

FCC - TEST REPORT

Report Number : **60.960.16.022.02R02** Date of Issue : February 20, 2016

Model : Coach Smart

Product Type : Bike Computer

Applicant : Dayton Industrial Co., Ltd

Address : 2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong

Production Facility : Kendy Enterprise Ltd

Address : 2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong

Test Result : Positive Negative

Total pages including Appendices : 23

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2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	Bike Computer
Model no.:	Coach Smart
FCC ID:	O4G-MS279
Rating:	3.0VDC (1 x 3.0VDC size "CR2032" batteries)
Frequency:	2457MHz
Antenna gain:	0 dBi
Number of operated channel:	1
Modulation:	GFSK

3 Summary of Test Standards

Test Standards

FCC Part 15 Subpart C 10-1-14 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

4 Details about the Test Laboratory

Site 1

Company name: TÜV SÜD Hong Kong Ltd.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin, Hong Kong

Site 2

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13 Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2,
Shenzhen 518052, P.R.China
FCC Registration Number: 502708

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.249 & 15.209 Radiated Emission	Site 2
FCC Title 47 Part 15.249 & 15.207 Conduct Emission	NIL
FCC Title 47 Part 15.215 20dB & 99% Bandwidth	Site 2
FCC Title 47 Part 15.249 Bandedge Emission	Site 2

4.1 Test Equipment Site List

Radiated emission Test, Bandedge Emission – Site 3

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	17-Aug-16
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	17-Aug-17
Horn Antenna	Rohde & Schwarz	HF907	102294	17-Aug-17
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	17-Aug-16
3m Semi-anechoic chamber	TDK	9X6X6	----	29-May-19

20dB & 99% Bandwidth – Site 3

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	17-Aug-16
Signal Analyzer	Rohde & Schwarz	FSV40	101030	17-Aug-16
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	17-Aug-16
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	17-Aug-16

4.2 Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.54dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted RF test	2.04dB

5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.249 & 15.209 Radiated Emission	10-11	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.249 & 15.207 Conduct Emission	NIL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
FCC Title 47 Part 15.215 20dB & 99% Bandwidth	12-13	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.249 Bandedge Emission	14-15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6 General Remarks

Remarks

NIL

SUMMARY:

- All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

- The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

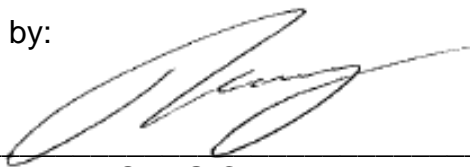
Sample Received Date: January 28, 2016

Testing Start Date: January 29, 2016

Testing End Date: February 16, 2016

- TÜV SÜD HONG KONG LTD. -

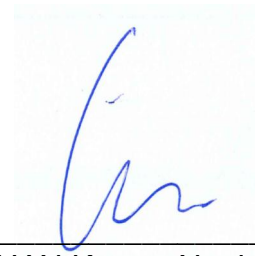
Reviewed by:



TSENG Chi Kit
EMC Project Engineer



Prepared by:



CHAN Kwong Ngai
EMC Test Engineer

7 Emission Test Results

7.1 Radiated Emission

EUT: Coach Smart
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.249 & 15.209, Antenna: Horizontal
 Comment: 3.0VDC
 Remark: 9kHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
50.352	15.61	40	-24.39	Quasi Peak
94.260	11.32	43.5	-32.18	Quasi Peak
279.654	16.32	46	-29.68	Quasi Peak
855.172	25.26	46	-20.74	Quasi Peak
2457.000	83.67	114	-30.33	Peak
2457.000	73.73	94	-20.27	Average
4914.000	58.16	74	-15.84	Peak
4914.000	41.37	54	-12.63	Average
7371.000	61.04	74	-12.96	Peak
7371.000	43.22	54	-10.78	Average

Radiated Emission

EUT: Coach Smart
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.249 & 15.209, Antenna: Vertical
 Comment: 3.0VDC
 Remark: 9kHz to 25GHz

