

Coaxial, Wideband Frequency Mixer

ZMDB-44H-K+

Level 15 (LO Power +15 dBm) 10000 to 40000 MHz

The Big Deal

- Low conversion loss, 8.8 dB
- Excellent IF bandwidth, DC to 15 GHz
- High L-R isolation, 35 dB



CASE STYLE: UK2938

Product Overview

Mini-Circuits' ZMDB-44H-K+ coaxial frequency mixer provides an RF and LO frequency range from 10 to 40 GHz and an IF frequency range from DC to 15 GHz, ideal for applications including defense radar and communication, VSAT, line of sight links, 5G, ISM and more. This model handles input power up to +21 dBm and provides low conversion loss with high L-R isolation. The mixer comes housed in a rugged, 2.92mm connectorized housing (0.56 x 0.56 x 0.34") suitable for assembled systems and lab use.

Key Features

Feature	Advantages
Wide bandwidth, 10 to 40 GHz	Useful in wideband systems and several narrowband systems, reducing inventory.
Wide IF bandwidth, DC to 15 GHz	Usable in first and second down converter applications. IF down to DC enables use in phase detector applications.
Low conversion loss, 8.8 dB	Enables lower NF front ends, improving system sensitivity.
High isolation, <ul style="list-style-type: none">• L-R, 35 dB• L-I, 30 dB	Preserves signal integrity from input to output and reduces undesired signal responses that can interfere with system performance.
High IP3, +20 dBm	Minimizes third order intermodulation distortion and enables high-dynamic range.
2.92mm-F connectorized housing, (0.56 x 0.56 x 0.34")	Ideal for assembled systems and lab use. High-frequency connector mates with 2.92mm and SMA connectors.

Notes

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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. 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/MCLStore/terms.jsp



Coaxial, Wideband Frequency Mixer

ZMDB-44H-K+

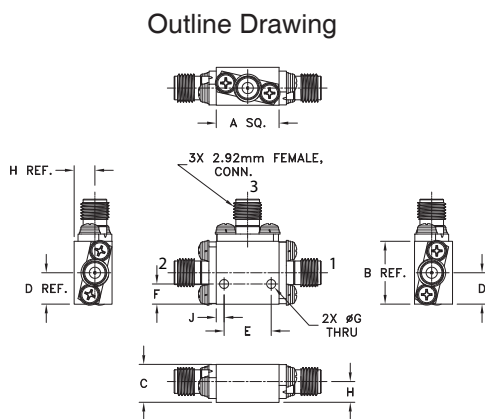
Level 15 (LO Power +15 dBm) 10000 to 40000 MHz

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	125mW
Permanent damage may occur if any of these limits are exceeded.	

Coaxial Connections

LO	2
RF	1
IF	3



Outline Dimensions (inches/mm)

A	B	C	D	E	
.56	.56	.34	.28	.420	
14.22	14.22	8.64	7.11	10.67	
F	G	H	J	wt	
.18	.081	.19	.07	grams	
4.57	2.06	4.83	1.78	23	

Features

- wide bandwidth, 10000 to 40000 MHz
- low conversion loss, 8.8 dB typ.
- high L-R isolation, 35 dB typ.
- excellent IF BW, DC to 15000 MHz
- rugged construction
- small size
- useable as up and down converter

Applications

- defense radar and communications
- VSAT
- line of sight links
- 5G
- ISM



Generic photo used for illustration purposes only

CASE STYLE: UK2938

Connectors Model
2.92mm-Female ZMDB-44H-K+

+RoHS Compliant

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

Electrical Specifications at 25°C

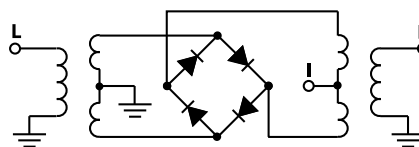
Parameter	Min.	Typ.	Max.	Unit
Frequency Range, RF	10000	—	40000	MHz
Frequency Range, LO	10000	—	40000	MHz
Frequency Range, IF	DC	—	15000	MHz
Conversion Loss*	—	8.8	15	dB
LO to RF Isolation	18	35	—	dB
LO to IF Isolation	18	30	—	dB
IP3	—	20	—	dBm
RF Input at 1 dB Compression	—	+10	—	dBm

* Conversion loss at 30 MHz IF. Increases with IF frequency.

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +15dBm	LO +15dBm	LO +15dBm	LO +15dBm	LO +15dBm
10000.10	10030.10	12.97	38.56	27.23	7.72	7.20
11000.10	11030.10	8.88	37.96	30.87	4.03	2.39
12000.10	12030.10	7.86	35.88	33.94	2.44	3.43
14000.10	14030.10	6.89	38.07	36.63	2.84	2.24
16000.10	16030.10	7.54	38.06	32.71	2.21	2.01
18000.10	18030.10	7.17	39.28	34.60	2.77	3.03
20000.10	20030.10	6.97	51.91	38.91	2.29	3.43
22000.10	22030.10	7.74	44.84	41.10	1.36	3.66
24000.10	24030.10	9.29	42.55	39.78	1.49	3.05
26000.10	26030.10	9.23	38.38	36.48	1.54	2.42
28000.10	28030.10	9.18	32.31	36.37	2.37	1.54
30000.10	30030.10	9.95	29.71	28.56	3.61	1.54
32000.10	32030.10	8.96	25.61	25.33	2.35	1.73
34000.10	34030.10	8.95	29.08	33.02	2.28	1.84
36000.10	36030.10	8.44	27.59	27.93	1.40	2.39
38000.10	38030.10	9.97	29.36	25.64	2.14	1.87
40000.10	40030.10	10.92	45.76	28.06	1.19	1.43

