China

FCC - TEST REPORT

Report Number	:	60.790.16.037.01	Date of Issue	:	August 22, 2016
Model	:	STS-S-3			
Product Type	:	**STS Speed Transmitter**			
Applicant	:	SIGMA Sport USA LLC			
Address	:	1860B Dean St., St. Charles, IL 60174, United States			
Production Facility	:	SIGMA Sport USA LLC			
Address	:	1860B Dean St., St. Charles, IL 60174, United States			
Test Result	:	■Positive ☐Negative			
Total pages including Appendices	:	20			

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1 Table of Contents

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2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	STS Speed Transmitter
Model no.:	STS-S-3
FCC ID:	M5LSPD3STS
Rating:	3.0VDC (1 x 3.0VDC “CR2032“ button cell battery)
Frequency:	112kHz
Antenna gain:	0 dBi
Number of operated Channel:	1
Description of the EUT:	The EUT is considered as wireless device, the frequency range is 112kHz. More details of EUT technical specification please refer to the User's Manual.

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3 Summary of Test Standards

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

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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 test site number 502708

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.209 Radiated Emission	Site 2
FCC Title 47 Part 15.207 Conduct Emission	NIL
FCC Title 47 Part 15.203 Antenna Requirement	Site 2

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4.1 Test Equipment Site List

Radiated Emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	17-Aug-17
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-17
3m Semi-anechoic chamber	TDK	9X6X6	----	29-May-19

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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;

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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 15.209 Radiated Emission	10-11	☒	☐	☐
FCC Title 47 Part 15.207 Conduct Emission	NIL	☐	☐	☒
FCC Title 47 Part 15.203 Antenna Requirement	12	☒	☐	☐

Remark:
(1) EUT is transmitter only

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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: August 3, 2016

Testing Start Date: August 4, 2016

Testing End Date: August 19, 2016

- TÜV SÜD HONG KONG LTD. -

Reviewed by: Prepared by:

TSENG Chi Kit	CHAN Kwong Ngai
EMC Project Engineer	EMC Test Engineer

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7 Emission Test Results

7.1 Radiated Emission

EUT: STS-S-3
Op Condition: On Mode
Test Specification: Antenna: Horizontal
Comment: 3.0VDC
Remark: 9kHz to 1GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
0.112	55.42	106.6	-51.18	Quasi Peak
50.250	18.00	40	-22.00	Quasi Peak
94.125	11.62	43.5	-31.88	Quasi Peak
280.216	20.23	46	-25.77	Quasi Peak
845.857	26.01	46	-19.99	Quasi Peak

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Radiated Emission

EUT: STS-S-3
Op Condition: On Mode
Test Specification: Antenna: Vertical
Comment: 3.0VDC
Remark: 9kHz to 1GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
0.112	55.13	106.6	-51.47	Quasi Peak
49.950	15.55	40	-24.45	Quasi Peak
100.265	16.43	43.5	-27.07	Quasi Peak
280.000	18.25	46	-27.75	Quasi Peak
844.560	20.31	46	-25.69	Quasi Peak

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7.2 Antenna Requirement

EUT:	STS-S-3
Op Condition:	On Mode
Test Specification:	FCC15.203
Comment:	3.0VDC

Test Result
☒ Passed
☐ Not Passed

Limit

For intentional device, according to FCC Title 47 Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connector Construction

The antenna used in this product is PCB antenna, and the maximum gain of this antenna is 0.0 dBi.

