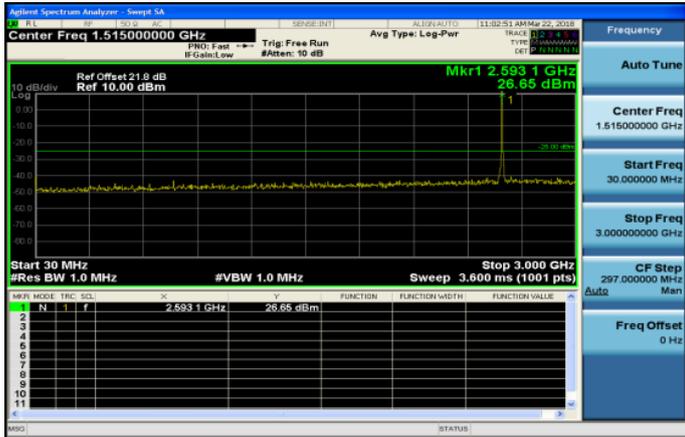
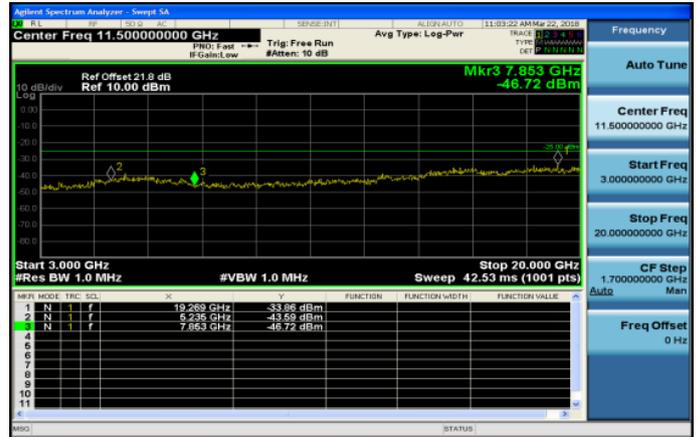


30MHz~3GHz\_Band38\_5MHz\_QPSK\_1\_0\_MidCH38000-2595



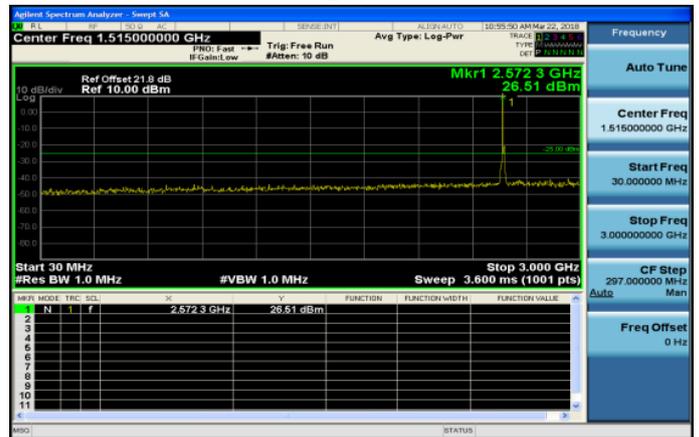
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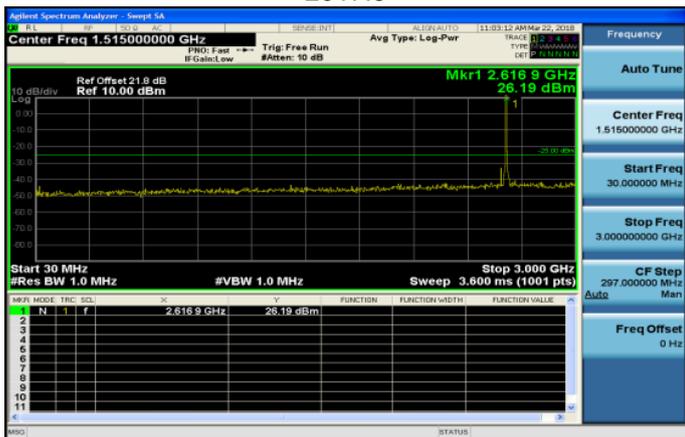
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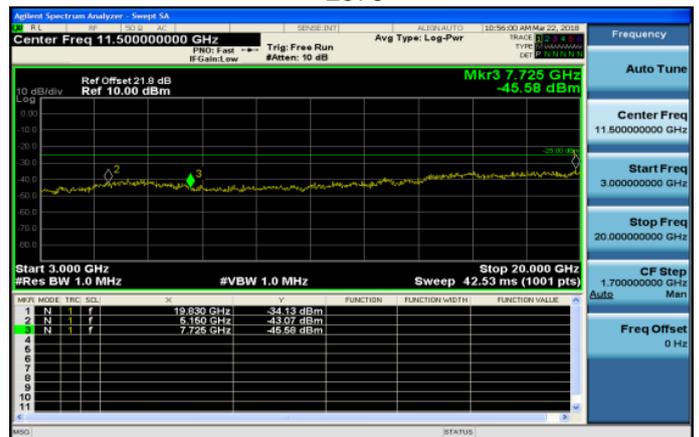
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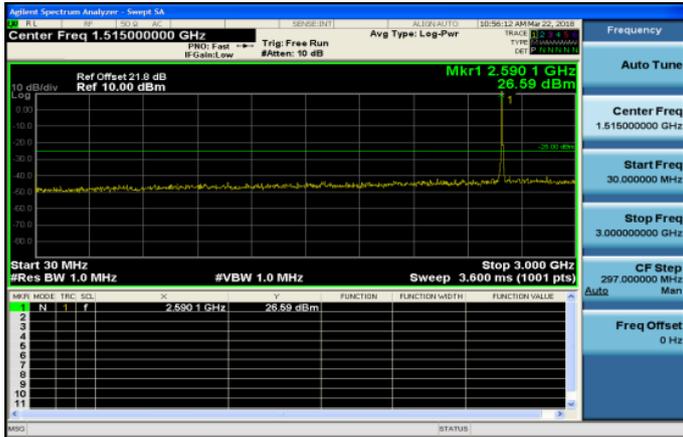


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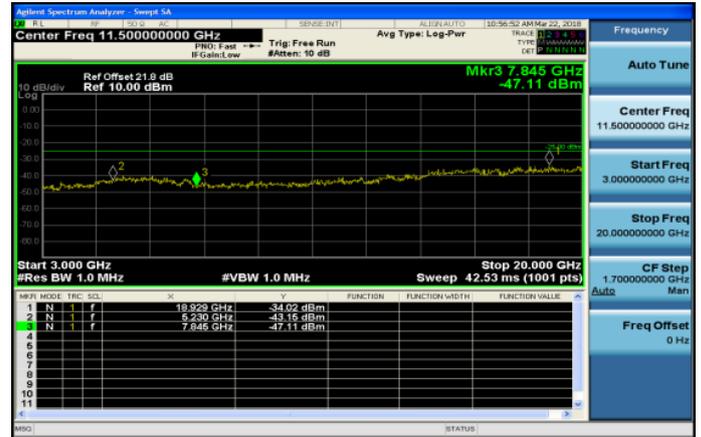
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30MHz~3GHz\_Band38\_10MHz\_QPSK\_1\_0\_MidCH38000-2595



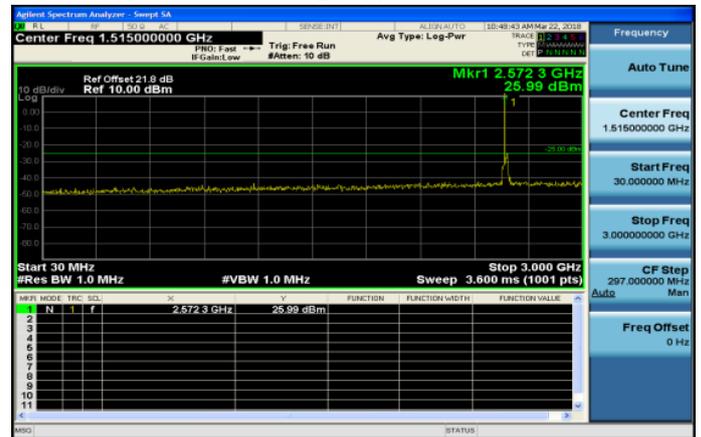
3GHz~10GHz\_Band38\_10MHz\_QPSK\_1\_0\_HighCH38200-2615



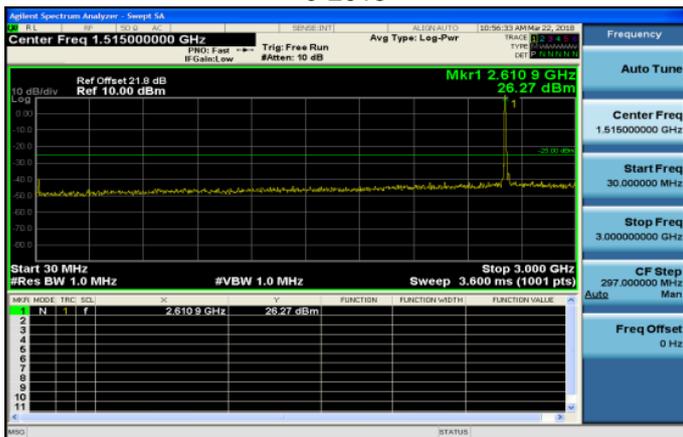
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30MHz~3GHz\_Band38\_15MHz\_QPSK\_1\_0\_LowCH37825-2577.5



30MHz~3GHz\_Band38\_10MHz\_QPSK\_1\_0\_HighCH382000-2615



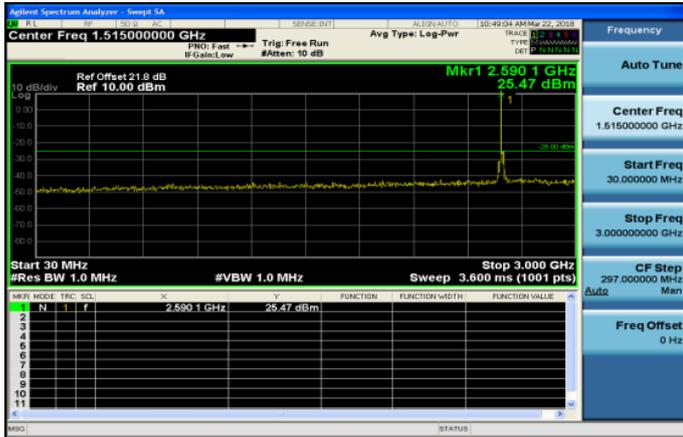
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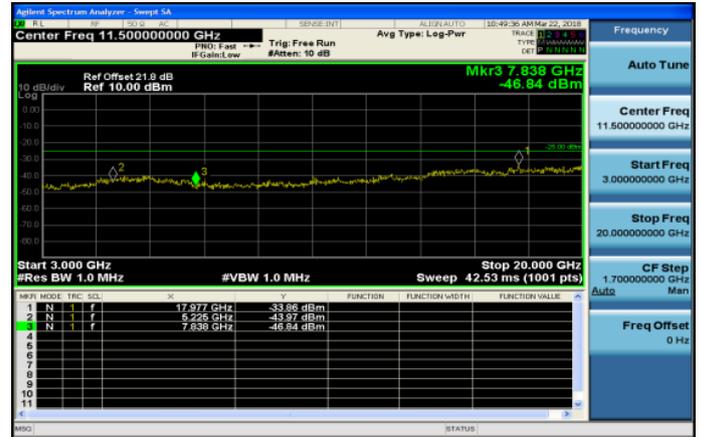
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30MHz~3GHz\_Band38\_15MHz\_QPSK\_1\_0\_MidCH38000-2595



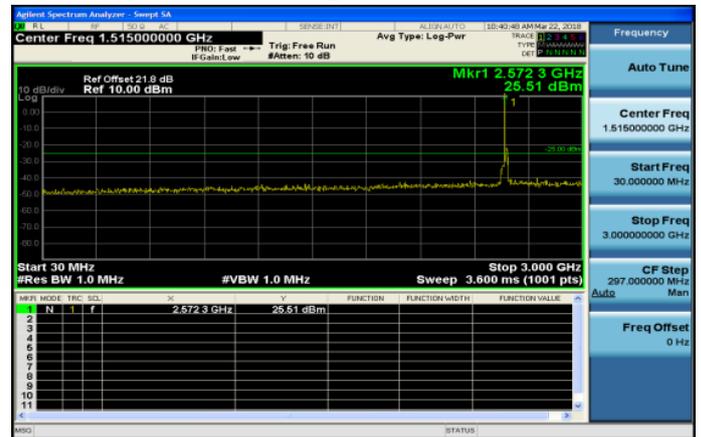
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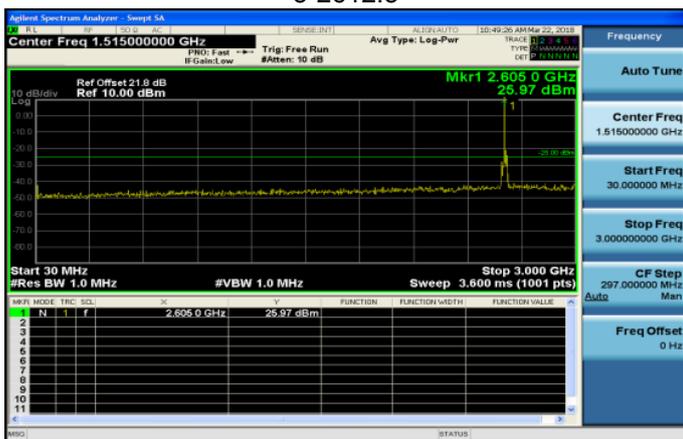
3GHz~10GHz\_Band38\_15MHz\_QPSK\_1\_0\_MidCH38000-2595



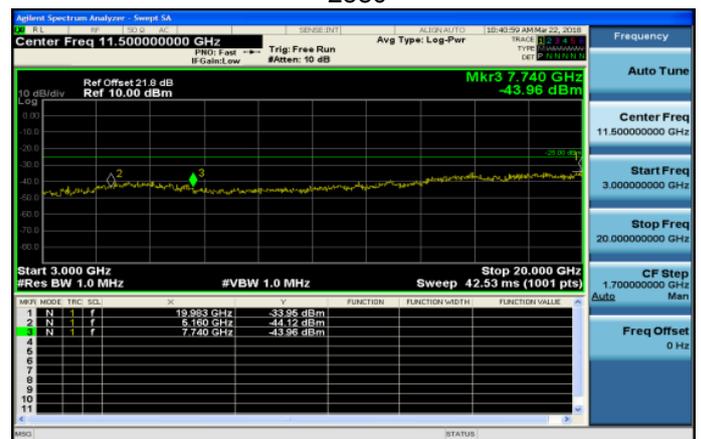
30MHz~3GHz\_Band38\_20MHz\_QPSK\_1\_0\_LowCH37850-2580



30MHz~3GHz\_Band38\_15MHz\_QPSK\_1\_0\_HighCH38175-2612.5



3GHz~10GHz\_Band38\_20MHz\_QPSK\_1\_0\_LowCH37850-2580



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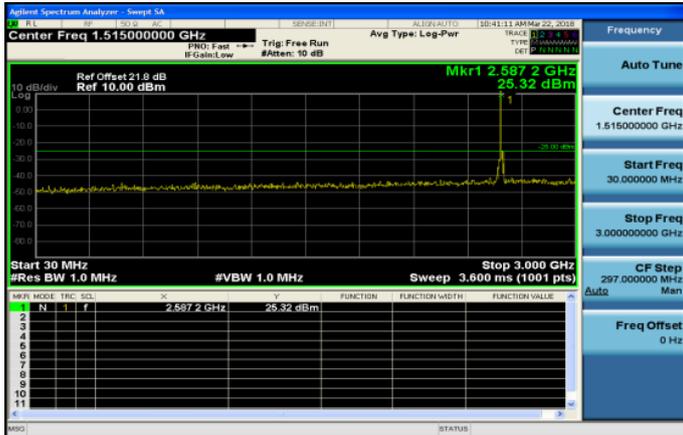
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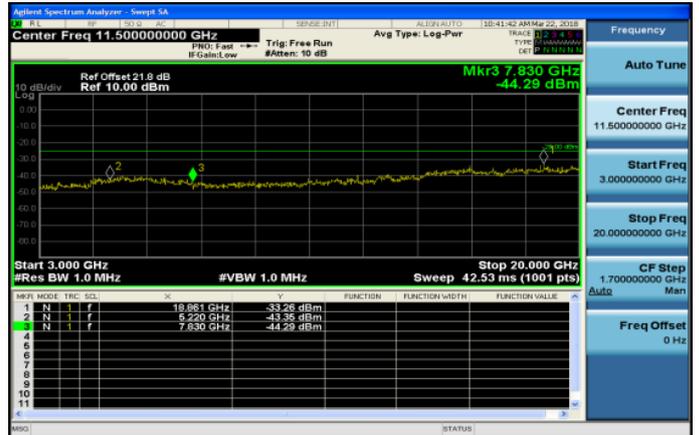
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30MHz~3GHz\_Band38\_20MHz\_QPSK\_1\_0\_MidCH38000-2595



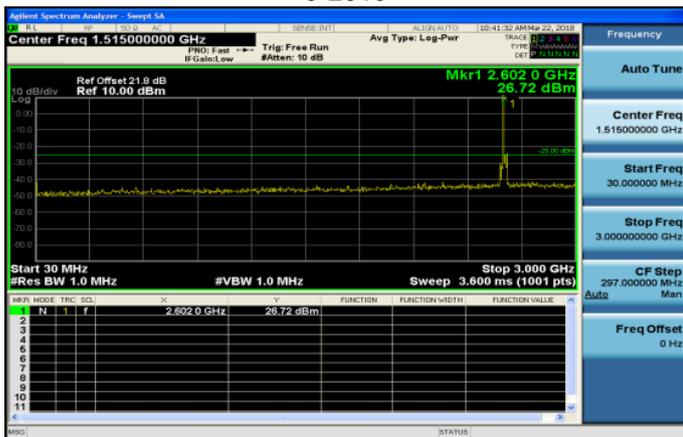
3GHz~10GHz\_Band38\_20MHz\_QPSK\_1\_0\_HighCH38150-2610



3GHz~10GHz\_Band38\_20MHz\_QPSK\_1\_0\_MidCH38000-2595



30MHz~3GHz\_Band38\_20MHz\_QPSK\_1\_0\_HighCH38150-2610



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## 10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### 10.1. 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).

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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## FCC §27.53(m) (4)

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 on 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.

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.

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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	$43 + 10 \log_{10}(p)^{\text{Note}}$
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	$43 + 10 \log_{10}(p)^{\text{Note}}$
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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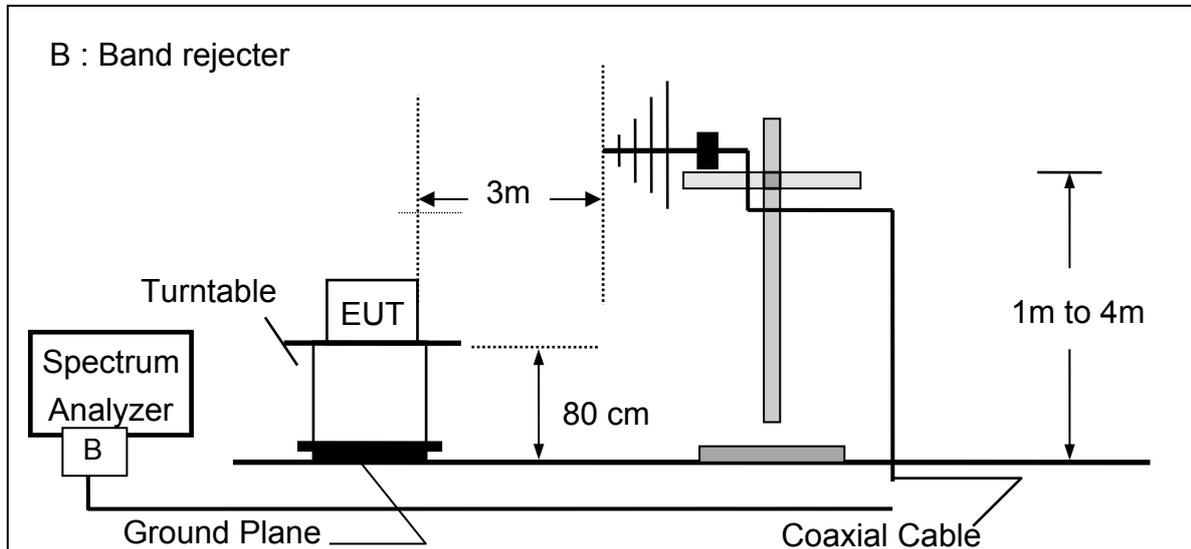
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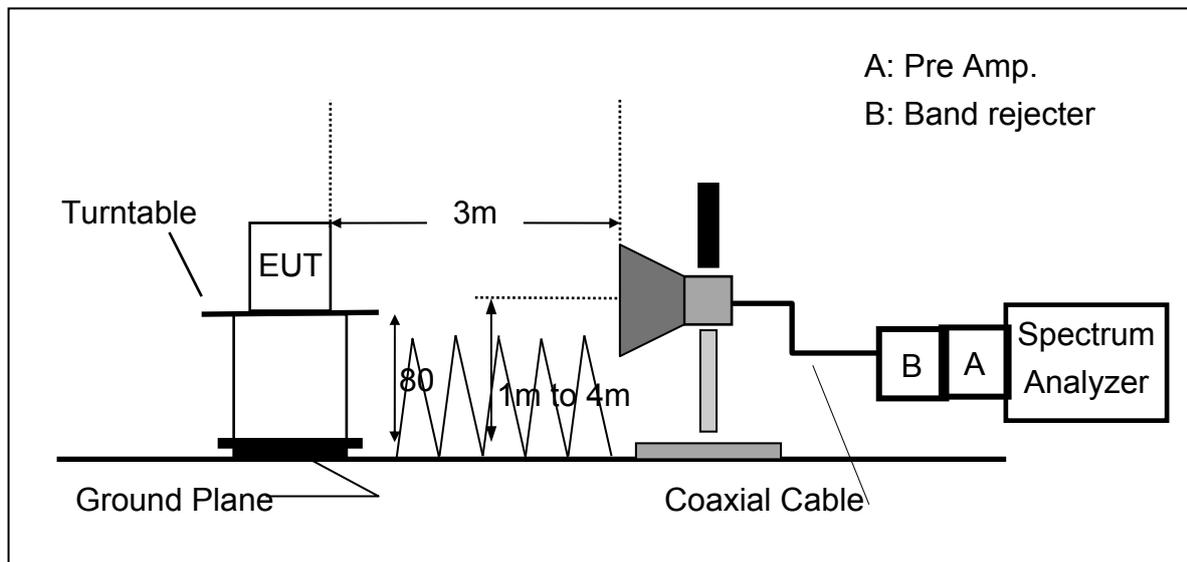
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## 10.2. EUT Setup

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



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



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### 10.3. 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.

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

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

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

### 10.4. Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	2017/12/29	2018/12/28
Bi-log Antenna	SCHWAZBECK	VULB9168	300	2017/12/20	2018/12/19
Horn Antenna	Schwarzbeck	BBHA9120D	309	2018/01/04	2019/01/03
Horn Antenna	Schwarzbeck	BBHA9120D	1441	2017/08/04	2018/08/03
Spectrum Analyzer	Agilent	E4446A	MY51100003	2017/05/10	2018/05/09
EMI Test Receiver	R&S	ESCI7	100760	2017/06/06	2018/06/05
Network Analyzer	Anritsu	MS4644A	1216312	2017/05/25	2018/05/24
Radio Communication Analyser	Anritsu	MT8820C	6201465317	2018/01/15	2019/01/14
Pre-Amplifier	HP	8449B	3008A00578	2018/01/02	2019/01/01
Pre-Amplifier	HP	8447D	2944A07676	2018/01/02	2019/01/01
Attenuator	Mini-Circuit	BW-S10W2+	N/A	2018/01/02	2019/01/01
Filter 800-1000	Micro-Tronics	EWT	M1	2018/01/02	2019/01/01
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966_RX	9	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966 TX	1	2018/01/02	2019/01/01

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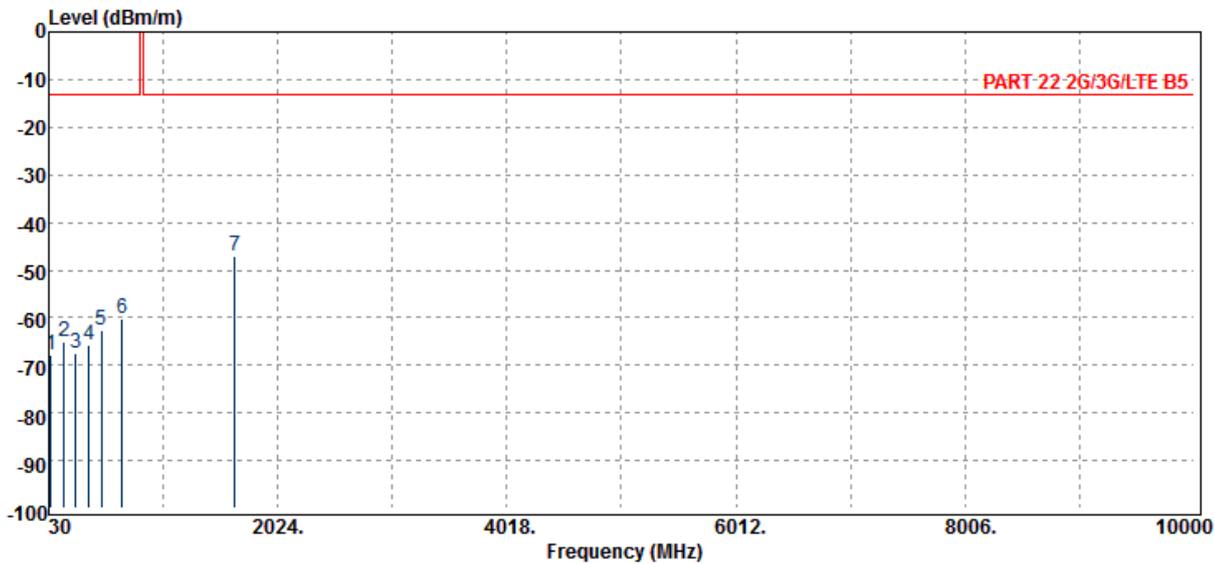
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### 10.5. Measurement Result:

#### Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:824.2 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



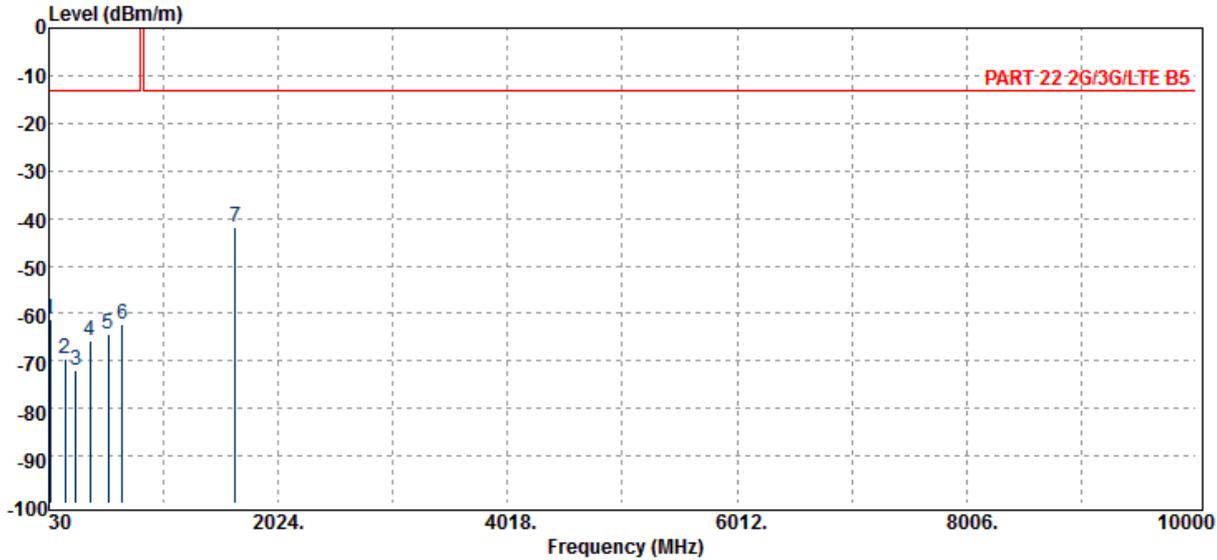
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
44.55	S	-67.93	-55.12	-12.12	-0.69	-13.00	-54.93
160.95	S	-65.14	-62.65	-1.18	-1.30	-13.00	-52.14
264.74	S	-67.36	-69.24	3.59	-1.71	-13.00	-54.36
382.11	S	-65.90	-67.64	3.76	-2.02	-13.00	-52.90
488.81	S	-62.74	-64.77	3.94	-1.91	-13.00	-49.74
668.26	S	-60.05	-61.65	3.77	-2.17	-13.00	-47.05
1648.40	H	-47.04	-49.66	6.97	-4.35	-13.00	-34.04

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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:824.2 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



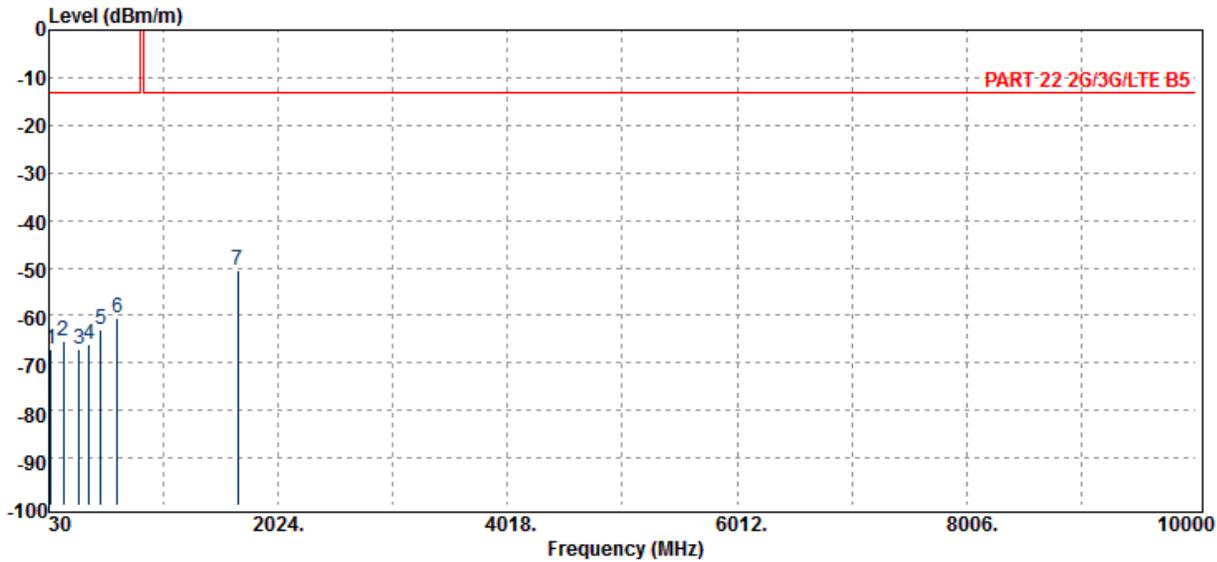
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
39.70	S	-61.12	-47.74	-12.72	-0.66	-13.00	-48.12
170.65	S	-69.63	-67.78	-0.51	-1.33	-13.00	-56.63
265.71	S	-72.10	-73.97	3.57	-1.71	-13.00	-59.10
386.96	S	-65.82	-67.55	3.75	-2.02	-13.00	-52.82
548.95	S	-64.46	-66.47	3.98	-1.97	-13.00	-51.46
667.29	S	-62.27	-63.94	3.78	-2.11	-13.00	-49.27
1648.40	H	-42.02	-44.65	6.97	-4.35	-13.00	-29.02

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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:VERTICAL
EUT Pol.	:H Plane	Pol.	



