
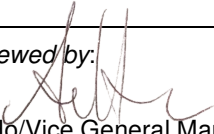


<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	<b>50103730 001</b>	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	<b>114068828</b>	<b>Seite 1 von 17</b> <i>Page 1 of 17</i>
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	<b>N/A</b>	<b>Auftragsdatum:</b> <i>Order date:</i>	<b>31-Aug-2017</b>	
<b>Auftraggeber:</b> <i>Client:</i>	<b>Microchip Technology Inc., 2355 West Chandler Blvd. Chandler, Arizona 85224-6199, United States.</b>			
<b>Prüfgegenstand:</b> <i>Test item:</i>	<b>IEEE 802.11 b/g/n Network Controller Module With Integrated Bluetooth 4.0 (BLE)</b>			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	<b>ATWINC3400-MR210CA</b>			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	<b>FCC Part 15C/IC RSS-247 (Class II Permissive Change) Test report(BLE) spurious radiated emissions only</b>			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	<b>FCC 47CFR Part 15: Subpart C Section 15.247 RSS-247 (02-2017)</b>			
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	<b>18-Sep-2017</b>			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	<b>A000632215-002</b>			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	<b>05-Oct-2017 - 05-Oct-2017</b>			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	<b>EMC/RF Laboratory Taipei</b>			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	<b>TUV Rheinland Taiwan Ltd.</b>			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	<b>Pass</b>			
<b>Report Date / tested by:</b>		<b>kontrolliert von / reviewed by:</b>		
<b>12-Oct-2017</b> Jack Chang / Project Manager		<b>12-Oct-2017</b> Arvin Ho/Vice General Manager		
<b>Datum</b> Name / Stellung <i>Date Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> Name / Stellung <i>Date Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>	
<b>Sonstiges / Other:</b>	<b>Reference the Test Report D50616R1 and D50908R3 of Compatible Electronics Inc.</b>			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	<b>Prüfmuster vollständig und unbeschädigt</b> <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut 3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good 3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the a. M. Test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

## TEST SUMMARY

### 5.1.1 SPURIOUS EMISSION

*RESULT: Passed*

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## 1. General Remarks

### 1.1 Complementary Materials

These attachments are integral parts of this test report:

**Appendix P: Photo Documentation internal view**  
(File Name: 50103730 001 APPENDIX P)

**Appendix D: Test Result of Radiated Emissions**  
(File Name: 50103730 001 APPENDIX D)

Test Specifications

The following standards were applied.

**Table 1: Applied Standard and Test Levels**

<b>Radio</b>
FCC CFR47 Part 15: Subpart C Section 15.247
RSS-247 Issue 2 (Feb 2017)
RSS-Gen, Issue 4, November 2014
ANSI C63.10:2013
KDB558074 D01 DTS Meas Guidance v03r05

## 2. Test Sites

### 2.1 Test Facility

TUV Rheinland Taiwan Ltd.  
Taipei Office

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.  
Taipei City 105  
Taiwan (R.O.C.)

FCC RegistrationNo.: 365730  
IC Canada Registration No.: 9465A-1  
TAF Accredited NCC Test Lab. No.:0759  
TAF ISO17025 Certification effective periods: 2016-Jul-1<sup>st</sup> to 2019-Jun-30<sup>th</sup>



