

1994. 4.27

KES

Automobile Motor Antenna

KES D-C698

(EST.) 1988-06-25

Contents

1. Scope of Application
2. Purpose
3. Report of Evaluation Result
4. Definition of Terminology
5. Specifications Indicated in Drawings
6. Evaluation Standard
7. Evaluation Method
8. Alteration of Specification
9. Indication Method on Drawings

Quoted Standard



1. Scope of Application

This standard specifies motor antenna for Automobile (hereinafter referred to as the "antenna").

2. Purpose

This standard aims at standardization of the specifications and securing proper quality.

Remarque : This standard and a drawing communicate together Kia's requirements.

3. Report of Evaluation Result

The result of quality evaluation at each stage from development to mass-production shall be submitted to Kia according to the Engineering's indication.

4. Definition of Terminology

- (1) Performance : The necessary capacity expressed quantitatively to satisfy the working purpose (Design value or evaluation standard value of each item, such as electrical performance or mechanical performance)
- (2) Function : After applying power source to the antenna and turning on or off the antenna control circuit, it shall perform the designated motion smoothly as indicated in drawings.
- (3) Operation : It shall satisfy the function specified in drawings.
- (4) Normal performance range : Environmental condition in which the antenna performance is guaranteed.
- (5) Normal working range : Environmental condition in which the function of antenna is guaranteed.
- (6) Normal storage range : Environmental condition in which damage, deformation, discoloration, dent, etc are not occurred in vehicle condition.
- (7) Error-working : Working that does not satisfy the antenna's performance and function.
- (8) Vehicle condition : The condition to fix an antenna with the antenna mounting parts and by antenna attaching method (tightening torque, etc.) as indicated in the specification drawing.

- (9) Smoke, ignition : The amount of smoke that correspond to a piece of cigarette comes out of the antenna case, and the flame comes out of the case.
- (10) Noise : Unpleasant noise, caused by antenna working vibration from the outside, etc.
- (11) Abnormality : The state where error working, noise, smoke, ignition, offensive smell, external deformation, discoloration, dent, etc. occur.
- (12) Wholly extended and wholly retracted state of an antenna pole
 - (a) Full on : State of completely extended antenna pole
 - (b) Full off : The shortest state of the entirely retracted antenna pole

5. Specifications Indicated in Drawing

5.1 Specification of external appearance

- (1) Dimension of external appearance (attaching dimension)
- (2) Type of connector (terminal arrangement and name)
- (3) Antenna pole length
- (4) Antenna mounting bracket shape and tightening torque to fix antenna (min - max)

5.2 Electric specification

- (1) Working voltage range
- (2) Consumed current
- (3) Antenna Q
- (4) Antenna electrostatic capacity
- (5) Electric circuit diagram (Sequence drawing)

