RF Exposure Evaluation Declaration

Product Name : PDS5-US
Model No. : PDS5-US
FCC ID: QIPPDS5-US
IC: 7830A-PDS5US

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

Date of Receipt : 10-20-2014
Issued Date : 10-26-2014
Report No. : UL05420141020FCC/IC024-2
Report Version : V1.0

RF Exposure Evaluation Declaration

Issued Date : 10-26-2014
Report No. : UL05420141020FCC/IC024-2

Product Name :	PDS5-US
Applicant :	Gemalto M2M GmbH.
Address :	Siemensdamm 50 Berlin 13629 Germany
Manufacturer :	Gemalto M2M GmbH.
Address :	Siemensdamm 50 Berlin 13629 Germany
Model No. :	PDS5-US
EUT Voltage	Extreme Low:3.3V, Nominal:3.8V, Extreme High:4.5V
Brand Name :	N/A
Applicable Standard :	FCC OET Bulletin 65 Supplement C (Edition 01-01)
	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
	TEL:+86-21-50275125/FAX:+86-21-50277862

Documented By : Andy Wei
(Technical Engineer: Andy Wei)

Reviewed By : Forest cao
(Senior Engineer: Forest Cao)

Approved By : Eva wang
(Supervisor: Eva Wang)

1. EUT Description

Product Name:	PDS5-US
Model Name:	PDS5-US
Hardware Version:	V2.1
Software Version:	03.000
RF Exposure Environment:	Uncontrolled
GSM/ EDGE	
Support Band:	GSM850/PCS1900
EGPRS/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
WCDMA	
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/cm2)	Average Time (Minutes)
(A)Limits for Occupation/Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B)Limits for General Occupation/UnControlled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4*Pi*R2)

Where

Pd = power density in mW/cm2

Pout = 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

Pd id the limit of MPE, 1 mW/cm2 . 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℃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/cm2)	MPE Limit (mW/cm2)
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/cm2)	MPE Limit (mW/cm2)
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/cm2)	MPE Limit (mW/cm2)
GSM 850	34.30	36.45	4415.70	555.90	0.11	0.55
PCS 1900	---------	31.50	1412.54	177.83	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/cm2)	MPE Limit (mW/cm2)
WCDMA 850	24.88	27.03	504.66	0.10	0.55
WCDMA 1900	----------	24.93	311.17	0.06	1.00
Duty cycle =100%					

This device can pass RF exposure limit.