

## HCT CO., LTD.

### CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name: HandHeld Group AB Address: Kinnegatan 17,53133 Lidkoping, Sweden Date of Issue:

December 15, 2010 Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheonsi, Kyunggi-Do, Korea(Lab) Test Report No.: HCTR1012FR16 HCT FRN: 0005866421

IC Recognition No.: IC 5944A-2

## FCC ID

## : YY3-NAUTIZX3

## APPLICANT : HandHeld Group AB

FCC Model(s):	Nautiz X3
EUT Type:	Industrial PDA
FCC Classification:	PCS Licensed Transmitter (PCB)
Tx Frequency:	824.20 - 848.80 MHz (GSM850) 826.40 - 846.60 MHz (WCDMA850) 1 850.20 - 1 909.80 MHz (GSM1900) 1 852.4 – 1 907.6 MHz (WCDMA1900)
Rx Frequency:	869.20 - 893.80 MHz (GSM850) 871.40 - 891.60 (WCDMA850) 1 930.20 - 1 989.80 MHz (GSM1900) 1 932.4 – 1 987.6 MHz (WCDMA1900)
Max. RF Output Power:	0.408 W ERP GSM850 (26.11 dBm) / 0.968 W EIRP GSM1900 (29.86 dBm) 0.269 W ERP EDGE850 (24.29 dBm) / 0.815 W EIRP EDGE1900 (29.11 dBm) 0.221 W ERP WCDMA850(23.44 dBm) / 0.682 W EIRP WCDMA1900(28.34 dBm)
Emission Designator(s):	246KGXW (GSM850) 248KGXW (GSM1900) 249 KG7W (GSM850 EDGE) 247 KG7W (GSM1900 EDGE) 4M16F9W (WCDMA850) 4M18F9W (WCDMA1900)
FCC Rule Part(s):	§22, §24, §2

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report prepared by

: Hyo Sun Kwak Test engineer of RF Team

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Approved by : Chang Seok Choi Manager of RF Team

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# <u>Version</u>

TEST REPORT NO.	DATE	DESCRIPTION
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## **MEASUREMENT REPORT**

## **1. GENERAL INFORMATION**

Applicar	nt Name:	HandHeld Group AB
Address	:	Kinnegatan 17,53133 Lidkoping, Sweden
FCC ID:		YY3-NAUTIZX3
Applicatio	on Type:	Certification
FCC Class	sification:	PCS Licensed Transmitter (PCB)
FCC Rule	Part(s):	§22, §24, §2
EUT Type	:	Industrial PDA
FCC Mode	el(s):	Nautiz X3
Battery	Model Name: Power Rating:	3.7 V, 3300 mAh Lithium-Ion Battery
Type: <b>Tx Frequency:</b>		824.20 - 848.80 MHz (GSM850) 826.40 - 846.60 MHz (WCDMA850) 1 850.20 - 1 909.80 MHz (GSM1900) 1 852.4 – 1 907.6 MHz (WCDMA1900)
Rx Freque	ency:	869.20 - 893.80 MHz (GSM850) 871.40 - 891.60 (WCDMA850) 1 930.20 - 1 989.80 MHz (GSM1900) 1 932.4 – 1 987.6 MHz (WCDMA1900)
Max. RF C	output Power:	0.408 W ERP GSM850 (26.11 dBm) / 0.968 W EIRP GSM1900 (29.86 dBm) 0.269 W ERP EDGE850 (24.29 dBm) / 0.815 W EIRP EDGE1900 (29.11 dBm) 0.221 W ERP WCDMA850(23.44 dBm) / 0.682 W EIRP WCDMA1900(28.34 dBm)
Emission	Designator(s):	246KGXW (GSM850) 248KGXW (GSM1900) 249 KG7W (GSM850 EDGE) 247 KG7W (GSM1900 EDGE) 4M16F9W (WCDMA850) 4M18F9W (WCDMA1900)
Antenna S	specification	Manufacturer: RadiAnt
		Antenna type: Internal Antenna
		Peak Gain: 1.99 dBi
Date(s) of	Tests:	December 13, 2010 ~ December 17, 2010

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## 2. INTRODUCTION

### 2.1. EUT DESCRIPTION

The HandHeld Group AB Nautiz X3 Industrial PDA consists of GSM850, GSM1900, GPRS Class12, EDGE, WCDMA850, WCDMA1900 and HSDPA.

### 2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### 2.3. TEST FACILITY

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated June 10, 2009 (Registration Number: 90661)

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## **3. DESCRIPTION OF TESTS**

## 3.1 EFFECTIVE RADIATED POWER/EQUIVALENT ISOTROPIC RADIATED POWER

### Test Set-up



#### **Test Procedure**

Radiated emission measurements were performed at an SAC(Semi-Anechoic Chamber)

The equipment under test is placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. A styrofoam turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

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## 3.2 PEAK- TO- AVERAGE RATIO

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

spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. Plots of the EUT's Peak- to- Average Ratio are shown herein.

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## 3.3 OCCUPIED BANDWIDTH.

#### Test set-up



(Configuration of conducted Emission measurement) Test Procedure

The EUT was setup to maximum output power at its lowest channel. The occupied bandwidth was measured using a spectrum analyzer. The measurements are repeated for the highest and a middle channel. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Plots of the EUT's occupied bandwidth are shown herein.

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## 3.4 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

**Test Procedure** 

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1 % of the emission bandwidth to show compliance with the – 13 dBm limit, in the 1 MHz bands immediately outside and adjacent to the edge of the frequency block. The 1 MHz RBW was used to scan from 10 MHz to 10 GHz. (GSM1900 Mode: 10 MHz to 20 GHz). A display line was placed at – 13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

- Band Edge Requirement : In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

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## 3.5 RADIATED SPURIOUS AND HARMONIC EMISSIONS

## Test Set-up



The measurement facilities used for this test have been documented in previous filings with the commission pursuant to section § 2.948. The SAC(Semi-Anechoic Chamber) meets requirements in ANSI C63.4 –2003. A mast capable of lifting the receiving antenna from a height of one to four meters is used together with a rotatable styrofoam platform mounted at three from the antenna mast.

- 1) The unit mounted on a styrofoam turntable 1.5 m × 1.0 m × 0.80 m is 0.8 meter above test site ground level.
- 2) During the emission test, the turntable is rotated and the EUT is manipulated to find the configuration resulting in maximum emission under normal condition of installation and operation.
- 3) The antenna height and polarization are also varied from 1 to 4 meters until the maximum signal is found.
- 4) The spectrum shall be scanned up to the 10<sup>th</sup> harmonic of the fundamental frequency.

#### Test Procedure

The equipment under test is placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. A styrofoam turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

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## 3.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

**Test Set-up** 



#### Test Procedure

The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from battery end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm$  0.000 25 %( $\pm$  2.5 ppm) of the center frequency.

#### Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).

1. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

2. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one halfhour is provided to allow stabilization of the equipment at each temperature level. **NOTE: The EUT is tested down to the battery endpoint.** 

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## **4. LIST OF TEST EQUIPMENT**

		Serial	Calibration	Calibration
Manufacture	Model/ Equipment	Number	Interval	Due
R&S	ESI40/ Spectrum Analyzer	831564/003	Annual	10/29/2011
Agilent	E4416A/ Power Meter	GB41291412	Annual	01/14/2011
Agilent	E9327A/ Power Sensor	MY4442009	Annual	07/23/2011
Agilent	8960 (E5515C)/ Base Station	GB44400269	Annual	02/10/2011
MITEQ	AMF-6D-001180-35-20P/AMP	990893	Annual	05/20/2011
Wainwright	WHK1.2/15G-10EF/H.P.F	2	Annual	06/25/2011
Wainwright	WHK3.3/18G-10EF/H.P.F	1	Annual	06/25/2011
Agilent	775D/ Dual Directional Coupler	12922	Annual	12/24/2010
Agilent	11636B/ Power Divider	11377	Annual	12/24/2010
Digital	EP-3010/ Power Supply	3110117	Annual	01/08/2011
Schwarzbeck	UHAP/ Dipole Antenna	585	Biennial	02/13/2011
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	02/13/2011
Korea Engineering	KR-1005L / Chamber	KRAB07063-2CH	Annual	12/28/2010
Schwarzbeck	BBHA 9120D/ Horn Antenna	296	Biennial	09/23/2011
Schwarzbeck	BBHA 9120D/ Horn Antenna	147	Biennial	04/13/2012
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	06/09/2011

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## **5. SUMMARY OF TEST RESULTS**

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049, 22.917(a), 24.238(a)	Occupied Bandwidth	N/A		PASS
2.1051, 22.917(a), 24.238(a)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions		PASS
2.1046	Conducted Output Power	-	CONDUCTED	PASS
24.232(d)	Peak- to- Average Ratio	< 13 dB		PASS
2.1055, 22.355, 24.235	Frequency stability / variation of ambient temperature	< 2.5 ppm		PASS
22.913(a)(2)	Effective Radiated Power	< 7 Watts max. ERP		PASS
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS
2.1053, 22.917(a), 24.238(a)	Radiated Spurious and Harmonic Emissions	< 43 + 10log10 (P[Watts]) for all out-of band emissions		PASS

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## **6. SAMPLE CALCULATION**

## A. ERP Sample Calculation

Modo	Ch./ Freq.		Measured	Substitude	Substitude LEVEL(dBm)	sured Substitude	Ant Gain		Pol	ERP	
wode	channel	Freq.(MHz)	Level(dBm)	Ant. Gain		U.L	P01.	w	dBm		
GSM850	128	824.20	-11.56	34.28	-8.32	1.17	Н	0.30	24.79		

#### ERP = SubstitudeLEVEL(dBm) + Ant. Gain - CL(Cable Loss)

1) The EUT mounted on a wooden tripod is 0.8 meter above test site ground level.

2) During the test, the turn table is rotated and the antenna height is also varied from 1 to 4 meters until the maximum signal is found.

- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (**ERP**).

## **B. Emission Designator**

#### **GSM Emission Designator**

#### Emission Designator = 249KGXW

GSM BW = 249 kHz

- G = Phase Modulation
- X = Cases not otherwise covered
- W = Combination (Audio/Data)

### WCDMA Emission Designator

#### Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

- F = Frequency Modulation
- 9 = Composite Digital Info
- W = Combination (Audio/Data)

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## 7. TEST DATA

## 7.1 CONDUCTED OUTPUT POWER

A base station simulator was used to establish communication with the EUT. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported. Conducted Output Powers of EUT are reported below.



#### Test Result

		Voice		GPR	S Data	
Band	Channel	GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)
CSM	128	32.50	32.50	30.46	28.91	27.86
850	190	32.51	32.51	30.46	28.90	27.86
000	251	32.46	32.46	30.43	28.85	27.84
CSM	512	29.87	29.87	27.75	26.15	25.07
1900	661	29.91	29.91	27.82	26.20	25.12
1900	810	29.85	29.85	27.78	26.15	25.09

(GSM Conducted Maximum Output Powers)

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		EDGE Data					
Band	Channel	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)		
COM	128	27.61	24.58	23.58	22.73		
950	190	27.61	24.59	23.58	22.62		
850	251	27.56	24.55	23.54	22.53		
COM	512	26.87	23.78	22.72	21.70		
GSM	661	26.92	23.83	22.76	21.74		
1900	810	26.85	23.78	22.71	21.69		

(GSM EDGE Conducted Output Powers)

		3GPP 34.121	Cellu	lar Band [		
3GPP Release Version	Mode	Subtest	UL 4132 (826.4)	UL 4183 (836.6)	UL 4233 (846.6)	MPR
		Castool	DL 4357	DL	DL	
99	WCDMA	12.2 kbps RMC	24.03	23.97	23.85	-
99	WCDMA	12.2 kbps AMR	24.01	23.97	23.84	-
5	HSDPA	Subtest 1	23.92	23.77	23.65	0

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2000		3GPP 34.121	PC	S Band [dE	ßm]	
Boloaso	Modo		UL 9262	UL 9400	UL 9538	MDD
Version	Wode	Subtest	(1852.4)	(1880.0)	(1907.6)	
			DL 9662	DL 9800	DL 9938	
00		12.2 kbps	24.12	24.17	24.17	
99	VCDIVIA	RMC	24.12	24.17	24.17	-
		12.2 kbps	24.10	24 16	24 16	_
55	VUCDIVIA	AMR	24.10	24.10	24.10	-
5	HSDPA	Subtest 1	24.09	24.05	24.19	0

(WCDMA Conducted Output Powers)
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Note : Detecting mode is average.

## 7.2 PEAK-TO-AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown Page 35, 38.

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## 7.3 OCCUPIED BANDWIDTH

Band	Channel	Channel Frequency(MHz)	
	128	824.20	243.7578
GSM850	190	836.60	241.4942
	251	848.80	246.0887
GSM850 EDGE	251	848.80	248.5516
	512	1850.20	247.4544
GSM1900	661	1880.00	246.3029
	810	1909.80	242.2535
GSM1900 EDGE	512	1850.20	246.6220
	4132	826.40	4.1385
WCDMA850	4183	836.60	4.1506
	4233	846.60	4.1635
	9262	1852.40	4.1830
WCDMA1900	9400	1880.00	4.1772
	9538	1907.60	4.1835

- Plots of the EUT's Occupied Bandwidth are shown Page 31 ~ 34, 35 ~ 38.

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## 7.4 CONDUCTED SPURIOUS EMISSIONS

Band	Channel	Frequency of Maximum Harmonic (GHz)	Maximum Data (dBm)	
	128	7.0125	-30.46	
GSM850	190	8.5250	-30.25	
	251	7.1250	-30.46	
	512	15.7870	-27.44	
GSM1900	661	13.2270	-27.85	
	810	14.6930	-27.74	
	4132	7.1375	-40.45	
WCDMA850	4183	7.0875	-40.56	
	4233	7.0500	-40.78	
	9262	13.9200	-38.14	
WCDMA1900	9400	14.2670	-38.10	
	9538	14.2400	-37.80	

- Plots of the EUT's Conducted Spurious Emissions are shown Page 51 ~ 62.

#### 7.4.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 39 ~ 50.

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## 7.5 EFFECTIVE RADIATED POWER OUTPUT (GSM / WCDMA)

#### (GSM850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Dol	ER	P
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBd)	U.L	FUI.	w	dBm
128	824.20	-14.18	33.58	-10.24	1.17	V	0.16	22.17
190	836.60	-13.21	35.42	-10.36	1.19	V	0.24	23.87
251	848.80	-11.69	37.79	-10.48	1.20	V	0.41	26.11
EDGE 251	848.80	-13.51	35.97	-10.48	1.20	V	0.27	24.29

#### (WCDMA850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain			E	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBd) (dBm)	C.L	Pol.	w	dBm	
4132	826.40	-14.57	33.34	-10.26	1.17	V	0.155	21.91
4183	836.60	-15.49	33.14	-10.36	1.19	V	0.144	21.59
4233	846.60	-14.23	35.10	-10.46	1.20	V	0.221	23.44

Note: Standard batteries are the only options for this phone

#### NOTES:

#### Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode and using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. This unit was tested with its standard battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in GSM850 and WCDMA850 mode. Also worst case of detecting Antenna is vertical polarization in GSM850 and WCDMA850 mode.

