TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Numerex Corp
Digi Cell Anynet

To: FCC Part 22: 2006 (Subpart H) and FCC Part 24: 2006 (Subpart E)
(selected parts only)

Test Report Serial No:
RFI/RPTE2/RP72605JD08A

Supersedes Test Report Serial No:
RFI/RPTE1/RP72605JD08A

This Test Report Is Issued Under The Authority Of Michael Derby, Radio Performance Service Leader: 	
Tested By: Nirav Modi  **pp**	**Checked By: Michael Derby** 
Report Copy No: PDF01	
Issue Date: 08 August 2007	**Test Dates: 25 June 2007**

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1. Client Information

Company Name:	Numerex Corp
Address:	1600 Parkwood Circle Suite 200 Atlanta GA 30339 USA
Contact Name:	Mr E Jansson

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Description:	Network Access Module
Brand Name:	Uplink
Model Name or Number:	Digi Cell Anynet
Serial Number:	1010081265
Hardware Version:	None Stated
Software Version:	None Stated
FCC ID Number:	TWV002557X
Country of Manufacture:	Japan
Date of Receipt:	21 June 2007

2.2. Accessories

No accessories were supplied with the EUT.

2.3. Description of EUT

The equipment under test is a Network Access Module.

2.4. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.5. Additional Information Related to Testing

Power Supply Requirement:	DC Supply of 12 V		
Intended Operating Environment:	Commercial Light Industry		
Equipment Category:	GSM/GPRS		
Type of Unit:	Base Station (Fixed Use)		
Transmit Frequency Range GSM 850:	824 MHz to 849 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	128	824.2
	Middle	190	836.6
	Top	251	848.8
Receive Frequency Range GSM 850:	869 MHz to 894 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	128	869.2
	Middle	190	881.6
	Top	251	893.8
Maximum Power Output at GSM 850 (ERP):	32.8 dBm		
Transmit Frequency Range GSM 1900:	1850 MHz to 1910 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8
Receive Frequency Range GSM 1900:	1930 MHz to 1990 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	512	1930.2
	Middle	660	1959.8
	Top	810	1989.8
Maximum Power Output at GSM 1900 (EIRP):	28.4 dBm		

2.6. Port Identification

Port	Description	Type/Length	Applicable
1	Enclosure	-	Yes
2	DC In	2 Core, 2m	Yes
3	O/P1	2 Pin	No
4	O/P2	2 Pin	No
5	In 1	2 Pin	No
6	In 2	2 Pin	No
7	In 3	2 Pin	No
8	In 4	2 Pin	No
9	serial	6 Pin, 1m	No

2.7. Support Equipment

Description:	Radio Communication Tester
Brand Name:	Rhode & Schwarz
Model Name:	CMU200
Serial Number:	1100.0008.02
Cable Length & Type:	1.5m, Utiflex
Connected to Port:	Not Applicable, connected over air

3. Test Specification, Methods and Procedures

Reference:	FCC Part 22: 2006 Subpart H (Cellular Radiotelephone Service)
Title:	Code of Federal Regulations, Part 22 (47CFR22) Personal Communication Services.

Reference:	FCC Part 24: 2006 Subpart E (Broadband PCS)
Title:	Code of Federal Regulations, Part 24 (47CFR24) Personal Communication Services.

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003
Land Mobile Communications Equipment, Measurements and performance Standards

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)
Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.2. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

There were no deviations from the test specification.

Only the ERP and EIRP sections of the test were performed, at the request of Numerex Corp.

5. Operation of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

GSM 850 Transmit

GSM 1900 Transmit

5.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:

Powered via 12 V DC supply.

RF air link to test set.

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Compliancy Status
Transmitter Effective Radiated Power (ERP)	C.F.R. 47 FCC Part 22: 2006 Section 22.913(a)	Antenna	Complied
Transmitter Equivalent Isotropic Radiated Power (EIRP)	C.F.R. 47 FCC Part 24: 2006 Section 24.232	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of
RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, UK.

7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

7.2. Transmitter Effective Radiated Power (ERP): Section 22.913(a)

The EUT was configured for effective radiated power, as described in section 8 of this report.

Tests were performed to identify the maximum effective radiated power (ERP).

