

RED-Radio Test Report

Client Name : Acrel Co., Ltd.

Address : No.253, Yulv Road, Jiading, Shanghai, China

Product Name : Anet Smart IoT Gateway

Date : Mar. 14, 2022

Shenzhen Anbotech Compliance Laboratory Limited



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TEST REPORT

Applicant : Acrel Co., Ltd.
Manufacturer : Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Product Name : Anet Smart IoT Gateway
Model No. : ANet-2E4SM, ANet-2E4SM-D, ANet-2E4SM-LR, ANet-2E4SM-LR/D, ANet-1E1S1, ANet-1E1S1-LR, ANet-1E1S1-4G, ANet-1E1S1-4G/LR, ANet-1E2S1, ANet-1E2S1-LR, ANet-1E2S1-4G, ANet-1E2S1-4G/LR, ANet-2E4S1, ANet-2E8S1, ANet-M4G, ANet-M485
Trade Mark : Acrel
Rating(s) : Input: DC 9-36V

Test Standard(s) : ETSI EN 301 908-1 V15.1.1 (2021-09)
ETSI EN 301 908-13 V13.1.1 (2019-11)

In Accordance with: ETSI EN 301 908-13 V13.1.1 (2019-11) about the effective uses allocated spectrum requirements of Article 3 of the RED Directive.

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the ETSI EN 300 908-13 V13.1.1 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt

Feb. 17, 2022

Date of Test :

Feb. 17~Mar. 10, 2022

Prepared By :

Tu Tu Hong

(TuTu Hong)

Approved & Authorized Signer :

Kingkong Jin

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1. General Information

1.1. Client Information

Applicant	:	Acrel Co., Ltd.
Address	:	No.253, Yulv Road, Jiading, Shanghai, China
Manufacturer	:	Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha, Jiangyin, Jiangsu, China
Factory	:	Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha, Jiangyin, Jiangsu, China

1.2. Description of Device (EUT)

Product Name	:	Anet Smart IoT Gateway	
Model No.	:	ANet-2E4SM, ANet-2E4SM-D, ANet-2E4SM-LR, ANet-2E4SM-LR/D, ANet-1E1S1, ANet-1E1S1-LR, ANet-1E1S1-4G, ANet-1E1S1-4G/LR, ANet-1E2S1, ANet-1E2S1-LR, ANet-1E2S1-4G, ANet-1E2S1-4G/LR, ANet-2E4S1, ANet-2E8S1, ANet-M4G, ANet-M485 (Note: All samples are the same except the appearance and size, so we prepare “ANet-2E4SM” for test only.)	
Trade Mark	:	Acrel	
Test Power Supply	:	DC 12V (Note: During the test, pre-scan all test voltages and only show the test data of the worst case DC 12V in this Report.)	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	Band3: TX: 1710~1785 MHz, RX: 1805~1880 MHz Band8: TX: 880~915 MHz, RX: 925~960 MHz Band38: TX&RX: 2570~2620 MHz Band40: TX&RX: 2300~2400 MHz
		Modulation Type:	QPSK, 16QAM
		Antenna Type:	External Antenna
		Antenna Gain(Peak):	0dBi (Provided by customer)
		Hardware version :	V0.1
		Software version :	V0.0
		Adapter:	N.A.
Remark: 1) For a more detailed features description, please refer to the manufacturer’s specifications or the User’s Manual. 2)This report is for LTE module.			

1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
--	--

1.4. Test Conditions

Temperature:	15-35 °C	
Relative humidity content:	Up to 75 %	
Details of power supply:	12D AC	
	Vnom= 12 V	DC
	Vmin = 10.8 V	DC
	Vmax = 13.2 V	DC
- Extreme temperature:	-10°C / 55°C	
Vibration	Frequency	ASD
	5Hz-20Hz	0,96 m2/s3
	20 Hz to 500 Hz	0,96 m2/s3 at 20 Hz, thereafter -3 dB/Octave
Other parameter:	None	

1.5. Measurement Uncertainty (95% confidence levels, k=2)

Maximum measurement uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1,5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±1 °C
Humidity	±5 %
DC and low frequency voltages	±3 %
Time	±5 %
Duty Cycle	±5 %

1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Oct. 26, 2021	1 Year
2.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Oct. 26, 2021	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Oct. 26, 2021	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Oct. 26, 2021	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 26, 2021	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Oct. 26, 2021	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2021	1 Year
9.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 26, 2021	1 Year
10.	DC Power Supply	LW	TPR-6420D	374470	Oct. 26, 2021	1 Year
11.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 26, 2021	1 Year
12.	Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	117888	Oct. 26, 2021	1 Year
13.	Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	104209	Oct. 26, 2021	1 Year
14.	High-Pass Filter	CDKMV	ZHPF-BM1100 -4000-0730	B2015094550	Oct. 26, 2021	1 Year
15.	High-Pass Filter	CDKMV	ZHPF-M3.5 -18G-3834	1307006523	Oct. 26, 2021	1 Year
16.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063507	Oct. 26, 2021	1 Year
17.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	Oct. 26, 2021	1 Year

1.7. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518128

1.8. Test Standard Description

ETSI EN 301 908-1 V15.1.1 (2021-09): IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 1: Introduction and common requirements Release 15

ETSI EN 301 908-13 V13.1.1(2019-11): IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)

ETSI TS 136 521-1 V16.9.0 (2021-09): LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing (3GPP TS 36.521-1 version 16.9.0 Release 16)

1.9. Additional Information

N/A

1.10. Operation State

Test frequency list:

E-UTRA Band	Transmitter / Receiver	Channel Bandwidth	Frequencies under Test		
			Lowest range (L)	Middle range (M)	Highest range (H)
Band 3	Transmitter / Receiver	Lowest: 1.4 MHz	NO.19207 1710.7 MHz	No. 19575 1747.5 MHz	No. 19943 1784.3 MHz
		3 MHz	No. 19215 1711.5 MHz	No. 19575 1747.5 MHz	No. 19935 1783.5 MHz
		5 MHz	No. 19225 1712.5 MHz	No. 19575 1747.5 MHz	No. 19925 1782.5 MHz
		10 MHz	No. 19250 1715 MHz	No. 19575 1747.5 MHz	No. 19900 1780 MHz
		15 MHz	No.19275 1717.5 MHz	No. 19575 1747.5 MHz	No.19875 1777.5 MHz
		Highest: 20 MHz	No. 19300 1720 MHz	No. 19575 1747.5 MHz	No. 19850 1775 MHz
	Receiver	Lowest: 1.4 MHz	No. 1207 1805.7 MHz	No. 1575 1842.5 MHz	No. 1943 1879.3 MHz
		3 MHz	No. 1215 1806.5 MHz	No. 1575 1842.5 MHz	No. 1935 1878.5 MHz
		5 MHz	No. 1225 1807.5 MHz	No. 1575 1842.5 MHz	No. 1925 1877.5 MHz
		10 MHz	No. 1250 1810 MHz	No. 1575 1842.5 MHz	No. 1900 1875 MHz
		15 MHz	No.1275 1812.5 MHz	No. 1575 1842.5 MHz	No.1875 1872.5 MHz
		Highest: 20 MHz	No. 1300 1815 MHz	No. 1575 1842.5 MHz	No. 1850 1870 MHz
E-UTRA Band	Transmitter / Receiver	Channel Bandwidth	Frequencies under Test		
			Lowest range (L)	Middle range (M)	Highest range (H)
Band 8	Transmitter	Lowest: 1.4 MHz	No.21457 880.7 MHz	No. 21625 897.5 MHz	No.21793 914.3 MHz
		3 MHz	No.21465 881.5	No. 21625 897.5 MHz	No.21785 913.5
		5 MHz	No. 21475 882.5 MHz	No. 21625 897.5 MHz	No. 21775 912.5 MHz
		Highest: 10 MHz	No. 21500 885 MHz	No. 21625 897.5 MHz	No. 21750 910 MHz
	Receiver	Lowest: 1.4 MHz	No.3457 925.7 MHz	No. 3625 942.5 MHz	No.3793 959.3 MHz
		3 MHz	No.3465 926.5 MHz	No. 3625 942.5 MHz	No.3785 958.5 MHz
		5 MHz	No. 3475 927.5 MHz	No. 3625 942.5 MHz	No. 3775 957.5 MHz
		Highest: 10 MHz	No. 3500 930 MHz	No. 3625 942.5 MHz	No. 3750 955 MHz

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E-UTRA Band	Transmitter / Receiver	Channel Bandwidth	Frequencies under Test		
			Lowest range (L)	Middle range (M)	Highest range (H)
Band 38	Transmitter/ Receiver	Lowest: 5 MHz	No. 37775 2572.5 MHz	No. 38000 2595 MHz	No. 38225 2617.5 MHz
		10 MHz	No. 37800 2575 MHz	No. 38000 2595 MHz	No. 38200 2615 MHz
		15 MHz	No. 37825 2578.5 MHz	No. 38000 2595 MHz	No. 38175 2612.5MHz
		Highest: 20 MHz	No.37850 2580MHz	No. 38000 2595 MHz	No.38150 2610 MHz
E-UTRA Band	Transmitter / Receiver	Channel Bandwidth	Frequencies under Test		
			Lowest range (L)	Middle range (M)	Highest range (H)
Band 40	Transmitter/ Receiver	Lowest: 5 MHz	No. 38675 2302.5 MHz	No. 39150 2350 MHz	No. 39625 2397.5 MHz
		10 MHz	No. 38700 2305 MHz	No. 39150 2350 MHz	No. 39600 2395 MHz
		15 MHz	No.38725 2307.5 MHz	No. 39150 2350 MHz	No.39575 2392.5 MHz
		Highest: 20 MHz	No.38750 2310 MHz	No. 39150 2350MHz	No.39550 2390 MHz

VL	VN	VH	TL	TN	TH
Low voltage	Normal voltage	High voltage	Low temperature	Normal temperature	High temperature

2. Summary of Test Results

List of Measurements		
Test Items	Clause No.	Results
Transmitter Maximum Output Power	ETSI EN 301 908-13 V13.1.1 §4.2.2	Pass
Transmitter Spectrum Emission Mask	ETSI EN 301 908-13 V13.1.1 §4.2.3	Pass
Transmitter Spurious Emissions	ETSI EN 301 908-13 V13.1.1 §4.2.4	Pass
Transmitter Minimum Output Power	ETSI EN 301 908-13 V13.1.1 §4.2.5	Pass
Receiver Adjacent Channel Selectivity (ACS)	ETSI EN 301 908-13 V13.1.1 §4.2.6	Pass
Receiver Blocking Characteristics	ETSI EN 301 908-13 V13.1.1 §4.2.7	Pass
Receiver Spurious Response	ETSI EN 301 908-13 V13.1.1 §4.2.8	Pass
Receiver Intermodulation Characteristics	ETSI EN 301 908-13 V13.1.1 §4.2.9	Pass
Receiver Spurious Emissions	ETSI EN 301 908-13 V13.1.1 §4.2.10	Pass
Transmitter Adjacent Channel Leakage Power Ratio	ETSI EN 301 908-13 V13.1.1 §4.2.11	Pass
Receiver Reference Sensitivity Level	ETSI EN 301 908-13 V13.1.1 §4.2.12	Pass
Radiated emissions (UE)	ETSI EN 301 908-1 V13.1.1 §4.2.2	Pass
Control and monitoring functions (UE)	ETSI EN 301 908-1 V13.1.1 §4.2.4	Pass

3. Transmitter maximum output power

3.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.2.

