



VTech Telecommunications Ltd.

Application
For
Certification

900MHz/5.8GHz 30 Channel Analog Modulation Cordless Phone with
Caller ID - Handset

(FCC ID: EW780-5735-04)

HK08010782-1(R1)

KS/ ac

February 25, 2008

- The test report only allows to be revised within three years from its original issued date unless further standard or the requirement was noticed.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com

INTERTEK TESTING SERVICES

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	General Description
<i>EXHIBIT 2:</i>	System Test Configuration
<i>EXHIBIT 3:</i>	Emission Results
<i>EXHIBIT 4:</i>	Equipment Photographs
<i>EXHIBIT 5:</i>	Product Labelling
<i>EXHIBIT 6:</i>	Technical Specifications
<i>EXHIBIT 7:</i>	Instruction Manual
<i>EXHIBIT 8:</i>	Letter of Agency
<i>EXHIBIT 9:</i>	Confidentiality Request

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

**VTech Telecommunications Ltd. - Model: CS5121, CS5121-2, CS5121-3,
CS5121-4, CS5111, CS5111-2,
CS5111-3, CS5111-4, CS5122-x**

FCC ID: EW780-5735-04

This report concerns (check one:)		Original Grant <input checked="" type="checkbox"/>	Class II Change <input type="checkbox"/>
Equipment Type : <u>DXT - Pt 15 Low Pwr Transceiver, RX Verified</u>			
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
		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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [05-04-07 Edition] Provision.			
Report prepared by:	Sit Kim Wai, Ken Intertek Testing Services Hong Kong Ltd. 2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. Phone : 852-2173-8474 Fax: 852-2741-1693		

INTERTEK TESTING SERVICES

Table of Contents

1.0 General Description	6
1.1 Product Description	6
1.2 Related Submittal(s) Grants	7
1.3 Test Methodology	7
1.4 Test Facility	7
2.0 System Test Configuration	9
2.1 Justification	9
2.2 EUT Exercising Software	9
2.3 Details of EUT and Description of Peripherals	10
2.4 Measurement Uncertainty	11
2.5 Equipment Modification	11
3.0 Emission Results	13
3.1 Field Strength Calculation	14
3.2 Radiated Emission Configuration Photograph - Handset	15
3.3 Radiated Emission Data - Handset	16
3.4 Radiated Emission on the Bandedge	19
4.0 Equipment Photographs	21
5.0 Product Labelling	23
6.0 Technical Specifications	25
7.0 Instruction Manual	27
8.0 Letter of Agency	29
9.0 Confidentiality Request	31

INTERTEK TESTING SERVICES

List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operational Description	Technical Description	descri.pdf
Test Setup Photos	Radiated Emission for Handset	config photos.pdf
Test Report	Emission Plot	emission.pdf
External Photos	External Photo	external photos.pdf
Internal Photos	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location Info	Label Artwork and Location	label.pdf
Cover Letter	Label Location Justification	justification.pdf
Users Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	letter of agency.pdf
Cover Letter	Confidentiality Request	request.pdf

INTERTEK TESTING SERVICES

EXHIBIT 1 GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

1.0 General Description

1.1 Product Description

The CS5121 is a 900MHz/5.8GHz 30 Channel Analog Modulation Cordless Phone with Caller ID - Handset. It operates at frequency 5863.800MHz-5872.500MHz. 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 antennas used in base unit and handset are integral, and the tested sample is a prototype.

The Model: CS5121-2, CS5121-3, CS5121-4, CS5111, CS5111-2, CS5111-3, CS5111-4, CS5122-x are the same as the Model: CS5121 in hardware aspect. Suffix "x" represents different number of same-design handset and extra charger. The difference in model number serves as marketing strategy.

The circuit description is saved with filename: descri.pdf

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

INTERTEK TESTING SERVICES

1.2 Related Submittal(s) Grants

This is an application for certification of handset unit of a cordless telephone system. The FCC ID of the associated Base is EW780-5735-02 and has been granted. The receiver is subject to the verification authorization process, in accordance with 15.101(b). A verification report has been prepared for the receiver section. The device is also subject to Part 68 registration.

1.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2003). 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 facility used to collect the radiated data and conducted data are 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.

INTERTEK TESTING SERVICES

**EXHIBIT 2
SYSTEM TEST CONFIGURATION**

INTERTEK TESTING SERVICES

2.0 System Test Configuration

2.1 Justification

For emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) 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 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.

Measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

2.2 EUT Exercising Software

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

INTERTEK TESTING SERVICES

2.3 Details of EUT and Description of Peripherals

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

- (1) Handset: A "Ni-Cd" type rechargeable battery (3.6V 400mAh)
(Supplied by Client)

Description of Peripherals:

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

INTERTEK TESTING SERVICES

2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Equipment Modification

Any modifications installed previous to testing by VTech Telecommunications Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Commercial & Electrical Division, Intertek Testing Services Hong Kong Ltd.

