



FCC RF Test Report

Product Name: Smart Phone

Model Number: HUAWEI RIO-L01, RIO-L01

Report No: SYBH(Z-RF)025042015-2001

FCC ID: QISRIO-L01

Reliability Laboratory of Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

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Notice

- 1. The laboratory has Passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
- 2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
- 3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
- 4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-2.
- 5. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- 6. The test report is invalid if there is any evidence of erasure and/or falsification.
- 7. The test report is only valid for the test samples.
- 8. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



Applicant: Huawei Technologies Co., Ltd.

Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,

Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt Sample:2015-06-15Start Date of Test:2015-06-15End Date of Test:2015-06-30

Test Result: Pass

Approved by Senior 2015-06-30 Liu Chunlin

Engineer: Date Name Signature

Prepared by: 2015-06-30 maowenli *Maowenli*Date Name Signature



Modification Record

No.	Last Report No.	Modification Description
1		First report.



CONTENT

1	Gene	eral Information	6			
	1.1	Applied Standard	6			
	1.2	Test Location	6			
	1.3	Test Environment Condition	6			
2	Test	Summary	7			
	2.1	Cellular Band (824-849 MHz paired with 869-894 MHz)	7			
	2.2	PCS Band (1850-1910 MHz paired with 1930-1990 MHz)	8			
	2.3	BRS&EBS Band (2500-2570 MHz paired with 2620-2690 MHz)	g			
3	Desc	cription of the Equipment under Test (EUT)	10			
	3.1	General Description	10			
	3.2	EUT Identity	10			
	3.3	Technical Specification	11			
4	Gene	eral Test Conditions / Configurations	12			
	4.1	Test Modes	12			
	4.2	Test Environment	12			
	4.3	Test Frequency	13			
	4.4	DESCRIPTION OF TESTS	15			
	4.5	Test Setups	18			
	4.6	Test Conditions	20			
5	Main Test Instruments					
6	Meas	surement Uncertainty	23			



1 General Information

1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 02: 2014

47 CFR FCC Part 22: 2014 47 CFR FCC Part 24: 2014 47 CFR FCC Part 27: 2014

Test Method: FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.

Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,

Bantian, Longgang District, Shenzhen, 518129, P.R.C

Test Location 2: BTL Laboratory

Address: No.3, Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.

1.3 Test Environment Condition

Ambient Temperature: 19.5 to 25 °C

Ambient Relative Humidity: 40 to 55 %

Atmospheric Pressure: Not applicable



2 Test Summary

2.1 Cellular Band (824-849 MHz paired with 869-894 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict	
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913	ERP ≤ 7 W.	Appendix A	Pass	
Peak-Average Ratio			Appendix B	N/T	
Modulation Characteristics	§2.1047	Digital modulation	Appendix C	Pass	
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix D	Pass	
Band Edges Compliance	§2.1051, §22.917	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix E	Pass	
Spurious Emission at Antenna Terminals	§2.1051, §22.917	≤ -13 dBm/100 kHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Appendix F	Pass	
Field Strength of §2.1053, Spurious Radiation §22.917		≤ -13 dBm/100 kHz.	Appendix G	Pass	
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	Appendix H	Pass	
NOTE 1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".					



2.2 PCS Band (1850-1910 MHz paired with 1930-1990 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict	
Effective (Isotropic)	§2.1046,	EIRP ≤ 2 W	Appendix A	Pass	
Radiated Power	§24.232				
Output Data					
Dools Asserted Dotin	§2.1046,	Limited 2 dD	Appendix B	Pass	
Peak-Average Ratio	§24.232	Limit≤13 dB			
Modulation	\$0.4047	District mandalation	Appendix C	Pass	
Characteristics	§2.1047	Digital modulation			
Bandwidth	§2.1049	OBW: No limit.	Appendix D	Pass	
		EBW: No limit.			
Band Edges	§2.1051,	≤ -13 dBm/1%*EBW, in 1 MHz bands	Appendix E	Pass	
Compliance	§24.238	immediately outside and adjacent to the			
		frequency block.			
Spurious Emission at	§2.1051,	≤ -13 dBm/1 MHz, from 9 kHz to 10 th	Appendix F	Pass	
Antenna Terminals	§24.238	harmonics but outside authorized			
		operating frequency ranges.			
Field Strength of	§2.1053,	≤ -13 dBm/1 MHz.	Appendix G	Pass	
Spurious Radiation	§24.238				
Frequency Stability	§2.1055,	FCC: within authorized frequency block.	Appendix H	Pass	
	§24.235				
NOTE 1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".					