The UE maximum output power shall be within the shown value in table 4.2.2.1.2-1.

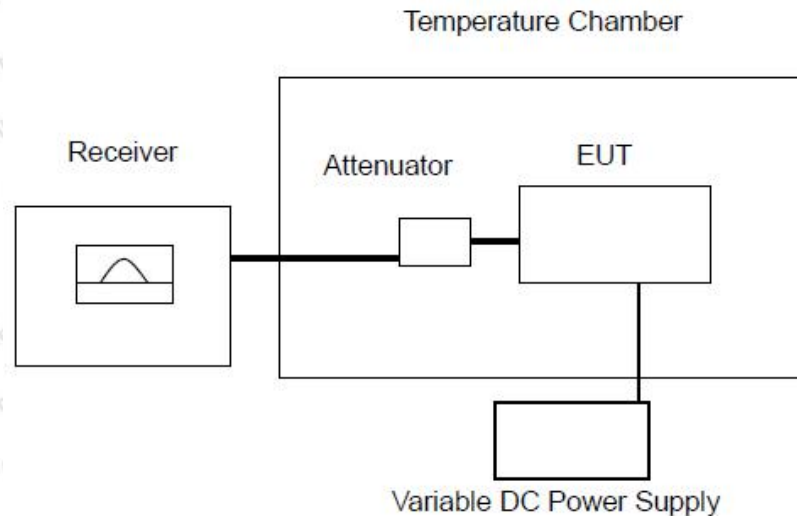
Table 4.2.2.1.2-1: UE power classes

E-UTRA Band	Power Class 3 (dBm)	Tolerance (dB)
1	23	$\pm 2,7$
3	23	$\pm 2,7$ (see note)
7	23	$\pm 2,7$ (see note)
8	23	$\pm 2,7$ (see note)
20	23	$\pm 2,7$ (see note)
22	23	+3,0/-4,5
28	23	+2,7/-3,2
31	23	$\pm 2,7$
33	23	$\pm 2,7$
34	23	$\pm 2,7$
38	23	$\pm 2,7$
40	23	$\pm 2,7$
42	23	+3,0/-4,0
43	23	+3,0/-4,0
65	23	$\pm 2,7$
68	23	$\pm 2,7$
NOTE: For transmission bandwidths (ETSI TS 136 521-1 [1], clause 5) confined within F_{UL_low} and $F_{UL_low} + 4$ MHz or $F_{UL_high} - 4$ MHz and F_{UL_high} , the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1,5 dB (tolerance = +2,7/-4,2).		

NOTE 1: These requirements do not take into account the maximum power reductions allowed to the UE subject to certain transmission conditions specified in ETSI TS 136 101 [3], clauses 6.2.3 and 6.2.4.

NOTE 2: The range of UE maximum output power for the various power classes are specified in ETSI TS 136 101 [3], clause 6.2.2. The values in table 4.2.2.1.2-1 correspond to the measurement limits.

3.2. Test Setup



3.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.1.1.

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; as specified in annex B.

Frequencies to be tested: low range, mid range, high range; as specified in TS 136 508 [2], clause 4.3.1.

Channel bandwidths to be tested: lowest, 5 MHz and highest channel bandwidth as defined in TS 136 508 [2], clause 4.3.1.

Uplink/Downlink configurations: as specified in TS 136 521-1 [1]:

- 1) Connect the SS to the UE antenna connectors.
- 2) The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.
- 3) Downlink signals are initially set up according to TS 136 521-1 [1], clauses C.0, C.1 and C.3.0 and uplink signals according to clauses H.1 and H.3.0.
- 4) The UL Reference Measurement channels are set according to TS 136 521-1 [1].
- 5) Propagation conditions are set according to TS 136 521-1 [1], clause B.0.
- 6) Ensure the UE is in State 3A-RF according to TS 136 508 [2], clause 5.2A.2.

NOTE: When reference is made to test set up, call set up and test mode, guidance on the applicability of these can be found in TS 136 521-1 [1], TS 136 508 [2] and TS 136 509 [i.11] respectively.

- 7) sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to table 6.2.2.1.4.1-1 of ETSI TS 136 521-1 [1]. Since the UE has no payload and no loopback data to send the UE sends uplink MAC padding bits on the UL RMC.
- 8) Send continuously uplink power control "up" commands in every uplink scheduling information to the UE; allow at least 200 ms for the UE to reach P_{UMAX} level.
- 9) Measure the mean power of the UE in the channel bandwidth of the radio access mode. The period of measurement shall be at least the continuous duration of one sub-frame (1 ms). For TDD slots with transient periods are not under test.
- 10) Repeat for applicable test frequencies, channel bandwidths, operating bands and environmental conditions.

3.4. Test Result

PASS

Please refer to Appendix A of the Appendix Test Data.

4. Transmitter spectrum emission mask

4.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.3.

The power of any UE emission shall fulfil requirements in tables 4.2.3.1.2-1 to 4.2.3.1.2-3.

Table 4.2.3.1.2-1: General E-UTRA spectrum emission mask, E UTRA bands ≤ 3 GHz

Δf_{OOB} (MHz)	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Measurement bandwidth
0 to 1	-8,5	-11,5	-13,5	-16,5	-18,5	-19,5	30 kHz
1 to 2,5	-8,5	-8,5	-8,5	-8,5	-8,5	-8,5	1 MHz
2,5 to 2,8	-23,5	-8,5	-8,5	-8,5	-8,5	-8,5	1 MHz
2,8 to 5		-8,5	-8,5	-8,5	-8,5	-8,5	1 MHz
5 to 6		-23,5	-11,5	-11,5	-11,5	-11,5	1 MHz
6 to 10			-23,5	-11,5	-11,5	-11,5	1 MHz
10 to 15				-23,5	-11,5	-11,5	1 MHz
15 to 20					-23,5	-11,5	1 MHz
20 to 25						-23,5	1 MHz

NOTE 1: The first and last measurement position with a 30 kHz filter is at Δf_{OOB} equals to 0,015 MHz and 0,985 MHz.

NOTE 2: The first and last measurement position with a 1 MHz filter for 1 MHz - 2,5 MHz offset range is at Δf_{OOB} equals to 1,5 MHz and 2,0 MHz. Similarly for other Δf_{OOB} ranges.

NOTE 3: The measurements shall be performed above the upper edge of the channel and below the lower edge of the channel.

NOTE 4: For the 2,5 MHz - 2,8 MHz offset range with 1,4 MHz channel bandwidth, the measurement position is at Δf_{OOB} equals to 3 MHz.

Table 4.2.3.1.2-2: General E-UTRA spectrum emission mask, 3 GHz < E-UTRA bands ≤ 4,2 GHz

Δf_{OOB} (MHz)	Spectrum emission limit (dBm)/Channel bandwidth						Measurement bandwidth
	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
0 to 1	-8,2	-11,2	-13,2	-16,2	-18,2	-19,2	30 kHz
1 to 2,5	-8,2	-8,2	-8,2	-8,2	-8,2	-8,2	1 MHz
2,5 to 2,8	-23,2						1 MHz
2,8 to 5							1 MHz
5 to 6							1 MHz
6 to 10		-23,2	-11,2	-11,2	-11,2	-11,2	1 MHz
10 to 15			-23,2				1 MHz
15 to 20				-23,2			1 MHz
20 to 25					-23,2	-23,2	1 MHz

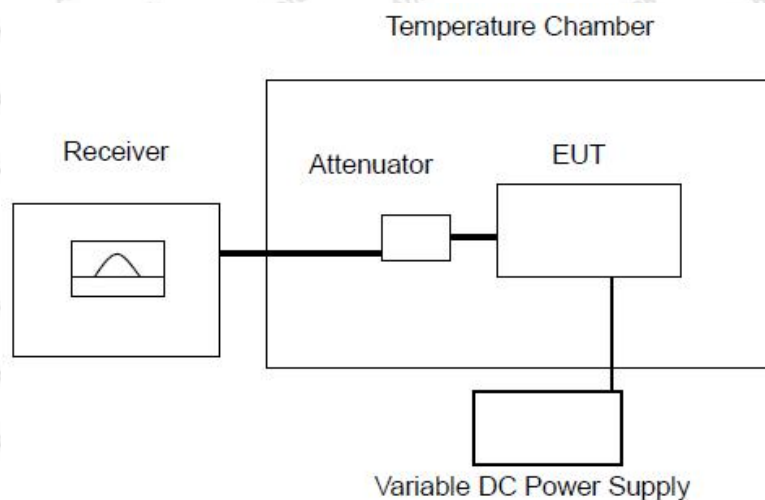
NOTE 1: The first and last measurement position with a 30 kHz filter is at Δf_{OOB} equals to 0,015 MHz and 0,985 MHz.

NOTE 2: At the boundary of spectrum emission limit, the first and last measurement position with a 1 MHz filter is the inside of +0,5 MHz and -0,5 MHz, respectively.

NOTE 3: The measurements shall be performed above the upper edge of the channel and below the lower edge of the channel.

NOTE 4: For the 2,5-2,8 MHz offset range with 1,4 MHz channel bandwidth, the measurement position is at Δf_{OOB} equals to 3 MHz.

4.2. Test Setup



4.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.2.1.

