

# Frequency Mixer

# ADE-17H+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=60MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	70.1	10.94	10.41	10.28
70.1	130.1	8.45	7.93	7.72
130.1	190.1	8.01	7.55	7.38
190.1	250.1	7.97	7.56	7.40
250.1	310.1	7.73	7.42	7.29
310.1	370.1	7.77	7.45	7.27
370.1	430.1	7.74	7.47	7.31
430.1	490.1	7.72	7.43	7.25
490.1	550.1	7.80	7.44	7.24
550.1	610.1	7.81	7.45	7.25
610.1	670.1	7.90	7.52	7.30
670.1	730.1	7.93	7.60	7.42
730.1	790.1	7.85	7.51	7.33
790.1	850.1	7.89	7.55	7.36
850.1	910.1	7.93	7.59	7.39
910.1	970.1	7.95	7.60	7.42
950.1	1010.1	7.92	7.61	7.54
1010.1	1070.1	7.80	7.53	7.60
1050.1	1110.1	7.89	7.61	7.62
1110.1	1170.1	7.95	7.69	7.64
1150.1	1210.1	7.94	7.68	7.59
1210.1	1270.1	7.95	7.57	7.42
1250.1	1310.1	7.95	7.54	7.31
1310.1	1370.1	7.96	7.58	7.33
1350.1	1410.1	7.89	7.50	7.25
1410.1	1470.1	7.85	7.47	7.23
1450.1	1510.1	7.82	7.43	7.20
1510.1	1570.1	7.93	7.56	7.34
1550.1	1610.1	7.92	7.54	7.30
1610.1	1670.1	8.03	7.64	7.42
1650.1	1710.1	7.98	7.60	7.37
1710.1	1770.1	8.18	7.78	7.53
1750.1	1810.1	8.27	7.83	7.58
1810.1	1870.1	8.66	8.15	7.87
1850.1	1910.1	8.77	8.26	7.98
1910.1	1970.1	9.50	8.84	8.48
1950.1	2010.1	9.85	9.09	8.62
2010.1	2070.1	10.72	9.76	9.09
2050.1	2110.1	10.87	9.83	9.09
2110.1	2170.1	11.74	10.43	9.49

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.1	70.1	18.28	19.77	21.62
70.1	130.1	18.82	19.58	21.38
130.1	190.1	18.63	19.47	22.76
190.1	250.1	17.62	20.50	26.86
250.1	310.1	18.56	22.88	30.00
310.1	370.1	18.08	23.65	29.36
370.1	430.1	21.21	28.51	29.14
430.1	490.1	23.60	29.79	29.62
490.1	550.1	25.76	28.33	28.20
550.1	610.1	24.53	26.49	28.25
610.1	670.1	23.66	24.64	27.61
670.1	730.1	28.24	27.67	28.68
730.1	790.1	23.92	25.01	32.11
790.1	850.1	26.42	37.05	29.81
850.1	910.1	28.79	27.47	26.42
910.1	970.1	24.48	24.23	28.96
950.1	1010.1	25.40	24.45	21.45
1010.1	1070.1	24.49	21.76	24.01
1050.1	1110.1	21.50	21.44	23.62
1110.1	1170.1	19.86	25.32	23.59
1150.1	1210.1	19.32	23.41	25.05
1210.1	1270.1	22.22	22.22	20.04
1250.1	1310.1	20.82	26.98	21.61
1310.1	1370.1	22.74	29.25	27.82
1350.1	1410.1	23.65	27.54	27.03
1410.1	1470.1	24.39	27.76	27.19
1450.1	1510.1	26.29	26.80	29.13
1510.1	1570.1	25.14	26.53	29.25
1550.1	1610.1	24.68	27.10	29.69
1610.1	1670.1	24.43	27.82	28.01
1650.1	1710.1	24.45	27.02	26.23
1710.1	1770.1	22.90	23.29	23.16
1750.1	1810.1	21.18	21.19	21.34
1810.1	1870.1	20.11	19.83	20.21
1850.1	1910.1	19.10	18.86	19.24
1910.1	1970.1	18.29	19.19	19.79
1950.1	2010.1	17.13	18.86	20.36
2010.1	2070.1	16.51	18.36	20.85
2050.1	2110.1	16.15	18.45	21.00
2110.1	2170.1	15.38	18.12	21.10

