

## EXTERNAL CELLULAR ANTENNA

For purposes of this exhibit the external antenna gain is defined as the gain of the antenna minus all path losses.

The cartridge containing the PHS8-USA has provisions for a cable connection to an external antenna. The alarm system installer may offer the end user an external antenna installation option, provided they have an antenna which meets the maximum gain values specified by the updated grant. The maximum external antenna gain for compliance to exemption limits are calculated in this exhibit. Honeywell is requesting the maximum cellular antenna gain values specified on the updated grant to be set to 6.0dBi for the low band (AMPS) and 2.5dBi for the high band (PCS).

## LAB REPORT - LOW BAND EMISSIONS

The information in this table is compiled from the Gemalto's lab included with the module's FCC listing.

File: "From\_Grant\_TR1\_Radiated\_Data.pdf"

Gemalto Report Reference: MDE\_CINTE\_1108\_FCCe

GSM Max Duty Cycle = 12.5%

EDGE Max Duty Cycle (4 upload slots) = 50%

FDD2 Max Duty Cycle = 100%

| MEASUREMENTS FROM REPORT FOR: QIPPHS8-US 850 MHz Band RF<br>Power Output §2.1053 §22.917 |       |                 |          |             |             |                                   | CALCULATIONS       |                      |                                |
|------------------------------------------------------------------------------------------|-------|-----------------|----------|-------------|-------------|-----------------------------------|--------------------|----------------------|--------------------------------|
| BAND:                                                                                    | MODE: | TEST:           | CHANNEL: | FREQ (MHz): | PEAK (dBm): | AVG while XMIT (dBm):<br>(note 1) | Max Duty Cycle (%) | Max Duty Cycle (dBm) | (Avg while XMIT)+Max Duty(dBm) |
| 850                                                                                      | EDGE  | edge test       | 128      | 824.2       | 30.3        | 27.1                              | 50.0%              | -3.01                | 24.09                          |
| 850                                                                                      | EDGE  | edge test       | 190      | 836.6       | 30.3        | 27.1                              | 50.0%              | -3.01                | 24.09                          |
| 850                                                                                      | EDGE  | edge test       | 251      | 848.8       | 30.3        | 27.1                              | 50.0%              | -3.01                | 24.09                          |
| 850                                                                                      | GSM   | gsm test        | 128      | 824.2       | 33.8        | 33.5                              | 12.5%              | -9.03                | 24.47                          |
| 850                                                                                      | GSM   | gsm test        | 190      | 836.6       | 33.4        | 33.1                              | 12.5%              | -9.03                | 24.07                          |
| 850                                                                                      | GSM   | gsm test        | 251      | 848.8       | 33.5        | 33.3                              | 12.5%              | -9.03                | 24.27                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_1 | 4132     | 826.4       | 27.2        | 23.5                              | 100.0%             | 0.00                 | 23.50                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_1 | 4183     | 836.6       | 27.1        | 23.5                              | 100.0%             | 0.00                 | 23.50                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_1 | 4233     | 846.6       | 27.0        | 23.4                              | 100.0%             | 0.00                 | 23.40                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_2 | 4132     | 826.4       | 27.7        | 23.7                              | 100.0%             | 0.00                 | 23.70                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_2 | 4183     | 836.6       | 27.6        | 23.6                              | 100.0%             | 0.00                 | 23.60                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_2 | 4233     | 846.6       | 27.5        | 23.4                              | 100.0%             | 0.00                 | 23.40                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_3 | 4132     | 826.4       | 27.5        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_3 | 4183     | 836.6       | 27.4        | 23.1                              | 