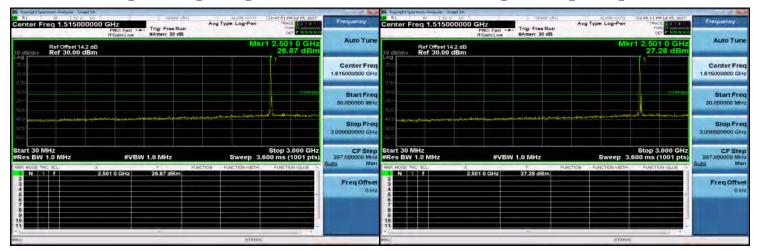


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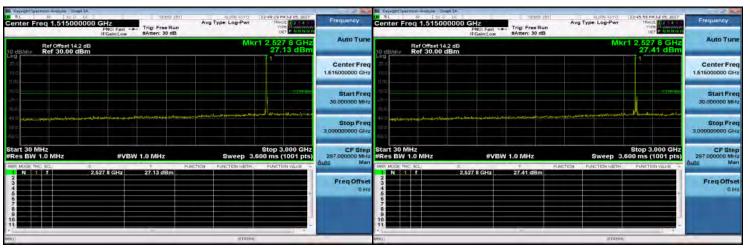
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Out of Band Emission Low\_Band7 20MHz\_QPSK 1 0\_LowCH20850-2510



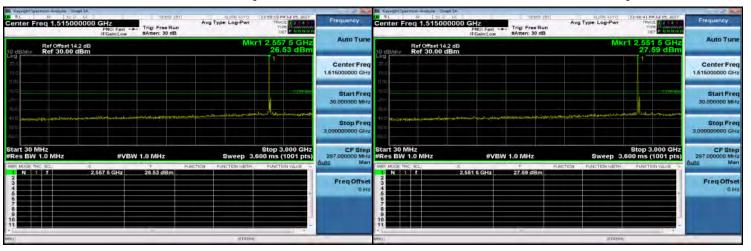
Out of Band Emission Low\_Band7 15MHz\_QPSK 1 0\_MidCH20175-1732.5

Out of Band Emission Low Band7 20MHz QPSK 1 0 MidCH21100-2535



Out of Band Emission Low\_Band7 15MHz\_QPSK 1 0\_HighCH21375-2562.5

Out of Band Emission Low\_Band7 20MHz\_QPSK 1 0\_HighCH21350-2560



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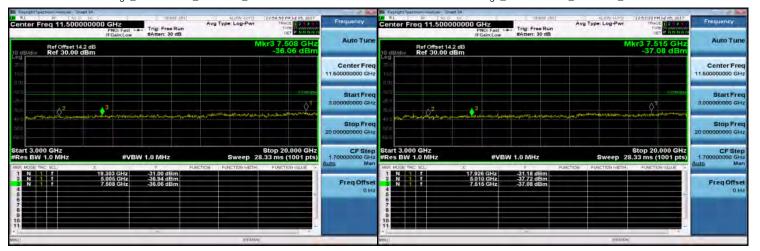
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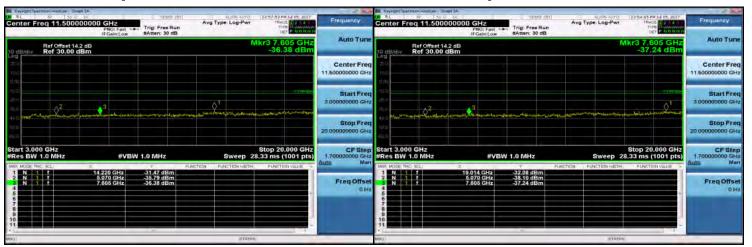
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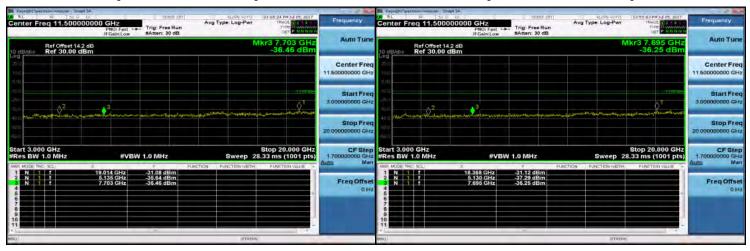
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Out of Band Emission High\_Band7 10MHz\_QPSK 1 0\_MidCH21100-2535



Out of Band Emission High\_Band7 5MHz\_QPSK 1 0\_HighCH21425-2567.5

Out of Band Emission High\_Band7 10MHz\_QPSK 1 0\_HighCH21400-2565



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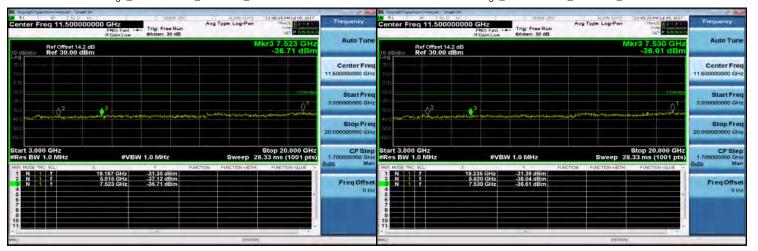
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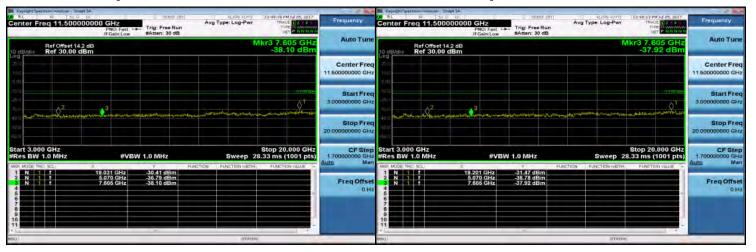
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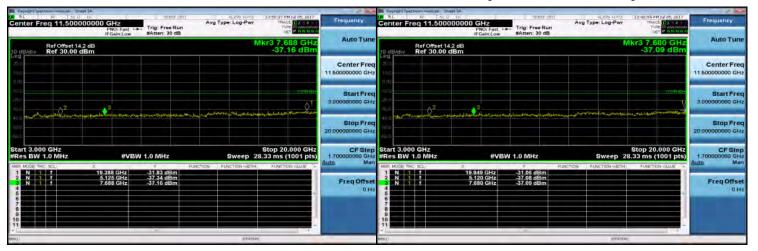
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Out of Band Emission High\_Band7 20MHz\_QPSK 1 0\_MidCH21100-2535



Out of Band Emission High\_Band7 15MHz\_QPSK 1 0\_HighCH21375-2562.5

Out of Band Emission High\_Band7 20MHz\_QPSK 1 0\_HighCH21350-2560



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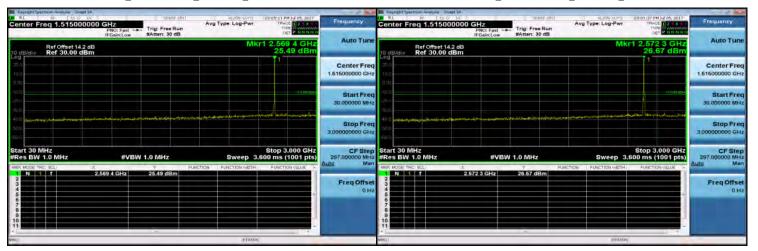
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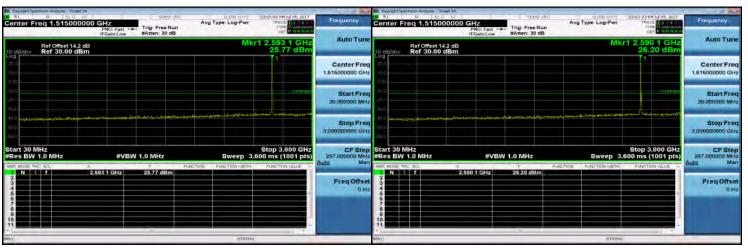
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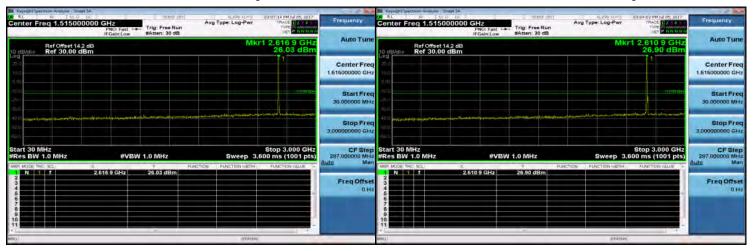
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Out of Band Emission Low Band38 10MHz QPSK 1 0 MidCH38000-2595



Out of Band Emission Low\_Band38 5MHz\_QPSK 1 0\_HighCH38225-2617.5

Out of Band Emission Low\_Band38 10MHz\_QPSK 1 0\_HighCH38200-2615



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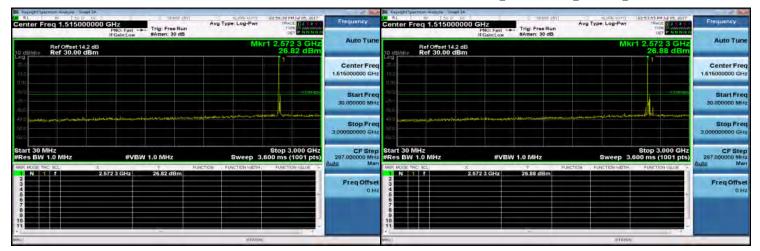
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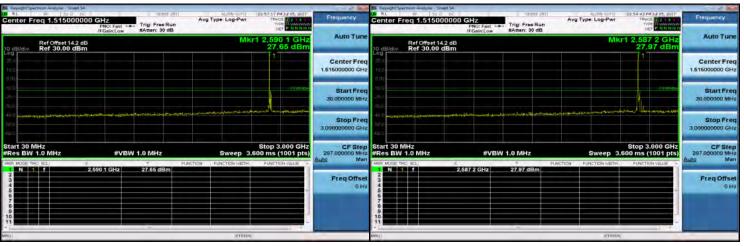
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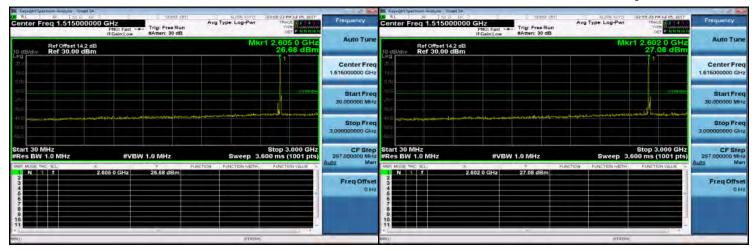
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Out of Band Emission Low\_Band38 15MHz\_QPSK 1 0\_HighCH38175-2612.5

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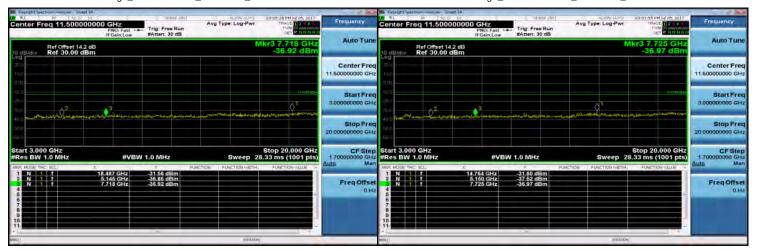
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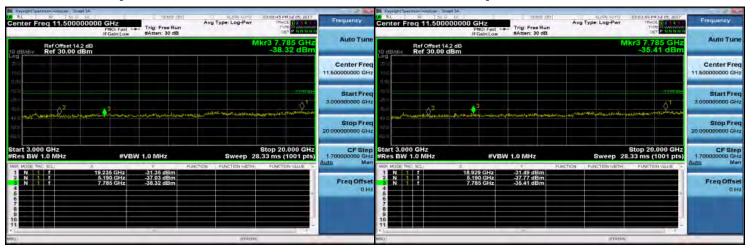
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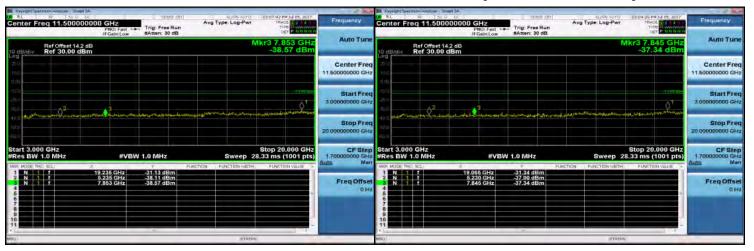
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Out of Band Emission High\_Band38 10MHz\_QPSK 1 0\_MidCH38000-2595



Out of Band Emission High\_Band38 5MHz\_QPSK 1 0\_HighCH38225-2617.5

Out of Band Emission High\_Band38 10MHz\_QPSK 1 0\_HighCH38200-2615



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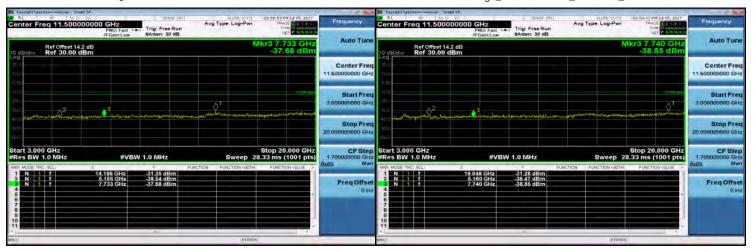
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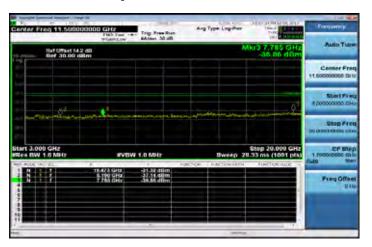
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Out of Band Emission High\_Band38 15MHz\_QPSK 1 0\_LowCH37825-2577.5

Out of Band Emission High\_Band38 20MHz\_QPSK 1 0\_LowCH37850-2580

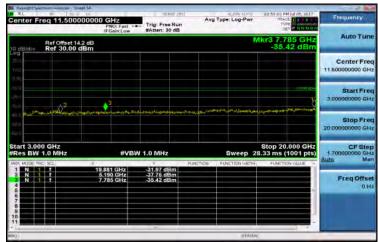


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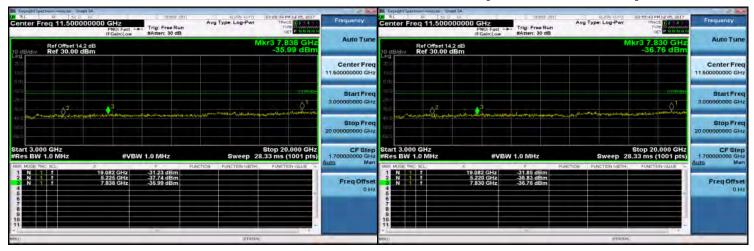


Out of Band Emission High\_Band38 15MHz\_QPSK 1 0\_HighCH38175-2612.5

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Out of Band Emission High\_Band38 20MHz\_QPSK 1 0\_HighCH38150-2610



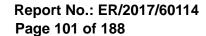
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Band Edge\_GSM\_850MHz\_LowCH128-824.2

Band Edge\_GPRS\_850MHz\_LowCH128-824.2



Band Edge\_GSM\_850MHz\_HighCH251-848.8

Band Edge\_GPRS\_850MHz\_HighCH251-848.8



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Band Edge\_EDGE\_850MHz\_LowCH128-824.2

Band Edge\_GSM\_1900MHz\_HighCH810-1909.8



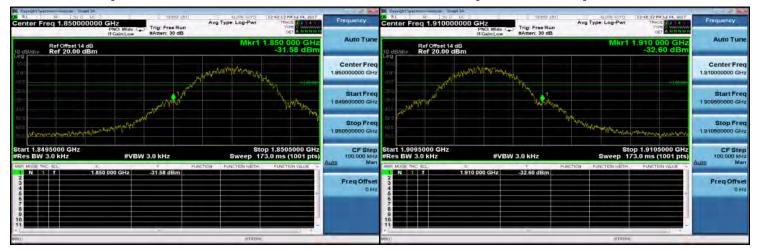
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Band Edge\_GPRS\_1900MHz\_LowCH512-1850.2



Band Edge\_GSM\_1900MHz\_LowCH512-1850.2

Band Edge\_GPRS\_1900MHz\_HighCH810-1909.8



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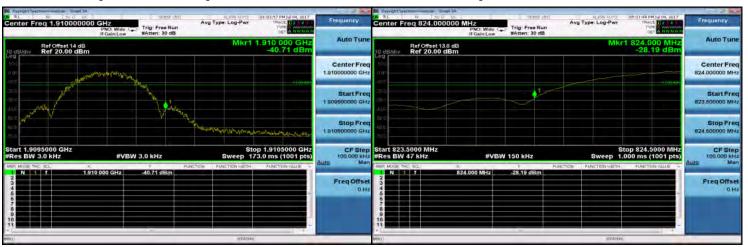
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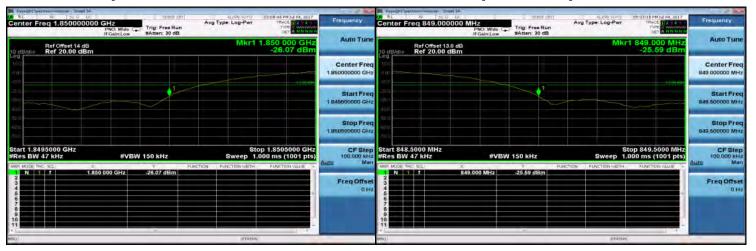
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Band Edge\_WCDMA\_B5\_LowCH4132-826.4



