



FCC REPORT

Report Reference No...... : **TRE1801018903** R/C.....: 90299

FCC ID..... : **2ANPFZELU-C450**

Applicant's name..... : **CIRION CAPITAL CORPORATION**

Address..... : VIA CINCUENTENARIO PANAMA

Manufacturer..... : UTCOM TECHNOLOGY CO.,LIMITED

Address..... : 4C,Block A, Central Avenue Building, BaoYuan Road,Xixiang Town,Baoan District,Shenzhen,518012

Test item description : **Smart phone**

Trade Mark : Zelu mobile

Model/Type reference..... : C450

Listed Model(s) : -

Standard : **FCC Part 22: PUBLIC MOBILE SERVICES**

Date of receipt of test sample..... : Jan.24,2018

Date of testing..... : Jan.25,2018- Feb.06,2018

Date of issue..... : Feb.07,2018

Result..... : **Pass**

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Testing Laboratory Name : **Shenzhen Huatongwei International Inspection Co., Ltd.**

Address..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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1. Test standards and Report version

1.1. Applicable Standards

The tests were performed according to following standards:

[FCC Part 22](#):PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 2](#):FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

[ANSI C63.26-2015](#): American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01 Power Meas License Digital Systems v03](#): MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

1.2. Report version

Version No.	Date of issue	Description
00	Feb.07,2018	Original

2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
RF Output Power	Part 2.1046 Part 22.913(a)	Pass	William Wang
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b)	Pass	William Wang
Conducted Spurious Emissions	Part 2.1051 Part 22.917	Pass	William Wang
Band Edge	Part 2.1051 Part 22.917	Pass	William Wang
ERP	Part 22.913(a)	Pass	William Wang
Radiated Spurious Emissions	Part 2.1053 Part 22.917	Pass	William Wang
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 22.355	Pass	William Wang
Frequency stability vs. voltage	Part 2.1055(d)(1)(2) Part 22.355	Pass	William Wang
Peak-Average Ratio	-	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	CIRION CAPITAL CORPORATION
Address:	VIA CINCUENTENARIO PANAMA
Manufacturer:	UTCOM TECHNOLOGY CO.,LIMITED
Address:	4C,Block A, Central Avenue Building, BaoYuan Road,Xixiang Town,Baoan District,Shenzhen,518012

3.2. Product Description

Name of EUT:	Smart phone
Trade Mark:	Zelu mobile
Model No.:	C450
Listed Model(s):	-
IMEI :	353448090001136
Power supply:	DC 3.7V
Adapter information:	Input:100-240Va.c.,50/60Hz,0.15A Output: 5Vd.c.,500mA
Hardware version:	ZELU_C450_001R
Software version:	ZELU_C450_TIGOCA_001R
RF Technical Description	
<input checked="" type="checkbox"/> FDD Band 5	
Operation Frequency:	Uplink:824.7 MHz – 848.3 MHz Downlink: 869.7 MHz – 893.3 MHz
Channel bandwidth:	<input checked="" type="checkbox"/> 1.4MHz <input checked="" type="checkbox"/> 3MHz <input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input type="checkbox"/> 15MHz <input type="checkbox"/> 20MHz
Power Class:	<input type="checkbox"/> Class 1 <input type="checkbox"/> Class 2 <input checked="" type="checkbox"/> Class 3 <input type="checkbox"/> Class 4
Modulation type:	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input type="checkbox"/> 64QAM
Antenna type	PIFA antenna
Antenna Gain	Band5: 1.0dBi

3.3. Operation state

➤ **Test frequency list**

FDD Band 5						
Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]	
Low Range	1.4	20407	824.7	2407	869.7	
	3	20415	825.5	2415	870.5	
	5	20425	826.5	2425	871.5	
	10 ^[1]	20450	829	2450	874	
Mid Range	1.4/3/5 10 ^[1]	20525	836.5	2525	881.5	
High Range	1.4	20643	848.3	2643	893.3	
	3	20635	847.5	2635	892.5	
	5	20625	846.5	2625	891.5	
	10 ^[1]	20600	844	2600	889	
NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.						

