

Unical Enterprises Inc.

Application
For
Certification

5.8GHz/2.4GHz Frequency Hopping Spread Spectrum Cordless Phone
with Caller ID, Speakerphone, and Digital Answering Machine - Handset

(FCC ID: LZX35828H)

05205712
TL/ Ann Choy
March 15, 2006

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MEASUREMENT/TECHNICAL REPORT

Unical Enterprises Inc. - Model: 35828, 35828A, 35829
FCC ID: LZX35828H

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

Equipment Type : DSS - Part 15 Spread Spectrum Transmitter

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 [10-01-04
Edition] Provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Cover Letter	Confidentiality Request	request.pdf
Test Report	Test Report	report.pdf
Test Report	Maximum Output Power Plot	maxop.pdf
Test Report	20 dB Bandwidth Plot	20dB.pdf
Test Report	Minimum Number of Hopping Frequencies	chno.pdf
Test Report	Minimum Hopping Channel Carrier Frequency Separation	fsepa.pdf
Test Report	Average Channel Occupancy Time	avetime.pdf
Test Report	Out Band Antenna Conducted Emission Plot	obantcon.pdf
Test Report	Duty Cycle Calculation and Measurement	dcc.pdf
Test Setup Photo	Radiated Emission for Handset	config photos.doc
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
RF Exposure Info	RF Safety	RF exposure info.pdf
Operation Description	Technical Description	descri.pdf

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EXHIBIT 1 SUMMARY OF TEST RESULTS

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1.0 Summary of Test

Unical Enterprises Inc. - MODEL: 35828, 35828A, 35829

FCC ID: LZX35828H

TEST	REFERENCE	RESULTS
Max. Output Power	15.247(b)	Pass
Maximum 20dB RF Bandwidth	15.247(a)(1)	Pass
Min. No. of Hopping Frequencies	15.247(a)(1)	Pass
Min. Hopping Channel Carrier Frequency Separation	15.247(a)(1)	Pass
Average Time of Occupancy	15.247(a)(1)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
Radiated Emission from Digital Part	15.109	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses a permanently attached antenna which, in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

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EXHIBIT 2 GENERAL DESCRIPTION

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2.0 General Description

2.1 Product Description

The 35828 is a 5.8GHz/2.4GHz Frequency Hopping Spread Spectrum Cordless Phone with Caller ID, Speakerphone, and Digital Answering Machine. Base Unit and Handset operate at frequency range of 5760.719MHz to 5838.312MHz and 2401.808MHz to 2479.401MHz respectively, and they consist of 87 physical hopping frequencies and 75 logical hopping frequencies. 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,*,#), eight function keys (INT, Menu, Up, Down, Mute, Redial, Mem, Flash). A L1 key and a L2 key are provided to control pick/release telephone line 1 and line 2 in a toggle base.

The base unit has a Int/Format/Prog key, which is used to communicate with handset unit, change CID number format on screen, or register a new handset to the base unit.

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

The Model: 35828A is the same as the Model: 35828 in hardware aspect except different packaging. The Model: 35829 is an additional identical handset with a charger for selling a handset standalone. The difference in model number serves as marketing strategy.

The circuit description and frequency hopping algorithm 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.

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2.2 Related Submittal(s) Grants

This is a single application for Certification of a Handset of a DSS-Part 15 Spread Spectrum Cordless Telephone System. The FCC ID of the associated base unit is LZX35828B and has been filed at the same time as this application. This specific report details the emission characteristics of a transmitter. The device is also subject to Part 68 Registration.

2.3 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. All other measurements were made in accordance with the procedures in 47 CFR Part 2.

2.4 Test Facility

The open area test site 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 3 SYSTEM TEST CONFIGURATION

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3.0 System Test Configuration

3.1 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 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. 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. Detector function is in peak mode. 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 for frequencies below 1000MHz. The resolution is 1MHz or greater for frequencies above 1000MHz.

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

3.2 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.

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3.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

HARDWARE:

The unit was operated standalone. A battery (provided with the unit) was used to power the device. Its description is listed below.

- (1) Handset: A "Ni-MH" type rechargeable battery (3.6V)

CABLES:

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

OTHERS:

- (1) A headset for telephone use with 1.2m unshielded cable permanently affixed. (Supplied by Intertek)

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3.4 Measurement Uncertainty

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

3.5 Equipment Modification

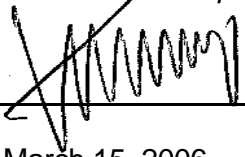
Any modifications installed previous to testing by Unical Enterprises Inc. will be incorporated in each production model sold/leased in the United States.

