MNO SAMPLE DATA SHEET

PROTECTED 関係者外級

トヨタ自動車株式会社 コネクティッドカンパニー コネクティッド基盤開発部 第 12 電子開発室 2G

Toyota Motor Corporation
Connected Company
Connected System Development Div.,
Electronics Development Dept. No.12 2G,
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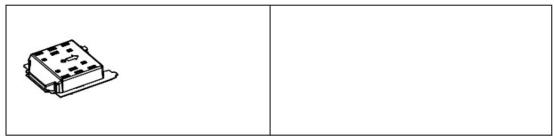
Remarks;

This datasheet is released dedicated for North America MNO certification process for 24DCM.

Please refer antenna setup guide regarding recommended setup method.

The attached cable is designed as maximum cable loss which considers installation in vehicle.

Antenna



Cable loss value

| Frequency Cable loss | | | | |
|----------------------|------|--|--|--|
| (MHz) | (dB) | | | |
| 663 | 1.0 | | | |
| 700 | 1.1 | | | |
| 748 | 1.1 | | | |
| 798 | 1.2 | | | |
| 849 | 1.2 | | | |
| 880 | 1.1 | | | |
| 915 | 1.2 | | | |
| 1710 | 1.6 | | | |
| 1785 | 1.6 | | | |
| 1910 | 1.7 | | | |
| 2025 | 1.7 | | | |
| 2300 | 2.1 | | | |
| 2400 | 2.1 | | | |
| 2496 | 2.0 | | | |
| 2595 | 2.0 | | | |
| 2690 | 2.1 | | | |
| 3300 | 2.6 | | | |
| 3675 | 2.7 | | | |
| 3975 | 3.0 | | | |
| 4200 | 3.2 | | | |
| 4400 | 3.3 | | | |
| 4700 | 3.5 | | | |
| 5000 | 3.6 | | | |

*The antenna cable length is 2.0m.

Max gain for each frequency

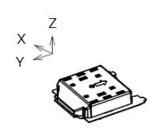
| Frequency | Max Gain(dBi) | | | | |
|-----------|---------------|-------|---------------|--------|--|
| (MHz) | <i>θ</i> =45° | θ=60° | <i>θ</i> =75° | θ =90° | |
| 663 | -12.4 | -12.4 | -12.4 | -11.6 | |
| 700 | -1.5 | -1.8 | -1.4 | -1.0 | |
| 748 | -2.2 | -1.7 | -2.0 | -1. | |
| 798 | -2.7 | -1.5 | -1.3 | -1.6 | |
| 849 | -0.9 | -0.7 | -0.1 | 0.0 | |
| 880 | -0.1 | -0.1 | -0.3 | 0.3 | |
| 915 | -0.4 | 0.1 | 0.3 | 0.9 | |
| 1710 | 2.1 | 2.5 | 2.2 | 3.2 | |
| 1785 | 1.5 | 1.4 | 0.8 | 1.8 | |
| 1910 | 0.7 | 0.4 | -0.2 | 0.2 | |
| 2025 | 2.8 | 2.3 | 2.0 | 3.2 | |
| 2300 | 4.6 | 3.5 | 1.4 | 2. | |
| 2400 | 4.6 | 3.1 | 0.6 | 1.3 | |
| 2496 | 4.2 | 3.6 | 2.2 | 0.0 | |
| 2595 | 5.1 | 4.3 | 1.8 | 1.2 | |
| 2690 | 3.3 | 2.6 | 0.2 | -0.9 | |
| 3300 | 4.8 | 4.0 | 2.4 | 1. | |
| 3675 | 5.7 | 5.0 | 3.9 | 3. | |
| 3975 | 3.6 | 3.0 | 2.2 | 0. | |
| 4200 | 4.2 | 4.2 | 3.3 | 2.4 | |
| 4400 | 5.3 | 5.1 | 4.7 | 2. | |
| 4700 | 7.5 | 7.1 | 5.4 | 1. | |
| 5000 | 7.6 | 5.7 | 5.1 | 0. | |

XThe antenna gain is measured at the end of 150mm cable.

*The antenna gain is measured at free space.