100.0%             | 0.00                 | 23.10                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_3 | 4233     | 846.6       | 27.3        | 23.1                              | 100.0%             | 0.00                 | 23.10                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_4 | 4132     | 826.4       | 27.6        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_4 | 4183     | 836.6       | 27.6        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 850                                                                                      | FDD5  | HSDPA_subtest_4 | 4233     | 846.6       | 27.4        | 23.0                              | 100.0%             | 0.00                 | 23.00                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_1 | 4132     | 826.4       | 28.1        | 22.5                              | 100.0%             | 0.00                 | 22.50                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_1 | 4183     | 836.6       | 28.4        | 23.0                              | 100.0%             | 0.00                 | 23.00                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_1 | 4233     | 846.6       | 28.1        | 22.6                              | 100.0%             | 0.00                 | 22.60                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_2 | 4132     | 826.4       | 27.6        | 21.7                              | 100.0%             | 0.00                 | 21.70                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_2 | 4183     | 836.6       | 27.4        | 21.4                              | 100.0%             | 0.00                 | 21.40                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_2 | 4233     | 846.6       | 27.4        | 21.5                              | 100.0%             | 0.00                 | 21.50                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_3 | 4132     | 826.4       | 28.1        | 21.9                              | 100.0%             | 0.00                 | 21.90                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_3 | 4183     | 836.6       | 28.1        | 21.9                              | 100.0%             | 0.00                 | 21.90                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_3 | 4233     | 846.6       | 28.2        | 22.0                              | 100.0%             | 0.00                 | 22.00                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_4 | 4132     | 826.4       | 27.9        | 21.7                              | 100.0%             | 0.00                 | 21.70                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_4 | 4183     | 836.6       | 27.9        | 21.7                              | 100.0%             | 0.00                 | 21.70                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_4 | 4233     | 846.6       | 27.9        | 21.8                              | 100.0%             | 0.00                 | 21.80                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_5 | 4132     | 826.4       | 28.0        | 22.5                              | 100.0%             | 0.00                 | 22.50                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_5 | 4183     | 836.6       | 28.3        | 23.0                              | 100.0%             | 0.00                 | 23.00                          |
| 850                                                                                      | FDD5  | HSUPA_subtest_5 | 4233     | 846.6       | 0.0         | 0.0                               | 100.0%             | 0.00                 | 0.00                           |
| 850                                                                                      | FDD5  | W-CDMA          | 4132     | 826.4       | 27.2        | 23.5                              | 100.0%             | 0.00                 | 23.50                          |
| 850                                                                                      | FDD5  | W-CDMA          | 4183     | 836.6       | 27.2        | 23.3                              | 100.0%             | 0.00                 | 23.30                          |
| 850                                                                                      | FDD5  | W-CDMA          | 4233     | 846.6       | 27.2        | 23.8                              | 100.0%             | 0.00                 | 23.80                          |
| Maximum Conducted Power in 850MHz Band                                                   |       |                 |          |             |             |                                   |                    |                      | 24.47                          |

