



<b>Prüfbericht - Nr.:</b> <i>Test Report No.</i>	<b>14012274 002</b>	<b>Seite 1 von 10</b> <i>Page 1 of 10</i>			
<b>Auftraggeber:</b> <i>Client:</i>	Schneider Electric India Private Limited Global Technology Centre #88(P),ii Floor, "Sahasra Shree" EPIP Indl. Area Whitefield Road, -Bangalore-560066 India				
<b>Gegenstand der Prüfung:</b> <i>Test item</i>	Wireless Temperature Maintenance Service - Transmitter				
<b>Bezeichnung:</b> <i>Identification</i>	<b>WTMS0105</b>	<b>Serien-Nr.:</b> <i>Serial No.</i>	<b>Engineering sample</b>		
<b>Wareneingangs-Nr.:</b> <i>Receipt No.</i>	<b>060303002-060303011</b>	<b>Eingangsdatum:</b> <i>Date of receipt</i>	<b>03.03.2006</b>		
<b>Prüfort:</b> <i>Testing location:</i>	TÜV Rheinland Hong Kong Ltd. Unit 8, 25 <sup>th</sup> Floor, Skyline Tower, 39 Wang Kwong Road, Kowloon Bay Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong				
<b>Prüfgrundlage:</b> <i>Test specification</i>	FCC Part 15, Subpart C				
<b>Prüfergebnis:</b> <i>Test Result:</i>	Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. <i>The a. m. test item passed the test specification.</i>				
<b>Prüflaboratorium:</b> <i>Testing Laboratory:</i>	TÜV Rheinland Hong Kong Ltd. Unit 8, 25 <sup>th</sup> Floor, Skyline Tower, 39 Wang Kwong Road, Kowloon Bay, Kowloon, Hong Kong.				
<b>geprüft / tested by:</b>		<b>kontrolliert / checked by:</b>			
16.08.2006	Derek Leung Project Manager		16.08.2006	Thomas Berns Manager	
<b>Datum</b> <i>Date</i>	<b>Name</b> <i>Name</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name</b> <i>Name</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges:</b> <i>Other Aspects</i>					
FCC ID: UBGGTCI0106S					
<b>Abkürzungen:</b>	OK, Pass, P = entspricht Prüfgrundlage	Fail, F = entspricht nicht Prüfgrundlage	<b>Abbreviations:</b>	OK, Pass, P = passed	Fail, F = failed
	N/A = nicht anwendbar	N/T = nicht getestet		N/A = not applicable	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> This test report relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicate in extracts. This test report does not entitle to carry any safety mark on this or similar products.					

## Test Summary

### **Radiated Emission of Carrier Frequency**

*Result: Pass*

### **Spurious Radiated Emissions**

*Result: Pass*

### **Bandwidth Measurement**

*Result: Pass*

# Contents

**List of Test and Measurement Instruments.....4**

**General Product Information .....5**

- Product Function and Intended Use.....5
- Ratings and System Details .....5
- Independent Operation Modes.....6
- Submitted Documents .....6

**Test Set-up and Operation Mode.....7**

- Principle of Configuration Selection .....7
- Test Operation and Test Software.....7
- Special Accessories and Auxiliary Equipment .....7
- Countermeasures to achieve EMC Compliance.....7

**Test Methodology .....8**

- Radiated Emission .....8

**Test Results .....9**

- Radiated Emission of Carrier Frequency   Section 15.249 .....9
- Spurious Radiated Emissions   Section 15.249 .....10

**Appendix 1: Test Setup**

**Appendix 2: EUT External Photo**

**Appendix 3: EUT Internal Photo**

**Appendix 4: FCCID Label and Label Location**

**Appendix 5: Block Diagram and Operating Description**

**Appendix 6: Specifications of EUT and Antenna**

**Appendix 7: User manual**

**Appendix 8: Schematic Diagrams and Bill of Material**

## List of Test and Measurement Instruments

Kind of Equipment	Manufacturer	Type	S/N
Test Receiver	Rohde & Schwarz	ESVS30	842807/009
Biconical Antenna	Rohde & Schwarz	HK116	841489/015
Log Periodic Antenna	Rohde & Schwarz	HL223	841516/017
Double Ridge Horn Antenna	EMCO	3115	9002-3347
Active Loop Antenna	EMCO	6502	9107-2651
Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30

## General Product Information

### Product Function and Intended Use

The EUT is the transmitter of the Wireless Temperature Maintenance Service (WTMS) system. WTMS includes a number of degreeSense Sensors (Transmitter), a Receiver Module and Application software running in a PC connected to the Receiver. Application software receives the data transferred to the PC through Ethernet port by the WTMS Receiver Module, analyses and records the data in MS Access Database that can be viewed by the Graphical User Interface (GUI) of the WTMS Application Software.

The EUT selects a random transmission interval which varies from 1 to 2 minutes and the transmission duration is 20ms.

