FCC
RF Test Report

Product Name: WCDMA Mobile Phone

Model Number: SKY 5.0Q

Report No: 1407FR31

FCCID：2ABOSGC140603

A Test Lab Techno Corp.

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Notice

1. The laboratory has Passed the accreditation by The American Association forLaboratoryAccreditation (A2LA).Theaccreditation numberis3464.01.
2. The laboratoryhasbeenaccreditedbythe US FederalCommunications Commission.
3. The laboratoryhasbeen listed byIndustryCanada to performelectromagnetic emissionmeasurements.The recognition numbers oftestsiteare 7381A.
4. The testreportis invalid if notmarked with the signatures ofthe persons responsibleforpreparingand approving the testreport.
5. The testreportis invalid if thereisanyevidenceof erasure and/orfalsification.
6. The testreportis onlyvalid forthe testsamples.
7. Contentofthetestreport,inpartorinfull,cannotbeusedforpublicityand/orpromotionalpurposeswithoutpriorwritten approvalfromthe laboratory.

Applicant:	Sky Phone LLC
Address:	1348 Washington Av., Miami Beach
DateofReceipt Sample:	2014-06-20
StartDate ofTest:	2014-06-23
End Date ofTest:	2014-07-23
Issue Date:	2014-08-01
TestResult:	Pass

Approved By	:		Reviewed By	:	
(Manager)		(Murphy Wang)	(Testing Engineer)		(FlyLv)

Revision History

Rev.	Issue Date	Revisions	Revised By
00	31July, 2014	Initial Issue	
01	14 Aug,2014	Test report number corrected	

CONTENT

1 GeneralInformation

1.1 Applied Standard

AppliedRules:	47CFRFCC Part02:201347CFRFCC Part22:2013 47CFRFCC Part24:2013 47CFRFCC Part27:2013
Test Method:	FCCKDB971168D01 Power MeasLicense Digital Systems

1.2 Test Location

TestLocation1:	A Test Lab Techno Corp.
Address:	No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan R.O.C.

1.3 Test Environment Condition

Ambient Temperature:	19.5to25°C
Ambient Relative Humidity:	40to55%
Atmospheric Pressure:	Not applicable

2 Test Summary

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

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective(Isotropic) Radiated Power Output Data	§2.1046, §22.913	FCC: ERP ≤ 7W.	Appendix A	Pass
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	≤-13dBm/1%*EBW,in1MHzbandsimmediatelyoutsideandadjacentto	Appendix E	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917	FCC: ≤ -13dBm/100kHz, from 9kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix F	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917	FCC: ≤ -13dBm/100kHz.	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”de notes“not tested”.				

2.2 PCS Band (1850-1915MHz paired with 1930-1995MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict (NOTE 1)
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232	EIRP ≤ 2W	Appendix A	Pass
Peak-Average Ratio	§2.1046, §24.232	FCC:Limit≤13dB	Appendix B	Pass
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, §24.238	≤ -13dBm/1%*EBW,in1MHzbandsimmediatelyoutsideandadjacentto	Appendix E	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238	≤-13dBm/1MHz,from 9kHz to10th harmonics but outside authorized Operating frequency ranges.	Appendix F	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238	≤ -13dBm/1MHz.	Appendix G	Pass
Frequency Stability	§2.1055, §24.235	FCC: within authorized frequency block.	Appendix H	Pass
NOTE 1: For theverdict,the“N/A”denotes“notapplicable”,the“N/T”denotes“nottested”.				

