

KES

Speaker

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Appendix



1. Purpose

This standard aims at securing proper quality by standardizing specifications

Remark: This standard communicates the required specifications accompanying the specification drawings.

2. Scope of Application

This standard specifies the speaker for automobiles .

3. Report of Evaluation Result

The quality evaluation results at each stage from development to mass production shall be submitted to KIA according to the Appendix.

4. Meaning of Terminology

- (1) Central point: The center point of the mouth of the cone on the imaginary surface containing the cone edge of the speaker
- (2) Central axis: The axis line that passes through the central point at the right angle to the surface containing the cone edge of the speaker

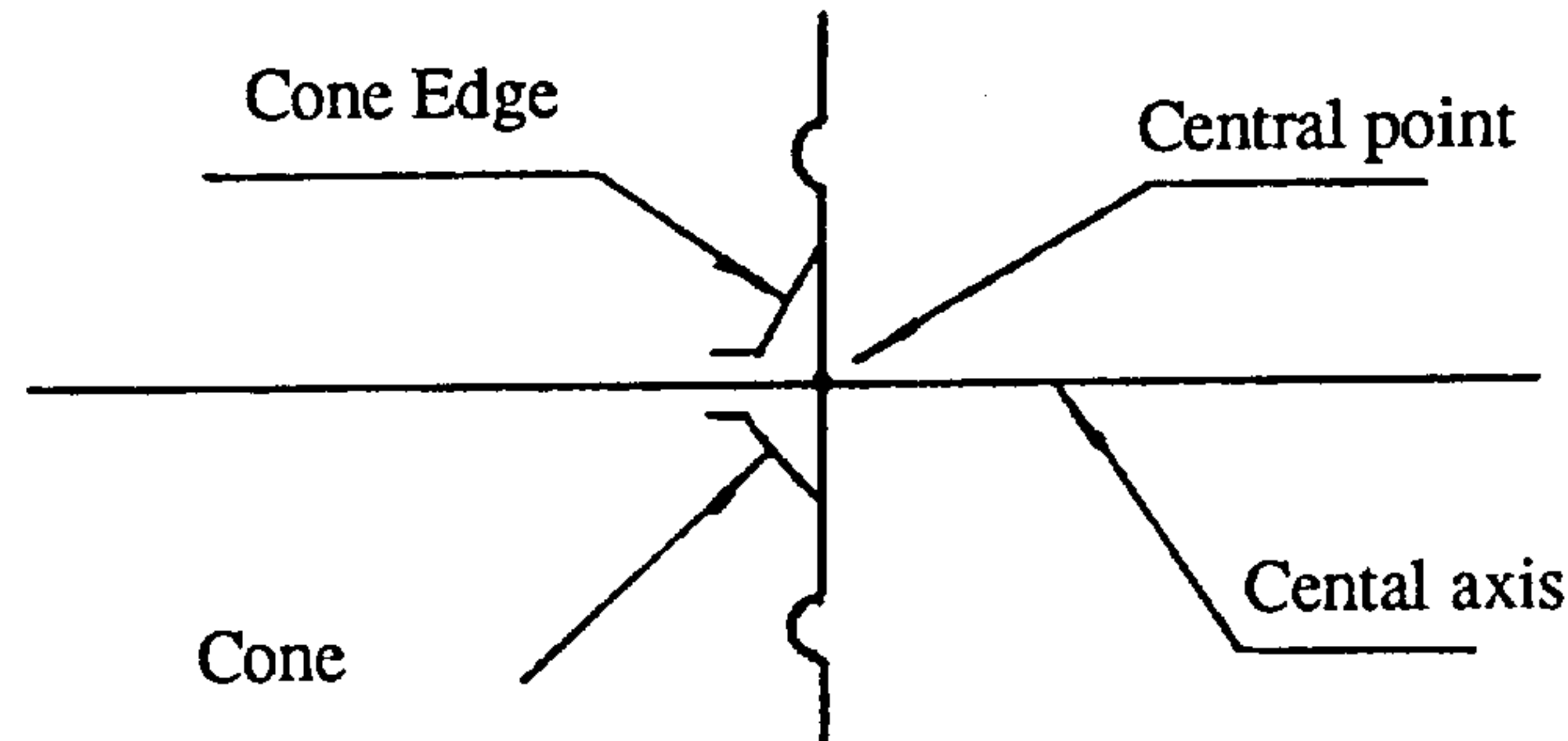


Fig. 1

- (3) Initial value: The measurement value on the electric performance performed prior to the various environmental evaluation under the conditions specified in 7.1.1.
- (4) Standard Value: The indicated value in the specification drawing or the one determined by submitting the relevant data to KIA and obtaining its approval.
- (5) Standard input: 1/3 of the maximum input limit. The standard input may be the rated input specified in KS D 6501. The input conditions shall be shown in the evaluation results.
- (6) Performance guarantee range: The environmental conditions for the guaranteed performance of the functions indicated in the specification drawing.
- (7) Operation Guarantee Range: The environmental conditions for the guaranteed operation of the functions indicated in the specification drawing .
- (8) Sustenance guarantee range: The environmental condition under which the Speaker shall not be subject to damage, deformation, decoloration or cracks when attached to the real automobile.