- 1) SS sends uplink scheduling information via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 6.6.2.1.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 2) Send continuously uplink power control "up" commands in the uplink scheduling information to the UE until the UE transmits at P_{UMAX} level.
- 3) Measure the power of the transmitted signal with a measurement filter of bandwidths according to tables 4.2.3.1.2-1 or 4.2.3.1.2-2, as applicable. The center frequency of the filter shall be stepped in continuous steps according to the same table. The measured power shall be recorded for each step. The measurement period shall capture the active TSs.
- 4) Repeat for applicable test frequencies, channel bandwidths and operating bands.

4.4. Test Result

PASS

Please refer to Appendix C of the Appendix Test Data.

5. Transmitter spurious emissions

5.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.4.

The spurious emission limits in table 4.2.4.1.2-2 apply for the frequency ranges that are more than Δf_{OoB} (MHz) from the edge of the channel bandwidth shown in table 4.2.4.1.2-1.

The measured average power of spurious emission for general requirements shall not exceed the described values in table 4.2.4.1.2-2.

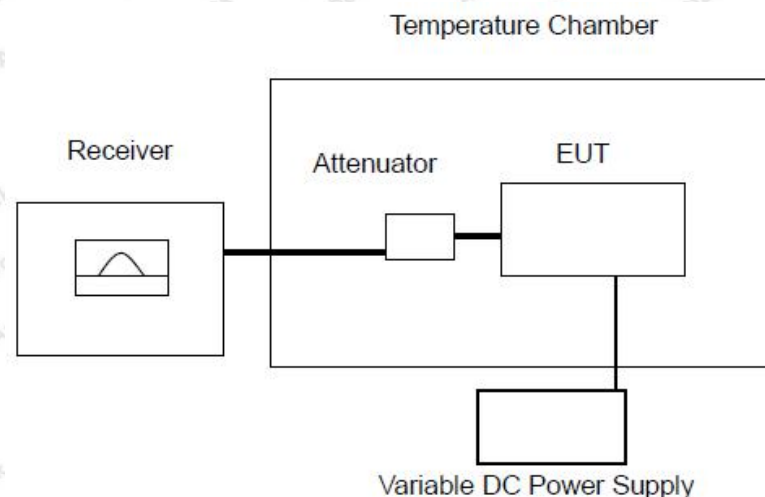
The measured average power of spurious emission for E-UTRA operating band specific requirements to protected bands shall not exceed the described values in tables 4.2.4.1.2-3 -to 4.2.4.1.2-6.

Table 4.2.4.1.2-2: General spurious emissions limits

Frequency range	Maximum level	Measurement bandwidth	Comment
$9 \text{ kHz} \leq f < 150 \text{ kHz}$	-36 dBm	1 kHz	
$150 \text{ kHz} \leq f < 30 \text{ MHz}$	-36 dBm	10 kHz	
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	-36 dBm	100 kHz	
$1 \text{ GHz} \leq f < 12,75 \text{ GHz}$	-30 dBm	1 MHz	
$12,75 \text{ GHz} \leq f < 5^{\text{th}}$ harmonic of the upper frequency edge of the UL operating band in GHz	-30 dBm	1 MHz	See note
NOTE: Shall apply for Band 22, 42 and Band 43.			

The additional requirements in table 4.2.4.1.2-3 apply for the frequency ranges that are more and less than Δf_{OoB} (MHz) from the edge of the channel bandwidth shown in table 4.2.4.1.2-1.

5.2. Test Setup



5.3. Test Procedure

- 1) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 6.6.3.1.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 2) Send continuously Up power control commands in the uplink scheduling information to the UE until the UE transmits at P_{UMAX} level.
- 3) For each applicable requirement in tables from 4.2.4.1.2-2 to 4.2.4.1.2-6; measure the power of the transmitted signal with a measurement filter of bandwidths. The centre frequency of the filter shall be stepped in contiguous steps according to the tables. The measured power shall be verified for each step. The measurement period shall capture the active time slots.
- 4) Repeat for applicable test frequencies, channel bandwidths and operating bands.

5.4. Test Result

PASS

Please refer to Appendix E of the Appendix Test Data.

6. Transmitter minimum output power

6.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.5.

The minimum output power measured shall not exceed the values specified in table 4.2.5.1.2-1.

Table 4.2.5.1.2-1: Minimum output power

	Channel bandwidth/minimum output power/measurement bandwidth					
	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Minimum output power	For carrier frequency $f \leq 3,0$ GHz: ≤ -39 dBm For carrier frequency $3,0$ GHz $< f \leq 4,2$ GHz: $\leq -38,7$ dBm					
Measurement bandwidth	1,08 MHz	2,7 MHz	4,5 MHz	9,0 MHz	13,5 MHz	18 MHz

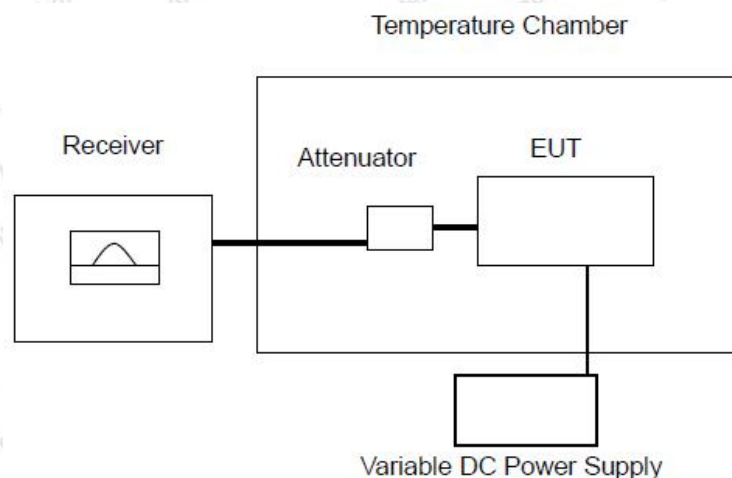
6.2. Test Procedures

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.4.

Test Environment: normal, TL/VL, TL/VH, TH/VL, TH/VH; as specified in annex B.

- 1) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 6.3.2.4.1-1. Since the UE has no payload and no loopback data to send the UE sends uplink MAC padding bits on the UL RMC.
- 2) Send continuous uplink power control "down" commands in the uplink scheduling information to the UE to ensure that the UE transmits at its minimum output power.
- 3) Measure the mean power of the UE in the associated measurement bandwidth specified in table 4.2.5.1.2-1 for the specific channel bandwidth under test. The period of measurement shall be the continuous duration of one sub-frame (1 ms). For TDD slots with transient periods are not under test.
- 4) Repeat for applicable test frequencies, channel bandwidths, operating bands and environmental conditions.

6.3. Test setup



6.4. Test Results

PASS

Please refer to Appendix B of the Appendix Test Data.

7. Receiver Adjacent Channel Selectivity (ACS)

7.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.6.

The throughput R_{av} shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in ETSI TS 136 521-1 [1] under the conditions specified in table 4.2.6.1.2-2 and also under the conditions specified in table 4.2.6.1.2-3.

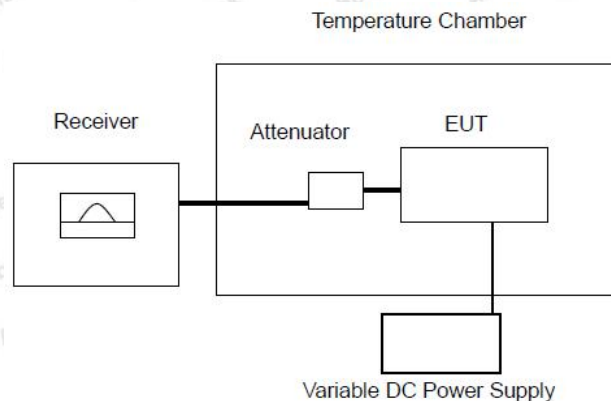
Table 4.2.6.1.2-2: Test parameters for Adjacent channel selectivity, Case 1

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission Bandwidth Configuration	dBm	REFSENS + 14 dB					
$P_{\text{Interferer}}$	dBm	REFSENS +45,5 dB	REFSENS +45,5 dB	REFSENS +45,5 dB	REFSENS +45,5 dB	REFSENS +42,5 dB	REFSENS +39,5 dB
$BW_{\text{Interferer}}$	MHz	1,4	3	5	5	5	5
$F_{\text{Interferer}}$ (offset)	MHz	1,4025	3,0075	5,0025	7,5075	10,0125	12,5025
NOTE 1: The transmitter shall be set to 4 dB below $P_{\text{CMAX_L}}$ or $P_{\text{CMAX_L_CA}}$ as defined in clause 6.2.5 in ETSI TS 136 101 [3].							
NOTE 2: The interferer shall consist of the Reference measurement channel specified in clause A.3.2 of ETSI TS 136 521-1 [1] with set-up according to clause C.3.1 of ETSI TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							
NOTE 4: For DL category M1 UE, the reference sensitivity for category M1 in ETSI TS 136 521-1 [1], table 7.3EA-1 and 7.3EA-2 should be used as REFSENS for the power in Transmission Bandwidth Configuration and $P_{\text{Interferer}}$.							
NOTE 5: For DL category M1 UE, the parameters for the applicable channel bandwidth apply.							

Table 4.2.6.1.2-3: Test parameters for Adjacent channel selectivity, Case 2

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission Bandwidth Configuration	dBm	-56,5	-56,5	-56,5	-56,5	-53,5	-50,5
$P_{\text{Interferer}}$	dBm	-25					
$BW_{\text{Interferer}}$	MHz	1,4	3	5	5	5	5
$F_{\text{Interferer}}$ (offset)	MHz	1,4025	3,0075	5,0025	7,5075	10,0125	12,5025
NOTE 1: The transmitter shall be set to 24 dB below $P_{\text{CMAX_L}}$ or $P_{\text{CMAX_L_CA}}$ as defined in clause 6.2.5 in ETSI TS 136 101 [3].							
NOTE 2: The interferer shall consist of the Reference measurement channel specified in clause A.3.2 of ETSI TS 136 521-1 [1] with set-up according to clause C.3.1 of ETSI TS 136 521-1 [1].							

7.2. Test Setup



7.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.5.