2.3 AWS Band (1710-1755MHz paired with 2110-2155MHz)

Test Item	FCC RuleNo.	Requirements	Test Result	Verdict
Effective(Isotropic)RadiatedPowerOutputData	§2.1046, §27.50(d)	EIRP ≤ 1W;	Appendix A	Pass
Peak-AverageRatio	§2.1046, §27.50(d)	Limit≤13dB	Appendix B	Pass
ModulationCharacteristics	§2.1047	Digitalmodulation	Appendix C	Pass
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	Appendix D	Pass
BandEdgesCompliance	§2.1051, §27.53(h)	≤ -13dBm/1%*EBW,in1 MHzbandsimmediately outsideandadjacent to	Appendix E	Pass
SpuriousEmissionatAntennaTerminals	§2.1051, §27.53(h)	≤ -13dBm/1MHz, from9kHzto10thharmonicsbutoutside authorized	Appendix F	Pass
Frequency Stability	§2.1055, §27.54	Withinauthorizedbands of operation/frequency block.	Appendix G	Pass
Radiatedspurious emission	§2.1053, §27.53(h)	≤ -13dBm/1MHz.	Appendix H	Pass

3 Description ofthe EquipmentunderTest(EUT)

3.1 GeneralDescription

SKY 4.5Dis subscriberequipmentintheWCDMA/GSMsystem. TheHSPA/UMTS frequencybandis BandII,BandIV,andBandV,TheGSM/GPRS/EDGE(EDGE downlink only)frequencybandincludes GSM850andGSM900andDCS1800andPCS1900,butonly BandIVandBandII andBandV andGSM850andPCS1900bandstestdataincludedinthisreport.TheMobilePhoneimplements suchfunctions asRFsignalreceiving/transmitting,HSPA/UMTS andGSM/GPRS/EDGEprotocolprocessing,voice,video MMS service, GPS,AGPS andWIFI etc.Externally itprovides microSDcardinterface,earphoneport(toprovidevoiceservice)andSIMcardinterface.ItalsoprovidesBluetoothmoduletosy nchronizedatabetweenaPC andthephone,or tousethebuilt-inmodem ofthephonetoaccesstheInternetwithaPC, ortoexchangedatawithotherBluetoothdevices.

3.2 EUT Identity

IMEI No.	
SIM 1	868817019960176
SIM 2	868817019960034

NOTE: Unlessotherwisenotedinthereport,thefunctionalboards installedintheunitsshallbeselectedfromthebelowlist,but notmeans allthefunctionalboards listedbelowshallbeinstalledinoneunit.

3.3 Technical Specification

Characteristics	Description		
Radio System Type	☒ GSM ☒ UMTS		
Supported Frequency Range	GSM850/WCDMA850	Transmission(TX):	824 to 849MHz
		Receiving(RX):	869 to 894MHz
	GSM1900/WCDMA1900	Transmission(TX):	1850 to 1910MHz
		Receiving(RX):	193 to 1990MHz
	WCDMA1700	Transmission(TX):	1710to1755MHz
		Receiving(RX):	2110to2155MHz
TX and RX Antenna Ports	TX& RX port:	1	
	TX-only port:	0	
	RX-only port:	1	
Supported Channel Bandwidth	GSM system:	200 kHz	
	UMTS system:	5 MHz	
Designation of Emissions (Note: the necessary bandwidthofwhichistheworstvaluefromthemeasuredoccupiedbandwidthsforeachtypeofchannelbandwidth configuration.)	GSM850:	247KGXW	
	GSM1900:	248KGXW	
	UMTS 850:	4M17F9W	
	UMTS 1900:	4M18F9W	
	UMTS1700:	4M19F9W	

4 General Test Conditions/Configurations

4.2 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
UMTS/TM1	WCDMA system, QPSK modulation
UMTS/TM2	HSDPA system, QPSK modulation
UMTS/TM3	HSUPA system, QPSK modulation

Note: This EUT owns two SIM cards, after we perform the pretest for these two SIM cards, we found the SIM 1 is the worst case, so its result is recorded in this report.