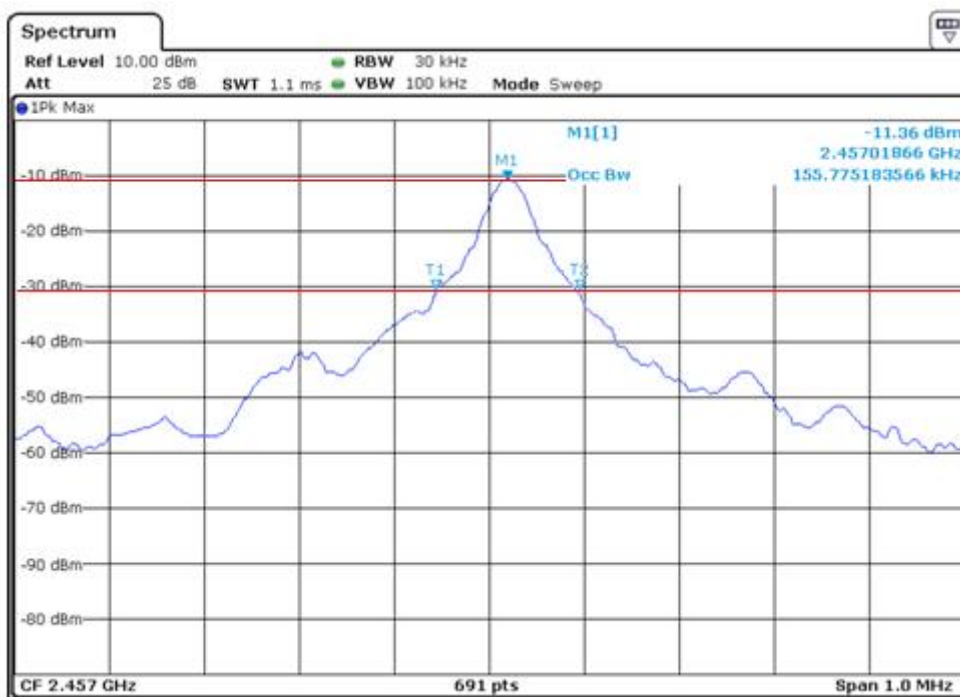
Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
49.860	14.13	40	-25.87	Quasi Peak
101.260	16.20	43.5	-27.30	Quasi Peak
280.540	16.89	46	-29.11	Quasi Peak
723.600	21.03	46	-24.97	Quasi Peak
2457.166	82.18	114	-31.82	Peak
2457.166	66.72	94	-27.28	Average
4914.375	59.83	74	-14.17	Peak
4914.375	42.03	54	-11.97	Average
7330.625	61.05	74	-12.95	Peak
7330.625	43.31	54	-10.69	Average

7.2 20dB & 99% Bandwidth

EUT: Coach Smart
Op Condition: Operated, TX Mode (2457MHz)
Test Specification: FCC15.215, 20dB Bandwidth
Comment: 3.0VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

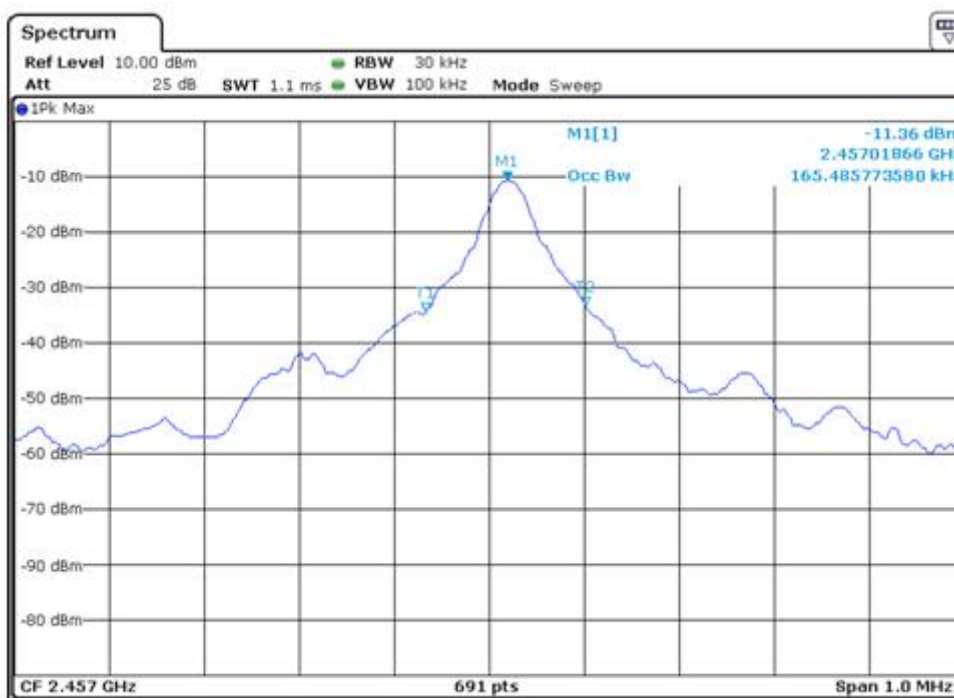


20dB bandwidth
155.775 kHz

20dB & 99% Bandwidth

EUT: Coach Smart
Op Condition: Operated, TX Mode (2457MHz)
Test Specification: FCC15.215, 99% Bandwidth
Comment: 3.0VDC

