NVLAP LAB CODE 200707-0

FCC PART 24 E

MEASUREMENT AND TEST REPORT

For

Tobii Technology AB

Karlsrovägen 2D, 18256 Danderyd, Sweden

FCC ID: W5MTOBIIC12

Report Type:	**Product Type:**
Original Report	A Laptop Computer with Bluetooth, Wi-Fi and GSM Modules

Test Engineer:	Bruce Zhang
Report Number:	RSZ09042306-24E
Report Date:	2009-07-02
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Tobii Technology AB's* product, model number: *T-C12-R1.0A-V0 (FCC ID: W5MTOBIIC12)* or the "EUT" as referred to in this report is a *Tobii C12(A Laptop Computer with Bluetooth, WiFi and GSM Modules)*, which measures approximately: 31.1 cm L x 25.9 cm W x 4.5 cm H, input voltage: DC 24V Adapter or DC 14.8V battery.

Adapter Information: powerbox AC power adapter
Part number: EXM80 5121
Input: 100-240V 50/60Hz, Max.1.7 A
Output: 24V 2.9A

Frequency Bands: PCS 1900: 1850-1910 MHz (TX), 1930-1990 MHz (RX)
Bluetooth: 2402-2480 MHz (TX/RX)
Wi-Fi: 2412-2462 MHz (TX/RX)

** All measurement and test data in this report was gathered from production sample serial number: 0904059 (Assigned by BACL, Shenzhen). The EUT was received on 2009-04-23.*

EUT Photo

Please see additional photos in Exhibit B & C

Objective

This type approval report is prepared on behalf of *Tobii Technology AB* in accordance with Part 2, Subpart J, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, band edge and radiated margin.

Related Submittal(s)/Grant(s)

FCC Part 15.247 Wi-Fi and Bluetooth and Part 15 B submission with FCC ID: W5MTOBIIC12.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 24 Subpart E - PCS

Applicable Standards: TIA/EIA 603-C, ANSI 63.4-2003.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

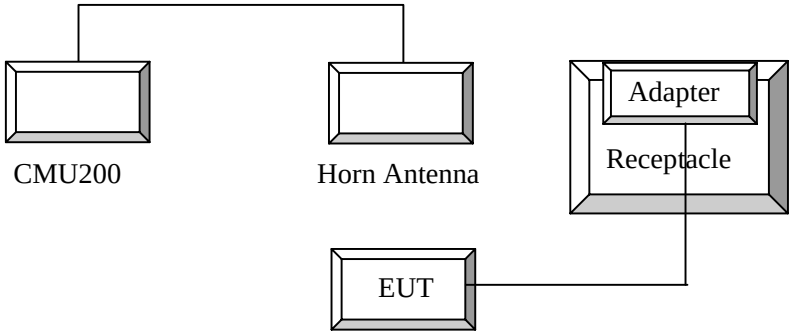
Justification

The EUT was configured for testing according to TIA/EIA-603-C.
The final qualification test was performed with the EUT operating at normal mode.

