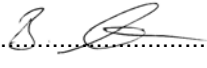
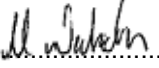


**Test Report (PDF copy)**  
**FCC Testing of the**  
**M6260**  
**USA Microwave**  
**Oven**  
**For**  
**Sharp Manufacturing**  
**Company of UK**

Document number 11345/TR/3

Project number C1303

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| Issue | Description | Issue by | Date                       |
|-------|-------------|----------|----------------------------|
| 3     | Issue Three | BR       | 2 <sup>nd</sup> April 2014 |

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## 1 Introduction

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**Name and address of client:** Sharp Manufacturing UK Limited  
Davy Way  
Llay  
Wrexham  
Clwyd  
LL12 0PG

The test results contained in this test report relate only to the unit(s) tested.

|                               |                                                                                                                                                                |                         |               |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|
| <b>Equipment under test</b>   | Microwave Oven                                                                                                                                                 |                         |               |
| <b>EUT Model No.</b>          | M6160/M6260 TC USA                                                                                                                                             | <b>Serial No.</b>       | 0977638862    |
| <b>Noise filter board No.</b> | FPWBFA496WRKZ                                                                                                                                                  | <b>HV capacitor No.</b> | RC-QZA389WRZZ |
| <b>Transformer No.</b>        | RTRN-A041URE0                                                                                                                                                  | <b>Magnetron No.</b>    | RV-MZA398WRZZ |
| <b>Date of receipt</b>        | 15 <sup>th</sup> January 2014                                                                                                                                  | <b>Number tested</b>    | One           |
| <b>Date(s) of test(s)</b>     | 20 <sup>th</sup> January 2014<br>6 <sup>th</sup> , 7 <sup>th</sup> , 10 <sup>th</sup> , 18 <sup>th</sup> , 24 <sup>th</sup> and 25 <sup>th</sup> February 2014 |                         |               |

**Date(s) when EUT was out of laboratory's control** None

**Personnel witnessing tests** The tests were carried out on an unwitnessed basis.

**Any other relevant information:** The operating frequency of the EUT was declared as 2.45GHz; therefore, as per FCC MP-5, section 2.3(a), measurements were made to the tenth harmonic, which is 24.5GHz.

## 2 Test Specification

### 2.1 Environment

The equipment under test is a microwave oven intended for use in a household environment.

### 2.2 Relevant standards

#### 2.2.1 Emissions

|                             |                                                                |
|-----------------------------|----------------------------------------------------------------|
| ANSI C63.4-2009             | Conducted disturbance (AC mains port)                          |
| CFR 47 Part 18              | 150kHz-30MHz limit as defined in 18.307 conduction limits      |
| Code of Federal Regulations | Radiated disturbance (enclosure port)                          |
|                             | 30MHz-24.5GHz limit as defined in 18.305 Field strength limits |

Note 1: Testing was limited to the above tests as requested by the customer.

Note 2: The operating frequency of the EUT was declared as 2.45GHz; therefore, measurements were made to the tenth harmonic i.e. 24.5GHz.

#### 2.2.2 Immunity

No Immunity testing required by the customer

#### 2.2.3 Operating modes

The EUT was operated in a total of 1 mode, the selection of which was test dependant.

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

Where the microwave function was being tested, the cavity was loaded with the amount of tap water, as specified within section 4.1 of FCC/OST MP-5 (1986), in a 150mm diameter borosilicate glass container, placed in the centre of the turntable unless otherwise specifically stated. Water was changed periodically to maintain the level and prevent the water boiling.

### 3 Test Results

#### 3.1 Power Output measurements (Calorimetric direct method)

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard                                                                     | Test description                                 | Class/limit |
|-----------------------------------------------------------------------------------|--------------------------------------------------|-------------|
| MP-5 1986, section 4.3.<br><br>Test method based upon<br>EN60705:1999, Section 8. | Power output measurements for<br>microwave ovens | N/A         |

| Input<br>Voltage<br>(V) | Input<br>Power<br>(kW) | Input<br>Current<br>(A) | Duration<br>of run<br>(sec) | Start<br>Temp<br>Water<br>(°C) | Final<br>Temp<br>Water<br>(°C) | $\Delta T$<br>(°C) | Output Power (W) |
|-------------------------|------------------------|-------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------|------------------|
| 120                     | 1.6                    | 14.55                   | 60                          | 16.1                           | 28.9                           | 12.8               | 893.18           |
| 120                     | 1.6                    | 14.52                   | 60                          | 19.0                           | 31.5                           | 12.5               | 872.25           |

Note 1: The test was performed using 1000g  $\pm 5$ g of tap water heated in a 150mm diameter cylindrical glass vessel placed in the centre of the oven. Start Temp is that of the water before it was poured into the glass vessel. Final temperature of the water was taken within 60sec of the microwave cycle finishing, after it had been stirred.

Note 2: The output power used to determine the value regarding out of band field strength limits, under the specified section of 18.305, was rounded to that of the lowest value i.e. 870W as this produced the lower limit line for electric field strength measurements see section 3.6 of this test report.

### 3.2 Frequency measurements

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard           | Test description                                                     | Class/limit                                      |
|-------------------------|----------------------------------------------------------------------|--------------------------------------------------|
| MP-5 1986, section 4.5. | Frequency measurements for microwave magnetron fundamental frequency | As defined in CFR 18.301<br>2,450MHz $\pm$ 50MHz |

#### 3.2.1 Frequency variation over time MP-5 section 4.5 (a)

| Time (Mins)   | Measured Frequency (MHz) |
|---------------|--------------------------|
| Start of Test | 2454.48                  |
| 6             | 2451.96                  |
| 12            | 2453.92                  |
| 18            | 2453.92                  |
| 24            | 2455.04                  |
| 30            | 2453.08                  |
| 36            | 2454.48                  |
| 42            | 2442.16                  |
| 48            | 2453.08                  |
| 54            | 2453.08                  |
| 60            | 2460.36                  |

Note 1: The test was performed using 1500mililetres of tap water in a 150mm diameter cylindrical glass vessel placed in the centre of the oven. The test duration was defined by the length of time taken by the microwave to reduce the load by means of evaporation to approximately 20% of the start level. Frequency measurements are shown in figure 5.6.1. The frequency is plotted within the allowable band of variation for the ISM frequency of 2450MHz  $\pm$  50MHz i.e. 2400MHz to 2500MHz.

## 3.2.2 Frequency variation over supply voltage variation MP-5 section 4.5 (b)

| Supply Voltage (V) at 60Hz | Frequency (MHz) |
|----------------------------|-----------------|
| 96                         | 2454.4          |
| 150                        | 2454.6          |

Note 1: The test was performed using 1500mililetres of tap water in a 150mm diameter cylindrical glass vessel placed in the centre of the oven. The microwave had been operating for 10mins prior to the test start and the load used was started at room temperature. The supply voltage was lowered to 80% of the nominal value and the EUT allowed enough time to respond to the voltage change prior to recording the frequency. The test was then repeated with the supply voltage at 125% of the nominal value.

**3.2 Conducted emissions (150kHz to 30MHz)**

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard  | Test description             | Class/limit          |
|----------------|------------------------------|----------------------|
| CFR 47 part 18 | Conducted emissions ac power | As defined in 18.307 |

| Results | Figure | Result | Comments |
|---------|--------|--------|----------|
|         | C01    | Pass   | None.    |

| QP Results | Freq (MHz) | Line (L or N) | QP level (dBμV) | Limit (dBμV) | Comments |
|------------|------------|---------------|-----------------|--------------|----------|
| (Max 6)    | 0.935      | N             | 40.9            | 56           | None     |
|            | 0.975      | N             | 45.6            | 56           | None     |
|            | 1.010      | N             | 43.2            | 56           | None     |
|            | 10.325     | L             | 50.8            | 60           | None     |
|            | 14.270     | N             | 47.8            | 60           | None     |
|            | 14.970     | L             | 50.8            | 60           | None     |

| AV Results | Freq (MHz) | Line (L or N) | AV level (dBµV) | Limit (dBµV) | Comments |
|------------|------------|---------------|-----------------|--------------|----------|
| (Max 6)    | 0.935      | N             | 37.5            | 46           | None     |
|            | 0.975      | N             | 41.5            | 46           | None     |
|            | 1.010      | N             | 37.8            | 46           | None     |
|            | 1.050      | N             | 38.6            | 46           | None     |
|            | 11.525     | L             | 44.2            | 50           | None     |
|            | 11.750     | N             | 45.6            | 50           | None     |

Note 1: The graphical data for this test can be found in Appendix 4 of this report.