Test Result	
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<input type="checkbox"/>	Not Passed

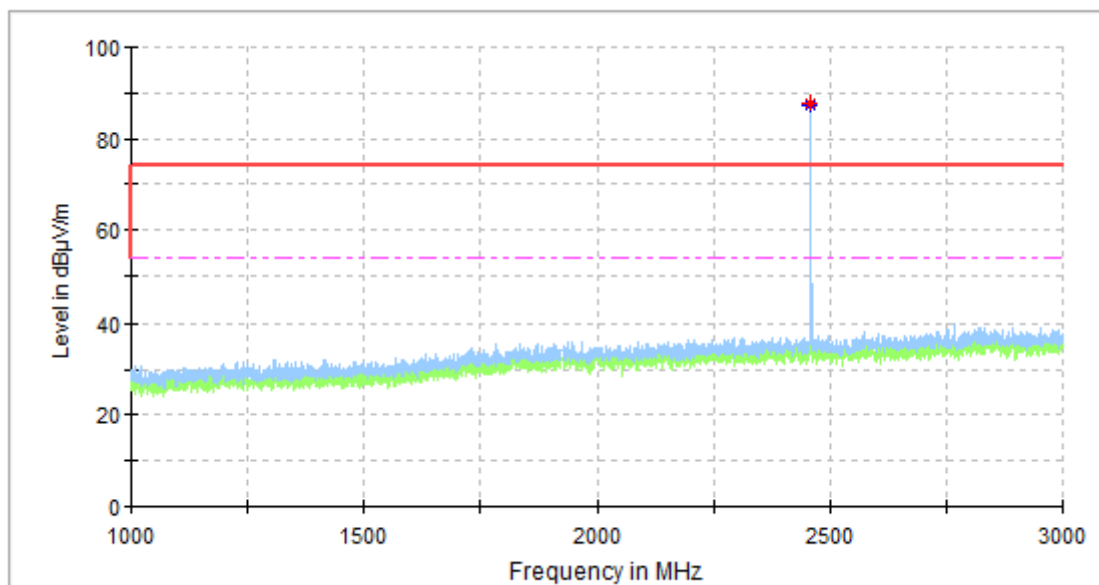


99% bandwidth
165.485 kHz

7.3 Bandedge Emission

EUT: Coach Smart
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.247, Antenna: Horizontal
 Comment: 3.0VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

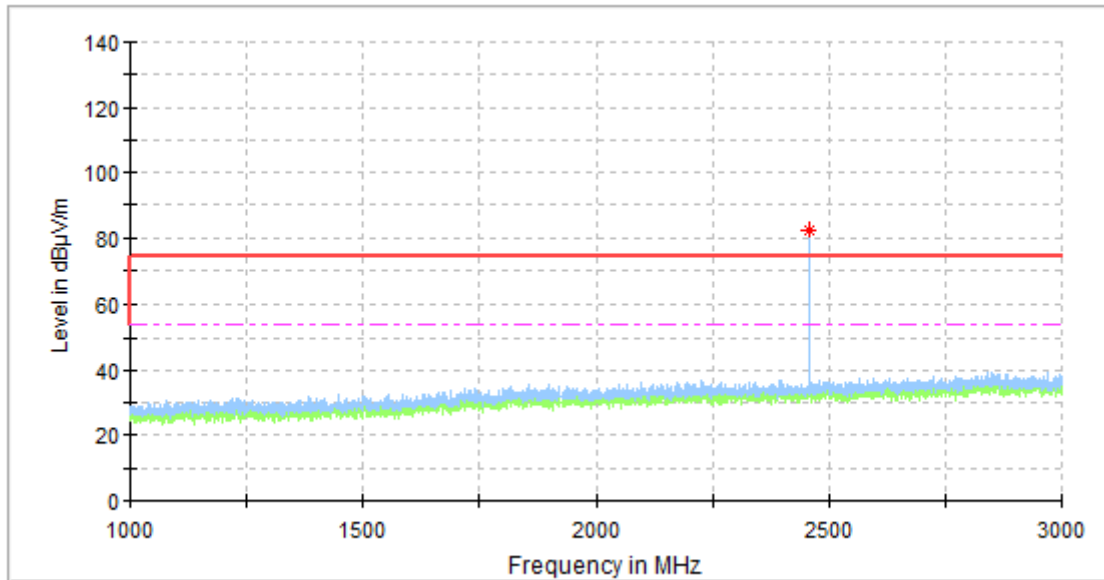


Band	Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
Low	2390.000	33.89	74	-40.11	Peak
Low	2390.000	30.63	54	-23.37	Average
High	2483.500	35.12	74	-38.88	Peak
High	2483.500	31.66	54	-22.34	Average

Bandedge Emission

EUT: Coach Smart
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.247, Antenna: Vertical
 Comment: 3.0VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

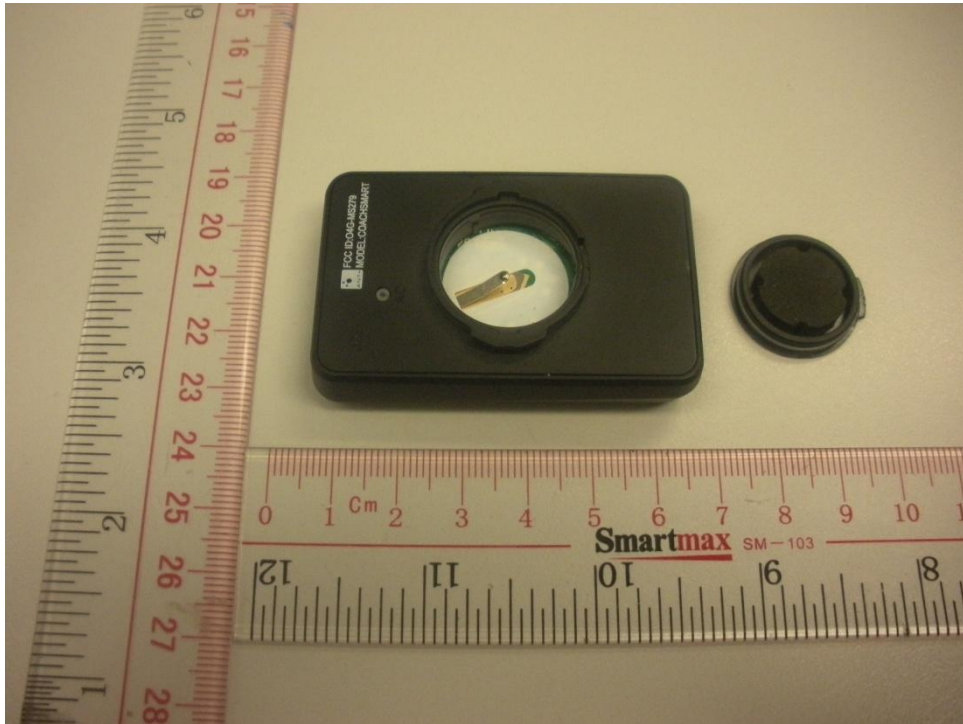


Band	Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
Low	2390.000	33.34	74	-40.66	Peak
Low	2390.000	30.16	54	-23.84	Average
High	2483.500	33.89	74	-40.11	Peak
High	2483.500	31.72	54	-22.38	Average

