



Mini-Circuits

SURFACE MOUNT

Power Splitter/Combiner

ADQ-22+

2 Way-90° 50Ω 95 to 200 MHz

FEATURES

- Low Insertion Loss, 0.3 dB typ.
- High Isolation, 28 dB typ.
- Excellent VSWR, 1.10 typ.
- Small size



Generic photo used for illustration purposes only

CASE STYLE: CJ725

+RoHS Compliant

The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Point to point microwave link

ELECTRICAL SPECIFICATIONS

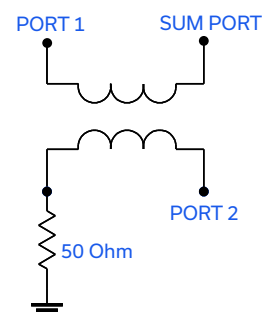
Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		—	95	—	200	MHz
Insertion Loss Avg. of Coupled Outputs above 3 dB		95-200	—	0.3	0.6	dB
Isolation		95-200	24	28	—	dB
Phase Unbalance		95-200	—	2	6	Degree
Amplitude Unbalance		95-200	—	0.7	1.6	dB
VSWR	S-Port	95-200	—	1.1	—	:1
	Output	95-200	—	1.1	—	

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Power Input (as a splitter)	1W Max.

Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC



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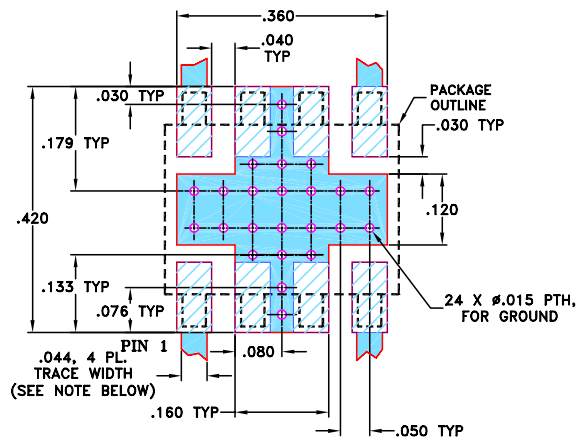
2 Way-90° 50Ω 95 to 200 MHz

PIN CONNECTIONS

SUM PORT	1
PORT 1 (0°)	5
PORT 2 (+90°)	8
GROUND EXTERNAL	2,3,6,7
50 OHM TERM EXTERNAL	4

PRODUCT MARKING: N/A

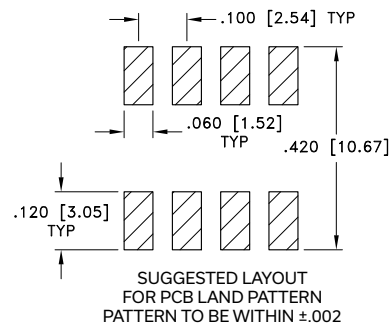
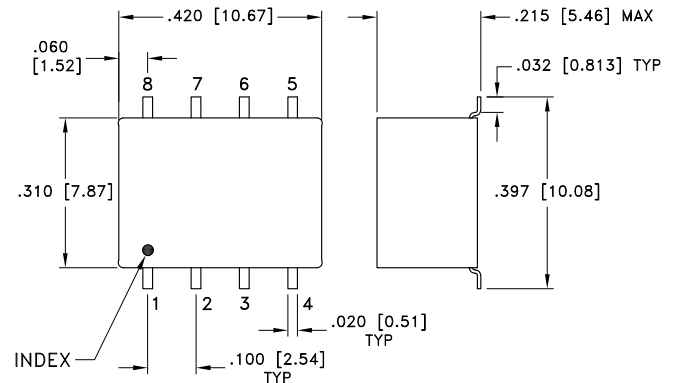
DEMO BOARD MCL P/N: TB-83
SUGGESTED PCB LAYOUT (PL-063)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS $0.020'' \pm 0.0015''$. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

-  DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
-  DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DRAWING



Weight: .40 gram
Dimensions are in inches [mm]. Tolerances: 2 Pl. $\pm .01$; 3Pl. $\pm .005$ Inch

Notes:

1. Case material: Plastic.
2. Termination Finish: Tin plate over Nickel plate.

TAPE & REEL INFORMATION: F10



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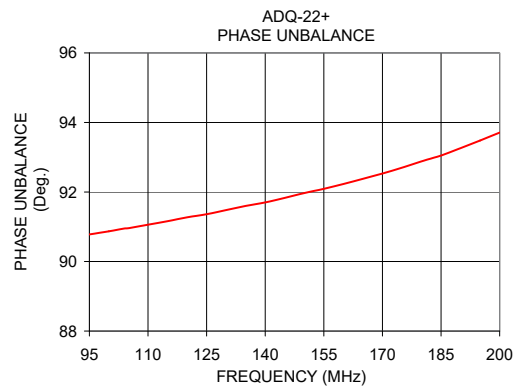
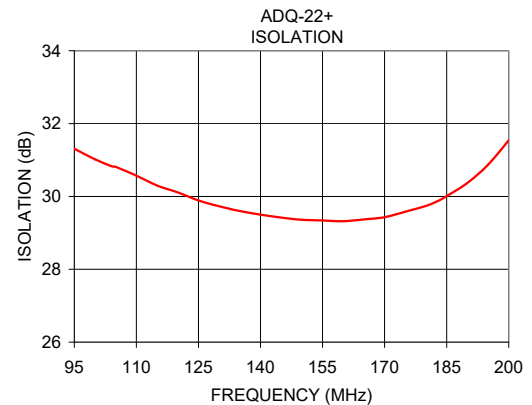
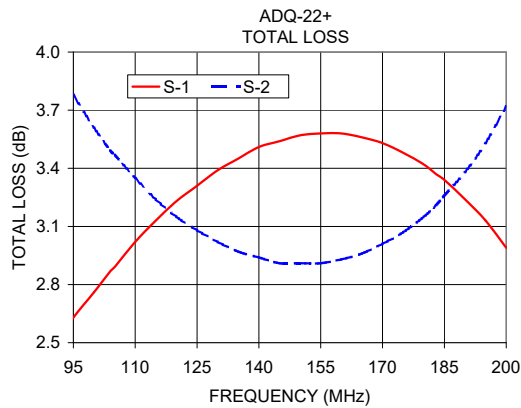
ADQ-22+

2 Way-90° 50Ω 95 to 200 MHz

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Total Loss ¹ (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR (:1)		
	S-1	S-2				S	1	2
95.00	2.63	3.78	1.15	31.31	90.78	1.09	1.09	1.06
100.00	2.76	3.61	0.85	31.02	90.87	1.09	1.09	1.06
105.00	2.89	3.47	0.57	30.81	90.96	1.09	1.09	1.06
110.00	3.02	3.35	0.33	30.57	91.06	1.09	1.09	1.06
120.00	3.23	3.15	0.08	30.11	91.27	1.10	1.10	1.06
130.00	3.39	3.02	0.37	29.73	91.48	1.10	1.10	1.06
140.00	3.51	2.94	0.57	29.50	91.70	1.10	1.10	1.06
150.00	3.57	2.91	0.66	29.36	91.97	1.10	1.10	1.06
160.00	3.58	2.93	0.65	29.32	92.23	1.10	1.10	1.06
170.00	3.53	3.01	0.52	29.43	92.53	1.11	1.11	1.05
180.00	3.42	3.15	0.26	29.74	92.88	1.11	1.11	1.05
185.00	3.34	3.26	0.08	30.01	93.05	1.11	1.10	1.05
190.00	3.24	3.38	0.14	30.37	93.26	1.11	1.10	1.05
195.00	3.13	3.53	0.41	30.87	93.48	1.11	1.10	1.04
200.00	2.99	3.72	0.72	31.54	93.71	1.11	1.10	1.04

1. Total Loss = Insertion Loss + 3dB splitter loss.



- NOTES**
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 - Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
 - The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html



