FCC
RFTest Report

ProductName:WCDMA Mobile Phone

ModelNumber:N500

ReportNo:1407FR22

FCCID：2ABOSGC140602

A Test Lab Techno Corp.

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Notice

1. The laboratoryhasPassed the accreditationbyThe 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/orpromotionalpurposeswithoutprior written 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	

CONTENT

1 GeneralInformation

1.1 Applied Standard

AppliedRules:	47CFRFCC Part02:201347CFRFCC Part22:2013 47CFRFCC Part24:2013
TestMethod:	FCCKDB971168D01PowerMeasLicenseDigitalSystems

1.2 TestLocation

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

1.3 TestEnvironment Condition

AmbientTemperature:	19.5to25°C
AmbientRelativeHumidity:	40to55%
AtmosphericPressure:	Notapplicable

2 TestSummary

2.1 CellularBand (824-849MHz pairedwith 869-894MHz)

Test Item	FCCRuleNo.	Requirements	TestResult	Verdict
Effective(Isotropic)RadiatedPowerOutput Data	§2.1046, §22.913	FCC:ERP ≤ 7W.	AppendixA	Pass
ModulationCharacteristics	§2.1047	Digitalmodulation	AppendixC	Pass
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	AppendixD	Pass
BandEdgesCompliance	§2.1051, §22.917	≤-13dBm/1%*EBW,in1MHzbandsimmediatelyoutsideandadjacentto	AppendixE	Pass
Spurious Emission atAntennaTerminals	§2.1051, §22.917	FCC: ≤ -13dBm/100kHz,from9kHzto10thharmonicsbutoutsideauthorizedoperatingfrequencyranges.	AppendixF	Pass
FieldStrengthofSpurious Radiation	§2.1053, §22.917	FCC: ≤ -13dBm/100kHz.	AppendixG	Pass
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	AppendixH	Pass
NOTE 1: For theverdict,the“N/A”denotes“notapplicable”,the“N/T”denotes“nottested”.				

2.2 PCSBand (1850-1915MHz pairedwith 1930-1995MHz)

Test Item	FCCRuleNo.	Requirements	TestResult	Verdict (NOTE 1)
Effective(Isotropic)Radiated PowerOutputData	§2.1046, §24.232	EIRP ≤ 2W	AppendixA	Pass
Peak-AverageRatio	§2.1046, §24.232	FCC:Limit≤13dB	AppendixB	Pass
ModulationCharacteristics	§2.1047	Digitalmodulation	AppendixC	Pass
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	AppendixD	Pass
BandEdgesCompliance	§2.1051, §24.238	≤ -13dBm/1%*EBW,in1MHzbandsimmediatelyoutsideandadjacentto	AppendixE	Pass
SpuriousEmissionatAntennaTerminals	§2.1051, §24.238	≤-13dBm/1MHz,from9kHzto10thharmonicsbut outsideauthorized	AppendixF	Pass
Field Strengthof Spurious Radiation	§2.1053, §24.238	≤ -13dBm/1MHz.	AppendixG	Pass
Frequency Stability	§2.1055, §24.235	FCC:withinauthorizedfrequency block.	AppendixH	Pass
NOTE 1: For theverdict,the“N/A”denotes“notapplicable”,the“N/T”denotes“nottested”.				

3 Description ofthe EquipmentunderTest(EUT)

3.1 GeneralDescription

N500is 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	868817019960248
SIM 2	868817019960165

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

3.3 TechnicalSpecification

Characteristics	Description	
RadioSystemType	☒ GSM ☒ UMTS	
SupportedFrequency Range	GSM850/WCDMA850	Transmission(TX): 824to849MHz
		Receiving(RX): 869to894MHz
	GSM1900/WCDMA1900	Transmission(TX): 1850to1910MHz
		Receiving(RX): 1930to1990MHz
TXandRXAntennaPorts	TX& RXport:	1
	TX-only port:	0
	RX-only port:	1
TargetTXOutputPower	GSM850: 32.10dBm UMTS 850: 22.81dBm GSM1900: 28.76dBm UMTS 1900: 22.33dBm	
SupportedChannelBandwidth	GSMsystem:	200 kHz
	UMTS system:	5 MHz
DesignationofEmissions (Note:thenecessary bandwidthofwhichistheworstvaluefromthemeasuredoccupiedbandwidthsforeachtypeofchannelbandwidth configuration.)	GSM850:	248KGXW
	GSM1900:	245KGXW
	UMTS 850:	4M17F9W
	UMTS 1900:	4M17F9W

4 GeneralTest Conditions/Configurations

4.1 TestModes

NOTE: Thetestmode(s)areselectedaccordingtorelevantradiotechnology specifications.

