

## 8.6 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  $43 + 10 \log_{10}(P)$  dB. The limit of emission equal to  $-13\text{dBm}$

### Test Procedures

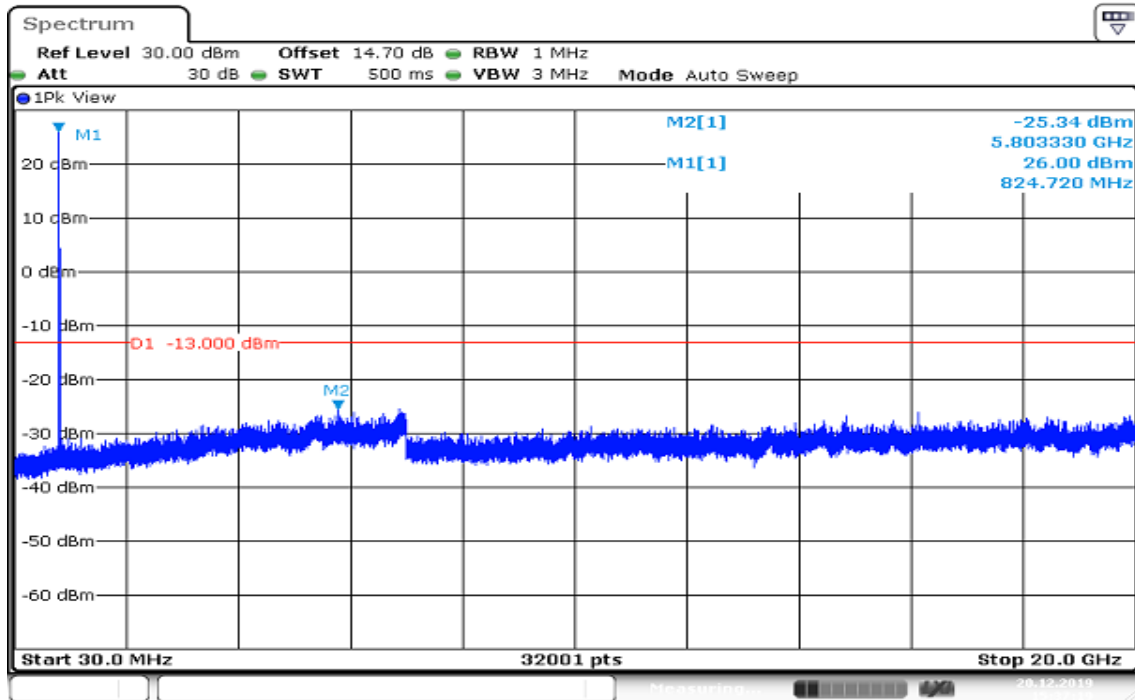
1. According to KDB 971168 D01,
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against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

### Test Results

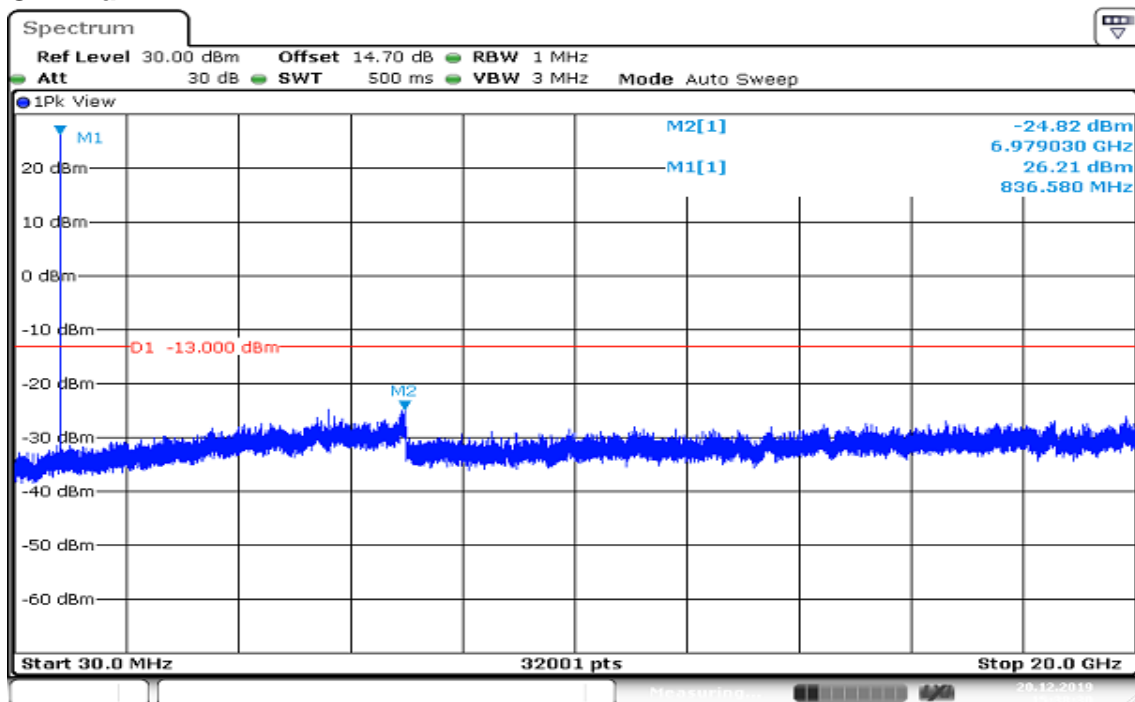
#### LTE Band 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

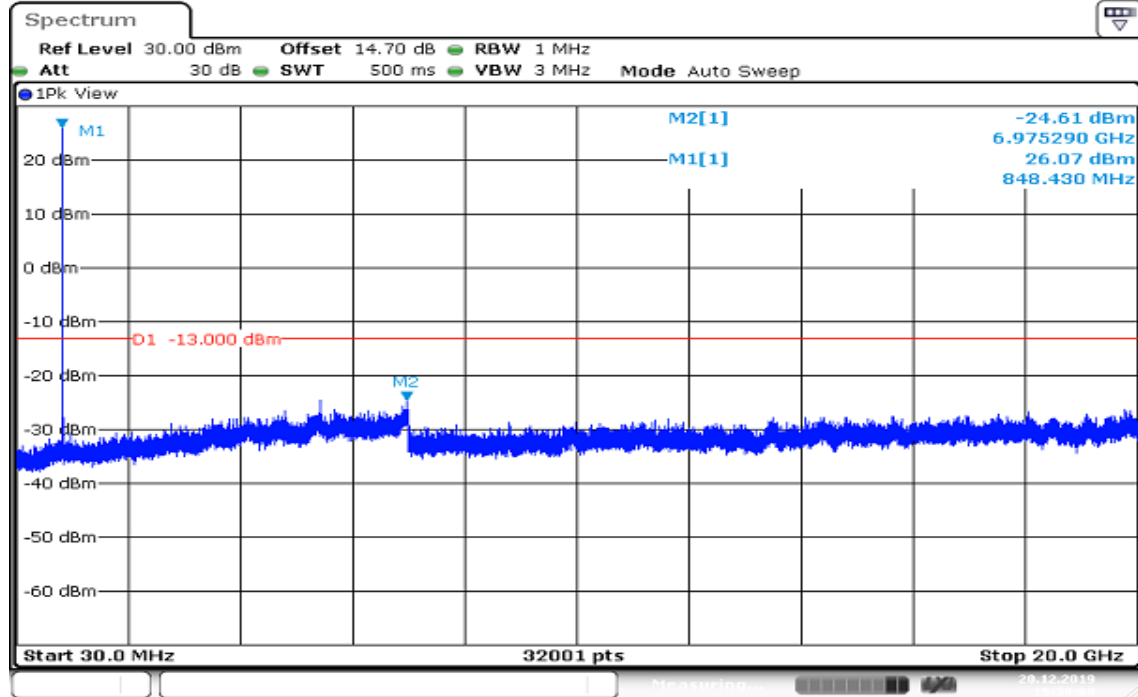
#### CH Low



#### CH Mid

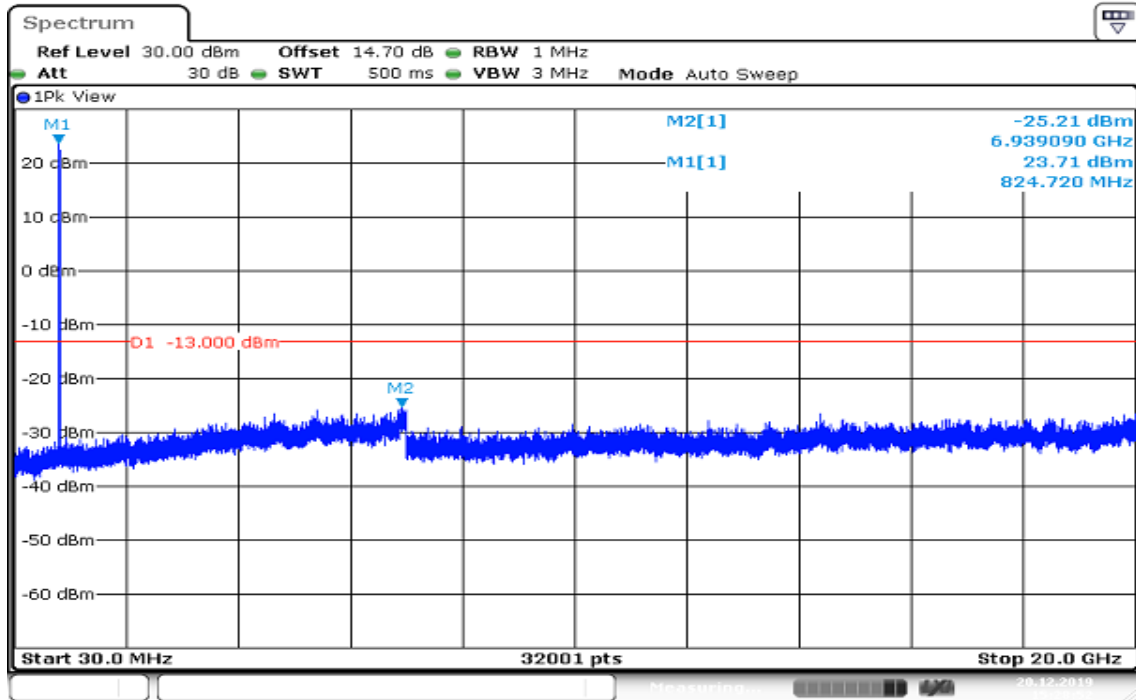


### CH High

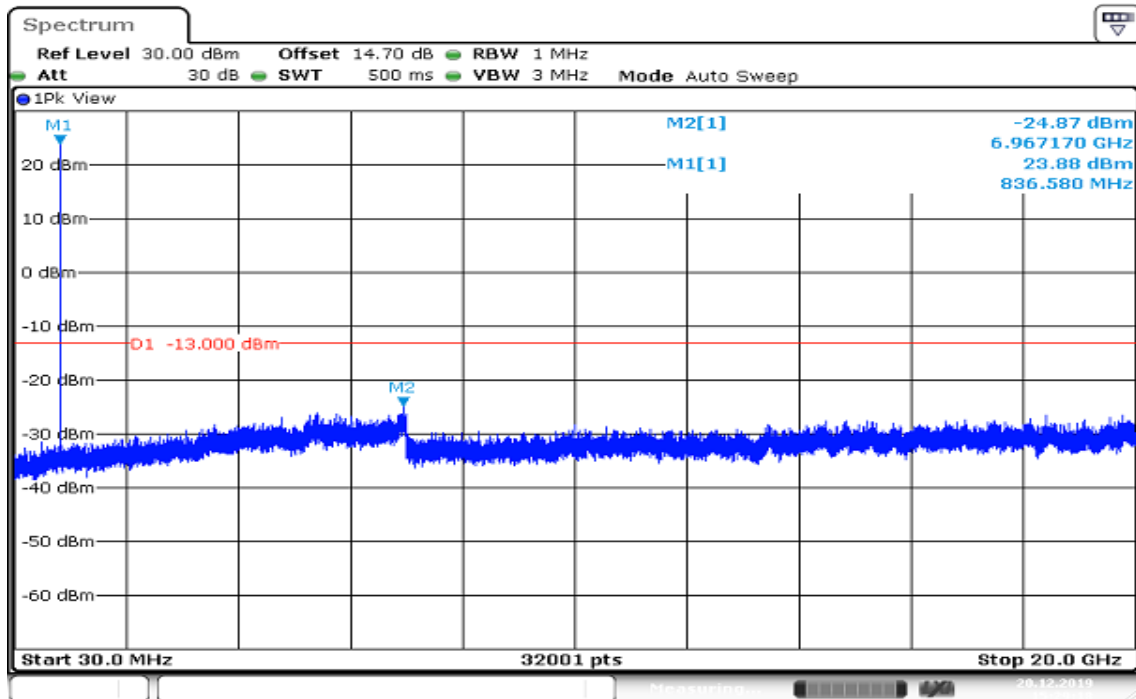


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**CHANNEL BANDWIDTH: 3MHz / QPSK**  
**CH Low**