Band Edge\_WCDMA\_B2\_LowCH9262-1852.4

Band Edge\_WCDMA\_B5\_HighCH4233-846.6



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Band Edge\_Band5 1.4MHz\_QPSK 1 0\_LowCH20407-824.7

Band Edge\_Band5 1.4MHz\_QPSK 6 0\_HighCH20643-848.3



Band Edge\_Band5 1.4MHz\_QPSK 1 5\_HighCH20643-848.3

Band Edge\_Band5 3MHz\_QPSK 1 0\_LowCH20415-825.5



Band Edge\_Band5 1.4MHz\_QPSK 6 0\_LowCH20407-824.7

Band Edge\_Band5 3MHz\_QPSK 1 14\_HighCH20635-847.5



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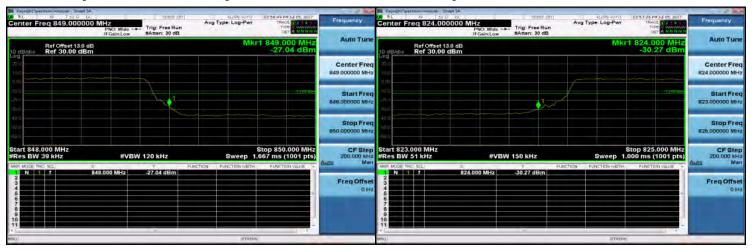
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Band Edge\_Band5 3MHz\_QPSK 15 0\_HighCH20635-847.5

Band Edge\_Band5 5MHz\_QPSK 25 0\_LowCH20425-826.5



Band Edge\_Band5 5MHz\_QPSK 1 0\_LowCH20425-826.5

Band Edge\_Band5 5MHz\_QPSK 25 0\_HighCH20625-846.5



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Band Edge\_Band5 10MHz\_QPSK 1 0\_LowCH20450-829

Band Edge\_Band5 10MHz\_QPSK 50 0\_LowCH20450-829



Band Edge\_Band5 10MHz\_QPSK 1 49\_HighCH20600-844

Band Edge\_Band5 10MHz\_QPSK 50 0\_HighCH20600-844



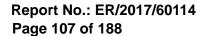
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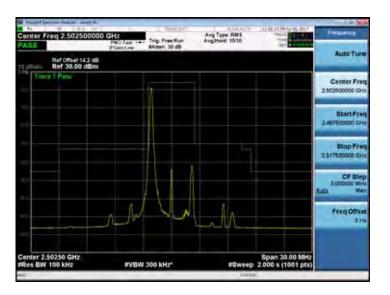
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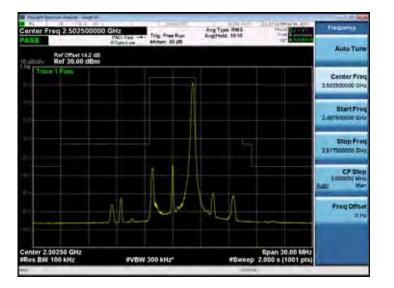




Emission Mask\_Band 7\_5M\_QPSK\_LOW\_RB1,0



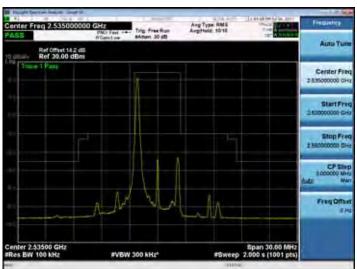
Emission Mask\_Band 7\_5M\_QPSK\_LOW\_RB1,24



Emission Mask\_Band 7\_5M\_QPSK\_LOW\_RB25,0



Emission Mask\_Band 7\_5M\_QPSK\_MID\_RB1,0



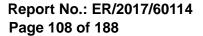
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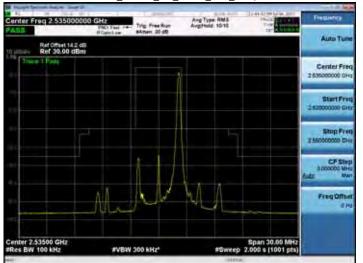
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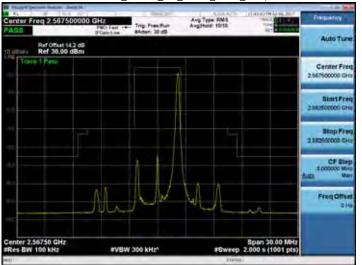




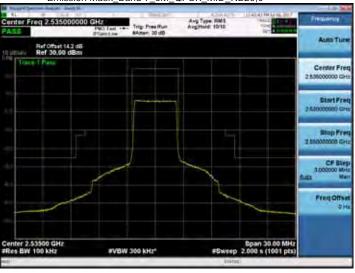
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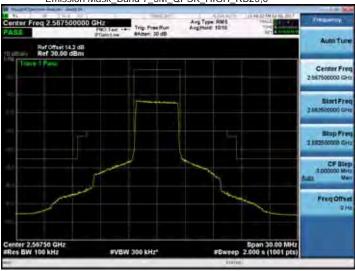
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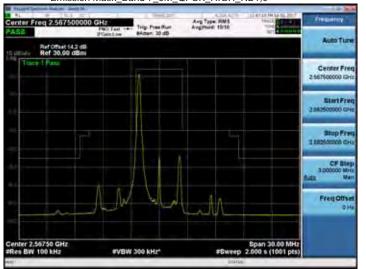
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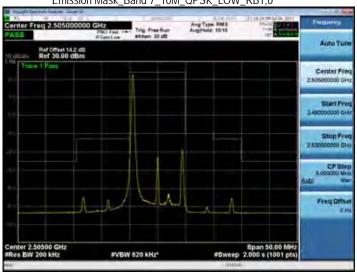
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Emission Mask\_Band 7\_5M\_QPSK\_HIGH\_RB1,0

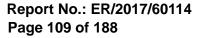


Emission Mask\_Band 7\_10M\_QPSK\_LOW\_RB1,0



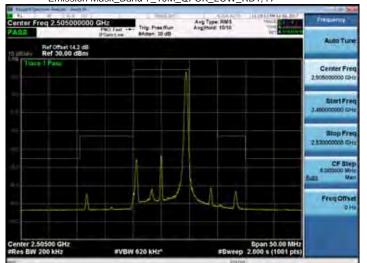
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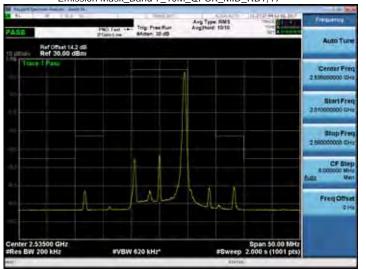




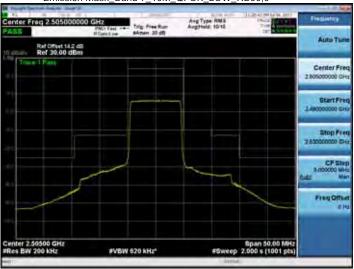
Emission Mask\_Band 7\_10M\_QPSK\_LOW\_RB1,49



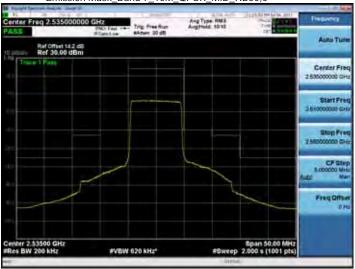
Emission Mask\_Band 7\_10M\_QPSK\_MID\_RB1,49



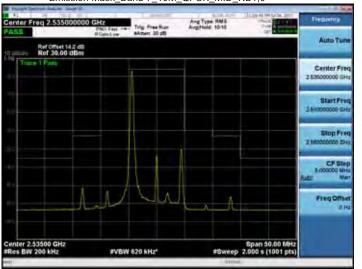
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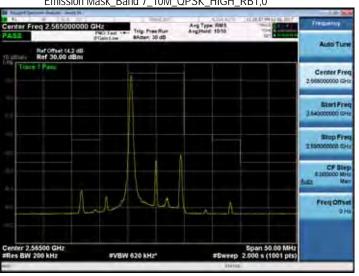
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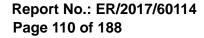


Emission Mask\_Band 7\_10M\_QPSK\_HIGH\_RB1,0

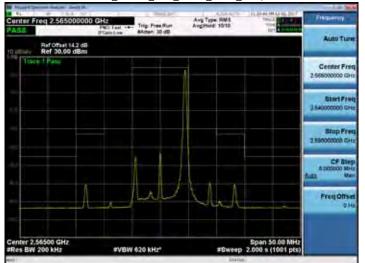


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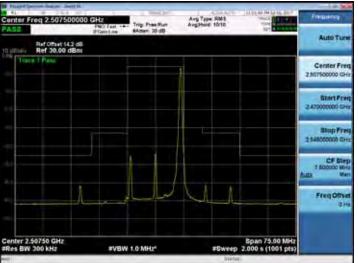
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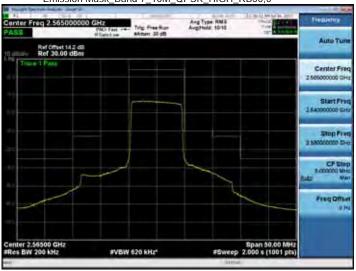
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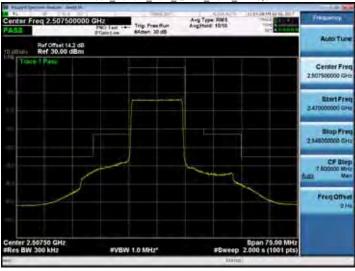




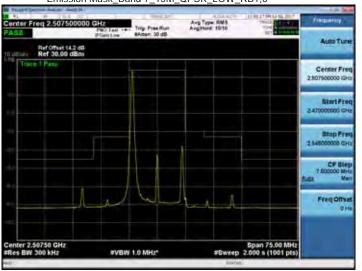
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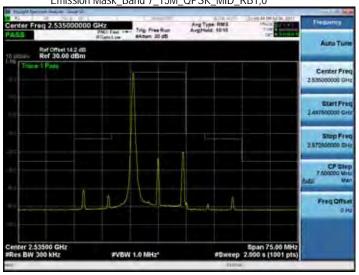
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Emission Mask\_Band 7\_15M\_QPSK\_LOW\_RB1,0

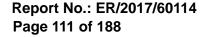


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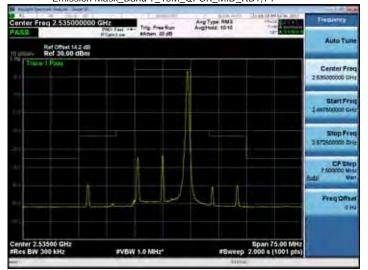
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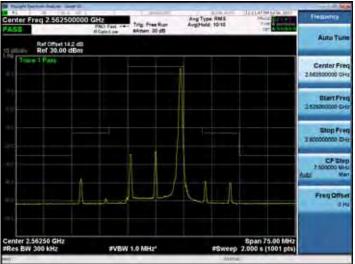




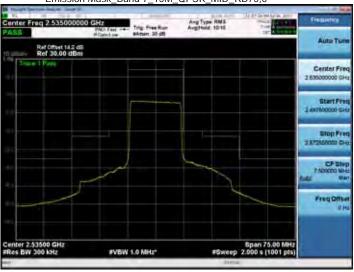
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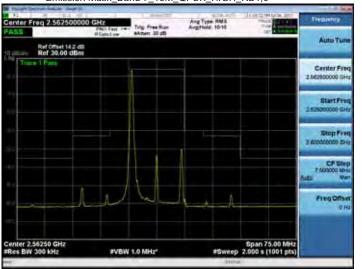
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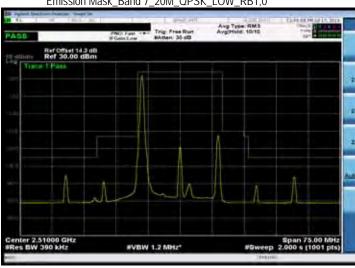
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Emission Mask\_Band 7\_15M\_QPSK\_HIGH\_RB1,0

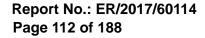


Emission Mask\_Band 7\_20M\_QPSK\_LOW\_RB1,0



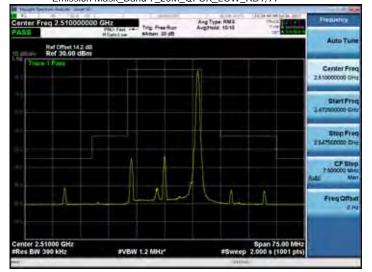
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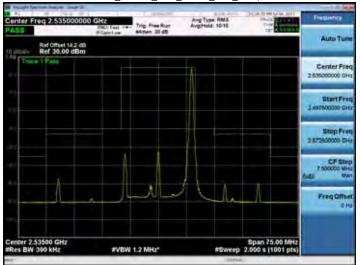




Emission Mask\_Band 7\_20M\_QPSK\_LOW\_RB1,99



Emission Mask\_Band 7\_20M\_QPSK\_MID\_RB1,99



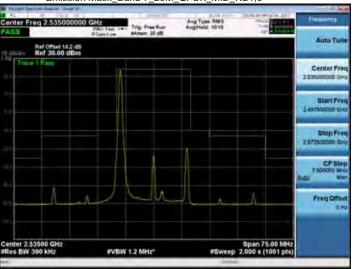
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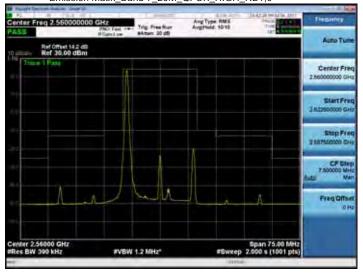
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Emission Mask\_Band 7\_20M\_QPSK\_MID\_RB1,0

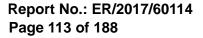


Emission Mask\_Band 7\_20M\_QPSK\_HIGH\_RB1,0



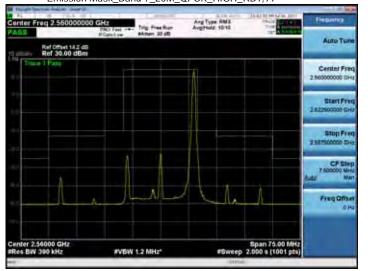
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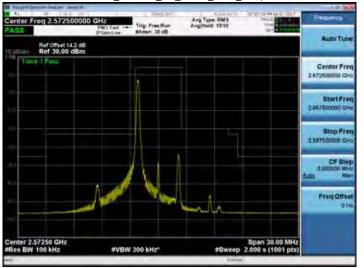
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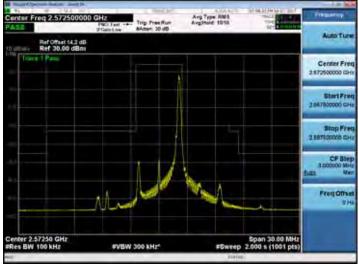
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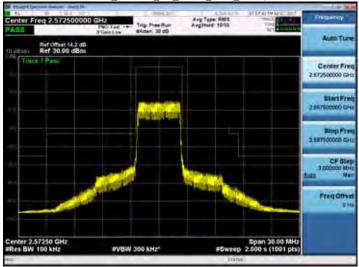
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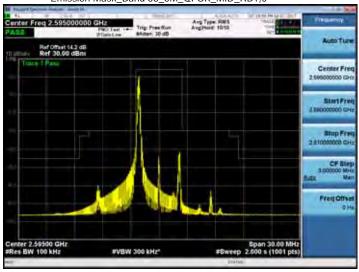
Emission Mask\_Band 38\_5M\_QPSK\_LOW\_RB1,24



Emission Mask\_Band 38\_5M\_QPSK\_LOW\_RB25,0

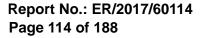


Emission Mask\_Band 38\_5M\_QPSK\_MID\_RB1,0



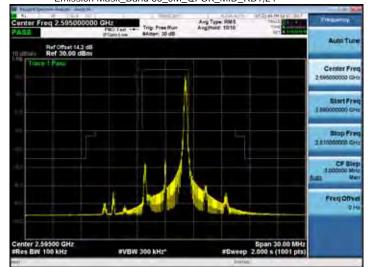
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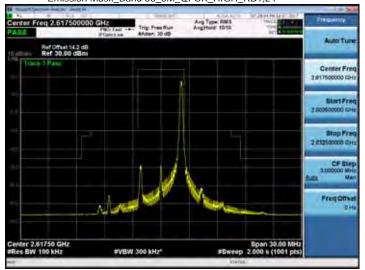