TestMode	TestModesDescription
GSM/TM1	GSMsystem, GSM/GPRS,GMSKmodulation
UMTS/TM1	WCDMA system, QPSKmodulation
UMTS/TM2	HSDPA system,QPSKmodulation
UMTS/TM3	HSUPA system,QPSKmodulation

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.

4.2 TestEnvironment

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

NOTE: VL=lowerextreme
testvoltageVN=nominalvoltage
VH=upperextreme
testvoltageTN=normaltemperature

4.3 TestFrequency

TestMode	TX/RX	RFChannel		
		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	RFChannel		
		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	RFChannel		
		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	RFChannel		
		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

4.4 DESCRIPTIONOF TESTS

4.4.1 RadiatedPowerand RadiatedSpurious Emissions

Radiatedspuriousemissionsareinvestigatedindoorsinasemi-anechoicchambertodeterminethefrequenciesproducingtheworstcaseemissions.Finalmeasurementsforradiatedpowerandradiatedspuriousemissionsareperformedonthe3meterOATSpertheguidelinesofANSI/TIA-603-C-2004.Theequipmentundertestwastransmittingwhileconnectedtoitsintegralantennaandisplacedonawoodenturntable80cmabovethegroundplaneand3meters fromthereceiveantenna.Thespectrumisscannedfromthelowestfrequencygeneratedintheequipmentuptoafrequencyincludingits10thharmonic.Thereceiveantennaheightisadjustedbetween1and4meterheight,theturntableisrotatedthrough360degrees,andtheEUTismanipulatedthroughallorthogonalplanesrepresentativeofitstypicalusetoachievethehighestreadingonthereceivespectrumanalyzer.Emissionsarealsoinvestigatedwiththereceiveantennahorizontallyandverticallypolarized.

Aportableorsmallunlicensedwirelessdeviceshallbeplacedonanon-metallictestfixtureorothernon-metallicsupportduringtesting.Thesupportingfixtureshallpermitorientationoftheat EUTineachofthreeorthogonal(x,y,z)axispositionssuchthatemissionsfromtheEUTaremaximized.MeasuretheEUTmaximumRFpowerandrecordtheresult.

Ahalf-wavedipoleisthensubstitutedinplaceoftheEUT.Foremissionsabove1GHz,ahornantennaissubstituted in placeof theEUT.Thesubstituteantennais drivenbyasignal generatorwiththelevelof thesignalgeneratorbeingadjustedtoobtainthesamereceivespectrumanalyzerlevelpreviouslyrecordedfromthespuriousemissionfromtheEUT.Thepoweroftheemissioniscalculatedusingthefollowingformula:

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

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

Note:Referencetestsetup3

4.4.2 OccupiedBandwidth

Theoccupiedbandwidth,thatisthefrequencybandwidthsuchthat,belowitslowerandaboveitsupperfrequencylimits,themeanpowersradiatedareeachequalto0.5percentofthetotalmeanpowerradiatedbyagivenemissionshallbemeasured.Thespanoftheanalyzershallbesettocaptureallproducts ofthemodulationprocess,includingtheemissionskirts.Theresolutionbandwidthshallbesettoascloseto1percent oftheselectedspanasispossiblewithoutbeingbelow1percent.Thevideobandwidthshallbesetto3timestheresolutionbandwidth.Videoaveragingisnotpermitted.Wherepractical,asamplingdetectorshallbeusedsinceapeakor,peakhold,mayproduceawiderbandwiththanactual.Thetracedatapointsarerecoveredandaredirectlysummedinlinearterms.Therecoveredamplitudedatapoints,beginningatthelowestfrequency,areplacedinarunningsum until0.5percentofthetotalis reachedandthatfrequencyrecorded.Theprocessisrepeatedforthehighestfrequency datapoints.Thisfrequencyisrecorded.Thespanbetweenthetworecordedfrequenciesistheoccupiedbandwidth.
Note:Referencetestsetup1.

4.4.3 Spurious and HarmonicEmissions at Antenna Terminal

Thelevelofthecarrierandthevariousconductedspuriousandharmonicfrequenciesismeasuredbymeansofacalibratedspectrumanalyzer.Thespectrumisscannedfromthelowestfrequencygeneratedintheequipmentuptoafrequencyincludingits10thharmonic.Onanyfrequencyoutsidealicensee'sfrequencyblock,thepowerof anyemissionshallbeattenuatedbelowthetransmitterpower(P)byatleast43+10 log(P)dB.Compliance withthese provisionsisbasedon theuse of measurementinstrumentationemployingaresolutionbandwidthof1MHzorgreater.However,inthe1MHzbandsimmediatelyoutsideandadjacenttothefrequencyblockaresolutionbandwidthofatleastonepercentoftheemission bandwidthofthefundamentalemissionofthetransmittermaybeemployed.Theemissionbandwidthisdefinedasthewidthofthesignalbetweentwopoints,onebelowthecarriercenterfrequencyandoneabovethecarriercenterfrequency,outsideofwhichallemissionareattenuatedatleast26dBbelowthetransmitterpower.
Note:Referencetestsetup1.

