# 7.7 CONDUCTED SPURIOUS EMISSIONS

## Limits

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

## Test Procedures

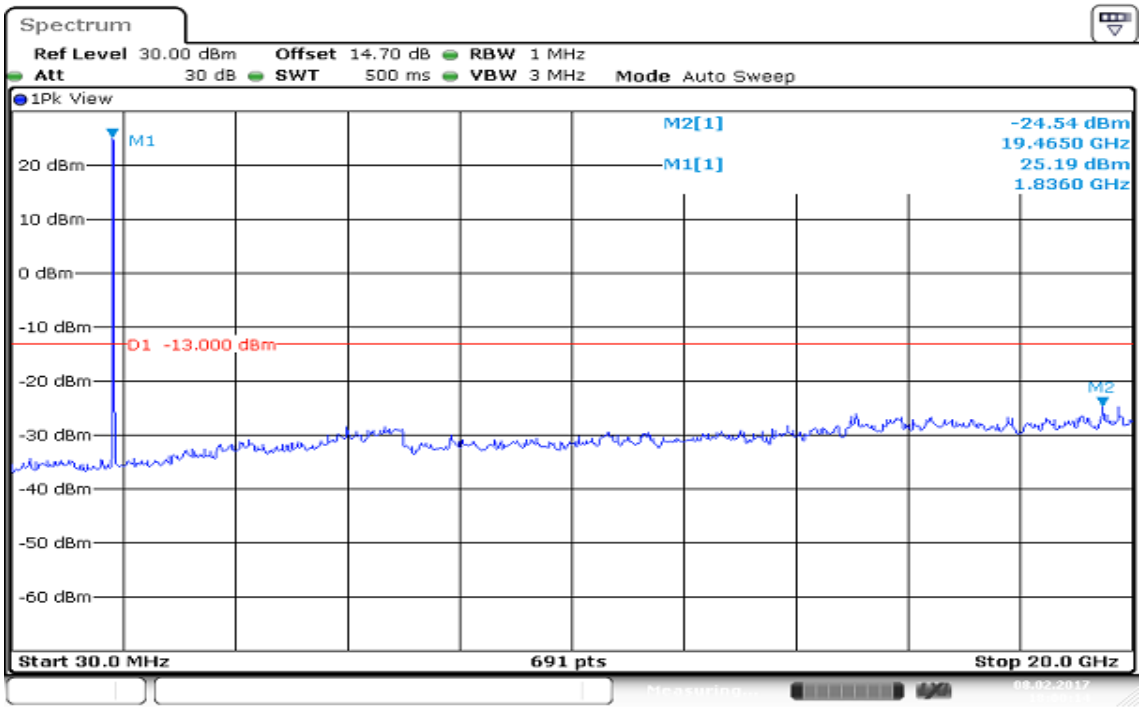
1. According to KDB 971168 D01, section 6.0
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against the limit in operating band.

# Test Results

## LTE Band 2

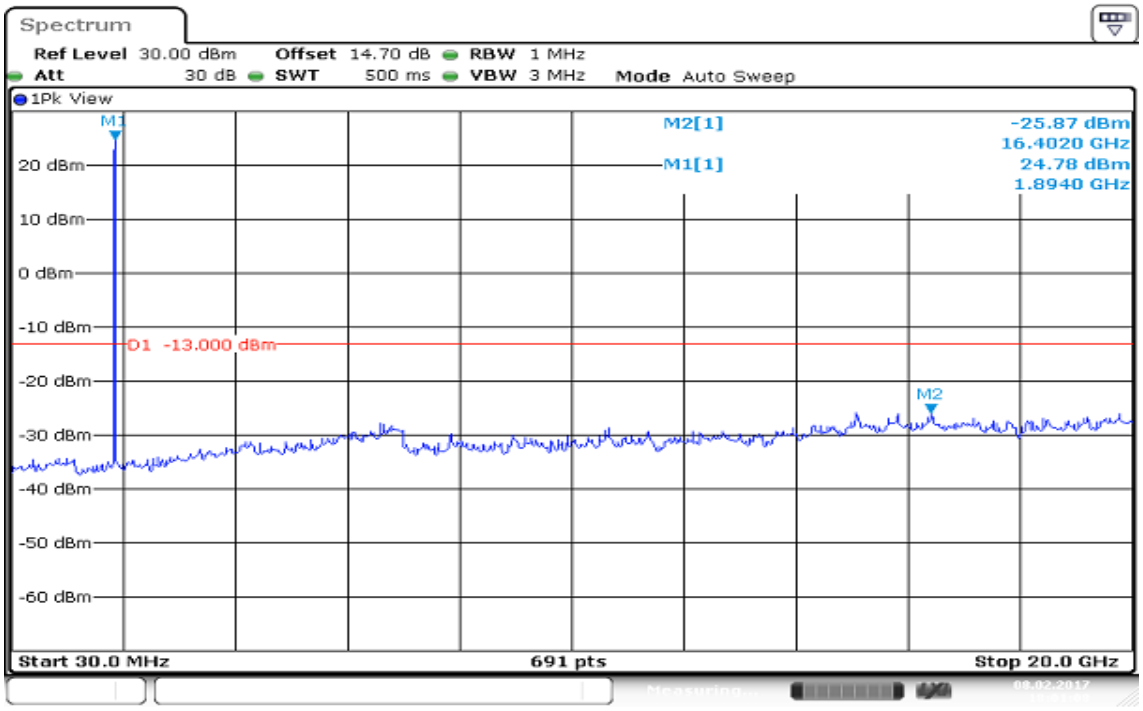
### BW: 1.4MHz / QPSK / RB =1, RB Offset = 0

### CH Low



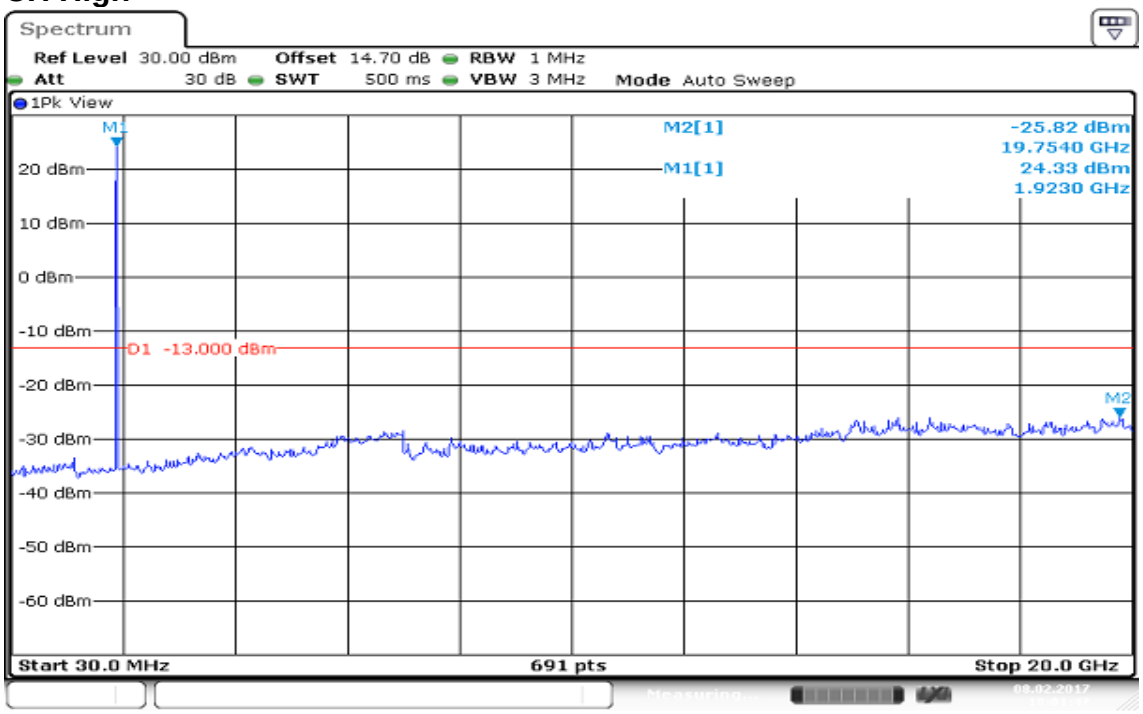

Date: 8.FEB.2017 18:00:14

### CH Mid




Date: 8.FEB.2017 18:01:08

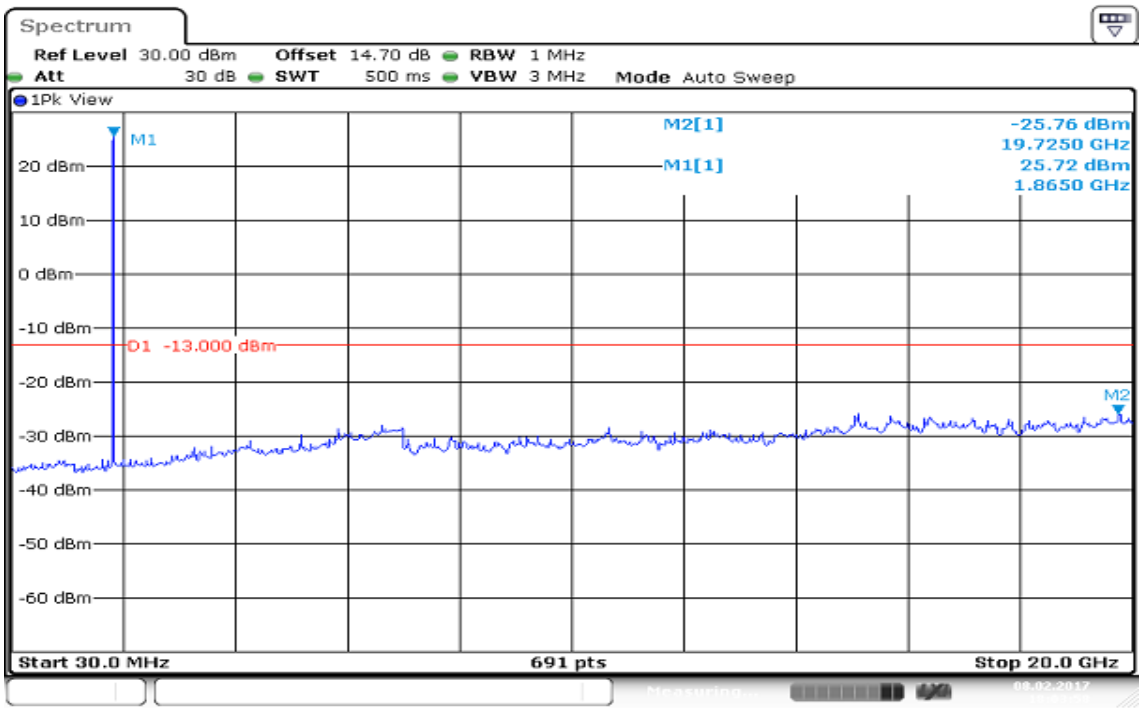
## CH High




Date: 8.FEB.2017 18:01:48

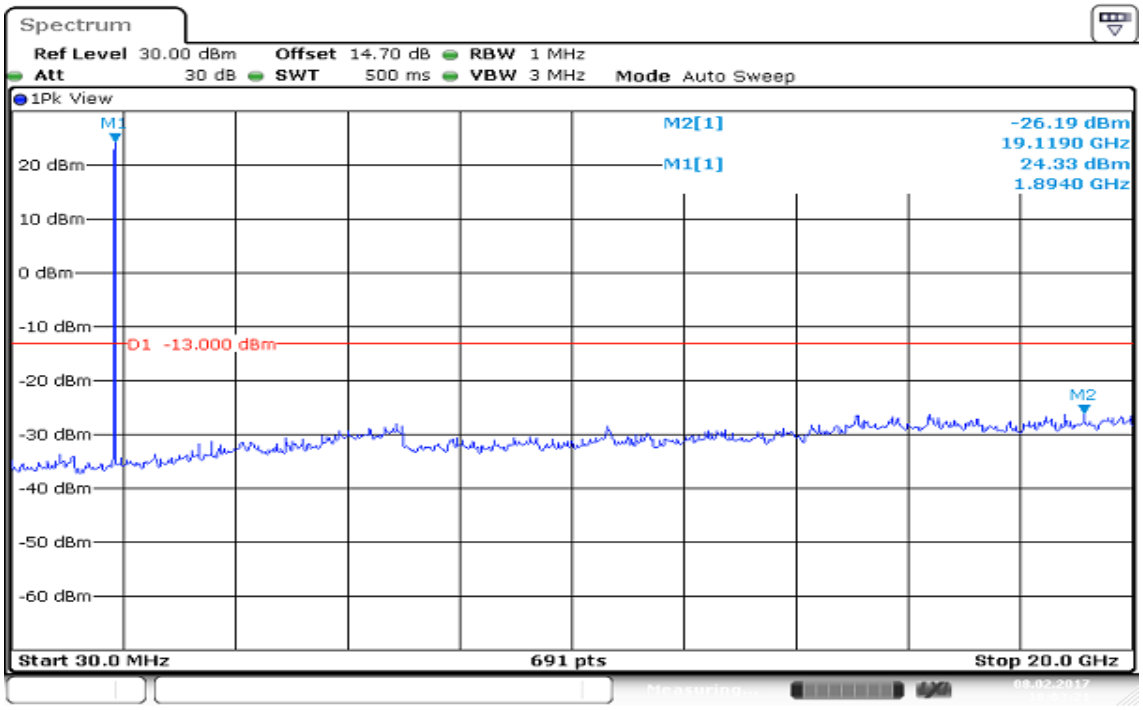
## BW: 1.4MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



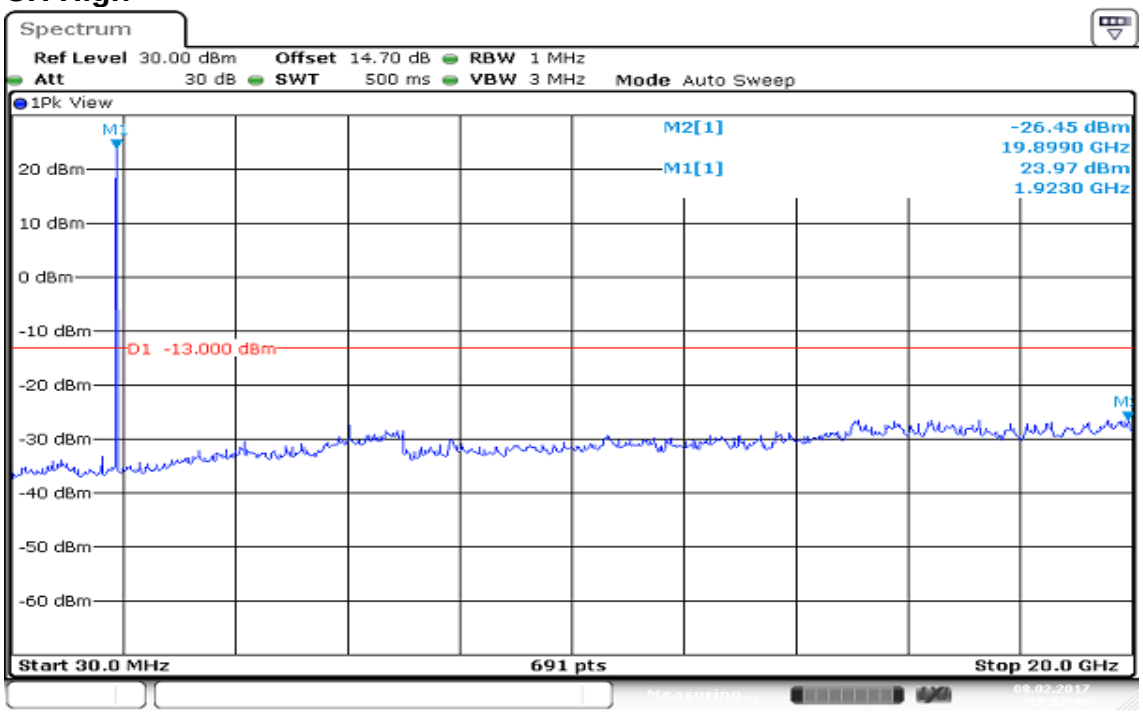

Date: 8.FEB.2017 18:03:59

### CH Mid




Date: 8.FEB.2017 18:03:21

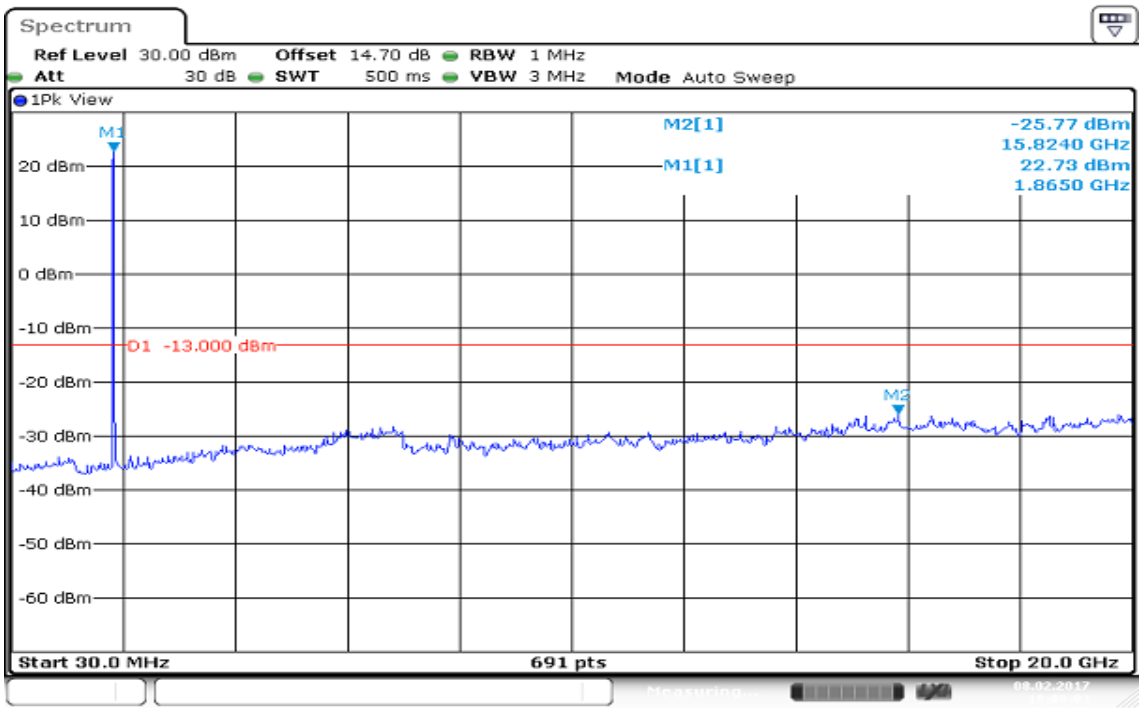
## CH High




Date: 8.FEB.2017 18:02:40

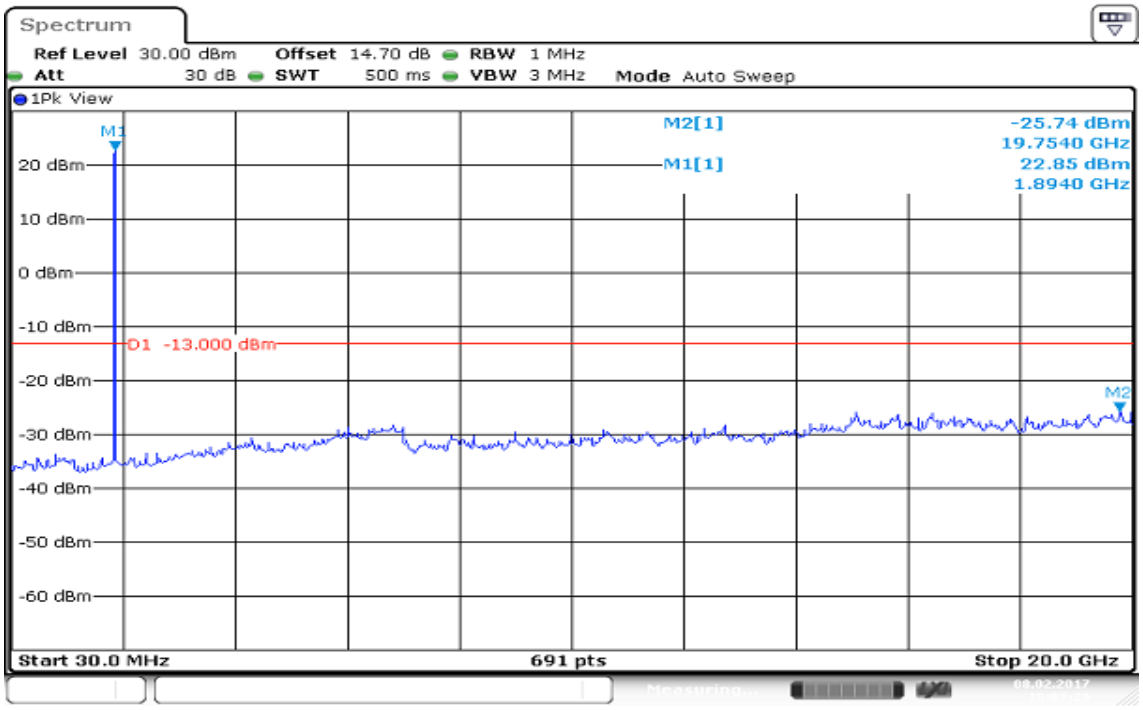
## BW: 3MHz / QPSK / RB =1, RB Offset = 0

### CH Low



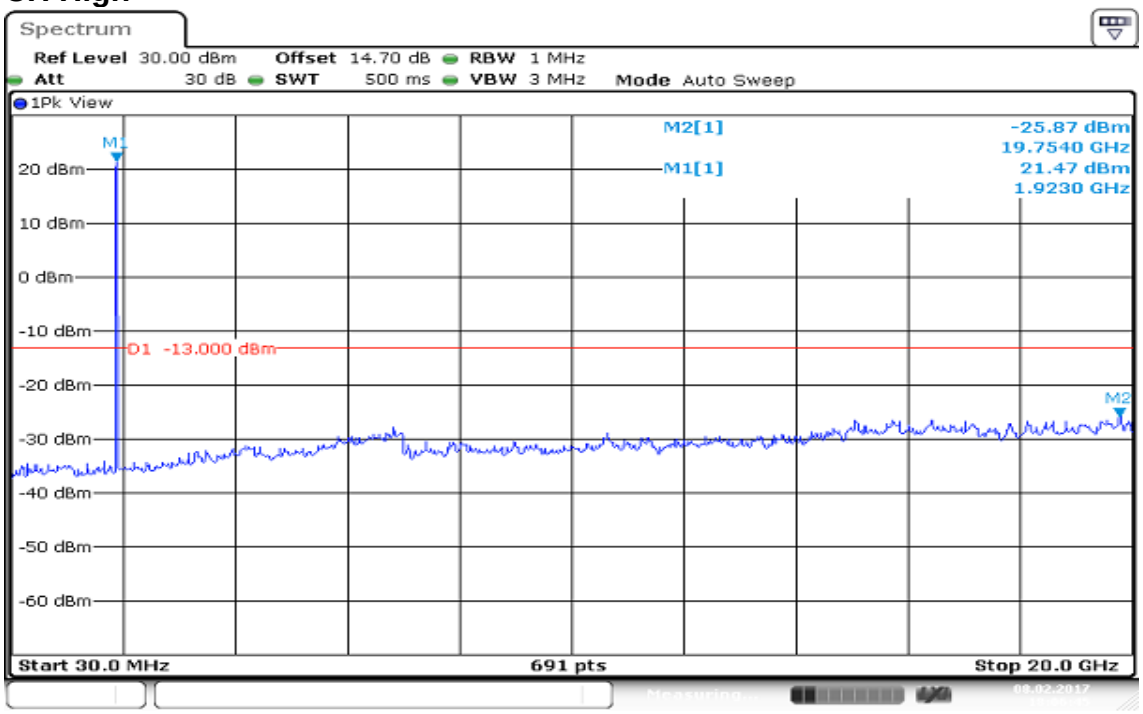

Date: 8.FEB.2017 18:08:04

### CH Mid




Date: 8.FEB.2017 18:07:29

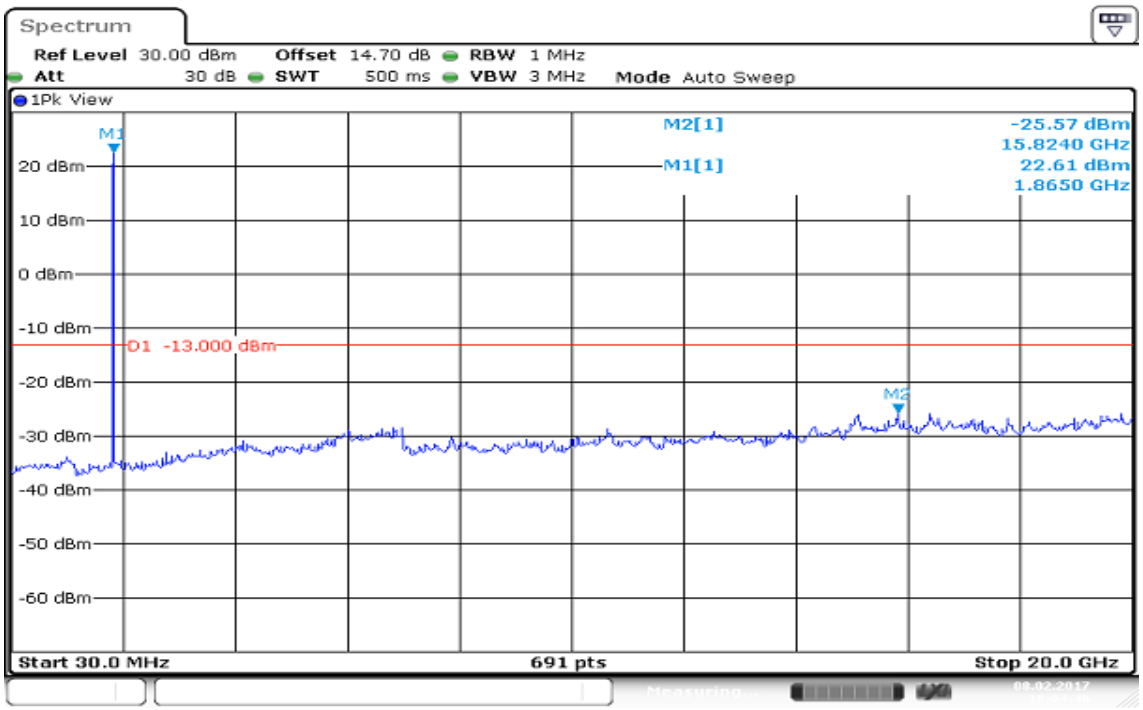
## CH High




Date: 8.FEB.2017 18:06:45

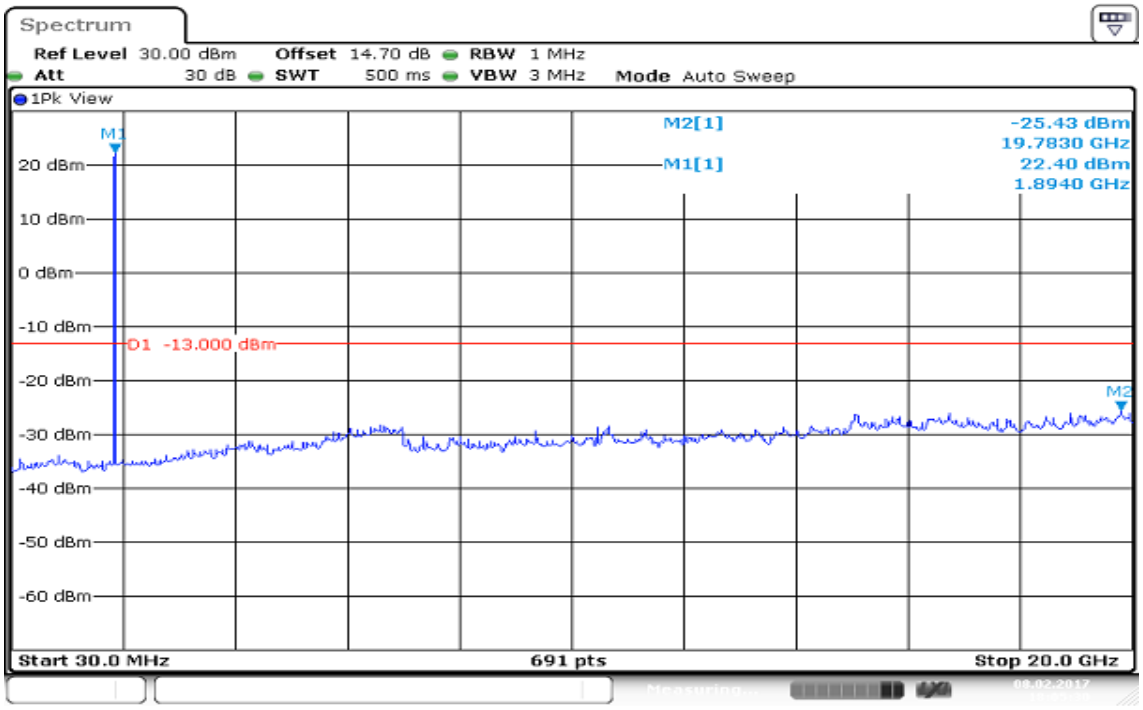
## BW: 3MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