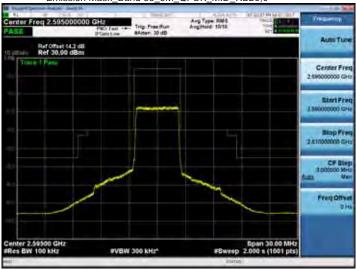
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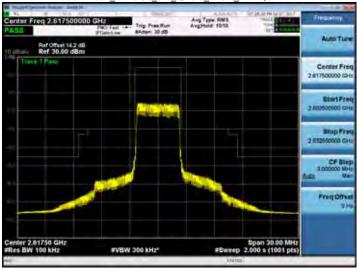
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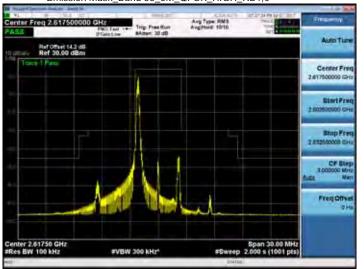
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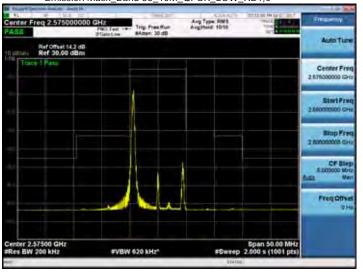
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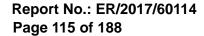


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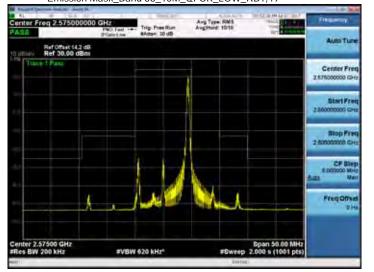
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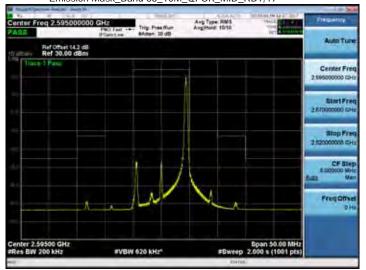




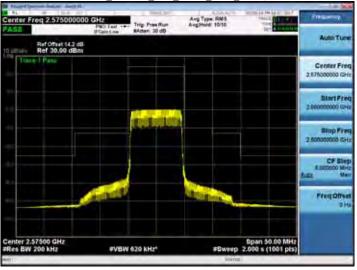
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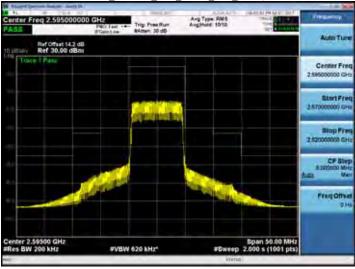
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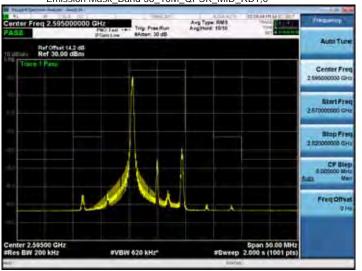
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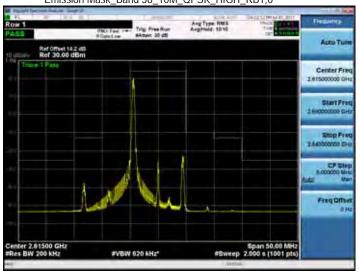
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Emission Mask\_Band 38\_10M\_QPSK\_MID\_RB1,0

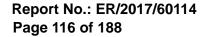


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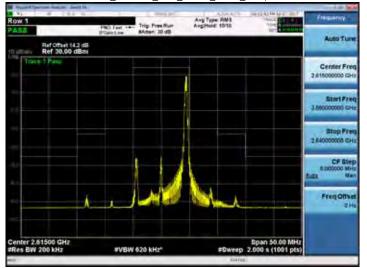
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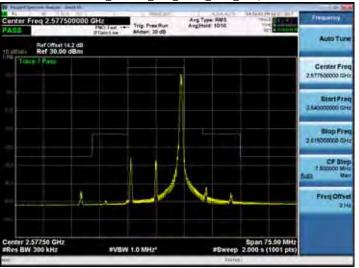




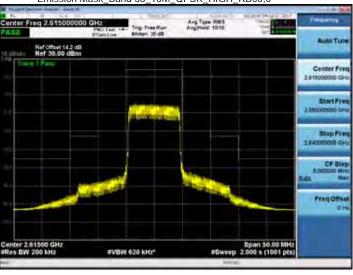
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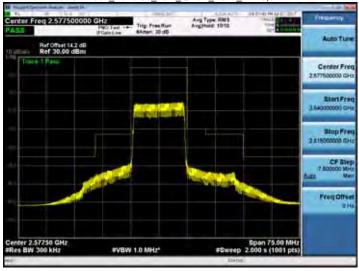
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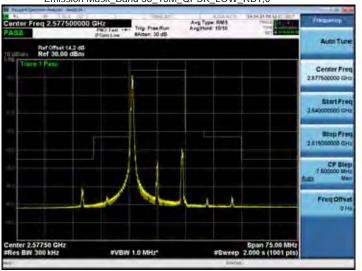
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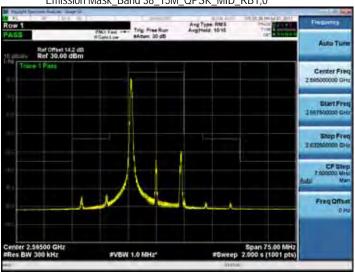
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Emission Mask\_Band 38\_15M\_QPSK\_LOW\_RB1,0

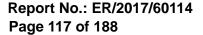


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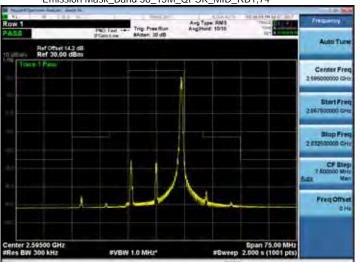
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For \$\frac{1}{2}\$ First points from \$\frac{1}{2}\$ Fi tions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction 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.

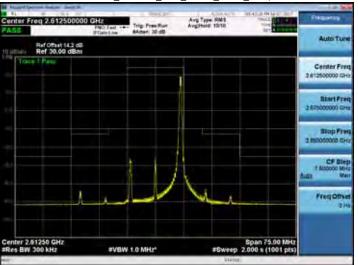




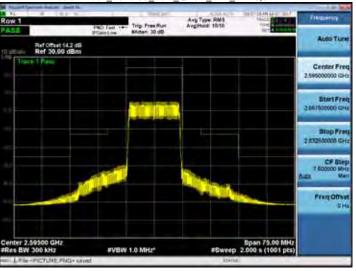
Emission Mask\_Band 38\_15M\_QPSK\_MID\_RB1,74



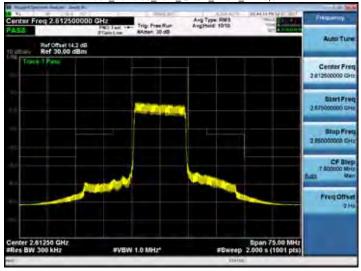
#### Emission Mask\_Band 38\_15M\_QPSK\_HIGH\_RB1,74



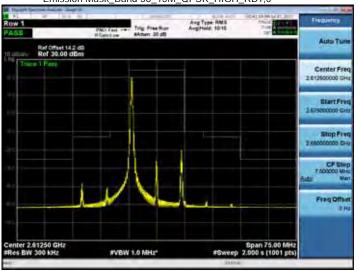
Emission Mask\_Band 38\_15M\_QPSK\_MID\_RB75,0



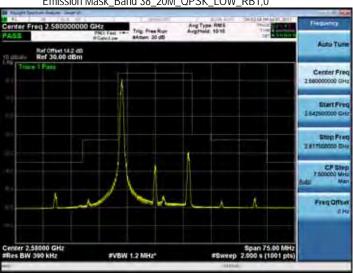
Emission Mask\_Band 38\_15M\_QPSK\_HIGH\_RB75,0



Emission Mask\_Band 38\_15M\_QPSK\_HIGH\_RB1,0

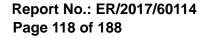


Emission Mask\_Band 38\_20M\_QPSK\_LOW\_RB1,0



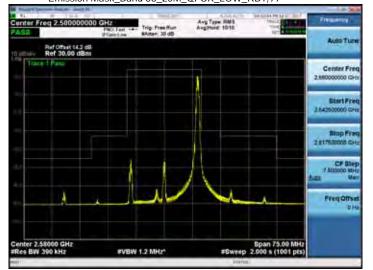
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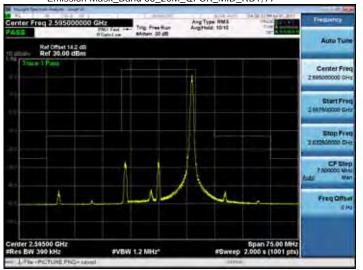




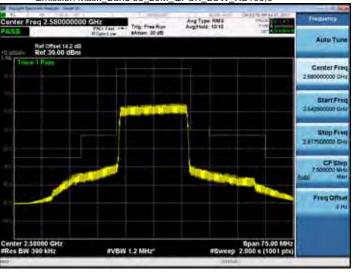
Emission Mask\_Band 38\_20M\_QPSK\_LOW\_RB1,99



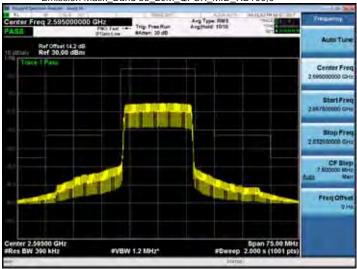
Emission Mask\_Band 38\_20M\_QPSK\_MID\_RB1,99



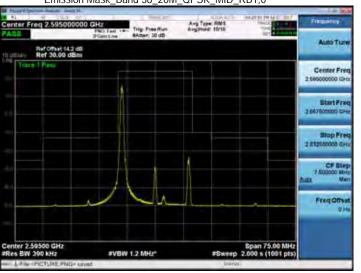
Emission Mask\_Band 38\_20M\_QPSK\_LOW\_RB100,0



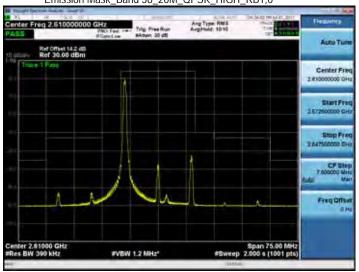
Emission Mask\_Band 38\_20M\_QPSK\_MID\_RB100,0



Emission Mask\_Band 38\_20M\_QPSK\_MID\_RB1,0



Emission Mask\_Band 38\_20M\_QPSK\_HIGH\_RB1,0



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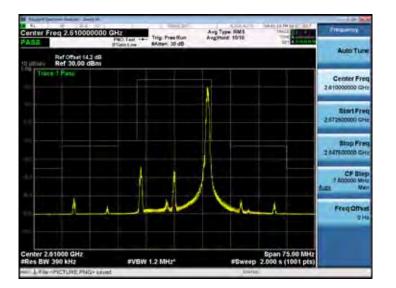
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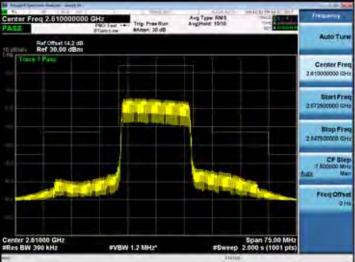


Emission Mask\_Band 38\_20M\_QPSK\_HIGH\_RB1,99

## Report No.: ER/2017/60114 Page 119 of 188

Emission Mask\_Band 38\_20M\_QPSK\_HIGH\_RB100,0





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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(c) (5) & FCC §27.53(g)

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

FCC §27.53(h) (3)

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

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### FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less 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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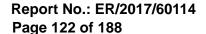




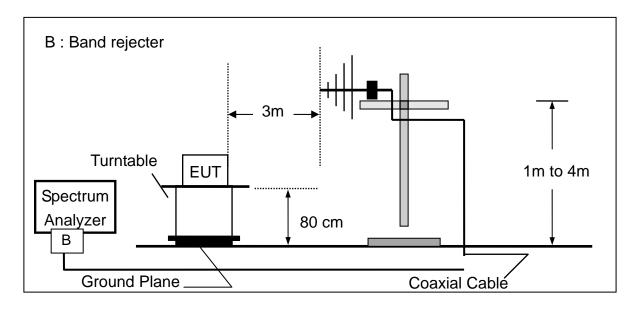
Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber **Equipment** 

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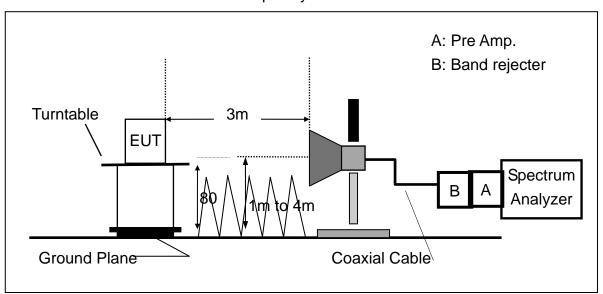
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### Radiated Emission Test Set-UP Frequency Over 1 GHz



#### 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.

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

EIRP (dBm) = SG Level(dBm) + Antenna Gain(dBi) + 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	SERIAL	LAST CAL.	CAL DUE.					
		NUMBER	NUMBER							
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	09/20/2016	09/19/2017					
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017					
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017					
Pre-Amplifier	Agilent	8447D	2944A07676	01/05/2017	01/04/2018					
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/05/2017	01/04/2018					
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	12/12/2016	12/11/2017					
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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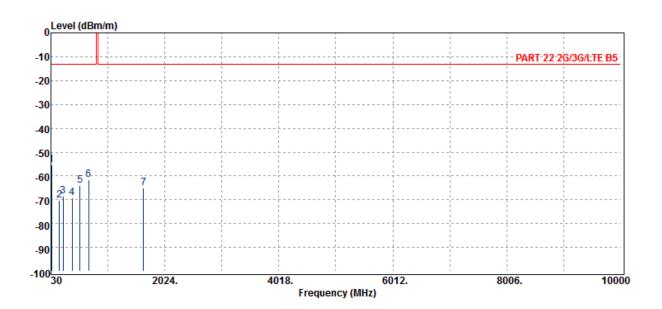
#### 10.5. Measurement Result:

## Radiated Spurious Emission Measurement Result: GPPRS 850 Mode

:GPRS 850 :21 deg\_C / 62 RH **Operation Band** Temp./Humi.

**Fundamental Frequency** :824.2 MHz Engineer

**Operation Mode** :Tx CH LOW EUT Pol. :E2 Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
41.64	S	-55.26	-41.42	-12.83	-1.00	-13.00	-42.26
179.38	S	-70.32	-69.54	0.78	-1.56	-13.00	-57.32
243.40	S	-68.53	-70.12	3.34	-1.75	-13.00	-55.53
401.51	S	-69.24	-70.67	3.82	-2.39	-13.00	-56.24
537.31	S	-64.14	-65.23	3.65	-2.57	-13.00	-51.14
691.54	S	-61.56	-61.82	3.09	-2.83	-13.00	-48.56
1648.40	Н	-64.94	-67.83	7.11	-4.22	-13.00	-51.94

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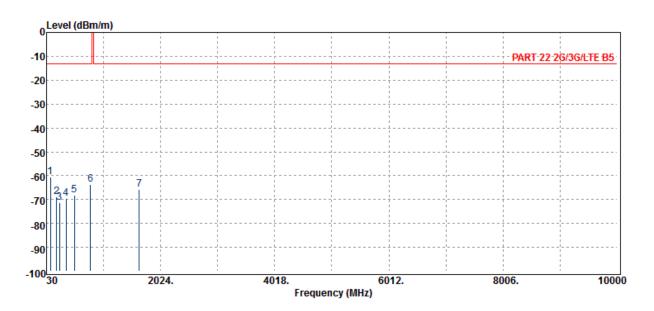
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:GPRS 850 :824.2 MHz :Tx CH LOW :E2 Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
95.96	S	-60.65	-58.26	-1.16	-1.23	-13.00	-47.65
206.54	S	-68.87	-70.59	3.38	-1.66	-13.00	-55.87
257.95	S	-71.26	-73.12	3.63	-1.77	-13.00	-58.26
374.35	S	-69.67	-71.28	3.84	-2.23	-13.00	-56.67
519.85	S	-68.09	-69.44	3.75	-2.39	-13.00	-55.09
799.21	S	-63.81	-64.26	3.34	-2.90	-13.00	-50.81
1648.40	Н	-65.60	-68.48	7.11	-4.22	-13.00	-52.60

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

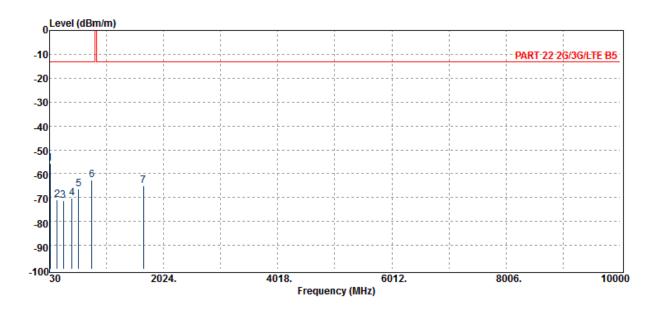
:GPRS 850 :836.6 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
41.64	S	-55.87	-42.03	-12.83	-1.00	-13.00	-42.87
162.89	S	-70.85	-67.93	-1.42	-1.49	-13.00	-57.85
269.59	S	-71.11	-72.80	3.51	-1.82	-13.00	-58.11
419.94	S	-70.14	-71.55	3.75	-2.33	-13.00	-57.14
542.16	S	-66.32	-67.33	3.63	-2.62	-13.00	-53.32
772.05	S	-62.80	-63.11	3.25	-2.94	-13.00	-49.80
1673.20	Н	-64.94	-67.85	7.20	-4.29	-13.00	-51.94

