

Band Edge_Band12_10MHz_QPSK_1_0_LowCH23060-704



Band Edge_Band12_10MHz_QPSK_50_0_HighCH23130-711



Band Edge_Band12_10MHz_QPSK_1_49_HighCH23130-711



Band Edge_Band12_10MHz_QPSK_50_0_LowCH23060-704



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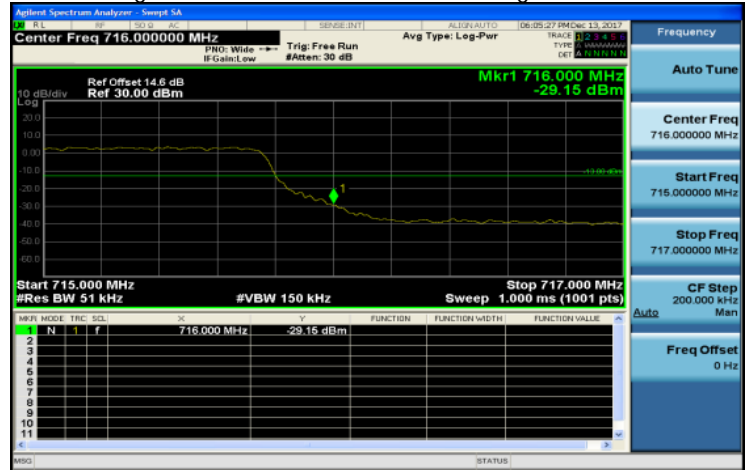
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Band Edge_Band17_5MHz_QPSK_1_0_LowCH23755-706.5



Band Edge_Band17_5MHz_QPSK_25_0_HighCH23825-713.5



Band Edge_Band17_5MHz_QPSK_1_24_HighCH23825-713.5



Band Edge_Band17_10MHz_QPSK_1_0_LowCH23780-709



Band Edge_Band17_5MHz_QPSK_25_0_LowCH23755-706.5



Band Edge_Band17_10MHz_QPSK_1_49_HighCH23800-711



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Band Edge_Band17_10MHz_QPSK_50_0_LowCH23780-709



Band Edge_Band17_10MHz_QPSK_50_0_HighCH23800-711



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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 at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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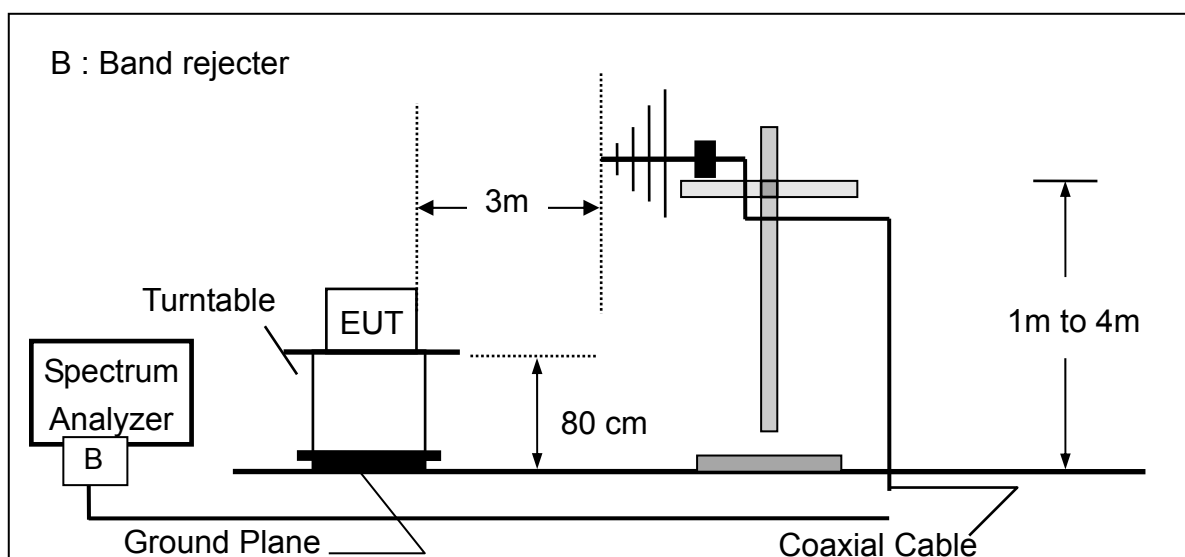
Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber Equipment

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	$43 + 10 \log_{10}(p)$ ^{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	$43 + 10 \log_{10}(p)$ ^{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 5.2 for the permitted frequency ranges for various equipment types.

10.2. EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz

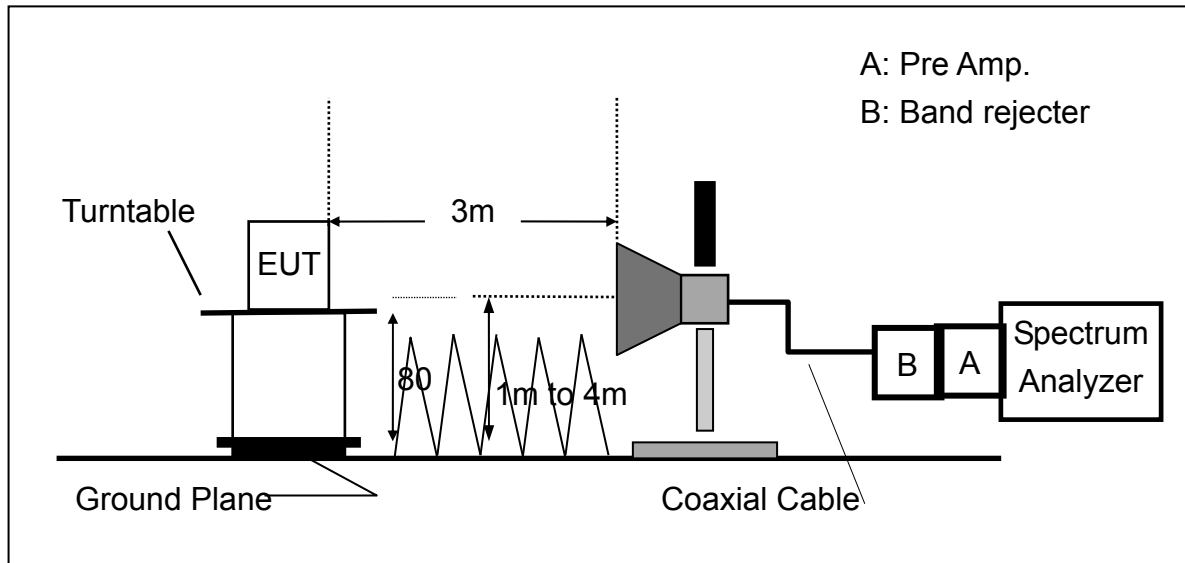


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Radiated Emission Test Set-UP Frequency Over 1 GHz



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.

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10.4. Measurement Equipment Used:

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2017	09/19/2018
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2017	12/18/2018
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/04/2017	08/03/2018
Pre-Amplifier	Agilent	8447D	2944A07676	01/03/2017	01/02/2018
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/03/2017	01/02/2018
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2017	12/11/2018
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/05/2017	01/04/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

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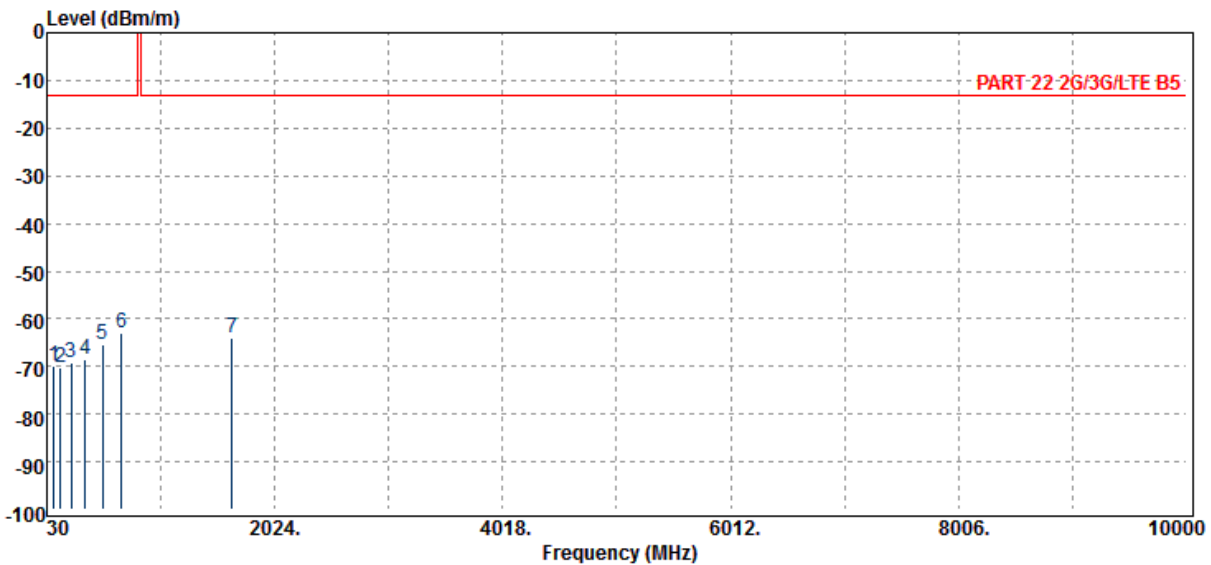
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10.5. Measurement Result:

Radiated Spurious Emission Measurement Result: GPPRS 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 dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB
93.05	S	-70.01	-67.98	-0.81	-1.22	-13.00	-57.01
146.40	S	-70.12	-66.40	-2.31	-1.42	-13.00	-57.12
245.34	S	-69.14	-70.76	3.37	-1.75	-13.00	-56.14
362.71	S	-68.68	-70.39	3.85	-2.15	-13.00	-55.68
519.85	S	-65.53	-66.89	3.75	-2.39	-13.00	-52.53
684.75	S	-62.97	-63.36	3.10	-2.70	-13.00	-49.97
1648.40	H	-63.86	-66.74	7.11	-4.22	-13.00	-50.86

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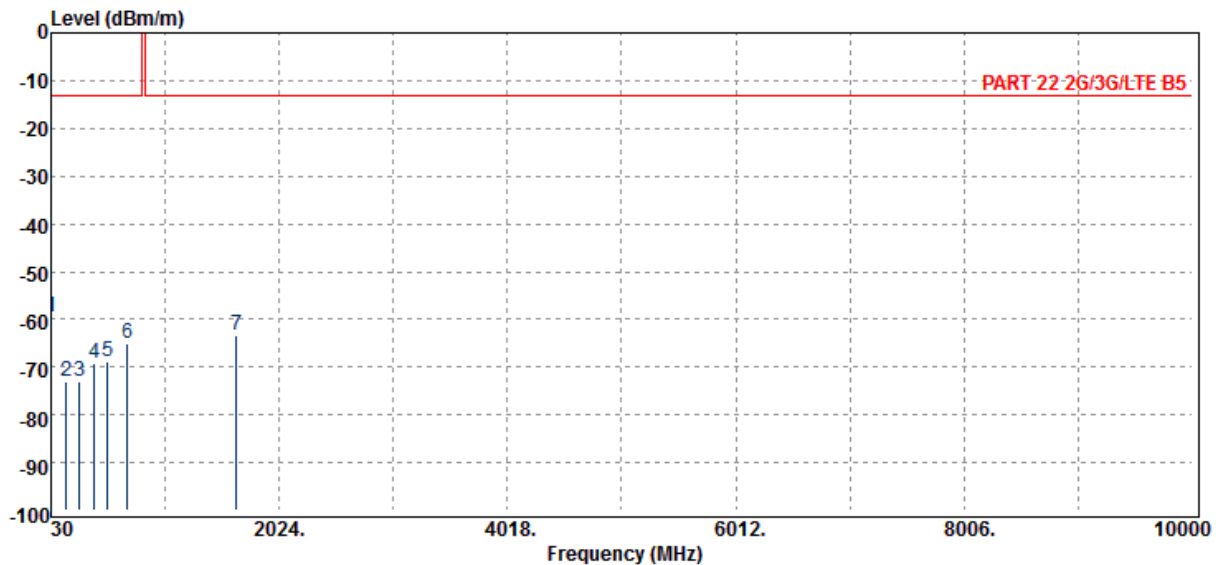
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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:824.2 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.36	-43.63	-14.78	-0.96	-13.00	-46.36
165.80	S	-73.05	-70.33	-1.21	-1.50	-13.00	-60.05
280.26	S	-73.06	-74.60	3.42	-1.88	-13.00	-60.06
410.24	S	-69.33	-70.71	3.78	-2.40	-13.00	-56.33
526.64	S	-68.76	-70.01	3.71	-2.46	-13.00	-55.76
694.45	S	-65.03	-65.24	3.09	-2.88	-13.00	-52.03
1648.40	H	-63.31	-66.20	7.11	-4.22	-13.00	-50.31

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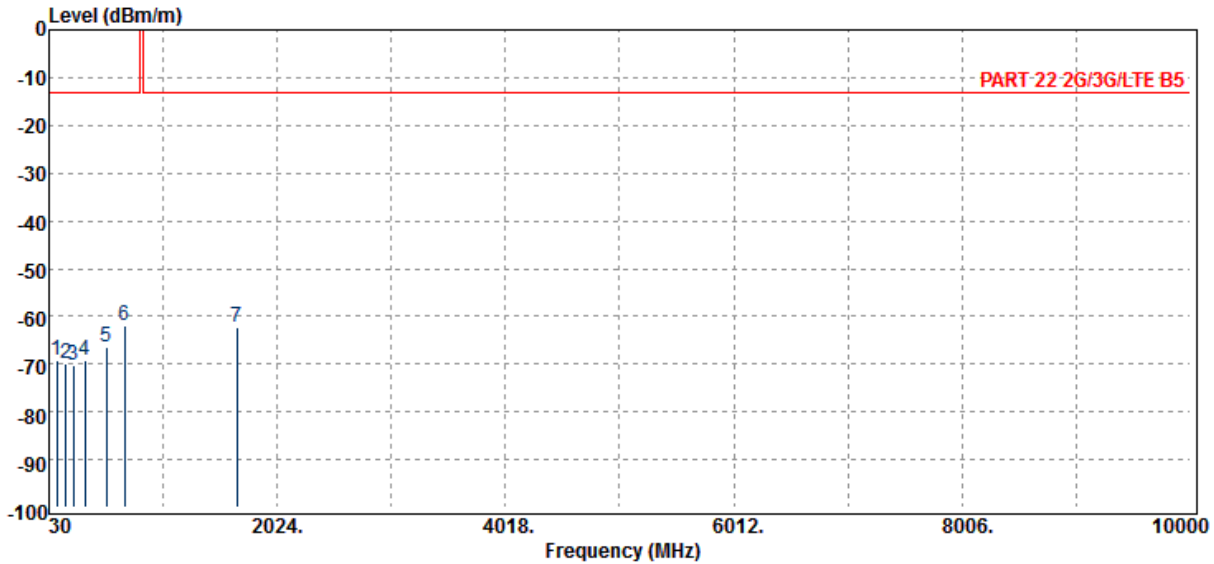
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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
94.99	S	-69.08	-66.81	-1.04	-1.23	-13.00	-56.08
175.50	S	-70.03	-68.58	0.09	-1.54	-13.00	-57.03
239.52	S	-70.35	-71.88	3.28	-1.74	-13.00	-57.35
345.25	S	-69.14	-70.97	3.84	-2.01	-13.00	-56.14
532.46	S	-66.29	-67.45	3.68	-2.52	-13.00	-53.29
691.54	S	-62.10	-62.36	3.09	-2.83	-13.00	-49.10
1673.20	H	-62.20	-65.11	7.20	-4.29	-13.00	-49.20

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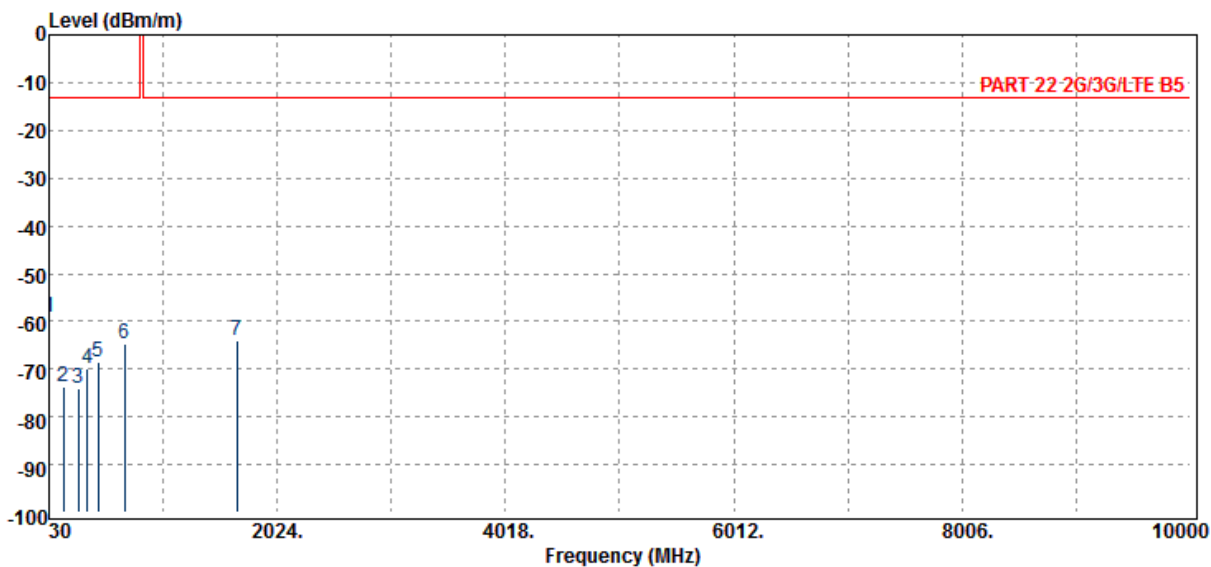
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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.11	-43.37	-14.78	-0.96	-13.00	-46.11
154.16	S	-73.61	-70.25	-1.90	-1.45	-13.00	-60.61
284.14	S	-74.05	-75.58	3.43	-1.89	-13.00	-61.05
366.59	S	-70.04	-71.71	3.85	-2.17	-13.00	-57.04
459.71	S	-68.51	-69.99	3.69	-2.21	-13.00	-55.51
692.51	S	-64.59	-64.84	3.09	-2.84	-13.00	-51.59
1673.20	H	-64.02	-66.92	7.20	-4.29	-13.00	-51.02

