

## Guide to Antenna Certification in Indonesia

### Certification in Indonesia

Certificate of approval is required for every telecommunication and ITE equipment entering Indonesian territory. The certificate of approval is issued by Directorate General of Resources and Equipment Standardization for Post and Informatics (SDPPI). Certifications are granted at the system (host) level. The certificate is valid for each type or model number of equipment while product or model series certificate or type approval is not acceptable.

### In-Country Testing

In-Country testing is required prior to certificate issuance by SDPPI. RF / Telecom Test is mandatory while EMC and safety is voluntary. The test will require 2 (two) samples of equipment and it will be conducted by local laboratories which appointed by SDPPI.

### Applicable Standards in Indonesia

Antenna approval test will be based on national standards: KEPDIRJEN No. 42/DIRJEN/2006. The key parameters are as follows:

#### CDMA Antenna

##### 1. CDMA (Dual Polarized Directional Antenna )

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.4
4. Gain	: 14 ~ 21 dBi
5. Half Power Beam Width	: Horizontal Plane 30°~90° Vertical Plane 6.5°~14°
6. Electrical Downtilt	: 0°-12°
7. Isolation	: 30 dB
8. Polarization	: +45° / -45°
9. Cross Polar Discrimination	: > 15dB
10. Front to Back Ratio	: 25 ~ 30 dB
11. Intermodulation IM3	: < -107dBm
12. Maximum Input Power	: 500 W
13. Lightning Protection	: DC Ground

##### 2. CDMA (Vertical Polarized Directional Antenna)

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: 1.3-1.4
4. Gain	: 11-18 dBi
5. Half Power Beam Width	: H Plane 65°~120° E Plane 7°-32°
6. Electrical Downtilt	: 0°-12°
7. Front to Back Ratio	: ≥21 dB
8. Intermodulation IM3	: <-107dBm
9. Maximum Input Power	: 500W
10. Lightning Protection	: DC Ground

##### 3. CDMA (Omni Directional Antenna)

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 11 dBi
5. Half Power Beam Width	: 6.5°
6. Electrical Downtilt	: 3° ~ 5°
7. Intermodulation IM3	: > -107 dBm
8. Maximum Input Power	: 500 W
9. Lightning Protection	: DC Ground

##### 4. CDMA ( High-Way DualDirectional Antenna )

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 13 ~ 14 dBi
5. Half Power Beam Width	: H Plane 60° ~ 210° E Plane 7°
6. Intermodulation IM3	: <-107 dBm
7. Maximum Input Power	: 500 W
8. Lightning Protection	: DC Ground

##### 5. CDMA (Backfire Directional Antenna)

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.5
4. Ga'n	: 17 dBi
5. Half Power Beam Width	: H Plane 25° E Plane 25°
6. Frof/it to Back Ratio	: > 30 dB
7. Maximum Input Power	: 500 W
8. Lightning Protection	: DC Ground

##### 6. CDMA (Grid Parabolic Antenna)

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.5
4. Gain	: 18.5 ~ 21 dBi
5. Polarization	: Horizontal and Vertical Polarization
6. Half Power Beam Width	: H Plane 12° ~ 15° E Plane 14° ~ 18°
7. Front to Back Ratio	: 28 ~ 35 dB
8. Maximum Sidelobe	: 15 dB
9. Maximum Input Power	: 100 W
10. Lightning Protection	: DC Ground

##### 7. CDMA (Panel Corner Reflection Directional Antenna)

1. Frequency Range	: 824 - 896 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 14 ~ 21 dBi
5. Half Power Beam Width	: H Plane 30° ~ 90° E Plane 6.5° ~ 13°
6. Front to Back Ratio	: 25 ~ 35 dB
7. Intermodulation IM3	: <-107 dBm
8. Maximum Input Power	: 500 W
9. Lightning Protection	: DC Ground