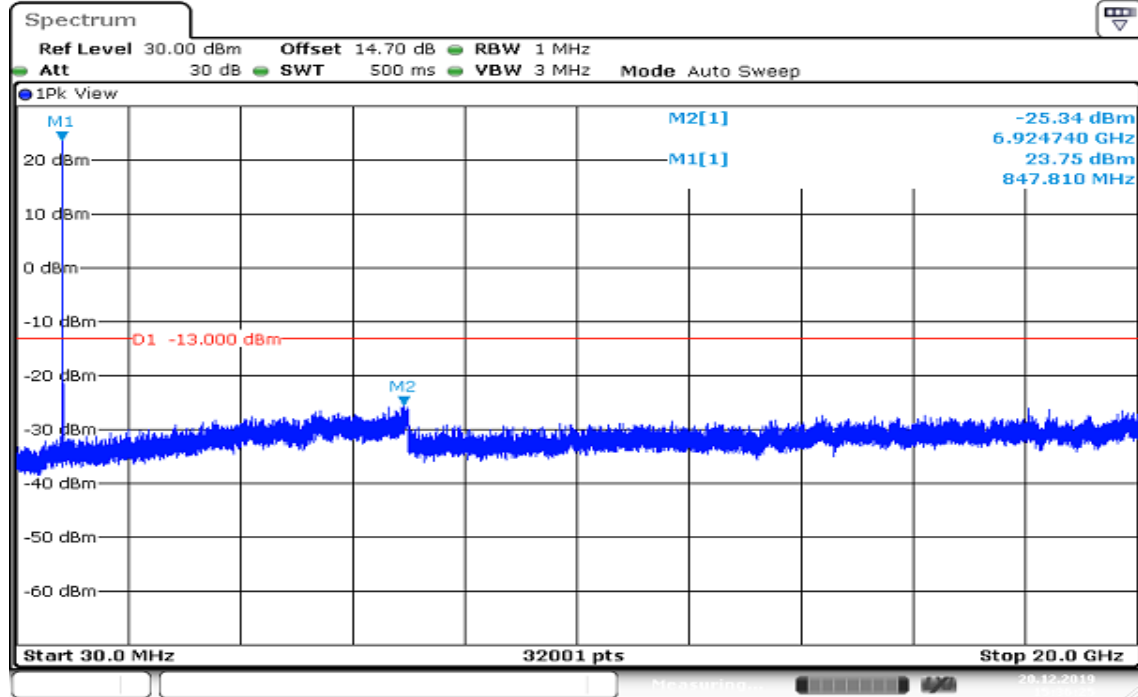


**CH Mid**



Report No.: T191120D05-RP11

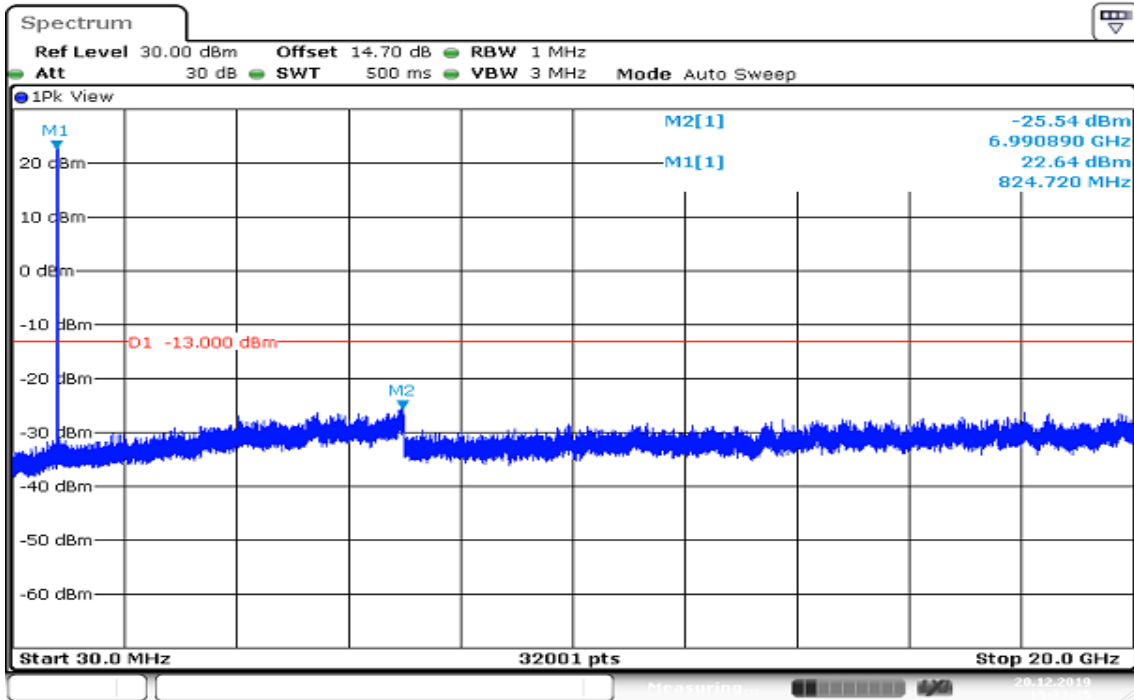
### CH High



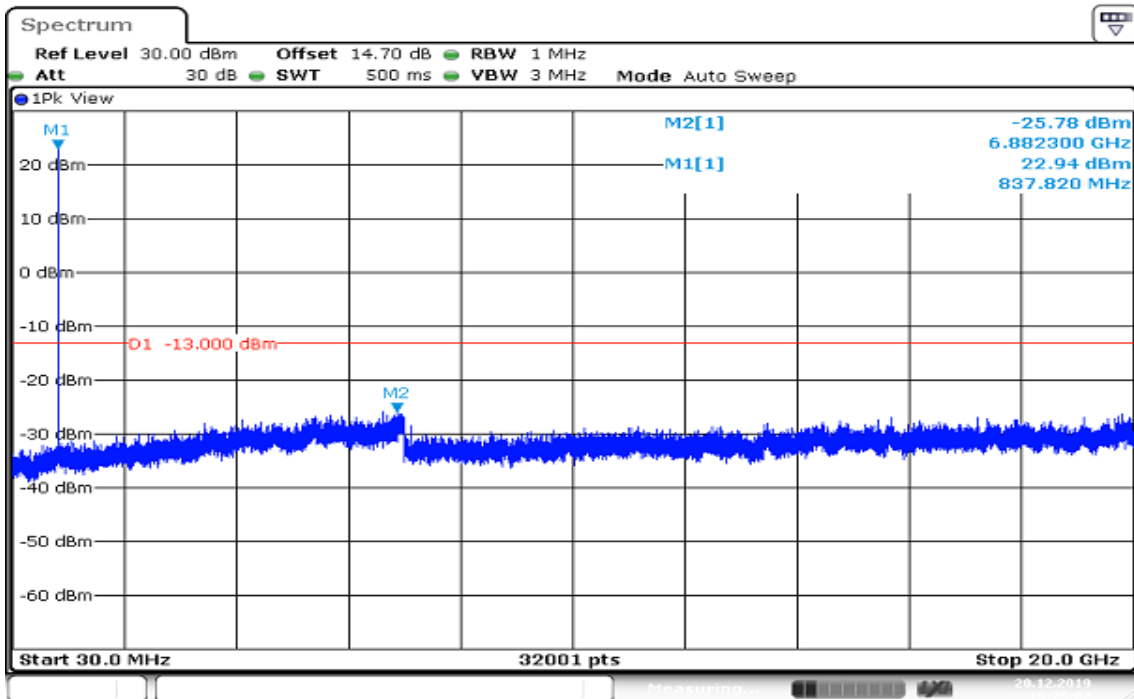
Date: 20.DEC.2019 15:36:26

Report No.: T191120D05-RP11

**CHANNEL BANDWIDTH: 5MHz / QPSK**  
**CH Low**

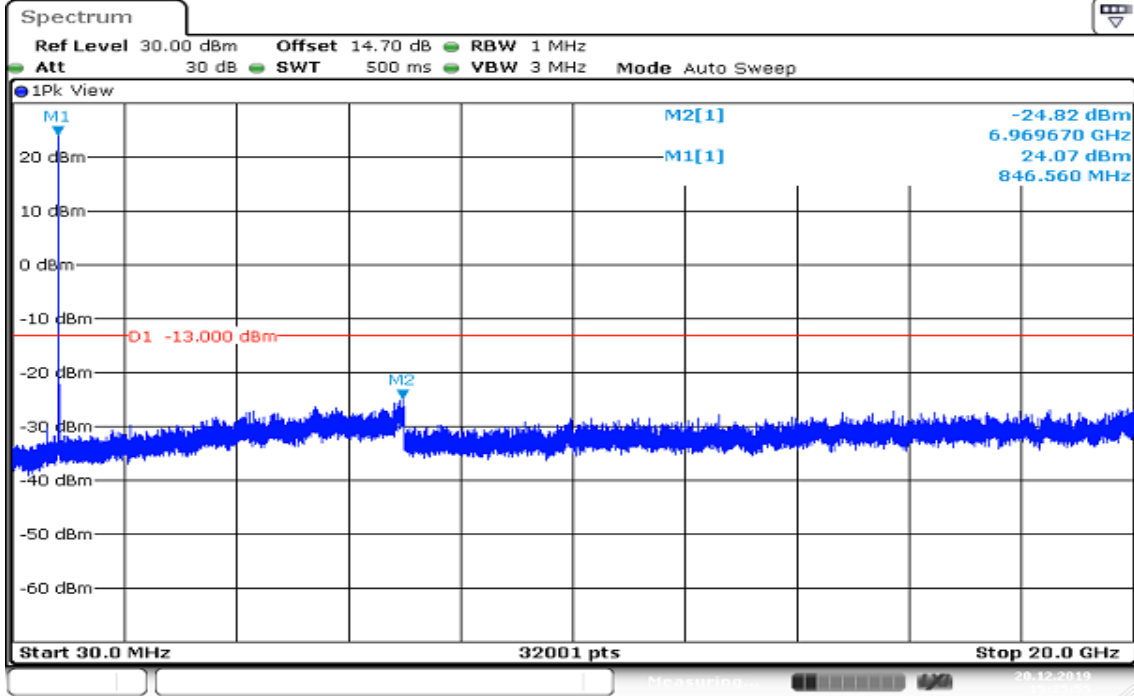


**CH Mid**



Report No.: T191120D05-RP11

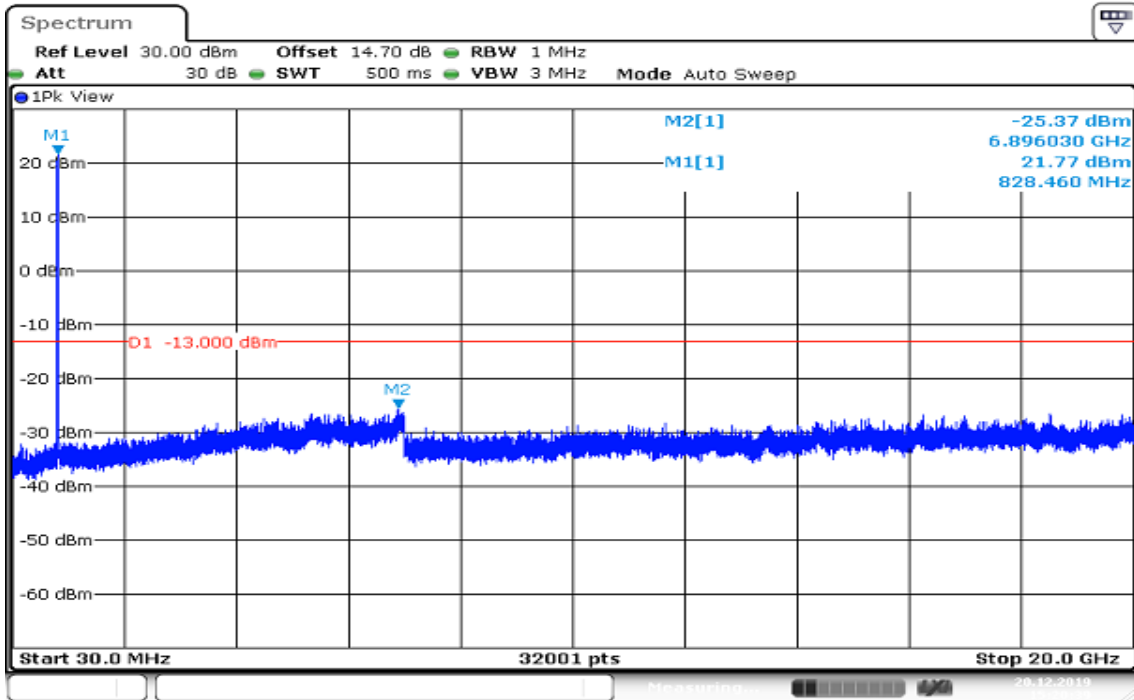
