683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080
Tel: +82-31-321-2664 Fax: +82-31-321-1664
http://www.digitalemc.com

CERTIFICATE OF COMPLIANCE
FCC Part 22 Certification

Dates of Tests: August 02 ~ 10, 2005
Test Report S/N:DR50110508J
Test Site : DIGITAL EMC CO., LTD.

Model No. **NPQFCS8900**

APPLICANT **Telian Corporation**

Classification	:	**Licensed Portable Transmitter Held to Ear (PCE)**
FCC Rule Part(s)	:	**§22(H), §2**
EUT Type	:	**Single-Band Cellular Phone (CDMA)**
Model name	:	**FCS-8900**
Add Model name	:	**AVVIO 8000**
Serial number	:	**Identical prototype**
TX Frequency Range	:	**824.70 ~848.31 MHz (CDMA)**
RX Frequency Range	:	**869.70 ~893.31 MHz (CDMA)**
Max. RF Output Power	:	**0.673W ERP CDMA (28.28dBm)**
Max. SAR Measurement		**1.000W/kg CDMA Head SAR**
	:	**0.526W/kg CDMA Body SAR**
Emission Designators:	:	**1M27F9W**
Date of Issue	:	**August 18, 2005**

TABLE OF CONTENTS

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: Telian Corporation

Address: 5th FL. Namjeun Bldg, 53-3 Haan-Dong, Kwangmyung-Si, Kyunggi-Do, Korea

Attention: Edy Park

- FCC ID: NPQFCS8900
- Quantity: The mass product
- Tx Freq. Range: 824.70 ~848.31 MHz (CDMA)
- Rx Freq. Range: 869.70 ~893.31 MHz (CDMA)
- Max. Power Rating: 0.673W ERP CDMA (28.28dBm)
- FCC Classification(s): Licensed Portable Transmitter Held to Ear (PCE)
- Equipment (EUT) Type: Single-Band Cellular Phone (CDMA)
- Modulation(s): CDMA
- Frequency Tolerance: ± 0.00025 % (2.5ppm)
- FCC Rule Part(s): §22(H), §2
- Dates of Tests: August 02 ~ 10, 2005
- Place of Tests: DIGITAL EMC
- Test Report S/N: DR50110508J

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 : demc@unitel.co.kr
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".
This laboratory is accredited by NVLAP for NVLAP Lab. Code : 200559-0.

Test operator: engineer

August 18, 2005	Won-Jung LEE	
Data	Name	Signature

Report Reviewed By: manager

August 18, 2005	Harvey Sung	
Data	Name	Signature

Ordering party:

Company name	:	Telian Corporation
Address	:	5TH fl. Namjeun Bldg, 53-3 Haan-Dong
Zipcode	:	423-060
City/town	:	Kwangmyung-Si City, Kyunggi-Do
Country	:	KOREA
Date of order	:	July 26, 2005

3.1 INSERTS

Function of Active Devices (Confidential)

The Function of active devices are shown in Attachment K.

Block & Schematic Diagrams (Confidential)

The block diagrams are shown in Attachment I, and the schematic diagrams are shown in Attachment J.

Operating Instructions

The instruction manual is shown in Attachment K.

Tune-Up Procedure (Confidential)

The tune-up procedure is shown in Attachment L.

Parts List (Confidential)

The parts list is shown in Attachment M.

Description of Freq. Stabilization Circuit (Confidential)

The description of frequency stabilization circuit is shown in Attachment K.

Description for Suppression of Spurious Radiation, for Limiting Modulation, and Harmonic Suppresion Circuits (Confidential)

The description of suppression stabilization circuits is shown in Attachment K.

4.1 DESCRIPTION OF TESTS

4.2 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.

4.3 Occupied Bandwidth

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

4.4 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 10 GHz.

4.5 Frequencies

At the input terminals of the spectrum analyzer, an isolator (RF pad) and a high-pass filter are connected between the test transceiver (for conducted tests) or the receive antenna (for radiated tests) and the analyzer. The high-pass filter (signals below 1.6 GHz) is to limit the fundamental frequency from interfering with the measurement of low-level spurious and harmonic emissions and to ensure that the preamplifier is not saturated.

4.6 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.

4.1 DESCRIPTION OF TESTS (CONTINUED)

4.7 Frequency Stability/Temperature Variation.

The frequency stability of the transmitter is measured by:

a) **Temperature** :The temperature is varied from -30°C to + 60°C using an environmental chamber.
b) **Primary Supply Voltage** :The primary supply voltage is varied from 85% 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 minimum frequency stability shall be +/- 0.00025% at any time during normal operation.

