FCC Test Report

Report No.: AGC00653151201FE02

FCC ID	:	2AFD9Q6
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	MOBILE PHONE
BRAND NAME	:	ZOOM
MODEL NAME	:	Q6
CLIENT	:	MOVEON TECHNOLOGY LIMITED
DATE OF ISSUE	:	Jan.08, 2016
STANDARD(S)	:	FCC Part 22H & 24E Rules
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd. LIGC (streenzthen)

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jan.08, 2016	Valid	Original Report

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Applicant	MOVEON TECHNOLOGY LIMITED			
Address	world trade plaza-A block #3201-3202 Fuhong Road, Futian			
Manufacturer	MOVEON TECHNOLOGY LIMITED			
Address	world trade plaza-A block #3201-3202 Fuhong Road, Futian			
Product Designation	MOBILE PHONE			
Brand Name	ZOOM			
Test Model	Q6			
Date of test	Dec.29, 2015 to Dec.31, 2015			
Deviation	None			
Condition of Test Sample	Normal			

1. VERIFICATION OF COMPLIANCE

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C 63.4:2009 and TIA/EIA 603. The sample tested as described in this report is in compliance with the FCC Rules Part 22H and 24E.

The test results of this report relate only to the tested sample identified in this report.

Tested By	Mortt Zhang		
	Matt Zhang(Zhang Liang)	Jan.08, 2016	
Reviewed By	Bore sie		
	Bart Xie(Xie Xiaobin)	Jan.08, 2016	
Approved By	Selya shary		
	Solger Zhang(Zhang Hongyi)	Jan.08, 2016	
	Authorized Officer		

2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	MOBILE PHONE		
Hardware version:	A3-02		
Software version:	a3e_ax_tm_q6_b2b5_zoom_v06_07122015		
Frequency Bands:	Image: Second state sta		
Antenna:	PIFA Antenna		
Type of Modulation	GSM / GPRS : GMSK WCDMA : QPSK		
Antenna gain(GSM):	-1.0dBi		
Power Supply:	DC 3.7V by battery		
Battery parameter:	DC3.7V/1300mAh		
Adapter Input:	AC100-240V, 50-60Hz, 150mA		
Adapter Output:	DC5V, 1000mA		
Dual Card:	WCDMA / GSM Card Slot GSM Card Slot		
GPRS Class	12		
Extreme Vol. Limits:	DC3.4 V to 4.2 V (Normal: DC3.7 V)		
Extreme Temp. Tolerance	-10℃ to +50℃		
*** Note: The High Voltage DC4.2V and Low Voltage DC3.4V were declared by manufacturer, The			

EUT couldn't be operating normally with higher or lower voltage.

Other functions have been performed according to verification procedure except for Bluetooth and MS function. Card 1 can't transmit with Card 2 simultaneously.

*** **Note:** The maximum power levels are GSM for MCS-4: GMSK link, and RMC 12.2kbps mode for WCDMA band II, WCDMA band V, only these modes were used for all tests.

We found out the test mode with the highest power level after we analyze all the data rates. So we chose worst case as a representative.

WCDMA Card Slot:

	Maximum ERP/EIRP	Max. Conducted Power	Max. Average	
	(dBm)	(dBm)	Burst Power (dBm)	
GSM 850	30.72	32.61	31.16	
PCS 1900	27.78	29.72	28.25	
UMTS BAND II	21.87	23.61	21.43	
UMTS BAND V	21.44	23.37	21.19	

GSM Card Slot:

	Maximum ERP/EIRP	Max. Conducted Power	Max. Average
	(dBm)	(dBm)	Burst Power (dBm)
GSM 850	30.41	31.87	31.05
PCS 1900	27.39	29.26	28.06

2.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AFD9Q6**, filing to comply with the FCC Part 22H&24E requirements.

2.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI C 63.4: 2009; TIA/EIA 603 and FCC CFR 47 Rules of 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057. KDB 971168 D01 Power Meas License Digital Systems v02r01

2.4 TEST FACILITY

Site	Dongguan Precise Testing Service Co., Ltd.		
Location Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,			
FCC Registration No.371540			
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009.		

2.5 MEASUREMENT INSTRUMENTS

Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2015	July 3, 2016
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2015	July 3, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2015	June 5, 2016
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2015	June 5, 2016
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2015	July 10, 2016
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 7, 2015	July 6, 2016
RF Cable	SCHWARZBECK	AK9515H	96220	July 8, 2015	July 7, 2016
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2015	June 5, 2016
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2015	July 7, 2016
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2015	July 7, 2016
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2015	July 3, 2016
Shielded Room	CHENGYU	843	PTS-002	June 6,2015	June 5,2016
COMMUNICATION TESTER	AGILENT	8960	GB46490550	July 25, 2015	July 24, 2016

2.6 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

2.7 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

Item Number	Item Description		FCC Rules	
1	Output Dowor	Conducted output power	2.1046/22.913(a) (2) / 24.232	
1	Output Power	Radiated output power	(c)	
2	Peak-to-Average	Dock to Average Potio	24.222(d)	
2	Ratio	Peak-to-Average Ratio	24.232(d)	
		Conducted		
3	Spurious Emission	spurious emission	2.1051 / 22.917 / 24.238	
		Radiated spurious emission		
4	Mains Conducted Emission		15.107 / 15.207	
5	Frequency Stability		2.1055/22.355 /24.235	
6	Occupied Bandwidth		2.1049 (h)(i)	
7	Emission Bandwidth		22.917(a)/24.238(a)	
8	Band Edge		22.917(a)/24.238(a)	

3.3 GENERAL TECHNICAL REQUIREMENTS

3.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

EUT

Accessory

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	Q6	FCC ID: 2AFD9Q6	EUT
2	Adapter	Q6	DC5V, 1000mA	Accessory
3	Battery	Q6	DC3.7V/1300mAh	Accessory
4	Earphone	Q6	N/A	Accessory
5	USB Cable	Q6	N/A	Accessory

***Note: All the accessories have been used during the test. The following "EUT" in setup diagram means EUT system.

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power Radiated Output Power	2.1046/22.913(a) (2) / 24.232 (c)	Pass
2	Peak-to-Average Ratio Ratio		24.232(d)	Pass
3	Spurious Emission	Conducted Spurious Emission Radiated Spurious Emission	- 2.1051 / 22.917 / 24.238	Pass
4	Mains Conducted Em	ission	15.107 / 15.207	Pass
5	Frequency Stability		2.1055/22.355 /24.235	Pass
6	Occupied Bandwidth		2.1049 (h)(i)	Pass
7	Emission Bandwidth		22.917(a)/24.238(a)	Pass
8	Band Edge		22.917(a)/24.238(a)	Pass

4. SUMMARY OF TEST RESULTS

5. DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMU 200) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both GSM and PCS frequency band. ***Note: GSM/GPRS 850, GSM/GPRS 1900, WCDMA/HSPA band II, WCDMA/HSPA band V, mode have

been tested during the test.

The worst condition was recorded in the test report if no other modes test data.

6. OUTPUT POWER

6.1 CONDUCTED OUTPUT POWER

6.1.1 MEASUREMENT METHOD

The transmitter output port was connected to base station.

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.

Measure the maximum burst average power and average power for other modulation signal.

The EUT was setup for the max output power with pseudo random data modulation. Power was measured with Spectrum Analyzer. The measurements were performed on all modes (GSM/GPRS850, GSM/GPRS1900, WCDMA/HSPA band II, WCDMA/HSPA band V) at 3 typical channels (the Top Channel, the Middle Channel and the Bottom Channel) for each band.

Conducted Output Power Limits for GSM850/EDGE band						
Mode	Nominal Peak Power	Tolerance(dB)				
GSM	33 dBm (2W)	- 2				
	Conducted Output Power Limits for PCS1900/EDGE band					
Mode Nominal Peak Power Tolerance(
GSM	30 dBm (1W)	- 2				
	Conducted Output Power Limits for UMTS	band II				
Mode	Nominal Peak Power	Tolerance(dB)				
WCDMA	24 dBm (0.25W)	- 2				
	Conducted Output Power Limits for UMTS band V					
Mode	Nominal Peak Power	Tolerance(dB)				
WCDMA	24 dBm (0.25W)	- 2				

6.1.2 MEASUREMENT RESULT

Mada	Frequency	Reference	Peak	Tolerance	Avg.Burst	Duty cycle	Frame
Mode	(MHz)	Power	Power		Power	Factor(dB)	Power(dBm)
	824.2	33	32.61	-0.39	31.16	-9	22.16
GSM850	836.6	33	32.53	-0.47	31.12	-9	22.12
	848.8	33	32.47	-0.53	31.11	-9	22.11
	824.2	33	32.36	-0.64	30.66	-9	21.66
GPRS850	836.6	33	32.32	-0.68	30.61	-9	21.61
(1 Slot)	848.8	33	32.29	-0.71	30.52	-9	21.52
	824.2	30	29.48	-0.52	28.26	-6	22.26
GPRS850 (2 Slot)	836.6	30	29.46	-0.54	28.23	-6	22.23
(2 3101)	848.8	30	29.42	-0.58	28.19	-6	22.19
	824.2	28.23	27.49	-0.74	26.15	-4.26	21.89
GPRS850	836.6	28.23	27.45	-0.78	26.12	-4.26	21.86
(3 Slot)	848.8	28.23	27.41	-0.82	26.17	-4.26	21.91
GPRS850	824.2	27	26.38	-0.62	25.29	-3	22.29
	836.6	27	26.35	-0.65	25.25	-3	22.25
(4 Slot)	848.8	27	26.32	-0.68	25.23	-3	22.23

GSM 850:

Mode	Frequency (MHz)	Reference Power	Peak Power	Tolerance	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power(dBm)
	1850.2	30	29.72	-0.28	28.25	-9	19.25
GSM1900	1880	30	29.67	-0.33	28.22	-9	19.22
	1909.8	30	29.62	-0.38	28.19	-9	19.19
GPRS1900	1850.2	30	29.41	-0.59	27.71	-9	18.71
(1 Slot)	1880	30	29.36	-0.64	27.68	-9	18.68
(1 300)	1909.8	30	29.32	-0.68	27.62	-9	18.62
GPRS1900	1850.2	27	26.59	-0.41	25.37	-6	19.37
	1880	27	26.54	-0.46	25.34	-6	19.34
(2 Slot)	1909.8	27	26.48	-0.52	25.32	-6	19.32
	1850.2	25.23	24.58	-0.65	23.37	-4.26	19.11
GPRS1900 (3 Slot)	1880	25.23	24.49	-0.74	23.26	-4.26	19
	1909.8	25.23	24.47	-0.76	23.24	-4.26	18.98
GPRS1900	1850.2	24	23.54	-0.46	22.39	-3	19.39
	1880	24	23.51	-0.49	22.37	-3	19.37
(4 Slot)	1909.8	24	23.46	-0.54	22.33	-3	19.33

PCS 1900:

UMTS BAND II

Mode	Frequency (MHz)	Reference power	Peak Power	Tolerance	Avg.Burst Power
	1852.6	24	23.61	-0.39	21.43
WCDMA 1900 RMC	1880	24	23.56	-0.44	21.39
	1907.4	24	23.53	-0.47	21.34
	1852.6	24	23.42	-0.58	21.25
WCDMA 1900 AMR	1880	24	23.37	-0.63	21.23
	1907.4	24	23.34	-0.66	21.18
	1852.6	24	22.46	-1.54	20.26
HSDPA Subtest 1	1880	24	22.44	-1.56	20.23
	1907.4	24	22.41	-1.59	20.19
	1852.6	24	22.47	-1.53	20.35
HSDPA Subtest 2	1880	24	22.43	-1.57	20.32
	1907.4	24	22.42	-1.58	20.27
	1852.6	24	22.59	-1.41	20.29
HSDPA Subtest 3	1880	24	22.55	-1.45	20.25
	1907.4	24	22.51	-1.49	20.21
	1852.6	24	22.66	-1.34	20.24
HSDPA Subtest 4	1880	24	22.62	-1.38	20.21
	1907.4	24	22.61	-1.39	20.18
	1852.6	24	22.56	-1.44	20.36
HSUPA Subtest 1	1880	24	22.52	-1.48	20.32
	1907.4	24	22.49	-1.51	20.31
	1852.6	24	22.62	-1.38	20.27
HSUPA Subtest 2	1880	24	22.57	-1.43	20.23
	1907.4	24	22.56	-1.44	20.21
	1852.6	24	22.67	-1.33	20.31
HSUPA Subtest 3	1880	24	22.63	-1.37	20.26
	1907.4	24	22.62	-1.38	20.22
	1852.6	24	22.64	-1.36	20.37
HSUPA Subtest 4	1880	24	22.61	-1.39	20.34
	1907.4	24	22.53	-1.47	20.32
	1852.6	24	22.68	-1.32	20.31
HSUPA Subtest 5	1880	24	22.63	-1.37	20.28
	1907.4	24	22.57	-1.43	20.23

UMTS BAND V

Mode	Frequency (MHz)	Reference power	Peak Power	Tolerance	Avg.Burst Power
	826.6	24	23.37	-0.63	21.19
WCDMA 850 RMC	836.4	24	23.35	-0.65	21.15
	846.4	24	23.31	-0.69	21.12
	826.6	24	23.27	-0.73	21.11
WCDMA 850 AMR	836.4	24	23.24	-0.76	21.08
	846.4	24	23.21	-0.79	21.06
	826.6	24	22.72	-1.28	20.38
HSDPA Subtest 1	836.4	24	22.68	-1.32	20.32
	846.4	24	22.63	-1.37	20.27
	826.6	24	22.49	-1.51	20.29
HSDPA Subtest 2	836.4	24	22.45	-1.55	20.25
	846.4	24	22.42	-1.58	20.24
	826.6	24	22.53	-1.47	20.39
HSDPA Subtest 3	836.4	24	22.51	-1.49	20.35
Sublest 5	846.4	24	22.46	-1.54	20.31
	826.6	24	22.68	-1.32	20.26
HSDPA Subtest 4	836.4	24	22.66	-1.34	20.23
Sublest 4	846.4	24	22.56	-1.44	20.21
	826.6	24	22.69	-1.31	20.38
HSUPA Subtest 1	836.4	24	22.64	-1.36	20.34
	846.4	24	22.62	-1.38	20.29
	826.6	24	22.67	-1.33	20.28
HSUPA Subtest 2	836.4	24	22.61	-1.39	20.27
	846.4	24	22.63	-1.37	20.25
	826.6	24	22.69	-1.31	20.26
HSUPA Subtest 3	836.4	24	22.64	-1.36	20.22
	846.4	24	22.62	-1.38	20.2
	826.6	24	22.71	-1.29	20.28
HSUPA Subtest 4	836.4	24	22.65	-1.35	20.24
	846.4	24	22.62	-1.38	20.28
	826.6	24	22.73	-1.27	20.39
HSUPA Subtest 5	836.4	24	22.71	-1.29	20.34
	846.4	24	22.66	-1.34	20.31

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

Table 6.1aA: UE maximum output power with HS-DPCCH and E-DCH

UE Transmit Channel Configuration	CM(db)	MPR(db)			
For all combinations of ,DPDCH,DPCCH	0≤ CM≤3.5				
HS-DPDCH, E-DPDCH and E-DPCCH		MAX(CM-1,0)			
Note: CM=1 for $\beta_c/\beta_d=12/15$, $\beta_{hs}/\beta_c=24/15$. For all other combinations of DPDCH, DPCCH,					
HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.					

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensate for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

6.2 RADIATED OUTPUT POWER

6.2.1 MEASUREMENT METHOD

The measurements procedures specified in TIA-603C-2004 were applied.

- 1 In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.
- 2 The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. The ARpl is the attenuation of "reference path loss", and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl
- 3 The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
- 4 From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.
- 5 The EUT is then put into continuously transmitting mode at its maximum power level.
- 6 Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.
- 7 This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).
- 8 ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi..

6.2.2 PROVISIONS APPLICABLE

This is the test for the maximum radiated power from the EUT. Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage." Rule Part 22.913(a) specifies "Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

Mode	Nominal Peak Power
GSM 850	<=38.45 dBm (7W)
PCS 1900	<=33 dBm (2W)
UMTS BAND II	<=33 dBm (2W)
UMTS BANDV	<=38.45 dBm (7W)

6.2.3 MEASUREMENT RESULT

Radiated Power (ERP) for GSM 850					
		Re	sult		
Mode	Frequency	Max. Peak ERP	Polarization	Conclusion	
		(dBm)	Of Max. ERP	Pass	
	824.2	30.72	Horizontal	Pass	
	836.6	30.61	Horizontal	Pass	
GSM850	848.8	30.55	Horizontal	Pass	
GSINIOSU	824.2	29.32	Vertical	Pass	
	836.6	29.19	Vertical	Pass	
	848.8	29.15	Vertical	Pass	

Radiated Power (E.I.R.P) for PCS 1900					
		Res	Result		
Mode	Frequency	Max. Peak	Polarization	Conclusion	
		E.I.R.P.(dBm)	Of Max. E.I.R.P.		
	1850.2	27.65	Horizontal	Pass	
	1880.0	27.78	Horizontal	Pass	
GSM 1900	1909.8	27.53	Horizontal	Pass	
001011300	1850.2	26.58	Vertical	Pass	
	1880.0	26.79	Vertical	Pass	
	1909.8	26.48	Vertical	Pass	

Radiated Power (E.I.R.P) for UMTS band II					
		Result			
Mode	Frequency	Max. Peak E.I.R.P	Polarization		
		(dBm)	Of Max. E.I.R.P		
	1852.6	21.87	Horizontal	Pass	
	1880	21.63	Horizontal	Pass	
RMC	1907.4	21.61	Horizontal	Pass	
12.2kbps	1852.6	21.53	Vertical	Pass	
	1880	21.48	Vertical	Pass	
	1907.4	21.46	Vertical	Pass	

Radiated Power (ERP) for UMTS band V						
		Re	Result			
Mode	Frequency Max. Peak ERP		Polarization	Conclusion		
		(dBm) Of Max. E.I.R.P.				
	826.6	21.44	Horizontal	Pass		
	836.4	21.36	Horizontal	Pass		
RMC	846.4	21.31	Horizontal	Pass		
12.2kbps	826.6	20.93	Vertical	Pass		
	836.4	20.87	Vertical	Pass		
	846.4	20.85	Vertical	Pass		

Note: Above is worst mode data.

6.3. PEAK-TO-AVERAGE RATIO

6.3.1 MEASUREMENT METHOD

Use one of the procedures presented in 4.1 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.2 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = PPk (dBm) - PAvg (dBm).

6.3.2 PROVISIONS APPLICABLE

This is the test for the Peak-to-Average Ratio from the EUT.

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

6.3.3 MEASUREMENT RESULT

Modes	GSM850(GSM)			
Channel	128	190	251	
	(Low)	(Mid)	(High)	
Frequency	824.2	836.6	848.8	
(MHz)	024.2	050.0	040.0	
Peak-To-Average Ratio (dB)/GSM	1.45	1.41	1.36	

Modes	PCS 1900 (GSM)			
Channel	512	661	810	
	(Low)	(Mid)	(High)	
Frequency	1850.2	1880	1909.8	
(MHz)	1050.2	1000	1909.0	
Peak-To-Average Ratio (dB)/GSM	1.47	1.45	1.43	

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Modes	UMTS BAND II			
Channel	9663	9800	9937	
Onamici	(Low)	(Mid)	(High)	
Frequency	1852.6	1880	1907.4	
(MHz)				
Peak-To-Average Ratio (dB)	2.18	2.17	2.19	

Modes	UMTS BAND V			
Channel	4358	4407	4457	
Unamier	(Low)	(Mid)	(High)	
Frequency	826.6	836.6	846.4	
(MHz)	020.0	030.0		
Peak-To-Average Ratio (dB)	2.18	2.2	2.19	

7. OCCUPIED BANDWIDTH

7.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

7.2 PROVISIONS APPLICABLE

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power

7.3 MEASUREMENT RESULT

APPENDIX A:BANDWIDTH

Test Results

Test	Test	Test	Occupied Bandwidth	Emission Bandwidth	Verdict
Band	Mode	Channel	(KHZ)	(KHZ)	verdict
GSM850 GSN		LCH GSM MCH	244.35	301.34	PASS
	GSM		246.76	309.09	PASS
		НСН	247.13	314.96	PASS

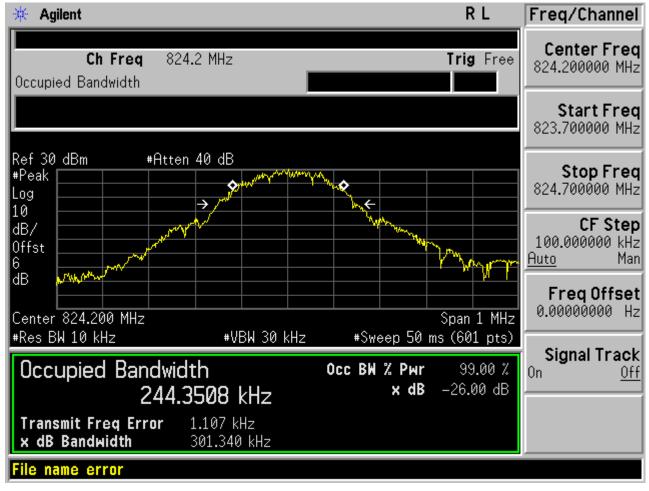
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM1900 GSM		LCH	247.57	314.25	PASS
	GSM	MCH	245.11	309.00	PASS
		HCH	244.87	315.80	PASS

For GSM

Test Band=GSM850

Test Mode=GSM

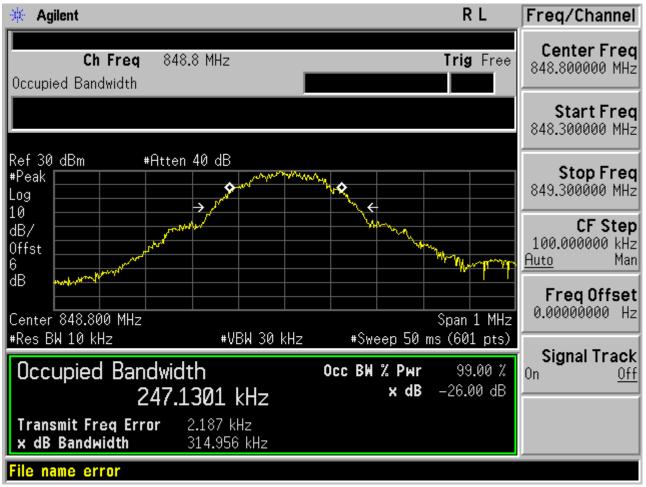
Test Channel=LCH



Test Channel=MCH



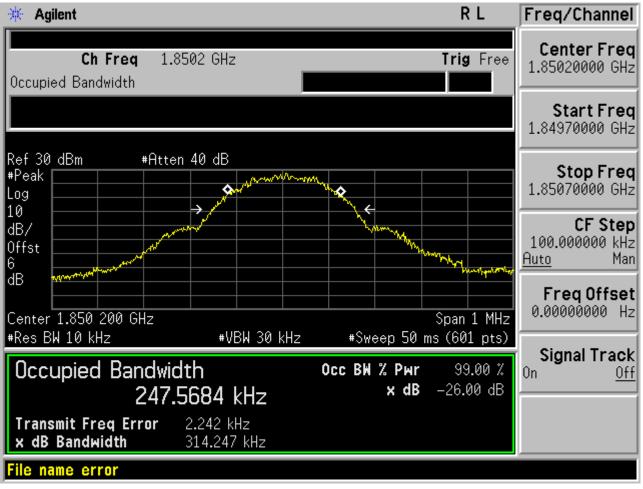
Test Channel=HCH



Test Band=GSM1900

Test Mode=GSM

Test Channel=LCH

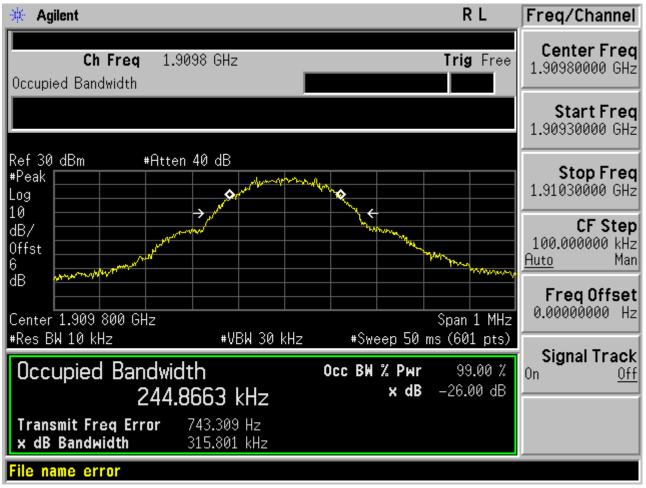


Test Channel=MCH



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Test Channel=HCH



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Test Band	Test	Test	Occupied Bandwidth	Emission Bandwidth	Verdi
	Mode	Channel	(KHZ)	(KHZ)	ct
WCDMA8 50	UMTS	LCH	4148.1	4668	PASS
		MCH	4137.1	4688	PASS
		HCH	4185.0	4761	PASS