## CH High



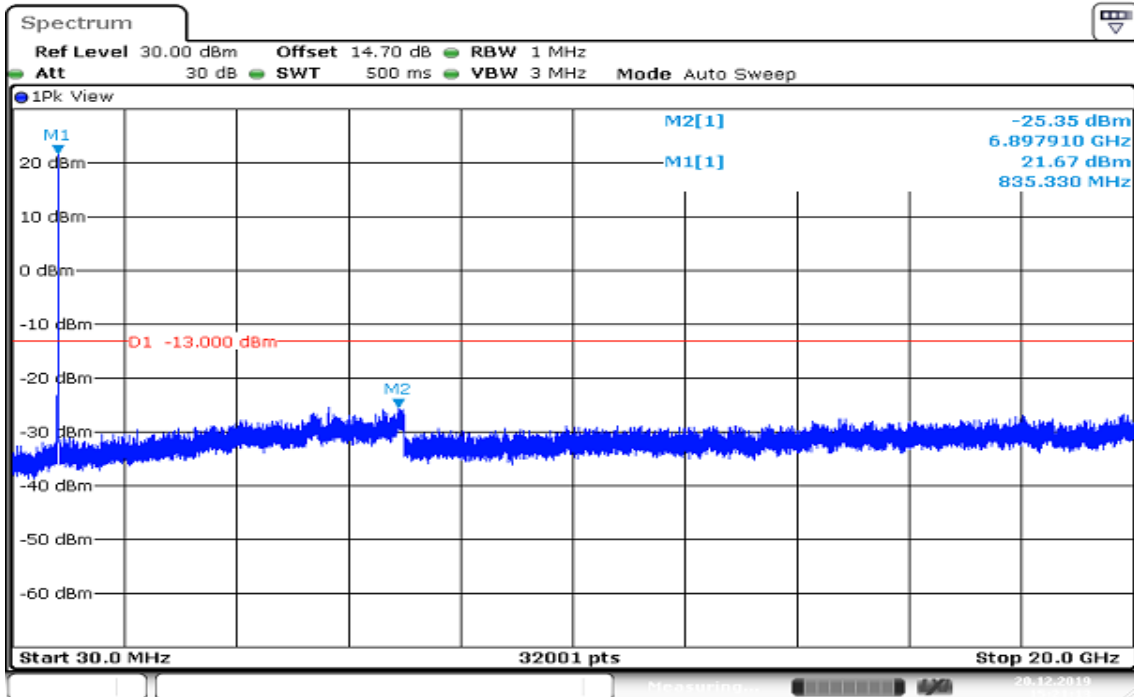
Date: 20.DEC.2019 15:25:56

Report No.: T191120D05-RP11

**CHANNEL BANDWIDTH: 10MHz / QPSK**  
**CH Low**



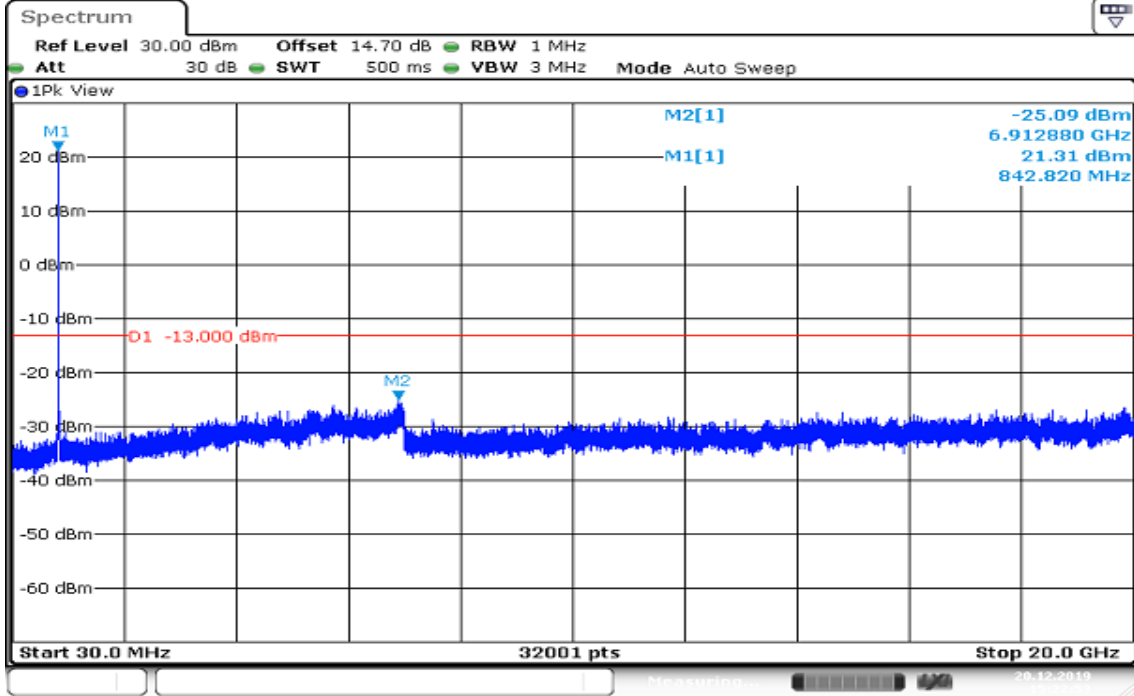
**CH Mid**





Report No.: T191120D05-RP11

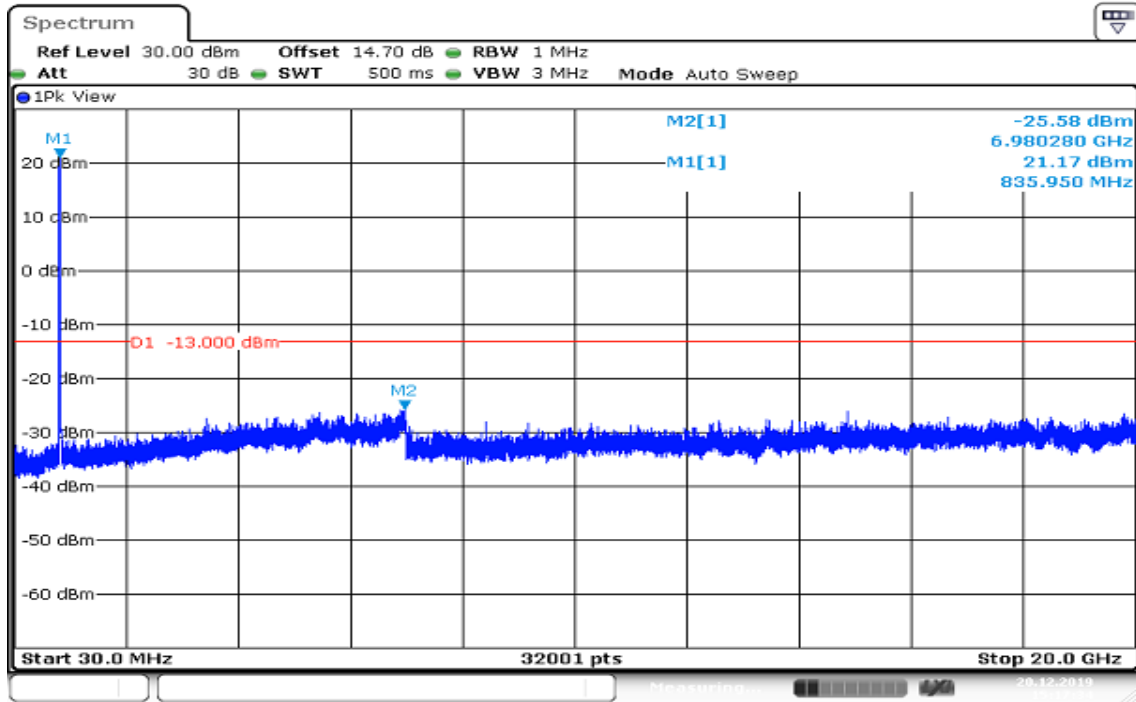
## CH High



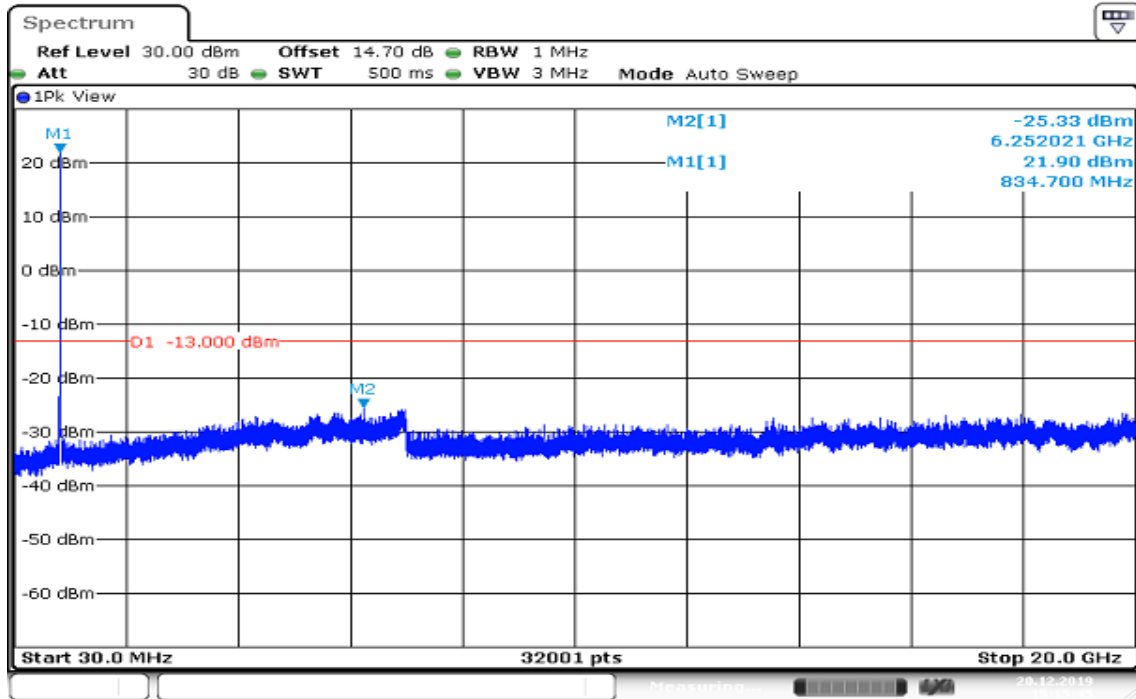
Date: 20.DEC.2019 15:22:53

