



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: Nov. 04 ~ 15, 2004
 Test Report S/N:DR50110411K
 Test Site : DIGITAL EMC CO., LTD.

Model No.

NPQFTD8900

APPLICANT

Telian Corporation

Classification : Licensed Non-Broadcast Station Transmitter (TNB)
FCC Rule Part(s) : §22(H), §15, §2
EUT Type : AMPS/TDMA Cellular Phone
Model name : FTD-8900
Serial number : Identical prototype
Frequency Range : 824.04 ~ 848.97 MHz (AMPS)
 824.04 ~ 848.97 MHz (TDMA)
Max. RF Output Power : 0.232 W ERP AMPS (23.66dBm)
 1.306 W ERP TDMA (31.16dBm)
Max. SAR Measurement : 0.754W/kg AMPS Head SAR / 0.509W/kg AMPS Body SAR
 1.260W/kg TDMA Head SAR / 0.832W/kg TDMA Body SAR
Emission Designators: : 40K0F8W, 40K0F1D, 30K0DXW
Date of Issue : November 16, 2004

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



NVLAP LAB CODE 200559-0

TABLE OF CONTENTS

ATTACHMENT A:	COVER LETTER(S)
ATTACHMENT B:	ATTESTATION STATEMENT(S)
ATTACHMENT C:	TEST REPORT
 1.1 SCOPE	3
 2.1 INTRODUCTION	4
 3.1 INSERTS	5
 4.1 DESCRIPTION OF TESTS	6~9
 5.1 EFFECTIVE RADIATED POWER	10~11
 6.1 RADIATED SPURIOUS EMISSION	12~17
 7.1 FREQUENCY STABILITY	18~19
 8.1 MODULATION DEVIATION LIMITING	20~21
 9.1 AUDIO FREQUENCY RESPONSE	22~23
 10.1 EMISSION TEST DATA	24
 11.1 PLOT(S) OF EMISSIONS	25
 12.1 TEST EQUIPMENT	26~27
 13.1 SAMPLE CALCULATIONS	28
 14.1 CONCLUSION	29
ATTACHMENT D:	TEST PLOTS
ATTACHMENT E:	FCC ID LABEL & LOCATION
ATTACHMENT F:	TEST SETUP PHOTOGRAPHS
ATTACHMENT G:	EXTERNAL PHOTOGRAPHS
ATTACHMENT H:	INTERNAL PHOTOGRAPHS
ATTACHMENT I:	BLOCK DIAGRAM (S)
ATTACHMENT J:	SCHEMATIC DIAGRAM (S)
ATTACHMENT K:	OPERATIONAL / CIRCUIT DESCRIPTION
ATTACHMENT L:	PARTS LIST/TUNE UP PROCEDURE
ATTACHMENT M:	USER'S MANUAL
ATTACHMENT N:	SAR MEASUREMENTS REPORT
ATTACHMENT O:	SAR TEST PLOTS
ATTACHMENT P:	SAR TEST SETUP PHOTOGRAPHS
ATTACHMENT Q:	DIPOLE VALIDATION (S)
ATTACHMENT R:	PROBE CALIBRATION

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: 4th Fl, Nam Jeun B/D 53-3 Haan-Dong, Kwang Myung-Si, Kyung Gi-Do, KOREA

Attention: Kay Choi

Telian Corporation

- FCC ID: NPQFTD8900
- Quantity: Quantity production is planned (#58)
- Emission Designators: 40K0F8W, 40K0F1D, 30K0DXW
- Freq. Range: 824.04 ~ 848.97 MHz (AMPS)
824.04 ~ 848.97 MHz (TDMA)
- Max. Power Rating: 0.232 W ERP AMPS (23.66dBm)
1.306 W ERP TDMA (31.16dBm)
- FCC Classification(s): Licensed Non-Broadcast Station Transmitter (TNB)
- Equipment (EUT) Type: AMPS/TDMA Portable Cellular Phone
- Modulation(s): AMPS/TDMA
- Frequency Tolerance: ± 0.00025 % (2.5ppm)
- FCC Rule Part(s): §22(H), §15, §2
- Dates of Tests: November 04~15, 2004
- Place of Tests: DIGITAL EMC
- Test Report S/N: DR50110411K

2.1. General information's

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



November 16, 2004

Kyung-Taek LEE

Data

Name

Signature

Report Reviewed By: manager



November 16, 2004

Dong-Min JUNG

Data

Name

Signature

Ordering party:

Company name	:	TELIAN CORPORATION
Address	:	4th Fl, Nam Jeun B/D 53-3 Haan-Dong, Kwang Myung-Si
Zipcode	:	423-606
City/town	:	Kyung Gi-Do
Country	:	KOREA
Date of order	:	November 04, 2004

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 M.