- (9) Occurrence of smoke and spark: The state of the speaker where more than a cigarette's worth of smoke is generated from the speaker frame, or the state where flames come out of the speaker frame.
- (10) Abnormal sound: The unwanted sound other than normal sound generated by the speaker due to its operation or external vibration etc.
- (11) Defects: The occurrence of operation fault, abnormal sound, smoke, spark, abnormal odor, physical deformation, decoloration, crack, etc.

5. Specification Indicated in Engineering Drawings

5.1 Physical Appearance Appearance Specification

- (1) Physical appearance dimensions (Attachment dimensions)
- (2) Types of the connector (Names and disposition of the terminals)

5.2 Electric Specification

- (1) Rated input limit
- (2) Voice coil impedance
- (3) Magnet size

5.3 Environmental Conditions

- (1) Temperature guarantee range
- (2) Input guarantee range

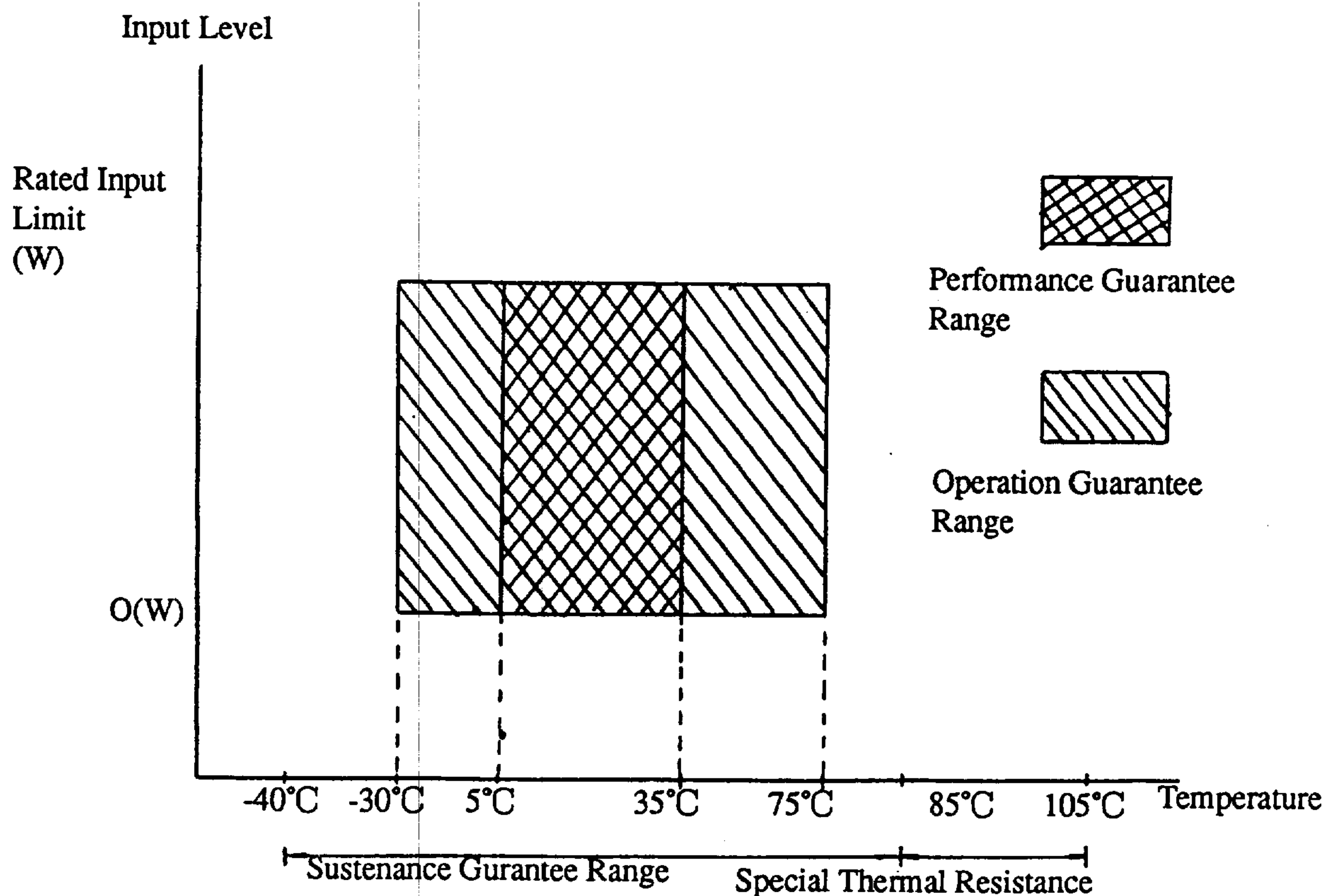
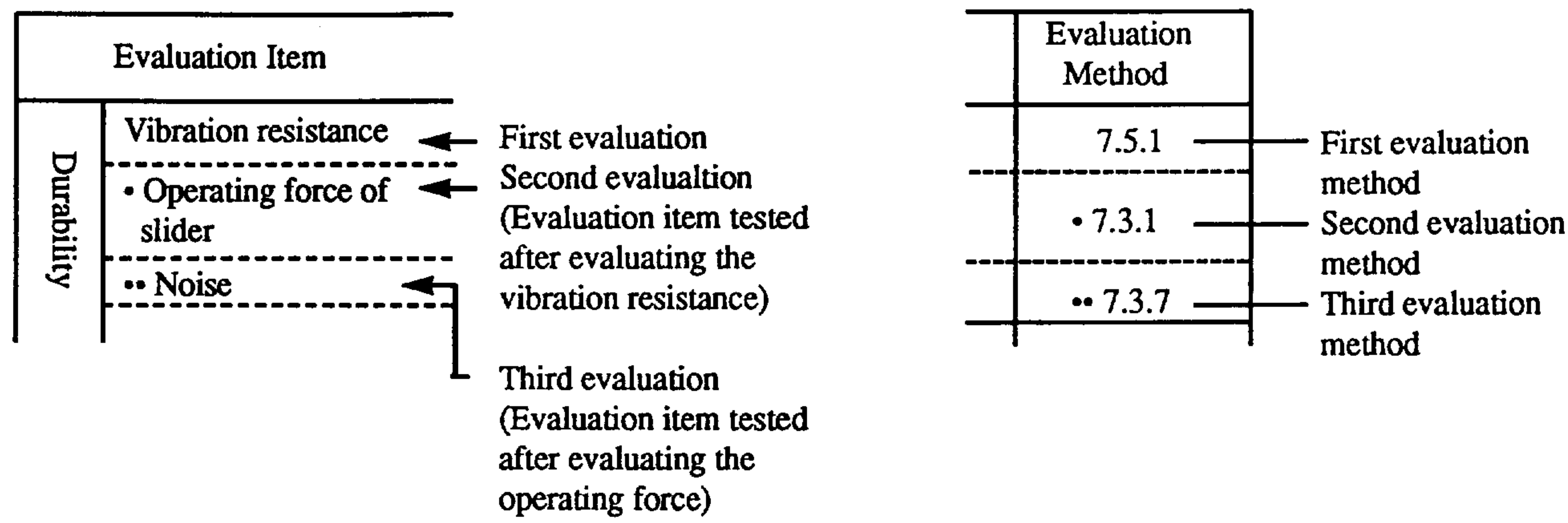