2 Way-90° Power Splitter/Combiner

ADQ-22+

Typical Performance Data

FREQUENCY (MHz)	TOTAL LOSS ¹		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB)	PHASE UNBALANCE (deg.)	FREQUENCY (MHz)	VSWR		
	(dB)						(:1)		
	S-1	S-2					S	1	2
95.0	2.63	3.78	1.15	31.31	90.78	95.0	1.09	1.09	1.06
100.0	2.76	3.61	0.85	31.02	90.87	100.0	1.09	1.09	1.06
104.0	2.87	3.49	0.62	30.83	90.95	104.0	1.09	1.09	1.06
105.0	2.89	3.47	0.57	30.81	90.96	105.0	1.09	1.09	1.06
110.0	3.02	3.35	0.33	30.57	91.06	110.0	1.09	1.09	1.06
115.0	3.13	3.24	0.11	30.30	91.16	115.0	1.09	1.09	1.06
120.0	3.23	3.15	0.08	30.11	91.27	120.0	1.10	1.10	1.06
125.0	3.31	3.08	0.24	29.89	91.36	125.0	1.10	1.10	1.06
130.0	3.39	3.02	0.37	29.73	91.48	130.0	1.10	1.10	1.06
135.0	3.45	2.97	0.48	29.60	91.60	135.0	1.10	1.10	1.06
140.0	3.51	2.94	0.57	29.50	91.70	140.0	1.10	1.10	1.06
145.0	3.54	2.91	0.63	29.42	91.83	145.0	1.10	1.10	1.06
150.0	3.57	2.91	0.66	29.36	91.97	150.0	1.10	1.10	1.06
155.0	3.58	2.91	0.67	29.34	92.09	155.0	1.10	1.10	1.06
160.0	3.58	2.93	0.65	29.32	92.23	160.0	1.10	1.10	1.06
165.0	3.56	2.96	0.60	29.37	92.38	165.0	1.11	1.10	1.06
170.0	3.53	3.01	0.52	29.43	92.53	170.0	1.11	1.11	1.05
175.0	3.48	3.07	0.41	29.58	92.70	175.0	1.11	1.11	1.05
180.0	3.42	3.15	0.26	29.74	92.88	180.0	1.11	1.11	1.05
183.0	3.37	3.21	0.16	29.88	92.98	183.0	1.11	1.10	1.05
185.0	3.34	3.26	0.08	30.01	93.05	185.0	1.11	1.10	1.05
190.0	3.24	3.38	0.14	30.37	93.26	190.0	1.11	1.10	1.05
195.0	3.13	3.53	0.41	30.87	93.48	195.0	1.11	1.10	1.04
200.0	2.99	3.72	0.72	31.54	93.71	200.0	1.11	1.10	1.04

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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 The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