Parts List & Tune-Up Procedure (Confidential)

The parts list & tune-up procedure is shown in Attachment L.

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 Supresion Circuits (Confidential)

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

4.1 DESCRIPTION OF TESTS

4.2 Transmitter Audio Frequency Response

The frequency response of the audio modulating circuit over the frequency range 100-5000Hz is measured. The audio signal generator is connected to the audio input circuit/microphone of the EUT. The audio signal input is adjusted to obtain 50% modulation at 1kHz and this point is taken as the 0dB reference. With the input held constant and below the limit at all frequency, the audio signal generator is varied from 100 to 50kHz.

4.3 Audio Low Pass Filter Frequency Response

The response in dB relative to 1kHz is measured using the HP8901 a Modulation Analyzer. For the frequency response of the audio low-pass filter, the audio input is connected at the input to the modulation limiter and the modulated stage. The audio output is connected at the output of the modulated stage. The corresponding plots are shown herein.

4.4 Modulation Limiting

The audio signal generator is connected to the audio put circuit/microphone of the EUT. The modulation response is measured for each of the three modulating frequencies(300Hz, 1000Hz and 3000Hz), and the input voltage is varied form 30% modulation ($\pm 3.6\text{kHz}$ deviation) to at least 20dB higher than the saturation point. Measurements of modulation and the plots are attached herein . Measurements were performed for ST, SAT and wide-band data modulations. The corresponding results are shown herein.

Note: ST, SAT and wide-band data were internally generated by the EUT.

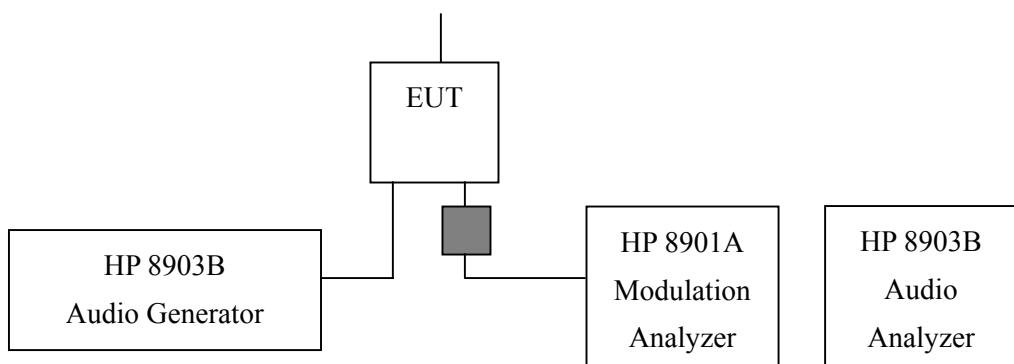


Fig. Transmitter Audio Frequency & Tone Test Setup.

4.1 DESCRIPTION OF TESTS (CONTINUED)

4.5 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.

4.6 Occupied Bandwidth

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

4.7 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.

At the input terminals of the spectrum analyzer, an isolator(RF circulator with one port terminated with 50ohms) and an 870 MHz to 890 MHz bandpass filter is connected between the test transceiver(for conducted tests)or the receive antenna(for radiated tests) and the analyzer . The rejection of the bandpass filter to signals in the 825-845 MHz range is adequate to limit the transmit energy from the test transceiver which appears to a level which will allow the analyzer to measure signals less than-90dBm. Calibration of the test receiver is performed in the 870-890 MHz range to insure accuracy to allow variation in the bandpass filter insertion loss to be calibrated.

4.8 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.

4.9 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)

4.10 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 (± 2.5 ppm) 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)

4.11 Radiated Emission

Final test was performed according to ANSI C63.4-2001 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.

