

Annex 1: Measurement diagrams to  
**T E S T R E P O R T**  
 No.: 17-1-0078101T04a-C1







According to:  
**FCC Regulations**  
 Part 15.107  
 Part 15.109

for

Gemalto M2M GmbH

EMS31-V

FCC-ID: QIPEMS31-V

| Laboratory Accreditation and Listings                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                           |                                                                                                                                                                           |                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>DAkKS</b><br/>         Deutsche<br/>         Akkreditierungsstelle<br/>         D-PL-12047-01-01</p>                                                                                                                                                                                                         |  <p>FEDERAL COMMUNICATIONS COMMISSION<br/> <b>FCC</b><br/>         USA<br/>         MRA US-EU 0003</p> |  <p>Industry Canada<br/>         Reg. No.: 3462D-2<br/>         Reg. No.: 3462D-3</p> |  <p>Voluntary Controls for<br/>         Electromagnetic Emissions<br/>         Reg. No.:<br/>         R-2666 C-2914,<br/>         T-1967, G-301</p> |
|  <p><b>WiFi</b><br/>         ALLIANCE<br/>         AUTHORIZED<br/>         RF LABORATORY</p>                                                                                                                                                                                                                        |  <p><b>ctia</b> Authorized<sup>TM</sup><br/>         Test Lab<br/>         Lab Code: 20011130-00</p>  |                                                                                                                                                                           |                                                                                                                                                                                                                                          |
| accredited according to DIN EN ISO/IEC 17025                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                                                                           |                                                                                                                                                                                                                                          |
| <p align="center"><b>CETECOM GmbH</b><br/>         Laboratory Radio Communications &amp; Electromagnetic Compatibility<br/>         Im Teelbruch 116 • 45219 Essen • Germany<br/>         Registered in Essen, Germany, Reg. No.: HRB Essen 8984<br/>         Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964<br/>         E-mail: info@cetecom.com • Internet: www.cetecom.com</p> |                                                                                                                                                                                           |                                                                                                                                                                           |                                                                                                                                                                                                                                          |

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# 1. Measurement diagrams

## 1.1. Radiated field strength emissions, 30 MHz - 1 GHz

### Diagram No. 3.01\_RS232\_Data\_Transfer

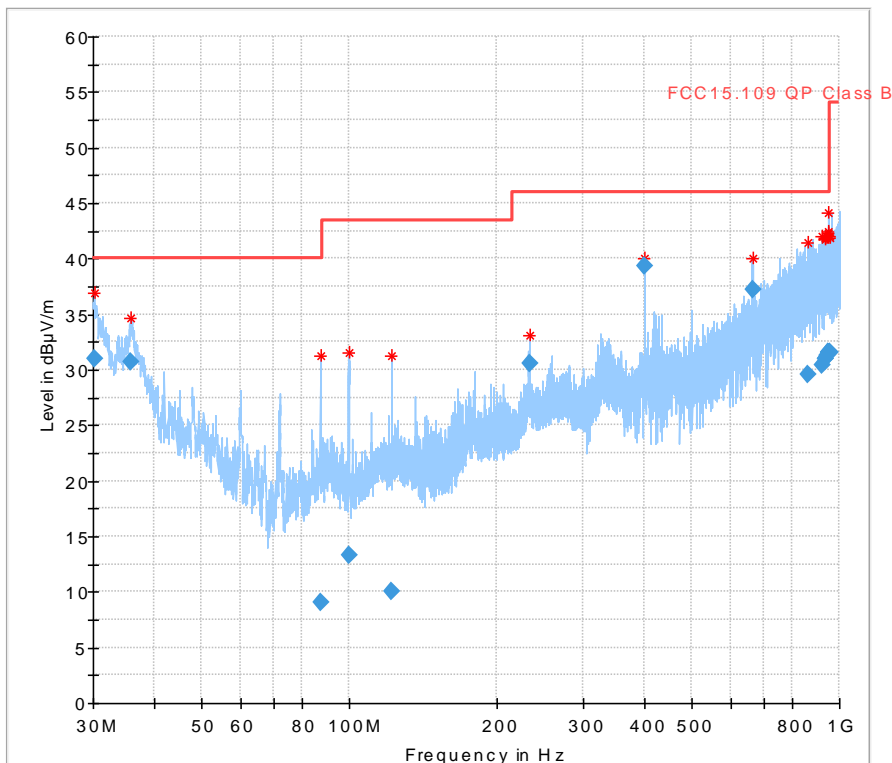
|                          |                                                                    |
|--------------------------|--------------------------------------------------------------------|
| Test description:        | Date: 23.08.2017 Page 1 of 2                                       |
| Test site and distance:  | Electric Field Strength Measurement                                |
| Version of Testsoftware: | Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3m measurement distance |
| Distance correction:     | EMC32 V9.25.0                                                      |
| Technical Data:          | not used                                                           |
| Used filter:             | Please see page 2 for detailed data of measurement setup           |
| Test specification:      | not used                                                           |
|                          | FCC15.109, class B; RSS-Gen.: Issue 4                              |