Fig. 2 Temperature vs. input guarantee range

6. Evaluation Standard

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

Remarks 1. The way of reading evaluation item and method in Table 1 shall conform to the following example.



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

The definitions shall conform to KES Q-A001 (Determination and procedure of quality ranking)

Table 1

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Electric Performance	Max. input limit	According to the specification drawing	B	7.2.1
	Voice coil impedance	To be within the standard value $\pm 10\%$	B	7.2.2
	Min. resonance Frequency (f_0)	(1) Measurement data shall be submitted to KIA (2) To be within the agreed standard value $\pm 20\%$	B	7.2.3
	Output sound pressure level	(1) Measurement data shall be submitted to KIA (2) To be within the agreed standard value $\pm 3\text{dB}$	B	7.2.4
	Output Sound Pressure Frequency Characteristics (F characteristics)	(1) Measurement data shall be submitted to Kia (2) To conform to the agreed standard value	B	7.2.4
	Directional frequency characteristics (30° , 60°)	(1) Measurement data shall be submitted to KIA (2) To be approved by Kia through discussion	B	7.2.4
	Output sound pressure frequency characteristics (Deflection range)	(1) Measurement data shall be submitted to KIA (2) To be within the agreed standard range	B	7.2.4
	Distortion Factor	Measurement data shall be submitted to KIA	B	7.2.5
	High-pass frequency limit (f h)	(1) Measurement data shall be submitted to KIA (2) To be within the agreed standard value 20%	B	7.2.6
	Magnetic Flux Density (Bg)	(1) Measurement data shall be submitted to KIA (2) To be within the agreed standard value $\pm 12\%$	B	7.2.7

