

FCC - TEST REPORT

Report Number : **60.790.15.016.01** Date of Issue : August 24, 2015

Model : Ridesense

Product Type : Ant+/BLE Combo

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 : 21

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2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	Ant+/BLE Combo
Model no.:	Ridesense
FCC ID:	04GRS1
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 10-1-13 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 China Ltd.
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-15
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-15
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-15
Signal Analyzer	Rohde & Schwarz	FSV40	101030	17-Aug-15
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	17-Aug-15
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	17-Aug-15

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: July 8, 2015

Testing Start Date: July 9, 2015

Testing End Date: July 31, 2015

- 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: Ridesense
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 dBμV/m	Limit dBμV/m	Margin dB	Detector
50.123	15.37	40	-24.63	Quasi Peak
251.765	16.42	40	-23.58	Quasi Peak
787.846	17.85	43.5	-25.65	Quasi Peak
4913.750	50.64	74	-23.36	Peak
4913.750	32.43	54	-21.57	Average
9828.125	46.27	74	-27.73	Peak

Radiated Emission

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

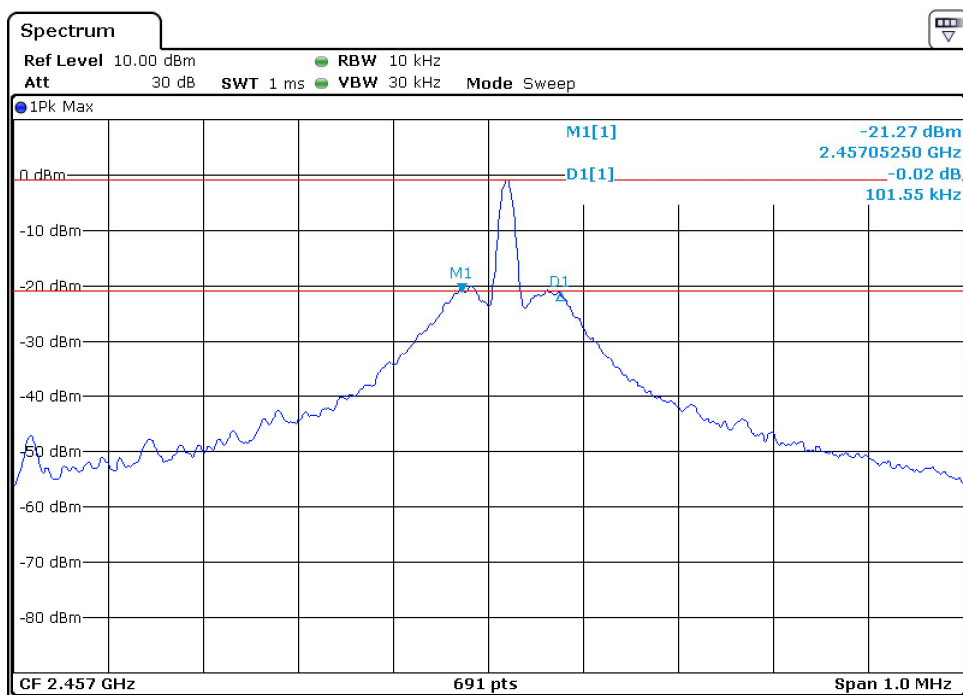
Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
50.085	16.57	40	-23.43	Quasi Peak
251.651	18.42	40	-21.58	Quasi Peak
787.748	17.35	40	-22.65	Quasi Peak
4913.750	49.77	74	-24.23	Peak
4913.750	31.45	54	-22.55	Average
9828.125	44.97	74	-19.03	Peak

