

# MNO SAMPLE DATA SHEET

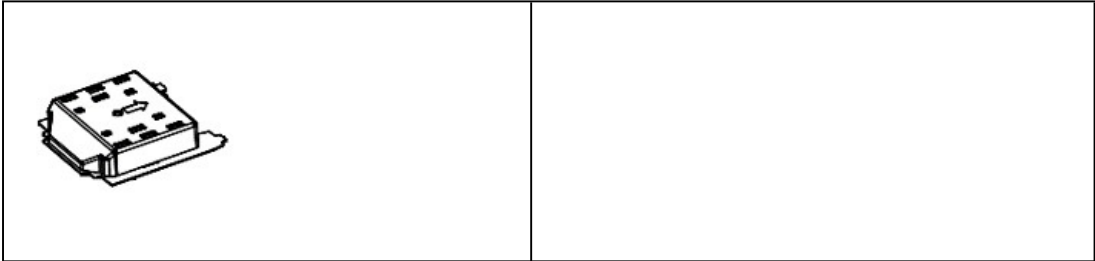
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PROTECTED  
関係者外秘

Toyota Motor Corporation  
Connected Company  
Connected System Development Div.,  
Electronics Development Dept. No.12 2G,  
2023.03.29

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<br>(MHz) | Cable loss<br>(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                |

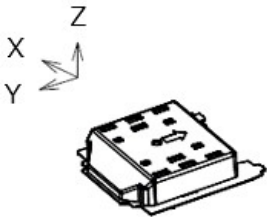
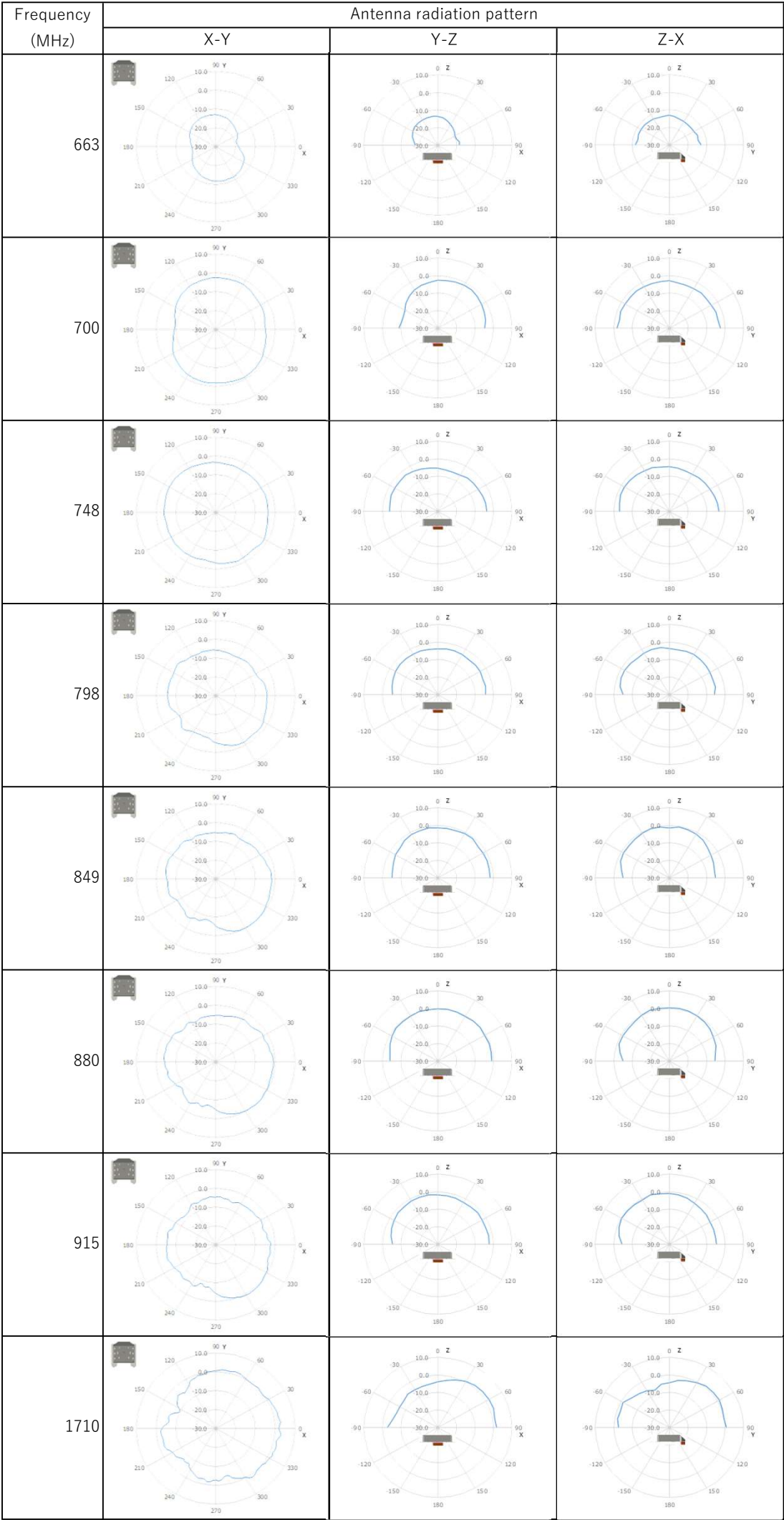
※The antenna cable length is 2.0m.

