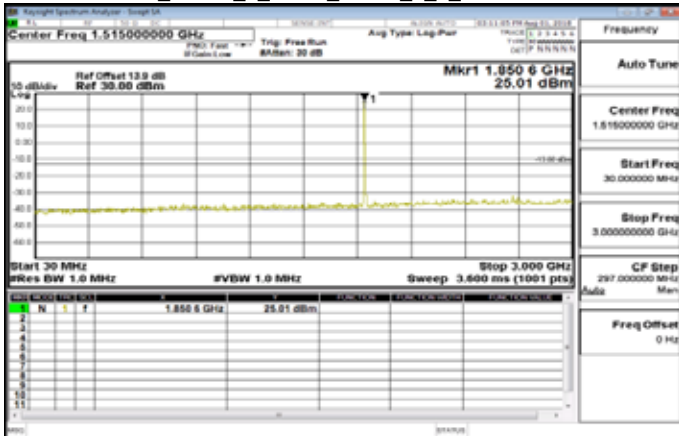


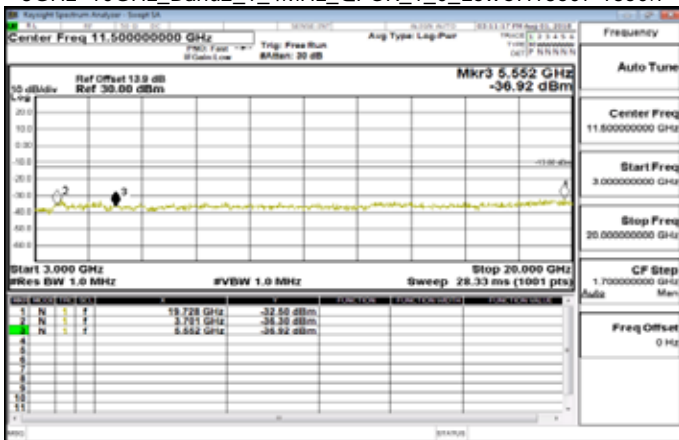
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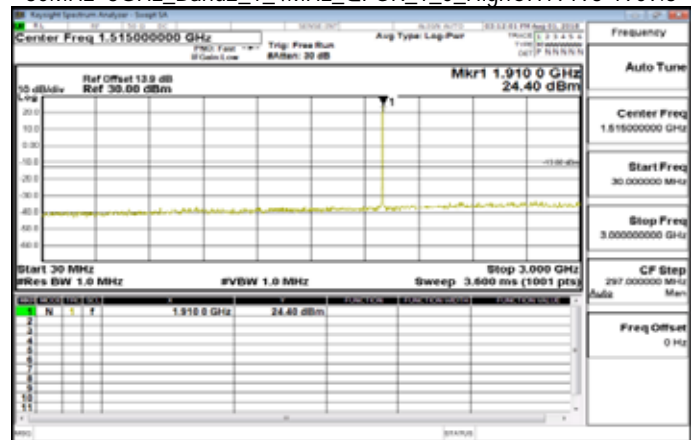
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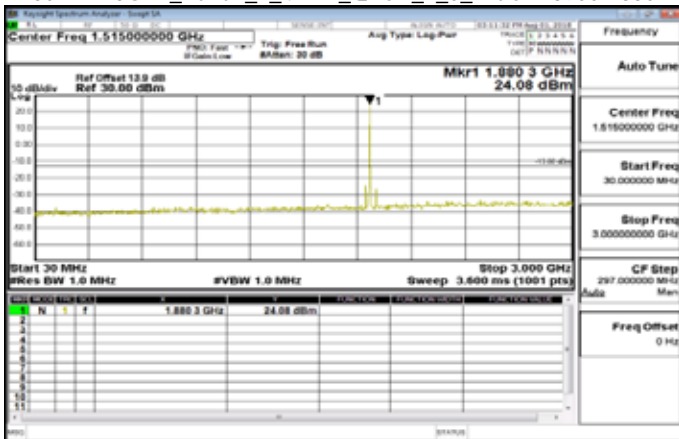
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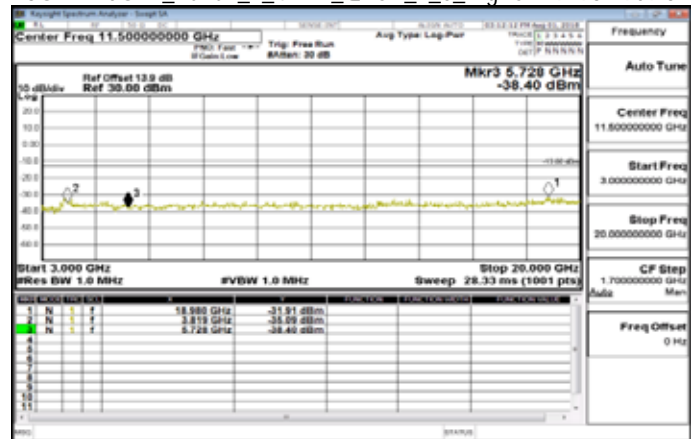
30MHz-3GHz\_Band2\_1\_4MHz\_QPSK\_1\_0\_HighCH19193-1909.3



30MHz-3GHz\_Band2\_1\_4MHz\_QPSK\_1\_0\_MidCH18900-1880



3GHz-10GHz\_Band2\_1\_4MHz\_QPSK\_1\_0\_HighCH19193-1909.3



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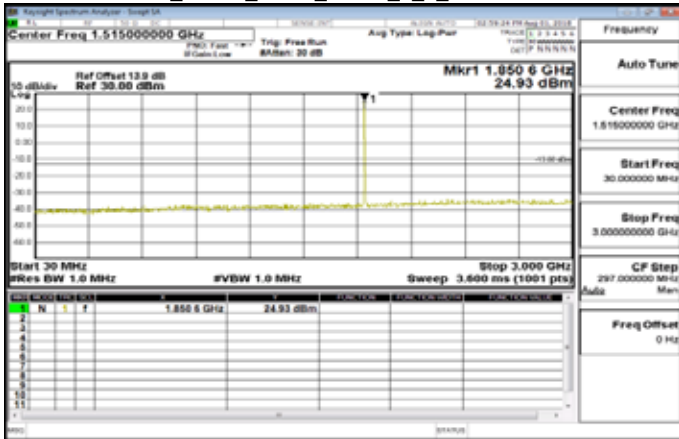
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30MHz-3GHz\_Band2\_3MHz\_QPSK\_1\_0\_LowCH18615-1851.5



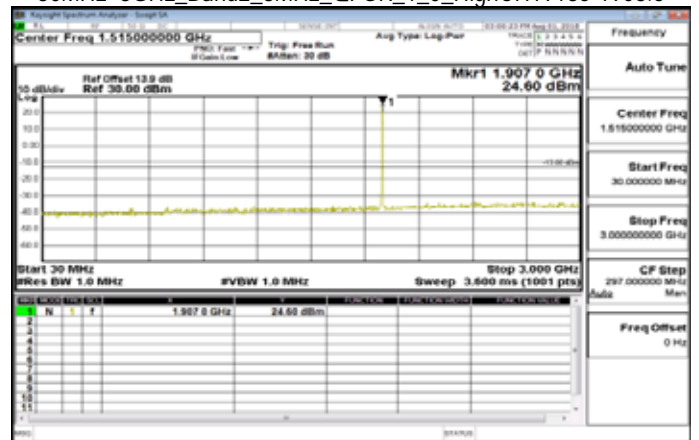
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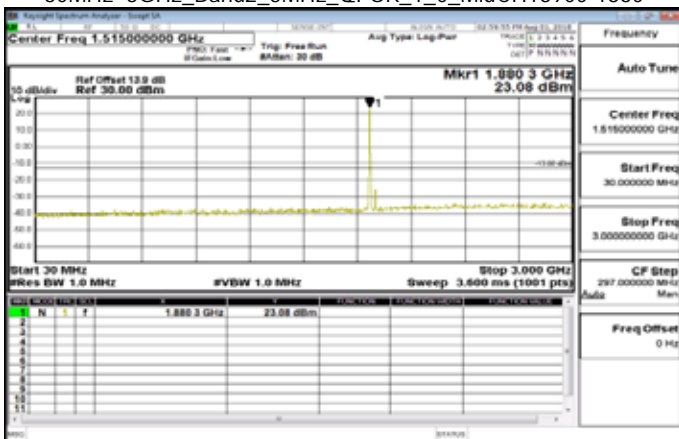
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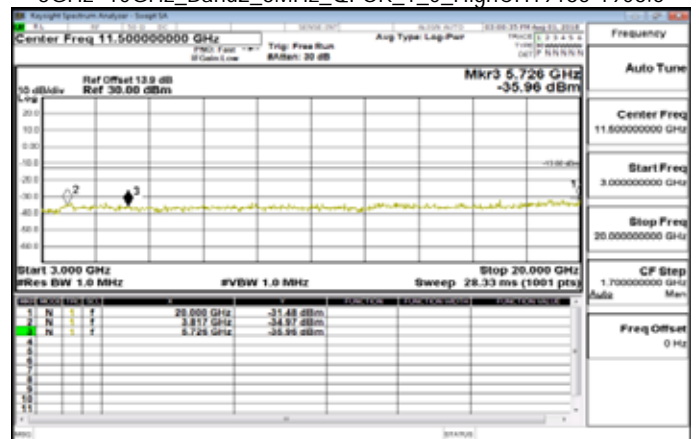
30MHz-3GHz\_Band2\_3MHz\_QPSK\_1\_0\_HighCH19185-1908.5



30MHz-3GHz\_Band2\_3MHz\_QPSK\_1\_0\_MidCH18900-1880



3GHz-10GHz\_Band2\_3MHz\_QPSK\_1\_0\_HighCH19185-1908.5



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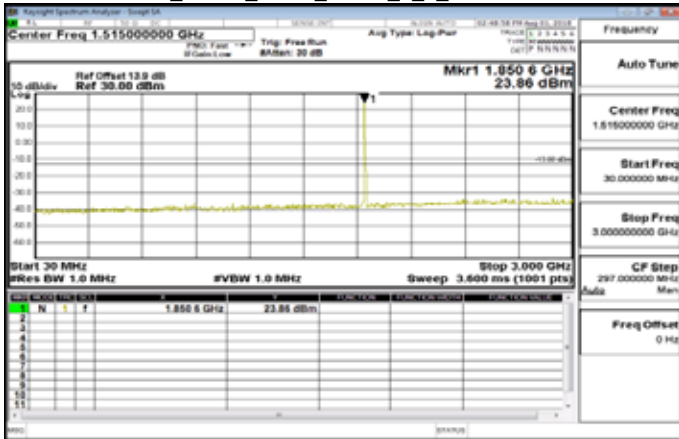
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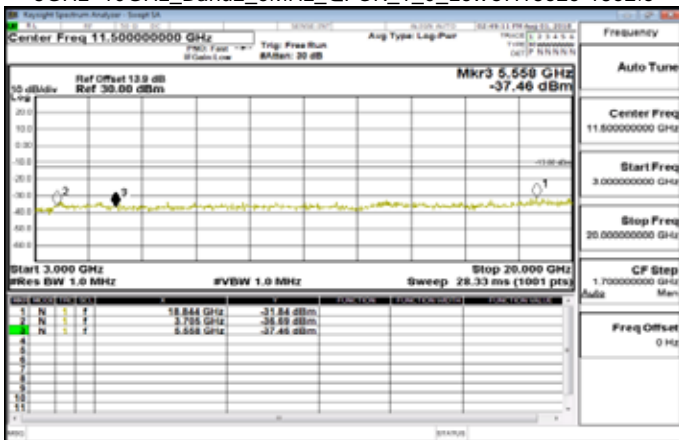
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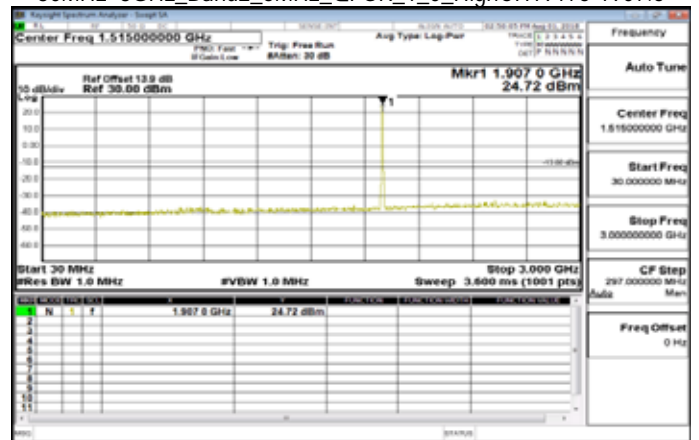
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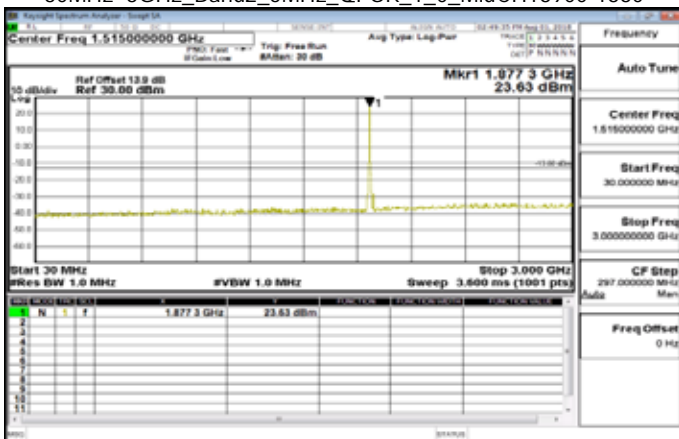
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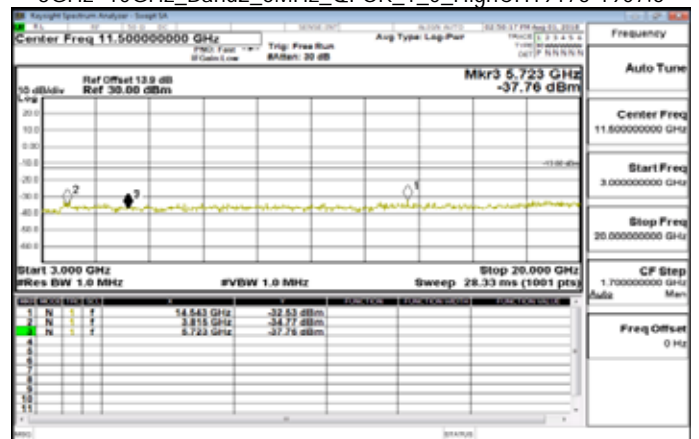
30MHz-3GHz\_Band2\_5MHz\_QPSK\_1\_0\_HighCH19175-1907.5



30MHz-3GHz\_Band2\_5MHz\_QPSK\_1\_0\_MidCH18900-1880



3GHz-10GHz\_Band2\_5MHz\_QPSK\_1\_0\_HighCH19175-1907.5



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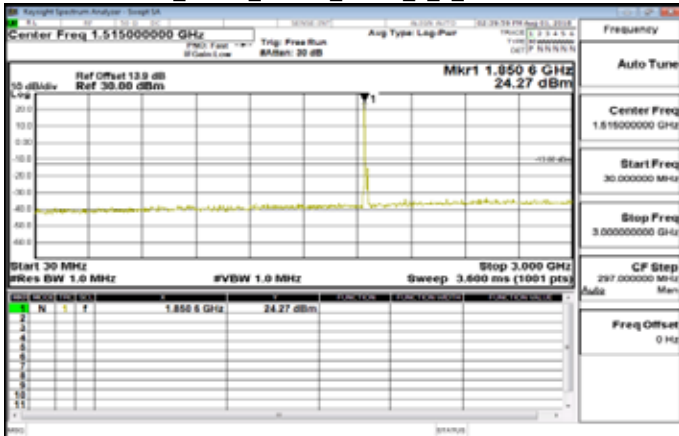
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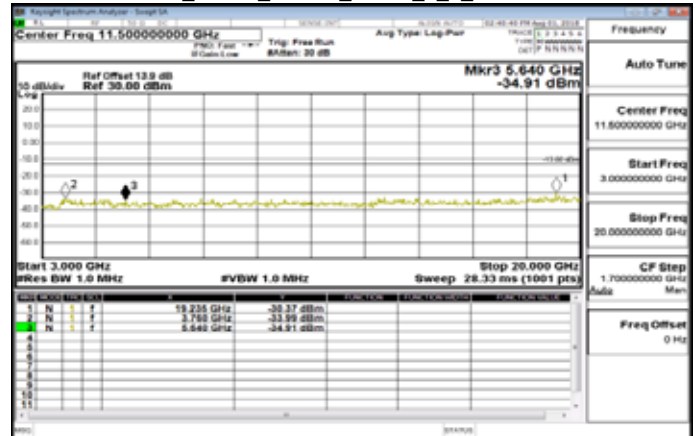
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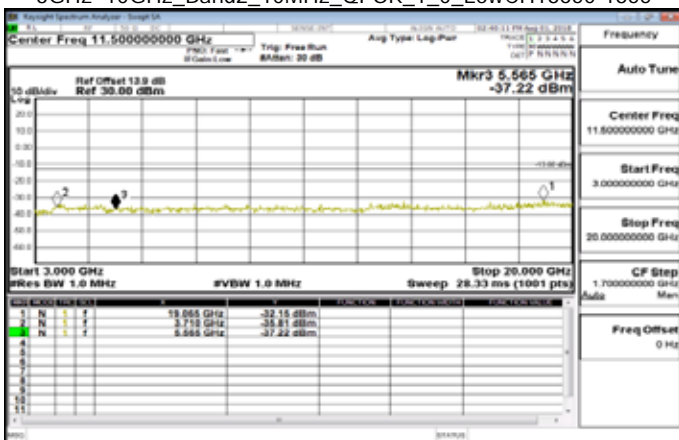
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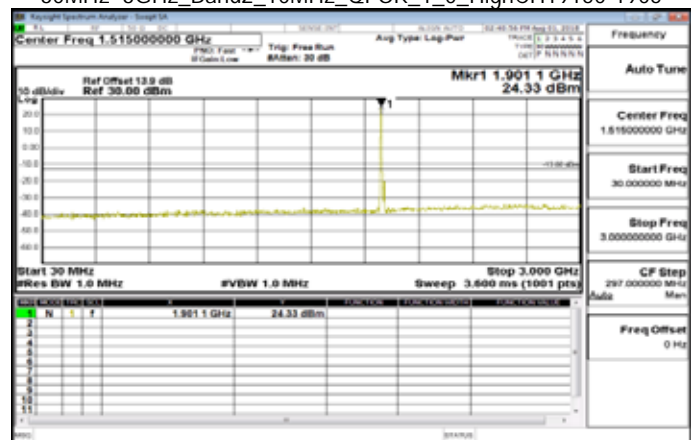
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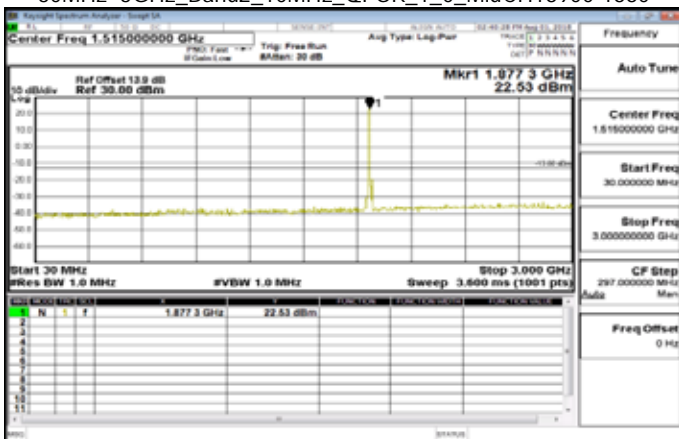
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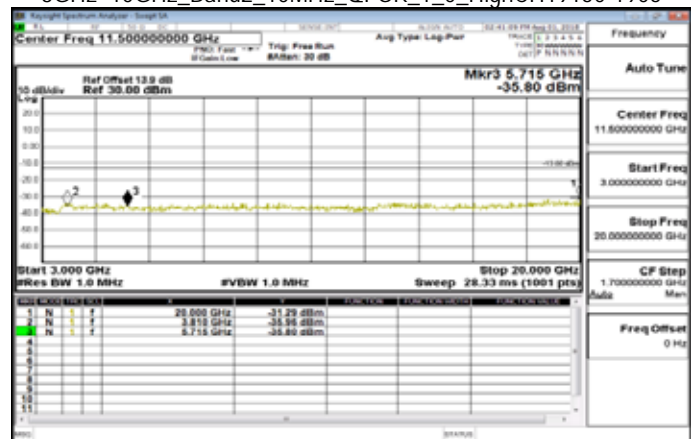
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30MHz-3GHz\_Band2\_10MHz\_QPSK\_1\_0\_MidCH18900-1880



3GHz-10GHz\_Band2\_10MHz\_QPSK\_1\_0\_HighCH19150-1905



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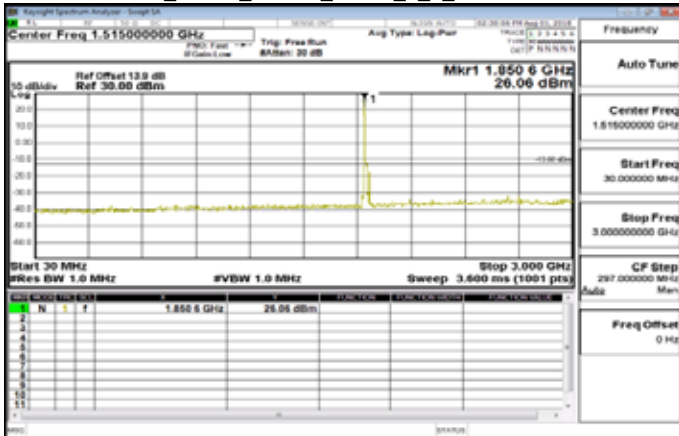
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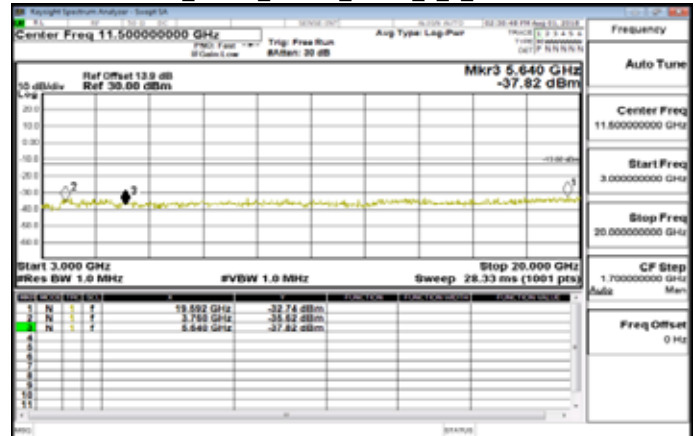
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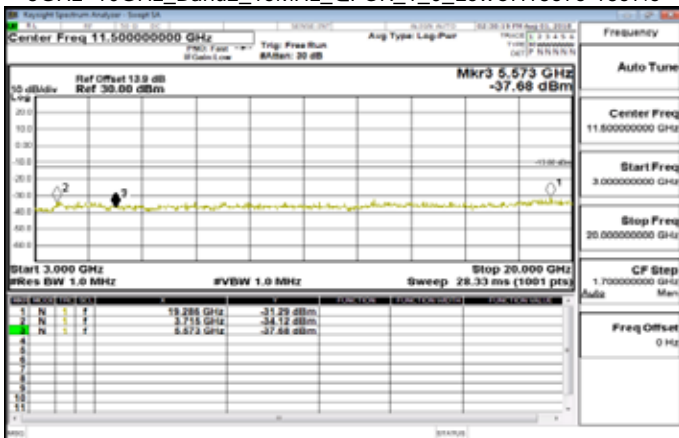
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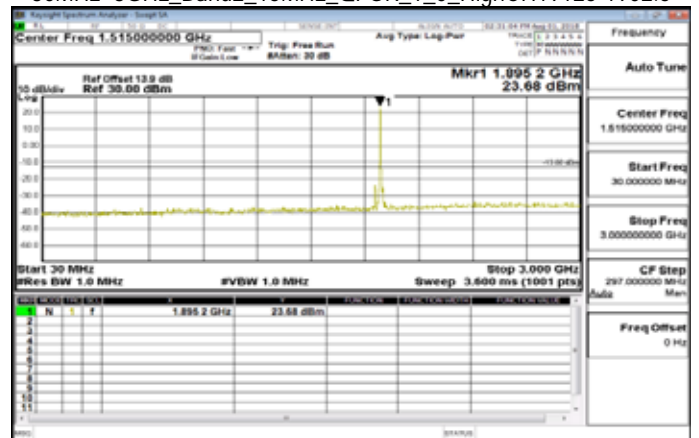
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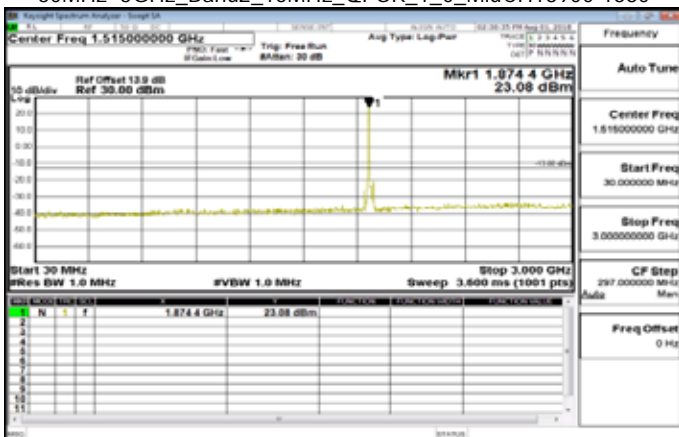
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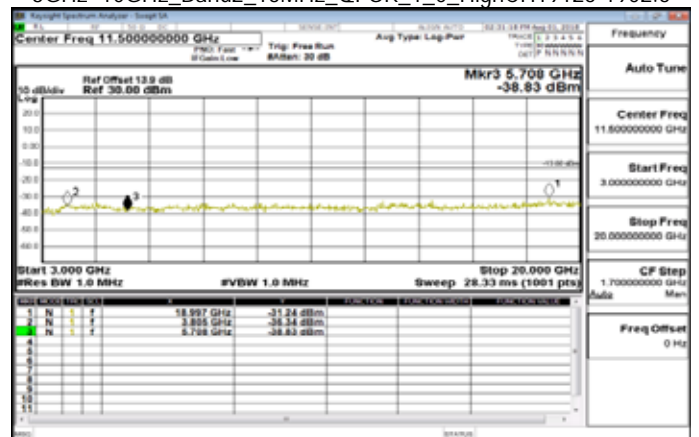
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30MHz~3GHz\_Band2\_15MHz\_QPSK\_1\_0\_MidCH1890-1880



