

©2008 ATL Techno. Corp. RF Testing Lab .
3D Gain Efficiency Test Report

Test Date	2012/7/25														
Trade Name															
Antenna Type	PCB Antenna														
Model Name	RC1533901/01, serial no.: 3139 228 11621														
Test Mode Free Space & Talking Position	Free Space														
Communication System															
Frequency	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416
OTA-02 Note															
Ant. Port Input Pwr. (dBm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-3.8981	-3.8407	-3.8234	-3.8049	-3.7839	-3.8332	-3.8379	-3.8048	-3.8126	-3.7861	-3.8074	-3.7959	-3.7957	-3.8146	-3.8498
Peak EIRP (dBm)	-1.6051	-1.5862	-1.5549	-1.5682	-1.5277	-1.5998	-1.5718	-1.5419	-1.5521	-1.5334	-1.6008	-1.5877	-1.5964	-1.5892	-1.6248
Directivity (dBi)	2.293	2.2545	2.2685	2.2367	2.2562	2.2334	2.2661	2.2629	2.2605	2.2527	2.2066	2.2082	2.1994	2.2254	2.2249
Efficiency (dB)	-3.8981	-3.8407	-3.8234	-3.8049	-3.7839	-3.8332	-3.8379	-3.8048	-3.8126	-3.7861	-3.8074	-3.7959	-3.7957	-3.8146	-3.8498
Gain (dBi)	-1.6051	-1.5862	-1.5549	-1.5682	-1.5277	-1.5998	-1.5718	-1.5419	-1.5521	-1.5334	-1.6008	-1.5877	-1.5964	-1.5892	-1.6248
Front/Back Ratio (dB)	3.8314	3.7642	3.7877	3.659	3.7363	3.7056	3.7244	2.9765	3.6778	3.6828	3.557	2.8409	3.5212	2.8342	2.8954
Beamwidth (?)	133	133	134	134	134	134	134	129	134	134	134	130	135	130	130
+ Beamwidth (?)	43	43	44	44	44	44	44	39	44	44	44	40	45	40	40
- Beamwidth (?)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Boresight Angle (?)	335	335	335	335	335	335	335	340	335	335	335	340	335	340	340
Maximum Power (dBm)	-1.6051	-1.5862	-1.5549	-1.5682	-1.5277	-1.5998	-1.5718	-1.5419	-1.5521	-1.5334	-1.6008	-1.5877	-1.5964	-1.5892	-1.6248
Minimum Power (dBm)	-6.6109	-6.5835	-6.532	-6.4765	-6.476	-6.5267	-6.5171	-6.5446	-6.5425	-6.521	-6.5082	-6.4951	-6.4745	-6.5242	-6.5696
Average Power (dBm)	-3.8818	-3.8241	-3.807	-3.7891	-3.7678	-3.8162	-3.8205	-3.7871	-3.7953	-3.7691	-3.7908	-3.7787	-3.7778	-3.7971	-3.8317
Max/Min Ratio (dB)	5.0058	4.9973	4.9771	4.9083	4.9483	4.927	4.9453	5.0027	4.9904	4.9876	4.9074	4.9074	4.8781	4.935	4.9448
Max/Avg Ratio (dB)	2.2767	2.2379	2.2521	2.2209	2.2401	2.2165	2.2487	2.2452	2.2432	2.2356	2.19	2.191	2.1814	2.2079	2.2069
Min/Avg Ratio (dB)	-2.729	-2.7594	-2.725	-2.6874	-2.7082	-2.7105	-2.6966	-2.7575	-2.7472	-2.752	-2.7174	-2.7164	-2.6967	-2.7271	-2.7379
Average Gain (dB)	-3.8981	-3.8407	-3.8234	-3.8049	-3.7839	-3.8332	-3.8379	-3.8048	-3.8126	-3.7861	-3.8074	-3.7959	-3.7957	-3.8146	-3.8498
Frequency	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431
Ant. Port Input Pwr. (dBm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-3.8092	-3.7895	-3.7493	-3.7778	-3.8034	-3.7864	-3.8181	-3.8325	-3.8105	-3.7962	-3.7289	-3.6955	-3.7179	-3.73	-3.7507
Peak EIRP (dBm)	-1.6029	-1.5557	-1.5113	-1.5971	-1.62	-1.5999	-1.6244	-1.6334	-1.6716	-1.6198	-1.5557	-1.5071	-1.5406	-1.5743	-1.5773
Directivity (dBi)	2.2063	2.2338	2.238	2.1808	2.1834	2.1865	2.1937	2.1991	2.1389	2.1764	2.1732	2.1884	2.1773	2.1557	2.1735
Efficiency (dB)	-3.8092	-3.7895	-3.7493	-3.7778	-3.8034	-3.7864	-3.8181	-3.8325	-3.8105	-3.7962	-3.7289	-3.6955	-3.7179	-3.73	-3.7507
Gain (dBi)	-1.6029	-1.5557	-1.5113	-1.5971	-1.62	-1.5999	-1.6244	-1.6334	-1.6716	-1.6198	-1.5557	-1.5071	-1.5406	-1.5743	-1.5773
Front/Back Ratio (dB)	2.7967	3.5692	3.5905	3.4224	2.7228	2.7067	3.4532	2.6769	2.5975	3.2835	3.3307	3.3488	2.612	2.5448	2.5446