**Testing Laboratory**  
**0759**

## 2.2 List of Test and Measurement Instruments

**Table 2: List of Test and Measurement Equipment**

Kind of Equipment	Manu-facturer	Type	S/N	Last Calibration	Next Calibration
Test Software	Farad	EZ_EMCC	Ver. TUV3A1	N/A	N/A
EMI Test Receiver	R&S	ESR7	101062	2017/09/25	2018/09/25
Spectrum Analyzer	R&S	FSV 40	100921	2017/05/02	2018/05/01
Spectrum Analyzer	Agilent	N9010A	MY53470241	2017/05/23	2018/05/22
Preamplifier (30MHz -1GHz)	HP	8447D	2944A06641	2016/12/28	2017/12/28
Preamplifier (18 GHz -40 GHz)	COM-POWER	PAM-840	461257	2016/12/01	2017/12/01
Pre-Amplifier (1GHz~18GHz)	EM Electronics	EM01G18G	060558	2016/11/17	2017/11/17
Bilog Antenna	TESEQ	CBL6111D	29802	2017/07/12	2018/07/12
Horn Antenna	ETS-Lindgren	3117	138160	2017/05/25	2018/05/25
Horn Antenna (18GHz~40GHz)	COM-POWER	AH-840	101031	2016/11/22	2017/11/22
Loop Antenna	Schwarzbeck	FMZB 1513	1513-076	2017/06/14	2018/06/14
EMI Test Receiver	R&S	ESCI7	100797	2016/12/30	2017/12/30
Spectrum Analyzer	R&S	FSV-40	100921	2017/05/02	2018/05/02
Temp. & Humid. Chamber	WISEWIND	1509	509Q24R	2017/05/24	2018/05/24
LISN (1 phase)	R&S	ENV216	101243	2017/06/18	2018/06/18
LISN	R&S	ENV216	101262	2017/06/22	2018/06/21
Test Software	Audix	e3	Ver. 9	N/A	N/A
Power sensor	Agilent	U2021XA	MY54020001	2017/01/08	2018/01/08

## 2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular schedule using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements.

**Table 3: Emission Measurement Uncertainty**

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF power, conducted	$\pm 1.5$ dB
RF power density, conducted	$\pm 3$ dB
spurious emissions, conducted	$\pm 3$ dB
all emissions, radiated	$\pm 6$ dB
Temperature	$\pm 1$ °C
Humidity	$\pm 5$ %
DC and low frequency voltages	$\pm 3$ %

### 3. General Product Information

#### 3.1 Product Function and Intended Use

" The EUT is a IEEE 802.11 b/g/n Network Controller Module With Integrated Bluetooth 4.0 (BLE). The Module has RF Shield and integrated Chip Antenna."

For details refer to the User Guide, Data Sheet and Circuit Diagram.

#### 3.2 System Details and Ratings

**Table 4: Basic Information of EUT**

Item	EUT information
Kind of Equipment/Test Item	IEEE 802.11 b/g/n Network Controller Module With Integrated Bluetooth 4.0 (BLE)
Type Identification	ATWINC3400-MR210CA
Brand Name	Microchip
FCC ID	2ADHKWINC3400
Canada ID	20266-ATWINC3400
Canada HVIN	ATWINC3400-MR210CA

**Table 5: Technical Specification of EUT**

Technical Specification	Value
Operating Frequencies	2402~2480 MHz
Channel Spacing	2 MHz
Channel number	40
Operation Voltage	3.0V~4.2V, tested in 3.3V
Modulation	GFSK
Antenna gain	0.5 dBi max@2.400 GHz



### **3.3 Independent Operation Modes**

Basic operation modes are:

- A. Transmitting
  - 1. Low channel
  - 2. Middle channel
  - 3. High channel
- B. Receiving
- C. Standby
- D. Off

### **3.4 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.5 Submitted Documents**

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Setup for testing: Test samples are provided with a I2C/UART to USB interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed in section 3.3 as appropriate.

BLE mode:

Channel Low (2402MHz), Channel Mid (2440MHz) and Channel High (2480MHz) were chosen for full testing.

The samples were used as follows:

Radiation: **A000632215-002**

Full test was applied on all test modes, but only worst case was shown

### 4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

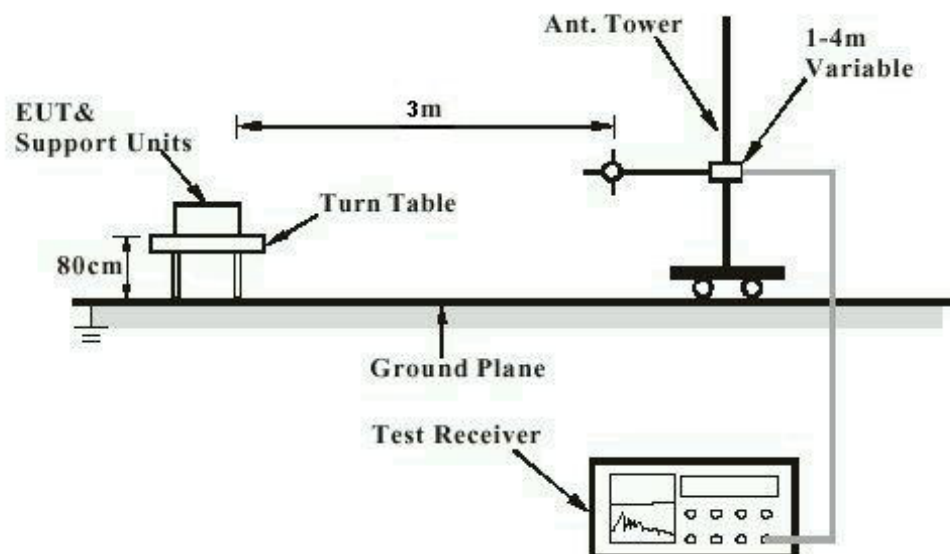
Description	Manufacturer	Model No.	Serial No.
Notebook(EMC-06)	Lenovo	TP00048A	PB-0F8B2