|                        |                          |
|------------------------|--------------------------|
| Operator:              | Klv                      |
| Operating conditions:  | USB RS232 DATA TRAFFIC   |
| Measured sides of EUT: | front, right, rear, left |
| Power during tests:    | 12V DC                   |

#### EUT Information

|                       |                               |
|-----------------------|-------------------------------|
| Manufacturer:         | Gemalto:                      |
| -----                 | -----                         |
| HW version:           | EMS31-V                       |
| SW version:           | 5.0.0.0a                      |
| Serial number:        | E4000044191-03                |
| Connected Interfaces: | Multiband antenna LTE, cables |
| Power Supply:         | 12VDC                         |
| Comments:             | -                             |

Full Spectrum



**Final Result**

| Frequency (MHz) | Quasi Peak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Elevation (deg) | Corr. (dB) |
|-----------------|---------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|-----------------|------------|
| 30.146000       | 30.92               | 40.00          | 9.08        | 1000.0          | 120.000         | 129.0       | H   | 157.0         | 90.0            | 21.5       |
| 35.854000       | 30.75               | 40.00          | 9.25        | 1000.0          | 120.000         | 120.0       | H   | 186.0         | 90.0            | 18.9       |
| 87.214000       | 9.10                | 40.00          | 30.90       | 1000.0          | 120.000         | 241.0       | V   | 219.0         | 90.0            | 8.0        |
| 99.586000       | 13.29               | 43.50          | 30.21       | 1000.0          | 120.000         | 189.0       | V   | 18.0          | 0.0             | 8.1        |
| 122.190000      | 10.05               | 43.50          | 33.45       | 1000.0          | 120.000         | 349.0       | V   | 60.0          | 0.0             | 8.0        |
| 233.190000      | 30.52               | 46.00          | 15.48       | 1000.0          | 120.000         | 126.0       | H   | 174.0         | 0.0             | 13.0       |
| 400.002000      | 39.27               | 46.00          | 6.73        | 1000.0          | 120.000         | 201.0       | H   | 92.0          | 0.0             | 18.5       |
| 663.866000      | 37.15               | 46.00          | 8.85        | 1000.0          | 120.000         | 136.0       | V   | 96.0          | 0.0             | 23.2       |
| 863.634000      | 29.55               | 46.00          | 16.45       | 1000.0          | 120.000         | 315.0       | H   | 188.0         | 0.0             | 25.9       |
| 918.994000      | 30.49               | 46.00          | 15.51       | 1000.0          | 120.000         | 347.0       | H   | 67.0          | 0.0             | 26.5       |
| 932.658000      | 30.96               | 46.00          | 15.04       | 1000.0          | 120.000         | 263.0       | V   | 136.0         | 90.0            | 26.8       |
| 933.250000      | 31.06               | 46.00          | 14.94       | 1000.0          | 120.000         | 109.0       | H   | 230.0         | 90.0            | 26.8       |
| 939.442000      | 31.29               | 46.00          | 14.71       | 1000.0          | 120.000         | 368.0       | H   | 92.0          | 90.0            | 27.1       |
| 947.690000      | 31.42               | 46.00          | 14.58       | 1000.0          | 120.000         | 360.0       | V   | 172.0         | 90.0            | 27.1       |
| 950.434000      | 31.52               | 46.00          | 14.48       | 1000.0          | 120.000         | 142.0       | H   | 22.0          | 90.0            | 27.2       |
| 952.630000      | 31.53               | 46.00          | 14.47       | 1000.0          | 120.000         | 265.0       | V   | 215.0         | 90.0            | 27.3       |
| 955.194000      | 31.59               | 46.00          | 14.41       | 1000.0          | 120.000         | 287.0       | H   | 185.0         | 90.0            | 27.3       |
| 956.198000      | 31.56               | 46.00          | 14.44       | 1000.0          | 120.000         | 360.0       | V   | 72.0          | 90.0            | 27.4       |