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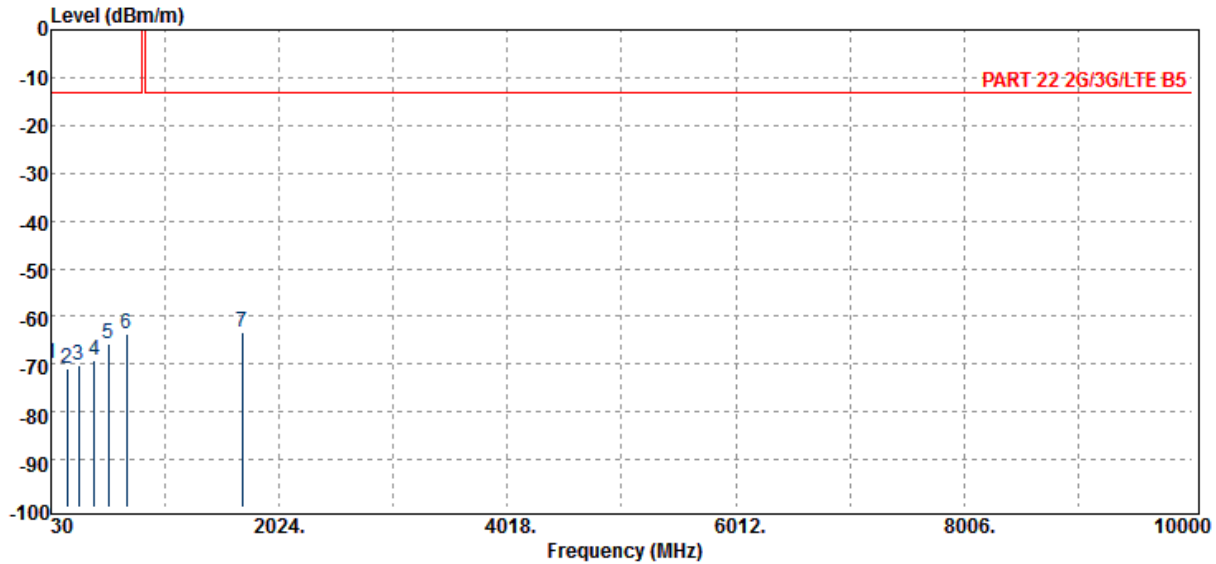
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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-70.04	-54.30	-14.78	-0.96	-13.00	-57.04
172.59	S	-70.85	-68.88	-0.44	-1.53	-13.00	-57.85
274.44	S	-70.36	-71.99	3.47	-1.85	-13.00	-57.36
405.39	S	-69.19	-70.58	3.80	-2.41	-13.00	-56.19
534.40	S	-65.67	-66.80	3.67	-2.54	-13.00	-52.67
686.69	S	-63.77	-64.12	3.10	-2.74	-13.00	-50.77
1697.60	H	-63.29	-66.26	7.28	-4.31	-13.00	-50.29

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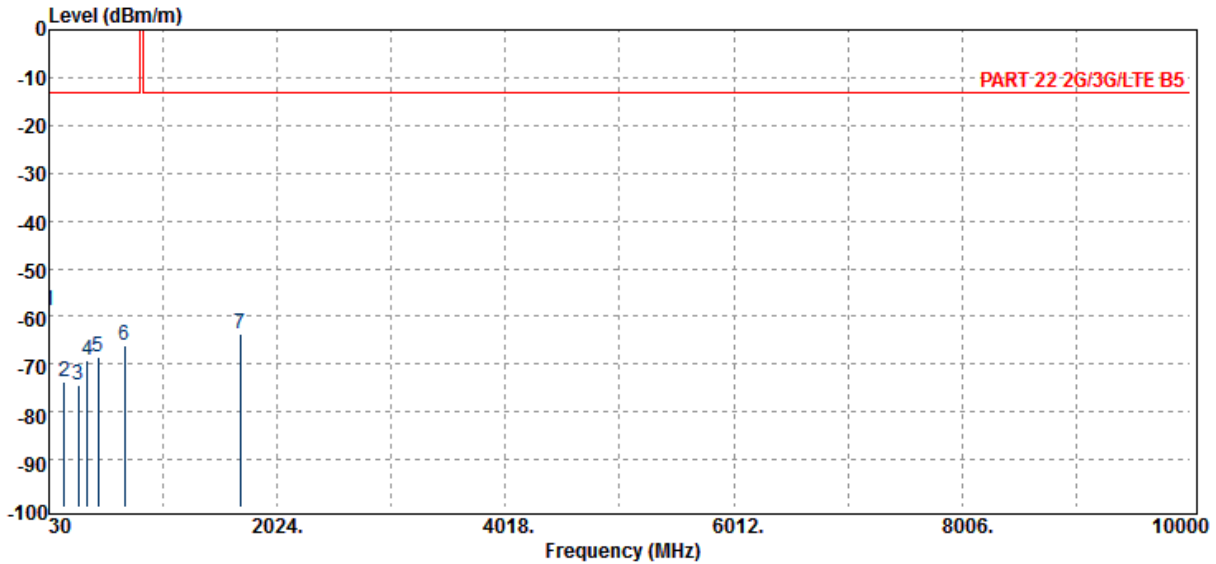
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Operation Band	:GPRS 850	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.96	-43.22	-14.78	-0.96	-13.00	-45.96
160.95	S	-73.67	-70.63	-1.57	-1.48	-13.00	-60.67
285.11	S	-74.28	-75.80	3.43	-1.90	-13.00	-61.28
366.59	S	-69.28	-70.95	3.85	-2.17	-13.00	-56.28
456.80	S	-68.41	-69.89	3.67	-2.20	-13.00	-55.41
689.60	S	-66.00	-66.30	3.09	-2.79	-13.00	-53.00
1697.60	H	-63.62	-66.60	7.28	-4.31	-13.00	-50.62

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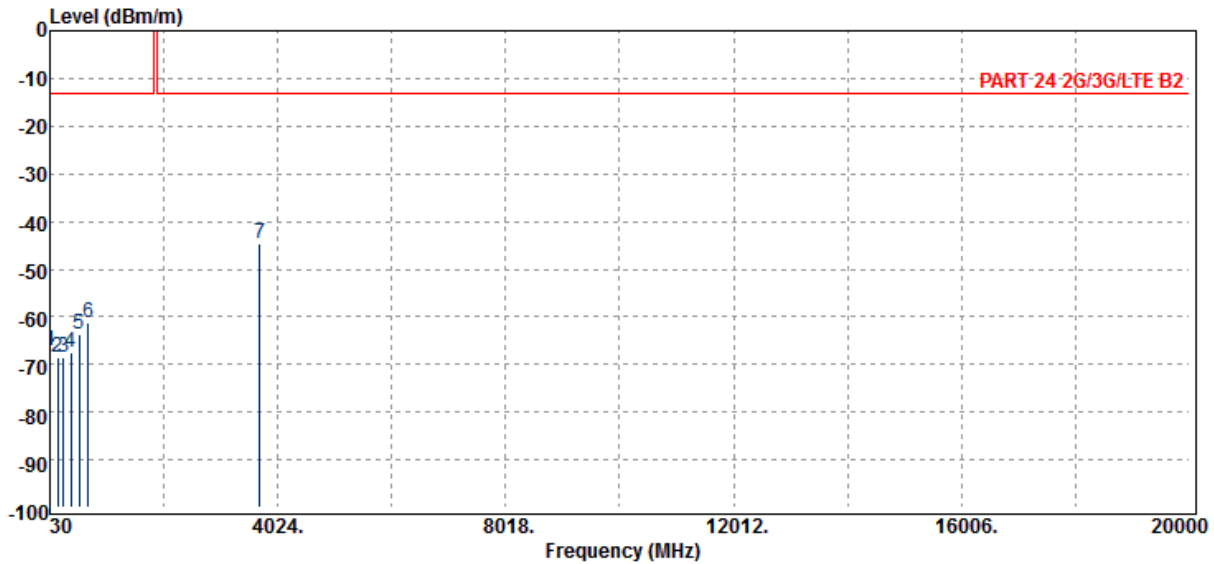
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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 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	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.06	8.78	-12.63	-0.96	-13.00	-54.06
165.80	S	-68.47	3.61	0.94	-1.50	-13.00	-55.47
274.44	S	-68.45	-0.48	5.62	-1.85	-13.00	-55.45
398.60	S	-67.48	-0.55	5.97	-2.37	-13.00	-54.48
547.01	S	-63.51	3.49	5.75	-2.67	-13.00	-50.51
696.39	S	-61.17	6.70	5.24	-2.91	-13.00	-48.17
3700.40	H	-44.67	6.77	12.44	-6.58	-13.00	-31.67

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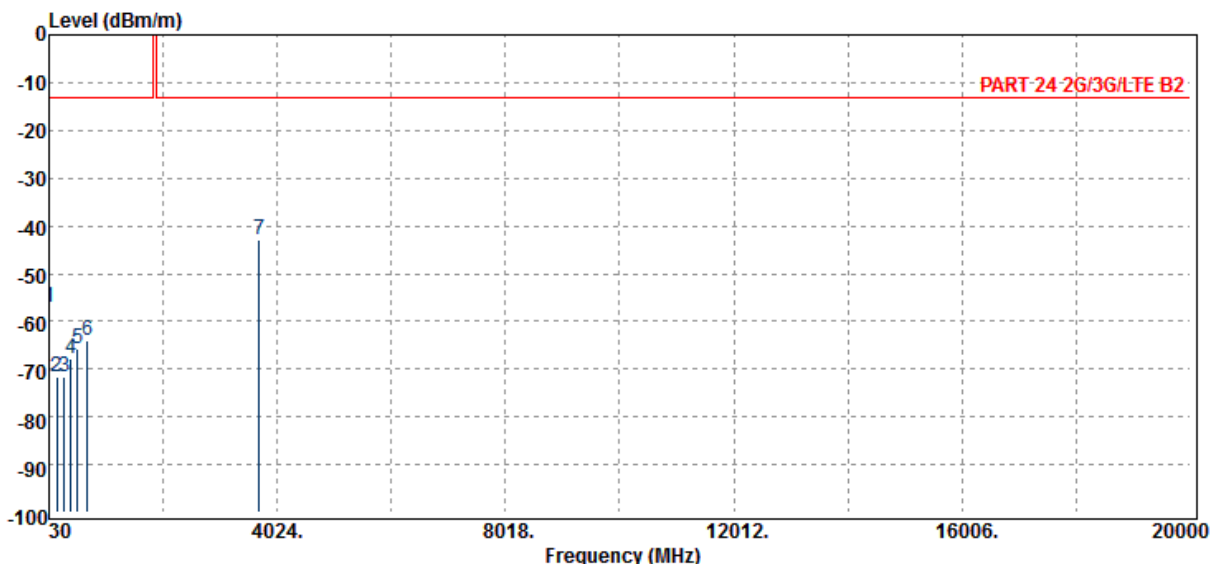
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1850.2 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.25	20.54	-12.63	-0.96	-13.00	-44.25
167.74	S	-71.77	0.39	1.08	-1.51	-13.00	-58.77
294.81	S	-71.73	-4.03	5.67	-1.94	-13.00	-58.73
419.94	S	-67.84	-0.42	5.90	-2.33	-13.00	-54.84
527.61	S	-65.70	1.03	5.86	-2.47	-13.00	-52.70
697.36	S	-63.87	4.86	5.23	-2.93	-13.00	-50.87
3700.40	H	-42.94	6.96	12.44	-6.58	-13.00	-29.94

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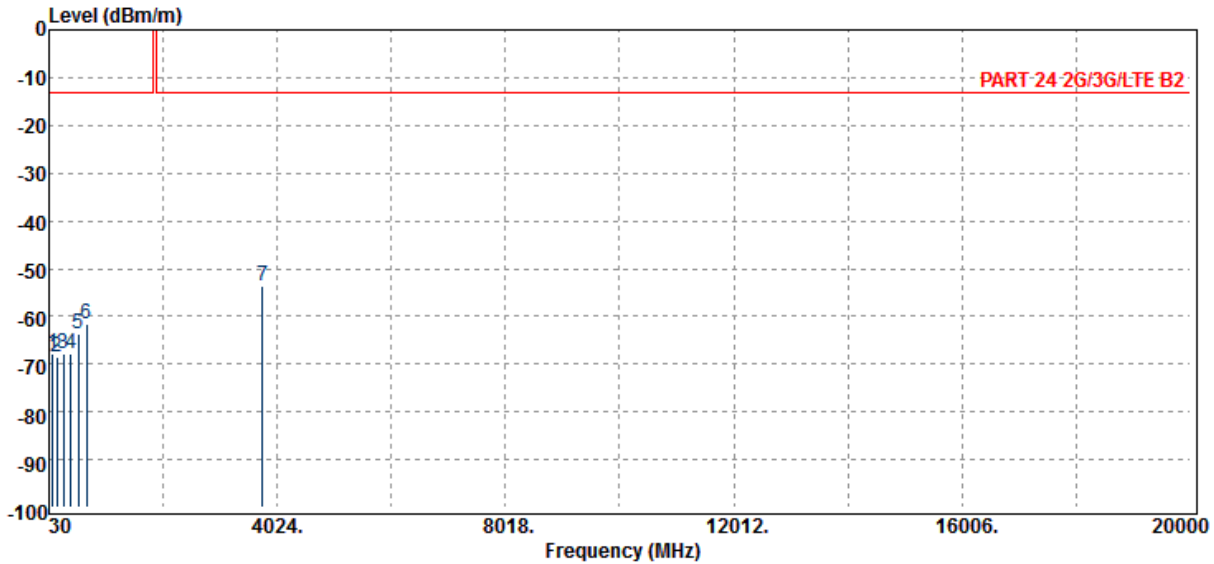
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
94.02	S	-67.66	1.28	1.22	-1.22	-13.00	-54.66
167.74	S	-68.58	3.43	1.08	-1.51	-13.00	-55.58
287.05	S	-67.88	-0.55	5.58	-1.91	-13.00	-54.88
410.24	S	-67.85	-0.10	5.93	-2.40	-13.00	-54.85
537.31	S	-63.67	3.51	5.80	-2.57	-13.00	-50.67
689.60	S	-61.66	7.26	5.24	-2.79	-13.00	-48.66
3760.00	H	-53.64	6.77	12.45	-6.60	-13.00	-40.64

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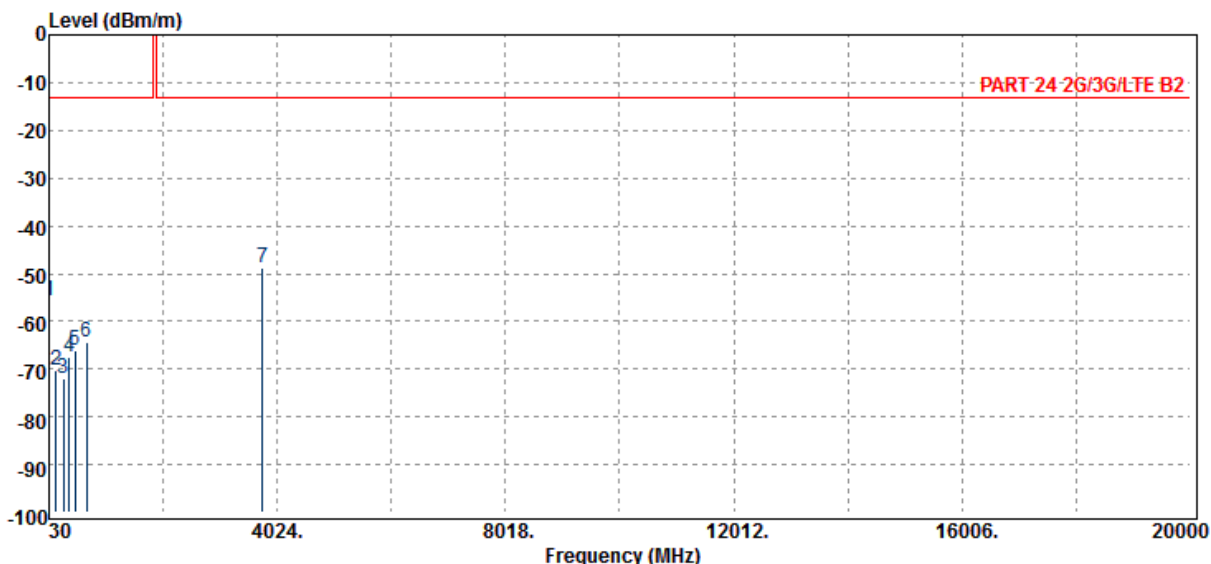
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-55.69	20.54	-12.63	-0.96	-13.00	-42.69
146.40	S	-70.30	1.83	-0.16	-1.42	-13.00	-57.30
279.29	S	-72.11	-4.21	5.58	-1.87	-13.00	-59.11
381.14	S	-67.60	-0.56	5.99	-2.27	-13.00	-54.60
490.75	S	-66.24	-0.39	5.97	-2.28	-13.00	-53.24
692.51	S	-64.26	4.68	5.24	-2.84	-13.00	-51.26
3760.00	H	-48.89	7.06	12.45	-6.60	-13.00	-35.89

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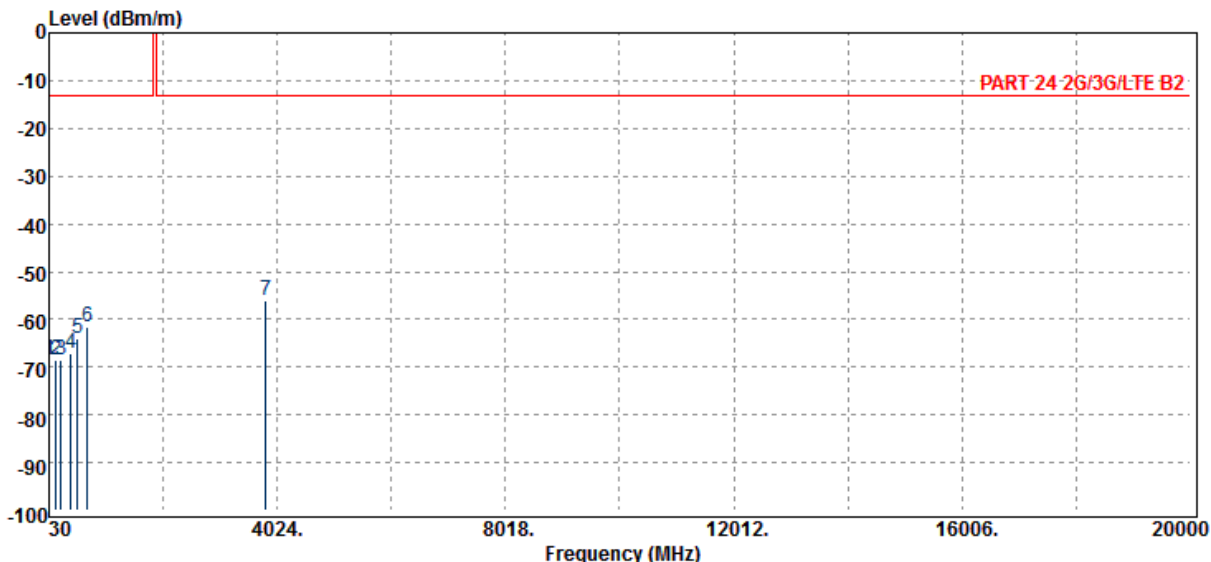
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-68.42	8.78	-12.63	-0.96	-13.00	-55.42
154.16	S	-68.61	3.89	0.25	-1.45	-13.00	-55.61
241.46	S	-68.51	-0.07	5.46	-1.74	-13.00	-55.51
419.94	S	-67.09	0.21	5.90	-2.33	-13.00	-54.09
529.55	S	-63.94	3.49	5.85	-2.49	-13.00	-50.94
697.36	S	-61.63	6.71	5.23	-2.93	-13.00	-48.63
3819.60	H	-56.15	7.19	12.47	-6.65	-13.00	-43.15

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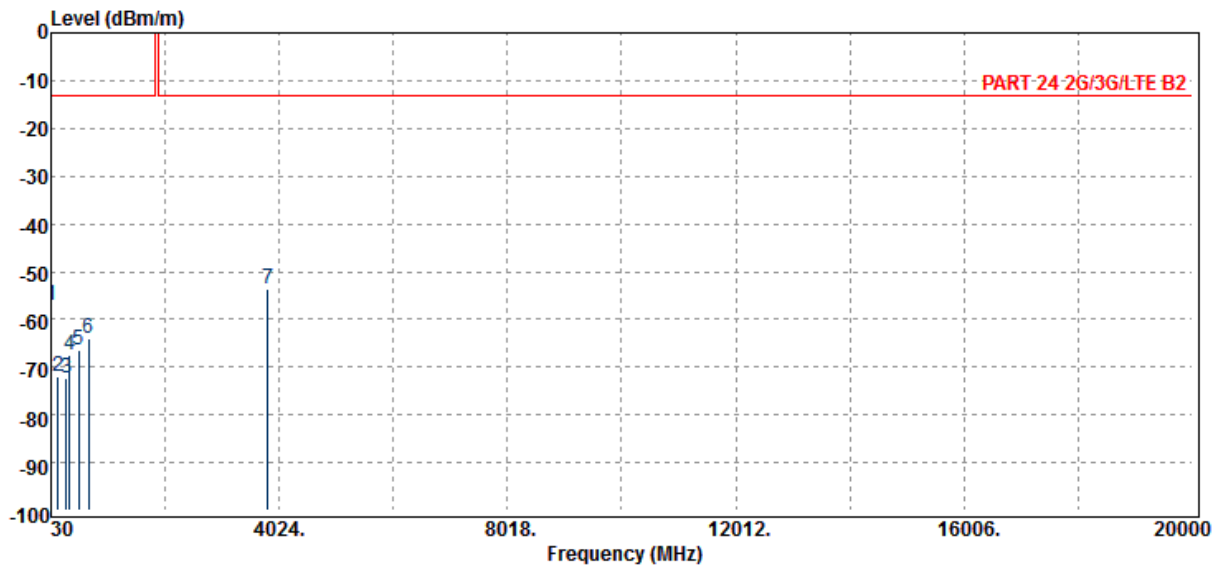
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Operation Band	:GPRS 1900	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.16	20.54	-12.63	-0.96	-13.00	-44.16
153.19	S	-72.06	1.22	0.20	-1.44	-13.00	-59.06
299.66	S	-72.16	-3.96	5.77	-1.95	-13.00	-59.16
356.89	S	-67.58	-1.12	6.01	-2.10	-13.00	-54.58
516.94	S	-66.43	0.76	5.91	-2.37	-13.00	-53.43
691.54	S	-63.94	4.77	5.24	-2.83	-13.00	-50.94
3819.60	H	-53.51	7.51	12.47	-6.65	-13.00	-40.51