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.5.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.5.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the Downlink signal level to the value as defined in table 4.2.6.1.2-2 (Case 1). Send Uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.6.1.2-2 (Case 1) for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the Throughput measurement (obtain correct UE output power as specified in ETSI TS 136 521-1 [1], table 7.5.3-2).
- 4) Set the Interferer signal level to the value as defined in table 4.2.6.1.2-2 (Case 1) and frequency below the wanted signal, using a modulated interferer as defined in ETSI TS 136 521-1 [1], annex D.
- 5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 6) Set the Downlink signal level to the value as defined in table 4.2.6.1.2-3 (Case 2). Send Uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.6.1.2-3 (Case 2) for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement (obtain correct UE output power as specified in ETSI TS 136 521-1 [1], table 7.5.3-3).
- 7) Set the Interferer signal level to the value as defined in table 4.2.6.1.2-3 (Case 2) and frequency below the wanted signal, using a modulated interferer as defined in ETSI TS 136 521-1 [1], annex D.
- 8) Measure the average throughput for a duration sufficient to achieve statistical significance according to ETSI TS 136 521-1 [1], annex G.
- 9) Repeat for applicable channel bandwidths in both Case 1 and Case 2.
- 10) Repeat for applicable test frequencies, channel bandwidths and operating bands.

7.4. Test Result*Pass**Please refer to the following Data.*

Band	Channel Bandwidth	Test Freq.	REFSENS [dBm]	ACS Case	Throughput, Offset (-)	Throughput, Offset (+)	Throughput Limit	Result
LTE Band3	1.4MHz	Mid CH	-94.7	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	5MHz	Mid CH	-96.0	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	20MHz	Mid CH	-97.2	Case 2	100 %	100 %	≥ 95%	Pass
				Case 1	100 %	100 %	≥ 95%	Pass
LTE Band8	1.4MHz	Mid CH	-93.2	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	5MHz	Mid CH	-92.2	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	10MHz	Mid CH	-91.8	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
LTE Band38	5MHz	Mid CH	-98.3	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	20MHz	Mid CH	-92.5	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
LTE Band40	5MHz	Mid CH	-97.5	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass
	20MHz	Mid CH	-92.7	Case 1	100 %	100 %	≥ 95%	Pass
				Case 2	100 %	100 %	≥ 95%	Pass

8. Receiver blocking characteristics

8.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.7.

With parameters specified in tables 4.2.7.1.2-1 and 4.2.7.1.2-2, the throughput shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in clauses A.2.2, A.2.3 and A.3.2 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in clauses A.5.1.1 and A.5.2.1) in ETSI TS 136 521-1 [1].

For table 4.2.7.1.2-4 in frequency range 1, 2 and 3, up to $\max(24, 6 \cdot [N_{RB} / 6])$ exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size, where N_{RB} is the number of resource blocks in the downlink transmission bandwidth configuration. For these exceptions the requirements of clause 4.2.8.1 Spurious response are applicable.

With parameters specified in table 4.2.7.1.2-5, the throughput shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in clauses A.2.2, A.2.3 and A.3.2 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in clauses A.5.1.1 and A.5.2.1) in ETSI TS 136 521-1 [1].

Table 4.2.7.1.2-1: In-band blocking parameters

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission Bandwidth Configuration	dBm	REFSENS + channel bandwidth specific value below					
		6	6	6	6	7	9
BW _{Interferer}	MHz	1,4	3	5	5	5	5
F _{offset, case 1}	MHz	2,1125	4,5075	7,5125	7,5025	7,5075	7,5125
F _{offset, case 2}	MHz	3,5075	7,5075	12,5075	12,5125	12,5025	12,5075
NOTE 1: The transmitter shall be set to 4 dB below P _{CMAX,L} at the minimum uplink configuration specified in ETSI TS 136 101 [3] (table 7.3.1-2 with P _{CMAX,L} as defined in clause 6.2.5).							
NOTE 2: The interferer shall consist of the Reference measurement channel specified in clause A.3.2 of ETSI TS 136 521-1 [1] with a set-up according to clause C.3.1 of ETSI TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							
NOTE 4: For DL category M1 UE, the reference sensitivity for category M1 in ETSI TS 136 521-1 [1], tables 7.3EA-1 and 7.3EA-2 should be used as REFSENS for the power in Transmission Bandwidth Configuration.							
NOTE 5: For DL category M1 UE, the parameters for the applicable channel bandwidth apply.							

Table 4.2.7.1.2-2: In-band blocking

E-UTRA band	Parameter	Units	Case 1	Case 2
	P _{Interferer}	dBm	-56	-44
1, 3, 7, 8, 20, 22, 28, 31, 33, 34, 38, 40, 42, 43, 65	F _{Interferer} (Offset)	MHz	= -BW/2 - F _{offset, case 1} and = +BW/2 + F _{offset, case 1}	≤ -BW/2 - F _{offset, case 2} and ≥ +BW/2 + F _{offset, case 2}
	F _{Interferer}	MHz	(note 2)	F _{DL_low} - 15 to F _{DL_high} + 15
NOTE 1: For certain bands, the unwanted modulated interfering signal may not fall inside the UE receive band, but within the first 15 MHz below or above the UE receive band.				
NOTE 2: For each carrier frequency the requirement is valid for two frequencies: a) the carrier frequency - BW/2 - F _{offset, case 1} ; and b) the carrier frequency + BW/2 + F _{offset, case 1} .				
NOTE 3: F _{Interferer} range values for unwanted modulated interfering signal are interferer centre frequencies.				

Table 4.2.7.1.2-3: Out-of-band blocking parameters

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission Bandwidth Configuration	dBm	REFSENS + channel bandwidth specific value below					
		6	6	6	6	7	9
NOTE 1: The transmitter shall be set to 4 dB below P_{CMAX_L} at the minimum uplink configuration specified in ETSI TS 136 101 [3] (table 7.3.1-2 with P_{CMAX_L} as defined in clause 6.2.5).							
NOTE 2: Reference measurement channel is clause A.3.2 of ETSI TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							
NOTE 4: For DL category M1 UE, the reference sensitivity for category M1 in ETSI TS 136 521-1 [1], tables 7.3EA-1 and 7.3EA-2 should be used as REFSENS for the power in Transmission Bandwidth Configuration.							
NOTE 5: For DL category M1 UE, the parameters for the applicable channel bandwidth apply.							

Table 4.2.7.1.2-4: Out-of-band blocking

E-UTRA band	Parameter	Units	Frequency		
			Range 1	Range 2	Range 3
	P _{Interferer}	dBm	-44	-30	-15
1, 3, 7, 8, 20, 22, 28, 31, 33, 34, 38, 40, 42 (note 2), 43 (note 2), 65	F _{Interferer} (CW)	MHz	F _{DL_low} - 15 to F _{DL_low} - 60	F _{DL_low} - 60 to F _{DL_low} - 85	F _{DL_low} - 85 to 1 MHz
			F _{DL_high} + 15 to F _{DL_high} + 60	F _{DL_high} + 60 to F _{DL_high} + 85	F _{DL_high} + 85 to +12 750 MHz
NOTE 1: Range 3 shall be tested only with the highest channel bandwidth.					
NOTE 2: The power level of the interferer (P _{Interferer}) for Range 3 shall be modified to -20 dBm for F _{Interferer} > 2 800 MHz and F _{Interferer} < 4 400 MHz.					

Table 4.2.7.1.2-5: Narrow-band blocking

Parameter	Units	Channel Bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
P_w	dBm	$P_{\text{REFSENS}} + \text{channel-bandwidth specific value below}$					
		22	18	16	13	14	16
P_{uw} (CW)	dBm	-55	-55	-55	-55	-55	-55
F_{uw} (offset for $\Delta f = 15$ kHz)	MHz	0,9075	1,7025	2,7075	5,2125	7,7025	10,2075
NOTE 1: The transmitter shall be set a 4 dB below P_{CMAX_L} at the minimum uplink configuration specified in ETSI TS 136 101 [3] (table 7.3.1-2 with P_{CMAX_L} as defined in clause 6.2.5).							
NOTE 2: Reference measurement channel is in clause A.3.2 of ETSI TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							
NOTE 4: For DL category M1 UE, the reference sensitivity for category M1 in ETSI TS 136 521-1 [1], tables 7.3EA-1 and 7.3EA-2 should be used as P_{REFSENS} for P_w .							
NOTE 5: For DL category M1 UE, the parameters for the applicable channel bandwidth apply.							

8.2. Test Procedures

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.6.

In-Band Procedure

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.6.1.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.6.1.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the parameters of the signal generator for an interfering signal below the wanted signal in Case 1 according to tables 4.2.7.1.2-1 and 4.2.7.1.2-2.
- 4) Set the downlink signal level according to the table 4.2.7.1.2-1. Send uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.7.1.2-1 for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement as specified in ETSI TS 136 521-1 [1].
- 5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 6) Repeat steps from 3 to 5, using an interfering signal above the wanted signal in Case 1 at step 3.
- 7) Repeat steps from 3 to 6, using interfering signals in Case 2 at step 3) and 6). The ranges of case 2 are covered in steps equal to the interferer bandwidth. The test frequencies are chosen in analogy to ETSI TS 136 521-1 [1], table 7.6.1.4.2-1.
- 8) Repeat for applicable test frequencies, channel bandwidths and operating bands.

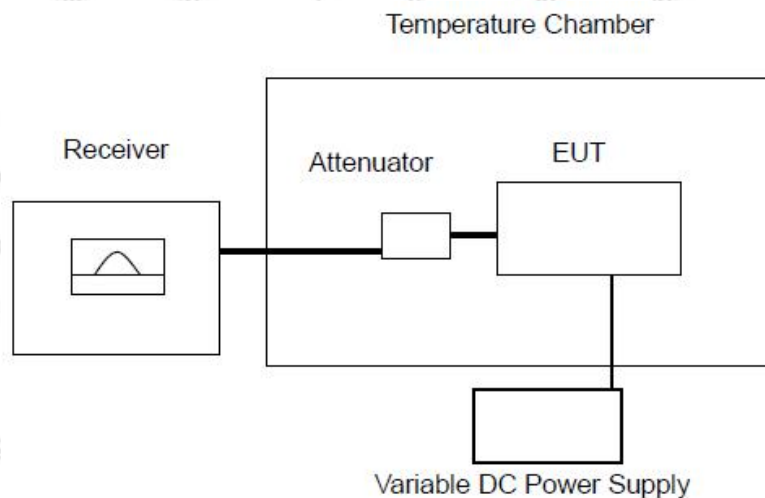
Out-Of-Band Procedure

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.6.2.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.6.2.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the parameters of the CW signal generator for an interfering signal according to table 4.2.7.1.2-4. The frequency step size is 1 MHz.
- 4) Set the downlink signal level according to the table 4.2.7.1.2-3. Send uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.7.1.2-3 for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement as specified in ETSI TS 136 521-1 [1].
- 5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 6) For table 4.2.7.1.2-4 record the frequencies for which the throughput does not meet the requirements.
- 7) Repeat for applicable test frequencies, channel bandwidths and operating bands.

