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# CE RF Test Report

**for WCDMA Direct Spread (UTRA FDD) User Equipment (UE)**

**Product Name : LTE Module**

**Model No.: EC25-E, EC25-E MINIPCI-E**

Prepared for:

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**Report No. : UL32220170322CE006-2**

**Report Version : V1.0**

**Notes:**

The test results only relate to these samples which have been tested.

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## Test Report Certification

Issued Date : 04-24-2017

Report No. : UL32220170322CE006-2

Product Name : LTE Module

Applicant : Quectel Wireless Solutions Co. Ltd

Address : Room 501, Building 13, No.99 Tianzhou Road, Xuhui District, Shanghai,China

Manufacturer : Quectel Wireless Solutions Co. Ltd

Address : Room 501, Building 13, No.99 Tianzhou Road, Xuhui District, Shanghai,China

Model No. : EC25-E, EC25-E MINIPCIE

Brand Name : Quectel

EUT Vlotage: Extreme Low: 3.3V Normal: 4.0V Extreme High:4.6V

Applicable Standard : ETSI EN 301 908-1 V11.1.1 (2016-07)  
ETSI EN 301 908-2 V11.1.1 (2016-07)  
3GPP TS 34.121-1 V13.1.0 (2016-12)

Test Result : PASS

Performed Location : Unilab (Shanghai) Co., Ltd.  
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## 1. Summary Of Test Result

Description of Test	Applicable Standard(s)	Test Result
Transmitter maximum output power	ETSI EN 301 908-2 V11.1.1 §4.2.2	PASS
Transmitter spectrum emission mask	ETSI EN 301 908-2 V11.1.1 §4.2.3	PASS
Transmitter spurious emissions	ETSI EN 301 908-2 V11.1.1 §4.2.4 3GPP TS 34.121-1 V13.1.0 §5.11.2	PASS
Transmitter minimum output power	ETSI EN 301 908-2 V11.1.1 §4.2.5	PASS
Receiver Adjacent Channel Selectivity (ACS)	ETSI EN 301 908-2 V11.1.1 §4.2.6	PASS
Receiver blocking characteristics	ETSI EN 301 908-2 V11.1.1 §4.2.7	PASS
Receiver spurious response	ETSI EN 301 908-2 V11.1.1 §4.2.8	PASS
Receiver intermodulation characteristics	ETSI EN 301 908-2 V11.1.1 §4.2.9	PASS
Receiver spurious emissions	ETSI EN 301 908-2 V11.1.1 §4.2.10 3GPP TS 34.121-1 V13.1.0 §6.8.2	PASS
Out-of-synchronization handling of output power	ETSI EN 301 908-2 V11.1.1 §4.2.11	PASS
Transmitter Adjacent Channel Leakage power Ratio (ACLR)	ETSI EN 301 908-2 V11.1.1 §4.2.12	PASS
Radiated emissions (UE)	ETSI EN 301 908-1 V11.1.1 §4.2.2	PASS
Control and monitoring functions (UE)	ETSI EN 301 908-1 V11.1.1 §4.2.4	PASS
Receiver Reference Sensitivity level	ETSI EN 301 908-2 V11.1.1 §4.2.13	PASS

## 2. General Information

### 2.1. EUT Description

Product Name:	LTE Module
Model Name:	EC25-E, EC25-E MINIPCIE
Hardware Version:	R1.0
Software Version:	EC25EFAR02A04M4G
Support Band:	WCDMA Band I / VIII
Tx Frequency Range:	WCDMA Band I:1920~1980MHz WCDMA Band VIII:880~915MHz
Rx Frequency Range:	WCDMA Band I:2110~2170MHz WCDMA Band VIII:925~960MHz
Type of modulation:	WCDMA: QPSK&16QAM&64QAM
Antenna Peak Gain:	4dBi
Antenna Type:	Connector
Operating Band	Power Class 3

### 2.2. Test Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the apparatus

Parameter	Uncertainty
Radio Frequency	$3.5 \times 10^{-8}$
Total RF power, conducted	0.47 dB
Spurious emissions, conducted	2.94 dB
Spurious emissions, radiated	5.2dB
Duty Cycle	5.64 dB
Temperature	0.9 °C
Humidity	4.5%RH
DC and low frequency voltages	0.45%

### 3. Technical Test

#### 3.1. Test Environment

Temperature (°C)	22
Humidity (%RH)	54

#### 3.2. Test Equipment

Instrument	Manufacturer	Model	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9038A	MY51210142	11/04/2017
Radio Communication Tester	R&S	CMW500	106636	11/07/2017
Signal Generator	Agilent	N5183A	MY50140938	09/22/2017
Power Splitter	Agilent	11667C/ 52401	MY53806148	02/25/2018
ESG Vector Signal Generator	Agilent	E4438C	MY42081708	09/22/2017
PSG Signal Generator	Agilent	E8257D	MY45470010	09/22/2017
Preamplifier	CEM	EM30180	3008A0245	02/25/2018
Temperature Chamber	WEISS	DU/20/40	58226017340050	12/01/2017
DC Power Supply	Agilent	6612C	MY43002989	03/01/2018
Bilog Antenna	Schwarzbeck	VULB9160	9160-3316	09/18/2017
VHF-UHF-Biconical Antenna	Schwarzbeck	VUBA9117	9117-263	09/18/2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-942	09/18/2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-943	09/18/2017

#### Notes:

Normal: the Temperature is +22 °C, the humidity is 54%, the voltage is 4.0V;  
 TL : the Temperature is -10 °C;  
 TH : the Temperature is +55°C;  
 VL : the voltage is 3.3V DC  
 VH : the voltage is 4.6V DC

There is only show typical and worst test plots in this report.

## 4. Results

### 4.1. Transmitter maximum output power

#### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.2, The nominal power defined is the broadband transmit power of the UE, i.e. the power in a bandwidth of at least  $(1 + \alpha)$  times the chip rate of the radio access mode. The period of measurement shall be at least one timeslot.

#### Limits

The UE maximum output power shall be within the shown value in table 4.2.2.1.2-1 even for the multi-code DPDCH transmission mode.

Table 4.2.2.1.2-1: UE power classes

Operating Band	Power Class 3		Power Class 3bis		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
Band I	+24	+1,7/-3,7			+21	+2,7/-2,7
Band III	+24	+1,7/-3,7			+21	+2,7/-2,7
Band VII	+24	+1,7/-3,7	+23	+2,7/-2,7	+21	+2,7/-2,7
Band VIII	+24	+1,7/-3,7	+23	+2,7/-2,7	+21	+2,7/-2,7
Band XV	+24	+1,7/-3,7	+23	+2,7/-2,7	+21	+2,7/-1,7
Band XVI	+24	+1,7/-3,7	+23	+2,7/-2,7	+21	+2,7/-1,7
Band XX	+24	+1,7/-3,7	+23	+2,7/-2,7	+21	+2,7/-1,7

Note 1: These requirements do not take into account the maximum power reduction allowed to the UE in the presence of HS-DPCCH and E-DCH specified in TS 125 101 [5].

Note 2: The range of UE maximum output power for the various power classes are specified in TS 125 101 [5], clause 6.2.1. The values in table 4.2.2.1.2-1 correspond to the measurement limits taking into account the measurement uncertainty of measurement equipment (see clause 5.2)

#### Test procedure

- 1) Set and send continuously Up power control commands to the UE.
- 2) Measure the mean power of the UE in a bandwidth of at least  $(1 + \alpha)$  times the chip rate of the radio access mode. The mean power shall be averaged over at least one timeslot.

#### Test Result

**PASS**

Test Environment: normal, TL/VL, TL/VH, TH/VL, TH/VH

## 4.2. Transmitter spectrum emission mask

### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.3, The spectrum emission mask of the UE applies to frequencies, which are between 2,5 MHz and 12,5 MHz away from the UE centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier.

### Limits

The power of any UE emission shall not exceed the levels specified in table 4.2.3.1.2-1, table 5.9A.1, table 5.9B.1. The requirements are applicable for all for the values of  $\beta_c$ ,  $\beta_d$ ,  $\beta_{hs}$ ,  $\beta_{ec}$  and  $\beta_{ed}$  defined in TS 125 214 [8].

