

Frequency Mixer

VAY-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+24dBm (dB)	
		@LO (dBm)				@LO (dBm)				@LO (dBm)	
		+24	+27			+24	+27			+24	+27
10.1	40.1	5.75	5.24	10.1	40.1	39.13	40.60	10.1	40.1	0.86	0.47
15.1	45.1	5.71	5.20	15.1	45.1	39.70	42.70	15.1	45.1	0.91	0.57
20.1	50.1	5.70	5.18	20.1	50.1	37.62	39.90	20.1	50.1	0.93	0.60
25.1	55.1	5.70	5.20	25.1	55.1	36.85	38.70	25.1	55.1	0.98	0.65
30.1	60.1	5.70	5.20	30.1	60.1	36.64	37.69	30.1	60.1	0.99	0.69
35.1	65.1	5.71	5.21	35.1	65.1	38.80	38.02	35.1	65.1	1.07	0.73
40.1	70.1	5.76	5.23	40.1	70.1	37.60	39.76	40.1	70.1	1.01	0.71
45.1	75.1	5.83	5.30	45.1	75.1	35.83	36.25	45.1	75.1	0.95	0.63
50.1	80.1	5.80	5.28	50.1	80.1	37.89	37.16	50.1	80.1	0.93	0.61
55.1	85.1	5.79	5.28	55.1	85.1	36.48	37.46	55.1	85.1	0.93	0.63
60.1	90.1	5.81	5.30	60.1	90.1	35.88	36.46	60.1	90.1	0.91	0.65
70.1	100.1	5.83	5.30	70.1	100.1	35.58	36.07	70.1	100.1	0.95	0.67
80.1	110.1	5.80	5.31	80.1	110.1	35.29	35.08	80.1	110.1	0.94	0.67
90.1	120.1	5.88	5.36	90.1	120.1	34.54	34.97	90.1	120.1	0.87	0.57
100.1	130.1	5.94	5.40	100.1	130.1	34.69	34.82	100.1	130.1	1.11	0.75
110.1	140.1	5.86	5.35	110.1	140.1	35.45	35.07	110.1	140.1	0.99	0.69
120.1	150.1	5.95	5.39	120.1	150.1	32.68	34.20	120.1	150.1	0.81	0.59
130.1	160.1	5.94	5.39	130.1	160.1	33.99	34.04	130.1	160.1	0.86	0.56
140.1	170.1	5.97	5.43	140.1	170.1	33.76	33.72	140.1	170.1	0.99	0.75
150.1	180.1	6.11	5.53	150.1	180.1	32.07	33.25	150.1	180.1	1.11	0.88
160.1	190.1	6.01	5.47	160.1	190.1	33.63	33.49	160.1	190.1	0.90	0.69
170.1	200.1	6.05	5.49	170.1	200.1	32.33	33.56	170.1	200.1	0.71	0.58
180.1	210.1	6.10	5.50	180.1	210.1	32.73	33.16	180.1	210.1	0.87	0.66
190.1	220.1	6.09	5.50	190.1	220.1	32.47	32.88	190.1	220.1	0.79	0.68
200.1	230.1	6.17	5.54	200.1	230.1	31.85	32.78	200.1	230.1	0.89	0.69
220.1	250.1	6.12	5.56	220.1	250.1	31.70	32.52	220.1	250.1	0.99	0.77
240.1	270.1	6.19	5.62	240.1	270.1	32.86	32.37	240.1	270.1	0.82	0.64
260.1	290.1	6.26	5.62	260.1	290.1	32.13	31.57	260.1	290.1	0.98	0.73
280.1	310.1	6.29	5.67	280.1	310.1	31.03	30.89	280.1	310.1	0.79	0.52
300.1	330.1	6.20	5.67	300.1	330.1	32.33	30.81	300.1	330.1	0.90	0.70
320.1	350.1	6.22	5.64	320.1	350.1	32.34	30.39	320.1	350.1	0.73	0.64
340.1	370.1	6.56	5.80	340.1	370.1	31.28	29.94	340.1	370.1	0.90	0.69
360.1	390.1	6.44	5.76	360.1	390.1	31.17	30.17	360.1	390.1	0.76	0.60
380.1	410.1	6.27	5.74	380.1	410.1	30.90	30.54	380.1	410.1	0.72	0.59
400.1	430.1	6.51	5.87	400.1	430.1	30.67	30.07	400.1	430.1	0.47	0.39
420.1	450.1	6.69	5.88	420.1	450.1	30.67	29.99	420.1	450.1	0.92	0.66
440.1	470.1	6.70	5.97	440.1	470.1	30.27	31.00	440.1	470.1	0.59	0.41
460.1	490.1	6.58	5.98	460.1	490.1	29.85	31.12	460.1	490.1	0.49	0.41
480.1	510.1	6.64	6.05	480.1	510.1	30.14	31.50	480.1	510.1	0.52	0.48
500.1	530.1	7.05	6.19	500.1	530.1	30.59	32.29	500.1	530.1	0.70	0.51