## 1.2. Radiated field strength emissions, above 1 GHz

### 4.01a\_RS232 DATA

#### Common Information

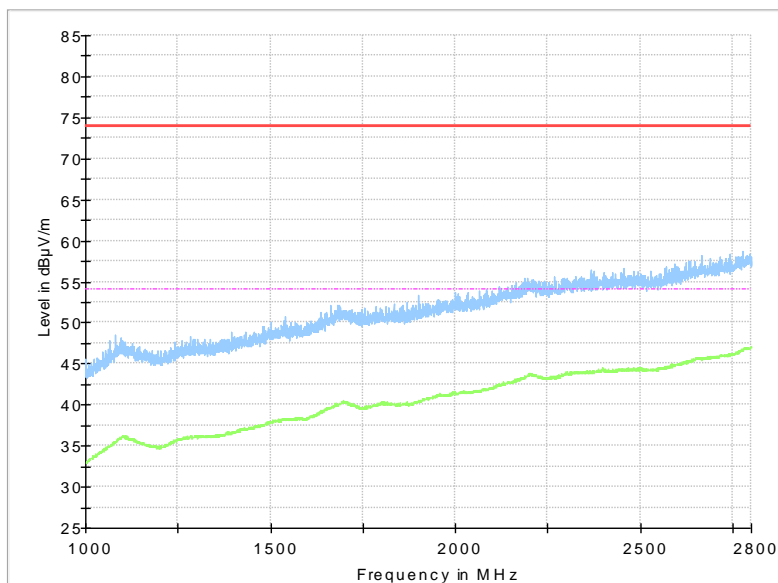
|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance |
| Test Site:            | CETECOM GmbH Essen                              |
| Test Standard:        | FCC 15.109 Unintentional Radiator               |
| Antenna polarisation: | horizontal/vertical                             |
| Operation mode:       | USB RS232 DATA TRAFFIC                          |
| Operator Name:        | mah                                             |
| Comment:              | --                                              |

#### EUT Information

|                       |                               |
|-----------------------|-------------------------------|
| Manufacturer:         | Gemalto:                      |
| -----                 | -----                         |
| HW version:           | EMS31-V                       |
| SW version:           | 5.0.0.0a                      |
| Serial number:        | E4000044191-03                |
| Connected Interfaces: | Multiband antenna LTE, cables |

|               |       |
|---------------|-------|
| Power Supply: | 12VDC |
| Comments:     | -     |

Full Spectrum



#### Final Result

| Frequency (MHz) | MaxPeak (dBµV/m) | RMS (dBµV/m) | Limit (dBµV/m) | Margi n (dB) | Meas . Time | Bandwidt h (kHz) | Heigh t (cm) | Pol | Azimut h (deg) | Elevatio n (deg) |
|-----------------|------------------|--------------|----------------|--------------|-------------|------------------|--------------|-----|----------------|------------------|
| 5591.989666     | 59.50            | ---          | 74.00          | 14.50        | 100.0       | 1000.000         | 155.0        | H   | 314.0          | 90.0             |
| 5591.997666     | ---              | 59.37        | 54.00          | -5.37        | 100.0       | 1000.000         | 155.0        | H   | 315.0          | 90.0             |