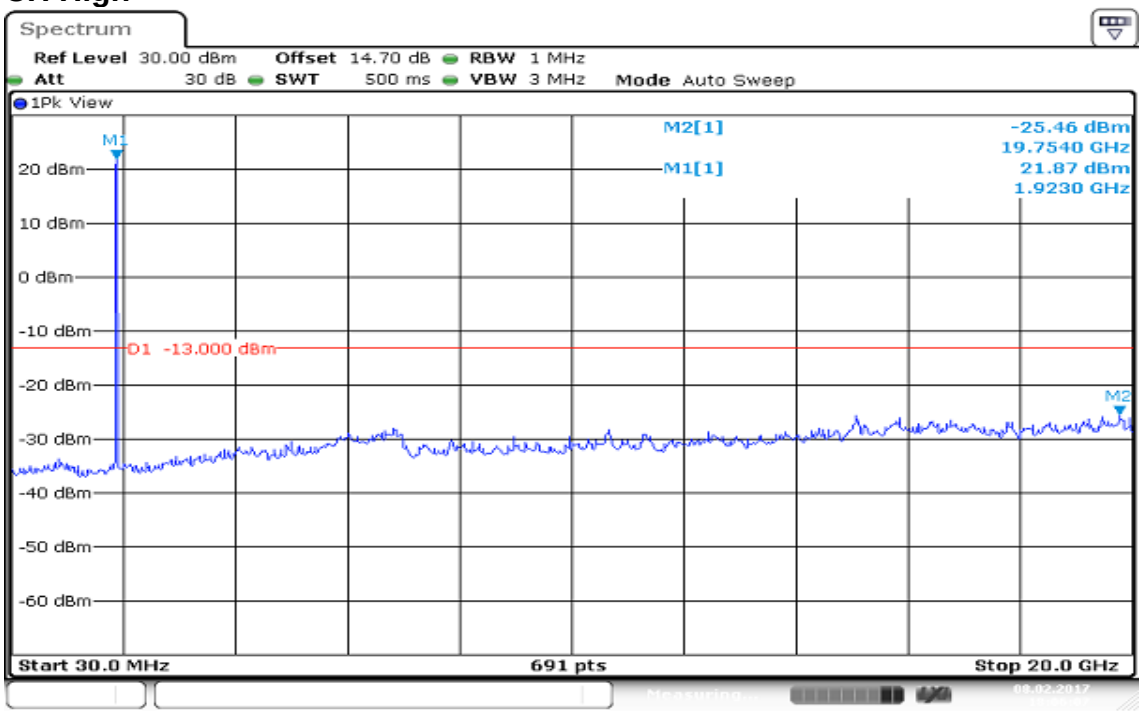

Date: 8.FEB.2017 18:04:46

### CH Mid




Date: 8.FEB.2017 18:05:31

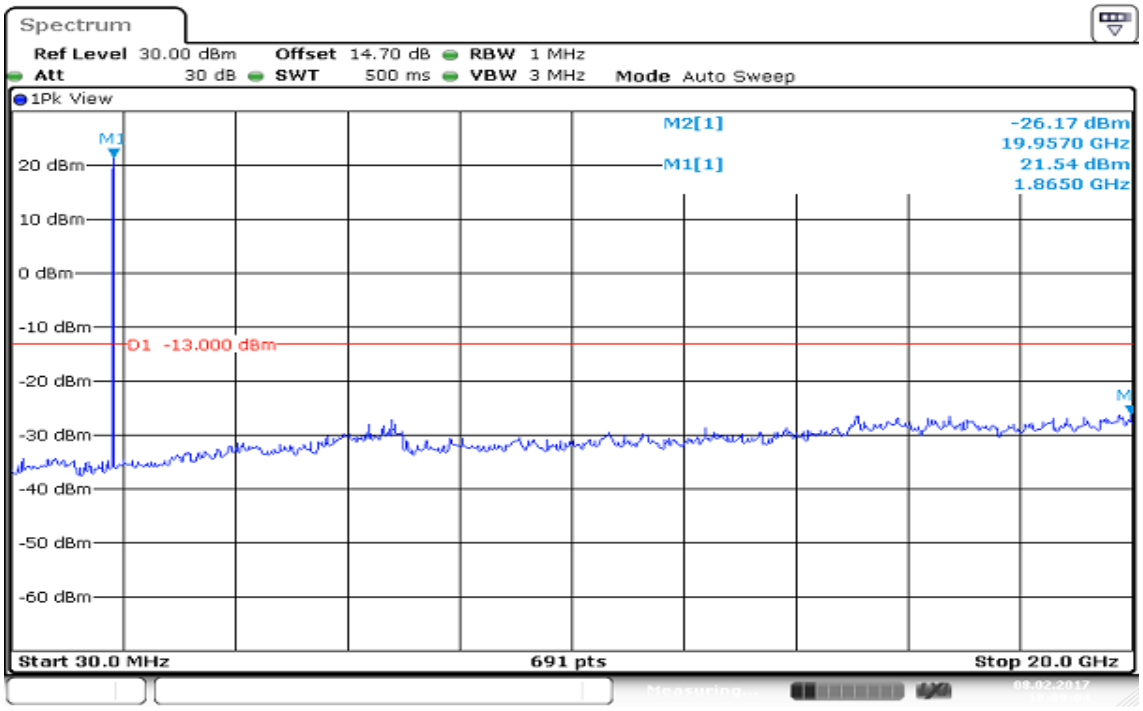
## CH High




Date: 8.FEB.2017 18:06:07

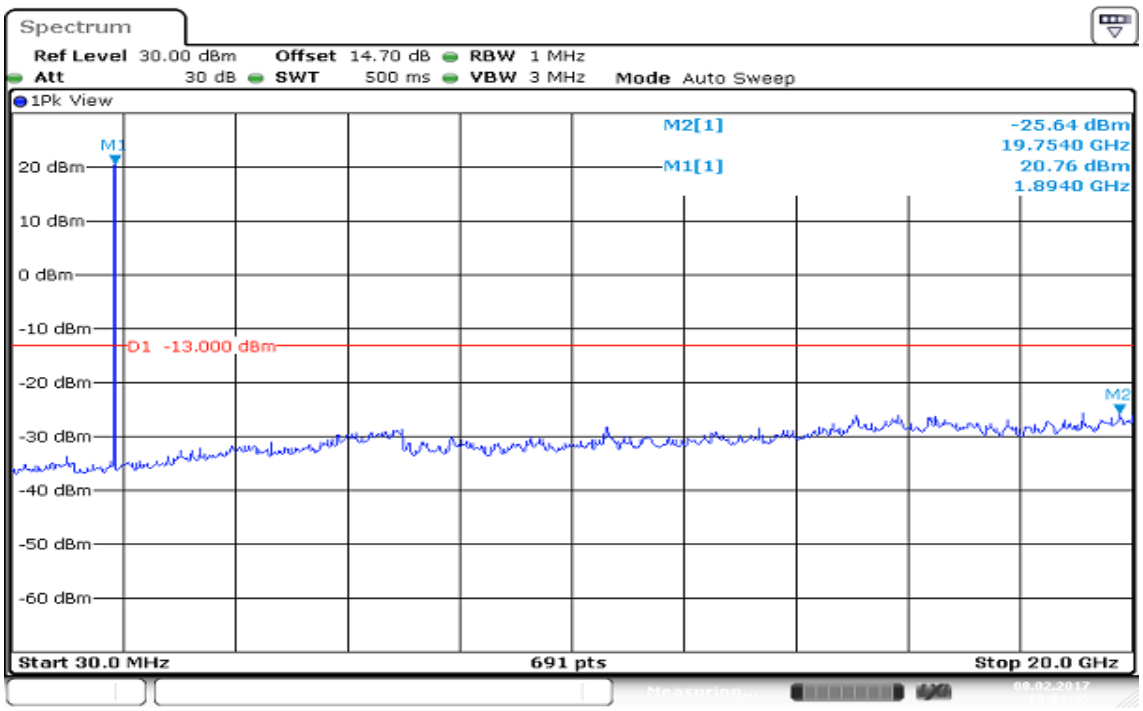
## BW: 5MHz / QPSK / RB =1, RB Offset = 0

### CH Low



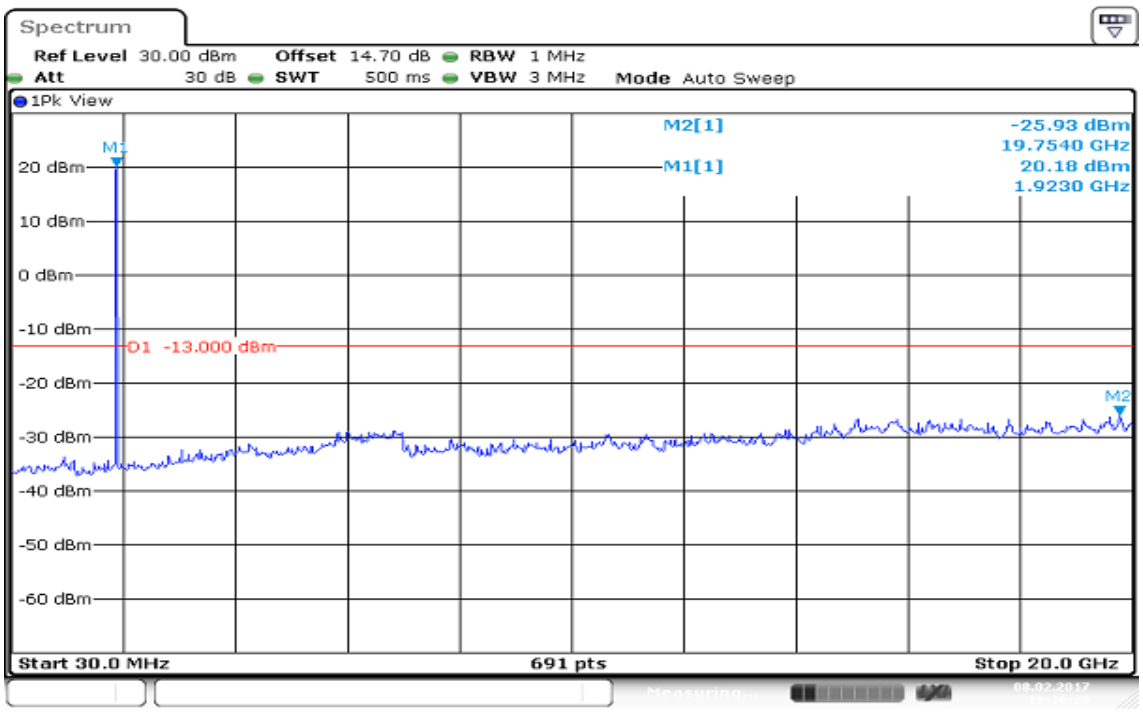

Date: 8.FEB.2017 18:09:04

### CH Mid




Date: 8.FEB.2017 18:09:45

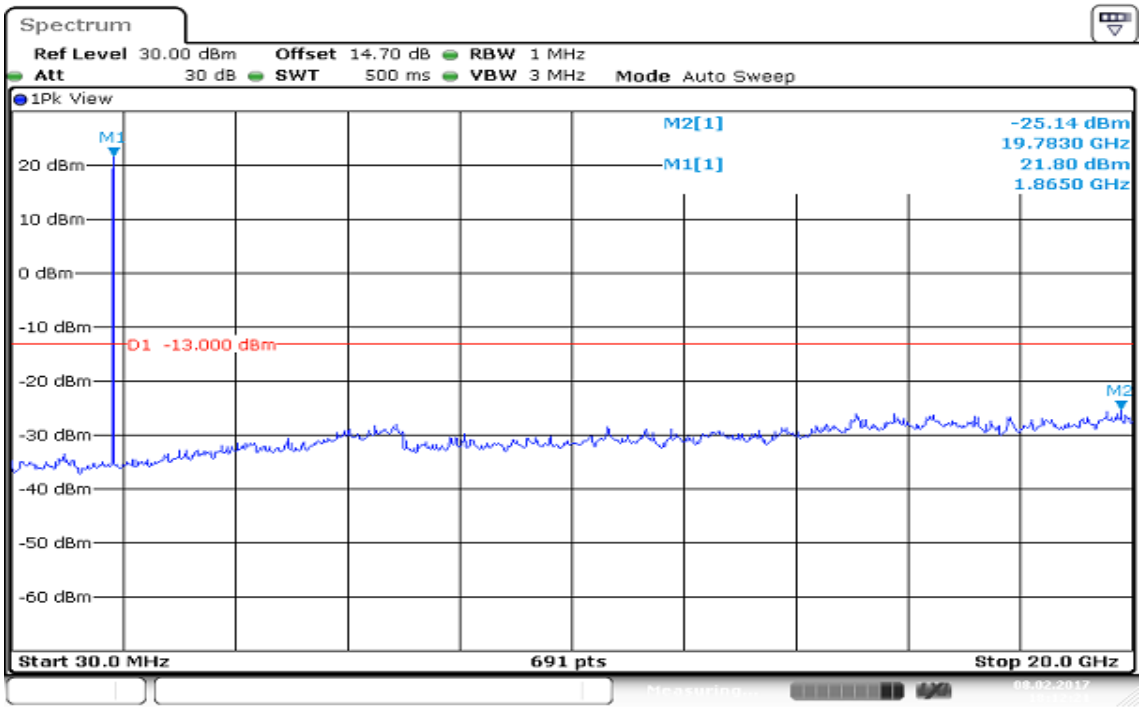
## CH High




Date: 8.FEB.2017 18:10:20

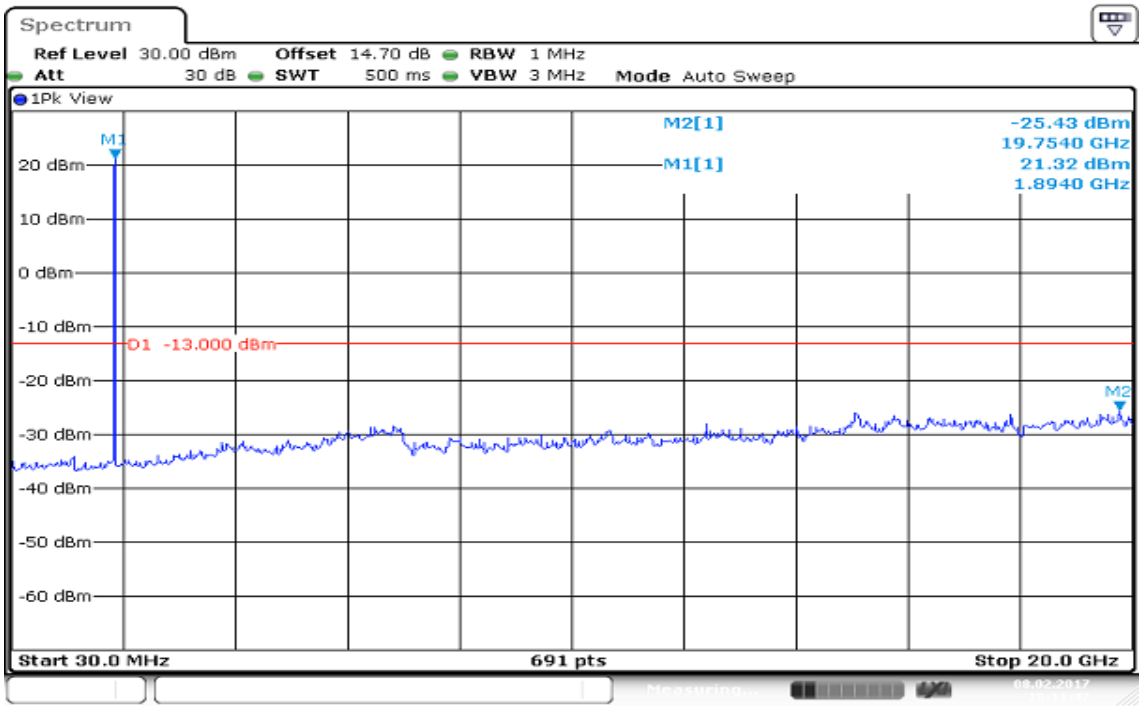
## BW: 5MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



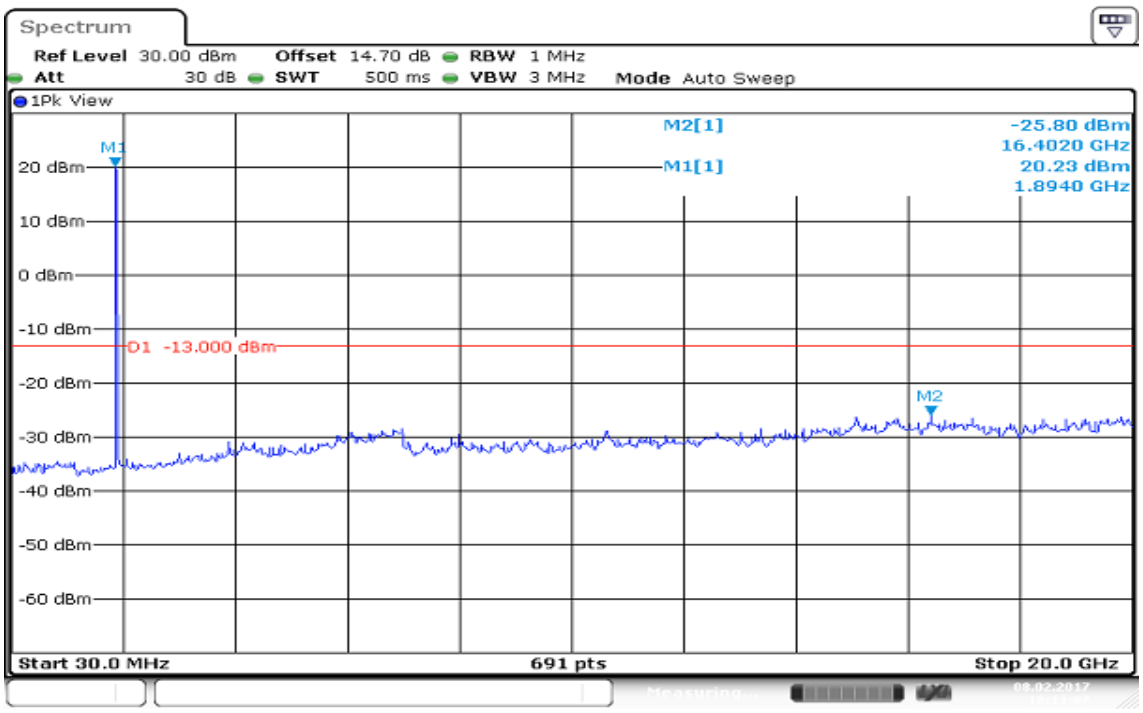

Date: 8.FEB.2017 18:12:21

### CH Mid




Date: 8.FEB.2017 18:11:43

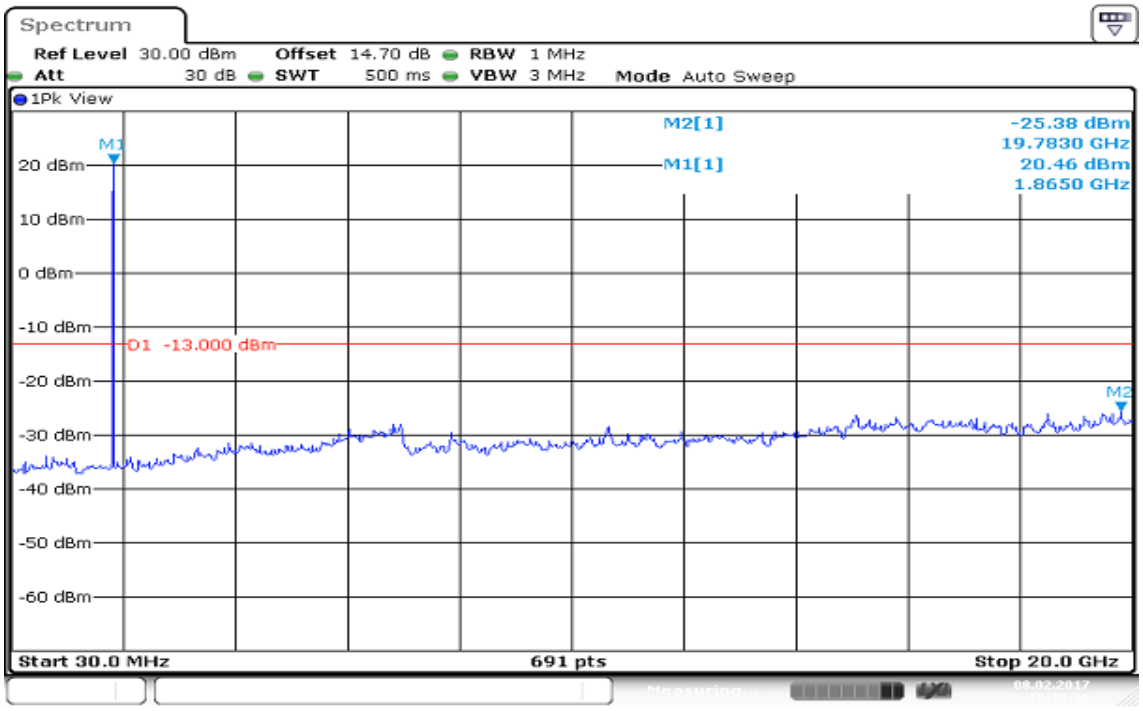
## CH High




Date: 8.FEB.2017 18:11:07

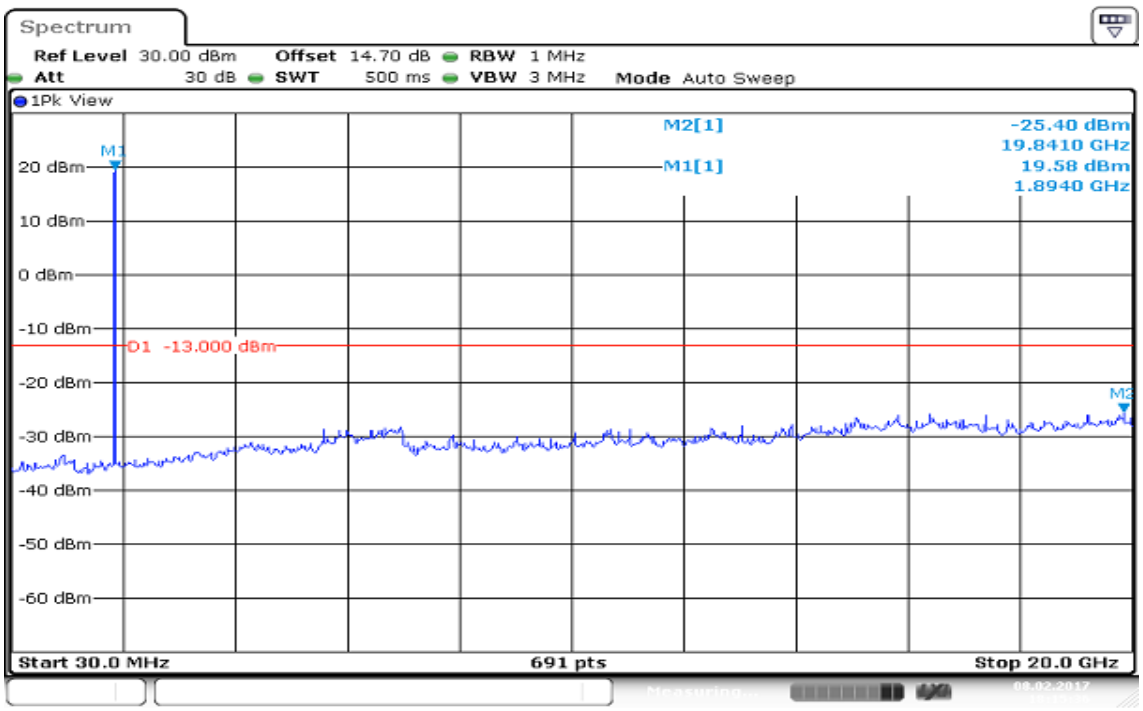
## BW: 10MHz / QPSK / RB =1, RB Offset = 0

### CH Low



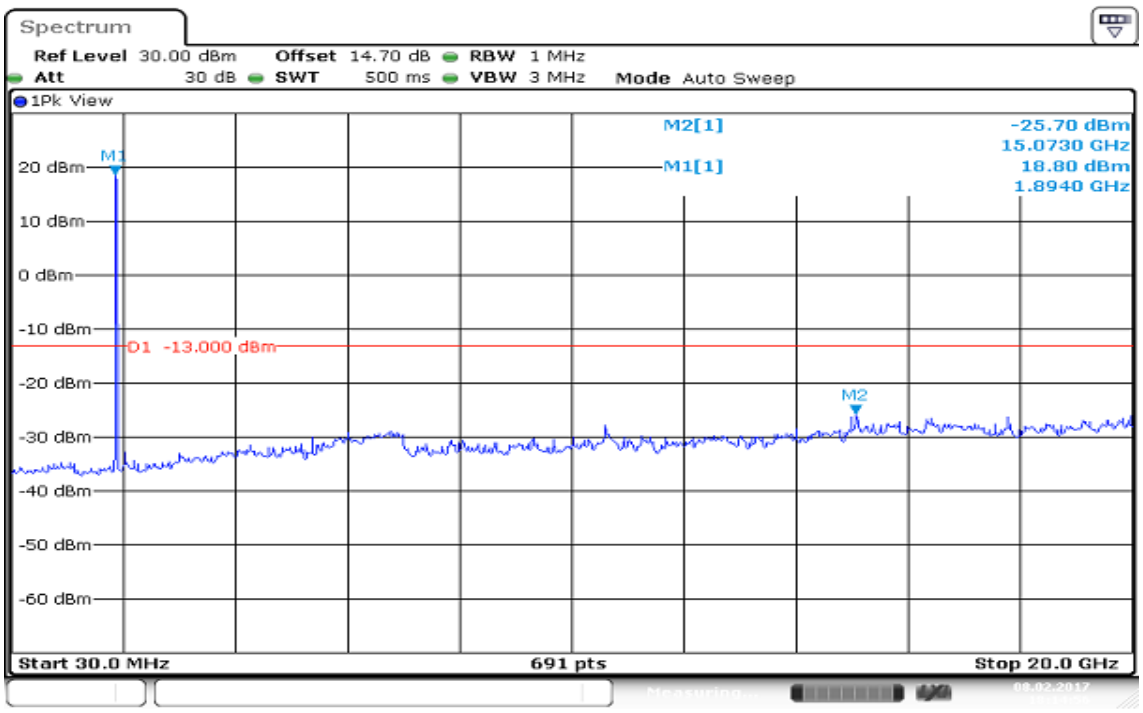

Date: 8.FEB.2017 18:16:16

### CH Mid




Date: 8.FEB.2017 18:15:36

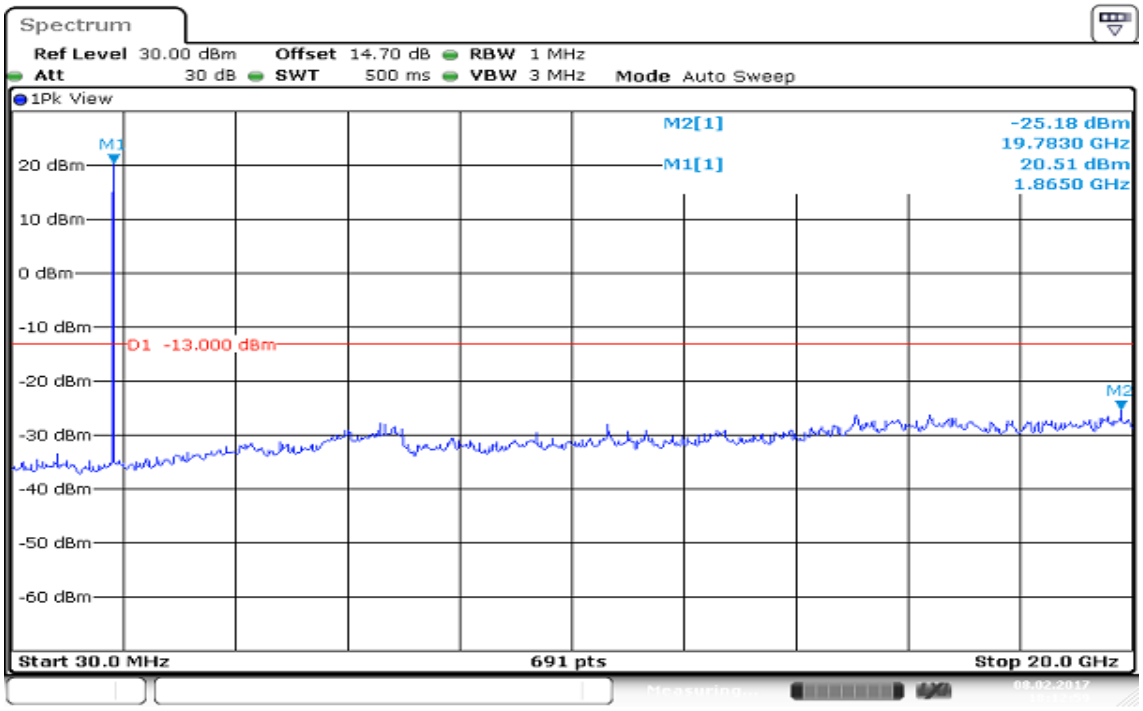
## CH High




Date: 8.FEB.2017 18:14:56

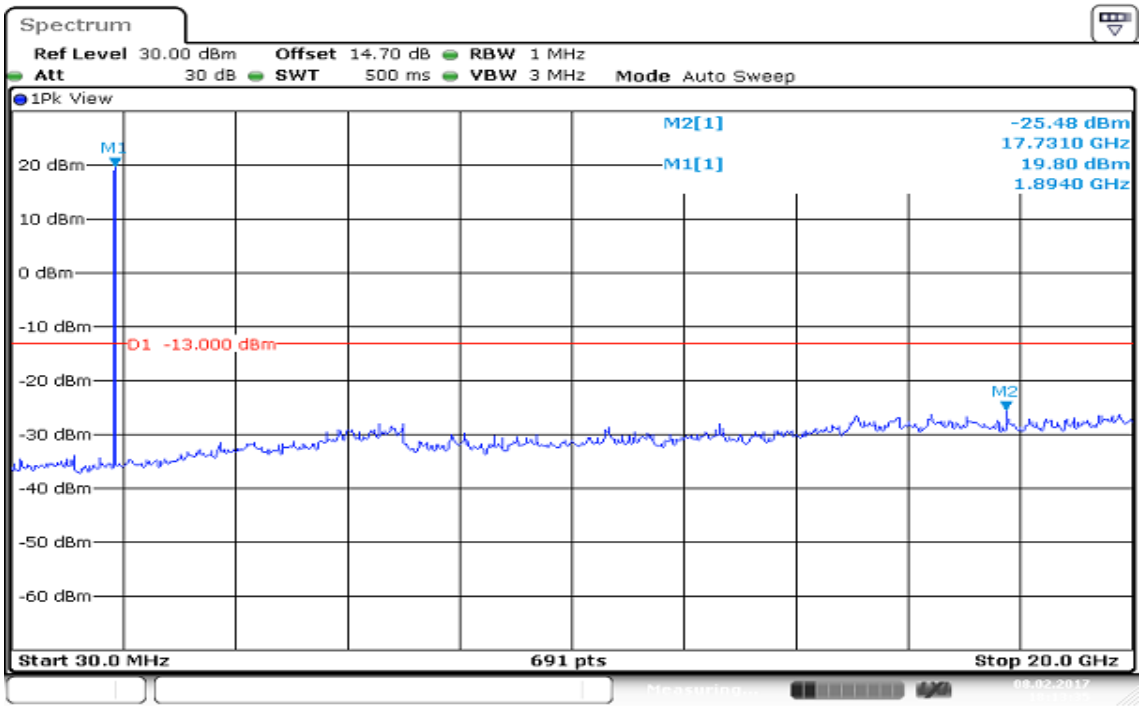
## BW: 10MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



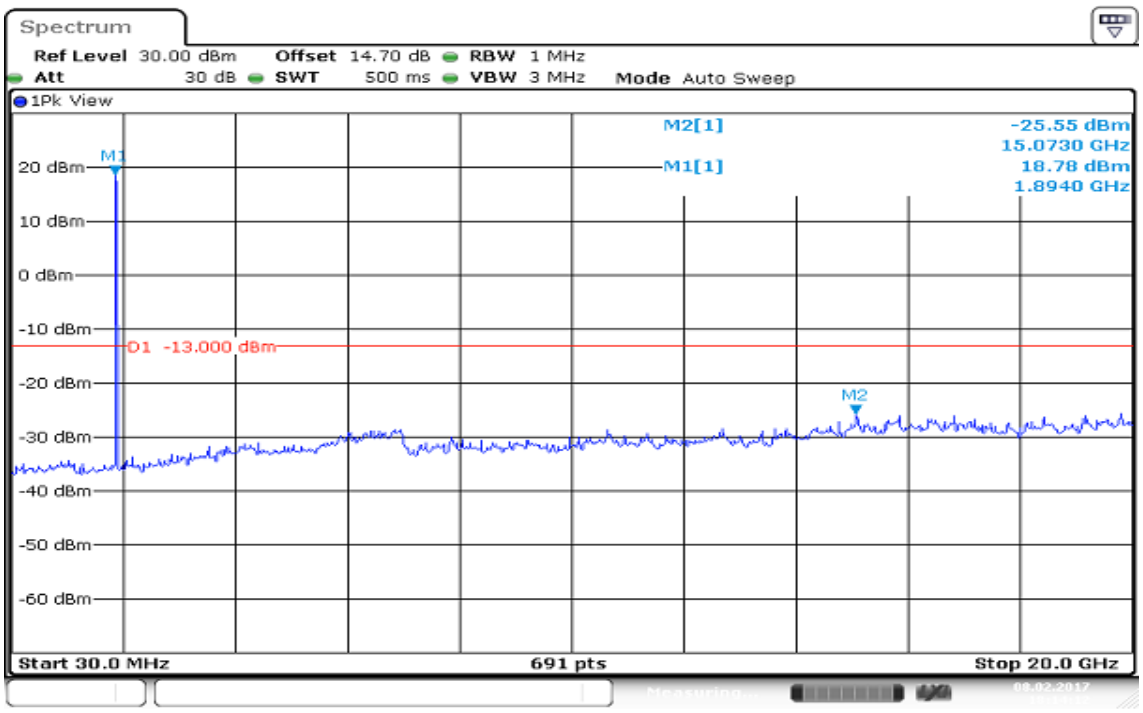

Date: 8.FEB.2017 18:12:58

### CH Mid




Date: 8.FEB.2017 18:13:36

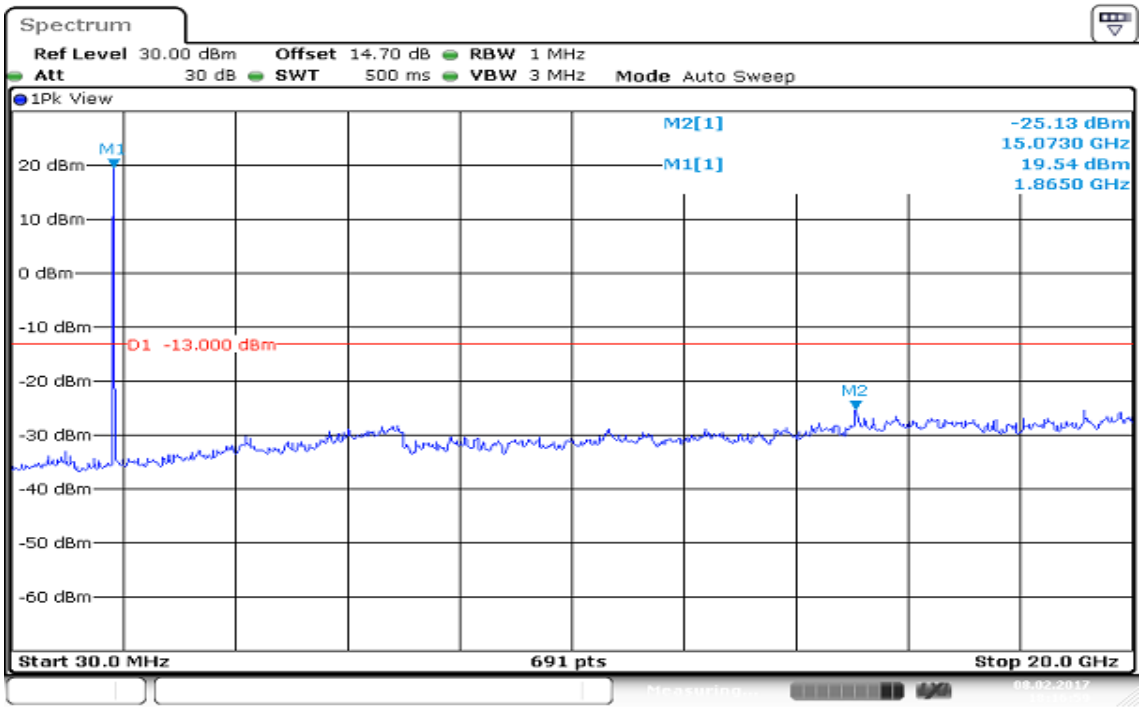
## CH High




Date: 8.FEB.2017 18:14:11

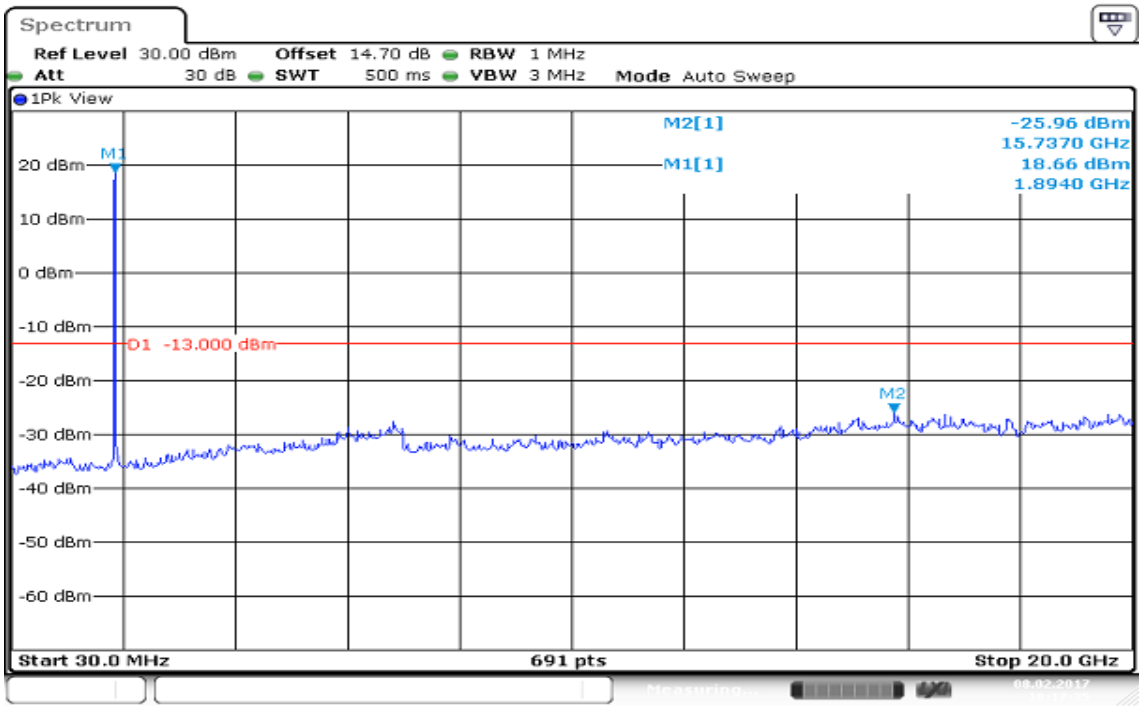
## BW: 15MHz / QPSK / RB =1, RB Offset = 0

