
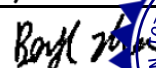



# Test Report

Test Report No. ....:	TCT231117E015	
Date of issue .....	Dec. 28, 2023	
Testing laboratory .....	Shenzhen TCT Testing Technology Co., Ltd.	
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China	
Applicant's name .....	Shenzhen Huafurui Technology Co., Ltd.	
Address .....	Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China	
Manufacturer's name.....:	Shenzhen Huafurui Technology Co., Ltd.	
Address .....	Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China	
Standard(s).....:	ETSI EN 301 908-1 V15.2.1 (2023-01) ETSI EN 301 908-2 V13.1.1 (2020-06)	
Product Name .....	Smartphone	
Trade Mark.....:	CUBOT	
Model/Type reference .....	A1	
Rating(s) .....	Refer to EUT description of page 3	
Date of receipt of test item .....	Nov. 17, 2023	
Date (s) of performance of test .....	Nov. 17, 2023 - Dec. 28, 2023	
Tested by (+signature).....:	Rleo LIU	
Check by (+signature) .....	Beryl ZHAO	
Approved by (+signature):	Tomsin	

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## 1. General Product Information

### 1.1. EUT description

Product Name.....:	Smartphone
Model/Type reference.....:	A1
Hardware Version.....:	E97C_V1.0X
Software Version .....	CUBOT_A1_E041_V01
Operation Frequency .....	UTRA Band I: TX:1920MHz~1980MHz; RX: 2110MHz~2170MHz UTRA Band VIII: TX: 880MHz~915MHz; RX: 925MHz~960MHz
Modulation Technology .....	16QAM for HSDPA and HSUPA
Antenna Type.....:	Internal Antenna
Antenna Gain.....:	WCDMA Band I: 0.76dBi WCDMA Band VIII: -0.09dBi
Rating(s).....:	Adapter Information: Model: HJ-0502000W2-EU Input: AC 100–240 V, 50/ 60 Hz, 0.3 A Output: DC 5.0 V, 2.0 A Output Power: 10.0 W Rechargeable Li-ion Battery DC 3.87V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

### 1.2. Model(s) list

None.

### 1.3. EUT Test Channels

WCDMA Band I				
Test Frequency ID	UARFCN	Frequency of Uplink	UARFCN	Frequency of Downlink
Low range	9612	1922.4MHz	10562	2112.4MHz
Mid range	9750	1950.0MHz	10700	2140.0MHz
High range	9888	1977.4MHz	10838	2167.6MHz
WCDMA Band VIII				
Test Frequency ID	UARFCN	Frequency of Uplink	UARFCN	Frequency of Downlink
Low range	2712	882.4MHz	2937	927.4MHz
Mid range	2788	897.6MHz	3013	924.6MHz
High range	2863	912.6MHz	3088	957.6MHz

## 2. Test Result Summary

No.	Description of Test	Result
1	Transmitter maximum output power	PASS
2	Transmitter spectrum emission mask	PASS
3	Transmitter spurious emissions	PASS
4	Transmitter minimum output power	PASS
5	Transmitter adjacent channel leakage power ratio	PASS
6	Out-of-synchronization handling of output power	PASS
7	Receiver adjacent channel selectivity (ACS)	PASS
8	Receiver blocking characteristics	PASS
9	Receiver spurious response	PASS
10	Receiver intermodulation characteristics	PASS
11	Receiver spurious emissions	PASS
12	Radiated emissions	PASS
13	Control and monitoring functions	PASS
14	Receiver Reference Sensitivity Level	PASS
15*	Receiver Total Radiated Sensitivity (TRS)	N/A
16*	Total Radiated Power (TRP)	N/A

**Note:**

1 Pass: Test item meets the requirement.

2. N/A: Test case does not apply to the test object.

3. The test result judgment is decided by the limit of test standard.

### 3. General Information

#### 3.1. Test environment and mode

Item	Normal condition	Extreme condition			
		HVHT	LVHT	HVLT	LVLT
Temperature	+25°C	+40°C	+40°C	-20°C	-20°C
Voltage	DC 3.87V	DC 4.35V	DC 3.5V	DC 4.35V	DC 3.5V
Humidity	20%-75%				
Atmospheric Pressure:	1008 mbar				
Test Mode:	Keep the EUT in communication with CMU200.				

#### 3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

**Note:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### 3.3. Test Instruments List

Name	Model No.	Manufacturer	Date of Cal.	Due Date
EMI Test Receiver	ESIB7	R&S	Jun. 30, 2023	Jun. 29, 2024
Spectrum Analyzer	FSQ40	R&S	Jun. 30, 2023	Jun. 29, 2024
Pre-amplifier	8447D	HP	Jun. 28, 2023	Jun. 27, 2024
Pre-amplifier	LNPA_0118G-45	SKET	Feb. 21, 2023	Feb. 20, 2024
Pre-amplifier	LNPA_1840G-50	SKET	Feb. 21, 2023	Feb. 20, 2024
Broadband Antenna	VULB9163	Schwarzbeck	Jul. 02, 2023	Jul. 01, 2024
Horn Antenna	BBHA 9120D	Schwarzbeck	Jul. 02, 2023	Jul. 01, 2024
Horn Antenna	BBHA 9170	Schwarzbeck	Feb. 25, 2023	Feb. 24, 2024
Coaxial cable	RC-18G-N-M	SKET	Feb. 25, 2022	Feb. 24, 2024
Coaxial cable	RC_40G-K-M	SKET	Feb. 25, 2022	Feb. 24, 2024
EMI Test Software	EZ-EMC	Shurple Technology	/	/
Spectrum Analyzer	N9020A	Agilent	Jun. 29, 2023	Jun. 28, 2024
Universal Radio Communication Tester	CMU200	R&S	Jun. 29, 2023	Jun. 28, 2024
DC Power Supply	KR3005K	Kingrang	Jun. 29, 2023	Jun. 28, 2024
Programable tempratuce and humidity chamber	JQ-2000	JQ	Jun. 29, 2023	Jun. 28, 2024

## 4. Facilities and Accreditations

### 4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

### 4.2. Location

Shenzhen TCT Testing Technology Co., Ltd.

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

### 4.3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

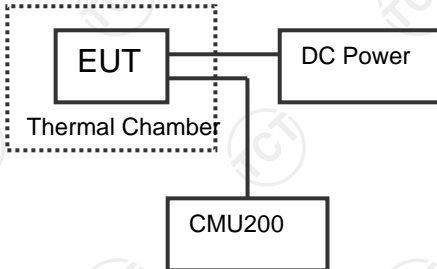
No.	Item	MU
1	Conducted Emission	$\pm 3.10$ dB
2	RF power, conducted	$\pm 1.08$ dB
3	Spurious emissions, conducted	$\pm 2.94$ dB
4	All emissions, radiated(<1 GHz)	$\pm 4.56$ dB
5	All emissions, radiated(1 GHz - 18 GHz)	$\pm 4.22$ dB
6	All emissions, radiated(18 GHz- 40 GHz)	$\pm 4.36$ dB
7	Temperature	$\pm 0.1^{\circ}\text{C}$
8	Humidity	$\pm 1.0\%$



## 5. Test Results and Measurement Data

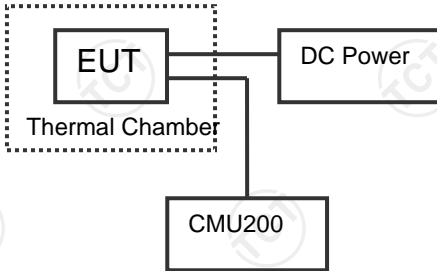
### 5.1. Transmitter Maximum Output Power

#### 5.1.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.1.2										
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.1.1										
<b>Test Setup:</b>	 <pre> graph LR     subgraph ThermalChamber [Thermal Chamber]         EUT[EUT]     end     DCPower[DC Power]     CMU200[CMU200]     EUT --- DCPower     EUT --- CMU200     </pre>										
<b>Limit:</b>	24.0+1,7/-3,7dBm										
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. Set and send continuously Up power control commands to the UE.</li> <li>5. Measure the mean power of the UE in a bandwidth of at least <math>(1 + \alpha)</math> times the chip rate of the radio access mode. The mean power shall be averaged over at least one timeslot.</li> <li>6. Transmitting or receiving bit/symbol rate for test channel is shown in table below.</li> </ol> <table border="1" data-bbox="523 1341 1375 1570"> <thead> <tr> <th>Type of user information</th><th>User bit rate</th><th>DL DPCH symbol rate</th><th>UL DPCH Bit rate</th></tr> </thead> <tbody> <tr> <td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr> </tbody> </table>			Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate	12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps
Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate								
12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps								
<b>Test Instrument:</b>	Refer to Item 3.3										
<b>Remark:</b>	Normal and extreme test conditions have been tested, And we found out that normal condition is worst case, so only the measurement data of normal condition in this report.										