Narrow-Band Procedure

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.6.3.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.6.3.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the parameters of the CW signal generator for an interfering signal below the wanted signal according to table 4.2.7.1.2-5.
- 4) Set the downlink signal level according to the table 4.2.7.1.2-5. Send uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.7.1.2-5 for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement as specified in ETSI TS 136 521-1 [1].
- 5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 6) Repeat steps from 3 to 5, using an interfering signal above the wanted signal at step 3.
- 7) Repeat for applicable test frequencies, channel bandwidths and operating bands.

8.3. Test setup



8.4. Test Result

Pass

Please refer to the following Data.

LTE band 3

The equipment passed the requirement of this clause.

In-Band Blocking					
Test Environment			NC		
Test Frequencies			Mid range		
Test Channel Bandwidths			Lowest, 5MHz, Highest		
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE1
		FDD		FDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE2
		FDD		FDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				

Out-of Band Blocking					
Test Environment		NC			
Test Frequencies		Low range for FInterferer below FDL_low High range for FInterferer above FDL_high			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		RANGE1/RANGE2/RANGE3
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		FDD		FDD	
OUT-LMHz	QPSK	Full	QPSK	OUT-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
OUT-HMHz	QPSK	Full	QPSK	OUT-H-RB	≥ 95 %
Verdict	Pass				

Narrow Band

Test Environment		NC			
Test Frequencies		Mid range			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		FDD		FDD	
NA-LMHz	QPSK	Full	QPSK	NA-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
NA-HMHz	QPSK	Full	QPSK	NA-H-RB	≥ 95 %
Verdict	Pass				

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LTE band 8

The equipment passed the requirement of this clause.

In-Band Blocking

Test Environment		NC			
Test Frequencies		Mid range			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE1
		FDD		FDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE2
		FDD		FDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				

Out-of Band Blocking

Test Environment	NC				
Test Frequencies	Low range for FInterferer below FDL_low High range for FInterferer above FDL_high				
Test Channel Bandwidths	Lowest, 5MHz, Highest				
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		RANGE1/RANGE2/RANGE3
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		FDD		FDD	
OUT-LMHz	QPSK	Full	QPSK	OUT-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
OUT-HMHz	QPSK	Full	QPSK	OUT-H-RB	≥ 95 %
Verdict	Pass				

Narrow Band

Test Environment		NC			
Test Frequencies		Mid range			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		FDD		FDD	
NA-LMHz	QPSK	Full	QPSK	NA-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
NA-HMHz	QPSK	Full	QPSK	NA-H-RB	≥ 95 %
Verdict	Pass				

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LTE band 38

The equipment passed the requirement of this clause.

In-Band Blocking					
Test Environment			NC		
Test Frequencies			Mid range		
Test Channel Bandwidths			Lowest, 5MHz, Highest		
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE1
		TDD		TDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE2
		TDD		TDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				

Out-of Band Blocking					
Test Environment		NC			
Test Frequencies		Low range for FInterferer below FDL_low High range for FInterferer above FDL_high			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		RANGE1/RANGE2/RANGE3
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		TDD		TDD	
OUT-LMHz	QPSK	Full	QPSK	OUT-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
OUT-HMHz	QPSK	Full	QPSK	OUT-H-RB	≥ 95 %
Verdict	Pass				

Narrow Band

Test Environment	NC				
Test Frequencies	Mid range				
Test Channel Bandwidths	Lowest, 5MHz, Highest				
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		TDD		TDD	
NA-LMHz	QPSK	Full	QPSK	NA-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
NA-HMHz	QPSK	Full	QPSK	NA-H-RB	≥ 95 %
Verdict	Pass				

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LTE band 40

The equipment passed the requirement of this clause.

In-Band Blocking					
Test Environment			NC		
Test Frequencies			Mid range		
Test Channel Bandwidths			Lowest, 5MHz, Highest		
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE1
		TDD		TDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE2
		TDD		TDD	Throughput Limit
IN-LMHz	QPSK	Full	QPSK	IN-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
IN-HMHz	QPSK	Full	QPSK	IN-H-RB	≥ 95 %
Verdict	Pass				

Out-of Band Blocking					
Test Environment		NC			
Test Frequencies		Low range for FInterferer below FDL_low High range for FInterferer above FDL_high			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		RANGE1/RANGE2/RANGE3
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		TDD		TDD	
OUT-LMHz	QPSK	Full	QPSK	OUT-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
OUT-HMHz	QPSK	Full	QPSK	OUT-H-RB	≥ 95 %
Verdict	Pass				

Narrow Band

Test Environment		NC			
Test Frequencies		Mid range			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Throughput Limit
		TDD		TDD	
NA-LMHz	QPSK	Full	QPSK	NA-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
NA-HMHz	QPSK	Full	QPSK	NA-H-RB	≥ 95 %
Verdict	Pass				

9. Receiver spurious response

9.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.8.

The throughput shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in clauses A.2.2, A.2.3 and A.3.2 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in clauses A.5.1.1 and A.5.2.1) in ETSI TS 136 521-1 [1] with parameters specified in tables 4.2.8.1.2-1 and 4.2.8.1.2-2.

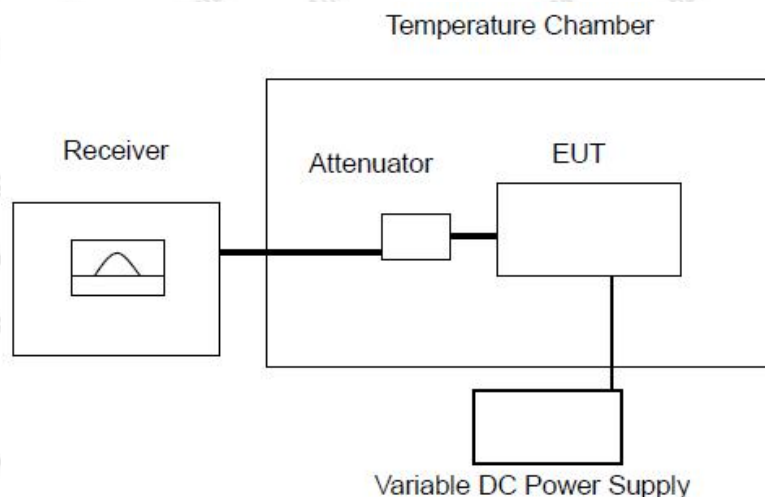
Table 4.2.8.1.2-1: Spurious response parameters

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission	dBm	REFSENS + channel bandwidth specific value below					
Bandwidth Configuration		6	6	6	6	7	9
NOTE 1: The transmitter shall be set to 4 dB below $P_{\text{CMAX_L}}$ at the minimum uplink configuration specified in ETSI TS 136 101 [3] (table 7.3.1-2 with $P_{\text{CMAX_L}}$ as defined in clause 6.2.5).							
NOTE 2: Reference measurement channel is clause A.3.2 of ETSI TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							

Table 4.2.8.1.2-2: Spurious Response

Parameter	Units	Level
$P_{\text{Interferer}}$ (CW)	dBm	-44
$F_{\text{Interferer}}$	MHz	Spurious response frequencies

9.2. Test Setup



9.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.7.

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.6.2.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.6.2.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the parameters of the CW signal generator for an interfering signal according to table 4.2.8.1.2-2. The spurious frequencies are taken from step 5) records in clause 5.3.6.1.1.2.
- 4) Set the downlink signal level according to the table 4.2.8.1.2-1. Send uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.8.1.2-1 for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement as specified in ETSI TS 136 521-1 [1].
- 5) For the spurious frequency, measure the average throughput for a duration sufficient to achieve statistical significance.

9.4. Test Result

Pass

Please refer to the following Data.

LTE band 3

Test Environment		NC			
Test Frequencies		Mid range			
Test Channel Bandwidths		Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 1
		FDD		FDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 2
		FDD		FDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				

LTE band 8

Test Environment	NC				
Test Frequencies	Mid range				
Test Channel Bandwidths	Lowest, 5MHz, Highest				
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 1
		FDD		FDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 2
		FDD		FDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				

LTE band 38

Test Environment	NC				
Test Frequencies	Mid range				
Test Channel Bandwidths	Lowest, 5MHz, Highest				
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 1
		TDD		TDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 2
		TDD		TDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				

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LTE band 40

Test Environment	NC				
Test Frequencies	Mid range				
Test Channel Bandwidths	Lowest, 5MHz, Highest				
Test Parameters for Channel Bandwidths					
	Downlink Configuration		Uplink Configuration		
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 1
		TDD		TDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				
Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	CASE 2
		TDD		TDD	Throughput Limit
ACS-LMHz	QPSK	Full	QPSK	ACS-L-RB	≥ 95 %
5MHz	QPSK	Full	QPSK	15,20,25	≥ 95 %
ACS-HMHz	QPSK	Full	QPSK	ACS-H-RB	≥ 95 %
Verdict	Pass				

10. Receiver intermodulation characteristics

10.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.9.

The throughput shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in clauses A.2.2, A.2.3 and A.3.2 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in clauses A.5.1.1 and A.5.2.1) in ETSI TS 136 521-1 [1] with parameters specified in table 4.2.9.1.2-1 for the specified wanted signal mean power in the presence of two interfering signals.

