TeleMatrix, Inc

Application
For
Certification

900MHz 20 Channel Spread Spectrum Cordless Phone with Speakerphone

(FCC ID: OTHN-9000MWD)

WO# 03060711(S1)
TL/Ann Choy
July 28, 2003

FCC ID: OTHN-9000MWD

Intertek Testing Services Hong Kong Ltd.
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LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

TeleMatrix, Inc.- MODEL: 95339, 953391, 95419, 954191
FCC ID: OTHN-9000MWD

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 [08-20-02 Edition] provision.

Report prepared by:

Tommy Leung
Intertek Testing Services
2/F., Garment Centre,
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Phone: 852-2173-8538
Fax: 852-2741-1693

Table of Contents

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 Base	config photos.doc
Test Setup Photo	Radiated Emission for Handset	config photos.doc
Test Report	Maximum Output Power Plot	bmaxop.pdf, hmaxop.pdf
Test Report	6 dB Bandwidth Plot	b6dB.pdf, h6dB.pdf
Test Report	Maximum Power Density Plot	bpowden.pdf, hpowden.pdf
Test Report	Out Band Antenna Conducted Emission Plot	bobantcon.pdf, hobantcon.pdf
Test Report	Duty Cycle Calculation and Measurement	bdcc.pdf, hdcc.pdf
Test Setup Photo	Conducted Emission	config photos.doc
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	bcircuit.pdf, hcircuit.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

EXHIBIT 1
SUMMARY OF TEST RESULTS

1.0 Summary of Test

TeleMatrix, Inc. - MODEL: 95339, 953391, 95419, 954191
FCC ID: OTHN-9000MWD

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(d)	Pass
Out of Band Antenna Conducted Emission	15.247(c)	Pass
Radiated Emission in Restricted Bands	15.247(c)	Pass
AC Conducted Emission	15.207	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.

EXHIBIT 2
GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description

The 95339 is a 900MHz 20 Channel Spread Spectrum Cordless Phone with Speakerphone. It operates at frequency range of 904.2 MHz to 925.8 MHz with 20 Channels. 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 base unit consists of a keypad with twelve standard keys (0,...9,*,#), five function keys (Hold, Redial, Volume Up, Volume Down, Flash). A Phone key is provided to control pick/ release telephone line in a toggle base.

The base unit has a Locate key, which is used to communicate with handset unit.

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

The models 953391, 95419 and 954191 are the same as the model 95339 in hardware aspect. Additional suffix "1" is represented another color. 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.

2.2 Related Submittal(s) Grants

This is an application for Certification of a DSS-Part 15 Spread Spectrum Cordless Telephone System. Two transmitters are included in this application. The device is also subject to Part 68 Registration.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). 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 part 2 of CFR 47.

2.4 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.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**

3.1 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 cardboard box 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 handset is remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base 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 10GHz.

3.2 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.

3.3 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. An AC adapter (provided with the unit) was used to power the device. Its description is listed below.

(1) AC adapter with two meter unshielded power cord permanently affixed.

CABLES:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated

OTHERS:

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

3.4 Equipment Modification

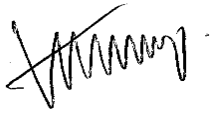
Any modifications installed previous to testing by TeleMatrix, Inc. will be incorporated in each production model sold/leased in the United States.

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

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

Confirmed by:

Tommy Leung
Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for TeleMatrix, Inc.



Signature

July 28, 2003 Date

EXHIBIT 4
MEASUREMENT RESULTS

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.0 Measurement Results

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

[ ] 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> 6dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated for using to OFFSET function of the analyzer.

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

For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

(Base Unit) Antenna Gain = 1.0 dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	904.236	1.97	1.57
Middle Channel:	914.464	2.75	1.88
High Channel:	925.843	3.44	2.21

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

Cable loss, external attenuation: [×] included in OFFSET function
[ ] added to SA raw reading

EUT Transmit Antenna Gain (dBi) + dBm max. output level = 4.44 dBm (36 dBm or less)

Please refer to the attached plots for details:

Plot B1a: Low Channel Output Power
Plot B1b: Middle Channel Output Power
Plot B1c: High Channel Output Power

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) - Continued:

(Handset Unit) Maximum Antenna Gain = 1.0 dB			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	904.229	0.31	1.07
Middle Channel:	914.443	0.63	1.16
High Channel:	925.879	0.50	1.12

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

Cable loss, external attenuation: [x] included in OFFSET function
[ ] added to SA raw reading

EUT Transmit Antenna Gain (dBi) + dBm max. output level = 1.63 dBm (36 dBm 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: bmaxop.pdf, hmaxop.pdf.