4.12 Conducted Emission

The power line conducted interference measurements were performed according to ANSI C63.4-2001 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 (Analog Mode)

Freq. Tuned (MHz)	REF. LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)	Supplied Power
824.04	-13.60	H	0.232	23.66	Battery
836.52	-15.14	H	0.174	22.41	Battery
848.97	-14.58	H	0.186	22.69	Battery

Note: battery is options for this phone.

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 Effective Radiated Power Output****A. POWER: High (TDMA Mode)**

Freq. Tuned (MHz)	REF. LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)	Supplied Power
824.04	-6.34	H	1.306	31.16	Battery
836.52	-6.32	H	1.259	31.00	Battery
848.97	-6.14	H	1.294	31.12	Battery

Note: battery is options for this phone.

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.

6.1 TEST DATA

6.2 AMPS Radiated Measurements

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 824.04 MHz
 CHANNEL : 0991(Low)
 MEASURED OUTPUT POWER : 23.66 dBm = 0.232 W
 MODULATION SIGNAL : FM (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) =$ 36.66 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1648.08	-44.7	6.3	-38.4	H	62.06
2472.12	-42.9	9.1	-33.8	H	57.46
3296.16	-58.3	9	-49.3	H	72.96
4120.20	-69.3	9.5	-59.8	H	83.46
-	-	-	-	-	-

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.

6.1 TEST DATA (CONTINUED)**6.3 AMPS Radiated Measurements**Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 836.52 MHz
 CHANNEL : 0384(Mid)
 MEASURED OUTPUT POWER : 23.66 dBm = 0.232 W
 MODULATION SIGNAL : FM (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) =$ 36.66 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-45.8	6.3	-39.5	H	63.16
2509.56	-44.8	9.1	-35.7	H	59.36
3346.08	-57.2	9	-48.2	H	71.86
4182.60	-67.8	9.5	-58.3	H	81.96
-	-	-	-	-	-
-	-	-	-	-	-

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.

6.1 TEST DATA (CONTINUED)**6.4 AMPS Radiated Measurements**Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 848.97 MHz
 CHANNEL : 0799(High)
 MEASURED OUTPUT POWER : 23.66 dBm = 0.232 W
 MODULATION SIGNAL : FM (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) =$ 36.66 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1697.94	-44.2	6.3	-37.9	H	61.56
2546.91	-49.9	9.1	-40.8	H	64.46
3395.88	-53.5	9	-44.5	H	68.16
4244.85	-66.2	9.5	-56.7	H	80.36
-	-	-	-	-	-

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.

6.1 TEST DATA (CONTINUED)**6.5 TDMA Radiated Measurements**Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 824.04 MHz
 CHANNEL : 0991(Low)
 MEASURED OUTPUT POWER : 31.16 dBm = 1.306 W
 MODULATION SIGNAL : TDMA (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) = 44.16$ dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1648.08	-39.4	6.3	-33.1	H	64.26
2472.12	-39	9.1	-29.9	H	61.06
3296.16	-52.5	9	-43.5	H	74.66
4120.20	-62.3	9.5	-52.8	H	83.96
-	-	-	-	-	-
-	-	-	-	-	-

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.

6.1 TEST DATA (CONTINUED)**6.6 TDMA Radiated Measurements**Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 836.52 MHz
 CHANNEL : 0384(Mid)
 MEASURED OUTPUT POWER : 31.16 dBm = 1.306 W
 MODULATION SIGNAL : TDMA (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) = 44.16$ dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-41.2	6.3	-34.9	H	66.06
2509.56	-41.7	9.1	-32.6	H	63.76
3346.08	-53.3	9	-44.3	H	75.46
4182.60	-61.8	9.5	-52.3	H	83.46
-	-	-	-	-	-
-	-	-	-	-	-

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.