Table 4.2.9.1.2-1: Test parameters for Wide band intermodulation

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission Bandwidth Configuration	dBm	REFSENS + channel bandwidth specific value below					
		12	8	6	6	7	9
$P_{\text{Interferer 1 (CW)}}$	dBm	-46					
$P_{\text{Interferer 2 (Modulated)}}$	dBm	-46					
$BW_{\text{Interferer 2}}$		1,4	3	5			
$F_{\text{Interferer 1 (Offset)}}$	MHz	-BW/2 - 2,1 / +BW/2 + 2,1	-BW/2 - 4,5 / +BW/2 + 4,5	-BW/2 - 7,5 / +BW/2 + 7,5			
$F_{\text{Interferer 2 (Offset)}}$	MHz	$2 \times F_{\text{Interferer 1}}$					
NOTE 1: The transmitter shall be set to 4 dB below $P_{\text{CMAX_L}}$ at the minimum uplink configuration specified in ETSI TS 136 101 [3] (table 7.3.1-2 with $P_{\text{CMAX_L}}$ as defined in clause 6.2.5).							
NOTE 2: Reference measurement channel is clause A.3.2 of ETSI TS 136 521-1 [1].							
NOTE 3: The modulated interferer shall consist of the Reference measurement channel specified in clause A.3.2 of ETSI TS 136 521-1 [1] with set-up according to clause C.3.1 of ETSI TS 136 521-1 [1]. The interfering modulated signal is 5 MHz E-UTRA signal as described in annex C of ETSI TS 136 521-1 [1] for channel bandwidth ≥ 5 MHz.							
NOTE 4: REFSENS as defined in clause 7.3.3 in ETSI TS 136 521-1 [1].							
NOTE 5: For DL category M1 UE, the reference sensitivity for category M1 in ETSI TS 136 521-1 [1], tables 7.3EA-1 and 7.3EA-2 should be used as REFSENS for the power in Transmission Bandwidth Configuration.							
NOTE 6: For DL category M1 UE, the parameters for the applicable channel bandwidth apply, and BW refers to the corresponding channel bandwidth.							

10.2. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.8.

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.8.1.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.8.1.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the Downlink signal level to the value as defined in table 4.2.9.1.2-1. Send uplink power control commands to the UE (less or equal to 1 dB step size should be used), to ensure that the UE output power is within +0, -3,4 dB of the target level in table 4.2.9.1.2-1 for carrier frequency $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2 \text{ GHz}$, for at least the duration of the throughput measurement as specified in ETSI TS 136 521-1 [1].
- 4) Set the Interfering signal levels to the values as defined in table 4.2.9.1.2-1, using a modulated interferer bandwidth as defined in annex D of ETSI TS 136 521-1 [1].
- 5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 6) Repeat for applicable test frequencies, channel bandwidths and operating bands.

10.3. Test Result

Pass

Please refer to the following Data.

Band	Channel Bandwidth	Test Freq.	REFSENS (dBm)	Throughput, Offset (-)	Throughput, Offset (+)	Throughput Limit	Result
LTE Band3	1.4MHz	Mid CH	-94.7	100 %	100 %	$\geq 95\%$	Pass
	5MHz	Mid CH	-96.0	100 %	100 %	$\geq 95\%$	Pass
	20MHz	Mid CH	-97.2	100 %	100 %	$\geq 95\%$	Pass
LTE Band8	1.4MHz	Mid CH	-93.2	100 %	100 %	$\geq 95\%$	Pass
	5MHz	Mid CH	-92.2	100 %	100 %	$\geq 95\%$	Pass
	10MHz	Mid CH	-91.8	100 %	100 %	$\geq 95\%$	Pass
LTE Band38	5MHz	Mid CH	-98.3	100 %	100 %	$\geq 95\%$	Pass
	20MHz	Mid CH	-92.5	100 %	100 %	$\geq 95\%$	Pass
LTE Band40	5MHz	Mid CH	-97.5	100 %	100 %	$\geq 95\%$	Pass
	20MHz	Mid CH	-92.7	100 %	100 %	$\geq 95\%$	Pass

11. Receiver spurious emissions

11.1. Test Limit

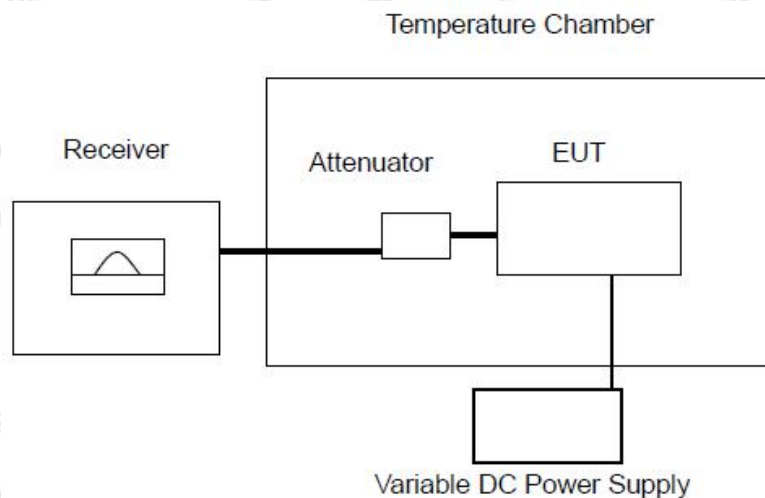
Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.10.

The measured spurious emissions derived in clause 5.3.9 shall not exceed the maximum level specified in table 4.2.10.1.2-1.

Table 4.2.10.1.2-1: General receiver spurious emission requirements

Frequency Band	Measurement bandwidth	Maximum level	Note
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	100 kHz	-57 dBm	
$1 \text{ GHz} \leq f \leq 12,75 \text{ GHz}$	1 MHz	-47 dBm	
$12,75 \text{ GHz} \leq f \leq 5^{\text{th}}$ harmonic of the upper frequency edge of the DL operating band in GHz	1 MHz	-47 dBm	Note 1
NOTE 1: Shall apply only for Band 22, 42 and Band 43.			
NOTE 2: Unused PDCCH resources are padded with resource element groups with power level given by PDCCH_RA/RB as defined in ETSI TS 136 101 [3], clause C.3.1.			

11.2. Test Setup



11.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.9.

- 1) 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.
- 2) Repeat step 1) for all E-UTRA Rx antennas of the UE.
- 3) Repeat for applicable test frequencies, channel bandwidths and operating bands.

11.4. Test Result

Pass

Please refer to Appendix F of the Appendix Test Data.

12. Transmitter Adjacent Channel Leakage power Ratio

12.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.11.

If the measured adjacent channel power is greater than -50 dBm then the measured E-UTRA_{ACLR} shall be higher than the limits in table 4.2.11.1.2-1.

Table 4.2.11.1.2-1: E-UTRA UE ACLR

	Channel bandwidth/E-UTRA _{ACLR1} /measurement bandwidth					
	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
E-UTRA_{ACLR1}	29,2 dB	29,2 dB	29,2 dB	29,2 dB	29,2 dB	29,2 dB
E-UTRA channel Measurement bandwidth	1,08 MHz	2,7 MHz	4,5 MHz	9,0 MHz	13,5 MHz	18 MHz
UE channel	+1,4 MHz or -1,4 MHz	+3 MHz or -3 MHz	+5 MHz or -5 MHz	+10 MHz or -10 MHz	+15 MHz or -15 MHz	+20 MHz or -20 MHz

If the measured UTRA channel power is greater than -50 dBm then the measured UTRA_{ACLR1}, UTRA_{ACLR2} shall be higher than the limits in table 4.2.11.1.2-2.

Table 4.2.11.1.2-2: UTRA UE ACLR

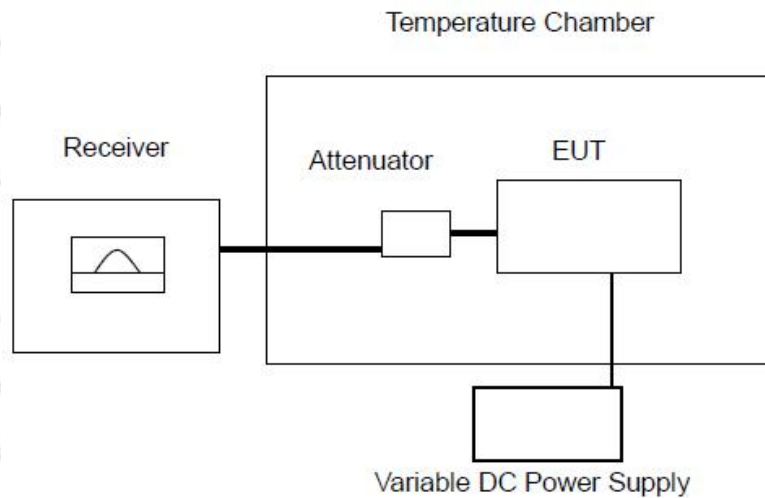
	Channel bandwidth/UTRA _{ACLR1/2} /measurement bandwidth					
	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
UTRA_{ACLR1}	32,2 dB	32,2 dB	32,2 dB	32,2 dB	32,2 dB	32,2 dB
Adjacent channel centre frequency offset (in MHz)	0,7 + BW _{UTRA} /2 / -0,7 - BW _{UTRA} /2	1,5 + BW _{UTRA} /2 / -1,5 - BW _{UTRA} /2	2,5 + BW _{UTRA} /2 / -2,5 - BW _{UTRA} /2	5 + BW _{UTRA} /2 / -5 - BW _{UTRA} /2	7,5 + BW _{UTRA} /2 / -7,5 - BW _{UTRA} /2	10 + BW _{UTRA} /2 / -10 - BW _{UTRA} /2
UTRA_{ACLR2}	-	-	35,2 dB	35,2 dB	35,2 dB	35,2 dB
Adjacent channel centre frequency offset (in MHz)	-	-	2,5 + 3 × BW _{UTRA} /2 / -2,5 - 3 × BW _{UTRA} /2	5 + 3 × BW _{UTRA} /2 / -5 - 3 × BW _{UTRA} /2	7,5 + 3 × BW _{UTRA} /2 / -7,5 - 3 × BW _{UTRA} /2	10 + 3 × BW _{UTRA} /2 / -10 - 3 × BW _{UTRA} /2
E-UTRA channel Measurement bandwidth	1,08 MHz	2,7 MHz	4,5 MHz	9,0 MHz	13,5 MHz	18 MHz
UTRA 5 MHz channel Measurement bandwidth (see note 1)	3,84 MHz	3,84 MHz	3,84 MHz	3,84 MHz	3,84 MHz	3,84 MHz
UTRA 1,6 MHz channel measurement bandwidth (see note 2)	1,28 MHz	1,28 MHz	1,28 MHz	1,28 MHz	1,28 MHz	1,28 MHz

NOTE 1: Shall apply for E-UTRA FDD co-existence with UTRA FDD in paired spectrum.

NOTE 2: Shall apply for E-UTRA TDD co-existence with UTRA TDD in unpaired spectrum.

NOTE 3: BW_{UTRA} for UTRA FDD shall be 5 MHz and for UTRA TDD shall be 1,6 MHz.

12.2. Test Setup



12.3. Test Procedure

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.11.