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8 Appendix A - Photographs of EUT

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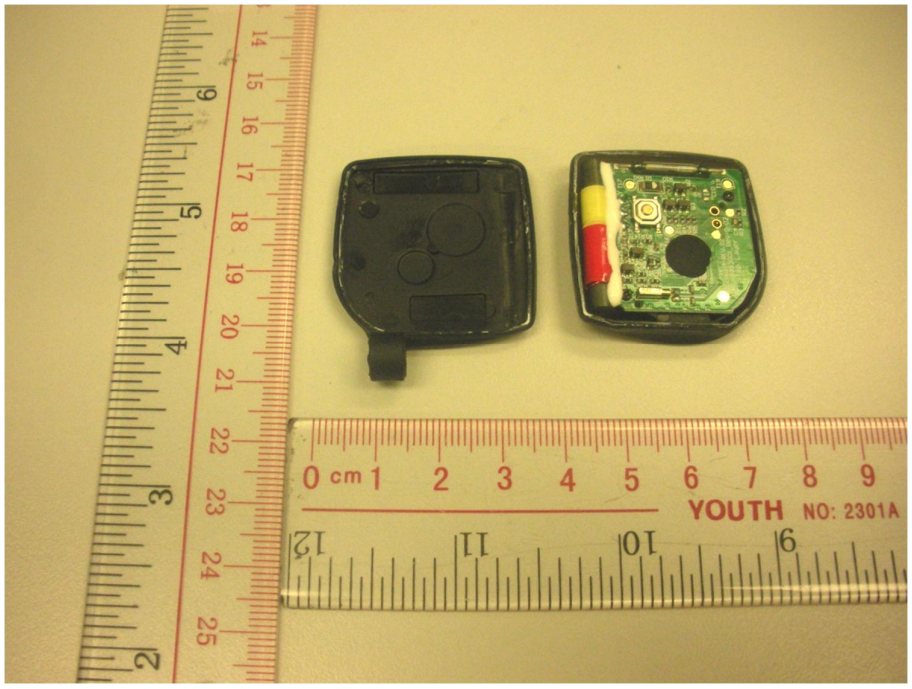
Appendix A



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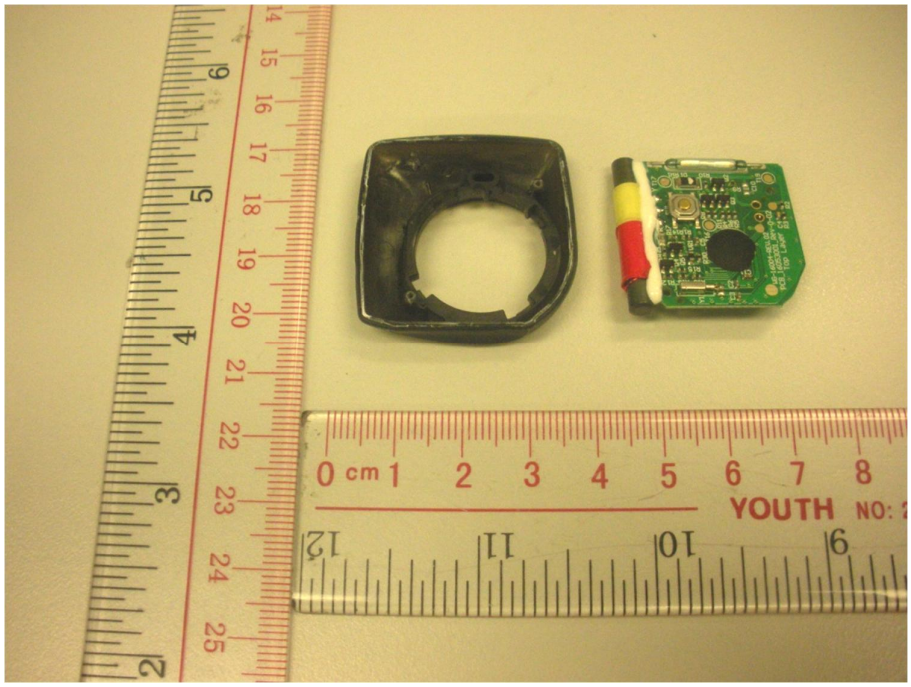
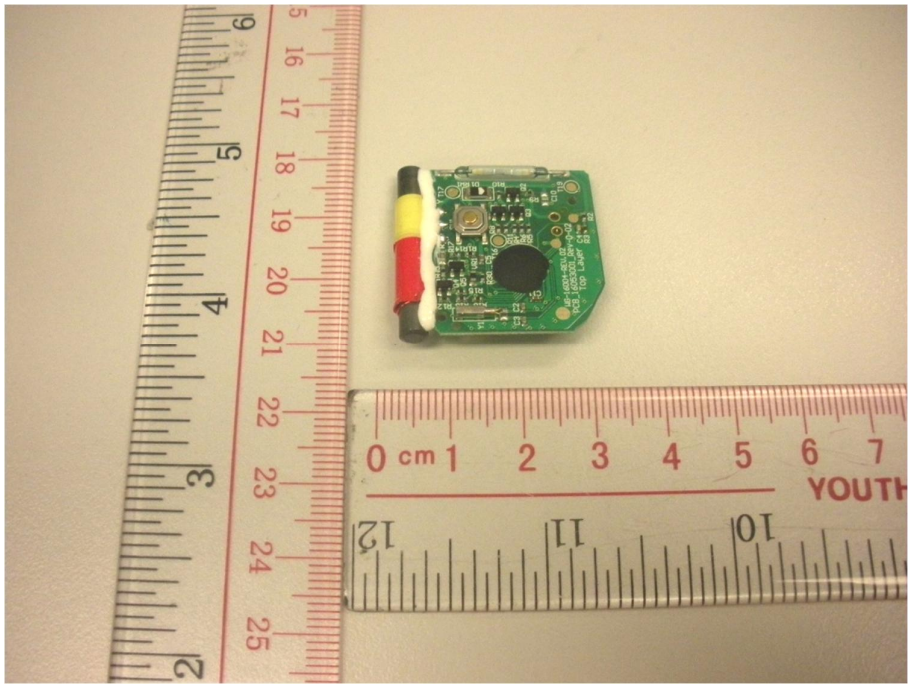
Appendix A