3GHz~10GHz\_Band2\_15MHz\_QPSK\_1\_0\_HighCH19125-1902.5



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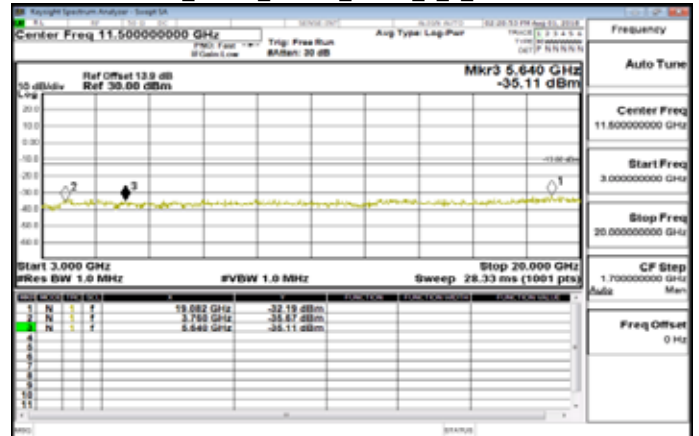
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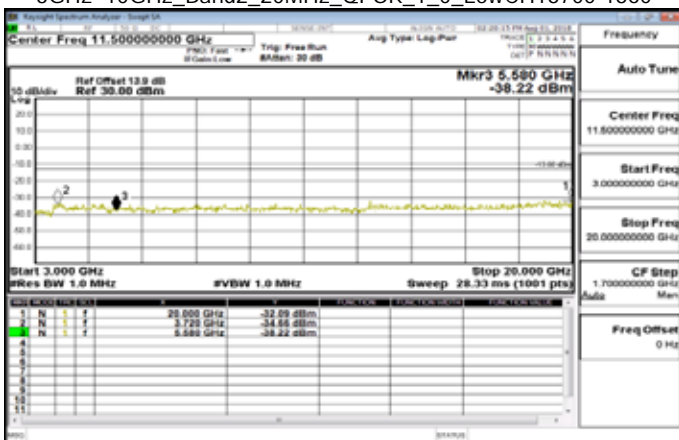
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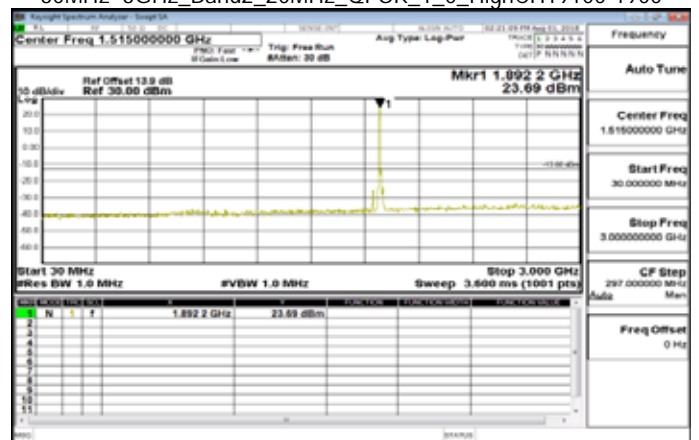
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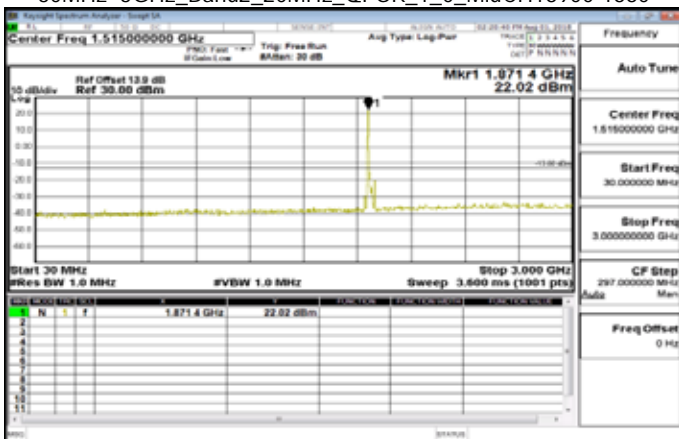
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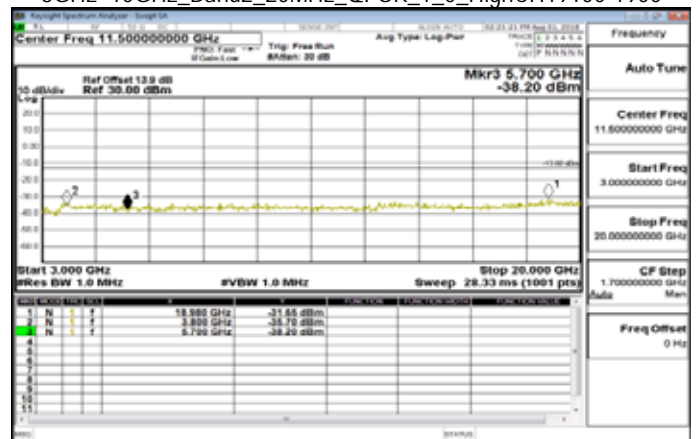
30MHz-3GHz\_Band2\_20MHz\_QPSK\_1\_0\_HighCH19100-1900



30MHz-3GHz\_Band2\_20MHz\_QPSK\_1\_0\_MidCH18900-1880



3GHz-10GHz\_Band2\_20MHz\_QPSK\_1\_0\_HighCH19100-1900



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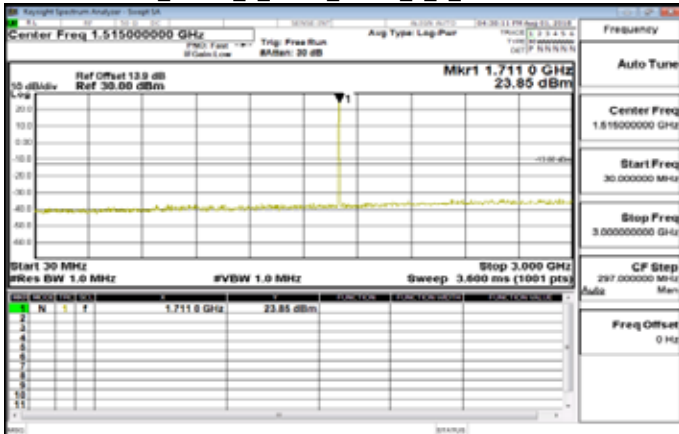
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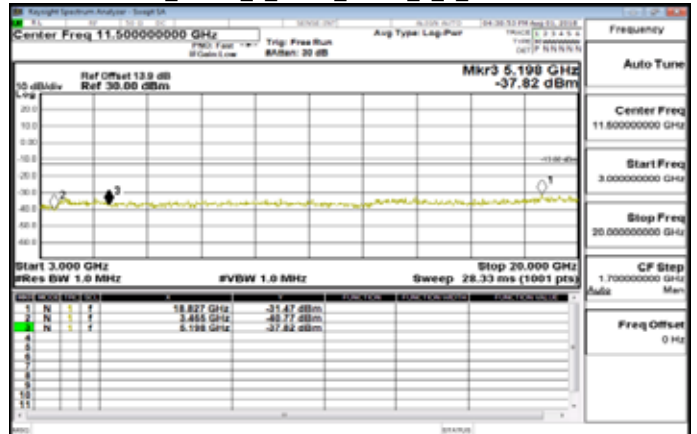
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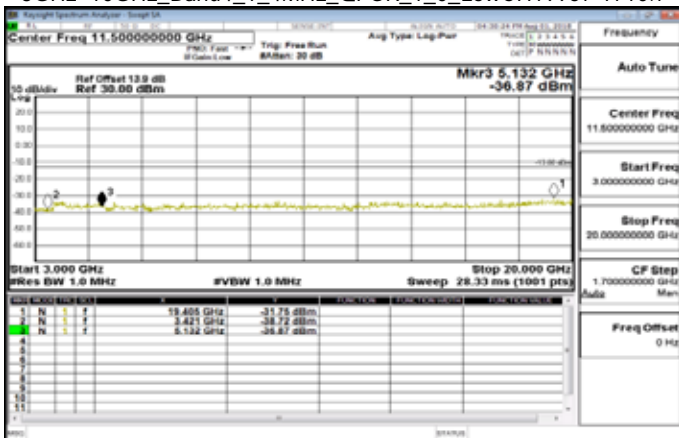
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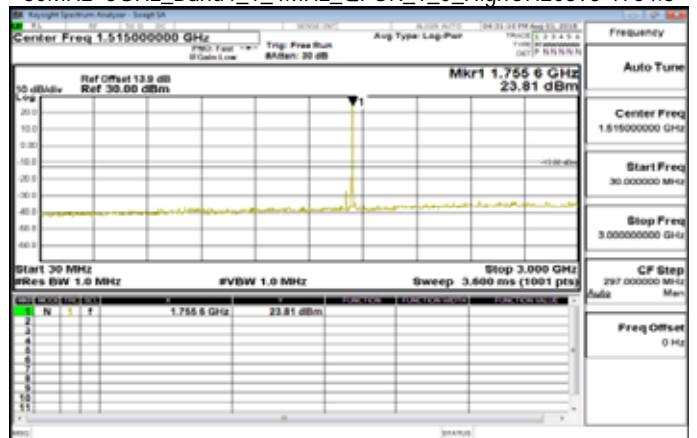
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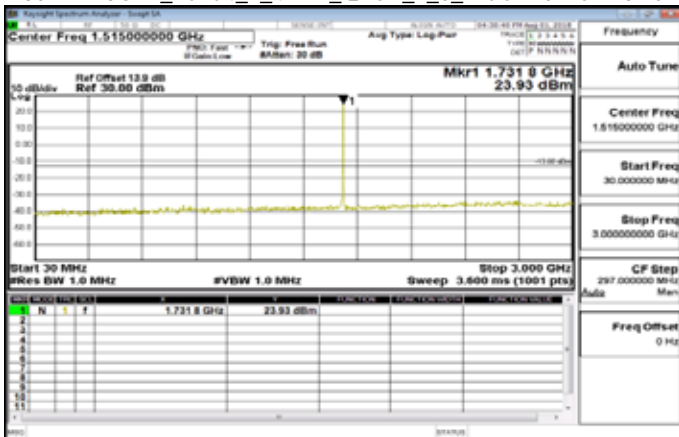
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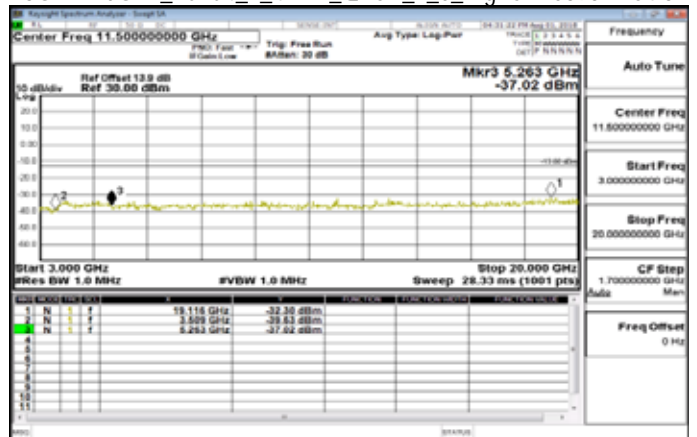
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3GHz-10GHz\_Band4\_1\_4MHz\_QPSK\_1\_0\_HighCH20393-1754.3



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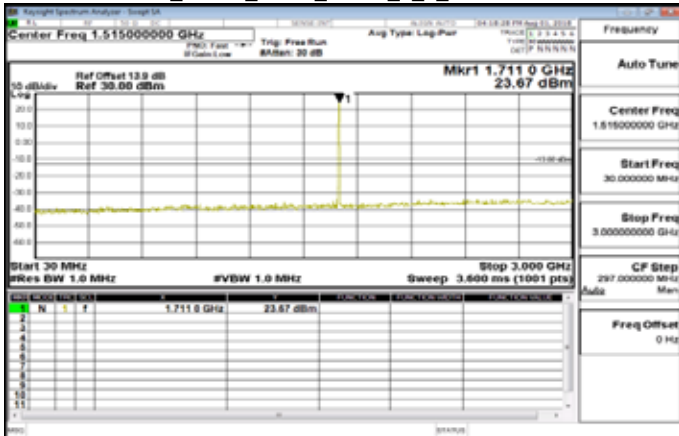
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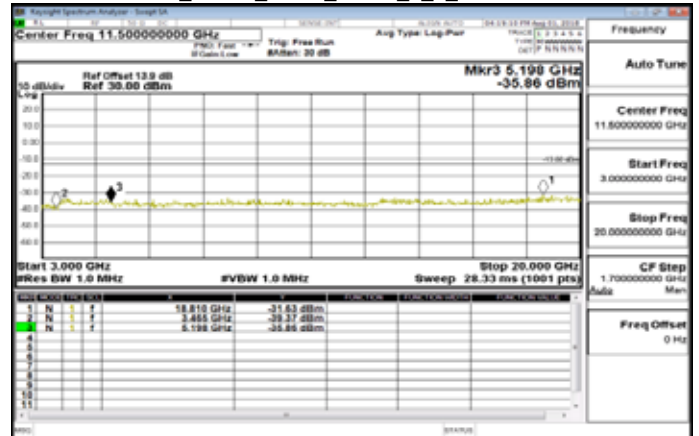
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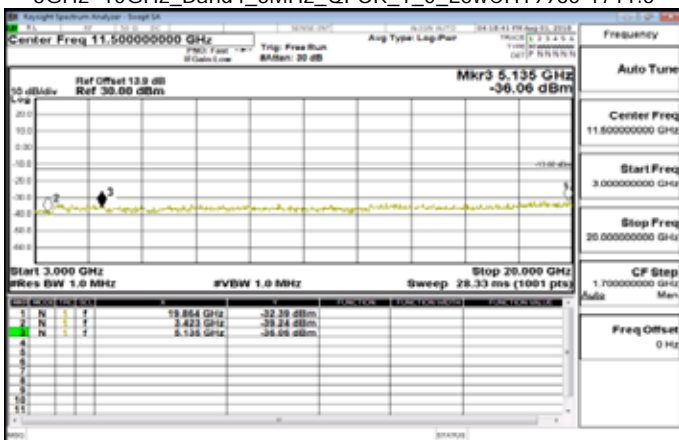
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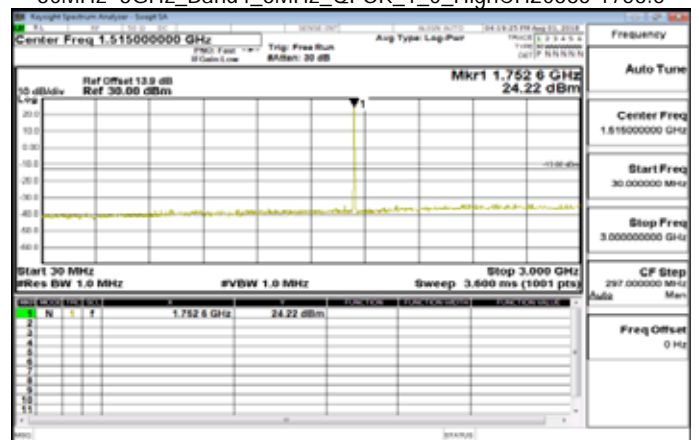
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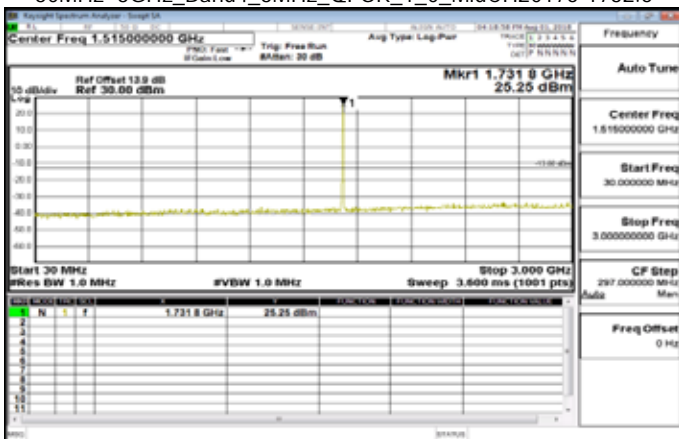
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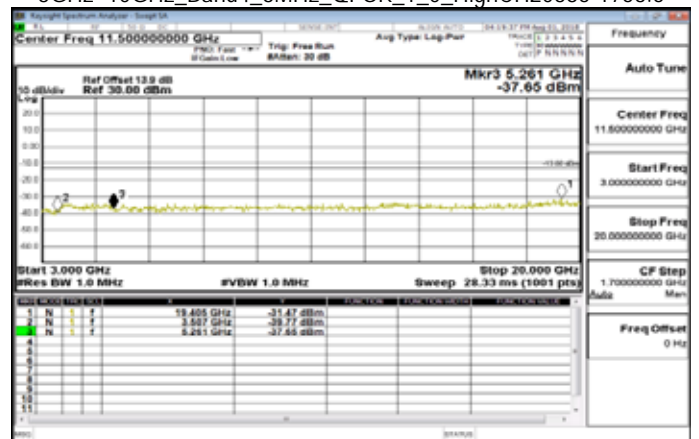
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3GHz~10GHz\_Band4\_3MHz\_QPSK\_1\_0\_HighCH20385-1753.5



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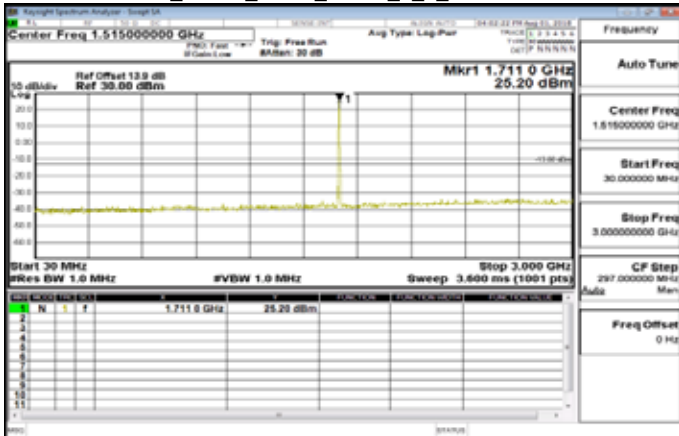
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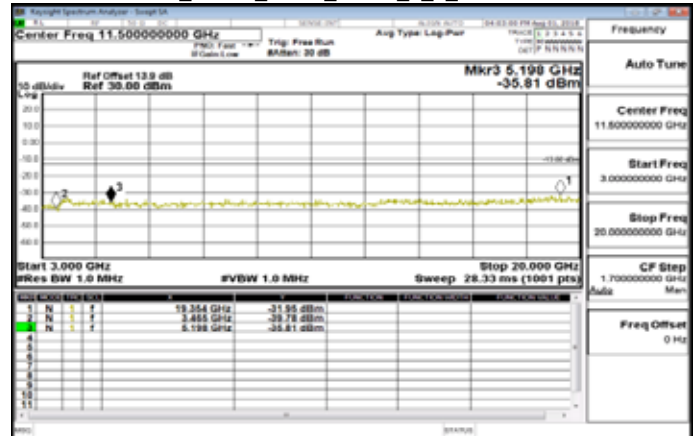
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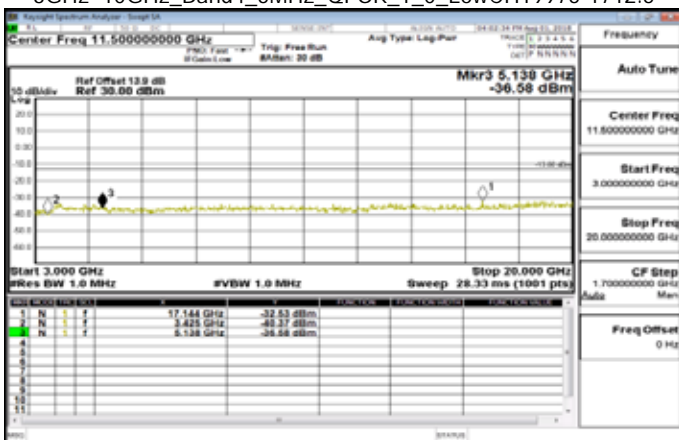
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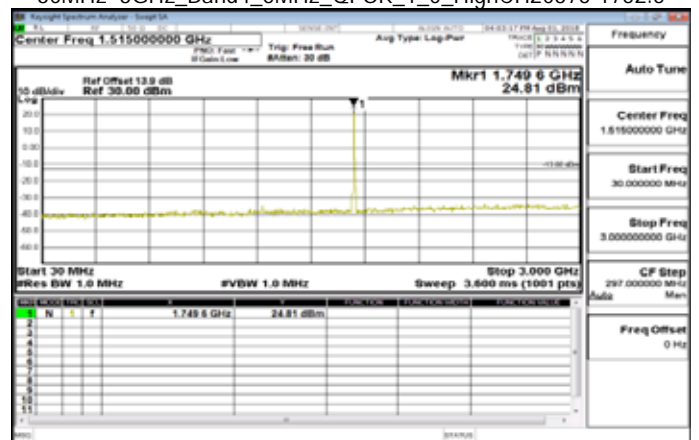
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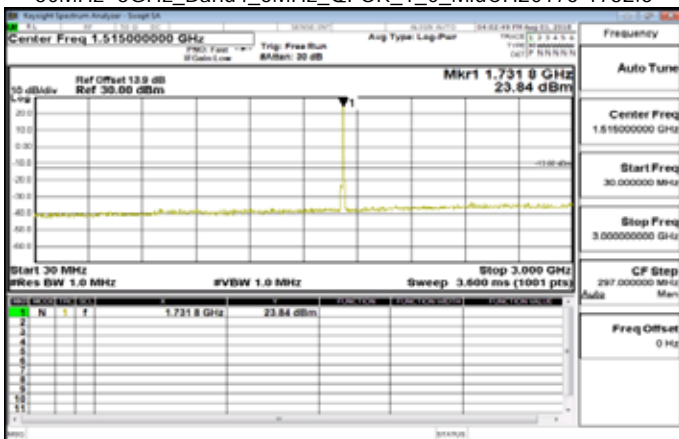
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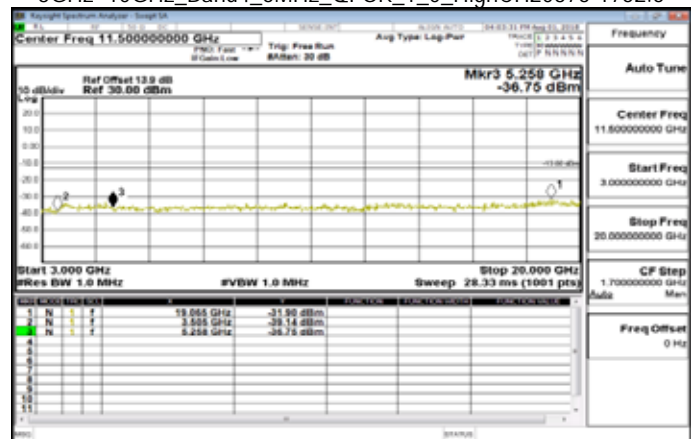
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3GHz~10GHz\_Band4\_5MHz\_QPSK\_1\_0\_HighCH20375-1752.5



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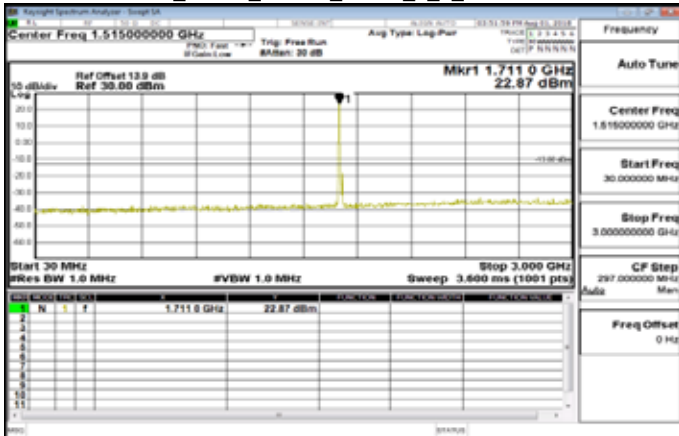
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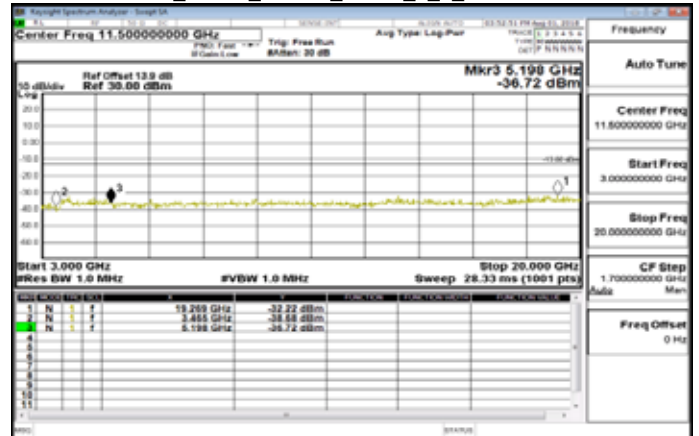
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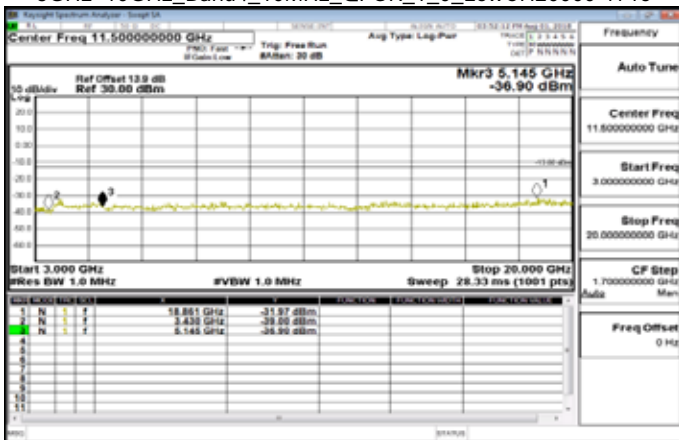
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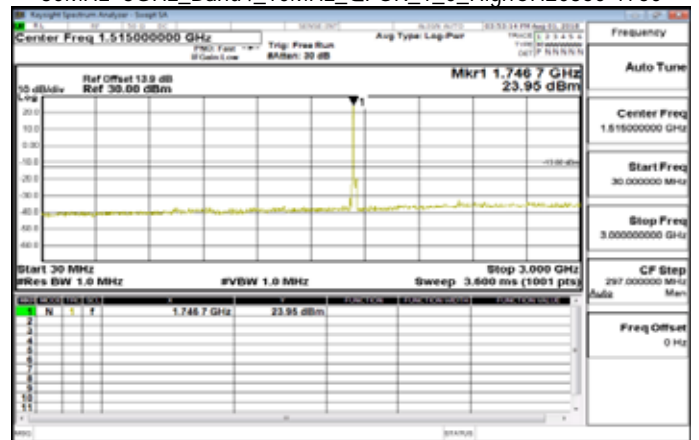
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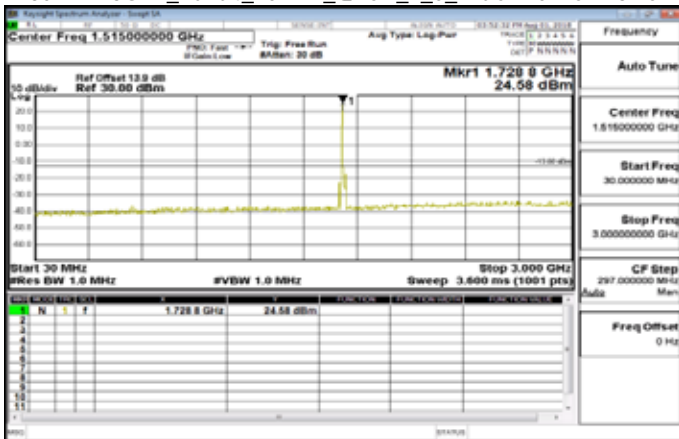
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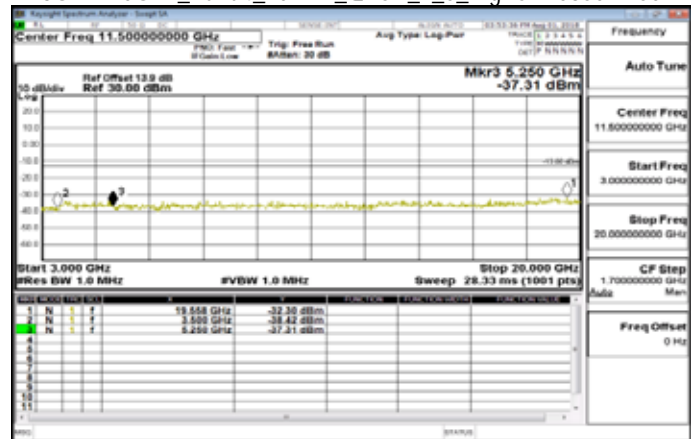
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3GHz-10GHz\_Band4\_10MHz\_QPSK\_1\_0\_HighCH20350-1750



