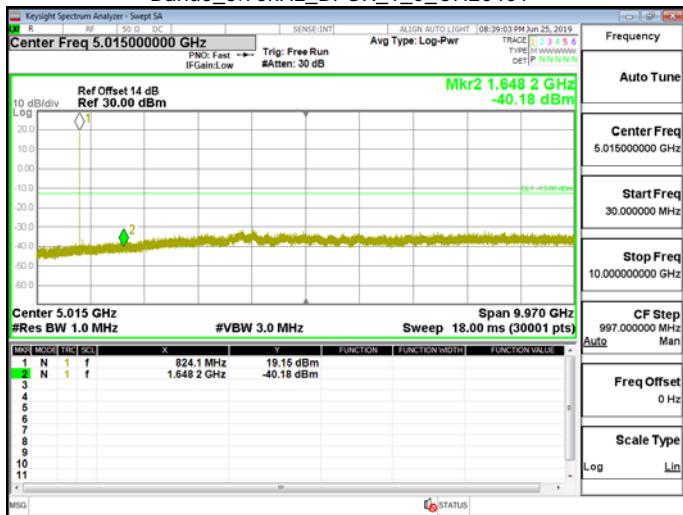
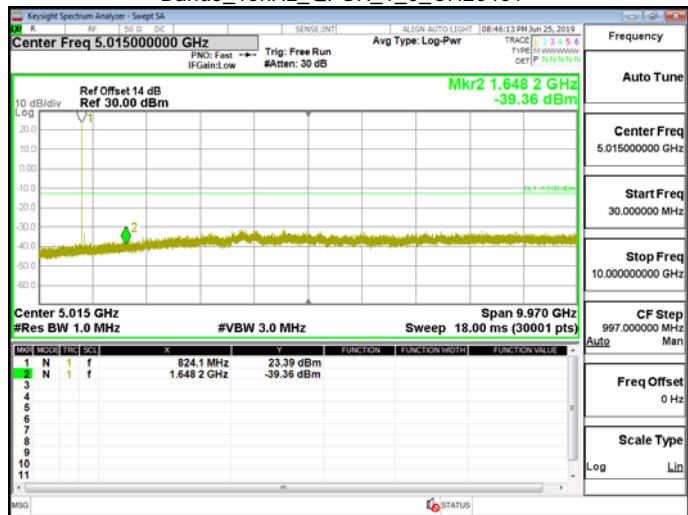


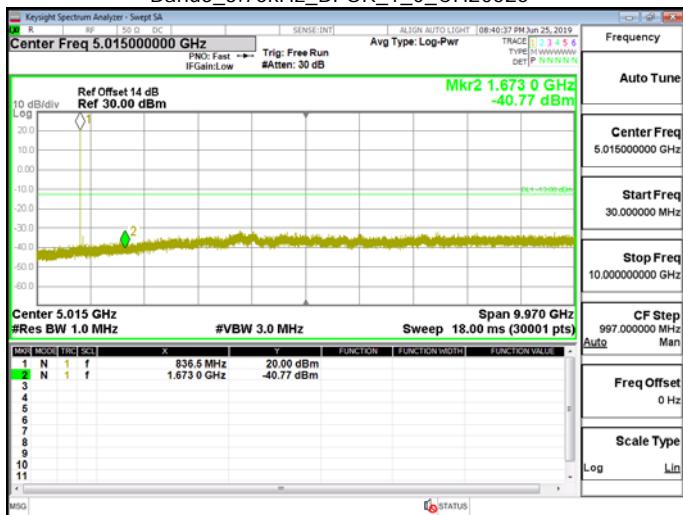
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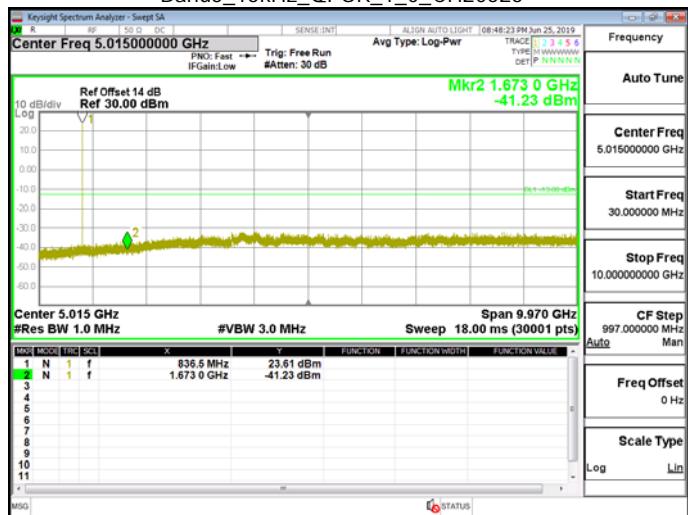
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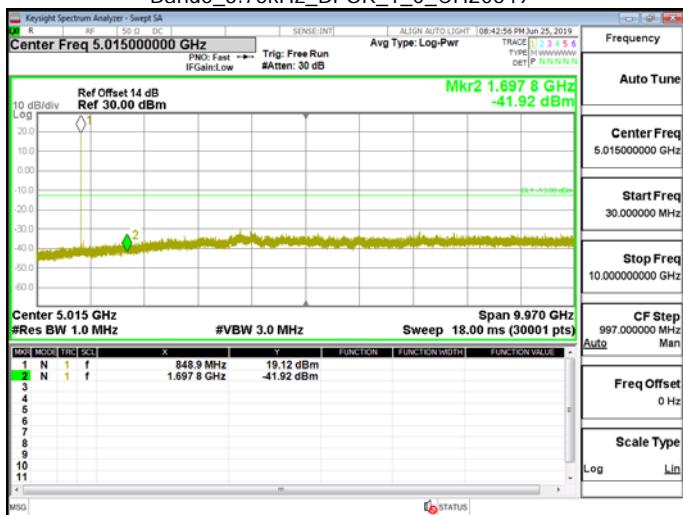
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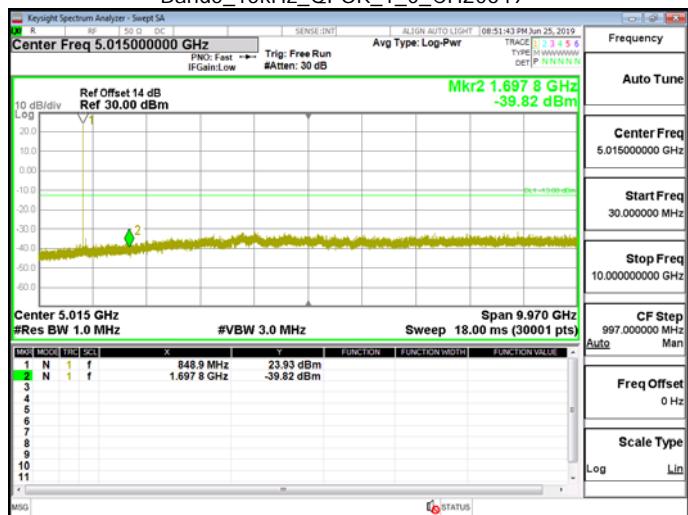
Band5\_15kHz\_QPSK\_1\_0\_CH20525



Band5\_3.75kHz\_BPSK\_1\_0\_CH20649



Band5\_15kHz\_QPSK\_1\_0\_CH20649



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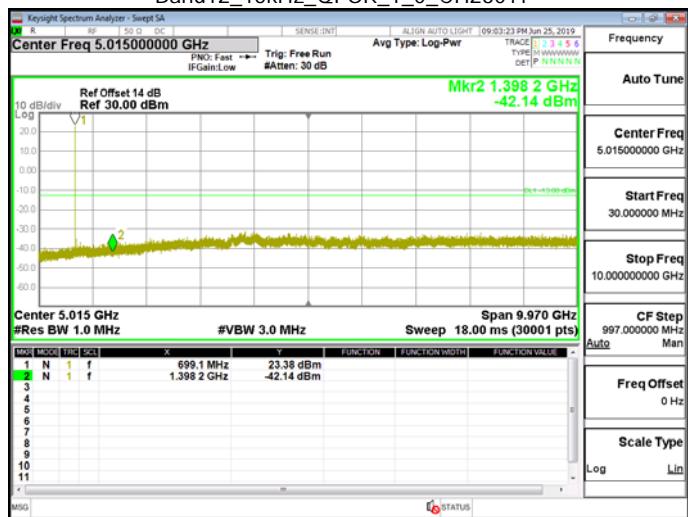
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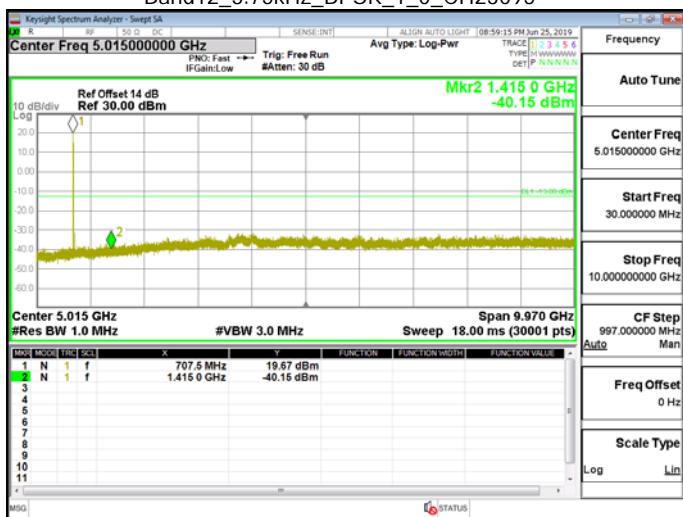
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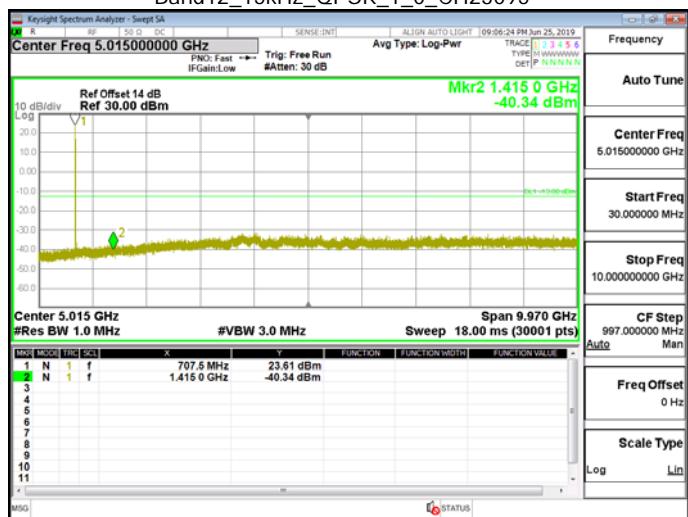
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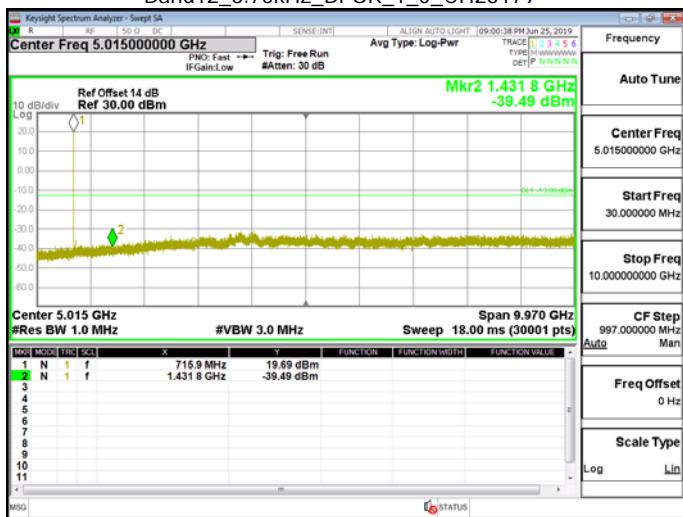
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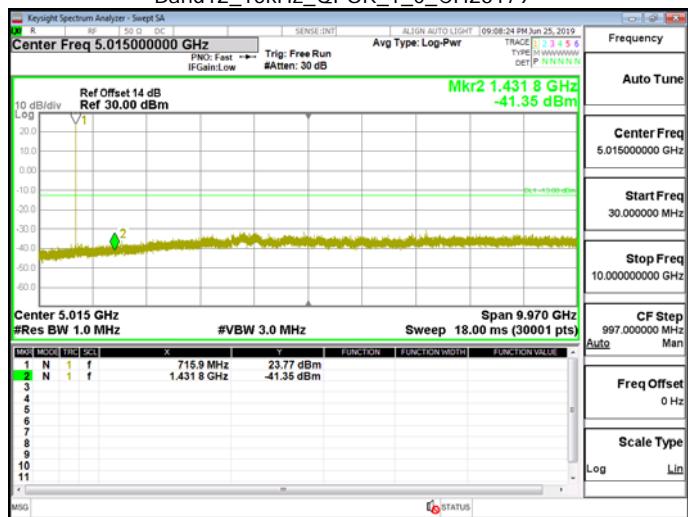
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Band12\_3.75kHz\_BPSK\_1\_0\_CH23179



Band12\_15kHz\_QPSK\_1\_0\_CH23179

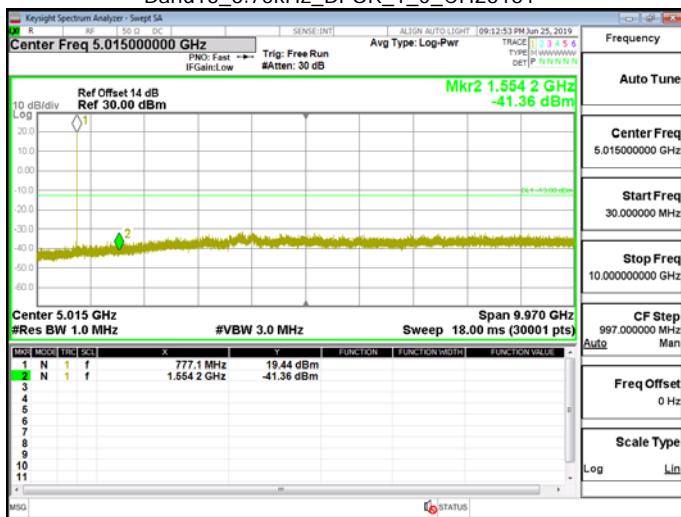


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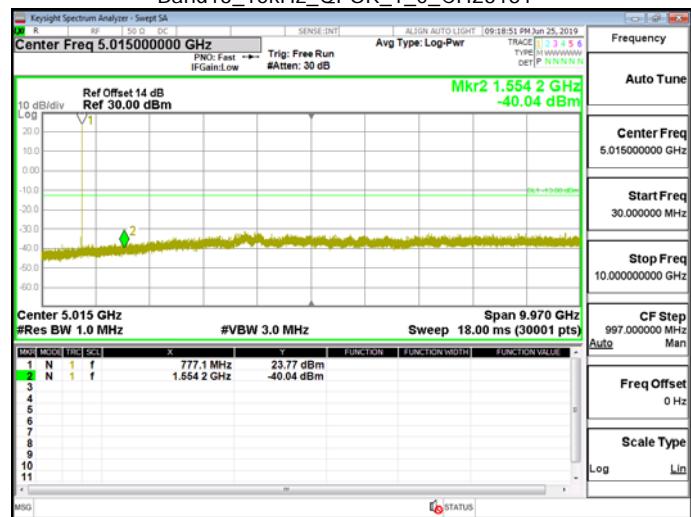
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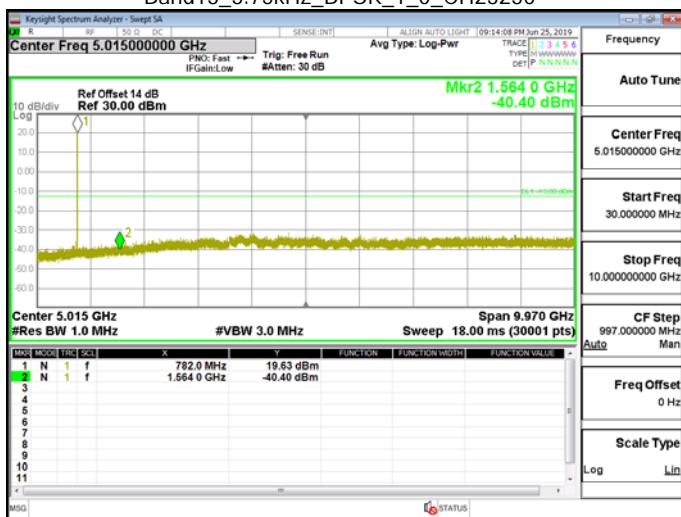
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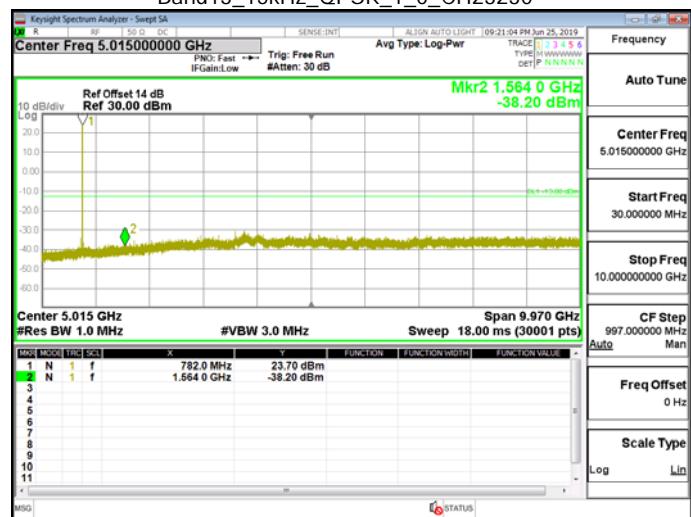
Band13\_15kHz\_QPSK\_1\_0\_CH23181



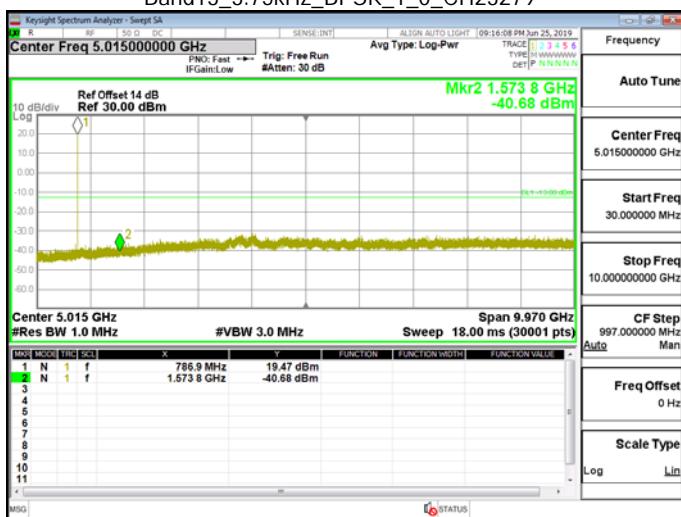
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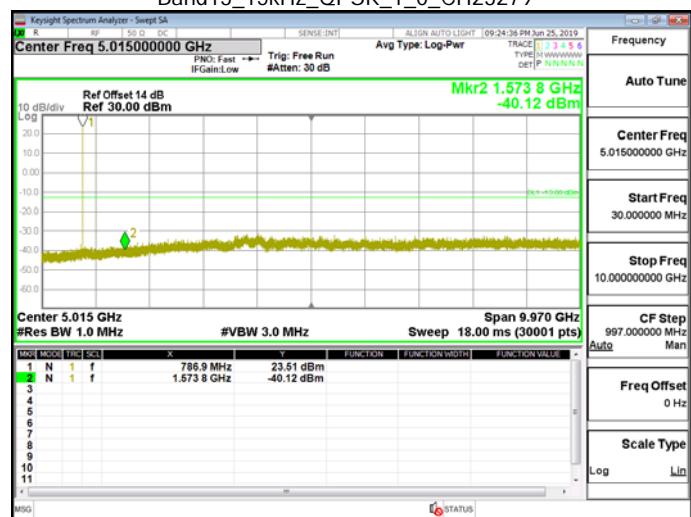
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Band13\_3.75kHz\_BPSK\_1\_0\_CH23279



Band13\_15kHz\_QPSK\_1\_0\_CH23279

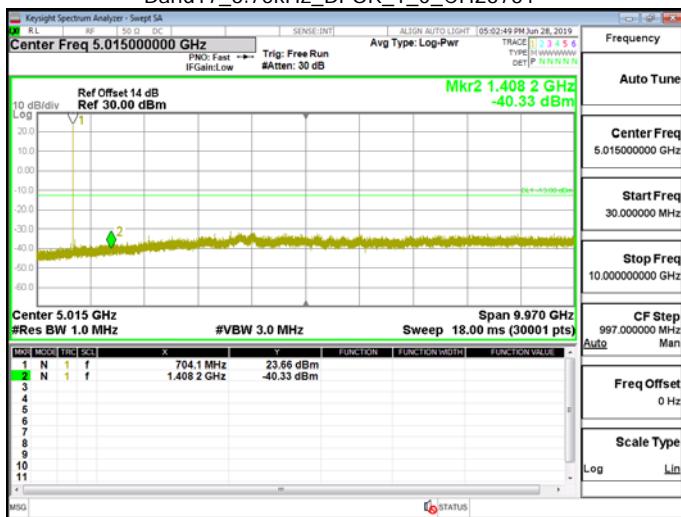


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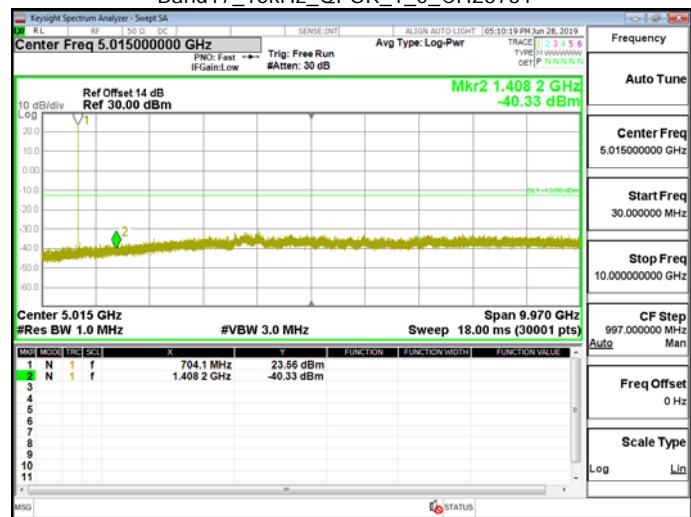
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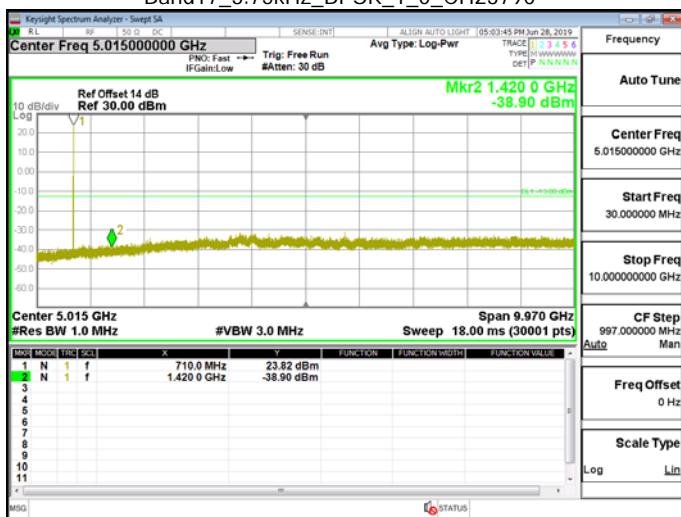
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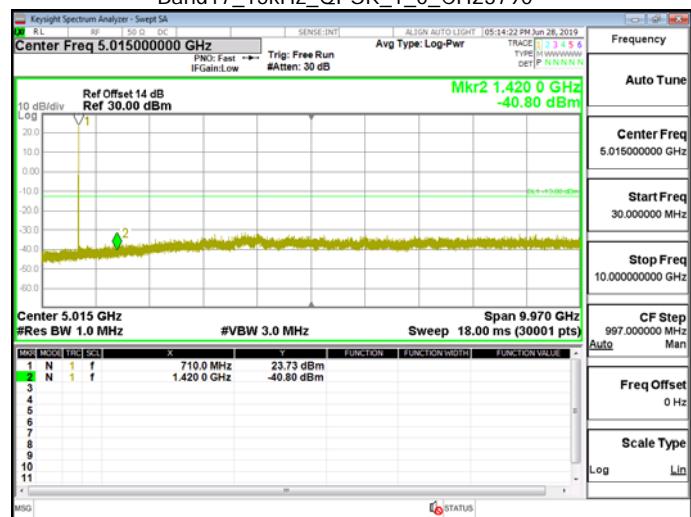
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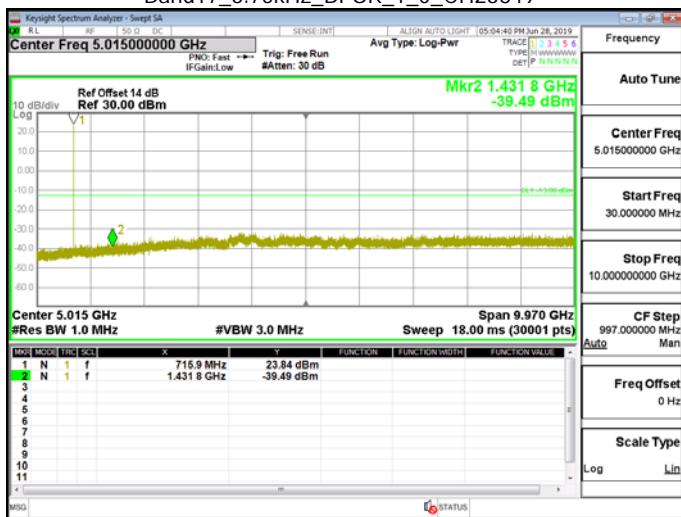
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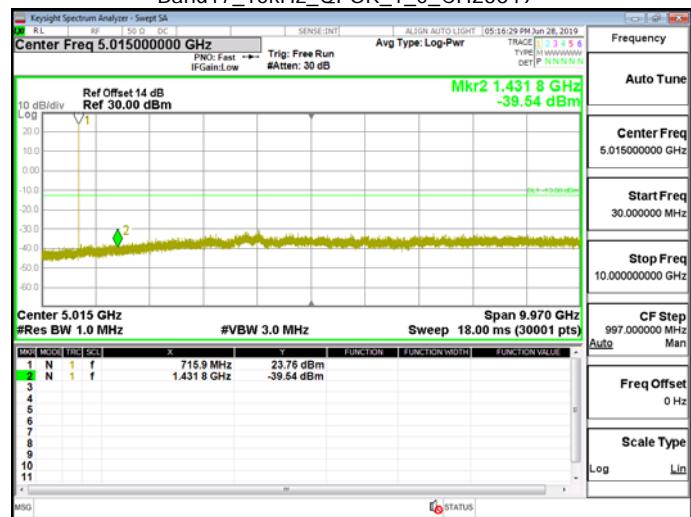
Band17\_15kHz\_QPSK\_1\_0\_CH23790



Band17\_3.75kHz\_BPSK\_1\_0\_CH23849



Band17\_15kHz\_QPSK\_1\_0\_CH23849

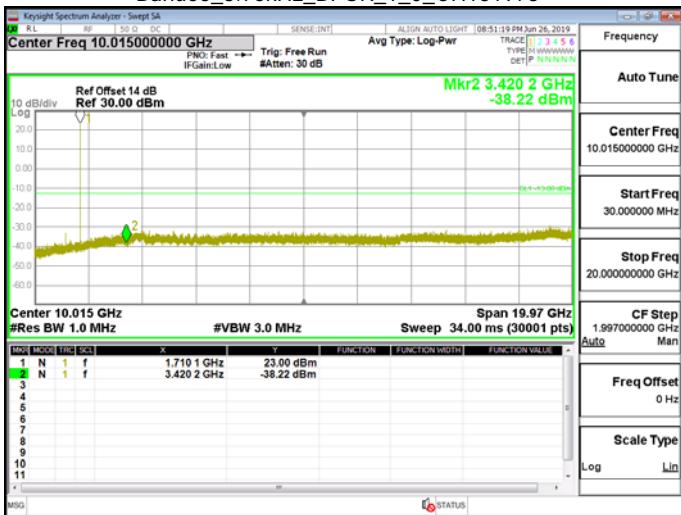


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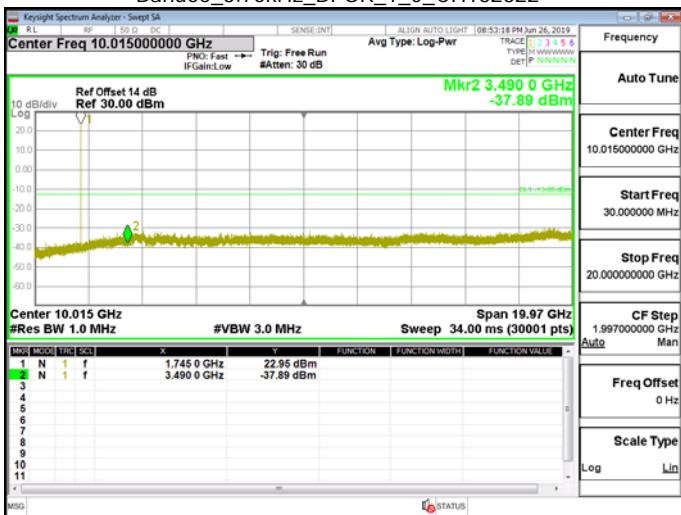
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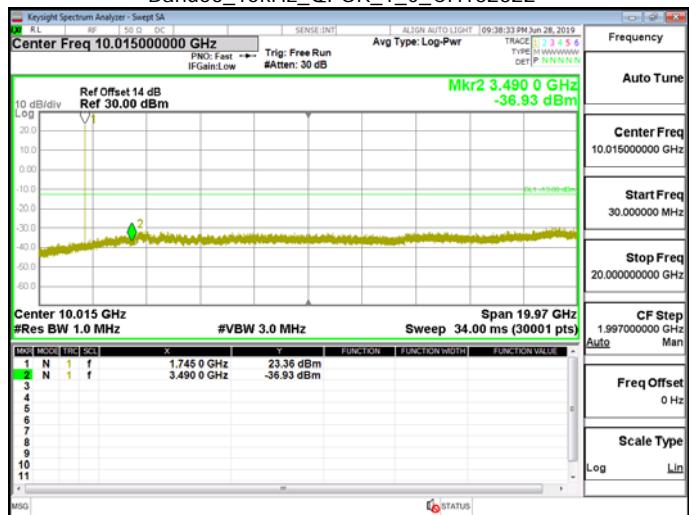
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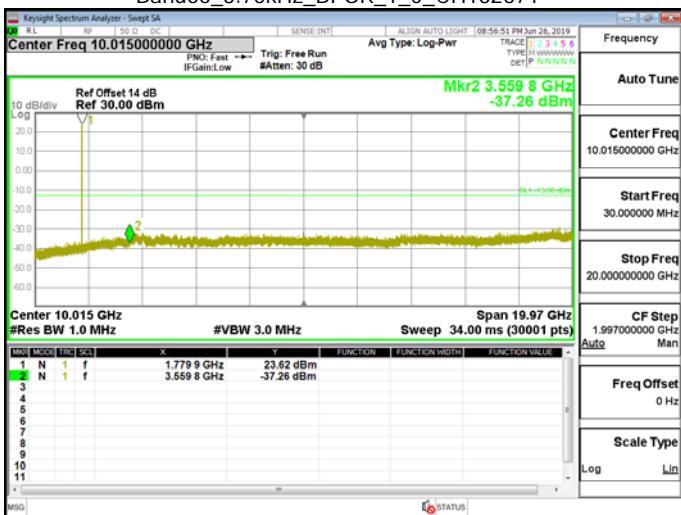
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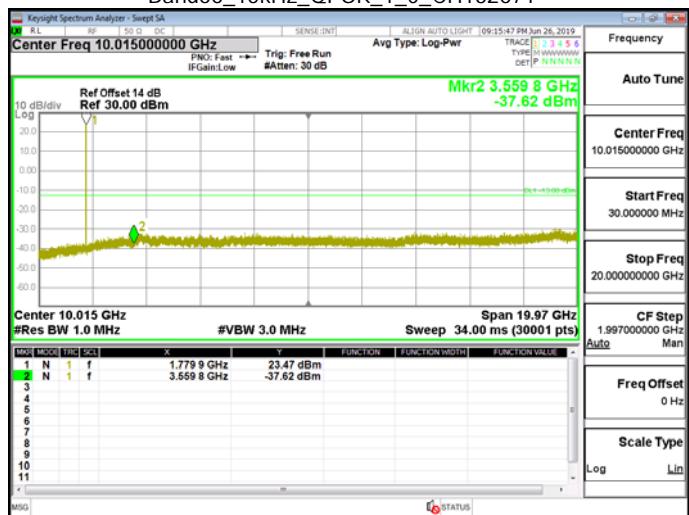
### Band66\_15kHz\_QPSK\_1\_0\_CH132322



### Band66\_3.75kHz\_BPSK\_1\_0\_CH132671



### Band66\_15kHz\_QPSK\_1\_0\_CH132671



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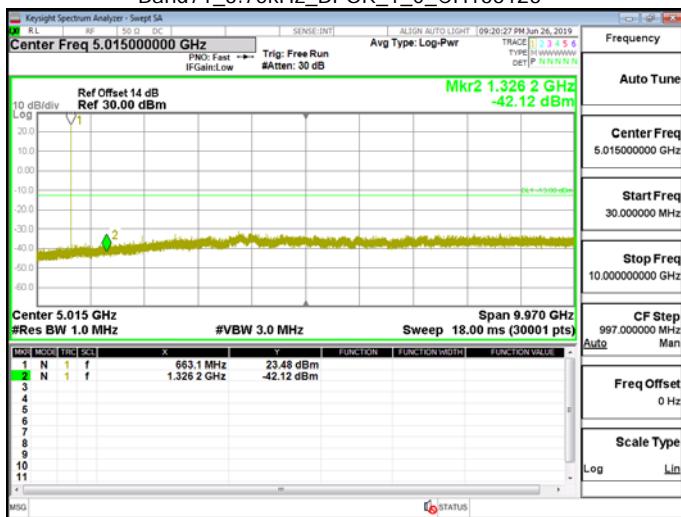
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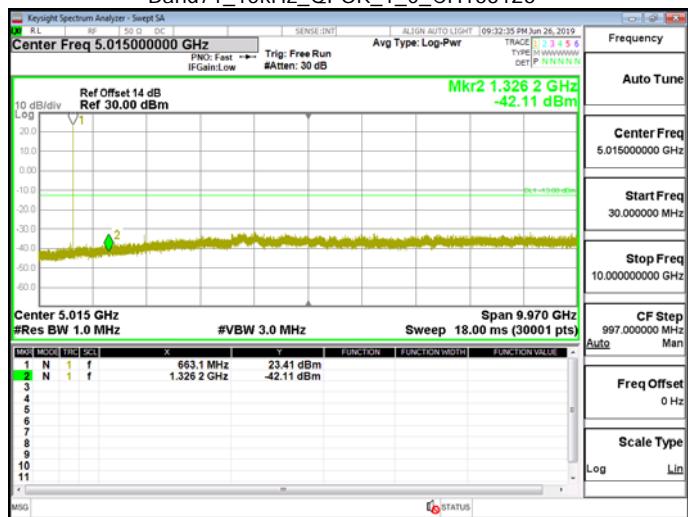
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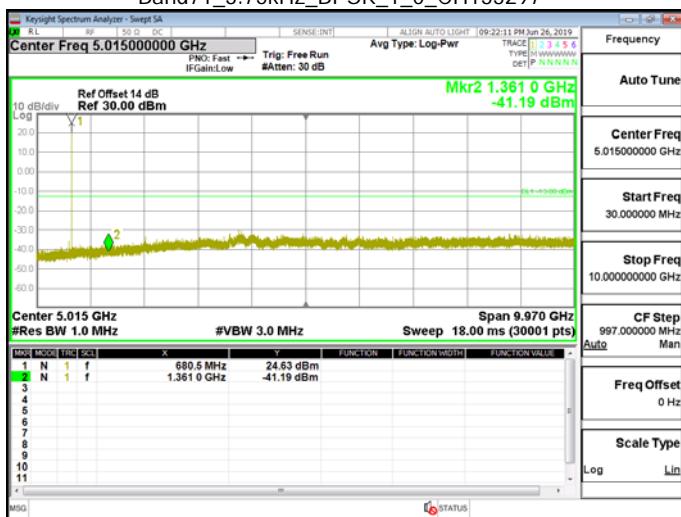
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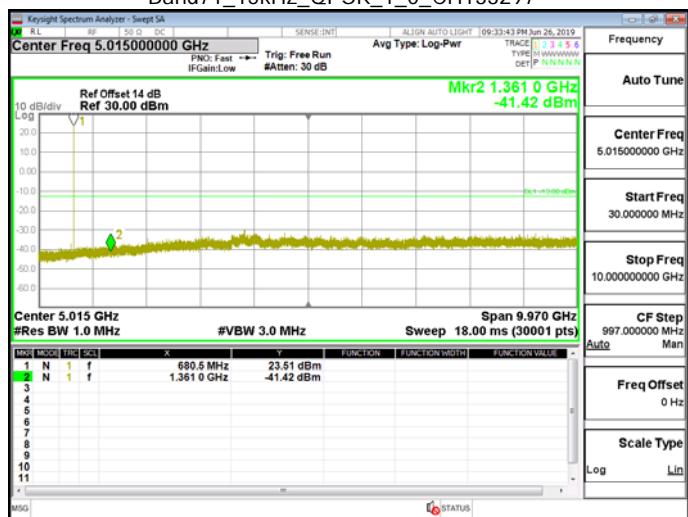
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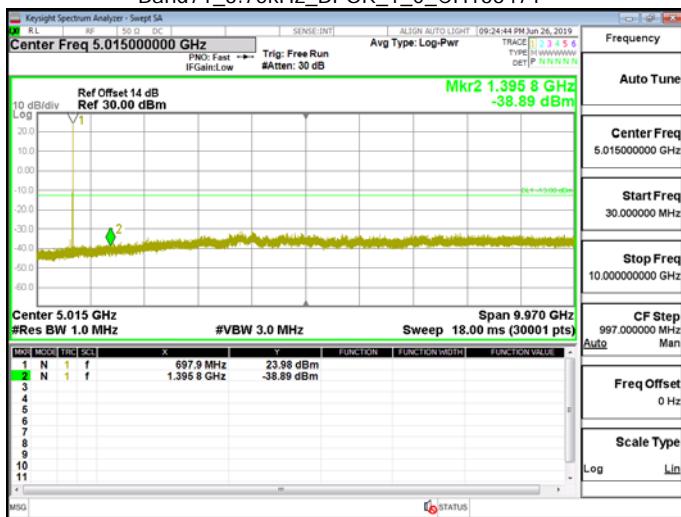
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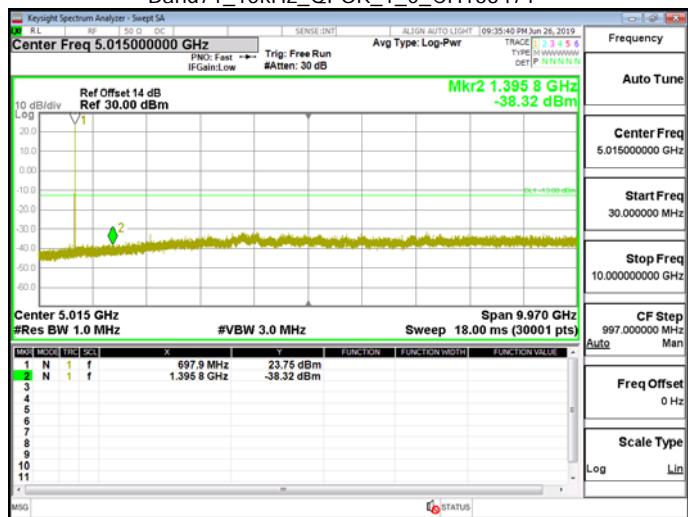
Band71\_15kHz\_QPSK\_1\_0\_CH133297



Band71\_3.75kHz\_BPSK\_1\_0\_CH133471



Band71\_15kHz\_QPSK\_1\_0\_CH133471

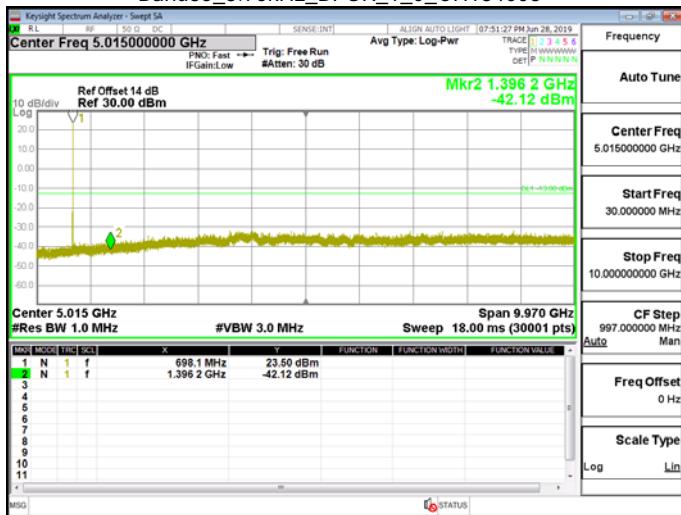


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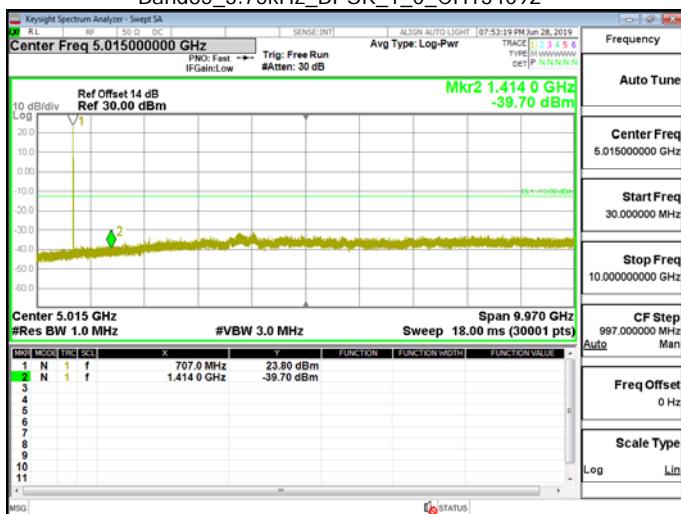
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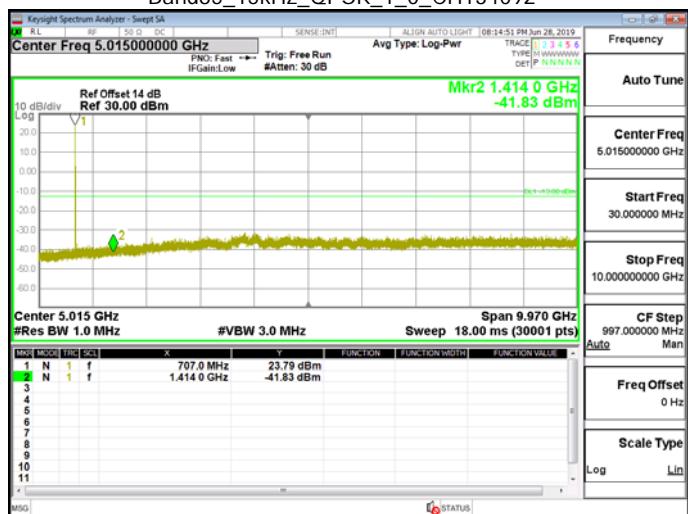
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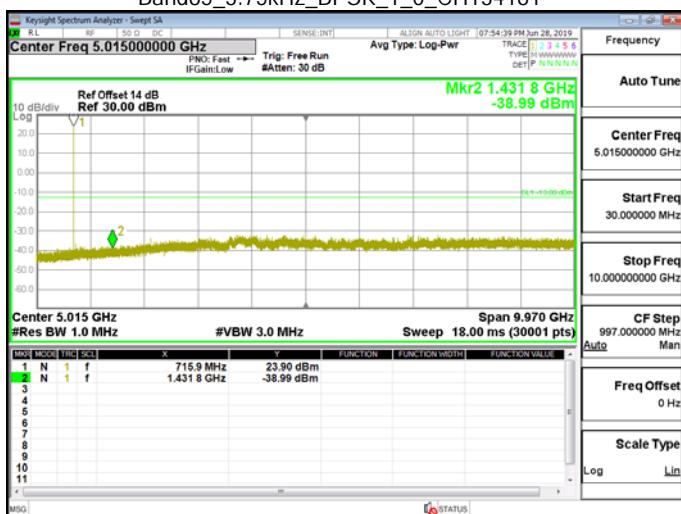
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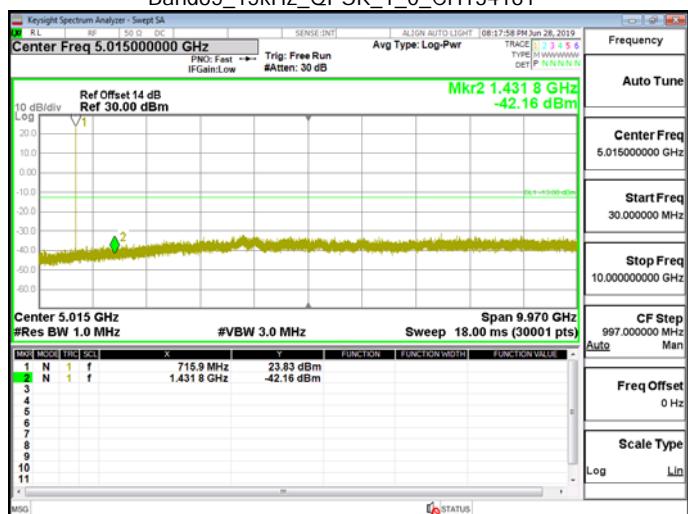
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Band85\_3.75kHz\_BPSK\_1\_0\_CH134181



