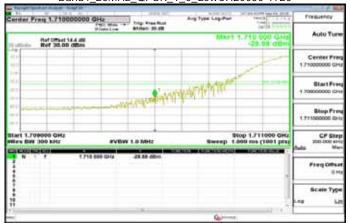


Auto Tu



Band4_20MHz_QPSK_1_0_LowCH20050-1720

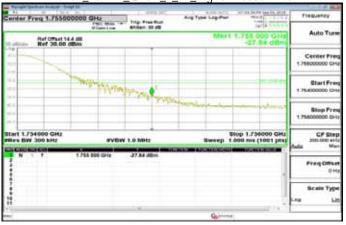


Ref 30.00 dBm Center Fr Start Fre

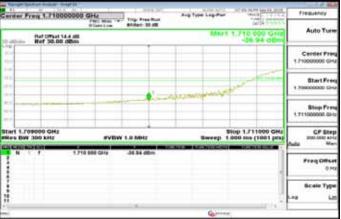
Band4_20MHz_QPSK_100_0_HighCH20300-1745

CF Str

Band4_20MHz_QPSK_1_99_HighCH20300-1745



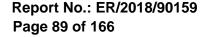
Band4 20MHz QPSK 100 0 LowCH20050-1720



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Out of Band Emission

30MHz~3GHz_GSM_1900MHz_LowCH512-1850.2



3GHz~10GHz_GSM_1900MHz_LowCH512-1850.2



30MHz~3GHz GSM 1900MHz MidCH661-1880



3GHz~10GHz_GSM_1900MHz_MidCH661-1880



30MHz~3GHz_GSM_1900MHz_HighCH810-1909.8



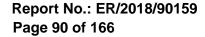
3GHz~10GHz GSM 1900MHz HighCH810-1909.8



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30MHz~3GHz_GPRS_1900MHz_LowCH512-1850.2



3GHz~10GHz_GPRS_1900MHz_LowCH512-1850.2



30MHz~3GHz GPRS 1900MHz MidCH661-1880



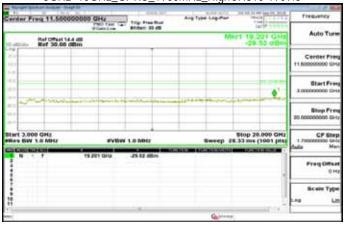
3GHz~10GHz_GPRS_1900MHz_MidCH661-1880



30MHz~3GHz_GPRS_1900MHz_HighCH810-1909.8



3GHz~10GHz GPRS 1900MHz HighCH810-1909.8



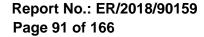
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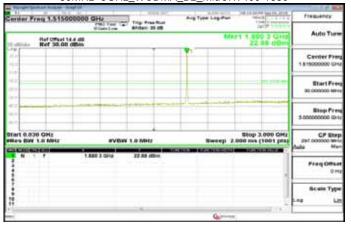
30MHz~3GHz_WCDMA_B2_LowCH9262-1852.4



3GHz~10GHz_WCDMA_B2_LowCH9262-1852.4



30MHz~3GHz WCDMA B2 MidCH9400-1880



3GHz~10GHz_WCDMA_B2_MidCH9400-1880



30MHz~3GHz_WCDMA_B2_HighCH9538-1907.6



3GHz~10GHz WCDMA B2 HighCH9538-1907.6



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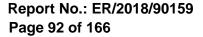
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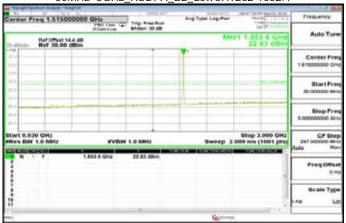
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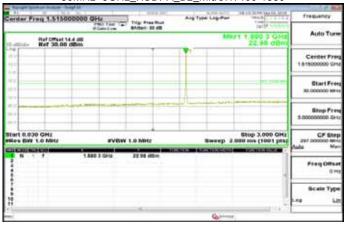
30MHz~3GHz_HSDPA_B2_LowCH9262-1852.4



3GHz~10GHz_HSDPA_B2_LowCH9262-1852.4



30MHz~3GHz HSDPA B2 MidCH9400-1880



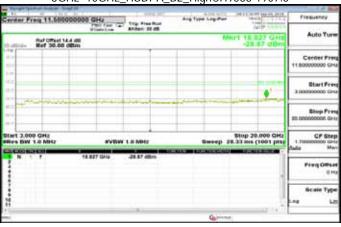
3GHz~10GHz_HSDPA_B2_MidCH9400-1880



30MHz~3GHz_HSDPA_B2_HighCH9538-1907.6



3GHz~10GHz HSDPA B2 HighCH9538-1907.6



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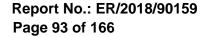
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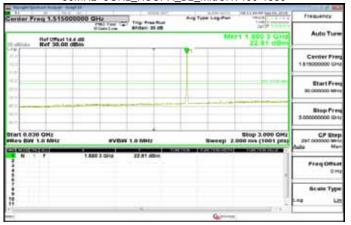
30MHz~3GHz_HSUPA_B2_LowCH9262-1852.4



3GHz~10GHz_HSUPA_B2_LowCH9262-1852.4



30MHz~3GHz HSUPA B2 MidCH9400-1880



3GHz~10GHz_HSUPA_B2_MidCH9400-1880



30MHz~3GHz_HSUPA_B2_HighCH9538-1907.6



3GHz~10GHz HSUPA B2 HighCH9538-1907.6

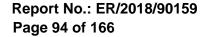


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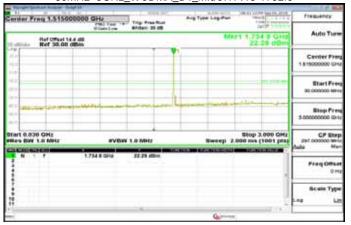
30MHz~3GHz_WCDMA_B4_LowCH1312-1712.4



3GHz~10GHz_WCDMA_B4_LowCH1312-1712.4



30MHz~3GHz WCDMA B4 MidCH1413-1732.6



3GHz~10GHz_WCDMA_B4_MidCH1413-1732.6



30MHz~3GHz_WCDMA_B4_HighCH1513-1752.6



3GHz~10GHz WCDMA B4 HighCH1513-1752.6

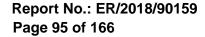


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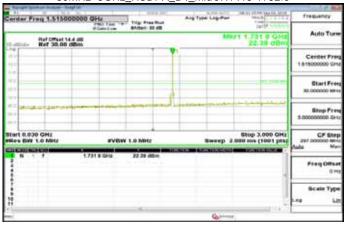
30MHz~3GHz_HSDPA_B4_LowCH1312-1712.4



3GHz~10GHz_HSDPA_B4_LowCH1312-1712.4



30MHz~3GHz HSDPA B4 MidCH1413-1732.6



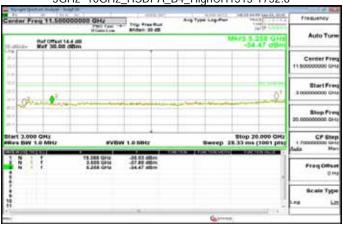
3GHz~10GHz_HSDPA_B4_MidCH1413-1732.6



30MHz~3GHz_HSDPA_B4_HighCH1513-1752.6



3GHz~10GHz HSDPA B4 HighCH1513-1752.6

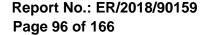


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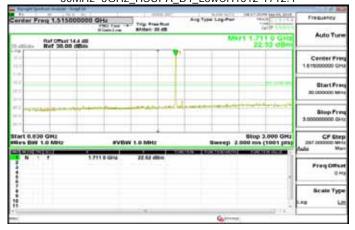
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30MHz~3GHz_HSUPA_B4_LowCH1312-1712.4



3GHz~10GHz_HSUPA_B4_LowCH1312-1712.4



30MHz~3GHz HSUPA B4 MidCH1413-1732.6



3GHz~10GHz_HSUPA_B4_MidCH1413-1732.6



30MHz~3GHz_HSUPA_B4_HighCH1513-1752.6



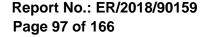
3GHz~10GHz HSUPA B4 HighCH1513-1752.6



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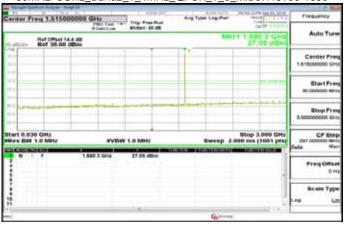
30MHz~3GHz_Band2_1_4MHz_QPSK_1_0_LowCH18607-1850.7



3GHz~10GHz_Band2_1_4MHz_QPSK_1_0_LowCH18607-1850.7



30MHz~3GHz Band2 1 4MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_1_4MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_1_4MHz_QPSK_1_0_HighCH19193-1909.3



3GHz~10GHz Band2 1 4MHz QPSK 1 0 HighCH19193-1909.3



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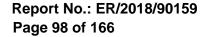
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30MHz~3GHz_Band2_3MHz_QPSK_1_0_LowCH18615-1851.5



3GHz~10GHz_Band2_3MHz_QPSK_1_0_LowCH18615-1851.5



30MHz~3GHz Band2 3MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_3MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_3MHz_QPSK_1_0_HighCH19185-1908.5



3GHz~10GHz Band2 3MHz QPSK 1 0 HighCH19185-1908.5



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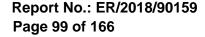
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30MHz~3GHz_Band2_5MHz_QPSK_1_0_LowCH18625-1852.5



3GHz~10GHz_Band2_5MHz_QPSK_1_0_LowCH18625-1852.5



30MHz~3GHz Band2 5MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_5MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_5MHz_QPSK_1_0_HighCH19175-1907.5



3GHz~10GHz Band2 5MHz QPSK 1 0 HighCH19175-1907.5



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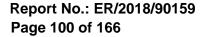
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30MHz~3GHz_Band2_10MHz_QPSK_1_0_LowCH18650-1855



3GHz~10GHz_Band2_10MHz_QPSK_1_0_LowCH18650-1855



30MHz~3GHz Band2 10MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_10MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_10MHz_QPSK_1_0_HighCH19150-1905



3GHz~10GHz Band2 10MHz QPSK 1 0 HighCH19150-1905



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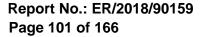
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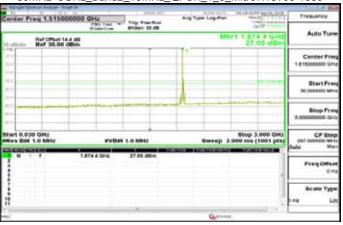
30MHz~3GHz_Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



3GHz~10GHz_Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



30MHz~3GHz Band2 15MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_15MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_15MHz_QPSK_1_0_HighCH19125-1902.5



3GHz~10GHz Band2 15MHz QPSK 1 0 HighCH19125-1902.5



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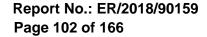
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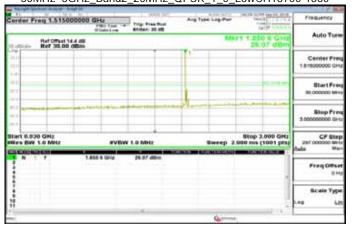
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30MHz~3GHz_Band2_20MHz_QPSK_1_0_LowCH18700-1860



3GHz~10GHz_Band2_20MHz_QPSK_1_0_LowCH18700-1860



30MHz~3GHz Band2 20MHz QPSK 1 0 MidCH18900-1880



3GHz~10GHz_Band2_20MHz_QPSK_1_0_MidCH18900-1880



30MHz~3GHz_Band2_20MHz_QPSK_1_0_HighCH19100-1900



3GHz~10GHz Band2 20MHz QPSK 1 0 HighCH19100-1900



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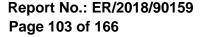
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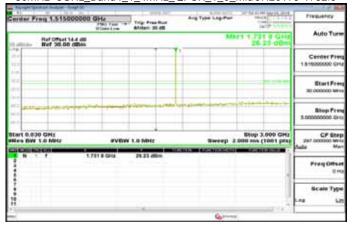
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3GHz~10GHz_Band4_1_4MHz_QPSK_1_0_LowCH19957-1710.7



