ETSI EN 301 908-1 V7.1.1 (2015-03)
ETSI EN 301 908-13 V6.2.1 (2013-10)

TEST REPORT

For

Advanced Technologies SRL.

Ion Heliade Radulescu nr 26, Bucharest 021255, ROMANIA

Model: ZUN X

Report Type:	**Product Type:**
Amended Report	Smartphone

Test Engineer:	Haiguo Li
Report Number:	RSZ160302004-22FA1
Report Date:	2016-03-17
Reviewed By:	Bell Hu RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RSZ151208012-22F	Original Report	2015-12-30
1	RSZ160302004-22FA1	Amended Report	2016-03-17

Note: This is an amended report based on the original report RSZ151208012-22F issued on 2015-12-30, the detailed differences between the original device and the current one were as below:

(1) Changing the applicant from "Shenzhen East Xinyi Electronic Techonology Co., Ltd." with address "Room 20A, TAIBANG Techonology bldg, High-Tech Park, Nanshan District, Shenzhen, China" to "Advanced Technologies SRL." with address "Ion Heliade Radulescu nr 26, Bucharest 021255, ROMANIA".

(2) Changing the model number from "EX8535, EX8537" to "ZUN X".

(3) Changing the product name from "Brondi 530 4G HD" to "Smartphone".

(4) Changing the trade name from "East Xinyi" to "vonino".

(5) Changing the silk screen of EUT appearance.

(6) Changing the flash from 1G to 2G memory.

(7) Changing the device's storage from 8G to 16G memory.

(8) Changing the pixels of the rear cameral from 2.0M to 5.0M.

(9) Changing adapter and the battery label.

(10) Adding LTE band 38 through a software operation.

(11) Upgrading the standard from "ETSI EN 301 908-1 V6.2.1 (2013-04)" to "ETSI EN 301 908-1 V7.1.1 (2015-03)".

Based on the above difference, all the related items of LTE band 38 were performed and all the photos were updated in this report. For the other data, please refer to the original report RSZ151208012-22F issued on 2015-12-30.

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Advanced Technologies SRL.*'s product, model number: *ZUN X* or the "EUT" in this report was a *Smartphone*, which was measured approximately: 143 mm (L) × 72 mm (W) × 8 mm (H), rated with input voltage: DC 3.8V rechargeable Li-ion battery or DC 5.0V from the adapter.

Adapter Information:
Model: JT108-0501000
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5.0V, 1.0A

**All measurement and test data in this report was gathered from production sample serial number: 1601478 (Assigned by BACL, Shenzhen).The EUT supplied by the applicant was received on 2016-03-02.*

Objective

This Type approval report is prepared on behalf of *Advanced Technologies SRL.* accordance with ETSI EN 301 908-1 V7.1.1 (2015-03), IMT cellular networks;Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements; and ETSI EN 301 908-13 V6.2.1 (2013-10), 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).

The objective is to determine the EUT compliance with ETSI EN 301 908-1 V7.1.1 (2015-03) and ETSI EN 301 908-13 V6.2.1 (2013-10).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 908-1 V7.1.1 (2015-03) and ETSI EN 301 908-13 V6.2.1 (2013-10).

Measurement Uncertainty

According to the requirements of ETSI EN 301 908-1 and ETSI EN 301 908-13, F_{lab} (the value of the measurement uncertainty according to the requirements of ETSI TR 100 028) shall be, for each measurement, equal to or lower than the figure in the following table:

SN	Parameter	F_{lab}	Maximum allowable uncertainty
1	ERP 30MHz-180MHz	±3.62dB	±6 dB
2	ERP 180MHz-12750MHz	±2.6 dB	±3 dB
3	Transmitter maximum output power	±0.6 dB	±0,7 dB
4	Transmitter spectrum emissions mask	±1,5 dB	±1,5 dB
5	Transmitter spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
6	Transmitter spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
7	Transmitter Minimum output power	±0.6 dB	±2,0 dB
8	Receiver Adjacent Channel Selectivity (ACS)	±1.5 dB*	±1,1 dB
9	Receiver Blocking characteristics 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
10	Receiver Blocking characteristics 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
11	Receiver spurious response 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
12	Receiver spurious response 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
13	Receiver intermodulation characteristics	±1.4 dB	±1,4 dB
14	Receiver spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
15	Receiver spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
16	Transmitter adjacent channel leakage power ratio	±0.8 dB	±0,8 dB

Note:

* Test system of laboratory have a measurement uncertainty greater than that specified in harmonized standard, this equipment can still be used provided that an adjustment is made follows:
any additional uncertainty in the test system over and above that specified in harmonized standard should be used to tighten the test requirements - making the test harder to pass (for some tests, e.g. receiver tests, this may require modification of stimulus signals). This procedure will ensure that a test system not compliant with harmonized standard does not increase the probability of passing a EUT that would otherwise have failed a test if a test system compliant with harmonized standard had been used.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing according to EN 301 908-1 and EN 301 908-13.

EUT Exercise Software

No exercise software.

Special Accessories

No special accessory.

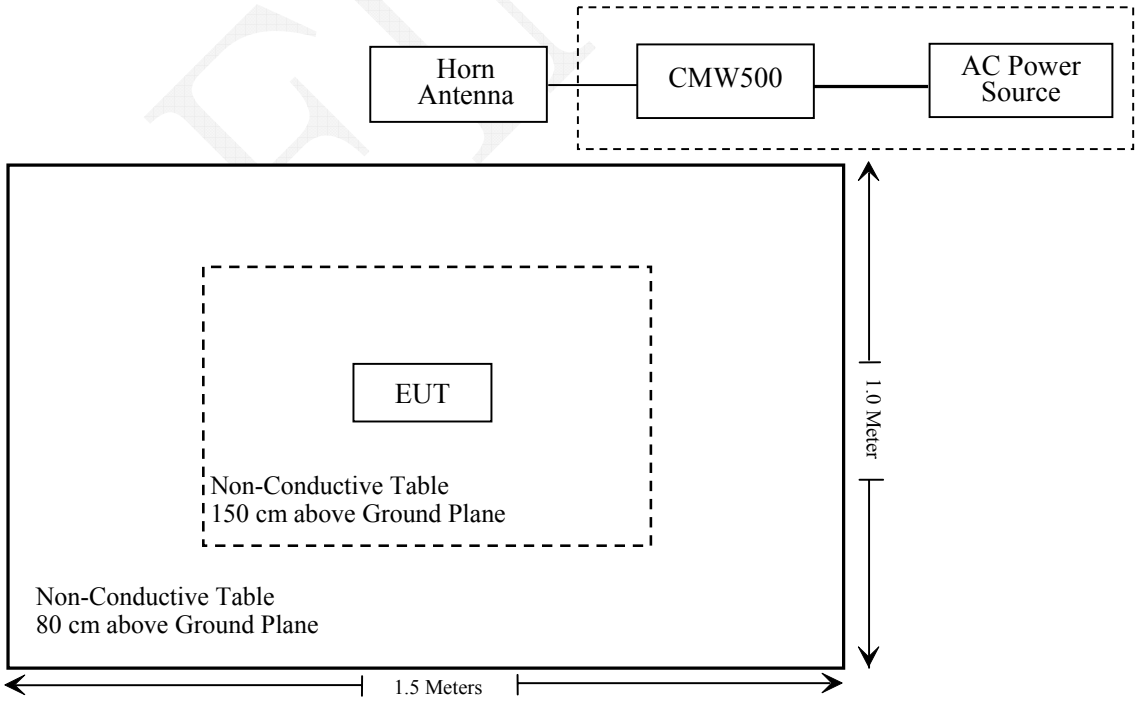
Equipment Modifications

No modifications were made to the unit tested.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Wideband Radio Communication Tester	CMW500	114772

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ETSI EN 301 908-1 V7.1.1	Description of Test	Test Result
§4.2.2	Radiated emissions (UE)	Compliance
§4.2.3	Radiated emissions (BS and repeater)	Not Applicable
§4.2.4	Control and monitoring functions (UE)	Compliance

ETSI EN 301 908-13 V6.2.1	Description of Test	Test Result
§4.2.2	Transmitter maximum output power	Compliance
§4.2.3	Transmitter spectrum emission mask	Compliance
§4.2.4	Transmitter spurious emissions	Compliance
§4.2.5	Transmitter minimum output power	Compliance
§4.2.6	Receiver Adjacent Channel Selectivity (ACS)	Compliance
§4.2.7	Receiver blocking characteristics	Compliance
§4.2.8	Receiver spurious response	Compliance
§4.2.9	Receiver intermodulation characteristics	Compliance
§4.2.10	Receiver spurious emissions	Compliance
§4.2.11	Transmitter Adjacent Channel Leakage power Ratio	Compliance

ETSI EN 301 908-1 V7.1.1 (2015-03) §4.2.2 – RADIATED EMISSIONS (UE)

Applicable Standard

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

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

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

Limits

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

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 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, Mobile WiMAX, 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.			

Test configurations

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;

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Signal Generator	HP 8341B	2624A00116	2015-07-02	2016-07-01
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-11-03	2016-11-03
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-29	2017-12-28

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Result: Compliant.

Please refer to following data table.

Traffic Mode

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 301 908-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Band 38										
185.64	38.14	209	2.0	H	-58.9	0.29	0	-59.19	-36	23.19
185.64	37.26	59	2.2	V	-59.7	0.29	0	-59.99	-36	23.99
5190.00	46.34	247	1.8	H	-47.5	1.80	10.10	-39.20	-30	9.20
5190.00	44.54	195	1.1	V	-48.6	1.80	10.10	-40.30	-30	10.30
7785.00	42.57	202	1.0	H	-51.0	3.70	10.90	-43.80	-30	13.80
7785.00	42.12	259	2.3	V	-52.2	3.70	10.90	-45.00	-30	15.00

Idle Mode

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 301 908-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Band 38										
194.56	31.24	324	1.1	H	-65.8	0.29	0	-66.09	-57	9.09
194.56	30.85	105	1.9	V	-66.1	0.29	0	-66.39	-57	9.39
1428.31	42.48	218	1.8	H	-66.0	1.20	6.40	-60.80	-47	13.80
1428.31	41.32	99	1.3	V	-67.1	1.20	6.40	-61.90	-47	14.90

Note: 1) Absolute Level = SG Level - Cable Loss + Antenna Gain
2) Margin = Limit - Absolute Level

ETSI EN 301 908-1 V7.1.1 (2015-03) §4.2.4 – CONTROL AND MONITORING FUNCTIONS (UE)

Applicable Standard

This requirement, together with other control and monitoring technical requirements identified in the table of cross references in the applicable part, verifies that the control and monitoring functions of the UE prevent it from transmitting in the absence of a valid network.

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

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

Limits:

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

Test method

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

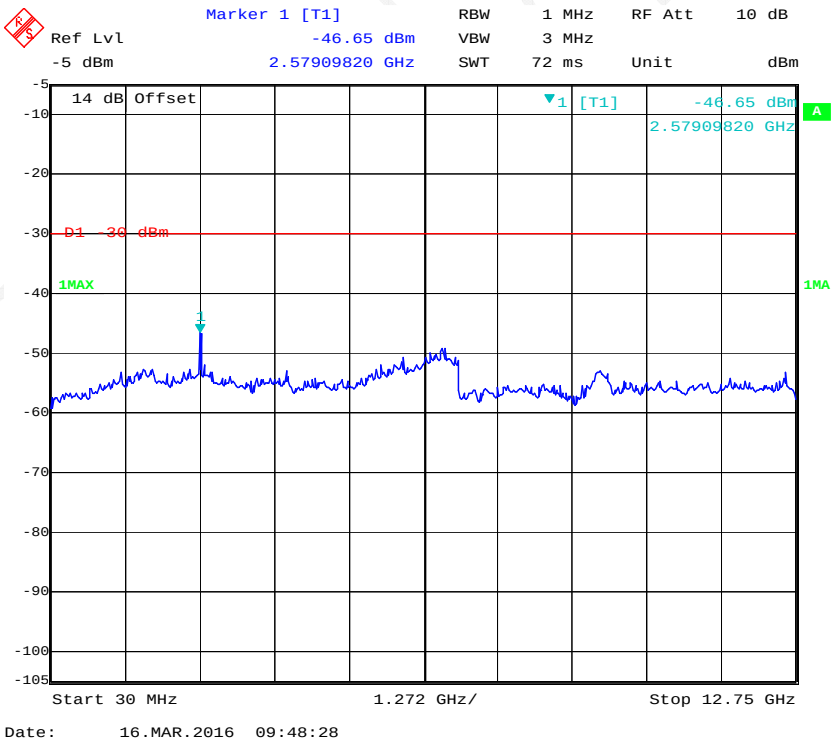
Test Data

Environmental Conditions

Temperature:	21 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-16.

Test Result: Compliant.



ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.2 – TRANSMITTER MAXIMUM OUTPUT POWER

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.2.1, Transmitter maximum output power for Single Carrier:
The following UE Power Classes define the maximum output power for any transmission bandwidth within the channel bandwidth. The period of measurement shall be at least one sub-frame (1 ms).

Limits

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).

Test Condition

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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

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.

Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-16.

Test Mode: Transmitting

Test Result: Compliant, the worst case, please refer to following data tables.

