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CERTIFICATE OF COMPLIANCE FCC Part 22 Certification

Dates of Tests: February 03 ~ 10, 2009 Test Report S/N: DR50110902J Test Site: DIGITAL EMC CO., LTD.

Model No.

R2NSXT-4080

APPLICANT

EpiValley Co., Ltd.

Classification : Licensed Non-Broadcast Station Transmitter (TNB)

FCC Rule Part(s) : §22(H), §2

EUT Type : CDMA 1x Fixed Wireless Terminal

Model name : SXT-4080

Serial number : Identical prototype
TX Frequency Range : 824.70 ~848.31 MHz
RX Frequency Range : 869.70 ~893.31 MHz

Max. RF Output Power : 0.476 W ERP(26.78 dBm)

Emission Designators: : 1M28F9W

Date of Issue : February 14, 2009

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MEASUREMENT REPORT

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

§2.1033 General Information

Applicant: EpiValley Co., Ltd.

Address: Roadland EZ Tower #511, 513, Gumi-dong, Bundang-Gu

Sunganam-City, Kyunggi-Do, 463-500, Korea

Attention: Woo Won Choung

• FCC ID: R2NSXT-4080

Quantity: Quantity production is planned

Emission Designators: 1M28F9W

Tx Freq. Range: 824.70 ~ 848.31 MHz
 Rx Freq. Range: 869.70 ~ 893.31 MHz

• Max. Power Rating: 0.476 W ERP(26.78 dBm)

• FCC Classification(s): Licensed Non-Broadcast Station Transmitter (TNB)

• Equipment (EUT) Type: CDMA 1x Fixed Wireless Terminal

• Frequency Tolerance: $\pm 0.00025 \% (2.5ppm)$

• FCC Rule Part(s): §22(H), §2

• Dates of Tests: February 03 ~ 10, 2009

Place of Tests: DIGITAL EMCTest Report S/N: DR50110902J

2.1. General Information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address: 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

http://www.digitalemc.com E-mail: harveysung@digitalemc.com

Tel: +82-31-321-2664 Fax: +82-31-321-1664

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competents of calibration and testing laboratory".

Test operator: engineer

February 14, 2009 Dong-Chul CHA

Data Name Signature

Report Reviewed By: manager

February 14, 2009 Harvey Sung

Data Name Signature

Ordering party:

Company name : EpiValley Co., Ltd.

Address : Roadland EZ Tower #511, 513, Gumi-dong, Bundang-Gu,

Zipcode : 463-500

City/town : Sungnam-City, Kyunggi-Do

Country : Korea

Date of order : January 06, 2009

3.1 DESCRIPTION OF TESTS

3.1.1 Occupied Bandwidth Emission Limits

- (a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P) dB$.
- (b) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- (c) The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

3.1.2 Occupied Bandwidth

The 99% power bandwidth was measured with a calibrated spectrum analyzer.

3.1.3 Spurious and Harmonic Emissions at Antenna Terminal

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

3.1.5 Radiation Spurious and Harmonic Emissions

Radiation and harmonic emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna.

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

(Continued...)

3.1.6 Frequency Stability/Temperature Variation.

The frequency stability of the transmitter is measured by:

- a) **Temperature**: The temperature is varied from -30°C to +50°C increments using an environmental chamber.
- b) **Primary Supply Voltage**: The primary supply voltage is varied from 85% to 115% of the normal voltage for non hand-carried battery equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

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 $\pm 0.00025(\pm 2.5 \text{ppm})$ of the center frequency.

Time Period and Procedure:

- 1. The carrier frequency of the transmitter is measured at room temperature (25°C to 27 °C to provide a reference)
- 2. The equipment is tuned 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.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C up to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

(Continued...)

3.1.7 Radiated Emission

Final test was performed according to ANSI C63.4-2003 at the open field test site. There are no deviations from the standard.