2.3 BRS&EBS Band (2500-2570 MHz paired with 2620-2690 MHz)

Test Item	FCC Rule	Requirements	Test Result	Verdict	
	No.				
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)	EIRP ≤ 2W	Appendix A	Pass	
Peak-Average Ratio			Appendix B	N/T	
Modulation Characteristics	§2.1047	Digital modulation	Appendix C	Pass	
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix D	Pass	
Band Edges Compliance	§2.1051, §27.53(m)	Channel Edge -10 dBm -13 dBm -13 dBm -13 dBm -13 dBm -13 dBm -13 dBm 5.5 MHz 4 MHz RBW ≥ 2%*EBW RBW ≥ 2%*EBW X=Max {6MHz, EBW}	Appendix E	Pass	
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)	Channel Edge -25dBm/ 1 MHz 1 MHz 1 MHz 9 kHz 95 MHz X MHz 10th harmonics X=Max {6MHz, EBW}	Appendix F	Pass	
Field Strength of Spurious Radiation	§2.1053, §27.53(m)	Channel Edge -25dBm/ 1 MHz 1 MHz 1 MHz 9 kHz 95 MHz × MHz 10th harmonics X=Max {6MHz, EBW}	Appendix G	Pass	
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	Appendix H	Pass	
NOTE 1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".					



3 Description of the Equipment under Test (EUT)

3.1 General Description

HUAWEI RIO-L01, RIO-L01 is subscriber equipment in the LTE/WCDMA/GSM system. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The HSPA+/UMTS frequency band is Band I and Band VIII. The LTE frequency band is B1 and B3 and B7 and B8 and B20. But only GSM850 and GSM1900MHz and LTE B7 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, NFC and WIFI etc. Externally it provides SIM card interface (it can also used as micro SD card interface), earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 **Board**

Board				
Description	Hardware Version	Software Version		
Main Board	HL1RIOL01M	RIO-L01 C00B035		



3.3 Technical Specification

Characteristics	Description			
Radio System Type	⊠ GSM			
	□ LTE			
Supported Frequency Range	0014050	Transmission (TX): 824 to 849 MHz		
	GSM850	Receiving (RX): 869 to 894 MHz		
	GSM1900	Transmission (TX): 1850 to 1910 MHz		
	GSW1900	Receiving (RX): 1930 to 1990 MHz		
	LTE BAND7	Transmission (TX): 2500 to 2570 MHz		
		Receiving (RX): 2620 to 2690 MHz		
TX and RX Antenna Ports	TX & RX port:	1		
	TX-only port:	0		
	RX-only port:	1		
Target TX Output Power	GSM850: 32.5dBm			
	GSM1900: 29.5dBm			
	LTE BAND7: 23dBm			
Supported Channel Bandwidth	GSM system:			
	LTE band 7			
Designation of Emissions	GSM850:	244KGXW, 244KG7W		
(Note: the necessary bandwidth of	GSM1900:	248KGXW, 248KG7W		
which is the worst value from the	LTE BAND7:	4M51G7D (5 MHz QPSK modulation),		
measured occupied bandwidths for		4M52W7D (5 MHz 16QAM modulation)		
each type of channel bandwidth		9M00G7D (10 MHz QPSK modulation),		
configuration.)		9M00W7D (10 MHz 16QAM modulation		
		13M5G7D (15 MHz QPSK modulation),		
		13M5W7D (15 MHz 16QAM modulation)		
		18M0G7D (20 MHz QPSK modulation),		
		18M0W7D (20 MHz 16QAM modulation)		