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

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100kHz. 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 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Base Unit	
Frequency (MHz)	6 dB Bandwidth (kHz)
904.230, 914.430, 925.830	1590

Refer to the following plots for 6 dB bandwidth sharp:

Plot B2a: Low Channel 6 dB RF Bandwidth
Plot B2b: Middle Channel 6 dB RF Bandwidth
Plot B2c: High Channel 6 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: b6dB.pdf.

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2) - Continued:

(Handset Unit)	
Frequency (MHz)	20 dB Bandwidth (kHz)
904.240, 914.440, 925.840	1590

Refer to the following plots for 6 dB bandwidth sharp:

Plot H2a: Low Channel 6 dB RF Bandwidth
Plot H2b: Middle Channel 6 dB RF Bandwidth
Plot H2c: High Channel 6 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: h6dB.pdf

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.3 Maximum Power Density Reading, FCC Rule 15.247(d) :

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

SWEEP TIME (SEC) = (Fstop, kHz - Fstart, kHz)/3kHz

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Base Unit	
Frequency (MHz)	Power Density (dBm)
926.106	-12.00

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Refer to the following plots for power density data :

Plot B3a: Low Channel power density
Plot B3b: Middle Channel power density
Plot B3c: High Channel power density

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

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Maximum Power Density Reading, FCC Rule 15.247(d) – Continued:

Handset Unit	
Frequency (MHz)	Power Density (dBm)
914.859 & 926.115	-14.44

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Refer to the following plots for power density data :

Plot H3a: Low Channel power density
Plot H3b: Middle Channel power density
Plot H3c: High Channel power density

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

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(c):

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 20dB 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 B4a.1 - B4a.2: Low Channel Emissions
Plot B4b.1 - B4b.2: Middle Channel Emissions
Plot B4c.1 - B4c.2: High Channel Emissions
Plot B4d.1 - B4d.2: Modulation Products Emissions
Plot H4a.1 - H4a.2: Low Channel Emissions
Plot H4b.1 - H4b.2: Middle Channel Emissions
Plot H4c.1 - H4c.2: High Channel Emissions
Plot H4d.1 - H4d.2: Modulation Products Emissions

The plots showed the 2nd harmonic and modulation products at the band edges of 902 MHz and 928 MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 26 dB below the highest level of the desired power in the passband.

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

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 26dB below carrier), FCC Rule 15.247(c):

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
[ ] See attached data sheet

4.6 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.

4.7 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 dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
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 dBμV 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 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

4.8 Radiated Emission Configuration Photograph - Base Unit

Worst Case Radiated Emission
at
2777.400MHz

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

4.9 Radiated Emission Data

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

Judgement : Passed by 17.8 dB

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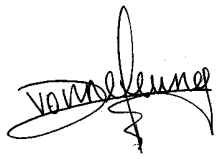
TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

July 28, 2003
Date

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 1

Table 1 (Base Unit)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	*2712.600	47.5	29.1	34	7.0	35.6	54	-18.4
V	*3616.800	44.1	32.8	34	7.0	35.9	54	-18.1
V	*4521.000	41.3	34.0	34	7.0	34.3	54	-19.7

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 10

Table 2 (Base Unit)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	*2743.200	47.2	29.1	34	7.0	35.3	54	-18.7
V	*3657.600	43.7	32.8	34	7.0	35.5	54	-18.5
V	*4572.000	41.5	34.0	34	7.0	34.5	54	-19.5

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 20

Table 3 (Base Unit)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	*2777.400	48.1	29.1	34	7.0	36.2	54	-17.8
V	*3703.200	44.0	32.8	34	7.0	35.8	54	-18.2
V	*4629.000	41.6	34.0	34	7.0	34.6	54	-19.4

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.10 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission
at
2777.400 MHz

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

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.11 Radiated Emission Data

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

Judgement : Passed by 7.6 dB

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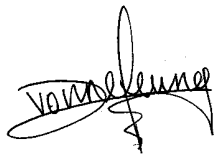
TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

July 28, 2003
Date

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 1

Table 4, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	*2712.600	57.7	29.1	34	7.0	45.8	54	-8.2
V	*3616.800	44.8	32.8	34	7.0	36.6	54	-17.4
V	*4521.000	42.8	34.0	34	7.0	35.8	54	-18.2

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 10

Table 5, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	*2743.200	58.0	29.1	34	7.0	46.1	54	-7.9
V	*3657.600	44.7	32.8	34	7.0	36.5	54	-17.5
V	*4572.000	42.8	34.0	34	7.0	35.8	54	-18.2

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339
Mode : TX-Channel 20

Table 6, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	*2777.400	58.3	29.1	34	7.0	46.4	54	-7.6
V	*3703.200	45.0	32.8	34	7.0	36.8	54	-17.2
V	*4629.000	42.0	34.0	34	7.0	35.0	54	-19.0

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

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 and average detector used for the emissions 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 1000MHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.12 AC Line Conducted Emission, FCC Rule 15.207:

[ ] Not required; battery operation only

[×] Test data attached

4.13 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

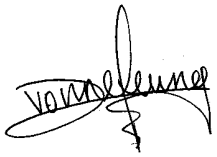
For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc.