REV. X2
VAY-1+
100818
Page 1 of 5



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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+27			+27			+27
0.5	249.6	5.87	0.5	10.6	5.33	0.5	499.6	6.33
1.0	249.1	5.77	0.8	10.9	5.28	0.8	499.4	6.28
1.5	248.6	5.70	1.0	11.1	5.25	1.0	499.1	6.24
2.0	248.1	5.67	2.0	12.1	5.18	2.0	498.1	6.16
2.5	247.6	5.63	3.0	13.1	5.15	3.0	497.1	6.12
3.0	247.1	5.61	4.0	14.1	5.14	4.0	496.1	6.12
4.0	246.1	5.58	5.0	15.1	5.14	5.0	495.1	6.09
5.0	245.1	5.55	6.0	16.1	5.15	6.0	494.1	6.08
6.0	244.1	5.53	8.0	18.1	5.18	8.0	492.1	6.13
8.0	242.1	5.50	10.0	20.1	5.18	10.0	490.1	6.12
10.0	240.1	5.53	15.0	25.1	5.26	15.0	485.1	6.07
15.0	235.1	5.73	20.0	30.1	5.18	20.0	480.1	6.07
20.0	230.1	5.75	25.0	35.1	5.26	25.0	475.1	6.16
25.0	225.1	5.51	30.0	40.1	5.25	30.0	470.1	6.25
30.0	220.1	5.48	35.0	45.1	5.16	35.0	465.1	6.21
35.0	215.1	5.54	40.0	50.1	5.11	40.0	460.1	6.16
40.0	210.1	5.70	45.0	55.1	5.18	45.0	455.1	6.17
45.0	205.1	5.72	50.0	60.1	5.20	50.0	450.1	6.16
50.0	200.1	5.59	70.0	80.1	5.27	70.0	430.1	6.10
55.0	195.1	5.49	90.0	100.1	5.16	90.0	410.1	6.20
60.0	190.1	5.64	110.0	120.1	5.16	110.0	390.1	6.30
65.0	185.1	5.74	130.0	140.1	5.11	130.0	370.1	6.22
70.0	180.1	5.62	150.0	160.1	5.22	150.0	350.1	6.14
80.0	170.1	5.51	170.0	180.1	5.19	170.0	330.1	6.27
90.0	160.1	5.69	190.0	200.1	5.12	190.0	310.1	6.47
100.0	150.1	5.67	210.0	220.1	5.13	210.0	290.1	6.19
110.0	140.1	5.59	230.0	240.1	5.05	230.0	270.1	6.19
120.0	130.1	5.58	250.0	260.1	5.25	250.0	250.1	6.26
130.0	120.1	5.49	270.0	280.1	5.09	270.0	230.1	6.55
140.0	110.1	5.62	290.0	300.1	4.99	290.0	210.1	6.38
150.0	100.1	5.57	310.0	320.1	5.05	310.0	190.1	6.26
160.0	90.1	5.53	330.0	340.1	5.12	330.0	170.1	6.17
170.0	80.1	5.53	350.0	360.1	5.26	350.0	150.1	6.30
180.0	70.1	5.45	370.0	380.1	5.09	370.0	130.1	6.30
190.0	60.1	5.53	390.0	400.1	5.01	390.0	110.1	6.25
200.0	50.1	5.43	410.0	420.1	5.07	410.0	90.1	6.22
210.0	40.1	5.47	430.0	440.1	5.21	430.0	70.1	6.06
220.0	30.1	5.39	450.0	460.1	5.18	450.0	50.1	5.98
230.0	20.1	5.39	470.0	480.1	5.12	470.0	30.1	5.98
240.0	10.1	5.35	490.0	500.1	5.14	490.0	10.1	5.85