30MHz~3GHz_Band4_1_4MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_1_4MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_1_4MHz_QPSK_1_0_HighCH20393-1754.3



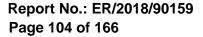
3GHz~10GHz Band4 1 4MHz QPSK 1 0 HighCH20393-1754.3



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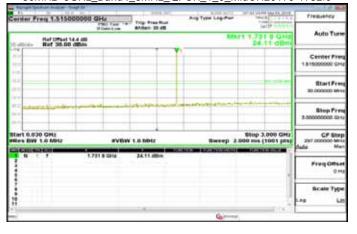
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3GHz~10GHz_Band4_3MHz_QPSK_1_0_LowCH19965-1711.5



30MHz~3GHz Band4 3MHz QPSK 1 0 MidCH20175-1732.5



3GHz~10GHz_Band4_3MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_3MHz_QPSK_1_0_HighCH20385-1753.5



3GHz~10GHz Band4 3MHz QPSK 1 0 HighCH20385-1753.5



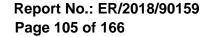
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30MHz~3GHz_Band4_5MHz_QPSK_1_0_LowCH19975-1712.5



3GHz~10GHz_Band4_5MHz_QPSK_1_0_LowCH19975-1712.5



30MHz~3GHz Band4 5MHz QPSK 1 0 MidCH20175-1732.5



3GHz~10GHz_Band4_5MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_5MHz_QPSK_1_0_HighCH20375-1752.5



3GHz~10GHz Band4 5MHz QPSK 1 0 HighCH20375-1752.5



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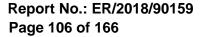
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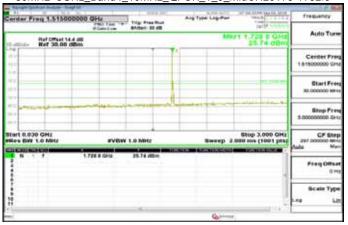
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3GHz~10GHz_Band4_10MHz_QPSK_1_0_LowCH20000-1715



30MHz~3GHz Band4 10MHz QPSK 1 0 MidCH20175-1732.5



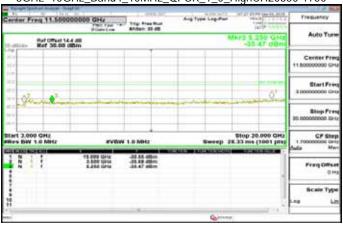
3GHz~10GHz_Band4_10MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_10MHz_QPSK_1_0_HighCH20350-1750



3GHz~10GHz Band4 10MHz QPSK 1 0 HighCH20350-1750



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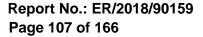
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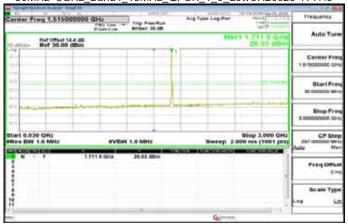
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30MHz~3GHz_Band4_15MHz_QPSK_1_0_LowCH20025-1717.5



3GHz~10GHz_Band4_15MHz_QPSK_1_0_LowCH20025-1717.5



30MHz~3GHz Band4 15MHz QPSK 1 0 MidCH20175-1732.5



3GHz~10GHz_Band4_15MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_15MHz_QPSK_1_0_HighCH20325-1747.5



3GHz~10GHz Band4 15MHz QPSK 1 0 HighCH20325-1747.5



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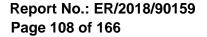
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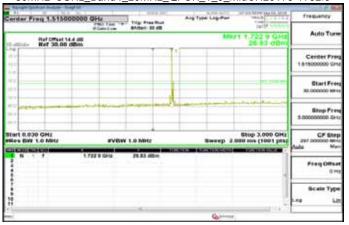
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3GHz~10GHz_Band4_20MHz_QPSK_1_0_LowCH20050-1720



30MHz~3GHz Band4 20MHz QPSK 1 0 MidCH20175-1732.5



3GHz~10GHz_Band4_20MHz_QPSK_1_0_MidCH20175-1732.5



30MHz~3GHz_Band4_20MHz_QPSK_1_0_HighCH20300-1745



3GHz~10GHz Band4 20MHz QPSK 1 0 HighCH20300-1745



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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), 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(q)

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 that 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	$43 + 10 \log_{10}(p)^{\text{Note}}$
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.

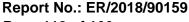
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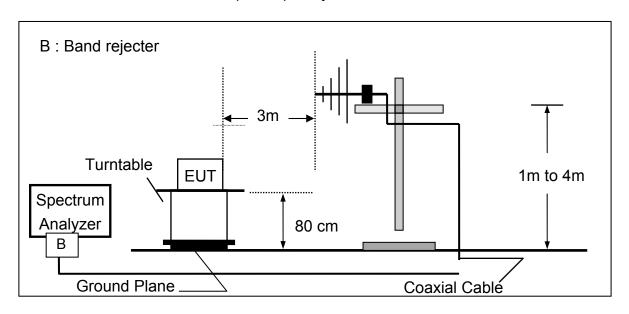




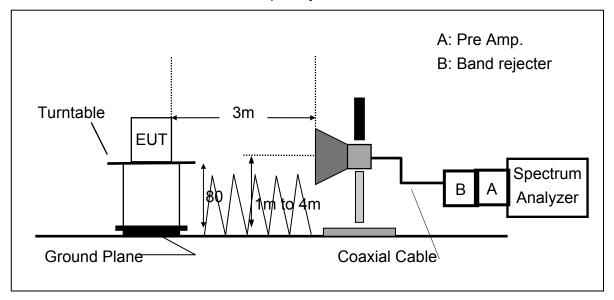
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10.2. EUT Setup

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.

ERP (dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

EIRP (dBm) = SG Level(dBm) + Antenna Gain(dBi) + Cable Loss(dB)

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency. Note:

"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
Horn Antenna	Schwarzbeck	BBHA9120D	1441	2018/08/16	2019/08/15
Horn Antenna	Schwarzbeck	BBHA9170	184	2017/12/12	2018/12/11
Loop Antenna	ETS.LINDGREN	6502	148045	2017/09/26	2018/09/25
3m Site NSA	SGS	966 chamber	N/A	2018/01/02	2019/01/01
Spectrum Analyzer	Agilent	E4446A	MY51100003	2018/05/15	2019/05/14
EMI Test Receiver	R&S	ESCI7	100335	2018/02/02	2019/02/01
Pre-Amplifier	HP	8449B	3008A00578	2018/01/02	2019/01/01
Pre-Amplifier	HP	8447D	2944A07676	2018/01/02	2019/01/01
Pre-Amplifier	EMC Instru- ments	EMC184045B	980135	2017/10/27	2018/10/26
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	2018/01/02	2019/01/01
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966_RX	9	2018/01/02	2019/01/01

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:VERTICAL

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10.5. Measurement Result:

EUT Pol.

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

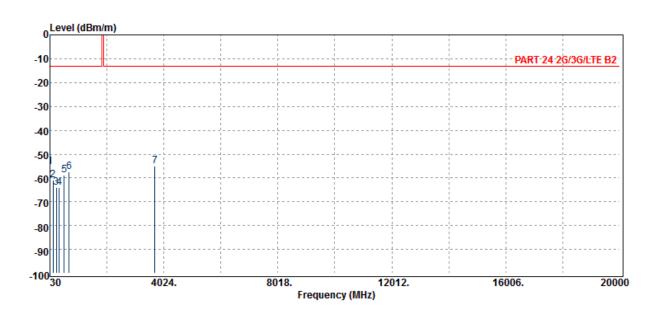
:H Plane

Operation Band :GPRS 1900 Temp./Humi. :22 deg C / 61 RH

Measurement Antenna Pol.

Fundamental Frequency Engineer :1850.2 MHz :Tin

:Tx CH LOW **Operation Mode**



Freq.	ERP/EIRP	SG Output Lovel	Antenna	Cable	Limit	Margin
N 41 1-	dD.ma	Output Level	Gain	Loss	dD ma	٩D
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-55.37	-42.36	-12.43	-0.58	-13.00	-42.37
140.58	-61.03	-59.64	-0.12	-1.26	-13.00	-48.03
248.25	-63.89	-67.87	5.67	-1.69	-13.00	-50.89
359.80	-64.00	-67.92	5.98	-2.06	-13.00	-51.00
534.40	-58.92	-62.89	6.15	-2.19	-13.00	-45.92
696.39	-57.61	-60.99	5.84	-2.46	-13.00	-44.61
3700.40	-54.87	-60.52	12.57	-6.91	-13.00	-41.87

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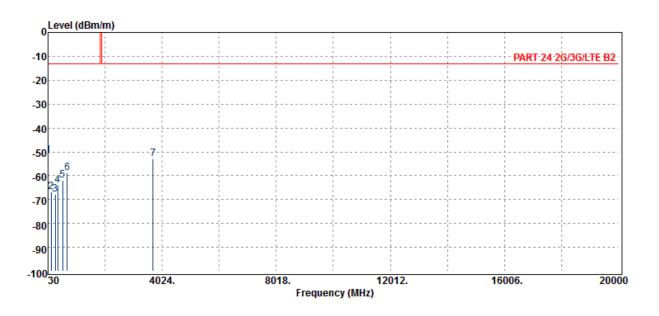
Operation Band :GPRS 1900 Fundamental Frequency :1850.2 MHz

Operation Mode :Tx CH LOW EUT Pol. :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		_
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-51.56	-38.55	-12.43	-0.58	-13.00	-38.56
138.64	-66.94	-65.57	-0.11	-1.25	-13.00	-53.94
287.05	-67.80	-71.60	5.57	-1.77	-13.00	-54.80
367.56	-64.16	-68.04	5.95	-2.06	-13.00	-51.16
542.16	-61.92	-66.19	6.14	-1.87	-13.00	-48.92
696.39	-58.98	-62.35	5.84	-2.46	-13.00	-45.98
3700.40	-52.83	-58.48	12.57	-6.91	-13.00	-39.83

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Operation Band Fundamental Frequency **Operation Mode**

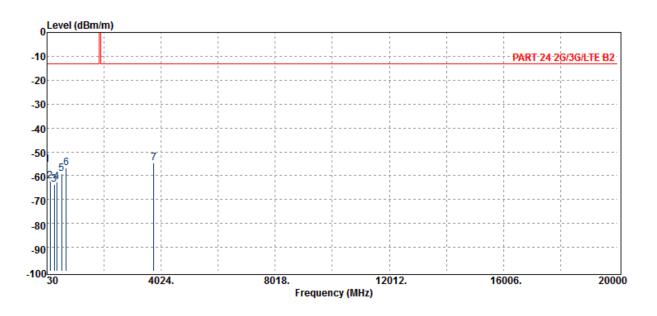
EUT Pol.