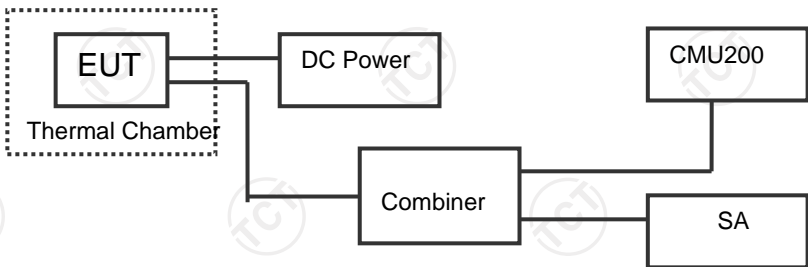
## 5.2. Transmitter Spectrum Emission Mask

### 5.2.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.2.2																								
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.2.1																								
<b>Test Setup:</b>																									
<b>Limit:</b>	<table border="1"> <thead> <tr> <th rowspan="2"><math>\Delta f</math> in MHz (note 1)</th><th colspan="2">Minimum requirement (note 2)</th><th rowspan="2">Measurement bandwidth (note 5)</th></tr> <tr> <th>Relative requirement</th><th>Absolute requirement (in measurement bandwidth)</th></tr> </thead> <tbody> <tr> <td>2,5 MHz to 3,5 MHz</td><td><math>\left\{ -33,5 - 15 \cdot \left( \frac{\Delta f}{MHz} - 2,5 \right) \right\} dBc</math></td><td>-69,6 dBm</td><td>30 kHz (see note 3)</td></tr> <tr> <td>3,5 MHz to 7,5 MHz</td><td><math>\left\{ -33,5 - 1 \cdot \left( \frac{\Delta f}{MHz} - 3,5 \right) \right\} dBc</math></td><td>-54,3 dBm</td><td>1 MHz (see note 4)</td></tr> <tr> <td>7,5 MHz to 8,5 MHz</td><td><math>\left\{ -37,5 - 10 \cdot \left( \frac{\Delta f}{MHz} - 7,5 \right) \right\} dBc</math></td><td>-54,3 dBm</td><td>1 MHz (see note 4)</td></tr> <tr> <td>8,5 MHz to 12,5 MHz</td><td>-47,5 dBc</td><td>-54,3 dBm</td><td>1 MHz (see note 4)</td></tr> </tbody> </table> <p>NOTE 1: <math>\Delta f</math> is the separation between the carrier frequency and the centre of the measurement bandwidth.  NOTE 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.  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.  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.  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>			$\Delta f$ 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)
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<b>Test procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. Set and send continuously Up power control commands to the UE.</li> <li>5. Transmitting or receiving bit/symbol rate for test channel is shown in table below.</li> </ol> <table border="1"> <thead> <tr> <th>Type of user information</th><th>User bit rate</th><th>DL DPCH symbol rate</th><th>UL DPCH Bit rate</th></tr> </thead> <tbody> <tr> <td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr> </tbody> </table>			Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate	12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps														
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12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps																						
<b>Test Instruments:</b>	Refer to Item 3.3																								
<b>Test Result</b>	PASS																								

## 5.3. Transmitter Spurious Emissions

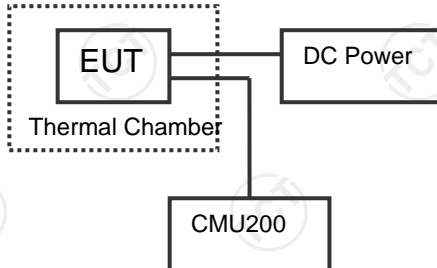
### 5.3.1. Test Specification

Test Requirement:	ETSI EN 301 908-2 clause 5.3.2.2																																																																									
Test Method:	ETSI EN 301 908-2 clause 5.3.2.1																																																																									
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2 585 MHz ≤ f ≤ 2 640 MHz	3,84 MHz	-60 dBm																																																																								
2 640 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm (note 2)																																																																								
Test Procedure:	<ol style="list-style-type: none"><li>1. Connect the SS to the UE antenna connector.</li><li>2. A call is set up according to the Generic call setup procedure.</li><li>3. Enter the UE into loopback test mode and start the loopback test.</li><li>4. Set and send continuously up power control commands to the UE, until the UE output power shall be maximum level.</li><li>5. Sweep the spectrum analyser (or equivalent equipment) over a frequency range and measure the average power of spurious emission.</li><li>6. Transmitting or receiving bit/symbol rate for test channel is shown in table below.</li></ol>																																																																									

	Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate
	12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps
Test Instrument:	Refer to Item 3.3			
Test Result:	PASS			

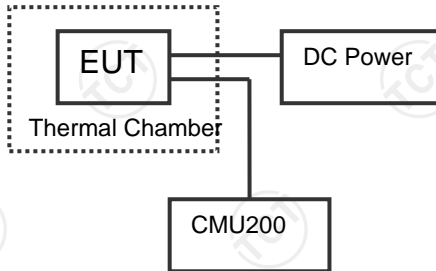
## 5.4. Transmitter Minimum Output Power

### 5.4.1. Test Specification

Test Requirement:	ETSI EN 301 908-2 clause 5.3.4.2										
Test Method:	ETSI EN 301 908-2 clause 5.3.4.1										
Test Setup:											
Limit:	Less than -49dBm										
Test Procedure:	<div><div><div>1. Connect the SS to the UE antenna connector.</div><div>2. A call is set up according to the Generic call setup procedure.</div><div>3. Enter the UE into loopback test mode and start the loopback test.</div><div>4. Transmitting or receiving bit/symbol rate for test channel is shown in table below.</div></div><table><tr><td>Type of user information</td><td>User bit rate</td><td>DL DPCH symbol rate</td><td>UL DPCH Bit rate</td></tr><tr><td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr></table><div><div>5. Set and send continuously Down power control commands to the UE</div><div>6. Measure the mean power of the UE.</div></div></div>			Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate	12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps
Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate								
12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps								
Test Instrument:	Refer to Item 3.3										
Remark:	Normal and extreme test conditions have been tested, And we found out that normal condition is worst case, so only the measurement dada of normal condition in this report.										
Test Result:	PASS										

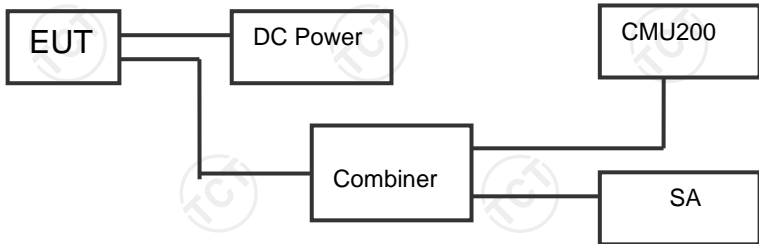
## 5.5. Transmitter Adjacent Channel Leakage Power Ratio

### 5.5.1. Test Specification

Test Requirement:	ETSI EN 301 908-2 clause 5.3.11.2															
Test Method:	ETSI EN 301 908-2 clause 5.3.11.1															
Test Setup:																
Limit:	<table><tr><th>Power Class</th><th>Adjacent channel frequency relative to assigned channel frequency</th><th>ACLR limit</th></tr><tr><td>3</td><td>+5 MHz or -5 MHz</td><td>32,2 dB</td></tr><tr><td>3</td><td>+10 MHz or -10 MHz</td><td>42,2 dB</td></tr><tr><td>4</td><td>+5 MHz or -5 MHz</td><td>32,2 dB</td></tr><tr><td>4</td><td>+10 MHz or -10 MHz</td><td>42,2 dB</td></tr></table> <p>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.</p>	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
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														
Test Procedure:	<ol style="list-style-type: none"><li>1. Connect the SS to the UE antenna connector.</li><li>2. A call is set up according to the Generic call setup procedure.</li><li>3. Enter the UE into loopback test mode and start the loopback test.</li></ol>															
Test Instrument:	Refer to Item 3.3															
Remark:	Normal and extreme test conditions have been tested, And we found out that normal condition is worst case, so only the measurement dada of normal condition in this report.															
Test Result:	PASS															

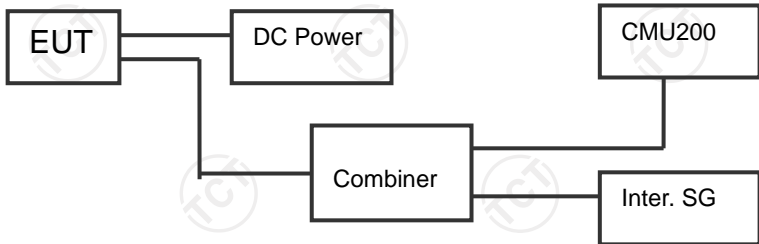
## 5.6. Out-of-synchronization Handling of Output Power

### 5.6.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.10.2										
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.10.1										
<b>Test Setup:</b>											
<b>Limit:</b>	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.										
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure, with the following exception according to table 5.3.10.1.1-1 for information elements in System Information Block type 1 found in TS 134 108 [3].</li> <li>3. RF parameters are set up according to table 4.2.11.2-1 with DPCCH_Ec/Ior ratio level according to table 4.2.11.2-2, 'before A'.</li> <li>4. Enter the UE into loopback test mode and start the loopback test.</li> <li>5. The SS sends continuously up power control commands to the UE until the UE transmitter power reach maximum level.</li> <li>6. The SS controls the DPCCH_Ec/Ior ratio level according to table 4.2.11.2-2, 'A to B'.</li> <li>7. 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.</li> <li>8. The SS monitors the UE transmitted power for 5 s and verifies that the UE transmitter is not switched on during this time.</li> <li>9. Transmitting or receiving bit/symbol rate for test channel is shown in table below.</li> </ol> <table border="1" data-bbox="523 1715 1393 1879"> <thead> <tr> <th>Type of user information</th><th>User bit rate</th><th>DL DPCH symbol rate</th><th>UL DPCH Bit rate</th></tr> </thead> <tbody> <tr> <td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr> </tbody> </table>			Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate	12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps
Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate								
12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps								
<b>Test Instrument:</b>	Refer to Item 3.3										
<b>Test Result:</b>	PASS										