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

All the items listed under section 3.0 of this report are confirmed by:

Confirmed by:

*Tommy Leung
Assistant Manager
Intertek Testing Services
Agent for Unical Enterprises Inc.*



Signature

March 15, 2006 Date

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EXHIBIT 4 MEASUREMENT RESULTS

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(1) :

- ☐ The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.
- ☒ The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for RBW>20dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated for using the OFFSET function of the analyser.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).

(Handset) Antenna Gain = 0 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2401.808	16.86	48.53
Middle Channel: 2440.159	16.58	45.50
High Channel: 2479.401	16.39	43.55

Cable loss : 0.5 dB External Attenuation : N/A dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

dBm max. output level = 30 dBm (30dBm or less)

Please refer to the attached plots for details:

Plot H1A: Low Channel Output Power
Plot H1B: Middle Channel Output Power
Plot H1C: High Channel Output Power

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

For RF Safety, the information is saved with filename: RF exposure info.pdf.

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.2 Maximum 20 dB RF Bandwidth, FCC Rule 15.247(a)(1)(i):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 20 dB lower than PEAK level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.

(Handset)	
Frequency (MHz)	20 dB Bandwidth (kHz)
2440.159	618

Refer to the following plots for 20 dB bandwidth sharp:

Plot H2A: Low Channel 20 dB RF Bandwidth
Plot H2B: Middle Channel 20 dB RF Bandwidth
Plot H2C: High Channel 20 dB RF Bandwidth

Requirement: the maximum 20dBm bandwidth is 1MHz

For electronic filing, the above plots are saved with filename: 20dB.pdf

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.3 Minimum Number of Hopping Frequencies, FCC Rule 15.247(a)(1)(iii) :

The RF passband of the EUT was divided into 7 approximately equal bands. With the analyzer set to MAX HOLD readings were taken for 2-3 minutes in each band. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

Handset	
No. of hopping channels	75

Minimum Requirements: at least 15 hopping channels for 2400MHz-2483.5MHz.

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

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.4 Minimum Hopping Channel Carrier Frequency Separation, FCC Ref: 15.247(a)(1):

Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit.

[] 25 kHz [x] 20 dB bandwidth of hopping channel: 618kHz

Handset	
Channel Separation	892 kHz

Plot B4: Channel 44 and Channel 45

Requirement: The frequency separation is more than 20dB bandwidth of hopping channel.

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

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.5 Average Channel Occupancy Time, FCC Ref: 15.247(a)(1)(iii)

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 10ms, the SPAN was set to ZERO SPAN, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (20 seconds for 902-928 MHz devices, if the 20dB bandwidth is less than 250kHz, 10 seconds for 902-928 MHz if the 20dB bandwidth is or greater than 250kHz, "0.4 seconds x Number of hopping channels employed" seconds for 2400-2483.5 MHz, 30 seconds for 5725-5850 MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4 seconds).

Average 0.4 seconds maximum occupancy in 30 seconds (0.4 sec. x 75) for 2400MHz-2483.5MHz.

Handset Unit (worst-case: Double-Slots Operation)	
Average Occupancy Time = $0.960\text{ms} \times 40 \times 2$	76.8 ms

Refer to attached spectrum analyzer plots H5A-C

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

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.6 Out of Band Conducted Emissions, FCC Rule 15.247(d):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the following plots for out of band conducted emissions data:

Plot H6A1 - H6A2: Low Channel Emissions
Plot H6B1 - H6B2: Middle Channel Emissions
Plot H6C1 - H6C2: High Channel Emissions
Plot H6D1 - H6D2: Modulation Products Emissions*

The plots showed the 2nd harmonic and modulation products at the band edges of 2400MHz and 2483.5MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

Furthermore, delta measurement technique for measuring bandedge emissions was incorporated in the test of the edge at 2483.5MHz.

*These 2 plots are shown the worst-case which has been already considered between enable and disable the hopping function of the EUT.

For electronic filing, the above plots are saved with filenames: obantcon.pdf

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.7 Out of Band Radiated Emissions (for emissions in 4.6 above that are less than 20 dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- ☒ Not required, all emissions more than 20dB below fundamental
☐ See attached data sheet

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.8 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

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. All measurements were performed with peak detection unless otherwise specified.