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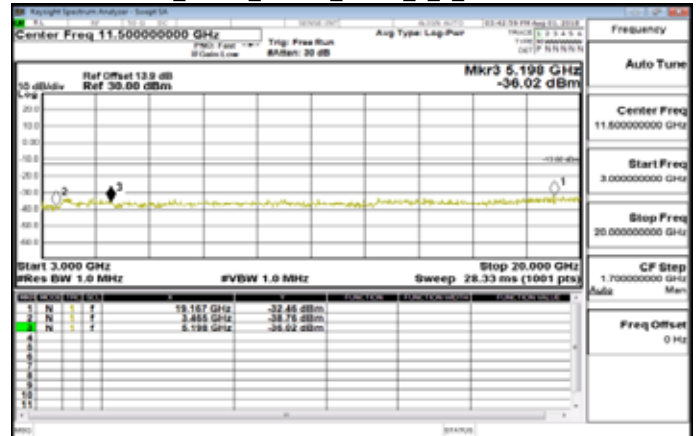
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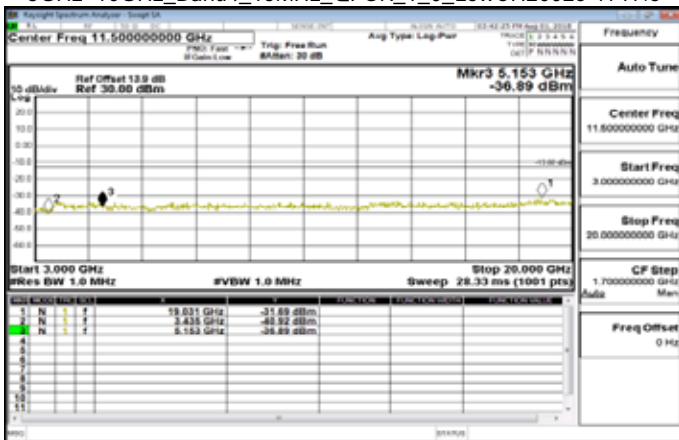
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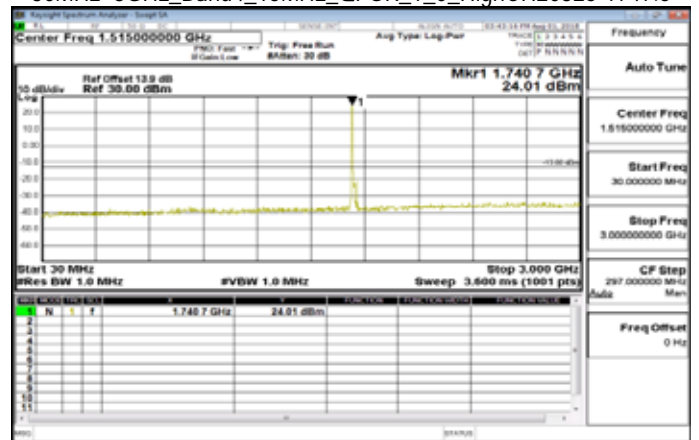
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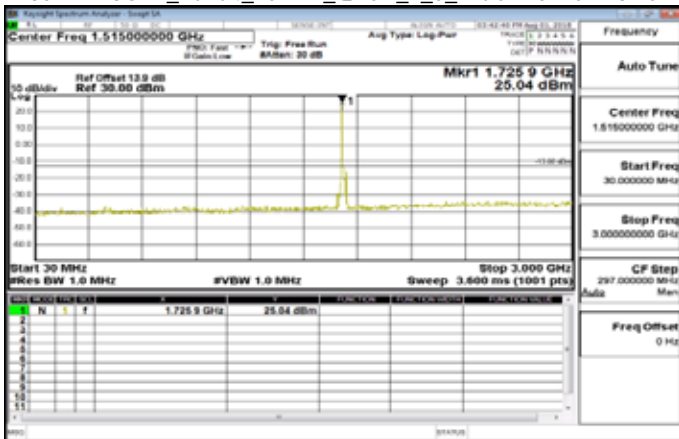
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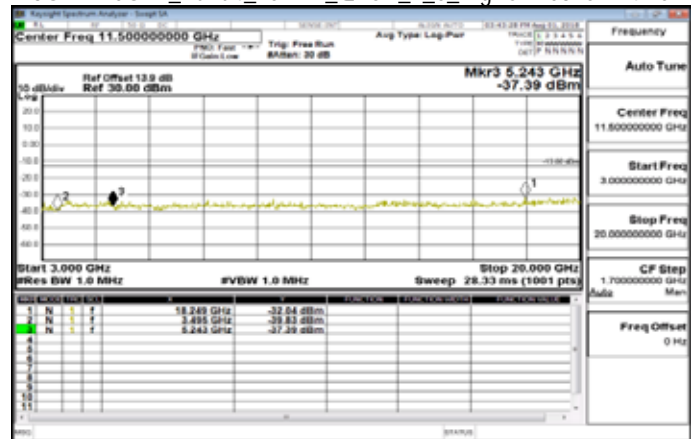
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3GHz~10GHz\_Band4\_15MHz\_QPSK\_1\_0\_HighCH20325-1747.5



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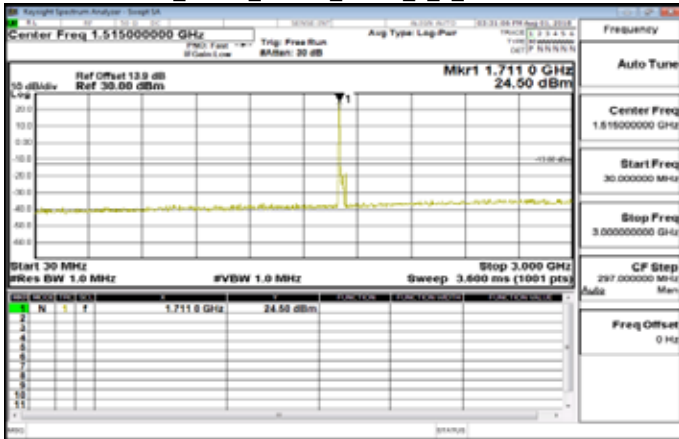
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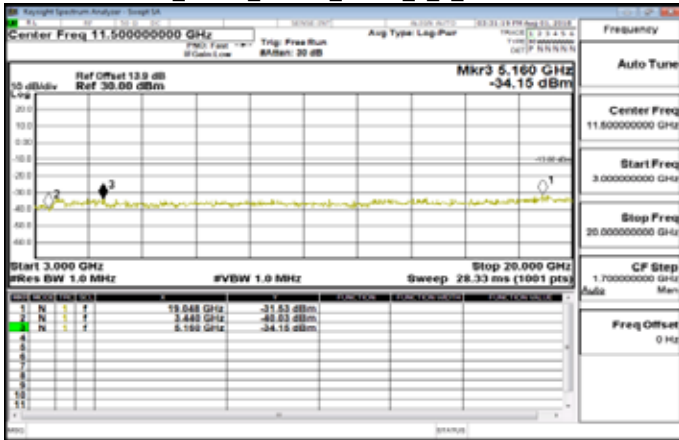
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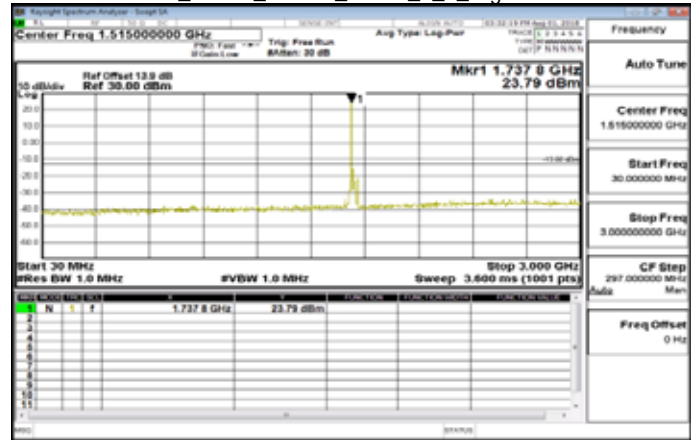
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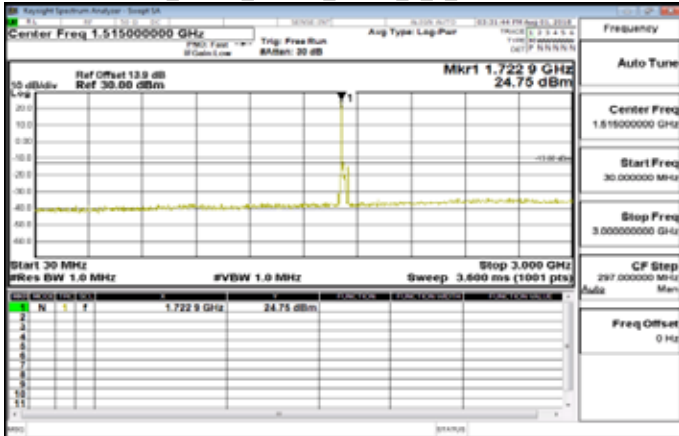
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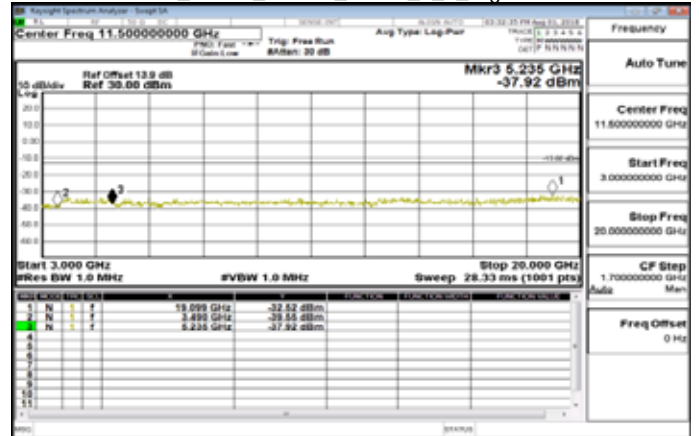
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3GHz-10GHz\_Band4\_20MHz\_QPSK\_1\_0\_HighCH20300-1745



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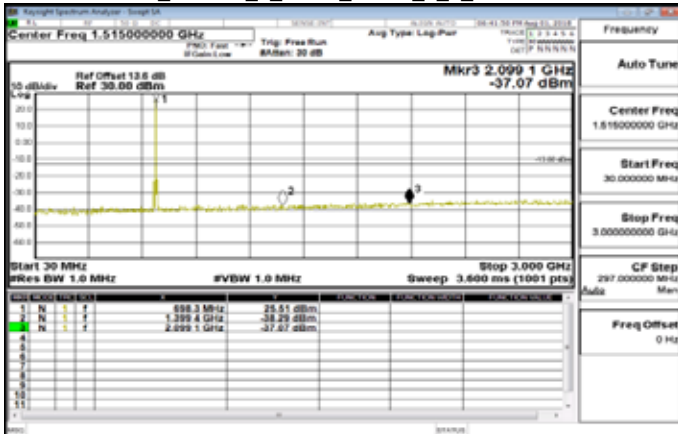
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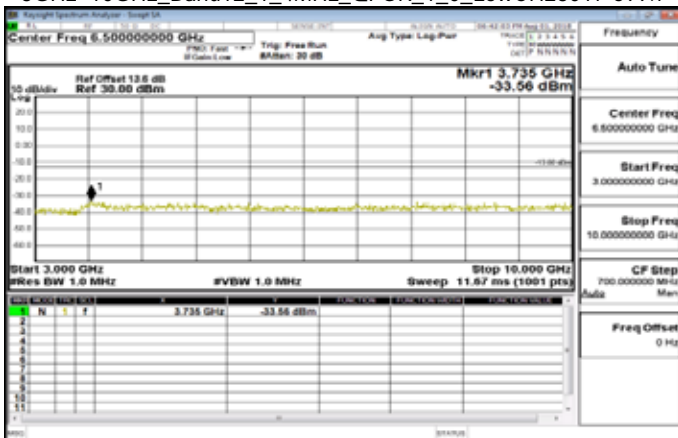
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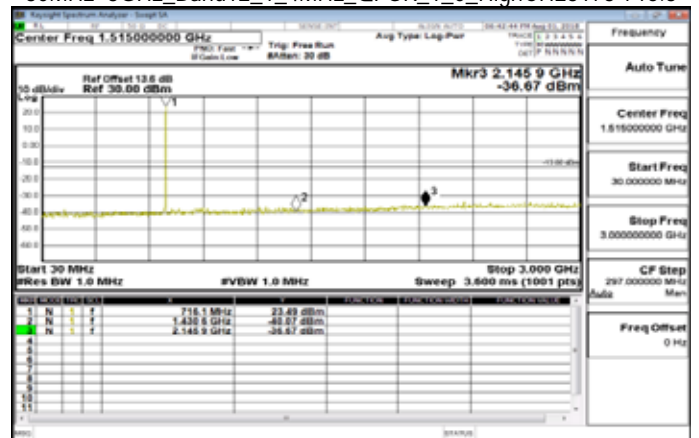
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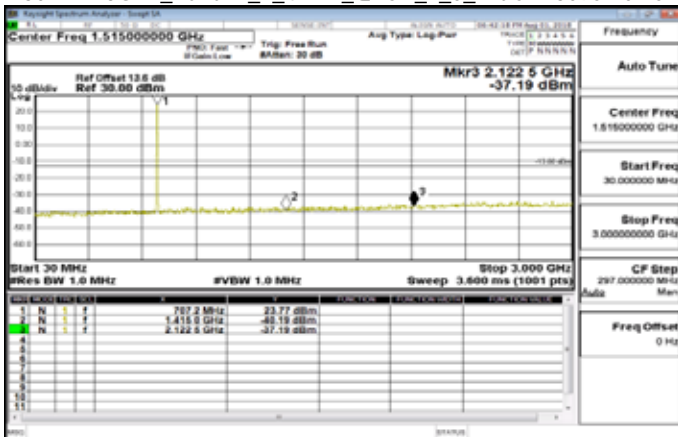
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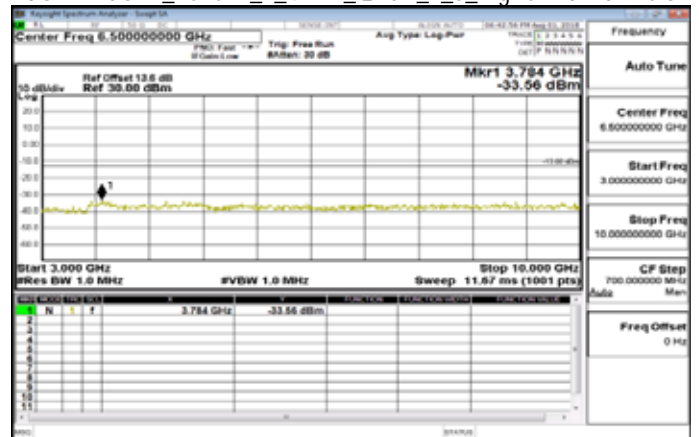
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3GHz-10GHz\_Band12\_1\_4MHz\_QPSK\_1\_0\_HighCH23173-715.3



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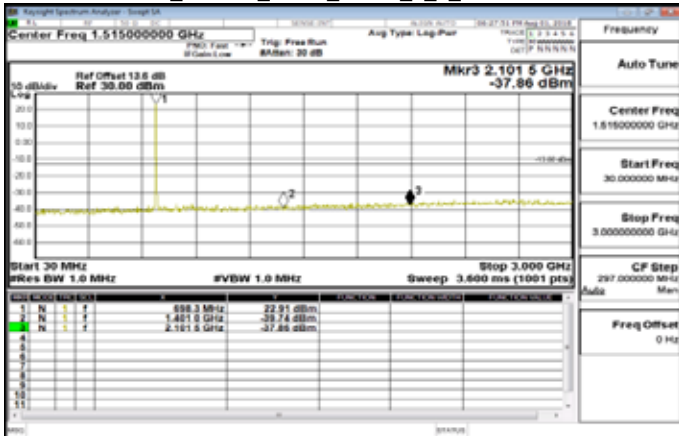
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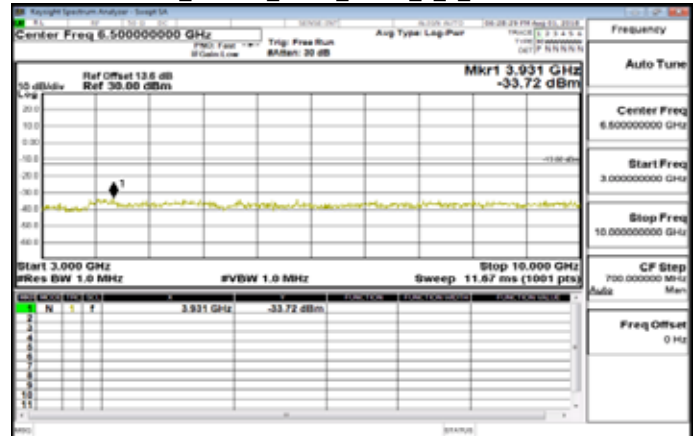
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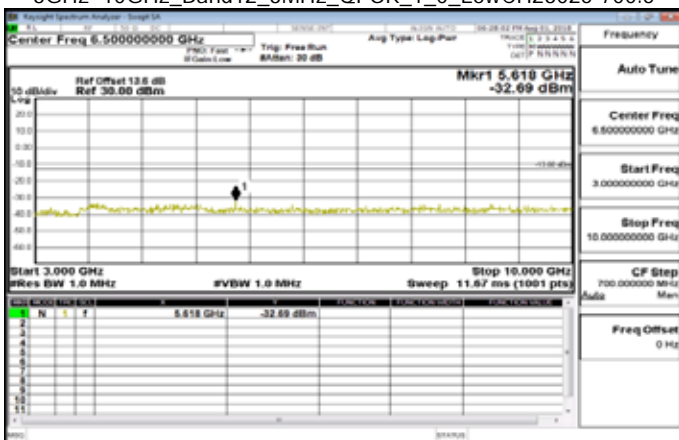
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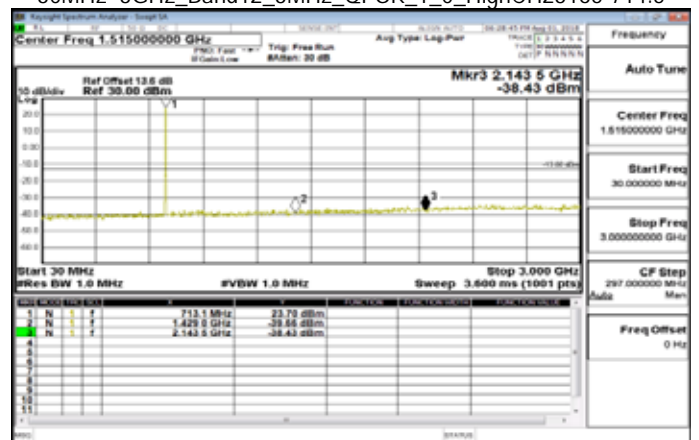
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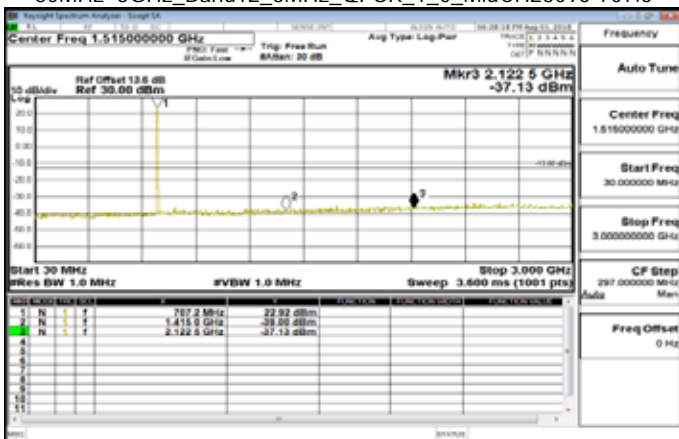
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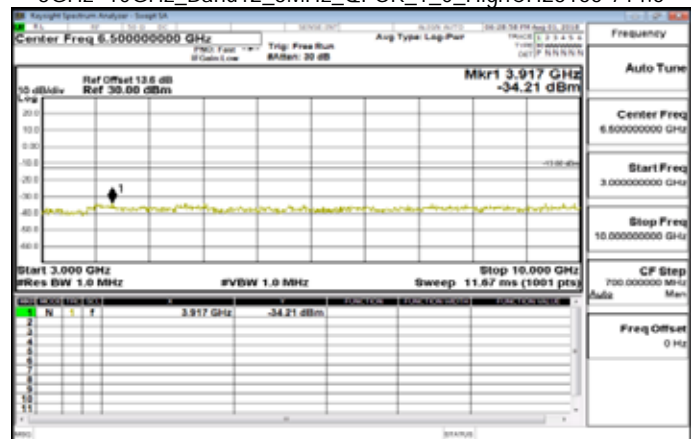
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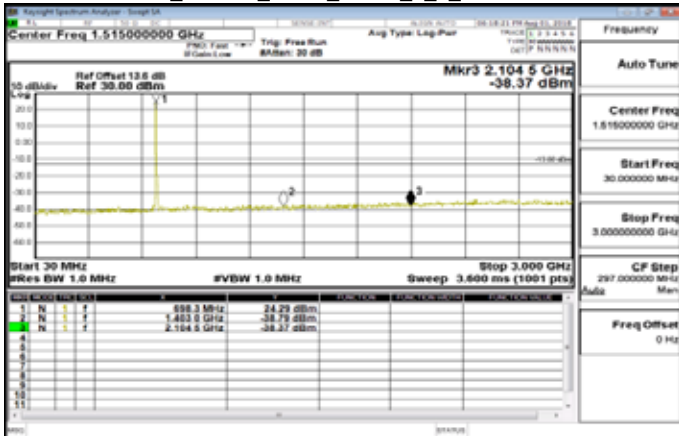
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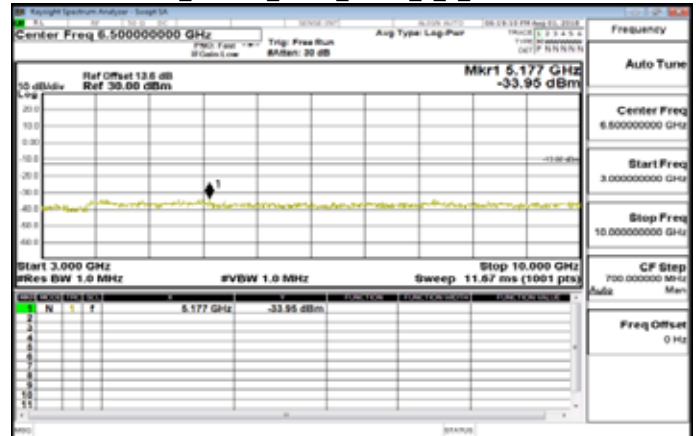
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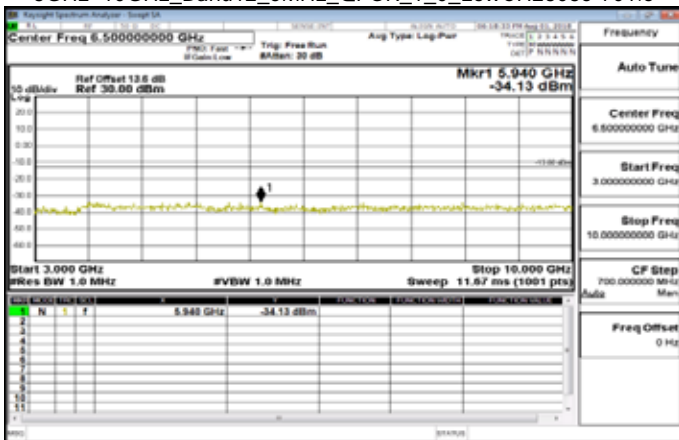
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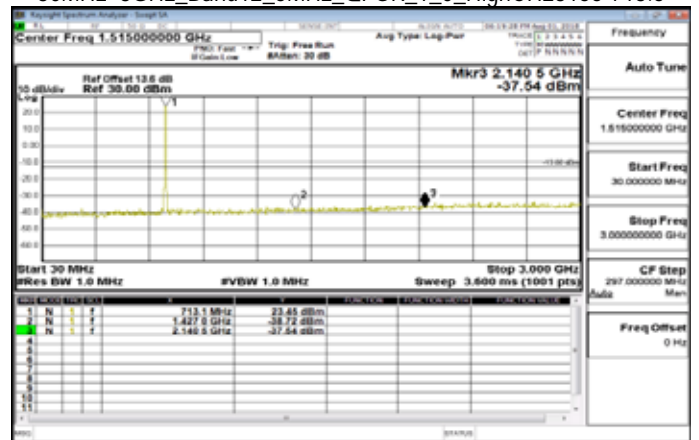
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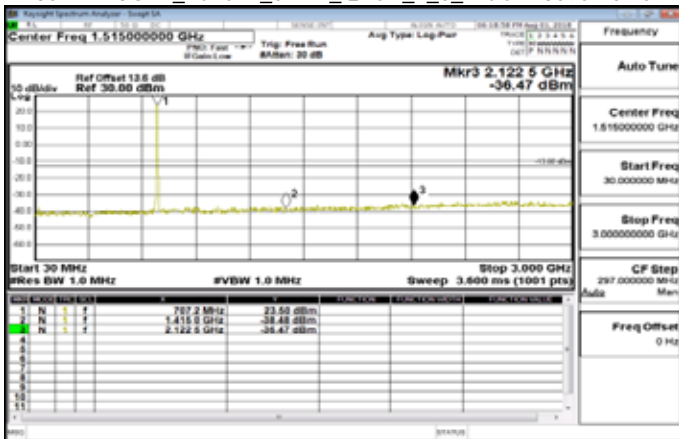
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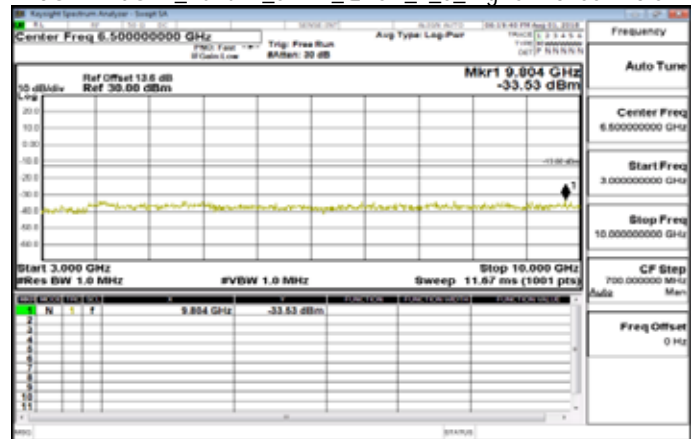
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30MHz~3GHz\_Band12\_5MHz\_QPSK\_1\_0\_MidCH23095-707.5



3GHz~10GHz\_Band12\_5MHz\_QPSK\_1\_0\_HighCH23155-713.5



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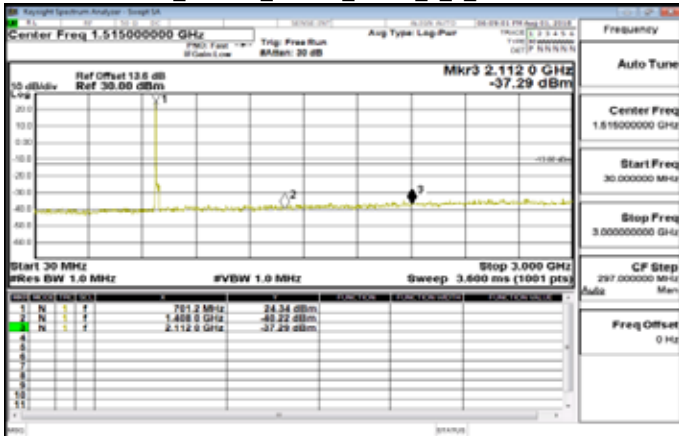
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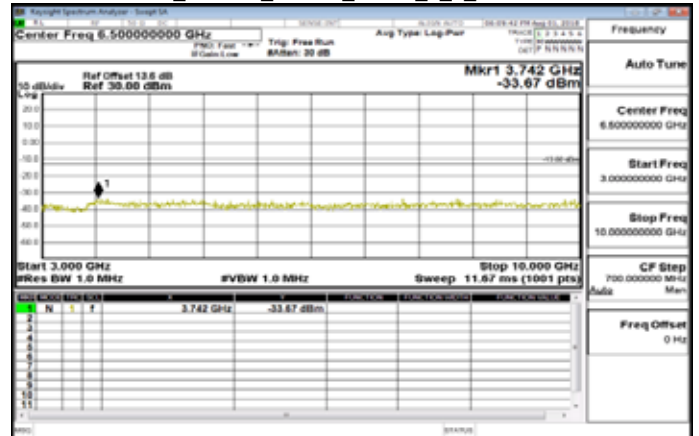
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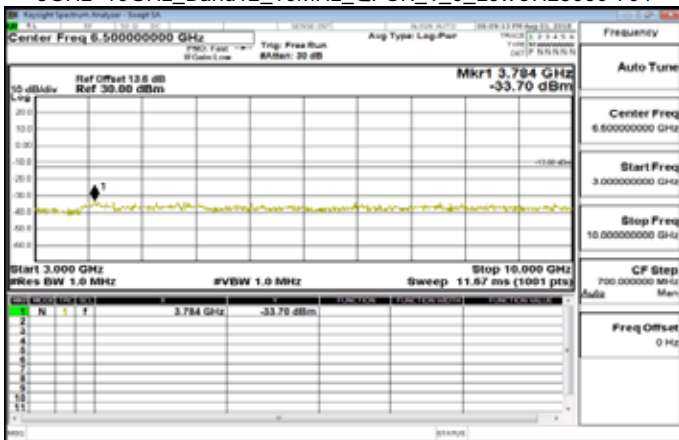
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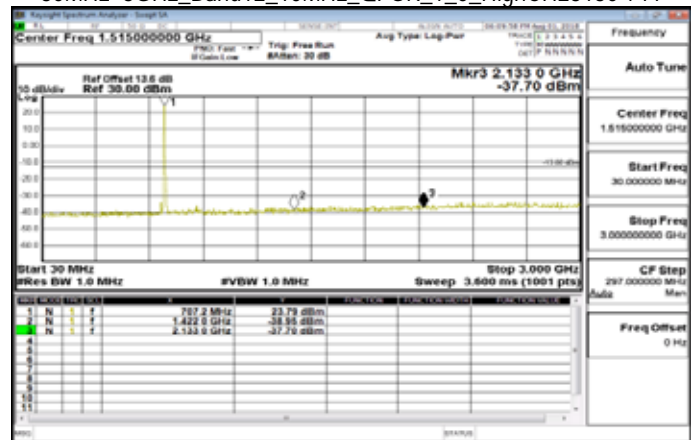
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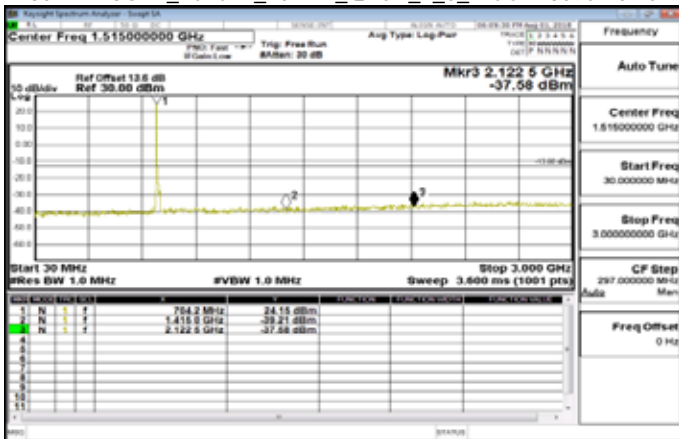
3GHz-10GHz\_Band12\_10MHz\_QPSK\_1\_0\_LowCH23060-704



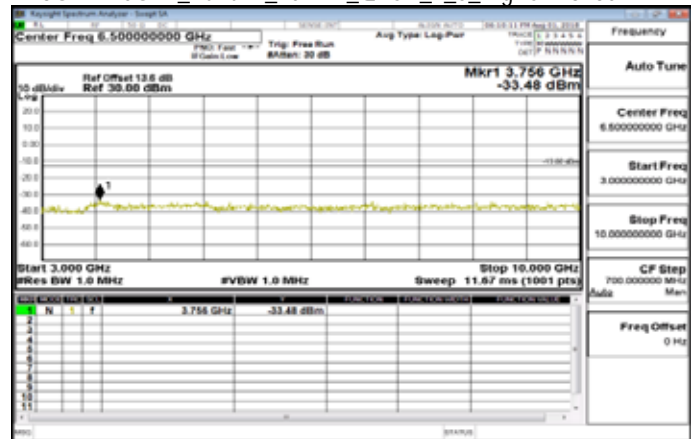
30MHz-3GHz\_Band12\_10MHz\_QPSK\_1\_0\_HighCH23130-711



30MHz-3GHz\_Band12\_10MHz\_QPSK\_1\_0\_MidCH23095-707.5



3GHz-10GHz\_Band12\_10MHz\_QPSK\_1\_0\_HighCH23130-711



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## 9. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### 9.1. Standard Applicable

According to FCC §2.1053, FCC §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).