Test Band	Test	Test Occupied Bandwidth		Emission Bandwidth	Verdi
	Mode	Channel	(KHZ)	(KHZ)	ct
WCDMA1 900		LCH	4152.3	4692	PASS
	UMTS	MCH	4150.5	4694	PASS
		HCH	4168.5	4730	PASS

For WCDMA

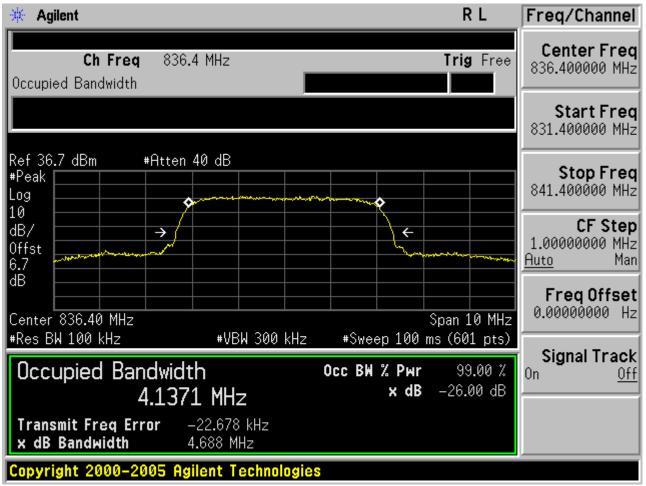
Test Band=WCDMA850

Test Mode=UMTS

Test Channel=LCH

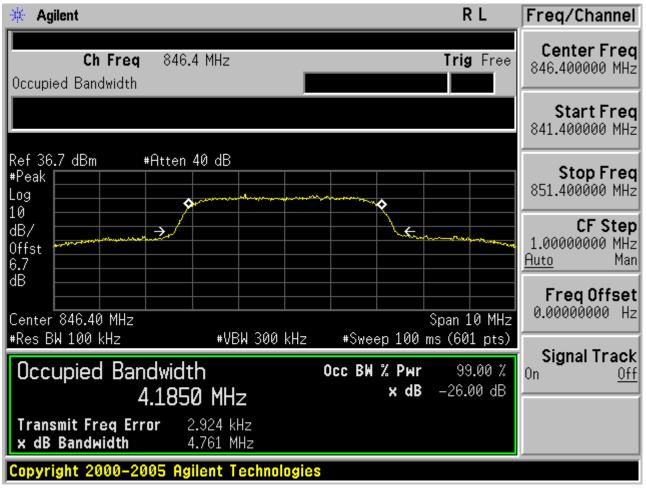
🔆 Agilent			RL	Freq/Channel
Ch Freq 826.6 Occupied Bandwidth) MHz		Trig Free	Center Freq 826.600000 MHz
				Start Freq 821.600000 MHz
Ref 36.7 dBm #Atten # #Peak Log 10	40 dB	•		Stop Freq 831.600000 MHz
dB/ Offst 6.7			anter a construction of the second	CF Step 1.0000000 MHz <u>Auto</u> Man
dB Center 826.60 MHz			pan 10 MHz	FreqOffset 0.00000000 Hz
*Res BW 100 kHz Occupied Bandwidt 4.148		#Sweep 100 ms Осс ВЖ % Рыг х dB		Signal Track On <u>Off</u>
	.225 kHz .668 MHz			
Copyright 2000-2005 Agi	lent Technologies	5		

Test Channel=MCH



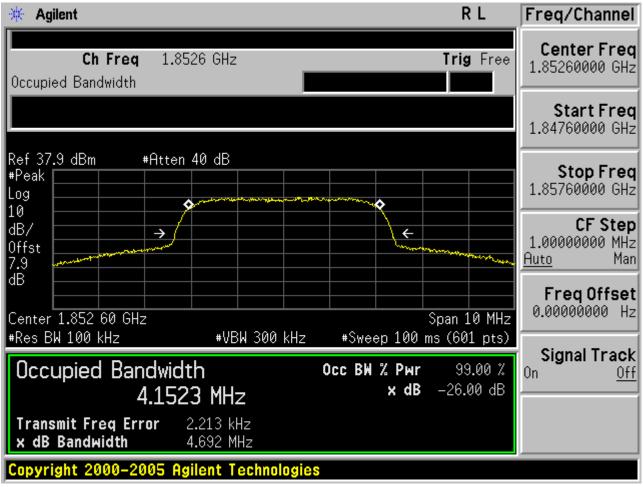
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Test Channel=HCH

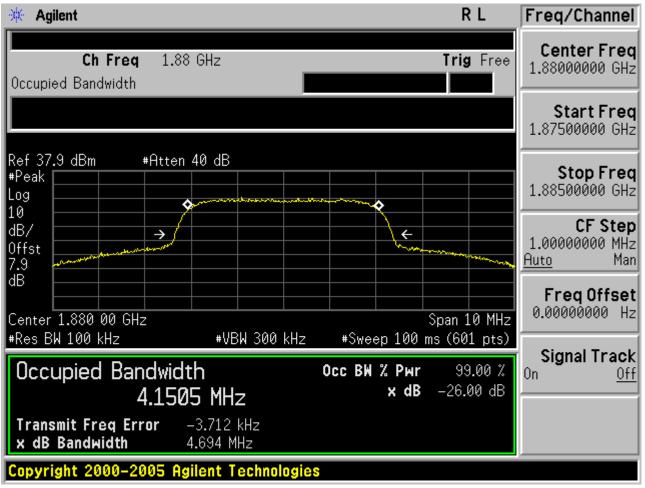


Test Band=WCDMA1900

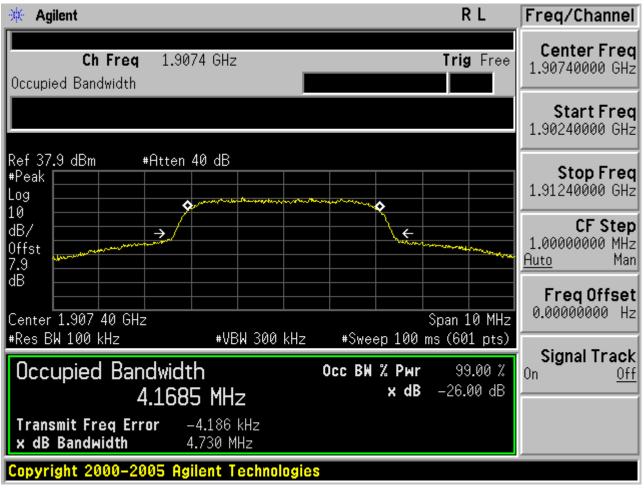
Test Mode=UMTS



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8. BAND EDGE

8.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

8.2 PROVISIONS APPLICABLE

As Specified in FCC rules of 22.917(a) and 24.238(a)

