

FCC - TEST REPORT

Report Number : **60.790.16.015.01R02** Date of Issue : March 19, 2016

Model : **BKM5AB**

Product Type : **Bike Speed/Cadence Sensor with ANT+/BLE**

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 : 22

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2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	Bike Speed/Cadence Sensor with ANT+/BLE
Model no.:	BKM5AB
FCC ID:	O4GBKM5AB
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

Site 2:

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
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	☒	☐	☐
FCC Title 47 Part 15.249 & 15.207 Conduct Emission	NIL	☐	☐	☒
FCC Title 47 Part 15.215 20dB & 99% Bandwidth	12-13	☒	☐	☐
FCC Title 47 Part 15.249 Bandedge Emission	14-15	☒	☐	☐

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.

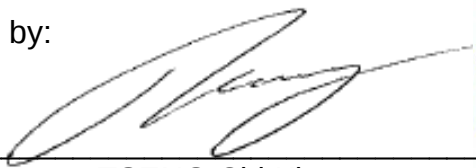
Sample Received Date: March 14, 2016

Testing Start Date: March 15, 2016

Testing End Date: March 18, 2016

- TÜV SÜD HONG KONG LTD. -

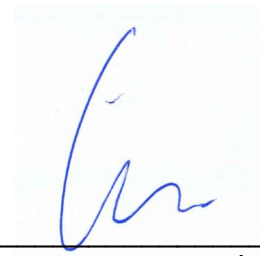
Reviewed by:



TSENG Chi Kit
EMC Project Engineer



Prepared by:



CHAN Kwong Ngai
EMC Test Engineer

7 Emission Test Results

7.1 Radiated Emission

EUT: BKM5AB
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.249 & 15.209, Antenna: Horizontal
 Comment: 3.0VDC
 Remark: 9kHz to 25GHz

Test Result

☒ Passed

☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
49.842	15.30	40	-24.70	Quasi Peak
95.167	12.23	43.5	-31.27	Quasi Peak
280.439	15.87	46	-30.13	Quasi Peak
855.762	24.13	46	-21.87	Quasi Peak
2457.000	84.72	114	-29.28	Peak
2457.000	65.28	94	-28.72	Average
4914.000	60.79	74	-13.21	Peak
4914.000	42.11	54	-11.89	Average
7371.000	58.02	74	-15.98	Peak
7371.000	42.98	54	-11.02	Average

Radiated Emission

EUT: BKM5AB
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.249 & 15.209, Antenna: Vertical
 Comment: 3.0VDC
 Remark: 9kHz to 25GHz

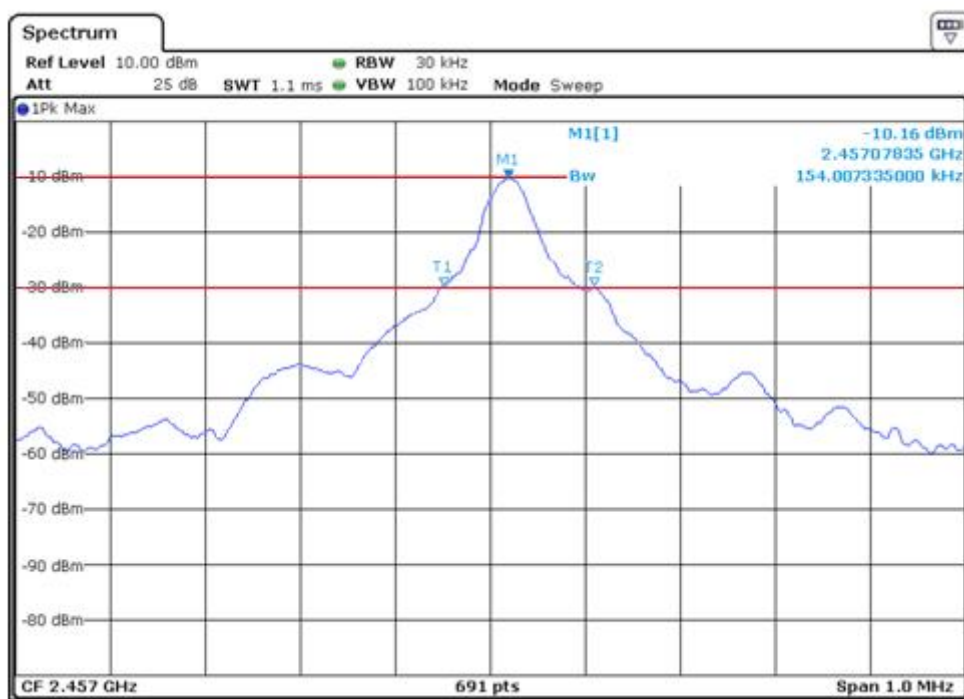
Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
50.459	15.24	40	-24.76	Quasi Peak
100.890	16.53	43.5	-26.97	Quasi Peak
280.513	16.77	46	-29.23	Quasi Peak
723.600	20.36	46	-25.64	Quasi Peak
2457.000	84.16	114	-29.84	Peak
2457.000	64.32	94	-29.68	Average
4914.093	55.93	74	-18.07	Peak
4914.093	42.16	54	-11.84	Average
7371.145	52.88	74	-21.12	Peak
7371.145	43.13	54	-10.87	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