## Max gain for each frequency

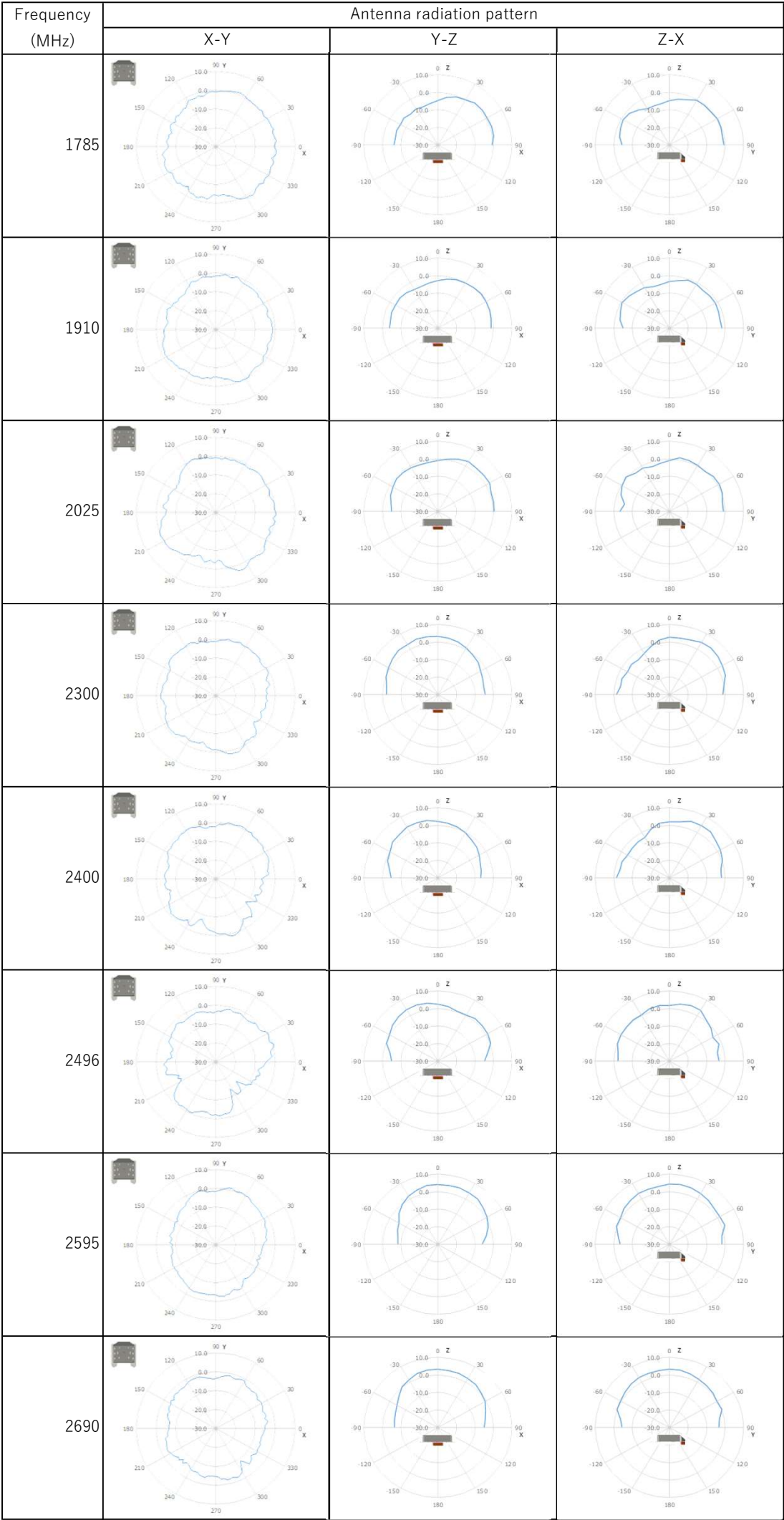
| Frequency<br>(MHz) | Max Gain(dBi)       |                     |                     |                     |
|--------------------|---------------------|---------------------|---------------------|---------------------|
|                    | $\theta = 45^\circ$ | $\theta = 60^\circ$ | $\theta = 75^\circ$ | $\theta = 90^\circ$ |
| 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                | -1.7                |
| 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                 | 2.1                 |
| 2400               | 4.6                 | 3.1                 | 0.6                 | 1.3                 |
| 2496               | 4.2                 | 3.6                 | 2.2                 | 0.6                 |
| 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                 | 1.5                 |
| 3675               | 5.7                 | 5.0                 | 3.9                 | 3.3                 |
| 3975               | 3.6                 | 3.0                 | 2.2                 | 0.6                 |
| 4200               | 4.2                 | 4.2                 | 3.3                 | 2.4                 |
| 4400               | 5.3                 | 5.1                 | 4.7                 | 2.3                 |
| 4700               | 7.5                 | 7.1                 | 5.4                 | 1.4                 |
| 5000               | 7.6                 | 5.7                 | 5.1                 | 0.8                 |

※The antenna gain is measured at the end of 150mm cable.  
※The antenna gain is measured at free space.  
※The antenna gain is measured with bracket and cable holder.

Antenna radiation pattern of each frequency



Antenna radiation pattern of each frequency



Antenna radiation pattern of each frequency



※The antenna gain is measured at the end of 150mm cable.  
※The antenna gain is measured at free space.  
※The antenna gain is measured with bracket and cable holder.  
※The Radiation Pattern is plotted with data of "total gain of the antenna".