- 1) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 6.6.2.3.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 2) Send continuous uplink power control "up" commands in the uplink scheduling information to the UE to ensure that the UE transmits at P_{UMAX} level.
- 3) Measure the mean power of the UE in the channel bandwidth of the radio access mode according to the test configuration, which shall meet the requirements described in tables 4.2.11.1.2-1 and 4.2.11.1.2-2. The period of the measurement shall be at least the continuous duration of one sub-frame (1 ms). For TDD slots with transient periods are not under test.
- 4) Measure the filtered mean power for E-UTRA.
- 5) Measure the filtered mean power of the first E-UTRA adjacent channel.
- 6) Measure the RRC filtered mean power of the first and the second UTRA adjacent channel.
- 7) Calculate the ratio of the power between the values measured in step 4) over step 5) for E-UTRA_{ACLR}.
- 8) Calculate the ratio of the power between the values measured in step 4) over step 6) for UTRA_{ACLR1}, UTRA_{ACLR2}.
- 9) Repeat for applicable test frequencies, channel bandwidths, operating bands and environmental conditions.

12.4. Test Result

PASS

Please refer to Appendix D of the Appendix Test Data.

13. Receiver Reference Sensitivity Level

13.1. Test Limit

Please refer to ETSI EN 301 908-13 V13.1.1 clause 4.2.12.

The throughput shall be $\geq 95\%$ of the maximum throughput of the reference measurement channels as specified in ETSI TS 136 521-1 [1], clauses A.2.2, A.2.3 and A.3.2 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in ETSI TS 136 521-1 [1], clauses A.5.1.1 and A.5.2.1) with parameters specified in table 4.2.12.1.2-1 and table 7.3.3-2 in ETSI TS 136 521-1 [1].

Table 4.2.12.1.2-1: Reference sensitivity QPSK P_{REFSENS}

E-UTRA Band	Channel bandwidth						Duplex Mode
	1,4 MHz (dBm)	3 MHz (dBm)	5 MHz (dBm)	10 MHz (dBm)	15 MHz (dBm)	20 MHz (dBm)	
1	-	-	-99,3	-96,3	-94,5	-93,3	FDD
3	-101,0	-98,0	-96,3	-93,3	-91,5	-90,3	FDD
7	-	-	-97,3	-94,3	-92,5	-91,3	FDD
8	-101,5	-98,5	-96,3	-93,3	-	-	FDD
20	-	-	-96,3	-93,3	-90,5	-89,3	FDD
22	-	-	-96,0	-93,0	-91,2	-90,0	FDD
28	-	-99,5	-97,8	-94,8	-93,0	-90,3	FDD
31	-98,3	-95,0	-92,8	-	-	-	FDD
33	-	-	-99,3	-96,3	-94,5	-93,3	TDD
34	-	-	-99,3	-96,3	-94,5	-	TDD
38	-	-	-99,3	-96,3	-94,5	-93,3	TDD
40	-	-	-99,3	-96,3	-94,5	-93,3	TDD
42	-	-	-98,0	-95,0	-93,2	-92,0	TDD
43	-	-	-98,0	-95,0	-93,2	-92,0	TDD
65	-103,5	-100,5	-98,8	-95,8	-94,0	-92,8	FDD

NOTE 1: The transmitter shall be set to maximum output power level (ETSI TS 136 521-1 [1], table 7.3.5-2).

NOTE 2: The reference measurement channel is specified in ETSI TS 136 521-1 [1], clause A.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD as described in ETSI TS 136 521-1 [1], clauses A.5.1.1 and A.5.2.1.

NOTE 3: The signal power is specified per port.

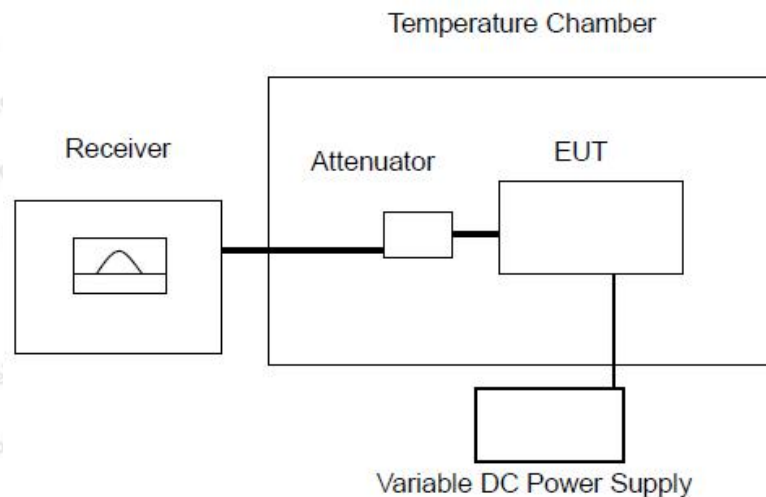
The reference receive sensitivity (REFSENS) requirement specified in table 4.2.12.1.2-1 shall be met for an uplink transmission bandwidth less than or equal to that specified in ETSI TS 136 521-1 [1], table 7.3.5-2.

13.2. Test Procedures

Please refer to ETSI EN 301 908-13 V13.1.1 clause 5.3.11.

- 1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to ETSI TS 136 521-1 [1], table 7.3.4.1-1. The SS sends downlink MAC padding bits on the DL RMC.
- 2) SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to ETSI TS 136 521-1 [1], table 7.3.4.1-1. Since the UE has no payload data to send, the UE transmits uplink MAC padding bits on the UL RMC.
- 3) Set the Downlink signal level to the appropriate REFSENS value defined in table 4.2.12.1.2-1. Send continuously uplink power control "up" commands in the uplink scheduling information to the UE to ensure the UE transmits P_{UMAX} level for at least the duration of the Throughput measurement. (obtain correct UE output power as specified in ETSI TS 136 521-1 [1]).
- 4) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of ETSI TS 136 521-1 [1].
- 5) Repeat for applicable test frequencies, channel bandwidths and operating bands.

13.3. Test Setup



13.4. Test Results

Pass

	Test Band		Band 3				
	TestEnvironment		NC				
	Test Frequencies		Midrange				
	TestChannelBandwidths		Lowest,5MHz,Highest				
	Test Parameters for Channel Bandwidths						
		DownlinkConfigurati on		Uplink Configuration			
	Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Meas. Throughput	Throughput Limit
			FDD		FDD		
TNVN	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					

	Test Band		Band 8				
	TestEnvironment		NC				
	Test Frequencies		Midrange				
	TestChannelBandwidths		Lowest,5MHz,Highest				
	Test Parameters for Channel Bandwidths						
		DownlinkConfigurati on		Uplink Configuration			
	Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Meas. Throughput	Throughput Limit
			FDD		FDD		
TNVN	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					

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	Test Band			Band 38			
	TestEnvironment			NC			
	Test Frequencies			Midrange			
	TestChannelBandwidths			Lowest,5MHz,Highest			
	Test Parameters for Channel Bandwidths						
		DownlinkConfigurati on		Uplink Configuration			
	Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Meas. Throughput	Throughput Limit
			TDD		TDD		
TNVN	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					

	Test Band			Band 40			
	TestEnvironment			NC			
	Test Frequencies			Midrange			
	TestChannelBandwidths			Lowest,5MHz,Highest			
	Test Parameters for Channel Bandwidths						
		DownlinkConfigurati on		Uplink Configuration			
	Ch BW	Mod' n	RB allocation	Mod' n	RB allocation	Meas. Throughput	Throughput Limit
			TDD		TDD		
TNVN	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TL,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VL	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					
TH,VH	IC-LMHz	QPSK	Full	QPSK	IC-L-RB	IC-L-V	≥ 95 %
	5MHz	QPSK	Full	QPSK	15,20,25	IC-5-V	≥ 95 %
	IC-HMHz	QPSK	Full	QPSK	IC-H-RB	IC-H-V	≥ 95 %
	Verdict	Pass					

14. Radiated emissions (UE)

14.1. Test Limit

Please refer to ETSI EN 301 908-1 V15.1.1 clause 4.2.2.

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 Recommendations ITU-R SM.329-12 [1] and SM.1539-1 [i.6].

The requirements shown in table 4.2.2.2-1 are only applicable for frequencies in the spurious domain.

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
$12,75 \text{ GHz} \leq f < 5^{\text{th}}$ harmonic of the upper frequency edge of the Uplink operating band in GHz	-47 dBm/1 MHz	-30 dBm/1 MHz	All (note 3)
$12,75 \text{ GHz} < f < 26 \text{ GHz}$	-47 dBm/1 MHz	-30 dBm/1 MHz	All (note 4)
$f_c - 2,5 \times 5 \text{ MHz} < f < f_c + 2,5 \times 5 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
$f_c - 2,5 \times \text{BW}_{\text{Channel}} \text{ MHz} < f < f_c + 2,5 \times \text{BW}_{\text{Channel}} \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WiMAX™
$f_c - (1,5 \times \text{BW}_{\text{Channel}} + 5) \text{ MHz} < f < f_c + (1,5 \times \text{BW}_{\text{Channel}} + 5) \text{ MHz}$ (note 1)	Not defined	Not defined	NR operating in FR1
$f_c - 2,5 \times 10 \text{ MHz} < f < f_c + 2,5 \times 10 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA TDD, 7,68 Mcps option
$f_c - 4 \text{ MHz} < f < f_c + 4 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1

NOTE 1: f_c is the UE transmit centre frequency.

NOTE 2: This frequency range is not in the spurious domain, no requirement is then defined for this frequency range.

NOTE 3: Applies for Band that the upper frequency edge of the Uplink Band more than 2,69 GHz.

NOTE 4: Applies for Band that the upper frequency edge of the Uplink Band more than 5,2 GHz.

14.2. Test configurations

Please refer to ETSI EN 301 908-1 V15.1.1 clause 5.3.1.

- The equipment shall be tested under normal test conditions;
- The test configuration shall be as close to normal intended use as possible;
- If the equipment is part of a system, or can be connected to ancillary equipment, then it shall be acceptable to test the equipment while connected to the minimum configuration of ancillary equipment necessary to exercise the ports;

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- If the equipment has a large number of ports, then a sufficient number shall be selected to simulate actual operation conditions and to ensure that all the different types of termination are tested;
- The test conditions, test configuration and mode of operation shall be recorded in the test report;
- ports which in normal operation are connected shall be connected to an ancillary equipment or to a representative piece of cable correctly terminated to simulate the input/output characteristics of the ancillary equipment, RF input/output ports shall be correctly terminated;
- ports that are not connected to cables during normal operation, e.g. service connectors, programming connectors; temporary connectors, etc. shall not be connected to any cables for the purpose of this test. Where cables have to be connected to these ports, or interconnecting cables have to be extended in length in order to exercise the EUT, precautions shall be taken to ensure that the evaluation of the EUT is not affected by the addition or extension of these cables:
 - emission tests shall be performed in two modes of operation:
 - with a communication link established (traffic mode); and
 - in the idle mode;
- the traffic mode configuration which uses the UE maximum output power for testing shall be declared by the manufacturer.