The EDGE mode testing were performed using 1Tx because 1Tx is highest power in EDGE mode.

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## 7.6 EQUIVALENT ISOTROPIC RADIATED POWER (GSM / WCDMA)

#### (GSM1900 Mode)

Ch./	Freq.	Moosurod	Substitude	Ant Cain			EIRP	
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	Pol.	w	dBm
512	1,850.20	-10.15	21.10	10.40	1.91	V	0.91	29.59
661	1,880.00	-10.77	20.67	10.43	1.95	V	0.82	29.15
810	1,909.80	-10.13	21.36	10.47	1.97	V	0.97	29.86
EDGE 810	1,909.80	-10.88	20.61	10.47	1.97	V	0.81	29.11

#### (WCDMA1900 Mode)

Ch./	Freq.	Moosurod	Substitude	Ant Cain			EII	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	Pol.	w	dBm
9262	1,852.40	-13.53	17.73	10.40	1.91	Н	0.42	26.22
9400	1,880.00	-11.58	19.86	10.43	1.95	Н	0.68	28.34
9538	1,907.60	-13.84	17.67	10.47	1.97	Н	0.41	26.17

Note: Standard batteries are the only options for this phone

#### NOTES:

#### Equivalent Isotropic Radiated Power Measurements by Substitution Method

#### according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode and using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. This unit was tested with its standard battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is z plane in GSM1900 and (x plane in WCDMA1900) mode. Also worst case of detecting Antenna is vertical polarization in GSM1900 and (horizontal polarization in WCDMA1900) mode.

The EDGE mode testing were performed using 1Tx because 1Tx is highest power in EDGE mode.

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## 7.7 RADIATED SPURIOUS EMISSIONS 7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)

MEASURED OUTPUT POWER:	26.11 dBm = 0.408W

MODULATION SIGNAL:
 <u>GSM850</u>

DISTANCE:

■ LIMIT: - (43 + 10 log10 (W)) = <u>- 39.11 dBc</u>

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> <u>Level</u> [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,648.40	-29.38	8.57	-41.39	1.73	Н	-34.55	-60.66
128 (824.2)	2,472.60	-38.81	11.10	-48.90	2.28	V	-40.08	-66.19
	3,296.80	-46.85	11.65	-56.36	2.57	Н	-47.28	-73.39
	1,673.20	-30.08	8.57	-42.18	1.79	Н	-35.40	-61.51
190 (836.6)	2,509.80	-38.02	11.15	-48.16	2.33	Н	-39.34	-65.45
	3,346.40	-45.16	11.77	-54.97	2.66	Н	-45.86	-71.97
	1,697.60	-26.34	8.57	-38.11	1.83	Н	-31.37	-57.48
251 (848.8)	2,546.40	-37.61	11.15	-47.83	2.34	Н	-39.02	-65.13
	3,395.20	-44.42	11.77	-53.91	2.85	Н	-44.99	-71.10

3 meters

### **NOTES:** <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5<sup>th</sup> Harmonic for all channel.

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### 7.7.2 RADIATED SPURIOUS EMISSIONS (GSM1900)

MEASURED OUTPUT POWER: 29.86 dBm = 0.968 W

MODULATION SIGNAL:
 GSM1900

DISTANCE:

LIMIT: - (43 + 10 log10 (W)) = - 42.86 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,700.40	-30.03	12.25	-36.09	2.73	Н	-26.57	-56.43
512 (1850.2)	5,550.60	-48.89	12.59	-50.36	3.60	V	-41.37	-71.23
	7,400.80	_	_	_	-	-	_	_
	3,760.00	-32.31	12.25	-38.06	2.73	Н	-28.54	-58.40
661 (1880.0)	5,640.00	-49.15	12.51	-50.56	3.60	V	-41.65	-71.51
	7,520.00	-53.59	11.36	-44.52	3.88	V	-37.04	-66.90
	3,819.60	-34.01	12.37	-39.77	2.73	Н	-30.13	-59.99
810 (1909.8)	5,729.40	-47.14	12.43	-48.08	3.60	Н	-39.25	-69.11
	7,639.20	_	_	_	_	_	_	_

3 meters

**NOTES:** <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u>

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5<sup>th</sup> Harmonic for <u>all channel.</u>

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#### 7.7.3 RADIATED SPURIOUS EMISSIONS (WCDMA850)

MEASURED OUTPUT POWER: 23.44 dBm = 0.221 W

MODULATION SIGNAL:

DISTANCE:

3 meters

WCDMA850

■ LIMIT: - (43 + 10 log10 (W)) = <u>- 36.44 dBc</u>

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> <u>Level</u> [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,652.80	-32.00	8.57	-44.04	1.73	Н	-37.20	-60.64
4,132 (826.4)	2,479.20	-44.21	11.10	-54.31	2.28	V	-45.49	-68.93
	3,305.60	-46.94	12.65	-57.43	2.57	Н	-47.35	-70.79
	1,673.20	-33.62	8.57	-45.72	1.79	Н	-38.94	-62.38
4,183 (836.6)	2,509.80	-45.71	11.15	-55.85	2.33	Н	-47.03	-70.47
	3,346.40	-49.37	12.65	-60.06	2.66	V	-50.07	-73.51
	1,693.20	-33.12	8.57	-44.94	1.83	Н	-38.20	-61.64
4,233 (846.6)	2,539.80	-42.80	11.15	-53.00	2.34	V	-44.19	-67.63
	3,386.40	-48.37	12.69	-58.80	2.85	V	-48.96	-72.40

## **NOTES:** <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5<sup>th</sup> Harmonic for <u>all channel.</u>

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#### 7.7.4 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

MEASURED OUTPUT POWER: <u>28.34 dBm = 0.682 W</u>

MODULATION SIGNAL: WCDMA1900

DISTANCE:

3 meters

■ LIMIT: - (43 + 10 log10 (W)) = - 41.34 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,704.80	-40.35	12.46	-46.59	2.73	Н	-36.86	-65.20
9262	5,557.20	-	-	_	_	_	_	_
	7,409.60	_	-	_	_	_	_	_
	3,760.00	-37.20	12.47	-43.17	2.73	V	-33.43	-61.77
9400	5,640.00	_	Ι	_	_	_	_	
	7,520.00	_	Ι	_	_	_	_	Ι
	3,815.20	-41.15	12.46	-47.02	2.73	Н	-37.29	-65.63
9538	5,722.80	-	-	-	-	-	-	-
	7,630.40	_	_	_	_	-	_	_

## **NOTES:** <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5<sup>th</sup> Harmonic for <u>all channel.</u>

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## 7.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE 7.8.1 FREQUENCY STABILITY (GSM850)

OPERATING FREQUENCY:	836,600,000 Hz
CHANNEL:	<u>    190    </u>
REFERENCE VOLTAGE:	3.7 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°°)	(Hz)	Error (Hz)	(%)	ррт
100%		+20(Ref)	836 600 000	0	0.000 000	0.000
100%		-30	836 599 997	-3.44	0.000 000	-0.004
100%		-20	836 599 994	-5.82	-0.000 001	-0.007
100%		-10	836 599 999	-1.01	0.000 000	-0.001
100%	3.700	0	836 600 002	1.61	0.000 000	0.002
100%		+10	836 599 997	-2.69	0.000 000	-0.003
100%		+30	836 599 996	-4.26	-0.000 001	-0.005
100%		+40	836 599 995	-4.73	-0.000 001	-0.006
100%		+50	836 599 994	-6.45	-0.000 001	-0.008
115%	4.255	+20	836 599 998	-2.11	0.000 000	-0.003
Batt. Endpoint	3.400	+20	836 599 992	-7.82	-0.000 001	-0.009



