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☆ 承 認 書 ☆

☆ APPROVED SHEET ☆

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客戶

CUSTOMER

大鵬科技股份有限公司

客戶機種

CUSTOMER'S PART NO.

HYBRID-ADC-MAIN V2.3

廠內機種

MANUFACTURING PART NO.

MS4A7031A

| 廠長  | 工程  | 檢驗  |
|-----|-----|-----|
| 賴家雄 | 陳祈仰 | 陳熾如 |

| 承認人簽章 |  |  |
|-------|--|--|
|       |  |  |

榮 相 科 技 有 限 公 司  
公司：桃園市蘆竹區南崁路一段 83 號 15 樓之 5  
電話：(03)3219330  
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# 榮 相 科 技 有 限 公 司

## QUALITY ASSURANCE INSPECTION REPORT

|                           |                             |                |                |                        |              |           |                |             |
|---------------------------|-----------------------------|----------------|----------------|------------------------|--------------|-----------|----------------|-------------|
| CUSTOMER                  | 大鵬科技股份有限公司                  |                | DATE CODE      |                        |              |           |                |             |
| CUST. NUMBER              | HYBRID-ADC-MAIN V2.3        |                | UL MARK        | <div>RT</div> H4 94V-0 |              |           |                |             |
| OUR REF. NO               | MS4A7031A                   |                |                |                        |              |           |                |             |
| LOT Q'TY                  | 5PNL                        |                | SAMPLING Q'TY  | 5PNL                   |              |           |                |             |
| PER MIL-STD-105E LEVEL II |                             | AQL MAJOR 0.40 |                | AQL MINOR 1.5          |              |           |                |             |
| NO                        | INSPECT ITEM                |                | SPEC. & TOL.   | INSPECT RESULT         | MARK         |           |                |             |
| 01                        | MATERIAL                    |                | FR-4           | FR-4                   |              |           |                |             |
| 02                        | BOARD THICKNESS             |                | 1.6T±0.1       | 1.63                   |              |           |                |             |
| 03                        | CONDUCTOR WIDTH             |                | 3mil±20%       | 3mil                   |              |           |                |             |
| 04                        | CONDUCTOR SPACE WIDTH       |                | 3mil±20%       | 3mil                   |              |           |                |             |
| 05                        | MIN. HOLE WALL CU THICKNESS |                | 1 mil          | 1 mil                  |              |           |                |             |
| 06                        | GOLD THICKNESS MIN          |                | 2μ"            | 2μ"                    |              |           |                |             |
| 07                        | NI THICKNESS MIN            |                | 120~180μ"      | 155μ"                  |              |           |                |             |
| 08                        | MIN. TIN THICKNESS          |                | 100~1000μ"     | *****                  |              |           |                |             |
| 09                        | OPEN/SHORT 100% TEST        |                | PASS           | PASS                   |              |           |                |             |
| 10                        | WARP & TWIST                |                | PASS           | PASS                   |              |           |                |             |
| 11                        | SOLDER MASK                 |                | GREEN          | GREEN                  |              |           |                |             |
| 12                        | SILKSCREEN                  |                | WHITE          | WHITE                  |              |           |                |             |
| 13                        | HOLE SIZE:                  |                | UNIT: mm       | TOLERANCE: PTH±0.076   | N-PTH±0.05   |           |                |             |
|                           | SPEC. & TOL.                |                | INSPECT RESULT |                        | SPEC. & TOL. |           | INSPECT RESULT |             |
|                           | +                           | 0.3            |                | 0.3                    | H            | 0.75*2.65 |                | 0.775*2.675 |
|                           | X                           | 1.4            |                | 1.425                  | I            | 0.75*3.2  |                | 0.775*3.225 |
|                           | T1                          | 1.6            |                | 1.625                  | J            | 2.3       |                | 2.325       |
|                           | T2                          | 1.0            |                | 1.025                  | L            | 4.0       |                | 4.025       |
|                           | T3                          | 0.9*1.85       |                | 0.925*1.875            | M            | 3.5       | N              | 3.5         |
|                           | T4                          | 1.0            |                | 1.025                  | N            | 0.8       |                | 0.825       |
|                           | A                           | 0.5*2.55       |                | 0.525*2.575            | P            | 1.2       |                | 1.225       |
|                           | B                           | 3.2            | N              | 3.2                    | Q            | 0.9       |                | 0.925       |
|                           | C                           | 0.9            |                | 0.925                  | R            | 0.8       |                | 0.825       |
|                           | D                           | 0.25           |                | 0.25                   | S            | 1.1       | N              | 1.1         |
|                           | E                           | 0.5            |                | 0.525                  |              |           |                |             |
|                           | F                           | 0.95           |                | 0.975                  |              |           |                |             |
| G                         | 1.15                        |                | 1.175          |                        |              |           |                |             |