**3.3 Radiated emissions (100MHz to 1000MHz)**

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard  | Test description   | Class/limit          |
|----------------|--------------------|----------------------|
| CFR 47 Part 18 | Radiated emissions | As defined in 18.305 |

| Results | Figure | Result | Comments |
|---------|--------|--------|----------|
|         | R01    | Pass   | None     |

| Frequency (MHz) | Polarity (H/V) | Height (m) | Angle (degrees ) | Detector Type | Meas distance (m) | Spec distance (m) | E field @ spec distance (dBuV/m) | E field Limit (dBuV/m) | Margin (dB) |
|-----------------|----------------|------------|------------------|---------------|-------------------|-------------------|----------------------------------|------------------------|-------------|
| 257.040         | V              | 1          | 90               | QP            | 3                 | 300               | -29.0                            | 30.4                   | -59.4       |
| 257.160         | V              | 1          | 90               | QP            | 3                 | 300               | -21.2                            | 30.4                   | -51.6       |
| 257.280         | V              | 1          | 90               | QP            | 3                 | 300               | -29.6                            | 30.4                   | -60.0       |
| 258.780         | V              | 1          | 90               | QP            | 3                 | 300               | -29.6                            | 30.4                   | -60.0       |
| 295.200         | V              | 1          | 270              | QP            | 3                 | 300               | -30.0                            | 30.4                   | -60.4       |
| 296.640         | V              | 1          | 270              | QP            | 3                 | 300               | -30.1                            | 30.4                   | -60.5       |
| 717.240         | V              | 1          | 270              | QP            | 3                 | 300               | -21.1                            | 30.4                   | -51.5       |

*Table 3.3.1 Final Quasi peak measurements*

Note 1: The graphical data of this test can be found in Appendix 5 of this report.

**3.4 Radiated emissions (1GHz to 18GHz)**

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard  | Test description   | Class/limit          |
|----------------|--------------------|----------------------|
| CFR 47 Part 18 | Radiated emissions | As defined in 18.305 |

| Results | Figure | Result | Comments                                               |
|---------|--------|--------|--------------------------------------------------------|
|         | R02    | N/A    | Measurements were performed in an anechoic chamber.    |
|         | R03    | Pass   | These tests were performed on the open area test site. |

| Frequency<br>(GHz) | 1<br>Analyser<br>Level (dBµV) | 2<br>AF<br>(dB/m) | 3<br>Cable loss<br>(dB) | 4<br>Pre Amplifier<br>Gain (dB) | (1+2+3-4)<br>Average detector<br>Result @3m<br>dBµV/m | Limit@3m<br>dBµV/m |
|--------------------|-------------------------------|-------------------|-------------------------|---------------------------------|-------------------------------------------------------|--------------------|
| 2.200              | 45.83                         | 27.84             | 2.22                    | 35.93                           | 39.96                                                 | 70.36              |
| 2.308              | 42.99                         | 28.03             | 2.22                    | 35.93                           | 37.31                                                 | 70.36              |
| 2.544              | 44.07                         | 28.29             | 2.55                    | 35.93                           | 38.98                                                 | 70.36              |
| 2.714              | 41.80                         | 29.12             | 2.55                    | 35.93                           | 37.54                                                 | 70.36              |
| 7.344              | 27.83                         | 36.74             | 5.31                    | 35.38                           | 34.23                                                 | 70.36              |
| 8.436              | 23.91                         | 37.31             | 5.74                    | 35.77                           | 31.19                                                 | 70.36              |
| 8.574              | 27.49                         | 37.40             | 5.62                    | 35.77                           | 34.74                                                 | 70.36              |

Table 3.4.1 Horizontal measurements

| Frequency<br>(GHz) | 1<br>Analyser<br>Level (dB $\mu$ V) | 2<br>AF<br>(dB/m) | 3<br>Cable loss<br>(dB) | 4<br>Pre Amplifier<br>Gain (dB) | (1+2+3-4)<br>Average detector<br>Result @3m<br>dB $\mu$ V/m | Limit@3m<br>dB $\mu$ V/m |
|--------------------|-------------------------------------|-------------------|-------------------------|---------------------------------|-------------------------------------------------------------|--------------------------|
| 2.200              | 51.00                               | 27.84             | 2.22                    | 35.93                           | 45.13                                                       | 70.36                    |
| 2.652              | 46.00                               | 28.63             | 2.55                    | 35.93                           | 41.25                                                       | 70.36                    |
| 2.662              | 44.17                               | 28.63             | 2.55                    | 35.93                           | 39.42                                                       | 70.36                    |
| 8.556              | 25.96                               | 37.34             | 5.62                    | 35.77                           | 33.15                                                       | 70.36                    |
| 8.562              | 27.06                               | 37.40             | 5.62                    | 35.77                           | 34.31                                                       | 70.36                    |

Table 3.4.1 Vertical measurements

Note 1: The tests in the above table carried out between 1GHz to 2GHz and 3GHz to 18GHz were performed with a 2.4GHz notch filter connected, this was to avoid spurious harmonics from the magnetron fundamental frequency of 2.45GHz appearing in the measuring instrumentation. The bands between 2GHz and 3GHz were performed without the filter. Testing was performed over the frequency ranges 1000MHz to 18000MHz. Results were compared with the limit line as defined in 18.305 and scaled for a measurement distance of 3m.

Note 2: The above results >1GHz were recorded using an average detector.

**3.5 Radiated emissions (18GHz to 24.5GHz)**

| Mode of operation | Description          | Mode No. |
|-------------------|----------------------|----------|
|                   | 100% microwave power | 1        |

| Test standard  | Test description   | Class/limit          |
|----------------|--------------------|----------------------|
| CFR 47 Part 18 | Radiated emissions | As defined in 18.305 |

| Results | Figure | Result | Comments |
|---------|--------|--------|----------|
|         | R04    | Pass   | None     |

Note 1: The EUT was rotated from 0° to 360° and back to 0° whilst the peak emissions were recorded, with the antenna first in horizontal polarisation. This was then repeated with the antenna in vertical polarisation.

Note 2: No emissions were detected above the noise floor of the anechoic chamber when investigated at a distance of 3m.

Note 3: The graphical data can be found in Appendix 5 of this test report.

### 3.6 Calculation of Electric Field Strength Limit

ISM equipment operating on a frequency specified in Section 18.301 of the FCC Rules is permitted unlimited radiated energy in the band specified for that frequency.

The limit of field strength levels of emissions that lie outside the ISM bands is specified in Section 18.305 of the FCC rules as follows:

Where the operating frequency is within an ISM frequency band and where the output power is greater than 500W at a measurement distance of 300m the limit for radiated field strength outside of the ISM bands is:

$$\text{Limit } (\mu\text{V/m}) \text{ at } 300\text{m} = 25\sqrt{\frac{P}{500}}$$

Where  $P$  is the measured output power of the oven in w (refer to section 3.1 of this test report).

In units of dB $\mu$ V/m, and at a measurement distance of 3m the limit is calculated as:

$$\text{Limit (dB}\mu\text{V/m) at 3m} = 20\log_{10}\left(25\sqrt{\frac{P}{500}}\right) + 20\log_{10}\left(\frac{300}{3}\right)$$

The measured oven power  $P$ , was 870W (refer to section 3.1 of this test report). Using this measured value of  $P$  in above formula this gives a field strength limit of 70.4dB $\mu$ V/m at a measurement distance of 3m.

The electric field strength between 100MHz and 24.5GHz was measured at 3m and compared to this limit calculated at 3m.

Note: Section 4.6.1 of FCC Document MP5 dated 1986 states that a conservative value of the field strength limit at closer distances than 300m may be calculated using inverse linear variation of field with distance.

