



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant : TELEWAY INDUSTRIAL LTD.

Address : 3/6F, Block 1, Sanwei Industrial Zone, Baoan Road, Xixiang,
Baoan District, Shenzhen, China

Product Name : iCruz Audio Handsfree Kit for iPhone 4/ iPhone 3GS/ iPhone 3G

Model Name : DCA234

Brand Name : dexim

FCC ID : TM4-DCA234

Report No. : MOST101211F2

Date of Issue : January. 5, 2011

Issued by : Most Technology Service Co., Ltd.

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. VERIFICATION OF CONFORMITY

Equipment Under Test: iCruz Audio Handsfree Kit for iPhone 4/ iPhone 3GS/ iPhone 3G

Brand Name: dexim

Model Number: DCA234

FCC ID: TM4-DCA234

Applicant: TELEWAY INDUSTRIAL LTD.

3/6F, Block 1, Sanwei Industrial Zone, Baoan Road, Xixiang, Baoan District, Shenzhen, China

Manufacturer: TELEWAY INDUSTRIAL LTD.

3/6F, Block 1, Sanwei Industrial Zone, Baoan Road, Xixiang, Baoan District, Shenzhen, China

Technical Standards: 47 CFR Part 15 Subpart C

File Number: MOST101211F2

Date of test: December. 28, 2010 – January. 4, 2011

Deviation: None

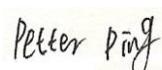
Condition of Test Sample: Normal

Test Result: PASS

The above equipment was tested by *Most Technology Service Co., Ltd.* for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Tested by (+ signature):



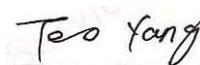
Petter Ping January. 5, 2011

Review by (+ signature):



July Wen January. 5, 2011

Approved by (+ signature):



Terry Yang January. 5, 2011

2. GENERAL INFORMATION

2.1 Product Information

EUT- FM	
Description:	iCruz Audio Handsfree Kit for iPhone 4/ iPhone 3GS/ iPhone 3G
Model Name:	DCA234
Series Number:	N/A
Model Difference description:	N/A
Power Supply:	DC 5V by car charger
Frequency Range:	88.1MHz – 107.9MHz
Channel Number:	99
Channel Spacing:	200 KHz
Antenna Gain:	0.1 dB
Modulation Technique:	FM
Temperature Range:	-10°C ~ +55°C

NOTE:

1. Please refer to Appendix 2 for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.239	20dB Bandwidth	PASS	2010-12-29
2	15.239	Frequency Range	PASS	2010-12-29
3	15.239 15.209 15.205	Radiated Emission	PASS	2010-12-28
4	15.203	Antenna Requirement	PASS	2010-12-29
5	15.207	Power Line Conducted Emission Test	NOT APPLICABLE	N/A

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

2.5 Support Equipment

Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
iPod (8G)	Apple	A1367	BCG-E2407	C3RDDTJKDCP7	N/A	N/A

Remark:

All the equipment/cables were placed in the worst-case [-configuration to maximize the emission during the test.

Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3. TEST FACILITY

Test Site: Most Technology Service Co., Ltd.

Location: No.5, Nangshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China

Description: There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009 and CISPR 16 requirements.

The FCC Registration Number is **490827**.

Site Filing: The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at MOST for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calculator due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2011/03/14
2	Spectrum Analyzer	Agilent	E7405A	US44210471	2011/03/14
3	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2011/03/14
4	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/03/14
5	Terminator	Hubersuhner	50Ω	No.1	2011/03/14
6	RF Cable	SchwarzBeck	N/A	No.1	2011/03/14
7	Test Receiver	Rohde & Schwarz	ESPI	101202	2011/03/14
8	Bilog Antenna	Sunol	JB3	A121206	2011/03/14
9	Horn Antenna	TRC	N/A	N/A	2011/03/14
10	Cable	Resenberger	N/A	NO.1	2011/03/14
11	Cable	SchwarzBeck	N/A	NO.2	2011/03/14
12	Cable	SchwarzBeck	N/A	NO.3	2011/03/14
13	DC Power Filter	DuoJi	DL2×30B	N/A	2011/03/14
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2011/03/14
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2011/03/14
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2011/03/14
17	Absorbing Clamp	Luthi	MDS21	3635	2011/03/14
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/03/14
19	AC Power Source	Kikusui	AC40MA	LM003232	2011/03/14
20	Test Analyzer	Kikusui	KHA1000	LM003720	2011/03/14
21	Line Impedance Network	Kikusui	LIN40MA-PCR-L	LM002352	2011/03/14
22	ESD Tester	Kikusui	KES4021	LM003537	2011/03/14
23	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2011/03/14
24	Signal Generator	IFR	2032	203002/100	2011/03/14
25	Amplifier	A&R	150W1000	301584	2011/03/14
26	CDN	FCC	FCC-801-M2-25	47	2011/03/14
27	CDN	FCC	FCC-801-M3-25	107	2011/03/14
28	EM Injection Clamp	FCC	F-203I-23mm	403	2011/03/14
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2011/03/14
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2011/03/14
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2011/03/14

NOTE: Equipments listed above have been calibrated and are in the period of validation.

5. 47 CFR Part 15 C Requirements

5.1 20dB Bandwidth

5.1.1 Definition

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

5.1.2 Test Description

The EUT was placed on a non-conductive table 0.8 meters above the floor. The table was rotated to an angle which presented the highest signal level. The occupied bandwidth was based on a 20 dB criteria (20dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