6.1 TEST DATA (CONTINUED)**6.7 TDMA Radiated Measurements**Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY : 848.97 MHz
 CHANNEL : 0799(High)
 MEASURED OUTPUT POWER : 31.16 dBm = 1.306 W
 MODULATION SIGNAL : TDMA (Internal)
 DISTANCE : 3 meters
 LIMIT : $43 + 10 \log_{10} (W) =$ 44.16 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1697.94	-42.5	6.3	-36.2	H	67.36
2546.91	-42.8	9.1	-33.7	H	64.86
3395.88	-51.5	9	-42.5	H	73.66
4244.85	-64.3	9.5	-54.8	H	85.96
-	-	-	-	-	-

NOTE

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

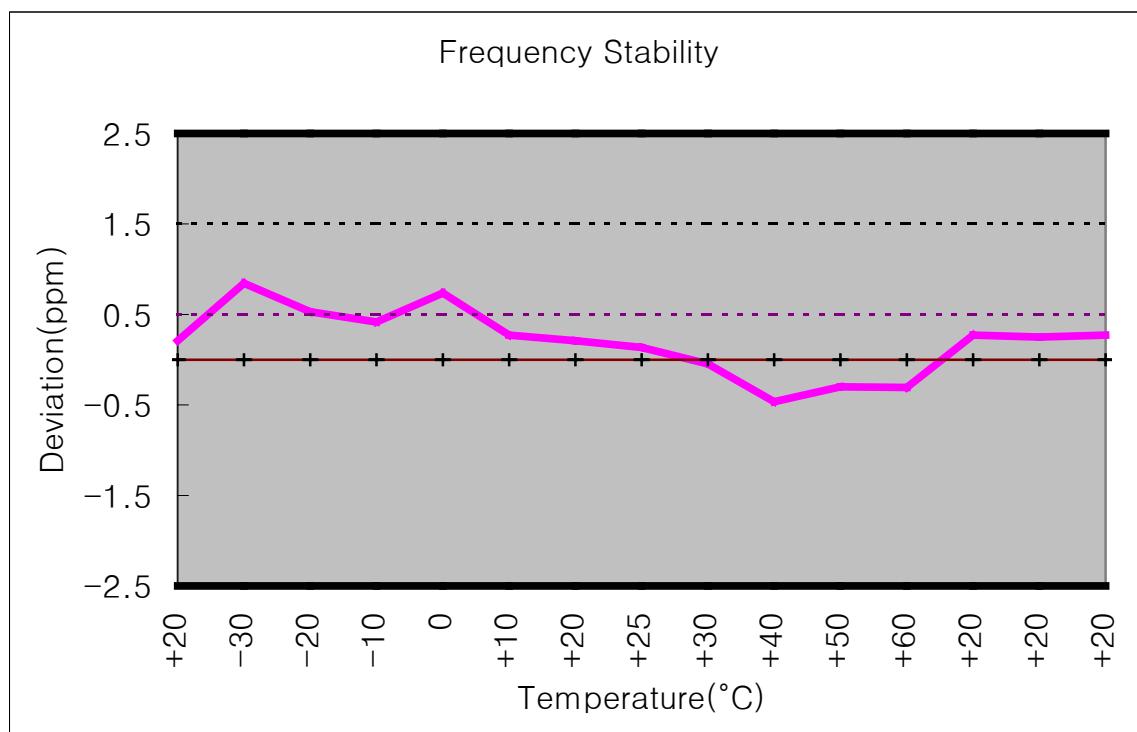
The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator 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.

7.1 TEST DATA

7.2 Frequency Stability (AMPS)

OPERATING FREQUENCY : 836,520,000 Hz
 CHANNEL : 0384(Mid)
 REFERENCE VOLTAGE : 3.7 VDC
 DEVIATION LIMIT ± 0.00025 % or 2.5 ppm
 :

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	3.7	+20(Ref)	835,520,175	0.000021
100%		-30	835,520,705	-0.000084
100%		-20	835,520,443	-0.000053
100%		-10	835,520,348	-0.000042
100%		0	835,520,616	-0.000074
100%		+10	835,520,227	-0.000027
100%		+20	835,520,175	-0.000021
100%		+25	835,520,113	-0.000014
100%		+30	835,519,961	0.000005
100%		+40	835,519,612	0.000046
100%		+50	835,519,749	0.000030
100%		+60	835,519,743	0.000031
85%	3.2	+20	835,520,227	-0.000027
115%	4.2	+20	835,520,209	-0.000025
BATT.ENDPOINT	3.2	+20	835,520,227	-0.000027

