Technical Data Sheet

BRADY L-2588-32C DUAL FREQUENCY LABEL

TDS No. L-2588-32C
Effective Date: 27/05/2022

Description:
Dual Frequency Label for general application is suitable for use outdoor and indoor, large read ranges, and UV exposed environment.

Details:

Material Specifications:

Face Material	B-423 - White Polyester
Adhesive	Permanent adhesive
Finishing	Glossy White
Antenna	Aluminium
IC to antenna construction	Chip bonded to antenna using Anisotropic Conductive Film adhesive
Tag base material	PET

General Specifications:

Applications	Dual Frequency Label for general applications such as retail, industry, supply chain, media and advertising, product authentication and others. The antenna is designed for application on non-metal surfaces.
Print Technology	Thermal transfer print, including RFID encoding.
Recommended Ribbon	Brady Series 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

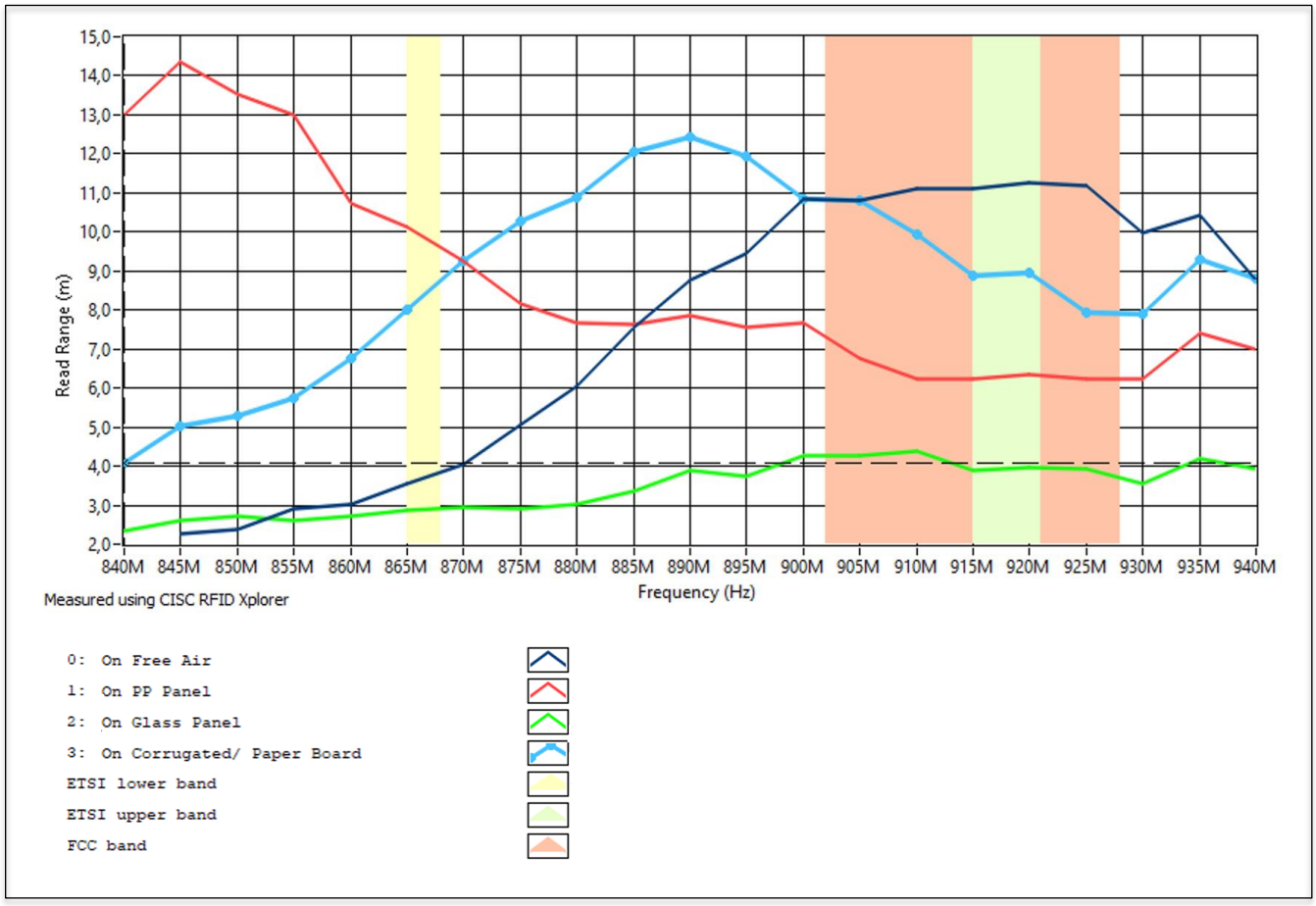
Electronic Specifications:

IC / Chip	EM 4425
Operating Frequency	860 - 960 MHz (ETSI band), 13.56 MHz
Supported Standard	EPC Class 1 Gen2v2 – ISO 18000-63, ISO 15693
EPC Memory	480 bits (UHF)
User Memory	2048 bits (UHF, HF)
TID Memory	96 bits (UHF), 64 bits (HF)

Read Range:

Details RFID performance in ETSI lower bandwidth:

PERFORMANCE PROPERTIES	REGULATION	TYPICAL RESULTS
RFID Read range on free air	ETSI	up to 3.5m
RFID Read range on glass panel	ETSI	up to 3.0m
RFID Read range on PP panel	ETSI	up to 9.5m
RFID Read range on corrugated/ paper board	ETSI	up to 8.0m



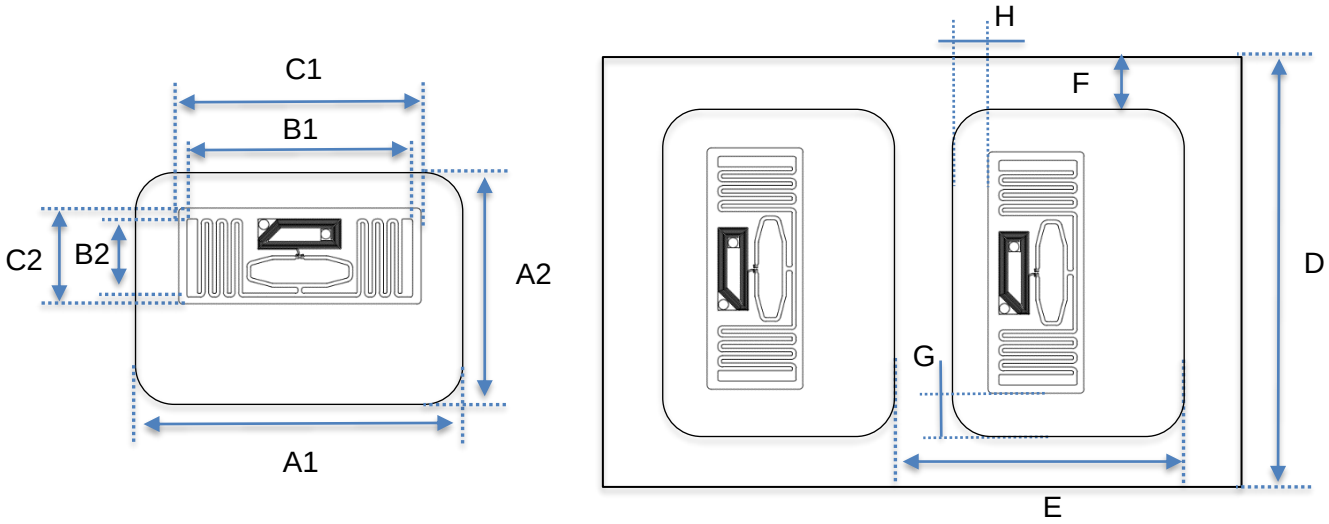
Label Dimensions:

Metric (mm)		
Width	**Length**	**Thickness** Total (with chip)
66.00	46.00	0.35

Label Mass (including antenna and chip)

Label Mass (g)
0.52

Dimensions (mm)



		Length (mm)	Tolerance (mm)
A1	Tag Width	66.00	+/- 0.2
A2	Tag Length	46.00	+/- 0.2
B1	Antenna Width	54.00	+/- 0.5
B2	Antenna Length	19.00	+/- 0.5
C1	Die-Cut Width	58.00	+/- 0.2
C2	Die-Cut Length	23.00	+/- 0.2
D	Web Width	71.08	+/- 0.3
E	Tag to Tag Pitch	49.74	+/- 1.5
F	Web edge to label	2.54	+/- 0.3
G	Die-Cut to side label	4.00	+/- 1.5
H	Die-Cut to top label	5.00	+/- 1.5

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)	 0.0138 inch (0.35 mm)
Adhesion to: -Glass	ASTM D 1000 20 minute dwell 24 hour dwell	 48 N/100mm (44 oz/inch) 49 N/100mm (45 oz/inch)
-Polypropylene	20 minute dwell 24 hour dwell	38 N/100mm (35 oz/inch) 35 N/100mm (32 oz/inch)

Performance properties tested on samples printed with the Brady Series R6000 Halogen Free ribbons. Printed samples were laminated to glass plate and allowed to dwell 24 hours before exposure to the indicated environments.

PERFORMANCE PROPERTIES		ENVIRONMENTAL RESISTANCE		
PERFORMANCE PROPERTIES	**TEST METHODS**	**EFFECT TO LABEL ADHESION**	**EFFECT TO PRINT IMAGE**	**EFFECT TO CHIP**
High Service Temperature	30 days at temperatures 85°C, 100°C, and 120°C	No visible effect	No visible effect	Readable
Low Service Temperature	30 days at temperatures -40°C and -80°C	No visible effect	No visible effect	Readable
Short Term High Service Temperature	5 minutes at 180°C	No visible effect	No visible effect	Readable
Humidity Resistance	30 days at 37°C, 95% relative humidity	No visible effect	No visible effect	Readable
UV Light Resistance	30 days in Xenon Test Chamber	No visible effect	No visible effect	Readable
Weatherability	ASTM G155, Cycle 1 30 days in QUV accelerated weathering tester	No visible effect	No visible effect	Readable
Abrasion Resistance	Taber Abraser, CS10 grinding wheels, 250 g/arm (Fed. Std. 191A, Method 5306), 150 cycles	No visible effect	Print still 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 R6000 Halogen Free. Samples were laminated to glass 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/TOPCOAT WITHOUT RUB**	**EFFECT TO PRINT/TOPCOAT WITH RUB**	**EFFECT TO ADHESIVE**	**EFFECT TO CHIP**
Ethanol	1	1	1	Readable
Toluene	1	5	1	Readable
Isopropyl Alcohol	1	1	1	Readable
DOT 4 Brake Fluid	1	3	1	Readable
Skydrol® 500B-4	1	2	1	Readable
Hydrochloric Acid 37%	1	1	1	Readable
Sodium Hydroxide 10%	1	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

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.

References:
Skydrol® is a registered trademark of the Monsanto Company
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.

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