

DrayTek 居易科技

零件承認書

料號 : 450-0000909-00

品名 : WLAN CABLE RSMA+IPEX+Core16cm 1.13mm黑色 低鉛

規格 : 16cm 1.13mm RSMA(11.4mm)+IPEX 黑色

機種 : Vigor Pro100VGi

廠商 : 亞驪企業股份有限公司

日期 : 2005/6/16

核准 : 林棟樑

審核 : 吳尙倫

承認者 : 湯仁智

亞 驪 企 業 有 限 公 司
ARISTOTLE ENTERPRISES

承 認 申 請 書

客戶名稱:
Customer

居易科技股份有限公司

廠商料號:
Part No.

BTC013-1-06-160-C-反

品名:
Description

RFC-A4-1C-160-K1.13G

圖號:
Drawing No.

BTC013-1-06-160-C-反.DWG

客戶料號:
Drawing No.

出廠簽章:

檢 查 TEST BY	核 對 CHECK BY	承 認 APPROVE BY
周沂珮	黃秋芳	廖煥文

承認簽章:

檢 查 TEST BY	核 對 CHECK BY	承 認 APPROVE BY

地址:台北縣中和市莒光路 63 號 8 樓

電話:02-2225-8209

傳真:02-2225-7523

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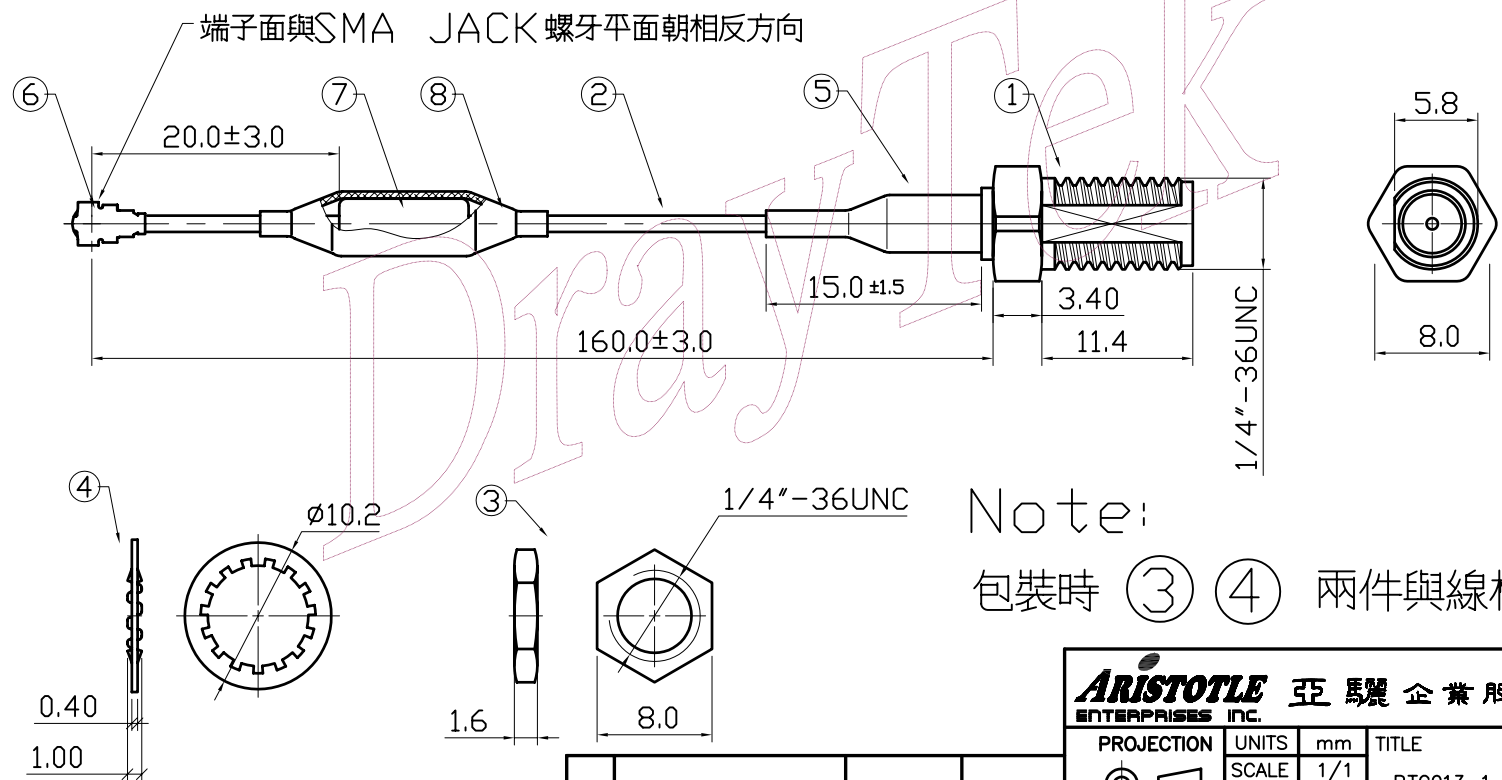
4. RF connector drawing

4-1 Material certificates

5. Cable assembly test report

6. Salt-spray test report

NO.	NAME	FINISH	MAT'L	Q'TY	MEMO
1.	RP SMA JACK	GOLD PLATED	BRASS	1	Plated Ni 1.5um over Au 1u"
2.	Cable	BLACK	--	1	
3.	Nut	GOLD PLATED	BRASS	2	Gold Plated 2u"
4.	Washer	GOLD PLATED	SUS304	1	Gold Plated 2u"
5.	Heat-Shrinkable	BLACK	PE	1	
6.	Connector	GOLD PLATED	BRASS	1	Plated Ni 1.5um over Au 1u"
7.	Core	BLACK	IRON	1	3.5*9*1.3
8.	Heat-Shrinkable	BLACK	PE	1	



Note:

包裝時 ③ ④ 兩件與線材分開包裝

ARISTOTLE 亞驪企業股份有限公司
ENTERPRISES INC.

PROJECTION	UNITS	mm	TITLE	SHEET
1/4"	SCALE	1/1	BTC013-1-06-160-C-反	1/1
PAPER	A4		RFC-A4-1C-160-K1.13G	REV.
			DWG NO.	
			BTC013-1-06-160-C-反	DWG

REV	ECN	NAME	DATE	DRAW
4.				
3.				
2.				
1.				

J.W. Lee 23/05/05

(0,0)

High Frequency Coaxial Cable

1. Impedance: 50Ω
2. Outer Diameter: 1.13mm
3. Vendor:

Kurabe

- a. Specification
- b. Test report

Showa

- a. Specification
- b. Environmental report
- c. Test report

KURABE INDUSTRIAL CO., LTD

SP3830M-X	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022)	PAGE	1/4
PRODUCT STANDARD		ISSUED	17-9-2001
		REVISED	

1. SCOPE

This standard covers "FEP insulated High-Frequency coaxial cable".

2. CONSTRUCTION

Construction and dimensions of the cable are shown in Figure.1 and Table 1.

3. PERFORMANCE

Performance of the finished cable is shown in Table 2. The test methods are in accordance with applicable test methods described in JIS C 3005.

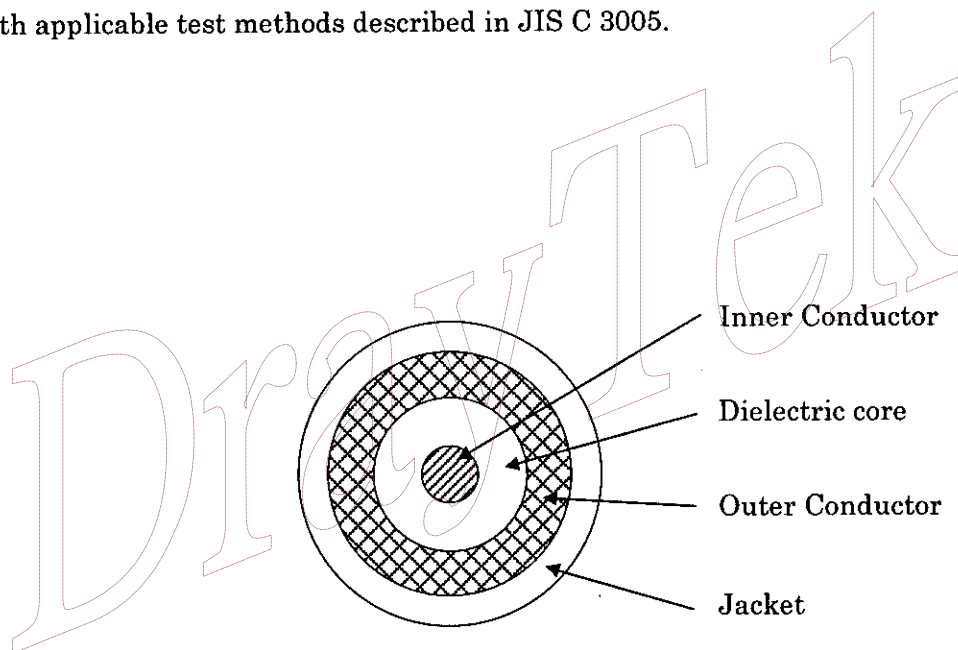


Figure 1.