### CH Low



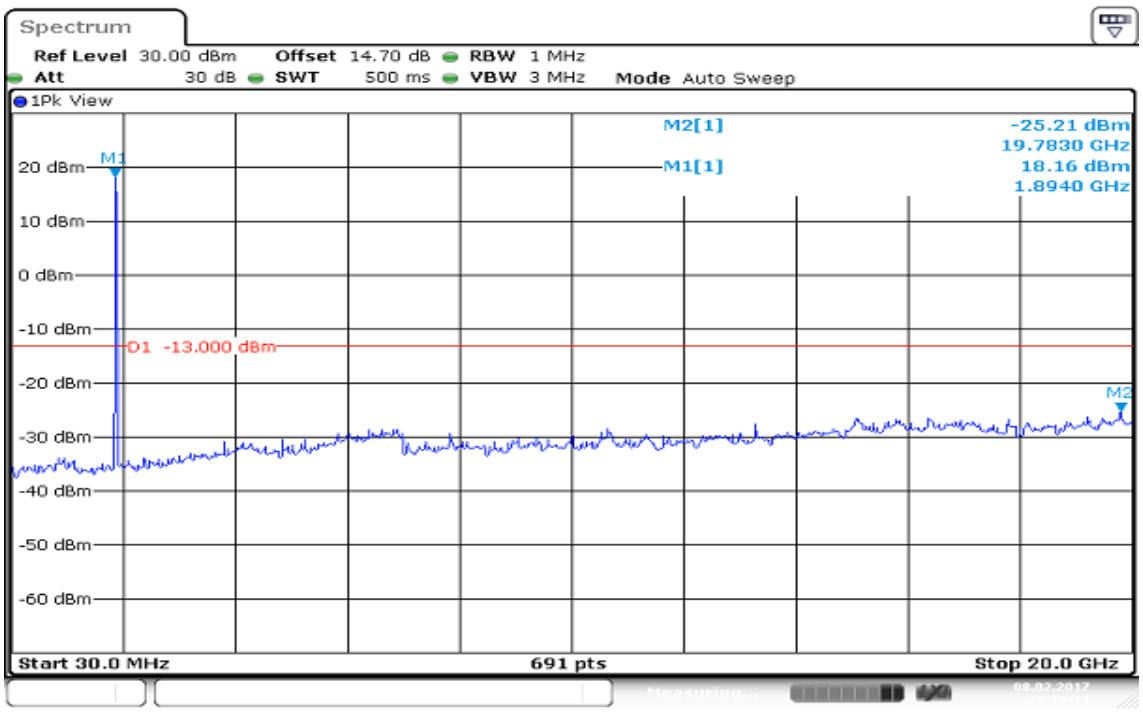

Date: 8.FEB.2017 18:16:59

### CH Mid




Date: 8.FEB.2017 18:17:36

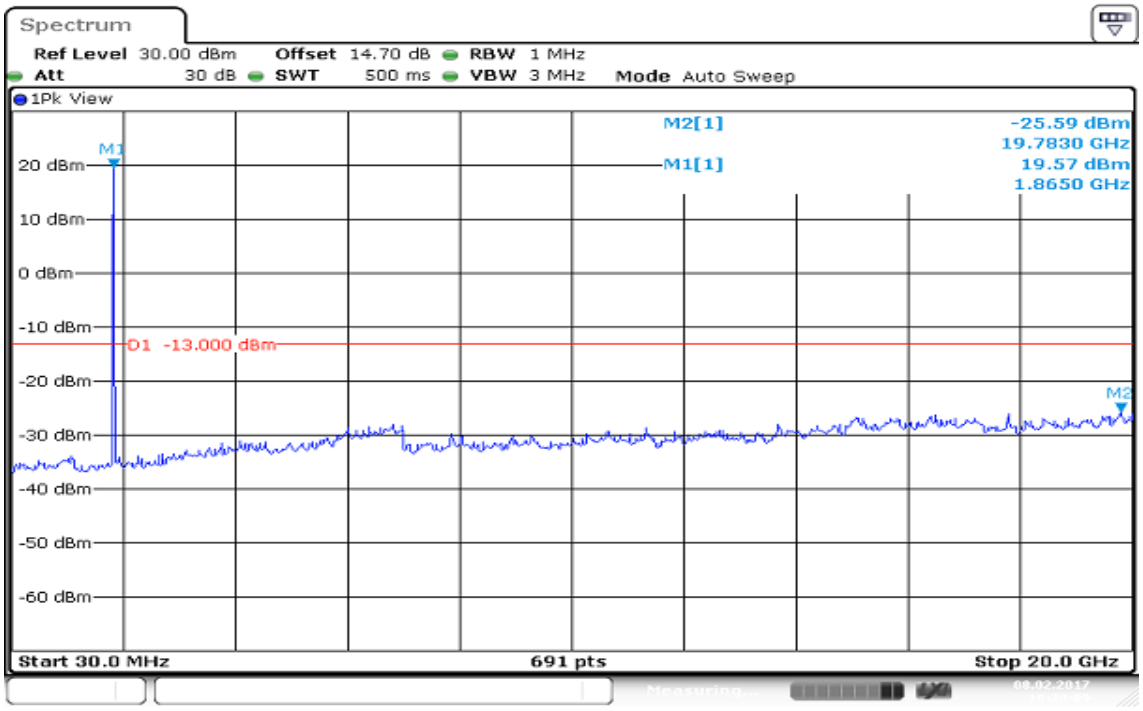
## CH High




Date: 8.FEB.2017 18:18:12

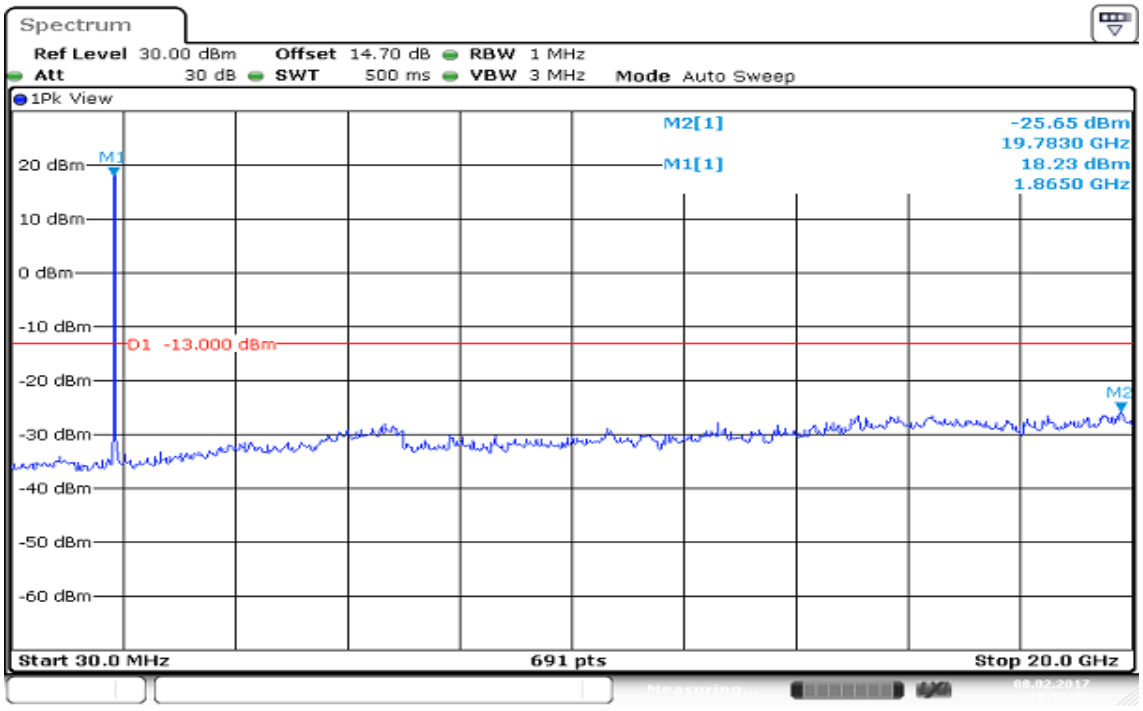
## BW: 15MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



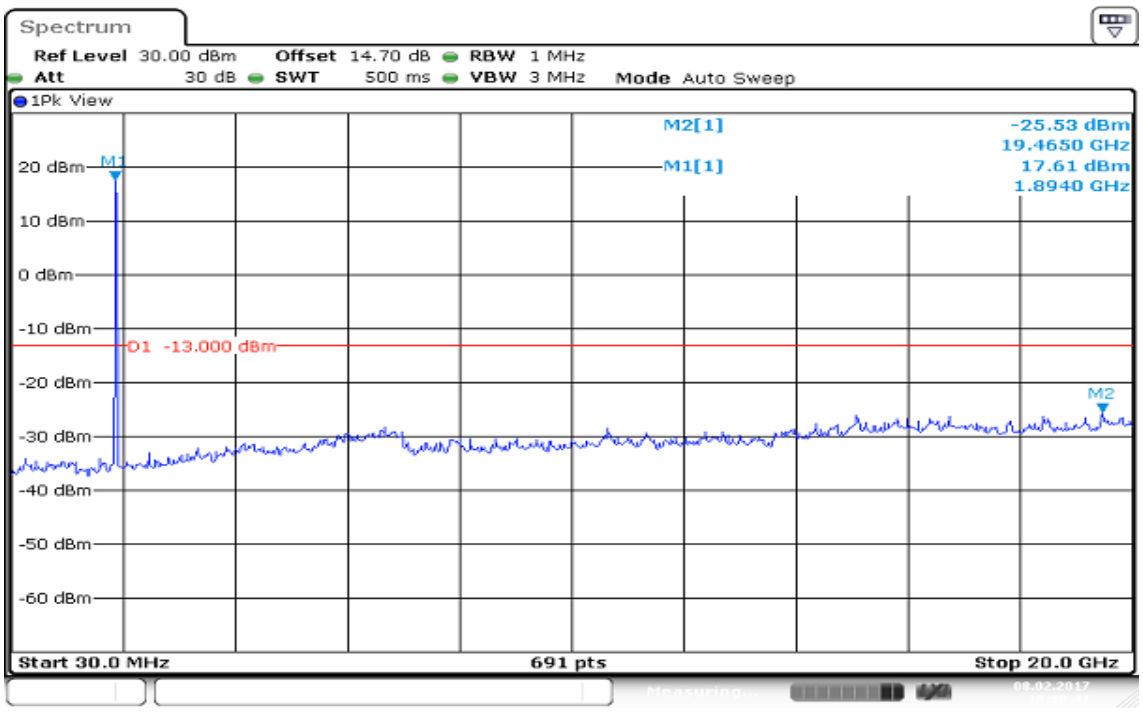

Date: 8.FEB.2017 18:20:10

### CH Mid




Date: 8.FEB.2017 18:19:33

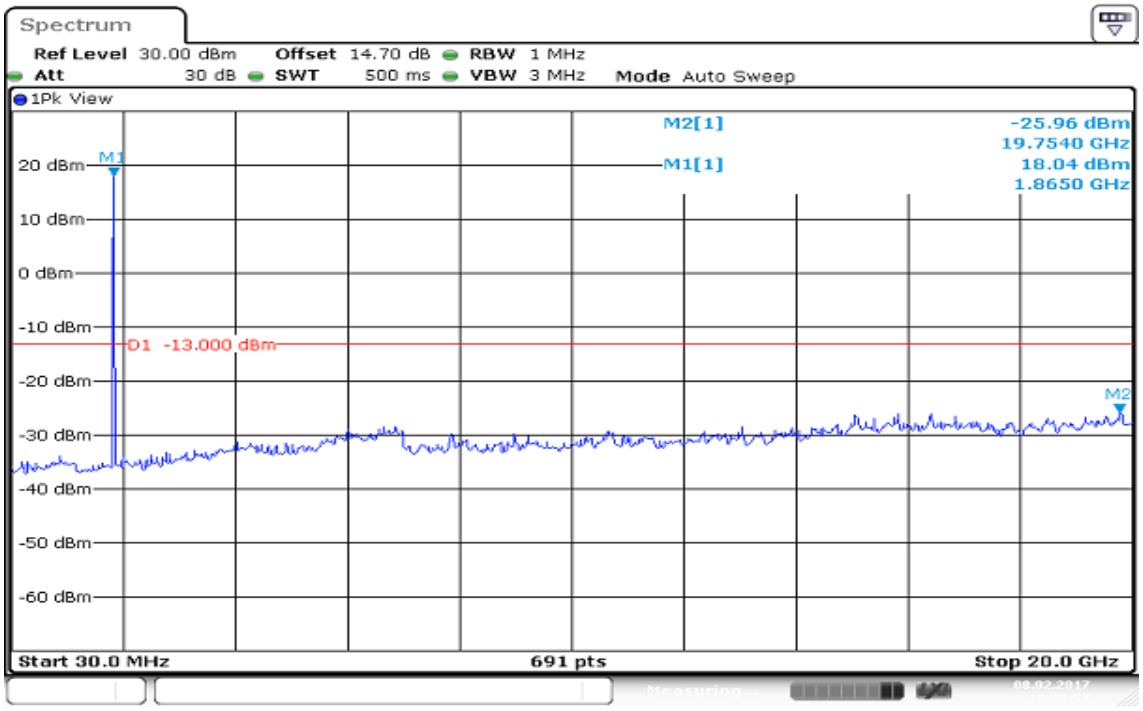
## CH High




Date: 8.FEB.2017 18:18:48

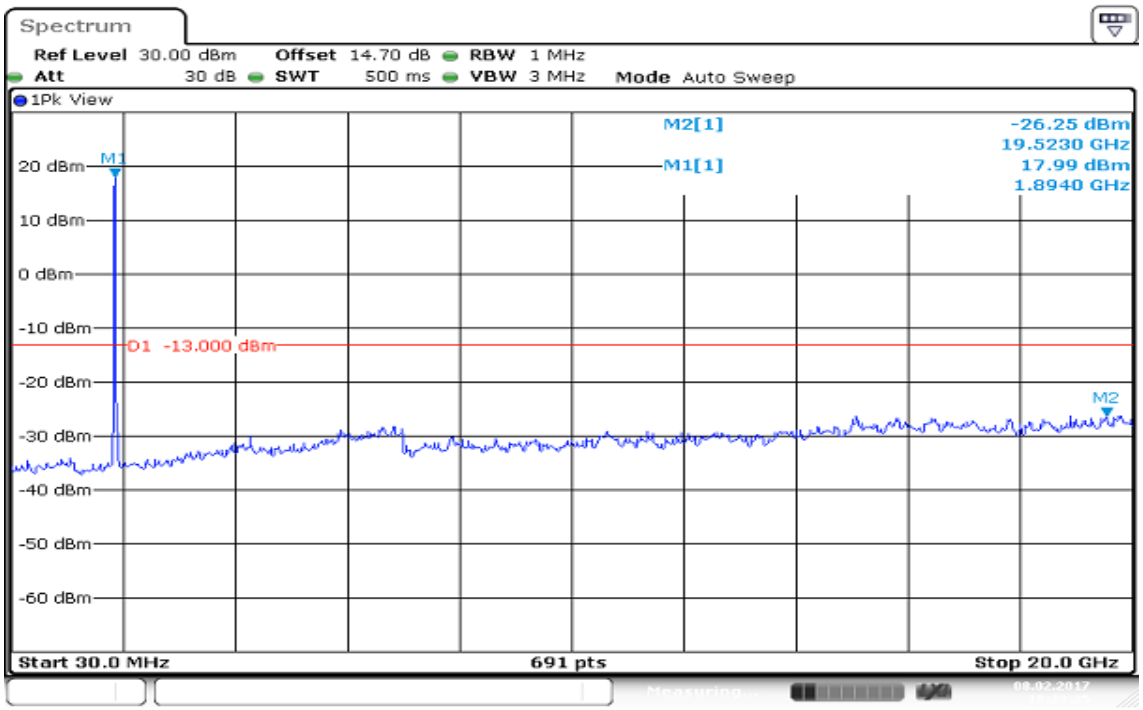
## BW: 20MHz / QPSK / RB =1, RB Offset = 0

### CH Low



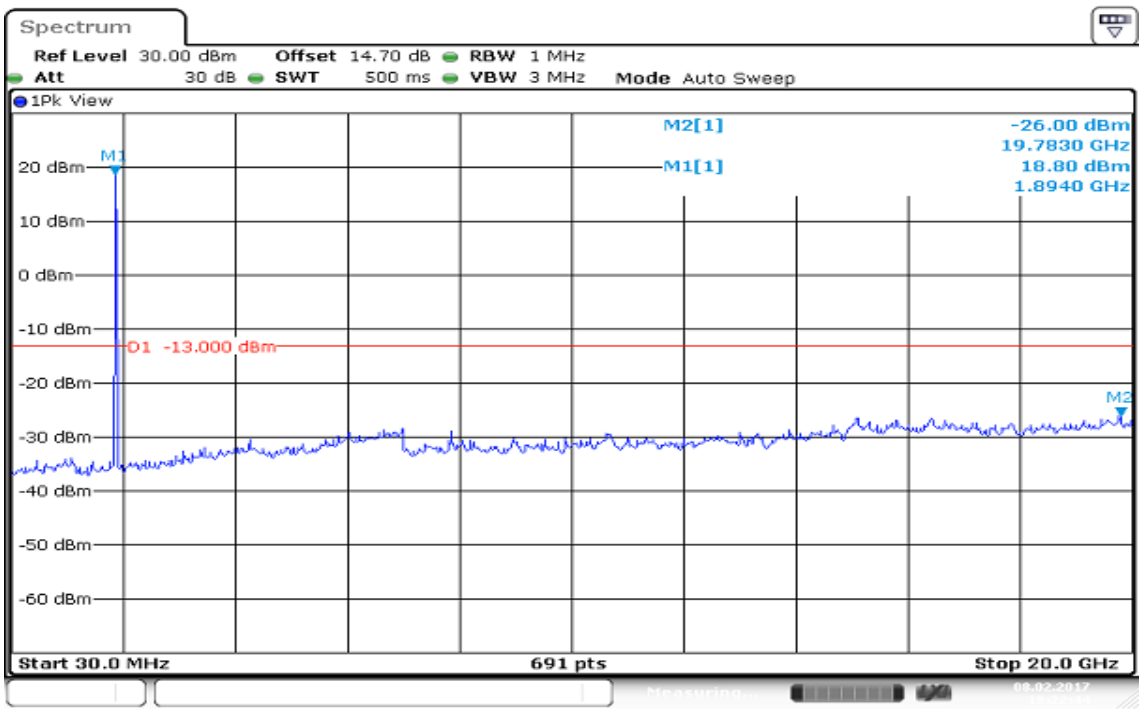

Date: 8.FEB.2017 18:23:57

### CH Mid




Date: 8.FEB.2017 18:23:26

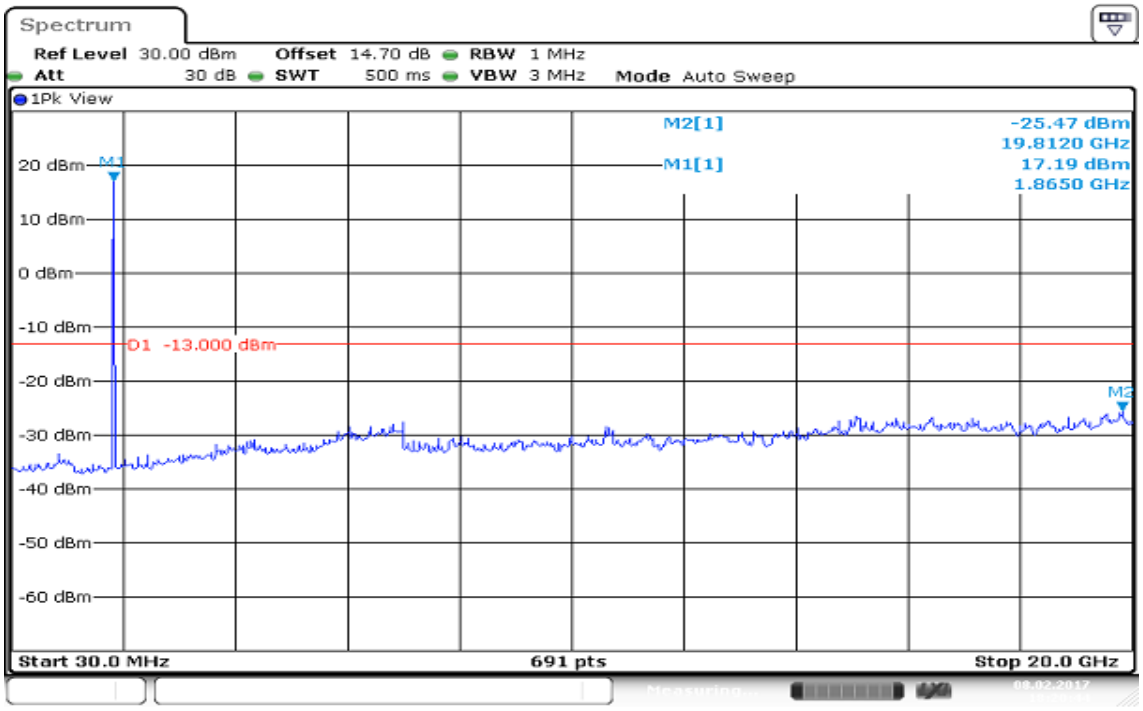
## CH High




Date: 8.FEB.2017 18:22:44

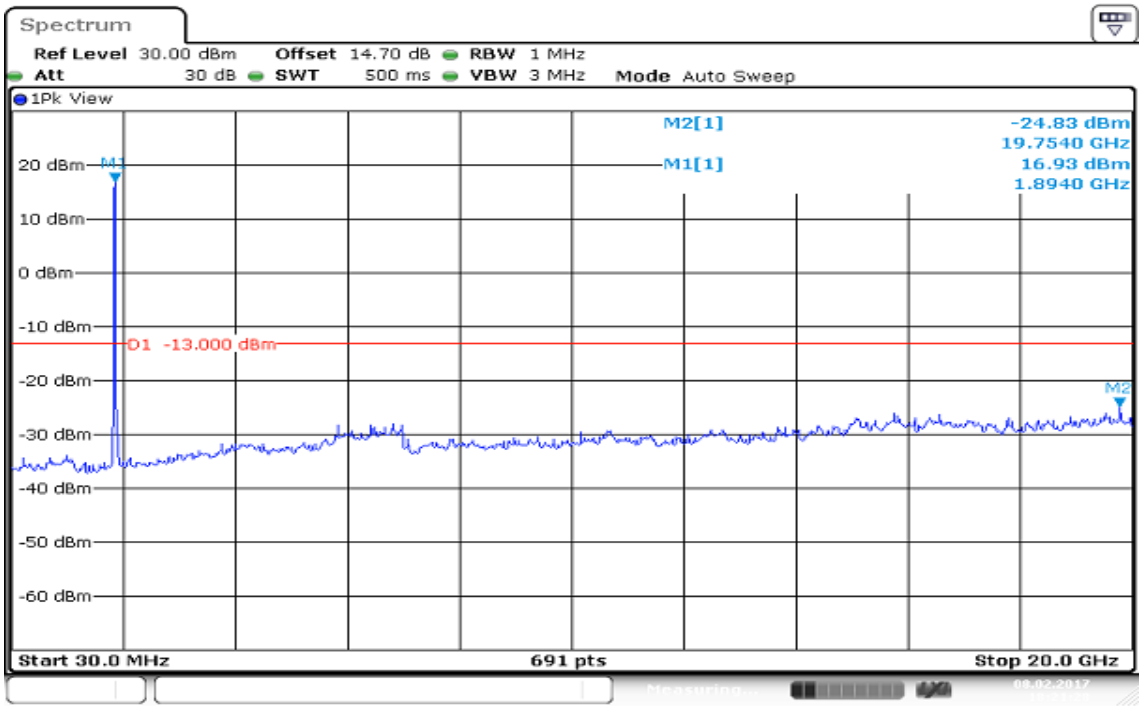
## BW: 20MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



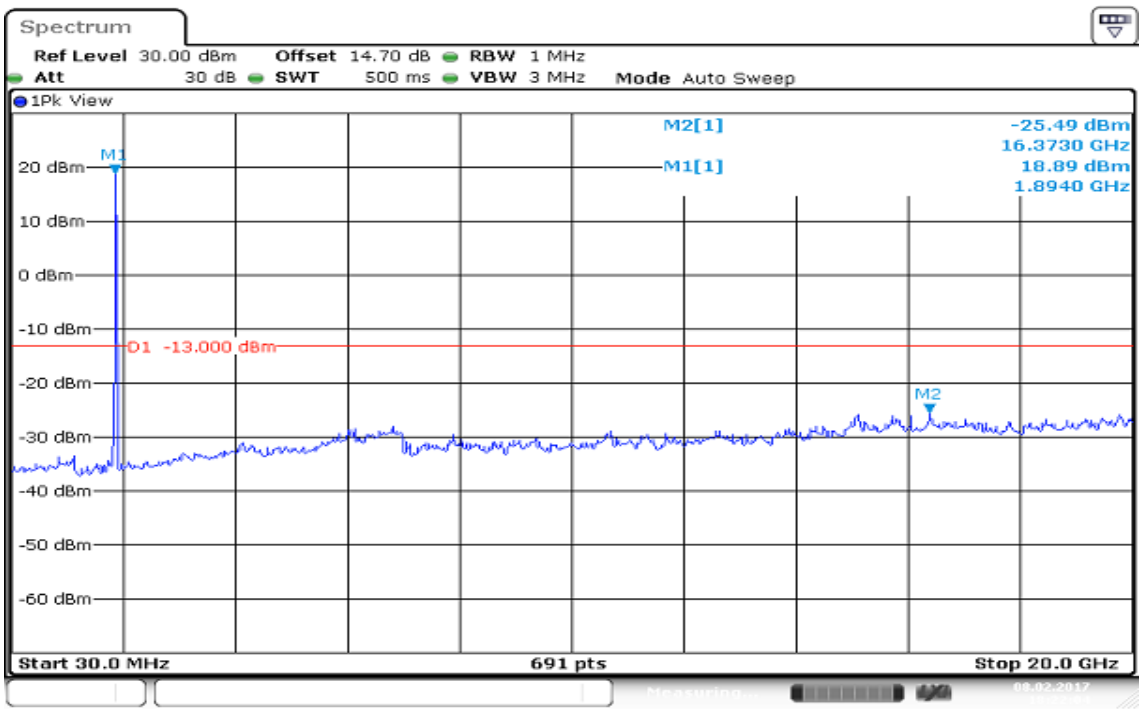

Date: 8.FEB.2017 18:20:44

### CH Mid




Date: 8.FEB.2017 18:21:28

## CH High

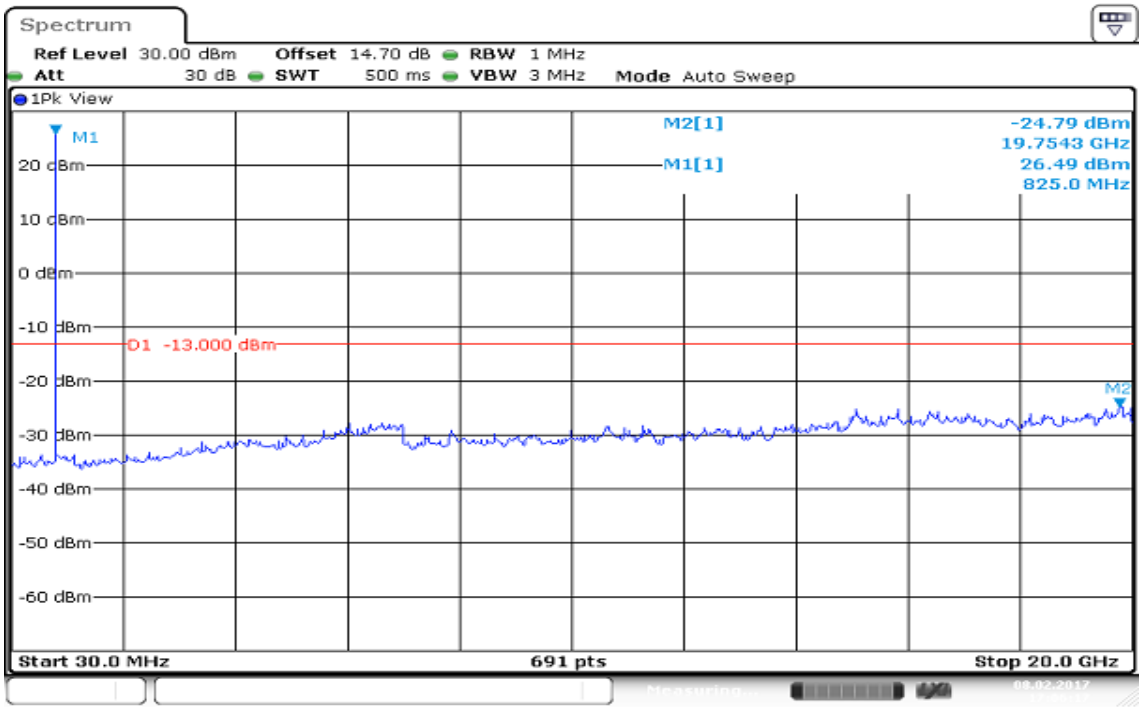



Date: 8.FEB.2017 18:22:04

# LTE Band 5

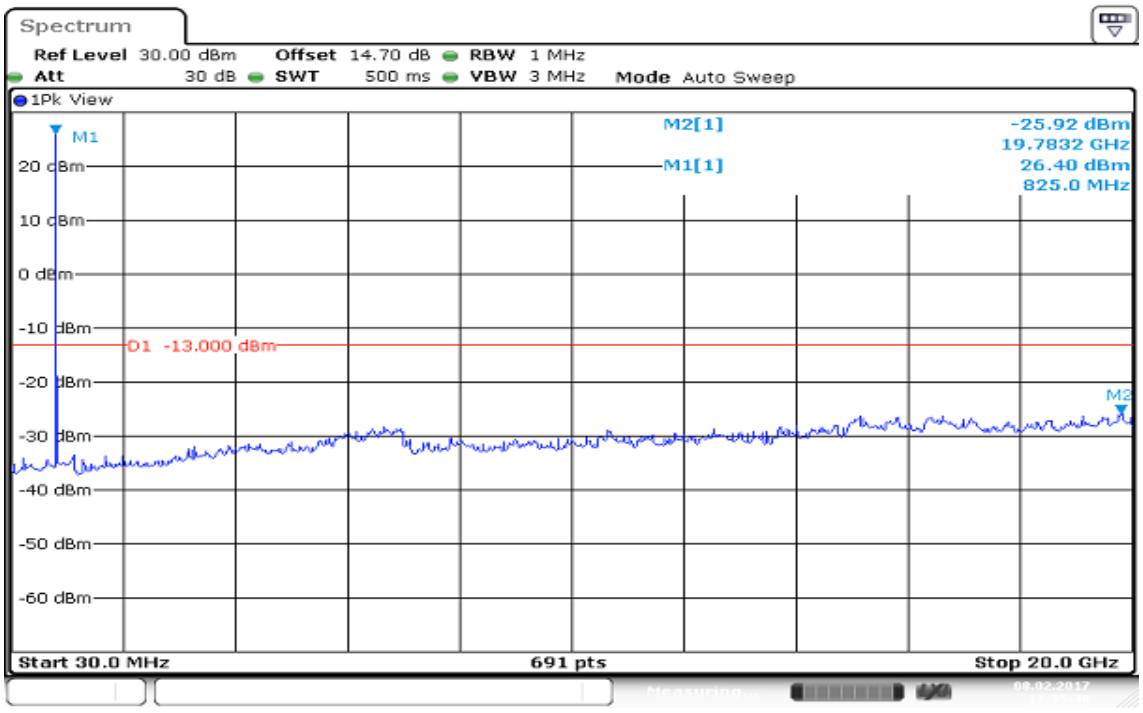
## BW: 1.4MHz / QPSK/ RB =1, RB Offset = 0