8.3 MEASUREMENT RESULT

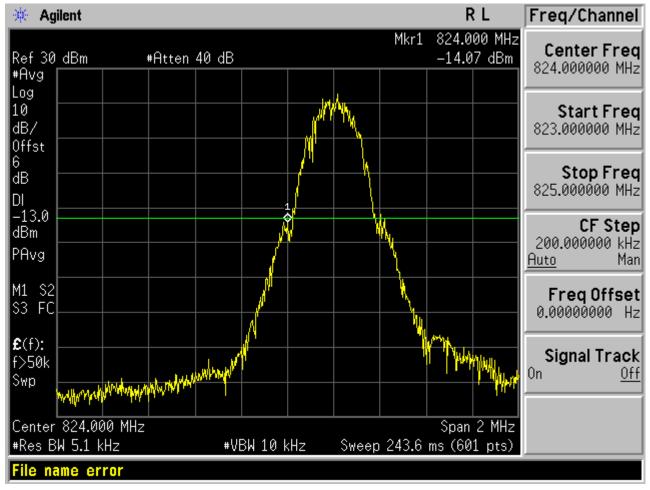
APPENDIX B: BAND EDGES COMPLIANCE

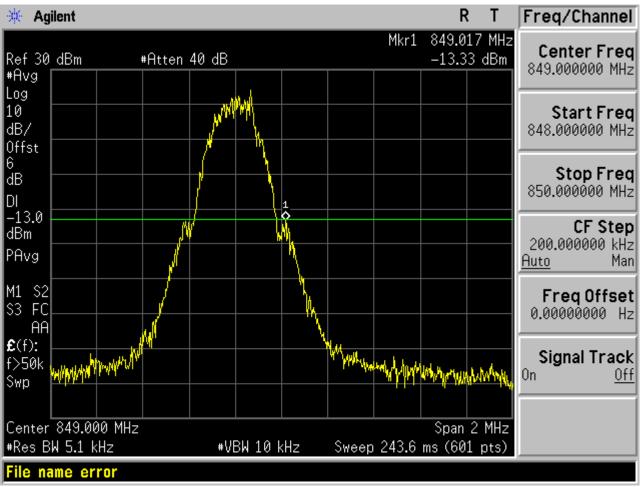
Test Results

For GSM

Test Band=GSM850

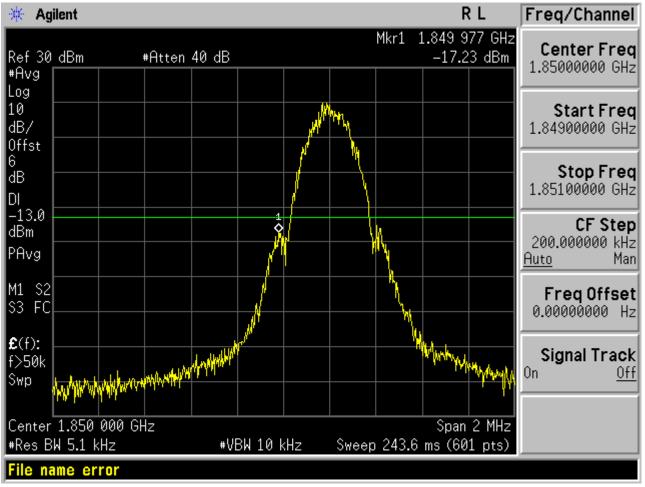
Test Mode=GSM

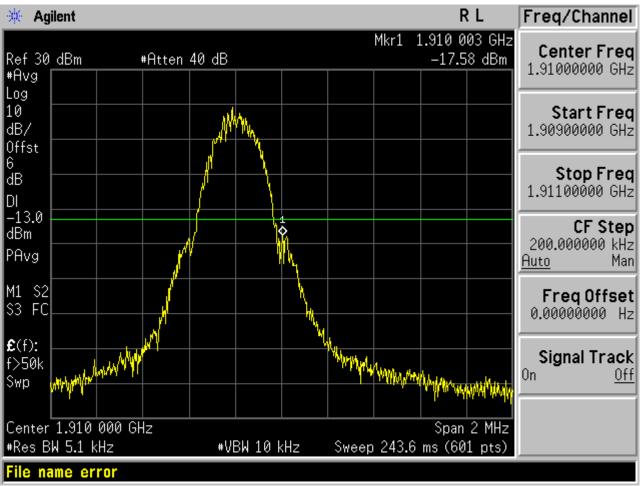




Test Band=GSM1900

Test Mode=GSM

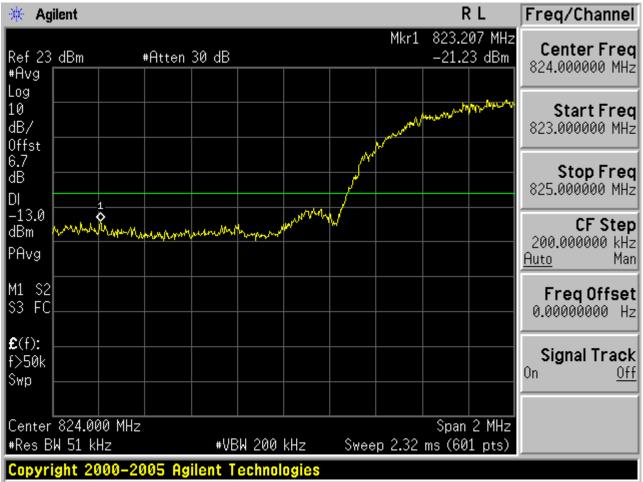


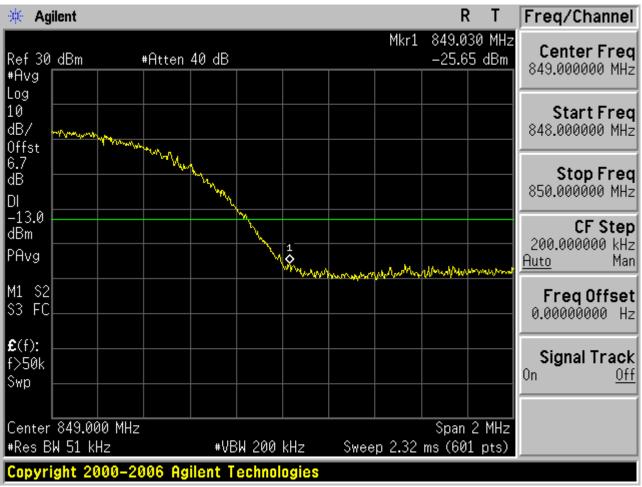


For WCDMA

Test Band=WCDMA850

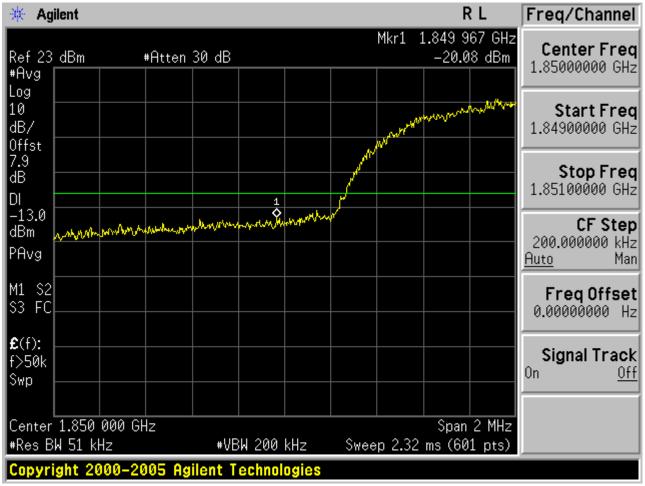
Test Mode=UMTS





Test Band=WCDMA1900

Test Mode=UMTS



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#Avg 1.9100000 G #Avg 1.9100000 G 10 1.9100000 G 0ffst 1 7.9 1 dB 1 DI 1 -13.0 1 dBm 1 PAvg 1 M1 S2 S3 FC S3 FC Signal Tra	🔆 Ag	ilent								F	₹L	Freq/Channel
10 Max Ma	#Avg								Mkr1 :			Center Freq 1.91000000 GHz
dB 1 1 1.91100000 G DI -13.0 CF Sto 200.000000 k dBm M1 S2 S3 FC Freq Offs 6(f): f>50k Signal Tra	10 dB/ Offst	boo-mood	arter the the	whenha								Start Freq 1.90900000 GHz
dBm CF Str PAvg 200.000000 k M1 S2 Freq Offs S3 FC 0.0000000 £(f): Signal Tra	dB DI				North North	Mungu	water and the second	Ŷ	underado	(he a dati)		Stop Freq 1.91100000 GHz
\$3 FC 0.00000000 £(f): Signal Tra	dBm									n er gesenne ge	946946-09-2	CF Step 200.000000 kHz <u>Auto</u> Man
f>50k Signal Ira	M1 S2 S3 FC											FreqOffset 0.00000000 Hz
	f>50k											Signal Track On <u>Off</u>
Center 1.910 000 GHz Span 2 MHz #Res BW 51 kHz #VBW 200 kHz Sweep 2.32 ms (601 pts) Copyright 2000-2005 Agilent Technologies	# Res B	W 51 k	Hz					Swee	p 2.32			

9. SPURIOUS EMISSION

9.1 CONDUCTED SPURIOUS EMISSION

9.1.1 MEASUREMENT METHOD

The following steps outline the procedure used to measure the conducted emissions from the EUT. 1, Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM 850, data taken from 30 MHz to 9 GHz. 2, Determine EUT transmit frequencies: the following typical channels were chosen to conducted emissions testing.

Typical Channels for testing of GSM 850						
Channel	Frequency (MHz)					
128	824.2					
190	836.6					
251	848.8					

Typical Channels for testing of PCS 1900						
Channel	Frequency (MHz)					
512	1850.2					
661	1880.0					
810	1909.8					

Typical Channels for testing of UMTS band II						
Channel	Frequency (MHz)					
9663	1852.6					
9800	1880					
9937	1907.4					

Typical Channels for testing of UMTS band V						
Channel	Frequency (MHz)					
4358	826.6					
4407	836.4					
4457	846.4					

9.1.2 PROVISIONS APPLICABLE

On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

9.1.3 MEASUREMENT RESULT

APPENDIX C: SPURIOUS EMISSION AT ANTENNA TERMINAL

Test Results

Test Band=GSM850

Test Mode=GSM

🔆 Agilent			RL	Freq/Channel
Ref 33 dBm #Atten #Avg	40 dB		480.5 MHz 5.04 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst				Start Freq 30.0000000 MHz
6 dB DI				Stop Freq 1.00000000 GHz
-13.0 dBm PAvg				CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FS	2			FreqOffset 0.00000000 Hz
£(f): FTun Swp		<u></u>		Signal Track On <u>Off</u>
Center 515.0 MHz #Res BW 1 MHz	#VBW 3 MHz	Span #Sweep 100 ms (1	970 MHz 000 pts)	
File name error				

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*HV9	Center Freq
	5.00000000 GHz
Log 10 dB/ Offst	Start Freq 1.00000000 GHz
	Stop Freq 9.00000000 GHz
	CF Step 800.000000 MHz l <u>uto</u> Man
	FreqOffset 0.00000000 Hz
£(f): Image: Constraint of the second seco	Signal Track
Center 5.000 GHz Span 8 GHz #Res BW 1 MHz #VBW 3 MHz #Sweep 100.5 ms (8190 pts)	

🔆 Agilent				RL	Freq/Channel
Ref 33 dBm #Avg Log	#Atten 40 dB			485.4 MHz 44.90 dBm	Center Freq 515.000000 MHz
10 dB/ 0ffst					Start Freq 30.0000000 MHz
6 dB DI					Stop Freq 1.00000000 GHz
-13.0 dBm PAvg					CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FS		2			FreqOffset 0.00000000 Hz
£(f): FTun Swp					Signal Track ^{On <u>Off</u>}
Center 515.0 M #Res BW 1 MHz	#V	BW 3 MHz	Spa #Sweep 100 ms	an 970 MHz (1000 pts)	
File name erro	or				

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Mkr1 3.347 GHz -32.60 dBm Center Freq 5.0000000 GHz Log	🔆 Agilent				RL	Freq/Channel
10 dB/ G G Start Freq 0 dB/ 0 dB G G Stop Freq 0 dB 0 dB G G G 0 dB 0 dB G G G 0 dB 0 dB G G G G 0 dB 0 dB G G G G 0 dB 0 dB G G G G G 0 dB 0 dB G G G G G G 0 dB 0 dB G	#Avg	#Atten	40 dB			
dB DI Stop Freq 9.0000000 GHz -13.0 GBm CF Step 800.000000 MHz PAvg M1 S2 M1 Stop Freq 9.0000000 MHz M1 S2 STop Freq Stop Freq 9.0000000 MHz C(f): Freq Offset 0.0000000 Hz 0.0000000 Hz Swp Stop Freq Stop Freq 9.0000000 MHz Center 5.000 GHz Span 8 GHz Stop Freq 9.0000000 MHz	10 dB/					
dBm PAvg S00.00000 MHz M1 S2 * M1 S2 S3 FS * Freq Offset £(f): * * FTun * * Swp * * Center 5.000 GHz Span 8 GHz	dB DI					Stop Freq 9.00000000 GHz
S3 FS 0.00000000 Hz £(f): Signal Track Swp 0.000 GHz Center 5.000 GHz Span 8 GHz	dBm					800.000000 MHz
FTun Swp Center 5.000 GHz Span 8 GHz	\$3 FS			ing type () and () a		
	FTun					
File name error	#Res BW 1 MH:	Z	#VBW 3 M	Hz #Sweep		

🔆 Agilent		RL	Freq/Channel
#Avg	#Atten 40 dB	364.0 MHz 45.04 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst			Start Freq 30.0000000 MHz
6 dB DI			Stop Freq 1.00000000 GHz
-13.0 dBm PAvg			CF Step 97.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS	2		FreqOffset 0.00000000 Hz
£(f): FTun Swp			Signal Track ^{On <u>Off</u>}
Center 515.0 MHz #Res BW 1 MHz	#VBW 3 M	n 970 MHz (1000 pts)	
File name error			

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🔆 Agilent					RL	Freq/Channel
Ref 33 dBm #Avg	#Atten	40 dB			3.395 GHz 4.67 dBm	Center Freq 5.00000000 GHz
Log 10 dB/ Offst						Start Freq 1.00000000 GHz
6 dB DI						Stop Freq 9.00000000 GHz
-13.0 dBm PAvg						CF Step 800.00000 MHz <u>Auto</u> Man
M1 S2 S3 FS						FreqOffset 0.00000000 Hz
£(f): 499049 FTun Swp						Signal Track ^{On <u>Off</u>}
Center 5.000 #Res BW 1 MH File name er	Z	#VBW 3 N	1Hz #Sweep	S; 100.5 ms (8	pan 8 GHz 3190 pts)	

Test Band=GSM1900

Test Mode=GSM

🔆 Agilent								F	۲ L	Freq/Channel
Ref 33 dBm #Avg		#Atten 4	0 dB				Mk		7.9 MHz 1 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst										Start Freq 30.0000000 MHz
6 dB DI										Stop Freq 1.00000000 GHz
-13.0 dBm PAvg										CF Step 97.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS				1						FreqOffset 0.00000000 Hz
£(f): FTun Swp			**************************************		<u></u>	<u></u>		1		Signal Track ^{On <u>Off</u>}
Center 515. #Res BW 1 N	MHz		#VE	3W 3 M	Hz	#Sweep	5 100 m		70 MHz 0 pts)	
File name	error									