Table 4.2.3.1.2-1: Spectrum emission mask requirement(UMTS)

$\Delta f$ in MHz (note 1)	Minimum requirement (note 2)		Measurement bandwidth (note 5)
	Relative requirement	Absolute requirement (in measurement bandwidth)	
2,5 MHz to 3,5 MHz	$\left\{ -33,5 - 15 \cdot \left( \frac{\Delta f}{MHz} - 2,5 \right) \right\} dBc$	-69,6 dBm	30 kHz (see note 3)
3,5 MHz to 7,5 MHz	$\left\{ -33,5 - 1 \cdot \left( \frac{\Delta f}{MHz} - 3,5 \right) \right\} dBc$	-54,3 dBm	1 MHz (see note 4)
7,5 MHz to 8,5 MHz	$\left\{ -37,5 - 10 \cdot \left( \frac{\Delta f}{MHz} - 7,5 \right) \right\} dBc$	-54,3 dBm	1 MHz (see note 4)
8,5 MHz to 12,5 MHz	-47,5 dBc	-54,3 dBm	1 MHz (see note 4)
<p>NOTE 1: <math>\Delta f</math> is the separation between the carrier frequency and the centre of the measurement bandwidth.</p> <p>NOTE 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.</p> <p>NOTE 3: The first and last measurement position with a 30 kHz filter is at <math>\Delta f</math> equals to 2,515 MHz and 3,485 MHz.</p> <p>NOTE 4: The first and last measurement position with a 1 MHz filter is at <math>\Delta f</math> equals to 4 MHz and 12 MHz.</p> <p>NOTE 5: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.</p>			



Table 5.9A.1: Spectrum emission mask requirement(HSDPA)

$\Delta f$ in MHz (Note 1)	Minimum requirement (Note 2)		Measurement bandwidth
	Relative requirement	Absolute requirement	
2.5 - 3.5	$\left\{ -33.5 - 15 \cdot \left( \frac{\Delta f}{MHz} - 2.5 \right) \right\} dBc$	-69.6 dBm	30 kHz (Note 3)
3.5 - 7.5	$\left\{ -33.5 - 1 \cdot \left( \frac{\Delta f}{MHz} - 3.5 \right) \right\} dBc$	-54.3 dBm	1 MHz (Note 4)
7.5 - 8.5	$\left\{ -37.5 - 10 \cdot \left( \frac{\Delta f}{MHz} - 7.5 \right) \right\} dBc$	-54.3 dBm	1 MHz (Note 4)
8.5 - 12.5 MHz	-47.5 dBc	-54.3 dBm	1 MHz (Note 4)
<p>Note 1: <math>\Delta f</math> is the separation between the carrier frequency and the centre of the measurement bandwidth.</p> <p>Note 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.</p> <p>Note 3: The first and last measurement position with a 30 kHz filter is at <math>\Delta f</math> equals to 2.515 MHz and 3.485 MHz.</p> <p>Note 4: The first and last measurement position with a 1 MHz filter is at <math>\Delta f</math> equals to 4 MHz and 12 MHz.</p>			

Table 5.9B.1: Spectrum emission mask requirement(E-DCH)

$\Delta f$ in MHz (Note 1)	Minimum requirement (Note 2)		Measurement bandwidth
	Relative requirement	Absolute requirement	
2.5 - 3.5	$\left\{ -35 - 15 \cdot \left( \frac{\Delta f}{MHz} - 2.5 \right) \right\} dBc$	-71.1 dBm	30 kHz (Note 3)
3.5 - 7.5	$\left\{ -35 - 1 \cdot \left( \frac{\Delta f}{MHz} - 3.5 \right) \right\} dBc$	-55.8 dBm	1 MHz (Note 4)
7.5 - 8.5	$\left\{ -39 - 10 \cdot \left( \frac{\Delta f}{MHz} - 7.5 \right) \right\} dBc$	-55.8 dBm	1 MHz (Note 4)
8.5 - 12.5 MHz	-49 dBc	-55.8 dBm	1 MHz (Note 4)
<p>Note 1: <math>\Delta f</math> is the separation between the carrier frequency and the centre of the measurement bandwidth.</p> <p>Note 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.</p> <p>Note 3: The first and last measurement position with a 30 kHz filter is at <math>\Delta f</math> equals to 2.515 MHz and 3.485 MHz.</p> <p>Note 4: The first and last measurement position with a 1 MHz filter is at <math>\Delta f</math> equals to 4 MHz and 12 MHz.</p>			

- 1) Set and send continuously Up power control commands to the UE until the UE output power shall be at the maximum level.
- 2) Measure the power of the transmitted signal with a measurement filter of bandwidths according to table 4.2.3.2-1. Measurements with an offset from the carrier centre frequency between 2,515 MHz and 3,485 MHz shall use a 30 kHz measurement filter. Measurements with an offset from the carrier centre frequency between 4 MHz and 12 MHz shall use 1 MHz measurement bandwidth and the result may be calculated by integrating multiple 50 kHz or narrower filter measurements. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The centre frequency of the filter shall be stepped in contiguous steps according to table 2. The measured power shall be recorded for each step.
- 3) Measure the RRC filtered mean power centred on the assigned channel frequency.
- 4) Calculate the ratio of the power 2) with respect to 3) in dBc.

**Test Result**

**PASS**

Test Environment: normal

### 4.3. Transmitter spurious emissions

#### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.4 and 3GPP TS 34.121-1 V13.1.0 (2016-12)§5.11.2, Spurious emissions are emissions, which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

#### Limits

The power of spurious emissions shall not exceed the limits defined in tables 4.2.4.1.2-1, 4.2.4.1.2-2 and 5.11.1b. The limits shown in tables 4.2.4.1.2-1, 4.2.4.1.2-2 and 5.11.1b are only applicable for frequencies, which are greater than 12,5 MHz away from the UE centre carrier frequency.

Table 4.2.4.1.2-1: General spurious emissions requirements

Frequency bandwidth	Measurement bandwidth	Minimum requirement
$9 \text{ kHz} \leq f < 150 \text{ kHz}$	1 kHz	-36 dBm
$150 \text{ kHz} \leq f < 30 \text{ MHz}$	10 kHz	-36 dBm
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	100 kHz	-36 dBm
$1 \text{ GHz} \leq f < 12,75 \text{ GHz}$	1 MHz	-30 dBm
$12,75 \text{ GHz} \leq f < 5^{\text{th}}$ harmonic of the upper frequency edge of the UL operating band in GHz	1 MHz	-30 dBm (note)
NOTE: Applies only for Band XXII.		

Table 4.2.4.1.2-2: Additional spurious emissions requirements

Operating band	Frequency bandwidth	Measurement bandwidth	Minimum requirement
I	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3,84 MHz	-60 dBm
	$921 \text{ MHz} \leq f < 925 \text{ MHz}$	100 kHz	-60 dBm (note 1)
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm (note 1)
	$935 \text{ MHz} < f \leq 960 \text{ MHz}$	100 kHz	-79 dBm (note 1)
	$1\,805 \text{ MHz} \leq f \leq 1\,880 \text{ MHz}$	100 kHz	-71 dBm (note 1)
	$2\,110 \text{ MHz} \leq f \leq 2\,170 \text{ MHz}$	3,84 MHz	-60 dBm
	$2\,585 \text{ MHz} \leq f \leq 2\,690 \text{ MHz}$	3,84 MHz	-60 dBm
VIII	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3,84 MHz	-60 dBm
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm (note 1)
	$935 \text{ MHz} < f \leq 960 \text{ MHz}$	100 kHz	-79 dBm (note 1)
	$1\,805 \text{ MHz} < f \leq 1\,830 \text{ MHz}$	100 kHz	-71 dBm (notes 1 and 2)
	$1\,830 \text{ MHz} < f \leq 1\,880 \text{ MHz}$	100 kHz	-71 dBm (note 1)
	$2\,110 \text{ MHz} \leq f \leq 2\,170 \text{ MHz}$	3,84 MHz	-60 dBm
	$2\,585 \text{ MHz} \leq f \leq 2\,640 \text{ MHz}$	3,84 MHz	-60 dBm
	$2\,640 \text{ MHz} \leq f \leq 2\,690 \text{ MHz}$	3,84 MHz	-60 dBm (note 2)
NOTE 1: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-1 are permitted for each UARFCN used in the measurement.			
NOTE 2: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-1 are permitted for each UARFCN used in the measurement due to 2 <sup>nd</sup> or 3 <sup>rd</sup> harmonic spurious emissions.			
NOTE 3: The conformance shall be assessed using the measurement position placed at the following centre frequencies: 474 MHz, 586 MHz, 690 MHz, 754 MHz, 770 MHz and 786 MHz.			

**Test procedure**

- 1) Set and send continuously Up power control commands to the UE until the UE output power shall be maximum level.
- 2) Sweep the spectrum analyzer (or equivalent equipment) over a frequency range and measure the average power of spurious emission.

**Test Result**

**Pass**

Test Environment: normal

#### **4.4. Transmitter minimum output power**

##### **Standard Applicable**

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.5, The minimum controlled output power of the UE is when the power is set to a minimum value. The minimum transmit power is defined as a mean power in one time slot.

##### **Limits**

The minimum output power shall be less than -49 dBm.

##### **Test procedure**

- 1) Set and send continuously Down power control commands to the UE.
- 2) Measure the mean power of the UE.

##### **Test Result**

**Pass**

Test Environment: normal

## 4.5. Receiver Adjacent Channel Selectivity (ACS)

### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.6, Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a WCDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

### Limits

For the UE of power class 3 and 4, the BER shall not exceed 0,001 for the parameters specified in table 4.2.6.2-1. This test condition is equivalent to the ACS value 33 dB.

Table 4.2.6.2-1: Test parameters for adjacent channel selectivity

Parameter	Unit	Case 1	Case 2
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 14 dB	<REFSENS> + 41 dB
I <sub>or</sub>	dBm/3,84 MHz	<REFI <sub>or</sub> > + 14 dB	<REFI <sub>or</sub> > + 41 dB
I <sub>oac</sub> mean power (modulated)	dBm	-52	-25
F <sub>uw</sub> (offset)	MHz	+5 or -5	+5 or -5
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	20 (for Power class 3) 18 (for Power class 4)
NOTE 1: <REFSENS> and <REFI <sub>or</sub> > as specified in TS 134 121-1 [2].			
NOTE 2: The I <sub>oac</sub> (modulated) signal consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5].			

