Radio
Measurement and Test Report

For

Vonino ELectronics LTD.

Miramar Tower 10F-No.1010, 132 Nathan Road, Tsim Sha Tsui , Kowloon,

Hong Kong

Test Standard(s):	EN 301 908-1 V7.1.1 (2015-03) EN 301 908-13 V7.1.1 (2015-12)
Product Description:	Smart Phone
Tested Model:	VOLT X
Report No.:	STR16128114E-3
Tested Date:	2016-12-12 to 2016-12-21
Issued Date:	2016-12-22
Tested By:	Iven Guo / Engineer
Reviewed By:	Lahm Peng / EMC Manager
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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Vonino ELectronics LTD.
Address of applicant:	Miramar Tower 10F-No.1010, 132 Nathan Road, Tsim Sha Tsui , Kowloon, Hong Kong
Manufacturer:	Gui zhou Fortuneship Technology Co., Ltd.
Address of manufacturer:	No. 4 Plant, High-tech Industrial Park, Xinpu Economic Development Zone) Jingkai Road, Xinpu Jingkai District, Xinpu New District, Zunyi City, Guizhou Province, P. R. China

General Description of EUT	
Product Name:	Smart Phone
Brand Name:	vonino
Model No.:	VOLT X
Adding Model(s):	/
Rated Voltage:	DC 3.8V by Battery
Battery Capacity:	4000mAh
Adapter Model:	JT288-05100 Input: 100-240Vac, 50/60Hz, 0.15A Output: 5.0V⎓, 1A
Software Version:	Vonino_v1.1.1_20161130
Hardware Version:	F1-4G-V60-CF9-KS670
Note: The test data is gathered from a production sample, provided by the manufacturer. The product have two SIM, Test is carry on SIM1 which is the worst case	

Technical Characteristics of EUT	
4G	
Support Bands:	FDD-LTE Band 1, 3, 7, 20 TDD-LTE Band 38
Frequency Range:	FDD-LTE Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz
	FDD-LTE Band 3: Tx: 1710-1785MHz, Rx: 1805-1880MHz
	FDD-LTE Band 7: Tx: 2500-2570MHz, Rx: 2620-2690MHz
	FDD-LTE Band 20: Tx: 832-862MHz, Rx: 791-821MHz
	TDD-LTE Band 38: Tx: 2570-2620MHz, Rx: 2570-2620MHz
Max.RF Output Power:	FDD-LTE Band 1: 23.98dBm,FDD-LTE Band 3: 24.32dBm FDD-LTE Band 7: 22.46dBm, FDD-LTE Band 20: 24.72dBm, TDD-LTE Band 38: 24.25dBm
Modulation Type:	QPSK, 16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	FDD-LTE Band 1: -0.1dBi, FDD-LTE Band 3: 0.6dBi, FDD-LTE Band 7: 0.2dBi, FDD-LTE Band 20: -1.3dBi TDD-LTE Band 38: 0.2dBi

1.2 Test Standards

The following report is prepared on behalf of the Vonino ELectronics LTD. in accordance with ETSI EN 301908-1 V6.2.1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive. And the harmonize standard ETSI EN 301 908-13 V7.1.1, IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE) This standard refers to ETSI TS 134 121-1 V9.1.0(2010-07), which is based on ETSI Specification Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 9.1.0 Release 9). Every time when standard TS 134 121-1 is mentioned in this test report without version or date than ETSI TS 136 521-1 (V11.1.0) (07-2013) is the only valid reference.

The objective of the manufacturer is to determine compliance with ETSI EN 301 908-13 V7.1.1, IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE) covering essential requirements of article 3.2 of the R&TTE Directive.
Abbreviations and acronyms you may find in ETSI Technical Report ETR 350 November 1996.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which maybe results in lowering the emission/immunity should be checked to ensure that compliance has been maintained.

1.3 Test Facility

- **FCC – Registration No.: 934118**
  Shenzhen SEM.Test Technology Co., Ltd. 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 and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**
  The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. Has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Technology Co., Ltd. Is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

1.4 Test Equipment List and Details

Kind of Equipment	Manufacturer	Type	S/N	Cal Date	Due Date
Equipment list of < Shenzhen SEM.Test Technology Co., Ltd.>					
Test SIM card	-		-	N/A	N/A
Wireless Communications Test Set	Agilent	E5515C	MY48365163	2016-06-04	2017-06-03
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420128	2016-06-04	2017-06-03
EPM Series Power Meter	Agilent	E4418B	MY50000188	2016-06-04	2017-06-03
E-Series Power Sensor	Agilent	E9304A	MY50000187	2016-06-04	2017-06-03
Mobile Communication DC Source	Agilent	66319D	MY43003946	2016-06-04	2017-06-03
Universal Switck Control Unit	Agilent	N9370A	MY46130177	N/A	N/A
RF Interface Box	Agilent	N1960-80103	MY45490191	N/A	N/A
GSM Filter Module	Agilent	N1960-80104	MY45490185	N/A	N/A
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2016-06-04	2017-06-03
ESG Vector Signal Generator	Agilent	E4438C	MY49070163	2016-06-04	2017-06-03
Temperature & Humidity Chamber	Agilent	TH-1P-B	WIT-05121302	2016-06-04	2017-06-03
Temperature/Humidity Meter	Agilent	ZC1-2	TR7-TH	2016-06-04	2017-06-03
Spectrum Analyzer	R&S	FSP	836079/035	2016-06-04	2017-06-03
Pre-amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
Pre-amplifier	Compliance Direction	PAP-0118	24002	2016-06-04	2017-06-03
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2016-06-04	2017-06-03
Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
Signal Generator	Rohde & Schwarz	SMR20	100047	2016-06-04	2017-06-03
Universal Radio Communication Tester	Agilent	CMW500	/	2016-06-04	2017-06-03
Signal Analyzer	Agilent	N9020A	/	2016-06-04	2017-06-03
Signal Generator	Agilent	N5182A	/	2016-06-04	2017-06-03

1.5 Environmental conditions for testing

General conditions (GC) as stated in ETSI TS 136 521-1 (V11.1.0) (07-2013) Annex G G1 This normative annex specifies the environmental requirements of the UE. Within these limits the requirements of the present documents shall be fulfilled.
For extreme test conditions (TC2.2) the manufacturer declared the low voltage to 3.3 V (for Lithium-Ion battery). Higher extreme voltages of 4.2V.
If not other noted, the temperature was in range of +15 ℃ to +35 ℃, the relative humidity was in the range of 20% to 95% and the DC power supply voltage was set to 3.7V (normal test conditions TC2.1).
Note: The relative humidity during all the tests is higher than the mentioned 20%-75% in ETSI TS 136 521-1 (V11.1.0) (07-2013) for test conditions. Since the weather situation in the testing area gives always this humidity level, all tests are performed within this range. No extra notification in the single test clauses is done.

Table 1 Parameters for normal test conditions TC2.1

Temperature:	+15 ℃ to + 35 ℃
Voltage	3.8V
Humidity	20%-95%

Table 2 Parameters for extreme test conditions TC2.2

Temperature:	+55 ℃	+55 ℃	-10 ℃	-10 ℃
Voltage	3.3V	4.2V	3.3V	4.2V

For the Vibration requirements (TC4) as stated in ETSI TS 136 521-1 (V11.1.0) (07-2013) Annex G G2.3.1 the following conditions apply

Table 3 Parameter for vibration requirements TC4

Frequency in Hz	ASD in m^2/s^3
5-20	0,96
20-500	0,96 at 20 Hz, thereafter –5dB/octave

2. SUMMARY OF TEST RESULTS

Conformance requirement according to EN 301 908-13					
No.	**Reference**	**EN-R (note)**	**TS 136 521-1 Clause**	**Verdict**	**Note**
1	4.2.2	Transmitter maximum output power	6.2.2	Yes	Appendix A
2	4.2.3	Transmitter spectrum emission mask	6.6.2.1	Yes	Appendix B
3	4.2.4	Transmitter spurious emission	6.6.3	Yes	Appendix C
4	4.2.5	Transmitter minimum output power	4.2.5	Yes	Appendix D
5	4.2.6	Receiver adjacent channel selectivity	7.5	Yes	Appendix E
6	4.2.7	Receiver blocking characteristics	7.6	Yes	Appendix F
7	4.2.8	Receiver spurious response	7.7	Yes	Appendix G
8	4.2.9	Receiver intermediation characteristics	6.7	Yes	Appendix H
9	4.2.10	Receiver spurious emission	7.9	Yes	Appendix I
10	4.2.11	Transmitter adjacent channel leakage power ratio	4.2.11	Yes	Appendix J
Conformance requirement according to EN 301 908-1					
12	4.2.2	Radiated emissions	/	Yes	/
13	4.2.4	Control and monitoring functions	/	Yes	/

Yes **Test shall be performed**
N/A **Test not applicable**

Detailed information's, which test data/plots are to find in Appendix 1.

3. Essential radio test suites

3.1 Transmitter maximum output power

Clause 6.2.2 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.1.1 Definition and applicability

To verify that the error of the UE maximum output power does not exceed the range prescribed by the specified nominal maximum output power and tolerance.
An excess maximum output power has the possibility to interfere to other channels or other systems. A small maximum output power decreases the coverage area.
This test case applies to all types of E-UTRA UE release 8 and forward.

3.1.2 Conformance requirements

Test environment: normal, TL/VL,TL/VH,TH/VL,TH/VH (see section 1.6).
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.

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	±2,7
3	23	±2,7 (see note)
7	23	±2,7 (see note)
8	23	±2,7 (see note)
20	23	±2,7 (see note)
33	23	±2,7
34	23	±2,7
38	23	±2,7
40	23	±2,7
42	23	+3,0/-4,0
43	23	+3,0/-4,0
NOTE: For transmission bandwidths (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 in subject to certain transmission conditions specified in TS 136 101 [4], 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 TS 136 101 [4], clause 6.2.2. The values in table 4.2.2.1.2-1 correspond to the measurement limits taking into account the measurement uncertainty of measurement equipment (see clause 5.2).

3.1.3 Set up for testing

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 table 6.2.2.1.4.1-1 of 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.
2) 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 PUMAX level.
3) 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.
4) Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

3.1.4 Test result

Test result transmitter maximum output power

Please refer to the Appendix A

3.2 Transmitter spectrum emission mask

Clause 6.6.2.1 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.2.1 Definition and applicability

Out of band emissions are unwanted emissions immediately outside the nominal channel resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a Spectrum Emission Mask and Adjacent Channel Leakage power Ratio.

This test case applies to all types of E-UTRA UE release 8 and forward.

3.2.2 Conformance requirements

Test environment: normal (see section 1.6).
Frequencies to be tested: low range, mid range and high range; as specified in TS 136 508 [2], clause 4.3.1.
Channel bandwidths to be tested: lowest, 5 MHz, 10 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.

The power of any UE emission shall fulfil requirements in tables 4.2.3.1.2-1 and 4.2.3.1.2-2.

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 are to 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

	Spectrum emission limit (dBm)/ Channel bandwidth						
Δf_{OOB} (MHz)	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Measurement bandwidth
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		-23,2	-11,2	-11,2	-11,2	-11,2	1 MHz
6 to 10			-23,2				1 MHz
10 to 15				-23,2			1 MHz
15 to 20					-23,2		1 MHz
20 to 25						-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 are to 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.

3.2.3 Set up for testing

1) SS sends uplink scheduling information via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to 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 PUMAX 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 band combinations.

3.2.4 Test result

Test result transmitter spectrum emission mask as:

Please refer to the Appendix B

3.3 Transmitter spurious emissions

Clause 6.6.3 of ETSI ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.3.1 Definition and applicability

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. The spurious emission limits are specified in terms of general requirements in line with Recommendation ITU-R SM.329-12 [i.5] and E-UTRA operating band requirement to address UE co-existence. 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.

3.3.2 Conformance requirements

Test environment: normal condition (see section 1.6).
Frequencies to be tested: low range, mid range, high range; see TS 136 508 [2].
Channel bandwidth to be tested: lowest, 5 MHz and highest channel bandwidth as defined in TS 136 508 [2].
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.

The spurious emission limits in table 4.2.4.1.2-2 apply for the frequency ranges that are more than ΔfOOB (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 and 4.2.4.1.2-4.

Table 4.2.4.1.2-1: Δf_{OOB} boundary between E-UTRA channel and spurious emission domain

Channel bandwidth	1,4 MHz	3,0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Δf_{OOB} (MHz)	2,8	6	10	15	20	25

Table 4.2.4.1.2-2: General spurious emissions limits

Frequency range	Maximum level	Measurement bandwidth	Comment
9 kHz ≤ f < 150 kHz	-36 dBm	1 kHz	
150 kHz ≤ f < 30 MHz	-36 dBm	10 kHz	
30 MHz ≤ f < 1 000 MHz	-36 dBm	100 kHz	
1 GHz ≤ f < 12,75 GHz	-30 dBm	1 MHz	
12,75 GHz ≤ f < 5th harmonic of the upper frequency edge of the UL operating band in GHz	-30 dBm	1 MHz	See note
NOTE: Applies for Band 42 and Band 43.			

NOTE 1: In order that the measurement of spurious emissions falls within the frequency ranges that are more than ΔfOOB (MHz) from the edge of the channel bandwidth, the minimum offset of the measurement frequency from each edge of the channel should be Δf_{OOB} + MBW/2. MBW denotes the measurement bandwidth defined in table 4.2.4.1.2-2.

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.

3.3.3 Set up for testing

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 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 PUMAX level.
3) For each applicable requirement in tables 4.2.4.1.2-2, 4.2.4.1.2-3 and 4.2.4.1.2-4; Measure the power of the transmitted signal with a measurement filter of bandwidths. The center 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 band combinations.

3.3.4 Test result

Please refer to the Appendix C

3.4 Transmitter minimum output power

Clause 4.2.5 of EN 301 908-13 V7.1.1 applies.

RESULT: Pass

3.4.1 Definition and applicability

The minimum controlled output power of the UE is defined as the broadband transmit power of the UE, i.e. the power in the channel bandwidth for all transmit bandwidth configurations (resource blocks), when the power is set to a minimum value.

3.4.2 Conformance requirements

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH (see section 1.6)
Frequencies to be tested: low range, mid range and high range; see TS 136 508 [2].
Channel bandwidths to be tested: lowest, 5 MHz and highest channel bandwidth, as specified 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.

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 ≤ 3,0 GHz: ≤ -39 dBm For carrier frequency 3,0 GHz < f ≤ 4,2 GHz: ≤ -38,7 dBm					
Measurement bandwidth	1,08 MHz	2,7 MHz	4,5 MHz	9,0 MHz	13,5 MHz	18 MHz

3.4.3 Set up for testing

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 TS 136 521-1 [1], table 6.3.2.1.4.1-1. 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 4.5.2.1-1 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 band combinations and environmental conditions.
Details of the test method can be found in TS 136 521-1 [1], clause 6.3.2.

3.4.4 Test result

Test result transmitter minimum output power

Please refer to the Appendix D

3.5 Receiver adjacent channel selectivity

Clause 7.5 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.5.1 Definition and applicability

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive an E-UTRA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

3.5.2 Conformance requirements

Test environment: normal (see section 1.6).
Frequencies to be tested: mid range see TS 136 508 [2].
Channel bandwidth 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 and interfering source 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 and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.5.4.1-1.
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.

The throughput R_{av} shall be $\geqslant$ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1] under the conditions specified in table 4.2.6.2-2 and also under the conditions specified in table 4.2.6.2-3.

Table 4.2.6.2-1: Adjacent channel selectivity

		Channel bandwidth					
Rx Parameter	Units	1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
ACS	dB	33,0	33,0	33,0	33,0	30	27

Table 4.2.6.2-2: 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					
$P_{Interferer}$	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
$BW_{Interferer}$	MHz	1,4	3	5	5	5	5
$F_{Interferer}$ (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_{CMAX_L} or $P_{CMAX\_L\_CA}$ as defined in clause 6.2.5 in TS 136 101 [4].							
NOTE 2: The interferer consists of the Reference measurement channel specified in clause A.3.2 of TS 136 521-1 [1] with set-up according to clause C.3.1 of TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in TS 136 521-1 [1].							

Table 4.2.6.2-3: 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
$P_{Interferer}$	dBm	-25					
$BW_{Interferer}$	MHz	1,4	3	5	5	5	5
$F_{Interferer}$ (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_{CMAX_L} or $P_{CMAX\_L\_CA}$ as defined in clause 6.2.5 in TS 136 101 [4].							
NOTE 2: The interferer consists of the Reference measurement channel specified in clause A.3.2 of TS 136 521-1 [1] with set-up according to clause C.3.1 of TS 136 521-1 [1].							

3.5.3 Set up for testing

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.6.2-2 (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 4.2.6.2-2 (Case 1) for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the Throughput measurement (obtain correct UE output power as specified in TS 136 521-1 [1]).
4) Set the Interferer signal level to the value as defined in table 4.2.6.2-2 (Case 1) and frequency below the wanted signal, using a modulated interferer as defined in 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 TS 136 521-1 [1].

6) Set the Downlink signal level to the value as defined in table 4.2.6.2-3 (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 4.2.6.2-3 (Case 2) for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement (obtain correct UE output power as specified in TS 136 521-1 [1]).
7) Set the Interferer signal level to the value as defined in table 4.2.6.2-3 (Case 2) and frequency below the wanted signal, using a modulated interferer as defined in TS 136 521-1 [1], annex D.
8) Measure the average throughput for a duration sufficient to achieve statistical significance according to 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 band combinations.

3.5.4 Test result

Please refer to the Appendix E

3.6 Receiver blocking characteristics

Clause 7.6 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.6.1 Definition and applicability

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

3.6.2 Conformance requirements

Test environment: normal (see section 1.6).
For In-band blocking, the frequencies to be tested are mid range as defined in TS 136 508 [2].
For Out of band blocking, the frequency to be tested is low or high range as defined in TS 136 508 [2].
For Narrow-band blocking, the frequencies to be tested are mid range as defined in TS 136 508 [2].
Channel bandwidth to be tested: lowest, 5 MHz and highest channel bandwidth as defined in TS 136 508 [2], clause 4.3.1. Range 3 of out-of-band blocking is tested only with highest bandwidth.
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.3.1 and uplink signals according to clauses H.1 and H.3.0.
4) The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.6.2.4.1-1.
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.

With parameters specified in tables 4.2.7.2-1 and 4.2.7.2-2, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1].
With parameters specified in tables 4.2.7.2-3 and 4.2.7.2-4, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1], except for the spurious response frequencies.
For table 4.2.7.2-4 in frequency range 1, 2 and 3, up to ⌈⌉()6/6,24maxRBN· exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size, where RBN is the number of resource blocks in the downlink transmission bandwidth configuration. For these exceptions the requirements of clause 4.2.8 Spurious response are applicable.

With parameters specified in table 4.2.7.2-5, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1].

Table 4.2.7.2-1: 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
$F_{loffset, case\ 1}$	MHz	2,1125	4,5075	7,5125	7,5025	7,5075	7,5125
$F_{loffset, case\ 2}$	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 TS 136 101 [4] (table 7.3.1-2 with P_{CMAX_L} as defined in clause 6.2.5).							
NOTE 2: The interferer consists of the Reference measurement channel specified in clause A.3.2 of TS 136 521-1 [1] with a set-up according to clause C.3.1 of TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in TS 136 521-1 [1].							