Band85\_15kHz\_QPSK\_1\_0\_CH134181



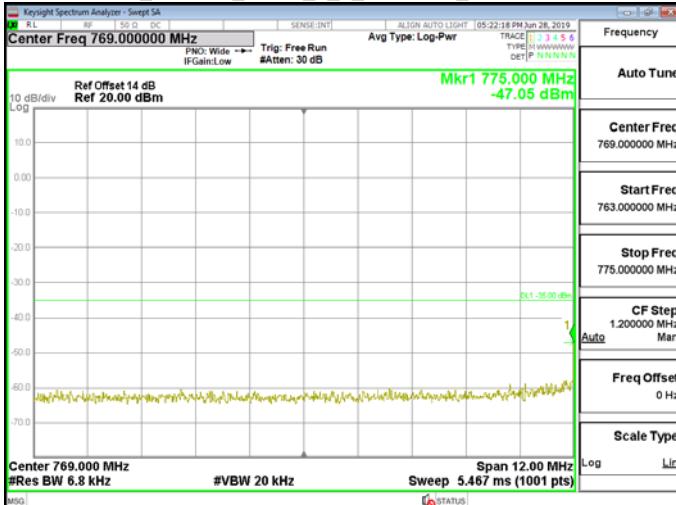
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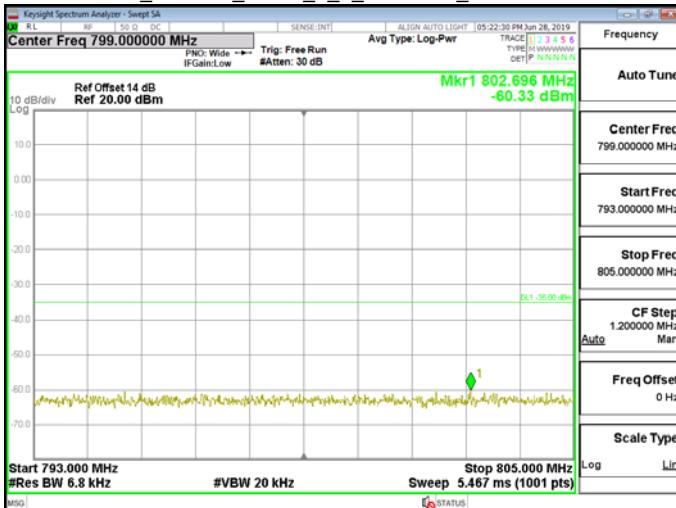
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### 8.5.3 Emissions in 1559-1610 MHz

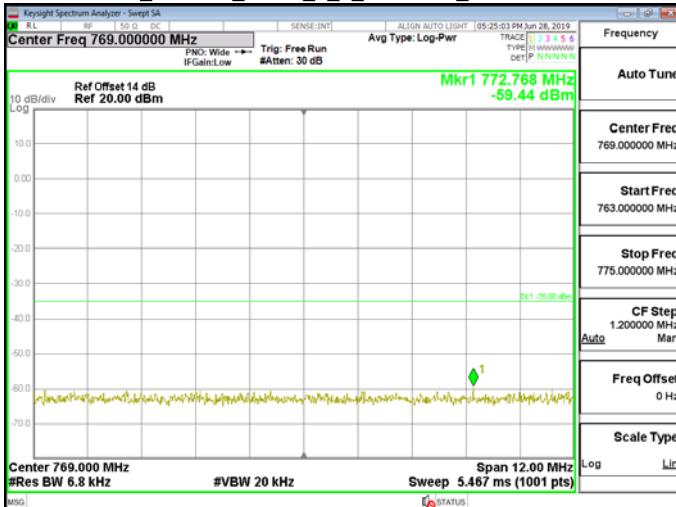
Band13\_3.75kHz\_BPSK\_1\_0\_CH23181\_763-775MHz



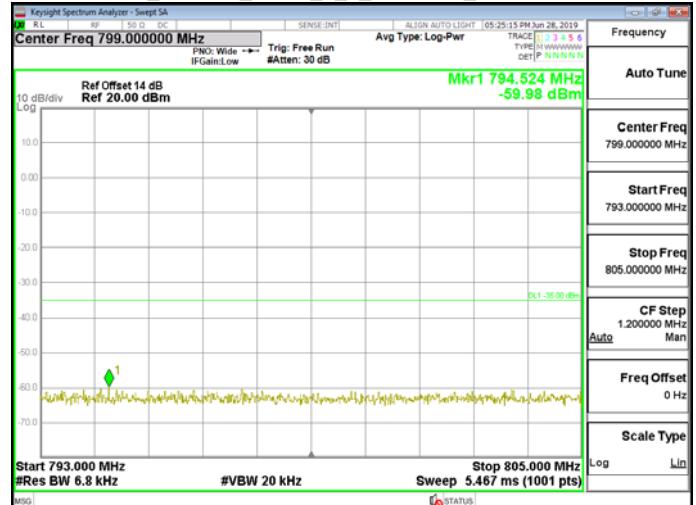
Band13\_3.75kHz\_BPSK\_1\_0\_CH23181\_793-805MHz



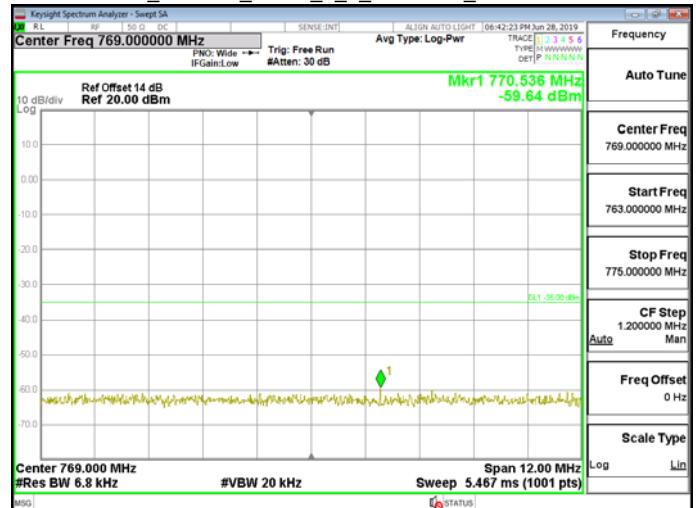
Band13\_3.75kHz\_BPSK\_1\_0\_CH23230\_763-775MHz



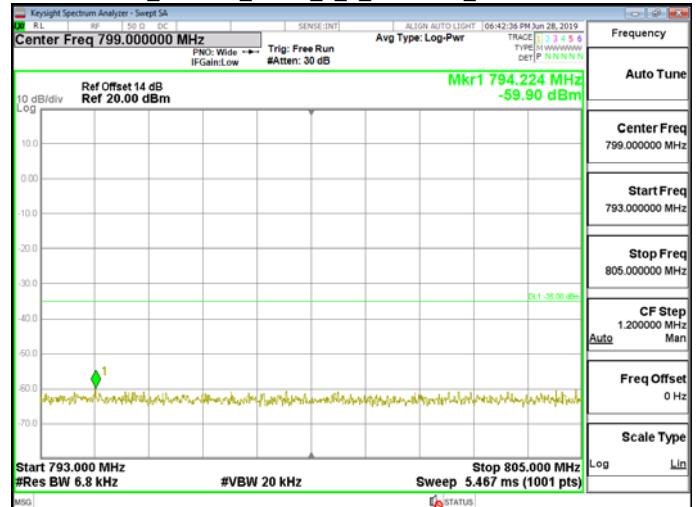
Band13\_3.75kHz\_BPSK\_1\_0\_CH23230\_793-805MHz



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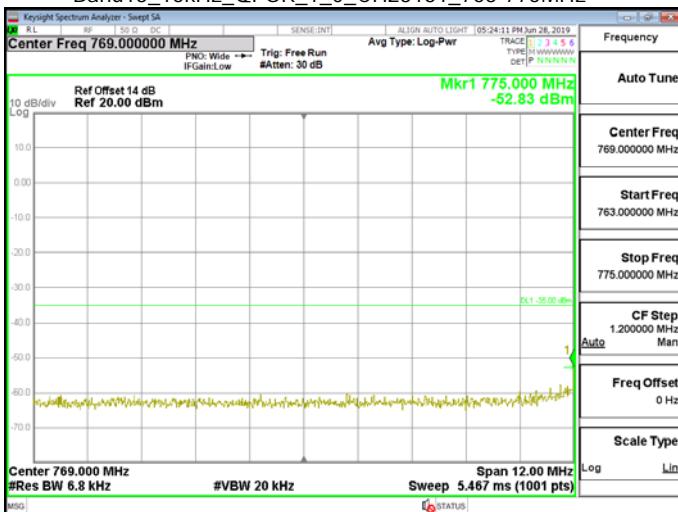


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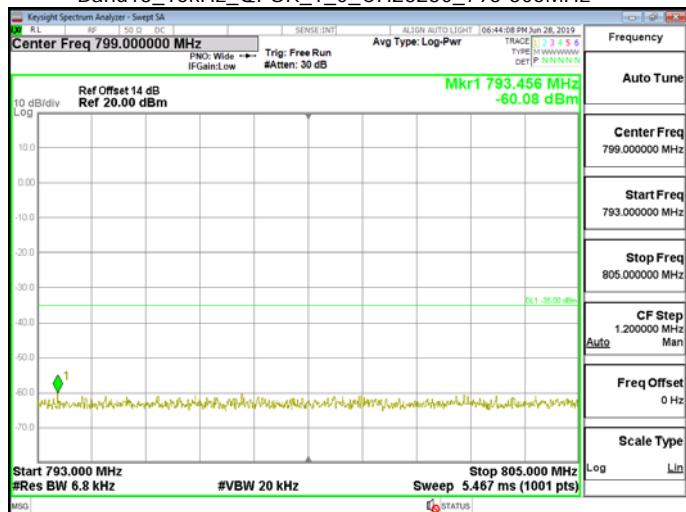
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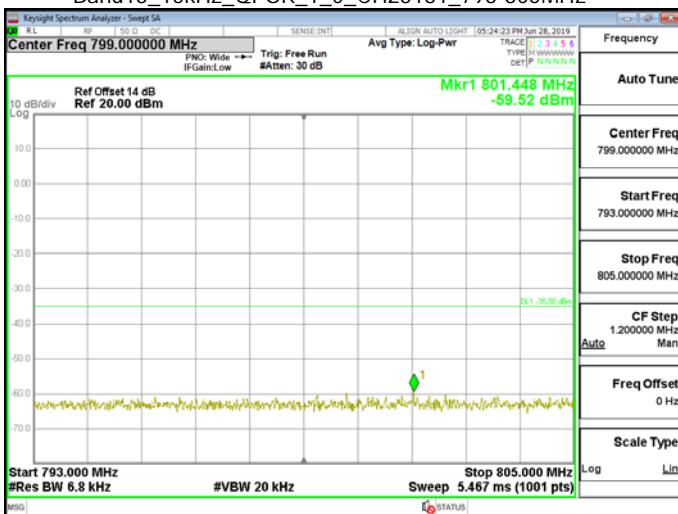
### Band13\_15kHz\_QPSK\_1\_0\_CH23181\_763-775MHz



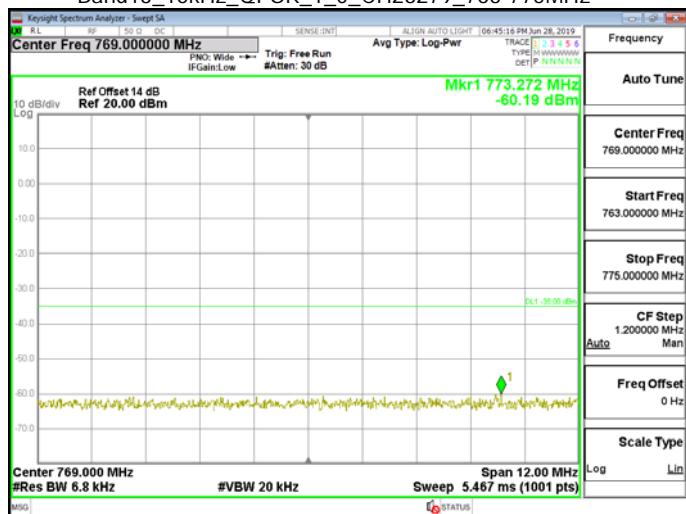
### Band13\_15kHz\_QPSK\_1\_0\_CH23230\_793-805MHz



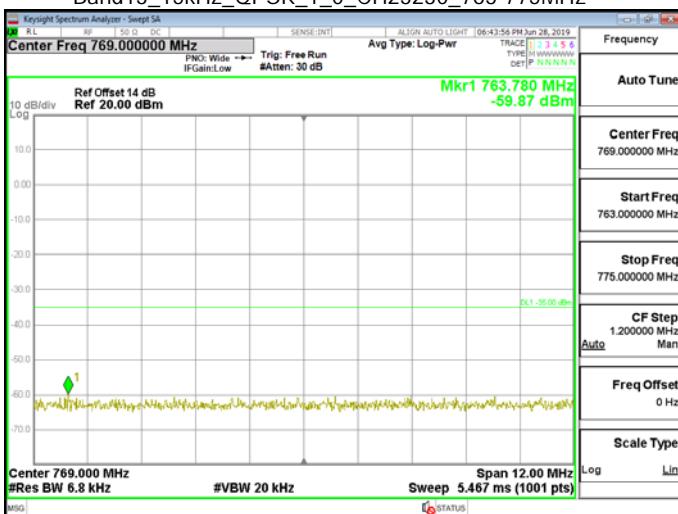
### Band13\_15kHz\_QPSK\_1\_0\_CH23181\_793-805MHz



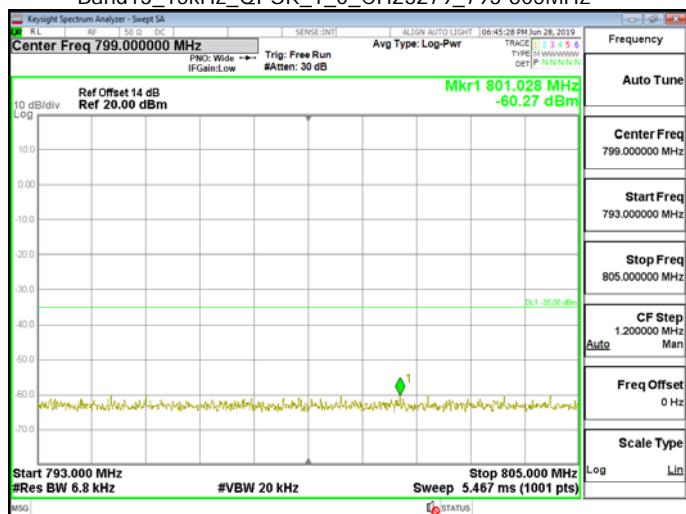
### Band13\_15kHz\_QPSK\_1\_0\_CH23279\_763-775MHz



### Band13\_15kHz\_QPSK\_1\_0\_CH23230\_763-775MHz



### Band13\_15kHz\_QPSK\_1\_0\_CH23279\_793-805MHz



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## 9 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### 9.1 Standard Applicable

According to FCC §2.1053,

FCC §22.917(a) , §24.238(a) , §27.53 (h) , the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm).

§27.53 (c)

(2) On any frequency outside the 776– 788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB (-13dBm)

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;

§27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(c) (5) & FCC §27.53(g)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC §27.53(h) (3)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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According to RSS-132 §5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).
- (ii)

After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

According to RSS-133 §6.5.1

Equipment shall comply with the limits in (i) and (ii) below.

- (i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).
- (ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

According to RSS-139 §6.5

- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB.
- (ii) After the first 1.0 MHz outside the equipment's operating frequency block, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB.

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**Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber Equipment**

| Frequency (MHz) | Attenuation (dB)                       |
|-----------------|--|
| <2200           | $43 + 10 \log_{10}(p)$                 |
| 2200 - 2288     | $70 + 10 \log_{10}(p)$                 |
| 2288 - 2292     | $67 + 10 \log_{10}(p)$                 |
| 2292 - 2296     | $61 + 10 \log_{10}(p)$                 |
| 2296 - 2300     | $55 + 10 \log_{10}(p)$                 |
| 2300 - 2305     | $43 + 10 \log_{10}(p)$                 |
| 2305 - 2320     | $43 + 10 \log_{10}(p)$ <sup>Note</sup> |
| 2320 - 2324     | $55 + 10 \log_{10}(p)$                 |
| 2324 - 2328     | $61 + 10 \log_{10}(p)$                 |
| 2328 - 2337     | $67 + 10 \log_{10}(p)$                 |
| 2337 - 2341     | $61 + 10 \log_{10}(p)$                 |
| 2341 - 2345     | $55 + 10 \log_{10}(p)$                 |
| 2345 - 2360     | $43 + 10 \log_{10}(p)$ <sup>Note</sup> |
| 2360 - 2365     | $43 + 10 \log_{10}(p)$                 |
| 2365 - 2395     | $70 + 10 \log_{10}(p)$                 |
| >2395           | $43 + 10 \log_{10}(p)$                 |

**Note:** Measured at the edges of the highest and lowest frequency range(s) in which the equipment is designed to operate. See Section 1.2 for the permitted frequency ranges for various equipment types.