NOTE :

MADE BY

M. Ohba

APPROVALS

T. Nagasawa

KURABE INDUSTRIAL CO., LTD

SP3830M-X	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022)	PAGE	2/4
PRODUCT STANDARD		ISSUED	17-9-2001
		REVISED	

Table 1. Construction

Item		Unit	Specified Value
Inner Conductor	Material	—	Silver coated annealed copper wire
	Stranding	No./mm	7/0.08
	Dia.(approx.)		0.24
Dielectric Core	Material	—	FEP
	Thick.(nom.)	mm	0.22
	Dia.	mm	0.68±0.05
	Color	—	Natural
Outer Conductor	Material	—	Silver coated annealed copper wire
	Type	—	Braid (16/4/0.05)
	Dia.(approx)	mm	0.93
Jacket	Material	—	FEP
	Thick.(nom.)	mm	0.10
	Dia.	mm	1.13 +0.10/-0.06
	Color	—	Standard colors are white,black,blue,brown,and gray.

Table 2. Performance

Item	Unit	Specified Value	Note
Appearance	—	Faultless in visible	—
Inner conductor resistance	Ω/km	Max.597	at 20℃
Insulation resistance	MΩ·km	Min.1500	at 20℃
Dielectric strength	—	Dielectric core: No breakdown at AC1.5kV for 0.15sec.	Spark test
		Jacket: No breakdown at AC1.5kV for 0.15sec.	Spark test
		No breakdown at AC500V for 1min.	Outer conductor to inner conductor
Heat resistance for solder	—	Shrink or expansion of dielectric core are not more than 0.5mm	※
Capacitance	pF/m	nom. 98	at 1kHz
Characteristic impedance	Ω	50±2	TDR method
Attenuation (nom.)	dB/m	2.0	1.0GHz
		2.9	2.0GHZ
		3.6	3.0GHz
		4.2	4.0GHz
		4.7	5.0GHz
		5.2	6.0GHz

※ After immersion of dielectric core, 10mm into soldering pot which is 230℃ for 5 seconds, shrinkage or expansion of the dielectric core must not exceed 0.5mm.

NOTE :	MADE BY	M. Ohba
	APPROVALS	J. Kawasumi

KURABE INDUSTRIAL CO., LTD

SP3830M-X	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022)	PAGE	3/4
PRODUCT STANDARD		ISSUED	17-9-2001
		REVISED	

4. INSPECTION

An inspection is took place in accordance with applicable test methods. The cable has to pass the specifications described Table 1 and Table 2.

5. TEST METHOD

The test methods are in accordance with applicable test methods described in JIS C 3005 (Test methods for rubber or plastic insulated wires and cables).

6. TEMPERATURE RATING

150 °C

7. VOLATGE LATING

250 V

8. MARKING ON TAG

Each reel of finished cable is tagged to indicate following information:

- (1) Designation of the cable,
- (2) Conductor size,
- (3) Length,
- (4) Date of manufacture or LOT No.,
- (5) Specification No., and
- (6) Manufacture's name.

9. PACKAGE

The finished cables are cut into a shipping length of 200 meters, reeled to paper bobbin and packed securely to prevent injuries during transportation. Odd length of the finished wires should be accepted for shipping according to the condition of mutual agreement.

In the case no agreement is found, the condition stated in quotation shall prevail.

10. APPLICATION NOTES

10-1. For use other than the use mutually agreed, compatibility should be carefully confirmed in each practical use by user.

10-2. It is recommended to make a trial run for each practical application.

NOTE :	MADE BY	<i>M. Ohba</i>
	APPROVALS	<i>T. Kanaoka</i>

KURABE INDUSTRIAL CO., LTD

SP3830M-X	FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022)	PAGE	4/ 4
PRODUCT STANDARD		ISSUED	17-9-2001
		REVISED	

10-3. In case a design for use of cable is changed, please contact our sales department, if necessary. Do not use under extreme mechanical stress such as hard bending, tightening, and twisting. The use under extreme mechanical stress may cause not only shortening the life span of cable but also troubles such as decline of dielectric strength.

10-4. Handling precautions

- ① Do not hurt the insulation and sheath of the cable by making holes and scratches. And avoid any sharp edge when wiring so as not to injure cables.
- ② Avoid unnecessary excessive force to cable, such as pulling, twisting, bending or tightening.

10-5. Storage precautions

Avoid continuous exposure to sunlight.

DrayTek

NOTE :	MADE BY	<i>m. Ohba</i>
	APPROVALS	<i>T. Kawasaki</i>

AVLV2

December 18, 1993

Appliance Wiring Material - Component

KURABE INDUSTRIAL CO LTD

4830 TAKATSUKA-CHO HAMAMATSU-SHI, SHIZUOKA 432-

8521 JAPAN

E46702

LOOK FOR THE RECOGNITION MARK

See General Information Preceding These Recognitions

**For use only in equipment where the acceptability of the combination is determined by
Underwriters Laboratories Inc.**

10/28/1999

Underwriters Laboratories Inc.

Card 1 of 1

HIGH PERFORMANCE HIGH-FREQUENCY COAXIAL CABLE FWS 5031 and FWS 5032

1.Construction

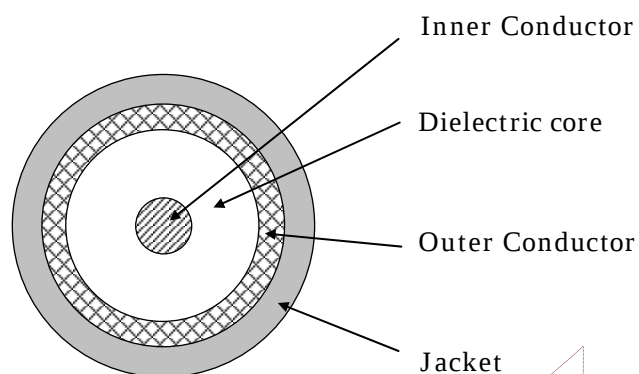


Table 1.Construction (Specified Value)

Item		Unit	Specified Value			
			KURABE FWS-5031	KURABE FWS-5032	KURABE FWS-5022	KURABE FWS-5030
Inner Conductor	Material	—	AgA	AgA	AgA	AgA
	Stranding	No./mm	7/0.102	7/0.102	7/0.080	7/0.080
	Dia.	mm	0.31	0.31	0.24	0.24
Dielectric Core	Material	—	FEP	FEP	FEP	FEP
	Thick.	mm	0.30	0.30	0.22	0.22
	Dia.	mm	0.90	0.90	0.68	0.68
	Color	—	Natural	Natural	Natural	Natural
Outer Conductor	Material	—	AgA	TA	AgA	TA
	Type	—	Braid (16/5/0.050)	Braid (16/5/0.050)	Braid (16/4/0.050)	Braid (16/4/0.050)
	Dia.	mm	1.15	1.15	0.93	0.93
Jacket	Material	—	FEP	FEP	FEP	FEP
	Thick.	mm	0.12	0.12	0.10	0.10
	Dia.	mm	1.38	1.38	1.13	1.13

AgA : Silver Plated annealed copper wire

TA : Tinned annealed copper wire

KURABE INDUSTRIAL CO., LTD

HIGH PERFORMANCE HIGH-FREQUENCY COAXIAL CABLE FWS 5031 and FWS 5032

2. Electrical Performance

Table 3. Electrical Performance (Measured value)

Item	Unit		KURABE FWS-5031	KURABE FWS-5032	KURABE FWS-5022	KURABE FWS-5030
Inner conductor resistance	Ω /km		296	297	496	493
Capacitance	pF/m		95.2	95.4	97.0	97.2
Characteristic impedance	Ω		50.2	49.8	49.5	49.4
Attenuation	dB/m	1GHz	1.44	1.46	1.86	1.91
		2GHz	2.06	2.10	2.66	2.77
		2.4GHz	2.27	2.32	2.92	3.07
		3GHz	2.54	2.60	3.28	3.44
		4GHz	3.00	3.06	3.82	4.05
		5GHz	3.35	3.48	4.30	4.59
		5.8GHz	3.63	3.80	4.65	5.02
		6GHz	3.70	3.87	4.74	5.11

Note ; Above data were measured using actual samples.