This report shall not be reproduced except in full, without the written approval of ATL.

©2008 ATL Techno. Corp. RF Testing Lab .
3D Gain Efficiency Test Report

Beamwidth (?)	131	135	135	136	131	131	136	131	132	137	136	137	132	132	133
+ Beamwidth (?)	41	45	45	46	41	41	46	41	42	47	46	47	42	42	43
- Beamwidth (?)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Boresight Angle (?)	340	335	335	335	340	340	335	340	340	335	335	335	340	340	340
Maximum Power (dBm)	-1.6029	-1.5557	-1.5113	-1.5971	-1.62	-1.5999	-1.6244	-1.6334	-1.6716	-1.6198	-1.5557	-1.5071	-1.5406	-1.5743	-1.5773
Minimum Power (dBm)	-6.4776	-6.5156	-6.4233	-6.4642	-6.4538	-6.4749	-6.5355	-6.4977	-6.4742	-6.4358	-6.3543	-6.3321	-6.3682	-6.3488	-6.4385
Average Power (dBm)	-3.7913	-3.7714	-3.7308	-3.759	-3.7844	-3.7684	-3.7991	-3.8143	-3.7921	-3.7768	-3.71	-3.6765	-3.6982	-3.7105	-3.7312
Max/Min Ratio (dB)	4.8747	4.9599	4.912	4.8671	4.8338	4.875	4.9111	4.8642	4.8025	4.816	4.7986	4.825	4.8276	4.7745	4.8613
Max/Avg Ratio (dB)	2.1885	2.2157	2.2195	2.1619	2.1644	2.1685	2.1747	2.1808	2.1205	2.157	2.1543	2.1693	2.1576	2.1362	2.1539
Min/Avg Ratio (dB)	-2.6862	-2.7442	-2.6925	-2.7053	-2.6694	-2.7065	-2.7364	-2.6834	-2.6821	-2.659	-2.6443	-2.6557	-2.67	-2.6383	-2.7074
Average Gain (dB)	-3.8092	-3.7895	-3.7493	-3.7778	-3.8034	-3.7864	-3.8181	-3.8325	-3.8105	-3.7962	-3.7289	-3.6955	-3.7179	-3.73	-3.7507
Frequency	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446
Ant. Port Input Pwr. (dBm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-3.7008	-3.706	-3.6507	-3.6128	-3.6177	-3.5872	-3.6061	-3.593	-3.5829	-3.5553	-3.536	-3.5213	-3.4915	-3.489	-3.4987
Peak EIRP (dBm)	-1.5191	-1.5748	-1.4976	-1.4175	-1.4643	-1.4642	-1.4543	-1.4421	-1.4454	-1.4009	-1.3991	-1.4028	-1.3635	-1.3471	-1.3746
Directivity (dBi)	2.1817	2.1312	2.1531	2.1954	2.1534	2.123	2.1517	2.1508	2.1375	2.1544	2.1369	2.1185	2.128	2.1419	2.1241
Efficiency (dB)	-3.7008	-3.706	-3.6507	-3.6128	-3.6177	-3.5872	-3.6061	-3.593	-3.5829	-3.5553	-3.536	-3.5213	-3.4915	-3.489	-3.4987