### CH Low



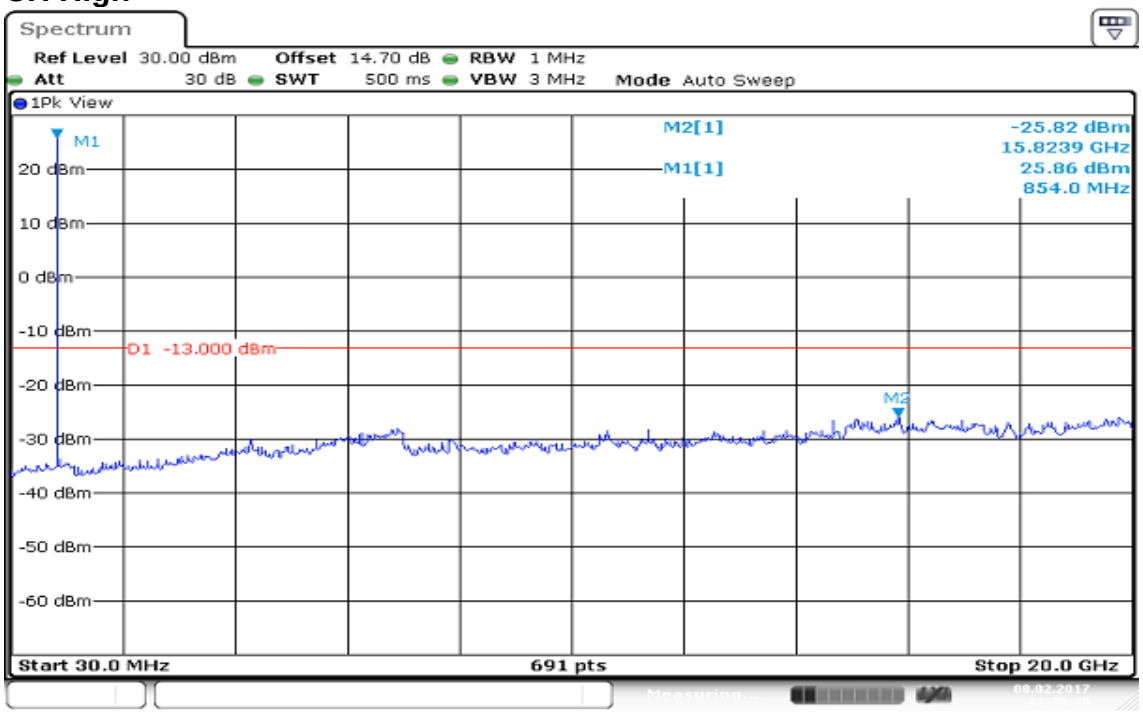

Date: 8.FEB.2017 17:06:18

### CH Mid




Date: 8.FEB.2017 17:35:40

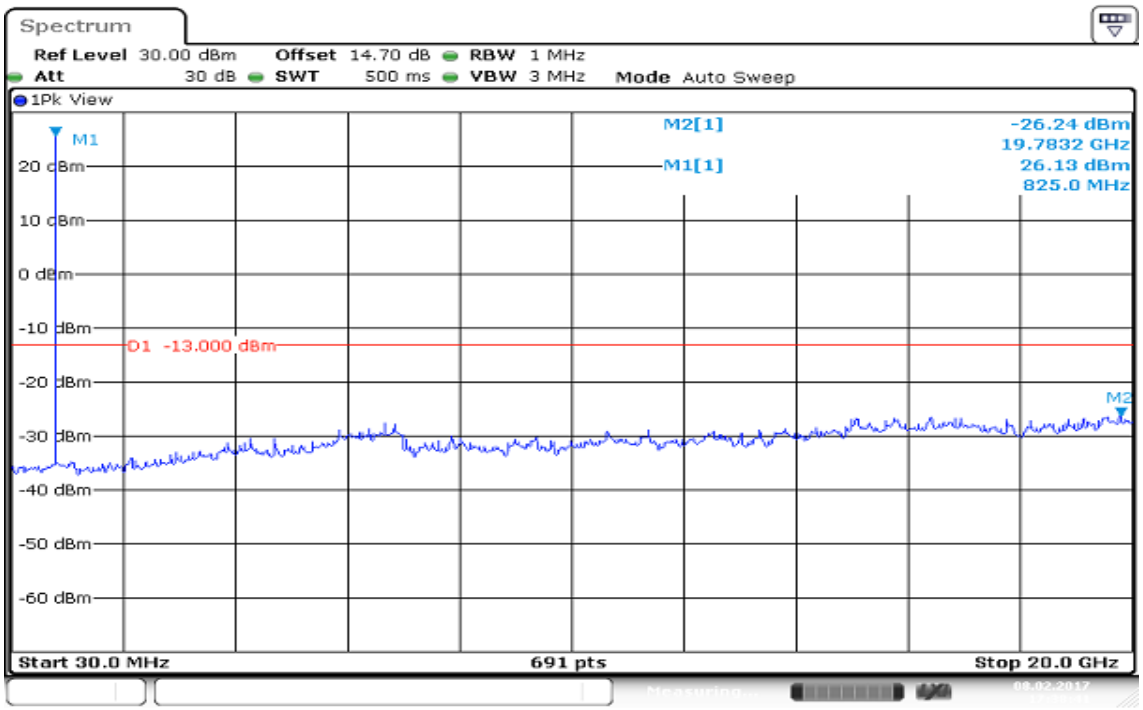
## CH High




Date: 8.FEB.2017 17:36:31

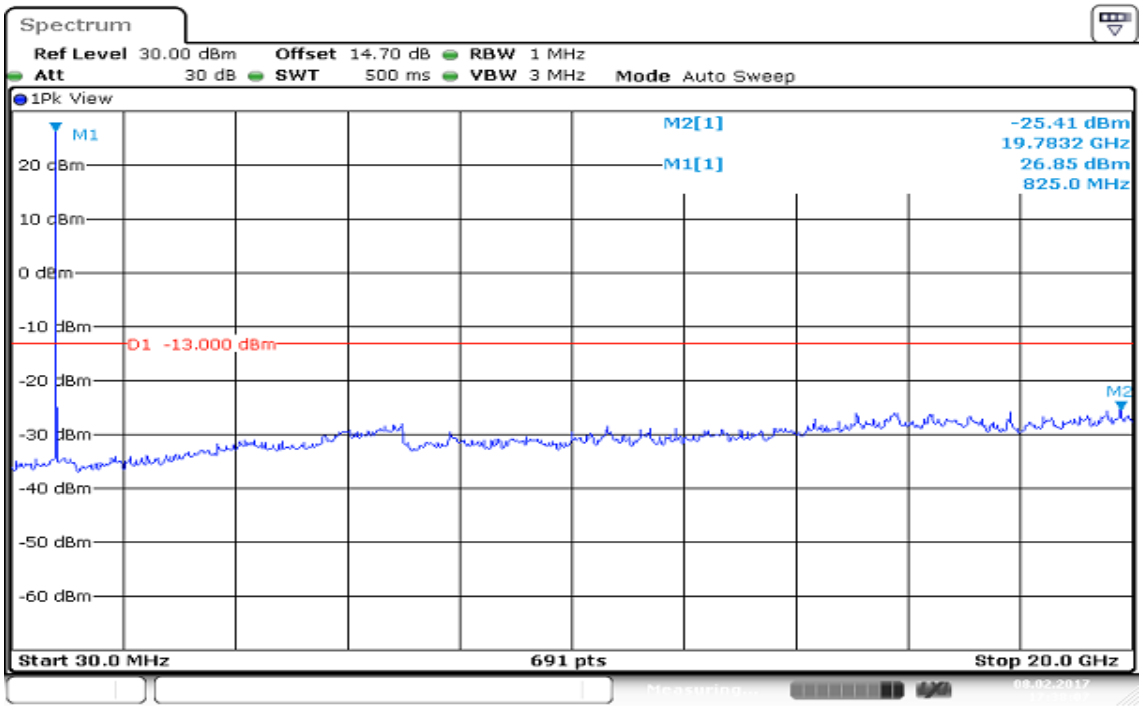
## BW: 1.4MHz / 16QAM/ RB =1, RB Offset = 0

### CH Low



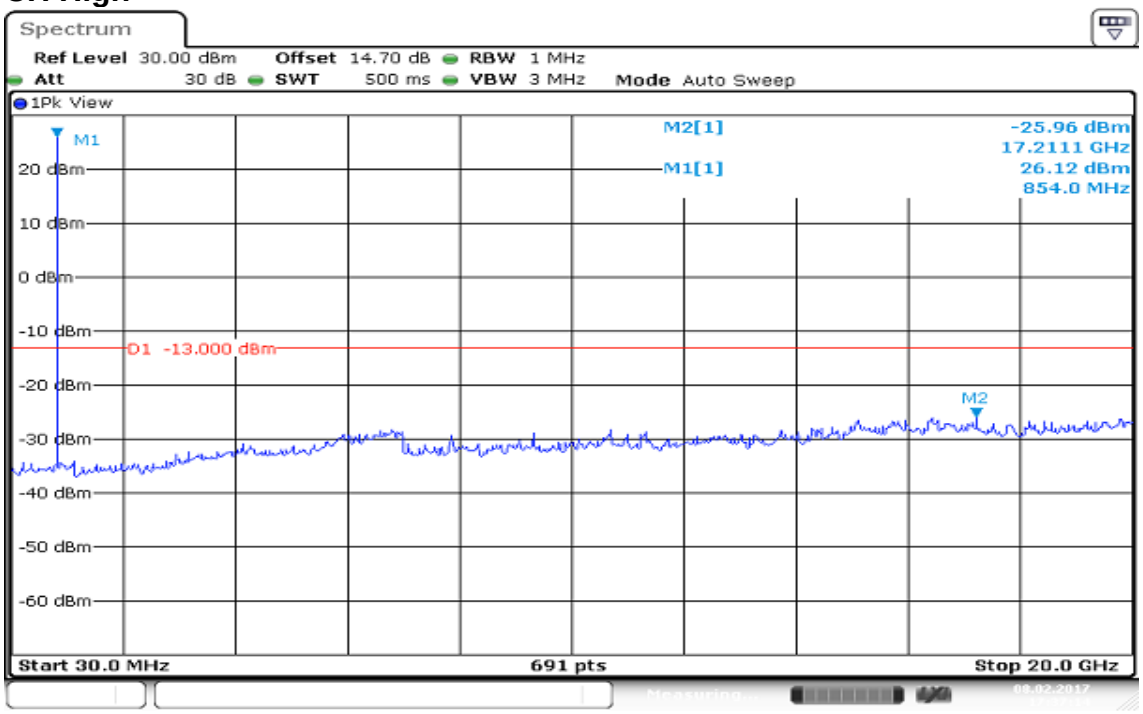

Date: 8.FEB.2017 17:38:42

### CH Mid




Date: 8.FEB.2017 17:38:07

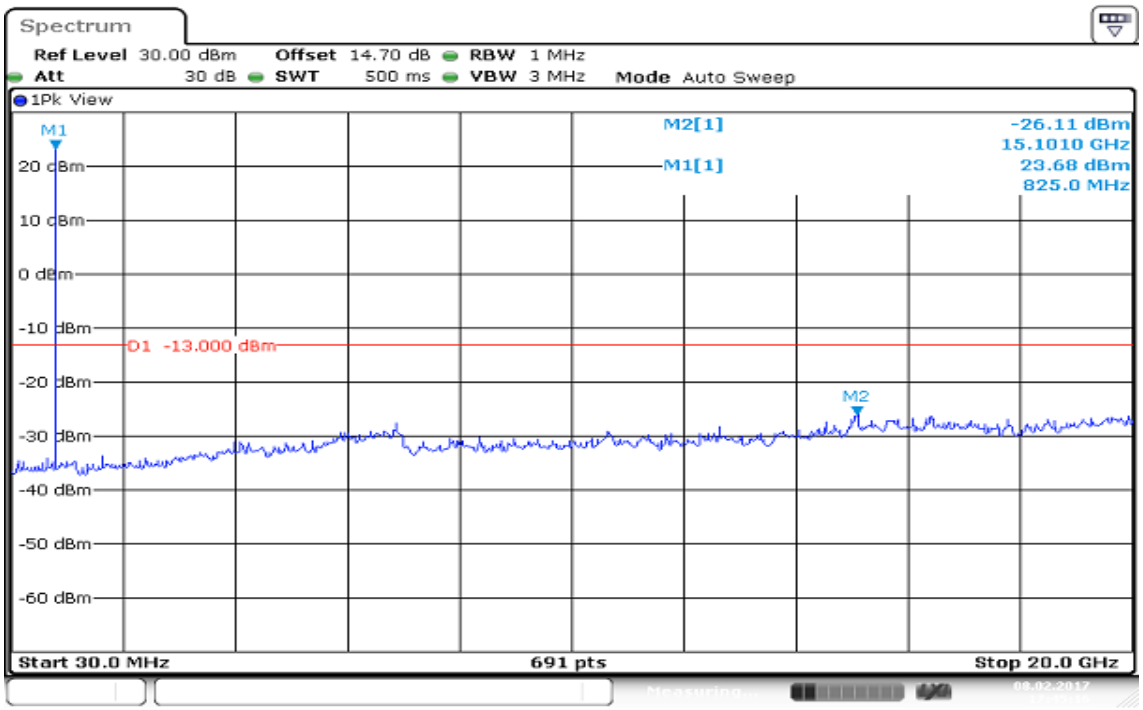
## CH High




Date: 8.FEB.2017 17:37:14

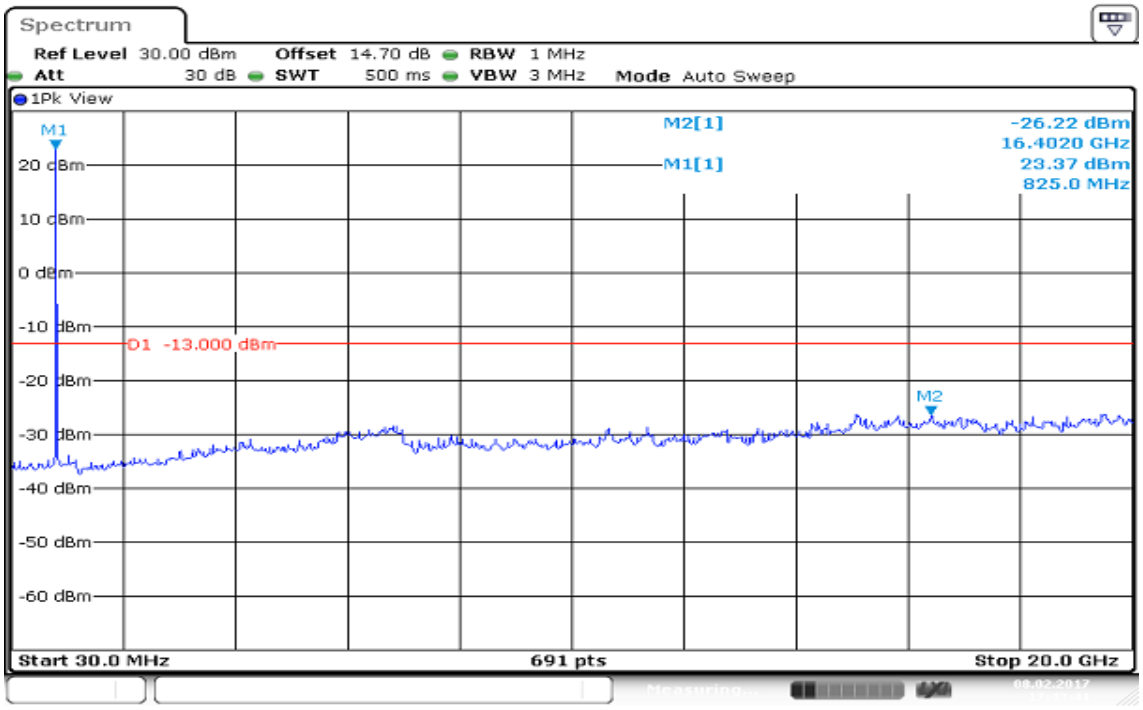
## BW: 3MHz / QPSK / RB =1, RB Offset = 0

### CH Low



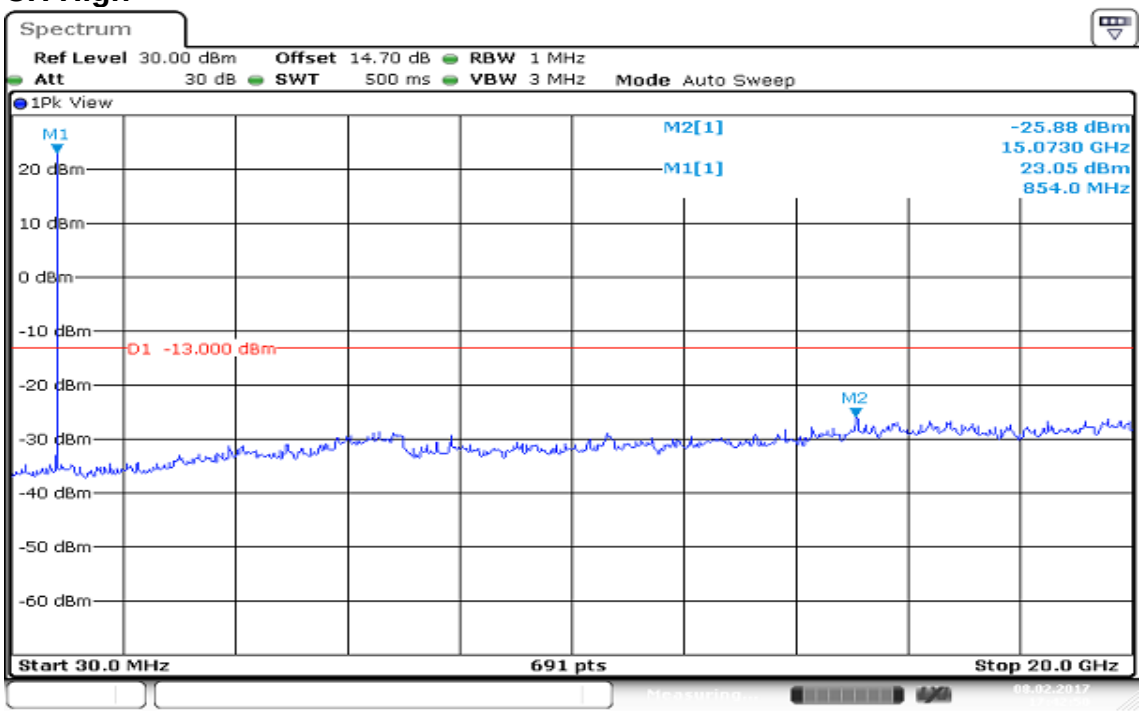

Date: 8.FEB.2017 17:45:16

### CH Mid




Date: 8.FEB.2017 17:43:41

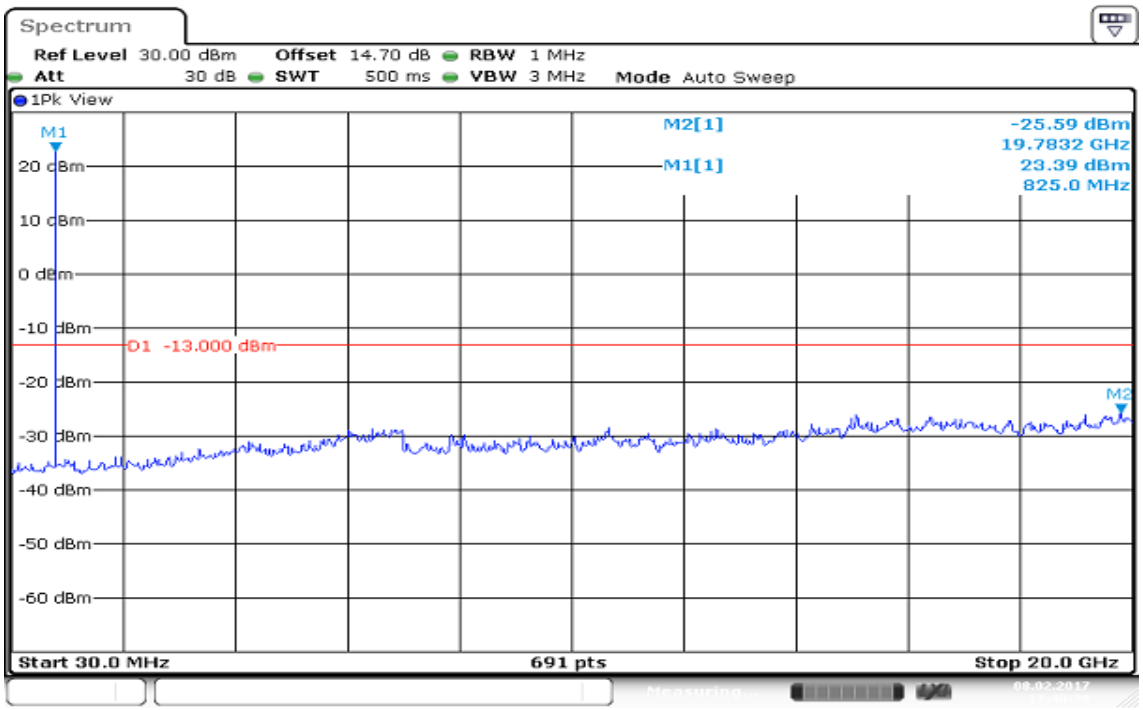
## CH High




Date: 8.FEB.2017 17:42:50

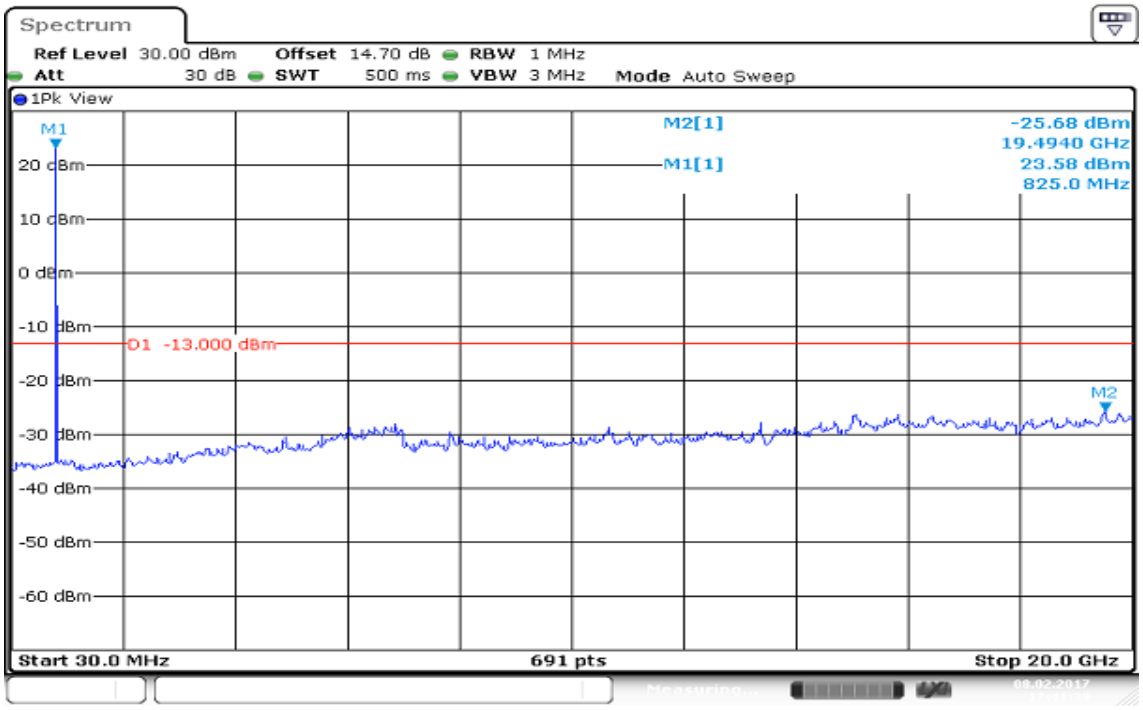
## BW: 3MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



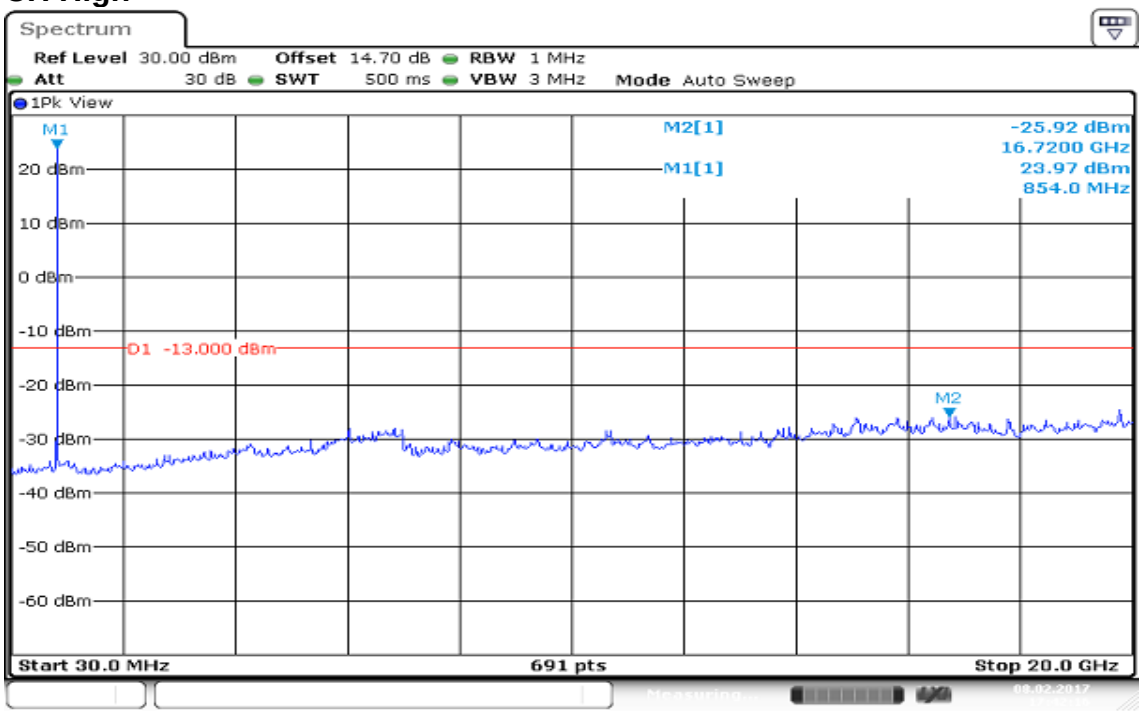

Date: 8.FEB.2017 17:40:39

### CH Mid




Date: 8.FEB.2017 17:41:39

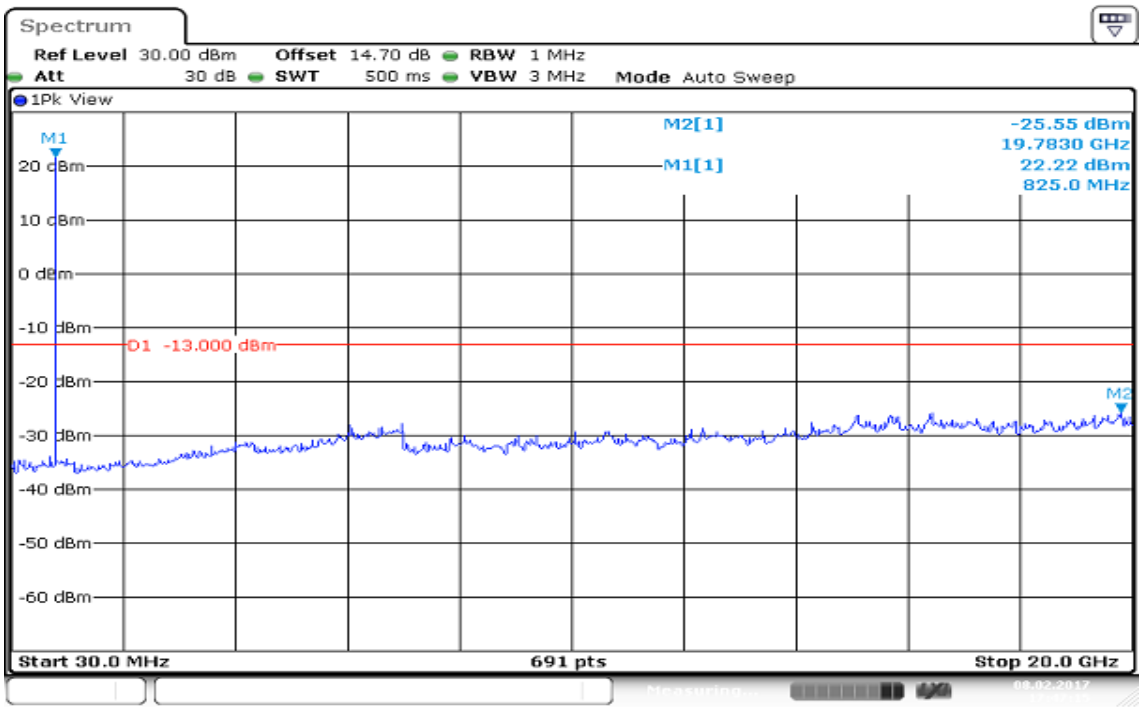
## CH High




Date: 8.FEB.2017 17:42:16

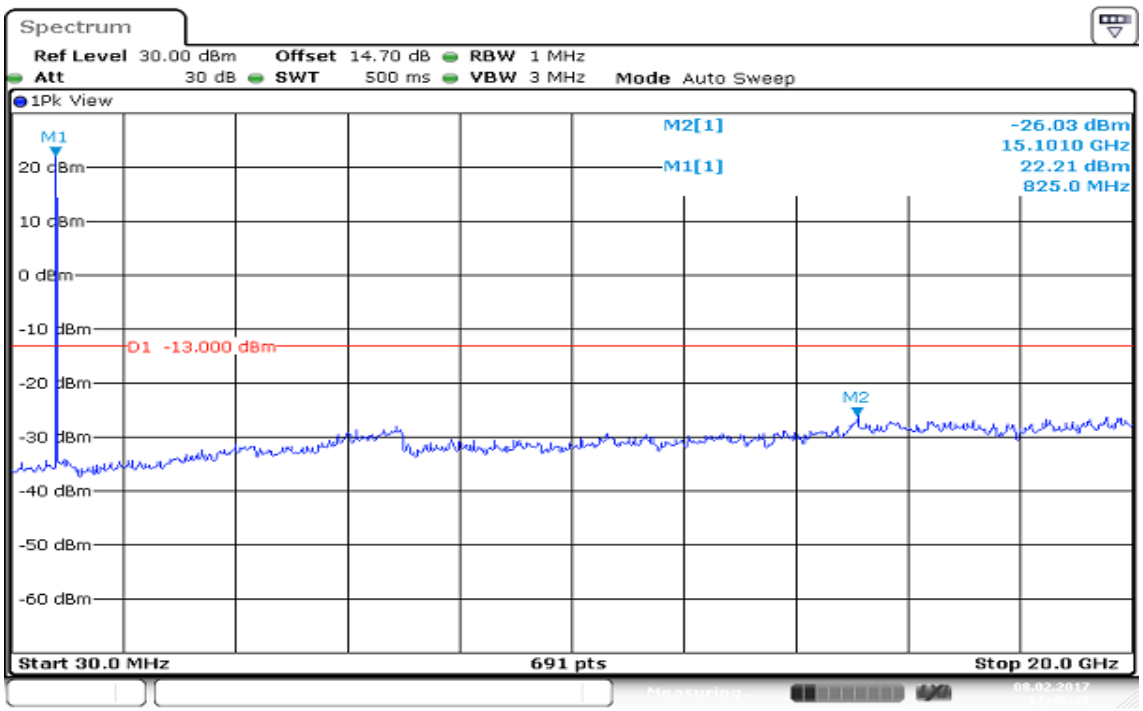
## BW: 5MHz / QPSK / RB =1, RB Offset = 0

