

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

JD RC Fix- It Up Johnny

Model No.: 46315

Trademark: N/A

FCC ID: BMW-46315TX27

Report No.: ED140722218E

Issue Date: August 07, 2014

Prepared for

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Prepared by

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VERIFICATION OF COMPLIANCE

Applicant:	TOMY International, Inc. 1111 W. 22nd Street Suite 320 Oak Brook, IL 60523 United States
Manufacturer:	Jetta(China) Industries Co., Ltd.
Product Description:	JD RC Fix- It Up Johnny
Trademark:	Not Provided
Model Number:	46315
Date code:	G1814JE01
FCC ID Number:	BMW-46315TX27
File Number:	ED140722218E
Date of Test:	July 22, 2014 to August 07, 2014

We hereby certify that:

The above equipment was tested by Dongguan EMTEK Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.227(2013).

The test results of this report relate only to the tested sample identified in this report.

Approved By

***Sam Lv / Q.A. Manager
DONGGUAN EMTEK CO., LTD.***

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1. GENERAL INFORMATION

1.1 Product Description

The JD RC Fix- It Up Johnny, Model: 46315 (referred to as the EUT in this report). The EUT is an short range, lower power transmitter.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 27.145 MHz, one channel.
- B). Antenna Designation: External Antenna
- C). Power Supply: DC 3*1.5 V Battery.
- D) Model: 46315

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: BMW-46315TX27 filing to comply with Section 15.227 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab. :

Accredited by FCC, June 18, 2014
The Certificate Number is 247565

Accredited by Industry Canada, February 19, 2014
The Certificate Registration Number. is 9444A.

Name of Firm : Dongguan EMTEK Co., Ltd.

Site Location : No.281, Guantai Road, Nancheng District, Dongguan,
Guangdong, China.

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009. Conducted emissions from the EUT measured in the **frequency range between 0.15 MHz and 30MHz** using **CISPR Quasi-Peak and average detector mode**.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Limitation

(1) Conducted Emission (Not applicable in this report)

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

- The field strength of any emission within this band (section 15.227 frequency between 26.95MHz -27.28MHz) shall not exceed 10000 micro volts/meter at 3 meters. (80dB μ V at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.
- The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit).as below.

Frequency (MHz)	Field strength μ V/m	Distance(m)	Field strength at 3m dB μ V/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark 1. Emission level in dBuV/m=20 log (uV/m)

- Measurement was performed at an antenna to the closed point of EUT distance of meters.
- Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205
- Emission spurious frequency which appearing within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1	JD RC Fix- It Up Johnny	N/A	46315	BMW-46315TX27	N/A	<i>EUT</i>

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.

3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	N/A
§15.227	Radiated Emission	Compliant
§15.227	Bandwidth Test	Compliant
§15.203	Antenna Application	Compliant

4. Description of test modes

The EUT (JD RC Fix- It Up Johnny) has been tested under normal operating condition. The EUT stay in continuous transmitting mode. The Frequency 27.145MHz are chosen for testing.

5. Conducted Emissions Test (Not applicable in this report)

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

5.3 Measurement Equipment Used:

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCS30	100018	05/16/2014	05/15/2015
L.I.S.N	Rohde & Schwarz	ENV216	100017	05/16/2014	05/15/2015
RF Switching Unit	CDS	RSU-M2	38401	05/16/2014	05/15/2015