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## 7.8.2 FREQUENCY STABILITY (GSM1900)

OPERATING FREQUENCY:	1880,000,000 Hz
CHANNEL:	<u>    661  </u>
REFERENCE VOLTAGE:	3.7 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°°)	(Hz)	Error (Hz)	(%)	ррш
100%		+20(Ref)	1880 000 020	0	0.000 000	0.000
100%		-30	1879 999 987	-12.57	-0.000 001	-0.007
100%		-20	1879 999 977	-23.40	-0.000 001	-0.012
100%	3.700	-10	1879 999 987	-13.19	-0.000 001	-0.007
100%		0	1879 999 975	-24.57	-0.000 001	-0.013
100%		+10	1879 999 984	-16.29	-0.000 001	-0.009
100%		+30	1879 999 982	-17.70	-0.000 001	-0.009
100%		+40	1879 999 979	-20.89	-0.000 001	-0.011
100%		+50	1879 999 985	-15.25	-0.000 001	-0.008
115%	4.255	+20	1879 999 979	-21.17	-0.000 001	-0.011
Batt. Endpoint	3.400	+20	1879 999 981	-19.22	-0.000 001	-0.010



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## 7.8.3 FREQUENCY STABILITY (WCDMA850)

OPERATING FREQUENCY:	836,600,000 Hz
CHANNEL:	4183
REFERENCE VOLTAGE:	3.7 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ррт
100%		+20(Ref)	836 600 041	0	0.000 000	0.000
100%		-30	836 600 008	7.71	0.000 001	0.009
100%		-20	836 599 970	-29.82	-0.000 004	-0.036
100%	3.700	-10	836 600 009	9.47	0.000 001	0.011
100%		0	836 600 020	20.02	0.000 002	0.024
100%		+10	836 599 969	-31.39	-0.000 004	-0.038
100%		+30	836 599 940	-60.12	-0.000 007	-0.072
100%		+40	836 599 986	-14.00	-0.000 002	-0.017
100%		+50	836 599 950	-50.47	-0.000 006	-0.060
115%	4.255	+20	836 600 031	30.87	0.000 004	0.037
Batt. Endpoint	3.400	+20	836 600 056	55.56	0.000 007	0.066



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## 7.8.4 FREQUENCY STABILITY (WCDMA1900)

OPERATING FREQUENCY:	1,880,000,000 Hz
CHANNEL:	9400
REFERENCE VOLTAGE:	3.7 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ррш
100%		+20(Ref)	1880 000 055	0	0.000 000	0.000
100%		-30	1880 000 034	34.07	0.000 002	0.018
100%		-20	1880 000 063	63.20	0.000 003	0.034
100%	3.700	-10	1880 000 020	19.75	0.000 001	0.011
100%		0	1879 999 941	-59.03	-0.000 003	-0.031
100%		+10	1880 000 089	88.92	0.000 005	0.047
100%		+30	1880 000 036	36.33	0.000 002	0.019
100%		+40	1880 000 060	60.27	0.000 003	0.032
100%		+50	1880 000 038	38.03	0.000 002	0.020
115%	4.255	+20	1880 000 093	92.56	0.000 005	0.049
Batt. Endpoint	3.400	+20	1880 000 045	45.36	0.000 002	0.024



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## 8. TEST PLOTS

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#### ■ GSM850 MODE (128 CH.) Occupied Bandwidth



#### ■ GSM850 MODE (190 CH.) Occupied Bandwidth



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#### ■ GSM850 MODE (251 CH.) Occupied Bandwidth



#### ■ GSM850 EDGE (251 CH.) Occupied Bandwidth



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#### ■ GSM1900 MODE (512 CH.) Occupied Bandwidth



#### ■ GSM1900 MODE (661 CH.) Occupied Bandwidth



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#### GSM1900 MODE (810 CH.) Occupied Bandwidth



#### ■ GSM1900 EDGE (512 CH.) Occupied Bandwidth



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🔆 Agilent		RT	Freq/Channel
Nautiz X3 P.A.R Ch.661	20 AB	▲ Mkr1 83 kHz 0 00 dB	Center Freq
#Avg			1.88000000 GHz
Log 10			Start Fred
dB/			1.87750000 GHz
0ffst 27.4			
dB			<b>Stop Freq</b> 1.88250000 GHz
			<b>CF Step</b>
#LgAv /			<u>Auto</u> Man
V1 M2			FreqOffset 0.00000000 Hz
<b>£</b> (f):			Cinnal Tuank
FTun Swp			On Off
Jwh			
Center 1.880 000 GHz		Span 5 MHz	
#Res BW 1 MHz	#VBW 1 MHz	Sweep 1 ms (601 pts)	
File Operation Status, C:	HCT.GIF file saved		

### ■ GSM1900 MODE (661 CH.) Peak-to-Average Ratio

#### ■ WCDMA850 MODE (4132 CH.) Occupied Bandwidth

* Agilent R T	Measure
Mobile         Ch Freq         826.4 MHz         Trig         Free           Occupied Bandwidth         #3GPP W-CDMA         Image: Comparison of the second s	Meas Off
Nautiz X3 ABW Ch 4357	Channel Power
Ref 24 dBm Atten 10 dB #Peak	Occupied BW
dB/ Offst 27.1	ACP
dB Center 826.400 MHz Span 7 MHz Page Bll 100 kHz System 1 may (C01 mag)	Multi Carrier Power
*Kes DW 100 KH2         *VDW 500 KH2         Sweep 1 ms (601 pts)           Occ DW % Pwr         99.00 %           4.1385 MHz         × dB         -26.00 dB	Power Stat CCDF
Transmit Freq Error 27.076 kHz × dB Bandwidth 4.663 MHz	More 1 of 2
File Operation Status, C:\HCT.GIF file saved	

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#### ■ WCDMA850 MODE (4183 CH.) Occupied Bandwidth



#### ■ WCDMA850MODE (4233 CH.) Occupied Bandwidth



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#### ■ WCDMA1900 MODE (9262 CH.) Occupied Bandwidth



#### ■ WCDMA1900 MODE (9400 CH.) Occupied Bandwidth



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#### ■ WCDMA1900 MODE (9538 CH.) Occupied Bandwidth



#### ■ WCDMA1900 MODE (9400 CH.) Peak-to-Average Ratio



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#### R Agilent Т Freg/Channel **※** Nautiz X3 Band Edge Ch.128 Center Frea Ref 32.5 dBm Atten 20 dB 824.000000 MHz #Avg Log 10 Start Fred dB/ 823.500000 MHz Offst 27.1 Stop Freq dB 824.500000 MHz DI -13.0 **CF** Step dBm 100.000000 kHz #LgAv Auto Man M1 S2 Freq Offset S3 FC 0.00000000 Hz AΑ £(f): Signal Track f>50k 0n Off Swp THE REAL PROPERTY AND Center 824.000 0 MHz Span 1 MHz Sweep 423.7 ms (601 pts) #Res BW 3 kHz ₩VBW 3 kHz File Operation Status, C:\HCT.GIF file saved