Electrical Schematic



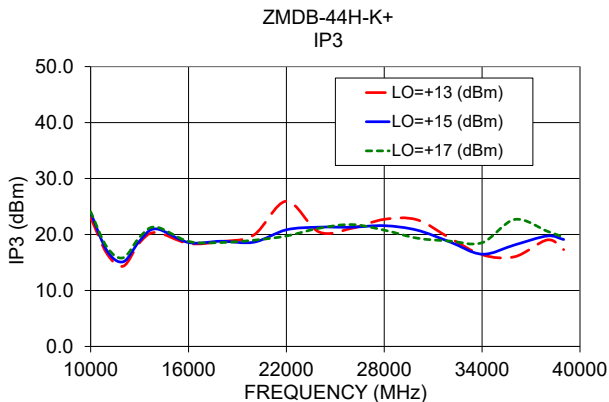
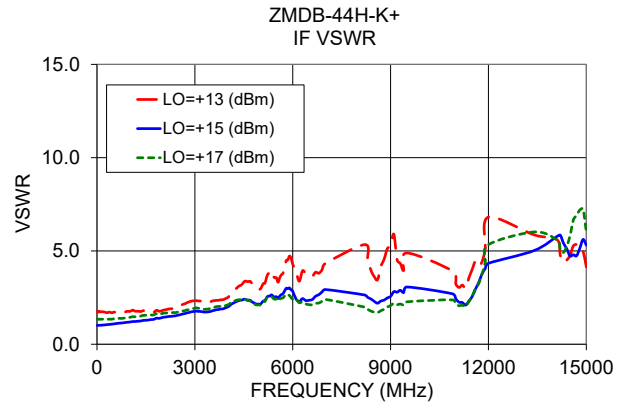
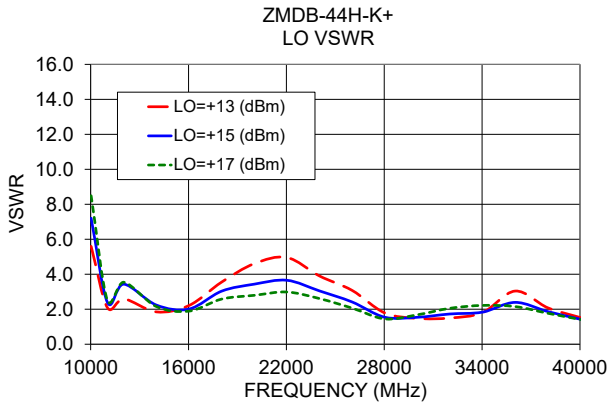
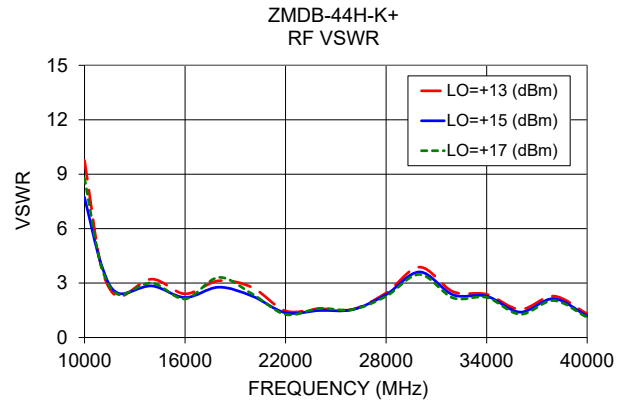
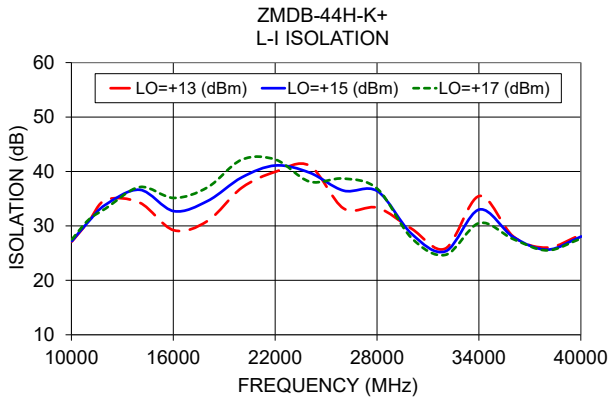
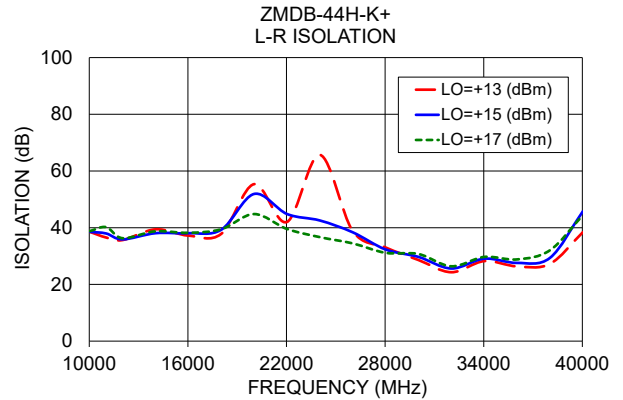
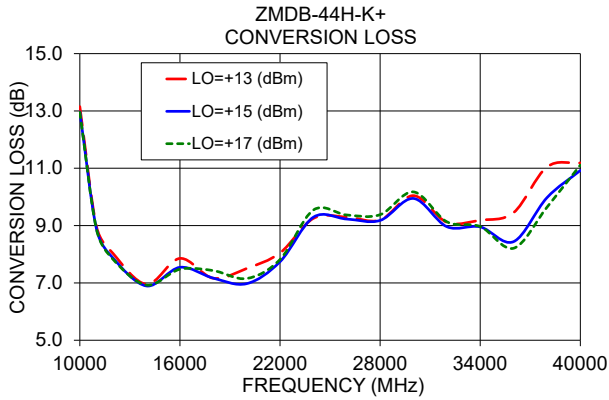
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www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

