ECMG
Worldwide Certification Solutions
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FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: Cordless Bed monitor

Model Number : TM-01

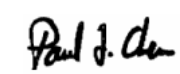
Trademark : RONDISH

FCC ID : WNGTM-01

Prepared for RONDISH CO. LTD

According to FCC Part 15 (2007), Subpart C

Test Report #:	RON-0807-10018-FCCID
Prepared by:	Jawen Yin
Reviewed by:	Ivan Wen
QC Manager:	Paul Chen

Test Report Released by:  2008, Aug. 28

Paul Chen Date

List Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	WNGTM-01 _Test report.pdf
Operation Description	Technical Description	WNGTM-01 _operation description.pdf
External Photos	External Photos	WNGTM-01 _External Photos
Internal Photos	Internal Photos	WNGTM-01 _Internal Photos
Block Diagram	Block Diagram	WNGTM-01 _Block Diagram.pdf
Schematics	Circuit Diagram	WNGTM-01 _Schematics.pdf
ID Label/Location	Label and Location	WNGTM-01 _Label & Location.pdf
User Manual	User Manual	WNGTM-01 _User Manual.pdf
Test setup photos	Test setup photos	WNGTM-01 _Test Setup Photos

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location: Guangdong Galanz Enterprise Co. Ltd

25 South Ronggui Rd., Shunde, Foshan, Guangdong, China

Tel : 86-755-23612785

Fax : 86-755-23612537

FCC Registration Number: 580210

CNAS Number : L2244

List of Test Instruments

Equipment	Manufacture	Model	Serial No.	Calibrated Untill
Spectrum Analyzer	R&S	FSP30	100755	2008-11-30
EMI Receiver	SCHAFFNER	SMR4503	11725	2009-07-08
Double-ridged Wave guide horn	ETS	3115	6587	2010-08-02
Amplifier	Agilent	83017A	MY39500438	2009-07-11
Biconilog Antenna	ETS	3142C	00042672	2008-09-28
Semi-anechoic Chamber	ETS	N/A	N/A	2009-05-24

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Worldwide Certification Solution Inc., Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Table of Contents

Administrative Data

Test Sample: Cordless Bed Monitor

Model Number: TM-01

Model Tested: TM-01

Brand name: RONDISH

Date Tested: 2008 , Aug. 21

Applicant: RONDISH CO. LTD

UNIT G & H, 4/F, BLOCK 1, KWAI TAK IND. CTR,
15-33 KWAI TAK ST., KWAI CHUNG, N.T. HONG KONG

Telephone : + 0852 -25431955

Fax : + 0852 -25417411

Manufacturer : RONDISH CO. LTD

EUT Description

RONDISH CO. LTD Model number TM-01 (referred to as the EUT in this test report) is a Cordless Bed monitor.

Frequency Range:	433.92MHz±0.5
Channel Number:	1
Modulation Type:	ASK
Power Supply:	DC 3V Battery

Test Summary

The Electromagnetic Compatibility requirements on TM-01 for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

Test Summary Reference FCC Part 15 (2007), Subpart C			
Specification	**Description**	**Test Results**	**Remark**
FCC Part 15.203	Antenna Requirement	Compliance	Attachment 1
FCC Part 15.207	Conducted Emission Test	Test is not applicable, because EUT only employ battery power for operation.	
15.231 (a)	Transmitting Time Test	Compliance	Attachment 2
15.231 (b)	Field Strength of Fundamental and Spurious Emissions	Compliance	Attachment 3
15.231 (c)	Bandwidth	Compliance	Attachment 4

EUT Exercise Software

The device is not programmable and does not use software.

Equipment Modification

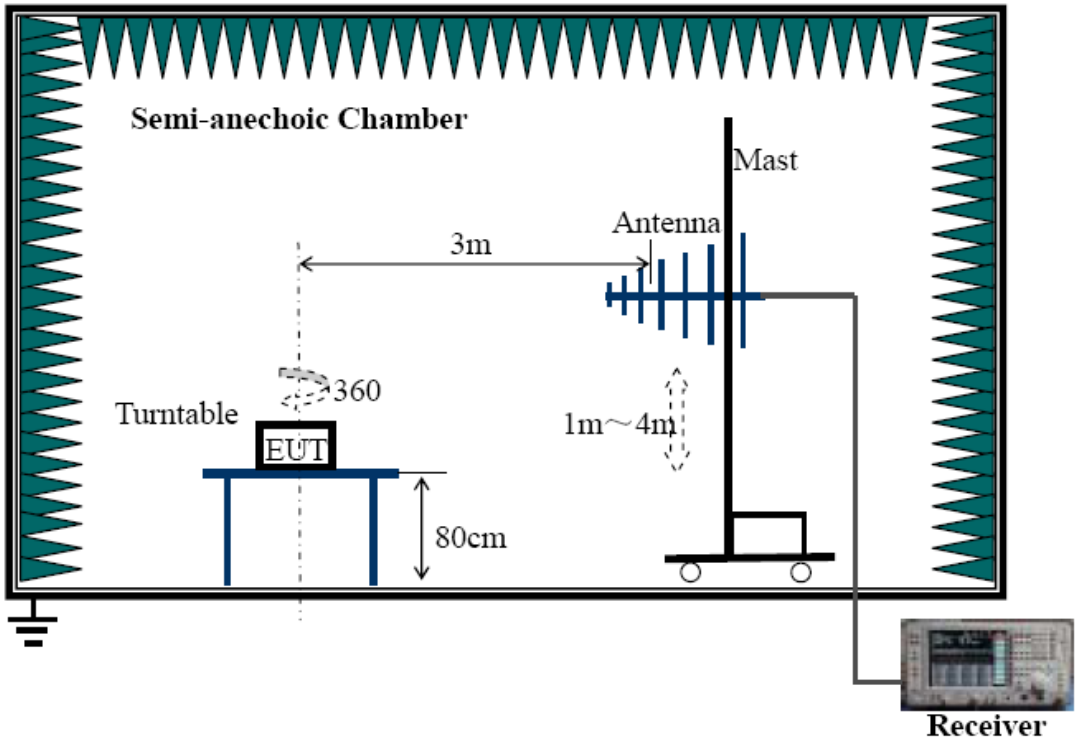
Any modifications installed previous to testing by RONDISH CO. LTD will be incorporated in each production model sold or leased in United States.

There were no modifications installed by EMC Compliance Management Group (China) test personnel.