4 General Test Conditions / Configurations

4.1 Test Modes

NOTE: The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	Test Modes Description	
GSM/TM1 GSM system, GSM/GPRS, GMSK modulation		
GSM/TM2	GSM system, EDGE, 8PSK modulation	
LTE/TM1	LTE system, QPSK modulation	
LTE/TM2	LTE system, 16QAM modulation	

4.2 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN Ambient	
	VL	3.6V
Voltage	VN	3.8V
	VH	4.35V

NOTE: VL= lower extreme test voltage

VN= nominal voltage

VH= upper extreme test voltage

TN= normal temperature



4.3 Test Frequency

Test Mode	TX/RX	RF Channel		
i est iviode		Low (L)	Middle (M)	High (H)
	TX	Channel 128	Channel 190	Channel 251
GSM850	17	824.2MHz	836.6MHz	848.8MHz
GSIVIOSU	DV	Channel 128	Channel 190	Channel 251
	RX	869.2MHz	881.6MHz	893.8MHz
Test Mode	TX / RX	RF Channel		
i est Mode		Low (L)	Middle (M)	High (H)
	TX	Channel 512	Channel 661	Channel 810
GSM1900	1.8	1850.2MHz	1880.0MHz	1909.8MHz
G2M1800	DV	Channel 512	Channel 661	Channel 810
	RX	1930.2 MHz	1960.0 MHz	1989.8 MHz

Test Mode	TX/RX	RF Channel		
Test Wode		Low (B)	Middle (M)	High (T)
	TY (5M)	Channel 20775	Channel 21100	Channel 21425
	TX (5M)	2502.5 MHz	2535 MHz	2567.5 MHz
	TX (10M)	Channel 20800	Channel 21100	Channel 21400
		2505 MHz	2535 MHz	2565 MHz
LTE Band 7	TX (15M)	Channel 20825	Channel 21100	Channel 21375
		2507.5 MHz	2535 MHz	2562.5 MHz
	T)((2214)	Channel 20850	Channel 21100	Channel 21350
	TX (20M)	2510 MHz	2535 MHz	2560 MHz
	RX (5M)	Channel 2775	Channel 3100	Channel 3425



Test Mode	TX/RX	RF Channel		
		Low (B)	Middle (M)	High (T)
		2622.5 MHz	2655 MHz	2687.5 MHz
	DV (40M)	Channel 2800	Channel 3100	Channel 3400
	RX (10M)	2625 MHz	2655 MHz	2685 MHz
	DV (45M)	Channel 2825	Channel 3100	Channel 3375
	RX (15M)	2627.5 MHz	2655 MHz	2682.5 MHz
	DV (20M)	Channel 2850	Channel 3100	Channel 3350
	RX (20M)	2630 MHz	2655 MHz	2680 MHz



4.4 DESCRIPTION OF TESTS

4.4.1 Radiated Power and Radiated Spurious Emissions

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Emissions are also investigated with the receive antenna horizontally and vertically polarized.

A portable or small unlicensed wireless device shall be placed on a non-metallic test fixture or other non-metallic support during testing. The supporting fixture shall permit orientation of the EUT in each of three orthogonal (x, y, z) axis positions such that emissions from the EUT are maximized. Measure the EUT maximum RF power and record the result.

A half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

Pd [dBm] = Pg [dBm] - cable loss [dB] + antenna gain [dBd/dBi]

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to Pg [dBm] – cable loss [dB].

The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log₁₀(Power [Watts]).

Note: Reference test setup 3



4.4.2 Occupied Bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

Note: Reference test setup 1.

4.4.3 Spurious and Harmonic Emissions at Antenna Terminal

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Note: Reference test setup 1.

4.4.4 Peak-Average Ratio

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

Note: Reference test setup 1.



4.4.5 Frequency Stability / Temperature Variation

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-C-2004. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Time Period and Procedure:

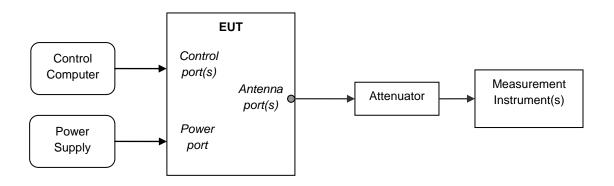
- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Note: Reference test setup 2.