Test Band	Test Bandwidth	Test RB	Test Channel	Test Condition					Limit
				VN/TN	VH/TH	VH/TL	VL/TH	VL/TL	
E-UTRA Band 38	5MHz	RB1	L	22.32	22.65	22.21	22.68	22.21	23±2.7dBm
			M	22.35	22.68	22.23	22.62	22.23	
			H	22.34	22.63	22.25	22.64	22.22	
		RB8	L	22.36	22.72	22.24	22.75	22.24	
			M	22.42	22.74	22.11	22.77	22.14	
			H	22.43	22.78	22.16	22.76	22.16	
	20MHz	RB1	L	22.45	22.73	22.14	22.73	22.15	
			M	22.47	22.65	22.19	22.67	22.17	
			H	22.25	22.45	22.05	22.48	22.07	
		RB18	L	22.23	22.46	22.07	22.49	22.06	
			M	22.24	22.48	22.09	22.43	22.03	
			H	22.26	22.43	22.12	22.41	22.17	

Note:

L.V.: Low Voltage 3.5V_{DC}
L.T.: Low Temperature –20℃
N.V.: Normal Voltage 4.18V_{DC}
N.T.: Normal Temperature +25℃
H.V.: High Voltage 4.18V_{DC}
H.T.: High Temperature +55℃
Nominal Voltage: 3.8V_{DC}

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.3 – TRANSMITTER SPECTRUM EMISSION MASK

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.3.1, Transmitter spectrum emission mask for Single Carrier:

The spectrum emission mask of the UE applies to frequencies (ΔfOOB) starting from the ± edge of the assigned E-UTRA channel bandwidth

Limit:
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.

Test Condition

Test environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

Ensure the UE is in State 3A-RF according to TS 136 508 [2], clause 5.2A.2.

Test Procedure

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.

Send continuously uplink power control "up" commands in the uplink scheduling information to the UE until the UE transmits at PUMAX level.

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.

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 6.6.2

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Mode: Transmitting

Test Result: Compliant.

Please refer to the plots in the appendix A.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.4 – TRANSMITTER SPURIOUS EMISSIONS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.4.1, Transmitter spurious emissions for Single Carrier:

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.

Limits

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 ΔfOOB + 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 ΔfOOB (MHz) from the edge of the channel bandwidth shown in table 4.2.4.1.2-1.

Table 4.2.4.1.2-3: Spurious emission band UE co-existence limits

E-UTRA Band	Spurious emission						
	Protected band	Frequency range (MHz)			Maximum Level (dBm)	MBW (MHz)	Comment
1	E-UTRA Band 1, 7, 8, 20, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3, 34	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	Frequency range	1 900	-	1 915	-15,5	5	
	Frequency range	1 915	-	1 920	+1,6	5	
3	E-UTRA Band 1, 7, 8, 20, 33, 34, 38, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 42	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
7	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	Frequency range	2 570	-	2 575	+1,6	5	Note 3
	Frequency range	2 575	-	2 620	-15,5	5	Note 3
8	E-UTRA Band 1, 20, 33, 34, 38, 40	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
	E-UTRA band 7	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
	E-UTRA Band 8	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
20	E-UTRA Band 1, 3, 7, 8, 33, 34, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 20	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 38, 42	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
33	E-UTRA Band 1, 7, 8, 20, 34, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
34	E-UTRA Band 1, 3, 7, 8, 20, 33, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
38	E-UTRA Band 1, 3, 8, 20, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	Frequency range	2 620	-	2 690	-15,5	5	
40	E-UTRA Band 1, 3, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
42	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 38, 40	FDL_low	-	FDL_high	-50	1	
	E-UTRA Band 43	FDL_low	-	FDL_high	-50	1	
43	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 38, 40	FDL_low	-	FDL_high	-50	1	
	E-UTRA Band 42	FDL_low	-	FDL_high	-50	1	

NOTE 1: F_{DL_low} and F_{DL_high} refer to each frequency range of the protected E-UTRA band.

NOTE 2: As exceptions, measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd or 4th harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see figure 5.4.2-1 in TS 136 521-1 [1]) for which the 2nd, 3rd or 4th harmonic totally or partially overlaps the measurement bandwidth (MBW). For frequency with 2nd, 3rd or 4th harmonic spurious emissions, the measurements are covered in table 4.2.4.1.2-2.

NOTE 3: These requirements also apply for the frequency ranges that are less than Δf_{OOB} (MHz) in table 4.2.4.1.2-1 from the edge of the channel bandwidth.

NOTE 2: For measurement conditions at the edge of each frequency range, the lowest frequency of the measurement position in each frequency range should be set at the lowest boundary of the frequency range plus MBW/2. The highest frequency of the measurement position in each frequency range should be set at the highest boundary of the frequency range minus MBW/2. MBW denotes the measurement bandwidth defined for the protected band.

Table 4.2.4.1.2-4: Additional spurious emissions limits

Operating band	Frequency bandwidth	Maximum Level (dBm)	Measurement bandwidth (MHz)
20	470 MHz ≤ f ≤ 790 MHz	-65	8
NOTE: The conformance shall be assessed using the measurement position placed at the following centre frequencies: 474 MHz, 586 MHz, 690 MHz, 754 MHz, 770 MHz and 786 MHz.			

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0

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.

Test Procedure

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.

Send continuously Up power control commands in the uplink scheduling information to the UE until the UE transmits at PUMAX level.

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.

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Mode: Transmitting

Test Result: Compliant.

Please refer to plot in the appendix B.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.5 – TRANSMITTER MINIMUM OUTPUT POWER

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.5.1, Transmitter minimum output power for Single Carrier:

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.

Limits

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

Test Condition

Initial conditions are a set of test configurations the UE needs to be tested in and the steps for the SS to take with the UE to reach the correct measurement state.

The initial test configurations consist of environmental conditions, test frequencies, and channel bandwidths based on E-UTRA operating bands specified in table 5.4.2.1-1. All of these configurations shall be tested with applicable test parameters for each channel bandwidth, and are shown in table 6.3.2.4.1-1. The details of the uplink reference measurement channels (RMCs) are specified in Annexes A.2. Configurations of PDSCH and PDCCH before measurement are specified in Annex C.2.

Table 6.3.2.4.1-1: Test Configuration Table

Initial Conditions				
Test Environment as specified in TS 36.508[7] subclause 4.1	Normal, TL/VL, TL/VH, TH/VL, TH/VH			
Test Frequencies as specified in TS36.508 [7] subclause 4.3.1	Low range, Mid range, High range			
Test Channel Bandwidths as specified in TS 36.508 [7] subclause 4.3.1	Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths				
	Downlink Configuration	**Uplink Configuration**		
Ch BW	N/A for min output power test	Mod'n	RB allocation	
			FDD	TDD
1.4MHz		QPSK	6	6
3MHz		QPSK	15	15
5MHz		QPSK	25	25
10MHz		QPSK	50	50
15MHz		QPSK	75	75
20MHz		QPSK	100	100
Note 1: Test Channel Bandwidths are checked separately for each E-UTRA band, the applicable channel bandwidths are specified in Table 5.4.2.1-1.				

Connect the SS to the UE antenna connectors as shown in TS 36.508 [7] Annex A, in Figure A.3.

The parameter settings for the cell are set up according to TS 36.508 [7] subclause 4.4.3.

Downlink signals are initially set up according to Annex C.0, C.1, and C.3.0, and uplink signals according to Annex H.1 and H.3.0.

The UL Reference Measurement channel is set according to Table 6.3.2.4.1-1.

Propagation conditions are set according to Annex B.0.

Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 5.2A.2. Message contents are defined in clause 6.3.2.4.3.

Test Procedure

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 6.3.2.1.4.1-1. Since the UE has no payload and no loopback data to send the UE sends uplink MAC padding bits on the UL RMC

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.

Measure the mean power of the UE in the associated measurement bandwidth specified in Table 6.3.2.5-1 for the specific channel bandwidth under test. The period of measurement shall be the continuous duration of one subframe (1ms). For TDD slots with transient periods are not under test.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Mode: Transmitting

Test Band	Test Bandwidth	Test RB	Test Channel	Test Condition					Limits
				VN/TN	VH/TH	VH/TL	VL/TH	VL/TL	
E-UTRA Band 38	5MHz	RB25	L	-51.25	-51.13	-52.25	-51.12	-51.59	≤-39dBm
			M	-50.27	-50.14	-51.01	-50.15	-51.76	
			H	-48.45	-48.15	-49.23	-48.24	-48.73	
	20MHz	RB100	L	-45.46	-44.92	-45.64	-45.34	-45.72	
			M	-45.35	-45.21	-45.54	-45.26	-45.62	
			H	-46.38	-46.25	-46.64	-46.15	-46.85	

Note:

L.V.: Low Voltage 3.5V_{DC}
L.T.: Low Temperature –20℃
N.V.: Normal Voltage 4.18V_{DC}
N.T.: Normal Temperature +25℃
H.V.: High Voltage 4.2V_{DC}
H.T.: High Temperature +55℃
Nominal Voltage: 3.8V_{DC}

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.6 – RECEIVER ADJACENT CHANNEL SELECTIVITY (ACS)

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.6,
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).

Limits

The throughput Rav shall be ≥ 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].							

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS and interfering source to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.5.4.1-1.

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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.

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 $f \leq 3{,}0$ GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz $< f \leq 4{,}2$ GHz, for at least the duration of the Throughput measurement (obtain correct UE output power as specified in TS 136 521-1 [1]).

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.

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

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]).

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.

Measure the average throughput for a duration sufficient to achieve statistical significance according to TS 136 521-1 [1], annex G.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Result: Compliant.

Please refer the following table.

Test Band	Test Bandwidth	Test RB	Test Channel	Throughput (%)				Limits (%)
				Case 1		Case 2		
				$F\text{-}F_{offset}$	$F+F_{offset}$	$F\text{-}F_{offset}$	$F+F_{offset}$	
Band 38	5 MHz	25	M	99.22	99.52	99.12	99.65	≥95
	20 MHz	100		99.23	99.54	99.15	99.63	

TSI EN 301 908-13 V6.2.1 (2013-10) §4.2.7 – RECEIVER BLOCKING CHARACTERISTICS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.7:

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

Limit:

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 max(24, 6 □□NRB / 6□) exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size, where RB N 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 - FIoffset, case 1; and
b) the carrier frequency + BW/2 + FIoffset, 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].

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.6.2.4.1-1. Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Result: Compliance.

In-Band Blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Case	Interfering Signals Frequency	Throughput (%)	Limits (%)
Band 38	5MHz	M	25	1	2584.9875	98.53	≥95
					2605.0125	98.62	
				2	2569.988	98.67	
					2620.013	98.54	
	20MHz	M	100	1	2577.4875	98.57	
					2612.5125	98.59	
				2	2562.488	98.65	
					2627.513	98.63	

Out-Band Blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Frequency Range	Worst Throughput (%)			Limits (%)
					Range 1	Range 2	Range 3	
Band 38	5MHz	H	25	F_{low}	98.52	99.35	/	≥95
				F_{high}	99.35	99.38	/	
	20MHz	H	100	F_{low}	99.42	99.44	99.53	
				F_{high}	99.46	99.47	99.56	

Narrow band blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Throughput (%)	Limits (%)
Band 38	5M	M	25	99.63	≥95
	20M	M	100	99.68	

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.8 – RECEIVER SPURIOUS RESPONSE

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.8:

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

Limits

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

Test Condition

The initial conditions shall be the same as for those in Out-of-band blocking in clause 5.3.6.1.1 in order to test spurious responses obtained in clause 5.3.6.1.2 under the same conditions

Test Procedure

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.

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.

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.

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].

For the spurious frequency, measure the average throughput for a duration sufficient to achieve statistical significance.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Result: Compliant.

Test Band	Test Bandwidth	Test Channel	Test RB	Throughput (%)	Limits (%)
Band 38	5MHz	M	25	98.63	≥95
	20MHz	M	100	98.67	

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.9 – RECEIVER INTERMODULATION CHARACTERISTICS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.9,

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.

Limits

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].

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS and interfering sources to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.8.4.1-1.

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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.

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 $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2$ GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].

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].

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

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-17.

Test Result: Compliant.

Test Band	Test Bandwidth	Test RB	Test Channel	Throughput (%)		Limits (%)
				Low Interfering	High Interfering	
Band 38	5MHz	25	M	99.24	99.52	≥95
	20MHz	100	M	99.27	99.58	

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.10 – RECEIVER SPURIOUS EMISSIONS

Applicable Standard

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

Limits

The measured spurious emissions derived in clause 5.3.9 shall not exceed the maximum level specified in table 4.2.10.2-1.

Table 4.2.10.2-1: General receiver spurious emission requirements

Frequency Band	Measurement bandwidth	Maximum level	Note
30 MHz ≤ f < 1 GHz	100 kHz	-57 dBm	
1 GHz ≤ f ≤ 12,75 GHz	1 MHz	-47 dBm	
NOTE: Unused PDCCH resources are padded with resource element groups with power level given by PDCCH_RA/RB as defined in TS 136 101 [4] clause C.3.1.			

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect a spectrum analyzer (or other suitable test equipment) to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

Downlink signals are initially set up according to TS 136 521-1 [1], clauses C.0, C.1 and C.3.1.

The DL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

Repeat step 1 for all E-UTRA Rx antennas of the UE.

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-16.

Test Mode: Receiving

Test Result: Compliant.

Please refer to the plots in appendix C.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.11 – TRANSMITTER ADJACENT CHANNEL LEAKAGE POWER RATIO

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.11.1,

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.

Limits

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 4.2.11.2-2.

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: 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.

Test Condition

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

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]:

Connect the SS to the UE to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

Send continuous uplink power control "up" commands in the uplink scheduling information to the UE to ensure that the UE transmits at PUMAX level

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.

Measure the filtered mean power for E-UTRA.

Measure the filtered mean power of the first E-UTRA adjacent channel.

Measure the RRC filtered mean power of the first and the second UTRA adjacent channel.

Calculate the ratio of the power between the values measured in step 4) over step 5) for E-UTRAACLR.

Calculated the ratio of the power between the values measured in step 4) over step 6) for UTRAACLR1, UTRAACLR2.

Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-11-01

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2016-03-16.

Test Result: Compliance.

Please refer to the plots in in appendix D.