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🔆 Agilent					RT	Freq/Channel
Ref 33 dBm #Avg	#Âtt	en 40 dB			3.164 GHz 9.97 dBm	Center Freq 4.00000000 GHz
Log 10 dB/ Offst						Start Freq 1.00000000 GHz
6 dB DI -13.0						Stop Freq 7.00000000 GHz
dBm PAvg						CF Step 600.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS		2				FreqOffset 0.00000000 Hz
£(f): FTun Swp						Signal Track On <u>Off</u>
Center 4.000 #Res BW 1 M		#VBW 3	MHz #Swee	Sp p 100.4 ms (6	an 6 GHz 200 pts)	
File name e	rror					

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#Avg	r Freq 000 GHz
10 Star dB/ 7.000000 0ffst 6 dB Stor	
dB Sto	tFreq 000 GHz
	p Freq 000 GHz
-13.0	F Step 000 MHz Man
	Offset 000 Hz
£(f): Signal Swp Image: Signal	l Track <u>Off</u>
Center 10.300 GHz Span 6.6 GHz #Res BW 1 MHz #VBW 3 MHz #Sweep 100.2 ms (6800 pts)	

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🔆 Ag	ilent								F	۲L	Freq/Channel
Ref 34 #Avg	dBm		#Atten	40 dB				Mkr:		11 GHz 7 dBm	Center Freq 16.8000000 GHz
Log 10 dB/ Offst											Start Freq 13.6000000 GHz
6 dB DI											Stop Freq 20.0000000 GHz
-13.0 dBm PAvg											CF Step 640.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS					Hingdodige	tine sintega					FreqOffset 0.00000000 Hz
£ (f): FTun Swp											Signal Track On <u>Off</u>
Center #Res B	16.800 W 1 MH			#V	BW 3 M	Hz #	Sweep	100.3 n		.4 GHz 0 pts)	
File na	ime er	ror									

🔆 Agilent						R	L	Freq/Channel
Ref 33 dBm #Avg	#Ĥt	ten 40 dB			Mkr	1 491. -45.08	.2 MHz 3 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst								Start Freq 30.0000000 MHz
6 dB								Stop Freq 1.00000000 GHz
-13.0 dBm PAvg								CF Step 97.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS								FreqOffset 0.00000000 Hz
£ (f): FTun Swp		, <u>1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1</u>	¥	······				Signal Track ^{On <u>Off</u>}
Center 515 #Res BW 1	MHz	#VE	W 3 MHz	#Sweep	S 5 100 m	pan 970 s (1000		
File name	error							

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Mkr2 3.063 GHz Center Freq #Avg	🔆 Agilent					RL	Freq/Channel
Log Start Freq 10 10 0ffst 10 6 10000000 GHz 0H 100000000 GHz 11 100000000 Hz 000000000 Hz 100000000 Hz 000000000 Hz 100000000 Hz 100000000 GHz 100000000 Hz 100000000 GHz 1000000000 Hz 100000000 GHz 1000000000 Hz 100000000 GHz 100000000 GHz 1000000000 GHz 1000	#Avg		ten 40 dB		Mk		Center Freq
6 dB DI -13.0 dBm PAvg Stop Freq 7.0000000 GHz M1 S2 S3 FS 2 2 CF Step 600.00000 MHz Auto £(f): FTun Swp 2 2 Stop Freq 7.0000000 MHz C(f): FTun Swp 2 2 Stop Freq 7.0000000 MHz Center 4.000 GHz Span 6 GHz Span 6 GHz	10 dB/						
dBm PAvg 600.000000 MHz M1 S2 2 Man £(f): 2 Freq Offset Swp Signal Track On Center 4.000 GHz Span 6 GHz	6 dB DI						
\$3 FS 2 0.00000000 Hz £(f): Swp Signal Track Swp 0.000 GHz Span 6 GHz	dBm						600.000000 MHz
FTun Swp Center 4.000 GHz Span 6 GHz	S3 FS		2				
	FTun						
File name error	#Res BW 1 M	Hz	#VBW	3 MHz #Sw	eep 100.4 m		

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🔆 Ag	ilent								F	۲L	Freq/Channel
Ref 33 #Avg	dBm		#Atten	40 dB				Mkr:		83 GHz 50 dBm	Center Freq 10.3000000 GHz
Log 10 dB/ Offst											Start Freq 7.00000000 GHz
6 dB DI											Stop Freq 13.6000000 GHz
-13.0 dBm PAvg											CF Step 660.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS		di Visionala						dat datedat	والمتحرب الخرار	1 ¢	FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
	10.300 W 1 MH			#V	BW 3 M	Hz #	Sweep	100.2 n		6.6 GHz 00 pts)	
File na	ame er	ror									

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🔆 Ag	ilent								F	≀ L	Freq/Channel
Ref 34 #Avg	dBm		#Atten	40 dB				Mkr:		12 GHz 3 dBm	Center Freq 16.8000000 GHz
Log 10 dB/ Offst											Start Freq 13.6000000 GHz
6 dB DI											Stop Freq 20.0000000 GHz
-13.0 dBm PAvg											CF Step 640.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS	te per ple mili p	والدوالي ورود			i di setat daga di si setat daga di setat daga di setat d	the put the sec			a selen , Lade		FreqOffset 0.00000000 Hz
£ (f): FTun Swp											Signal Track ^{On <u>Off</u>}
Center #Res B	16.800 W 1 MH			#V	вы з м	Hz #	Sweep	100.3 m		.4 GHz 0 pts)	
File na	ime er	ror									

Mkr1 475.7 MHz Center Freq #Avg	🔆 Agilent				RL	Freq/Channel
10 Start Freq 0B/ 0ffst 6 0 dB 0 DI 0 -13.0 0 dBm 0 PAvg 0 M1 S2 0 S3 FS 0 Center 515.0 MHz *VBW 3 MHz *Res BW 1 MHz *VBW 3 MHz	#Avg	#Atten 40 dB		Mkı		
dB DI 1.0000000 GHz -13.0 CF Step 97.000000 MHz 97.000000 MHz PAvg M1 S2 S3 FS 1 £(f): 1 FTun 1 Swp 1 Center 515.0 MHz *VBW 3 MHz *Span 970 MHz *Res BW 1 MHz	10 dB/					
dBm PAvg 97.0000000 MHz M1 S2 M1 S2 M1 S2 S3 FS 1 0 £(f): 1 0.0000000 Hz Swp 1 1 Center 515.0 MHz #VBW 3 MHz #Sweep 100 ms (1000 pts)	dB DI					
S3 FS 1 0.00000000 Hz £(f): FTun Signal Track Swp 0 0 Center 515.0 MHz #VBW 3 MHz #Sweep 100 ms (1000 pts)	dBm					97.0000000 MHz
E(f): Signal Track FTun Swp Swp Image: Signal Track Center 515.0 MHz Span 970 MHz #Res BW 1 MHz #VBW 3 MHz	\$3 FS		1			
#Res BW 1 MHz #VBW 3 MHz #Sweep 100 ms (1000 pts)	FTun	<u>, a</u>		<u>+</u>		
File name error	#Res BW 1 MHz	#\	BW 3 MHz			

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🔆 Agilent							F	₹L	Freq/Channel
Ref 33 dBm #Avg	#A	tten 40 dB				Mkı		19 GHz 4 dBm	Center Freq 4.00000000 GHz
Log 10 dB/ Offst									Start Freq 1.00000000 GHz
6 dB DI -13.0									Stop Freq 7.00000000 GHz
dBm PAvg									CF Step 600.00000 MHz <u>Auto</u> Man
M1 S2 S3 FS		. Harrison and Marine	2						FreqOffset 0.00000000 Hz
£(f): •••••••• FTun Swp									Signal Track On <u>Off</u>
Center 4.000 #Res BW 1 MH File name en	lz	#V	BW 3 MI	Hz #S	Weep 1	.00.4 m		6 GHz 0 pts)	

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🔆 Ag	ilent								F	۲L	Freq/Channel
Ref 33 #Avg	dBm		#Atten	40 dB				Mkr:		21 GHz 5 dBm	Center Freq 10.3000000 GHz
Log 10 dB/ Offst											Start Freq 7.00000000 GHz
6 dB DI											Stop Freq 13.6000000 GHz
-13.0 dBm PAvg											CF Step 660.000000 MHz <u>Auto</u> Man
M1 S2 S3 FS									d the state of a	1	FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
Center #Res B	10.300 W 1 MH			#V	BW 3 M	Hz #	Sweep	100.2 n		.6 GHz 0 pts)	
File na	ime er	ror									

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Mkr1 19.556 GHz #Avg	🔆 Ag	ilent								F	۲L	Freq/Channel
10 dB/ G Start Freq 0 dFfst 6 6 13.600000 GHz 0 dB 1 1 1 PAvg 1 1 1 M1 S2 5 5 1 Stop Freq 1 1 1 0.0000000 MHz 1 1 1 1 Signal Track 0 0 1 0.0000000 Hz 1 1 1 1 1 Signal Track 1 1 1 1 1 Signal Track 1 1 1 1 1 Preq Offset 1 1 1 1	#Avg	dBm		#Atten	40 dB				Mkr:			CenterFreq
6 dB DI −13.0 dBm PAvg Stop Freq 20.000000 GHz M1 S2 S3 FS CF Step 640.000000 MHz Auto €(f): FTun Swp 1 Center 16.800 GHz Span 6.4 GHz #VBW 3 MHz *VBW 3 MHz *Sweep 100.3 ms (6400 pts)	10 dB/											
dBm PAvg Cr Step M1 S2 M1 S2 M1 S2 S3 FS M1 S2 M1 S2 £(f): FTun M1 S2 Swp Signal Track Center 16.800 GHz WBW 3 MHz #Res BW 1 MHz #VBW 3 MHz	6 dB DI											
\$3 FS 1 0.00000000 Hz £(f): FTun Signal Track Swp 0.00000000 Hz 0 Center 16.800 GHz *VBW 3 MHz *Sweep 100.3 ms (6400 pts)	dBm											640.000000 MHz
FTun Swp Center 16.800 GHz #Res BW 1 MHz #VBW 3 MHz #VBW 3 MHz #Sweep 100.3 ms (6400 pts)	M1 S2 S3 FS		Million (selected				ters inglising	والمراجع والمنافق		a, effeta jate	1	
#Res BW 1 MHz #VBW 3 MHz #Sweep 100.3 ms (6400 pts)	FTun											
	#Res B	W 1 MH	z		#V	BW 3 M	Hz #	Sweep	100.3 n			

Test Band=WCDMA850

Test Mode=UMTS

🔆 Agi	ilent				RL	Freq/Channel
Ref 30 #Avg	dBm	#Atten 40 dB			478.6 MHz 42.04 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst						Start Freq 30.0000000 MHz
7.9 dB DI						Stop Freq 1.00000000 GHz
-13.0 dBm PAvg						CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	al al the second se	1. 5	2	1011 · · · · · · · · · · · · · · · · · ·	 	Freq Offset 0.00000000 Hz
£(f): FTun Swp						Signal Track On <u>Off</u>
	515.0 MHz W 1 MHz	#\	/BW 3 MHz	#Sweep	an 970 MHz (1000 pts)	
		005 Agilent 1				

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🔆 Agilent		I	۲L	Freq/Channel
Ref 30 dBm #Avg	#Atten 40 dB	Mkr1 7.9 –35.2	973 GHz 25 dBm	Center Freq 5.00000000 GHz
Log 10 dB/ Offst				Start Freq 1.00000000 GHz
7.9 dB DI				Stop Freq 9.00000000 GHz
-13.0 dBm PAvg				CF Step 800.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC			dala ang b	Freq Offset 0.00000000 Hz
£(f): FTun Swp				Signal Track On <u>Off</u>
Center 5.000 GH #Res BW 1 MHz		Span Span eep 50.23 ms (819	8 GHz 00 pts)	

