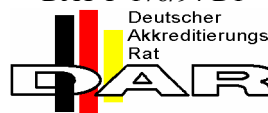


Recognized by the  
Federal Communications Commission  
**Anechoic chamber registration no.: 90462 (FCC)**  
**Anechoic chamber registration no.: IC 3463A-1**  
TCB ID: DE 0001



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



Accredited Bluetooth<sup>®</sup> Test Facility (BQTF)

**Test report no. :** 2-4785-01-09/07  
**Applicant :** Aston Martin Lagonda Ltd  
**Type :** Plastic - RKE Key Fob  
**Test Standard :** FCC Part 15 / RSS210 issue 7  
**FCC ID :** OHT7003186  
**Certification No. IC:** 5461A-7003186

*The Bluetooth word mark and logos are owned by the Bluetooth SIG,  
Inc. and any use of such marks by Cetecom ICT is under license*

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## 1 General information

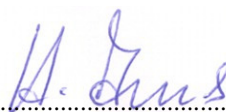
### 1.1 Administrative data of the test facility

#### 1.1.1 Identification of the testing laboratory

|                                     |   |
|-------------------------------------|---|
| Company name:                       | Cetecom ICT Services GmbH   |
| Address:                            | Untertürkheimerstr. 6-10<br>D-66117 Saarbruecken<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>Harro Ames<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  
(Harro Ames)



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

## 1.3 Details of Applicant

Name : Aston Martin Lagonda Limited  
Address : Banbury Road  
City : Gaidon, Warwick, CB35 0DB  
Country : England  
Phone : +44 (0) 1926 644 177  
Fax : +44 (0) 1926 644 001  
Contact : --  
Phone : --  
Fax : --  
e-mail : --

## 1.4 Details of Manufacturer

Name : Stratec Security Group  
Address : 3333 West Good Hope Road  
City : Milwaukee, WI 53209  
Country : USA  
Phone : +1 414 247 3333  
Fax : +1 414 247 3329  
Contact : --  
Phone : --  
Fax : --  
e-mail : --

Date of receipt of application : 2007-10-11  
Date of receipt of test item : 2007-10-11  
Date(s) of test : 2007-10-15 to 2007-10-16  
Date of report : 2008-01-15

## 1.5 Test Item

Type of equipment : Automotive Key Transmitter Fob  
Model name : Plastic - RKE Key Fob  
7003186  
Manufacturer : Strattec Security Group  
Address : 3333 West Good Hope Road  
City : Milwaukee, WI 53209  
Country : USA  
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: 315 MHz  
Field Strength (at what distance) : 1096.5  $\mu$ V/m (60.8 dB $\mu$ V/m) in 3m  
Occupied Bandwidth (99% BW) : 240kHz  
Type of Modulation : A1D  
Antenna Information : printed loop antenna  
Emission Designator (TRC-43) : 240KA1D  
Transmitter Spurious (worst case) : 42.7dB $\mu$ V/m in 3m (1575 MHz)  
Receiver Spurious (worst case) : n.a.  
IC no. : Plastic housing : OHT7003186  
FCC ID : Plastic housing : 5461A-7003186

### 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 :

2007-10-16

RSC 8414

Harro Ames



Date

Section

Name

Signature

## 1.6 Test Setup

The test was performed with a sample which has a housing completely made of plastic.

## 1.7 Test Specifications

|             |                         |
|-------------|-------------------------|
| <b>FCC:</b> | <b>CFR Part 15.231</b>  |
| <b>IC:</b>  | <b>RSS 210, Issue 7</b> |

## 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 ) | RSS-GEN                             | YES                    | pass    |
| 4.2                    | § 15.231 (a)<br>Timing of the transmitter (release within 5 seconds)     | A1.1.1.(a)                          | YES                    | pass    |
| 4.3                    | § 15.231 (b)<br>FIELDSTRENGTH OF FUNDAMENTAL                             | A1.1.2 (1)                          | YES                    | pass    |
| 4.4                    | § 15.231 (b)<br>FIELDSTRENGTH OF HARMONICS and SPURIOUS                  | A1.1.2 (1)                          | YES                    | pass    |
| 4.5                    | § 15.231 (c)<br>Occupied bandwidth                                       | A1.1.3                              | YES                    | pass    |

### 3 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 4 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 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 conform with ANSI C63.2-1996 item 15.

- 9 kHz - 150 kHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
- 150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
- 30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, biconical antenna.
- 200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna.
- >1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn.

