SAR Exclusion REPORT

Applicant Name:

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Test Report No.: HCT-SR-1809-FC004-R2

Test Site: HCT CO.,LTD.

FCC ID:

XHG-LT711

Equipment Type:	**Pet Tracker**
Application Type	**Certification**
FCC Rule Part(s):	**CFR §2.1093**
Model Name:	**LT711**
Date of Test:	**09/06/2018**

This product is subject to FCC KDB 447498 Sec6.3 Low transmission duty device, so the SAR test is excluded.

Reviewed By

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DOCUMENT HISTORY

Rev.	DATE	DESCRIPTION
HCT-SR-1809-FC004	09. 06, 2018	First Approval Report
HCT-SR-1809-FC004-R1	09. 21, 2018	Revised Notes for duty cycle
HCT-SR-1809-FC004-R2	04. 12, 2019	Equipment Type change

SAR Test Considerations

Per FCC KDB 447498 D01v06, Sec.6.3 Low Transmission duty factor devices

For devices that transmit only intermittently in data mode, without any voice support, the time-averaged exposure can be low. When transmissions are sporadic and duty factor is not inherently built-in to the device, source-based time-averaging may not be easily applied. These types of operations may include location trackers, emergency alert responders, point of sales (POS) devices, certain black and white display e-readers, and devices supporting location-based services. SAR measurement is not required when an acceptable worst case or most conservative transmission duty factor is determined and the SAR Test Exclusion Threshold conditions are satisfied for the duty factor adjusted maximum output power and minimum test separation distance required for all applicable operating configurations. To qualify for SAR test exclusion, the supporting details for determining this type of transmission duty factor, with respect to the design and implementation of the device, operating configurations, and exposure conditions, must be fully documented in a SAR analysis report according to KDB Publication 865664 D02. When SAR evaluation is required to determine compliance, the duty factor established in the SAR analysis may be applied to scale the measured SAR.59 Voice-mode communication generally does not qualify for low duty factor considerations; however, exceptions may be considered for certain short (e.g., < 30 seconds) and infrequent transmissions.

Note 1: We will use the most conservative source based duty cycle for all the radios.
Note 2: The load base duty cycle for LTE and UMTS is based on a worst case scenario where the Pet is outside area from a specified geo-fence. The device is continuously updating its location information based on the max packet length to 200 bytes and uploading cycle to every 180 seconds with the max transmit time to 0.5 seconds and using a worst case 1.6kbps QPSK uplink coding rate (excluding overhead, with lowest order modulation, and lowest coding rate).

The Wi-Fi is purposed on the WPS(Wi-Fi positioning system) scenario, and the load base duty cycle for WPS function is working on every 180 seconds as Wi-Fi channel scanning function.

The load base duty cycle for BLE is based on the adverting packet of 31 bytes (iBeacon profile payload) every second with the max transfer time to 30ms for three advertisement channels(37, 38, and 39) with a conservative 0.8kbps transfer rate.

1. LTE / WCDMA Band Consideration.

- These functions are using when sending out location information to server.

- Tx time: 0.5 sec / Min Tx period 180 sec duty cycle = 0.5/180 =0.0028

- It's duty is very low (0.28% from the Device specification by manufacture)

- The Maximum Source-based Time averaged Power = The maximum allowed Power x Duty cycle

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50mm is defined by the following equation:

$$\frac{MaxPower\,of\,Channel(mW)}{TestSeparationDistance(mm)} * \sqrt{Frequency(GHz)} \leq 3.0(1g\ SAR), 7.5(10g\ SAR)$$

Mode	Frequency	Maximum Allowed Power	Duty Cycle	Maximum Source based time averaged Power	≤ 3.0
	[MHz]	[mW]		[mW]	1g SAR
LTE Band 2	1 850.7 ~ 1 909.3	177.83	0.0028	0.50	0.1
LTE Band 4	1 710.7 ~ 1 754.3	223.87	0.0028	0.63	0.1
LTE Band 12	699.7 ~ 715.3	223.87	0.0028	0.63	0.1
WCDMA Band 2	1 852.4 ~ 1 907.6	177.83	0.0028	0.50	0.1
WCDMA Band 4	1 712.4 ~ 1 752.6	223.87	0.0028	0.63	0.1

Based on the maximum Souce-based tome average power of WCDMA2/4/LTE2/4/12 and antenna to use separation distanceThese Bands SAR were not required..

2. WLAN   Consideration

- This function check the location that using wifi SSID scan.

- Tx time: 0.5 sec / Min Tx period 180 sec

- It's duty is very low (0.28% from the specification)

Mode	Frequency	Maximum Allowed Power	Duty Cycle	Maximum Source based time averaged Power	≤ 3.0
	[MHz]	[mW]		[mW]	1g SAR
802.11b	2 412 ~ 2 462 MHz	25.12	0.0028	0.07	0
802.11g	2 412 ~ 2 462 MHz	22.39	0.0028	0.062	0
802.11n	2 412 ~ 2 462 MHz	22.39	0.0028	0.062	0

Based on the maximum Souce-based tome average power of 802.11b/g/n and antenna to use separation distanceThese Bands SAR were not required..

3. BT / BT LE

- Initial setup for connecting to user's mobile phone. After then, Bluetooth is not operating anymore.

- BT Power is high, but the duty factor is the worst case. So we think that low duty factor is applicable.

- Tx time: 0.03 sec / Min Tx period 1 sec

- It's duty is very low (3% from the specification)

Mode	Frequency	Maximum Allowed Power	Duty Cycle	Maximum Source based time averaged Power	≤ 3.0
	[MHz]	[mW]		[mW]	1g SAR
Bluetooth	2 402 ~ 2 480 MHz	12.59	0.03	0.38	0.1
Bluetooth LE	2 402 ~ 2 480 MHz	1.29	0.03	0.039	0

Based on the maximum Souce-based tome average power of BT/RT LE and antenna to use separation distanceThese Bands SAR were not required..

Thefore , Per FCC KDB 447498 D01v06.This device is not required for SAR test.