

Dual band 2dbi PCB antenna - 26cm cable - I.PEX/U.FL
termination
Part #: WAPH-2DBI-26

1. ELECTRICAL SPECIFICATION

- Antenna Type: PCB Antenna
- Frequency Range:
 - 2.4G~2.5GHz
 - 4.9GHz~5.85GHz
- V.S.W.R: $\leq 2.0 : 1$
- Impedance: 50ohm nominal
- Normal Gain: <2.5dbi typical
 - 2.4GHz 2dbi
 - 5.1GHz 2.5dbi
 - 5.8GHz 2.5dbi
- Return loss: -10dbi max
- Type of Radiation: Omni-directional
- HPBW/Horizontal: 360°
- HPBW/Vertical: 78°
- Polarization: Linear / Vertical
- Electrical Wave: $\frac{1}{2}$
- Connector: U.FI. / IPEX

2. MECHANICAL SPECIFICATION

- Antenna Body: PCB
- Color: PCB / black cable
- Operation Temperature: -40 ~ + 85 degree
- Storage Temperature: -40 ~ + 85 degree
- Operation Humidity: RH 90%
- Storage Humidity: RH 95%
- Weight : 2.5gr max

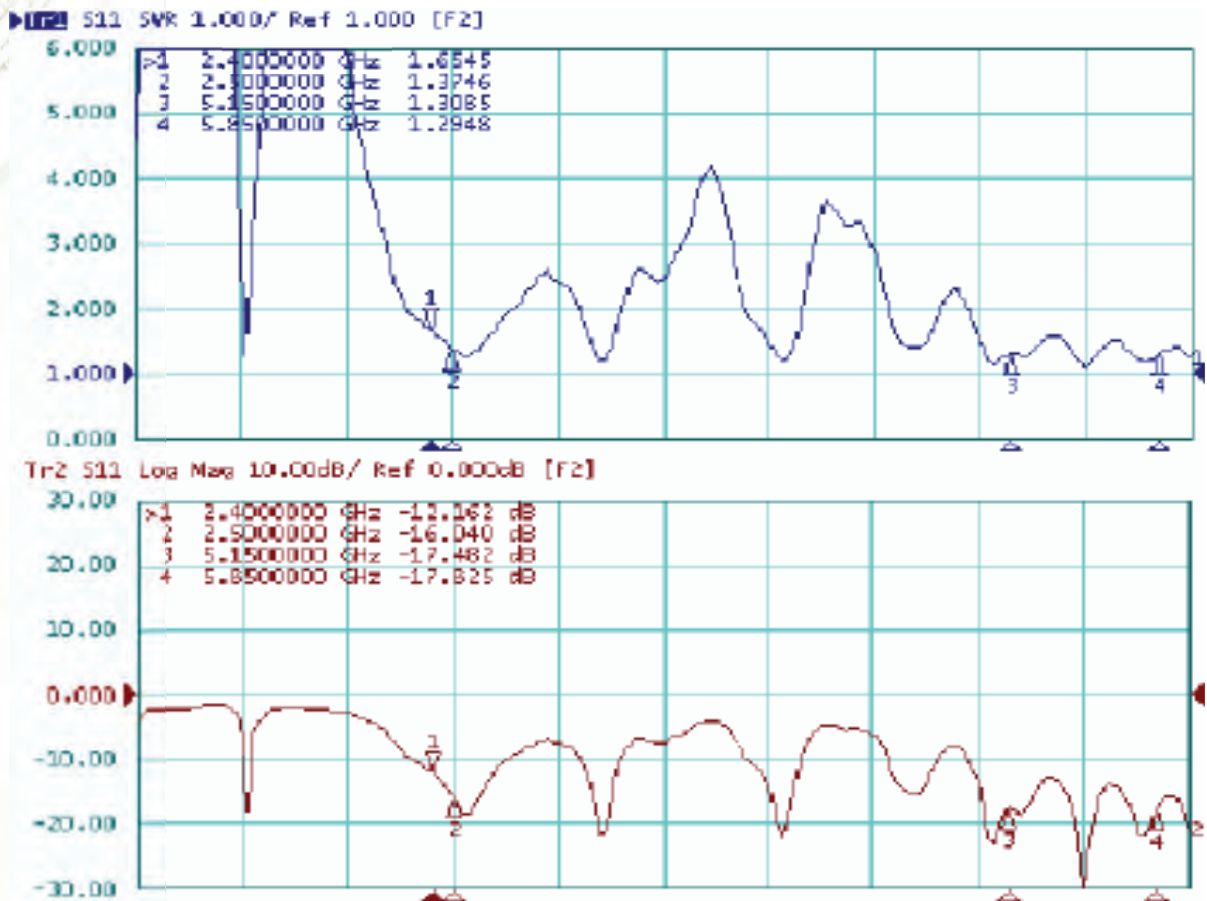
The WAPH-2DBI-26 is an easy-to-fit dual band embedded integration antenna for a wide variety of wireless applications. The connector is the standard U.FI. / IPEX connector on the majority of mini-pci / mPCI express cards, bluetooth & GPS modules.



