



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1310FS12-05
Applicant	: Telit Communications S.p.A.
Manufacturer	: Telit Communications S.p.A.
Product Type	: GL865-QUAD V3
Trade Name	: Telit
Model Number	: GL865-QUAD V3
Dates of Received	: Sep. 24, 2013
Dates of Test	: Sep. 27, 2013
Issued Date	: Nov. 12, 2013
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
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1. Description of Equipment under Test (EUT)

Applicant	Telit Communications S.p.A.			
Applicant Address	Viale Stazione di Prosecco 5/b, 34010, Trieste, Italy			
Manufacturer	Telit Communications S.p.A.			
Manufacturer Address	Viale Stazione di Prosecco 5/b, 34010, Trieste, Italy			
Product Type	GL865-QUAD V3			
Trade Name	Telit			
Model Number	GL865-QUAD V3			
IMEI No.	356917059003180			
FCC ID	R17GL865Q3			
IC	5131A-GL865Q3			
Frequency Range	824.2 - 848.8 MHz GSM/GPRS 850 1850.2 - 1909.8 MHz PCS/GPRS 1900 *GPRS Multi Class: 10			
Transmit Power (conducted power)	GSM/GPRS 850: 1.663 W / 32.21 dBm PCS/GPRS 1900: 0.940 W / 29.73 dBm			
Antenna Designation	Manufacturer	Model Number	Antenna Type	Antenna Gain
	TEL-CAB Telecommunications and cables	1RR0100056TLB	1/4 λ Mobile Antenna	GSM/GPRS 850: 6.43dBi PCS/GPRS 1900: 3dBi
Temperature Range	-30 ~ +70°C			
RF Evaluation	5.48 W/m ²			

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 FCC’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. RF Output Power

Band	Date Rate	CH	Frequency (MHz)	Conducted power Avg.-Burst (dBm)
GSM850	---	128	824.2	32.21
		190	836.6	32.16
		251	848.8	32.06
GPRS850	4Down1Up	128	824.2	31.97
		190	836.6	31.93
		251	848.8	31.85
	3Down2Up	128	824.2	31.81
		190	836.6	31.76
		251	848.8	31.67
GSM1900	---	512	1850.2	29.56
		661	1880.0	29.62
		810	1909.8	29.73
GPRS1900	4Down1Up	512	1850.2	29.36
		661	1909.8	29.43
		810	1909.8	29.55
	3Down2Up	512	1850.2	29.12
		661	1909.8	29.20
		810	1909.8	29.32



4. Max. Gain Evaluation

Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet EIRP limits				Calculations to meet MPE limits		
						ERP limits (W)	EIRP limits (W)	Antenna gain to meet ERP limits		max tune-up power (upper limit) (dBm) [P]	Antenna Gain limits (dBi)	Numeric Gain [G]
								Numeric	[dBi]			
GSM 850	1Down1Up	824.2	0.549	20	0.125	7	11.48	5	8.45	34	9.44	8.79
		836.6	0.558	20	0.125	7	11.48	5	8.45	34	9.51	8.93
		848.8	0.566	20	0.125	7	11.48	5	8.45	34	9.57	9.06
GPRS 850	4Down1Up	824.2	0.549	20	0.125	7	11.48	5	8.45	34	9.44	8.79
		836.6	0.558	20	0.125	7	11.48	5	8.45	34	9.51	8.93
		848.8	0.566	20	0.125	7	11.48	5	8.45	34	9.57	9.06
	3Down2Up	824.2	0.549	20	0.250	7	11.48	5	8.45	34	6.43	4.39
		836.6	0.558	20	0.250	7	11.48	5	8.45	34	6.50	4.47
		848.8	0.566	20	0.250	7	11.48	5	8.45	34	6.56	4.53

Note: In order to match the pass condition that maximum antenna gain for 850 MHz frequency band do not exceed 6.43 dBi.

Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet EIRP limits			Calculations to meet MPE limits		
						EIRP limits (W)	Antenna gain to meet ERP limits		max tune-up power (upper limit) (dBm) [P]	Antenna Gain limits (dBi)	Numeric Gain [G]
							Numeric	[dBi]			
PCS 1900	1Down1Up	1850.2	1.000	20	0.125	2	2	3	31	15.04	31.941
		1880.0	1.000	20	0.125	2	2	3	31	15.04	31.941
		1909.8	1.000	20	0.125	2	2	3	31	15.04	31.941
GPRS 1900	4Down1Up	1850.2	1.000	20	0.125	2	2	3	31	15.04	31.941
		1880.0	1.000	20	0.125	2	2	3	31	15.04	31.941
		1909.8	1.000	20	0.125	2	2	3	31	15.04	31.941
	3Down2Up	1850.2	1.000	20	0.250	2	2	3	31	12.03	15.971
		1880.0	1.000	20	0.250	2	2	3	31	12.03	15.971
		1909.8	1.000	20	0.250	2	2	3	31	12.03	15.971

Note: In order to match the pass condition that maximum antenna gain for 1900 MHz frequency band do not exceed 3 dBi.



5. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up Power (upper limit) (dBm) [P]	ANT Gain [G] (dBi)	Numeric Gain [G]	Duty Cycle	[P]+ [G] with Duty cycle (mW) [TP]	Power Density (mw/cm ²) [S]	Min. Distance (cm)
GSM 850	1Down1Up	824.2	0.549	20	34	6.43	4.4	0.125	1381.54	0.275	20
		836.6	0.558	20	34	6.43	4.4	0.125	1381.54	0.275	20
		848.8	0.566	20	34	6.43	4.4	0.125	1381.54	0.275	20
GPRS 850	4Down1Up	824.2	0.549	20	34	6.43	4.4	0.125	1381.54	0.275	20
		836.6	0.558	20	34	6.43	4.4	0.125	1381.54	0.275	20
		848.8	0.566	20	34	6.43	4.4	0.125	1381.54	0.275	20
	3Down2Up	824.2	0.549	20	34	6.43	4.4	0.250	2763.08	0.548	20
		836.6	0.558	20	34	6.43	4.4	0.250	2763.08	0.548	20
		848.8	0.566	20	34	6.43	4.4	0.250	2763.08	0.548	20
GSM 1900	1Down1Up	1850.2	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
		1880.0	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
		1909.8	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
GPRS 1900	4Down1Up	1850.2	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
		1909.8	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
		1909.8	1.000	20	31	3.00	2.0	0.125	314.73	0.063	20
	3Down2Up	1850.2	1.000	20	31	3.00	2.0	0.250	629.46	0.125	20
		1909.8	1.000	20	31	3.00	2.0	0.250	629.46	0.125	20
		1909.8	1.000	20	31	3.00	2.0	0.250	629.46	0.125	20

Note: The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.