5.3 Environmental condition

- (1) Temperature guaranteed range
- (2) Voltage guaranteed range

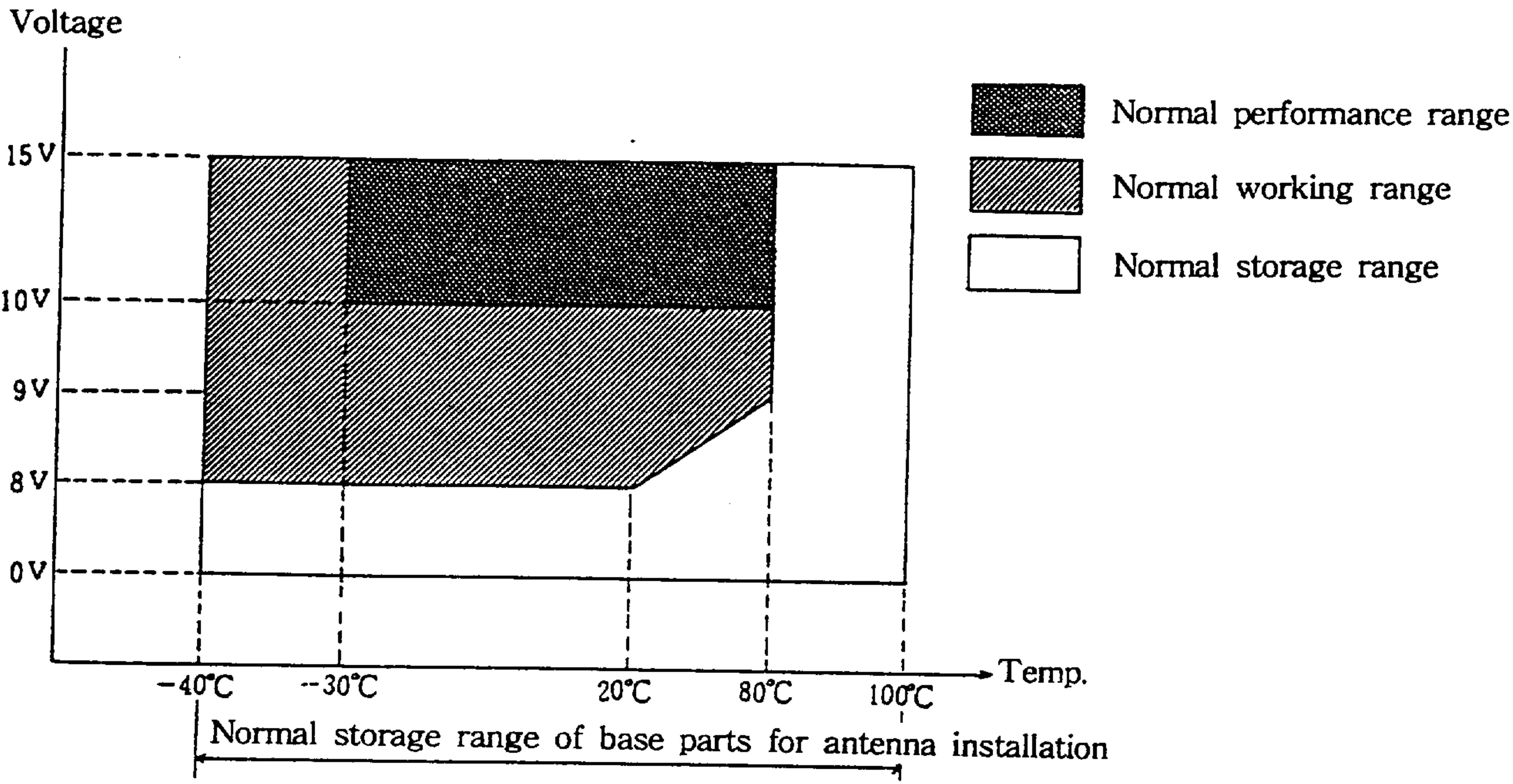


Fig. 1 Temperature - voltage guaranteed range

6. Evaluation Standard

The evaluation standard of the antenna shall conform to Table 1.

(1) The way of reading evaluation items and methods in Table 1 shall conform to the following example.

Evaluation item			Evaluation method	
Dura- bility	Vibration resistance	1st evaluation	7.5.1	1st evaluation method
	• Operating force of slider	2nd evaluation (Evaluation item tested after evaluation the vibration resistance)	• 7.3.1	2nd evaluation method
	••Noise		••7.3.7	3rd evaluation method
		3rd evaluation (Evaluation item tested after evaluation the operating force)		

(2) The quality rank shall be represented by A, AR, B or C.

(3) The definitions shall conform to KMS Q 410001(Determination and Procedure of Quality Ranking).