All measurement settings are according to FCC 15.209 and 15.207



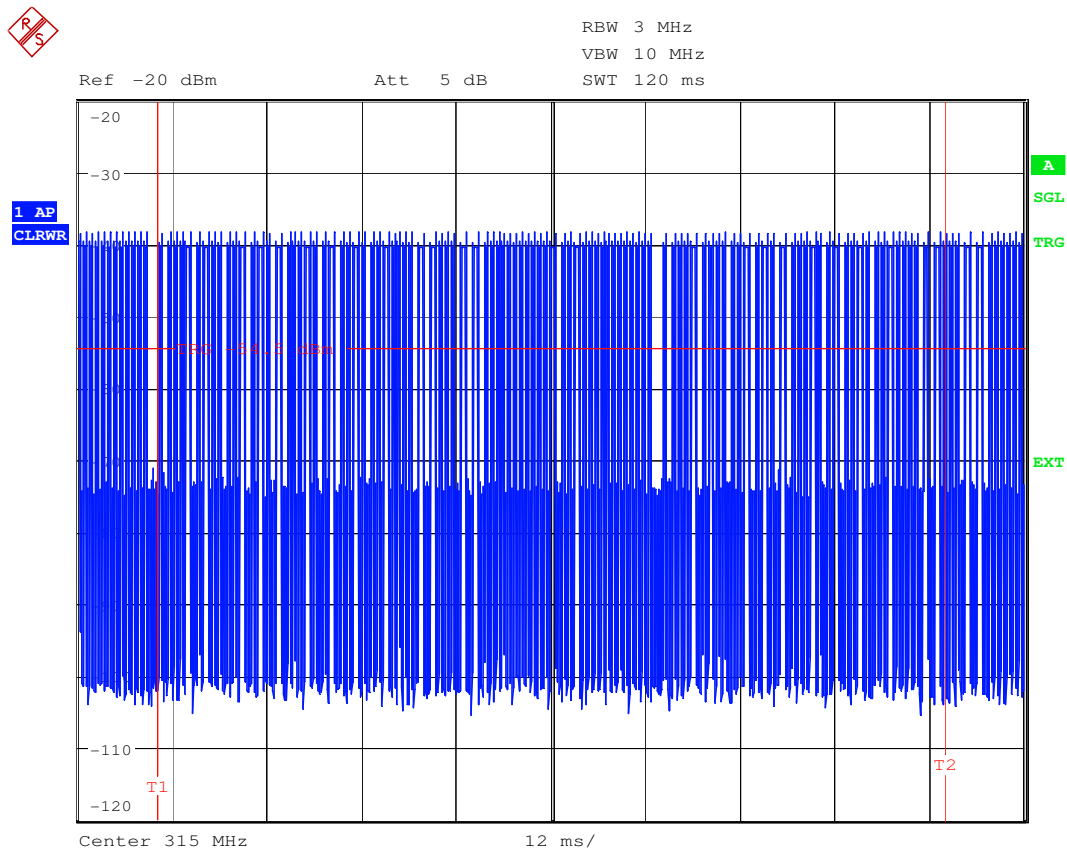
## 4 FCC Part 15 Subpart C

### 4.1 Timing of the transmitter

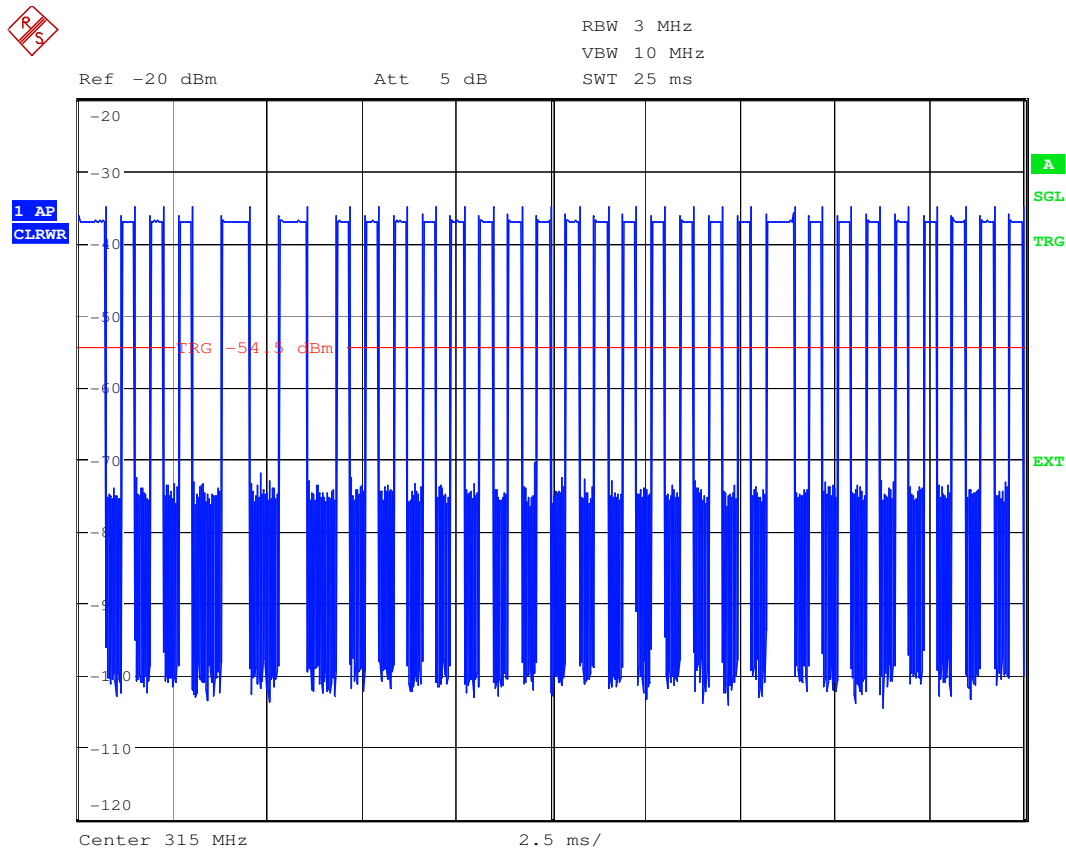
#### Reference

|      |                                |