:GPRS 1900 :1880 MHz :Tx CH MID :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-55.42	-42.41	-12.43	-0.58	-13.00	-42.42
144.46	-62.44	-61.22	0.07	-1.28	-13.00	-49.44
277.35	-63.50	-67.35	5.59	-1.74	-13.00	-50.50
362.71	-62.65	-66.56	5.97	-2.07	-13.00	-49.65
536.34	-59.02	-63.06	6.15	-2.11	-13.00	-46.02
697.36	-56.73	-60.18	5.83	-2.38	-13.00	-43.73
3760.00	-54.58	-60.31	12.61	-6.89	-13.00	-41.58

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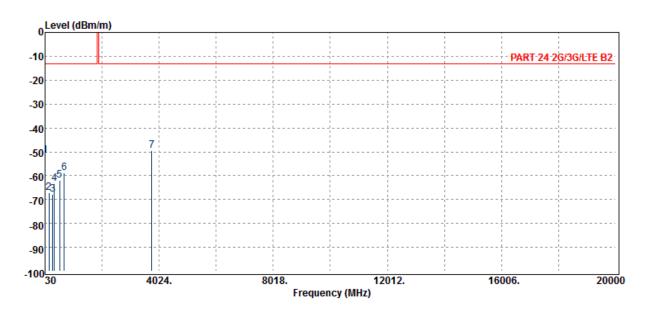
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:GPRS 1900 :1880 MHz :Tx CH MID :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-51.47	-38.46	-12.43	-0.58	-13.00	-38.47
165.80	-67.21	-67.17	1.27	-1.31	-13.00	-54.21
291.90	-67.87	-71.69	5.61	-1.79	-13.00	-54.87
352.04	-63.40	-67.36	6.00	-2.03	-13.00	-50.40
537.31	-61.95	-66.03	6.15	-2.07	-13.00	-48.95
700.27	-58.76	-62.42	5.82	-2.16	-13.00	-45.76
3760.00	-49.36	-55.09	12.61	-6.89	-13.00	-36.36

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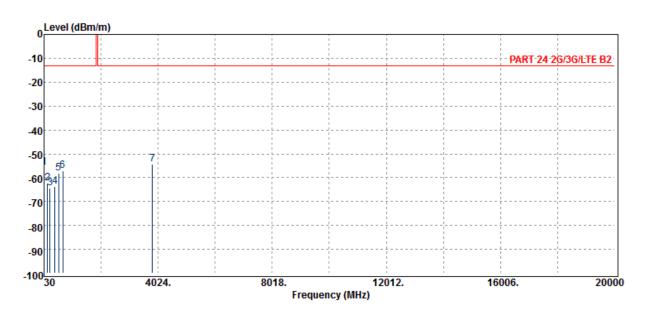
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:GPRS 1900 :1909.8 MHz :Tx CH HIGH :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
B 41 1	ID.	Output Level	Gain	Loss	ID.	ID
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-55.59	-43.06	-11.93	-0.59	-13.00	-42.59
146.40	-62.35	-61.23	0.17	-1.29	-13.00	-49.35
246.31	-64.27	-68.24	5.66	-1.69	-13.00	-51.27
415.09	-63.71	-67.40	5.81	-2.12	-13.00	-50.71
548.95	-58.18	-62.34	6.13	-1.97	-13.00	-45.18
681.84	-56.99	-59.75	5.88	-3.12	-13.00	-43.99
3819.60	-54.43	-60.07	12.66	-7.02	-13.00	-41.43

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EUT Pol.

Report No.: ER/2018/90159

:22 deg_C / 61 RH

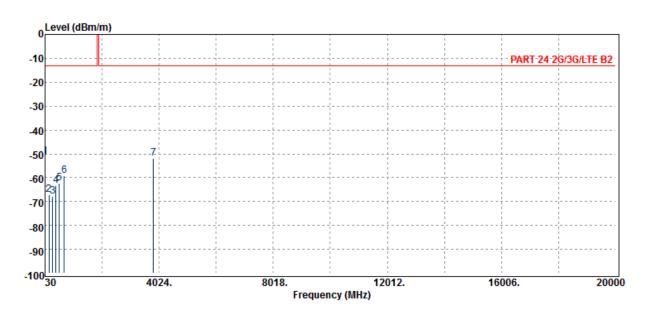
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Operation Band :GPRS 1900 Fundamental Frequency :1909.8 MHz **Operation Mode** :Tx CH HIGH

Engineer

:H Plane Measurement Antenna Pol. :HORIZONTAL

Temp./Humi.



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-51.33	-38.32	-12.43	-0.58	-13.00	-38.33
165.80	-67.05	-67.02	1.27	-1.31	-13.00	-54.05
299.66	-67.65	-71.59	5.76	-1.82	-13.00	-54.65
408.30	-63.27	-66.96	5.83	-2.14	-13.00	-50.27
534.40	-62.30	-66.26	6.15	-2.19	-13.00	-49.30
700.27	-59.04	-62.70	5.82	-2.16	-13.00	-46.04
3819.60	-51.94	-57.58	12.66	-7.02	-13.00	-38.94

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Operation Mode

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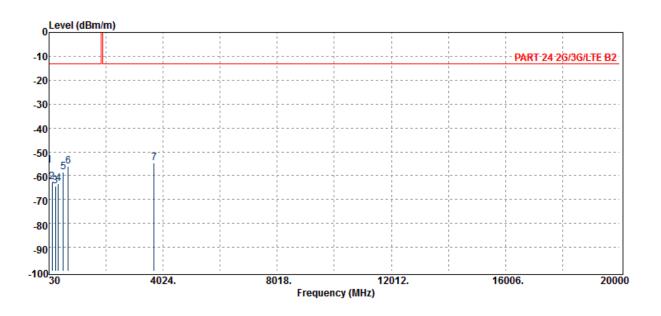
Radiated Spurious Emission Measurement Result: HSDPA Band 2 Mode

:Tx CH LOW

Operation Band :HSDPA B2 Temp./Humi. :22 deg_C / 61 RH

Fundamental Frequency :1852.4 MHz Engineer :Tin

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
•		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-55.83	-43.31	-11.93	-0.59	-13.00	-42.83
138.64	-62.77	-61.40	-0.11	-1.25	-13.00	-49.77
257.95	-64.41	-68.50	5.79	-1.70	-13.00	-51.41
357.86	-63.24	-67.17	5.98	-2.05	-13.00	-50.24
529.55	-58.60	-62.37	6.16	-2.39	-13.00	-45.60
699.30	-56.14	-59.73	5.83	-2.24	-13.00	-43.14
3704.80	-54.69	-60.36	12.57	-6.90	-13.00	-41.69

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EUT Pol.

Report No.: ER/2018/90159

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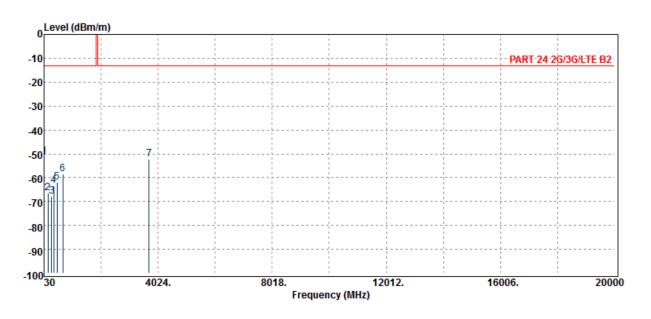
Operation Band :HSDPA B2 Fundamental Frequency :1852.4 MHz **Operation Mode** :Tx CH LOW

:H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
B 41 1	ID	Output Level	Gain	Loss	ID	ID.
MHz	dBm	dBm	dBd/dBi	dB	dBm	<u>dB</u>
31.94	-51.08	-38.55	-11.93	-0.59	-13.00	-38.08
162.89	-66.29	-66.07	1.09	-1.31	-13.00	-53.29
294.81	-67.83	-71.69	5.67	-1.80	-13.00	-54.83
371.44	-63.46	-67.35	5.94	-2.05	-13.00	-50.46
482.99	-61.93	-66.07	6.03	-1.89	-13.00	-48.93
694.45	-58.43	-61.66	5.84	-2.61	-13.00	-45.43
3704.80	-52.33	-57.99	12.57	-6.90	-13.00	-39.33

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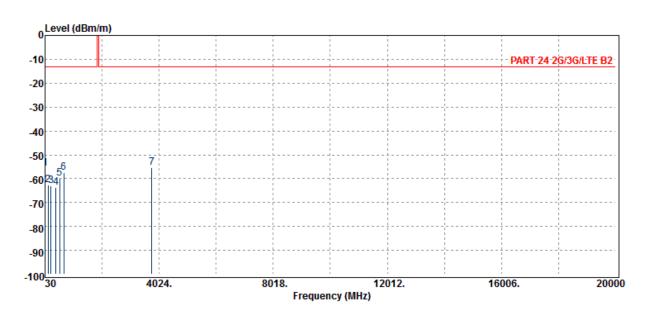


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Operation Band :HSDPA B2 Temp./Humi. :22 deg_C / 61 RH

Fundamental Frequency :1880 MHz Engineer **Operation Mode** :Tx CH MID

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	<u>dB</u>
30.00	-55.60	-42.59	-12.43	-0.58	-13.00	-42.60
136.70	-62.79	-61.51	-0.04	-1.24	-13.00	-49.79
240.49	-63.06	-67.02	5.63	-1.67	-13.00	-50.06
410.24	-63.81	-67.50	5.83	-2.13	-13.00	-50.81
544.10	-59.73	-64.08	6.14	-1.79	-13.00	-46.73
689.60	-57.31	-60.18	5.86	-2.98	-13.00	-44.31
3760.00	-55.22	-60.95	12.61	-6.89	-13.00	-42.22

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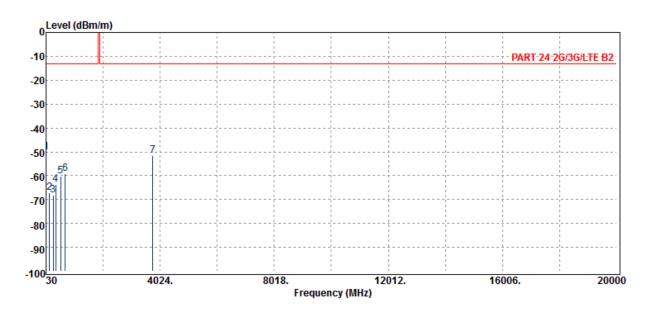
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Operation Band :HSDPA B2 Fundamental Frequency :1880 MHz **Operation Mode** :Tx CH MID EUT Pol. :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-50.22	-37.21	-12.43	-0.58	-13.00	-37.22
146.40	-67.22	-66.11	0.17	-1.29	-13.00	-54.22
288.99	-68.05	-71.84	5.57	-1.78	-13.00	-55.05
366.59	-63.61	-67.50	5.96	-2.07	-13.00	-50.61
536.34	-60.33	-64.38	6.15	-2.11	-13.00	-47.33
697.36	-59.00	-62.45	5.83	-2.38	-13.00	-46.00
3760.00	-51.48	-57.21	12.61	-6.89	-13.00	-38.48

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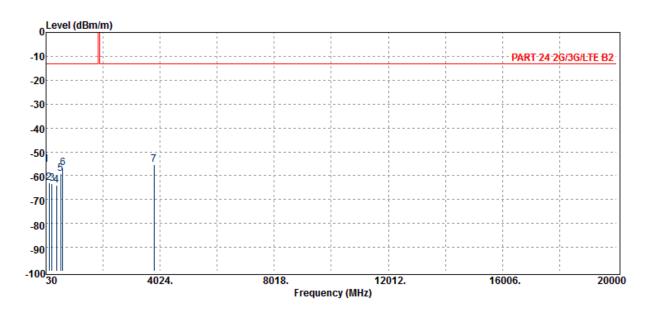
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Operation Band :HSDPA B2 Fundamental Frequency :1907.6 MHz :Tx CH HIGH

Operation Mode EUT Pol. :H Plane Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-55.35	-42.83	-11.93	-0.59	-13.00	-42.35
140.58	-62.85	-61.46	-0.12	-1.26	-13.00	-49.85
240.49	-63.35	-67.31	5.63	-1.67	-13.00	-50.35
405.39	-63.98	-67.67	5.84	-2.15	-13.00	-50.98
537.31	-59.00	-63.08	6.15	-2.07	-13.00	-46.00
613.94	-56.79	-60.12	5.77	-2.44	-13.00	-43.79
3815.20	-55.19	-60.84	12.66	-7.00	-13.00	-42.19