Table 1

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method
Electric performance	Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	7.2.1
	Tolerance of electrostatic capacity	Electrostatic capacity of antenna shall conform to the specification drawing.				B	7.2.2
		Feeder length	~ 500m	500 ~ 1000mm	1000mm ~		
		Ant. (excluding middle feeder)	±4PF	±4PF	±4PF		
		Ant. (including middle feeder)	±5PF	±5PF	±8PF ⁽¹⁾		
		Note(1) Standard value may be determined by an agreement.					
	Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.				B	7.2.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Electric performance	Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	7.2.4
	Consumed current	Obtain an approval by submitting the measurement data for the following cases: (1) Antenna pole is being raised (2) Clutch is in working	B	7.2.5
	Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) The measured time from antenna pole stop to clutch stop	B	7.2.6
	Dark current	2mA or less	B	7.2.7
Mechanical performance	Traction	3kg f {29.4N} or more of raising and lowering force	B	7.3.1
	Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	7.3.2
	Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch working : 70dB or less	B	7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method																								
Environment resistance	High temperature exposure resistance	(1) No external appearance deformation, discoloration, connecting part loosening, or peel off (2) No internal deformation, connecting part loosening, or peel off (3) No noise				B	7.4.1																								
	• Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	• 7.2.1																								
	• Tolerance of electrostatic capacity	<table><tr><td colspan="5">Electrostatic capacity of antenna shall conform to the specification drawing.</td></tr><tr><td>Feeder length</td><td>~ 500m</td><td>500 ~ 1000mm</td><td colspan="2">1000mm ~</td></tr><tr><td>Ant. (excluding middle feeder)</td><td>±4PF</td><td>±4PF</td><td colspan="2">±4PF</td></tr><tr><td>Ant. (including middle feeder)</td><td>±5PF</td><td>±5PF</td><td colspan="2">±8PF⁽¹⁾</td></tr><tr><td colspan="5">Note(1) Standard value may be determined by an agreement.</td></tr></table>				Electrostatic capacity of antenna shall conform to the specification drawing.					Feeder length	~ 500m	500 ~ 1000mm	1000mm ~		Ant. (excluding middle feeder)	±4PF	±4PF	±4PF		Ant. (including middle feeder)	±5PF	±5PF	±8PF ⁽¹⁾		Note(1) Standard value may be determined by an agreement.					B
Electrostatic capacity of antenna shall conform to the specification drawing.																															
Feeder length	~ 500m	500 ~ 1000mm	1000mm ~																												
Ant. (excluding middle feeder)	±4PF	±4PF	±4PF																												
Ant. (including middle feeder)	±5PF	±5PF	±8PF ⁽¹⁾																												
Note(1) Standard value may be determined by an agreement.																															

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) The time from antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch working : 70dB or less	B	• 7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method
Environment resistance	Low temperature exposure resistance	(1) No external appearance deformation, discoloration, connecting part loosening, or peel off (2) No internal deformation, connecting part loosening, or peel off (3) No noise				B	7.4.2
	• Isulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	• 7.2.1
	• Static electricity capacity tolerance	Electrostatic capacity of antenna shall conform to the specification drawing.				B	• 7.2.2
Feeder length		~ 500m	500 ~ 1000mm	1000mm ~			
Ant. (excluding middle feeder)		±4PF	±4PF	±4PF			
Ant. (including middle feeder)		±5PF	±5PF	±8PF ⁽¹⁾			
Note ⁽¹⁾ Standard value may be determined by an agreement.							

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) The time from antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3Kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch working : 70dB or less	B	• 7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method
Environment resistance	• Moisture resistance	(1) No external appearance deformation, discoloration, connecting part loosening or peel off (2) No internal deformation, connecting part loosening or peel off (3) No electric corrosion, rust, or foreign material on the contact point of limit S/W, etc.				B	7.4.3
	• Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	• 7.2.1
	• Tolerance of electrostatic capacity	Electrostatic capacity of antenna shall conform to the specification drawing.				B	• 7.2.2
Feeder length		~ 500m	500 ~ 1000mm	1000mm ~			
Ant. (excluding middle feeder)		±4PF	±4PF	±4PF			
Ant. (including middle feeder)		±5PF	±5PF	±8PF ⁽¹⁾			
Note ⁽¹⁾ Standard value may be determined by an agreement.							

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) The time from antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch wokring : 70dB or less	B	7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method
Environment resistance	High temperature working resistance	(1) No abnormality during working (2) No external appearance deformation, discoloration, connecting part loosening or peel off (3) No internal appearance deformation, connecting part loosening or peel off (4) No noise				B	・ 7.4.4
	・ Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	・ 7.2.1
	・ Tolerance of electrostatic capacity	Electrostatic capacity of antenna shall conform to the specification drawing.				B	・ 7.2.2
Feeder length		~ 500m	500 ~ 1000mm	1000mm ~			
Ant. (excluding middle feeder)		±4PF	±4PF	±4PF			
Ant. (including middle feeder)		±5PF	±5PF	±8PF ⁽¹⁾			
Note ⁽¹⁾ Standard value may be determined by an agreement.							