|------|--------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.35 (c) |
| IC:  | RSS-GEN                        |

#### Duty cycle:



Date: 16.OCT.2007 08:15:10



Date: 16.OCT.2007 08:15:55

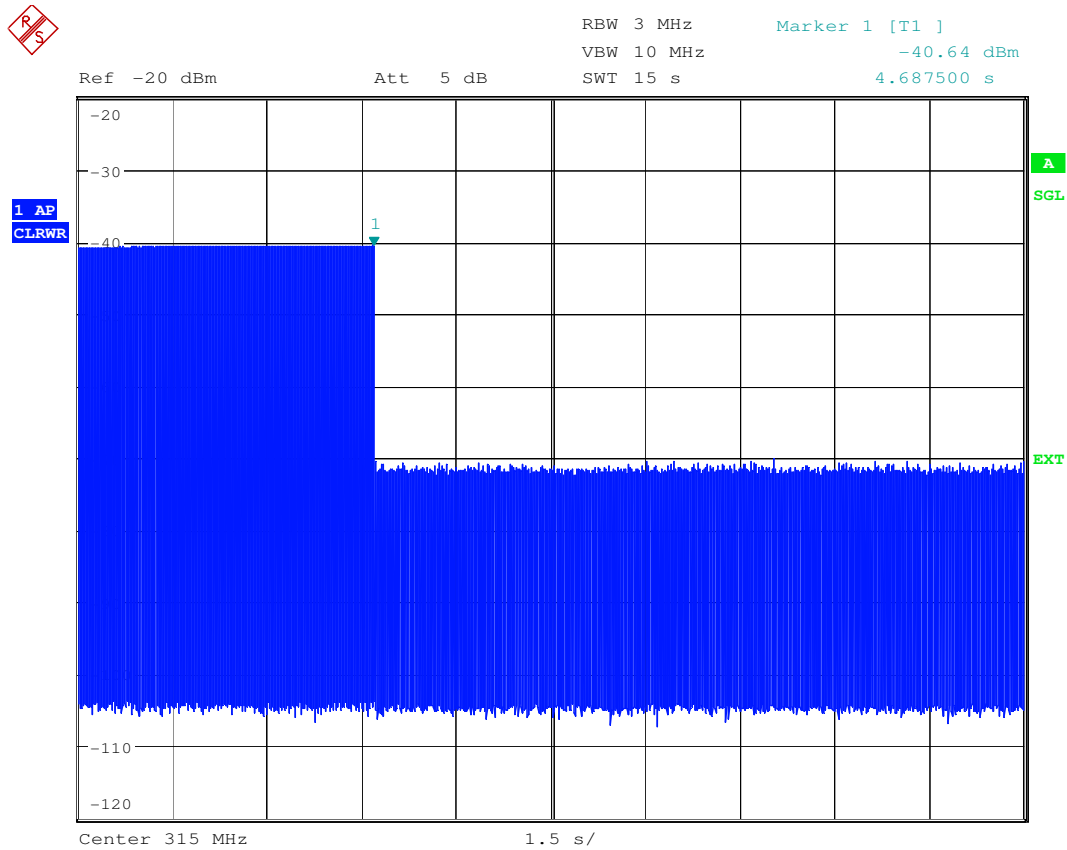
The plots show that within 100ms there is a continuously pulsed emission with a duty cycle of ~50%.

