

MEASUREMENT REPORT of CORDLESS TELEPHONE

Applicant : CIDMATE International Technology Inc.
Model No. : GH9407xx, GH9408xx
(x could be blank, numbers or alphabets)
EUT : 2.4GHz Analog Cordless Phone
FCC ID : PIZGH94078
Report No. : C5015424

Test by :

Training Research Co., Ltd.

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2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

CERTIFICATION

We hereby verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (1992) as a reference. All test were conducted by **Training Research Co., Ltd.**, 2, Lane 194, Huan-Ho Street, Hsichi, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.249.

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Test Date : June 6, 2002

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Report No.: C5015424, 2.4GHz Analog Cordless Phone, FCC Part 15 Class B

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I. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of Applicant in support of a Cordless Telephone certification in accordance with Part 2 Subpart J and Part 15 Subpart A and C of the Commission's Rules and Regulations.

1.2 Description of EUT

Product Name : 2.4GHz Analog Cordless Phone
Model No. : GH9407xx, GH9408xx
(x could be blank, number or alphabets)
FCC ID : PIZGH94078
Frequency Range : Base: 2402.55 – 2404.50 MHz
Handset: 2474.00 – 2475.95 MHz
Support Channel : 40 Channel
Power Type : Base Powered by 120Vac, 60 Hz, 11W / 9Vdc 500mA
Handset powered by 3.6 V / 600 mAh
Power Cord : Non-shielded
Data Cable : RJ-11C x 1
=> Non-shielded, 7' long, Plastic hoods, No bead
Applicant : CIDMATE International Technology Inc.
3F-B, No. 58, Sec. 1, Minsheng E. Road, Taipei 104,
Taiwan

1.3 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

PABX : **King Design**
Model No. : KD8705-A
Serial No. : GV101101186
Power type : 110 VAC 60Hz
Power cord : Non – Shielded, 185cm long

EarphoneMic : **God Information Inc.**
Model No. : Net8 EarphoneMic
Data cable : 118cm long, Non – Shielded

1.4 Configuration of System Under Test

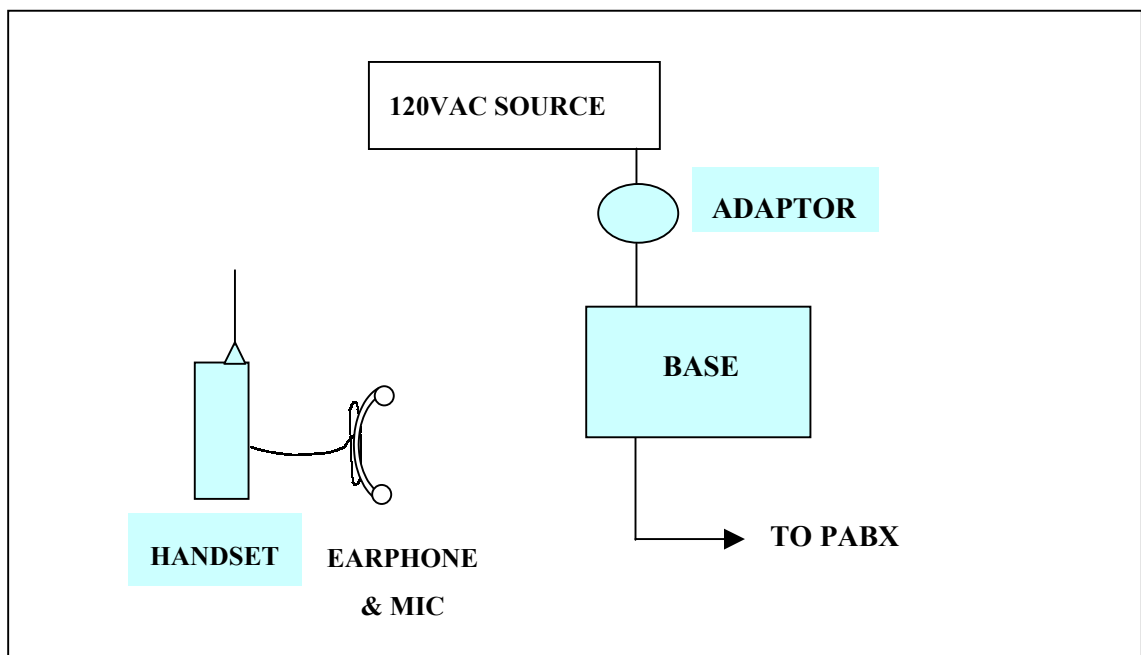


Fig.-1 Configuration of system under test

During testing the EUT was connected to PABX. A diagram of the complete test configuration was shown in Fig-1.

1.5 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in Measurement procedure ANSI C63.4 (1992).

1.6 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter, Anechoic Chamber (Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F., No. 2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in an anechoic chamber also located at Training Research Co., Ltd. 1F, No. 2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.7 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests was chosen as that which produced the highest emission levels. However, only those conditions which the EUT was considered likely to encounter in normal use were investigated.

In test, the base and handset are tested separately. They were set in Ch01, Ch21 and Ch40 of EUT and continuously transmitting mode that controlled by test mode of EUT.

II. Conducted Emissions Measurements

2.1 Test Condition & Setup

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPER quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 450 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 2.4.

There are tree test condition apply in this test item, the test procedure description as the following:

2.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
EMI Receiver	8546A	H P	3520A00242	06/29/01	06/29/02
RF Filter Section	85460A	H P	3448A00217	06/29/01	06/29/02
LISN (EUT)	LISN-01	TRC	9912-03,04	12/09/01	12/09/02
LISN (Support E.)	LISN-01	TRC	9912-05	01/04/02	01/04/03
Switch/Control Unit (< 30MHz)	3488A	HP	N/A	11/20/01	11/20/02
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	11/20/01	11/20/02

2.3 Test Result of Conducted Emissions

The following table shows a summary of the highest emissions of power line conducted emissions on the HOT and NATURAL conductors of the EUT power cord.

