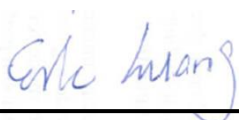


# RF Exposure Evaluation Report

**APPLICANT** : Texas Instruments Incorporated  
**EQUIPMENT** : CC3100MODR11MAMOB  
**BRAND NAME** : Texas Instruments  
**MODEL NAME** : CC3100MODR11MAMOB  
**MARKETING NAME** : SimpleLink™ Wi-Fi® CC3100MOD  
Wireless Network Processor Module  
**STANDARD** : EN 62311:2008

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Manager



Approved by: Jones Tsai / Manager



**SPORTON INTERNATIONAL INC.**

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
EA741317	Rev. 01	Initial issue of report	Jul. 20, 2017

**1. Administration Data****1.1. Testing Laboratory**

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Texas Instruments Incorporated
Address	12500 TI BLVD., Dallas Texas, 75243

Manufacturer	
Company Name	Texas Instruments Incorporated
Address	12500 TI BLVD., Dallas Texas, 75243

## 2. General Information

### 2.1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	CC3100MODR11MAMOB
Brand Name	Texas Instruments
Model Name	CC3100MODR11MAMOB
Marketing Name	SimpleLink™ Wi-Fi® CC3100MOD Wireless Network Processor Module
Wireless Technology and Frequency Range	WLAN2.4GHz Band: 2412 MHz ~ 2472 MHz
Mode	802.11b/g/n HT20
EUT Stage	Production Unit

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna List				
	Brand	Antenna Type	Model	2.4GHz gain
1	Ethertronics	Dipole	1000423	-0.6dBi
2	LSR	Rubber Whip / Dipole	001-0012	2dBi
3			080-0013	2dBi
4			080-0014	2dBi
5	Laird	PCB	CAF94504	2dBi
6			CAF94505	2dBi
7	ACX	Multilayer Chip	AT3216-BR2R7HAA	0.5dBi
8			AT312-T2R4PAA	1.5dBi
9	TDK	Multilayer Ceramic Chip Antenna	ANT016008LCD2442MA1	1.6dBi
10	Mitsubishi Material	Chip Antenna	AM03DP-ST01	1.6dBi
11		Antenna Unit	UB18CP-100ST01	-1.0dBi
12	Taiyo Yuden	Chip Antenna / Herical Monopole	AF216M245001	1.5dBi
13		Chip Antenna / Monopole Type	AH212M245001	1.3dBi
14			AH316M245001	1.9dBi
15	Antenna Technology	Dipole	AA2402SPU	2.0dBi
16			AA2402RSPU	2.0dBi
17			AA2402A-UFLLP	2.0dBi
18			AA2402AU-UFLLP	2.0dBi
19	Staf	Mono-pole	1019-016	2.14dBi
20			1019-017	2.14dBi
21			1019-018	2.14dBi
22			1019-019	2.14dBi
23	Map Electronics	Rubber Whip	MEIWX-2411SAXX-2400	2.0dBi
24			MEIWX-2411RSXX-2400	2.0dBi
25			MEIWX-282XSAXX-2400	2.0dBi
26			MEIWX-282XRSXX-2400	2.0dBi
27			MEIWF-HP01RS2X-2400	2.0dBi
28	Yageo	Chip	ANT3216A063R2400A	1.69dBi
29	Mag Layers Scientific	Chip	LTA-3216-2G4S3-A1	1dBi
30			LTA-3216-2G4S3-A3	2dBi



**3. Maximum RF Output Power (Unit: dBm)**

Mode		Maximum Average Power (dBm)
2.4GHz WLAN	802.11b	16.0
	802.11g	16.8
	802.11n-HT20	16.5

## 4. RF Exposure Limit Introduction

The table of the reference field levels shown as below is given in Annex III of the Council Recommendation 1999/519/EC.

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density $S_{eq}$ (W/m <sup>2</sup> )
0-1 Hz	—	$3,2 \times 10^4$	$4 \times 10^4$	—
1-8 Hz	10 000	$3,2 \times 10^4/f^{1/2}$	$4 \times 10^4/f^{1/2}$	—
8-25 Hz	10 000	$4\,000/f$	$5\,000/f$	—
0,025-0,8 kHz	$250/f$	$4/f$	$5/f$	—
0,8-3 kHz	$250/f$	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	$87/f$	$0,73/f$	$0,92/f$	—
1-10 MHz	$87/f^{1/2}$	$0,73/f$	$0,92/f$	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	$f/200$
2-300 GHz	61	0,16	0,20	10

### Notes:

1.  $f$  as indicated in the frequency range column.
2. For frequencies between 100 kHz and 10 GHz,  $S_{eq}$ ,  $E^2$ ,  $H^2$ , and  $B^2$  are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz,  $S_{eq}$ ,  $E^2$ ,  $H^2$ , and  $B^2$  are to be averaged over any  $68/f^{1.05}$ -minute period ( $f$  in GHz).
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



## **5. RF Exposure Evaluation**

### **5.1. Power Density Calculations**

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (W/m <sup>2</sup> )	Limit (W/m <sup>2</sup> )
2.4GHz WLAN	2412.0	2.14	16.8	18.94	78.34	0.16	10.00

**Note:** For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.

### **Conclusion:**

According to Council Recommendation 1999/519/EC, the RF exposure analysis concludes that the RF Exposure is CE compliant.