3.4. EUT operation mode

For RF test items
The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maximum output power status.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max Output Power	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	5	v	v	v	v	-	-	v	v			v	v	v	v
Conducted Band Edge	5	v	v	v	v	-	-	v	v	v		v	v		v
Conducted Spurious Emission	5	v	v	v	v	-	-	v	v	v			v	v	v
E.R.P.	5	v	v	v	v	-	-	v	v	v			v	v	v
Radiated Spurious Emission	5	v	v	v	v	-	-	v		v			v	v	v
Frequency Stability	5				v			v	v			v		v	
Peak-to-Average Ratio	5				v			v	v	v		v	v	v	v
Remark	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times off fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.														

3.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

		Manufacturer :	
		Model No. :	
		Manufacturer :	
		Model No. :	

3.6. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Equipments Used during the Test

RF Conducted						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	11/11/2017	11/11/2018
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	137688	10/26/2017	10/25/2018
3	Spectrum Analyzer	Rohde&Schwarz	FSW26	103440	11/11/2017	11/10/2018
4	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	11/10/2017	11/09/2018
5	Splitter	Mini-Circuit	ZAPD-4	400059	03/20/2017	03/19/2018
6	Climate Chamber	ESPEC	EL-10KA	05107008	11/10/2017	11/09/2018

RF Radiated						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	11/11/2017	11/11/2018
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	137688	10/26/2017	10/25/2018
3	Spectrum Analyzer	Rohde&Schwarz	FSW26	103440	11/11/2017	11/10/2018
4	HORNANTENNA	ShwarzBeck	9120D	1011	03/27/2017	03/26/2020
5	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	04/05/2017	04/04/2020
6	TURNTABLE	MATURO	TT2.0	N/A	N/A	N/A
7	ANTENNA MAST	MATURO	TAM-4.0-P	N/A	N/A	N/A
8	EMI Test Software	Audix	E3	N/A	N/A	N/A
9	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
10	High pass filter	Compliance Direction systems	BSU-6	34202	11/21/2017	11/20/2018
11	Preamplifier	ShwarzBeck	BBV 9718	9718-248	10/18/2017	10/17/2018
12	Broadband Preamplifier	ShwarzBeck	BBV 9743	9743-0022	10/18/2017	10/17/2018
13	Signal Generator	Rohde&Schwarz	SMB100A	114360	06/13/2017	06/12/2018
14	Pre-amplifier	SCHWARZBECK	BBV 9742	N/A	11/22/2017	11/21/2018
15	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
16	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
17	Test Software	R&S	ES-K1	N/A	N/A	N/A
18	Loop Antenna	R&S	HFH2-Z2	100020	11/20/2017	11/19/2020
19	RF Connection Cable	HUBER+SUHNER	N/A	N/A	11/21/2017	11/20/2018
20	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	11/21/2017	11/20/2018
21	RF Connection Cable	HUBER+SUHNER	MULTIFLEX 141	N/A	11/21/2017	11/20/2018
22	Spectrum Analyzer	R&S	FSP40	100597	11/11/2017	11/10/2018
23	RF Connection Cable	HUBER+SUHNER	RE-7-FH	N/A	11/21/2017	11/20/2018
24	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	11/21/2017	11/20/2018

4.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Voltage	VN=Nominal Voltage	DC 3.70V
	VL=Lower Voltage	DC 3.60V
	VH=Higher Voltage	DC 4.20V
Temperature	TN=Normal Temperature	25 °C
	Extreme Temperature	From -30° to + 50° centigrade
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

4.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)
Emission Mask	-----	(1)
Modulation Characteristic	-----	(1)
Transmitter Frequency Behavior	-----	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

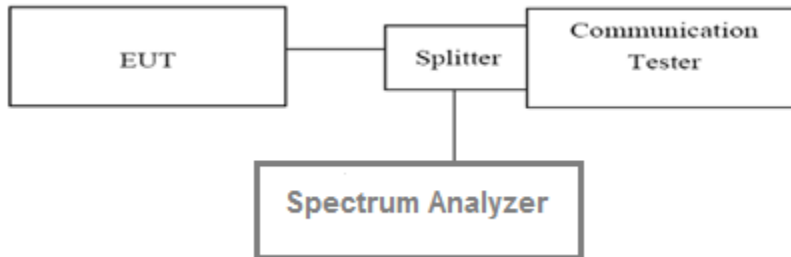
5. TEST CONDITIONS AND RESULTS

5.1. Conducted Output Power

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure the maximum burst average power.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

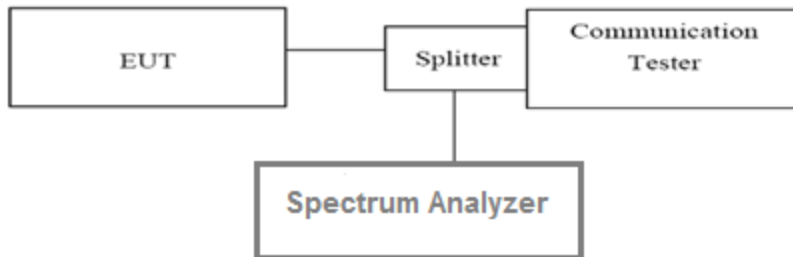
Reference Appendix A:

5.2. 99% & -26 dB Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBW was set to about 1% of emission BW, VBW= 3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

Reference Appendix C:

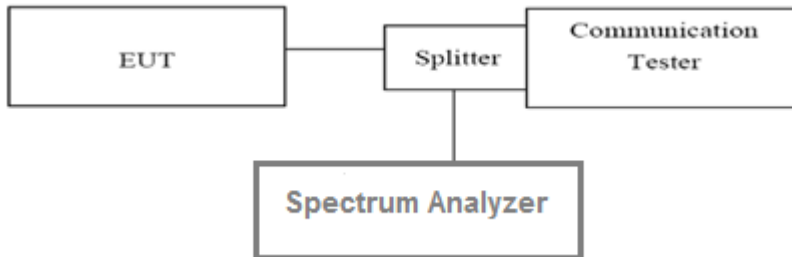
5.3. Conducted Spurious Emissions

LIMIT

Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable

Reference Appendix E:

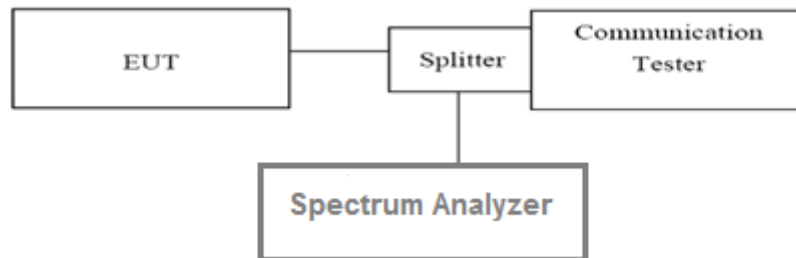
5.4. Band Edge

LIMIT

Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW \geq 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with RMS detector.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable

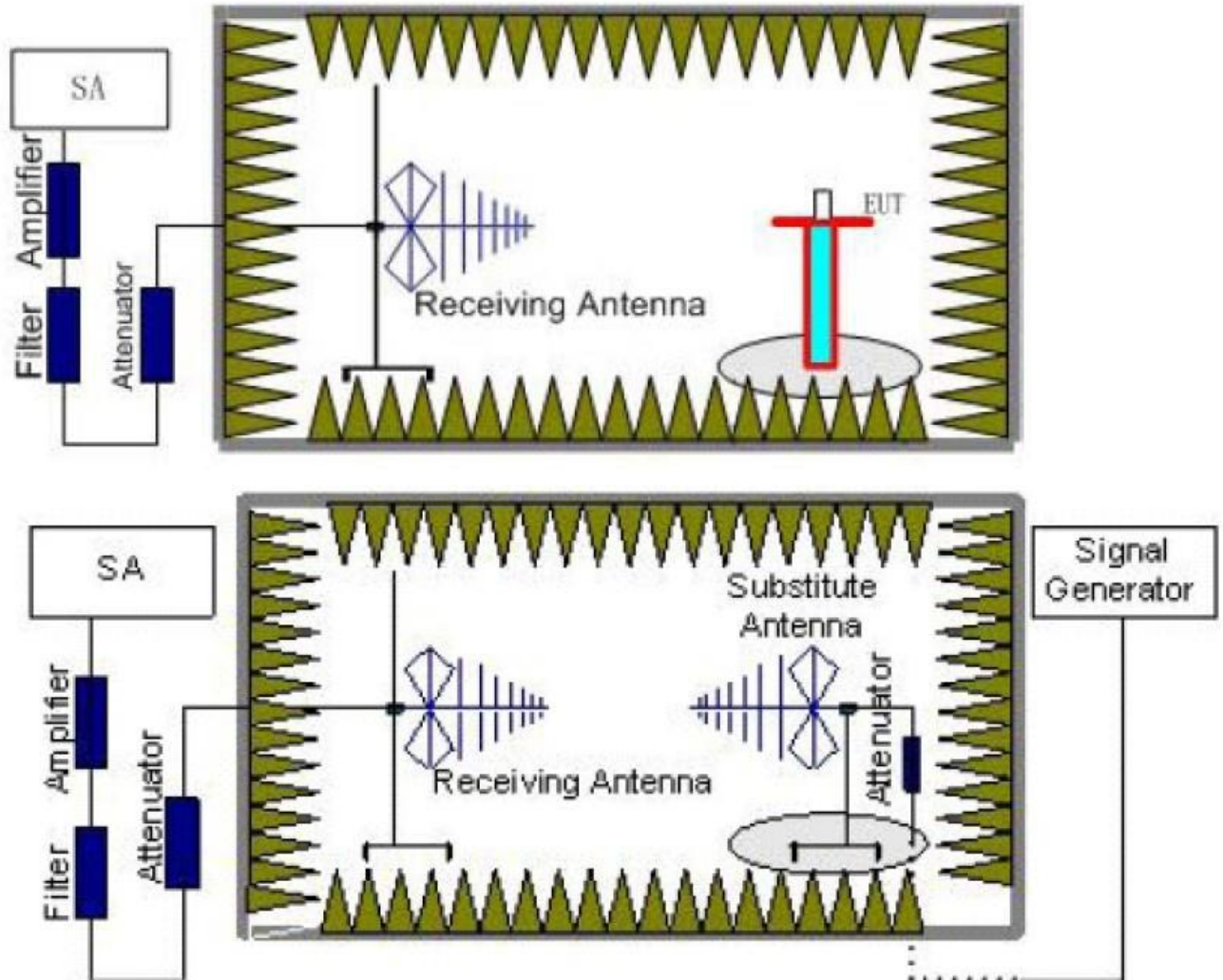
Reference Appendix D:

5.5. ERP

LIMIT

LTE Band 5:ERP<7W

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna shall be moved from 1m to 4m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the

substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

LTE Band 5-1.4MHz						
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result	
		Vertical	Horizontal			
QPSK	Low	22.38	22.20	38.50	PASS	
	Mid	22.87	21.41			
	High	22.84	21.85			
16QAM	Low	19.84	18.94		38.50	PASS
	Mid	19.79	19.22			
	High	19.87	19.09			

LTE Band 5-3MHz						
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result	
		Vertical	Horizontal			
QPSK	Low	23.17	20.63	38.50	PASS	
	Mid	24.31	20.95			
	High	24.02	20.96			
16QAM	Low	18.70	19.65		38.50	PASS
	Mid	19.02	19.07			
	High	19.14	19.02			

LTE Band 5-5MHz						
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result	
		Vertical	Horizontal			
QPSK	Low	22.80	20.76	38.50	PASS	
	Mid	23.06	19.61			
	High	22.95	19.30			
16QAM	Low	20.61	19.59		38.50	PASS
	Mid	20.82	18.10			
	High	20.71	17.99			

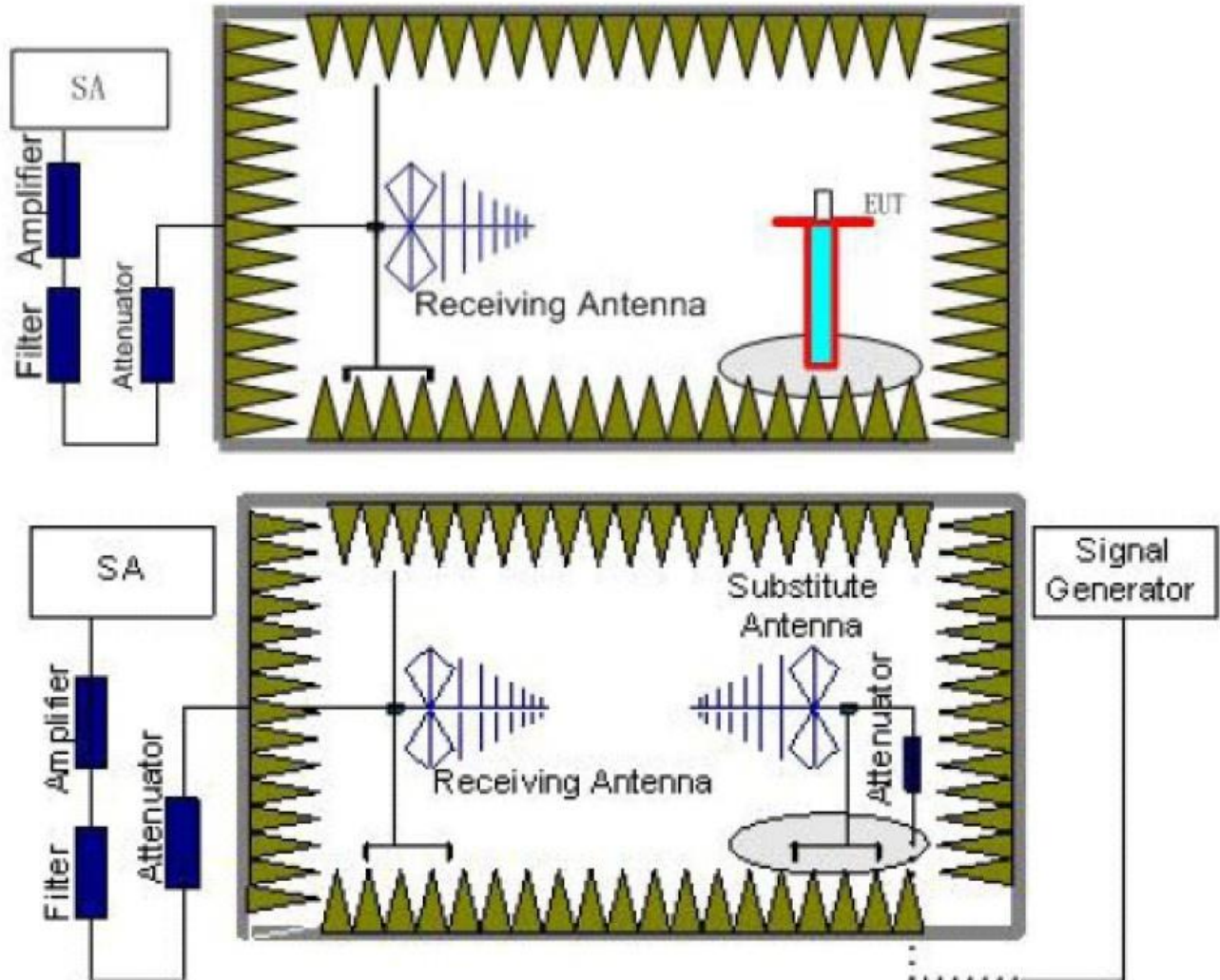
LTE Band 5-10MHz						
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result	
		Vertical	Horizontal			
QPSK	Low	22.27	20.62	38.50	PASS	
	Mid	22.56	19.75			
	High	22.11	19.48			
16QAM	Low	20.10	18.63		38.50	PASS
	Mid	20.48	18.08			
	High	20.30	17.81			