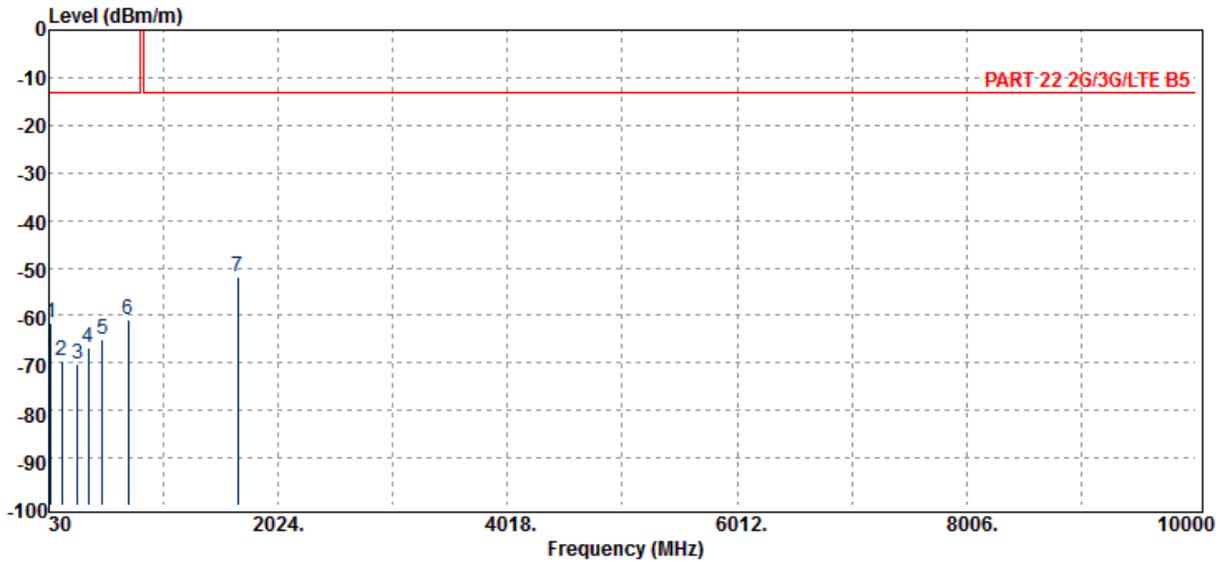
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
46.49	S	-67.21	-54.69	-11.81	-0.71	-13.00	-54.21
156.10	S	-65.53	-62.77	-1.46	-1.30	-13.00	-52.53
291.90	S	-67.02	-68.69	3.46	-1.79	-13.00	-54.02
382.11	S	-66.19	-67.94	3.76	-2.02	-13.00	-53.19
483.96	S	-63.00	-65.04	3.89	-1.85	-13.00	-50.00
624.61	S	-60.45	-61.34	3.68	-2.80	-13.00	-47.45
1673.20	H	-50.44	-53.11	7.06	-4.39	-13.00	-37.44

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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



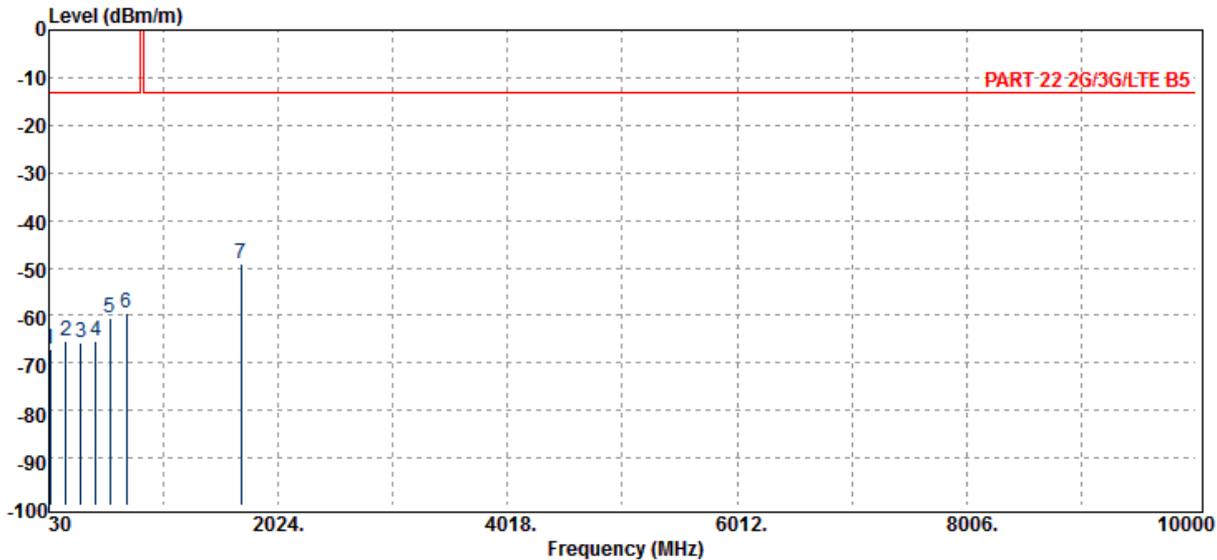
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
44.55	S	-61.66	-48.86	-12.12	-0.69	-13.00	-48.66
139.61	S	-69.66	-66.11	-2.29	-1.26	-13.00	-56.66
280.26	S	-70.31	-71.98	3.42	-1.75	-13.00	-57.31
374.35	S	-66.93	-68.68	3.78	-2.04	-13.00	-53.93
492.69	S	-64.88	-66.85	3.98	-2.01	-13.00	-51.88
720.64	S	-60.74	-61.56	3.59	-2.78	-13.00	-47.74
1673.20	H	-51.82	-54.48	7.06	-4.39	-13.00	-38.82

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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



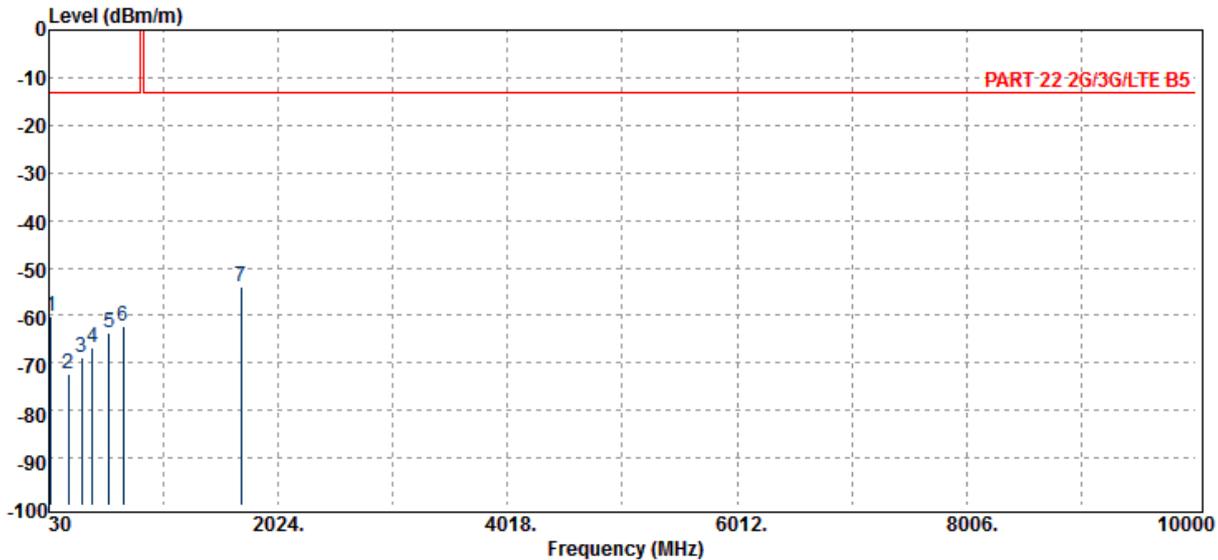
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
41.64	S	-66.99	-53.84	-12.47	-0.67	-13.00	-53.99
175.50	S	-65.47	-64.38	0.27	-1.36	-13.00	-52.47
311.30	S	-65.85	-67.67	3.67	-1.86	-13.00	-52.85
440.31	S	-65.45	-67.06	3.57	-1.95	-13.00	-52.45
560.59	S	-60.68	-61.96	3.88	-2.61	-13.00	-47.68
706.09	S	-59.47	-61.25	3.65	-1.87	-13.00	-46.47
1697.60	H	-49.08	-51.79	7.14	-4.43	-13.00	-36.08

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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
46.49	S	-60.28	-47.76	-11.81	-0.71	-13.00	-47.28
202.66	S	-72.33	-74.11	3.26	-1.49	-13.00	-59.33
316.15	S	-68.92	-70.75	3.70	-1.86	-13.00	-55.92
406.36	S	-66.82	-68.36	3.69	-2.15	-13.00	-53.82
551.86	S	-63.81	-65.64	3.96	-2.13	-13.00	-50.81
672.14	S	-62.21	-63.53	3.76	-2.45	-13.00	-49.21
1697.60	H	-53.96	-56.67	7.14	-4.43	-13.00	-40.96

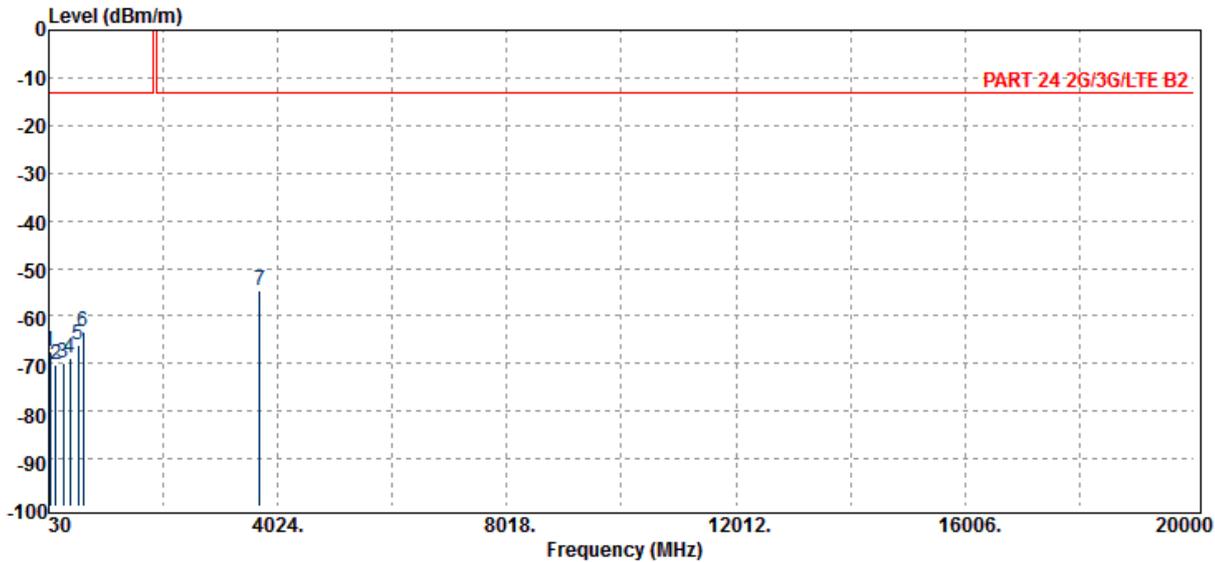
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### Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Band :GPRS 1900 Temp./Humi. :22 deg\_C / 61 RH  
 Fundamental Frequency :1850.2 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



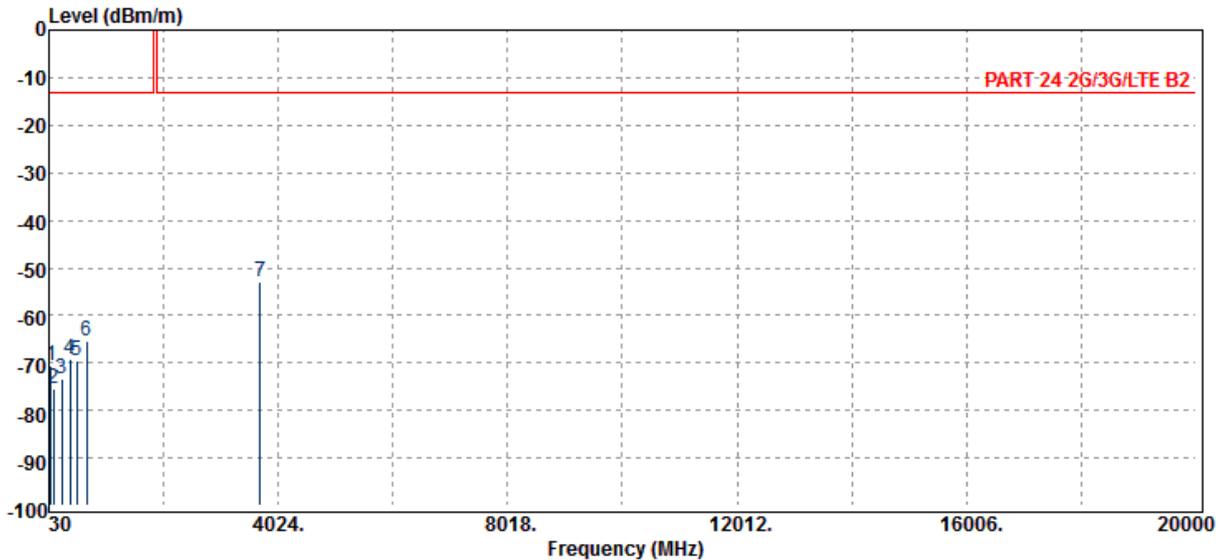
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
57.16	S	-67.45	-59.08	-7.29	-1.07	-13.00	-54.45
151.25	S	-70.14	-68.82	0.11	-1.44	-13.00	-57.14
277.35	S	-69.73	-73.46	5.60	-1.86	-13.00	-56.73
393.75	S	-68.98	-72.62	5.98	-2.34	-13.00	-55.98
543.13	S	-65.93	-69.07	5.77	-2.63	-13.00	-52.93
636.25	S	-63.25	-66.12	5.32	-2.45	-13.00	-50.25
3700.40	H	-54.72	-60.58	12.44	-6.58	-13.00	-41.72

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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1850.2 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW	Measurement Antenna	:HORIZONTAL
EUT Pol.	:H Plane	Pol.	



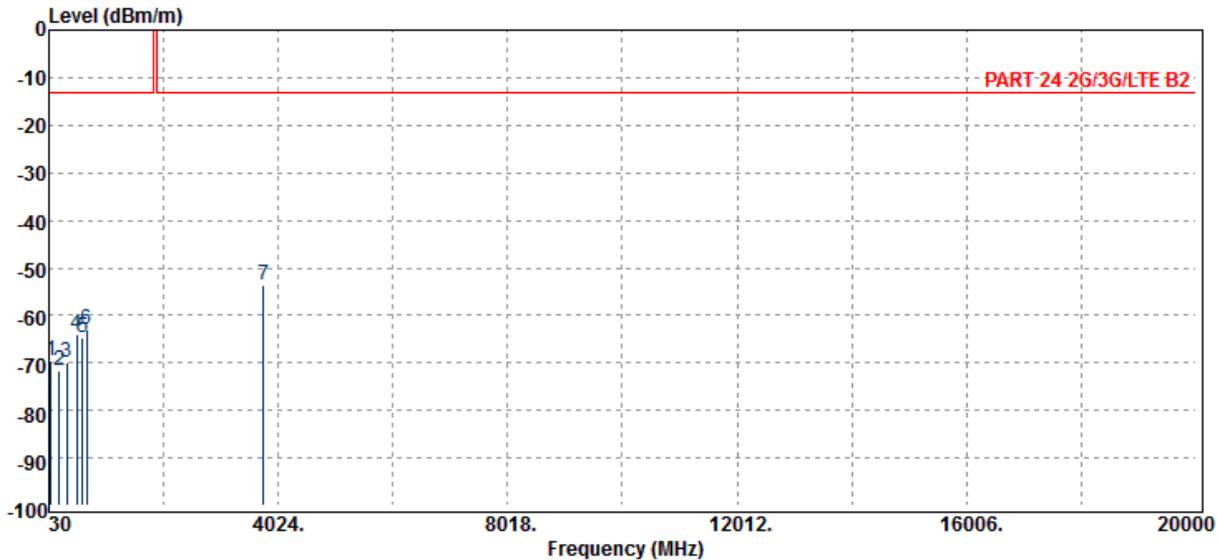
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
60.07	S	-70.47	-62.80	-6.59	-1.08	-13.00	-57.47
116.33	S	-75.32	-73.70	-0.31	-1.31	-13.00	-62.32
257.95	S	-73.50	-77.51	5.78	-1.77	-13.00	-60.50
397.63	S	-69.30	-72.91	5.97	-2.37	-13.00	-56.30
510.15	S	-69.43	-73.04	5.95	-2.34	-13.00	-56.43
694.45	S	-65.43	-67.79	5.24	-2.88	-13.00	-52.43
3700.40	H	-53.08	-58.94	12.44	-6.58	-13.00	-40.08

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Operation Band :GPRS 1900 Temp./Humi. :22 deg\_C / 61 RH  
 Fundamental Frequency :1880 MHz Engineer :Tin  
 Operation Mode :Tx CH MID  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



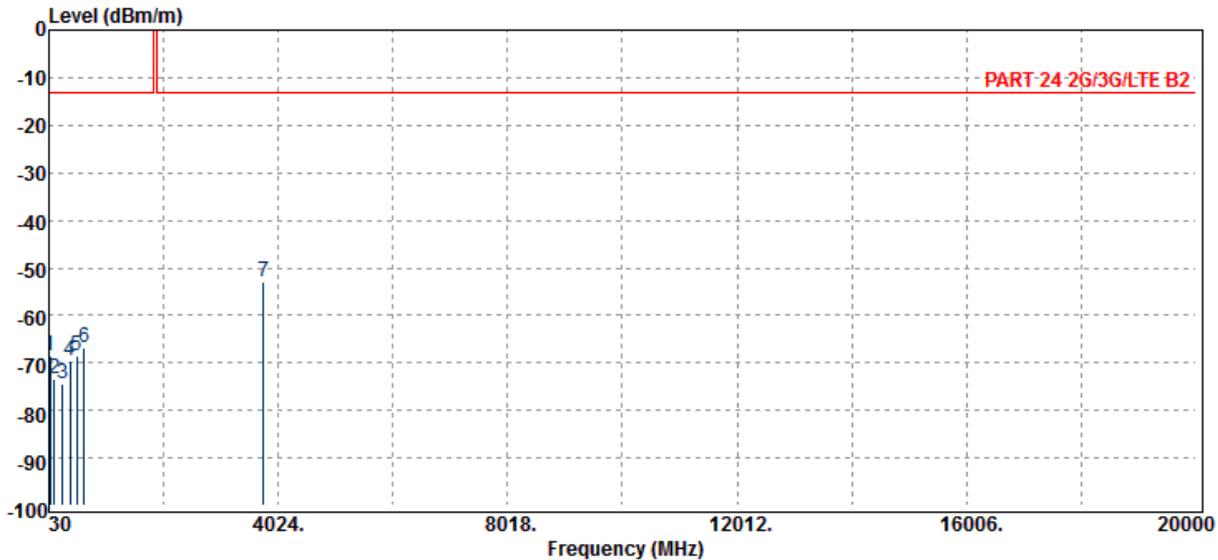
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
70.74	S	-69.62	-64.97	-3.53	-1.12	-13.00	-56.62
204.60	S	-71.58	-75.38	5.45	-1.65	-13.00	-58.58
335.55	S	-69.83	-73.84	5.95	-1.93	-13.00	-56.83
510.15	S	-64.11	-67.72	5.95	-2.34	-13.00	-51.11
609.09	S	-64.66	-67.39	5.37	-2.65	-13.00	-51.66
694.45	S	-63.04	-65.40	5.24	-2.88	-13.00	-50.04
3760.00	H	-53.66	-59.51	12.45	-6.60	-13.00	-40.66

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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:HORIZONTAL
EUT Pol.	:H Plane	Pol.	



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
56.19	S	-68.35	-59.74	-7.54	-1.07	-13.00	-55.35
127.00	S	-73.44	-71.66	-0.43	-1.35	-13.00	-60.44
268.62	S	-74.31	-78.17	5.68	-1.82	-13.00	-61.31
399.57	S	-69.61	-73.20	5.97	-2.38	-13.00	-56.61
511.12	S	-68.44	-72.04	5.95	-2.35	-13.00	-55.44
643.04	S	-66.76	-69.63	5.30	-2.43	-13.00	-53.76
3760.00	H	-53.00	-58.86	12.45	-6.60	-13.00	-40.00

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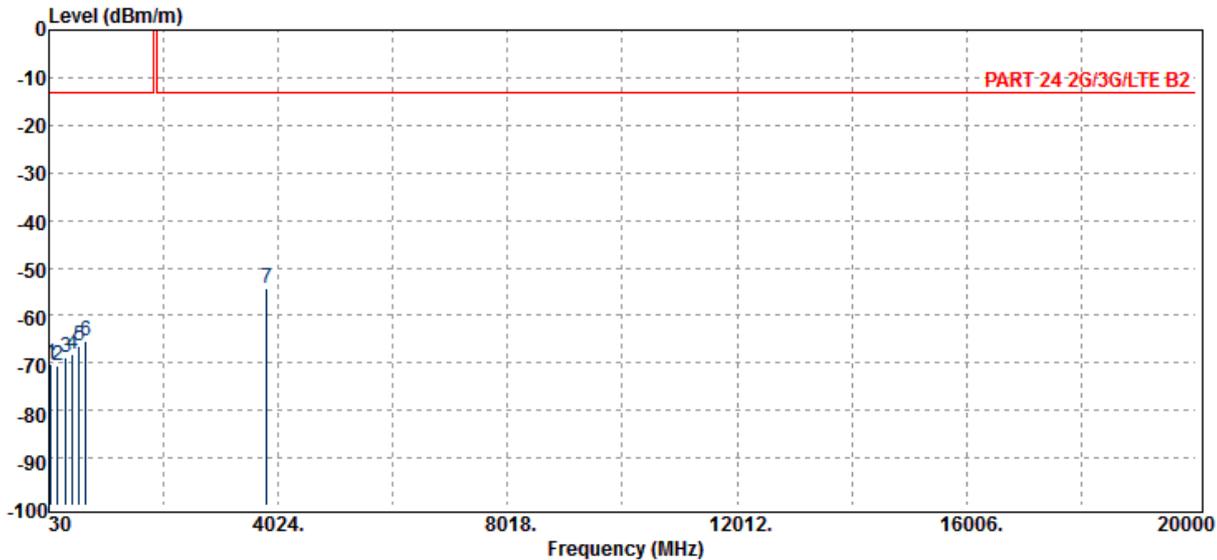
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH	Measurement Antenna	:VERTICAL
EUT Pol.	:H Plane	Pol.	



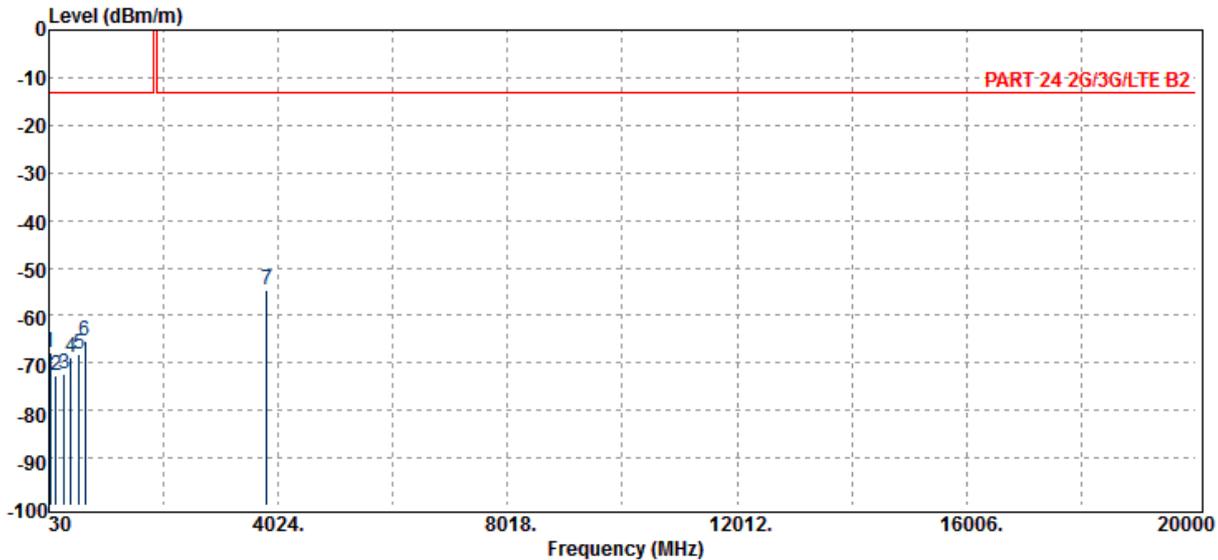
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
70.74	S	-70.09	-65.45	-3.53	-1.12	-13.00	-57.09
181.32	S	-70.70	-72.40	3.26	-1.57	-13.00	-57.70
327.79	S	-68.95	-72.95	5.91	-1.92	-13.00	-55.95
449.04	S	-68.27	-71.88	5.80	-2.19	-13.00	-55.27
556.71	S	-66.32	-69.26	5.69	-2.75	-13.00	-53.32
672.14	S	-65.50	-68.29	5.26	-2.47	-13.00	-52.50
3819.60	H	-54.44	-60.25	12.47	-6.65	-13.00	-41.44

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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH	Measurement Antenna	:HORIZONTAL
EUT Pol.	:H Plane	Pol.	



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
52.31	S	-67.70	-58.10	-8.55	-1.05	-13.00	-54.70
147.37	S	-72.65	-71.13	-0.10	-1.42	-13.00	-59.65
296.75	S	-72.47	-76.23	5.71	-1.95	-13.00	-59.47
406.36	S	-69.01	-72.54	5.95	-2.42	-13.00	-56.01
554.77	S	-68.19	-71.14	5.70	-2.75	-13.00	-55.19
655.65	S	-65.51	-68.40	5.28	-2.39	-13.00	-52.51
3819.60	H	-54.57	-60.39	12.47	-6.65	-13.00	-41.57

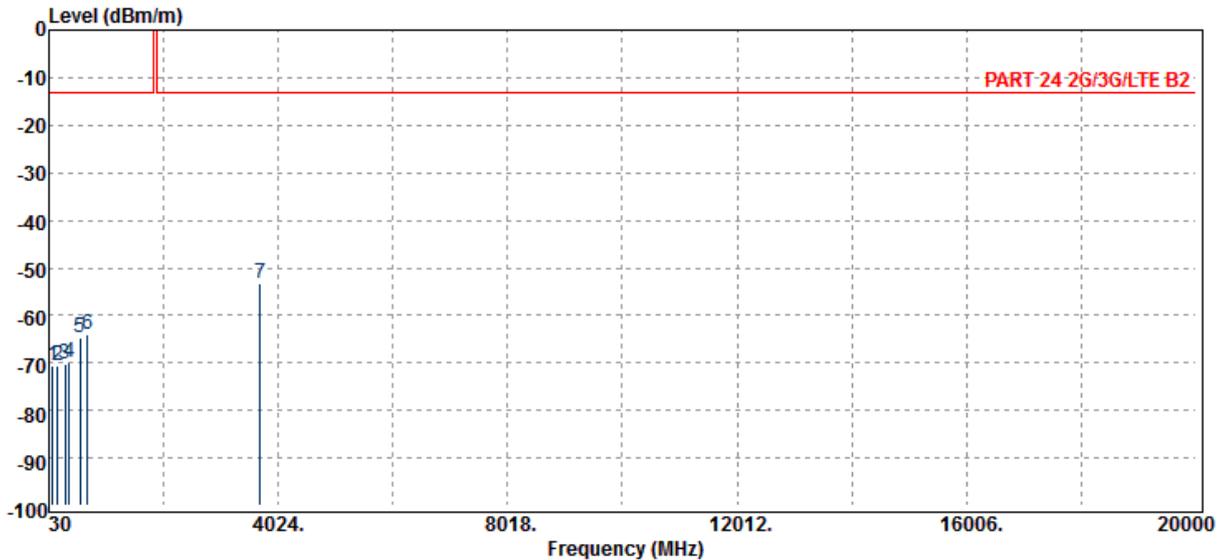
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### Radiated Spurious Emission Measurement Result: HSDPA Band 2 Mode

Operation Band :HSDPA B2 Temp./Humi. :22 deg\_C / 61 RH  
 Fundamental Frequency :1852.4 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



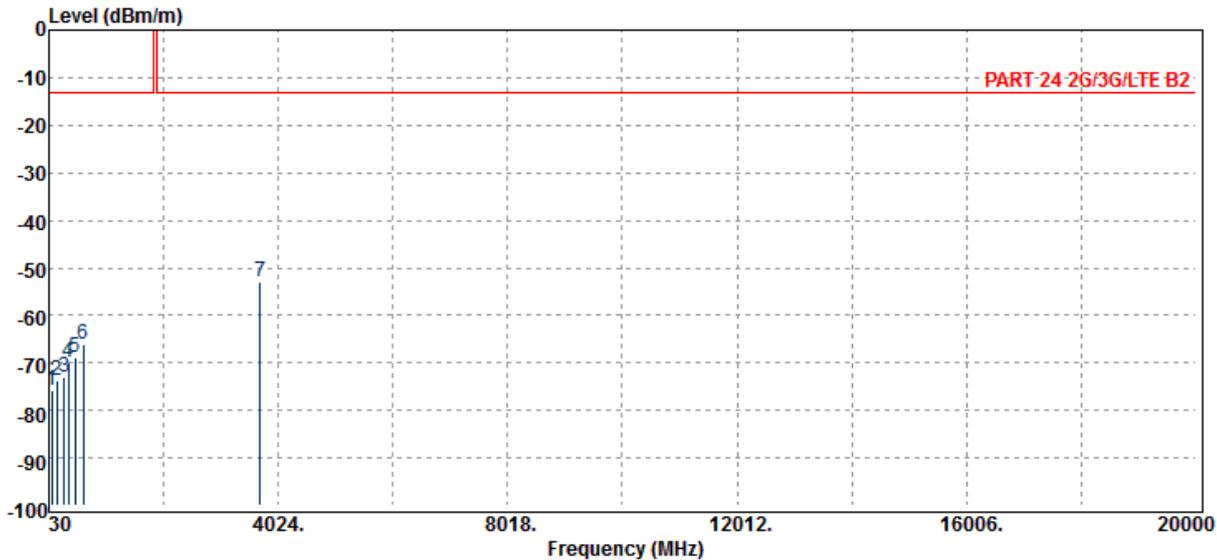
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
96.93	S	-70.74	-70.39	0.88	-1.24	-13.00	-57.74
174.53	S	-70.53	-71.06	2.07	-1.54	-13.00	-57.53
313.24	S	-70.11	-74.02	5.84	-1.93	-13.00	-57.11
389.87	S	-69.75	-73.41	5.98	-2.32	-13.00	-56.75
569.32	S	-64.82	-67.65	5.60	-2.77	-13.00	-51.82
701.24	S	-63.99	-66.22	5.23	-3.00	-13.00	-50.99
3704.80	H	-53.41	-59.27	12.44	-6.58	-13.00	-40.41

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Operation Band :HSDPA B2 Temp./Humi. :22 deg\_C / 61 RH  
 Fundamental Frequency :1852.4 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
75.59	S	-75.68	-72.53	-2.01	-1.14	-13.00	-62.68
161.92	S	-73.82	-72.99	0.66	-1.48	-13.00	-60.82
300.63	S	-73.07	-76.90	5.78	-1.94	-13.00	-60.07
370.47	S	-70.05	-73.84	5.99	-2.20	-13.00	-57.05
487.84	S	-68.85	-72.54	5.96	-2.26	-13.00	-55.85
622.67	S	-66.14	-68.96	5.34	-2.53	-13.00	-53.14
3704.80	H	-53.06	-58.92	12.44	-6.58	-13.00	-40.06

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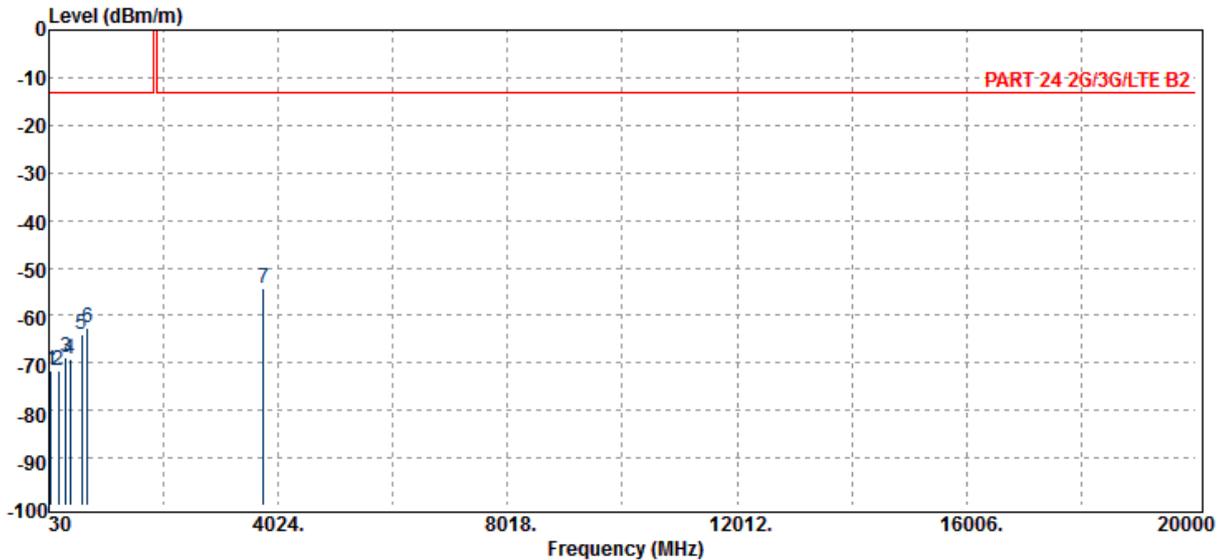
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Operation Band	:HSDPA B2	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:VERTICAL
EUT Pol.	:H Plane	Pol.	