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) From antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch working : 70dB or less	B	• 7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method
Environment resistance	Low temperature working resistance	(1) No abnormality during working (2) No external appearance deformation, discoloration, connecting part loosening or peel off (3) No internal appearance deformation, connecting part loosening or peel off (4) No noise				B	• 7.4.5
	• Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	• 7.2.1
	• Tolerance of electrostatic capacity	Electrostatic capacity of antenna shall conform to the specification drawing.				B	• 7.2.2
Feeder length		~ 500m	500 ~ 1000mm	1000mm ~			
Ant. (excluding middle feeder)		±4PF	±4PF	±4PF			
Ant. (including middle feeder)		±5PF	±5PF	±8PF ⁽¹⁾			
Note ⁽¹⁾ Standard value may be determined by an agreement.							

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) From antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3Kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch wokring : 70dB or less	B	• 7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard				Quality Rank	Evaluation Method																								
Environment resistance	Repeating cold-heating resistance (Thermal shock)	(1) No external appearance deformation, discoloration, connecting part loosening or peel off (2) No internal appearance deformation, connecting part loosening or peel off (3) No noise				B	• 7.4.6																								
	• Insulation resistance	(1) 100MΩ or more of resistance value between feeder core wire and shield wire (2) 100MΩ or more of resistance value between pole and shield pipe (3) 10MΩ or more of resistance value between antenna body and non-conductive terminal of control unit and each terminal				B	• 7.2.1																								
	• Tolerance of electrostatic capacity	<table><tr><td colspan="5">Electrostatic capacity of antenna shall conform to the specification drawing.</td></tr><tr><td>Feeder length</td><td>~ 500m</td><td>500 ~ 1000mm</td><td colspan="2">1000mm ~</td></tr><tr><td>Ant. (excluding middle feeder)</td><td>±4PF</td><td>±4PF</td><td colspan="2">±4PF</td></tr><tr><td>Ant. (including middle feeder)</td><td>±5PF</td><td>±5PF</td><td colspan="2">±8PF⁽¹⁾</td></tr><tr><td colspan="5">Note⁽¹⁾ Standard value may be determined by an agreement.</td></tr></table>				Electrostatic capacity of antenna shall conform to the specification drawing.					Feeder length	~ 500m	500 ~ 1000mm	1000mm ~		Ant. (excluding middle feeder)	±4PF	±4PF	±4PF		Ant. (including middle feeder)	±5PF	±5PF	±8PF ⁽¹⁾		Note ⁽¹⁾ Standard value may be determined by an agreement.					B
Electrostatic capacity of antenna shall conform to the specification drawing.																															
Feeder length	~ 500m	500 ~ 1000mm	1000mm ~																												
Ant. (excluding middle feeder)	±4PF	±4PF	±4PF																												
Ant. (including middle feeder)	±5PF	±5PF	±8PF ⁽¹⁾																												
Note ⁽¹⁾ Standard value may be determined by an agreement.																															

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environment resistance	• Antenna Q	200 or more Remark: In case of providing countermeasures for electrostatic noise, the standard value shall be determined by an agreement.	B	• 7.2.3
	• Working voltage	Antenna shall work smoothly at the following voltages: (1) Rated voltage : 12V (2) Max. working voltage : 15V (3) Min. working voltage : 8V	B	• 7.2.4
	• Working time	Obtain an approval by submitting the measurement time for the following: (1) The time from the start of antenna pole extension to its stop shall be within 5 ± 1 sec. (in case the antenna pole length is 900mm) (2) The time from antenna pole stop to clutch stop	B	• 7.2.6
	• Traction	3kg f {29.4N} or more of raising and lowering force	B	• 7.3.1
	• Tensile strength of antenna pole	Antenna pole and antenna top, etc. shall not come off.	B	• 7.3.2
	• Working noise	The volume and tone shall meet the acceptance sample. • During raising or lowering of antenna pole : 60dB or less • During clutch working : 70dB or less	B	• 7.3.3