 $\ensuremath{\mbox{\ensuremath{\%}}\mbox{\ensuremath{\mbox{\sc The}}}}$ antenna gain is measured with bracket and cable holder.

| | diation pattern of each frequency | | | | | |
|-----------|--|---|--|--|--|--|
| Frequency | | | | | | |
| (MHz) | X-Y | | | | | |
| 663 | 120 10.0 60 0.0 150 10.0 30 | 30 10.0 0 Z 30 0.0 30 00 X 10.0 00 X | 10.0 0 Z 30 0.0 30 10.0 60 10.0 60 20.0 60 120 120 150 150 | | | |
| 700 | 210 330 | 30 0.0 2 30 0.0 60 120 120 120 150 150 | 10.0 0 Z 30 0.0 30 30 60 20.0 60 20.0 60 40 40 40 40 40 40 40 40 40 40 40 40 40 | | | |
| 748 | 120 00 Y 120 0.0 60 150 120.0 30 20.0 0 0 x 210 300 300 | 30 10.0 0 Z 30 0.0 0 10.0 00 20.0 00 120 120 150 150 150 | 10.0 0 Z 30 0.0 10.0 20.0 30 00 10.0 | | | |
| 798 | 120 10.0 50 Y 120 10.0 50 Y 150 10.0 50 Y 150 20.0 50 7 210 330 540 330 | 30 10.0 0 Z 30 0.0 60 10.0 60 20.0 0 X 120 150 150 150 | -120 150 150 | | | |
| 849 | 120 00 Y 120 0.0 60 150 120.0 30 180 20.0 300 210 330 | 30 10.0 0 Z 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | 10.0 0 Z 30 10.0 0 Z 30 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | |
| 880 | 10.0 00 Y 120 0.0 150 10.0 30 20.0 180 20.0 210 330 220 330 | 30.00 20.0 50 20.0 50 20.0 50 150 150 150 | 10.0 0 Z 10.0 0 Z 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | |
| 915 | 10.0 00 Y 10.0 0 | 30 10.0 0 Z 30 0.6 30 60 30 60 X | 30 10.0 0 Z 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | |
| 1710 | 120 10.0 00 Y 50 120 120 120 130 300 270 300 270 300 | 30 0.0 0 Z 30 0.0 60 20.0 00 X 120 150 150 150 | 10.0 0 Z 30 10.0 0 Z 30 0.0 0.0 00 10.0 00 10.0 00 10. | | | |



| requency | diation pattern of each frequency Antenna radiation pattern | | | | | |
|----------|--|---|--|--|--|--|
| (MHz) | X-Y | Y-Z | Z-X | | | |
| 1785 | 120 10.0 90 Y 60 150 30 200 180 270 300 270 | 30 10.0 0 Z 30 0.0 60 10.0 60 90 X | 10.0 0 Z 30 0.0 30 60 20.0 60 30.0 90 120 120 | | | |
| 1910 | 120 10.0 90 Y 150 10.0 90 Y 150 20.0 30 210 330 | 30 0 Z 30 0.0 GO 20.0 90 X 120 150 150 | 30 0 Z 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | | | |
| 2025 | 120 10.0 90 Y 60 120 10.0 90 Y 60 120 120 120 120 120 120 120 120 120 12 | 30 10.0 0 Z 30 0.0 60 10.0 60 20.0 90 X 120 150 150 | 30 10.0 0 Z 30 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0 | | | |
| 2300 | 120 10.0 90 Y 120 10.0 - 60 150 20.0 300 210 320 320 | -120 150 150 | -120 150 150 | | | |
| 2400 | 120 10.0 % Y 60 0.0 150 150 10.0 % Y 60 120 120 120 120 120 120 120 120 120 12 | 30 10.0 Z 30 0.0 30 60 20.0 90 X | 10.0 0 Z 30 10.0 0 Z 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | |
| 2496 | 120 100 00 Y 60 120 30 150 200 300 200 300 200 300 200 300 300 | 30 10.0 0 Z 30 0.0 60 10.0 60 20.0 90 X 120 150 150 | -30 10.0 0 Z 30 30 -60 10.0 -60 20.0 -90 90 90 90 90 90 90 90 90 90 90 90 90 9 | | | |
| 2595 | 120 10 00 Y 120 10 00 Y 150 20 0 00 180 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 30 10.0 0 30 60 10.0 60 20.0 90 120 120 150 150 | 30 10.0 0 Z 30 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | |
| 2690 | 120 10.0 90 Y 150 10.0 150 30 150 20.0 180 320 210 320 300 | 30 10.0 0 Z 30 60 10.0 60 20.0 60 20.0 90 X | 10.0 0 Z 30 10.0 0 Z 10 | | | |

Antenna radiation pattern of each frequency



- $\mbox{\em XThe}$ antenna gain is measured at the end of 150mm cable.
- $\ensuremath{\mbox{\ensuremath{\mbox{\sc M}}}}$ The antenna gain is measured at free space.
- \frakk{MThe} antenna gain is measured with bracket and cable holder.
- $\ensuremath{\mbox{\ensuremath{\%}}}$ The Radiation Pattern is plotted with data of "total gain of the antenna".