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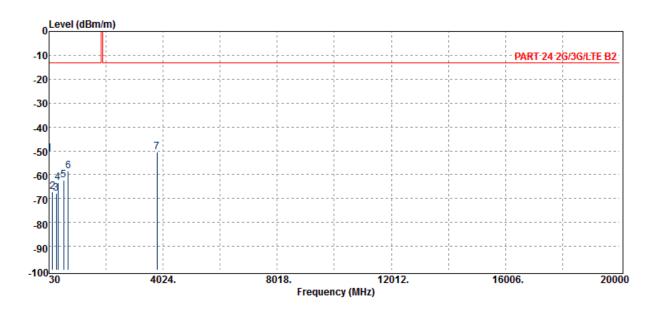
Operation Band :HSDPA B2 Fundamental Frequency

:1907.6 MHz **Operation Mode** :Tx CH HIGH EUT Pol. :H Plane

Temp./Humi. :22 deg_C / 61 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-51.26	-38.25	-12.43	-0.58	-13.00	-38.26
149.31	-67.08	-66.10	0.31	-1.29	-13.00	-54.08
289.96	-67.80	-71.59	5.57	-1.78	-13.00	-54.80
340.40	-63.31	-67.29	5.96	-1.98	-13.00	-50.31
548.95	-62.22	-66.38	6.13	-1.97	-13.00	-49.22
697.36	-58.54	-61.99	5.83	-2.38	-13.00	-45.54
3815.20	-50.67	-56.32	12.66	-7.00	-13.00	-37.67

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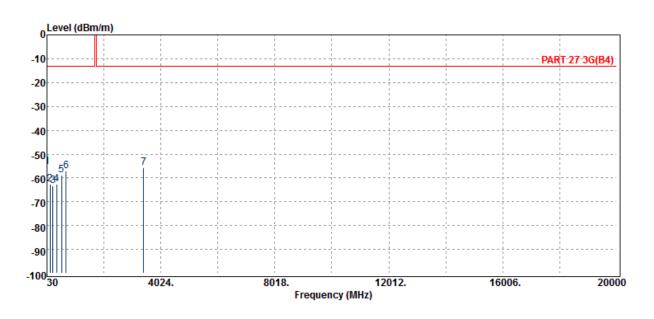
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Radiated Spurious Emission Measurement Result: HSDPA Band 4 (The Worst Case)

Operation Band :HSDPA 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.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-55.21	-42.21	-12.43	-0.58	-13.00	-42.21
138.64	-62.65	-61.29	-0.11	-1.25	-13.00	-49.65
241.46	-63.35	-67.31	5.64	-1.68	-13.00	-50.35
367.56	-62.73	-66.62	5.95	-2.06	-13.00	-49.73
541.19	-58.72	-62.95	6.14	-1.91	-13.00	-45.72
699.30	-57.18	-60.77	5.83	-2.24	-13.00	-44.18
3424.80	-55.81	-61.50	12.23	-6.54	-13.00	-42.81

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Operation Band Fundamental Frequency **Operation Mode**

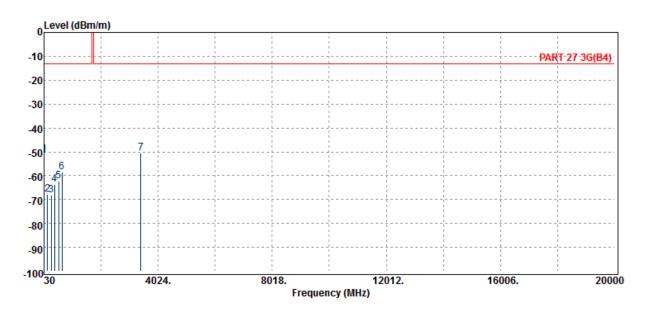
EUT Pol.

:HSDPA B4 :1712.4 MHz :Tx CH LOW :H Plane

Temp./Humi. :22 deg_C / 62 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-51.11	-38.58	-11.93	-0.59	-13.00	-38.11
154.16	-67.75	-67.04	0.58	-1.30	-13.00	-54.75
289.96	-68.19	-71.98	5.57	-1.78	-13.00	-55.19
395.69	-63.67	-67.46	5.88	-2.08	-13.00	-50.67
544.10	-62.29	-66.63	6.14	-1.79	-13.00	-49.29
662.44	-58.38	-62.33	5.94	-2.00	-13.00	-45.38
3424.80	-50.62	-56.31	12.23	-6.54	-13.00	-37.62

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Jurisdiction issues defined interin. Any holder of this addisted in saddised in contained neteron reliefs the Company's inlinings at the time of its intervention only and within the initial contained neteron reliefs the Company is middle at the contained neteron reliefs the Company is not in the contained neteron reliefs to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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Operation Band Fundamental Frequency **Operation Mode**

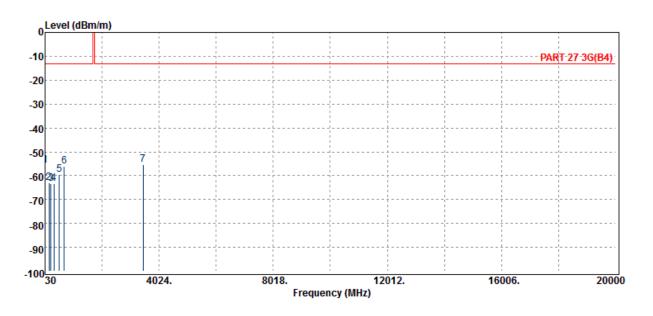
EUT Pol.

:HSDPA B4 :1732.6 MHz :Tx CH MID :H Plane

Temp./Humi. :22 deg_C / 62 RH

Engineer :Tin

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
	I.D.	Output Level	Gain	Loss	ı.D.	15
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-55.57	-43.04	-11.93	-0.59	-13.00	-42.57
168.71	-62.95	-63.07	1.45	-1.33	-13.00	-49.95
239.52	-63.31	-67.27	5.62	-1.67	-13.00	-50.31
337.49	-63.16	-67.15	5.95	-1.96	-13.00	-50.16
534.40	-59.44	-63.41	6.15	-2.19	-13.00	-46.44
697.36	-56.05	-59.49	5.83	-2.38	-13.00	-43.05
3465.20	-55.34	-61.10	12.32	-6.56	-13.00	-42.34

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Operation Band Fundamental Frequency **Operation Mode**

EUT Pol.

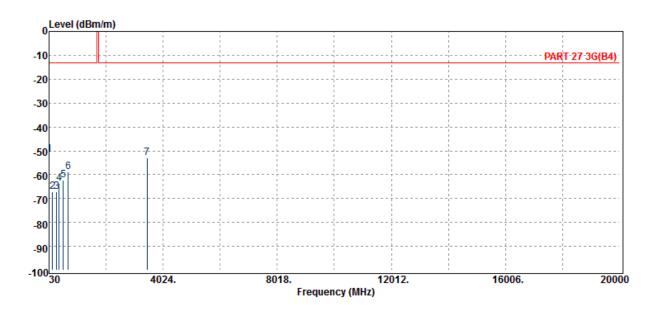
:1732.6 MHz :Tx CH MID :H Plane

:HSDPA B4

Temp./Humi. :22 deg_C / 62 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-51.56	-38.55	-12.43	-0.58	-13.00	-38.56
156.10	-67.12	-66.51	0.69	-1.30	-13.00	-54.12
299.66	-67.11	-71.04	5.76	-1.82	-13.00	-54.11
386.96	-63.56	-67.44	5.90	-2.02	-13.00	-50.56
521.79	-62.25	-65.89	6.17	-2.54	-13.00	-49.25
699.30	-58.90	-62.49	5.83	-2.24	-13.00	-45.90
3465.20	-53.11	-58.87	12.32	-6.56	-13.00	-40.11

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Operation Band Fundamental Frequency

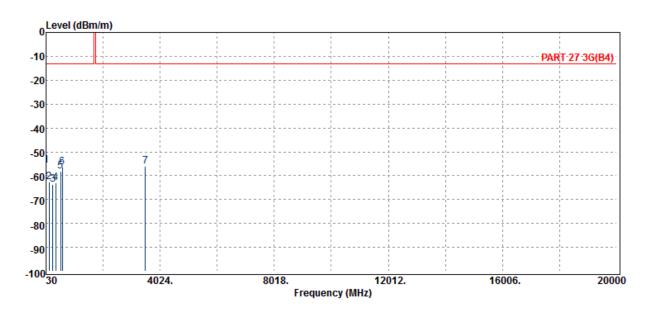
:1752.6 MHz **Operation Mode** :Tx CH HIGH EUT Pol. :H Plane

:HSDPA B4

Temp./Humi. :22 deg_C / 62 RH

Engineer :Tin

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-55.61	-43.09	-11.93	-0.59	-13.00	-42.61
138.64	-62.74	-61.38	-0.11	-1.25	-13.00	-49.74
262.80	-63.65	-67.72	5.77	-1.71	-13.00	-50.65
364.65	-63.12	-67.01	5.96	-2.07	-13.00	-50.12
539.25	-58.21	-62.37	6.15	-1.99	-13.00	-45.21
605.21	-56.30	-59.88	5.72	-2.15	-13.00	-43.30
3505.20	-55.90	-61.64	12.40	-6.66	-13.00	-42.90

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Operation Band :HSDPA B4 Fundamental Frequency **Operation Mode**

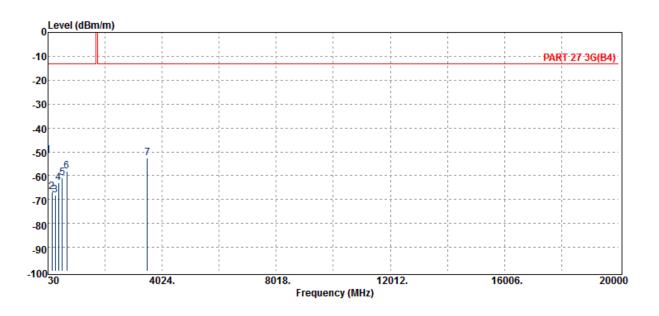
EUT Pol.