Results:

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	31.4	38.4	7.0	Complied
Middle	836.6	32.5	38.4	5.9	Complied
Top	848.8	32.8	38.4	5.6	Complied

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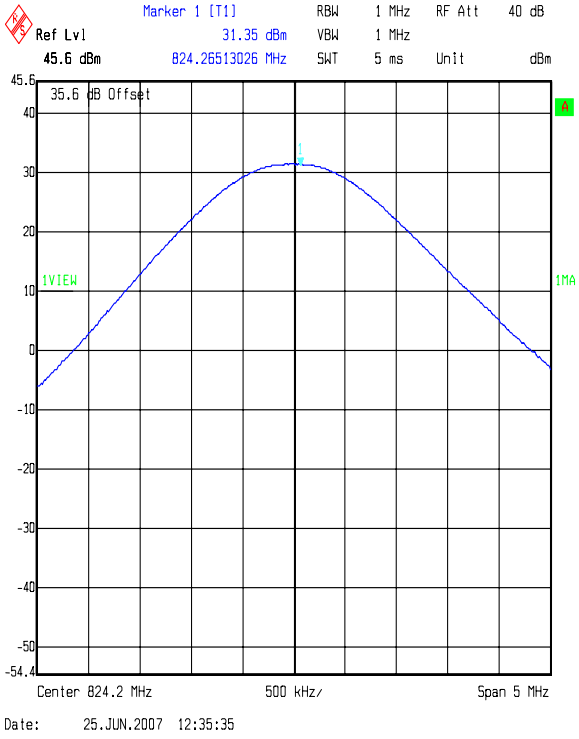
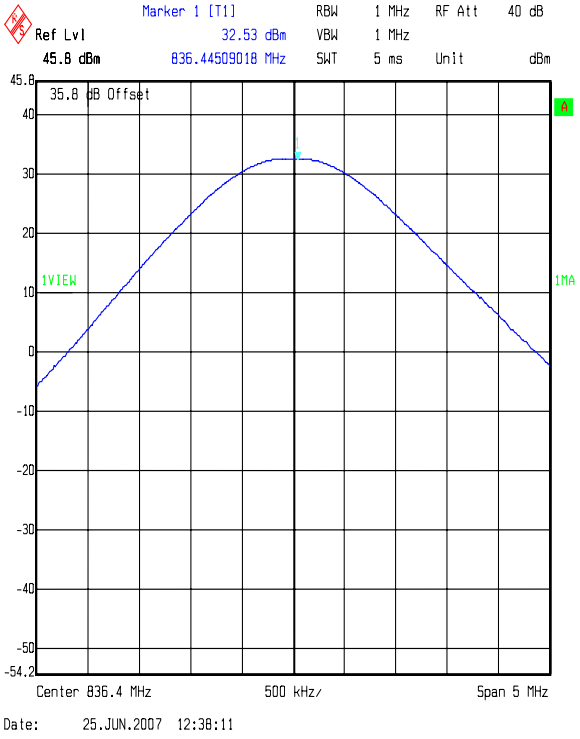
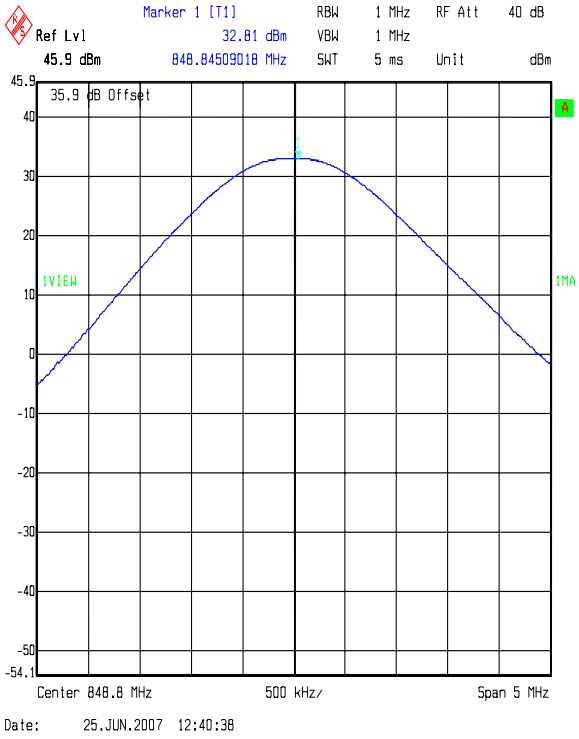
Transmitter Effective Radiated Power (ERP): Section 22.913(a) (Continued)







7.2.1. Transmitter Equivalent Isotropic Radiated Power (EIRP): Section 24.232

The EUT was configured for effective isotropic radiated power, as described in section 8 of this report.