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

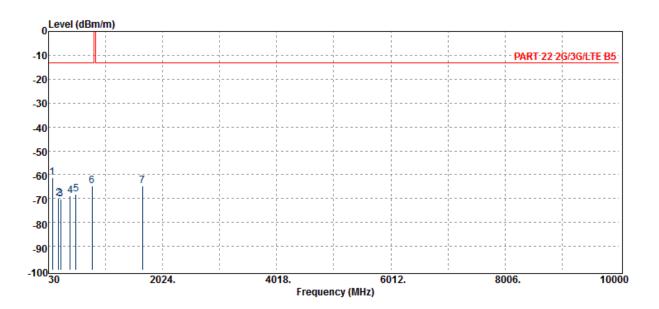
:GPRS 850 :836.6 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
97.90	S	-61.08	-58.46	-1.38	-1.24	-13.00	-48.08
206.54	S	-69.82	-71.54	3.38	-1.66	-13.00	-56.82
239.52	S	-70.13	-71.67	3.28	-1.74	-13.00	-57.13
405.39	S	-68.93	-70.32	3.80	-2.41	-13.00	-55.93
512.09	S	-68.20	-69.64	3.79	-2.35	-13.00	-55.20
793.39	S	-64.74	-65.16	3.32	-2.90	-13.00	-51.74
1673.20	Н	-64.67	-67.58	7.20	-4.29	-13.00	-51.67

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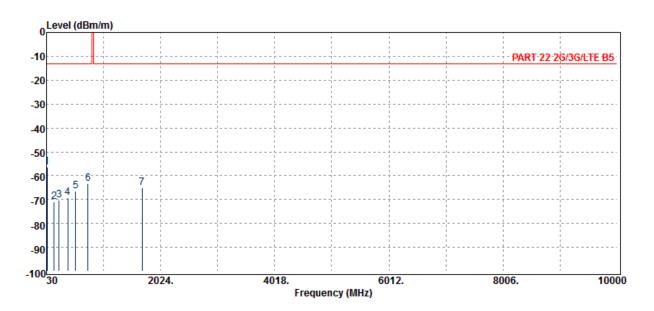
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:GPRS 850 :848.8 MHz :Tx CH HIGH :E2 Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
							_
41.64	S	-56.54	-42.70	-12.83	-1.00	-13.00	-43.54
162.89	S	-70.96	-68.05	-1.42	-1.49	-13.00	-57.96
248.25	S	-70.33	-71.99	3.41	-1.75	-13.00	-57.33
400.54	S	-69.15	-70.59	3.82	-2.38	-13.00	-56.15
539.25	S	-66.46	-67.51	3.64	-2.59	-13.00	-53.46
757.50	S	-63.17	-63.34	3.21	-3.03	-13.00	-50.17
1697.60	Н	-64.88	-67.86	7.28	-4.31	-13.00	-51.88

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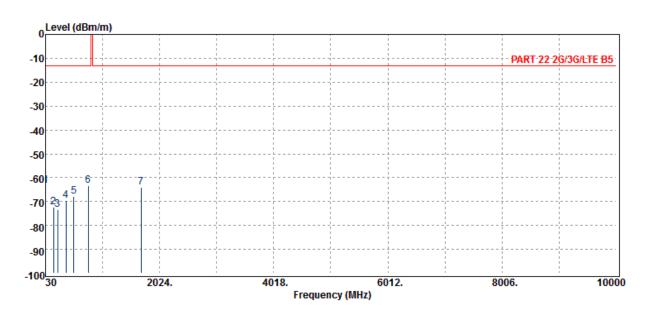
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:GPRS 850 :848.8 MHz :Tx CH HIGH :E2 Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
30.00	S	-63.41	-47.67	-14.78	-0.96	-13.00	-50.41
173.56	S	-72.23	-70.44	-0.26	-1.53	-13.00	-59.23
241.46	S	-73.28	-74.85	3.31	-1.74	-13.00	-60.28
386.96	S	-69.43	-70.96	3.83	-2.30	-13.00	-56.43
522.76	S	-67.76	-69.07	3.73	-2.42	-13.00	-54.76
778.84	S	-63.49	-63.85	3.28	-2.91	-13.00	-50.49
1697.60	Н	-63.91	-66.88	7.28	-4.31	-13.00	-50.91



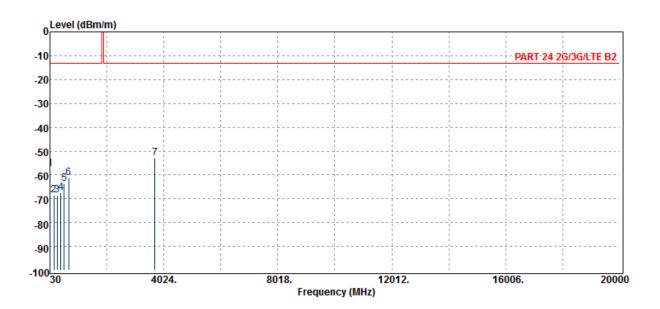
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#### Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

**Operation Band** :GPRS 1900 Temp./Humi. :21 deg\_C / 62 RH

Fundamental Frequency :1850.2 MHz Engineer :Tin :Tx CH LOW **Operation Mode** 

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



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
•			Output Level	Gain	Loss		J	
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
37.76	S	-57.49	-45.34	-11.17	-0.98	-13.00	-44.49	
173.56	S	-68.39	-68.75	1.89	-1.53	-13.00	-55.39	
282.20	S	-68.55	-72.24	5.57	-1.89	-13.00	-55.55	
410.24	S	-67.52	-71.06	5.93	-2.40	-13.00	-54.52	
524.70	S	-63.78	-67.21	5.87	-2.44	-13.00	-50.78	
682.81	S	-61.07	-63.66	5.25	-2.67	-13.00	-48.07	
3700.40	Н	-53.08	-58.95	12.44	-6.58	-13.00	-40.08	



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**Operation Band** Fundamental Frequency **Operation Mode** 

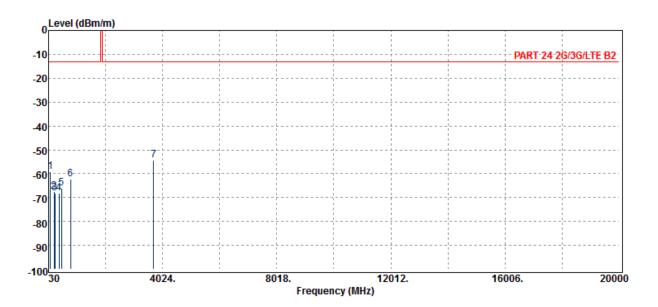
EUT Pol.

:GPRS 1900 :1850.2 MHz :Tx CH LOW :H Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
95.96	S	-59.21	-58.97	0.99	-1.23	-13.00	-46.21
220.12	S	-67.60	-71.37	5.48	-1.70	-13.00	-54.60
253.10	S	-68.32	-72.22	5.66	-1.76	-13.00	-55.32
396.66	S	-68.02	-71.64	5.97	-2.36	-13.00	-55.02
482.99	S	-65.95	-69.64	5.94	-2.25	-13.00	-52.95
796.30	S	-62.21	-64.79	5.48	-2.90	-13.00	-49.21
3700.40	Н	-54.16	-60.02	12.44	-6.58	-13.00	-41.16



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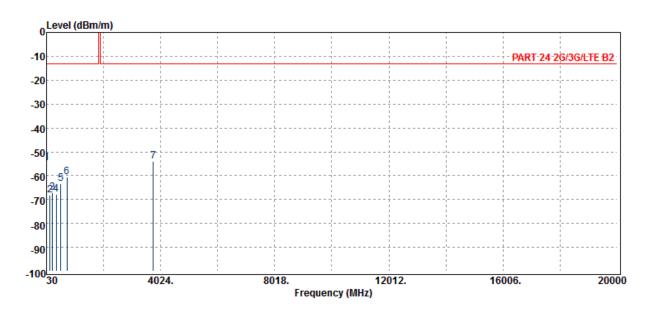
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

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

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
42.61	S	-54.62	-43.08	-10.54	-1.01	-13.00	-41.62
159.98	S	-68.22	-67.26	0.51	-1.48	-13.00	-55.22
245.34	S	-67.17	-70.93	5.52	-1.75	-13.00	-54.17
362.71	S	-67.89	-71.75	6.00	-2.15	-13.00	-54.89
531.49	S	-63.22	-66.54	5.84	-2.51	-13.00	-50.22
744.89	S	-60.55	-62.76	5.32	-3.11	-13.00	-47.55
3760.00	Н	-53.97	-59.82	12.45	-6.60	-13.00	-40.97



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**Operation Band** Fundamental Frequency **Operation Mode** 

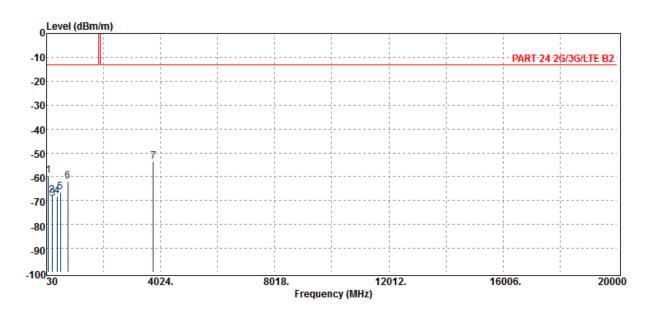
EUT Pol.

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

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
97.90	S	-59.47	-59.00	0.77	-1.24	-13.00	-46.47
219.15	S	-67.92	-71.71	5.49	-1.70	-13.00	-54.92
239.52	S	-69.24	-72.93	5.43	-1.74	-13.00	-56.24
398.60	S	-68.27	-71.87	5.97	-2.37	-13.00	-55.27
519.85	S	-66.50	-70.01	5.90	-2.39	-13.00	-53.50
774.96	S	-61.79	-64.28	5.41	-2.92	-13.00	-48.79
3760.00	Н	-53.61	-59.47	12.45	-6.60	-13.00	-40.61



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

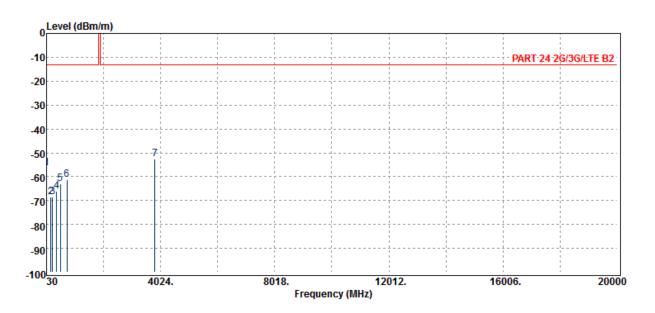
:GPRS 1900 :1909.8 MHz :Tx CH HIGH :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
37.76	S	-56.36	-44.21	-11.17	-0.98	-13.00	-43.36
175.50	S	-68.55	-69.25	2.24	-1.54	-13.00	-55.55
243.40	S	-68.46	-72.20	5.49	-1.75	-13.00	-55.46
390.84	S	-66.26	-69.91	5.98	-2.33	-13.00	-53.26
517.91	S	-63.06	-66.60	5.91	-2.37	-13.00	-50.06
740.04	S	-61.11	-63.28	5.31	-3.14	-13.00	-48.11
3819.60	Н	-52.77	-58.58	12.47	-6.65	-13.00	-39.77



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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

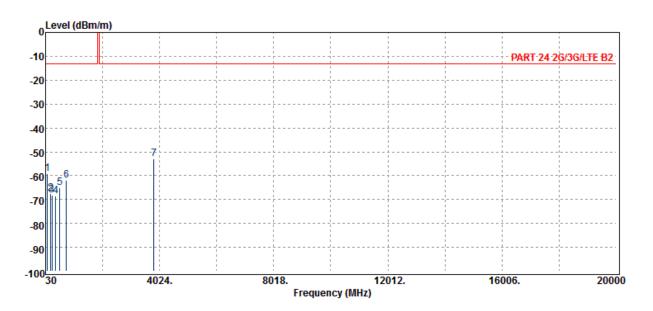
:GPRS 1900 :1909.8 MHz :Tx CH HIGH :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
·			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
95.96	S	-59.04	-58.80	0.99	-1.23	-13.00	-46.04
207.51	S	-67.62	-71.53	5.57	-1.66	-13.00	-54.62
253.10	S	-68.20	-72.11	5.66	-1.76	-13.00	-55.20
388.90	S	-68.39	-72.06	5.98	-2.31	-13.00	-55.39
526.64	S	-65.15	-68.55	5.86	-2.46	-13.00	-52.15
755.56	S	-62.11	-64.42	5.35	-3.04	-13.00	-49.11
3819.60	Н	-52.78	-58.60	12.47	-6.65	-13.00	-39.78



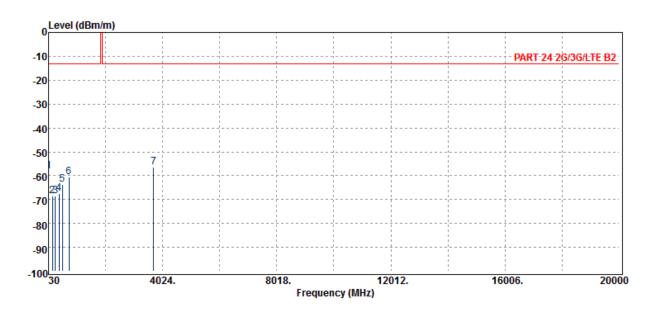
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#### Radiated Spurious Emission Measurement Result: HSDPA Band 2 Mode

**Operation Band** Temp./Humi. :HSDPA B2 :21 deg\_C / 62 RH

Fundamental Frequency :1852.4 MHz Engineer :Tin **Operation Mode** :Tx CH LOW

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



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
32.91	S	-58.28	-45.37	-11.94	-0.97	-13.00	-45.28
168.71	S	-68.54	-68.17	1.15	-1.51	-13.00	-55.54
265.71	S	-68.59	-72.52	5.73	-1.80	-13.00	-55.59
403.45	S	-67.41	-70.97	5.96	-2.40	-13.00	-54.41
513.06	S	-63.76	-67.34	5.94	-2.35	-13.00	-50.76
745.86	S	-60.49	-62.71	5.32	-3.10	-13.00	-47.49
3704.80	Н	-56.57	-62.43	12.44	-6.58	-13.00	-43.57

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:21 deg\_C / 62 RH

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**Operation Band** Fundamental Frequency **Operation Mode** 

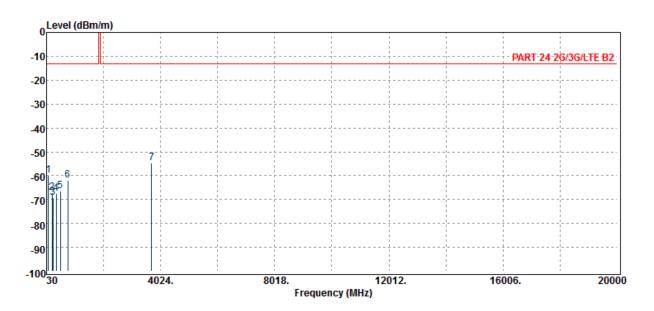
EUT Pol.

:HSDPA B2 :1852.4 MHz :Tx CH LOW :H Plane

Temp./Humi.