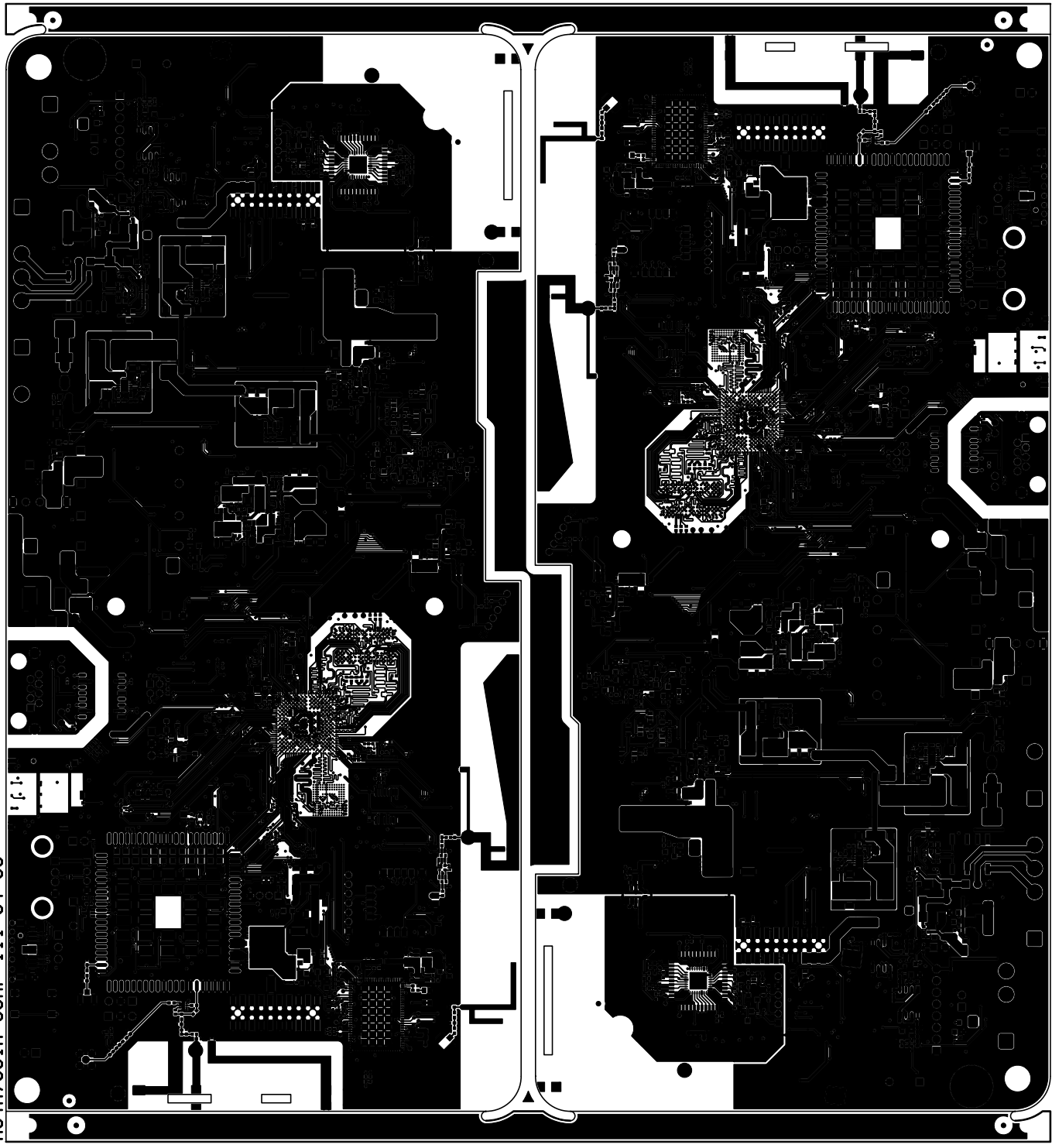
APPROVED BY:

陳祈仰

INSPECTED BY:

陳燕如

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| Total                               | Frequency (MHz) | 800      | 804      | 808      | 812      | 816      | 820      | 824      | 828      | 832      | 836       | 840      | 844      | 848      | 852      | 856      | 860      | 864      | 868      | 872      | 876      | 880      | 884      | 888      | 892      | 896      | 900      | 904      | 908      |         |
|-------------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|
| Point Values                        |                 |          |          |          |          |          |          |          |          |          |           |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |         |
| Ant. Port Input Pwr. (dBm)          |                 | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |         |
| Peak EIRP (dBm)                     |                 | -8.42806 | -8.85491 | -8.69592 | -8.32482 | -7.9299  | -8.11645 | -8.37262 | -8.03502 | -8.10858 | -8.3796   | -8.17377 | -7.52515 | -7.05762 | -6.367   | -6.23761 | -5.31269 | -6.16623 | -5.36687 | -5.1996  | -4.78076 | -4.6834  | -3.96414 | -3.46756 | -3.77123 | -3.6803  | -3.52496 | -3.45016 | -4.15857 |         |
| Tot. Radiated Pwr. (dBm)            |                 | -2.69213 | -3.1413  | -2.88012 | -2.64045 | -2.48673 | -2.73451 | -3.27993 | -3.31247 | -3.69151 | -4.03604  | -3.42475 | -2.48002 | -1.93424 | -1.65422 | -1.32773 | -0.69123 | -1.14278 | -0.66491 | -0.57027 | -0.39448 | -0.7302  | -0.41721 | -0.41693 | -0.96635 | -0.98742 | -0.81097 | -0.6989  | -1.00351 |         |
| Directivity (dBi)                   |                 | 5.75393  | 5.7136   | 5.8158   | 5.68437  | 5.44317  | 5.38193  | 5.09269  | 4.72255  | 4.41708  | 4.34356   | 4.74902  | 5.04513  | 5.12338  | 4.71278  | 4.90988  | 4.62147  | 5.02345  | 4.70196  | 4.62932  | 4.38628  | 3.95321  | 3.54693  | 3.05063  | 2.80489  | 2.69288  | 2.714    | 2.75125  | 3.15506  |         |
| Efficiency (dB)                     |                 | -8.42806 | -8.85491 | -8.69592 | -8.32482 | -7.9299  | -8.11645 | -8.37262 | -8.03502 | -8.10858 | -8.3796   | -8.17377 | -7.52515 | -7.05762 | -6.367   | -6.23761 | -5.31269 | -6.16623 | -5.36687 | -5.1996  | -4.78076 | -4.6834  | -3.96414 | -3.46756 | -3.77123 | -3.6803  | -3.52496 | -3.45016 | -4.15857 |         |
| Efficiency (%)                      |                 | 14.3613  | 13.017   | 13.5023  | 14.7068  | 16.1068  | 15.4296  | 14.5458  | 15.7217  | 15.4576  | 14.5273   | 17.6801  | 19.6897  | 23.0834  | 23.7815  | 29.426   | 24.1756  | 29.0612  | 30.2023  | 33.2601  | 34.0141  | 40.1408  | 45.0033  | 41.964   | 42.8519  | 44.4123  | 45.184   | 38.3834  |          |         |
| Gain (dBi)                          |                 | -2.69213 | -3.1413  | -2.88012 | -2.64045 | -2.48673 | -2.73451 | -3.27993 | -3.31247 | -3.69151 | -4.03604  | -3.42475 | -2.48002 | -1.93424 | -1.65422 | -1.32773 | -0.69123 | -1.14278 | -0.66491 | -0.57027 | -0.39448 | -0.7302  | -0.41721 | -0.41693 | -0.96635 | -0.98742 | -0.81097 | -0.6989  | -1.00351 |         |
| NHPRP ±P/4 (dBm)                    |                 | -10.1481 | -10.6321 | -10.5217 | -10.1828 | -9.87029 | -10.2158 | -10.592  | -10.4311 | -10.7822 | -11.12587 | -11.0926 | -10.3156 | -9.49448 | -8.55657 | -8.56987 | -7.29181 | -8.55662 | -7.30861 | -7.18981 | -6.5879  | -6.3217  | -5.48202 | -4.91835 | -5.22428 | -5.15527 | -4.97034 | -4.91024 | -5.64739 |         |
| NHPRP ±P/6 (dBm)                    |                 | -11.8553 | -12.3756 | -12.2992 | -11.9629 | -11.6835 | -12.1195 | -12.5539 | -12.457  | -12.9447 | -13.5118  | -13.3712 | -12.437  | -11.4651 | -10.3663 | -10.4783 | -9.08304 | -10.5392 | -9.07509 | -8.95743 | -8.31804 | -8.0037  | -7.09568 | -6.51557 | -6.87399 | -6.78622 | -6.57092 | -6.5178  | -7.29789 |         |
| NHPRP ±P/8 (dBm)                    |                 | -13.0904 | -13.6252 | -13.5669 | -13.2273 | -12.9589 | -13.4298 | -13.8879 | -13.8119 | -14.3483 | -14.9418  | -14.7288 | -13.8066 | -12.7871 | -11.6488 | -11.7573 | -10.3335 | -11.0478 | -10.1943 | -9.55369 | -9.23284 | -8.29266 | -7.70181 | -8.0903  | -7.99395 | -7.76391 | -7.7253  | -8.51834 |          |         |
| Upper Hem. PRP (dBm)                |                 | -12.0598 | -12.4639 | -12.3204 | -11.9193 | -11.4576 | -11.6609 | -11.8891 | -11.485  | -11.5453 | -11.8708  | -11.7047 | -11.1578 | -10.7894 | -10.1142 | -9.91731 | -9.0516  | -9.85554 | -9.13368 | -8.95294 | -8.57917 | -8.49257 | -7.73435 | -7.2342  | -7.53732 | -7.46177 | -7.27492 | -7.15233 | -7.95332 |         |
| Lower Hem. PRP (dBm)                |                 | -10.8948 | -11.3392 | -11.1682 | -10.8203 | -10.4779 | -10.6512 | -10.2926 | -10.6461 | -10.7306 | -10.9518  | -10.9192 | -9.99121 | -9.44938 | -8.74751 | -8.68604 | -7.69925 | -5.89347 | -7.73309 | -7.5756  | -7.12424 | -7.01921 | -6.3279  | -5.8339  | -6.13798 | -6.03593 | -5.90344 | -5.86381 | -6.50467 |         |
| NHPRP / TRP Ratio (dB)              |                 | -1.72007 | -1.77724 | -1.18283 | -1.85798 | -1.94039 | -2.09936 | -2.21934 | -2.39608 | -2.67359 | -2.87908  | -2.97186 | -2.79042 | -2.43686 | -2.13857 | -2.33226 | -1.97912 | -2.58049 | -1.94174 | -1.99022 | -1.80714 | -1.6383  | -1.51788 | -1.45079 | -1.71778 | -1.74749 | -1.44538 | -1.46008 | -1.46886 |         |
| NHPRP4 / TRP Ratio (%)              |                 | 67.2966  | 66.4165  | 65.6776  | 65.1932  | 63.9677  | 61.6685  | 59.9882  | 57.596   | 54.0308  | 51.5338   | 51.0639  | 52.5967  | 57.0577  | 61.1143  | 58.6486  | 63.9939  | 57.6714  | 63.9478  | 63.238   | 65.9608  | 68.5757  | 70.5038  | 71.6013  | 71.2566  | 71.2037  | 71.6906  | 71.4483  | 70.977   |         |
| Near Horiz. TRP for ±P/4 (dBm)      |                 | -8.64298 | -9.127   | -9.10166 | -8.67765 | -8.36514 | -8.71066 | -9.08681 | -8.92595 | -9.27702 | -9.75353  | -9.58748 | -8.81042 | -7.98933 | -7.00042 | -7.06472 | -5.78666 | -7.05147 | -5.80436 | -5.68466 | -5.08275 | -4.81655 | -3.97687 | -3.4132  | -3.73783 | -3.65012 | -3.46519 | -3.40509 | -4.1224  |         |
| NHPRP6 / TRP Ratio (dB)             |                 | -3.42727 | -3.52068 | -3.60331 | -3.63807 | -3.75363 | -4.0031  | -4.18124 | -4.42198 | -4.83613 | -5.13216  | -5.13889 | -4.91187 | -4.4075  | -3.99928 | -4.24071 | -3.77034 | -4.37293 | -3.70822 | -3.75784 | -3.53728 | -3.32029 | -3.13154 | -3.04801 | -3.10276 | -3.10593 | -3.04596 | -3.06765 | -3.13932 |         |
| NHPRP6 / TRP Ratio (%)              |                 | 45.4227  | 44.4562  | 43.6184  | 43.2764  | 42.1034  | 39.7823  | 38.1836  | 36.1245  | 32.8388  | 30.675    | 30.1625  | 32.271   | 36.2452  | 39.8173  | 37.6642  | 41.9726  | 36.5348  | 42.5773  | 42.0936  | 44.2866  | 46.5554  | 48.6235  | 49.5677  | 48.9467  | 48.9111  | 49.5912  | 49.3441  | 48.2565  |         |
| Near Horiz. TRP for ±P/6 (dBm)      |                 | -8.84503 | -9.36529 | -9.28893 | -8.95259 | -8.67323 | -9.10924 | -9.54356 | -9.4467  | -9.94934 | -10.5015  | -10.3024 | -9.42673 | -8.45481 | -7.35598 | -6.48072 | -6.07274 | -7.52886 | -6.06479 | -5.94713 | -5.30774 | -4.9934  | -4.80358 | -3.50527 | -3.86369 | -3.77592 | -3.56062 | -3.5075  | -4.28739 |         |
| NHPRP8 / TRP Ratio (dB)             |                 | -4.66232 | -4.77034 | -4.87101 | -4.90251 | -5.02896 | -5.31331 | -5.5153  | -5.77691 | -6.23973 | -6.56816  | -6.55504 | -6.28149 | -5.72948 | -5.28181 | -5.51971 | -5.02076 | -5.68647 | -4.94792 | -4.99466 | -4.77293 | -4.54943 | -4.32851 | -4.24062 | -4.31907 | -4.31365 | -4.23895 | -4.27514 | -4.35977 |         |
| NHPRP8 / TRP Ratio (%)              |                 | 34.1797  | 33.34    | 32.5761  | 32.3407  | 31.126   | 29.4218  | 28.0847  | 26.4429  | 23.7699  | 22.0386   | 22.2035  | 23.5242  | 26.7333  | 29.6359  | 28.0562  | 31.472   | 26.9993  | 32.0043  | 31.6617  | 33.3202  | 35.0798  | 36.9608  | 36.3854  | 37.0369  | 37.6795  | 37.3668  | 36.6457  |          |         |
| Near Horiz. TRP for ±P/8 (dBm)      |                 | -8.91878 | -9.45364 | -9.39532 | -9.05572 | -8.78725 | -9.25815 | -9.71632 | -9.64032 | -10.1767 | -10.7762  | -10.5572 | -9.63504 | -8.61549 | -7.47721 | -7.58571 | -6.16185 | -7.68109 | -6.14318 | -6.02266 | -5.38209 | -5.06124 | -4.12105 | -3.53658 | -3.91869 | -3.82235 | -3.59231 | -3.55369 | -4.34674 |         |
| UHPRP / TRP Ratio (dB)              |                 | -3.63176 | -3.60896 | -3.62449 | -3.59452 | -3.52771 | -3.54443 | -3.51651 | -3.44999 | -3.43673 | -3.45121  | -3.53095 | -3.63265 | -3.73179 | -3.74716 | -3.6797  | -3.7389  | -3.68931 | -3.76682 | -3.75334 | -3.79841 | -3.80916 | -3.77021 | -3.76664 | -3.76609 | -3.78147 | -3.74995 | -3.70217 | -3.79475 |         |