The EUT was placed in a 0.8m high table along with the peripherals. The turn table was separated from the antenna distance 3meters. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for maximum.

The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. Reported are maximized emission levels.

These tests were performed at 120kHz of 6dB bandwidth.

3.1.8 Conducted Emission

The power line conducted interference measurements were performed according to ANSI C63.4-2003 in a shielded enclosure with peripherals placed on a table, 0.8m high over a metal floor. It was located more than required distance away from the shielded enclosure wall. There are no deviations from the standard.

The EUT was plugged into the LISN and the frequency range of interest scanned.

Reported are maximized emission levels.

These tests were performed at 9kHz of 6dB bandwidth.

4.1 TEST DATA

4.1.1 Conducted Output Power

The output power was measured under all R.C.s and S.O.s which are listed below measurement data. The worst case output power is reported with SO55 of RC3.

Therefore this device was tested under SO55 of RC3.

- Measurement data

	Channel	1X RRT						
Band		RC1	RC1	RC3	RC3	RC3	RC3	
		SO2	SO55	SO2	SO55	SO32 (Only FCH)	SO32 (TDSO)	
	1013	23.60	23.50	23.54	23.60	-	-	
Cellular	384	24.05	24.05	24.06	24.08	-	-	
	777	22.24	22.25	22.09	22.37	-	-	

⁻ This device does not support RC3 SO32(only FCH) and RC3 SO32(TDSO)

4.1.2 Effective Radiated Power Output

A. POWER: High (Cellular Mode)

Freq. Tuned (MHz)	REF. LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)	Supplied Power	Note
824.70	-12.39	V	0.320	25.05	Adaptor	RC3 SO55
836.52	-11.13	V	0.476	26.78	Adaptor	RC3 SO55
848.31	-13.19	V	0.277	24.43	Adaptor	RC3 SO55

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 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. 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.

4.1.3 CDMA Radiated Measurements

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.7 MHz

CHANNEL : <u>1013(Low)</u>

MEASURED OUTPUT POWER : 25.05 dBm = 0.320 W

MODULATION SIGNAL : CDMA (Internal)

DISTANCE: 3 meters

LIMIT : $43 + 10 \log_{10} (W) = 38.05$ dBc

Freq.	LEVEL@	SUBSTITUTE	CORRECT	POL	
(MHz)	ANTENNA	ANTENNA	GENERATOR	(H/V)	
	TERMINALS	GAIN	LEVEL		(dBc)
	(dBm)	(dBd)	(dBm)		
1649.40	-33.27	5.92	-27.35	Н	-52.40
1649.40	-34.26	5.92	-28.34	V	-53.39
2474.10	-48.02	7.38	-40.64	Н	-65.69
2474.10	-45.96	7.38	-38.58	V	-63.63
-	-	-	-	-	-

NOTE

Radiated Spurious Emission 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. 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. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

4.1.3 CDMA Radiated Measurements

(Continued...)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.52 MHz

CHANNEL: 384(Mid)

MEASURED OUTPUT POWER : $\underline{26.78}$ dBm = $\underline{0.476}$ W

MODULATION SIGNAL : CDMA (Internal)

DISTANCE: 3 meters

LIMIT : $43 + 10 \log_{10} (W) = 39.78$ dBc

Freq.	LEVEL@	SUBSTITUTE	CORRECT	POL	
(MHz)	ANTENNA	ANTENNA	GENERATOR	(H/V)	
	TERMINALS	GAIN	LEVEL		(dBc)
	(dBm)	(dBd)	(dBm)		
1673.04	-34.04	6.01	-28.03	Н	54.81
1673.04	-35.94	6.01	-29.93	V	56.71
2509.56	-52.29	7.39	-44.90	Н	71.68
2509.56	-50.87	7.39	-43.48	V	70.26
-	-	-	-	-	-

NOTE

Radiated Spurious Emission 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. 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. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