#### ■ GSM850 MODE (128 CH.) Block Edge 1

#### ■ GSM850 MODE (128 CH.) Block Edge 2



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#### R Agilent Т Freg/Channel ₩. Nautiz X3 Band Edge Ch.251 Center Frea Ref 32.5 dBm Atten 20 dB 849.000000 MHz #Avg Log 10 Start Fred dB/ 848.500000 MHz Offst 27.1 Stop Freq dB 849.500000 MHz DI -13.0 **CF** Step dBm 100.000000 kHz #LgAv Auto Man M1 S2 Freq Offset S3 FC 0.00000000 Hz AΑ **£**(f): Signal Track f>50k MAN AND A 0n Off Swp NUMPER Center 849.000 0 MHz Span 1 MHz #Res BW 3 kHz ₩VBW 3 kHz Sweep 423.7 ms (601 pts) File Operation Status, C:\HCT.GIF file saved

#### ■ GSM850 MODE (251 CH.) Block Edge 1

#### ■ GSM850 MODE (251 CH.) Block Edge 2



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#### ■ EDGE MODE (128 CH.) Block Edge 1

■ EDGE MODE (128 CH.) Block Edge 2



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#### ■ EDGE MODE (251 CH.) Block Edge 1

■ EDGE MODE (251 CH.) Block Edge 2



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#### ■ GSM1900 MODE (512 CH.) Block Edge 1

#### ■ GSM1900 MODE (512 CH.) Block Edge 2



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#### ■ GSM1900 MODE (810 CH.) Block Edge 1

#### ■ GSM1900 MODE (810 CH.) Block Edge 2



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#### ■ EDGE MODE (512 CH.) Block Edge 1

■ EDGE MODE (512 CH.) Block Edge 2



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#### ■ EDGE MODE (810 CH.) Block Edge 1

■ EDGE MODE (810 CH.) Block Edge 2



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🔆 Agilent	RT	Measure
Nautiz X3 Band Edge Ch.4357 Ref 24 dBm Atten 10 dB	Mkr1 824.000 MHz -28.484 dBm	Meas Off
*Samp Log 10		Channel Paular
dB/ Offst 27.1	and the state of the second of the second	
dB DI		Occupied BW
-13.0 dBm 1		ACP
Lgnv 100 W1 S2 was an		Multi Carrier
S3 FS		Power
£(†): f>50k Swp		Power Stat CCDF
Center 824.000 MHz	Span 7 MHz	More
#Res BW 100 kHz	o 2.12 ms (601 pts)	1 Of 2
File Operation Status, C:\HCI.GIF file saved		

#### ■ WCDMA850 MODE (4132 CH.) Block Edge

#### ■ WCDMA850MODE (4233 CH.) Block Edge



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🔆 Ag	jilent								R	2 T	Measure
Nautiz	X3_4MH	lz Span	Ch.435	57 1 0 1 D				Mkr1	822.9	93 MHz	
Ret 24 #Samn	dBm I		Htten	10 dB					-20.07	6 dBm	Meas Uff
Log											
10											Channel Power
Uff∝+											
27.1											
dB											Occupied BW
DI 120										1	
dBm										M	000
LgAv 100					white will a start from	man	and and a second se	And a start and a start of the st	gene, naf penger	W	HUP
W1 S2		and a support	hand	hapen of the second							Multi Carrier
S3 FC	with the second second										Power
E(r): FTun											Power Stat
Swp											CCDF
Center	821.00	00 MHz							Span	4 MHz	More
#Res B	BW 1 MH	Z		<b>#</b> \/	BW 1 M	Hz	Sv	veep 1	ms (60	1 pts)	1012
File 0	peratio	n Stat	us, C:'	HCT.6	IF file	saved					

#### ■ WCDMA850 MODE (4132 CH.) – 4 MHz Span

#### ■ WCDMA850MODE (4233 CH.) – 4 MHz Span



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🔆 Agilent								F	х Т	Config I/0
Nautiz X3 E	Band Edge	Ch.966	62				Mkr1	1.850 0	100 GH	z GPIB
Ref 24 dBn	n	Atten	10 dB					-24.86	6 dBm	Address
#Samp										17
Log										
10										IP Address
					- sour	moun	mphilapanee	monor	www.pp	203.238.200.227
Uffst					Ser.					
dB					- <u>/</u>					Host Name,
					1					HCTRF
_130					{					
dBm					5					Subnet Mask
		murt		and						255.255.255.0
100	why many of a control	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second s	eter Carlos						
µ1 s2										Gateway
S3 FS										Address
ÅÅ										203.238.200.194
<b>£</b> (f):										
f>50k										SCPI LAN →
Śwp —										
		<u> </u>						<u> </u>	7 MU-	
UPLE DIL 40	90 000 GI	12		11.200		¢	- 014	span Span	7 MHZ	
#Kes BW IV	W KHZ		#VE	W 300	кнг	SWee	p 2.12	2 ms (60	u pts)	
File Opera	tion Stat	us, C:'	HCT.G	IF file	saved					

## ■ WCDMA1900 MODE (9262 CH.) Block Edge

## ■ WCDMA1900 MODE (9538 CH.) Block Edge

🔆 Ag	ilent								F	₹ <u></u>	Config I/0
Nautiz	X3 Ban	d Edge	Ch.993	38				Mkr1	1.910 0	00 GHz	GPIB
Ref 24	dBm		Atten	10 dB					-27.81	5 dBm	Address
#Samp											17
Log											TD Oddusses
10 dB/	and Manusla			No-Mar							203 238 200 227
0ffst	1.			W 9 V 11 V	No No						205.250.200.227
27.4					ľ						Liest Name
dB											
DI											nern
-13.0											
						\$					255 255 255 0
LgHv						home	unn				200.200.200.0
100								The second se	www.www	and the second	Gateway
S3 ES											Address
ĽĂĂĂ											203.238.200.194
<b>£</b> (f):											
f>50k											SCPI LAN >
Swp											
Center	1.910	000 GF	z						Span	7 MHz	
#Res B	W 100	kHz .		<b>#</b> VB	W 300	kHz	Swee	p 2.12	2 ms (60	1 pts)	
File 0	peratio	n Stat	us, C:'	HCT.6	IF file	saved					

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* Agilent	RT	Config I/0
Nautiz X3 4MHz Span Ch.9662	Mkr1 1.848 993 GHz	GPIB
Ref 24 dBm Atten 10 dB	-16.037 dBm	Address
#Samp		17
10		ID Oddrocc
dB/		203.238.200.227
Offst		
27.4		Host Name
dB		HCTRF
dBm	Magar Marker and Marker when a state and a second	Subnet Mask
LaAv		255.255.255.0
100 monte and		
W1 S2		Gateway
\$3 FC		HOOLESS
		203.230.200.134
		SCRUON
Swn		SUPILAN
<pre>vnp</pre>		
Cantor 1 847 888 Clin		
Lenter 1.047 000 GH2 #Ree RW 1 MU-7 #URW 1 MU-7	opan 4 MHZ Sweep 1 ms (601 pts)	
	Sweep I ms (our hts)	
File Operation Status, C:\HCT.GIF file saved		

#### ■ WCDMA1900 MODE (9262 CH.) – 4 MHz Span

#### ■ WCDMA1900 MODE (9538 CH.) – 4 MHz Span



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🔆 Ag	ilent								R	: T	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.128					Mk	r1 2.4	71 GHz	Center Freg
Ret 32 #Peak	.5 dBm		Htten	20 dB					-33.4	6 dBm	1.26500000 GHz
Log											
10 dB7											Start Freq
0ffst											38.8888888 Milz
27.1 dB											Stop Freq
DI											2.50000000 GHz
-13.0 dBm											CF Step
uDiii #LaAv											247.000000 MHz
- 23/11										1	<u>Huto</u> Man
V1 S2		e tatte dille	. بالا بالام						. Anderson	-	Freq Offset
AA	an a	egr - war -		w Patraga		1997 C 1997					0.00000000 Hz
<b>£</b> (f):											Signal Track
Flun Swn											On <u>Off</u>
Center	1.265	GHz						S	ipan 2.4	17 GHz	
#Res B	W 1 MH	Z		#V	BW 1 M	Hz	Swee	p 4.12	ms (60	1 pts)	
File 0	peratio	n Stat	us, C:\	HCT.G	IF file	saved					