## 4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

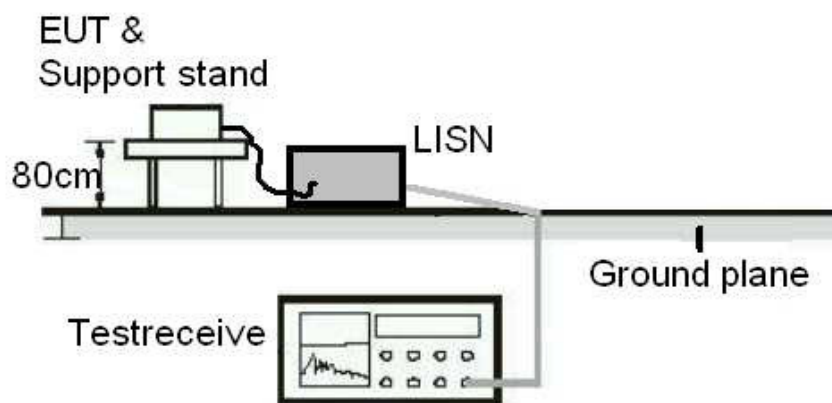
## 4.5 Test Setup Diagram

### Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1 GHz are done with a table height of 1.5m

**Diagram of Measurement Equipment Configuration for Mains Conduction Measurement (if applicable)**



## 5. Test Results

### 5.1.1 Spurious Emission

**RESULT:****Passed**

Test standard	:	FCC part 15.247(d), FCC 15.205, FCC 15.209, RSS-247 5.5 and RSS-Gen 8.9 LP0002(2016): 3.10.1.5
Basic standard	:	ANSI C63.10: 2009
Limits	:	Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-Gen i4, 8.9 (Table 6), must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Gen i4, 8.9 (Table 4 and 5). Radiated emissions which fall in the restricted bands, as defined in LP0002(2016): 2.7 , must comply with the radiated emission limits specified in LP0002(2016): 2.8 Emission radiated outside the specified frequency bands must comply with the radiated emission limits specified in FCC 15.209(a), RSS-Gen i4, 8.9 (Table 4 and 5). Emission radiated outside the specified frequency bands must comply with the radiated emission limits specified in LP0002(2016): 2.8
Kind of test site	:	3m Semi-Anechoic Chamber