#### 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.

#### FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

**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.

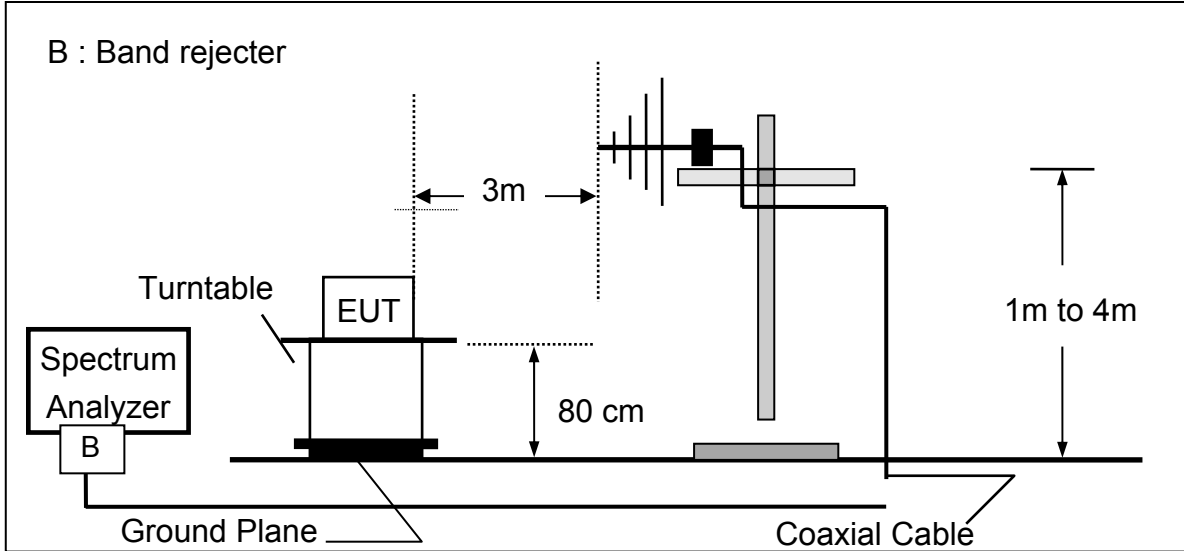
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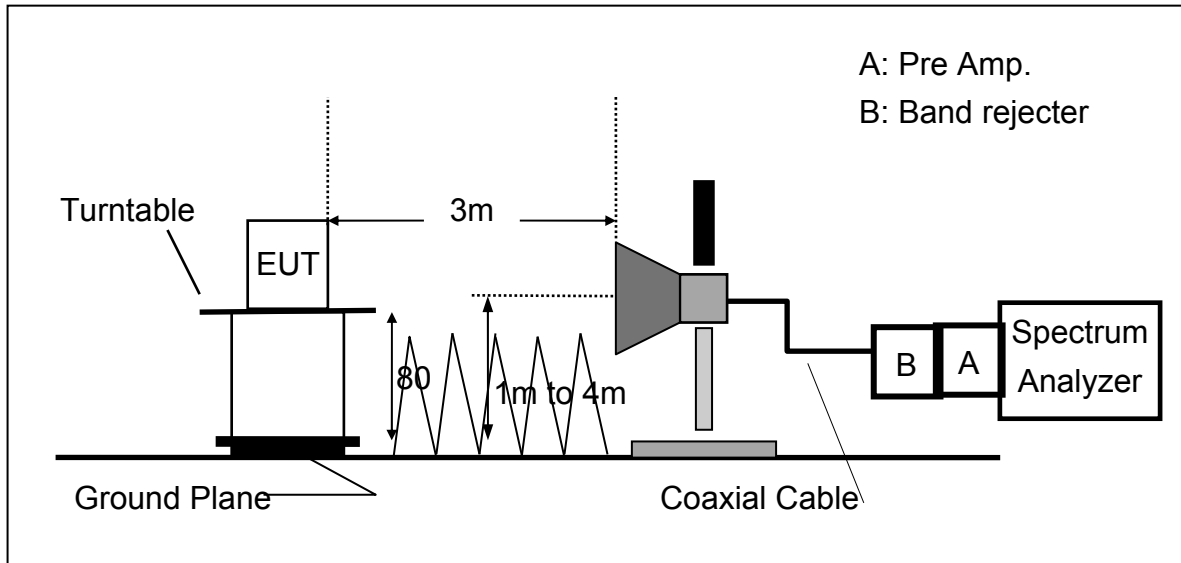
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## 9.2. EUT Setup

### 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.

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

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

### 9.4. Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	TESEQ	CBL 6112D	35243	2017/11/10	2018/11/09
Horn Antenna	Schwarzbeck	BBHA9120D	1187	2018/01/04	2019/01/03
Horn Antenna	SCHWAZBECK	BBHA9170	184	2017/12/12	2018/12/11
EMI Test Receiver	R&S	ESU 40	100363	2018/04/11	2019/04/10
Radio Communication Analyzer	Anritsu	MT8820C	6201107337	2018/06/15	2019/06/14
Pre-Amplifier	EMC Instruments	EMC330	980096	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC0011830	980199	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Attenuator	Marvelous	MVE2213-30	RF28	2017/12/26	2018/12/25
Highpass Filter	Micro Tronics	BRM50701-01	G008	2017/12/26	2018/12/25
Notch Filter	Woken	EWT-54-0037	RF54	2017/12/26	2018/12/25
Notch Filter	Woken	EWT-54-0038	RF55	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	EMC106-SM-SM-9 100	150704	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	2017/12/26	2018/12/25

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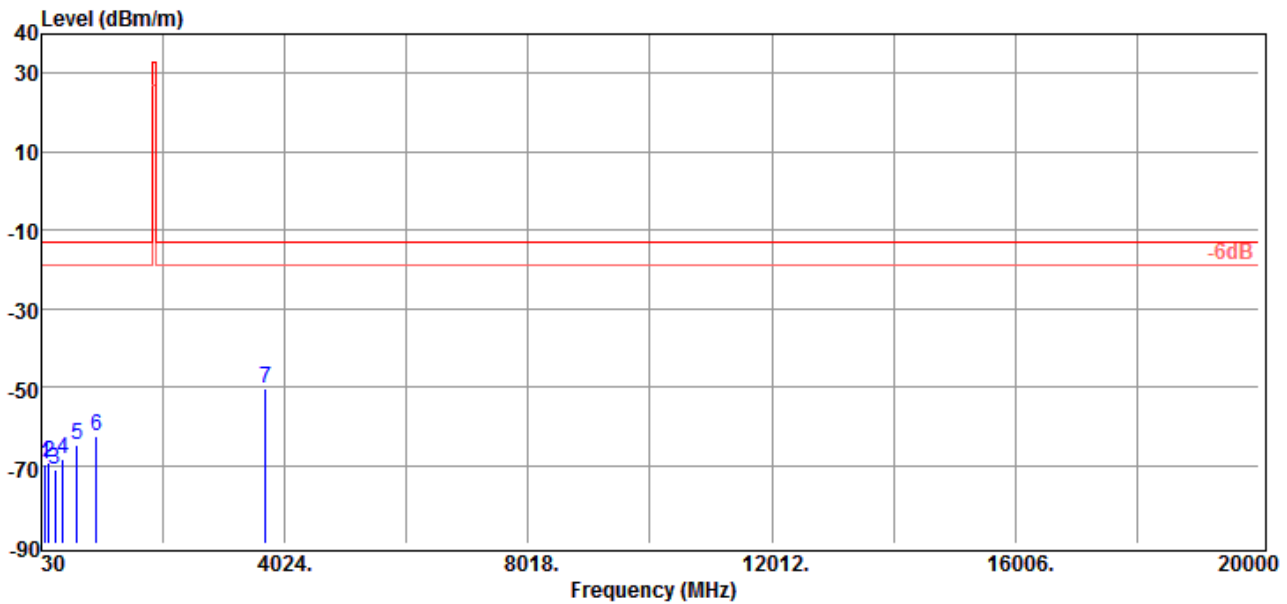
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### 9.5. Measurement Result:

#### Radiated Spurious Emission Measurement Result: WCDMA Band 2 Mode

Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1852.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
91.11	-69.64	-68.71	-0.11	-0.82	-13.00	-56.64
148.34	-69.26	-70.70	2.44	-1.00	-13.00	-56.26
260.86	-71.13	-74.98	5.33	-1.48	-13.00	-58.13
383.08	-68.37	-71.99	5.63	-2.01	-13.00	-55.37
611.03	-64.65	-69.16	6.72	-2.21	-13.00	-51.65
929.19	-62.63	-67.65	7.63	-2.61	-13.00	-49.63
3704.80	-50.41	-56.10	12.43	-6.74	-13.00	-37.41

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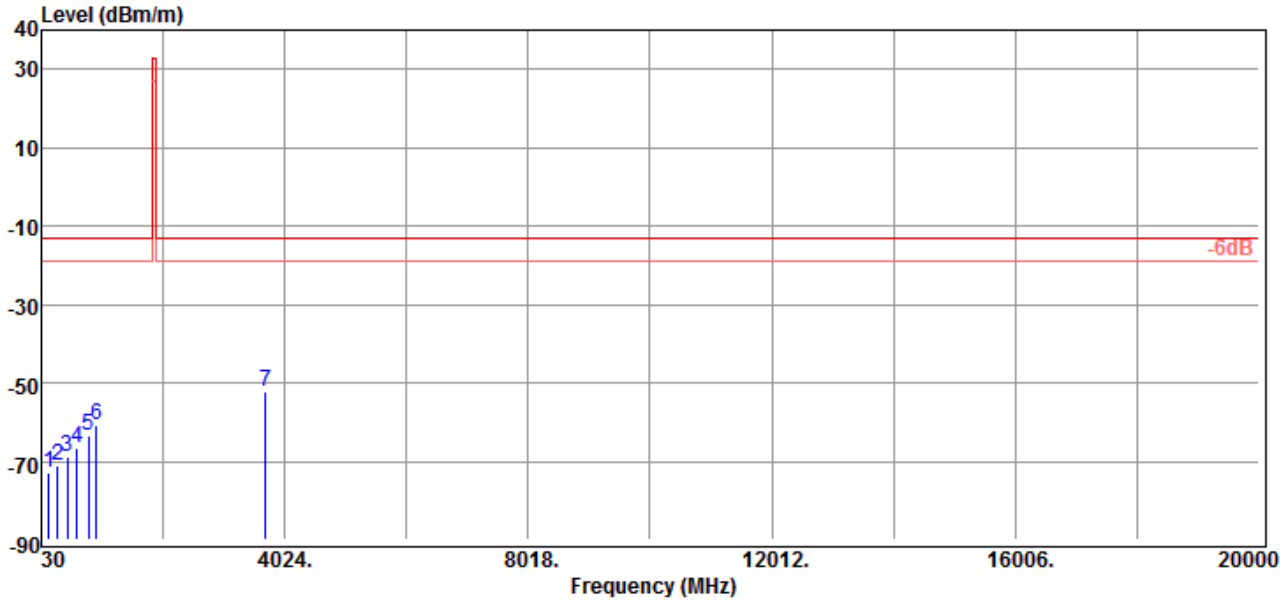
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Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1852.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
150.28	-73.06	-74.61	2.55	-1.00	-13.00	-60.06
292.87	-71.12	-75.29	5.76	-1.59	-13.00	-58.12
456.80	-68.99	-72.95	6.10	-2.14	-13.00	-55.99
614.91	-66.83	-71.31	6.73	-2.25	-13.00	-53.83
798.24	-63.65	-68.78	7.56	-2.43	-13.00	-50.65
933.07	-60.84	-65.85	7.64	-2.63	-13.00	-47.84
3704.80	-52.28	-57.97	12.43	-6.74	-13.00	-39.28

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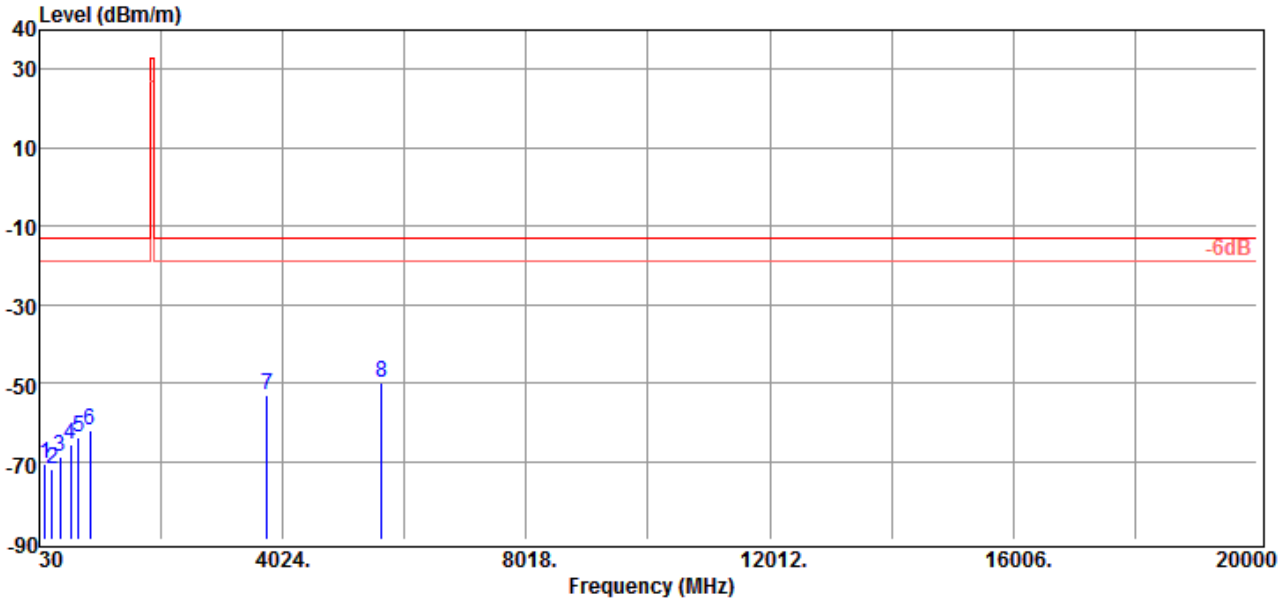
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Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1880 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
118.27	-70.45	-70.07	0.53	-0.91	-13.00	-57.45
244.37	-71.78	-75.60	5.24	-1.42	-13.00	-58.78
375.32	-68.78	-72.44	5.66	-2.00	-13.00	-55.78
540.22	-65.70	-69.53	6.23	-2.40	-13.00	-52.70
679.90	-63.79	-68.54	7.14	-2.39	-13.00	-50.79
868.08	-62.16	-67.30	7.53	-2.39	-13.00	-49.16
3760.00	-52.93	-58.72	12.46	-6.67	-13.00	-39.93
5640.00	-49.76	-56.19	13.03	-6.60	-13.00	-36.76

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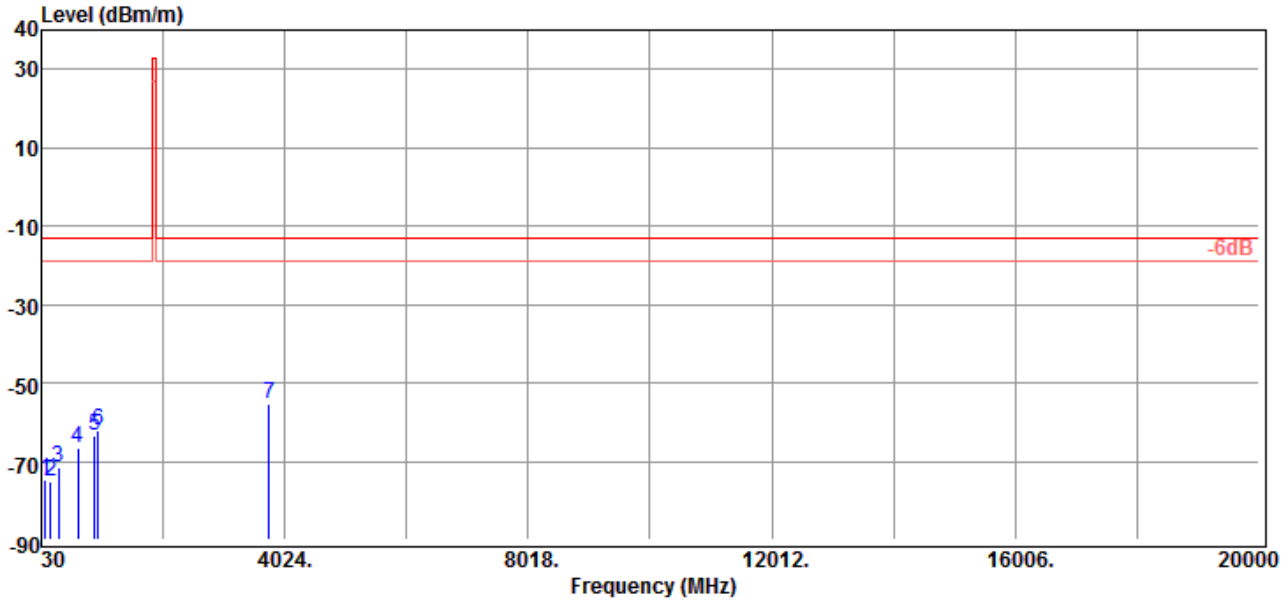
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Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1880 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
91.11	-74.80	-73.87	-0.11	-0.82	-13.00	-61.80
184.23	-75.18	-78.91	4.89	-1.16	-13.00	-62.18
305.48	-71.56	-75.74	5.84	-1.66	-13.00	-58.56
624.61	-66.46	-70.90	6.77	-2.33	-13.00	-53.46
907.85	-63.53	-68.64	7.60	-2.49	-13.00	-50.53
966.05	-62.28	-67.18	7.71	-2.81	-13.00	-49.28
3760.00	-55.46	-61.25	12.46	-6.67	-13.00	-42.46

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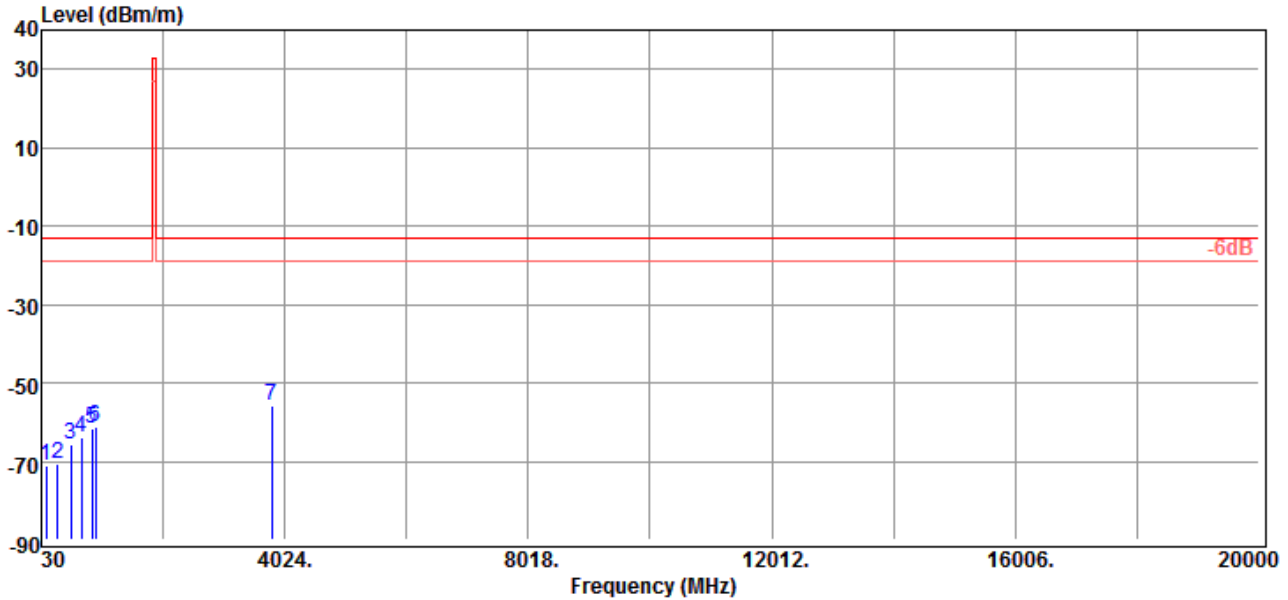
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Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1907.6 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
109.54	-71.13	-70.12	-0.12	-0.89	-13.00	-58.13
292.87	-70.55	-74.72	5.76	-1.59	-13.00	-57.55
514.03	-65.69	-69.42	6.27	-2.54	-13.00	-52.69
689.60	-63.75	-68.63	7.22	-2.34	-13.00	-50.75
856.44	-61.57	-66.71	7.51	-2.37	-13.00	-48.57
918.52	-61.37	-66.44	7.62	-2.55	-13.00	-48.37
3815.20	-55.91	-61.81	12.49	-6.59	-13.00	-42.91

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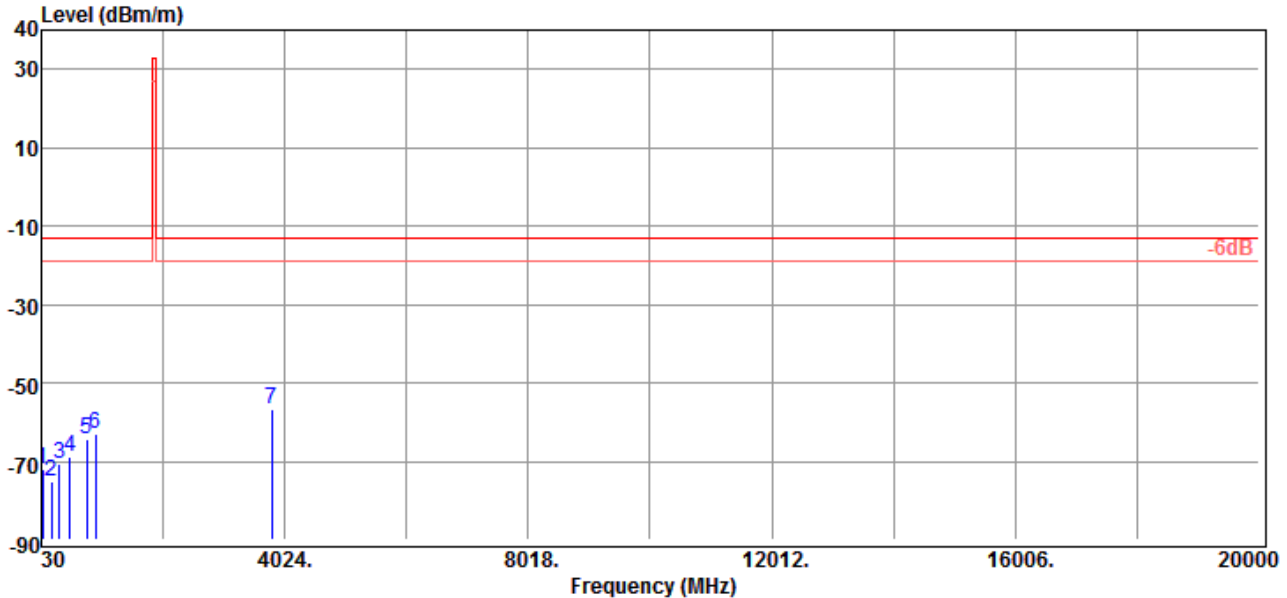
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Operation Mode	:WCDMA B2	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1907.6 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
50.37	-71.88	-66.67	-4.55	-0.66	-13.00	-58.88
202.66	-75.16	-79.70	5.79	-1.25	-13.00	-62.16
322.94	-70.55	-74.60	5.82	-1.77	-13.00	-57.55
495.60	-68.79	-72.49	6.27	-2.57	-13.00	-55.79
779.81	-64.44	-69.67	7.51	-2.28	-13.00	-51.44
918.52	-62.87	-67.94	7.62	-2.55	-13.00	-49.87
3815.20	-56.50	-62.40	12.49	-6.59	-13.00	-43.50

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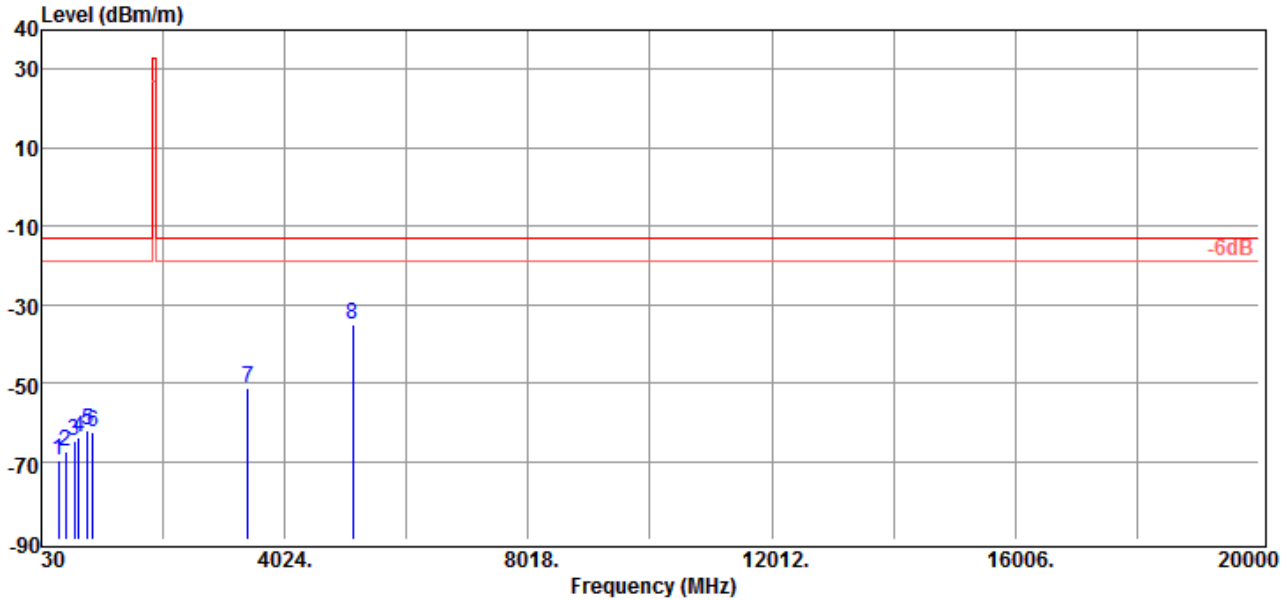
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### Radiated Spurious Emission Measurement Result: WCDMA Band 4 Mode

Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1712.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
315.18	-69.79	-73.90	5.83	-1.72	-13.00	-56.79
423.82	-67.65	-71.41	5.81	-2.05	-13.00	-54.65
567.38	-64.99	-69.10	6.38	-2.27	-13.00	-51.99
649.83	-64.01	-68.34	6.87	-2.54	-13.00	-51.01
782.72	-61.92	-67.13	7.52	-2.31	-13.00	-48.92
880.69	-62.43	-67.58	7.56	-2.41	-13.00	-49.43
3424.80	-51.11	-56.63	12.16	-6.64	-13.00	-38.11
5137.20	-35.26	-41.21	12.64	-6.69	-13.00	-22.26

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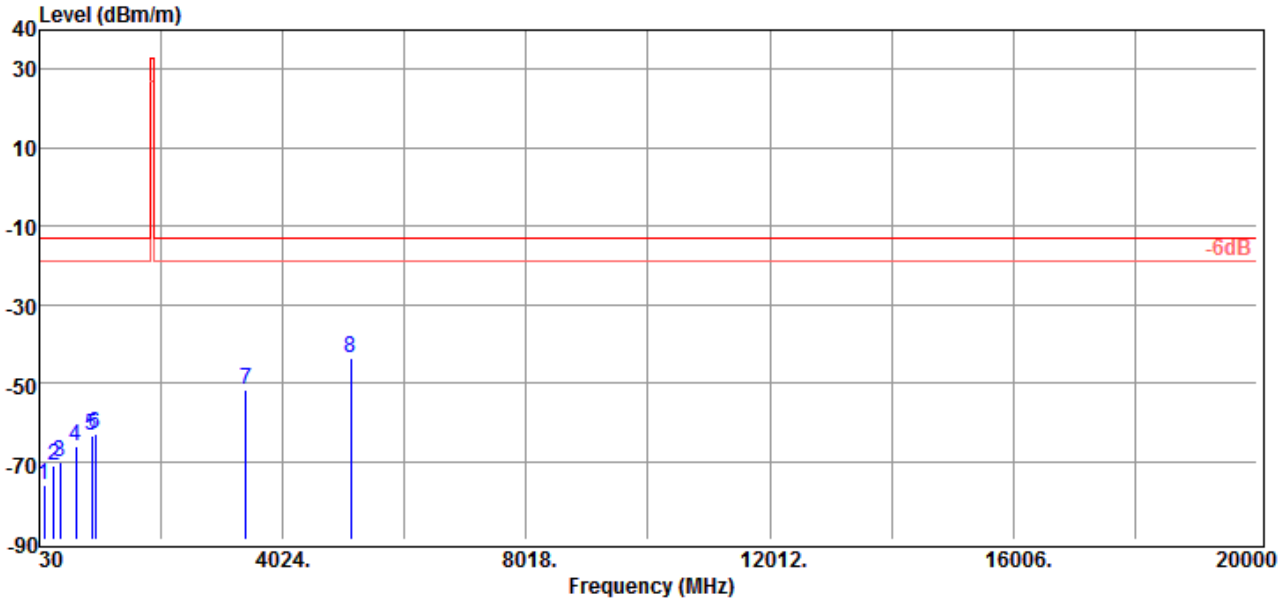
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Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1712.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
109.54	-75.97	-74.96	-0.12	-0.89	-13.00	-62.97
264.74	-71.25	-75.14	5.38	-1.49	-13.00	-58.25
374.35	-70.41	-74.09	5.67	-1.99	-13.00	-57.41
632.37	-66.28	-70.69	6.80	-2.39	-13.00	-53.28
886.51	-63.37	-68.52	7.57	-2.42	-13.00	-50.37
951.50	-62.87	-67.79	7.66	-2.74	-13.00	-49.87
3424.80	-51.57	-57.09	12.16	-6.64	-13.00	-38.57
5137.20	-43.51	-49.46	12.64	-6.69	-13.00	-30.51

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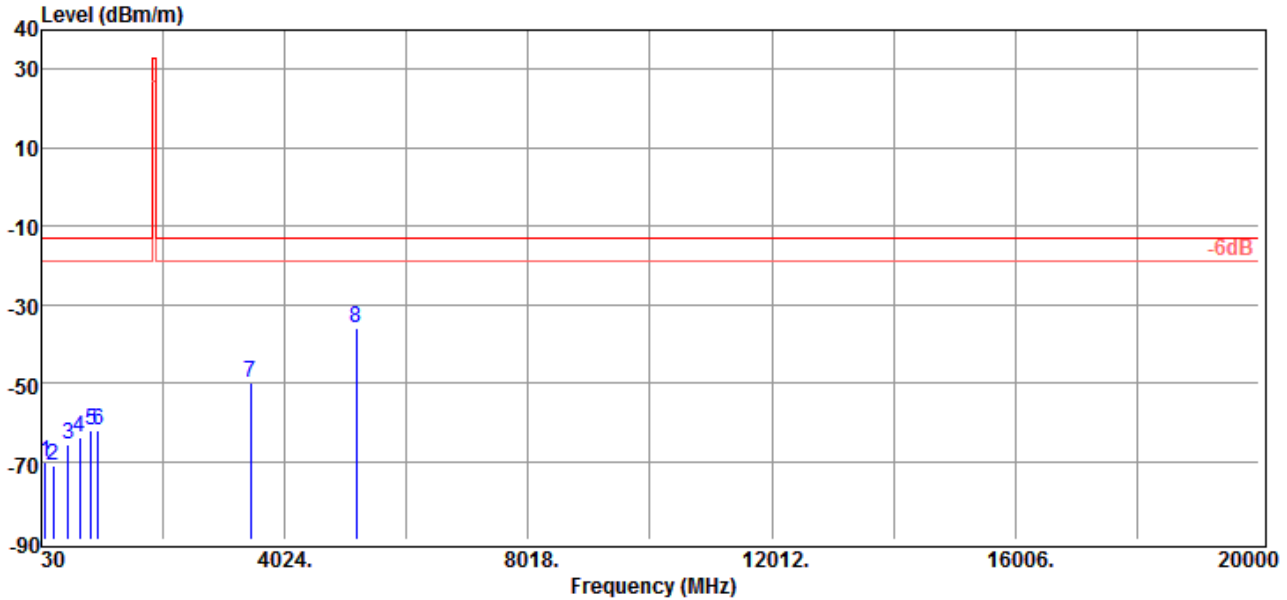
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Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1732.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
96.93	-70.40	-68.92	-0.63	-0.85	-13.00	-57.40
226.91	-71.17	-75.28	5.46	-1.35	-13.00	-58.17
464.56	-65.63	-69.55	6.14	-2.22	-13.00	-52.63
665.35	-64.06	-68.61	7.01	-2.46	-13.00	-51.06
853.53	-62.05	-67.19	7.51	-2.37	-13.00	-49.05
955.38	-61.93	-66.85	7.68	-2.76	-13.00	-48.93
3464.80	-49.92	-55.31	12.23	-6.84	-13.00	-36.92
5197.20	-36.07	-42.14	12.70	-6.63	-13.00	-23.07

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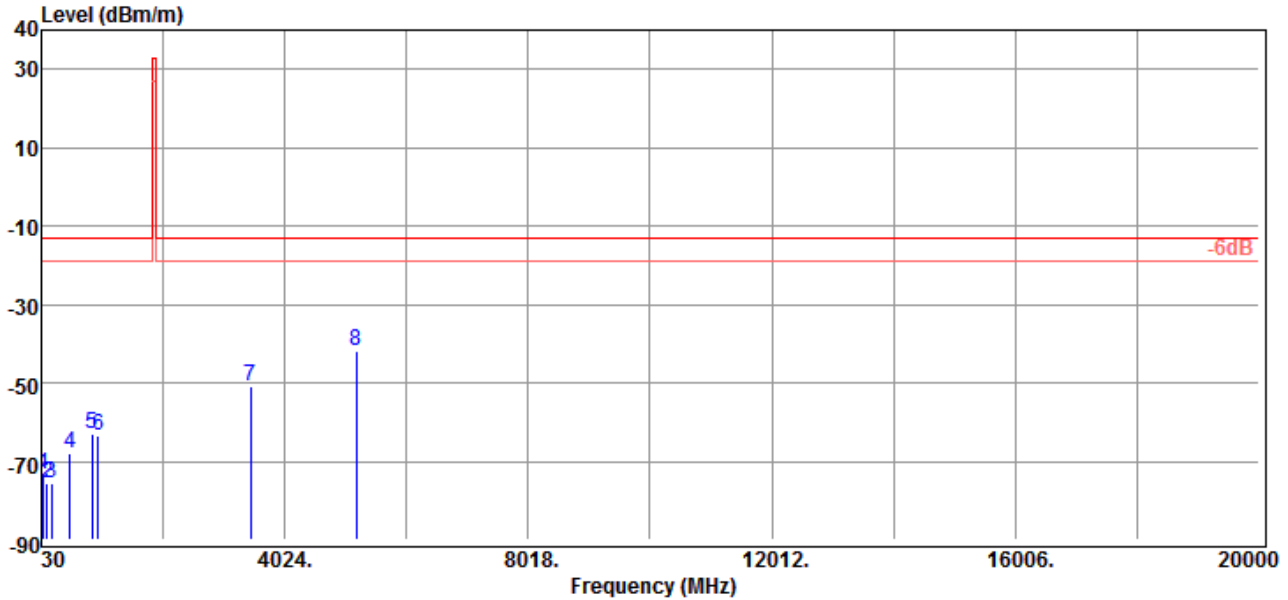
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Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1732.4 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
65.89	-73.44	-72.72	-0.02	-0.70	-13.00	-60.44
118.27	-75.50	-75.12	0.53	-0.91	-13.00	-62.50
200.72	-75.44	-80.02	5.82	-1.24	-13.00	-62.44
496.57	-68.00	-71.70	6.28	-2.58	-13.00	-55.00
859.35	-62.80	-67.95	7.52	-2.37	-13.00	-49.80
965.08	-63.46	-68.36	7.71	-2.81	-13.00	-50.46
3464.80	-50.76	-56.15	12.23	-6.84	-13.00	-37.76
5197.20	-41.66	-47.73	12.70	-6.63	-13.00	-28.66

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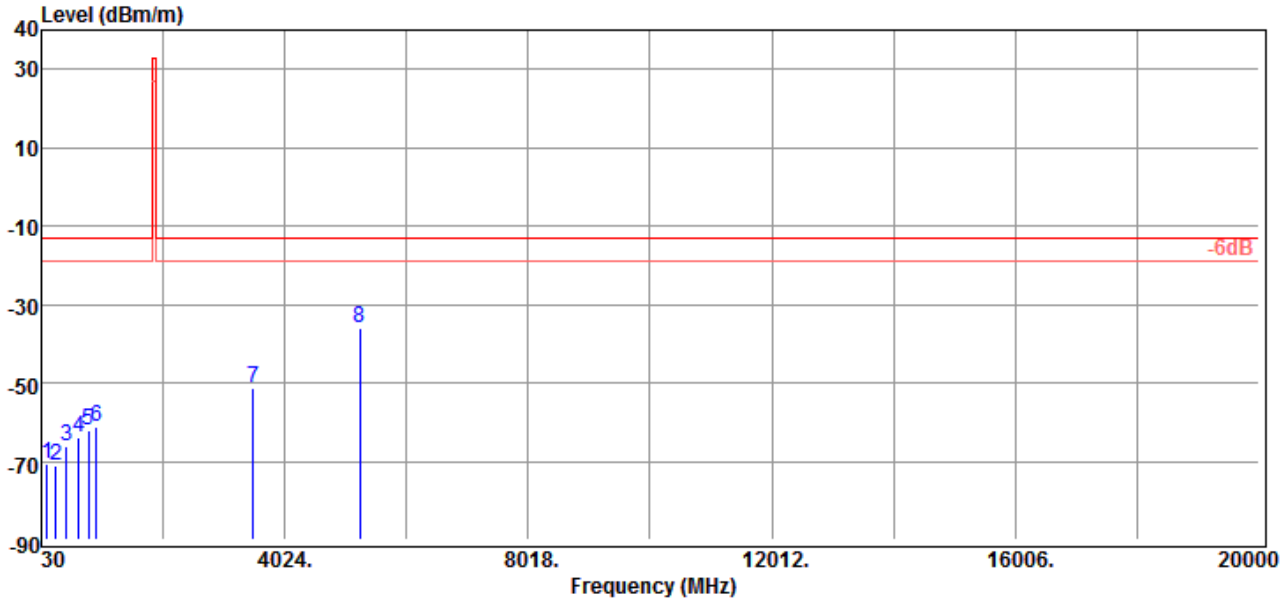
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Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1752.6 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
117.30	-70.54	-70.09	0.46	-0.91	-13.00	-57.54
265.71	-71.26	-75.16	5.40	-1.50	-13.00	-58.26
447.10	-66.36	-70.34	6.04	-2.06	-13.00	-53.36
643.04	-64.12	-68.48	6.84	-2.48	-13.00	-51.12
799.21	-62.08	-67.22	7.57	-2.43	-13.00	-49.08
938.89	-61.22	-66.19	7.64	-2.67	-13.00	-48.22
3505.20	-51.24	-56.54	12.30	-7.00	-13.00	-38.24
5257.80	-36.00	-42.19	12.76	-6.57	-13.00	-23.00

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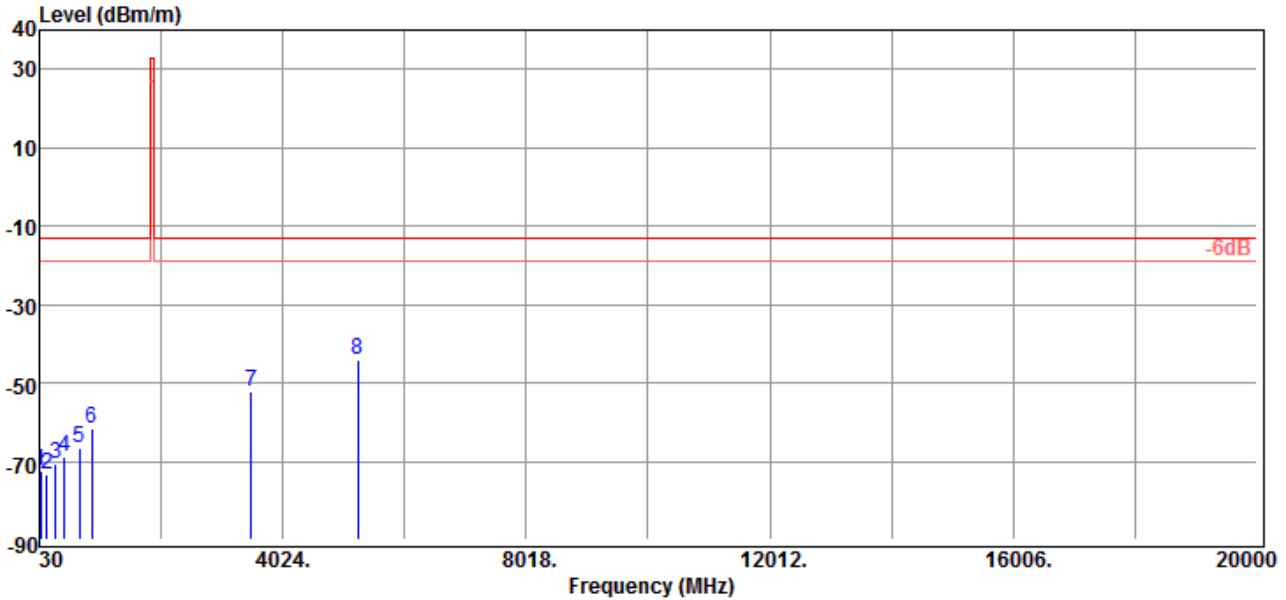
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Operation Mode	:WCDMA B4	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1752.6 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
51.34	-72.31	-67.50	-4.15	-0.66	-13.00	-59.31
153.19	-73.36	-75.11	2.77	-1.02	-13.00	-60.36
293.84	-70.83	-75.00	5.77	-1.60	-13.00	-57.83
438.37	-68.95	-72.84	5.95	-2.06	-13.00	-55.95
686.69	-66.51	-71.35	7.20	-2.36	-13.00	-53.51
882.63	-61.69	-66.84	7.56	-2.41	-13.00	-48.69
3505.20	-52.26	-57.56	12.30	-7.00	-13.00	-39.26
5257.80	-43.92	-50.11	12.76	-6.57	-13.00	-30.92

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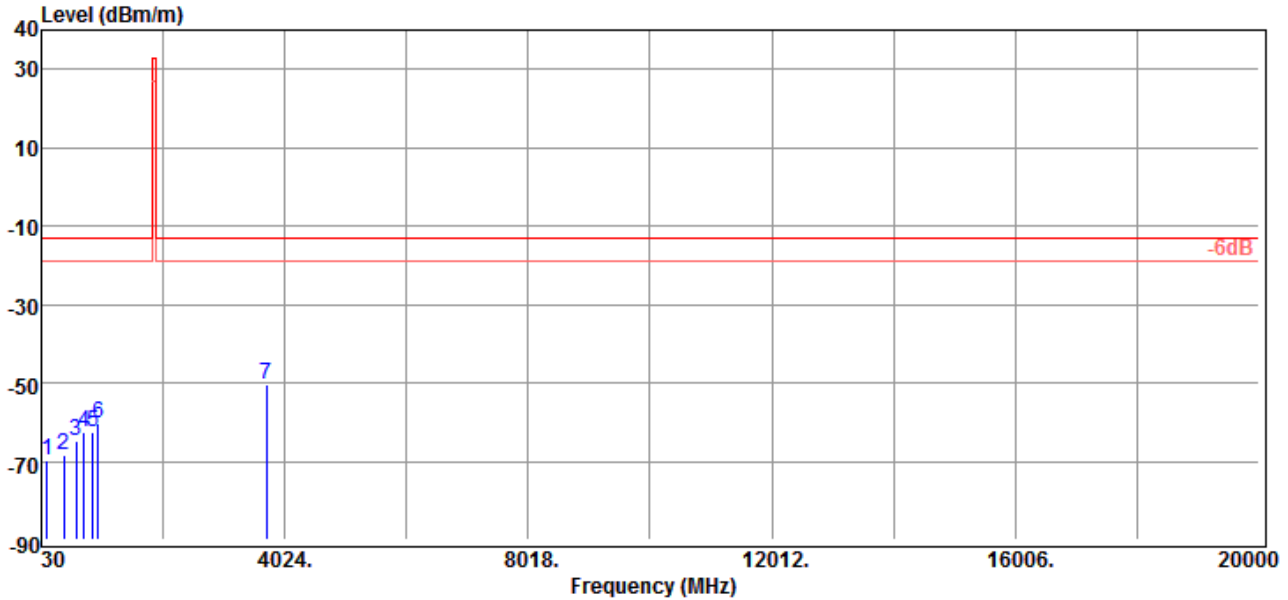
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### Radiated Spurious Emission Measurement Result: LTE-Band 2 (The Worst Case)

Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1860 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
129.91	-69.85	-70.22	1.32	-0.95	-13.00	-56.85
405.39	-68.36	-71.93	5.61	-2.04	-13.00	-55.36
596.48	-64.87	-69.37	6.64	-2.14	-13.00	-51.87
732.28	-62.78	-68.02	7.38	-2.14	-13.00	-49.78
873.90	-62.52	-67.66	7.54	-2.40	-13.00	-49.52
967.02	-60.14	-65.03	7.71	-2.82	-13.00	-47.14
3720.00	-50.30	-56.02	12.44	-6.72	-13.00	-37.30

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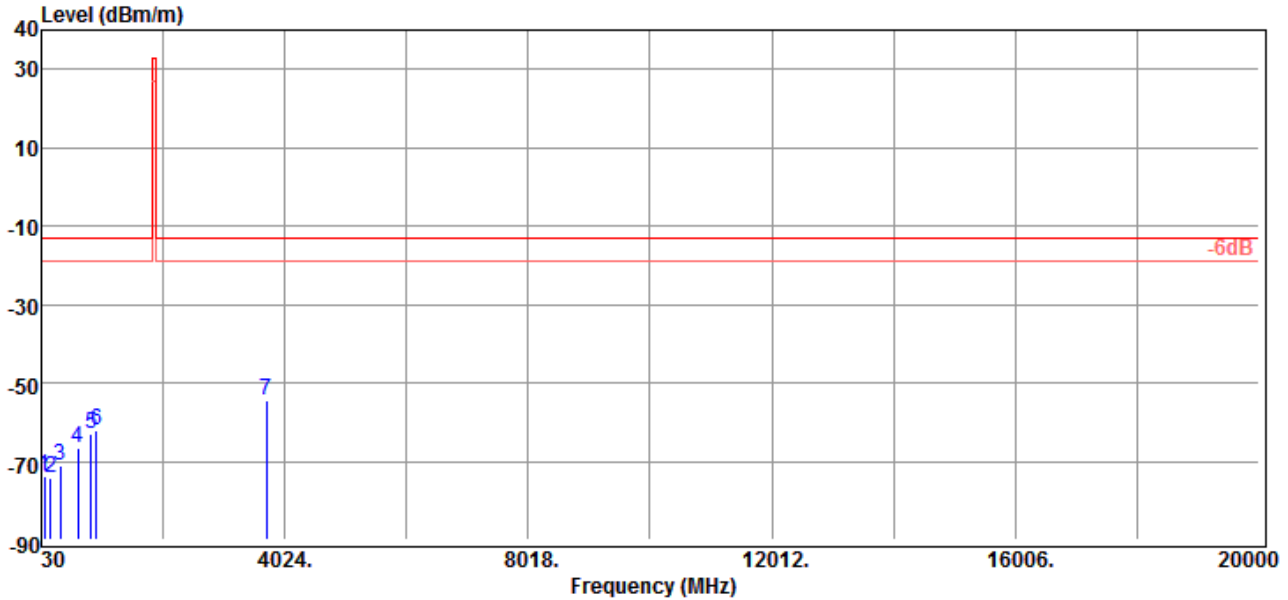
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Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1860 MHz	Engineer	:Enzo



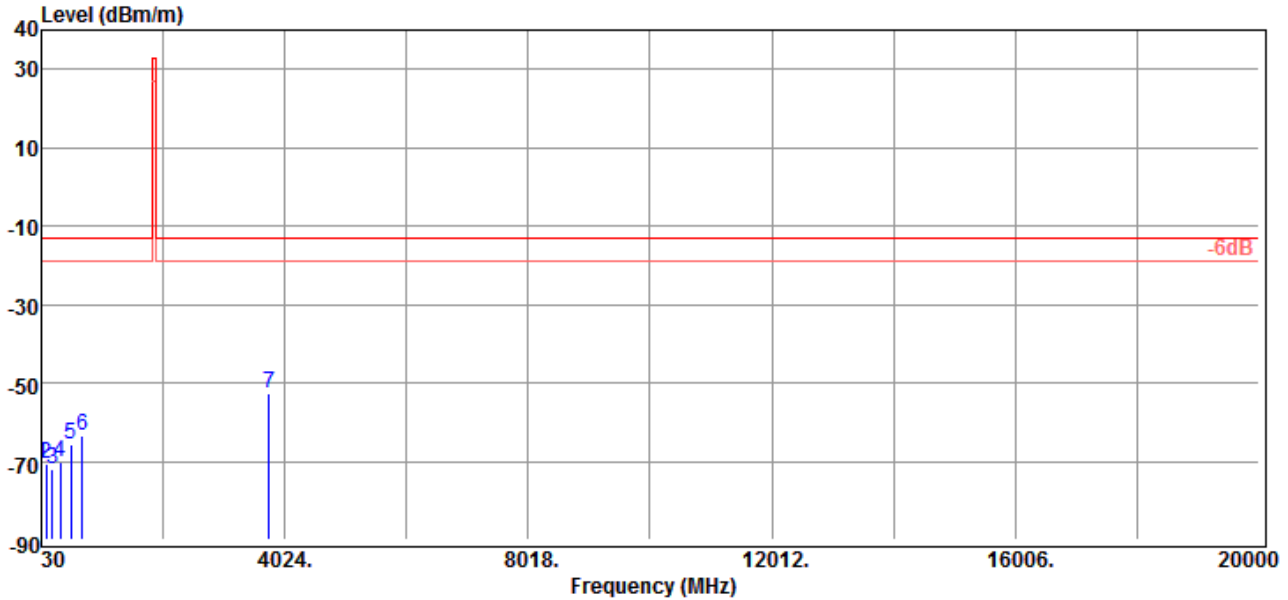
Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
77.53	-73.77	-73.63	0.63	-0.77	-13.00	-60.77
180.35	-74.34	-77.83	4.64	-1.15	-13.00	-61.34
344.28	-71.04	-74.93	5.80	-1.91	-13.00	-58.04
630.43	-66.74	-71.15	6.79	-2.38	-13.00	-53.74
845.77	-62.87	-68.01	7.51	-2.37	-13.00	-49.87
937.92	-62.11	-67.09	7.64	-2.66	-13.00	-49.11
3720.00	-54.30	-60.02	12.44	-6.72	-13.00	-41.30

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Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1880 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
39.70	-70.86	-58.11	-12.16	-0.59	-13.00	-57.86
112.45	-70.52	-69.72	0.10	-0.90	-13.00	-57.52
204.60	-71.79	-76.29	5.76	-1.26	-13.00	-58.79
337.49	-70.36	-74.29	5.80	-1.87	-13.00	-57.36
514.03	-65.69	-69.42	6.27	-2.54	-13.00	-52.69
700.27	-63.63	-68.65	7.31	-2.29	-13.00	-50.63
3760.00	-52.86	-58.65	12.46	-6.67	-13.00	-39.86

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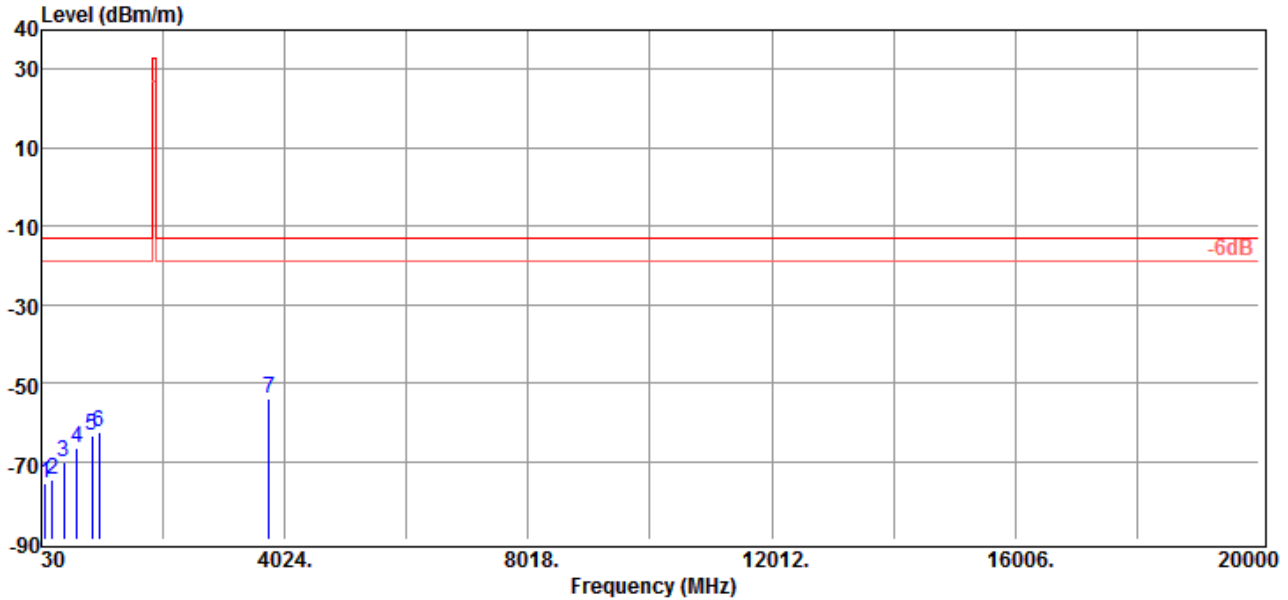
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Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1880 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
99.84	-75.76	-74.02	-0.88	-0.86	-13.00	-62.76
208.48	-74.76	-79.20	5.71	-1.27	-13.00	-61.76
400.54	-70.08	-73.60	5.56	-2.04	-13.00	-57.08
619.76	-66.79	-71.25	6.75	-2.29	-13.00	-53.79
866.14	-63.68	-68.82	7.53	-2.39	-13.00	-50.68
974.78	-62.62	-67.50	7.74	-2.86	-13.00	-49.62
3760.00	-54.05	-59.84	12.46	-6.67	-13.00	-41.05

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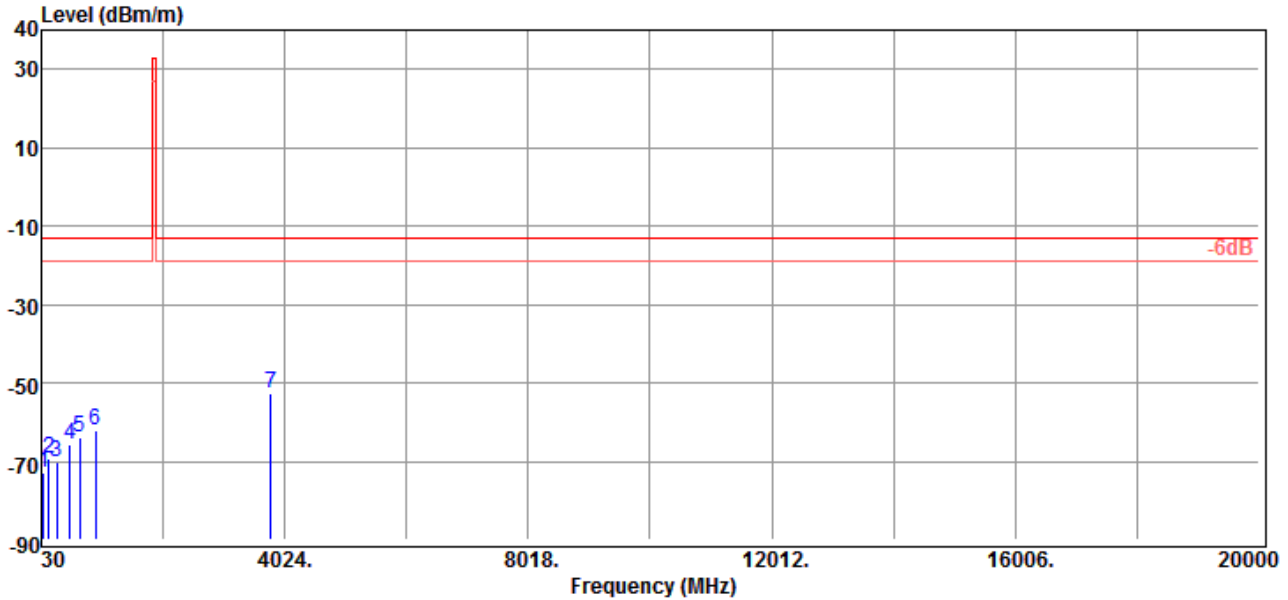
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Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1900 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
67.83	-72.85	-72.38	0.24	-0.71	-13.00	-59.85
154.16	-69.27	-71.09	2.84	-1.02	-13.00	-56.27
288.02	-70.27	-74.39	5.70	-1.58	-13.00	-57.27
503.36	-65.80	-69.49	6.29	-2.60	-13.00	-52.80
665.35	-64.06	-68.61	7.01	-2.46	-13.00	-51.06
917.55	-62.03	-67.11	7.62	-2.54	-13.00	-49.03
3800.00	-52.59	-58.46	12.48	-6.61	-13.00	-39.59

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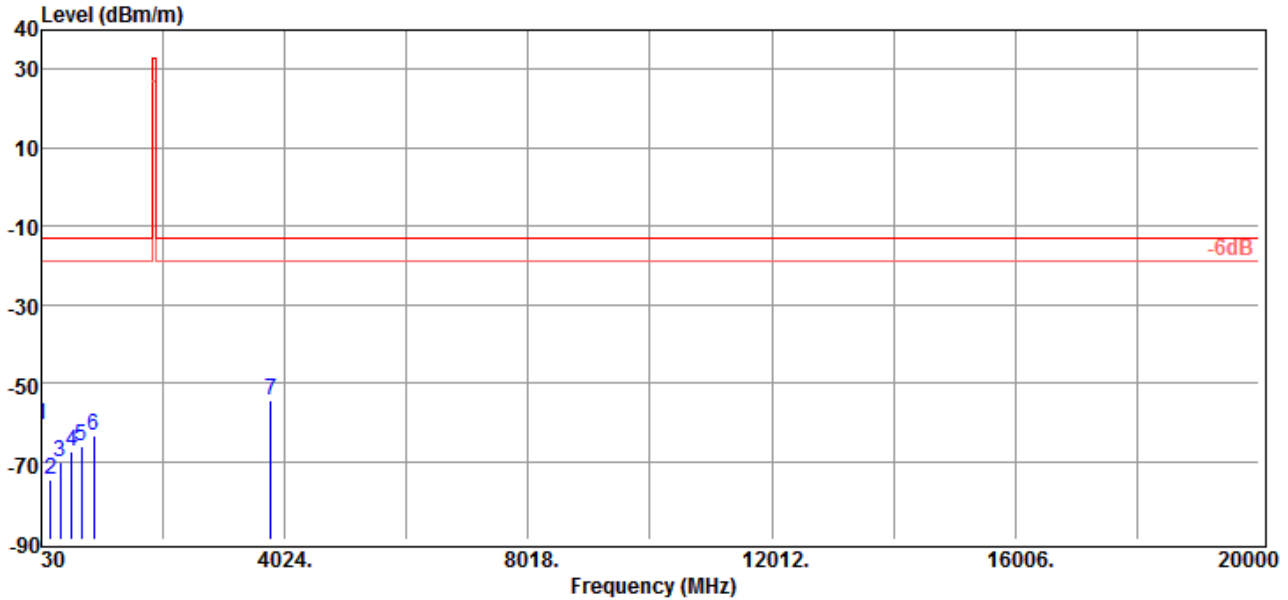
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Operation Mode	:LTE B2	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1900 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
35.82	-60.85	-45.26	-15.06	-0.53	-13.00	-47.85
174.53	-74.54	-77.69	4.27	-1.12	-13.00	-61.54
339.43	-70.13	-74.05	5.80	-1.88	-13.00	-57.13
535.37	-67.41	-71.22	6.24	-2.43	-13.00	-54.41
687.66	-65.98	-70.83	7.20	-2.35	-13.00	-52.98
896.21	-63.50	-68.65	7.58	-2.43	-13.00	-50.50
3800.00	-54.51	-60.38	12.48	-6.61	-13.00	-41.51

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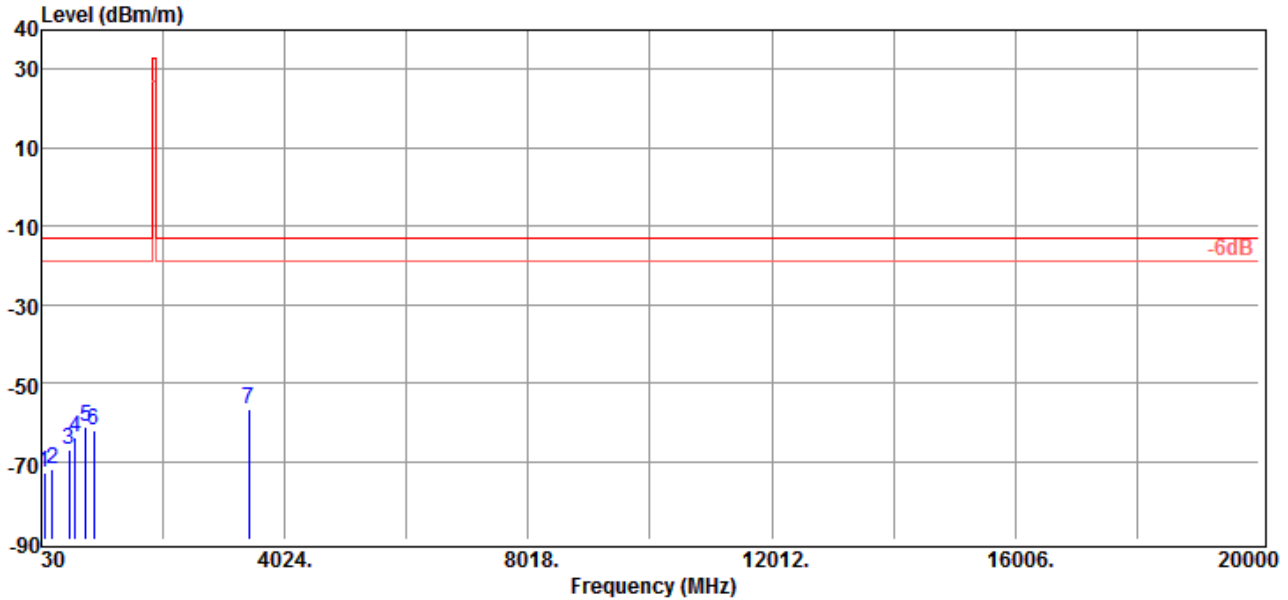
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### Radiated Spurious Emission Measurement Result: LTE-Band 4 (The Worst Case)

Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1720 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
82.38	-72.91	-72.62	0.50	-0.79	-13.00	-59.91
205.57	-72.16	-76.65	5.75	-1.26	-13.00	-59.16
486.87	-66.91	-70.67	6.23	-2.47	-13.00	-53.91
589.69	-63.83	-68.24	6.58	-2.17	-13.00	-50.83
761.38	-61.18	-66.49	7.45	-2.14	-13.00	-48.18
891.36	-62.00	-67.14	7.57	-2.43	-13.00	-49.00
3440.00	-56.82	-62.29	12.19	-6.72	-13.00	-43.82

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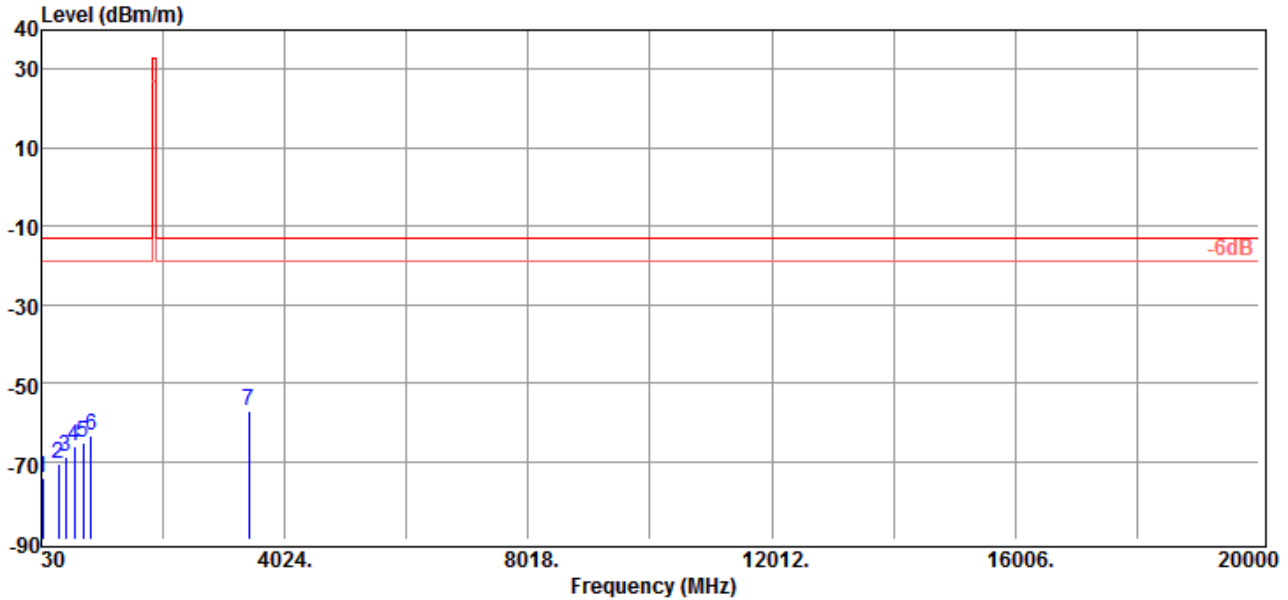
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Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1720 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
55.22	-74.15	-70.90	-2.60	-0.65	-13.00	-61.15
306.45	-70.49	-74.67	5.84	-1.66	-13.00	-57.49
429.64	-68.97	-72.79	5.87	-2.05	-13.00	-55.97
570.29	-66.32	-70.47	6.41	-2.26	-13.00	-53.32
719.67	-65.25	-70.40	7.35	-2.20	-13.00	-52.25
853.53	-63.51	-68.65	7.51	-2.37	-13.00	-50.51
3440.00	-56.95	-62.42	12.19	-6.72	-13.00	-43.95

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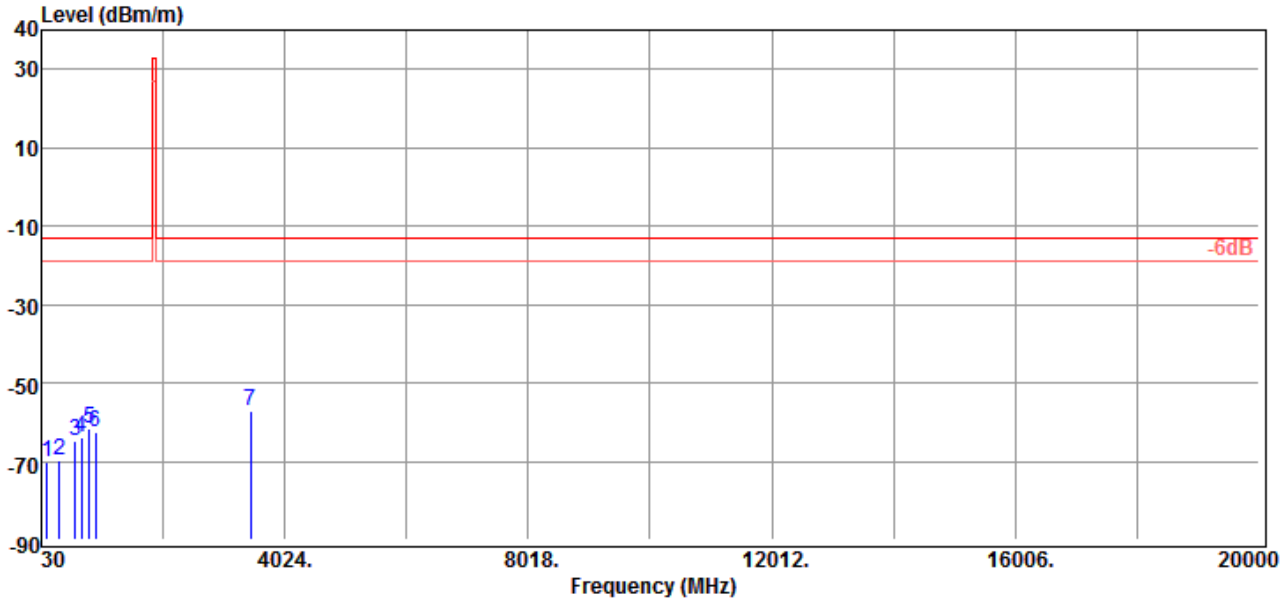
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Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1732.5 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
126.03	-70.36	-70.48	1.06	-0.94	-13.00	-57.36
325.85	-69.95	-73.98	5.82	-1.79	-13.00	-56.95
584.84	-65.00	-69.35	6.54	-2.19	-13.00	-52.00
685.72	-63.77	-68.60	7.19	-2.36	-13.00	-50.77
824.43	-61.88	-67.02	7.54	-2.40	-13.00	-48.88
913.67	-62.49	-67.58	7.61	-2.52	-13.00	-49.49
3465.00	-57.37	-62.76	12.23	-6.84	-13.00	-44.37

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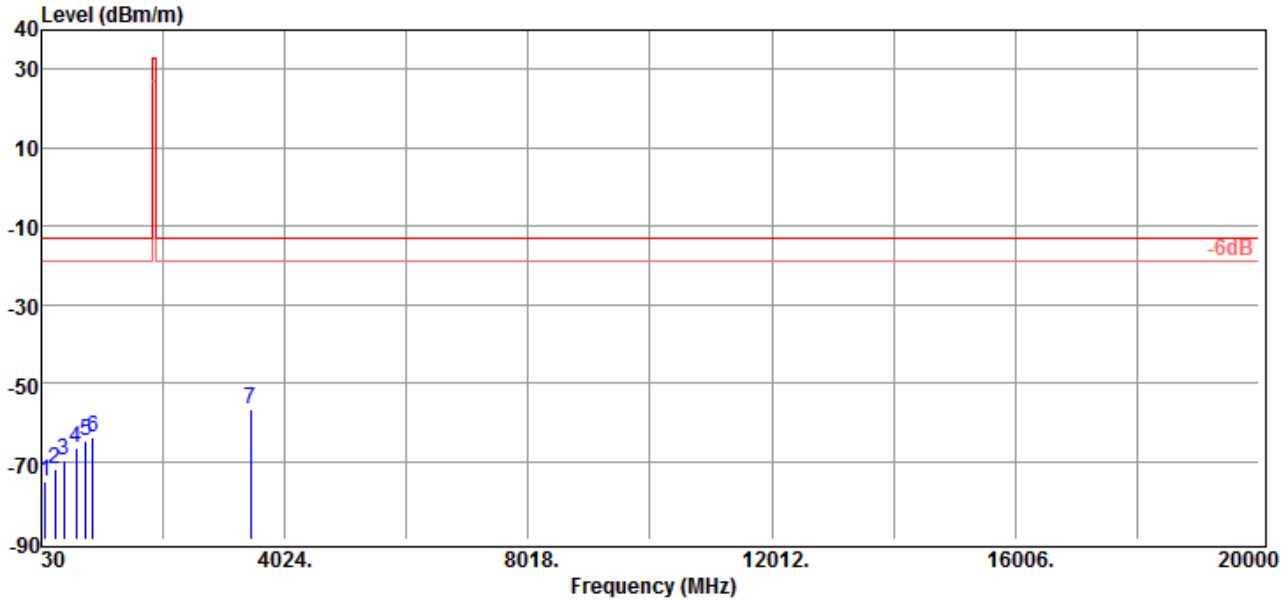
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Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1732.5 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
88.20	-75.25	-74.55	0.11	-0.81	-13.00	-62.25
252.13	-72.03	-75.78	5.20	-1.45	-13.00	-59.03
398.60	-69.78	-73.30	5.56	-2.04	-13.00	-56.78
596.48	-66.67	-71.17	6.64	-2.14	-13.00	-53.67
764.29	-64.72	-70.02	7.46	-2.16	-13.00	-51.72
876.81	-64.02	-69.17	7.55	-2.40	-13.00	-51.02
3465.00	-56.61	-62.00	12.23	-6.84	-13.00	-43.61

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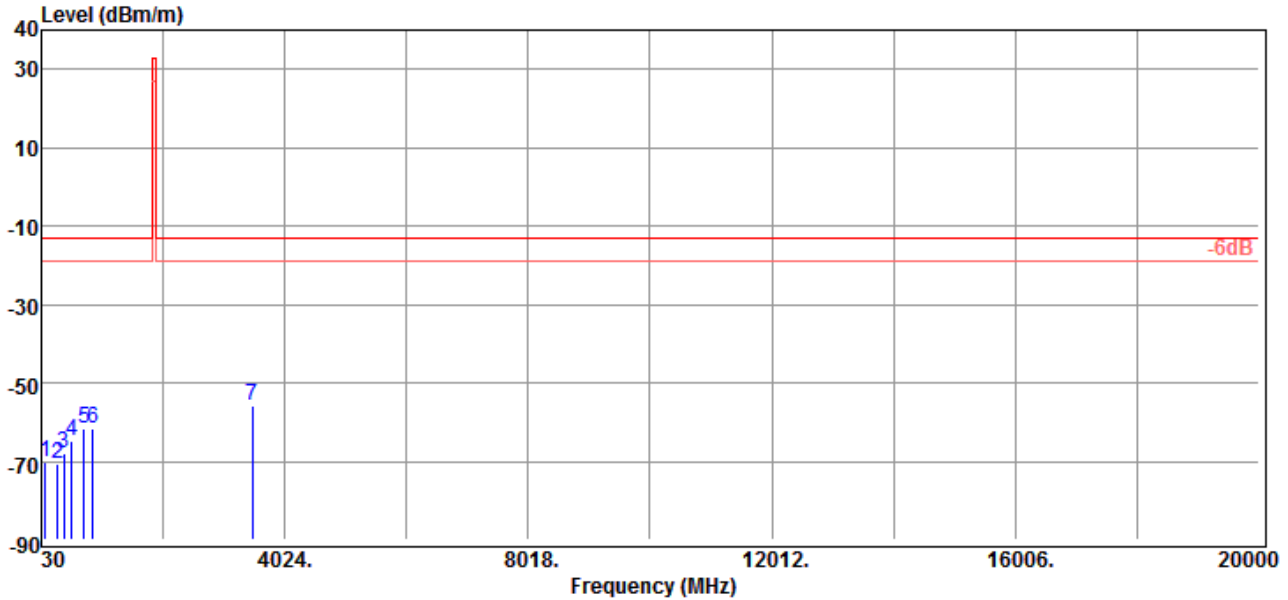
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Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:1745 MHz	Engineer	:Enzo



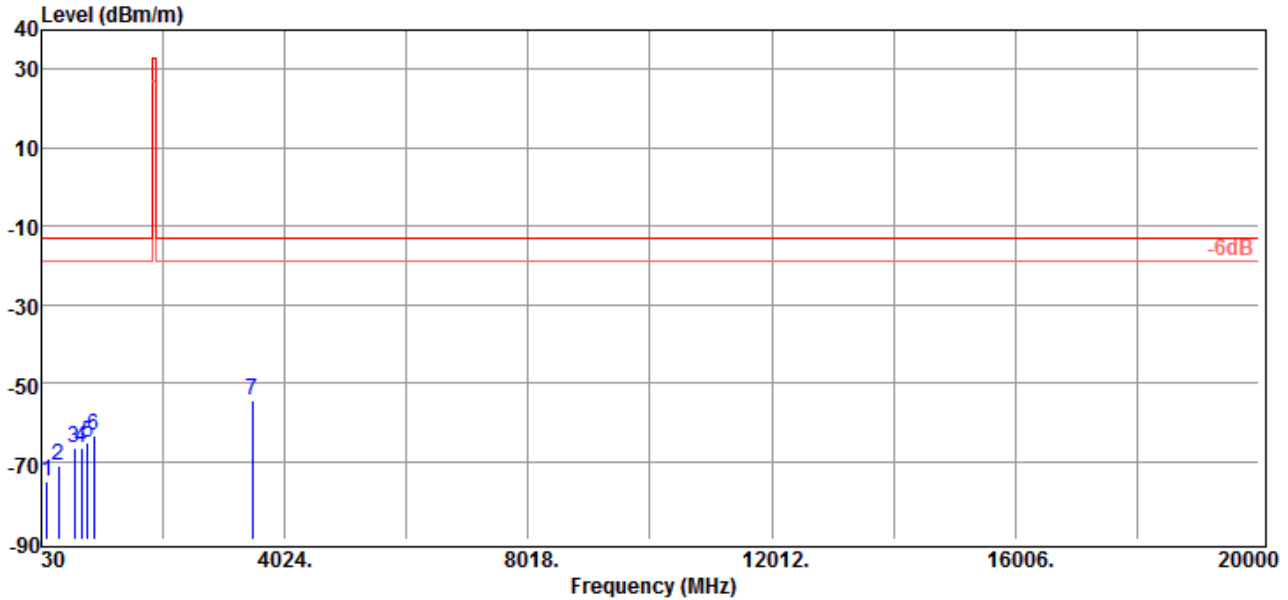
Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
88.20	-70.24	-69.54	0.11	-0.81	-13.00	-57.24
292.87	-70.55	-74.72	5.76	-1.59	-13.00	-57.55
398.60	-68.17	-71.69	5.56	-2.04	-13.00	-55.17
531.49	-65.02	-68.82	6.25	-2.45	-13.00	-52.02
736.16	-61.77	-67.03	7.38	-2.12	-13.00	-48.77
870.02	-61.72	-66.87	7.54	-2.39	-13.00	-48.72
3490.00	-55.91	-61.23	12.28	-6.96	-13.00	-42.91

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Operation Mode	:LTE B4	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1745 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
122.15	-74.97	-74.84	0.80	-0.93	-13.00	-61.97
314.21	-71.01	-75.13	5.83	-1.71	-13.00	-58.01
577.08	-66.63	-70.87	6.47	-2.23	-13.00	-53.63
684.75	-66.46	-71.27	7.18	-2.37	-13.00	-53.46
782.72	-65.27	-70.48	7.52	-2.31	-13.00	-52.27
896.21	-63.50	-68.65	7.58	-2.43	-13.00	-50.50
3490.00	-54.54	-59.86	12.28	-6.96	-13.00	-41.54

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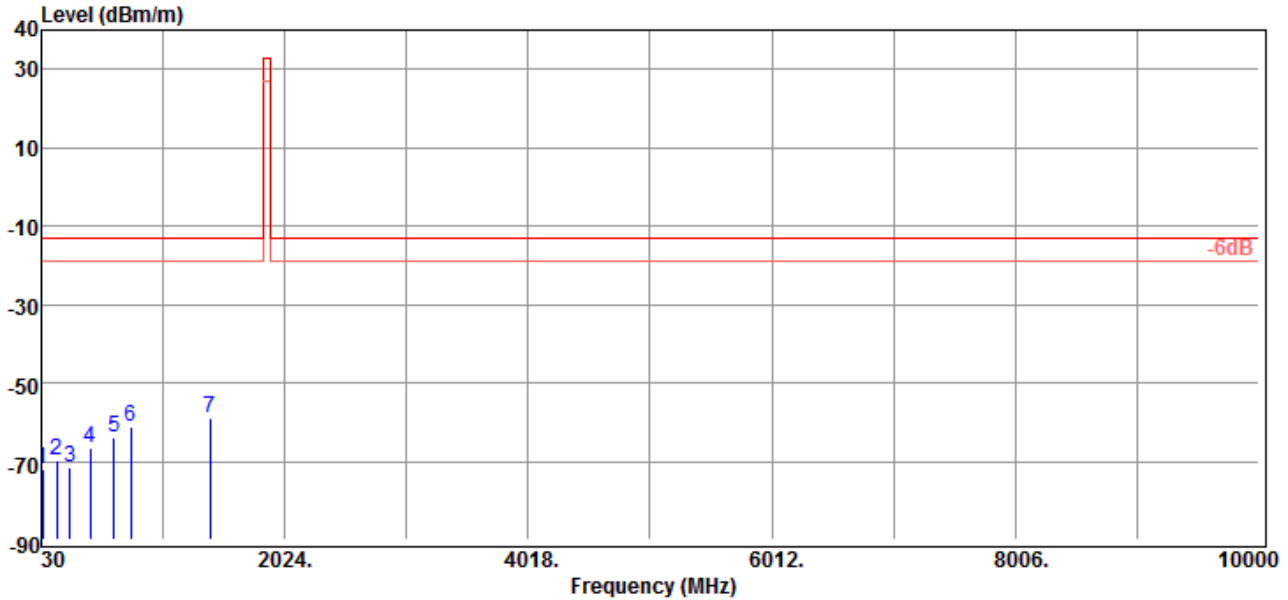
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### Radiated Spurious Emission Measurement Result: LTE-Band 12 (The Worst Case)

Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:704 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
40.67	-71.97	-59.96	-11.41	-0.60	-13.00	-58.97
156.10	-69.70	-71.66	2.99	-1.03	-13.00	-56.70
267.65	-71.34	-75.26	5.42	-1.50	-13.00	-58.34
430.61	-66.69	-70.52	5.88	-2.05	-13.00	-53.69
621.70	-63.93	-68.39	6.76	-2.30	-13.00	-50.93
761.38	-61.18	-66.49	7.45	-2.14	-13.00	-48.18
1408.00	-58.81	-63.05	7.73	-3.49	-13.00	-45.81

