



RF Exposure Report

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FCC ID: MQT-T103LE

Test Model: xAPT-103LE

Series Model: xCE_T103LE

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Release Control Record

Issue No.	Description	Date Issued
SA160126E16	Original release.	Mar. 23, 2016

2 Evaluation Result

Following FCC KDB 447498 D01 “General SAR test exclusion guidance”

The corresponding SAR Exclusion Threshold condition, listed below:

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$$

$$\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$
 - $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
 - Power and distance are rounded to the nearest mW and mm before calculation.
 - The result is rounded to one decimal place for comparison. The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

- 2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50mm) · (f(MHz)/150)] mW, at 100MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · 10] mW at > 1500 MHz and ≤ 6 GHz

- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion.
 - a) The threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ for test separation distances > 50 mm and < 200 mm.
 - b) The threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for test separation distances ≤ 50 mm.
 - c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

3 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Brand	Model No.	Antenna Type	Antenna Connector	Gain(dBi)	Frequency (MHz)
Chain (0)	HUN-PAI	M30-005+-000	PIFA	NA	1.5	2400-2500
Chain (1)					2.9	

NOTE: 1. Chain (0) -- Tx & Rx / Chain (1) -- Rx

4 SAR Test Exclusion Thresholds

Maximum measured transmitter power:

Power Table

Mode	Frequency (MHz)	Peak Conducted power (dBm)	Average Conducted power (dBm)
11b	2412	18.68	16.87
	2437	17.73	14.85
	2462	16.72	13.75
11g	2412	18.68	16.87
	2437	17.73	14.85
	2462	16.72	13.75
11n-HT20	2412	19.28	12.65
	2437	19.33	12.67
	2462	19.29	12.52
11n-HT40	2412	19.30	12.53
	2437	19.31	12.56
	2462	19.32	12.43

Maximum Average power for WiFi Mode:

Mode	Frequency (MHz)	Average Conducted power (dBm)	Average Conducted power (mW)
11b	2412	16.87	48.641

Note: The device utilizes IEEE 802.11bgn (WiFi) for complete the payment authentication with the credit card center office. The typical processing time for each transaction is 30 seconds from the user touches or holds the device to the approval of transaction from the credit card company. The product transmits only shortly (maximum 0.001 sec during 30 seconds of authentication period with credit card companies) per transaction. Note: the Transmitter turn-on time 0.001 sec is based on the fact that the slowest air-interface speed for 11bgn is 1Mbps (802.11b) for WiFi technology and the EUT send only 1k bytes per transaction. Accordingly, the EUT uses $1k/1Mbps=0.001$ sec to complete 1k data upload.

Time average power:

Average power experienced by the user = max power x radio-on duty cycle during the operation (30 sec typically, from user touch or hold the device to credit card companies approve or disapprove the transaction) equal to below:

$$48.641 \text{ mW} \times (0.001/30 \text{ sec}) = 0.00162 \text{ mW}.$$

SAR Test Exclusion Thresholds

Frequency (MHz)	Max. Power* ¹ (mW)	Min. test separation distance (mm)	SAR test exclusion calculation value* ²	10-g extremity SAR test exclusion thresholds	Result
2412	0.00162	5	0.00050319	7.5	Pass

*¹ Max. power obtained from Time average power.

*² Calculate SAR test exclusion thresholds from “ 1) ” formulas. (base on 10-g extremity SAR exclusion thresholds)

Conclusion

Since Source-base time average power is below SAR test exclusion power thresholds, the SAR evaluation is not required.

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