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Frequency Mixer

ZMDB-44H-K+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP-3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+10dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+13	+15	+17			+13	+15	+17			+13	+15	+17
9000.1	9030.1	19.07	18.30	17.78	9000.1	9030.1	27.62	30.99	32.01	9000.1	9030.1	-0.26	-0.06	0.00
10000.1	10030.1	13.08	12.80	12.67	10000.1	10030.1	25.00	24.74	24.46	10000.1	10030.1	0.10	-0.01	-0.03
11000.1	11030.1	9.30	9.28	9.31	11000.1	11030.1	16.13	16.37	16.91	11000.1	11030.1	-1.23	-0.97	-0.77
12000.1	12030.1	8.10	8.06	8.07	12000.1	12030.1	13.31	13.69	14.64	12000.1	12030.1	-0.63	-0.45	-0.37
13000.1	13030.1	8.37	8.34	8.29	13000.1	13030.1	18.81	19.12	19.15	13000.1	13030.1	-0.64	-0.44	-0.37
14000.1	14030.1	6.97	6.85	6.85	14000.1	14030.1	19.49	20.39	21.58	14000.1	14030.1	-0.81	-0.54	-0.48
15000.1	15030.1	8.49	8.33	8.40	15000.1	15030.1	19.45	19.77	20.66	15000.1	15030.1	-0.32	-0.26	-0.29
16000.1	16030.1	7.86	7.62	7.58	16000.1	16030.1	20.29	20.29	20.11	16000.1	16030.1	-0.64	-0.50	-0.47
17000.1	17030.1	7.98	7.75	7.71	17000.1	17030.1	20.01	20.01	20.01	17000.1	17030.1	-0.60	-0.55	-0.57
18000.1	18030.1	8.71	8.38	8.39	18000.1	18030.1	20.90	20.90	20.88	18000.1	18030.1	-0.30	-0.41	-0.36
19000.1	19030.1	6.58	6.54	6.69	19000.1	19030.1	19.15	19.15	19.15	19000.1	19030.1	-0.94	-0.89	-0.79
19970.1	20000.1	8.99	7.66	7.46	19970.1	20000.1	19.87	18.99	19.61	19970.1	20000.1	0.04	-0.64	-0.72
20000.1	20030.1	9.80	8.31	7.96	20000.1	20030.1	19.81	19.01	19.70	20000.1	20030.1	0.44	-0.34	-0.51
20500.1	20530.1	7.53	7.38	7.44	20500.1	20530.1	19.48	20.13	20.42	20500.1	20530.1	-0.55	-0.58	-0.63
21000.1	21030.1	7.79	7.73	7.83	21000.1	21030.1	18.58	19.76	20.37	21000.1	21030.1	-0.40	-0.43	-0.43
22000.1	22030.1	8.10	7.63	7.55	21500.1	21530.1	20.08	18.56	19.86	22000.1	22030.1	-0.25	-0.24	-0.27
22500.1	22530.1	8.07	7.94	7.99	22000.1	22030.1	21.97	21.92	21.71	22500.1	22530.1	-0.36	-0.35	-0.34
23000.1	23030.1	9.18	8.75	8.62	22500.1	22530.1	22.27	22.47	22.35	23000.1	23030.1	-0.16	-0.19	-0.22
23500.1	23530.1	9.28	8.59	8.39	23000.1	23030.1	22.49	22.89	22.86	23500.1	23530.1	-0.19	-0.17	-0.23
24000.1	24030.1	9.08	8.93	9.00	23500.1	23530.1	21.51	22.59	23.37	24000.1	24030.1	-0.37	-0.46	-0.53
24500.1	24530.1	10.48	10.44	10.45	24000.1	24030.1	21.98	22.89	22.84	24500.1	24530.1	-0.05	-0.04	-0.07
25000.1	25030.1	10.56	10.22	10.07	24500.1	24530.1	22.46	23.03	22.82	25000.1	25030.1	0.16	0.05	-0.05
25500.1	25530.1	9.18	8.71	8.66	25000.1	25030.1	20.99	21.92	22.32	25500.1	25530.1	-0.38	-0.17	-0.29
26000.1	26030.1	9.03	8.95	9.15	25500.1	25530.1	21.77	21.59	22.10	26000.1	26030.1	-0.34	-0.26	-0.15
26500.1	26530.1	10.10	10.03	10.00	26000.1	26030.1	21.90	22.21	22.96	26500.1	26530.1	-0.04	-0.03	-0.12
27000.1	27030.1	8.92	8.78	8.80	26500.1	26530.1	21.91	22.29	22.28	27000.1	27030.1	-0.25	-0.16	-0.31
28000.1	28030.1	9.70	9.68	9.82	27000.1	27030.1	21.40	21.64	21.64	28000.1	28030.1	-0.28	-0.30	-0.38
29000.1	29030.1	8.69	8.52	8.67	28000.1	28030.1	20.42	20.41	20.26	29000.1	29030.1	-0.47	-0.58	-0.69
30000.1	30030.1	11.00	10.80	10.81	29000.1	29030.1	19.85	19.85	19.60	30000.1	30030.1	-0.03	-0.05	-0.14
31000.1	31030.1	7.87	7.92	8.39	30000.1	30030.1	18.77	18.77	18.77	31000.1	31030.1	-0.75	-0.89	-0.82
32000.1	32030.1	9.76	9.70	9.90	31000.1	31030.1	18.36	18.02	18.04	32000.1	32030.1	-0.21	-0.36	-0.51
33000.1	33030.1	9.22	9.13	9.26	32000.1	32030.1	18.45	17.83	18.34	33000.1	33030.1	-0.36	-0.43	-0.40
34000.1	34030.1	9.46	9.38	9.54	33000.1	33030.1	17.69	17.21	19.55	34000.1	34030.1	-0.30	-0.34	-0.24
35000.1	35030.1	9.08	8.86	8.96	34000.1	34030.1	16.52	17.52	22.33	35000.1	35030.1	-0.48	-0.38	-0.36
36000.1	36030.1	10.82	9.91	9.59	35000.1	35030.1	16.31	18.31	23.20	36000.1	36030.1	-0.90	-0.39	-0.30
37000.1	37030.1	9.25	9.18	9.45	36000.1	36030.1	15.09	16.78	19.50	37000.1	37030.1	-0.32	-0.32	-0.34
38000.1	38030.1	14.37	11.25	10.49	37000.1	37030.1	20.48	22.10	23.20	38000.1	38030.1	1.18	-0.32	-0.18
39000.1	39030.1	10.35	9.97	10.05	38000.1	38030.1	16.61	19.32	20.17	39000.1	39030.1	-0.75	-0.45	-0.41
40000.1	40030.1	11.42	11.12	11.40	39000.1	39030.1	18.59	19.37	19.04	40000.1	40030.1	-0.81	-0.55	-0.47
41000.1	41030.1	13.22	11.91	11.68	39500.1	39530.1	19.99	20.08	21.25	41000.1	41030.1	-0.6	-0.5	-0.3