EXHIBIT A - CE PRODUCT LABELING

CE Label Format

CE1313

Specifications: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking. 1313: 4 digit notified body number

Note: The label should contain the below content

① The name of the manufacturer or the person responsible for placing the apparatus on the market
② Type
③ Batch and/or serial numbers

Proposed Label Location on EUT

EXHIBIT B - EUT PHOTOGRAPHS

EUT – All View

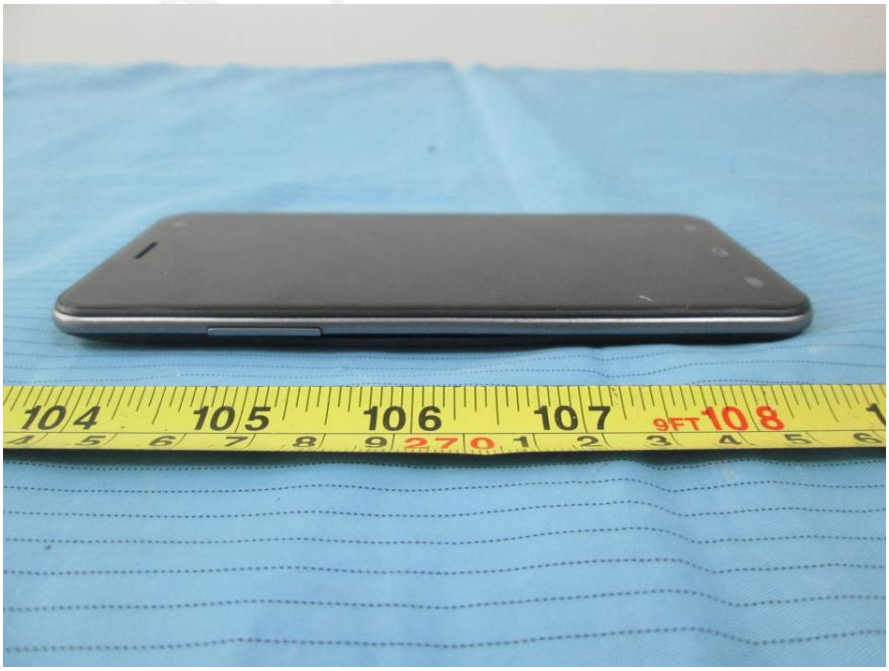
EUT – Front View

EUT – Rear View

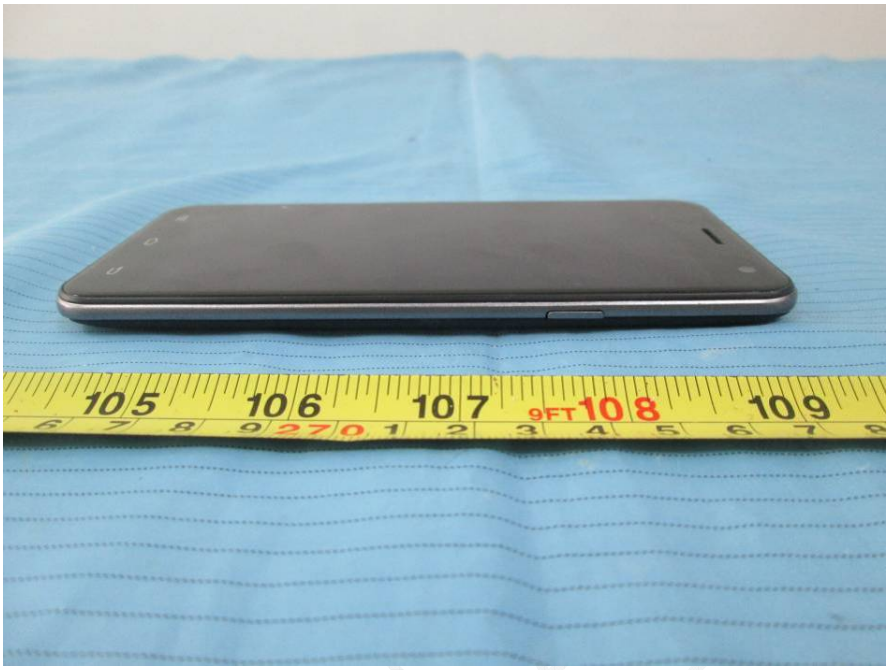
EUT – Top View

EUT – Bottom View

EUT – Left Side View



EUT – Right Side View

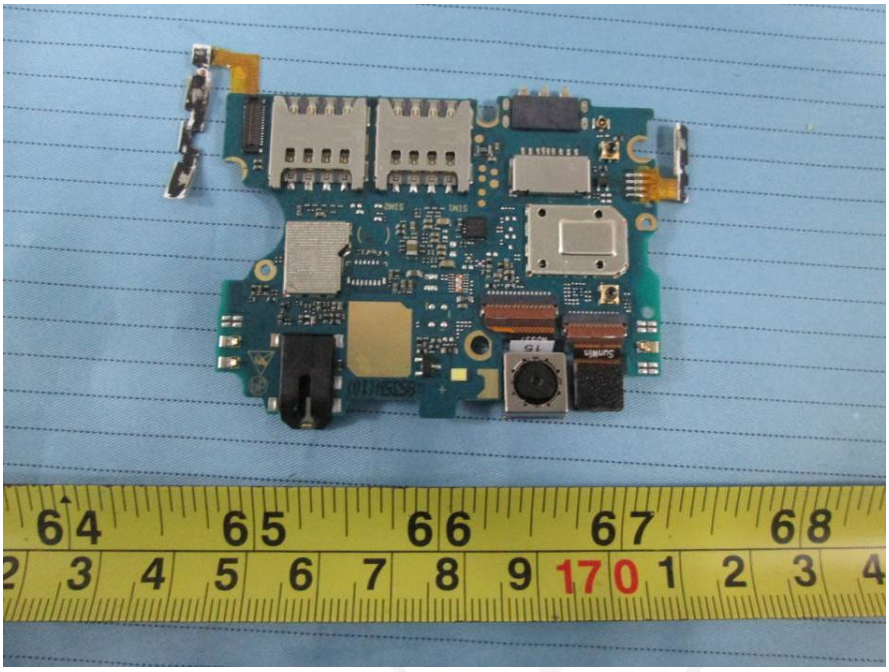


EUT –Cover off View 1

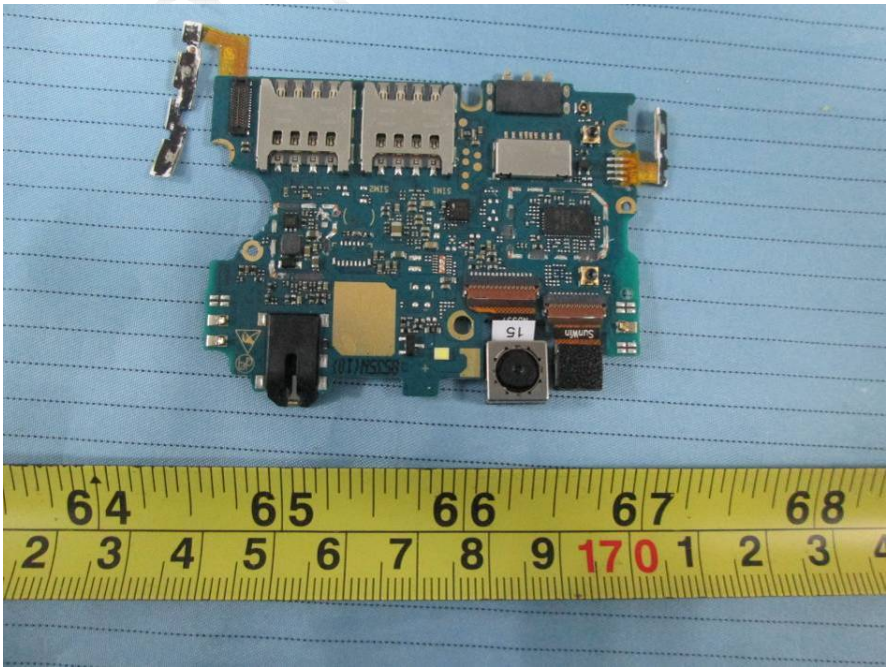
EUT –Cover off View 2

EUT –Cover off View 3

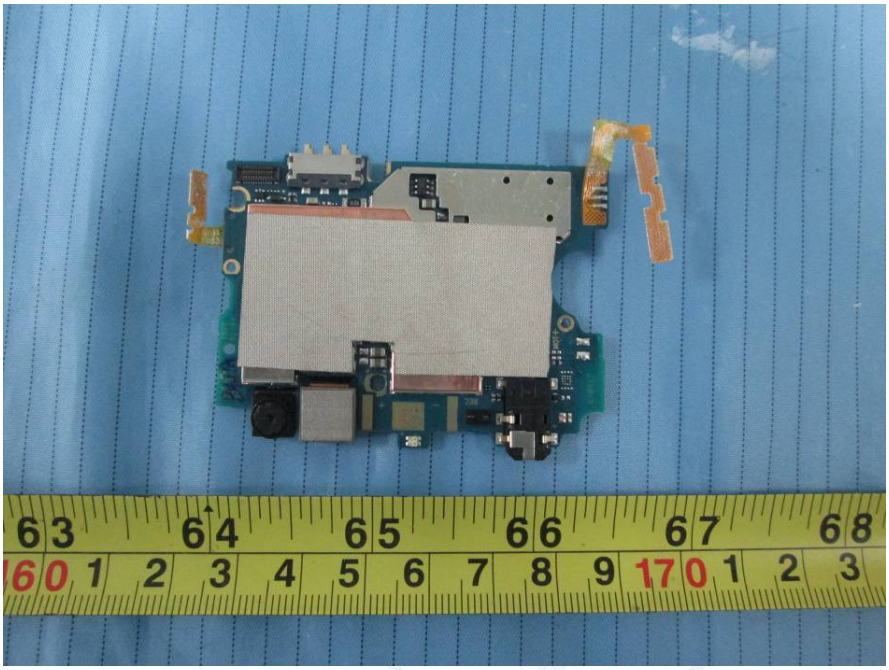
EUT – Main Board Top View



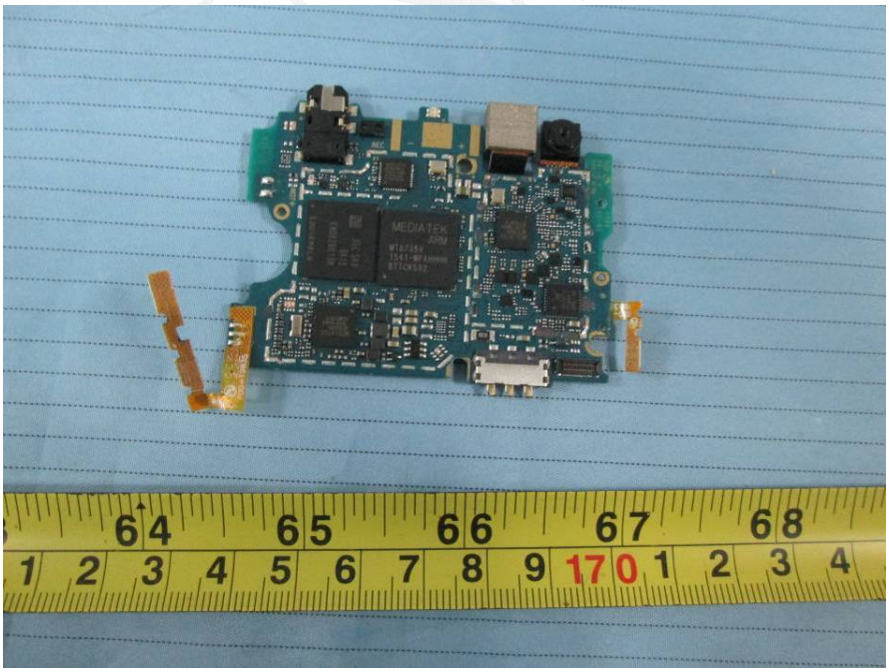
EUT – Main Board Top Shielding off View



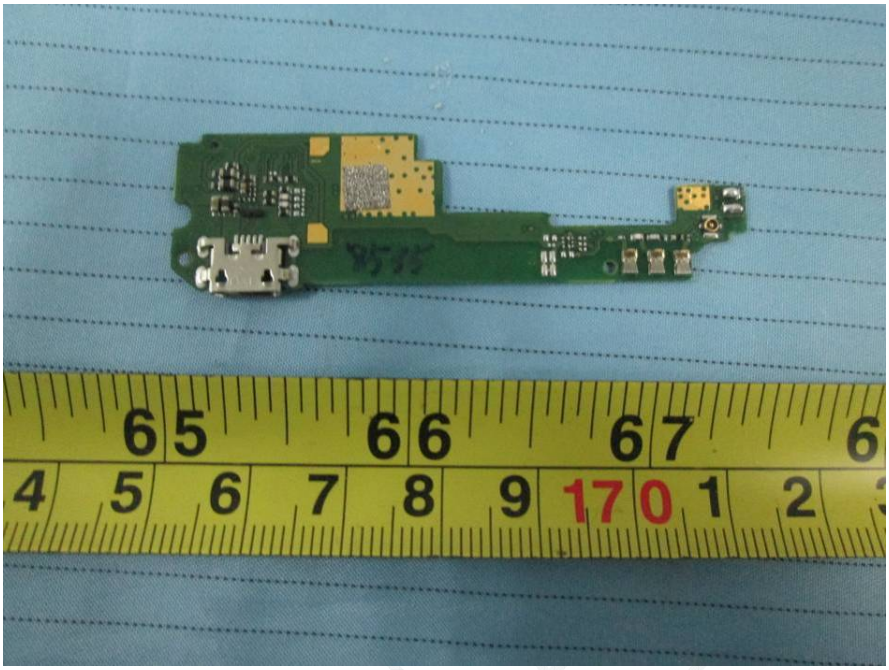
EUT – Main Board Bottom View



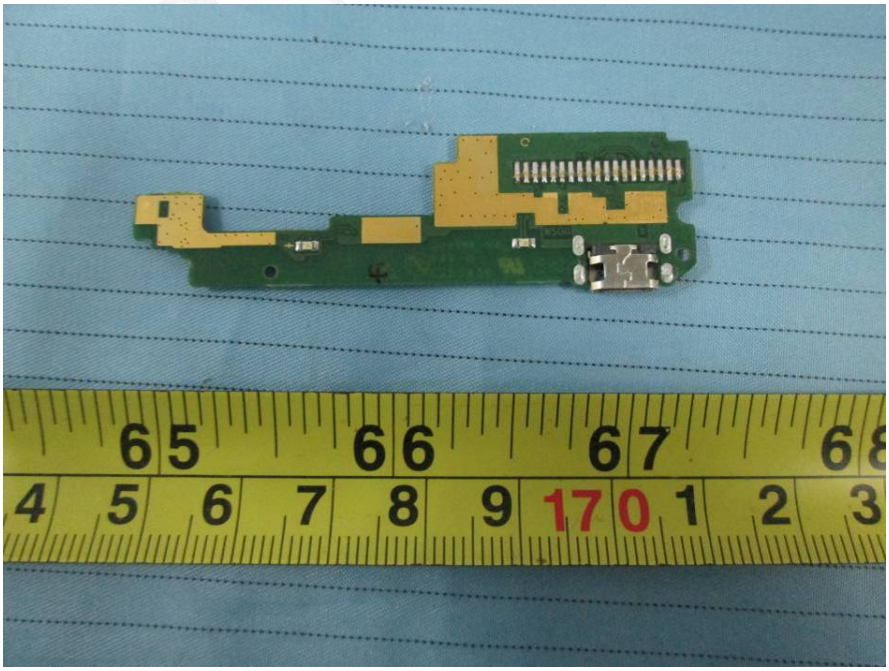
EUT – Main Board Bottom Shielding off View