### Test procedure

- 1) Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 1.
- 2) Set the power level of UE according to the table 4.2.6.2-1 case 1 with  $\pm 1$  dB tolerance.
- 3) Measure the BER of DCH received from the UE at the SS.
- 4) Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 2.
- 5) Set the power level of UE according to the table 4.2.6.2-1 case 2 with  $\pm 1$  dB tolerance.
- 6) Measure the BER of DCH received from the UE at the SS.

### Test Result

Operating Band	BER	Result
WCDMA BAND I	<0.001	Pass
WCDMA BAND VIII	<0.001	Pass

Test Environment: normal

#### 4.6. Receiver blocking characteristics

##### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.7, The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

##### Limits

The BER shall not exceed 0,001 for the parameters specified in tables 4.2.7.2-1 and 4.2.7.2-2. For table 4.2.7.2-2 up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size.

Table 4.2.7.2-1: Test parameters for in-band blocking characteristics

Parameter	Unit	Level	
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 3 dB	
I_or	dBm/3,84 MHz	<REFI_or> + 3 dB	
I_blocking mean power (modulated)	dBm	-56 (for F_uw offset ±10 MHz)	-44 (for F_uw offset ±15 MHz)
F_uw (Band I operation)	MHz	2 102,4 ≤ f ≤ 2 177,6	2 095 ≤ f ≤ 2 185
F_uw (Band III operation)	MHz	1 797,4 ≤ f ≤ 1 887,6	1 790 ≤ f ≤ 1 895
F_uw (Band VII operation)	MHz	2 612,4 ≤ f ≤ 2 697,6	2 605 ≤ f ≤ 2 705
F_uw (Band VIII operation)	MHz	917,4 ≤ f ≤ 967,6	910 ≤ f ≤ 975
F_uw (Band XX operation)	MHz	783,4 ≤ f ≤ 828,6	776 ≤ f ≤ 836
F_uw (Band XXII operation)	MHz	3 502,4 ≤ f ≤ 3 597,6	3 495 ≤ f ≤ 3 605
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4) (note 3)	
NOTE 1: <REFSENS> and <REFI_or> as specified in TS 134 121-1 [2].			
NOTE 2: The I_blocking (modulated) signal consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5].			
NOTE 3: The UE transmitted mean power shall be reduced by 0,5 dB for a UE operating in band XXII.			



Table 4.2.7.2-2: Test parameters for out-of-band blocking characteristics

Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3
DPCH Ec	dBm/3,84 MHz	<REFSENS> + 3 dB	<REFSENS> + 3 dB	<REFSENS> + 3 dB
I <sub>or</sub>	dBm/3,84 MHz	<REFI <sub>or</sub> > + 3 dB	<REFI <sub>or</sub> > + 3 dB	<REFI <sub>or</sub> > + 3 dB
I <sub>blocking</sub> (CW)	dBm	-44	-30	-15
F <sub>uw</sub> (Band I operation)	MHz	2 050 < f < 2 095 2 185 < f < 2 230	2 025 < f ≤ 2 050 2 230 ≤ f < 2 255	1 < f ≤ 2 025 2 255 ≤ f < 12 750
F <sub>uw</sub> (Band III operation)	MHz	1 745 < f < 1 790 1 895 < f < 1 940	1 720 < f ≤ 1 745 1 940 ≤ f < 1 965	1 < f ≤ 1 720 1 965 ≤ f < 12 750
F <sub>uw</sub> (Band VII operation)	MHz	2 570 < f < 2 605 2 705 < f < 2 750	Na 2 750 ≤ f < 2 775	1 < f ≤ 2 570 2 775 ≤ f < 12 750
F <sub>uw</sub> (Band VIII operation)	MHz	865 < f < 910 975 < f < 1 020	840 < f < 865 1 020 ≤ f < 1 045	1 < f ≤ 840 1 045 ≤ f < 12 750
F <sub>uw</sub> (Band XV operation)	MHz	2 570 < f < 2 585 2 705 < f < 2 750	Na 2 750 ≤ f < 2 775	1 < f ≤ 2 570 2 775 ≤ f < 12 750
F <sub>uw</sub> (Band XVI operation)	MHz	Na 2 705 < f < 2 750	2 500 < f ≤ 2 570 2 750 ≤ f < 2 775	1 < f ≤ 2 500 2 775 ≤ f < 12 750
F <sub>uw</sub> (Band XX operation)	MHz	731 < f < 776 836 < f < 881	706 < f ≤ 731 881 ≤ f < 906	1 < f ≤ 706 906 ≤ f < 12 750
F <sub>uw</sub> (Band XXII operation)	MHz	3 450 < f < 3 495 3 605 < f < 3 650	3 425 < f ≤ 3 450 3 650 ≤ f < 3 675	1 < f ≤ 3 425 3 675 ≤ f < 12 750
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)		
Band I operation	For 2 095 MHz ≤ f ≤ 2 185 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band III operation	For 1 790 MHz ≤ f ≤ 1 895 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band VII operation	For 2 605 MHz ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band VIII operation	For 910 MHz ≤ f ≤ 975 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band XV operation	For 2 585 MHz ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band XVI operation	For 2 570 MHz ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band XX operation	For 776 MHz ≤ f ≤ 836 MHz, the appropriate in-band blocking or adjacent channel selectivity in clauses 4.2.6 and table 4.2.7.2-1 shall be applied.			
Band XXII operation	For 3 495 ≤ f ≤ 3 605 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and clause 4.2.7.2-1 shall be applied. (note 2)			
NOTE 1: <REFSENS> and <REFI <sub>or</sub> > as specified in TS 134 121-1 [2].				
NOTE 2: The UE transmitted mean power shall be reduced by 0,5 dB for a UE operating in band XXII.				



Table 4.2.7.2-3: Test parameters for narrow band blocking

Parameter	Unit	Band III, VIII
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 10 dB
$I_{or}$	dBm/3,84 MHz	<REF $I_{or}$ > + 10 dB
$I_{blocking}$ (GMSK)	dBm	-56
$F_{uw}$ (offset)	MHz	2,8
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)
NOTE 1: <REFSENS> and <REF $I_{or}$ > as specified in TS 134 121-1 [2].		
NOTE 2: $I_{blocking}$ (GMSK) is an interfering signal as defined in TS 145 004 [9]. It is a continuous GMSK modulated carrier following the structure of the GSM signals, but with all modulating bits (including the midamble period) derived directly from a random or any pseudo random data stream.		

### **Test procedure**

- 1) Set the parameters of the CW generator or the interference signal generator as shown in tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3. For table 4.2.7.2-2 the frequency step size is 1 MHz.
- 2) Set the power level of the UE according to tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3 with a  $\pm 1$  dB tolerance.
- 3) Measure the BER of DCH received from the UE at the SS.
- 4) For table 4.2.7.2-2, record the frequencies for which the BER exceeds the test requirements.

### **Test Result**

Operating Band	BER	Result
WCDMA BAND I	<0.001	Pass
WCDMA BAND VIII	<0.001	Pass

Test Environment: normal

## 4.7. Receiver spurious response

### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.8, Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the out-of-band blocking limit as specified in table 7 is not met.

### Limits

The BER shall not exceed 0,001 for the parameters specified in table 4.2.8.2-1.

Table 4.2.8.2-1: Test parameters for spurious response

Parameter	Level	Unit
DPCH_Ec	<REFSENS> + 3 dB	dBm/3,84 MHz
I <sub>or</sub>	<REFI <sub>or</sub> > + 3 dB	dBm/3,84 MHz
I <sub>blocking</sub> (CW)	-44	dBm
F <sub>uw</sub>	Spurious response frequencies	MHz
UE transmitted mean power	20 (for Power class 3) 18 (for Power class 4) (note 2)	dBm
NOTE 1: <REFSENS> and <REFI <sub>or</sub> > as specified in TS 134 121-1 [2].		
NOTE 2: The UE transmitted mean power shall be reduced by 0,5 dB, for a UE operating in band XXII.		

### Test procedure

- 1) Set the parameter of the CW generator as shown in table 4.2.8.2-1. The spurious response frequencies are determined in step 4) of clause 5.3.6.1.2.
- 2) Set the power level of the UE according to table 9 with a ±1 dB tolerance.
- 3) Measure the BER of DCH received from the UE at the SS.

### Test Result

Operating Band	BER	Result
WCDMA BAND I	<0.001	Pass
WCDMA BAND VIII	<0.001	Pass

Test Environment: normal

## 4.8. Receiver Intermodulation characteristics

### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.9, Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receive a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

### Limits

The BER shall not exceed 0,001 for the parameters specified in table 4.2.9.2-1.

Table 4.2.9.2-1: Receive intermodulation characteristics

Parameter	Level		Unit
DPCH_Ec	<REFSENS> + 3 dB		dBm/3,84 MHz
I <sub>or</sub>	<REFI <sub>or</sub> > + 3 dB		dBm/3,84 MHz
I <sub>ouw1</sub> (CW)	-46		dBm
I <sub>ouw2</sub> mean power (modulated)	-46		dBm
F <sub>uw1</sub> (offset)	10	-10	MHz
F <sub>uw2</sub> (offset)	20	-20	MHz
UE transmitted mean power	20 (for Power class 3) 18 (for Power class 4) (note 3)		dBm
NOTE 1: I <sub>ouw2</sub> (modulated) consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5].			
NOTE 2: <REFSENS> and <REFI <sub>or</sub> > as specified in TS 134 121-1 [2].			
NOTE 3: The UE transmitted mean power shall be reduced by 0,5 dB for a UE operating in band XXII.			