## CDMA Antenna

### 8. WCDMA/CDMA2000 (Dual Polarized Directional Antenna)

1. Frequency Range	: 1920-2170 MHz.
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 12.5 ~18dBi
5. Half Power Beam Width	: Horizontal Plane 65°~90° Vertical Plane 7°~29°
6. Electrical Downtilt	: 4°~6°
7. Isolation	: 30 dB
8. Polarization	: +45°/-45°
9. Cross Po/ar Discrimination	: 15 dB
10. Front to Back Ratio	: > 25 dB
11. Intermodulation IM3	: <-107dBm
12. Maximum Input Power	: 500 W
13. Lightning Protection	: DC Ground

### 9. WCDMA/COM A2000 (Vertical Polarized Directional Antenna)

1. Frequency Range	: 1920 -2170 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 14-18 dBi
5. Half Power Beam Width	: H Plane 65°~90° EPlane7°~14°
6. Electrical Downtilt	: 4°~6°
7. Front to Back Ratio	: > 25 dB
8. Intermodulation IM3	: <-107dBm
9. Maximum Input Power	: 500 W
10. Lightning Protection	: DC Ground

### 10. WCDMA/CDMA2000 (Omni Directional Antenna)

1. Frequency Range	: 1920-2170 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.5
4. Gain	: 11 dBi
5. Half Power Beam Width	: 7°
6. Electrical Downtilt	: 3°
7. Intermodulation IM3	: <-107dBm
8. Maximum Input Power	: 500 W
9. Lightning Protection	: DC Ground

### 11. TD-SCDMA (Omni Directional Smart Antenna Array)

1. Frequency Range	: 2007.5 - 2027.5 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.4
4. Gain	: 8 ~ 10.5 dBi
5. Half Power Beam Width	: 7°~14°
6. Antenna to Antenna Isolation	: 15 dB
7. Difference in Transmission Coefficient Between any 2 Antenna Element Connector to Calibration Connector in Phase	: 5°
8. Difference in Transmission Coefficient Between any 2 Antenna Element Connector to Calibration Connector in Magnitude	: 0.5 dB
9. Electrical Downtilt	: 2°~7°
10. Intermodulation IM3	: <-107 dBm
11. Maximum Input Power	: 50 W
12. Lightning Protection	: DC Ground

### 11. TD-SCDMA (Directional Smart Antenna Array)

1. Frequency Range	: 2007.5 - 2027.5 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤ 1.35
4. Polarization	: Vertical
5. Gain (Individual Antenna)	: 15 dBi
6. Gain (Beam Formed Array)	: 23 dBi
7. Beam Width	: H Plane 10.5° E Plane 6.5°
8. Antenna to Antenna Isolation	: 15 dB
9. Difference in Transmission Coefficient Between any 2 Antenna Element Connector to Calibration Connector in Phase	: 5°
10. Difference in Transmission Coefficient Between any 2 Antenna Element Connector to Calibration Connector in Magnitude	: 0.5 dB
11. Front to Back Ratio	: 25 dB
12. Intermodulation IM3	: <-107 dBm
13. Maximum Input Power	: 50 W
14. Lightning Protection	: DC Ground

## GSM Antenna

### 1. GSM ( Dual Polarized Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.4
4. Gain	: 14 ~ 21 dBi
5. Half Power Beam Width	: Horizontal Plane 30°~90° Vertical Plane 6°~14°
6. Electrical Downtilt	: 0°~12°
7. Isolation	: 30 dB
8. Cross Polar Discrimination	: > 15dB
9. Polarization	: +45° / -45°
10. Front to Back Ratio	: 25 ~ 30 dB
11. Intermodulation IM3	: <-107dBm
12. Maximum Input Power	: 500 W
13. Lightning Protection	: DC Ground