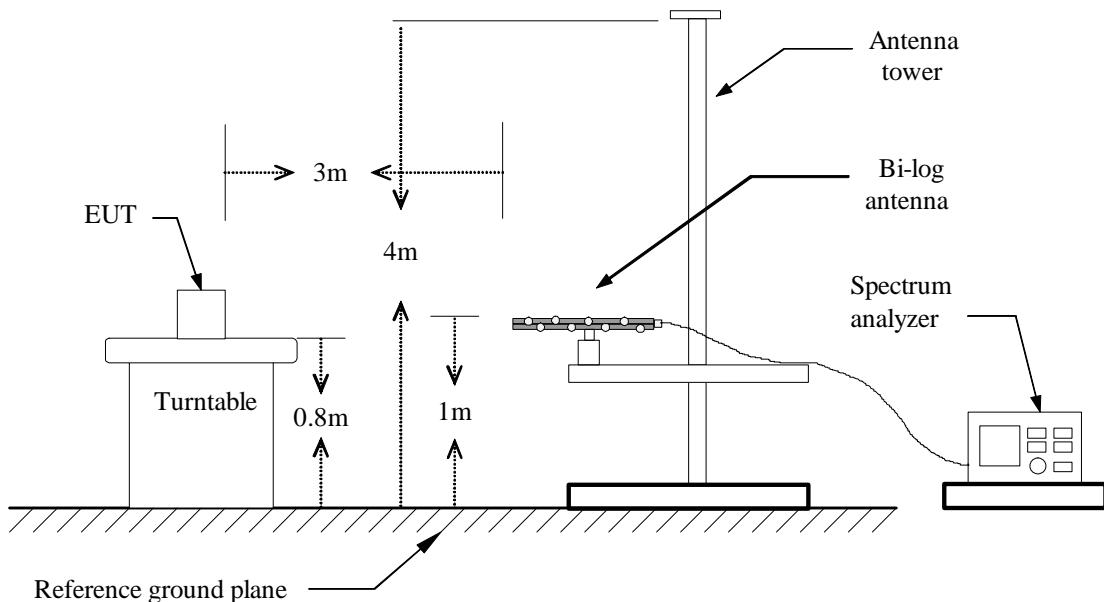
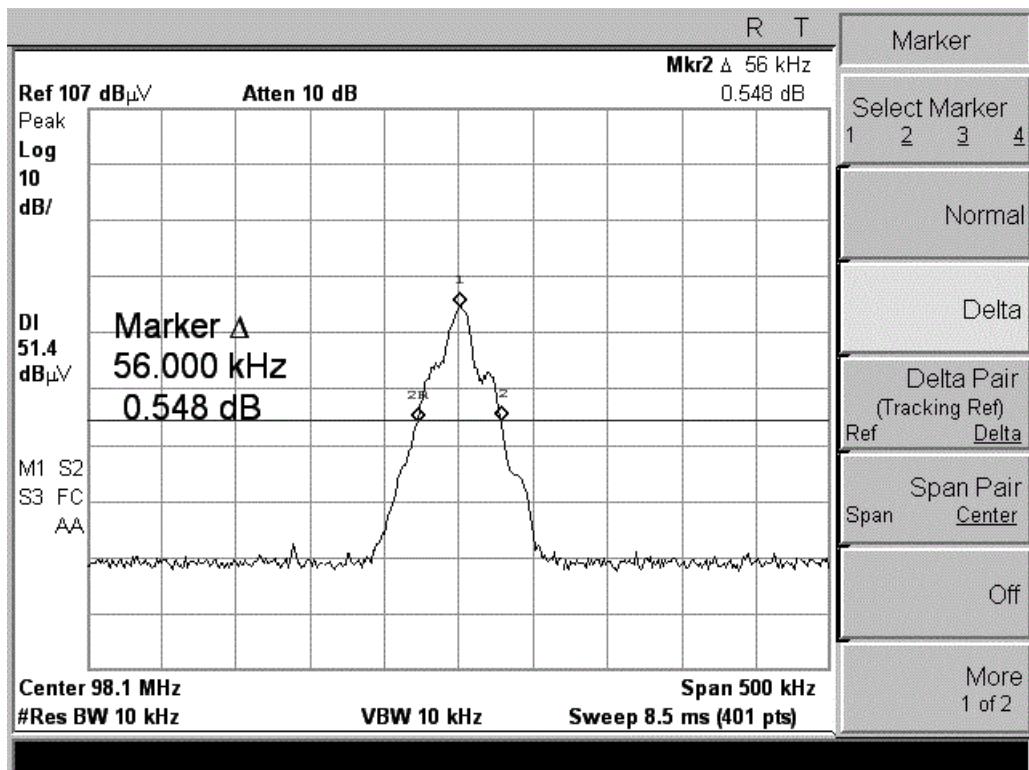
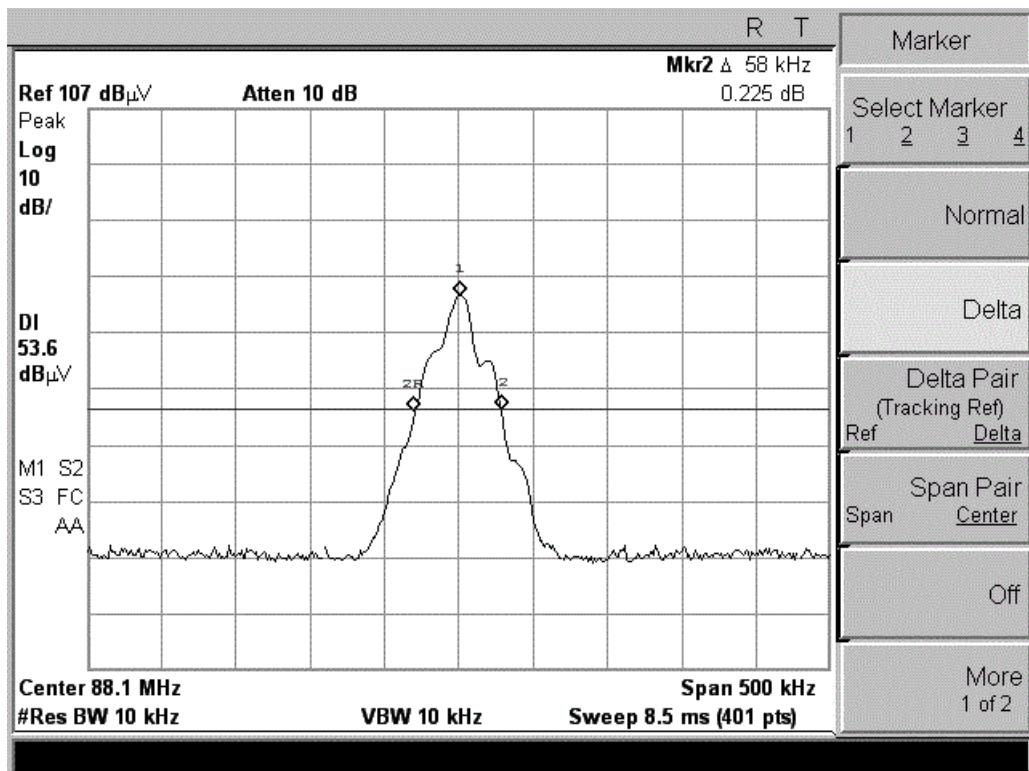
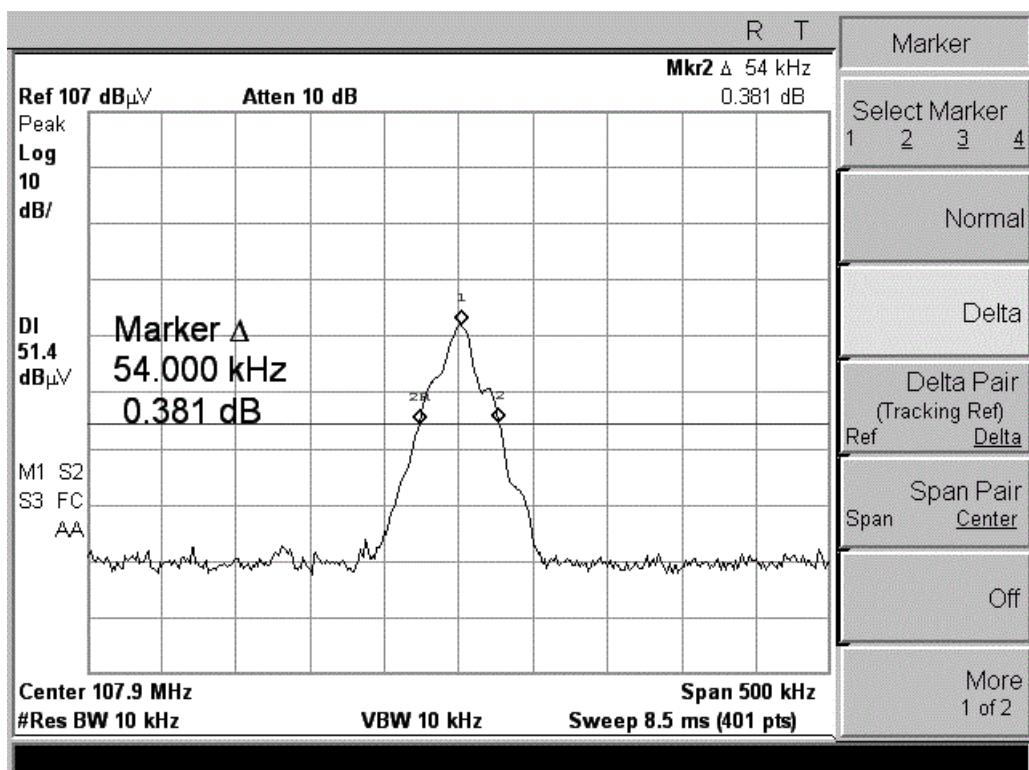