4.3 TestEnvironment

EnvironmentParameter	SelectedValuesDuringTests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.5V
	VN	3.7V
	VH	4.2V

NOTE: VL=lower extreme
testvoltageVN=nominalvoltage
VH=upperextreme
testvoltageTN=normaltemperature

4.4 Test Frequency

TestMode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
GSM850	TX	Channel128	Channel190	Channel251
		824.2MHz	836.6MHz	848.8MHz
	RX	Channel128	Channel190	Channel251
		869.2MHz	881.6MHz	893.8MHz
TestMode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
GSM1900	TX	Channel512	Channel661	Channel810
		1850.2MHz	1880.0MHz	1909.8MHz
	RX	Channel512	Channel661	Channel810
		1930.2 MHz	1960.0 MHz	1989.8 MHz
TestMode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
WCDMA850	TX	Channel4132	Channel4182	Channel4233
		826.4MHz	836.4MHz	846.6MHz
	RX	Channel4357	Channel4407	Channel4458
		871.4MHz	881.4MHz	891.6MHz
TestMode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
WCDMA1900	TX	Channel9262	Channel9400	Channel9538
		1852.4MHz	1880.0MHz	1907.6MHz
	RX	Channel9662	Channel9800	Channel9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

TestMode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
WCDMA1700	TX	Channel1312	Channel1413	Channel1513
		1712.4MHz	1732.6MHz	1752.6MHz
	RX	Channel1537	Channel1638	Channel1738
		2112.4MHz	2132.6MHz	2152.6MHz

4.5 DESCRIPTIONOF TESTS

4.5.1 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 3meter 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 3meters from the receive antenna. The spectrumis scannedfromthelowestfrequencygeneratedintheequipmentuptoafrequencyincludingits10thharmonic.Therec eiveantennaheightisadjustedbetween1and4meterheight,theturntableisrotatedthrough360degrees,andtheEU Tismanipulatedthroughallorthogonalplanesrepresentativeofitstypicalusetoachievethehighestreadingonthere ceivespectrumanalyzer.Emissionsarealsoinvestigatedwiththereceiveantennahorizontallyandverticallypolariz ed.

Aportableorsmallunlicensedwirelessdeviceshallbeplacedonanon-metallictestfixtureorothernon-metallicsupportduringtesting.Thesupportingfixtureshallpermitorientationoftheeutineachofthreeorthogonal(x ,y,z)axispositionssuchthatemissionsfromtheeutaremaximized.Measuretheeutmaximumrfpowerandrecor dtheresult.

Ahalf-wavedipoleisthensubstitutedinplaceoftheeut.Foremissionsabove1ghz,ahornantennaissubstituted in placeof theeut.Thesubstituteantennais drivenbyasignal generatorwiththelevelof thesignalgeneratorbeingadjustedtoobtainthesamereceivespectrumanalyzerlevelpreviouslyrecordedfromthe spuriousemissionfromtheeut.Thepoweroftheemissioniscalculatedusingthefollowingformula:

$$P_{d[dBm]} = P_{g[dBm]} - \text{cableloss}_{[dB]} + \text{antennagain}_{[dBd/dBi]}$$

Where,$P_d$isthedipoleequivalentpower,$P_g$isthegeneratoroutputintothesubstitutionantenna,andtheantennagain isthegainofthesubstituteantennausedrelativetoeitherahalf-wavedipole(dBd)oranisotropicsource(dBi).Thesubstitutelevelisequaltopg[dBm]–cableloss[dB]. ThecalculatedPdlevelsarethencomparedtotheabsolutespuriousemissionlimitof-13dBmwhichisequivalenttotherequiredminimumattenuationof$43+10\log_{10}(\text{Power}_{[Watts]})$.

Note: Reference test setup 3

4.5.2 OccupiedBandwidth

Theoccupiedbandwidth,thatisthefrequencybandwidthsuchthat,belowitslowerandaboveitsupperfrequencylimits,themeanpowersradiatedareeachequalto0.5percentofthetotalmeanpowerradiatedbyagivenemissionshallbemeasured.Thespanoftheanalyzershallbesettocaptureallproducts ofthemodulationprocess,includingtheemissionskirts.Theresolutionbandwidthshallbesettoascloseto1percent oftheselectedspanasispossiblewithoutbeingbelow1percent.Thevideobandwidthshallbesetto3timestheresolutionbandwidth.Videoaveragingisnotpermitted.Whereпractical,asamplingdetectorshallbeusedsinceapeakor,peakhold,mayproduceawiderbandwiththanactual.Thetracedatapointsarerecoveredandaredirectlysummedinlinearterms.Therecoveredamplitudedatapoints,beginningatthelowestfrequency,areplacedinarunningsum until0.5percentofthetotalis reachedandthatfrequencyrecorded.Theprocessisrepeatedforthehighestfrequency datapoints.Thisfrequencyisrecorded.Thespanbetweenthetworecordedfrequenciesistheoccupiedbandwidth.
Note: Reference test setup1.