The calculated correction factor from peak to average is  $20 \cdot \log(0.5) = -6$  dB

Limits: § 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 Timing of the transmitter (Release time)



Date: 16.OCT.2007 08:18:31

**The transmitter stops immediately after releasing the button.**

### 4.3 Field Strength of the Fundamental

#### Reference

|      |                                 |
|------|---------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.231 (b) |
| IC:  | RSS 210, Issue 7, A1.1.1.(a)    |

#### MAXIMUM OUTPUT POWER RADIATED (PEAK)

| TEST CONDITIONS   |                          | MAXIMUM POWER ( $\mu\text{V/m}$ )                 |    |    |
|---|--------------------------|---|----|----|
|   |                          | 315 MHz   | -- | -- |
| Frequency   |                          |   |    |    |
| $T_{\text{nom}}$ 23 °C  | $V_{\text{nom}}$ 3.0V DC | 1096.5 $\mu\text{V/m}$<br>60.8 dB $\mu\text{V/m}$ | -- | -- |
| Maximum deviation from output power under extreme test conditions (dBc) |                          | not applicable                                    | -- | -- |
| Measurement uncertainty   |                          | $\pm 3\text{dB}$                                  |    |    |

RBW/VBW : 1 MHz

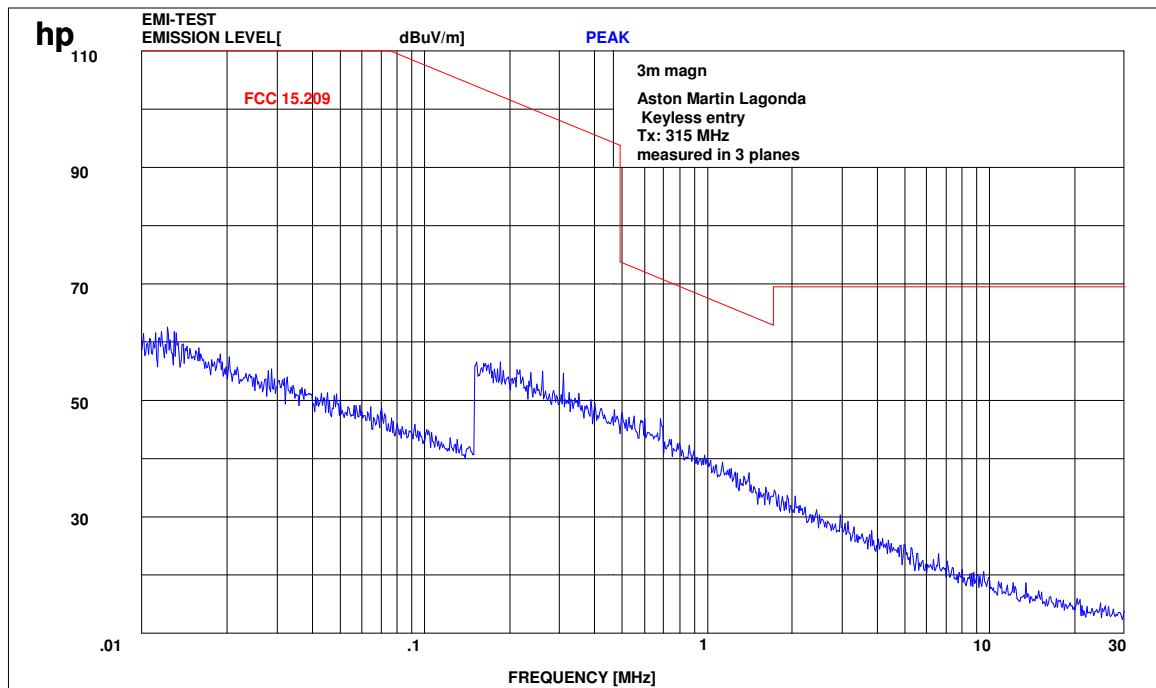
#### Limits (Average Values)

#### SUBCLAUSE § 15.231 (b)

| Fundamental Frequency (MHz) | Field strength of Fundamental ( $\mu\text{V/m}$ ) | Field strength of spurious( $\mu\text{V/m}$ ) |
|-----------------------------|---|---|
| 40.66 – 40.70               | 2,250   | 225   |
| 70-130                      | 1,250   | 125   |
| 130-174                     | 1,250 to 3,750                                    | 125 to 375                                    |
| 174-260                     | 3,750   | 375   |
| 260-470                     | 3,750 to 12,500                                   | 375 to 1,250                                  |
| Above 470                   | 12,500  | 1,250   |