Figure 1: Radiated Emission Test Setup

5.1.3 Test Result

The maximum occupied bandwidth for the fundamental frequency 88.1 MHz is 58 kHz. This occupied bandwidth complies with the FCC requirement.

Test Plot A:



5.2 Frequency Range

5.2.1 Definition

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

5.2.2 Test Description

The EUT was placed on a non-conductive table 0.8 meters above the floor. The table was rotated to an angle which presented the highest signal level. The occupied bandwidth was based on a 26 dB criteria (26 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

5.2.3 Test Result

The operation frequency band is from 88 MHz to 108 MHz. This frequency range complies with the FCC requirement.

Refer to the occupied bandwidth test Plot A.

5.3 Radiated Emission

5.3.1 Definition

The field strength of any emission within this band (section 15.239, frequency between 88 MHz –108 MHz) shall not exceed 250 micro volts /meter at 3 meters. 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.

1. 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)	Measurement Distance (m)
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

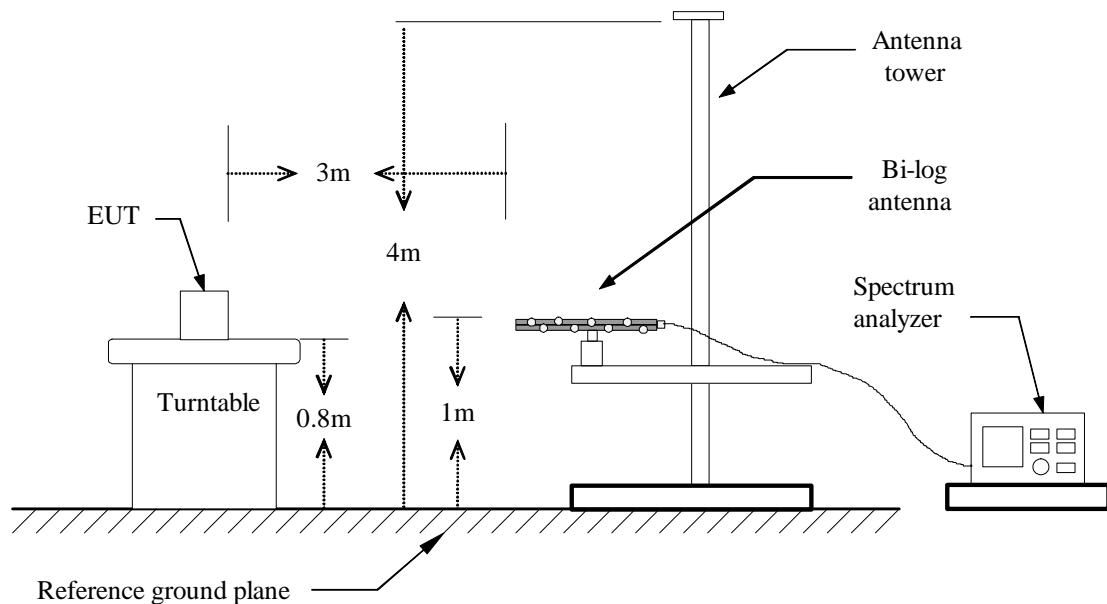
2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (μ V/m at 3-meter)	Test Distance (m)	Field Strength (dB μ V/m at 3-meter)
1.705-30	30	3	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54
Fundamental	250	3	48