## 5.7. Receiver Adjacent Channel Selectivity (ACS)

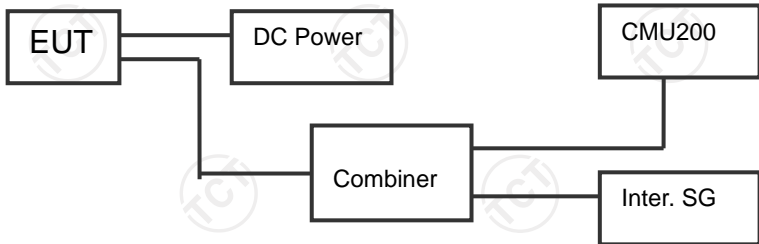
### 5.7.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.5.2
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.5.1
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC_Power[DC Power]     DC_Power --- Combiner[Combiner]     CMU200[CMU200] --- Combiner     Combiner --- Inter_SG[Inter. SG]         </pre>
<b>Limit:</b>	For the UE of power class 3 and 4, the BER shall not exceed 0.001
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 1.</li> <li>5. Set the power level of UE according to the table 4.2.6.2-1 case 1 with <math>\pm 1</math> dB tolerance.</li> </ol> <p>Measure the BER of DCH received from the UE at the SS.</p>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS



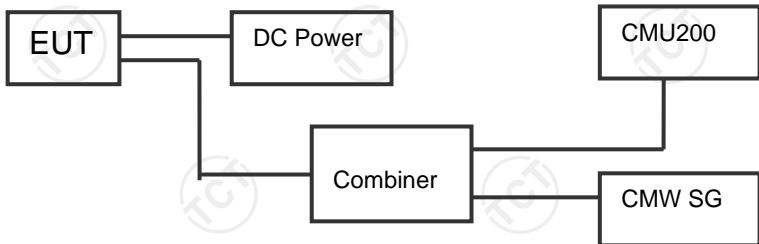
## 5.8. Receiver Blocking Characteristics

### 5.8.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.6.2
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.6.1
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC[DC Power]     DC --- Combiner[Combiner]     Combiner --- InterSG[Inter. SG]     CMU200[CMU200] --- InterSG             </pre>
<b>Limit:</b>	The BER shall not exceed 0.001
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. 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.</li> <li>5. 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 <math>\pm 1</math> dB tolerance.</li> <li>6. Measure the BER of DCH received from the UE at the SS.</li> <li>7. For table 4.2.7.2-2, record the frequencies for which the BER exceeds the test requirements.</li> </ol>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS

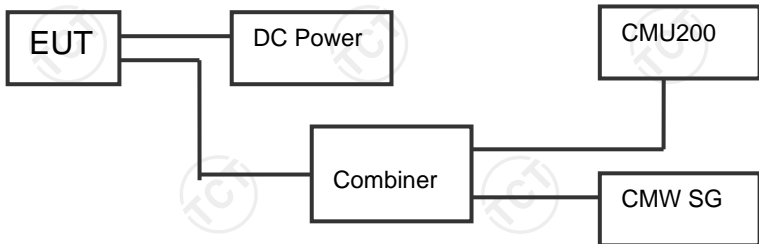
## 5.9. Receiver Spurious Response

### 5.9.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.7.2
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.7.1
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC_Power[DC Power]     DC_Power --- Combiner[Combiner]     CMU200[CMU200] --- Combiner     Combiner --- CMW_SG[CMW SG]         </pre>
<b>Limit:</b>	The BER shall not exceed 0.001
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. 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.</li> <li>5. Set the power level of the UE according to table 4.2.8.2-1 with a <math>\pm 1</math> dB tolerance.</li> <li>6. Measure the BER of DCH received from the UE at the SS.</li> </ol>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS

## 5.10. Receiver Intermodulation Characteristics

### 5.10.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.8.2
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.8.1
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC_Power[DC Power]     DC_Power --- Combiner[Combiner]     CMU200[CMU200] --- Combiner     Combiner --- CMW_SG[CMW SG]         </pre>
<b>Limit:</b>	The BER shall not exceed 0.001
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. 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.</li> <li>5. Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a <math>\pm 1</math> dB tolerance.</li> <li>6. Measure the BER of DCH received from the UE at the SS.</li> </ol>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS

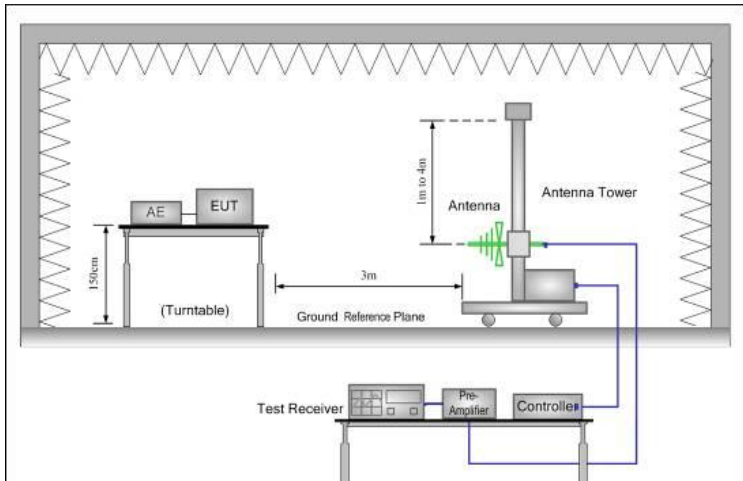
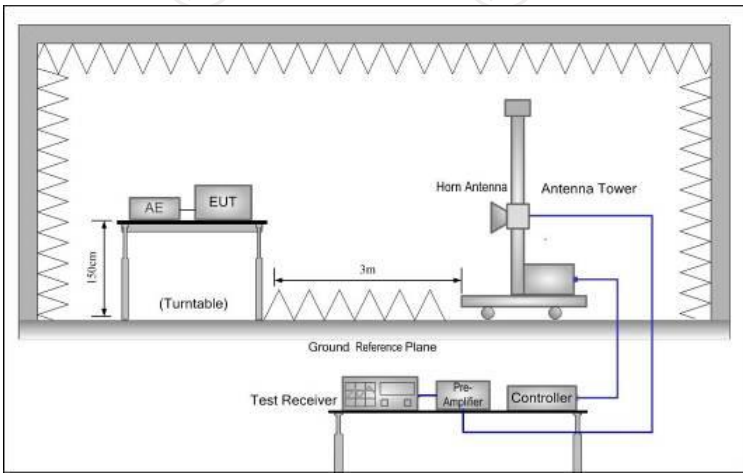
## 5.11. Receiver Spurious Emissions

### 5.11.1. Test Specification

Test Requirement:	ETSI EN 301 908-1 clause 5.3.9.2																																																															
Test Method:	ETSI EN 301 908-2 clause 5.3.9.1																																																															
Test Setup:	<pre>graph LR; EUT[EUT] --- DC_Power[DC Power]; DC_Power --- Combiner[Combiner]; CMU200[CMU200] --- Combiner; Combiner --- SA[SA]</pre>																																																															
Limit:	<table><tr><th>Frequency band</th><th>Measurement bandwidth</th><th>Maximum level</th></tr><tr><td>30 MHz ≤ f &lt; 1 GHz</td><td>100 kHz</td><td>-57 dBm</td></tr><tr><td>1 GHz ≤ f ≤ 12,75 GHz</td><td>1 MHz</td><td>-47 dBm</td></tr></table> <table><tr><th>Band</th><th>Frequency Range</th><th>Measurement Bandwidth</th><th>Maximum level</th></tr><tr><td rowspan="8">I</td><td>791 MHz ≤ f ≤ 821 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>921 MHz ≤ f &lt; 925 MHz</td><td>100 kHz</td><td>-60 dBm (see note)</td></tr><tr><td>925 MHz ≤ f ≤ 935 MHz</td><td>100 kHz</td><td>-67 dBm (see note)</td></tr><tr><td>935 MHz &lt; f ≤ 960 MHz</td><td>100 kHz</td><td>-79 dBm (see note)</td></tr><tr><td>1 805 MHz ≤ f ≤ 1 880 MHz</td><td>100 kHz</td><td>-71 dBm (see note)</td></tr><tr><td>1 920 MHz ≤ f ≤ 1 980 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>2 110 MHz ≤ f ≤ 2 170 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>2 585 MHz ≤ f ≤ 2 690 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td rowspan="8">VIII</td><td>791 MHz ≤ f &lt; 821 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>880 MHz ≤ f ≤ 915 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>921 MHz ≤ f &lt; 925 MHz</td><td>100 kHz</td><td>-60 dBm (see note)</td></tr><tr><td>925 MHz ≤ f ≤ 935 MHz</td><td>100 kHz</td><td>-67 dBm (see note)</td></tr><tr><td>935 MHz &lt; f ≤ 960 MHz</td><td>100 kHz</td><td>-79 dBm (see note)</td></tr><tr><td>1 805 MHz &lt; f ≤ 1 880 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>2 110 MHz ≤ f ≤ 2 170 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr><tr><td>2 585 MHz ≤ f ≤ 2 690 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr></table>	Frequency band	Measurement bandwidth	Maximum level	30 MHz ≤ f < 1 GHz	100 kHz	-57 dBm	1 GHz ≤ f ≤ 12,75 GHz	1 MHz	-47 dBm	Band	Frequency Range	Measurement Bandwidth	Maximum level	I	791 MHz ≤ f ≤ 821 MHz	3,84 MHz	-60 dBm	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm (see note)	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm (see note)	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm (see note)	1 805 MHz ≤ f ≤ 1 880 MHz	100 kHz	-71 dBm (see note)	1 920 MHz ≤ f ≤ 1 980 MHz	3,84 MHz	-60 dBm	2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm	2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm	VIII	791 MHz ≤ f < 821 MHz	3,84 MHz	-60 dBm	880 MHz ≤ f ≤ 915 MHz	3,84 MHz	-60 dBm	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm (see note)	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm (see note)	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm (see note)	1 805 MHz < f ≤ 1 880 MHz	3,84 MHz	-60 dBm	2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm	2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm
Frequency band	Measurement bandwidth	Maximum level																																																														
30 MHz ≤ f < 1 GHz	100 kHz	-57 dBm																																																														
1 GHz ≤ f ≤ 12,75 GHz	1 MHz	-47 dBm																																																														
Band	Frequency Range	Measurement Bandwidth	Maximum level																																																													
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	2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm																																																													
VIII	791 MHz ≤ f < 821 MHz	3,84 MHz	-60 dBm																																																													
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	2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm																																																													
	2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm																																																													
Test Procedure:	<ol style="list-style-type: none"><li>1. Connect a spectrum analyzer (or other suitable test equipment) to the UE antenna connector.</li><li>2. UE shall be in CELL_FACH state.</li><li>3. The UE shall be setup such that UE will not transmit during the measurement. (For guidance see TS 134 121-1 [2]).</li><li>4. 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.</li></ol>																																																															
Test Instrument:	Refer to Item 3.3																																																															
Test Result:	PASS																																																															