4.5.3 Spurious and Harmonic Emissions at Antenna Terminal

Thelevelofthecarrierandthevariousconductedspuriousandharmonicfrequenciesismeasuredbymeansofacalibratedspectrumanalyzer.Thespectrumisscannedfromthelowestfrequencygeneratedintheequipmentuptoafrequencyincludingits10$_{th}$harmonic.Onanyfrequencyoutsidealicensee'sfrequencyblock,thepowerof anyemissionshallbeattenuatedbelowthetransmitterpower(P)byatleast43+10 log(P)dB.Compliance withthese provisionsisbasedon theuse of measurementinstrumentationemployingaresolutionbandwidthof1MHzorgreater.However,inthe1MHzbandsimmediatelyoutsideandadjacenttothefrequencyblockaresolutionbandwidthofatleastonepercentoftheemission bandwidthofthefundamentalemissionofthetransmittermaybeemployed.Theemissionbandwidthisdefinedasthewidthofthesignalbetweentwopoints,onebelowthecarriercenterfrequencyandoneabovethecarriercenterfrequency,outsideofwhichallemissionareattenuatedatleast26dBbelowthetransmitterpower.
Note:Referencetestsetup1.

4.5.4 Peak-Average Ratio

Apeaktoaverageratiomeasurementisperformedattheconductedportoftheeut.ForWCDMAsignals,thespectrumanalyzersComplementary CumulativeDistributionFunction(CCDF)measurementprofileisusedtodeterminethelargestdeviationbetweentheaverageandthepeakpoweroftheEUTinagivenbandwidth.TheCCDFcurveshowshowmuchtimethepeakwaveformspendsatoraboveagivenaveragepowerlevel.Thepercentof timethesignalspends atorabovetheleveldefines the probabilityforthatparticularpowerlevel.ForGSMsignals,anaverageandapeaktraceareusedonaspectrumanalyzertodeterminethelargestdeviationbetweentheaverageandthepeakpoweroftheEUTinabandwidthgreaterthan theemissionbandwidth.Thetracesaregeneratedwiththespectrumanalyzersettozerospanmode.
Note:Referencetestsetup1.

4.5.5 Frequency Stability/Temperature Variation

Frequencystabilitytestingisperformedinaccordancewiththeguidelinesof ANSI/TIA-603-C-2004.Thefrequencystabilityofthetransmitterismeasuredby:

a.)**Temperature:** The temperature is varied from-30°Cto+50°Cin10°Cincrementsusinganenvironmentalchamber.

b.)**PrimarySupplyVoltage:**Theprimarysupplyvoltageisvariedfrom85%to115%ofthenominalvaluefornonhand-carriedbatteryandACpoweredequipment.Forhand-carried,battery-poweredequipment,primarysupplyvoltageisreducedtothebatteryoperatingendpointwhichshallbespecifiedbythemanufacturer.

Specification–

Thefrequencystabilityshallbesufficienttoensurethatthefundamentalemissionstayswithintheauthorized frequencyblock.The frequencystability ofthe transmittershallbe maintainedwithin ±0.00025 %(±2.5ppm) of the center frequency.

