TEST REPORT

Date: 2016-06-26
Report No.: 60.870.14.021.06F

Applicant:	I.R.I.S.s.a I.R.I.S. s.a rue du bosquet 10 1348 Louvain-La-Neuve Belgium .	
Description of Samples:	Model name:	Mouse scanner (USB Dongle)
	Brand name:	IRIS
	Model no.:	IRIScan™ Mouse Wifi
	FCCID :	2ABQ3-SSM003R
Date Samples Received:	2014-11-24	
Date Tested:	2014-11-24 to 2014-12-24	
Investigation Requested:	FCC Part 15 Subpart B	
Conclusions:	The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.	
Remarks:	----	

Checked by: Approved by:-

Simon Wang
Project Engineer

John Zhi
Section Manager

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA

CONTENT:

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA

1.0 General Details

1.1 Test Laboratory

STC (Dongguan) Company Ltd.
68 Fumin Nan Rd, Dalang, Dongguan, Guangdong, PRC.

Tested by:

John Zhi

1.2 Applicant Details

Applicant

I.R.I.S.s.a
I.R.I.S. s.a rue du bosquet 10 1348 Louvain-La-Neuve Belgium

Manufacturer

Systech Electronic Ltd.
Unit 802, 8/F, Sunbeam Centre, 27 Shing Yip Street, Kwun Tong, Kowloon, Hong Kong.

1.3 Equipment Under Test [EUT]

Description of Sample

Product Description:	Mouse scanner (USB Dongle)
Model No:	IRIScan™ Mouse Wifi
Brand Name:	IRIS
FCC ID:	2ABQ3-SSM003R
Rating:	DC 5.0V by USB Port
Accessories and Auxiliary Equipment:	ThinkPad Notebook
EUT Exercising Software:	None

Description of EUT

The Equipment Under Test (EUT) is a USB Dongle of the Mouse scanner which operated at 2.4GHz.

1.4 Equipment Modification

No modification was conducted on the tested sample by TUV SUD Hong Kong Ltd.

1.5 Related Submittal(s) Grants

The Computer communication function of this EUT is subjected to the application of FCC Certification.

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2012 and ANSI C63.4: 2009.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary					
Test Condition	FCC Test Requirement	Class / Severity	Test Result		
			Pass	Failed	N/A
Radiated Emissions, 30MHz to 4.5GHz	Part 15.109	Class B	☒	☐	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	Part 15.107	Class B	☒	☐	☐

Note: N/A - Not Applicable

3.0 Test Methodology

3.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

3.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + System Factor
System Factor = AF + CF + FA – PA

Where FS = Net Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer / Test Receiver in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

3.3 Conducted Emissions

The EUT was placed on a non-metallic table 0.8m above the horizontal metal reference place and 0.4m from a vertical ground plane which is connected to the horizontal metal ground plane. Meanwhile, the AC main of EUT was connected to the distance of 0.8m line impedance stabilization network (LISN) during measurement.

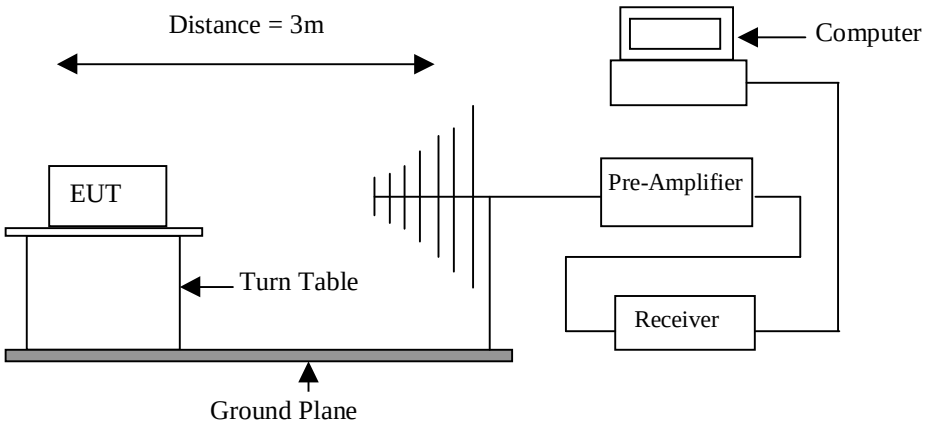
Initial measurements were performed in quasi-peak and average detection modes by the test receiver, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