4.1.3 CDMA Radiated Measurements

(Continued...)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 848.31 MHz

CHANNEL: 777(High)

MEASURED OUTPUT POWER : $\underline{24.43}$ dBm = $\underline{0.277}$ W

MODULATION SIGNAL : CDMA (Internal)

DISTANCE: 3 meters

LIMIT : $43 + 10 \log_{10} (W) = 37.43$ dBc

Freq.	LEVEL@	SUBSTITUTE	CORRECT	POL	
(MHz)	ANTENNA	ANTENNA	GENERATOR	(H/V)	
	TERMINALS	GAIN	LEVEL		(dBc)
	(dBm)	(dBd)	(dBm)		
1696.62	-32.43	6.10	-26.33	Н	50.76
1696.62	-33.60	6.10	-27.50	V	51.93
2544.93	-54.07	7.39	-46.68	Н	71.11
2544.93	-54.17	7.39	-46.78	V	71.21
-	-	-	-	-	-

NOTE

Radiated Spurious Emission 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. 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. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

4.1.4 Frequency Stability (CDMA)

OPERATING FREQUENCY : 836,520,009 Hz

CHANNEL: 0384(Mid)

REFERENCE VOLTAGE : 120 VAC

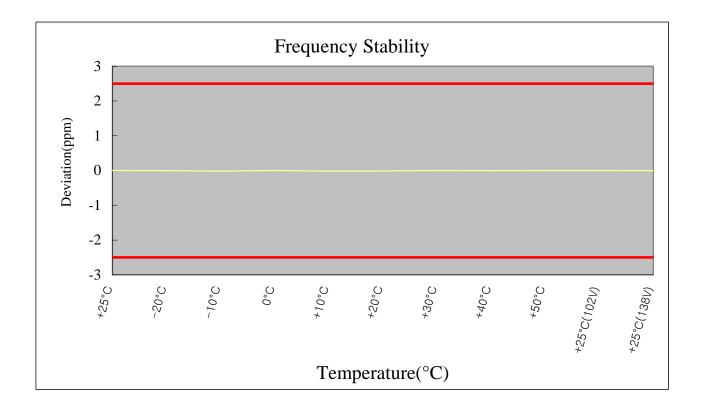
DEVIATION LIMIT : ± 0.00025 % or 2.5 ppm

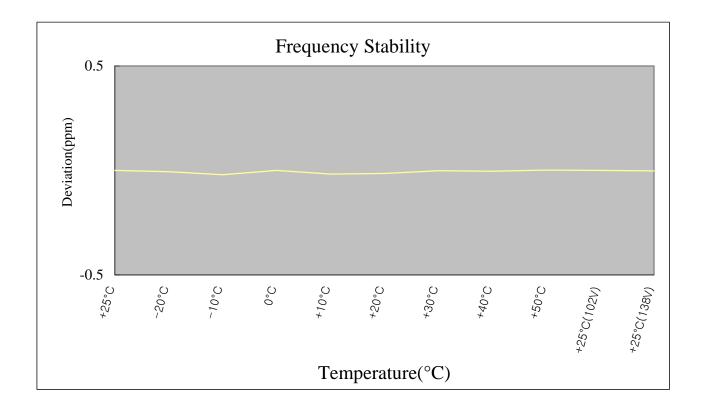
VOLTAGE	POWER	TEMP	FREQ	Deviation
(%)	(VAC)	(dB)	(Hz)	(%)
100%	120	+25(Ref)	836,520,009	0.000000
100%		-30	-	-
100%		-20	836,520,004	-0.000001
100%		-10	836,519,992	-0.000002
100%		0	836,520,009	0.000000
100%		+10	836,519,994	-0.000002
100%		+20	836,519,997	-0.000001
100%		+30	836,520,008	0.000000
100%		+40	836,520,006	0.000000
100%		+50	836,520,010	0.000000
85%	102	+25	836,520,009	0.000000
115%	138	+25	836,520,007	0.000000
BATT.ENDPOINT	-	-	-	-

Note: This device does not operate at -30 $^{\circ}$ C.