KURABE INDUSTRIAL CO., LTD

HIGH PERFORMANCE
HIGH-FREQUENCY COAXIAL CABLE
FWS 5031 and FWS 5032

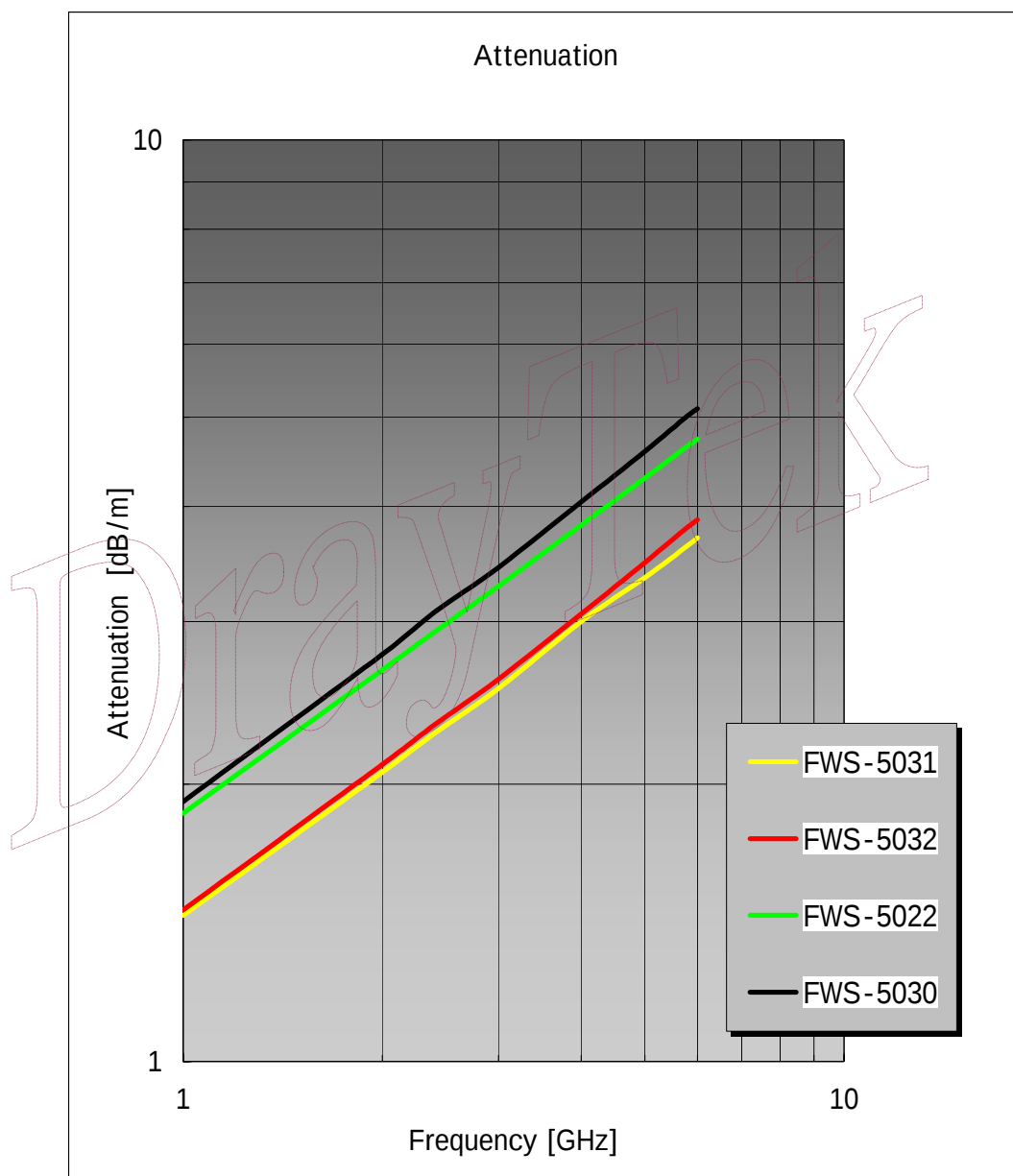


Figure 1.Attenuation

HIGH PERFORMANCE HIGH-FREQUENCY COAXIAL CABLE FWS 5031 and FWS 5032

3. Mechanical Performance

Table 4. Mechanical Performance (Measured value)

Item	Unit	KURABE FWS-5031	KURABE FWS-5032	KURABE FWS-5022	KURABE FWS-5030
Tensile strength of a cable (Test speed:500mm/min)	kg	7.30	7.77	5.40	5.40
Twists Test (Speed : 30Cycles / min) Note ; 1	Cycles	> 200,000	> 200,000	> 200,000	> 200,000

1 Twist Test

The twist test is performed supposing opening and closing of the display part of a notebook PC. After carrying out the twist test of 200,000 times, it was checked that there was no change of the Characteristic impedance, VSWR, and Attenuation of the cable.

Test method

1. A cable is fixed to the equipment like following figure.
2. The cable was twisted repeatedly to ± 90 degrees by the equipment.
(Speed ; 30Cycles / min)

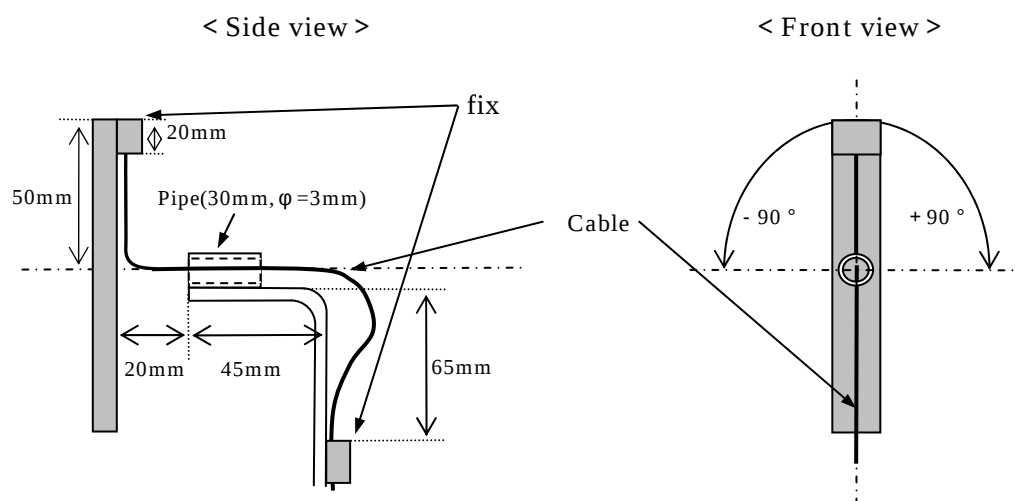


Figure 2. Test method

Date :

Our Spec. No. WS03-M051

MESSRS.

SPECIFICATION

FOR

HIGH FREQUENCY COAXIAL CABLE

“ KHCX - 32AWG - SB - TA ”

SHOWA ELECTRIC WIRE & CABLE CO., LTD.

TORANOMON

TOKYO JAPAN

James Huang

LANTRRA INDUSTRIAL CO., LTD.
F.14, NO. 92, SHING TEH ROAD,
SAN CHUNG, TAIPEI, TAIWAN
TEL:886-2-8511-1178
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T. Mori

T. Mori
Manager, Engineering Section
Engineering Dept.
Electronic Wire Business Unit

1. 適用(SCOPE)

本仕様書は電子機器などの内部配線に使用される細径同軸“KHCX-32AWG-SB-TA”の構造と特性について定める。

This specification covers the construction and characteristics of coaxial cable “KHCX-32AWG-SB-TA” for internal wiring of electronic equipment.

2. ケーブル型名の説明 (EXPLANATION OF CABLE TYPE)

KHCX-32AWG-SB-TA

(1) (2) (3)

(1) ケーブル略称 (Cable Abbreviation)

(2) 導体サイズ (Conductor Size)

(3) 外部導体タイプ (Outer Conductor Type)

3. 構造(CONSTRUCTION)

項目 Item		要求特性 Requirement
内部導体 Inner conductor	材質 Material	銀めつき軟銅線 Silver coated annealed copper wire
	構成 Stranding	7/0.08mm
	外径 Diameter	標準 0.24mm Nom. 0.24mm
絶縁体 Insulation	材質 Material	FEP
	色別 Color	自然色 Natural
	厚さ Thickness	標準 0.22mm Nom. 0.22mm
	外径 Diameter	標準 0.68mm Nom. 0.68mm
外部導体 Outer conductor	材質 Material	錫めつき軟銅線 Tinned annealed copper wire braid shield
	構成 Stranding	16/4/0.05 mm
シース Sheath	材質 Material	FEP
	色別 Color	灰・白・黒 Gray・White・Black
	厚さ Thickness	標準 0.10mm Nom. 0.10mm
仕上外径 Overall diameter		標準 1.13mm Nom. 1.13mm
概算質量 Approximate mass		3 kg/km

Our Spec. No. WS03-M051 (2/2)

4. 電気特性(20℃) (ELECTRICAL CHARACTERISTICS at 20 degree)

