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No. : HM161935

**Applicant (WIC020):** Winbel Co Ltd

9C Fully Industrial Building, 6 Tsun Yip Lane, Kwun Tong

Hong Kong

Manufacturer: Winbel Co Ltd

9C Fully Industrial Building, 6 Tsun Yip Lane, Kwun Tong

Hong Kong

**Description of Samples:** Product: Co Co Call Round Type Transmitter

Brand Name: Co Co Call Model Number: WM109U40

FCC ID: WDZCOCOCALL300

**Date Samples Received:** 2008-06-12, 2008-08-06, 2008-08-21

**Date Tested:** 2008-06-19 to 2008-08-25

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2007 and ANSI C63.4:2003 for FCC Certification.

**Conclusions:** The submitted product COMPLIED with the requirements of

Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this

Test Report.

Remarks: ----

Dr. LEE Kam Chuen, ElectroMagnetic Compatibility Department For and on behalf of

The Hong Kong Standards and Testing Centre Ltd.



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# 1.0 General Details

# 1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd. EMC Laboratory 10 Dai Wang Street, Taipo Industrial Estate New Territories, Hong Kong

Telephone: 852 2666 1888 Fax: 852 2664 4353

# 1.2 Applicant Details Applicant

Winbel Co Ltd 9C Fully Industrial Building, 6 Tsun Yip Lane, Kwun Tong Hong Kong

#### Manufacturer

Winbel Co Ltd 9C Fully Industrial Building, 6 Tsun Yip Lane, Kwun Tong Hong Kong



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# 1.3 Equipment Under Test [EUT] Description of Sample

Product: Co Co Call Round Type Transmitter

Manufacturer: Winbel Co Ltd Brand Name: Co Co Call Model Number: WM109U40

Rating: 3Vd.c. ("AA" size battery x 2)

#### 1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Winbel Co Ltd., Co Co Call Round Type Transmitter. The EUT continues to transmit while button is being pressed. It is button transmitter, Modulation by IC; and type of pulse modulation.

## 1.4 Date of Order

2008-06-12, 2008-08-06, 2008-08-21

## 1.5 Submitted Sample(s):

3 Samples

# 1.6 Test Duration

2008-06-19 to 2008-08-25

## 1.7 Country of Origin

China



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# 2.0 <u>Technical Details</u>

# 2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 2007 and ANSI C63.4:2003 for FCC Certification.

# 2.2 Test Standards and Results Summary Tables

EMISSION Results Summary								
Test Condition	Test Requirement	Test Method	Class /	Test	Result			
			Severity	Pass	Failed			
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.231a	ANSI C63.4:2003	N/A					
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	N/A					

Note: N/A - Not Applicable



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## 3.0 Test Results

#### 3.1 Emission

## 3.1.1 Radiated Emissions (30 – 1000MHz)

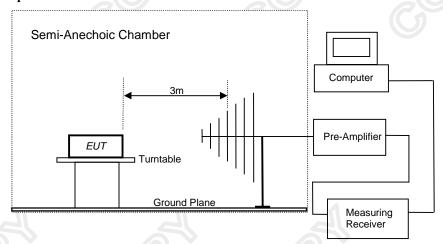
Test Requirement: FCC 47CFR 15.231a
Test Method: ANSI C63.4:2003
Test Date: 2008-08-25
Mode of Operation: Tx mode

#### **Test Method:**

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

\*: Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

#### **Test Setup:**





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## Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.231a]:

Frequency Range of	Field Strength of	Field Strength of
Fundamental	Fundamental Emission	Spurious Emission
	[Average]	[Average]
[MHz]	$[\mu V/m]$	$[\mu V/m]$
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750 *	125 to 375 *
174-260	3,750	375
260-470	3,750 to 12,500 *	375 to 1,250 *
Above 470	12,500	1,250

<sup>\*</sup> Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz,  $\mu$ V/m at 3 meters=56.81818(F)-6136.3636; for the band 260-470 MHz,  $\mu$ V/m at 3 meters =41.6667(F)-7083.3333. The maximum permissible unwanted emission level is 20dB below the maximum permitted fundamental level.