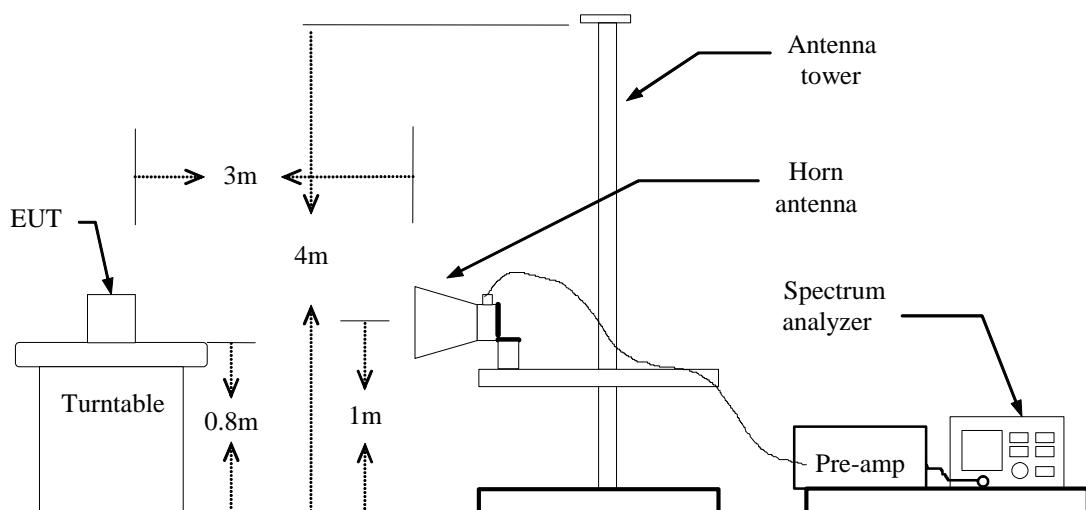
5.3.2 Test Configuration

Test Setup:

Below 1GHz:



Above 1GHz:



5.3.3 Test Description

5.3.4 Test Result

Operation Mode: CH Low **Test Date:** December, 28, 2010

Temperature: 20°C **Tested by:** Petter Ping

Humidity: 70 % RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
88.20	V	Peak	34.34	11.34	45.68	48.00	-2.32
69.77	V	Peak	22.14	11.69	33.83	40.00	-6.17
263.77	V	Peak	21.92	18.09	40.01	46.00	-5.99
352.04	V	Peak	18.78	17.96	36.74	46.00	-9.26
440.31	V	Peak	7.18	20.29	27.47	46.00	-18.53
--	V	Peak	--	--	--	--	<-20
88.20	H	Peak	28.79	11.34	40.13	48.00	-7.87
263.77	H	Peak	25.56	18.09	43.65	46.00	-2.35
352.04	H	Peak	21.27	17.96	39.23	46.00	-6.77
440.31	H	Peak	11.01	20.29	31.30	46.00	-14.70
--	H	Peak	--	--	--	--	<-20

Notes:

Notes:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100 kHz.
5. No additional spurious emissions found between lowest internal generated and 30 MHz.

Operation Mode: CH Middle**Test Date:** December. 28, 2010**Temperature:** 20°C**Tested by:** Petter Ping**Humidity:** 70 % RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
98.10	V	Peak	31.77	12.72	44.49	48.00	-3.51
69.77	V	Peak	22.14	11.69	33.83	40.00	-6.17
195.87	V	Peak	13.56	16.95	30.51	43.50	-12.99
293.84	V	Peak	24.36	19.32	43.68	46.00	-2.32
391.81	V	Peak	16.34	18.39	34.73	46.00	-11.27
489.78	V	Peak	17.54	21.70	39.24	46.00	-6.76
---	V	Peak	---	---	---	---	<-20
98.10	H	Peak	29.49	12.72	42.21	48.00	-5.79
195.87	H	Peak	17.62	16.95	34.57	43.50	-8.93
293.84	H	Peak	24.41	19.32	43.73	46.00	-2.27
391.81	H	Peak	22.88	18.39	41.27	46.00	-4.73
489.78	H	Peak	18.71	21.70	40.41	46.00	-5.59
---	H	Peak	---	---	---	---	<-20

Notes:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100 kHz.
5. No additional spurious emissions found between lowest internal generated and 30 MHz.

Operation Mode: CH High**Test Date:** December. 28, 2010**Temperature:** 20°C**Tested by:** Petter Ping**Humidity:** 70 % RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
107.90	V	Peak	30.41	15.41	45.82	48.00	-2.18
69.77	V	Peak	22.14	11.69	33.83	40.00	-6.17
323.91	V	Peak	26.01	17.00	43.01	46.00	-2.99
431.58	V	Peak	22.41	20.32	42.73	46.00	-3.27
539.25	V	Peak	19.43	22.21	41.64	46.00	-4.36
755.56	V	Peak	8.67	25.69	34.36	46.00	-11.64
--	V	Peak	---	---	---	---	<-20
107.90	H	Peak	29.23	15.41	44.64	48.00	-3.36
323.91	H	Peak	25.31	17.00	42.31	46.00	-3.69
431.58	H	Peak	22.08	20.32	42.40	46.00	-3.60
539.25	H	Peak	20.47	22.21	42.68	46.00	-3.32
755.56	H	Peak	10.12	25.69	35.81	46.00	-10.19
--	H	Peak	---	---	---	---	<-20

Notes:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100 kHz.
5. No additional spurious emissions found between lowest internal generated and 30 MHz.

5.4 Antenna Requirement

5.4.1 Definition

An analysis of the *DCA234* was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

5.4.2 Evaluation Procedure

The structure and application of the *DCA234* was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user. An auxiliary antenna port is not present.

5.4.3 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the EUT.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.4.4 Evaluation Results

The *DCA234* meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

5.5 Line Conducted Emission Test(NOT APPLICABLE)

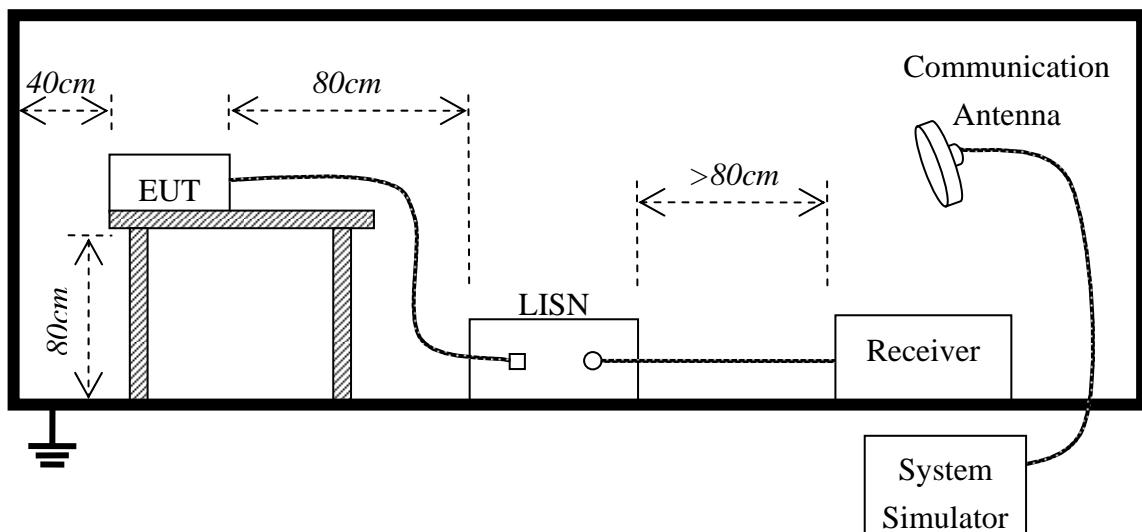
5.5.1. Limits Of Line Conducted Emission Test