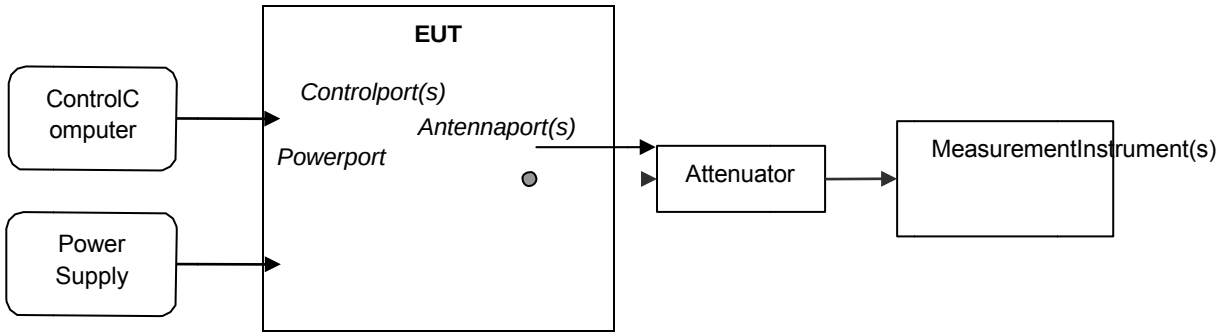
Time Period and Procedure:

1. Thecarrierfrequencyof thetransmitterismeasuredatroomtemperature(20°C toprovideareference).
2. Theequipmentisturnedonina“standby”conditionforfifteenminutesbeforeapplyingpowertothetransmitter.Measurementofthecarrierfrequencyofthetransmitterismadewithinoneminuteafterapplyingpowertothetransmitter.
3. Frequency measurements are made at 10°Cintervals rangingfrom-30°C to +50°C.Aperiod ofatleastonehalf-hourisprovidedtoallowstabilizationoftheequipmentateachtemperaturelevel.

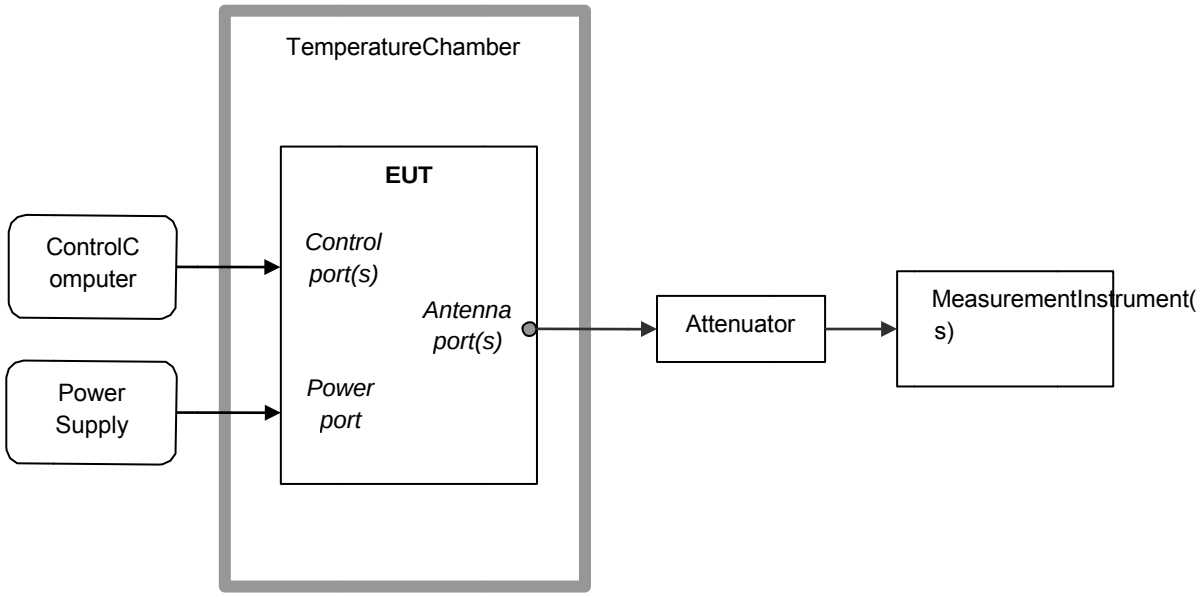
Note: Reference test setup 2.