Tests were performed to identify the maximum effective isotropic radiated power (EIRP).

Results:

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Vertical	26.5	33.0	6.5	Complied
Middle	1879.8	Vertical	28.3	33.0	4.7	Complied
Top	1909.8	Vertical	28.4	33.0	4.6	Complied

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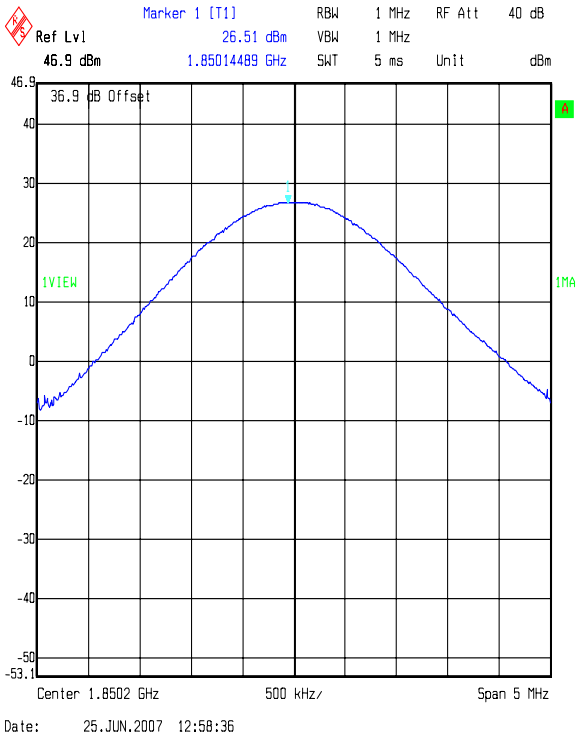
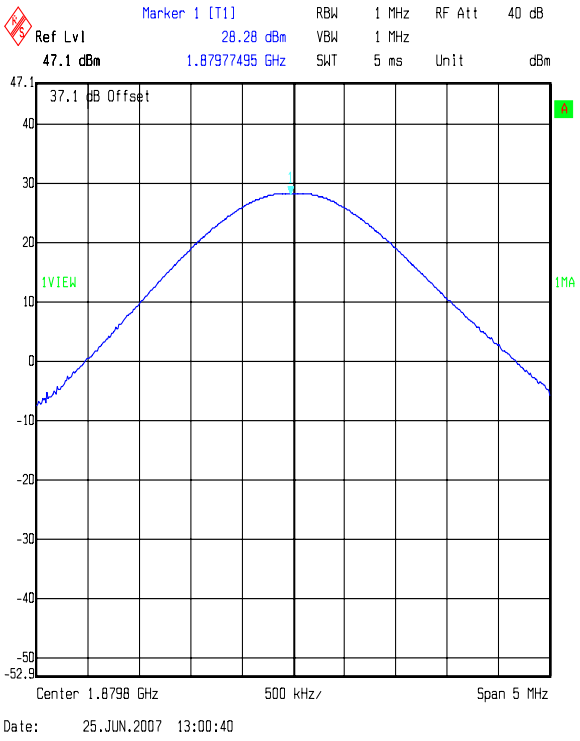
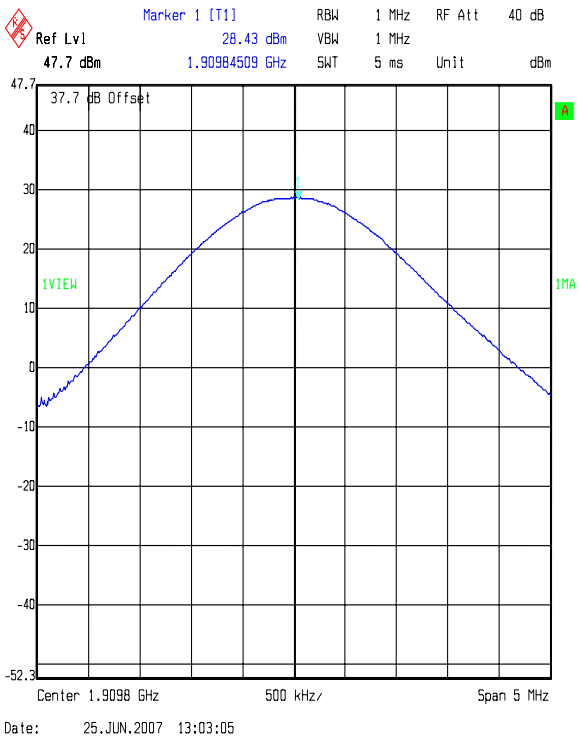
Transmitter Effective Radiated Power (ERP): Section 22.913(a) (Continued)