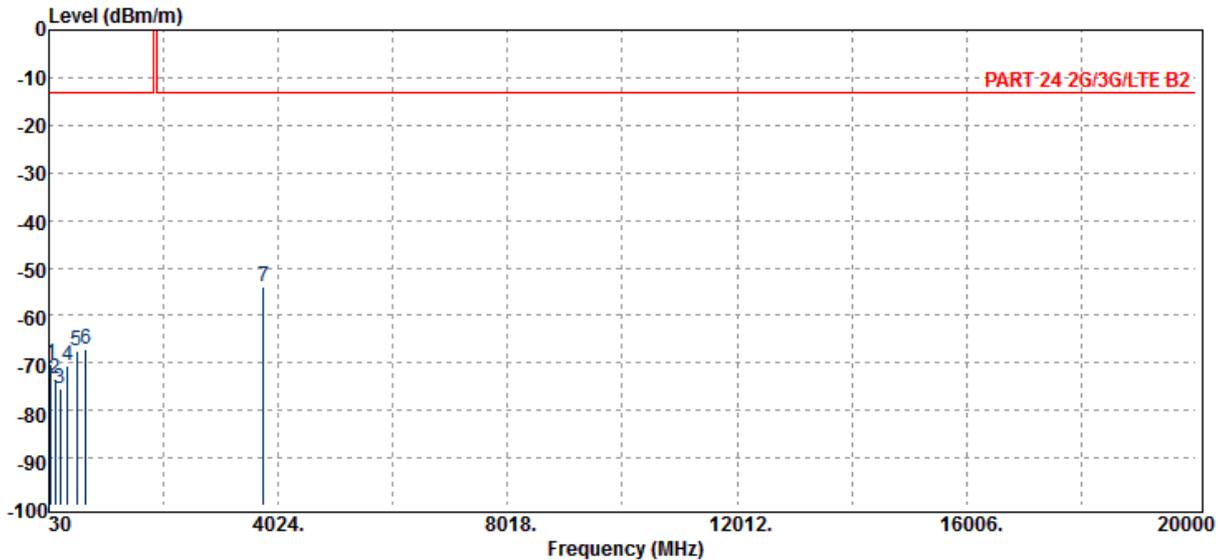
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
70.74	S	-71.61	-66.97	-3.53	-1.12	-13.00	-58.61
197.81	S	-71.63	-75.13	5.13	-1.63	-13.00	-58.63
326.82	S	-68.79	-72.78	5.91	-1.92	-13.00	-55.79
393.75	S	-69.26	-72.90	5.98	-2.34	-13.00	-56.26
605.21	S	-64.04	-66.74	5.38	-2.68	-13.00	-51.04
704.15	S	-62.79	-65.00	5.24	-3.03	-13.00	-49.79
3760.00	H	-54.18	-60.03	12.45	-6.60	-13.00	-41.18

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Operation Band	:HSDPA B2	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
61.04	S	-70.22	-62.84	-6.29	-1.09	-13.00	-57.22
142.52	S	-73.25	-71.46	-0.39	-1.40	-13.00	-60.25
231.76	S	-75.36	-78.93	5.29	-1.73	-13.00	-62.36
354.95	S	-70.55	-74.47	6.01	-2.09	-13.00	-57.55
516.94	S	-67.54	-71.09	5.91	-2.37	-13.00	-54.54
674.08	S	-67.28	-70.03	5.26	-2.51	-13.00	-54.28
3760.00	H	-53.89	-59.74	12.45	-6.60	-13.00	-40.89

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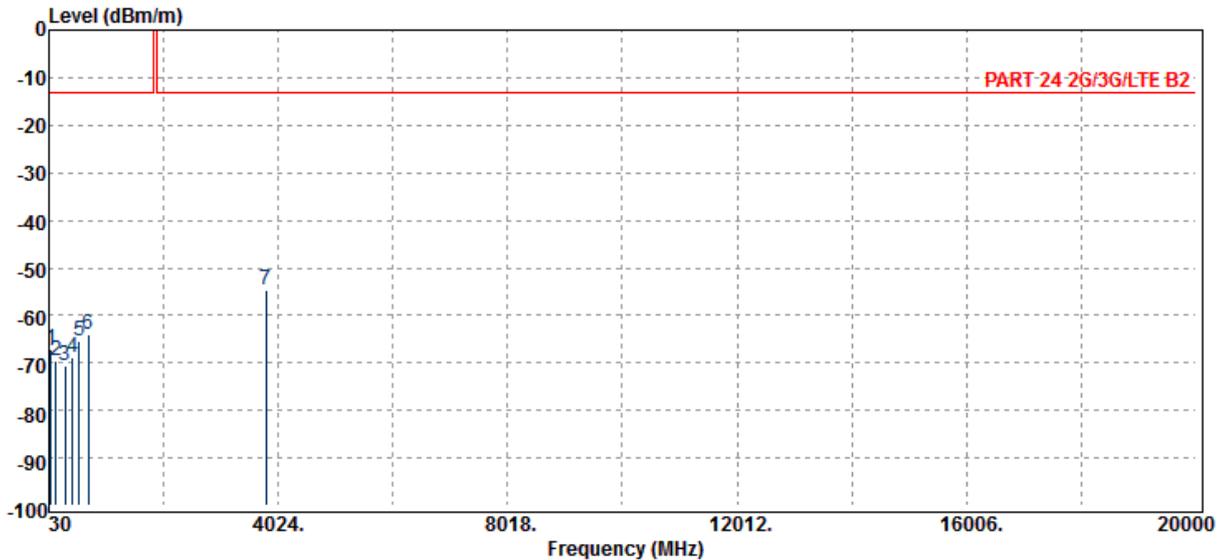
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Operation Band :HSDPA B2 Temp./Humi. :22 deg\_C / 61 RH  
 Fundamental Frequency :1907.6 MHz Engineer :Tin  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
63.95	S	-67.16	-60.63	-5.43	-1.10	-13.00	-54.16
154.16	S	-69.67	-68.47	0.25	-1.45	-13.00	-56.67
311.30	S	-70.60	-74.50	5.83	-1.93	-13.00	-57.60
436.43	S	-68.71	-72.33	5.84	-2.23	-13.00	-55.71
553.80	S	-65.49	-68.47	5.71	-2.74	-13.00	-52.49
710.94	S	-64.17	-66.38	5.25	-3.05	-13.00	-51.17
3815.20	H	-54.53	-60.36	12.46	-6.63	-13.00	-41.53

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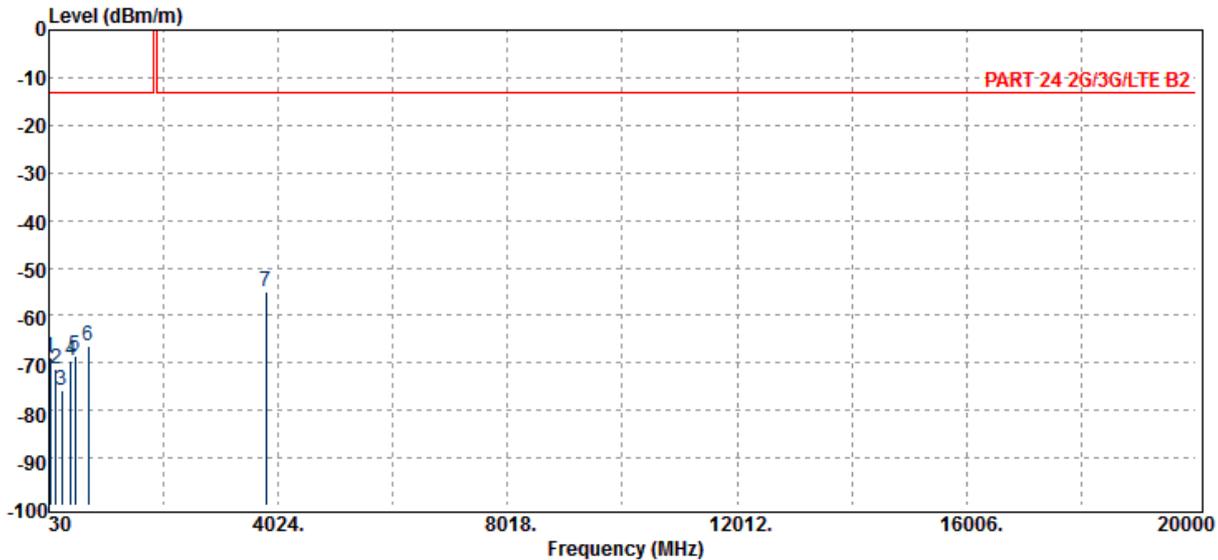
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Operation Band	:HSDPA B2	Temp./Humi.	:22 deg_C / 61 RH
Fundamental Frequency	:1907.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
56.19	S	-68.87	-60.26	-7.54	-1.07	-13.00	-55.87
149.31	S	-71.38	-69.96	0.01	-1.43	-13.00	-58.38
250.19	S	-75.62	-79.46	5.59	-1.76	-13.00	-62.62
413.15	S	-69.71	-73.25	5.92	-2.38	-13.00	-56.71
487.84	S	-68.40	-72.09	5.96	-2.26	-13.00	-55.40
712.88	S	-66.35	-68.54	5.26	-3.06	-13.00	-53.35
3815.20	H	-54.97	-60.80	12.46	-6.63	-13.00	-41.97

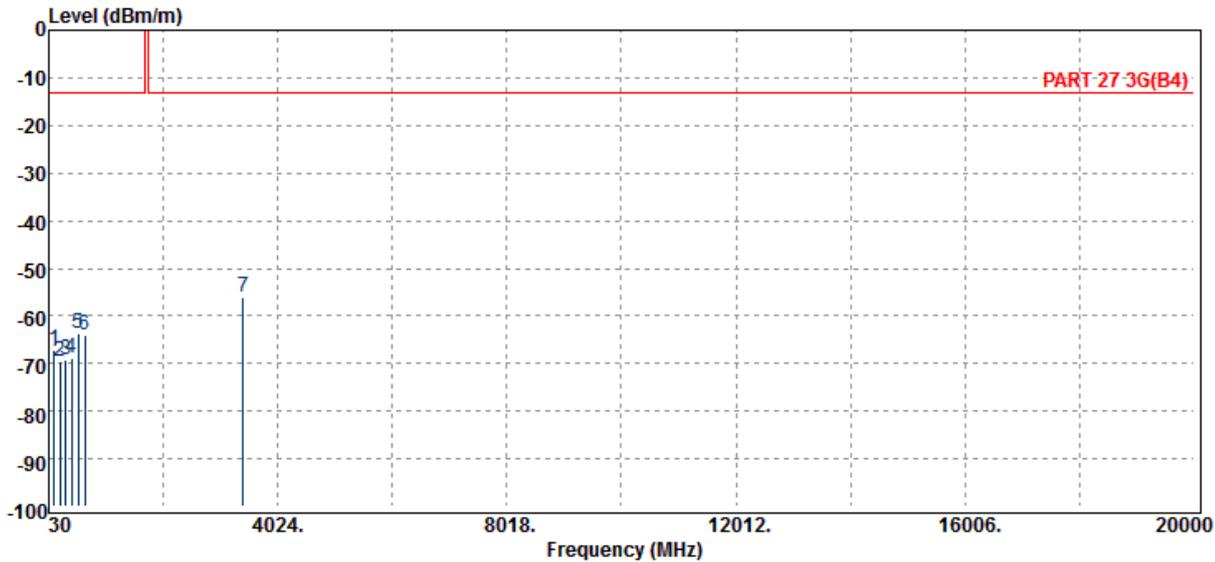
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### Radiated Spurious Emission Measurement Result: HSUPA Band 4 Mode

Operation Band :HSUPA B4 Temp./Humi. :22 deg\_C / 62 RH  
 Fundamental Frequency :1712.4 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



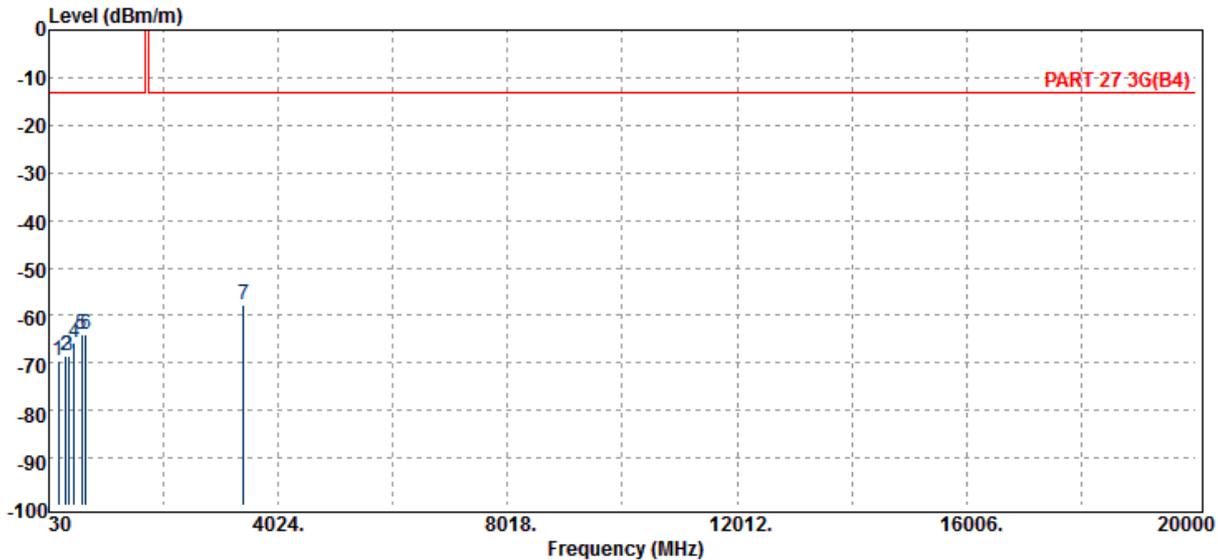
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
122.15	S	-67.29	-65.63	-0.33	-1.33	-13.00	-54.29
223.03	S	-69.59	-73.29	5.41	-1.71	-13.00	-56.59
327.79	S	-69.31	-73.31	5.91	-1.92	-13.00	-56.31
422.85	S	-68.75	-72.32	5.89	-2.31	-13.00	-55.75
542.16	S	-63.59	-66.74	5.78	-2.62	-13.00	-50.59
651.77	S	-64.10	-66.99	5.29	-2.40	-13.00	-51.10
3424.80	H	-56.21	-62.25	12.27	-6.23	-13.00	-43.21

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Operation Band	:HSUPA B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1712.4 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



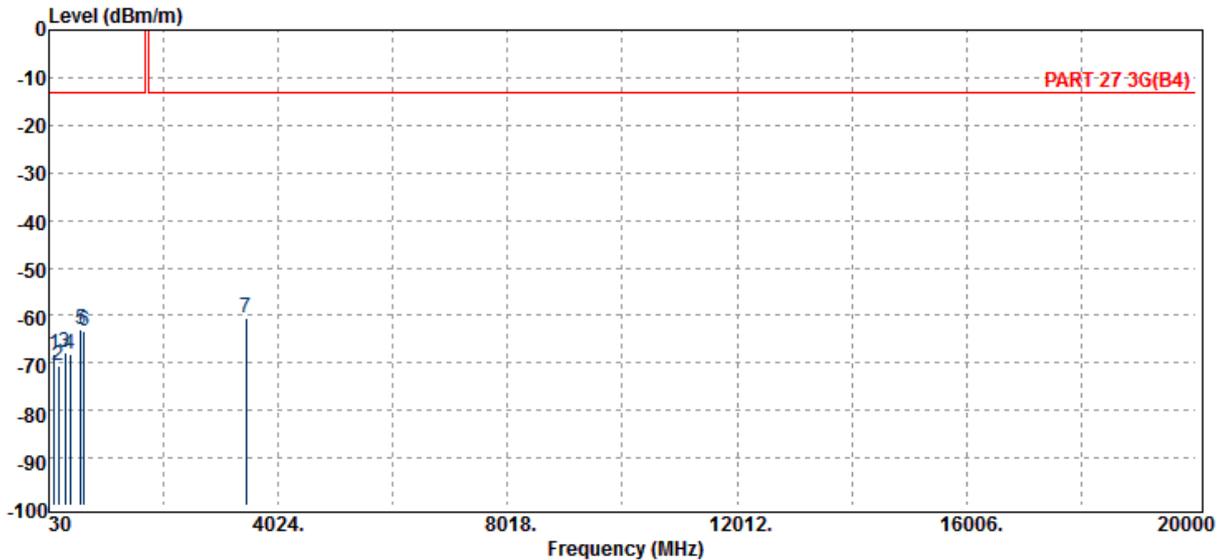
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
189.08	S	-69.59	-72.55	4.56	-1.60	-13.00	-56.59
322.94	S	-68.44	-72.41	5.89	-1.92	-13.00	-55.44
364.65	S	-68.39	-72.23	6.00	-2.16	-13.00	-55.39
474.26	S	-65.66	-69.33	5.90	-2.23	-13.00	-52.66
605.21	S	-64.00	-66.70	5.38	-2.68	-13.00	-51.00
669.23	S	-63.86	-66.71	5.27	-2.42	-13.00	-50.86
3424.80	H	-57.93	-63.97	12.27	-6.23	-13.00	-44.93

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Operation Band	:HSUPA B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



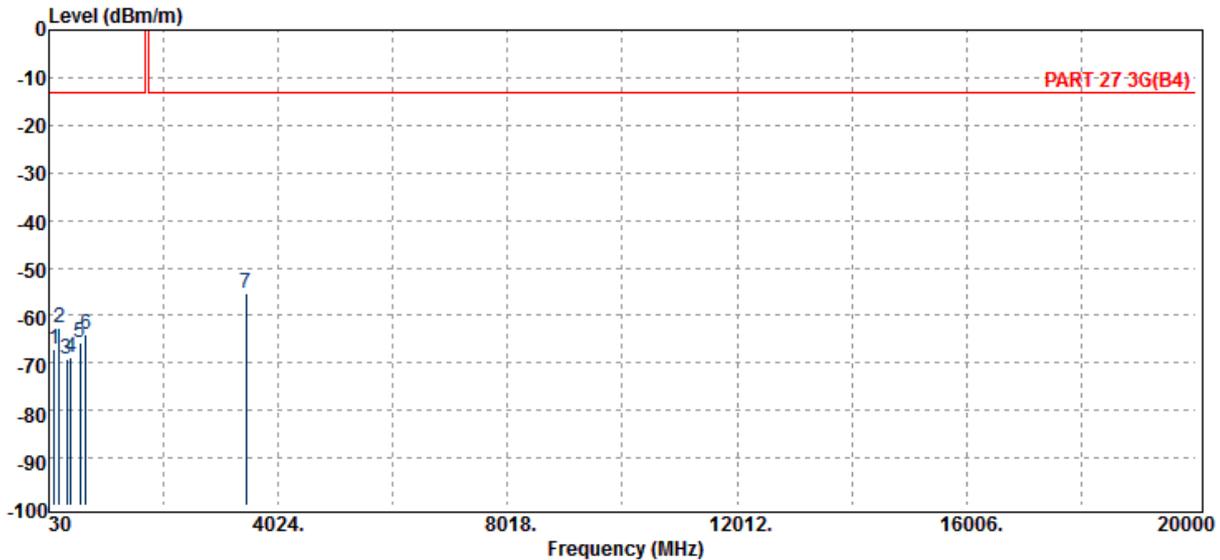
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
120.21	S	-68.15	-66.54	-0.29	-1.33	-13.00	-55.15
194.90	S	-70.70	-74.06	4.98	-1.62	-13.00	-57.70
307.42	S	-67.83	-71.71	5.81	-1.94	-13.00	-54.83
401.51	S	-68.32	-71.89	5.97	-2.39	-13.00	-55.32
580.96	S	-62.92	-65.66	5.52	-2.79	-13.00	-49.92
644.01	S	-63.32	-66.20	5.30	-2.42	-13.00	-50.32
3465.20	H	-60.56	-66.65	12.34	-6.25	-13.00	-47.56

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Operation Band	:HSUPA B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



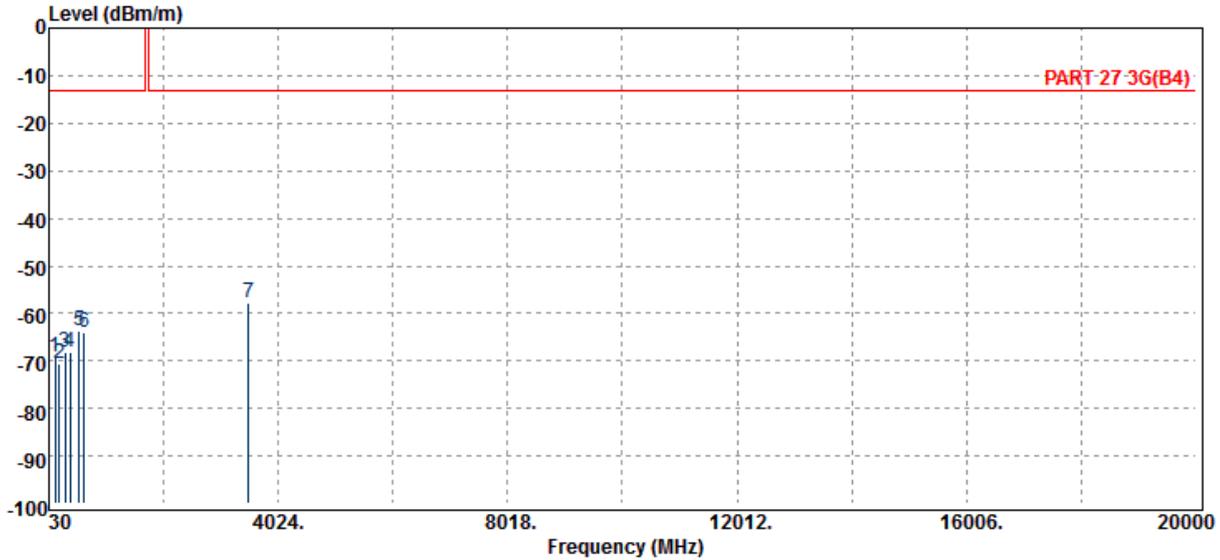
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
124.09	S	-67.17	-65.46	-0.37	-1.34	-13.00	-54.17
214.30	S	-62.69	-66.59	5.59	-1.68	-13.00	-49.69
342.34	S	-69.17	-73.16	5.98	-1.99	-13.00	-56.17
410.24	S	-68.89	-72.42	5.93	-2.40	-13.00	-55.89
565.44	S	-65.73	-68.59	5.63	-2.76	-13.00	-52.73
666.32	S	-64.09	-67.00	5.27	-2.37	-13.00	-51.09
3465.20	H	-55.34	-61.44	12.34	-6.25	-13.00	-42.34

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Operation Band	:HSUPA B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1752.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH	Measurement Antenna	:VERTICAL
EUT Pol.	:H Plane	Pol.	



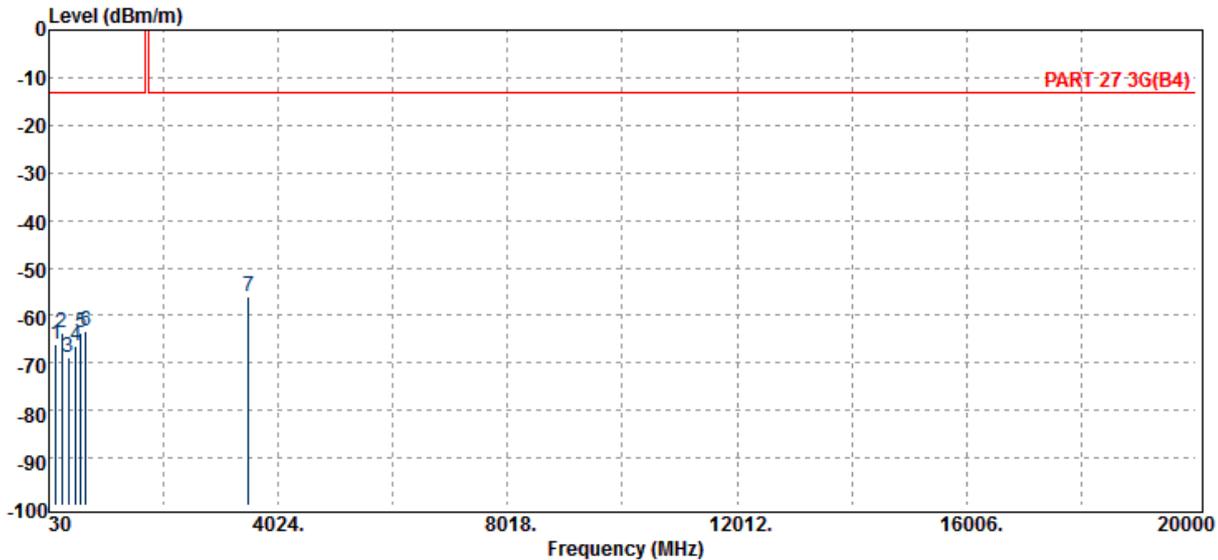
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
142.52	S	-69.23	-67.43	-0.39	-1.40	-13.00	-56.23
209.45	S	-70.54	-74.53	5.65	-1.67	-13.00	-57.54
318.09	S	-68.17	-72.10	5.86	-1.93	-13.00	-55.17
394.72	S	-68.29	-71.92	5.98	-2.35	-13.00	-55.29
556.71	S	-63.68	-66.61	5.69	-2.75	-13.00	-50.68
644.01	S	-64.14	-67.01	5.30	-2.42	-13.00	-51.14
3505.20	H	-57.82	-63.76	12.40	-6.47	-13.00	-44.82

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Operation Band	:HSUPA B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1752.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
157.07	S	-65.93	-64.85	0.38	-1.46	-13.00	-52.93
259.89	S	-63.50	-67.55	5.83	-1.77	-13.00	-50.50
368.53	S	-68.73	-72.54	6.00	-2.19	-13.00	-55.73
501.42	S	-66.49	-70.18	6.00	-2.31	-13.00	-53.49
589.69	S	-63.58	-66.25	5.46	-2.80	-13.00	-50.58
678.93	S	-63.30	-65.95	5.26	-2.60	-13.00	-50.30
3505.20	H	-56.00	-61.93	12.40	-6.47	-13.00	-43.00

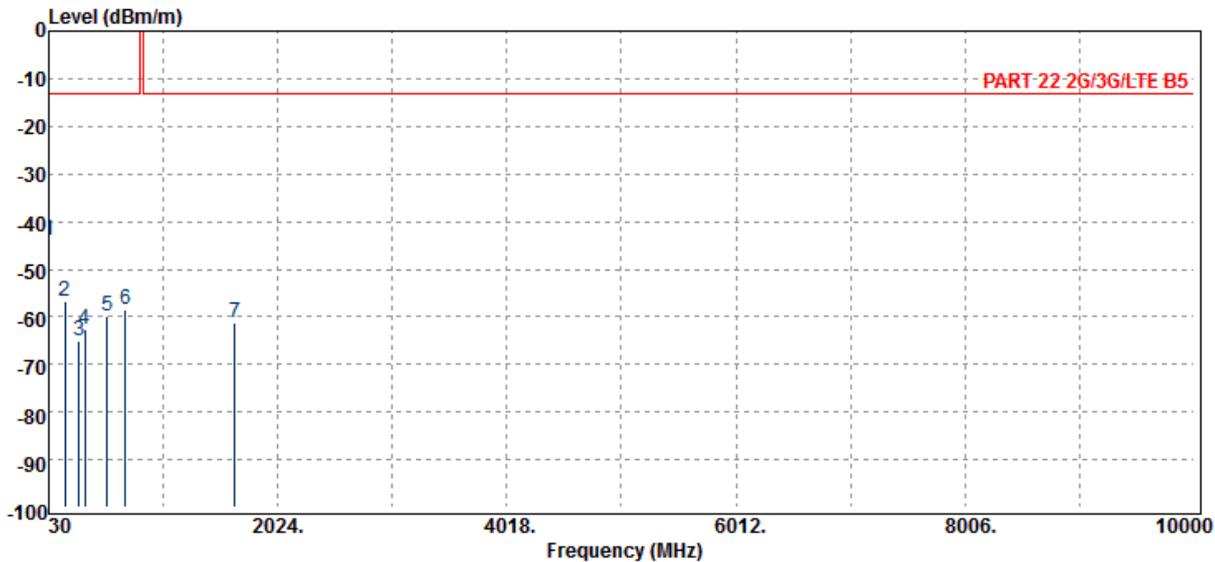
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### Radiated Spurious Emission Measurement Result: HSUPA Band 5 Mode

Operation Band	:HSDPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:826.4 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW	Measurement Pol.	Antenna :VERTICAL
EUT Pol.	:E2 Plane		



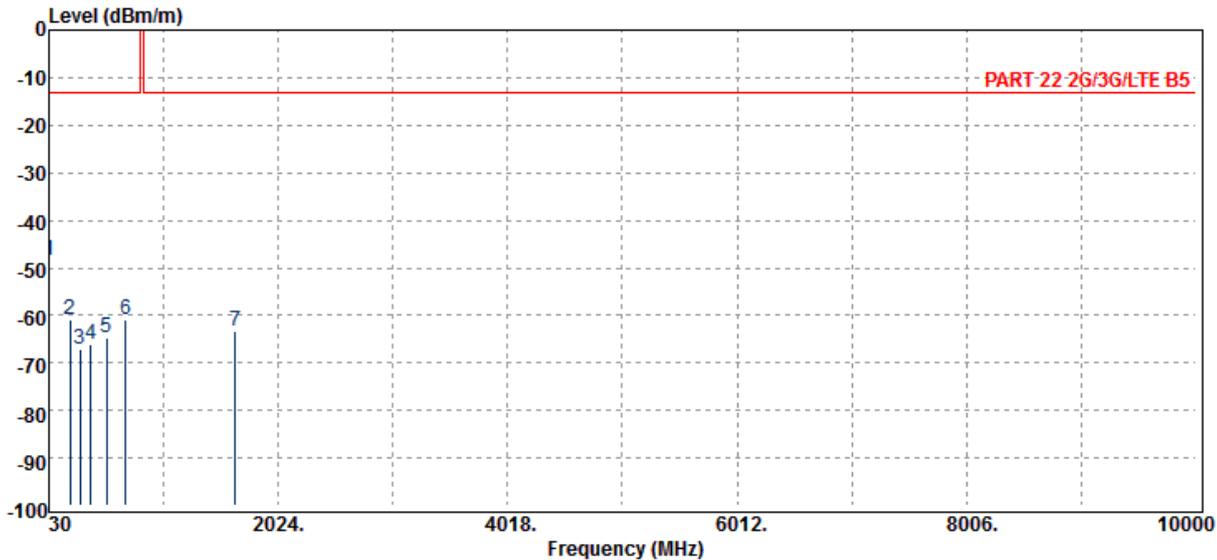
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-44.60	-29.93	-14.08	-0.59	-13.00	-31.60
168.71	S	-57.82	-55.79	-0.70	-1.33	-13.00	-44.82
296.75	S	-65.89	-67.63	3.55	-1.81	-13.00	-52.89
347.19	S	-63.10	-64.92	3.84	-2.02	-13.00	-50.10
536.34	S	-60.47	-62.36	4.00	-2.11	-13.00	-47.47
694.45	S	-58.80	-59.88	3.69	-2.61	-13.00	-45.80
1652.80	H	-61.85	-64.48	6.99	-4.36	-13.00	-48.85

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Operation Band	:HSDPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:826.4 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



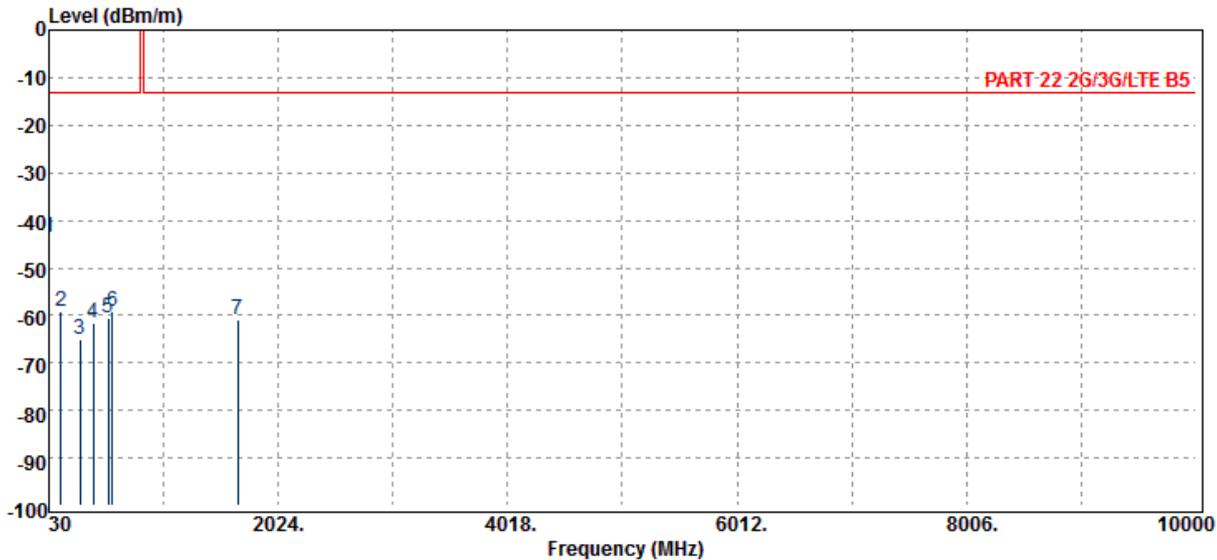
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-49.35	-34.68	-14.08	-0.59	-13.00	-36.35
216.24	S	-60.80	-62.71	3.47	-1.56	-13.00	-47.80
299.66	S	-67.78	-69.57	3.61	-1.82	-13.00	-54.78
395.69	S	-66.44	-68.09	3.73	-2.08	-13.00	-53.44
531.49	S	-65.33	-67.03	4.01	-2.31	-13.00	-52.33
699.30	S	-61.54	-62.98	3.68	-2.24	-13.00	-48.54
1652.80	H	-63.52	-66.15	6.99	-4.36	-13.00	-50.52

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Operation Band	:HSDPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



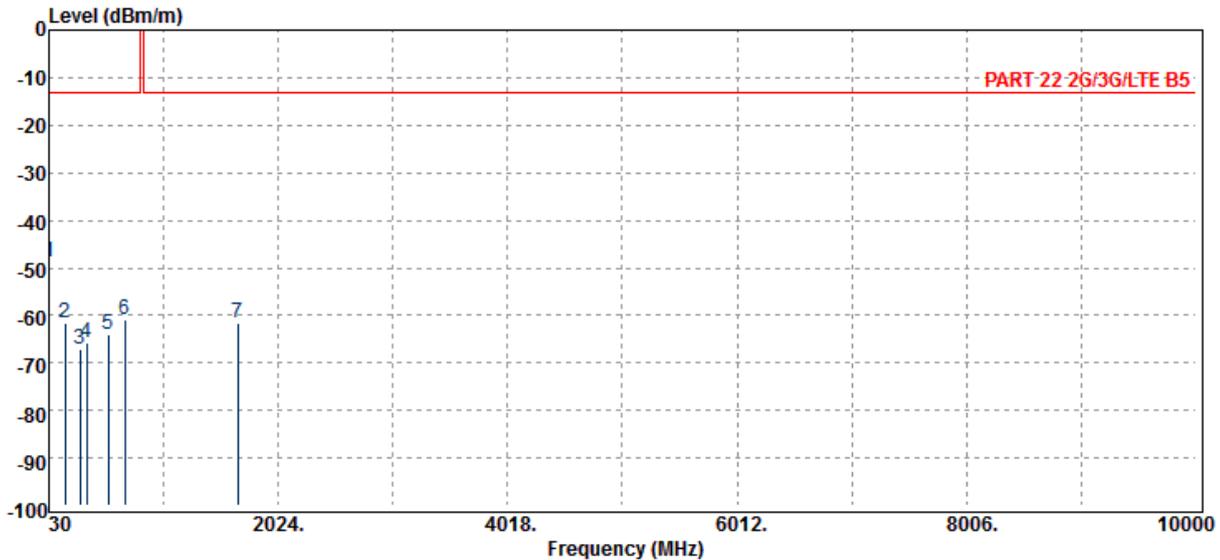
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.95	S	-44.22	-29.55	-14.08	-0.59	-13.00	-31.22
136.71	S	-60.12	-56.69	-2.19	-1.24	-13.00	-47.12
298.70	S	-65.79	-67.56	3.59	-1.82	-13.00	-52.79
415.10	S	-62.45	-63.99	3.66	-2.12	-13.00	-49.45
544.14	S	-60.96	-63.16	3.99	-1.79	-13.00	-47.96
582.91	S	-60.23	-61.61	3.68	-2.30	-13.00	-47.23
1673.20	H	-61.19	-63.86	7.06	-4.39	-13.00	-48.19

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Operation Band	:HSDPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:HORIZONTAL
EUT Pol.	:E2 Plane	Pol.	