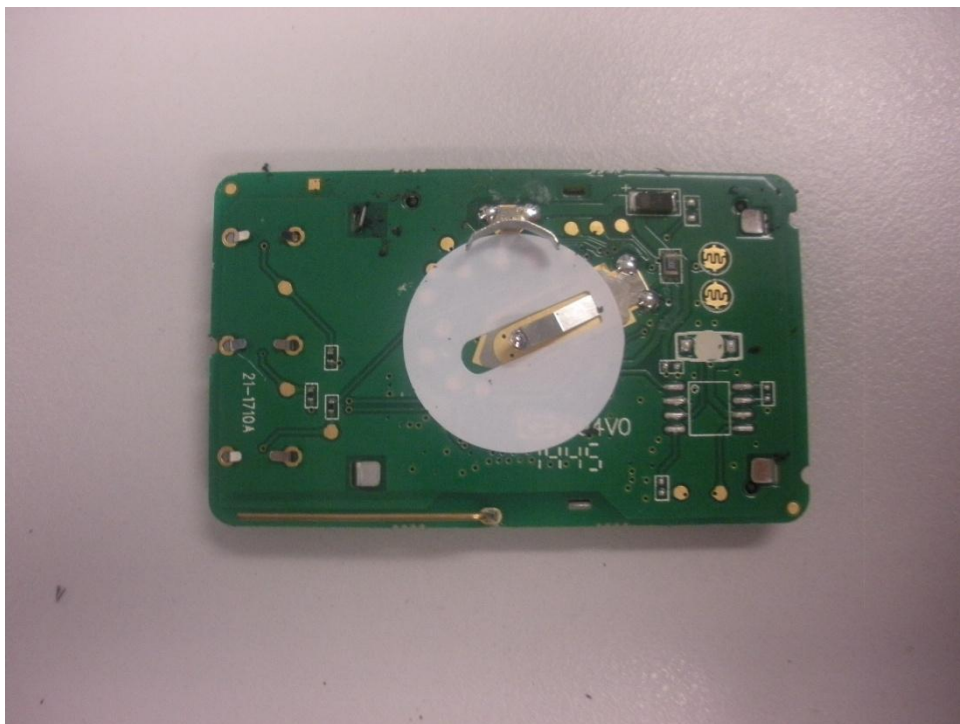
8 Appendix A - Photographs of EUT