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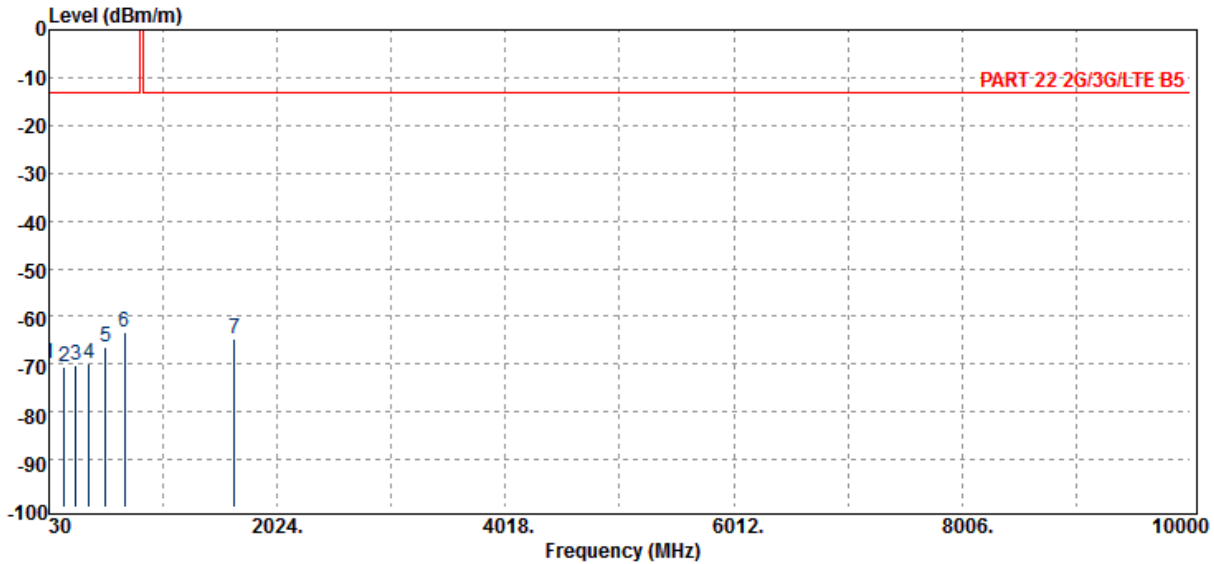
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Radiated Spurious Emission Measurement Result: WCDMA Band 5 Mode

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



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-70.01	-54.27	-14.78	-0.96	-13.00	-57.01
160.95	S	-70.66	-67.61	-1.57	-1.48	-13.00	-57.66
262.80	S	-70.38	-72.22	3.63	-1.79	-13.00	-57.38
379.20	S	-70.01	-71.59	3.84	-2.26	-13.00	-57.01
527.61	S	-66.38	-67.62	3.71	-2.47	-13.00	-53.38
687.66	S	-63.21	-63.55	3.10	-2.76	-13.00	-50.21
1652.80	H	-64.79	-67.68	7.12	-4.24	-13.00	-51.79

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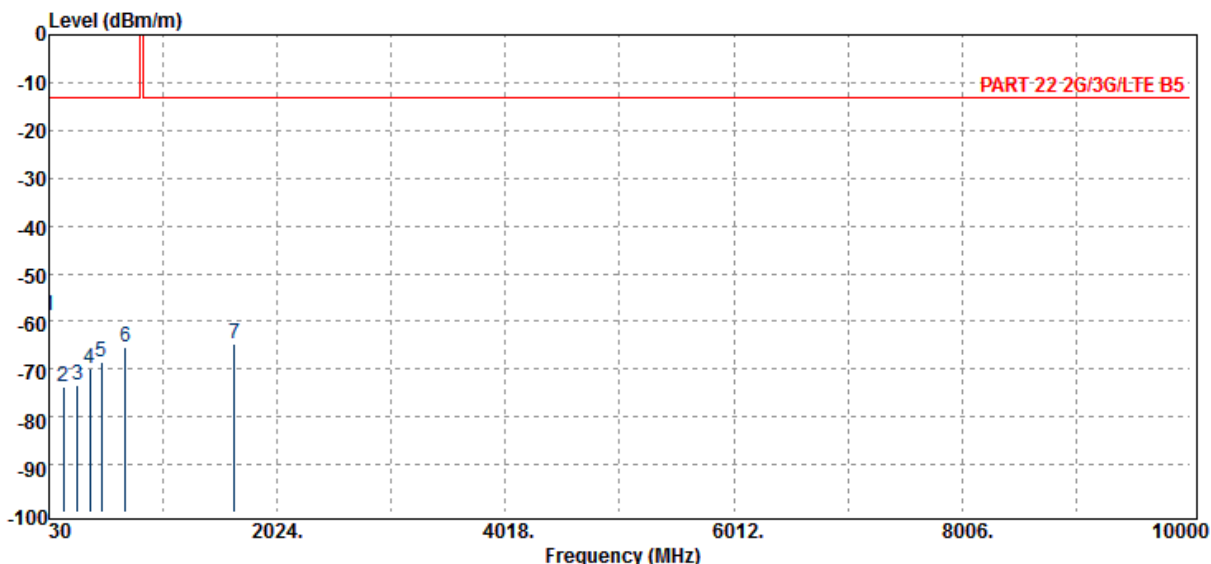
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Operation Band	:WCDMA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:826.4 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.70	-42.97	-14.78	-0.96	-13.00	-45.70
153.19	S	-73.78	-70.38	-1.95	-1.44	-13.00	-60.78
280.26	S	-73.45	-75.00	3.42	-1.88	-13.00	-60.45
384.05	S	-69.79	-71.33	3.83	-2.29	-13.00	-56.79
485.90	S	-68.56	-70.10	3.80	-2.26	-13.00	-55.56
697.36	S	-65.33	-65.49	3.08	-2.93	-13.00	-52.33
1652.80	H	-64.70	-67.59	7.12	-4.24	-13.00	-51.70

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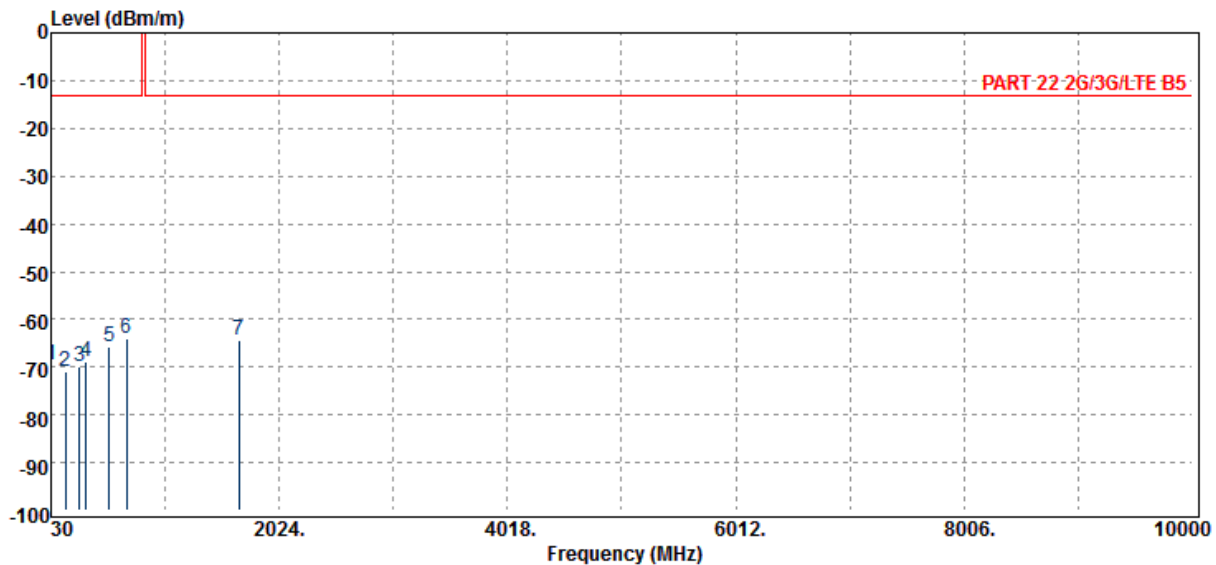
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Operation Band	:WCDMA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-69.58	-53.84	-14.78	-0.96	-13.00	-56.58
159.01	S	-70.96	-67.81	-1.68	-1.47	-13.00	-57.96
279.29	S	-70.06	-71.62	3.43	-1.87	-13.00	-57.06
333.61	S	-69.01	-70.88	3.79	-1.92	-13.00	-56.01
541.19	S	-65.91	-66.93	3.63	-2.61	-13.00	-52.91
692.51	S	-63.86	-64.10	3.09	-2.84	-13.00	-50.86
1673.20	H	-64.33	-67.24	7.20	-4.29	-13.00	-51.33

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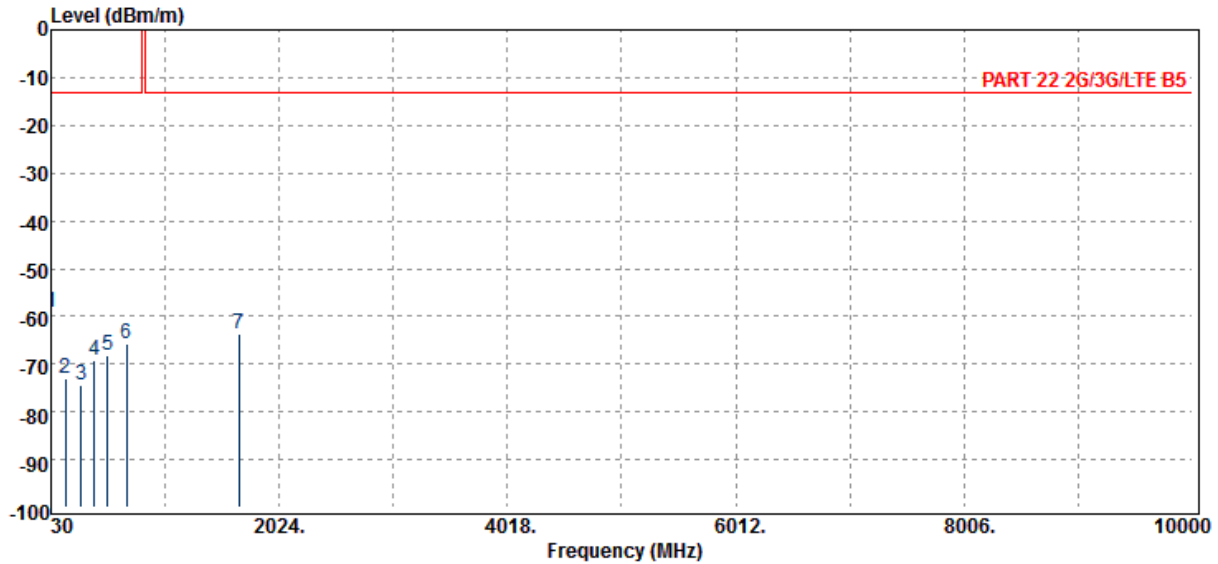
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Operation Band	:WCDMA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.07	-43.33	-14.78	-0.96	-13.00	-46.07
156.10	S	-73.11	-69.84	-1.81	-1.46	-13.00	-60.11
293.84	S	-74.29	-75.85	3.50	-1.94	-13.00	-61.29
411.21	S	-69.32	-70.70	3.78	-2.39	-13.00	-56.32
522.76	S	-68.13	-69.44	3.73	-2.42	-13.00	-55.13
689.60	S	-65.58	-65.88	3.09	-2.79	-13.00	-52.58
1673.20	H	-63.71	-66.62	7.20	-4.29	-13.00	-50.71

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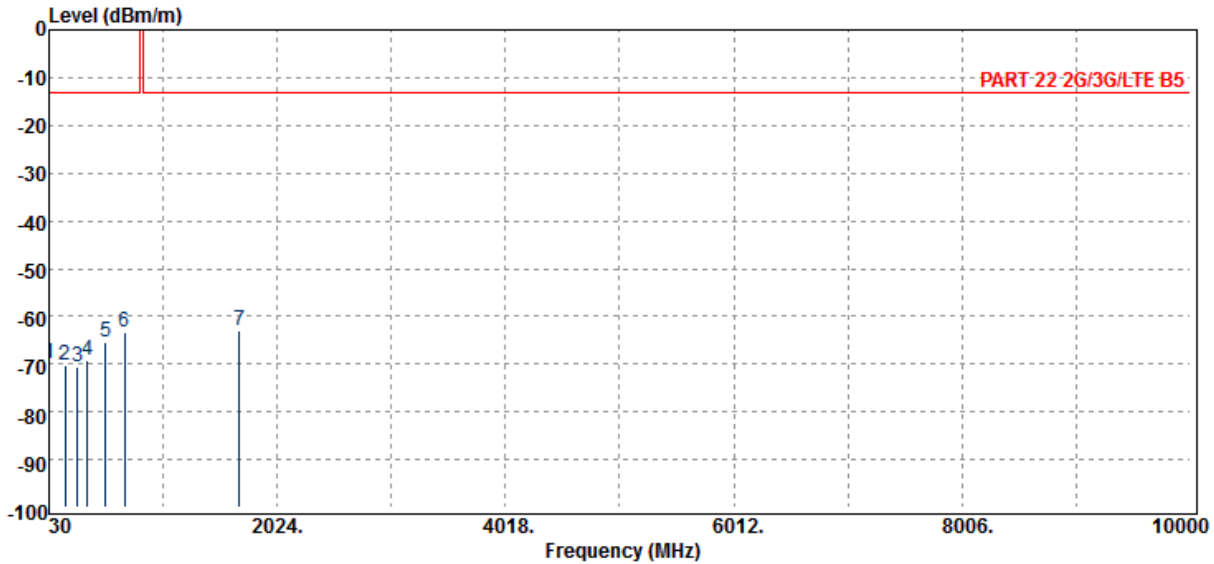
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Operation Band	:WCDMA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-69.98	-54.25	-14.78	-0.96	-13.00	-56.98
173.56	S	-70.15	-68.36	-0.26	-1.53	-13.00	-57.15
279.29	S	-70.50	-72.06	3.43	-1.87	-13.00	-57.50
362.71	S	-69.11	-70.82	3.85	-2.15	-13.00	-56.11
526.64	S	-65.45	-66.70	3.71	-2.46	-13.00	-52.45
689.60	S	-63.18	-63.48	3.09	-2.79	-13.00	-50.18
1693.20	H	-63.12	-66.08	7.27	-4.30	-13.00	-50.12

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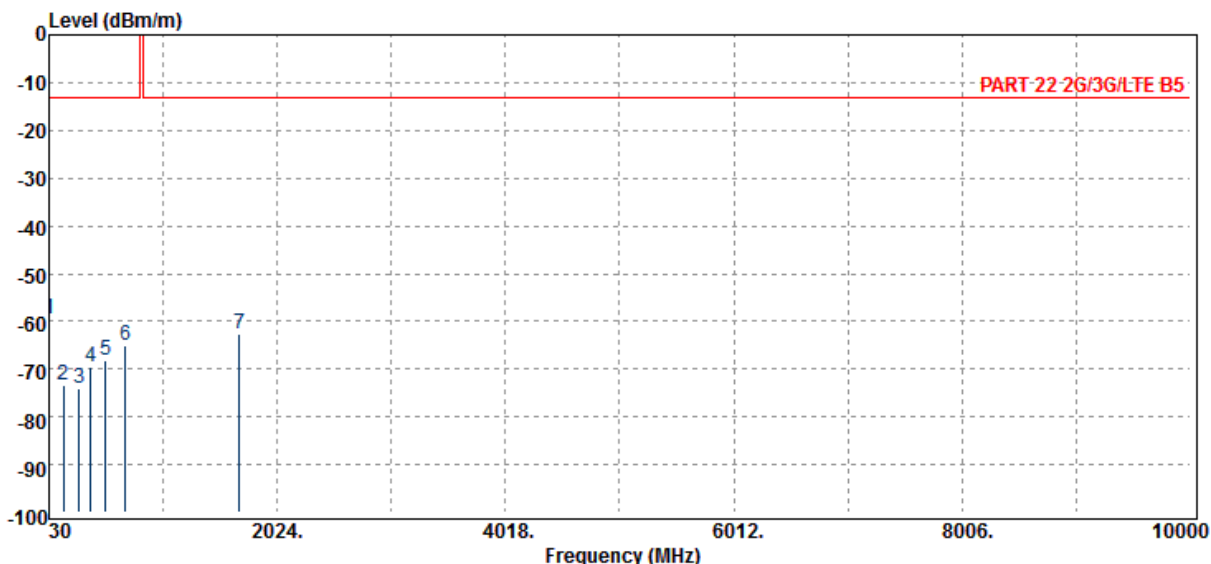
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Operation Band	:WCDMA B5	Temp./Humi.	:24 deg_C / 61 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.37	-43.64	-14.78	-0.96	-13.00	-46.37
154.16	S	-73.32	-69.97	-1.90	-1.45	-13.00	-60.32
289.96	S	-74.10	-75.61	3.43	-1.92	-13.00	-61.10
395.69	S	-69.62	-71.09	3.82	-2.35	-13.00	-56.62
526.64	S	-68.07	-69.32	3.71	-2.46	-13.00	-55.07
697.36	S	-65.00	-65.15	3.08	-2.93	-13.00	-52.00
1693.20	H	-62.47	-65.43	7.27	-4.30	-13.00	-49.47

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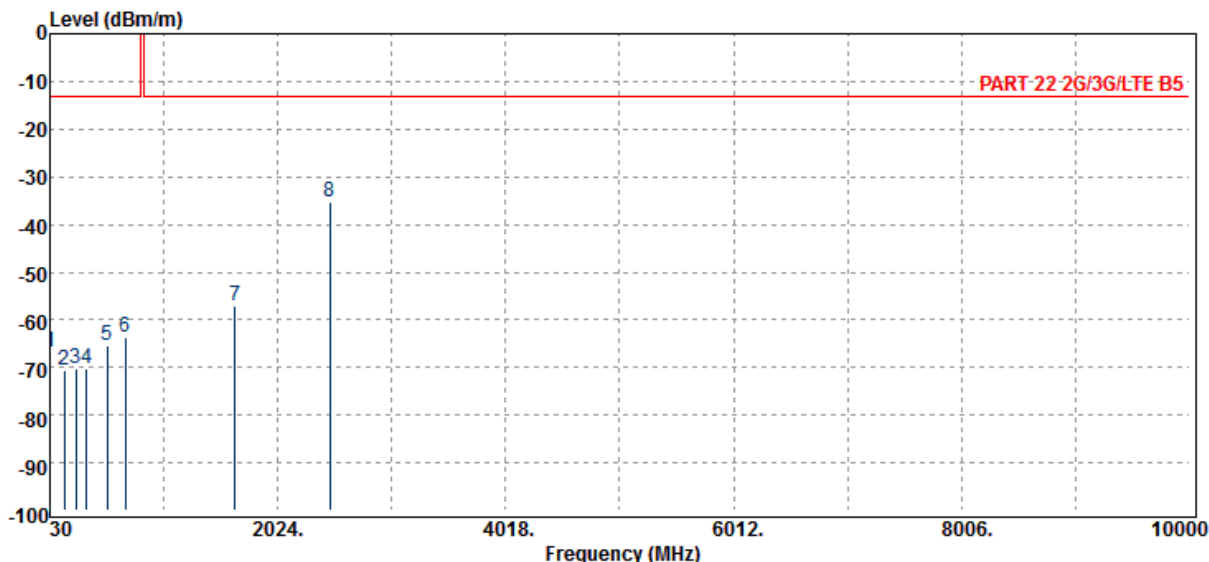
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Radiated Spurious Emission Measurement Result: LTE-Band 5 (The Worst Case)

Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:825.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



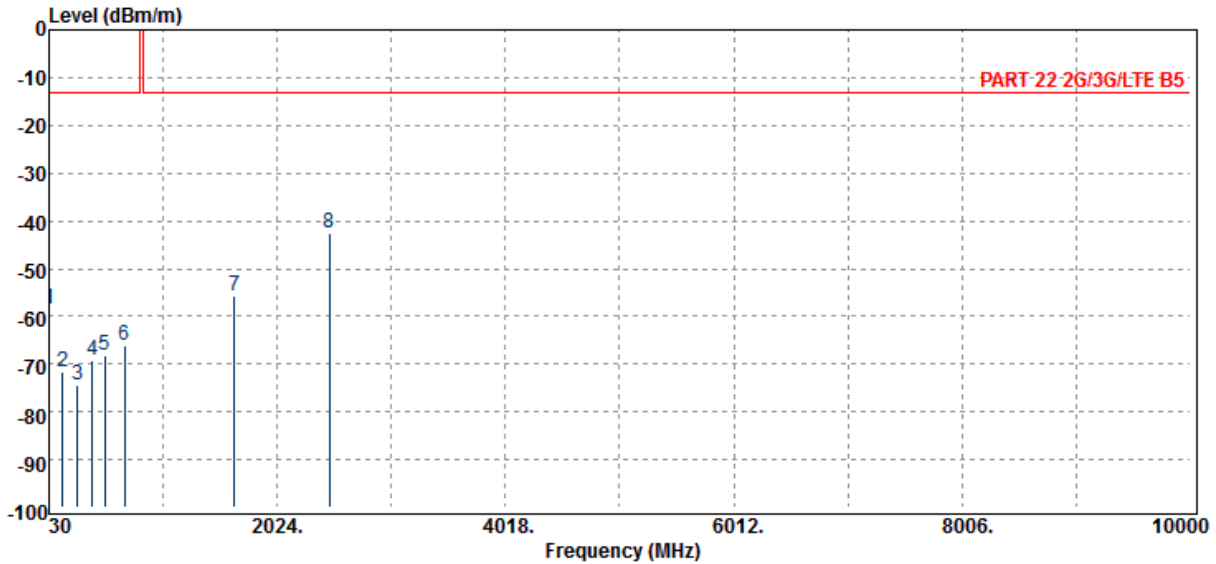
Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-66.69	8.78	-14.78	-0.96	-13.00	-53.69
159.01	S	-70.44	3.79	-1.68	-1.47	-13.00	-57.44
257.95	S	-70.37	-1.06	3.63	-1.77	-13.00	-57.37
353.01	S	-70.09	-0.75	3.86	-2.07	-13.00	-57.09
529.55	S	-65.24	3.49	3.70	-2.49	-13.00	-52.24
686.69	S	-63.51	6.89	3.10	-2.74	-13.00	-50.51
1651.00	H	-57.20	0.13	9.27	-4.23	-13.00	-44.20
2476.50	H	-35.30	4.30	10.88	-5.23	-13.00	-22.30

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Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:825.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.34	20.54	-14.78	-0.96	-13.00	-45.34
146.40	S	-71.51	1.83	-2.31	-1.42	-13.00	-58.51
280.26	S	-74.40	-4.08	3.42	-1.88	-13.00	-61.40
406.36	S	-69.04	-0.39	3.80	-2.42	-13.00	-56.04
519.85	S	-68.31	1.18	3.75	-2.39	-13.00	-55.31
689.60	S	-65.99	4.71	3.09	-2.79	-13.00	-52.99
1651.00	H	-55.58	0.26	9.27	-4.23	-13.00	-42.58
2476.50	H	-42.52	3.81	10.88	-5.23	-13.00	-29.52

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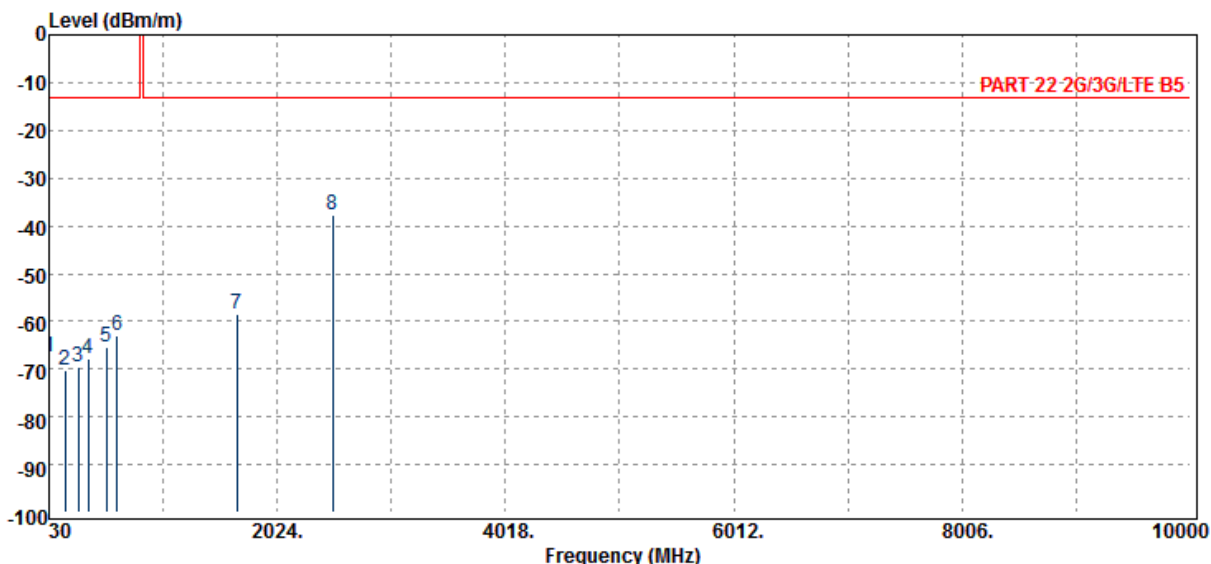
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Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:836.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.32	8.78	-14.78	-0.96	-13.00	-54.32
173.56	S	-70.11	2.83	-0.26	-1.53	-13.00	-57.11
287.05	S	-69.50	-0.55	3.43	-1.91	-13.00	-56.50
374.35	S	-67.99	-0.38	3.84	-2.23	-13.00	-54.99
534.40	S	-65.48	3.60	3.67	-2.54	-13.00	-52.48
621.70	S	-62.87	6.07	3.20	-2.53	-13.00	-49.87
1673.00	H	-58.55	0.52	9.35	-4.29	-13.00	-45.55
2509.50	H	-37.78	4.26	10.91	-5.26	-13.00	-24.78

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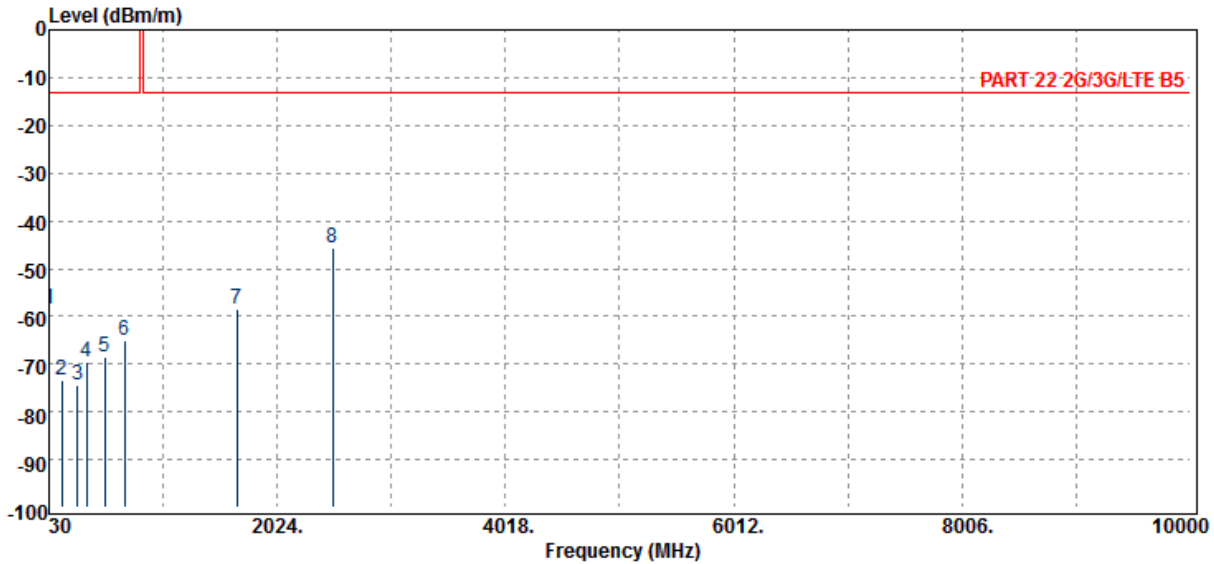
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Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:836.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.35	20.54	-14.78	-0.96	-13.00	-45.35
141.55	S	-73.39	1.08	-2.60	-1.40	-13.00	-60.39
280.26	S	-74.30	-4.08	3.42	-1.88	-13.00	-61.30
359.80	S	-69.45	-0.85	3.85	-2.12	-13.00	-56.45
519.85	S	-68.62	1.18	3.75	-2.39	-13.00	-55.62
692.51	S	-65.13	4.68	3.09	-2.84	-13.00	-52.13
1673.00	H	-58.45	0.68	9.35	-4.29	-13.00	-45.45
2509.50	H	-45.84	3.94	10.91	-5.26	-13.00	-32.84

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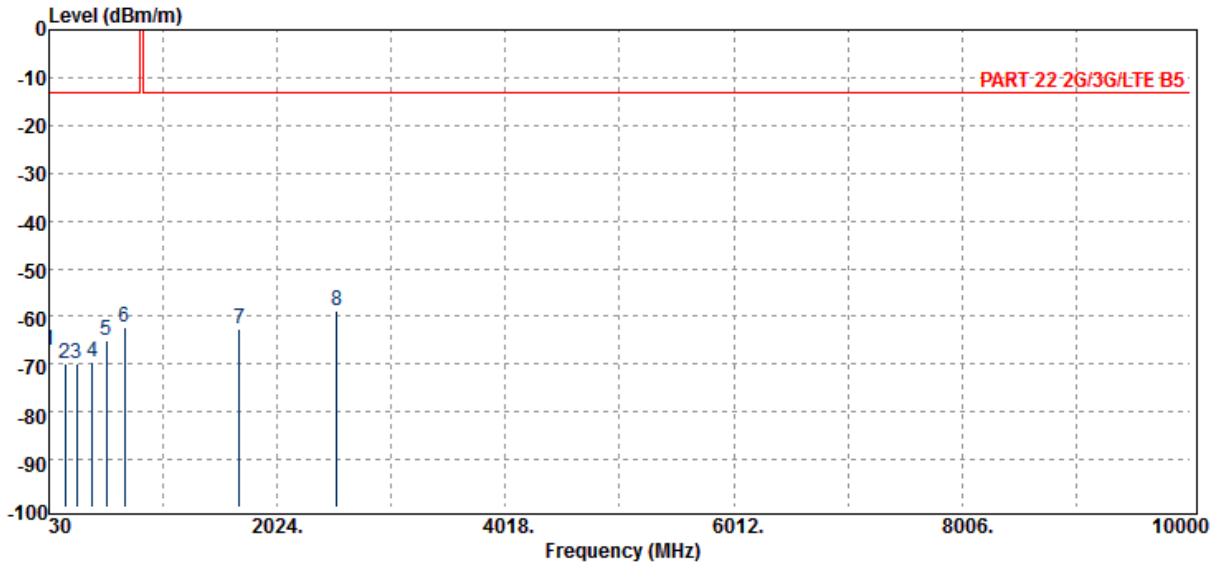
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Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:847.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.13	8.78	-14.78	-0.96	-13.00	-54.13
173.56	S	-70.00	2.83	-0.26	-1.53	-13.00	-57.00
274.44	S	-69.74	-0.48	3.47	-1.85	-13.00	-56.74
408.30	S	-69.63	-0.29	3.79	-2.41	-13.00	-56.63
534.40	S	-65.21	3.60	3.67	-2.54	-13.00	-52.21
687.66	S	-62.26	6.99	3.10	-2.76	-13.00	-49.26
1695.00	H	-62.67	0.35	7.27	-4.30	-13.00	-49.67
2542.50	H	-58.71	4.32	8.81	-5.32	-13.00	-45.71

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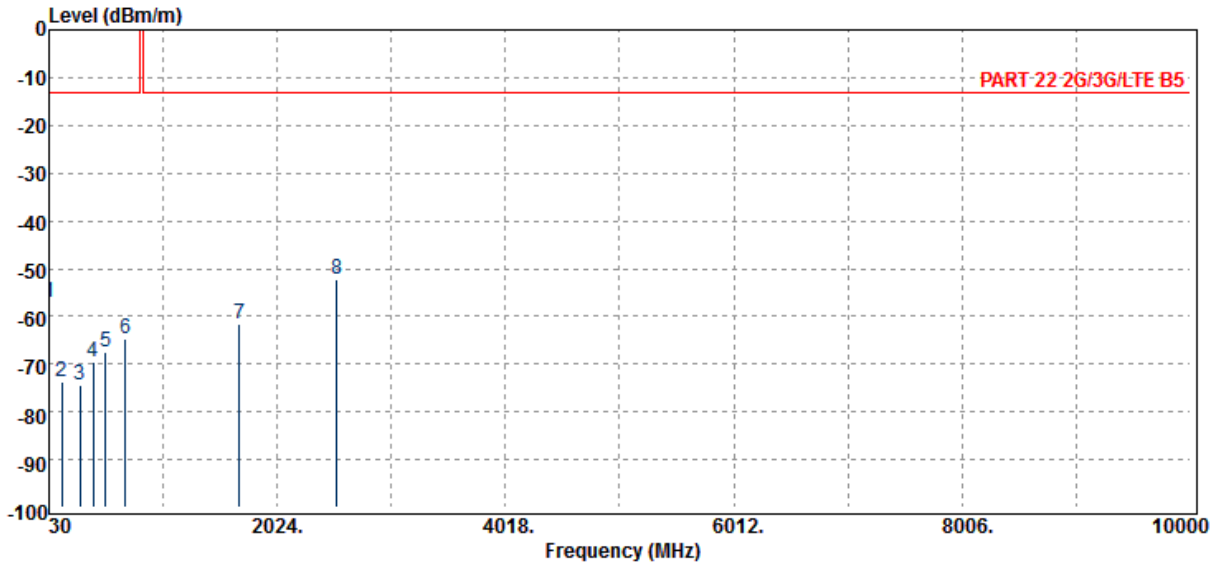
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Operation Band	:LTE B5	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:847.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.19	20.54	-14.78	-0.96	-13.00	-44.19
141.55	S	-73.70	1.08	-2.60	-1.40	-13.00	-60.70
299.66	S	-74.32	-3.96	3.62	-1.95	-13.00	-61.32
416.06	S	-69.43	-0.37	3.76	-2.36	-13.00	-56.43
527.61	S	-67.59	1.03	3.71	-2.47	-13.00	-54.59
694.45	S	-64.70	4.64	3.09	-2.88	-13.00	-51.70
1695.00	H	-61.45	0.45	7.27	-4.30	-13.00	-48.45
2542.50	H	-52.10	4.10	8.81	-5.32	-13.00	-39.10

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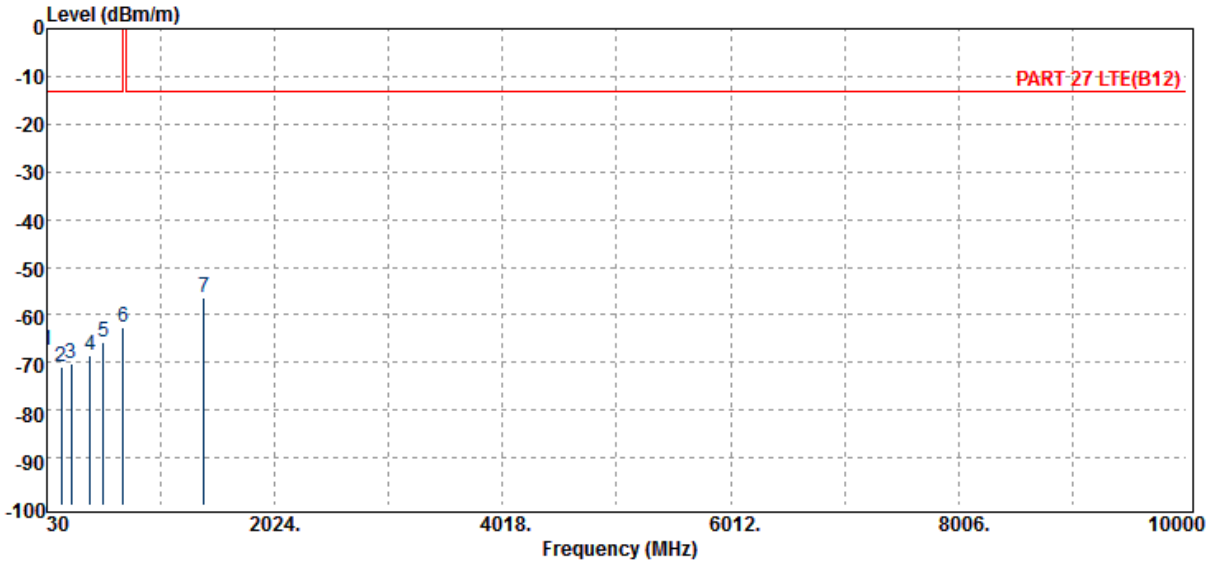
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Radiated Spurious Emission Measurement Result: LTE-Band 12 (The Worst Case)

Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:699.7 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.55	-51.82	-14.78	-0.96	-13.00	-54.55
159.01	S	-70.77	-67.62	-1.68	-1.47	-13.00	-57.77
241.46	S	-70.09	-71.65	3.31	-1.74	-13.00	-57.09
411.21	S	-68.53	-69.91	3.78	-2.39	-13.00	-55.53
527.61	S	-65.66	-66.89	3.71	-2.47	-13.00	-52.66
697.36	S	-62.59	-62.75	3.08	-2.93	-13.00	-49.59
1399.40	H	-56.34	-60.74	8.30	-3.90	-13.00	-43.34