**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

This measurement was done in 3 polarisation's, the plot shows the worst case

**Limits**

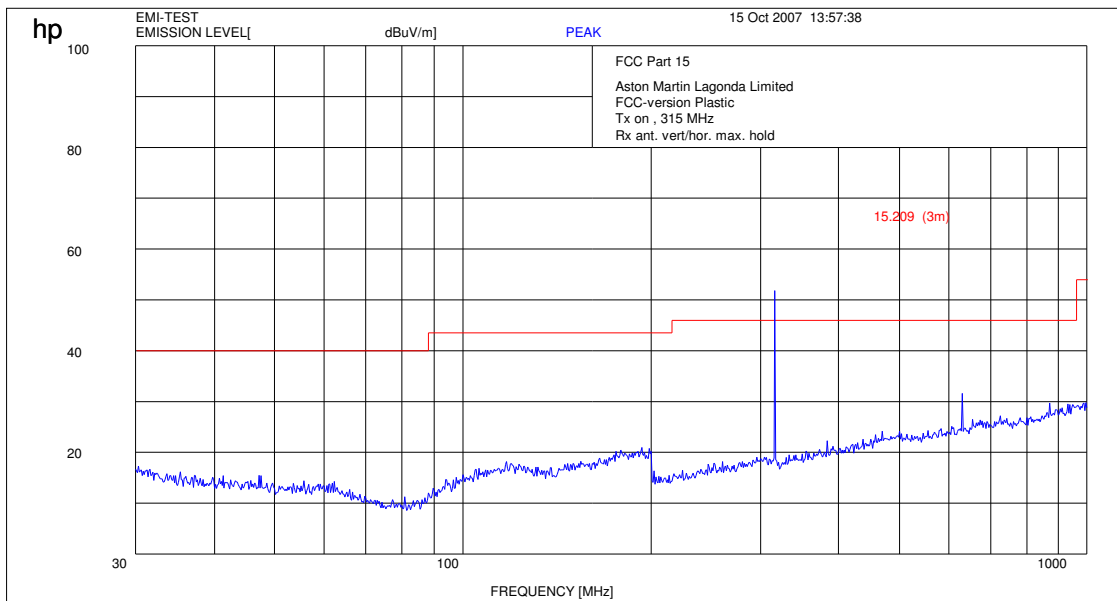
**SUBCLAUSE § 15.209**

| Frequency (MHz) | Field strength ( $\mu\text{V/m}$ ) | 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                        |

## TX with plastic housing

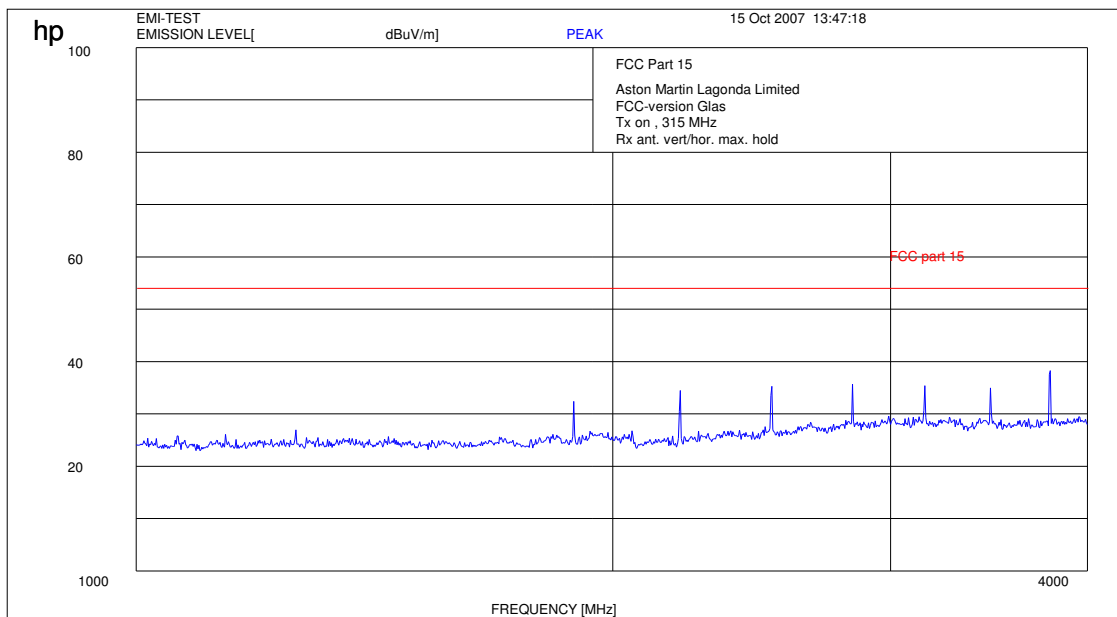
Plot 1:

Tx : 30 MHz - 1 GHz



Plot 2:

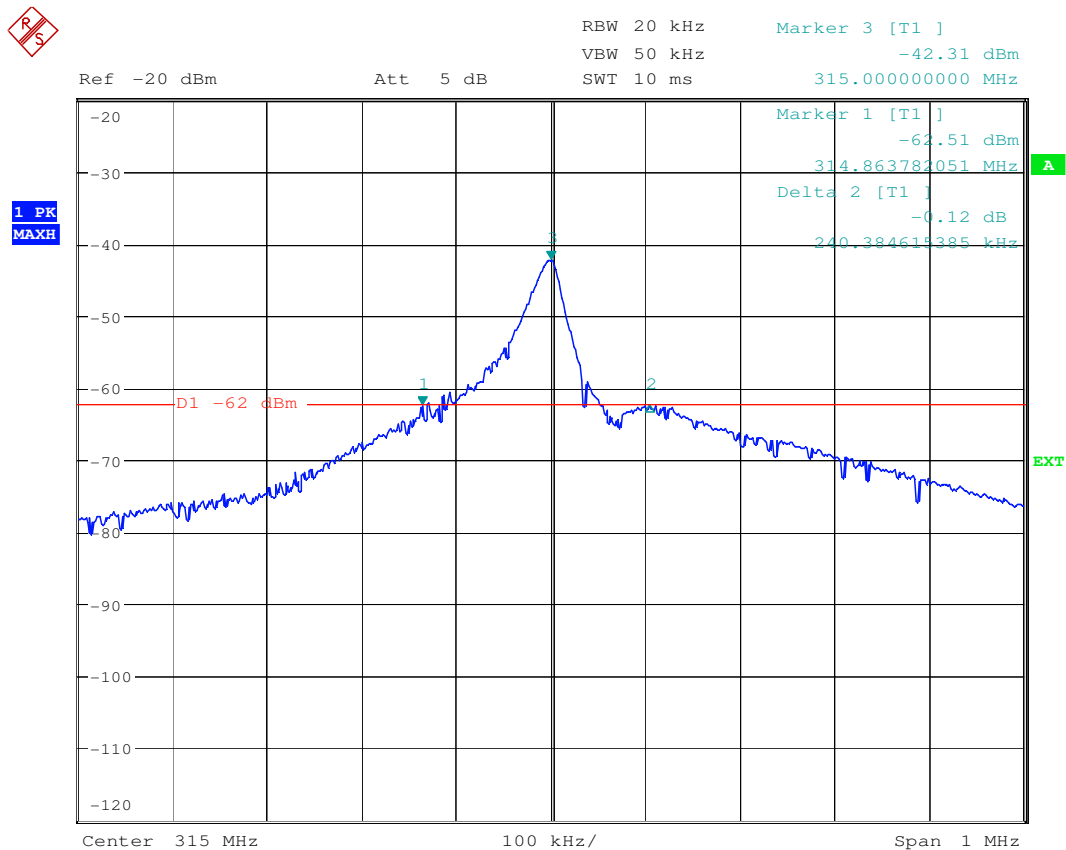
Tx : 1 GHz - 4 GHz



## 4.5 Occupied Bandwidth

### Reference

|      |                                 |
|------|---------------------------------|
| FCC: | CFR Part SUBCLAUSE § 15.231 (c) |
| IC:  | RSS 210, Issue 7 A1.1.3         |



Date: 16.OCT.2007 08:55:03

**OBW is 240.3 kHz**

### Limit:

The OBW shall not be wider than 0.25% of the centre frequency, here maximum 787.5 kHz.



## 5 Used Testequipment

All equipment is calibrated at least once every two years, analyzers and generators have been calibrated last time in August 2007.

### *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    | 26.10.2006                         | 12                 | 26.10.2007       |
| 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.) |                    |                  |
|    |                                  |            |                  |                  |                                    |                    |                  |