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
95.96	S	-59.69	-59.45	0.99	-1.23	-13.00	-46.69
220.12	S	-67.21	-70.98	5.48	-1.70	-13.00	-54.21
255.04	S	-69.15	-73.09	5.71	-1.76	-13.00	-56.15
371.44	S	-67.50	-71.28	5.99	-2.21	-13.00	-54.50
512.09	S	-66.52	-70.11	5.94	-2.35	-13.00	-53.52
767.20	S	-62.09	-64.51	5.39	-2.97	-13.00	-49.09
3704.80	Н	-54.52	-60.38	12.44	-6.58	-13.00	-41.52

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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

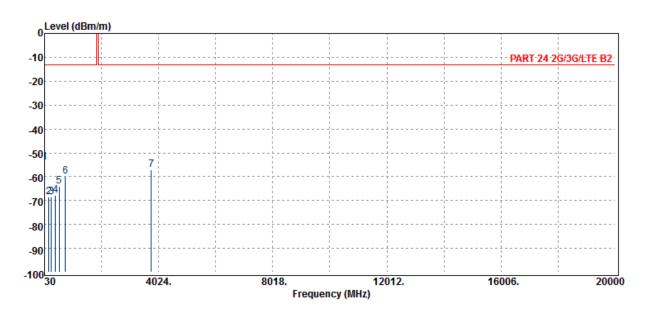
:HSDPA B2 :1880 MHz :Tx CH MID :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
41.64	S	-53.91	-42.23	-10.68	-1.00	-13.00	-40.91
177.44	S	-68.59	-69.62	2.59	-1.55	-13.00	-55.59
274.44	S	-68.50	-72.27	5.62	-1.85	-13.00	-55.50
411.21	S	-67.92	-71.45	5.93	-2.39	-13.00	-54.92
537.31	S	-64.07	-67.31	5.80	-2.57	-13.00	-51.07
759.44	S	-60.03	-62.37	5.36	-3.02	-13.00	-47.03
3760.00	Н	-57.06	-62.91	12.45	-6.60	-13.00	-44.06



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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

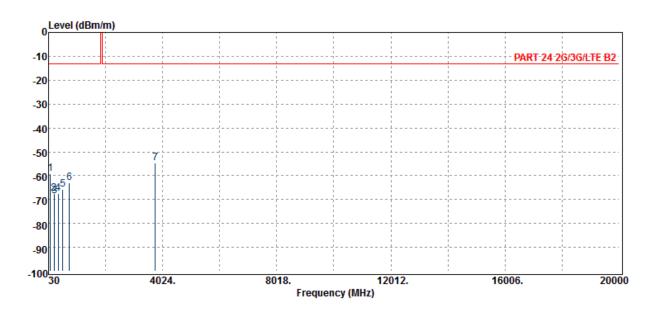
:HSDPA B2 :1880 MHz :Tx CH MID :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
97.90	S	-59.10	-58.62	0.77	-1.24	-13.00	-46.10
219.15	S	-67.46	-71.26	5.49	-1.70	-13.00	-54.46
239.52	S	-68.67	-72.36	5.43	-1.74	-13.00	-55.67
366.59	S	-67.45	-71.27	6.00	-2.17	-13.00	-54.45
524.70	S	-65.70	-69.13	5.87	-2.44	-13.00	-52.70
757.50	S	-62.92	-65.25	5.36	-3.03	-13.00	-49.92
3760.00	Н	-54.57	-60.43	12.45	-6.60	-13.00	-41.57



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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

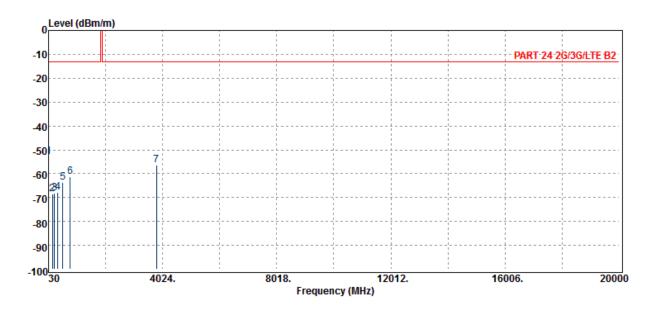
:HSDPA B2 :1907.6 MHz :Tx CH HIGH :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
41.64	S	-52.91	-41.22	-10.68	-1.00	-13.00	-39.91
173.56	S	-68.57	-68.92	1.89	-1.53	-13.00	-55.57
241.46	S	-68.06	-71.77	5.46	-1.74	-13.00	-55.06
353.01	S	-67.81	-71.75	6.01	-2.07	-13.00	-54.81
522.76	S	-63.75	-67.21	5.88	-2.42	-13.00	-50.75
791.45	S	-61.36	-63.92	5.47	-2.90	-13.00	-48.36
3815.20	Н	-56.46	-62.29	12.46	-6.63	-13.00	-43.46



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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

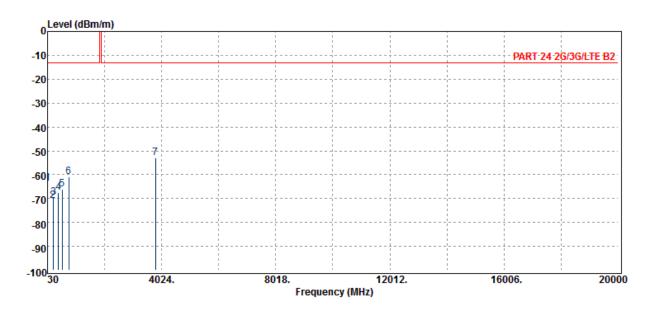
:HSDPA B2 :1907.6 MHz :Tx CH HIGH :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
·			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
30.00	S	-63.65	-50.07	-12.63	-0.96	-13.00	-50.65
220.12	S	-70.82	-74.59	5.48	-1.70	-13.00	-57.82
243.40	S	-69.45	-73.19	5.49	-1.75	-13.00	-56.45
413.15	S	-67.62	-71.17	5.92	-2.38	-13.00	-54.62
537.31	S	-65.97	-69.20	5.80	-2.57	-13.00	-52.97
774.96	S	-60.76	-63.25	5.41	-2.92	-13.00	-47.76
3815.20	Н	-52.90	-58.74	12.46	-6.63	-13.00	-39.90



**Operation Mode** 

Report No.: ER/2017/60114

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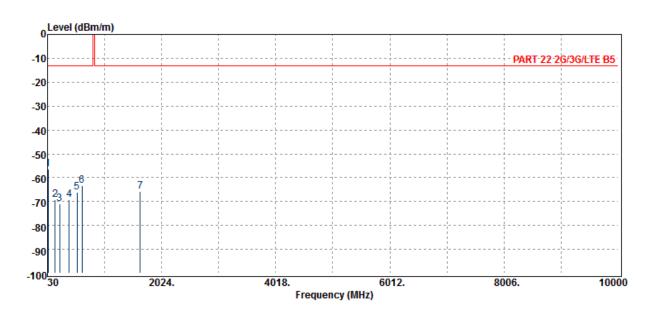
### Radiated Spurious Emission Measurement Result: HSDPA Band 5 Mode

:Tx CH LOW

**Operation Band** :HSDPA B5 Temp./Humi. :21 deg\_C / 62 RH

**Fundamental Frequency** :826.4 MHz Engineer

EUT Pol. :E2 Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
42.61	S	-56.40	-42.71	-12.69	-1.01	-13.00	-43.40
165.80	S	-69.14	-66.43	-1.21	-1.50	-13.00	-56.14
240.49	S	-70.80	-72.35	3.29	-1.74	-13.00	-57.80
410.24	S	-69.20	-70.58	3.78	-2.40	-13.00	-56.20
546.04	S	-65.97	-66.91	3.61	-2.66	-13.00	-52.97
634.31	S	-63.30	-64.01	3.17	-2.45	-13.00	-50.30
1652.80	Н	-65.83	-68.72	7.12	-4.24	-13.00	-52.83



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

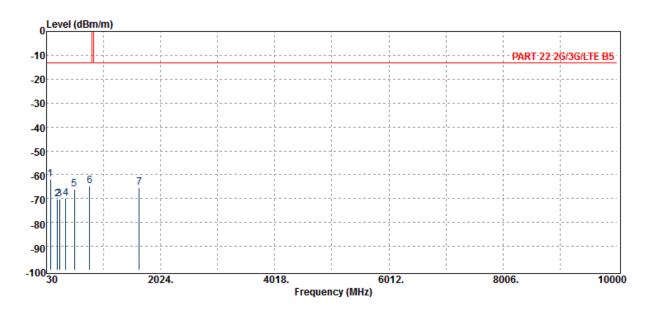
:HSDPA B5 :826.4 MHz :Tx CH LOW :E2 Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
•			Output Level	Gain	Loss		· ·	
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
97.90	S	-61.84	-59.22	-1.38	-1.24	-13.00	-48.84	
219.15	S	-70.07	-71.72	3.34	-1.70	-13.00	-57.07	
256.01	S	-70.19	-72.01	3.58	-1.77	-13.00	-57.19	
362.71	S	-69.76	-71.46	3.85	-2.15	-13.00	-56.76	
516.94	S	-65.96	-67.35	3.76	-2.37	-13.00	-52.96	
783.69	S	-64.66	-65.05	3.29	-2.91	-13.00	-51.66	
1652.80	Н	-65.43	-68.32	7.12	-4.24	-13.00	-52.43	

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

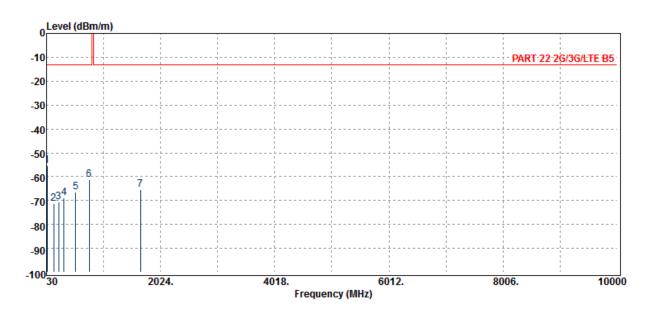
:HSDPA B5 :836.6 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
41.64	S	-55.52	-41.69	-12.83	-1.00	-13.00	-42.52
154.16	S	-71.28	-67.93	-1.90	-1.45	-13.00	-58.28
243.40	S	-70.61	-72.20	3.34	-1.75	-13.00	-57.61
335.55	S	-68.87	-70.74	3.80	-1.93	-13.00	-55.87
541.19	S	-66.58	-67.61	3.63	-2.61	-13.00	-53.58
774.96	S	-61.31	-61.65	3.26	-2.92	-13.00	-48.31
1673.20	Н	-65.27	-68.18	7.20	-4.29	-13.00	-52.27

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

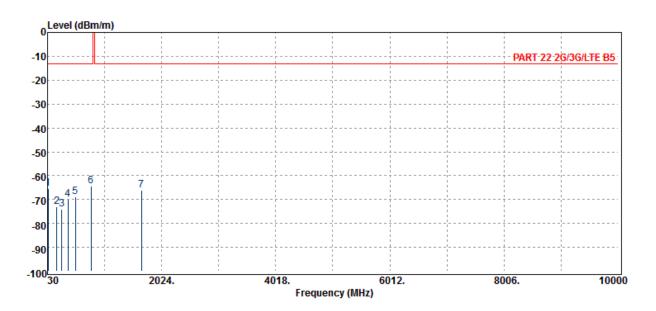
:HSDPA B5 :836.6 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
							_
37.76	S	-65.37	-51.07	-13.32	-0.98	-13.00	-52.37
194.90	S	-72.87	-74.08	2.83	-1.62	-13.00	-59.87
279.29	S	-74.13	-75.69	3.43	-1.87	-13.00	-61.13
386.96	S	-69.84	-71.37	3.83	-2.30	-13.00	-56.84
515.00	S	-68.92	-70.34	3.77	-2.36	-13.00	-55.92
789.51	S	-64.50	-64.90	3.31	-2.90	-13.00	-51.50
1673.20	Н	-65.96	-68.87	7.20	-4.29	-13.00	-52.96



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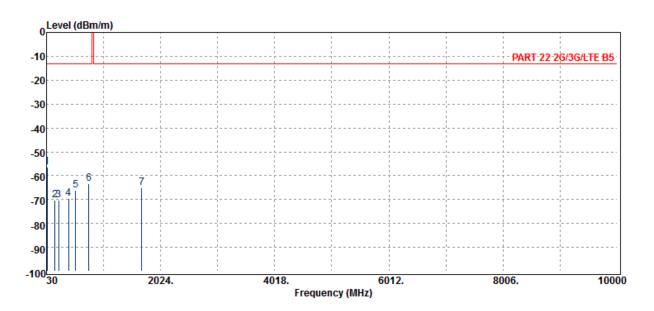
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:HSDPA B5 :846.6 MHz :Tx CH HIGH :E2 Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
							_
41.64	S	-56.44	-42.60	-12.83	-1.00	-13.00	-43.44
178.41	S	-70.40	-69.45	0.61	-1.55	-13.00	-57.40
245.34	S	-70.12	-71.74	3.37	-1.75	-13.00	-57.12
415.09	S	-69.58	-70.98	3.77	-2.37	-13.00	-56.58
536.34	S	-66.24	-67.34	3.66	-2.56	-13.00	-53.24
769.14	S	-63.42	-63.70	3.24	-2.96	-13.00	-50.42
1693.20	Н	-64.98	-67.94	7.27	-4.30	-13.00	-51.98



:21 deg\_C / 62 RH

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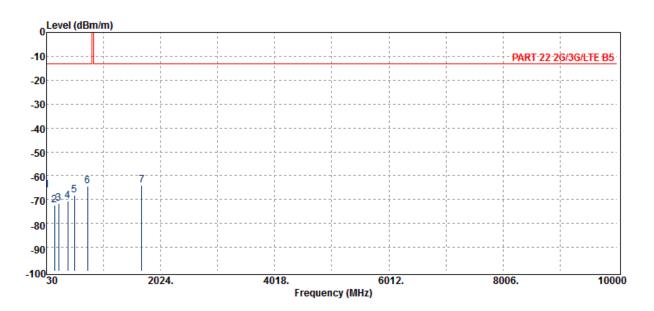
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:HSDPA B5 :846.6 MHz :Tx CH HIGH :E2 Plane

Temp./Humi.

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
·			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
30.00	S	-65.96	-50.23	-14.78	-0.96	-13.00	-52.96
173.56	S	-72.49	-70.70	-0.26	-1.53	-13.00	-59.49
243.40	S	-71.50	-73.09	3.34	-1.75	-13.00	-58.50
403.45	S	-70.47	-71.88	3.81	-2.40	-13.00	-57.47
517.91	S	-68.22	-69.61	3.76	-2.37	-13.00	-55.22
747.80	S	-64.25	-64.34	3.18	-3.09	-13.00	-51.25
1693.20	Н	-63.97	-66.94	7.27	-4.30	-13.00	-50.97



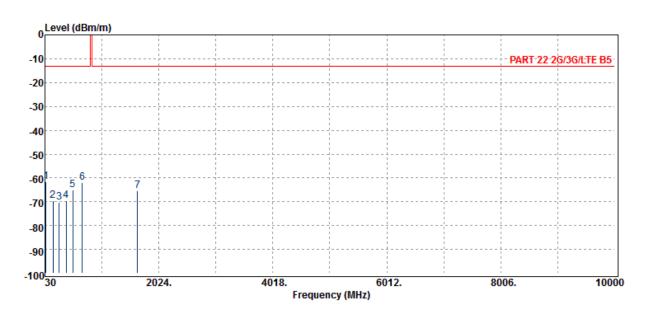
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## Radiated Spurious Emission Measurement Result: LTE-Band 5 (The Worst Case)

Temp./Humi. **Operation Band** :LTE B5 :22 deg C / 61 RH

Fundamental Frequency :826.5 MHz Engineer :Tin **Operation Mode** :Tx CH LOW

EUT Pol. :E2 Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
44.55	S	-61.58	-48.15	-12.42	-1.02	-13.00	-48.58
167.74	S	-69.42	-66.84	-1.07	-1.51	-13.00	-56.42
282.20	S	-70.08	-71.62	3.42	-1.89	-13.00	-57.08
403.45	S	-69.46	-70.87	3.81	-2.40	-13.00	-56.46
516.94	S	-65.14	-66.54	3.76	-2.37	-13.00	-52.14
683.78	S	-62.10	-62.52	3.10	-2.69	-13.00	-49.10
1653.00	Н	-65.25	-68.13	7.12	-4.24	-13.00	-52.25

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**Operation Band** Fundamental Frequency **Operation Mode** 

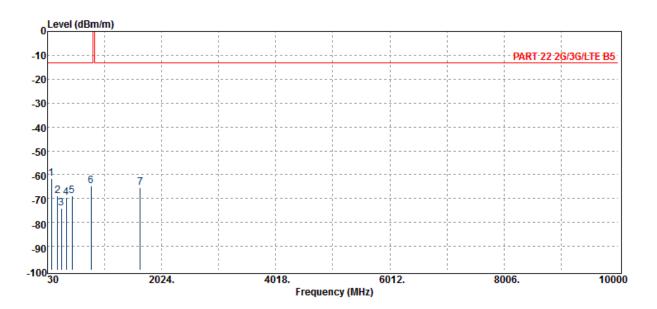
EUT Pol.

:LTE B5 :826.5 MHz :Tx CH LOW :E2 Plane

Temp./Humi. :22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
•			Output Level	Gain	Loss		J	
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
97.90	S	-61.53	-58.91	-1.38	-1.24	-13.00	-48.53	
207.51	S	-68.87	-70.63	3.42	-1.66	-13.00	-55.87	
274.44	S	-74.20	-75.82	3.47	-1.85	-13.00	-61.20	
361.74	S	-69.47	-71.18	3.85	-2.14	-13.00	-56.47	
459.71	S	-68.74	-70.22	3.69	-2.21	-13.00	-55.74	
794.36	S	-64.60	-65.03	3.32	-2.90	-13.00	-51.60	
1653.00	Н	-65.29	-68.18	7.12	-4.24	-13.00	-52.29	



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**Operation Band** Fundamental Frequency **Operation Mode** 

EUT Pol.

