ITS Intertek Testing Services

October 26, 1999

Federal Communications Commission
Equipment Authorization Division
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

Attention: Mr. Joe Dichoso

Reference: GVC Corporation, FCC ID: DK4MH9082, Conf# EA95004, Ref # 10017

Dear Mr. Dichoso:

This is in response to your information request letter dated 10/7/99 for the above referenced application.

1. The rated RF power output was recalculated; it should be 60 mW; please revised 731 form accordingly.

2. The antenna gain is 0 dB.

3. The output power density data was derived thru the radiated calculation; see attached.

4. The output power data was derived thru the radiated calculation; see attached.

I hope this answers your questions and issue us the grant.

Thank you.

Regards,

Gaspara Lim

Enclosures

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2.0 General Description

2.1 Product Description

The GVC Model No.: MH9082 is a 900 MHz DSSS digital cordless telephone.

A pre-production version of the sample was received on July 15, 1999 in good condition.

Overview of 900 MHz DSSS Cordless Telephone

Applicant	**GVC Corporation**
Trade Name & Model No.	**GVC Corporation, MH9082**
FCC Identifier	**DK4MH9082**
Use of Product	Cordless Telephone
Manufacturer & Model of Spread Spectrum Module	GVC Corporation
Type of Transmission	Direct Sequence
Rated RF Output (mW)	60
Frequency Range (MHz)	903.6 - 926.44
Number of Channel(s)	20
Antenna(s) & Gain, dBi	0
Processing Gain Measurements	[X] Will be provided to ITS for submission with the application [ ] Will be provided directly to the FCC reviewing engineer by the client or manufacturer of the spread spectrum module
Antenna Requirement	[X] The EUT uses a permanently connected antenna. [ ] The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector. [ ] The EUT requires professional installation (attach supporting documentation if using this option).
Manufacturer name & address	GVC Corporation 4F, No. 6, Lane 359, Sec. 2, Chung-shan Rd., Chung-Ho, Taipei, Taiwan, R.O.C.

4.0 Measurement Results

4.1 Maximum Radiated Output Power, FCC Rules 15.247(b):

Test Procedure

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane on an open test site.

The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer. During the measurement, the resolution and video bandwidth of the spectrum analyzer were set to 1 MHz. To maximize emissions, the system was rotated through 360°, the antenna height was varied from 1m to 4m, and the antenna polarization was changed.

The ERP was calculated using equation:

$$E = \frac{\sqrt{30 \cdot P \cdot G}}{D}$$

Where E = Field Strength (V/m),
D = Distance between two antennae(m)
G = Numeric Gain of Antenna (1 for isotropic antenna),
P = ERP (W) = EIRP (G=1)

(Base Unit)			
Frequency (MHz)		Output in dBm (ERP)	Output in mWatt (ERP)
Low Channel:	904.2	17.4	55.0
Middle Channel:	914.4	15.0	31.6
High Channel:	925.7	15.0	31.6

Please refer to Appendix A for the plots:

Plot B1a: Low Channel Output Power
Plot B1b: Middle Channel Output Power
Plot B1c: High Channel Output Power
Data Sheet - Radiated Emission (Output Power)

ITS Intertek Testing Services

Company: GVC Corporation
Project #: J99007969
Model: MH9082 (Base Tx)
Engineer: Xi-Ming Yang
Date of test: April 25, 1999

FCC 15.247 Radiated Emissions (Output Power)

Frequency	Antenna Polarity	Reading	Antenna Factor	Cable Loss	Corrected Reading	EUT Ant Gan	ERP	ERP
MHz	H/V	dB(uV)	dB/m	dB	dB(uV/m)	dB	dBm	mWatts
904.2	V	89.0	22.7	0.9	112.6	0.0	17.4	55.0
914.4	V	86.6	22.7	0.9	110.2	0.0	15.0	31.6
925.7	V	86.6	22.7	0.9	110.2	0.0	15.0	31.6

Note: 1. All measurement were made at 3 meters
2. Output power (EIRP)
P(w) = (E*d)sbquared/30
10log P = 10log((E*d)squared/30)
P(dBw) = 10log ((d) squared/30) + 10log ((E) squarde)
P(dBm) - 30dB = 10log (9/30) + 20log (E) d = 3m
P(dBm) – 30dB = -5.23dB + E(dBuV/m) – 120dB
P(dBm) = E (dBuV/m) – 95.2 dB
4. Output Power (ERP) = Output Power (EIRP) – 0 (EUT Ant Gan)

(Handset Unit)			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	904.2	11.7	14.8
Middle Channel:	914.4	11.9	15.5
High Channel:	925.7	11.4	13.8

Please refer to Appendix A for the plots:

Plot H1a: Low Channel Output Power
Plot H1b: Middle Channel Output Power
Plot H1c: High Channel Output Power
Data Sheet – Radiated Emission (Output Power)

