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RF Exposure Report

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FCC ID: S8WTTD

Test Model: TTD

Received Date: Jan. 15, 2015

Test Date: Jan. 27 ~ Feb. 06, 2015

Issued Date: Feb. 10, 2015

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**A D T****Release Control Record**

Issue No.	Description	Date Issued
SA150115C08	Original release	Feb. 10, 2015



1 Certificate of Conformity

Product: Tagg Tracking Device

Brand: Tagg

Test Model: TTD

Sample Status: Engineering sample

Applicant: Whistle Labs, Inc

Test Date: Jan. 27 ~ Feb. 06, 2015

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D03

IEEE C95.1

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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2 Evaluation Result

2.1 SAR Test Exclusion Thresholds

Following FCC KDB 447498 D03 "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 - 50 mm) · ($f(\text{MHz})/150$)] 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.

2.2 Smallest Distance from the Antenna And Radiating Structures Or Outer Surface Of The Device

During typical operating conditions the device is attached to the collar of an animal.

If a human was to pet the animal their extremities could potentially come in to direct contact with the device for a brief period of time, so a distance of 5mm will be applied in all calculations to determine SAR test exclusion.

2.3 EUT Operating Conditions

The device only transmits periodically and has two operating modes, In Beacon and Out of Beacon.

The device uses the RSSI of a 900 Mhz transmission (referred to as the Beacon) sent periodically from its charging station to determine its proximity.

The device itself never transmits at 900 MHz.

While the device is within range of its charging station (In Beacon) as determined by the RSSI of the 900 MHz receiver the cellular radio will only transmit small packets (Daily Check-In) of data once every 24 hours.

When the device moves out of range of its charging station (Out of Beacon) the cellular radio registers on the network and then transmits a packet of data to indicate this. When the device is Out of Beacon the GPS receiver is enabled, and once it is determined that the device is outside of a user defined geo-fence another packet of data is transmitted.

When the device detects the 900 Mhz beacon again a final packet is transmitted to indicate that it is now In Beacon.

Typically a user might be expected to walk their pet twice daily, this would result in 3 transmissions per walk, an Out Of Beacon message, an Out Of Geo-fence message, and a Back In Beacon message. Including the daily check in message this would result in a total of 7 transmissions over a 24 hours period.

The length of a typical transmission is 15 seconds, so 7 transmissions averaged over a 24 hour period, for Average Time 30 minutes the duty cycle is 0.025%

2.4 Maximum measured transmitter power

Maximum measured transmitter power:

Frequency (MHz)	Conducted (dBm)	EIRP (dBm)	Duty Cycle (%)	Time-Average Power (dBm)
824.7 ~ 848.31MHz	23.56	22.28	0.025	6.28

Frequency (MHz)	EIRP (dBm)	Duty Cycle (%)	Time-Average Power (dBm)
1851.25 ~ 1908.75MHz	23.34	0.025	7.34

Antenna gain: -1.28dBi PIFA

2.5 SAR Test Exclusion Thresholds

Frequency (MHz)	Time-Average Power (mW)	Min. test separation distance (mm)	SAR test exclusion calculation value ^(NOTE 2)	1-g SAR test exclusion thresholds	Result
824.7 ~ 848.31MHz	4.25	5	0.78	3	Pass
1851.25 ~ 1908.75MHz	5.42	5	1.49	3	Pass

Note: 1. The antenna type is PIFA antenna with -1.28dBi gain.

2. Calculate SAR test exclusion thresholds from condition "1" formulas.

Conclusion

Since maximum power is below SAR test exclusion power thresholds, the SAR evaluation is not required.

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