Frequency	Maximum RF Line Voltage	
	Q.P. (dBuV)	Average (dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

****Note:** 1. the lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

5.5.2. Block Diagram Of Test Setup



5.5.3. Preliminary Procedure Of Line Conducted Emission Test

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per FCC Part 15 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per FCC Part 15.
- 3) All I/O cables were positioned to simulate typical actual usage as per FCC Part 15.
- 4) The EUT received DC 5V by car adaptor.
- 5) All support equipments received power from a second LISN supplying power of AC 120V/60Hz, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test					
Frequency Range Investigated		150KHz TO 30 MHz			
Mode of operation	Date	Report No.	Data#	Worst Mode	
---	---	---	---	---	---

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

5.3.4. Final Procedure Of Line Conducted Emission Test

EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

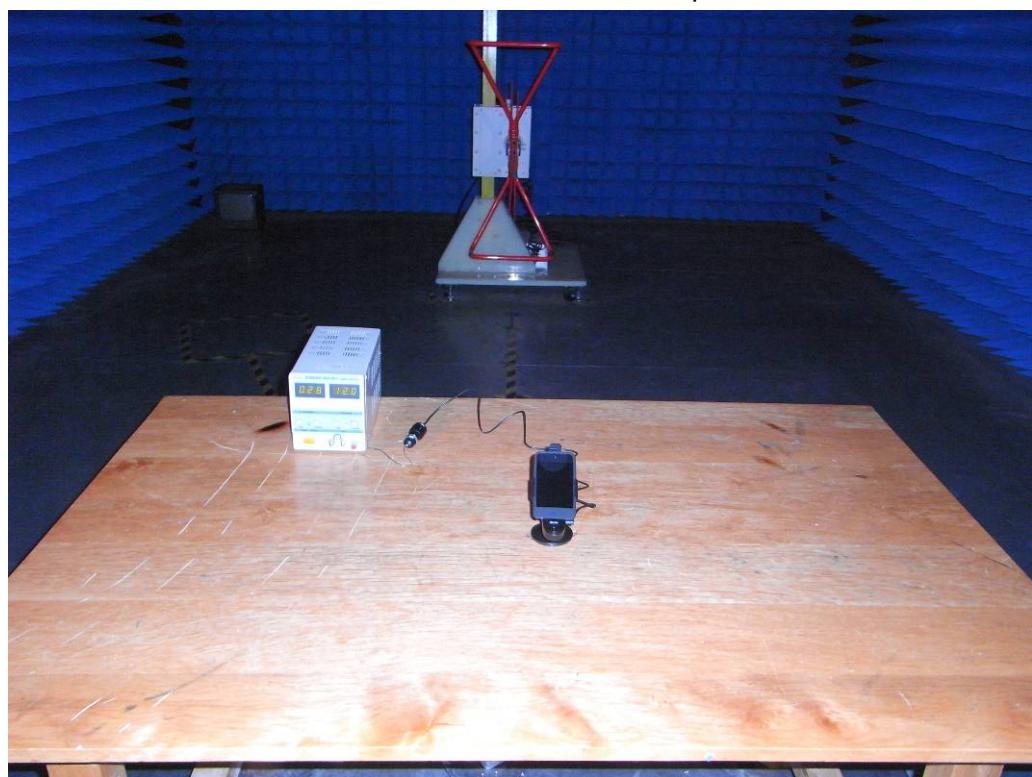
The test data of the worst case condition(s) was reported on the Summary Data page.

5.3.5. Test Result Of Line Conducted Emission Test

N/A(The power of the EUT is DC 5V by car adaptor.)

