


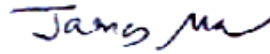
FCC PART 22, 24 TYPE APPROVALS
EMI MEASUREMENT AND TEST REPORT

For

TELULAR CORPORATION

580 Old Willets Path
Hauppauge, New York 11772

FCC ID: MTF060304

This Report Concerns: <input checked="" type="checkbox"/> Class II Permissive Change: Supplemental Report	Equipment Type: GSM Dual Band Table Top Cellular Phone
Test Engineer: Choon Sian Ooi	
Report Number: R0704097	
Report Date: 2007-02-02	
Reviewed By: James Ma, Test Engineer	
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The *TELULAR CORPORATION's* product, FCC ID: MTF060304 model: SX7P-200G or the "EUT" as referred to in this report is a GSM850 & PCS1900 table top Cellular Phone.

1.2 Mechanical Description

Approximate measurement is: 165mm (L) x 170 mm (W) x 65mm (H)

* *The test data gathered are from typical production sample, serial number: 701162 provided by BACL*

1.3 EUT Photo:



Please see additional photos in Exhibit C

1.4 Objective

This Class II permissive change approval report is prepared on behalf of *TELULAR CORPORATION* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine continued compliance with FCC 22, 24 Standard's limits rules for Radiated Spurious Emissions after the class II permissive change.

This test report has been compiled to record the spurious emissions of the EUT after the addition of an external dipole antenna manufactured by Telular Corporation which has a maximum gain of 3 dBi. For details concerning this change as well as antenna specifications please see the Antenna Information exhibit and Description of Changes exhibit submitted along with this report.

1.5 Related Submittal(s)/Grant(s)

This is a Permissive Change II application. The original application was granted on 2007-03-18 by Bay Area Compliance Laboratories Corporation's and all original test data can be found in project number: R0701162.

1.6 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - PCS

Applicable Standards: TIA/EIA 603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

Test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the test methods and procedures set forth in ANSI C63.4-2003& TIA/EIA-603.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations is attached hereinafter and can also be found at <http://ts.nist.gov/ts/hdocs/210/214/scopes/2001670.htm>

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to TIA/EIA-603 C.

The final qualification test was performed with the EUT operating at normal mode.

2.2 Equipment Modifications

No modifications were made to the EUT.

2.3 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
Tamura Electronics	AC/DC Adapter	TL-A115	N/A
Telular Corp.	3.6V Back up Battery	BP3x50AA1200	N/A

2.4 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Agilent	Wireless Communications Test Set	8960 Series 10 E5515C	GB44051221
Dell	Laptop	Inspiron 1300	CN-0RJ272-70166-69A-03TC
Mini-Circuits	Splitter	ZFRSC-42	SF874700404