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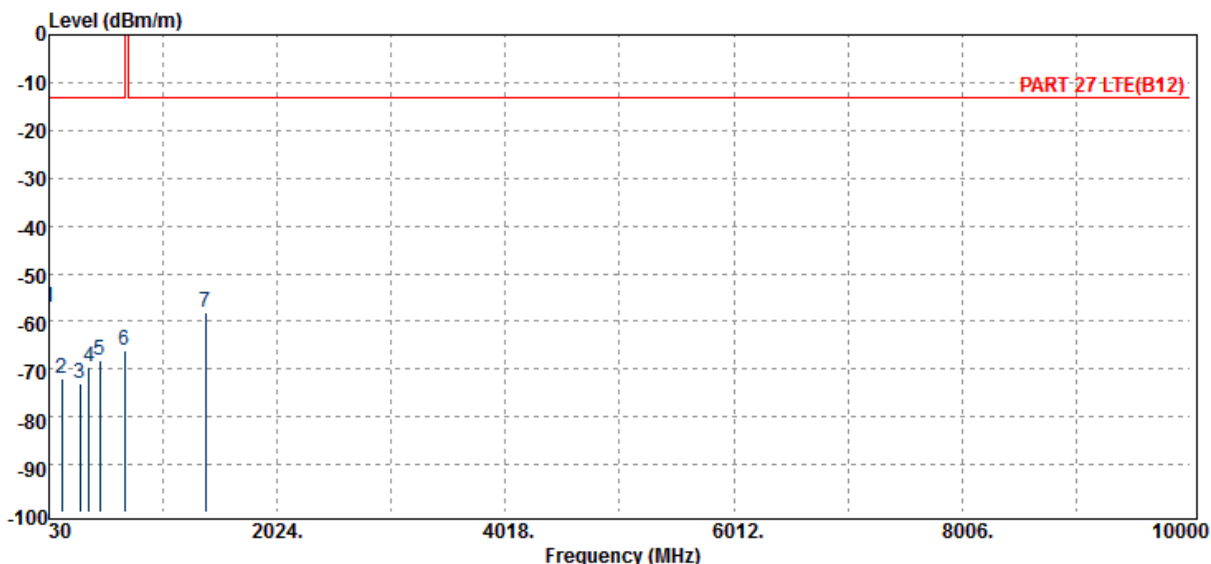
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Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:699.7 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.20	-41.46	-14.78	-0.96	-13.00	-44.20
140.58	S	-72.14	-68.08	-2.66	-1.40	-13.00	-59.14
299.66	S	-73.14	-74.82	3.62	-1.95	-13.00	-60.14
377.26	S	-69.61	-71.20	3.84	-2.24	-13.00	-56.61
476.20	S	-68.24	-69.76	3.76	-2.23	-13.00	-55.24
692.51	S	-65.97	-66.22	3.09	-2.84	-13.00	-52.97
1399.40	H	-58.02	-62.40	8.27	-3.89	-13.00	-45.02

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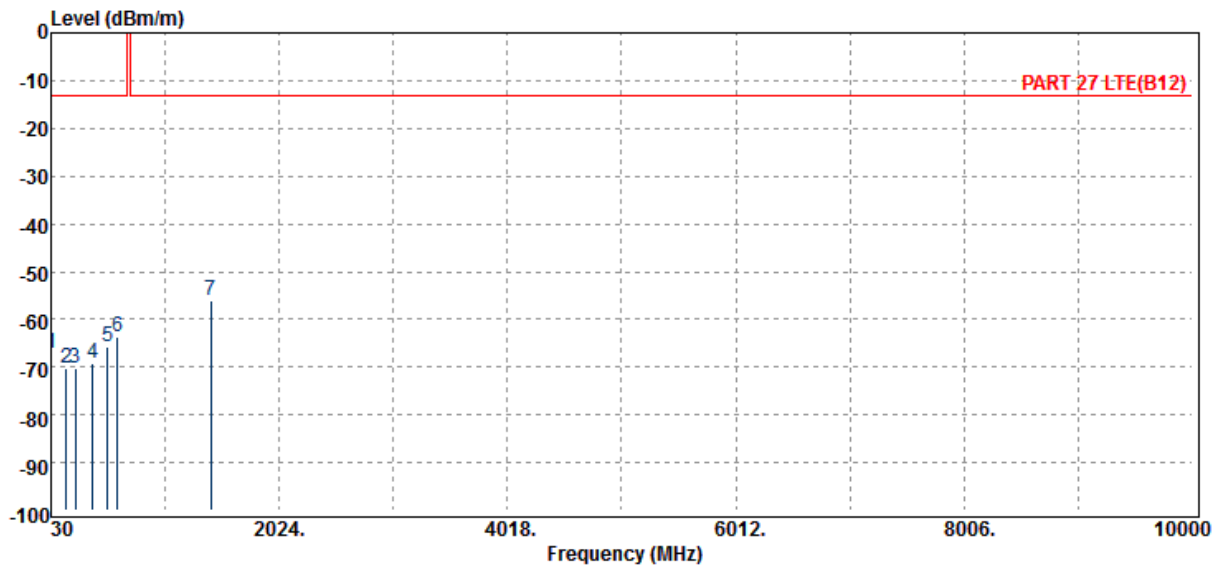
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Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:707.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.27	-51.53	-14.78	-0.96	-13.00	-54.27
165.80	S	-70.16	-67.44	-1.21	-1.50	-13.00	-57.16
240.49	S	-70.31	-71.87	3.29	-1.74	-13.00	-57.31
391.81	S	-69.16	-70.65	3.83	-2.33	-13.00	-56.16
526.64	S	-65.60	-66.85	3.71	-2.46	-13.00	-52.60
613.94	S	-63.53	-64.14	3.21	-2.60	-13.00	-50.53
1415.00	H	-56.08	-60.53	8.38	-3.93	-13.00	-43.08

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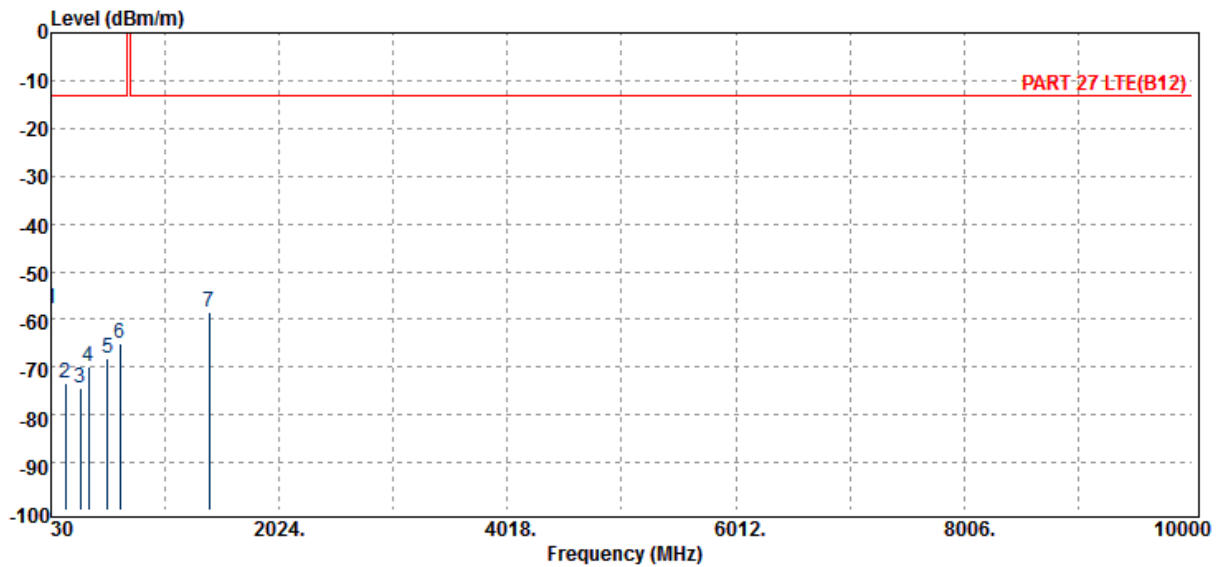
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Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:707.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.67	-41.93	-14.78	-0.96	-13.00	-44.67
159.01	S	-73.21	-70.06	-1.68	-1.47	-13.00	-60.21
287.05	S	-74.34	-75.86	3.43	-1.91	-13.00	-61.34
357.86	S	-69.95	-71.70	3.85	-2.11	-13.00	-56.95
522.76	S	-68.29	-69.60	3.73	-2.42	-13.00	-55.29
634.31	S	-65.17	-65.88	3.17	-2.45	-13.00	-52.17
1415.00	H	-58.58	-63.01	8.34	-3.91	-13.00	-45.58

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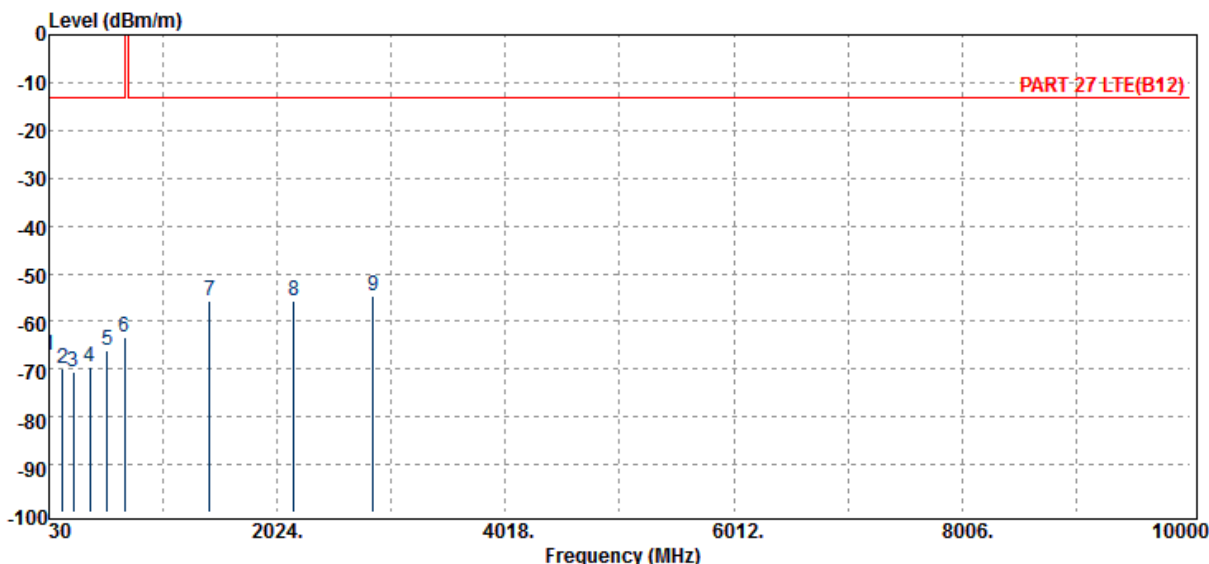
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Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:715.3 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.22	-51.49	-14.78	-0.96	-13.00	-54.22
146.40	S	-69.97	-66.24	-2.31	-1.42	-13.00	-56.97
240.49	S	-70.44	-71.99	3.29	-1.74	-13.00	-57.44
384.05	S	-69.39	-70.94	3.83	-2.29	-13.00	-56.39
536.34	S	-65.97	-67.07	3.66	-2.56	-13.00	-52.97
689.60	S	-63.36	-63.67	3.09	-2.79	-13.00	-50.36
1430.60	H	-55.80	-60.27	8.41	-3.94	-13.00	-42.80
2145.90	H	-55.80	-61.52	10.58	-4.86	-13.00	-42.80
2861.20	H	-54.82	-60.46	11.35	-5.70	-13.00	-41.82

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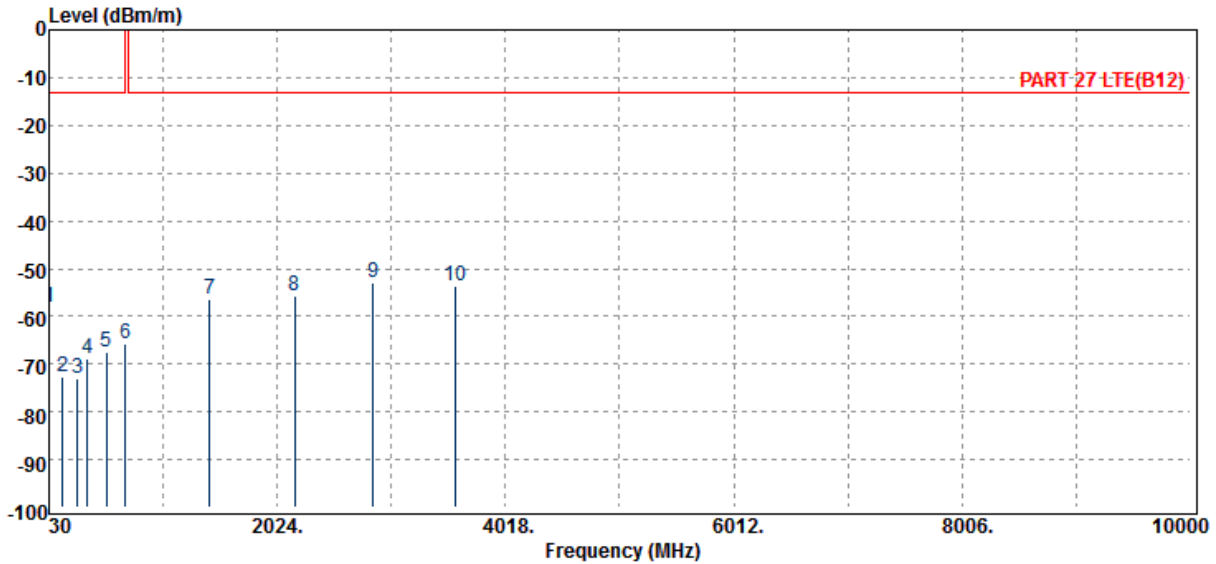
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Operation Band	:LTE B12	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:715.3 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.13	-42.39	-14.78	-0.96	-13.00	-45.13
146.40	S	-72.80	-69.07	-2.31	-1.42	-13.00	-59.80
280.26	S	-72.97	-74.51	3.42	-1.88	-13.00	-59.97
364.65	S	-68.92	-70.61	3.85	-2.16	-13.00	-55.92
531.49	S	-67.62	-68.79	3.69	-2.51	-13.00	-54.62
700.27	S	-65.87	-65.97	3.08	-2.98	34.77	-100.64
1430.60	H	-56.52	-60.99	8.41	-3.94	-13.00	-43.52
2145.90	H	-55.86	-61.58	10.59	-4.87	-13.00	-42.86
2861.20	H	-52.91	-58.55	11.35	-5.70	-13.00	-39.91
3576.50	H	-53.46	-59.47	12.42	-6.41	-13.00	-40.46

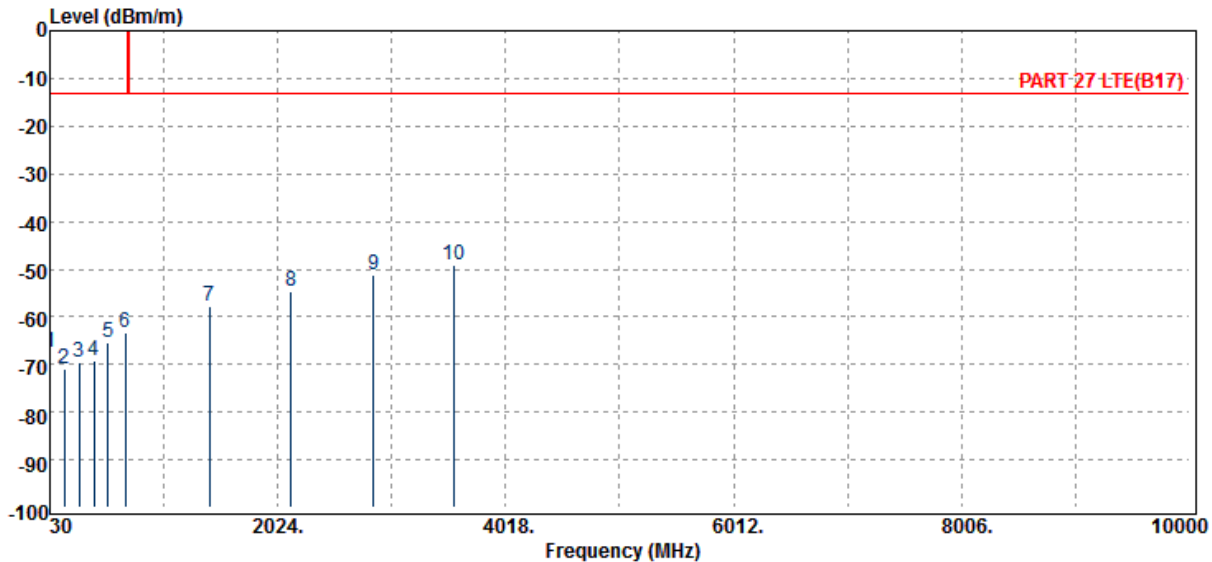
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Radiated Spurious Emission Measurement Result: LTE-Band 17 (The Worst Case)

Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:709.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



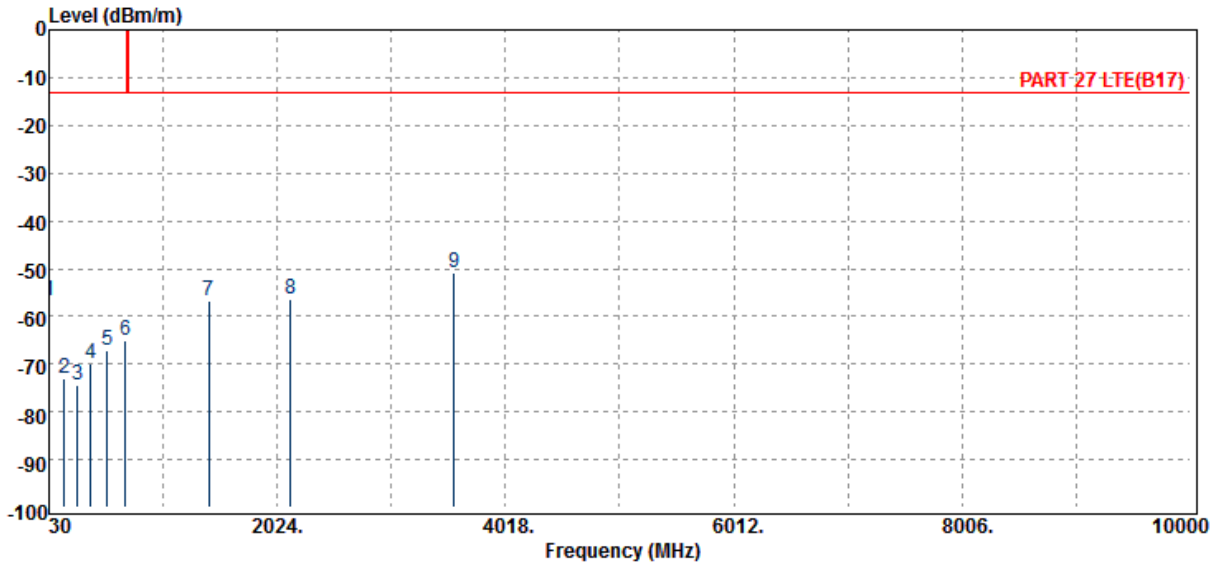
Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.57	8.78	-14.78	-0.96	-13.00	-54.57
153.19	S	-70.95	3.68	-1.95	-1.44	-13.00	-57.95
285.11	S	-69.54	-0.53	3.43	-1.90	-13.00	-56.54
418.00	S	-69.09	0.13	3.76	-2.35	-13.00	-56.09
539.25	S	-65.52	3.46	3.64	-2.59	-13.00	-52.52
686.69	S	-63.39	6.89	3.10	-2.74	-13.00	-50.39
1418.00	H	-57.89	1.72	8.38	-3.93	-13.00	-44.89
2127.00	H	-54.84	4.33	10.55	-4.82	-13.00	-41.84
2836.00	H	-51.14	5.06	11.35	-5.70	-13.00	-38.14
3545.00	H	-49.15	6.70	12.41	-6.46	-13.00	-36.15

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Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:709.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