7.2 20dB & 99% Bandwidth

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

Test Result

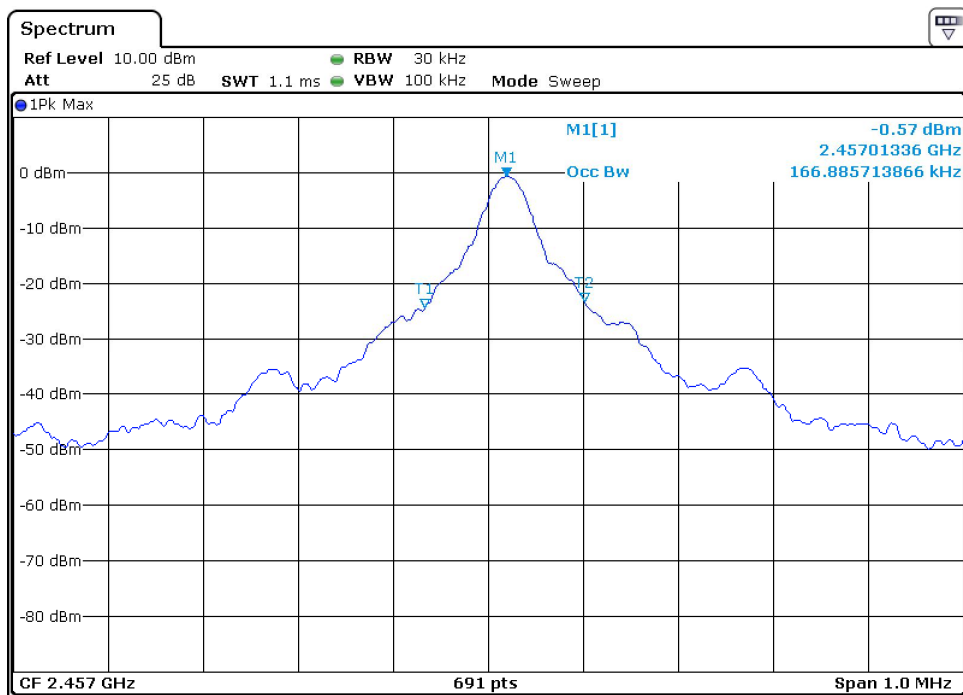
☒ Passed☐ Not Passed**20dB bandwidth**

101.55 kHz

20dB & 99% Bandwidth

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

Test Result

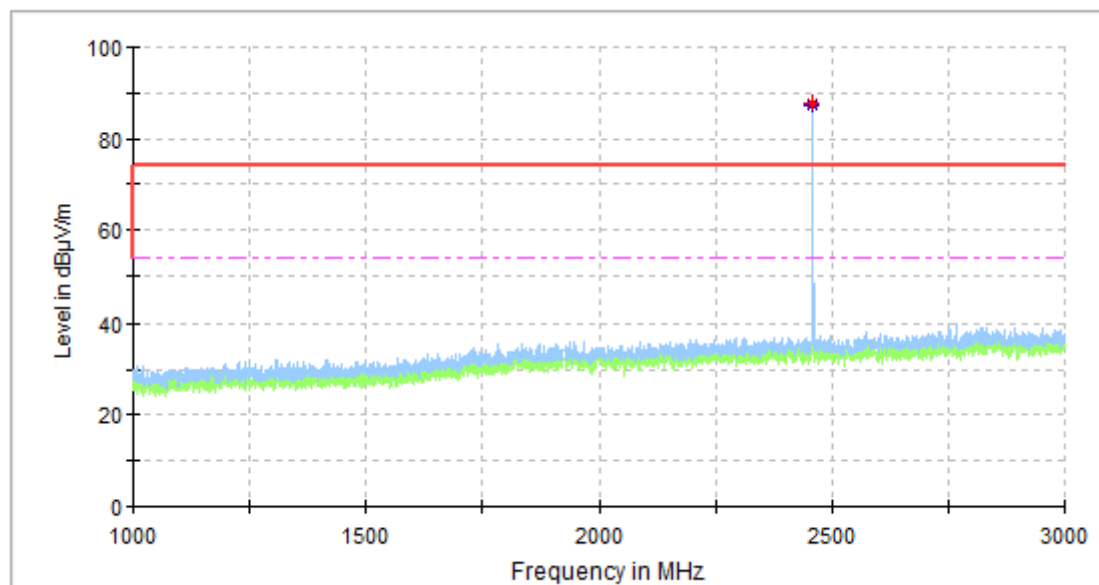
☒ Passed☐ Not Passed**99% bandwidth**

166.885 kHz

7.3 Bandedge Emission

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

Test Result

☒ Passed☐ Not Passed