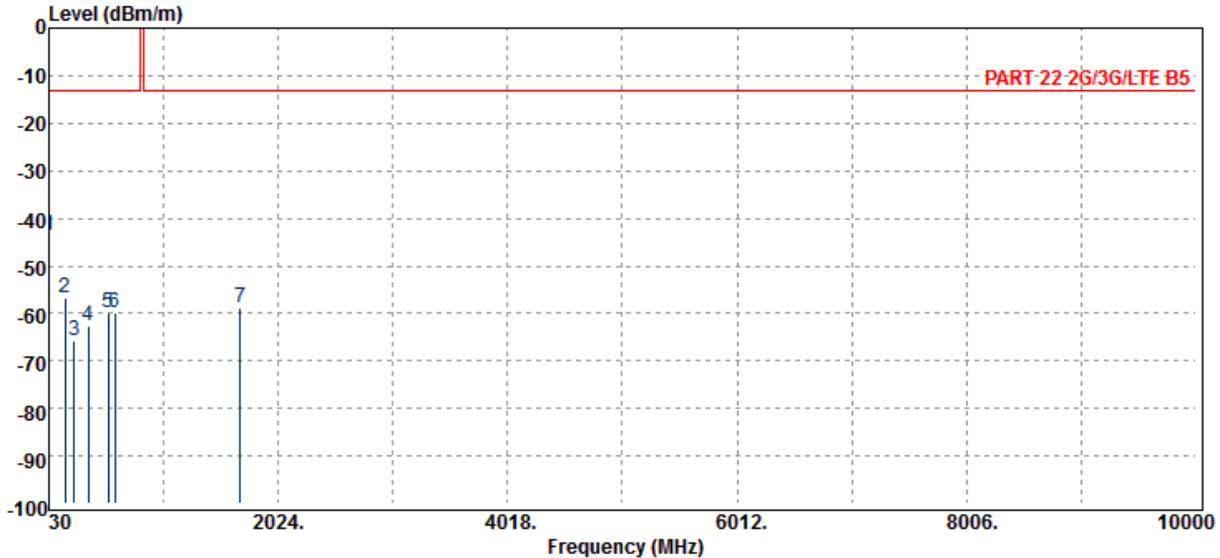
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-49.46	-34.30	-14.58	-0.58	-13.00	-36.46
172.60	S	-61.77	-60.23	-0.20	-1.34	-13.00	-48.77
299.65	S	-67.56	-69.35	3.61	-1.82	-13.00	-54.56
359.81	S	-66.29	-68.06	3.83	-2.06	-13.00	-53.29
546.05	S	-64.45	-66.63	3.99	-1.81	-13.00	-51.45
692.50	S	-61.14	-62.08	3.70	-2.76	-13.00	-48.14
1673.20	H	-61.56	-64.23	7.06	-4.39	-13.00	-48.56

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Operation Band	:HSDPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



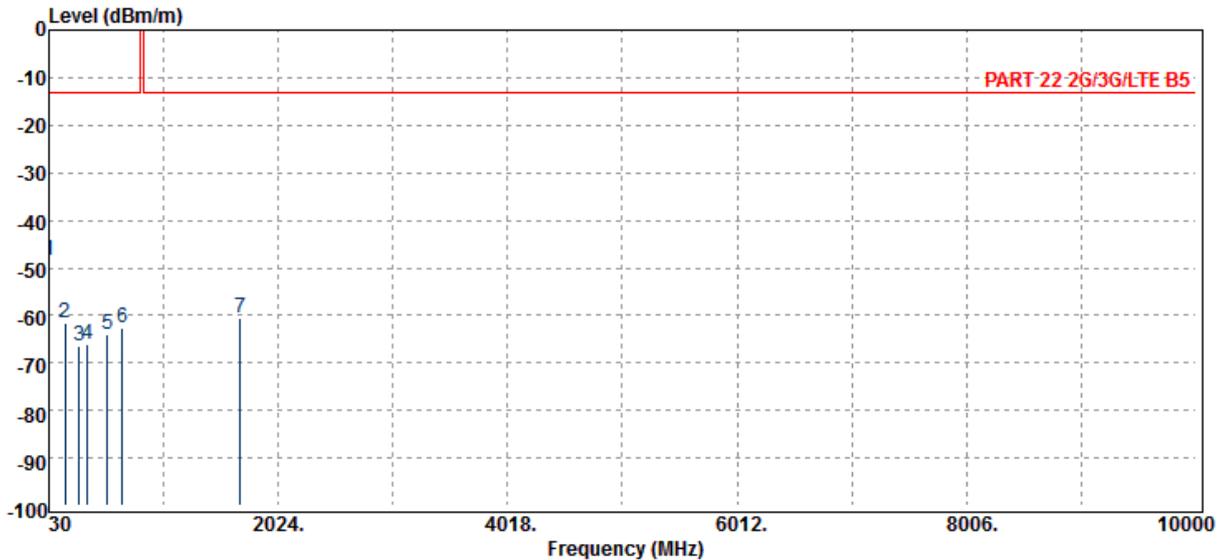
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.95	S	-44.45	-29.78	-14.08	-0.59	-13.00	-31.45
172.60	S	-57.24	-55.70	-0.20	-1.34	-13.00	-44.24
251.16	S	-66.27	-68.12	3.55	-1.70	-13.00	-53.27
374.33	S	-63.04	-64.78	3.78	-2.04	-13.00	-50.04
547.00	S	-60.45	-62.57	3.98	-1.86	-13.00	-47.45
605.24	S	-60.22	-61.64	3.57	-2.15	-13.00	-47.22
1693.20	H	-59.05	-61.74	7.12	-4.43	-13.00	-46.05

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Operation Band	:HSUPA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-49.11	-33.95	-14.58	-0.58	-13.00	-36.11
172.60	S	-61.86	-60.32	-0.20	-1.34	-13.00	-48.86
294.83	S	-67.51	-69.23	3.52	-1.80	-13.00	-54.51
364.63	S	-66.87	-68.61	3.81	-2.07	-13.00	-53.87
539.22	S	-64.31	-66.32	4.00	-1.99	-13.00	-51.31
667.30	S	-63.04	-64.71	3.78	-2.11	-13.00	-50.04
1693.20	H	-60.97	-63.66	7.12	-4.43	-13.00	-47.97

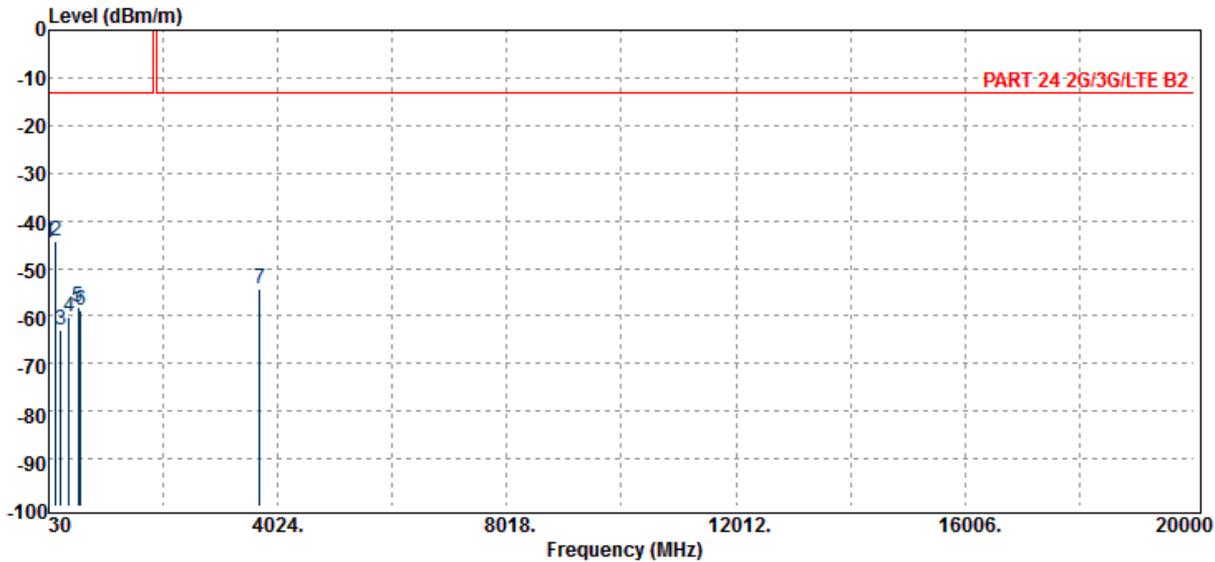
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### Radiated Spurious Emission Measurement Result: LTE-Band 2 (The Worst Case)

Operation Band :LTE B2 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :1852.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-44.70	-30.03	-14.08	-0.59	-13.00	-31.70
146.40	S	-44.17	-40.91	-1.98	-1.29	-13.00	-31.17
241.46	S	-62.96	-64.77	3.49	-1.68	-13.00	-49.96
382.11	S	-60.37	-62.12	3.76	-2.02	-13.00	-47.37
541.19	S	-58.06	-60.14	3.99	-1.91	-13.00	-45.06
579.99	S	-58.75	-60.07	3.71	-2.39	-13.00	-45.75
3705.00	H	-54.36	-60.03	12.57	-6.90	-13.00	-41.36

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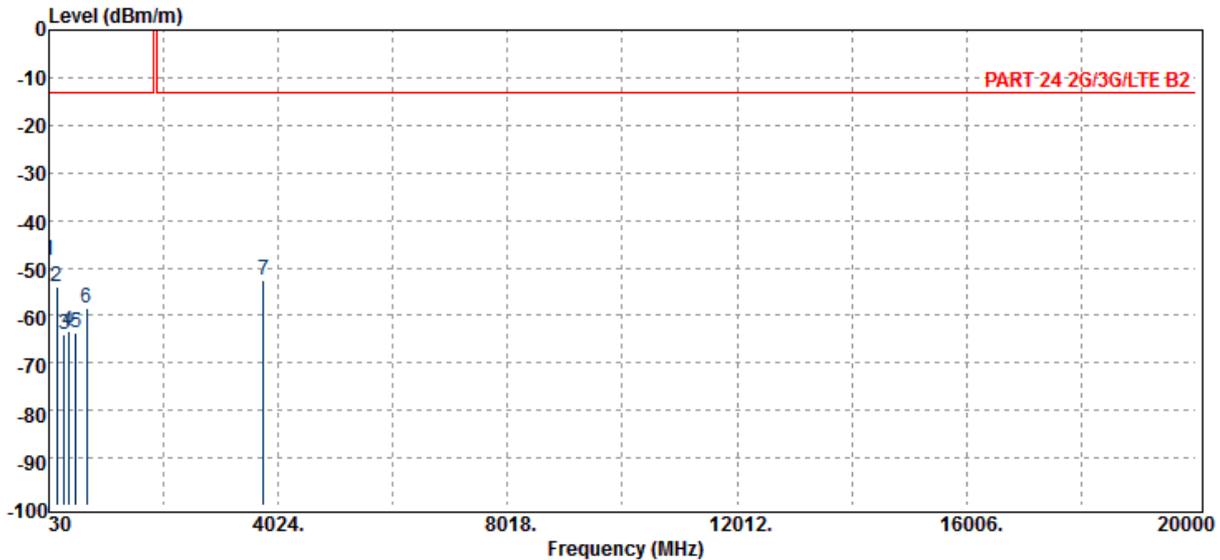
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Operation Band	:LTE B2	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



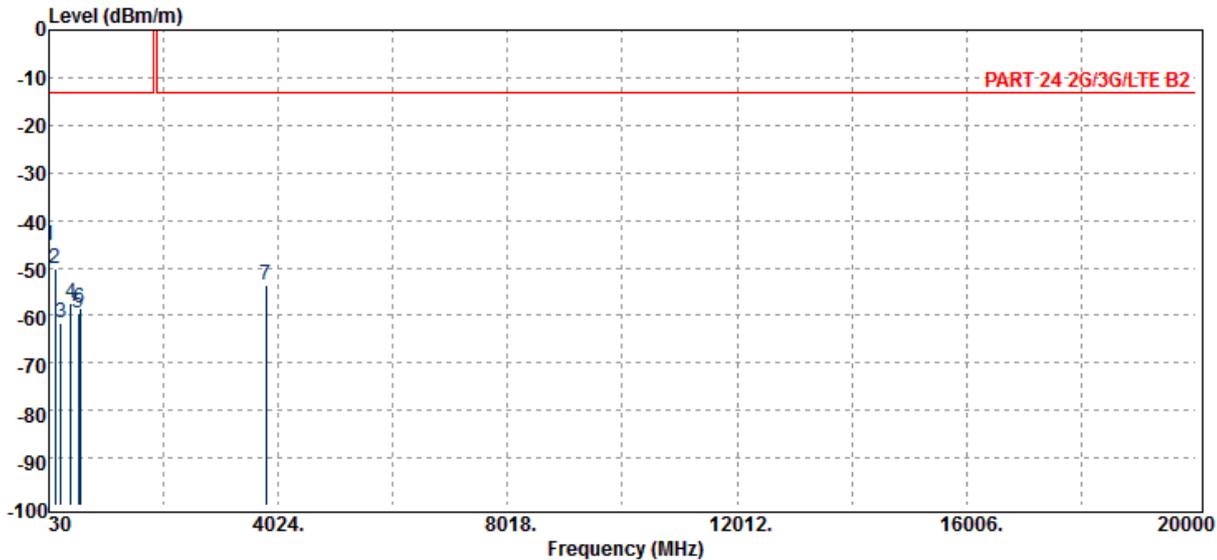
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.60	-33.44	-14.58	-0.58	-13.00	-35.60
168.71	S	-53.96	-51.94	-0.70	-1.33	-13.00	-40.96
299.66	S	-64.02	-65.80	3.61	-1.82	-13.00	-51.02
367.56	S	-63.25	-64.99	3.80	-2.06	-13.00	-50.25
495.60	S	-63.75	-65.67	4.01	-2.09	-13.00	-50.75
684.75	S	-58.65	-59.04	3.72	-3.32	-13.00	-45.65
3760.00	H	-52.70	-58.43	12.61	-6.89	-13.00	-39.70

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Operation Band	:LTE B2	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1907.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-45.44	-30.77	-14.08	-0.59	-13.00	-32.44
133.79	S	-50.29	-46.98	-2.09	-1.23	-13.00	-37.29
241.46	S	-61.57	-63.38	3.49	-1.68	-13.00	-48.57
418.00	S	-57.58	-59.11	3.65	-2.11	-13.00	-44.58
546.04	S	-59.56	-61.74	3.99	-1.81	-13.00	-46.56
578.05	S	-58.36	-59.64	3.73	-2.45	-13.00	-45.36
3815.00	H	-53.78	-59.43	12.66	-7.00	-13.00	-40.78

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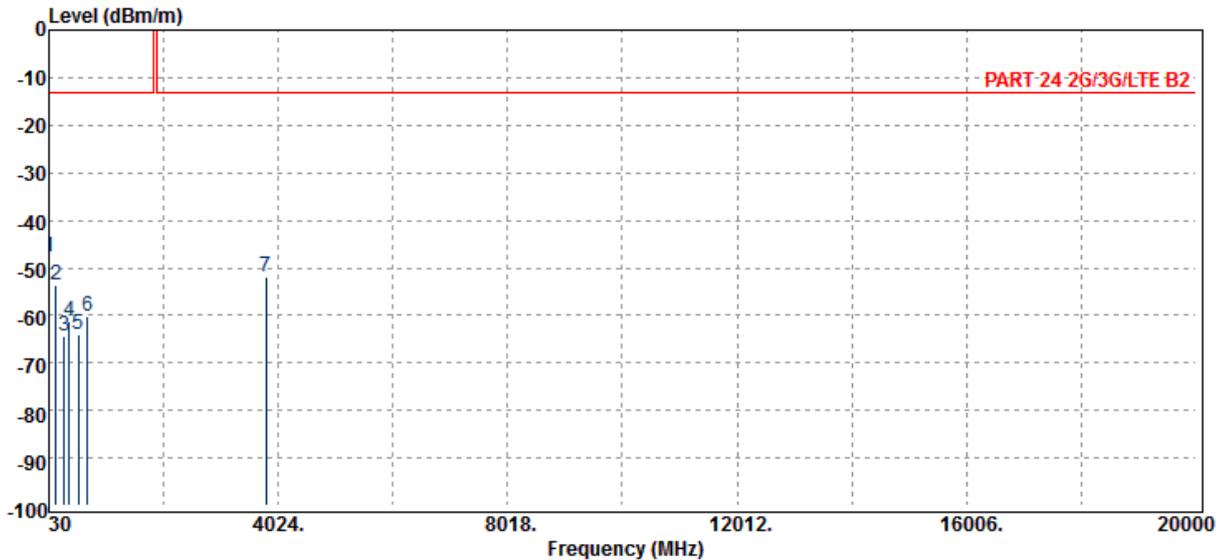
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Operation Band	:LTE B2	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1907.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-47.77	-32.61	-14.58	-0.58	-13.00	-34.77
148.34	S	-53.61	-50.44	-1.89	-1.29	-13.00	-40.61
299.66	S	-64.27	-66.06	3.61	-1.82	-13.00	-51.27
379.20	S	-61.28	-63.03	3.77	-2.03	-13.00	-48.28
541.19	S	-63.96	-66.04	3.99	-1.91	-13.00	-50.96
699.30	S	-60.22	-61.66	3.68	-2.24	-13.00	-47.22
3815.00	H	-51.87	-57.53	12.66	-7.00	-13.00	-38.87

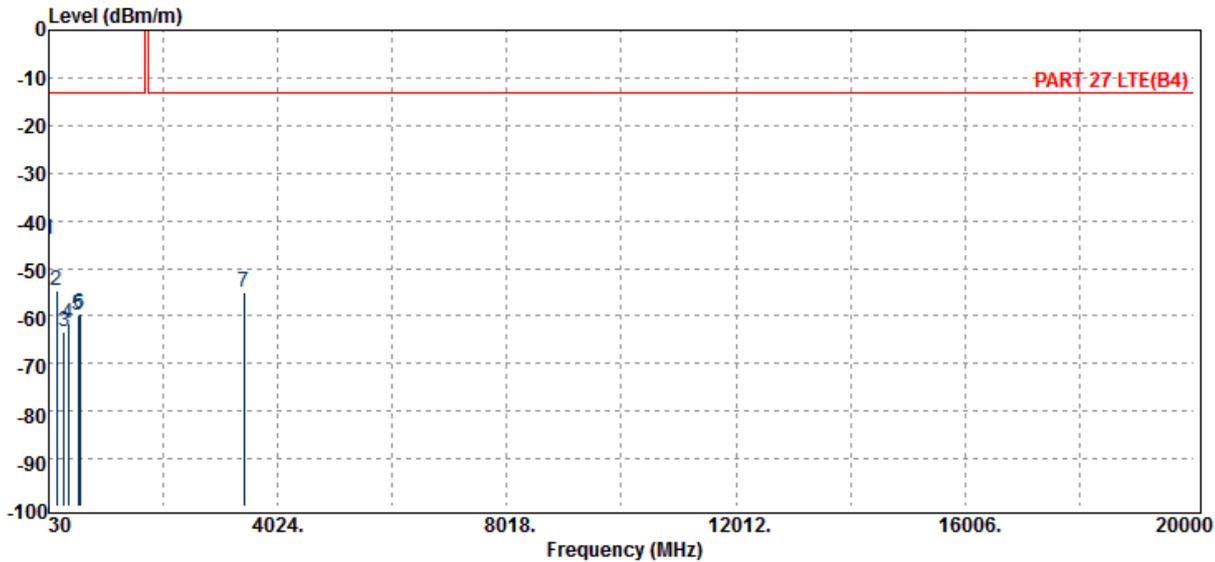
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### Radiated Spurious Emission Measurement Result: LTE-Band 4 (The Worst Case)

Operation Band :LTE B4 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :1717.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



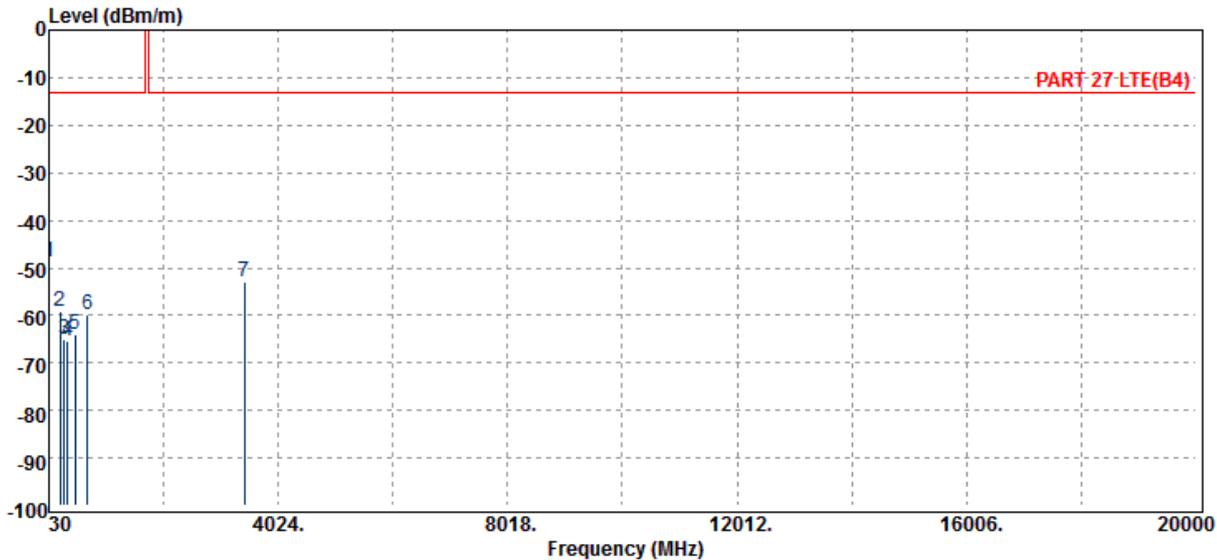
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
32.91	S	-43.94	-29.50	-13.84	-0.60	-13.00	-30.94
172.59	S	-54.66	-53.12	-0.20	-1.34	-13.00	-41.66
299.66	S	-63.49	-65.28	3.61	-1.82	-13.00	-50.49
366.59	S	-61.65	-63.39	3.81	-2.07	-13.00	-48.65
544.10	S	-59.75	-61.95	3.99	-1.79	-13.00	-46.75
573.20	S	-59.55	-60.73	3.77	-2.59	-13.00	-46.55
3435.00	H	-55.17	-60.88	12.25	-6.55	-13.00	-42.17

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Operation Band	:LTE B4	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1717.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



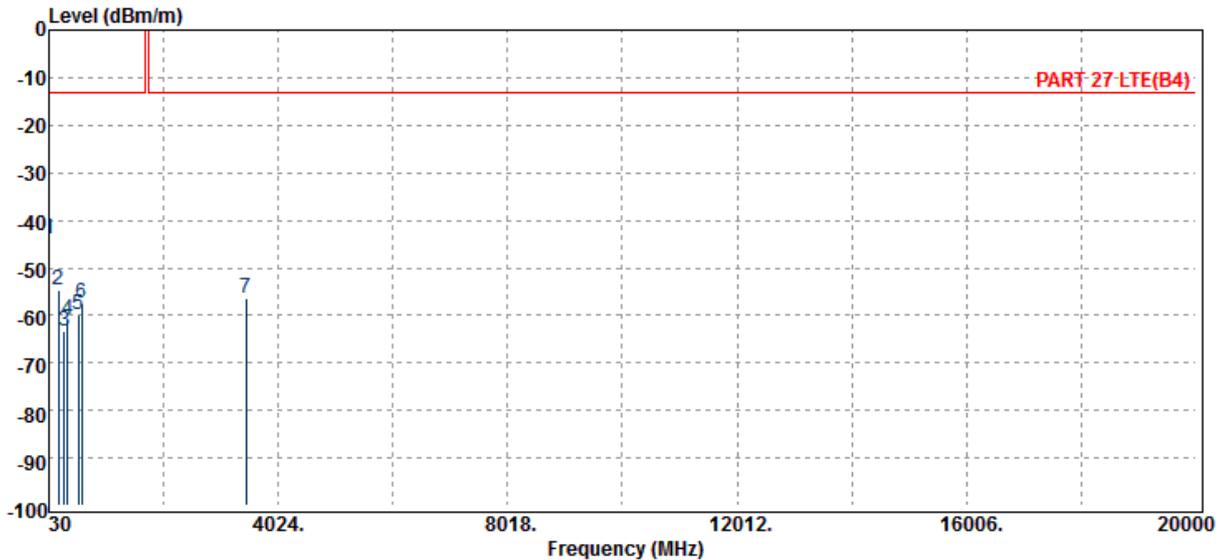
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.94	-33.78	-14.58	-0.58	-13.00	-35.94
219.15	S	-59.12	-60.90	3.35	-1.57	-13.00	-46.12
299.66	S	-64.89	-66.67	3.61	-1.82	-13.00	-51.89
356.89	S	-65.34	-67.13	3.83	-2.05	-13.00	-52.34
488.81	S	-63.93	-65.95	3.94	-1.91	-13.00	-50.93
697.36	S	-59.76	-61.06	3.68	-2.38	-13.00	-46.76
3435.00	H	-52.90	-58.60	12.25	-6.55	-13.00	-39.90

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Operation Band :LTE B4  
Fundamental Frequency :1732.5 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :H Plane  
Temp./Humi. :24.1 deg\_C / 65 RH  
Engineer :Tin  
Measurement Antenna Pol.:VERTICAL



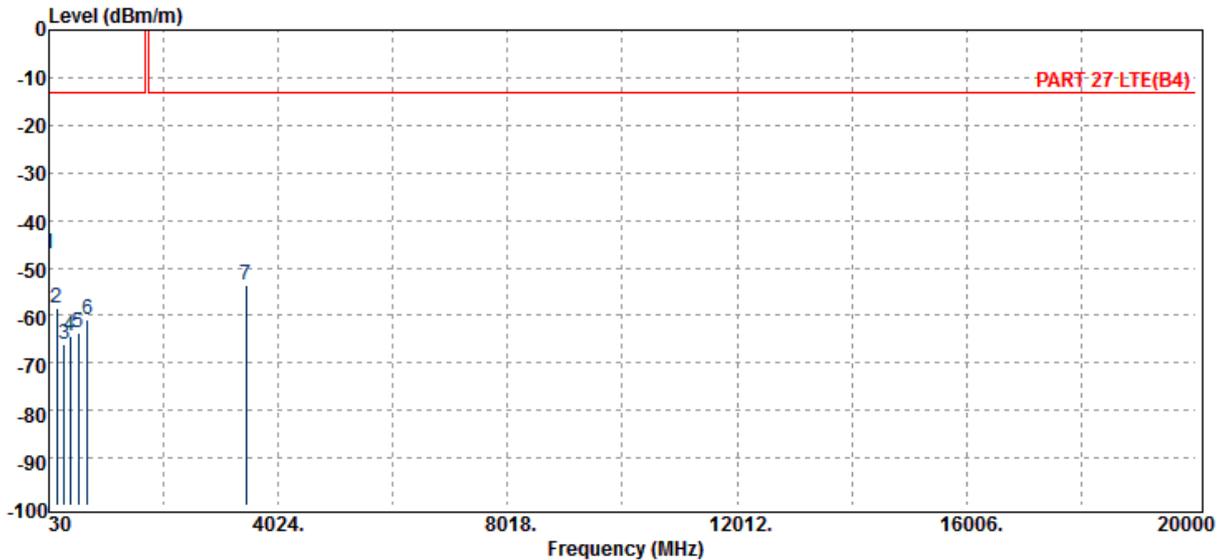
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-44.06	-29.39	-14.08	-0.59	-13.00	-31.06
191.99	S	-54.50	-55.73	2.66	-1.44	-13.00	-41.50
299.66	S	-63.19	-64.98	3.61	-1.82	-13.00	-50.19
357.86	S	-60.92	-62.70	3.83	-2.05	-13.00	-47.92
539.25	S	-59.99	-62.00	4.00	-1.99	-13.00	-46.99
604.24	S	-57.45	-58.87	3.56	-2.14	-13.00	-44.45
3465.00	H	-56.36	-62.12	12.32	-6.56	-13.00	-43.36

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Operation Band	:LTE B4	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1732.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-46.98	-31.83	-14.58	-0.58	-13.00	-33.98
172.59	S	-58.53	-56.99	-0.20	-1.34	-13.00	-45.53
299.66	S	-66.03	-67.82	3.61	-1.82	-13.00	-53.03
403.45	S	-64.43	-65.99	3.70	-2.14	-13.00	-51.43
547.01	S	-63.57	-65.69	3.98	-1.86	-13.00	-50.57
697.36	S	-60.81	-62.11	3.68	-2.38	-13.00	-47.81
3465.00	H	-53.61	-59.38	12.32	-6.56	-13.00	-40.61

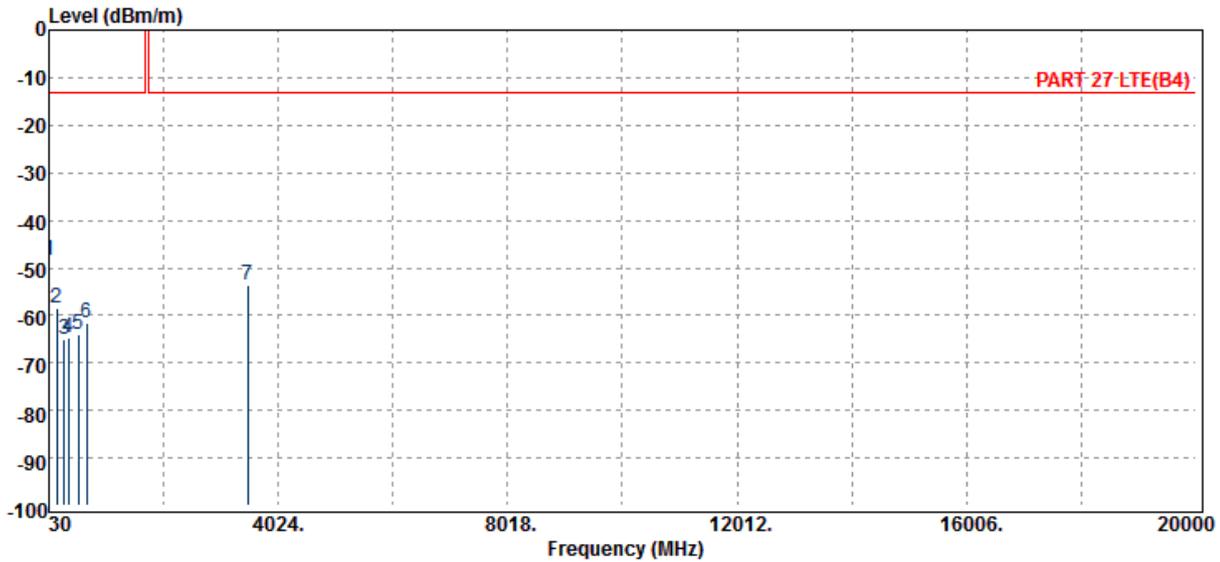
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Operation Band	:LTE B4	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:1747.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.38	-33.22	-14.58	-0.58	-13.00	-35.38
173.56	S	-58.38	-56.99	-0.04	-1.35	-13.00	-45.38
299.66	S	-65.17	-66.95	3.61	-1.82	-13.00	-52.17
367.56	S	-64.80	-66.54	3.80	-2.06	-13.00	-51.80
542.16	S	-64.01	-66.13	3.99	-1.87	-13.00	-51.01
692.51	S	-61.45	-62.39	3.70	-2.76	-13.00	-48.45
3495.00	H	-53.57	-59.35	12.39	-6.61	-13.00	-40.57

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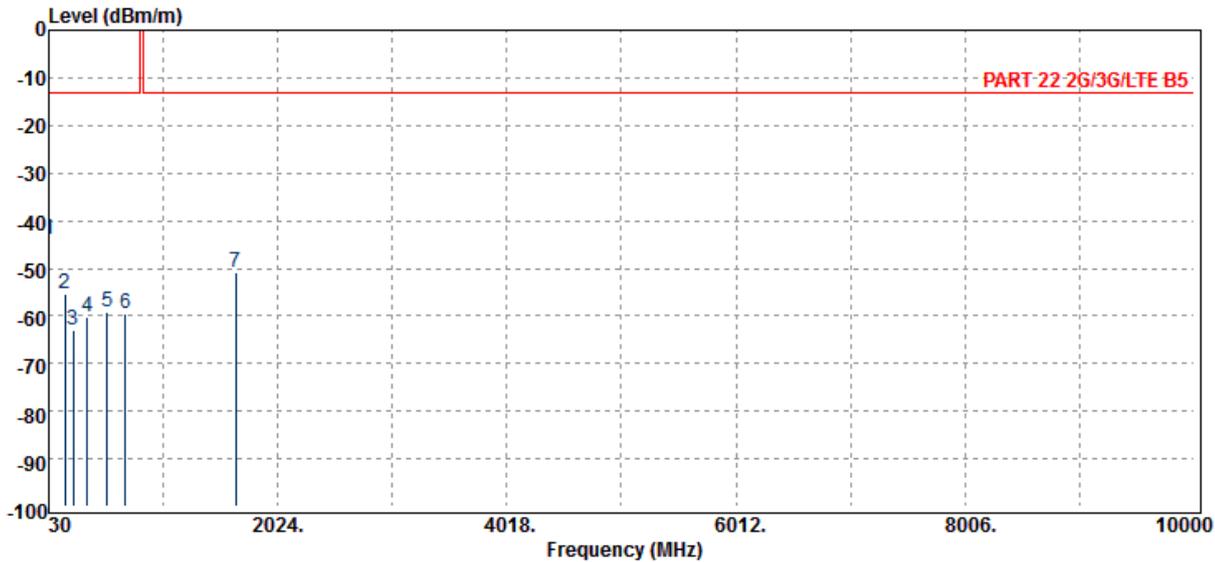
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### Radiated Spurious Emission Measurement Result: LTE-Band 5 (The Worst Case)

Operation Band	:LTE B5	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:829 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



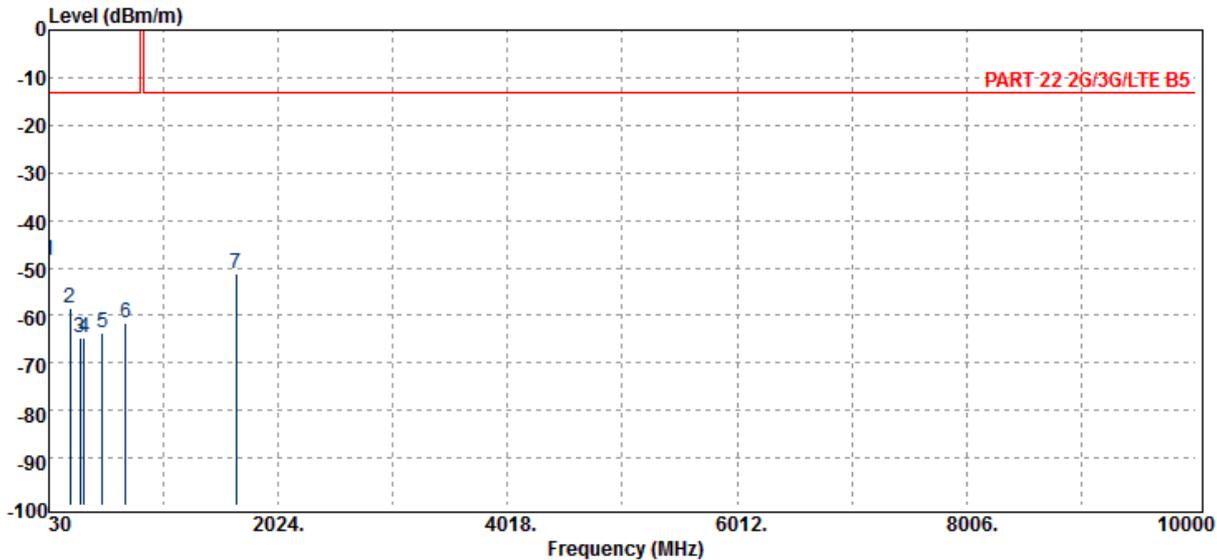
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
32.91	S	-44.10	-29.66	-13.84	-0.60	-13.00	-31.10
167.74	S	-55.45	-53.37	-0.76	-1.32	-13.00	-42.45
241.46	S	-63.12	-64.93	3.49	-1.68	-13.00	-50.12
366.59	S	-60.08	-61.82	3.81	-2.07	-13.00	-47.08
539.25	S	-59.23	-61.24	4.00	-1.99	-13.00	-46.23
694.45	S	-59.48	-60.56	3.69	-2.61	-13.00	-46.48
1658.00	H	-51.04	-55.83	9.16	-4.37	-13.00	-38.04