5.4 Measurement Result: N/A

5.5 Conducted Measurement Photos: N/A

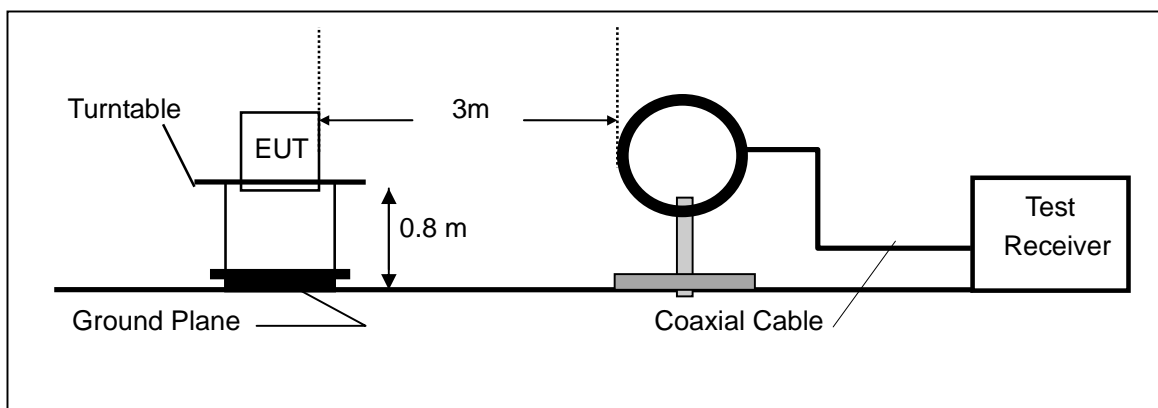
6. Radiated Emission Test

6.1 Measurement Procedure

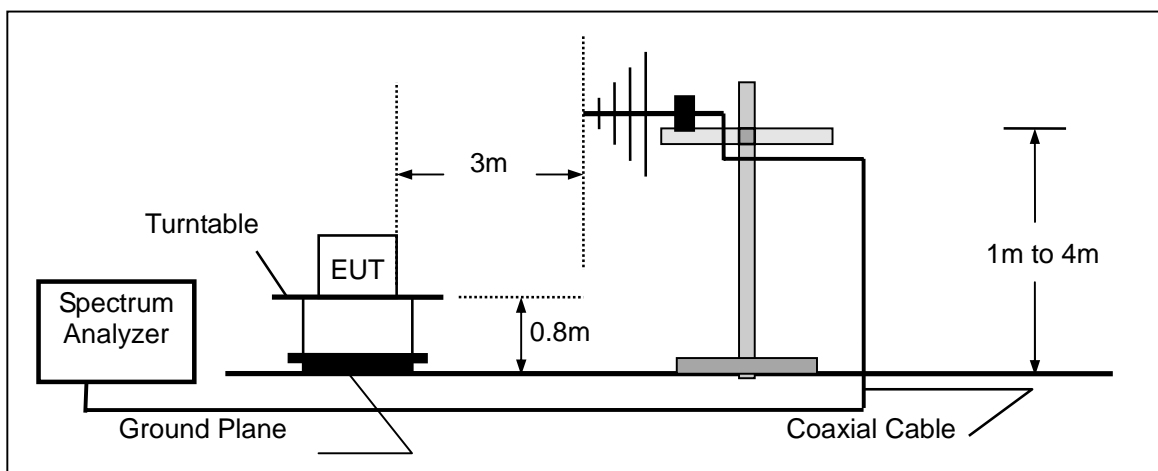
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Above 30MHz



6.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	100137	05/16/2014	05/15/2015
Test Receiver	Rohde & Schwarz	ESCI	100137	05/16/2014	05/15/2015
Bilog Antenna	Schwarzbeck	VULB9163	000141	05/16/2014	05/15/2015
Power Amplifier	CDS	RSU-M352	818	05/16/2014	05/15/2015
Power Amplifier	HP	8447F	OPT H64	05/16/2014	05/15/2015
Color Monitor	SUNSP0	SP-140A	N/A	05/16/2014	05/15/2015
Single Line Filter	JIANLI	XL-3	N/A	05/16/2014	05/15/2015
Single Phase Power Line Filter	JIANLI	DL-2X100B	N/A	05/16/2014	05/15/2015
3 Phase Power Line Filter	JIANLI	DL-4X100B	N/A	05/16/2014	05/15/2015
DC Power Filter	JIANLI	DL-2X50B	N/A	05/16/2014	05/15/2015
Cable	Schwarzbeck	PLF-100	549489	05/19/2014	05/18/2015
Cable	Rosenberger	CIL02	A0783566	05/19/2014	05/18/2015
Cable	Rosenberger	RG 233/U	525178	05/19/2014	05/18/2015

6.4 Measurement Results

Fundamental and Harmonics Radiated Emission Data

Operation Mode: Transmitting Mode Test Date : July 26, 2014
Frequency Range: 20M-1GHz Temperature : 26 °C
Fundamental 27.145 MHz Humidity : 55 %
Frequency:
Test Result: PASS Test By: Andy