### CH Low



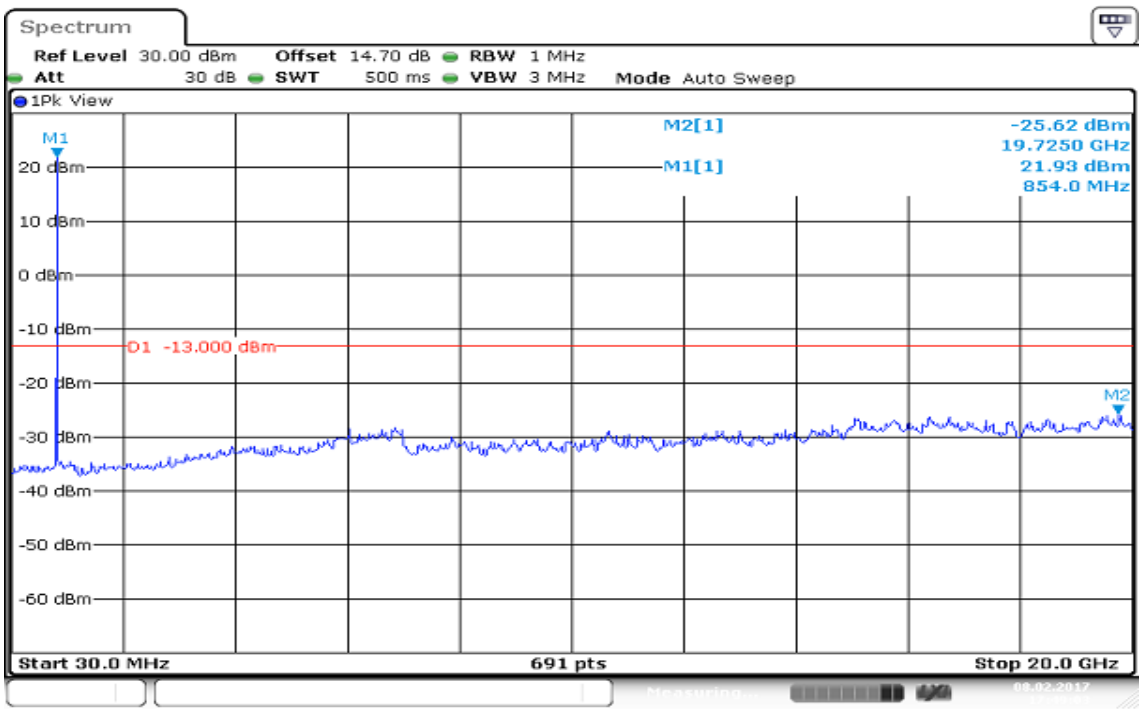

Date: 8.FEB.2017 17:47:15

### CH Mid




Date: 8.FEB.2017 17:48:29

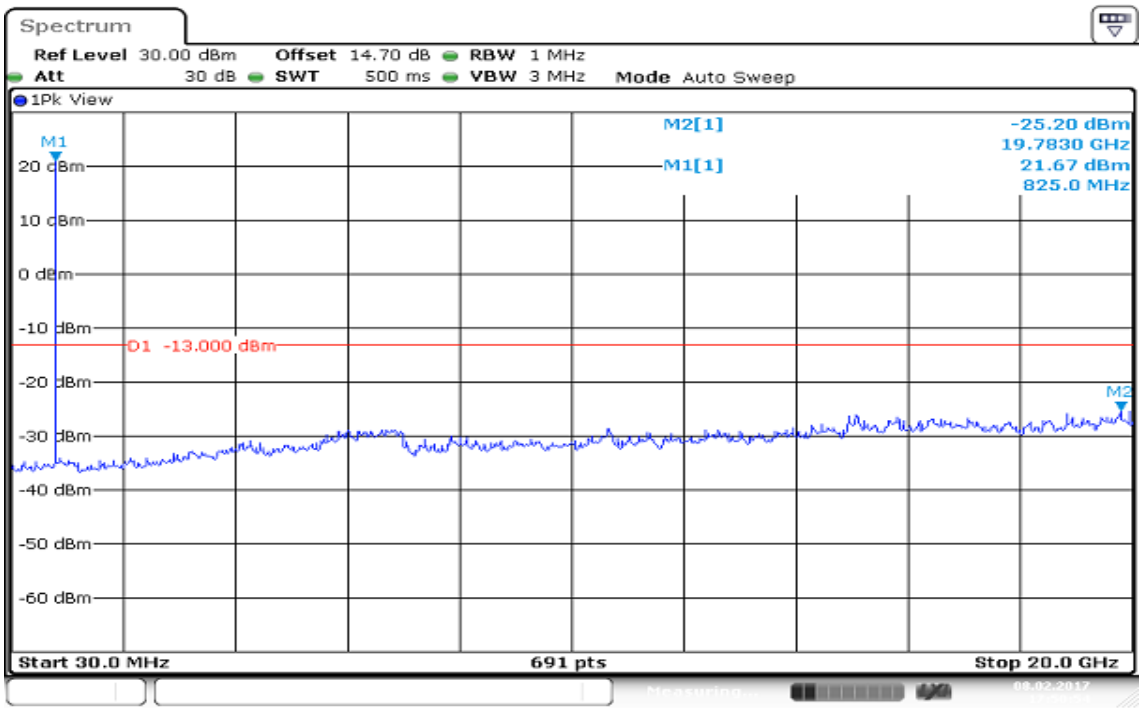
## CH High




Date: 8.FEB.2017 17:49:03

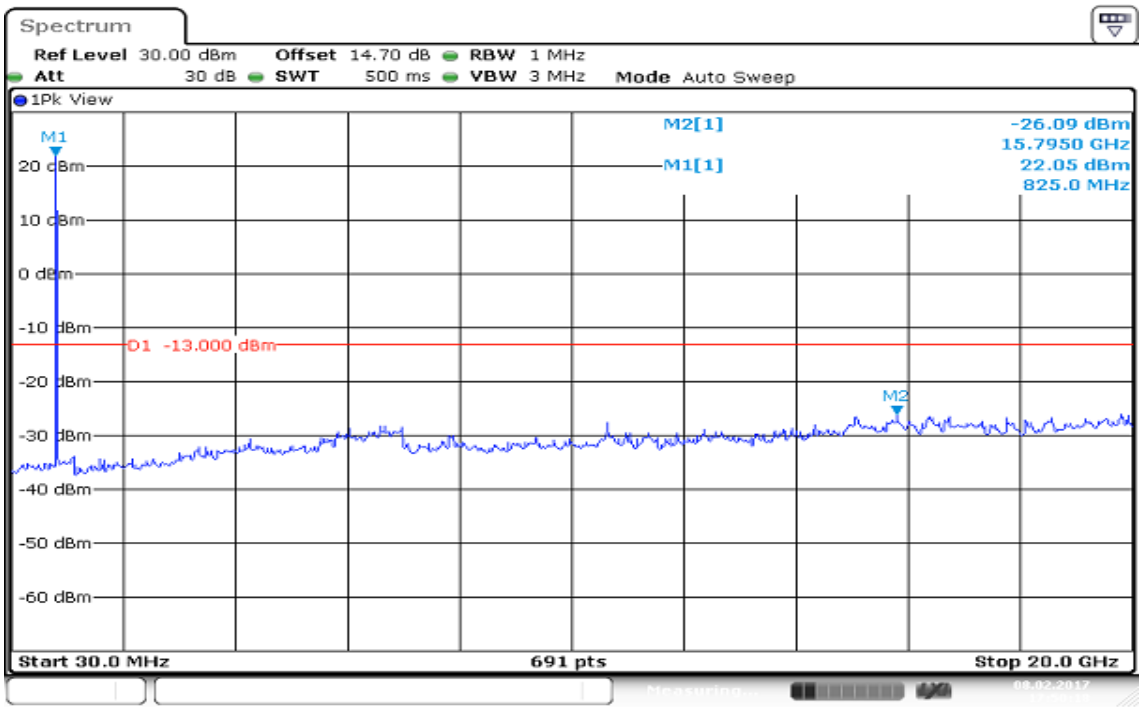
## BW: 5MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



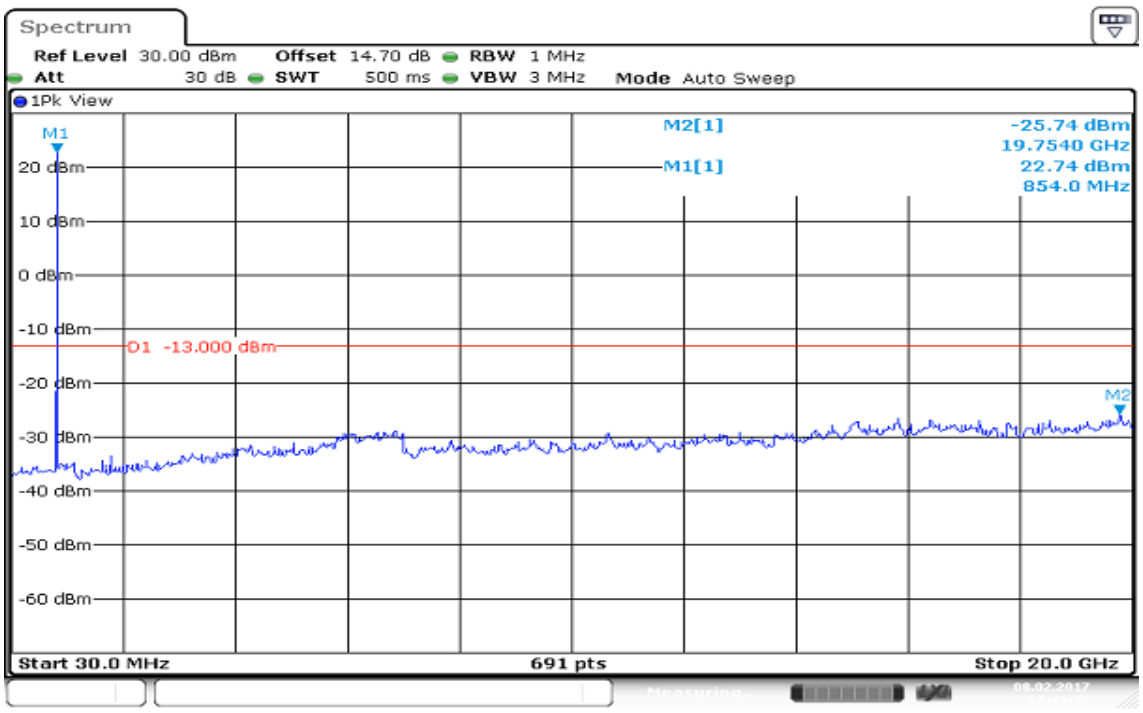

Date: 8.FEB.2017 17:50:54

### CH Mid




Date: 8.FEB.2017 17:50:18

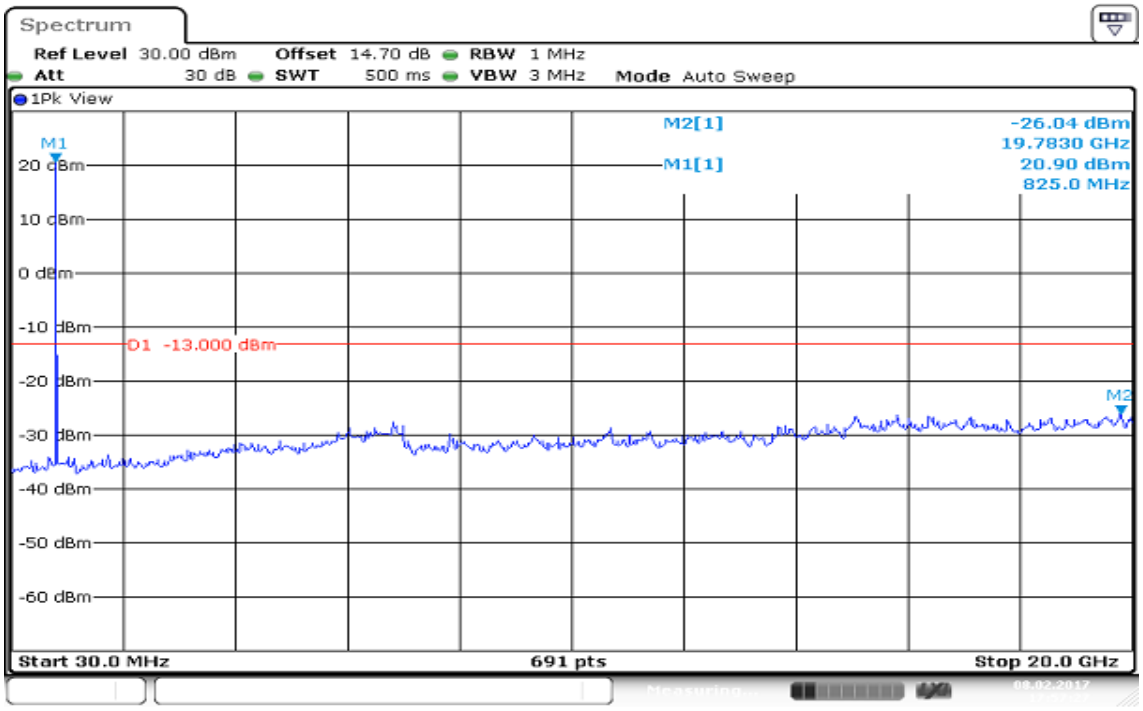
## CH High




Date: 8.FEB.2017 17:49:38

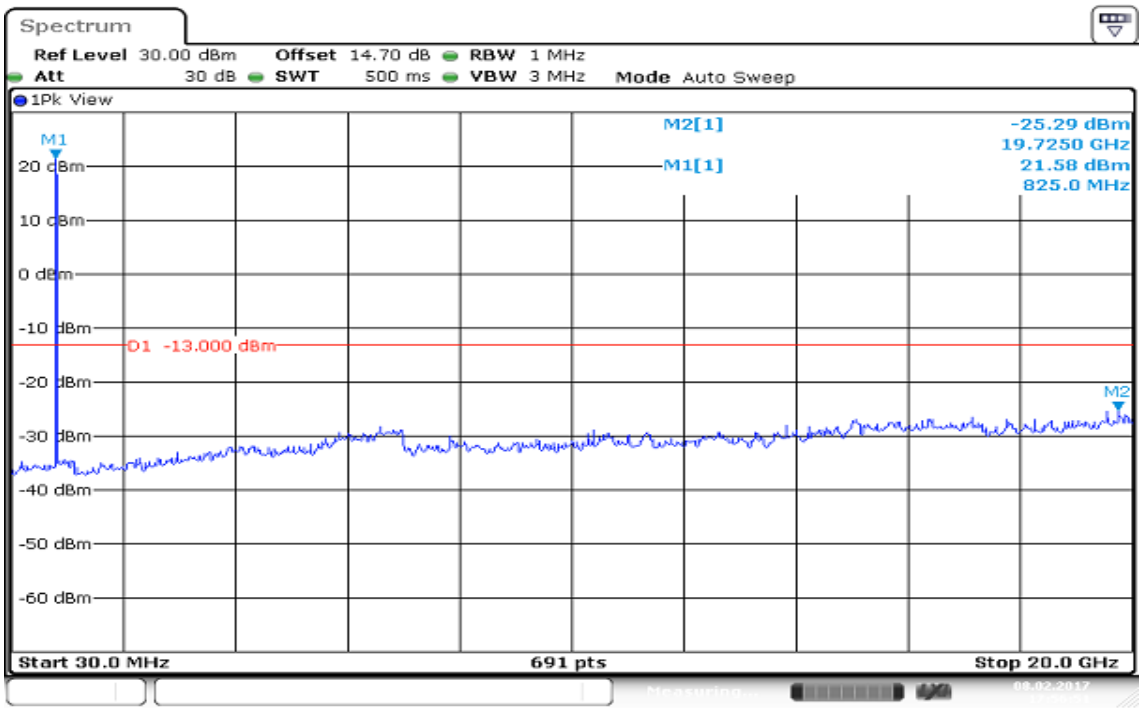
## BW: 10MHz / QPSK / RB =1, RB Offset = 0

### CH Low



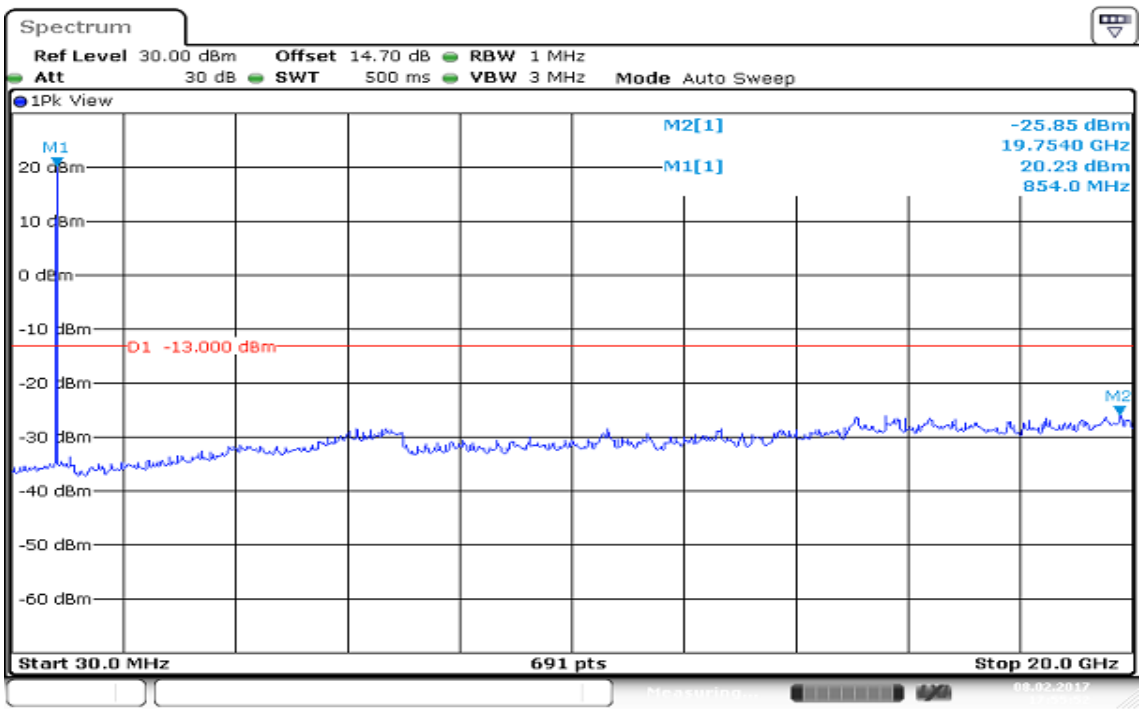

Date: 8.FEB.2017 17:57:27

### CH Mid




Date: 8.FEB.2017 17:56:52

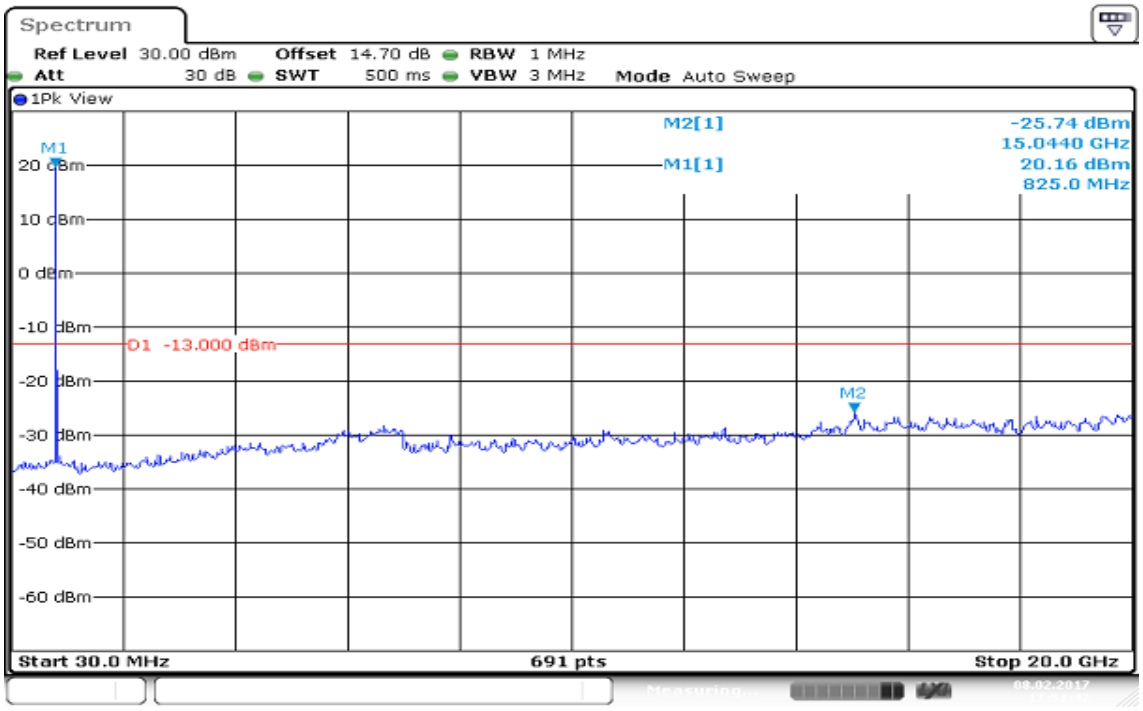
## CH High




Date: 8.FEB.2017 17:55:53

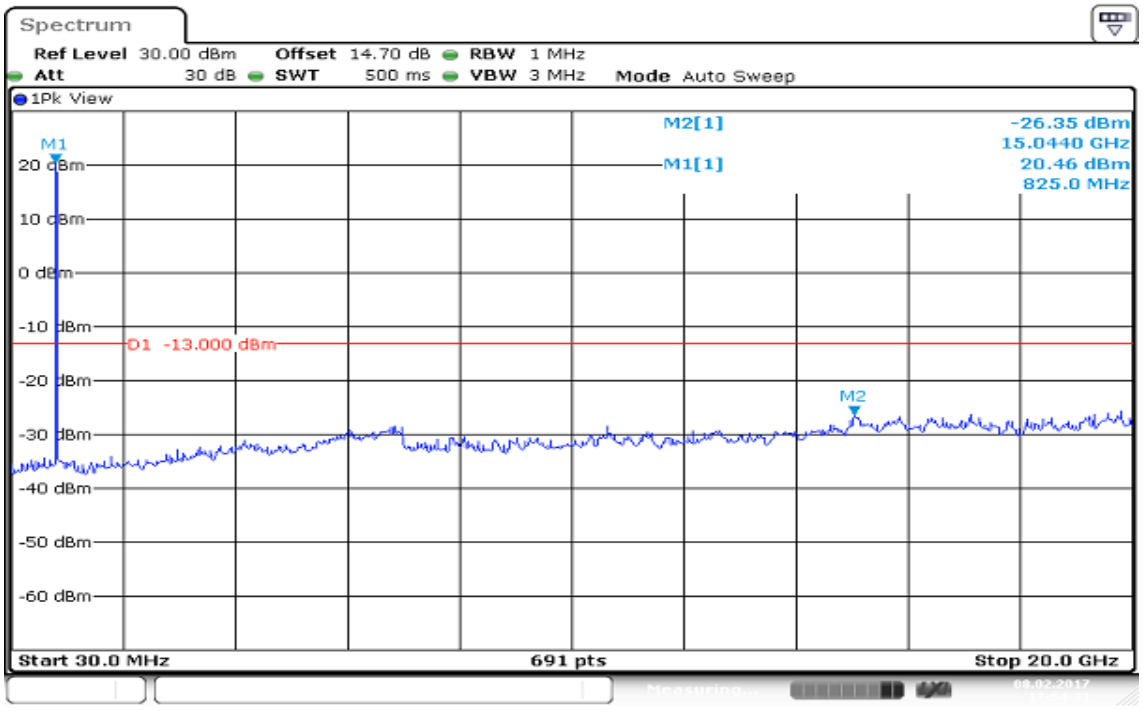
## BW: 10MHz / 16QAM / RB =1, RB Offset = 0

### CH Low



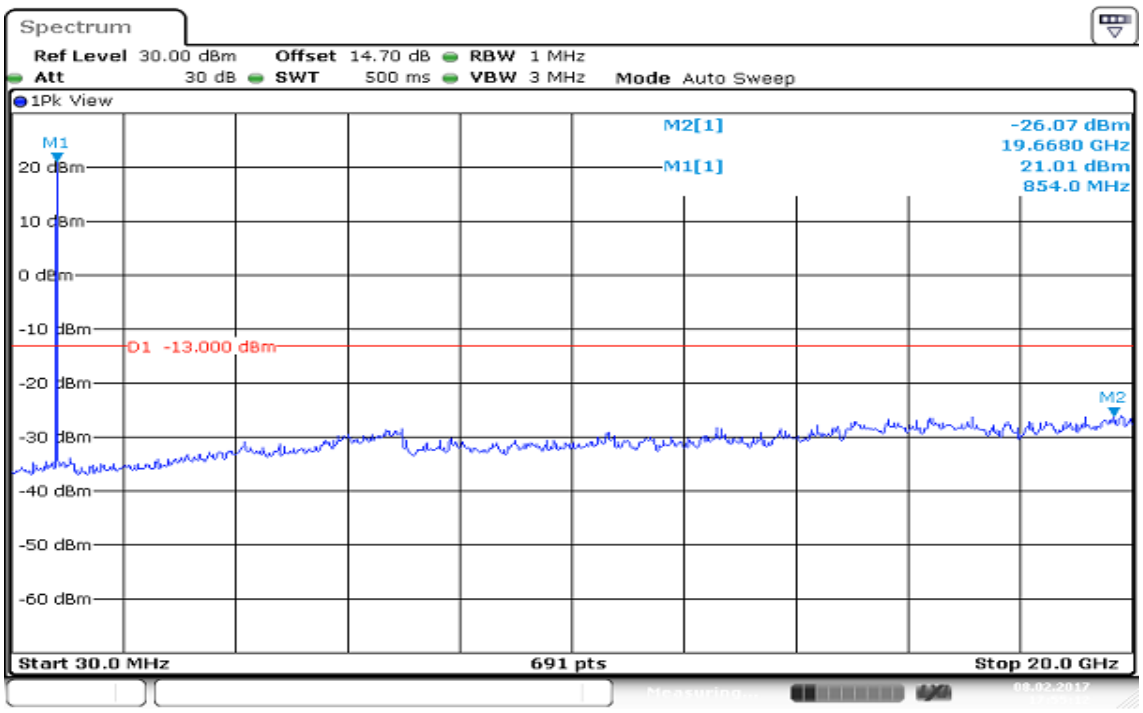

Date: 8.FEB.2017 17:51:42

### CH Mid




Date: 8.FEB.2017 17:54:34

## CH High




Date: 8.FEB.2017 17:55:12

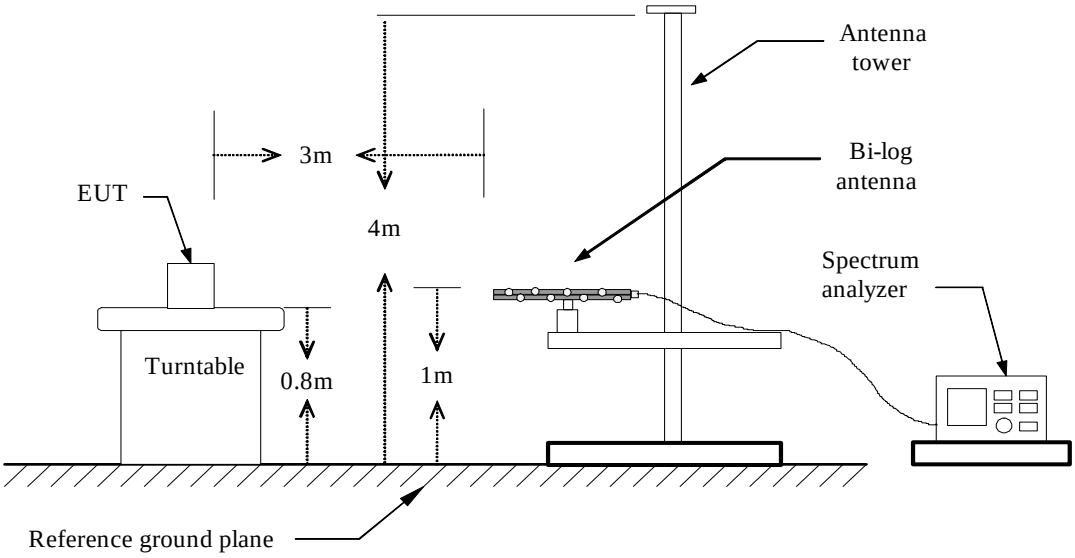
# 7.8 SPURIOUS RADIATION MEASUREMENT

## LIMIT

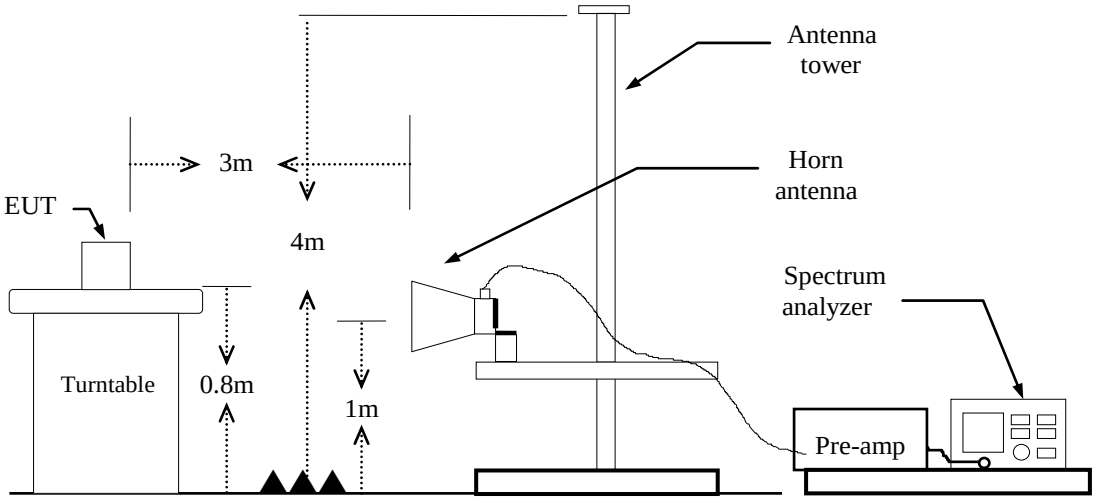
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