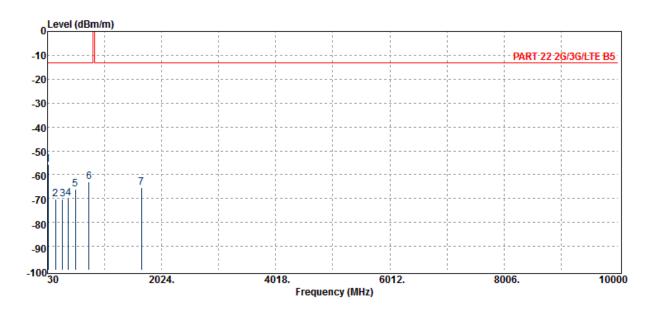
:LTE B5 :836.5 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
41.64	S	-55.76	-41.93	-12.83	-1.00	-13.00	-42.76
173.56	S	-70.26	-68.47	-0.26	-1.53	-13.00	-57.26
296.75	S	-70.25	-71.86	3.56	-1.95	-13.00	-57.25
395.69	S	-69.87	-71.34	3.82	-2.35	-13.00	-56.87
519.85	S	-66.02	-67.38	3.75	-2.39	-13.00	-53.02
755.56	S	-62.97	-63.12	3.20	-3.04	-13.00	-49.97
1673.00	Н	-65.53	-68.44	7.20	-4.29	-13.00	-52.53



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

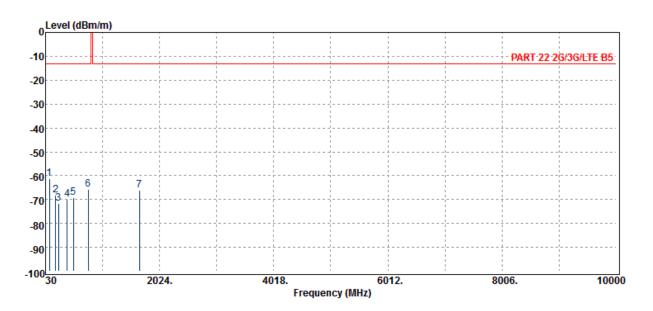
:LTE B5 :836.5 MHz :Tx CH MID :E2 Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
94.99	S	-61.38	-59.11	-1.04	-1.23	-13.00	-48.38
206.54	S	-68.07	-69.79	3.38	-1.66	-13.00	-55.07
257.95	S	-71.66	-73.52	3.63	-1.77	-13.00	-58.66
410.24	S	-69.94	-71.32	3.78	-2.40	-13.00	-56.94
517.91	S	-69.18	-70.57	3.76	-2.37	-13.00	-56.18
774.96	S	-65.66	-66.00	3.26	-2.92	-13.00	-52.66
1673.00	Н	-65.95	-68.86	7.20	-4.29	-13.00	-52.95



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

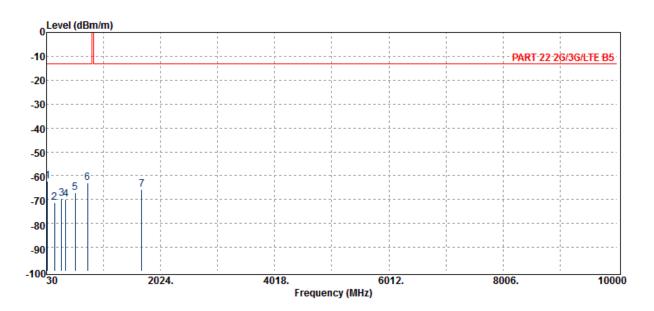
:LTE B5 :846.5 MHz :Tx CH HIGH :E2 Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
							_
44.55	S	-62.38	-48.94	-12.42	-1.02	-13.00	-49.38
173.56	S	-71.39	-69.59	-0.26	-1.53	-13.00	-58.39
296.75	S	-69.56	-71.17	3.56	-1.95	-13.00	-56.56
366.59	S	-69.99	-71.67	3.85	-2.17	-13.00	-56.99
531.49	S	-67.10	-68.27	3.69	-2.51	-13.00	-54.10
744.89	S	-62.92	-62.98	3.17	-3.11	-13.00	-49.92
1693.00	Н	-65.68	-68.64	7.27	-4.30	-13.00	-52.68



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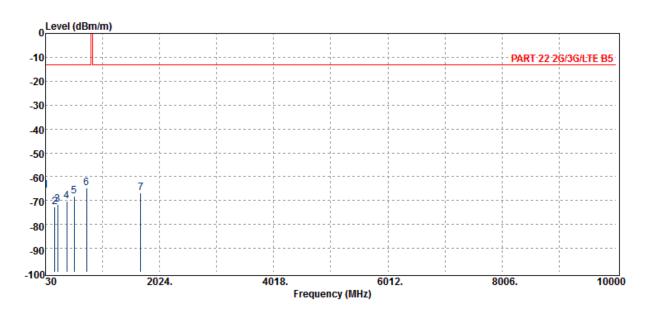
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:LTE B5 :846.5 MHz :Tx CH HIGH :E2 Plane

Temp./Humi. :22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
							_
30.00	S	-65.58	-49.85	-14.78	-0.96	-13.00	-52.58
194.90	S	-72.59	-73.80	2.83	-1.62	-13.00	-59.59
245.34	S	-71.58	-73.20	3.37	-1.75	-13.00	-58.58
403.45	S	-70.29	-71.70	3.81	-2.40	-13.00	-57.29
534.40	S	-68.25	-69.38	3.67	-2.54	-13.00	-55.25
750.71	S	-64.66	-64.77	3.18	-3.07	-13.00	-51.66
1693.00	Н	-66.77	-69.73	7.27	-4.30	-13.00	-53.77

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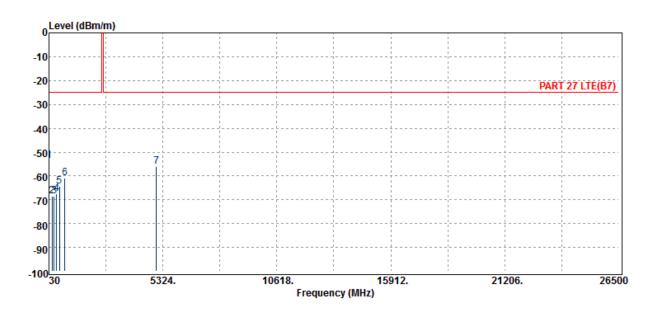
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# Radiated Spurious Emission Measurement Result: LTE-Band 7 (The Worst Case)

Temp./Humi. **Operation Band** :LTE B7 :21 deg C / 62 RH

Fundamental Frequency :2505 MHz Engineer :Tin **Operation Mode** :Tx CH LOW

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



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
·			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
39.70	S	-53.49	-41.53	-10.96	-0.99	-25.00	-28.49
165.80	S	-68.68	-68.11	0.94	-1.50	-25.00	-43.68
274.44	S	-68.43	-72.20	5.62	-1.85	-25.00	-43.43
379.20	S	-67.37	-71.10	5.99	-2.26	-25.00	-42.37
526.64	S	-64.49	-67.89	5.86	-2.46	-25.00	-39.49
767.20	S	-60.89	-63.31	5.39	-2.97	-25.00	-35.89
5010.00	Н	-56.02	-60.91	12.70	-7.81	-25.00	-31.02

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

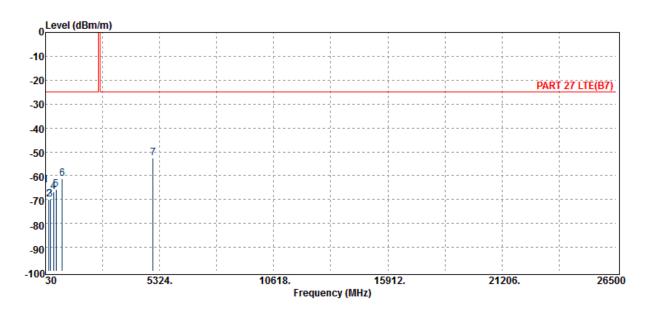
:LTE B7 :2505 MHz :Tx CH LOW :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
37.76	S	-63.87	-51.72	-11.17	-0.98	-25.00	-38.87
198.78	S	-69.97	-73.53	5.19	-1.63	-25.00	-44.97
243.40	S	-69.92	-73.66	5.49	-1.75	-25.00	-44.92
411.21	S	-66.71	-70.24	5.93	-2.39	-25.00	-41.71
521.79	S	-65.72	-69.20	5.89	-2.41	-25.00	-40.72
796.30	S	-61.21	-63.79	5.48	-2.90	-25.00	-36.21
5010.00	Н	-52.75	-57.64	12.70	-7.81	-25.00	-27.75

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

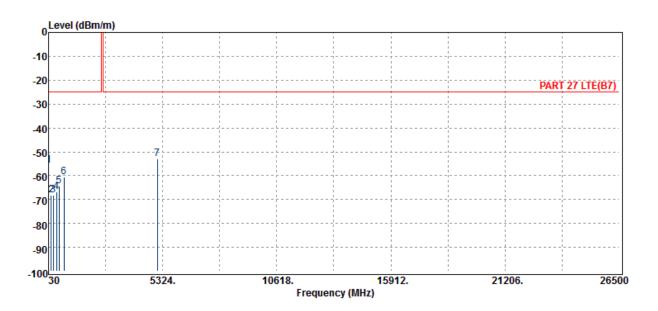
:LTE B7 :2535.0 MHz :Tx CH MID :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG Output Lovel	Antenna Gain	Cable	Limit	Margin
			Output Level		Loss		
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
37.76	S	-55.72	-43.57	-11.17	-0.98	-25.00	-30.72
160.95	S	-68.27	-67.37	0.58	-1.48	-25.00	-43.27
246.31	S	-68.19	-71.97	5.53	-1.75	-25.00	-43.19
395.69	S	-66.72	-70.34	5.97	-2.35	-25.00	-41.72
516.94	S	-64.29	-67.84	5.91	-2.37	-25.00	-39.29
750.71	S	-60.42	-62.68	5.33	-3.07	-25.00	-35.42
5070.00	Н	-53.10	-57.97	12.73	-7.86	-25.00	-28.10



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

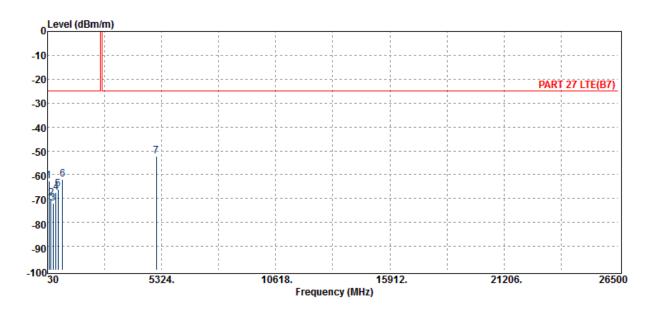
:LTE B7 :2535.0 MHz :Tx CH MID :H Plane

Temp./Humi.

:21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
IVITZ	F/П/E/3	UDIII	UDIII	иы	uБ	ubili	uБ
	_						
97.90	S	-62.63	-62.16	0.77	-1.24	-25.00	-37.63
191.99	S	-70.02	-73.23	4.82	-1.61	-25.00	-45.02
285.11	S	-71.93	-75.60	5.58	-1.90	-25.00	-46.93
415.09	S	-67.41	-70.96	5.92	-2.37	-25.00	-42.41
526.64	S	-65.92	-69.32	5.86	-2.46	-25.00	-40.92
738.10	S	-61.98	-64.15	5.31	-3.13	-25.00	-36.98
5070.00	Н	-52.32	-57.19	12.73	-7.86	-25.00	-27.32

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:21 deg\_C / 62 RH

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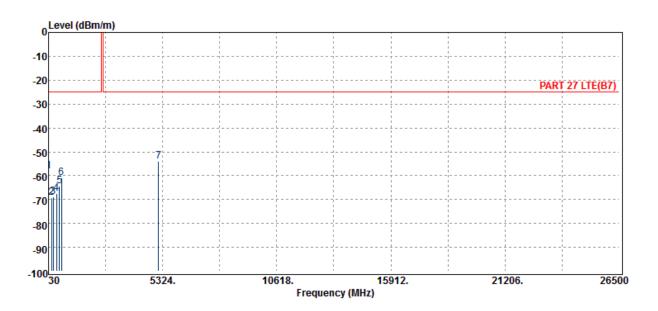
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:LTE B7 :2565 MHz :Tx CH HIGH :H Plane

Temp./Humi.

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
36.79	S	-58.08	-45.82	-11.28	-0.98	-25.00	-33.08
178.41	S	-69.33	-70.53	2.76	-1.55	-25.00	-44.33
243.40	S	-68.75	-72.49	5.49	-1.75	-25.00	-43.75
400.54	S	-67.55	-71.14	5.97	-2.38	-25.00	-42.55
542.16	S	-64.23	-67.39	5.78	-2.62	-25.00	-39.23
628.49	S	-60.77	-63.63	5.33	-2.47	-25.00	-35.77
5130.00	Н	-54.03	-58.87	12.75	-7.92	-25.00	-29.03



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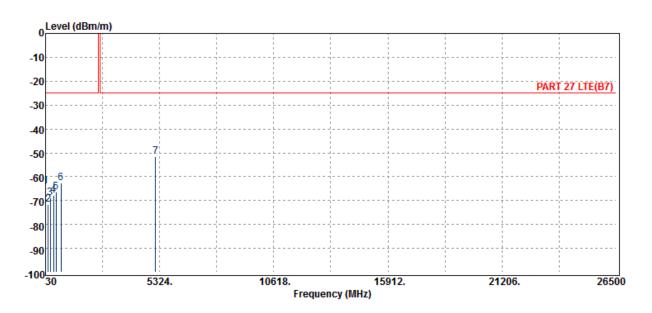
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:LTE B7 :2565 MHz :Tx CH HIGH :H Plane

Temp./Humi. :21 deg\_C / 62 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
·			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
30.00	S	-64.10	-50.52	-12.63	-0.96	-25.00	-39.10
153.19	S	-71.52	-70.28	0.20	-1.44	-25.00	-46.52
241.46	S	-68.84	-72.55	5.46	-1.74	-25.00	-43.84
411.21	S	-67.76	-71.30	5.93	-2.39	-25.00	-42.76
513.06	S	-66.60	-70.18	5.94	-2.35	-25.00	-41.60
744.89	S	-62.50	-64.72	5.32	-3.11	-25.00	-37.50
5130.00	Н	-51.50	-56.34	12.75	-7.92	-25.00	-26.50



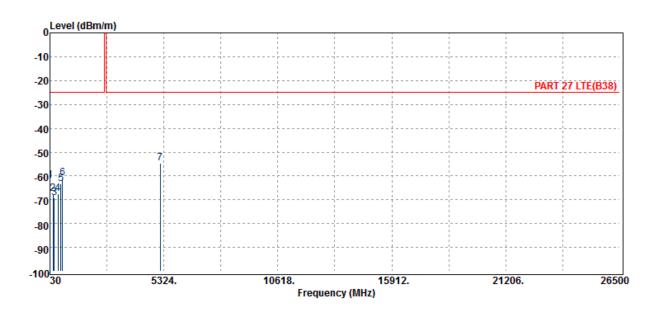
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## Radiated Spurious Emission Measurement Result: LTE-Band 38 (The Worst Case)

Temp./Humi. **Operation Band** :LTE B38 :22 deg C / 61 RH

Fundamental Frequency :2572.5 MHz Engineer :Tin **Operation Mode** :Tx CH LOW

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



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
·			Output Level	Gain	Loss		· ·	
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
36.79	S	-62.09	-49.84	-11.28	-0.98	-25.00	-37.09	
172.59	S	-67.41	-67.60	1.71	-1.53	-25.00	-42.41	
240.49	S	-69.12	-72.83	5.44	-1.74	-25.00	-44.12	
410.24	S	-67.46	-71.00	5.93	-2.40	-25.00	-42.46	
541.19	S	-63.30	-66.48	5.78	-2.61	-25.00	-38.30	
619.76	S	-60.88	-63.68	5.35	-2.55	-25.00	-35.88	
5145.00	Н	-54.55	-59.37	12.76	-7.94	-25.00	-29.55	

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

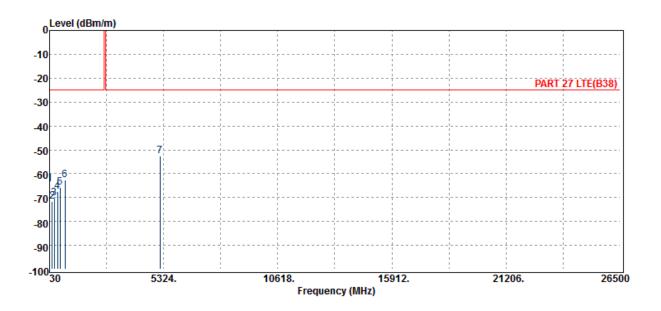
:LTE B38 :2572.5 MHz :Tx CH LOW :H Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
46.49	S	-64.29	-53.37	-9.89	-1.03	-25.00	-39.29
153.19	S	-71.59	-70.35	0.20	-1.44	-25.00	-46.59
243.40	S	-70.07	-73.82	5.49	-1.75	-25.00	-45.07
403.45	S	-67.64	-71.20	5.96	-2.40	-25.00	-42.64
512.09	S	-65.66	-69.26	5.94	-2.35	-25.00	-40.66
744.89	S	-62.70	-64.91	5.32	-3.11	-25.00	-37.70
5145.00	Н	-52.43	-57.25	12.76	-7.94	-25.00	-27.43