## 4 Summary

### 4.1 Emissions

| Standard                         | Test Description                                                                   | Result |
|----------------------------------|------------------------------------------------------------------------------------|--------|
| CFR 47 Part 18 (10-1-08 edition) | Conducted disturbance (AC mains port)<br>150kHz-30MHz, Limit as defined in 18.307  | Pass   |
|                                  | Radiated disturbance (enclosure port)<br>30MHz-24.5GHz, Limit as defined in 18.305 | Pass   |

### 4.2 Compliance statement

The Miele M6260 USA microwave oven, as tested was shown to meet the requirements of the tests listed in 4.1 of this report.

## 5 Appendices

### 5.1 Appendix 1 Conducted emission test method

#### 5.1.1 Test information

|                                |                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Standard</b>                | CFR 47 Part 18 (10-1-08 edition)                                                                |
| <b>YES Test Method</b>         | Based upon CEP19                                                                                |
| <b>Measurement uncertainty</b> | +/- 2.38dB                                                                                      |
| <b>Equipment Used</b>          | Rohde & Schwarz ESHS10 receiver<br>Rohde & Schwarz ESH3-Z5 LISN<br>Chase 9206 transient limiter |

The conducted emissions from the ac power port were assessed from both the live and neutral lines with respect to earth.

For this test the EUT was placed in a screened room and the test carried out using equipment compliant to CISPR 16.

Following an initial measurement made with a peak detector, any disturbances within 10dB of the limit line were measured with a quasi-peak and average detector respectively.

## 5.2 Appendix 2 Radiated emission test method (30MHz to 1000MHz)

### 5.2.1 Test information

|                                |                                                                                                                                                                             |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards</b>               | CFR 47 Part 18                                                                                                                                                              |
| <b>YES Test Method</b>         | CEP23                                                                                                                                                                       |
| <b>Measurement uncertainty</b> | ±5dB                                                                                                                                                                        |
| <b>Equipment Used</b>          | Rohde & Schwarz receiver<br>Bilog antenna<br>Rohde & Schwarz positioning mast and controller<br>EMCO 2m diameter turntable and controller<br>80cm non conducting test table |

#### Pre-compliance measurement in an anechoic chamber

The radiated emissions from the enclosure port of the EUT were initially assessed in an anechoic chamber at a test distance of 3m, using an X Wing Bilog antenna at a fixed height of 1.5m. The measurement was made using a peak detector and the emissions were assessed with the antenna in both horizontal and vertical polarisation on the four faces of the EUT i.e. 0°, 90°, 180° and 270°. The purpose of these preliminary investigations is to highlight any frequencies within 15dB of the applied limit line. Any identified frequencies inside the anechoic chamber are then maximised on the open area test site.

#### Compliance measurement on the Open Area Test Site (OATS)

Any disturbances within 10dB of the limit line, or as a minimum the 10 highest values found during the anechoic chamber scans, were measured with a quasi-peak detector on the OATS using equipment compliant with CISPR16. The EUT was rotated 360°, the antenna was orientated in both horizontal and vertical polarisation with the mast scanned from 1m to 4m to maximise the Quasi-Peak values at the identified frequencies.

### 5.3 Appendix 3 Radiated emission test method (1GHz to 24.5GHz)

#### 5.3.1 Test information

|                                |                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards</b>               | CFR 47 Part 18 (10-1-08 edition)                                                                                                      |
| <b>YES Test Method</b>         | CEP27                                                                                                                                 |
| <b>Measurement uncertainty</b> | ±4.86dB                                                                                                                               |
| <b>Equipment Used</b>          | Anritsu spectrum analyser<br>HP Pre-amplifier<br>Horn antenna<br>EMCO turntable and controller<br>80cm non conducting (plastic) table |

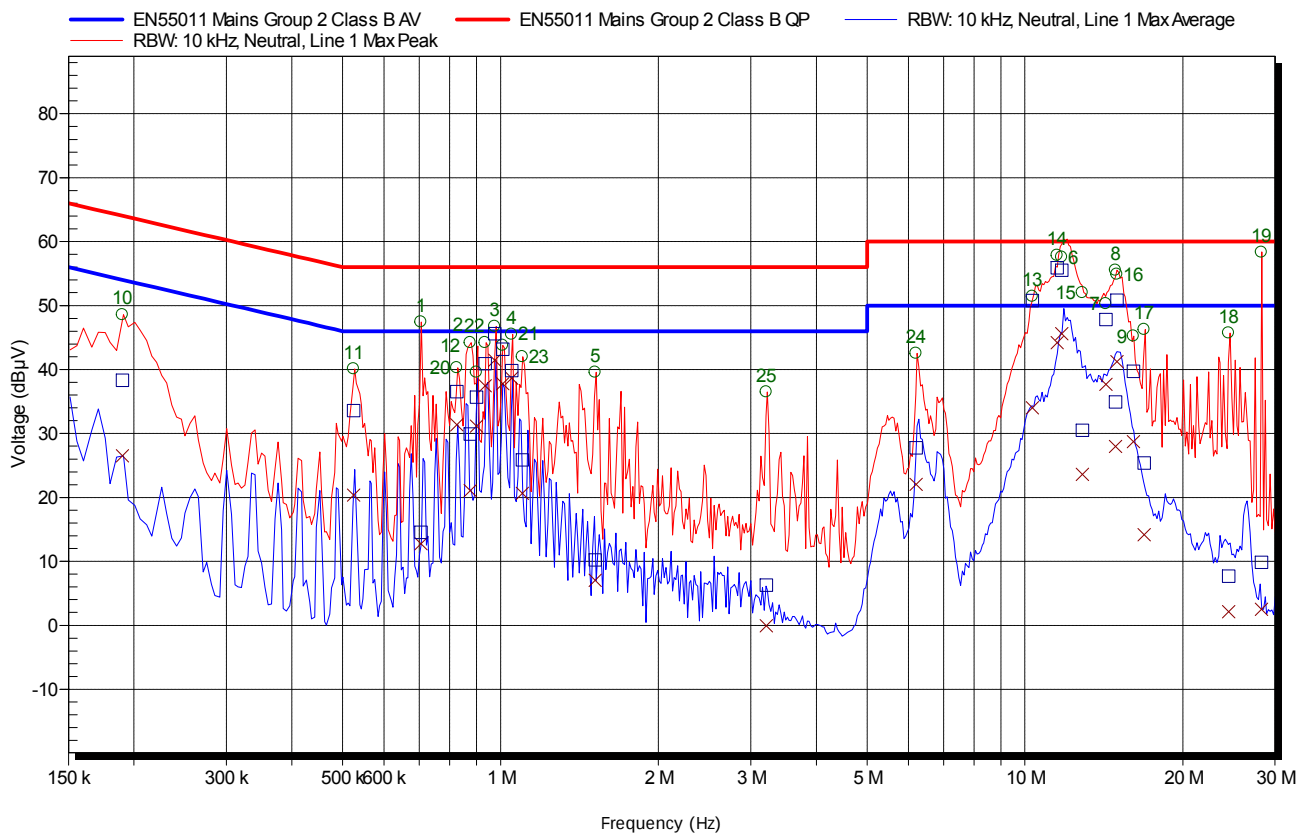
#### Pre-compliance measurement in an anechoic chamber

The radiated emissions from the enclosure port of the EUT were initially assessed in an anechoic chamber at a test distance of 3m, using a horn antenna at a fixed height, directed towards the radiation centre of the EUT. The measurement was made using a peak detector and the emissions were assessed with the antenna in both horizontal and vertical polarisation with the EUT rotated 360°.