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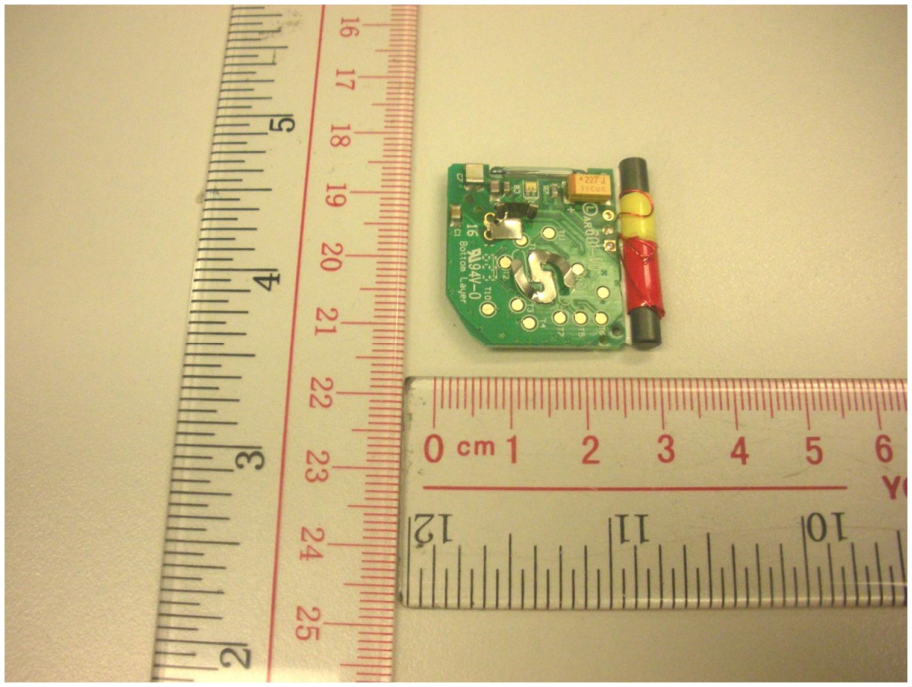

