

Recognized by the  
Federal Communications Commission  
**Anechoic chamber registration no.: 90462 (FCC)**  
**Anechoic chamber registration no.: IC 3463A-1**  
TCB ID: DE 0001



Accredited by the  
German Accreditation Council  
DAR-Registration Number  
DAT-P-176/94-D1



**Accredited Bluetooth® Test Facility (BQTF)**

|                             |                                           |
|-----------------------------|-------------------------------------------|
| <b>Test report no.</b>      | <b>: 1-0642-01-02/08</b>                  |
| <b>Applicant</b>            | <b>: W.H. Mandolyn International Ltd.</b> |
| <b>Type</b>                 | <b>: THM405R / TRC650</b>                 |
| <b>Test Standard</b>        | <b>: FCC Part 15</b>                      |
|                             | <b>RSS210 Issue 7</b>                     |
| <b>FCC ID</b>               | <b>: PLJTRC650</b>                        |
| <b>Certification No. IC</b> | <b>: 3981A-THM405R</b>                    |

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## 1 General information

### 1.1 Administrative data of the test facility

#### 1.1.1 Identification of the testing laboratory

|                                     |                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Company name:                       | Cetecom ICT Services GmbH                                                                                                                    |
| Address:                            | Untertürkheimerstr. 6-10<br>D-66117 Saarbrücken<br>Germany                                                                                   |
| Laboratory accreditation:           | DAR-Registration No. DAT-P-176/94-D1<br>Bluetooth Qualification Test Facility (BQTF)<br>Federal Communications Commission (FCC)              |
| Responsible for testing laboratory: | Identification/Registration No : 90462<br>Meheza Kpelou Walla<br>Phone: +49 681 598 0<br>Fax: +49 681 598 9075<br>email: info@ict.cetecom.de |

### 1.2 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.



.....  
Responsible for testing laboratory  
(Meheza Kpelou Walla)



.....  
Responsible for test report  
(Stefan Bös)

## 1.3 Details of Applicant

|         |   |                                         |
|---------|---|-----------------------------------------|
| Name    | : | W.H. Mandolyn International Ltd.        |
| Address | : | 1003-8, 10/F, Landmark North            |
| City    | : | 39 Lung Sum Avenue<br>Sheung Shui, N.T. |
| Country | : | HONG KONG                               |
| Phone   | : | +852-2670-9733                          |
| Fax     | : | +852-2670-6132                          |
| Contact | : | Crystal Cheung                          |
| Phone   | : | +852-2670-9733                          |
| Fax     | : | +852-2673-0337                          |
| e-mail  | : | crystalcheung@upm-products.com.hk       |

## 1.4 Application Details

|                                                 |   |            |
|-------------------------------------------------|---|------------|
| Date of receipt of application                  | : | 2008.05.27 |
| Date of receipt of test item                    | : | 2008.06.18 |
| Date of start test                              | : | 2008.06.18 |
| Date of end test                                | : | 2008.06.30 |
| Date of report                                  | : | 2008.07.01 |
| Person(s) who have been present during the test | : | -/-        |

Test report no.: 1-0642-01-02/08

Date: 2008-07-01

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## 1.5 Test Item

|                                                  |   |                                  |
|--------------------------------------------------|---|----------------------------------|
| Type of equipment                                | : | THM405R / TRC650                 |
| Model name                                       | : | Wireless Thermostat              |
| Manufacturer                                     | : | W.H. Mandolyn International Ltd. |
| Address                                          | : | 1003-8, 10/F, Landmark North     |
| City                                             | : | 39 Lung Sum Avenue               |
|                                                  | : | Sheung Shui, N.T.                |
| Country                                          | : | HONG KONG                        |
| Tested to Radio Standards Specification(RSS) No. | : | 210 Issue 7                      |
| Open Area Test Site Industry Canada Number       | : | IC 3463A-1                       |
| Frequency Range (or fixed frequency)             | : | Tx: 915 MHz Rx: 915 MHz          |
| R F: Power in Watts                              | : | -/-                              |
| Field Strength (at what distance)                | : | 89 dB $\mu$ V/m in 3m QP         |
| Occupied Bandwidth (99% BW)                      | : | 340 kHz                          |
| Type of Modulation                               | : | FSK                              |
| Emission Designator                              | : | 340KF1D                          |
| Antenna Information                              | : | Integrated antenna               |
| Transmitter Spurious (worst case)                | : | 44.80 dB $\mu$ V/m in 3m         |
| Receiver Spurious (worst case)                   | : | noise floor                      |
| IC no.                                           | : | 3981A-THM405R                    |
| FCC ID                                           | : | PLJTRC650                        |

### ATTESTATION:

### DECLARATION OF COMPLIANCE:

I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

### Laboratory Manager :

2008-07-01

RSC

Meheza Kpelou Walla

Date

Section

Name

Signature



## 1.6 Test Setup

|          |   |     |
|----------|---|-----|
| Hardware | : | -/- |
| Software | : | -/- |

## 1.7 Test Specifications

|     |   |                  |
|-----|---|------------------|
| FCC | : | CFR Part 15.249  |
| IC  | : | RSS 210, Issue 7 |

## 2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

### 2.1 Summary of Measurement Results

#### 2.1.1 CFR 47 Part 15 Radio frequency devices

| Section in this Report | Test Name / Section FCC Part 15                                          | Test Name / Section RSS 210 Issue 7                     | Measurement applicable | Verdict |
|------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|------------------------|---------|
| 4.1                    | § 15.35 (c)<br>Timing of the transmitter (Duty cycle correction factor ) | 6.5 Pulsed Operation                                    | YES                    | passed  |
| 4.2                    | § 15.249 (a)<br>FIELDSTRENGTH OF FUNDAMENTAL                             | 6.2.2 (m2)(1) 902-928, 2400-2483.5 and 5725-5875 MHz    | YES                    | passed  |
| 4.3                    | § 15.249 (a) (d)<br>FIELDSTRENGTH OF HARMONICS and SPURIOUS              | 6.2.2 (m2)(1)(3) 902-928, 2400-2483.5 and 5725-5875 MHz | YES                    | passed  |
| 4.4                    | Transmitter spurious emissions (radiated) / Standby                      |                                                         | YES                    | passed  |
| 4.5                    | § 15.109<br>Receiver spurious emissions (radiated)                       | 7.3 Receiver Spurious Emissions (Radiated)              | YES                    | passed  |
| 4.6                    | § 15.107 / 15.207 Conducted Limits                                       | Section 6.6 , 7.4                                       | NO                     | -/-     |
| 4.7                    | Occupied Bandwidth                                                       |                                                         | YES                    | passed  |

### **3 Measurements and results**

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

150 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.109 and 15.107

## 4 FCC Part 15 Subpart C

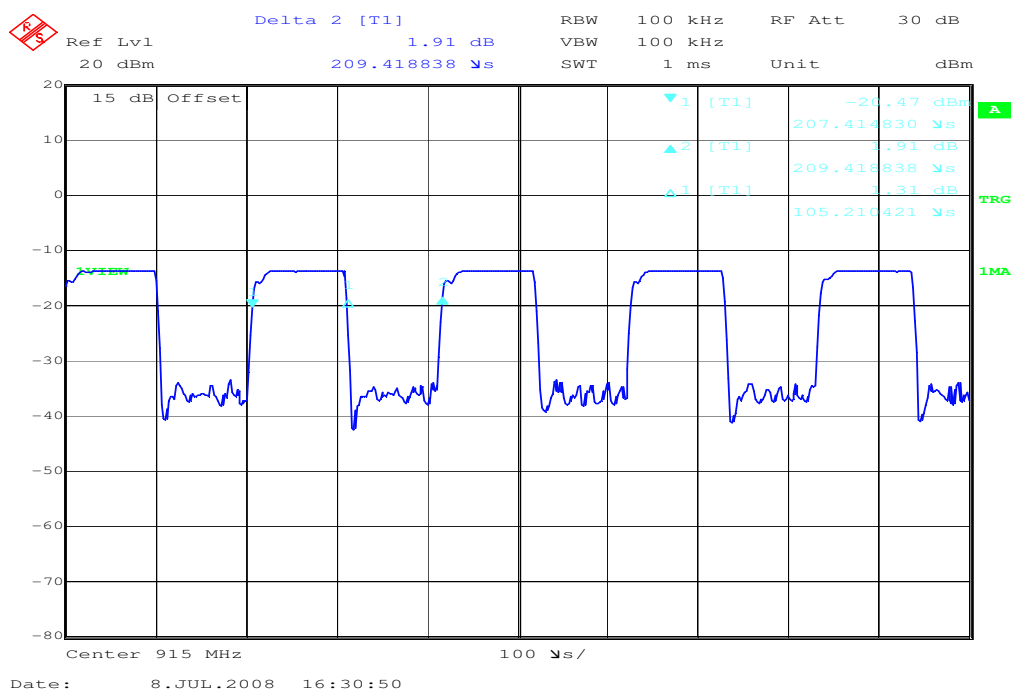
### 4.1 Timing of the transmitter

#### Reference

|      |                                       |
|------|---------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.35 (c)        |
| IC:  | RSS 210, Issue 7 6.5 Pulsed operation |

#### Duty Cycle:

Plot 1:



#### Results:

Period : 209 μs  
TX on : 105 μs  
TX off : 104 μs

Correction Factor:  $20 \times \log(105\mu s / 209\mu s)$   
Correction Factor: -5.98 dB

## Limits

## SUBCLAUSE § 15.35 (c)

(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

## 4.2 Field Strength of the Fundamental

### Reference

|      |                                                                        |
|------|------------------------------------------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.249 (a)                                        |
| IC:  | RSS 210, Issue 7, 6.2.2 (m2)(1) 902-928, 2400-2483.5 and 5725-5875 MHz |

### MAXIMUM OUTPUT POWER RADIATED (QUASIPeAK)

| TEST CONDITIONS                                                         |                          | MAXIMUM POWER (dBμV/m) |  |  |
|-------------------------------------------------------------------------|--------------------------|------------------------|--|--|
| Frequency                                                               |                          | 914.856 MHz            |  |  |
| T <sub>nom</sub> : 23°C                                                 | V <sub>nom</sub> : 3V DC | <b>89</b>              |  |  |
| Maximum deviation from output power under extreme test conditions (dBc) |                          | <u>Not applicable!</u> |  |  |
| Measurement uncertainty                                                 |                          | <b>±3dB</b>            |  |  |

RBW/VBW : 1 MHz

### Limits

### SUBCLAUSE § 15.249 (a)

| Fundamental Frequency (MHz) | Field strength of Fundamental (mV/m) | Field strength of Harmonics (V/m) |
|-----------------------------|--------------------------------------|-----------------------------------|
| 902-928                     | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                   |
| 2400-2483.5                 | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                   |
| 5725-5875                   | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                   |
| 24.0-24.25 GHz              | 250 (108 dBμV/m)                     | 2500 (68 dBμV/m)                  |