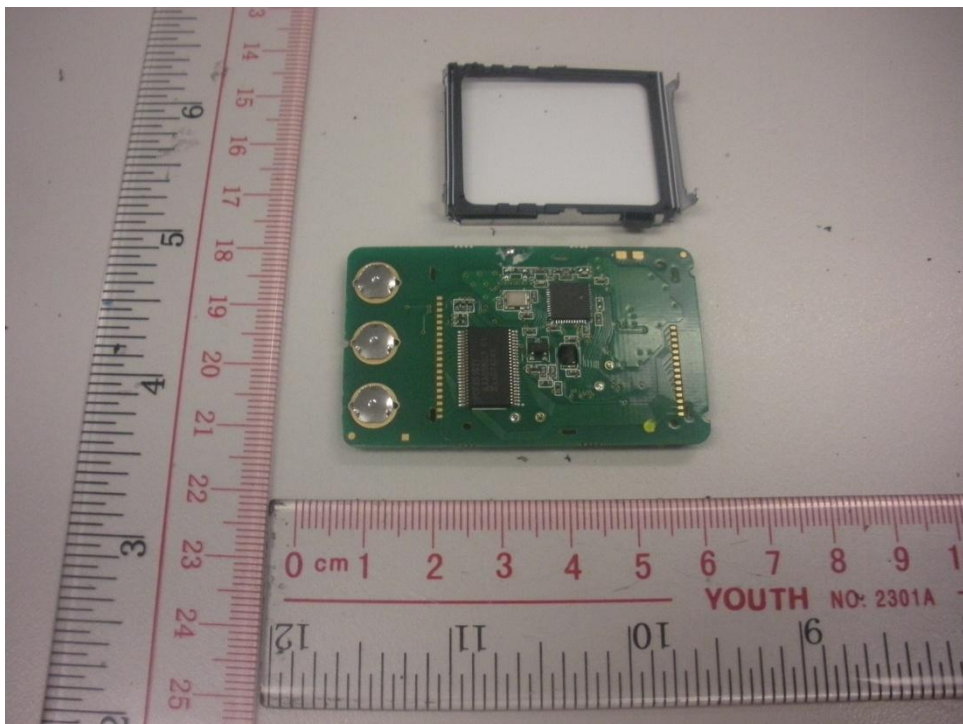
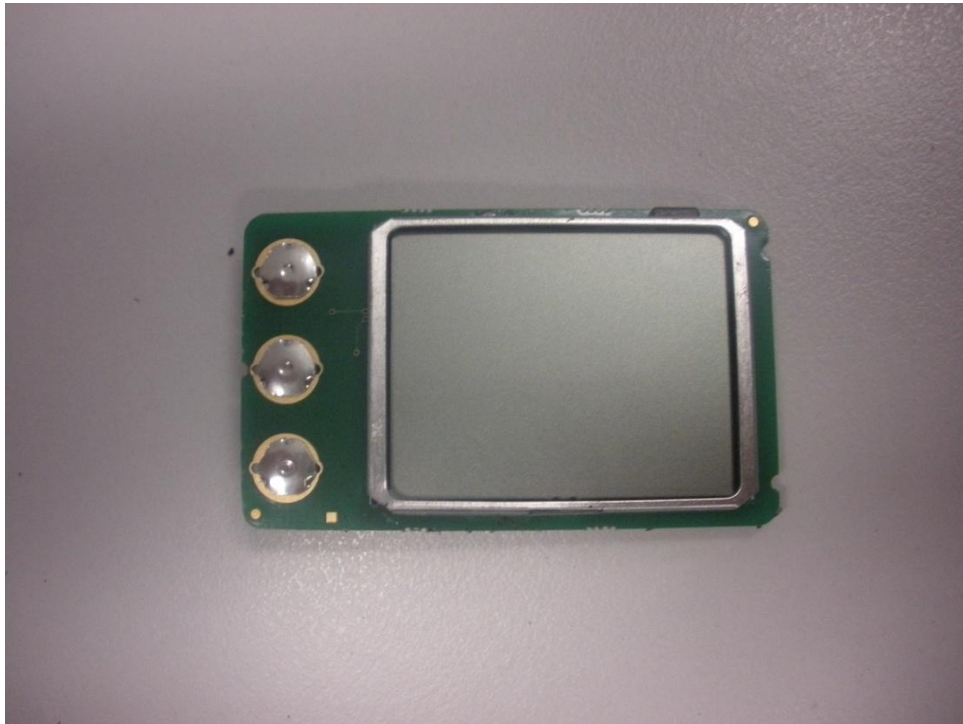
Appendix A