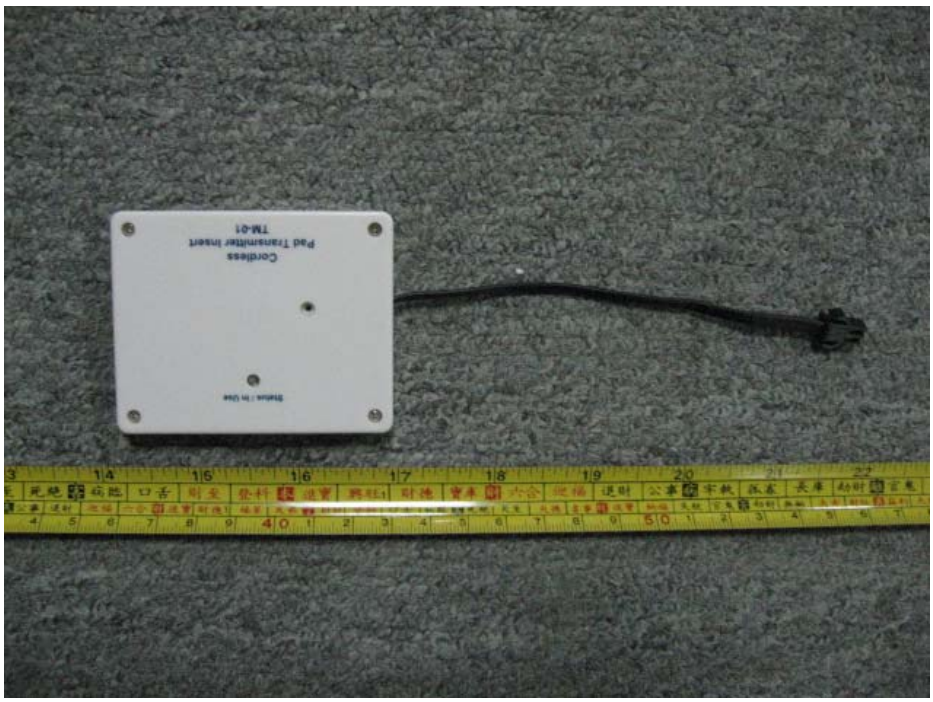
Test System Details

EUT	
Model Number:	TM-01
Model Tested:	TM-01
Trademark::	RONDISH
Serial Number:	Engineering Sample
Input Voltage:	3V DC
Description:	Cordless Bed monitor
Manufacturer:	RONDISH CO. LTD
Support Equipment	
None	
Cable Description	
None	