Frequency Mixer

ZMDB-44H-K+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=25000.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10000.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=40000.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+15			+15			+15
15000.0	10000.1	16.41	10.0	10010.1	13.65	12000.0	28000.1	13.80
14000.0	11000.1	15.03	30.0	10030.1	13.50	11500.0	28500.1	13.25
13000.0	12000.1	13.83	50.0	10050.1	13.55	11000.0	29000.1	12.90
12000.0	13000.1	11.90	70.0	10070.1	13.67	10500.0	29500.1	13.36
11000.0	14000.1	11.23	90.0	10090.1	13.65	10000.0	30000.1	12.17
10000.0	15000.1	10.10	200.0	10200.1	13.59	9500.0	30500.1	12.72
9000.0	16000.1	11.18	500.0	10500.1	13.72	9000.0	31000.1	12.70
8000.0	17000.1	11.92	800.0	10800.1	14.65	8500.0	31500.1	12.51
7000.0	18000.1	14.03	1100.0	11100.1	14.83	8000.0	32000.1	12.60
6000.0	19000.1	12.73	1400.0	11400.1	14.65	7500.0	32500.1	11.17
5000.0	20000.1	11.58	1700.0	11700.1	14.58	7000.0	33000.1	11.71
4000.0	21000.1	11.23	2000.0	12000.1	14.35	6500.0	33500.1	11.26
3000.0	22000.1	11.36	2300.0	12300.1	14.18	6000.0	34000.1	11.00
2000.0	23000.1	10.93	2600.0	12600.1	14.37	5500.0	34500.1	11.33
1000.0	24000.1	10.28	2900.0	12900.1	14.12	5000.0	35000.1	11.45
700.0	24300.1	10.26	3200.0	13200.1	14.06	4500.0	35500.1	11.02
300.0	24700.1	10.17	3500.0	13500.1	14.11	4000.0	36000.1	10.96
110.0	24890.1	10.19	4000.0	14000.1	13.97	3500.0	36500.1	10.58
70.0	24930.1	10.15	4500.0	14500.1	13.92	3000.0	37000.1	11.11
30.0	24970.1	10.32	5000.0	15000.1	14.36	2500.0	37500.1	11.63
10.0	25010.1	11.50	5500.0	15500.1	14.86	2000.0	38000.1	10.42
50.0	25050.1	11.19	6000.0	16000.1	15.00	1900.0	38100.1	10.60
90.0	25090.1	11.42	6500.0	16500.1	15.28	1700.0	38300.1	10.28
400.0	25400.1	11.09	7000.0	17000.1	15.43	1500.0	38500.1	10.56
800.0	25800.1	11.10	7500.0	17500.1	15.16	1300.0	38700.1	10.45
1200.0	26200.1	11.12	8000.0	18000.1	14.58	1100.0	38900.1	10.65
1600.0	26600.1	11.35	8500.0	18500.1	14.11	900.0	39100.1	10.38
2000.0	27000.1	11.37	9000.0	19000.1	14.42	700.0	39300.1	10.38
2400.0	27400.1	11.42	9500.0	19500.1	14.29	500.0	39500.1	10.45
2800.0	27800.1	11.39	10000.0	20000.1	14.28	300.0	39700.1	10.29
3200.0	28200.1	11.45	10500.0	20500.1	14.37	100.0	39900.1	10.35
3600.0	28600.1	11.59	11000.0	21000.1	14.42	90.0	39910.1	10.41
4500.0	29500.1	11.61	11500.0	21500.1	14.60	80.0	39920.1	10.38
5500.0	30500.1	11.84	12000.0	22000.1	14.38	70.0	39930.1	10.30
6500.0	31500.1	12.31	12500.0	22500.1	15.29	60.0	39940.1	10.26
7500.0	32500.1	13.07	13000.0	23000.1	14.46	50.0	39950.1	10.28
8500.0	33500.1	13.01	13500.0	23500.1	15.16	40.0	39960.1	10.33
9500.0	34500.1	12.52	14000.0	24000.1	16.20	30.0	39970.1	10.38
10500.0	35500.1	12.98	14500.0	24500.1	16.92	20.0	39980.1	10.39
11500.0	36500.1	13.37	15000.0	25000.1	17.39	10.0	39990.1	10.42

Frequency Mixer

ZMDB-44H-K+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+13	+15	+17	+13	+15	+17			+13	+15	+17
9030.1	42.56	43.13	44.48	24.88	25.11	25.57	9000.1	9030.1	30.31	30.90	31.50
10030.1	38.80	38.76	39.07	28.15	28.66	29.02	10000.1	10030.1	26.32	26.90	27.29
11030.1	36.41	37.40	39.27	30.58	31.06	31.76	11000.1	11030.1	23.66	23.51	23.14
12030.1	34.97	35.04	34.96	32.41	31.15	30.37	12000.1	12030.1	23.41	23.94	24.33
13030.1	37.42	37.25	37.37	38.11	37.20	36.33	13000.1	13030.1	24.18	24.79	24.76
14030.1	39.21	38.17	37.77	33.09	35.51	36.21	14000.1	14030.1	23.08	23.54	23.47
15030.1	37.45	37.68	37.66	30.87	34.36	36.26	15000.1	15030.1	24.19	25.01	25.62
16030.1	36.17	36.38	36.61	29.10	32.74	35.31	16000.1	16030.1	22.92	23.08	22.85
17030.1	36.04	37.56	38.46	29.34	32.67	35.45	17000.1	17030.1	23.53	23.93	24.13
18030.1	37.83	37.66	38.02	31.89	34.95	37.40	18000.1	18030.1	23.66	23.41	23.20
19030.1	38.62	42.52	43.39	33.06	35.98	38.81	19000.1	19030.1	22.11	21.60	21.28
20000.1	51.13	48.84	45.00	36.18	39.13	42.16	19970.1	20000.1	21.61	21.13	20.46
20030.1	51.37	48.59	44.84	36.21	39.12	41.64	20000.1	20030.1	22.29	21.77	21.00
20530.1	67.65	49.03	44.36	37.42	39.88	41.95	20500.1	20530.1	20.50	20.28	19.79
21030.1	49.34	46.17	41.59	37.92	40.05	41.97	21000.1	21030.1	20.64	20.15	19.84
22030.1	44.77	44.74	41.11	39.26	40.34	41.03	22000.1	22030.1	18.85	18.63	18.49
22530.1	43.97	54.88	45.37	40.01	40.63	40.77	22500.1	22530.1	18.24	18.17	18.10
23030.1	44.04	59.98	46.46	41.96	41.32	40.29	23000.1	23030.1	18.00	17.86	17.81
23530.1	59.73	43.41	37.69	39.99	38.87	37.82	23500.1	23530.1	16.66	16.60	16.71
24030.1	42.23	37.56	35.04	37.17	36.96	36.53	24000.1	24030.1	17.35	17.34	17.17
24530.1	42.46	36.75	33.98	36.30	36.47	36.46	24500.1	24530.1	18.23	18.12	18.44
25030.1	45.29	40.54	35.40	34.96	36.69	37.47	25000.1	25030.1	17.70	17.59	17.84
25530.1	39.55	37.03	33.70	33.88	36.28	37.83	25500.1	25530.1	15.66	15.69	15.91
26030.1	35.31	34.27	32.81	32.81	35.82	38.63	26000.1	26030.1	14.89	14.93	15.38
26530.1	36.91	36.40	34.30	32.19	36.05	40.34	26500.1	26530.1	15.35	15.48	15.58
27030.1	35.83	35.29	33.34	31.51	35.33	40.07	27000.1	27030.1	13.34	13.56	13.79
28030.1	32.60	32.66	32.25	32.27	34.02	34.92	28000.1	28030.1	14.57	14.73	14.90
29030.1	31.47	32.06	31.98	31.63	31.55	30.86	29000.1	29030.1	14.35	14.63	15.14
30030.1	28.19	29.05	29.75	30.01	28.62	27.13	30000.1	30030.1	17.23	17.41	17.91
31030.1	25.66	27.03	28.20	28.07	27.58	27.09	31000.1	31030.1	17.11	17.35	17.73
32030.1	26.28	27.19	27.92	29.29	27.69	26.76	32000.1	32030.1	23.63	24.07	24.83
33030.1	23.33	24.48	25.43	31.05	29.51	28.07	33000.1	33030.1	27.57	27.71	27.77
34030.1	26.70	27.36	28.06	32.59	30.48	29.25	34000.1	34030.1	29.33	29.58	29.74
35030.1	27.59	28.78	30.13	29.87	29.67	28.78	35000.1	35030.1	34.91	36.65	38.02
36030.1	25.51	26.83	28.02	25.80	25.18	24.87	36000.1	36030.1	41.21	45.69	44.90
37030.1	26.87	27.50	28.00	31.05	30.39	29.45	37000.1	37030.1	37.03	37.55	37.01
38030.1	26.91	28.33	30.08	29.45	29.33	28.81	38000.1	38030.1	37.79	36.24	33.97
39030.1	29.11	31.19	34.57	27.28	26.88	26.29	39000.1	39030.1	30.95	29.61	27.47
40030.1	34.91	37.08	39.58	29.25	30.37	30.80	40000.1	40030.1	29.13	28.94	28.16
41030.1	45.79	43.60	38.76	32.5	32.8	33.4	41000.1	41030.1	28.0	28.4	28.5

Frequency Mixer

ZMDB-44H-K+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=40000.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+13	+15	+17		+13	+15	+17		+13	+15	+17
9000.1	9030.1	9.70	9.80	9.21	9030.1	9.02	8.34	8.28	10	1.61	1.40	1.61
10000.1	10030.1	30.65	31.77	32.06	10030.1	4.11	4.65	4.98	50	1.45	1.08	1.42
11000.1	11030.1	3.14	3.13	3.12	11030.1	2.04	2.25	2.48	100	1.37	1.06	1.39
12000.1	12030.1	2.71	2.87	2.99	12030.1	2.97	3.83	4.63	150	1.40	1.06	1.42
13000.1	13030.1	1.91	1.95	1.96	13030.1	1.57	1.83	2.11	250	1.40	1.06	1.43
14000.1	14030.1	3.09	3.10	3.07	14030.1	2.70	2.86	3.12	350	1.39	1.07	1.43
15000.1	15030.1	3.45	3.33	3.22	15030.1	2.39	2.49	2.62	450	1.37	1.07	1.42
16000.1	16030.1	2.64	2.52	2.40	16030.1	2.89	2.60	2.48	550	1.36	1.08	1.43
17000.1	17030.1	2.54	2.43	2.29	17030.1	2.67	2.45	2.37	650	1.36	1.10	1.44
18000.1	18030.1	2.30	2.18	2.10	18030.1	2.92	2.56	2.35	750	1.36	1.12	1.47
19000.1	19030.1	1.59	1.52	1.46	19030.1	3.03	2.58	2.23	850	1.35	1.14	1.49
19970.1	20000.1	1.69	1.53	1.45	20000.1	3.62	2.52	2.14	950	1.34	1.16	1.52
20000.1	20030.1	1.74	1.57	1.49	20030.1	3.22	2.34	2.03	1000	1.37	1.19	1.57
20500.1	20530.1	1.90	1.81	1.73	20530.1	3.65	2.62	2.27	1200	1.37	1.27	1.63
21000.1	21030.1	1.49	1.41	1.34	21030.1	3.70	3.01	2.59	1400	1.40	1.32	1.63
22000.1	22030.1	1.89	1.89	1.89	21530.1	4.45	3.81	3.25	1600	1.49	1.39	1.64
22500.1	22530.1	2.40	2.33	2.27	22030.1	4.70	3.58	2.74	1800	1.66	1.51	1.73
23000.1	23030.1	2.17	2.08	2.01	22530.1	2.91	2.16	1.78	2000	1.72	1.52	1.69
23500.1	23530.1	1.73	1.65	1.60	23030.1	3.14	2.25	1.79	2200	1.75	1.52	1.65
24000.1	24030.1	1.74	1.70	1.68	23530.1	3.62	2.92	2.23	2400	1.71	1.48	1.63
24500.1	24530.1	2.25	2.19	2.15	24030.1	2.46	2.18	1.85	2600	1.59	1.43	1.62
25000.1	25030.1	3.87	3.61	3.41	24530.1	2.16	1.79	1.44	2800	1.56	1.49	1.72
25500.1	25530.1	3.03	2.76	2.60	25030.1	2.98	2.32	1.64	3000	1.66	1.65	1.90
26000.1	26030.1	1.86	1.83	1.78	25530.1	3.09	2.54	1.96	3200	1.97	1.95	2.26
26500.1	26530.1	1.94	1.89	1.86	26030.1	2.55	2.28	1.91	3400	2.32	2.22	2.53
27000.1	27030.1	3.43	3.29	3.17	26530.1	2.35	1.97	1.58	3600	2.50	2.29	2.49
28000.1	28030.1	2.22	2.14	2.06	27030.1	1.57	1.19	1.15	3800	2.47	2.17	2.26
29000.1	29030.1	3.43	3.22	3.03	28030.1	3.21	2.49	2.06	4000	2.38	2.03	2.07
30000.1	30030.1	2.77	2.64	2.49	29030.1	1.52	1.30	1.19	5000	3.08	2.64	2.59
31000.1	31030.1	2.47	2.30	2.13	30030.1	1.31	1.14	1.15	6000	3.34	2.80	2.58
32000.1	32030.1	2.92	2.77	2.63	31030.1	1.58	1.38	1.24	7050	5.12	3.69	2.89
33000.1	33030.1	1.23	1.28	1.37	32030.1	1.58	1.76	1.97	8050	3.01	2.46	2.02
34000.1	34030.1	2.30	2.01	1.79	33030.1	2.86	2.61	2.25	9050	5.31	3.86	2.85
35000.1	35030.1	2.23	2.31	2.44	34030.1	1.29	1.19	1.36	10050	2.29	1.73	1.45
36000.1	36030.1	1.82	1.58	1.41	35030.1	13.58	9.14	5.81	11050	8.47	6.26	5.27
37000.1	37030.1	1.87	1.83	1.78	36030.1	1.74	1.54	1.35	12000	3.96	3.81	4.04
38000.1	38030.1	3.05	2.70	2.48	37030.1	8.32	5.30	3.73	13000	4.84	5.10	5.39
39000.1	39030.1	1.50	1.39	1.28	38030.1	3.52	2.91	2.39	14000	4.30	4.89	6.12
40000.1	40030.1	1.71	1.54	1.37	39030.1	2.68	2.32	2.03	15000	7.40	9.80	10.87
41000.1	41030.1	1.99	2.15	2.38	40030.1	5.56	4.12	3.62	16000	4.56	5.24	5.79



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Harmonics Tables

RF HARMONICS ORDER

RF CAL Notes: 1. All Harmonics are relative to IF OUTPUT (dBm)
2. + entry denotes harmonics above IF OUTPUT (dBm)

	(-dBm)	(-dBc)											
0	---	-	(-dBc)	---	---	---	---	---	---	---	---	---	---
1	---	7.39	-	32.80	---	---	---	---	---	---	---	---	---
2	72.64	56.26	64.72	46.82	61.82	---	---	---	---	---	---	---	---
3	---	---	66.60	78.24	60.63	86.38	---	---	---	---	---	---	---
4	---	---	---	71.66	83.77	94.62	86.24	---	---	---	---	---	---
5	---	---	---	---	69.87	83.54	97.41	86.06	---	---	---	---	---
6	---	---	---	---	---	72.41	85.73	99.48	87.34	---	---	---	---
7	---	---	---	---	---	---	72.93	87.31	100.36	88.59	---	---	---
8	---	---	---	---	---	---	---	72.25	85.79	97.16	87.15	---	---
9	---	---	---	---	---	---	---	---	69.34	84.65	102.43	88.30	---
10	---	---	---	---	---	---	---	---	---	71.24	85.70	100.17	---
		0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 25000 MHz; 0.00 dBm.
LO IN: 25030 MHz; +15.00 dBm
IF OUT: 30.00 MHz; -11.60 dBm

RF HARMONICS ORDER

RF CAL Notes: 1. All Harmonics are relative to IF OUTPUT (dBm)
2. + entry denotes harmonics above IF OUTPUT (dBm)

	(-dBm)	(-dBc)											
0	---	-	19.09	---	---	---	---	---	---	---	---	---	---
1	---	6.83	-	32.03	---	---	---	---	---	---	---	---	---
2	63.05	46.23	52.68	36.70	51.52	---	---	---	---	---	---	---	---
3	---	---	45.21	57.90	40.42	64.21	---	---	---	---	---	---	---
4	---	---	---	70.32	85.31	67.96	69.04	---	---	---	---	---	---
5	---	---	---	---	70.65	85.46	62.06	85.51	---	---	---	---	---
6	---	---	---	---	---	70.64	87.70	83.19	86.24	---	---	---	---
7	---	---	---	---	---	---	71.39	86.95	78.90	87.96	---	---	---
8	---	---	---	---	---	---	---	71.72	83.74	90.74	86.75	---	---
9	---	---	---	---	---	---	---	---	71.87	87.89	90.09	87.76	---
10	---	---	---	---	---	---	---	---	---	72.22	86.41	99.99	---
		0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

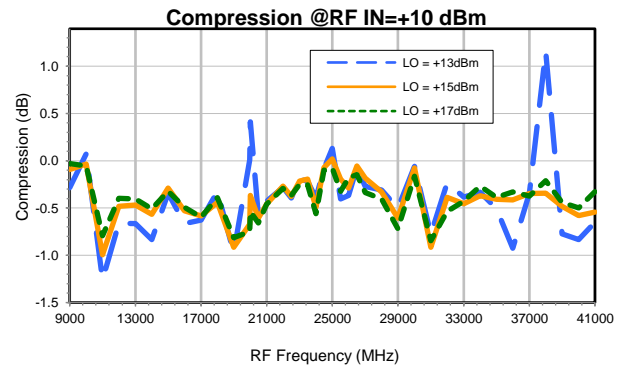
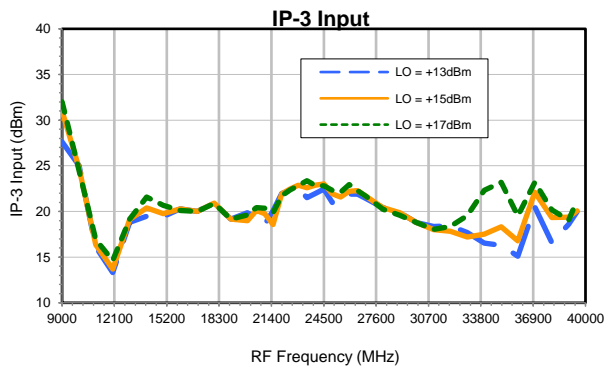
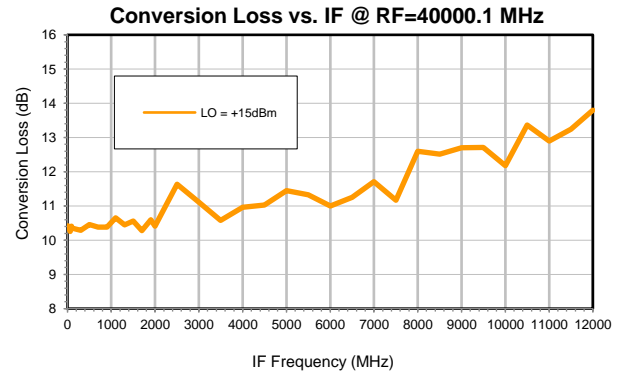
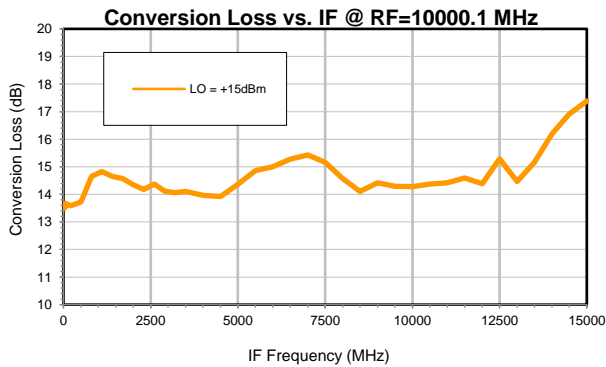
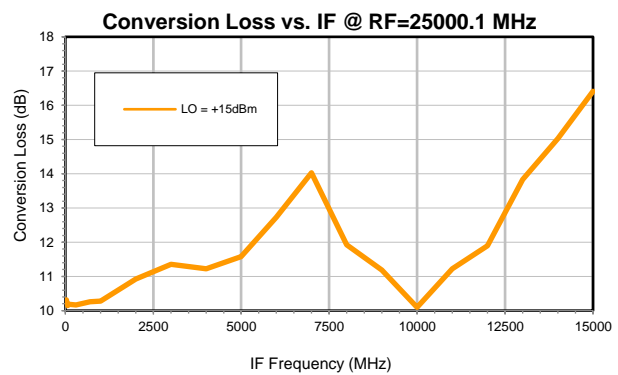
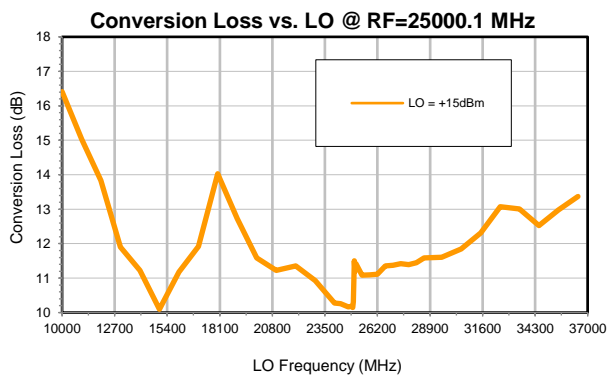
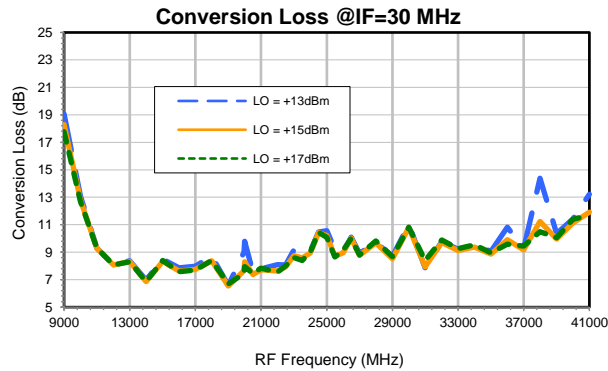
Test conditions: RF IN: 25000 MHz; 10.0 dBm.
LO IN: 25030 MHz; +15.00 dBm
IF OUT: 30.00 MHz; -1.64 dBm



Frequency Mixer

ZMDB-44H-K+

Typical Performance Curves



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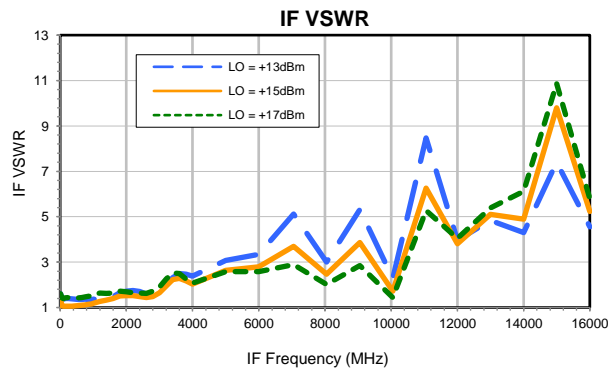
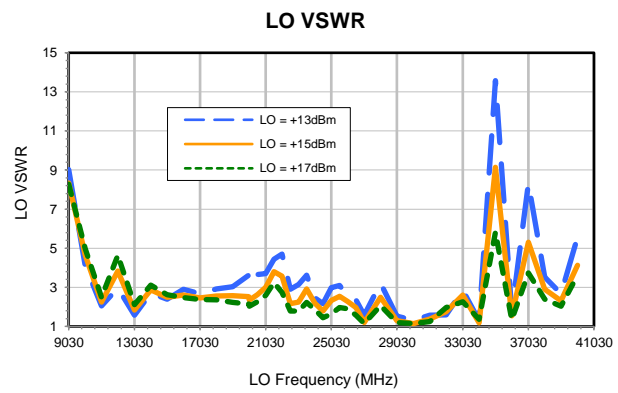
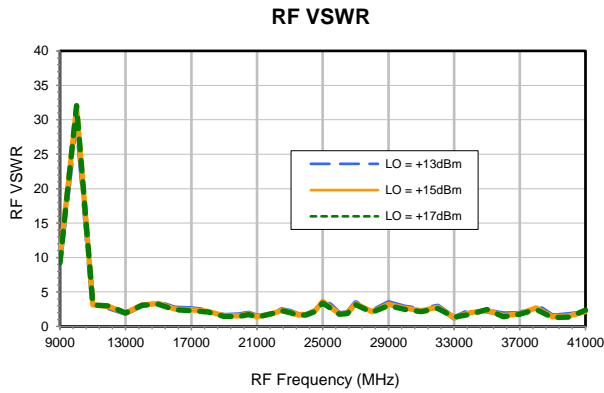
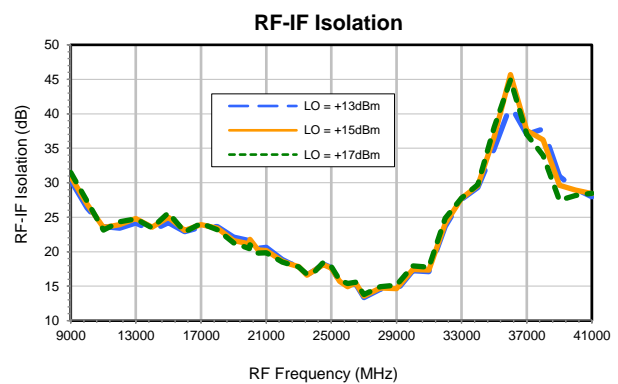
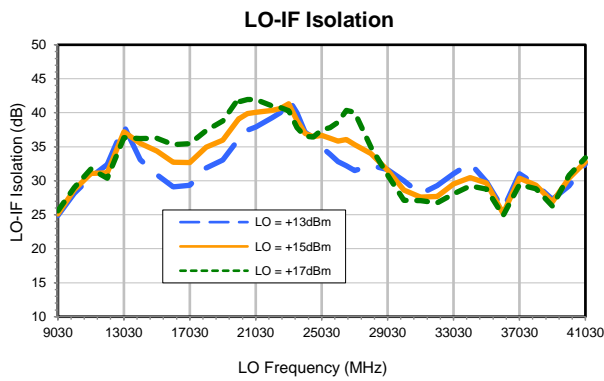
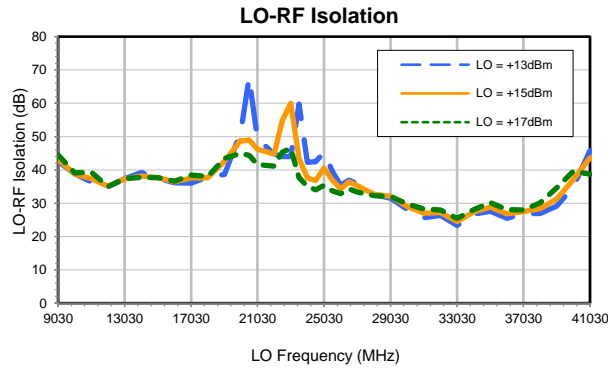
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Frequency Mixer

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Typical Performance Curves



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Harmonics Tables

RF HARMONICS ORDER

RF CAL Notes: 1. All Harmonics are relative to IF OUTPUT (dBm)
2. + entry denotes harmonics above IF OUTPUT (dBm)

	(-dBm)	(-dBc)											
0	---	-	(-dBc)	---	---	---	---	---	---	---	---	---	---
1	---	7.39	-	32.80	---	---	---	---	---	---	---	---	---
2	72.64	56.26	64.72	46.82	61.82	---	---	---	---	---	---	---	---
3	---	---	66.60	78.24	60.63	86.38	---	---	---	---	---	---	---
4	---	---	---	71.66	83.77	94.62	86.24	---	---	---	---	---	---
5	---	---	---	---	69.87	83.54	97.41	86.06	---	---	---	---	---
6	---	---	---	---	---	72.41	85.73	99.48	87.34	---	---	---	---
7	---	---	---	---	---	---	72.93	87.31	100.36	88.59	---	---	---
8	---	---	---	---	---	---	---	72.25	85.79	97.16	87.15	---	---
9	---	---	---	---	---	---	---	---	69.34	84.65	102.43	88.30	---
10	---	---	---	---	---	---	---	---	---	71.24	85.70	100.17	---
		0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 25000 MHz; 0.00 dBm.
LO IN: 25030 MHz; +15.00 dBm
IF OUT: 30.00 MHz; -11.60 dBm

RF HARMONICS ORDER

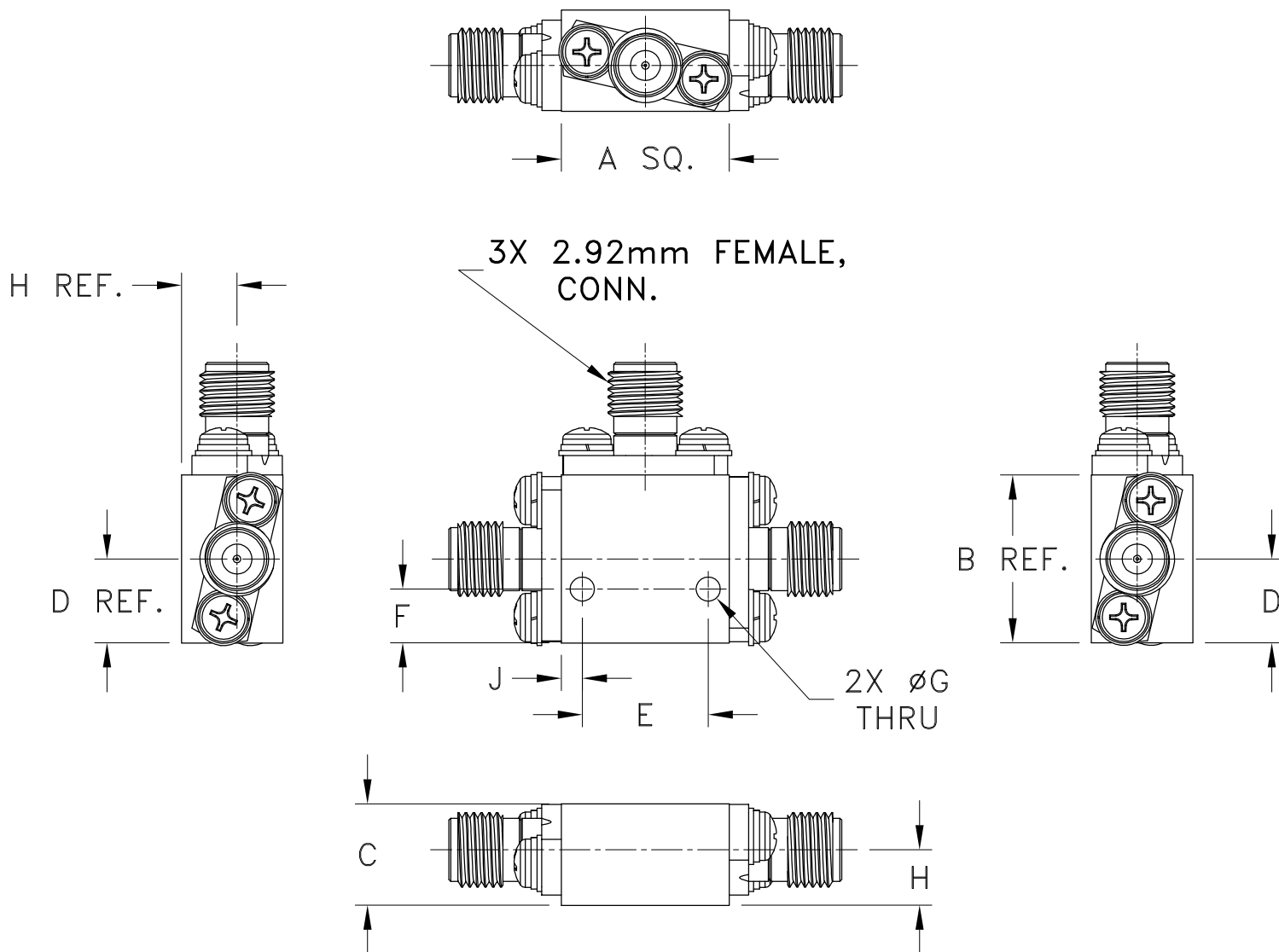
RF CAL Notes: 1. All Harmonics are relative to IF OUTPUT (dBm)
2. + entry denotes harmonics above IF OUTPUT (dBm)

	(-dBm)	(-dBc)											
0	---	-	19.09	---	---	---	---	---	---	---	---	---	---
1	---	6.83	-	32.03	---	---	---	---	---	---	---	---	---
2	63.05	46.23	52.68	36.70	51.52	---	---	---	---	---	---	---	---
3	---	---	45.21	57.90	40.42	64.21	---	---	---	---	---	---	---
4	---	---	---	70.32	85.31	67.96	69.04	---	---	---	---	---	---
5	---	---	---	---	70.65	85.46	62.06	85.51	---	---	---	---	---
6	---	---	---	---	---	70.64	87.70	83.19	86.24	---	---	---	---
7	---	---	---	---	---	---	71.39	86.95	78.90	87.96	---	---	---
8	---	---	---	---	---	---	---	71.72	83.74	90.74	86.75	---	---
9	---	---	---	---	---	---	---	---	71.87	87.89	90.09	87.76	---
10	---	---	---	---	---	---	---	---	---	72.22	86.41	99.99	---
		0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 25000 MHz; 10.0 dBm.
LO IN: 25030 MHz; +15.00 dBm
IF OUT: 30.00 MHz; -1.64 dBm





CASE#	A	B	C	D	E	F	G	H	J	WT. GRAMS
UK2938	.56 (14.2)	.56 (14.2)	.34 (8.6)	.28 (7.1)	.420 (10.67)	.18 (4.6)	.081 (2.06)	.19 (4.7)	.07 (1.8)	23.0

Dimensions are in inches (mm). Tolerances: 2 Pl.±.03; 3 Pl. ±.015

Notes:

1. Case material: Brass.
2. Case Finish: Gold plate.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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

RF/IF MICROWAVE COMPONENTS



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	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 85°C, 25 cycles	MIL-STD-202F: Method 107G