4.5 Test Setups

4.5.1 Test Setup 1



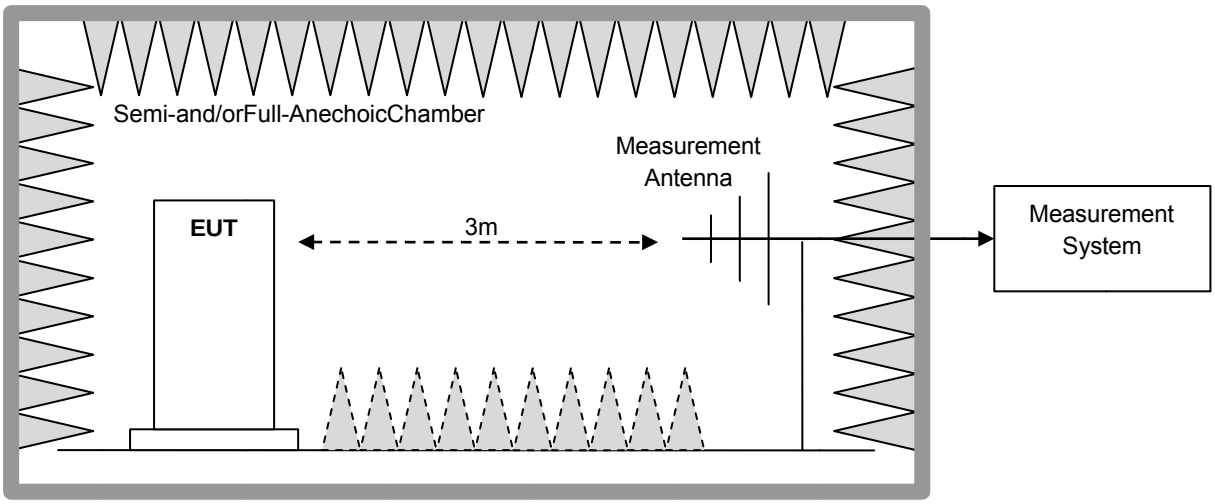
4.5.2 TestSetup 2



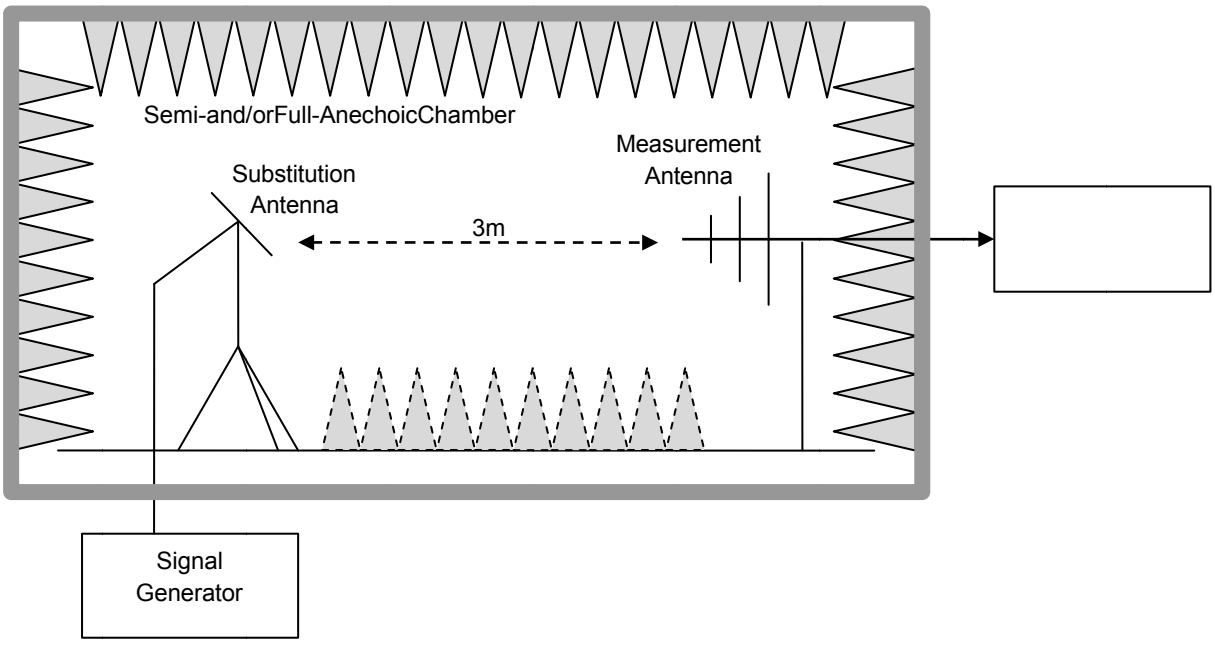
4.5.3 TestSetup 3

NOTE: Effectiveradiatedpower(ERP) referstotheradiationpower outputof theEUT,assumingallemissions areradiatedfrom half-wavedipoleantennas.

4.5.3.1 Step 1: Pre-test



4.5.3.2 Step 2: Substitution method to verifythe maximum ERP



4.6 TestConditions

Test Case		TestConditions	
Transmit OutputPowerData	AveragePower, Total	Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
	AveragePower, SpectralDensity(if required)	Test Env.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
Peak-to-AverageRatio(if required)		Test Env.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
ModulationCharacteristics		TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	M (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
Bandwidth	Occupied Bandwidth	Test Env.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
	EmissionBandwidth(if required)	Test Env.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
BandEdgesCompliance		TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
SpuriousEmissionatAntennaTerminals		TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)

Test Case	TestConditions	
	TestMode	GSM/TM1,UMTS/TM1
FieldStrengthofSpuriousRadiation	TestEnv.	AmbientClimate&RatedVoltage
	Test Setup	TestSeup3
	TestMode	GSM/TM1,UMTS/TM1/TM2/TM3
	RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
Frequency Stability	TestEnv.	(1) -30°C to+50°C withstep10°C atRatedVoltage; (2) VL, VN andVH ofRatedVoltageat AmbientClimate.
	Test Setup	TestSeup2
	RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
	TestMode	GSM/TM1,UMTS/TM1

5 Main TestInstruments

EquipmentName	Manufacturer	Model	SerialNumber	CalDate	Cal Period