### Test Configuration

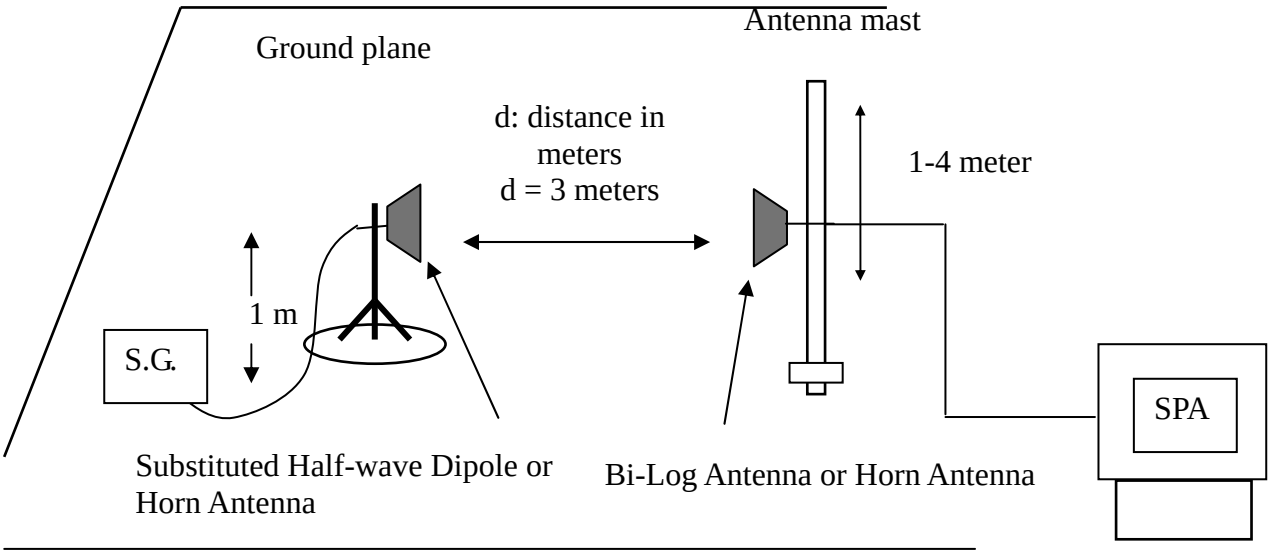
**Below 1 GHz**




**Above 1 GHz**



**Substituted Method Test Set-up**




## TEST PROCEDURE

1. According to KDB 971168 D01. Section 5.8 and TIA-603-D:2010 Section 2.2.12.
2. The EUT was placed on a turntable
   (1) Below 1G : 0.8m
   (2) Above 1G : 0.8m
   (3) EUT set 3m from the receiving antenna
   (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

## TEST RESULTS

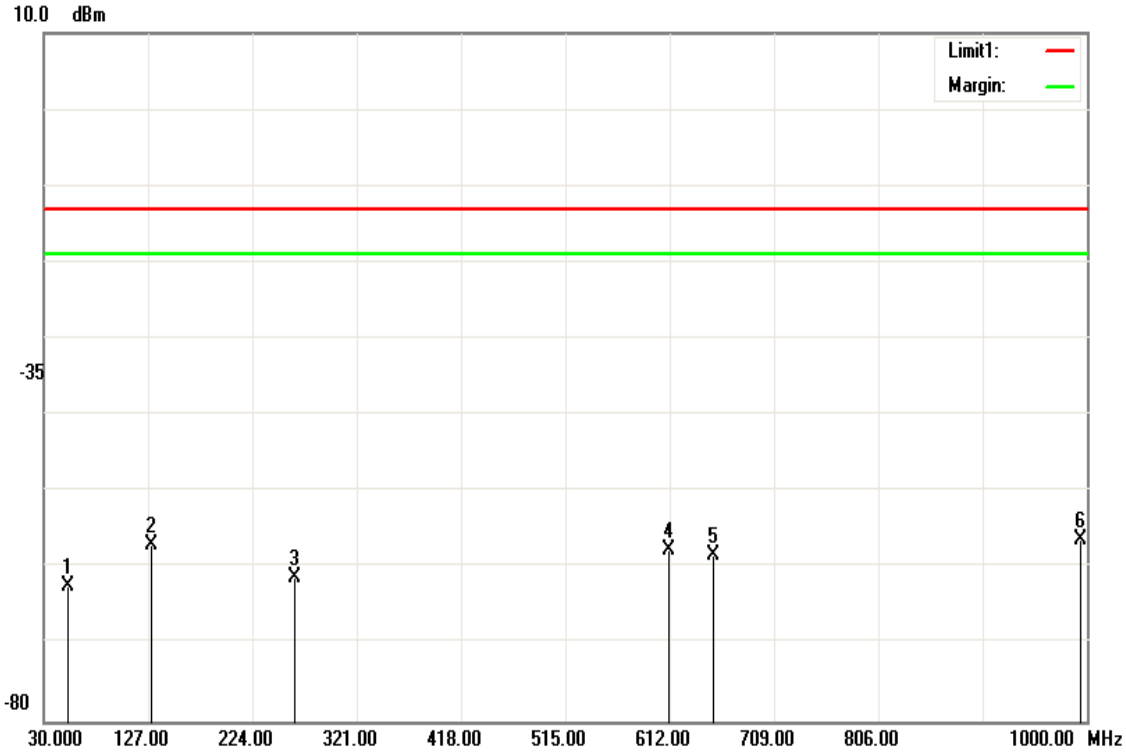
*Refer to the attached tabular data sheets.*

## Test Results

## Below 1GHz

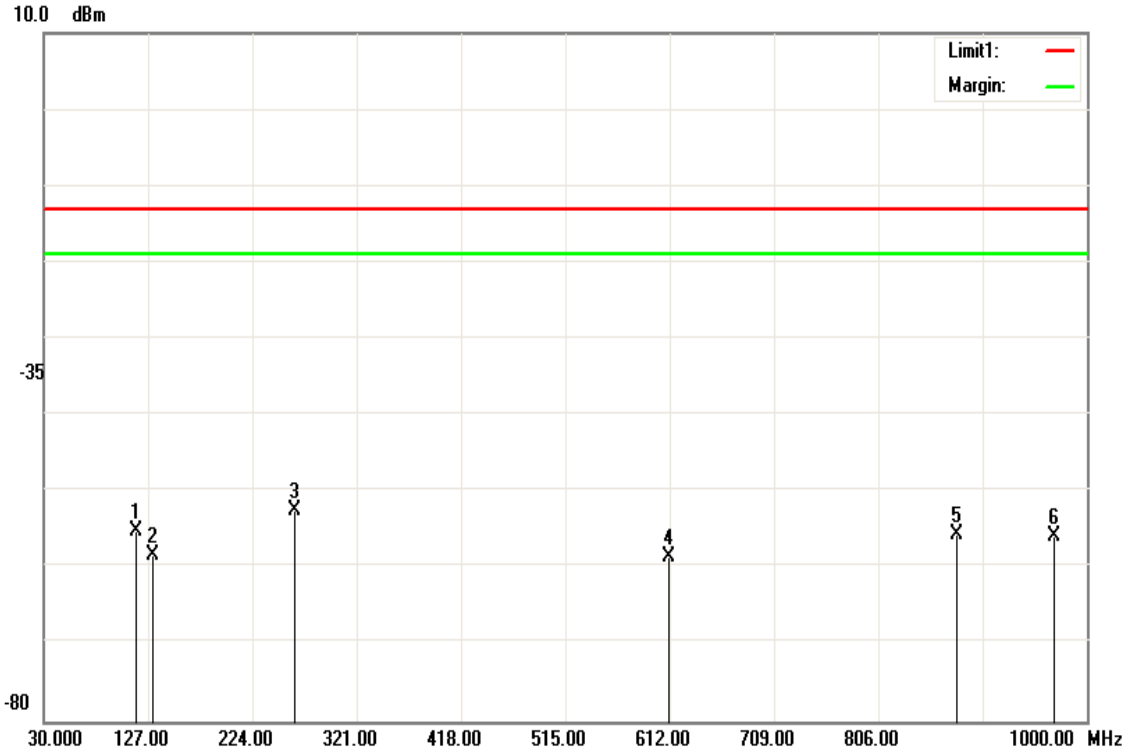
**LTE Band 5 / BW: 10MHz / QPSK / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 52.3100 | -60.37 | -2.07 | -62.44 | -13.00 | -49.44 | V |
| 129.9100 | -57.95 | 1.05 | -56.90 | -13.00 | -43.90 | V |
| 263.7700 | -68.58 | 7.26 | -61.32 | -13.00 | -48.32 | V |
| 611.0300 | -56.66 | -0.95 | -57.61 | -13.00 | -44.61 | V |
| 652.7400 | -59.69 | 1.33 | -58.36 | -13.00 | -45.36 | V |
| 994.1800 | -62.32 | 5.98 | -56.34 | -13.00 | -43.34 | V |

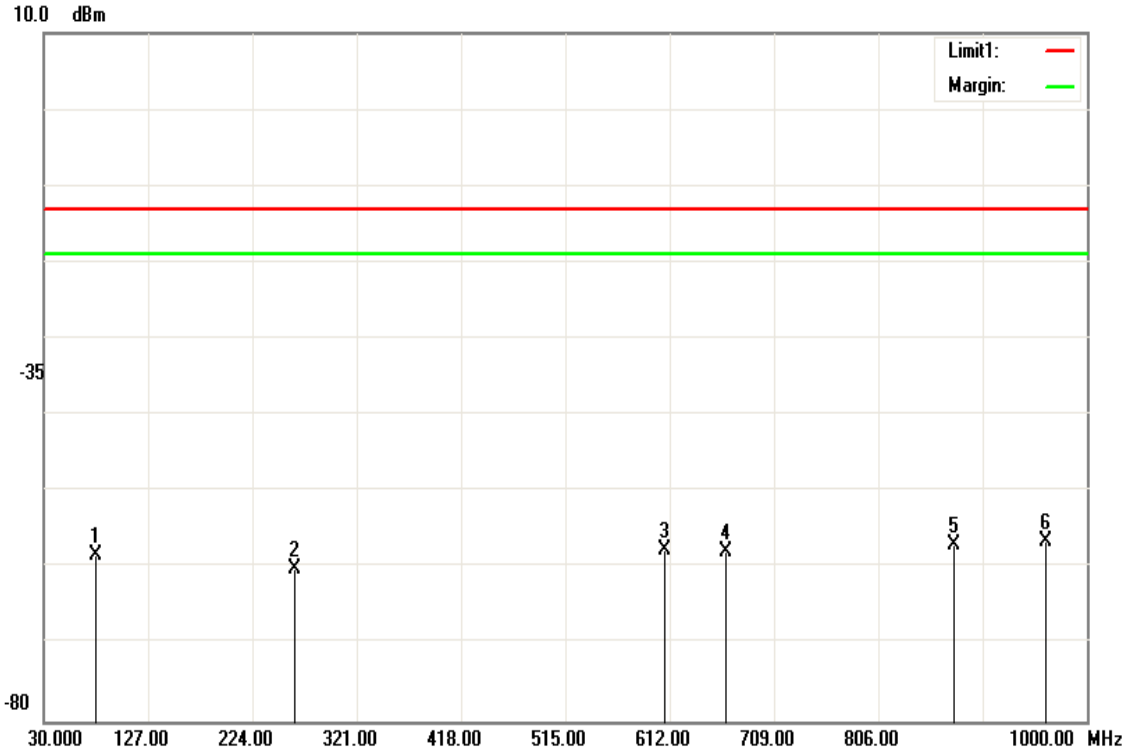
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 115.3600 | -55.85 | 0.71 | -55.14 | -13.00 | -42.14 | H |
| 130.8800 | -59.29 | 1.06 | -58.23 | -13.00 | -45.23 | H |
| 263.7700 | -59.79 | 7.26 | -52.53 | -13.00 | -39.53 | H |
| 611.0300 | -57.55 | -0.95 | -58.50 | -13.00 | -45.50 | H |
| 878.7500 | -57.02 | 1.33 | -55.69 | -13.00 | -42.69 | H |
| 969.9300 | -59.31 | 3.42 | -55.89 | -13.00 | -42.89 | H |

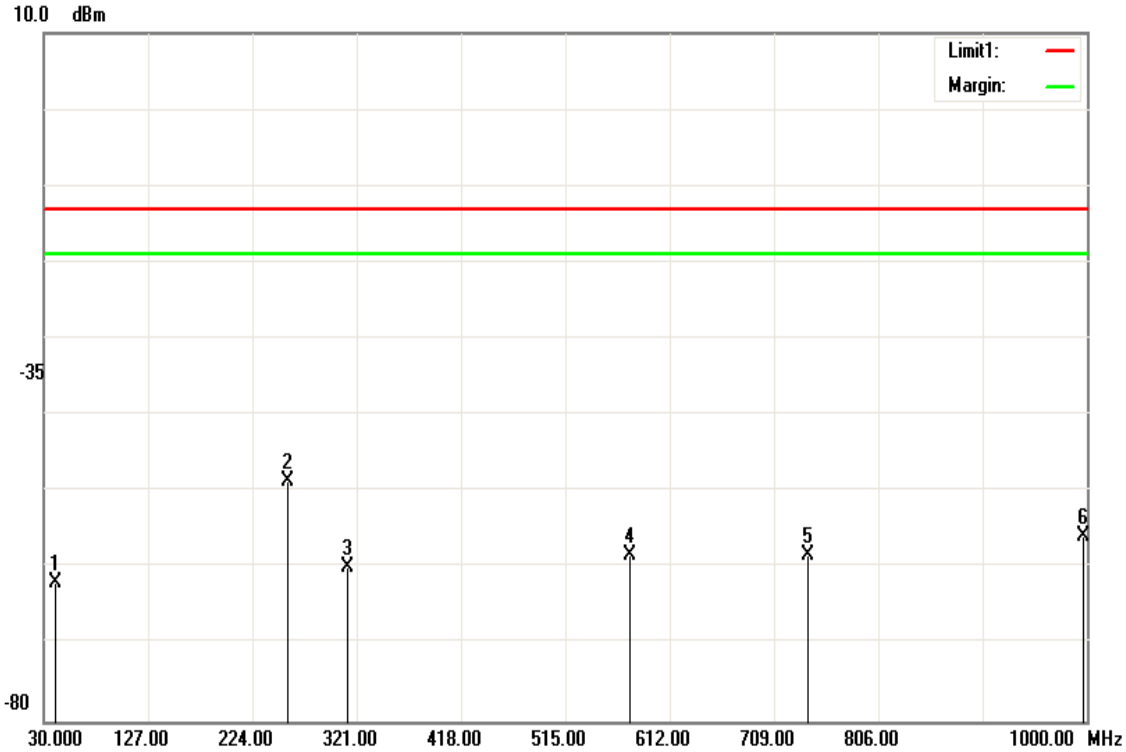
**LTE Band 5 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 78.5000 | -58.85 | 0.53 | -58.32 | -13.00 | -45.32 | V |
| 263.7700 | -67.35 | 7.26 | -60.09 | -13.00 | -47.09 | V |
| 607.1500 | -56.4 | -1.17 | -57.57 | -13.00 | -44.57 | V |
| 664.3800 | -59.37 | 1.51 | -57.86 | -13.00 | -44.86 | V |
| 876.8100 | -58.24 | 1.32 | -56.92 | -13.00 | -43.92 | V |
| 962.1700 | -59.13 | 2.6 | -56.53 | -13.00 | -43.53 | V |

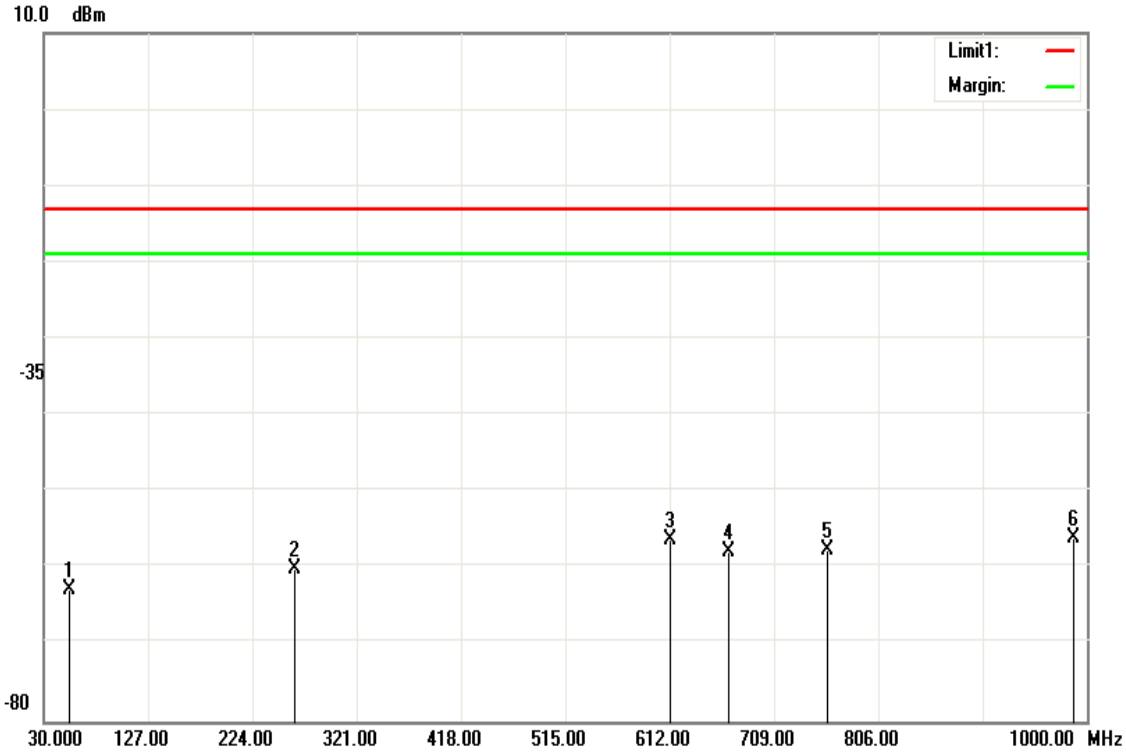
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH I | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 40.6700 | -56.19 | -5.71 | -61.90 | -13.00 | -48.90 | H |
| 256.9800 | -55.99 | 7.33 | -48.66 | -13.00 | -35.66 | H |
| 312.2700 | -66.91 | 6.95 | -59.96 | -13.00 | -46.96 | H |
| 575.1400 | -60.88 | 2.61 | -58.27 | -13.00 | -45.27 | H |
| 741.0100 | -59.93 | 1.74 | -58.19 | -13.00 | -45.19 | H |
| 996.1200 | -61.96 | 6.19 | -55.77 | -13.00 | -42.77 | H |

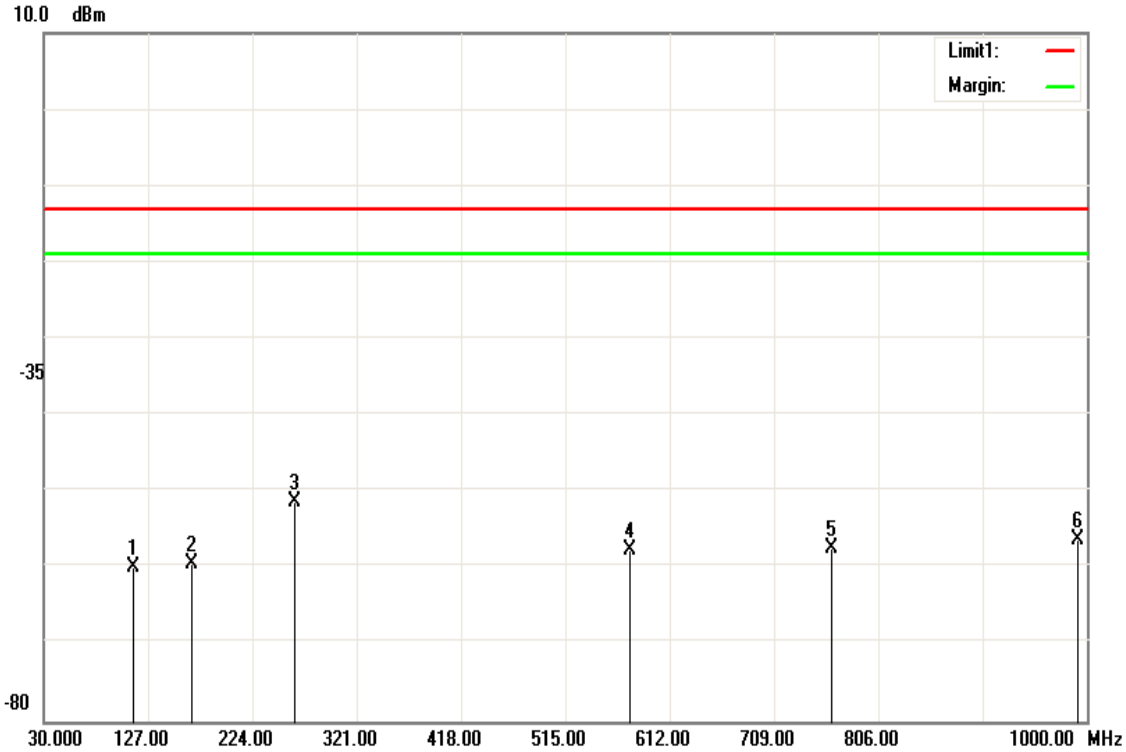
**LTE Band 2 / BW: 20MHz / QPSK / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 53.2800 | -60.78 | -1.97 | -62.75 | -13.00 | -49.75 | V |
| 263.7700 | -67.35 | 7.26 | -60.09 | -13.00 | -47.09 | V |
| 612.9700 | -55.43 | -0.84 | -56.27 | -13.00 | -43.27 | V |
| 667.2900 | -59.3 | 1.55 | -57.75 | -13.00 | -44.75 | V |
| 758.4700 | -59.33 | 1.61 | -57.72 | -13.00 | -44.72 | V |
| 987.3900 | -61.24 | 5.27 | -55.97 | -13.00 | -42.97 | V |

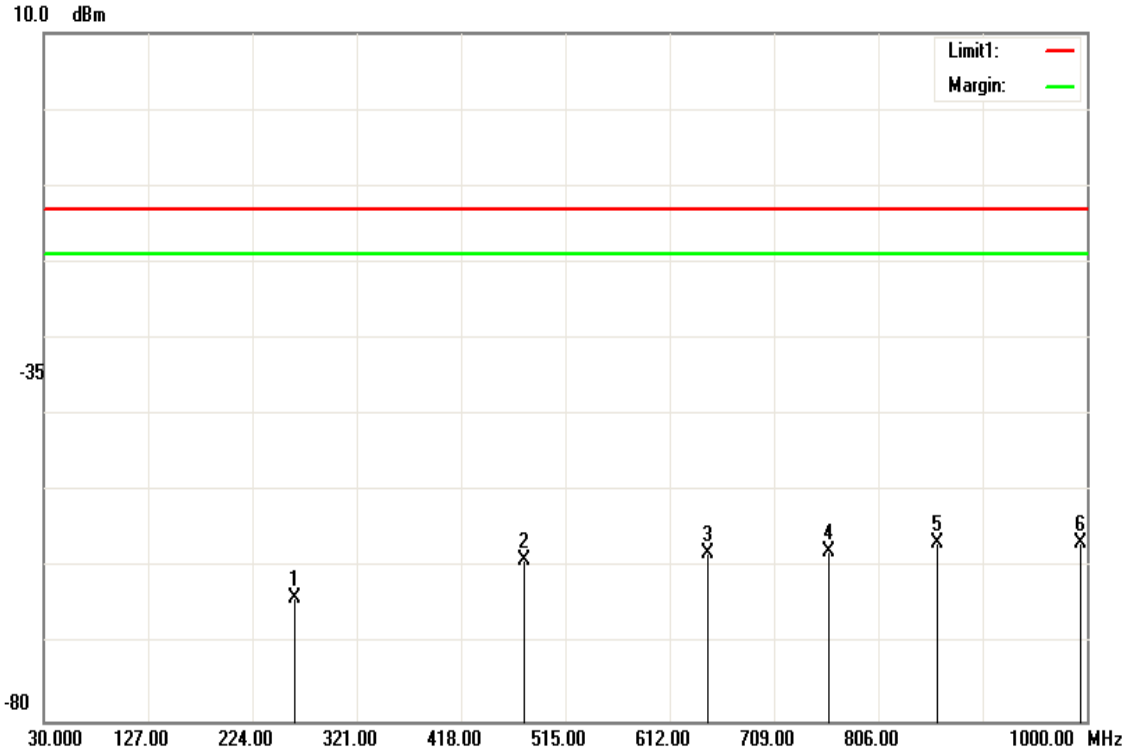
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 113.4200 | -60.39 | 0.64 | -59.75 | -13.00 | -46.75 | H |
| 167.7400 | -60.64 | 1.22 | -59.42 | -13.00 | -46.42 | H |
| 263.7700 | -58.57 | 7.26 | -51.31 | -13.00 | -38.31 | H |
| 575.1400 | -60.22 | 2.61 | -57.61 | -13.00 | -44.61 | H |
| 762.3500 | -59 | 1.58 | -57.42 | -13.00 | -44.42 | H |
| 991.2700 | -61.93 | 5.68 | -56.25 | -13.00 | -43.25 | H |

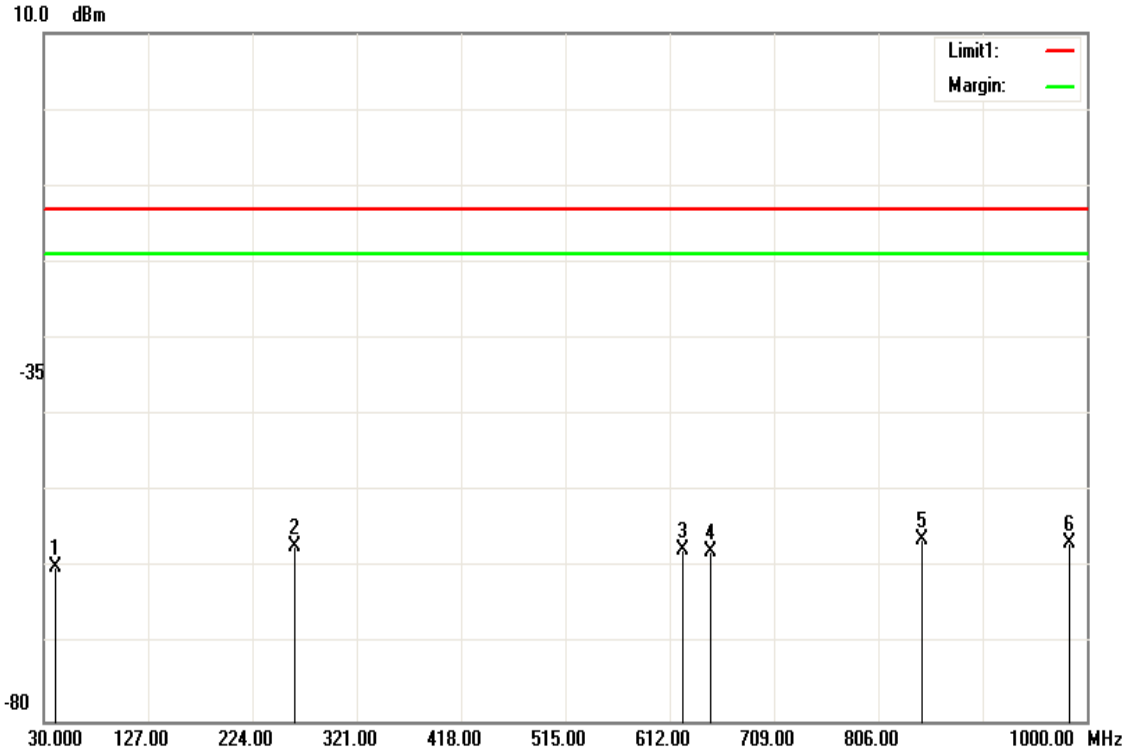
**LTE Band 2 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 263.7700 | -71.13 | 7.26 | -63.87 | -13.00 | -50.87 | V |
| 477.1700 | -65.93 | 6.91 | -59.02 | -13.00 | -46.02 | V |
| 646.9200 | -59.16 | 1.11 | -58.05 | -13.00 | -45.05 | V |
| 759.4400 | -59.37 | 1.6 | -57.77 | -13.00 | -44.77 | V |
| 861.2900 | -57.85 | 1.23 | -56.62 | -13.00 | -43.62 | V |
| 994.1800 | -62.73 | 5.98 | -56.75 | -13.00 | -43.75 | V |

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |

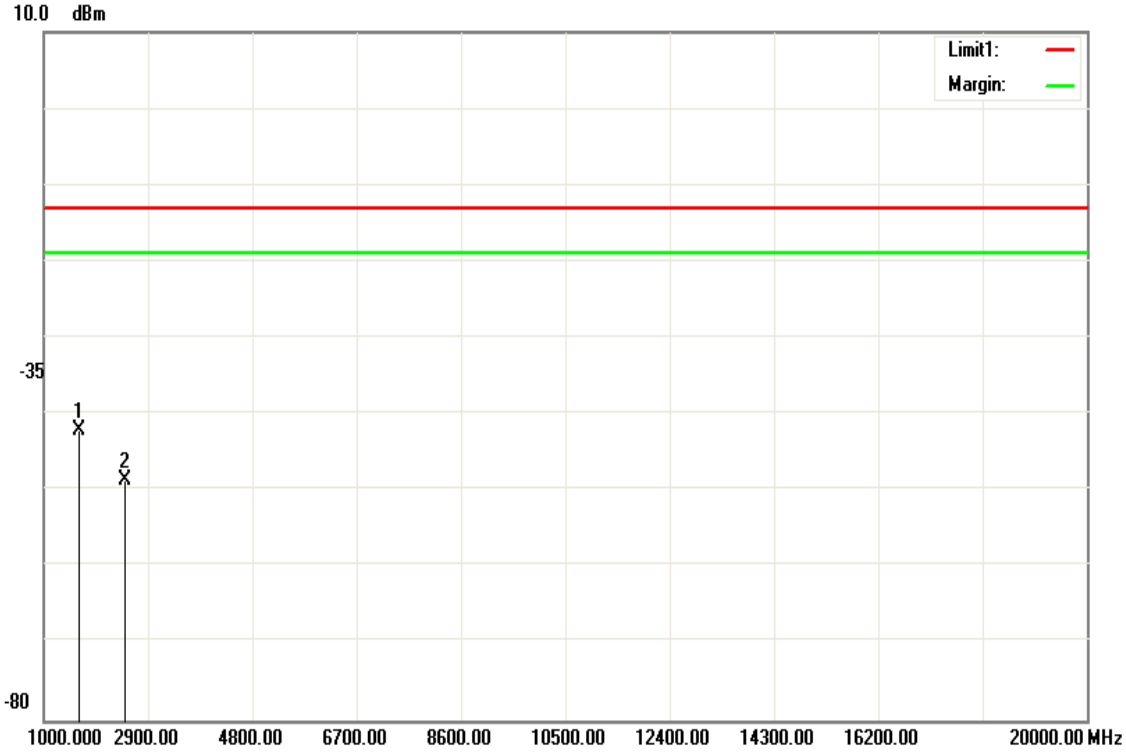



| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 40.6700 | -54.18 | -5.71 | -59.89 | -13.00 | -46.89 | H |
| 263.7700 | -64.53 | 7.26 | -57.27 | -13.00 | -44.27 | H |
| 624.6100 | -57.5 | -0.17 | -57.67 | -13.00 | -44.67 | H |
| 649.8300 | -59.04 | 1.28 | -57.76 | -13.00 | -44.76 | H |
| 846.7400 | -57.54 | 1.18 | -56.36 | -13.00 | -43.36 | H |
| 983.5100 | -61.49 | 4.86 | -56.63 | -13.00 | -43.63 | H |

## Above 1GHz

**LTE Band 5 / BW: 10 MHz / QPSK / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |

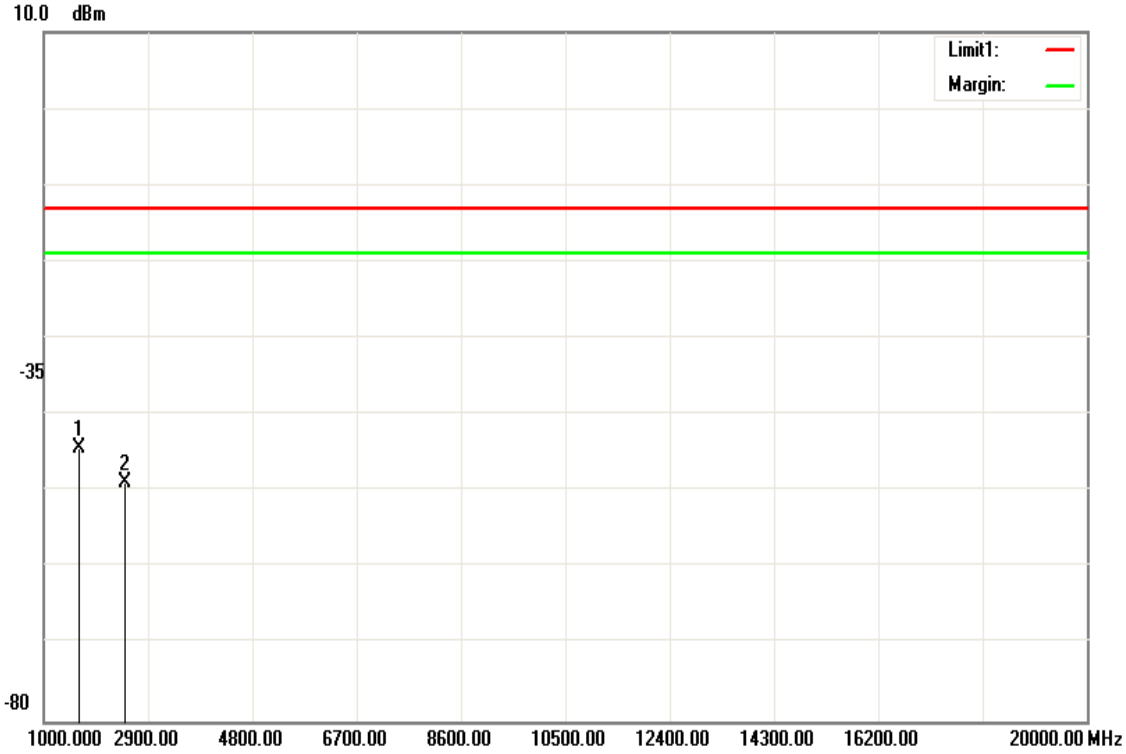



| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1651.000 | -43.53 | 1.52 | -42.01 | -13.00 | -29.01 | V |
| 2473.000 | -50.39 | 1.83 | -48.56 | -13.00 | -35.56 | V |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |

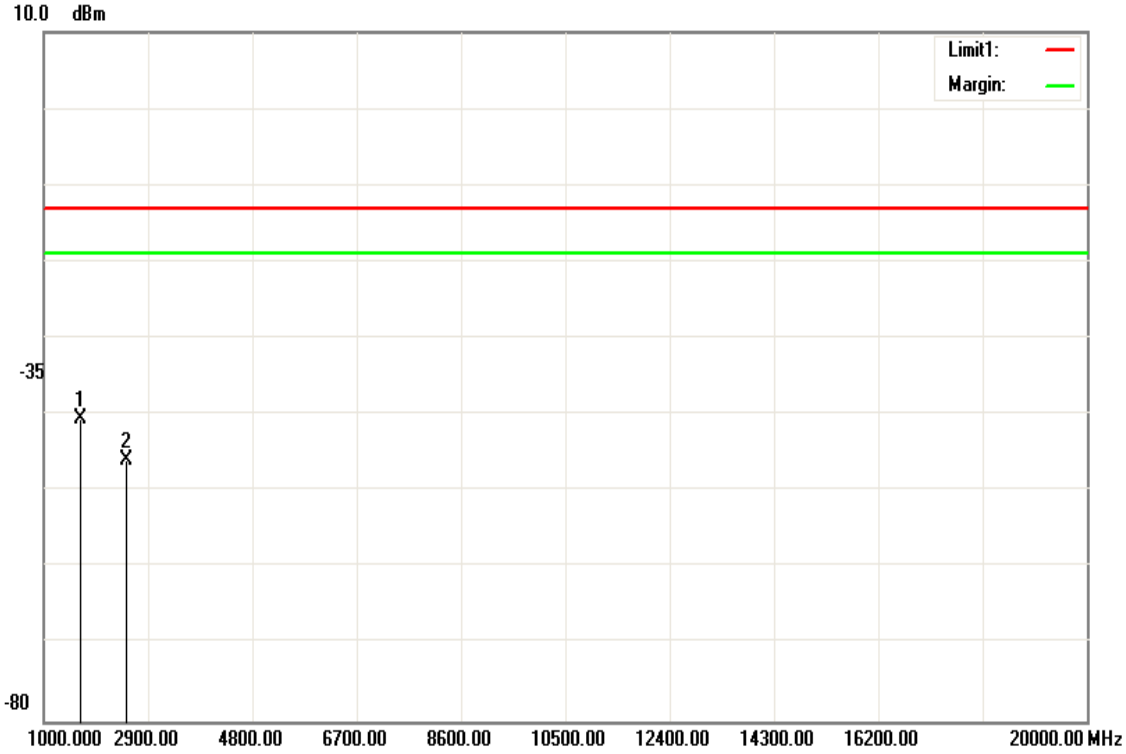



| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1651.000 | -45.76 | 1.52 | -44.24 | -13.00 | -31.24 | H |
| 2473.000 | -50.77 | 1.83 | -48.94 | -13.00 | -35.94 | H |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |

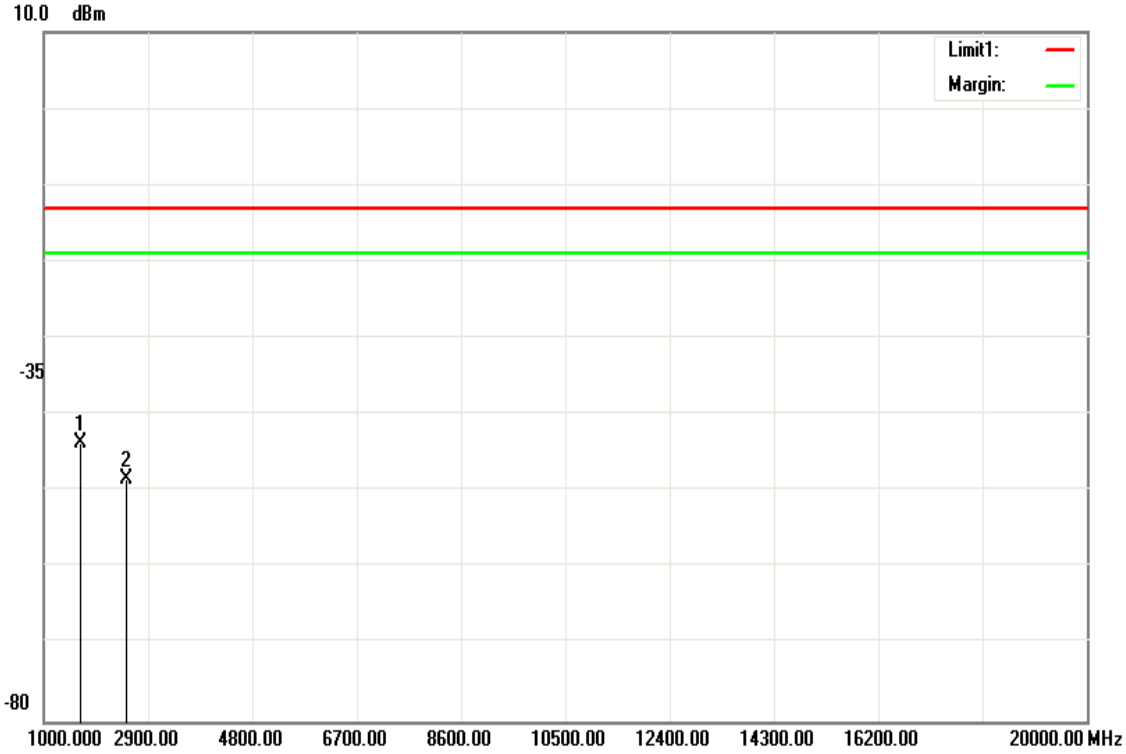



| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1665.000 | -41.93 | 1.52 | -40.41 | -13.00 | -27.41 | V |
| 2496.000 | -47.87 | 1.85 | -46.02 | -13.00 | -33.02 | V |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |

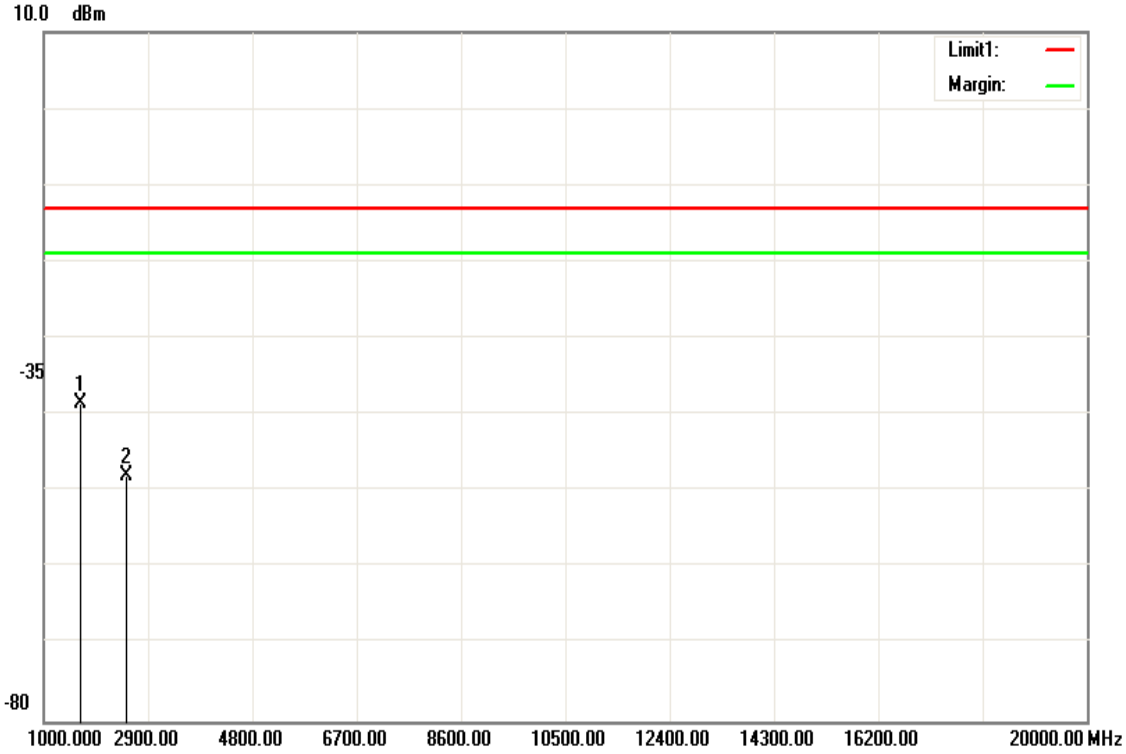



| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1665.000 | -45.08 | 1.52 | -43.56 | -13.00 | -30.56 | H |
| 2496.000 | -50.32 | 1.85 | -48.47 | -13.00 | -35.47 | H |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1679.000 | -40.06 | 1.52 | -38.54 | -13.00 | -25.54 | V |
| 2518.000 | -50.13 | 2.19 | -47.94 | -13.00 | -34.94 | V |
| N/A | | | | | | |
| | | | | | | |
| | | | | | | |
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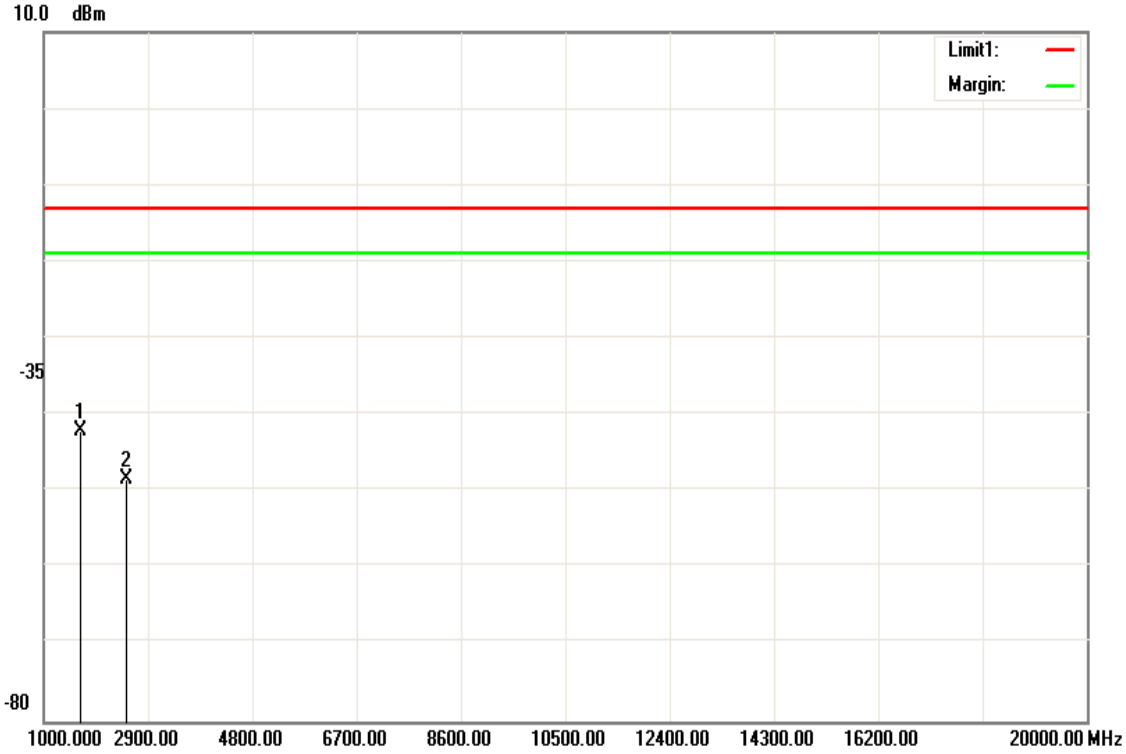
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1679.000 | -43.67 | 1.52 | -42.15 | -13.00 | -29.15 | H |
| 2518.000 | -50.67 | 2.19 | -48.48 | -13.00 | -35.48 | H |
| N/A | | | | | | |
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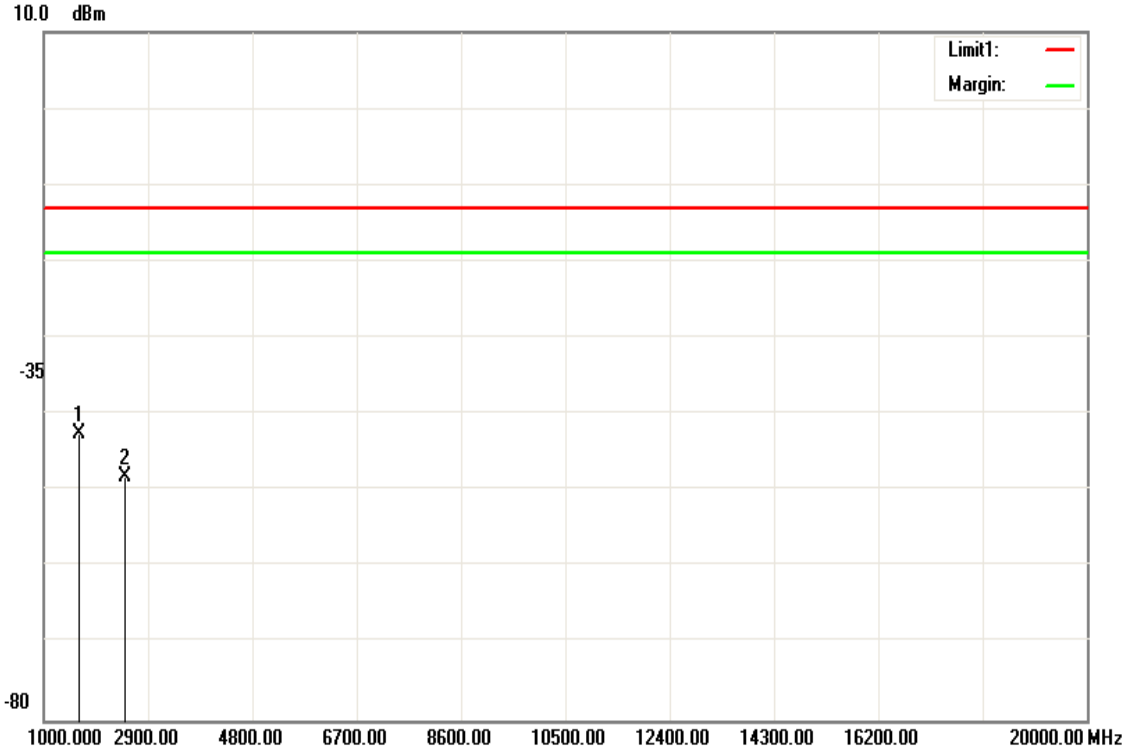
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

**LTE Band 5 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1651.000 | -44.02 | 1.52 | -42.50 | -13.00 | -29.50 | V |
| 2473.000 | -50.02 | 1.83 | -48.19 | -13.00 | -35.19 | V |
| N/A | | | | | | |
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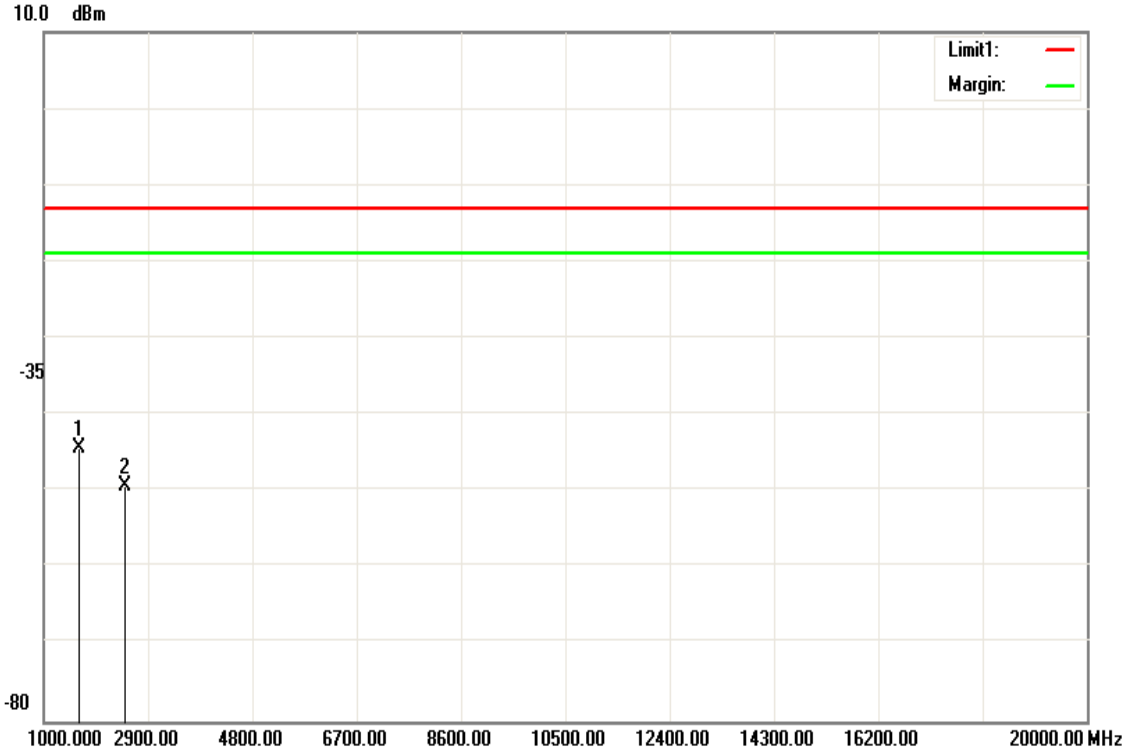
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1651.000 | -45.89 | 1.52 | -44.37 | -13.00 | -31.37 | peak |
| 2473.000 | -51.09 | 1.83 | -49.26 | -13.00 | -36.26 | peak |
| N/A | | | | | | |
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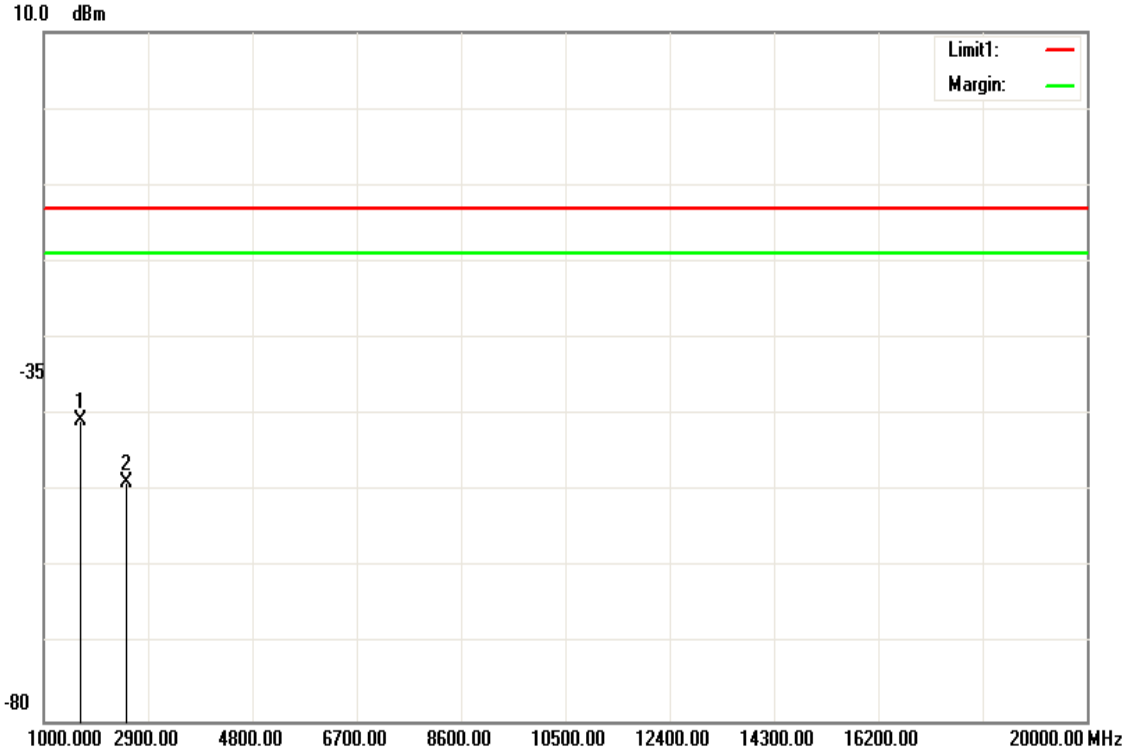
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1664.000 | -42.27 | 1.52 | -40.75 | -13.00 | -27.75 | V |
| 2496.000 | -50.64 | 1.85 | -48.79 | -13.00 | -35.79 | V |
| N/A | | | | | | |
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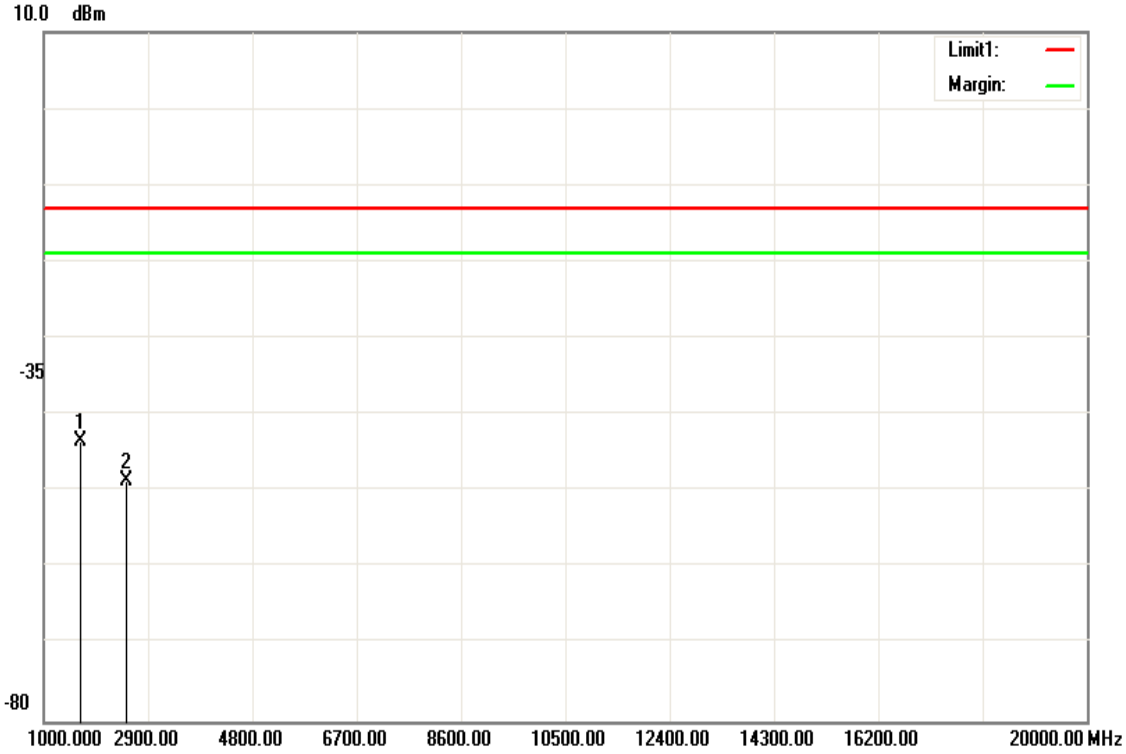
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1664.000 | -44.86 | 1.52 | -43.34 | -13.00 | -30.34 | H |
| 2496.000 | -50.41 | 1.85 | -48.56 | -13.00 | -35.56 | H |
| N/A | | | | | | |
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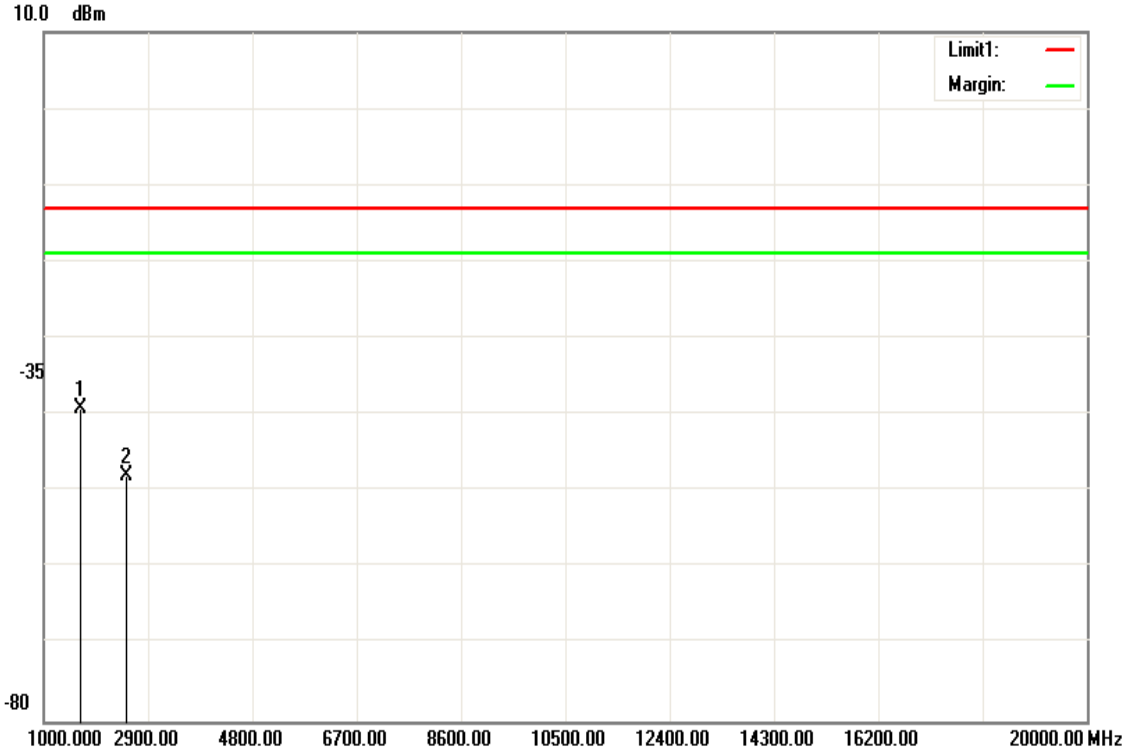
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1679.000 | -40.61 | 1.52 | -39.09 | -13.00 | -26.09 | V |
| 2518.000 | -50.23 | 2.19 | -48.04 | -13.00 | -35.04 | V |
| N/A | | | | | | |
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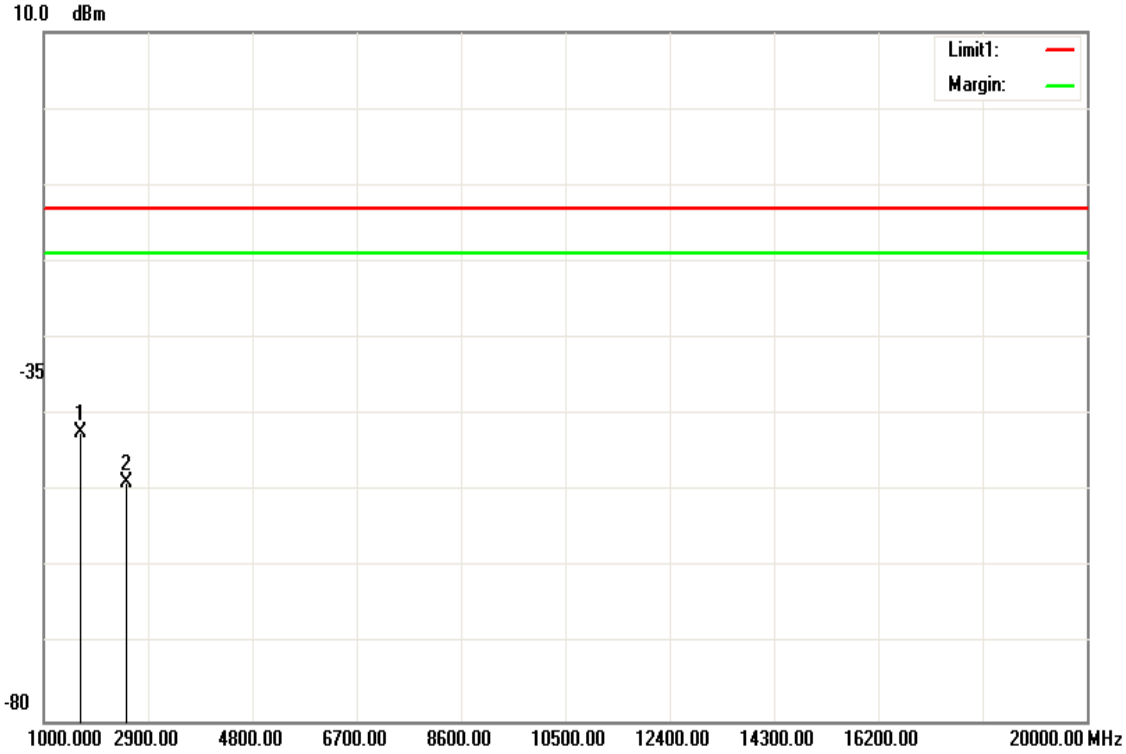
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 1679.000 | -43.8 | 1.52 | -42.28 | -13.00 | -29.28 | H |
| 2518.000 | -51.03 | 2.19 | -48.84 | -13.00 | -35.84 | H |
| N/A | | | | | | |
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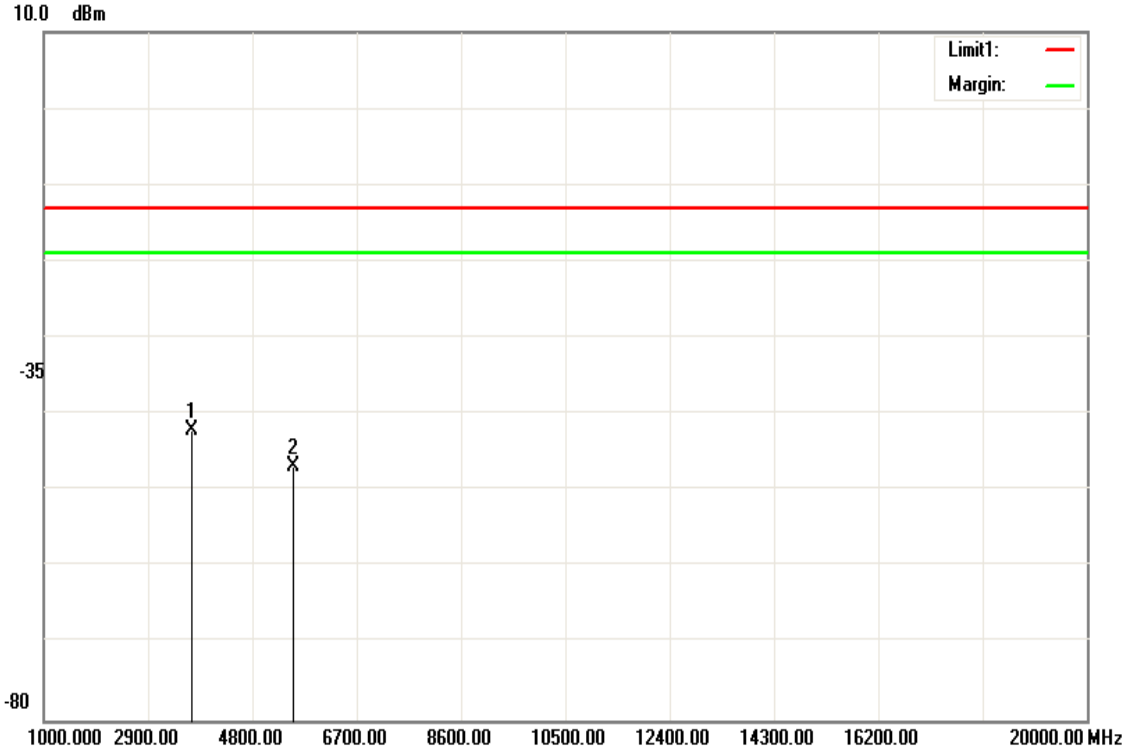
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