## ■ GSM850 MODE (128 CH.) Conducted Spurious Emissions1

## ■ GSM850 MODE (128 CH.) Conducted Spurious Emissions2

🔆 Ag	ilent								R	Т	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.128					Mkr1	7.012	5 GHz	
Ref 32	.5 dBm		Atten	20 dB					-30.46	6 dBm	
#Peak											6.25000000 GHZ
Log											
10											Start Freq
dB/											2.50000000 GHz
0††st 27.1											
27.1 dB											Stop Freq
											10.0000000 GHz
_13.0											
dBm											CF Step
#LaAv											750.000000 MHz
"Egine							L				Huto man
V1 S2						astard	and West	March Mar	diarden and a	4	Freq Offset
\$3 FC	dividence.	NWWWW YWW	When whether	Monthleapour	harderstrates	and a			and the second second	wierwitzen auf	0.00000000 Hz
AA											
<b>£</b> (f):											Signal Trook
FTun											
Swp											
Center	6.250	0 GHz							Span 7.	5 GHz	
#Res B	W 1 MH	Z		#V	BW 1 M	Hz	Sweep	12.52	ms (601	pts)	
File 0	peratio	n Stat	us, C:Y	HCT.G	IF file	saved					

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🔆 Ag	ilent								F	2 T	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.190					Mk	r1 2 <b>.</b> 4	71 GHz	Contor From
Ref 32	.5 dBm		Atten	20 dB					-33.8	5 dBm	
#Peak											1.20300000 0112
LU9 10											Stort From
dBZ											ЗО ООООООО МНЭ
Offst											
27.1											Stop Fred
dB											2.50000000 GHz
DI 12.0											
-13.0 dBm											CF Step
#LaAv											247.000000 MHz
"L'gilly											<u>Huto</u> Man
V1 S2										1	Fred Offset
\$3 FC	Monion	where how	and the second	Money	howselfenepe	malanger	and a state of the	whytherap	with the state of	Hannah	0.00000000 Hz
AA											
£(†):											Signal Track
FTUR											On <u>Off</u>
Jub											
Lenter	1.265 41.4 MU	GHŻ -					e	- 110	pan 2.4	T GHZ	
#Kes B	MIMH	Z		#	NDM I M	HZ	Swee	ep 4.12	ms (60	i pts)	
File 0	peratio	n Stat	us, C:'	HCT.	F file	saved					

## ■ GSM850 MODE (190 CH.) Conducted Spurious Emissions1

## ■ GSM850 MODE (190 CH.) Conducted Spurious Emissions2

* Agilent R T	Freq/Channel
Nautiz X3 Cond Spur Ch.190 Mkr1 8.525 0 GHz	Сан <b>тан</b> Гиан
Ref 32.5 dBm Atten 20 dB -30.25 dBm	
#Peak	0.23000000 012
	Start Freq
0D/	2.30000000 002
27.1	
dB	Stop Freq
	10.0000000 GHZ
-13.0	CE Step
	750.000000 MHz
#LgAv	<u>Auto</u> Man
VI SZ ECynal artal waard were arta ar arta ar ar arta arta arta ar	Freq Offset
	0.00000000 HZ
<b>£</b> (f):	
FTun	Signal Track
Swp	0n <u>0tt</u>
Center 6 250 0 GHz Span 7.5 GHz	
#Res BW 1 MHz #VBW 1 MHz Sweep 12.52 ms (601 pts)	
File Operation Status, C:\HCT.GIF file saved	

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🔆 Ag	ilent									F	? Т	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.251	20.	JD				Mk	r1 1.6	97 GHz	Center Freq
#Peak			HILEN	20 (						-32.7		1.26500000 GHz
Log 10												Start Fred
dB/												30.0000000 MHz
27.1												Stop Frog
dB												2.50000000 GHz
-13.0												CE Sten
dBm #LaAv												247.000000 MHz
"L'GITV								1-				<u>Huto</u> Man
V1 S2 S3 FC	weeks and a second	phone species	-Mayora	mly	mut	wakakaratiw	Kolonyukuphani		an a	and the second second	umal and a	Freq Offset 0.00000000 Hz
HA F(F):												
FTun												Signal Track
Swp												
Canton	1.005											
#Res B	1.205 ₩1 MH	вн2 Z			ŧV	BW 1 M	Hz	Swee	о р 4.12	pan 2.4 ms (60	1 pts)	
File 0	peratio	n Stat	us, C:'	HCT	<b>.</b>	IF file	saved					

## ■ GSM850 MODE (251 CH.) Conducted Spurious Emissions1

## ■ GSM850 MODE (251 CH.) Conducted Spurious Emissions2

🔆 Ag	ilent								R	Т	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.251					Mkr1	7.125	0 GHz	Conton Enor
Ref 32	.5 dBm		Atten	20 dB					-30.46	6 dBm	
#Peak											0.23000000 0112
LOG 10											Stort From
dBZ											2 50000000 GHz
0ffst											2.30000000 0112
27.1											Stop Eron
dB											
DI											10.0000000 0112
-13.0 dBm											CF Step
uDill #L.=O.:											750.000000 MHz
#LgHV							4				<u>Auto</u> Man
V1 S2							Ś.	1. m. 1.			Eros Offeet
S3 FC	way way where	electron and the	Mr-hubber	manifilation	mandalan	had	1 . Left	and the second	an a	hubbert block	
AA											0.00000000 112
<b>£</b> (f):											Signal Trook
FTun											
Swp											
Center	6.250	0 GHz							Span 7.	5 GHz	
#Res B	W 1 MH	Z		#V	BW1 M	Hz	Sweep	12.52	ms (601	l pts)	
File 0	peratio	n Stat	us, C:'	HCT.G	IF file	saved					

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🔆 Agi	ilent								R	T	Freq/Channel
Nautiz )	X3 Con	d Spur	Ch.512	^^ ID				Mk	r1 3.9	07 GHz	Center Freg
Ref 30 ≢Peak [	dBm		Htten	20 dB					-32.4	3 dBm	2.01500000 GHz
Log											
10 dB/											Start Freq 30.0000000 MHz
Offst											
27.4 dB											Stop Freq
DI											4.00000000 GHz
-13.0 dBm											CF Step
LgAv											397.000000 MHz <u>Auto</u> Man
V1 S2 S3 FC	y-god of th	mundup	anan Juna		marture	vq_at	double worthe to	Anna anna	n <del>Ma</del> hanan	uhuru, nifu	FreqOffset 0.00000000 Hz
AA CEDE											
FTun											Signal Track
Swp											0n <u>0ff</u>
	<u> </u>	<u></u>									
Lenter #Res Bl	2.015 W 1 MH	GHZ Z		#\/	BW 1_1	1Hz	Swee	ა ი 6.64	pan 3.9 ms (60	17 GHZ 1 pts)	
Copyrig	ght 20	00-20	107 Ag	ilent T	echno	logies					

