



A Test Lab Techno Corp.

Changan Lab : No. 140 -1, Changan Street, Bade City, Taoyuan County, Taiwan R.O.C.
Tel : 886-3-271-0188 / Fax : 886-3-271-0190



MPE Report

Test Report No.	: 1401FS12-02
Applicant	: Telit Communications S.p.A.
Manufacturer	: Telit Communications S.p.A.
Product Type	: Wireless module
Trade Name	: Telit
Model Number	: HE920-NA
Date of Received	Nov. 20, 2013
Test Period	: Dec. 04 ~ 05, 2013
Date of Issued	Feb. 26, 2014
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.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp.
4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

Approved By : Bill Hu
(Bill Hu)

Tested By : Sky Chou
(Sky Chou)



Contents

1. Description of Equipment under Test (EUT).....	3
2. Human Exposure Assessment	5
3. RF Output Power.....	6
4. Max. Gain Evaluation.....	11
5. Test Result.....	15

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	Wireless module
Trade Name	Telit
Model Number	HE920-NA
CIIPC Description	<p>[Hardware changes] From version 1.00 to 1.10 For HE920-NA, three duplexers respectively for WCDMA FDD II, IV, V have been replaced with smaller ones and several related matching values have been changed. For both HE920-NA, WCDMA Rx diversity antenna switch has been replaced with smaller one from same vendor. For both HE920-NA, PCB has been modified just to reflect the changes described above. GSM and all other parts are 100% same as before.</p> <p>[Software changes] From version 14.10.001 to 14.12.000-B028 For HE920-NA, Qualcomm MDM6200 baseline upgraded to 3.5. Captured differences below have nothing to do with protocols. For HE920-NA, GPRS and EGPRS multi slot class changed from 33 to 10 For HE920-NA, DTM mode class changed from 11 to 9 For HE920-NA, GPS disabled All other changes are related to AT command interfaces and have no influences on previous certifications.</p>
FCC ID	RI7HE920NA
IC	5131A-HE920NA
Frequency Range	824.2 - 848.8 MHz GSM/GPRS/EGPRS/DTM 850 1850.2 - 1909.8 MHz PCS/GPRS/EGPRS/DTM 1900 1852.4 - 1907.6 MHz WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band II 1712.4 - 1752.6 MHz WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band IV 826.4 - 846.6 MHz WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band V *GPRS / EGPRS Multi Class: 10 *DTM Multi Class: 9
Transmit Power (conducted power)	GSM/GPRS/EGPRS/DTM 850: 1.832 W / 32.63 dBm PCS/GPRS/EGPRS/DTM 1900: 0.762 W / 28.82 dBm WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band II: 0.213 W / 23.28 dBm WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band IV: 0.243 W / 23.85 dBm WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band V: 0.251 W / 24.00 dBm



Antenna Specification	GSM/GPRS/EGPRS/DTM 850: 6.79 dBi GSM/GPRS/EGPRS/DTM 1900: 3.01 dBi WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band II: 3.01 dBi WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band IV: 2.70 dBi WCDMA(RMC 12.2K)/HSDPA/HSUPA/HSPA+ Band V: 6.79 dBi
Antenna Designation	Dipole Antenna
Temperature Range	-30 ~ +70°C
RF Evaluation	4.74 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

$$S = \frac{PG}{4\pi R^2}$$
$$G_{max} = \frac{4\pi R^2}{P_{av}} S_{limit}$$

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	Data Rate	CH	Frequency (MHz)	Avg.-burst Conducted power (dBm)
GSM 850	---	128	824.2	32.38
		190	836.6	32.52
		251	848.8	32.63
GPRS 850	4Down1Up	128	824.2	32.21
		190	836.6	32.38
		251	848.8	32.45
	3Down2Up	128	824.2	32.09
		190	836.6	32.19
		251	848.8	32.28
EGPRS 850	4Down1Up	128	824.2	26.55
		190	836.6	26.66
		251	848.8	26.73
	3Down2Up	128	824.2	26.03
		190	836.6	26.08
		251	848.8	26.12
DTM 850 (GSM+GPRS)	3Down2Up	128	824.2	31.90
		190	836.6	31.96
		251	848.8	32.00
DTM 850 (GSM+EGPRS)	3Down2Up	128	824.2	25.02
		190	836.6	25.11
		251	848.8	25.14



