Panasonic INDUSTRY

Any letters with parentheses ( ) at the end of a part number are for identification code in our company and are not included in the part numbers registered for UL certification.

Applications
Wireless / Automotive
Antenna (Automotive Millimeter-Wave Radar, Base Station)

Halogen -free

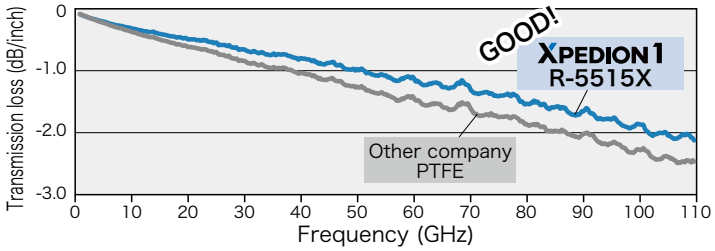
XPEDION 1

Laminate **R-5515X** Prepreg **R-5410X**

Halogen-free ultra-low transmission loss multi-layer circuit board materials

Prepreg R-5410X enables multi-layer antenna constructions and improves the design flexibility of high-frequency circuit boards; especially suitable for millimeter-wave antennas.
This material achieves higher efficiency and lower loss, with the added benefit of reduced processing costs.

Frequency dependence by transmission loss

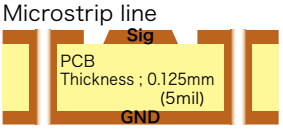


Transmission loss at 77GHz

Material	Transmission loss (dB/inch)	Modeling Dk
XPEDION1 R-5515X	-1.4	3.14
Other company PTFE	-1.8	3.13

Construction

Microstrip line

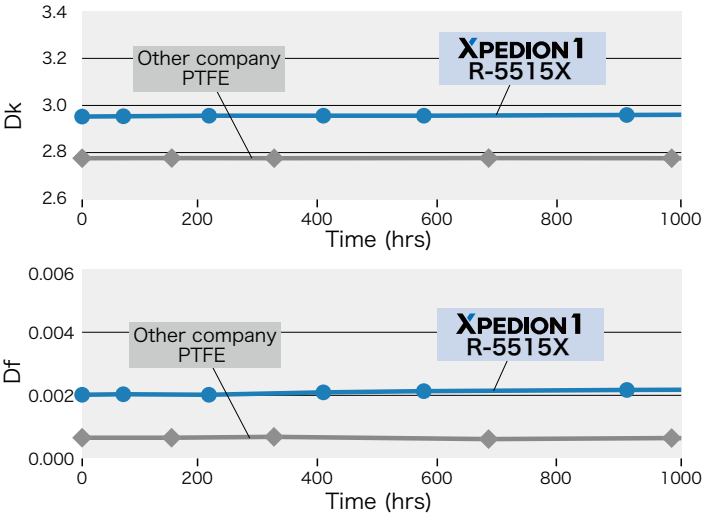


Measurement	2 port S-Parameter
Frequency	10MHz-110GHz
De-embedded	TRL method
Measurement line	adjust to 50Ω(Zo)

Layer1: Signal line (line width: 300μm, Cu thickness: 24μm)
Layer2: GND plane (Cu thickness: 24μm)

The above data are typical values and not guaranteed values.

Long-term stability under high temperature (Dk, Df)



- Measurement method : Cavity resonator method
- Aging temperature : 125℃ (without humidity control)
- Measurement frequency : 10GHz

The above data are typical values and not guaranteed values.

General properties

Item		Test method	Condition	Unit	XPEDION1 R-5515X
Tg		DMA	A	℃	200
CTE z-axis	α1	IPC-TM-650 2.4.24	A	ppm/℃	50*1
	α2				300*1
T288(with copper)		IPC-TM-650 2.4.24.1	A	min	>120*1
Dk	14GHz	Balanced-type circular disk resonator method	C-24/23/50	-	3.06
Df					0.0021
Peel strength*2	1/2oz(18μm)	IPC-TM-650 2.4.8	A	kN/m	0.6

The sample thickness is 0.13mm.
*1 The sample thickness is 0.5mm.
*2 H-VLP2 Copper

Please see our website for Notes before you use.

Please contact us about the thickness specification.
Our Halogen-free materials are based on JPCA-ES-01-2003 standard and others.
The above data are typical values and not guaranteed values.

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Panasonic Industry XPEDION1

Panasonic Industry Co., Ltd. Electronic Materials Business Division