Configuration of Tested System

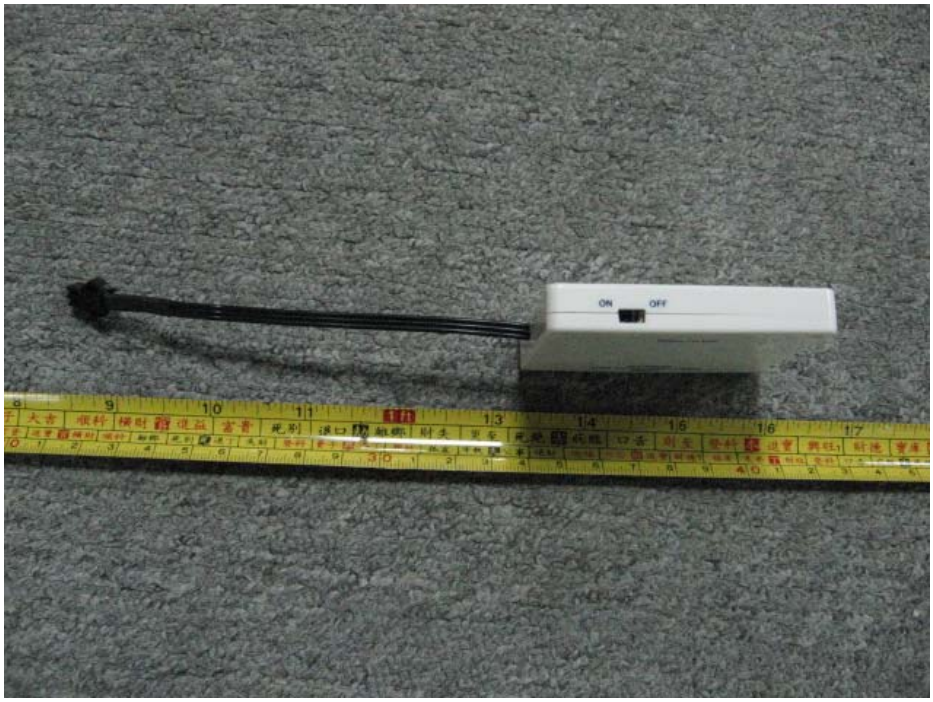


EUT Sample Photos of



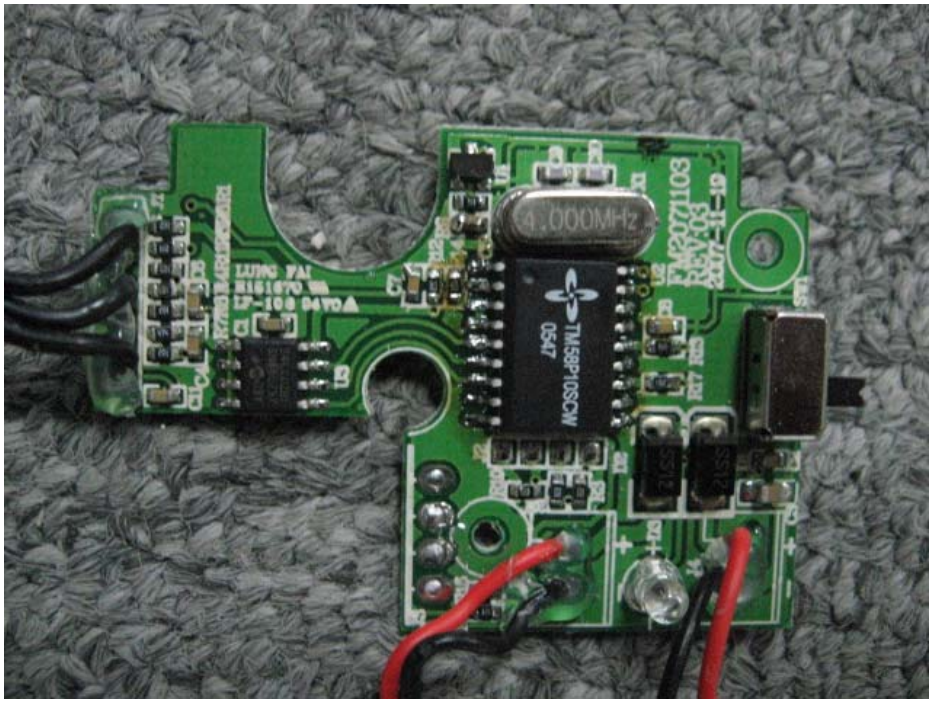
Front View of EUT

Back View of EUT

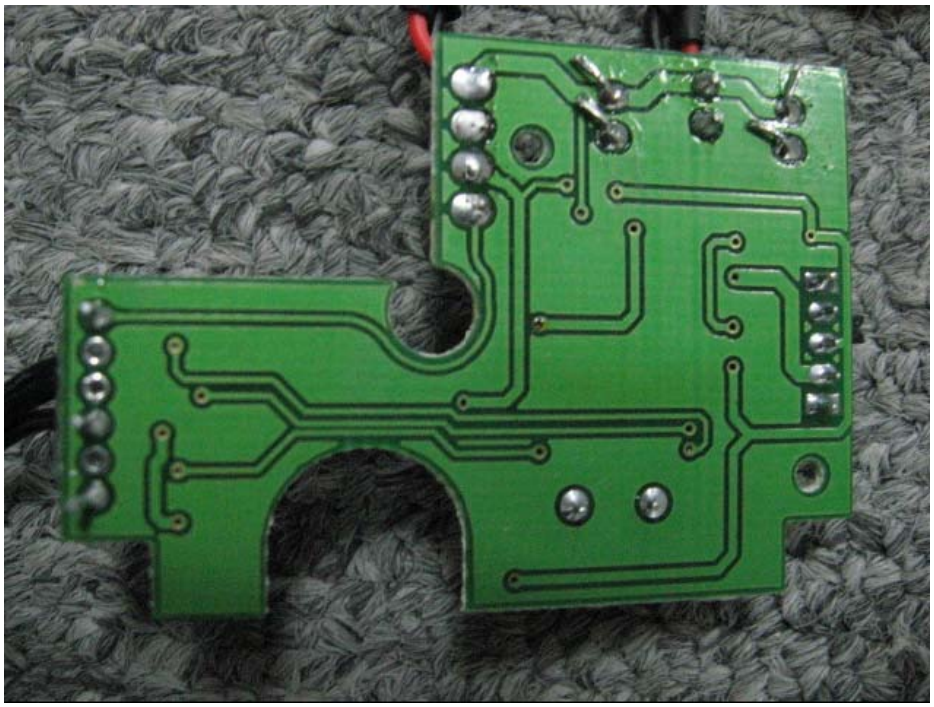


Side View of EUT


Uncovered View



Main Board View


Main Board View #1

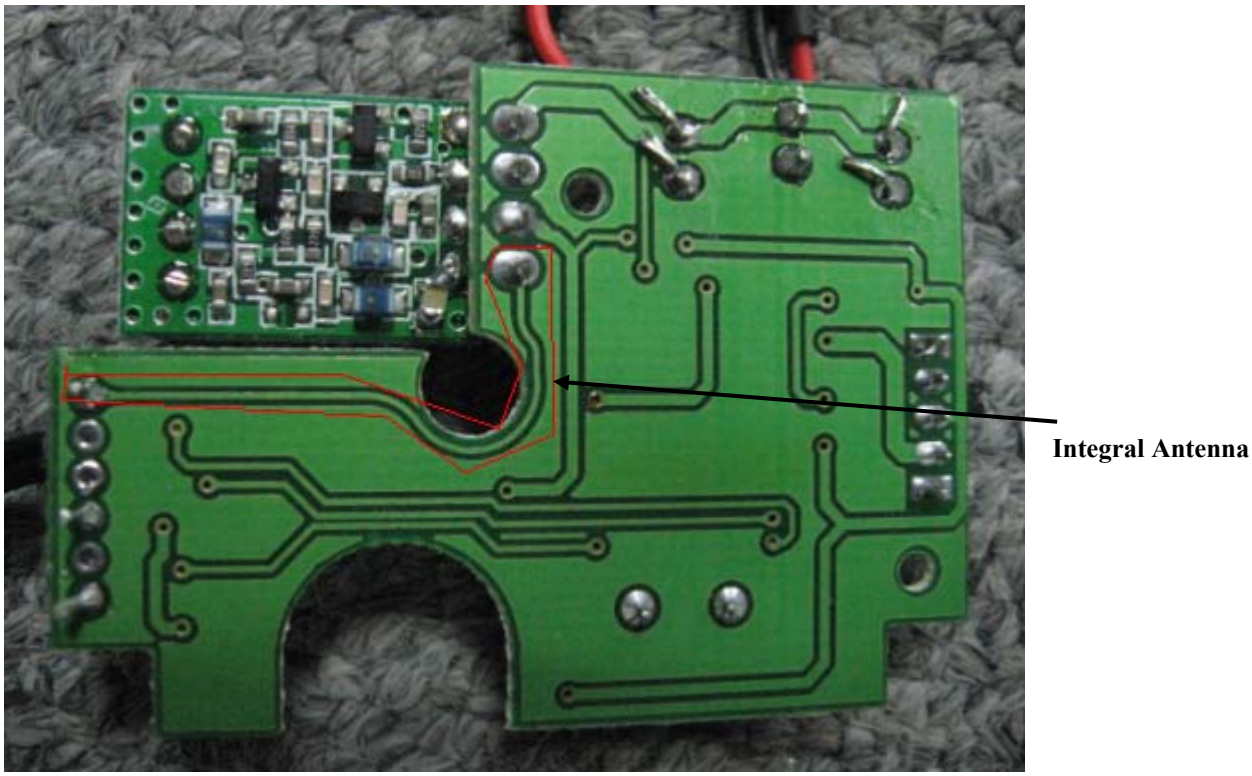
RF Module View


RF Module View#1

ATTACHMENT 1 – ANTENNA REQUIREMENT

CLIENT:	RONDISH CO. LTD	**TEST STANDARD:**	FCC Part 15.203
MODEL TESTED:	TM-01	**PRODUCT:**	Cordless Bed monitor
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.8 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Jawen Yin	**DATE OF TEST:**	2008, Aug. 21
SETUP METHOD:	N/A		
ANTENNA REQUIREMENT:	An intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.		
TEST VOLTAGE:	3V DC Battery		
TEST STATUS:	Normal Operation		
RESULTS:	The EUT meets the Antenna requirement. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
M. UNCERTAINTY:	N/A		