#### Radiated Emission Test Set-Up, Frequency Below 1000MHz

#### Radiated Emission Test Set-UP Frequency Over 1 GHz

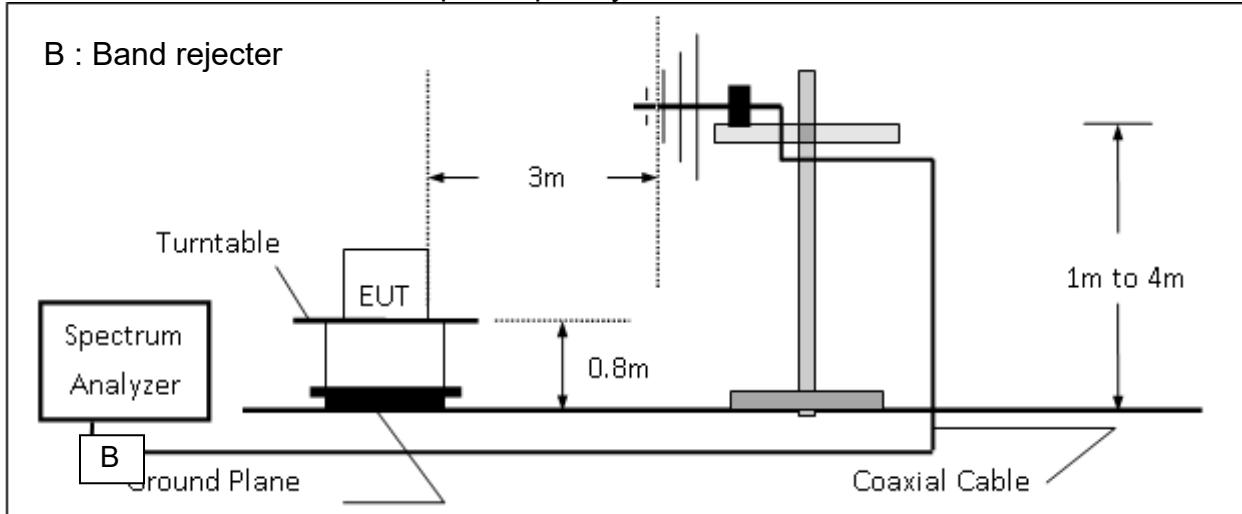
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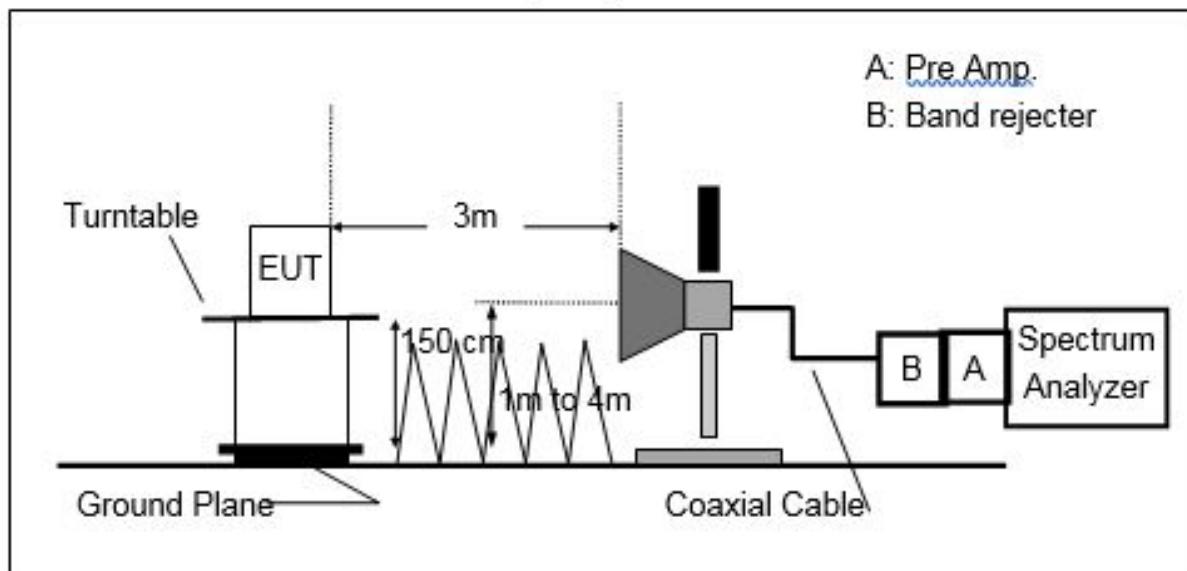
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## 9.2 EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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### 9.3 Measurement Procedure:

The EUT was placed on a non-conductive; the measurement antenna was placed at a distance of 3 meters from the EUT. 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.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$$\text{ERP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

$$\text{EIRP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBi)} + \text{Cable Loss(dB)}$$

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#### 9.4 Measurement Equipment Used:

| 966A Chamber                     |                   |                                   |               |            |            |
|----------------------------------|-------------------|-----------------------------------|---------------|------------|------------|
| EQUIPMENT TYPE                   | MFR               | MODEL NUMBER                      | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
| DC Power Supply                  | GWINSTEK          | SPS-3610                          | GPE880163     | 01/14/2019 | 01/13/2020 |
| PSA Series Spectrum Analyzer     | Agilent           | E4446A                            | MY46180323    | 05/29/2019 | 05/28/2020 |
| Digital Thermo-Hygro Meter       | WISEWIND          | 1206                              | D07           | 01/30/2019 | 01/29/2020 |
| Pre-Amplifier                    | MITEQ             | AMF-6F-260400-40-8P               | 985646        | 02/26/2019 | 02/25/2020 |
| Pre-Amplifier                    | EMEC              | EM330                             | 60609         | 02/26/2019 | 02/25/2020 |
| Pre-Amplifier                    | HP                | 8449B                             | 3008A00965    | 02/26/2019 | 02/25/2020 |
| Horn Antenna                     | Schwarzbeck       | BBHA9170                          | 184           | 12/27/2018 | 12/26/2019 |
| Horn Antenna                     | ETS LINDGREN      | 3116                              | 26370         | 12/26/2018 | 12/25/2019 |
| Horn Antenna                     | SCHWARZBECK       | BBHA 9120D                        | 779           | 03/09/2019 | 03/08/2020 |
| Bilog Antenna                    | Sunol Sciences    | JB3                               | A030105       | 07/13/2018 | 07/12/2019 |
| Bilog Antenna                    | Sunol Sciences    | JB1                               | A052609       | 03/06/2019 | 03/05/2020 |
| double Ridged Guide Horn Antenna | ETC               | MCTD 1209                         | DRH13M02003   | 08/20/2018 | 08/19/2019 |
| Loop Antenna                     | COM-POWER         | AL-130                            | 121051        | 03/22/2019 | 03/21/2020 |
| Loop Antenna                     | ETS.LINDGREN      | 6502                              | 148045        | 10/08/2018 | 10/07/2019 |
| Attenuator                       | Marvelous         | MVE2213-10                        | RF80          | 02/26/2019 | 02/25/2020 |
| Radio Communication Analyer      | Anritsu           | MT8821C                           | 6261786084    | 01/09/2019 | 01/08/2020 |
| Cable                            | HUBER SUHNER      | SUCOFLEX 104PEA                   | 25157         | 02/26/2019 | 02/25/2020 |
| Cable                            | HUBER SUHNER      | SUCOFLEX 104PEA                   | 20995         | 02/26/2019 | 02/25/2020 |
| High Pass Filter                 | Woken             | EWT-57-0209                       | RF43          | 02/26/2019 | 02/25/2020 |
| High Pass Filter                 | R&S               | F13 HPF 3GHz                      | RF64          | 02/26/2019 | 02/25/2020 |
| Notch Filter                     | EWT               | EWT-54-0037                       | RF53          | 02/26/2019 | 02/25/2020 |
| Notch Filter                     | EWT               | EWT-54-0038                       | RF55          | 02/26/2019 | 02/25/2020 |
| Band Reject Filter               | WI                | WRCJV2300/270 0-2240/2760-40/12SS | 2             | 02/26/2019 | 02/25/2020 |
| Band Reject Filter               | WI                | WRCGV695/920-635/980-40/12SS      | 2             | 02/26/2019 | 02/25/2020 |
| Software                         | e3 V6.11-20180413 |                                   |               |            |            |

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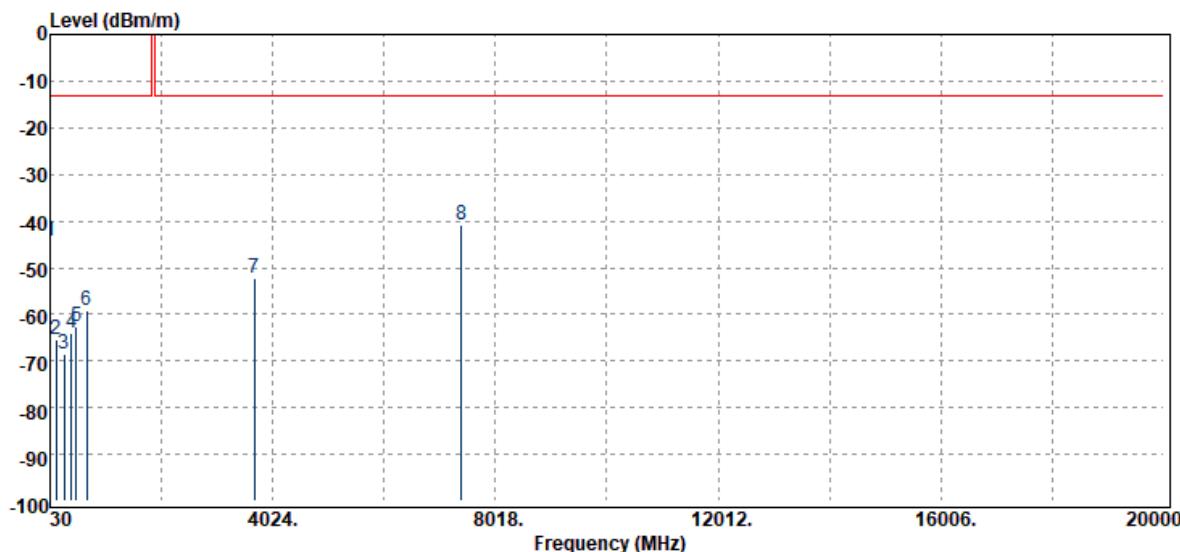
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## 9.5 Measurement Result:

### Radiated Spurious Emission Measurement Result: NB\_IOT-Band 2 (The Worst Case)

|                |                              |              |              |
|----------------|------------------------------|--------------|--------------|
| Report Number  | : T190624W03                 | Test Date    | : 2019-07-04 |
| Operation Mode | : NB_IOT B2 3.75kHz BPSK 1 0 | Temp./Humi.  | : 26/62      |
| Test Mode      | : Tx CH Low                  | Antenna Pol. | : VERTICAL   |
| EUT Pol        | : H Plane                    | Engineer     | : Jerry      |
| Test Channel   | : 18601_1850.1 MHz           |              |              |



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.38          | -13.83                    | -30.10                     | -0.45               | -13.00       | -31.38       |
| 133.79       | -65.41          | -54.94                    | -9.52                      | -0.95               | -13.00       | -52.41       |
| 280.26       | -68.46          | -64.49                    | -2.59                      | -1.38               | -13.00       | -55.46       |
| 418.00       | -63.96          | -60.37                    | -1.90                      | -1.69               | -13.00       | -50.96       |
| 495.60       | -62.59          | -58.73                    | -2.00                      | -1.86               | -13.00       | -49.59       |
| 687.66       | -59.33          | -55.77                    | -1.35                      | -2.21               | -13.00       | -46.33       |
| 3700.20      | -52.34          | -59.13                    | 12.50                      | -5.71               | -13.00       | -39.34       |
| 7400.40      | -40.99          | -43.52                    | 10.60                      | -8.07               | -13.00       | -27.99       |

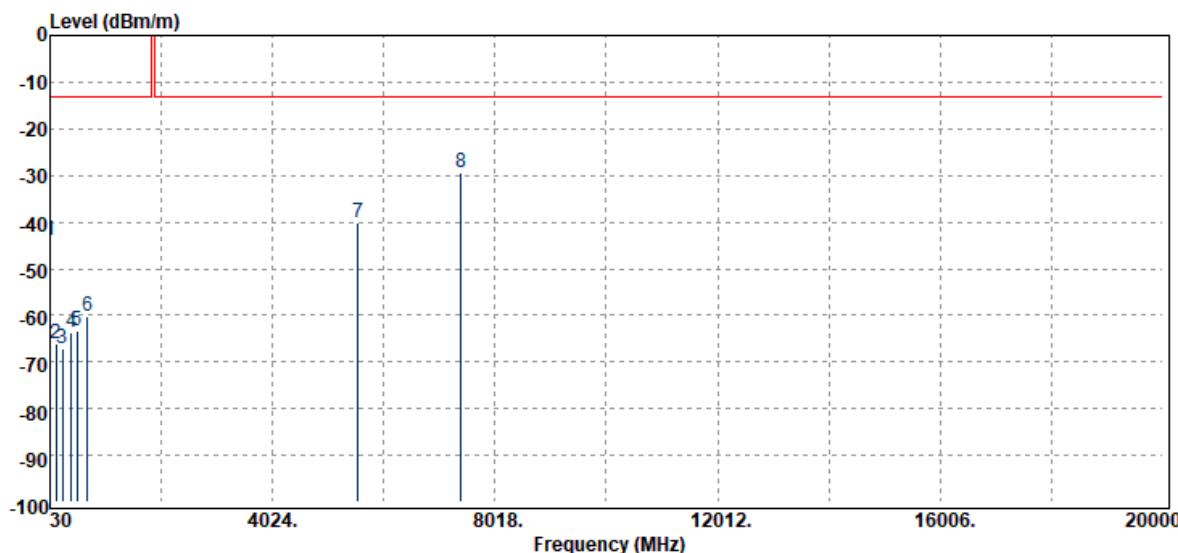
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B2 3.75kHz BPSK 1 0  
 Test Mode : Tx CH Low  
 EUT Pol : H Plane  
 Test Channel : 18601\_1850.1 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -43.88          | -13.33                    | -30.10                     | -0.45               | -13.00       | -30.88       |
| 144.46       | -66.01          | -57.21                    | -7.81                      | -0.99               | -13.00       | -53.01       |
| 248.25       | -67.27          | -64.14                    | -1.83                      | -1.30               | -13.00       | -54.27       |
| 408.30       | -63.54          | -60.07                    | -1.80                      | -1.67               | -13.00       | -50.54       |
| 507.24       | -63.19          | -59.49                    | -1.81                      | -1.89               | -13.00       | -50.19       |
| 697.36       | -60.03          | -56.41                    | -1.40                      | -2.22               | -13.00       | -47.03       |
| 5550.30      | -40.06          | -46.17                    | 13.20                      | -7.09               | -13.00       | -27.06       |
| 7400.40      | -29.44          | -31.97                    | 10.60                      | -8.07               | -13.00       | -16.44       |

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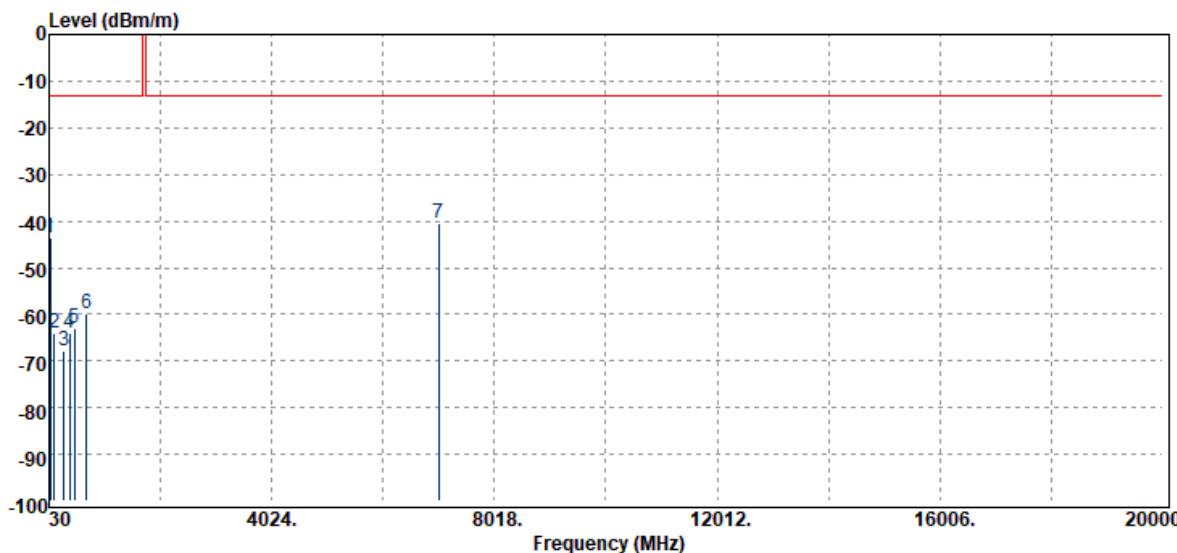
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**Radiated Spurious Emission Measurement Result: NB\_IOT-Band 4 (The Worst Case)**

Report Number : T190624W03  
Operation Mode : NB\_IOT B4 3.75kHz BPSK 1 47  
Test Mode : Tx CH High  
EUT Pol : H Plane  
Test Channel : 20399\_1754.9 MHz

Test Date : 2019-07-04  
Temp./Hum. : 26/62  
Antenna Pol. : VERTICAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 44.55        | -43.44          | -27.04                    | -15.86                     | -0.54               | -13.00       | -30.44       |
| 129.91       | -64.02          | -52.90                    | -10.19                     | -0.93               | -13.00       | -51.02       |
| 293.84       | -67.95          | -64.41                    | -2.12                      | -1.42               | -13.00       | -54.95       |
| 405.39       | -64.13          | -60.66                    | -1.80                      | -1.67               | -13.00       | -51.13       |
| 490.75       | -63.08          | -59.06                    | -2.17                      | -1.85               | -13.00       | -50.08       |
| 700.27       | -59.81          | -56.17                    | -1.41                      | -2.23               | -13.00       | -46.81       |
| 7019.60      | -40.49          | -43.54                    | 11.00                      | -7.95               | -13.00       | -27.49       |

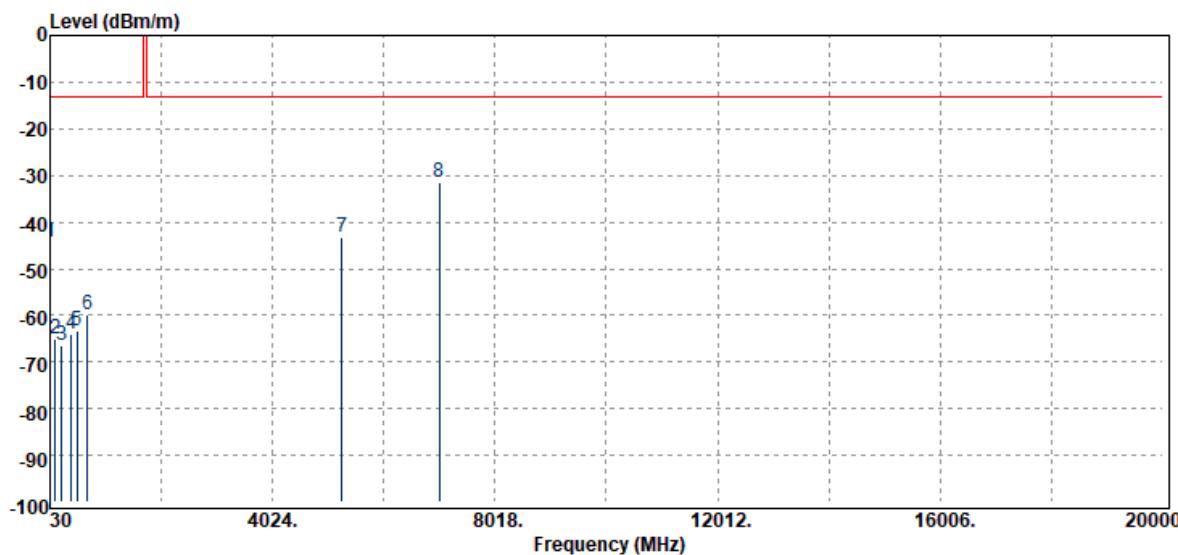
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B4 3.75kHz BPSK 1 47  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 20399\_1754.9 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.12          | -13.57                    | -30.10                     | -0.45               | -13.00       | -31.12       |
| 128.94       | -65.18          | -54.14                    | -10.11                     | -0.93               | -13.00       | -52.18       |
| 243.40       | -66.51          | -63.27                    | -1.96                      | -1.28               | -13.00       | -53.51       |
| 408.30       | -64.09          | -60.62                    | -1.80                      | -1.67               | -13.00       | -51.09       |
| 519.85       | -63.22          | -59.91                    | -1.40                      | -1.91               | -13.00       | -50.22       |
| 699.30       | -59.84          | -56.21                    | -1.40                      | -2.23               | -13.00       | -46.84       |
| 5264.70      | -43.18          | -49.56                    | 13.20                      | -6.82               | -13.00       | -30.18       |
| 7019.60      | -31.54          | -34.59                    | 11.00                      | -7.95               | -13.00       | -18.54       |

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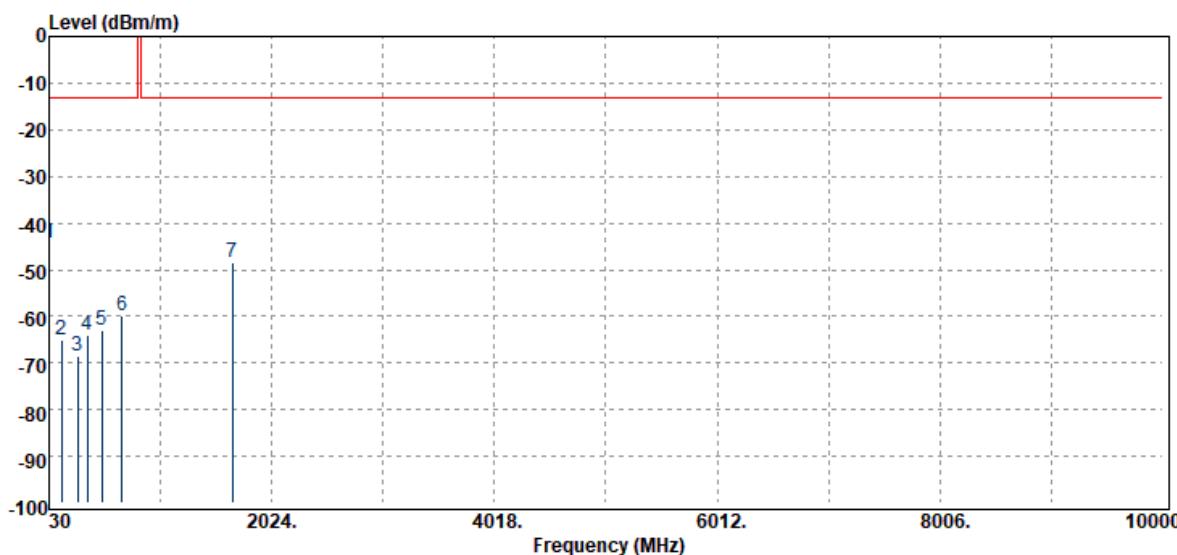
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**Radiated Spurious Emission Measurement Result: NB\_IOT-Band 5 (The Worst Case)**

Report Number : T190624W03  
 Operation Mode : NB\_IOT B5 3.75kHz BPSK 1 47  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 20525\_836.5 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.45          | -13.90                    | -30.10                     | -0.45               | -13.00       | -31.45       |
| 141.55       | -65.13          | -55.85                    | -8.30                      | -0.98               | -13.00       | -52.13       |
| 288.99       | -68.46          | -64.82                    | -2.24                      | -1.40               | -13.00       | -55.46       |
| 369.50       | -63.94          | -60.55                    | -1.80                      | -1.59               | -13.00       | -50.94       |
| 505.30       | -62.85          | -59.08                    | -1.89                      | -1.88               | -13.00       | -49.85       |
| 684.75       | -59.92          | -56.41                    | -1.30                      | -2.21               | -13.00       | -46.92       |
| 1673.00      | -48.44          | -54.70                    | 9.84                       | -3.58               | -13.00       | -35.44       |