4.0 Test Results

4.1 Spurious Radiated Emissions (30MHz to 10GHz)

Test Requirement:	FCC Part 15 section 15.109 Class B
Test Method:	ANSI C63.4:2009
Test Date:	2014-12-11
Mode of Operation:	PC Communication mode
Detector Function:	Quasi-peak (Below 1000 MHz) Average (Above 1000 MHz)
Measurement BW:	120 kHz (Below 1000 MHz) 1 MHz (Above 1000 MHz)

Test Setup:



Results: PASS

Frequency (MHz)	Detector Type	Antenna	Result (dBµV/m)	Limit (dBµV/m)	Margin
31.19	QP	H	30.58	40.00	-9.42
202.25	QP	H	32.85	43.50	-10.65
269.81	QP	H	34.25	46.00	-11.75
377.50	QP	H	36.96	46.00	-9.04
60.44	QP	V	25.42	40.00	-14.58
166.56	QP	V	32.73	43.50	-10.77
196.75	QP	V	31.20	43.50	-12.30
378.94	QP	V	35.39	46.00	-10.61

Note:
- No further spurious emissions found between 30 MHz and lowest internal used/generated frequency.
- No significant emissions noise floors were detected above 1 GHz.

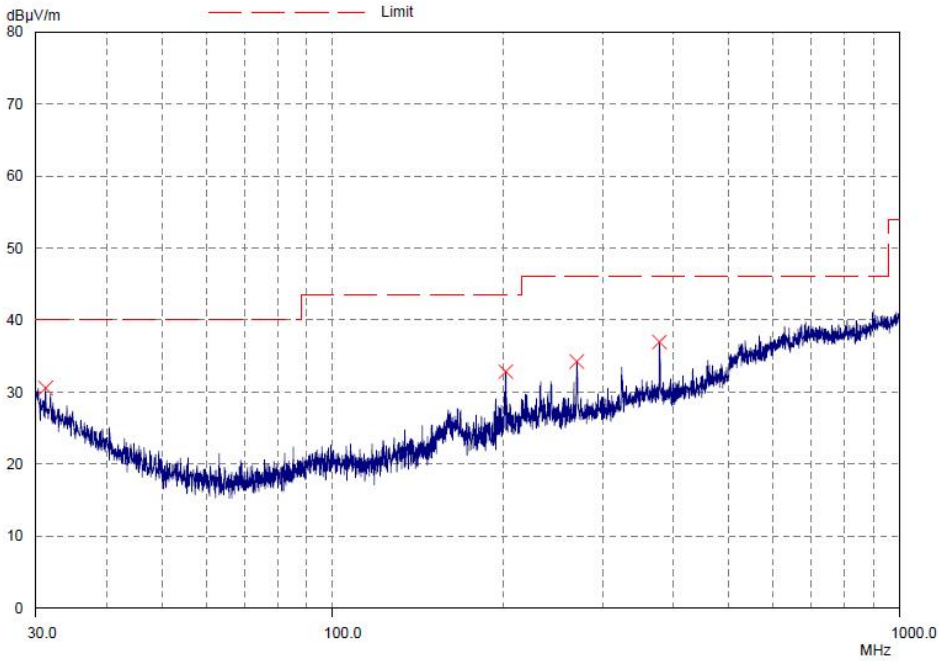
Remark:
- Calculated measurement uncertainty: ±3.2 dB .

Limits for Radiated Emissions [Section 15.109 Class B] :

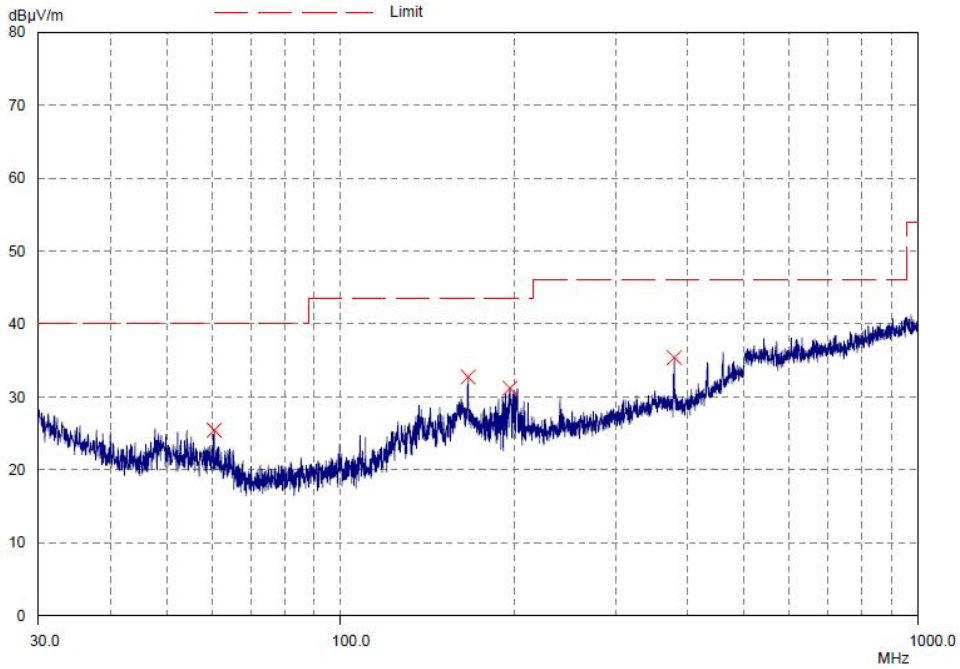
Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Horizontal