Report No.: T191120D05-RP11

**CHANNEL BANDWIDTH: 15MHz / QPSK**  
**CH Low**

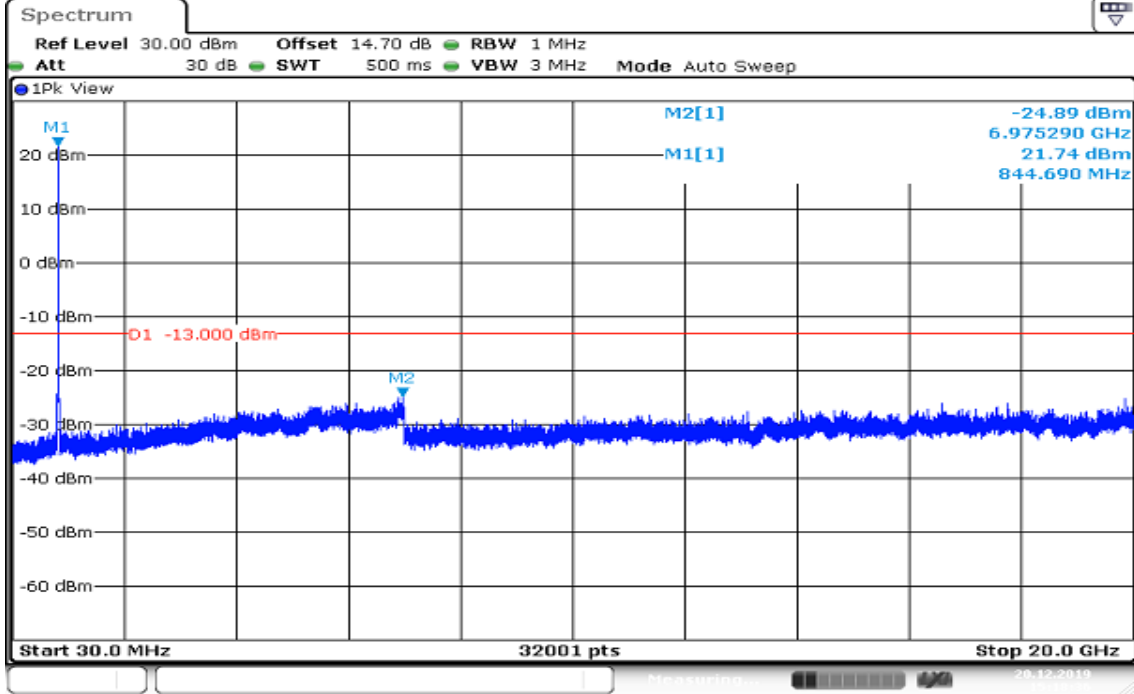


**CH Mid**



Report No.: T191120D05-RP11

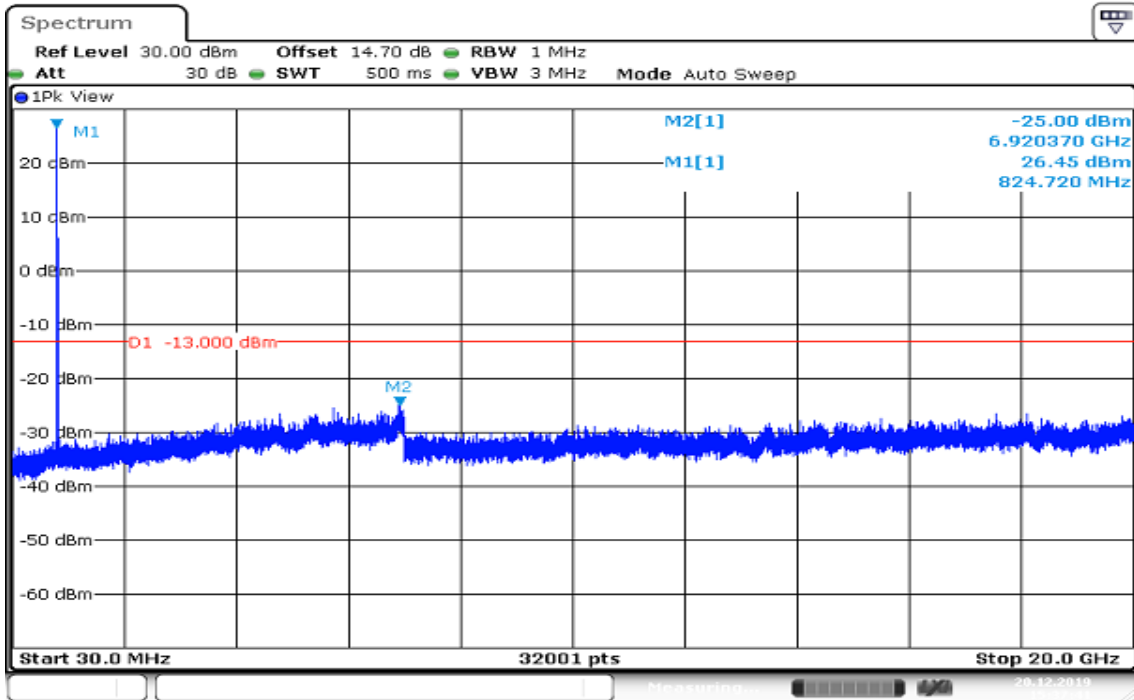
## CH High



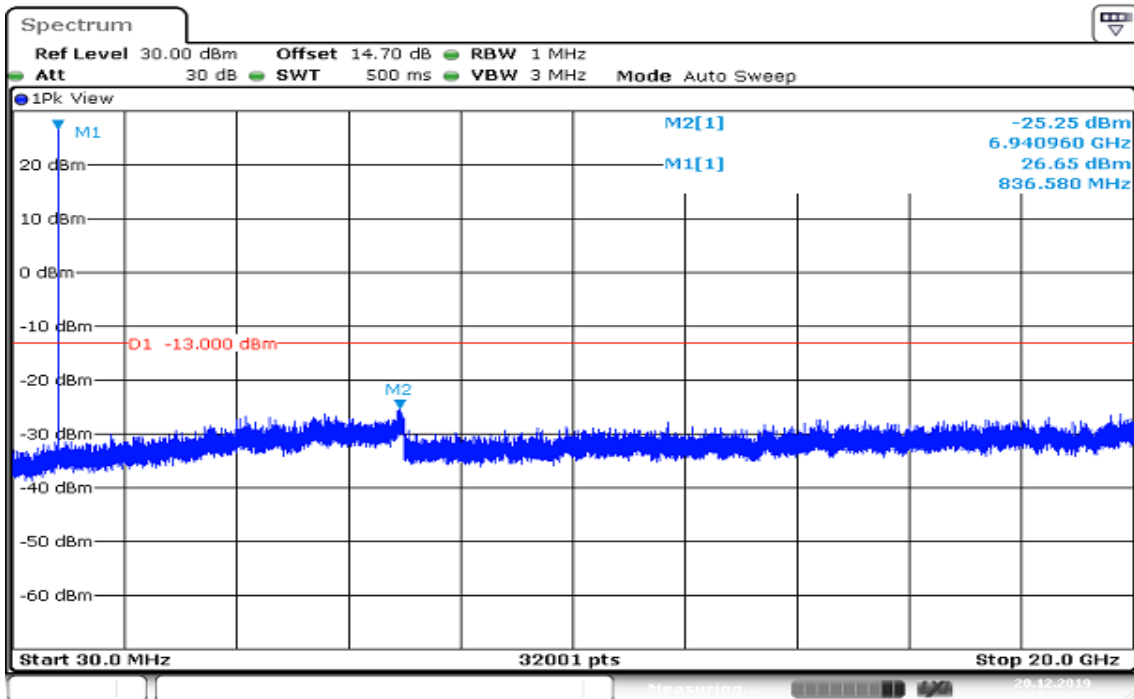
Date: 20.DEC.2019 15:18:37

Report No.: T191120D05-RP11

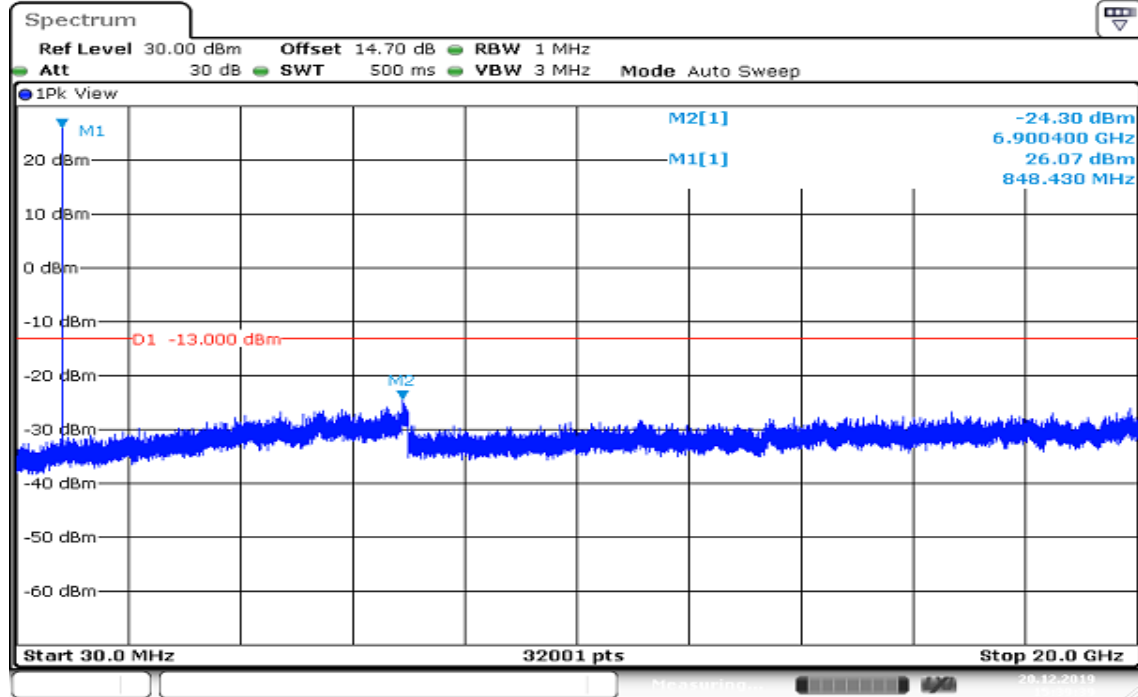
**CHANNEL BANDWIDTH: 1.4MHz / 16QAM**  
**CH Low**