### 2. GSM ( Vertical Polarized Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: 1.3 ~ 1.4
4. Gain	: 11 ~ 18 dBi
5. Half Power Beam Width	: H Plane 65°~120° E Plane 6.5°~32°
6. Electrical Downtilt	: 0°~12°
7. Front to Back Ratio	: >22 dB
8. Intermodulation IM3	: <-107dBm
9. Maximum Input Power	: 500 W
10. Lightning Protection	: DC Ground

### 3. GSM ( Omni Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.4
4. Gain	: 11 dBi
5. Half Power Beam Width	: 6°
6. Electrical Downtilt	: 3°~5°
7. Intermodulation IM3	: <-107dBm
8. Maximum Input Power	: 500 W
9. Lightning Protection	: DC Ground

### 4. GSM ( High Way Dual Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.4
4. Gain	: 13~14 dBi
5. Half Power Beam Width	: H Plane 60° ~210° E Plane 7°
6. Intermodulation IM3	: <-107dBm
7. Maximum Input Power	: 500 W
8. Lightning Protection	: DC Ground

### 5. GSM ( Backfire Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.5
4. Gain	: 17 dBi
5. Half Power Beam Width	: H Plane 30° E Plane 31°
6. Front to Back Ratio	: > 30 dB
7. Maximum Input Power	: 500 W
8. Lightning Protection	: DC Ground

### 6. GSM ( Grid Parabolic Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.5
4. Gain	: 19 ~ 22 dBi
5. Polarization	: Horizontal and Vertical Polarization
6. Half Power Beam Width	: H Plane 12°~15° E Plane 14°~18°
7. Front to Back Ratio	: 28 ~ 35 dB
8. Maximum Sidelobe	: 15 dBm
9. Maximum Input Power	: 100 W
10. Lightning Protection	: DC Ground

### 7. GSM ( Panel Corner Reflection Directional Antenna )

1. Frequency Range	: 870 -960 MHz
2. Impedance	: 50 Ω
3. VSWR	: ≤1.4
4. Gain	: 14 ~ 21 dBi
5. Half Power Beam Width	: H Plane 30°~90° E Plane 6.5°~13°
6. Front to Back Ratio	: 25 ~ 35 dB
7. Intermodulation IM3	: <-107 dBm
8. Maximum Input Power	: 500 W
9. Lightning Protection	: DC Ground

## Indoor Antenna

- Multi Band Ceiling Mount Antenna (Indoor Antenna)**
  - Frequency Range : 824 - 960 MHz  
1710-2500 MHz
  - Impedance : 50 Ω
  - VSWR : <1.5
  - Gain : 3 dBi
  - Half Power Beam Width : 55°
  - Maximum Input Power : 150W
- Four Band Ceiling Mount Antenna (Indoor Antenna)**
  - Frequency Range : 824 - 960 MHz  
1710-2200 MHz
  - Impedance : 50 Ω
  - VSWR : ≤1.5
  - Gain : 3 dBi
  - Half Power Beam Width : 55°
  - Maximum Input Power : 150 W
- Dual Band Ceiling Mount Antenna (Indoor Antenna)**
  - Frequency Range : 824 - 960 MHz
  - Impedance : 50 Ω
  - VSWR : ≤1.5
  - Gain : 3 dBi
  - Half Power Beam Width : 55°
  - Maximum Input Power : 150 W
- Four Band Directional Ceiling Mount Antenna (Indoor Antenna)**
  - Frequency Range : 824 - 960 MHz  
1710-2500 MHz
  - Impedance : 50 Ω
  - VSWR : ≤1.5
  - Gain : 4.5 dBi
  - Half Power Beam Width : H Plane 120°  
E Plane 55°
  - Maximum Input Power : 150W
- Indoor Directional Antenna**
  - Frequency Range : 824 - 960 MHz  
1710-1880 MHz  
1710 - 2170 MHz
  - Impedance : 50 Ω
  - VSWR : ≤1.5
  - Gain : 7/8 dBi
  - Half Power Beam Width : H Plane 70°  
E Plane 50°
  - Maximum Input Power : 150 W