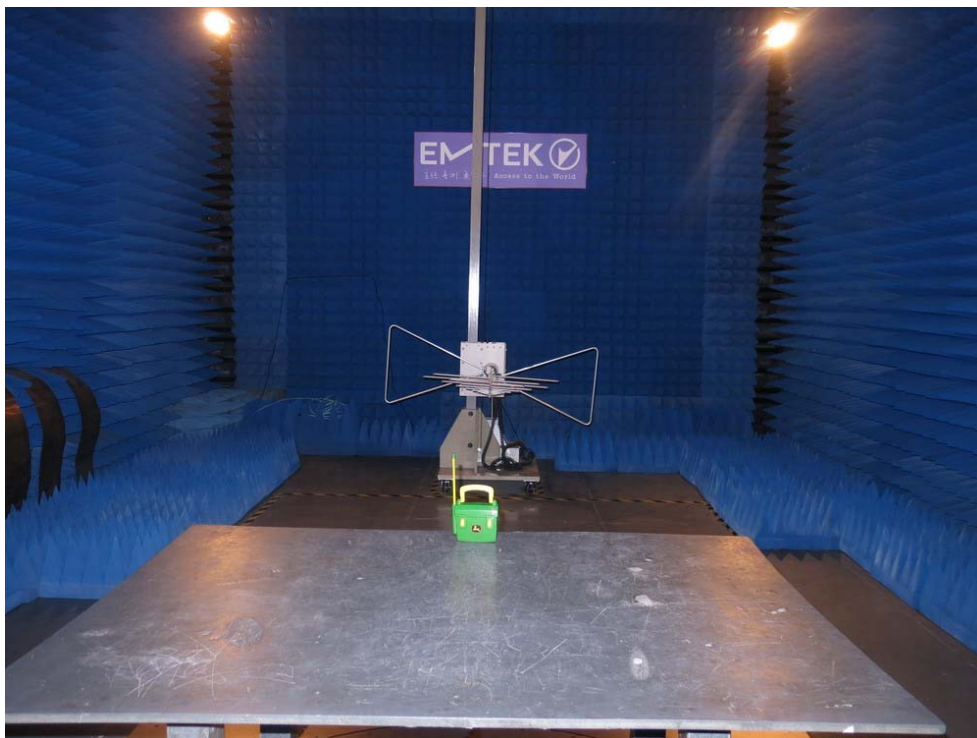
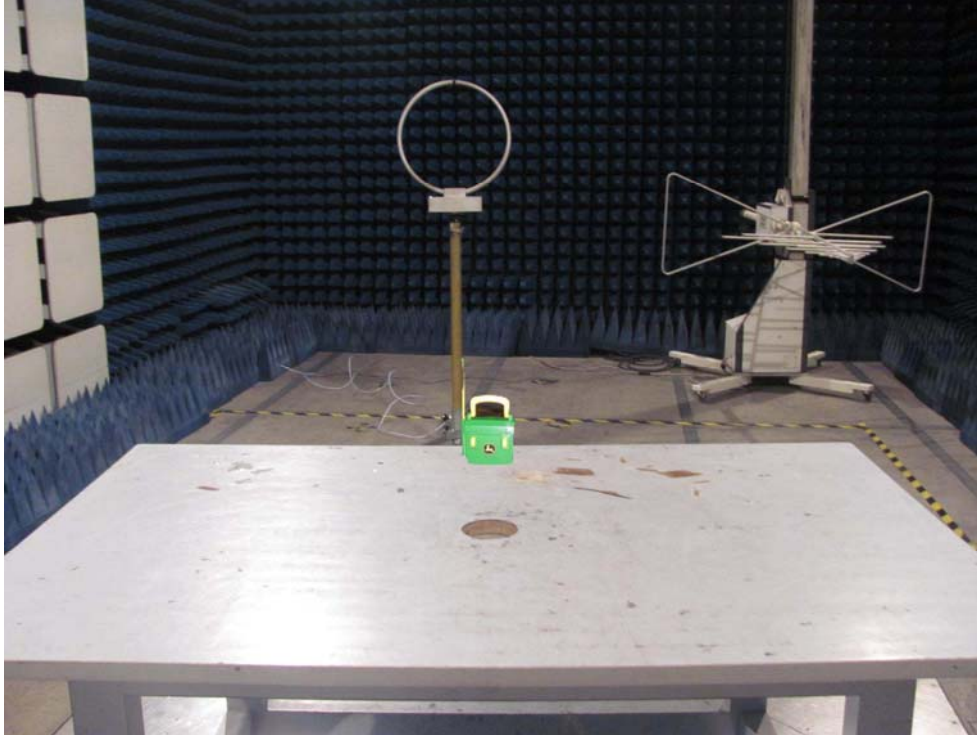
Freq. (MHz)	Ant. Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
27.145	V	79.59	100.00	-20.41	Peak
27.145	V	64.58	80.00	-15.42	AV
54.290	V	32.48	40.00	-7.52	QP
81.435	V	36.28	40.00	-3.72	QP
108.58	V	34.18	43.50	-9.32	QP
135.725	V	35.08	43.50	-8.42	QP
162.870	V	32.04	43.50	-11.46	QP
190.015	V	31.22	43.50	-12.28	QP
217.160	V	34.28	46.00	-11.72	QP
244.305	V	35.16	46.00	-10.84	QP
271.450	V	33.28	46.00	-12.72	QP
298.595	V	34.28	46.00	-11.72	QP
325.740	V	37.29	46.00	-8.71	QP
352.885	V	38.49	46.00	-7.51	QP
380.030	V	32.85	46.00	-13.15	QP
407.175	V	35.95	46.00	-10.05	QP
434.320	V	34.28	46.00	-11.72	QP
461.465	V	35.07	46.00	-10.93	QP
27.145	H	76.59	100.00	-23.41	Peak
27.145	H	66.58	80.00	-13.42	AV
54.290	H	32.18	40.00	-7.82	QP
81.435	H	31.08	40.00	-8.92	QP
108.580	H	33.69	43.50	-9.81	QP
135.725	H	34.28	43.50	-9.22	QP
162.870	H	35.08	43.50	-8.42	QP
190.015	H	34.95	43.50	-8.55	QP
217.160	H	33.07	46.00	-12.93	QP
244.305	H	32.92	46.00	-13.08	QP
271.450	H	32.48	46.00	-13.52	QP