**CH Mid**

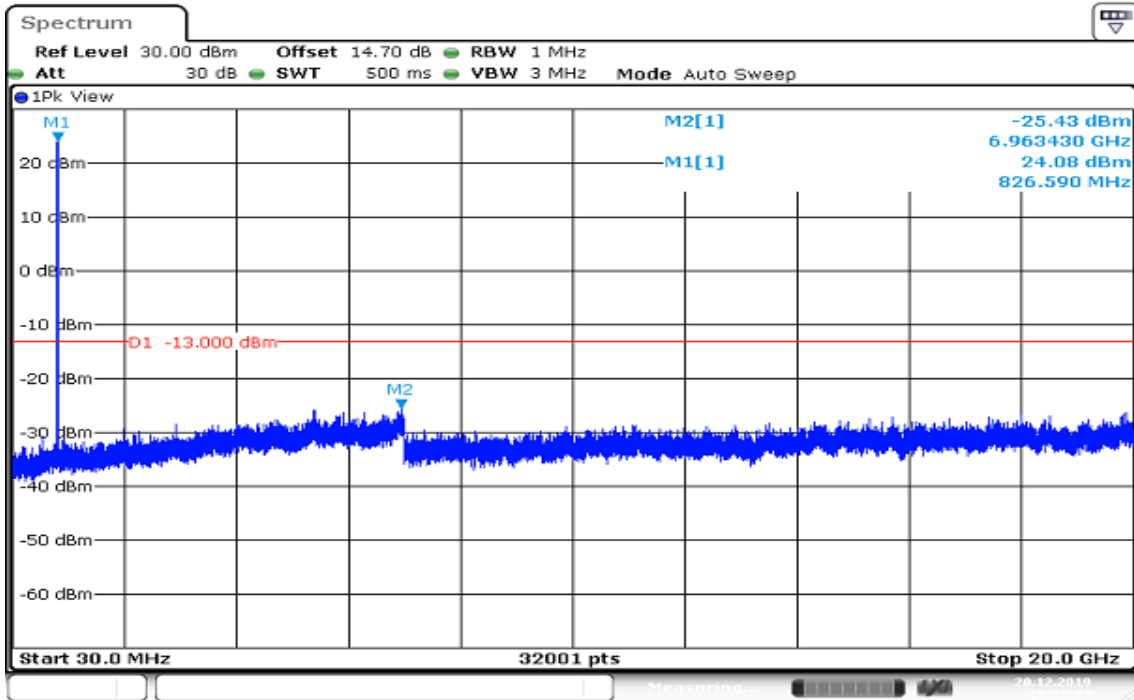


### CH High

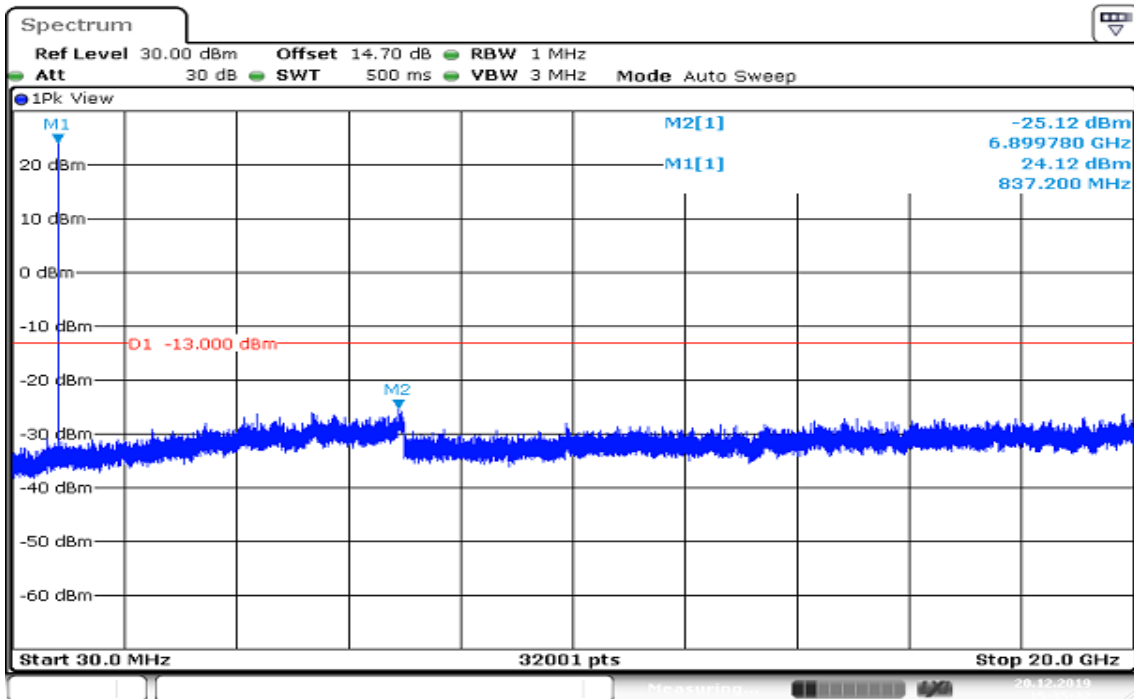


Date: 20.DEC.2019 15:39:40

**CHANNEL BANDWIDTH: 3MHz / 16QAM**  
**CH Low**

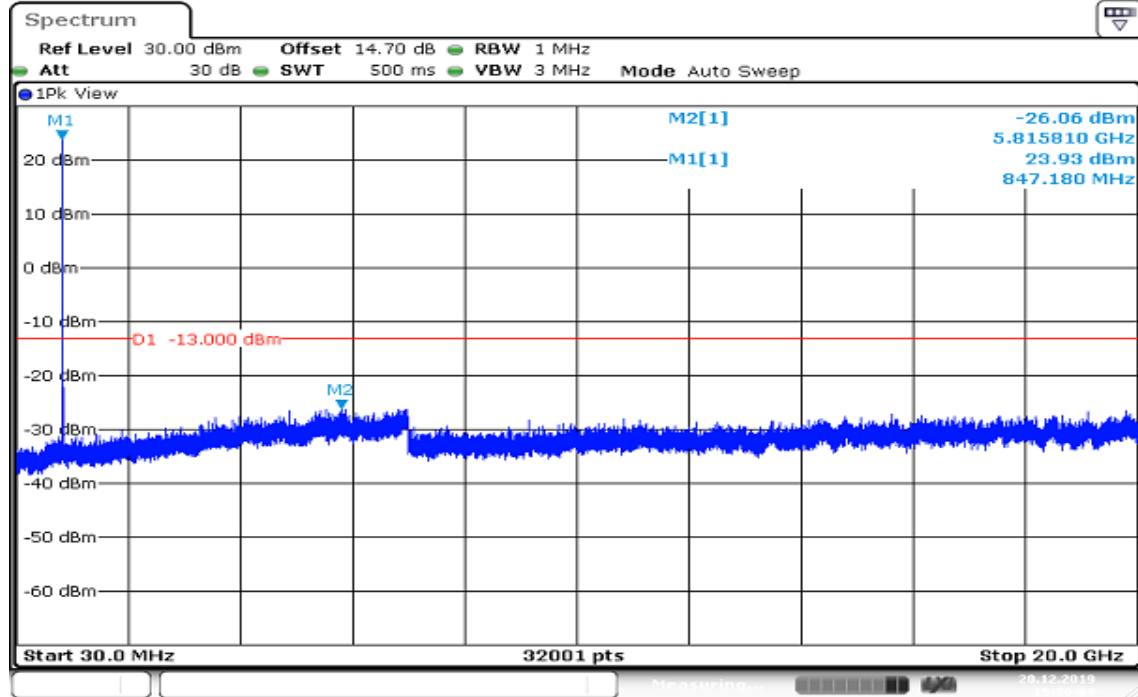


**CH Mid**



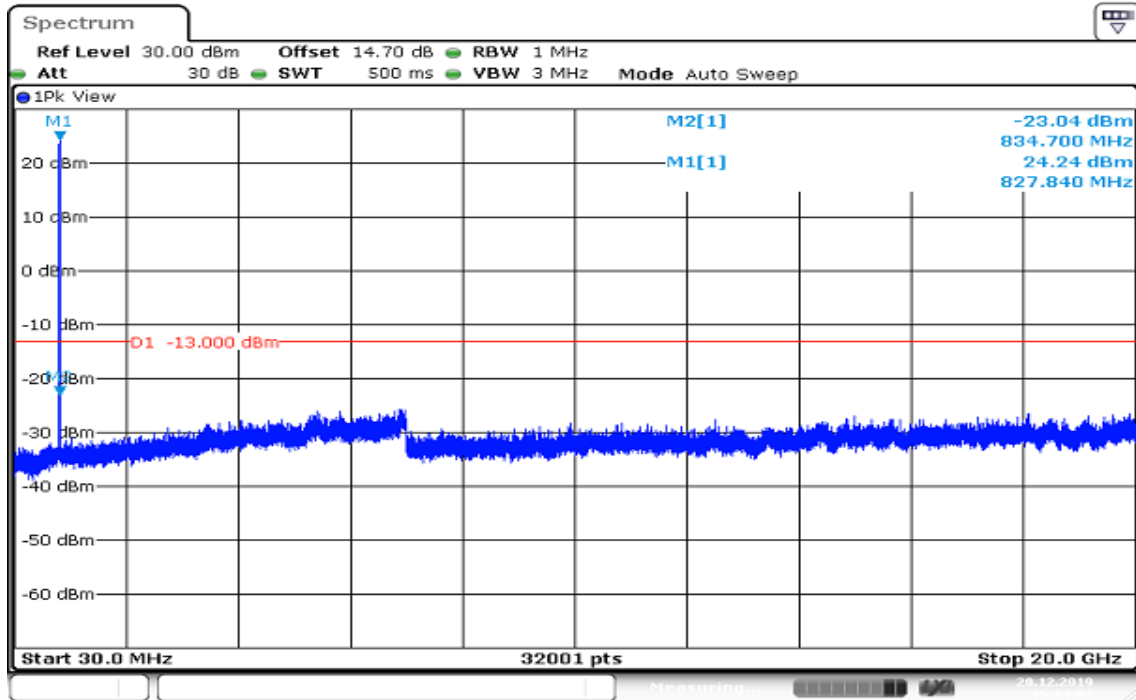
Report No.: T191120D05-RP11

### CH High

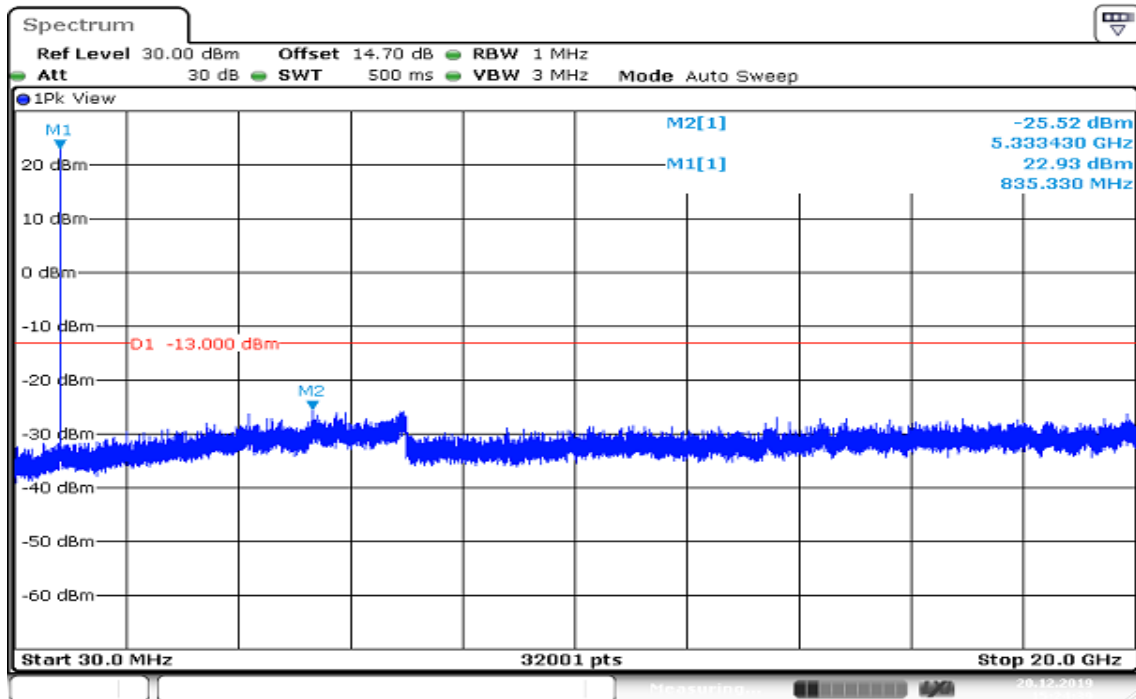


Date: 20.DEC.2019 15:36:08

**CHANNEL BANDWIDTH: 5MHz / 16QAM**  
**CH Low**

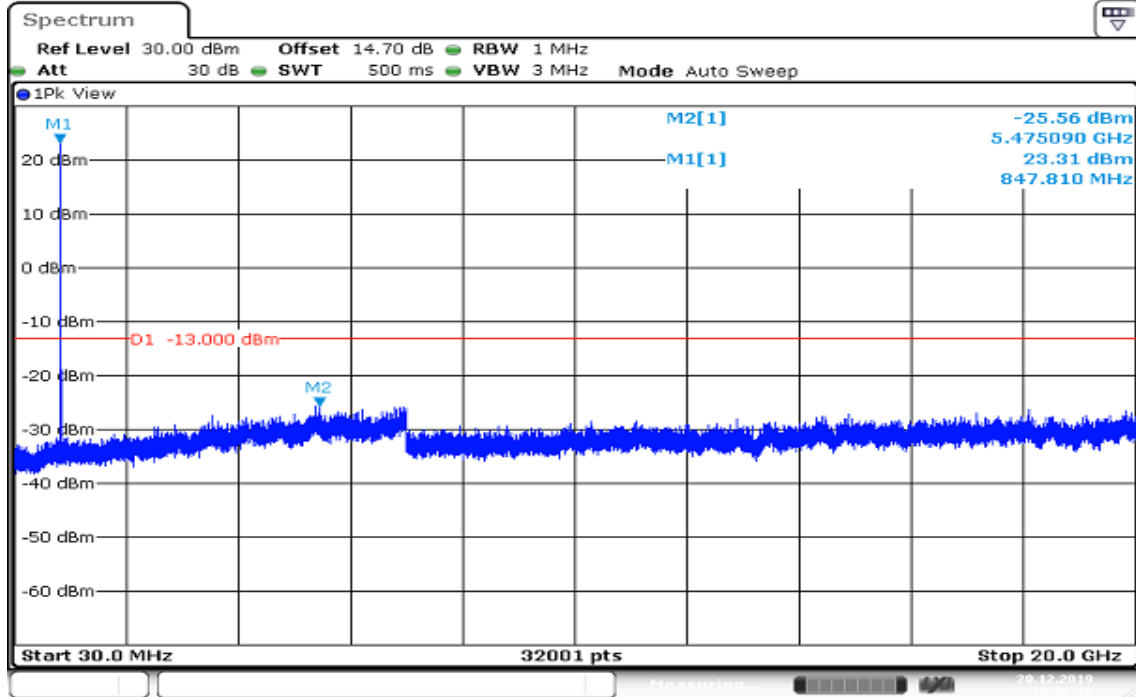


**CH Mid**



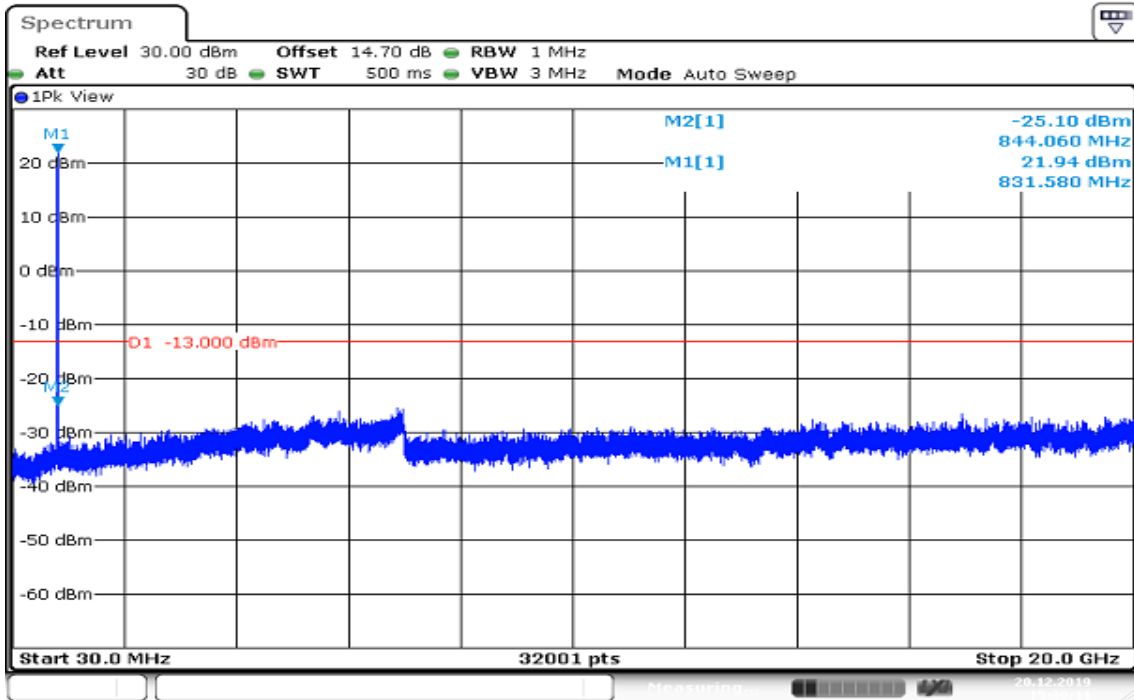


## CH High

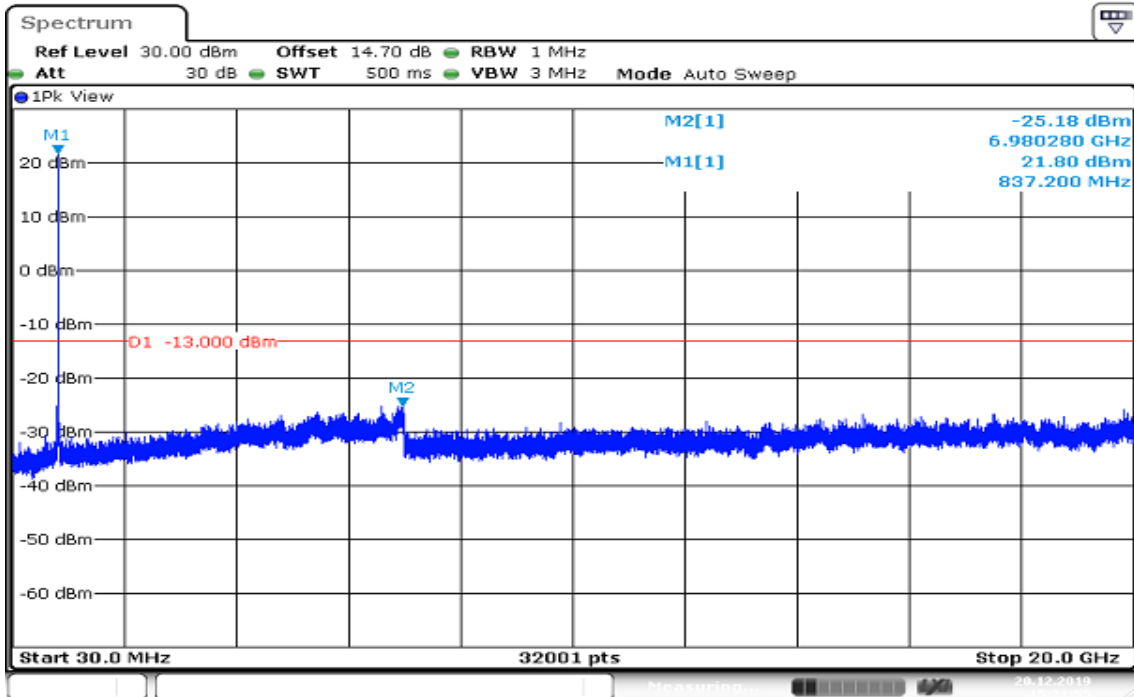


Date: 20.DEC.2019 15:26:20

**CHANNEL BANDWIDTH: 10MHz / 16QAM**  
**CH Low**

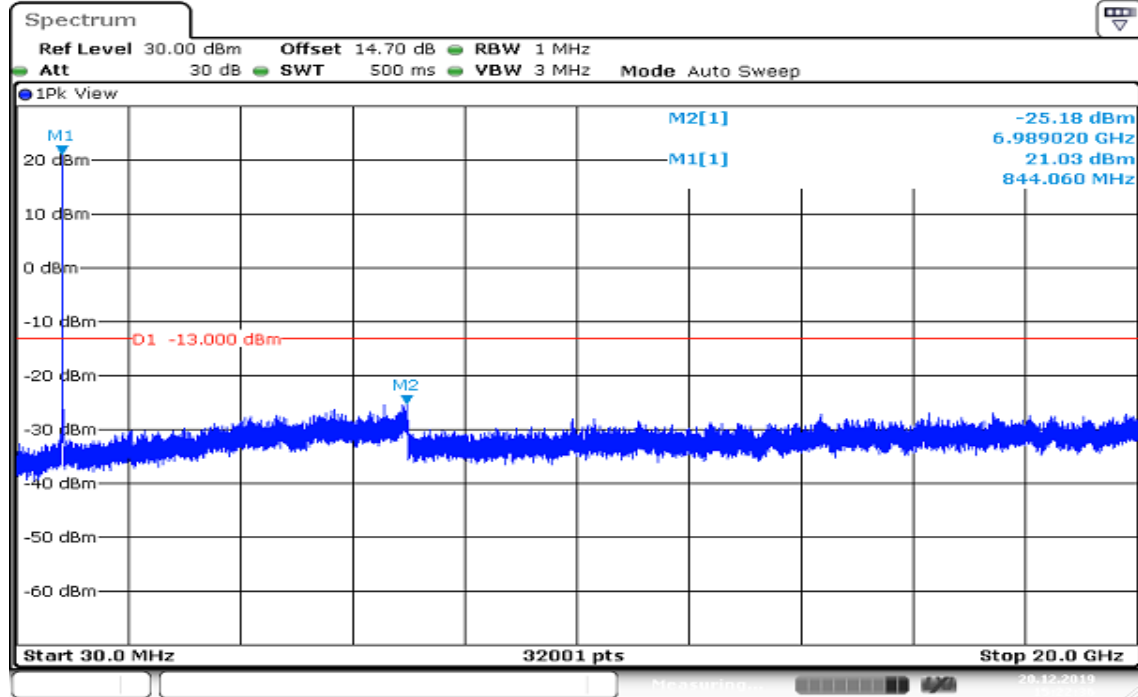


**CH Mid**



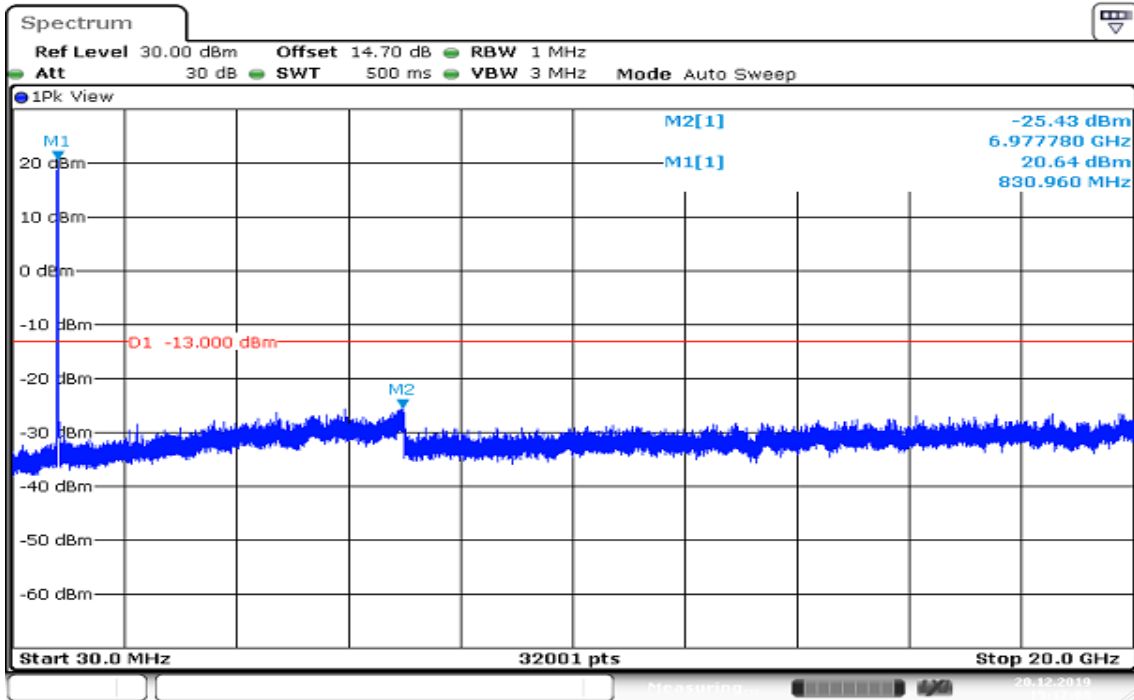
Report No.: T191120D05-RP11

### CH High

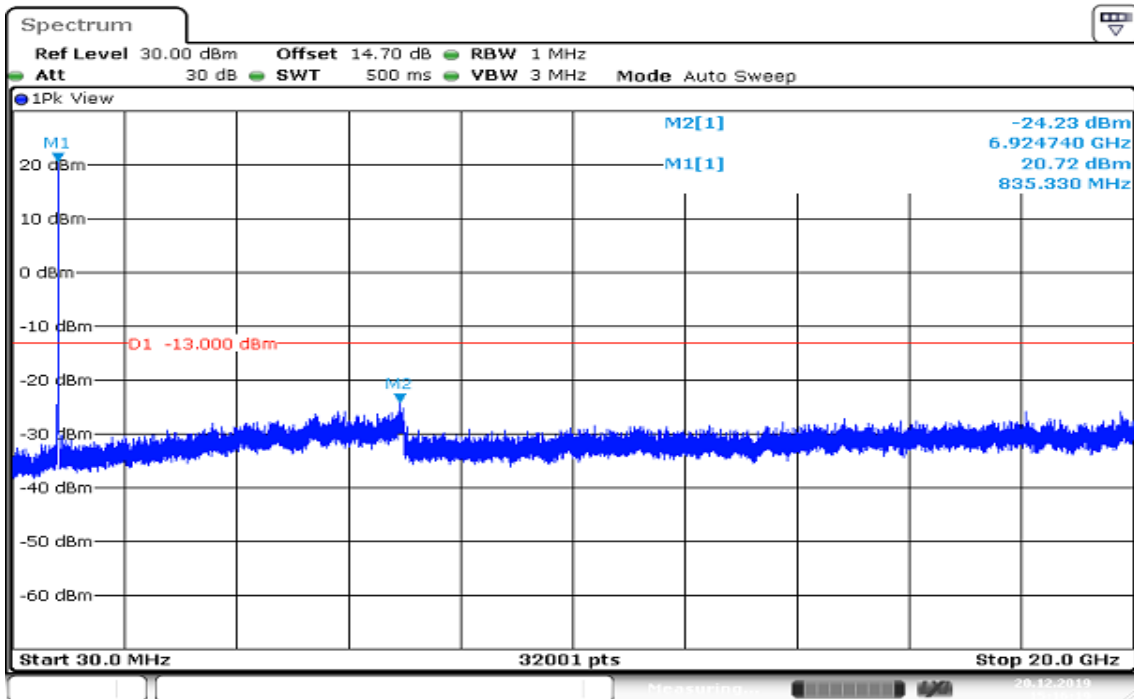


Date: 20.DEC.2019 15:22:37

**CHANNEL BANDWIDTH: 15MHz / 16QAM**  
**CH Low**

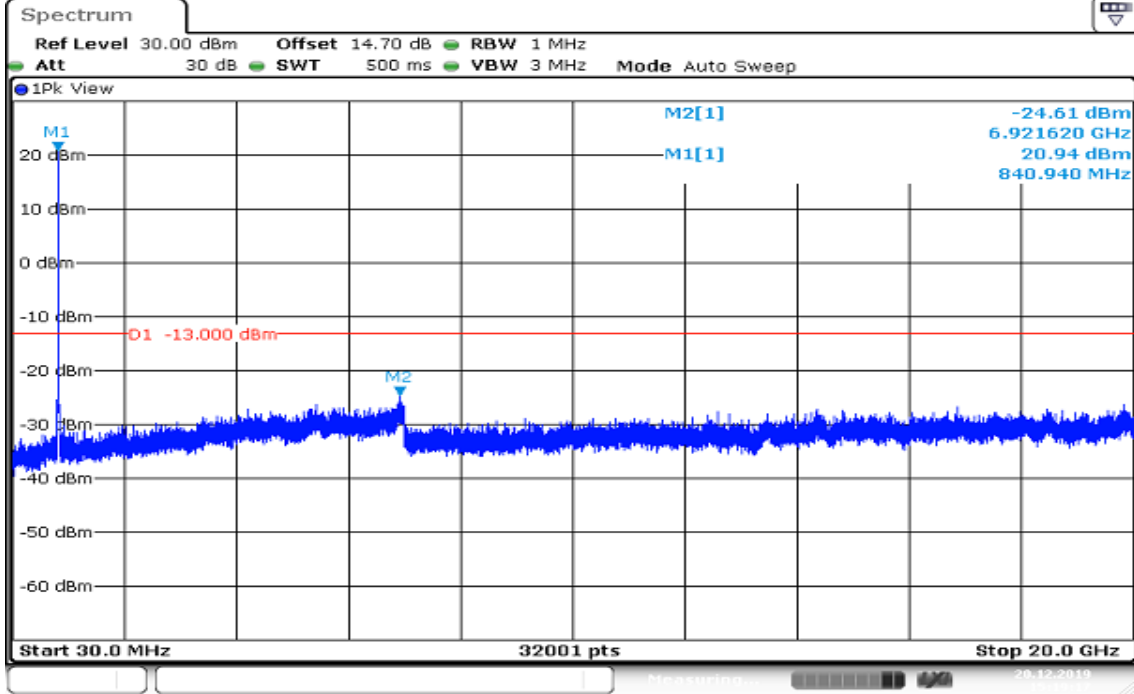


**CH Mid**



Report No.: T191120D05-RP11

### CH High



Date: 20.DEC.2019 15:19:18

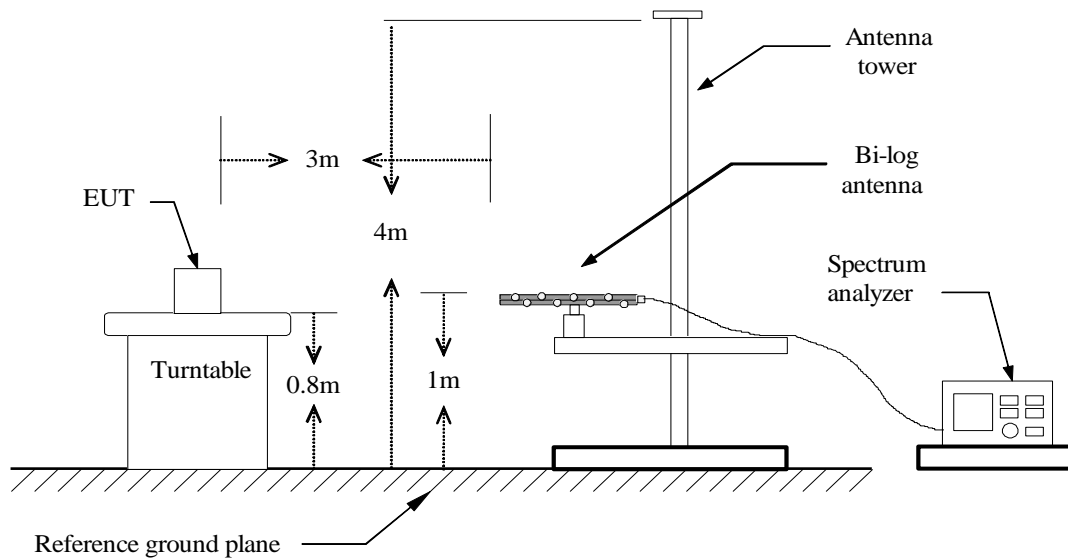
## 8.7 SPURIOUS RADIATION MEASUREMENT

### LIMIT

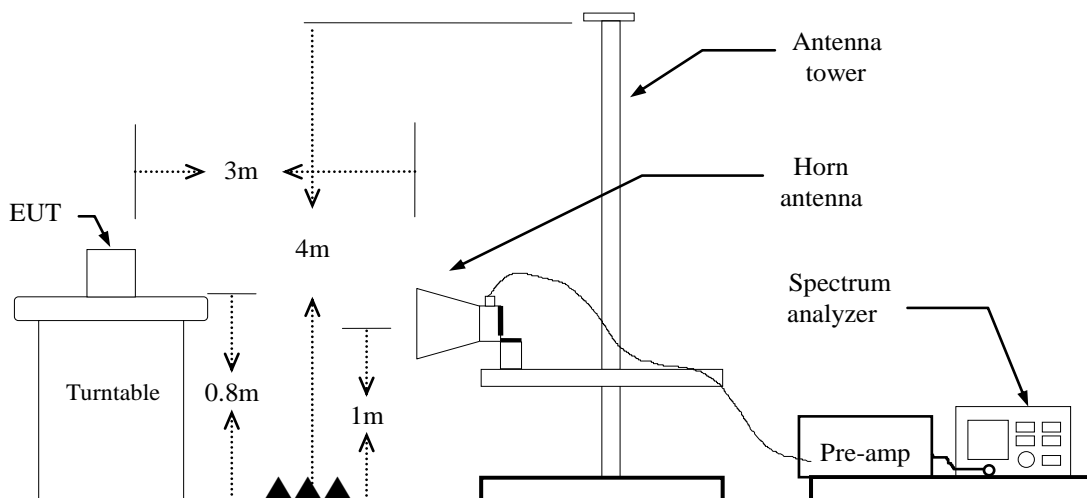