Table 4.2.9.2-2: Test parameters for narrow band intermodulation characteristics

Parameter	Unit	Band III, VIII	
DPCH Ec	dBm/3,84 MHz	<REFSENS> + 10 dB	
I <sub>or</sub>	dBm/3,84 MHz	<REFI <sub>or</sub> > + 10 dB	
I <sub>ouw1</sub> (CW)	dBm	-43	
I <sub>ouw2</sub> (GMSK)	dBm	-43	
F <sub>uw1</sub> (offset)	MHz	3,6	-3,6
F <sub>uw2</sub> (offset)	MHz	6,0	-6,0
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	
NOTE 1: <REFSENS> and <REFI <sub>or</sub> > as specified in TS 134 121-1 [2].			
NOTE 2: I <sub>ouw2</sub> (GMSK) is an interfering signal as defined in TS 145 004 [9]. It is a continuous GMSK modulated carrier following the structure of the GSM signals, but with all modulating bits (including the midamble period) derived directly from a random or any pseudo random data stream.			

### Test procedure

- 1) Set the parameters of the CW generator and interference generator as shown in tables 4.2.9.2-1 and 4.2.9.2-2.
- 2) Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a ±1 dB tolerance.
- 3) Measure the BER of DCH received from the UE at the SS.

**Test Result**

Operating Band	BER	Result
WCDMA BAND I	<0.001	Pass
WCDMA BAND VIII	<0.001	Pass

Test Environment: normal

## 4.9. Receiver spurious emissions

### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.10 and 3GPP TS 34.121-1 V13.1.0 (2016-12) §6.8.2, The spurious emissions power is the power of emissions, generated or amplified in a receiver, which appear at the UE antenna connector. The requirements in UE transmit bands are valid in URA\_PCH, Cell\_PCH and idle state.

### Limits

The power of any narrow band CW spurious emission shall not exceed the maximum level specified in tables 4.2.10.2-1 ,4.2.10.2-2 and 6.8.2.

Table 4.2.10.2-1: General receiver spurious emission requirements

Frequency band	Measurement bandwidth	Maximum level
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	100 kHz	-57 dBm
$1 \text{ GHz} \leq f \leq 12,75 \text{ GHz}$	1 MHz	-47 dBm

Table 4.2.10.2-2: Additional receiver spurious emission requirements

Band	Frequency Range	Measurement Bandwidth	Maximum level
I	$1\,920 \text{ MHz} \leq f \leq 1\,980 \text{ MHz}$	3,84 MHz	-60 dBm
VIII	$880 \text{ MHz} \leq f \leq 915 \text{ MHz}$	3,84 MHz	-60 dBm

### Test procedure

Sweep the spectrum analyzer (or other suitable test equipment) over a frequency range from 30 MHz to 12,75 GHz and measure the average power of the spurious emissions.

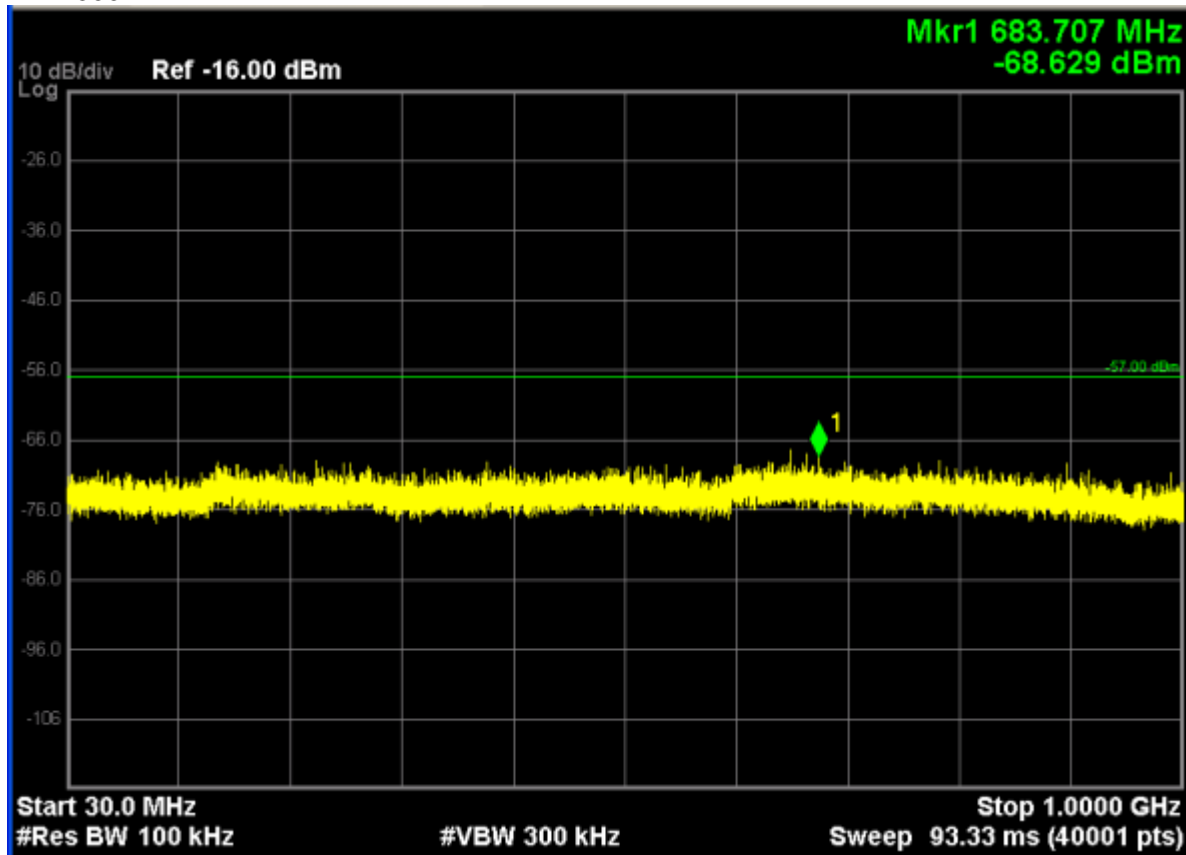
### Test Result

**Pass**

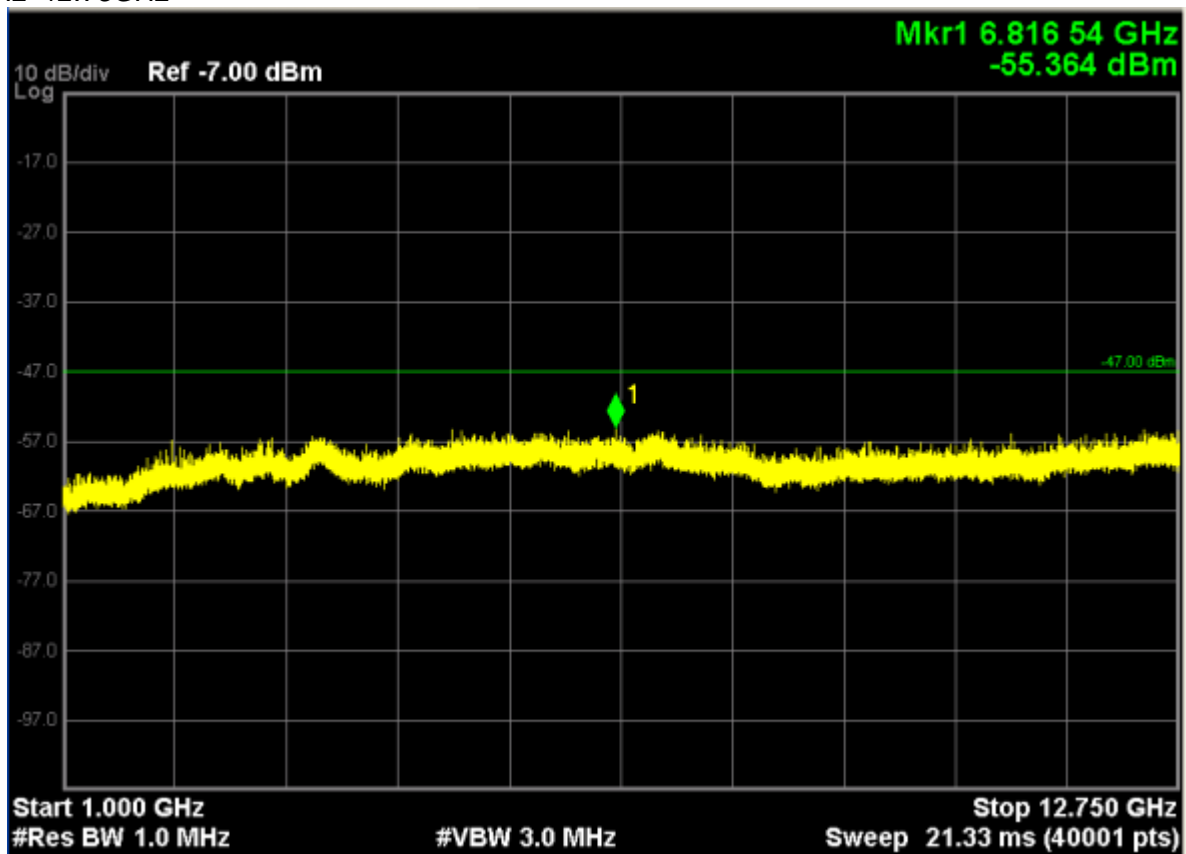
Test Environment: normal  
Please refer to following data plots.