8. Methods and Procedures

8.1. Transmitter Radiated Emissions

Radiated emission measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial pre-scans covering the entire measurement band from the lowest generated frequency declared up to 10 times the highest fundamental frequency. The scans were performed within a screened chamber in order to identify frequencies on which the EUT was generating spurious. This procedure identified the frequencies from the EUT, which required further examination. Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. A limit line was set to the specification limit by characterising the screen room using a known signal source set at exactly the same location as the EUT. The signal source was derived from either a horn antenna or a dipole dependant on the frequency band under investigation. Any levels within 20 dB of this limit were measured where possible, on occasion; the receiver noise floor came within the 20 dB boundary. On these occasions, the system noise floor may have been recorded.

An open area test site using the appropriate test distance and measuring receiver with a peak detector was used for final measurements at each frequency recorded in the screen room.

The levels were maximised by initially rotating the turntable through 360° and then varying the antenna height between 1 m and 4 m in the vertical polarisation. At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT. The procedure was repeated for the horizontal polarisation.

Once the final amplitude (maximised) had been obtained, the EUT was substituted with a substitution antenna. For EIRP measurements a horn antenna whose gain was based on an isotropic antenna was used, ERP measurements were done using a dipole. The centre of the substitution antenna was set to approximately the same centre location as the EUT. The substitution antenna was set to the horizontal polarity. The substitution antenna was matched into a signal generator using a 6 dB or greater attenuator. The signal generator was tuned to the EUT's frequency under test.

The test antenna was then raised and lowered to obtain a maximum reading on the spectrum analyser. The level of the signal generator output was then adjusted until the maximum recorded EUT level was observed. The signal generator level was noted. This procedure was repeated with both test antenna and substitution antenna vertically polarised. The radiated power was calculated as:-

EIRP/ERP = Signal Generator Level - Cable Loss + Antenna Gain

Transmitter Radiated Emissions (Continued)

The limit in the standard states that emissions shall be attenuated by at least 43+10 log (P) dB below the transmitter power (P), where (P) is the maximum measured fundamental power for the channel under test. This limit always reduces to -13dBm therefore, the limit line presented on the accompanying plots is set to -13dBm.

Any spurious measured were then compared to the -13dBm limit. The requirement is for the emission to be less than -13dBm. The margin between emission and limit is recorded and should always be positive to indicate compliance.

It should be noted that FCC Part 22.917 states that the 1st MHz band immediately adjacent to the applicants declared frequency block may be measured using a resolution bandwidth of at least 1% of the emission bandwidth. This bandwidth was found by calculating 1% of the bandwidth measured in the transmitter occupied bandwidth section of this report. The next largest available bandwidth above this calculated figure was, therefore, used i.e. 3 kHz.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A028	Horn Antenna	Eaton	91888-2	304	08 Jun 2006	36
A059	Log Periodic Antenna	EMCO	3146	8902-2378	09 May 2006	12
C1065	Cable	Rosenberger	UFA210-1-7872	0985	06 Jun 2007	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986_022	08 Sep 2006	12
S202	3m OATS	RFI	2	S202-15011990	17 Nov 2006	12

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule. All equipment was in calibration at the time of the test.

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