APPENDIX 1
PHOTOGRAPHS OF TEST SETUP

Radiated Emission Test Setup



APPENDIX 2
PHOTOGRAPHS OF EUT

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



PHOTO OF CAR ADAPTOR



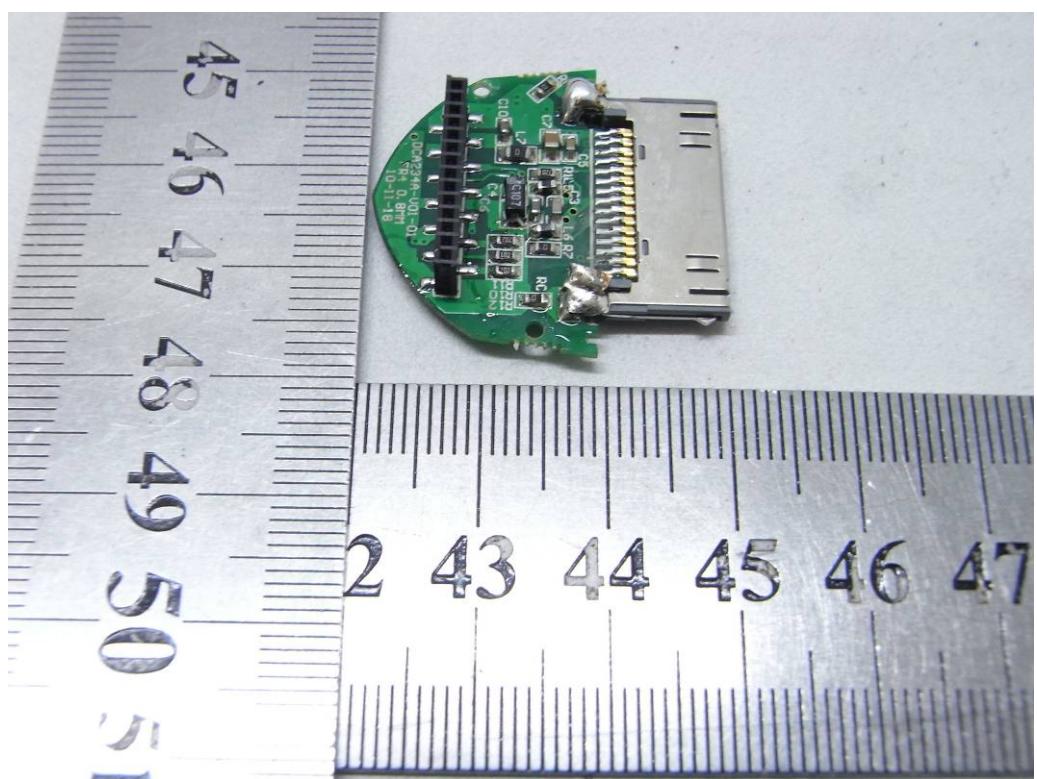
PHOTO OF TRESTLE TABLE



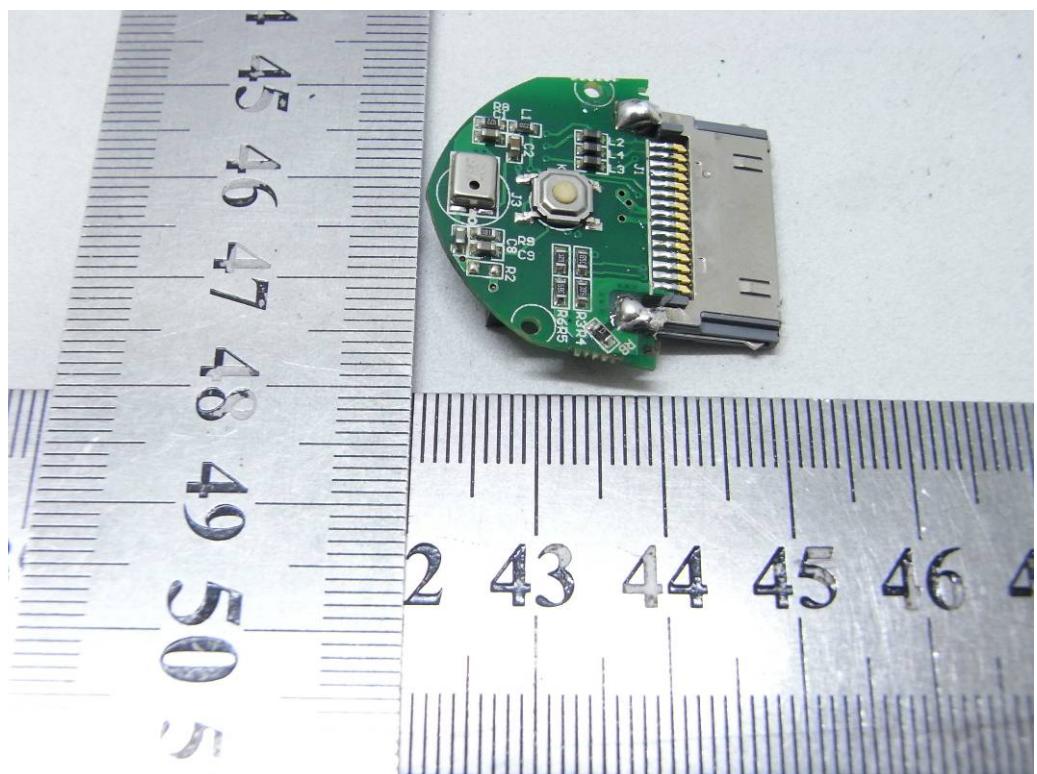
PHOTO OF THE ENTIRE SAMPLE