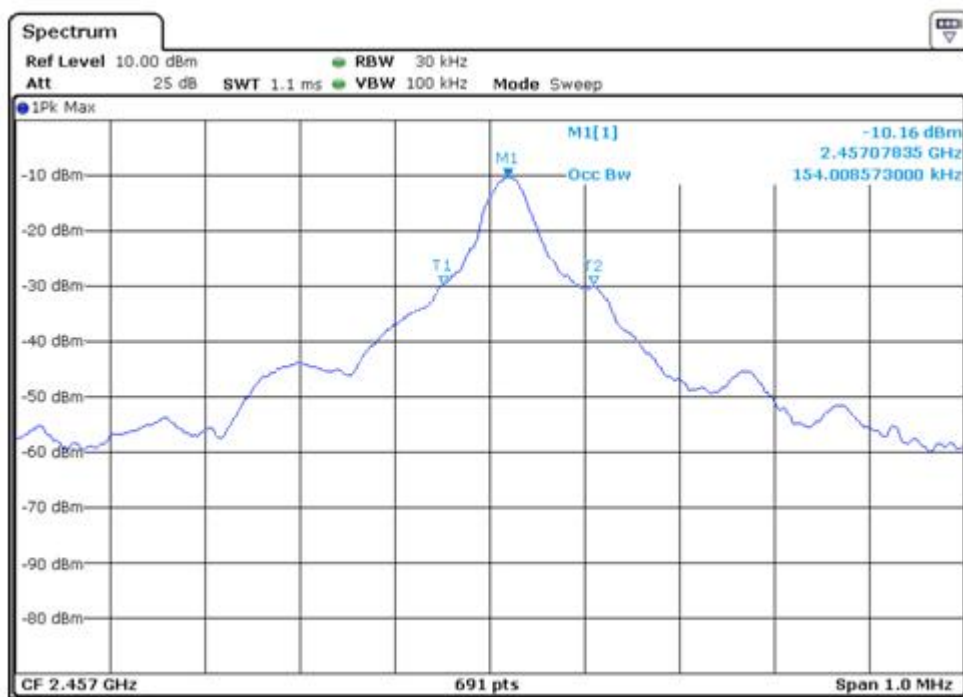
☒ Passed☐ Not Passed**20dB bandwidth**

154.007 kHz

20dB & 99% Bandwidth

EUT: BKM5AB
Op Condition: Operated, TX Mode (2457MHz)
Test Specification: FCC15.215, 99% Bandwidth
Comment: 3.0VDC