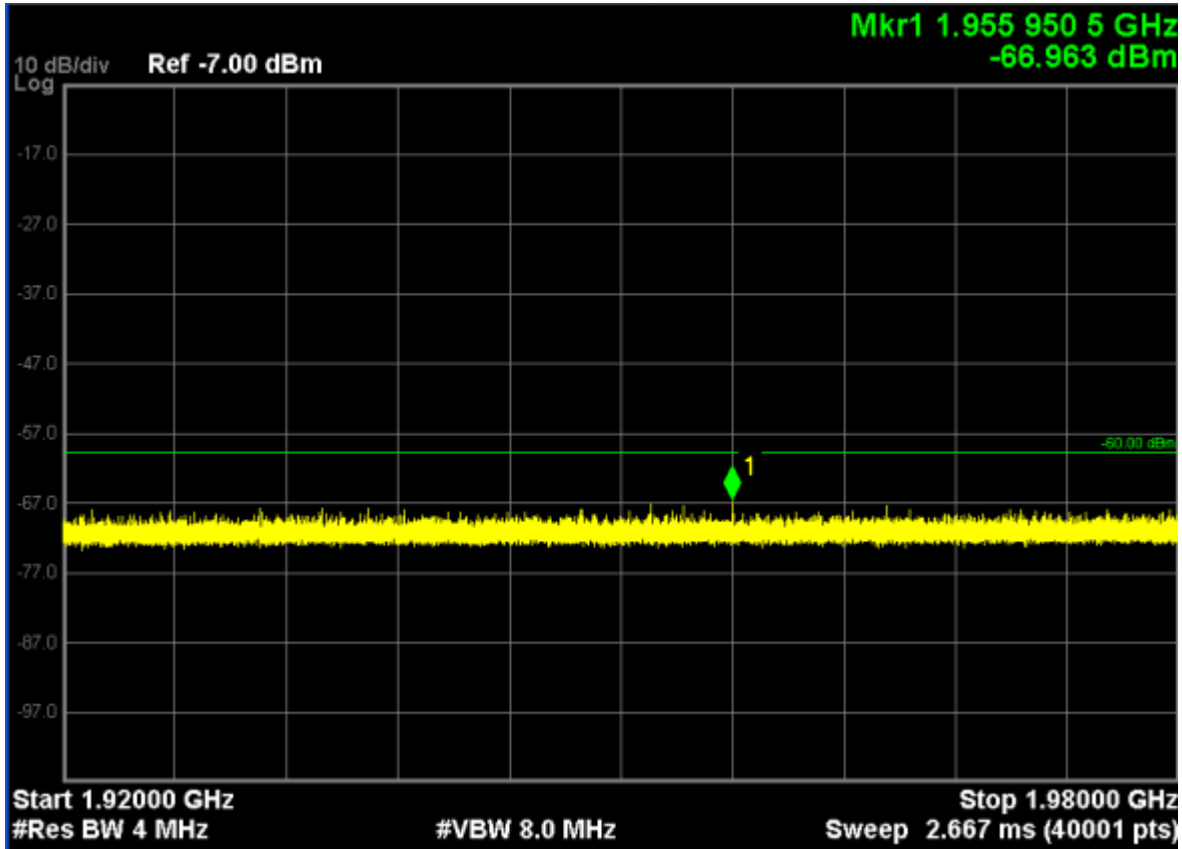
WCDMA BAND 1

30MHz~1000MHz



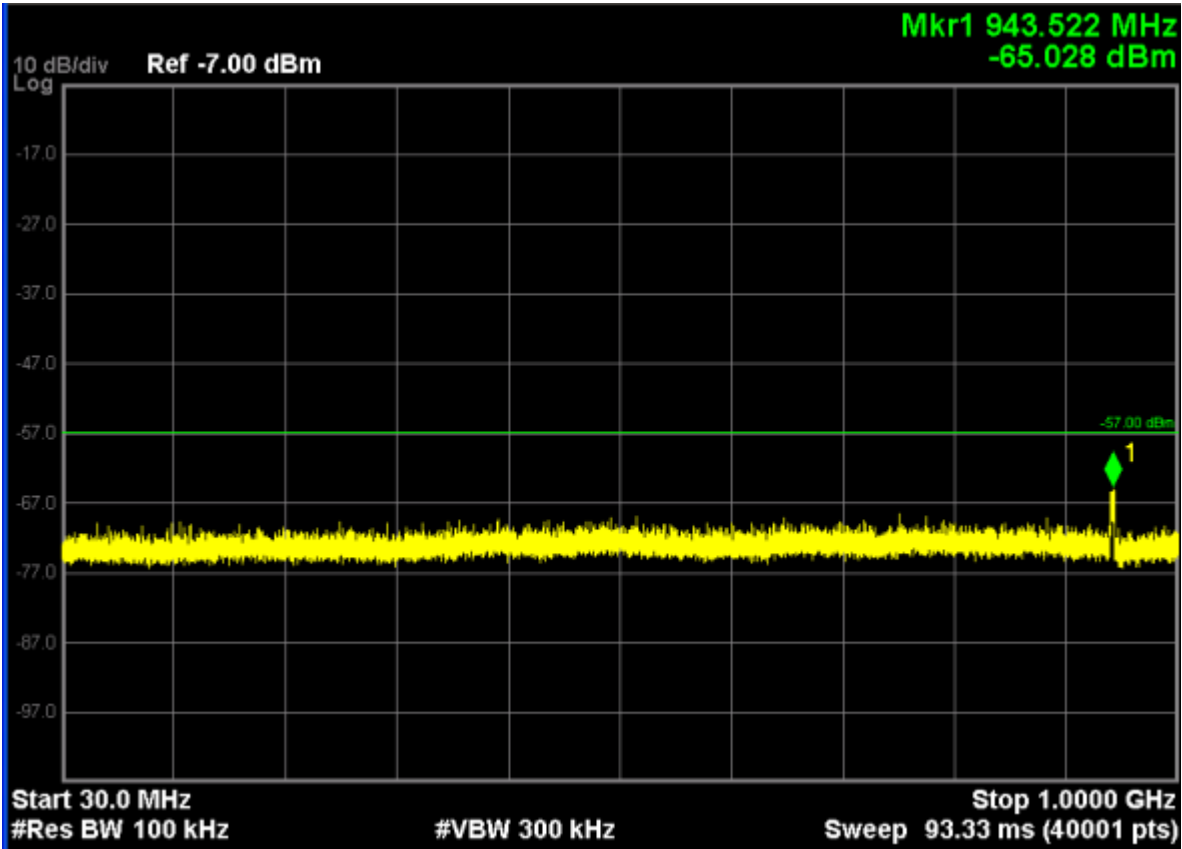
1GHz~12.75GHz



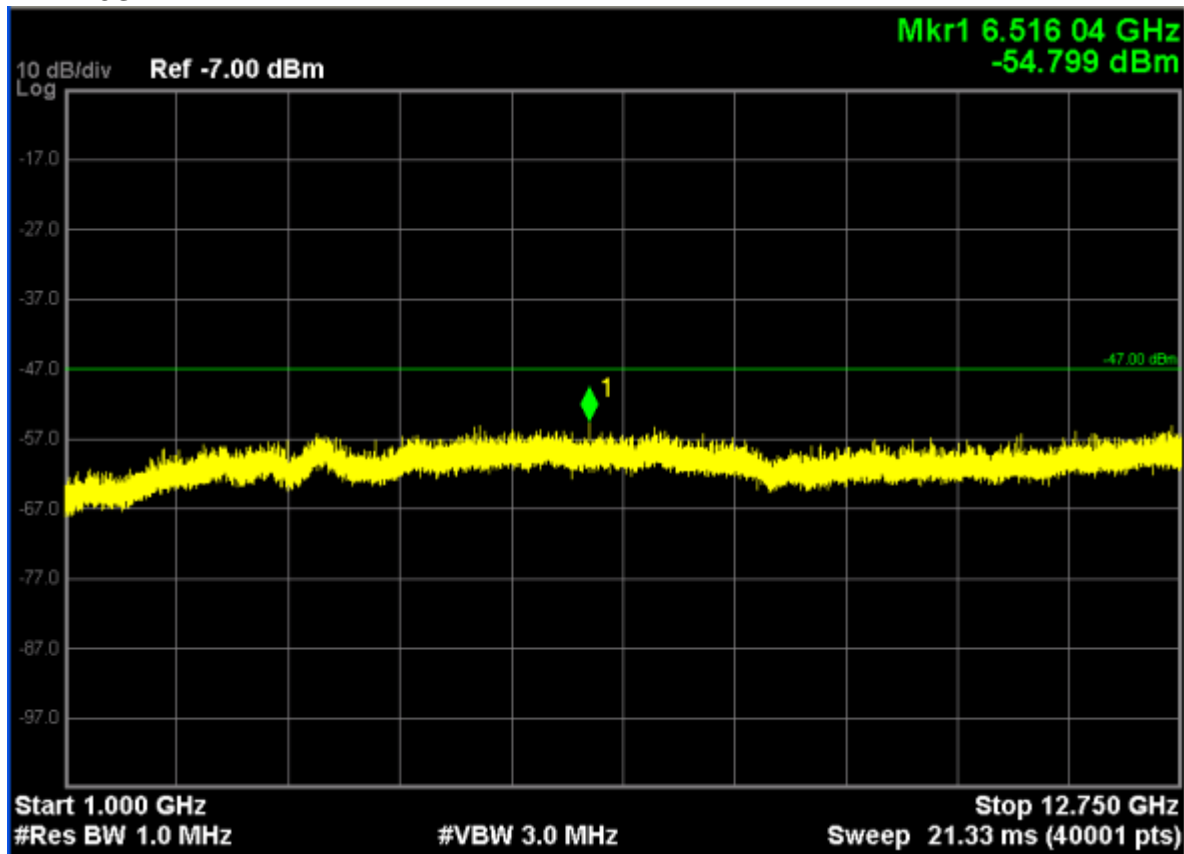


WCDMA BAND VIII

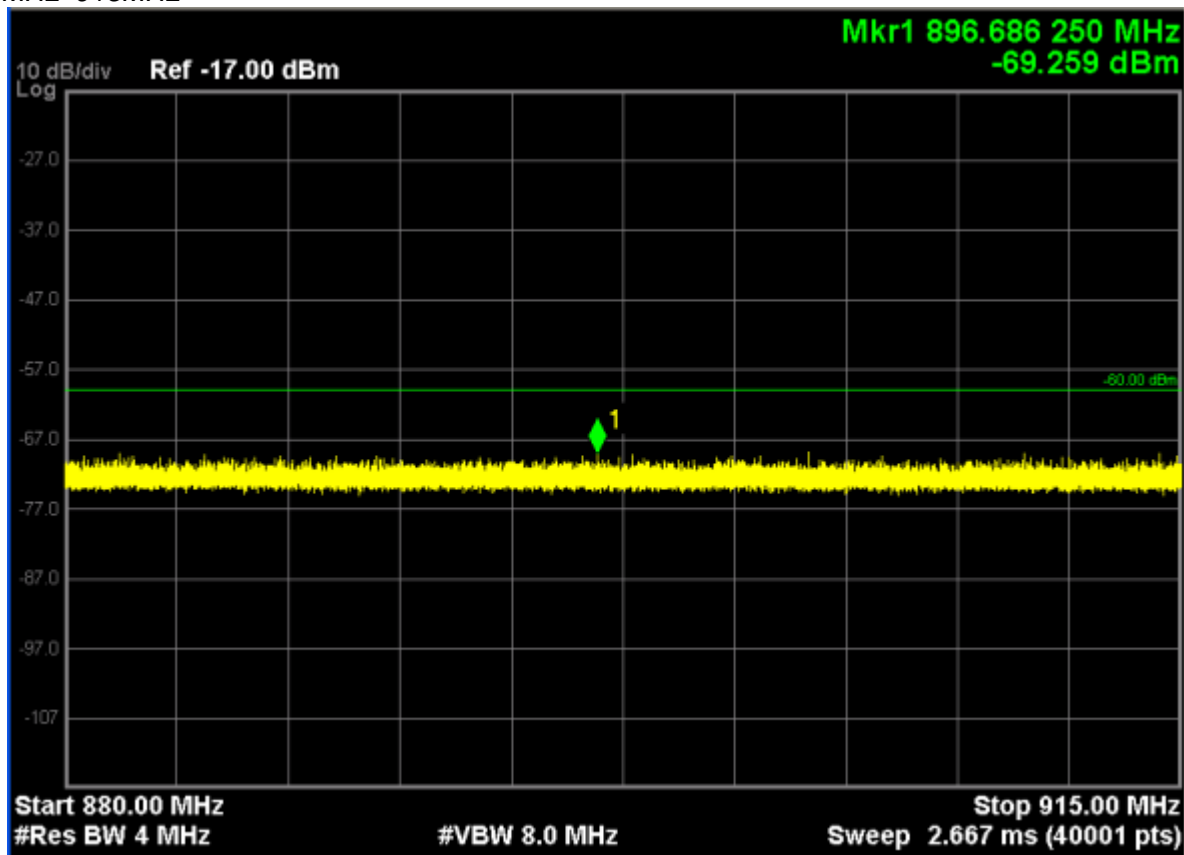
30MHz~1000MHz



1GHz~12.75GHz



880MHz~915MHz





#### 4.10. Out of synchronization handling of output power

##### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.11, The UE shall monitor the DPCCH quality in order to detect a loss of the signal on Layer 1. The threshold  $Q_{out}$  specifies at what DPCCH quality levels the UE shall shut its power off. The threshold is not defined explicitly, but is defined by the conditions under which the UE shall shut its transmitter off, as stated in this clause.

The DPCCH quality shall be monitored in the UE and compared to the threshold  $Q_{out}$  for the purpose of monitoring synchronization. The threshold  $Q_{out}$  should correspond to a level of DPCCH quality where no reliable detection of the TPC commands transmitted on the downlink DPCCH can be made. This can be at a TPC command error ratio level of e.g. 20 %.

##### Limits

When the UE estimates the DPCCH quality over the last 160 ms period to be worse than a threshold  $Q_{out}$ , the UE shall shut its transmitter off within 40 ms.