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 ±0.00025(±2.5ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25°C to 27 °C to provide a reference)
2. The equipment is subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight ”soak” at 30°C(usually 14-16 hours),the equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency to the transmitter and the individual oscillators is made within a three minute interval after applying power to the transmitter.
4. Frequency measurements is made at 10°C interval up to room temperature. At least a period of one and one half hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency were made at 10intervals starting at 30°C up to +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

NOTE : The EUT is tested down to the battery endpoint.

4.1 DESCRIPTION OF TESTS (CONTINUED)

4.8 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.

4.9 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.

5.1 TEST DATA

5.2 Effective Radiated Power Output

A. POWER: **High (CDMA Mode)**

Freq. Tuned (MHz)	**REF. LEVEL** (dBm)	**POL** (H/V)	**ERP** (W)	**ERP** (dBm)	**Supplied Power**
824.70	-7.72	H	0.673	28.28	Standard
836.52	-8.82	H	0.507	27.05	Standard
848.31	-13.22	H	0.180	22.55	Standard

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

5.1 TEST DATA (CONTINUED)

5.3 CDMA Radiated Measurements

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 824.7 MHz
CHANNEL : 1013(Low)
MEASURED OUTPUT POWER : 28.28 dBm = 0.673 W
MODULATION SIGNAL : CDMA (Internal)
DISTANCE : 3 meters
LIMIT : 43 + 10 $\log_{10}$ (W) = 41.28 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBd)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	(dBc)
1649.4	-30.0	8.0	-22.00	H	50.28
2474.1	-51.6	9.1	-42.50	H	70.78
-	-	-	-	-	-

NOTE

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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.

5.1 TEST DATA (CONTINUED)

5.3 CDMA Radiated Measurements

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 836.52 MHz
CHANNEL : 0384(Mid)
MEASURED OUTPUT POWER : 28.28 dBm = 0.673 W
MODULATION SIGNAL : CDMA (Internal)
DISTANCE : 3 meters
LIMIT : $43 + 10 \log_{10} (W)$ = 41.28 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBd)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	(dBc)
1673.04	-28.7	8.0	-20.7	H	48.98
2509.56	-51.2	9.4	-41.8	H	70.08
-	-	-	-	-	-

NOTE

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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.

5.1 TEST DATA (CONTINUED)

5.3 CDMA Radiated Measurements

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 848.31 MHz
CHANNEL : 0777(High)
MEASURED OUTPUT POWER : 28.28 dBm = 0.673 W
MODULATION SIGNAL : CDMA (Internal)
DISTANCE : 3 meters
LIMIT : 43 + 10 $\log_{10}$ (W) = 41.28 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBd)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	(dBc)
1696.62	-32.0	8.1	-23.9	H	52.18
2544.93	-53.0	9.4	-43.6	H	71.88
-	-	-	-	-	-
-	-	-	-	-	-

NOTE

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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.

5.1 TEST DATA (CONTINUED)

5.4 Frequency Stability (CDMA)

OPERATING FREQUENCY : 836,520,010 Hz

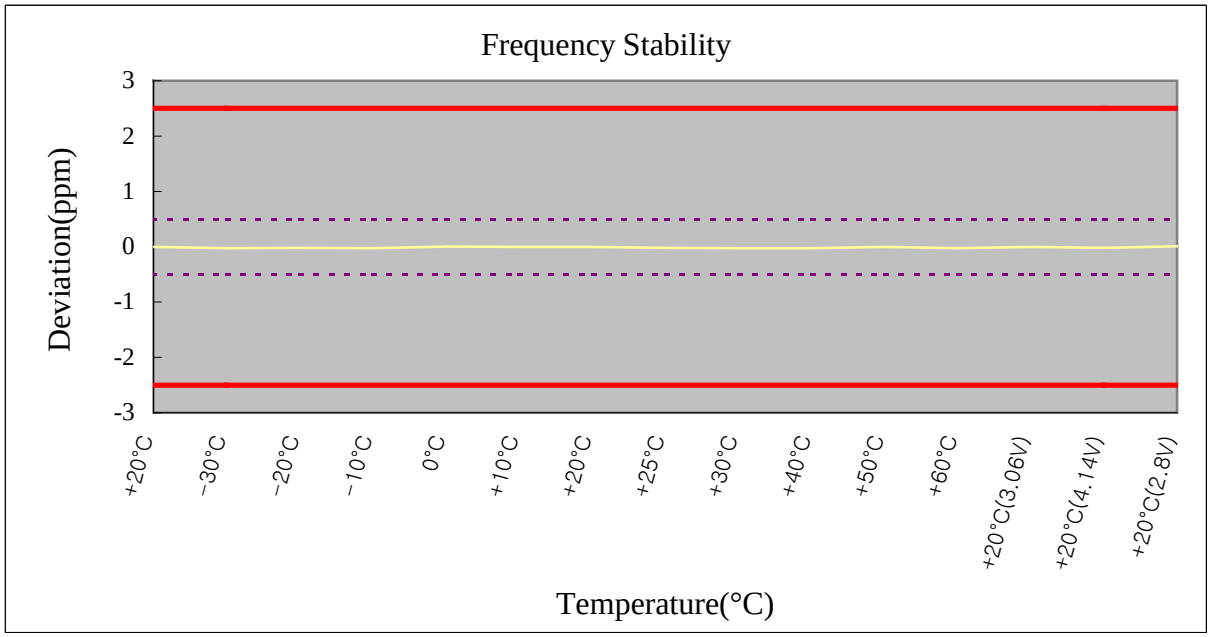
CHANNEL : 0384(Mid)