4.4.4 Peak-Average Ratio

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

4.4.5 FrequencyStability/Temperature Variation

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

a.)**Temperature:**Thetemperatureisvariedfrom-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)ofthecenterfrequency.

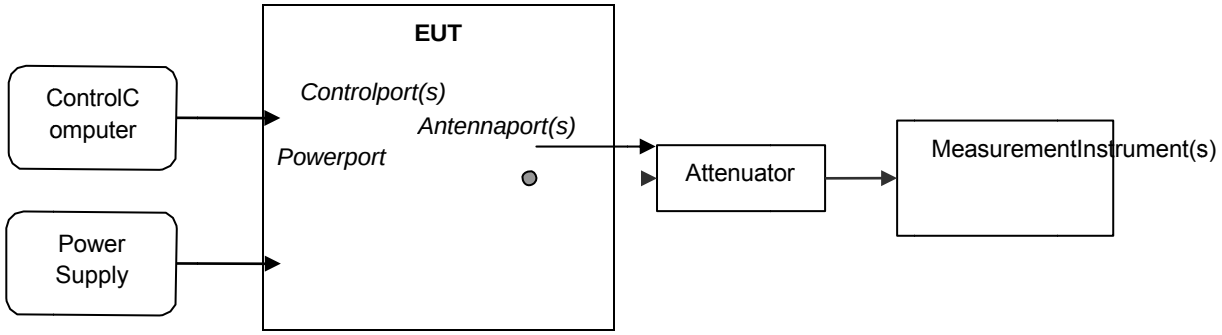
TimePeriodandProcedure:

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

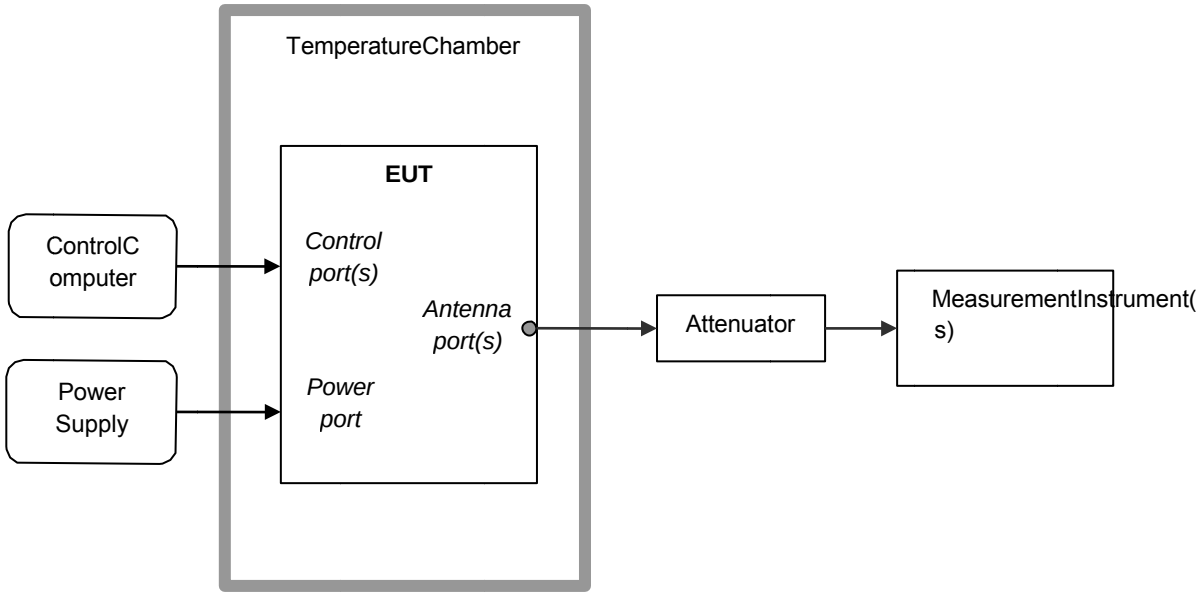
Note:Referencetestsetup2.