#### Compliance measurement on the Open Area Test Site (OATS)

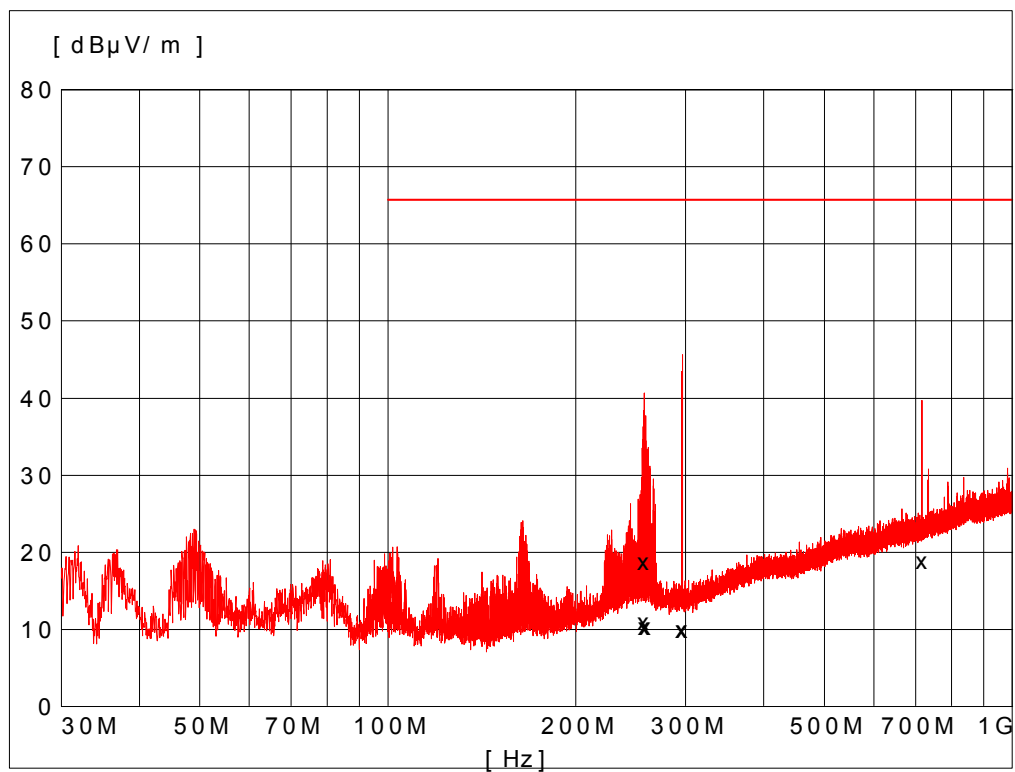
The highest values found during the anechoic chamber scans, were measured with an average detector on the OATS. The EUT was rotated 360°, the antenna was orientated in both horizontal and vertical polarisation with the mast scanned from 1m to 4m to maximise the values at the identified frequencies.

## 5.4 Appendix 4 Conducted emission test results

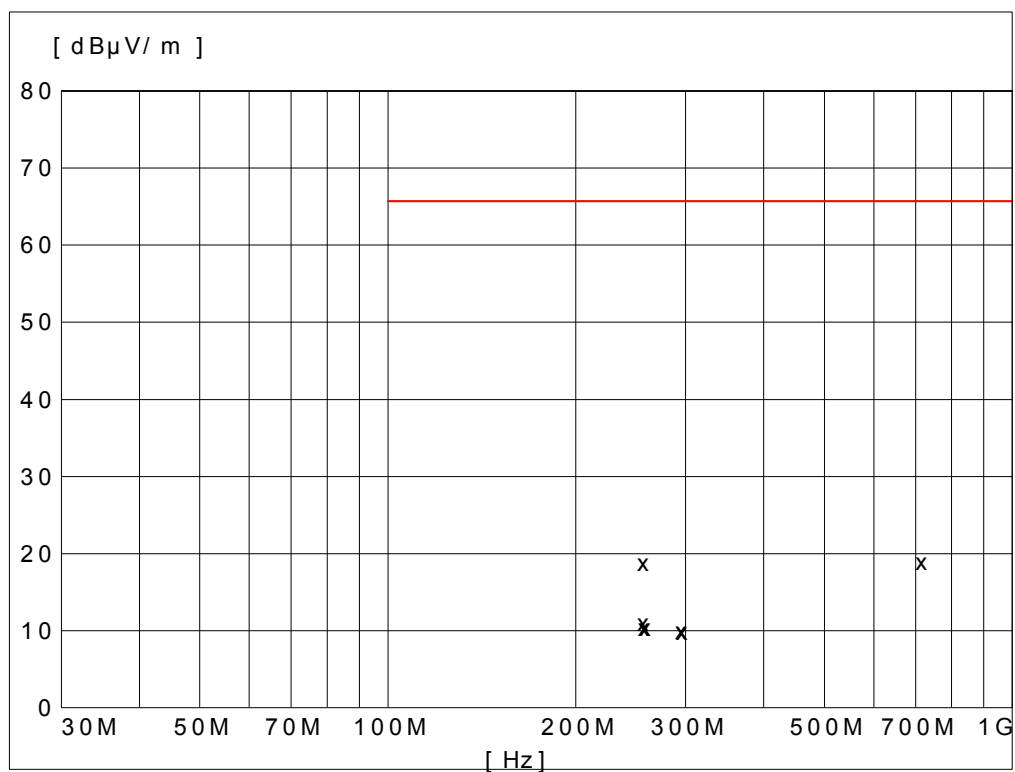


**Figure 5.4.1 Conducted emissions results, (C01).**

## 5.5 Appendix 5 Radiated emission test results



**Figure 5.5.1 Radiated emissions results (R01, Peak Detector Chamber – information only).**



**Figure 5.5.2 Radiated emissions results (R02, OATS) – Maximised Quasi Peak data.**

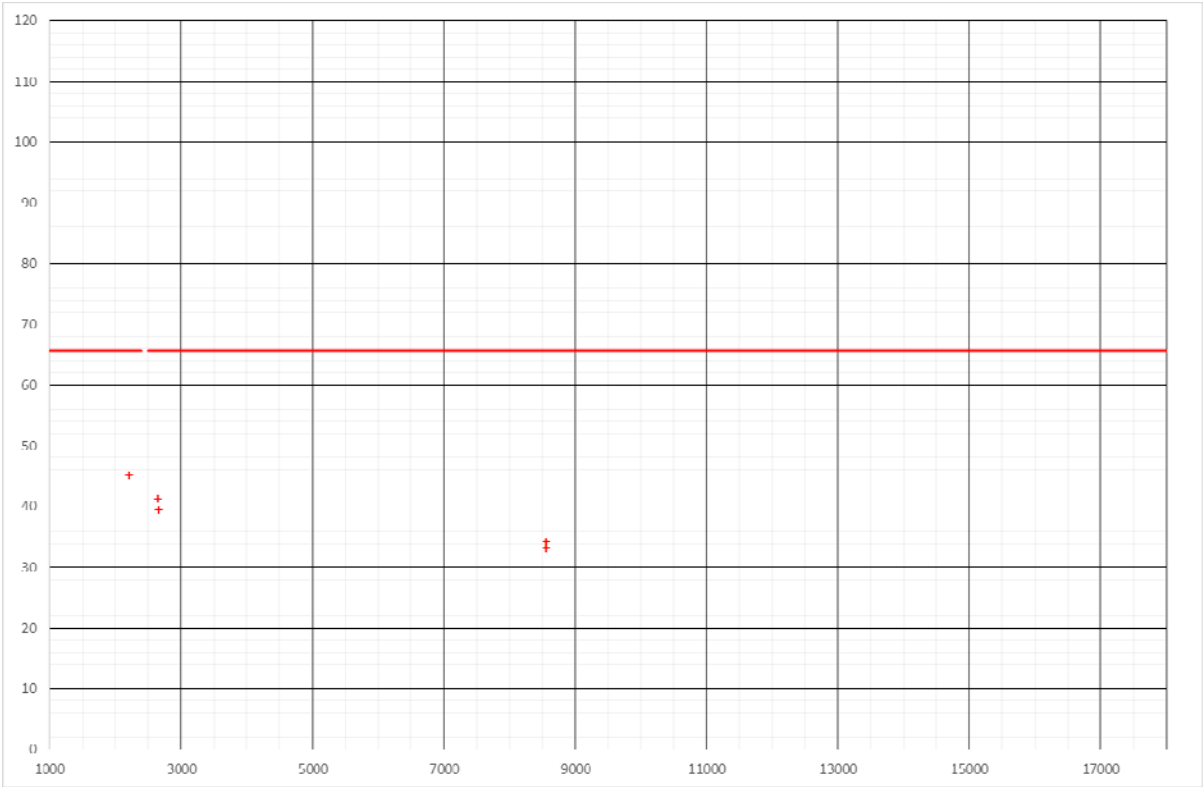


Figure 5.5.3 Radiated emissions Average results Vertical 1-18GHz (R03)