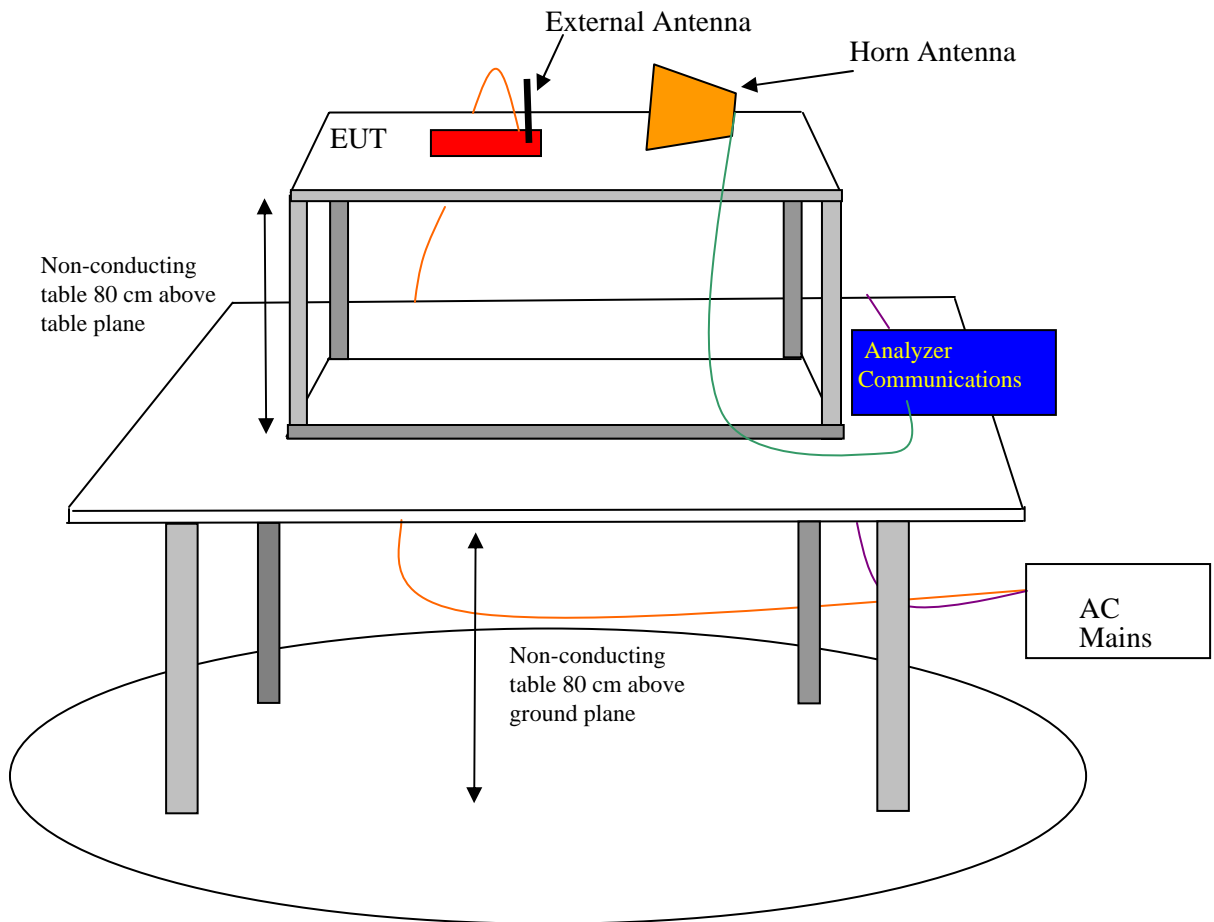
2.5 Interface Ports and Cabling

Cable Description	Length (M)	From	To
RF cable	0.2	Communications test set	Splitter
RF cable	0.4	Antenna port on EUT	Splitter
Data cable	0.5	Communications test set	Laptop

2.5 Ancillary Equipment

Manufacturer	Antenna Description	Maximum Gain	Part Number
Telular	Dipole Antenna	3 dBi	72006691

2.6 Block Diagram



3 - SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 2.1047	Modulation Characteristics	Compliant: Please refer to original report*
§ 2.1053	Field Strength of Spurious Radiation	Compliant
§2.1091	RF Exposure	Compliant
§ 2.1046, § 22.912 (d) § 24.232	RF Output Power	Compliant: Please refer to original report*
§ 2.1049 § 22.917 § 22.905 § 24.238	Out of Band Emissions, Occupied Bandwidth	Compliant: Please refer to original report*
§ 2.1051, § 22.917 § 24.238(a)	Spurious Emissions at Antenna Terminals	Compliant: Please refer to original report*
§ 2.1055 (a) § 2.1055 (d) § 22.355 § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant: Please refer to original report*
§ 22.917 §24.238	Band Edge	Compliant: Please refer to original report*

**Please refer to BA CL Telular Corporation project R0704097 for original testing and data*

5 - §1.1307(b) (1) & §2.1091 - RF EXPOSURE

5.1 Applicable Standard

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

5.2 MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

GSM Band

Maximum peak output power at antenna input terminal (dBm): 32.52

Maximum peak output power at antenna input terminal (mW): 1786.49

Predication distance (cm): 25

Predication frequency (MHz): 836.6

Antenna Gain, typical (dBi): 3

Maximum Antenna Gain (numeric): 1.995

Power density at predication frequency at 25 cm (mW/cm²): 0.454

MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.560

Result: Compliant -- the device's power density at predication frequency at 25 cm was 0.448 mW/cm² which was less than the MPE limit of 0.56 mW/cm².