項目 Item	単位 Unit	要求特性 Requirements
導体抵抗 Conductor Resistance	Ω /km	520 以下 Max. 520
絶縁抵抗 Insulation Resistance	M Ω km	1,500 以上 (DC 500V 1 分間充電後) Min. 1,500 (After charge DC 500V for 1 min.)
耐電圧 Dielectric Strength	V/1min.	AC 1,000
静電容量 Capacitance	pF/m	標準 97 (at 1kHz) Nom. 97 (at 1kHz)
特性インピーダンス Characteristic Impedance	Ω	標準 50 (TDR にて測定) Nom. 50 (at TDR)

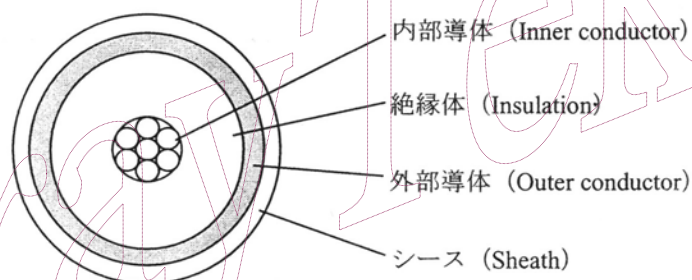


図 1 .ケーブル構造図

Fig.1. Cable Cross-Section

5. 梱包及び荷札の表示 (PACKING AND MARKING ON TAG)

完成品は運送中及び保管中に損傷を生じぬ荷造りをする。

また、荷札の表示は以下の通りとする。

The completed cables shall be coiled and packing in such a manner as to be adequately protected from damage during packing, shipping, and normal handling.

The following items shall be marked in the Tag which is attached to the products.

- 1) 品名 (Type of Cable)
- 2) 導体サイズ (Conductor size)
- 3) 条長 (Length)
- 4) 製造者名または略称 (Manufacturer's name or trade mark)
- 5) 製造年月 (The year and month of manufacture)

なお、完成品にはジョイントを有する場合がある。その場合は条長明細を記載する。

Note : The spool may contain joints. In that case, the detail of length is indicated.

Date : May 26, 2004

Our Ref. No. TD-04115

MESSRS. _____

RF 同軸ケーブル (KHCX)
環境調査結果
ENVIRONMENTAL REPORT
FOR
RF-COAXIAL CABLES (KHCX)

SHOWA ELECTRIC WIRE & CABLE CO., LTD.

TORANOMON

TOKYO JAPAN

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T. Mori

T. Mori
Manager of Engineering Section
Engineering Dept.
Electronic Wire Business Unit

RF同軸ケーブル (KH CX)
環境調査結果
ENVIRONMENTAL REPORT
FOR
RF-COAXIAL CABLES (KH CX)

下記ケーブルには次の RoHS 指令(電気電子機器に含まれる特定有害物質の使用制限に関する指令)による化学物質を使用していません。

The applicable chemical materials of the next RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equipment) Directive aren't being used for the following cables.

1. ケーブル(Cables)

- ・ RF同軸ケーブル(RF-Coaxial cable)
 - KH CX-32-SB-TA (Jacket Color: Black, Gray, White)
 - KH CX-32-SB-SA (Jacket Color: Black, Gray, White)
 - KH CX-36-SB-TA (Jacket Color: Black, Gray, White)
 - KH CX-36-SB-SA (Jacket Color: Black, Gray, White)

2. 化学物質(Chemical materials)

- ・ 鉛(Lead)
- ・ 水銀(Mercury)
- ・ カドミウム(Cadmium)
- ・ 六価クロム化合物(Hexavalent chromium compound)
- ・ PBBs 及び PBDEs
(ポリブロモビフェニル及びポリブロモジフェニルエーテル
; Polybrominated biphenyls and Polybrominated diphenyl ethers)

以上

KHCX-32-SB(SA) Test Report

1. Test cable

Inner conductor	Silver coated annealed copper wire 7 / 0.08mm
Insulation	FEP Nom. 0.68 mm ϕ
Outer conductor	Silver coated annealed copper braid 16/4/0.05mm
Sheath	FEP Nom. 1.13 mm ϕ

2. Test item and test result

(1)Bending test	Radius.	Ave.	Min.	Max.			
	R=2mm	21,005	11,289	30,182			
	R=5mm	42,744	39,491	49,200			
	R=10mm	271,821	242,385	298,754			
(2)Twisting test		Not break until 300000 times					
(3)Tensile strength of cable Unit : N		Ave.	Min.	Max.			
		38.2	37.5	39.5			
(4)Heat shrink test of insulation		0 (not shrink)					
(5)Attenuation		1GHz	2GHz	3GHz	4GHz	5GHz	6GHz
		-1.78	-2.54	-3.14	-3.70	-4.15	-4.58

Radius.
R=2mm
R=5mm
R=10mm

2-(1) Bending test

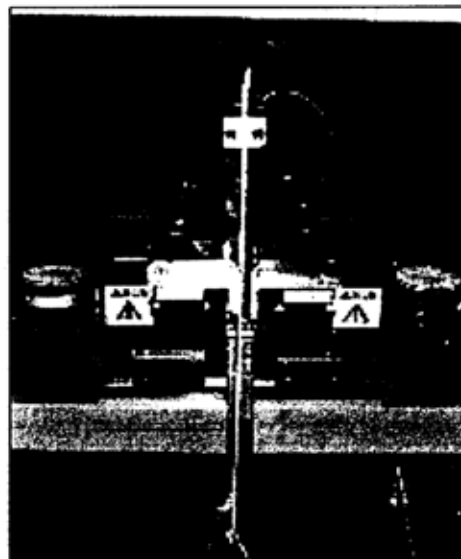
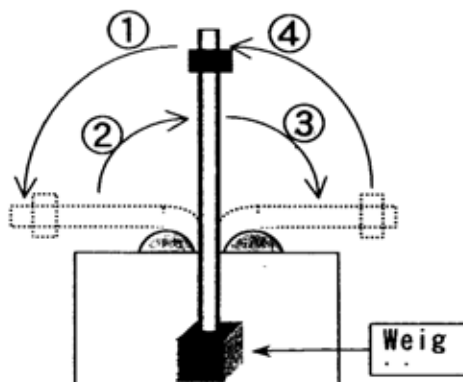
Radius.	Number of bending times until conductor break			Ave.	Min.	Max.
R=2mm	11,289	21,543	30,182	21,005	11,289	30,182
R=5mm	39,491	39,541	49,200	42,744	39,491	49,200
R=10mm	242,385	274,325	298,754	271,821	242,385	298,754

Test condition.

Radius: 2mm, 5mm, 10mm

Weight: 100g

Speed: 30 times/minutes.



2-(2) Twisting test

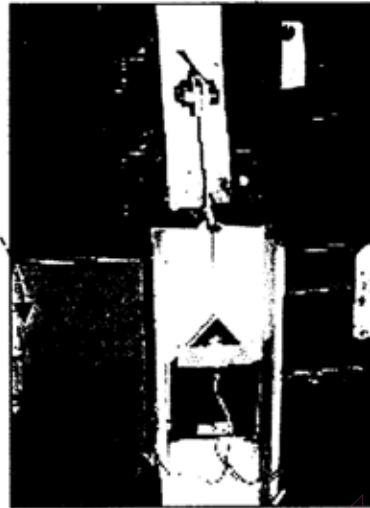
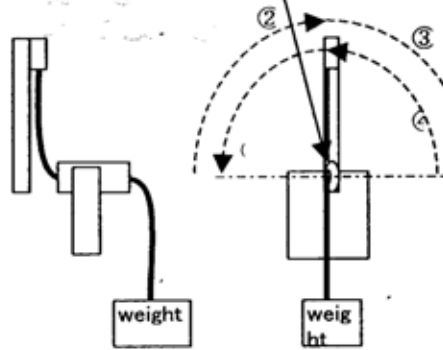
Number of times		
300000	300000	300000
(Not break)	(Not break)	(Not break)

Test condition.

Pipe size : the inside diameter 4mm, length 30mm.

Weight: 60g .

Speed: 30 times/minutes.



2-(3) Tensile strength of cable

Tensile strength at breaking cable (N)					Ave.	Min.	Max.
37.8	37.5	39.5	38.4	37.9	38.2	37.5	39.5

Test method

Measurement of tensile strength are to be made on a power-driven machine provided with a device that indicates the actual maximum load at which a specimen(cable) breaks.

2-(4) Heat shrink test of insulation

Shrinking length (mm)				
0mm	0mm	0mm	0mm	0mm

Insulation of 5 specimen were not sriaked.

Test condition.

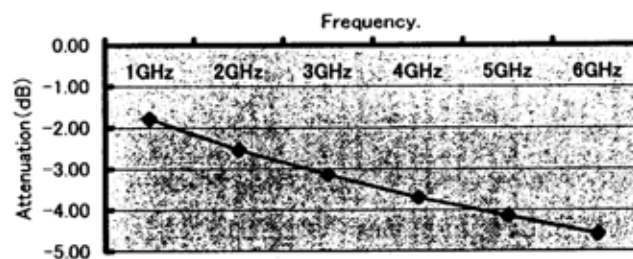
Temperature of solder bath: 230°C

Time: 5sec.

Shrink length: Max. 0.5mm

2-(5) Attenuation

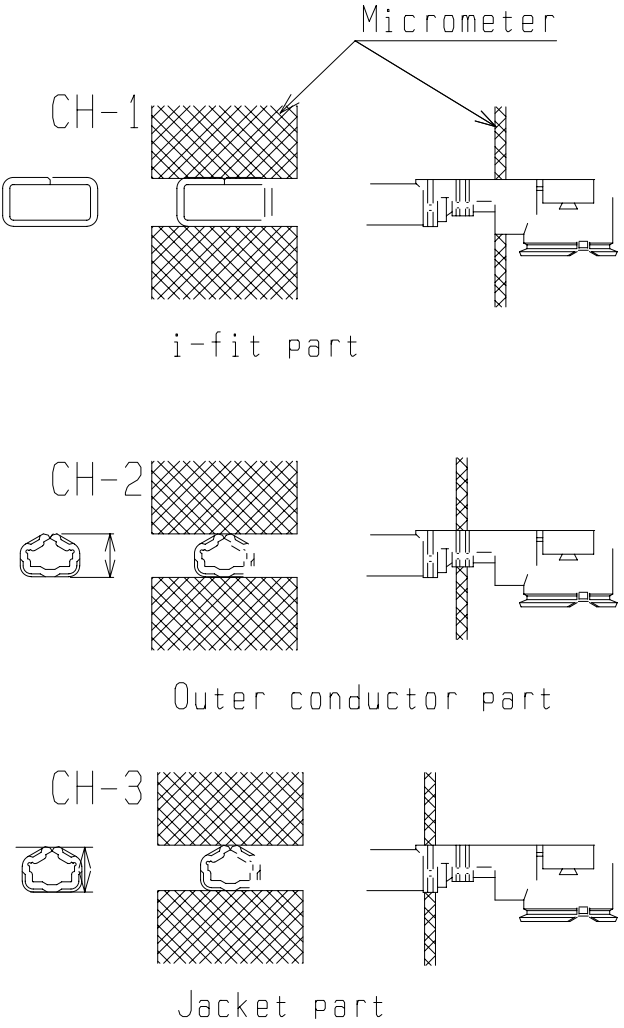
Freq.	Attenuation (dB)			Ave.	Min.	Max.
1GHz	-1.79	-1.77	-1.79	-1.78	-1.79	-1.77
2GHz	-2.54	-2.53	-2.55	-2.54	-2.55	-2.53
3GHz	-3.14	-3.13	-3.14	-3.14	-3.14	-3.13
4GHz	-3.72	-3.69	-3.70	-3.70	-3.72	-3.69
5GHz	-4.14	-4.15	-4.15	-4.15	-4.15	-4.14
6GHz	-4.58	-4.56	-4.60	-4.58	-4.60	-4.56



MHF series micro coaxial connector

1. P/N: 20278-111R-13 / 20278-101R-13
2. Impedance: 50Ω
3. Vender: IPEX Co., Ltd
 - a. Drawing Specification
 - b. Qualification Test Report
 - c. Investigation report of Chemical substance
with environmental impact

Part No.		20278-101R-08 20278-111R-08	20278-101R-13 20278-111R-13	20278-101R-32 20278-111R-32	20278-101R-18 20278-111R-18
Applicable cable nominal dimension		※ NOTE-1	※ NOTE-1	※ NOTE-1	※ NOTE-1
Braided shield of Outer conductor 外部導体の編組		Single / 1重編組	Single / 1重編組	Double / 2重編組	Single / 1重編組
P/N of hand Tool P/N of semi auto termination machine		90187-008C 90213-008C	90187-013C 90213-013C	90187-032C 90213-032C	90233-018 90232-018
Sect. M-M					
Sect. L-L					
Crimp Height	CH-1	1.34~1.40	1.34~1.40	1.34~1.40	1.34~1.40
	CH-2	0.76~0.84	1.06~1.14	1.20~1.30	1.41~1.49
	CH-3	0.85~0.97	1.15~1.35	1.26~1.46	1.70~1.80



Crimp Height

NOTE-1
中心導体，外部導体への半田コーティングは不可
Must not use solder coated
inner conductor and outer conductor.

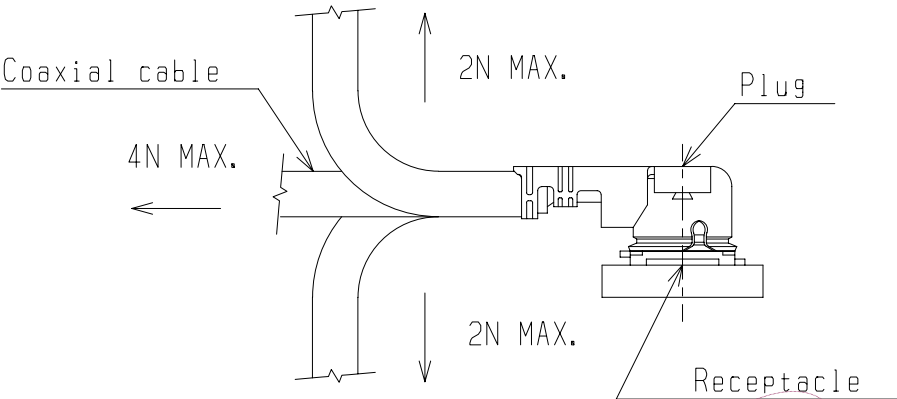
GENERAL TOLERANCE		
6 MAX.	±0.2	
6 OVER MAX.30	±0.3	
30 OVER MAX.120	±0.5	
ANGLE	±2°	

					DESIGN'D BY		DATE		I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN					
					CHK'D BY		DATE							
					APP'D BY		DATE							
					TITLE									
REV	ECN	BY	DATE	APP					MHF series micro coaxial connector plug vertical (ground contact : gold plating)					
REV. RECORD					CUSTOMER COPY		PROJECTION		SCALE	UNIT	DWG. No.		SHEET	REV.
SERIES No.		2814							-/-	mm	20278		2/3	13C

Notes

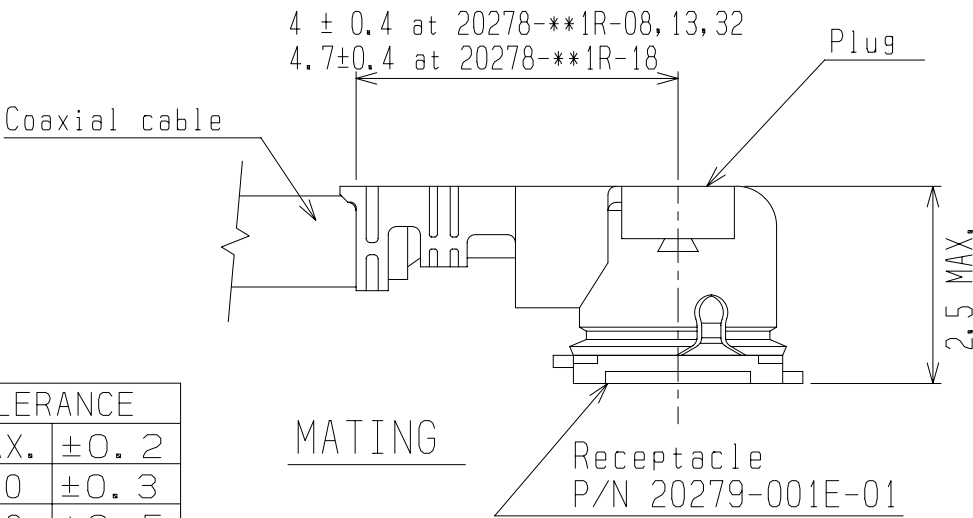
1. Material
(1) Housing : PBT , UL94V-0 , black
(2) Contact
phosphor bronze
gold plating 0.1μm MIN.
over nickel 1.27μm MIN.
(3) Ground contact
phosphor bronze
gold plating 0.05μm MIN.
over nickel 1.27μm MIN.
2. Packing : reel
3. Mating partner part No.
: 20279-001E-01
4. Permissible load of cable at mating

1. 材 料
(1) ハウジング:PBT, UL94V-0, 黒色
(2) コンタクト
りん青銅
金メッキ0.1μm MIN.
下地 ニッケル1.27μm MIN.
(3) グランドコンタクト
りん青銅
金メッキ0.05μm MIN.
下地 ニッケル1.27μm MIN.
2. 梱包 : リール
3. かん合相手 part No.
: 20279-001E-01
4. コネクタかん合後のケーブルに対する荷重



5. Suggestions for mating & unmating operation.

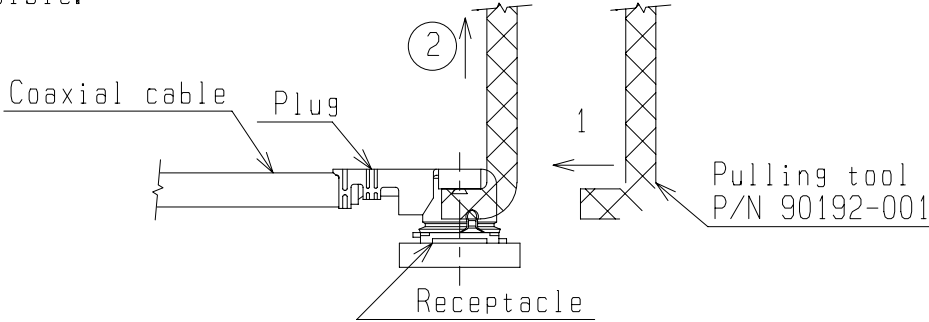
5-1 Mating.
Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle.
As excessive slant angle mating may break the connector , please don't do it.



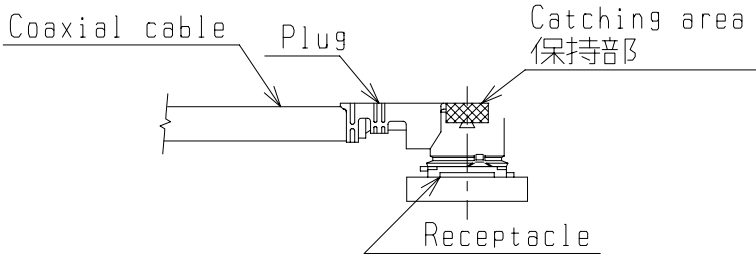
GENERAL TOLERANCE		
6 MAX.	±0.2	
6 OVER MAX. 30	±0.3	
30 OVER MAX. 120	±0.5	
ANGLE	±2°	

5-2 Unmating.

- (1) In case of unmating by pulling tool.
Please use the pulling tool as the following drawing, and please pull plug to vertical direction as directly as possible.



- (2) In case of unmating directly by hand
Please catch the catching area of plug , and please pull plug to vertical direction as directly as possible.



5-3 Crimp over standards of outer conductor

Standards: Less than 10% from total numbers of outer conductor
(Numbers of outer conductor's crimp over from outer conductor's barrel)

5-4 Caution about Heat shrinkage tubes

Please be careful not to melt housing when using heat shrinkage tubes.
It will become cause of open circuit.

					DESIGN' D BY	DATE
					CHK' D BY	DATE
					APP' D BY	DATE
REV	ECN	BY	DATE	APP		
REV. RECORD					CUSTOMER COPY	PROJECTION
SERIES No.		2814				

		<i>Interconnect and Packaging Electronics</i>		<i>TOKYO, JAPAN</i>	
TITLE					
MHF series micro coaxial connector plug vertical (ground contact : gold plating)					
SCALE	UNIT	DWG. No.		SHEET	REV.
-/-	mm	20278		3/3	13C

QUALIFICATION TEST REPORT**Document No. TR-1037****MHF series micro coaxial connector****Product Specification No. PRS-1180**

					Prepared by	Reviewed by	Approved by
2	T2020	K.O	MAY/17/'02	K.K	K.Ohbayashi Nov/16/'01	E.Kawabe Nov/20/'01	K.Katabuchi Nov/21/'01
1	T1040	K.O	Dec/25/'01	K.K			
0	T1036	K.O	Nov/16/'01				
REV.	ECN	BY	DATE	APP.			
REVISION RECORD							

DOCUMENT CLASSIFICATION	TITLE	DOCUMENT No.
Qualification Test Report	MHF series micro coaxial connector	TR-1037

1.Purpose

Testing was performed on the MHF series micro coaxial connector to determine meets the requirement of I-PEX specification,PRS-1180

2.Conclusion

All the specimen met the requirements of PRS-1180.

3.Sample

- (1) Connector Plug : part No.20278-111R-13
Receptacle : part No.20279-001E-01
- (2) Cable AWG#32 coaxial cable (jacket diameter 1.13mm)

3.Method

Refer to product specification,PRS-1180

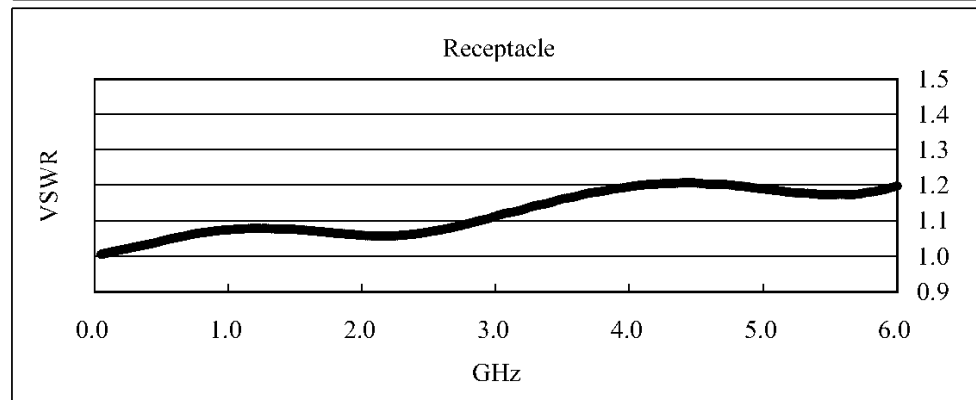
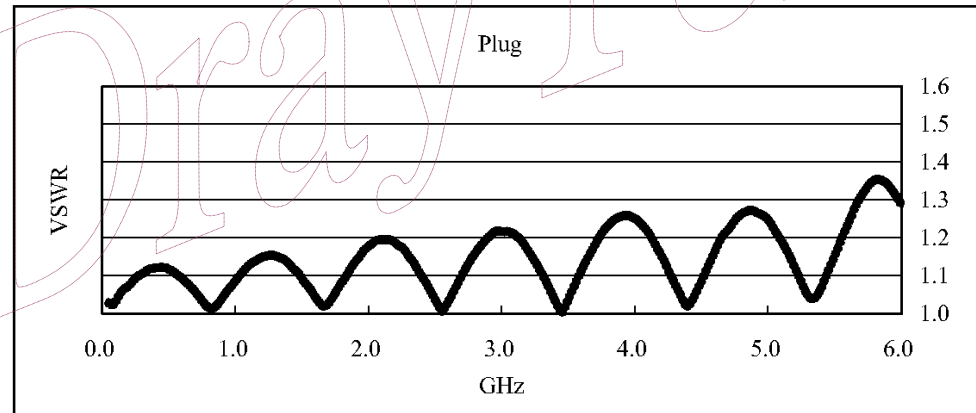
4. Results

(1) Dielectric withstanding voltage

Results	No abnormality
Sample quantity	10pcs.
Judge	OK

(2) VSWR

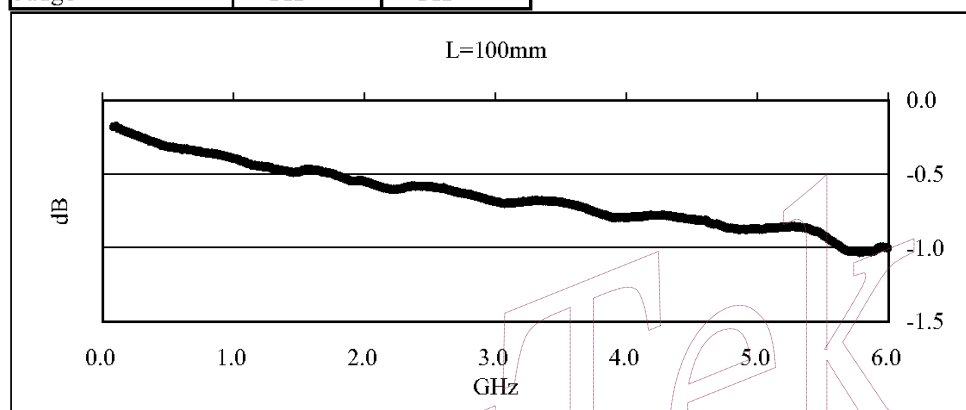
	Plug		Receptacle	
	0.1~3GHz	3~6GHz	0.1~3GHz	3~6GHz
AVE.	1.240	1.370	1.120	1.216
MAX.	1.25	1.39	1.13	1.24
MIN.	1.23	1.35	1.11	1.20
Specification	1.3 MAX.	1.5 MAX.	1.3 MAX.	1.4 MAX.
Sample quantity	5pcs.	5pcs.	5pcs.	5pcs.
Judge	OK	OK	OK	OK



DOCUMENT CLASSIFICATION	TITLE	DOCUMENT No.
Qualification Test Report	MHF series micro coaxial connector	TR-1037

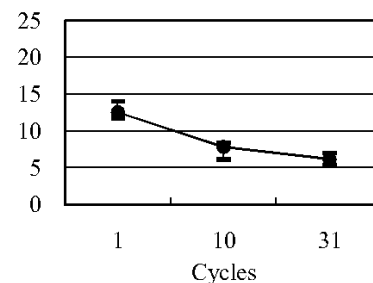
(3) Insertion loss

	Plug cable length 100mm	
	0.1~3GHz	3~6GHz
AVE.	-0.682	-0.990
MAX.	-0.66	-0.96
MIN.	-0.71	-1.02
Specification	-1.0 MIN.	-1.6 MIN.
Sample quantity	5pcs.	5pcs.
Judge	OK	OK

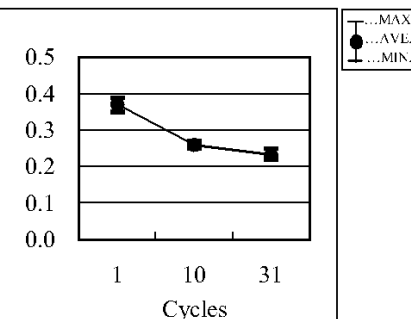


(3) Unmating force(抜去力)

Total unmating force (総合抜去力)	Initial (初期)	After 30cycles (30回後)
AVE.	12.6	6.2
MAX.	14	7
MIN.	12	5
S	0.8	0.6
Specification(規格)	5 MIN.	3 MIN.
Units(単位)	N	N
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



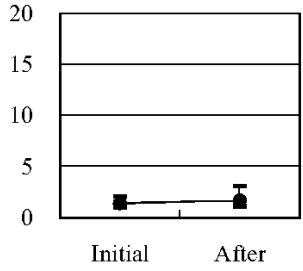
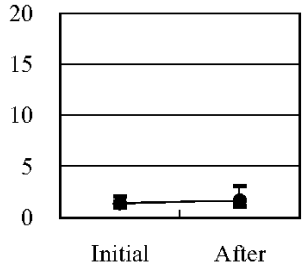
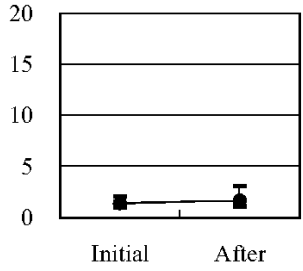
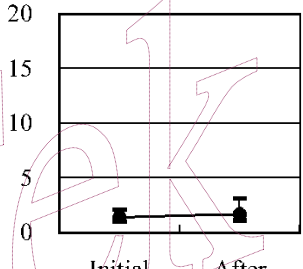
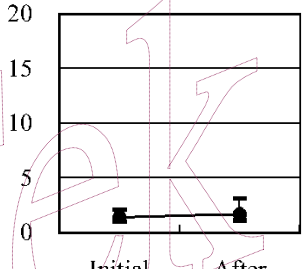
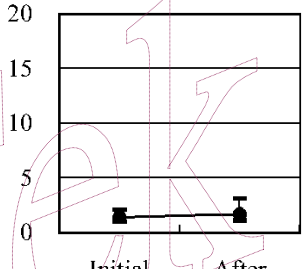
Unmating force of inner contact (中心導体抜去力)	Initial (初期)	After 30cycles (30回後)
AVE.	0.372	0.233
MAX.	0.39	0.25
MIN.	0.35	0.22
S	0.015	0.012
Specification(規格)	0.15 MIN.	0.1 MIN.
Units(単位)	N	N
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



DOCUMENT CLASSIFICATION	TITLE	No.
Qualification Test Report テストレポート	MHF series micro coaxial connector	TR-1037

(4) Durability(耐久性)

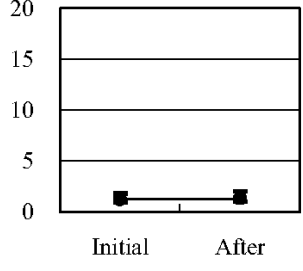
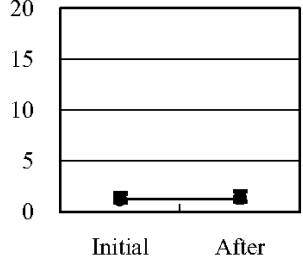
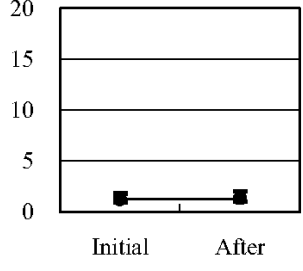
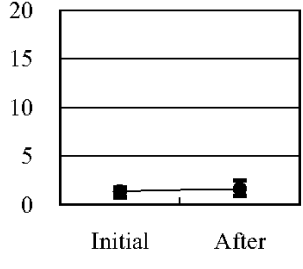
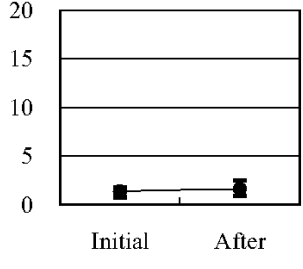
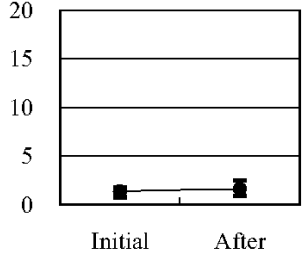
Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)			
	Initial (初期)	After testing (試験後)	
AVE.	1.41	1.70	
MAX.	2.1	3.1	
MIN.	1.0	1.1	
S	0.37	0.58	
Specification(規格)	20 MAX.	25 MAX.	
Units(単位)	mille-ohm	mille-ohm	
Sample quantity(試料数)	10pcs.	10pcs.	
Judge(判定)	OK	OK	
Contact resistance of ground contact (外部導体接触抵抗)			
	Initial (初期)	After testing (試験後)	
AVE.	1.49	2.51	
MAX.	1.8	3.0	
MIN.	0.9	1.3	
S	0.30	0.59	
Specification(規格)	10 MAX.	15 MAX.	
Units(単位)	mille-ohm	mille-ohm	
Sample quantity(試料数)	10pcs.	10pcs.	
Judge(判定)	OK	OK	

(5) Cable retention force(ケーブル保持力)

Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)			
	Initial (初期)	After testing (試験後)	
AVE.	1.23	1.35	
MAX.	1.8	2.0	
MIN.	0.9	1.0	
S	0.35	0.37	
Specification(規格)	20 MAX.	25 MAX.	
Units(単位)	mille-ohm	mille-ohm	
Sample quantity(試料数)	10pcs.	10pcs.	
Judge(判定)	OK	OK	
Contact resistance of ground contact (外部導体接触抵抗)			
	Initial (初期)	After testing (試験後)	
AVE.	1.41	1.69	
MAX.	1.8	2.5	
MIN.	0.8	0.9	
S	0.35	0.46	
Specification(規格)	10 MAX.	15 MAX.	
Units(単位)	mille-ohm	mille-ohm	
Sample quantity(試料数)	10pcs.	10pcs.	
Judge(判定)	OK	OK	

DOCUMENT CLASSIFICATION	TITLE	No.
Qualification Test Report テストレポート	MHF series micro coaxial connector	TR-1037

(6) Vibration(振動)

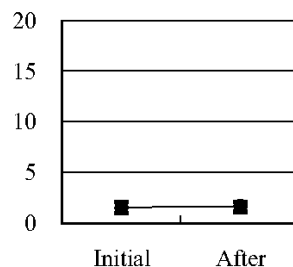
Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact

(中心導体接触抵抗)

	Initial (初期)	After testing (試験後)
AVE.	1.55	1.72
MAX.	2.1	2.1
MIN.	1.0	1.1
S	0.44	0.46
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

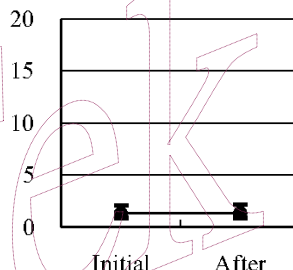


...MAX.
...AVE.
...MIN.

Contact resistance of ground contact

(外部導体接触抵抗)

	Initial (初期)	After testing (試験後)
AVE.	1.35	1.39
MAX.	2.1	2.2
MIN.	0.9	0.9
S	0.41	0.46
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



...MAX.
...AVE.
...MIN.

(7) Shock(衝撃)

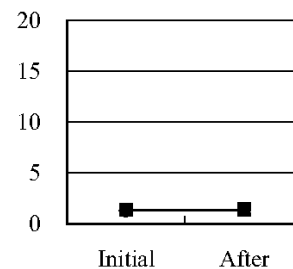
Appearance(外観) : No abnormality(異常無し)

Electrical discontinuity(電気瞬断) : No abnormality(異常無し)

Contact resistance of inner contact

(中心導体接触抵抗)

	Initial (初期)	After testing (試験後)
AVE.	1.32	1.45
MAX.	1.8	1.9
MIN.	0.9	0.9
S	0.30	0.35
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

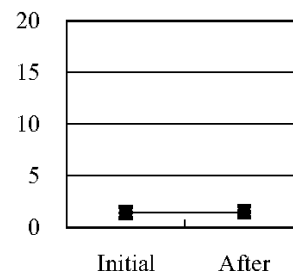


...MAX.
...AVE.
...MIN.

Contact resistance of ground contact

(外部導体接触抵抗)

	Initial (初期)	After testing (試験後)
AVE.	1.45	1.53
MAX.	2.0	2.1
MIN.	0.9	1.0
S	0.34	0.37
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



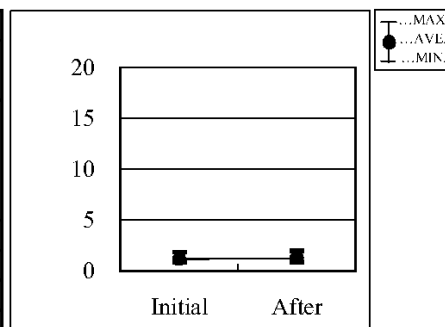
...MAX.
...AVE.
...MIN.

DOCUMENT CLASSIFICATION	TITLE	No.
Qualification Test Report テストレポート	MHF series micro coaxial connector	TR-1037

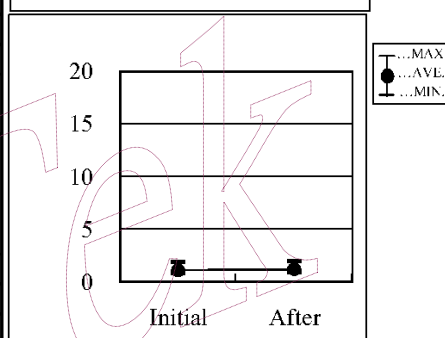
(8) Thermal shock(熱衝撃)

Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.23	1.34
MAX.	1.9	2.0
MIN.	0.9	0.9
S	0.25	0.32
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.13	1.24
MAX.	1.9	2.0
MIN.	0.9	0.9
S	0.37	0.38
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



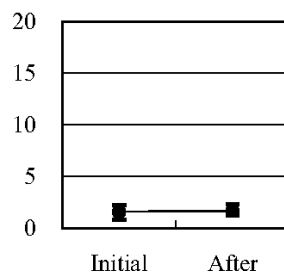
Insulation resistance (絶縁抵抗)		
	Initial (初期)	After testing (試験後)
Results(結果) MIN. value	10,000	10,000
Specification(規格)	500 MIN.	100 MIN.
Units(単位)	mega-ohm	mega-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

DOCUMENT CLASSIFICATION	TITLE	No.
Qualification Test Report テストレポート	MHF series micro coaxial connector	TR-1037

(9) Humidity(湿度)

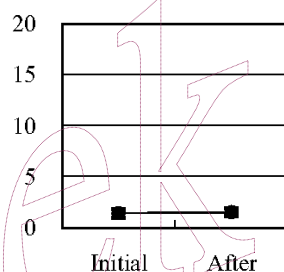
Appearance(外観) : No abnormality(異常無し)

Contact resistance of inner contact (中心導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.58	1.72
MAX.	2.2	2.3
MIN.	0.8	1.2
S	0.45	0.51
Specification(規格)	20 MAX.	25 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



...MAX
...AVE
...MIN

Contact resistance of ground contact (外部導体接触抵抗)		
	Initial (初期)	After testing (試験後)
AVE.	1.44	1.55
MAX.	1.8	1.9
MIN.	1.0	1.2
S	0.25	0.25
Specification(規格)	10 MAX.	15 MAX.
Units(単位)	mille-ohm	mille-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK



...MAX
...AVE
...MIN

Insulation resistance (絶縁抵抗)		
	Initial (初期)	After testing (試験後)
Results(結果) MIN. value	10,000	10,000
Specification(規格)	500 MIN.	100 MIN.
Units(単位)	mega-ohm	mega-ohm
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

(10) Salt water spray
(塩水噴霧)

	Initial(初期)	After testing(試験後)
Results(結果)	No abnormality(異常無し)	No abnormality(異常無し)
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

(11) Solderability , reflow soldering resistance(半田付け性, 半田耐熱性)

	Solderability(半田付け性)	Reflow soldering resistance(半田耐熱性)
Results(結果)	No abnormality(異常無し)	No abnormality(異常無し)
Sample quantity(試料数)	10pcs.	10pcs.
Judge(判定)	OK	OK

To: Wistron NeWeb Corporation

TECHNICAL REPORT

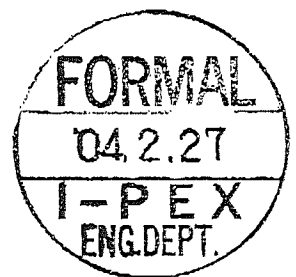
テクニカルレポート

MHF, MHF II

環境負荷化学物質 調査報告

Investigation report of Chemical Substances with Environmental Impact

No. IER-001-01464 Rev.0



					Prepared by	Reviewed by	Approved by
					Y. Hasegawa	J. Harada	K. Kato
0	R04062	K.O	Feb/27/'04		Feb/27/'04	Feb/27/'04	Feb/27/'04
REV.	ECN	BY	DATE	APP.			
REVISION RECORD							

Form Rev.0

DOCUMENT CLASSIFICATION	TITLE	No.
Technical Report	MHF,MHF II 環境負荷化学物質 調査報告 Investigation report of Chemical substance with Environmental Impact	IER-001-01464

1. 目的【Purpose】

御社よりお問い合わせのありました弊社コネクタ MHF、MHF II における
環境負荷化学物質調査について御報告致します。

This is the survey report for the evaluation of environmental load chemistry substance in
MHF, MHF II connector.

2. 製品【Product】

- ・ MHF PLUG Vertical (Ground Contact : gold plating) . . . P/N 20278-1*1R-**
- ・ MHF PLUG Vertical (Ground Contact : gold plating) . . . P/N 20351-1*1R-**
- ・ MHF PLUG Vertical (Ground Contact : silver plating) . . . P/N 20308-1*1R-**
- ・ MHF RECE. Vertical (Ground Contact : gold plating) . . . P/N 20279-001E-01
- ・ MHF RECE. Vertical (Ground Contact : silver plating) . . . P/N 20314-001E-01
- ・ MHF II PLUG Vertical (Ground Contact : gold plating) . . . P/N 20311-0*1R-**
- ・ MHF II PLUG Vertical (Ground Contact : silver plating) . . . P/N 20312-0*1R-**

3. 調査結果【Investigation result】

Material	Cr	Cd	Hg	Pb	PBB	PBBDE
Connector	N/A	N/A	N/A	N/A	N/A	N/A
Packings/label	N/A	N/A	N/A	N/A	N/A	N/A

RF Connector

1. Name: RP SMA JACK
2. P/N: BC05A4-1
2. Impedance: 50Ω
3. Vender: Aristotle
 - a. Drawing Specification

DrayTek

SPECIFICATION

Part Name	SMA Connector
Part Number	1.SMA-J-113
	2.SMA-J-178

SMA Series

ELECTRICAL

* Impedance	50 ohm
* Frequency	0-12.4 GHz on Flexible cable. 0-18 GHz on Semi-rigid cable
* Working Voltage	RG-178: 170 VRMS max. at see level RG316, 0.085": 250 VRMS max. at see level RG-142, 0.141": 335 VRMS max. at see level
* Dielectric Withstanding Voltage	RG-178: 500 VRMS min. at see level RG316, 0.085": 750 VRMS min. at see level RG-142, 0.141": 1000 VRMS min. at see level
* VSWR	Straight: 1.3 max. Right Angle: 1.5 max.
* Contact resistance	Center Contact: 6 Milliohms Max. Outer Contact: 2 Milliohms Max.
* Insulator Resistance	5000 megohms min.

MATERIAL

Parts Name	Material	Finish
* Body, metal parts	Brass per QQ-B-626 or Non-magnetic stainless steel per QQ-S-764 # 303	Nickel or BCr. per requirement
* Center Contacts	Male: Brass per QQ-B-626 Female: Phosphor Bronze Bars QQ-C-530	Gold plated Gold plated
* Insulators	PTFE	None
* Gasket	Silicone Rubber	None
* Crimp Ferrules	Annealed copper	Nickel or per requirement

Note: Other Material / Finish is Available on Request.

MECHANICAL

* Engagement Force	2 in- lbs. Max.
* Disengagement Force	2 in- lbs. Max
* Coupling Nut Retention	60 lbs. Min.
* Coupling Proof Torque	15 in-lbs. Min.
* Contact Retention	6 lbs. Min.
* Durability (Mating)	500 cycles min.