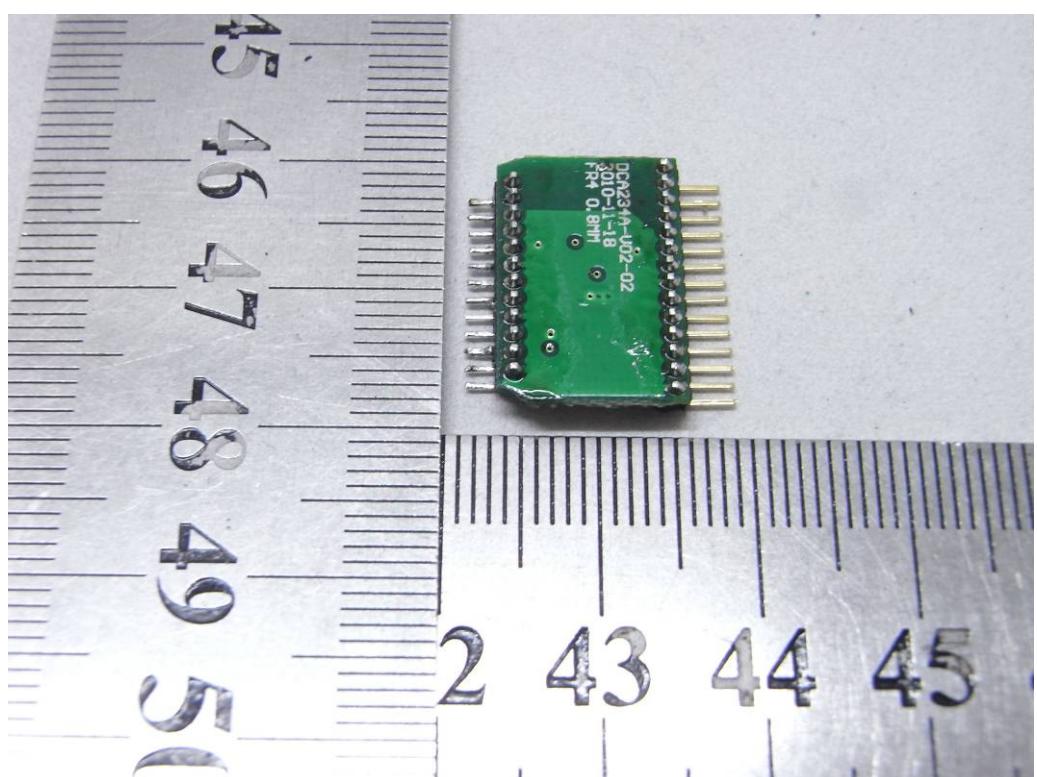
INTERNAL PHOTO OF SAMPLE - 1



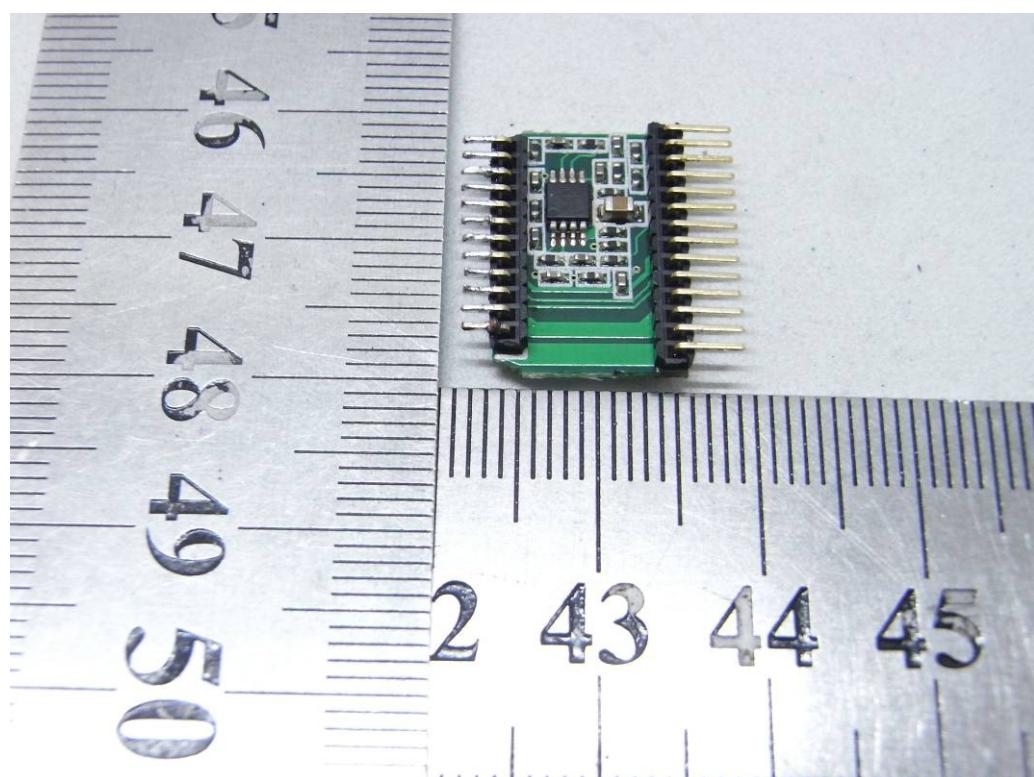
INTERNAL PHOTO OF SAMPLE - 2



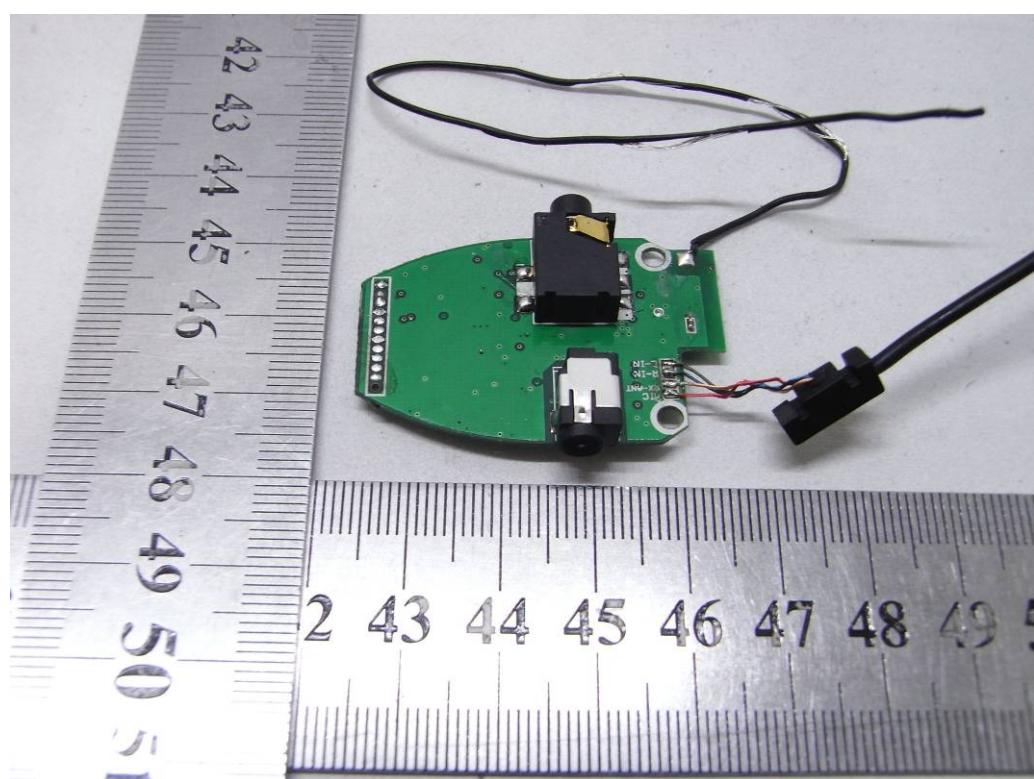
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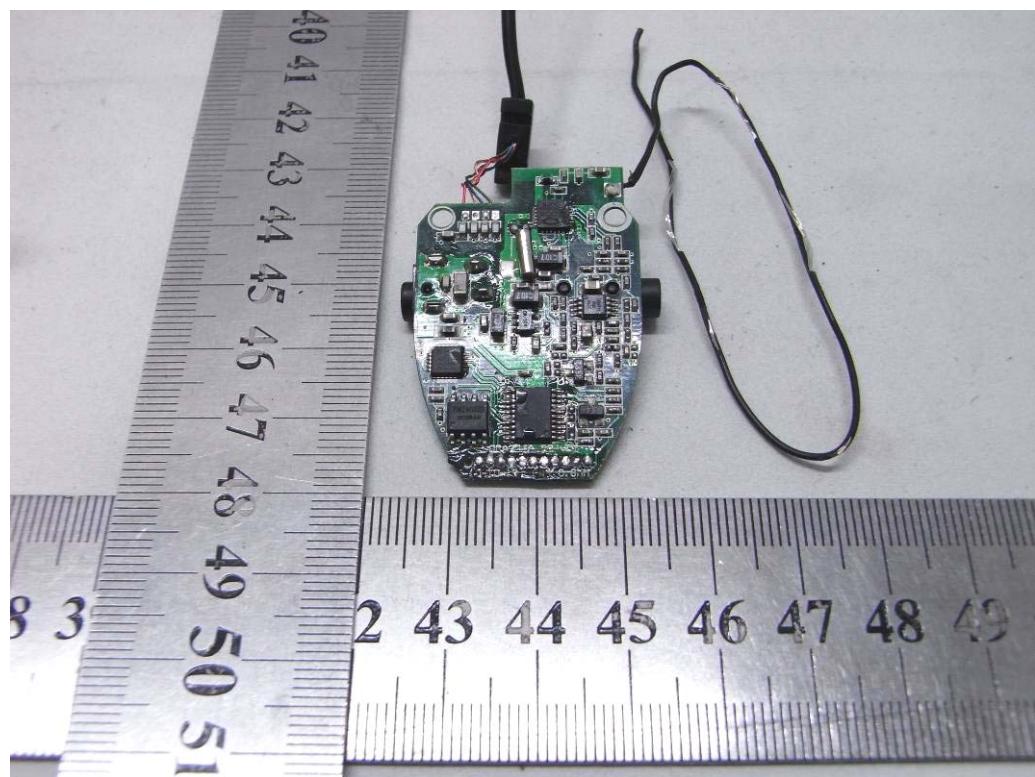
INTERNAL PHOTO OF SAMPLE - 4



