

# RF Exposure Evaluation Declaration

Product Name : PDS6  
Model No. : PDS6  
FCC ID: QIPPDS6  
IC: 7830A-PDS6

Applicant : Gemalto M2M GmbH.  
Address : Siemensdamm 50 Berlin 13629 Germany

Date of Receipt : 01-30-2015  
Issued Date : 02-06-2015  
Report No. : UL05420150130FCC/IC038-2  
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Report No. : UL05420150130FCC/IC038-2

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Applicant : Gemalto M2M GmbH.  
Address : Siemensdamm 50 Berlin 13629 Germany  
Manufacturer : Gemalto M2M GmbH.  
Address : Siemensdamm 50 Berlin 13629 Germany  
Model No. : PDS6  
EUT Voltage : Extreme Low:3.3V, Nominal:3.8V, Extreme High:4.5V  
Brand Name : N/A  
Applicable Standard : FCC's Rules (47 C.F.R. § 1.1310 and 2.1091)  
Industry Canada RSS-102 ,Issue 4  
Test Result : Complied  
Performed Location : Unilab (Shanghai) Co.,Ltd.  
FCC 2.948 register number is 714465  
IC register number is 11025A-1  
No.1350, Lianxi Road, Pudong New District, Shangha, China  
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(Supervisor: Eva Wang)

## 1. EUT Description

Product Name:	PDS6
Model Name:	PDS6
Hardware Version:	B2.1
Software Version:	03.001
RF Exposure Environment:	Uncontrolled
<b>GSM/ EDGE</b>	
Support Band:	GSM850/PCS1900
GPRS Class:	12
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GMSK for GSM/GPRS 8PSK for EDGE
Antenna Type:	Connector
Antenna Peak Gain:	GSM 850:2.15dBi PCS 1900: 2.15dBi
<b>WCDMA</b>	
Support Band:	WCDMA Band II
Tx Frequency Range:	WCDMA Band II : 1850MHz ~1910MHz
Rx Frequency Range:	WCDMA Band II : 1930MHz ~1990MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band II : 2.15dBi
Support Band:	WCDMA Band V
Tx Frequency Range:	WCDMA Band V: 824MHz ~849MHz
Rx Frequency Range:	WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band V: 2.15dBi

## 2. RF Exposure Evaluation

### 2.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range(MHz)	Electric Filed Strength (V/m)	Magnetic Filed Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
<b>(A)Limits for Occupation/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
<b>(B)Limits for General Occupation/UnControlled Exposures</b>				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### 2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 22°C and 45% RH.

### 2.3.Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition  
 For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Average Power (dBm)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
GSM 850	2.15	34	27.15	518.8	0.10	0.55
PCS 1900	2.15	31	24.15	260.0	0.05	1.00

The averaged power calculated method are shown as below:  
 Averaged power=Maximum burst averaged power(1 Tx Slot)-9dB  
 Duty cycle =12.5%  
 Average EIRP Power=Average Power+Antenna Gain

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
WCDMA 850	2.15	25	518.8	0.10	0.55
WCDMA 1900	2.15	25	518.8	0.10	1.00

Duty cycle =100%

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
GSM 850	32.99	35.14	3265.88	411.15	0.08	0.55
PCS 1900	-----	29.81	957.19	120.50	0.04	1.00

The frame-averaged power calculated method are shown as below:  
 Average EIRP=Peak EIRP-9dB  
 Duty cycle =12.5%

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
WCDMA 850	24.06	26.21	417.83	0.17	0.55
WCDMA 1900	-----	24.11	257.63	0.05	1.00

Duty cycle =100%

This device can pass RF exposure limit.