4.1.4 Frequency Stability (CDMA)

(Continued...)





5.1 PLOTS OF EMISSIONS

(SEE ATTACHMENT "Test Plots")

6.1 LIST OF TEST EQUIPMENT

	Туре	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
\boxtimes	Spectrum Analyzer	Agilent	E4440A	06/11/08	06/11/09	MY45304199
	Spectrum Analyzer(RE)	H.P	8563E	13/10/08	13/10/09	3551A04634
	Spectrum Analyzer	Rohde Schwarz	FSP	09/09/08	09/09/09	100385
	Power Meter	H.P	EMP-442A	10/07/08	10/07/09	GB37170413
	Power Sensor	H.P	8481A	14/07/08	14/07/09	3318A96332
	Power Divider	Agilent	11636B	04/12/08	04/12/09	56471
\boxtimes	Power Splitter	Anritsu	K241B	14/10/08	14/10/09	020611
	Frequency Counter	H.P	5342A	16/09/08	16/09/09	2119A04450
	TEMP & HUMIDITY Chamber	JISCO	KR-100/J-RHC2	10/10/08	10/10/09	30604493/021031
\boxtimes	Digital Multimeter	H.P	34401A	20/03/08	20/03/09	3146A13475
	Thermo hygrograph	SATO	NS II-Q	06/10/08	06/10/09	1503512
	Thermo hygrograph	SATO	NS II-Q	17/10/08	17/10/09	1506426
	Multifuction Synthesizer	HP	8904A	06/10/08	06/10/09	3633A08404
\boxtimes	Signal Generator	Rohde Schwarz	SMR20	02/04/08	02/04/09	101251
\boxtimes	Signal Generator	H.P	ESG-3000A	09/07/08	09/07/09	US37230529
	Vector Signal Generator	Rohde Schwarz	SMJ100A	02/02/09	02/02/10	100148
	Audio Analyzer	H.P	8903B	09/07/08	09/07/09	3011A09448
	Modulation Analyzer	H.P	8901B	18/07/08	18/07/09	3028A03029
\boxtimes	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	31/07/08	31/07/09	GB43461134
	Universal Radio communication Tester	Rohde Schwarz	CMU 200	02/04/08	02/04/09	107631
	Bluetooth Tester	TESCOM	TC-3000A	16/12/08	16/12/09	3000A4A0121
\boxtimes	BAND Reject Filter	Microwave Circuits	N0308372	06/10/08	06/10/09	3125-01DC0352
	BAND Reject Filter	Wainwright	WRCG1750	06/10/08	06/10/09	2
	High-Pass Filter	ANRITSU	MP526D	06/10/08	06/10/09	MP27756
	High-pass filter	Wainwright	WHKX2.1	N/A	N/A	1
	High-Pass Filter	Wainwright	WHKX3.0	N/A	N/A	9
	Tunable Notch Filter	Wainwright	WRCT800.0 /960.0-0.2/40-8SSK	N/A	N/A	10
	Tunable Notch Filter	Wainwright	WRCD1700.0 /2000.0-0.2/40-10SSK	N/A	N/A	27
	Tunable Notch Filter	Wainwright	WRCT1900.0/ 2200.0-5/40-10SSK	N/A	N/A	7
\boxtimes	AC Power supply	DAEKWANG	5KVA	20/03/08	20/03/09	20060321-1
	DC Power Supply	HP	6622A	20/03/08	20/03/09	3448A03760
	DC Power Supply	HP	6633A	20/03/08	20/03/09	3524A06634
	HORN ANT	ETS	3115	13/06/08	13/06/09	6419
	HORN ANT	ETS	3115	10/09/08	10/09/09	21097
	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	154
	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	155