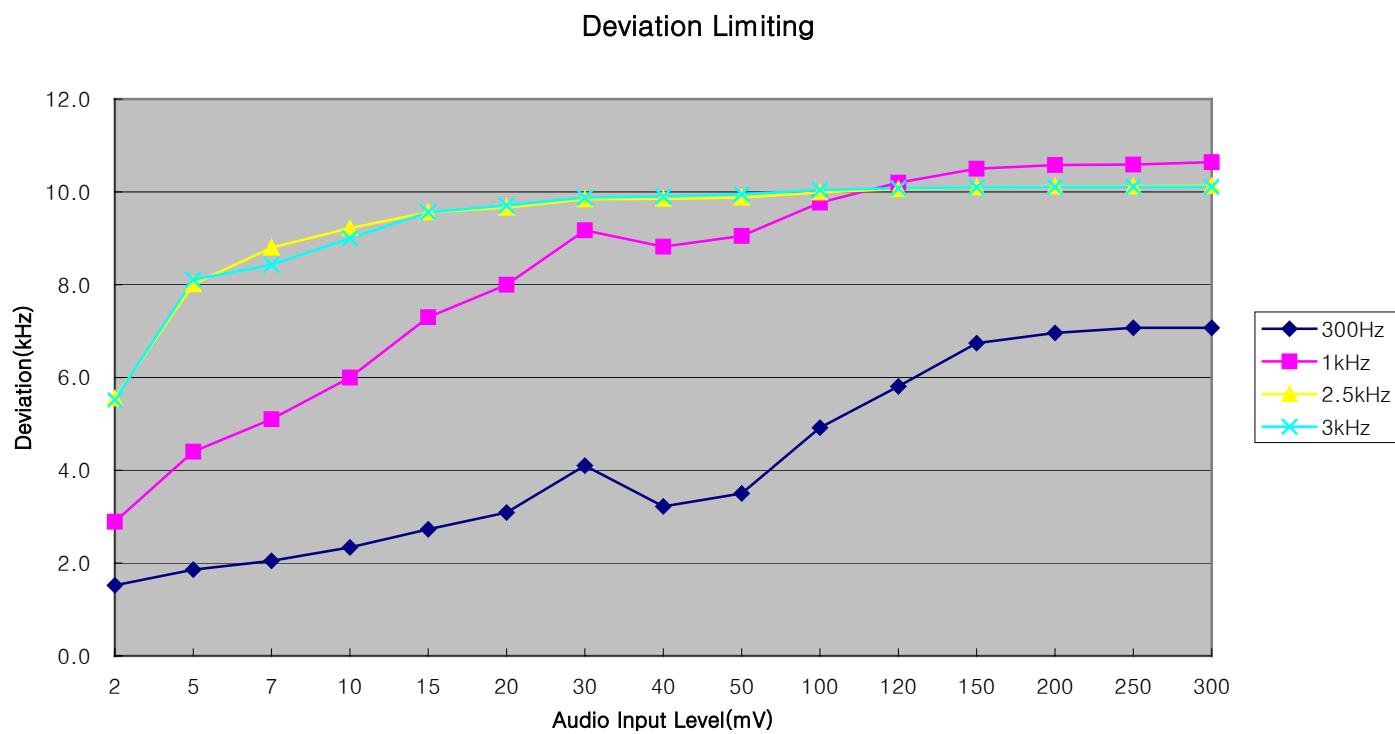
7.1 TEST DATA**(CONTINUED)****7.3 Frequency Stability (AMPS)**

8.1 TEST DATA

8.2 MODULATION DEVIATION LIMITING

OPERATING FREQUENCY: 836.52 MHzCHANNEL: 0384DEVIATION LIMIT: 13.2 KHz

Input Level (mV)	FM Deviation in kHz at Indicated Modulating Frequency			
	300Hz	1KHz	2.5KHz	3KHz
2	1.5	2.9	5.6	5.5
5	1.9	4.4	8.0	8.1
7	2.1	5.1	8.8	8.4
10	2.3	6.0	9.2	9.0
15	2.7	7.3	9.6	9.6
20	3.1	8.0	9.7	9.7
30	4.1	9.2	9.8	9.9
40	3.2	8.8	9.9	9.9
50	3.5	9.1	9.9	10.0
100	4.9	9.8	10.0	10.0
120	5.8	10.2	10.1	10.1
150	6.7	10.5	10.1	10.1
200	7.0	10.6	10.1	10.1
250	7.1	10.6	10.1	10.1
300	7.1	10.6	10.1	10.1