- SOURCING ADVISORY
- SCHEDULED DELIVERIES
- PROACTIVE SUPPLY CHAIN

Dual band 2dbi PCB antenna - 26cm cable - I.PEX/U.FL termination **Part #: WAPH-2DBI-26**

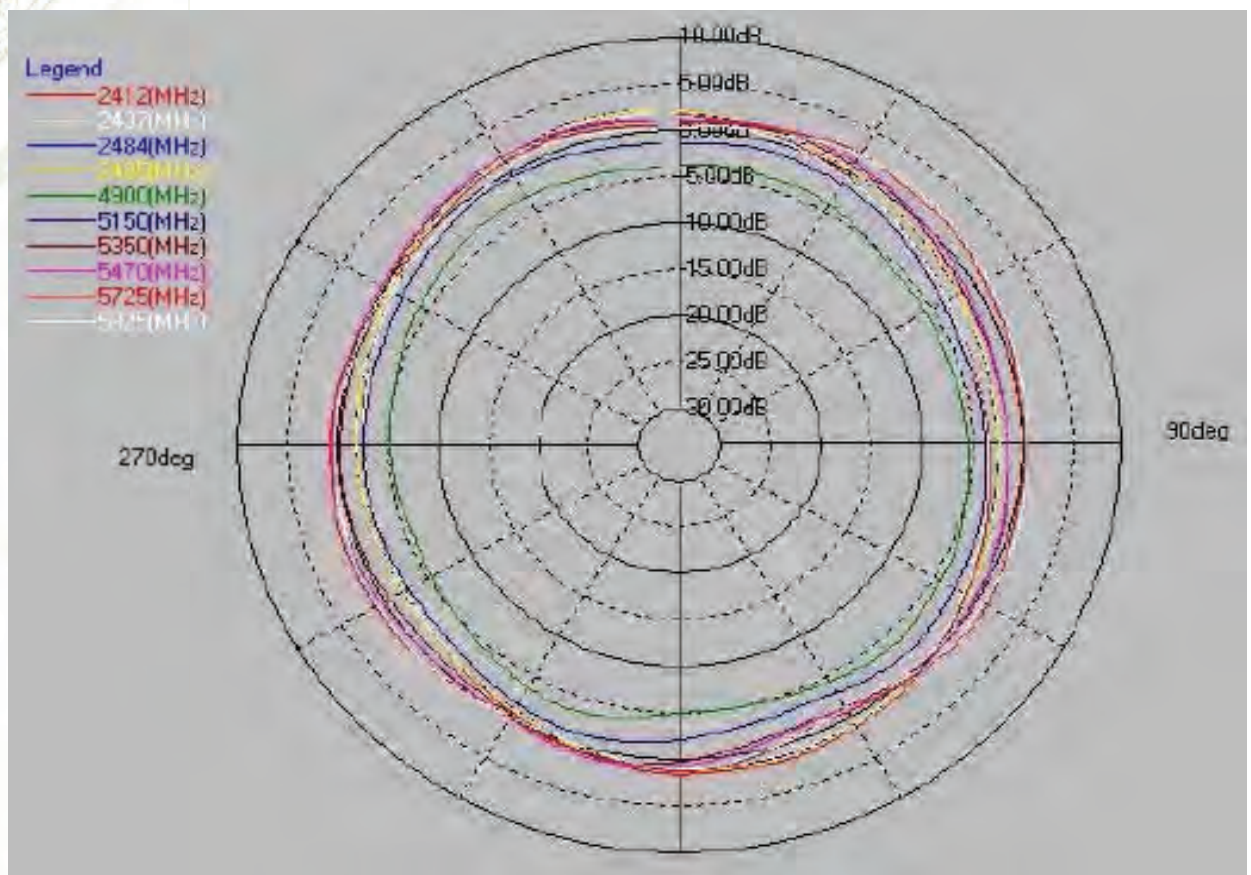
3. VSWR & Insertion Loss Test (ADVANTEST R3767CG Network analyzer)



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- SCHEDULED DELIVERIES
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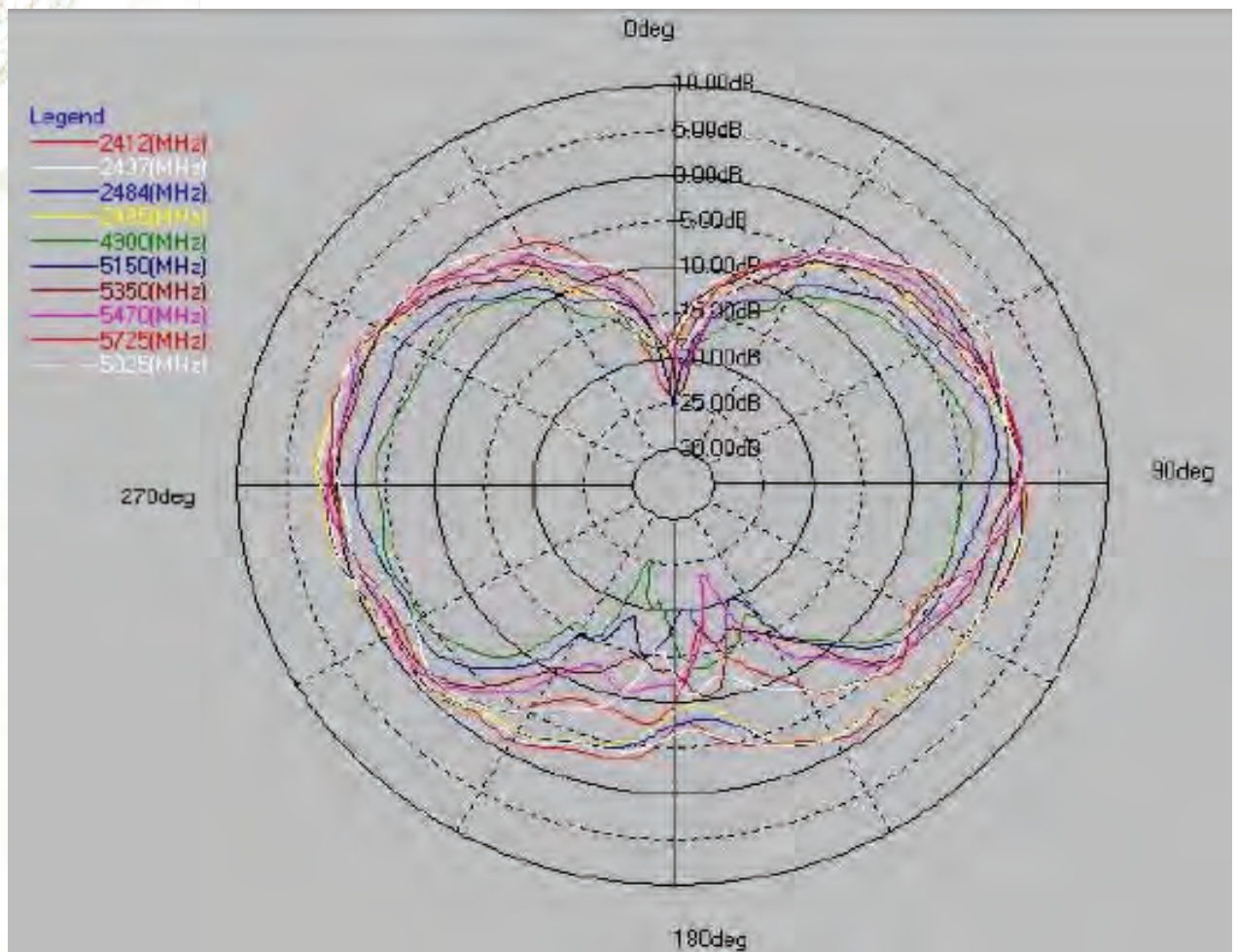
4. Antenna Radiation Pattern; H-Plane (Anritsu MS4653B Vector)



