RF Exposure Evaluation declaration

Product Name	WiFi Module
Model No.	ComXS-320
FCC ID	XB7-COMXS320

Applicant	ACTIA I+ME GmbH
Address	Dresdenstrasse 17/18, D-38124 Braunschweig, Germany

Date of Receipt	Feb. 07, 2017
Date of Declaration	Mar. 24, 2017
Report No.	1720095R-RFUSP02V00

Issued Date: Mar. 24, 2017
Report No.: 1720095R-RFUSP02V00

Product Name	WiFi Module
Applicant	ACTIA I+ME GmbH
Address	Dresdenstrasse 17/18, D-38124 Braunschweig, Germany
Manufacturer	ACTIA I+ME GmbH
Model No.	ComXS-320
FCC ID.	XB7-COMXS320
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	DC 3.3V
Trade Name	ACTIA
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

Documented By : Rita Huang

(Senior Adm. Specialist / Rita Huang)

Tested By : Vic Chen

(Engineer / Vic Chen)

Approved By :

(Director / Vincent Lin)

1. RF Exposure Evaluation

1.1. 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 Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ 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.

1.2. 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: 18℃ and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : WiFi Module
Test Item : RF Exposure Evaluation

For 2.4GHz:

Operation Frequency	2412MHz-2462MHz 2422MHz-2452MHz
Maximum Conducted output power	26.70dBm
Antenna gain	2 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
467.7351	0.1475

Power density is lower than the limit (1 mW/cm2).

For 5GHz:

Operation Frequency	5180-5320MHz, 5500-5700MHz, 5745-5825MHz 5190-5310MHz, 5510-5670MHz, 5755-5795MHz
Maximum Conducted output power	19.59dBm
Antenna gain	4 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
90.9913	0.045471

Power density is lower than the limit (1 mW/cm2).