No data in  
lab report

note 1 - This column is the average taken during transmitter-on time only; duty-factor is not included.

## LAB REPORT - HIGH BAND EMISSIONS

The information in this table is compiled from the Gemalto's lab included with the module's FCC listing

File: "From\_Grant\_TR2\_Radiated\_Data.pdf"

Gemalto Report Reference: MDE\_CINTE\_1108\_FCCd

GSM Max Duty Cycle = 12.5%

EDGE Max Duty Cycle (4 upload slots) = 50%

FDD2 Max Duty Cycle = 100%

| MEASUREMENTS FROM REPORT FOR: QIPPHS8-US 1900 MHz Band RF<br>Power Output \$2.1046 \$24.232 |       |                 |          |             |             |                                   | CALCULATIONS       |                      |                                |
|---------------------------------------------------------------------------------------------|-------|-----------------|----------|-------------|-------------|-----------------------------------|--------------------|----------------------|--------------------------------|
| BAND:                                                                                       | MODE: | TEST:           | CHANNEL: | FREQ (MHz): | PEAK (dBm): | AVG while XMIT (dBm):<br>(note 1) | Max Duty Cycle (%) | Max Duty Cycle (dBm) | (Avg while XMIT)+Max Duty(dBm) |
| 1900                                                                                        | EDGE  | not given       | 512      | 1850.2      | 29.4        | 26.2                              | 50.0%              | -3.01                |                                |
| 1900                                                                                        | EDGE  | not given       | 661      | 1880        | 29.3        | 26.1                              | 50.0%              | -3.01                | 23.09                          |
| 1900                                                                                        | EDGE  | not given       | 810      | 1909.8      | 29.4        | 26.2                              | 50.0%              | -3.01                | 23.19                          |
| 1900                                                                                        | GSM   | not given       | 512      | 1850.2      | 30.1        | 29.9                              | 12.5%              | -9.03                | 20.87                          |
| 1900                                                                                        | GSM   | not given       | 661      | 1880        | 30.5        | 30.3                              | 12.5%              | -9.03                | 21.27                          |
| 1900                                                                                        | GSM   | not given       | 810      | 1909.8      | 30.2        | 30                                | 12.5%              | -9.03                | 20.97                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_1 | 9262     | 1852.4      | 26.9        | 23.4                              | 100.0%             | 0.00                 | 23.40                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_1 | 9400     | 1880        | 27.3        | 23.8                              | 100.0%             | 0.00                 | 23.80                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_1 | 9538     | 1907.6      | 26.8        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_2 | 9262     | 1852.4      | 27.4        | 23.6                              | 100.0%             | 0.00                 | 23.60                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_2 | 9400     | 1880        | 27.5        | 23.5                              | 100.0%             | 0.00                 | 23.50                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_2 | 9538     | 1907.6      | 27.3        | 23.3                              | 100.0%             | 0.00                 | 23.30                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_3 | 9262     | 1852.4      | 27.4        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_3 | 9400     | 1880        | 27.4        | 23.2                              | 100.0%             | 0.00                 | 23.20                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_3 | 9538     | 1907.6      | 27.2        | 22.8                              | 100.0%             | 0.00                 | 22.80                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_4 | 9262     | 1852.4      | 27.6        | 23.3                              | 100.0%             | 0.00                 | 23.30                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_4 | 9400     | 1880        | 27.7        | 23.3                              | 100.0%             | 0.00                 | 23.30                          |
| 1900                                                                                        | FDD2  | HSDPA_subtest_4 | 9538     | 1907.6      | 27.4        | 23.1                              | 100.0%             | 0.00                 | 23.10                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_1 | 9262     | 1852.4      | 28.3        | 22.9                              | 100.0%             | 0.00                 | 22.90                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_1 | 9400     | 1880        | 28.1        | 22.8                              | 100.0%             | 0.00                 | 22.80                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_1 | 9538     | 1907.6      | 27.9        | 22.6                              | 100.0%             | 0.00                 | 22.60                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_2 | 9262     | 1852.4      | 27.3        | 21.7                              | 100.0%             | 0.00                 | 21.70                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_2 | 9400     | 1880        | 27.2        | 21.5                              | 100.0%             | 0.00                 | 21.50                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_2 | 9538     | 1907.6      | 27.0        | 21.4                              | 100.0%             | 0.00                 | 21.40                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_3 | 9262     | 1852.4      | 28.0        | 22.0                              | 100.0%             | 0.00                 | 22.00                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_3 | 9400     | 1880        | 27.9        | 21.9                              | 100.0%             | 0.00                 | 21.90                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_3 | 9538     | 1907.6      | 27.5        | 21.9                              | 100.0%             | 0.00                 | 21.90                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_4 | 9262     | 1852.4      | 28.0        | 22.0                              | 100.0%             | 0.00                 | 22.00                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_4 | 9400     | 1880        | 27.6        | 21.5                              | 100.0%             | 0.00                 | 21.50                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_4 | 9538     | 1907.6      | 27.4        | 21.5                              | 100.0%             | 0.00                 | 21.50                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_5 | 9262     | 1852.4      | 28.1        | 22.8                              | 100.0%             | 0.00                 | 22.80                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_5 | 9400     | 1880        | 27.9        | 22.6                              | 100.0%             | 0.00                 | 22.60                          |
| 1900                                                                                        | FDD2  | HSUPA_subtest_5 | 9538     | 1907.6      | 27.7        | 22.4                              | 100.0%             | 0.00                 | 22.40                          |
| 1900                                                                                        | FDD2  | W-CDMA          | 9262     | 1852.4      | 27.0        | 23.0                              | 100.0%             | 0.00                 | 23.00                          |
| 1900                                                                                        | FDD2  | W-CDMA          | 9400     | 1880        | 26.5        | 22.9                              | 100.0%             | 0.00                 | 22.90                          |
| 1900                                                                                        | FDD2  | W-CDMA          | 9538     | 1907.6      | 26.5        | 23.0                              | 100.0%             | 0.00                 | 23.00                          |
| Maximum Conducted Power in 1900MHz Band                                                     |       |                 |          |             |             |                                   |                    |                      | 23.80                          |

note 1 - This column is the average taken during transmitter-on time only; duty-factor is not included.

ANTENNA GAIN CALCULATIONS

PATH LOSS

For 'worst case' calculations, the path loss of the external antenna connector is considered to be 0dB.