🔆 Ag	jilent								F	۲L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mk		3.7 MHz 8 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst									1		Start Freq 30.0000000 MHz
7.9 dB DI											Stop Freq 1.00000000 GHz
-13.0 dBm PAvg											CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC					2 •	***]			<u></u>		FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track ^{On <u>Off</u>}
#Res B	515.0 W 1 MH	z			вы з м		Sweep	\$ 50.02 m		70 MHz 0 pts)	
Copyright 2000–2005 Agilent Technologies											

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Mkr1 7.655 GHz -35.28 dBm Center Freq 5.00000000 GHz Log	🔆 Ag	ilent					R	L	Freq/Channel
10 dB/ dB dB/ dB <	#Avg	dBm	#Atten	40 dB		Mkı			Center Freq
7.9 dB Dl -13.0 dBm PAvg Stop Freq 9.0000000 GHz M1 \$2 S3 FC Stop Stop Freq 9.0000000 MHz Auto £(f): FTun Swp Freq Offset 0.000000 Hz Center 5.000 GHz Span 8 GHz	10 dB/								
dBm PAvg S00.00000 MHz M1 S2 S3 FC Freq Offset 0.0000000 Hz 0.0000000 Hz £(f): Signal Track FTun Swp Center 5.000 GHz Span 8 GHz	7.9 dB DI								
M1 S2 S3 FC S3 FC E(f): FTun Swp Center 5.000 GHz M1 S2 S3 FC S3 F	dBm								800.000000 MHz
FTun Swp Center 5.000 GHz Signal Track On On Off			aliana, meta patrical		alalarahan tarahan da da Mata da			inter the	
	FTun								
Copyright 2000–2005 Agilent Technologies	#Res B	W 1 MHz				50.23 m			

🔆 Agilent				RL	Freq/Channel	
Ref 30 dBm #Avg	#Atten 40 dB		Mkı	r2 480.5 MHz -41.88 dBm	Center Freq 515.000000 MHz	
Log 10 dB/ Offst				1 •	Start Freq 30.0000000 MHz	
7.9 dB DI					Stop Freq 1.00000000 GHz	
-13.0 dBm PAvg					CF Step 97.000000 MHz <u>Auto</u> Man	
M1 S2 S3 FC		2			FreqOffset 0.00000000 Hz	
£(f): FTun Swp					Signal Track ^{On <u>Off</u>}	
Center 515.0 M #Res BW 1 MHz	z #V		Sweep 50.02 m	Span 970 MHz is (1000 pts)		
Copyright 2000–2005 Agilent Technologies						

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🔆 Ag	ilent								F	:L	Freq/Channel
Ref 30 #Avg	dBm	#	Atten	40 dB				Mk		37 GHz 5 dBm	Center Freq 5.00000000 GHz
Log 10 dB/ Offst											Start Freq 1.00000000 GHz
7.9 dB DI											Stop Freq 9.00000000 GHz
-13.0 dBm PAvg											CF Step 800.00000 MHz <u>Auto</u> Man
M1 S2 S3 FC			AN AN		ter j _e n sleb te		i e e indice	and a state			FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track ^{On <u>Off</u>}
	5.000 GI	⊥ Hz		#V	BW 3 M	Hz #	Sweep	50.23 m		8 GHz 0 pts)	
Copyri	ight 200	0-200	05 Agi	ilent T	echnol						

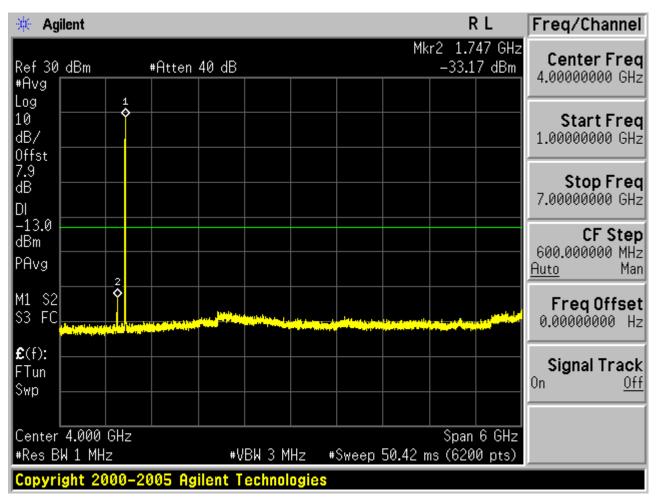
Test Band=WCDMA1900

Test Mode=UMTS

Test Channel=LCH

🔆 Agil	lent					RL	Freq/Channel
Ref 30 #Avg	dBm	#Atten 40 dB			Mkr1	L 898.0 MHz -40.41 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst							Start Freq 30.0000000 MHz
7.9 dB DI							Stop Freq 1.00000000 GHz
-13.0 dBm PAvg							CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC				مانديو برداد المراجع		1	FreqOffset 0.00000000 Hz
£ (f): FTun Swp -							Signal Track ^{On <u>Off</u>}
#Res B∤	515.0 MHz V 1 MHz		VBW 3 MHz			pan 970 MHz (1000 pts)	
Copyrig	ght 2000-20	005 Agilent	echnologi	es			

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🔆 Ag	ilent								F	۲L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mkr:		55 GHz '6 dBm	Center Freq 10.3000000 GHz
Log 10 dB/ Offst											Start Freq 7.00000000 GHz
7.9 dB DI											Stop Freq 13.6000000 GHz
-13.0 dBm PAvg											CF Step 660.00000 MHz <u>Auto</u> Man
M1 S2 S3 FC			la de cipe		e a a state a fa		u da antica que	detha de vederiet			FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
#Res B	10.300 W 1 MH	Z			BW 3 M		Sweep	50.31 m		.6 GHz 0 pts)	
Copyri	ight 20	00-20	05 Ag	ilent T	echnol	ogies					

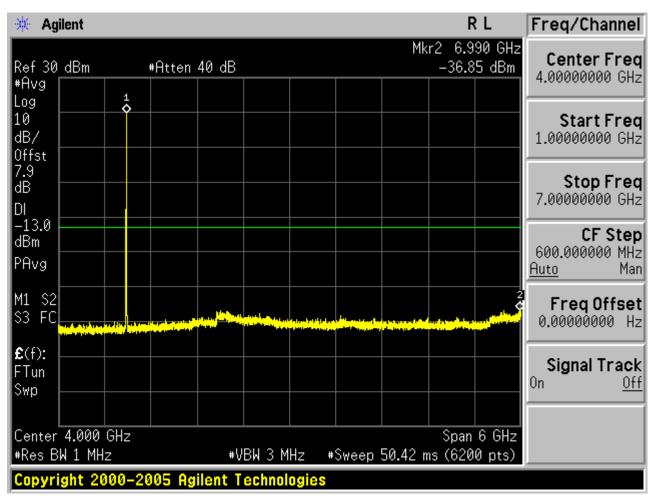
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🔆 Ag	jilent								F	≀ L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mkr:		29 GHz 7 dBm	Center Freq 16.8000000 GHz
Log 10 dB/ Offst											Start Freq 13.6000000 GHz
7.9 dB DI											Stop Freq 20.0000000 GHz
-13.0 dBm PAvg											CF Step 640.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	Harla, Ayua	ti sagan bad	hini hayir.	al frailisea	n in state by			a jaha sa sa si ka	ud the data		FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
	0 16.800 W 1 MH			#V	вы з м	Hz #	Sweep	50.34 m		.4 GHz 0 pts)	
Copyri	ight 20	00-20)05 Ag	ilent T	echnol	ogies					

Test Channel=MCH

🔆 Ag	jilent								F	۲L	Freq/Channel
Ref 30 #Avg	dBm	:	#Atten	40 dB				Mk		5.3 MHz 16 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst											Start Freq 30.0000000 MHz
7.9 dB DI											Stop Freq 1.00000000 GHz
-13.0 dBm PAvg											CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC				1 \$							FreqOffset 0.00000000 Hz
£(f): F⊤un Swp											Signal Track On <u>Off</u>
	515.0 W 1 MH			#\	IBW 3 M	Hz #	Sweep	: 50.02 m		70 MHz 0 pts)	
Copyri	ight 20	00-20)05 Ag	ilent T	echnol	ogies					

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🔆 Ag	ilent								F	₹ L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mk		94 GHz 5 dBm	Center Freq 10.3000000 GHz
Log 10 dB/ Offst											Start Freq 7.00000000 GHz
7.9 dB DI											Stop Freq 13.6000000 GHz
-13.0 dBm PAvg											CF Step 660.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	Local Alberts State									ing a jar <mark>ng a la</mark>	FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
	10.300 W 1 MH			#\	ви з м	Hz #	Sweep	50.31 n		.6 GHz 0 pts)	
Copyri	ight 20	00-20	005 Ag	ilent T	echnol	ogies					

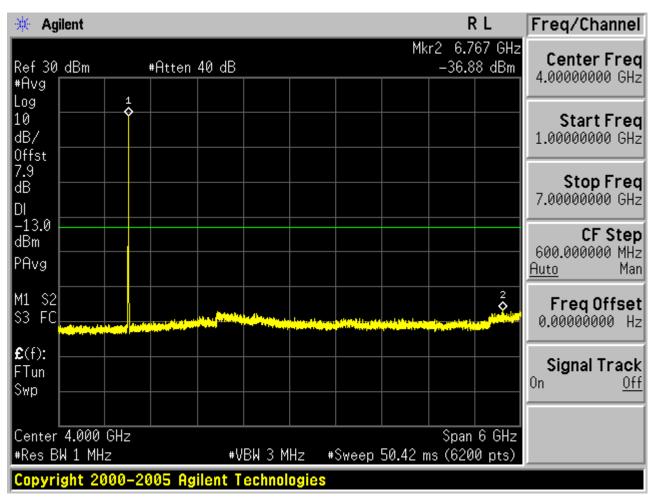
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🔆 Ag	ilent								F	≀ L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mkr:		26 GHz 6 dBm	Center Freq 16.8000000 GHz
Log 10 dB/ Offst											Start Freq 13.6000000 GHz
7.9 dB DI											Stop Freq 20.0000000 GHz
-13.0 dBm PAvg					4						CF Step 640.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	and a state of the second second				Ŷ.	i dela contra da cont		ution data	den Mandalan	a dirikan sikaka	FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
	16.800 W 1 MH			 #\	'ВЫ З М	 Hz #	Sweep	50.34 m		.4 GHz 0 pts)	
Copyri	ight 20	00-20)05 Ag	ilent T	echnol	ogies					

Test Channel=HCH

🔆 Ag	ilent								F	₹L	Freq/Channel
Ref 30 #Avg	dBm		ŧAtten	40 dB				Mk		0.8 MHz 02 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst											Start Freq 30.0000000 MHz
7.9 dB DI -13.0											Stop Freq 1.00000000 GHz
-13.0 dBm PAvg											CF Step 97.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC		,		**************************************	1						FreqOffset 0.00000000 Hz
£(f): F⊤un Swp											Signal Track On <u>Off</u>
#Res B	515.0 M W 1 MHz				BW 3 M		Sweep	: 50.02 m		70 MHz 10 pts)	
Copyri	ight 200	00-20	105 Ag	ilent T	echnol	ogies					

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🔆 Ag	ilent								F	₹ L	Freq/Channel
Ref 30 #Avg	dBm		#Atten	40 dB				Mkr:		46 GHz 7 dBm	Center Freq 10.3000000 GHz
Log 10 dB/ Offst											Start Freq 7.00000000 GHz
7.9 dB DI											Stop Freq 13.6000000 GHz
-13.0 dBm PAvg											CF Step 660.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	and a second		ada alayad			alian tana		ili-yang parint			FreqOffset 0.00000000 Hz
€(f): FTun Swp											Signal Track On <u>Off</u>
	10.300 W 1 MH			#V	в <u>и</u> з м	Hz #	Sweep	50.31 m		.6 GHz 0 pts)	
Copyri	ight 20	00-20)05 Ag	ilent T	echnol	ogies					

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🔆 Agilent				RL	Freq/Channel
Ref 30 dBm #Avg	#Atten 40	IB	Mk	r1 19.528 GHz -34.00 dBm	Center Freq 16.8000000 GHz
Log 10 dB/ Offst					Start Freq 13.6000000 GHz
7.9 dB DI					Stop Freq 20.0000000 GHz
-13.0 dBm PAvg					CF Step 640.000000 MHz <u>Auto</u> Man
M1 S2 S3 FC					FreqOffset 0.00000000 Hz
£(f): FTun Swp					Signal Track On <u>Off</u>
Center 16.800 (#Res BW 1 MHz) Hz	#VBW 3 MHz	#Sweep 50.34	Span 6.4 GHz ms (6400 pts)	
Copyright 200	0-2005 Agilen	t Technologia			

Note: 1. Below 30MHZ no Spurious found and The GSM modes is the worst condition.