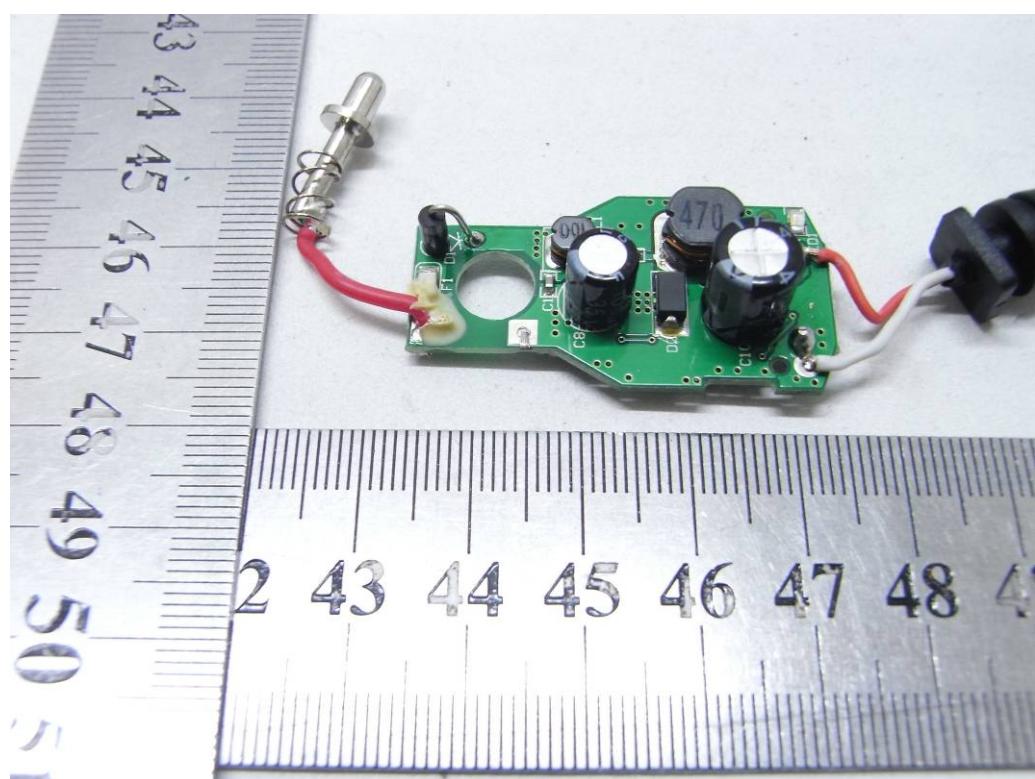
INTERNAL PHOTO OF SAMPLE - 5



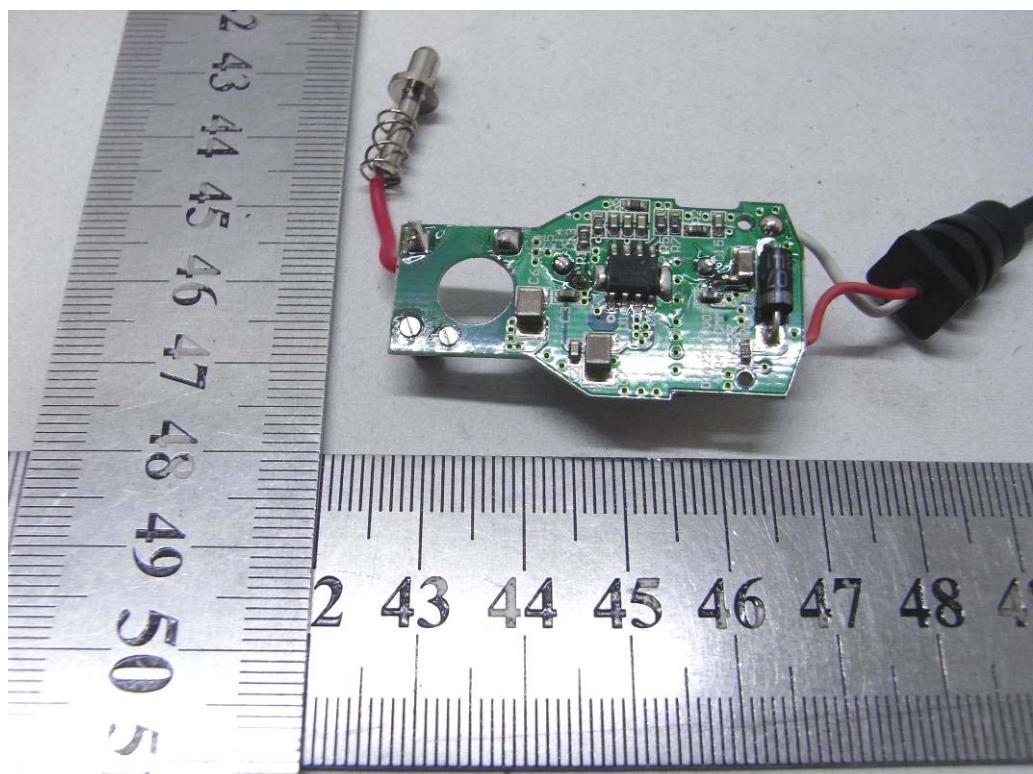
INTERNAL PHOTO OF SAMPLE - 6



INTERNAL PHOTO OF CAR SUPPLY - 1



INTERNAL PHOTO OF CAR SUPPLY - 2



-----END OF REPORT-----