:1752.6 MHz :Tx CH HIGH :H Plane

Temp./Humi. :22 deg_C / 62 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-51.40	-38.88	-11.93	-0.59	-13.00	-38.40
165.80	-66.80	-66.77	1.27	-1.31	-13.00	-53.80
284.14	-68.00	-71.82	5.57	-1.76	-13.00	-55.00
405.39	-63.12	-66.81	5.84	-2.15	-13.00	-50.12
529.55	-61.03	-64.80	6.16	-2.39	-13.00	-48.03
691.54	-58.24	-61.25	5.85	-2.83	-13.00	-45.24
3505.20	-52.51	-58.25	12.40	-6.66	-13.00	-39.51

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Operation Mode

Report No.: ER/2018/90159

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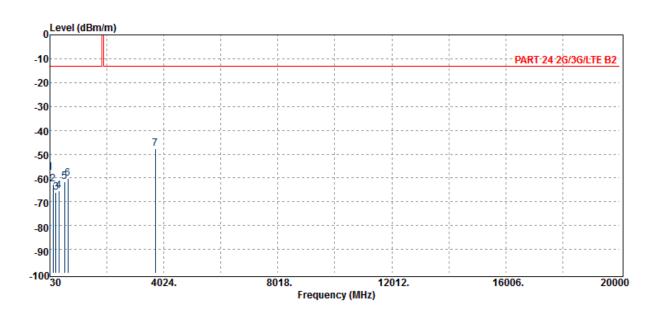
Radiated Spurious Emission Measurement Result: LTE-Band 2 (The Worst Case)

Operation Band Temp./Humi. :LTE B2 :24.1 deg_C / 65 RH

Fundamental Frequency :1860 MHz Engineer :Tin

:Tx CH LOW

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin	
-		Output Level	Gain	Loss		_	
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB	
30.00	-57.83	-42.67	-14.58	-0.58	-13.00	-44.83	
141.55	-62.70	-59.21	-2.22	-1.27	-13.00	-49.70	
241.46	-66.04	-67.85	3.49	-1.68	-13.00	-53.04	
343.31	-65.38	-67.21	3.82	-2.00	-13.00	-52.38	
544.10	-61.65	-63.85	3.99	-1.79	-13.00	-48.65	
662.44	-60.09	-61.89	3.79	-2.00	-13.00	-47.09	
3720.00	-47.66	-53.37	12.58	-6.88	-13.00	-34.66	

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Operation Band :LTE B2 Fundamental Frequency

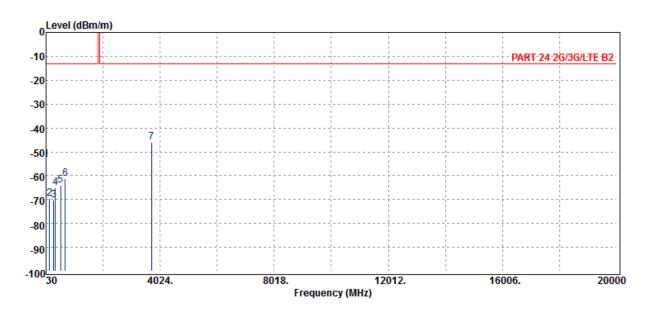
Operation Mode EUT Pol.

:1860 MHz :Tx CH LOW :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-53.25	-38.09	-14.58	-0.58	-13.00	-40.25
149.31	-69.67	-66.54	-1.84	-1.29	-13.00	-56.67
299.66	-70.09	-71.87	3.61	-1.82	-13.00	-57.09
361.74	-64.97	-66.73	3.82	-2.06	-13.00	-51.97
544.10	-63.98	-66.18	3.99	-1.79	-13.00	-50.98
697.36	-61.21	-62.51	3.68	-2.38	-13.00	-48.21
3720.00	-46.17	-51.87	12.58	-6.88	-13.00	-33.17

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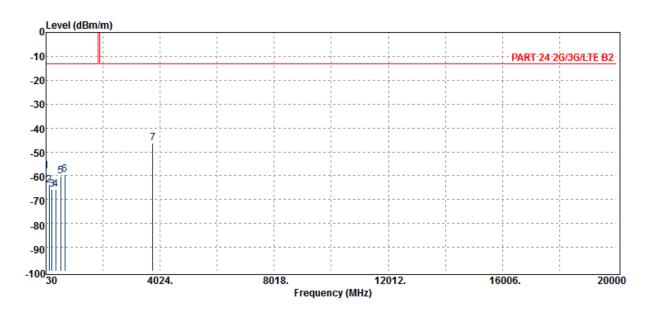
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Operation Band :LTE B2 Fundamental Frequency :1880 MHz :Tx CH MID

Operation Mode EUT Pol. :H Plane Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-58.01	-42.85	-14.58	-0.58	-13.00	-45.01
138.64	-64.03	-60.52	-2.26	-1.25	-13.00	-51.03
246.31	-65.87	-67.69	3.51	-1.69	-13.00	-52.87
367.56	-65.60	-67.34	3.80	-2.06	-13.00	-52.60
547.01	-60.11	-62.24	3.98	-1.86	-13.00	-47.11
692.51	-59.39	-60.33	3.70	-2.76	-13.00	-46.39
3760.00	-46.29	-52.02	12.61	-6.89	-13.00	-33.29

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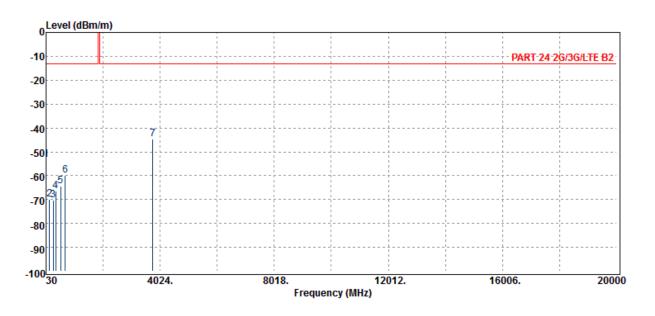
:24.1 deg_C / 65 RH

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Operation Band :LTE B2 Fundamental Frequency :1880 MHz **Operation Mode** :Tx CH MID

Temp./Humi. Engineer

EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
31.94	-53.29	-38.61	-14.08	-0.59	-13.00	-40.29
156.10	-69.74	-66.99	-1.46	-1.30	-13.00	-56.74
285.11	-70.15	-71.81	3.42	-1.76	-13.00	-57.15
369.50	-66.39	-68.14	3.80	-2.06	-13.00	-53.39
541.19	-64.23	-66.31	3.99	-1.91	-13.00	-51.23
699.30	-59.97	-61.41	3.68	-2.24	-13.00	-46.97
3760.00	-44.61	-50.34	12.61	-6.89	-13.00	-31.61

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Operation Band Fundamental Frequency

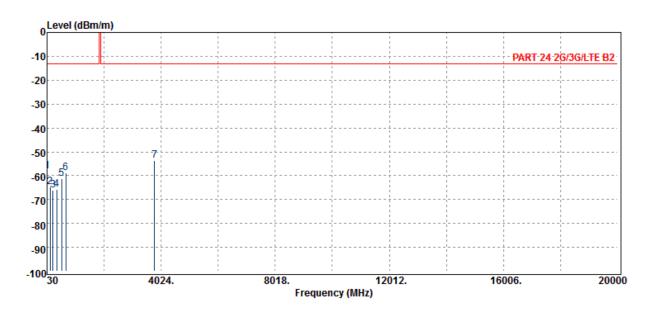
Operation Mode EUT Pol.

:LTE B2 :1900 MHz :Tx CH HIGH :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-57.96	-42.80	-14.58	-0.58	-13.00	-44.96
138.64	-64.60	-61.09	-2.26	-1.25	-13.00	-51.60
241.46	-66.07	-67.88	3.49	-1.68	-13.00	-53.07
376.29	-65.68	-67.42	3.78	-2.03	-13.00	-52.68
541.19	-61.27	-63.35	3.99	-1.91	-13.00	-48.27
681.84	-58.91	-59.51	3.73	-3.12	-13.00	-45.91
3800.00	-53.60	-59.28	12.65	-6.96	-13.00	-40.60

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Operation Band Fundamental Frequency **Operation Mode**

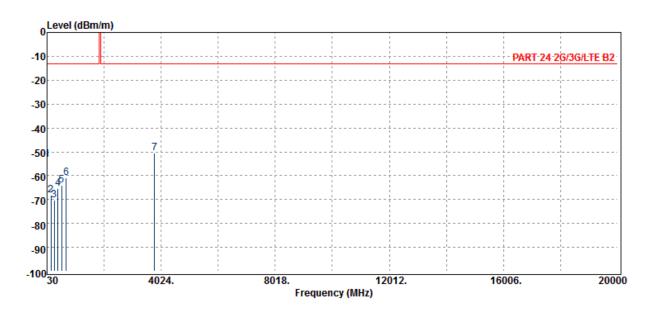
EUT Pol.

:LTE B2 :1900 MHz :Tx CH HIGH :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-53.31	-38.15	-14.58	-0.58	-13.00	-40.31
167.74	-68.07	-65.99	-0.76	-1.32	-13.00	-55.07
284.14	-70.30	-71.96	3.42	-1.76	-13.00	-57.30
408.30	-65.24	-66.79	3.68	-2.14	-13.00	-52.24
539.25	-64.01	-66.02	4.00	-1.99	-13.00	-51.01
696.39	-60.87	-62.10	3.69	-2.46	-13.00	-47.87
3800.00	-50.45	-56.14	12.65	-6.96	-13.00	-37.45

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Operation Mode

Report No.: ER/2018/90159

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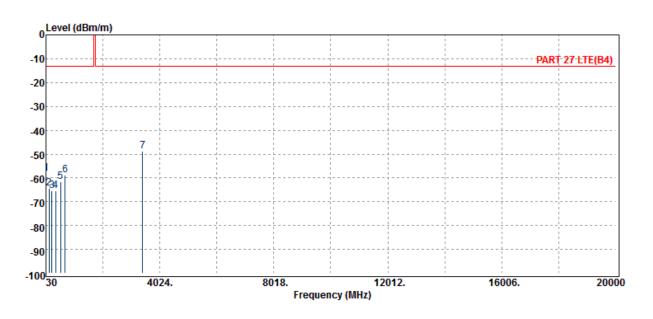
Radiated Spurious Emission Measurement Result: LTE-Band 4 (The Worst Case)

Operation Band :LTE B4 Temp./Humi. :24.1 deg_C / 65 RH

Fundamental Frequency :1712.5 MHz Engineer :Tin

:Tx CH LOW

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	<u>dB</u>
31.94	-57.98	-43.30	-14.08	-0.59	-13.00	-44.98
140.58	-64.25	-60.71	-2.27	-1.26	-13.00	-51.25
241.46	-65.40	-67.21	3.49	-1.68	-13.00	-52.40
376.29	-65.56	-67.31	3.78	-2.03	-13.00	-52.56
541.19	-61.65	-63.74	3.99	-1.91	-13.00	-48.65
697.36	-58.98	-60.27	3.68	-2.38	-13.00	-45.98
3425.00	-48.84	-54.53	12.23	-6.54	-13.00	-35.84

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Operation Band Fundamental Frequency **Operation Mode**

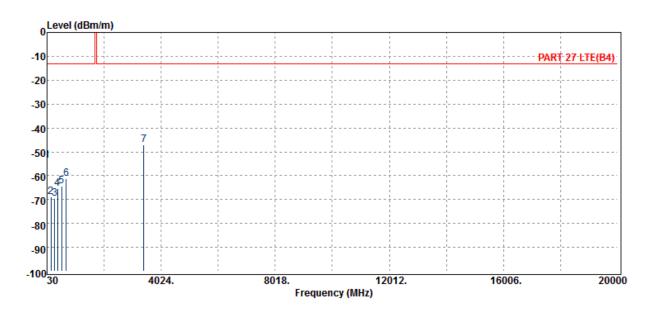
EUT Pol.

:LTE B4 :1712.5 MHz :Tx CH LOW :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-53.72	-38.56	-14.58	-0.58	-13.00	-40.72
173.56	-69.01	-67.63	-0.04	-1.35	-13.00	-56.01
296.75	-69.53	-71.27	3.55	-1.81	-13.00	-56.53
403.45	-65.29	-66.86	3.70	-2.14	-13.00	-52.29
548.95	-64.30	-66.31	3.98	-1.97	-13.00	-51.30
697.36	-61.33	-62.63	3.68	-2.38	-13.00	-48.33
3425.00	-47.00	-52.69	12.23	-6.54	-13.00	-34.00

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Operation Band Fundamental Frequency **Operation Mode**

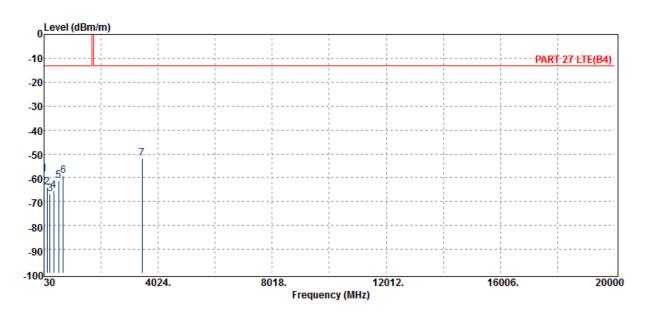
EUT Pol.