Table 1 Power Line Conducted Emissions (Channel 01)

Power Connected Emissions				FCC Class B	
Conductor	Frequency (kHz)	Peak Amplitude (dB μV)	QP Amplitude (dB μV)	Limit (dB μV)	Margin (dB)
Line 1	1410.00	21.08	---	48.00	-26.92
	1487.00	20.94	---	48.00	-27.06
	2040.00	20.81	---	48.00	-27.19
	3610.00	24.61	---	48.00	-23.39
	3750.00	26.92	---	48.00	-21.08
	3890.00	27.17	---	48.00	-20.83
	3970.00	26.90	---	48.00	-21.10
	4110.00	25.26	---	48.00	-22.74
	4220.00	25.19	---	48.00	-22.81
	4770.00	20.94	---	48.00	-27.06
Line 2	2040.00	20.56	---	48.00	-27.44
	3970.00	22.79	---	48.00	-25.21
	4270.00	23.12	---	48.00	-24.88
	4420.00	20.07	---	48.00	-27.93
	4510.00	20.33	---	48.00	-27.67
	4700.00	20.72	---	48.00	-27.28
	4810.00	21.65	---	48.00	-26.35
	28570.00	20.63	---	48.00	-27.37

NOTE:

1. Margin = Peak Amplitude - Limit
2. A "+" sign in the margin column means the emission is OVER the Class B Limit and "-" sign of means UNDER the Class B limit.

Table 2 Power Line Conducted Emissions (Channel 21)

<i>Power Connected Emissions</i>				<i>FCC Class B</i>	
<i>Conductor</i>	<i>Frequency (kHz)</i>	<i>Peak Amplitude (dB μV)</i>	<i>QP Amplitude (dB μV)</i>	<i>Limit (dB μV)</i>	<i>Margin (dB)</i>
Line 1	1792.00	22.04	---	48.00	-25.96
	3630.00	24.12	---	48.00	-23.88
	3810.00	27.58	---	48.00	-20.42
	3970.00	26.26	---	48.00	-21.74
	4110.00	25.60	---	48.00	-22.40
	4220.00	25.57	---	48.00	-22.43
	4420.00	21.68	---	48.00	-26.32
	4840.00	21.28	---	48.00	-26.72
	8810.00	21.75	---	48.00	-26.25
	10960.00	26.88	---	48.00	-21.12
Line 2	1458.00	20.84	---	48.00	-27.16
	3400.00	20.18	---	48.00	-27.82
	3630.00	20.10	---	48.00	-27.90
	3970.00	22.58	---	48.00	-25.42
	4190.00	22.14	---	48.00	-25.86
	4330.00	20.67	---	48.00	-27.33
	4480.00	21.41	---	48.00	-26.59
	4770.00	22.08	---	48.00	-25.92
	4980.00	20.53	---	48.00	-27.47
	30000.00	20.56	---	48.00	-27.44

Table 3 Power Line Conducted Emissions (Channel 40)

<i>Power Connected Emissions</i>				<i>FCC Class B</i>	
<i>Conductor</i>	<i>Frequency (kHz)</i>	<i>Peak Amplitude (dB μV)</i>	<i>QP Amplitude (dB μV)</i>	<i>Limit (dB μV)</i>	<i>Margin (dB)</i>
Line 1	813.00	20.93	---	48.00	-27.07
	3560.00	24.98	---	48.00	-23.02
	3660.00	26.31	---	48.00	-21.69
	3780.00	26.18	---	48.00	-21.82
	3970.00	28.49	---	48.00	-19.51
	4050.00	25.90	---	48.00	-22.10
	4350.00	23.30	---	48.00	-24.70
	4700.00	23.44	---	48.00	-24.56
	4810.00	21.26	---	48.00	-26.74
	29800.00	20.36	---	48.00	-27.64
Line 2	1324.00	21.32	---	48.00	-26.68
	3970.00	22.99	---	48.00	-25.01
	4080.00	20.82	---	48.00	-27.18
	4300.00	21.15	---	48.00	-26.85
	4540.00	20.95	---	48.00	-27.05
	4810.00	21.63	---	48.00	-26.37
	20000.00	20.55	---	48.00	-27.45
	28160.00	20.31	---	48.00	-27.69
	30000.00	21.08	---	48.00	-26.92

Table 4 Power Line Conducted Emissions (Charging mode)

<i>Power Connected Emissions</i>				<i>FCC Class B</i>	
<i>Conductor</i>	<i>Frequency (kHz)</i>	<i>Peak Amplitude (dB μV)</i>	<i>QP Amplitude (dB μV)</i>	<i>Limit (dB μV)</i>	<i>Margin (dB)</i>
Line 1	1400.00	22.23	---	48.00	-25.77
	1803.00	21.93	---	48.00	-26.07
	3560.00	27.76	---	48.00	-20.24
	3700.00	26.35	---	48.00	-21.65
	3780.00	27.03	---	48.00	-20.97
	3970.00	27.80	---	48.00	-20.20
	4110.00	23.56	---	48.00	-24.44
	4190.00	22.78	---	48.00	-25.22
	4580.00	22.38	---	48.00	-25.62
	4670.00	22.02	---	48.00	-25.98
Line 2	1713.00	20.01	---	48.00	-27.99
	2040.00	20.67	---	48.00	-27.33
	3560.00	21.22	---	48.00	-26.78
	3970.00	23.91	---	48.00	-24.09
	4140.00	20.67	---	48.00	-27.33
	4330.00	20.23	---	48.00	-27.77
	4580.00	21.42	---	48.00	-26.58
	4670.00	22.57	---	48.00	-25.43
	4880.00	21.04	---	48.00	-26.96

III. Radiated Emissions Measurements

3.1 Test Condition & Setup

The EUT was placed in a anechoic chamber and scanned at 3 meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration which produced the highest emissions was noted so it could be reproduced later during the final tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, anechoic chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 8546A EMI Receiver, whole range Bi-Log antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum HP 85460A and spectrum was examined from 1GHz to 25GHz using an Hewlett Packard Spectrum Analyzer, EMCO/CMT Horn Antenna (Model 3115 / RA42-K-F-4B-C) for 1G ~ 25GHz.