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

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Company: Unical Enterprises Inc.
Model: 35828

Date of Test: October 8, 2005-February 17, 2006

4.9 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

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

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

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

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

Example

Assume a receiver reading of 62.0 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. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.10 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission
at
12397.005 MHz

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

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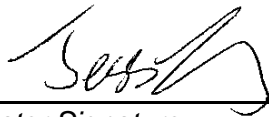
Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.11 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 12.3 dB margin compare with the peak limit

TEST PERSONNEL:



Tester Signature

Jess Tang, Lead Engineer
Typed/Printed Name

March 15, 2006
Date

INTERTEK TESTING SERVICES

Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828
Mode : TX-Channel 1

Table 1, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (-dB)	Calculated at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	*4803.616	60.2	34	34.9	61.1	34.3	26.8	54	-27.2
H	*12009.040	52.5	34	40.5	59.0	34.3	24.7	54	-29.3
V	*19214.464	54.4	34	37.7	58.1	34.3	23.8	54	-30.2

- NOTES: 1. Peak detector is used for the emission measurement.
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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Jess Tang

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828
Mode : TX-Channel 44

Table 2, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (-dB)	Calculated at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	*4880.318	55.5	34	34.9	56.4	34.3	22.1	54	-31.9
V	*7320.477	52.1	34	37.9	56.0	34.3	21.7	54	-32.3
H	*12200.795	52.5	34	40.5	59.0	34.3	24.7	54	-29.3
V	*19521.272	54.6	34	37.8	58.4	34.3	24.1	54	-29.9

- NOTES: 1. Peak detector is used for the emission measurement.
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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Jess Tang

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828
Mode : TX-Channel 88

Table 3, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (-dB)	Calculated at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	**2479.401	115.5	34	29.4	110.9	34.3	76.6	---	---
H	*4958.802	57.2	34	34.9	58.1	34.3	23.8	54	-30.2
V	*7438.203	49.2	34	37.9	53.1	34.3	18.8	54	-35.2
H	*12397.005	55.2	34	40.5	61.7	34.3	27.4	54	-26.6
V	*19835.208	55.2	34	37.8	59.0	34.3	24.7	54	-29.3
V	*22314.609	54.5	34	38.2	58.7	34.3	24.4	54	-29.6

- NOTES: 1. Peak detector is used for the emission measurement.
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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function, and this is the worst-case of 12.3dB margin at 12397.005MHz.

Test Engineer: Jess Tang

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Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.12 Radiated Emissions from Digital Section of Transceiver (Transmitter), FCC Ref:
15.109

☐ Not required - No digital part

☒ Test results are attached

☐ Included in the separated DOC report.

INTERTEK TESTING SERVICES

Company: Unical Enterprises Inc.
Model: 35828

Date of Test: October 8, 2005-February 17, 2006

Table 4, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	34.500	30.3	16	10.0	24.3	40.0	-15.7
V	48.371	30.6	16	11.0	25.6	40.0	-14.4
V	62.229	32.3	16	10.0	26.3	40.0	-13.7
V	76.057	37.3	16	6.0	27.3	40.0	-12.7
V	89.793	35.8	16	9.0	28.8	43.5	-14.7
V	103.636	31.5	16	13.0	28.5	43.5	-15.0

- NOTES:
1. Quasi-peak detector is used for the emission below or equal to 1000 MHz.
 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.

Test Engineer: Jess Tang

INTERTEK TESTING SERVICES

Company: Unical Enterprises Inc. Date of Test: October 8, 2005-February 17, 2006
Model: 35828

4.13 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEPT function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Handset:

Duty cycle (DC) = Maximum ON time in 100ms/100ms
= (0.960ms x 2)ms/100ms for double-slots operation

Duty cycle correction, dB = $20 \times \log(\text{DC})$
= $20 \times \log(0.0192)$
= -34.3 dB

X	See attached spectrum analyzer chart (s) for transmitter timing Handset: Plot H7
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

For electronic filing, the above plot is saved with filenames: dcc.pdf

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**EXHIBIT 5
EQUIPMENT PHOTOGRAPHS**

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5.0 **Equipment Photographs**

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

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EXHIBIT 6 PRODUCT LABELLING

INTERTEK TESTING SERVICES

6.0 **Product Labelling**

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

INTERTEK TESTING SERVICES

EXHIBIT 7 TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

7.0 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 8 INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

8.0 **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 9 SECURITY CODE INFORMATION

9.0 Security Code Information

The handset unit and base unit will registration on both 2^{32} digital random generated security code with manufacturer ID code. The base will store the handset 32bit security code in EEPROM after registration, and assign a unique handset name for each handset.