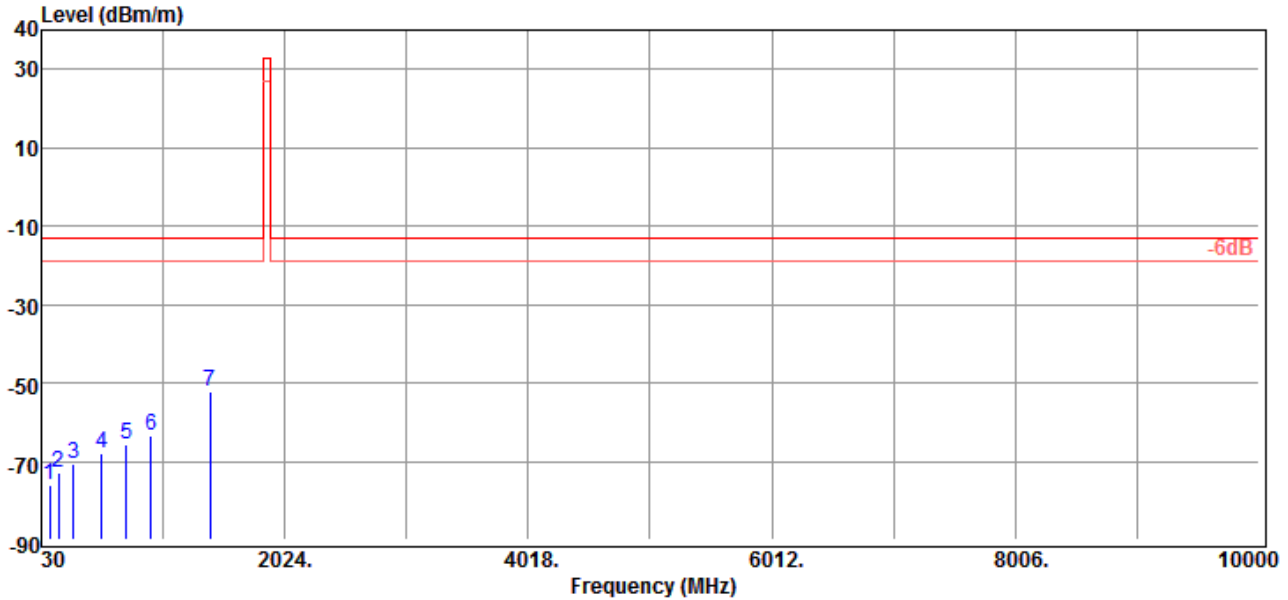
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Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:704 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
96.93	-76.27	-74.79	-0.63	-0.85	-13.00	-63.27
170.65	-73.09	-76.00	4.01	-1.10	-13.00	-60.09
293.84	-70.83	-75.00	5.77	-1.60	-13.00	-57.83
520.82	-67.86	-71.61	6.26	-2.51	-13.00	-54.86
726.46	-65.54	-70.74	7.36	-2.16	-13.00	-52.54
930.16	-63.34	-68.36	7.63	-2.61	-13.00	-50.34
1408.00	-52.05	-56.29	7.73	-3.49	-13.00	-39.05

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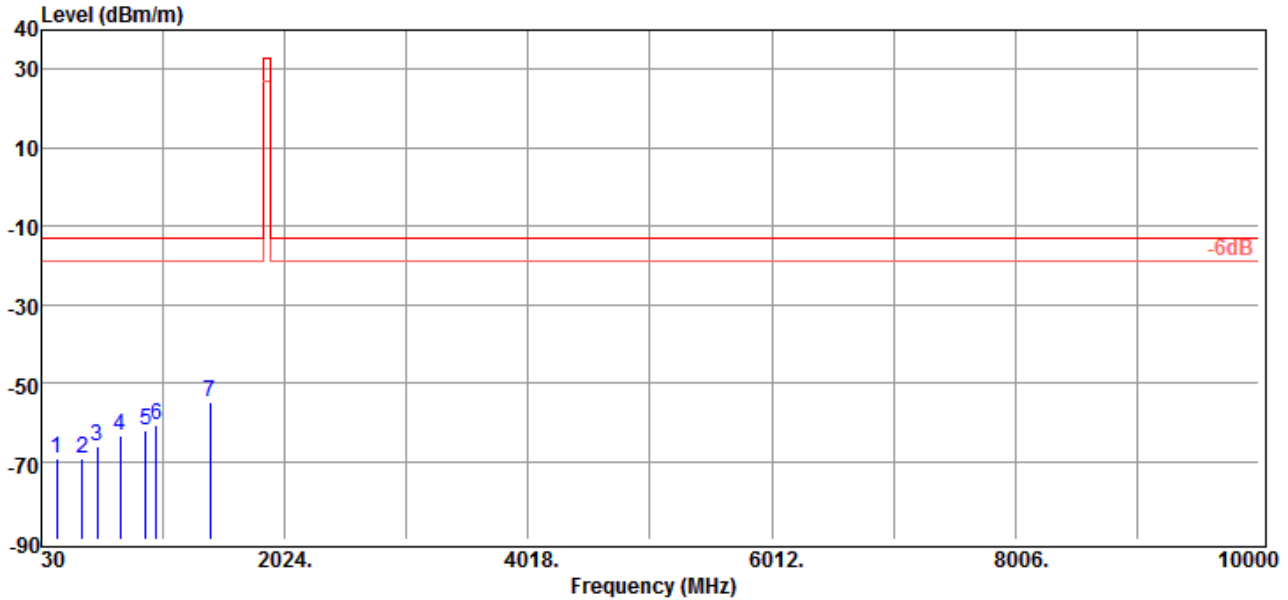
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Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:707.5 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
157.07	-69.33	-71.36	3.06	-1.03	-13.00	-56.33
368.53	-69.22	-72.94	5.70	-1.98	-13.00	-56.22
485.90	-66.11	-69.88	6.23	-2.46	-13.00	-53.11
676.99	-63.57	-68.27	7.11	-2.41	-13.00	-50.57
885.54	-62.05	-67.19	7.56	-2.42	-13.00	-49.05
969.93	-60.82	-65.71	7.72	-2.83	-13.00	-47.82
1415.00	-54.71	-58.96	7.75	-3.50	-13.00	-41.71

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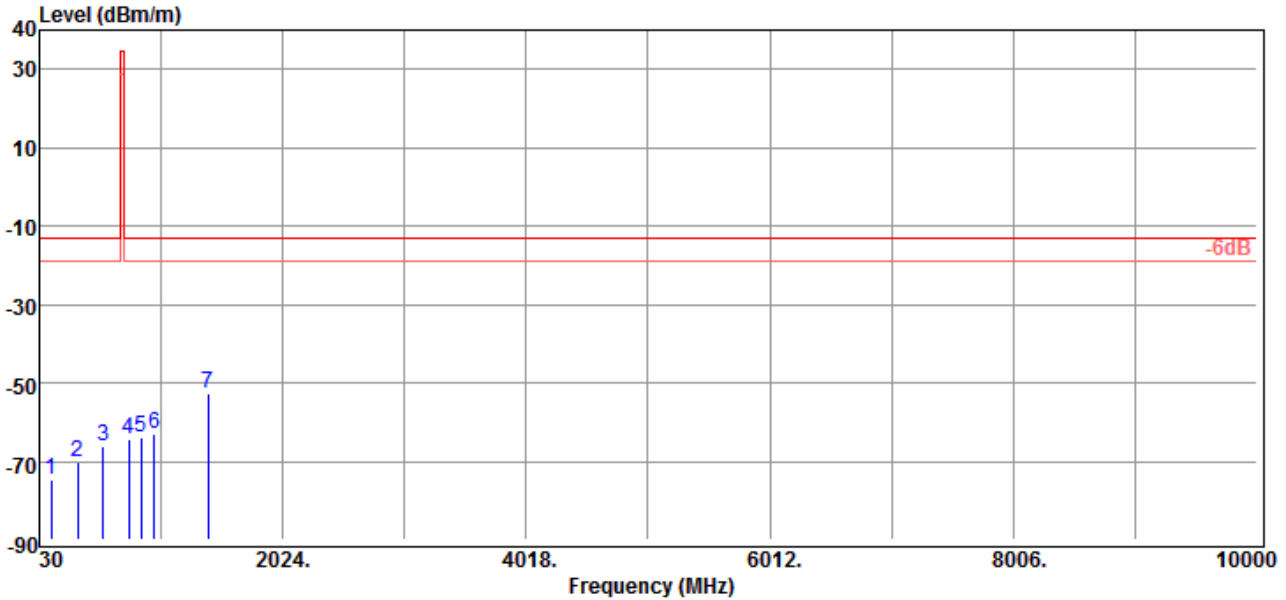
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Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:707.5 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
130.88	-74.54	-74.97	1.38	-0.95	-13.00	-61.54
343.31	-70.32	-74.21	5.80	-1.91	-13.00	-57.32
550.89	-66.18	-70.06	6.23	-2.35	-13.00	-53.18
763.32	-64.43	-69.73	7.45	-2.15	-13.00	-51.43
864.20	-63.95	-69.10	7.53	-2.38	-13.00	-50.95
973.81	-63.08	-67.96	7.73	-2.85	-13.00	-50.08
1415.00	-52.80	-57.05	7.75	-3.50	-13.00	-39.80

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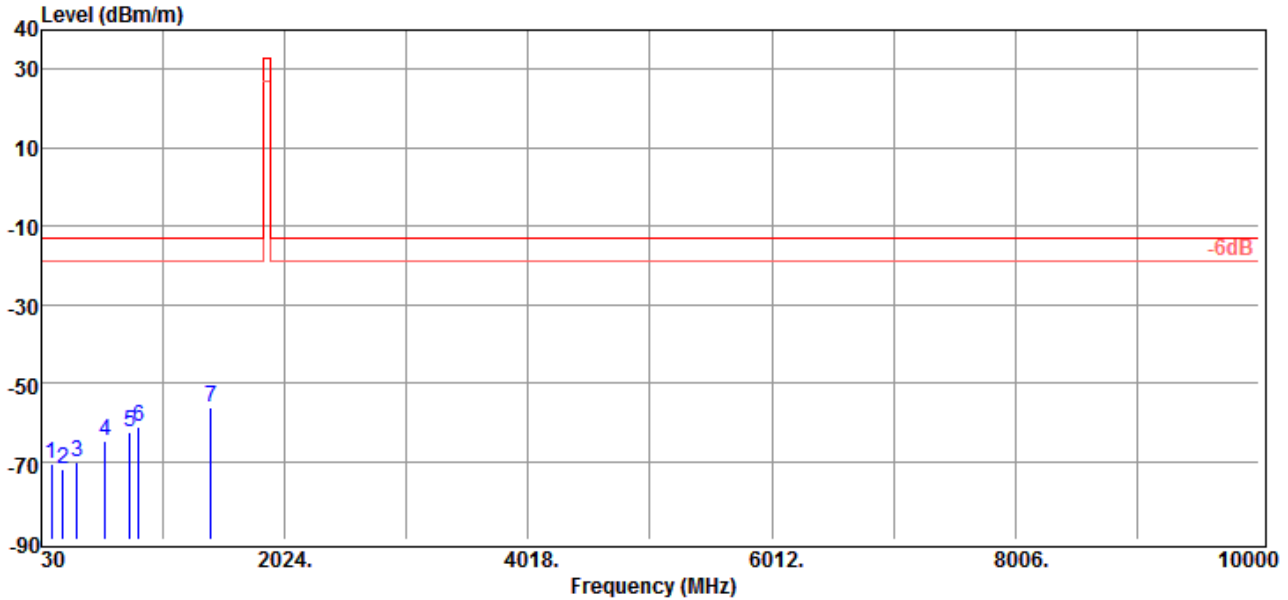
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Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:711 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
116.33	-70.78	-70.26	0.39	-0.91	-13.00	-57.78
205.57	-72.16	-76.65	5.75	-1.26	-13.00	-59.16
322.94	-70.40	-74.45	5.82	-1.77	-13.00	-57.40
555.74	-65.03	-68.98	6.27	-2.32	-13.00	-52.03
754.59	-62.54	-67.88	7.43	-2.09	-13.00	-49.54
828.31	-61.09	-66.23	7.53	-2.39	-13.00	-48.09
1422.00	-56.05	-60.32	7.78	-3.51	-13.00	-43.05

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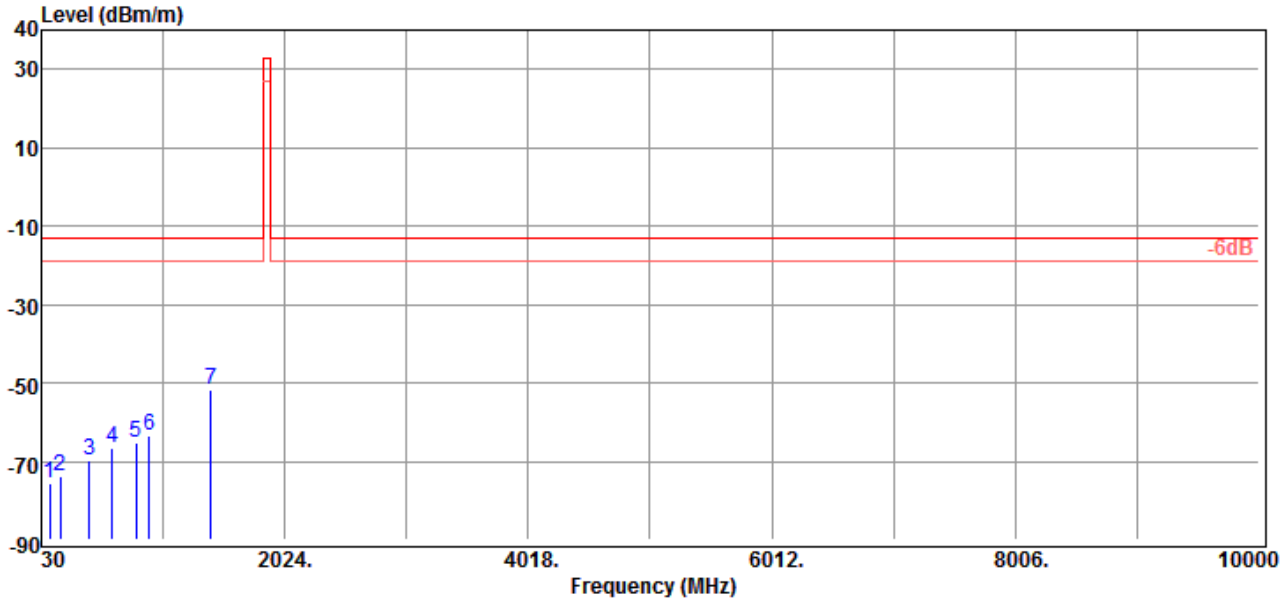
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Operation Mode	:LTE B12	Test Date	:2018-08-03
Test Mode	:TX CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:711 MHz	Engineer	:Enzo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
99.84	-75.76	-74.02	-0.88	-0.86	-13.00	-62.76
187.14	-73.98	-77.87	5.07	-1.18	-13.00	-60.98
423.82	-69.61	-73.37	5.81	-2.05	-13.00	-56.61
611.03	-66.70	-71.21	6.72	-2.21	-13.00	-53.70
807.94	-65.23	-70.36	7.56	-2.43	-13.00	-52.23
910.76	-63.28	-68.39	7.61	-2.50	-13.00	-50.28
1422.00	-51.77	-56.04	7.78	-3.51	-13.00	-38.77

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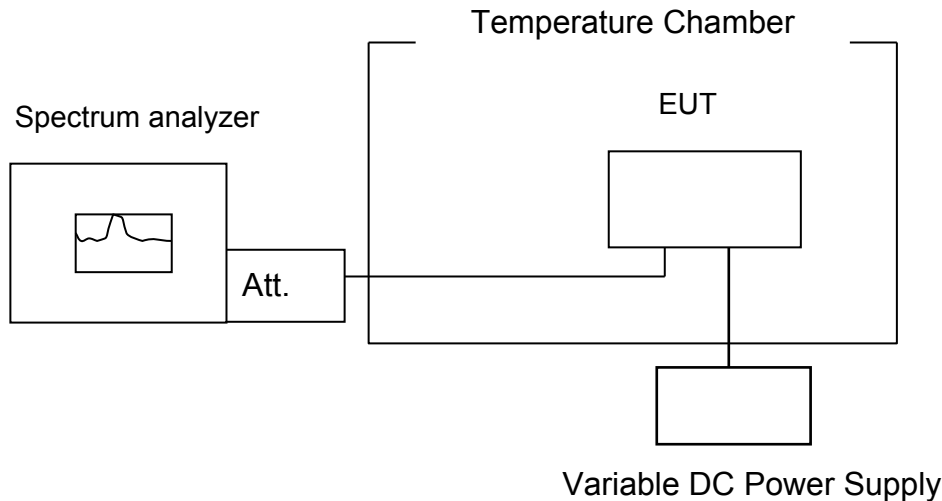


## 10. FREQUENCY STABILITY MEASUREMENT

### 10.1. Standard Applicabl

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 . 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

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
Radio Communication Analyzer	Anritsu	MT8820C	6201107337	2018/06/15	2019/06/14
DC Power Supply	Agilent	E3640A	MY53130054	2017/09/04	2018/09/03
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Splitter	Woken	DOM35LW1A2	RF36	2017/12/26	2018/12/25

#### 10.5. Measurement Result

WCDMA II Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm				
Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
4.37	20	1879.999981	-19.00000007	4700
3.8	20	1879.999995	-5.000000101	4700
3.23	20	1880.000013	13.00000008	4700
3.1 (End point)	20	1880.000017	17.00000007	4700
FREQUENCY ERROR vs. Temp.				
3.8	50	1879.999996	-3.99999999	4700
3.8	40	1879.999997	-3.000000106	4700
3.8	30	1880.000018	17.99999995	4700
3.8	20	1879.999995	-5.000000101	4700
3.8	10	1879.999984	-15.99999996	4700
3.8	0	1879.999986	-13.99999996	4700
3.8	-10	1880.000011	11.00000009	4700
3.8	-20	1880.000016	15.99999996	4700
3.8	-30	1879.999988	-11.99999997	4700

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WCDMA IV Mid Channel 1732.6 MHz				
Limit: +/- 2.5 ppm				
Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
4.37	20	1732.600004	3.99999999	4331
3.8	20	1732.599993	-6.999999869	4331
3.23	20	1732.599999	-0.999999884	4331
3.1 (End point)	20	1732.599976	-23.99999994	4331
FREQUENCY ERROR vs. Temp.				
3.8	50	1732.599988	-11.99999997	4331
3.8	40	1732.599968	-31.99999992	4331
3.8	30	1732.599987	-12.99999985	4331
3.8	20	1732.599993	-6.999999869	4331
3.8	10	1732.599969	-30.99999981	4331
3.8	0	1732.600014	14.00000019	4331
3.8	-10	1732.600012	12.00000002	4331
3.8	-20	1732.599998	-1.999999995	4331
3.8	-30	1732.600008	7.99999998	4331

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Reference Freq.: LTE B2 Mid Channel 1880 MHz 20M QPSK CH 18900				
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
<b>Freq. ERROR vs. VOLTAGE</b>				
4.37	25	1880.000000	0	4700
3.8	25	1879.999977	-23	4700
3.23	25	1880.000020	20	4700
3.1 (End point) (End Point)	25	1879.999978	-22	4700
<b>Freq. ERROR vs. Temp.</b>				
3.8	-30	1879.999990	-10	4700
3.8	-20	1880.000000	0	4700
3.8	-10	1879.999979	-21	4700
3.8	0	1879.999976	-24	4700
3.8	10	1880.000022	22	4700
3.8	20	1880.000012	12	4700
3.8	30	1880.000004	4	4700
3.8	40	1880.000006	6	4700
3.8	50	1880.000006	6	4700

Reference Freq.: LTE B4 Mid Channel 1732.5 MHz 20M QPSK CH 20175				
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
<b>Freq. ERROR vs. VOLTAGE</b>				
4.37	25	1732.500000	0	4331
3.8	25	1732.499994	-6	4331
3.23	25	1732.499993	-7	4331
3.1 (End point) (End Point)	25	1732.500014	14	4331
<b>Freq. ERROR vs. Temp.</b>				
3.8	-30	1732.499982	-18	4331
3.8	-20	1732.499989	-11	4331
3.8	-10	1732.500000	0	4331
3.8	0	1732.500015	15	4331
3.8	10	1732.500011	11	4331
3.8	20	1732.500002	2	4331
3.8	30	1732.499976	-24	4331
3.8	40	1732.499980	-20	4331
3.8	50	1732.499975	-25	4331

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Reference Freq.: LTE B12 Mid Channel 707.5 MHz 10M QPSK CH 23095				
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
<b>Freq. ERROR vs. VOLTAGE</b>				
4.37	25	707.499980	-20	1769
3.8	25	707.500019	19	1769
3.23	25	707.500011	11	1769
3.1 (End point) (End Point)	25	707.499981	-19	1769
<b>Freq. ERROR vs. Temp.</b>				
3.8	-30	707.500013	13	1769
3.8	-20	707.500017	17	1769
3.8	-10	707.500012	12	1769
3.8	0	707.500011	11	1769
3.8	10	707.499983	-17	1769
3.8	20	707.499977	-23	1769
3.8	30	707.500020	20	1769
3.8	40	707.500003	3	1769
3.8	50	707.499993	-7	1769

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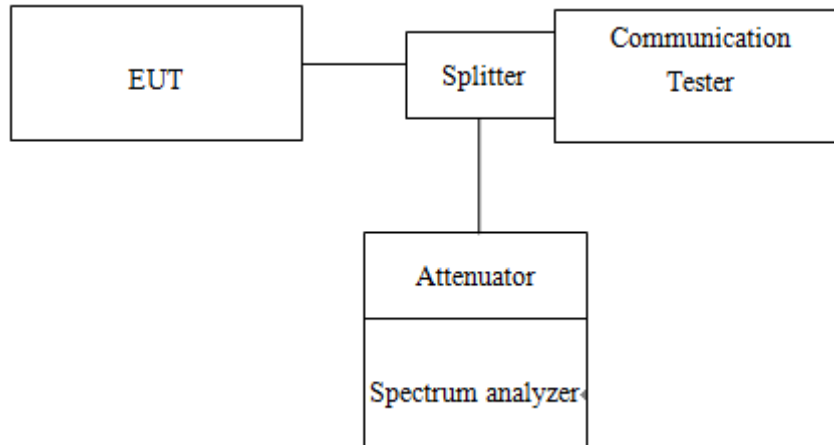


## 11. PEAK TO AVERAGE RATIO

### 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

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
Radio Communication Analyzer	Anritsu	MT8820C	6201107337	2018/06/15	2019/06/14
DC Power Supply	Agilent	E3640A	MY53130054	2017/09/04	2018/09/03
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Splitter	Woken	DOM35LW1A2	RF36	2017/12/26	2018/12/25

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### 11.5. Measurement Result

#### Tabular Results:

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA II	HSDPA II	HSUPA II
1852.4	9262	3.10	3.10	3.09
1880	9400	2.95	2.95	2.96
1907.6	9538	2.80	2.80	2.82

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA IV	HSDPA IV	HSUPA IV
1712.4	1312	3.35	3.37	3.32
1732.6	1413	3.06	3.04	3.07
1752.6	1513	3.35	3.33	3.35

LTE BAND 2							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1850.7	18607	6.88	13	1851.5	18615	6.48	13
1880.0	18900	6.18	13	1880.0	18900	6.22	13
1909.3	19193	6.36	13	1908.5	19185	6.59	13

LTE BAND 2							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1852.5	18625	6.46	13	1855.0	18650	6.23	13
1880.0	18900	6.16	13	1880.0	18900	6.30	13
1907.5	19175	6.52	13	1905.0	19150	6.38	13

LTE BAND 2							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1857.5	18675	6.15	13	1860.0	18700	6.63	13
1880.0	18900	6.24	13	1880.0	18900	6.76	13
1902.5	19125	6.26	13	1900.0	19100	6.66	13

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LTE BAND 4							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1710.7	19957	6.81	13	1711.5	19965	6.91	13
1732.5	20175	6.50	13	1732.5	20175	6.52	13
1754.3	20393	7.05	13	1753.5	20385	7.01	13

LTE BAND 4							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1712.5	19957	6.67	13	1715.0	20000	6.59	13
1732.5	20175	6.42	13	1732.5	20175	6.51	13
1752.5	20375	6.60	13	1750.0	20350	6.50	13

LTE BAND 4							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
1717.5	20025	6.49	13	1720.0	20050	6.74	13
1732.5	20175	6.37	13	1732.5	20175	6.80	13
1747.5	20325	6.30	13	1745.0	20300	6.74	13

LTE BAND 12							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
699.7	23017	6.37	13	700.5	23025	6.23	13
707.5	23095	6.46	13	707.5	23095	6.27	13
715.3	23173	6.68	13	714.5	23165	6.43	13

LTE BAND 12							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
701.5	23035	6.20	13	704.0	23060	6.15	13
707.5	23095	6.14	13	707.5	23095	6.29	13
713.5	23155	5.88	13	711.0	23130	6.17	13

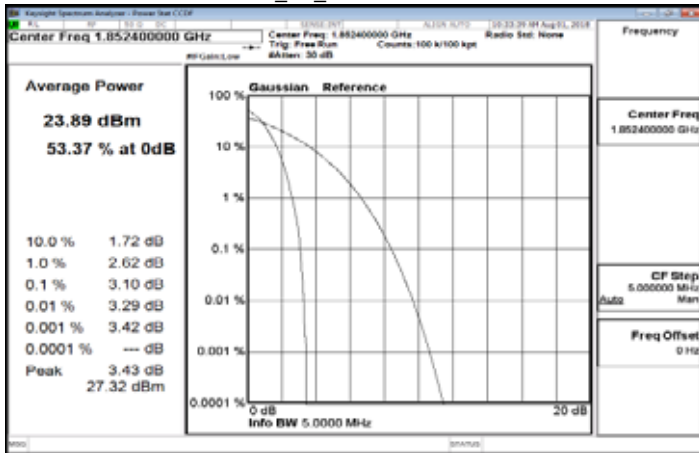
**Please refer to next page for test plots.**