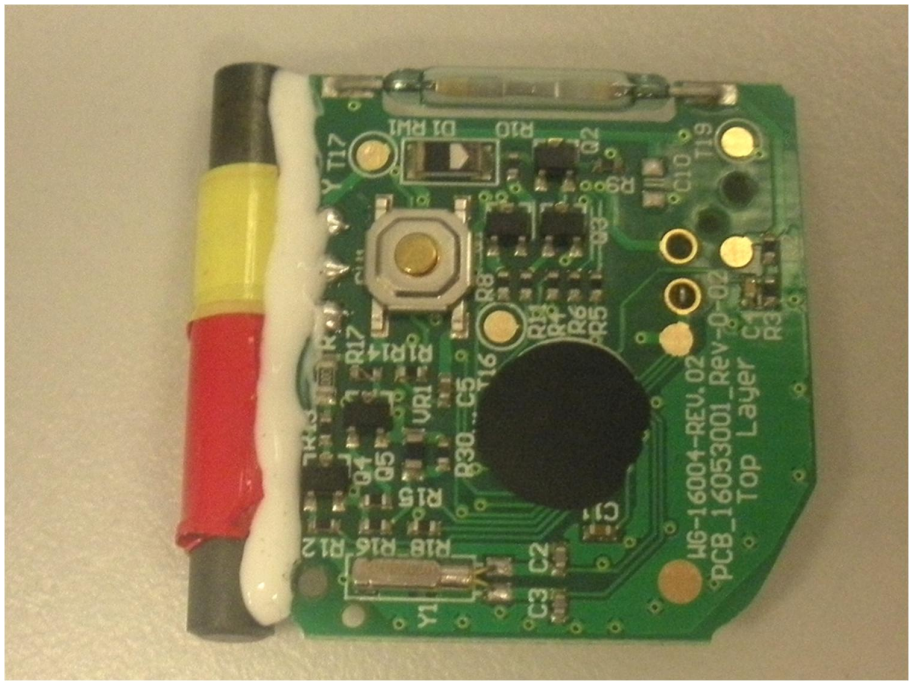

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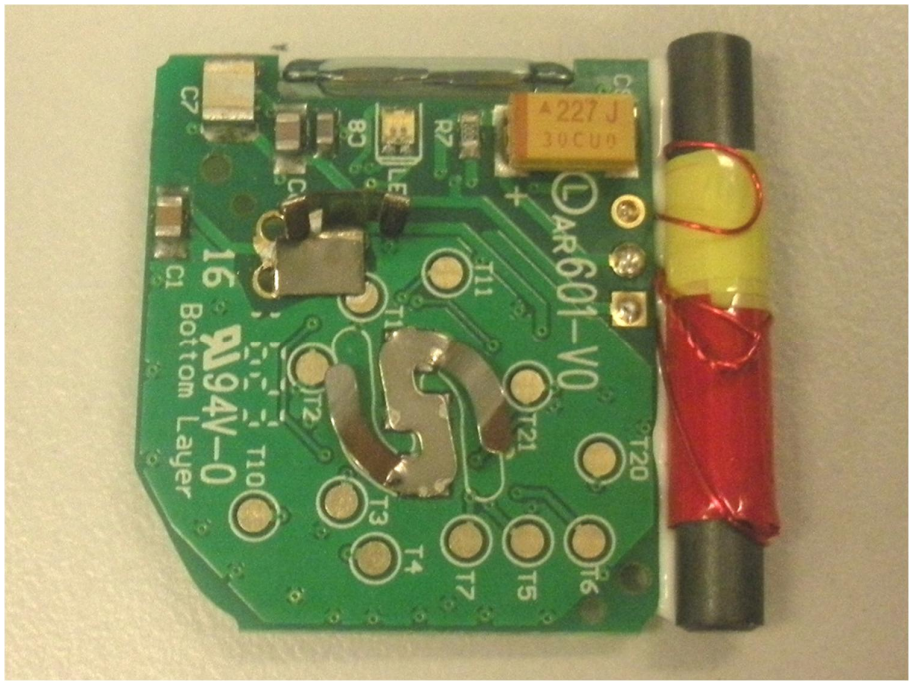