Test Result

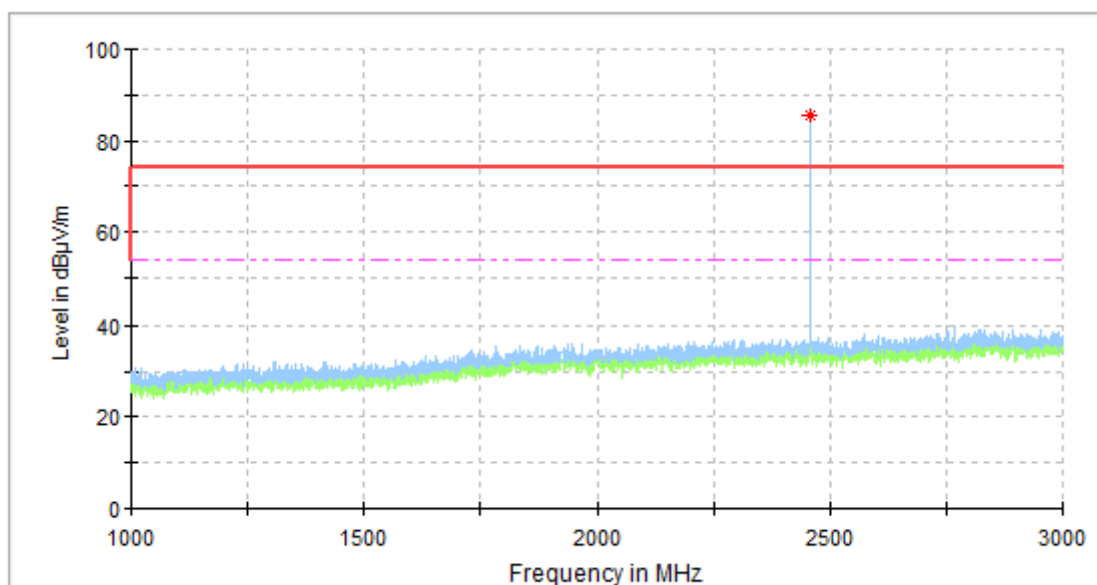
☒ Passed☐ Not Passed**99% bandwidth**

154.008 kHz

7.3 Bandedge Emission

EUT: BKM5AB
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.247, Antenna: Horizontal
 Comment: 3.0VDC

Test Result

☒ Passed☐ Not Passed

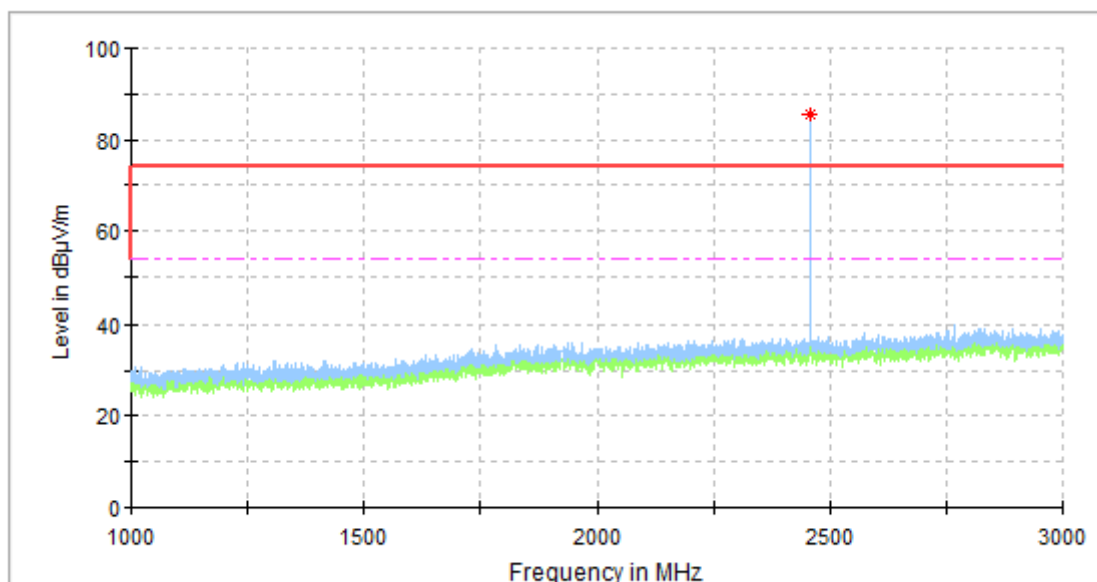
Band	Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
Low	2390.000	33.46	74	-40.54	Peak
Low	2390.000	31.21	54	-22.79	Average
High	2483.500	35.03	74	-38.97	Peak
High	2483.500	31.44	54	-22.56	Average

Bandedge Emission

EUT: BKM5AB
 Op Condition: Operated, TX Mode (2457MHz)
 Test Specification: FCC15.247, Antenna: Vertical
 Comment: 3.0VDC