## 4.3 Field Strength of the Harmonics and Spurious

### Reference

|      |                                                                           |
|------|---------------------------------------------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.249 (a)(d)                                        |
| IC:  | RSS 210, Issue 7, 6.2.2 (m2)(1)(3) 902-928, 2400-2483.5 and 5725-5875 MHz |

| EMISSION LIMITATIONS    |  |                                              |                                   |                                                      |                     |
|-------------------------|--|----------------------------------------------|-----------------------------------|------------------------------------------------------|---------------------|
| f (MHz)                 |  | amplitude of emission (dBμV/m)<br>Average/QP | limit max. allowed emission power | actual attenuation below frequency of operation (dB) | results             |
| 915                     |  | 89 / QP                                      | 94BμV/m                           |                                                      | Operating frequency |
|                         |  |                                              | 20 dBc or 46 dBμV/m               |                                                      | Complies            |
|                         |  |                                              | 20dBc or 54 dBμV/m                |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
|                         |  |                                              |                                   |                                                      | Complies            |
| Measurement uncertainty |  |                                              | ± 3dB                             |                                                      |                     |

### Limits

### SUBCLAUSE § 15.249 (a)

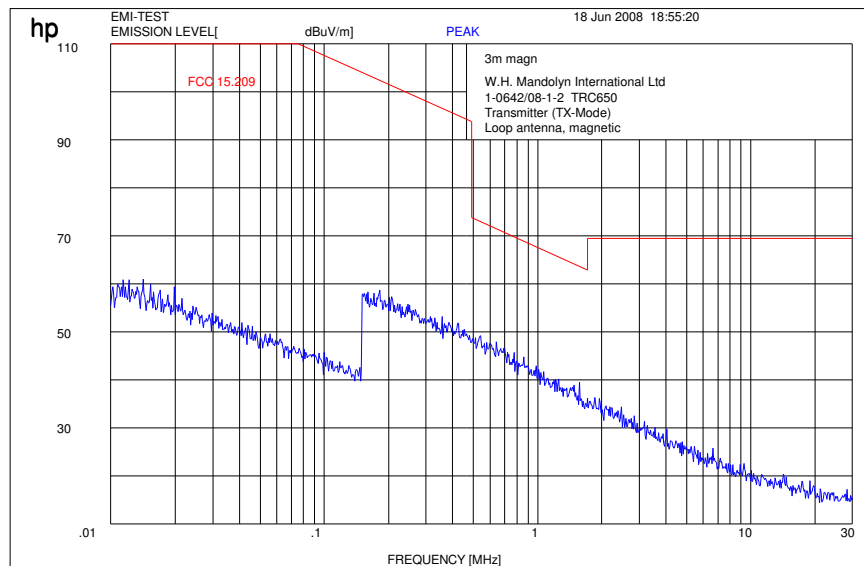
| Fundamental Frequency (MHz) | Field strength of Fundamental (mV/m) | Field strength of Fundamental (dBμV/m) |
|-----------------------------|--------------------------------------|----------------------------------------|
| 902-928                     | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                        |
| 2400-2483.5                 | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                        |
| 5725-5875                   | 50 (94 dBμV/m)                       | 500 (54 dBμV/m)                        |
| 24.0-24.25 GHz              | 250 (108 dBμV/m)                     | 2500 (68 dBμV/m)                       |

### Limits

### SUBCLAUSE § 15.249 (d)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Plot 1:  
Part 15.109 Magnetics



(to convert the measuring distance from 3m to 30m and 30 to 300m a correction factor from 40 dB/decade was used)

Measurement distance 3m

## Limits

## SUBCLAUSE § 15.209

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.0009 – 0.490  | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 - 30      | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

Plot 2:

TX-Mode : 30 MHz - 1 GHz

## Information

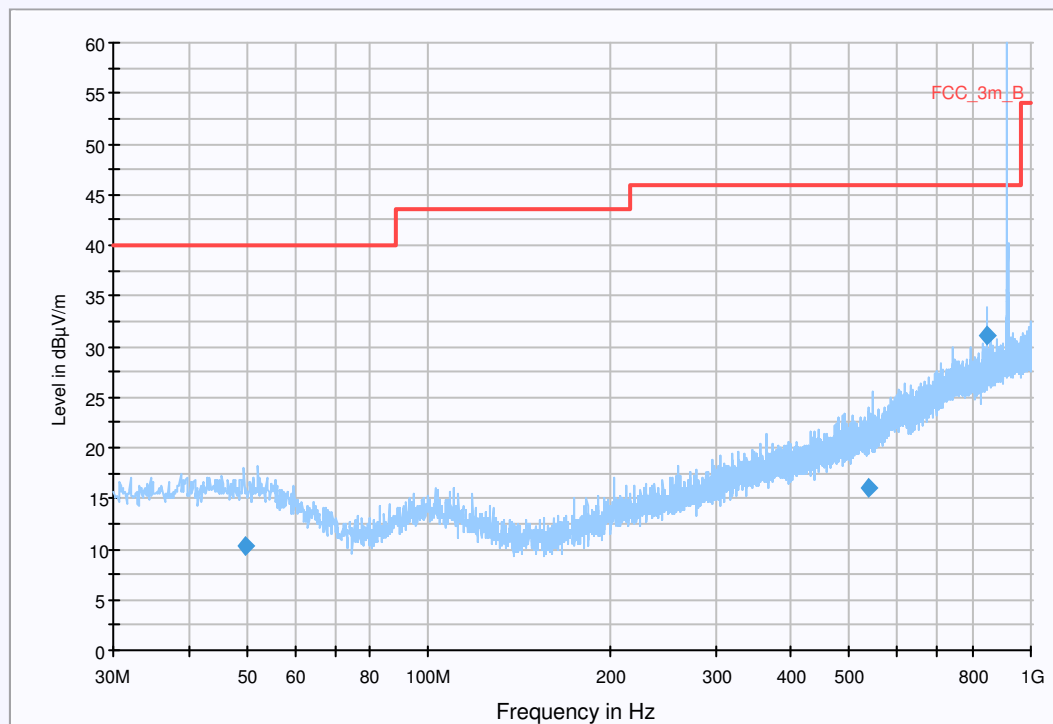
EUT: TRC650 (TX)  
Serial Number: #2  
Test Description: FCC class B @ 3 m  
Operating Conditions: TX-Mode  
Operator Name: WAL  
Comment:

## Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)  
Level Unit: dB $\mu$ V/m

| Subrange     | Detectors | IF Bandwidth | Meas. Time | Receiver |
|--------------|-----------|--------------|------------|----------|
| 30MHz - 1GHz | QuasiPeak | 120kHz       | 15s        | Receiver |

## FCC\_3m\_1GHz



## Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------|-------------|----------------------|---------|
| 49.814750       | 10.2                     | 15000.000       | 120.000         | 263.0               | V        | 79.0                     | 13.6       | 29.8        | 40.0                 |         |
| 537.536750      | 16.0                     | 15000.000       | 120.000         | 393.0               | H        | 15.0                     | 19.4       | 30.0        | 46.0                 |         |
| 844.838900      | 31.1                     | 15000.000       | 120.000         | 100.0               | H        | 95.0                     | 25.3       | 14.9        | 46.0                 |         |

## Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

### Subrange 1

Frequency Range: 30MHz - 2GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009

Signal Path: without Notch  
FW 1.0

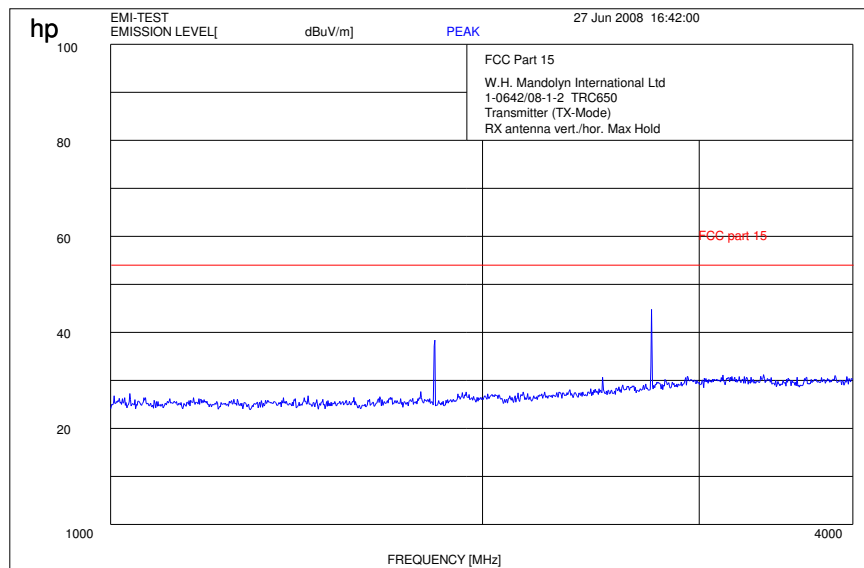
Antenna: VULB 9163  
SN 9163-295, FW ---, CAL 08.04.2010  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cabel with switch (0408)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9)

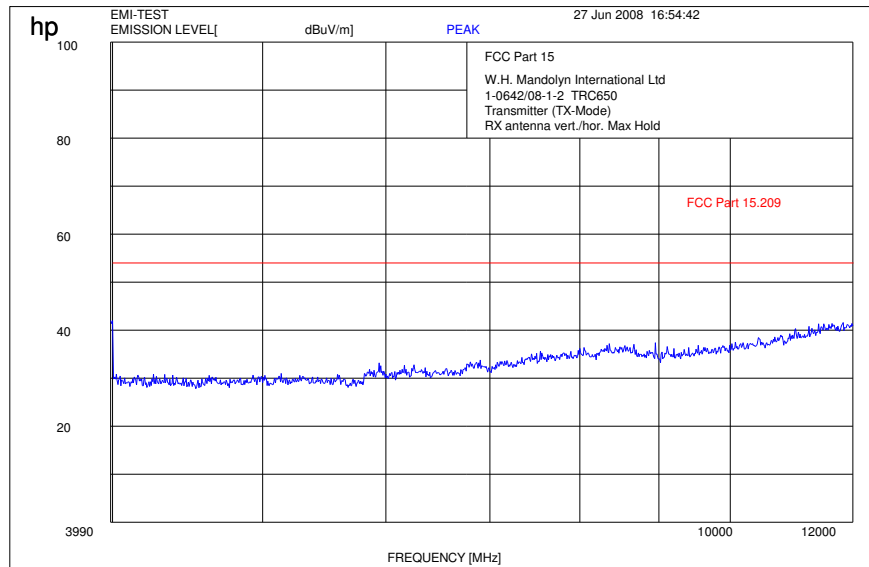
### Plot 3:

TX-Mode : 1 GHz – 4 GHz



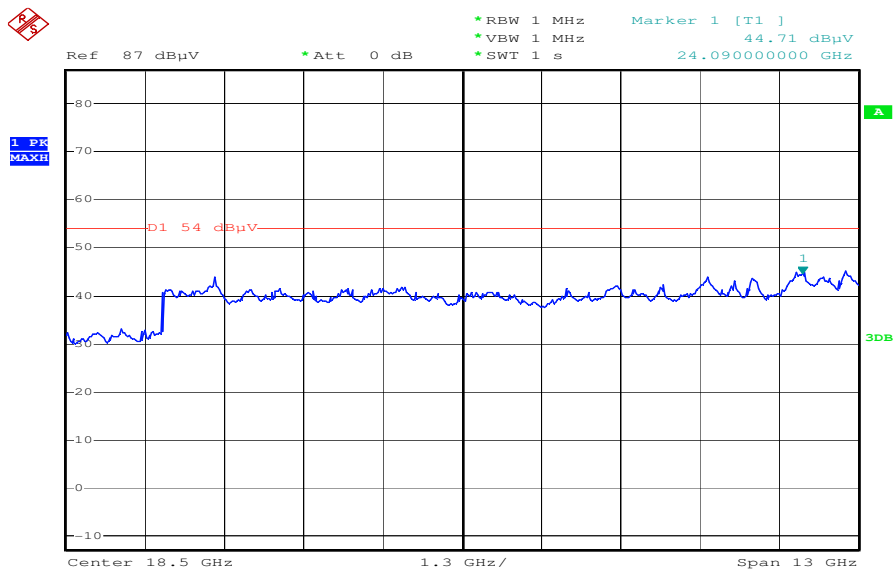
Plot 4:

TX-Mode : 4 GHz – 12 GHz



Plot 5:

TX-Mode : 12 GHz – 25 GHz



Date: 18.JUN.2008 19:35:41

## Results:

| Spurious Emissions level [dB $\mu$ V/m] |          |                      |
|-----------------------------------------|----------|----------------------|
| f[MHz]                                  | Detector | Level [dB $\mu$ V/m] |
| 1831.6                                  | Peak     | 38.4                 |
| 2744.5                                  | Peak     | 44.8                 |
|                                         |          |                      |
|                                         |          |                      |
|                                         |          |                      |
|                                         |          |                      |
|                                         |          |                      |
| Measurement uncertainty                 |          | $\pm 3$ dB           |

f < 1 GHz: RBW/VBW: 100 kHz

f  $\geq$  1 GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

## Limits

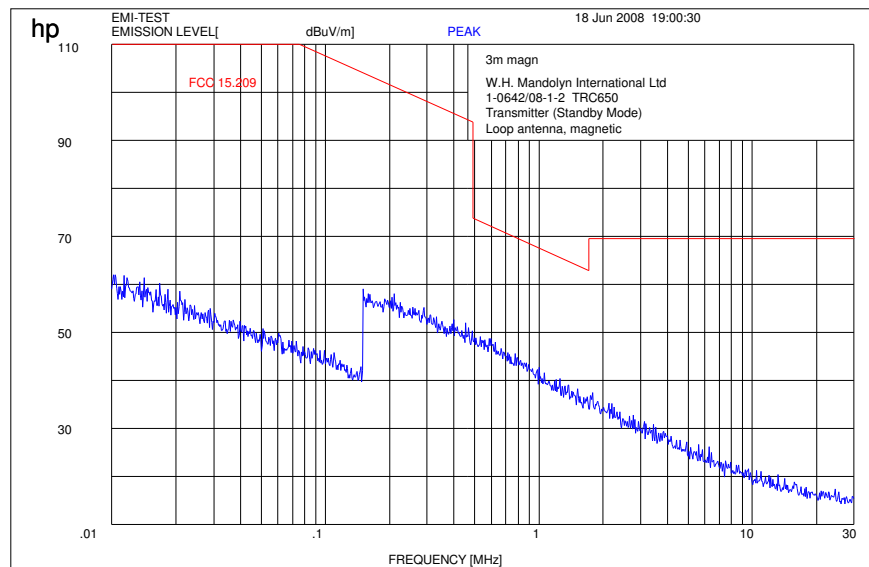
## SUBCLAUSE § 15.109

| Frequency (MHz) | Field strength ( $\mu$ V/m) | Measurement distance (m) |
|-----------------|-----------------------------|--------------------------|
| 30 - 88         | 100 (40 dB $\mu$ V/m)       | 3                        |
| 88 - 216        | 150 (43.5 dB $\mu$ V/m)     | 3                        |
| 216 - 960       | 200 (46 dB $\mu$ V/m)       | 3                        |
| above 960       | 500 (54 dB $\mu$ V/m)       | 3                        |

## 4.4 Transmitter Spurious Emission (radiated) / Standby

Plot 1:

Standby-Mode: Part 15.109 Magnetics



Plot 2:

Standby-Mode : 30 MHz - 1 GHZ

## Information

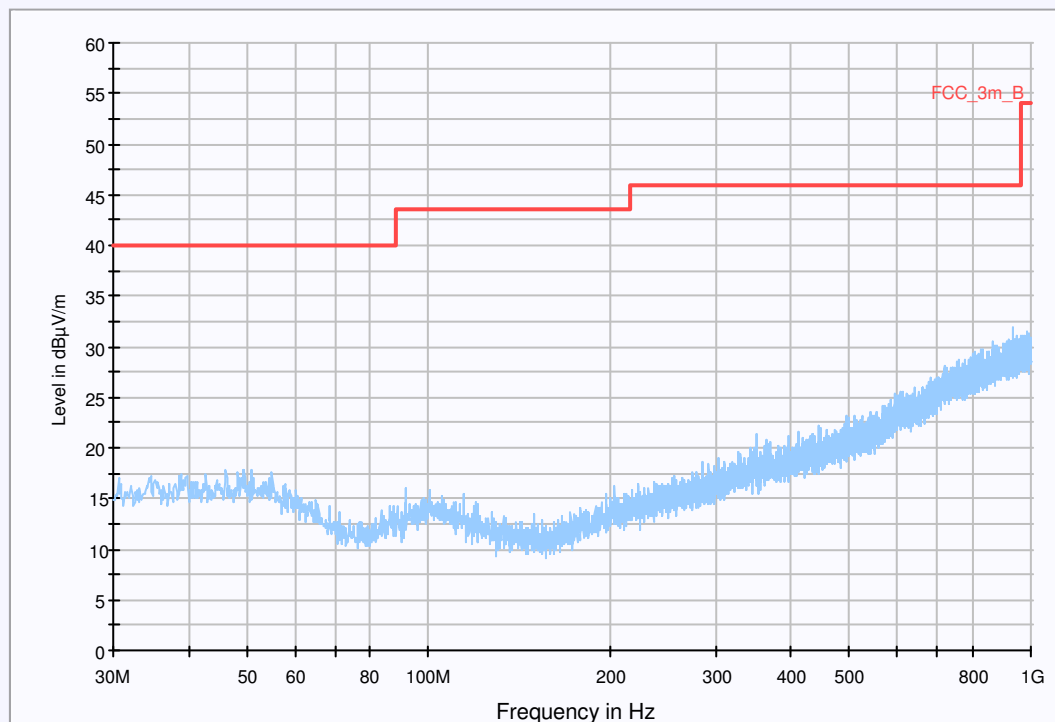
|                       |                   |
|-----------------------|-------------------|
| EUT:                  | TRC650 (TX)       |
| Serial Number:        | #2                |
| Test Description:     | FCC class B @ 3 m |
| Operating Conditions: | Standby           |
| Operator Name:        | WAL               |
| Comment:              |                   |

## Scan Setup: STAN\_Fin [EMI radiated]

|                 |                                   |
|-----------------|-----------------------------------|
| Hardware Setup: | EMI radiated\Electric Field (NOS) |
| Level Unit:     | dB $\mu$ V/m                      |

| Subrange     | Detectors | IF Bandwidth | Meas. Time | Receiver |
|--------------|-----------|--------------|------------|----------|
| 30MHz - 1GHz | QuasiPeak | 120kHz       | 15s        | Receiver |

## FCC\_3m\_1GHz



**No critical peaks found !**

## Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

### Subrange 1

Frequency Range: 30MHz - 2GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009

Signal Path: without Notch  
FW 1.0

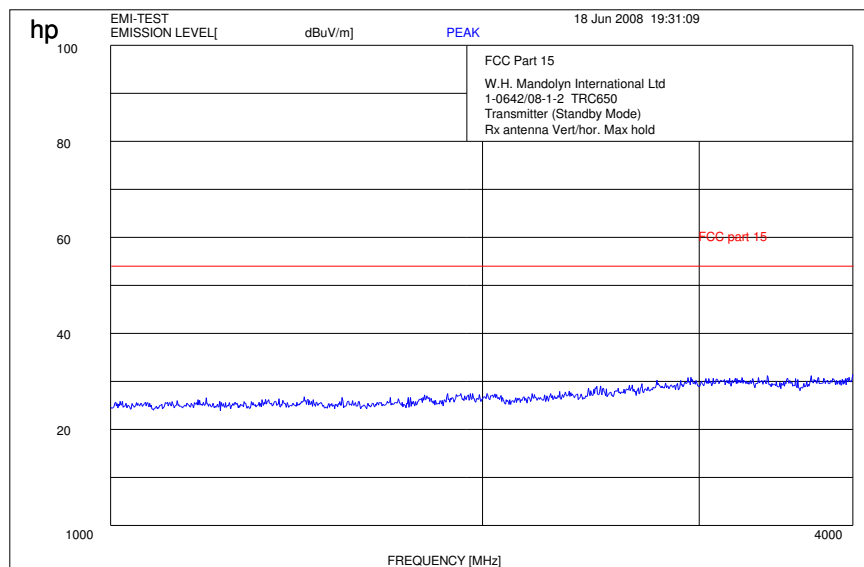
Antenna: VULB 9163  
SN 9163-295, FW ---, CAL 08.04.2010  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cabel with switch (0408)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9)

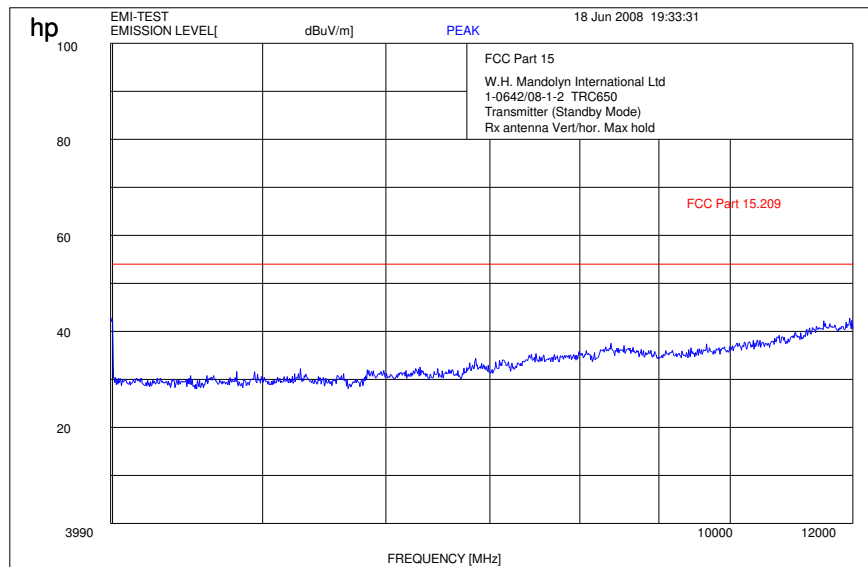
### Plot 3:

Standby-Mode : 1 GHz – 4 GHz



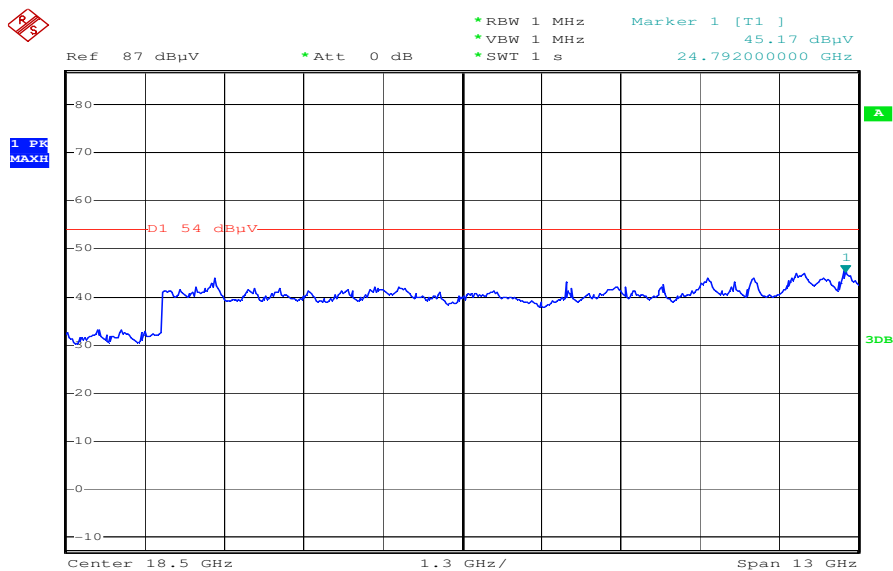
Plot 4:

Standby-Mode : 4 GHz – 12 GHz



Plot 5:

Standby-Mode : 12 GHz – 25 GHz



Date: 18.JUN.2008 19:39:23

## 4.5 Receiver Spurious Emission (radiated)

### Reference

|      |                                                                      |
|------|----------------------------------------------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.109                                          |
| IC:  | RSS 210, Issue 7, Section 7.3 Receiver Spurious Emissions (Radiated) |

Plot 1:

RX-Mode : 30 MHz - 1 GHz

### Information

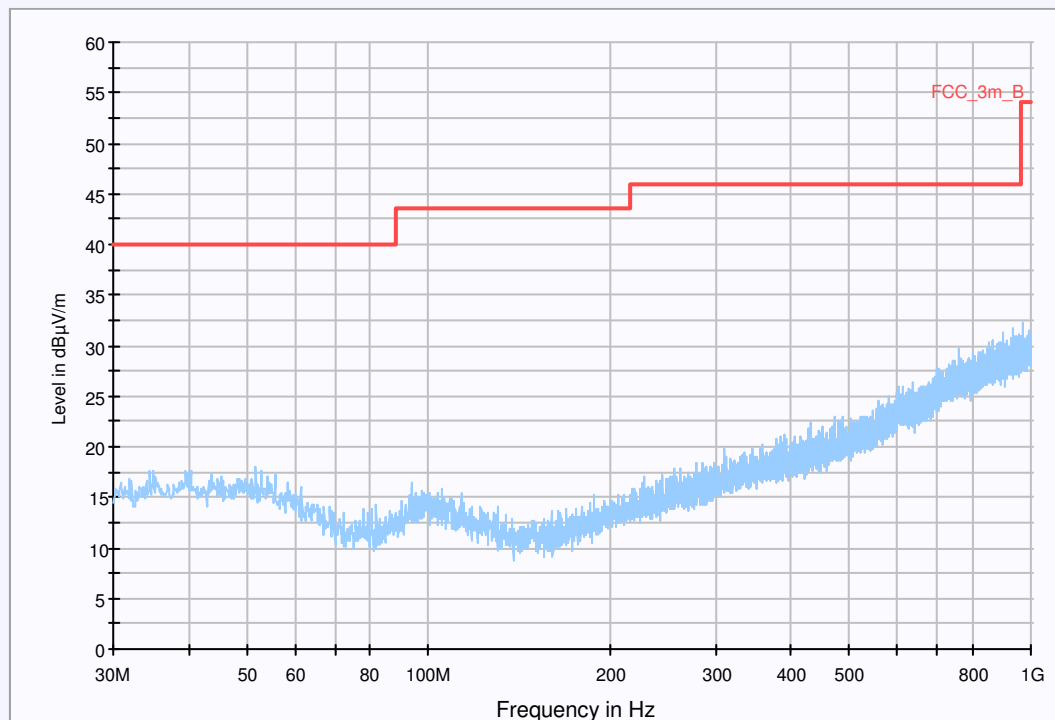
EUT: THM405R (RX)  
 Serial Number: #2  
 Test Description: FCC Class B @ 3 m  
 Operating Conditions: RX-Mode  
 Operator Name: WAL  
 Comment:

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

| Subrange     | Detectors | IF Bandwidth | Meas. Time | Receiver |
|--------------|-----------|--------------|------------|----------|
| 30MHz - 1GHz | QuasiPeak | 120kHz       | 15s        | Receiver |

### FCC\_3m\_1GHz



**No critical peaks found !**

## Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

### Subrange 1

Frequency Range: 30MHz - 2GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009

Signal Path: without Notch  
FW 1.0

Antenna: VULB 9163  
SN 9163-295, FW ---, CAL 08.04.2010  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cabel with switch (0408)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9)

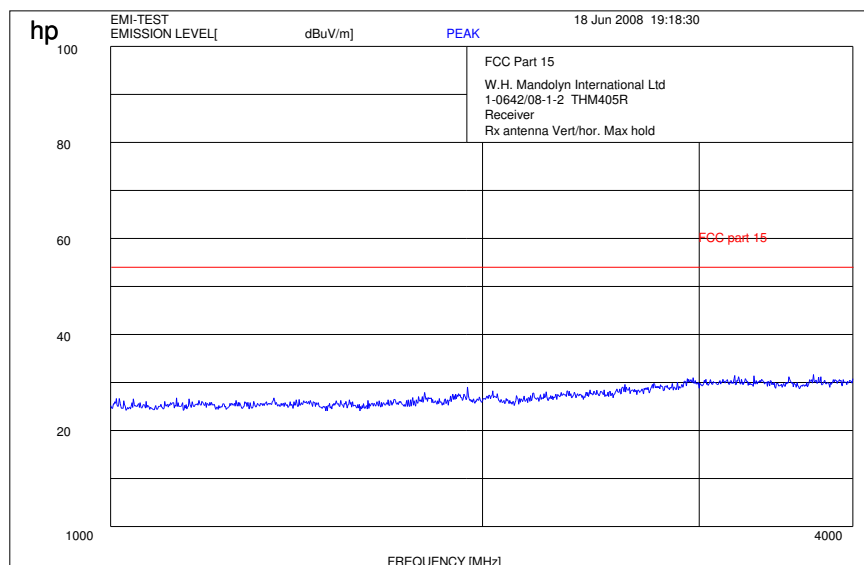
## Limits

## SUBCLAUSE § 15.109

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

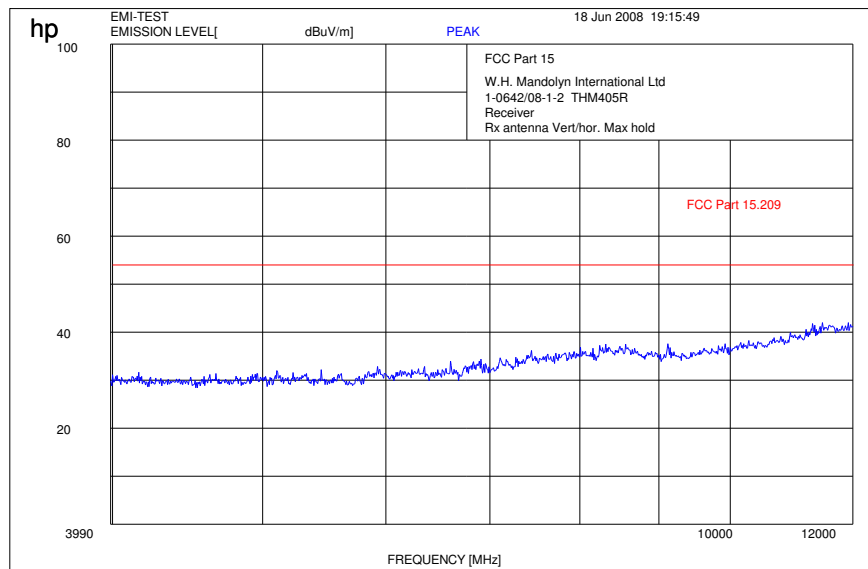
### Plot 2:

RX-Mode : 1 GHz – 4 GHz



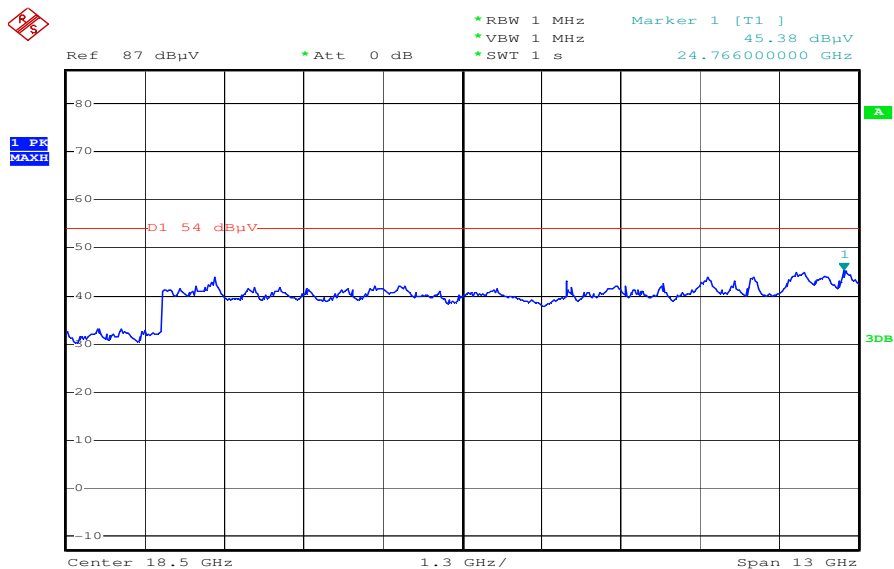
Plot 3:

RX-Mode : 4 GHz – 12 GHz



Plot 4:

RX-Mode : 12 GHz – 25 GHz



Date: 18.JUN.2008 19:40:48

## 4.6 Conducted Limits

**Not applicable !**

### Reference

|      |                                     |
|------|-------------------------------------|
| FCC: | CFR Part 15.207, 15.107             |
| IC:  | RSS 210, Issue 7, Section 6.6 , 7.4 |

### Limits

**SUBCLAUSE § 15.107 / 15.207**

| Frequency of Emission (MHz) | Conducted Limit (dBµV) |            |
|-----------------------------|------------------------|------------|
|                             | Quasi-peak             | Average    |
| 0.15 – 0.5                  | 66 to 56 *             | 56 to 46 * |
| 0.5 – 5                     | 56                     | 46         |
| 5 - 30                      | 60                     | 50         |

\* Decreases with the logarithm of the frequency

## 4.7 Occupied Bandwidth

Plot 1:



Results:

| Test conditions         |           | 20 dB BANDWIDTH [kHz] |    |    |
|-------------------------|-----------|-----------------------|----|----|
| Frequency [MHz]         |           | 914.823               | -- | -- |
| $T_{nom}$               | $V_{nom}$ | 340                   | -- | -- |
| Measurement uncertainty |           | $\pm 1\text{kHz}$     |    |    |

Limits:

|                                   |           |
|-----------------------------------|-----------|
| Under normal test conditions only | > 200 kHz |
|-----------------------------------|-----------|

## 5 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

### *Anechoic chamber C:*

| No | Equipment/Type                   | Manuf.     | Serial Nr.       | Inv. No. Cetecom | Last Calibration                   | Frequency (months) | Next Calibration |
|----|----------------------------------|------------|------------------|------------------|------------------------------------|--------------------|------------------|
| 1  | Anechoic chamber                 | MWB        | 87400/02         | 300000996        | Monthly verification               |                    |                  |
| 2  | System-Rack 85900                | HP I.V.    | *                | 300000222        | n.a.                               |                    |                  |
| 3  | Measurement System 1             |            |                  |                  |                                    |                    |                  |
| 4  | Spektrum Analyzer 8566B          | HP         | 2747A05306       | 300001000        | 05.10.2006                         | 24                 | 05.10.2008       |
| 5  | Spektrum Analyzer Display 85662A | HP         | 2816A16541       | 300002297        | 05.10.2006                         | 24                 | 05.10.2008       |
| 6  | Quasi-Peak-Adapter 85650A        | HP         | 2811A01131       | 300000999        | 05.10.2006                         | 24                 | 05.10.2008       |
| 7  | RF-Preselector 85685A            | HP         | 2837A00779       | 300000218        | 08.11.2006                         | 24                 | 08.11.2008       |
| 8  | PC Vectra VL                     | HP         |                  | 300001688        | n.a.                               |                    |                  |
| 9  | Software EMI                     | HP         |                  | 300000983        | n.a.                               |                    |                  |
| 10 | Measurement System 2             |            |                  |                  |                                    |                    |                  |
| 11 | FSP 30                           | R&S        | 100623           | ICT 300003464    | 05.10.2007                         | 24                 | 15.10.2009       |
| 12 | PC                               | F+W        |                  |                  | n.a.                               |                    |                  |
| 13 | TILE                             | TILE       |                  |                  | n.a.                               |                    |                  |
| 14 | Biconical antenna                | EMCO       | S/N: 860 942/003 |                  | Monthly verification (System cal.) |                    |                  |
| 15 | Log. Period. Antenna 3146        | EMCO       | 2130             | 300001603        | Monthly verification (System cal.) |                    |                  |
| 16 | Double Ridged Antenna HP 3115P   | EMCO       | 3088             | 300001032        | Monthly verification (System cal.) |                    |                  |
| 17 | Active Loop Antenna 6502         | EMCO       | 2210             | 300001015        | Monthly verification (System cal.) |                    |                  |
| 18 | Power Supply 6032A               | HP         | 2818A03450       | 300001040        | 12.05.2007                         | 36                 | 12.05.2010       |
| 19 | Busisolator                      | Kontron    |                  | 300001056        | n.a.                               |                    |                  |
| 20 | Leitungsteiler 11850C            | HP         |                  | 300000997        | Monthly verification (System cal.) |                    |                  |
| 21 | Power attenuator 8325            | Byrd       | 1530             | 300001595        | Monthly verification (System cal.) |                    |                  |
| 22 | Band reject filter WRCG1855/1910 | Wainwright | 7                | 300003350        | Monthly verification (System cal.) |                    |                  |
| 23 | Band reject filter WRCG2400/2483 | Wainwright | 11               | 300003351        | Monthly verification (System cal.) |                    |                  |

### *System Rack Room 005 :*

| No | Equipment/Type   | Manuf. | Serial Nr.  | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|------------------|--------|-------------|------------------|------------------|--------------------|------------------|
| 1  | FSP 30           | R&S    |             | 300003575        | 02.04.2007       | 24                 | 02.04.2009       |
| 2  | CBT              | R&S    | 100313      | 300003516        | 24.10.2006       | 24                 | 24.10.2008       |
| 3  | Switch Matrix    | HP     |             | 300000929        | n.a.             |                    |                  |
| 4  | Power Supply     | HP     | 3041A00544  | 300002270        | 13.05.2007       | 36                 | 13.05.2010       |
| 5  | Signal Generator | R&S    | 836206/0092 | 300002680        | 30.05.2007       | 36                 | 30.05.2010       |

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**Signalling Units:**

| No | Equipment/Type | Manuf. | Serial Nr.  | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|----------------|--------|-------------|------------------|------------------|--------------------|------------------|
| 1  | CBT            | R&S    | 100313      | 300003516        | 24.10.2006       | 24                 | 24.10.2008       |
| 2  | CBT            | R&S    | 100185      | 300003416        | 21.02.2006       | 24                 | 21.02.2008       |
| 3  | CMU-200        | R&S    | 103992      | 300003231        | 27.04.2007       | 12                 | 27.04.2008       |
| 4  | CMU-200        | R&S    | 106240      | 300003321        | 02.05.2006       | 24                 | 02.05.2008       |
| 5  | CMU-200        | R&S    | 832221/0055 | 300002862        | 20.03.2008       | 24                 | 20.03.2010       |

**SRD Laboratory Room 002:**

| No | Equipment/Type                              | Manuf. | Serial Nr.     | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|---------------------------------------------|--------|----------------|------------------|------------------|--------------------|------------------|
| 1  | System Controller PSM 12                    | R&S    | 835259/007     | 3000002681-00xx  | n.a.             |                    |                  |
| 2  | Memory Extension PSM-K10                    | R&S    | To 1           | 3000002681       | n.a.             |                    |                  |
| 3  | Operating Software PSM-B2                   | R&S    | To 1           | 3000002681       | n.a.             |                    |                  |
| 4  | 19" Monitor                                 |        | 22759020-ED    | 3000002681       | n.a.             |                    |                  |
| 5  | Mouse                                       |        | LZE 0095/6639  | 3000002681       | n.a.             |                    |                  |
| 6  | Keyboard                                    |        | G00013834L461  | 3000002681       | n.a.             |                    |                  |
| 7  | Spectrum Analyser FSIQ 26                   | R&S    | 835540/018     | 3000002681-0005  | 01.08.2006       | 24                 | 01.08.2008       |
| 8  | Tracking Generator FSIQ-B10                 | R&S    | 835107/015     | 3000002681       | s.No.7           |                    |                  |
| 10 | RF-Generator SMIQ03 (B1 Signal)             | R&S    | 835541/056     | 3000002681-0002  | 01.08.2006       | 36                 | 01.08.2009       |
| 11 | Modulation Coder SMIQ-B20                   | R&S    | To 10          | 3000002681       | s.No.10          |                    |                  |
| 12 | Data Generator SMIQ-B11                     | R&S    | To 10          | 3000002681       | s.No.10          |                    |                  |
| 13 | RF Rear Connection SMIQ-B19                 | R&S    | To 10          | 3000002681       | s.No.10          |                    |                  |
| 14 | Fast CPU SM-B50                             | R&S    | To 10          | 3000002681       | s.No.10          |                    |                  |
| 15 | FM Modulator SM-B5                          | R&S    | 835676/033     | 3000002681       | s.No.10          |                    |                  |
| 16 | RF-Generator SMIQ03 (B2 Signal)             | R&S    | 835541/055     | 3000002681-0001  | 01.08.2006       | 36                 | 01.08.2009       |
| 17 | Modulation Coder SMIQ-B20                   | R&S    | To 16          | 3000002681       | s.No.16          |                    |                  |
| 18 | Data Generator SMIQ-B11                     | R&S    | To 16          | 3000002681       | s.No.16          |                    |                  |
| 19 | RF Rear Connection SMIQ-B19                 | R&S    | To 16          | 3000002681       | s.No.16          |                    |                  |
| 20 | Fast CPU SM-B50                             | R&S    | To 16          | 3000002681       | s.No.16          |                    |                  |
| 21 | FM Modulator SM-B5                          | R&S    | 836061/022     | 3000002681       | s.No.16          |                    |                  |
| 22 | RF-Generator SMP03 (B3 Signal)              | R&S    | 835133/011     | 3000002681-0003  | 01.08.2006       | 36                 | 01.08.2009       |
| 23 | Attenuator SMP-B15                          | R&S    | 835136/014     | 3000002681       | S.No.22          |                    |                  |
| 24 | RF Rear Connection SMP-B19                  | R&S    | 834745/007     | 3000002681       | S.No.22          |                    |                  |
| 25 | Power Meter NRVD                            | R&S    | 835430/044     | 3000002681-0004  | 01.08.2006       | 24                 | 01.08.2008       |
| 26 | Power Sensor NRVD-Z1                        | R&S    | 833894/012     | 3000002681-0013  | 01.08.2006       | 24                 | 01.08.2008       |
| 27 | Power Sensor NRVD-Z1                        | R&S    | 833894/011     | 3000002681-0010  | 01.08.2006       | 24                 | 01.08.2008       |
| 28 | Rubidium Standard RUB                       | R&S    |                | 3000002681-0009  | 01.08.2006       | 24                 | 01.08.2008       |
| 29 | Switching and Signal Conditioning Unit SSCU | R&S    | 338864/003     | 3000002681-0006  | 01.08.2006       | 24                 | 01.08.2008       |
| 30 | Laser Printer HP Deskjet 2100               | HP     | N/A            | 3000002681-0011  | n.a.             |                    |                  |
| 31 | 19" Rack                                    | R&S    | 11138363000004 | 3000002681       | n.a.             |                    |                  |
| 32 | RF-cable set                                | R&S    | N/A            | 3000002681       | n.a.             |                    |                  |
| 33 | IEEE-cables                                 | R&S    | N/A            | 3000002681       | n.a.             |                    |                  |
| 34 | Sampling System FSIQ-B70                    | R&S    | 835355/009     | 3000002681       | s.No.7           |                    |                  |

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|    |                                        |                |            |                 |            |    |            |
|----|----------------------------------------|----------------|------------|-----------------|------------|----|------------|
| 35 | RSP programmable attenuator            | R&S            | 834500/010 | 3000002681-0007 | 01.08.2006 | 24 | 01.08.2008 |
| 36 | Signalling Unit                        | R&S            | 838312/011 | 3000002681      | n.a.       |    |            |
| 37 | NGPE programmable Power Supply for EUT | R&S            | 192.033.41 | 3000002681      |            |    |            |
| 39 | Power Splitter 6005-3                  | Inmet Corp.    | none       | 300002841       | 23.12.2006 | 24 | 23.12.2008 |
| 40 | SMA Cables SPS-1151-985-SPS            | Insulated Wire | different  | different       | n.a.       |    |            |
| 41 | CBT32 with EDR Signaling Unit          | R&S            |            |                 |            |    |            |
| 42 | Coupling unit                          | Narda          | N/A        | --              | n.a.       |    |            |
| 43 | 2xSwitch Matrix PSU                    | R&S            | 872584/021 | 300001329       | n.a.       |    |            |
| 44 | RF-cable set                           | R&S            | N/A        | different       | n.a.       |    |            |
| 45 | IEEE-cables                            | R&S            | N/A        | --              | n.a.       |    |            |