Gain (dBi)	-1.5191	-1.5748	-1.4976	-1.4175	-1.4643	-1.4642	-1.4543	-1.4421	-1.4454	-1.4009	-1.3991	-1.4028	-1.3635	-1.3471	-1.3746
Front/Back Ratio (dB)	2.5531	2.4588	2.526	2.5524	2.4341	2.4132	2.4348	2.4231	2.4152	2.4137	2.3665	2.4215	2.3474	2.4014	2.4047
Beamwidth (?)	132	133	133	132	133	133	134	134	134	134	135	135	135	135	135
+ Beamwidth (?)	42	43	43	42	43	43	44	44	44	44	45	45	45	45	45
- Beamwidth (?)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Boresight Angle (?)	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340
Maximum Power (dBm)	-1.5191	-1.5748	-1.4976	-1.4175	-1.4643	-1.4642	-1.4543	-1.4421	-1.4454	-1.4009	-1.3991	-1.4028	-1.3635	-1.3471	-1.3746
Minimum Power (dBm)	-6.333	-6.3082	-6.2614	-6.2489	-6.2028	-6.1005	-6.1265	-6.1279	-6.1486	-6.1314	-6.0546	-6.0374	-5.9924	-5.9249	-5.9683
Average Power (dBm)	-3.6807	-3.686	-3.6311	-3.5919	-3.5975	-3.5667	-3.5856	-3.572	-3.5623	-3.5345	-3.5154	-3.5001	-3.4701	-3.4674	-3.4771
Max/Min Ratio (dB)	4.8139	4.7334	4.7638	4.8314	4.7384	4.6363	4.6721	4.6857	4.7031	4.7305	4.6554	4.6347	4.6288	4.5778	4.5937
Max/Avg Ratio (dB)	2.1615	2.1112	2.1335	2.1744	2.1331	2.1025	2.1313	2.1299	2.1169	2.1336	2.1163	2.0974	2.1065	2.1203	2.1024
Min/Avg Ratio (dB)	-2.6524	-2.6222	-2.6303	-2.6571	-2.6053	-2.5338	-2.5408	-2.5559	-2.5863	-2.597	-2.5392	-2.5373	-2.5223	-2.4575	-2.4912
Average Gain (dB)	-3.7008	-3.706	-3.6507	-3.6128	-3.6177	-3.5872	-3.6061	-3.593	-3.5829	-3.5553	-3.536	-3.5213	-3.4915	-3.489	-3.4987
Frequency	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461
Ant. Port Input Pwr. (dBm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-3.4911	-3.4675	-3.4088	-3.4087	-3.4189	-3.4237	-3.4426	-3.485	-3.47	-3.4844	-3.4518	-3.4739	-3.4942	-3.4358	-3.4526
Peak EIRP (dBm)	-1.3218	-1.357	-1.2607	-1.2849	-1.3042	-1.2878	-1.2882	-1.3739	-1.336	-1.3299	-1.3213	-1.2957	-1.3552	-1.3012	-1.3121
Directivity (dBi)	2.1693	2.1105	2.1482	2.1238	2.1147	2.1359	2.1543	2.1111	2.1341	2.1545	2.1305	2.1782	2.139	2.1346	2.1405
Efficiency (dB)	-3.4911	-3.4675	-3.4088	-3.4087	-3.4189	-3.4237	-3.4426	-3.485	-3.47	-3.4844	-3.4518	-3.4739	-3.4942	-3.4358	-3.4526

©2008 ATL Techno. Corp. RF Testing Lab .
3D Gain Efficiency Test Report

Gain (dBi)	-1.3218	-1.357	-1.2607	-1.2849	-1.3042	-1.2878	-1.2882	-1.3739	-1.336	-1.3299	-1.3213	-1.2957	-1.3552	-1.3012	-1.3121
Front/Back Ratio (dB)	2.4158	2.3474	2.3644	2.339	2.3239	1.6537	1.6225	2.3767	1.611	2.3075	1.5702	1.6008	2.3211	1.5153	2.3136
Beamwidth (?)	135	136	136	136	137	131	131	137	131	137	132	132	138	133	138
+ Beamwidth (?)	45	46	46	46	47	41	41	47	41	47	42	42	48	43	48
- Beamwidth (?)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Boresight Angle (?)	340	340	340	340	340	345	345	340	345	340	345	345	340	345	340
Maximum Power (dBm)	-1.3218	-1.357	-1.2607	-1.2849	-1.3042	-1.2878	-1.2882	-1.3739	-1.336	-1.3299	-1.3213	-1.2957	-1.3552	-1.3012	-1.3121
Minimum Power (dBm)	-5.9124	-5.9216	-5.8349	-5.8206	-5.7695	-5.8165	-5.7899	-5.8702	-5.9048	-5.9052	-5.7721	-5.7737	-5.7698	-5.7893	-5.8285
Average Power (dBm)	-3.4693	-3.4451	-3.3864	-3.3859	-3.3961	-3.3999	-3.4191	-3.4605	-3.4457	-3.4608	-3.4278	-3.4496	-3.4696	-3.4101	-3.4275
Max/Min Ratio (dB)	4.5906	4.5646	4.5743	4.5357	4.4652	4.5287	4.5017	4.4963	4.5688	4.5753	4.4507	4.478	4.4146	4.4882	4.5164
Max/Avg Ratio (dB)	2.1475	2.0881	2.1257	2.101	2.0919	2.1121	2.1309	2.0866	2.1097	2.1309	2.1065	2.1539	2.1144	2.109	2.1154
Min/Avg Ratio (dB)	-2.4431	-2.4765	-2.4486	-2.4347	-2.3734	-2.4166	-2.3708	-2.4097	-2.4591	-2.4445	-2.3443	-2.3241	-2.3002	-2.3792	-2.4009
Average Gain (dB)	-3.4911	-3.4675	-3.4088	-3.4087	-3.4189	-3.4237	-3.4426	-3.485	-3.47	-3.4844	-3.4518	-3.4739	-3.4942	-3.4358	-3.4526
Frequency	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476
Ant. Port Input Pwr. (dBm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-3.4502	-3.4438	-3.3766	-3.3403	-3.3021	-3.3387	-3.364	-3.3672	-3.3778	-3.3703	-3.349	-3.3486	-3.3498	-3.398	-3.3884
Peak EIRP (dBm)	-1.307	-1.2801	-1.1741	-1.1817	-1.1258	-1.1653	-1.191	-1.165	-1.1901	-1.1601	-1.1334	-1.1774	-1.1205	-1.2196	-1.1661
Directivity (dBi)	2.1432	2.1637	2.2026	2.1585	2.1763	2.1735	2.173	2.2022	2.1877	2.2102	2.2156	2.1712	2.2293	2.1785	2.2223
Efficiency (dB)	-3.4502	-3.4438	-3.3766	-3.3403	-3.3021	-3.3387	-3.364	-3.3672	-3.3778	-3.3703	-3.349	-3.3486	-3.3498	-3.398	-3.3884
Gain (dBi)	-1.307	-1.2801	-1.1741	-1.1817	-1.1258	-1.1653	-1.191	-1.165	-1.1901	-1.1601	-1.1334	-1.1774	-1.1205	-1.2196	-1.1661
Front/Back Ratio (dB)	1.573	1.603	1.6461	1.5914	1.6136	1.5912	1.6077	1.6272	1.5818	1.6548	1.6189	1.6159	1.6529	1.6299	1.067
Beamwidth (?)	133	134	133	134	134	134	135	134	135	135	135	136	135	136	131
+ Beamwidth (?)	43	44	43	44	44	44	45	44	45	45	45	46	45	46	41
- Beamwidth (?)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Boresight Angle (?)	345	345	345	345	345	345	345	345	345	345	345	345	345	345	350
Maximum Power (dBm)	-1.307	-1.2801	-1.1741	-1.1817	-1.1258	-1.1653	-1.191	-1.165	-1.1901	-1.1601	-1.1334	-1.1774	-1.1205	-1.2196	-1.1661
Minimum Power (dBm)	-5.8082	-5.8153	-5.7424	-5.7553	-5.6891	-5.743	-5.7969	-5.7944	-5.8643	-5.8213	-5.7553	-5.8169	-5.8487	-5.9269	-5.9898
Average Power (dBm)	-3.4243	-3.4173	-3.35	-3.3138	-3.2752	-3.3123	-3.3372	-3.3391	-3.3492	-3.3413	-3.3204	-3.3199	-3.3209	-3.3682	-3.359
Max/Min Ratio (dB)	4.5012	4.5352	4.5683	4.5736	4.5634	4.5778	4.6059	4.6294	4.6742	4.6612	4.622	4.6395	4.7283	4.7073	4.8237
Max/Avg Ratio (dB)	2.1173	2.1371	2.176	2.1321	2.1494	2.1471	2.1462	2.1741	2.1591	2.1812	2.187	2.1424	2.2004	2.1486	2.1928
Min/Avg Ratio (dB)	-2.3839	-2.398	-2.3923	-2.4415	-2.414	-2.4307	-2.4597	-2.4554	-2.5152	-2.48	-2.435	-2.497	-2.5279	-2.5587	-2.6309
Average Gain (dB)	-3.4502	-3.4438	-3.3766	-3.3403	-3.3021	-3.3387	-3.364	-3.3672	-3.3778	-3.3703	-3.349	-3.3486	-3.3498	-3.398	-3.3884
Frequency	2477	2478	2479	2480											
Ant. Port Input Pwr. (dBm)	0	0	0	0											
Tot. Rad. Pwr. (dBm)	-3.4237	-3.468	-3.4454	-3.4403											
Peak EIRP (dBm)	-1.1925	-1.2243	-1.2056	-1.1796											