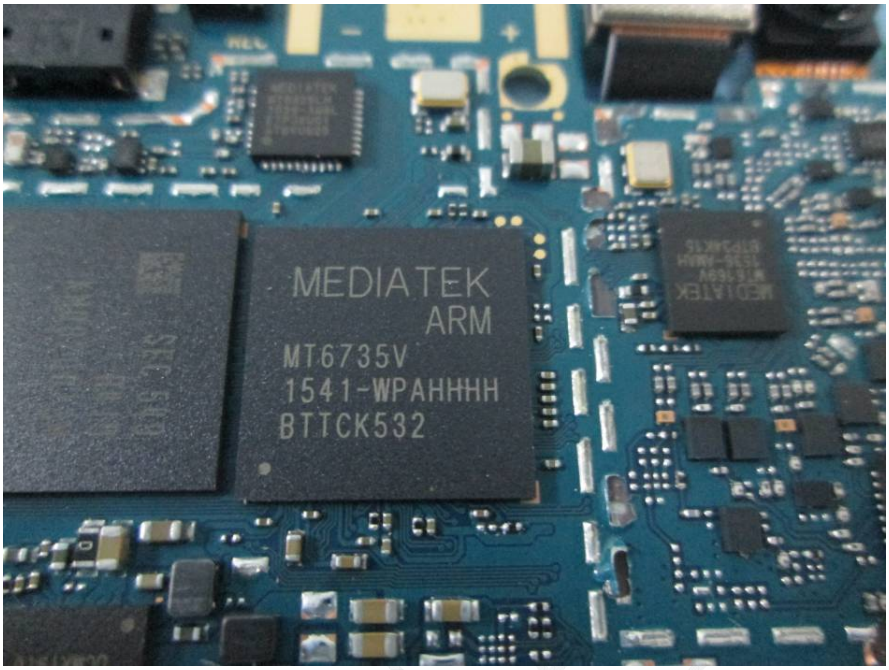
EUT – Sub Board Top View



EUT – Sub Board Bottom View



EUT – IC Chip View



EUT – Battery Top View

EUT – Battery Bottom View

EUT – USB Cable & Adapter View

EUT – Adapter Label View

EUT – Earphone View

EXHIBIT C - TEST SETUP PHOTOGRAPHS

Radiated Emissions View (Below 1 GHz)

Radiated Emissions View (Above 1 GHz)

BELOW IS THE ORIGINAL REPORT

ETSI EN 301 908-1 V6.2.1 (2013-04)
ETSI EN 301 908-13 V6.2.1 (2013-10)

TEST REPORT

For

Shenzhen East Xinyi Electronic Techonology Co., Ltd.

Room 20A, TAIBANG Techonology bldg, High-Tech Park, Nanshan District, Shenzhen, China

Tested Model: EX8535
Multiple Model: EX8537

Report Type:	**Product Type:**
Original Report	Brondi 530 4G HD

Test Engineer:	Haiguo Li
Report Number:	RSZ151208012-22F
Report Date:	2015-12-30
Reviewed By:	Candy Li RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen East Xinyi Electronic Techonology Co., Ltd.*'s product, model number: *EX8535* or the "EUT" in this report was a *Brondi 530 4G HD*, which was measured approximately: 143 mm (L) × 72 mm (W) × 8 mm (H), rated with input voltage: DC 3.8V rechargeable Li-ion battery or DC 5.0V from the adapter.

Adapter Information:
Model: KS15002R
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5.0V, 1000mA

Note: The series product, model EX8537 and EX8535 are electrically identical, they are just different from model number and process of rear cover due to marketing purposes. Detailed information is stated and guaranteed by the applicant which was explained in the attached declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: 1507305 (Assigned by BACL, Shenzhen).The EUT supplied by the applicant was received on 2015-12-08.*

Objective

This Type approval report is prepared on behalf of *Shenzhen East Xinyi Electronic Techonology Co., Ltd.* accordance with ETSI EN 301 908-1 V6.2.1 (2013-04), IMT cellular networks;Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements; and ETSI EN 301 908-13 V6.2.1 (2013-10), 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).

The objective is to determine the EUT compliance with ETSI EN 301 908-1 V6.2.1 (2013-04) and ETSI EN 301 908-13 V6.2.1 (2013-10).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 908-1 V6.2.1 (2013-04) and ETSI EN 301 908-13 V6.2.1 (2013-10).

Measurement Uncertainty

According to the requirements of ETSI EN 301 908-1 and ETSI EN 301 908-13, F_{lab} (the value of the measurement uncertainty according to the requirements of ETSI TR 100 028) shall be, for each measurement, equal to or lower than the figure in the following table:

SN	Parameter	F_{lab}	Maximum allowable uncertainty
1	ERP 30MHz-180MHz	±3.62dB	±6 dB
2	ERP 180MHz-12750MHz	±2.6 dB	±3 dB
3	Transmitter maximum output power	±0.6 dB	±0,7 dB
4	Transmitter spectrum emissions mask	±1,5 dB	±1,5 dB
5	Transmitter spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
6	Transmitter spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
7	Transmitter Minimum output power	±0.6 dB	±2,0 dB
8	Receiver Adjacent Channel Selectivity (ACS)	±1.5 dB*	±1,1 dB
9	Receiver Blocking characteristics 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
10	Receiver Blocking characteristics 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
11	Receiver spurious response 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
12	Receiver spurious response 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
13	Receiver intermodulation characteristics	±1.4 dB	±1,4 dB
14	Receiver spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
15	Receiver spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
16	Transmitter adjacent channel leakage power ratio	±0.8 dB	±0,8 dB

Note:

* Test system of laboratory have a measurement uncertainty greater than that specified in harmonized standard, this equipment can still be used provided that an adjustment is made follows:
any additional uncertainty in the test system over and above that specified in harmonized standard should be used to tighten the test requirements - making the test harder to pass (for some tests, e.g. receiver tests, this may require modification of stimulus signals). This procedure will ensure that a test system not compliant with harmonized standard does not increase the probability of passing a EUT that would otherwise have failed a test if a test system compliant with harmonized standard had been used.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing according to EN 301 908-1 and EN 301 908-13.

EUT Exercise Software

No exercise software.

Special Accessories

No special accessory.

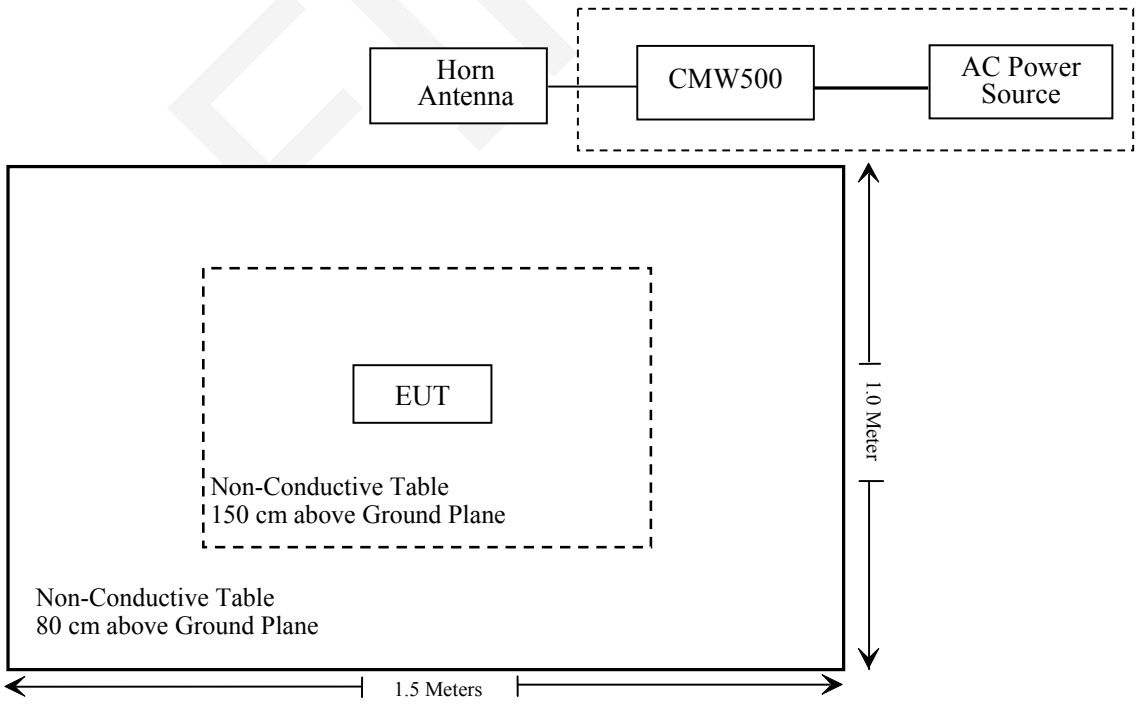
Equipment Modifications

No modifications were made to the unit tested.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Wideband Radio Communication Tester	CMW500	114772

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ETSI EN 301 908-1 V6.2.1	Description of Test	Test Result
§4.2.2	Radiated emissions (UE)	Compliance
§4.2.3	Radiated emissions (BS and repeater)	Not Applicable
§4.2.4	Control and monitoring functions (UE)	Compliance

ETSI EN 301 908-13 V6.2.1	Description of Test	Test Result
§4.2.2	Transmitter maximum output power	Compliance
§4.2.3	Transmitter spectrum emission mask	Compliance
§4.2.4	Transmitter spurious emissions	Compliance
§4.2.5	Transmitter minimum output power	Compliance
§4.2.6	Receiver Adjacent Channel Selectivity (ACS)	Compliance
§4.2.7	Receiver blocking characteristics	Compliance
§4.2.8	Receiver spurious response	Compliance
§4.2.9	Receiver intermodulation characteristics	Compliance
§4.2.10	Receiver spurious emissions	Compliance
§4.2.11	Transmitter Adjacent Channel Leakage power Ratio	Compliance

ETSI EN 301 908-1 V6.2.1 (2013-04) §4.2.2 – RADIATED EMISSIONS (UE)

Applicable Standard

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

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

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

Limits

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

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 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, Mobile WiMAX, 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.			

Test configurations

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;

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Signal Generator	HP 8341B	2624A00116	2015-07-02	2016-07-01
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-11-03	2016-11-03
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-29	2017-12-28

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Result: Compliant.

Please refer to following data table.