## 5.12. Radiated Emissions

### 5.12.1. Test Specification

Test Requirement:	ETSI EN 301 908-1 clause 4.2.2																																				
Test Method:	ETSI EN 301 908-1 clause 5.3.1																																				
Test Setup:	<p>Below 1GHz</p> 																																				
	<p>Above 1GHz</p> 																																				
Limit:	<table><tr><th>Frequency</th><th>Minimum requirement (e.r.p.)/ reference bandwidth idle mode</th><th>Minimum requirement (e.r.p.)/ reference bandwidth traffic mode</th><th>Applicability</th></tr><tr><td>30 MHz ≤ f &lt; 1 000 MHz</td><td>-57 dBm/100 kHz</td><td>-36 dBm/100 kHz</td><td>All</td></tr><tr><td>1 GHz ≤ f &lt; 12,75 GHz</td><td>-47 dBm/1 MHz</td><td>-30 dBm/1 MHz</td><td>All</td></tr><tr><td>f<sub>c</sub> - 2,5 × 5 MHz &lt; f &lt; f<sub>c</sub> + 2,5 × 5 MHz</td><td></td><td>Not defined</td><td>UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3</td></tr><tr><td>f<sub>c</sub> - 2,5 × BW<sub>Channel</sub> MHz &lt; f &lt; f<sub>c</sub> + 2,5 × BW<sub>Channel</sub> MHz</td><td></td><td>Not defined</td><td>E-UTRA FDD, E-UTRA TDD, Mobile WIMAX, UMB</td></tr><tr><td>f<sub>c</sub> - 2,5 × 10 MHz &lt; f &lt; f<sub>c</sub> + 2,5 × 10 MHz</td><td></td><td>Not defined</td><td>UTRA TDD, 7,68 Mcps option</td></tr><tr><td>f<sub>c</sub> - 4 MHz &lt; f &lt; f<sub>c</sub> + 4 MHz</td><td></td><td>Not defined</td><td>UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1</td></tr><tr><td>f<sub>c</sub> - 500 kHz &lt; f &lt; f<sub>c</sub> + 500 kHz</td><td></td><td>Not defined</td><td>UWC 136, 200 kHz option</td></tr><tr><td>f<sub>c</sub> - 250 kHz &lt; f &lt; f<sub>c</sub> + 250 kHz</td><td></td><td>Not defined</td><td>UWC 136, 30 kHz option</td></tr></table> <p>NOTE: f<sub>c</sub> is the UE transmit centre frequency.</p>	Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability	30 MHz ≤ f < 1 000 MHz	-57 dBm/100 kHz	-36 dBm/100 kHz	All	1 GHz ≤ f < 12,75 GHz	-47 dBm/1 MHz	-30 dBm/1 MHz	All	f <sub>c</sub> - 2,5 × 5 MHz < f < f <sub>c</sub> + 2,5 × 5 MHz		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3	f <sub>c</sub> - 2,5 × BW <sub>Channel</sub> MHz < f < f <sub>c</sub> + 2,5 × BW <sub>Channel</sub> MHz		Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WIMAX, UMB	f <sub>c</sub> - 2,5 × 10 MHz < f < f <sub>c</sub> + 2,5 × 10 MHz		Not defined	UTRA TDD, 7,68 Mcps option	f <sub>c</sub> - 4 MHz < f < f <sub>c</sub> + 4 MHz		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1	f <sub>c</sub> - 500 kHz < f < f <sub>c</sub> + 500 kHz		Not defined	UWC 136, 200 kHz option	f <sub>c</sub> - 250 kHz < f < f <sub>c</sub> + 250 kHz		Not defined	UWC 136, 30 kHz option
Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability																																		
30 MHz ≤ f < 1 000 MHz	-57 dBm/100 kHz	-36 dBm/100 kHz	All																																		
1 GHz ≤ f < 12,75 GHz	-47 dBm/1 MHz	-30 dBm/1 MHz	All																																		
f <sub>c</sub> - 2,5 × 5 MHz < f < f <sub>c</sub> + 2,5 × 5 MHz		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3																																		
f <sub>c</sub> - 2,5 × BW <sub>Channel</sub> MHz < f < f <sub>c</sub> + 2,5 × BW <sub>Channel</sub> MHz		Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WIMAX, UMB																																		
f <sub>c</sub> - 2,5 × 10 MHz < f < f <sub>c</sub> + 2,5 × 10 MHz		Not defined	UTRA TDD, 7,68 Mcps option																																		
f <sub>c</sub> - 4 MHz < f < f <sub>c</sub> + 4 MHz		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1																																		
f <sub>c</sub> - 500 kHz < f < f <sub>c</sub> + 500 kHz		Not defined	UWC 136, 200 kHz option																																		
f <sub>c</sub> - 250 kHz < f < f <sub>c</sub> + 250 kHz		Not defined	UWC 136, 30 kHz option																																		
	<p>Substitution method was performed to determine the actual ERP emission levels of the EUT.</p> <p>The following test procedure as below:</p> <p>1&gt;.Below 1GHz test procedure:</p>																																				

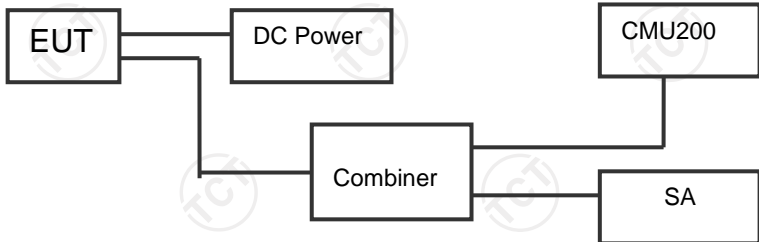
**Test Procedure:**

1. On the test site as test setup graph above, the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider.
2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter. The output of the test antenna shall be connected to the measuring receiver.
3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.
4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
5. Repeat step 4 for test frequency with the test antenna polarized horizontally.
6. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.
7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non radiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
8. Repeat step 7 with both antennas horizontally polarized for each test frequency.
9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:  
$$\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
  
where:  
Pg is the generator output power into the

	<p>Substitution antenna.</p> <p>2&gt;.Above 1GHz test procedure: Different between above is the test site, change from Semi-Anechoic Chamber to fully Anechoic Chamber, and the test antenna do not need to raise from 1 to 4m, just test in 1.5m height.</p>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS

## 5.13. Control and Monitoring Functions

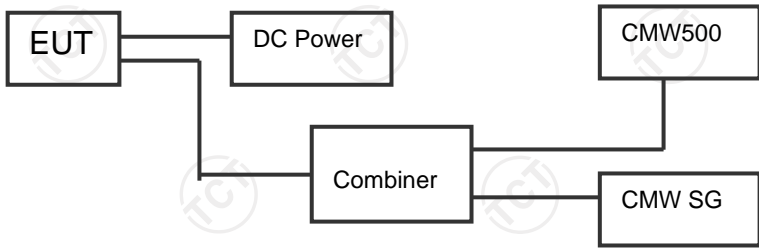
### 5.13.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-1 clause 4.2.4
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.3
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC_Power[DC Power]     EUT --- Combiner[Combiner]     DC_Power --- Combiner     Combiner --- CMU200[CMU200]     Combiner --- SA[SA]         </pre>
<b>Limit:</b>	The maximum measured power during the duration of the test shall not exceed -30 dBm.
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect a spectrum analyser (or other suitable test equipment) to the UE antenna connector.</li> <li>2. UE shall be in CELL_FACH state.</li> <li>3. The UE shall be setup such that UE will not transmit during the measurement. (For guidance see TS 134 121-1 [2]).</li> <li>4. Sweep the spectrum analyser (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.</li> </ol>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS



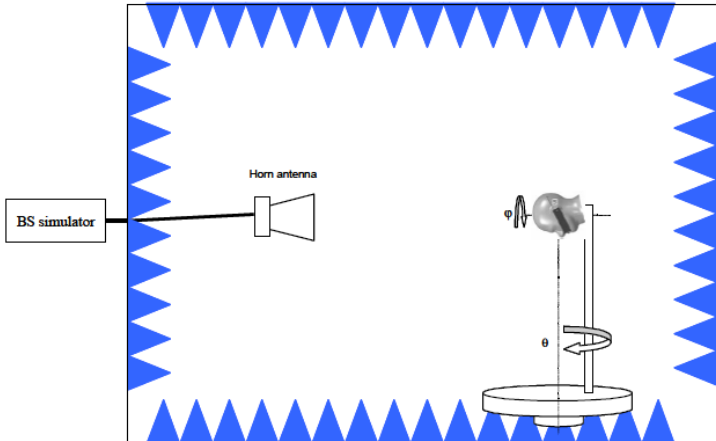
## 5.14. Receiver Reference Sensitivity Level