2. As no emission found in standby or receive mode, no recording in this report.

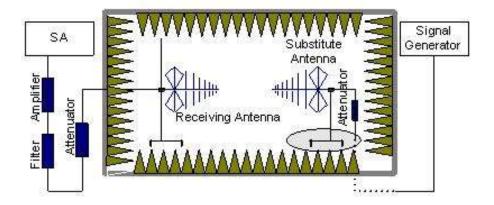
9.2 RADIATED SPURIOUS EMISSION

9.2.1 MEASUREMENT METHOD

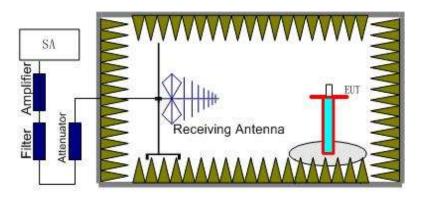
The measurements procedures specified in TIA-603C-2004 were used for testing. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set 1MHz as outlined in Part 24.238. The measurements were performed on all modes(GPRS 850, GPRS 1900, HSPA band II, HSPA band V) at 3 typical channels(the Top Channel, the Middle Channel and the Bottom Channel) for each band.

The procedure of radiated spurious emissions is as follows:

a) Pre-calibration With pre-calibration method, the Radiated Spurious Emissions(RSE) is calculated as, RSE=Rx(dBuV)+CL(dB)+SA(dB)+Gain(dBi)-107(dBuV to dBm) The SA is calibrated using following setup.



b) 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 test item for emission measurements. The height of receiving antenna is 0.8m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the test item and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1MHz bandwidth.



Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS 1900 band (1850.2 MHz, 1880 MHz and 1909.8 MHz) ,GSM850 band (824.2MHz, 836.6MHz, 848.8MHz), UMTS band II(1852.6MHz, 1880MHz, 1907.4MHz), UMTS band V(826.6MHz, 836.4MHz, 846.4MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of any band into any of the other blocks.

The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss. The measurement results are obtained as described below: Power=P_{Mea}+A_{Rpl}

9.2.2 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(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.

Note: only result the worst condition of each test mode:

9.2.3 MEASUREMENT RESULT

GSM 850:

	The Worst Test Results for Channel 251/848.8 MHz										
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity						
1685.23	-41.73	-5.01	-46.74	-13.00	Horizontal						
2456.12	-42.46	-2.18	-44.64	-13.00	Vertical						
3645.78	-42.39	3.46	-38.93	-13.00	Vertical						
4536.58	-42.72	2.79	-39.93	-13.00	Horizontal						

PCS 1900:

	The Worst Test Results for Channel 810/1909.8MHz										
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity						
1429.36	-43.67	-3.22	-46.89	-13.00	Vertical						
2563.47	-42.21	-0.24	-42.45	-13.00	Vertical						
3645.26	-44.83	3.98	-40.85	-13.00	Horizontal						
4563.56	-44.69	11.56	-33.13	-13.00	Vertical						
5689.25	-44.17	17.89	-26.28	-13.00	Horizontal						

UMTS band II:

	The Worst Test	Results for	Channel 9938	/1907.4MHz	
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)		Polarity
2000.00	-38.27	-2.25	-40.52	-13.00	Vertical
9548.50	-40.32	-3.03	-43.35	-13.00	Horizontal
13367.40	-41.73	-1.87	-43.6	-13.00	Horizontal
15277.80	-41.86	8.52	-33.34	-13.00	Vertical
17931.60	-41.18	18.7	-22.48	-13.00	Horizontal

	The Worst Tes	t Results for	Channel 4458	8/846.4MHz	
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1598.26	-41.83	-2.26	-44.09	-13.00	Vertical
2365.78	-41.67	-3.12	-44.79	-13.00	Horizontal
4967.65	-42.21	-1.74	-43.95	-13.00	Horizontal
6457.86	-42.53	8.74	-33.79	-13.00	Vertical
7896.56	-43.77	17.89	-25.88	-13.00	Horizontal

UMTS band V:

Note: ARpl= Factor=Antenna Factor+ Cable loss-Amplifier gain.

The "Factor" value can be calculated automatically by software of measurement system.

Below 30MHZ no Spurious found and The GSM modes is the worst condition.

10. MAINS CONDUCTED EMISSION

10.1 MEASUREMENT METHOD

The measurement procedure specified in ANSI C63.4-2009 was used for testing. Conducted Emission was measured with travel charger.

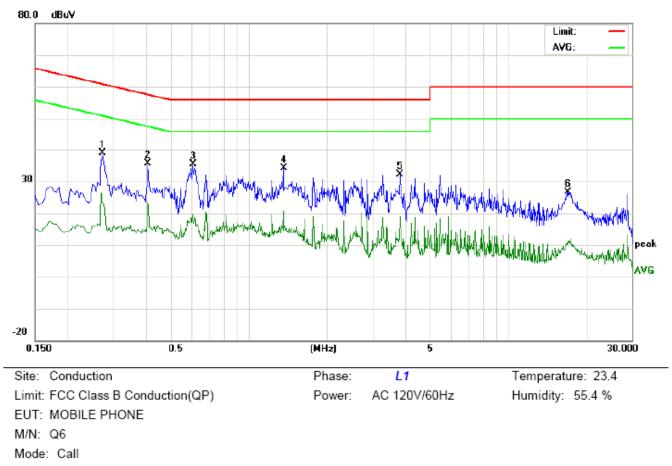
10.2 PROVISIONS APPLICABLE

Frequency of Emission (MHz)	Conducted Limit(dBuV)				
	Quasi-Peak	Average			
0.15 – 0.5	66 to 56 *	56 to 46 *			
0.5 – 5	56	46			
5 – 30	60	50			
*Decreases with the logarithm of the frequency.					
*The lower limit shall apply at the transition freque	ncy.				

Note: The GSM850 mode is the worst condition and the test result as following:

10.3 MEASUREMENT RESULT

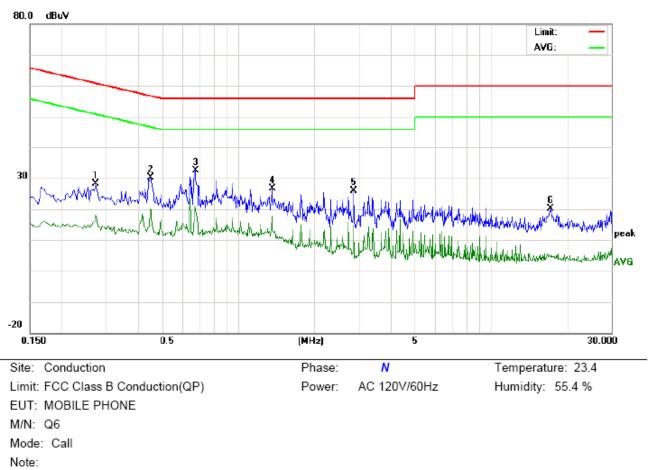
LINE CONDUCTED EMISSION - L



Note:

No.	Freq.	Rea	ading_L (dBuV)		Correct Factor		easuren (dBuV)			nit uV)	Mai (c	rgin IB)	P/F	Comment
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2740	28.65		13.23	10.28	38.93		23.51	60.99	50.99	-22.06	-27.48	Ρ	
2	0.4100	25.37		13.29	10.34	35.71		23.63	57.65	47.65	-21.94	-24.02	Ρ	
3	0.6100	25.06		8.23	10.31	35.37		18.54	56.00	46.00	-20.63	-27.46	Р	
4	1.3660	23.75		10.19	10.38	34.13		20.57	56.00	46.00	-21.87	-25.43	Р	
5	3.8260	21.59		8.40	10.46	32.05		18.86	56.00	46.00	-23.95	-27.14	Р	
6	16.9380	16.50		1.08	10.13	26.63		11.21	60.00	50.00	-33.37	-38.79	Р	

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LINE CONDUCTED EMISSION - N

No.	Freq.		iding_L (dBuV)		Correct Factor		easuren (dBuV)		Lir (dB	nit uV)	Mai (d	rgin IB)	P/F	Comment
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2740	17.72		7.90	10.28	28.00		18.18	60.99	50.99	-32.99	-32.81	Р	
2	0.4500	19.64		10.07	10.37	30.01		20.44	56.87	46.87	-26.86	-26.43	Р	
3	0.6780	22.06		9.82	10.34	32.40		20.16	56.00	46.00	-23.60	-25.84	Р	
4	1.3660	16.19		7.30	10.38	26.57		17.68	56.00	46.00	-29.43	-28.32	Ρ	
5	2.8699	15.37		4.27	10.52	25.89		14.79	56.00	46.00	-30.11	-31.21	Р	
6	17.2900	10.00		-5.38	10.13	20.13		4.75	60.00	50.00	-39.87	-45.25	Р	

Note: The GSM850 mode is the worst condition.

11. FREQUENCY STABILITY

11.1 MEASUREMENT METHOD

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

- 1 , Measure the carrier frequency at room temperature.
- 2 , Subject the EUT to overnight soak at -10 $^\circ\!\!\mathbb{C}.$

3 , With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 for PCS 1900 band , channel 190 for GSM 850 band, channel 9400 for UMTS band II and channel 4175 for UMTS band V measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

4 , Repeat the above measurements at 10° C increments from -10° C to $+55^{\circ}$ C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

5 , Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

6 , Subject the EUT to overnight soak at +55 $^{\circ}$ C.

7 , With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

8 , Repeat the above measurements at 10° C increments from +55 $^{\circ}$ C to -10 $^{\circ}$ C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

9 , At all temperature levels hold the temperature to +/- 0.5° C during the measurement procedure.