PCS Band

Maximum peak output power at antenna input terminal (dBm): 29.22
Maximum peak output power at antenna input terminal (mW): 835.60
Predication distance (cm): 1880
Predication frequency (MHz): 1880
Antenna Gain, typical (dBi): 3.0
Maximum Antenna Gain (numeric): 1.995
Power density at predication frequency at 20 cm (mW/cm²): 0.332
MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 1.0

5.3 Test Result

The EUT is a mobile device. The power density level at 25 cm is 0.454 mW/cm², which is below the uncontrolled exposure limit of 0.560 mW/cm² at 836.580 MHz for GSM band. The power density level at 20 cm is 0.332 mW/cm², which is below the uncontrolled exposure limit of 1mW/cm² at 1880 MHz for PCS band.

6 - §2.1053 - SPURIOUS RADIATED EMISSIONS

6.1 Applicable Standard

Requirements: CFR 47, § 2.1053, § 22.917, § 24.238.

6.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log₁₀ (power out in Watts)

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	46%
ATM Pressure:	102.0 kPa

The testing was performed by Choon Sian Ooi on 2007-04-18.

6.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Analyzer, Communications	E5515C	GB44051221	2005-08-08*
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-06
Agilent	Amplifier, Pre	8447D	2944A10198	2006-08-17
HP	Amplifier, Pre, Microwave	8449B	3147A00400	2006-08-21
Rohde & Schwarz	Generator, Signal	SMIQ03	849192/0085	2006-10-18
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2005-04-20*
HP	Generator, Signal	83650B	3614A00276	2006-05-10
A.R.A.	Antenna, Horn	DRG-118/A	1132	2006-08-17
Wainwright	Filter, Band Reject	WRCG823/850-813/860-40/8SS	2	N/A
Wainwright	Filter, Band Reject	WRCG1850/1910-1835/1925-40/8SS	5	N/A

* Two Year Calibration Cycle

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

6.4 Test Result

Worst case reading as follows:

GSM 850

-5.75 dB at 1673.20 MHz

GSM 1900

-13.38 dB at 3760.00 MHz

Run # 1: 30MHz -10GHz GSM 850 Band Middle Channels

Indicated		Azimuth	Test Antenna		Substituted		Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
Frequency	Amplitude		Height	Polar	Frequency	Level					
MHz	dBuV	Degrees	m	H/V	MHz	dBm	Factor	dB	dBm	dBm	dB
1673.20	60.96	186	1.3	V	1673.20	-26.15	8.7	1.3	-18.75	-13	-5.75
1673.20	60.22	95	1.6	H	1673.20	-26.90	8.7	1.3	-19.5	-13	-6.5
2509.80	40.62	193	1.7	V	2509.80	-29.50	9.5	1.6	-21.6	-13	-8.6
2509.80	38.01	134	1.3	H	2509.80	-33.83	9.5	1.6	-25.93	-13	-12.93
3346.40	27.39	321	1.2	V	3346.40	-43.94	10.2	2.2	-35.94	-13	-22.94
3346.40	24.43	186	1.3	H	3346.40	-51.30	10.2	2.2	-43.3	-13	-30.3
41.83.00	24.06	95	1.6	V	41.83.00	-51.03	11.1	2.5	-42.43	-13	-29.43
41.83.00	23.30	90	1.3	H	41.83.00	-54.17	11.1	2.5	-45.57	-13	-32.57

Run # 2: 30MHz -20GHz GSM 1900 Band Middle Channels

Indicated		Azimuth	Test Antenna		Substituted		Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
Frequency	Amplitude		Height	Polar	Frequency	Level					
MHz	dBuV	Degrees	m	H/V	MHz	dBm	Factor	dB	dBm	dBm	dB
3760.00	70.36	202	1.2	V	3760.00	-35.48	11.4	2.3	-26.38	-13	-13.38
3760.00	69.15	123	1.3	H	3760.00	-36.47	11.4	2.3	-27.37	-13	-14.37
5640.00	50.43	198	1.2	V	5640.00	-43.63	11.2	3.1	-35.53	-13	-22.53
5640.00	48.17	123	1.3	H	5640.00	-44.77	11.2	3.1	-36.67	-13	-23.67
7520.00	37.50	276	1.2	V	7520.00	-49.61	11.1	4.1	-42.61	-13	-29.61
7520.00	36.63	156	1.3	H	7520.00	-52.63	11.1	4.1	-45.63	-13	-32.63