Ancillary equipment shall be tested with it connected to a UE in which case compliance shall be demonstrated to the appropriate clauses of the present document.

The results obtained shall be compared to the limits in clause 4.2.2.2 in order to prove compliance.

When the same set of Tx/Rx antennas are used for all supported radio technologies (i.e. WCDMA, E-UTRA and NR FR1), the UE could be tested only for the test configuration which corresponds to the UE's maximum output power irrespective of the radio technology. The manufacturer shall then declare if the equipment uses the same set of Tx/Rx antennas for all supported radio technologies.

14.3. Test Data

Pre-test with low, middle, high channel, the worst case as below

TX:

Band 3				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
258.8	V	-53.72	-36	17.72
462.4	V	-53.19	-36	17.19
719.0	V	-55.88	-36	19.88
3495	V	-44.94	-30	14.94
310.9	H	-55.59	-36	19.59
440.2	H	-54.54	-36	18.54
512.8	H	-53.10	-36	17.10
3495	H	-41.69	-30	11.69

Band 8				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
259.1	V	-55.40	-36	19.40
463.8	V	-56.75	-36	20.75
717.8	V	-54.34	-36	18.34
1795	V	-44.73	-30	14.73
311.3	H	-55.50	-36	19.50
440.3	H	-53.86	-36	17.86
512.9	H	-55.19	-36	19.19
1795	H	-40.75	-30	10.75

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Band 38				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
258.2	V	-53.46	-36	17.46
462.9	V	-56.33	-36	20.33
717.5	V	-54.16	-36	18.16
5190	V	-42.71	-30	12.71
311.9	H	-55.85	-36	19.85
440.4	H	-56.51	-36	20.51
512.3	H	-55.08	-36	19.08
5190	H	-42.70	-30	12.70

Band 40				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
259.5	V	-54.03	-36	18.03
463.4	V	-53.75	-36	17.75
718.9	V	-56.50	-36	20.50
4700	V	-44.25	-30	14.25
311.0	H	-54.13	-36	18.13
439.0	H	-55.76	-36	19.76
512.5	H	-54.63	-36	18.63
4700	H	-40.67	-30	10.67

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RX:

Band 3				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
258.4	V	-75.57	-57	18.57
459.5	V	-69.89	-57	12.89
714.4	V	-74.94	-57	17.94
307.7	H	-72.78	-57	15.78
436.9	H	-73.26	-57	16.26
507.6	H	-71.21	-57	14.21

Band 8				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
257.9	V	-76.20	-57	19.20
459.1	V	-69.52	-57	12.52
715.3	V	-75.69	-57	18.69
307.7	H	-72.35	-57	15.35
435.9	H	-74.67	-57	17.67
510.0	H	-71.70	-57	14.70

Band 38				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
258.6	V	-77.29	-57	20.29
458.1	V	-72.19	-57	15.19
715.5	V	-75.67	-57	18.67
307.5	H	-73.80	-57	16.80
436.3	H	-73.21	-57	16.21
510.8	H	-74.72	-57	17.72

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Band 40				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
257.8	V	-75.25	-57	18.25
458.5	V	-68.77	-57	11.77
715.5	V	-74.80	-57	17.80
308.2	H	-74.34	-57	17.34
436.4	H	-74.32	-57	17.32
511.2	H	-72.84	-57	15.84

15. Control and monitoring functions (UE)

15.1. Test Limit

Please refer to ETSI EN 301 908-1 V15.1.1 clause 4.2.4.

For NR UE operating in FR2, the maximum measured radiated power during the duration of the test shall not exceed -13 dBm.

For any other UE (including NR UE operating in FR1), the maximum measured power during the duration of the test shall not exceed -30 dBm.

15.2. Test Procedures

Please refer to ETSI EN 301 908-1 V15.1.1 clause 5.3.3.

a) At the start of the test, the UE shall be switched off. The UE antenna connector shall be connected to a power measuring equipment, with the following characteristics:

- The RF bandwidth shall exceed the total operating transmit frequency range of the UE for operation with an applicable part.
- The response time of the power measuring equipment shall be such that the measured power has reached within 1 dB of its steady state value within 100 μ s of a CW signal being applied.
- It shall record the maximum power measured.

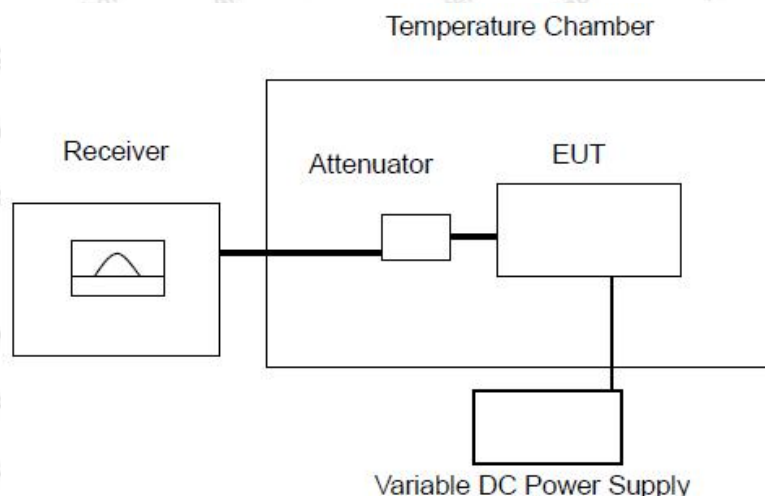
NOTE: The equipment may include a video low pass filter to minimize its response to transients or Gaussian noise peaks.

b) The UE shall be switched on for a period of approximately fifteen minutes, and then switched off.

c) The EUT shall remain switched off for a period of at least thirty seconds, and shall then be switched on for a period of approximately one minute.

d) The maximum power emitted from the UE throughout the duration of the test shall be recorded.

15.3. Test Setup



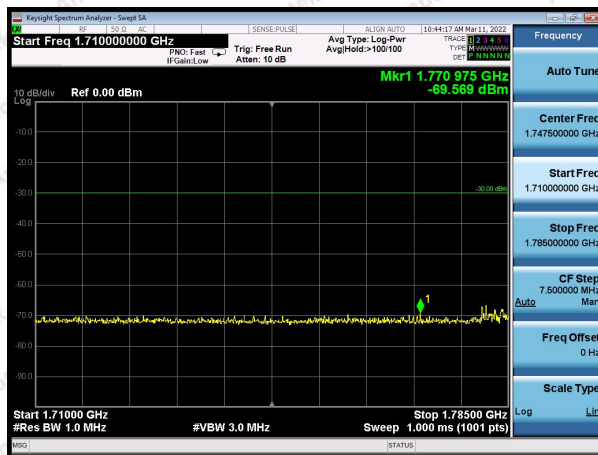
15.4. Test Results

Pass

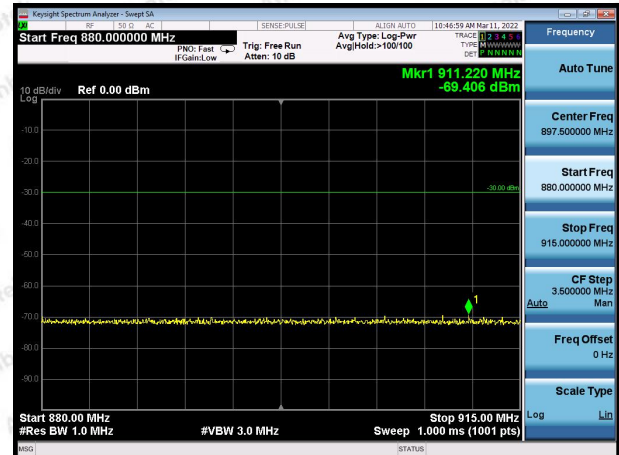
Please refer to the following Data.

Test slot

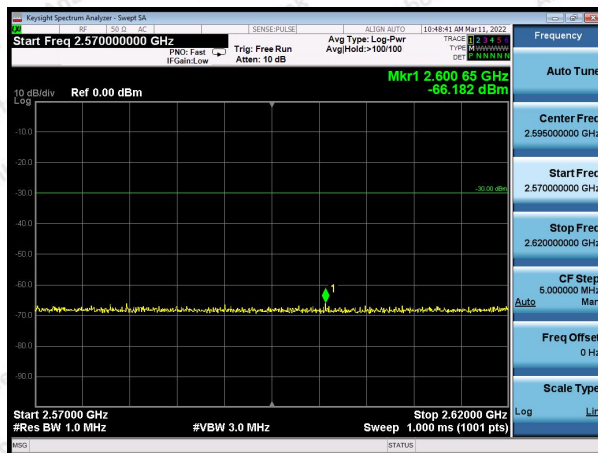
LTE Band 3



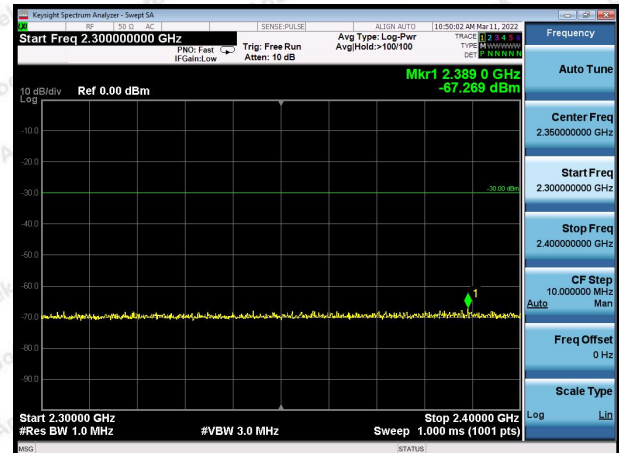
LTE Band 8



LTE Band 38



LTE Band 40



APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Radiation Emission Test



APPENDIX II – Appendix Test Data