#### **Results:**

Field Strength of Fundamental Emissions								
	Peak Value							
Frequency Measured Correction Field Field Limit E-Field								
	Level @3m	Factor	Strength	Strength	@3m	Polarity		
MHz	$dB\mu V$	dB/m	dBμV/m	μV/m	μV/m			
315.00	60.4	16.1	76.5	6683.4	60,416.8	Horizontal		

Field Strength of Fundamental Emissions									
Average Value									
Frequency	Measured	Correction	Field	Field	Limit	E-Field			
	Level @3m	Factor	Strength	Strength	@3m	Polarity			
MHz	$dB\mu V$	dB/m	dBμV/m	μV/m	$\mu V/m$				
315.00	54.0	16.1	70.1	3198.9	6,041.7	Horizontal			



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#### **Results:**

Field Strength of Spurious Emissions Average Value								
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field		
	Level @3m	Factor	Strength	Strength		Polarity		
MHz	$dB\mu V$	dB/m	dBμV/m	μV/m	μV/m			
630.00	13.9	23.1	37.0	70.8	6,041.7	Horizontal		
945.10	9.6	26.5	36.1	63.8	6,041.7	Horizontal		
1260.00	< 1.0	32.2	< 33.2	< 45.7	6,041.7	Vertical		
+ 1575.00	< 1.0	38.8	< 39.8	< 97.7	5,000.0	Vertical		
1890.00	< 1.0	17.4	< 18.4	< 8.3	6,041.7	Vertical		
+ 2205.00	< 1.0	17.2	< 18.2	< 8.1	5,000.0	Vertical		
2520.00	< 1.0	18.8	< 19.8	< 9.8	6,041.7	Vertical		
+ 2835.00	< 1.0	19.7	< 20.7	< 10.8	5,000.0	Vertical		
3150.00	< 1.0	20.6	< 21.6	< 12.0	6,041.7	Vertical		

#### Remarks:

Adjusted by Duty Cycle = -6.4dB

FCC Limit for Average Measurement = 41.6667(315MHz)-7083.3333=6,041.6772µV/m

+: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 were not adjusted for averaging and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB



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#### Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

## **Results:**

Radiated Emissions								
	Quasi-Peak							
Frequency	Frequency Measured Correction Field Field Limit @3m E-Field							
	Level @3m	Factor	Strength	Strength		Polarity		
MHz	$dB\mu V$	dB/m	dBμV/m	μV/m	μV/m			
Emissions detected are more than 20 dB below the FCC Limits								

## Remarks:

No further spurious emissions found between lowest internal frequency and 30MHz

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB



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## 3.2 20dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.231a

Test Method: ANSI C63.4:2003 (Section 13.1.7)

Test Date: 2007-08-12 Mode of Operation: On mode

#### **Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Test Setup:**

As Test Setup of clause 3.1.1 in this test report.



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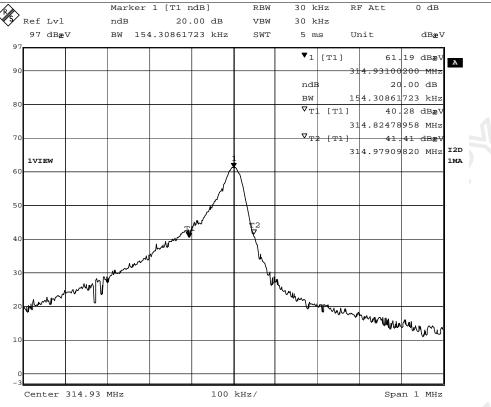
#### Limits for 20 dB Bandwidth of Fundamental Emission:

Frequency Range	20dB Bandwidth	FCC Limits *
[MHz]	[KHz]	[KHz]
314.9	134.31	787.75

FCC Limit for Bandwidth measurement = (0.25%)(Center Frequency)

=(0.0025)(314.9) = 787.75KHz

# **20dB Bandwidth of Fundamental Emission**



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## Appendix A

# List of Measurement Equipment

# Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM020	HORN ANTENNA	EMCO	3115	4032	2006/07/11	2009/07/11
EM215	MULTIDEVICE CONTROLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3		2006/05/02	2009/05/02
EM174	BICONILOG ANTENNA	EMCO	3142C	00029071	2008/01/24	2009/01/24
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2008/06/16	2009/06/16
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2006/07/26	2009/07/26

## **Line Conducted**

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM197	LISN	EMCO	4825/2	1193	2007/10/30	2009/10/30
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2008/06/16	2009/06/16
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	2008/01/23	2009/01/23

## Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined



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#### Appendix B

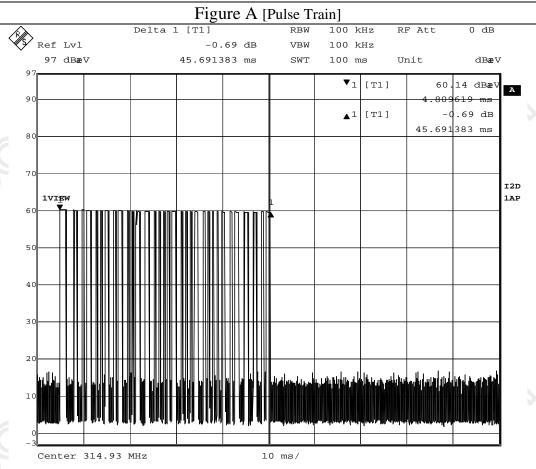
#### **Duty Cycle Correction During 100msec**

