

RF Exposure Evaluation Declaration

Product Name: GWM400
Model No. : GWM400
FCC ID: QIPELS61-AUS

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

Date of Receipt : 04-20-2017
Test Date : 04-20-2017~06-15-2017
Issued Date : 06-20-2017
Report No. : UL05420170420FCC013-3

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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Address : Siemensdamm 50 , 13629 Berlin, Germany
Manufacturer : Gemalto M2M GmbH
Address : Siemensdamm 50 , 13629 Berlin, Germany
Model No. : GWM400
EUT Voltage : MIN: 4.75V, NOR: 15V, MAX: 32V
Brand Name : EDMI
FCC ID: QIPELS61-AUS
Applicable Standard : FCC's Rules (47 C.F.R. §1.1310 and 2.1091)
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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1. EUT Description

Product Name:	GWM400
Model Name:	GWM400
Hardware Version:	B2
Software Version:	01.004
RF Exposure Environment:	Uncontrolled
LTE	
Support Band:	LTE Band V
Tx Frequency Range:	LTE Band V: 824MHz ~849MHz
Rx Frequency Range:	LTE Band V: 869MHz ~894MHz
Type of modulation:	LTE: QPSK,16-QAM
Antenna Type:	Connector
Antenna Peak Gain:	LTE Band V:2.15dBi
WCDMA	
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 Field Strength (V/m)	Magnetic Field 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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is 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°C 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.