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	70.1	0.91	0.64	0.36
70.1	130.1	0.98	0.46	0.24
130.1	190.1	1.12	0.49	0.24
190.1	250.1	1.15	0.53	0.27
250.1	310.1	1.16	0.48	0.22
310.1	370.1	1.21	0.53	0.29
370.1	430.1	1.16	0.46	0.24
430.1	490.1	1.20	0.54	0.32
490.1	550.1	1.14	0.56	0.35
550.1	610.1	1.16	0.57	0.39
610.1	670.1	1.04	0.51	0.39
670.1	730.1	1.15	0.52	0.35
730.1	790.1	1.15	0.57	0.46
790.1	850.1	1.27	0.59	0.53
850.1	910.1	1.17	0.55	0.57
910.1	970.1	1.35	0.68	0.64
950.1	1010.1	1.37	0.68	0.59
1010.1	1070.1	1.47	0.79	0.57
1050.1	1110.1	1.43	0.78	0.58
1110.1	1170.1	1.56	0.74	0.51
1150.1	1210.1	1.66	0.78	0.51
1210.1	1270.1	1.63	0.87	0.63
1250.1	1310.1	1.54	0.83	0.67
1310.1	1370.1	1.64	0.83	0.67
1350.1	1410.1	1.65	0.85	0.68
1410.1	1470.1	1.72	0.94	0.81
1450.1	1510.1	1.62	0.91	0.81
1510.1	1570.1	1.83	1.06	0.90
1550.1	1610.1	1.85	1.13	0.98
1610.1	1670.1	1.96	1.28	1.08
1650.1	1710.1	2.10	1.44	1.23
1710.1	1770.1	2.20	1.61	1.38
1750.1	1810.1	2.28	1.72	1.56
1810.1	1870.1	2.45	1.92	1.66
1850.1	1910.1	2.51	1.91	1.56
1910.1	1970.1	2.24	1.72	1.36
1950.1	2010.1	2.00	1.55	1.26
2010.1	2070.1	1.38	1.11	1.01
2050.1	2110.1	1.03	0.91	0.91
2110.1	2170.1	0.39	0.53	0.72

# Frequency Mixer

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## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=877.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=89.9MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1719.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
867.1	10.0	7.44	10.1	100.0	10.79	1692.1	27.0	7.49
847.1	30.0	6.74	110.1	200.0	7.60	1651.6	67.5	7.45
827.1	50.0	6.65	210.1	300.0	7.37	1611.1	108.0	7.43
807.1	70.0	6.69	310.1	400.0	7.27	1570.7	148.4	7.52
787.1	90.0	6.70	410.1	500.0	7.17	1530.2	188.9	7.50
767.1	110.0	6.68	510.1	600.0	7.09	1489.7	229.4	7.49
747.1	130.0	6.67	610.1	700.0	7.11	1449.2	269.9	7.52
727.1	150.0	6.67	710.1	800.0	7.07	1408.7	310.4	7.47
707.1	170.0	6.67	810.1	900.0	7.04	1368.2	350.9	7.47
687.1	190.0	6.69	910.1	1000.0	7.03	1327.8	391.3	7.47
667.1	210.0	6.68	1030.1	1120.0	7.08	1287.3	431.8	7.42
647.1	230.0	6.64	1130.1	1220.0	7.07	1246.8	472.3	7.57
627.1	250.0	6.64	1250.1	1340.0	7.00	1206.3	512.8	7.50
607.1	270.0	6.67	1350.1	1440.0	6.82	1165.8	553.3	7.50
587.1	290.0	6.72	1470.1	1560.0	6.82	1125.4	593.7	7.55
567.1	310.0	6.62	1570.1	1660.0	6.93	1084.9	634.2	7.54
547.1	330.0	6.67	1690.1	1780.0	6.92	1044.4	674.7	7.52
527.1	350.0	6.61	1790.1	1880.0	7.06	1003.9	715.2	7.40
507.1	370.0	6.65	1910.1	2000.0	7.52	963.4	755.7	7.30
487.1	390.0	6.67	2010.1	2100.0	8.10	922.9	796.2	7.25
467.1	410.0	6.59	2130.1	2220.0	8.77	882.5	836.6	7.16
447.1	430.0	6.51	2230.1	2320.0	8.79	842.0	877.1	7.25
427.1	450.0	6.47	2350.1	2440.0	8.74	801.5	917.6	7.25
407.1	470.0	6.60	2450.1	2540.0	8.45	761.0	958.1	7.32
387.1	490.0	6.71	2570.1	2660.0	7.70	720.5	998.6	7.36
367.1	510.0	6.65	2670.1	2760.0	7.67	680.1	1039.0	7.37
347.1	530.0	6.71	2790.1	2880.0	7.56	639.6	1079.5	7.34
327.1	550.0	6.78	2890.1	2980.0	7.27	599.1	1120.0	7.34
307.1	570.0	6.76	3010.1	3100.0	7.09	558.6	1160.5	7.45
287.1	590.0	6.84	3110.1	3200.0	7.00	518.1	1201.0	7.55
267.1	610.0	6.82	3230.1	3320.0	7.03	477.6	1241.5	7.45
247.1	630.0	6.84	3330.1	3420.0	7.03	416.9	1302.2	7.35
227.1	650.0	6.90	3450.1	3540.0	7.12	376.4	1342.7	7.27
207.1	670.0	6.88	3550.1	3640.0	7.36	315.7	1403.4	7.36
167.1	710.0	7.06	3670.1	3760.0	7.79	275.2	1443.9	7.33
147.1	730.0	7.14	3770.1	3860.0	8.29	214.5	1504.6	7.44
107.1	770.0	7.29	3890.1	3980.0	8.79	174.0	1545.1	7.49
87.1	790.0	7.38	3990.1	4080.0	9.34	113.3	1605.8	7.68
47.1	830.0	7.64	4110.1	4200.0	10.25	72.8	1646.3	7.86
27.1	850.0	7.99	4210.1	4300.0	10.93	12.1	1707.0	10.53