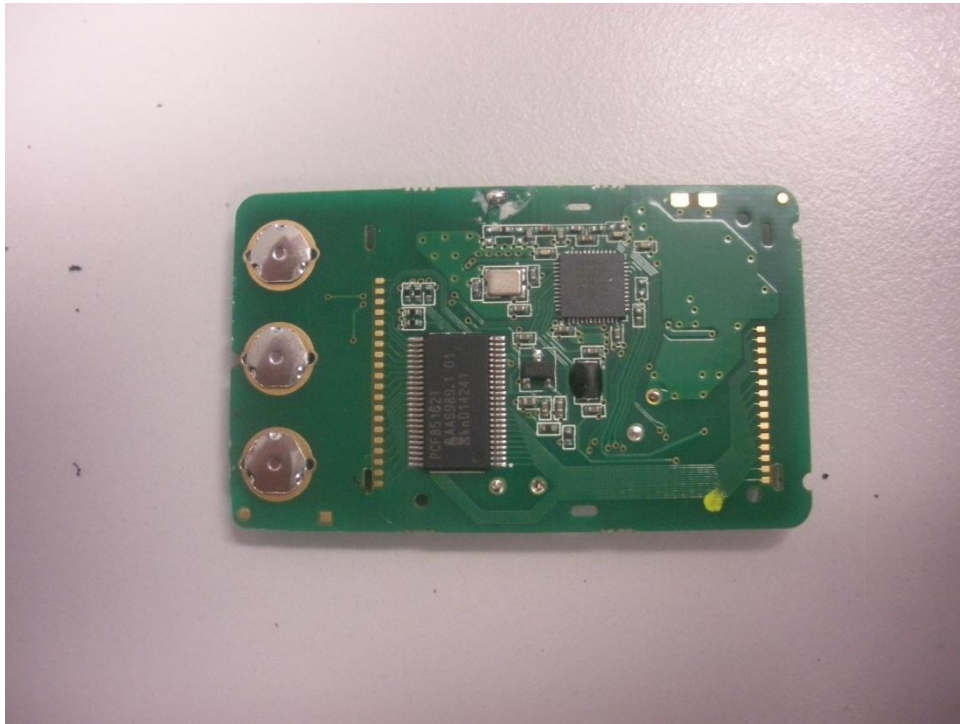
Appendix A



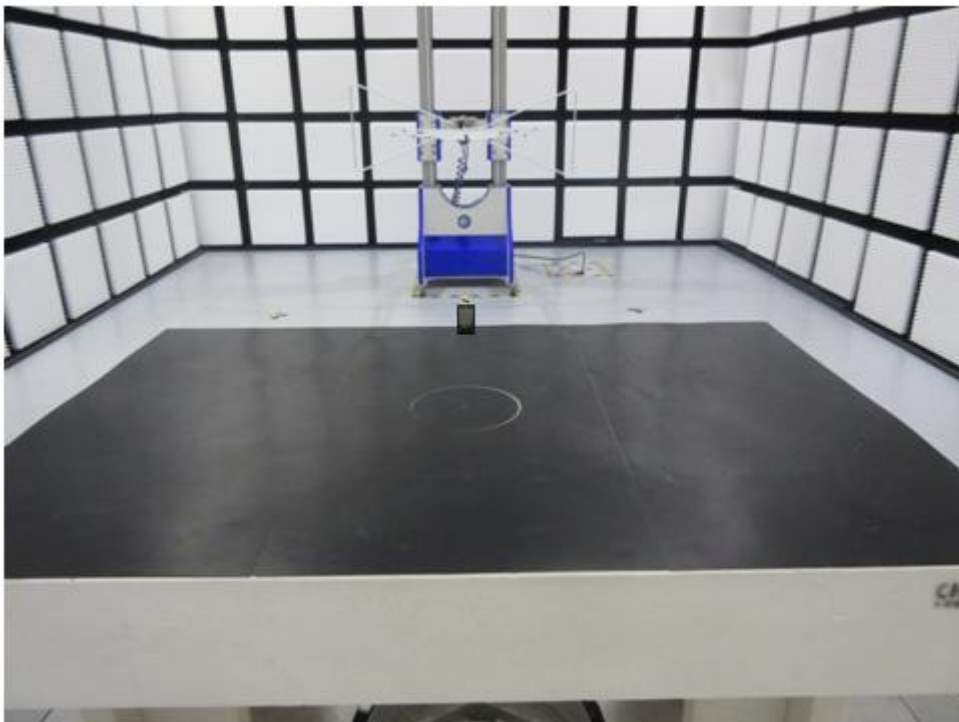
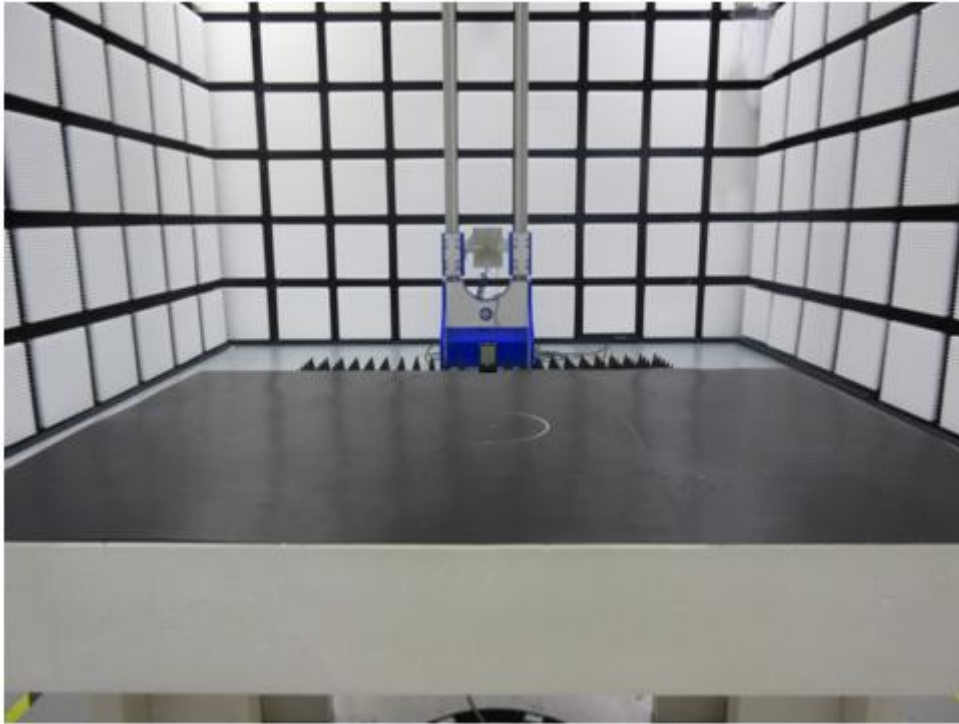
Appendix A