Table 4.2.7.2-2: In-band blocking

E-UTRA band	Parameter	Units	Case 1	Case 2
	$P_{Interferer}$	dBm	-56	-44
	$F_{Interferer}$ (Offset)	MHz	= -BW/2 - $F_{loffset, case\ 1}$ and = +BW/2 + $F_{loffset, case\ 1}$	≤ -BW/2 - $F_{loffset, case\ 2}$ and ≥ +BW/2 + $F_{loffset, case\ 2}$
1, 3, 7, 8, 20, 33, 34, 38, 40	$F_{Interferer}$	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 - Floffset, case 1; and b) the carrier frequency + BW/2 + Floffset, case 1.				
NOTE 3: $F_{Interferer}$ range values for unwanted modulated interfering signal are interferer center frequencies.				

Table 4.2.7.2-3: 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 TS 136 101 [4] (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 TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in TS 136 521-1 [1].							

Table 4.2.7.2-4: 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, 33, 34, 38, 40	$F_{Interferer}$ (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: Range 3 shall be tested only with the highest channel bandwidth.					

Table 4.2.7.2-5: Narrow-band blocking

Parameter	Unit	Channel Bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
P_w	dBm	$P_{REFSENS}$ + 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 Δf = 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 TS 136 101 [4] (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 TS 136 521-1 [1]. NOTE 3: REFSENS as defined in TS 136 521-1 [1].							

3.6.3 Set up for testing

In-Of-Band Procedure

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.7.2-1 and 4.2.7.2-2 as specified in TS 136 521-1 [1].

4) Set the downlink signal level according to the table 4.2.7.2-1. 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 4.2.7.2-1 for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].

5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of 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 TS 136 521-1 [1], table 7.6.1.4.2-1. 8) Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Out-Of-Band Procedure

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.7.2-4 as specified in TS 136 521-1 [1]. The frequency step size is 1 MHz.

4) Set the downlink signal level according to the table 4.2.7.2-3. 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 4.2.7.2-3 for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].

5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of TS 136 521-1 [1].

6) For table 4.2.7.2-4 record the frequencies for which the throughput does not meet the requirements. 7) Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Narrow-Band Procedure

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.7.2-5 as specified in TS 136 521-1 [1].

4) Set the downlink signal level according to the table 4.2.7.2-5. 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 4.2.7.2-5 for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].

5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of 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 band combinations.

3.6.4 Test result

Please refer to the Appendix F

3.7 Receiver spurious response

Clause 7.7 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.7.1 Definition and applicability

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the out-of-band blocking limit as specified in table 4.2.7.2-4 is not met.

3.7.2 Conformance requirements

Test environment: normal (see section 1.6).
Frequencies to be tested: mid range; see TS 136 508 [2].
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 and interfering sources 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, C.3.1 and uplink signals according to clauses H.1 and H.3.1.
4) The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.8.4.1-1.
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.

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1] with parameters specified in tables 4.2.8.2-1 and 4.2.8.2-2.

Table 4.2.8.2-1: Spurious response parameters

Rx Parameter	Units	Channel bandwidth					
		1,4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Power in Transmission 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 TS 136 101 [4] (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 TS 136 521-1 [1].							
NOTE 3: REFSENS as defined in TS 136 521-1 [1].							

Table 4.2.8.2-2: Spurious Response

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

3.7.3 Set up for testing

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.8.2-2. The spurious frequencies are taken from step 5) records in clause 5.3.6.1.2.
4) Set the downlink signal level according to the table 4.2.8.2-1. 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 4.2.8.2-1 for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].
5) For the spurious frequency, measure the average throughput for a duration sufficient to achieve statistical significance.

3.7.3 Test result

Please refer to the Appendix G

3.8 Receiver intermodulation charactistics

Clause 6.7 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.8.1 Definition and applicability

Intermodulation response rejection is a measure of the capability of the receiver to receiver a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

3.8.2 Conformance requirements

Test environment: normal (see section 1.6).
Frequencies to be tested: mid range; see TS 136 508 [2].
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 and interfering sources 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, C.3.1 and uplink signals according to clauses H.1 and H.3.1.
4) The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.8.4.1-1.
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.

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in TS 136 521-1 [1] with parameters specified in table 4.2.9.2-1 for the specified wanted signal mean power in the presence of two interfering signals.

Table 4.2.9.2-1: 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
$P_{Interferer\ 1}$ (CW)	dBm	-46					
$P_{Interferer\ 2}$ (Modulated)	dBm	-46					
$BW_{Interferer\ 2}$		1,4	3	5			
$F_{Interferer\ 1}$ (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			
$F_{Interferer\ 2}$ (Offset)	MHz	$2 \times F_{Interferer\ 1}$					
NOTE 1: The transmitter shall be set to 4 dB below P_{CMAX_L} at the minimum uplink configuration specified in TS 136 101 [4] (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 TS 136 521-1 [1].							
NOTE 3: The modulated interferer consists of the Reference measurement channel specified in clause A.3.2 of TS 136 521-1 [1] with set-up according to clause C.3.1 of TS 136 521-1 [1]. The interfering modulated signal is 5 MHz E-UTRA signal as described in annex D for channel bandwidth ≥ 5 MHz.							
NOTE 4: REFSENS as defined in TS 136 521-1 [1].							

3.8.3 Set up for testing

1) SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to 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 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 4.2.9.2-1. 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 4.2.9.2-1 for carrier frequency f ≤ 3,0 GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz < f ≤ 4,2 GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].
4) Set the Interfering signal levels to the values as defined in table 4.2.9.2-1, using a modulated interferer bandwidth as defined in annex D of TS 136 521-1 [1].
5) Measure the average throughput for a duration sufficient to achieve statistical significance according to clause G.2 of TS 136 521-1 [1].
6) Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

3.8.4 Test result

Please refer to the Appendix H

3.9 Receiver spurious emissions

Clause 7.9 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.9.1 Definition and applicability

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

3.9.2 Conformance requirements

Test Environment: normal (see section 1.6).
Frequencies to be tested: low range, mid range and high range; as specified in TS 136 508 [2], clause 4.3.1.
Channel bandwidth to be tested: 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 a spectrum analyzer (or other suitable test equipment) 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.3.1.
4) The DL 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.

The power of any narrow band CW spurious emission shall not exceed the maximum level specified in Table 7.9.3-1

Table 7.9.3-1: General receiver spurious emission requirements

Frequency Band	Measurement Bandwidth	Maximum level	Note
30MHz ≤ f < 1GHz	100 kHz	-57 dBm	
1GHz ≤ f ≤ 12.75 GHz	1 MHz	-47 dBm	
12.75 GHz ≤ f ≤ 5th harmonic of the upper frequency edge of the DL operating band in GHz	1 MHz	-47 dBm	Note 1
Note 1: Applies only for Band 22, Band 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 Annex C.3.1.			

3.9.3 Set up for testing

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 band combinations.

Details of the test method can be found in TS 136 521-1 [1], clause 7.9.

3.9.4 Test result

Please refer to the Appendix I

3.10 Transmitter adjacent channel power leakage ratio

Clause 4.2.11 of ETSI TS 136 521-1 (V11.1.0) (07-2013) applies.

RESULT: Pass

3.10.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the filtered mean power centred on the assigned channel frequency to the filtered mean power centred on an adjacent channel frequency

3.10.2 Conformance requirements

Test Environment: normal, TL/VL, TL/VH, TH/VL and TH/VH, as specified in(see section 1.6) .
Frequencies to be tested: low range, mid range and high range; see TS 136 508 [2].
Channel bandwidth to be tested: lowest, 5 MHz, 10 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 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.

If the measured adjacent channel power is greater than -50 dBm then the measured E-UTRAACLR 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 UTRAACLR1, UTRAACLR2 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 x $BW_{UTRA}/2$ / -2,5 - 3 x $BW_{UTRA}/2$	5 + 3 x $BW_{UTRA}/2$ / -5 - 3 x $BW_{UTRA}/2$	7,5 + 3 x $BW_{UTRA}/2$ / -7,5 - 3 x $BW_{UTRA}/2$	10 + 3 x $BW_{UTRA}/2$ / -10 - 3 x $BW_{UTRA}/2$
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: Applicable for E-UTRA FDD co-existence with UTRA FDD in paired spectrum.
NOTE 2: Applicable for E-UTRA TDD co-existence with UTRA TDD in unpaired spectrum.
NOTE 3: BW_{UTRA} for UTRA FDD is 5 MHz and for UTRA TDD is 1,6 MHz.

3.10.3 Set up for testing

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 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 PUMAX 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-UTRAACLR.
8) Calculated the ratio of the power between the values measured in step 4) over step 6) for UTRAACLR1, UTRAACLR2.
9) Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

Details of the test method can be found in TS 136 521-1 [1], clause 6.6.2.3.

3.110.4 Test result

Please refer to the Appendix J

3.12 Radiated emissions

Clause 4.2.2 of ETSI EN 301 908-1 V6.2.1 applies.

RESULT: Pass

3.12.1 Definition and applicability

This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port.

This test is applicable to radio communications equipment and ancillary equipment.

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

3.12.2 Conformance requirements

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

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
fc - 2,5 × 5 MHz < f < fc + 2,5 × 5 MHz		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
fc - 2,5 × $BW_{Channel}$ MHz < f < fc + 2,5 × $BW_{Channel}$ MHz		Not defined	E-UTRA FDD, E-UTRA TDD, UMB
fc - 2,5 × 10 MHz < f < fc1 + 2,5 × 10 MHz		Not defined	UTRA TDD, 7,68 Mcps option
fc - 4 MHz < f < fc + 4 MHz		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1
fc - 500 kHz < f < fc + 500 kHz		Not defined	UWC 136, 200 kHz option
fc - 250 kHz < f < fc + 250 kHz		Not defined	UWC 136, 30 kHz option
NOTE: fc is the UE transmit centre frequency.			