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB. The limit of emission equal to  $-13\text{dBm}$

### Test Configuration

#### Below 1 GHz

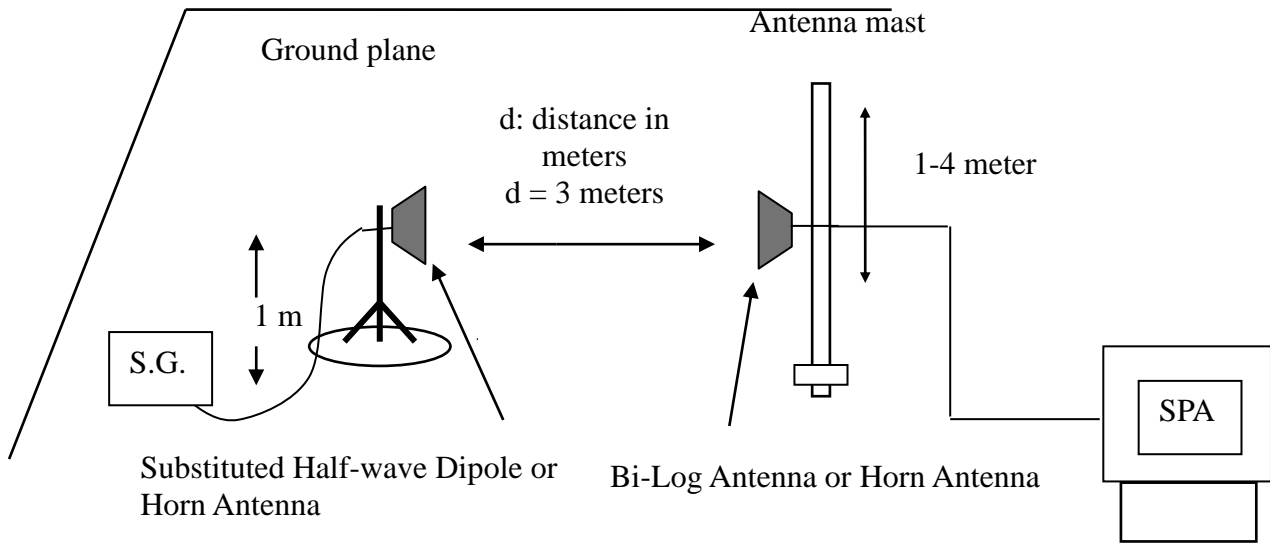


#### Above 1 GHz



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### Substituted Method Test Set-up



### TEST PROCEDURE

1. According to KDB 971168 D01 Power Meas License Digital Systems and TIA-603-E 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

$$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$$

$$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

### TEST RESULTS

Refer to the attached tabular data sheets.

#### **Remark: Above 1GHz**

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



Report No.: T191120D05-RP11

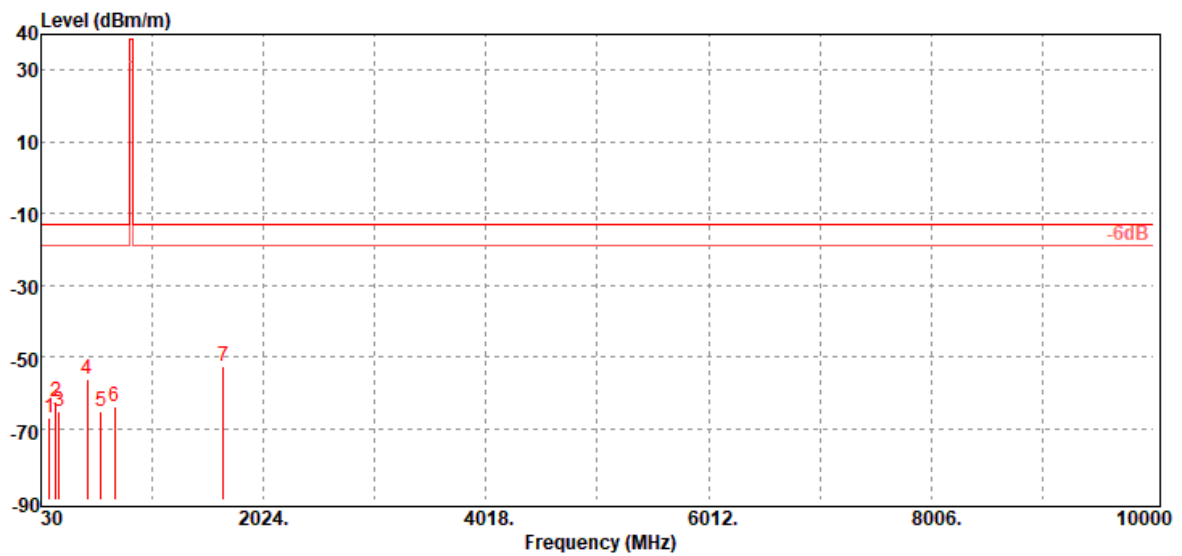
**Test Results**

**LTE Band 26 / BW: 15MHz / QPSK / RB =1, RB Offset = 0**

**Operation Mode:** Tx / Low CH      **Test Date:** January 8, 2020

**Temperature:** 18.6°C      **Tested by:** Jerry Chang

**Humidity:** 59% RH      **Polarity:** Ver.



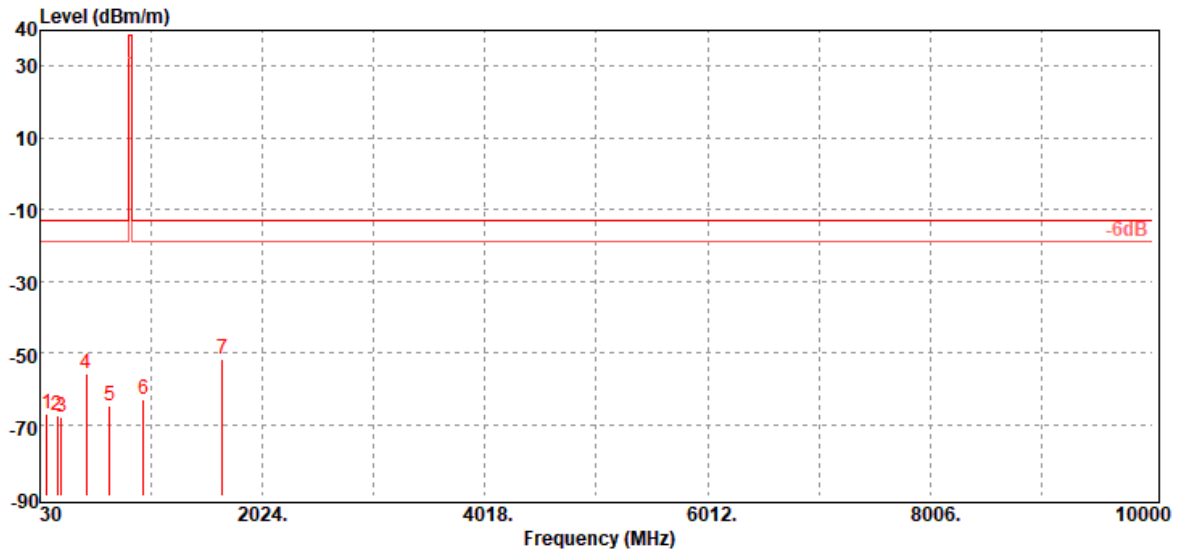
| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 105.66      | -66.99         | -56.78                | -9.37                  | -0.84           | -13.00      | -53.99      | V                          |
| 160.95      | -62.79         | -55.64                | -6.11                  | -1.04           | -13.00      | -49.79      | V                          |
| 190.05      | -65.09         | -59.96                | -4.00                  | -1.13           | -13.00      | -52.09      | V                          |
| 444.19      | -56.15         | -52.3                 | -2.10                  | -1.75           | -13.00      | -43.15      | V                          |
| 566.41      | -65.07         | -61.68                | -1.40                  | -1.99           | -13.00      | -52.07      | V                          |
| 689.60      | -63.77         | -60.17                | -1.39                  | -2.21           | -13.00      | -50.77      | V                          |
| 1663.00     | -52.57         | -58.78                | 9.78                   | -3.57           | -13.00      | -39.57      | V                          |





Report No.: T191120D05-RP11

**Operation Mode:** Tx / Low CH      **Test Date:** January 8, 2020  
**Temperature:** 18.6°C      **Tested by:** Jerry Chang  
**Humidity:** 59% RH      **Polarity:** Hor.