ITS Intertek Testing Services

Company: **GVC Corporation**
Project #: **J99007969**
Model: **MH-9082 (Handset Tx)**
Engineer: **Xi-Ming Yang**
Date of test: **April 16, 1999**

FCC 15.347 Radiated Emissions (Output Power)

Frequency	Antenna Polarity	Reading	Antenna Factor	Cable Loss	Corrected Reading	EUT Ant Gan	ERP	ERP
MHz	H/V	dB(uV)	dB/m	dB	dB(uV/m)	dB	dBm	mWatts
904.2	V	83.3	22.7	0.9	106.9	0.0	11.7	14.8
914.4	V	83.5	22.7	0.9	107.1	0.0	11.9	15.5
925.7	V	83.0	22.7	0.9	106.6	0.0	11.4	13.8

Note: 1. All measurement were made at 3 meters
2. Output power (EIRP)
P(w) = (E*d)sbquared/30
10log P = 10log((E*d)squared/30)
P(dBw) = 10log ((d) squared/30) + 10log ((E) squarde)
P(dBm) - 30dB = 10log (9/30) + 20log (E) d = 3m
P(dBm) – 30dB = -5.23dB + E(dBuV/m) – 120dB
P(dBm) = E (dBuV/m) – 95.2 dB
3. Output Power (ERP) = Output Power (EIRP) – 0 (EUT Ant Gan)

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)/3 kHz

Radiated method was used; power density was calculated from field strength.

$$P = (ED)^2/30$$
$$G = 1$$

(Base Unit)	
Frequency (MHz)	Power Density (dBm)
904.7	3.3

(Handset Unit)	
Frequency (MHz)	Power Density (dBm)
903.9	-1.6

Frequency Span = 600 kHz

Sweep Time = 600 Frequency Span/3 kHz
= 200 seconds

Refer to Appendix C for the following plots:

Plot B3a.1 - B3a.2 Low Channel Power Density
Plot B3b.1 - B3b.2 Middle Channel Power Density
Plot B3c.1 - B3c.2: High Channel Power Density
Plot H3a.1 - H3a.2 Low Channel Power Density
Plot H3b.1 - H3b.2 Middle Channel Power Density
Plot H3c.1 - H3c.2: High Channel Power Density
Radiated Emission (Output Power Density) Handset and Base

ITS Intertek Testing Services

Company: GVC Corporation
Project #: J99007969
Model: MH-9082 (Handset Tx)
Engineer: Xi-Ming Yang
Date of test: April 16, 1999

FCC 15.347 Radiated Emissions (Output Power Density)

Frequency	Antenna Polarity	Reading	Antenna Factor	Cable Loss	Corrected Reading	EUT Ant Gan	ERP	Limit	Margin
MHz	H/V	dB(uV)	dB/m	dB	dB(uV/m)	dB	dBm	dBm	dB
903.9	V	70.0	22.7	0.9	93.6	0.0	-1.6	8.0	-9.6
914.9	V	69.6	22.7	0.9	93.2	0.0	-2.0	8.0	-10.0
926.3	V	68.3	22.7	0.9	91.9	0.0	-3.3	8.0	-11.3

Note: 1. All measurement were made at 3 meters
2. Output power (EIRP)
P(w) = (E*d)sbquared/30
10log P = 10log((E*d)squared/30)
P(dBw) = 10log ((d) squared/30) + 10log ((E) squarde)
P(dBm) - 30dB = 10log (9/30) + 20log (E) d = 3m
P(dBm) – 30dB = -5.23dB + E(dBuV/m) – 120dB
P(dBm) = E (dBuV/m) – 95.2 dB
5. Output Power (ERP) = Output Power (EIRP) – 0 (EUT Ant Gan)

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FCC 15.247 Radiated Emissions (Output Power Density)

Frequency	Antenna Polarity	Reading	Antenna Factor	Cable Loss	Corrected Reading	EUT Ant Gan	ERP	Limit	Margin
MHz	H/V	dB(uV)	dB/m	dB	dB(uV/m)	dB	dBm	dBm	dB
904.7	V	74.9	22.7	0.9	98.5	0.0	3.3	8.0	-4.7
914.1	V	71.4	22.7	0.9	95.0	0.0	-0.2	8.0	-8.2
926.3	V	70.4	22.7	0.9	94.0	0.0	-1.2	8.0	-9.2

Note: 1. All measurement were made at 3 meters
2. Output power (EIRP)
P(w) = (E*d)sbquared/30
10log P = 10log((E*d)squared/30)
P(dBw) = 10log ((d) squared/30) + 10log ((E) squarde)
P(dBm) - 30dB = 10log (9/30) + 20log (E) d = 3m
P(dBm) – 30dB = -5.23dB + E(dBuV/m) – 120dB
P(dBm) = E (dBuV/m) – 95.2 dB
6. Output Power (ERP) = Output Power (EIRP) – 0 (EUT Ant Gan)