3.12.3 Set up for testing

Whenever possible the test site should be a fully anechoic chamber simulating the free-space conditions. EUT shall be placed on a non-conducting support. Mean power of any spurious components shall be detected by the test antenna and measuring receiver (e.g. a spectrum analyser).

At each frequency at which a component is detected, the EUT shall be rotated to obtain maximum response, and the effective radiated power (e.r.p.) of that component determined by a substitution measurement, which shall be the reference method. The measurement shall be repeated with the test antenna in the orthogonal polarization plane.
NOTE: Effective radiated power (e.r.p.) refers to the radiation of a half wave tuned dipole instead of an isotropic antenna. There is a constant difference of 2,15 dB between e.i.r.p. and e.r.p.
e.r.p. (dBm) = e.i.r.p. (dBm) - 2,15 (ITU-R Recommendation SM.329-10 [3], annex 1).

Measurements are made with a tuned dipole antenna or a reference antenna with a known gain referenced to an isotropic antenna. Unless otherwise stated, all measurements are done as mean power (RMS).

If a different test site or method is used, this shall be stated in the test report. The results shall be converted to the reference method values and the validity of the conversion shall be demonstrated.

3.12.4 Test result

Traffic Mode

Frequency range	Max. measure value (dBm)	Test result
30MHz to 1GHz	<-36	Pass
1GHz to 12.75GHz	<-30	Pass

Idle Mode

Frequency range	Max. measure value (dBm)	Test result
30MHz to 1GHz	<-57	Pass
1GHz to 12.75GHz	<-47	Pass

Measurement uncertainty	between 30 MHz and 180 MHz	+/-5.0dB
	between 180 MHz and 12,75 GHz	+/-3.0dB

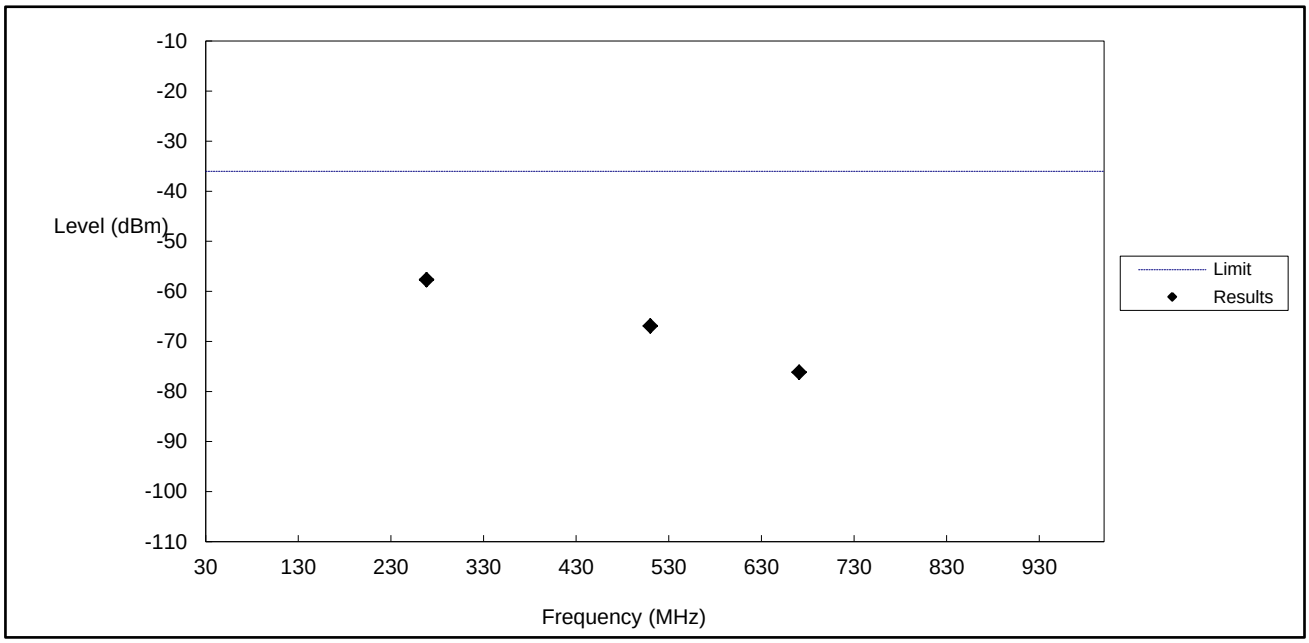
Please refer to the following test plots and data

For LTE Band 1(*Worst Case*)

Radiated Spurious Emissions(30MHz-1GHz)

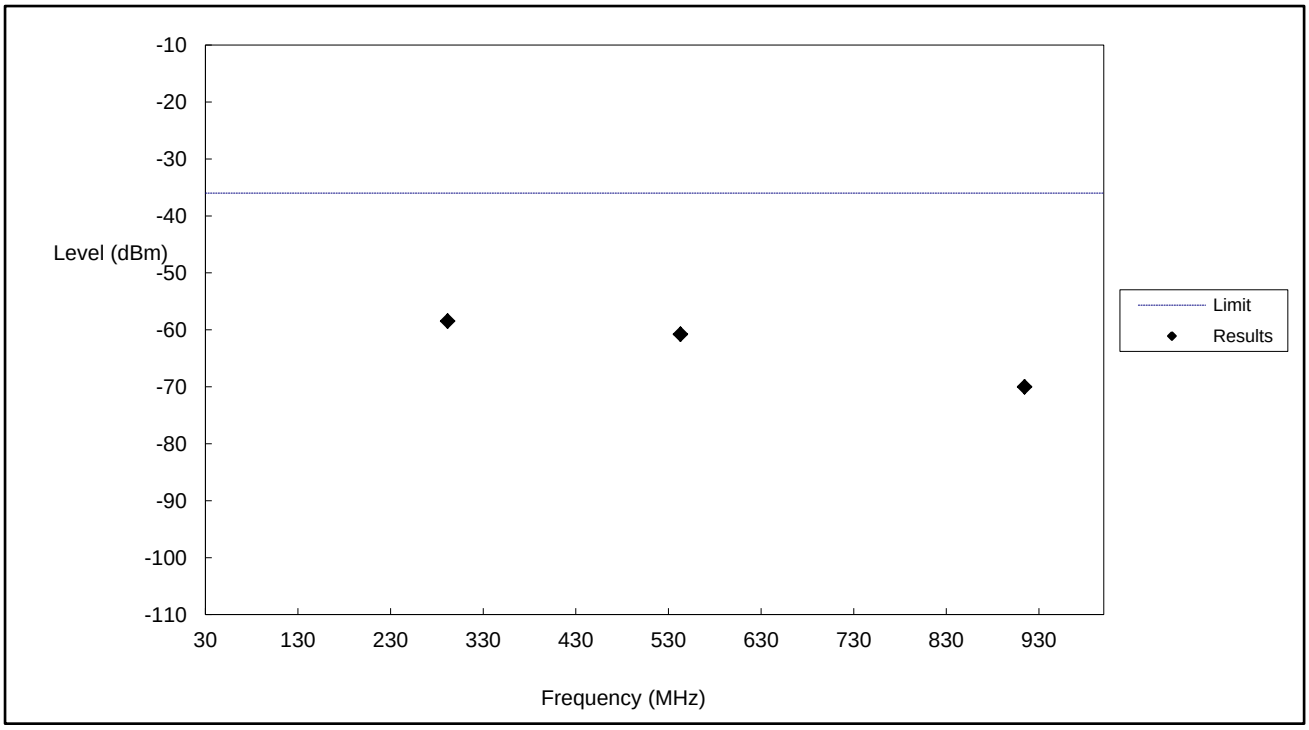
Test Mode: Traffic

Horizontal:



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	268.4615	-57.69	-36.00	-21.69	RMS
2	510.0000	-66.92	-36.00	-30.92	RMS
3	670.7692	-76.15	-36.00	-40.15	RMS

Vertical:



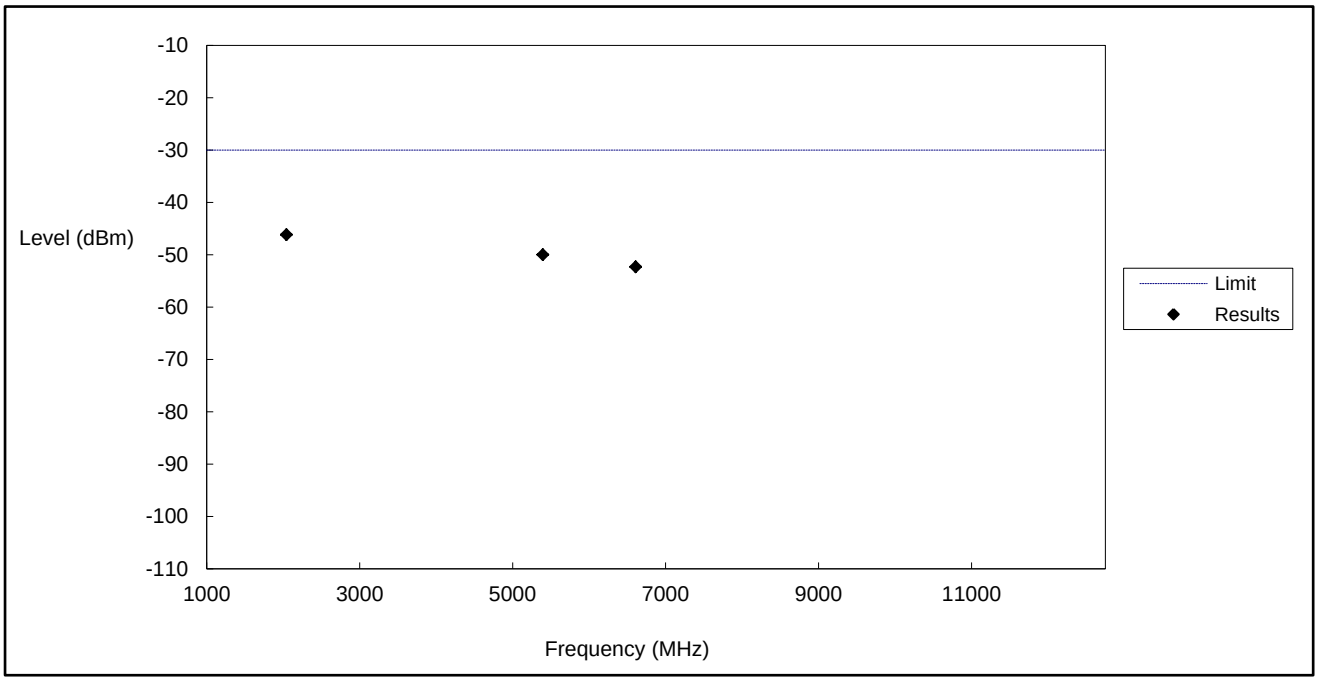
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	291.5385	-58.46	-36.00	-22.46	RMS
2	543.0769	-60.77	-36.00	-24.77	RMS
3	914.6154	-70.00	-36.00	-34.00	RMS