### Ratings and System Details

#### Transmitter

FCCID	:	UBGGTCI0106S
Nominal Frequency	:	909.96MHz
Number of channel	:	1
Transmit modulation	:	FSK
Type of antenna	:	Integral antenna
Power supply	:	Battery operated 3.6 Volt (Lithium battery cell –2/3AA size)
Port	:	(i) Ethernet (ii) RS485 female 9-pin port (iii) DC power input port (iv) Antenna port

## Independent Operation Modes

The basic operation mode :

- transmits data signal to the associated receiver.

For further information refer to User Manual

## Submitted Documents

- Block diagram
- User manual
- Parts list
- Schematic circuit diagram

## **Test Set-up and Operation Mode**

### **Principle of Configuration Selection**

**Emission:** The test was performed under normal operating mode to obtain the maximum emission.

### **Test Operation and Test Software**

Test operation should refer to test methodology.

- There was no special software to exercise the device.

### **Special Accessories and Auxiliary Equipment**

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

- none

### **Countermeasures to achieve EMC Compliance**

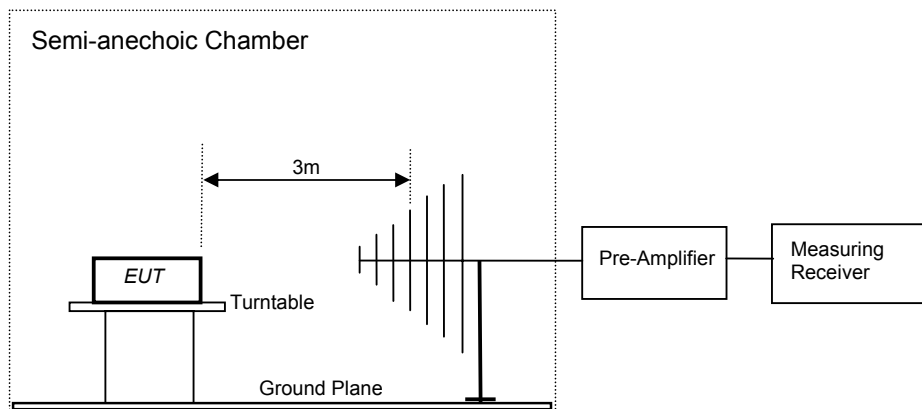
- none

## Test Methodology

### Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003. The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. The EUT was tested in three orthogonal planes and the turntable was rotated 360° for obtaining the maximum emission. The antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

### Test Setup:





## Test Results

### Radiated Emission of Carrier Frequency

### Section 15.249

#### RESULT:

Pass

Test Specification : FCC Part 15 Section 15.249  
 Test Method : ANSI C63.4-2003  
 Measurement Location : Semi Anechoic Chamber  
 Measurement Bandwidth : 100kHz  
 Detector : Peak  
 Supply Voltage : Battery operated  
 Fundamental Frequency : 909.936MHz  
 Measuring Distance : 3m

Fundamental Signal (MHz)	Antenna Polarization	Limit (dB $\mu$ V/m)	Field Strength (dB $\mu$ V/m)	Margin (dB)
909.936	Horizontal	93.98	87.2	-6.78
909.936	Vertical	93.98	80.4	-13.58

#### Limit for Radiated Emission under Section 15.249:

Frequency (MHz)	Field strength of Fundamental (mV/m) at 3m	Field strength of Harmonics (dB $\mu$ V/m) at 3m
902-928	50	93.98

#### Remark:

Peak detection was used instead of QP detection for the measurements. Peak values should be higher or equal to QP values.

**Spurious Radiated Emissions****Section 15.249****RESULT:****Pass**

Test Specification : FCC Part 15 Section 15.249  
 Test Method : ANSI C63.4-2003  
 Measurement Location : Semi Anechoic Chamber  
 Detector Function : Peak  
 Supply Voltage : Battery operated  
 Measuring Frequency Range : 3MHz – 10GHz (Internal Lowest oscillator frequency of EUT: 4MHz)  
 Measuring Distance : 3m  
 Limit: For frequency above 1000MHz, the field strength are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

Fundamenta l Carrier Signal (MHz)	Spurious Emission (MHz)	Antenna Polarization	Field Strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
909.936	1819.74	Vertical	44.3	54	-9.7
	2730.06	Vertical	45.4	54	-8.7
	3639.46	Vertical	51.1	54	-2.9
	4549.44	Vertical	38.6	54	-15.4
	1819.72	Horizontal	47.5	54	-6.5
	2729.60	Horizontal	52.9	54	-1.1
	3640.08	Horizontal	45.7	54	-8.3
	4550.18	Horizontal	37.4	54	-16.6

All other emissions, except for harmonics, were found at least 50dB below the level of the fundamental signal.

**Limit for Radiated Emission under Section 15.249:**

Fundamental Frequency (MHz)	Field strength of Harmonics at 3m ( $\mu$ V/m)	Field strength of Harmonics at 3m (dB $\mu$ V/m)
902-928	500	54

Remark:

Peak detection was used instead of average detection for the measurements. Peak detection values should be higher or equal to average values.