REV. X2
 VAY-1+
 100818
 Page 2 of 5



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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)	
	+24	+27	+24	+27			+24	+27
10.1	60.14	66.78	43.71	48.07	10.1	40.1	25.34	25.16
15.1	62.57	68.79	44.00	48.55	15.1	45.1	25.45	25.21
20.1	64.91	70.33	43.96	48.51	20.1	50.1	25.39	25.10
25.1	67.33	70.82	43.92	48.25	25.1	55.1	25.15	24.80
30.1	69.48	71.13	43.70	48.01	30.1	60.1	25.08	24.73
35.1	71.39	68.91	43.60	47.79	35.1	65.1	25.04	24.65
40.1	72.77	67.23	43.54	47.50	40.1	70.1	25.05	24.75
45.1	71.03	66.18	43.50	47.28	45.1	75.1	25.06	24.89
50.1	68.40	65.55	43.47	47.00	50.1	80.1	25.08	24.97
55.1	65.67	65.53	43.43	46.76	55.1	85.1	24.94	24.82
60.1	63.70	65.54	43.50	46.59	60.1	90.1	24.90	24.84
70.1	61.98	64.08	43.30	46.07	70.1	100.1	25.21	25.20
80.1	61.99	63.60	43.36	45.64	80.1	110.1	25.17	25.17
90.1	61.21	62.65	43.18	45.02	90.1	120.1	25.11	25.16
100.1	60.60	61.06	43.02	44.53	100.1	130.1	25.40	25.31
110.1	59.42	59.54	43.07	44.10	110.1	140.1	25.59	25.38
120.1	58.86	58.94	42.60	43.55	120.1	150.1	25.87	25.63
130.1	57.81	57.72	42.51	43.06	130.1	160.1	26.00	25.42
140.1	56.12	56.44	42.50	42.64	140.1	170.1	25.72	25.08
150.1	56.35	56.25	41.94	42.00	150.1	180.1	26.12	25.17
160.1	54.77	55.64	42.32	41.96	160.1	190.1	26.41	25.84
170.1	54.35	55.21	42.24	41.82	170.1	200.1	26.60	26.15
180.1	54.42	55.10	41.88	41.54	180.1	210.1	26.93	26.49
190.1	53.44	54.88	42.30	41.43	190.1	220.1	26.68	26.12
200.1	54.03	55.44	41.97	41.14	200.1	230.1	26.65	26.52
220.1	53.64	56.78	42.02	40.58	220.1	250.1	26.94	26.31
240.1	52.71	56.24	41.78	40.18	240.1	270.1	27.44	26.97
260.1	53.14	56.59	41.69	39.60	260.1	290.1	28.69	29.25
280.1	52.76	55.38	41.54	38.80	280.1	310.1	30.61	32.50
300.1	51.52	52.59	41.11	38.39	300.1	330.1	31.30	34.87
320.1	51.01	51.84	40.45	37.73	320.1	350.1	31.47	36.35
340.1	50.03	51.25	40.13	37.20	340.1	370.1	32.06	39.93
360.1	49.33	50.13	40.68	37.00	360.1	390.1	34.22	42.28
380.1	47.92	49.18	40.39	36.99	380.1	410.1	33.13	40.29
400.1	46.34	49.57	39.92	37.15	400.1	430.1	31.60	39.21
420.1	45.49	48.74	41.77	37.96	420.1	450.1	30.14	35.88
440.1	45.01	47.22	43.80	38.82	440.1	470.1	32.01	36.12
460.1	44.21	45.69	44.15	39.33	460.1	490.1	29.94	32.95
480.1	41.91	44.18	42.61	39.41	480.1	510.1	29.16	32.25
500.1	40.97	42.24	38.20	38.19	500.1	530.1	28.24	28.77