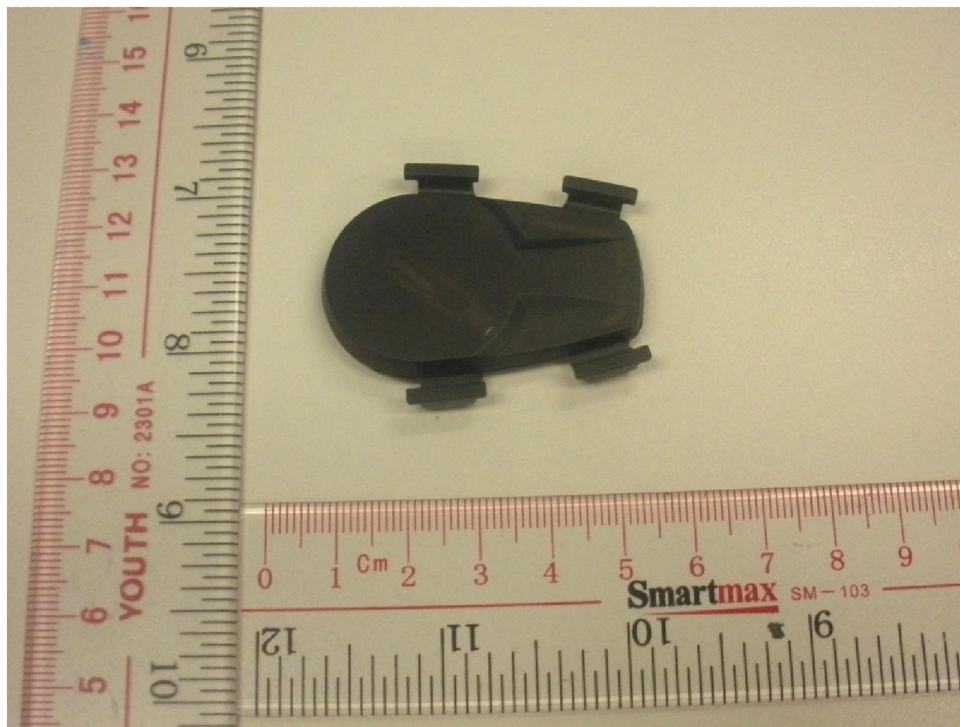
Test Result

☒ Passed
☐ Not Passed



Band	Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
Low	2390.000	33.54	74	-40.46	Peak
Low	2390.000	31.02	54	-22.98	Average
High	2483.500	33.91	74	-40.09	Peak
High	2483.500	32.03	54	-21.97	Average

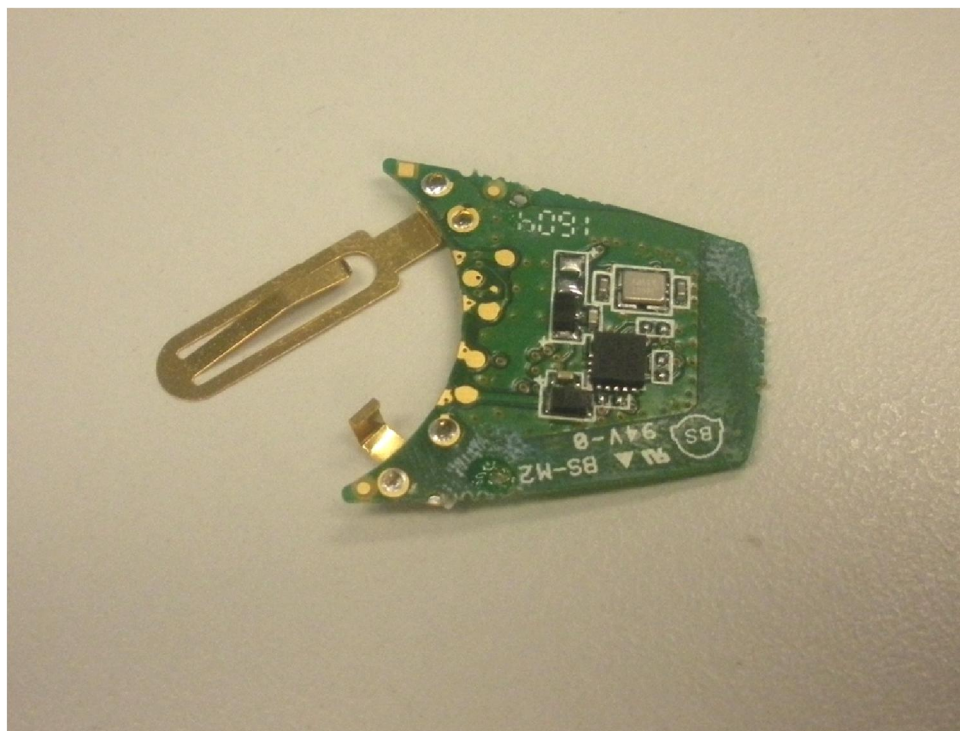
8 Appendix A - Photographs of EUT



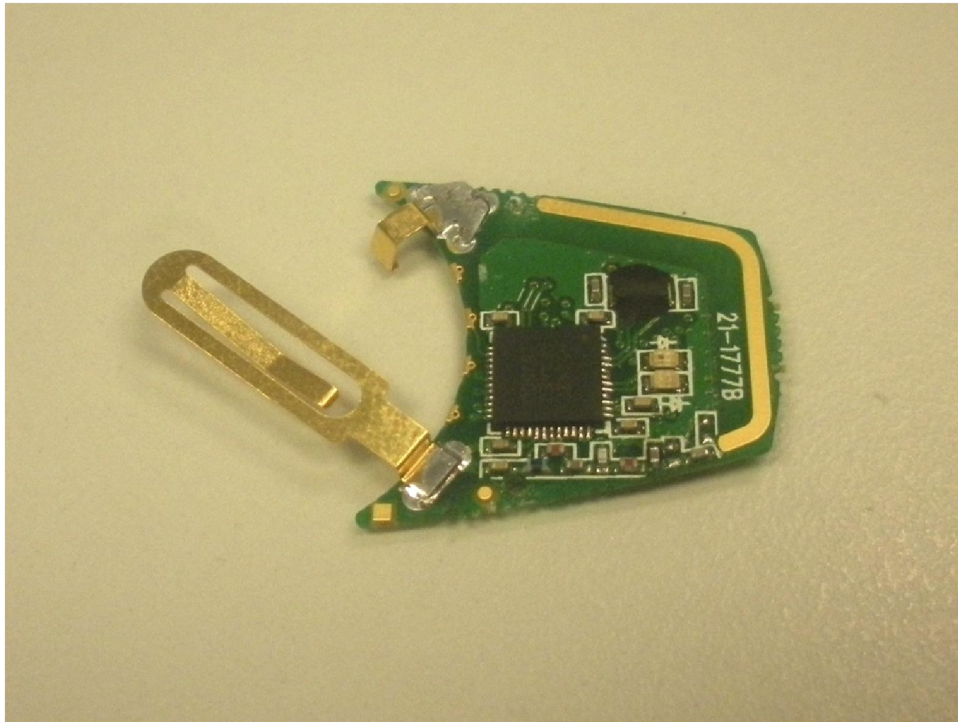