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# ADE-17H+

## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
70.1	26.55	28.97	31.26	25.93	28.05	30.20
130.1	28.95	31.80	34.74	28.37	31.03	33.84
190.1	29.62	32.42	35.53	29.03	31.72	34.78
250.1	29.79	33.32	36.50	29.54	33.00	36.61
310.1	30.82	34.53	37.11	30.45	34.19	37.95
370.1	30.79	34.58	36.06	30.70	34.99	38.38
430.1	32.02	35.43	35.49	32.28	36.79	38.83
490.1	33.63	35.75	34.76	34.11	38.14	38.83
550.1	34.40	35.53	33.84	35.54	39.09	38.18
610.1	35.12	34.93	32.97	36.46	39.18	37.23
670.1	35.66	34.33	32.09	37.65	38.77	36.20
730.1	35.78	33.49	31.12	38.82	38.20	35.44
790.1	35.51	32.80	30.68	40.09	37.87	35.12
850.1	35.25	32.34	30.43	41.10	37.68	35.03
910.1	35.81	32.28	30.08	41.80	37.73	35.12
970.1	35.67	32.06	29.95	42.89	38.47	35.80
1010.1	35.06	31.45	29.57	43.38	39.34	37.08
1070.1	34.78	31.97	29.74	41.60	39.54	35.85
1110.1	34.38	31.83	29.44	38.35	36.48	33.59
1170.1	32.96	31.10	28.97	35.58	34.66	32.27
1210.1	31.86	30.63	28.37	34.55	33.89	31.55
1270.1	30.66	30.13	29.00	33.30	32.52	31.58
1310.1	30.56	29.49	28.74	33.45	31.76	30.82
1370.1	31.55	29.87	28.60	33.80	31.70	30.38
1410.1	31.77	30.00	28.65	33.40	31.46	30.17
1470.1	31.58	29.82	28.55	33.01	31.12	30.04
1510.1	30.78	29.41	28.32	32.38	30.68	29.68
1570.1	29.92	29.17	28.16	32.25	30.84	29.81
1610.1	29.85	29.25	28.32	31.98	30.70	29.72
1670.1	29.39	29.11	28.57	31.75	30.47	29.56
1710.1	28.78	28.71	28.26	31.81	30.66	29.68
1770.1	29.12	29.39	29.20	31.90	30.92	30.05
1810.1	29.57	29.83	29.96	32.07	31.04	30.45
1870.1	30.09	30.62	30.85	32.21	31.46	30.89
1910.1	30.08	30.57	30.94	32.35	31.74	31.36
1970.1	30.88	31.17	31.54	32.70	32.26	32.09
2010.1	31.05	31.12	31.23	33.38	32.88	32.57
2070.1	31.18	31.18	31.23	34.21	33.76	33.50
2110.1	30.63	30.62	30.57	34.48	34.23	34.00
2170.1	29.94	30.03	29.87	34.98	34.77	34.41