- SOURCING ADVISORY
- SCHEDULED DELIVERIES
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**Dual band 2dbi PCB antenna - 26cm cable - I.PEX/U.FL
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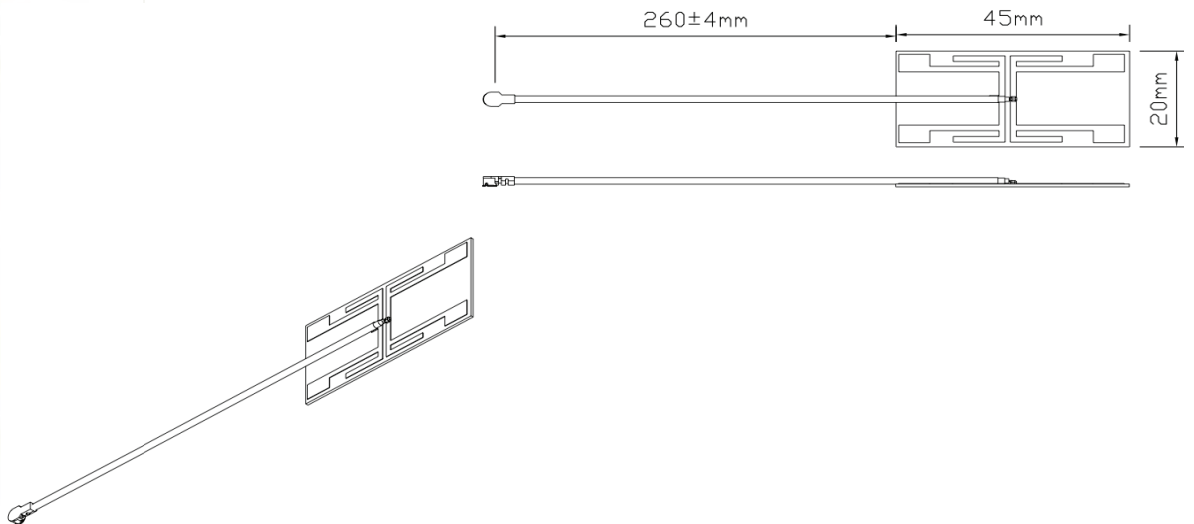
5. Antenna Radiation Pattern; E-Plane (Anritsu MS4653B Vector)



- SOURCING ADVISORY
- SCHEDULED DELIVERIES
- PROACTIVE SUPPLY CHAIN

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termination
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6. Mechanical Drawing Reference

