36.49		
<p><i>Note:</i></p> <ol style="list-style-type: none"> <li><i>The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.</i></li> <li><i>For above 1 GHz, all test modes were performed, and just the worst case shown in the report.</i></li> </ol>				

## 6.6 Frequency stability V.S. Temperature measurement

Test Requirement:	Part 22.355, Part 24.235, Part 27.54, Part 2.1055(a)(1)(b)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	
Test procedure:	<ol style="list-style-type: none"> <li>1. The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>3. The EUT was placed inside the temperature chamber.</li> <li>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached</li> </ol>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

**Measurement Data (worst case):**

**LTE Band 2 part:**

Reference Frequency: LTE Band 2 (10MHz) Middle channel=18900 channel=1880.00MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
3.85	-30	196	0.10426	±2.5	Pass
	-20	153	0.08138		
	-10	161	0.08564		
	0	121	0.06436		
	10	186	0.09894		
	20	172	0.09149		
	30	112	0.05957		
	40	103	0.05479		
	50	148	0.07872		
<b>16QAM</b>					
3.85	-30	121	0.06436	±2.5	Pass
	-20	148	0.07872		
	-10	164	0.08723		
	0	120	0.06383		
	10	142	0.07553		
	20	138	0.07340		
	30	154	0.08191		
	40	131	0.06968		
	50	136	0.07234		
<i>Note: Only the worst case shown in the report.</i>					

**LTE Band 4 part:**

Reference Frequency: LTE Band 4 (10MHz) Middle channel=20175 channel=1732.50MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
3.85	-30	196	0.113131	±2.5	Pass
	-20	153	0.088312		
	-10	161	0.092929		
	0	121	0.069841		
	10	186	0.107359		
	20	172	0.099278		
	30	112	0.064646		
	40	103	0.059452		
	50	148	0.085426		
<b>16QAM</b>					
3.85	-30	121	0.069841	±2.5	Pass
	-20	148	0.085426		
	-10	164	0.094661		
	0	120	0.069264		
	10	142	0.081962		
	20	138	0.079654		
	30	154	0.088889		
	40	131	0.075613		
	50	136	0.078499		
<i>Note: Only the worst case shown in the report.</i>					

**LTE Band 5 part:**

Reference Frequency: LTE Band 5 (10MHz) Middle channel=20525 channel=836.50MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
3.85	-30	199	0.237896	±2.5	Pass
	-20	156	0.186491		
	-10	164	0.196055		
	0	124	0.148237		
	10	189	0.225941		
	20	175	0.209205		
	30	115	0.137478		
	40	106	0.126718		
	50	151	0.180514		
<b>16QAM</b>					
3.85	-30	122	0.145846	±2.5	Pass
	-20	149	0.178123		
	-10	165	0.197250		
	0	121	0.144650		
	10	143	0.170950		
	20	139	0.166169		
	30	155	0.185296		
	40	132	0.157800		
	50	137	0.163778		
<i>Note: Only the worst case shown in the report.</i>					

**LTE Band 12 part:**

Reference Frequency: LTE Band 12 (10MHz) Middle channel=23095 channel=707.50MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
3.85	-30	195	0.275618	±2.5	Pass
	-20	152	0.214841		
	-10	160	0.226148		
	0	120	0.169611		
	10	185	0.261484		
	20	171	0.241696		
	30	111	0.156890		
	40	102	0.144170		
	50	147	0.207774		
<b>16QAM</b>					
3.85	-30	120	0.169611	±2.5	Pass
	-20	147	0.207774		
	-10	163	0.230389		
	0	119	0.168198		
	10	141	0.199293		
	20	137	0.193640		
	30	153	0.216254		
	40	130	0.183746		
	50	135	0.190813		

*Note: Only the worst case shown in the report.*

**LTE Band 17 part:**

Reference Frequency: LTE Band 17 (10MHz) Middle channel=23790 channel=710.00MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
3.85	-30	199	0.280282	±2.5	Pass
	-20	156	0.219718		
	-10	164	0.230986		
	0	124	0.174648		
	10	189	0.266197		
	20	175	0.246479		
	30	115	0.161972		
	40	106	0.149296		
	50	151	0.212676		
<b>16QAM</b>					
3.85	-30	124	0.174648	±2.5	Pass
	-20	151	0.212676		
	-10	167	0.235211		
	0	123	0.173239		
	10	145	0.204225		
	20	141	0.198592		
	30	157	0.221127		
	40	134	0.188732		
	50	139	0.195775		

*Note: Only the worst case shown in the report.*



## 6.7 Frequency stability V.S. Voltage measurement

Test Requirement:	Part 22.355, Part 24.235, Part 27.54, Part 2.1055(d)(2)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	<p>The diagram illustrates the test setup. A Power Source is connected to a Divider. The Divider is connected to two Spectrum Analyzers (SS and SA) and an EUT (Equipment Under Test). The EUT is housed within a Temperature &amp; Humidity Chamber.</p>
Test procedure:	<ol style="list-style-type: none"> <li>1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.</li> </ol>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

**Measurement Data (worst case):**

**LTE Band 2 part:**

Reference Frequency: LTE Band 2(10MHz) Middle channel=18900 channel=1880.00MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.40	100	0.053191	±2.5	Pass
	3.85	67	0.035638		
	3.50	76	0.040426		
16QAM					
25	4.40	82	0.043617	±2.5	Pass
	3.85	98	0.052128		
	3.50	50	0.026596		

*Note: Only the worst case shown in the report.*

**LTE Band 4 part:**

Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 channel=1732.50MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.40	96	0.055411	±2.5	Pass
	3.85	63	0.036364		
	3.50	72	0.041558		
16QAM					
25	4.40	78	0.045022	±2.5	Pass
	3.85	94	0.054257		
	3.50	46	0.026551		

*Note: Only the worst case shown in the report.*

**LTE Band 5 part:**

Reference Frequency: LTE Band 5(10MHz) Middle channel=20525 channel=836.50MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.40	97	0.115959	±2.5	Pass
	3.85	64	0.076509		
	3.50	73	0.087268		
16QAM					
25	4.40	79	0.094441	±2.5	Pass
	3.85	95	0.113568		
	3.50	47	0.056186		

*Note: Only the worst case shown in the report.*

**LTE Band 12 part:**

Reference Frequency: LTE Band 12(10MHz) Middle channel=23095 channel=707.50MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.40	95	0.134276	±2.5	Pass
	3.85	62	0.087633		
	3.50	71	0.100353		
16QAM					
25	4.40	77	0.108834	±2.5	Pass
	3.85	93	0.131449		
	3.50	45	0.063604		

*Note: Only the worst case shown in the report.*

**LTE Band 17 part:**

Reference Frequency: LTE Band 17(10MHz) Middle channel=23790 channel=710.00MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.40	99	0.139437	±2.5	Pass
	3.85	66	0.092958		
	3.50	75	0.105634		
16QAM					
25	4.40	81	0.114085	±2.5	Pass
	3.85	97	0.136620		
	3.50	49	0.069014		

*Note: Only the worst case shown in the report.*