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	70.1	17.79	20.41	22.25
70.1	130.1	28.38	31.09	33.83
130.1	190.1	29.70	32.66	34.87
190.1	250.1	31.57	34.46	36.99
250.1	310.1	33.10	35.39	37.19
310.1	370.1	34.26	35.76	37.51
370.1	430.1	35.21	37.31	38.52
430.1	490.1	35.73	37.92	41.14
490.1	550.1	36.81	38.49	41.29
550.1	610.1	40.66	43.46	45.63
610.1	670.1	42.64	42.45	41.15
670.1	730.1	37.98	37.17	35.12
730.1	790.1	40.31	38.13	36.39
790.1	850.1	38.81	35.95	33.95
850.1	910.1	36.07	32.73	30.69
910.1	970.1	34.55	31.07	29.52
950.1	1010.1	33.74	29.69	26.89
1010.1	1070.1	34.02	29.78	24.98
1050.1	1110.1	35.83	31.73	26.37
1110.1	1170.1	38.20	34.47	27.26
1150.1	1210.1	38.53	34.59	26.79
1210.1	1270.1	41.25	37.70	27.10
1250.1	1310.1	41.47	38.93	30.58
1310.1	1370.1	40.30	38.21	32.99
1350.1	1410.1	38.97	37.20	32.91
1410.1	1470.1	36.36	34.67	32.17
1450.1	1510.1	35.65	33.90	32.20
1510.1	1570.1	36.90	35.34	35.44
1550.1	1610.1	37.57	36.19	37.00
1610.1	1670.1	37.58	35.94	36.05
1650.1	1710.1	37.20	35.78	35.03
1710.1	1770.1	36.37	34.23	32.39
1750.1	1810.1	35.33	32.70	31.10
1810.1	1870.1	34.20	31.98	30.42
1850.1	1910.1	32.23	31.03	30.37
1910.1	1970.1	29.37	29.13	29.76
1950.1	2010.1	28.53	28.43	29.25
2010.1	2070.1	28.33	28.57	29.16
2050.1	2110.1	28.61	29.12	29.74
2110.1	2170.1	29.34	29.94	30.32



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# ADE-17H+

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+14	+17	+20
10.1	70.1	4.01	3.90	4.00
70.1	130.1	1.40	1.53	1.59
130.1	190.1	1.22	1.31	1.35
190.1	250.1	1.12	1.21	1.26
250.1	310.1	1.10	1.18	1.24
310.1	370.1	1.06	1.13	1.19
370.1	430.1	1.11	1.17	1.24
430.1	490.1	1.13	1.17	1.23
490.1	550.1	1.19	1.21	1.26
550.1	610.1	1.24	1.26	1.30
610.1	670.1	1.28	1.29	1.33
670.1	730.1	1.32	1.33	1.37
730.1	790.1	1.36	1.36	1.39
790.1	850.1	1.39	1.40	1.43
850.1	910.1	1.46	1.47	1.50
910.1	970.1	1.47	1.47	1.52
950.1	1010.1	1.51	1.52	1.58
1010.1	1070.1	1.49	1.52	1.65
1050.1	1110.1	1.53	1.55	1.66
1110.1	1170.1	1.49	1.49	1.59
1150.1	1210.1	1.50	1.49	1.60
1210.1	1270.1	1.47	1.47	1.55
1250.1	1310.1	1.51	1.50	1.55
1310.1	1370.1	1.56	1.54	1.54
1350.1	1410.1	1.64	1.60	1.59
1410.1	1470.1	1.72	1.65	1.61
1450.1	1510.1	1.79	1.70	1.65
1510.1	1570.1	1.83	1.72	1.65
1550.1	1610.1	1.82	1.70	1.62
1610.1	1670.1	1.79	1.66	1.58
1650.1	1710.1	1.77	1.64	1.55
1710.1	1770.1	1.73	1.60	1.52
1750.1	1810.1	1.76	1.62	1.54
1810.1	1870.1	1.79	1.65	1.58
1850.1	1910.1	1.87	1.73	1.66
1910.1	1970.1	2.04	1.91	1.84
1950.1	2010.1	2.25	2.10	2.02
2010.1	2070.1	2.46	2.30	2.20
2050.1	2110.1	2.67	2.50	2.39
2110.1	2170.1	2.84	2.65	2.52