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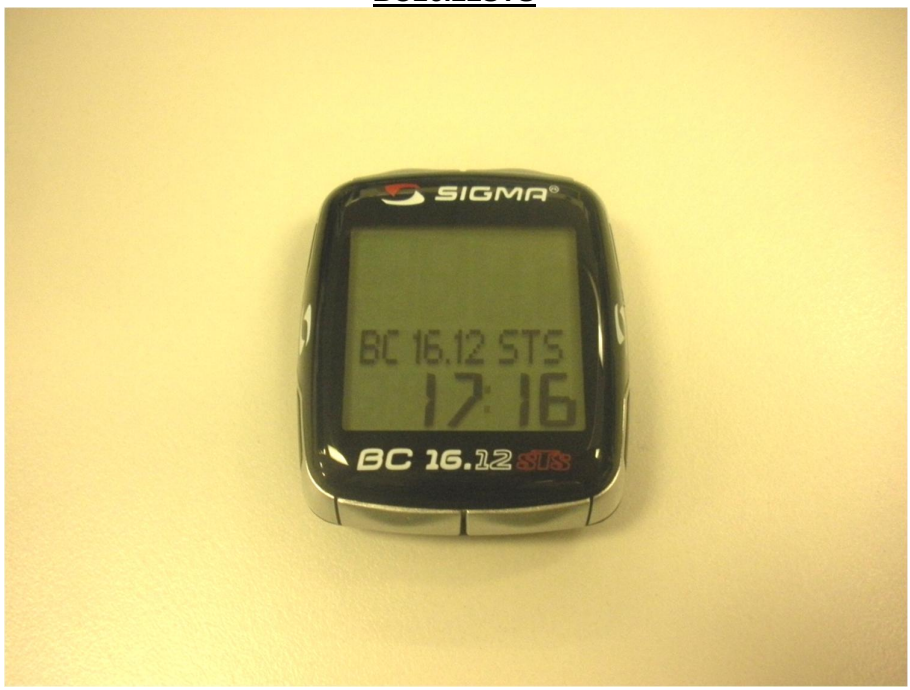
9 Appendix B - Test Support Equipment