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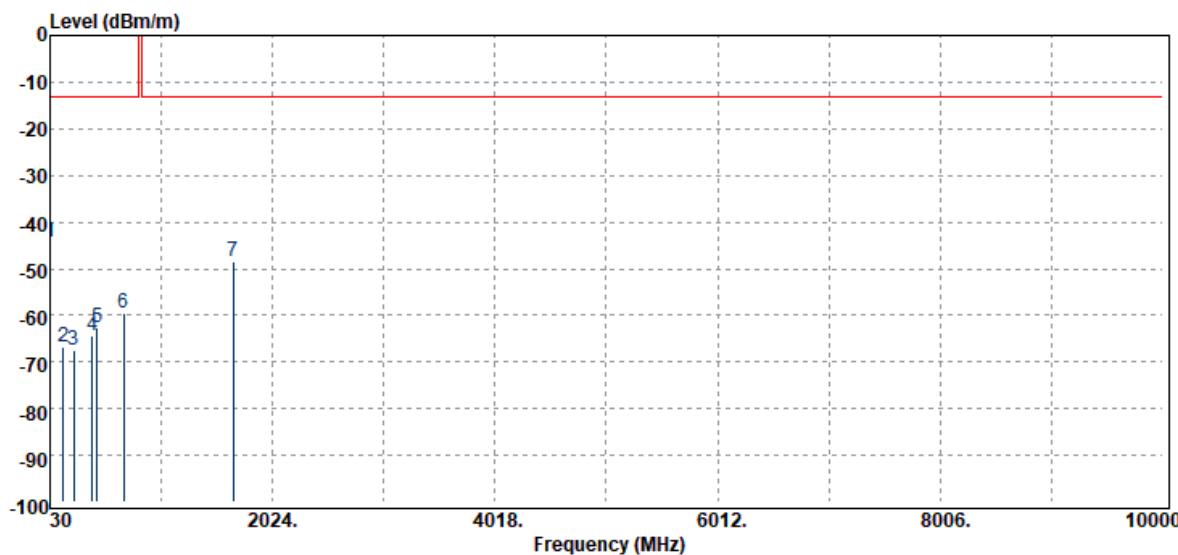
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B5 3.75kHz BPSK 1 47  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 20525\_836.5 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.24          | -13.69                    | -30.10                     | -0.45               | -13.00       | -31.24       |
| 151.25       | -66.77          | -58.71                    | -7.05                      | -1.01               | -13.00       | -53.77       |
| 240.49       | -67.34          | -63.99                    | -2.08                      | -1.27               | -13.00       | -54.34       |
| 410.24       | -64.37          | -60.89                    | -1.80                      | -1.68               | -13.00       | -51.37       |
| 451.95       | -62.47          | -58.61                    | -2.10                      | -1.76               | -13.00       | -49.47       |
| 687.66       | -59.60          | -56.04                    | -1.35                      | -2.21               | -13.00       | -46.60       |
| 1673.00      | -48.60          | -54.86                    | 9.84                       | -3.58               | -13.00       | -35.60       |

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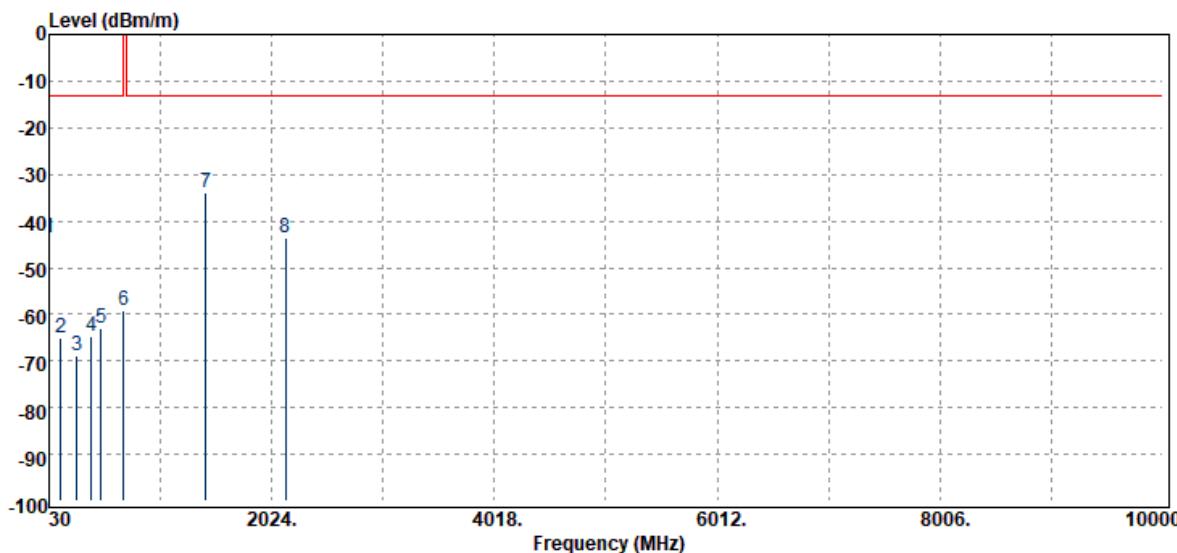
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## Radiated Spurious Emission Measurement Result: NB\_IOT-Band 12 (The Worst Case)

Report Number : T190624W03  
 Operation Mode : NB\_IOT B12 3.75kHz BPSK 1 47  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 23179\_715.9 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -43.59          | -13.04                    | -30.10                     | -0.45               | -13.00       | -30.59       |
| 133.79       | -64.93          | -54.46                    | -9.52                      | -0.95               | -13.00       | -51.93       |
| 282.20       | -68.69          | -64.79                    | -2.51                      | -1.39               | -13.00       | -55.69       |
| 408.30       | -64.59          | -61.12                    | -1.80                      | -1.67               | -13.00       | -51.59       |
| 497.54       | -62.98          | -59.12                    | -2.00                      | -1.86               | -13.00       | -49.98       |
| 697.36       | -59.08          | -55.46                    | -1.40                      | -2.22               | -13.00       | -46.08       |
| 1431.80      | -33.83          | -38.74                    | 8.19                       | -3.28               | -13.00       | -20.83       |
| 2147.70      | -43.76          | -49.03                    | 9.42                       | -4.15               | -13.00       | -30.76       |

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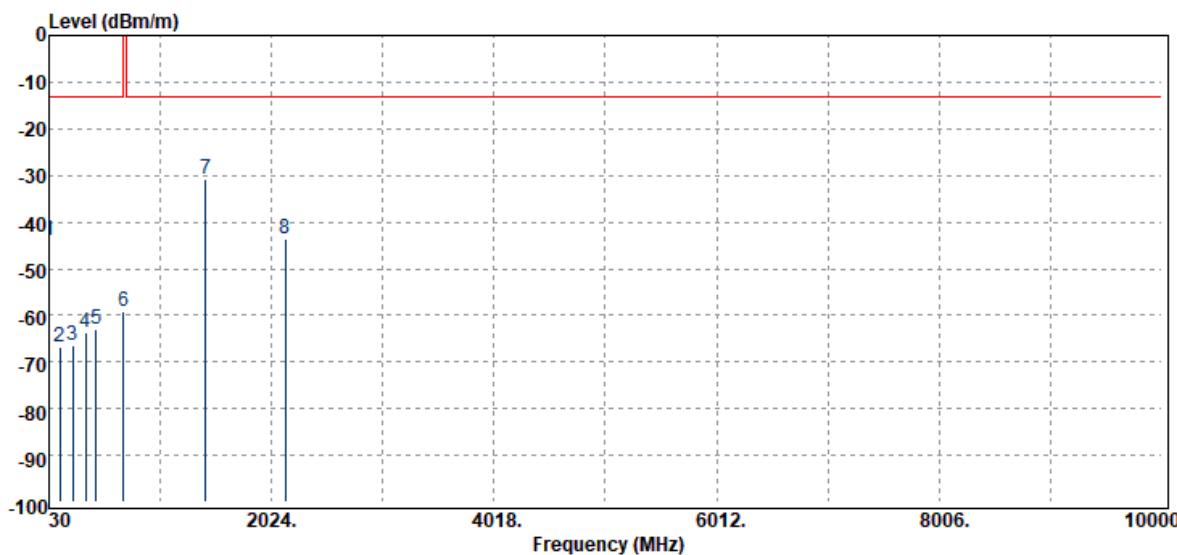
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B12 3.75kHz BPSK 1/47  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 23179\_715.9 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 31.94        | -44.02          | -15.39                    | -28.16                     | -0.47               | -13.00       | -31.02       |
| 128.94       | -66.95          | -55.91                    | -10.11                     | -0.93               | -13.00       | -53.95       |
| 246.31       | -66.38          | -63.22                    | -1.87                      | -1.29               | -13.00       | -53.38       |
| 359.80       | -63.53          | -60.18                    | -1.78                      | -1.57               | -13.00       | -50.53       |
| 451.95       | -62.92          | -59.06                    | -2.10                      | -1.76               | -13.00       | -49.92       |
| 696.39       | -59.08          | -55.46                    | -1.40                      | -2.22               | -13.00       | -46.08       |
| 1431.80      | -30.86          | -35.77                    | 8.19                       | -3.28               | -13.00       | -17.86       |
| 2147.70      | -43.75          | -49.02                    | 9.42                       | -4.15               | -13.00       | -30.75       |

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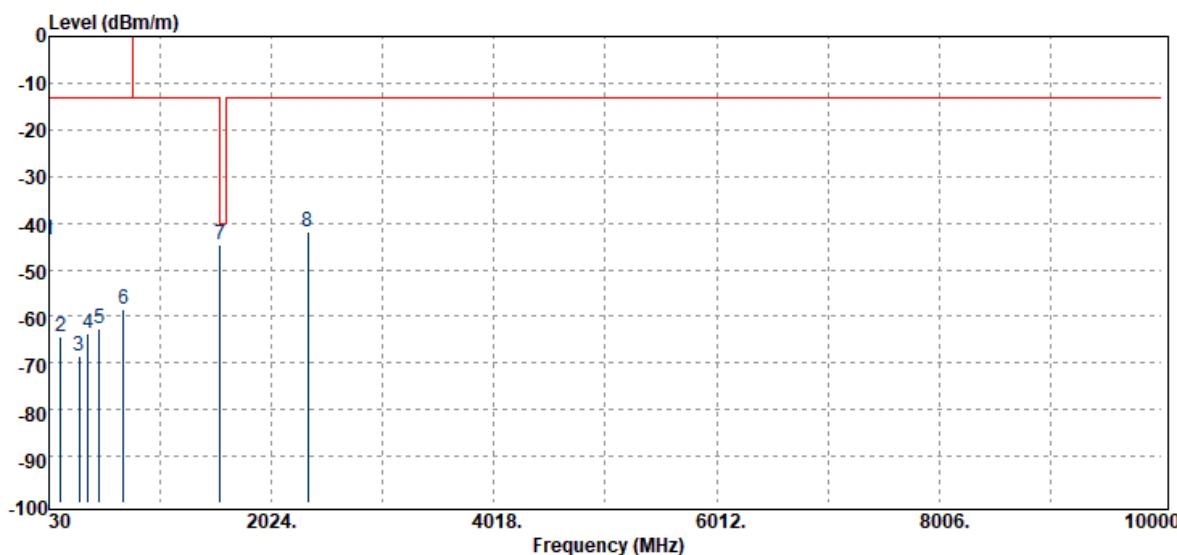
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**Radiated Spurious Emission Measurement Result: NB\_IOT-Band 13 (The Worst Case)**

Report Number : T190624W03  
 Operation Mode : NB\_IOT B13 3.75kHz BPSK 1 47  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
 Temp./Hum. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -43.73          | -13.18                    | -30.10                     | -0.45               | -13.00       | -30.73       |
| 133.79       | -64.37          | -53.90                    | -9.52                      | -0.95               | -13.00       | -51.37       |
| 298.69       | -68.68          | -65.22                    | -2.03                      | -1.43               | -13.00       | -55.68       |
| 382.11       | -63.68          | -60.60                    | -1.46                      | -1.62               | -13.00       | -50.68       |
| 478.14       | -62.70          | -58.48                    | -2.40                      | -1.82               | -13.00       | -49.70       |
| 696.39       | -58.57          | -54.95                    | -1.40                      | -2.22               | -13.00       | -45.57       |
| 1564.00      | -44.79          | -50.73                    | 9.38                       | -3.44               | -40.00       | -4.79        |
| 2346.00      | -41.78          | -47.26                    | 9.87                       | -4.39               | -13.00       | -28.78       |

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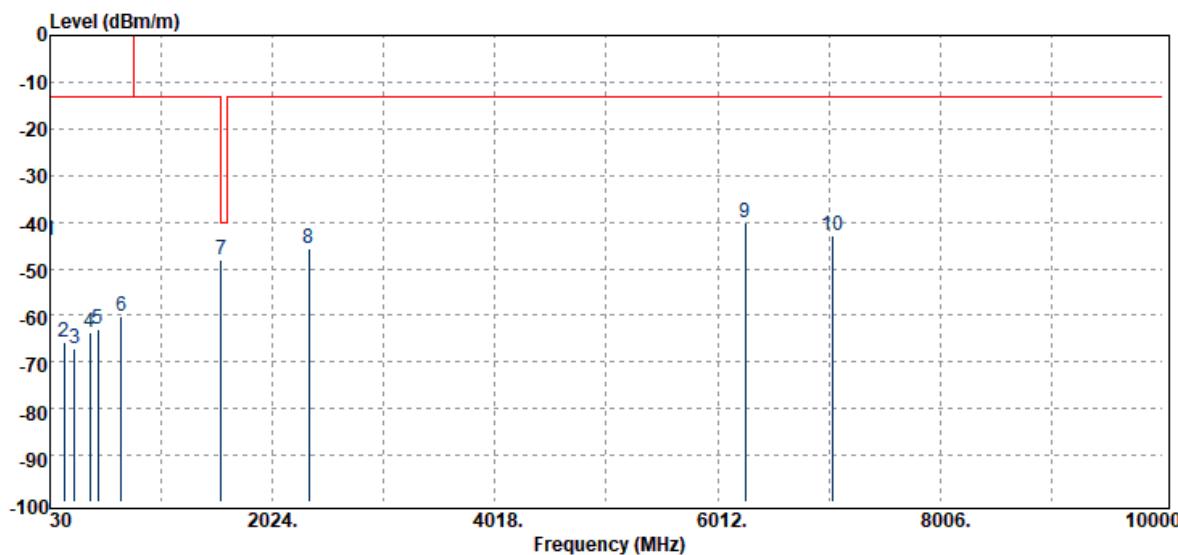
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B13 3.75kHz BPSK 1/47  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.01          | -13.46                    | -30.10                     | -0.45               | -13.00       | -31.01       |
| 154.16       | -65.81          | -58.01                    | -6.78                      | -1.02               | -13.00       | -52.81       |
| 253.10       | -67.00          | -64.01                    | -1.68                      | -1.31               | -13.00       | -54.00       |
| 385.99       | -63.49          | -60.46                    | -1.40                      | -1.63               | -13.00       | -50.49       |
| 461.65       | -62.86          | -58.91                    | -2.17                      | -1.78               | -13.00       | -49.86       |
| 665.35       | -60.10          | -56.43                    | -1.49                      | -2.18               | -13.00       | -47.10       |
| 1564.00      | -48.25          | -54.19                    | 9.38                       | -3.44               | -40.00       | -8.25        |
| 2346.00      | -45.50          | -50.98                    | 9.87                       | -4.39               | -13.00       | -32.50       |
| 6256.00      | -40.06          | -45.06                    | 12.50                      | -7.50               | -13.00       | -27.06       |
| 7038.00      | -43.02          | -46.06                    | 11.00                      | -7.96               | -13.00       | -30.02       |

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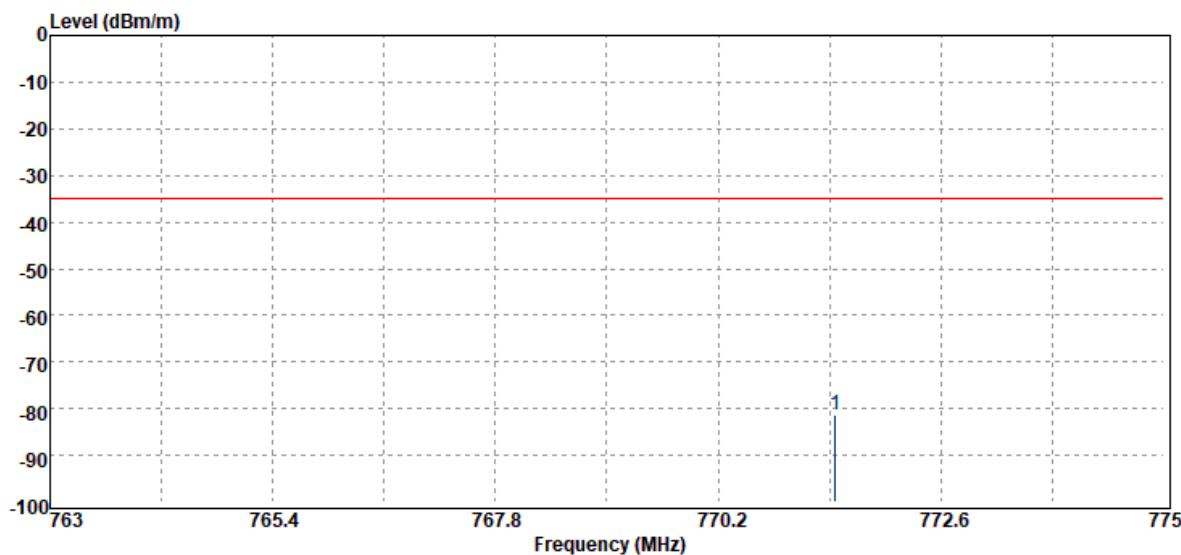
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**Radiated Spurious Emission Measurement Result: LTE-Band 13 (763~755MHz) (The Worst Case)**

Report Number : T190624W03  
Operation Mode : NB\_IOT B13 3.75kHz BPSK 1 47  
Test Mode : Tx CH Mid  
EUT Pol : H Plane  
Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
Temp./Humi. : 26/62  
Antenna Pol. : VERTICAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 771.46       | -81.35          | -77.62                    | -1.40                      | -2.33               | -35.00       | -46.35       |

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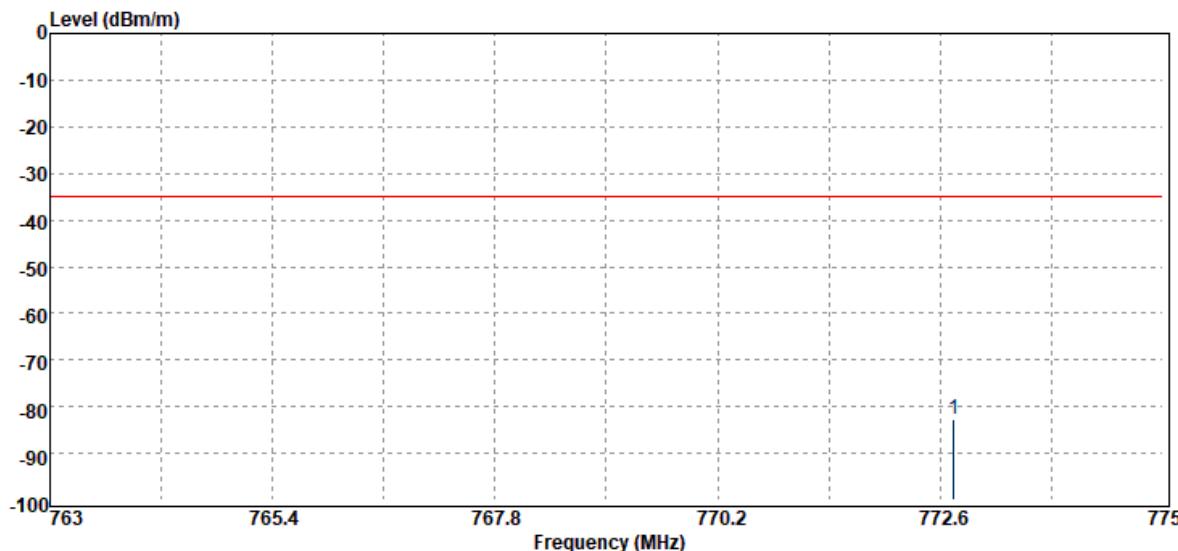
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Report Number : T190624W03  
Operation Mode : NB\_IOT B13 3.75kHz BPSK 1/47  
Test Mode : Tx CH Mid  
EUT Pol : H Plane  
Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
Temp./Humi. : 26/62  
Antenna Pol. : HORIZONTAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 772.74       | -82.85          | -79.11                    | -1.40                      | -2.34               | -35.00       | -47.85       |

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

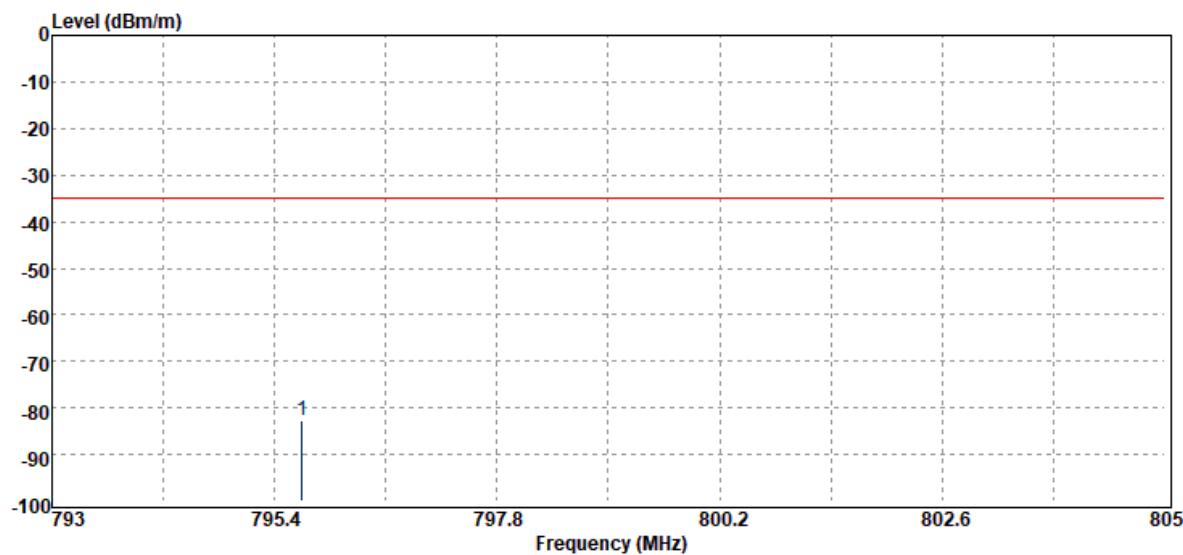
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**Radiated Spurious Emission Measurement Result: LTE-Band 13 (793~805MHz) (The Worst Case)**