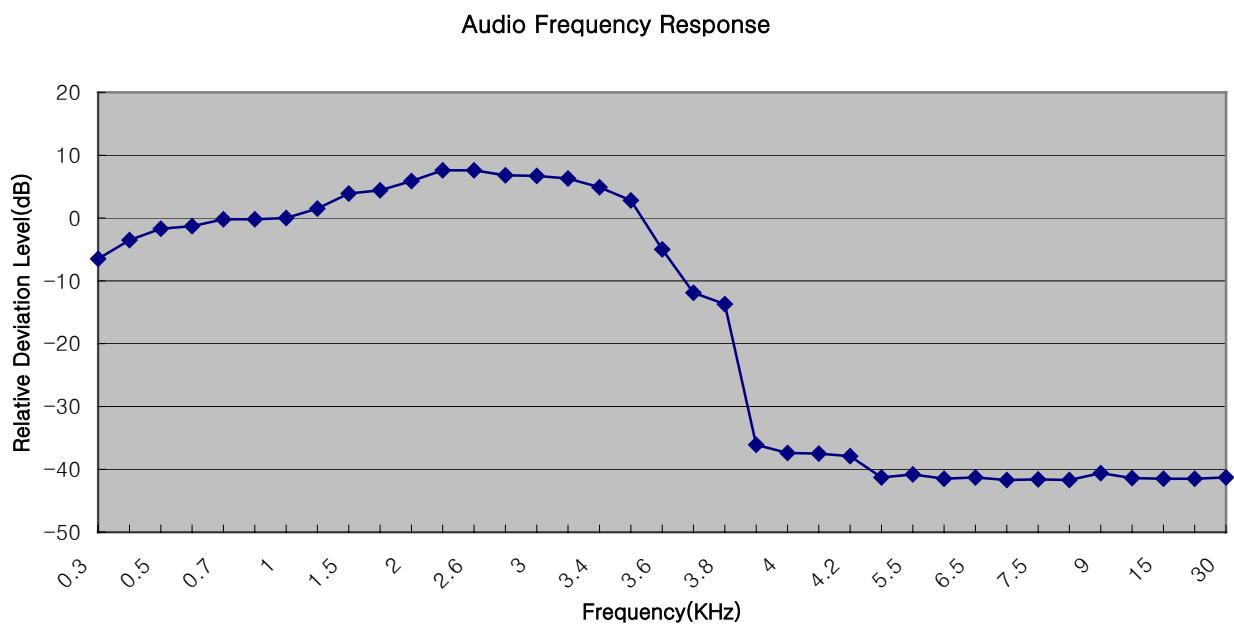
8.1 TEST DATA**(CONTINUED)****8.3 MODULATION DEVIATION LIMITING**

9.1 TEST DATA

9.2 AUDIO FREQUENCY RESPONSE

OPERATING FREQUENCY: 836.52 MHzCHANNEL: 0384Reference level: 0dB @ 1kHz

Audio Frequency Response					
Freq., kHz	Level, dB	Freq., kHz	Level, dB	Freq., kHz	Level, dB
0.3	-6.5	3.3	6.3	7.5	-41.6
0.4	-3.5	3.4	4.9	8.0	-41.7
0.5	-1.7	3.5	2.8	9.0	-40.6
0.6	-1.3	3.6	-5	10.0	-41.4
0.7	-0.2	3.7	-11.9	15.0	-41.5
0.8	-0.2	3.8	-13.7	20.0	-41.5
1.0	0	3.9	-36.1	30.0	-41.3
1.2	1.5	4.0	-37.4		
1.5	3.9	4.1	-37.5		
1.7	4.4	4.2	-37.9		
2.0	5.9	4.8	-41.3		
2.3	7.6	5.5	-40.8		
2.6	7.6	6.0	-41.5		
2.8	6.8	6.5	-41.3		
3.0	6.7	7.0	-41.7		

9.1 TEST DATA**(CONTINUED)****9.3 AUDIO FREQUENCY RESPONSE**

10.1 EMISSION TEST DATA

10.2 Radiated Emission

Distance: 3m

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

NOTE

1. 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.

