Technical Data Sheet

BRADY L-2588-50A UHF LED FLAG LABEL

TDS No. L-2588-50A
Effective Date: 21/08/2024

Description:
UHF LED Flag Label for general application is designed with the intention to locate a tagged cable or a group of cables from the field by means of LED light. The antenna is designed with good read range and blinking distance. The label is suitable for use indoor especially on wires and cables identification.

Details:

Material Specifications:

Face Material	B-425A + B-7508 - Polyester
Adhesive	Permanent rubber,very aggressive 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	UHF LED Flag Label is designed for data center application. The label is made with specialty adhesive and is suitable for application on both on-metal and non-metal.
Print Technology	Thermal transfer print, including RFID encoding.
Recommended Ribbon	Brady Series R-6000HF
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	Kiloway KX2005XBL
Operating Frequency	Global 860 - 960 MHz (ETSI band)
Supported Standard	ISO/IEC 18000-6C, EPC Class 1 Gen 2v2
EPC Memory	160 bits
User Memory	1312 bits
LED Color	Green

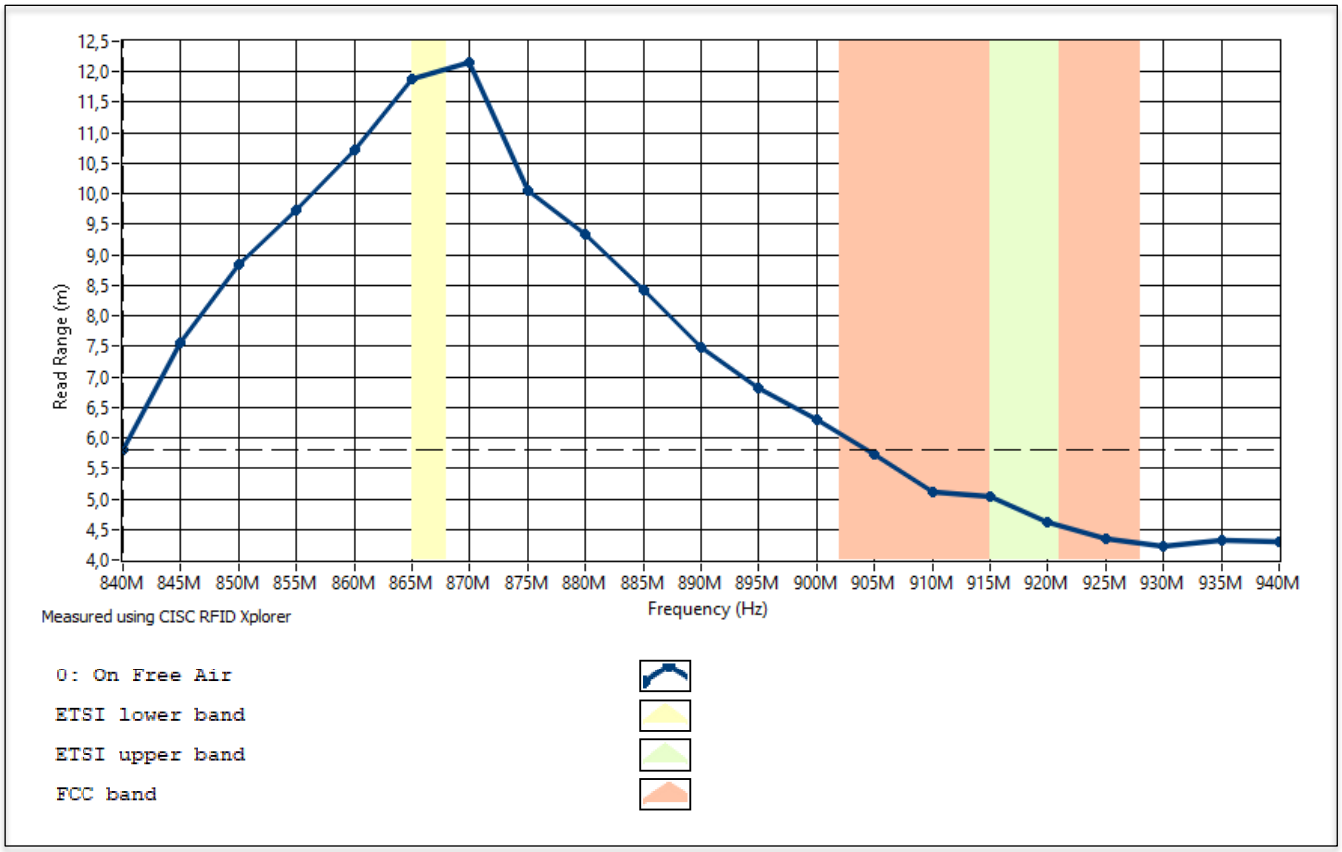
Notes: The chip uses XLPM (Super Permanent Memory with Low power consumption) as the memory, which is physically non-erasable and tamper-proof. The EPC memory is non-rewritable and locked after certain attempts to change the EPC code, which is used mainly for security purposes.

Read Range:

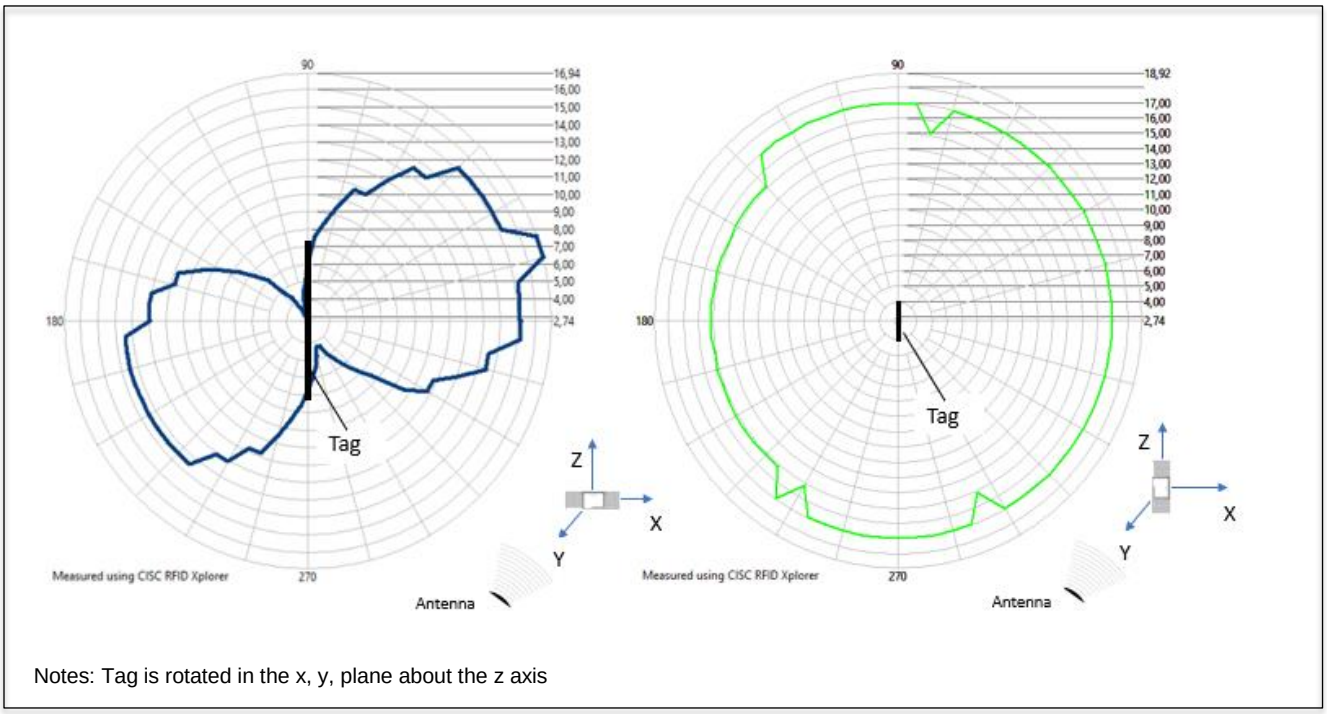
Details RFID performance in ETSI lower bandwidth:

PERFORMANCE PROPERTIES	REGULATION	TYPICAL RESULTS
RFID Read range on free air	ETSI	up to 12m

When using a handheld reader with a power of 2W, the lighting distance of the LED lamp is up to 4 m and the reading distance of the tag is 10 m, tested on free air.



Radiation Patterns:



Notes: Tag is rotated in the x, y, plane about the z axis

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

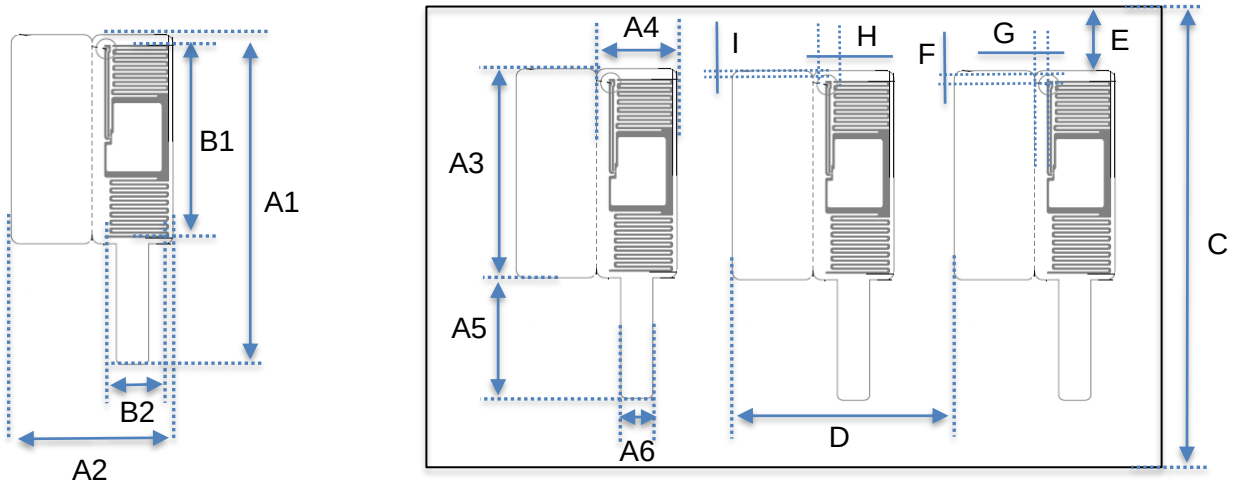
Label Dimensions:

Metric (mm)		
Width	**Height**	**Thickness** Total (with chip)
82.00	40.00	0.35

Label Mass (including antenna and chip)

Label Mass (g)
0.68

Dimensions (mm)



		Length (mm)	Tolerance (mm)
A1	Tag Width	82.00	+/- 0.2
A2	Tag Height	40.00	+/- 0.2
A3	Printable Area Width	52.00	+/- 0.2
A4	Printable Area Height	20.00	+/- 0.2
A5	Tag Tail Width	30.00	+/- 0.2
A6	Tag Tail Length	8.00	+/- 0.2
B1	Antenna Width	48.00	+/- 0.5
B2	Antenna Height	16.00	+/- 0.5
C	Web Width	87.08	+/- 0.5
D	Tag to Tag Pitch	44.98	+/- 1.5
E	Web edge to label	2.54	+/- 1.5
F	Antenna to side label	2.50	+/- 1.5
G	Antenna to top label	3.00	+/- 1.5
H	LED Hole Cut-Out Diameter	5.00	+/- 0.2
I	LED Hole Cut-Out to side label	1.00	+/- 0.2

Delivery and Packaging Specifications

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

Label Performance

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Total unfolded (excluding liner)	0.0110 inch (0.28 mm)
Adhesion to: -Polyethylene -Polyvinylchloride	ASTM D 1000 24 hour dwell 24 hour dwell	 160 N/100mm (146 oz/inch) 184 N/100 mm (168 oz/inch)

Performance properties tested on samples printed with the Brady Series R6000 HF ribbons. Printed samples were adhered on cables with diameters 2mm and 4.4mm, and allowed to dwell 24 hours before exposure to the indicated environments. Abrasion resistance was tested flat.

PERFORMANCE PROPERTIES		ENVIRONMENTAL RESISTANCE		
PERFORMANCE PROPERTIES	**TEST METHODS**	**EFFECT TO LABEL ADHESION**	**EFFECT TO PRINT IMAGE**	**EFFECT TO CHIP (tested at room temperature)**
High Service Temperature	30 days at temperatures 50°C and 85°C	Good adhesion around the cables At 85°C slight bleeding of the labels, but still good adhesion around the cables	No visible effect at 50°C, at 85°C slight yellowing of the labels	Readable
Low Service Temperature	30 days at temperatures -40°C	Good adhesion around the cable	No visible effect	Readable
Humidity Resistance	30 days at 37°C, 95% relative humidity	Good adhesion around the cable, some adhesive ooze on the small diameter cables	No visible effect	Readable
UV Light Resistance	30 days in Xenon Test Chamber	Good adhesion around the cable	No visible effect	Readable
Weatherability[1]	ASTM G155, Cycle 1 30 days in QUV accelerated weathering tester	Labels deforming and opening	Topcoat become chalky	Readable
Abrasion Resistance	Taber Abraser, CS10 grinding wheels, 250 g/arm (Fed. Std. 191A, Method 5306), 200 cycles	No visible effect	Appearance to print after 150 cycles:very slight print removal. After 200 cycles: slight print removal	No effect to chip. Chip still readable after 200 cycles

[1] B-425A is not recommended for long-term outdoor use.

PERFORMANCE PROPERTIES	CHEMICAL RESISTANCE			
Samples were printed with the Brady Series R6000HF. The samples were adhered on cables with diameter of 4.4 mm 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	2	1	Readable
Isopropyl Alcohol	1	1	1	Readable
DOT 4 Brake Fluid	1	2	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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Brady EMEA | Poldergotestraat 9 | 9240 Zele | Belgium | Tel: +32 (0) 52 45 78 11 | Fax: +32 (0) 52 45 78 12