Report Number : T190624W03  
Operation Mode : NB\_IOT B13 3.75kHz BPSK 1 47  
Test Mode : Tx CH Mid  
EUT Pol : H Plane  
Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
Temp./Humi. : 26/62  
Antenna Pol. : VERTICAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 795.70       | -82.63          | -79.06                    | -1.21                      | -2.36               | -35.00       | -47.63       |

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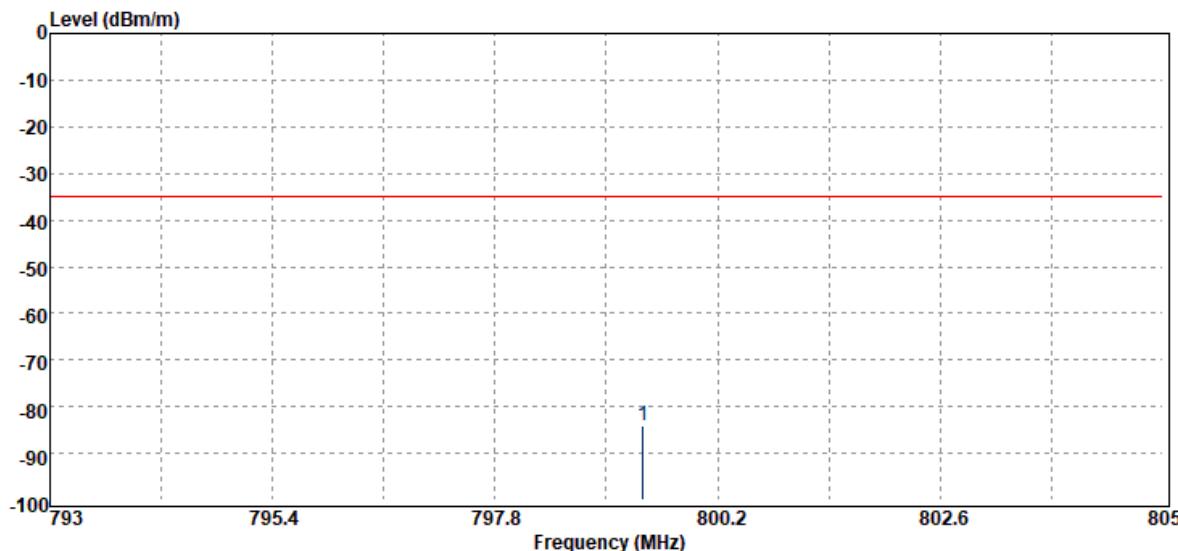
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Report Number : T190624W03  
Operation Mode : NB\_IOT B13 3.75kHz BPSK 1/47  
Test Mode : Tx CH Mid  
EUT Pol : H Plane  
Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
Temp./Humi. : 26/62  
Antenna Pol. : HORIZONTAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 799.40       | -84.11          | -80.45                    | -1.29                      | -2.37               | -35.00       | -49.11       |

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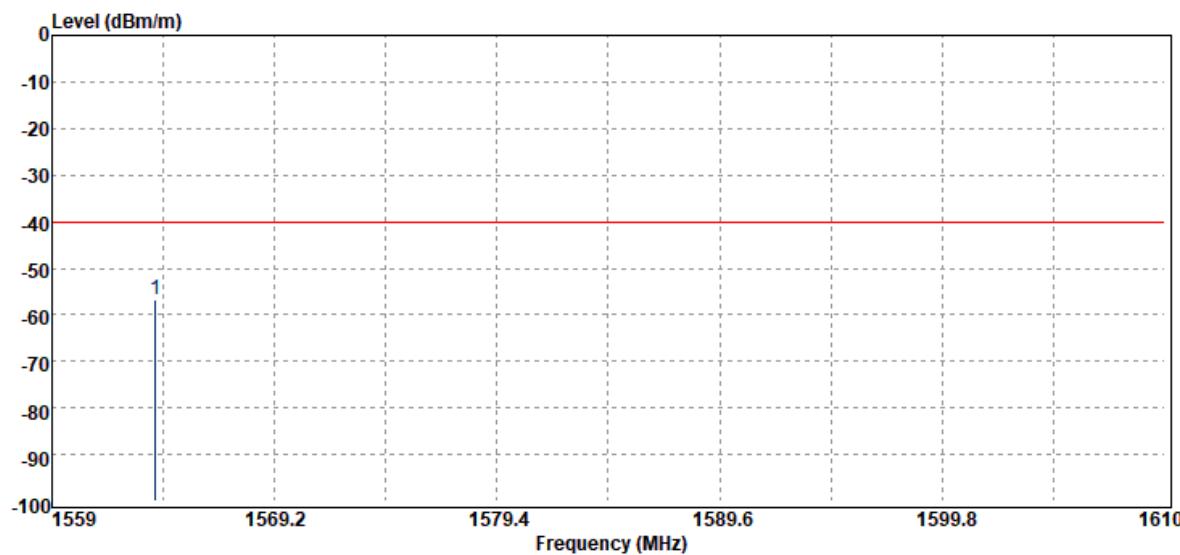
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**Radiated Spurious Emission Measurement Result: LTE-Band 13 (1559~1610MHz) (The Worst Case)**

Report Number : T190624W03  
Operation Mode : NB\_IOT B13 3.75kHz BPSK 1 47  
Test Mode : Tx CH Mid  
EUT Pol : H Plane  
Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
Temp./Humi. : 26/62  
Antenna Pol. : VERTICAL  
Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 1563.74      | -56.71          | -62.65                    | 9.38                       | -3.44               | -40.00       | -16.71       |

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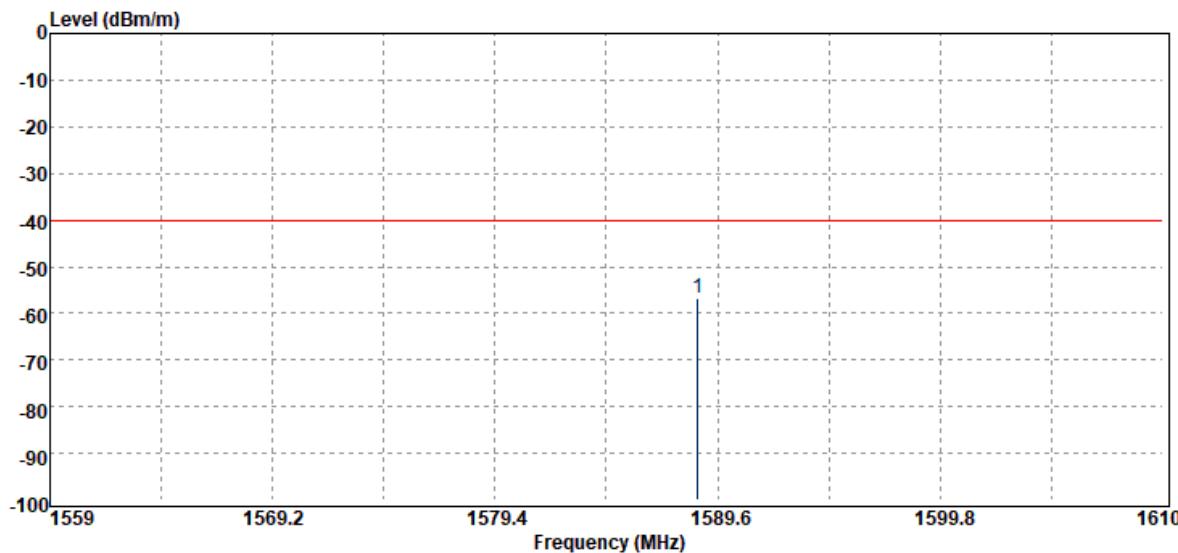
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B13 3.75kHz BPSK 1/47  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 23230\_782 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 1588.68      | -56.72          | -62.78                    | 9.53                       | -3.47               | -40.00       | -16.72       |

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

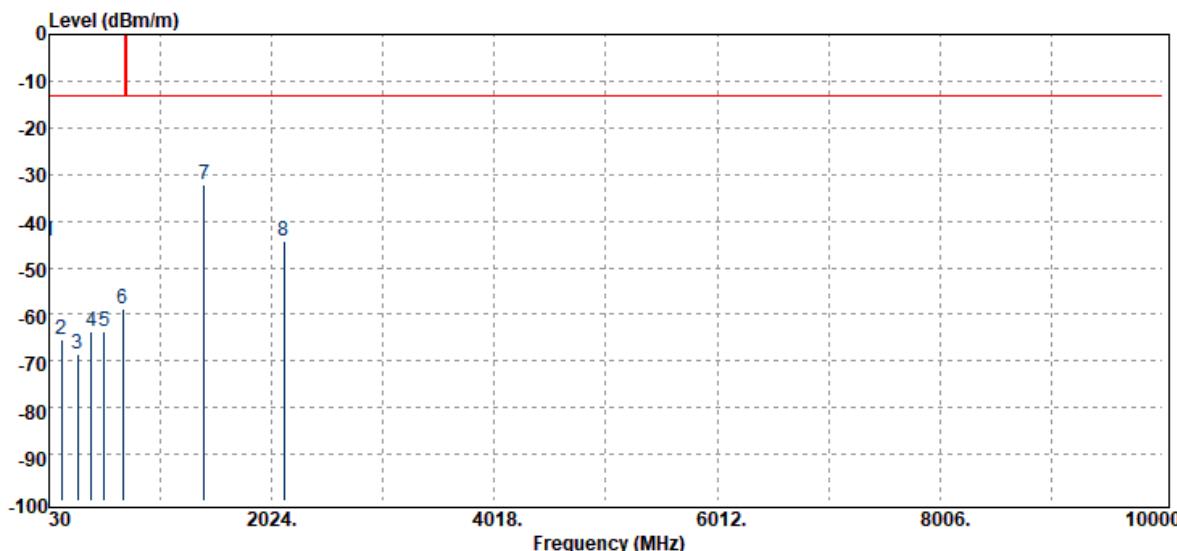
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## Radiated Spurious Emission Measurement Result: NB\_IOT-Band 17 (The Worst Case)

Report Number : T190624W03  
 Operation Mode : NB\_IOT B17 3.75kHz BPSK 1 0  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 23790\_710 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.13          | -13.58                    | -30.10                     | -0.45               | -13.00       | -31.13       |
| 141.55       | -65.40          | -56.12                    | -8.30                      | -0.98               | -13.00       | -52.40       |
| 285.11       | -68.60          | -64.81                    | -2.40                      | -1.39               | -13.00       | -55.60       |
| 405.39       | -63.60          | -60.13                    | -1.80                      | -1.67               | -13.00       | -50.60       |
| 521.79       | -63.50          | -60.23                    | -1.36                      | -1.91               | -13.00       | -50.50       |
| 689.60       | -58.70          | -55.10                    | -1.39                      | -2.21               | -13.00       | -45.70       |
| 1420.00      | -32.26          | -37.12                    | 8.12                       | -3.26               | -13.00       | -19.26       |
| 2130.00      | -44.22          | -49.65                    | 9.56                       | -4.13               | -13.00       | -31.22       |

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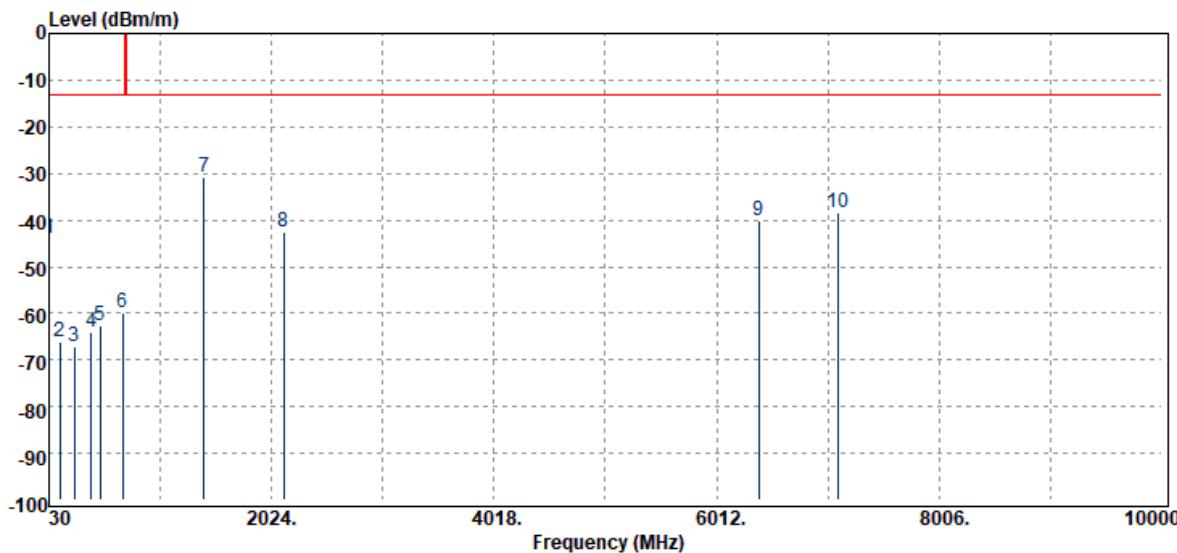
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B17 3.75kHz BPSK 10  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 23790\_710 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.03          | -13.48                    | -30.10                     | -0.45               | -13.00       | -31.03       |
| 128.94       | -66.17          | -55.13                    | -10.11                     | -0.93               | -13.00       | -53.17       |
| 255.04       | -67.19          | -64.28                    | -1.60                      | -1.31               | -13.00       | -54.19       |
| 410.24       | -63.86          | -60.38                    | -1.80                      | -1.68               | -13.00       | -50.86       |
| 485.90       | -62.70          | -58.58                    | -2.28                      | -1.84               | -13.00       | -49.70       |
| 691.54       | -59.80          | -56.18                    | -1.40                      | -2.22               | -13.00       | -46.80       |
| 1420.00      | -30.74          | -35.60                    | 8.12                       | -3.26               | -13.00       | -17.74       |
| 2130.00      | -42.70          | -48.13                    | 9.56                       | -4.13               | -13.00       | -29.70       |
| 6390.00      | -40.29          | -44.92                    | 12.22                      | -7.59               | -13.00       | -27.29       |
| 7100.00      | -38.38          | -41.20                    | 10.80                      | -7.98               | -13.00       | -25.38       |

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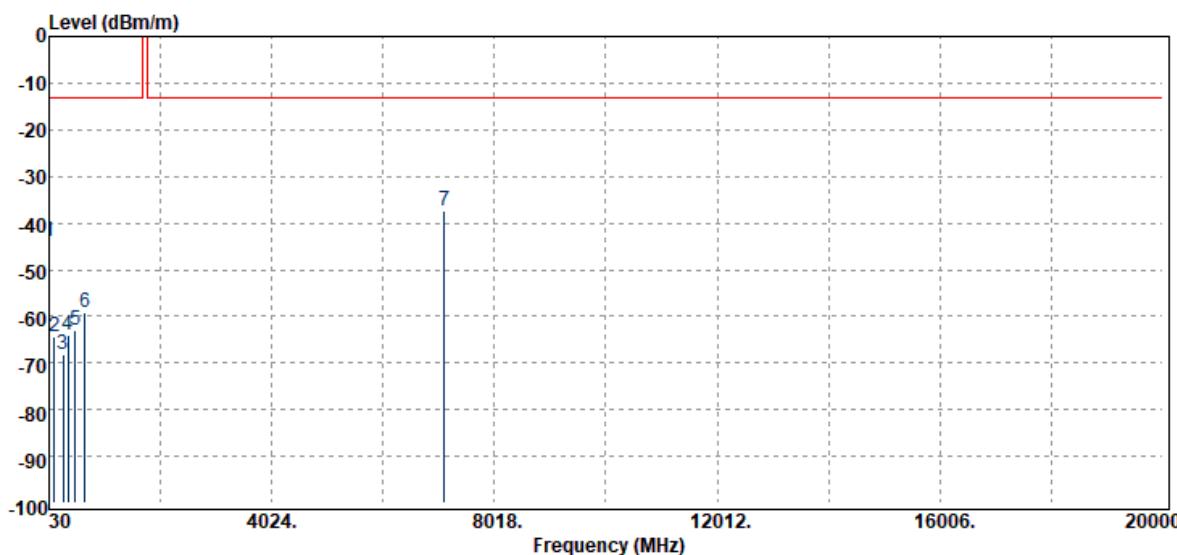
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## Radiated Spurious Emission Measurement Result: NB\_IOT-Band 66 (The Worst Case)

Report Number : T190624W03  
 Operation Mode : NB\_IOT B66 3.75kHz BPSK 1 0  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 132671\_1779.9 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.01          | -13.46                    | -30.10                     | -0.45               | -13.00       | -31.01       |
| 128.94       | -64.25          | -53.21                    | -10.11                     | -0.93               | -13.00       | -51.25       |
| 288.99       | -68.23          | -64.59                    | -2.24                      | -1.40               | -13.00       | -55.23       |
| 376.29       | -63.97          | -60.71                    | -1.65                      | -1.61               | -13.00       | -50.97       |
| 503.36       | -63.02          | -59.21                    | -1.93                      | -1.88               | -13.00       | -50.02       |
| 672.14       | -59.25          | -55.70                    | -1.36                      | -2.19               | -13.00       | -46.25       |
| 7119.60      | -37.32          | -40.10                    | 10.76                      | -7.98               | -13.00       | -24.32       |

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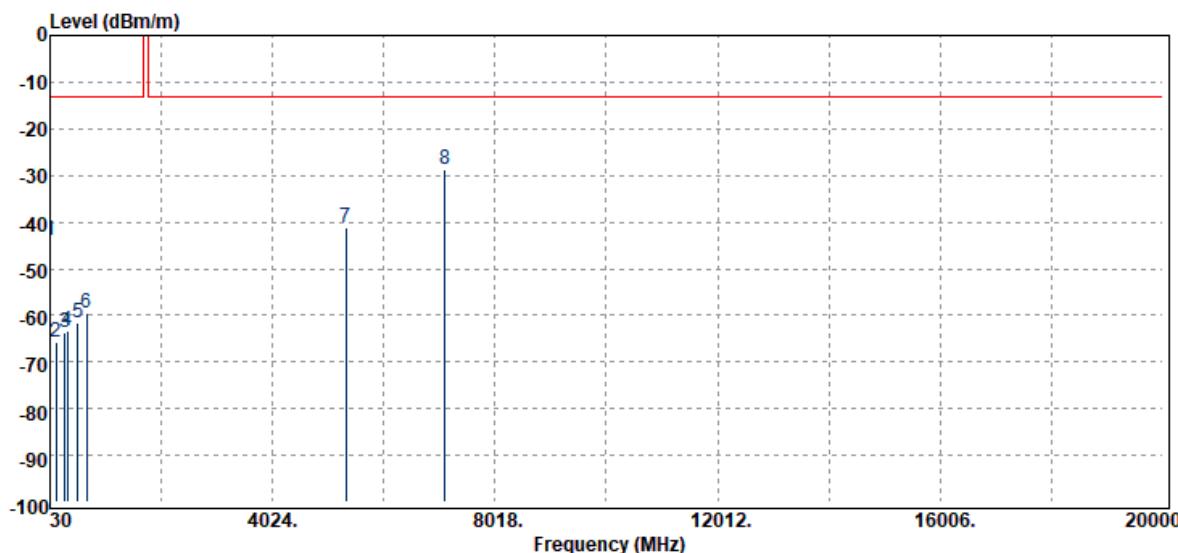
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B66 3.75kHz BPSK 10  
 Test Mode : Tx CH Mid  
 EUT Pol : H Plane  
 Test Channel : 132671\_1779.9 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.10          | -13.55                    | -30.10                     | -0.45               | -13.00       | -31.10       |
| 143.49       | -65.80          | -56.82                    | -8.00                      | -0.98               | -13.00       | -52.80       |
| 291.90       | -63.79          | -60.22                    | -2.16                      | -1.41               | -13.00       | -50.79       |
| 338.46       | -63.48          | -60.43                    | -1.53                      | -1.52               | -13.00       | -50.48       |
| 522.76       | -61.55          | -58.30                    | -1.34                      | -1.91               | -13.00       | -48.55       |
| 686.69       | -59.53          | -55.99                    | -1.33                      | -2.21               | -13.00       | -46.53       |
| 5339.70      | -41.19          | -47.58                    | 13.28                      | -6.89               | -13.00       | -28.19       |
| 7119.60      | -28.55          | -31.33                    | 10.76                      | -7.98               | -13.00       | -15.55       |

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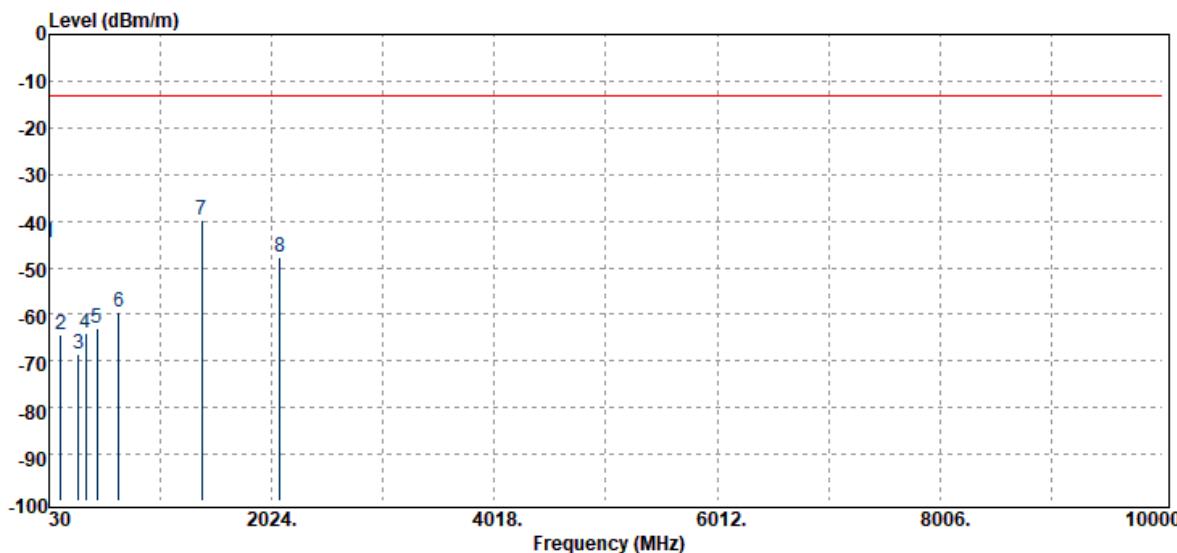
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## Radiated Spurious Emission Measurement Result: NB\_IOT-Band 71 (The Worst Case)