5.6. Radiated Spurious Emission

LIMIT

LTE Band 5: <-13dBm

TEST CONFIGURATION



TEST RESULTS

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna shall be moved from 1m to 4m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the

substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

LTE Band 5-1.4MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1649.4	Vertical	-40.38	-13.00	Pass
	2474.1	V	-43.72		
	3298.8	V	---		
	1649.4	Horizontal	-44.79	-13.00	Pass
	2474.1	H	-45.63		
	3298.8	H	---		
Mid	1673	Vertical	-40.38	-13.00	Pass
	2509.5	V	-43.72		
	3346	V	---		
	1673	Horizontal	-45.48	-13.00	Pass
	2509.5	H	-46.19		
	3346	H	---		
High	1696.6	Vertical	-39.41	-13.00	Pass
	2544.9	V	-42.84		
	3393.2	V	-		
	1696.6	Horizontal	-46.29	-13.00	Pass
	2544.9	H	-46.95		
	3393.2	H	---		

Remark:

1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 5-3MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1651	Vertical	-41.95	-13.00	Pass
	2476.5	V	-42.15		
	3302	V	---		
	1651	Horizontal	-51.51	-13.00	Pass
	2476.5	H	-47.11		
	3302	H	---		
Mid	1673	Vertical	-47.32	-13.00	Pass
	2509.5	V	-46.89		
	3346	V	---		
	1673	Horizontal	-51.04	-13.00	Pass
	2509.5	H	-47.49		
	3346	H	---		
High	1695	Vertical	-48.97	-13.00	Pass
	2542.5	V	-49.62		
	3390	V	---		
	1695	Horizontal	-53.77	-13.00	Pass
	2542.5	H	-50.09		
	3390	H	---		

Remark:

1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 5-5MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1653	Vertical	-42.60	-13.00	Pass
	2479.5	V	-41.50		
	3306	V	---		
	1653	Horizontal	-54.26	-13.00	Pass
	2479.5	H	-47.71		
	3306	H	---		
Mid	1673	Vertical	-44.80	-13.00	Pass
	2509.5	V	-43.45		
	3346	V	---		
	1673	Horizontal	-53.85	-13.00	Pass
	2509.5	H	-44.90		
	3346	H	---		
High	1693	Vertical	-46.25	-13.00	Pass
	2539.5	V	-45.84		
	3386	V	---		
	1693	Horizontal	-55.17	-13.00	Pass
	2539.5	H	-46.13		
	3386	H	---		

Remark:

1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 5-10MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1658	Vertical	-42.92	-13.00	Pass
	2487	V	-41.18		
	3316	V	---		
	1658	Horizontal	-55.65	-13.00	Pass
	2487	H	-48.02		
	3316	H	---		
Mid	1673	Vertical	-44.03	-13.00	Pass
	2509.5	V	-42.16		
	3346	V	---		
	1673	Horizontal	-54.42	-13.00	Pass
	2509.5	H	-47.80		
	3346	H	---		
High	1688	Vertical	-43.65	-13.00	Pass
	2532	V	-42.50		
	3376	V	-		
	1688	Horizontal	-54.29	-13.00	Pass
	2532	H	-47.92		
	3376	H	---		

Remark:

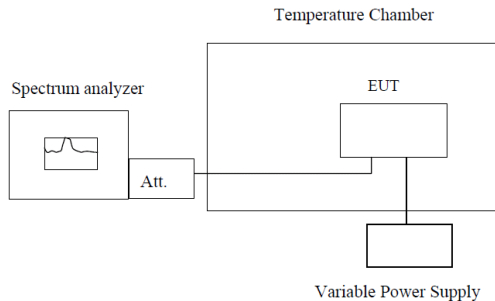
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