### *SRD Laboratory Room 002:*

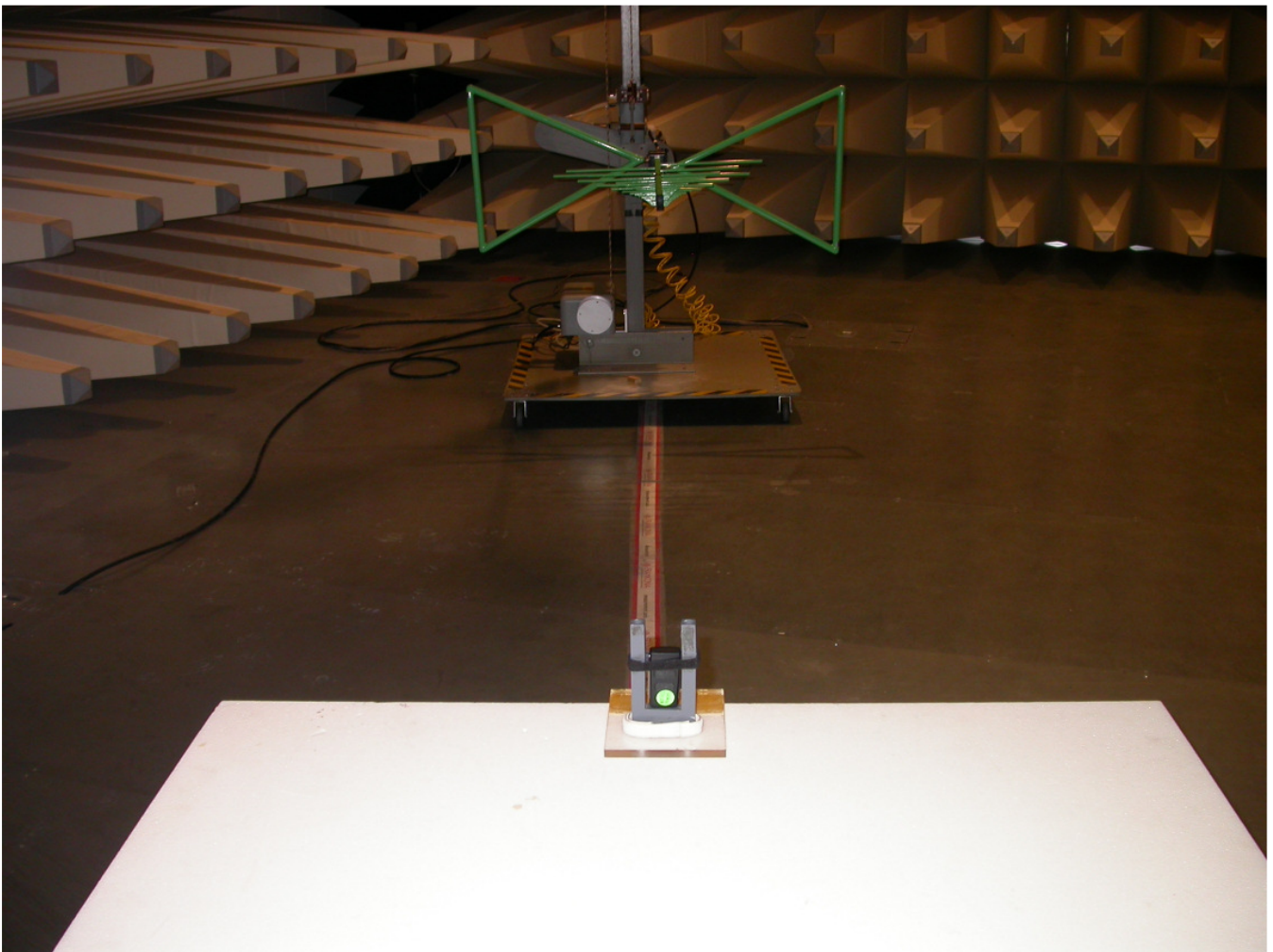
| No | Equipment/Type            | Manuf. | Serial Nr.    | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|----|---------------------------|--------|---------------|------------------|------------------|--------------------|------------------|
| 1  | System Controller 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<br>FSIQ-B10                 | R&S               | 835107/015     | 3000002681      | s.No.7     |    |            |
| 10 | RF-Generator SMIQ03<br>(B1 Signal)             | R&S               | 835541/056     | 3000002681-0002 | 01.08.2006 | 36 | 01.08.2009 |
| 11 | Modulation Coder<br>SMIQ-B20                   | R&S               | To 10          | 3000002681      | s.No.10    |    |            |
| 12 | Data Generator SMIQ-<br>B11                    | R&S               | To 10          | 3000002681      | s.No.10    |    |            |
| 13 | RF Rear Connection<br>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<br>(B2 Signal)             | R&S               | 835541/055     | 3000002681-0001 | 01.08.2006 | 36 | 01.08.2009 |
| 17 | Modulation Coder<br>SMIQ-B20                   | R&S               | To 16          | 3000002681      | s.No.16    |    |            |
| 18 | Data Generator SMIQ-<br>B11                    | R&S               | To 16          | 3000002681      | s.No.16    |    |            |
| 19 | RF Rear Connection<br>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<br>(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<br>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<br>Conditioning Unit SSCU | R&S               | 338864/003     | 3000002681-0006 | 01.08.2006 | 24 | 01.08.2008 |
| 30 | Laser Printer HP Deskjet<br>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-<br>B70                   | R&S               | 835355/009     | 3000002681      | s.No.7     |    |            |
| 35 | RSP programmable<br>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<br>Power Supply for EUT      | R&S               | 192.033.41     | 3000002681      |            |    |            |
| 38 | Climatic box VT 4002                           | Heraeus<br>Vötsch | 58566046820010 | 300003019       | 11.05.2007 | 24 | 11.05.2009 |
| 39 | Signaling Unit CMU200                          | R&S               | 832221/0055    | 300002862       | 12.01.2006 | 24 | 12.01.2008 |
| 40 | Power Splitter 6005-3                          | Inmet<br>Corp.    | none           | 300002841       | 23.12.2006 | 24 | 23.12.2008 |
| 41 | SMA Cables SPS-1151-<br>985-SPS                | Insulated<br>Wire | different      | different       | n.a.       |    |            |
| 42 | CBT32 with EDR<br>Signaling Unit               | R&S               |                |                 |            |    |            |
| 43 | Coupling unit                                  | Narda             | N/A            | --              | n.a.       |    |            |
| 44 | 2xSwitch Matrix PSU                            | R&S               | 872584/021     | 300001329       | n.a.       |    |            |
| 45 | RF-cable set                                   | R&S               | N/A            | different       | n.a.       |    |            |
| 46 | IEEE-cables                                    | R&S               | N/A            | --              | n.a.       |    |            |