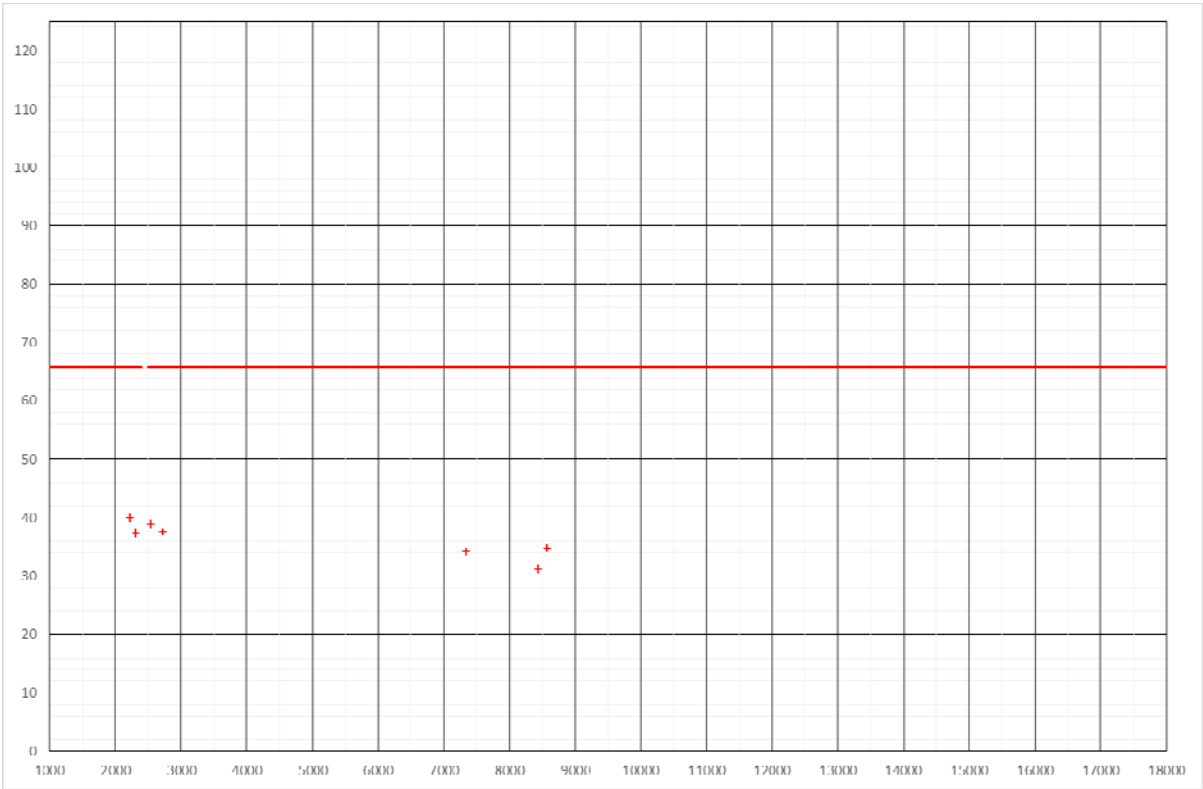
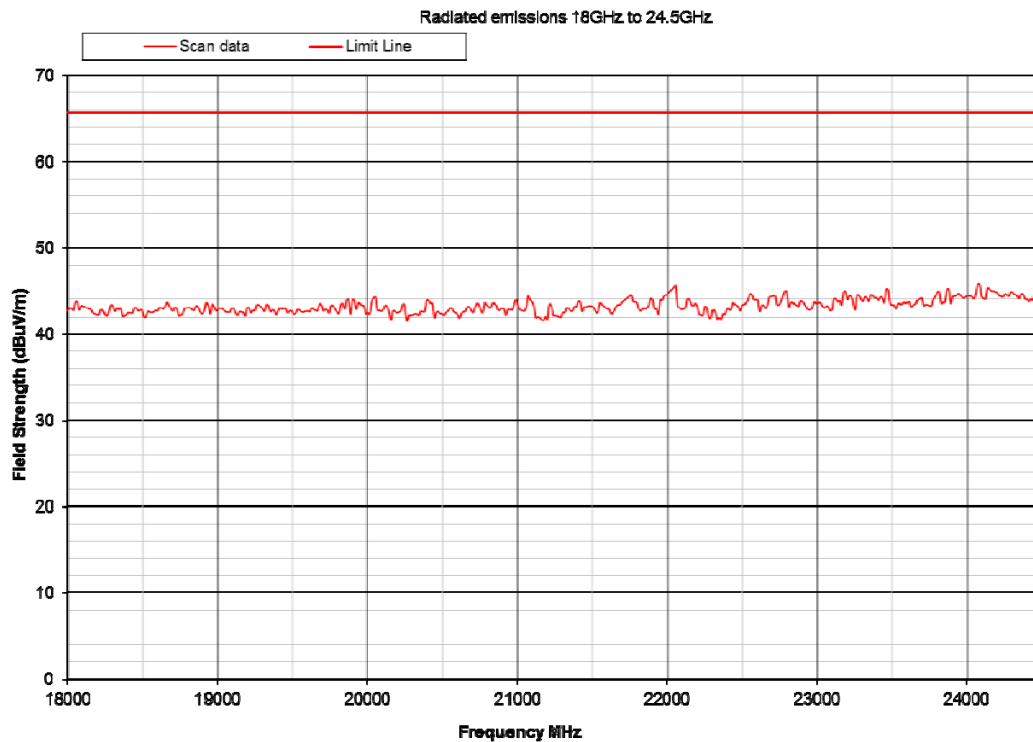
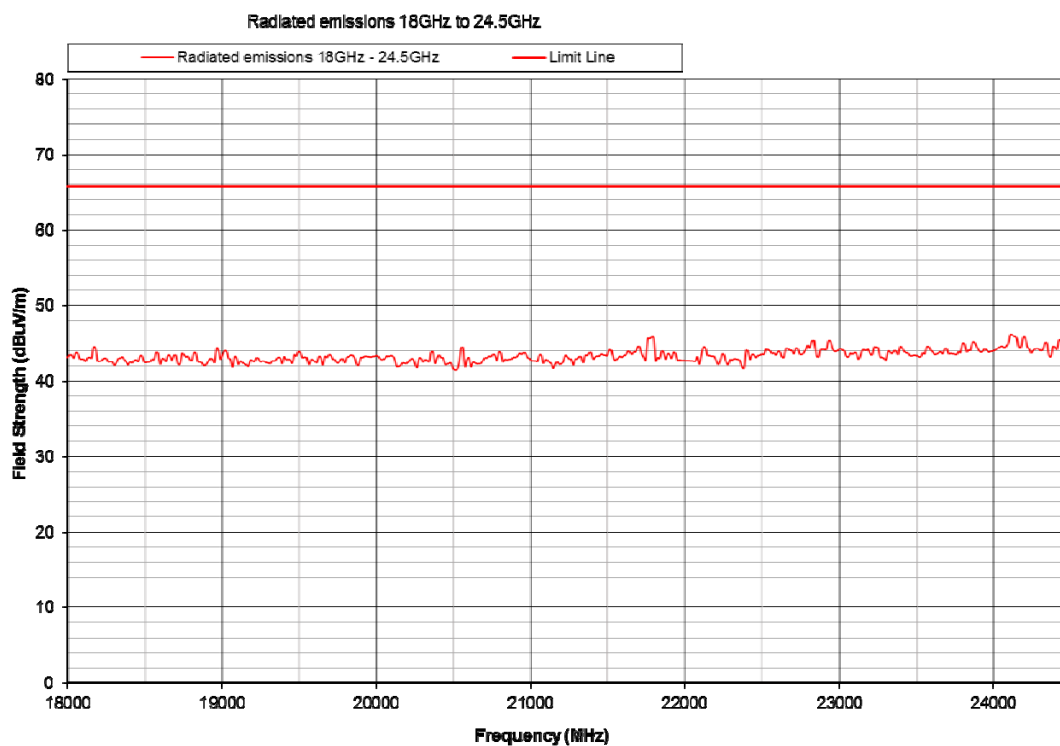


Figure 5.5.4 Radiated emissions Average results horizontal 1-18GHz (R04)