### 5.14.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.12.2
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.12.1
<b>Test Setup:</b>	 <pre> graph LR     EUT[EUT] --- DC_Power[DC Power]     DC_Power --- Combiner[Combiner]     CMW500[CMW500] --- Combiner     Combiner --- CMW_SG[CMW SG]         </pre>
<b>Limit:</b>	The BER shall not exceed 0.001
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. Connect the SS to the UE antenna connector.</li> <li>2. A call is set up according to the Generic call setup procedure.</li> <li>3. Enter the UE into loopback test mode and start the loopback test.</li> <li>4. Set and send continuously Up power control commands to the UE until the UE output power shall be maximum level.</li> <li>5. Measure the BER of DCH received from the UE at the SS.</li> </ol>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	PASS

## 5.15. Receiver Total Radiated Sensitivity

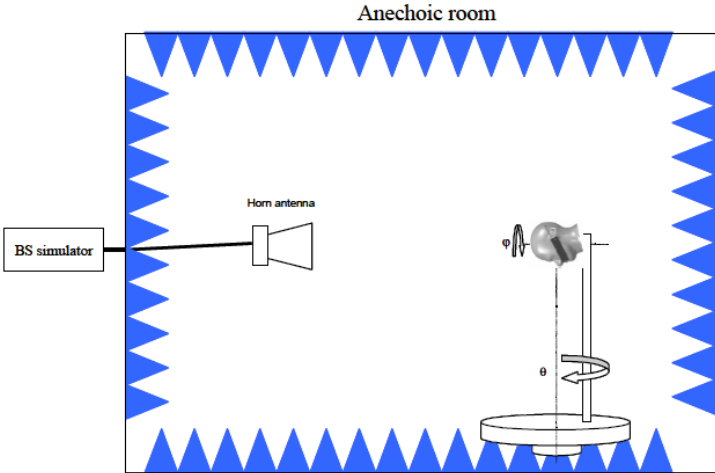
### 5.15.1. Test Specification

Test Requirement:	ETSI EN 301 908-2 clause 5.3.13.2										
Test Method:	ETSI EN 301 908-2 clause 5.3.13.1										
Test Setup:	<div><p>Anechoic room</p></div>										
Limit:	<p>The average measured total radiated sensitivity (TRS) of low, mid and high channel for handheld UE shall be lower than the average TRS requirement specified in table 4.2.14.2-1. The averaging shall be done in linear scale for the TRS results of both right and left side of the phantom head. Average TRS requirement is shown in the column "Average" on the requirement tables.</p> $TRS_{average} = 10 \log \left[ 6 \left( \frac{1}{10^{P_{left\_low}/10}} + \frac{1}{10^{P_{left\_mid}/10}} + \frac{1}{10^{P_{left\_high}/10}} + \frac{1}{10^{P_{right\_low}/10}} + \frac{1}{10^{P_{right\_mid}/10}} + \frac{1}{10^{P_{right\_high}/10}} \right) \right]$ <p>Table 4.2.14.2-1: TRS minimum requirements for UTRA FDD bands in the speech position Beside Head Hand Left and Beside Head Hand Right (BHHL/BHHR) for the primary mechanical mode</p> <table><tr><th rowspan="2">Operating band</th><th rowspan="2">Unit</th><th>&lt;REF<sub>or</sub>&gt;</th></tr><tr><th>Average</th></tr><tr><td>I</td><td>dBm/3.84 MHz</td><td>-100,1</td></tr><tr><td>VIII</td><td>dBm/3.84 MHz</td><td>-95,85</td></tr></table> <p>NOTE 1: For power class 3, 3bis and 4 this shall be achieved at the maximum output power. NOTE 2: Applicable for dual-mode GSM/UMTS. NOTE 3: Not applicable for devices supporting CDMA or carrier aggregation.</p>	Operating band	Unit	<REF <sub>or</sub> >	Average	I	dBm/3.84 MHz	-100,1	VIII	dBm/3.84 MHz	-95,85
Operating band	Unit			<REF <sub>or</sub> >							
		Average									
I	dBm/3.84 MHz	-100,1									
VIII	dBm/3.84 MHz	-95,85									
Test Procedure:	<div><ol style="list-style-type: none"><li>1) Position the UE according to the DUT positioning for speech mode.</li><li>2) Set the SS downlink physical channels.</li><li>3) Power on the UE.</li><li>4) A call is set up according to the Generic call setup procedure. The power control algorithm shall be set to Power Control Algorithm 2. Compressed mode shall be set to OFF.</li><li>5) Enter the UE into loopback test mode 2 and start the loopback test.</li><li>6) Send continuously Up power control commands to the UE.</li><li>7) As the UE reaches maximum power, start sending PN15</li></ol></div>										

	<p>data pattern.</p> <p>8) Measure EIS from one measurement point. EIS is the power transmitted from one specific direction to the UE causing BER value of <math>1\% \pm 0.2\%</math> using 20000 or more bits; see Annex E.20.</p> <p>NOTE: To meet BER value target DL power level can be changed using user's freely selectable algorithm.</p> <p>9) Measure the EIS for every direction of selected sampling gird using two orthogonal polarizations to obtain TRS.</p> <p>10) Calculate TRS using equations.</p>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	N/A, The product width is greater than 72mm.

## 5.16. Total Radiated Power

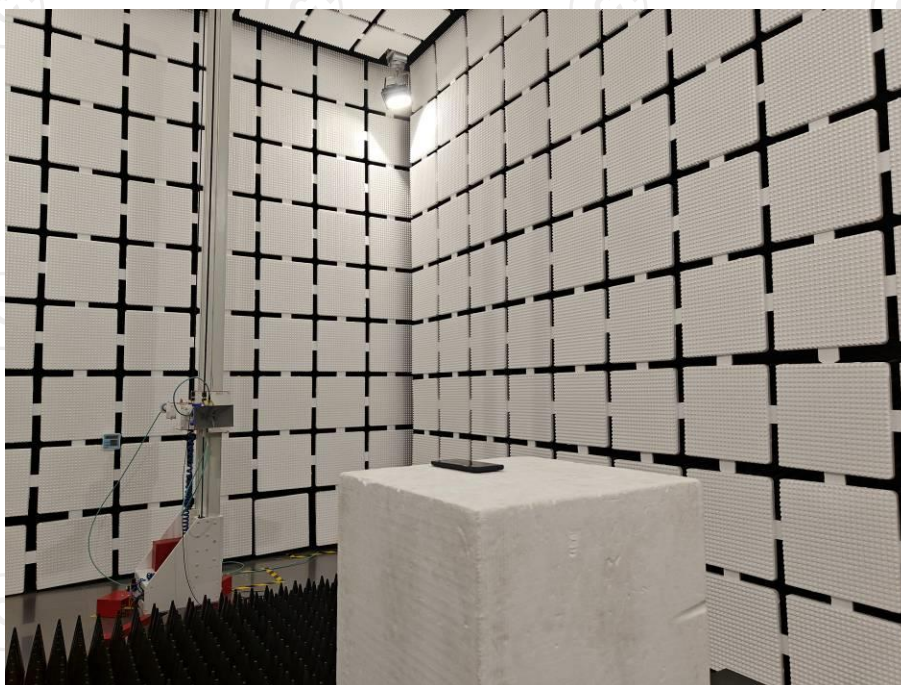
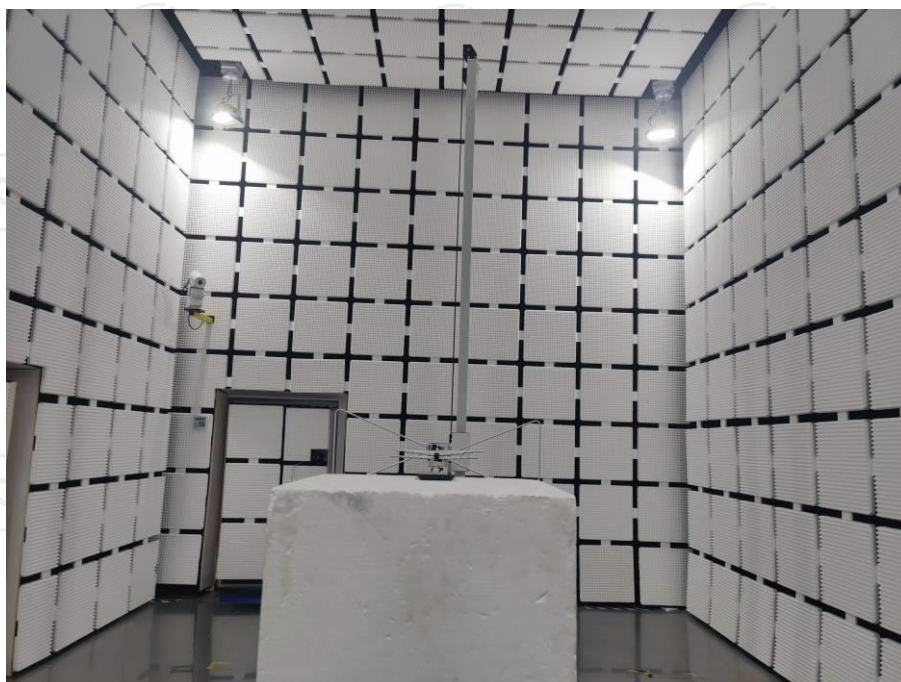
### 5.16.1. Test Specification