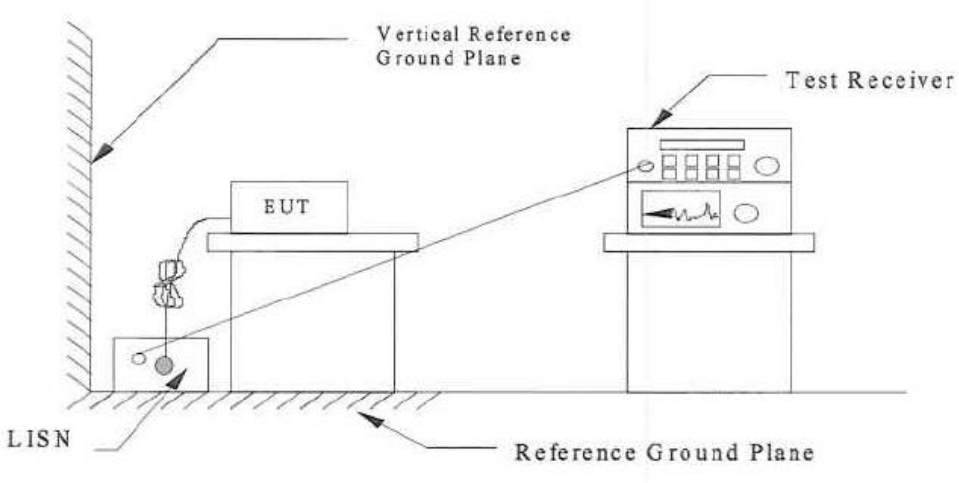
Vertical



4.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC part 15 Section 15.107 Class B
Test Method:	ANSI C63.4:2009
Test Date:	---
Mode of Operation:	---
Detector Function	Quasi-peak, average
Measurement BW	9kHz (150kHz to 30MHz)

Test Setup:



Result: N/A

Remark: This test is not applicable for DC operated device.

Limits for Conducted Emission [Section 15.107]:

Frequency Range [MHz]	Quasi-Peak Limit [dBµV]	Average Limit [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Remarks:
Calculated measurement uncertainty: ±2.8dB

5.0 List of Measurement Equipment

Radiated Emission and Bandwidth Emissions

Manufacturer	Description	Model no.	Serial no.	CAL due
ETS.LINDGREN	FACT-3 EMC CHAMBER	FACT-3	3803N/A	N/A
Agilent	Spectrum Analyzer	E4440A	US41421290	Jul. 16 2015
R&S	EMI Test Receiver	ESIB26	100388	Jun 10, 2015
ETS.LINDGREN	BICONILOG ANTENNA	3142C	00060439	Nov 29, 2015
ETS.LINDGREN	DOUBLE-RIDGEN WAVEGUIDE	3117	00075933	NoV 15 2015
CHENGDU AINFO INC	STANDARD GAIN HORN ANTENNA (18GHz – 26.5GhZ)	JXTXLB-42-15-C-KF	J2021100721 001	Jan 25, 2015

Conducted Emissions

Manufacturer	Description	Model no.	Serial no.	CAL due
ETS.LINDGREN	SHIELDING ROOM	RFD-100	3802	N/A
R&S	EMI Test Receiver	ESIB26	100388	Jun 10, 2015
R&S	LISN	ESH3-Z5	100102	Mar 21, 2015
R&S	LISN	ENV216	100261	Jun 10, 2015

Remarks:
CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined