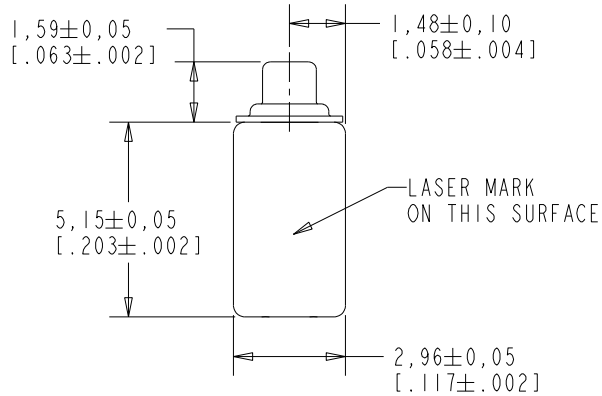
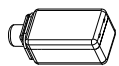
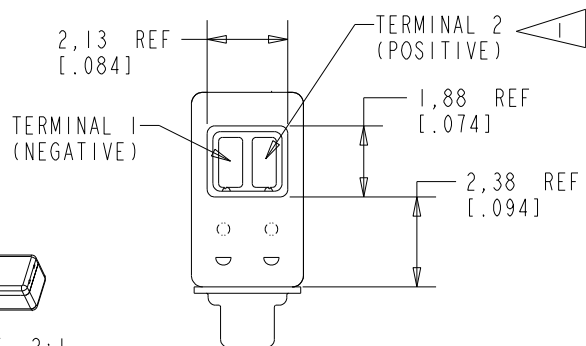
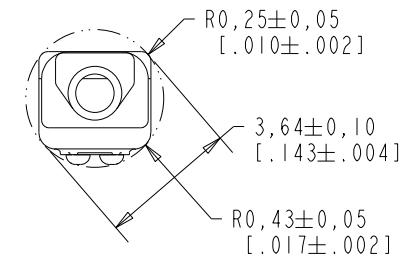
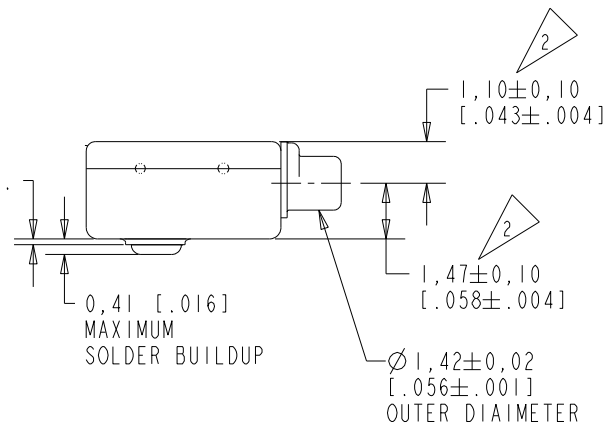
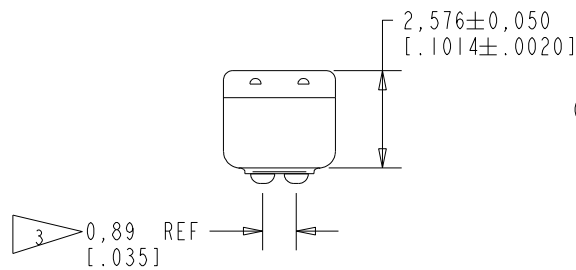


RAF-32902-000

SHT 1.1



- NOTE:
- 1 A POSITIVE GOING VOLTAGE AT TERMINAL 2, RELATIVE TO TERMINAL 1, CAUSES AN INCREASE IN PRESSURE AT THE SOUND OUTLET.
  - 2 LOCATED FROM TWO SURFACES FOR CUSTOMER CONVENIENCE. ONLY APPLICABLE FROM ONE SURFACE, NOT TO BE USED TOGETHER.
  - 3 DIMENSION TO APPROXIMATE CENTER OF TERMINAL PAD.



SCALE 2:1

NOMINAL WEIGHT  
.16 GRAMS

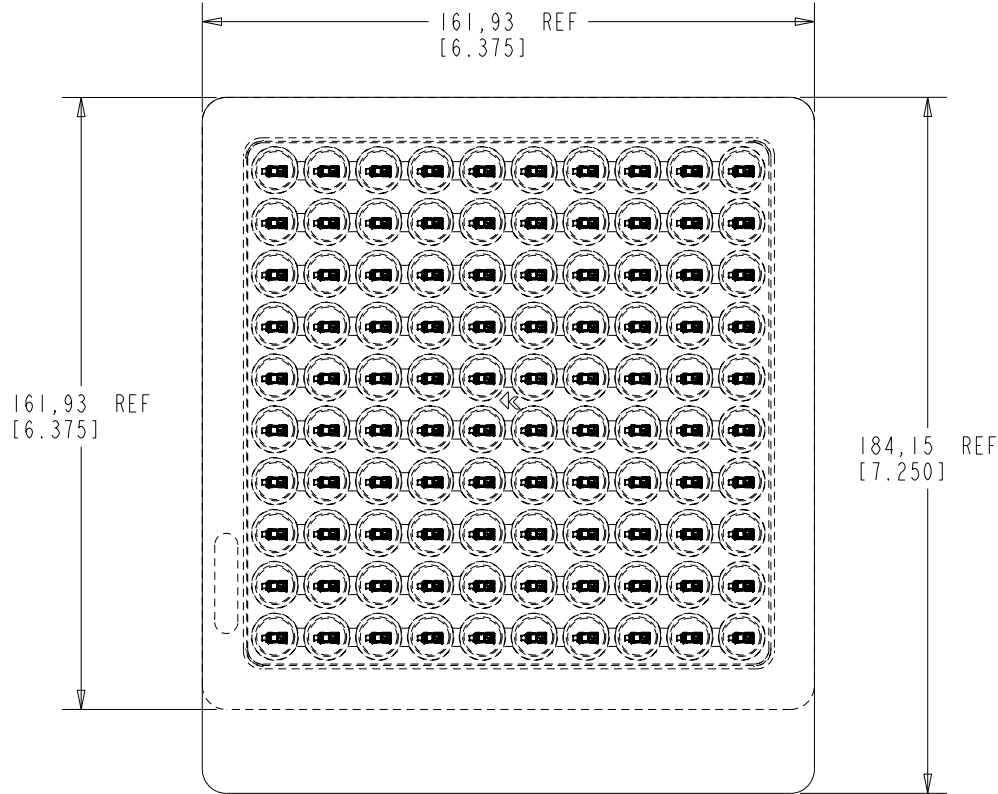
DIMENSIONS IN MILLIMETERS [INCHES]

Revision	C.O. #	Implementation Date	RELEASE LEVEL	REVISION
A	PI0000440	4-29-16	Active	A

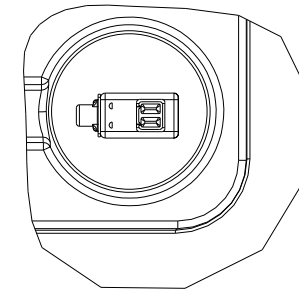
SCALE: 5:1		DR. BY: SSUN	DATE: 4-29-16
DO NOT SCALE DRAWING			
TITLE: RECEIVER		RAF-32902-000	
OUTLINE DRAWING		SHT 1.1	
		CK. BY: GJP	DATE: 4-29-16
		APP. BY: GJP	DATE: 4-29-16

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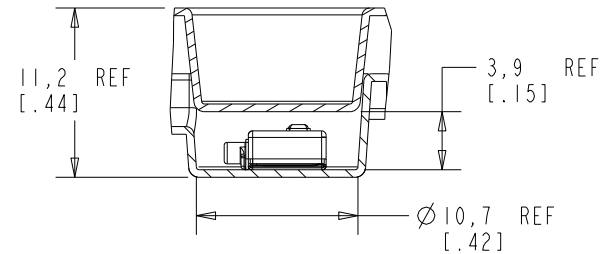
RAF-32902-000  
SHT 1.2



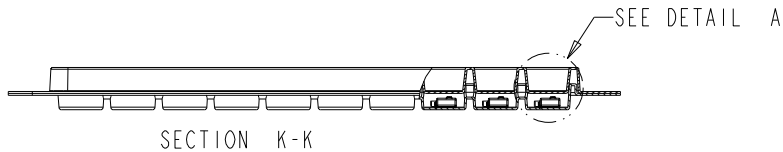
- NOTE:
1. PACKAGE MATERIAL INCLUDING A TRAY AND A COVER.
  2. 100 CAVITIES ON 1 TRAY, 1 PRODUCT IN EACH CAVITY.
  3. HARMFUL MATERIAL CONTROLLED FOLLOWS ROHS.
  4. NO SLOT WHEN COVER MATES WITH TRAY.
  5. THE RECEIVER ORIENTATION MAY VARY IN THE BUBBLE PACK.



SCALE 2:1



DETAIL A  
SCALE 2:1



DIMENSIONS IN MILLIMETERS [INCHES]

Revision	C.O. #	Implementation Date	RELEASE LEVEL	REVISION
			Active	A
A	PI0000440	4-29-16		

SCALE: 5:1

DR. BY SSUN DATE 4-29-16

DO NOT SCALE DRAWING

CK. BY GJP DATE 4-29-16

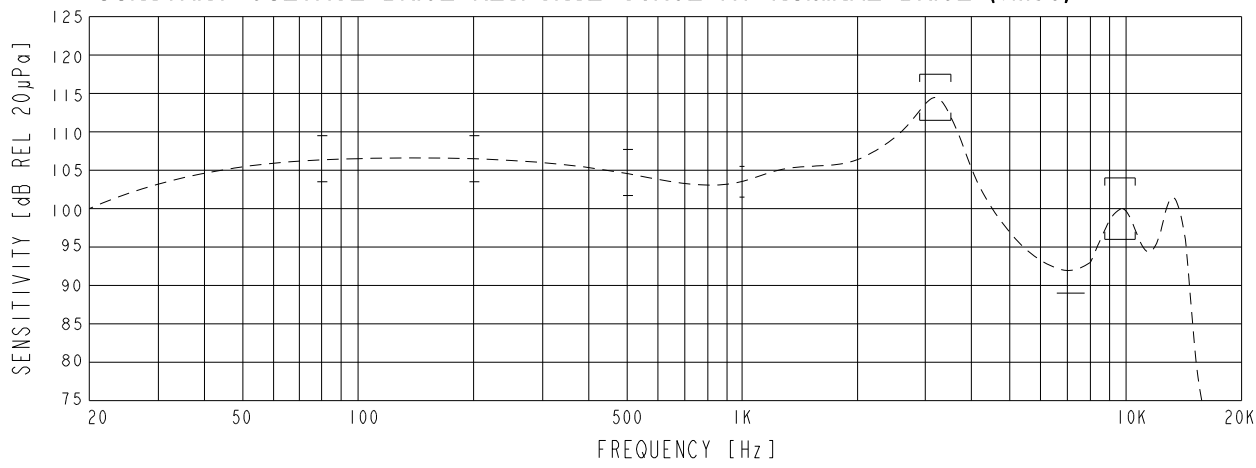
**KNOWLES CORPORATION**

TITLE: RECEIVER  
OUTLINE DRAWING

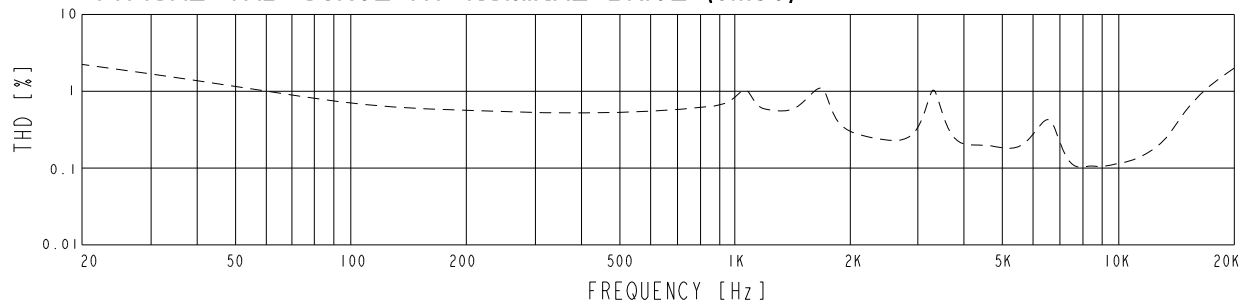
RAF-32902-000  
SHT 1.2

APP. BY GJP DATE 4-29-16

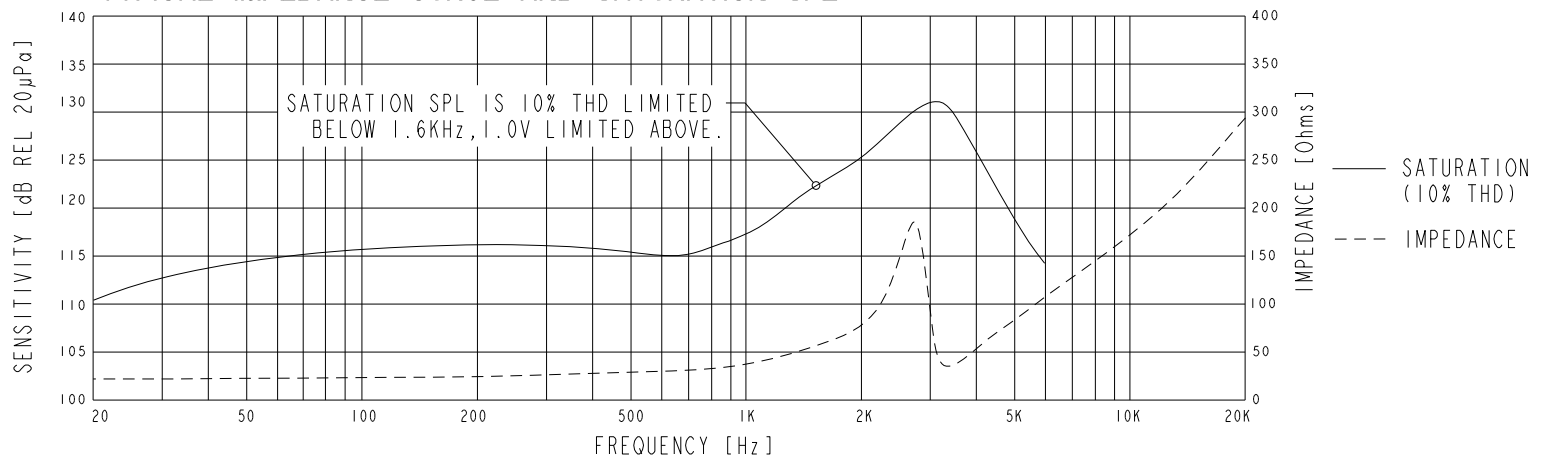
CONSTANT VOLTAGE DRIVE RESPONSE CURVE AT NOMINAL DRIVE (0.115V)



TYPICAL THD CURVE AT NOMINAL DRIVE (0.115V)



TYPICAL IMPEDANCE CURVE AND SATURATION SPL



ACOUSTICAL

SENSITIVITY DEVICE WILL PRODUCE THE SPL LISTED BELOW WITH THE TEST CONDITIONS DESCRIBED IN TABLE 3. NOMINAL SENSITIVITY AT 1 kHz IS dB RELATIVE TO 20µPa. ALL OTHER VALUES IN dB RELATIVE TO THE SENSITIVITY AT 1 kHz.

LIMIT TYPE	FREQUENCY (Hz)	MINIMUM	NOMINAL	MAXIMUM
REL	80	0.0	+3.0	+6.0
REL	200	0.0	+3.0	+6.0
REL	500	-1.8	+1.2	+4.2
REF	1000	-2.0	103.5	+2.0
PEAK	2900-3500	+8.0	+11.0	+14.0
VALLEY	6600-7800	-14.5	---	---
PEAK	8800-10800	-7.5	-3.5	+0.5

TABLE 1.

TOTAL HARMONIC DISTORTION DEVICE WILL NOT EXCEED TOTAL HARMONIC DISTORTION LEVELS LISTED BELOW.

FREQUENCY (Hz)	DRIVE (Vrms)	LIMIT (%)
1066	0.115	3
1600	0.115	3
1066	0.324	10
1600	0.324	10

TABLE 2.

TEST CONDITIONS

NOMINAL SOURCE VOLTAGE	0.115 Vrms
SOURCE IMPEDANCE	< 1 Ω
TUBING	TUBELESS, DIRECT TO IEC 711 COUPLER
COUPLER CAVITY	IEC 60318-4 (IEC 711)

TABLE 3.

ELECTRICAL

DC RESISTANCE	22.0 Ω ±10%
IMPEDANCE @ 500 Hz	30.5 Ω ±15%
IMPEDANCE @ 1 kHz	41.0 Ω ±15%
INDUCTANCE @ 500 Hz	7.2 mH TYPICAL

TABLE 4.

ISOLATION: THE CASE WILL BE ELECTRICALLY ISOLATED FROM THE COIL CIRCUIT

ELECTRICAL-ACOUSTICAL

TYPICAL PERFORMANCE AT 1 kHz

SENSITIVITY TO 100 mV	102 dB
SENSITIVITY TO 1 mW	108 dB
MAX. SPL (10% THD)	117 dB
MAX. DRIVE VOLTAGE	1.0 V
THD AT 94 dB SPL	0.4%
THD AT 100 dB SPL	0.6%

TABLE 5.

MECHANICAL

PORT LOCATION: 12S

SOLDER TYPE: ROHS COMPLIANT SAC305

TEMPERATURE

OPERATING: SENSITIVITY WILL NOT VARY MORE THAN +1/-3 dB FROM 0°C TO 63°C  
STORAGE: -40°C TO 63°C

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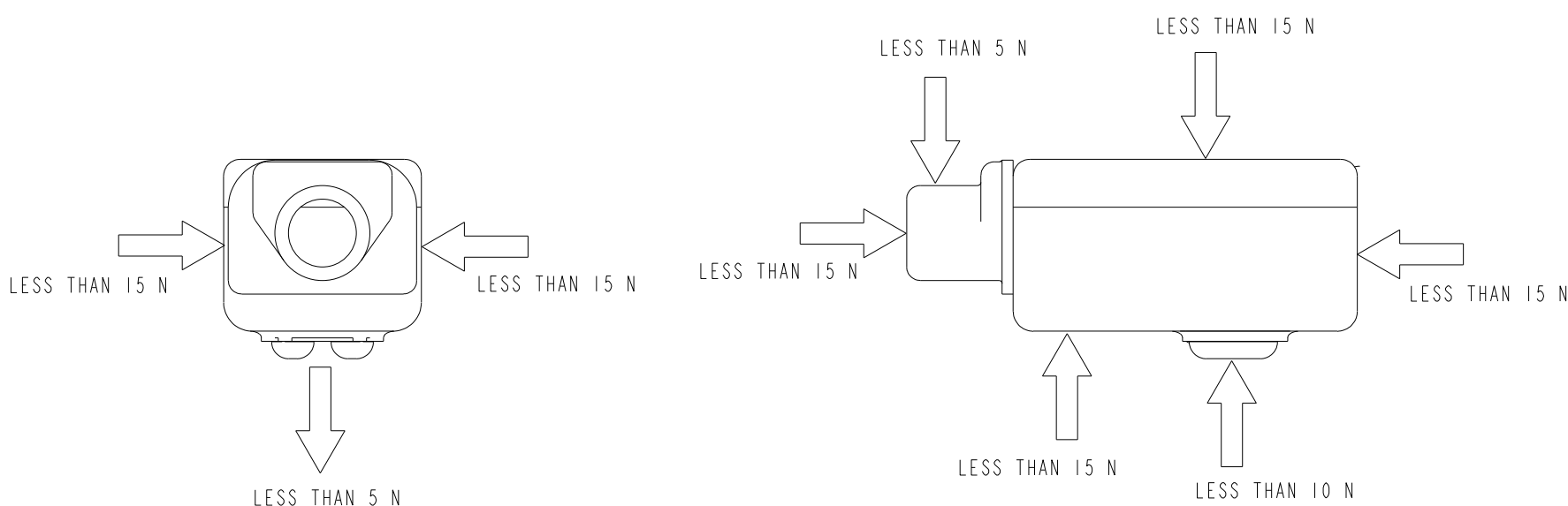
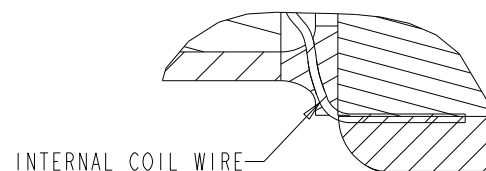
Revision	C.O. #	Implementation Date	RELEASE LEVEL	REVISION
			Active	A
A	PI0000440	4-29-16		

WHEN TEST LIMITS ARE USED TO ESTABLISH INCOMING INSPECTION ACCEPTANCE/REJECTION CRITERIA, CORRELATION OF TEST EQUIPMENT WITH KNOWLES IS ALSO REQUIRED FOR ELIMINATION OF EQUIPMENT AND TEST METHOD VARIATION		DR. BY	DATE
TITLE: RECEIVER		SSUN	4-29-16
		CK. BY	DATE
PERFORMANCE SPECIFICATION		GJP	4-29-16
		APP. BY	DATE
		GJP	4-29-16

**APPLICATION NOTES:**

1. HANDLING AND ASSEMBLY  
LIMIT APPLIED FORCE TO LEVELS SHOWN IN FIGURE BELOW TO AVOID DAMAGE.
2. TERMINAL AND SOLDERING  
THE INTERNAL COIL WIRE OF THE TRANSDUCER IS TERMINATED TO THE EXTERNAL SOLDER PADS, WHEN SOLDERING EXTERNAL WIRES TO SOLDER PAD, PLEASE TAKE CARE NOT TO DAMAGE THE EXISTING INTERNAL WIRE ON PAD.
3. SOLDER PAD PULL FORCE  
SOLDER PADS ARE DESIGNED TO WITHSTAND 10 N OF PULL FORCE.
4. IN ORDER TO MINIMIZE DEVICE DAMAGE  
DO NOT INSERT ANY OBJECT INTO THE PORT HOLE OF DEVICE.  
PREVENT ANY LIQUIDS FROM ENTERING INSIDE OF RECEIVER.  
TAKE CARE TO AVOID DROPPING UNPROTECTED RECEIVER ONTO HARD SURFACES, DROPPING UNPROTECTED RECEIVER ONTO HARD SURFACES MAY CAUSE INTERNAL DAMAGE, REDUCING PERFORMANCE.



**RELIABILITY TEST**

STANDARDS/SPECIFICATIONS	TEST ITEM	TEST CONDITIONS	ACCEPTANCE CRITERIA
QAP-8040	HALT (Highly Accelerated Life Test)	63°C at 95% RH +9dB drive at resonance for 2 weeks	Sensitivity change <3dB at 1000 Hz
IEC 68-2-38	Composite Temp & Humidity Cyclic Test	Test 2b (10 cycles of 24 hours each) 25°C / 80-100% RH for 3 h 65°C / 90-100% RH for 5 h -10°C / 0% RH for 5 h	Sensitivity change <3dB at 1000 Hz
QAP-8100	Thermal Shock	5 cycles: -40°C to +63°C, 15 minute soaks, <30 sec. transition	Sensitivity change <3dB at 1000 Hz
QAP-8640	Artificial Sweat Test	10 days exposure to sweat vapor at 38°C	Sensitivity change <3dB at 1000 Hz
QAP-8070	Solder / De-Solder Cycle Test	Tip temp 750F (400°C): 5 cycles 2 seconds / pad	Sensitivity change <1dB at 1000 Hz
QAP-8200	Mechanical Shock	Drop from progressively higher heights until failure. "Failure" means that sensitivity changes >3dB from initial, or THD at nominal drive at 1/3 resonance > 10%, or THD at nominal drive at 1/2 resonance > 20%.	>90% survival rate @ 14.1 kG shock level.
IEC 68-2-64	Vibration Stress (with Packaging Material)	10 Hz - 60 Hz w / const. amp of 3.5 mm 60 Hz - 150 Hz w / const. acc of 30 G sweep 10 oct / min, 10 min in each axis	Sensitivity change <1 dB at 1000 Hz
QAP 9130	Powered Salt Fog	2 weeks exposure to 35°C salt fog chamber with salt deposition 20-50g/sq.m/24 hours. powered with AC 0.289 Vrms @ 1kHz.	DCR test within spec (22.0 Ω ±10%).

NOTE: QAP IS ABBREVIATION OF QUALITY ASSURANCE PROCEDURES, IS USED TO CONTROL PRODUCT QUALITY.

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