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Operation Band	:LTE B5	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:829 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



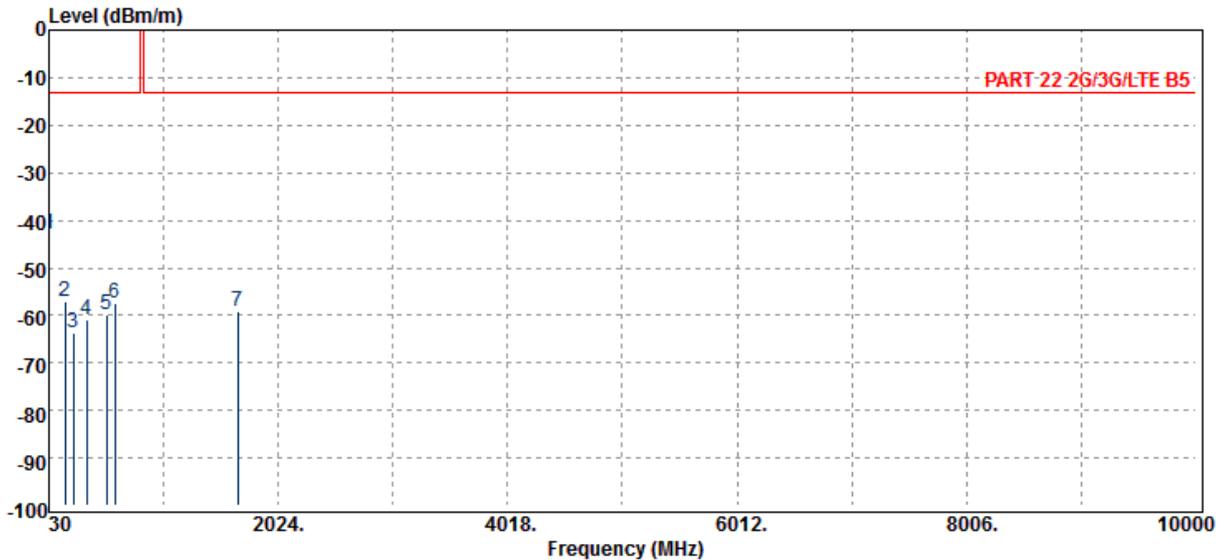
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.32	-33.16	-14.58	-0.58	-13.00	-35.32
217.21	S	-58.45	-60.32	3.43	-1.56	-13.00	-45.45
299.66	S	-64.62	-66.40	3.61	-1.82	-13.00	-51.62
335.55	S	-64.64	-66.48	3.79	-1.95	-13.00	-51.64
492.69	S	-63.78	-65.75	3.98	-2.01	-13.00	-50.78
699.30	S	-61.53	-62.97	3.68	-2.24	-13.00	-48.53
1658.00	H	-51.37	-56.16	9.16	-4.37	-13.00	-38.37

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Operation Band	:LTE B5	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:836.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-42.80	-28.12	-14.08	-0.59	-13.00	-29.80
173.56	S	-57.21	-55.82	-0.04	-1.35	-13.00	-44.21
241.46	S	-63.82	-65.63	3.49	-1.68	-13.00	-50.82
354.95	S	-60.77	-62.57	3.84	-2.04	-13.00	-47.77
534.40	S	-59.80	-61.61	4.00	-2.19	-13.00	-46.80
605.21	S	-57.57	-59.00	3.57	-2.15	-13.00	-44.57
1673.00	H	-59.24	-64.06	9.21	-4.39	-13.00	-46.24

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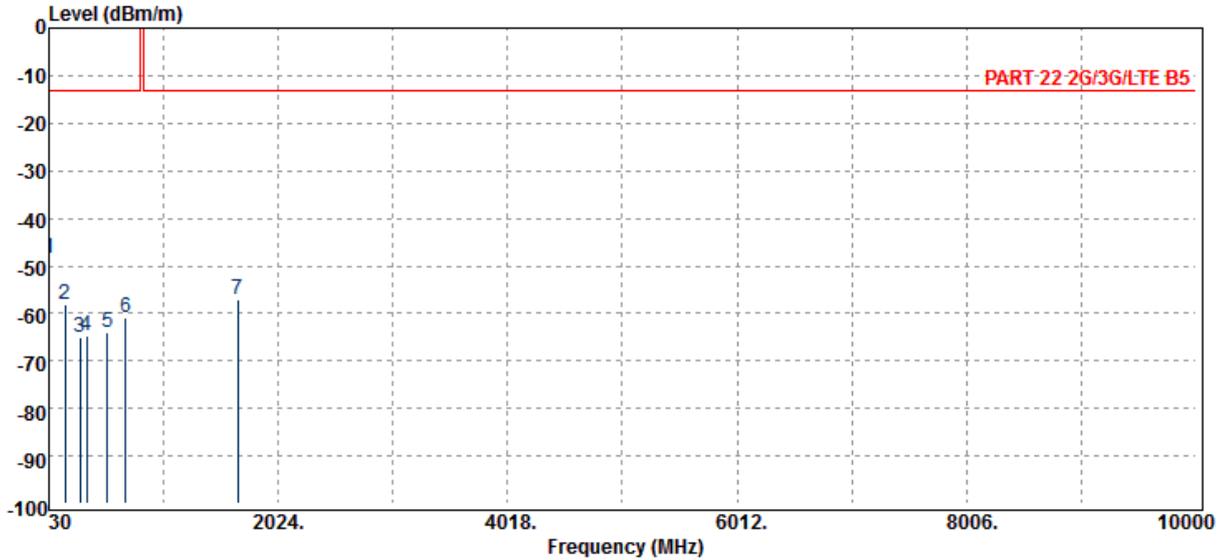
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Operation Band	:LTE B5	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:836.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



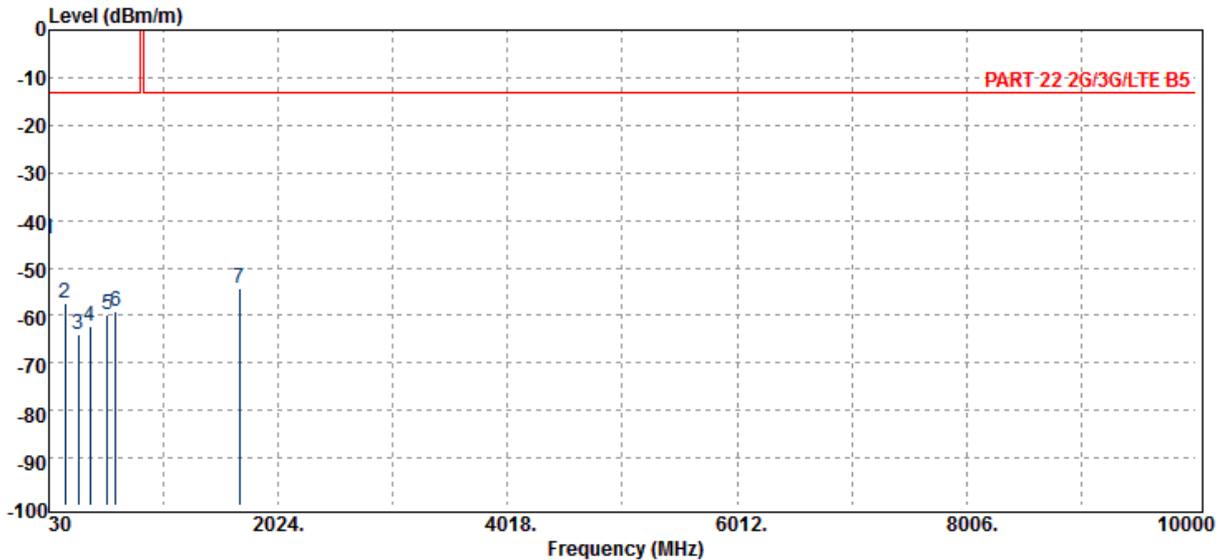
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.57	-33.41	-14.58	-0.58	-13.00	-35.57
170.65	S	-57.98	-56.13	-0.51	-1.33	-13.00	-44.98
299.66	S	-64.96	-66.74	3.61	-1.82	-13.00	-51.96
359.80	S	-64.76	-66.53	3.83	-2.06	-13.00	-51.76
542.16	S	-63.91	-66.03	3.99	-1.87	-13.00	-50.91
697.36	S	-60.74	-62.04	3.68	-2.38	-13.00	-47.74
1673.00	H	-57.12	-61.94	9.21	-4.39	-13.00	-44.12

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Operation Band	:LTE B5	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:844 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



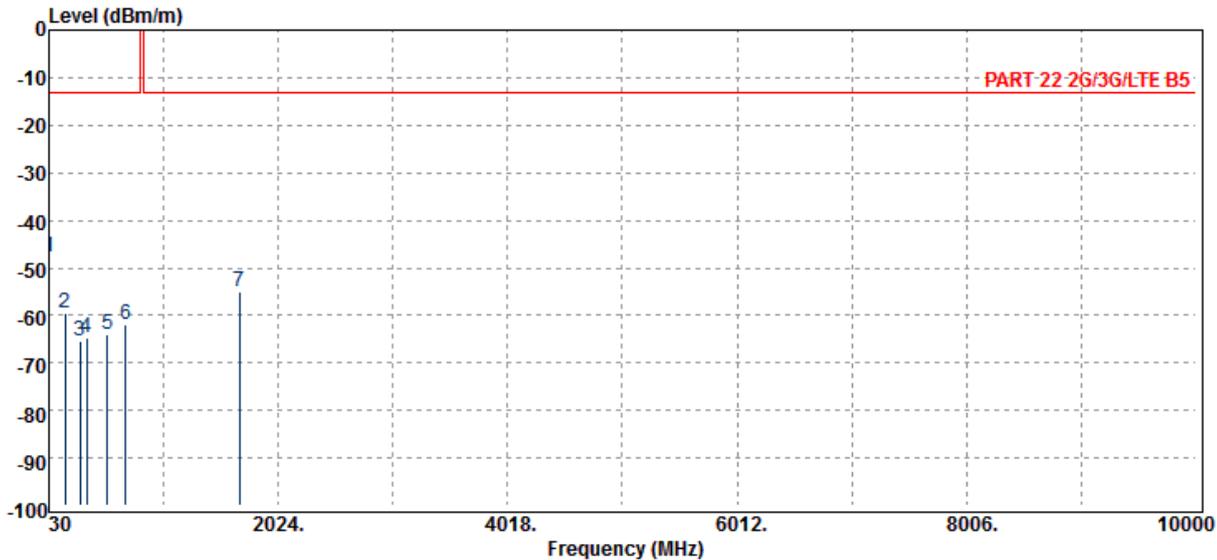
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.83	-29.16	-14.08	-0.59	-13.00	-30.83
170.65	S	-57.60	-55.75	-0.51	-1.33	-13.00	-44.60
287.05	S	-64.05	-65.70	3.42	-1.77	-13.00	-51.05
388.90	S	-62.34	-64.05	3.74	-2.04	-13.00	-49.34
541.19	S	-59.87	-61.95	3.99	-1.91	-13.00	-46.87
612.00	S	-59.27	-60.51	3.61	-2.38	-13.00	-46.27
1688.00	H	-54.39	-57.07	7.11	-4.42	-13.00	-41.39

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Operation Band :LTE B5 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :844 MHz Engineer :Tin  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :H Plane Measurement Antenna Pol.:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-47.67	-32.51	-14.58	-0.58	-13.00	-34.67
172.59	S	-59.39	-57.85	-0.20	-1.34	-13.00	-46.39
298.69	S	-65.26	-67.03	3.59	-1.82	-13.00	-52.26
359.80	S	-64.82	-66.59	3.83	-2.06	-13.00	-51.82
541.19	S	-64.14	-66.23	3.99	-1.91	-13.00	-51.14
700.27	S	-61.86	-63.38	3.67	-2.16	-13.00	-48.86
1688.00	H	-55.16	-57.85	7.11	-4.42	-13.00	-42.16

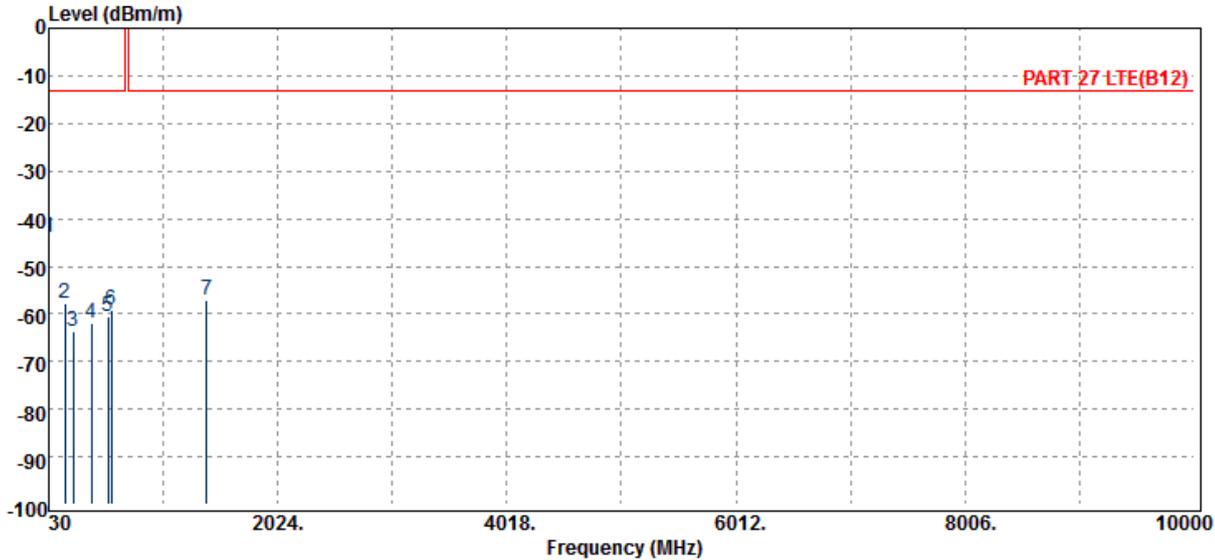
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### Radiated Spurious Emission Measurement Result: LTE-Band 12 (The Worst Case)

Operation Band :LTE B12 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :701.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.82	-29.15	-14.08	-0.59	-13.00	-30.82
168.71	S	-57.86	-55.84	-0.70	-1.33	-13.00	-44.86
243.40	S	-63.73	-65.54	3.50	-1.68	-13.00	-50.73
400.54	S	-61.82	-63.41	3.71	-2.12	-13.00	-48.82
546.04	S	-60.50	-62.68	3.99	-1.81	-13.00	-47.50
571.26	S	-59.09	-60.23	3.79	-2.65	-13.00	-46.09
1403.00	H	-57.04	-61.26	8.20	-3.99	-13.00	-44.04

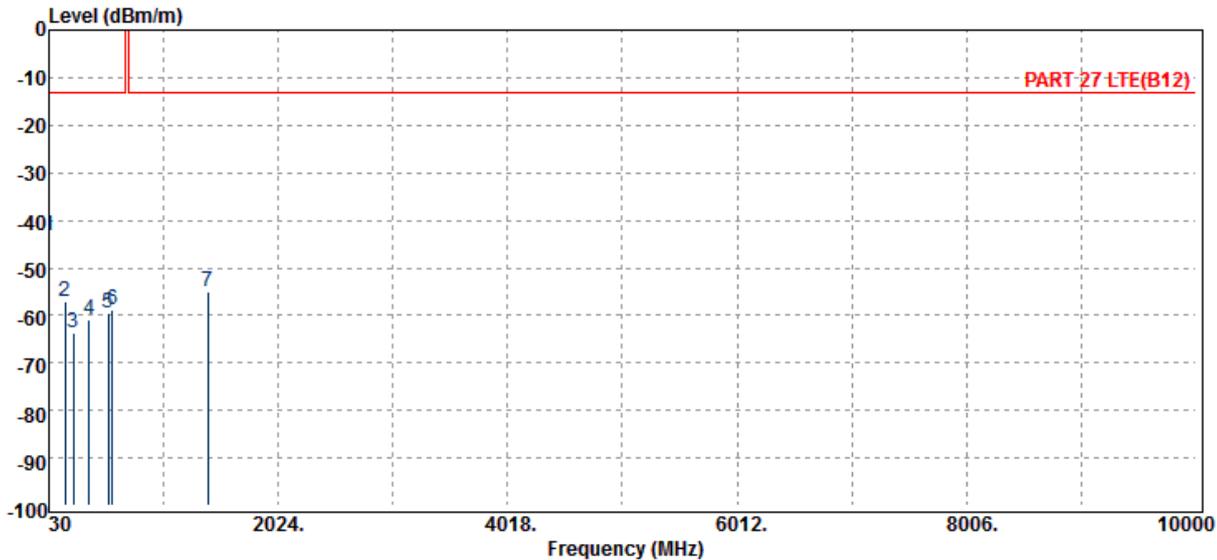
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Operation Band	:LTE B12	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:707.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



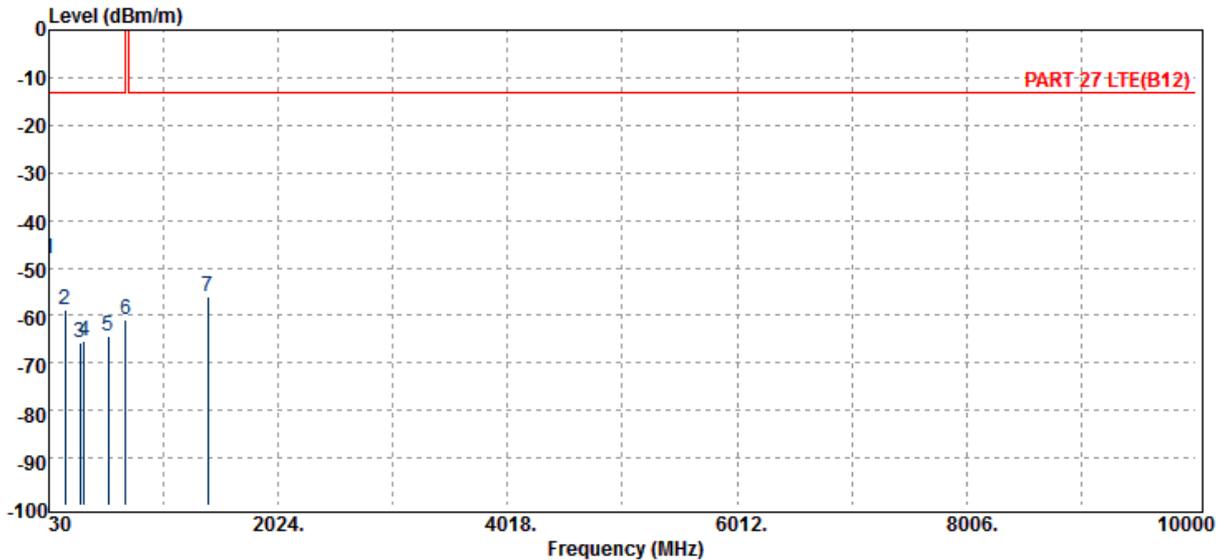
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.28	-28.61	-14.08	-0.59	-13.00	-30.28
172.59	S	-57.11	-55.57	-0.20	-1.34	-13.00	-44.11
241.46	S	-63.55	-65.36	3.49	-1.68	-13.00	-50.55
376.29	S	-60.92	-62.66	3.78	-2.03	-13.00	-47.92
546.04	S	-59.45	-61.62	3.99	-1.81	-13.00	-46.45
579.99	S	-58.82	-60.14	3.71	-2.39	-13.00	-45.82
1415.00	H	-54.97	-59.22	8.25	-4.01	-13.00	-41.97

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Operation Band	:LTE B12	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:707.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.10	-32.94	-14.58	-0.58	-13.00	-35.10
173.56	S	-58.90	-57.51	-0.04	-1.35	-13.00	-45.90
298.69	S	-65.64	-67.41	3.59	-1.82	-13.00	-52.64
335.55	S	-65.45	-67.29	3.79	-1.95	-13.00	-52.45
547.01	S	-64.52	-66.64	3.98	-1.86	-13.00	-51.52
700.27	S	-60.85	-62.37	3.67	-2.16	34.77	-95.62
1415.00	H	-56.08	-60.33	8.25	-4.01	-13.00	-43.08

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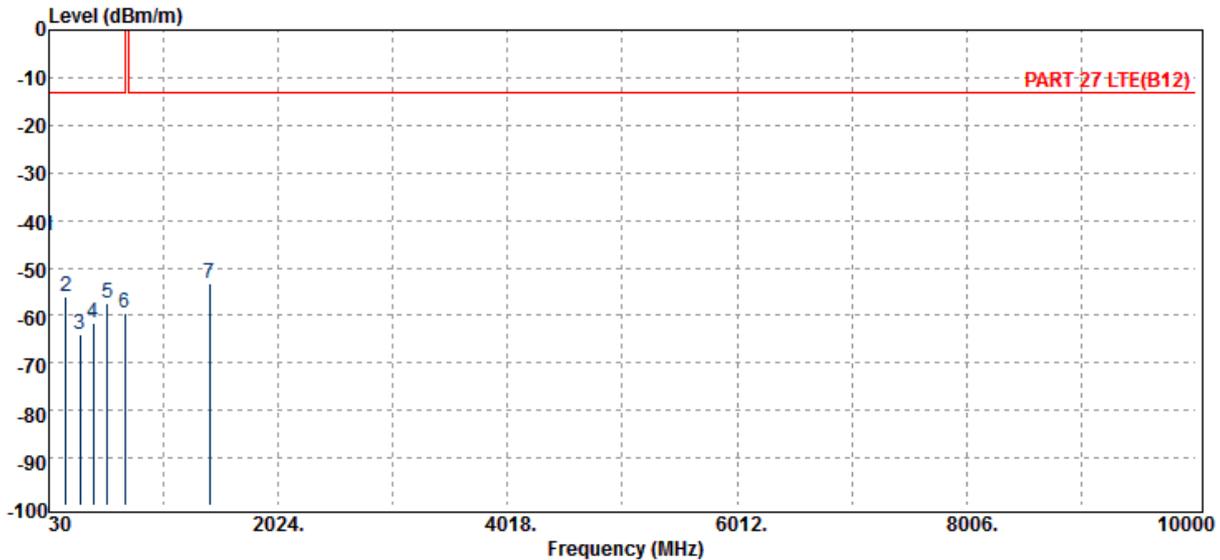
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Operation Band	:LTE B12	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:713.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.42	-28.75	-14.08	-0.59	-13.00	-30.42
175.50	S	-56.12	-55.04	0.27	-1.36	-13.00	-43.12
299.66	S	-64.12	-65.90	3.61	-1.82	-13.00	-51.12
413.15	S	-61.48	-63.02	3.67	-2.13	-13.00	-48.48
541.19	S	-57.58	-59.66	3.99	-1.91	-13.00	-44.58
686.69	S	-59.49	-59.99	3.72	-3.21	-13.00	-46.49
1427.00	H	-53.24	-57.51	8.30	-4.03	-13.00	-40.24

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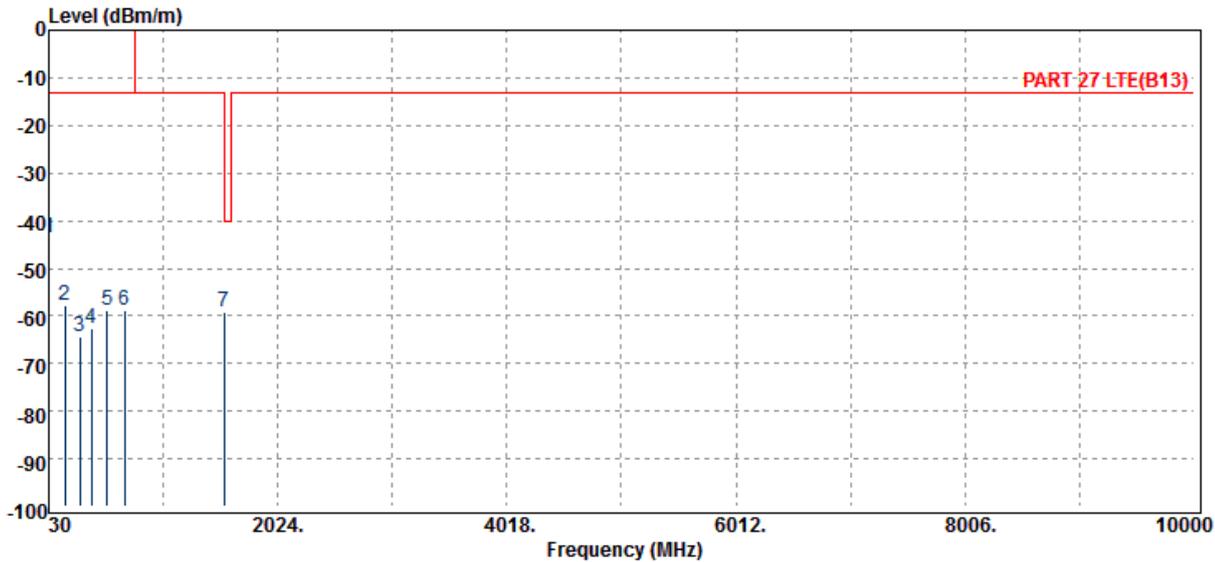
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### Radiated Spurious Emission Measurement Result: LTE-Band 13 (The Worst Case)

Operation Band :LTE B13 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :779.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



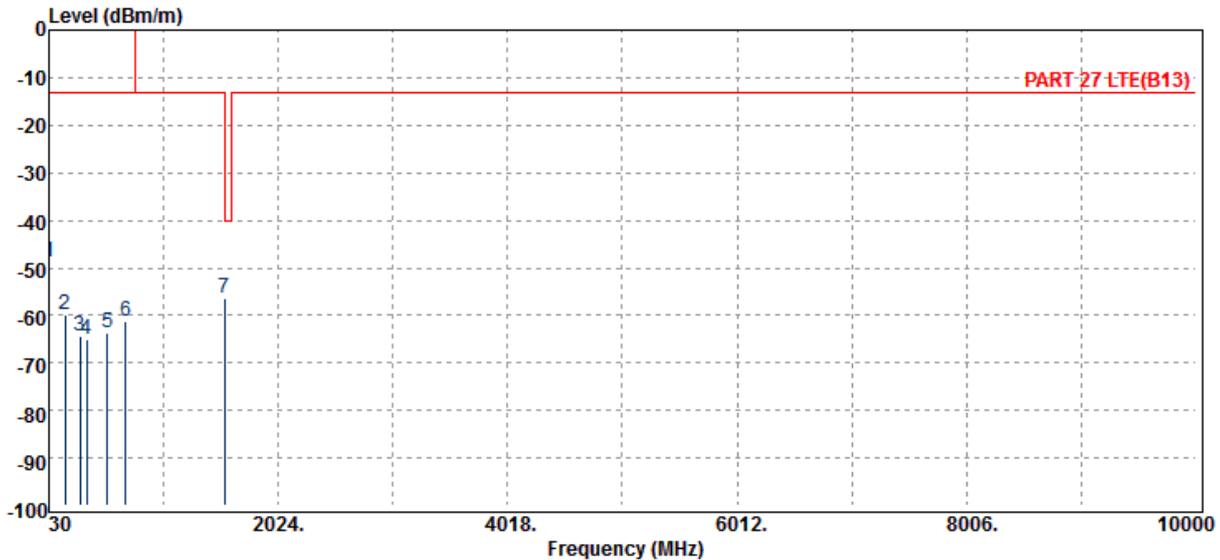
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.46	-28.79	-14.08	-0.59	-13.00	-30.46
168.71	S	-57.90	-55.88	-0.70	-1.33	-13.00	-44.90
298.69	S	-64.35	-66.13	3.59	-1.82	-13.00	-51.35
398.60	S	-62.63	-64.24	3.72	-2.10	-13.00	-49.63
539.25	S	-58.88	-60.89	4.00	-1.99	-13.00	-45.88
689.60	S	-58.98	-59.70	3.71	-2.98	-13.00	-45.98
1559.00	H	-59.31	-61.72	6.66	-4.25	-40.00	-19.31

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



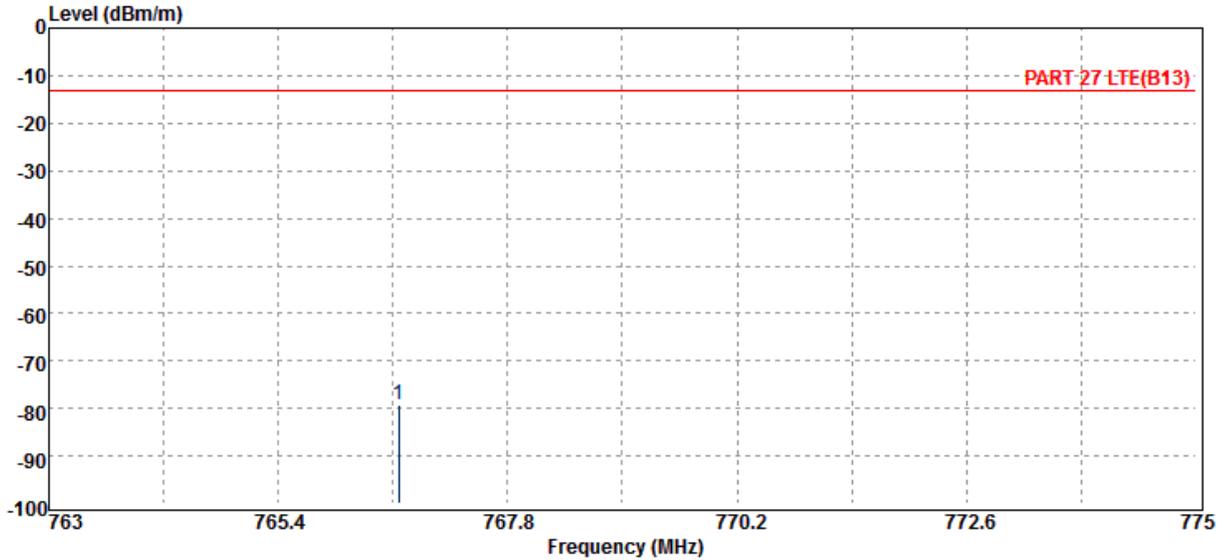
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.72	-33.56	-14.58	-0.58	-13.00	-35.72
172.59	S	-59.91	-58.38	-0.20	-1.34	-13.00	-46.91
299.66	S	-64.48	-66.27	3.61	-1.82	-13.00	-51.48
357.86	S	-65.11	-66.89	3.83	-2.05	-13.00	-52.11
541.19	S	-63.71	-65.80	3.99	-1.91	-13.00	-50.71
699.30	S	-61.08	-62.52	3.68	-2.24	-13.00	-48.08
1559.00	H	-56.43	-58.84	6.66	-4.25	-40.00	-16.43

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



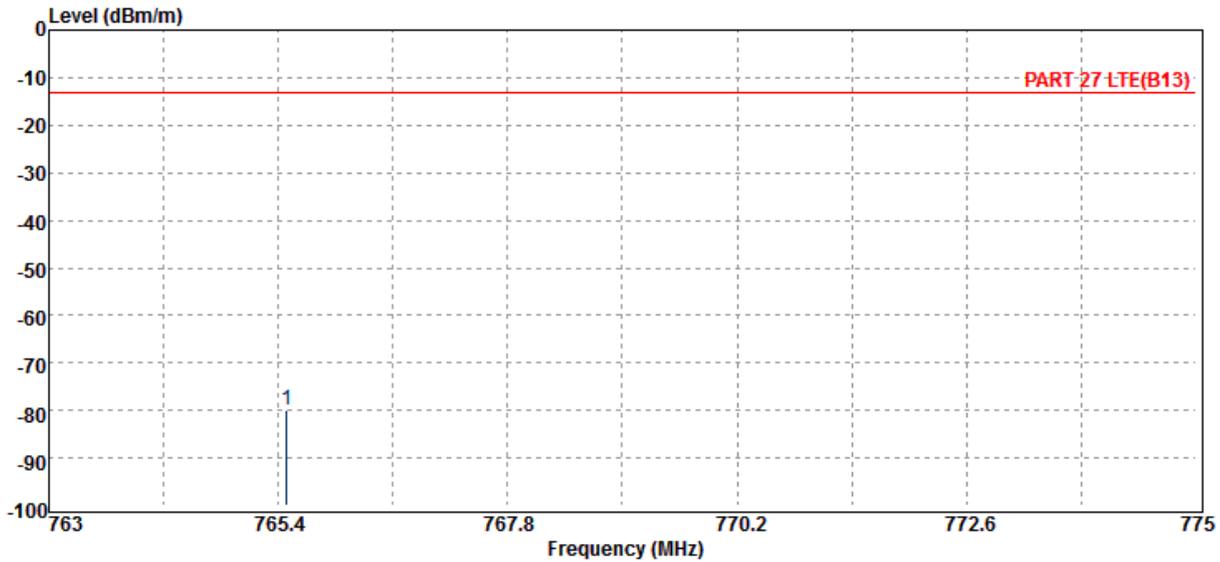
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
766.66	S	-79.27	-81.10	3.46	-1.64	-13.00	-66.27

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
765.48	S	-79.85	-81.81	3.46	-1.50	-13.00	-66.85

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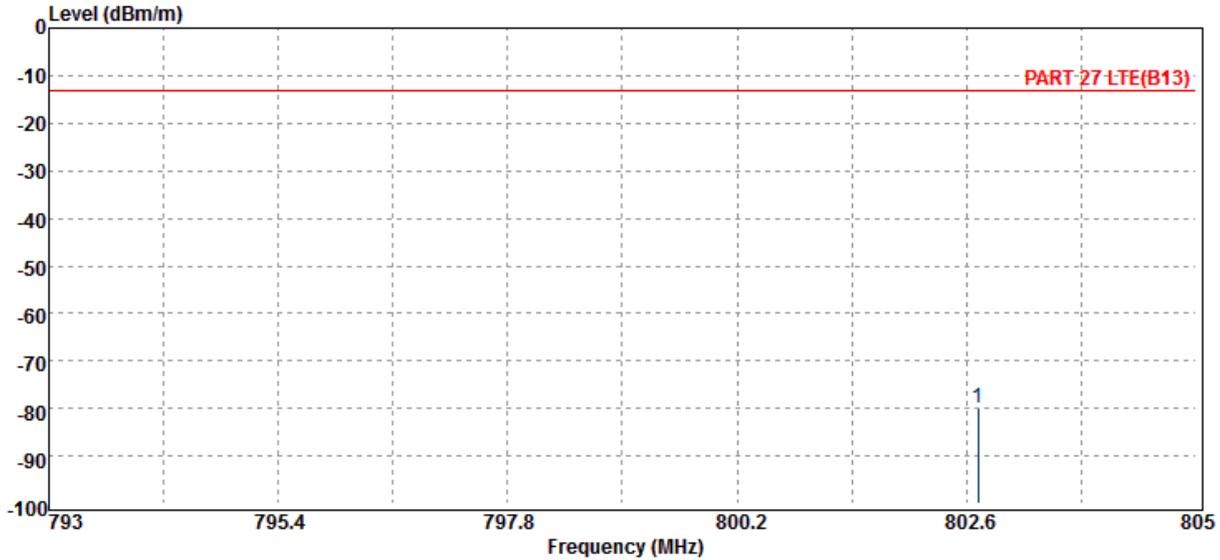
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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



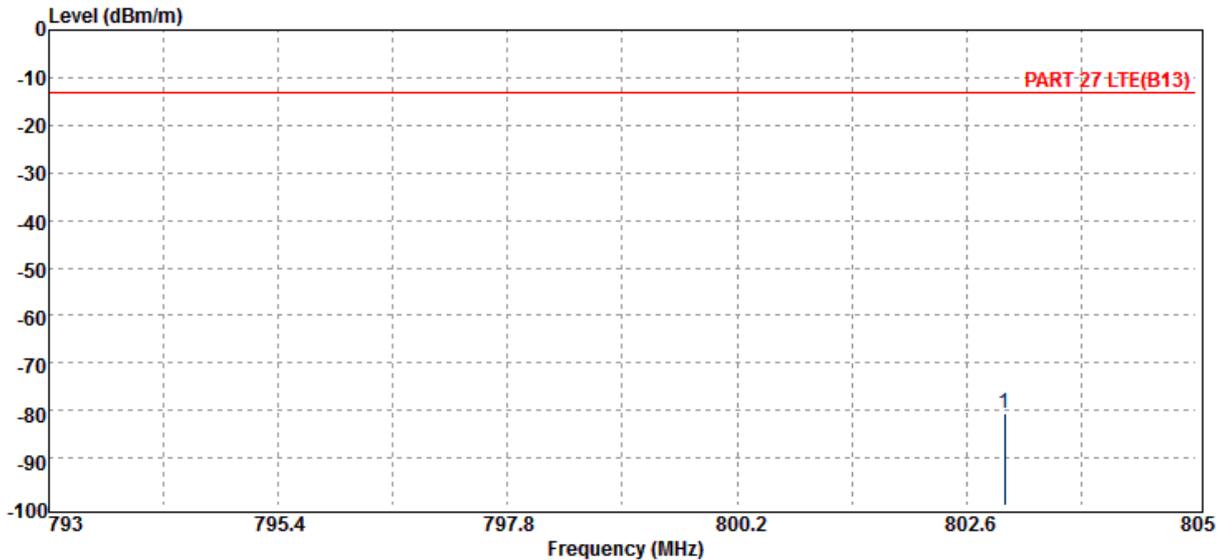
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
802.72	S	-79.81	-81.06	3.44	-2.18	-13.00	-66.81

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
803.00	S	-80.51	-81.79	3.44	-2.16	-13.00	-67.51

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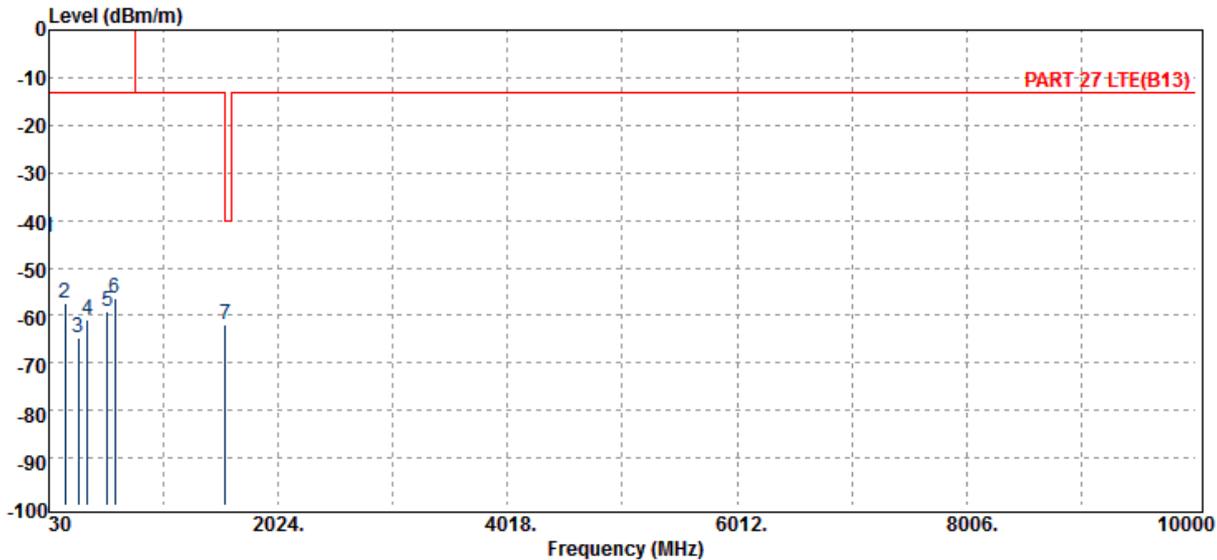
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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:VERTICAL
EUT Pol.	:H Plane	Pol.	