FCC Section	FCC Rules	Conclusion
15.203	Described how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT. The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed: ● The application (or intended use) of the EUT ● The installation requirements of the EUT ● The method by which the EUT will be marketed	The RF Device uses an integral antenna without connector

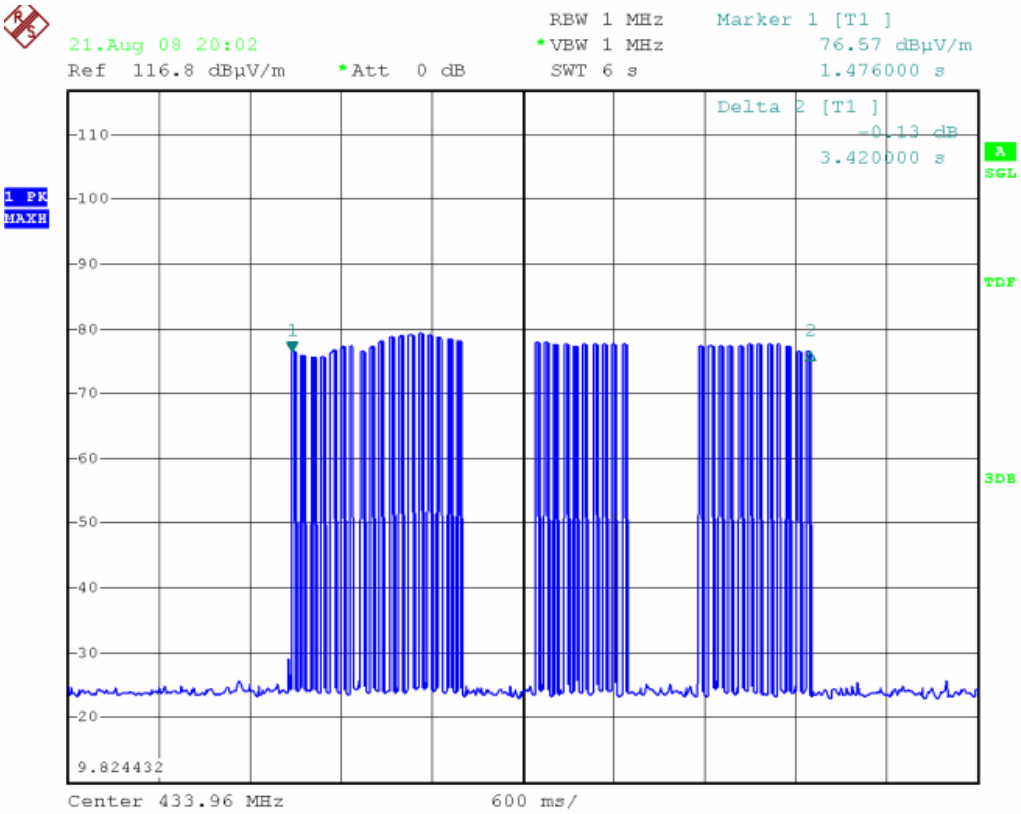


Integral Antenna without Connector View

ATTACHMENT 2 – Stop Transmitting Time Test

CLIENT:	RONDISH CO. LTD	**TEST STANDARD:**	FCC Part 15.231 (a)(2)
MODEL TESTED:	TM-01	**PRODUCT:**	Cordless Bed monitor
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.8 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Jawen Yin	**DATE OF TEST:**	2008, Aug. 21
SETUP METHOD:	N/A		
OPERATION MODE REQUIREMENT:	A transmitter activated automatically shall cease transmission within 5 seconds after activation.		
TEST VOLTAGE:	3V DC Battery		
TEST STATUS:	Keep Tx in normal transmission mode, modulated, to measure the transmitting time.		
RESULTS:	The EUT meets the operation mode requirement. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
M. UNCERTAINTY:	N/A		

FCC Section	FCC Rules	Conclusion
15.231 (a)(2)	A transmitter activated automatically shall cease transmission within 5 seconds after activation.	PASS
The Transmitting time is 3.42 Seconds.		



ATTACHMENT 3 – Field Strength of Emission

CLIENT:	RONDISH CO. LTD	**TEST STANDARD:**	FCC Part 15.205
MODEL TESTED:	TM-01	**PRODUCT:**	Cordless Bed monitor
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Jawen Yin	**DATE OF TEST:**	2008, Aug. 21
SETUP METHOD:	According to Section 13.1.4 of ANSI C63.4 - 2003		
REQUIREMENT:	Kindly see the next page.		
TESTED RANGE:	30MHz to 5000MHz		
TEST VOLTAGE:	3V DC Battery		
TEST STATUS:	Keep Tx in continuous transmission mode, modulated		
RESULTS:	The EUT meets the restricted bands of operation requirement. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB		

Requirement:

According to section 15.231(b), the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
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

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

The fundamental frequency is 433.95MHz for this EUT.
The fundamental limit$_{3m}$=41.667 x 433.95-7083.333=10998.06 uV/m
20log(10998.06 uV/m)=80.8 dB uV/m

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

Section 15.205: Restricted bands of operation.

