

RF Exposure Lab

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CERTIFICATE OF COMPLIANCE SAR EVALUATION

Lilitab LLC
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Dates of Test: April 12, 2023
Test Report Number: SAR.20230407

Lab Designation Number: US1195(FCC); US0194(ISED)

FCC ID:	2A8XU-G40SC
IC Certificate Number:	29503-G40SC
Model(s):	G40SC-L & G40SC-C
Contains BLE Module:	Lilitab LLC Model: G40SC; FCC ID: 2A8XU-G40SC; IC: 29503-G40SC
Equipment Type:	Wireless Kiosk
Classification:	Portable Transmitter Next to Extremity
TX Frequency Range:	2402 – 2480 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	2450 MHz (BLE) – 2.0 dBm Conducted
Signal Modulation:	8PSK, GMSK
Antenna Type:	PCB Trace on Module
Application Type:	Certification
Standard(s):	47CFR1.1310, 47CFR2.1093, KDB447498 D04, KDB248227 D01 v02r02, KDB941225 D05 v02r05, RSS-102 Issue 5, Safety Code 6
Separation Distance:	0 mm

This wireless portable device has been shown to be excluded for RF exposure requirements for uncontrolled environment/general exposure limits specified in above listed standards for standalone SAR. The device has also been shown to meet the simultaneous requirements of each standard as well (See test report).

I attest to the accuracy of the data. I assume full responsibility for the completeness of these calculations and vouch for the qualifications of all persons making them.



Jay M. Moulton
Vice President



Certificate # 2387.01

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Comment/Revision	Date
Original Release	April 12, 2023

Note: The latest version supersedes all previous versions listed in the above table. The latest version shall be used.

1. Introduction

This report shows exclusion calculations of the Lilitab LLC Model G40SC-L & G40SC-C with 47CFR1.1310, 47CFR2.1093, KDB447498 D04, KDB248227 D02 v02r02, KDB941225 D05 v02r05, RSS-102 Issue 5 and Safety Code 6.

The device contains one BLE module.

2. Radiation Sources

Module	Band	Technology	Class	3GPP Nominal Power dBm	Setpoint Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Fanstel BC840	2.4 GHz	BLE	N/A	N/A	N/A	N/A	N/A	2.0

3. RF Exposure Classifications

Device Types	
Fixed	A fixed device is defined as a device physically secured at one fixed location and cannot be easily re-located.
Mobile	A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. (47 CFR 2.1091)
Portable	A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. (47 CFR 2.1093)

Exposure Categories	
Occupational / Controlled	Limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
General population / uncontrolled	Exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

4. RF Exposure Limits Standalone And Simultaneous SAR

FCC Requirements

The FCC SAR test exclusion for standalone SAR is determined for each operating configuration and exposure condition the device can operate.

$$P_{th}(\text{mW}) = \begin{cases} ERP_{20\text{cm}} (d/20 \text{ cm})^x & 0.5 \text{ cm} \leq d \leq 20 \text{ cm} \\ ERP_{20\text{cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

$$x = -\log_{10} \left(\frac{60}{ERP_{20\text{cm}} \sqrt{f}} \right)$$

$$ERP_{20\text{cm}}(\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f \leq 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} < f \leq 6.0 \text{ GHz} \end{cases}$$

d = separation distance (cm)

The value is multiplied by 2.5 for extremity SAR.

ISED Requirements

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

For the extremity, multiple the value by 2.5 for the exclusion power limit.

5. BLE Modem Specifications

The upper end of the tolerance for the Fanstel modem (BC840) is 2 dBm for BLE bands. Therefore, the upper end of the conducted tolerance is 2 dBm (1.6 mW). The antenna gain for each band is a positive gain. The table below shows the gain for each band.

Modem	Band	Technology	Gain	Radiated
Fanstel BC840	2.4 GHz	BLE	0 dBi	2.0 dBi

Therefore, the radiated power level is used to calculate the exclusion.

6. Standalone SAR Exclusion Assessment

FCC Requirements

Based on the formula in section 5, the exclusion calculation for each of the transmitters is listed below.

Fanstel Model BC840
2.4 GHz Band = 8.75 dBm = 7.5 mW

The maximum transmit power for each of the bands is listed below.

Fanstel Model BC840 Maximum Power
2.4 GHz Band = 2.0 dBm = 1.6 mW

Therefore, the transmitter is excluded from standalone SAR evaluations.

ISED Requirements

Based on the table in section 5, the exclusion calculation for each of the transmitters is listed below.

Fanstel Model BC840
2.4 GHz Band = 10 mW

The maximum transmit power for each of the bands is listed below.

Fanstel Model BC840 Maximum Power
2.4 GHz Band = 2.0 dBm = 1.6 mW

Therefore, the transmitter is excluded from standalone SAR evaluations.

7. Simultaneous SAR Assessment

FCC & ISED Requirements

This device does not allow any simultaneous transmission. Therefore, no evaluation was conducted on the device.