BC16.12STS



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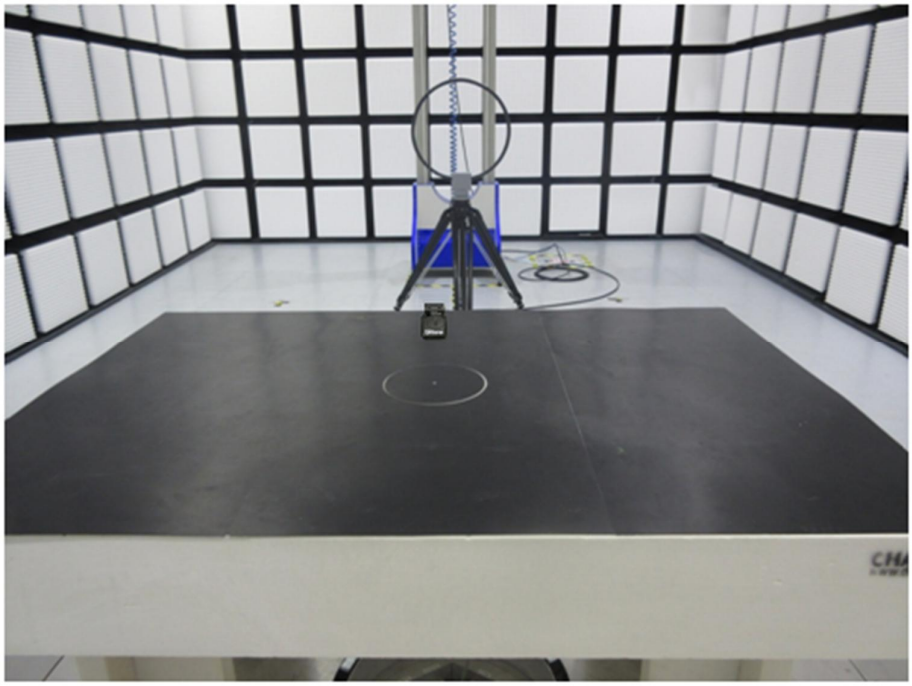
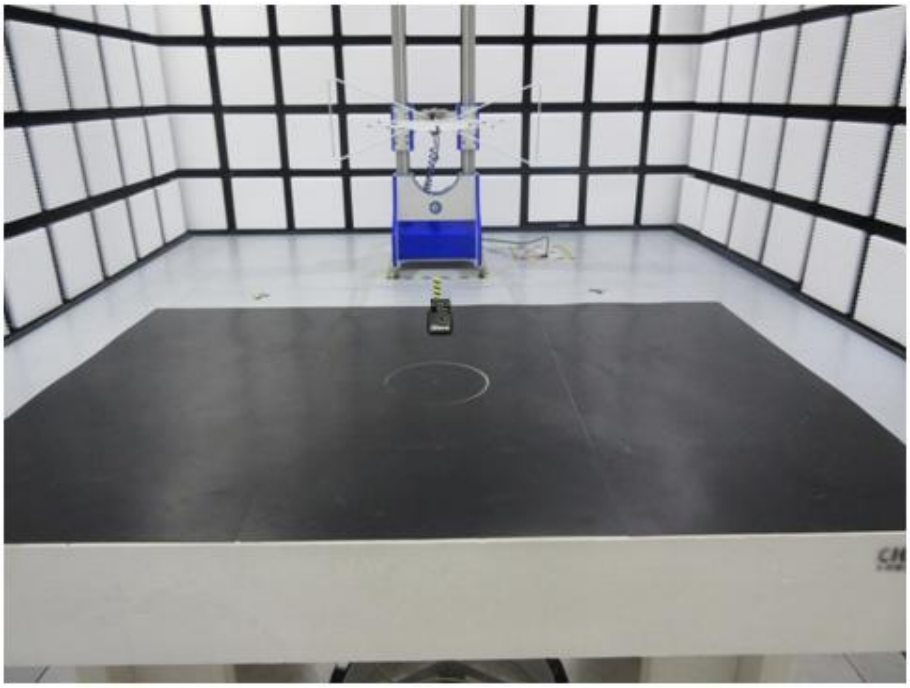
10 Appendix C - Setup Photographs of EUT

Radiated Emission





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11 Appendix D - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1, For frequencies below 100 MHz and test separation distances ≤ 50 mm, the Numeric threshold is determined as:

Step a)
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR

Step b)
{[Power allowed at numeric threshold for 50mm in step a)] + [(test separation distance – 50mm) · (f(MHz)/150)]} mW

Step c) 1)
For test separation distances > 50mm and < 200mm, the power threshold at the corresponding test separation distance at 100MHz in step b) is multiplied by [1 + log(100/f(MHz))]

Step c) 2)
For test separation distances ≤ 50mm, the power threshold determined by the equation in c) 1) for 50mm and 100MHz is multiplied by ½.

>> The fundamental frequency of the EUT is 112kHz, the test separation distance is < 50mm.
(Manufacturer specified the separation distance is: 20mm)

Step a)
>> Numeric threshold, mW / 50mm * √0.1GHz ≤ 3.0
Numeric threshold ≤ 474.3mW

Step b)
>> Numeric threshold ≤ 474.3mW + (50mm-50mm * 100MHz/150) = 474.3mW
Numeric threshold ≤ 474.3mW

Step c) 1) & c) 2)
>> Numeric threshold ≤ 474.3mW * [1 + log 100/100MHz] * ½
Numeric threshold ≤ 273.15mW

>> The power of EUT measured is: -39.78dBm = 0.0001051mW
Which is smaller than the Numeric threshold.
Therefore, the device is exempt from stand-alone SAR test requirements.

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