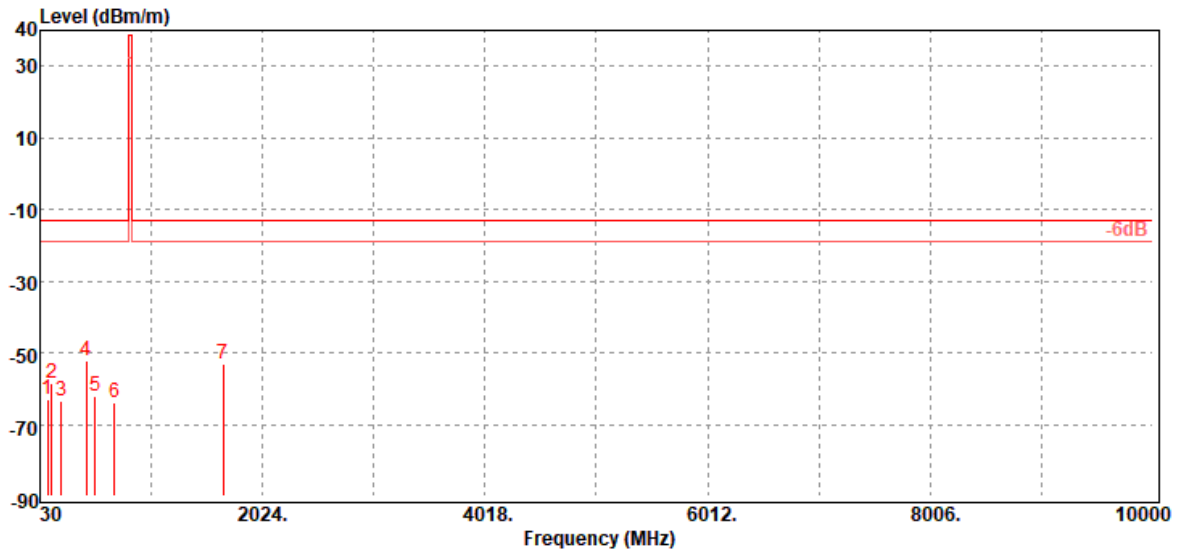


| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 93.05       | -66.86         | -58.87                | -7.20                  | -0.79           | -13.00      | -53.86      | H                          |
| 188.11      | -67.43         | -62.4                 | -3.90                  | -1.13           | -13.00      | -54.43      | H                          |
| 222.06      | -68.12         | -64.94                | -1.96                  | -1.22           | -13.00      | -55.12      | H                          |
| 442.25      | -55.94         | -52.1                 | -2.10                  | -1.74           | -13.00      | -42.94      | H                          |
| 650.80      | -64.94         | -61.11                | -1.68                  | -2.15           | -13.00      | -51.94      | H                          |
| 956.35      | -62.96         | -59.11                | -1.23                  | -2.62           | -13.00      | -49.96      | H                          |
| 1663.00     | -51.98         | -58.19                | 9.78                   | -3.57           | -13.00      | -38.98      | H                          |



Report No.: T191120D05-RP11

**Operation Mode:** Tx / Mid CH      **Test Date:** January 8, 2020  
**Temperature:** 18.6°C      **Tested by:** Jerry Chang  
**Humidity:** 59% RH      **Polarity:** Ver.



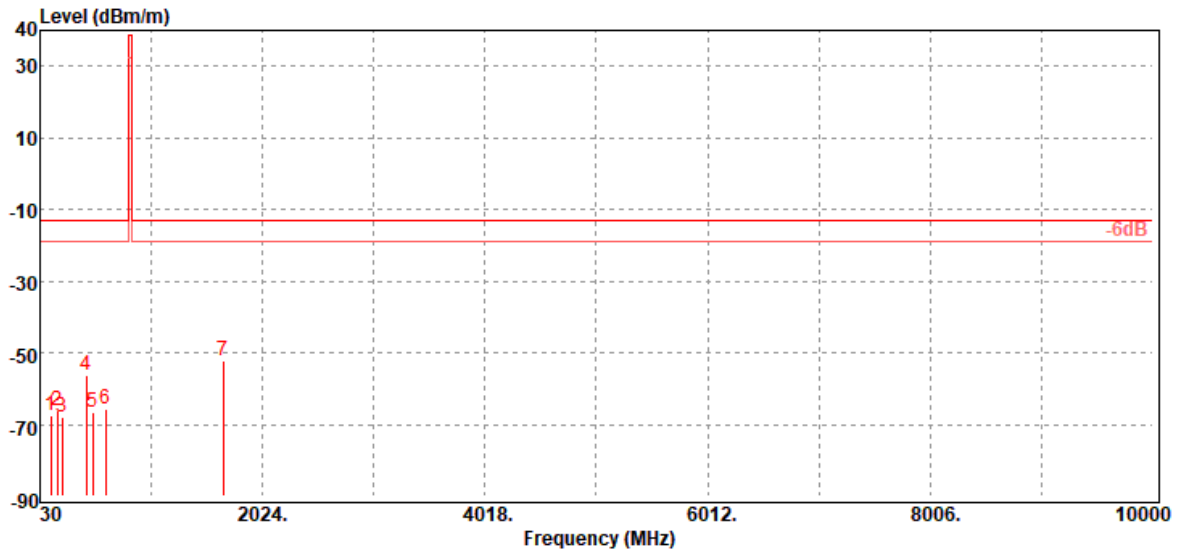
| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 97.90       | -62.98         | -54.28                | -7.89                  | -0.81           | -13.00      | -49.98      | V                          |
| 133.79      | -58.57         | -48.1                 | -9.52                  | -0.95           | -13.00      | -45.57      | V                          |
| 224.00      | -63.52         | -60.37                | -1.92                  | -1.23           | -13.00      | -50.52      | V                          |
| 447.10      | -52.14         | -48.29                | -2.10                  | -1.75           | -13.00      | -39.14      | V                          |
| 526.64      | -61.90         | -58.68                | -1.30                  | -1.92           | -13.00      | -48.90      | V                          |
| 699.30      | -63.90         | -60.27                | -1.40                  | -2.23           | -13.00      | -50.90      | V                          |
| 1673.00     | -53.32         | -59.58                | 9.84                   | -3.58           | -13.00      | -40.32      | V                          |



Report No.: T191120D05-RP11

Operation Mode: Tx / Mid CH  
Temperature: 18.6°C  
Humidity: 59% RH

Test Date: January 8, 2020  
Tested by: Jerry Chang  
Polarity: Hor.

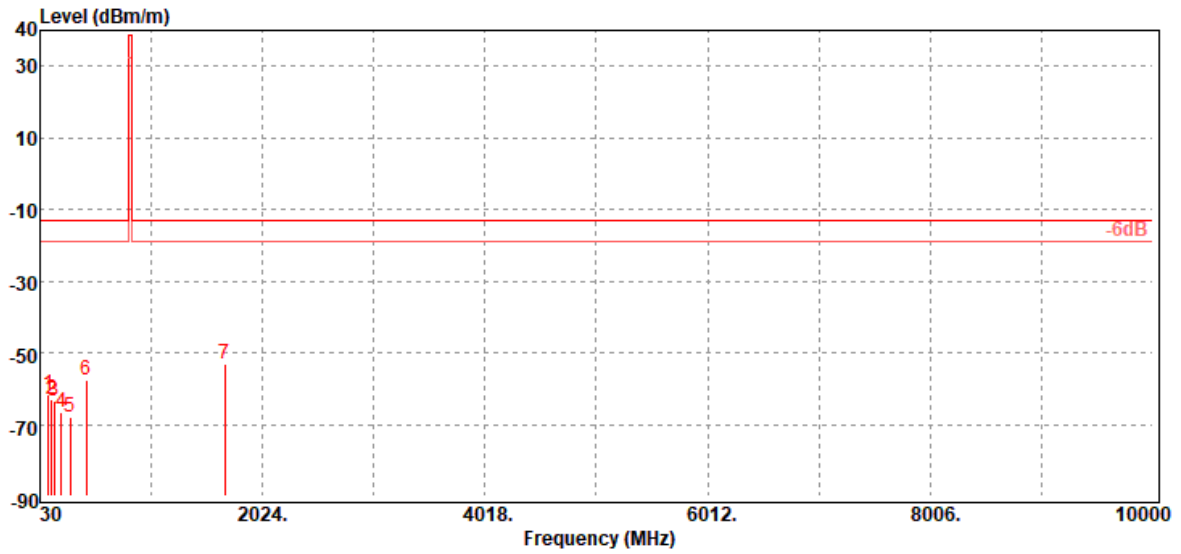


| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 124.09      | -67.56         | -56.15                | -10.50                 | -0.91           | -13.00      | -54.56      | H                          |
| 188.11      | -66.29         | -61.26                | -3.90                  | -1.13           | -13.00      | -53.29      | H                          |
| 225.94      | -68.08         | -64.91                | -1.94                  | -1.23           | -13.00      | -55.08      | H                          |
| 445.16      | -56.16         | -52.31                | -2.10                  | -1.75           | -13.00      | -43.16      | H                          |
| 500.45      | -66.52         | -62.66                | -1.99                  | -1.87           | -13.00      | -53.52      | H                          |
| 618.79      | -65.53         | -62.05                | -1.38                  | -2.10           | -13.00      | -52.53      | H                          |
| 1673.00     | -52.42         | -58.68                | 9.84                   | -3.58           | -13.00      | -39.42      | H                          |



Report No.: T191120D05-RP11

**Operation Mode:** Tx / High CH      **Test Date:** January 8, 2020  
**Temperature:** 18.6°C      **Tested by:** Jerry Chang  
**Humidity:** 59% RH      **Polarity:** Ver.



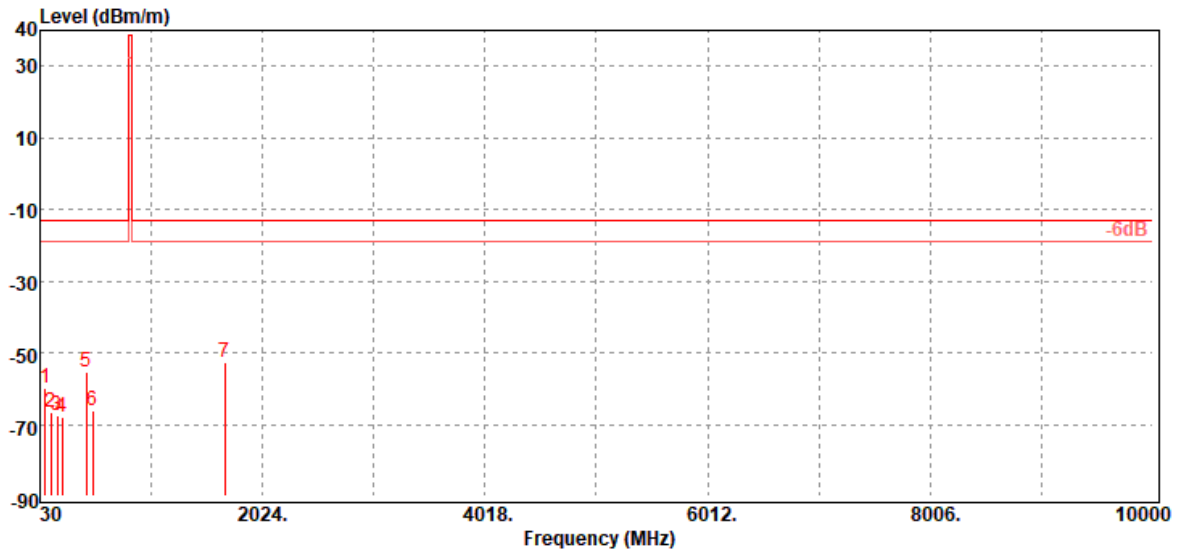
| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 105.66      | -61.58         | -51.37                | -9.37                  | -0.84           | -13.00      | -48.58      | V                          |
| 133.79      | -63.23         | -52.76                | -9.52                  | -0.95           | -13.00      | -50.23      | V                          |
| 153.19      | -63.37         | -55.63                | -6.72                  | -1.02           | -13.00      | -50.37      | V                          |
| 222.06      | -66.45         | -63.27                | -1.96                  | -1.22           | -13.00      | -53.45      | V                          |
| 299.66      | -67.78         | -64.34                | -2.01                  | -1.43           | -13.00      | -54.78      | V                          |
| 447.10      | -57.65         | -53.8                 | -2.10                  | -1.75           | -13.00      | -44.65      | V                          |
| 1683.00     | -53.20         | -59.51                | 9.90                   | -3.59           | -13.00      | -40.20      | V                          |



Report No.: T191120D05-RP11

Operation Mode: Tx / High CH  
Temperature: 18.6°C  
Humidity: 59% RH

Test Date: January 8, 2020  
Tested by: Jerry Chang  
Polarity: Hor.



| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-------------|----------------|-----------------------|------------------------|-----------------|-------------|-------------|----------------------------|
| 73.65       | -60.08         | -50.28                | -9.10                  | -0.70           | -13.00      | -47.08      | H                          |
| 124.09      | -66.74         | -55.33                | -10.50                 | -0.91           | -13.00      | -53.74      | H                          |
| 188.11      | -67.50         | -62.47                | -3.90                  | -1.13           | -13.00      | -54.50      | H                          |
| 225.94      | -68.09         | -64.92                | -1.94                  | -1.23           | -13.00      | -55.09      | H                          |
| 447.10      | -55.55         | -51.7                 | -2.10                  | -1.75           | -13.00      | -42.55      | H                          |
| 500.45      | -66.01         | -62.15                | -1.99                  | -1.87           | -13.00      | -53.01      | H                          |
| 1683.00     | -52.72         | -59.03                | 9.90                   | -3.59           | -13.00      | -39.72      | H                          |

- End of Test Report -