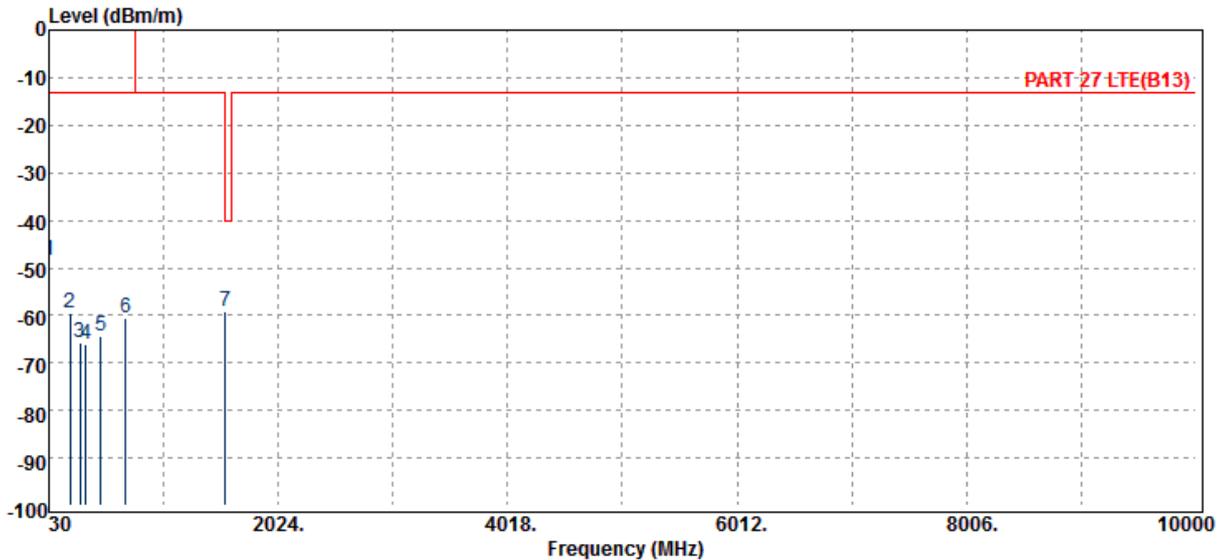
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.54	-28.87	-14.08	-0.59	-13.00	-30.54
167.74	S	-57.33	-55.25	-0.76	-1.32	-13.00	-44.33
287.05	S	-64.72	-66.37	3.42	-1.77	-13.00	-51.72
367.56	S	-60.95	-62.69	3.80	-2.06	-13.00	-47.95
536.34	S	-59.27	-61.17	4.00	-2.11	-13.00	-46.27
605.21	S	-56.46	-57.88	3.57	-2.15	-13.00	-43.46
1564.00	H	-61.83	-64.25	6.68	-4.26	-40.00	-21.83

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



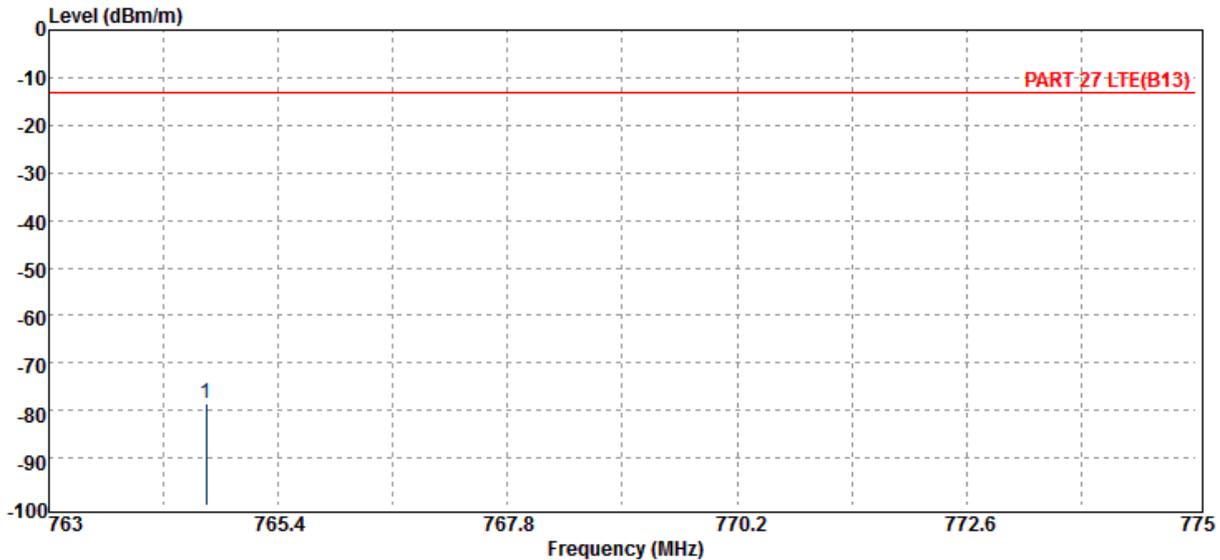
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.43	-33.27	-14.58	-0.58	-13.00	-35.43
214.30	S	-59.57	-61.57	3.55	-1.55	-13.00	-46.57
299.66	S	-65.61	-67.39	3.61	-1.82	-13.00	-52.61
352.04	S	-66.08	-67.90	3.85	-2.03	-13.00	-53.08
483.96	S	-64.31	-66.34	3.89	-1.85	-13.00	-51.31
697.36	S	-60.69	-61.99	3.68	-2.38	-13.00	-47.69
1564.00	H	-59.04	-61.47	6.68	-4.26	-40.00	-19.04

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



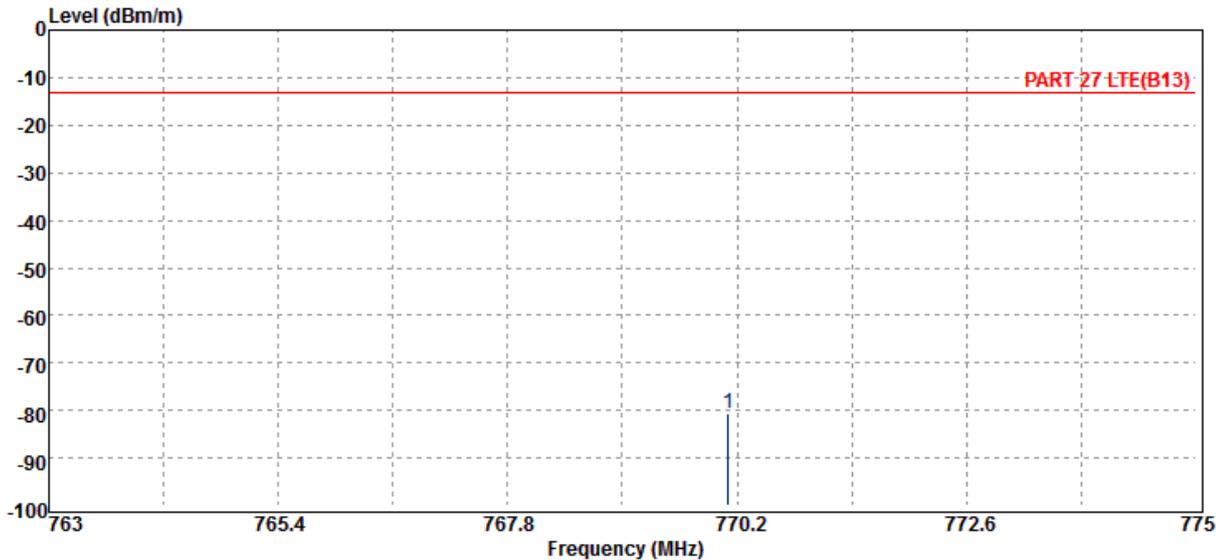
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
764.64	S	-78.69	-80.68	3.46	-1.47	-13.00	-65.69

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



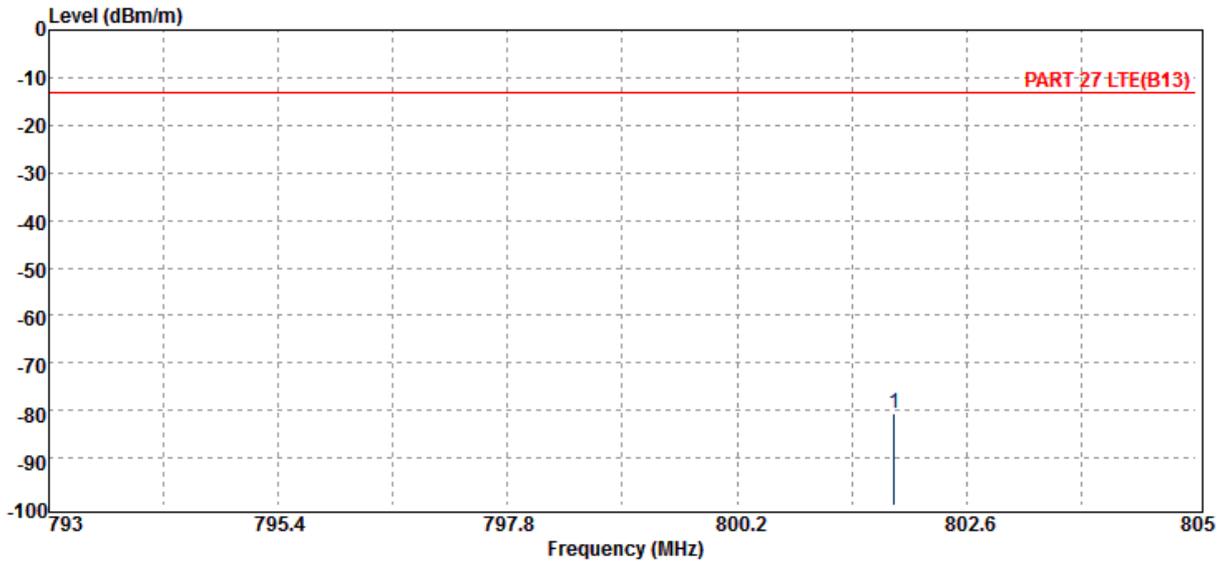
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
770.10	S	-80.68	-82.11	3.46	-2.03	-13.00	-67.68

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



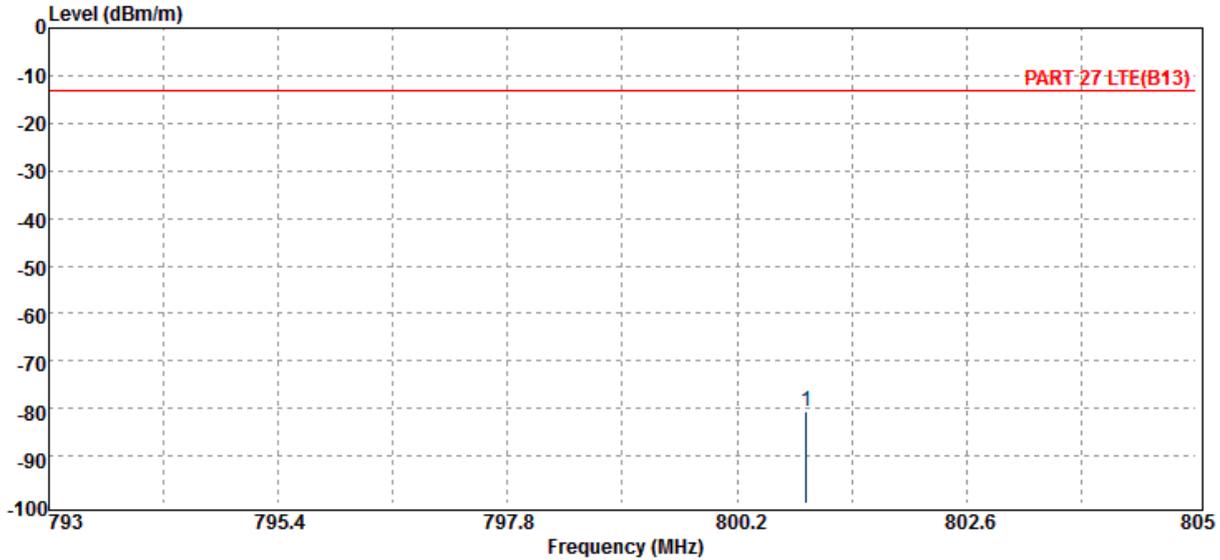
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
801.84	S	-80.47	-81.65	3.44	-2.26	-13.00	-67.47

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



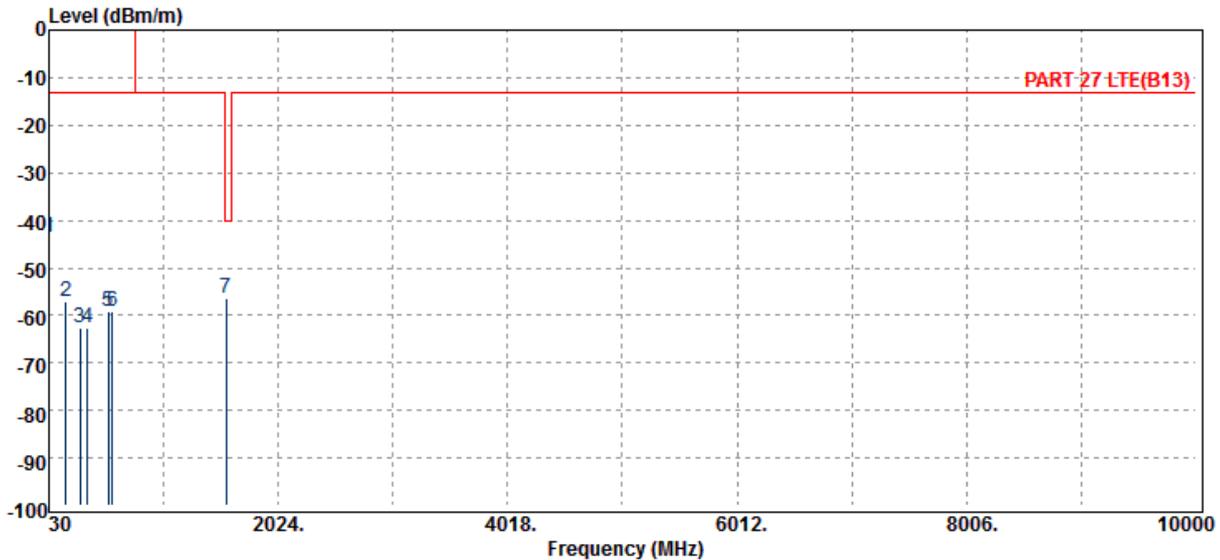
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
800.92	S	-80.54	-81.63	3.44	-2.34	-13.00	-67.54

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Operation Band :LTE B13 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :784.5 MHz Engineer :Tin  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.77	-29.09	-14.08	-0.59	-13.00	-30.77
175.50	S	-57.10	-56.01	0.27	-1.36	-13.00	-44.10
299.66	S	-62.54	-64.32	3.61	-1.82	-13.00	-49.54
362.71	S	-62.54	-64.29	3.82	-2.07	-13.00	-49.54
547.01	S	-59.01	-61.13	3.98	-1.86	-13.00	-46.01
580.96	S	-59.16	-60.50	3.70	-2.36	-13.00	-46.16
1569.00	H	-56.42	-58.85	6.70	-4.27	-40.00	-16.42

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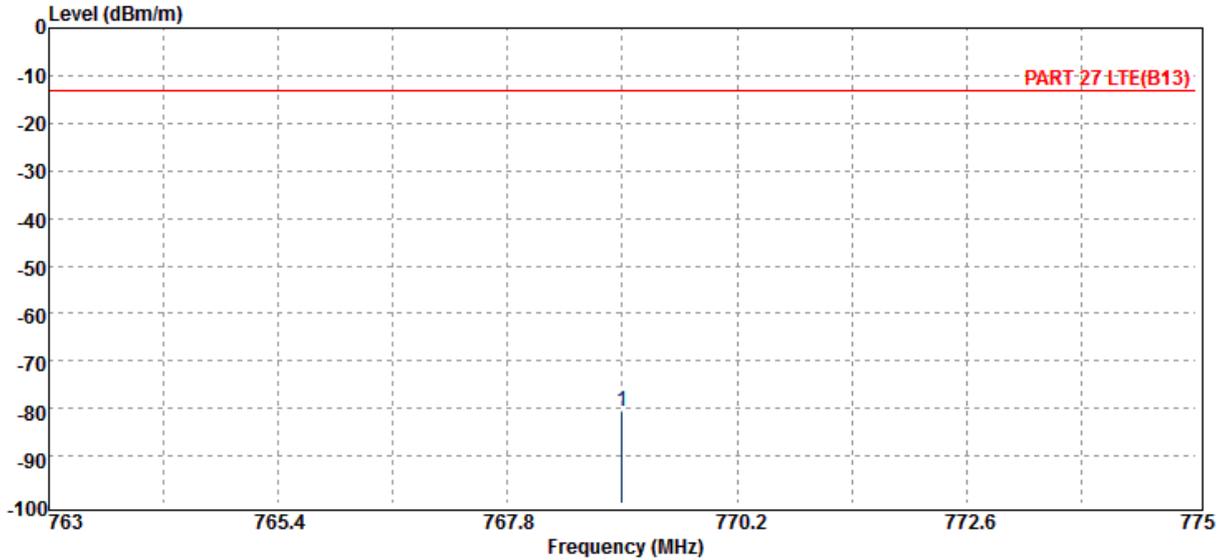
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Operation Band :LTE B13 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :784.5 MHz Engineer :Tin  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :H Plane Measurement Pol. Antenna :VERTICAL



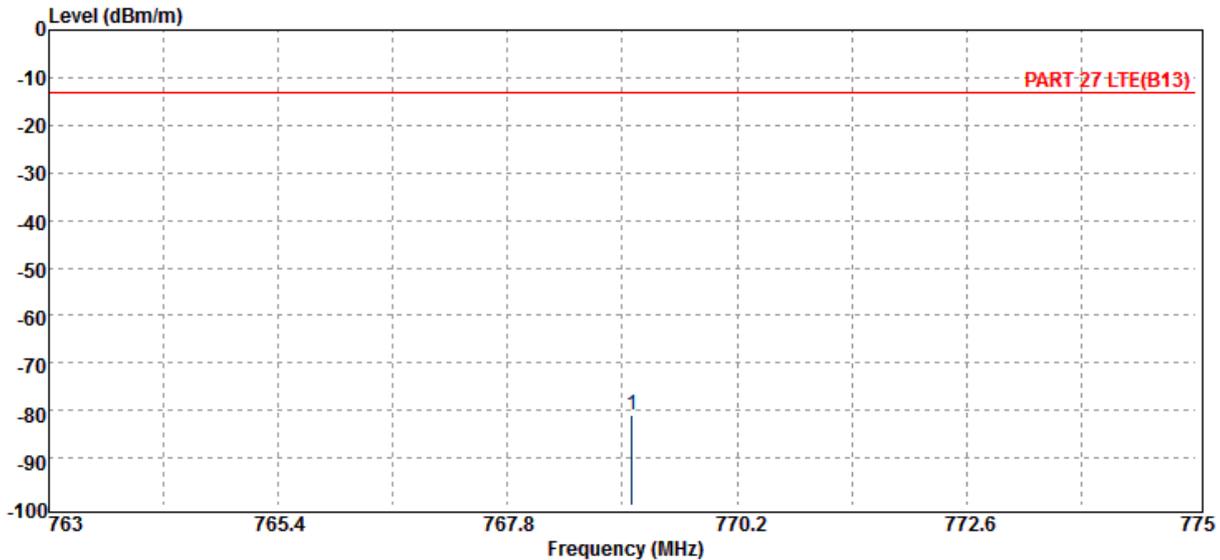
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
769.00	S	-80.61	-82.16	3.46	-1.90	-13.00	-67.61

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
769.10	S	-81.05	-82.59	3.46	-1.92	-13.00	-68.05

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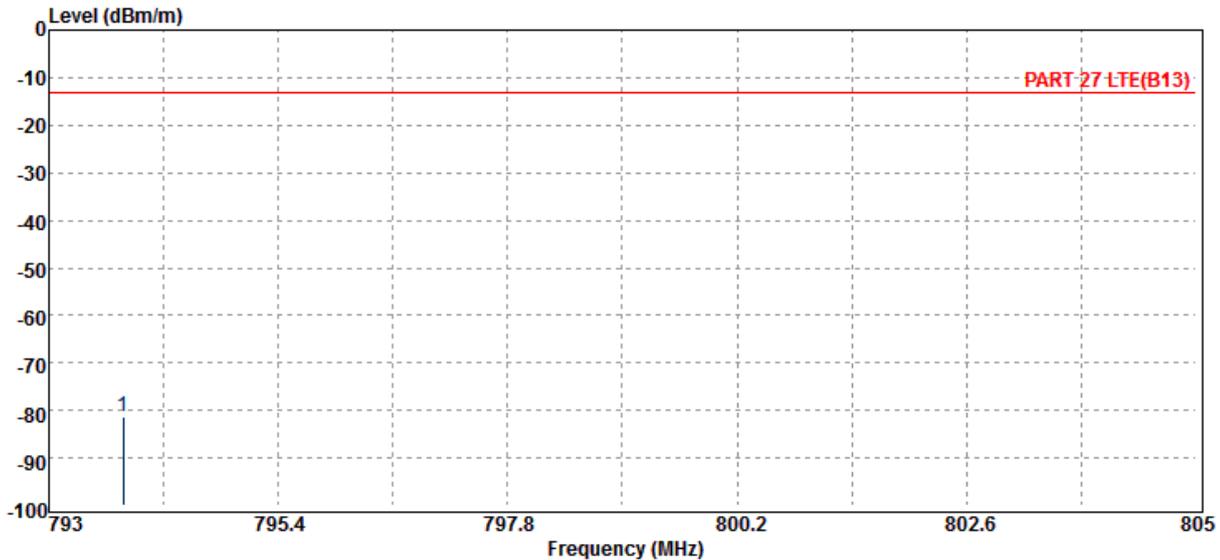
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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Pol.	Antenna :VERTICAL



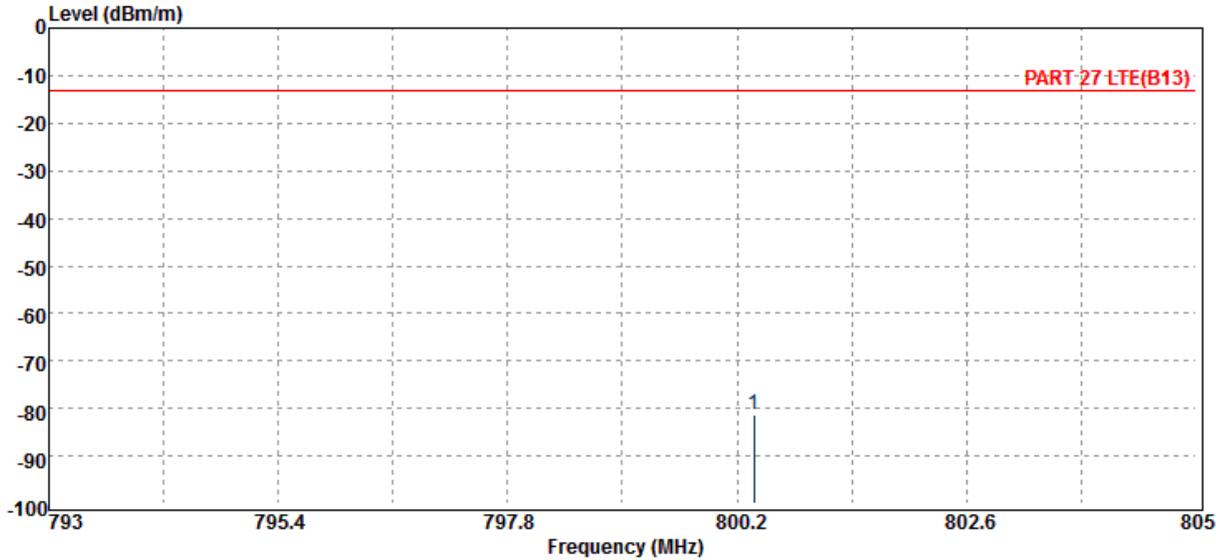
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
793.78	S	-81.20	-81.68	3.44	-2.96	-13.00	-68.20

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Operation Band	:LTE B13	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
800.38	S	-81.45	-82.50	3.44	-2.39	-13.00	-68.45

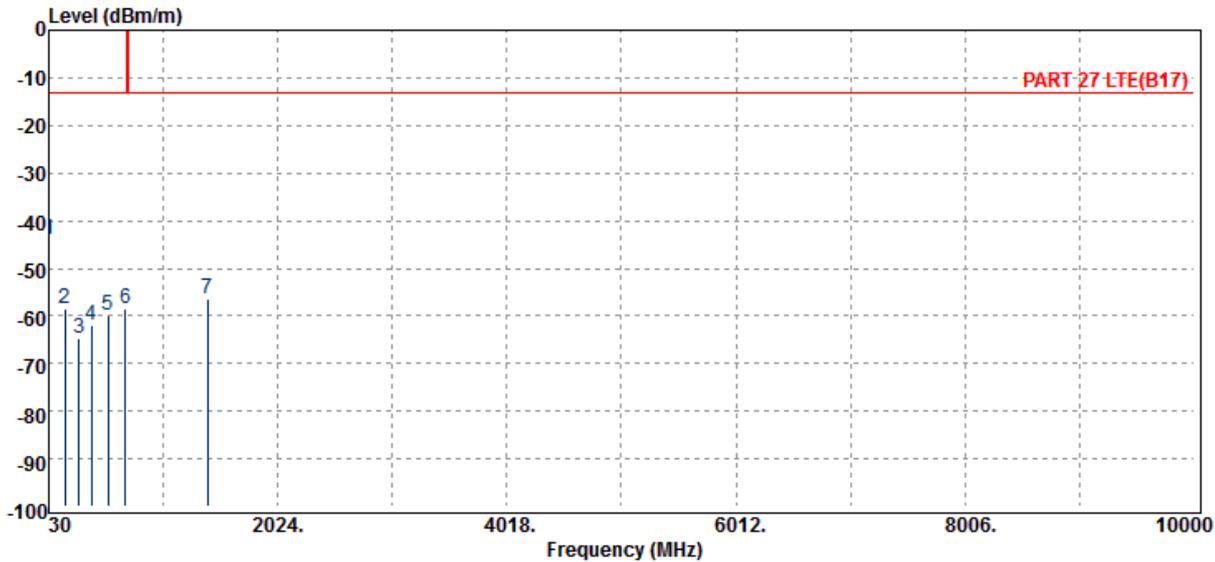
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### Radiated Spurious Emission Measurement Result: LTE-Band 17 (The Worst Case)

Operation Band :LTE B17 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :706.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



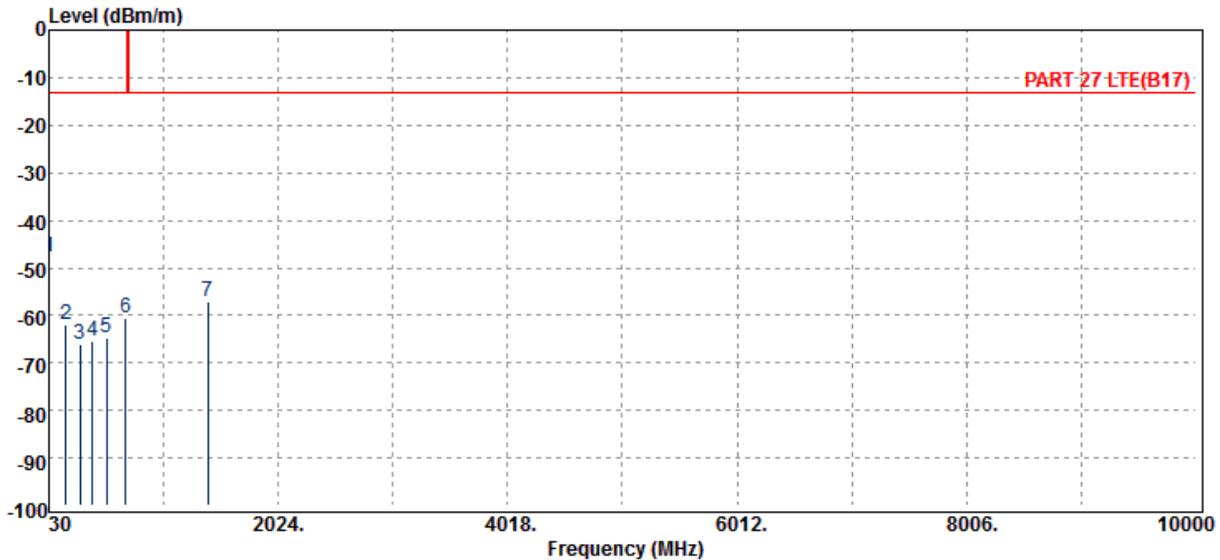
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-44.00	-29.32	-14.08	-0.59	-13.00	-31.00
168.71	S	-58.31	-56.29	-0.70	-1.33	-13.00	-45.31
296.75	S	-64.71	-66.45	3.55	-1.81	-13.00	-51.71
401.51	S	-61.88	-63.46	3.71	-2.13	-13.00	-48.88
548.95	S	-59.95	-61.96	3.98	-1.97	-13.00	-46.95
699.30	S	-58.65	-60.09	3.68	-2.24	-13.00	-45.65
1413.00	H	-56.36	-60.61	8.25	-4.00	-13.00	-43.36

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Operation Band :LTE B17 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :706.5 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:HORIZONTAL