5.7. Frequency stability V.S. Temperature measurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

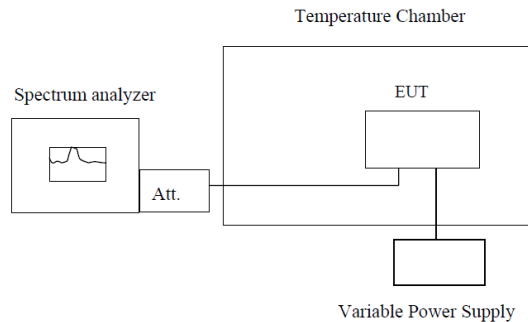
Reference Appendix F:

5.8. Frequency stability V.S. Voltagemasurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.
2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

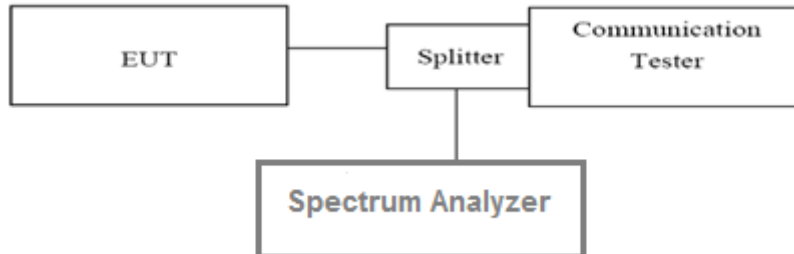
Reference Appendix F:

5.9. Peak-Average Ratio

LIMIT

13dB

TEST CONFIGURATION



TEST PROCEDURE

According with KDB 971168

1. The signal analyzer' s CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

TEST MODE:

Please refer to the clause 3.3

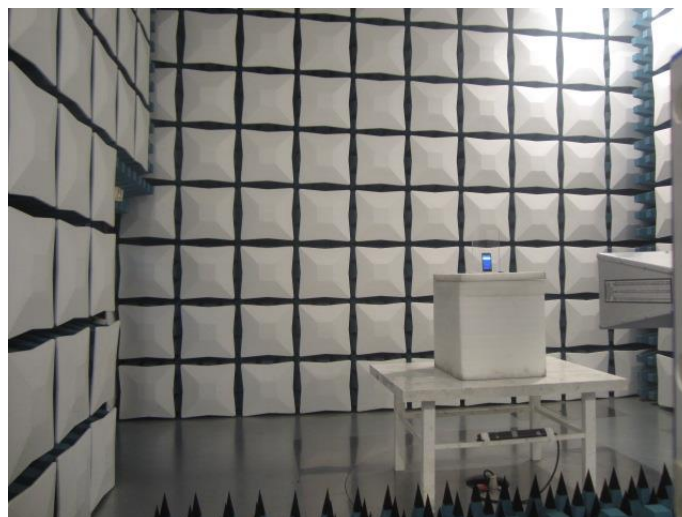
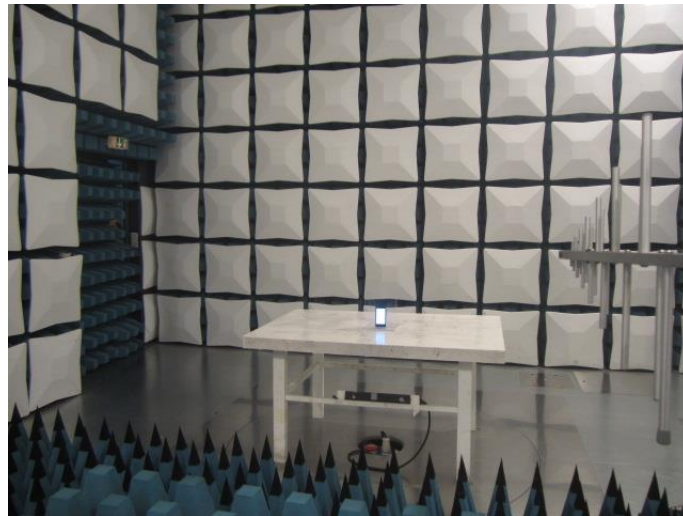
TEST RESULTS

Passed Not Applicable

Reference Appendix B:

6. Test Setup Photos of the EUT

Radiated emission:



7. External and Internal Photos of the EUT

Reference to the test report No.: TRE1801018901.

.....**End of Report**.....