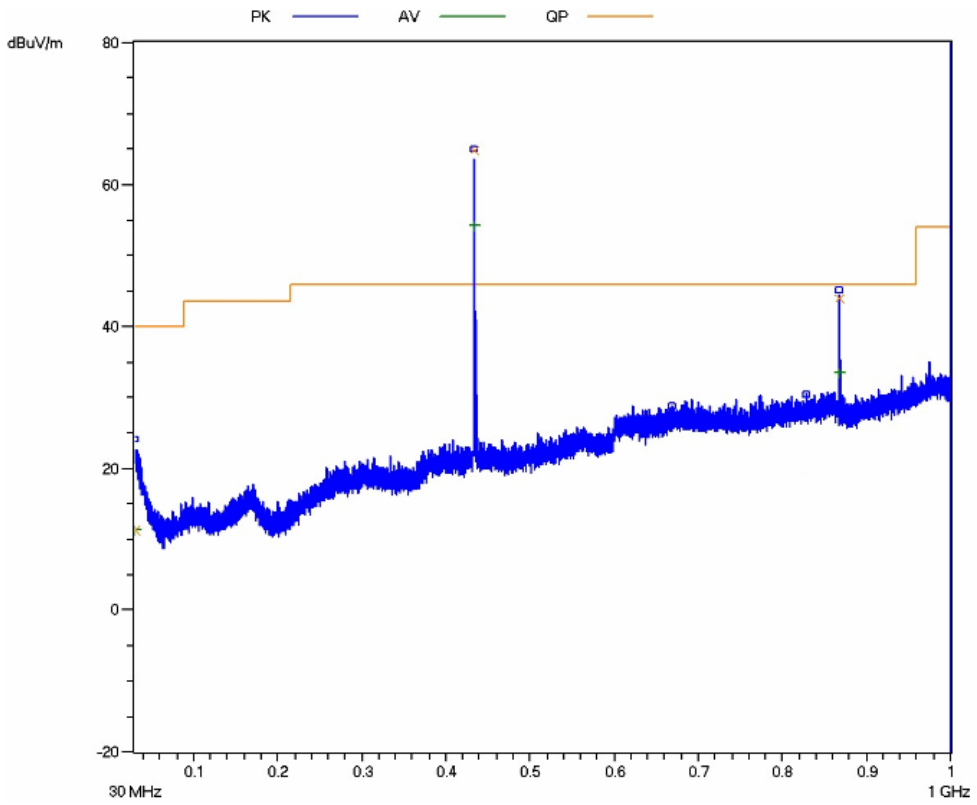
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

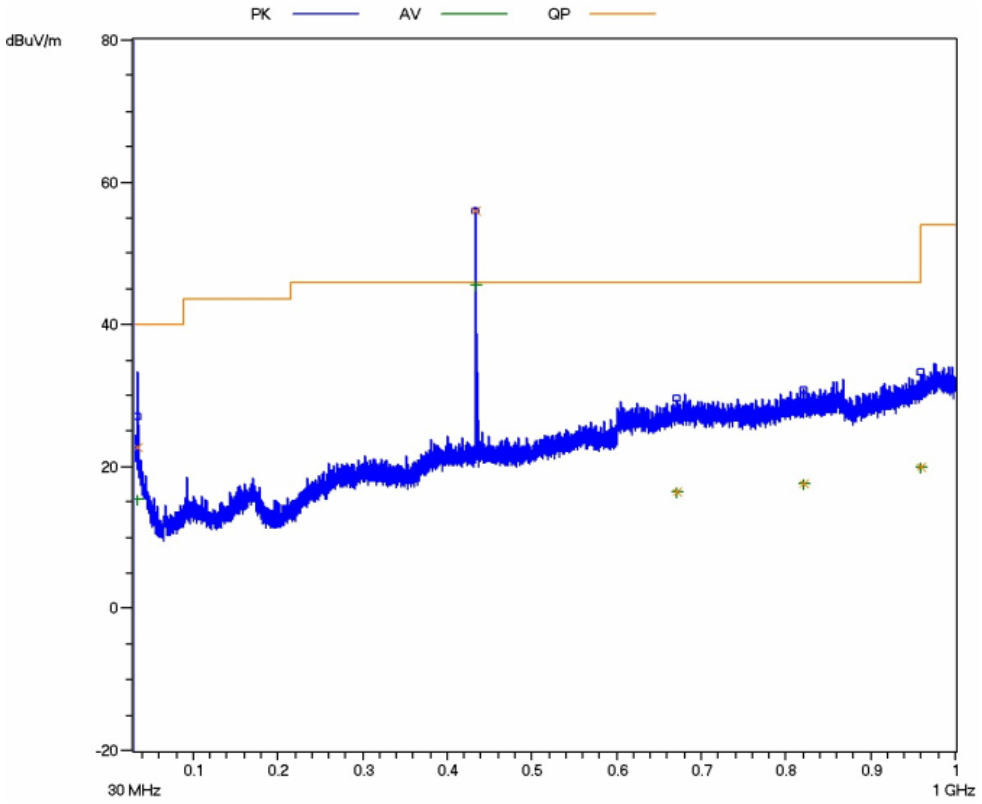
Field strength limits of 15.209:

Other Frequency (MHz)	*Field strength (uV/meter)*	*dB uV/meter*
30-88	*100*	*40.0*
88-216	*150*	*43.5*
216-960	*200*	*46.0*
Above 960	*500*	*54.0*

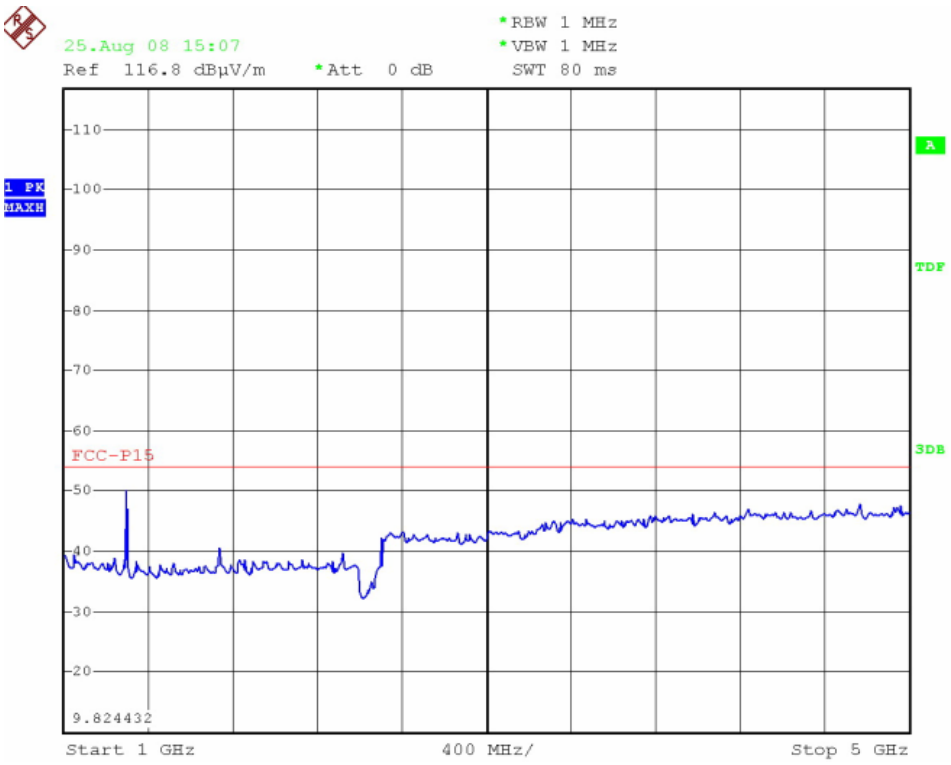
1. Field Strength (dBmV/m)=20log Field Strength (mV/m).
2. In the emission tables above,the tighter limit applies at the band edge