<b>Test Requirement:</b>	ETSI EN 301 908-2 clause 5.3.14.2							
<b>Test Method:</b>	ETSI EN 301 908-2 clause 5.3.14.1							
<b>Test Setup:</b>								
<b>Limit:</b>	<p>The average TRP of low, mid and high channel in beside head position shall be higher than minimum performance requirements for roaming bands shown in table 4.2.15.2-1. The averaging shall be done in linear scale for the TRP results of both right and left side of the phantom head</p> $TRP_{average} = 10 \log \left[ \frac{10^{P_{left\_low}/10} + 10^{P_{left\_mid}/10} + 10^{P_{left\_high}/10} + 10^{P_{right\_low}/10} + 10^{P_{right\_mid}/10} + 10^{P_{right\_high}/10}}{6} \right]$ <p>Table 4.2.15.2-1: TRP minimum performance requirement for UTRA FDD bands in the speech position Beside Head Hand Left and Beside Head Hand Right (BHHL/BHHR) for primary mechanical mode</p> <table border="1"> <thead> <tr> <th rowspan="2">Operating band</th><th>Power Class 3</th></tr> <tr> <th>Power (dBm)</th></tr> </thead> <tbody> <tr> <td>I</td><td>Average 12,55</td></tr> <tr> <td>VIII</td><td>8,70</td></tr> </tbody> </table> <p>NOTE 1: Applicable for dual-mode GSM/UMTS. NOTE 2: Not applicable for devices supporting CDMA or carrier aggregation.</p>	Operating band	Power Class 3	Power (dBm)	I	Average 12,55	VIII	8,70
Operating band	Power Class 3							
	Power (dBm)							
I	Average 12,55							
VIII	8,70							
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1) Set the SS downlink physical channels.</li> <li>2) Power on the UE.</li> <li>3) A call is set up according to the Generic call setup procedure. The power control algorithm shall be set to Power Control Algorithm 2. Compressed mode shall be set to OFF.</li> <li>4) Enter the UE into loopback test mode 2 and start the loopback test.</li> <li>5) Send continuously Up power control commands to the UE.</li> <li>6) As the UE reaches maximum power, start sending PN15 data pattern.</li> <li>7) Position the UE according to the DUT positioning for speech mode specified in Subclause 4.3.3.</li> <li>4) Measure the <math>EIRP_{\theta}</math> and <math>EIRP_{\phi}</math> with a sample step of <math>15^{\circ}</math> in theta (<math>\theta</math>) and phi (<math>\phi</math>) directions using a test system</li> </ol>							

	<p>having characteristics as described in Annex A.</p> <p>5) Calculate TRP using equations from Subclause 6.1.3.1.</p> <p>NOTE 1: The measurement procedure is based on the measurement of the spherical radiation pattern of the DUT. The power radiated by the DUT is sampled in far field in a group of points located on a spherical surface enclosing the DUT. The EIRP samples are taken using a constant sample step of 15° both in theta (θ) and phi (φ) directions. In some cases a different sampling grid may be used to speed up the measurements (See Subclause 4.4). All the EIRP samples are taken with two orthogonal polarizations, θ - and φ -polarisations.</p> <p>NOTE 2: The noise floor of the measurement receiver shall not disturb the power measurement.</p> <p>NOTE 3: Non Standard settings: To speed up sensitivity measurements, power measurements may be done with non standard modulation. However to obtain TRP result the measured EIRP figures shall be normalized by</p> $\Delta \overline{EIRP} = \frac{1}{n} \sum_{i=1}^n (EIRP_{std_i} - EIRP_{nstd_i})$ <p>where EIRP<sub>std<sub>i</sub></sub> is power measurement done with standard setting. EIRP<sub>nstd<sub>i</sub></sub> is power measurement done with non standard modulation. n is amount of reference measurement points.</p>
<b>Test Instrument:</b>	Refer to Item 3.3
<b>Test Result:</b>	N/A, The product width is greater than 72mm.

## 6. Photographs of Test Configuration

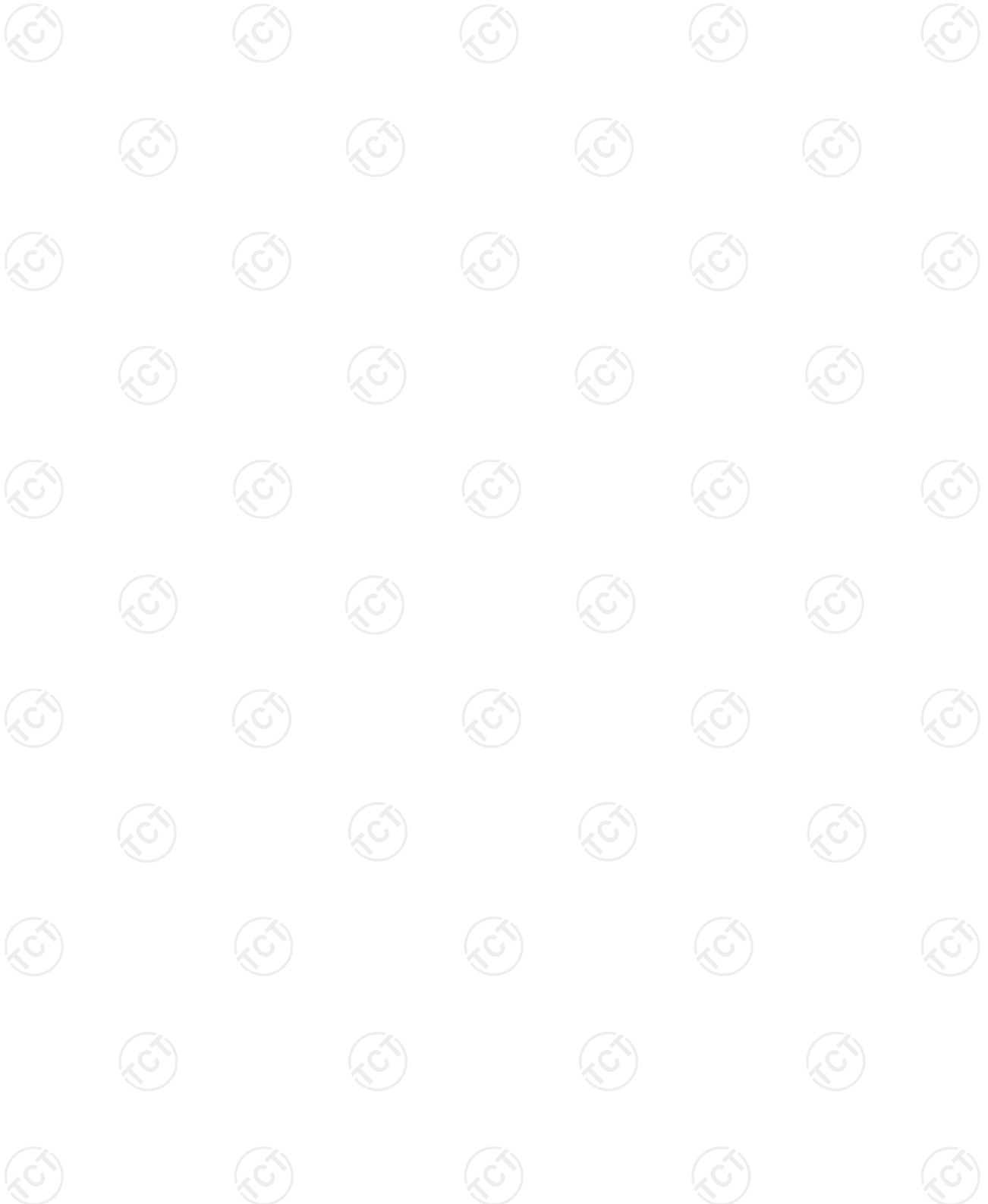
### Radiated Emission





## 7. Photographs of EUT

Refer to the test report No. TCT231117E017



## 8. Appendix A-Test Data

### A.1 Transmitter Maximum Output Power

WCDMA Band I					
Test mode	Maximum output power (dBm)			Limit (dBm)	Result
	L	M	H		
RMC	22.18	22.30	22.32	24+1.7/-3.7	PASS
HSDPA subtest 1	21.38	21.61	21.64		
HSDPA subtest 2	21.25	21.22	21.10		
HSDPA subtest 3	21.22	21.27	21.12		
HSDPA subtest 4	21.17	21.15	21.07		
HSUPA subtest 1	21.51	21.68	21.69		
HSUPA subtest 2	21.35	21.56	21.37		
HSUPA subtest 3	21.14	21.33	21.24		
HSUPA subtest 4	21.16	21.25	21.16		
HSUPA subtest 5	21.02	21.17	21.04		

WCDMA Band VIII					
Test mode	Maximum output power (dBm)			Limit (dBm)	Result
	L	M	H		
RMC	22.80	22.58	22.43	24+1.7/-3.7	PASS
HSDPA subtest 1	21.69	21.47	21.33		
HSDPA subtest 2	21.54	21.70	21.76		
HSDPA subtest 3	21.87	21.08	21.12		
HSDPA subtest 4	21.18	21.35	21.47		
HSUPA subtest 1	22.27	22.09	21.97		
HSUPA subtest 2	22.24	22.01	21.82		
HSUPA subtest 3	22.07	21.81	21.73		
HSUPA subtest 4	21.72	21.74	21.56		
HSUPA subtest 5	21.25	21.39	21.36		