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

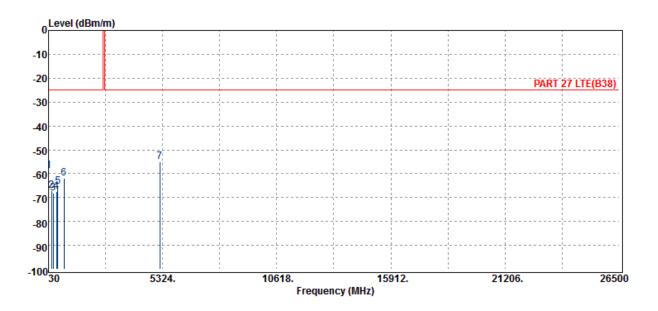
:LTE B38 :2595.0 MHz :Tx CH MID :H Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:VERTICAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		•
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
32.91	S	-58.68	-45.77	-11.94	-0.97	-25.00	-33.68
173.56	S	-67.16	-67.52	1.89	-1.53	-25.00	-42.16
248.25	S	-68.03	-71.84	5.56	-1.75	-25.00	-43.03
405.39	S	-67.58	-71.12	5.95	-2.41	-25.00	-42.58
453.89	S	-65.24	-68.85	5.81	-2.20	-25.00	-40.24
750.71	S	-61.80	-64.07	5.33	-3.07	-25.00	-36.80
5190.00	Н	-54.92	-59.75	12.78	-7.95	-25.00	-29.92



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

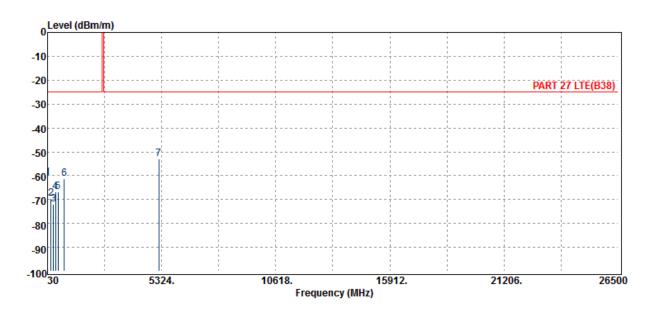
:LTE B38 :2595.0 MHz :Tx CH MID :H Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
•			Output Level	Gain	Loss		· ·
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
							_
30.00	S	-60.98	-47.39	-12.63	-0.96	-25.00	-35.98
199.75	S	-69.52	-73.13	5.24	-1.63	-25.00	-44.52
299.66	S	-72.06	-75.88	5.77	-1.95	-25.00	-47.06
403.45	S	-66.77	-70.33	5.96	-2.40	-25.00	-41.77
520.82	S	-66.69	-70.18	5.89	-2.40	-25.00	-41.69
796.30	S	-61.36	-63.94	5.48	-2.90	-25.00	-36.36
5190.00	Н	-52.82	-57.66	12.78	-7.95	-25.00	-27.82

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

:LTE B38 :2617.5 MHz :Tx CH HIGH :H Plane

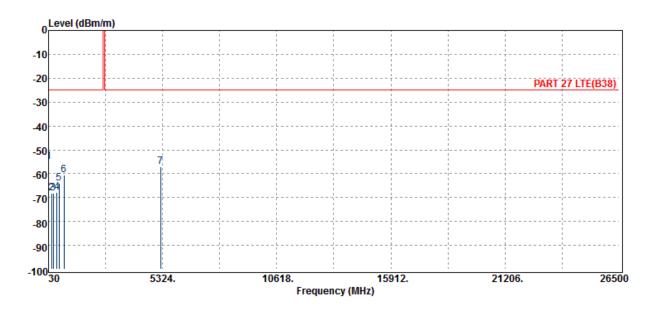
Temp./Humi.

Engineer

:22 deg\_C / 61 RH :Tin

Measurement Antenna Pol.

:VERTICAL



Freq.	Note	EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
39.70	S	-55.12	-43.17	-10.96	-0.99	-25.00	-30.12
172.59	S	-68.15	-68.34	1.71	-1.53	-25.00	-43.15
245.34	S	-68.02	-71.79	5.52	-1.75	-25.00	-43.02
416.06	S	-67.92	-71.47	5.91	-2.36	-25.00	-42.92
524.70	S	-63.93	-67.36	5.87	-2.44	-25.00	-38.93
749.74	S	-60.41	-62.66	5.33	-3.08	-25.00	-35.41
5235.00	Н	-57.20	-61.99	12.80	-8.00	-25.00	-32.20



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

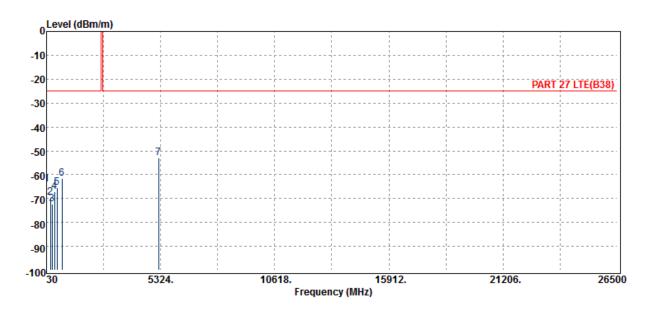
:LTE B38 :2617.5 MHz :Tx CH HIGH :H Plane

Temp./Humi.

:22 deg\_C / 61 RH

Engineer :Tin

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	EIRP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
37.76	S	-63.96	-51.81	-11.17	-0.98	-25.00	-38.96
219.15	S	-69.52	-73.32	5.49	-1.70	-25.00	-44.52
282.20	S	-72.24	-75.93	5.57	-1.89	-25.00	-47.24
410.24	S	-67.02	-70.56	5.93	-2.40	-25.00	-42.02
522.76	S	-65.28	-68.75	5.88	-2.42	-25.00	-40.28
755.56	S	-61.73	-64.04	5.35	-3.04	-25.00	-36.73
5235.00	Н	-53.11	-57.90	12.80	-8.00	-25.00	-28.11

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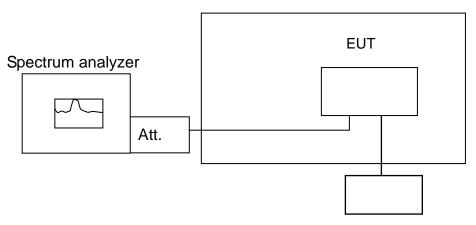
# 11. FREQUENCY STABILITY MEASUREMENT

# 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:





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°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:

1 1								
Conducted Emission (measured at antenna port) Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017			
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017			
EXA Spectrum Analyz- er	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+SUHNE R	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	11/21/2016	11/20/2017			
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 Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018			

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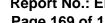
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## 11.5. Measurement Result:

## FREQUENCY ERROR vs. VOLTAGE

1124021101 211	REQUERTOR FOR FOLLAGE						
Ref	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz						
		Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency					
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)			
4.4	20	836600002	5	2091			
3.85	20	836599997	0	2091			
3.5	20	836599995	-2	2091			
2.5 (End point)	20	836600007	10	2091			

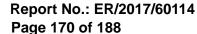
# FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz					
		Limit: +/- 2.5 ppm			
Power Supply	Environment	Frequency	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)	
3.85	50	836600001	11	2091	
3.85	40	836600000	10	2091	
3.85	30	836599986	-4	2091	
3.85	20	836599990	0	2091	
3.85	10	836600015	25	2091	
3.85	0	836600008	18	2091	
3.85	-10	836599991	1	2091	
3.85	-20	836600008	18	2091	
3.85	-30	836600013	23	2091	

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Reference Frequency: GPRS 1900 Mid Channel 1880 MHz						
	Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)		
4.4	20	1880000001	7	4700		
3.85	20	1879999994	0	4700		
3.5	20	1880000010	16	4700		
2.5 (End point)	20	1880000010	16	4700		

# FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz					
	L	.imit: +/- 2.5 ppm = H	Z		
Power Supply	Environment	- 1 7		Limit (Hz)	
Vdc	Temperature ( )	(MHz)	Delta (Hz)	LIIIII (FIZ)	
3.85	50	1880000000	-6	4700	
3.85	40	1880000003	-3	4700	
3.85	30	1879999987	-19	4700	
3.85	20	1880000006	0	4700	
3.85	10	1880000003	-3	4700	
3.85	0	1879999985	-21	4700	
3.85	-10	188000007	1	4700	
3.85	-20	1880000013	7	4700	
3.85	-30	1880000007	1	4700	

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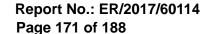
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Reference Frequency: WCDMA II Mid Channel 1880 MHz							
	Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency					
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)			
4.4	20	1879999999	3	4700			
3.85	20	1879999996	0	4700			
3.5	20	1880000003	7	4700			
2.5 (End point)	20	1879999998	2	4700			

# FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency: WCDMA II Mid Channel 1880						
		Limit: +/- 2.5 ppm	1			
Power Supply	Environment	Frequency				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)		
3.85	50	1879999998	10	4700		
3.85	40	1879999998	10	4700		
3.85	30	1879999995	7	4700		
3.85	20	1879999988	0	4700		
3.85	10	1879999990	2	4700		
3.85	0	1880000007	19	4700		
3.85	-10	1879999985	-3	4700		
3.85	-20	1880000015	27	4700		
3.85	-30	1880000012	24	4700		

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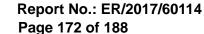
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	REQUENCT ENTON VS. VOLIAGE						
	Reference Frequency: WCDMA V Mid Channel 836.6 MHz						
		Limit: +/- 2	.5 ppm				
Power Supply	Environment	Frequency					
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)			
4.4	20	836599999	-15	2091			
3.85	20	836600014	0	2091			
3.5	20	836600006	-8	2091			
2.5 (End Point)	20	836600011	-3	2091			

# FREQUENCY ERROR vs. TEMPERATURE

	Reference Frequency: WCDMA V Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm							
Power Supply	Environment	Frequency	Dolto (Uz)	Limit (Lla)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
3.85	50	836599995	7	2091				
3.85	40	836600010	22	2091				
3.85	30	836599988	0	2091				
3.85	20	836599988	0	2091				
3.85	10	836599993	5	2091				
3.85	0	836599994	6	2091				
3.85	-10	836600012	24	2091				
3.85	-20	836599991	3	2091				
3.85	-30	836600009	21	2091				

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# FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B5 Mid Channel	836.5	MHz 10M QPSK CH 20525
		Limit: +/- 2	2.5 ppm	
Power Supply	Environment	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
4.4	25	836.4999599	-55.5	2091
3.85	25	836.5000154	0	2091
3.5	25	836.4999728	-42.6	2091
2.5 (End Point)	25	836.4999708	-44.6	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	Dolto (Hz)	Limit (Uz)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
3.85	-30	836.4999596	-6.8	2091				
3.85	-20	836.4999645	-1.9	2091				
3.85	-10	836.5000224	56	2091				
3.85	0	836.4999728	6.4	2091				
3.85	10	836.5000175	51.1	2091				
3.85	20	836.4999664	0	2091				
3.85	30	836.4999633	-3.1	2091				
3.85	40	836.4999688	2.4	2091				
3.85	50	836.5000018	35.4	2091				

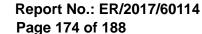
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Reference	Frequency:	LTE B7 Mid Channel	2535.0	MHz 10M QPSK CH 21100					
	Limit: +/- 2.5 ppm								
Power Supply	Environment	Frequency							
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)					
4.4	25	2535	-31.1	6338					
3.85	25	2535	0	6338					
3.5	25	2535	3.8	6338					
2.5 (End Point)	25	2535	7.1	6338					

## FREQUENCY ERROR vs. TEMPERATURE

Reference	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 10M QPSK CH 21100							
	Limit: +/- 2.5 ppm										
Power Supply	Environment	Frequency	Frequency								
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)							
3.85	-30	2535	28.8	6338							
3.85	-20	2535	29.6	6338							
3.85	-10	2535	4.6	6338							
3.85	0	2535	0.8	6338							
3.85	10	2535	22.9	6338							
3.85	20	2535	0	6338							
3.85	30	2535	3.2	6338							
3.85	40	2535	0.9	6338							
3.85	50	2535	15.6	6338							

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# FREQUENCY ERROR vs. VOLTAGE

Reference	Frequency:	LTE B38 Mid Channel	2595 ()							
	Limit: +/- 2.5 ppm									
Power Supply	Environment	Frequency								
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)						
4.4	25	2595	-18.8	6488						
3.85	25	2595	0	6488						
3.5	25	2595	-25.8	6488						
2.5 (End Point)	25	2595	-23.8	6488						

# FREQUENCY ERROR vs. TEMPERATURE

Reference	ce Frequency:	LTE B38 Mid Channel	2595.0	MHz 10M QPSK CH 38000						
	Limit: +/- 2.5 ppm									
Power Supply	Environment	Frequency								
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)						
3.85	-30	2595	55.1	6488						
3.85	-20	2595	50.2	6488						
3.85	-10	2595	3.2	6488						
3.85	0	2595	36.9	6488						
3.85	10	2595	8.0	6488						
3.85	20	2595	0	6488						
3.85	30	2595	36.4	6488						
3.85	40	2595	10.3	6488						
3.85	50	2595	41.8	6488						

Note: The battery is rated 3.85V dc.

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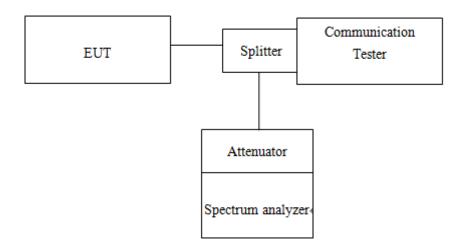
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# 12. PEAK TO AVERAGE RATIO

# 12.1. Standard Applicable

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

## 12.2. Test SET-UP



## 12.3. Measurement Procedure

- 1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
- 2. Set resolution/measurement bandwidth ≥ 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

Conduc	cted Emission (m	neasured at a	antenna port)	Test Site	
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyz- er	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+SUHNE R	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	11/21/2016	11/20/2017
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 Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

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## 12.5. Measurement Result

# **Tabular Results:**

Freq. (MHz)	СН	Peak-to-Average				
		GSM	GPRS	EDGE		
()		1900	1900	1900		
1850.2	9296	9.29	9.77	11.64		
1880.0	9400	9.91	9.66	11.44		
1909.8	9538	8.76	9.80	11.44		

Freq.	СН		Peak-to-Average				
(MHz)	CII	WCDMA II	HSDPA II	HSUPA II			
1850.2	9262	2.89	3.69	3.75			
1880.0	9400	2.94	3.43	3.63			
1909.8	9538	2.89	3.74	3.61			

	LTE BAND 5									
Channel bandwidth: 1.4MHz				С	hannel band	dwidth: 3MF	łz			
Freq.	СН		Average (dB)	Freq.	СН		Average (dB)			
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT			
824.7	20407	5.56	13	825.5	20415	6.26	13			
836.5	20525	5.90	13	836.5	20525	6.31	13			
848.3	20643	5.47	13	847.5	20635	6.06	13			

LTE BAND 5									
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz					
Freq.	СН	Peak-to- Ratio	Average (dB)	Freq.	СН	Peak-to- Ratio	Average (dB)		
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT		
826.5	20425	6.35	13	829.0	20450	6.17	13		
836.5	20525	6.25	13	836.5	20525	6.26	13		
846.5	20625	6.12	13	844.0	20600	6.14	13		

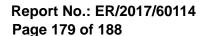
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	LTE BAND 7									
С	hannel ban	dwidth: 5MF	łz	Cł	nannel band	lwidth: 10Ml	Hz			
Freq.	СН	Peak-to- Ratio	Average (dB)	Freq.	СН		Average (dB)			
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT			
2502.5	20775	5.76	13	2505.0	20800	5.85	13			
2535.0	21100	5.54	13	2535.0	21100	5.67	13			
2567.5	21375	5.51	13	2565.0	21350	5.74	13			

LTE BAND 7									
Channel bandwidth: 15MHz				Cł	nannel band	lwidth: 20Ml	Hz		
Freq.	СН	Peak-to- Ratio	Average (dB)	Freq.	СН	Peak-to- Ratio	Ŭ		
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT		
2507.5	20825	6.13	13	2510.0	20850	6.64	13		
2535.0	21100	6.00	13	2535.0	21100	6.53	13		

	LTE BAND 38									
С	hannel band	dwidth: 5MH	łz	Cł	nannel band	lwidth: 10Ml	Hz			
Freq.	СН	Peak-to-Average Ratio (dB)		Freq.	СН	Peak-to- Ratio	Average (dB)			
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT			
2572.5	37775	8.26	13	2575.0	37800	9.82	13			
2595.0	38000	8.62	13	2595.0	38000	8.20	13			
2617.5	38225	7.96	13	2615.0	38200	9.14	13			

LTE BAND 38							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq.	СН	Peak-to-Average Ratio (dB)		Freq.	СН	Peak-to-Average Ratio (dB)	
(MHz)		16QAM	LIMIT	(MHz)		16QAM	LIMIT
2577.5	37825	9.71	13	2580.0	37850	8.58	13
2595.0	38000	9.81	13	2595.0	38000	8.43	13
2612.5	38175	9.12	13	2610.0	38150	9.44	13