Appendix A



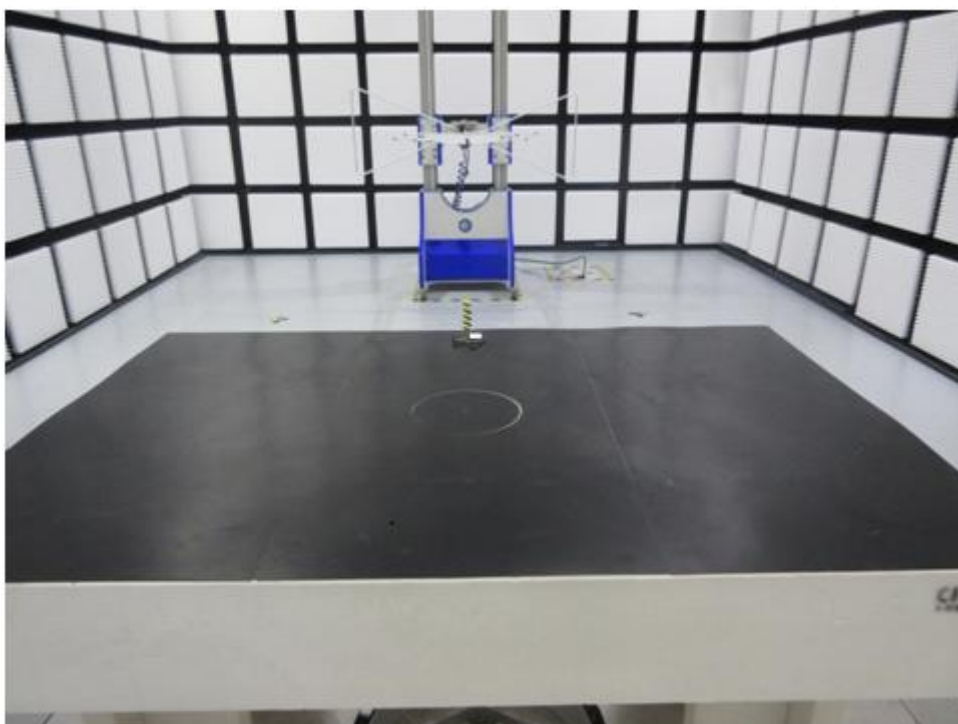
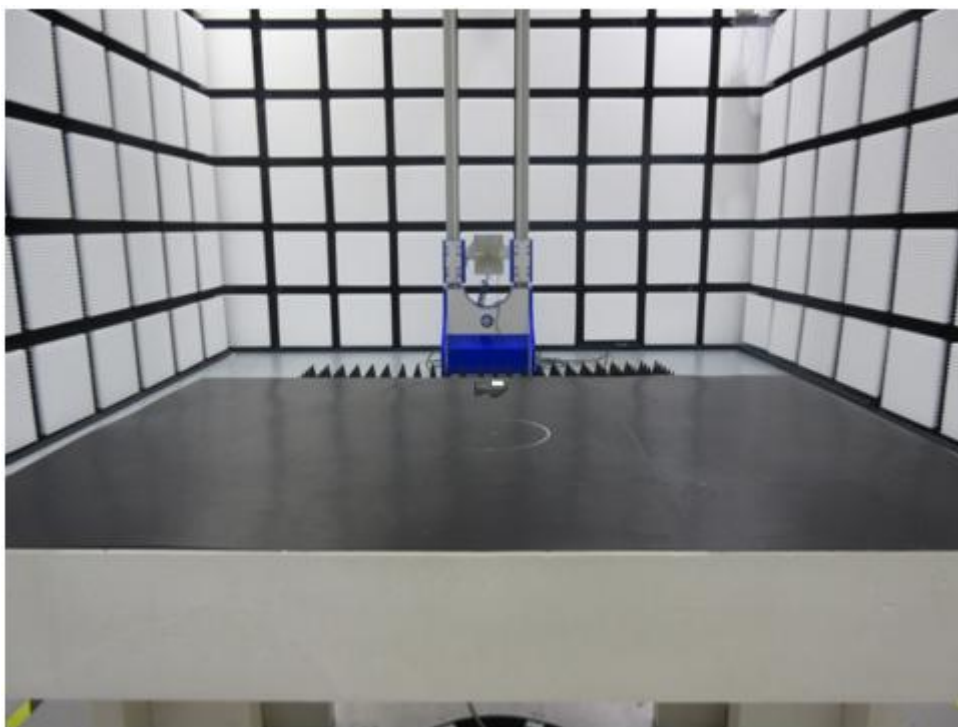
Appendix A



