RF Exposure Evaluation declaration

Product Name : HE863-NAD

Model No. : HE863-NAD

FCC ID : RI7HE863NA

Applicant : Telit Communications S.p.A.

Address : Viale Stazione di Prosecco 5/b

Date of Receipt : Nov. 17, 2009

Date of Declaration : Jan. 28, 2011

Report No. : 10B334R-RF-US-RFEXP-A

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	30
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*Pi*R^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 23℃ and 58％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : HE863-NAD
Test Item : RF Exposure Evaluation
Test Site : N/A

	850					
	Peak	Time-Average	Peak	Time-Average	Peak	Time-Average
	128		189		251	
GPRS 8 (1 Uplink)	32.54	23.51	32.54	23.51	32.6	23.57
GPRS 10 (2 Uplink)	32.27	26.25	32.31	26.29	32.27	26.25
GPRS 11 (3 Uplink)	32	27.74	32.04	27.78	32.04	27.78
GPRS 12 (4 Uplink)	30.89	**27.88**	30.96	**27.95**	30.95	**27.94**
EGPRS 8 (1 Uplink)	27.37	18.34	27.33	18.3	27.42	18.39
EGPRS 10 (2 Uplink)	26.96	20.94	27.06	21.04	27.03	21.01
EGPRS 11 (3 Uplink)	26.06	21.8	26.17	21.91	26.13	21.87
EGPRS 12 (4 Uplink)	25.06	22.05	25.03	22.02	25.05	22.04

	1900					
	Peak	Time-Average	Peak	Time-Average	Peak	Time-Average
	512		698		885	
GPRS 8 (1 Uplink)	29.09	20.06	29.13	20.1	29.08	20.05
GPRS 10 (2 Uplink)	28.99	22.97	28.97	22.95	28.92	22.9
GPRS 11 (3 Uplink)	28.8	24.54	28.77	24.51	28.73	24.47
GPRS 12 (4 Uplink)	28.45	**25.44**	28.34	**25.33**	28.44	**25.43**
EGPRS 8 (1 Uplink)	25.89	16.86	25.91	16.88	25.93	16.9
EGPRS 10 (2 Uplink)	25.78	19.76	25.79	19.77	25.81	19.79
EGPRS 11 (3 Uplink)	25.64	21.38	25.51	21.25	25.53	21.27
EGPRS 12 (4 Uplink)	24.68	21.67	24.65	21.64	24.62	21.61

Note : The calculated method are shown as below :

1 uplink(Duty cycle=1/8) : Time-Average = peak -9.03

2 uplink(Duty cycle=2/8) : Time-Average = peak -6.02

3 uplink(Duty cycle=3/8) : Time-Average = peak -4.26

4 uplink(Duty cycle=4/8) : Time-Average = peak -3.01

GSM 850 GPRS-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Peak Power (dBm)	Duty Cycle	Conducted Average Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
824.2	30.89	1/2	27.88	613.7	0.3211	0.55	Pass
836.4	30.96	1/2	27.95	623.7	0.3264	0.55	Pass
848.8	30.95	1/2	27.94	622.3	0.3256	0.55	Pass

GSM 850 EGPRS-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Peak Power (dBm)	Duty Cycle	Conducted Average Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
824.2	25.06	1/2	22.05	160.3	0.0839	0.55	Pass
836.4	25.03	1/2	22.02	159.2	0.0833	0.55	Pass
848.8	25.05	1/2	22.04	159.9	0.0837	0.55	Pass

PCS 1900 GPRS-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Peak Power (dBm)	Duty Cycle	Conducted Average Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1850.2	28.45	1/2	25.44	349.9	0.1831	1	Pass
1880	28.34	1/2	25.33	341.2	0.1785	1	Pass
1909.8	28.44	1/2	25.43	349.1	0.1827	1	Pass

PCS 1900 EGPRS-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Peak Power (dBm)	Duty Cycle	Conducted Average Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1850.2	24.68	1/2	21.67	146.9	0.0769	1	Pass
1880	24.65	1/2	21.64	145.9	0.0763	1	Pass
1909.8	24.62	1/2	21.61	144.9	0.0758	1	Pass

WCDMA V-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
826.4	22.82	1	191.4	0.1002	0.55	Pass
836.6	22.93	1	196.3	0.1027	0.55	Pass
846.6	22.98	1	198.6	0.1039	0.55	Pass

WCDMA V HSDPA-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
826.4	23.02	1	200.4	0.1049	0.55	Pass
836.6	22.96	1	197.7	0.1035	0.55	Pass
846.6	22.90	1	195.0	0.1020	0.55	Pass

WCDMA V HSUPA-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
826.4	22.68	1	185.4	0.0970	0.55	Pass
836.6	22.59	1	181.6	0.0950	0.55	Pass
846.6	22.74	1	187.9	0.0983	0.55	Pass

WCDMA II -Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1852.4	22.96	1	197.7	0.1035	1	Pass
1880	23.04	1	201.4	0.1054	1	Pass
1907.6	22.98	1	198.6	0.1039	1	Pass

WCDMA II HSDPA-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1852.4	22.98	1	198.6	0.1039	1	Pass
1880	22.93	1	196.3	0.1027	1	Pass
1907.6	22.94	1	196.8	0.1030	1	Pass

WCDMA II HSUPA-Peak Gain: 4.2dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1852.4	22.15	1	164.1	0.0858	1	Pass
1880	22.19	1	165.6	0.0866	1	Pass
1907.6	21.46	1	140.0	0.0732	1	Pass

Note: The conducted output power is refer to report No.: 10B304R-HPUSP07V01-A from the QuieTek.