Technical Data Sheet

BRADY L-2588-43A MEDIUM UHF RFID ON-METAL LABEL

TDS No. L-2588-43A
Effective Date: 08/02/2024

Catalog Number: THT-UHF-M-PET-2x1

Description:
Medium UHF RFID on-metal label is a robust and medium read range label with small footprint. It is recommended and optimized for tagging on-metal products and surfaces.

Details:

Material Specifications:

Face Material	Polyester
Adhesive	High tack adhesive with excellent adhesion to all surfaces including low surface energy plastics
Finishing	White
Antenna	Aluminium
IC to antenna construction	Chip bonded to antenna using Anisotropic Conductive Film adhesive
Tag base material	Clear PET

General Specifications:

Applications	Medium UHF RFID on-metal label is recommended for tagging on-metal products and surfaces. Common applications include indoor and outdoor asset management, metal assets in industrial, automotive, healthcare, retail, beverages and snacks, miscellaneous item level consumables, and any on-metal applications.
Print Technology	Thermal transfer print, including RFID encoding.
Recommended Ribbon	Brady Series R7961, R6000 Halogen Free
Operating Temperature	-40 °C to 85 °C
Regulatory/Agency Approvals	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

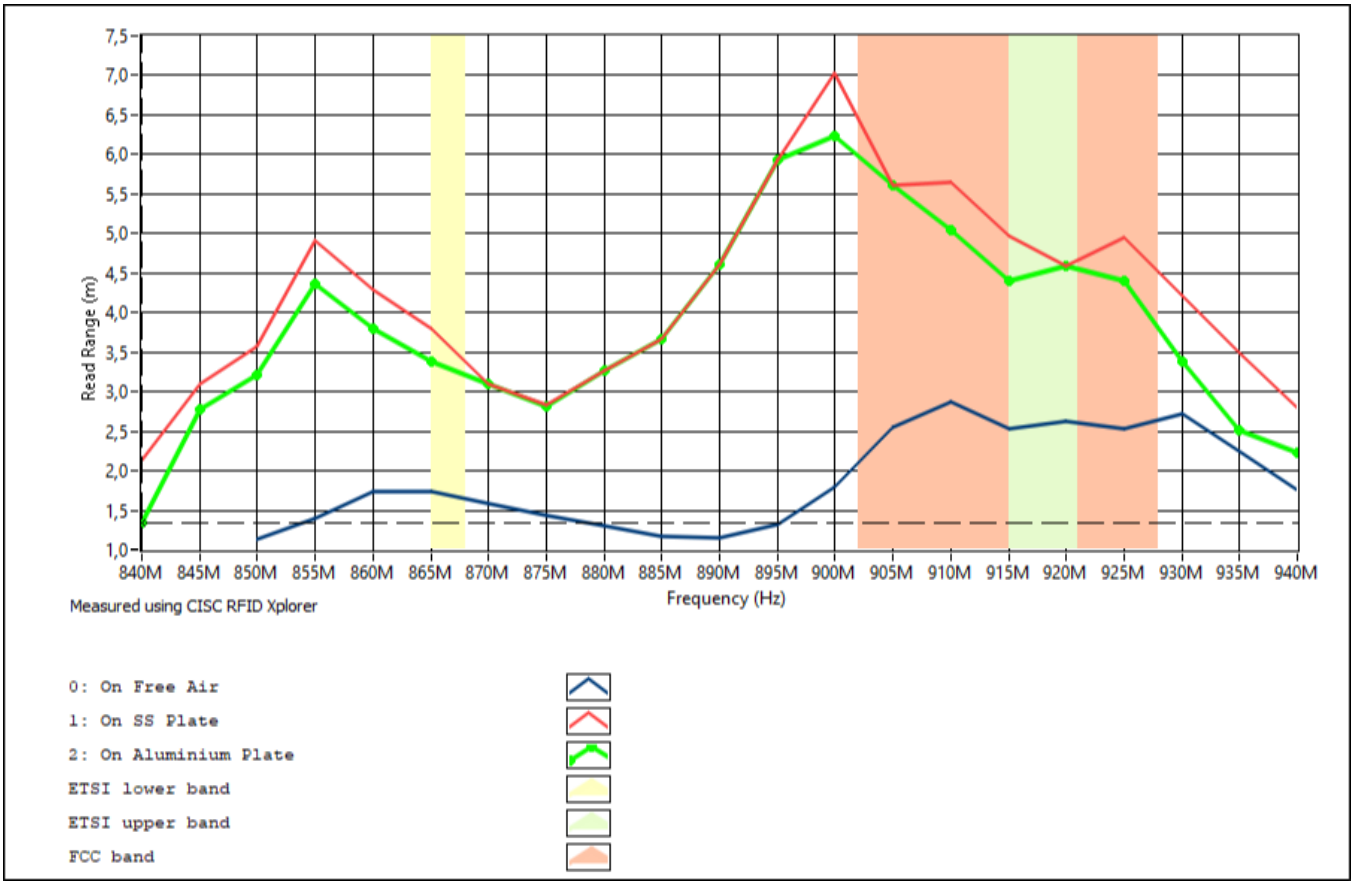
Electronic Specifications:

IC / Chip	NXP UCODE 8
Operating Frequency	Global 860 - 960 MHz (ETSI band)
Supported Standard	ISO/IEC 18000-63 Type C
EPC Memory	128 bits
TID Memory	96-bit Tag IDentifier (TID) factory locked 48-bit unique serial number factory-encoded into TID

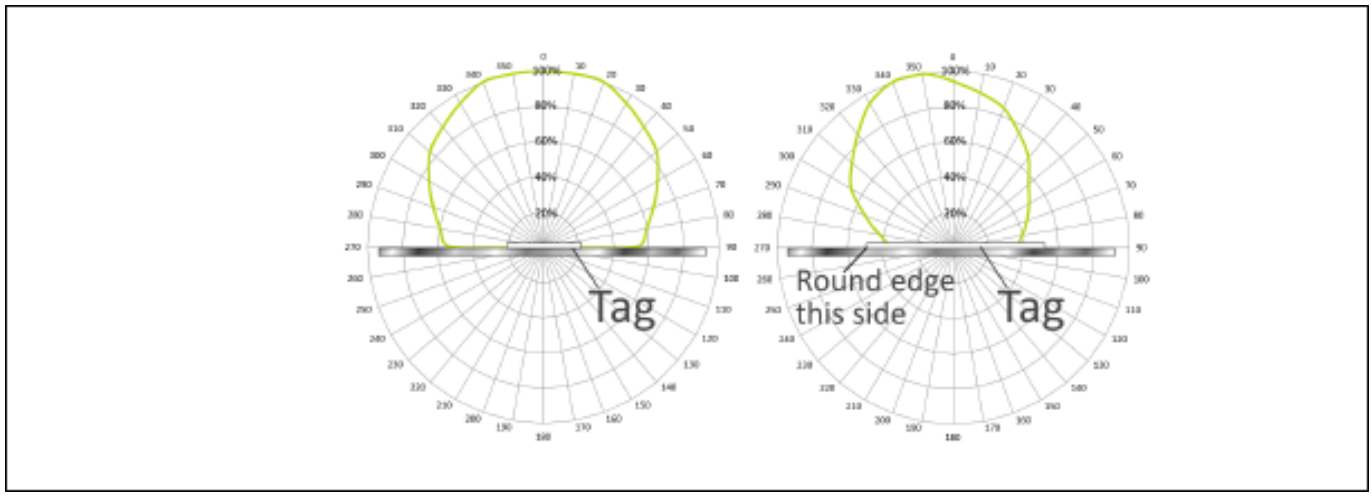
Read Range:

Details RFID performance in ETSI lower bandwidth:

PERFORMANCE PROPERTIES	REGULATION	TYPICAL RESULTS
RFID Read range on free air	ETSI	up to 1.5m
RFID Read range on SS plate	ETSI	up to 3.5m
RFID Read range on Aluminium plate	ETSI	up to 3.0m



Radiation Patterns:



All graphs are indicative: performance in real life applications may vary.

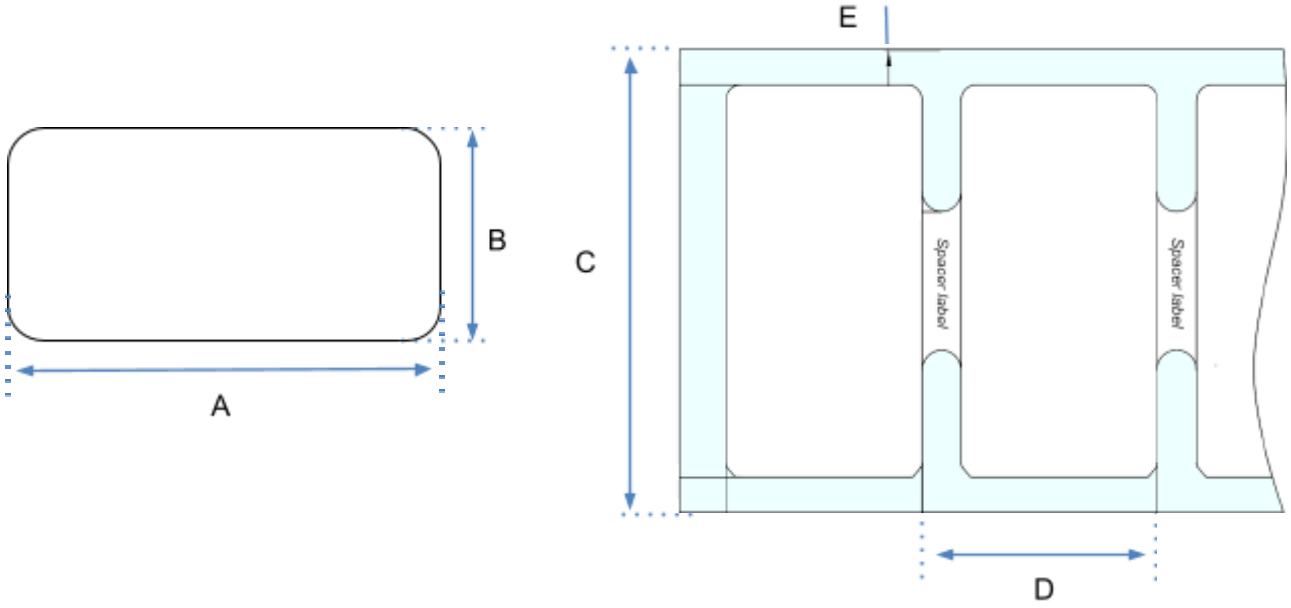
Label Dimensions:

Metric (mm)		
Width	**Length**	**Thickness** Total (with chip)
50.80	25.40	1.30

Label Mass (including antenna and chip)

Label Mass (g)
1.00

Dimensions (mm)



		Length (mm)
A	Tag Width	50.80
B	Tag Length	25.40
C	Web Width	60.00
D	Tag to Tag Pitch	30.48
E	Web edge to label	4.60

Delivery and Packaging Specifications:

RFID labels per roll	500
Rolls in package	1
Winding	RFID labels out
Inspection and delivered tags	100% inspected, 500 good RFID labels per roll
Bad Tags Marked	Yes

Label Performance:

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Total (excluding liner)	1.30 mm (0.05 inch)
Adhesion to:	ASTM D 1000	

-Stainless steel	20 minute dwell	99.9 N/100 mm (91.3 oz/inch)
-Aluminium	20 minute dwell	94.1 N/100 mm (86.0 oz/inch)

Performance properties tested on samples printed with the Brady Series R7961 ribbons. Printed samples were laminated to aluminum panels and allowed to dwell 24 hours before exposure to the indicated environments.

ENVIRONMENTAL RESISTANCE			
PERFORMANCE PROPERTIES	**TEST METHODS**	**EFFECT TO PRINT IMAGE**	**EFFECT TO CHIPS (tested at room temperature)**
High Service Temperature	30 days at 85°C	No visible effect	Readable
Low Service Temperature	30 days at -40°C	No visible effect	Readable
Short Term High Service Temperature	5 minutes at 140°C and 160°C	No visible effect at 140°C, at 160°C print remains intact - face material 'curls' up	Readable
Humidity Resistance	30 days at 37°C, 95% relative humidity	No visible effect	Readable
UV Light Resistance	30 days in Xenon Test Chamber	Very slight yellowing	Readable
Weatherability	ASTM G155, Cycle 1 30 days in QUV accelerated weathering tester	Slight yellowing	Readable
Abrasion Resistance	Taber Abraser, CS10 grinding wheels, 250 g/arm (Fed. Std. 191A, Method 5306), 150 cycles	Print still legible after 50 cycles, hardly legible after 100 cycles, and not legible after 150 cycles	No effect to chip. Chip still readable after 150 cycles

PERFORMANCE PROPERTIES	**CHEMICAL RESISTANCE**		
Samples were printed with the Brady Series R7961. Samples were laminated to aluminum panels and allowed to dwell 24 hours prior to testing. Testing was conducted at room temperature and consisted of 30 minutes immersions in the specified test fluid. After immersion, the samples were removed from the test fluid and the printed image rubbed 10 times with a cotton swab saturated with the test fluid. The rating scale below shows the effect to the quality of the print for each sample.			
CHEMICAL REAGENT	**EFFECT TO PRINT WITHOUT RUB**	**EFFECT TO PRINT WITH RUB**	**EFFECT TO CHIPS**
Ethanol	1	1	Readable
Toluene	1	5	Readable
Isopropyl Alcohol	1	1	Readable
DOT 4 Brake Fluid	1	4	Readable
Hydrochloric Acid 37%	1	1	Readable
Sodium Hydroxide 10%	1	1	Readable

Rating Scale:
1= no visible effect
2= slight smear or print removal, detectable but minimal smear
3= moderate smear or print removal (print still legible)
4= severe smear or print removal (print illegible or just barely legible)
5= complete print and/or topcoat removal
NP= print removed prior to rub

Installation Instructions:

Smallest recommended bending diameter of the label is 100mm. For optimal performance please bend the label in the orientation shown below.

Optimal read range is achieved when label is attached close to the edge of metal asset, as shown in below picture.

Shelf Life:
Shelf life is one year from the date of receipt for this product as long as this product is stored in its original packaging in an environment below 23 ± 2°C and 50 ± 5% 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.

References:
ASTM: American Society for Testing and Materials (U.S.A.)
All S.I. Units (metric) are mathematically derived from the U.S. Conventional Units

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.

Brady EMEA | Poldergotestraat 9 | 9240 Zele | Belgium | Tel: +32 (0) 52 45 78 11 | Fax: +32 (0) 52 45 78 12