

FCC PART 15B MEASUREMENT AND TEST REPORT

For

Ningbo Chima winch co.,ltd.

Wangjiaqiao Village, Dongqiaotown, Yinzhou District, Ningbo, Zhejiang Province ,China

FCC ID: 2AM3BCM-CMT

Report Type: Original Report	Product Type: Electric winch wireless controller
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Report Number: RSHD190114001-00A	
Report Date: 2019-01-30	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Ningbo Chima winch co.,ltd.
Test Model	CM-CMT
Product	Electric winch wireless controller
Rate Voltage	DC 7V~18V
Highest Operation Frequency	315MHz
Dimension	49 mm (L)*40 mm (W)*45mm(H)

**All measurement and test data in this report was gathered from production sample serial number: 20190114001. (Assigned by the BACL. The EUT supplied by the applicant was received on 2019-01-14).*

Objective

This report is prepared on behalf of *Ningbo Chima winch co.,ltd.* in accordance with Part 2-Subpart J, and Part 15-Subparts A and B of the Federal Communication Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15, Class B digital device.

Related Submittal(s)

FCC Part 15.231 DSC submittals with FCC ID: 2AM3BCM-CRC.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Test mode: RF Communication

EUT Exercise Software

No exercise software was used to test.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

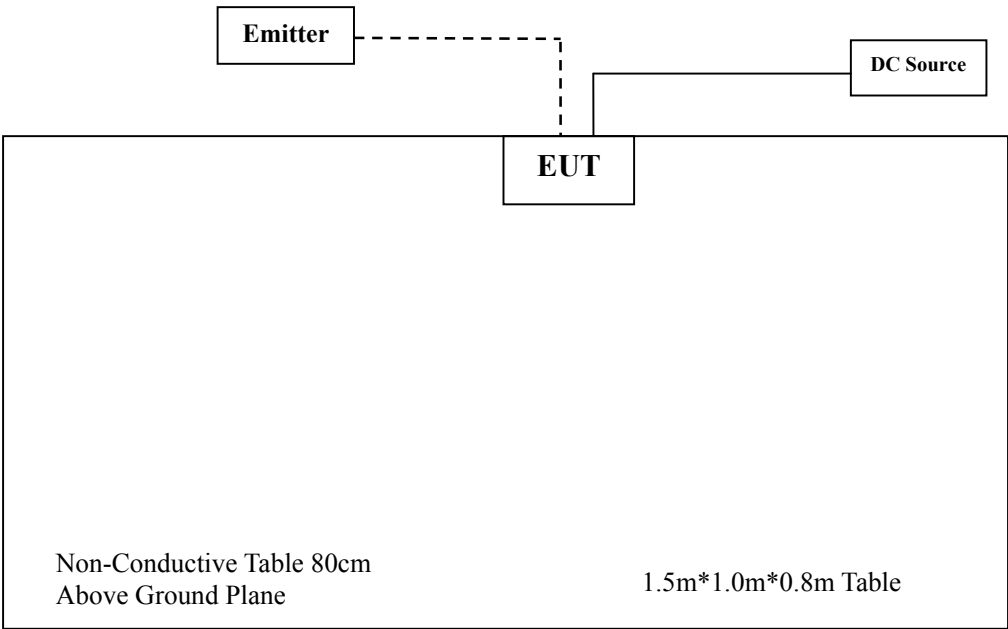
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
BEST	DC Source	PS-1502D+	/
Ningbo Chima winch co.,ltd.	Emitter	CM-CRC	/

External I/O Cable

Cable Description	Length (m)	From/Port	To
Power Cable	1.5	EUT	DC Source

Block Diagram of Radiated Emissions Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Not Applicable
§15.109	Radiated Emissions	Compliance

Not Applicable: The EUT power supply by DC Source.

FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

FCC §15.109

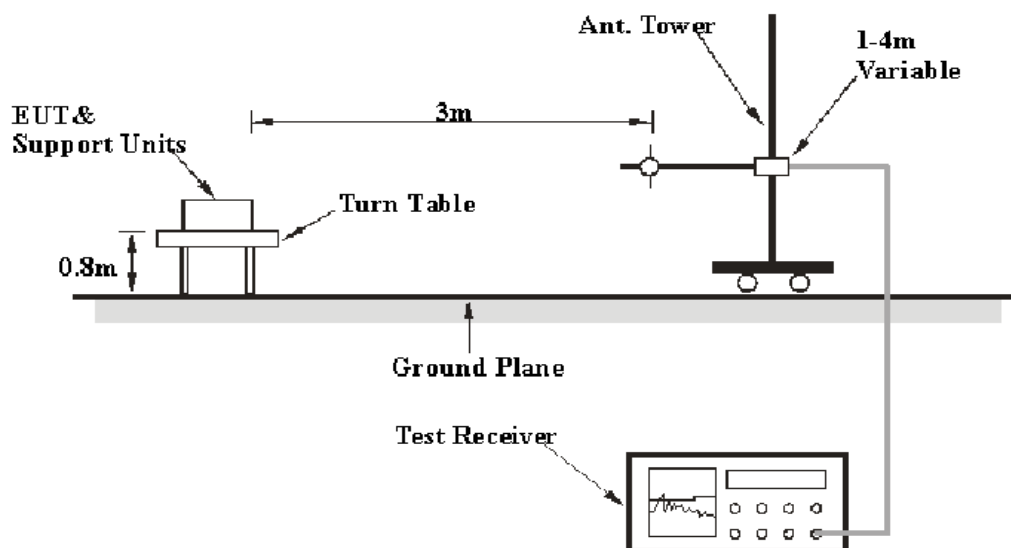
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

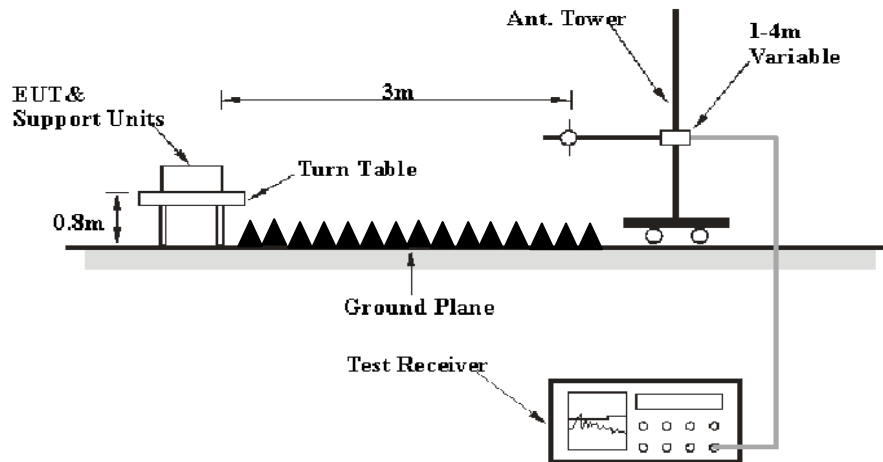
Item		Measurement Uncertainty	U_{cispr}
Radiated Emission	30MHz~1GHz	6.11dB	6.3 dB
	1GHz~6GHz	4.45dB	5.2 dB
	6 GHz ~18 GHz	5.23dB	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 18 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector Type
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	Peak
	1MHz	3 MHz	1MHz	AVG

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sonoma Instrument	Amplifier	310N	185700	2018-08-14	2019-08-13
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2018-11-12	2019-11-11
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2019-01-09	2022-01-08
Champrotek	Chamber	Chamber A	T-KSEMC049	-	-
Champrotek	Chamber	Chamber B	T-KSEMC080	-	-
R&S	Auto test Software	EMC32	100361	-	-
ETS	Horn Antenna	3115	6229	2019-01-11	2022-01-10
Rohde & Schwarz	EMI Receiver	ESU40	100207	2018-08-27	2019-08-26
A.H.Systems, inc	Amplifier	2641-1	466	2018-09-11	2019-09-10
MICRO-COAX	Coaxial Cable	Cable-8	008	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-4	004	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-5	005	2018-08-15	2019-08-14