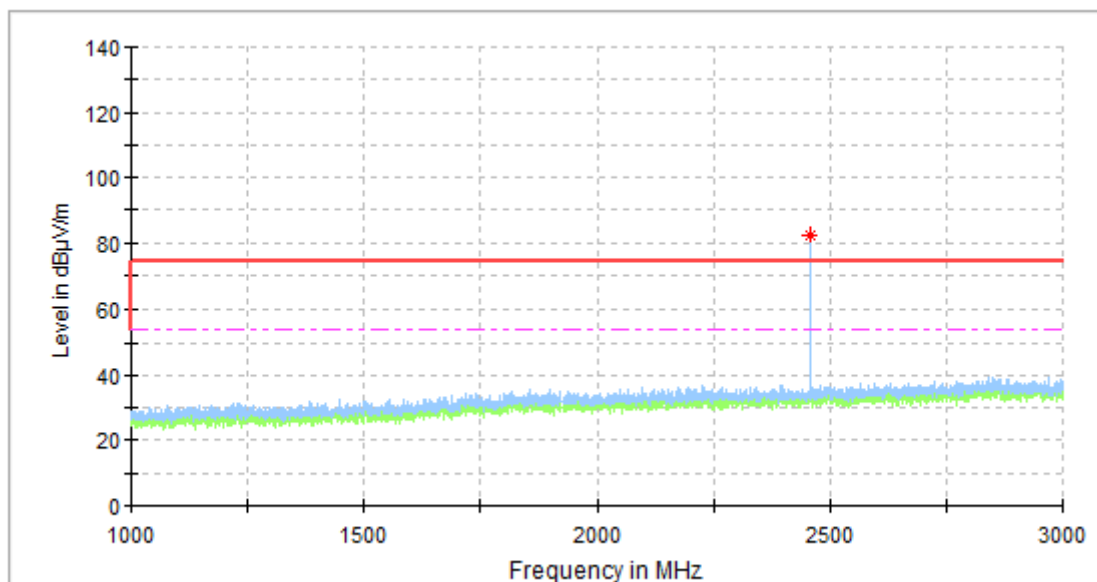
Band	Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
Low	2396.000	34.45	74	-39.55	Peak
Low	2396.000	31.23	54	-22.77	Average
High	2491.000	36.45	74	-37.55	Peak
High	2491.000	32.38	54	-21.62	Average

Bandedge Emission

EUT: Ridesense
 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	2396.000	33.17	74	-40.83	Peak
Low	2396.000	29.98	54	-24.02	Average
High	2491.000	34.12	74	-39.88	Peak
High	2491.000	32.32	54	-21.68	Average