Traffic Mode

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 301 908-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Band 3										
189.25	36.58	259	1.2	H	-60.4	0.29	0	-60.69	-36	24.69
189.25	35.47	148	1.6	V	-61.5	0.29	0	-61.79	-36	25.79
3495.00	46.58	326	1.4	H	-49.0	1.90	10.00	-40.90	-30	10.90
3495.00	44.79	299	1.3	V	-50.9	1.90	10.00	-42.80	-30	12.80
5242.50	42.11	162	2.4	H	-51.8	1.80	10.10	-43.50	-30	13.50
5242.50	41.32	173	2.1	V	-51.9	1.80	10.10	-43.60	-30	13.60
Band 7										
189.25	36.54	279	1.4	H	-60.5	0.29	0	-60.79	-36	24.79
189.25	35.42	195	1.5	V	-61.6	0.29	0	-61.89	-36	25.89
5070.00	45.28	126	2.4	H	-51.0	2.30	10.10	-43.20	-30	13.20
5070.00	44.21	126	2.3	V	-51.3	2.30	10.10	-43.50	-30	13.50
7605.00	43.25	33	2.1	H	-47.1	4.70	10.80	-41.00	-30	11.00
7605.00	41.79	10	1.0	V	-49.4	4.70	10.80	-43.30	-30	13.30
Band 20										
189.25	36.32	323	1.5	H	-60.7	0.29	0	-60.99	-36	24.99
189.25	35.75	333	2.0	V	-61.2	0.29	0	-61.49	-36	25.49
1694.00	45.74	17	1.5	H	-61.7	1.60	6.90	-56.40	-30	26.40
1694.00	44.32	36	2.0	V	-63.5	1.60	6.90	-58.20	-30	28.20
2541.00	42.45	67	2.3	H	-62.1	1.70	8.60	-55.20	-30	25.20
2541.00	41.66	160	1.3	V	-63.2	1.70	8.60	-56.30	-30	26.30

Idle Mode

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 301 908-1	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Band 3										
192.25	30.25	255	1.6	H	-66.7	0.29	0	-66.99	-57	9.99
192.25	31.40	106	1.6	V	-65.6	0.29	0	-65.89	-57	8.89
1424.25	41.74	303	1.1	H	-66.7	1.20	6.40	-61.50	-47	14.50
1424.25	40.32	215	1.8	V	-68.1	1.20	6.40	-62.90	-47	15.90
Band 7										
192.25	30.69	84	2.1	H	-66.3	0.29	0	-66.59	-57	9.59
192.25	30.99	176	1.7	V	-66.0	0.29	0	-66.29	-57	9.29
1424.25	41.42	260	2.0	H	-67.0	1.20	6.40	-61.80	-47	14.80
1424.25	40.36	277	1.0	V	-68.1	1.20	6.40	-62.90	-47	15.90
Band 20										
192.25	30.63	300	2.3	H	-66.4	0.29	0	-66.69	-57	9.69
192.25	31.09	41	2.2	V	-65.9	0.29	0	-66.19	-57	9.19
1424.25	41.28	69	1.4	H	-67.2	1.20	6.40	-62.00	-47	15.00
1424.25	40.31	109	1.7	V	-68.1	1.20	6.40	-62.90	-47	15.90

Note: 1) Absolute Level = SG Level - Cable Loss + Antenna Gain
2) Margin = Limit - Absolute Level

ETSI EN 301 908-1 V6.2.1 (2013-04) §4.2.4 – CONTROL AND MONITORING FUNCTIONS (UE)

Applicable Standard

This requirement, together with other control and monitoring technical requirements identified in the table of cross references in the applicable part, verifies that the control and monitoring functions of the UE prevent it from transmitting in the absence of a valid network.

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

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

Limits:

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

Test method

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

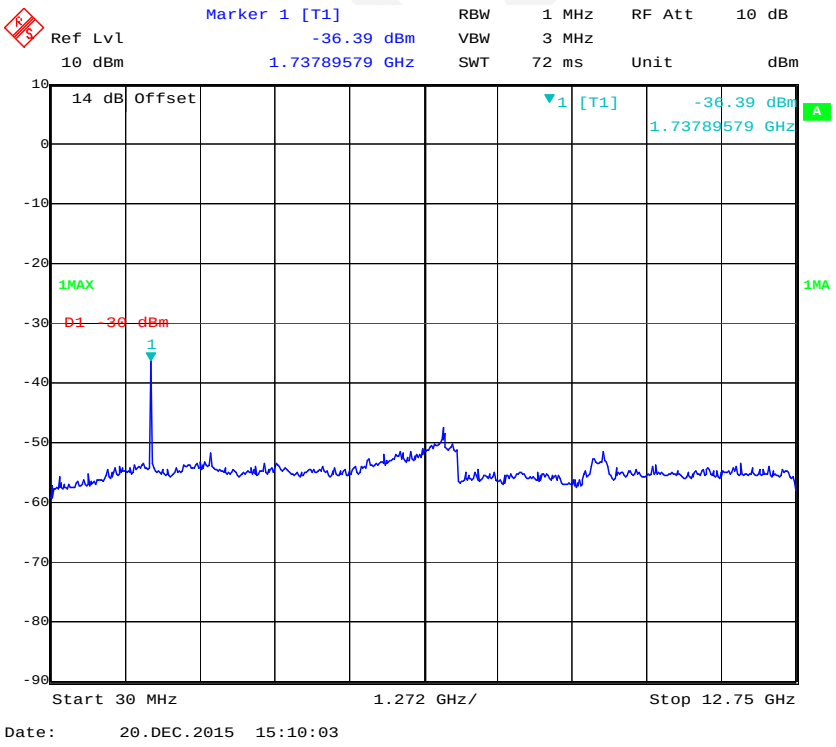
Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-20.

Test Result: Compliant.



ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.2 – TRANSMITTER MAXIMUM OUTPUT POWER

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.2.1, Transmitter maximum output power for Single Carrier:
The following UE Power Classes define the maximum output power for any transmission bandwidth within the channel bandwidth. The period of measurement shall be at least one sub-frame (1 ms).

Limits

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).

Test Condition

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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

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.

Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Mode: Transmitting

Test Result: Compliant, the worst case, please refer to following data tables.

Test Band	Test Bandwidth	Test RB	Test Channel	Test Condition					Limit
				VN/TN	VH/TH	VH/TL	VL/TH	VL/TL	
E-UTRA Band 3	1.4MHz	RB1	L	22.15	22.25	22.12	22.38	22.11	23±2.7dBm
			M	22.26	22.35	22.21	22.47	22.13	
			H	22.26	22.35	22.22	22.36	22.04	
		RB5	L	22.23	22.35	22.15	22.45	22.12	
			M	22.35	22.45	22.27	22.75	22.12	
			H	22.34	22.49	22.12	22.45	22.12	
	5MHz	RB1	L	22.36	22.52	22.23	22.48	22.12	
			M	22.21	22.53	22.12	22.47	22.12	
			H	22.25	22.46	22.12	22.58	22.13	
		RB8	L	22.21	22.42	22.12	22.56	22.11	
			M	22.34	22.43	22.23	22.46	22.12	
			H	22.32	22.48	22.12	22.49	22.15	
	20MHz	RB1	L	22.31	22.49	22.25	22.75	22.16	
			M	22.24	22.47	22.13	22.56	22.12	
			H	22.15	22.36	22.12	22.34	22.12	
		RB18	L	22.13	22.36	22.12	22.76	22.08	
			M	22.14	22.28	22.12	22.46	22.05	
			H	22.15	22.34	22.14	22.56	22.07	
E-UTRA Band 7	5MHz	RB1	L	22.16	22.35	22.11	22.34	22.03	
			M	22.12	22.58	22.08	22.53	22.07	
			H	22.14	22.35	22.03	22.76	22.03	
		RB8	L	22.15	22.75	22.05	22.43	22.01	
			M	22.24	22.47	22.12	22.43	22.11	
			H	22.25	22.49	22.12	22.85	22.02	
	20MHz	RB1	L	22.32	22.57	22.12	22.55	22.13	
			M	22.34	22.47	22.21	22.58	22.12	
			H	22.36	22.57	22.12	22.54	22.11	
		RB18	L	22.37	22.45	22.12	22.48	22.12	
			M	22.32	22.46	22.21	22.75	22.12	
			H	22.42	22.58	22.27	22.74	22.11	

Test Band	Test Bandwidth	Test RB	Test Channel	Test Condition					Limit
				VN/TN	VH/TH	VH/TL	VL/TH	VL/TL	
E-UTRA Band 20	5MHz	RB1	L	22.43	22.53	22.22	22.56	22.13	23±2.7dBm
			M	22.41	22.54	22.12	22.74	22.12	
			H	22.46	22.64	22.14	22.69	22.11	
		RB8	L	22.52	22.75	22.37	22.68	22.13	
			M	22.53	22.86	22.31	22.85	22.13	
			H	22.54	22.75	22.32	22.96	22.28	
	20MHz	RB1	L	22.55	22.65	22.12	22.76	22.36	
			M	22.52	22.76	22.23	22.69	22.27	
			H	22.53	22.87	22.22	22.89	22.13	
		RB18	L	22.56	22.33	22.27	22.35	22.28	
			M	22.53	22.25	22.20	22.27	22.17	
			H	22.54	22.24	22.20	22.26	22.19	

Note:

L.V.: Low Voltage 3.5V_{DC}
L.T.: Low Temperature –20℃
N.V.: Normal Voltage 3.8V_{DC}
N.T.: Normal Temperature +25℃
H.V.: High Voltage 4.2V_{DC}
H.T.: High Temperature +55℃
Nominal Voltage: 3.8V_{DC}

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.3 – TRANSMITTER SPECTRUM EMISSION MASK

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.3.1, Transmitter spectrum emission mask for Single Carrier:

The spectrum emission mask of the UE applies to frequencies (ΔfOOB) starting from the ± edge of the assigned E-UTRA channel bandwidth

Limit:
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.

Test Condition

Test environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

Ensure the UE is in State 3A-RF according to TS 136 508 [2], clause 5.2A.2.

Test Procedure

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.

Send continuously uplink power control "up" commands in the uplink scheduling information to the UE until the UE transmits at PUMAX level.

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.

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 6.6.2

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Mode: Transmitting

Test Result: Compliant.

Please refer to the plots in the appendix A.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.4 – TRANSMITTER SPURIOUS EMISSIONS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.4.1, Transmitter spurious emissions for Single Carrier:

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.

Limits

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 ΔfOOB + 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 ΔfOOB (MHz) from the edge of the channel bandwidth shown in table 4.2.4.1.2-1.

Table 4.2.4.1.2-3: Spurious emission band UE co-existence limits

E-UTRA Band	Spurious emission						
	Protected band	Frequency range (MHz)			Maximum Level (dBm)	MBW (MHz)	Comment
1	E-UTRA Band 1, 7, 8, 20, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3, 34	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	Frequency range	1 900	-	1 915	-15,5	5	
	Frequency range	1 915	-	1 920	+1,6	5	
3	E-UTRA Band 1, 7, 8, 20, 33, 34, 38, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 42	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
7	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	Frequency range	2 570	-	2 575	+1,6	5	Note 3
	Frequency range	2 575	-	2 620	-15,5	5	Note 3
8	E-UTRA Band 1, 20, 33, 34, 38, 40	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
	E-UTRA band 7	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
	E-UTRA Band 8	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
20	E-UTRA Band 1, 3, 7, 8, 33, 34, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 20	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
	E-UTRA Band 38, 42	F_{DL_low}	-	F_{DL_high}	-50	1	Note 2
33	E-UTRA Band 1, 7, 8, 20, 34, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	E-UTRA Band 3	F_{DL_low}	-	F_{DL_high}	-50	1	Note 3
34	E-UTRA Band 1, 3, 7, 8, 20, 33, 38, 40, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
38	E-UTRA Band 1, 3, 8, 20, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
	Frequency range	2 620	-	2 690	-15,5	5	
40	E-UTRA Band 1, 3, 33, 34, 42, 43	F_{DL_low}	-	F_{DL_high}	-50	1	
42	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 38, 40	FDL_low	-	FDL_high	-50	1	
	E-UTRA Band 43	FDL_low	-	FDL_high	-50	1	
43	E-UTRA Band 1, 3, 7, 8, 20, 33, 34, 38, 40	FDL_low	-	FDL_high	-50	1	
	E-UTRA Band 42	FDL_low	-	FDL_high	-50	1	

NOTE 1: F_{DL_low} and F_{DL_high} refer to each frequency range of the protected E-UTRA band.

NOTE 2: As exceptions, measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd or 4th harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see figure 5.4.2-1 in TS 136 521-1 [1]) for which the 2nd, 3rd or 4th harmonic totally or partially overlaps the measurement bandwidth (MBW). For frequency with 2nd, 3rd or 4th harmonic spurious emissions, the measurements are covered in table 4.2.4.1.2-2.

NOTE 3: These requirements also apply for the frequency ranges that are less than Δf_{OOB} (MHz) in table 4.2.4.1.2-1 from the edge of the channel bandwidth.

NOTE 2: For measurement conditions at the edge of each frequency range, the lowest frequency of the measurement position in each frequency range should be set at the lowest boundary of the frequency range plus MBW/2. The highest frequency of the measurement position in each frequency range should be set at the highest boundary of the frequency range minus MBW/2. MBW denotes the measurement bandwidth defined for the protected band.

Table 4.2.4.1.2-4: Additional spurious emissions limits

Operating band	Frequency bandwidth	Maximum Level (dBm)	Measurement bandwidth (MHz)
20	470 MHz ≤ f ≤ 790 MHz	-65	8
NOTE: The conformance shall be assessed using the measurement position placed at the following centre frequencies: 474 MHz, 586 MHz, 690 MHz, 754 MHz, 770 MHz and 786 MHz.			

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0

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.

Test Procedure

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.

Send continuously Up power control commands in the uplink scheduling information to the UE until the UE transmits at PUMAX level.

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.

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-20.

Test Mode: Transmitting

Test Result: Compliant.

Please refer to plot in the appendix B.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.5 – TRANSMITTER MINIMUM OUTPUT POWER

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.5.1, Transmitter minimum output power for Single Carrier:

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.

Limits

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

Test Condition

Initial conditions are a set of test configurations the UE needs to be tested in and the steps for the SS to take with the UE to reach the correct measurement state.

The initial test configurations consist of environmental conditions, test frequencies, and channel bandwidths based on E-UTRA operating bands specified in table 5.4.2.1-1. All of these configurations shall be tested with applicable test parameters for each channel bandwidth, and are shown in table 6.3.2.4.1-1. The details of the uplink reference measurement channels (RMCs) are specified in Annexes A.2. Configurations of PDSCH and PDCCH before measurement are specified in Annex C.2.

Table 6.3.2.4.1-1: Test Configuration Table

Initial Conditions				
Test Environment as specified in TS 36.508[7] subclause 4.1	Normal, TL/VL, TL/VH, TH/VL, TH/VH			
Test Frequencies as specified in TS36.508 [7] subclause 4.3.1	Low range, Mid range, High range			
Test Channel Bandwidths as specified in TS 36.508 [7] subclause 4.3.1	Lowest, 5MHz, Highest			
Test Parameters for Channel Bandwidths				
	Downlink Configuration	**Uplink Configuration**		
Ch BW	N/A for min output power test	Mod'n	RB allocation	
			FDD	TDD
1.4MHz		QPSK	6	6
3MHz		QPSK	15	15
5MHz		QPSK	25	25
10MHz		QPSK	50	50
15MHz		QPSK	75	75
20MHz		QPSK	100	100
Note 1: Test Channel Bandwidths are checked separately for each E-UTRA band, the applicable channel bandwidths are specified in Table 5.4.2.1-1.				