This report shall not be reproduced except in full, without the written approval of ATL.

©2008 ATL Techno. Corp. RF Testing Lab .
3D Gain Efficiency Test Report

Directivity (dBi)	2.2312	2.2437	2.2398	2.2607
Efficiency (dB)	-3.4237	-3.468	-3.4454	-3.4403
Gain (dBi)	-1.1925	-1.2243	-1.2056	-1.1796
Front/Back Ratio (dB)	1.0617	1.743	1.6752	1.7491
Beamwidth (?)	131	136	137	136
+ Beamwidth (?)	41	46	47	46
- Beamwidth (?)	90	90	90	90
Boresight Angle (?)	350	345	345	345
Maximum Power (dBm)	-1.1925	-1.2243	-1.2056	-1.1796
Minimum Power (dBm)	-6.0056	-6.007	-5.9979	-6.0073
Average Power (dBm)	-3.393	-3.4371	-3.4149	-3.4095
Max/Min Ratio (dB)	4.8131	4.7827	4.7923	4.8278
Max/Avg Ratio (dB)	2.2005	2.2128	2.2092	2.2299
Min/Avg Ratio (dB)	-2.6126	-2.5699	-2.583	-2.5978
Average Gain (dB)	-3.4237	-3.468	-3.4454	-3.4403