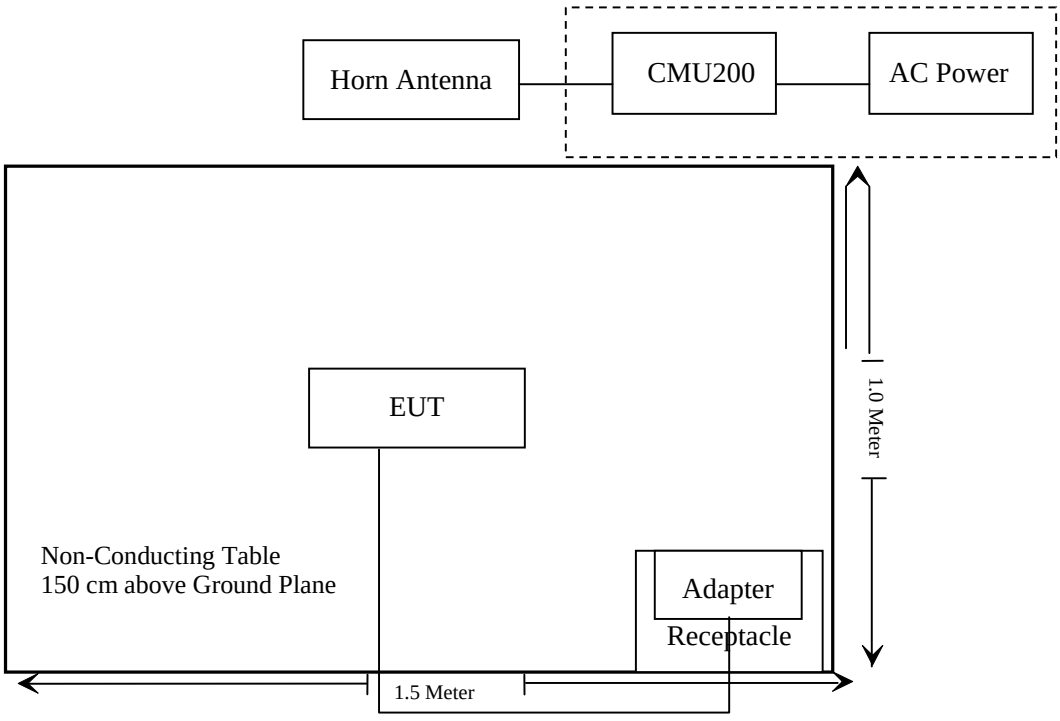
Equipment Modifications

No modifications were made to the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1037, §2.1093	RF Exposure (SAR)	Compliant **
§2.1046, § 24.232 (c)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Compliant *
§ 2.1049, § 24.238	99% & -26 dB Occupied Bandwidth	Compliant *
§ 2.1051, § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliant *
§ 2.1053, § 24.238 (a)	Field Strength of Spurious Radiation	Compliant
§ 24.238 (a)	Out of Band Emission, Band Edge	Compliant *
§ 2.1055, § 24.235	Frequency Stability vs. temperature Frequency Stability vs. voltage	Compliant *

Note: * Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03, which is issued by CETECOM ICT Services GmbH.
** Please refer to SAR test report released by BACL, report number: R09042916-FCC-SAR.

§1.1037 & §2.1093 - RF EXPOSURE

Applicable Standard

§1.1310 and §2.1093

Test Result

* Please refer to the SAR report, report No.R09042916-FCC-SAR.

§2.1047 - MODULATION CHARACTERISTIC

Applicable Standard

According to FCC § 2.1047(d), Part 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

§ 2.1046 & § 24.232 (c) - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §24.232 (C), in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

Test Procedure

Radiated method:

TIA 603-C section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-05-09	2010-05-09
HP	Preamplifier	8449B	3008A00277	2008-09-12	2009-09-11
HP	Signal Generator	HP8657A	2849U00982	2008-10-16	2009-10-16
HP	Amplifier	HP8447D	2944A09795	2008-08-02	2009-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2008-11-07	2009-11-06
COM POWER	Dipole Antenna	AD-100	041000	2008-09-25	2009-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2008-05-17	2009-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Bruce Zhang on 2009-05-26.

Test mode: Transmitting

Radiated Power (ERP and EIRP)

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Cord. (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 24E Limit (dBm)
Frequency (MHz)	S.A. Reading (dBµV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				
Low Channel											
1850.2	109.56	360	1.15	H	1850.2	11.3	H	6.2	1.02	16.48	33
1850.2	110.92	60	1.40	V	1850.2	12.5	V	6.2	1.02	17.68	33
Middle Channel											
1880.0	109.70	17	1.15	H	1880	12.2	H	6.2	1.03	17.37	33
1880.0	110.35	300	1.40	V	1880	13.6	V	6.2	1.03	18.77	33
High Channel											
1909.8	107.22	50	1.40	H	1909.8	11.3	H	6.2	1.03	16.47	33
1909.8	110.80	144	1.36	V	1909.8	14.8	V	6.2	1.03	19.97	33

RF Output Power (Conducted)

* Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03.

§2.1049 & §24.238 - OCCUPIED BANDWIDTH

Applicable Standards

CFR 47 §2.1049 and §24.238.

Test Data

* Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03.

§2.1051 & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standards

CFR 47 §2.1051 and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Data

* Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03.

§2.1053 & § 24.238 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

CFR 47 § 2.1053 and § 24.238.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TX pwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-05-09	2010-05-09
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COM POWER	Dipole Antenna	AD-100	041000	2008-09-25	2009-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2009-05-17	2010-05-17
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*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Bruce Zhang on 2009-05-26.

Test Mode: Transmitting

Below 1 GHz:

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Part 24E Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)			
Middle Channel (f = 1880 MHz)											
366.82	42.56	175	2.0	V	366.82	-51.8	0	0.65	-52.45	-13	39.45
366.82	41.27	160	1.0	H	366.82	-52.3	0	0.65	-52.95	-13	39.95
603.54	41.05	320	1.0	V	603.54	-54.6	0	0.83	-55.43	-13	42.43
434.07	38.54	210	2.0	H	434.07	-56.6	0	0.64	-57.24	-13	44.24

Above 1 GHz:

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Part 24E Limit (dBm)	Margin (dB)
Frequency (MHz)	Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)			
Middle Channel (f = 1880 MHz)											
1600	58.20	360	1.5	V	1600	-48.3	6.2	0.95	-43.05	-13	30.05
3760	46.63	320	2.0	H	3760	-50.7	7.1	1.47	-45.07	-13	32.07
3760	47.56	145	2.0	V	3760	-51.6	7.1	1.47	-45.97	-13	32.97
1600	48.40	325	2.0	H	1600	-55.7	6.2	0.95	-50.45	-13	37.45

§24.238(a) - BAND EDGES

Applicable Standards

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Data

* Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03.

§2.1055 & §24.235 - FREQUENCY STABILITY

Applicable Standard

CFR47 § 2.1055 (a), §24.235

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Data

* Please refer to FCC ID: QIPMC55 granted on 2004-02-13, report number: 2_3450-01-02/03.

******* END OF REPORT *******