## ■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions1

## ■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions2

🔆 Agilent				RT	Freq/Channel
Nautiz X3 Cond Spur	Ch.512		Mkr1	l 1 <mark>5.787</mark> GHz	Contor From
Ref 30 dBm	Atten 20 dB			-27.44 dBm	
#Peak					12.0000000 0112
109 10					Stort From
dB/					4.00000000 GHz
Offst					
27.4					Stop Fred
dB					20.0000000 GHz
DI					
dBm					CF Step
LgAv			1		1.60000000 GHz
			and the second second second	an at mound action which	
V1 S2 mound and and port	14 martin Part - 10 martin and 10 ki	ward and a start and			Freq Offset
S3 FC					0.00000000 Hz
ETun					Signal Track
Swp					On <u>Off</u>
Center 12 000 GHz				Span 16 GHz	
#Res BW 1 MHz	#\;	/BW 1 MHz	Sweep 40	ms (601 pts)	
File Operation Sta	tus, C:\HCT.G	IF file saved			

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🔆 Agilent				RT	Freq/Channel
Nautiz X3 Cond Spur Ref 30 dBm #Peak	Ch.661 Atten 20 dB		Mkr1 ( _3;	3.186 GHz 2.26 dBm	Center Freq 2.01500000 GHz
Log 10 dB/					Start Freq 30.0000000 MHz
Offst 27.4 dB					Stop Freq 4.0000000 GHz
UI -13.0 dBm					CF Step 397.000000 MHz
V1 S2 S3 FC	antersection and the second	gy yang glandagi separatan	1 Marin of the offerstanding	yddwyddwrynawady	Huto Man Freq Offset 0.00000000 Hz
fff ff(f): FTun Swp					<b>Signal Track</b> On <u>Off</u>
Center 2.015 GHz #Res BW 1 MHz	#VBW	1 MHz	Span Sweep 6.64 ms (	3.97 GHz 601 pts)	
File Operation Stat	tus, C:\HCT.GIF	file saved			

## ■ GSM1900 MODE (661 CH) Conducted Spurious Emissions1

## ■ GSM1900 MODE (661 CH.) Conducted Spurious Emissions2

🔆 Ag	ilent								R	Т	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.661					Mkr1	13.22	27 GHz	Center Fred
Ret 30 #Peak	dBm		Atten	20 dB					-27.85	5 dBm	12.0000000 GHz
Log											
10 JD /											Start Freq
aB7 Offst											4.00000000 GHZ
27.4											Stop Fred
dB											20.0000000 GHz
–13.0											
dBm											LF Step 1.6000000 GHz
LgAv											<u>Auto</u> Man
V1 S2	and the set	w. M	an attended	wyenter .	an strand	whitehow		the population of the second	and we prove	Spenderson the	Fred Offset
S3 FC	COVER DOMA	WICH .									0.00000000 Hz
AA C(f)											
FTun											Signal Track
Swp											0n <u>011</u>
Center	12.000	) GHz							Span 1	6 GHz	
#Res B	W 1 MH	z		#\/	BW 1 M	Hz	Swe	eep 40 r	ms (601	. pts)	
File 0	peratio	in Stat	us, C:	<b>HCT.G</b>	IF file	saved					

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🔆 Agilent				RT	Freq/Channel
Nautiz X3 Cond Sp	our Ch.810		Mkr1 3.	232 GHz	Center Freg
Ref30 dBm ≢Peak	Htten 20 dB		-31.	53 dBm	2.01500000 GHz
Log					
10 dBZ					Start Freq
Offst					
27.4 dB					Stop Freq
DI					4.00000000 GHz
-13.0					CF Step
LgAv					397.000000 MHz Auto Man
111 00				1.	
S3 FC	When the way and the second	monor and and the second states	Marth and the state of the second state of the	worthation	Freq Offset
AA					0.0000000 112
£(†):					Signal Track
Swp					On <u>Off</u>
Center 2.015 GHz	2		Span 3.	.97 GHz	
File Operation C	tatua Cu) VCT (	/DW I MHZ	აweep ნ.64 ms (ნ	ØI pts)	
rile operation S	uatus, civici.	our the saved			

## ■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions1

## ■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions2

🔆 Ag	jilent								R	Т	Freq/Channel
Nautiz	X3 Con	d Spur	Ch.810					Mkr1	14.69	93 GHz	Center Fred
Ref 30 #Peak	dBm		Atten	20 dB					-27.74	4 dBm	12.0000000 GHz
Log											
10											Start Freq
dB7 Offst											4.00000000 GHz
27.4											Ctop From
dB											20 0000000 GHz
DI 130											20.0000000000
dBm											CF Step
LgAv											1.60000000 GHZ <u>Auto</u> Man
V1 S2		1 Martinet	www	Thearden Mit	under the still age	wowen	henryhow	there where the second s	ergent-generation	and week with at	Erer Offeet
S3 FC	-when write	, Mar 1 (197									
AA											0.0000000000
£(†):											Signal Track
Swp											On <u>Off</u>
Center	12.000	0 GHz							Span 1	6 GHz	
#Res B	W 1 MH	z		#V	BW 1 M	Hz	Swe	eep 40	ms (601	l pts)	
File 0	peratic	n Stat	us, C:	<b>HCT.G</b>	IF file	saved					

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🔆 Agilent				R	Т	Measure
Nautiz X3 Cond Spur Ref 24 dBm #Peak	Ch.4357 Atten 10 dB		Mkr1	1 1.656 -41.73 d	GHz IBm	Meas Off
Log 10 dB/						Channel Power
27.1 dB DI						Occupied BW
-13.0 dBm LgAv	<u> </u>					ACP
V1 S2 S3 FC AA	una and the	ana Manifestation or a sub-	Apply the second and	n managana an		Multi Carrier Power
£(f): FTun Swp						Power Stat CCDF
Center 1.265 GHz #Res BW 1 MHz	#\	BW 1 MHz	Sp Sweep 4.12 m	an 2.47 ( ns (601 p	GHz its)	More 1 of 2
File Operation Stat	us, C:\HCT.G	IF file saved				

## ■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions1

## ■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions2

* Agilent R T	Measure
Nautiz X3 Cond Spur Ch.4357         Mkr1         7.137         5 GH           Ref 24 dBm         Atten 10 dB         -40.45 dBm           #Peak	z Meas Off
Log 10 dB/	Channel Power
27.1 dB DI	Occupied BW
-13.0 dBm LgAv	ACP
V1 S2 S3 FC warm harmon harmon harmon harmon har and a strand a stra	Multi Carrier Power
£(f): FTun Swp	Power Stat CCDF
Center 6.250 0 GHz Span 7.5 GHz #Res BW 1 MHz #VBW 1 MHz Sweep 12.52 ms (601 pts)	More 1 of 2
File Operation Status, C:\HCT.GIF file saved	

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🔆 Agilent				R	Т	Measure
Nautiz X3 Cond Spur Ref 24 dBm #Peak	Ch.4408 Atten 10 dB		Mk	r1 2.35 -43.62	2 GHz dBm	Meas Off
Log 10 dB/ 0ffst						Channel Power
27.1 dB DI						Occupied BW
-13.0 dBm LgAv						ACP
V1 S2 S3 FC	wenter water	and all the strenger	www.how men	agath the forty that have any	1 ••••••••••••••••	Multi Carrier Power
£(f): FTun Swp						Power Stat CCDF
Center 1.265 GHz #Res BW 1 MHz	#\	BW 1 MHz	S Sweep 4.12	pan 2.47 ms (601	'GHz pts)	More 1 of 2
File Operation Stat	tus, C:\HCT.G	IF file saved				