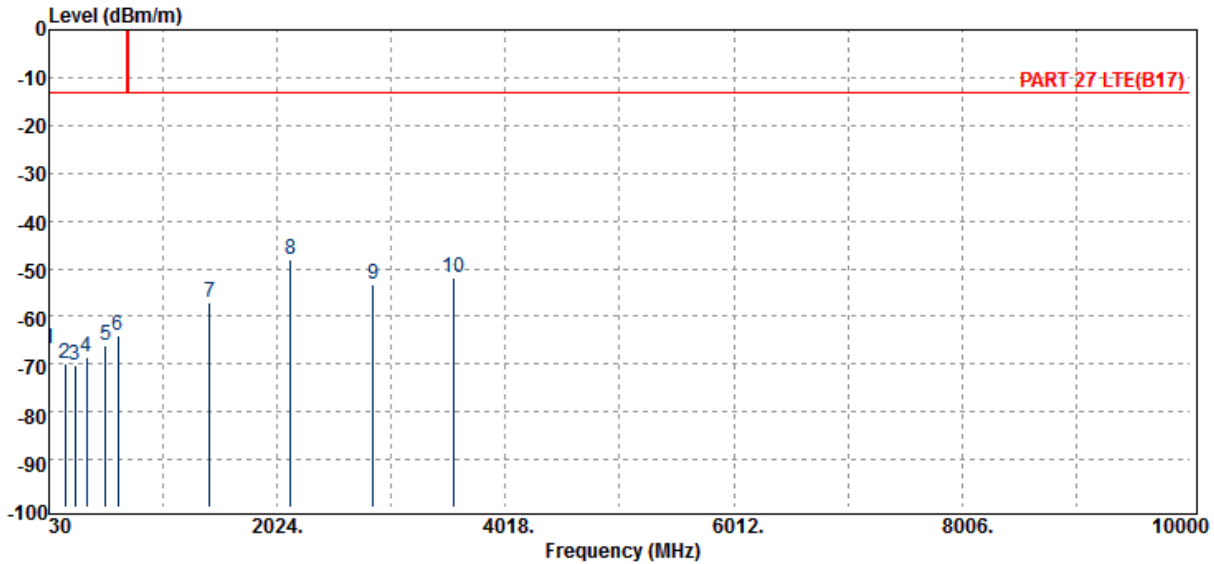
Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-56.74	20.54	-14.78	-0.96	-13.00	-43.74
160.95	S	-73.10	0.51	-1.57	-1.48	-13.00	-60.10
280.26	S	-74.51	-4.08	3.42	-1.88	-13.00	-61.51
396.66	S	-69.80	-0.95	3.82	-2.36	-13.00	-56.80
539.25	S	-67.13	0.55	3.64	-2.59	-13.00	-54.13
694.45	S	-65.01	4.64	3.09	-2.88	-13.00	-52.01
1418.00	H	-56.79	2.27	8.38	-3.93	-13.00	-43.79
2127.00	H	-56.33	4.26	10.55	-4.82	-13.00	-43.33
3545.00	H	-50.92	6.78	12.41	-6.46	-13.00	-37.92

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Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:710.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



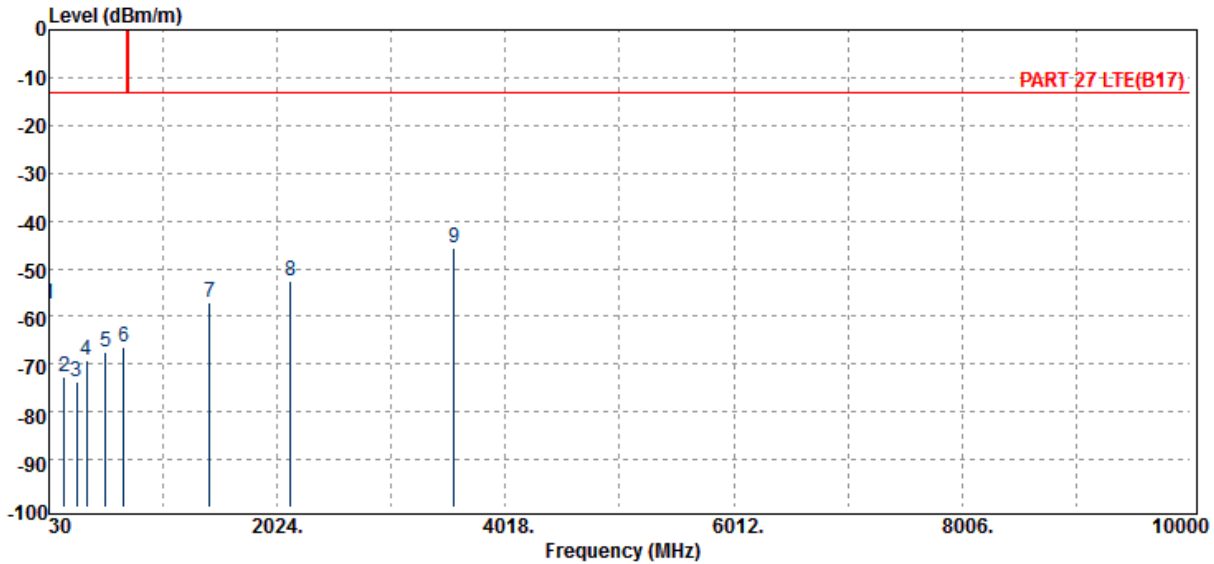
Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-66.94	8.78	-14.78	-0.96	-13.00	-53.94
173.56	S	-69.77	2.83	-0.26	-1.53	-13.00	-56.77
255.04	S	-70.40	-1.11	3.56	-1.76	-13.00	-57.40
359.80	S	-68.56	-0.50	3.85	-2.12	-13.00	-55.56
526.64	S	-66.10	3.44	3.71	-2.46	-13.00	-53.10
629.46	S	-64.09	6.15	3.18	-2.47	-13.00	-51.09
1420.00	H	-57.10	1.52	8.41	-3.94	-13.00	-44.10
2130.00	H	-48.11	4.33	10.55	-4.82	-13.00	-35.11
2840.00	H	-53.17	5.06	11.35	-5.70	-13.00	-40.17
3550.00	H	-51.94	6.70	12.41	-6.46	-13.00	-38.94

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Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:710.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



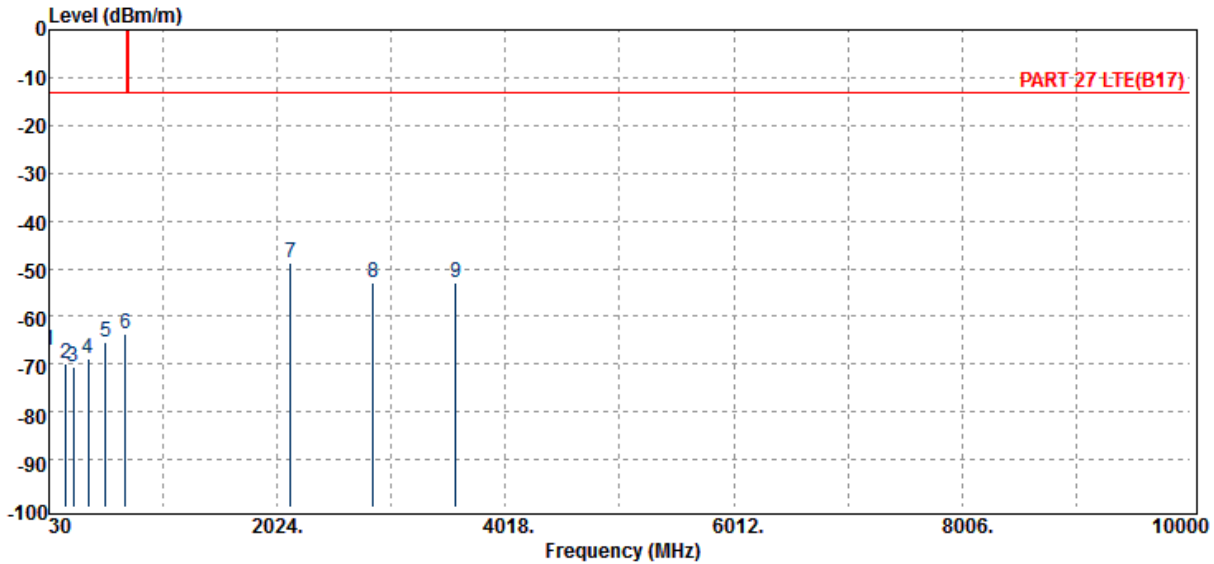
Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.43	20.54	-14.78	-0.96	-13.00	-44.43
159.98	S	-72.70	0.83	-1.64	-1.48	-13.00	-59.70
274.44	S	-73.82	-4.55	3.47	-1.85	-13.00	-60.82
356.89	S	-69.18	-1.12	3.86	-2.10	-13.00	-56.18
526.64	S	-67.56	1.04	3.71	-2.46	-13.00	-54.56
682.81	S	-66.42	3.84	3.10	-2.67	-13.00	-53.42
1420.00	H	-57.12	1.87	8.41	-3.94	-13.00	-44.12
2130.00	H	-52.43	4.26	10.55	-4.82	-13.00	-39.43
3550.00	H	-45.77	6.78	12.41	-6.46	-13.00	-32.77

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Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:711.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-67.27	8.78	-14.78	-0.96	-13.00	-54.27
178.41	S	-69.76	1.19	0.61	-1.55	-13.00	-56.76
239.52	S	-70.61	0.24	3.28	-1.74	-13.00	-57.61
374.35	S	-68.86	-0.38	3.84	-2.23	-13.00	-55.86
527.61	S	-65.32	3.50	3.71	-2.47	-13.00	-52.32
697.36	S	-63.71	6.71	3.08	-2.93	-13.00	-50.71
2133.00	H	-48.85	4.33	10.55	-4.82	-13.00	-35.85
2844.00	H	-53.07	5.06	11.35	-5.70	-13.00	-40.07
3555.00	H	-52.82	6.76	12.42	-6.41	-13.00	-39.82

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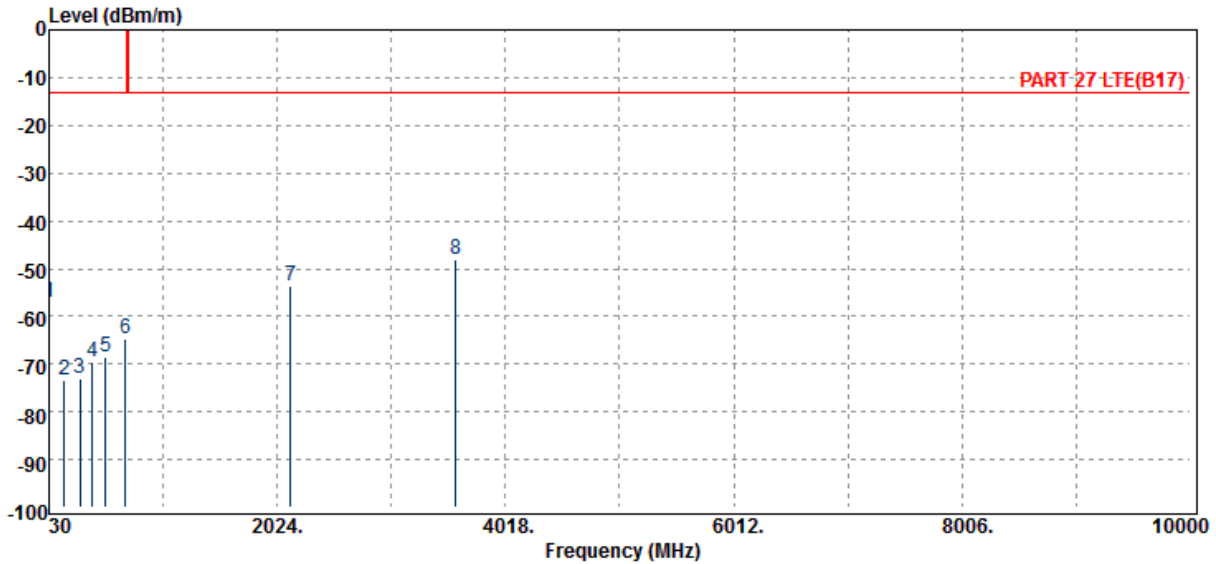
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Operation Band	:LTE B17	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:711.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-57.24	20.54	-14.78	-0.96	-13.00	-44.24
162.89	S	-73.53	-0.15	-1.42	-1.49	-13.00	-60.53
299.66	S	-73.14	-3.96	3.62	-1.95	-13.00	-60.14
408.30	S	-69.47	-0.28	3.79	-2.41	-13.00	-56.47
527.61	S	-68.54	1.03	3.71	-2.47	-13.00	-55.54
696.39	S	-64.62	4.77	3.09	-2.91	-13.00	-51.62
2133.00	H	-53.48	4.26	10.55	-4.82	-13.00	-40.48
3555.00	H	-48.10	6.87	12.42	-6.41	-13.00	-35.10

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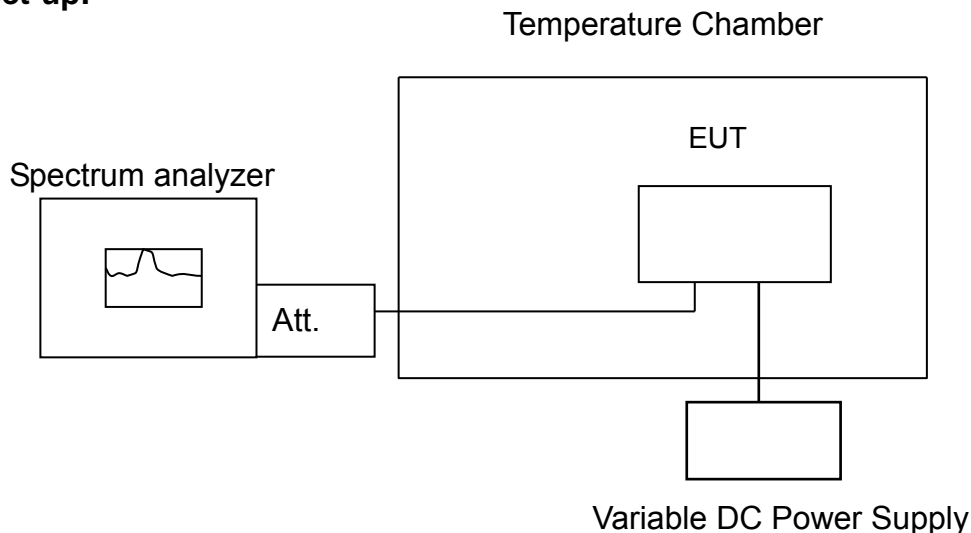
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11. FREQUENCY STABILITY MEASUREMENT

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

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

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11.4. Measurement Equipment Used:

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/15/2017	12/14/2018
Power Sensor	Anritsu	MA2411B	917032	12/15/2017	12/14/2018
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HU-BER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	10/26/2017	10/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

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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)		
4.42	20	836.600003	-2	2091
3.85	20	836.600005	0	2091
3.27	20	836.599999	-6	2091
2.8 (End point)	20	836.600008	3	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	836.600012	10	2091
3.85	40	836.60001	8	2091
3.85	30	836.599994	-8	2091
3.85	20	836.599991	-11	2091
3.85	10	836.600009	7	2091
3.85	0	836.600002	0	2091
3.85	-10	836.600003	1	2091
3.85	-20	836.600002	0	2091
3.85	-30	836.600005	3	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)		
4.42	20	1879999992	-11	4700
3.85	20	1879999998	5	4700
3.27	20	1880000009	-1	4700
2.8 (End point)	20	1879999996	5	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	1880000001	10	4700
3.85	40	1879999985	8	4700
3.85	30	1879999998	-2	4700
3.85	20	1880000002	1	4700
3.85	10	1879999990	-4	4700
3.85	0	1879999996	2	4700
3.85	-10	1880000013	8	4700
3.85	-20	1879999993	9	4700
3.85	-30	1880000003	11	4700

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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)		
4.42	20	836599999	-3	2091
3.85	20	836600008	14	2091
3.27	20	836600000	6	2091
2.8 (End Point)	20	836599986	9	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	836599988	11	2091
3.85	40	836600014	10	2091
3.85	30	836599987	8	2091
3.85	20	836599998	4	2091
3.85	10	836600008	0	2091
3.85	0	836599998	3	2091
3.85	-10	836600006	6	2091
3.85	-20	836600003	9	2091
3.85	-30	836600012	12	2091

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B5 Mid Channel	836.5	MHz	10M QPSK CH 20525
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
4.42	25	836.500006	2	2091	
3.85	25	836.500004	0	2091	
3.27	25	836.500011	7	2091	
2.8 (End Point)	25	836.500005	1	2091	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B5 Mid Channel	836.5	MHz	10M QPSK CH 20525
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
3.85	-30	836.499998	4	2091	
3.85	-20	836.500006	12	2091	
3.85	-10	836.499996	2	2091	
3.85	0	836.500001	16	2091	
3.85	10	836.500008	14	2091	
3.85	20	836.499994	0	2091	
3.85	30	836.499997	3	2091	
3.85	40	836.500001	7	2091	
3.85	50	836.5	6	2091	

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B12 Mid Channel	2535.0	MHz	10M QPSK CH 23095
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
4.42	25	707.500004	-4	1769	
3.85	25	707.500008	0	1769	
3.27	25	707.5	-8	1769	
2.8 (End Point)	25	707.500013	5	1769	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B12 Mid Channel	2535.0	MHz	10M QPSK CH 23095
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
3.85	-30	707.499992	-20	1769	
3.85	-20	707.500005	-7	1769	
3.85	-10	707.499998	-14	1769	
3.85	0	707.500003	-9	1769	
3.85	10	707.500009	-3	1769	
3.85	20	707.500012	0	1769	
3.85	30	707.500004	-8	1769	
3.85	40	707.499997	-15	1769	
3.85	50	707.500001	-11	1769	

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B17 Mid Channel	2595.0	MHz	10M QPSK CH 38000
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
4.42	25	710	-4	1775	
3.85	25	710	0	1775	
3.27	25	710.00001	2	1775	
2.8 (End Point)	25	710.00001	6	1775	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B17 Mid Channel	2595.0	MHz	10M QPSK CH 38000
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature ()	(MHz)			
3.85	-30	710.00001	13	1775	
3.85	-20	710.00001	8	1775	
3.85	-10	710.00001	9	1775	
3.85	0	710	-2	1775	
3.85	10	710	0	1775	
3.85	20	710	0	1775	
3.85	30	710	7	1775	
3.85	40	710	5	1775	
3.85	50	710.00001	12	1775	

Note: The battery is rated 3.85V dc.

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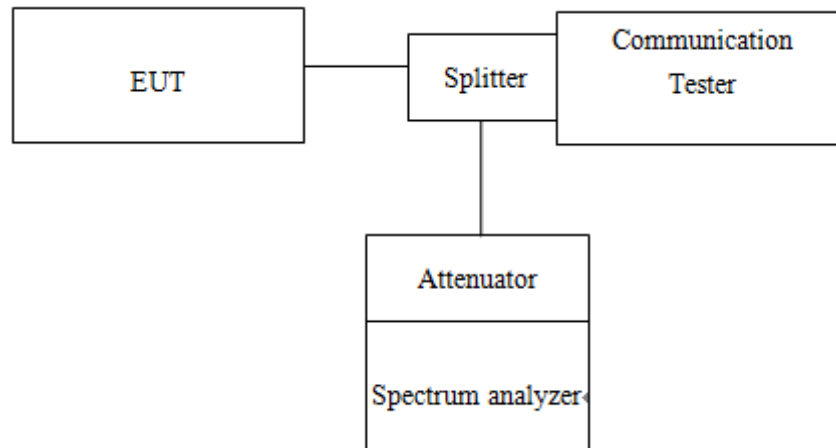
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12. PEAK TO AVERAGE RATIO

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.