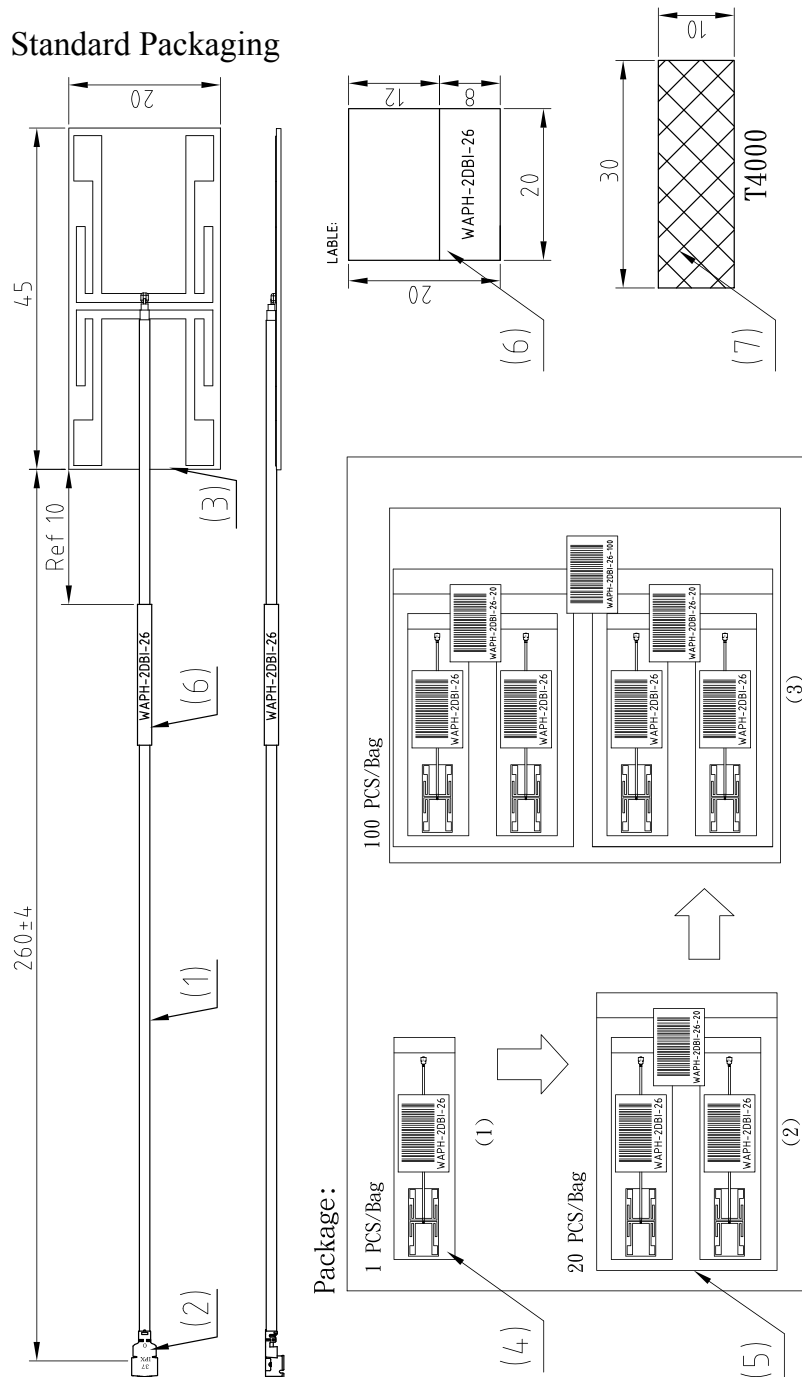


*real size representation in mm

- SOURCING ADVISORY
- SCHEDULED DELIVERIES
- PROACTIVE SUPPLY CHAIN

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7. Standard Packaging



*real size representation in mm

FOR FURTHER INFORMATION, CUSTOMIZATION AND VOLUME PRICING CONTACT OXFORDTEC WHOLESALERS
 U.S.A./CANADA 877 411-WIFI OR +1 (562) 252-1420 - U.K. +44 1844 222001
 OR EMAIL SALES AT OXFORDTEC.COM

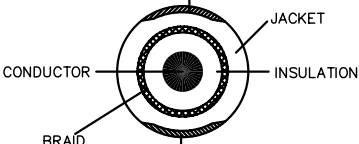
- SOURCING ADVISORY
- SCHEDULED DELIVERIES
- PROACTIVE SUPPLY CHAIN

**Dual band 2dbi PCB antenna - 26cm cable - I.PEX/U.FL
termination
Part #: WAPH-2DBI-26**

8. Materials Specifications & Grading
- Cable Spec & UL Certifications
 - IPEX Spec & UL Certifications
 - PCB Spec & UL Certifications

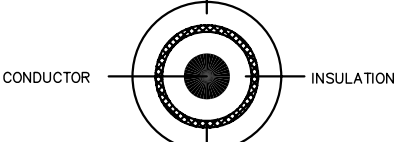
A		B		C		
ISSUE	QTY	ECN NO.	REVISED DESCRIPTION		DATE	APPROVED
0						

EXTRUSION GRAY STRIPED
(COVERAGE 18~23% NOM)

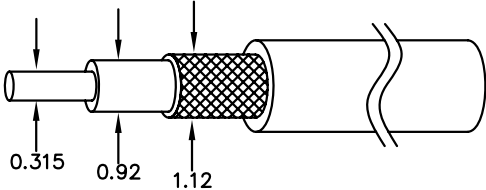


EXTRUSION GRAY STRIPED
(COVERAGE 18~23% NOM)

JACKET



BRAID



0.315

0.92

1.12

CONSTRUCTION

1.37 STANDARD COAXIAL CABLE

1.CONDUCTOR: 30#(7/0.103)x1C,STRANDED SILVER COPPER WIRE
STRANEDE CONDUCTOR OD:0.315mm NOM.

2.INSULATION: FEP,ø0.92±0.02mm,COLOR: SELF-COLOR.

3.SHIELD: BRAID(16/5/0.05) TINNED COPPER WIRE,
BRAIDED Nom. OD:1.12mm

4.JACKET: FEP,GLOSS SURFACE,ø1.37±0.05mm
WITHOUT MARKING.

COLOR LIST		
COLOR	GB ERP P/N:	GB COLOR NO.:
BLACK	RF137BR4	000
WHITE	RF137WR4	118
GRAY	RF137GR4	116
RED	RF137RR4	230
BLUE	RF1371R4	555
BLACK/GRAY	RF1373R4	GRAY STRIPED: PANTONE COLOR WARM GRAY 2U~5U
WHITE/GRAY	RF1372R4	GRAY STRIPED: PANTONE COLOR COOL GRAY 7U~10U

ELECTRICAL CHARACTERISITCS

1.RATING TEMPERATURE: -40℃~+80℃.

2.ELECTRICAL PROPERTIES:

2-1.INSULATION RESISTANCE: DC/250V 1000Mohm.m MIN..

2-2.VOLTAGE RATING :30V.

2-3.WITHSTAND VOLTAGE: AC/500V RMS FOR ONE MINUTE.

2-4.CONDUCTOR RESISTANCE: LESS THAN 330ohm/KM(at 20℃)

2-5.CAPACITANCE: 96pF/M(NOMINAL)

2-6.IMPEDANCE: 50ohm ● TDR (NOMINAL)

2-7.

NOM. ATTENUATION(dB/M)		NOM. ATTENUATION(dB/M)	
0.1GHz	0.5	5.2GHz	4.0
0.4GHz	1.0	5.8GHz	4.2
0.8GHz	1.5	6.0GHz	4.3
1.0GHz	1.6	7.0GHz	4.7
1.5GHz	2.0	8.0GHz	5.5
2.0GHz	2.3	9.0GHz	5.6
2.45GHz	2.5	10.0GHz	6.0
3.0GHz	2.9		

2-8.VSWR: 1~10GHz.

3.ALL THE MATERIAL OF THE CABLE MUST MEET: RoHS.

4.VENDOR: GOLDEN BRIDGE ELECTECH

SAFETY CERTIFICATION

UL LISTING: E156437 AWM 10005 80℃ 30V (MEET VW-1)

PROPRIETARY DESIGN

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used or reproduced without prior written consent
of GOLDEN BRIDGE ELECTECH.

DRAWER		GOLDEN BRIDGE ELECTECH INC.	DRAWING NO.	RF137XR4
ENGINEER			REVISION	R1
CHECKED			UNIT	mm
APPROVED		TITLE: COAXIAL CABLE	SCALE	8:1
GENERAL TOLERANCE: >0.5~3= ±0.1 >3~6= ±0.1 >6~30= ±0.2		DESC: 30#x1C	PAGE NO.	1 OF 1
>30~120= ±0.3 >120~315= ±0.5 ANGLE= ±1°		SPEC: FEP, ø1.37mm,L=...	DATE	2008.10.20
			FILES:	R: \PART\C\RF137XR41.DWG



AVLV2.E156437 Appliance Wiring Material - Component

[Page Bottom](#)

Appliance Wiring Material - Component

[See General Information for Appliance Wiring Material - Component](#)

GOLDEN BRIDGE ELECTECH INC

E156437

3RD FL

6 LANE 270 PEI SHEN RD

SEC 3

SHEN-KENG HSIANG, TAIPEI HSIEN 222 TAIWAN

Table of Recognized Styles							
Single-conductor, thermoplastic insulation.							
1007	1354	1571	1908	10452	10501	10954	
1015	1365	1637	10005	10466	10532	10958	
1061	1375	1685	10064	10467	10608	11130	
1185	1533	1792	10113	10484	10645		
Multiple-conductor, thermoplastic insulation.							
2095	2464	2586	2834	2960	20242	21083	21455
2344	2468	2661	2835	2969	20251	21379	21491
2384	2517	2725	2844	2990	20276	21380	
2385	2547	2785	2854	2993	20279	21445	
2448	2562	2789	2919	20197	20379	21446	
Single-conductor, thermoset insulation.							
3302	3385	3386					

Marking: Company name, voltage rating, temperature rating, conductor size, conductor material if other than copper, and use.

[Last Updated](#) on 2012-06-17

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APPLIANCE WIRING MATERIAL

Subj.758 Section 1 Page 10005

Issued:1986-12-29

Revised:2013-01-28

Style 10005 Single conductor with other-than-extruded
jacket or non-integral jacket.

Rating 80 deg C, 30 Vac, Horizontal flame.

Conductor 50 AWG minimum, solid or stranded.

Insulation Inner layer: Extruded PTFE, extruded PFA,
extruded FEP, extruded foamed PE, extruded
PE, extruded XLPTFE, extruded XLPFA,
extruded XLFEP, extruded foamed XLPE or
extruded XLPE, 2 mils minimum thickness at
any point; or foamed PTFE tape wrap, one
or more layers, overall insulation
thickness 2 mils minimum at any point.
Outer layer: (Optional) Polyester tape,
overall thickness 0.2 mils minimum
thickness at any point and heat sealed.

Shield Optional.

Jacket Inner jacket - Spirally wrapped, two or
more layers of polyester, ETFE, PTFE,
foamed PTFE, or composite tape, and heat
sealed, overall thickness minimum 0.2 mils
at any point, or extruded PFA, extruded
FEP, or extruded PVDF, 1 mil minimum at
any point.

Shield Optional.

Jacket Optional, outer jacket, same as inner
jacket.

Standard Appliance Wiring Material UL 758.

Marking General.

Use Internal wiring.

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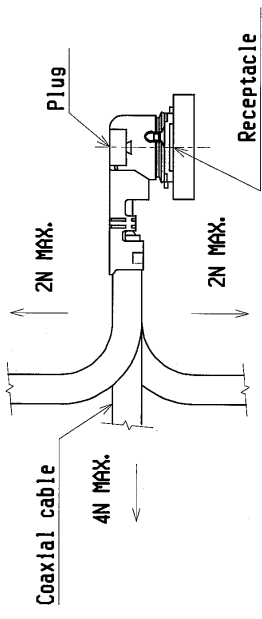
Part No. of non halogen free type	20351-101R-37	20351-111R-37
Part No. of halogen free type	20351-102R-37	20351-112R-37
Applicable cable nominal dimension	1.1 ± 0.1 2.3 ± 0.1 1.16 ± 0.1 1.13 1.08 1.37 1.78 2.65 1.78 $1.34 \sim 1.40$ $1.36 \sim 1.42$ $1.28 \sim 1.34$	
Applicable cable nominal dimension	B : Maximum length C : Minimum length $1.1 \pm 0.1 = A-B \neq A-C$ 中心導体への半田コティングは不可。 Must not use solder coated inner conductor.	
Braided shield of Outer conductor 外部導体の編組	Single / 1重編組	
P/N of hand Tool	90233-037	
P/N of seal auto termination machine	90232-037	
Sect. M-M	Sect. L-L	
CH-1	1.34~1.40	
CH-2	1.36~1.42	
CH-3	1.28~1.34	

Cable cut length		
Crimp Height		
Blade Micrometer		
Point Micrometer		
Outer conductor part		
Jacket part		

DESIGN D BY		DATE	
CHK D BY		DATE	
APP D BY		DATE	
REV	ECN	BY	DATE
APP		REV. RECORD	
SERIES No.		2814	
CUSTOMER COPY		PROJECTION	
TITLE		SCALE UNIT	
I-PEX		mm	
Interconnect and Packaging Electronics TOKYO, JAPAN		DWG. No.	
General		20351	
MF series micro coaxial connector plug vertical (around contact : gold plating)		SHEET REV.	
2/3		11	

Notes

1. Material
(1) Housing : PBT, white, UL94V-0
(2) Contact
phosphor bronze
gold plating 0.1 μ m MIN.
over nickel 1.27 μ m MIN.
(3) Ground contact
phosphor bronze
gold plating 0.05 μ m MIN.
over nickel 1.27 μ m MIN.
2. Packing : reel
3. Mating partner part No.
: 20279-001E-01, 20441-001E-01
4. Permissible load of cable at mating



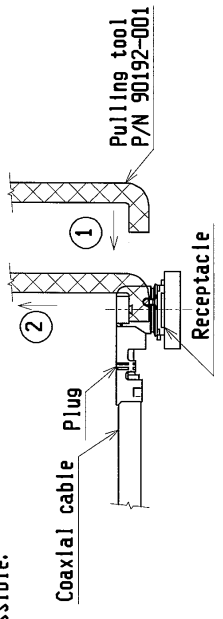
5. Suggestions for mating & unmating operation.
- 5-1 Mating.
Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle.
As excessive slant angle mating may break the connector, please don't do it.

5. コネクタカカ合時および抜き時の注意
- 5-1 コネクタ挿入時
PlugとReceptacleのカカ合軸を合わせ、できるだけ垂直に挿入して下さい。
過度な斜め挿入は行わないで下さい。
コネクタ破損の原因となりますので、過度なこじり挿入は行わないで下さい。

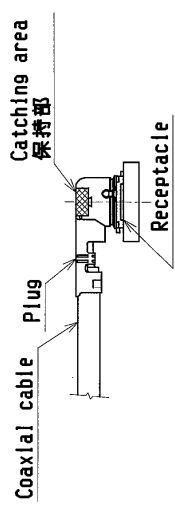
1. 材料
(1)ハウジング:PBT、白色、UL94V-0
(2)コンタクト
りん青銅
金メッキ0.1 μ m MIN.
下地 ニッケル1.27 μ m MIN.
(3)グラウンドコンタクト
りん青銅
金メッキ0.05 μ m MIN.
下地 ニッケル1.27 μ m MIN.
2. 梱包: リール
3. カカ合相手 part No.
: 20279-001E-01, 20441-001E-01
4. コネクタカカ合後のケーブルに負する荷重

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.
- (2) 手で直接引き抜く場合
下図の保持部をつかみ、できるだけ垂直に引き抜いて下さい。



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.

6. Tip of contact should be recessed of housing after crimped about mating area.
7. This is 'Pb-free' connector.

外部導体はみだし量規定 : 外部導体トータル本数の10%以下
(外部導体バレルの外にみだし量)

5-4 熱収縮チューブについて
の注意
熱収縮チューブで外部導体を覆う場合は、導体不良の原因になりますので、熱によりハウジングを溶融させないよう注意してください。
6. 圧着後、コネクタカカ合部に
おいて、コンタクト先端が
ハウジングより飛び出さない事。
7. 本コネクタは、'Pb-free'である

I-PEX		Interconnect and Packaging Electronics TOKYO, JAPAN	
TITLE		General	
MFG series micro coaxial connector plug vertical (ground contact : gold plating)			
SCALE UNIT	MM	DWG. No.	20351
PROJECTION	1/1	SHEET	3/3
CUSTOMER COPY		REV.	11
DESIGN D BY	DATE	CHK'D BY	DATE
APP'D BY	DATE	REV	ECN
BY	DATE	APP	REV
RECORD	2814	SERIES No.	2814
FORM REV. 4			

No.06027-1
Feb / 26/'08

材料証明書
MATERIAL CERTIFICATE

当社製品には下記の材料が使われている事を証明致します。
WE HEREBY CERTIFY THAT THE FOLLOWING MATERIALS ARE USED IN OUR PRODUCT.

PRODUCT NAME : MHF series micro coaxial connector PLUG & RECEPTACLE VERTICAL

Plug, Non halogen free type

Part No.	Contents	Housing	Contact	Ground contact
20278-101R-08	材質名/ Material	PBT	Phosphor bronze	Phosphor bronze
20278-111R-08				
20278-101R-13	型名/ Cat No.	DURANEX 3116	C5210R-H	C5191R-1/2H
20278-111R-13				
20278-101R-32	材料メーカー	WINTECH POLYMER LTD.	Nippon Mining &	HARADA METAL
20278-111R-32	Manufacturer		Metals Co.,Ltd.	INDUSTRY Co.,Ltd.
20278-101R-18				
20278-111R-18	UL94難燃性	V-0	-----	-----
20308-101R-13	UL94 flame			
20308-111R-13	class			
20308-101R-32				
20308-111R-32	UL file No.	E213445	-----	-----
20351-101R-37				
20351-111R-37				

※添付資料 : ULカード写し／UL CARD COPY

APPROVAL	CHECK	ORIGINATOR
T.Harada Feb/26/'08	T.Tagawa Feb/26/'08	K.Ohbayashi Feb/26/'08