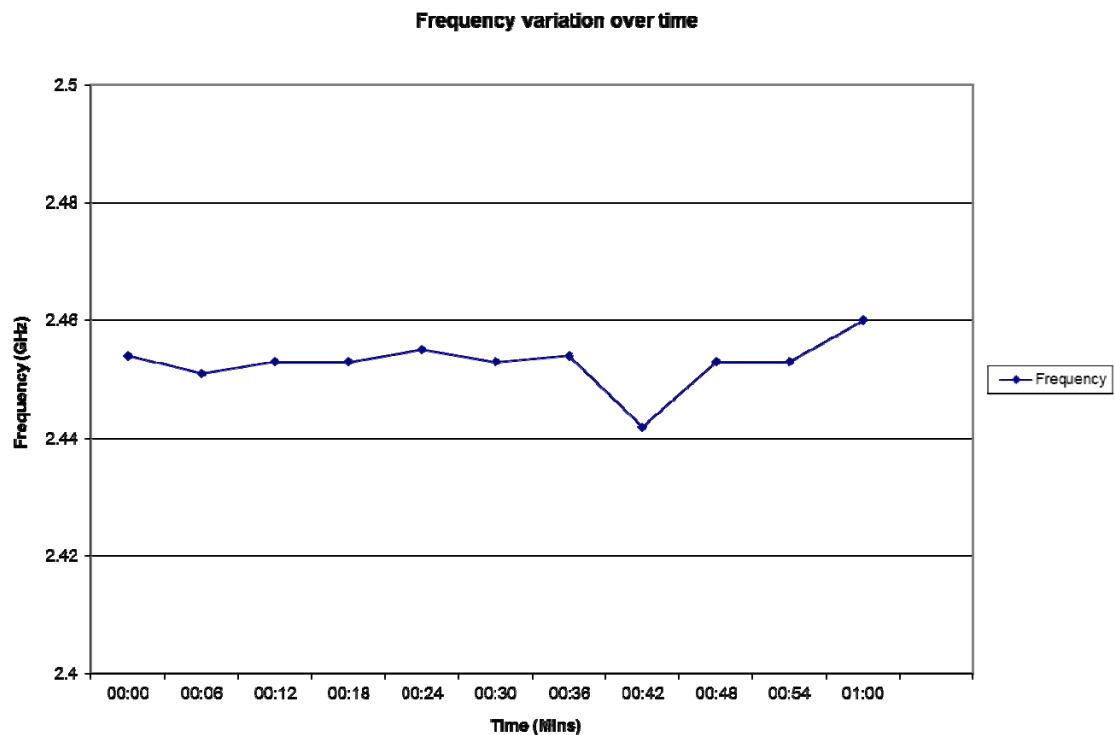
**Figure 5.5.5 Radiated emissions, Peak scan, Vertical, 18GHz to 24.5GHz**



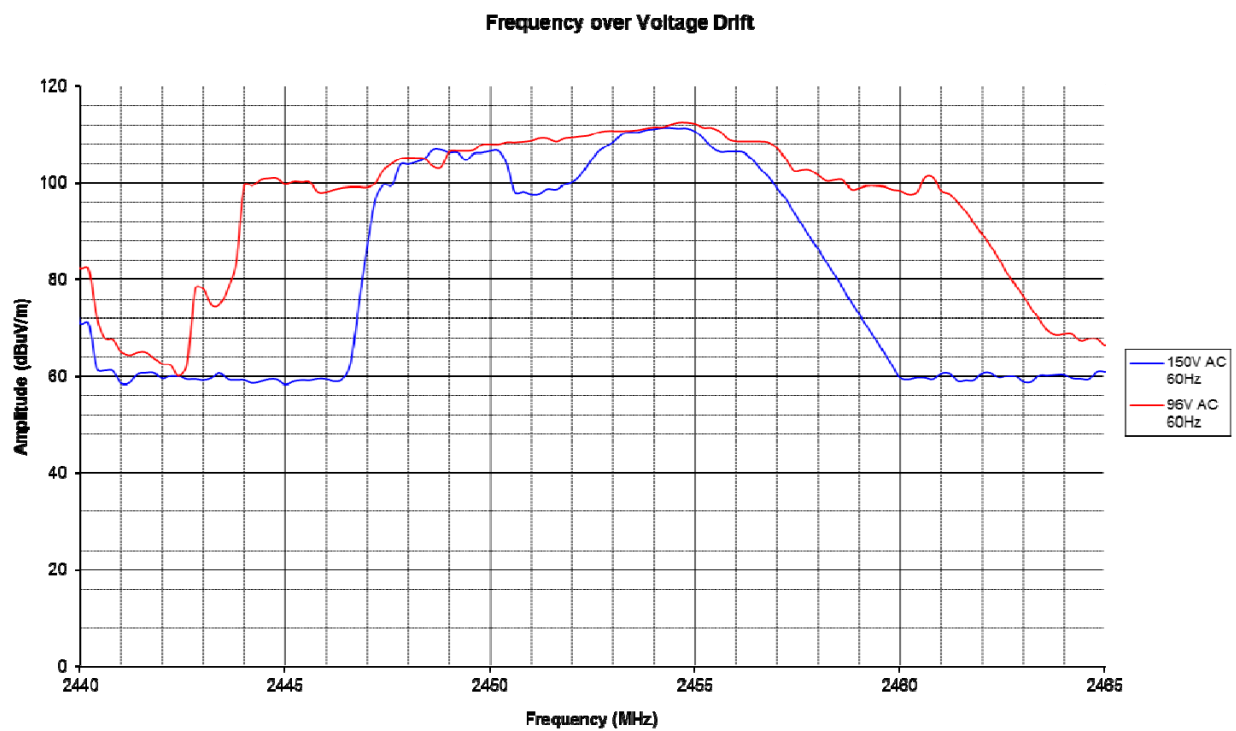
**Figure 5.5.6 Radiated emissions, Peak scan, Horizontal, 18GHz to 24.5GHz**

Note: The graphs shown in this Appendix contain the limit line extrapolated for a 3m measurement distance

## 5.6 Appendix 6 Frequency variation measurements



*Figure 5.6.1 Frequency variation over time.*



*Figure 5.6.2 Frequency variation over voltage.*

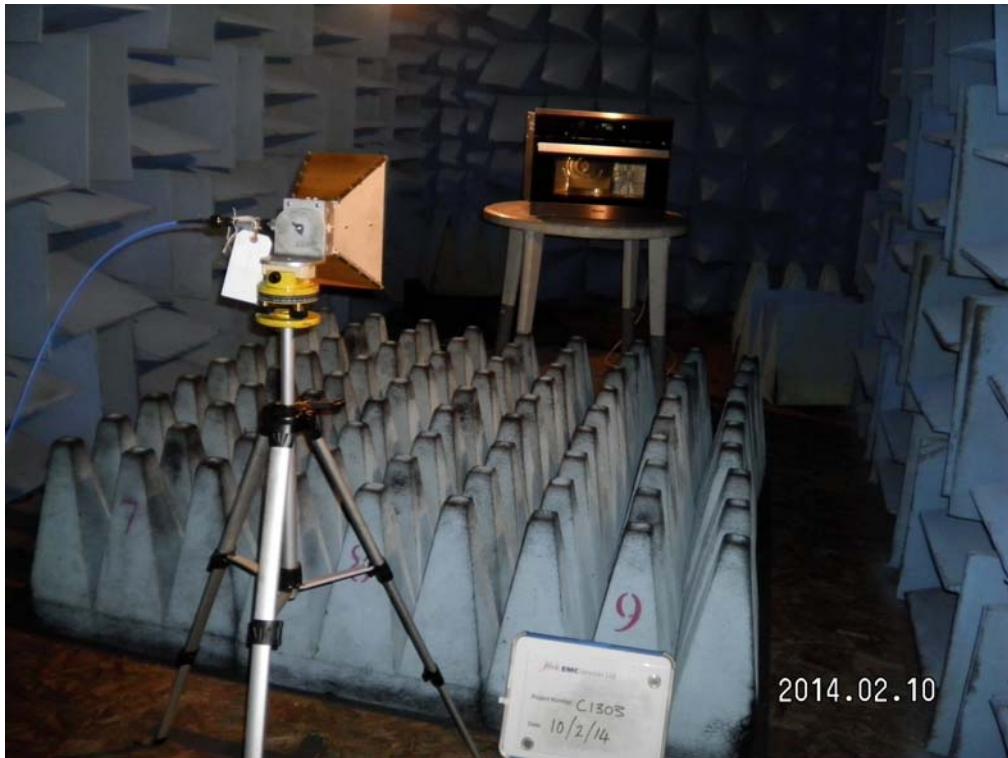
## 5.7 Appendix 7 EUT test configurations