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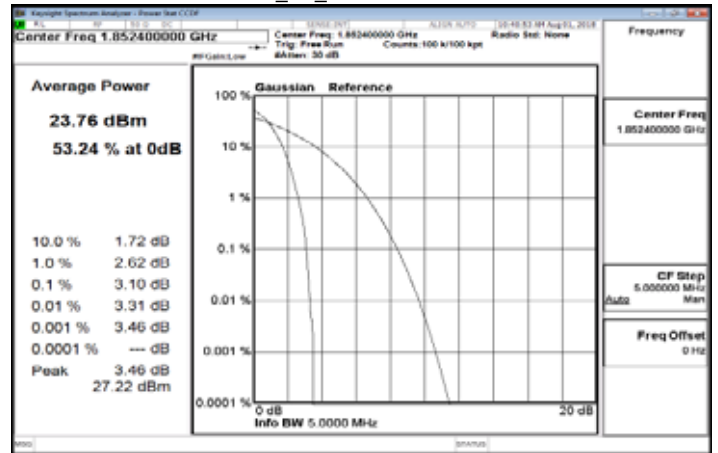
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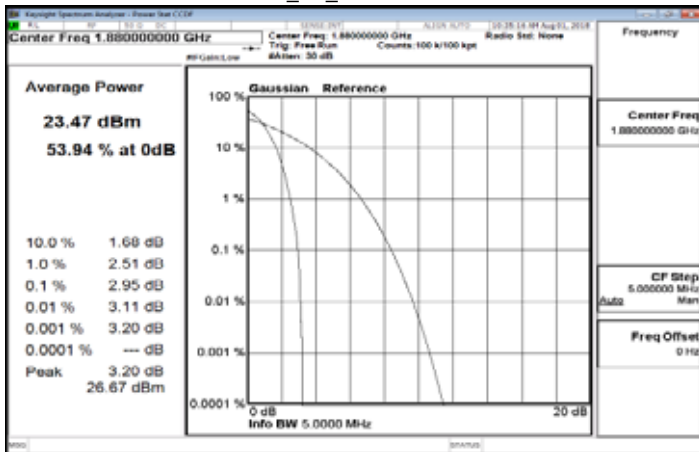
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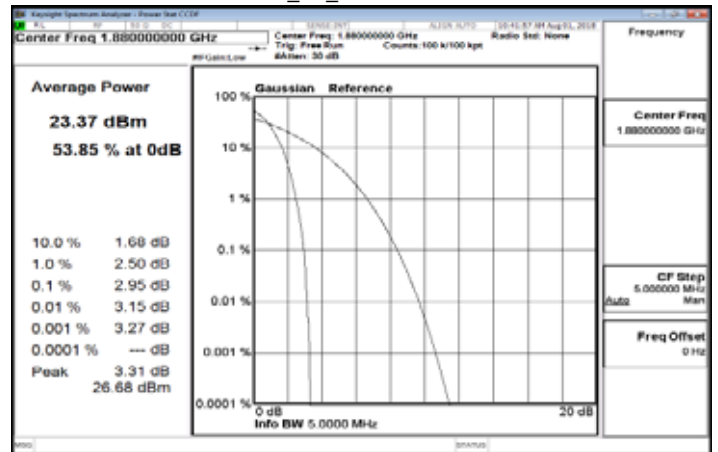
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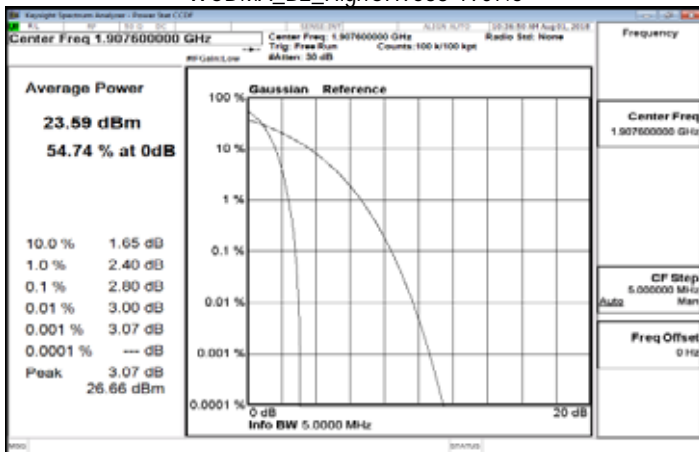
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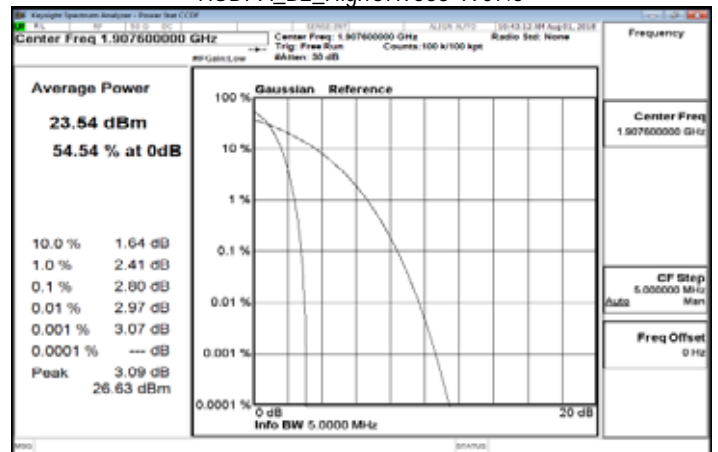
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WCDMA\_B2\_HighCH9538-1907.6



HSDPA\_B2\_HighCH9538-1907.6



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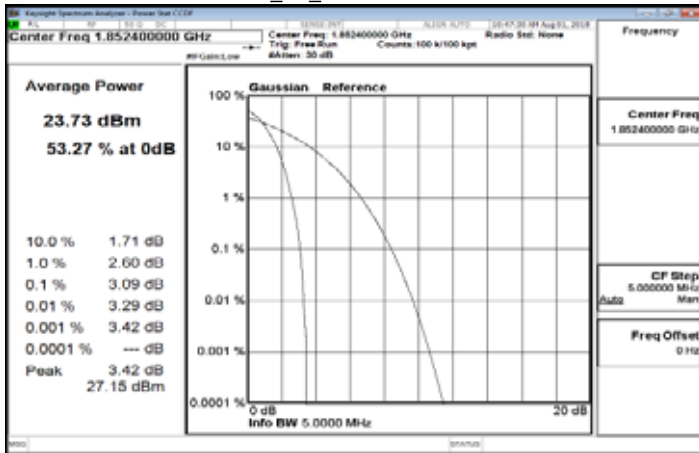
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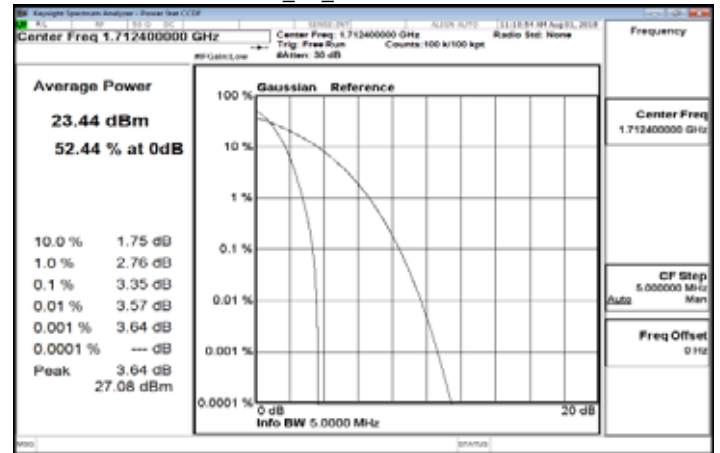
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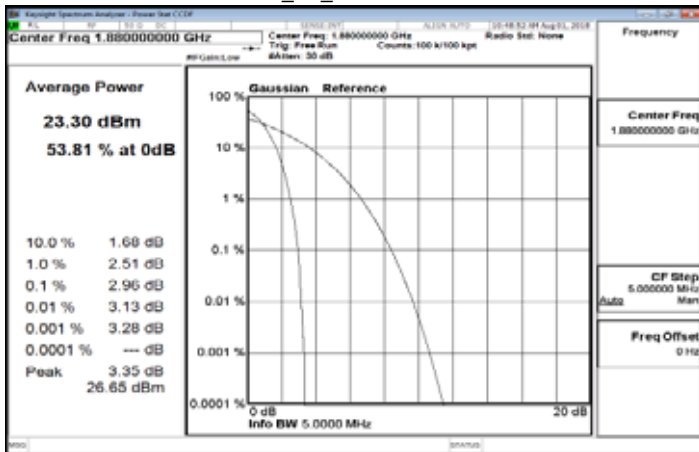
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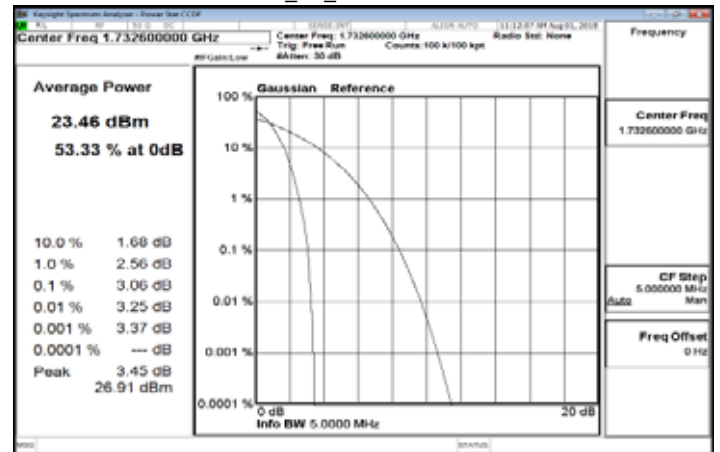
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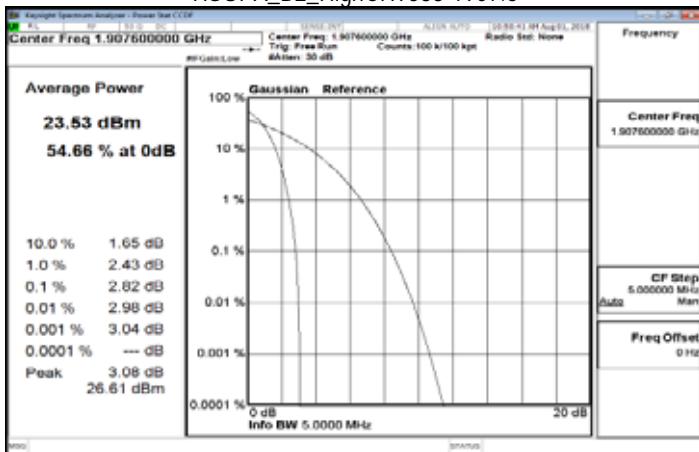
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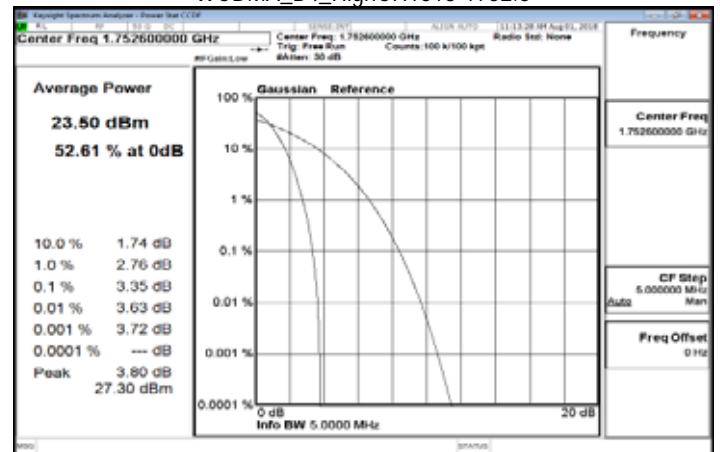
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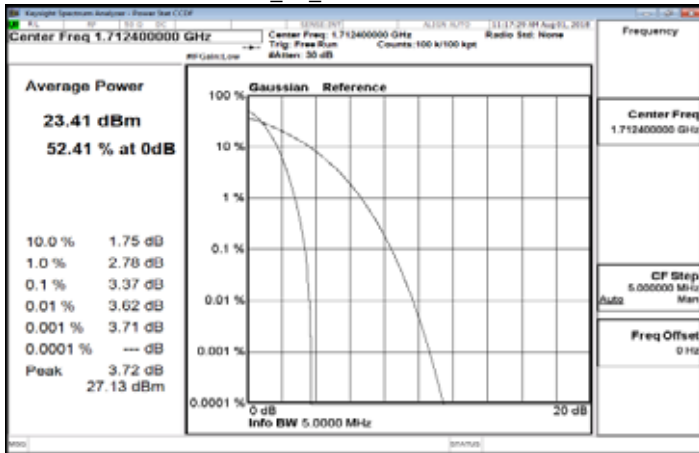


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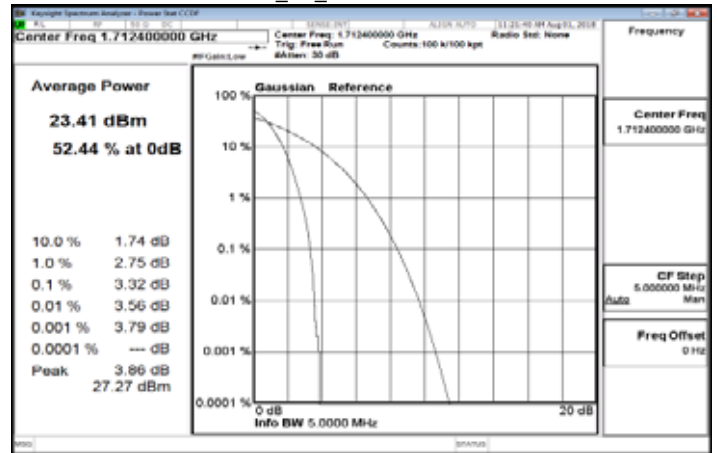
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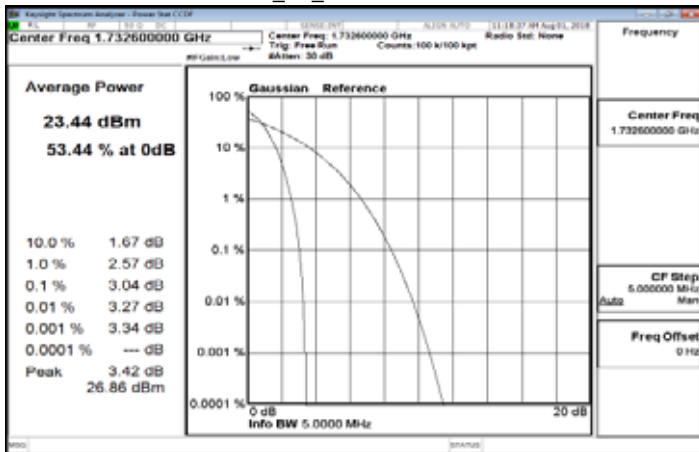
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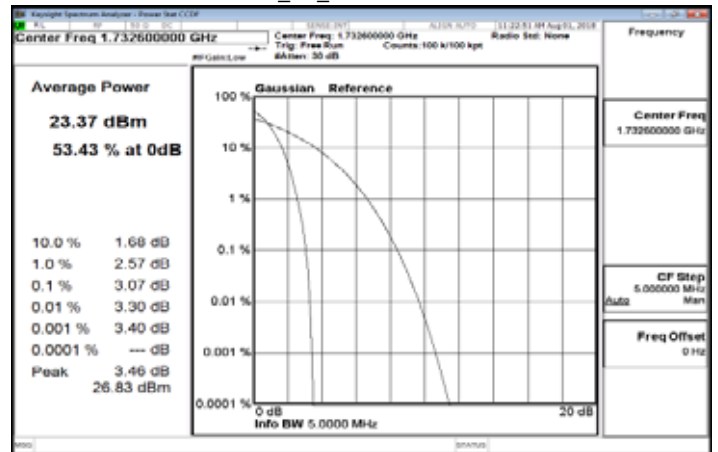
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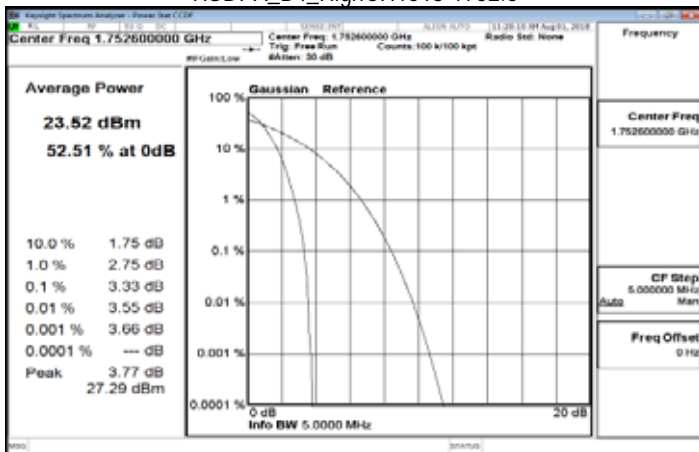
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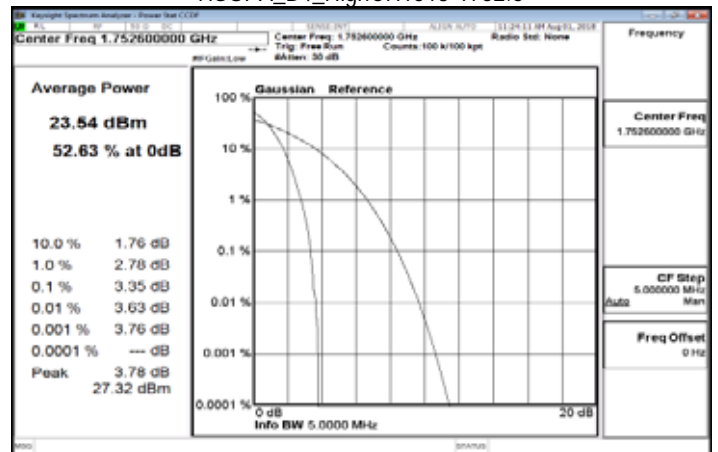
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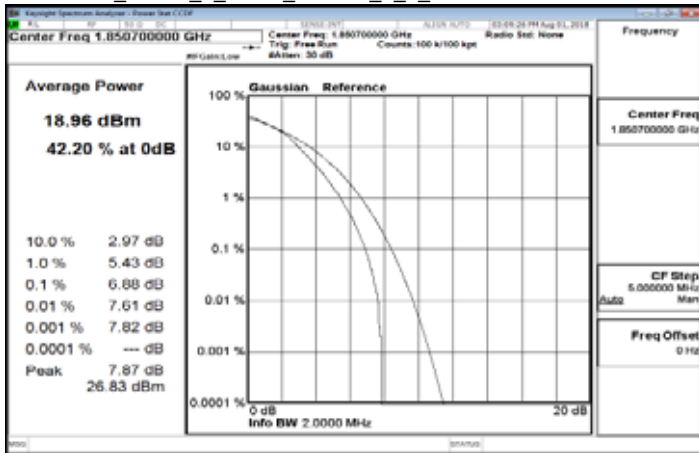
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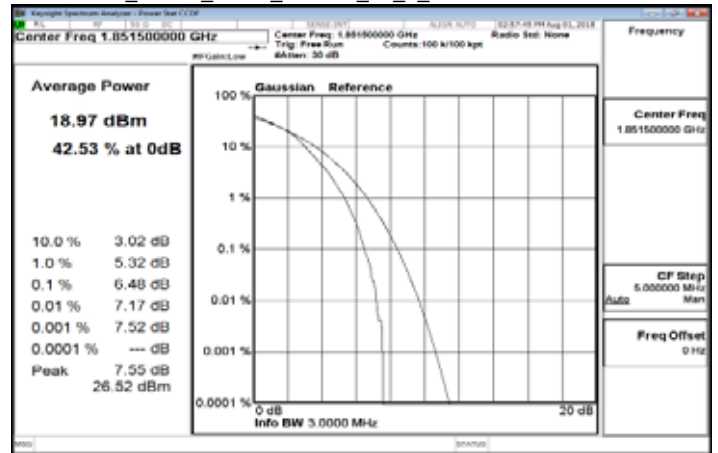
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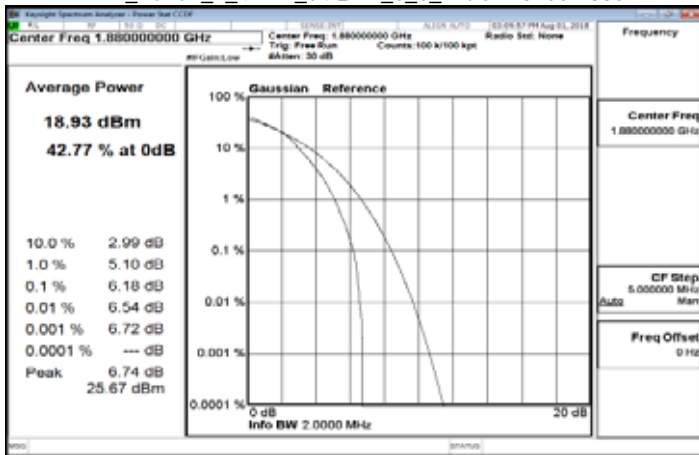
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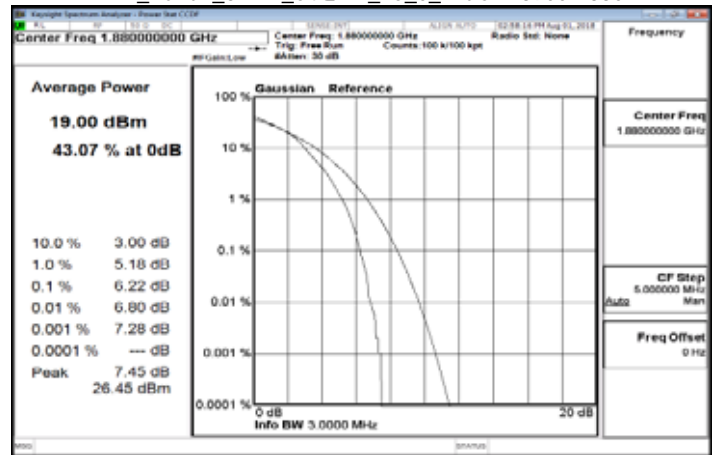
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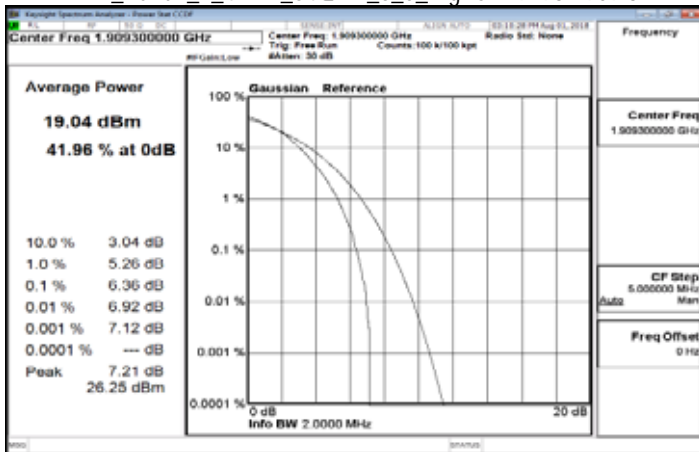
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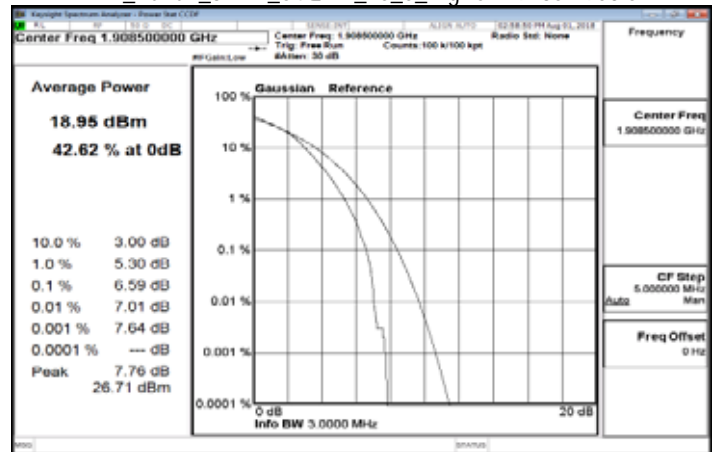
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LTE\_Band2\_1\_4MHz\_64QAM\_6\_0\_HighCH19193-1909.3



LTE\_Band2\_3MHz\_64QAM\_15\_0\_HighCH19185-1908.5



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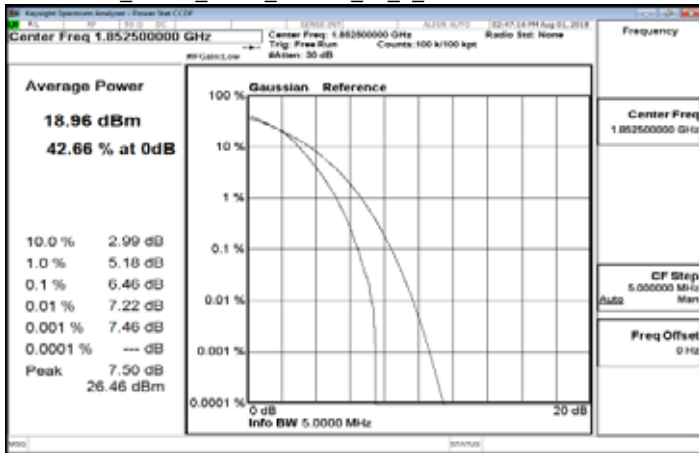
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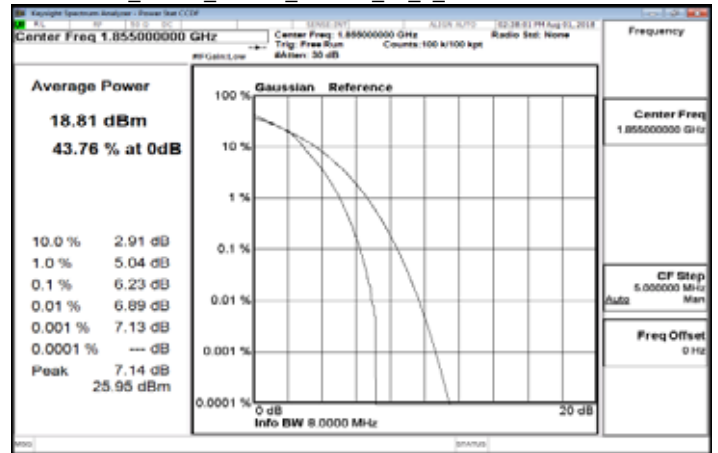
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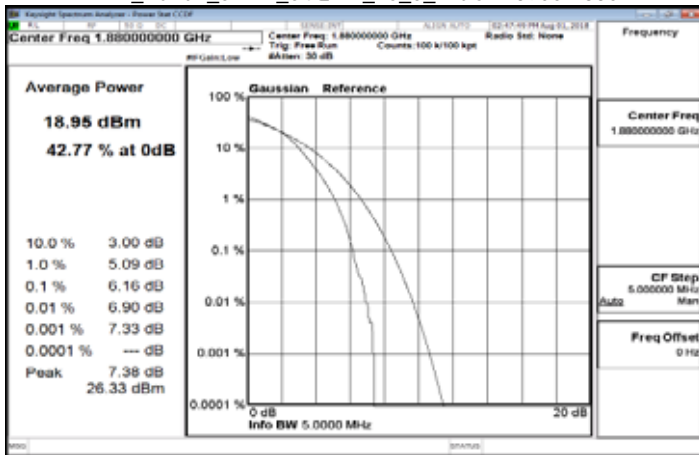
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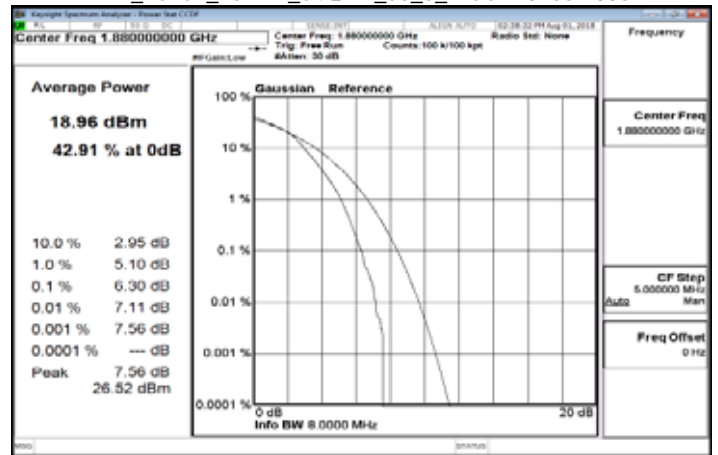
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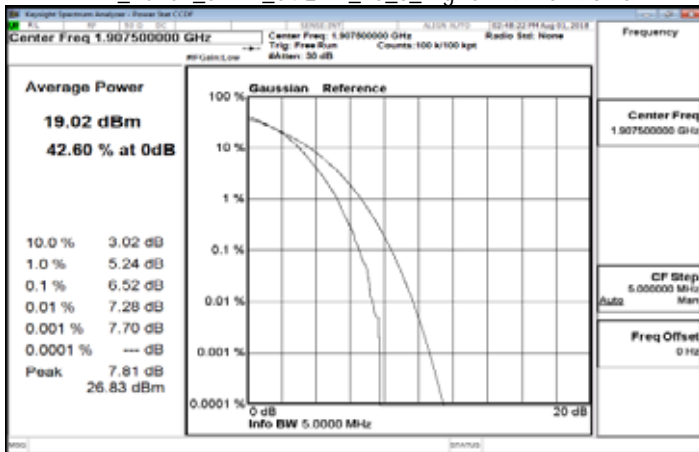
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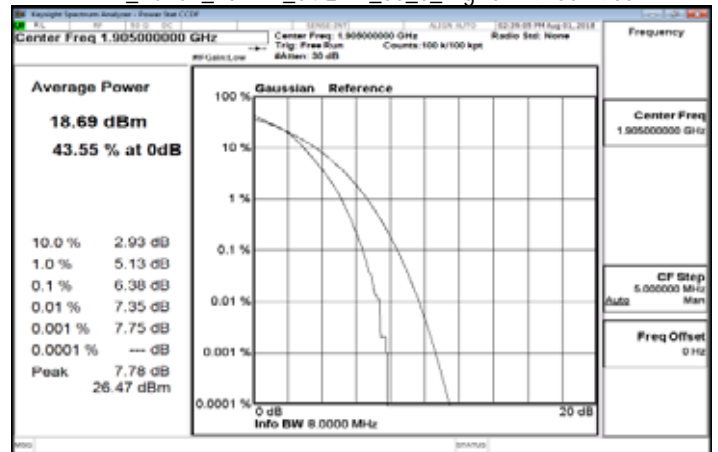
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LTE\_Band2\_10MHz\_64QAM\_50\_0\_HighCH19150-1905



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