Plug, Halogen free type

Part No.	Contents	Housing	Contact	Ground contact
20278-102R-08	材質名/ Material	PBT	Phosphor bronze	Phosphor bronze
20278-112R-08	型名/ Cat No.	XFR4840 GF10	C5210R-H	C5191R-1/2H
20278-102R-13	材料メーカー	WINTECH POLYMER LTD.	Nippon Mining & Metals Co.,Ltd.	HARADA METAL
20278-112R-13	Manufacturer			INDUSTRY Co.,Ltd.
20278-102R-32	UL94難燃性	V-0	-----	-----
20278-112R-32	UL94 flame			
20278-102R-18	class			
20278-112R-18	UL file No.	E213445	-----	-----
20351-102R-37				
20351-112R-37				

※添付資料：ULカード写し／UL CARD COPY

Receptacle

Part No.	Contents	Housing	Contact	Ground contact
20279-001E-01	材質名/ Material	LCP	Brass	Phosphor bronze
20314-001E-01	型名/ Cat No.	VECTRA E130i	C2680R-o	C5191R-1/2H
	材料メーカー	Polyplastics Co.,Ltd	Nippon Mining & Metals Co.,Ltd.	HARADA METAL
	Manufacturer			INDUSTRY Co.,Ltd.
	UL94難燃性	V-0	-----	-----
	UL94 flame			
	class			
	UL file No.	E 106764	-----	-----

※添付資料：ULカード写し／UL CARD COPY

QMFZ2 Component – Plastics Friday, October 24, 2003 E213445

WINTECH POLYMER LTD
 18-1 KONAN 2-CHOME MINATO-KU TOKYO 108-8280 JP

Material Designation: **3116(e)**
 Product Description: Polybutylene Terephthalate (PBT), designated "Duranex" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.75	V-0	4	0	130	–	130	–	–
	1.5	V-0	3	0	130	120	130	–	–
	NC, BK	3	5VA	2	0	130	120	130	–
CTI: 2	IEC CTI (V): –	HVTR: 3	D495: 6					IEC Ball Pressure (° C): –	
Dielectric Strength (kV/mm): 23		Volume Resistivity (10*ohm-cm): 16					Dimensional Stability(%):0.0		
ISO Tensile Strength (MPa): –		ISO Flexural Strength (MPa): –					ISO Heat Deflection (C): –		
ISO Tensile Impact (kJ/m²): –		ISO Izod Impact (kJ/m²): –					ISO Charpy Impact(kJ/m²): –		

(e) Virgin and regrind from 1 to 50 by weight incl. have the same basic material characteristics (at a minimum thickness of 0.75 mm), except for 310EP which has a lower as received Tensile Impact value from 26 to 50 percent regrind.

Report Date: 11/15/2000 Underwriters Laboratories IncR

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

Component - Plastics

E213445

WINTech POLYMER LTD

15-1 KONAN 2-CHOME, MINATO-KU, TOKYO 108-8280,JP

XFR 4840 GF10

Polybutylene Terephthalate (PBT), "Duranex", furnished as pellets

Color	Min Thk (mm)	Flame Class	HWI	HA1	RTI Elec	RTI Imp	RTI Str
ALL	0.75	V-0	1	0	75	75	75
	1.5	V-0	1	0	75	75	75
	3.0	V-0	1	0	75	75	75

Comparative Tracking Index (CTI): 1

Dimensional Stability (%): -

High-Voltage Arc Tracking Rate
(HvTR): 0

High Volt. Low Current Arc Resis (D495): 5

Dielectric Strength (kV/mm): 24

Volume Resistivity (10¹²ohm-cm): 14

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2006-07-24

Last Revised: 2006-07-25

Underwriters Laboratories Inc®

**IEC and ISO Test Methods**

Test Name	Test Method	Units	Thickness Tested (mm)	Value
IEC Flammability	IEC 60695-11-10	Class (color)	0.75	V-0 (ALL)
			1.5	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m2	-	-
ISO Izod Impact	ISO 180	kJ/m2	-	-
ISO Charpy Impact	ISO 179-2	kJ/m2	-	-

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**ZPMV8.E256554****Wiring, Printed Certified for Canada - Component**Enhanced searching capability for this category can be found in UL's iQ Family of Databases (iq.ul.com).[Page Bottom](#)**Wiring, Printed Certified for Canada - Component**[See General Information for Wiring, Printed Certified for Canada - Component](#)**TURBOARD TECHNOLOGICS INC**

E256554

107 SEC 1 CHANGXING RD

LUZHU SHIANG

TAOYUAN HSIEN, 338 TAIWAN

AN TSIEN, 550 TAIWAN

Type	Cond Width			SS/ DS/ DSO	Max		Max		Flame	UL796	Meets	C
	Min	Min	Cond		Area	Solder	Oper					
mm(in)	mm(in)	mic(mil)	mm(in)	C	sec	C	Class	DSR	I			
Multilayer printed wiring boards.												
M	0.07 (0.003)	0.10 (0.004)	17 (0.67) Int:68	DS	76.2 (3.0)	288	10	130	V-0	All	*	
Single layer printed wiring boards.												
DS	0.07 (0.003)	0.10 (0.004)	17 (0.67)	DS	76.2 (3.0)	288	10	130	V-0	All	*	
DS-1	0.07 (0.003)	0.07 (0.003)	33 (1.30)	DS	76.2 (3.0)	280	10	105	V-0	All	*	

* - CTI PLC is marked on individual board.

Marking: Company name or trademark **TurBoard, TB**, type designation and Recognized Component Mark for Canada, **cRU**. May be followed by a suffix to denote factory identification.