# **Measurement Results:**

# Please refer to next page.

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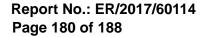
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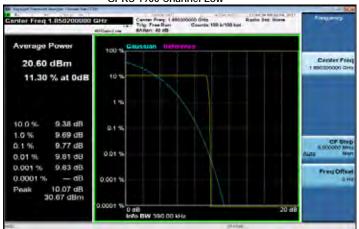




### **GSM 1900 Channel Low**



#### **GPRS 1900 Channel Low**



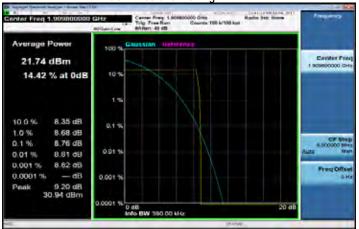
#### GSM 1900 Channel Mid



**GPRS 1900 Channel Mid** 



### GSM 1900 Channel High



**GPRS 1900 Channel High** 

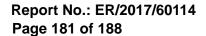


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#### **EDGE 1900 Channel Low**





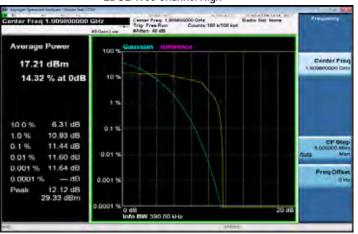
**EDGE 1900 Channel High** 

O dB Info BW 590 00 kHz

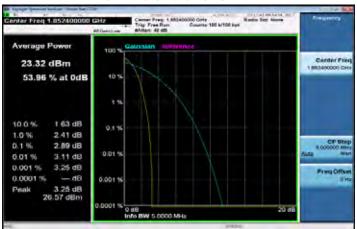
0.0001%

- dB

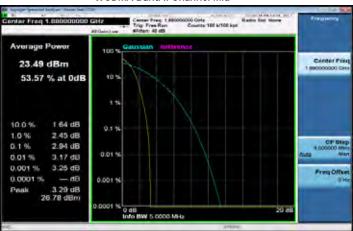
16.21 dB 33.22 dBm



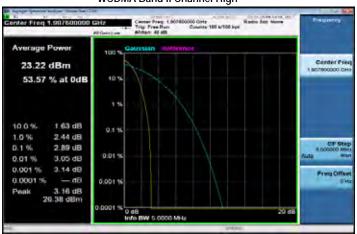
#### WCDMA Band II Channel Low



WCDMA Band II Channel Mid



WCDMA Band II Channel High



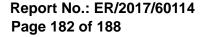
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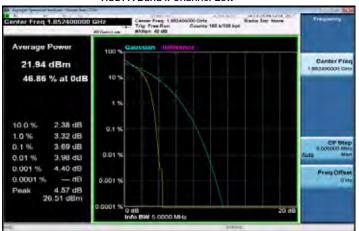
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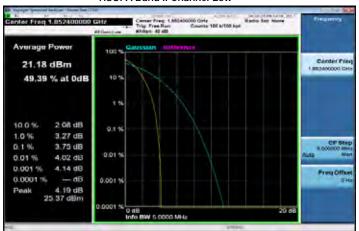




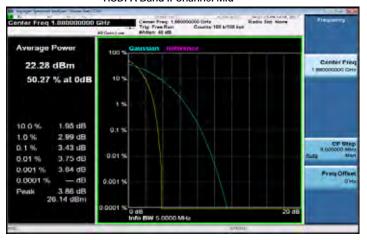
#### **HSDPA Band II Channel Low**



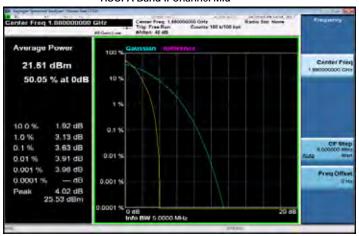
#### **HSUPA Band II Channel Low**



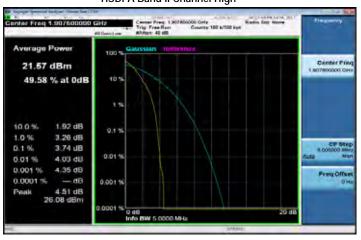
### **HSDPA Band II Channel Mid**



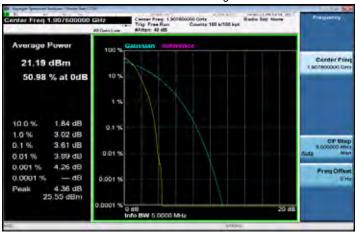
**HSUPA Band II Channel Mid** 



## **HSDPA Band II Channel High**



## **HSUPA Band II Channel High**

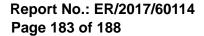


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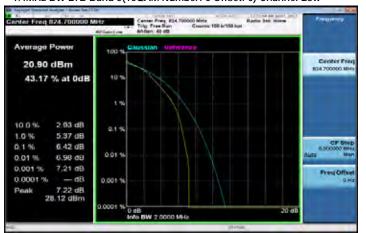
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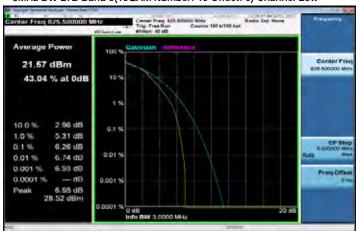




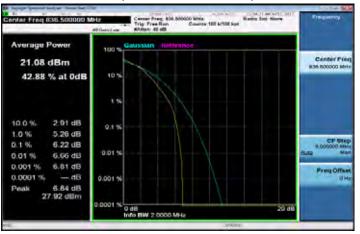
#### 1.4MHz BW LTE-Band 5(16QAM Number: 6 Offset: 0) Channel Low



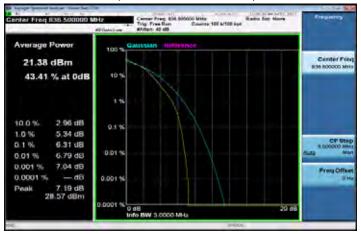
#### 3MHz BW LTE-Band 5(16QAM Number: 15 Offset: 0) Channel Low



#### 1.4MHz BW LTE-Band 5(16QAM Number: 6 Offset: 0) Channel Mid



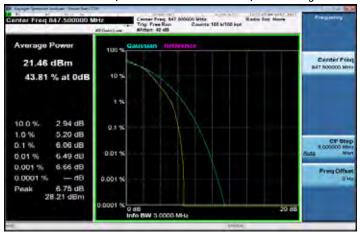
3MHz BW LTE-Band 5(16QAM Number: 15 Offset: 0) Channel Mid



## 1.4MHz BW LTE-Band 5(16QAM Number: 6 Offset: 0) Channel High

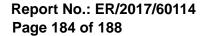


3MHz BW LTE-Band 5(16QAM Number: 15 Offset: 0) Channel High



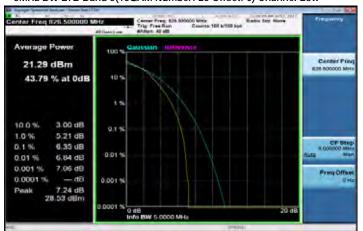
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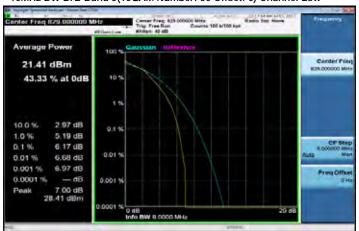




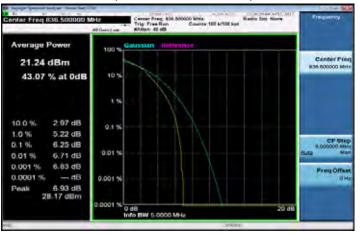
## 5MHz BW LTE-Band 5(16QAM Number: 25 Offset: 0) Channel Low



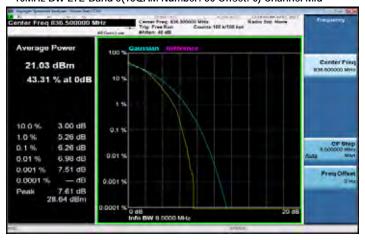
# 10MHz BW LTE-Band 5(16QAM Number: 50 Offset: 0) Channel Low



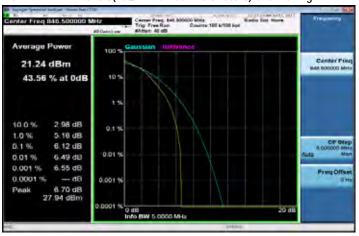
#### 5MHz BW LTE-Band 5(16QAM Number: 25 Offset: 0) Channel Mid



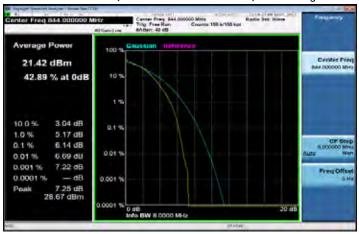
10MHz BW LTE-Band 5(16QAM Number: 50 Offset: 0) Channel Mid



# 5MHz BW LTE-Band 5(16QAM Number: 25 Offset: 0) Channel High



10MHz BW LTE-Band 5(16QAM Number: 50 Offset: 0) Channel High



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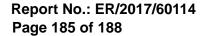
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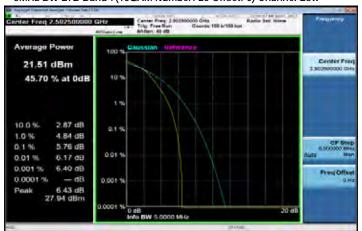
台灣檢驗科技股份有限公司

t (886-2) 2299-3279

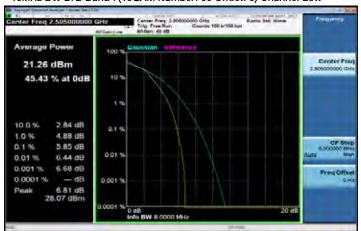




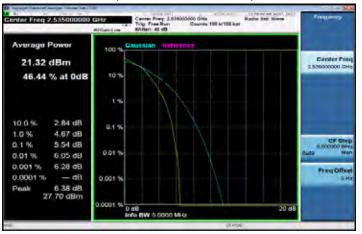
## 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel Low



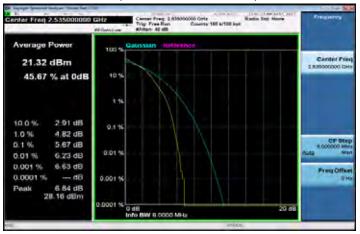
# 10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel Low



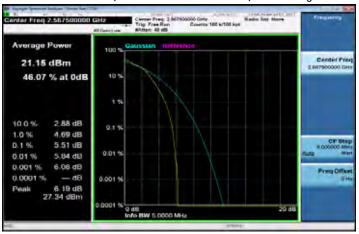
#### 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel Mid



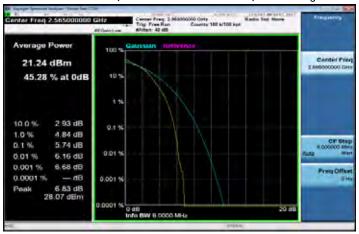
10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel Mid



### 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel High



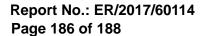
10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel High



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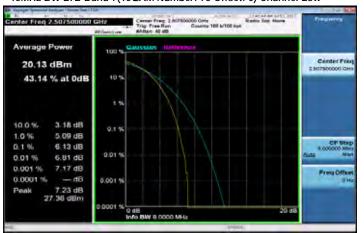
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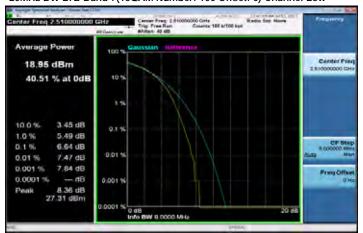




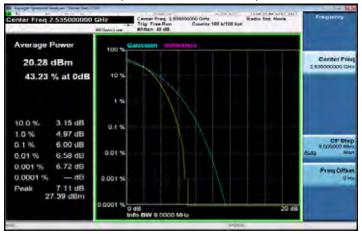
## 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel Low



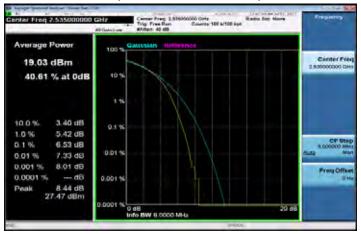
#### 20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel Low



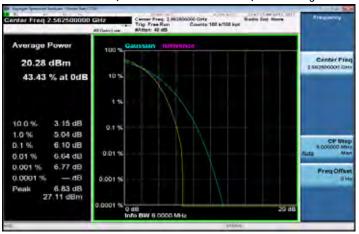
#### 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel Mid



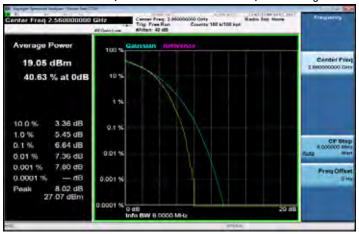
20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel Mid



## 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel High



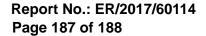
20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel High



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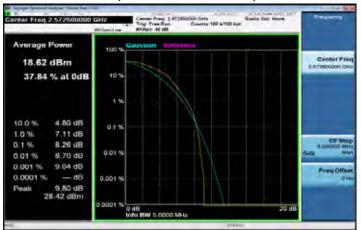
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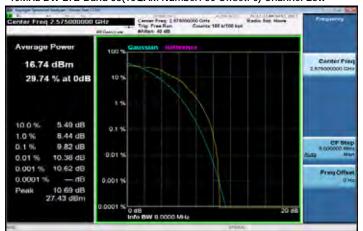




## 5MHz BW LTE-Band 38(16QAM Number: 25 Offset: 0) Channel Low



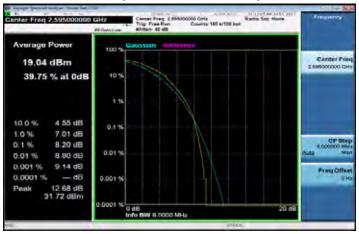
# 10MHz BW LTE-Band 38(16QAM Number: 50 Offset: 0) Channel Low



### 5MHz BW LTE-Band 38(16QAM Number: 25 Offset: 0) Channel Mid



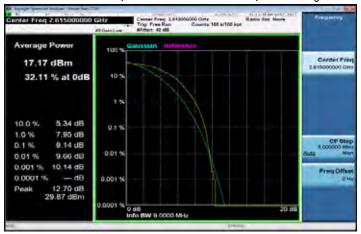
10MHz BW LTE-Band 38(16QAM Number: 50 Offset: 0) Channel Mid



## 5MHz BW LTE-Band 38(16QAM Number: 25 Offset: 0) Channel High



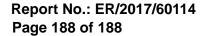
10MHz BW LTE-Band 38(16QAM Number: 50 Offset: 0) Channel High



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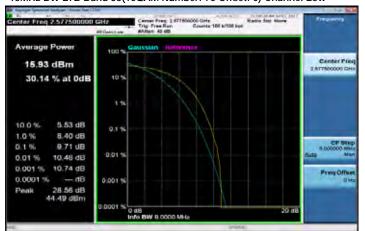
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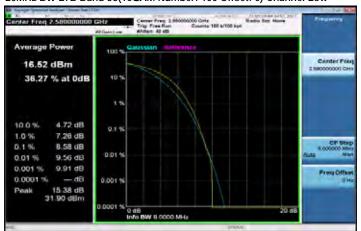




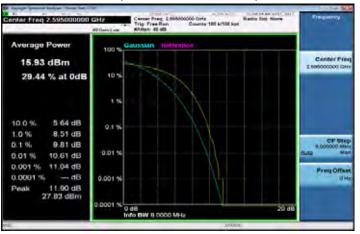
# 15MHz BW LTE-Band 38(16QAM Number: 75 Offset: 0) Channel Low



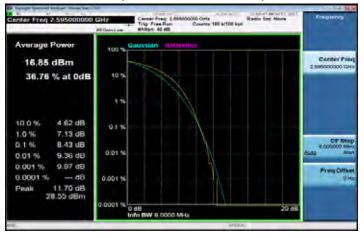
# 20MHz BW LTE-Band 38(16QAM Number: 100 Offset: 0) Channel Low



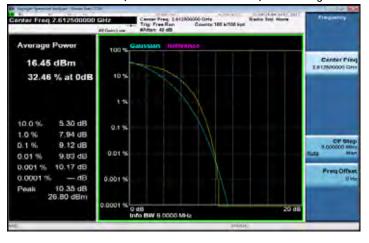
#### 15MHz BW LTE-Band 38(16QAM Number: 75 Offset: 0) Channel Mid



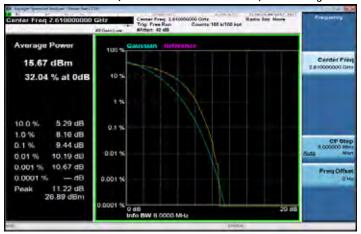
20MHz BW LTE-Band 38(16QAM Number: 100 Offset: 0) Channel Mid



## 15MHz BW LTE-Band 38(16QAM Number: 75 Offset: 0) Channel High



20MHz BW LTE-Band 38(16QAM Number: 100 Offset: 0) Channel High



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