IF/RF MICROWAVE COMPONENTS

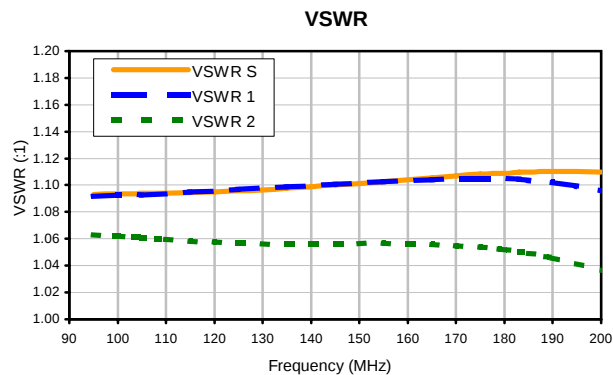
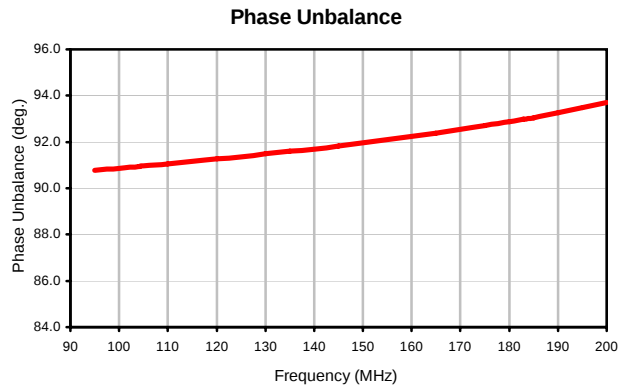
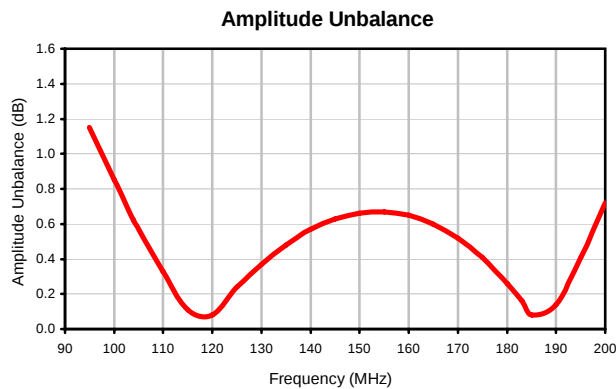
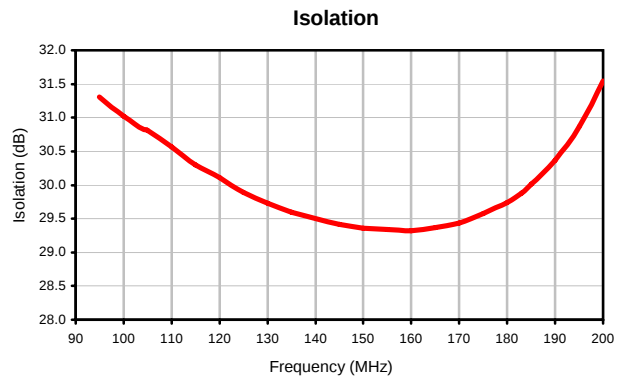
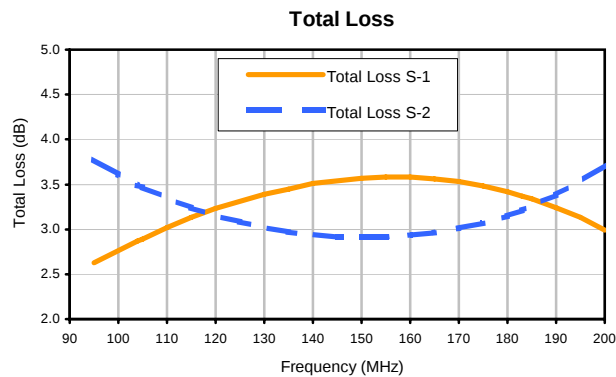


REV. X2
 ADQ-22+
 6/22/2010
 Page 1 of 1

2 Way-90° Power Splitter/Combiner

ADQ-22+

Typical Performance Curves



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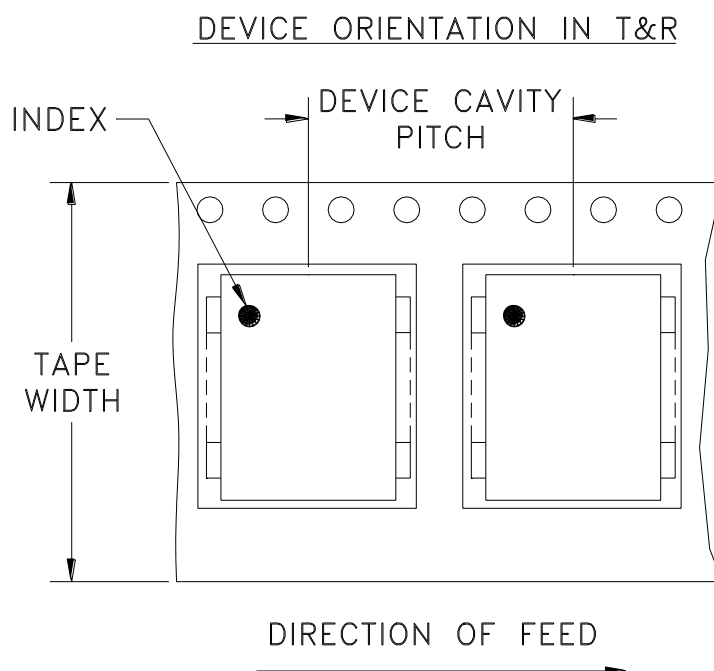


IF/RF MICROWAVE COMPONENTS



REV. X2
ADQ-22+
6/22/2010
Page 1 of 1

Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100,200
		13	500

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

Note: Please consult individual model data sheet to determine device per reel availability.