Note: 3000002681-00xx inventoried as a system

## SRD Laboratory Room 005:

| No | Equipment/Type                   | Manuf. | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|----------------------------------|--------|------------|------------------|------------------|--------------------|------------------|
| 1  | Spektrum Analyzer 8566B          | HP     | 2747A05275 | 300000219        | 08.11.2006       | 24                 | 08.11.2008       |
| 2  | Spektrum Analyzer Display 85662A | HP     | 2816A16497 | 300001690        | 08.11.2006       | 24                 | 08.11.2008       |
| 3  | Quasi-Peak-Adapter 85650A        | HP     | 2811A01135 | 300000216        | 08.11.2006       | 24                 | 08.11.2008       |
| 4  | Power Supply                     | Heiden | 003202     | 300001187        | 12.05.2007       | 36                 | 12.05.2010       |
| 5  | Power Supply                     | Heiden | 1701       | 300001392        | 12.05.2007       | 36                 | 12.05.2010       |

## Anechoic chamber F:

| No | Equipment/Type                          | Manuf.                   | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|-----------------------------------------|--------------------------|------------|------------------|------------------|--------------------|------------------|
| 1  | Control Computer                        | F+W                      | FW0502032  | 300003303        | -/-              | -/-                | -/-              |
| 2  | Trilog Antenna                          | 9163-295                 | -/-        | -/-              | 30.04.2008       | 24                 | 30.04.2010       |
| 3  | Amplifier - 0518C-138                   | Veritech Micro-wave Inc. | -/-        | -/-              | -/-              | -/-                | -/-              |
| 4  | Switch - 3488A                          | HP                       |            | 300000368        | -/-              | -/-                | -/-              |
| 5  | EMI Test receiver - ESCI                | R&S                      | 100083     | 300003312        | 31.01.2009       | 24                 | 31.01.2009       |
| 6  | Turntable Controller - 1061 3M          | EMCO                     | 1218       | 300000661        | -/-              | -/-                | -/-              |
| 7  | Tower Controller 1051 Controller        | EMCO                     | 1262       | 300000625        | -/-              | -/-                | -/-              |
| 8  | Tower - 1051                            | EMCO                     | 1262       | 300000625        | -/-              | -/-                | -/-              |
| 10 | Ultra Notch-Filter Rejected band Ch. 62 | WRCD                     | 9          | -/-              | -/-              | -/-                | -/-              |

## 6 Photographs of the Test Set-up

Photo 1:

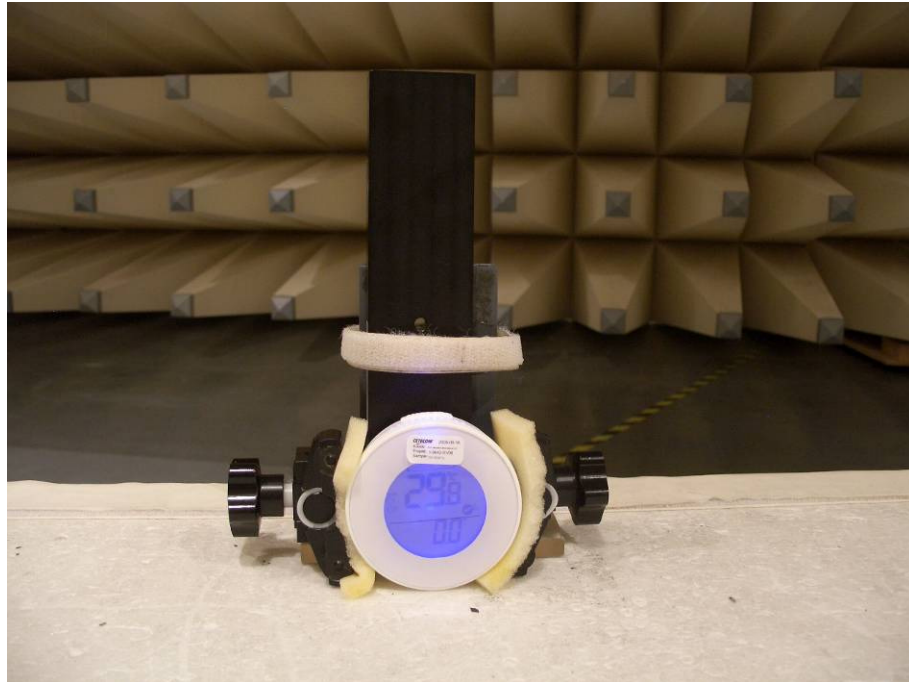


Photo 2:

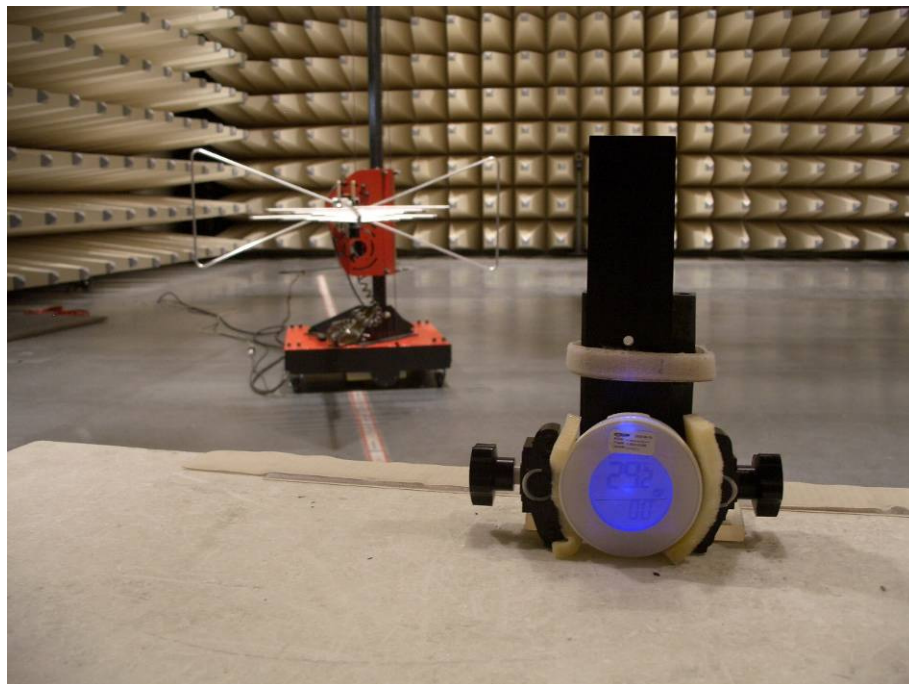
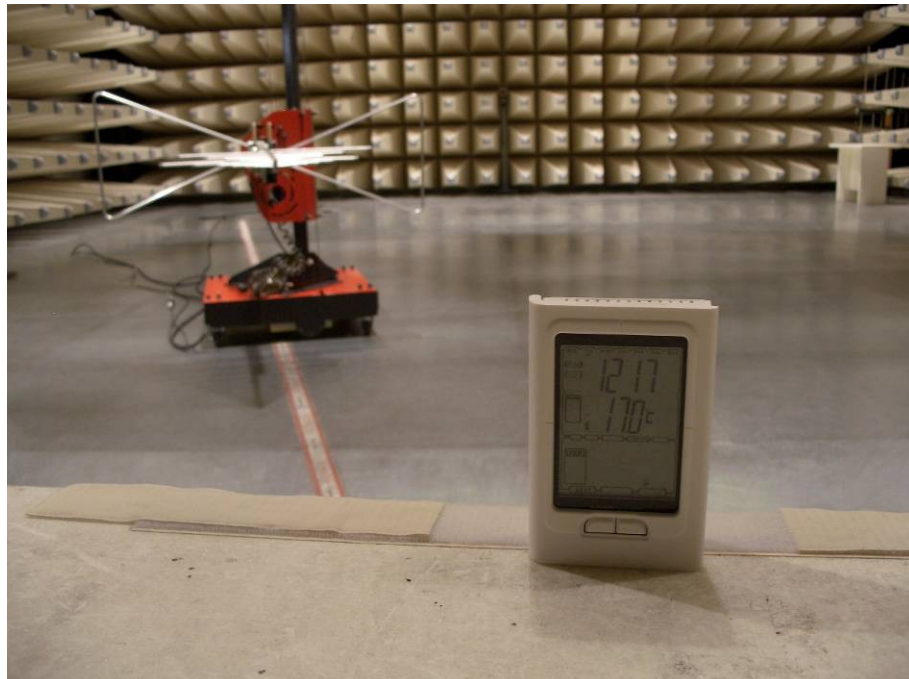


Photo 3:



Photo 4:



## 7 Photographs of the EUT

Photo 1:

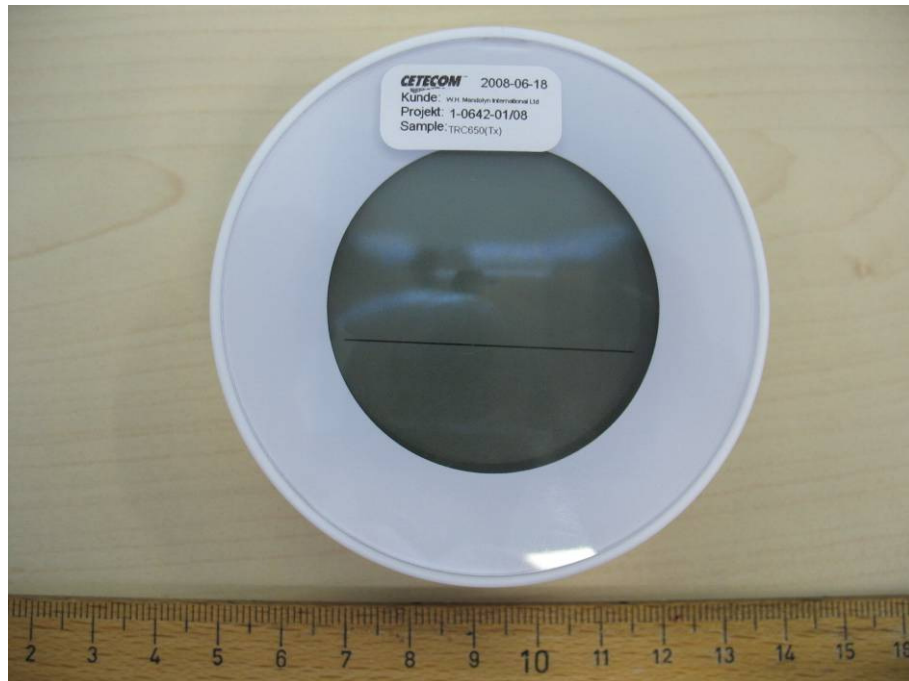


Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



Photo 7:

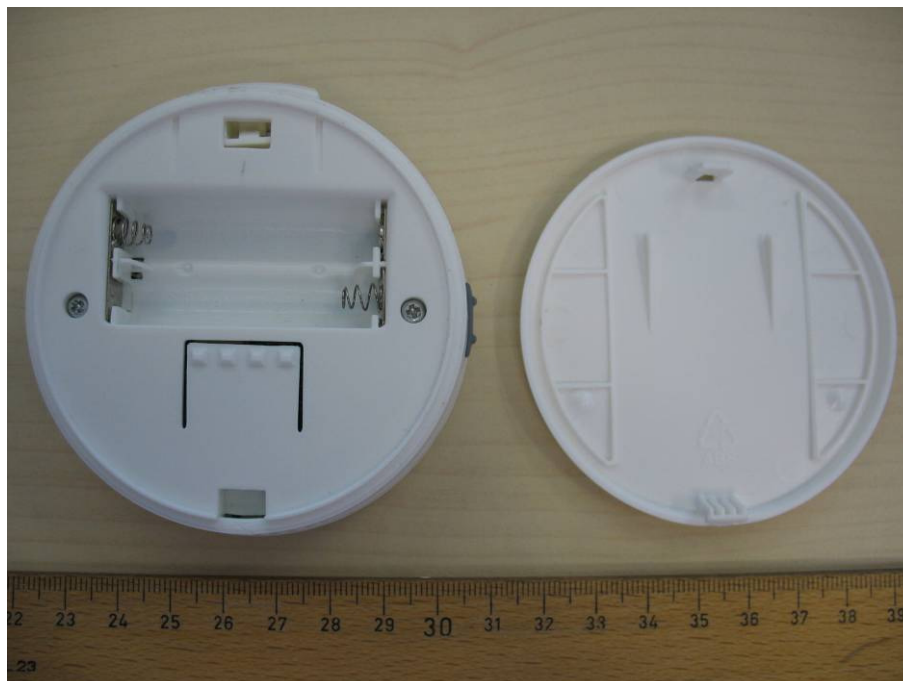


Photo 8:



Photo 9:



Photo 10:



Photo 11:

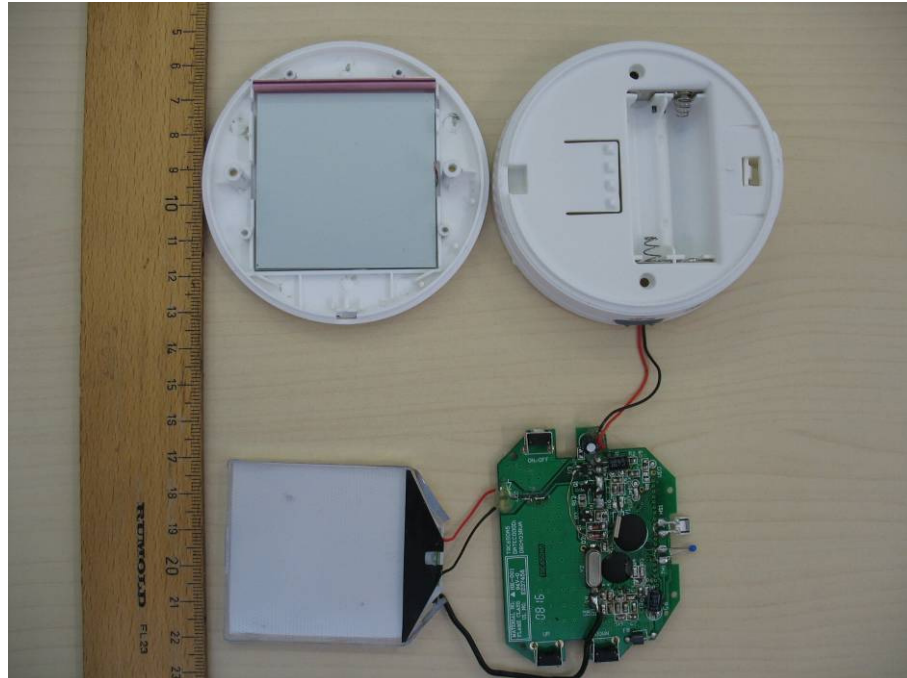


Photo 12:

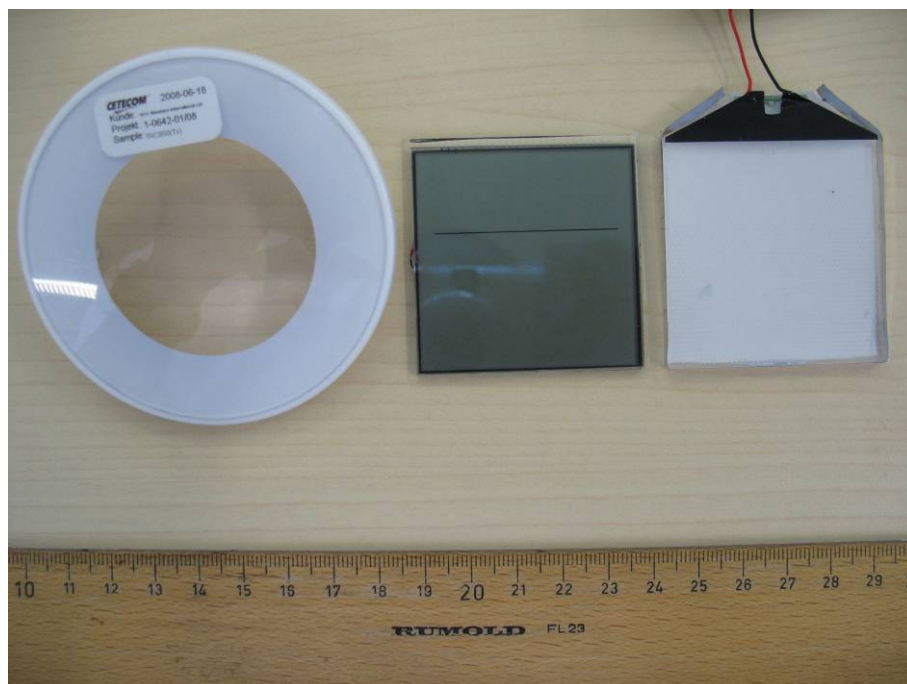


Photo 13:



Photo 14:



Photo 15:



Photo 16:



Photo 17:



Photo 18:



Photo 19:



Photo 20:

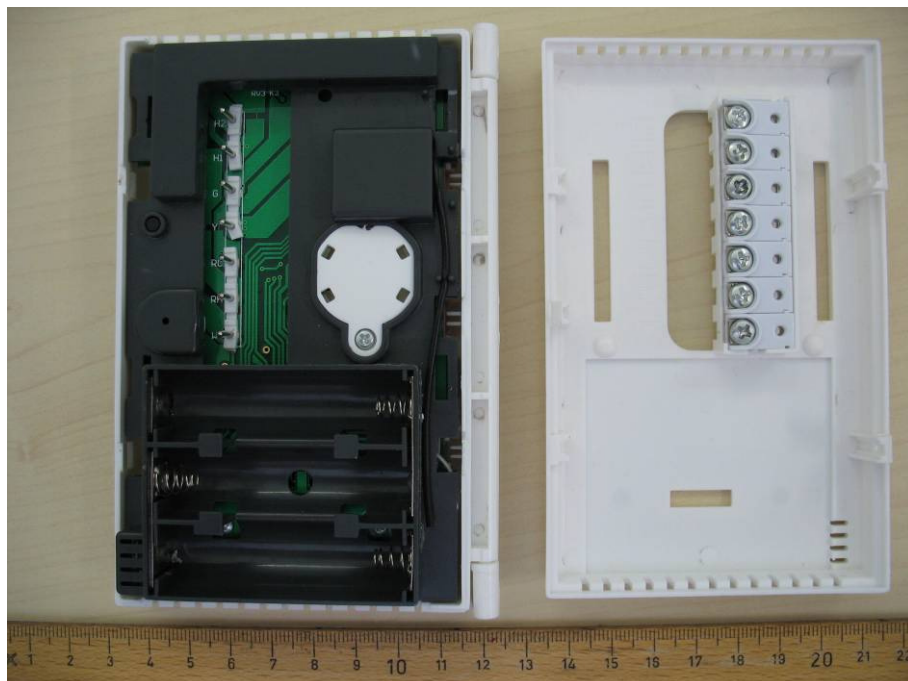


Photo 21:

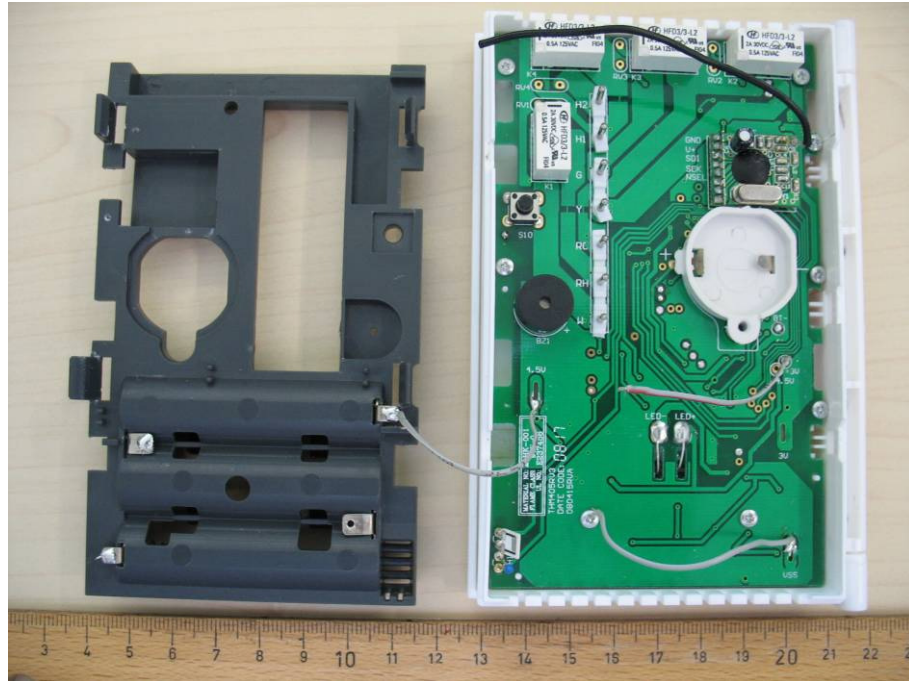


Photo 22:

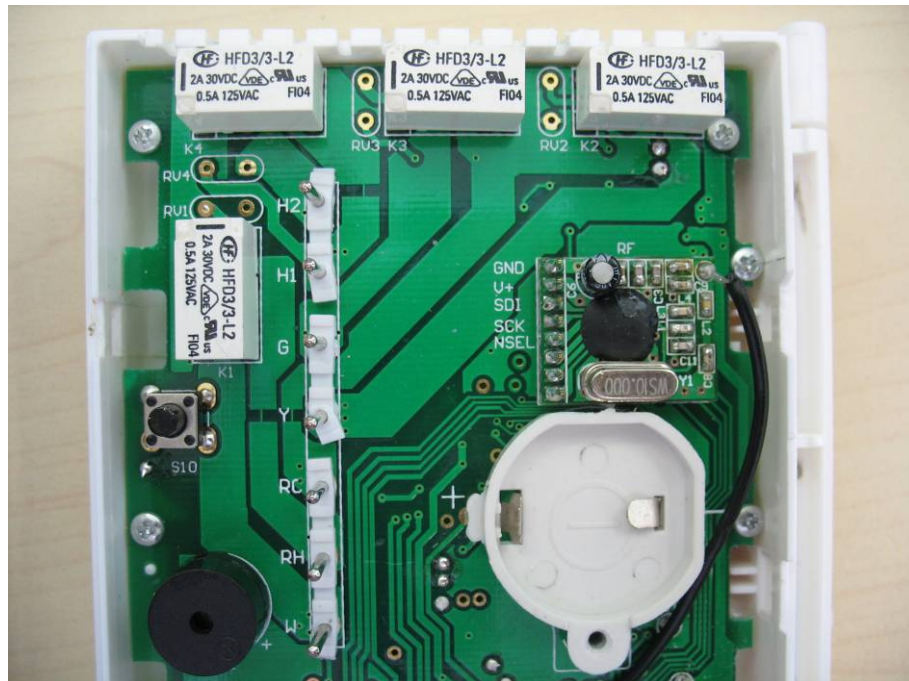


Photo 23:

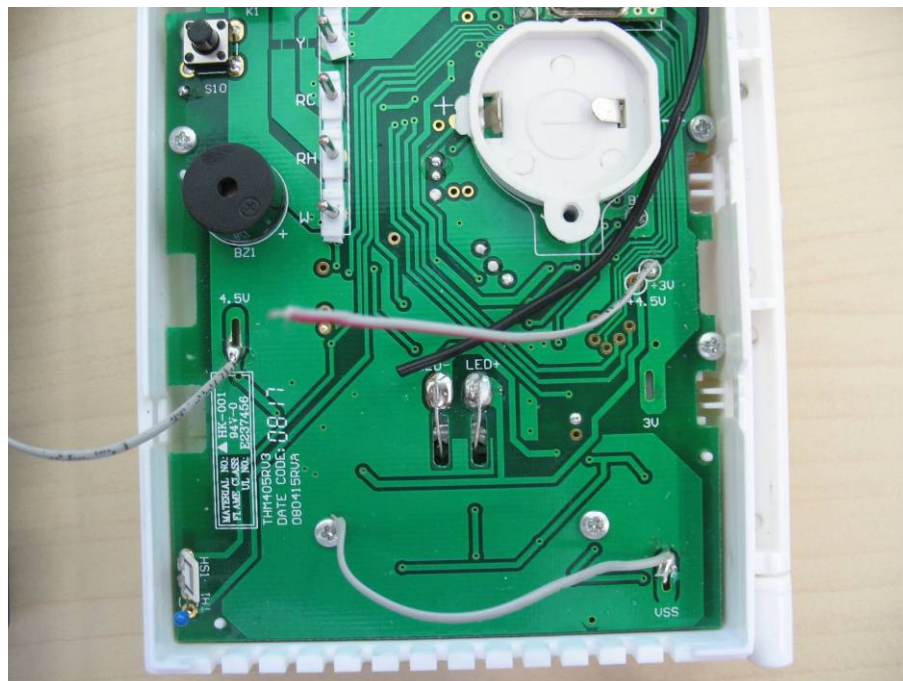


Photo 24:

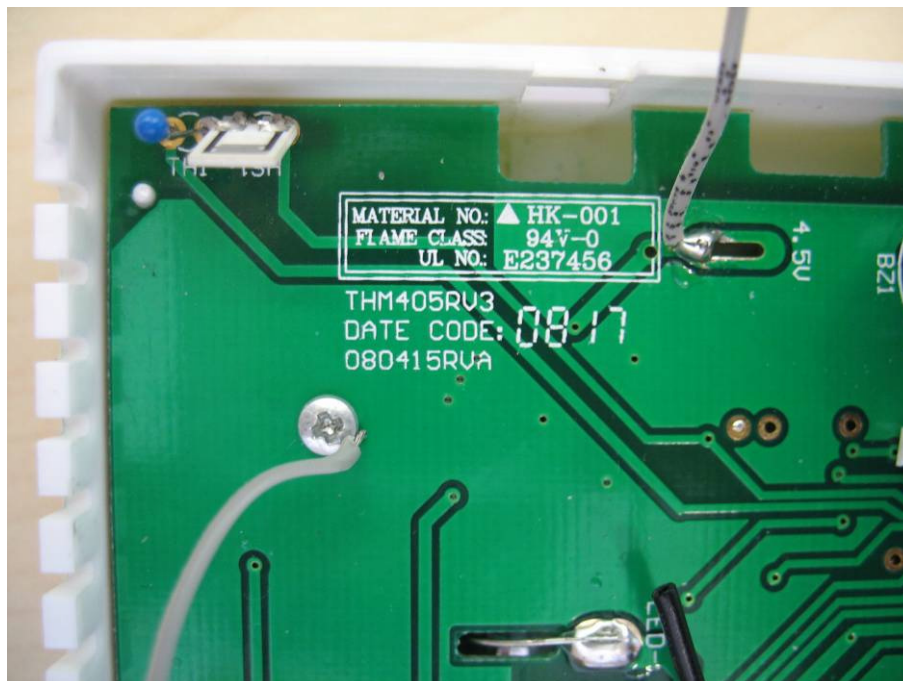


Photo 25:

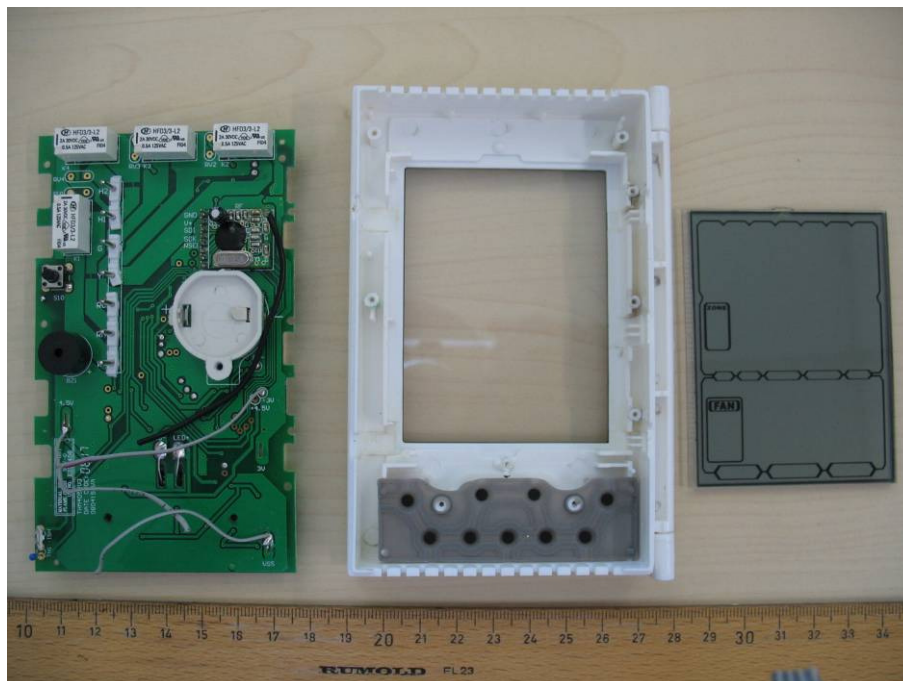


Photo 26:

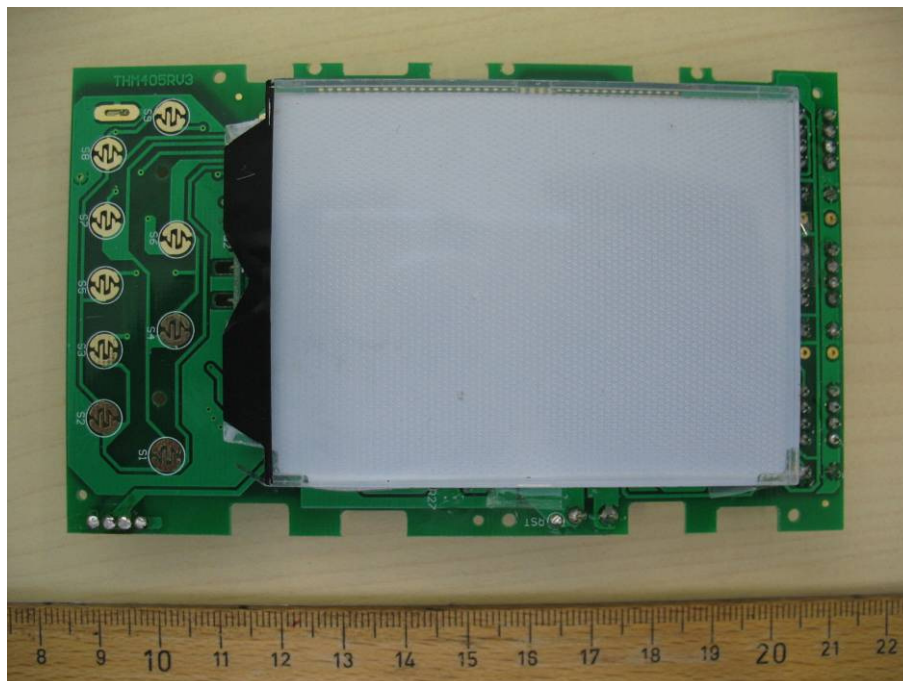


Photo 27:



Photo 28:

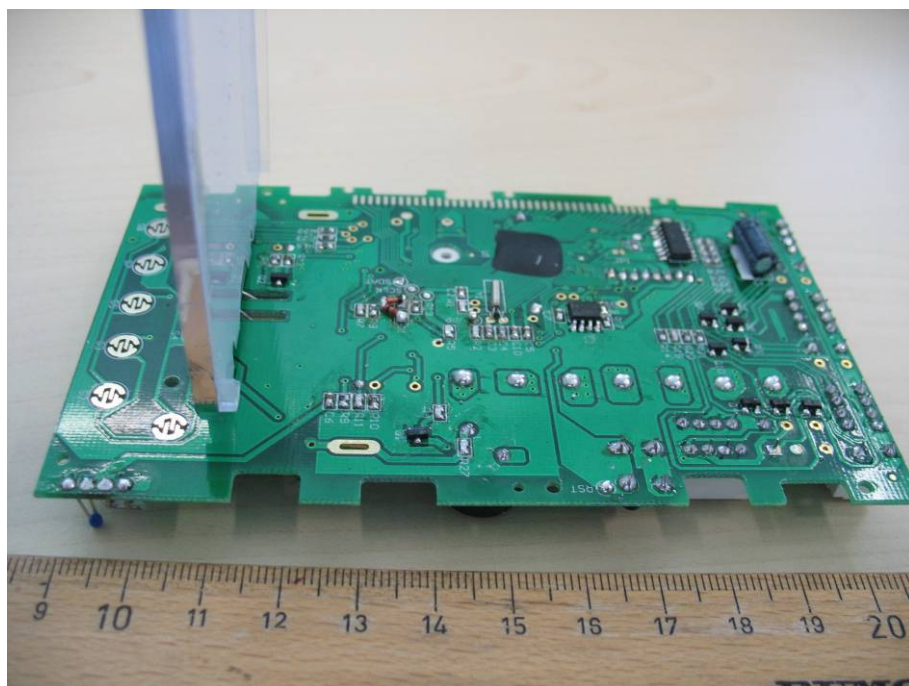


Photo 29:

