Certificate of Test

We hereby declare that the item described below has been tested by BSI and complies with the requirements of

Clients Specification Ref. QA/95/2087

The full details of the tests and the results are given in our Report No: CT001080 *Dated:* 1st November 1995

Description of item tested:

Instrumentation Cable
5 x 2 x 1 + 1.0 mm^2

Submitted by:

Middle Eastern Specialized Cable Co
PO Box 60536
Riyadh
Saudi Arabia

Certificate authorized by:

K R Gifford

Title Laboratory Manager

Date 9 NOVEMBER 1995

BSI TESTING

Attention is drawn to the conditions upon which this declaration is issued, namely:

1 The general and specific conditions of the BSI Testing House, Test Leaflet 1 apply in all respects. Copies of this leaflet are available on request.

2 This Declaration applies only to the particular sample tested and to the specific tests carried out as detailed in the report referred to above.

3 This declaration does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.

BSI Testing, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

Test Report

BSI TESTING

Report No	CT001080
Client	Middle Eastern Specialized Cable Co PO Box 60536 Riyadh Saudi Arabia
Authority & date	Clients Fax dated 11 October 1995
Items tested	One sample of Instrumentation Cable 5 x 2 x 1 + 1.0 mm^2
Specifications	Clients Specification Ref : QA/95/2087
Results	The sample submitted complied with the requirements of the Specification
Prepared by	J Cooper
Authorized by	B Hall
Issue date	1st November 1995
Conditions of issue	This Test Report is issued subject to the conditions stated in the current issue of *Test Leaflet 1* 'General conditions relating to acceptance of testing'. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the Director, BSI Testing, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought.

1) Introduction

This report relates to tests conducted on a sample of electric cable submitted by The Middle East Specialized Cable Co. of Riyadh, Saudi Arabia.
This report applies only to the particular sample tested and to the specific tests carried out and detailed within the report. It does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of this or any related products.

2) Samples

The client submitted one sample of electric cable:-
Instrumentation cable 5 x 2 x 1.0 + 1.0 mm^2

3) Testing

The sample submitted was subjected to the tests specified in the clients Specification Ref. QA/95/2087. This Specification is detailed in Appendix A of this report

4) Results

The results of the tests carried out are detailed on pages 3 to 7 of this report.

5) Conclusion

The sample complied with the requirements of the clients specification.

TESTING OF INSTRUMENTATION CABLE TO CLIENTS SPECIFICATION REF. QA/95/2087

Test Results **Assessment**

Clause 1 - Conductor Detail

All the cable cores had 32 strands of 0.20 mm. diameter Pass

Clause 2 - Conductor Resistance at 20 C

Pair No.	Core	Resistance (Ohm / Km)
1	Red	17.7
	Blue	17.9
2	Red	17.7
	Blue	17.9
3	Red	17.8
	Blue	17.9
4	Red	18.1
	Blue	18.3
5	Red	18.2
	Blue	18.2
Earth	Green / Yellow	17.6

Pass

Date samples received :- 13/10/95 Tested by : J Cooper Checked by :B Hall

Date : 31/10/95 Date : 01/11/95

TESTING OF INSTRUMENTATION CABLE TO CLIENTS SPECIFICATION REF. QA/95/2087

Test Results **Assessment**

Clause 3 - Thickness of Insulation; Clause 4 - Thickness of Tape; Clause 5 -Thickness of Sheath

Component	Mean Thickness (mm)	Minimum Thickness (mm)
Green Sheath	1.77	1.49
Red Insulation	0.47	0.40
Blue Insulation	0.45	0.35
Polyester Tape	0.046	0.043

Pass

Note:
One pair of cores was selected as representative of the complete cable for the measurement of Insulation Thickness. Pair No. 4 was selected

Date samples received :- 13/10/95 Tested by : J Cooper Checked by :B Hall

Date : 31/10/95 Date : 01/11/95

TESTING OF INSTRUMENTATION CABLE TO CLIENTS SPECIFICATION REF. QA/95/2087

Test Results **Assessment**

Clauses 6, 7, 8, 9. - Tensile Strength and Elongation of Sheath and Insulation

Componenent	Median Tensile Strength (N / mm^2)	Median Elongation at Break (%)
Sheath	18.2	248
Insulation Red Core	21.0	182
Insulation Blue Core	21.4	178

Pass

Note:
Following the clients instructions, one pair of cores was selected as representative of the complete cable for the measurement of Tensile Strength an Elongation at Break. Pair No. 4 was selected. For both Sheath and Core, the results are the median values of tests conducted on five specimens.

Date samples received :- 13/10/95 Tested by : J Cooper Checked by :B Hall

Date : 31/10/95 Date : 01/11/95

TESTING OF INSTRUMENTATION CABLE TO CLIENTS SPECIFICATION REF. QA/95/2087

Test Results **Assessment**

Clause 10 - Insulation Resistance @ Room Temperature

Pair No.	Core	M.Ohms / Km
1	Red	418
	Blue	1040
2	Red	479
	Blue	936
3	Red	502
	Blue	1050
4	Red	502
	Blue	990
5	Red	505
	Blue	952
Earth	Green / Yellow	711

Pass

Clause 11 Mutual Capacitance Core to Core

Pair No.		nF / Km
1	Red - Blue	47.50
	Blue - Red	47.46
2	Red - Blue	49.22
	Blue - Red	49.36
3	Red - Blue	49.30
	Blue - Red	49.19
4	Red - Blue	49.58
	Blue - Red	49.52
5	Red - Blue	50.64
	Blue - Red	50.65

Pass

Date samples received :- 13/10/95 Tested by : J Cooper Checked by :B Hall

Date : 31/10/95 Date : 01/11/95

TESTING OF INSTRUMENTATION CABLE TO CLIENTS SPECIFICATION REF. QA/95/2087

Test Results **Assessment**

Clause 12 Braiding Coverage

Using the test method and formulae for calculation specified by the client, the Braiding coverage was found to be 83%.

Pass

Clause 13 - High Voltage Test

All cores, including the Green / Yellow Earth core, were submitted to a voltage of 1000 V. AC. for one minute in sequence. No breakdown between individual cores or between cores and braid was detected.

Pass

Date samples received :- 13/10/95 Tested by : J Cooper Checked by :B Hall

Date : 31/10/95 Date : 01/11/95

APPENDIX A

Clients Specification Ref. QA/95/2087

Clause No	Parameter	Unit of measure	Limiting Value Specified by client	Ref. Standard defining test method used.
1	Conductor Detail	No. x mm	32 x 0.20	BS6360:1991 Class 5
2	Conductor Resistance @ 20 C	Ohms/Km	20.0 (Max.)	BS 6360:1991
3	Thickness of Insulation (PVC)	mm	0.38 (Av.Min.)	UL 1424
4	Thickness of Polyester Tape	mm	0.025 (Min.)	BS5308:Part2: 1986
5	Thickness of Sheath	mm	1.60 (Nom.)	Clients Specification
6	Tensile Strength of Insulation	N/mm^2	12.5 (min.)	BS7655: Pt 3.1:1993 (TI 1 compound)
7	Tensile strength of Sheath	N/mm^2	12.5 (min)	BS7655: Pt 4.1:1993 (TM 1 compound)

APPENDIX A (CONTINUED)

Clients Specification Ref. QA/95/2087

Clause No	Parameter	Unit of measure	Limiting Value Specified by client	Ref. Standard defining test method used.
8	Elongation of PVC Insulation	%	125 (min)	BS7655: Pt 3.1:1993 (TI 1 compound)
9	Elongation of PVC Sheath	%	125 (min)	BS7655: Pt 4.1:1993 (TM 1 compound)
10	Insulation Resistance @ Room Temperature	M. Ohms / Km	20 (min)	Clients Specification
11	Mutual Capacitance Core to Core	nF / Km	120 (Nominal)	Clients Specification
12	Braiding Coverage	%	80 (Approx.)	Clients Specification
13	High Voltage Test	KV / Minute	1.0 / 1.0	BS5308:Pt 2