Universal Radio Communication Tester	R & S	CMU200	109369	08/07/2013	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	11/05/2013	1 year
Single Channel PK Power Sensor	Agilent	N1911A	MY45101619	12/21/2013	1 year
Wideband Power Meter	Agilent	N1921A	MY45241957	12/21/2013	1 year
MXA Signal Analyzer	Agilent	N9020A	MY53420615	05/12/2014	1 year
RF Pre-selector	Agilent	N9039A	MY46520256	01/10/2014	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/10/2014	1 year
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2014	1 year
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2014	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	07/16/2014	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2014	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/13/2014	1 year
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/16/2014	1 year
Amplifier	Mini-Circuits	ZKL-1R5+	N/A	05/29/2014	1 year
Amplifier	Mini-Circuits	ZVA-213-S+	N/A	05/29/2014	1 year
RF Pre-selector	Agilent	N9039A	MY46520255	05/10/2014	1 year
Trilog-Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	SB AC VULB	9168-419	05/16/2014	1 year
Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00128055	08/09/2014	1 year
Signal Generator	Rohde & Schwarz	SML03	126085	05/11/2014	1 year

Measurement Uncertainty

For a95%confidencelevel(k = 2), themeasurementexpandeduncertaintiesfordefinedsystems, inaccordancewiththerecommendationsofISO 17025asfollowing:

Test Item		ExtendedUncertainty
Transmit OutputPowerData	Power [dBm]	U = 1.2dB
Bandwidth	Magnitude[%]	U = 0.2%
BandEdgeCompliance	DisturbancePower[dBm]	U = 1.2dB
SpuriousEmissions,Conducted	DisturbancePower[dBm]	U = 1.2dB
FieldStrengthofSpuriousRadiation	ERP [dBm]	For 3mChamber: U = 4.6dB (30MHzto1GHz) U = 3.0dB (above1GHz)For 10mChamber: U = 4.6dB (30MHzto1GHz)
Frequency Stability	Frequency Accuracy [ppm]	U = 0.21ppm

END