4.5 TestSetups

4.5.1 TestSetup 1



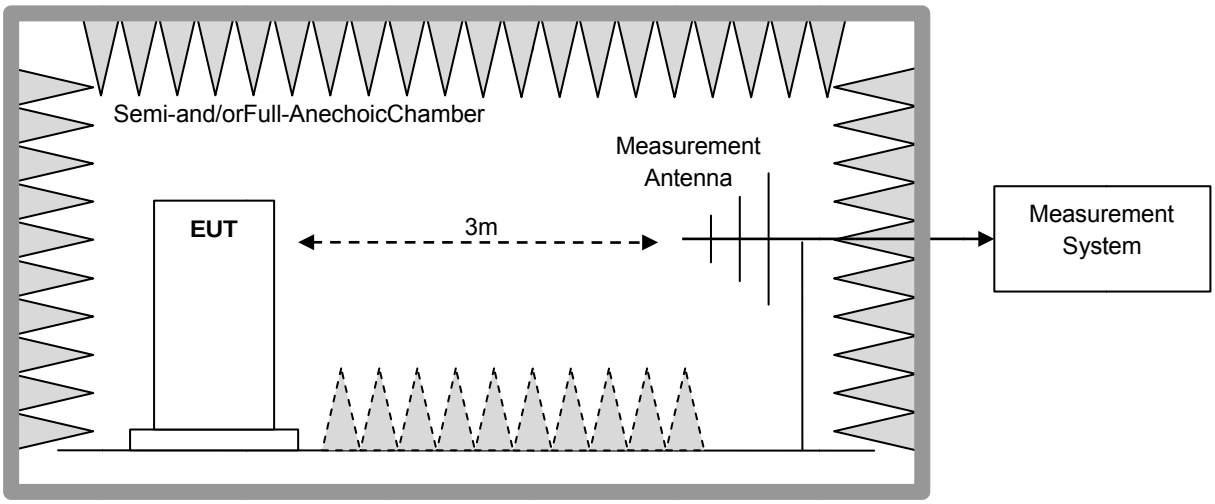
4.5.2 TestSetup 2



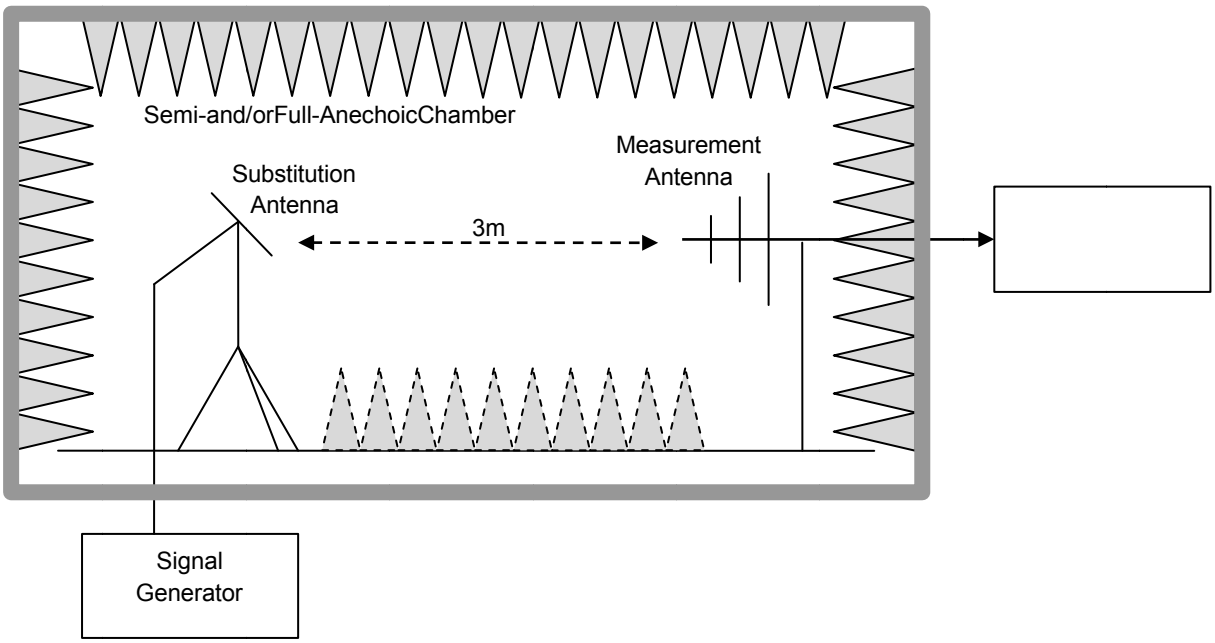
4.5.3 TestSetup 3

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	TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
	AveragePower, SpectralDensity(if required)	TestEnv.	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)		TestEnv.	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	TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1
		RFChannels (TX)	L, M, H (L= lowchannel,M=middlechannel,H=highchannel)
		TestMode	GSM/TM1,UMTS/TM1
	EmissionBandwidth(if required)	TestEnv.	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
SpuriousEmissionatAntennaT		TestEnv.	AmbientClimate&RatedVoltage
		Test Setup	TestSeup1

erminals	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

6 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