11.1 PLOT(S) OF EMISSIONS

(SEE ATTACHMENT D)

12.1 TEST EQUIPMENT

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	22/11/04	US41061134
02	Spectrum Analyzer	H.P	8563E	25/09/05	3551A04634
03	Power Meter	H.P	EPM-442A	15/07/05	GB37170413
04	Power Sensor	H.P	8481A	15/07/05	3318A96332
05	Frequency Counter	H.P	5342A	07/10/05	2119A04450
06	Multifunction Synthesizer	H.P	8904A	07/10/05	3633A08404
07	Signal Generator	H.P	8673D	26/09/05	2844A00753
08	Signal Generator	H.P	E4421A	15/07/05	US37230529
09	Signal Generator	H.P	8657A	26/05/05	3430U02049
10	Audio Analyzer	H.P	8903B	21/07/05	3011A0944B
11	Modulation Analyzer	H.P	8901B	15/07/05	3028A03029
12	Sensor Module	H.P	11722A	15/07/05	3111A04665
13	Oscilloscope	LeCroy	9314A	10/10/05	93144390
14	CDMA Mobile Station Test Set	H.P	8924C	07/10/05	US35360688
15	Power Splitter	WEINSCHEL	1593	07/10/05	332
16	BAND Reject Filter	Microwave circuits INC.	NO308372	07/10/05	3125-01DC0312
17	BAND Reject Filter	Wainwright	WRG1750	07/10/05	SN2
18	AC Power supply	DAEKWANG	5KVA	03/04/05	N/A
19	DC Power Supply	H.P	6622A	24/03/05	465487
20	Attenuator (30dB)	H.P	8498A	07/10/05	50101
21	Attenuator (10dB)	WEINSCHEL	23-10-34	07/10/05	BP4387
22	HORN ANT	EMCO	3115	04/04/05	6419
23	HORN ANT	EMCO	3115	10/01/05	21097
24	HORN ANT	A.H.Systems	SAS-574	27/11/04	154
25	HORN ANT	A.H.Systems	SAS-574	14/11/04	155
26	Dipole Antenna	Schwarzbeck	VHA9103	29/10/05	2116

12.1 TEST EQUIPMENT (CONTINUED)

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
27	Dipole Antenna	Schwarzbeck	VHA9103	29/10/05	2117
28	Dipole Antenna	Schwarzbeck	UHA9105	29/10/05	2261
29	Dipole Antenna	Schwarzbeck	UHA9105	29/10/05	2262
30	RFI/FIELD Iintensity Meter	Kyorits	KNM-504D	25/07/05	SN-161-4
31	Frequency Converter	Kyorits	KCV-604C	25/07/05	4-230-3
32	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	14/09/05	021031
33	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	29/10/05	1098
34	Biconical Antenna	Schwarzbeck	VHA9103	29/10/05	VHA91031946
35	Digital Multimeter	H.P	34401A	07/04/05	3146A13475
36	Attenuator (10dB)	WEINSCHEL	23-10-34	07/10/05	BP4386
37	High-Pass Filter	ANRITSU	MP526	12/05/05	M27756
38	Attenuator (3dB)	Agilent	8491B	15/09/05	58177
39	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	07/07/05	4N-170-3
40	LISN	Kyorits	KNW-407	16/08/05	8-317-8
41	LISN	Kyorits	KNW-242	16/08/05	8-654-15
42	Spectrum Analyzer	H.P	8591E	23/05/05	3649A05889
43	Software	ToYo EMI	EP5/CE	N/A	Ver 2.0.801
44	CVCF	NF Electronic	4400	N/A	344536 4420064

13.1 SAMPLE CALCULATIONS

Emission Designator

A. Voice and SAT signals:

Voice (M=2.5 kHz, D=12 kHz)

SAT (M=6 kHz, D=2 kHz)

$$B_n = 2(6+12+2) = 40 \text{ kHz}$$

Emission Designator = 40K0F8W

B. Wideband data:

Data (M = 10 kHz, D = 8 kHz)

SAT (M = 6 kHz, D = 2 kHz)

$$B_n = 2(10+8+2) = 40 \text{ kHz}$$

Emission Designator = 40K0F1D

C. TDMA

Emission Designator = 30K0DXW

14.1 CONCLUSION

The data collected shows that the **Telian Corporation** Portable Cellular Phone (FCC ID: **NPQFTD8900**) complies with all the requirements of Parts 2, 15 and 22 of the FCC rules.