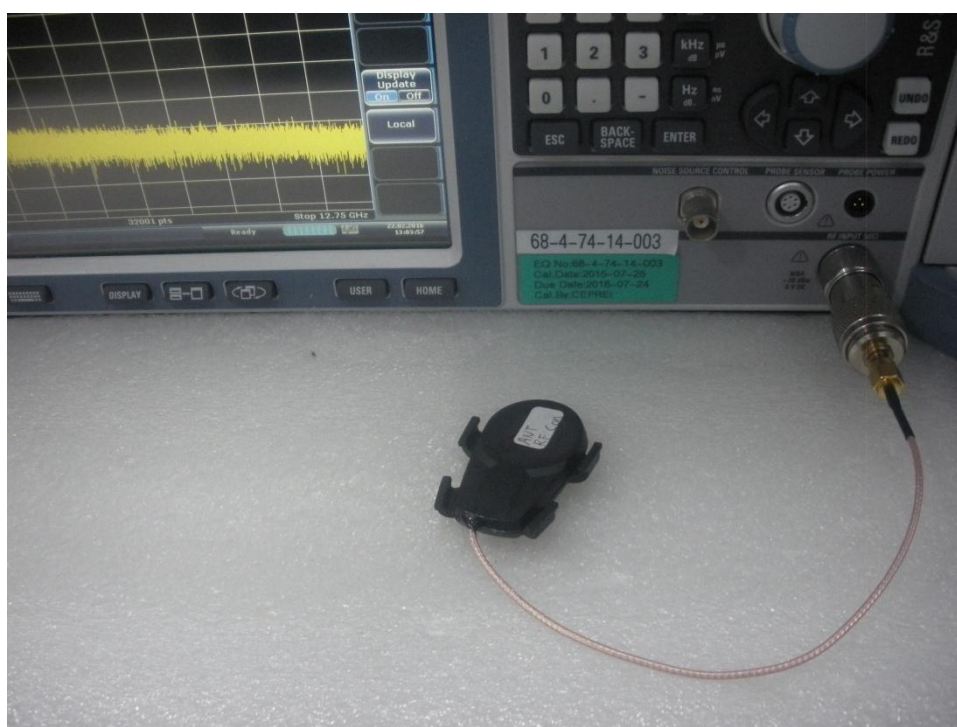
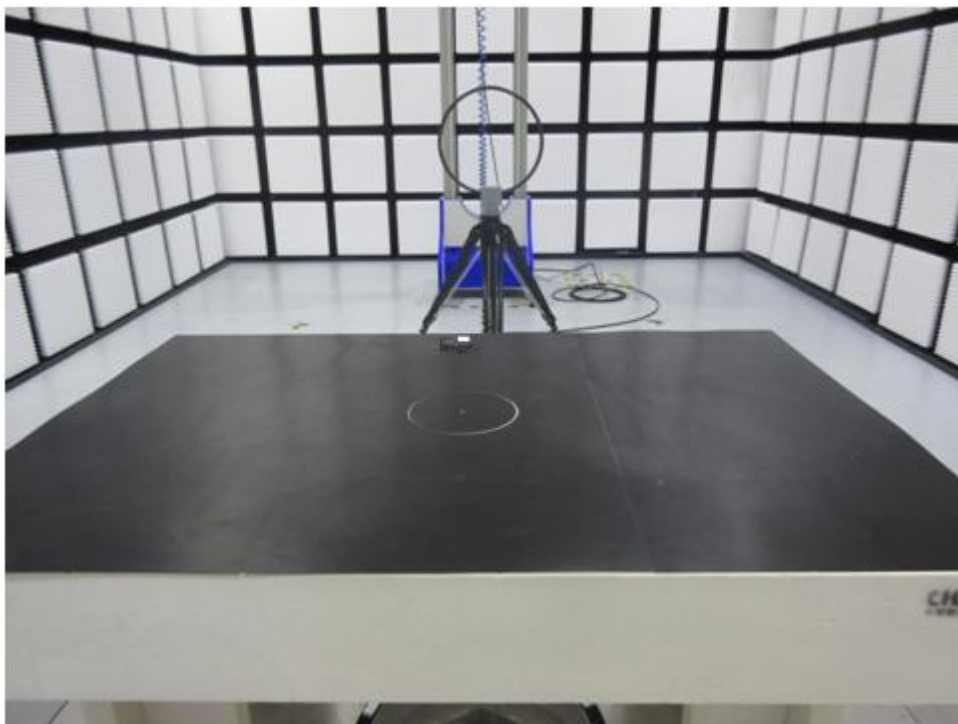
Appendix A



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 = 0.0963 mW EIRP

$[(0.0963 \text{ mW}) / (20 \text{ mm})] \cdot [\text{sqrt}(2.457 \text{ GHz})] = 0.007547$ 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 $< 50\text{mm}$. (Manufacturer specified the separation distance is: 20mm)

>> The power of EUT measured is:

- For 2457MHz: $0.0963\text{mW} = 10 \log (0.0963) \text{ dBm} \sim -10.16\text{dBm}$