The quality level at the thresholds  $Q_{out}$  correspond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in table 4.2.11.2-1, a signal with the quality at the level  $Q_{out}$  can be generated by a  $DPCCH\_Ec/I_{or}$  ratio of -25 dB. The DL reference measurement channel 12,2 kbit/s is specified in TS 134 121-1 [2] and with static propagation conditions. The downlink physical channels, other than those specified in table 4.2.11.2-1, are as specified in TS 134 121-1 [2].

Table 4.2.11.2-1: DCH parameters for test of out-of-synchronization handling

Parameter	Value	Unit
$\hat{I}_{or}/I_{oc}$	-1	dB
$I_{oc}$	-60	dBm/3,84 MHz
$\frac{DPDCH\_E_c}{I_{or}}$	See figure 4.2.11.2-1: Before point A: -16,6 for UEs not supporting enhanced performance type 1 for DCH -19,6 for UEs supporting enhanced performance type 1 for DCH After point A not defined	dB
$\frac{DPCCH\_E_c}{I_{or}}$	See figure 4.2.11.2-1	dB
Information Data Rate	12,2	kbit/s

Figure 4.2.11.2-1 and table 4.2.11.2-2 show an example scenario where the DPCCH\_Ec/Ior ratio varies from a level where the DPCH is demodulated under normal conditions, down to a level below  $Q_{out}$  where the UE shall shut its power off.

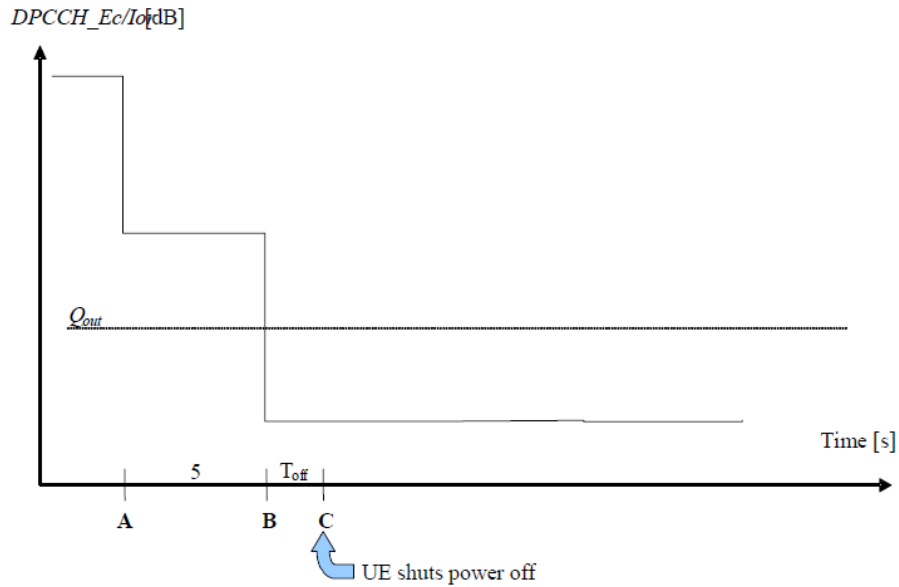


Figure 4.2.11.2-1: Conditions for out-of-synchronization handling in the UE

Table 4.2.11.2-2: Conditions for out-of-synchronization handling in the UE

Clause from figure 4.2.11.2-1	DPCCH_Ec/Ior (UE, not supporting enhanced performance requirements type 1 for DCH)	DPCCH_Ec/Ior (UE, supporting enhanced performance requirements type 1 for DCH)	Unit
Before A	-16,6	-19,6	dB
A to B	-21,6	-24,6	dB
After B	-28,4	-31,4	dB

The requirements for the UE are that it shall shut its transmitter off before point C.