## YAGI Antenna

- Multi Band Ceiling Mount Antenna (Indoor Antenna)**
  - Frequency Range : 824 - 960 MHz
  - Impedance : 50 Ω
  - VSWR : <1.5
  - Gain : 10 ~ 17 dBi
  - Half Power Beam Width : H Plane 17° ~ 62°  
E Plane 28° ~ 55°
  - Front to Back Ratio : 16 ~ 25 dB
  - Maximum Input Power : 50 W
  - Lightning Protection : DC Ground

## Terrestrial Antenna

- Grid Parabolic Antenna**
  - Diameter : 4 ft (1.2 m) ~ 12 ft (3.7 m)
  - Frequency Range : 1.9 to 2.7 GHz (in band)
  - Input Flanges : Type N Female
  - Impedance : 50 Ω
  - Gain :
    - Bottom : 25.6 ~ 35.5 dBi
    - Mid-Band : 26.5 ~ 35.7 dBi
    - Top : 27.3 ~ 35.9 dBi
  - Half Power Beamwidth : 2.9° ~ 7.7°
  - Cross Polarization Disc : 29 ~ 40 dB
  - F/B Ratio : 32 ~ 44 dB
  - VSWR Max. (Return Loss) : 1.15 ~ 1.20
  - Return Loss : 20.8 ~ 26.4 dB
  - Polarization : Horizontal or Vertical Polarization
  - Maximum Input Power : 10 W
  - Humidity : 100 %
  - Operating Temperature : 0 ~ 70° C
- Dish Parabolic Standard Antenna**
  - Diameter : 2 ft (0.6 m)
  - Frequency Range : 7.125 ~ 8.500 GHz (in band)
  - Input Flanges : Type CPR 112
  - Impedance : 50 Ω
  - Gain :
    - Bottom : 30.3 dBi
    - Mid-Band : 30.7 dBi
    - Top : 1.0 dBi
  - Half Power Beamwidth : 2.5°
  - Cross Polarization Disc : 28 dB
  - F/B Ratio : 42 dB
  - VSWR Max : 1.29
  - Return Loss : 18.0 dB
  - Polarization : Horizontal or Vertical Polarization
  - Maximum Input Power : 10 W
  - Humidity : 100 %
  - Operating Temperature : 0 ~ 70° C
- Dish Parabolic High Performance Antenna**
  - Diameter : 2 ft (0.6 m)
  - Frequency Range : 7.125 ~ 8.500 GHz (in band)
  - Input Flanges : Type CPR 112
  - Impedance : 50 Ω
  - Gain :
    - Bottom : 30.0 dBi
    - Mid-Band : 30.4 dBi
    - Top : 30.6 dBi
  - Half Power Beamwidth : 4.5°
  - Cross Polarization Disc : 28 dB
  - F/B Ratio : 50 dB
  - VSWR Max : 1.29
  - Return Loss : 18.0 dB
  - Polarization : Horizontal or Vertical Polarization
  - Maximum Input Power : 10 W
  - Humidity : 100 %
  - Operating Temperature : 0 ~ 70° C

## Documentations Requirements

1. Completed Application Forms: Application Form (FR.PM.5), Inspection Form (FR.PM.4), Power of Attorney to *TEKNOKRAT* Indonesia
2. Technical Constructive File: General information, Installation guide, User manual, BOM, Hardware description, Block diagram, Assembly Top/Bottom, Conducted test report (RF / Telecom and EMC & Safety test)
3. Copy of Certificates of Compliance (from other country)

TEKNOKRAT's services have been specifically designed to support manufacturers, test laboratories and consultants seeking type approval in Indonesia for telecommunications equipment and other ITE. The world's leading telecommunications equipment vendors already recognize the value in our service and entrust their approvals in Indonesia to us. We would be delighted to have the opportunity to support your telecom approvals.

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