Report Number : T190624W03  
 Operation Mode : NB\_IOT B71 3.75kHz BPSK 1 0  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 133471\_697.9 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.54          | -13.99                    | -30.10                     | -0.45               | -13.00       | -31.54       |
| 134.76       | -64.46          | -54.16                    | -9.35                      | -0.95               | -13.00       | -51.46       |
| 291.90       | -68.51          | -64.94                    | -2.16                      | -1.41               | -13.00       | -55.51       |
| 359.80       | -64.00          | -60.65                    | -1.78                      | -1.57               | -13.00       | -51.00       |
| 458.74       | -62.96          | -59.08                    | -2.10                      | -1.78               | -13.00       | -49.96       |
| 657.59       | -59.50          | -55.84                    | -1.50                      | -2.16               | -13.00       | -46.50       |
| 1395.80      | -39.68          | -36.45                    | 0.00                       | -3.23               | -13.00       | -26.68       |
| 2093.70      | -47.78          | -43.69                    | 0.00                       | -4.09               | -13.00       | -34.78       |

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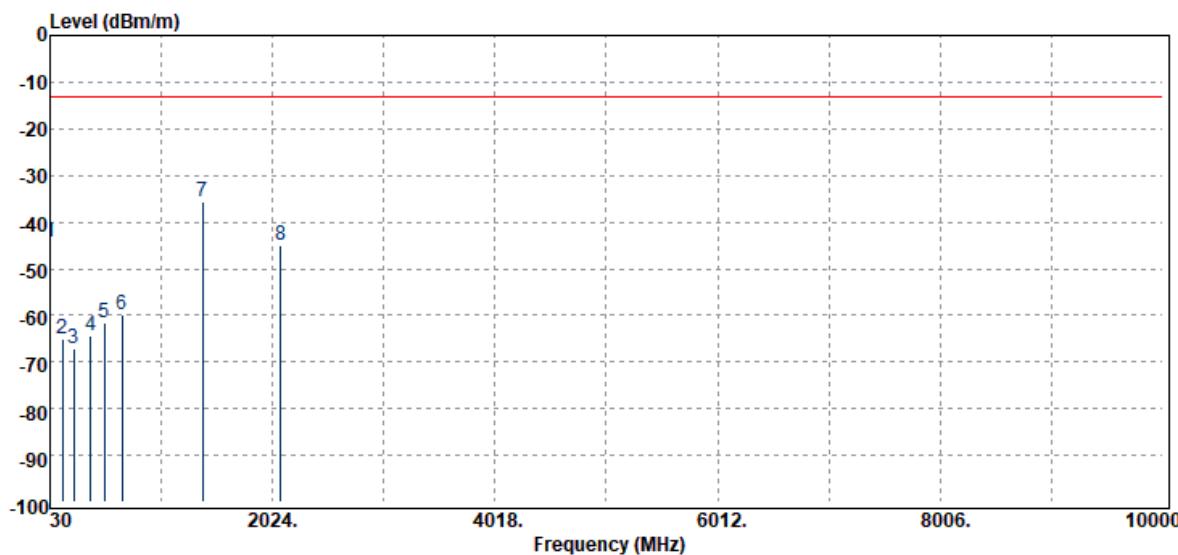
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B71 3.75kHz BPSK 10  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 133471\_697.9 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.21          | -13.66                    | -30.10                     | -0.45               | -13.00       | -31.21       |
| 141.55       | -65.07          | -55.79                    | -8.30                      | -0.98               | -13.00       | -52.07       |
| 243.40       | -67.06          | -63.82                    | -1.96                      | -1.28               | -13.00       | -54.06       |
| 396.66       | -64.37          | -61.09                    | -1.63                      | -1.65               | -13.00       | -51.37       |
| 516.94       | -61.74          | -58.38                    | -1.46                      | -1.90               | -13.00       | -48.74       |
| 673.11       | -60.03          | -56.50                    | -1.34                      | -2.19               | -13.00       | -47.03       |
| 1395.80      | -35.66          | -40.40                    | 7.97                       | -3.23               | -13.00       | -22.66       |
| 2093.70      | -44.98          | -50.73                    | 9.84                       | -4.09               | -13.00       | -31.98       |

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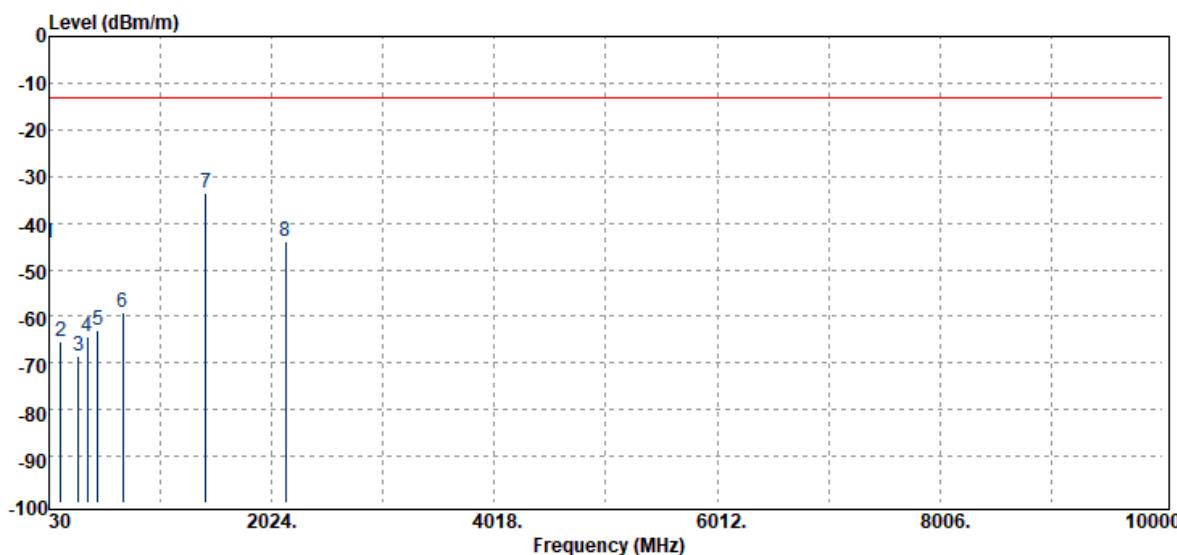
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**Radiated Spurious Emission Measurement Result: NB\_IOT-Band 85 (The Worst Case)**

Report Number : T190624W03  
 Operation Mode : NB\_IOT B85 3.75kHz BPSK 1 0  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 134180\_715.9 MHz

Test Date : 2019-07-04  
 Temp./Humid. : 26/62  
 Antenna Pol. : VERTICAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.41          | 0.00                      | -30.10                     | -0.45               | -13.00       | -31.41       |
| 133.79       | -65.45          | 0.00                      | -9.52                      | -0.95               | -13.00       | -52.45       |
| 294.81       | -68.49          | 0.00                      | -2.10                      | -1.42               | -13.00       | -55.49       |
| 374.35       | -64.30          | 0.00                      | -1.71                      | -1.60               | -13.00       | -51.30       |
| 466.50       | -62.98          | 0.00                      | -2.33                      | -1.79               | -13.00       | -49.98       |
| 689.60       | -59.21          | 0.00                      | -1.39                      | -2.21               | -13.00       | -46.21       |
| 1431.80      | -33.69          | 0.00                      | 8.19                       | -3.28               | -13.00       | -20.69       |
| 2147.70      | -43.78          | 0.00                      | 9.42                       | -4.15               | -13.00       | -30.78       |

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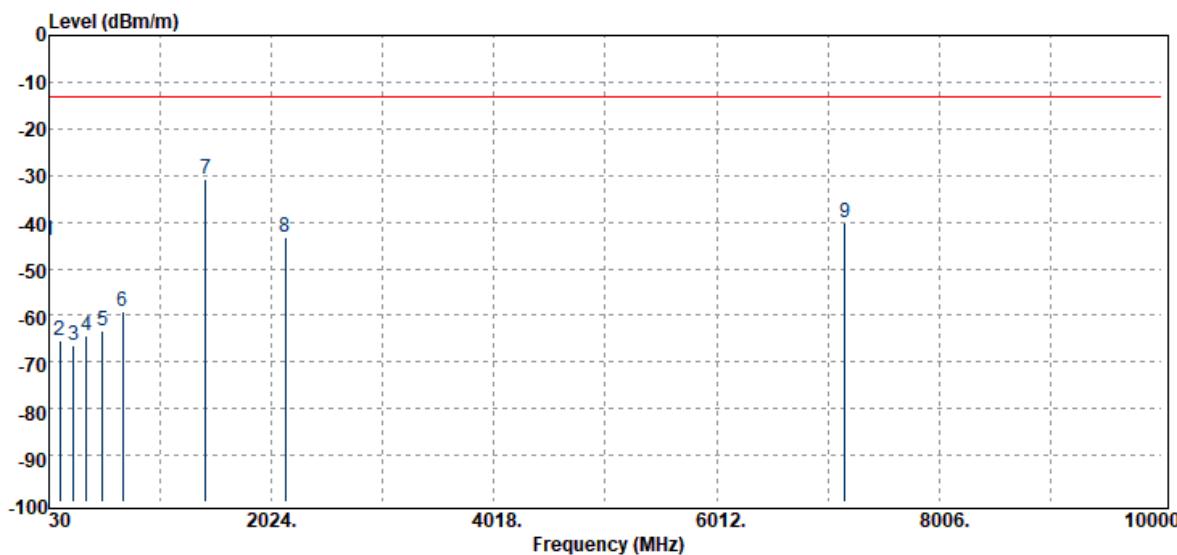
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Report Number : T190624W03  
 Operation Mode : NB\_IOT B85 3.75kHz BPSK 10  
 Test Mode : Tx CH High  
 EUT Pol : H Plane  
 Test Channel : 134180\_715.9 MHz

Test Date : 2019-07-04  
 Temp./Humi. : 26/62  
 Antenna Pol. : HORIZONTAL  
 Engineer : Jerry



| Freq.<br>MHz | EIRP/ERP<br>dBm | SG<br>Output Level<br>dBm | Antenna<br>Gain<br>dBi/dBd | Cable<br>Loss<br>dB | Limit<br>dBm | Margin<br>dB |
|--------------|-----------------|---------------------------|----------------------------|---------------------|--------------|--------------|
| 30.00        | -44.04          | 0.00                      | -30.10                     | -0.45               | -13.00       | -31.04       |
| 128.94       | -65.50          | 0.00                      | -10.11                     | -0.93               | -13.00       | -52.50       |
| 251.16       | -66.40          | 0.00                      | -1.75                      | -1.30               | -13.00       | -53.40       |
| 367.56       | -64.20          | 0.00                      | -1.80                      | -1.59               | -13.00       | -51.20       |
| 507.24       | -63.28          | 0.00                      | -1.81                      | -1.89               | -13.00       | -50.28       |
| 691.54       | -59.33          | 0.00                      | -1.40                      | -2.22               | -13.00       | -46.33       |
| 1431.80      | -30.81          | 0.00                      | 8.19                       | -3.28               | -13.00       | -17.81       |
| 2147.70      | -43.39          | 0.00                      | 9.42                       | -4.15               | -13.00       | -30.39       |
| 7159.00      | -40.29          | 0.00                      | 10.72                      | -7.99               | -13.00       | -27.29       |

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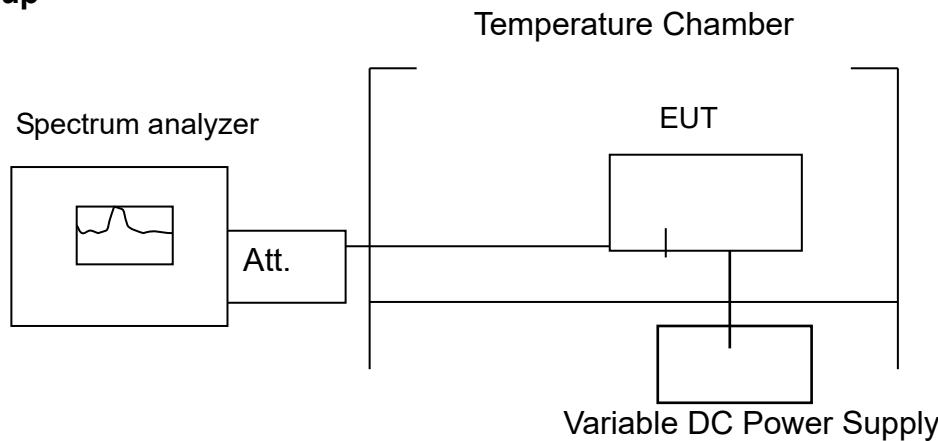
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## 10 FREQUENCY STABILITY MEASUREMENT

### 10.1 Standard Applicable

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 10.2 Test Set-up



**Note:** Measurement setup for testing on Antenna connector

### 10.3 Measurement Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Set chamber temperature to 25°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

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## 10.4 Measurement Equipment Used

| Conducted Emission (measured at antenna port) Test Site |               |              |                |            |            |
|---|---------------|--------------|----------------|------------|------------|
| EQUIPMENT TYPE  | MFR           | MODEL NUMBER | SERIAL NUMBER  | LAST CAL.  | CAL DUE.   |
| PXA Spectrum Analyzer                                   | Agilent       | N9030A       | MY53120760     | 04/22/2019 | 04/21/2020 |
| DC Power Supply   | Agilent       | E3640A       | MY40000811     | 12/11/2018 | 12/10/2019 |
| Radio Communication Analyser                            | Anritsu       | MT8821C      | 6261786084     | 01/09/2019 | 01/08/2020 |
| Temperature Chamber                                     | TERCHY        | MHG-120LF    | 911009         | 05/17/2019 | 05/16/2020 |
| DC Block  | Mini-Circuits | BLK-18-S+    | 1              | 01/02/2019 | 01/01/2020 |
| Splitter  | RF-LAMBAD     | RFLT2W1G 18G | 11-JSPF412-018 | 01/02/2019 | 01/01/2020 |
| Coaxial Cables  | N/A           | WK CE Cable  | N/A            | 01/02/2019 | 01/01/2020 |

## 10.5 Measurement Result

| LTE NB IoT Band 2 1880 MHz    |            |             |            |                 |
|-------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block |            |             |            |                 |
| Vdc                           | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| FREQUENCY ERROR vs. VOLTAGE   |            |             |            |                 |
| 5.75                          | 20         | 1880        | 0          | 0.000           |
| 5                             | 20         | 1880.00008  | 80         | 0.043           |
| 4.25                          | 20         | 1880.00007  | 70         | 0.037           |
| 2.4(End point)                | 20         | 1879.99994  | 60         | -0.032          |
| FREQUENCY ERROR vs. Temp.     |            |             |            |                 |
| 5                             | 50         | 1879.99993  | 70         | -0.037          |
| 5                             | 40         | 1880.00000  | 0          | 0.000           |
| 5                             | 30         | 1880.00007  | 70         | 0.037           |
| 5                             | 20         | 1879.99994  | 60         | -0.032          |
| 5                             | 10         | 1879.99992  | 80         | -0.043          |
| 5                             | 0          | 1879.99998  | 20         | -0.011          |
| 5                             | -10        | 1879.99994  | 60         | -0.032          |
| 5                             | -20        | 1880.00000  | 0          | 0.000           |
| 5                             | -30        | 1880.00006  | 60         | 0.032           |

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| LTE NB IoT Band 4 1733 MHz         |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 1732.50003  | 30         | 0.017           |
| 5                                  | 20         | 1732.5      | 0          | 0.000           |
| 4.25                               | 20         | 1732.49994  | 60         | -0.035          |
| 2.4(End point)                     | 20         | 1732.50004  | 40         | 0.023           |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 1732.50004  | 40         | 0.023           |
| 5                                  | 40         | 1732.50005  | 50         | 0.029           |
| 5                                  | 30         | 1732.49993  | 70         | -0.040          |
| 5                                  | 20         | 1732.50005  | 50         | 0.029           |
| 5                                  | 10         | 1732.50003  | 30         | 0.017           |
| 5                                  | 0          | 1732.50005  | 50         | 0.029           |
| 5                                  | -10        | 1732.50005  | 50         | 0.029           |
| 5                                  | -20        | 1732.49998  | 20         | -0.012          |
| 5                                  | -30        | 1732.49996  | 40         | -0.023          |

| LTE NB IoT Band 5 888 MHz          |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: +/- 2.5 ppm                 |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 888.00004   | 40         | 0.045           |
| 5                                  | 20         | 888         | 0          | 0.045           |
| 4.25                               | 20         | 888.00003   | 30         | 0.045           |
| 2.4(End point)                     | 20         | 887.99996   | 40         | 0.045           |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 888.00003   | 30         | 0.034           |
| 5                                  | 40         | 887.99993   | 70         | -0.079          |
| 5                                  | 30         | 887.99996   | 40         | -0.045          |
| 5                                  | 20         | 888.00006   | 60         | 0.068           |
| 5                                  | 10         | 887.99996   | 40         | -0.045          |
| 5                                  | 0          | 888.00006   | 60         | 0.068           |
| 5                                  | -10        | 887.99998   | 20         | -0.023          |
| 5                                  | -20        | 887.99992   | 80         | -0.090          |
| 5                                  | -30        | 888.00000   | 0          | 0.000           |

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| LTE NB IoT Band 12    708    MHz   |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 707.50001   | 10         | 0.014           |
| 5                                  | 20         | 707.49995   | 50         | -0.071          |
| 4.25                               | 20         | 707.50002   | 20         | 0.028           |
| 2.4(End point)                     | 20         | 707.50002   | 20         | 0.028           |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 707.50006   | 60         | 0.085           |
| 5                                  | 40         | 707.50002   | 20         | 0.028           |
| 5                                  | 30         | 707.50000   | 0          | 0.000           |
| 5                                  | 20         | 707.49995   | 50         | -0.071          |
| 5                                  | 10         | 707.50006   | 60         | 0.085           |
| 5                                  | 0          | 707.50001   | 10         | 0.014           |
| 5                                  | -10        | 707.49994   | 60         | -0.085          |
| 5                                  | -20        | 707.50008   | 80         | 0.113           |
| 5                                  | -30        | 707.50007   | 70         | 0.099           |

| LTE NB IoT Band 13    782    MHz   |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 782.00002   | 20         | 0.026           |
| 5                                  | 20         | 782.00001   | 10         | 0.013           |
| 4.25                               | 20         | 782.00006   | 60         | 0.077           |
| 2.4(End point)                     | 20         | 782.00005   | 50         | 0.064           |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 782.00002   | 20         | 0.026           |
| 5                                  | 40         | 781.99995   | 50         | -0.064          |
| 5                                  | 30         | 782.00001   | 10         | 0.013           |
| 5                                  | 20         | 782.00000   | 0          | 0.000           |
| 5                                  | 10         | 781.99992   | 80         | -0.102          |
| 5                                  | 0          | 781.99994   | 60         | -0.077          |
| 5                                  | -10        | 782.00003   | 30         | 0.038           |
| 5                                  | -20        | 782.00005   | 50         | 0.064           |
| 5                                  | -30        | 781.99994   | 60         | -0.077          |

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| LTE NB IoT Band 17    710    MHz   |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 709.99994   | 60         | -0.085          |
| 5                                  | 20         | 709.99996   | 40         | -0.056          |
| 4.25                               | 20         | 710.00004   | 40         | 0.056           |
| 2.4(End point)                     | 20         | 709.99997   | 30         | -0.042          |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 709.99999   | 10         | -0.014          |
| 5                                  | 40         | 710.00002   | 20         | 0.028           |
| 5                                  | 30         | 710.00003   | 30         | 0.042           |
| 5                                  | 20         | 710.00000   | 0          | 0.000           |
| 5                                  | 10         | 710.00000   | 0          | 0.000           |
| 5                                  | 0          | 710.00005   | 50         | 0.070           |
| 5                                  | -10        | 710.00003   | 30         | 0.042           |
| 5                                  | -20        | 710.00006   | 60         | 0.085           |
| 5                                  | -30        | 709.99999   | 10         | -0.014          |

| LTE NB IoT Band 66    1745    MHz  |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 1744.99993  | 70         | -0.040          |
| 5                                  | 20         | 1744.99993  | 70         | -0.040          |
| 4.25                               | 20         | 1745.00002  | 20         | 0.011           |
| 2.4(End point)                     | 20         | 1745        | 0          | 0.000           |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 1745.00004  | 40         | 0.023           |
| 5                                  | 40         | 1745.00002  | 20         | 0.011           |
| 5                                  | 30         | 1744.99998  | 20         | -0.011          |
| 5                                  | 20         | 1744.99993  | 70         | -0.040          |
| 5                                  | 10         | 1744.99997  | 30         | -0.017          |
| 5                                  | 0          | 1745.00003  | 30         | 0.017           |
| 5                                  | -10        | 1745.00005  | 50         | 0.029           |
| 5                                  | -20        | 1744.99993  | 70         | -0.040          |
| 5                                  | -30        | 1745.00004  | 40         | 0.023           |