### 4.01b\_RS232\_Data\_retest

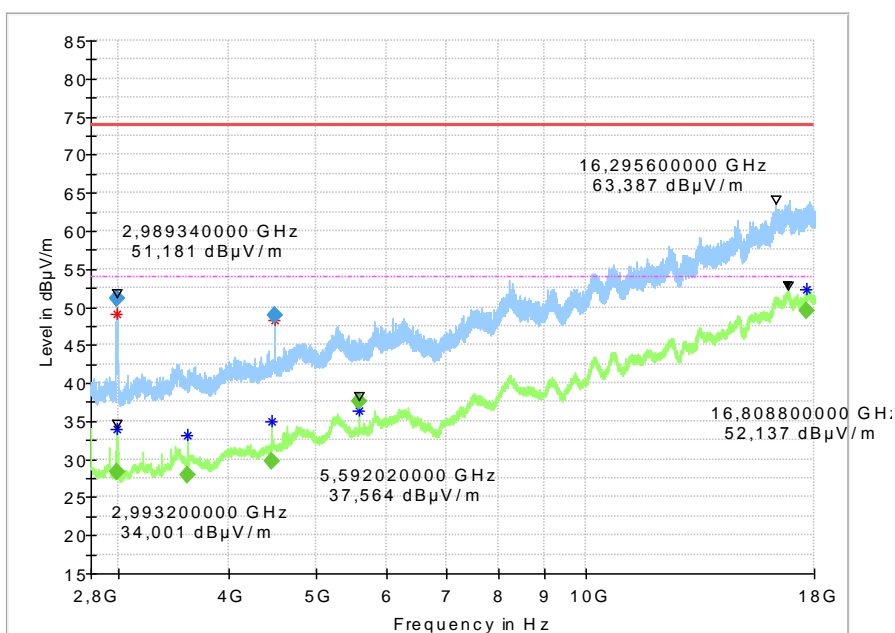
#### Common Information

|                           |                                              |
|---------------------------|----------------------------------------------|
| Test Description:         | Radiated Filed Strength Emission             |
| Test Site Location:       | CETECOM GmbH Essen                           |
| Test Site:                | Fully Anechoic Room (FAR)                    |
| Test Standard:            | FCC Part 15.109, class B / RSS-Gen., Issue 4 |
| Operating Mode:           | USB RS232 DATA TRAFFIC                       |
| Equipment Class:          | Class B                                      |
| Environmental Conditions: | Humidity: 50%rH; Temperature: 25°C           |
| Operator:                 | HEI                                          |
| EUT Information           | FOX-17-18-0315                               |

#### EUT Information

|                       |                               |
|-----------------------|-------------------------------|
| Manufacturer:         | Gemalto:                      |
| -----                 | -----                         |
| HW version:           | EMS31-V                       |
| SW version:           | 5.0.0.0a                      |
| Serial number:        | E4000044191-03                |
| Connected Interfaces: | Multiband antenna LTE, cables |
| Power Supply:         | 12VDC                         |
| Comments:             | -                             |

Full Spectrum



#### Final Result

| Frequency (MHz) | Average (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Pol | Azimuth (deg) | Elevation (deg) | Corr. (dB) |
|-----------------|------------------|----------------|-------------|-----------------|-----|---------------|-----------------|------------|
| 2989.340000     | ---              | 74.00          | 22.82       | 100.0           | V   | 62.0          | 0.0             | -1.0       |
| 2993.660000     | 28.35            | 54.00          | 25.65       | 100.0           | V   | 84.0          | 0.0             | -0.9       |
| 3590.180000     | 27.97            | 54.00          | 26.03       | 100.0           | V   | 98.0          | 90.0            | 0.8        |
| 4465.740000     | 29.81            | 54.00          | 24.19       | 100.0           | V   | 257.0         | 0.0             | 2.6        |
| 4495.020000     | ---              | 74.00          | 25.18       | 100.0           | V   | 88.0          | 90.0            | 2.6        |
| 5592.020000     | 37.56            | 54.00          | 16.44       | 100.0           | H   | 200.0         | 90.0            | 5.7        |
| 17640.020000    | 49.57            | 54.00          | 4.43        | 100.0           | H   | 313.0         | 0.0             | 25.9       |