:LTE B4 :1732.5 MHz :Tx CH MID :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-58.47	-43.31	-14.58	-0.58	-13.00	-45.47
138.64	-64.10	-60.59	-2.26	-1.25	-13.00	-51.10
245.34	-66.85	-68.67	3.51	-1.69	-13.00	-53.85
364.65	-65.34	-67.08	3.81	-2.07	-13.00	-52.34
539.25	-61.35	-63.36	4.00	-1.99	-13.00	-48.35
699.30	-59.28	-60.72	3.68	-2.24	-13.00	-46.28
3465.00	-52.02	-57.78	12.32	-6.56	-13.00	-39.02

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Operation Band Fundamental Frequency **Operation Mode**

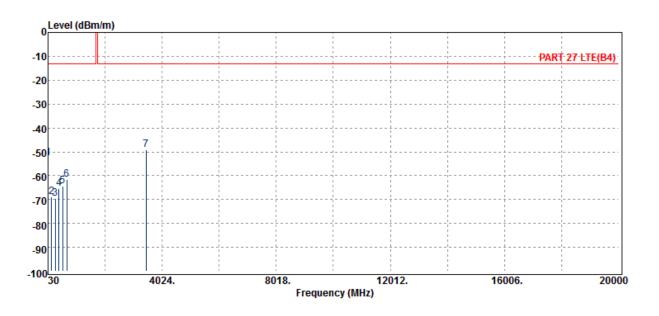
EUT Pol.

:LTE B4 :1732.5 MHz :Tx CH MID :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-52.75	-37.59	-14.58	-0.58	-13.00	-39.75
149.31	-68.85	-65.72	-1.84	-1.29	-13.00	-55.85
287.05	-69.42	-71.07	3.42	-1.77	-13.00	-56.42
411.21	-65.44	-66.98	3.67	-2.13	-13.00	-52.44
548.95	-64.29	-66.30	3.98	-1.97	-13.00	-51.29
694.45	-61.69	-62.77	3.69	-2.61	-13.00	-48.69
3465.00	-49.18	-54.94	12.32	-6.56	-13.00	-36.18

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Operation Band :LTE B4 Fundamental Frequency

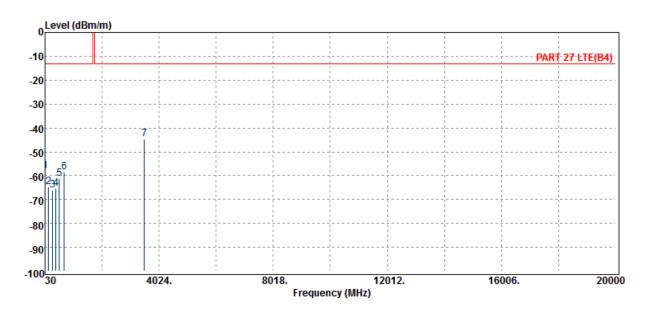
Operation Mode EUT Pol.

:1752.5 MHz :Tx CH HIGH :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :VERTICAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	dB
30.00	-58.16	-43.00	-14.58	-0.58	-13.00	-45.16
148.34	-64.58	-61.41	-1.89	-1.29	-13.00	-51.58
296.75	-66.12	-67.86	3.55	-1.81	-13.00	-53.12
418.00	-65.54	-67.08	3.65	-2.11	-13.00	-52.54
532.46	-61.09	-62.83	4.01	-2.27	-13.00	-48.09
696.39	-58.64	-59.87	3.69	-2.46	-13.00	-45.64
3505.00	-44.72	-50.46	12.40	-6.66	-13.00	-31.72

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Operation Band Fundamental Frequency **Operation Mode**

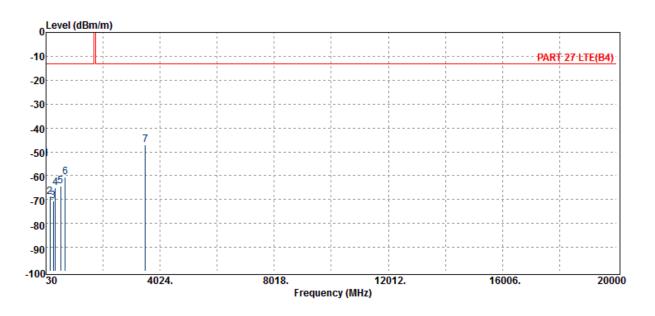
EUT Pol.

:LTE B4 :1752.5 MHz :Tx CH HIGH :H Plane

Temp./Humi. :24.1 deg_C / 65 RH

Engineer

Measurement Antenna Pol. :HORIZONTAL



Freq.	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBd/dBi	dB	dBm	<u>dB</u>
31.94	-52.98	-38.31	-14.08	-0.59	-13.00	-39.98
165.80	-68.89	-66.71	-0.88	-1.31	-13.00	-55.89
277.35	-70.49	-72.18	3.44	-1.74	-13.00	-57.49
356.89	-65.02	-66.81	3.83	-2.05	-13.00	-52.02
541.19	-64.29	-66.38	3.99	-1.91	-13.00	-51.29
696.39	-60.58	-61.81	3.69	-2.46	-13.00	-47.58
3505.00	-47.15	-52.89	12.40	-6.66	-13.00	-34.15

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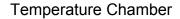
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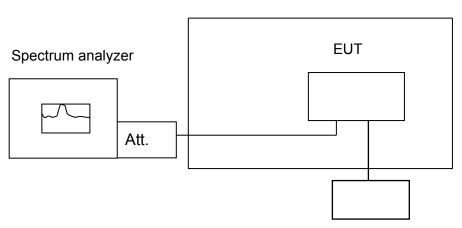
FREQUENCY STABILITY MEASUREMENT

11.1. Standard Applicable

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







Variable DC Power Supply

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

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EQUIPMENT TYPE	MFR	MODEL NUM- BER	SERIAL NUM- BER	LAST CAL.	CAL DUE.	
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08	
Radio Commu- nication Analyer	Anritsu	MT8815B	6200711454	2018/04/05	2019/04/04	
DC Power Sup- ply	Anritsu	E3640A	MY52410006	2017/11/28	2018/11/27	
Temperature Chamber	TERCHY	MHG-120LF	911009	2018/05/18	2019/05/17	
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01	
Splitter	RF-LAMBAD	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	

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11.5. Measurement Result

FREQUENCY ERROR vs. VOLTAGE

GPRS 1900 Mid Channel 1880 MHz						
	Lir	nit: +/- 2.5 ppm				
Vdc	Temp. ()	Freq. (MHz)	Delta (Hz)	Limit (Hz)		
	FREQUENC	Y ERROR vs. VO	LTAGE			
4	20	1879.999992	-7.99999998	4700		
4	20	1880.000002	1.999999995	4700		
3.7	20	1880.000005	5.000000101	4700		
2.7 (End point)	20	1880	0	4700		

FREQUENCY ERROR vs. TEMPERATURE

	FREQUENCY ERROR vs. Temp.						
4	50	1880.000006	5.999999985	4700			
4	40	1880.00001	9.99999975	4700			
4	30	1879.999994	-5.999999985	4700			
4	20	1880.000007	7.000000096	4700			
4	10	1879.999992	-7.99999998	4700			
4	0	1880.000004	3.99999999	4700			
4	-10	1879.999999	-1.000000111	4700			
4	-20	1879.999998	-1.999999995	4700			
4	-30	1879.999993	-7.000000096	4700			

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FREQUENCY ERROR vs. VOLTAGE

WCDMA II Mid Channel 1880 MHz							
Limit: +/- 2.5 ppm							
Vdc	Temp.()	Freq. (MHz)	Delta (Hz)	Limit (Hz)			
FREQUENCY ERROR vs. VOLTAGE							
4	20	1880.000002	1.999999995	4700			
4	20	1879.999995	-5.000000101	4700			
3.7	20	1879.999995	-5.000000101	4700			
2.7 (End point)	20	1879.999993	-7.000000096	4700			

FREQUENCY ERROR vs. TEMPERATURE

FREQUENCY ERROR vs. Temp.								
4	50	1879.999994	-5.999999985	4700				
4	40	1880.000003	3.000000106	4700				
4	30	1879.999997	-3.00000106	4700				
4	20	1880.000003	3.000000106	4700				
4	10	1879.999993	-7.000000096	4700				
4	0	1879.999992	-7.99999998	4700				
4	-10	1880.000001	1.000000111	4700				
4	-20	1880.000001	1.000000111	4700				
4	-30	1880.00001	9.99999975	4700				

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REQUENCY ERROR vs. VOLTAGE

WCDMA IV Mid Channel 1732.6 MHz									
WCDIVIA IV IVIIU CHAHHEI 1/32.0 IVIAZ									
Limit: +/- 2.5 ppm									
Vdc	Temp.()	Freq. (MHz)	Delta (Hz)	Limit (Hz)					
FREQUENCY ERROR vs. VOLTAGE									
4	20	1732.600008	7.99999998	4331					
4	20	1732.600006	5.999999985	4331					
3.7	20	1732.599999	-0.999999884	4331					
2.7 (End point)	20	1732.600009	9.000000091	4331					

FREQUENCY ERROR vs. TEMPERATURE

_									
FREQUENCY ERROR vs. Temp.									
4	50	1732.599992	-7.99999998	4331					
4	40	1732.600004	3.99999999	4331					
4	30	1732.600005	5.000000101	4331					
4	20	1732.599996	-3.99999999	4331					
4	10	1732.600008	7.99999998	4331					
4	0	1732.600009	9.000000091	4331					
4	-10	1732.599994	-5.999999985	4331					
4	-20	1732.59999	-9.999999975	4331					
4	-30	1732.600003	3.000000106	4331					

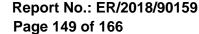
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Reference Freq.:		B2 Mid annel	1880	MHz 20M QPSK CH 18900
Power Supply Vdc	Temp. ()	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
	F	req. ERROR v	s. VOLTAGI	E
4	25	1879.999997	-3.0000001	4700
4	25	1879.999992	-8	4700
3.7	25	1879.999993	-7.0000001	4700
2.7 (End Point)	25	1880.000003	3.00000011	4700
		Freq. ERROR	vs. Temp.	
4	-30	1880.00003	3.00000011	4700
4	-20	1879.999990	-10	4700
4	-10	1879.999993	-7.0000001	4700
4	0	1879.999998	-2	4700
4	10	1880.000010	9.99999997	4700
4	20	1879.999993	-7.0000001	4700
4	30	1879.999997	-3.0000001	4700
4	40	1879.999991	-9.0000001	4700
4	50	1879.999997	-3.000001	4700

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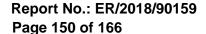
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Reference Freq.:		B4 Mid annel	1732.5	MHz 20M QPSK CH 20175
Power Supply Vdc	Temp. ()	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
	Fr	eq. ERROR v	s. VOLTAGE	
4	25	1732.499998	-2	4331
4	25	1732.500009	9.00000009	4331
3.7	25	1732.499996	-4	4331
2.7 (End Point)	25	1732.500007	7.0000001	4331
		Freq. ERROR	vs. Temp.	
4	-30	1732.500007	7.0000001	4331
4	-20	1732.500007	7.0000001	4331
4	-10	1732.500010	9.9999997	4331
4	0	1732.499997	-3.0000001	4331
4	10	1732.500001	1.00000011	4331
4	20	1732.499992	-8	4331
4	30	1732.500002	1.99999999	4331
4	40	1732.500001	1.00000011	4331
4	50	1732.499992	-8	4331

Note: The battery is rated 4V dc.