| UHPRP / TRP Ratio (%)               |                 | 43.3335  | 43.5616  | 43.4062  | 43.6073  | 44.3843  | 44.2137  | 44.4989  | 45.1857  | 45.3238  | 44.7589   | 44.3511  | 43.3247  | 42.3468  | 42.1972  | 42.8578  | 42.2775  | 42.6313  | 42.0067  | 42.1372  | 41.7022  | 41.5991  | 41.9738  | 42.0084  | 42.0812  | 41.7022  | 41.8652  | 42.1701  | 42.6366  | 41.7374 |
| Upper Hem. Total Radiated Pwr (dBm) |                 | -9.04952 | -9.45357 | -9.31011 | -8.90904 | -8.44731 | -8.65057 | -8.87883 | -8.47471 | -8.53502 | -8.86051  | -8.69442 | -8.1475  | -7.7791  | -7.10386 | -6.90701 | -6.0413  | -6.84524 | -6.12338 | -5.94264 | -5.56887 | -5.48227 | -4.72405 | -4.2239  | -4.52702 | -4.45147 | -4.26462 | -4.14203 | -4.94302 |         |
| LHPRP / TRP Ratio (dB)              |                 | -2.46673 | -2.48425 | -2.47321 | -2.49543 | -2.54802 | -2.53473 | -2.55699 | -2.61106 | -2.62202 | -2.57738  | -2.54544 | -2.46606 | -2.39177 | -2.38051 | -2.40343 | -2.38655 | -2.42324 | -2.37601 | -2.34348 | -2.3358  | -2.36736 | -2.36635 | -2.36675 | -2.35564 | -2.37848 | -2.41365 | -2.3461  |          |         |
| LHPRP / TRP Ratio (%)               |                 | 56.6665  | 56.4384  | 56.5938  | 56.2933  | 55.6157  | 55.7863  | 55.5011  | 54.8143  | 54.6762  | 55.2411   | 55.6489  | 56.6753  | 57.6028  | 57.1422  | 57.7225  | 57.2369  | 57.9933  | 57.8628  | 58.2978  | 58.4009  | 58.0262  | 57.9916  | 57.9863  | 58.1348  | 57.8299  | 57.3634  | 58.2626  |          |         |
| Lower Hem. Total Radiated Pwr (dBm) |                 | -7.88449 | -8.32886 | -8.15793 | -7.80955 | -7.46762 | -7.64087 | -7.91931 | -7.63578 | -7.77203 | -7.94668  | -7.7089  | -6.98091 | -6.43908 | -5.73721 | -5.65774 | -6.68895 | -5.57917 | -4.72279 | -4.5653  | -4.11394 | -4.08091 | -3.3176  | -2.8236  | -3.12768 | -3.02563 | -2.89314 | -2.85351 | -3.49437 |         |
| PRP (dBm) (theta = 0 to 120)        |                 | -10.145  | -10.5893 | -10.4658 | -10.0966 | -9.71377 | -9.98767 | -10.2862 | -9.9962  | -10.1765 | -10.5511  | -10.3645 | -9.70256 | -9.12813 | -8.30701 | -8.21759 | -7.15865 | -8.1708  | -7.20076 | -7.03509 | -6.56176 | -6.40029 | -5.59619 | -5.07074 | -5.39416 | -5.31091 | -5.11856 | -5.03505 | -5.80359 |         |
| Front/Back Ratio (dB)               |                 | 4.95895  | 5.08539  | 4.97906  | 4.91449  | 4.50831  | 4.36594  | 4.02399  | 3.55343  | 3.66676  | 5.54472   | 7.08382  | 9.39683  | 10.6337  | 8.45358  | 8.9596   | 7.93291  | 8.86902  | 10.3545  | 9.35336  | 7.84945  | 6.42431  | 5.47556  | 4.7415   | 4.04981  | 4.78323  | 12.1466  | 12.0184  | 4.86242  |         |
| Phi BW (°)                          |                 | 65       | 64       | 62       | 62       | 62       | 61       | 61       | 58       | 54       | 55        | 52       | 57       | 65       | 57       | 69       | 53       | 66       | 67       | 104      | 121      | 128      | 168      | 183      | 192      | 193      | 189      | 187      |          |         |