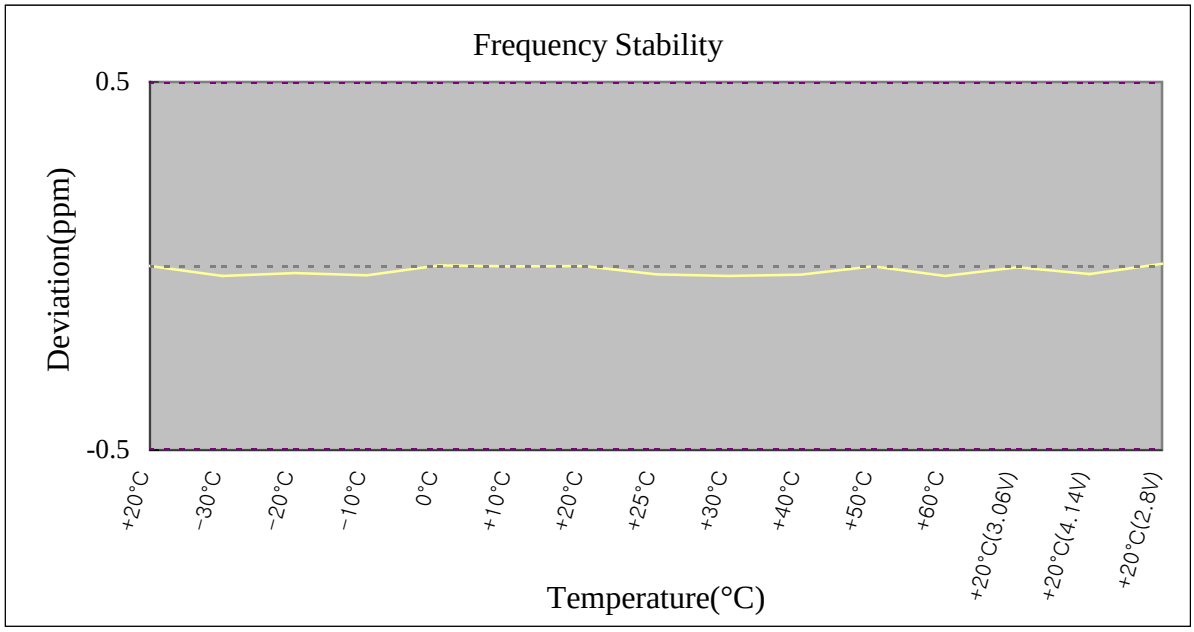
REFERENCE VOLTAGE : 3.6 VDC

DEVIATION LIMIT : ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	3.6	+20(Ref)	836520010	0.000000
100%		-30	836519988	-0.000003
100%		-20	836519994	-0.000002
100%		-10	836519989	-0.000003
100%		0	836520011	0.000000
100%		+10	836520009	0.000000
100%		+20	836520010	0.000000
100%		+25	836519991	-0.000002
100%		+30	836519987	-0.000003
100%		+40	836519990	-0.000002
100%		+50	836520009	0.000000
100%		+60	836519987	-0.000003
85%	3.06	+20	836520007	0.000000
115%	4.14	+20	836519992	-0.000002
BATT.ENDPOINT	2.80	+20	836520015	0.000001

5.4 Frequency Stability (CDMA) (Continued…)





5.1 TEST DATA (CONTINUED)

5.5 Radiated Emission

Distance: 3m

Frequency [㎒]	ANT Pol.	Reading [dB㎶]	T.F [dB]	Results [dB㎶/m]	Limits [dB㎶/m]	Margin [dB]
	No emissions were detected at a level greater than 10dB below limit.					