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+14	+17	+20
70.1	1.45	1.80	2.48
130.1	1.30	1.74	2.52
190.1	1.23	1.64	2.35
250.1	1.20	1.67	2.43
310.1	1.17	1.66	2.42
370.1	1.17	1.66	2.40
430.1	1.13	1.70	2.48
490.1	1.16	1.73	2.50
550.1	1.15	1.75	2.51
610.1	1.18	1.82	2.60
670.1	1.21	1.84	2.60
730.1	1.24	1.88	2.66
790.1	1.28	1.93	2.72
850.1	1.31	1.95	2.71
910.1	1.36	2.02	2.80
970.1	1.41	2.05	2.82
1010.1	1.46	2.11	2.90
1070.1	1.48	2.12	2.87
1110.1	1.54	2.17	2.92
1170.1	1.54	2.17	2.89
1210.1	1.54	2.20	2.94
1270.1	1.53	2.15	2.90
1310.1	1.54	2.17	2.93
1370.1	1.58	2.17	2.88
1410.1	1.62	2.21	2.95
1470.1	1.68	2.22	2.92
1510.1	1.75	2.30	3.00
1570.1	1.80	2.31	2.97
1610.1	1.86	2.37	3.06
1670.1	1.93	2.39	3.04
1710.1	2.00	2.47	3.15
1770.1	2.05	2.48	3.11
1810.1	2.13	2.56	3.21
1870.1	2.20	2.56	3.18
1910.1	2.28	2.65	3.29
1970.1	2.35	2.65	3.24
2010.1	2.46	2.78	3.38
2070.1	2.50	2.77	3.34
2110.1	2.58	2.88	3.48
2170.1	2.60	2.84	3.40

IF (OUT) (MHz)	IF VSWR @LO=1700MHz (:1)		
	@LO (dBm)		
	+14	+17	+20
10.0	5.61	5.47	5.30
50.5	1.58	1.61	1.64
91.0	1.34	1.37	1.42
131.5	1.28	1.33	1.39
172.0	1.22	1.25	1.31
212.5	1.17	1.22	1.28
253.0	1.15	1.20	1.26
293.5	1.10	1.13	1.20
334.1	1.10	1.13	1.21
374.6	1.08	1.08	1.15
415.1	1.07	1.06	1.15
455.6	1.07	1.05	1.14
496.1	1.08	1.02	1.12
536.6	1.08	1.06	1.15
577.1	1.11	1.07	1.14
617.6	1.15	1.11	1.16
658.1	1.17	1.13	1.17
698.6	1.20	1.16	1.19
739.1	1.24	1.20	1.23
779.6	1.25	1.20	1.22
820.1	1.31	1.26	1.28
860.6	1.31	1.27	1.29
901.1	1.36	1.29	1.30
941.6	1.41	1.36	1.37
982.2	1.39	1.32	1.33
1022.7	1.47	1.41	1.41
1063.2	1.45	1.38	1.38
1103.7	1.49	1.41	1.40
1144.2	1.53	1.46	1.45
1184.7	1.51	1.42	1.40
1225.2	1.61	1.51	1.49
1265.7	1.56	1.46	1.44
1306.2	1.63	1.52	1.48
1346.7	1.64	1.53	1.48
1387.2	1.62	1.50	1.45
1427.7	1.69	1.56	1.49
1468.2	1.65	1.52	1.46
1508.7	1.70	1.54	1.46
1549.2	1.70	1.55	1.47
1610.0	1.68	1.52	1.44

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	13	9	23	17	25	25	38	35	35	52
1	-	23	+0	26	12	39	25	39	31	47	44	47
2	64	55	45	61	44	56	50	46	43	53	57	58
3	>90	56	58	55	62	56	61	60	53	57	68	68
4	>90	74	73	73	70	73	67	75	72	73	64	78
5	>90	>81	>81	>81	>81	80	81	80	>81	>81	80	78
6	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
7	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
8	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
9	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
10	>90	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81	>81
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 900 MHz; -1.00 dBm.  
 LO IN: 960 MHz; +17.00 dBm  
 IF OUT: 60 MHz; -8.65 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	25	19	36	32	37	42	52	54	50	46
1	-	26	+0	30	12	46	29	45	39	54	50	56
2	44	51	35	50	37	56	41	44	45	53	63	55
3	69	51	40	47	41	45	44	55	40	54	53	70
4	>90	68	62	60	61	57	53	59	51	59	50	65
5	>90	56	54	58	54	57	57	55	57	63	54	63
6	>90	67	63	67	61	69	71	64	60	66	62	65
7	>90	70	77	76	72	69	67	73	66	61	71	62
8	>90	80	88	67	66	74	66	88	76	75	88	66
9	>90	75	72	77	67	70	62	71	61	66	72	66
10	>90	63	75	66	79	58	65	62	66	60	64	71
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 900 MHz; 9.00 dBm.  
 LO IN: 960 MHz; +17.00 dBm  
 IF OUT: 60 MHz; 1.31 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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 ADE-17H+  
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