Connect the SS to the UE antenna connectors as shown in TS 36.508 [7] Annex A, in Figure A.3.

The parameter settings for the cell are set up according to TS 36.508 [7] subclause 4.4.3.

Downlink signals are initially set up according to Annex C.0, C.1, and C.3.0, and uplink signals according to Annex H.1 and H.3.0.

The UL Reference Measurement channel is set according to Table 6.3.2.4.1-1.

Propagation conditions are set according to Annex B.0.

Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 5.2A.2. Message contents are defined in clause 6.3.2.4.3.

Test Procedure

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 6.3.2.1.4.1-1. Since the UE has no payload and no loopback data to send the UE sends uplink MAC padding bits on the UL RMC

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.

Measure the mean power of the UE in the associated measurement bandwidth specified in Table 6.3.2.5-1 for the specific channel bandwidth under test. The period of measurement shall be the continuous duration of one subframe (1ms). For TDD slots with transient periods are not under test.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Mode: Transmitting

Test Band	Test Bandwidth	Test RB	Test Channel	Test Condition					Limits
				VN/TN	VH/TH	VH/TL	VL/TH	VL/TL	
E-UTRA Band 3	1.4MHz	RB6	L	-48.32	-48.13	-49.58	-48.12	-48.56	≤-39dBm
			M	-45.25	-45.14	-45.69	-44.96	-45.56	
			H	-45.14	-45.05	-46.12	-45.08	-45.79	
	5MHz	RB25	L	-46.25	-46.19	-46.46	-46.18	-46.48	
			M	-45.42	-45.27	-45.59	-45.15	-45.86	
			H	-48.23	-48.13	-49.24	-48.08	-49.19	
	20MHz	RB100	L	-45.35	-45.12	-45.45	-44.89	-45.63	
			M	-45.41	-45.21	-46.27	-45.08	-45.78	
			H	-45.26	-45.12	-45.75	-45.21	-45.85	
E-UTRA Band 7	5MHz	RB25	L	-51.36	-51.21	-52.78	-51.23	-51.54	
			M	-50.45	-50.12	-51.48	-50.32	-51.79	
			H	-48.24	-48.12	-49.28	-48.13	-48.79	
	20MHz	RB100	L	-45.12	-44.86	-45.25	-45.13	-45.76	
			M	-45.23	-45.14	-45.87	-45.13	-45.69	
			H	-46.36	-46.14	-46.69	-46.18	-46.87	
E-UTRA Band 20	5MHz	RB25	L	-45.24	-45.15	-45.75	-45.13	-45.78	
			M	-50.23	-50.13	-51.45	-50.17	-50.97	
			H	-48.23	-48.15	-49.08	-48.13	-48.77	
	20MHz	RB100	L	-45.56	-45.16	-45.78	-45.23	-45.87	
			M	-45.14	-45.08	-45.86	-45.11	-45.75	
			H	-46.15	-46.11	-46.59	-45.09	-46.49	

Note:

L.V.: Low Voltage 3.5V_{DC}
L.T.: Low Temperature –20℃
N.V.: Normal Voltage 3.8V_{DC}
N.T.: Normal Temperature +25℃
H.V.: High Voltage 4.2V_{DC}
H.T.: High Temperature +55℃
Nominal Voltage: 3.8V_{DC}

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.6 – RECEIVER ADJACENT CHANNEL SELECTIVITY (ACS)

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.6,
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).

Limits

The throughput Rav shall be ≥ 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].							

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS and interfering source to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.5.4.1-1.

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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.

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 $f \leq 3{,}0$ GHz or within +0, -4,0 dB of the target level for carrier frequency 3,0 GHz $< f \leq 4{,}2$ GHz, for at least the duration of the Throughput measurement (obtain correct UE output power as specified in TS 136 521-1 [1]).

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.

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

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]).

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.

Measure the average throughput for a duration sufficient to achieve statistical significance according to TS 136 521-1 [1], annex G.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28

Test Result: Compliant.

Please refer the following table.

Test Band	Test Bandwidth	Test RB	Test Channel	Throughput (%)				Limits (%)
				Case 1		Case 2		
				$F\text{-}F_{offset}$	$F+F_{offset}$	$F\text{-}F_{offset}$	$F+F_{offset}$	
Band 3	1.4 MHz	6	M	99.45	99.35	99.41	99.23	≥95
	5 MHz	25		99.36	99.26	99.85	99.52	
	20 MHz	100		99.32	99.35	99.43	99.32	
Band 7	5 MHz	25		99.25	99.56	99.52	99.36	
	20 MHz	100		99.65	99.52	99.33	99.42	
Band 20	5 MHz	25		99.56	99.51	99.53	99.47	
	20 MHz	100		99.45	99.25	99.63	99.52	

TSI EN 301 908-13 V6.2.1 (2013-10) §4.2.7 – RECEIVER BLOCKING CHARACTERISTICS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.7:

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

Limit:

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 max(24, 6 · □NRB / 6□) exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size, where RB N 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 - FIoffset, case 1; and
b) the carrier frequency + BW/2 + FIoffset, 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].

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.6.2.4.1-1. Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Result: Compliance.

In-Band Blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Case	Interfering Signals Frequency	Throughput (%)	Limits (%)
Band 3	1.4MHz	M	6	1	1839.6875	98.52	⩾95
					1845.3125	98.21	
				2	1800.9875	98.32	
					1890.0125	98.41	
	5MHz	M	25	1	1832.4875	98.32	
					1852.5125	98.21	
				2	1802.9875	98.42	
					1892.0125	98.53	
	20MHz	M	100	1	1824.9875	98.43	
					1860.0125	98.52	
				2	1884.9875	98.43	
					1894.0125	98.46	
Band 7	5MHz	M	25	1	2644.9875	98.42	
					2665.0125	98.32	
				2	2615.9875	98.34	
					2700.0125	98.49	
	20MHz	M	100	1	2637.4875	98.43	
					2672.5125	98.53	
				2	2618.9875	98.57	
					2703.0125	98.32	
Band 20	5MHz	M	25	1	795.9875	98.34	
					816.0125	98.32	
				2	780.9875	98.42	
					830.0125	98.12	
	20MHz	M	100	1	788.4875	98.41	
					823.5125	98.35	
				2	785.9875	98.48	
					834.0125	98.42	

Out-Band Blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Frequency Range	Worst Throughput (%)			Limits (%)
					Range 1	Range 2	Range 3	
Band 3	1.4MHz	H	6	F_{low}	99.25	99.36	/	⩾95
				F_{high}	99.35	99.45	/	
	5MHz	H	25	F_{low}	99.26	99.36	/	
				F_{high}	99.27	99.35	/	
	20MHz	H	100	F_{low}	99.34	99.26	99.56	
				F_{high}	99.45	99.35	99.41	
Band 7	5MHz	H	25	F_{low}	98.42	99.42	/	
				F_{high}	99.12	99.21	/	
	20MHz	H	100	F_{low}	99.17	99.23	99.21	
				F_{high}	99.15	99.52	99.41	
Band 20	5MHz	H	25	F_{low}	99.36	99.14	/	
				F_{high}	99.24	99.14	/	
	20MHz	H	100	F_{low}	99.28	99.31	99.23	
				F_{high}	99.27	99.31	99.41	

Narrow band blocking:

Test Band	Test Bandwidth	Test Channel	Test RB	Throughput (%)	Limits (%)
Band 3	1.4M	M	6	99.52	⩾95
	5M	M	25	99.34	
	20M	M	100	98.41	
Band 7	5M	M	25	99.52	
	20M	M	100	99.47	
Band 20	5M	M	25	99.56	
	20M	M	100	99.24	

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.8 – RECEIVER SPURIOUS RESPONSE

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.8:

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

Limits

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

Test Condition

The initial conditions shall be the same as for those in Out-of-band blocking in clause 5.3.6.1.1 in order to test spurious responses obtained in clause 5.3.6.1.2 under the same conditions

Test Procedure

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.

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.

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.

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].

For the spurious frequency, measure the average throughput for a duration sufficient to achieve statistical significance.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Result: Compliant.

Test Band	Test Bandwidth	Test Channel	Test RB	Throughput (%)	Limits (%)
Band 3	1.4MHz	M	6	98.12	≥95
	5MHz	M	25	98.36	
	20MHz	M	100	98.35	
Band 7	5MHz	M	25	98.42	
	20MHz	M	100	98.25	
Band 20	5MHz	M	25	98.63	
	20MHz	M	100	98.69	

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.9 – RECEIVER INTERMODULATION CHARACTERISTICS

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.9,

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.

Limits

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].

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect the SS and interfering sources to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3

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.

The UL and DL Reference Measurement channels are set according to TS 136 521-1 [1], table 7.8.4.1-1.

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

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.

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 $f \leq 3,0$ GHz or within +0, -4,0 dB of the target level for carrier frequency $3,0 \text{ GHz} < f \leq 4,2$ GHz, for at least the duration of the throughput measurement as specified in TS 136 521-1 [1].

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].

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

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-28.

Test Result: Compliant.

Test Band	Test Bandwidth	Test RB	Test Channel	Throughput (%)		Limits (%)
				Low Interfering	High Interfering	
Band 3	1.4MHz	6	M	99.08	99.75	≥95
	5MHz	25	M	99.24	99.74	
	20MHz	100	M	99.26	99.85	
Band 7	5MHz	25	M	99.14	99.83	
	20MHz	100	M	99.13	99.65	
Band 20	5MHz	25	M	99.18	99.67	
	20MHz	100	M	99.16		

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.10 – RECEIVER SPURIOUS EMISSIONS

Applicable Standard

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

Limits

The measured spurious emissions derived in clause 5.3.9 shall not exceed the maximum level specified in table 4.2.10.2-1.

Table 4.2.10.2-1: General receiver spurious emission requirements

Frequency Band	Measurement bandwidth	Maximum level	Note
30 MHz ≤ f < 1 GHz	100 kHz	-57 dBm	
1 GHz ≤ f ≤ 12,75 GHz	1 MHz	-47 dBm	
NOTE: Unused PDCCH resources are padded with resource element groups with power level given by PDCCH_RA/RB as defined in TS 136 101 [4] clause C.3.1.			

Test Condition

Test Environment: normal, as specified in annex B.

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]:

Connect a spectrum analyzer (or other suitable test equipment) to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

Downlink signals are initially set up according to TS 136 521-1 [1], clauses C.0, C.1 and C.3.1.

The DL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

Repeat step 1 for all E-UTRA Rx antennas of the UE.

Repeat for applicable test frequencies, channel bandwidths and operating band combinations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-20.

Test Mode: Receiving

Test Result: Compliant.

Please refer to the plots in appendix C.

ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.11 – TRANSMITTER ADJACENT CHANNEL LEAKAGE POWER RATIO

Applicable Standard

According to ETSI EN 301 908-13 V6.2.1 (2013-10) §4.2.11.1,

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.

Limits

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 4.2.11.2-2.

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: 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.

Test Condition

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

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]:

Connect the SS to the UE to the UE antenna connectors.

The parameter settings for the cell are set up according to TS 136 508 [2], clause 4.4.3.

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.

The UL Reference Measurement channels are set according to TS 136 521-1 [1].

Propagation conditions are set according to TS 136 521-1 [1], clause B.0.

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.

Test Procedure

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.

Send continuous uplink power control "up" commands in the uplink scheduling information to the UE to ensure that the UE transmits at PUMAX level

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.

Measure the filtered mean power for E-UTRA.

Measure the filtered mean power of the first E-UTRA adjacent channel.

Measure the RRC filtered mean power of the first and the second UTRA adjacent channel.

Calculate the ratio of the power between the values measured in step 4) over step 5) for E-UTRAACLR.

Calculated the ratio of the power between the values measured in step 4) over step 6) for UTRAACLR1, UTRAACLR2.

Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2015-11-15	2016-11-14
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-11-01

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2015-12-20.

Test Result: Compliance.

Please refer to the plots in in appendix D.

EXHIBIT A - CE PRODUCT LABELING

CE Label Format

CE1313

Specifications: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking. 1313: 4 digit notified body number

Note: The label should contain the below content

① The name of the manufacturer or the person responsible for placing the apparatus on the market
② Type
③ Batch and/or serial numbers

Proposed Label Location on EUT

EXHIBIT B - EUT PHOTOGRAPHS

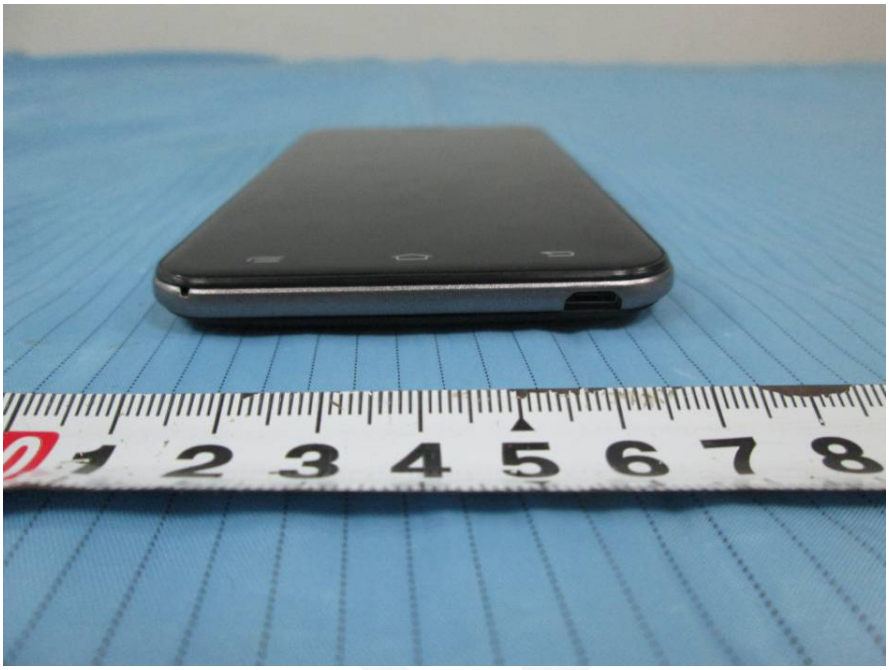
EUT – All View

EUT – Front View

EUT – Rear View

EUT – Top View

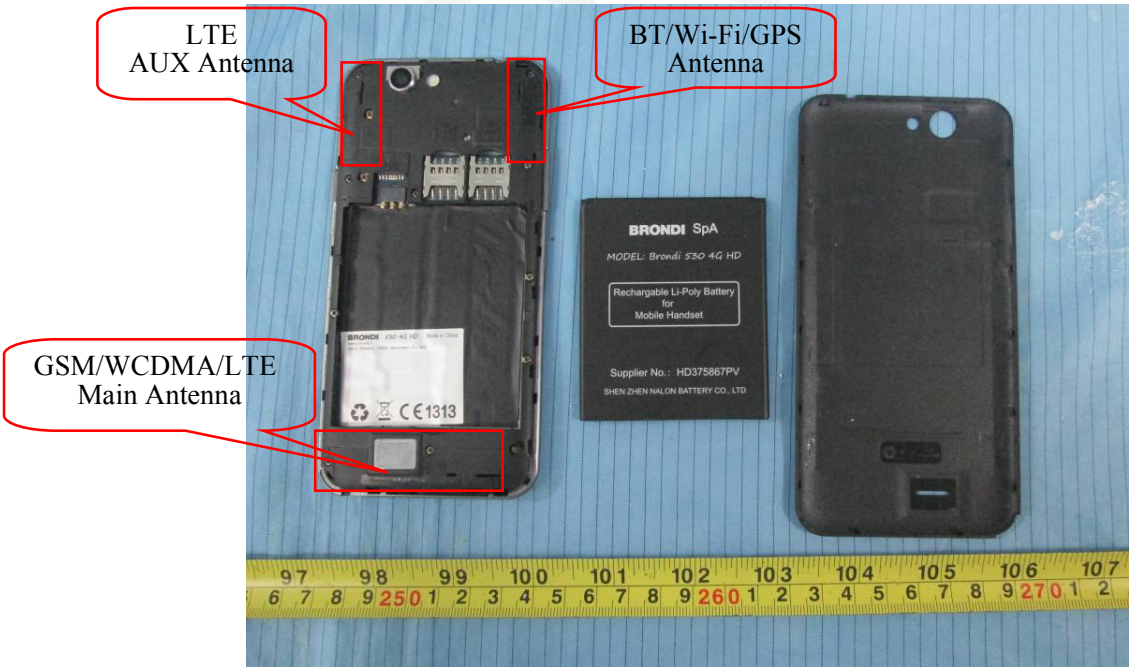
EUT – Bottom View



EUT –Left Side View

EUT – Right Side View

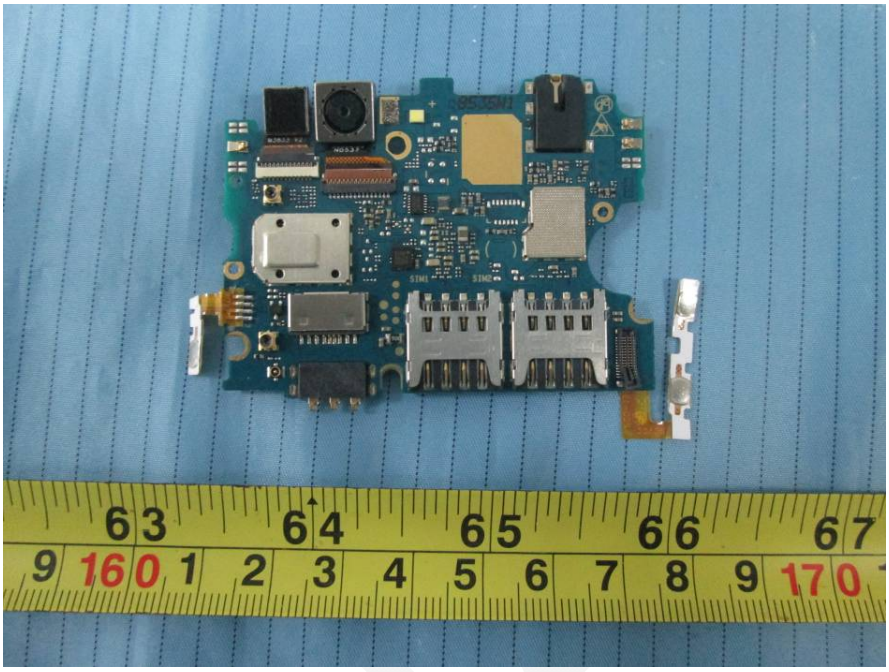
EUT –Cover off View 1



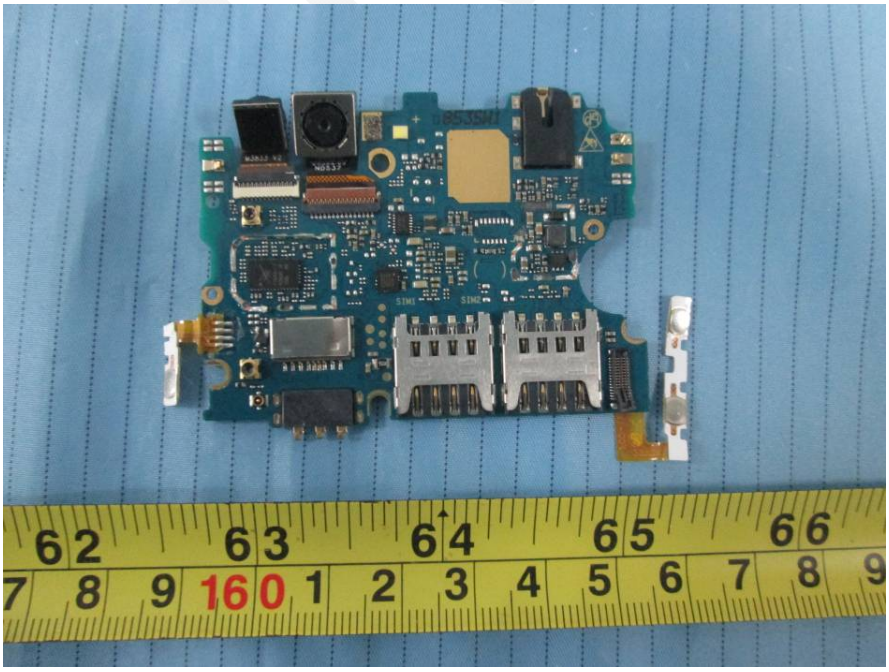
EUT –Cover off View 2

EUT –Cover off View 3

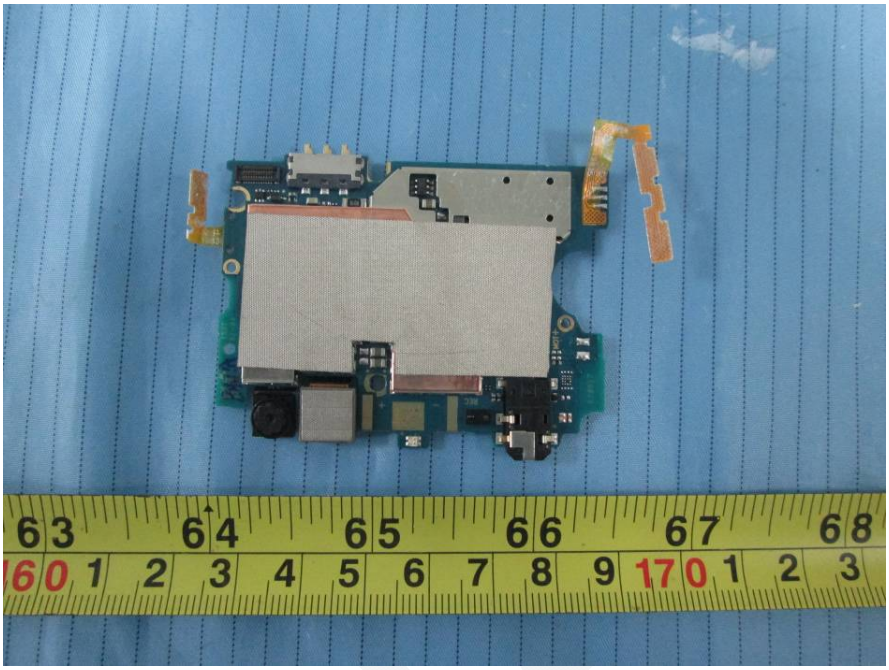
EUT – Main Board Top View



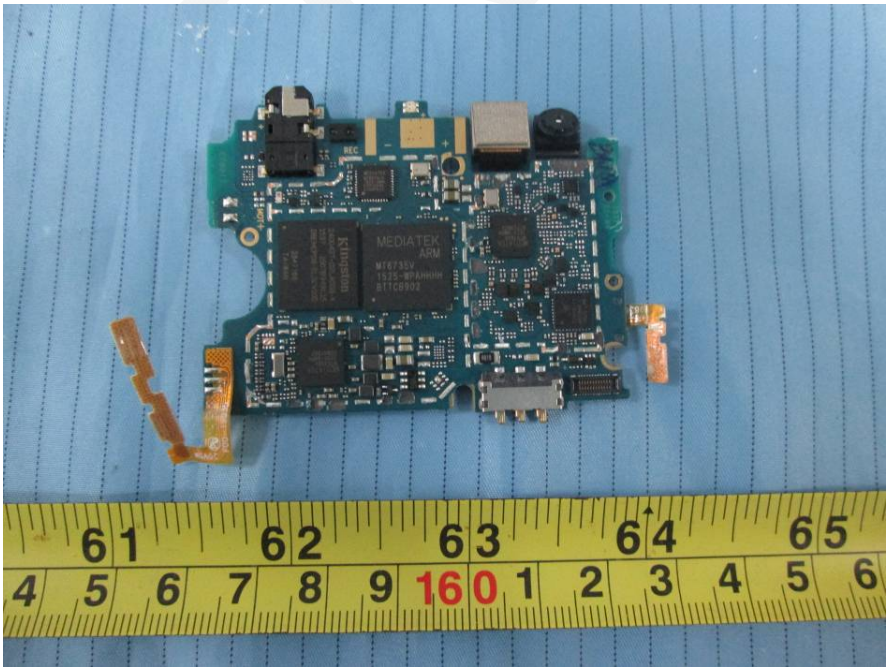
EUT – Main Board Top Shielding off View



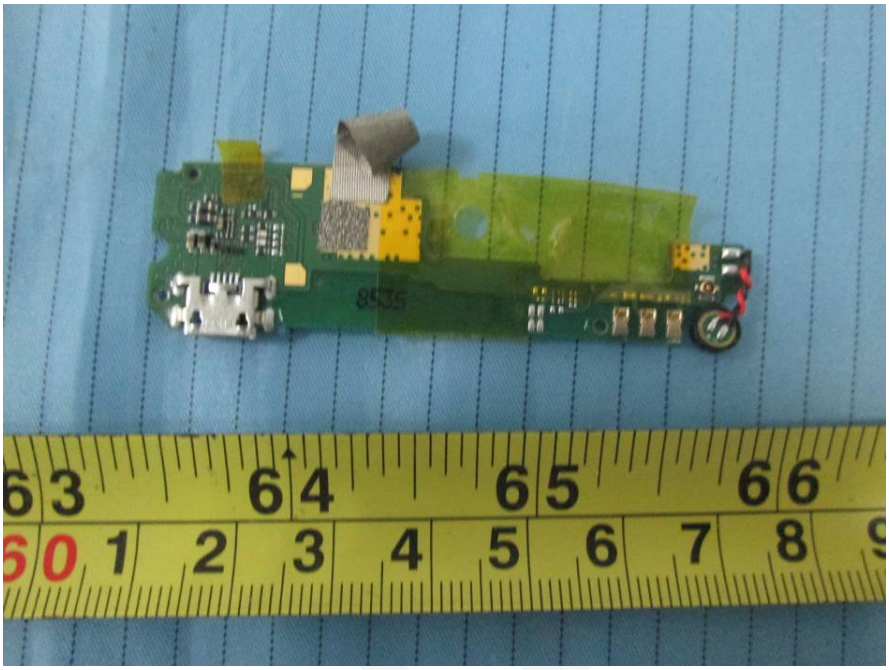
EUT – Main Board Bottom View



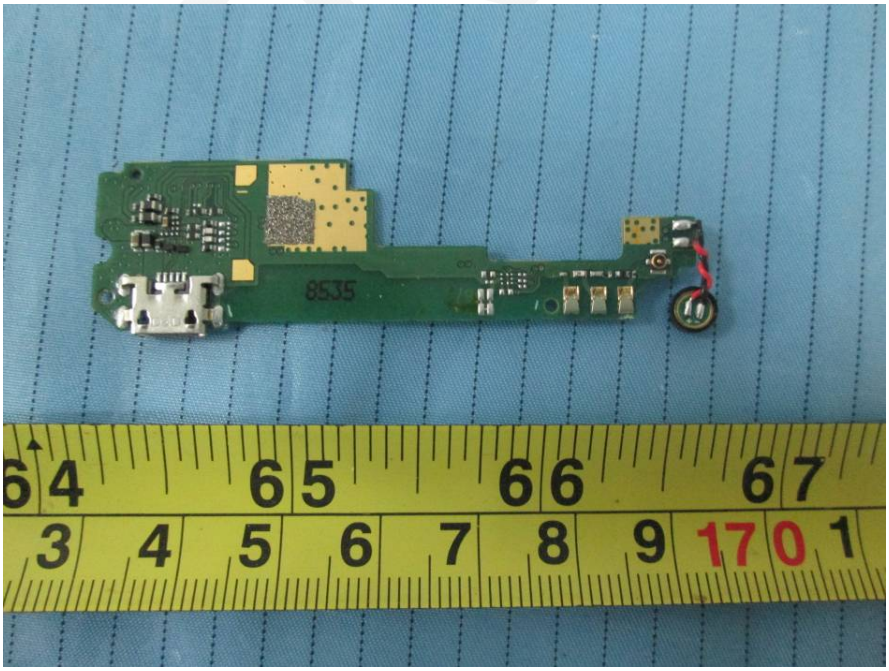
EUT – Main Board Bottom Shielding off View