**Test setup**

Test Channel	:	Low/ Middle/ High
Operation mode	:	A, B

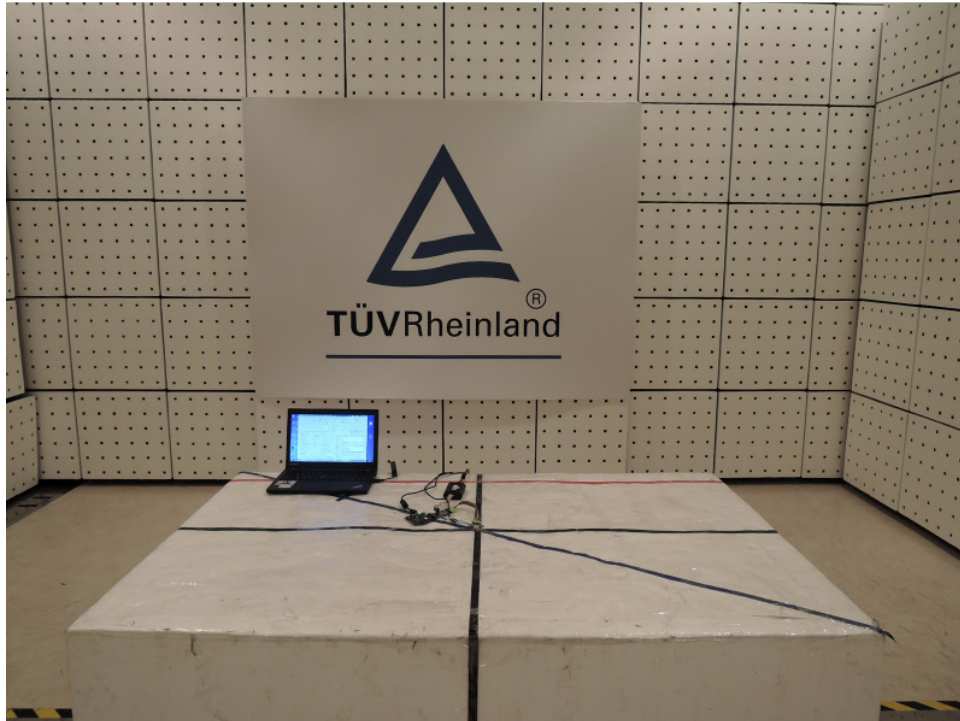
Remark: Testing was carried out within frequency range 30MHz to the tenth harmonic.

For details refer to Appendix D.

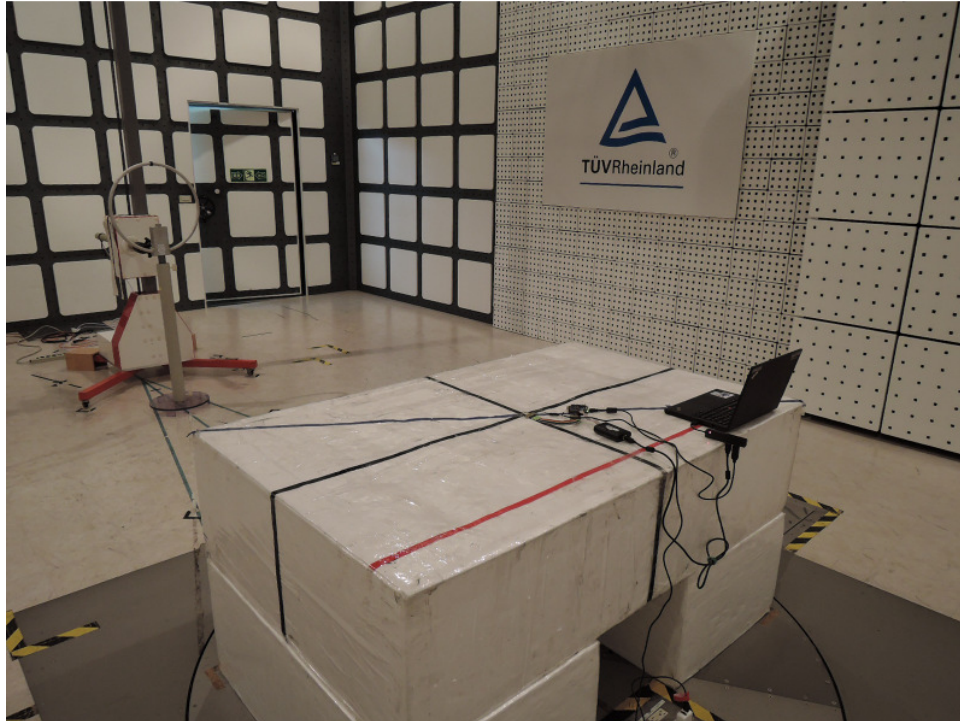
Testing was carried out within frequency range 30MHz to the tenth harmonic. For details refer to Appendix D. The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