11.2 PROVISIONS APPLICABLE

11.2.1 For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 6.3VDC and 8.5VDC, with a nominal voltage of 7.4VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

11.2.2 For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment, the normal environment temperature is 20°C.

11.3 MEASUREMENT RESULT

Appendix D:Frequency Stability

Test Results

Frequency Error vs. Voltage:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vordict
Band	Mode	Channel	Temp.	Volt.(V)	(Hz)	(ppm)	(ppm)	Verdict
			ΤN	3.4	20.73	0.03	±2.5	PASS
		LCH	ΤN	3.7	21.31	0.03	±2.5	PASS
			TN	4.2	20.73	0.03	±2.5	PASS
			ΤN	3.4	21.57	0.03	±2.5	PASS
GSM850	GSM	MCH	TN	3.7	24.21	0.03	±2.5	PASS
			TN	4.2	21.18	0.03	±2.5	PASS
			ΤN	3.4	26.35	0.03	±2.5	PASS
		HCH	TN	3.7	20.66	0.02	±2.5	PASS
			TN	4.2	29.83	0.04	±2.5	PASS

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Temp.	Volt.	(Hz)	(ppm)	(ppm)	
				(V)				
			TN	3.4	42.81	0.02	±2.5	PASS
		LCH	TN	3.7	40.49	0.02	±2.5	PASS
			TN	4.2	40.81	0.02	±2.5	PASS
			TN	3.4	52.30	0.03	±2.5	PASS
GSM1900	GSM	MCH	TN	3.7	51.46	0.03	±2.5	PASS
			TN	4.2	42.10	0.02	±2.5	PASS
			TN	3.4	59.54	0.03	±2.5	PASS
		НСН	TN	3.7	58.89	0.03	±2.5	PASS
			TN	4.2	60.83	0.03	±2.5	PASS

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Frequency Error vs. Temperature:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channe	Volt.	Temp	(Hz)	(ppm)	(ppm	
		I)	
			VN	-10	21.70	0.03	±2.5	PASS
			VN	0	25.05	0.03	±2.5	PASS
			VN	10	24.28	0.03	±2.5	PASS
GSM850	GSM	LCH	VN	20	25.18	0.03	±2.5	PASS
			VN	30	22.28	0.03	±2.5	PASS
			VN	40	23.50	0.03	±2.5	PASS
			VN	50	21.50	0.03	±2.5	PASS
			VN	-10	21.18	0.03	±2.5	PASS
			VN	0	20.66	0.02	±2.5	PASS
			VN	10	24.28	0.03	±2.5	PASS
GSM850	GSM	MCH	VN	20	26.80	0.03	±2.5	PASS
			VN	30	25.38	0.03	±2.5	PASS
			VN	40	20.92	0.03	±2.5	PASS
			VN	50	26.73	0.03	±2.5	PASS
			VN	-10	28.54	0.03	±2.5	PASS
			VN	0	24.92	0.03	±2.5	PASS
			VN	10	23.44	0.03	±2.5	PASS
GSM850	GSM	НСН	VN	20	24.86	0.03	±2.5	PASS
			VN	30	27.70	0.03	±2.5	PASS
			VN	40	27.77	0.03	±2.5	PASS
			VN	50	24.09	0.03	±2.5	PASS

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Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Volt.	Temp.	(Hz)	(ppm)	(ppm)	
			VN	-10	50.37	0.03	±2.5	PASS
			VN	0	45.07	0.02	±2.5	PASS
			VN	10	45.78	0.02	±2.5	PASS
GSM1900	GSM	LCH	VN	20	44.49	0.02	±2.5	PASS
			VN	30	43.39	0.02	±2.5	PASS
			VN	40	41.33	0.02	±2.5	PASS
			VN	50	51.72	0.03	±2.5	PASS
			VN	-10	54.37	0.03	±2.5	PASS
			VN	0	54.30	0.03	±2.5	PASS
			VN	10	53.59	0.03	±2.5	PASS
GSM1900	GSM	MCH	VN	20	51.21	0.03	±2.5	PASS
			VN	30	52.04	0.03	±2.5	PASS
			VN	40	47.59	0.03	±2.5	PASS
			VN	50	45.72	0.02	±2.5	PASS
			VN	-10	50.69	0.03	±2.5	PASS
			VN	0	47.72	0.02	±2.5	PASS
			VN	10	51.14	0.03	±2.5	PASS
GSM1900	GSM	НСН	VN	20	46.94	0.02	±2.5	PASS
			VN	30	58.89	0.03	±2.5	PASS
			VN	40	49.59	0.03	±2.5	PASS
			VN	50	50.24	0.03	±2.5	PASS

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Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channe	Temp.	Volt.	(Hz)	(ppm)	(ppm	
		I		(V))	
			ΤN	3.4	20.60	0.02	±2.5	PASS
		LCH	ΤN	3.7	22.43	0.03	±2.5	PASS
			ΤN	4.2	20.14	0.02	±2.5	PASS
WCDMA			ΤN	3.4	12.59	0.02	±2.5	PASS
850	UMTS	MCH	ΤN	3.7	22.43	-0.01	±2.5	PASS
850			ΤN	4.2	8.01	0.01	±2.5	PASS
			ΤN	3.4	18.08	0.02	±2.5	PASS
		HCH	ΤN	3.7	22.43	0.02	±2.5	PASS
			ΤN	4.2	21.06	0.02	±2.5	PASS

Frequency Error vs. Voltage:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channe	Temp.	Volt.	(Hz)	(ppm)	(ppm	
		I		(V))	
			ΤN	3.4	53.56	0.03	±2.5	PASS
		LCH	ΤN	3.7	48.29	0.03	±2.5	PASS
			ΤN	4.2	51.04	0.03	±2.5	PASS
WCDMA			ΤN	3.4	56.30	0.03	±2.5	PASS
1900	UMTS	MCH	ΤN	3.7	48.29	0.03	±2.5	PASS
1900			ΤN	4.2	51.96	0.03	±2.5	PASS
			ΤN	3.4	56.38	0.03	±2.5	PASS
		НСН	ΤN	3.7	48.81	0.03	±2.5	PASS
			ΤN	4.2	51.73	0.03	±2.5	PASS

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Frequency Error vs. Temperature:

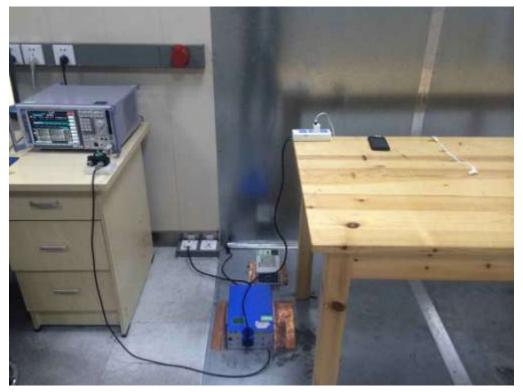
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Band	Mode	Channe	Volt.	Temp	(Hz)	(ppm)	(ppm									
		I.)									
			VN	-10	24.72	0.03	±2.5	PASS								
			VN	0	21.29	0.03	±2.5	PASS								
			VN	10	17.62	0.02	±2.5	PASS								
WCDMA 850	UMTS	LCH	VN	20	16.02	0.02	±2.5	PASS								
000			VN	30	21.29	0.03	±2.5	PASS								
			VN	40	15.34	0.02	±2.5	PASS								
			VN	50	21.74	0.03	±2.5	PASS								
			VN	-10	21.97	0.03	±2.5	PASS								
			VN	0	13.28	0.02	±2.5	PASS								
WCDMA				VN	10	18.77	0.02	±2.5	PASS							
850	UMTS	MCH	VN	20	15.79	0.02	±2.5	PASS								
000			VN	30	22.89	0.03	±2.5	PASS								
			VN	40	20.83	0.02	±2.5	PASS								
			VN	50	15.79	0.02	±2.5	PASS								
			VN	-10	22.20	0.03	±2.5	PASS								
			_	-				VN	0	17.62	0.02	±2.5	PASS			
								-								
WCDMA 850	UMTS	НСН	VN	20	13.50	0.02	±2.5	PASS								
000			VN	30	20.37	0.02	±2.5	PASS								
			VN	40	19.00	0.02	±2.5	PASS								
			VN	50	15.56	0.02	±2.5	PASS								

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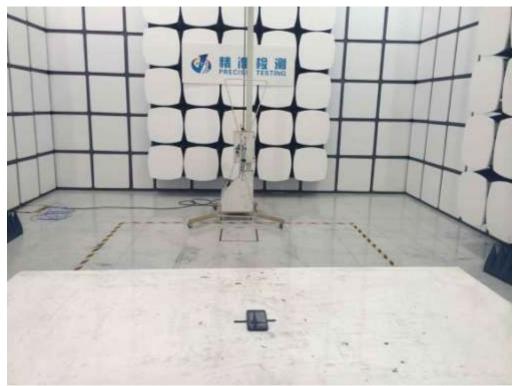
Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channe	Volt.	Temp	(Hz)	(ppm)	(ppm	
		I)	
WCDMA 1900	UMTS	LCH	VN	-10	45.55	0.02	±2.5	PASS
			VN	0	37.31	0.02	±2.5	PASS
			VN	10	46.01	0.02	±2.5	PASS
			VN	20	46.69	0.03	±2.5	PASS
			VN	30	41.66	0.02	±2.5	PASS
			VN	40	45.78	0.02	±2.5	PASS
			VN	50	59.05	0.03	±2.5	PASS
WCDMA 1900	UMTS	MCH	VN	-10	52.46	0.03	±2.5	PASS
			VN	0	69.40	0.03	±2.5	PASS
			VN	10	60.20	0.03	±2.5	PASS
			VN	20	54.70	0.03	±2.5	PASS
			VN	30	53.79	0.03	±2.5	PASS
			VN	40	57.68	0.03	±2.5	PASS
			VN	50	34.84	0.02	±2.5	PASS
WCDMA 1900	UMTS	НСН	VN	-10	52.41	0.03	±2.5	PASS
			VN	0	69.48	0.03	±2.5	PASS
			VN	10	60.26	0.03	±2.5	PASS
			VN	20	54.76	0.03	±2.5	PASS
			VN	30	53.71	0.03	±2.5	PASS
			VN	40	57.63	0.03	±2.5	PASS
			VN	50	34.76	0.02	±2.5	PASS

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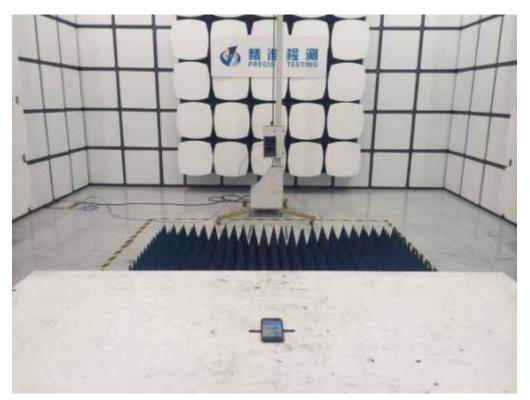
PHOTOGRAPHS OF TEST SETUP CONDUCTED EMISSION



RADIATED SPURIOUS EMISSION



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CONDUCTED MEASUREMENTS



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PHOTOGRAPHS OF EUT TOTAL VIEW OF EUT

TOP VIEW OF EUT



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BOTTOM VIEW OF EUT

FRONT VIEW OF EUT



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BACK VIEW OF EUT

LEFT VIEW OF EUT



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RIGHT VIEW OF EUT

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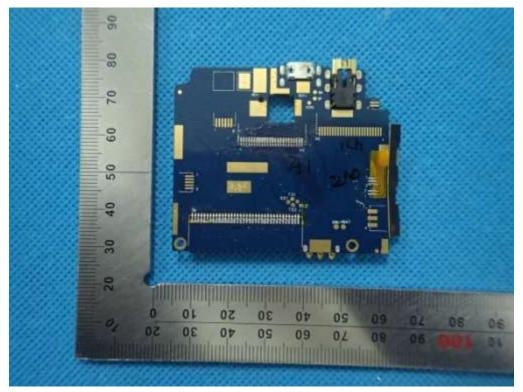


OPEN VIEW OF EUT-2

OPEN VIEW OF EUT-3

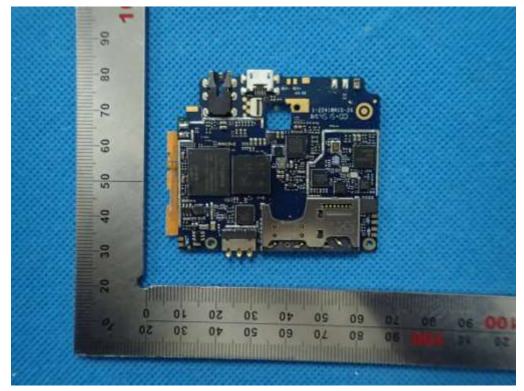


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INTERNAL VIEW OF EUT-1

INTERNAL VIEW OF EUT-2



----END OF REPORT----