For LTE Band 7(*Worst Case*)

Radiated Spurious Emissions(above 1GHz)

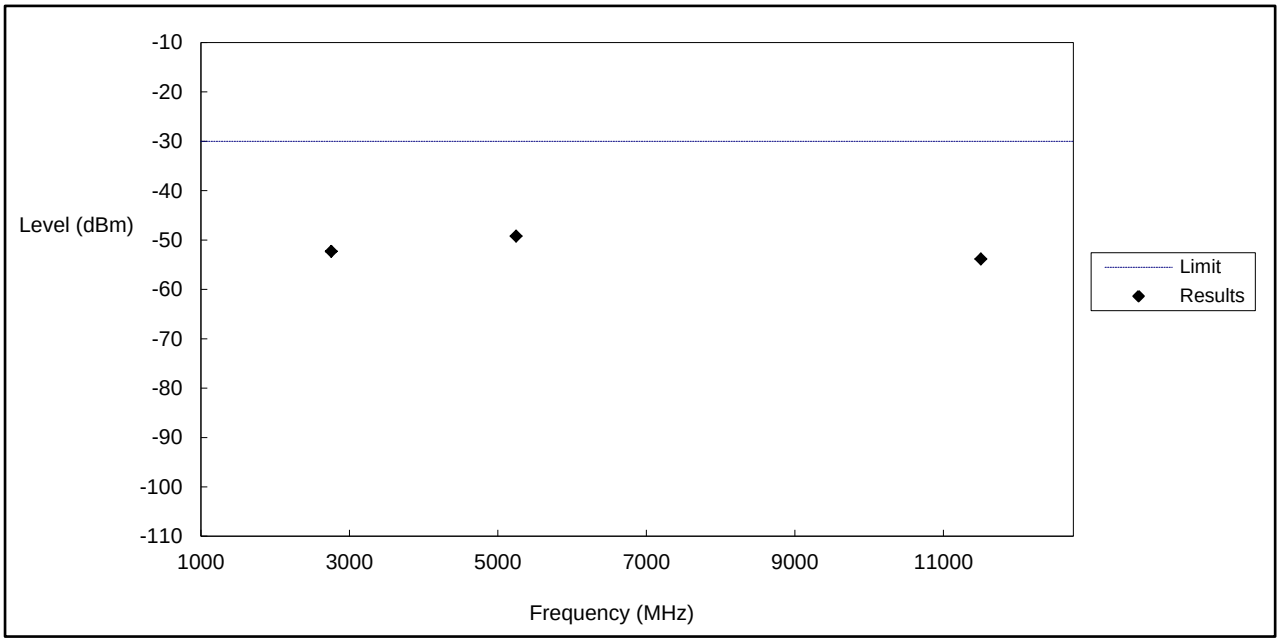
Test Mode: Traffic

Horizontal:



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	2043.0769	-46.15	-30.00	-16.15	RMS
2	5394.6154	-50.00	-30.00	-20.00	RMS
3	6610.0000	-52.31	-30.00	-22.31	RMS

Vertical:



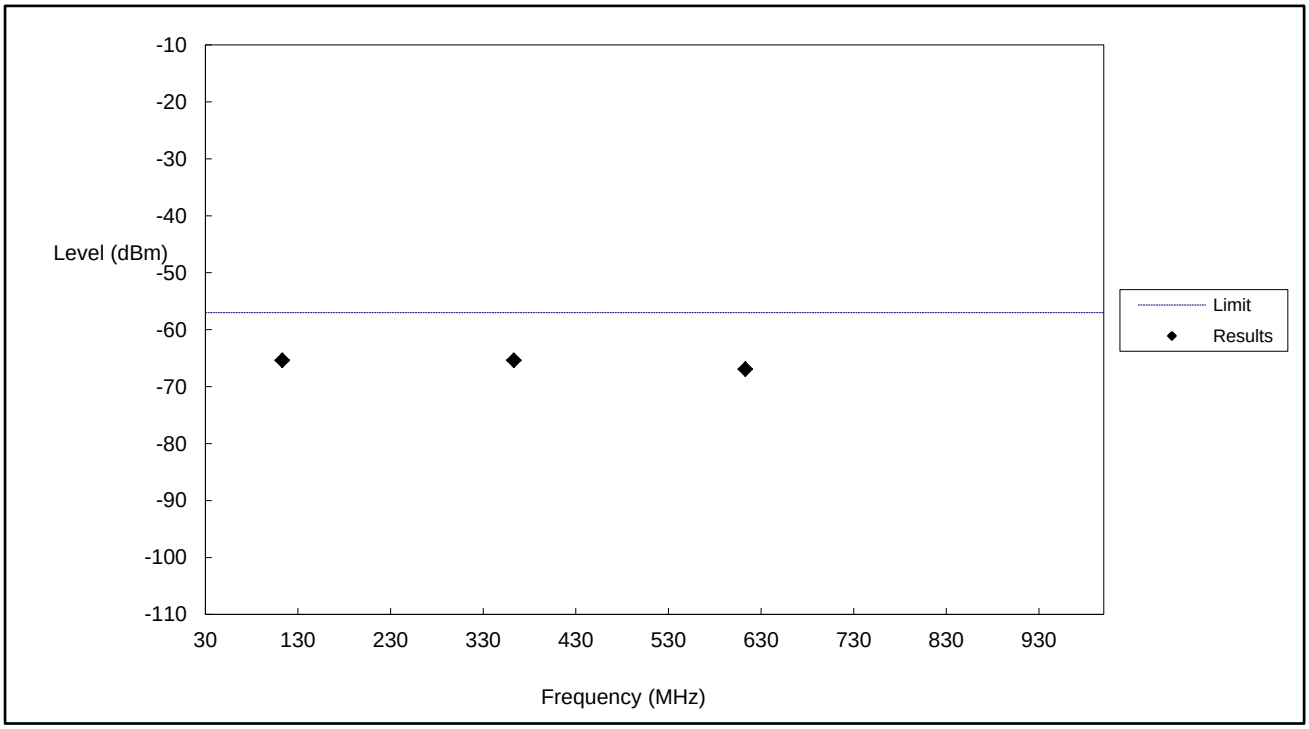
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	2755.3846	-52.31	-30.00	-22.31	RMS
2	5246.1538	-49.23	-30.00	-19.23	RMS
3	11504.6154	-53.85	-30.00	-23.85	RMS

For LTE Band 3(*Worst Case*)

Radiated Spurious Emissions(30MHz-1GHz)

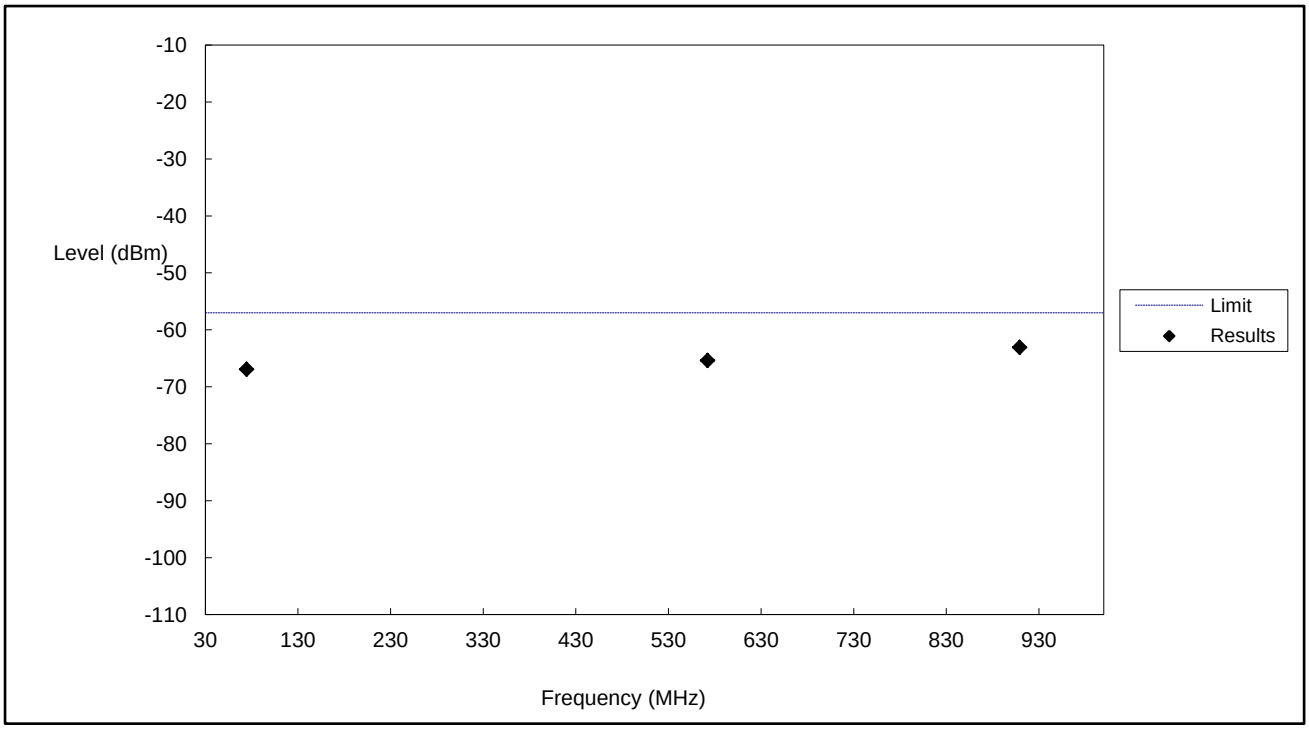
Test Mode: Idle

Horizontal:



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	113.0769	-65.38	-57.00	-8.38	RMS
2	363.0769	-65.38	-57.00	-8.38	RMS
3	613.0769	-66.92	-57.00	-9.92	RMS

Vertical:



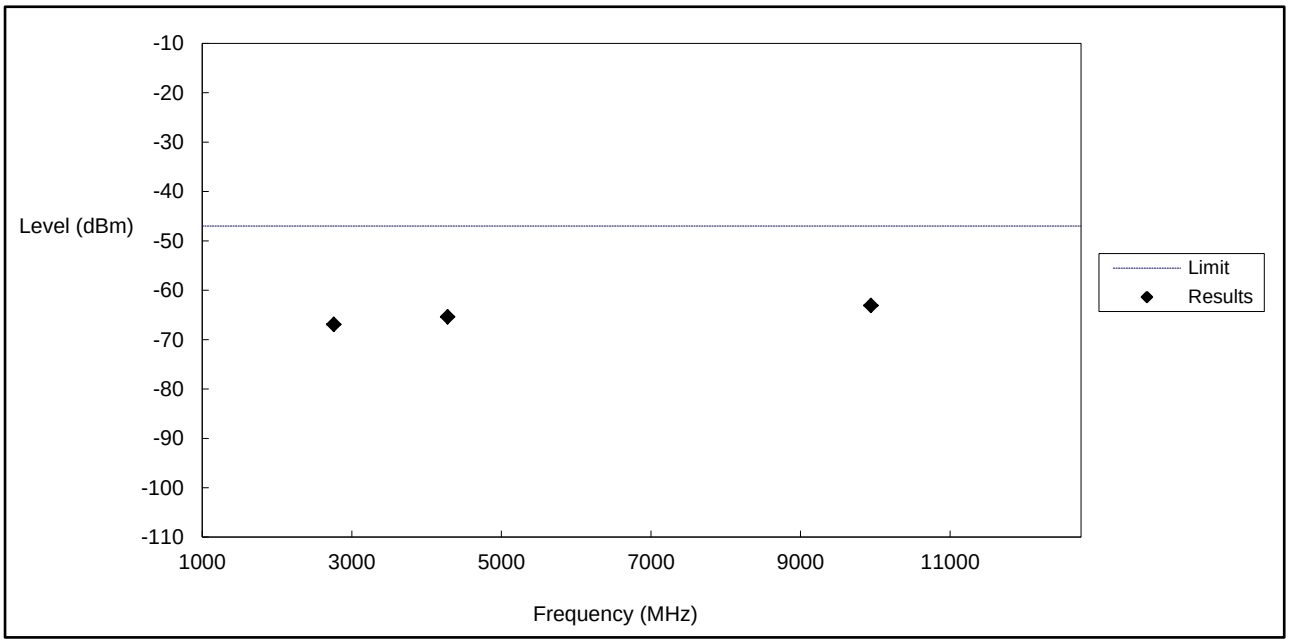
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	74.6154	-66.92	-57.00	-9.92	RMS
2	572.3077	-65.38	-57.00	-8.38	RMS
3	909.2308	-63.08	-57.00	-6.08	RMS

For LTE Band 20(*Worst Case*)

Radiated Spurious Emissions(above 1GHz)

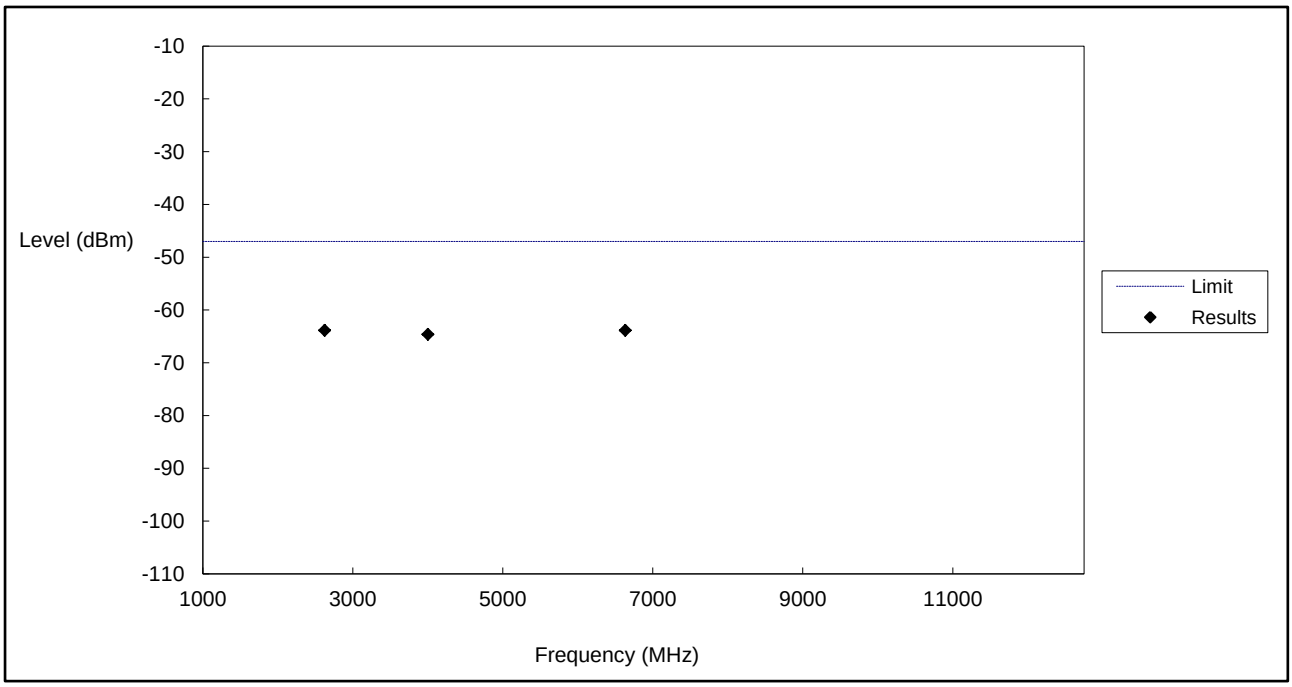
Test Mode: Idle

Horizontal:



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	2760.0000	-66.92	-47.00	-19.92	RMS
2	4281.5385	-65.38	-47.00	-18.38	RMS
3	9940.7692	-63.08	-47.00	-16.08	RMS

Vertical:



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	2625.3846	-63.85	-47.00	-16.85	RMS
2	4000.7692	-64.62	-47.00	-17.62	RMS
3	6632.3077	-63.85	-47.00	-16.85	RMS

Note: only list the worst case for Traffic Mode<1GHz, Traffic Mode >1GHz, idle Mode <1GHz, idle Mode >1GHz.

3.13 Control and monitoring functions

Clause 4.2.4 of ETSI EN 301 908-1 V6.2.1 applies.

RESULT: Pass

3.13.1 Definition and applicability

This requirement, together with other control and monitoring technical requirements identified in the table of cross references in the applicable part, verifies that the control and monitoring functions of the UE prevent it from transmitting in the absence of a valid network.
This test is applicable to radio communications equipment and ancillary equipment in the operating band defined in the applicable part of this multipart harmonized standard.
This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

3.13.2 Conformance requirements

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

3.13.3 Set up for testing

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 µs 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.
The results obtained shall be compared to the limits in clause 3.13.2 in order to prove compliance.

3.13.4 Test result

Test conditions		FDD-LTE Band 1 – Control and monitoring functions						
T	V	Measured range	Test data (dBm)				Limit (dBm)	Result
			1st	2nd	3rd	4th		
Tnom(25 ℃)	Vnom(3.7V)	FDD-LTE Band 1 1920MHz to 1980MHz	-35.9	-36.8	-35.9	-36.0	-30	Pass

Test conditions		FDD-LTE Band 3 – Control and monitoring functions						
T	V	Measured range	Test data (dBm)				Limit (dBm)	Result
			1st	2nd	3rd	4th		
Tnom(25 ℃)	Vnom(3.7V)	FDD-LTE Band 3 1710MHz to 1785MHz	-36.5	-36.9	-37.0	-36.1	-30	Pass

Test conditions		FDD-LTE Band 7 – Control and monitoring functions						
T	V	Measured range	Test data (dBm)				Limit (dBm)	Result
			1st	2nd	3rd	4th		
Tnom(25 ℃)	Vnom(3.7V)	FDD-LTE Band 7 2500MHz to 2570MHz	-36.9	-36.5	-37.3	-37.0	-30	Pass

Test conditions		FDD-LTE Band 20 – Control and monitoring functions						
T	V	Measured range	Test data (dBm)				Limit (dBm)	Result
			1st	2nd	3rd	4th		
Tnom(25 ℃)	Vnom(3.7V)	FDD-LTE Band 20 832MHz to 862MHz	-36.7	-36.6	-37.0	-36.8	-30	Pass

Test conditions		TDD-LTE Band 38 – Control and monitoring functions						
T	V	Measured range	Test data (dBm)				Limit (dBm)	Result
			1st	2nd	3rd	4th		
Tnom(25 ℃)	Vnom(3.7V)	TDD-LTE Band 38 2570MHz to 2620MHz	-36.4	-36.8	-37.6	-36.1	-30	Pass

Measurement uncertainty	+/-1.0dB

The equipment complied with the requirement of this clause.