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental Resistance	• Output sound pressure Level	The variation from the initial value shall be within $\pm 20\%$	B	•7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	•7.2.4
	Low Temperature Exposure Resistance	(1) No deformation, decoloration, looseness of joints nor peeling-off in the Physical appearance (2) No deformation, looseness of joints nor peeling-off in the interia (3) No abnormal sound	B	•7.3.6
	• Min. Resonance Frequency	The variation from the initial value shall be within $\pm 20\%$	B	•7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within $\pm 3\text{dB}$	B	•7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	•7.2.4
	Special Thermal Resistance (To be applied to the Speaker exposed to direct sunlight)	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interia (3) No abnormal sound	B	•7.3.7
	• Min. Resonance Frequency	The variation from the initial value shall be within 20%	B	•7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within 3dB	B	•7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	•7.2.4
	Humidity Resistance	(1) No deformation, decoloration, looseness of joints nor peeling off in the physical appearance (2) No deformation, looseness of joints nor peeling-off in the interia (3) No abnormal sound		

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Thermal Environmental Resistance		(4) No harmful effect on the performance and functions of metal parts. No visual deterioration in the physical appearance.		
	• Output Sound Pressure Level	The variation from the initial value shall be within ± 3 dB	B	• 7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	• 7.2.4
	Special thermal resistance (To be applied to the speaker exposed to sunlight)	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterior (2) No deformation, looseness of joints nor peeling-off in the interior (3) No abnormal sound	B	7.3.7
	• Min. Resonance Frequency	The variation from the initial value shall be within $\pm 20\%$	B	• 7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within ± 3 dB	B	• 7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range) Humidity resistance	No significant variation from the initial value (1) No deformation, decoloration, looseness of joints nor peeling-off in the exterior (2) No deformation, looseness of joints nor peeling-off in the interior (3) No abnormal sound (4) No harmful effect on the performance and functions of metal parts. No visual deterioration in the physical appearance	B B	• 7.2.4 7.3.8

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Thermal Environmental Resistance	Operability at high Temperature	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.3.3
	• Min. Resonance Frequency (f_0)	The variation from the initial value shall be within +10% ~ -30%	B	7.2.3
	Operability at Low Temperature	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound		
	• Min Resonance Frequency	The variation from the initial value shall be within $\pm 10\%$ ~ -30%	B	7.2.3
	High Temperature Exposure Resistance	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.3.5
	• Min.. Resonance Frequency	The variation from the initial value shall be within $\pm 20\%$	B	• 7.2.3
Electrical Performance	Temperature Increase of Voice Coil	(1) Measurement data shall be submitted to KIA (2) To be approved by KIA through discussion	B	7.2.8
	Polarity	To conform to the specification drawing	B	7.2.9
	Voltage Resistance	No defect	B	7.2.10
	Insulation Resistance	1M Ω or more	B	7.2.11
	Durability at normal temperature (A)	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.3.7

Evaluation Item		Standard	Quality Rank	Evaluation Method
Mechanical Environmental Resistance	• Min. Resonance Frequency (fo)	The variation from the initial value shall be within +10% ~ -30%	B	• 7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within ±3dB.	B	• 7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	• 7.2.4
	• • Durability at Normal Temperature (B)		B	• • 7.3.1 (2)
	• • • General No defect Operability		B	• • • 7.1.6
	Acceleration Durability	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria	B	7.3.2
	• General Operability	No defect	B	• 7.1.6
	• Min. Resonance Frequency (f ₀)	The variation from the initial value shall be within ±20%	B	• 7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within ±3dB	B	• 7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	• 7.2.9
	Heat./cold Response characteristics	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.3.7

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
	• Min. Resonance Frequency (f_0)	The variation from the initial value shall be within $\pm 20\%$	B	• 7.2.3
	• Output Sound Pressure Level	The variation from the initial value shall be within $\pm 3\text{dB}$	B	• 7.2.4
	• Output Sound Pressure Frequency Characteristics (Deflection range)	No significant variation from the initial value	B	• 7.2.4
Mechanical Environmental Resistance	Vibration Resistance	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.4.1
	Impact Resistance	No defect	B	• 7.1.6
	General operability	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.4.2
	• General Operability	No defect	B	• 7.1.6
	Lead wire and Terminal Strength	No damage, looseness of joints nor solder separation.	B	7.4.3
	Combined Evaluation	(1) No deformation, decoloration, looseness of joints nor peeling-off in the exterioria (2) No deformation, looseness of joints nor peeling-off in the interioria (3) No abnormal sound	B	7.4.4
	• General Operability	No defect	B	• 7.1.6
	Smoke and Spark Resistance	No generation of smoke, spark nor harmful gas (smoke generation shall be one cigarette worth or less).	B	7.5.1