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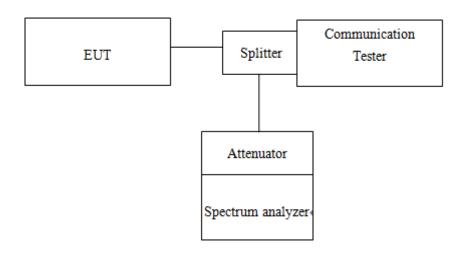
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PEAK TO AVERAGE RATIO 12.

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 ≥ 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

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08
Radio Commu- nication Analyer	Anritsu	MT8815B	6200711454	2018/04/05	2019/04/04
DC Power Sup- ply	Anritsu	E3640A	MY52410006	2017/11/28	2018/11/27
Temperature Chamber	TERCHY	MHG-120LF	911009	2018/05/18	2019/05/17
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBAD	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

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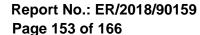
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12.5. Measurement Result **Tabular Results:**

Freq.	СН	Peak-to-Av tio (d	•
(MHz)	CII	GSM 1900	GPRS 1900
1850.2	512	10.14	9.34
1880	661	9.46	9.8
1909.8	810	9.48	9.7

From		Peak-to-	-Average Ra	atio (dB)
Freq. (MHz)	СН	WCDMA II	HSDPA II	HSUPA II
1852.4	9262	3.10	3.09	3.05
1880	9400	3.06	3.07	3.05
1907.6	9538	3.37	3.43	3.37

Freq. (MHz)	СН	Peak-to-	-Average Ra	atio (dB)
	Сп	WCDMA IV	HSDPA IV	HSUPA IV
1712.4	1312	3.46	3.46	3.45
1732.6	1413	3.37	3.40	3.41
1752.6	1513	3.37	3.42	3.41

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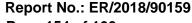
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LTE BAND 2									
Char	nnel band	width: 1.4N	lHz	Cha	nnel band	lwidth: 3MI	Ηz		
Freq.	СН	PAPR	(dB)	Freq. PAPR (dB)		(dB)			
(MHz)	СП	16QAM	Limit	(MHz)	CH	16QAM	Limit		
1850.7	18607	6.01	13	1851.5	18615	6.14	13		
1880.0	18900	6.12	13	1880.0	18900	6.17	13		
1909.3	19193	5.99	13	1908.5	19185	6.08	13		

LTE BAND 2									
Cha	Channel bandwidth: 5MHz				nel bandwidth: 5MHz Channel bandwidth: 10MHz				
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (d			
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit		
1852.5	18625	6.04	13	1855.0	18650	6.03	13		
1880.0	18900	5.97	13	1880.0	18900	6.00	13		
1907.5	19175	6.03	13	1905.0	19150	5.91	13		

	LTE BAND 2									
Channel bandwidth: 15MHz				Cha	nnel band	width: 20M	Hz			
Freq.	СН	PAPR	(dB)	Freq.	CH PAPR (dB)		(dB)			
(MHz)	CII	16QAM	Limit	(MHz)	CII	16QAM	Limit			
1857.5	18675	6.34	13	1860.0	18700	6.78	13			
1880.0	18900	6.34	13	1880.0	18900	6.79	13			
1902.5	19125	6.27	13	1900.0	19100	6.78	13			

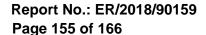
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LTE BAND 4								
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz				
Freq. (MHz) CH	PAPR (dB)		Freq.	СП	PAPR (dB)			
	16QAM	Limit	(MHz)	Сп	16QAM	Limit		
19957	5.90	13	1711.5	19965	6.08	13		
20175	5.83	13	1732.5	20175	5.94	13		
20393	5.82	13	1753.5	20385	5.88	13		
	CH 19957 20175	CHPAPR16QAM199575.90201755.83	rel bandwidth: 1.4MHz PAPR (dB) 16QAM Limit 19957 5.90 13 20175 5.83 13	rel bandwidth: 1.4MHz Characterist CHAPR (dB) Freq. 16QAM Limit (MHz) 19957 5.90 13 1711.5 20175 5.83 13 1732.5	rel bandwidth: 1.4MHz Channel band CH PAPR (dB) Freq. (MHz) CH 19957 5.90 13 1711.5 19965 20175 5.83 13 1732.5 20175	Channel bandwidth: 3M CH PAPR (dB) Freq. (MHz) CH PAPR 16QAM Limit (MHz) 19965 6.08 20175 5.83 13 1732.5 20175 5.94		

LTE BAND 4								
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz				
Freq. (MHz)	СП	CH PAPR		Freq.	СН	PAPR (dB)		
	Сп	16QAM	Limit	(MHz)	СП	16QAM	Limit	
1712.5	19957	5.86	13	1715.0	20000	5.94	13	
1732.5	20175	5.92	13	1732.5	20175	5.91	13	
1752.5	20375	5.88	13	1750.0	20350	5.82	13	

LTE BAND 4								
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz				
Freq.	Freq. (MHz) CH	PAPR	(dB)	Freq.	СН	PAPR (dB)		
(MHz)		16QAM	Limit	(MHz)	СП	16QAM	Limit	
1717.5	20025	6.32	13	1720.0	20050	6.81	13	
1732.5	20175	6.32	13	1732.5	20175	6.72	13	
1747.5	20325	6.26	13	1745.0	20300	6.78	13	

Measurement Results:

Please refer to next page.

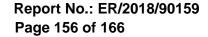
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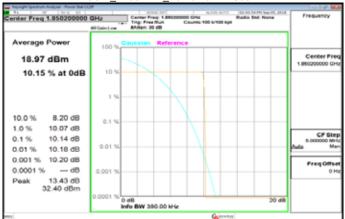
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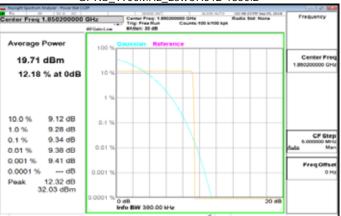




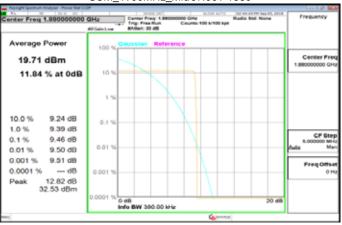
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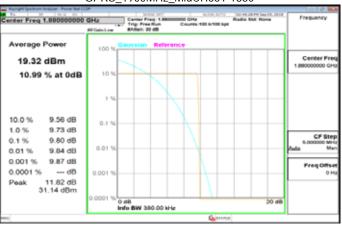
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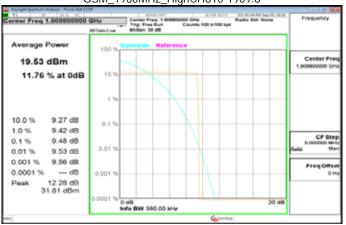
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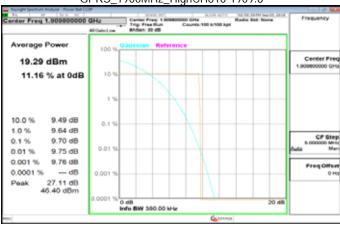
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GSM_1900MHz_HighCH810-1909.8



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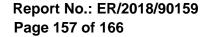
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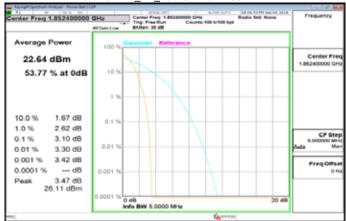
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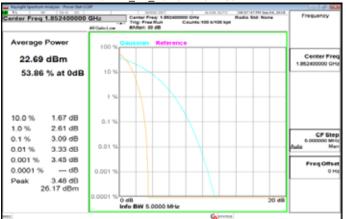




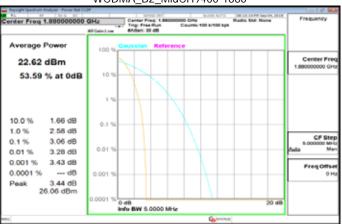
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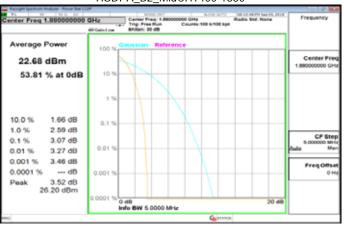
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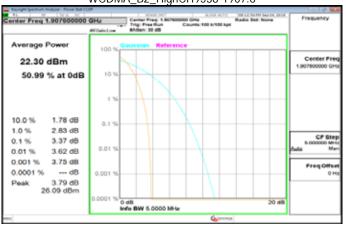
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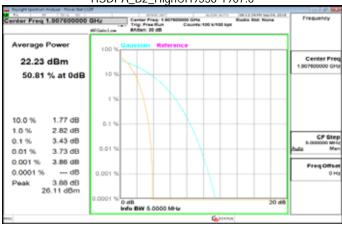
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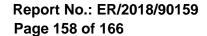
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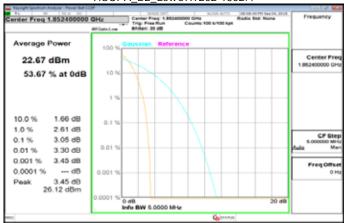
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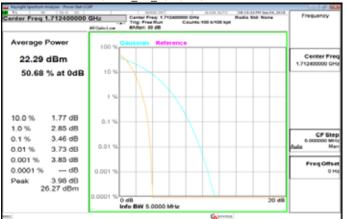




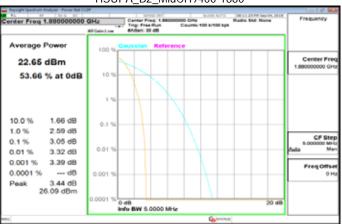
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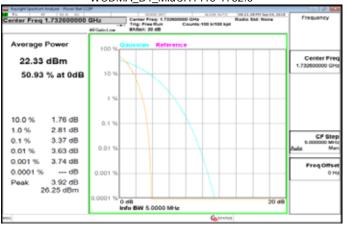
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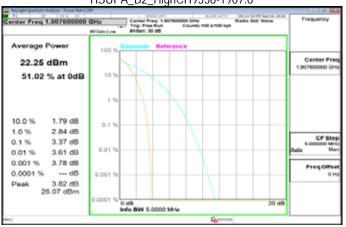
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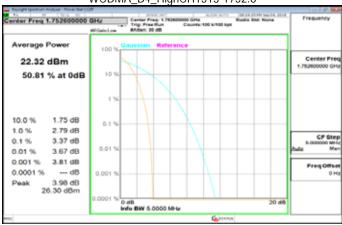
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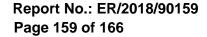


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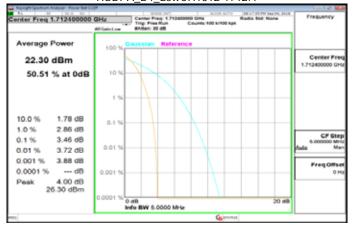
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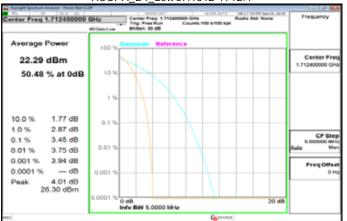