EXHIBIT 1 - PRODUCT LABELING

Proposed CE Label Format

Smart Phone
Model: VOLT X
Input: 5V⎓, 1A or Powered by 3.8V, 4000mAh
Rechargeable Li-polymer Battery
CE 0700
Gui zhou Fortuneship Technology Co., Ltd.

Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking is allowed less than 5 mm but must clear. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected. The Importer name, address and Manufacturer name and address should indicate on marking label or packaging or in a document accompanying

Proposed Label Location on EUT

CE Label Location

EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1

EUT View 2

EUT View 3

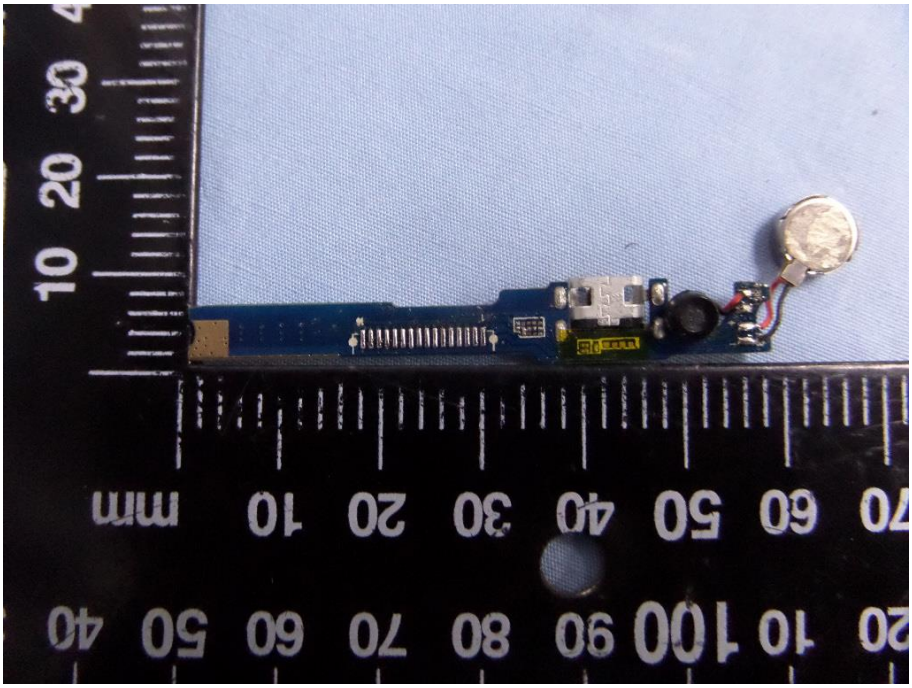
EUT Housing and Board View 1

EUT Housing and Board View 2

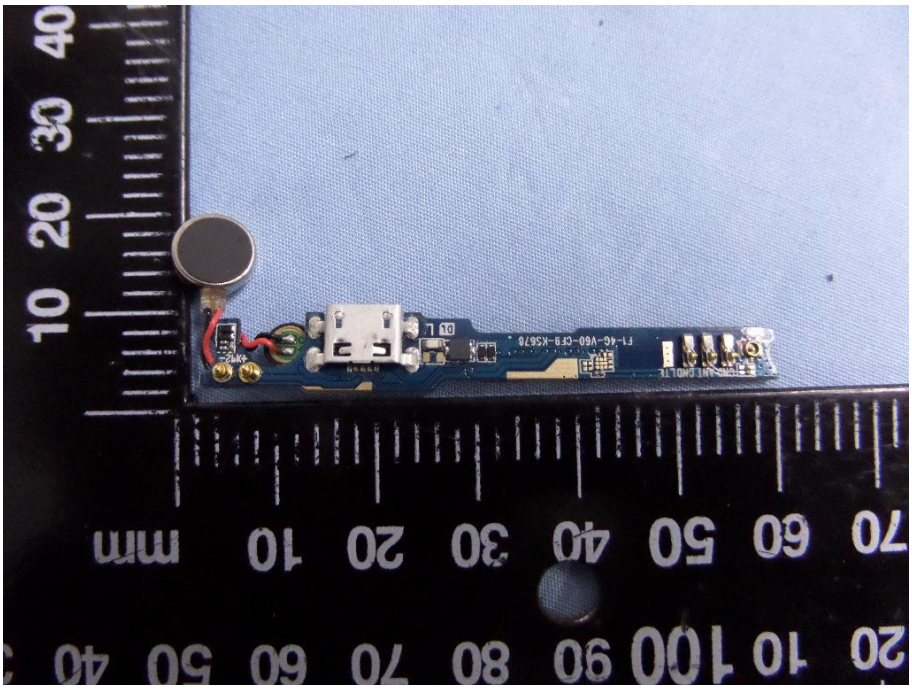