NOTE

1. There is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated.
2. Measurements above 1GHz is performed using a minimum resolution bandwidth of 1MHz. The EUT was tested up to the 10th harmonics and no significant emission was found.

6.1 PLOTS OF EMISSIONS

(SEE ATTACHMENT D)

7.1 LIST OF TEST EQUIPMENT

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	19/11/05	30601-01-6025569
02	Spectrum Analyzer	H.P	8563E	25/09/05	3551A04634
03	Power Meter	H.P	EPM-442A	04/07/06	GB37170413
04	Power Sensor	H.P	8481A	05/07/06	3318A96332
05	Frequency Counter	H.P	5342A	07/10/05	2119A04450
06	Multfunction Synthesizer	H.P	8904A	07/10/05	3633A08404
07	Signal Generator	Rohde Schwarz	SMR20	17/05/06	101251
08	Signal Generator	H.P	E4421A	05/07/06	US37230529
09	Audio Analyzer	H.P	8903B	07/07/06	3011A0944B
10	Modulation Analyzer	H.P	8901B	05/07/06	3028A03029
11	Oscilloscope	LeCroy	9314A	10/10/05	93144390
12	CDMA Mobile Station Test Set	H.P	8924C	07/10/05	US35360688
13	Power Splitter	WEINSCHEL	1593	07/10/05	332
14	BAND Reject Filter	Wainwright	WRCG824	07/10/05	SN1
15	BAND Reject Filter	Wainwright	WRCG1750	07/10/05	SN2
16	AC Power supply	DAEKWANG	5KVA	18/04/06	N/A
17	DC Power Supply	H.P	6622A	18/04/06	465487
18	Attenuator (30dB)	H.P	8498A	07/10/05	50101
19	Attenuator (10dB)	WEINSCHEL	23-10-34	07/10/05	BP4387
20	HORN ANT	EMCO	3115	06/03/07	6419
21	HORN ANT	EMCO	3115	04/25/07	21097
22	HORN ANT	A.H.Systems	SAS-574	09/11/06	154
23	HORN ANT	A.H.Systems	SAS-574	09/11/06	155
24	Dipole Antenna	Schwarzbeck	VHA9103	29/10/05	2116
25	Dipole Antenna	Schwarzbeck	VHA9103	29/10/05	2117
26	Dipole Antenna	Schwarzbeck	UHA9105	29/10/05	2261

7.1 TEST EQUIPMENT (CONTINUED)

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
27	Dipole Antenna	Schwarzbeck	UHA9105	29/10/05	2262
28	RFI/FIELD Iintensity Meter	Kyorits	KNM-504D	07/07/06	SN-161-4
29	Frequency Converter	Kyorits	KCV-604C	07/07/06	4-230-3
30	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	13/09/06	021031
31	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	29/10/05	1098
32	Biconical Antenna	Schwarzbeck	VHA9103	29/10/05	VHA91031946
33	Digital Multimeter	H.P	34401A	18/04/06	3146A13475
34	Attenuator (10dB)	WEINSCHEL	23-10-34	07/10/05	BP4386
35	High-Pass Filter	ANRITSU	MP526	12/05/06	M27756
36	Attenuator (3dB)	Agilent	8491B	15/09/05	58177
37	Amplifier (25dB)	Agilent	8447D	18/04/06	2944A10144
38	Position Controller	TOKIN	5901T	N/A	14173
39	Driver	TOKIN	5902T2	N/A	14174
40	Spectrum Analyzer	H.P	8591E	18/04/06	3649A05889
41	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	04/07/06	4N-170-3
42	LISN	Kyorits	KNW-407	11/08/06	8-317-8
43	LISN	Kyorits	KNW-242	11/08/06	8-654-15
44	CVCF	NF Electronic	4400	N/A	344536 4420064
45	Software	ToYo EMI	EP5/RE	N/A	Ver 2.0.800
46	Software	ToYo EMI	EP5/CE	N/A	Ver 2.0.801
47	Software	AUDIX	e3	N/A	Ver 3.0
48	Software	Agilent	Benchlink	N/A	A.01.09 021211

8.1 SAMPLE CALCULATIONS

A. Emission Designator

Emission Designator = 1M27F9W

CDMA BW = 1.27 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)
(Measured at the 99.75% power bandwidth)

9.1 CONCLUSION

The data collected shows that the **Telian Corporation.** Single-Mode Cellular Phone (CDMA) **FCC ID: NPQFCS8900** complies with all the requirements of Parts 2 and 22 of the FCC rules.