At each frequency, the handset of EUT stood on three orthogonal planes respectively and rotated 360 degrees, the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 8546A for frequency 30MHz to 1000MHz, and HP8564E for frequency 1 GHz to 25GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz), the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1 GHz to 25GHz) and the analyzer was operated in the maximum hold mode.

The actual field intensity in decibels referenced to 1 microvolt per meter (dB μ V/m) is determined by algebraically adding the measured reading in dB μ V, the antenna factor (dB), and cable loss (dB) at the appropriate frequency.

For frequency between 30MHz to 1000MHz

$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} - \text{Correction Factors}$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss

For frequency between 1GHz to 25GHz

$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factor}$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

3.2 List of Test Instruments

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Last time</u>	<u>Next time</u>
EMI Receiver	8546A	H P	3520A00242	06/29/01	06/29/02
RF Filter Section	85460A	H P	3448A00217	06/29/01	06/29/02
Bi-log Antenna	CBL6141A	Schaffner	4206	03/09/02	03/09/03
Switch/Control Unit					
(> 30MHz)	3488A	HP	N/A	11/20/01	11/20/02
Auto Switch Box					
(> 30MHz)	ASB-01	TRC	9904-01	11/20/01	11/20/02
Spectrum Analyzer	8564E	HP	US36433002	08/01/01	08/01/02
Microwave Preamplifier	83051A	HP	3232A00347	08/01/01	08/01/02
Horn Antenna	3115	EMCO	9704 – 5178	08/01/01	08/01/02
Horn Antenna	RA42-K-F-4B-C	CMT	961505-003	08/01/01	08/01/02
Anechoic Chamber (cable calibrated together)				05/20/02	05/20/03

3.3 Test Result of Radiated Emissions

The peak values of fundamental emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following.

Product Name : 2.4GHz Analog Cordless Phone
FCC ID : PIZGH94078

Table 5 Open Field Fundamental Emissions

Channel	Frequency (MHz)	A.P. (H/V)	A.H. (cm)	Table (degree)	Amplitude (Peak) (dBμV/m)	Limit (dBμV)	Margin (dBμV)
Base 1	2402.55	H	100.00	259	79.34	94.00	-14.66
		V	100.00	316	86.21	94.00	-7.79
Base 21	2403.55	H	100.00	28	79.39	94.00	-14.61
		V	100.00	241	86.23	94.00	-7.77
Base 40	2404.50	H	100.00	146	79.03	94.00	-14.97
		V	100.00	165	85.89	94.00	-8.11
Handset 1	2474.00	H	100.00	9	78.83	94.00	-15.17
		V	100.00	145	80.42	94.00	-13.58
Handset 21	2475.00	H	100.00	315	78.27	94.00	-15.73
		V	100.00	58	80.26	94.00	-13.74
Handset 40	2475.95	H	100.00	61	77.98	94.00	-16.02
		V	100.00	226	79.87	94.00	-14.13

Note:

1. A. P. means antenna polarization, horizontal and vertical.
2. A. H. means antenna height.
3. Table means turntable turning position.
4. Amplitude means the fundamental emission measured.
5. Margin = Amplitude-limit

3.4 Test Result of Spurious Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following.

Testing room : Temperature : 25 ° C Humidity : 55 % RH
 Testing site : Temperature : 27 ° C Humidity : 52 % RH

Table 6 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 01, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
800.848	11.96	1.05	43	-28.17	40.13	46.00	-5.87
828.234	10.74	1.03	33	-28.74	39.48	46.00	-6.52

Table 7 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 01, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
800.855	9.53	1.00	34	-28.57	38.10	46.00	-7.90
828.231	7.90	1.00	69	-29.26	37.16	46.00	-8.84

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 8 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 01, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60087	42.91	100.00	96	1.76	44.67	54.00	-9.33

Table 9 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 01, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60206	50.10	100.00	157	1.77	51.87	54.00	-2.13
1.65669	39.59	100.00	259	2.08	41.67	54.00	-12.33

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude + Correction Factor = Corrected

Table 10 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 21, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
801.186	9.29	1.00	41	-28.17	37.46	46.00	-8.54
828.568	9.50	1.00	34	-28.75	38.25	46.00	-7.75

Table 11 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 21, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
801.186	8.08	1.29	31	-28.57	36.65	46.00	-9.35
828.568	7.64	1.39	60	-29.26	36.90	46.00	-9.10

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 12 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 21, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60325	42.77	100.00	271	1.78	44.55	54.00	-9.45

Table 13 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 21, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60206	50.43	100.00	56	1.77	52.20	54.00	-1.80
1.65787	39.03	100.00	42	2.08	41.11	54.00	-12.89

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude + Correction Factor = Corrected

Table 14 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 40, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
801.502	11.60	1.00	38	-28.17	39.77	46.00	-6.23
828.885	10.60	1.00	27	-28.76	39.36	46.00	-6.64

Table 15 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 40, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
801.504	7.84	1.00	31	-28.58	36.42	46.00	-9.58
828.885	7.57	1.00	61	-29.27	36.84	46.00	-9.16

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 16 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 40, Base Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60325	42.42	100.00	82	1.78	44.20	54.00	-9.80

Table 17 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 40, Base Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.60325	50.36	100.00	164	1.78	52.14	54.00	-1.86
1.65787	39.50	100.00	208	2.08	41.58	54.00	-12.42

Note:

1. Margin = Corrected - Limit.
2. Peak Amplitude + Correction Factor = Corrected

Table 18 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 01, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
824.663	11.53	1.00	66	-28.62	40.15	46.00	-5.85

Table 19 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 01, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
824.672	9.17	1.02	5	-29.7	38.87	46.00	-7.13