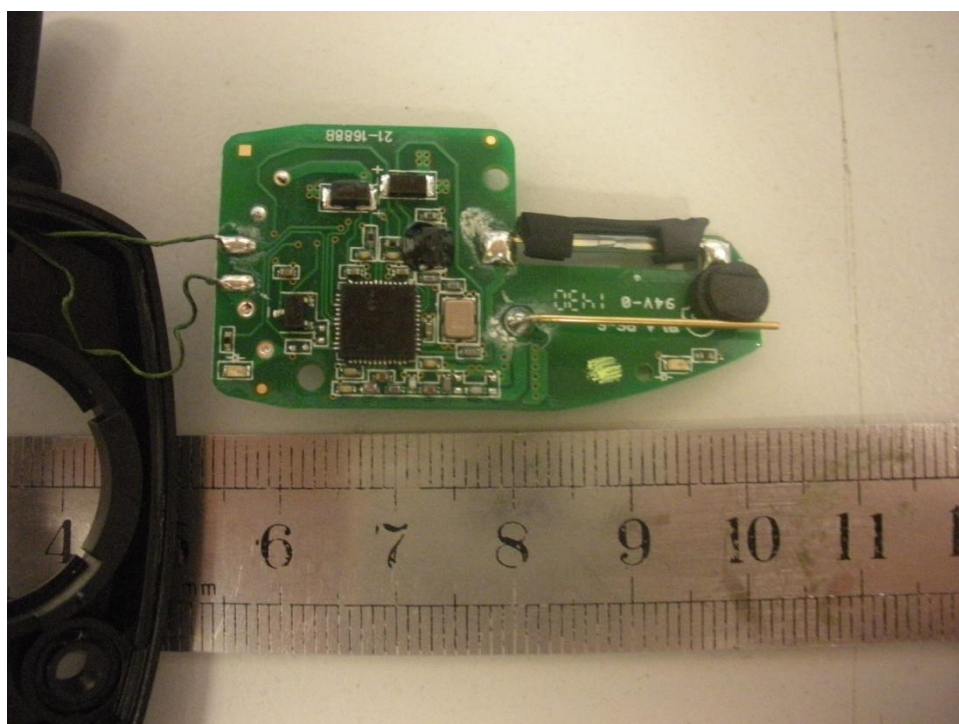
8 Appendix A - Photographs of EUT



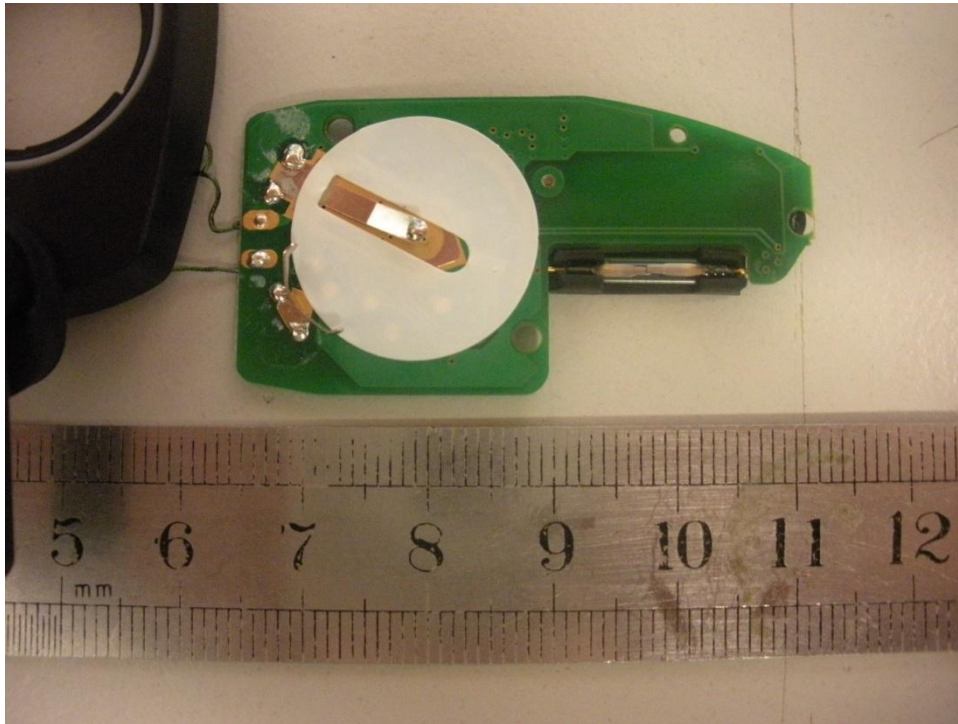
Appendix A



Appendix A

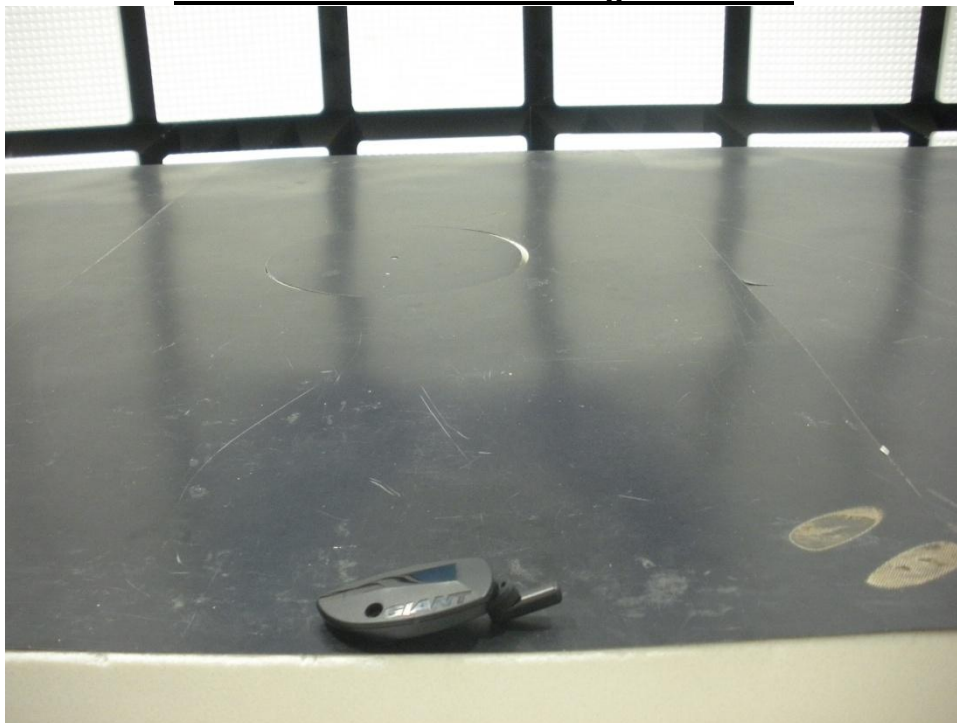


Appendix A

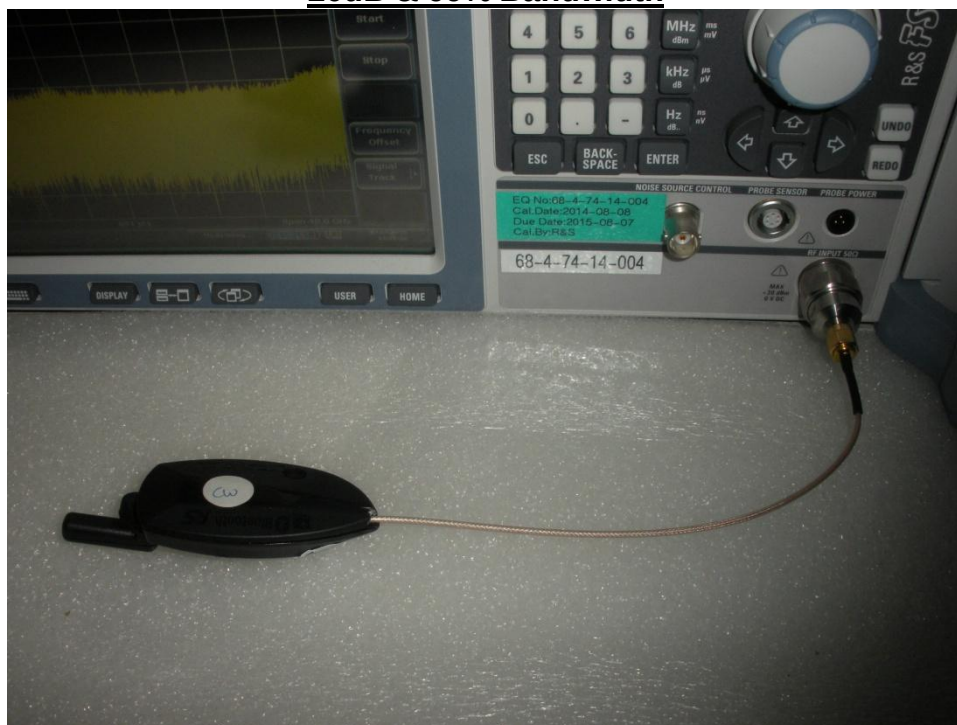


9 Appendix B - Setup Photographs of EUT

Radiated Emission / Bandedge Emission



20dB & 99% Bandwidth



10 Appendix C - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v05r02 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 2457GHz = 0.1931 mW EIRP

$[(0.1931 \text{ mW}) / (50 \text{ mm})] \cdot [\text{sqrt}(2457 \text{ GHz})] = 0.1914$ 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 $< 50\text{mm}$.

>> The power of EUT measured is:

- For 2457MHz: $0.1931\text{mW} = 10 \log(0.1931) \text{ dBm} \sim -7.14\text{dBm}$