298.595	H	33.72	46.00	-12.28	QP
325.740	H	35.07	46.00	-10.93	QP
352.885	H	30.75	46.00	-15.25	QP
380.030	H	31.95	46.00	-14.05	QP
407.175	H	32.72	46.00	-13.28	QP
434.320	H	39.08	46.00	-6.92	QP
461.465	H	38.49	46.00	-7.51	QP

No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.227.

- Note:**
- (1) Emission Level= Reading Level+ Probe Factor +Cable Loss.
 - (2) The average measurement was not performed when the peak measured data under the limit of average detection.

6.5 Radiated Measurement Photos:



7. Occupied Bandwidth

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW= 10KHz,VBW= 30KHz
4. Set SPA Max hold. Mark peak.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

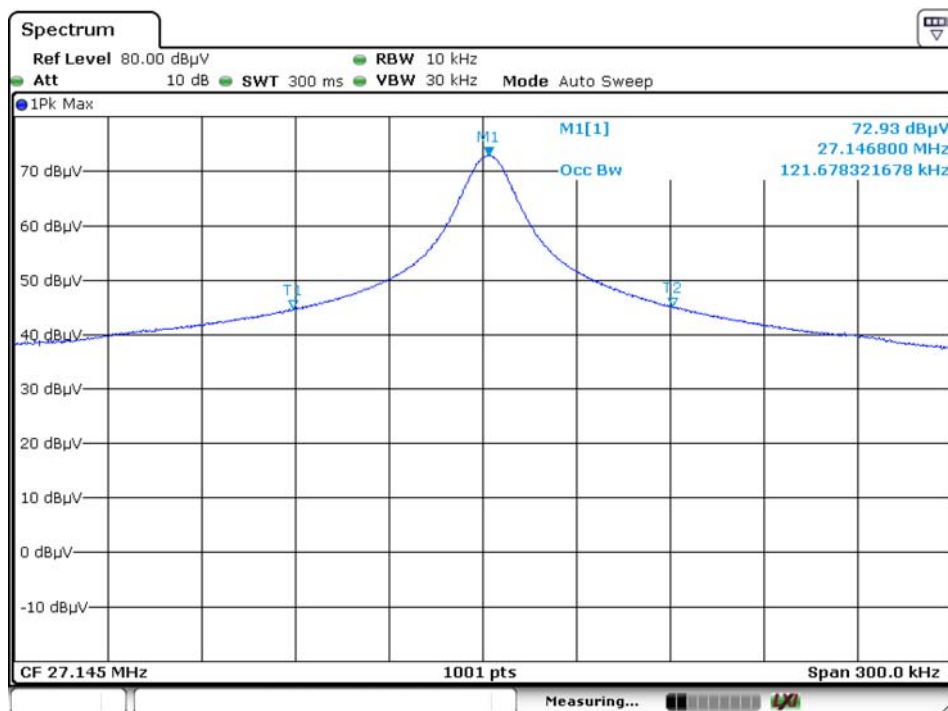
Same as 6.2 Radiated Emission Measurement.

7.4 Measurement Results:

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209.

Refer to attached data chart.

Band Width Test Data



8. Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:

Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

8.1 Result

The EUT's antenna used an external Antenna.

APPENDIX (Photos of EUT)