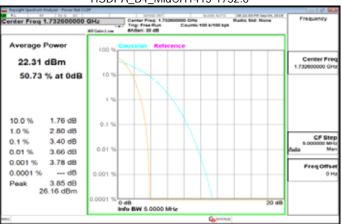
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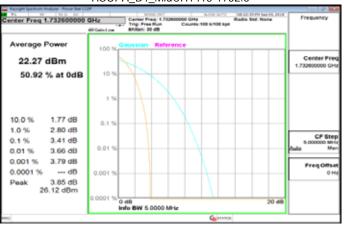
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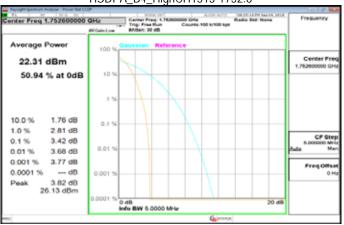
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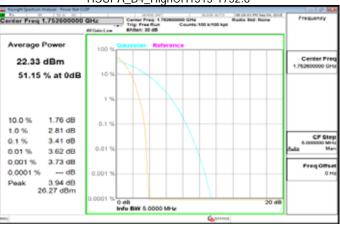
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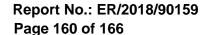
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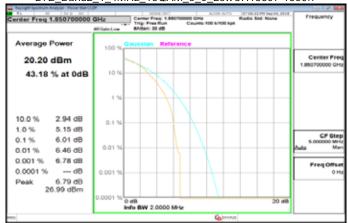
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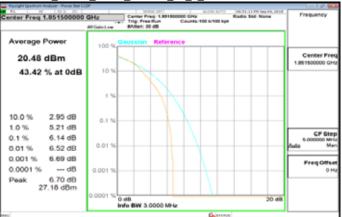




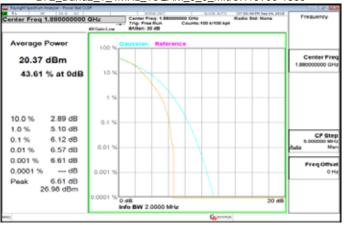
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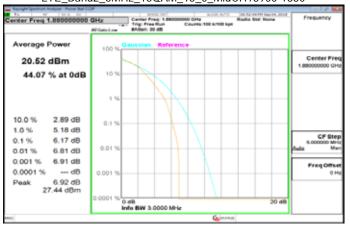
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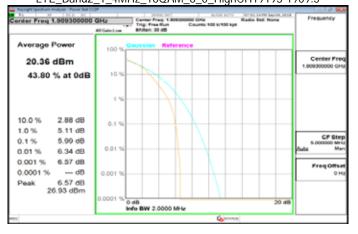
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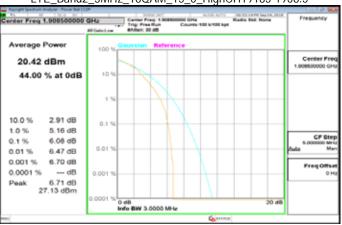
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LTE_Band2_3MHz_16QAM_15_0_HighCH19185-1908.5



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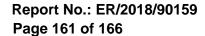
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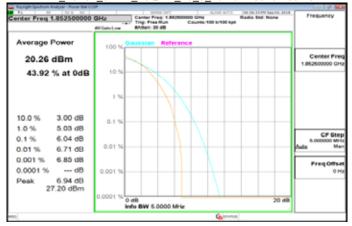
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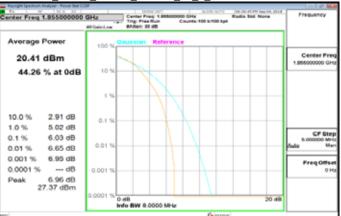




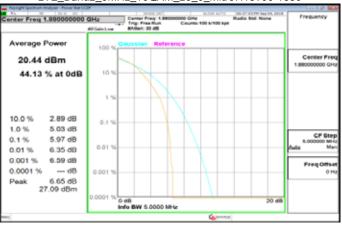
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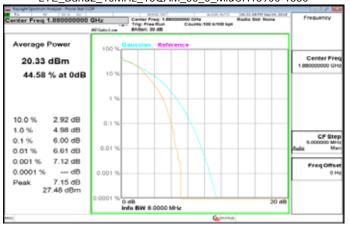
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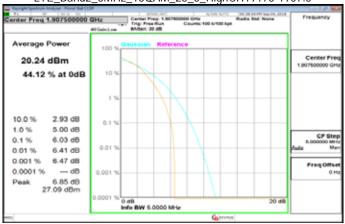
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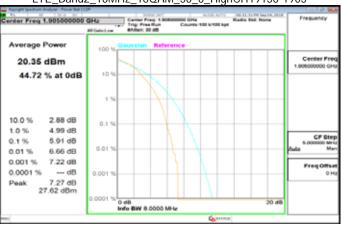
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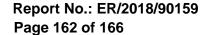


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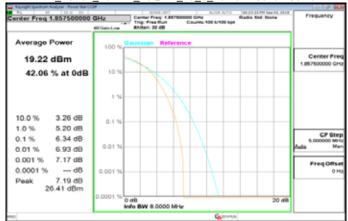
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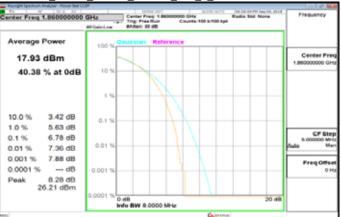




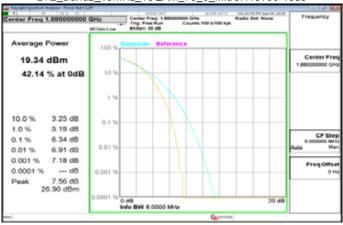
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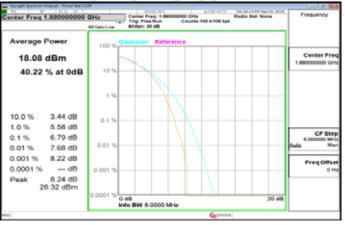
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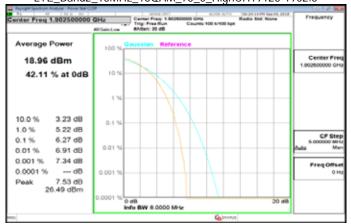
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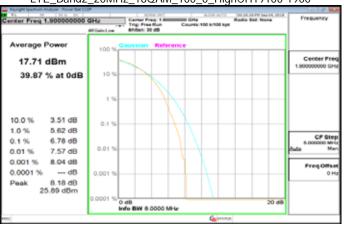
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LTE_Band2_20MHz_16QAM_100_0_HighCH19100-1900



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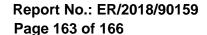
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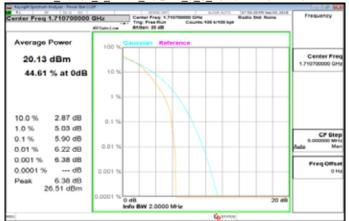
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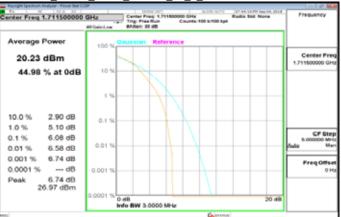




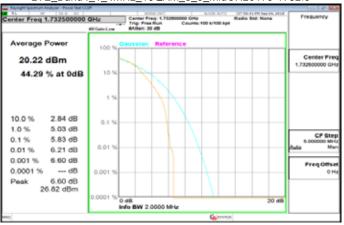
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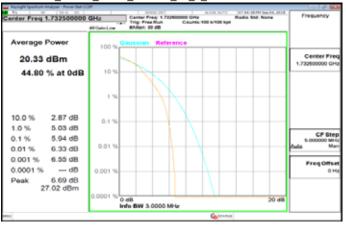
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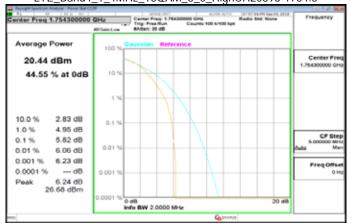
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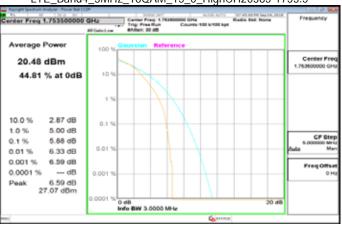
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LTE_Band4_1_4MHz_16QAM_6_0_HighCH20393-1754.3



LTE_Band4_3MHz_16QAM_15_0_HighCH20385-1753.5



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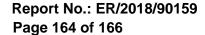
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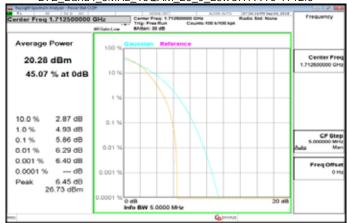
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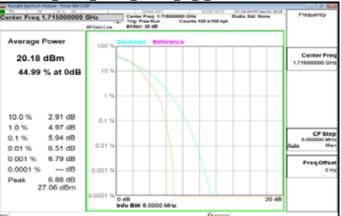




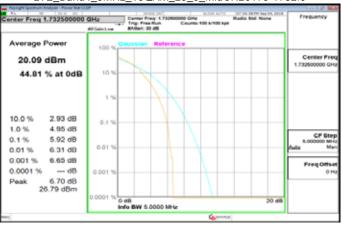
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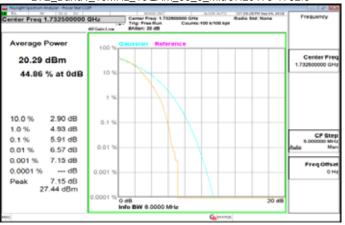
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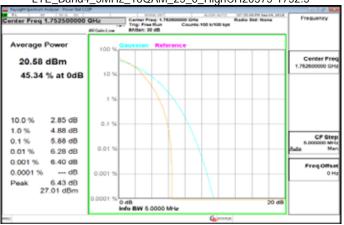
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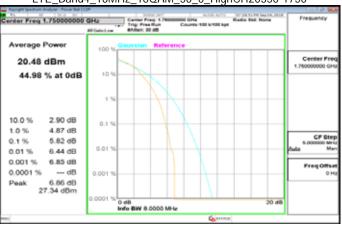
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LTE_Band4_5MHz_16QAM_25_0_HighCH20375-1752.5



LTE Band4 10MHz 16QAM 50 0 HighCH20350-1750

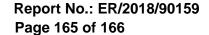


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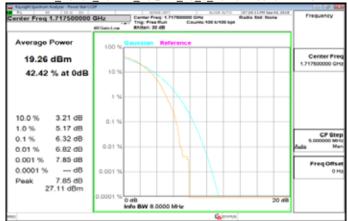
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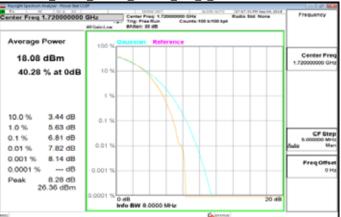




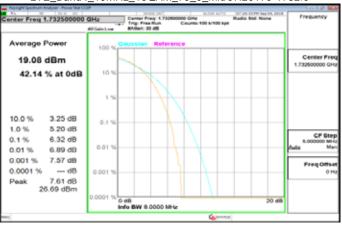
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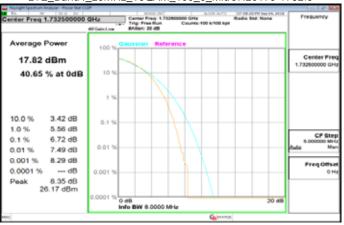
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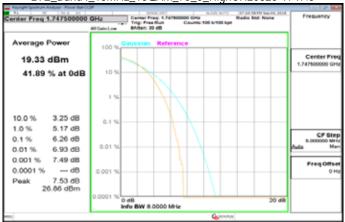
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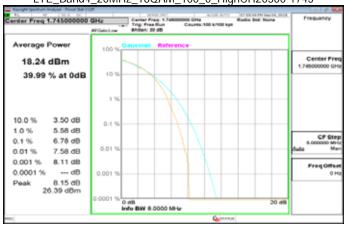
LTE Band4 20MHz 16QAM 100 0 MidCH20175-1732.5



LTE_Band4_15MHz_16QAM_75_0_HighCH20325-1747.5



LTE Band4 20MHz 16QAM 100 0 HighCH20300-1745



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~ End of Report ~

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