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12.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/15/2017	12/14/2018
Power Sensor	Anritsu	MA2411B	917032	12/15/2017	12/14/2018
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	10/26/2017	10/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

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12.5. Measurement Result

Tabular Results:

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		GSM 1900	GPRS 1900
1850.2	9296	9.72	9.48
1880.0	9400	10.54	9.06
1909.8	9538	10.74	9.25

LTE BAND 5							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	LIMIT			16QAM	LIMIT
824.7	20407	6.38	13	825.5	20415	6.44	13
836.5	20525	6.27	13	836.5	20525	6.27	13
848.3	20643	6.15	13	847.5	20635	6.34	13

LTE BAND 5							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	LIMIT			16QAM	LIMIT
826.5	20425	6.30	13	829.0	20450	6.27	13
836.5	20525	6.08	13	836.5	20525	6.16	13
846.5	20625	6.35	13	844.0	20600	6.26	13

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LTE BAND 12							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	LIMIT			16QAM	LIMIT
699.7	23017	6.12	13	700.5	23025	6.24	13
707.5	23095	6.24	13	707.5	23095	6.28	13
715.3	23173	5.96	13	714.5	23165	6.15	13

LTE BAND 12							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	LIMIT			16QAM	LIMIT
701.5	23035	6.05	13	704.0	23060	6.13	13
707.5	23095	6.16	13	707.5	23095	6.10	13
713.5	23155	6.02	13	711.0	23130	6.05	13

LTE BAND 17							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	LIMIT			16QAM	LIMIT
706.5	23755	6.22	13	709.0	23780	6.09	13
710.0	23790	6.11	13	710.0	23790	5.98	13
713.5	23825	6.04	13	711.0	23780	6.13	13

Measurement Results:

Please refer to next page.

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台灣檢驗科技股份有限公司

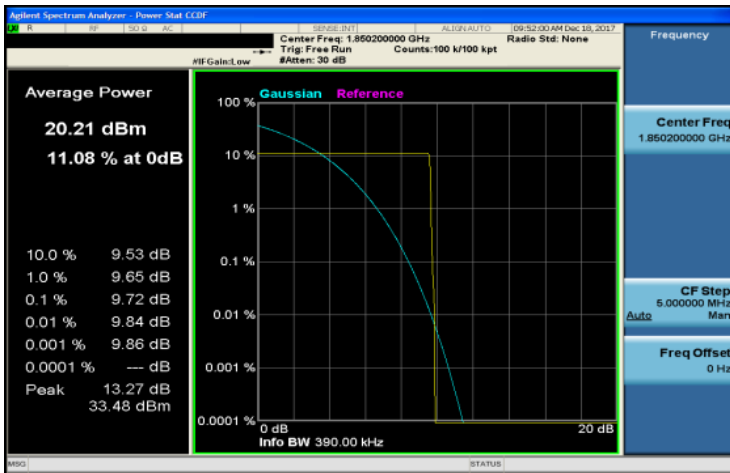
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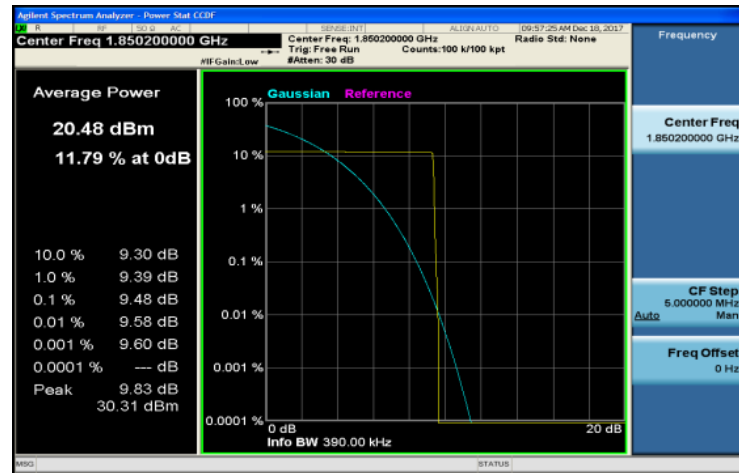
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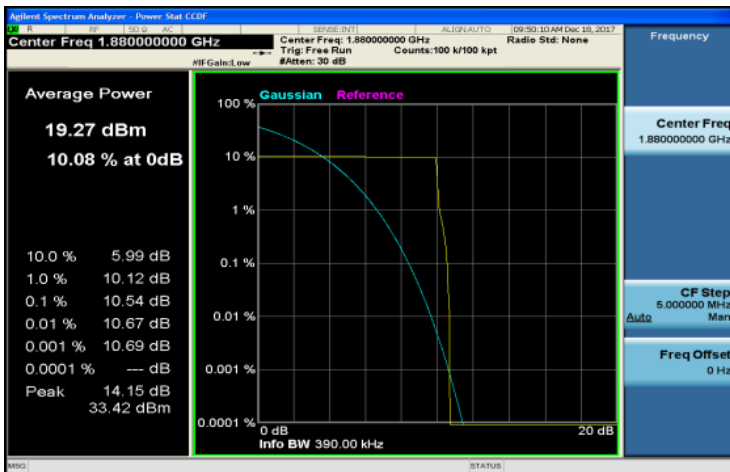
GSM 1900 Channel Low



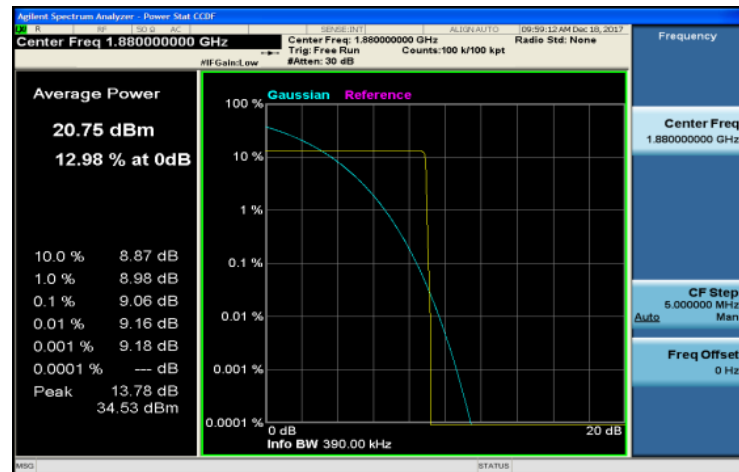
GPRS 1900 Channel Low



GSM 1900 Channel Mid



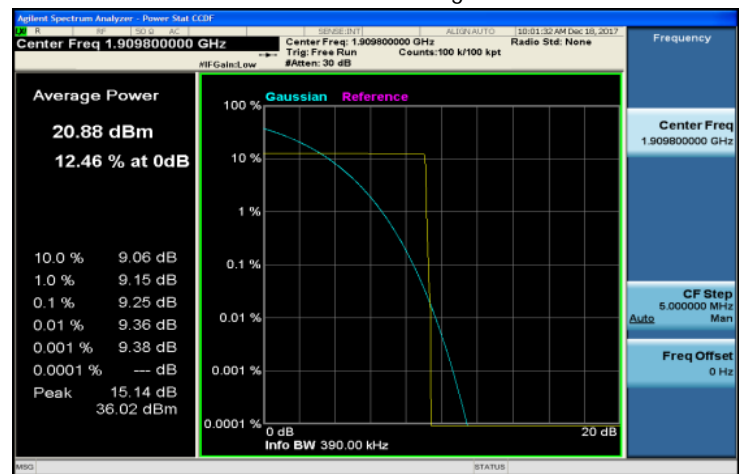
GPRS 1900 Channel Mid



GSM 1900 Channel High



GPRS 1900 Channel High

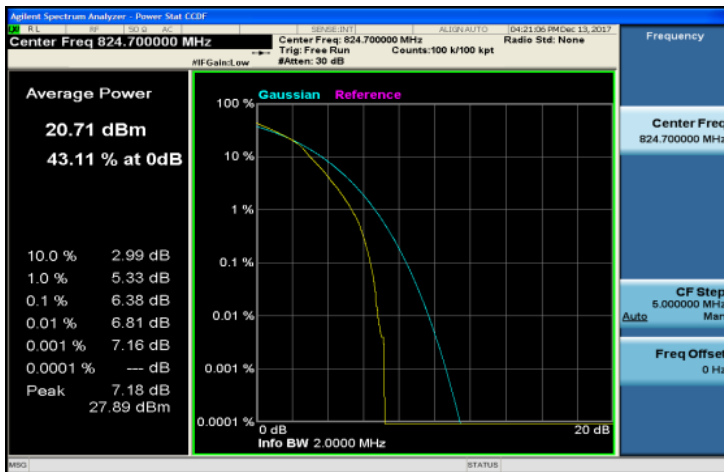


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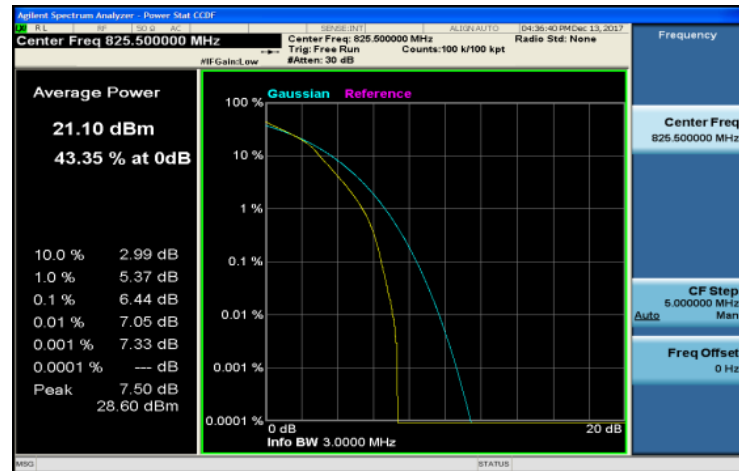
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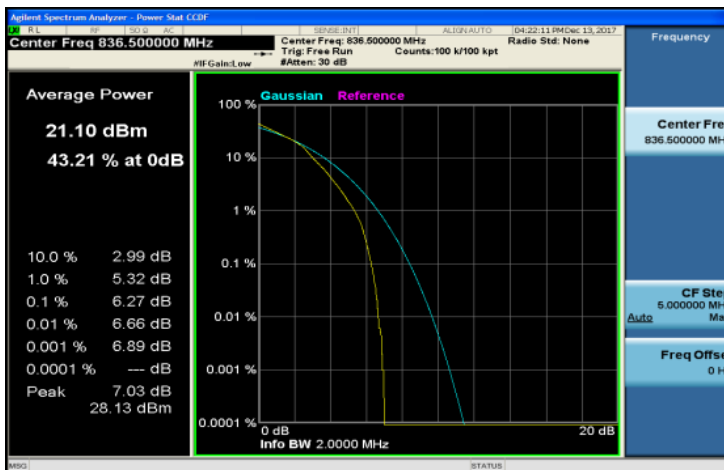
LTE_Band5_1_4MHz_16QAM_6_0_Channel Low



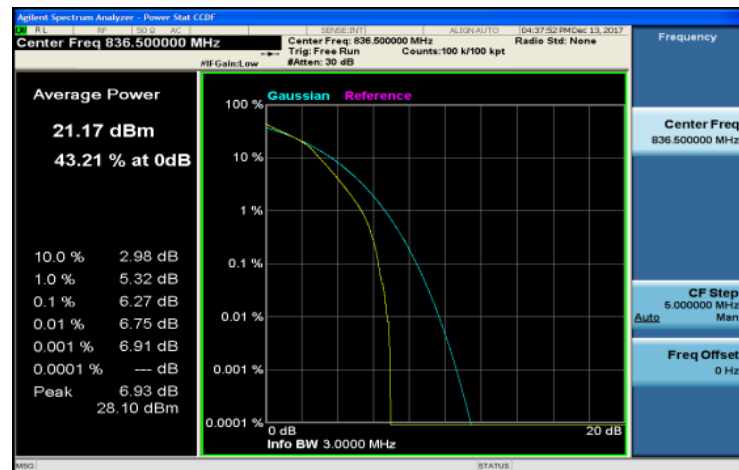
LTE_Band5_3MHz_16QAM_15_0_Channel Low



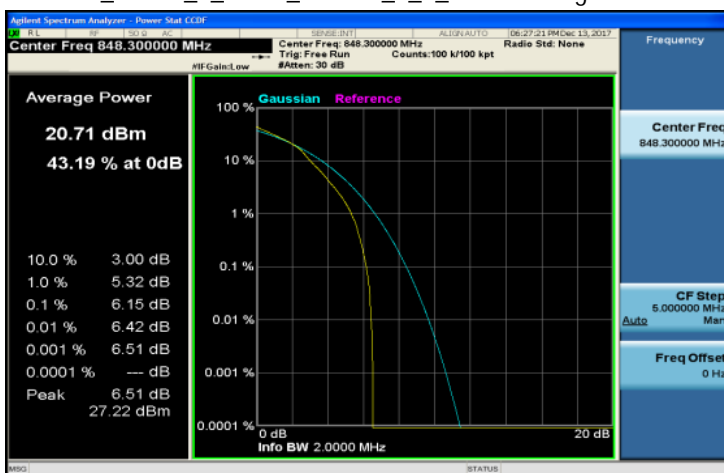
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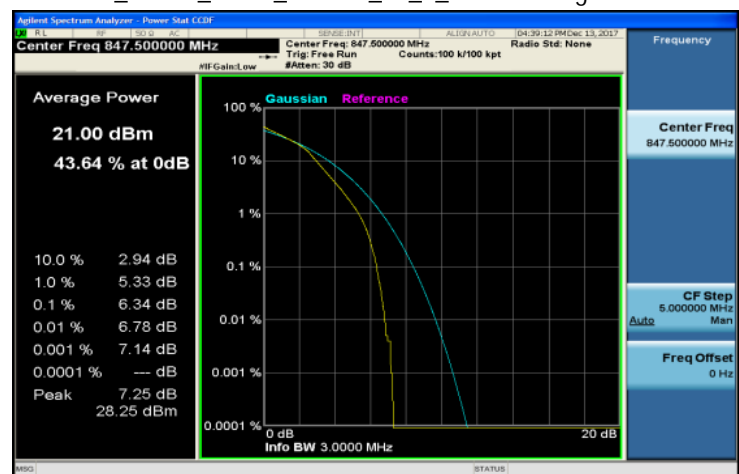
LTE_Band5_3MHz_16QAM_15_0_Channel Mid



LTE_Band5_1_4MHz_16QAM_6_0_Channel High



LTE_Band5_3MHz_16QAM_15_0_Channel High

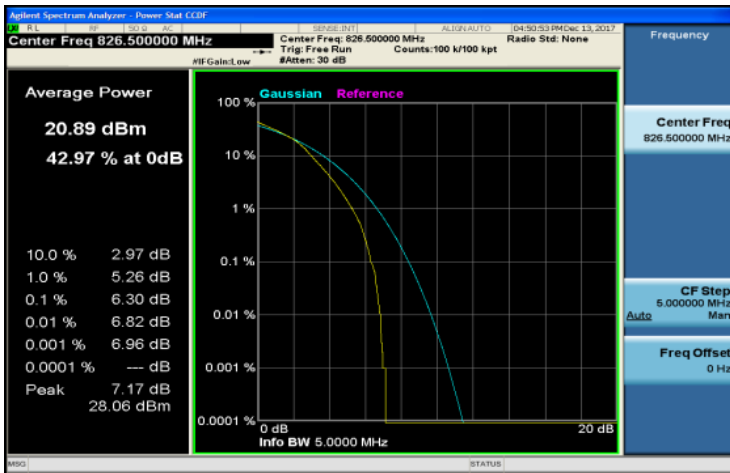


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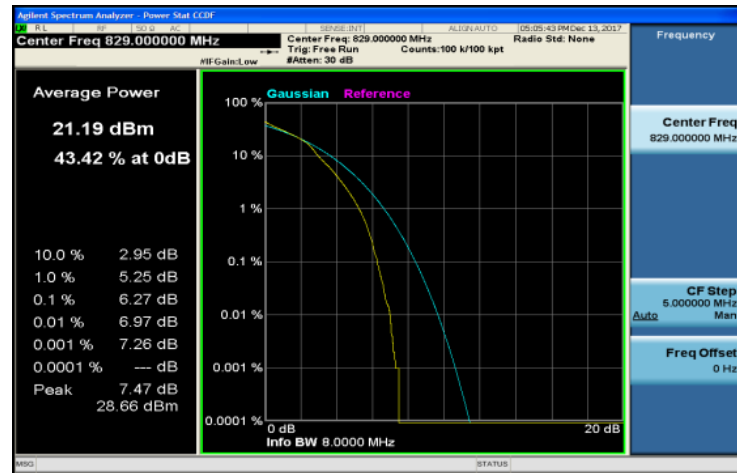
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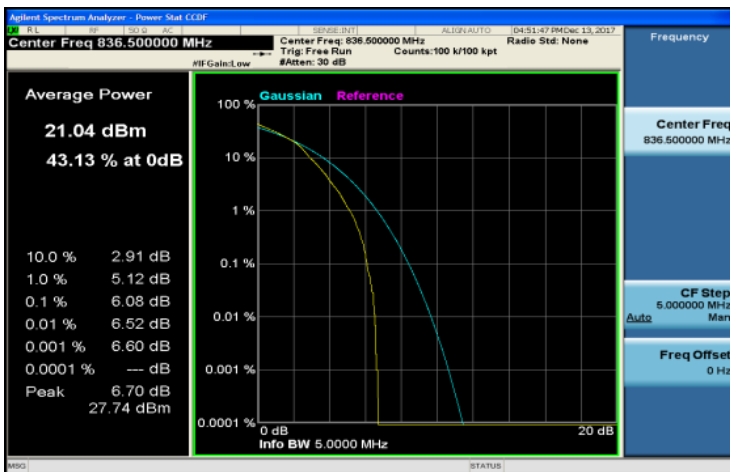
LTE_Band5_5MHz_16QAM_25_0_Channel Low



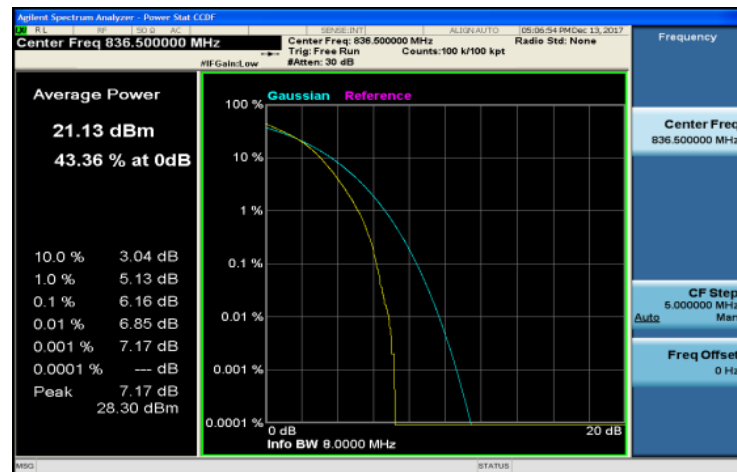
LTE_Band5_10MHz_16QAM_50_0_Channel Low



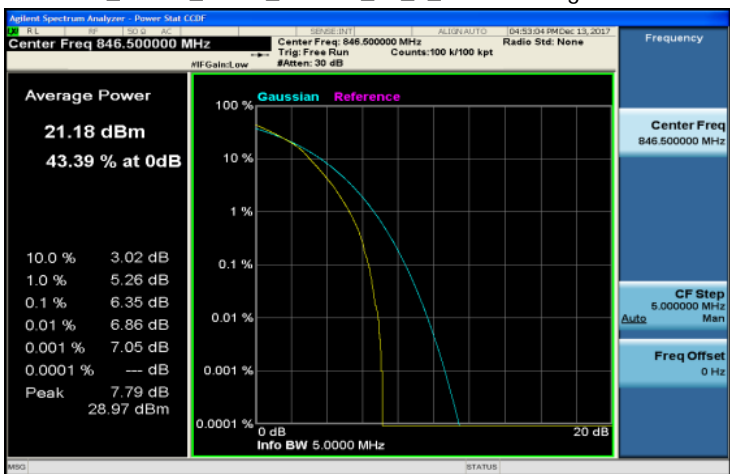
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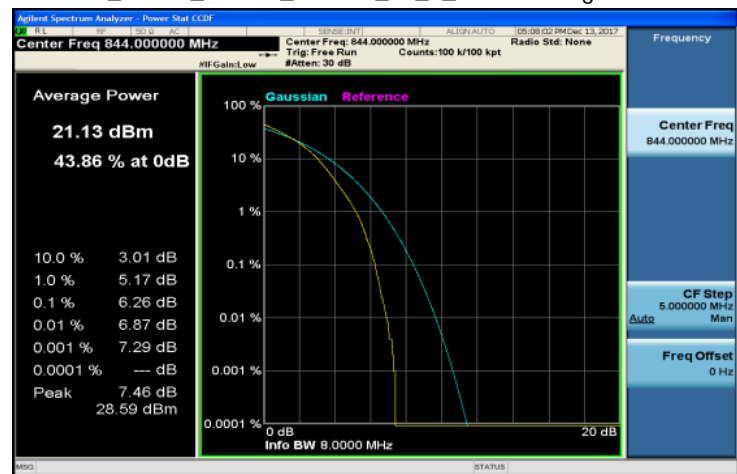
LTE_Band5_10MHz_16QAM_50_0_Channel Mid