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 20 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 01, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59494	36.59	100.00	15	1.73	38.32	54.00	-15.68
1.64956	38.48	100.00	226	2.04	40.52	54.00	-13.48
4.12229	44.83	100.00	20	0.00	44.83	54.00	-9.17
4.78083	43.67	100.00	9	0.00	43.67	54.00	-10.33
5.57833	42.00	100.00	141	0.00	42.00	54.00	-12.00

Table 21 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 01, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59375	42.37	100.00	62	1.72	44.09	54.00	-9.91
1.64956	46.71	100.00	348	2.04	48.75	54.00	-5.25
4.12229	43.67	100.00	351	0.00	43.67	54.00	-10.33
4.78083	49.17	100.00	6	0.00	49.17	54.00	-4.83

Note:

1. Margin = Corrected - Limit.
2. Peak Amplitude + Correction Factor = Corrected

Table 22 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 21, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
825.005	11.70	1.00	62	-28.63	40.33	46.00	-5.67

Table 23 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 21, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
824.996	9.87	2.43	147	-29.17	39.04	46.00	-6.96

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 24 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 21, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59494	35.03	100.00	132	1.73	36.76	54.00	-17.24
1.65075	36.58	100.00	160	2.04	38.62	54.00	-15.38
4.12229	44.67	100.00	201	0.00	44.67	54.00	-9.33
4.78083	43.17	100.00	33	0.00	43.17	54.00	-10.83
5.57833	43.00	100.00	54	0.00	43.00	54.00	-11.00

Table 25 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 21, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59494	43.12	100.00	91	1.73	44.85	54.00	-9.15
1.64956	46.83	100.00	64	2.04	48.87	54.00	-5.13
4.12229	43.50	100.00	245	0.00	43.50	54.00	-10.50
4.78083	49.33	100.00	3	0.00	49.33	54.00	-4.67

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude + Correction Factor = Corrected

Table 26 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 40, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
825.320	10.83	1.00	45	-28.64	39.47	46.00	-6.53

Table 27 Open Field Radiated Emissions for 30MHz ~ 1GHz [Channel 40, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	FCC Class B (3 M)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (cm)	Table (°)			Limit (dBμV/m)	Margin (dB)
825.314	9.80	2.44	153	-29.18	38.98	46.00	-7.02

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude – Correction Factors = Corrected

Table 28 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 40, Handset Horizontal]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59612	35.72	100.00	20	1.74	37.46	54.00	-16.54
1.65075	36.70	100.00	46	2.04	38.74	54.00	-15.26
4.12229	44.00	100.00	307	0.00	44.00	54.00	-10.00
4.78687	42.83	100.00	191	0.00	42.83	54.00	-11.17
5.58437	42.33	100.00	33	0.00	42.33	54.00	-11.67

Table 29 Open Field Radiated Emissions for 1GHz ~ 25GHz [Channel 40, Handset Vertical]

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dB μ V/m)	FCC Class B (3 m)	
Frequency (GHz)	Amplitude (dB μ V)	Ant. H. (cm)	Table (°)			Limit (dB μ V/m)	Margin (dB)
1.59612	43.22	100.00	327	1.74	44.96	54.00	-9.04
1.65075	46.93	100.00	125	2.04	48.97	54.00	-5.03
4.12229	41.33	100.00	279	0.00	41.33	54.00	-12.67
4.78687	49.33	100.00	6	0.00	49.33	54.00	-4.67

Note:

1. Margin = Corrected – Limit
2. Peak Amplitude + Correction Factor = Corrected

IV. Verify Frequencies and Channels

This is for sure that all frequencies are in 2402MHz to 2476MHz that verifies the frequency as follow