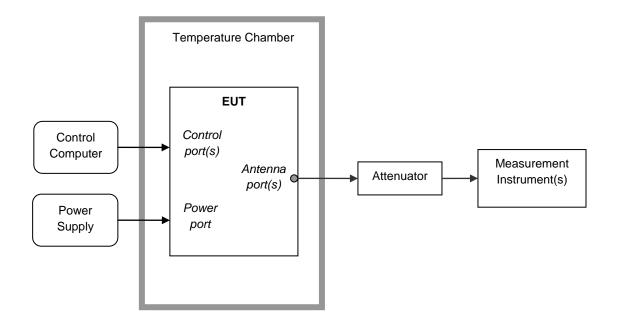


4.5 Test Setups

4.5.1 Test Setup 1



4.5.2 Test Setup 2

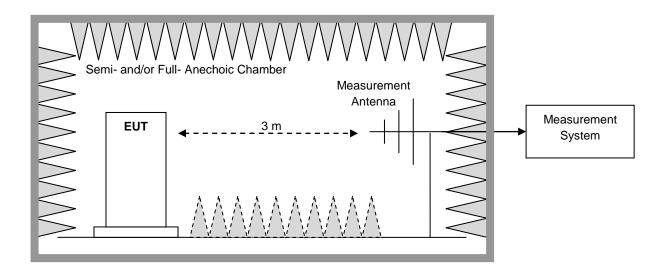




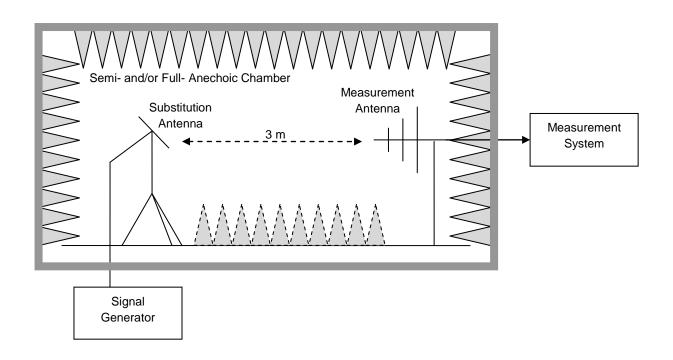
4.5.3 Test Setup 3

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

4.5.3.1 Step 1: Pre-test



4.5.3.2 Step 2: Substitution method to verify the maximum ERP





4.6 Test Conditions

Test Case		Test Conditions		
Transmit	ansmit Average Power, T		Ambient Climate & Rated Voltage	
Output	Total	Test Setup	Test Seup 1	
Power Data		RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
	Average Power,	Test Env.	Ambient Climate & Rated Voltage	
	Spectral Density	Test Setup	Test Seup 1	
	(if required)	RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
Peak-to-Average Ratio		Test Env.	Ambient Climate & Rated Voltage	
(if required)		Test Setup	Test Seup 1	
		RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
Modulation C	haracteristics	Test Env.	Ambient Climate & Rated Voltage	
		Test Setup	Test Seup 1	
		RF Channels	M	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
Bandwidth Occupied		Test Env.	Ambient Climate & Rated Voltage	
	Bandwidth	Test Setup	Test Seup 1	
		RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
	Emission	Test Env.	Ambient Climate & Rated Voltage	
	Bandwidth	Test Setup	Test Seup 1	
	(if required)	RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
Band Edges	Compliance	Test Env.	Ambient Climate & Rated Voltage	
		Test Setup	Test Seup 1	
		RF Channels	L, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	
		Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2	
Spurious Emission at Antenna		Test Env.	Ambient Climate & Rated Voltage	
Terminals		Test Setup	Test Seup 1	
		RF Channels	L, M, H	
		(TX)	(L= low channel, M= middle channel, H= high channel)	



Test Case	Test Conditions			
	Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2		
Field Strength of Spurious	Test Env.	Ambient Climate & Rated Voltage		
Radiation	Test Setup	Test Seup 3		
	Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2		
		NOTE: If applicable, the EUT conf. that has maximum power		
		density (based on the equivalent power level) is		
		selected.		
	RF Channels	L, M, H		
	(TX)	(L= low channel, M= middle channel, H= high channel)		
Frequency Stability	ency Stability Test Env. (1) -30 °C to +50 °C with step 10 °C at Rated Voltage;			
		(2) VL, VN and VH of Rated Voltage at Ambient Climate.		
	Test Setup	Test Seup 2		
	RF Channels	L, M, H		
	(TX)	(L= low channel, M= middle channel, H= high channel)		
	Test Mode	GSM/TM1,GSM/TM2, LTE/TM1,LTE/TM2		



5 <u>Main Test Instruments</u>

Test Location 1:

Equipment Name	Manufactur er	Model	Serial Number	Cal Date	Cal- Due
Power supply	KEITHLEY	2303	A120714713	2014-08-07	2016-08-06
Wireless Communication Test set	Agilent	N4010A	MY49081592	2014-11-04	2015-11-03
Universal Radio Communication Tester	R&S	CMU200	123299	2014-11-04	2015-11-03
Spectrum Analyzer	Agilent	N9020A	MY52090652	2014-07-11	2015-07-10
Universal Radio Communication Tester	R&S	CMW500	126854	2015-02-13	2016-02-12
Spectrum Analyzer	Agilent	E4440A	MY48250119	2014-07-11	2015-07-10
Signal Analyzer	R&S	FSQ31	200021	2014-11-04	2015-11-03
Spectrum Analyzer	Agilent	N9030A	MY49431698	2014-11-04	2015-11-03
Temperature Chamber	WEISS	WKL64	56246002940010	2015-02-13	2016-02-12
Signal generator	Agilent	E8257D	MY49281095	2014-11-04	2015-11-03
Vector Signal Generator	R&S	SMU200A	104162	2014-11-04	2015-11-03
Power Detecting & Sampling Unit	R&S	OSP-B157	100881	2014-09-08	2015-09-07
Signal Generator	Agilent	E4438C	MY47271904	2014-10-28	2015-10-27

Test Location 2:

Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
EXA Spectrum Analyzer	N9010A	MY5052044	Agilent	Mar.28,2016
Microwave Preamplifier With Adaptor	EMC012645B	980221	EMC INSTRUMENT	Oct.22,2015
Amplifier	8449B	3008A02274	Agilent	Mar.28,2016
Double Ridged Guide Antenna (1 GHz ~18GHz)	3115	00075846	ETS.LINDGREN	Mar.28,2016
Antenna (1 GHz ~18GHz)	3115	00075789	ETS	Mar.28,2016
Antenna(30M~1GHz)	VULB9160	9160-3231	SCHWARZBECK	Mar.28,2016
Antenna(30M~1GHz)	VULB9160	9160-3232	SCHWARZBECK	Mar.28,2016
Triple Loop Antenna(9K~30M)	HXYZ9170	9170-110	SCHWARZBECK	Mar.28,2016
Horn Antenna(18GHz~26.5GHz)	3116C	00152324	ETS	Mar.28,2016
controller	SC100	9163-235	СТ	N/A



Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
Amplifier	8447D	1937A02847	HP	Mar. 17, 2016
Receiver	N9038A	MY52130039	AGILENT	Sep. 30, 2015

6 Measurement Uncertainty

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item	Extended Uncertainty	
Transmit Output Power Data	Power [dBm]	U = 0.39 dB
Bandwidth	Magnitude [%]	U = 0.2%
Band Edge Compliance	Disturbance Power [dBm]	U = 2.0 dB
Spurious Emissions, Conducted	Disturbance Power [dBm]	U = 2.0 dB
Field Strength of Spurious Radiation	ERP [dBm]	For 3 m Chamber:
		U = 4.6 dB (30 MHz to 1GHz)
		U = 3.0 dB (above 1 GHz)
		For 10 m Chamber:
		U = 4.6 dB (30 MHz to 1GHz)
		U = 3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy [ppm]	U = 0.21 ppm

END