EUT Housing and Board View 3

EUT Housing and Board View 4

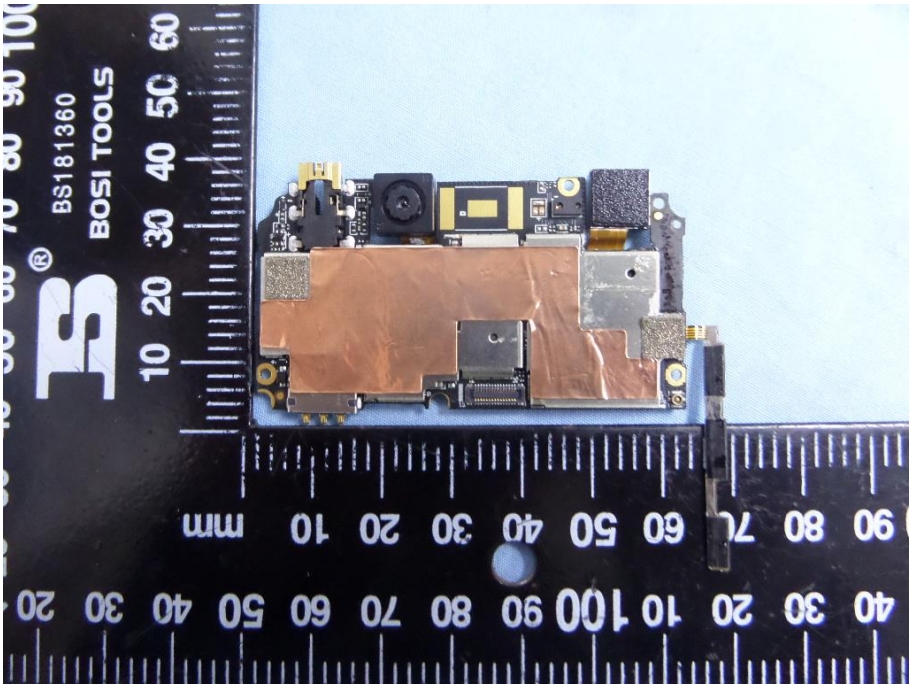
Solder Board-Component View 1



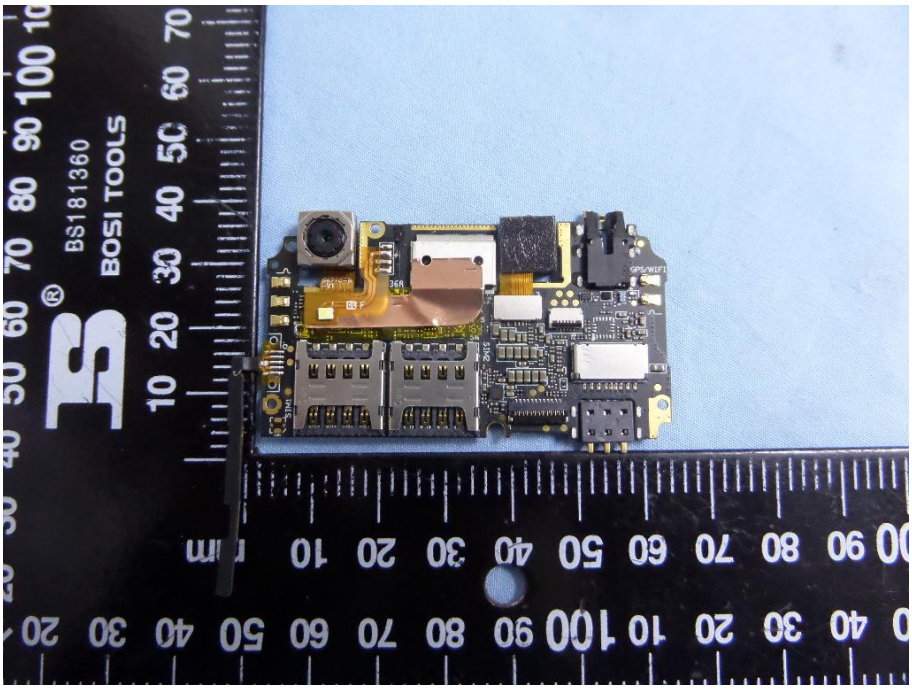
Solder Board-Component View 2



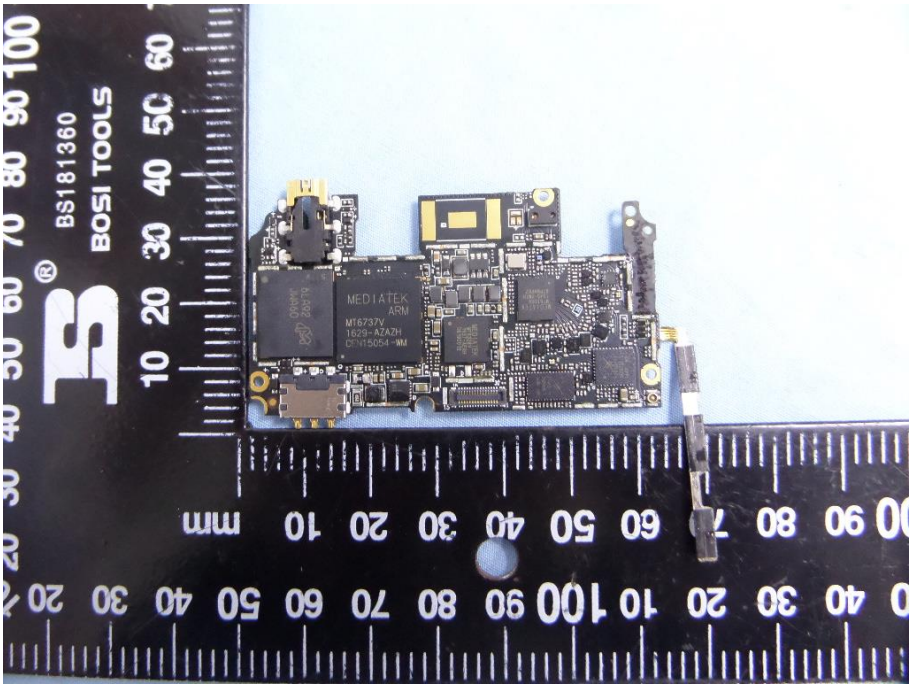
Solder Board-Component View 3



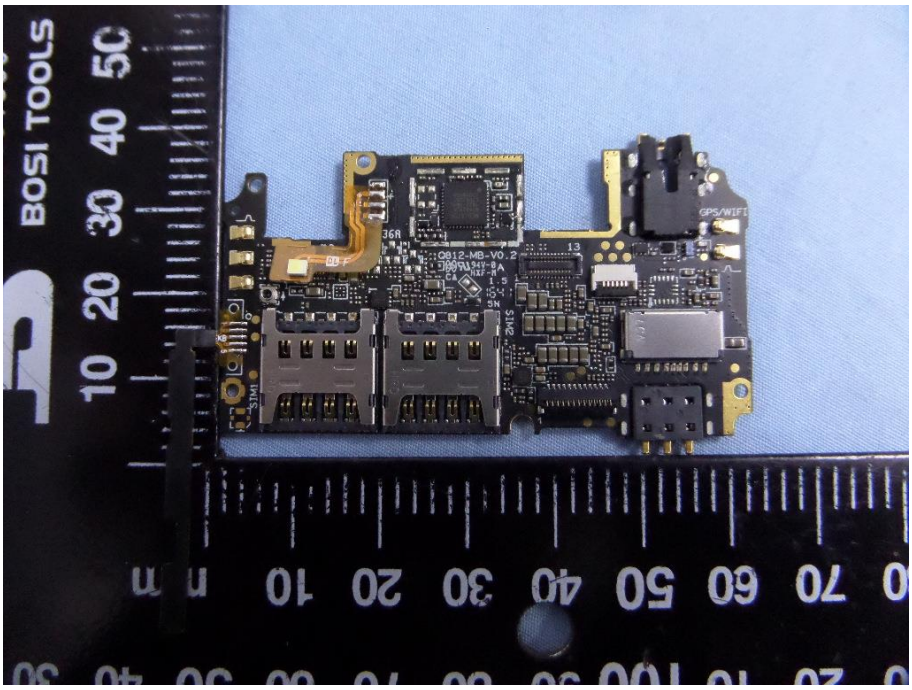
Solder Board-Component View 4



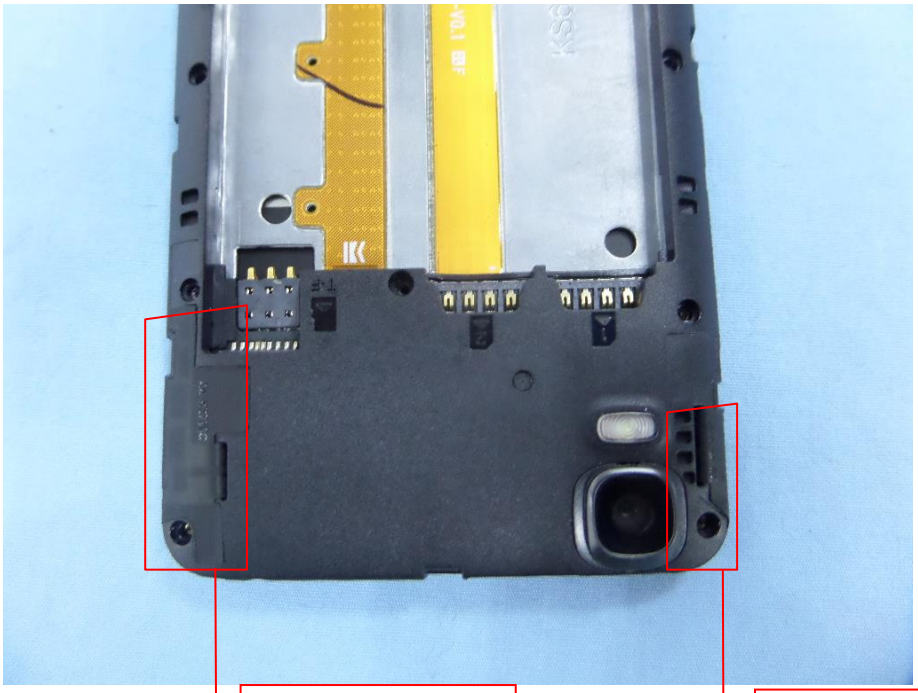
Solder Board-Component View 5



Solder Board-Component View 6



Antenna View



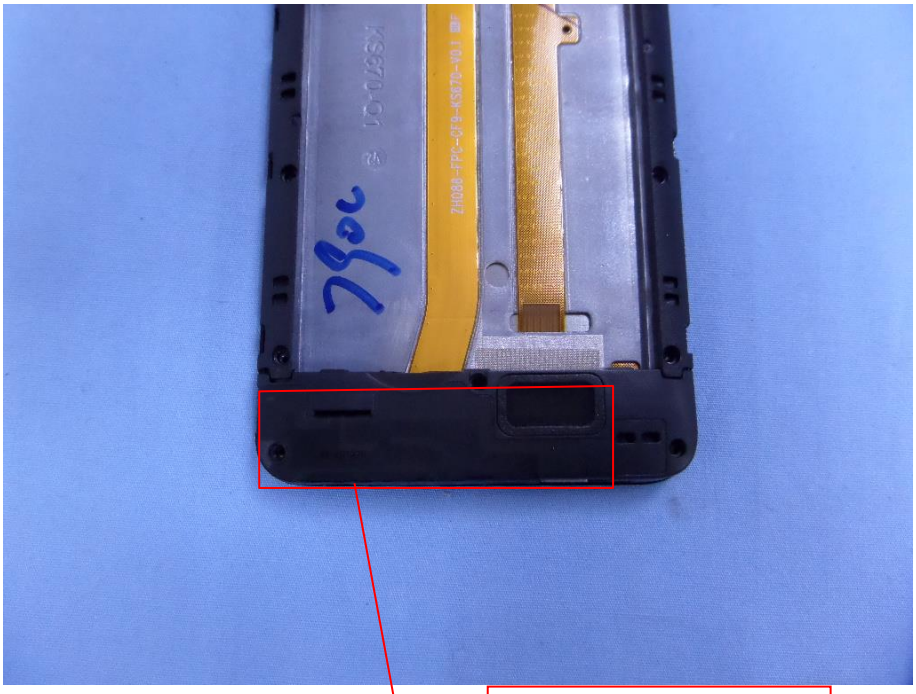
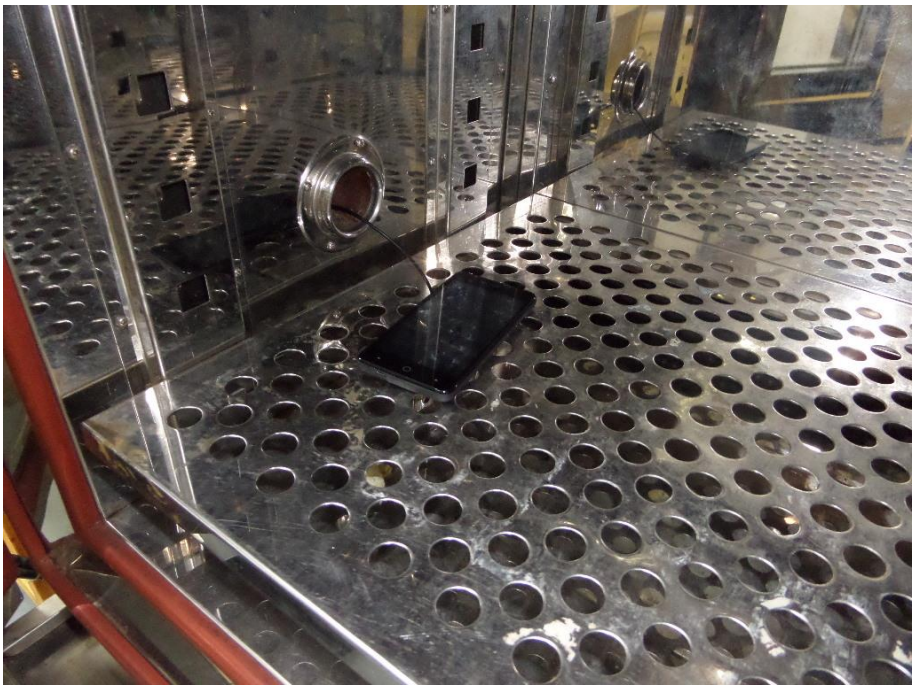


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Spurious Emission Test Setup (Below 1GHz)

Spurious Emission Test Setup (Above 1GHz)

Extreme Condition Test Setup



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