

Giant Telecom Limited

Application
For
Permissive Change

900MHz/ 5.8GHz Analog Modulation Cordless Phone with Caller ID
(Handset Unit)

(FCC ID: RAQOL5800H)

04153191
TL/Ann Choy
September 13, 2004

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FCC ID: RAQOL5800H

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LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Giant Telecom Limited - MODEL: OL3021, OL3022
FCC ID: RAQOL5800H

This report concerns (check one:) Original Grant ____ Class II Change X

Equipment Type : DXT - Cordless Telephone

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ____ No X

If yes, defer until : ____
date

Company Name agrees to notify the Commission
by: _____

date

of the intended date of announcement of the product so that the grant can be issued
on that date.

Transition Rules Request per 15.37 ? Yes ____ No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [12-08-03
Edition] Provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission for Handset	config photos.doc
Test Report	Emission Plot	emission.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
User Manual	FCC Information	fcc information.pdf

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EXHIBIT 1 GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The OL3021 is a 900MHz/ 5.8GHz Analog Modulation Cordless Phone with Caller ID. Base Unit and handset operate at frequency of 902.100MHz to 904.000MHz with 20 channels and 5863.800MHz to 5871.600MHz with 40 channels respectively. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), six function keys (Calls/Vol-, Delete/Vol+, Flash, Redial, Mute, Mem), and one channel switch key. A Talk key is provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to page the handset unit.

The antennas used in base unit and handset are integral, and the tested sample is a prototype.

The Model: OL3022 is the same as the Model: OL3021 in hardware aspect except different packaging. The Model: OL3022 is sold with an additional identical handset and an extra charger in a package. The difference in model number serves as marketing strategy.

The circuit description is saved with filename: descri.pdf

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

1.2 Purpose of Application

The purpose of application is saved with filename: product change.pdf.

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1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2001). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

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EXHIBIT 2 SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions. The handset was powered by a fully charged battery.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). The base unit is remotely located as far from the antenna and the handset as possible to ensure full power transmission from the handset. Else, the handset is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater. The spurious emissions more than 20 dB below the permissible value are not reported.

Only handset unit has been modified except its RF module; therefore, all data is derived from handset unit.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

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2.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

HARDWARE:

The unit was operated standalone. A 3.6V NiMH rechargeable battery (provided with the unit) was used to power the device.

CABLES:

There are no special accessories necessary for compliance of this product.

OTHERS:

There are no special accessories necessary for compliance of this product.

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2.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.5 Equipment Modification

Any modifications installed previous to testing by Giant Telecom Limited will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

*Tommy Leung
Supervisor
Intertek Testing Services
Agent for Giant Telecom Limited*



Signature

September 18, 2004 Date

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EXHIBIT 3 EMISSION RESULTS

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3.0 **Emission Results**

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB
 AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

$$FS = RR + LF$$

where FS = Field Strength in dB μ V/m
 RR = RA - AG in dB μ V
 LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V/m	
AF = 7.4 dB	RR = 23.0 dB μ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
FS = RR + LF	
FS = 23 + 9 = 32 dB μ V/m	

Level in μ V/m = Common Antilogarithm [(32 dB μ V/m)/20] = 39.8 μ V/m

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3.2 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission

at 5871.600 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

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3.3 Radiated Emission Data - Handset

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 7.4 dB

TEST PERSONNEL:



Tester Signature

Jess Tang, Engineer
Typed/Printed Name

September 18, 2004
Date

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Company: Giant Telecom Limited
Model: OL3021
Mode : TX-Channel 1

Date of Test: August 11-30, 2004

Table 1, Handset unit
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	5863.800	84.3	34	36.0	86.3	94	-7.7
V	*977.300	28.8	16	23.9	36.7	54	-17.3
V	1954.600	44.6	34	26.5	37.1	54	-16.9
V	2931.900	42.7	34	29.1	37.8	54	-16.2
V	*3909.200	39.3	34	32.8	38.1	54	-15.9
V	*4886.500	38.9	34	34.0	38.9	54	-15.1
V	6841.100	36.7	34	36.4	39.1	54	-14.9
V	7818.400	35.9	34	37.7	39.6	54	-14.4
V	8795.700	35.0	34	38.4	39.4	54	-14.6

NOTES: 1. Peak detector is used for the emission.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna are used for the emission over 1000MHz

5. Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9kHz to 40GHz.

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

FCC ID: RAQOL5800H

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Company: Giant Telecom Limited
Model: OL3021
Mode : TX-Channel 40

Date of Test: August 11-30, 2004

Table 2, Handset unit
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	5871.600	84.6	34	36.0	86.6	94	-7.4
V	*978.600	28.7	16	23.9	36.6	54	-17.4
V	1957.200	44.5	34	26.5	37.0	54	-17.0
V	2935.800	42.5	34	29.1	37.6	54	-16.4
V	*3914.400	39.2	34	32.8	38.0	54	-16.0
V	*4893.000	38.4	34	34.0	38.4	54	-15.6
V	6850.200	36.6	34	36.4	39.0	54	-15.0
V	7828.800	35.8	34	37.7	39.5	54	-14.5
V	8807.400	34.7	34	38.4	39.1	54	-14.9

NOTES: 1. Peak detector is used for the emission.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna are used for the emission over 1000MHz.

5. Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9kHz to 40GHz.

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

FCC ID: RAQOL5800H

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3.4 Radiated Emission on the bandedge

From the following table, it shows that the fundamental emissions are confined in the specified band and it meets the general radiated emission limits in Section 15.209 at the frequency bands of 5725MHz and 5875MHz. It is complied with the requirement of section 15.249(d).

For electronic filing, the emission plots are saved with filename: emission.pdf

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EXHIBIT 4 EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.doc

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EXHIBIT 5 PRODUCT LABELLING

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5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename:
label.pdf

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EXHIBIT 6 TECHNICAL SPECIFICATIONS

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6.0 **Technical Specifications**

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

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EXHIBIT 7 INSTRUCTION MANUAL

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7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf

Please note that the required FCC Information to the User is saved with filename: fcc information.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

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EXHIBIT 8 SECURITY CODE INFORMATION

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8.0 **Security code information**

The telephone has an internal security code with 65,536 possible combinations. Each time the HANDSET is placed on the BASE UNIT, the code is randomly set to a new combination.