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

Confirmed by:

*Sit Kim Wai, Ken
Supervisor
Intertek Testing Services
Agent for VTech Telecommunications Ltd.*



Signature

February 25, 2008 _____
Date

INTERTEK TESTING SERVICES

**EXHIBIT 3
EMISSION RESULTS**

INTERTEK TESTING SERVICES

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.

INTERTEK TESTING SERVICES

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

RR = 23.0 dB μ V
LF = 9.0 dB

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

INTERTEK TESTING SERVICES

3.2 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission

at 7830.000 MHz

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

INTERTEK TESTING SERVICES

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 0.9 dB margin

TEST PERSONNEL:



Tester Signature

Melvin Nip, Lead Engineer
Typed/Printed Name

February 25, 2008
Date

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd. Date of Test: January 25-February 4, 2008
Model: CS5121
Mode : TX-Channel 0

Table 1, Handset

Radiated Emissions

Polarization	Frequency	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Calculated at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	5863.800	84.3	33	36.6	87.9	94.0	-6.1
V	1954.600	52.0	33	27.2	46.2	54.0	-7.8
V	*3909.200	45.7	33	33.3	46.0	54.0	-8.0
V	7818.400	47.1	33	38.9	53.0	54.0	-1.0
V	9773.000	43.0	33	40.4	50.4	54.0	-3.6
V	*11727.600	40.7	33	40.5	48.2	54.0	-5.8
V	13682.200	38.6	33	42.0	47.6	54.0	-6.4

- NOTES:
1. Peak detector is used for the emission measurement.
 2. All measurements were made at 3 meters. Radiated 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 radiated 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 is used for the emission over 1000MHz.
 5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

INTERTEK TESTING SERVICES

Company: VTech Telecommunications Ltd. Date of Test: January 25-February 4, 2008
Model: CS5121
Mode : TX-Channel 29

Table 2, Handset

Radiated Emissions

Polarization	Frequency	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Calculated at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	5872.500	84.3	33	36.6	87.9	94.0	-6.1
V	1957.500	52.2	33	27.2	46.4	54.0	-7.6
V	*3915.000	45.9	33	33.3	46.2	54.0	-7.8
V	7830.000	47.2	33	38.9	53.1	54.0	-0.9
V	9787.500	43.2	33	40.4	50.6	54.0	-3.4
V	*11745.000	41.4	33	40.5	48.9	54.0	-5.1
V	13702.500	38.2	33	42.0	47.2	54.0	-6.8

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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 is used for the emission over 1000MHz.
5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

INTERTEK TESTING SERVICES

3.4 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (5725MHz and 5875MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Please refer to the following plots for radiated emission on the bandedge:

Plot H1A*: Handset - Low Channel Emissions

Plot H1B: Handset - High Channel Emissions

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

* Bandedge compliance is determined by applying marker-delta method, i.e.

Resultant field strength = Fundamental emissions - delta from the plot

$$= 87.9\text{dB}\mu\text{V/m} - 40.1\text{dB}$$

$$= 47.8\text{dB}\mu\text{V/m}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 54dB μ V/m.

INTERTEK TESTING SERVICES

**EXHIBIT 4
EQUIPMENT PHOTOGRAPHS**

INTERTEK TESTING SERVICES

4.0 Equipment Photographs

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

INTERTEK TESTING SERVICES

**EXHIBIT 5
PRODUCT LABELLING**

INTERTEK TESTING SERVICES

5.0 Product Labelling

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

For electronic filing, the label location justification letter is saved as filename: justification.pdf

INTERTEK TESTING SERVICES

**EXHIBIT 6
TECHNICAL SPECIFICATIONS**

INTERTEK TESTING SERVICES

6.0 Technical Specifications

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

INTERTEK TESTING SERVICES

EXHIBIT 7 INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

7.0 Instruction Manual

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

The required FCC Information to the User is stated on P.47 of the Instruction Manual.

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

INTERTEK TESTING SERVICES

**EXHIBIT 8
LETTER OF AGENCY**

INTERTEK TESTING SERVICES

8.0 Letter of Agency

For electronic filing, a Letter of Agency is saved with filename: letter of agency.pdf

INTERTEK TESTING SERVICES

**EXHIBIT 9
CONFIDENTIALITY REQUEST**

INTERTEK TESTING SERVICES

9.0 Confidentiality Request

For electronic filing, a preliminary copy of the Confidentiality Request is saved with filename: request.pdf