The UE transmitter is considered to be OFF if the measured RRC filtered mean power is less than -55 dBm.

**Test procedure**

- 1) The SS sends continuously up power control commands to the UE until the UE transmitter power reach maximum level.
- 2) The SS controls the DPCCH\_Ec/Ior ratio level according to table 4.2.11.2-2, 'A to B'.
- 3) The SS controls the DPCCH\_Ec/Ior ratio level according to table 4.2.11.2-2, 'after B'. The SS waits 200 ms and then verifies that the UE transmitter has been switched off.
- 4) The SS monitors the UE transmitted power for 5 s and verifies that the UE transmitter is not switched on during this time.

**Test Result**

**Pass**

Test Environment: normal

#### 4.11. Transmitter Adjacent Channel Leakage power Ratio (ACLR)

##### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.12, Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centred on the assigned channel frequency to the RRC filtered mean power centred on an adjacent channel frequency.

##### Limits

If the adjacent channel power is greater than -50 dBm then the ACLR shall be higher than the value specified in table 4.2.12.2-1, Table 5.10A.1 and Table 5.10B.1. The requirements are applicable for all for the values of  $\beta_c$ ,  $\beta_d$ ,  $\beta_{hs}$ ,  $\beta_{ec}$  and  $\beta_{ed}$  defined in TS 125 214 [8], TS 34 121 [5].

Table 4.2.12.2-1: UE ACLR

Power Class	Adjacent channel frequency relative to assigned channel frequency	ACLR limit
3	+5 MHz or -5 MHz	32,2 dB
3	+10 MHz or -10 MHz	42,2 dB
4	+5 MHz or -5 MHz	32,2 dB
4	+10 MHz or -10 MHz	42,2 dB

NOTE 1: The requirement shall still be met in the presence of switching transients.  
NOTE 2: The ACLR requirements reflect what can be achieved with present state of the art technology.  
NOTE 3: Requirement on the UE shall be reconsidered when the state of the art technology progresses.

Table 5.10A.1: UE ACLR(HSDPA)

Power Class	UE channel	ACLR limit
3	+5 MHz or -5 MHz	33 dB
3	+10 MHz or -10 MHz	43 dB
4	+5 MHz or -5 MHz	33 dB
4	+10 MHz or -10 MHz	43 dB

Table 5.10B.1: UE ACLR(E-DCH)

Power Class	UE channel	ACLR limit
3	+5 MHz or -5 MHz	33 dB
3	+10 MHz or -10 MHz	43 dB
4	+5 MHz or -5 MHz	33 dB
4	+10 MHz or -10 MHz	43 dB

##### Test procedure

- 1) The SS sends continuously Up power control commands to the UE until the UE transmitter power reaches maximum level.
- 2) Measure the RRC filtered mean power.
- 3) Measure the RRC filtered mean power of the first adjacent channels and the second adjacent channels.
- 4) Calculate the ratio of the power between the values measured in 2) and 3) above.

##### Test Result

**Pass**

Test Environment: normal, TL/VL, TL/VH, TH/VL, TH/VH

### **Standard Applicable**

According to ETSI EN 301 908-1 V11.1.1(2016-07) §4.2.2, This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port. This test is applicable to radio communications equipment and ancillary equipment. This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

### **Limits**

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out-of-band emissions and spurious emissions are based on ITU-R Recommendations SM.329-10 [3] and SM.1539-1 [4].

Table 4.2.2.2-1: Radiated spurious emissions requirements (UE)

Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	-57 dBm/100 kHz	-36 dBm/100 kHz	All
$1 \text{ GHz} \leq f < 12,75 \text{ GHz}$	-47 dBm/1 MHz	-30 dBm/1 MHz	All
$f_c - 2,5 \times 5 \text{ MHz} < f < f_c + 2,5 \times 5 \text{ MHz}$		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
$f_c - 2,5 \times BW_{\text{Channel}} \text{ MHz} < f < f_c + 2,5 \times BW_{\text{Channel}} \text{ MHz}$		Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WiMAX, UMB
$f_c - 2,5 \times 10 \text{ MHz} < f < f_c + 2,5 \times 10 \text{ MHz}$		Not defined	UTRA TDD, 7,68 Mcps option
$f_c - 4 \text{ MHz} < f < f_c + 4 \text{ MHz}$		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1
$f_c - 500 \text{ kHz} < f < f_c + 500 \text{ kHz}$		Not defined	UWC 136, 200 kHz option
$f_c - 250 \text{ kHz} < f < f_c + 250 \text{ kHz}$		Not defined	UWC 136, 30 kHz option
NOTE: $f_c$ is the UE transmit centre frequency.			

### **Test Result**

Pass

Test Environment: normal

Please refer to following data tables.

**WCDMA Band I Idle Mode**

Indicated		Table Angle Degree	Test Ant.		Substituted			Ant. Gain Correction (dBi)	Cable Loss (dBm)	Absolute Level (dBm)	Limit (dBm)
Freq. (MHz)	Receiver Reading (dBμV)		Height	Polar (H/V)	Freq. (MHz)	Level (dBm)	Polar (H/V)				
1636.7	41.19	207	1.4	H	1636.7	-57.01	H	7.8	6	-55.21	-47
2785.6	40.06	2	1.6	V	2785.6	-59.90	V	8.46	7.42	-58.86	-47
2608.4	46.54	126	1.7	V	2608.4	-55.70	V	8.33	7.89	-55.26	-47
52.9	41.67	209	1.4	H	52.9	-62.64	H	-0.26	3.18	-66.08	-57
415.3	37.51	272	1.5	H	415.3	-61.69	H	1.45	4.48	-64.72	-57

**WCDMA Band VIII Idle Mode**

Indicated		Table Angle Degree	Test Ant.		Substituted			Ant. Gain Correction (dBi)	Cable Loss (dBm)	Absolute Level (dBm)	Limit (dBm)
Freq. (MHz)	Receiver Reading (dBμV)		Height	Polar (H/V)	Freq. (MHz)	Level (dBm)	Polar (H/V)				
2613.0	46.22	89	1.6	H	2613.0	-55.12	H	8.33	7.89	-54.68	-47
1633.0	42.19	159	1.5	V	1633.0	-53.47	V	8.57	6.54	-51.44	-47
1427.7	39.54	235	1.3	V	1427.7	-57.09	V	8.97	5.26	-53.38	-47
315.5	37.97	320	1.7	H	315.5	-62.40	H	1.76	2.16	-62.80	-57
61.5	42.66	229	1.2	V	61.5	-64.56	V	-0.68	1.12	-66.36	-57

**WCDMA Band I traffic Mode in middle channel**

Indicated		Table Angle Degree	Test Ant.		Substituted			Ant. Gain Correction (dBi)	Cable Loss (dBm)	Absolute Level (dBm)	Limit (dBm)
Freq. (MHz)	Receiver Reading (dBμV)		Height	Polar (H/V)	Freq. (MHz)	Level (dBm)	Polar (H/V)				
2744.9	39.52	142	1.6	H	2744.9	-42.27	H	8.46	7.45	-41.26	-30
2684.3	33.39	224	1.7	V	2684.3	-39.89	V	8.95	7.43	-38.37	-30
2338.1	30.70	297	1.4	V	2338.1	-44.32	V	9.4	6.42	-41.34	-30
62.6	39.37	118	1.4	V	62.6	-47.31	V	-0.26	2.09	-49.66	-36
136.1	35.96	322	1.6	H	136.1	-56.88	H	1.45	3.78	-59.21	-36

**WCDMA Band VIII traffic Mode in middle channel**

Indicated		Table Angle Degree	Test Ant.		Substituted			Ant. Gain Correction (dBi)	Cable Loss (dBm)	Absolute Level (dBm)	Limit (dBm)
Freq. (MHz)	Receiver Reading (dBμV)		Height	Polar (H/V)	Freq. (MHz)	Level (dBm)	Polar (H/V)				
1797.9	45.47	300	1.6	V	1797.9	-39.26	V	7.95	7.03	-38.34	-30
2695.1	45.78	21	1.3	V	2695.1	-41.91	V	8.74	7.93	-41.10	-30
873.4	35.15	342	1.4	H	873.4	-46.53	H	6.9	4.57	-44.20	-36
750.8	34.23	159	1.8	V	750.8	-47.05	V	7.8	5.89	-45.14	-36
360.7	31.89	136	1.8	H	360.7	-50.80	H	2.56	2.35	-50.59	-36

#### 4.13. Control and monitoring functions (UE)

##### Standard Applicable

According to ETSI EN 301 908-1 V11.1.1(2016-07) §4.2.4, This requirement, together with other control and monitoring technical requirements identified in the table of cross references in the applicable part, verifies that the control and monitoring functions of the UE prevent it from transmitting in the absence of a valid network.

This test is applicable to radio communications equipment and ancillary equipment in the operating band defined in the applicable part of this multipart harmonized standard.