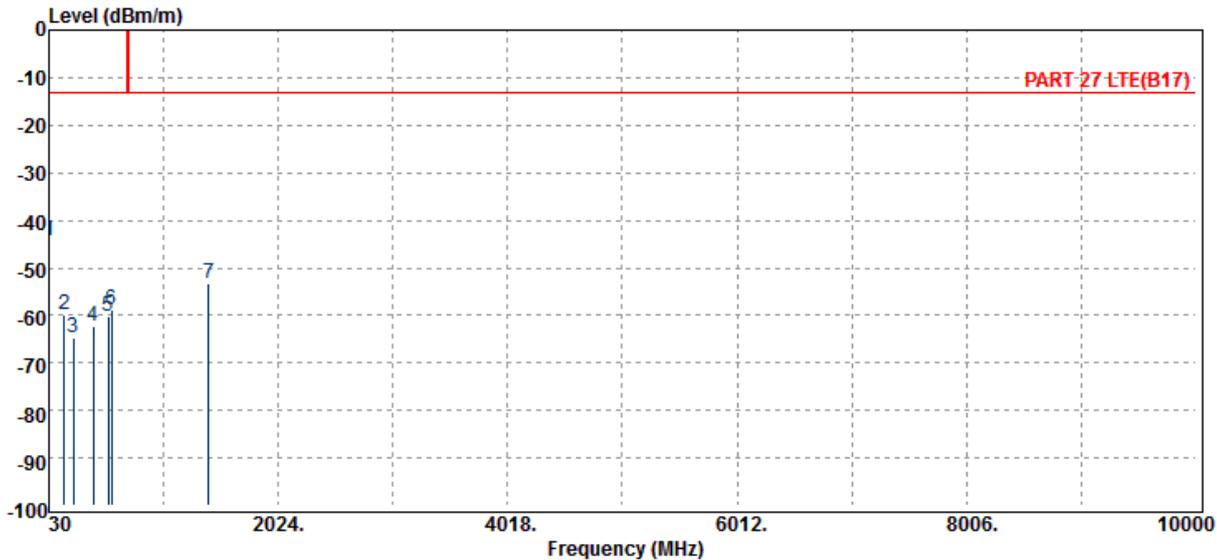
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-47.87	-32.71	-14.58	-0.58	-13.00	-34.87
175.50	S	-61.77	-60.68	0.27	-1.36	-13.00	-48.77
299.66	S	-66.08	-67.86	3.61	-1.82	-13.00	-53.08
406.36	S	-65.57	-67.11	3.69	-2.15	-13.00	-52.57
534.40	S	-64.58	-66.39	4.00	-2.19	-13.00	-51.58
696.39	S	-60.54	-61.77	3.69	-2.46	-13.00	-47.54
1413.00	H	-57.01	-61.26	8.25	-4.00	-13.00	-44.01

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Operation Band	:LTE B17	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:710 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-44.20	-29.04	-14.58	-0.58	-13.00	-31.20
165.80	S	-59.79	-57.60	-0.88	-1.31	-13.00	-46.79
241.46	S	-64.67	-66.49	3.49	-1.68	-13.00	-51.67
416.06	S	-62.22	-63.75	3.66	-2.12	-13.00	-49.22
544.10	S	-60.06	-62.26	3.99	-1.79	-13.00	-47.06
578.05	S	-58.66	-59.94	3.73	-2.45	-13.00	-45.66
1420.00	H	-53.45	-57.71	8.28	-4.01	-13.00	-40.45

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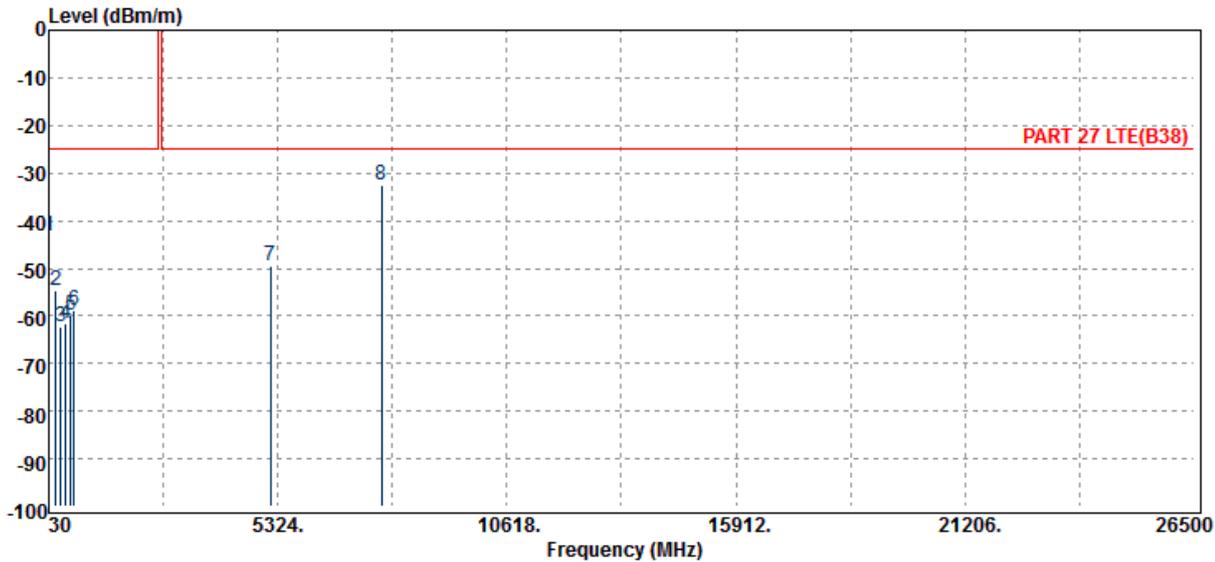






### Radiated Spurious Emission Measurement Result: LTE-Band 38 (The Worst Case)

Operation Band :LTE B38 Temp./Humi. :24.1 deg\_C / 65 RH  
 Fundamental Frequency :2575 MHz Engineer :Tin  
 Operation Mode :Tx CH LOW  
 EUT Pol. :H Plane Measurement Antenna Pol.:VERTICAL



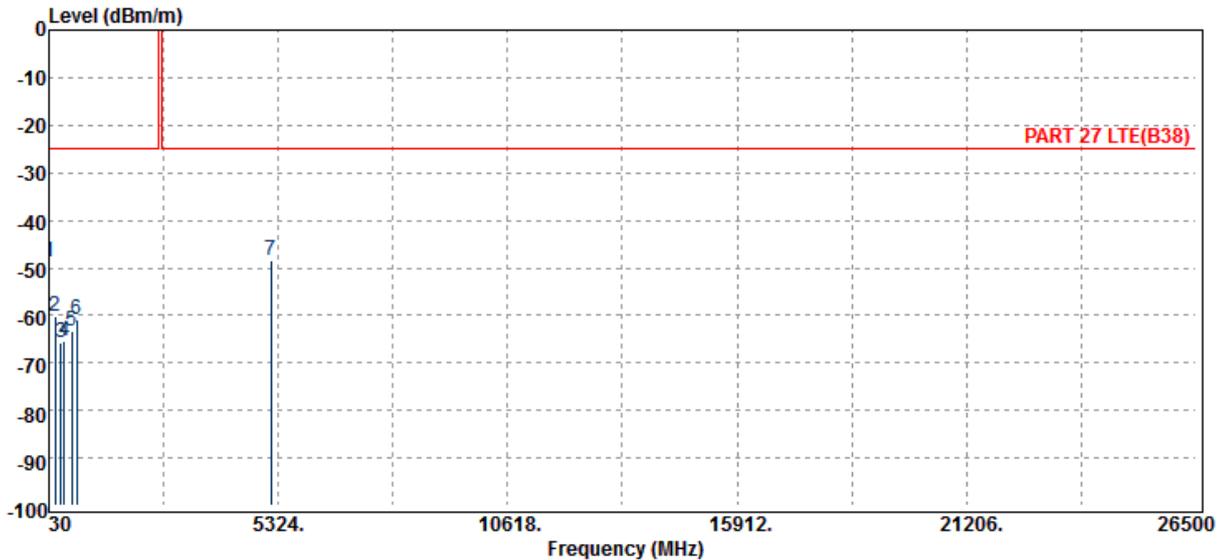
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.33	-28.66	-14.08	-0.59	-25.00	-18.33
192.96	S	-54.83	-56.10	2.71	-1.44	-25.00	-29.83
298.69	S	-62.36	-64.13	3.59	-1.82	-25.00	-37.36
419.94	S	-61.71	-63.24	3.64	-2.11	-25.00	-36.71
531.49	S	-59.91	-61.61	4.01	-2.31	-25.00	-34.91
605.21	S	-58.75	-60.17	3.57	-2.15	-25.00	-33.75
5150.00	H	-49.61	-54.18	12.69	-8.12	-25.00	-24.61
7725.00	H	-32.51	-32.96	10.66	-10.21	-25.00	-7.51

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Operation Band	:LTE B38	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:2575 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.77	-33.61	-14.58	-0.58	-25.00	-23.77
168.71	S	-60.35	-58.33	-0.70	-1.33	-25.00	-35.35
299.66	S	-65.57	-67.36	3.61	-1.82	-25.00	-40.57
381.14	S	-65.25	-67.00	3.77	-2.02	-25.00	-40.25
548.95	S	-63.16	-65.17	3.98	-1.97	-25.00	-38.16
679.90	S	-60.83	-61.58	3.74	-2.99	-25.00	-35.83
5150.00	H	-48.42	-52.98	12.69	-8.12	-25.00	-23.42

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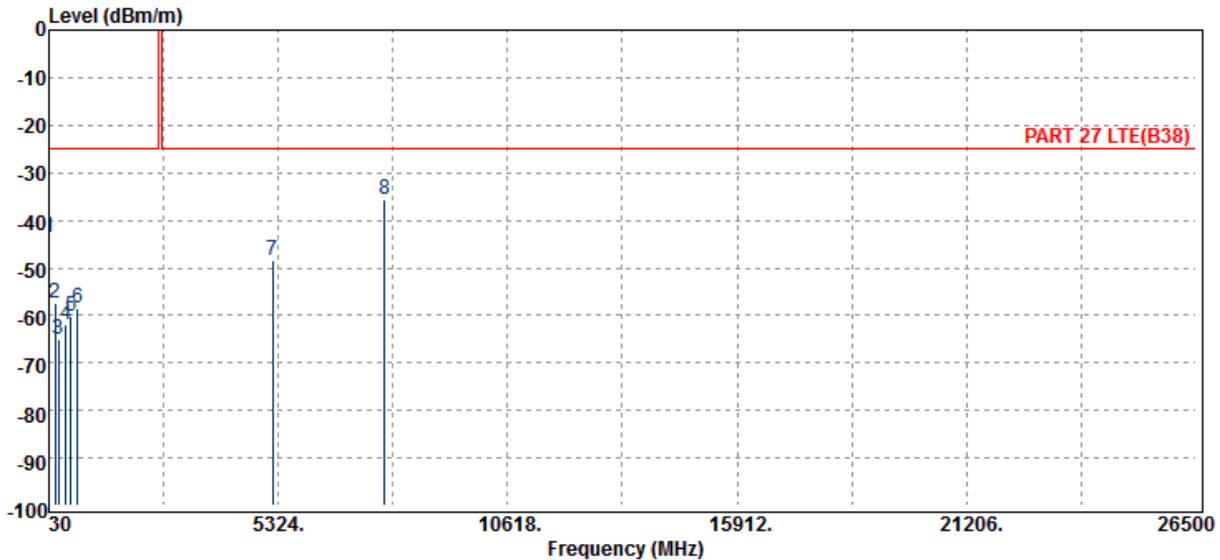
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Operation Band	:LTE B38	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:2595 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



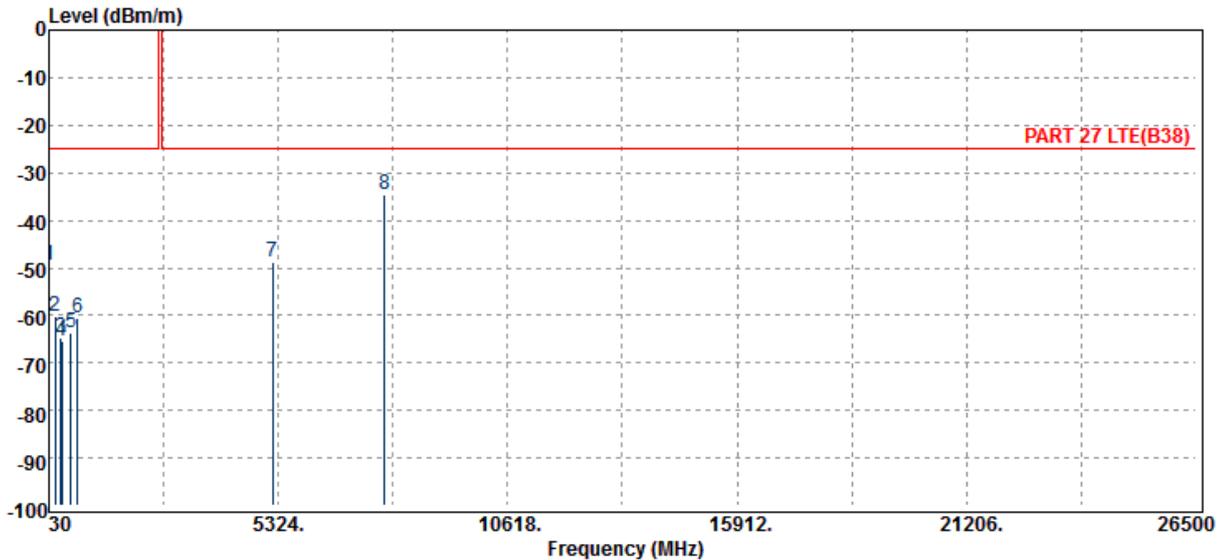
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.43	-28.75	-14.08	-0.59	-25.00	-18.43
168.71	S	-57.54	-55.52	-0.70	-1.33	-25.00	-32.54
243.40	S	-65.06	-66.88	3.50	-1.68	-25.00	-40.06
419.94	S	-61.95	-63.48	3.64	-2.11	-25.00	-36.95
546.04	S	-60.17	-62.34	3.99	-1.81	-25.00	-35.17
694.45	S	-58.63	-59.71	3.69	-2.61	-25.00	-33.63
5190.00	H	-48.62	-53.16	12.73	-8.19	-25.00	-23.62
7785.00	H	-35.47	-35.79	10.63	-10.30	-25.00	-10.47

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Operation Band	:LTE B38	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:2595 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Antenna	:HORIZONTAL
EUT Pol.	:H Plane	Pol.	



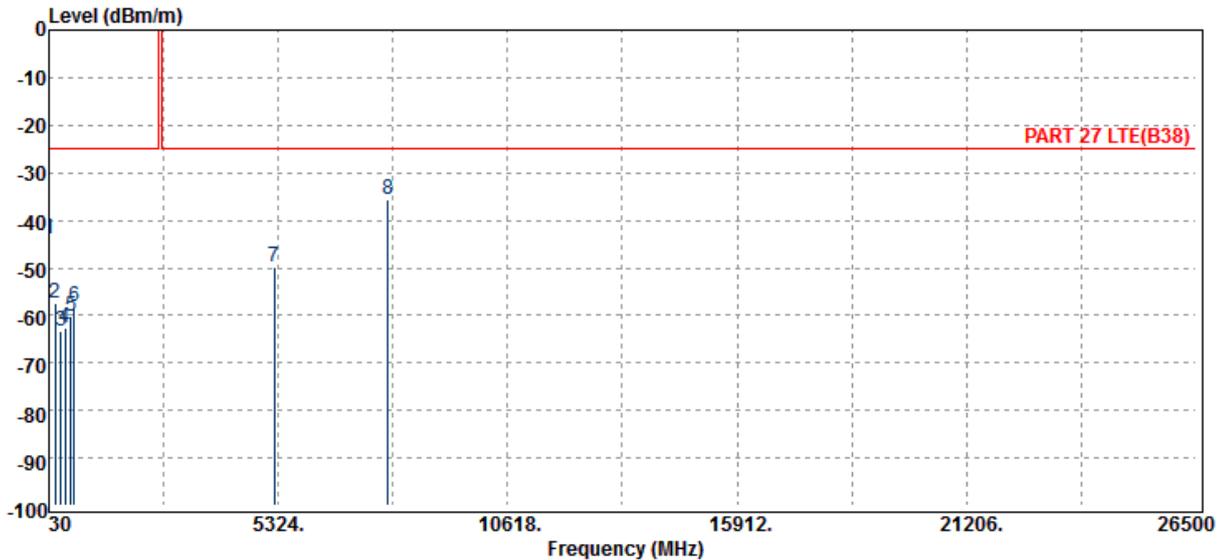
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-49.39	-34.72	-14.08	-0.59	-25.00	-24.39
168.71	S	-60.28	-58.25	-0.70	-1.33	-25.00	-35.28
298.69	S	-64.70	-66.47	3.59	-1.82	-25.00	-39.70
332.64	S	-65.57	-67.41	3.78	-1.93	-25.00	-40.57
547.01	S	-63.76	-65.88	3.98	-1.86	-25.00	-38.76
692.51	S	-60.68	-61.62	3.70	-2.76	-25.00	-35.68
5190.00	H	-48.64	-53.18	12.73	-8.19	-25.00	-23.64
7785.00	H	-34.66	-34.98	10.63	-10.30	-25.00	-9.66

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Operation Band	:LTE B38	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:2615 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



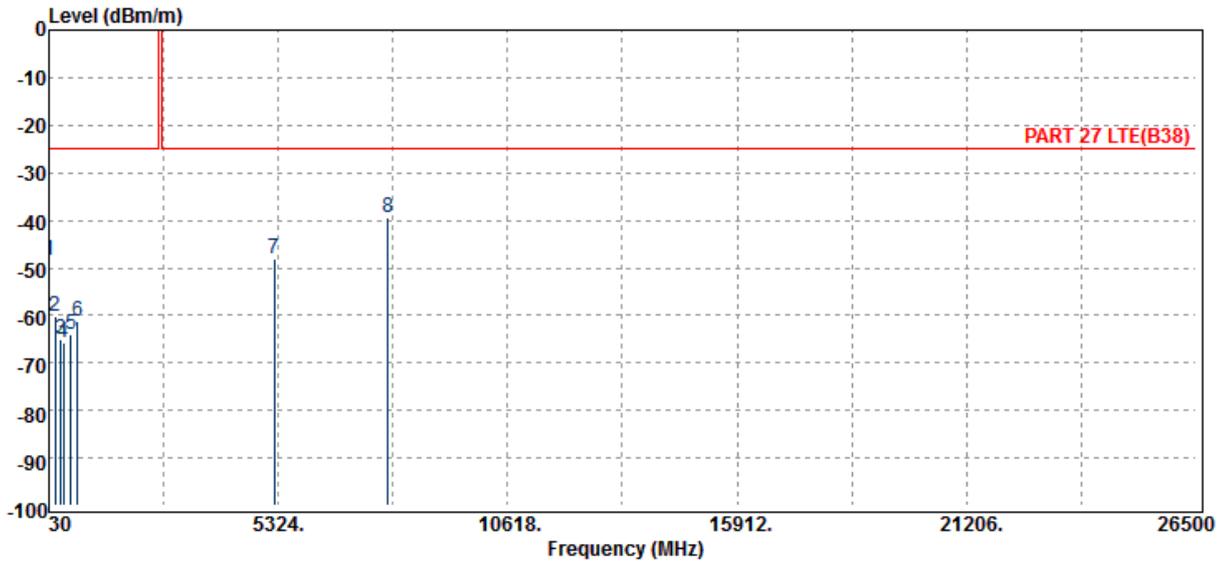
Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-43.80	-29.12	-14.08	-0.59	-25.00	-18.80
170.65	S	-57.45	-55.60	-0.51	-1.33	-25.00	-32.45
299.66	S	-63.33	-65.12	3.61	-1.82	-25.00	-38.33
400.54	S	-62.51	-64.11	3.71	-2.12	-25.00	-37.51
537.31	S	-60.20	-62.14	4.00	-2.07	-25.00	-35.20
605.21	S	-58.21	-59.63	3.57	-2.15	-25.00	-33.21
5230.00	H	-49.95	-54.52	12.78	-8.22	-25.00	-24.95
7845.00	H	-35.66	-36.00	10.59	-10.25	-25.00	-10.66

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Operation Band	:LTE B38	Temp./Humi.	:24.1 deg_C / 65 RH
Fundamental Frequency	:2615 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-48.52	-33.37	-14.58	-0.58	-25.00	-23.52
172.59	S	-60.15	-58.61	-0.20	-1.34	-25.00	-35.15
299.66	S	-64.98	-66.76	3.61	-1.82	-25.00	-39.98
371.44	S	-65.74	-67.48	3.79	-2.05	-25.00	-40.74
539.25	S	-63.95	-65.96	4.00	-1.99	-25.00	-38.95
686.69	S	-61.28	-61.79	3.72	-3.21	-25.00	-36.28
5230.00	H	-48.18	-52.74	12.78	-8.22	-25.00	-23.18
7845.00	H	-39.30	-39.64	10.59	-10.25	-25.00	-14.30

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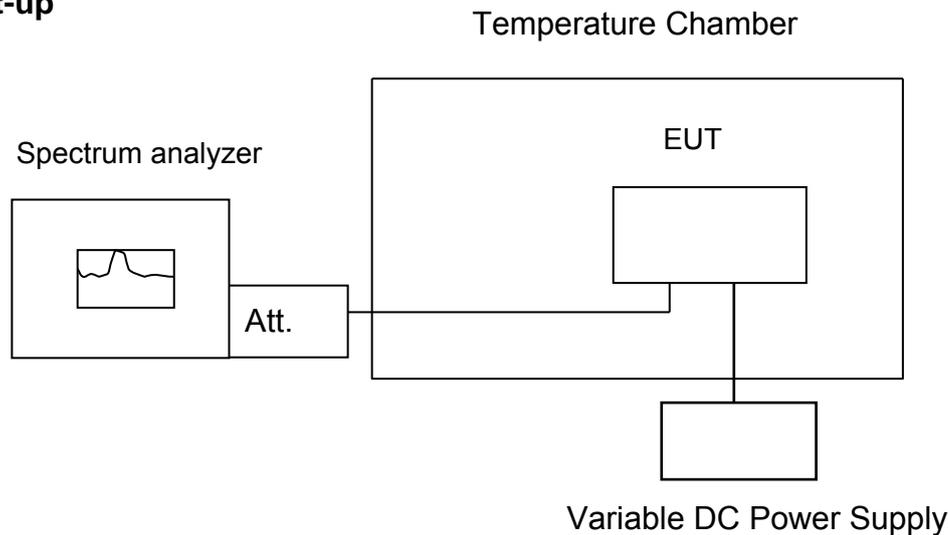
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## 11. FREQUENCY STABILITY MEASUREMENT

### 11.1. Standard Applicable

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

### 11.2. Test Set-up



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

### 11.3. 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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#### 11.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	2017/10/16	2018/10/15
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	2018/01/17	2019/01/16
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-018	2018/01/02	2019/01/01
Coaxial Cables	N/A	WK CE Cable	N/A	2018/01/02	2019/01/01
Temperature Chamber	TERCHY	MHG-120LF	911009	2017/05/19	2018/5/18

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## 11.5. Measurement Result

### FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
4.43	20	836.599998	-1.999999995	2091
3.85	20	836.6	0	2091
3.27	20	836.600003	2.999999992	2091
3 (End point)	20	836.600002	1.999999995	2091

### FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
3.85	50	836.599997	-2.999999992	2091
3.85	40	836.600005	4.999999987	2091
3.85	30	836.599994	-5.999999985	2091
3.85	20	836.600003	2.999999992	2091
3.85	10	836.600001	0.999999997	2091
3.85	0	836.600002	1.999999995	2091
3.85	-10	836.600001	0.999999997	2091
3.85	-20	836.600007	6.999999982	2091
3.85	-30	836.600003	2.999999992	2091

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### FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
4.43	20	1879.999991	-9.000000091	4700
3.85	20	1879.999992	-7.99999998	4700
3.27	20	1879.999997	-3.000000106	4700
3 (End point)	20	1880.000003	3.000000106	4700

### FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
3.85	50	1879.999996	-3.99999999	4700
3.85	40	1879.999996	-3.99999999	4700
3.85	30	1880	0	4700
3.85	20	1879.999999	-1.000000111	4700
3.85	10	1880.000004	3.99999999	4700
3.85	0	1880.000006	5.999999985	4700
3.85	-10	1880.000009	9.000000091	4700
3.85	-20	1879.999994	-5.999999985	4700
3.85	-30	1880.000002	1.999999995	4700

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### FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: WCDMA II Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
4.43	20	1880.000006	5.999999985	4700
3.85	20	1880.000002	1.999999995	4700
3.27	20	1879.999993	-7.000000096	4700
3 (End point)	20	1880.000005	5.000000101	4700

### FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: WCDMA II Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
3.85	50	1879.999993	-7.000000096	4700
3.85	40	1880.000003	3.000000106	4700
3.85	30	1880	0	4700
3.85	20	1880.000004	3.999999999	4700
3.85	10	1880.000009	9.000000091	4700
3.85	0	1880.000001	1.000000111	4700
3.85	-10	1880.000002	1.999999995	4700
3.85	-20	1880.000009	9.000000091	4700
3.85	-30	1880.000009	9.000000091	4700

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### FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: WCDMA IV Mid Channel 1732.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
4.43	20	1732.599994	-5.999999985	4331
3.85	20	1732.599993	-6.999999869	4331
3.27	20	1732.600001	1.000000111	4331
3 (End point)	20	1732.599998	-1.999999995	4331

### FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: WCDMA IV Mid Channel 1732.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
3.85	50	1732.599994	-5.999999985	4331
3.85	40	1732.599994	-5.999999985	4331
3.85	30	1732.600007	7.000000096	4331
3.85	20	1732.599999	-9.999999975	4331
3.85	10	1732.599994	-5.999999985	4331
3.85	0	1732.599998	-1.999999995	4331
3.85	-10	1732.599996	-3.999999999	4331
3.85	-20	1732.600006	5.999999985	4331
3.85	-30	1732.599993	-6.999999869	4331

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### FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: WCDMA V Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
4.43	20	836.600004	3.99999999	2091
3.85	20	836.599991	-8.999999977	2091
3.27	20	836.599995	-4.999999987	2091
3 (End point)	20	836.600001	0.999999997	2091

### FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: WCDMA V Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)		
3.85	50	836.600002	1.999999995	2091
3.85	40	836.599997	-2.999999992	2091
3.85	30	836.600006	5.999999985	2091
3.85	20	836.600001	0.999999997	2091
3.85	10	836.600008	7.99999998	2091
3.85	0	836.599998	-1.999999995	2091
3.85	-10	836.599996	-3.99999999	2091
3.85	-20	836.599991	-8.999999977	2091
3.85	-30	836.599998	-1.999999995	2091

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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>					
4.43	25	1879.999998	-2	4700	
3.85	25	1880.000000	0	4700	
3.27	25	1880.000003	3.00000011	4700	
3 (End Point)	25	1880.000001	1.00000011	4700	
<b>Freq. ERROR vs. Temp.</b>					
3.85	-30	1879.999997	-3.0000001	4700	
3.85	-20	1880.000005	5.0000001	4700	
3.85	-10	1879.999994	-6	4700	
3.85	0	1880.000003	3.00000011	4700	
3.85	10	1880.000001	1.00000011	4700	
3.85	20	1880.000002	1.99999999	4700	
3.85	30	1880.000001	1.00000011	4700	
3.85	40	1880.000007	7.0000001	4700	
3.85	50	1880.000003	3.00000011	4700	

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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>					
4.43	25	1732.499991	-9.0000001	4331	
3.85	25	1732.499992	-8	4331	
3.27	25	1732.499997	-3.0000001	4331	
3 (End Point)	25	1732.500003	3.00000011	4331	
<b>Freq. ERROR vs. Temp.</b>					
3.85	-30	1732.499996	-4	4331	
3.85	-20	1732.499996	-4	4331	
3.85	-10	1732.500000	0	4331	
3.85	0	1732.499999	-1.0000001	4331	
3.85	10	1732.500004	3.99999999	4331	
3.85	20	1732.500006	5.99999998	4331	
3.85	30	1732.500009	9.00000009	4331	
3.85	40	1732.499994	-6	4331	
3.85	50	1732.500002	1.99999999	4331	

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Reference Freq.:		LTE B5 Mid Channel		836.5 MHz	10M QPSK CH 20525
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)	
<b>Freq. ERROR vs. VOLTAGE</b>					
4.43	25	836.500006	5.99999998	2091	
3.85	25	836.500002	1.99999999	2091	
3.27	25	836.499993	-7	2091	
3 (End Point)	25	836.500005	4.99999999	2091	
<b>Freq. ERROR vs. Temp.</b>					
3.85	-30	836.499993	-7	2091	
3.85	-20	836.500003	2.99999999	2091	
3.85	-10	836.500000	0	2091	
3.85	0	836.500004	3.99999999	2091	
3.85	10	836.500009	8.99999998	2091	
3.85	20	836.500001	1	2091	
3.85	30	836.500002	1.99999999	2091	
3.85	40	836.500009	8.99999998	2091	
3.85	50	836.500009	8.99999998	2091	

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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>				
4.43	25	707.499996	-4	1769
3.85	25	707.500003	2.99999999	1769
3.27	25	707.499998	-2	1769
3 (End Point)	25	707.500001	1	1769
<b>Freq. ERROR vs. Temp.</b>				
3.85	-30	707.499996	-4	1769
3.85	-20	707.499997	-3	1769
3.85	-10	707.499992	-8	1769
3.85	0	707.500004	3.99999999	1769
3.85	10	707.500001	1	1769
3.85	20	707.499990	-10	1769
3.85	30	707.500009	8.99999998	1769
3.85	40	707.499997	-3	1769
3.85	50	707.499994	-6	1769

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Reference Freq.:		LTE B13 Mid Channel		782	MHz 10M QPSK CH 23230
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)	
<b>Freq. ERROR vs. VOLTAGE</b>					
4.43	25	781.999994	-6	1955	
3.85	25	781.999993	-7	1955	
3.27	25	782.000001	1	1955	
3 (End Point)	25	781.999998	-2	1955	
<b>Freq. ERROR vs. Temp.</b>					
3.85	-30	781.999994	-6	1955	
3.85	-20	781.999994	-6	1955	
3.85	-10	782.000007	6.99999998	1955	
3.85	0	781.999990	-10	1955	
3.85	10	781.999994	-6	1955	
3.85	20	781.999998	-2	1955	
3.85	30	781.999996	-4	1955	
3.85	40	782.000006	5.99999998	1955	
3.85	50	781.999993	-7	1955	

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Reference Freq.: LTE B17 Mid Channel 710 MHz 10M QPSK CH 23790				
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
<b>Freq. ERROR vs. VOLTAGE</b>				
4.43	25	710.000004	3.99999999	1775
3.85	25	709.999991	-9	1775
3.27	25	709.999995	-5	1775
3 (End Point)	25	710.000001	1	1775
<b>Freq. ERROR vs. Temp.</b>				
3.85	-30	710.000002	1.99999999	1775
3.85	-20	709.999997	-3	1775
3.85	-10	710.000006	5.99999998	1775
3.85	0	710.000001	1	1775
3.85	10	710.000008	7.99999998	1775
3.85	20	709.999998	-2	1775
3.85	30	709.999996	-4	1775
3.85	40	709.999991	-9	1775
3.85	50	709.999998	-2	1775

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Reference Freq.:		LTE B38 Mid Channel		2595	MHz	10M QPSK CH 38000
Power Supply Vdc	Temp. ( )	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)		
<b>Freq. ERROR vs. VOLTAGE</b>						
4.43	25	2594.999992	-8	6488		
3.85	25	2594.999995	-4.9999999	6488		
3.27	25	2595.000000	0	6488		
3 (End Point)	25	2594.999998	-2.0000002	6488		
<b>Freq. ERROR vs. Temp.</b>						
3.85	-30	2594.999995	-4.9999999	6488		
3.85	-20	2595.000001	0.99999988	6488		
3.85	-10	2595.000004	3.99999999	6488		
3.85	0	2595.000009	8.99999986	6488		
3.85	10	2595.000007	7.0000001	6488		
3.85	20	2595.000006	6.00000021	6488		
3.85	30	2594.999994	-6.0000002	6488		
3.85	40	2594.999990	-10	6488		
3.85	50	2594.999990	-10	6488		

**Note: The battery is rated 3.85V dc.**

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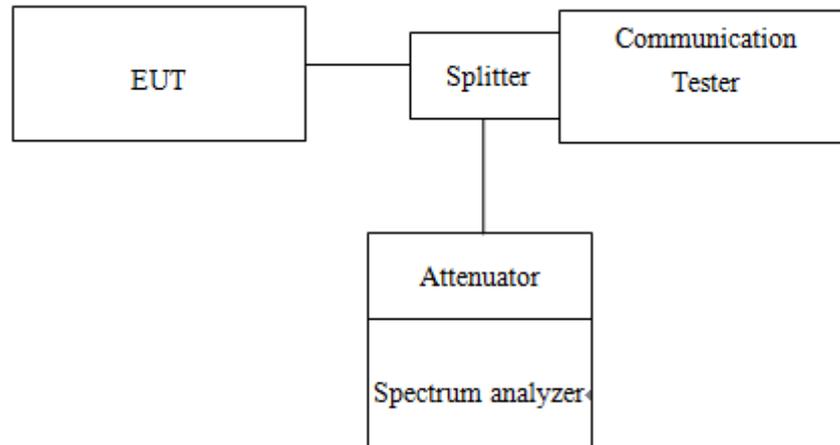
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## 12. PEAK TO AVERAGE RATIO

### 12.1. Standard Applicable

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

### 12.2. Test SET-UP



### 12.3. 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.

### 12.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	2017/10/16	2018/10/15
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	2018/01/17	2019/01/16
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-018	2018/01/02	2019/01/01
Coaxial Cables	N/A	WK CE Cable	N/A	2018/01/02	2019/01/01
Temperature Chamber	TERCHY	MHG-120LF	911009	2017/05/19	2018/5/18

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## 12.5. Measurement Result

### Tabular Results:

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		GSM 850	GPRS 850
824.2	128	10.18	9.72
836.6	190	10.39	9.56
848.8	251	9.62	9.81

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		GSM 1900	GPRS 1900
1850.2	512	9.88	9.18
1880	661	10.4	8.08
1909.8	810	10.06	8.28

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA II	HSDPA II	HSUPA II
1852.4	9262	2.78	2.73	3.16
1880	9400	3.03	3.04	2.96
1907.6	9538	2.82	2.81	2.85

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA IV	HSDPA IV	HSUPA IV
1712.4	1312	3.01	3.06	3.04
1732.6	1413	3.07	3.06	3.10
1752.6	1513	2.69	3.03	3.05

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Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA V	HSDPA V	HSUPA V
826.4	4132	3.08	3.08	3.10
836.6	4183	3.07	3.04	3.05
846.6	4233	3.08	3.07	3.07

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	6.15	13	1851.5	18615	6.22	13
1880.0	18900	6.11	13	1880.0	18900	6.07	13
1909.3	19193	6.03	13	1908.5	19185	6.19	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	6.03	13	1855.0	18650	6.00	13
1880.0	18900	6.05	13	1880.0	18900	6.03	13
1907.5	19175	5.99	13	1905.0	19150	6.05	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	6.17	13	1860.0	18700	6.58	13
1880.0	18900	6.10	13	1880.0	18900	6.49	13
1902.5	19125	6.16	13	1900.0	19100	6.65	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	5.86	13	1711.5	19965	5.86	13
1732.5	20175	6.24	13	1732.5	20175	6.16	13
1754.3	20393	5.83	13	1753.5	20385	5.85	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	5.72	13	1715.0	20000	5.91	13
1732.5	20175	6.06	13	1732.5	20175	6.02	13
1752.5	20375	5.87	13	1750.0	20350	5.83	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	6.17	13	1720.0	20050	6.65	13
1732.5	20175	6.03	13	1732.5	20175	6.61	13
1747.5	20325	6.08	13	1745.0	20300	6.81	13