Each function key sends a different series of characters, but each packet period (45.3msec) never exceeds a series of  $13 \log (0.962$ msec) or 20 short (0.481 msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (13x0.962)+(20x0.481)msec per 45.3msec=48.8% duty cycle. Figure A through D show the characteristics of the pulses train for one of these functions.

#### Remarks:

Duty Cycle Correction = 20Log(0.488) =-6.4dB

The following figures [Figure A to Figure E] showed the characteristics of the pulse train for one of these functions.



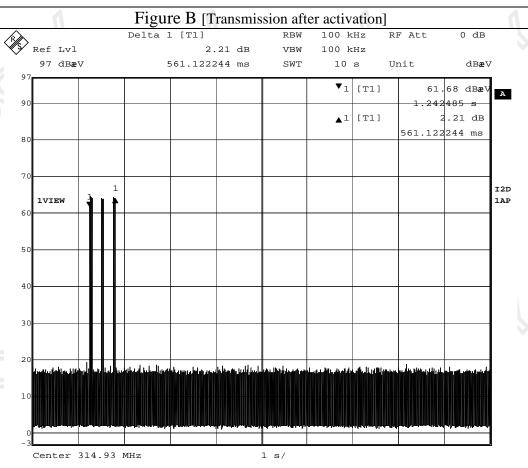
Date: 19.JUN.2008 16:24:31

10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



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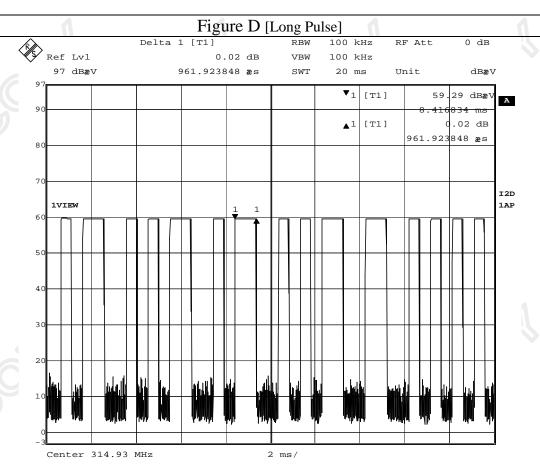
# Figure C [13 long pulses and 20 short pulses within 45.69ms] 1 MHz RBW RF Att 10 dB Ref Lvl VBW 1 MHz 87 dBæV SWT 60 ms Unit dB**æ**V A 80 70 60 I2D 1AP 50 40 30 20 Center 315 MHz 6 ms/

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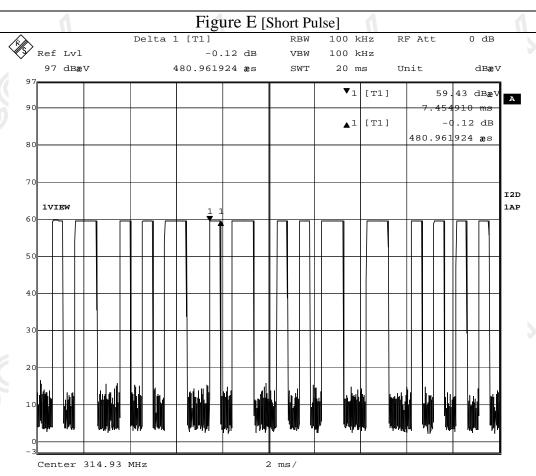


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# Appendix C

## Periodic Operation [FCC 47CFR 15.231(a2)]

According to FCC 47CFR15.231 (a2). A transmitter automatically activated must automatically deactivate within not more than 5 seconds of being released. The EUT ceases transmission almost immediately upon being released and appears to finish the current packet being transmitted. Therefore the longest period of time the transmitter should take to deactivate is a packet length.



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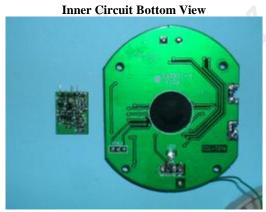
# Appendix D

# Photographs of EUT





Inner Circuit Top View





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## **Photographs of EUT**

Measurement of Radiated Emission Test Set Up

\*\*\*\*\* End of Test Report \*\*\*\*\*