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REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82272	NEW RELEASE	08/06/02	GF	DJ
A	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/16/06	GT	IL

.360
 .040 TYP
 .030 TYP
 .179 TYP
 .420
 .120
 .133 TYP
 .076 TYP
 .080
 .160 TYP
 .050 TYP
 .044, 4 PL. TRACE WIDTH (SEE NOTE BELOW)
 PIN 1
 PACKAGE OUTLINE
 .030 TYP
 24 X ϕ .015 PTH, FOR GROUND

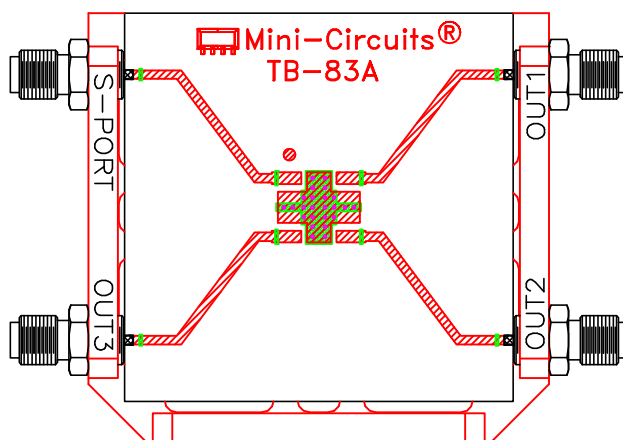
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

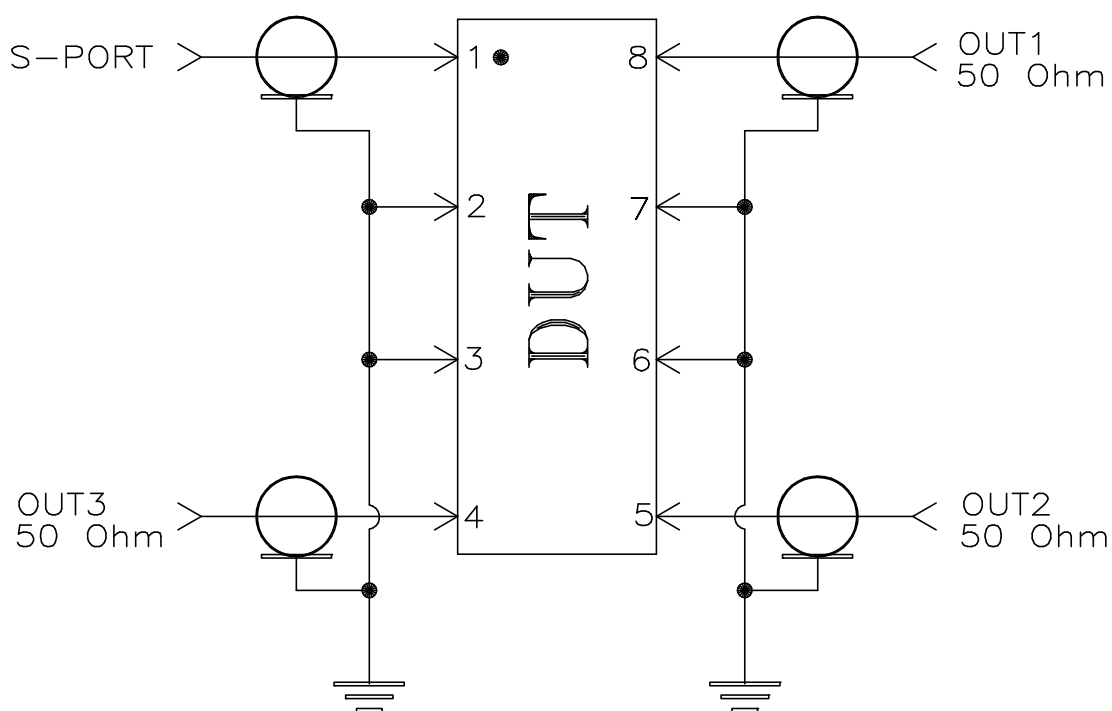
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-063		REV: A
FILE: 98PL063		SCALE: 6:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



TB-83



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

 **Mini-Circuits®**



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215