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LTE BAND 5							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
824.7	20407	6.09	13	825.5	20415	6.18	13
836.5	20525	6.14	13	836.5	20525	6.07	13
848.3	20643	6.04	13	847.5	20635	6.05	13

LTE BAND 5							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
826.5	20425	6.06	13	829.0	20450	6.00	13
836.5	20525	6.09	13	836.5	20525	6.10	13
846.5	20625	5.99	13	844.0	20600	6.04	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	6.02	13	700.5	23025	6.15	13
707.5	23095	5.82	13	707.5	23095	5.97	13
715.3	23173	6.06	13	714.5	23165	6.00	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	6.00	13	704.0	23060	6.14	13
707.5	23095	5.83	13	707.5	23095	5.82	13
713.5	23155	5.67	13	711.0	23130	5.76	13

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LTE BAND 13							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
779.5	23205	6.06	13	782.0	23230	6.04	13
782.0	23230	6.00	13				
784.5	23255	5.99	13				

LTE BAND 17							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
706.5	23755	6.05	13	709	23780	6.01	13
710	23790	5.70	13	710	23790	6.08	13
713.5	23825	6.01	13	711	23780	6.06	13

LTE BAND 38							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
2572.5	37775	10.10	13	2575	37800	9.41	13
2595.0	38000	9.70	13	2595	38000	9.20	13
2617.5	38225	9.99	13	2615	38200	9.99	13

LTE BAND 38							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
2577.5	37825	7.46	13	2580.0	37850	9.18	13
2595.0	38000	10.73	13	2595.0	38000	9.57	13
2612.5	38175	9.58	13	2610.0	38150	8.66	13

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**Measurement Results:**

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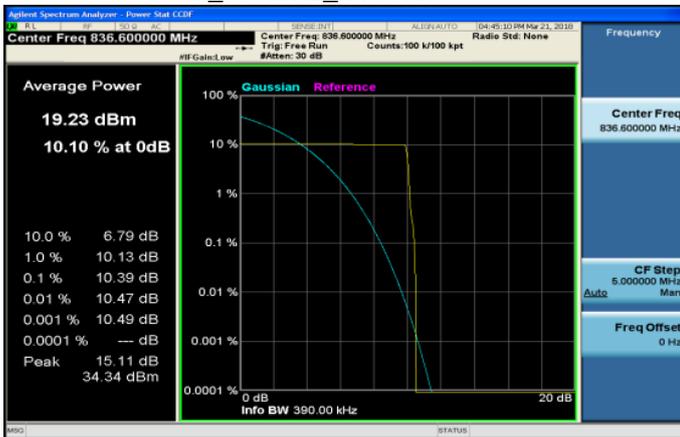
**GSM\_850MHz\_LowCH128-824.2**



**GSM\_1900MHz\_LowCH512-1850.2**



**GSM\_850MHz\_MidCH190-836.6**



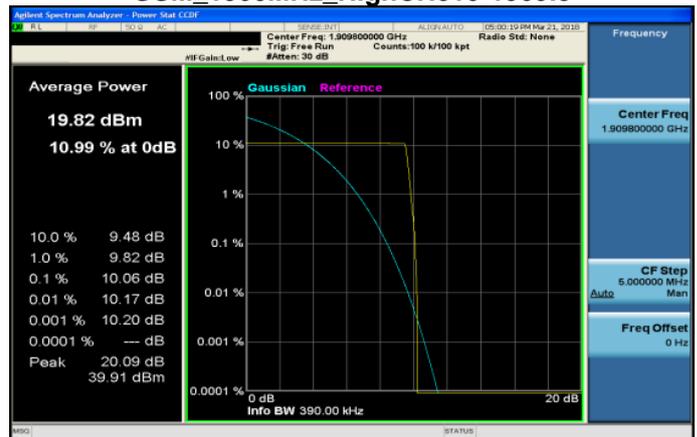
**GSM\_1900MHz\_MidCH661-1880**



**GSM\_850MHz\_HighCH251-848.8**



**GSM\_1900MHz\_HighCH810-1909.8**



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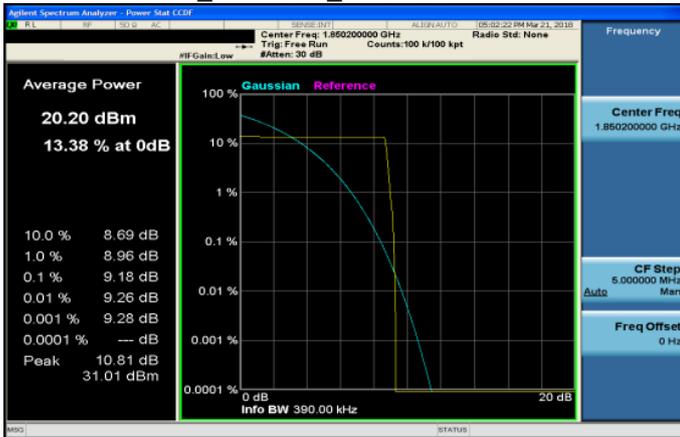
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### GPRS\_1900MHz\_LowCH512-1850.2



### WCDMA\_B2\_LowCH9262-1852.4



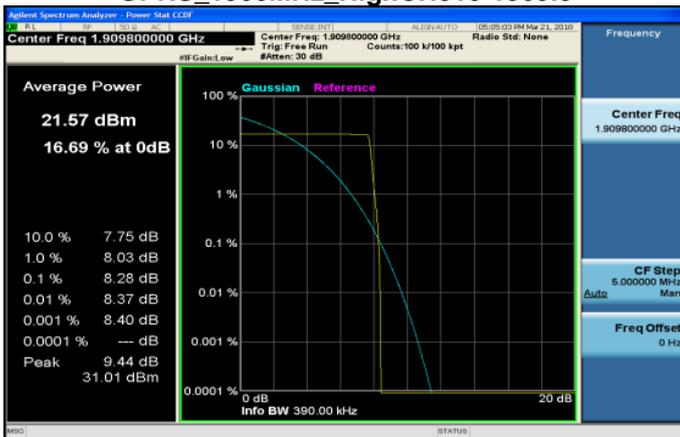
### GPRS\_1900MHz\_MidCH661-1880



### WCDMA\_B2\_MidCH9400-1880



### GPRS\_1900MHz\_HighCH810-1909.8



### WCDMA\_B2\_HighCH9538-1907.6



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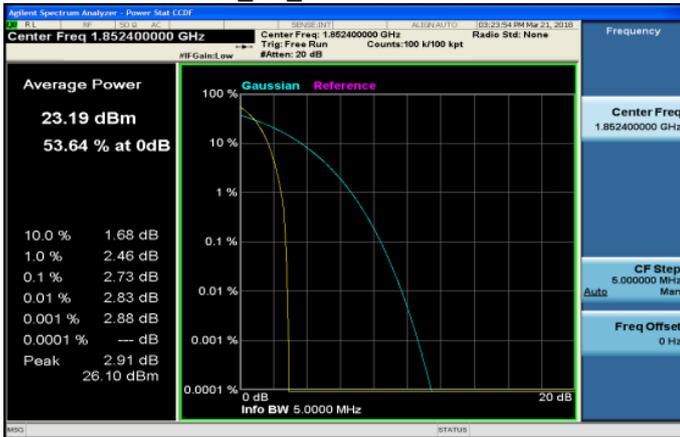
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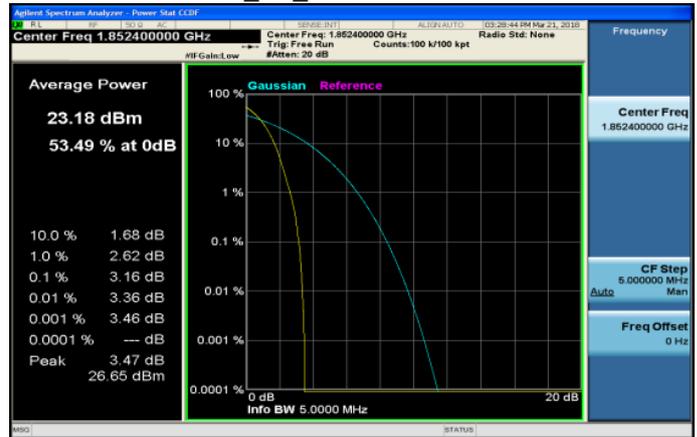
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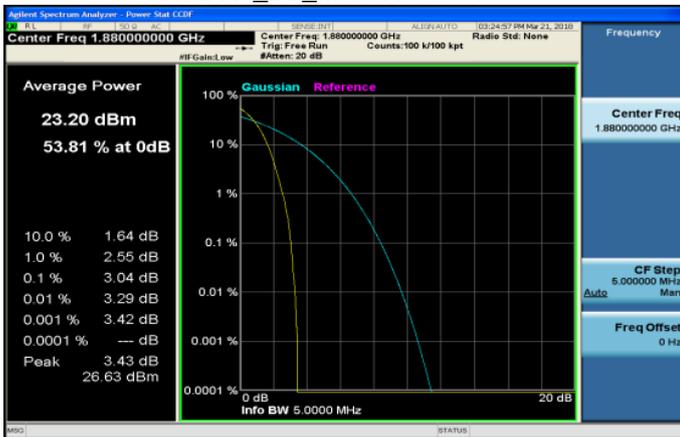
**HSDPA B2\_LowCH9262-1852.4**



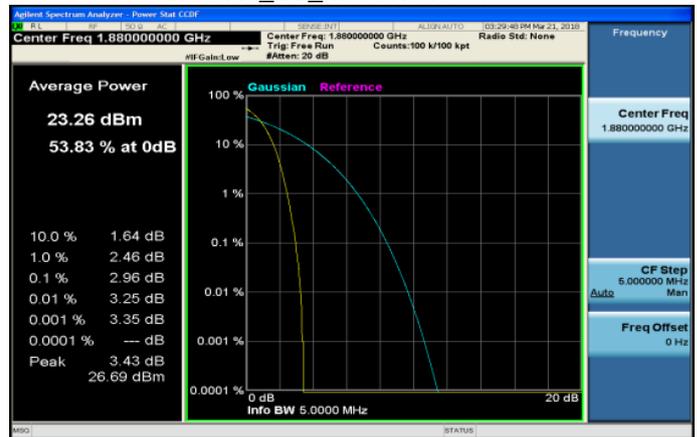
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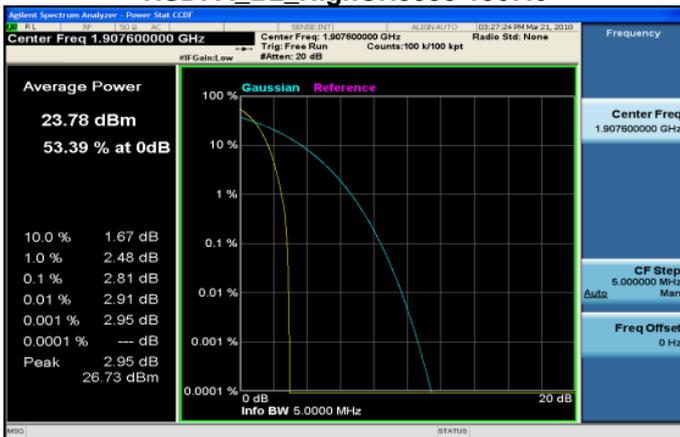
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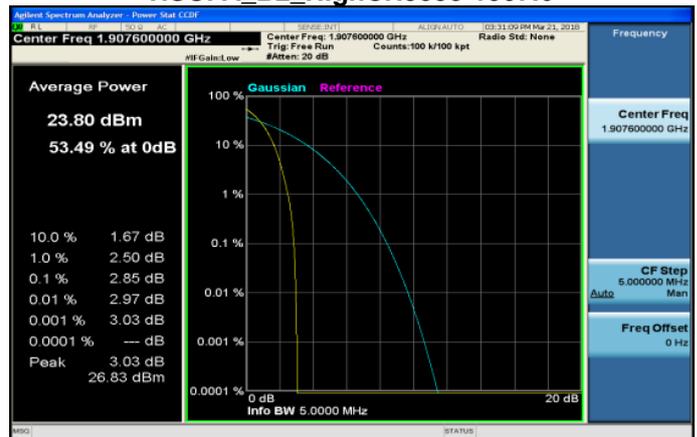
**HSUPA B2\_MidCH9400-1880**



**HSDPA B2\_HighCH9538-1907.6**



**HSUPA B2\_HighCH9538-1907.6**



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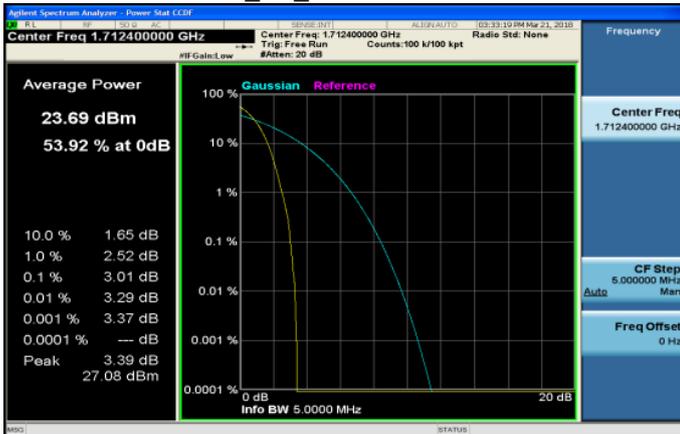
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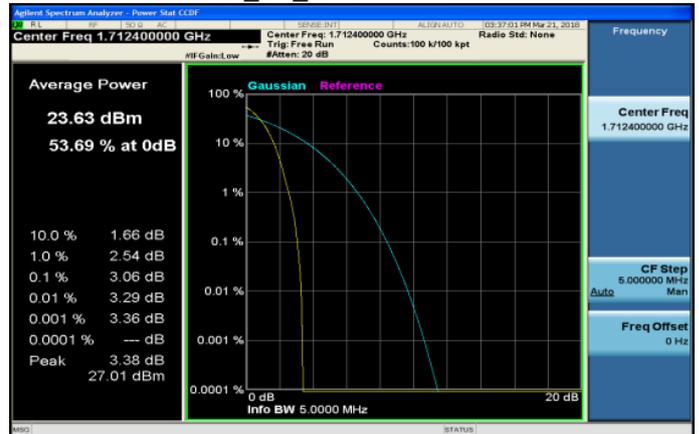
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**WCDMA\_B4\_LowCH1312-1712.4**



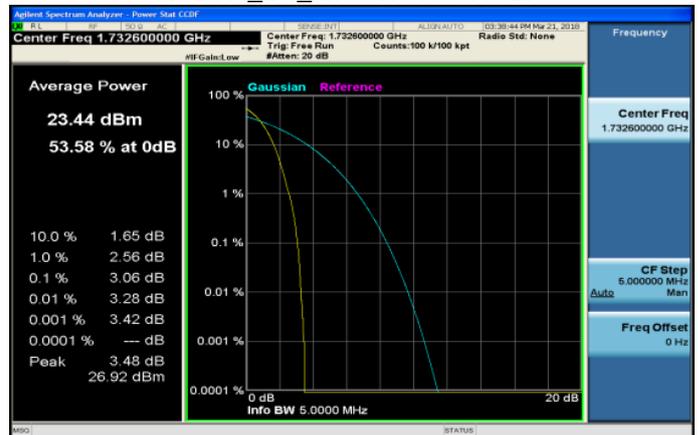
**HSDPA\_B4\_LowCH1312-1712.4**



**WCDMA\_B4\_MidCH1413-1732.6**



**HSDPA\_B4\_MidCH1413-1732.6**



**WCDMA\_B4\_HighCH1513-1752.6**



**HSDPA\_B4\_HighCH1513-1752.6**



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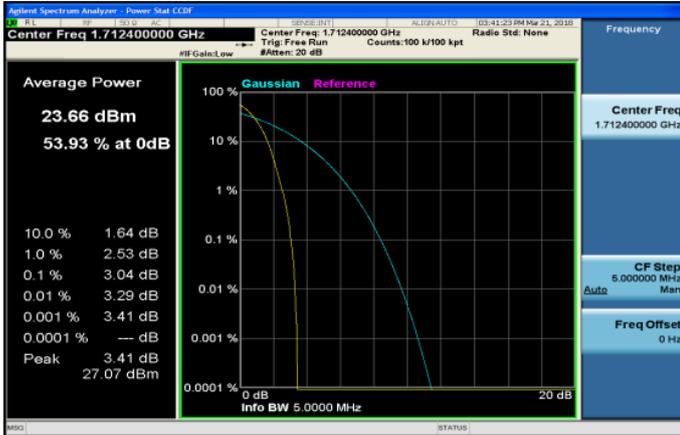
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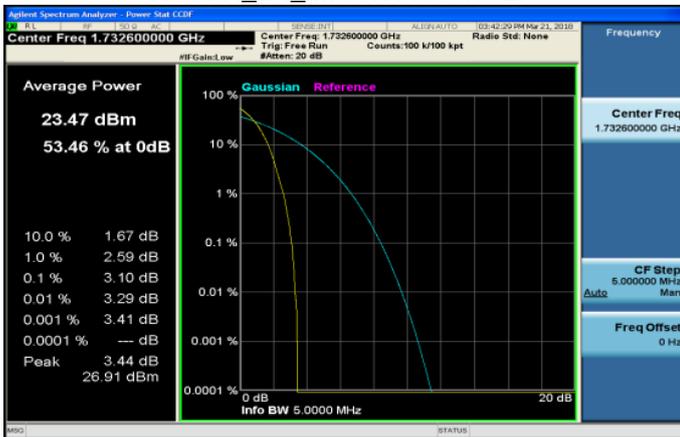
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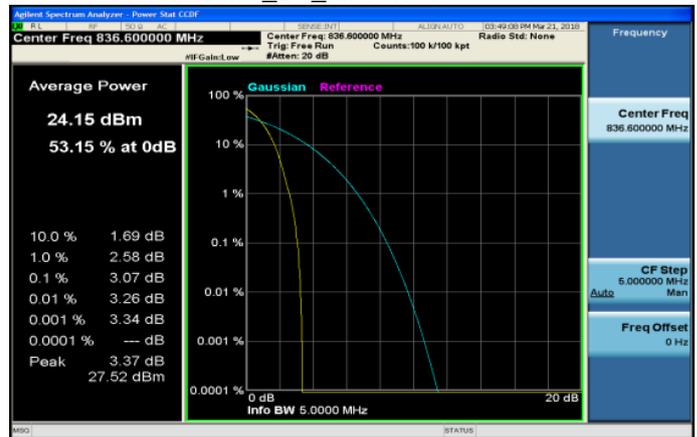
**WCDMA\_B5\_LowCH4132-826.4**



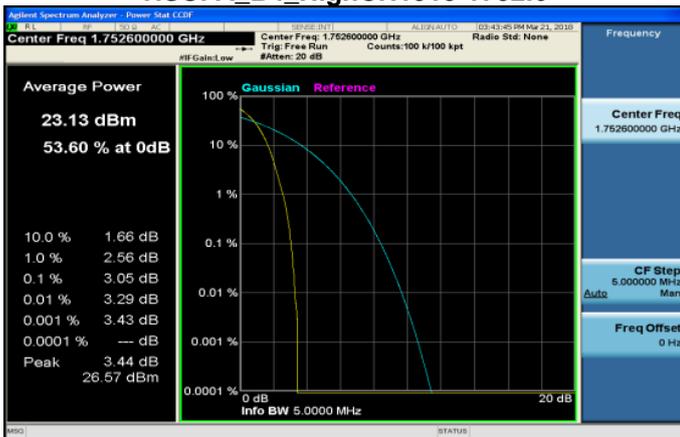
**HSUPA\_B4\_MidCH1413-1732.6**



**WCDMA\_B5\_MidCH4183-836.6**



**HSUPA\_B4\_HighCH1513-1752.6**



**WCDMA\_B5\_HighCH4233-846.6**



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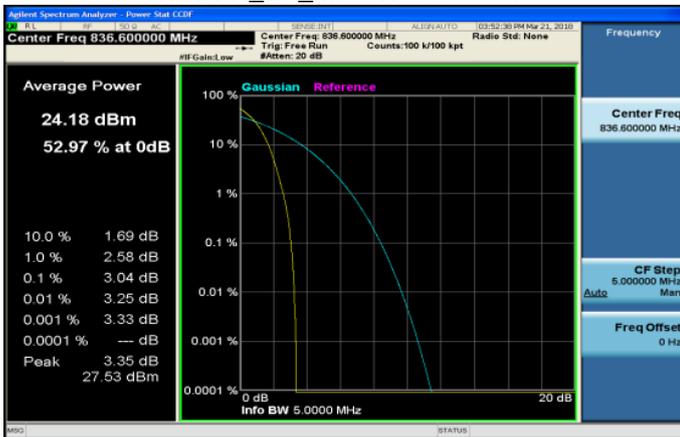
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**HSUPA\_B5\_LowCH4132-826.4**



**HSDPA\_B5\_MidCH4183-836.6**



**HSUPA\_B5\_MidCH4183-836.6**



**HSDPA\_B5\_HighCH4233-846.6**



**HSUPA\_B5\_HighCH4233-846.6**



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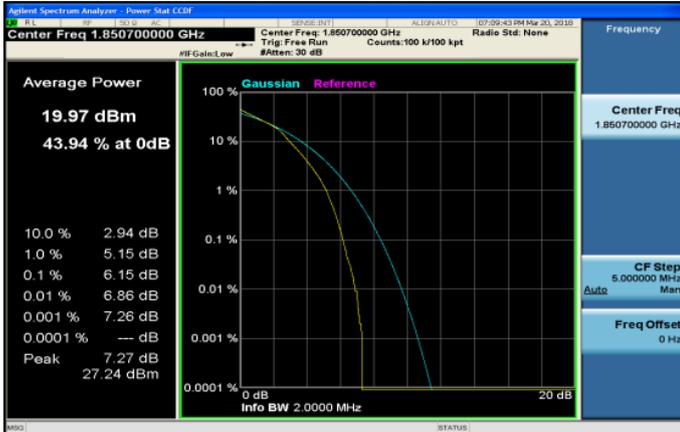
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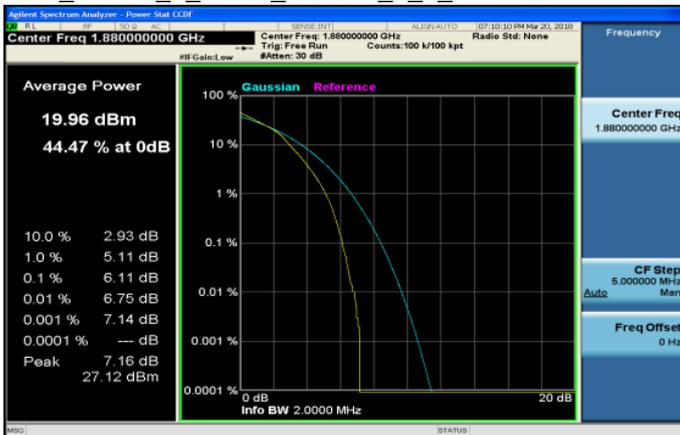
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**LTE\_Band2\_3MHz\_64QAM\_15\_0\_LowCH18615-1851.5**



**LTE\_Band2\_1\_4MHz\_64QAM\_6\_0\_MidCH18900-1880**



**LTE\_Band2\_3MHz\_64QAM\_15\_0\_MidCH18900-1880**



**LTE\_Band2\_1\_4MHz\_64QAM\_6\_0\_HighCH19193-1909.**

3



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

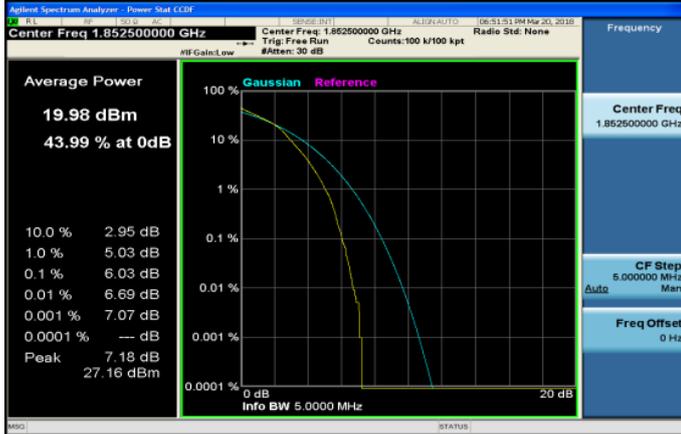


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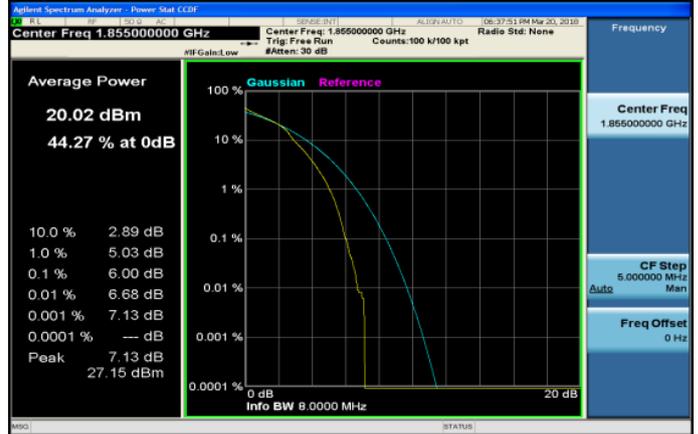
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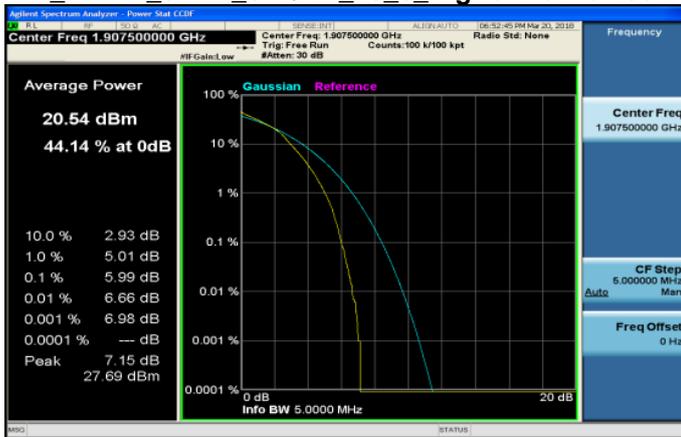
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**LTE\_Band2\_10MHz\_64QAM\_50\_0\_MidCH18900-1880**



**LTE\_Band2\_5MHz\_64QAM\_25\_0\_HighCH19175-1907.5**



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



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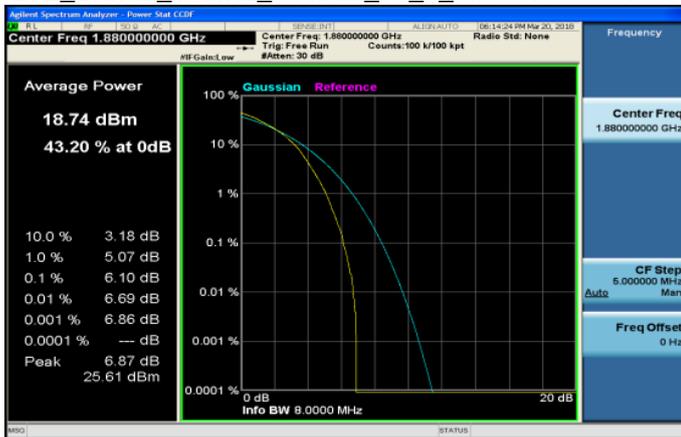
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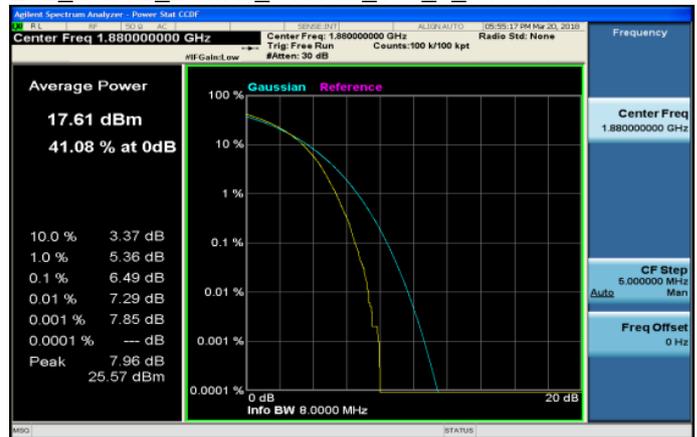
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LTE\_Band2\_15MHz\_64QAM\_75\_0\_MidCH18900-1880



LTE\_Band2\_20MHz\_64QAM\_100\_0\_MidCH18900-1880



LTE\_Band2\_15MHz\_64QAM\_75\_0\_HighCH19125-1902.



LTE\_Band2\_20MHz\_64QAM\_100\_0\_HighCH19100-1900



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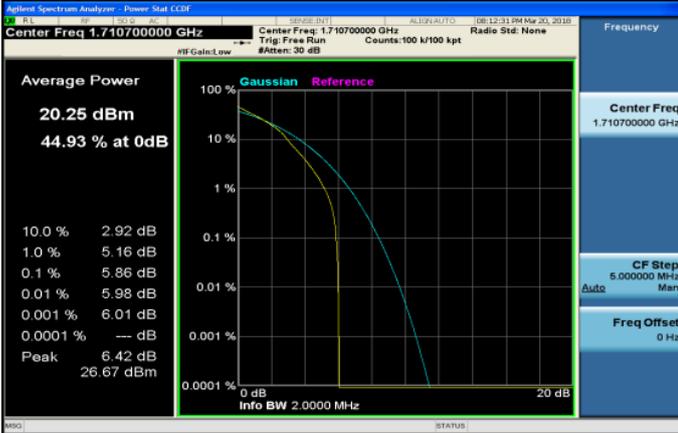
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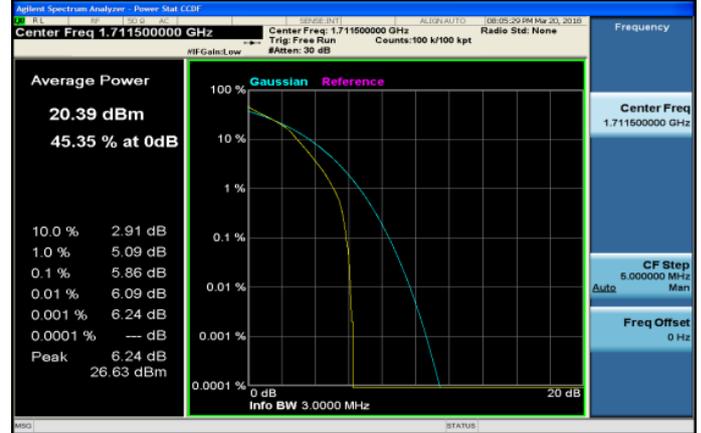
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LTE\_Band4\_1\_4MHz\_64QAM\_6\_0\_LowCH19957-1710.7



LTE\_Band4\_3MHz\_64QAM\_15\_0\_LowCH19965-1711.5



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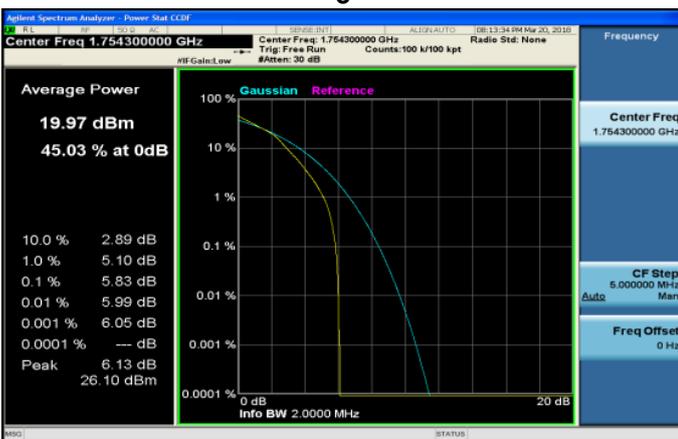


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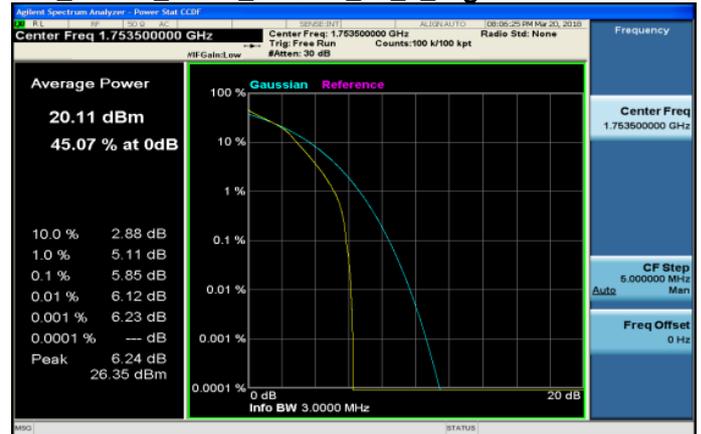


LTE\_Band4\_1\_4MHz\_64QAM\_6\_0\_HighCH20393-1754.

3



LTE\_Band4\_3MHz\_64QAM\_15\_0\_HighCH20385-1753.5



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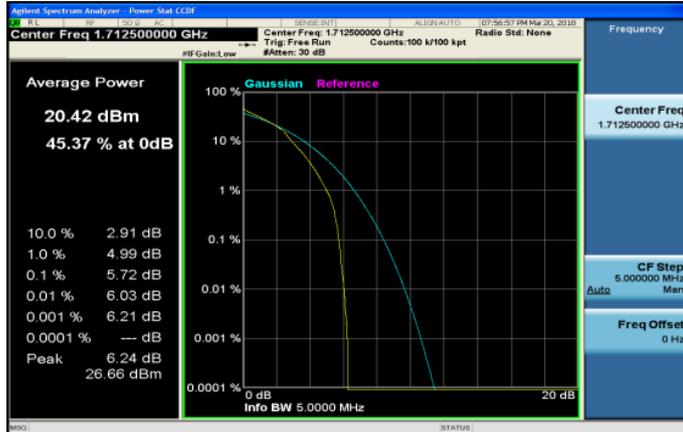
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### LTE\_Band4\_5MHz\_64QAM\_25\_0\_LowCH1975-1712.5



### LTE\_Band4\_10MHz\_64QAM\_50\_0\_LowCH20000-1715



### LTE\_Band4\_5MHz\_64QAM\_25\_0\_MidCH20175-1732.5



### LTE\_Band4\_10MHz\_64QAM\_50\_0\_MidCH20175-1732.5



### LTE\_Band4\_5MHz\_64QAM\_25\_0\_HighCH20375-1752.5



### LTE\_Band4\_10MHz\_64QAM\_50\_0\_HighCH20350-1750



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