



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1501FS12-01
Applicant	: CONNECTED HOLDINGS LLC
Manufacturer	: 4740 VON KARMAN AVENUE, SUITE 120, NEWPORT BEACH, CA 92660, USA
Product Type	: GPS TRACKER
Trade Name	: N/A
Model Number	: ARROW-G
Date of Received	: February 28, 2015
Test Period	: March 01,2015 to March 24, 2015
Date of Issued	: March 25, 2015
Test Specification	: 47 CFR § 2.1091 47 CFR §1.1310 ANSI / IEEE Std.C95.1-1992 H46-2/99-237E CANADA RSS-102 Issue 4 March 2010
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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Approved By : Bill Hu
(Bill Hu)

Tested By : Sky Chou
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1. Description of Equipment under Test (EUT)

Applicant	CONNECTED HOLDINGS LLC
Applicant Address	4740 VON KARMAN AVENUE, SUITE 120, NEWPORT BEACH, CA 92660, USA
Manufacturer	SHENZHEN EELINK COMMUNICATION TECHNOLOGY CO., LTD
Manufacturer Address	FLOOR 3, YUYANG BUILDING, LANGSHAN 2ND ROAD, NANSHAN DISTRICT, SHENZHEN, CHINA
Product Type	GPS TRACKER
Trade Name	N/A
Model Number	ARROW-G
FCC ID	2AEB4ARROWG01
Frequency Range	824.2 - 848.8 MHz GPRS/EGPRS 850 1850.2 - 1909.8 MHz GPRS/EGPRS 1900 *GPRS Multi Class :12
Transmit Power (conducted power)	GPRS 850: 1.33 W / 31.25 dBm GPRS 1900: 0.74 W / 28.71 dBm
Device Type	Mobile Devices
Exposure category	General population/uncontrolled environment
Antenna Specification	GSM 850: -1 dBi PCS 1900: -1 dBi
Antenna Designation	Integrated onto PCB
RF Evaluation	1.00 W/m2

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 & 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device 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 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FC C's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna.

3. Manufacturing tolerance

GSM850 GPRS				
Channel		251	190	128
1 Txslot	Target (dBm)	31.0	31.0	31.0
	Tolerance \pm (dB)	1	1	1
2 Txslot	Target (dBm)	30.0	30.0	30.0
	Tolerance \pm (dB)	1	1	1
3 Txslot	Target (dBm)	29.0	29.0	29.0
	Tolerance \pm (dB)	1	1	1
4 Txslot	Target (dBm)	28.0	28.0	28.0
	Tolerance \pm (dB)	1	1	1
GSM 1900 GPRS				
Channel		810	661	512
1 Txslot	Target (dBm)	28.0	28.0	28.0
	Tolerance \pm (dB)	1	1	1
2 Txslot	Target (dBm)	27.0	27.0	27.0
	Tolerance \pm (dB)	1	1	1
3 Txslot	Target (dBm)	26.0	26.0	26.0
	Tolerance \pm (dB)	1	1	1
4 Txslot	Target (dBm)	25.0	25.0	25.0
	Tolerance \pm (dB)	1	1	1

GSM850		Burst-Average Conducted power (dBm)			Burst-Average Conducted power - including tolerance (dBm)				Source Based Time-Average power (dBm)			Source Based Time-Average power -including tolerance (dBm)		
		824.2 MHz	836.6 MHz	848.8 MHz	824.2 MHz	836.6 MHz	848.8 MHz		824.2 MHz	836.6 MHz	848.8 MHz	824.2 MHz	836.6 MHz	848.8 MHz
GPRS (GMS K)	1TX slot	31.14	31.25	31.09	32.00	32.00	32.00	-9.03dB	22.11	22.22	22.06	22.97	22.97	22.97
	2TX slot	30.89	30.24	30.08	31.00	31.00	31.00	-6.02dB	24.87	24.22	24.06	24.98	24.98	24.98
	3TX slot	29.92	29.15	29.09	30.00	30.00	30.00	-4.26dB	25.66	24.89	24.83	25.74	25.74	25.74
	4TX slot	28.91	28.33	28.06	29.00	29.00	29.00	-3.01dB	25.90	25.32	25.05	25.99	25.99	25.99
GSM1900		Burst-Average Conducted power (dBm)			Burst-Average Conducted power - including tolerance (dBm)				Source Based Time-Average power (dBm)			Source Based Time-Average power -including tolerance (dBm)		
		1850.2 MHz	1880.0 MHz	1909.8 MHz	1850.2 MHz	1880.0 MHz	1909.8 MHz		1850.2 MHz	1880.0 MHz	1909.8 MHz	1850.2 MHz	1880.0 MHz	1909.8 MHz
GPRS (GMS K)	1TX slot	28.52	28.66	28.71	29.00	29.00	29.00	-9.03dB	19.49	19.63	19.68	19.97	19.97	19.97
	2TX slot	27.25	27.04	27.11	28.00	28.00	28.00	-6.02dB	21.23	21.02	21.09	21.98	21.98	21.98
	3TX slot	26.54	26.14	26.25	27.00	27.00	27.00	-4.26dB	22.28	21.88	21.99	22.74	22.74	22.74
	4TX slot	25.48	25.44	25.12	26.00	26.00	26.00	-3.01dB	22.47	22.43	22.11	22.99	22.99	22.99

Note:

1. Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => - 9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => - 6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => - 4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => - 3.01dB



4. Test Result

Band	Data Rate	Frequency (MHz)	Time-average Power (dBm)	Time-average Power (including tolerance) (dBm)	Antenna Gain (dB)	Numeric Gain (dBi)	Duty Cycle	Power Density [S] (mW/cm ²)	Limit (mW/cm ²)
GPRS850	4 Tx slot	824.2	25.90	25.99	-1.00	0.7943	50%	0.0622	0.5495
		836.6	25.32	25.99	-1.00	0.7943	50%	0.0622	0.5577
		848.8	25.05	25.99	-1.00	0.7943	50%	0.0622	0.5659
GPRS1900	4 Tx slot	1850.2	22.47	22.99	-1.00	0.7943	50%	0.0315	1.0000
		1880.0	22.43	22.99	-1.00	0.7943	50%	0.0315	1.0000
		1908.8	22.11	22.99	-1.00	0.7943	50%	0.0315	1.0000