	Туре	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
\boxtimes	Dipole Antenna	Schwarzbeck	VHA9103	25/11/08	25/11/09	2116
\boxtimes	Dipole Antenna	Schwarzbeck	VHA9103	25/11/08	25/11/09	2117
	Dipole Antenna	Schwarzbeck	UHA9105	25/11/08	25/11/09	2261
	Dipole Antenna	Schwarzbeck	UHA9105	25/11/08	25/11/09	2262
	Coaxial Fixed Attenuators	Agilent	8491B	01/08/08	01/08/09	MY39260700
\boxtimes	Coaxial Fixed Attenuators	Agilent	8491B	15/07/08	15/07/09	MY39260699
	Attenuator (10dB)	WEINSCHEL	23-10-34	01/10/08	01/10/09	BP4386
	Attenuator (20dB)	WEINSCHEL	86-20-11	06/10/08	06/10/09	432
	Attenuator (10dB)	WEINSCHEL	86-10-11	06/10/08	06/10/09	446
\boxtimes	Attenuator (10dB)	WEINSCHEL	86-10-11	06/10/08	06/10/09	408
	Attenuator (40dB)	WEINSCHEL	57-40-33	01/10/08	01/10/09	NN837
	Attenuator (30dB)	JFW	50FH-030-300	24/03/08	24/03/09	060320-1
	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0088CAN	11/07/08	11/07/09	788
	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0185CAN	11/07/08	11/07/09	790
	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0215CAN	11/07/08	11/07/09	112
\boxtimes	Amplifier (30dB)	Agilent	8449B	13/10/08	13/10/09	3008A01590
	RF Power Amplifier	OPHIRRF	5069F	09/07/08	09/07/09	1006
	Software	Agilent	Benchlink	N/A	N/A	A.01.09 021211
	EMI TEST RECEIVER	R&S	ESU	02/02/09	02/02/10	100014
	BILOG ANTENNA	SCHAFFNER	CBL6112B	13/06/08	13/06/09	2737
	Amplifier (22dB)	H.P	8447E	27/02/08	27/02/09	2945A02865
	Position Controller	TOKIN	5905A	N/A	N/A	N/A
	Software	ToYo EMI	EP5/RE	N/A	N/A	Ver 2.0.800
	EMI TEST RECEIVER	R&S	ESCI	13/05/08	13/05/09	100364
	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	30/09/08	30/09/09	1098
	Biconical Antenna	Schwarzbeck	VHA9103	13/06/08	13/06/09	2233
	Amplifier (25dB)	Agilent	8447D	21/05/08	21/05/09	2944A10144
\boxtimes	Position Controller	TOKIN	5901T	N/A	N/A	14173
	Software	AUDIX	e3	N/A	N/A	Ver 3.0
	Driver	TOKIN	5902T2	N/A	N/A	14174
	Spectrum Analyzer(CE)	H.P	8591E	26/04/08	26/04/09	3649A05889
	LISN	Kyorits	KNW-407	04/08/08	04/08/09	8-317-8
	LISN	Kyorits	KNW-242	11/09/08	11/09/09	8-654-15
	CVCF	NF Electronic	4420	21/03/08	21/03/09	304935/337980
	Software	ToYo EMI	EP5/CE	N/A	N/A	Ver 2.0.801
	DC BLOCK	Hyuplip	KEL-007	N/A	N/A	7-1581-5
	50 ohm Terminator	НМЕ	CT-01	22/01/09	22/01/10	N/A
	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	11/09/08	11/09/09	4N-170-3

7.1 SAMPLE CALCULATIONS

A. Emission Designator

Emission Designator = 1M28F9W

CDMA BW = 1.2781 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

(Measured at the 99.75% power bandwidth)

8.1 CONCLUSION

The data collected shows that the **EpiValley Co., Ltd. CDMA 1x Fixed Wireless Terminal (FCC ID: R2NSXT-4080)** complies with all the requirements of Parts 2 and 22 of the FCC rules.