Frequency Mixer

VAY-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		LO (MHz)	LO VSWR (:1)		IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1)	
		@LO (dBm)			@LO (dBm)			@LO (dBm)	
		+24	+27		+24	+27		+24	+27
10.1	40.1	1.64	1.38	10.1	1.20	1.26	0.5	1.20	1.11
15.1	45.1	1.66	1.39	15.1	1.21	1.27	0.8	1.25	1.04
20.1	50.1	1.67	1.39	20.1	1.23	1.31	1.0	1.33	1.11
25.1	55.1	1.68	1.41	25.1	1.26	1.32	2.0	1.43	1.18
30.1	60.1	1.69	1.41	30.1	1.28	1.34	3.0	1.42	1.17
35.1	65.1	1.68	1.41	35.1	1.29	1.35	4.0	1.41	1.16
40.1	70.1	1.71	1.42	40.1	1.30	1.36	5.0	1.39	1.15
45.1	75.1	1.75	1.46	45.1	1.31	1.36	6.0	1.38	1.14
50.1	80.1	1.71	1.43	50.1	1.30	1.36	8.0	1.38	1.13
55.1	85.1	1.70	1.42	55.1	1.30	1.34	10.0	1.38	1.13
60.1	90.1	1.72	1.45	60.1	1.32	1.33	15.0	1.39	1.14
70.1	100.1	1.74	1.45	70.1	1.29	1.33	20.0	1.39	1.14
80.1	110.1	1.71	1.45	80.1	1.35	1.33	25.0	1.40	1.15
90.1	120.1	1.73	1.46	90.1	1.36	1.34	30.0	1.40	1.15
100.1	130.1	1.76	1.48	100.1	1.38	1.32	35.0	1.41	1.16
110.1	140.1	1.73	1.46	110.1	1.39	1.35	40.0	1.43	1.17
120.1	150.1	1.83	1.52	120.1	1.36	1.28	50.0	1.42	1.17
130.1	160.1	1.81	1.50	130.1	1.44	1.29	65.0	1.44	1.18
140.1	170.1	1.80	1.51	140.1	1.41	1.28	80.0	1.47	1.21
150.1	180.1	1.87	1.55	150.1	1.49	1.28	100.0	1.47	1.22
160.1	190.1	1.81	1.52	160.1	1.52	1.34	120.0	1.50	1.24
170.1	200.1	1.84	1.54	170.1	1.46	1.22	140.0	1.52	1.26
180.1	210.1	1.86	1.54	180.1	1.52	1.24	160.0	1.56	1.29
190.1	220.1	1.85	1.54	190.1	1.46	1.17	180.0	1.58	1.31
200.1	230.1	1.90	1.56	200.1	1.55	1.18	200.0	1.60	1.34
220.1	250.1	1.93	1.60	220.1	1.65	1.19	220.0	1.64	1.36
240.1	270.1	1.92	1.59	240.1	1.63	1.14	240.0	1.66	1.38
260.1	290.1	1.96	1.60	260.1	1.60	1.10	260.0	1.69	1.40
280.1	310.1	2.03	1.65	280.1	1.75	1.12	280.0	1.71	1.42
300.1	330.1	1.97	1.64	300.1	1.92	1.16	300.0	1.74	1.44
320.1	350.1	2.03	1.67	320.1	1.92	1.16	320.0	1.75	1.45
340.1	370.1	2.19	1.73	340.1	1.82	1.15	340.0	1.77	1.47
360.1	390.1	2.13	1.72	360.1	2.01	1.18	360.0	1.77	1.47
380.1	410.1	2.08	1.75	380.1	2.40	1.28	380.0	1.78	1.48
400.1	430.1	2.24	1.83	400.1	2.49	1.32	400.0	1.79	1.49
420.1	450.1	2.42	1.90	420.1	1.94	1.24	420.0	1.79	1.49
440.1	470.1	2.38	1.93	440.1	2.06	1.23	440.0	1.77	1.48
460.1	490.1	2.36	1.98	460.1	2.71	1.34	460.0	1.77	1.48
480.1	510.1	2.42	2.05	480.1	2.92	1.45	480.0	1.76	1.47
500.1	530.1	2.68	2.16	500.1	2.00	1.27	500.0	1.63	1.33

REV. X2
 VAY-1+
 100818
 Page 4 of 5



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	25	40	26	52	37	55	56	56	61	63
1	-	35	+0	46	13	42	29	41	38	46	36	59
2	74	59	51	65	51	64	52	57	61	78	50	72
3	91	57	39	54	39	59	52	59	40	51	42	52
4	109	70	59	82	65	72	63	80	61	71	69	77
5	>119	63	49	66	50	62	48	61	50	59	49	60
6	>119	78	64	84	60	75	64	72	64	75	63	81
7	>118	89	65	74	65	72	73	74	65	66	68	63
8	>120	80	78	81	72	79	67	77	69	78	69	78
9	>120	84	74	80	77	71	89	71	72	74	68	75
10	>119	86	82	103	81	94	75	86	74	86	76	86
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; 19.05.00 dBm.
 LO IN: 280.01 MHz; +26.9.00 dBm
 IF OUT: 29.91 MHz; 13.56 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	30	15	36	25	52	35	51	34	43
1	-	32	+0	46	13	39	27	34	26	36	25	46
2	88	66	49	61	50	65	48	65	57	60	51	58
3	102	56	53	55	52	57	51	59	49	64	50	63
4	>121	74	60	86	63	80	65	71	74	76	72	78
5	>122	74	70	65	65	68	66	67	63	66	74	75
6	>122	90	83	84	77	87	86	84	83	76	77	84
7	>121	85	81	79	76	75	78	78	80	75	88	76
8	>121	96	95	97	91	89	92	89	92	89	88	86
9	>122	94	97	94	95	87	89	85	89	87	93	86
10	>120	105	101	104	107	107	102	94	101	96	98	97
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; 9.00 dBm.
 LO IN: 280.01 MHz; +26.9.00 dBm
 IF OUT: 29.91 MHz; 3.39 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
 2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
 3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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Page 5 of 5



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