GAIN CALCULATIONS: WORST CASE ANTENNA GAIN

| BAND                 |              | HONEYWELL'S REQUESTED MAX ANTENNA GAIN                                 | DATA FROM GEMALTO LAB REPORT |                                           |                            |             |                            |                        | DETERMININATION OF COMPLIANCE TO EXEMPTION LIMIT |                        |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     |                                                                                        |                                                                                    |
|----------------------|--------------|------------------------------------------------------------------------|------------------------------|-------------------------------------------|----------------------------|-------------|----------------------------|------------------------|--------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| col 1                | col 2        | col 3                                                                  | col 4                        | col 5                                     | col 6                      | col 7       | col 8                      | col 9                  | co 10                                            | col 11                 | col 12                                                                                             | col 13                                                                                   | col 14                                                                                                                                                                                                                                                                              | col 15                                                                                 | col 16                                                                             |
|                      | Freq. (Mhz)  | Honeywell's Requested Max Ext Antenna Gain on Updated Grant (from p.1) | Technology                   | Max 'Avg. during xmit' Pwr (dBm) (note 1) | Inherent Duty Factor (dBi) | Freq. (MHz) | Gmlto Test Report Filename | Gmlto Test Report Page | Max Time-Avg. Pwr (dBm) (note 2)                 | Max Time-Avg. EIRP (W) | FCC: 1.1310(e) Exposure Limit (all intentional radiators) (avg with duty factor) (note 3) (note 5) | FCC: 2.1091(c)(1) RF Exposure Eval (Mobile devices only) (avg with duty factor) (note 3) | <div>&lt;1.5G:<br/>FCC: Effective Radiated Pwr Limit from 22.913(a)(2) (ERP)(Cellular Devices Only) (avg while xmit), for &lt;1.5G (note 1)<br/><div>&gt;1.5G:<br/>FCC: EMC Limit from 24.232(c) (EIRP) (Cellular Devices Only) (avg while xmit), for &gt;1.5G (note 1)</div></div> | Calculated Worst Case Allowed External Antenna Net Gain + Loss (dBi) (note 4) (note 8) | Is Calc. Worst Case Allowed Ext Gain Compliant With Honeyell's Requested Max Gain? |
| LOW BAND GAIN (AMPS) | (824 - 896)  | 6.0dBi                                                                 | EDGE                         | 27.1                                      | -3.01                      | 824.2       | TR1.pdf                    | 14                     | 24.1                                             | 0.26                   | 2.76W_EIRP =34.41dBm                                                                               | =2.46W_EIRP =33.91dBm                                                                    | 7W_ERP = 11.48W_EIRP = 40.60dBm                                                                                                                                                                                                                                                     | 9.81                                                                                   | Y                                                                                  |
|                      |              |                                                                        | GSM                          | 33.5                                      | -9.03                      | 824.2       | TR1.pdf                    | 15                     | 24.5                                             | 0.28                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 7.10                                                                                   |                                                                                    |
|                      |              |                                                                        | FDD5: HSDPA                  | 23.7                                      | 0                          | 826.4       | TR1.pdf                    | 18                     | 23.7                                             | 0.23                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 10.21                                                                                  |                                                                                    |
|                      |              |                                                                        | FDD5: HSUPA                  | 23.0                                      | 0                          | 836.6       | TR1.pdf                    | 23                     | 23.0                                             | 0.20                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 10.91                                                                                  |                                                                                    |
|                      |              |                                                                        | FDD5: W-CDMA                 | 23.8                                      | 0                          | 826.4       | TR1.pdf                    | 30                     | 23.8                                             | 0.24                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 10.11                                                                                  |                                                                                    |
| HIGH BAND GAIN (PCS) | (1850 –1990) | 2.5dBi                                                                 | EDGE                         | 26.2                                      | -3.01                      | 1850.2      | TR2.pdf                    | 14                     | 23.2                                             | 0.21                   | 5.03W_EIRP =37.01dBm                                                                               | 4.92W_EIRP =36.92dBm                                                                     | 1.22W_ERP =2W_EIRP =33.01dBm                                                                                                                                                                                                                                                        | 6.81                                                                                   | Y                                                                                  |
|                      |              |                                                                        | GSM                          | 30.3                                      | -9.03                      | 1880        | TR2.pdf                    | 15                     | 21.3                                             | 0.13                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 2.71                                                                                   |                                                                                    |
|                      |              |                                                                        | FDD2: HSDPA                  | 23.8                                      | 0                          | 1880        | TR2.pdf                    | 16                     | 23.8                                             | 0.24                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 9.21                                                                                   |                                                                                    |
|                      |              |                                                                        | FDD2: HSUPA                  | 22.9                                      | 0                          | 1852.4      | TR2.pdf                    | 22                     | 22.9                                             | 0.19                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 10.11                                                                                  |                                                                                    |
|                      |              |                                                                        | FDD2: W-CDMA                 | 23.0                                      | 0                          | 1852.4      | TR2.pdf                    | 30                     | 23.0                                             | 0.20                   |                                                                                                    |                                                                                          |                                                                                                                                                                                                                                                                                     | 10.01                                                                                  |                                                                                    |

note 1 - This is the average taken during transmitter-on time only; duty-factor is not included.

note 2 - col 5 + col 6.

note 3 - This is time-averaged maximum power. It includes duty-factor.

note 4 - This is the worst case (minimum) of these three calculations: (1) col 12- col 7, (2) col 13-col 7, and (3) col 14-col 5. This lists the worst case antenna gain to meet the given FCC exemption/power limits for each transmit technology in col 4. The limiting antenna gain from the set of transmit technologies is highlighted in col 15. Choosing this allows the cell module to use all transmit technologies and remain compliant to FCC limits.

note 5 - =[f(in MHz)/1500] mW/cm^2, averaged over 30 min  
=[824.20/1500] mW/cm^2  
= 0.5495 mW/cm2 @20cm limit  
=2.76W\_EIRP