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| LTE NB IoT Band 71    681    MHz   |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 680.5       | 0          | 0.000           |
| 5                                  | 20         | 680.49997   | 30         | -0.044          |
| 4.25                               | 20         | 680.49995   | 50         | -0.073          |
| 2.4(End point)                     | 20         | 680.49995   | 50         | -0.073          |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 680.50004   | 40         | 0.059           |
| 5                                  | 40         | 680.50000   | 0          | 0.000           |
| 5                                  | 30         | 680.50006   | 60         | 0.088           |
| 5                                  | 20         | 680.50003   | 30         | 0.044           |
| 5                                  | 10         | 680.49992   | 80         | -0.118          |
| 5                                  | 0          | 680.50003   | 30         | 0.044           |
| 5                                  | -10        | 680.49992   | 80         | -0.118          |
| 5                                  | -20        | 680.49995   | 50         | -0.073          |
| 5                                  | -30        | 680.50001   | 10         | 0.015           |

| LTE NB IoT Band 85    707    MHz   |            |             |            |                 |
|------------------------------------|------------|-------------|------------|-----------------|
| Limit: within frequency block      |            |             |            |                 |
| Vdc                                | Temp. (°C) | Freq. (MHz) | Delta (Hz) | Frequency error |
| <b>FREQUENCY ERROR vs. VOLTAGE</b> |            |             |            |                 |
| 5.75                               | 20         | 707.00007   | 70         | 0.099           |
| 5                                  | 20         | 706.99995   | 50         | -0.071          |
| 4.25                               | 20         | 706.99995   | 50         | -0.071          |
| 2.4(End point)                     | 20         | 706.99992   | 80         | -0.113          |
| <b>FREQUENCY ERROR vs. Temp.</b>   |            |             |            |                 |
| 5                                  | 50         | 706.99992   | 80         | -0.113          |
| 5                                  | 40         | 706.99996   | 40         | -0.057          |
| 5                                  | 30         | 706.99997   | 30         | -0.042          |
| 5                                  | 20         | 707.00001   | 10         | 0.014           |
| 5                                  | 10         | 707.00007   | 70         | 0.099           |
| 5                                  | 0          | 706.99998   | 20         | -0.028          |
| 5                                  | -10        | 707.00004   | 40         | 0.057           |
| 5                                  | -20        | 707.00000   | 0          | 0.000           |
| 5                                  | -30        | 707.00003   | 30         | 0.042           |

**Note: The battery is rated 5Vdc.**

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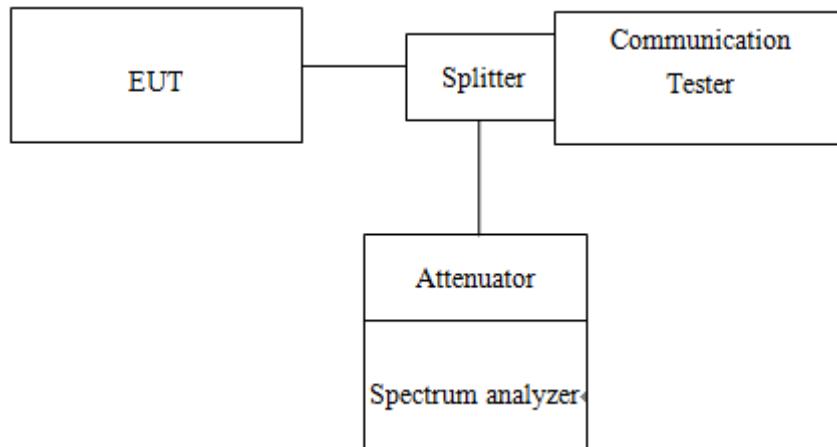
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## 11 PEAK TO AVERAGE RATIO

### 11.1 Standard Applicable

The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

### 11.2 Test SET-UP



### 11.3 Measurement Procedure

1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly;
2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth; & internal =1ms
3. Set the number of counts to a value that stabilizes the measured CCDF curve.

### 11.4 Measurement Equipment Used

| Conducted Emission (measured at antenna port) Test Site |               |                 |                    |            |            |
|---|---------------|-----------------|--------------------|------------|------------|
| EQUIPMENT TYPE  | MFR           | MODEL NUMBER    | SERIAL NUMBER      | LAST CAL.  | CAL DUE.   |
| PXA Spectrum Analyzer                                   | Agilent       | N9030A          | MY5312076<br>0     | 04/22/2019 | 04/21/2020 |
| DC Power Supply   | Agilent       | E3640A          | MY4000081<br>1     | 12/11/2018 | 12/10/2019 |
| Radio Communication Analyer                             | Anritsu       | MT8821C         | 6261786084         | 01/09/2019 | 01/08/2020 |
| Temperature Chamber                                     | TERCHY        | MHG-120L<br>F   | 911009             | 05/17/2019 | 05/16/2020 |
| DC Block  | Mini-Circuits | BLK-18-S+       | 1                  | 01/02/2019 | 01/01/2020 |
| Splitter  | RF-LAMBAD     | RFLT2W1G<br>18G | 11-JSPF412<br>-018 | 01/02/2019 | 01/01/2020 |
| Coaxial Cables  | N/A           | WK CE Cable     | N/A                | 01/02/2019 | 01/01/2020 |

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## 11.5 Measurement Result

### Tabular Results:

| LTE NB-IoT Band 2 |                |            |                             |                    |                                    |
|-------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel           | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 18601             | 1850.1         | BPSK       | 15                          | 1@0                | 9.06                               |
|                   |                | QPSK       | 15                          | 12@0               | 9.38                               |
| 18900             | 1880           | BPSK       | 15                          | 1@0                | 9.53                               |
|                   |                | QPSK       | 15                          | 12@0               | 11.72                              |
| 19199             | 1909.9         | BPSK       | 15                          | 1@0                | 8.72                               |
|                   |                | QPSK       | 15                          | 12@0               | 11.47                              |

| LTE NB-IoT Band 4 |                |            |                             |                    |                                    |
|-------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel           | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 19951             | 1710.1         | BPSK       | 15                          | 1@0                | 8.02                               |
|                   |                | QPSK       | 15                          | 12@0               | 12.55                              |
| 20175             | 1732.5         | BPSK       | 15                          | 1@0                | 9.07                               |
|                   |                | QPSK       | 15                          | 12@0               | 10.8                               |
| 20399             | 1754.9         | BPSK       | 15                          | 1@0                | 7.36                               |
|                   |                | QPSK       | 15                          | 12@0               | 11.68                              |

| LTE NB-IoT Band 5 |                |            |                             |                    |                                    |
|-------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel           | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 20401             | 824.1          | BPSK       | 15                          | 1@0                | 11.64                              |
|                   |                | QPSK       | 15                          | 12@0               | 7.56                               |
| 20525             | 836.5          | BPSK       | 15                          | 1@0                | 12.02                              |
|                   |                | QPSK       | 15                          | 12@0               | 9.84                               |
| 20649             | 848.9          | BPSK       | 15                          | 1@0                | 10.36                              |
|                   |                | QPSK       | 15                          | 12@0               | 10.18                              |

| LTE NB-IoT Band 12 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 23011              | 699.1          | BPSK       | 15                          | 1@0                | 8.24                               |
|                    |                | QPSK       | 15                          | 12@0               | 7.14                               |
| 23095              | 707.5          | BPSK       | 15                          | 1@0                | 8.11                               |
|                    |                | QPSK       | 15                          | 12@0               | 9.33                               |
| 23719              | 715.9          | BPSK       | 15                          | 1@0                | 11.61                              |
|                    |                | QPSK       | 15                          | 12@0               | 8.11                               |

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| LTE NB-IoT Band 13 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 23181              | 777.1          | BPSK       | 15                          | 1@0                | 8.12                               |
|                    |                | QPSK       | 15                          | 12@0               | 9.96                               |
| 23230              | 782            | BPSK       | 15                          | 1@0                | 8                                  |
|                    |                | QPSK       | 15                          | 12@0               | 9.92                               |
| 23279              | 786.9          | BPSK       | 15                          | 1@0                | 9.08                               |
|                    |                | QPSK       | 15                          | 12@0               | 9.31                               |

| LTE NB-IoT Band 17 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 23731              | 704.1          | BPSK       | 15                          | 1@0                | 8.46                               |
|                    |                | QPSK       | 15                          | 12@0               | 10.06                              |
| 23790              | 710            | BPSK       | 15                          | 1@0                | 7.68                               |
|                    |                | QPSK       | 15                          | 12@0               | 8.71                               |
| 23849              | 715.9          | BPSK       | 15                          | 1@0                | 7.7                                |
|                    |                | QPSK       | 15                          | 12@0               | 9.2                                |

| LTE NB-IoT Band 66 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 131973             | 1710.1         | BPSK       | 15                          | 1@0                | 10.05                              |
|                    |                | QPSK       | 15                          | 12@0               | 11.2                               |
| 132322             | 1745           | BPSK       | 15                          | 1@0                | 10.02                              |
|                    |                | QPSK       | 15                          | 12@0               | 12.75                              |
| 132671             | 1779.9         | BPSK       | 15                          | 1@0                | 10.28                              |
|                    |                | QPSK       | 15                          | 12@0               | 11.03                              |

| LTE NB-IoT Band 71 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 133123             | 663.1          | BPSK       | 15                          | 1@0                | 7.78                               |
|                    |                | QPSK       | 15                          | 12@0               | 8.66                               |
| 133297             | 680.5          | BPSK       | 15                          | 1@0                | 9.74                               |
|                    |                | QPSK       | 15                          | 12@0               | 12.2                               |
| 133471             | 697.9          | BPSK       | 15                          | 1@0                | 8.44                               |
|                    |                | QPSK       | 15                          | 12@0               | 12.16                              |

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| LTE NB-IoT Band 85 |                |            |                             |                    |                                    |
|--------------------|----------------|------------|-----------------------------|--------------------|------------------------------------|
| Channel            | Freq.<br>(MHz) | Modulation | Subcarrier<br>Spacing (kHz) | N <sub>tones</sub> | Peak-to-Average<br>Power Ratio(dB) |
| 134003             | 698.1          | BPSK       | 15                          | 1@0                | 10.28                              |
|                    |                | QPSK       | 15                          | 12@0               | 11.18                              |
| 134092             | 707            | BPSK       | 15                          | 1@0                | 8.75                               |
|                    |                | QPSK       | 15                          | 12@0               | 9.98                               |
| 134181             | 715.9          | BPSK       | 15                          | 1@0                | 7.74                               |
|                    |                | QPSK       | 15                          | 12@0               | 11.3                               |

**Please refer to next page for test plots.**

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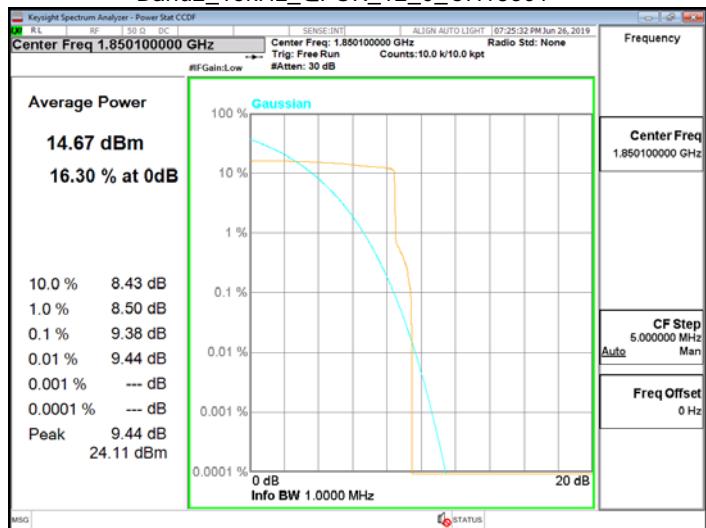
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Band2\_15kHz\_BPSK\_1\_0\_CH18601



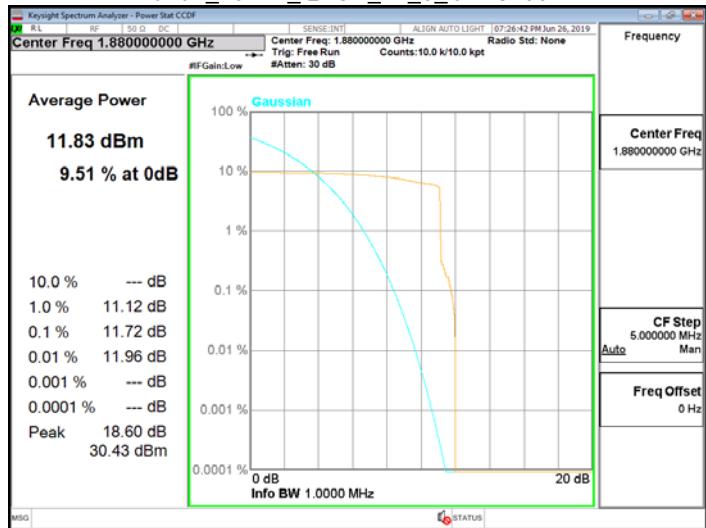
Band2\_15kHz\_QPSK\_12\_0\_CH18601



Band2\_15kHz\_BPSK\_1\_0\_CH18900



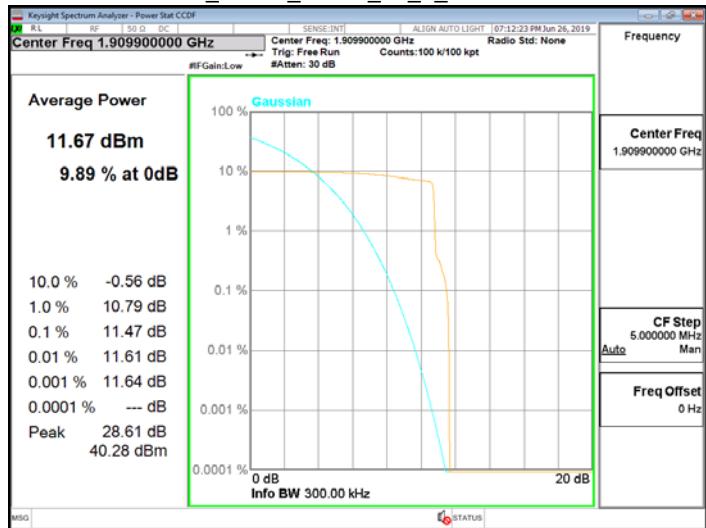
Band2\_15kHz\_QPSK\_12\_0\_CH18900



Band2\_15kHz\_BPSK\_1\_0\_CH19199



Band2\_15kHz\_QPSK\_12\_0\_CH19199



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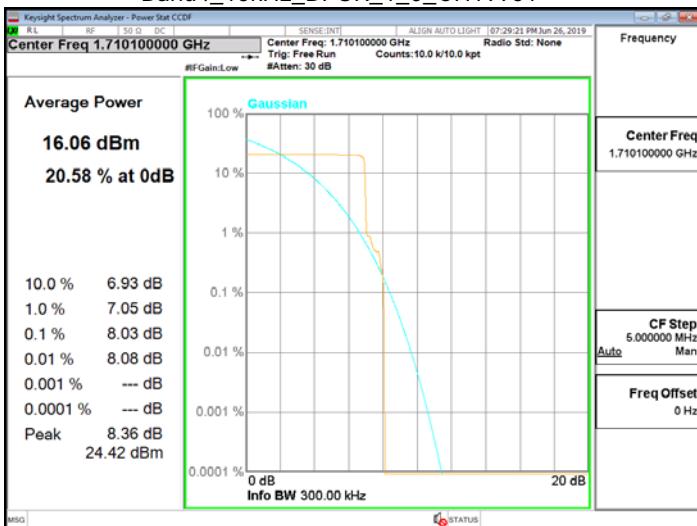
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Band4\_15kHz\_BPSK\_1\_0\_CH19951



Band4\_15kHz\_QPSK\_12\_0\_CH19951



Band4\_15kHz\_BPSK\_1\_0\_CH20175



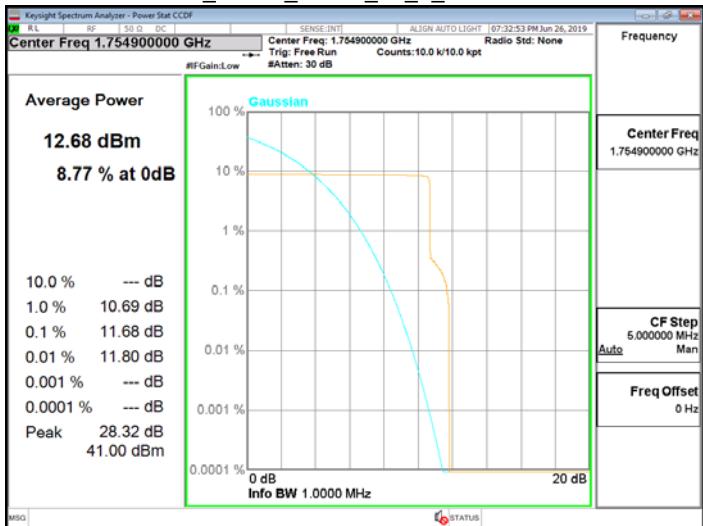
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Band4\_15kHz\_BPSK\_1\_0\_CH20399



Band4\_15kHz\_QPSK\_12\_0\_CH20399

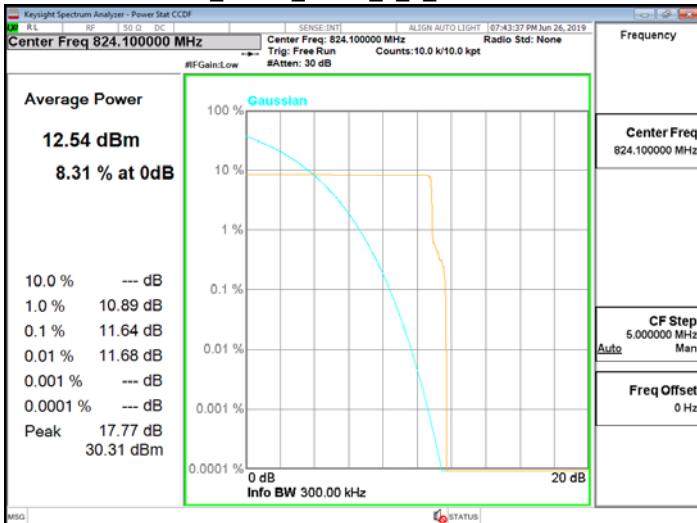


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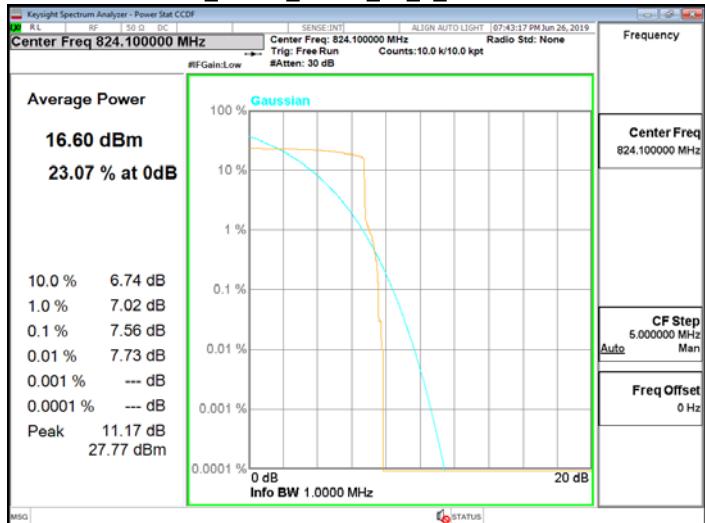
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Band5\_15kHz\_BPSK\_1\_0\_CH20401



Band5\_15kHz\_QPSK\_12\_0\_CH20401



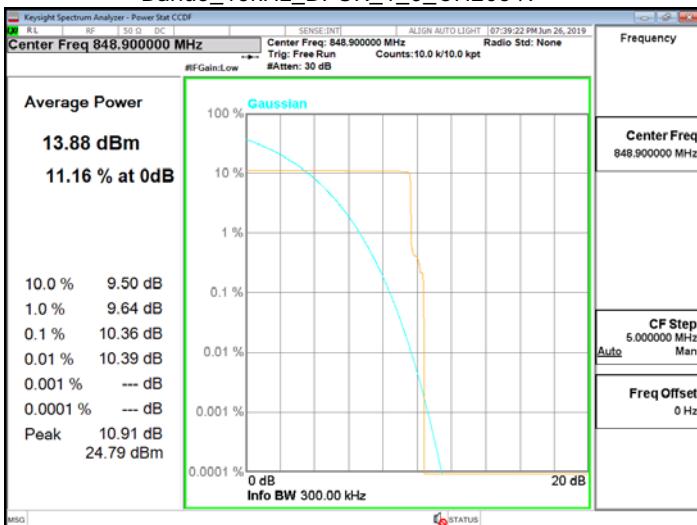
Band5\_15kHz\_BPSK\_1\_0\_CH20525



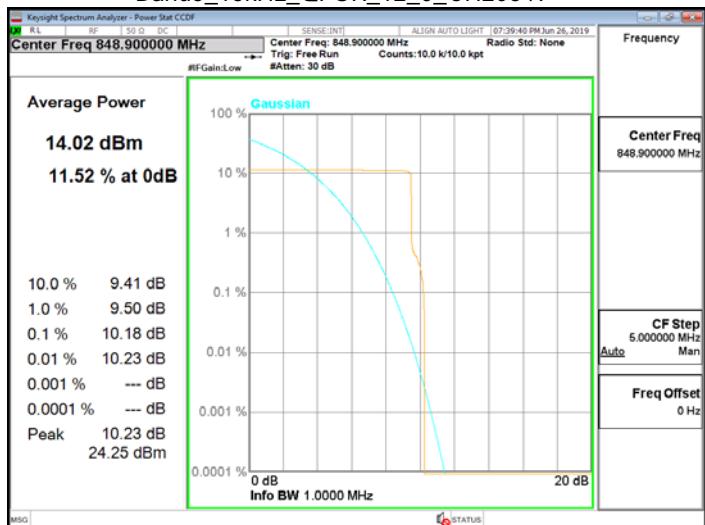
Band5\_15kHz\_QPSK\_12\_0\_CH20525



Band5\_15kHz\_BPSK\_1\_0\_CH20649



Band5\_15kHz\_QPSK\_12\_0\_CH20649



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