RF EXPOSURE EVALUATION REPORT

FCC ID	:	ZAT-1312PSIP-1
Equipment	:	CC1312PSIP
Brand Name	:	Texas Instruments
Model Name	:	CC1312PSIP SimpleLink™ Sub-1-GHz Wireless System-in-Package
Applicant	:	Texas Instruments Incorporated 12500 TI BLVD., Dallas, Texas, 75243
Manufacturer	:	Texas Instruments Incorporated 12500 TI BLVD., Dallas, Texas, 75243
Standard	:	47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

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

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA341305	Rev. 01	Initial issue of report	Jun. 28, 2023

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	CC1312PSIP
Brand Name	Texas Instruments
Model Name	CC1312PSIP SimpleLink™ Sub-1-GHz Wireless System-in-Package
FCC ID	ZAT-1312PSIP-1
Wireless Technology and Frequency Range	RFID: 902 MHz-928 MHz
Mode	RFID: GFSK

Reviewed by: Jason Wang

Report Producer: Paula Chen

Antenna Information				
	Brand	Antenna Type	Model	915MHz Gain
1	TI	Integrated PCB antenna	LP-EM-CC1312PSIP antenna	+2.69 dBi
2	Kaadas	Flexi PCB antenna	K1	-5.82 dBi
3	Leederson	Integrated PCB antenna	L1	-4.51 dBi
4	Leederson	Integrated PCB antenna	L2	-1.83 dBi
5	Leederson	Stanced antenna	L3	-9.48 dBi
6	Leederson	Stanced antenna	L4	+0.37 dBi
7	Leederson	Integrated PCB antenna	L5	-1.74 dBi
8	Pulse	External whip antenna	W5017	+0.90 dBi
9	Johanson Technology	Chip antenna	0900AT43A0070	-0.50 dBi
10	Johanson Technology	Chip antenna	0915AT43A0026	+1.0 dBi
11	Pulse	Wire antenna	W3113	+0.80 dBi

2. Maximum RF average output power among production units

Band	Maximum Average Power (dBm)
RFID	14

3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$Pth\ (mW) = ERP_{20cm}\ (d / 20)^{x} \quad \text{for distance } d \leq 20cm$$

$$Pth\ (mW) = ERP_{20cm} \quad \text{for distance } 20cm < d \leq 40cm$$

$$x = -log10\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

ERP_{20cm}(mW) 0.3 GHz ≤ f < 1.5 GHz: 2040 f
1.5 GHz ≤ f ≤ 6 GHz: 3060

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm.
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report, use Part1.1307(b)(3)(i)(B) to perfrom RF Exposure evaluation.
4. The distance of 20cm is for this device.

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	P_{th}	P_{th} (mW)	Part1.1307 option(b) Threshold (mW)
RFID	2.69	14.00	16.7	14.54	46.67	28.44	14.54	28.44	1840.080

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.