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

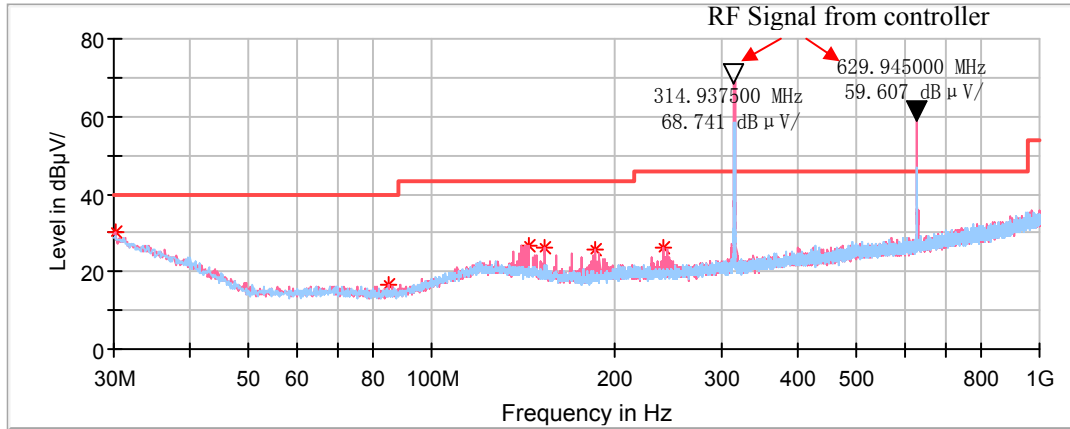
Test Data**Environmental Conditions**

Temperature:	20.2 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Stone Wei on 2019-01-21.

Test mode: RF Communication

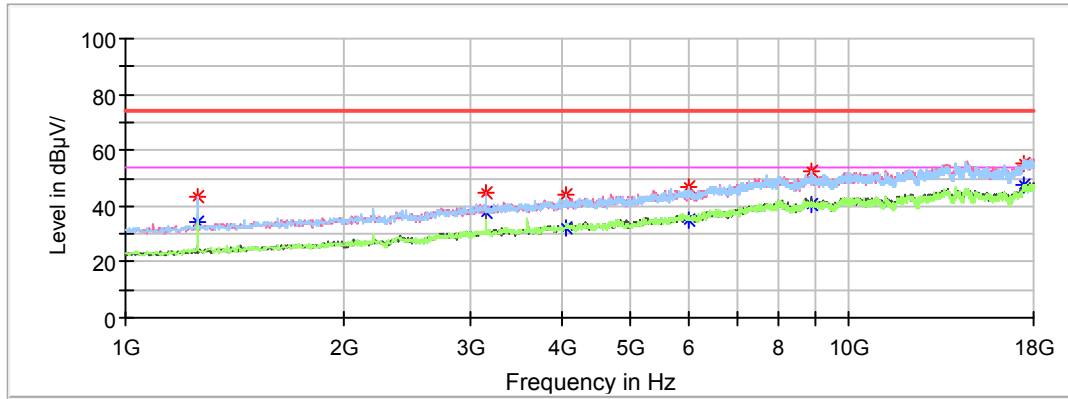
30MHz ~ 1GHz



Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.121250	30.22	40.00	9.78	100.0	V	119.0	-4.0
85.047500	16.64	40.00	23.36	100.0	V	67.0	-17.6
144.338750	26.67	43.50	16.83	100.0	V	56.0	-12.1
153.068750	26.13	43.50	17.37	100.0	V	145.0	-12.4
186.170000	25.78	43.50	17.72	100.0	V	19.0	-13.2
240.732500	25.93	46.00	20.07	100.0	V	156.0	-12.1

Above 1 GHz:

Full Spectrum



Frequency (MHz)	Max Peak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1258.400000	---	34.33	54.00	19.67	200.0	H	189.0	-9.0
1258.400000	43.23	---	74.00	30.77	200.0	H	189.0	-9.0
3148.800000	---	37.51	54.00	16.49	200.0	V	107.0	-1.4
3148.800000	44.83	---	74.00	29.17	200.0	V	107.0	-1.4
4063.400000	---	32.15	54.00	21.85	100.0	H	154.0	0.9
4063.400000	43.98	---	74.00	30.02	100.0	H	154.0	0.9
5994.600000	---	35.22	54.00	18.78	200.0	H	247.0	4.9
5994.600000	46.64	---	74.00	27.36	200.0	H	247.0	4.9
8871.000000	---	40.82	54.00	13.18	100.0	H	2.0	11.4
8871.000000	52.68	---	74.00	21.32	100.0	H	2.0	11.4
17486.600000	54.96	---	74.00	19.04	200.0	H	356.0	17.1
17486.600000	---	47.72	54.00	6.28	200.0	H	356.0	17.1

*****END OF REPORT*****