| #NAME?                              |                 | 28       | 29       | 31       | 31       | 32       | 33       | 35       | 34       | 32       | 38        | 33       | 30       | 29       | 32       | 30       | 37       | 25       | 31       | 40       | 48       | 48       | 47       | 50       | 98       | 98       | 97       | 97       |          |         |
| #NAME?                              |                 | 37       | 35       | 31       | 31       | 30       | 28       | 26       | 24       | 22       | 17        | 19       | 22       | 28       | 33       | 27       | 32       | 26       | 41       | 36       | 64       | 73       | 80       | 121      | 133      | 94       | 95       | 92       | 90       |         |
| Theta BW (°)                        |                 | 58       | 59       | 58       | 58       | 58       | 60       | 65       | 93       | 108      | 125       | 122      | 123      | 124      | 115      | 105      | 107      | 51       | 53       | 94       | 116      | 127      | 132      | 139      | 140      | 104      | 108      | 133      | 101      |         |
| #NAME?                              |                 | 21       | 21       | 20       | 19       | 17       | 15       | 14       | 13       | 12       | 26        | 27       | 29       | 29       | 87       | 77       | 83       | 26       | 29       | 69       | 27       | 26       | 26       | 28       | 28       | 75       | 48       | 46       | 71       |         |
| #NAME?                              |                 | 37       | 38       | 38       | 39       | 41       | 45       | 51       | 80       | 96       | 99        | 95       | 94       | 95       | 28       | 28       | 24       | 25       | 24       | 25       | 89       | 101      | 106      | 111      | 112      | 29       | 60       | 87       | 30       |         |
| Boresight Phi (°)                   |                 | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 165       | 165      | 165      | 165      | 165      | 165      | 165      | 165      | 165      | 165      | 0        | 0        | 0        | 0        | 0        | 120      | 120      | 120      | 120      |         |
| Boresight Th. (°)                   |                 | -135     | -135     | -135     | -135     | -135     | -135     | -135     | -135     | -135     | -135      | -135     | -135     | -135     | -135     | -135     | -135     | -135     | -135     | -135     | 135      | 135      | 135      | 135      | 135      | 135      | 135      | -105     | -135     |         |
| Maximum Power (dBm)                 |                 | -2.69213 | -3.1413  | -2.88012 | -2.64045 | -2.48673 | -2.73451 | -3.27993 | -3.31247 | -3.69151 | -4.03604  | -3.42475 | -2.48002 | -1.93424 | -1.65422 | -1.32773 | -0.69123 | -1.14278 | -0.66491 | -0.57027 | -0.39448 | -0.7302  | -0.41721 | -        |          |          |          |          |          |         |