Last Updated on 2010-04-17

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Material Safety Data Sheet

Section One: Product and Manufacturer

Product: Epoxy Woven Fiberglass Copper Clad Laminate and Prepreg
Product Name: NP-140TL;NP-140R;NP-140B
Manufacturer's Address and Telephone: 55, Wei-Wong Street, Su-Lin City, Taipei County, Taiwan, R.O.C. Tel: +886-2-2680-6311
Emergency Telephone/Fax: +886-02-26806311ext.775~778/Fax: +886-02-26807234

Section Two: Ingredient Identification

Prepreg product is composed of semi-cured resin (B-stage) and reinforced with E-glass fabric; Copper Clad Laminate is composed of fully cured (C-stage) prepreg and adhered with copper foil. Resin components include halogenated organic elements and other trace elements of volatile organic materials.

Mixture: Resin, E-Glass Fabric and Copper Foil

Chemical Property:		
Substance Name	Concentration(Percentage)	Substance Category(CAS No)
E-Glass Fabric	30~60%	14808-60-7
Copper Foil	10~30%	7440-50-8
Epoxy Resin	30~60%	67-64-1

Section Three: Hazardous Ingredient Identification

Most Important Harmful Effect	Healthy Harmful Effect: No harm to health
	Environmental Effect: NA
	Physical & Chemical harm: NA
	Special Harm: NA
Major Symptom: NA	
Article Harmful Category: NA	

Section Four: First Aid Measures

First aid measures for different ways of exposures:
Inhalation: Immediately flush mouth and nose with large amounts of temperate water.

Skin contact: Use compressed air to blow the skin and clothes. Wash skin thoroughly with water with mild soap. Eye contact: Immediately use water to flush the eyes and seek medical attention. First-Aid for accidental ingestion: Force to vomit, flush the mouth with water, and seek immediate medical attention..
Most Important Symptom and Harmful Effect: Sensitive reaction from skin contact with dusts ; Skin cuts or bruises from careless trimming operation..
Protection to the First-Aid Personnel: N/A
Hints to the Medical Doctor: N/A

Section Five: Fire Fighting Measures

Proper Extinguishing Media: Water spray、dry chemical powder, or carbon dioxide.
Possible Special Harm during Fire Fighting: Inhalation of smoke from burning.
Special Fire Fighting Procedure: N/A
Special Protection Equipment for Fire Fighter: Wear full bunker gear including a positive pressure self-contained breathing apparatus in any close place.

Section Six: Accidental Release Measures

Personal Attention: Solid Substance, No Risk of Leakage
Environmental Attention: N/A
Clean Up Measure: N/A

Section Seven: Safe Handling and Storage

Holding: NA
Storage: (Prepreg) Packed: Room Temp.=$21 \pm 2^{\circ}\text{C}$, (30% RH ~ 50% RH) $\rightarrow$ 90 days (Laminate) Packed: Room Temp.=$21 \pm 2^{\circ}\text{C}$ $\rightarrow$ 2 years

Section Eight: Special Protection

Engineering Control: NA
Control Parameter: Average acceptable daily density for 8 hours/Average acceptable density for short period/Highest acceptable density: N/A Biological Index: N/A
Personal Protection Equipment:

Respiratory Protection: Micro dusts and particles may come out from drilling, edge trimming, and cutting. Dust collection should be used during these processes, and operator should wear gauze mask to prevent inhalation.

Hand Protection: Wearing cotton gloves may help keep scraps from hurting personnel during handling..

Eye Protection: Not necessary, but wearing safety glasses or face shield when machining or sawing can help avoid dust contact during operation

Skin & Body Protection: NA

Hygiene Measure: NA

Section Nine: Physical and Chemical Properties

Substance Status: Solid	Shape: Pieces in flat rectangle pieces
Color: Light Yellow	Smell: N/A
PH Value: 6~7	Boiling Point/Range: N/A
Decomposition Temp.: N/A	Fire Flash Point: N/A °C Test Method: Open Cup Close Cup
Temperature of Spontaneous Combustion: N/A	Explosion Limit: N/A
Steam Pressure: N/A	Steam Density: N/A
Specific Gravity: 1.8~1.9	Dissolution: Not water soluble

Section Ten: Stability and Reactivity

Stability: Stable Under Room Temperature
Possible Harmful Reaction Under Special Condition: During combustion
Conditions to be avoided: Stored in temperature .higher than 21°C at RH more than 50% unpacked.
Incompatible Materials: Stay away from fire, strong acid, strong oxidizers, and related chemicals
Hazardous Decomposition: Hydrocarbon of variable compositions.

Section Eleven: Toxicological Information

Urgent Toxicity: NA
Partial Effect: NA
Sensitization: NA
Slow or Long Term Toxicity: NA
Special Effect: NA

Section Twelve: Ecological Information

Possible Environmental Effect/Environmental Flow: NA
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Section Thirteen: Disposal Measures

Method of Disposal: Proper landfill after complete burning.

Section Fourteen: Transport Information

International Transportation Regulation : NA
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United Nation Code: NA

Domestic Transportation: Laminate by Truck; Prepreg by airtight refrigerated Truck.

Special Delivery measures and attention: Prepreg needs to be stored in the refrigerated truck with temp. 23°C ↓ ,85%RH ↓
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Section Fifteen: Regulatory Information

Regulation Applied: NA

Section Sixteen: Other Information

Reference Document	NA	
Business Unit	Name: CCL Technical Dept., Electronic Materials Div. Nan Ya Plastics Corporation.	
	Address/Phone: 55, Wei-Wong St., Su-lin City, Taipei, Taiwan, R.O.C. 886-02-26806311 ext.775~778	
Drawer	Title: Quality Assurance Specialist	Name: Y. S. Du
Date	December 26 th , 2008	