**Photograph 5.7.1 Conducted emissions testing.**



**Photograph 5.7.2 Radiated emissions testing 30MHz-1GHz (Anechoic chamber)**



***Photograph 5.7.3 Radiated emissions testing above 1GHz (Anechoic chamber)***

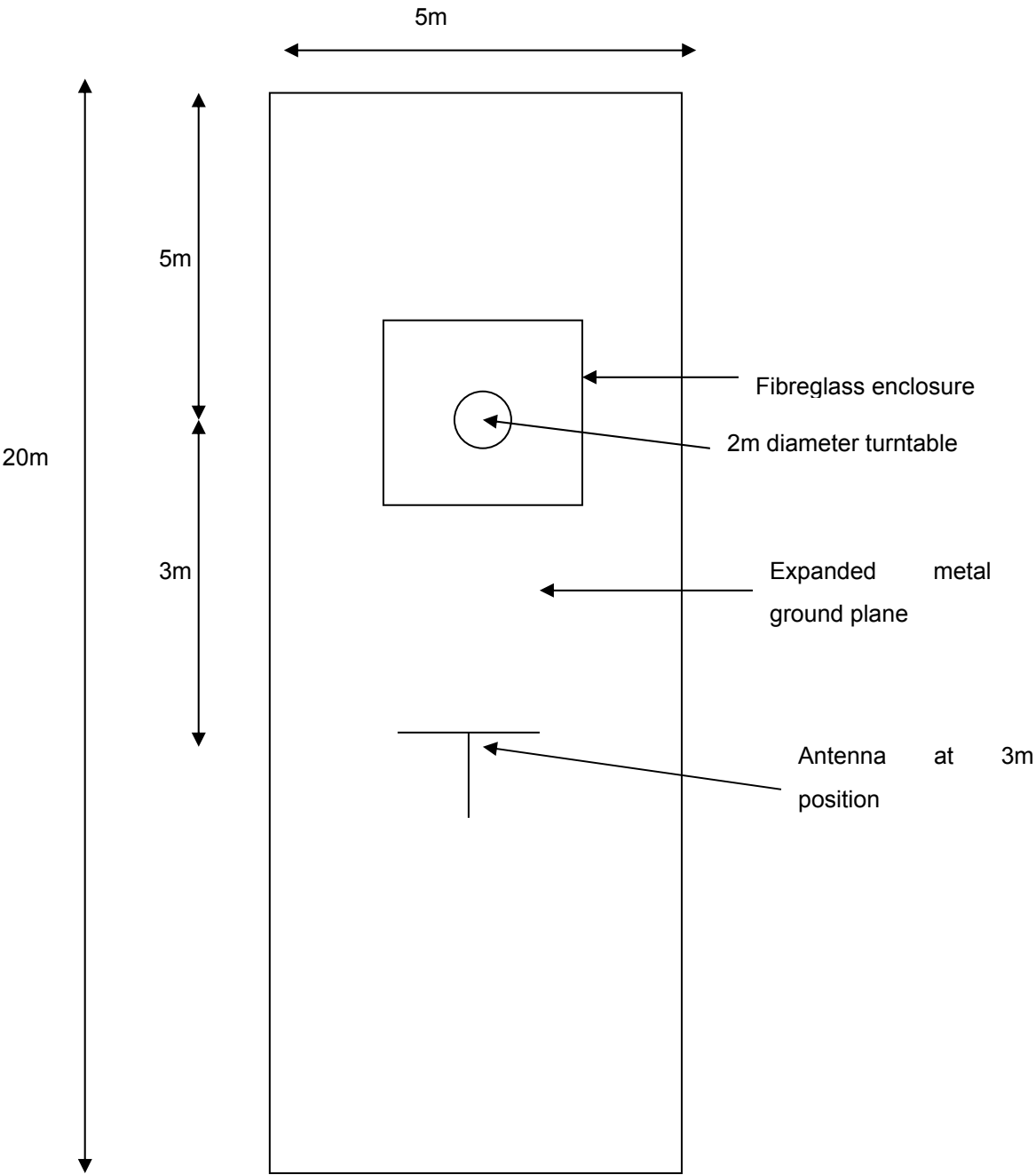
## 5.8 Appendix 8 Equipment used

| Equipment                        | No.   | Cal Type | Used | Equipment                            | No.   | Cal Type | Used |
|----------------------------------|-------|----------|------|--------------------------------------|-------|----------|------|
| AR FM2000 Field Probe Set        | 78211 | UKAS     |      | R&S SMT06 Signal Generator           | 78653 | UKAS     |      |
| Blackstar Function Generator     | 78200 | In-house |      | Schaffner NSG1025 EFT/B Gen          | 78136 | UKAS     |      |
| Chase Van Veen Loop              | 78217 | In-house |      | Schaffner NSG2025 EFT/B Gen          | 78006 | UKAS     |      |
| Chase CBL 6111A Bilog Antenna    | 78167 | UKAS     |      | Schaffner NSG2050 + PNW2055          | 78178 | UKAS     |      |
| Chase CBL 6112B Bilog Antenna    | 78708 | UKAS     | ✓    | R&S SMT06 Signal Generator           | 79124 | UKAS     |      |
| Chase CBL 6140 X-Wing Antenna    | 78310 | In-house | ✓    | Lem-Heme Current Probe               | 78482 | NCS      |      |
| Chase CFL 9206 Transient Limiter | 78101 | In-house |      | Schaffner NSG435 ESD Simulator       | 78008 | UKAS     |      |
| Chase CFL 9206 Transient Limiter | 78087 | In-house | ✓    | Schaffner INA 172 surge CDN          | 78462 | In-house |      |
| Chase HLA6120 Loop Antenna       | 78128 | NPL      |      | Schaffner NSG650 + CDN113            | 78478 | UKAS     |      |
| Chase MDS21 Absorbing Clamp      | 78195 | UKAS     |      | Schaffner NSG2050 + PNW2056          | 78458 | UKAS     |      |
| Fischer FCC-801-M1-16 CDN        | 78240 | UKAS     |      | Schaffner voltage probe CVP2200      | 78596 | UKAS     |      |
| Fischer FCC-801-M2-25 CDN        | 78241 | UKAS     |      | Schaffner current probe SMZ11        | 78569 | UKAS     |      |
| Fischer FCC-801-M2-16 CDN        | 78400 | UKAS     |      | Schaffner current probe              | 79020 | UKAS     |      |
| Fischer FCC-801-M3-16 CDN        | 78044 | UKAS     |      | Schaffner 40 ohm load                | 78570 | In-house |      |
| Fischer FCC-801-M3-25 CDN        | 78242 | UKAS     |      | Schaffner Chase CBL6111C             | 78707 | UKAS     |      |
| Fischer FCC-801-M4-25 CDN        | 78045 | UKAS     |      | Schaffner Chase CBL6112B             | 78708 | Manufac  |      |
| Emco 3115 Horn Antenna           | 78347 | UKAS     | ✓    | Schaffner INA 175 surge CDN          | 78461 | In-house |      |
| 3116 40GHz Horn Antenna          | 78951 | UKAS     | ✓    | Solar 9108-IN Current Probe          | 78545 | UKAS     |      |
| Fluke 45 Digital Multimeter      | 78655 | UKAS     |      | California Inst PACS-1 analyser      | 79135 | UKAS     |      |
| Fluke 85 Digital Multimeter      | 78375 | UKAS     |      | California Inst 5000 iX Power supply | 79136 | UKAS     | ✓    |
| Gould 475 Digital Oscilloscope   | 78057 | UKAS     |      | Fischer FCC-801-M3-25 CDN            | 79008 | UKAS     |      |
| HP LF spectrum analyser          | 79129 | UKAS     |      | Fischer FCC-801 M1-16 CDN            | 79001 | UKAS     |      |
| HP 8449B Pre-amplifier           | C0221 | UKAS     | ✓    | EM Test UCS 500                      | 79059 | UKAS     |      |
| Anritsu MS2667C Analyser         | 78490 | UKAS     | ✓    | CDN 118                              | 78460 | NCS      |      |
| 2.4GHz notch filter              | 79178 | UKAS     | ✓    | Schaffner clamp                      | 79045 | In-house |      |
| ISO-TECH 9053 LCR meter          | 78487 | NCS      |      | Keytek AC line qualifier             | 78350 | UKAS     |      |
| Keytek EMC Pro                   | 78348 | UKAS     |      | Spitzenberger & Spies                | 78131 | NCS      |      |
| Keytek MZ-15/EC ESD Simulator    | 78133 | UKAS     |      | Arb Waveform Generator               | 79116 | In-house |      |
| LEM HEME clamp                   | 78483 | NCS      |      | 6dB attenuator                       | 79073 | In-house |      |
| Intek Function Generator         | 78673 | UKAS     |      | HP Dynamic Signal Analyzer           | 79121 | In-house |      |
| Rolfe Heine NNB 32A LISN         | 78205 | UKAS     | ✓    | Magnetic immunity loop (multi)       | 78722 | In-house |      |
| R&S ESH3-Z5 LISN                 | 78119 | UKAS     |      | Wandel & Goltermann EFA-2            | 78551 | Manufac  |      |
| R&S ESHS 10 Receiver             | 78035 | UKAS     |      | Schaffner EFT/B clamp                | 79184 | In-house |      |
| R&S ESHS10 Receiver              | 79182 | UKAS     | ✓    | Wandel & Goltermann EMC 20           | 79005 | Manufac  |      |
| R&S ESVS 30 Receiver             | 79183 | UKAS     | ✓    | AR50S/G4A Amplifier                  | 79095 | NCS      |      |
| R&S ESVS 10 Receiver             | 78036 | UKAS     |      | AR FM2000 Field Probe Set            | 78108 | UKAS     |      |
| R&S ESVS 30 Receiver             | 78107 | UKAS     | ✓    | 650V Transformer                     | 78123 | In-House |      |
| Schaffner Profline               | 78374 | UKAS     |      | HCP                                  | 79099 | In-house |      |
| Variac                           | 78192 | In-house |      | VCP                                  | 79102 | In-house |      |
| MV 2616                          | 79149 | In-house |      | EFT 503                              | 79132 | UKAS     |      |
| Schaffner Discontinuous Analyser | 79215 | UKAS     |      | Fischer clamp                        | 78043 | In-house |      |
| Variac                           | 78688 | In-house |      | Thermometer and K-Type Thermocouple  | 79242 | UKAS     | ✓    |

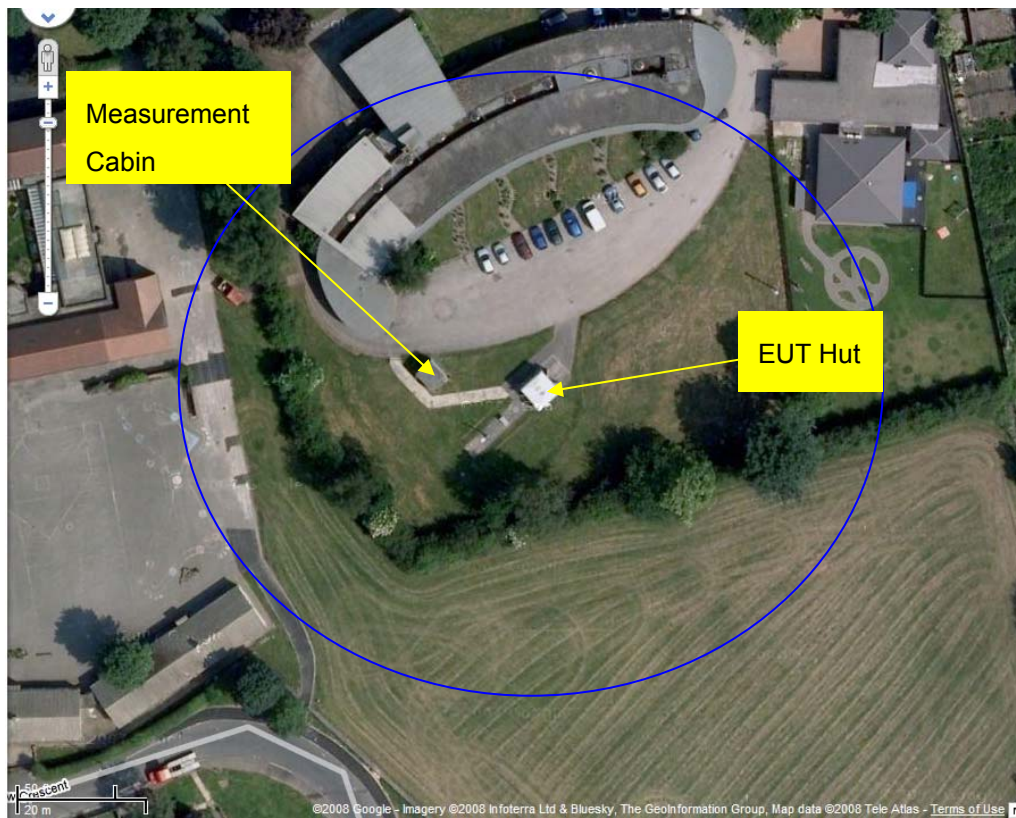
NCS-Not on calibration schedule

## 5.9 Appendix 9 Open Area Test Site Description

The Open Area Test Site (OATS) is constructed of welded expanded galvanised steel “Expamet” with major aperture size of approximately 28mm. The ground plane was approximately 20mx5m fitted with a 2m diameter flush mounted turntable, covered with a fibreglass enclosure approximately 4.3m x 4.3m x 3.5m high. This enclosure is fitted with double doors at both the front and rear, and has an apex height of approximately 3.5m. The site was fitted with a Rohde and Schwarz antenna mast, which was bolted to the ground plane at a 3m measurement position. No other objects were located within the CISPR ellipse. A “portacabin” type building (approximately 3.9mx3.3m) was located to one side of the site, approximately 8.6m from the edge of the ground plane and containing the measuring equipment.



**Open Area Test Site Dimensions**



***Open area test site, via Google, showing all structures within the estimated 5 times the distance between the measuring set and the EUT.***

**5.10 Appendix 10 Calibration data**

| <b>Yes No.</b> | <b>Equipment description</b>                                                     | <b>Calibration Date</b> | <b>Calibration Frequency</b> |
|----------------|----------------------------------------------------------------------------------|-------------------------|------------------------------|
| 79182          | 9kHz-30MHz R&S ESHS 10 Receiver                                                  | 27/12/2013              | 12 Months                    |
| 78205          | Rolfe Heine 32A LISN                                                             | 26/07/2013              | 24 Months                    |
| 78087          | CFL9206 Transient limiter                                                        | 09/12/2013              | 12 Months                    |
| 79183          | 30MHz-1000MHz R&S ESVS 30 Receiver                                               | 25/09/2013              | 12 Months                    |
| 78107          | 30MHz-1000MHz R&S ESVS 30 Receiver                                               | 27/12/2013              | 12 Months                    |
| 78310          | Chase X-Wing Bilog antenna- Used for initial pre-compliance chamber measurements | 09/01/2013              | 12 Months                    |
| 78708          | CBL6112B Green Bilog antenna – used for OATS tests                               | 17/12/2013              | 12 Months                    |
| 78347          | EMCO 3115 horn antenna                                                           | 02/01/2014              | 24 Months                    |
| 78951          | EMCO 3116 40GHz horn antenna                                                     | 14/02/2013              | 60 Months                    |
| 78490          | Anritsu MS2667C Spectrum analyser                                                | 27/12/2013              | 12 Months                    |
| C0221          | HP 8449B Pre-amplifier                                                           | 26/11/2012              | 24 Months                    |
| 79178          | Microtronics BRM13134 2.4GHz Notch filter                                        | 23/12/2013              | 24 Months                    |
| 79242          | Digital Thermometer and K-Type Thermocouple                                      | 01/10/2013              | 12 Months                    |

**5.11 Appendix 11 Test Report History**

| Issue | Modification details                                                                     |
|-------|------------------------------------------------------------------------------------------|
| 1     | Original issue of the test report                                                        |
| 2     | Re-measurement of the output power. Results amended and Limit line re-scaled.            |
| 3     | Radiated emissions limits amended to the correct value. Horn Antenna Cal date corrected. |