RF Exposure Evaluation Declaration

Product Name: ELS61-AUS

Model No. :   ELS61-AUS

FCC ID: QIPELS61-AUS

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

Date of Receipt : 04-30-2016

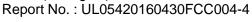Test Date :   04-30-2016~05-16-2016

Issued Date :   06-06-2016

Report No. :   UL05420160430FCC004-4

Unilab

RF Exposure Evaluation Declaration

Issued Date : 06-06-2016
Report No. : UL05420160430FCC004-4

Product Name :	ELS61-AUS
Applicant :	Gemalto M2M GmbH
Address :	Siemensdamm 50, 13629 Berlin, Germany
Manufacturer :	Gemalto M2M GmbH
Address :	Siemensdamm 50, 13629 Berlin, Germany
Model No. :	ELS61-AUS
EUT Voltage :	MIN: 3.0V, NOR: 3.8V, MAX: 4.5V
Brand Name :	GEMALTO
FCC ID:	QIPELS61-AUS
Applicable Standard :	FCC's Rules (47 C.F.R. §1.1310 and 2.1091)
	Industry Canada RSS-102,Issue 5
Test Result :	Complied
Performed Location :	Unilab (Shanghai) Co.,Ltd.
	FCC 2.948 register number is 714465
	No.1350, Lianxi Road, Pudong New District, Shangha, China
	TEL:+86-21-5027-5125 FAX:+86-21-5027-7862

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Approved by : _Eva Wang_
(SupervisorEngineer: Eva Wang)

1. EUT Description

Product Name:	ELS61-AUS
Model Name:	ELS61-AUS
Hardware Version:	B2.1
Software Version:	00.380
RF Exposure Environment:	Uncontrolled
LTE	
Support Band:	LTE Band V
Tx FrequencyRange:	LTE Band V: 824MHz ~849MHz
Rx FrequencyRange:	LTE Band V: 869MHz ~894MHz
Type of modulation:	LTE: QPSK,16-QAM
Antenna Type:	Connector
AntennaPeak Gain:	LTE Band V:2.15dBi
WCDMA	
Support Band:	WCDMA Band V
Tx FrequencyRange:	WCDMA Band V: 824MHz ~849MHz
Rx FrequencyRange:	WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
AntennaPeak 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^2)	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: $Pd = (Pout*G)/(4*Pi*R^2)$

Where

Pd = power density in mW/cm^2

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/cm^2 . 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 53%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 (dBd)	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm^2)	MPE Limit (mW/cm^2)
WCDMA Band V	0	----	25	518.8	0.10	0.55
Duty cycle =100%						

Test Mode	Band Width （MHz）	Antenna Gain (dBd)	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm^2)	MPE Limit (mW/cm^2)
LTE Band 5	1.4	0	----	25	518.8	0.10	0.55
	3	0	----	25	518.8	0.10	
	5	0	----	25	518.8	0.10	
	10	0	----	25	518.8	0.10	
Duty cycle =100%							

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm^2)	MPE Limit (mW/cm^2)
WCDMA Band V	23.73	25.88	387.3	0.08	0.55
Duty cycle =100%					

Test Mode	Band Width（MHz）	ERP (dBm)	EIRP (dBm)	Maximum Output Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm^2)	MPE Limit (mW/cm^2)
LTE Band 5	1.4	22.96	25.11	324.3	0.06	0.55
	3	22.76	24.91	309.7	0.06	
	5	22.82	24.97	314.1	0.06	
	10	22.79	24.94	311.9	0.06	
Duty cycle =100%						

This device can pass RF exposure limit.