**LTE Band 2 / BW: 20MHz / QPSK RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3702.000 | -54.6 | 12.54 | -42.06 | -13.00 | -29.06 | V |
| 5553.000 | -59.74 | 12.88 | -46.86 | -13.00 | -33.86 | V |
| N/A | | | | | | |
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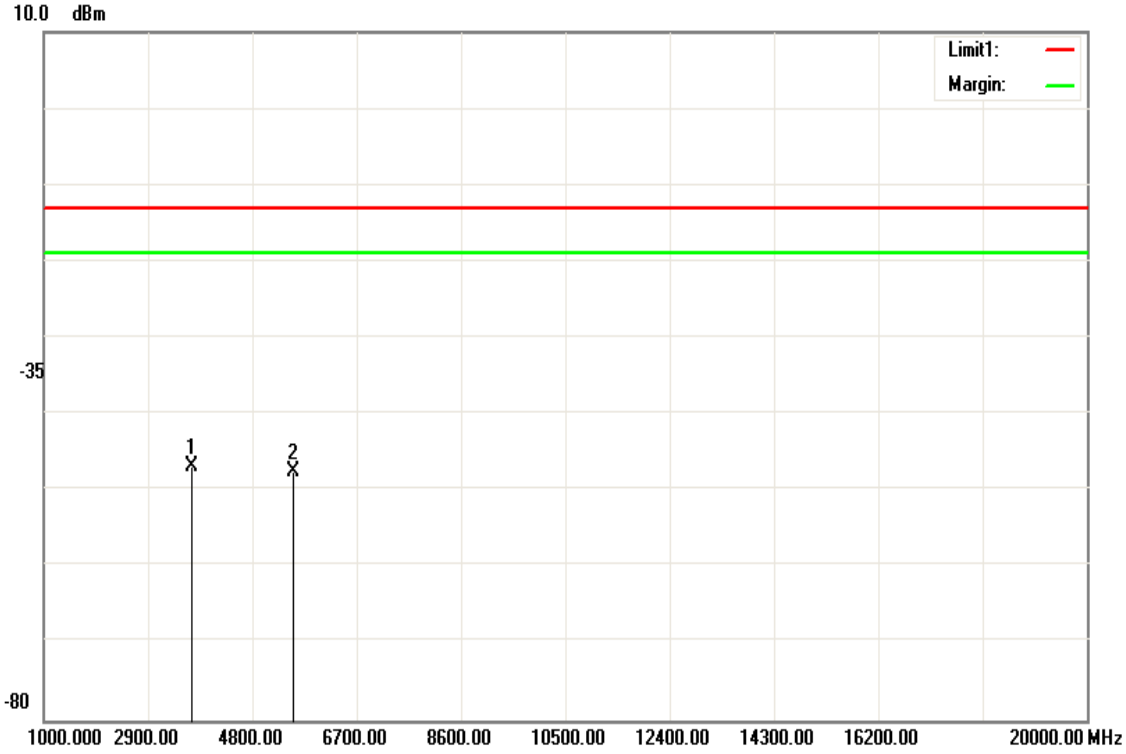
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3702.000 | -59.45 | 12.54 | -46.91 | -13.00 | -33.91 | H |
| 5553.000 | -60.36 | 12.88 | -47.48 | -13.00 | -34.48 | H |
| N/A | | | | | | |
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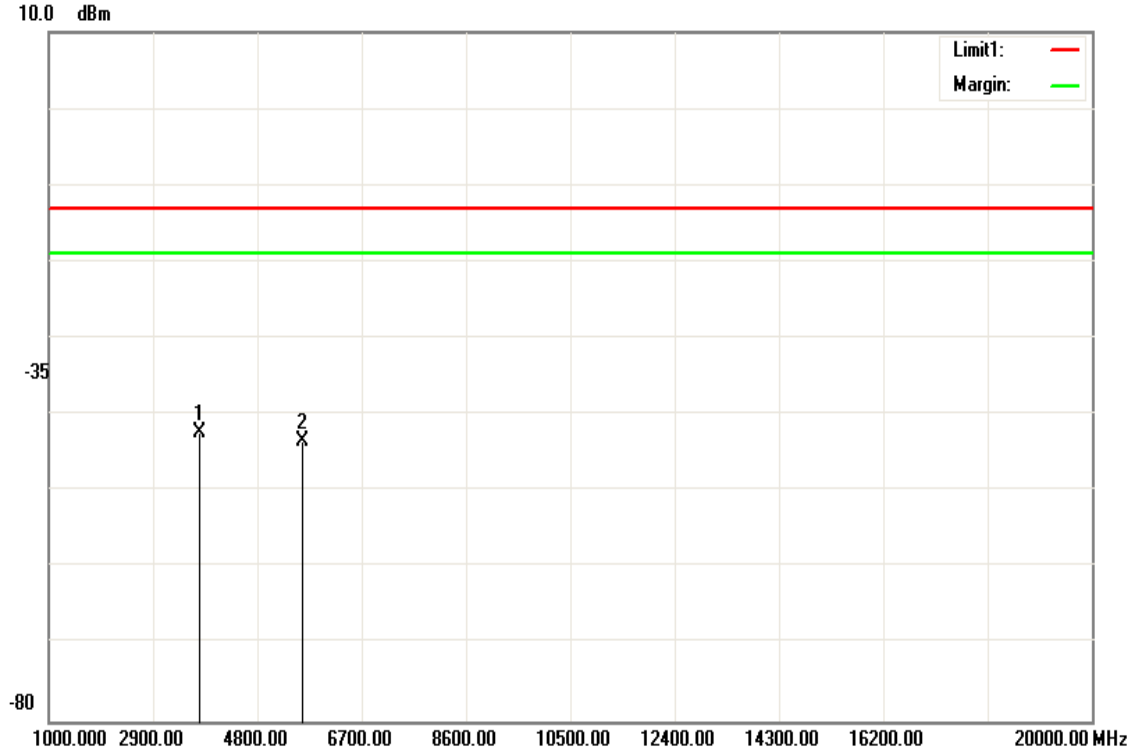
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3744.000 | -54.8 | 12.55 | -42.25 | -13.00 | -29.25 | V |
| 5613.000 | -56.22 | 12.85 | -43.37 | -13.00 | -30.37 | V |
| N/A | | | | | | |
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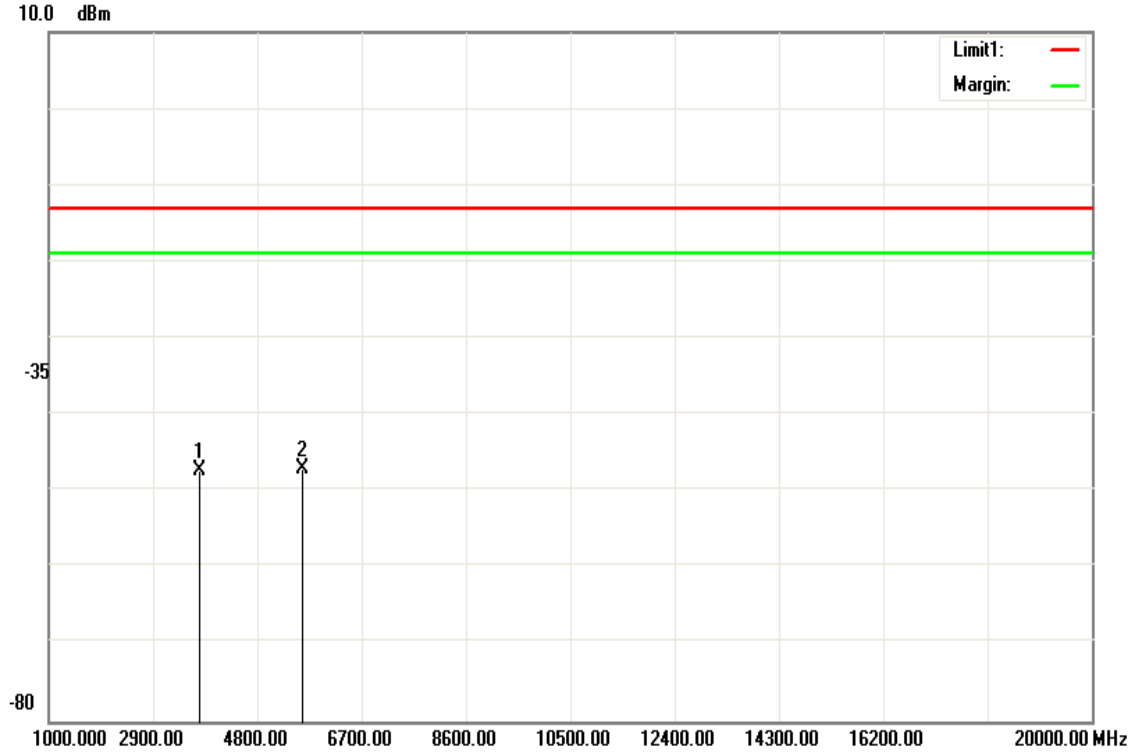
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3744.000 | -59.79 | 12.55 | -47.24 | -13.00 | -34.24 | H |
| 5613.000 | -59.88 | 12.85 | -47.03 | -13.00 | -34.03 | H |
| N/A | | | | | | |
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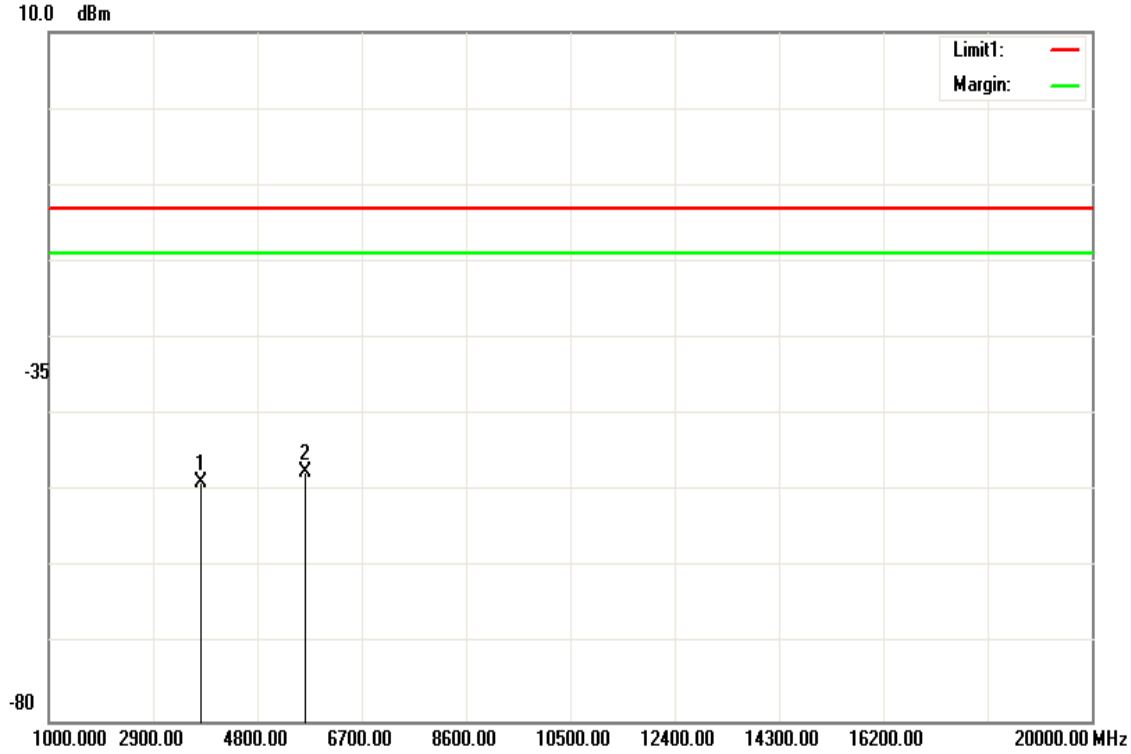
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3782.000 | -61.48 | 12.56 | -48.92 | -13.00 | -35.92 | V |
| 5673.000 | -60.28 | 12.83 | -47.45 | -13.00 | -34.45 | V |
| N/A | | | | | | |
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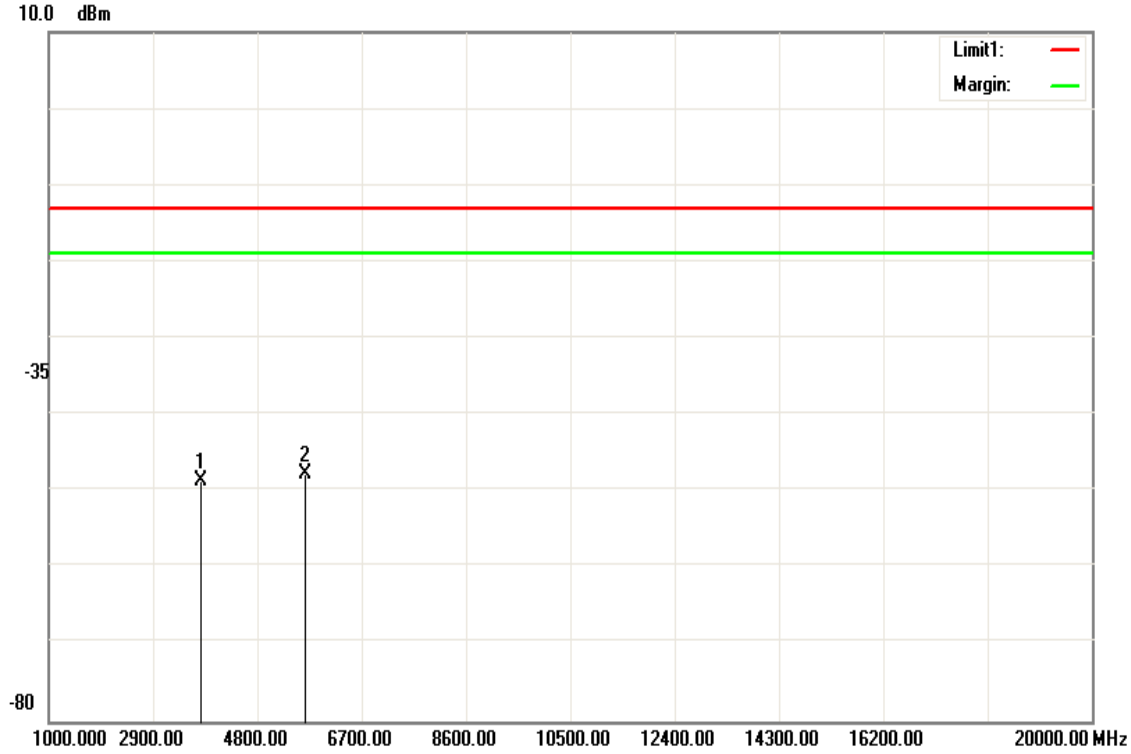
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3782.000 | -61.26 | 12.56 | -48.70 | -13.00 | -35.70 | H |
| 5673.000 | -60.55 | 12.83 | -47.72 | -13.00 | -34.72 | H |
| N/A | | | | | | |
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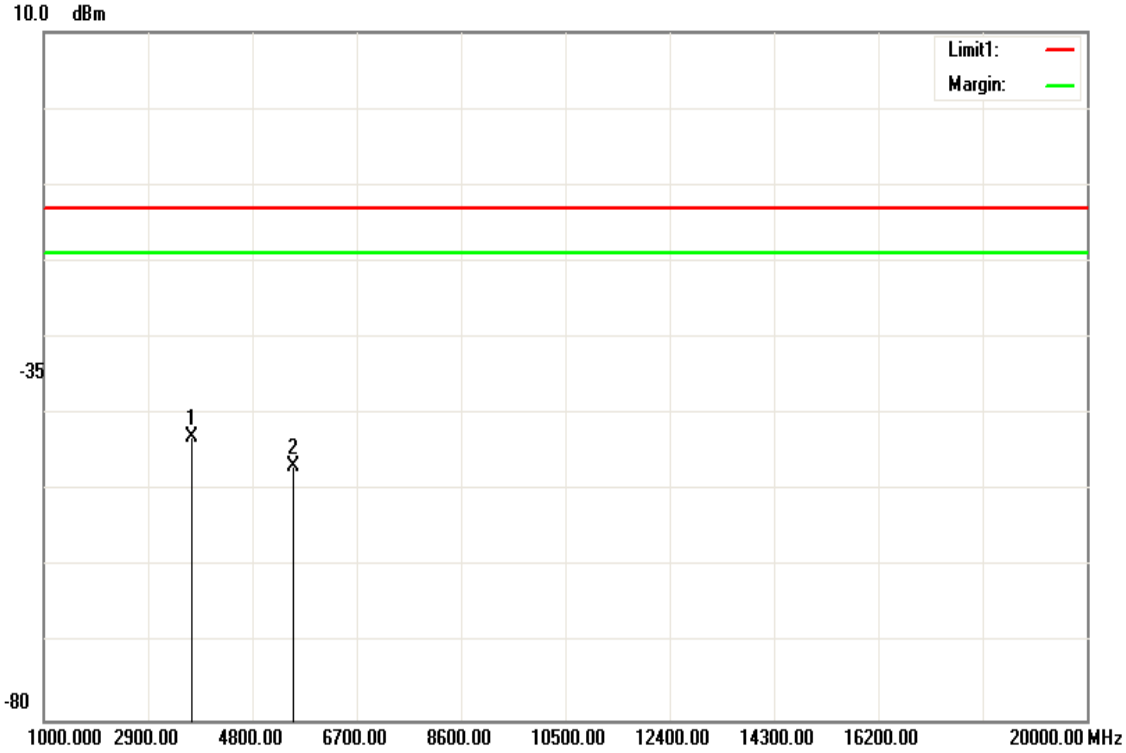
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

**LTE Band 2 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3702.000 | -55.42 | 12.54 | -42.88 | -13.00 | -29.88 | V |
| 5553.000 | -59.62 | 12.88 | -46.74 | -13.00 | -33.74 | V |
| N/A | | | | | | |
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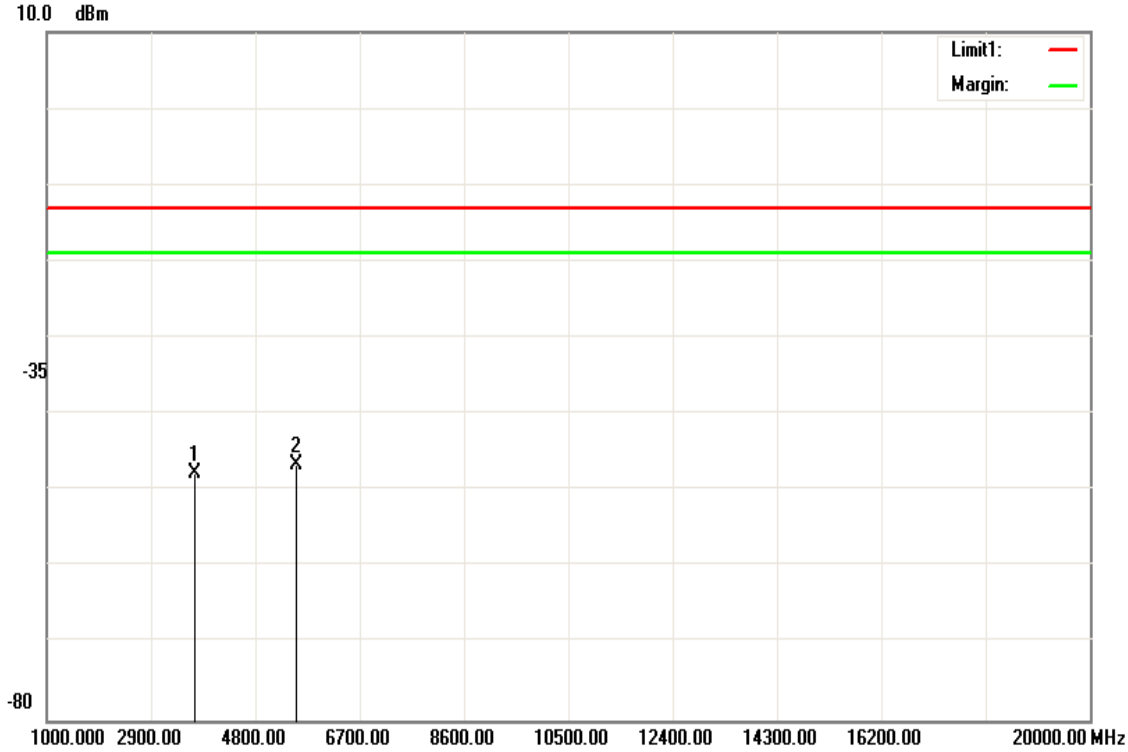
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3702.000 | -60.18 | 12.54 | -47.64 | -13.00 | -34.64 | H |
| 5553.000 | -59.45 | 12.88 | -46.57 | -13.00 | -33.57 | H |
| N/A | | | | | | |
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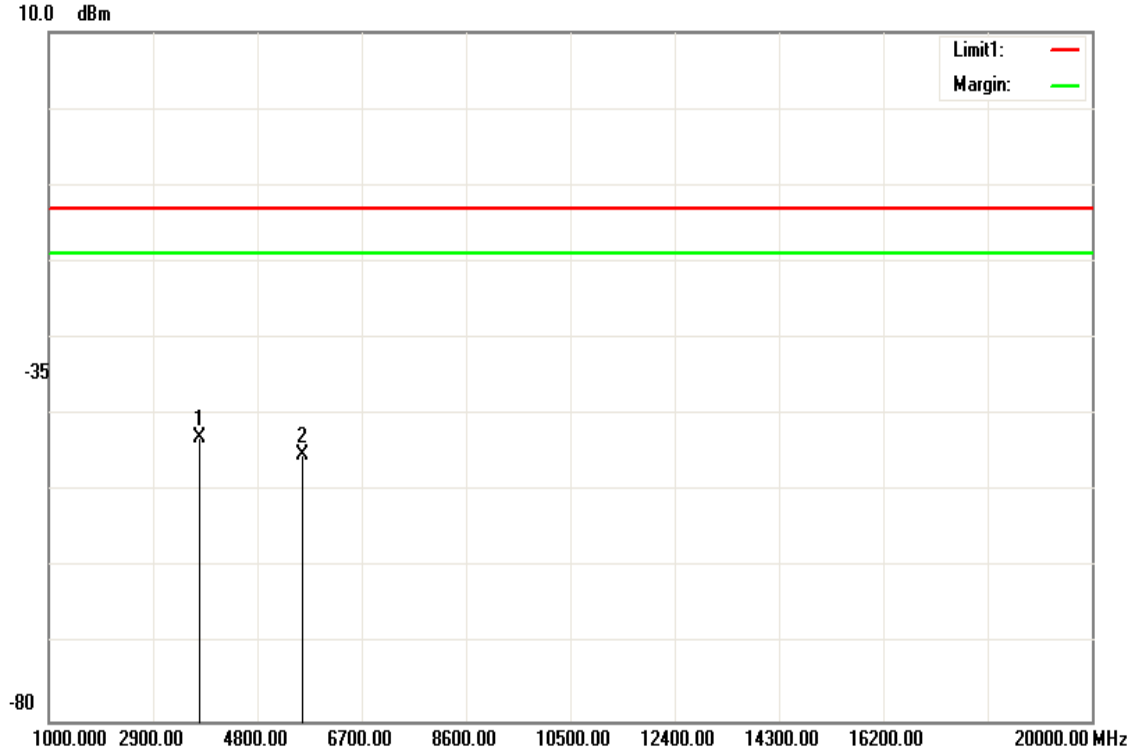
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3742.000 | -55.52 | 12.55 | -42.97 | -13.00 | -29.97 | V |
| 5613.000 | -57.98 | 12.85 | -45.13 | -13.00 | -32.13 | V |
| N/A | | | | | | |
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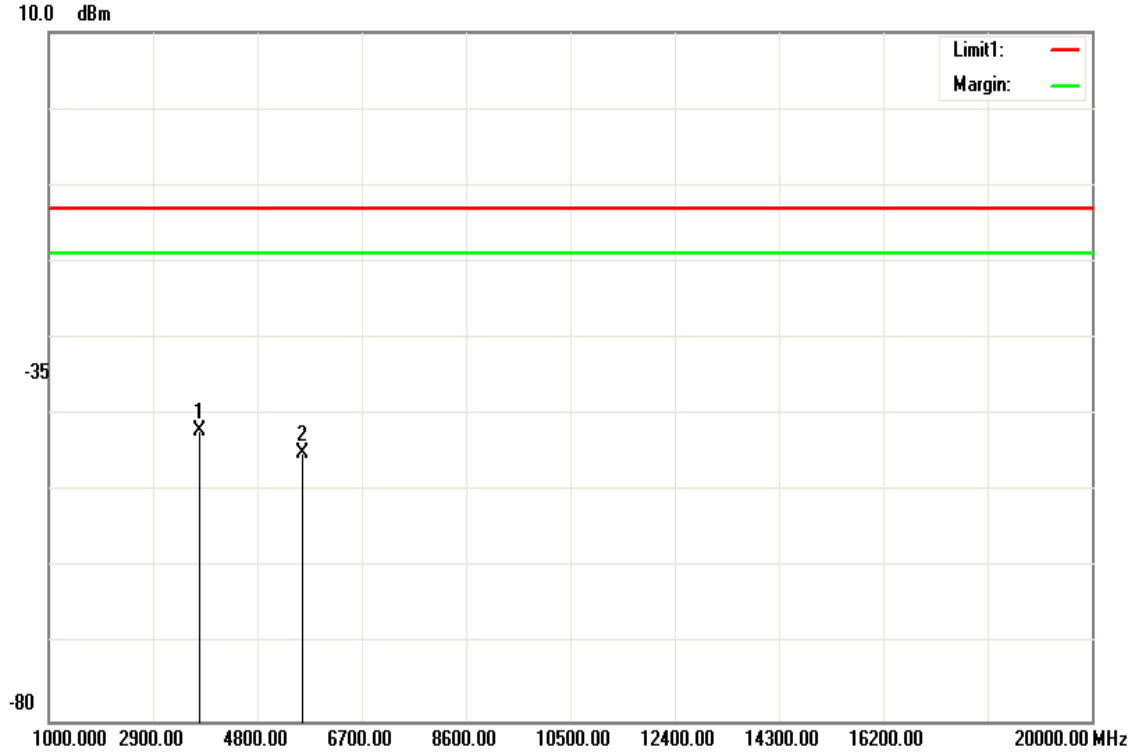
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3744.000 | -54.59 | 12.55 | -42.04 | -13.00 | -29.04 | H |
| 5613.000 | -57.85 | 12.85 | -45.00 | -13.00 | -32.00 | H |
| N/A | | | | | | |
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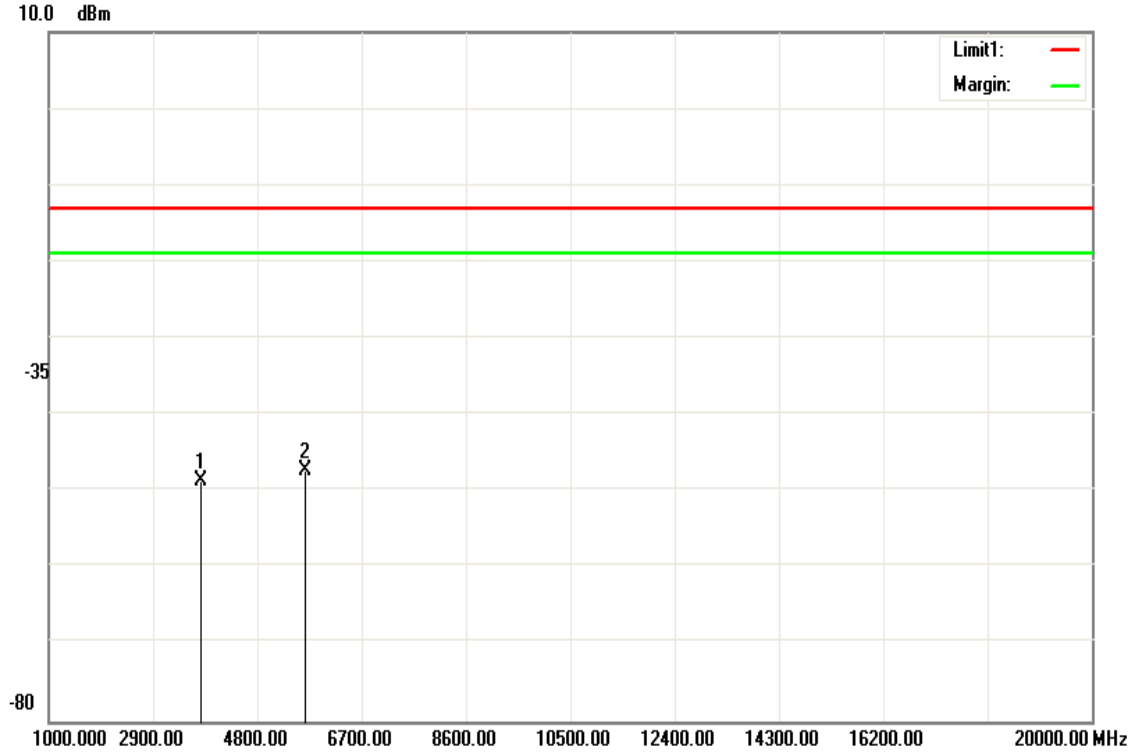
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Ver. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3782.000 | -61.07 | 12.56 | -48.51 | -13.00 | -35.51 | V |
| 5673.000 | -60.02 | 12.83 | -47.19 | -13.00 | -34.19 | V |
| N/A | | | | | | |
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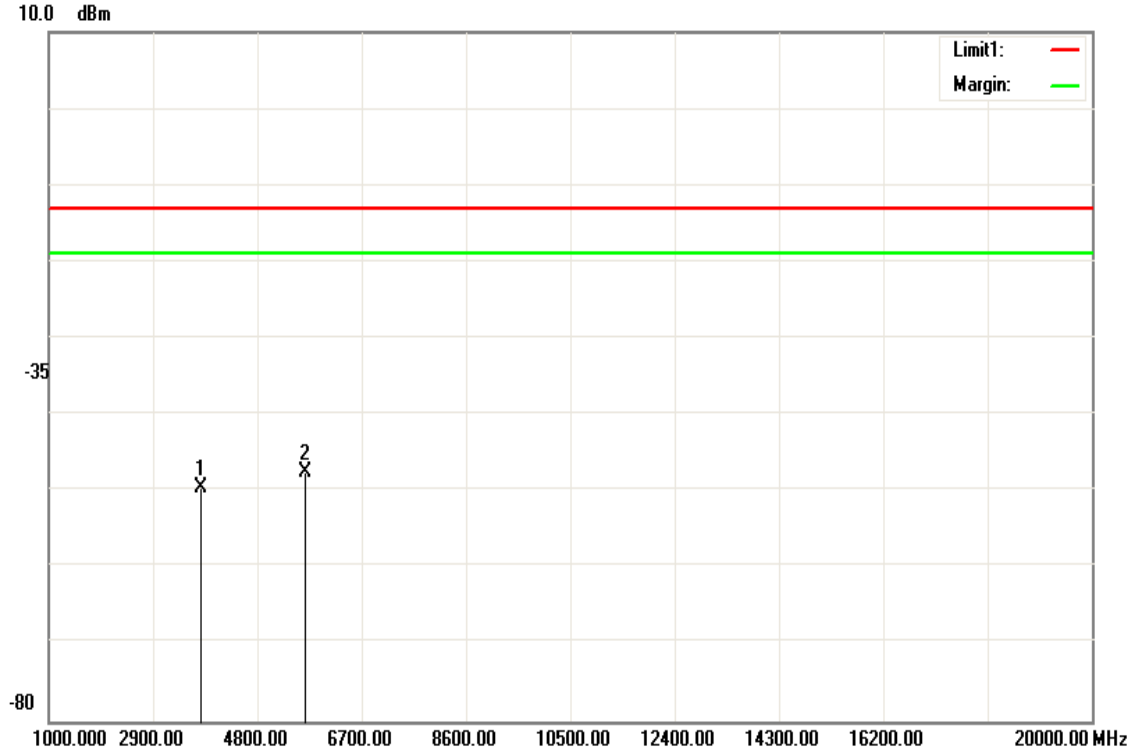
***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | March 9, 2017 |
| **Temperature:** | 22.6°C | **Tested by:** | Timmy Wang |
| **Humidity:** | 57.2% RH | **Polarity:** | Hor. |




| Frequency (MHz) | S.G. (dBm) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|
| 3782.000 | -61.98 | 12.56 | -49.42 | -13.00 | -36.42 | H |
| 5673.000 | -60.28 | 12.83 | -47.45 | -13.00 | -34.45 | H |
| N/A | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*