## ■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions1

## WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions2

🔆 Ag	ilent								R	T	Measure
Nautiz	X3 Con	d Spur	Ch.440	8 10 JD				Mkr1	7.087	5 GHz	Hasa Off
кет 24 #Peak			Htten	τυ αρ					-40.5	o adm	meas off
Log											
10 JB7											Channel Power
Offst											
27.1											
											Occubied BM
-13.0											
dBm											ACP
LgAv											
V1 S2							↓ ♦				Multi Carrier
S3 FC	hannah	and the second	withor when	syntaspra.	www.wohu	president franklige	Walter	arria (Nadarri	www.www.www.	-man -	Power
нн <b>£</b> (f) <sup>,</sup>											
FTun											Power Stat
Swp											LUDF
											More
Center	6.250	0 GHz					~		Span 7	.5 GHz	1 of 2
#Res B	W1 MH	z		#V	BM I M	Hz	Sweep	12.52	ms (60	1 pts)	
File 0	peratio	n Stat	us, C:'	WCT.G	IF file	saved					

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🔆 Agilent		RT	Measure
Nautiz X3 Cond Spur Ch Ref 24 dBm At #Peak	n.4458 tten 10 dB	Mkr1 2.109 GHz -43.54 dBm	Meas Off
Log 10 dB/			Channel Power
27.1 dB DI			Occupied BW
-13.0 dBm LgAv			ACP
V1 S2 S3 FC	whereast and a faith of the second and a second and	and the second	Multi Carrier Power
£(f): FTun Swp			Power Stat CCDF
Center 1.265 GHz #Res BW 1 MHz	#VBW 1 MHz	Span 2.47 GHz Sweep 4.12 ms (601 pts)	More 1 of 2
File Operation Status	, C:\HCT.GIF file saved		

#### ■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions1

### WCDMA850MODE (4233 CH.) Conducted Spurious Emissions2



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🔆 Agilent			RT	Config I/0
Nautiz X3 Cond Spur	Ch.9662		Mkr1 1.903 GHz	GPIB
Ref 24_dBm	Atten 10 dB		-40.69 dBm	Address
#Peak				17
10 10				ID Address
dB/				203 238 200 227
Öffst				200.200.200.227
27.4				Host Name
dB				HCTRF
dBm				Subnet Mask
LaAv				255.255.255.0
V1 S2		<b></b>		Gateway
S3 FC	whether the present of the present o	and water and the second	- martine the share to	Hddress
AA				203.230.200.194
				CODULON
Swp				SUPILHN +
<b>4</b>				
HER Z.015 GHZ	-uliD		5pan 3.97 GHz	
*Res DW 1 MHZ	#VD	WIMHZ SWee	ep 6.64 ms (601 pts)	
File Operation Sta	tus, C:\HCT.GI	F file saved		

## ■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions1

## ■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions2

🔆 Ag	jilent								R	ŧТ	Config I/0
Nautiz	X3 Con	d Spur	Ch.966	2				Mkri	1 13.9	20 GHz	GPIB
Ref 24	dBm		Atten	10 dB					-38.1	4 dBm	Address
#Peak											1/
L09 10											IP Address
dB/											203.238.200.227
Offst											
27.4 JR											Host Name.
											HCTRF
-13.0											
dBm											Subnet Mask
LgAv											255.255.255.0
							1 \$				Gateway
M1 SZ		1 Martin	and the property of	Monders	al march ly	MAY ATTING	an har man should be had	and Hertree b	tra frankativne til	W. p. Jormann	Address
		A CALCULAR									203.238.200.194
<b>£</b> (f):											
FTun											SCPI LAN +
Swp											
Center	12.000	) GHz							Span 1	.6 GHz	
#Res B	W 1 MH	z		#\/	BW 1 M	Hz	Swe	eep 40	ms (60	1 pts)	
File 0	peratio	in Stat	us, C:Y	<b>HCT.G</b>	IF file	savec	<u>.                                     </u>				

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🔆 Agilent			R	Т	Config I/0
Nautiz X3 Cond Spur	Ch.9800		Mkr1 3.20	6 GHz	GPIB
Ref 24 dBm	Atten 10 dB		-42.38	dBm	Address
#Peak					17
10					IP Address
dB/					203.238.200.227
Offst					
27.4					Host Name.
					HCTRF
-13.0					
dBm					Subnet Mask
LgAv					255.255.255.0
		∦			Cotoway
V1 S2		- N I - I - I			Address
53 FC	malindurit	word broken market	The street where the second seco	er la dices	203.238.200.194
<b>£</b> (f):					
FTun					SCPI LAN 🕨
Swp					
Center 2.015 GHz			Span 3.97	GHz	
#Res BW 1 MHz	#VE	3W1 MHz S	weep 6.64 ms (601	pts)	
File Operation Stat	tus, C:\HCT.GI	IF file saved			

## ■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions1

## WCDMA1900 MODE (9400 CH.) Condcted Spurious Emissions2

🔆 Ag	ilent								R	2 T	Config I/0
Nautiz	X3 Con	d Spur	<u>C</u> h.980	0				Mkr:	1 14.2	67 GHz	GPIB
Ref 24	dBm		Atten	10 dB					-38.1	0 dBm	Address
#Peak											17
Log											
10											IP Address
dB/											203.238.200.227
0ffst											
27.4 JR											Host Name,
											HCTRF
UI 12.0											
-15.0 dBm											Subnet Mack
											255 255 255 0
LgHV							1				233.233.233.0
111 00						4	Ŷ				Gateway
VI 32 83 EC		and start	and the second second	Had March and March	humber	white work in	and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mental wherease	NWWWWW	Address
	and the second	Alteria a									203.238.200.194
<b>s</b> (f):											
ETun											SCDT LON .
Swn											SUFILMA
Jub											
Center	12.000	) GHz							Span 1	.6 GHz	
#Res B	W 1 MH	z		#V	BW 1 M	Hz	Swe	eep 40	ms (60	1 pts)	
File 0	peratio	n Stat	us, C:Y	HCT.6	IF file	saved					

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🔆 Ag	ilent								F	? Т	Config I/0
Nautiz	X3 Con	d Spur	Ch.993	8				Mk	r1 3.8	15 GHz	GPIB
Ref 24	dBm		Atten	10 dB					-39.3	9 dBm	Address
#Peak Log											17
LU9 10											ID Addross
dB7											203 238 200 227
Offst											
27.4											Host Name
dB											HCTRF
DI 12.0											
-13.0 dBm											Subnet Mask
LaAv											255.255.255.0
29114										1	
V1 S2										<b>^</b>	Gateway
\$3 FC	wertwith	, they have a star	and the state of the	monter	viewig the w	a harrow	erminer but	mappy Man	man hall had manage	harrylynne	Hddress
AA A ( D)	<b>1</b>										203.230.200.194
£(†):											CODILION
FTUN Swin											SUPILHN +
νπμ											
<u> </u>		<u></u>									
Lenter	2.015 11 1 MU	GHZ					S	ن م د د ۸	pan 3.%	17 GHZ	
#Res B	WIMH	Z		#V	DMIN	IHZ	5Wee	р <b>б.</b> 64	ms (60	i pts)	
File 0	peratio	n Stat	us, C:\	HCT.6	IF file	saved					

## ■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions1

## ■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions2

* Agilent R T	Config I/0				
Nautiz X3 Cond Spur Ch.9938 Mkr1 14.240 GHz	GPIB				
#Peak	Address 17				
Log					
	IP Hddress 203.238.200.227				
Offst	200120012001221				
dB	Host Name,				
	HCTRF				
-13.0 dBm	Subnet Mask				
LgAv	255.255.255.0				
	Gateway				
S3 FC malos al water and share and the stand of the stand	Address				
	203.238.200.194				
E(f):	SCPI LAN >				
Swp					
Center 12.000 GHz Span 16 GHz					
File Operation Status, C+\HCT GTE file saved					

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