Band	Data Rate	CH	Frequency (MHz)	Avg.-burst Conducted power (dBm)
GSM 1900	---	512	1850.2	28.69
		661	1880.0	28.72
		810	1909.8	28.82
GPRS 1900	4Down1Up	512	1850.2	28.54
		661	1909.8	28.59
		810	1909.8	28.66
	3Down2Up	512	1850.2	28.49
		661	1909.8	28.51
		810	1909.8	28.56
EGPRS 1900	4Down1Up	512	1850.2	25.02
		661	1880.0	24.89
		810	1909.8	24.81
	3Down2Up	512	1850.2	24.93
		661	1909.8	24.76
		810	1909.8	24.67
DTM 1900 (GSM+GPRS)	3Down2Up	512	1850.2	27.80
		661	1909.8	27.89
		810	1909.8	28.00
DTM 1900 (GSM+EGPRS)	3Down2Up	512	1850.2	24.50
		661	1909.8	24.21
		810	1909.8	24.14



Band	Sub-test	CH	Frequency (MHz)	Time-Average Conducted power (dBm)
WCDMA Band II	---	9262	1852.4	23.28
		9400	1880.0	23.09
		9538	1907.6	23.02
HSDPA Band II	1	9262	1852.4	22.40
		9400	1880.0	22.27
		9538	1907.6	22.03
	2	9262	1852.4	22.41
		9400	1880.0	22.29
		9538	1907.6	22.01
	3	9262	1852.4	21.88
		9400	1880.0	21.76
		9538	1907.6	21.53
	4	9262	1852.4	21.88
		9400	1880.0	21.74
		9538	1907.6	21.50
HSUPA/HSPA+ Band II	1	9262	1852.4	21.93
		9400	1880.0	21.80
		9538	1907.6	21.50
	2	9262	1852.4	19.93
		9400	1880.0	19.79
		9538	1907.6	19.52
	3	9262	1852.4	20.95
		9400	1880.0	20.81
		9538	1907.6	20.53
	4	9262	1852.4	19.92
		9400	1880.0	19.78
		9538	1907.6	19.53
	5	9262	1852.4	21.91
		9400	1880.0	21.83
		9538	1907.6	21.52



Band	Sub-test	CH	Frequency (MHz)	Time-Average Conducted power (dBm)
WCDMA Band IV	---	1312	1712.4	23.85
		1413	1732.6	23.75
		1513	1752.6	23.54
HSDPA Band IV	1	1312	1712.4	22.81
		1413	1732.6	22.69
		1513	1752.6	22.52
	2	1312	1712.4	22.83
		1413	1732.6	22.71
		1513	1752.6	22.52
	3	1312	1712.4	22.32
		1413	1732.6	22.19
		1513	1752.6	22.01
	4	1312	1712.4	22.31
		1413	1732.6	22.18
		1513	1752.6	22.00
HSUPA/HSPA+ Band IV	1	1312	1712.4	22.36
		1413	1732.6	22.27
		1513	1752.6	22.01
	2	1312	1712.4	20.35
		1413	1732.6	20.26
		1513	1752.6	20.02
	3	1312	1712.4	21.37
		1413	1732.6	21.27
		1513	1752.6	21.02
	4	1312	1712.4	20.33
		1413	1732.6	20.23
		1513	1752.6	20.00
	5	1312	1712.4	22.37
		1413	1732.6	22.29
		1513	1752.6	22.01



Band	Sub-test	CH	Frequency (MHz)	Time-Average Conducted power (dBm)
WCDMA Band V	---	4132	826.4	23.69
		4183	836.6	23.60
		4233	846.6	24.00
HSDPA Band V	1	4132	826.4	22.38
		4183	836.6	22.26
		4233	846.6	22.71
	2	4132	826.4	22.35
		4183	836.6	22.24
		4233	846.6	22.68
	3	4132	826.4	21.88
		4183	836.6	21.77
		4233	846.6	22.21
	4	4132	826.4	21.86
		4183	836.6	21.75
		4233	846.6	22.22
HSUPA/HSPA+ Band V	1	4132	826.4	21.88
		4183	836.6	21.74
		4233	846.6	22.22
	2	4132	826.4	19.90
		4183	836.6	19.75
		4233	846.6	20.22
	3	4132	826.4	20.90
		4183	836.6	20.75
		4233	846.6	21.22
	4	4132	826.4	19.88
		4183	836.6	19.73
		4233	846.6	20.20
	5	4132	826.4	21.84
		4183	836.6	21.72
		4233	846.6	22.20



4. Max. Gain Evaluation

Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet ERP limits				Calculations to meet MPE limits		
						Peak power (dBm)	ERP limits (W)	Antenna gain to meet ERP limits [G1]		max tune-up power (upper limit) (dBm) [P]	Antenna gain to meet MPE limits [G2]	
								Numeric	[dBi]		Numeric	[dBi]
GSM 850	1D1U	824.2	0.549	20	0.125	33.00	7.00	5.75	7.60	33	11.06	10.44
		836.6	0.558	20	0.125	33.00	7.00	5.75	7.60	33	11.24	10.51
		848.8	0.566	20	0.125	33.00	7.00	5.75	7.60	33	11.40	10.57
GPRS 850	4D1U	824.2	0.549	20	0.125	33.00	7.00	5.75	7.60	33	11.06	10.44
		836.6	0.558	20	0.125	33.00	7.00	5.75	7.60	33	11.24	10.51
		848.8	0.566	20	0.125	33.00	7.00	5.75	7.60	33	11.40	10.57
	3D2U	824.2	0.549	20	0.250	33.00	7.00	5.75	7.60	33	5.53	7.43
		836.6	0.558	20	0.250	33.00	7.00	5.75	7.60	33	5.62	7.50
		848.8	0.566	20	0.250	33.00	7.00	5.75	7.60	33	5.70	7.56
EGPRS 850	4D1U	824.2	0.549	20	0.125	30.00	7.00	11.48	10.60	27	44.04	16.44
		836.6	0.558	20	0.125	30.00	7.00	11.48	10.60	27	44.77	16.51
		848.8	0.566	20	0.125	30.00	7.00	11.48	10.60	27	45.41	16.57
	3D2U	824.2	0.549	20	0.250	30.00	7.00	11.48	10.60	27	22.02	13.43
		836.6	0.558	20	0.250	30.00	7.00	11.48	10.60	27	22.38	13.50
		848.8	0.566	20	0.250	30.00	7.00	11.48	10.60	27	22.70	13.56
DTM 850 (GSM+GPRS)	3D2U	824.2	0.549	20	0.250	32.50	7.00	6.45	8.10	32	6.96	8.43
		836.6	0.558	20	0.250	32.50	7.00	6.45	8.10	32	7.07	8.49
		848.8	0.566	20	0.250	32.50	7.00	6.45	8.10	32	7.18	8.56
DTM 850 (GSM+EGPRS)	3D2U	824.2	0.549	20	0.250	33.00	7.00	5.75	7.60	26	27.72	14.43
		836.6	0.558	20	0.250	33.00	7.00	5.75	7.60	26	28.18	14.50
		848.8	0.566	20	0.250	33.00	7.00	5.75	7.60	26	28.58	14.56

Min G1: 7.60 dBi

Min G2: 7.43 dBi

Min G(G1, G2): 7.43 dBi

G1: Antenna gain (dBi) to comply with ERP limits

G2: Antenna gain (dBi) to comply with MPE limits

Note: In order to comply with MPE and ERP limits therefore the max antenna gain should not exceed 7.43 dBi in

GSM 850 MHz.



Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet EIRP limits				Calculations to meet MPE limits		
						Peak power (dBm)	EIRP Limits (W)	Antenna gain to meet ERP limits [G1]		max tune-up power (upper limit) (dBm) [P]	Antenna gain to meet MPE limits [G2]	
								Numeric	[dBi]		Numeric	[dBi]
PCS 1900	1D1U	1850.2	1.000	20	0.125	29.50	2.00	2.24	3.50	29.6	44.09	16.44
		1880.0	1.000	20	0.125	29.50	2.00	2.24	3.50	29.6	44.09	16.44
		1909.8	1.000	20	0.125	29.50	2.00	2.24	3.50	29.6	44.09	16.44
GPRS 1900	4D1U	1850.2	1.000	20	0.125	29.00	2.00	2.51	4.00	29.4	46.16	16.64
		1880.0	1.000	20	0.125	29.00	2.00	2.51	4.00	29.4	46.16	16.64
		1909.8	1.000	20	0.125	29.00	2.00	2.51	4.00	29.4	46.16	16.64
	3D2U	1850.2	1.000	20	0.250	29.00	2.00	2.51	4.00	29.3	23.62	13.73
		1880.0	1.000	20	0.250	29.00	2.00	2.51	4.00	29.3	23.62	13.73
		1909.8	1.000	20	0.250	29.00	2.00	2.51	4.00	29.3	23.62	13.73
EGPRS 1900	4D1U	1850.2	1.000	20	0.125	28.50	2.00	2.82	4.50	25.8	105.76	20.24
		1880.0	1.000	20	0.125	28.50	2.00	2.82	4.50	25.8	105.76	20.24
		1909.8	1.000	20	0.125	28.50	2.00	2.82	4.50	25.8	105.76	20.24
	3D2U	1850.2	1.000	20	0.250	28.50	2.00	2.82	4.50	25.5	56.66	17.53
		1880.0	1.000	20	0.250	28.50	2.00	2.82	4.50	25.5	56.66	17.53
		1909.8	1.000	20	0.250	28.50	2.00	2.82	4.50	25.5	56.66	17.53
DTM 1900 (GSM+GPRS)	3D2U	1850.2	1.000	20	0.250	28.50	2.00	2.82	4.50	28.0	31.86	15.03
		1880.0	1.000	20	0.250	28.50	2.00	2.82	4.50	28.0	31.86	15.03
		1909.8	1.000	20	0.250	28.50	2.00	2.82	4.50	28.0	31.86	15.03
DTM 1900 (GSM+EGPRS)	3D2U	1850.2	1.000	20	0.250	29.00	2.00	2.51	4.00	24.5	71.33	18.53
		1880.0	1.000	20	0.250	29.00	2.00	2.51	4.00	24.5	71.33	18.53
		1909.8	1.000	20	0.250	29.00	2.00	2.51	4.00	24.5	71.33	18.53

Min G1: 3.50 dBi

Min G2: 13.73 dBi

Min G(G1, G2): 3.50 dBi

G1: Antenna gain (dBi) to comply with ERP limits

G2: Antenna gain (dBi) to comply with MPE limits

Note: In order to comply with MPE and EIRP limits therefore the max antenna gain should not exceed 3.50 dBi in PCS.



Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet EIRP limits				Calculations to meet MPE limits		
						Peak power (dBm)	EIRP limits (W)	Antenna gain to meet ERP limits [G1]		max tune-up power (upper limit) (dBm) [P]	Antenna gain to meet MPE limits [G2]	
								Numeric	[dBi]		Numeric	[dBi]
WCDMA Band II	RMC 12.2K	1852.4	1.000	20	1	27.00	2.00	3.99	6.01	24	20.01	13.01
		1880.0	1.000	20	1	27.00	2.00	3.99	6.01	24	20.01	13.01
		1907.6	1.000	20	1	27.00	2.00	3.99	6.01	24	20.01	13.01

Min G1: 6.01 dBi

Min G2: 13.01 dBi

Min G(G1, G2): 6.01 dBi

G1: Antenna gain (dBi) to comply with EIRP limits

G2: Antenna gain (dBi) to comply with MPE limits

Note: In order to comply with MPE and EIRP limits therefore the max antenna gain should not exceed 6.01 dBi in WCDMA Band II.

Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet EIRP limits				Calculations to meet MPE limits		
						Peak power (dBm)	EIRP limits (W)	Antenna gain to meet ERP limits [G1]		max tune-up power (upper limit) (dBm) [P]	Antenna gain to meet MPE limits [G2]	
								Numeric	[dBi]		Numeric	[dBi]
WCDMA Band IV	RMC 12.2K	1712.4	1.000	20	1	27.10	1.00	1.94	2.88	24	20.01	13.01
		1732.6	1.000	20	1	27.10	1.00	1.94	2.88	24	20.01	13.01
		1752.6	1.000	20	1	27.10	1.00	1.94	2.88	24	20.01	13.01

Min G1: 2.88 dBi

Min G2: 13.01 dBi

Min G(G1, G2): 2.88 dBi

G1: Antenna gain (dBi) to comply with EIRP limits

G2: Antenna gain (dBi) to comply with MPE limits

Note: In order to comply with MPE and EIRP limits therefore the max antenna gain should not exceed 2.88 dBi in WCDMA Band IV.



Band	Data Rate	Frequency (MHz)	Limit (mw)/cm ²	Distance (cm) [R]	Duty Cycle	Calculations to meet ERP limits				Calculations to meet MPE limits		
						Peak power (dBm)	EIRP limits (W)	Antenna gain to meet ERP limits [G1]		max tune-up power (upper limit) (dBm) [P]	Antenna gain to meet MPE limits [G2]	
								Numeric	[dBi]		Numeric	[dBi]
WCDMA Band V	RMC 12.2K	826.4	0.551	20	1	27.50	7.00	20.42	13.10	24	11.02	10.42
		836.6	0.558	20	1	27.50	7.00	20.42	13.10	24	11.16	10.48
		846.6	0.564	20	1	27.50	7.00	20.42	13.10	24	11.28	10.52

Min G1: 13.10 dBi

Min G2: 10.42 dBi

Min G(G1, G2): 10.42 dBi

G1: Antenna gain (dBi) to comply with EIRP limits

G2: Antenna gain (dBi) to comply with MPE limits

Note: In order to comply with MPE and ERP limits therefore the max antenna gain should not exceed 10.42 dBi in WCDMA Band V.

Summary Gain	
Band	Antenna Gain Evaluation(dBi)
GSM/GPRS/EGPRS 850/WCDMA Band V	7.43
GSM/GPRS/EGPRS 1900/WCDMA Band II	3.50
WCDMA Band IV	2.88

Note: Except meet limit of EIRP and MPE, the evaluation gains also meet other test with RSE and CSE. Therefore it chose available evaluation gain on the report.

Please see the summary gain, that actual gain should be not more than evaluation gain.

The antenna gain which is designated by customer and it also lower than evaluation gain therefore use it to calculate MPE on the report.



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] x [G] with Duty cycle (mW) [TP]	Power Density (mw/cm ²) [S]
GSM 850	1D1U	824.2	0.549	20	33	6.79	4.78	0.125	1192.17	0.237
		836.6	0.558	20	33	6.79	4.78	0.125	1192.17	0.237
		848.8	0.566	20	33	6.79	4.78	0.125	1192.17	0.237
GPRS 850	4D1U	824.2	0.549	20	33	6.79	4.78	0.125	1192.17	0.237
		836.6	0.558	20	33	6.79	4.78	0.125	1192.17	0.237
		848.8	0.566	20	33	6.79	4.78	0.125	1192.17	0.237
	3D2U	824.2	0.549	20	33	6.79	4.78	0.250	2384.34	0.474
		836.6	0.558	20	33	6.79	4.78	0.250	2384.34	0.474
		848.8	0.566	20	33	6.79	4.78	0.250	2384.34	0.474
EGPRS 850	4D1U	824.2	0.549	20	27	6.79	4.78	0.125	299.46	0.060
		836.6	0.558	20	27	6.79	4.78	0.125	299.46	0.060
		848.8	0.566	20	27	6.79	4.78	0.125	299.46	0.060
	3D2U	824.2	0.549	20	27	6.79	4.78	0.250	598.92	0.119
		836.6	0.558	20	27	6.79	4.78	0.250	598.92	0.119
		848.8	0.566	20	27	6.79	4.78	0.250	598.92	0.119
DTM 850 (GSM+GPRS)	3D2U	824.2	0.549	20	32	6.79	4.78	0.250	1893.95	0.377
		836.6	0.558	20	32	6.79	4.78	0.250	1893.95	0.377
		848.8	0.566	20	32	6.79	4.78	0.250	1893.95	0.377
DTM 850 (GSM+EGPRS)	3D2U	824.2	0.549	20	26	6.79	4.78	0.250	475.74	0.095
		836.6	0.558	20	26	6.79	4.78	0.250	475.74	0.095
		848.8	0.566	20	26	6.79	4.78	0.250	475.74	0.095

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



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] x [G] with Duty cycle (mW) [TP]	Power Density (mw/cm ²) [S]
GSM 1900	1D1U	1850.2	1.000	20	29.6	3.01	2.00	0.125	228.00	0.045
		1880.0	1.000	20	29.6	3.01	2.00	0.125	228.00	0.045
		1909.8	1.000	20	29.6	3.01	2.00	0.125	228.00	0.045
GPRS 1900	4D1U	1850.2	1.000	20	29.4	3.01	2.00	0.125	217.74	0.043
		1880.0	1.000	20	29.4	3.01	2.00	0.125	217.74	0.043
		1909.8	1.000	20	29.4	3.01	2.00	0.125	217.74	0.043
	3D2U	1850.2	1.000	20	29.3	3.01	2.00	0.250	425.57	0.085
		1880.0	1.000	20	29.3	3.01	2.00	0.250	425.57	0.085
		1909.8	1.000	20	29.3	3.01	2.00	0.250	425.57	0.085
EGPRS 1900	4D1U	1850.2	1.000	20	25.8	3.01	2.00	0.125	95.05	0.019
		1880.0	1.000	20	25.8	3.01	2.00	0.125	95.05	0.019
		1909.8	1.000	20	25.8	3.01	2.00	0.125	95.05	0.019
	3D2U	1850.2	1.000	20	25.5	3.01	2.00	0.250	177.41	0.035
		1880.0	1.000	20	25.5	3.01	2.00	0.250	177.41	0.035
		1909.8	1.000	20	25.5	3.01	2.00	0.250	177.41	0.035
DTM 1900 (GSM+GPRS)	3D2U	1850.2	1.000	20	28.0	3.01	2.00	0.250	315.48	0.063
		1880.0	1.000	20	28.0	3.01	2.00	0.250	315.48	0.063
		1909.8	1.000	20	28.0	3.01	2.00	0.250	315.48	0.063
DTM 1900 (GSM+EGPRS)	3D2U	1850.2	1.000	20	24.5	3.01	2.00	0.250	140.92	0.028
		1880.0	1.000	20	24.5	3.01	2.00	0.250	140.92	0.028
		1909.8	1.000	20	24.5	3.01	2.00	0.250	140.92	0.028
WCDMA Band II	RMC 12.2K	1852.4	1.000	20	24.0	3.01	2.00	1.000	502.38	0.100
		1880.0	1.000	20	24.0	3.01	2.00	1.000	502.38	0.100
		1907.6	1.000	20	24.0	3.01	2.00	1.000	502.38	0.100
WCDMA Band IV	RMC 12.2K	1712.4	1.000	20	24.0	2.70	1.86	1.000	467.21	0.093
		1732.6	1.000	20	24.0	2.70	1.86	1.000	467.21	0.093
		1752.6	1.000	20	24.0	2.70	1.86	1.000	467.21	0.093
WCDMA Band V	RMC 12.2K	826.4	0.551	20	24.0	6.79	4.78	1.000	1200.68	0.239
		836.6	0.558	20	24.0	6.79	4.78	1.000	1200.68	0.239
		846.6	0.564	20	24.0	6.79	4.78	1.000	1200.68	0.239

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