**Note:** All test condition have been tested, only the worst condition(Normal condition)is reported.



## A.2 Transmitter Spectrum Emission Mask

Band	WCDMA Band I	Test Mode	RMC
Channel	$\Delta f$ in MHz	Max. Level Observed (dBc)	Result
L	2.5 to 3.5 MHz	-42.74	PASS
	3.5 to 7.5 MHz	-42.42	PASS
	7.5 to 8.5 MHz	-63.06	PASS
	8.5 to 12.5 MHz	-61.06	PASS
M	2.5 to 3.5 MHz	-42.52	PASS
	3.5 to 7.5 MHz	-42.22	PASS
	7.5 to 8.5 MHz	-60.06	PASS
	8.5 to 12.5 MHz	-59.17	PASS
H	2.5 to 3.5 MHz	-43.06	PASS
	3.5 to 7.5 MHz	-44.17	PASS
	7.5 to 8.5 MHz	-60.19	PASS
	8.5 to 12.5 MHz	-58.97	PASS

Band	WCDMA Band VIII	Test Mode	RMC
Channel	$\Delta f$ in MHz	Max. Level Observed (dBc)	Result
L	2.5 to 3.5 MHz	-44.01	PASS
	3.5 to 7.5 MHz	-43.69	PASS
	7.5 to 8.5 MHz	-64.33	PASS
	8.5 to 12.5 MHz	-62.33	PASS
M	2.5 to 3.5 MHz	-43.79	PASS
	3.5 to 7.5 MHz	-43.49	PASS
	7.5 to 8.5 MHz	-61.33	PASS
	8.5 to 12.5 MHz	-60.44	PASS
H	2.5 to 3.5 MHz	-44.33	PASS
	3.5 to 7.5 MHz	-45.44	PASS
	7.5 to 8.5 MHz	-61.46	PASS
	8.5 to 12.5 MHz	-60.24	PASS

**Note1:**  $\Delta f$  is the separation between the carrier frequency and the centre of the measurement bandwidth.

**Note2:** All modes (RMC, HSDPA, HSUPA) are tested, but the worst (RMC) is reported.

### A.3 Transmitter Spurious Emissions

WCDMA band I (General requirement)			
Frequency Range	Max. Level Observed(dBm)	Limit(dBm)	Result
9KHz - 150KHz	-68.49	-36	PASS
150KHz - 30MHz	-64.17	-36	PASS
30MHz - 1GHz	-63.86	-36	PASS
1GHz - 1.9375GHz	-44.17	-30	PASS
1.9625GHz - 12.75GHz	-47.13	-30	PASS
WCDMA band I (Additional requirement)			
Frequency Range	Max. Level Observed(dBm)	Limit(dBm)	Result
791MHz - 821MHz	-64.14	-60	PASS
921MHz - 925MHz	-64.24	-60	PASS
925MHz - 935MHz	-72.85	-67	PASS
935MHz - 960MHz	-85.94	-79	PASS
1.805GHz - 1.88GHz	-87.22	-71	PASS
2.11GHz - 2.17GHz	-77.24	-60	PASS
2.585GHz - 2.69GHz	-74.86	-60	PASS

WCDMA band VIII (General requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
9KHz - 150KHz	-72.34	-36	PASS
150KHz - 30MHz	-68.02	-36	PASS
30MHz - 885.1MHz	-67.71	-36	PASS
910.1MHz - 1GHz	-48.02	-30	PASS
1GHz - 12.75GHz	-50.98	-30	PASS
WCDMA band VIII (Additional requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
791MHz - 821MHz	-67.99	-60	PASS
925MHz - 935MHz(1)	-79.59	-67	PASS
935MHz - 960MHz(1)	-84.70	-79	PASS
1.805GHz - 1.83GHz(1)	-89.79	-71	PASS
1.83GHz - 1.88GHz(1)	-91.07	-71	PASS
2.11GHz - 2.17GHz	-81.09	-60	PASS
2.585GHz - 2.64GHz	-78.71	-60	PASS
2.64GHz - 2.69GHz	-67.99	-60	PASS

**A.4 Transmitter Minimum Output Power**

WCDMA Band I			
Test Condition	Minimum output power (dBm)	Limit (dBm)	Result
Normal	-56.14	-49	PASS
HVHT	-55.79		
LVHT	-56.17		
HVLT	-56.49		
LVLT	-56.40		
WCDMA Band VIII			
Test Condition	Minimum output power (dBm)	Limit (dBm)	Result
Normal	-56.40	-49	PASS
HVHT	-55.91		
LVHT	-55.98		
HVLT	-55.96		
LVLT	-55.98		

## A.5 Transmitter Adjacent Channel Leakage Power Ratio

Band	WCDMA Band I	Test Mode	RMC
Channel	Adjacent channel frequency relative to $f_c$	Max. Level Observed (dBc)	Result
L	+5 MHz or -5 MHz	-43.18	PASS
	+10 MHz or -10 MHz	-63.53	PASS
M	+5 MHz or -5 MHz	-45.42	PASS
	+10 MHz or -10 MHz	-60.71	PASS
H	+5 MHz or -5 MHz	-45.57	PASS
	+10 MHz or -10 MHz	-60.91	PASS
Band	WCDMA Band VIII	Test Mode	RMC
Channel	Adjacent channel frequency relative to $f_c$	Max. Level Observed (dBc)	Result
L	+5 MHz or -5 MHz	-43.54	PASS
	+10 MHz or -10 MHz	-61.71	PASS
M	+5 MHz or -5 MHz	-45.60	PASS
	+10 MHz or -10 MHz	-62.39	PASS
H	+5 MHz or -5 MHz	-45.33	PASS
	+10 MHz or -10 MHz	-59.81	PASS

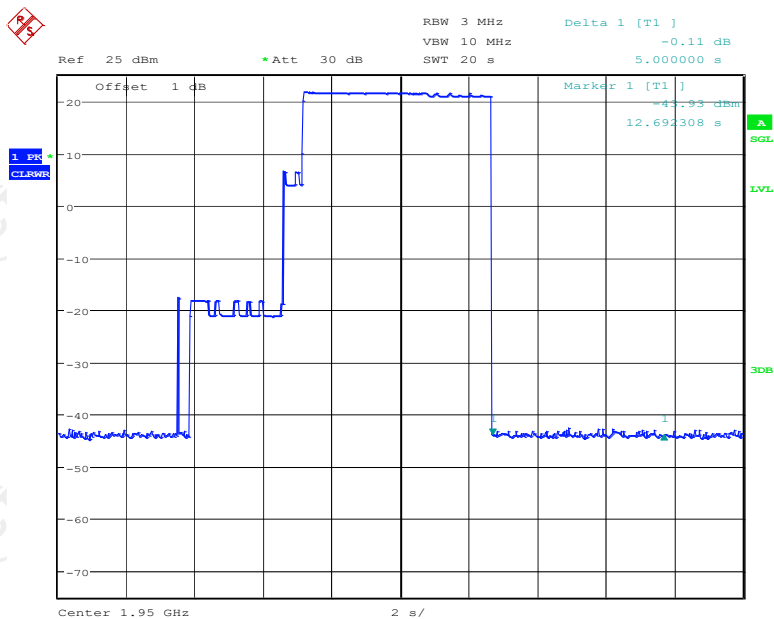
**Note1:**  $f_c$  is the carrier frequency.

**Note2:** All modes (RMC, HSDPA, HSUPA) are tested, but the worst (RMC) is reported.

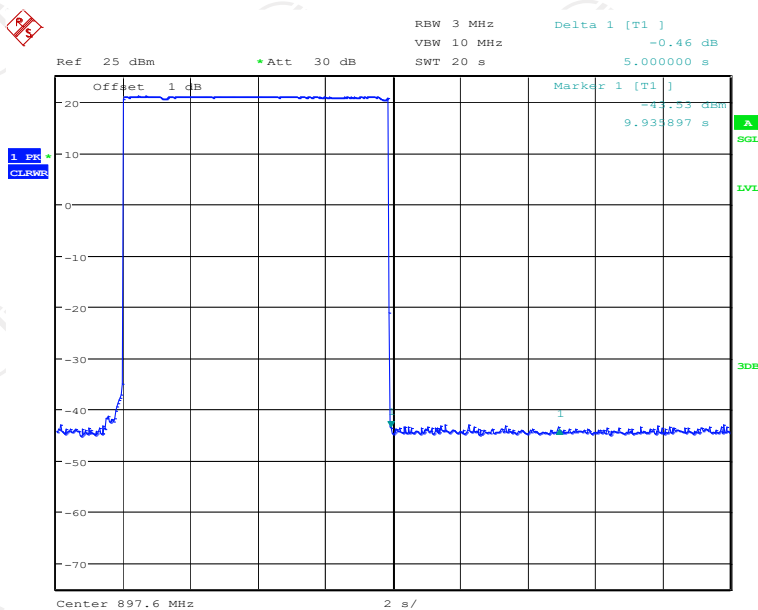
**Note3:** All test condition have been tested, only the worst condition(Normal condition)is reported.