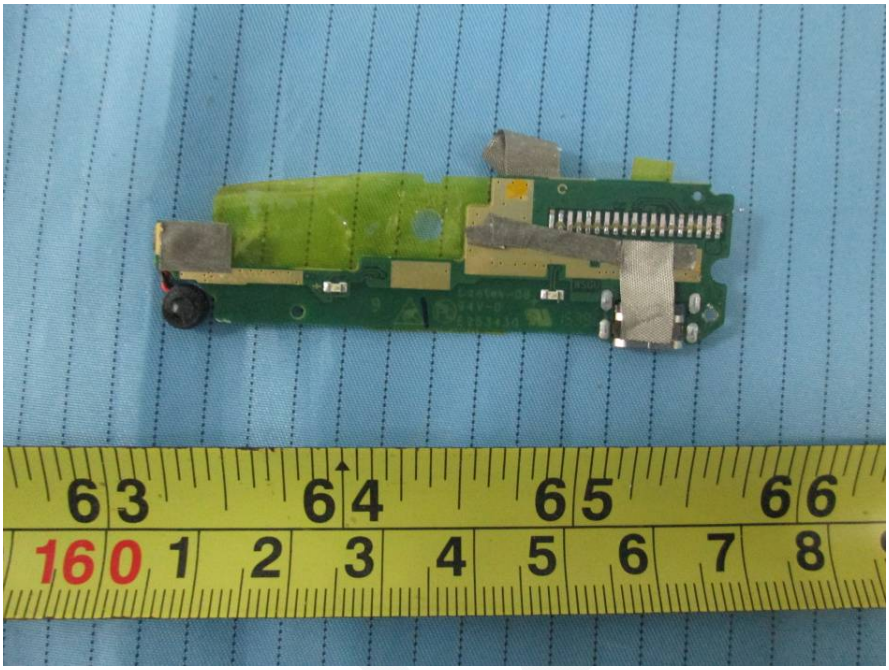
EUT – Sub Board Top View



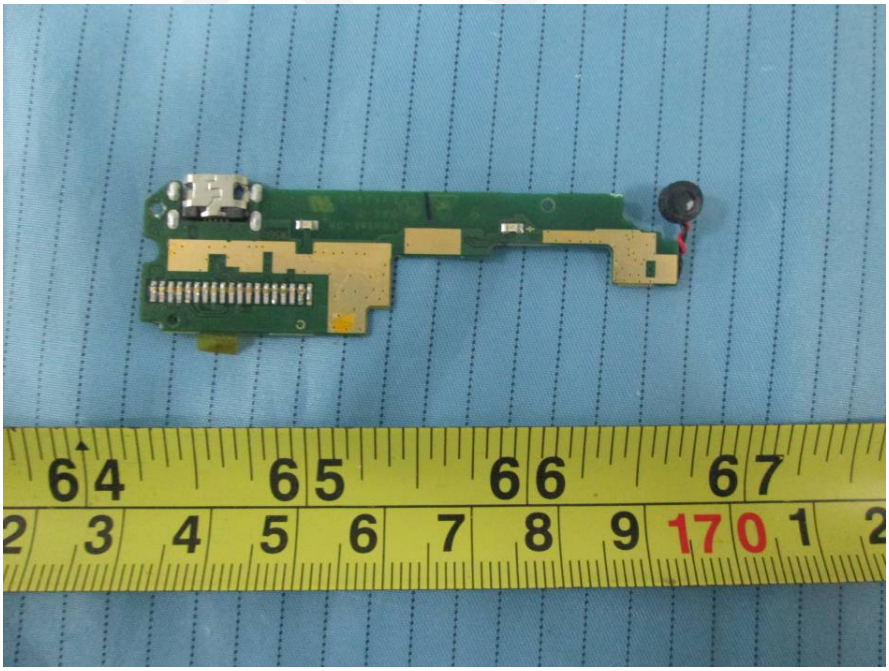
EUT – Sub Board Top Shielding off View



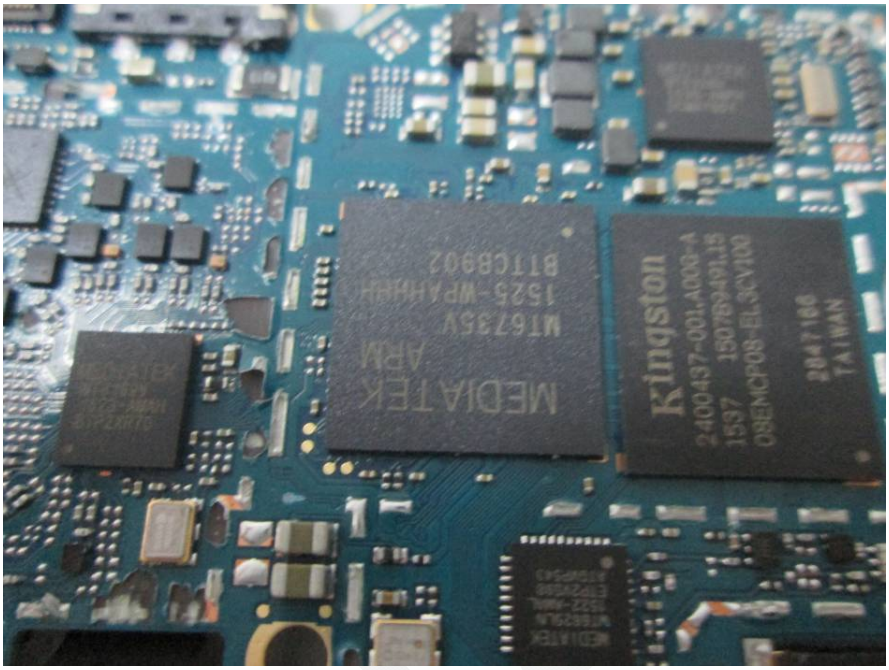
EUT – Sub Board Bottom View



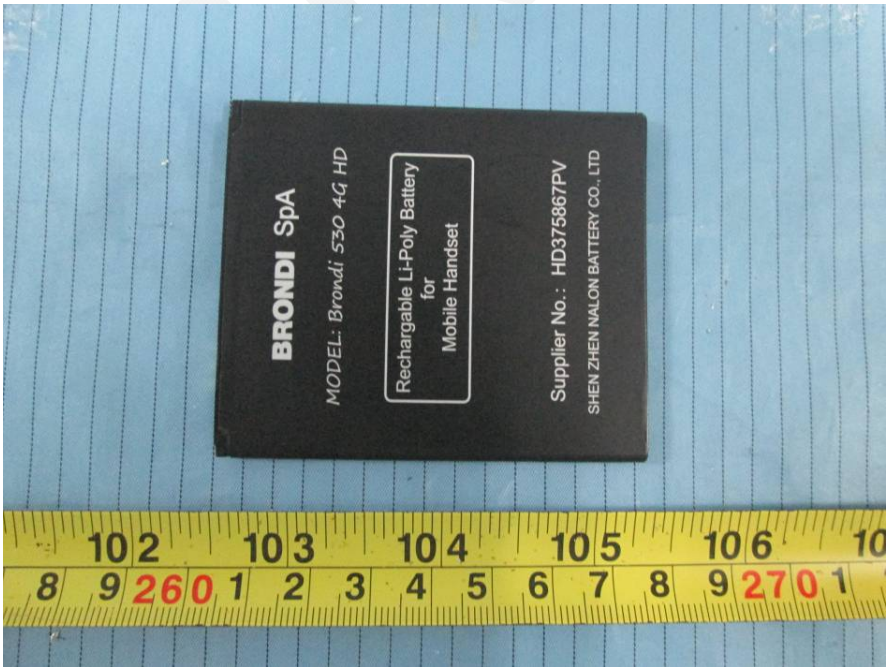
EUT – Main Board Bottom Shielding off View



EUT – IC Chip View



EUT – Battery Top View



EUT – Battery Bottom View

EUT – USB Cable & Adapter View

EUT – USB Cable View

EUT – Adapter Label View

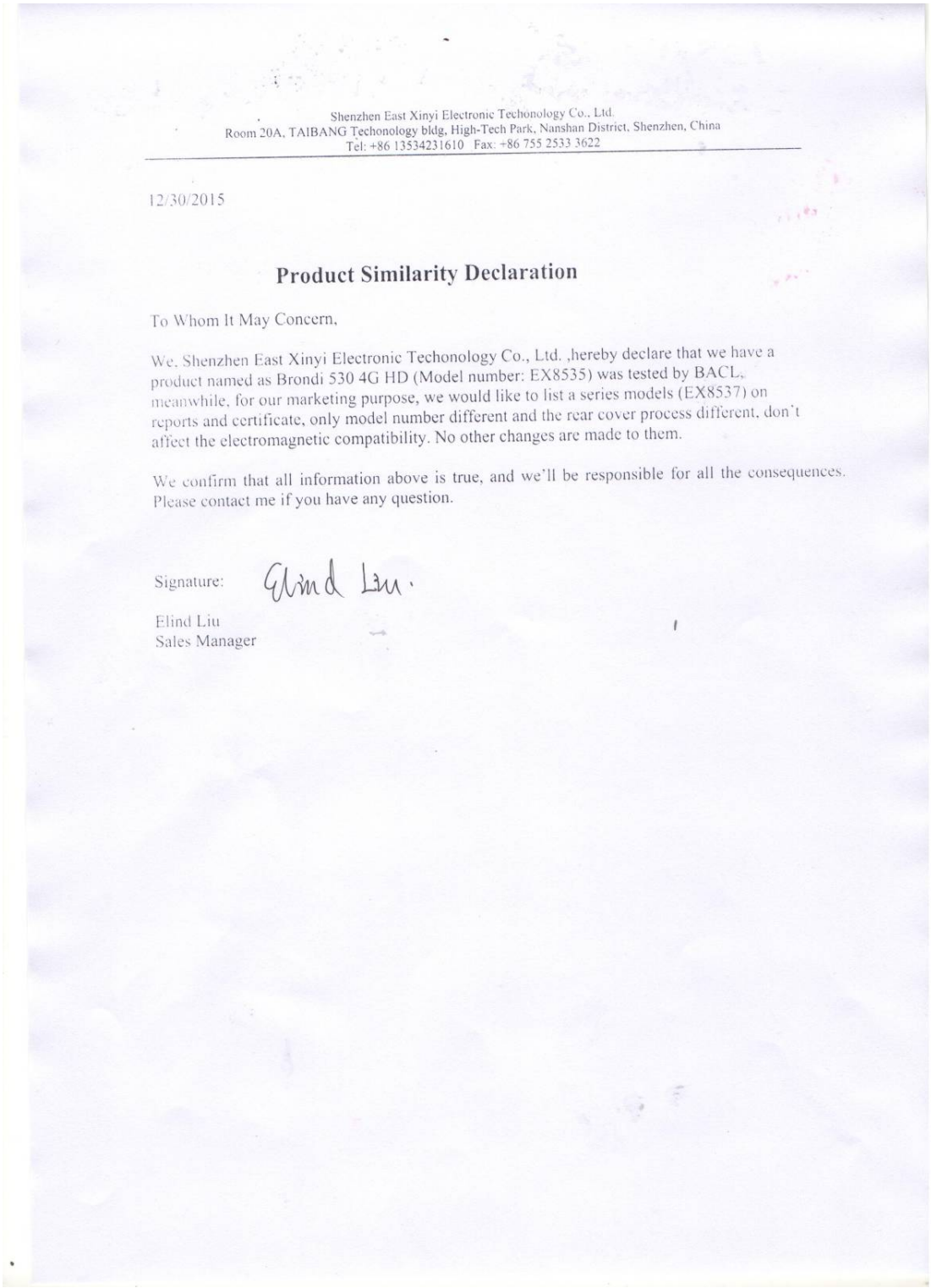
Model: KS15002R
Input: 100-240V ~ 50/60Hz 0.2A
Output: 5.0V ⎓ 1000mA
Shenzhen Kosun Industrial Co., Ltd
BRONDI SpA Made in China

EXHIBIT C - TEST SETUP PHOTOGRAPHS

Radiated Emissions View (Below 1 GHz)

Radiated Emissions View (Above 1 GHz)

PRODUCT SIMILARITY DECLARATION LETTER



Shenzhen East Xinyi Electronic Techonology Co., Ltd.
Room 20A, TAIBANG Techonology bldg, High-Tech Park, Nanshan District, Shenzhen, China
Tel: +86 13534231610 Fax: +86 755 2533 3622

12/30/2015

Product Similarity Declaration

To Whom It May Concern,

We, Shenzhen East Xinyi Electronic Techonology Co., Ltd. ,hereby declare that we have a product named as Brondi 530 4G HD (Model number: EX8535) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (EX8537) on reports and certificate, only model number different and the rear cover process different, don't affect the electromagnetic compatibility. No other changes are made to them.

We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

Signature: Elind Liu.

Elind Liu
Sales Manager

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