## 6 Annex B: Photographs of Test site

Plastic housing

Photo 1 (Radiated Emissions):



## 7 Annex C: External Photographs of the Equipment

Housing Plastic

Photo 2:



Photo 3:



## 8 Annex D: Internal Photographs of the Equipment

Plastic housing

Photo 4:



Photo 5:

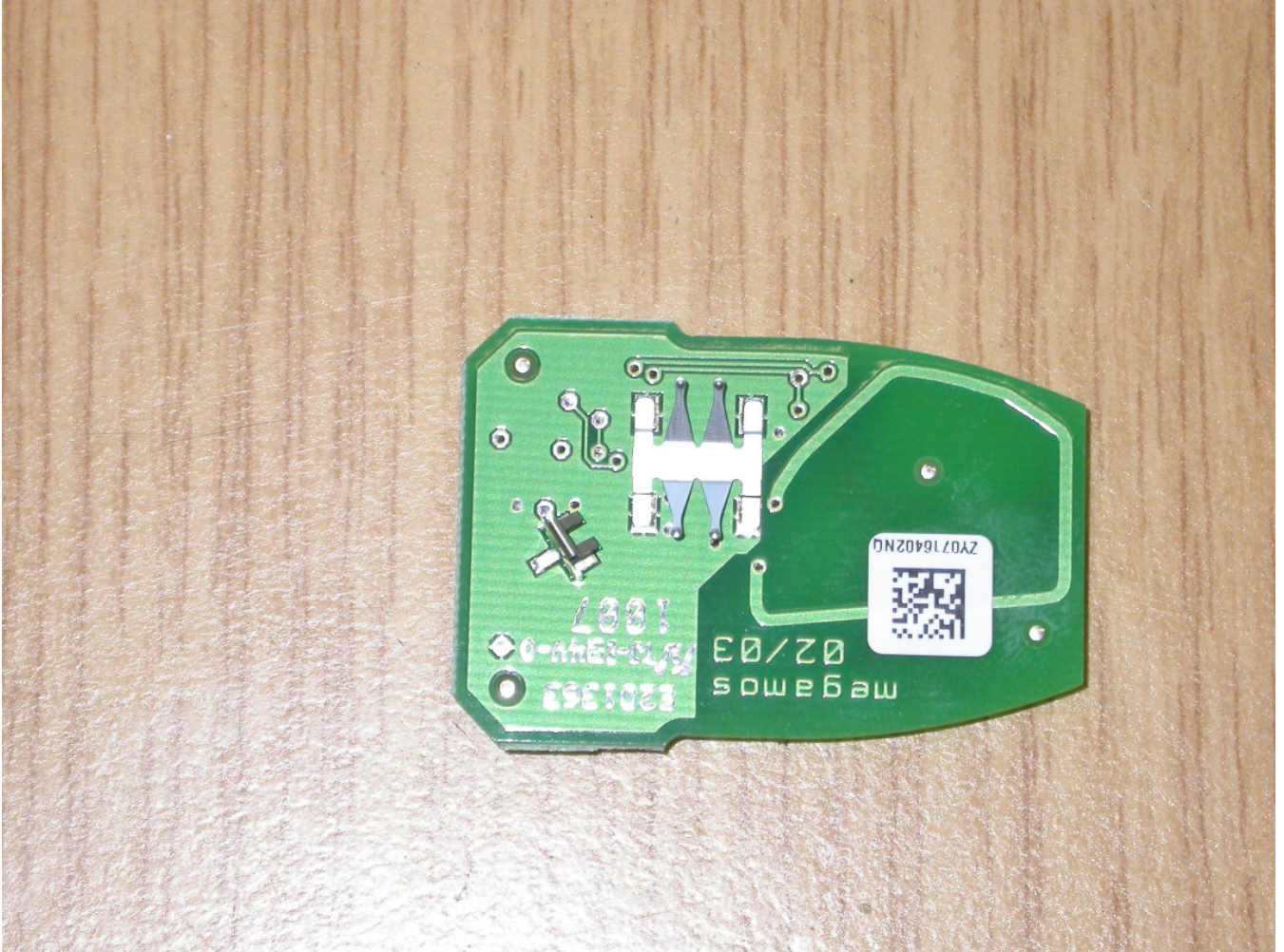


Photo 6:

