



A Test Lab Techno Corp.


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MPE Report



Test Report No.	: 1007FS15
Applicant	: Netcomm Limited
Manufacturer	: Netcomm Limited
Product Type	: 3G Router
Trade Name	: Netcomm
Model Number	: 3G10WVR2
FCC ID	: XIA-3G10WVR2
Dates of Test	: Jul. 20, 2010
Test Specification	: 47 CFR § 2.1091 47 CFR §1.1310 ANSI / IEEE Std.C95.1-1999
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
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Approve Signer



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1. Description of Equipment under Test (EUT)

Applicant	Netcomm Limited
Applicant Address	2-6 Orion Road, Lane Cove, NSW, 2066 Australia
Manufacturer	Netcomm Limited
Manufacturer Address	2-6 Orion Road, Lane Cove, NSW, 2066 Australia
Product Type	3G Router
Trade Name	Netcomm
Model Number	3G10WVR2
FCC ID	XIA-3G10WVR2
Frequency Range	2412 - 2462 MHz (IEEE 802.11b / IEEE 802.11g)
Transmit Power (Peak conducted power)	IEEE 802.11b: 0.277 W / 24.42 dBm IEEE 802.11g: 0.500 W / 26.99 dBm
Modulation Technique	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS(CCK, DQPSK, DBPSK) + OFDM(QPSK, BPSK, 16-QAM, 64-QAM)
Antenna Specification	2.0 dBi
Antenna Designation	PCB antenna
Temperature Range	-30 ~ +70°C

The above equipment was tested by Compliance Certification Services Inc. 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



1.1 RF Output Power

Band	Data Rate	Frequency (MHz)	Average Power (dBm)	Peak Power (dBm)	Worst Case
IEEE 802.11b	1	2412	19.90	24.06	<input type="checkbox"/>
		2437	20.01	24.17	<input type="checkbox"/>
		2462	20.23	24.31	<input type="checkbox"/>
	2	2412	19.82	24.06	<input type="checkbox"/>
		2437	19.97	24.17	<input type="checkbox"/>
		2462	20.01	24.33	<input type="checkbox"/>
	5.5	2412	19.64	24.05	<input type="checkbox"/>
		2437	19.68	24.19	<input type="checkbox"/>
		2462	19.86	24.34	<input type="checkbox"/>
	11	2412	19.54	24.14	<input type="checkbox"/>
		2437	19.55	24.29	<input type="checkbox"/>
		2462	19.71	24.42	<input checked="" type="checkbox"/>
IEEE 802.11g	6	2412	17.56	26.64	<input type="checkbox"/>
		2437	17.54	26.99	<input checked="" type="checkbox"/>
		2462	16.58	26.65	<input type="checkbox"/>
	9	2412	17.33	26.79	<input type="checkbox"/>
		2437	17.33	26.99	<input type="checkbox"/>
		2462	16.44	26.65	<input type="checkbox"/>
	12	2412	17.12	26.67	<input type="checkbox"/>
		2437	17.22	26.66	<input type="checkbox"/>
		2462	16.31	26.48	<input type="checkbox"/>
	18	2412	16.98	26.58	<input type="checkbox"/>
		2437	17.01	26.54	<input type="checkbox"/>
		2462	16.08	26.46	<input type="checkbox"/>
	24	2412	16.68	26.60	<input type="checkbox"/>
		2437	16.80	26.75	<input type="checkbox"/>
		2462	15.82	26.54	<input type="checkbox"/>
	36	2412	15.84	26.40	<input type="checkbox"/>
		2437	15.90	26.62	<input type="checkbox"/>
		2462	15.11	26.52	<input type="checkbox"/>
	48	2412	15.20	26.35	<input type="checkbox"/>
		2437	15.23	26.53	<input type="checkbox"/>
		2462	14.44	26.47	<input type="checkbox"/>
	54	2412	15.06	26.40	<input type="checkbox"/>
		2437	15.14	26.64	<input type="checkbox"/>
		2462	14.23	26.33	<input type="checkbox"/>



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.



2.1 Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw)	Distance (cm) [R]	Peak Power (dBm) [P]	ANT Gain (dBi) [G]	[P]+ [G] (W) [TP]	Power Density [S]	Min. distance (cm)
IEEE 802.11b	11	2412.0	1.000	20	24.14	2.00	0.411	0.082	20cm
		2437.0	1.000	20	24.29	2.00	0.426	0.085	20cm
		2462.0	1.000	20	24.42	2.00	0.439	0.087	20cm
IEEE 802.11g	6	2412.0	1.000	20	26.64	2.00	0.731	0.146	20cm
		2437.0	1.000	20	26.99	2.00	0.793	0.158	20cm
		2462.0	1.000	20	26.65	2.00	0.733	0.146	20cm

Band	Data Rate	Frequency (MHz)	Limit (mw)	Distance (cm) [R]	Peak Power (dBm) [P]	ANT Gain (dBi) [G]	[P]+ [G] (W) [TP]	Power Density [S]	Min. distance (cm)
GSM 850	----	824.2	0.549	20	31.96	2.00	2.489	0.248	20cm
		836.6	0.558	20	32.00	2.00	2.512	0.250	20cm
		848.8	0.566	20	32.03	2.00	2.529	0.252	20cm
GPRS 850	4Down1Up	824.2	0.549	20	32.40	2.00	2.754	0.274	20cm
		836.6	0.558	20	32.02	2.00	2.523	0.251	20cm
		848.8	0.566	20	31.92	2.00	2.466	0.245	20cm
GSM 1900	----	1850.2	1.000	20	29.01	2.00	1.262	0.126	20cm
		1880.0	1.000	20	28.84	2.00	1.213	0.121	20cm
		1909.8	1.000	20	28.98	2.00	1.253	0.125	20cm
GPRS 1900	1Down4Up	1850.2	1.000	20	28.83	2.00	1.211	0.120	20cm
		1880.0	1.000	20	28.58	2.00	1.143	0.114	20cm
		1909.8	1.000	20	28.73	2.00	1.183	0.118	20cm
WCDMA Band II	----	1852.4	1.000	20	22.59	2.00	0.288	0.057	20cm
		1880.0	1.000	20	22.90	2.00	0.309	0.062	20cm
		1909.7	1.000	20	22.76	2.00	0.299	0.060	20cm
HSDPA Band II	Sub-Test 4	1852.4	1.000	20	22.29	2.00	0.269	0.053	20cm
		1880.0	1.000	20	22.69	2.00	0.294	0.059	20cm
		1909.7	1.000	20	22.50	2.00	0.282	0.056	20cm
WCDMA Band V	----	826.4	0.551	20	22.30	2.00	0.269	0.054	20cm
		836.4	0.558	20	22.78	2.00	0.301	0.060	20cm
		846.4	0.564	20	22.24	2.00	0.265	0.053	20cm
HSDPA Band V	Sub-Test 3	826.4	0.551	20	22.26	2.00	0.267	0.053	20cm
		836.4	0.558	20	22.85	2.00	0.305	0.061	20cm
		846.4	0.564	20	22.14	2.00	0.259	0.052	20cm

Simultaneous MPE	Frequency(MHz)	MPE	Σ highest MPE for mobile transmitter(mW/cm ²)	Limit(mW/cm ²)
Cellular Band(824-849MHz)	824.2	0.274	0.432	1.000
802.11g_Rate 6M	2437	0.158		