## A.6 Out-of-synchronization Handling of Output Power

### WCDMA Band I



### WCDMA Band VIII



## A.7 Receiver Adjacent Channel Selectivity (ACS)

WCDMA Band I:

Test Case	BER	Limit	Result
Case 1	0.000%	0.01%	PASS
Case 2	0.000%	0.01%	

WCDMA Band VIII:

Test Case	BER	Limit	Result
Case 1	0.000%	0.01%	PASS
Case 2	0.000%	0.01%	

## A.8 Receiver Blocking Characteristics

WCDMA Band I:

Test Case	BER	Limit	Result
In-band blocking	0.000%	0.01%	PASS
Out-of-band blocking	0.000%	0.01%	
Narrow band blocking	0.000%	0.01%	

WCDMA Band VIII:

Test Case	BER	Limit	Result
In-band blocking	0.000%	0.01%	PASS
Out-of-band blocking	0.000%	0.01%	
Narrow band blocking	0.000%	0.01%	

## A.9 Receiver Spurious Response

WCDMA Band I:

Test Case	BER	Limit	Result
Spurious Response	0.000%	0.01%	PASS

WCDMA Band VIII:

Test Case	BER	Limit	Result
Spurious Response	0.000%	0.01%	PASS

## A.10 Receiver Intermodulation Characteristics

WCDMA Band I:

Test Case	BER	Limit	Result
Intermodulation	0.000%	0.01%	PASS

WCDMA Band VIII:

Test Case	BER	Limit	Result
Intermodulation	0.000%	0.01%	PASS

**A.11 Receiver Spurious Emissions**

WCDMA band I (General requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
30MHz - 1GHz	-66.29	-57	PASS
1GHz - 12.75GHz	-64.94	-47	PASS
WCDMA band I (Additional requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
791MHz - 821MHz	-77.61	-60	PASS
921MHz - 925MHz	-74.15	-60	PASS
925MHz - 935MHz	-84.63	-67	PASS
935MHz - 960MHz	-81.65	-79	PASS
1.805GHz - 1.88GHz	-78.83	-71	PASS
1.92GHz - 1.98GHz	-74.64	-60	PASS
2.11GHz - 2.17GHz	-78.54	-60	PASS
2.585GHz - 2.69GHz	-77.54	-60	PASS

WCDMA band VIII (General requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
30MHz - 1GHz	-67.47	-57	PASS
1GHz - 12.75GHz	-66.12	-47	PASS
WCDMA band VIII (Additional requirement)			
Frequency Range	Max. Level Observed (dBm)	Limit (dBm)	Result
791MHz - 821MHz	-78.79	-60	PASS
880MHz - 915MHz	-75.33	-60	PASS
921MHz - 925MHz	-85.81	-60	PASS
925MHz - 935MHz	-82.83	-67	PASS
935MHz - 960MHz	-80.01	-79	PASS
1.805GHz - 1.88GHz	-75.82	-60	PASS
2.11GHz - 2.17GHz	-79.72	-60	PASS
2.585GHz - 2.69GHz	-78.72	-60	PASS



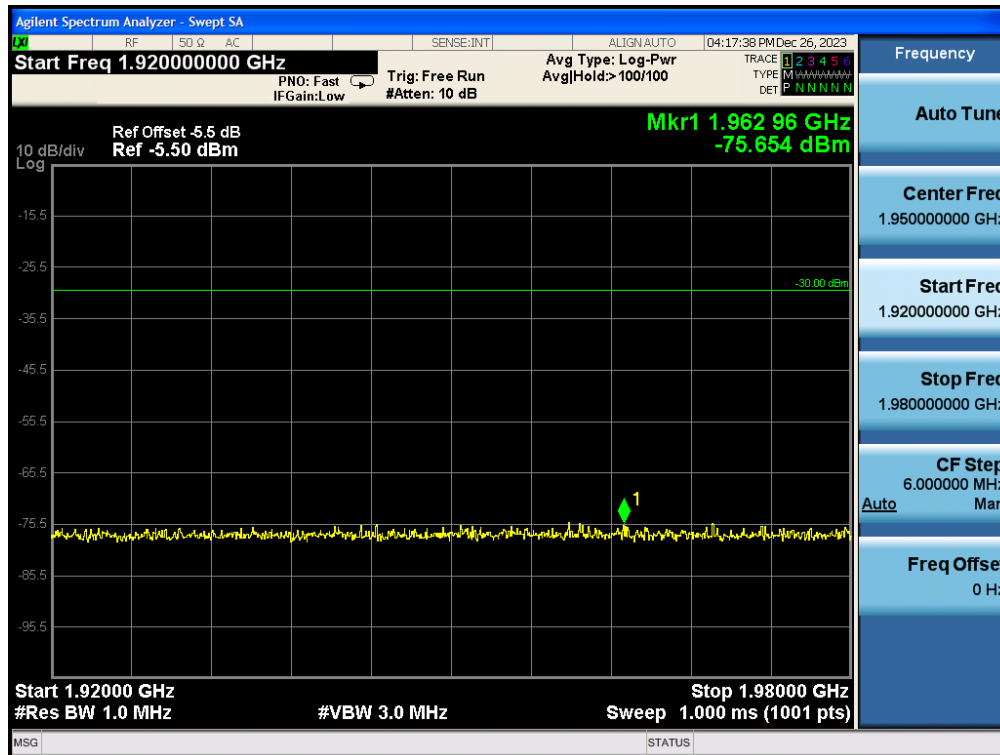
## A.12 Radiated Emissions

WCDMA Band I, Middle Channel - traffic mode				
Frequency (MHz)	Spurious Emission		Limit dBm(EIRP)	Result
	Polarization	Level dBm(EIRP)		
31.96	Vertical	-70.88	-36 dBm below 1GHz,  -30 dBm above 1GHz.	PASS
44.12	V	-72.20		
5850.92	V	-51.64		
31.96	Horizontal	-72.36		
94.76	H	-72.74		
5850.92	H	-56.32		
WCDMA Band I, Middle Channel - idle mode				
Frequency (MHz)	Spurious Emission		Limit dBm(EIRP)	Result
	Polarization	Level dBm(EIRP)		
31.96	Vertical	-72.21	-57 dBm below 1GHz,  -47 dBm above 1GHz	PASS
44.12	V	-72.86		
5850.92	V	-51.56		
31.96	Horizontal	-72.63		
94.76	H	-72.20		
5850.92	H	-55.02		

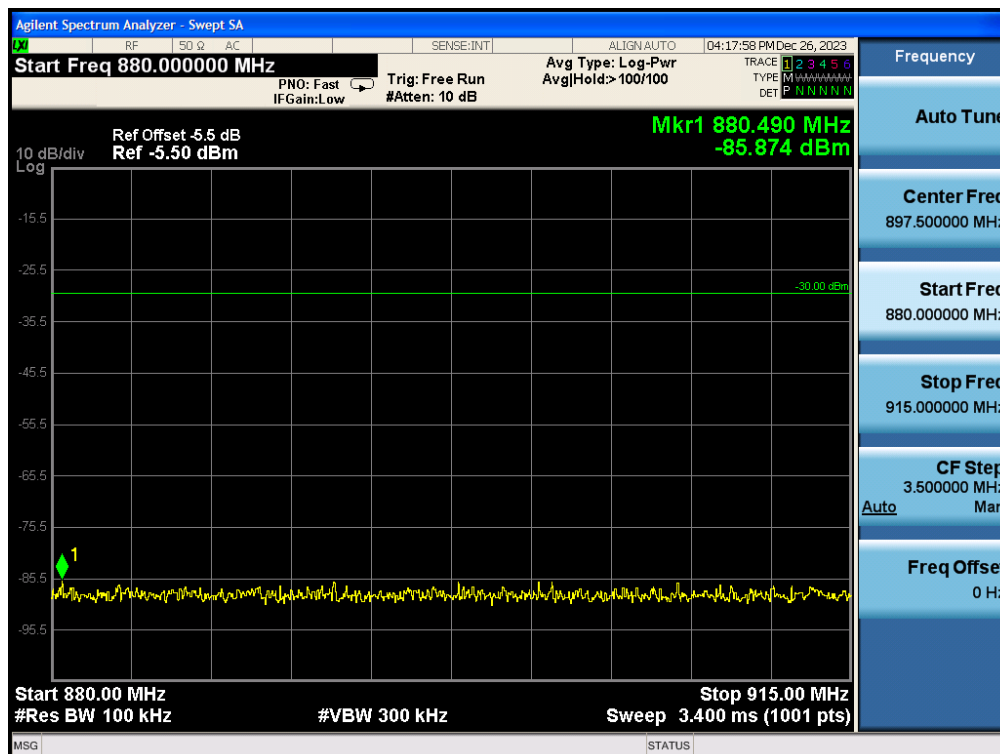
WCDMA Band VIII, Middle Channel - traffic mode				
Frequency (MHz)	Spurious Emission		Limit dBm(EIRP)	Result
	Polarization	Level dBm(EIRP)		
59.36	Vertical	-73.16	-36 dBm below 1GHz,  -30 dBm above 1GHz	PASS
124.42	V	-74.48		
1812.61	V	-53.92		
59.36	V	-74.62		
124.42	Horizontal	-75.02		
1841.61	H	-58.60		
WCDMA Band VIII, Middle Channel - idle mode				
Frequency (MHz)	Spurious Emission		Limit dBm(EIRP)	Result
	Polarization	Level dBm(EIRP)		
59.36	Vertical	-74.49	-57 dBm below 1GHz,  -47 dBm above 1GHz	PASS
124.42	V	-75.14		
1812.61	V	-53.84		
59.36	Horizontal	-74.91		
124.42	H	-74.48		
1812.61	H	-57.30		

## A.13 Control and Monitoring Functions

### WCDMA band I



### WCDMA band VIII



**A.14 Receiver Reference Sensitivity Level**

WCDMA Band I:

Test Case	BER	Limit	Result
Intermodulation	0.000%	0.01%	PASS

WCDMA Band VIII:

Test Case	BER	Limit	Result
Intermodulation	0.000%	0.01%	PASS

**\*\*\*\*\*END OF REPORT\*\*\*\*\***