Table 30 Verify the Frequency Pairs

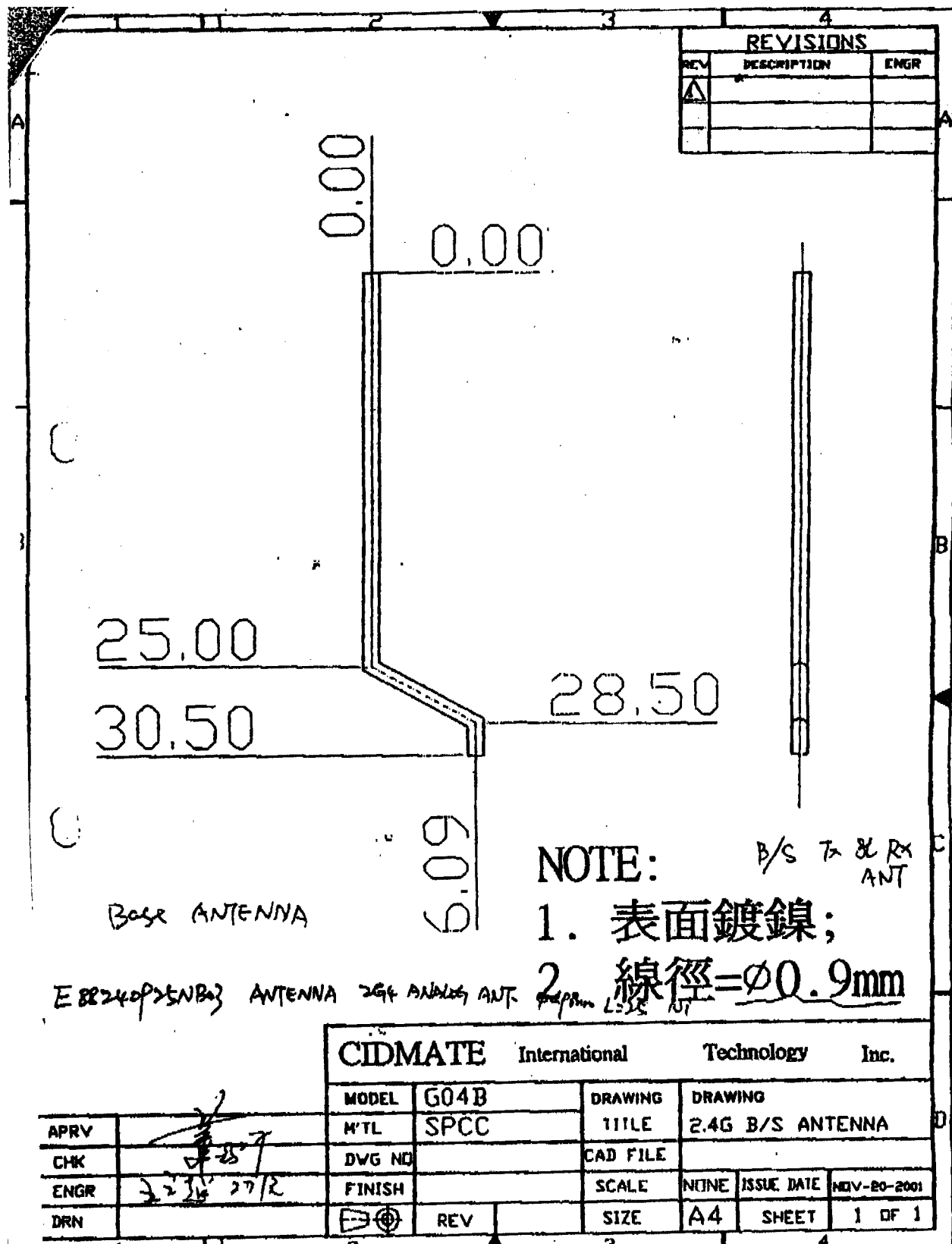
Channel	Handset (MHz)	Base (MHz)	Channel	Handset (MHz)	Base (MHz)
1	2474.00	2402.55	21	2475.00	2403.55
2	2474.05	2402.60	22	2475.05	2403.60
3	2474.10	2402.65	23	2475.10	2403.65
4	2474.15	2402.70	24	2475.15	2403.70
5	2474.20	2402.75	25	2475.20	2403.75
6	2474.25	2402.80	26	2475.25	2403.80
7	2474.30	2402.85	27	2475.30	2403.85
8	2474.35	2402.90	28	2475.35	2403.90
9	2474.40	2402.95	29	2475.40	2403.95
10	2474.45	2403.00	30	2475.45	2404.00
11	2474.50	2403.05	31	2475.50	2404.05
12	2474.55	2403.10	32	2475.55	2404.10
13	2474.60	2403.15	33	2475.60	2404.15
14	2474.65	2403.20	34	2475.65	2404.20
15	2474.70	2403.25	35	2475.70	2404.25
16	2474.75	2403.30	36	2475.75	2404.30
17	2474.80	2403.35	37	2475.80	2404.35
18	2474.85	2403.40	38	2475.85	2404.40
19	2474.90	2403.45	39	2475.90	2404.45
20	2474.95	2403.50	40	2475.95	2404.50

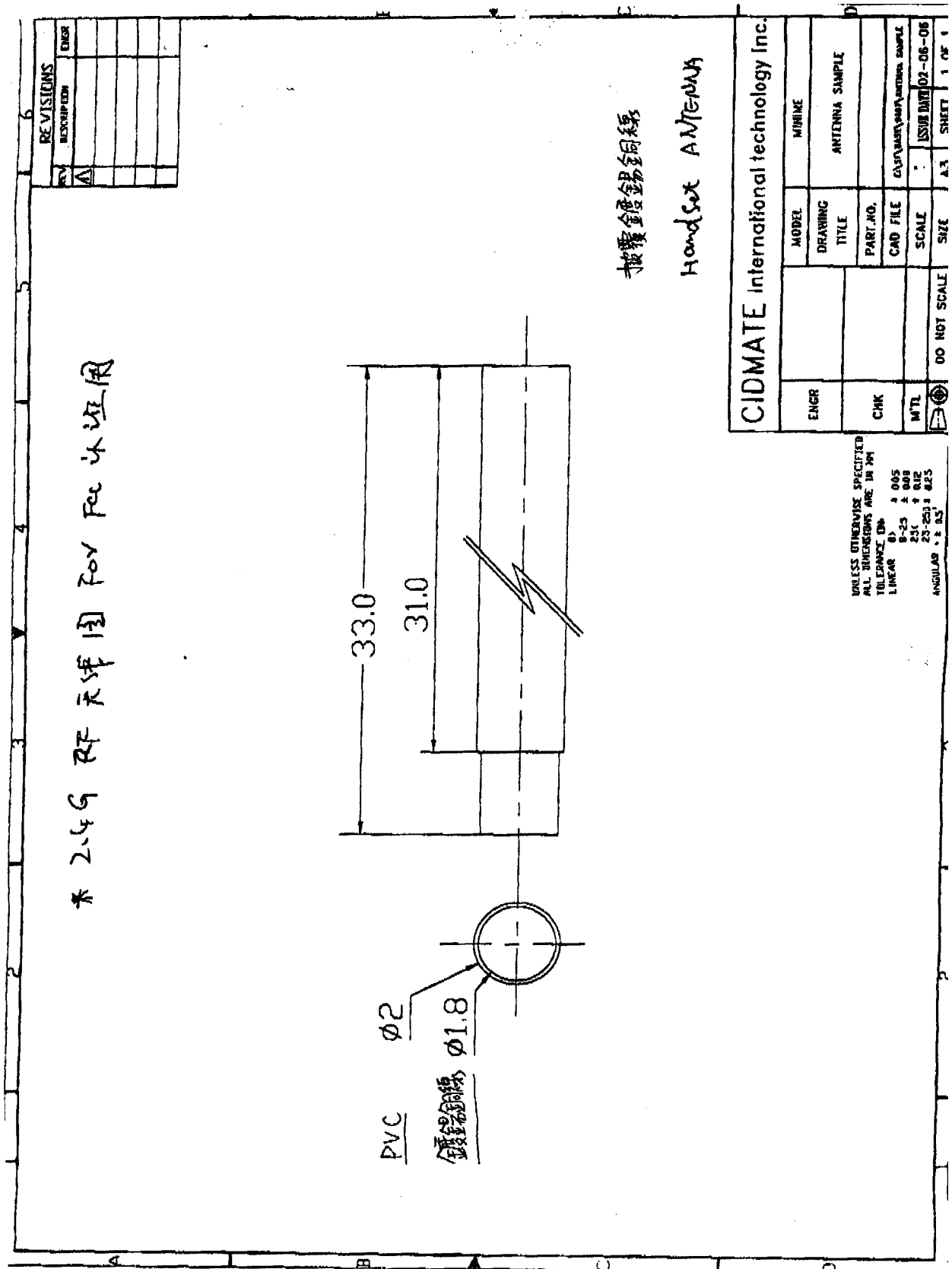
Section 15.214(d) The security code is set automatic:

Every time when you place the handset in the base, your cordless will randomly select over one million possible security codes.

Appendix A

The antenna of the device is screwed inside the device, the user can not remove it freely without any tools from outside the device. This is comply with the FCC rules part 15.203



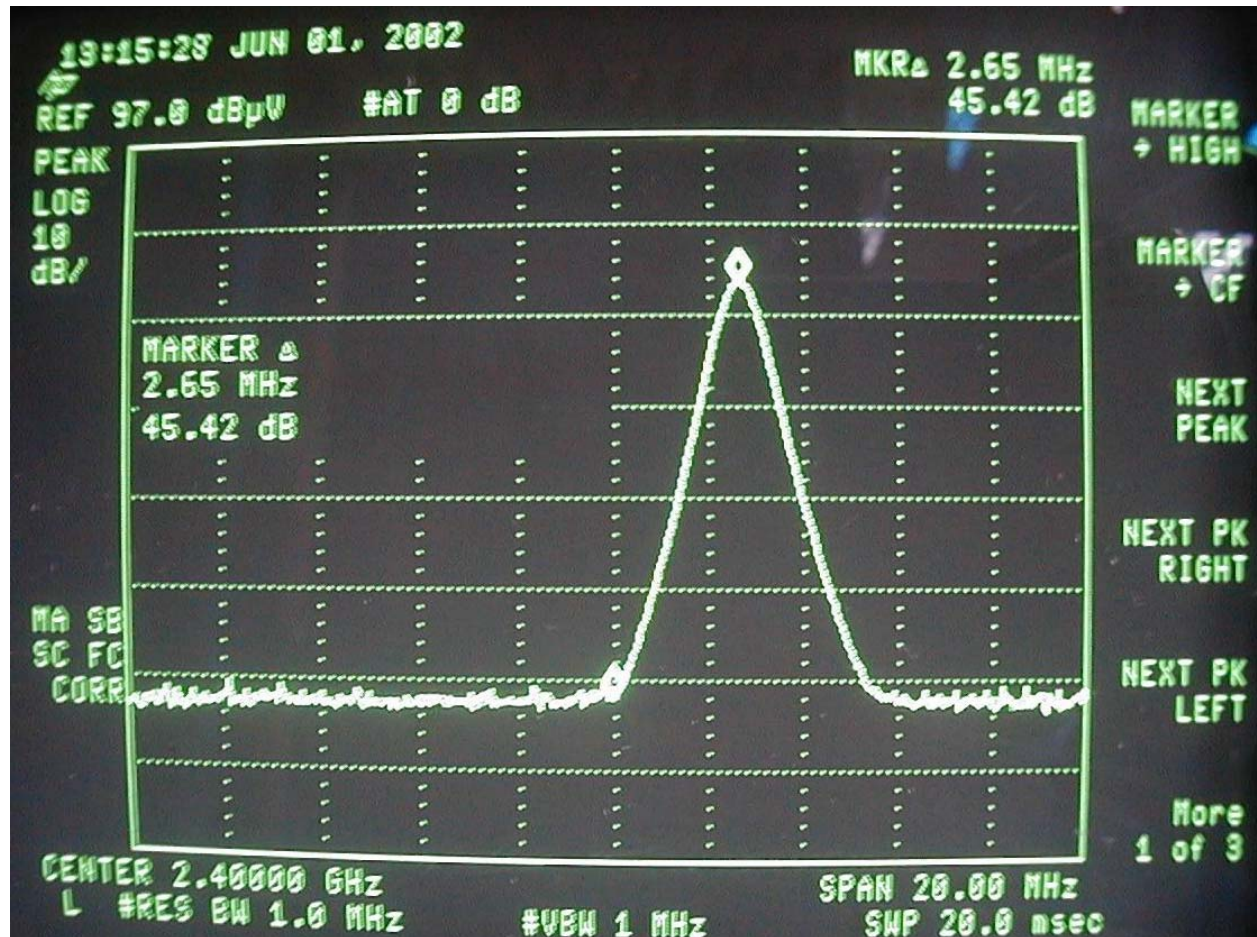


Appendix B

§ 15.245 (b)(3) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

See as following page.

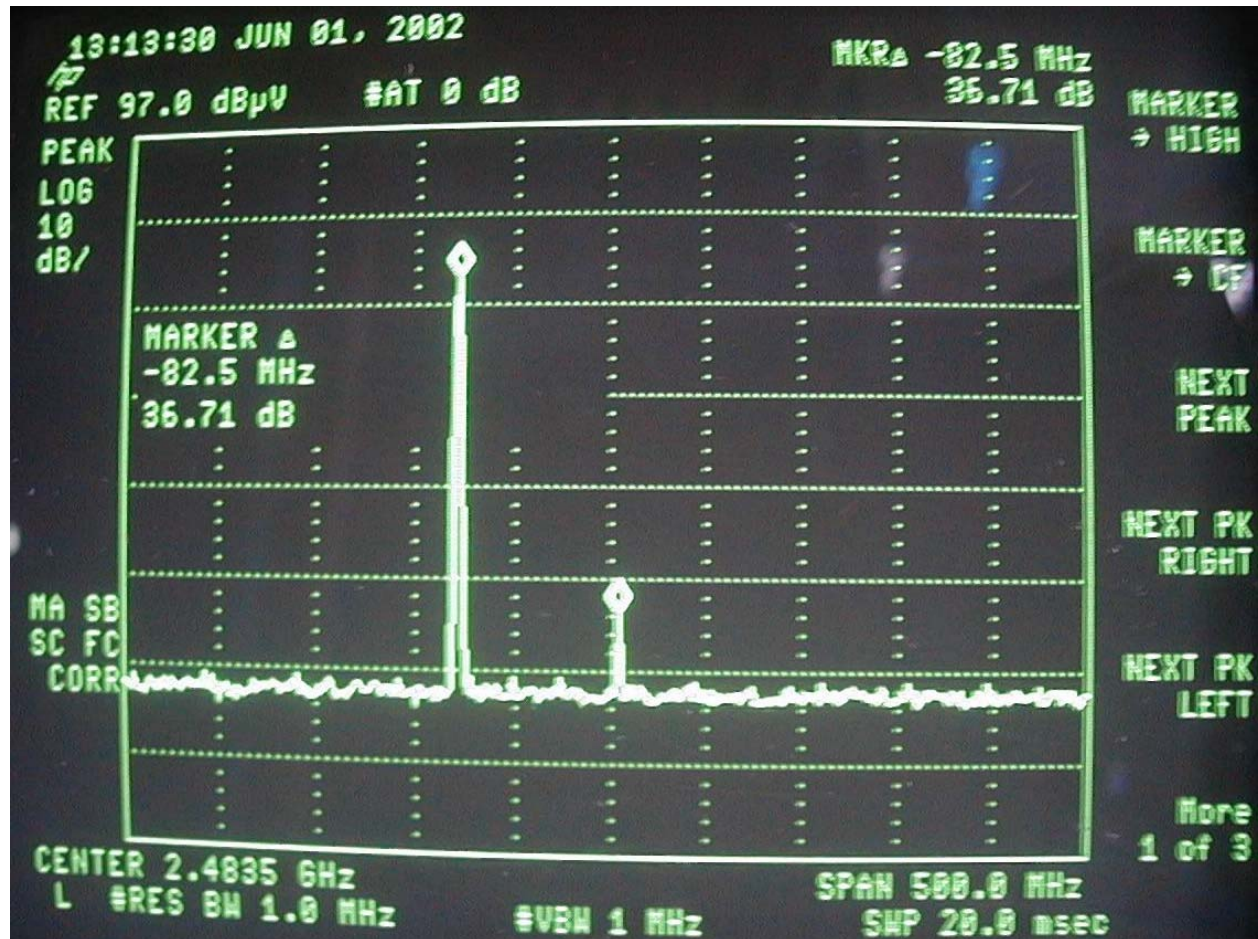
Base Channel 1



Band edge:

$86.21\text{dB } \mu\text{V/m (Peak Amplitude)} - 45.42\text{dB} = 40.79\text{dB } \mu\text{V/m} < 53.94\text{dB } \mu\text{V/m}$

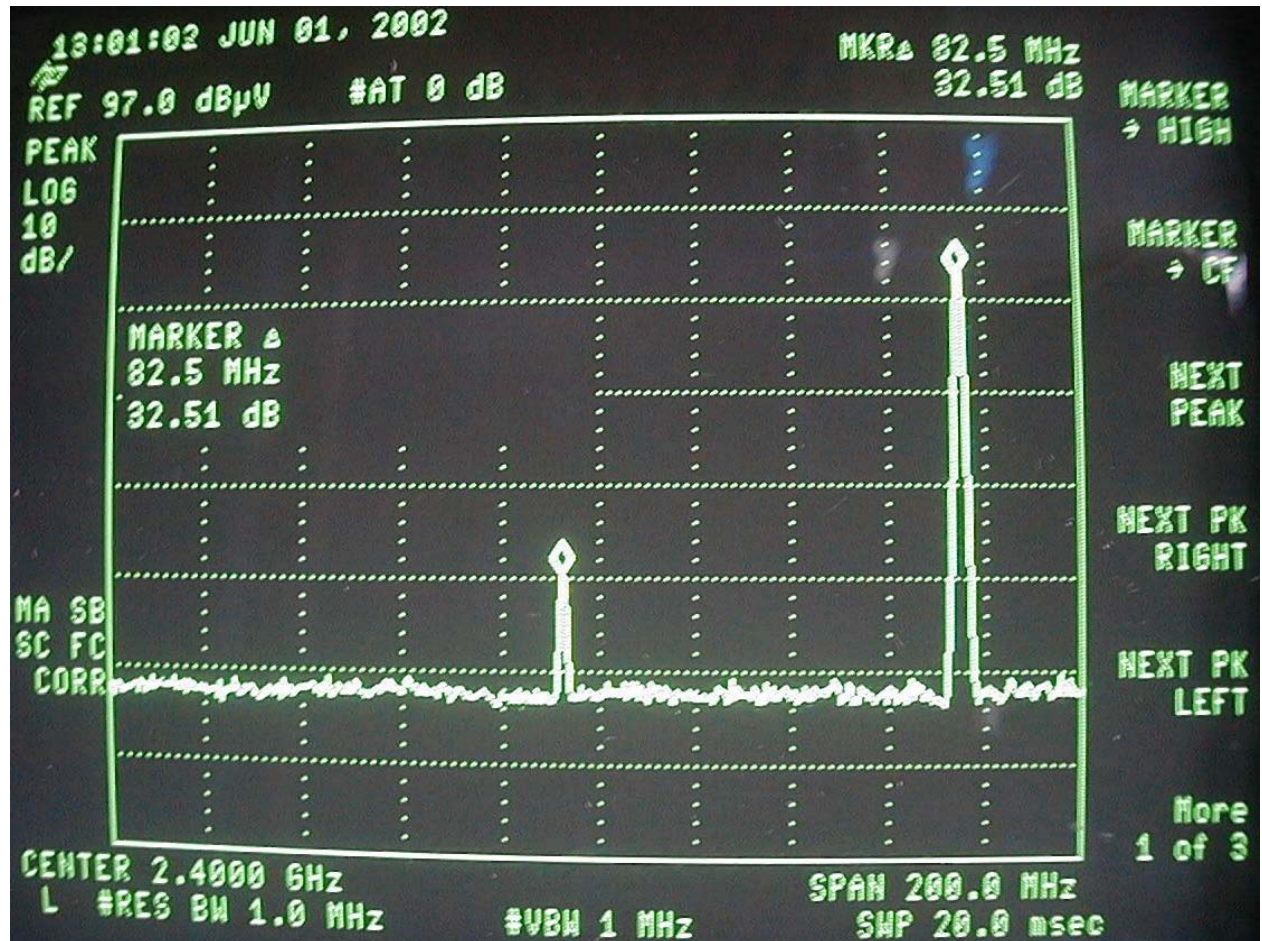
Base Channel 40



Band edge:

85.89dB μ V/m (Peak Amplitude) – 35.71dB = 50.18dB μ V/m < 53.94dB μ V/m

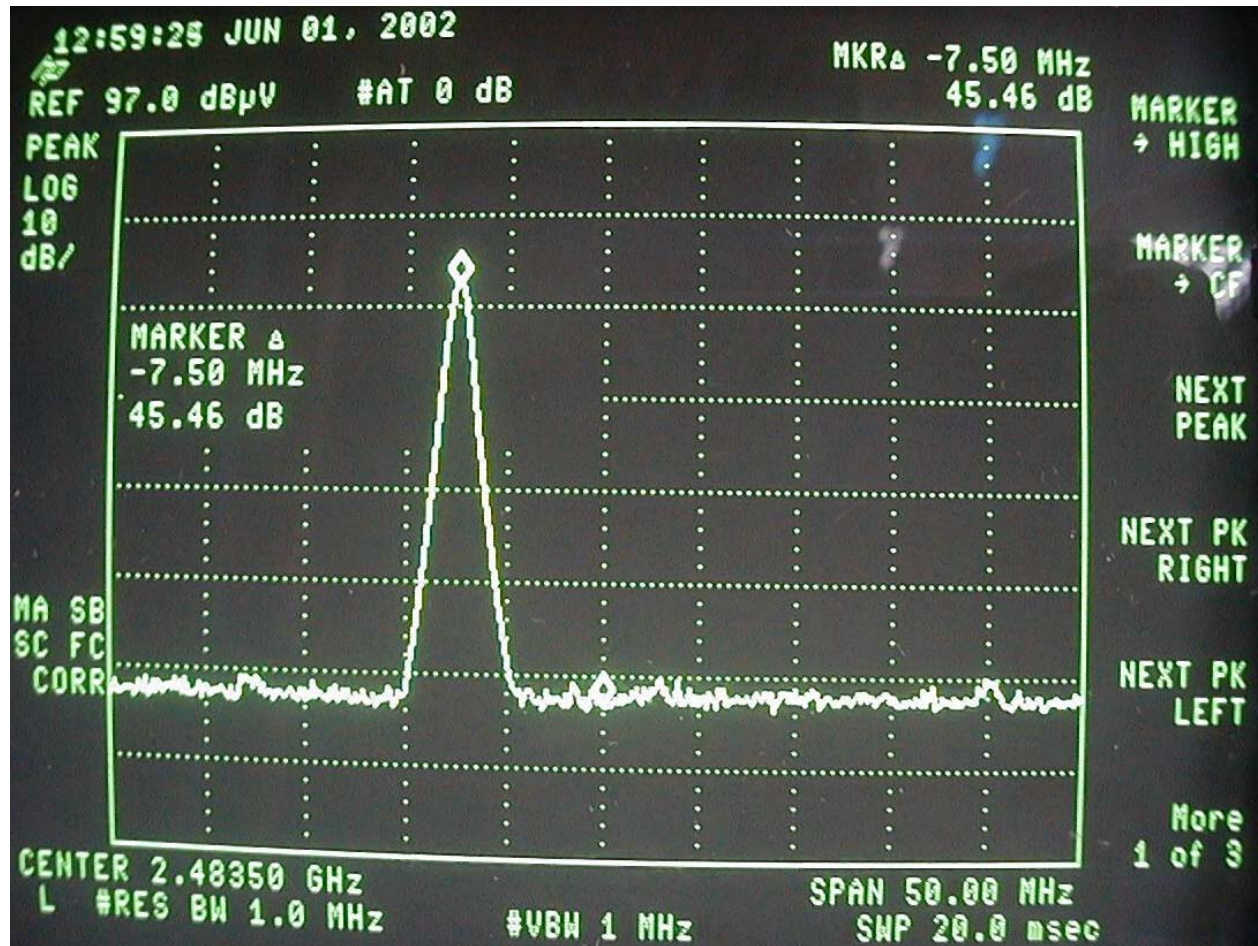
Handset Channel 1



Band edge:

$80.42\text{dB } \mu\text{V/m (Peak Amplitude)} - 32.51\text{dB} = 47.91\text{dB } \mu\text{V/m} < 53.94\text{dB } \mu\text{V/m}$

Handset Channel 40



Band edge:

$79.87\text{dB } \mu\text{V/m (Peak Amplitude)} - 45.46\text{dB} = 34.31\text{dB } \mu\text{V/m} < 53.94\text{dB } \mu\text{V/m}$

Appendix C

List of Modifications

EMI Solution:

A. Handset:

1. The metal cover of RF modular connected to rear GND of PCB.
(Part No.: 9407H1L)

B. Base

2. The metal cover of RF modular connected to rear GND of PCB.
(Part No.: 9407/08B1A1)
3. Two large GND were connected in solder side.
4. VCC of DC1 connected by-pass 330pf capacitor to GND. It is located in solder side.

Statement of Applicant:

I acknowledge that the modifications made to the EUT for compliance during testing will be incorporated into mass production units.

Mfg.: CIDMATE International Technology Inc.

By :


Signature

Date: June 19, 2002