This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

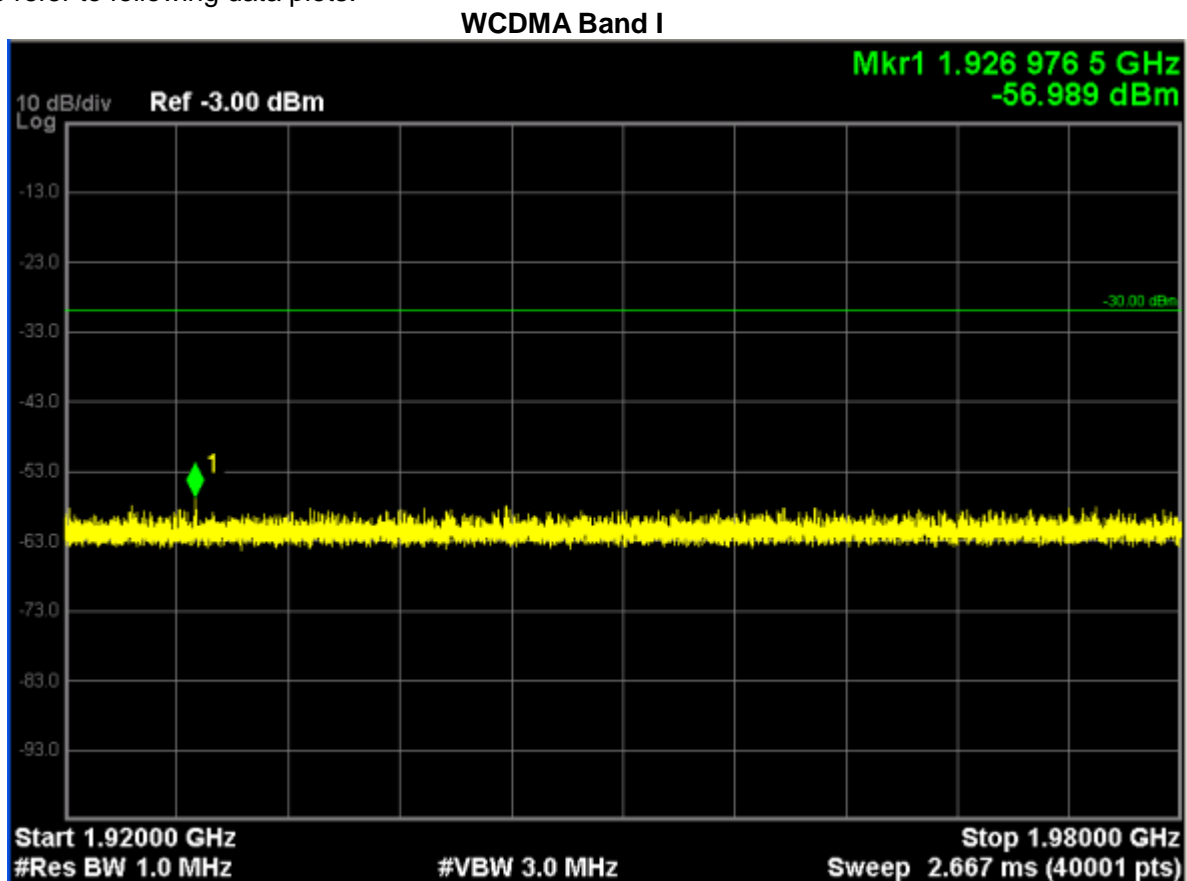
##### Limits

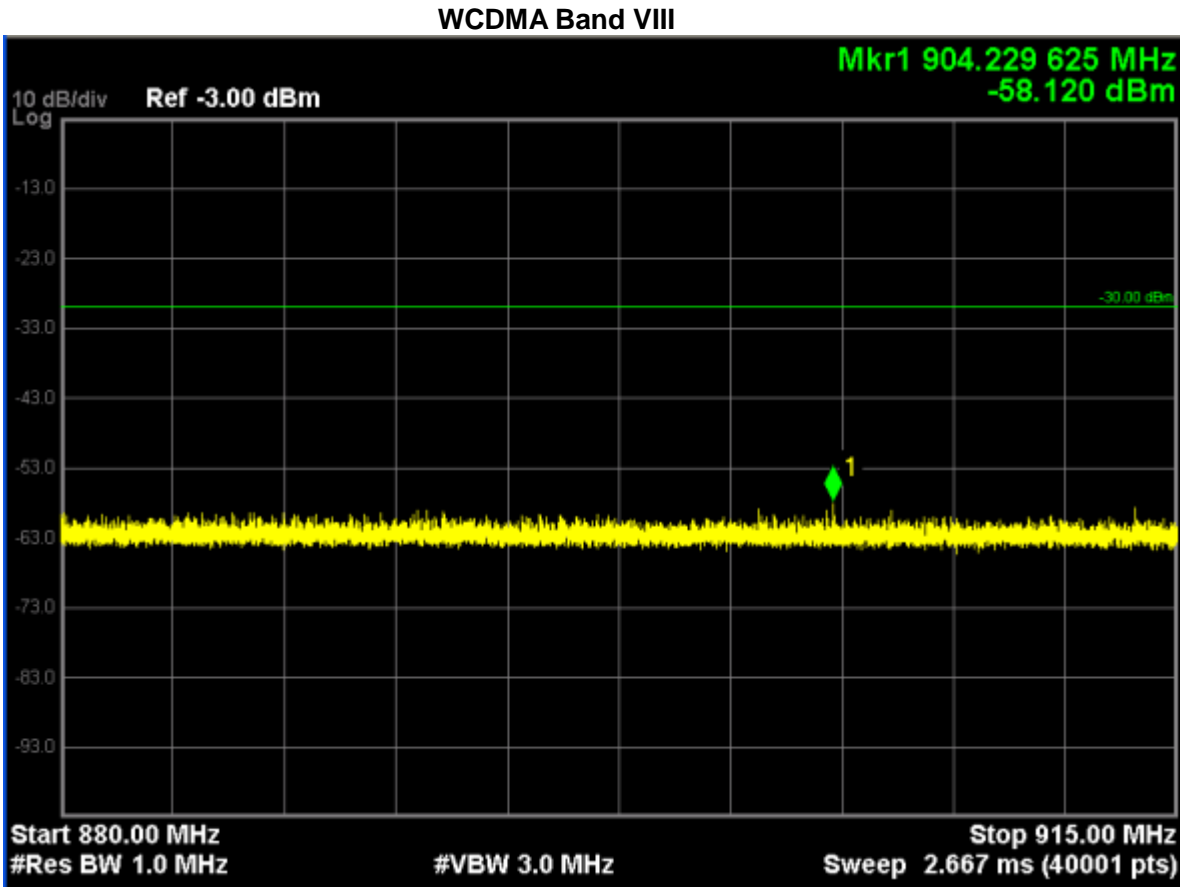
The maximum measured power during the duration of the test shall not exceed -30 dBm.

##### Test Result

Band	Measured power(dBm)	Results
WCDMA BAND I	< -30	Pass
WCDMA BAND VIII	<-30	Pass

Test Environment: normal  
Please refer to following data plots.





#### 4.14. Receiver Reference Sensitivity level

##### Standard Applicable

According to ETSI EN 301 908-2 V11.1.1(2016-07) §4.2.13, The reference sensitivity level <REFSENS> is the minimum mean power received at the UE antenna port at which the Bit Error Ratio (BER) shall not exceed a specific value.

##### Limits

The measured BER shall not exceed 0,001.

Table 4.2.13.2-1: Test parameters for Reference Sensitivity Level

Operating Band	Unit	DPCH Ec <REFSENS>	<REF <sub>or</sub> >
I	dBm/3,84 MHz	-116,3	-106
III	dBm/3,84 MHz	-113,3	-103
VII	dBm/3,84 MHz	-114,3	-104
VIII	dBm/3,84 MHz	-113,3	-103
XX	dBm/3,84 MHz	-113,3	-103
XXII	dBm/3,84 MHz	-113,3	-103

NOTE 1: For Power class 3 and 3bis this shall be at the maximum output power.  
NOTE 2: For Power class 4 this shall be at the maximum output power.

##### Test procedure

- 1) Set and send continuously Up power control commands to the UE until the UE output power shall be maximum level.
- 2) Measure the BER of DCH received from the UE at the SS.

##### Test Result

Pass

Test Environment: normal, TL/VL, TL/VH, TH/VL, TH/VH

Please refer to following data tables.

Band	Test Environment	BER			Result
		Low Channel	Middle Channel	High Channel	
WCDMA Band I	normal	≤0.001%	≤0.001%	≤0.001%	Pass
	TL/VL	≤0.001%	≤0.001%	≤0.001%	Pass
	TL/VH	≤0.001%	≤0.001%	≤0.001%	Pass
	TH/VL	≤0.001%	≤0.001%	≤0.001%	Pass
	TH/VH	≤0.001%	≤0.001%	≤0.001%	Pass
WCDMA BAND VIII	normal	≤0.001%	≤0.001%	≤0.001%	Pass
	TL/VL	≤0.001%	≤0.001%	≤0.001%	Pass
	TL/VH	≤0.001%	≤0.001%	≤0.001%	Pass
	TH/VL	≤0.001%	≤0.001%	≤0.001%	Pass
	TH/VH	≤0.001%	≤0.001%	≤0.001%	Pass



## **APPENDIX 1    PHOTOGRAPHS OF TEST SETUP**

Please refer to the file named “RF Test Setup Photos”.

## **APPENDIX 2    PHOTOGRAPHS OF EUT**

Please refer to the file named “EUT Photos”.

**----End of the report----**