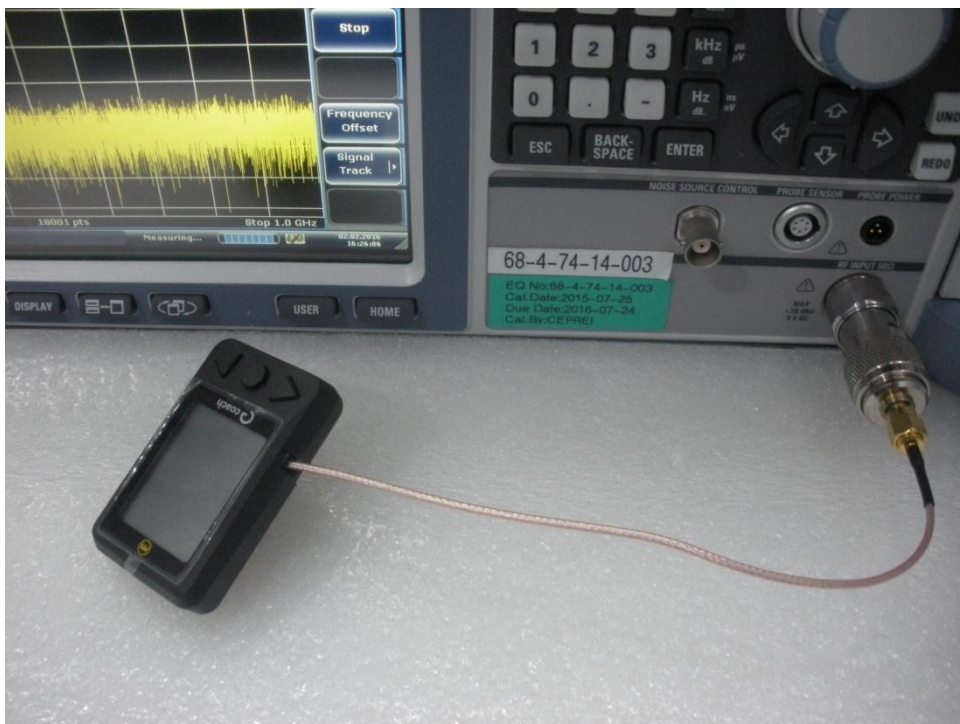
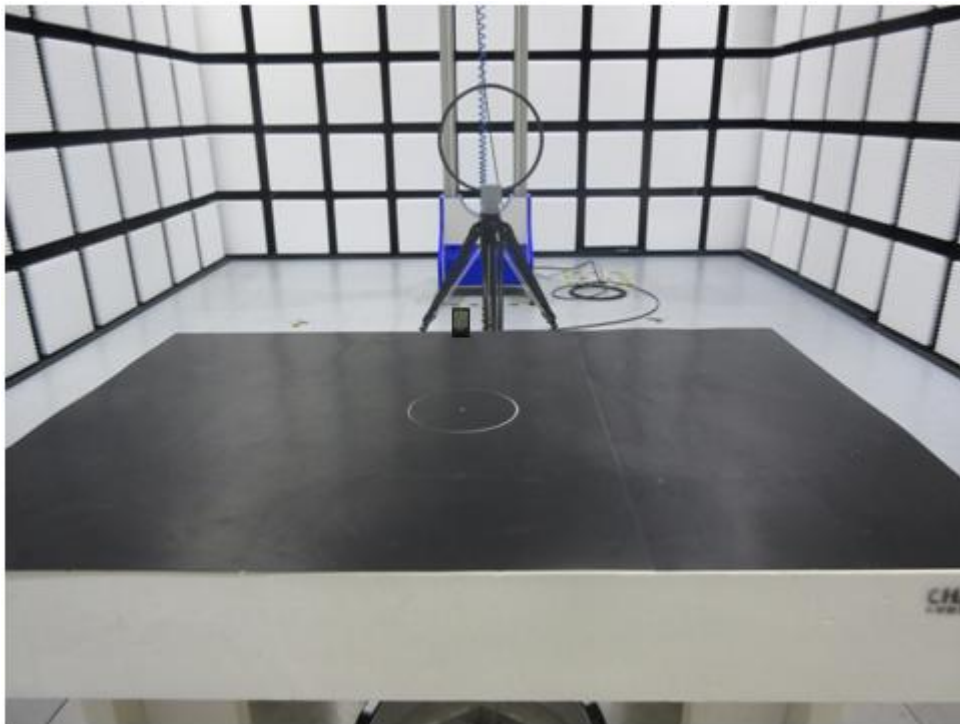
Appendix A



9 Appendix B - Setup Photographs of EUT



Appendix B



10 Appendix C - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1,

>> The 1-g SAR test exclusion thresholds, for 100MHz to 6GHz, at test separation distances ≤ 50 mm are determined by:

Power at 2.457GHz = 0.0731 mW EIRP

$[(0.0731 \text{ mW}) / (20 \text{ mm})] \cdot [\text{sqrt}(2.457 \text{ GHz})] = 0.005729$ which is ≤ 3.0 for 1-g SAR.

Therefore the device is exempt from stand-alone SAR test requirements.

>> The fundamental frequency of the EUT is 2457MHz, the test separation distance is < 50 mm. (Manufacturer specified the separation distance is: 20mm)

>> The power of EUT measured is:

- For 2457MHz: $0.0731\text{mW} = 10 \log(0.0731) \text{ dBm} \sim -11.36\text{dBm}$