4.14 Line Conducted Emission Data

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

Judgement : Passed by more than 20 dB margin

TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

July 28, 2003
Date

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.15 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.

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Table 7, Base Unit

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	48.005	34.0	11.9	16	29.9	40.0	-10.1
H	120.015	31.8	12.8	16	28.6	43.5	-14.9
H	153.609	34.9	11.9	16	30.8	43.5	-12.7
H	177.608	31.1	15.5	16	30.6	43.5	-12.9
H	211.008	34.0	11.8	16	29.8	43.5	-13.7
H	240.009	33.5	11.4	16	28.9	46.0	-17.1

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

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Table 8, Handset

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	38.401	37.8	11.2	16	33.0	40.0	-7.0
V	48.005	36.1	11.9	16	32.0	40.0	-8.0
H	153.005	36.2	11.9	16	32.1	43.5	-11.4
H	177.608	33.9	15.5	16	33.4	43.5	-10.1
H	211.202	38.3	11.8	16	34.1	43.5	-9.4
H	288.011	35.9	13.3	16	33.2	46.0	-12.8
H	316.806	36.5	14.3	16	34.8	46.0	-11.2
H	336.005	39.2	14.6	16	37.8	46.0	-8.2
H	345.609	37.5	14.6	16	36.1	46.0	-9.9
H	355.213	38.7	14.9	16	37.6	46.0	-8.4
H	369.608	39.3	14.9	16	38.2	46.0	-7.8
H	379.212	39.7	15.4	16	39.1	46.0	-6.9
H	388.816	39.8	15.4	16	39.2	46.0	-6.8
H	398.420	41.4	15.4	16	40.8	46.0	-5.2
H	408.013	41.3	15.9	16	41.2	46.0	-4.8
H	417.005	41.1	15.9	16	41.0	46.0	-5.0
H	427.209	39.5	16.3	16	39.8	46.0	-6.2
H	432.026	38.6	16.3	16	38.9	46.0	-7.1

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

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

Table 8, Handset (cont'd)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBμV/m)	Limit (dBμV/m)	Margin (dB)
H	446.405	38.3	16.3	16	38.6	46.0	-7.4
H	480.008	38.1	17.3	16	39.4	46.0	-6.6
H	508.806	33.9	18.0	16	35.9	46.0	-10.1
H	542.420	35.9	18.2	16	38.1	46.0	-7.9
H	580.816	36.6	18.6	16	39.2	46.0	-6.8
H	600.615	38.1	18.9	16	41.0	46.0	-5.0
H	619.223	37.7	18.9	16	40.6	46.0	-5.4
H	638.416	35.3	19.2	16	38.5	46.0	-7.5
H	648.018	31.7	19.2	16	34.9	46.0	-11.1

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

Test Engineer: Yvonne Leung

Company: TeleMatrix, Inc. Date of Test: May 21, 2003 to June 5, 2003
Model: 95339

4.16 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 SWEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Base Unit:

Duty cycle = Maximum ON time is 0.900ms/2.014ms

Duty Cycle correction, dB = 20*log (Duty Cycle)
= 20*log (0.447)
= -7.0dB

Handset:

Duty Cycle = Maximum ON time is 0.900ms/2.014ms

Duty Cycle correction, dB = 20*long (Duty Cycle)
= 20*log (0.447)
= -7.0dB

X	See attached spectrum analyzer chart (s) for transmitter timing Base Unit: Plot B5a, Plot H5a
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

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

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

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

EXHIBIT 6
PRODUCT LABELLING

6.0 **Product Labelling**

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

EXHIBIT 7
TECHNICAL SPECIFICATIONS

7.0 **Technical Specifications**

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

EXHIBIT 8
INSTRUCTION MANUAL

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.

EXHIBIT 9
SECURITY CODE INFORMATION

9.0 **Security code information**

The subject device's 20 independent channels, autoscan at link establishment and smart channel hopping combine to find the clearest channels at all times, automatically. Spread spectrum technology ensures the highest level of security available in a cordless phone.

The spread spectrum technique provides better security than other solutionssince only the receiver has a copy of the pre-assigned spreading code, making interception virtually impossible. The transmitting signal diluted over a large bandwidth with power density at any point being very light, so the signal goes unnoticed by other systems since they are not tuned to receive it. Moreover the scrambling code changes every 8 times the phone is parked, and there are millions of codes.

Scrambler / Descrambler A16-code randomizes the voice and supervisory data for trainsmission and reception, more than 64K scramble codes are available from the 16-bit maximal length pseudo-noise sequence generator.

Spread Spectrum Spreader each transmitted bit is multiplied with a 12-chip spreading code, meeting FCC Part 15.247 requirements.