LTE_Band5_5MHz_16QAM_25_0_Channel High



LTE_Band5_10MHz_16QAM_50_0_Channel High

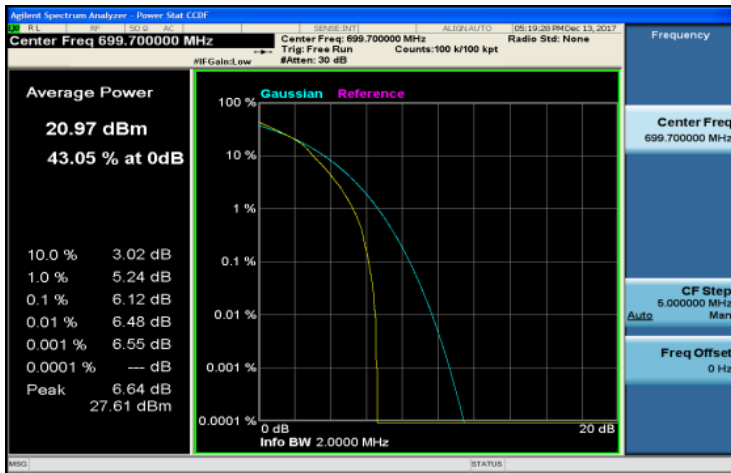


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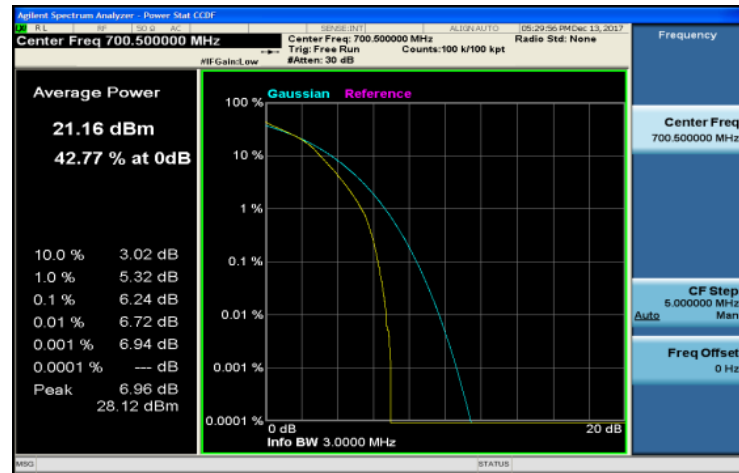
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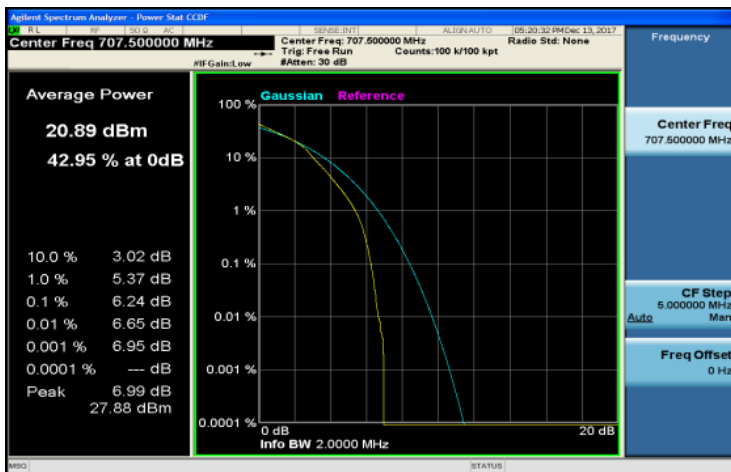
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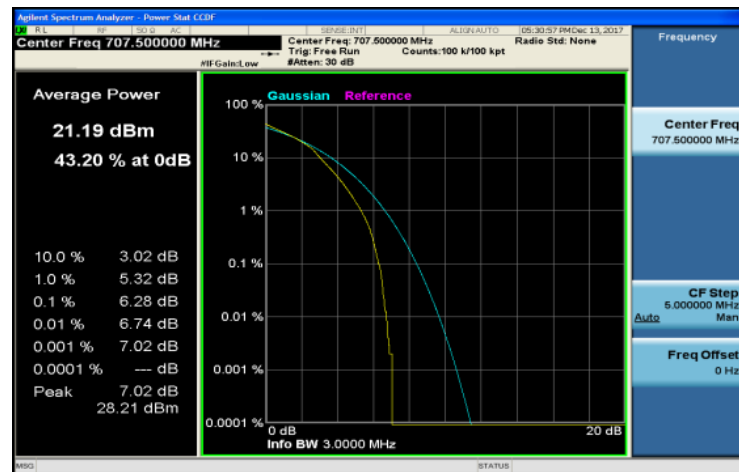
LTE_Band12_3MHz_16QAM_15_0_Channel Low



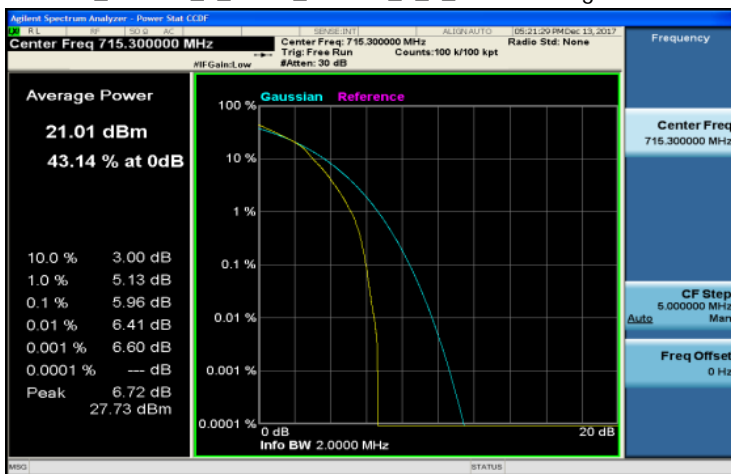
LTE_Band12_1_4MHz_16QAM_6_0_Channel Mid



LTE_Band12_3MHz_16QAM_15_0_Channel Mid



LTE_Band12_1_4MHz_16QAM_6_0_Channel High



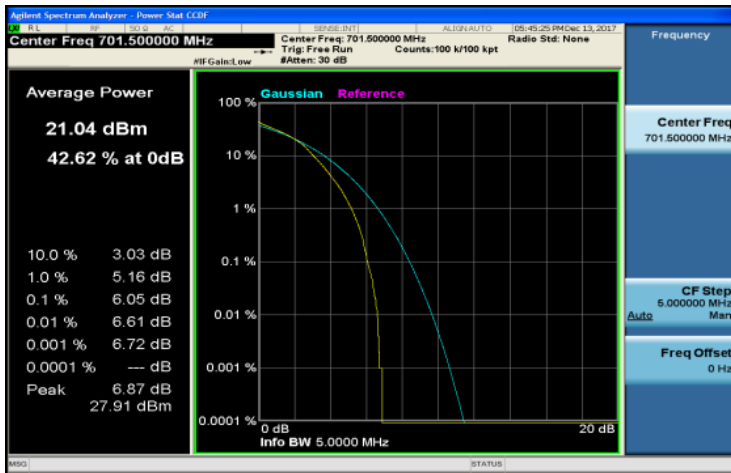
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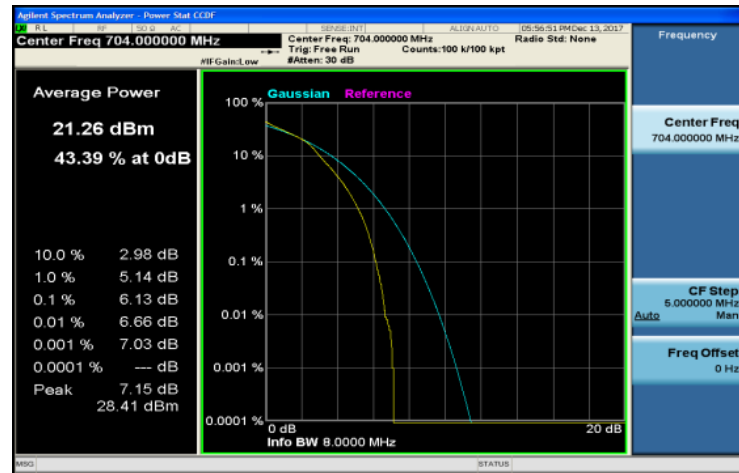
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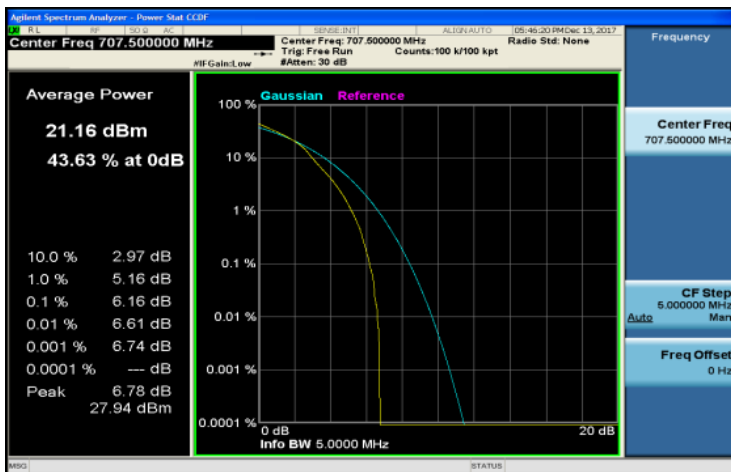
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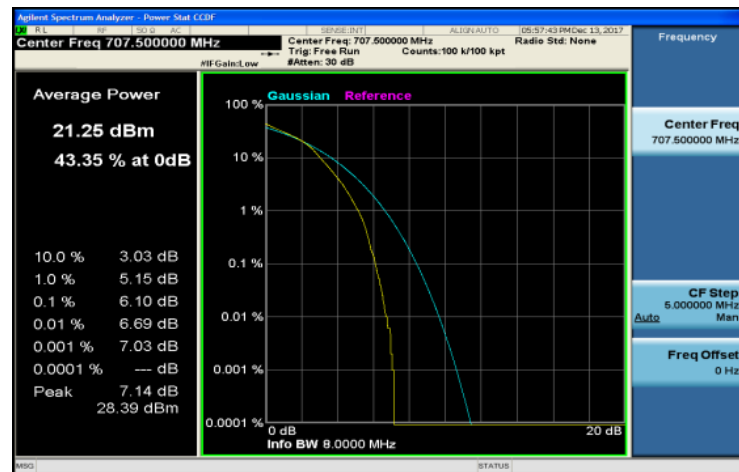
LTE_Band12_10MHz_16QAM_50_0_Channel Low



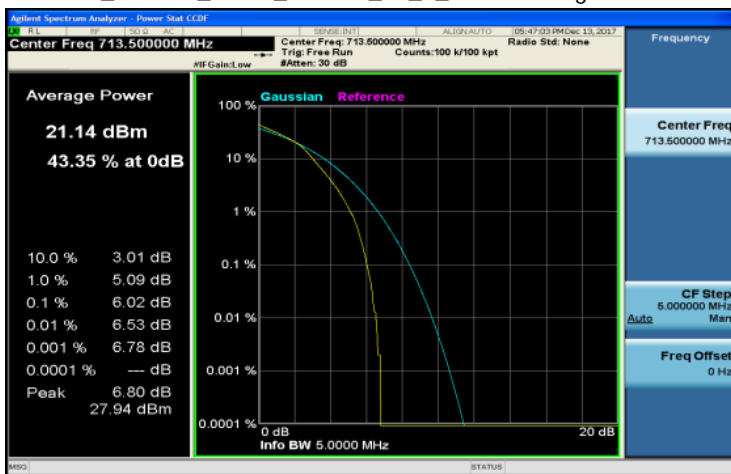
LTE_Band12_5MHz_16QAM_25_0_Channel Mid



LTE_Band12_10MHz_16QAM_50_0_Channel Mid



LTE_Band12_5MHz_16QAM_25_0_Channel High



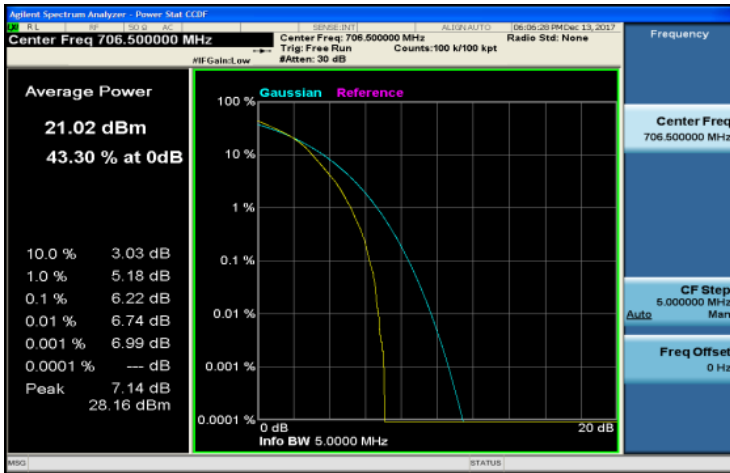
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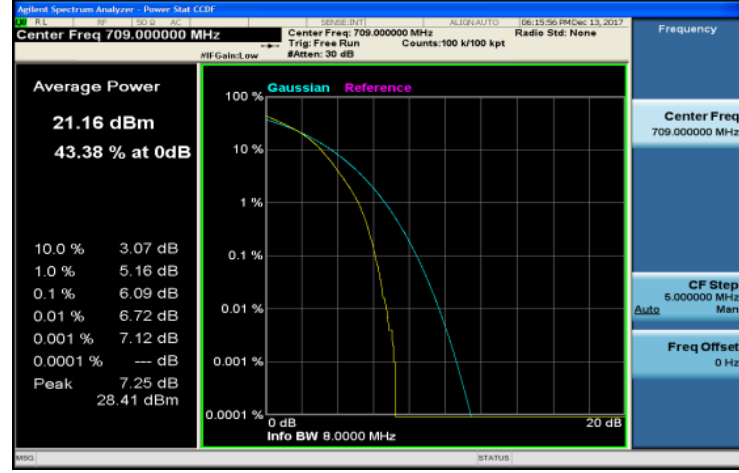
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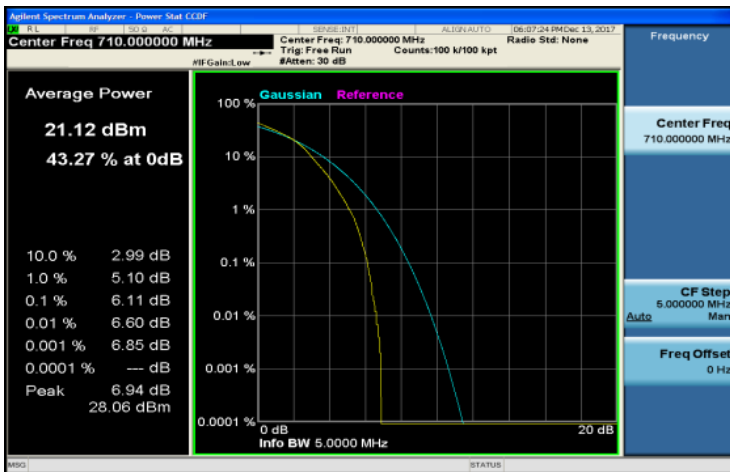
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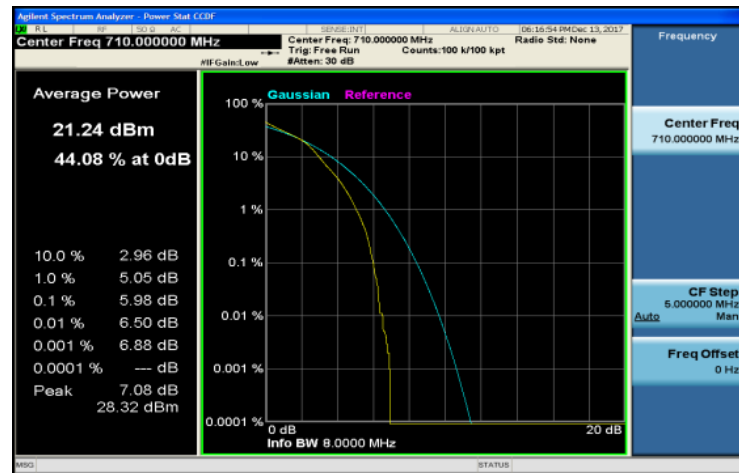
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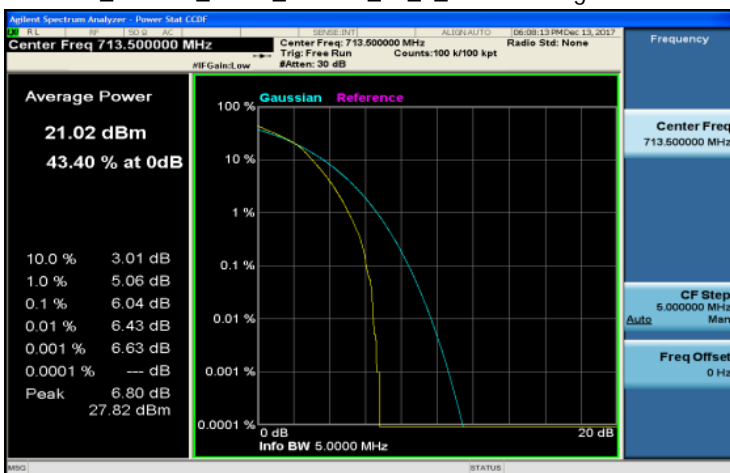
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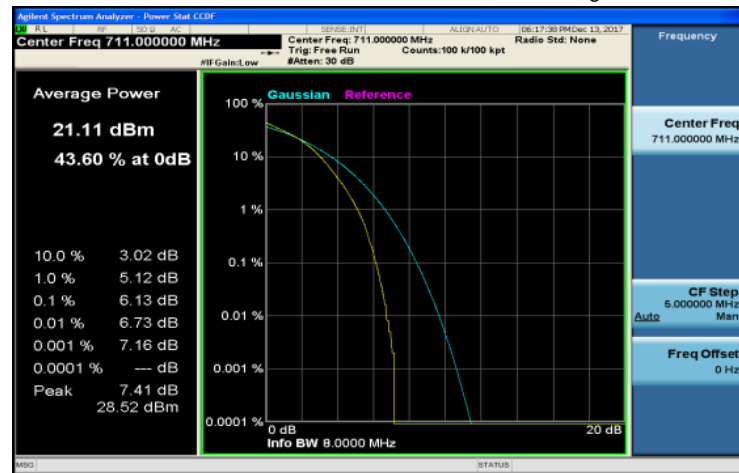
LTE_Band17_10MHz_16QAM_50_0_Channel Mid



LTE_Band17_5MHz_16QAM_25_0_Channel High



LTE_Band17_10MHz_16QAM_50_0_Channel High



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