## 6. Photographs of the Test Set-Up

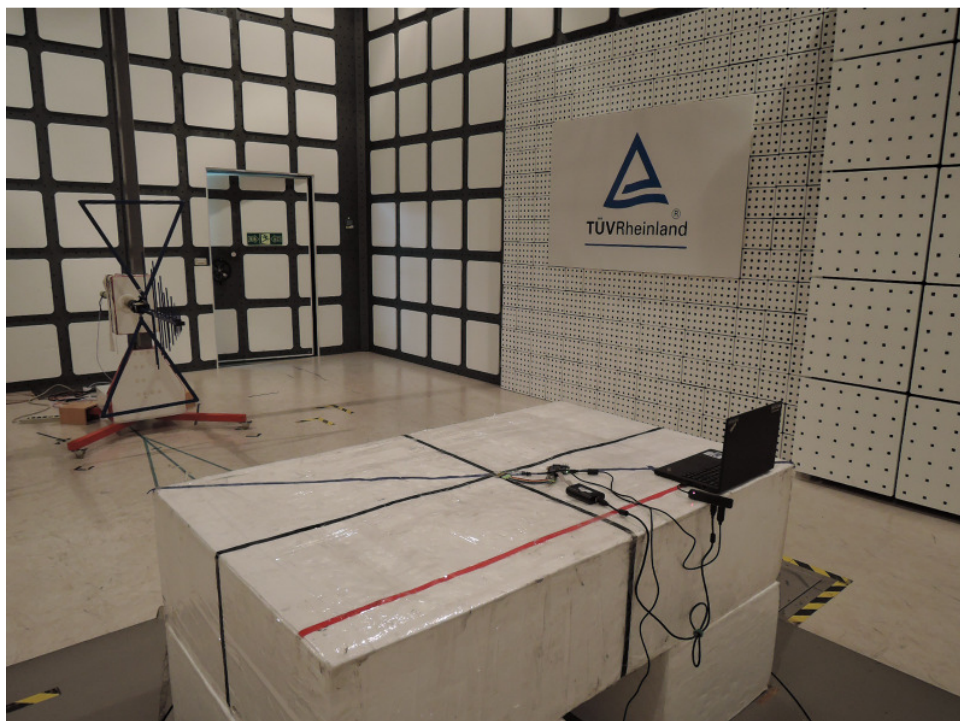
Photograph 1: Set-up for Spurious Emissions (Front View)



**Photograph 2: Set-up for Spurious Emissions (Back View 1)**

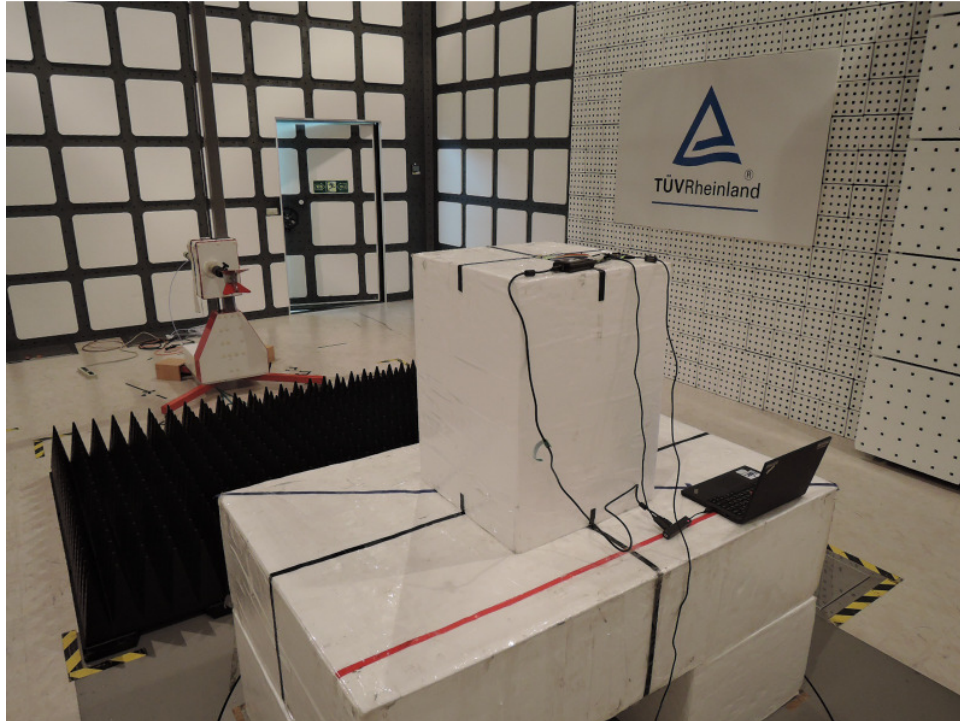


**Photograph 3: Set-up for Spurious Emissions (Back View 2)**





**Photograph 4: Set-up for Spurious Emissions (Back View 3)**





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