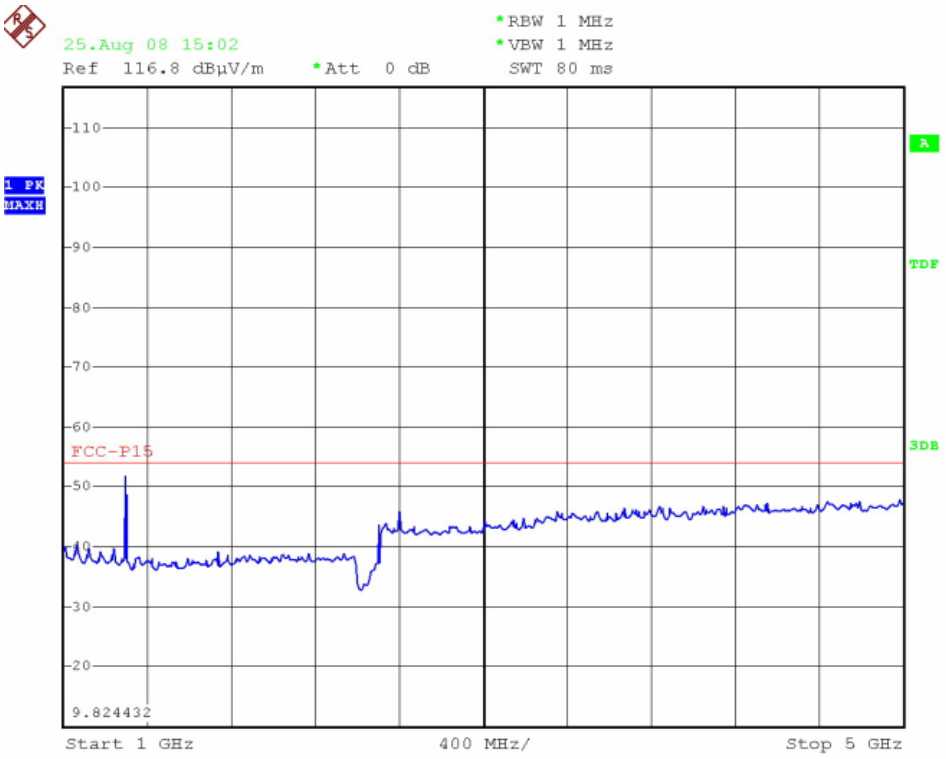
Horizontal – Below 1GHz



Vertical– Below 1GHz



Horizontal - Above 1GHz



Vertical - Above 1GHz

Field Strength of Emission:

Polarization	Frequency (MHz)	Reading Level dB(μV)	Factor (dB)	Field Strength dB(μV/m)	Limit dB(μV/m)	Margin dB(μV/m)	Remark
Horizontal	30.96	31.26	-5.73	25.53	40.00	-14.47	QP
	433.95	74.48	-7.40	67.08	100.80	-32.92	Peak
	669.52	18.25	-1.09	17.16	46.00	-28.84	QP
	867.92	43.82	2.87	40.95	80.80	-39.85	Peak
	1301.86	51.18	0.73	51.91	80.80	-28.09	Peak
Vertical	33.20	29.86	-5.73	24.13	40.00	-15.87	QP
	433.95	66.36	-7.40	58.96	100.80	-41.04	Peak
	670.96	18.15	-1.09	17.06	46.00	-28.94	QP
	867.92	30.16	2.87	33.03	80.80	-47.77	Peak
	1301.86	51.69	0.73	52.42	80.80	-23.58	Peak

Note:
1. Emission Level=Reading Level + Factor (Antenna factor + Cable Loss)
2. The other emission level is at least 20 dB below the official limit.

Fundamental and Spurious Emission (Average Value) :

Polarization	Frequency (MHz)	Peak Level dB(μV)	PDCF(dB)	Average Level dB(μV/m)	Limit dB(μV/m)	Margin dB(μV/m)
Horizontal	433.95	67.08	-11.44	55.64	80.80	-25.16
	867.92	40.95	-11.44	29.51	60.80	-31.29
	1301.86	51.91	-11.44	40.47	60.80	-20.33
Vertical	433.95	58.96	-11.44	47.52	80.80	-33.28
	867.92	33.03	-11.44	21.59	60.80	-39.21
	1301.86	52.42	-11.44	40.98	60.80	-19.82

Note:
1. Average Level=Peak Level +PDCF (According to Section 15.35)
2. PDCF = 20 x log (Duty Cycle)

PDCF Calculation :

Duty Cycle Correction Factor is calculated by averaging the sum of the pulse train. Correction factor is measured as follows:

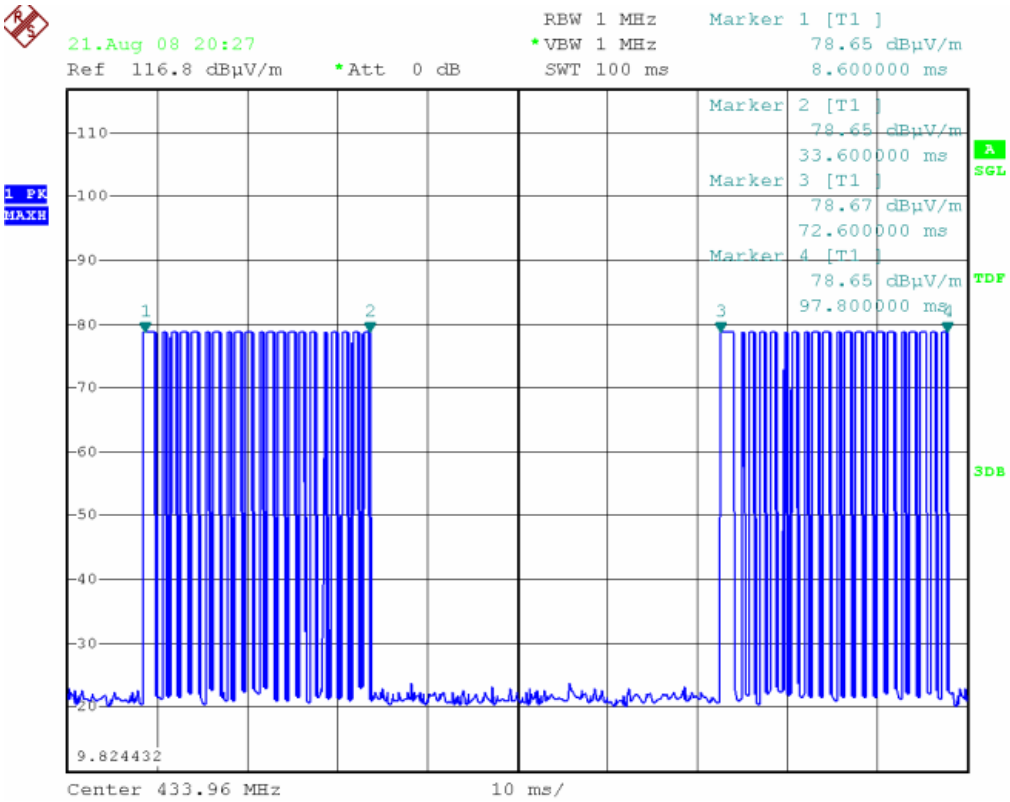
Keep the EUT in normal operation mode (modulated), and set the spectrum to the fundamental frequency and set the span width to 0 Hz. Then connect a storage oscilloscope to the video output of the spectrum that is used to detect the pulse train. Adjust the oscilloscope settings to observe the pulse train and determine the number and width of the pulses, as well as the period of the train.

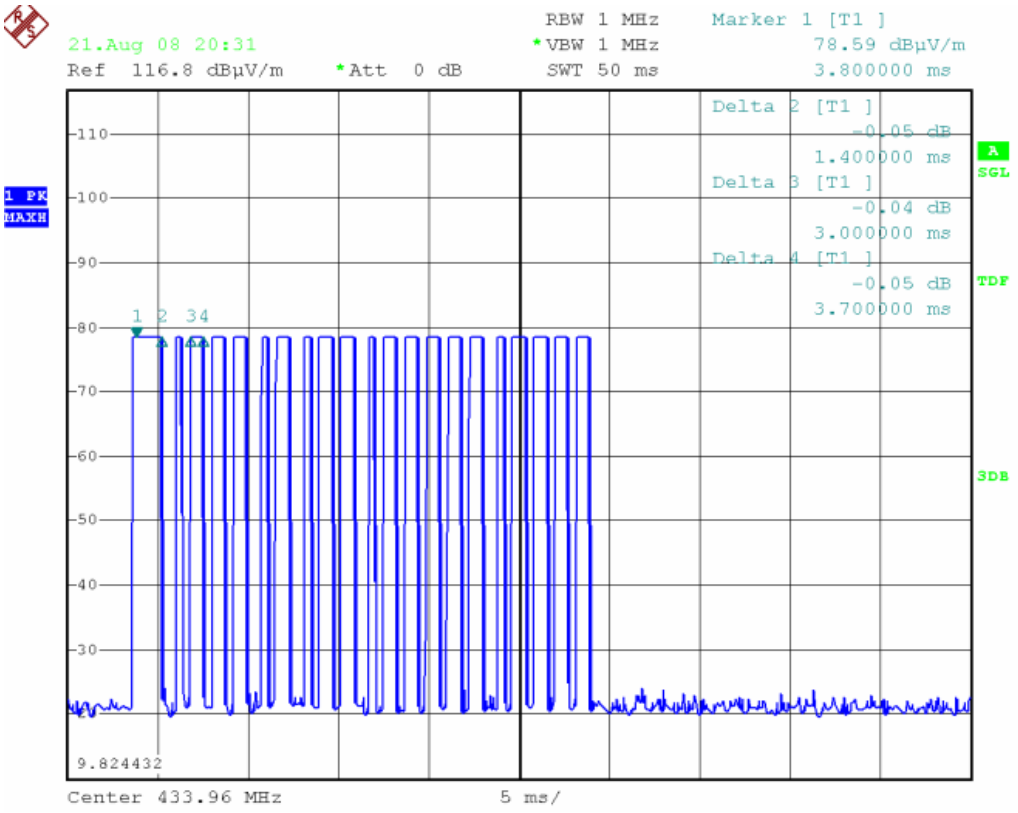
Duty Cycle = $T_{on\ time}/T_{period}$
$T_{on\ time}$ = (0.7ms x15 + 1.4ms + 0.3ms x 5) x 2 = 26.8 ms

PDCF = 20 X Log (Duty Cycle)

PDCF in 0.10s at its maximum value
=|20log(26.8ms/100ms)
= -11.44

Details refer to the following test graph below:




RBW 1 MHz
Marker 1 [T1]
21.Aug 08 20:31
*VBW 1 MHz
78.59 dBµV/m
Ref 116.8 dBµV/m
*Att 0 dB
SWT 50 ms
3.800000 ms
Delta 2 [T1]
-0.05 dB
1.400000 ms
Delta 3 [T1]
-0.04 dB
3.000000 ms
Delta 4 [T1]
-0.05 dB
3.700000 ms
1 PK
MAXH
A
SGL
TDF
3DB
110
100
90
80
70
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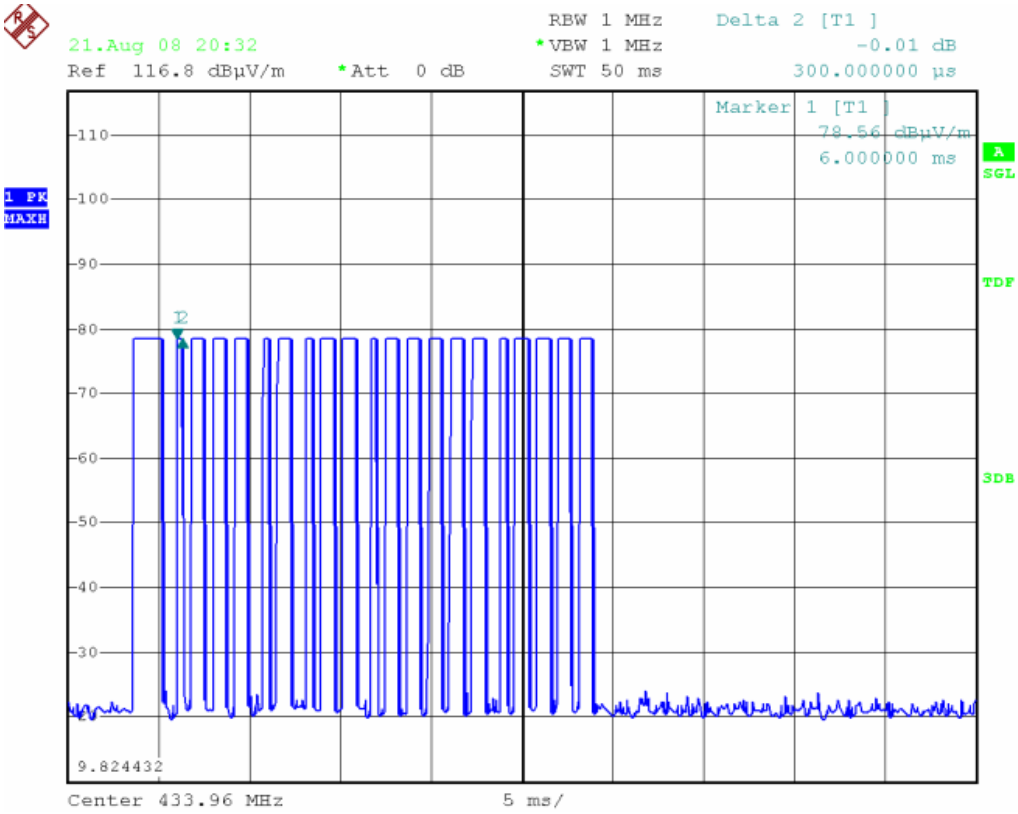
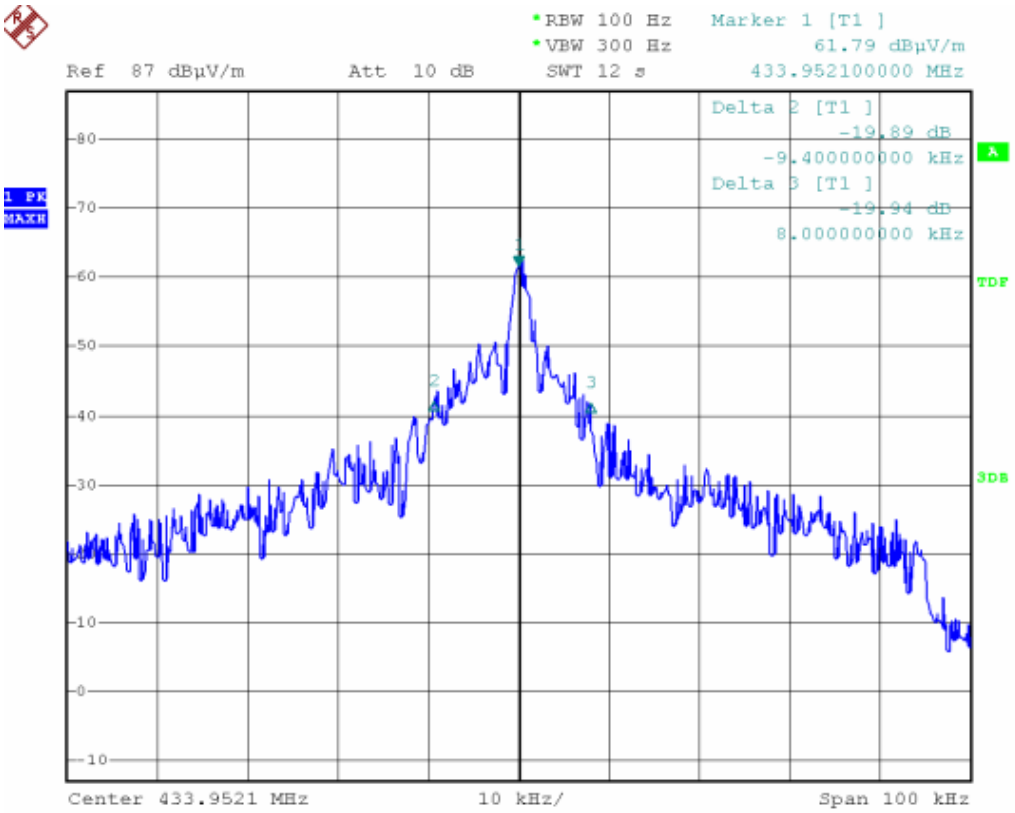
50
40
30
1 2 34
9.824432
Center 433.96 MHz
5 ms/


RBW 1 MHz
Delta 2 [T1]
21.Aug 08 20:32
*VBW 1 MHz
-0.01 dB
Ref 116.8 dBµV/m
*Att 0 dB
SWT 50 ms
300.000000 µs
Marker 1 [T1]
78.56 dBµV/m
6.000000 ms
1 PK
MAXH
A
SGL
TDF
3DB
110
100
90
80
70
60
50
40
30
2
9.824432
Center 433.96 MHz
5 ms/

ATTACHMENT 4 – 20 dB Bandwidth Measurement

CLIENT:	RONDISH CO. LTD	**TEST STANDARD:**	FCC Part 15.205
MODEL TESTED:	TM-01	**PRODUCT:**	Cordless Bed monitor
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Jawen Yin	**DATE OF TEST:**	2008, Aug. 21
SETUP METHOD:	According to Section 13.1.7 of ANSI C63.4 - 2003		
BANDWIDTH REQUIREMENT:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, The emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.		
TEST PROCEDURE:	Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external signal generator. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the spectrum analyzer shall be set to capture all products of the modulation process, including the emission skirts. The video bandwidth shall be set to a value at least three times greater than the IF bandwidth of the measuring instrument to avoid the introduction of amplitude smoothing, Video filtering is not used during occupied bandwidth tests. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.		
TEST VOLTAGE:	3V DC Battery		
TEST STATUS:	Keep Tx in normal transmitting mode, modulated		
RESULTS:	The EUT meets the bandwidth requirement. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB		



Frequency Lower(KHz)	Frequency Upper(KHz)	Bandwidth Reading(KHz)	Bandwidth Limit(KHz)	Conclusion
9.4	8	17.4	1084.8	PASS

ATTACHMENT 5 – Test Setup Photos