

BRADY B-1101 OFF-METAL PASSIVE RFID INTEGRATED LABEL

TDS No. B-1101
Effective Date: February 2019

Description:

GENERAL

Print Technology: Thermal Transfer
Material Type: White PET Film
Finish: Matte
Adhesive: Acrylic-Rubber Hybrid
User Memory: 512 bits
EPC Bank: 96 bit EPC memory, extensible to 480 bits
TID Bank: 32 bits (64 bit unique TID)

APPLICATIONS

Brady off-metal RFID integrated labels incorporate extended temperature range chip technology with durable label materials to withstand challenging environments on non-metal surfaces. Passive RFID tags, such as B-1101, do not require routine maintenance.

RECOMMENDED RIBBONS

Brady Series R6400

SPECIAL FEATURES

B-1101 labels meet the requirements of ATA Spec 2000 Ch 9 Rev 2016.1 and SAE AS5678A: Passive RFID Tags Intended for Aircraft Use

For information on the Weee-RoHS compliance status for a Brady Product go to one of the following websites:

In Canada: www.bradycanada.ca/weee-rohs

In Europe: www.bradyeurope.com/rohs

In Japan: www.brady.co.jp/products/labelsuse/rohs

All other regions: www.bradyid.com/weee-rohs

Details:

LABEL DIMENSIONS

Units	English			Metric (mm)		
Catalog Number	Width (in)	Length (in)	Thickness (mil)	Width	Length	Thickness
RFID-THT-.5KB-101.6x25.4-1101-.5	4.0	1.0	12.3	101.7	25.4	0.31

Liner thickness is 4.6 mil (0.12mm). Tag thickness is measured at the center of the tag, over the chip.

LABEL MASS

Catalog Number	Label Mass (g)
RFID-THT-.5KB-101.6x25.4-1101-.5	0.51

APPROXIMATE READ RANGE

Catalog Number	Surface	Average Read Range (m)*
RFID-THT-.5KB-101.6x25.4-1101-.5	Polycarbonate	10.8

*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Read Range and Orientation Testing Methodology* for additional detail.

SURFACE DEPENDENT TESTING

*Surface Dependent Read Range**

Catalog Number	RFID-THT-.5KB-101.6x25.4-1101-.5	
Surface	EU Average (m)	US Average (m)
Acrylic	10.6	10.6
Chlorinated Polyvinyl Chloride (CPVC)	11.2	10.7
Nylon	10.8	10.6
Polycarbonate	11.0	10.8
Polyether Ether Ketone (PEEK)	11.7	11.0
Polyester (PET)	10.7	10.4
Polypropylene	9.6	10.4
Ultra High Molecular Weight Polyethylene (UHMWPE)	10.7	10.9
ULTEM™	11.8	11.1

*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Read Range and Orientation Testing Methodology* for additional detail.

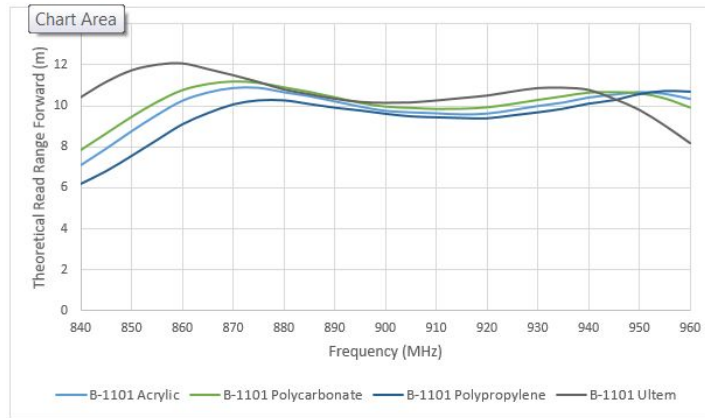
Surface Adhesion

Material	Peel Average (N/25mm)	Peel Average (oz/in)
Polypropylene	12.4	44.7
CPVC	16.7	60.0
HDPE	10.3	36.9
Acrylic	17.6	63.1
Fiberglass Electrical grade	11.7	42.1
Nylon	18.9	68.0
Polycarbonate	19.8	71.1
PET	11.2	40.3
PEEK	21.5	77.2
CRES	18.9	68.0

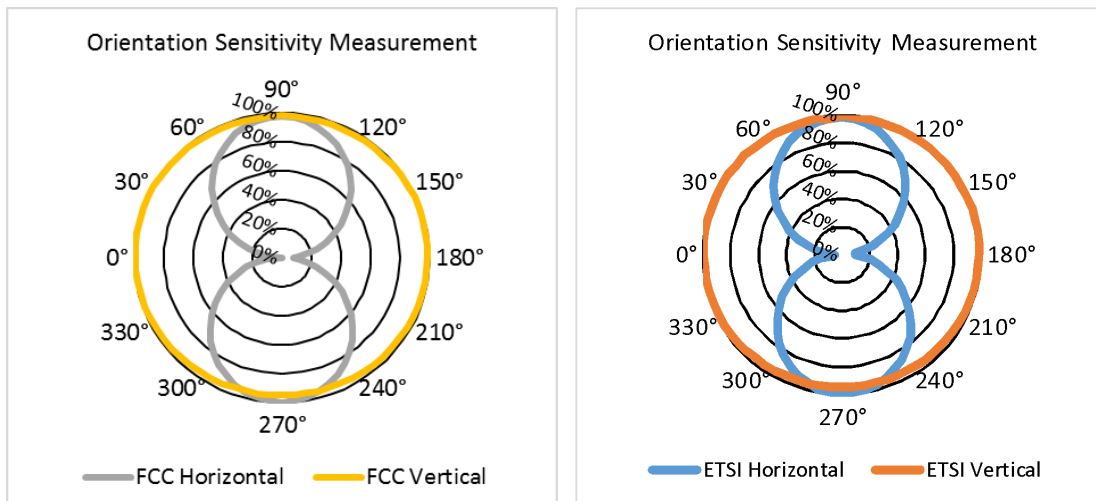
Adhesion values reported are an average of a sample set.

READ RANGE AND ORIENTATION

Frequency Scans of B-1101 RFID Tag



Orientation Testing



Read Range and Orientation Methodology

Read range and orientation measurements were performed using a 3.28 W EIRP patch antenna in an anechoic environment. Sample to antenna distance used for read range and orientation sensitivity measurements was 0.5 m for all tags. EU orientation sensitivity was measured at 866 MHz and US orientation sensitivity was measured at 915 MHz. An orientation of 90° indicates that the antenna is perpendicular to the RFID tag. EU read range was measured at 865 MHz and US read range was measured at 905 MHz. All surfaces tested were 0.062” thick. US read range measurements were adjusted by +10% to account for US antenna power of 4.00 W EIRP. The Brady Off-metal RFID Integrated Label must be sufficiently distanced from a conductive surface to read from an adequate range.

ENVIRONMENTAL TESTING

AS5678A 2015-12 Environmental Compliance

Environmental Requirement*	Environmental Test Reference Document	Performance Standard	Pass/Fail
Operating Temperature	RTCA DO-160E, Section 4	Data integrity	Pass
Survival Temperature	RTCA DO-160E, Section 4	Data integrity	Pass
Altitude	RTCA DO-160E, Section 4	Data integrity	Pass
Decompression	RTCA DO-160E, Section 4	Data integrity	Pass
Over Pressure	RTCA DO-160E, Section 4	Data integrity	Pass
Humidity	RTCA DO-160E, Section 6	Data integrity	Pass
Operational Shocks	RTCA DO-160E, Section 7	Data integrity	Pass
Vibration	RTCA DO-160E, Section 8	Data integrity	Pass
Magnetic Effect	RTCA DO-160E, Section 15	Data integrity	Pass
Flammability	14 CFR, Section 25.853(a)	Flammability per CFR limits	Pass

*AS5678A 2015-12 Environmental Fluid Exposure Testing**

Exposure	Method	Exposure Temperature (°C)	Exposure Duration (hr)	Power Effectiveness Pass/Fail*	Data Integrity Pass/Fail*
Skydrol® LD-4	Immersion	70	24	Pass	Pass
	Brush	70	24	Pass	Pass
MEK	Brush	23	24	Pass	Pass
Kerosene	Brush	40	24	Pass	Pass
	Immersion	40	24	Pass	Pass
Isopropyl Alcohol	Brush	23	24	Pass	Pass
	Immersion	23	24	Pass	Pass
Ethanol	Brush	23	24	Pass	Pass
	Immersion	23	24	Pass	Pass
Formula 409®	Brush	23	24	Pass	Pass
	Immersion	23	24	Pass	Pass
2% Permethrin	Brush	23	24	Pass	Pass
	Immersion	23	24	Pass	Pass
MIL-PRF-7808	Brush	70	24	Pass	Pass
Alpine RF-11®	Brush	50	24	Pass	Pass
Polar Guard® Advance	Brush	50	24	Pass	Pass
Deionized Water	Immersion	70	24	Pass	Pass
Corrosion	5% Salt Spray	23	50	Pass	Pass

*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Environmental Testing Methodology* for additional detail.

*Additional Environmental Fluid Exposure Testing**

Exposure	Method	Exposure Temperature (°C)	Exposure Duration (hr)	% Adhesion Change (PET surface)*	Print Durability*
Skydrol® LD-4	Immersion	23	336	-49%	Moderate Print Removal
	Brush Daily	70	1000	-13%	No Effect
Kerosene	Brush Daily	23	500	-13%	No Effect
MIL-PRF-7808	Brush Daily	70	500	-62%	No Effect
MIL-PRF-5606	Brush Daily	70	120	Not Tested	No Effect
Oil (15W40)	Brush Daily	70	120	Not Tested	No Effect
Isopropyl Alcohol	Brush Daily	23	500	-4%	No Effect
2% Permethrin	Brush Daily	23	120	Not Tested	No Effect
MEK	Brush Daily	23	500	+1%	No Effect
Alpine RF-11®	Brush Daily	23	500	0%	No Effect
Formula 409®	Brush Daily	23	120	Not Tested	No Effect
Polar Guard® Advance	Brush Daily	23	500	+14%	Not Tested
	Brush Daily	50	120	Not Tested	No Effect
Deionized Water	Immersion	70	72	+82%	No Effect
AeroShell Grease 33	Brush Once	70	24	0%	No Effect
FE-36™ Fire Extinguisher	Spray Every 4hr	23	24	+47%	Not Tested

*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Environmental Testing Methodology* for additional detail.

Environmental Testing Methodology

RF Performance, adhesion, and visual defects were evaluated. PET and polycarbonate test panels were used for immersion and brush testing. Polycarbonate, PET, or PEEK test panels were used for environmental exposures. The initial samples were adhered to test panels, random bits were encoded to the user memory, and then tested for average minimum transmitted power between 800 and 1000 MHz. RF performance was evaluated in terms of power effectiveness. Power effectiveness of greater than 50% in comparison to the initial measurement earned a passing grade. Data integrity was evaluated by reading the user memory after exposure. A passing grade was given to samples with no observed change to the user memory. Adhesion values were an average of a sample set. Adhesions of unexposed samples were used as controls. Adhesion performance was calculated as percentage difference of exposed samples to control sample adhesion.

Shelf Life:

Shelf life is two years from the date of receipt for this product as long as this product is stored in its original packaging in an environment below 80° F (27° C) and 60% RH. It remains the responsibility of the user to assess the risk of using this product. We encourage customers to develop testing protocols that will qualify a product's fitness for use in their actual application.

Trademarks:

SAE: Society of Automotive Engineers

ASTM: American Society for Testing and Materials (U.S.A.)

RTCA DO-160E: Environmental Conditions and Test Procedures for Airborne Equipment

CFR: Code of Federal Regulations (U.S.A.)

FAA TSO: Federal Aviation Administration Technical Standard Orders (U.S.A.)

Skydrol® is a registered trademark of Solutia, Inc.

ULTEM™ is a trademark of SABIC GLOBAL TECHNOLOGIES B.V.

Formula 409® is a registered trademark of the Clorox Company

Alpine RF-11® is a registered trademark of Na-Churs Plant Food Company dba Nachurs Alpine Solutions

Polar Guard® is a registered trademark of General Atomics International Services Corporation dba Cryotech Deicing Technology

FE-36™ is a trademark of The Chemours Company

Note: All values shown are averages and should not be used for specification purposes.

Test data and test results contained in this document are for general information only and shall not be relied upon by Brady customers for designs and specifications, or be relied on as meeting specified performance criteria. Customers desiring to develop specifications or performance criteria for specific product applications should contact Brady for further information.

Product compliance information is based upon information provided by suppliers of the raw materials used by Brady to manufacture this product or based on results of testing using recognized analytical methods performed by a third party, independent laboratory. As such, Brady makes no independent representations or warranties, express or implied, and assumes no liability in connection with the use of this information.

WARRANTY

Brady products are sold with the understanding that the buyers will test them in actual use and determine for themselves their adaptability to their intended uses. Brady warrants to the buyers that its products are free from defects in material and workmanship, but limits its obligation under this warranty to replacement of the product shown to Brady's satisfaction to have been defective at the time Brady sold it. This warranty does not extend to any persons obtaining the product from the buyers. This warranty is in lieu of any other warranty, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on Brady's part. Under no circumstances will Brady be liable for any loss, damage, expense, or consequential damages of any kind arising in connection with the use, or inability to use, Brady's products.

Copyright 2019 Brady Worldwide, Inc. | All Rights Reserved
Material may not be reproduced or distributed in any form without written permission.