


REPLACEMENT PART REFERENCE GUIDE, TVA-11-422A+

Replacement Part has been judged by Mini-Circuits Engineering as a suitable replacement to Original Part.

ORIGINAL PART:	TVA-11-422A+	
REPLACEMENT PART:	ZHL-10M4G21W2+	

MECHANICAL DIMENSIONS

Case Style: PJ2059-1

Replacement part uses same case style as original part.

CONCLUSION:

1) **FORM-FIT-FUNCTIONAL ANALYSIS_a:**

The Replacement Part is Form, Fit compatible.

Following is a summary of changes/improvements in the electrical specification:

Parameter	Original Part TVA-11-422A+	Replacement Part ZHL-10M4G21W2+
Gain	35 dB Min	38 dB Min
Gain Flatness	-	±2.1 Max
Output Power at P1dB Compression	+28 dBm Min @ 10-4200 MHz	+28 dBm Min @ 10-3600 MHz +27 dBm Min @ 3600-4200 MHz
Input VSWR (:1)	-	3.0 Max
Output VSWR (:1)	-	3.0 Max
AC Supply Voltage	265 V Max	264 V Max
RF Input Power	-9 dBm Max	0 dBm Max

For typical performance and graphs: See paragraphs 2 and 3

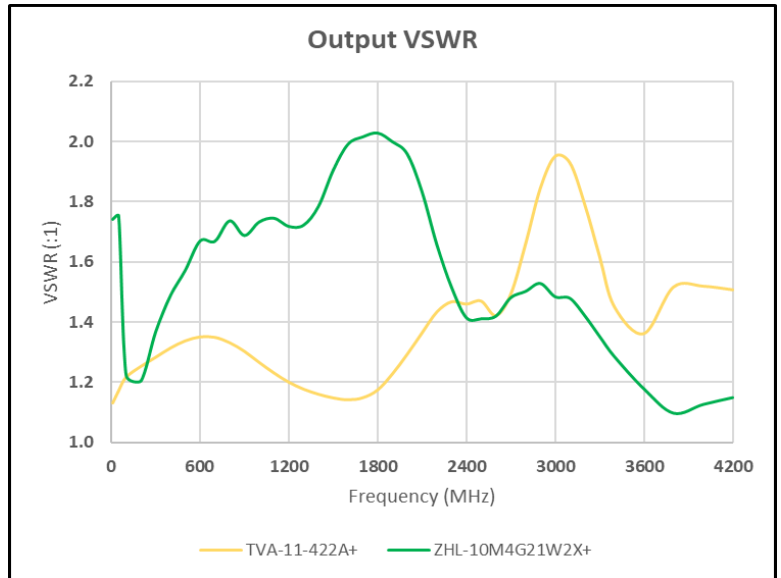
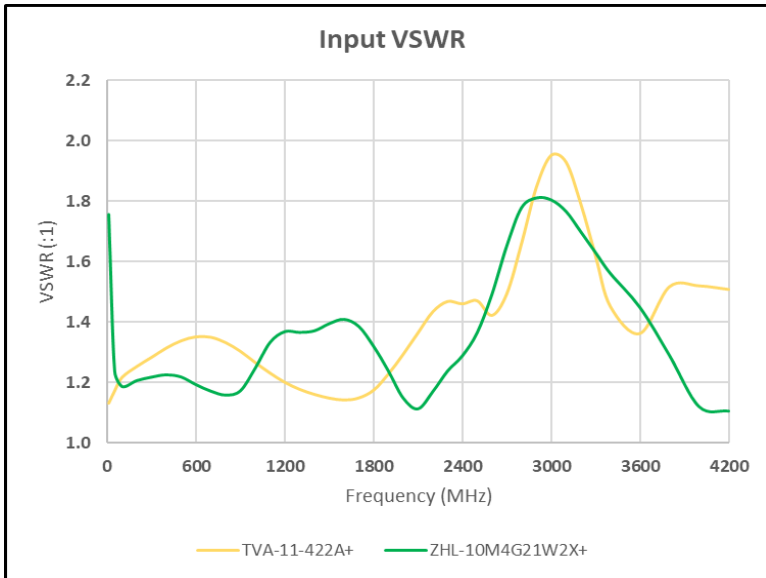
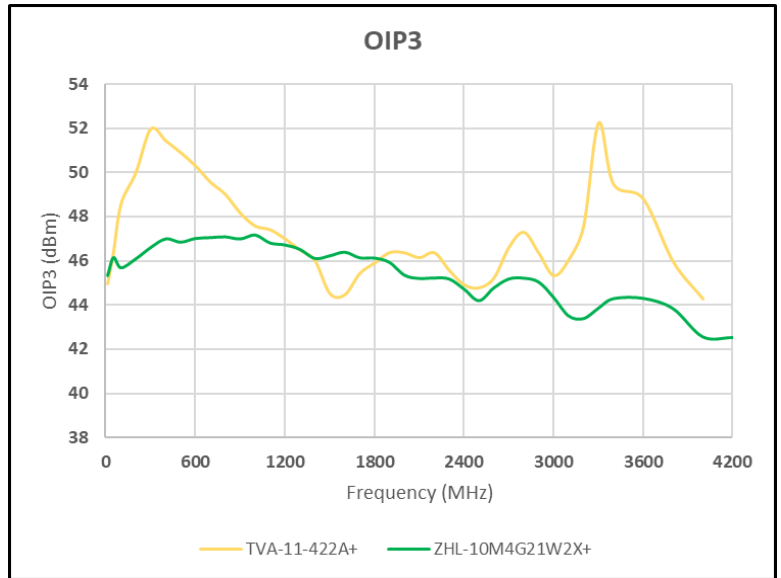
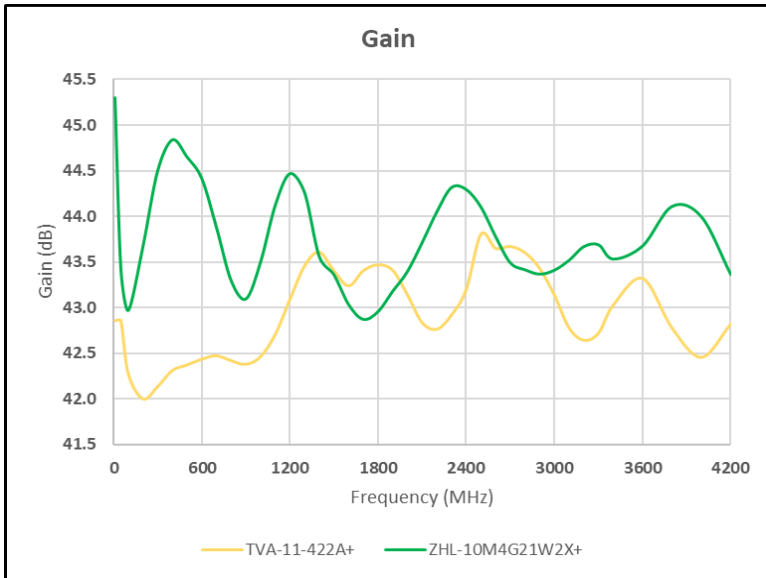
2) TYPICAL PERFORMANCE COMPARISON AT ROOM TEMPERATURE:

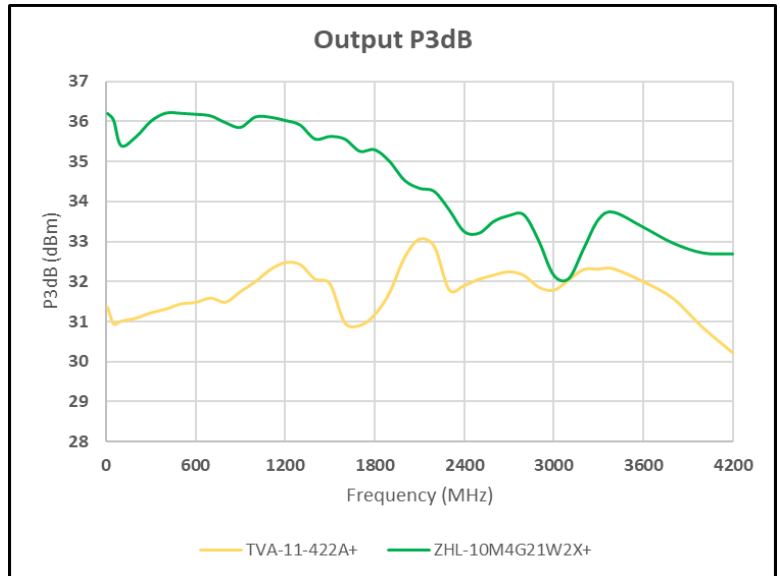
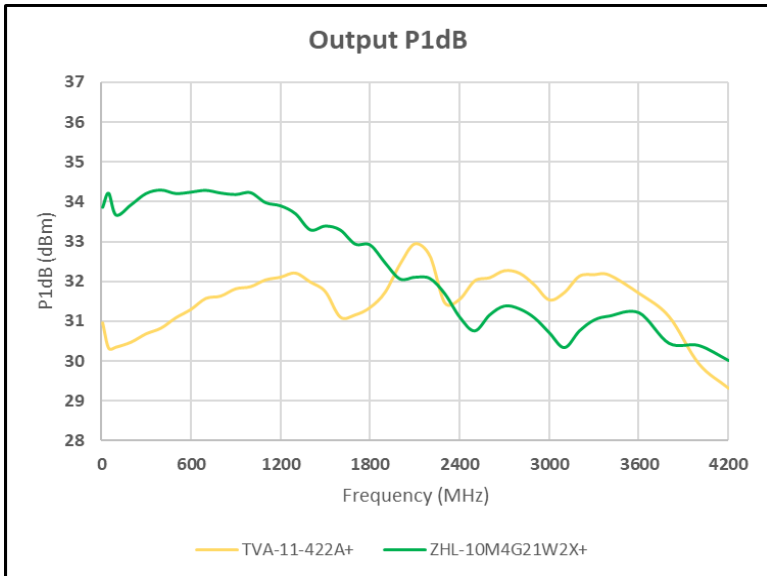
MODEL: TVA-11-422A+ (Original), ZHL-10M4G21W2+ (Replacement) (RF Parameters)

Parameter	Frequency MHz		Original Design @ 15 Units TVA-11-422A+			Replacement Design @ 5 Units ZHL-10M4G21W2+		
	From	To	Min	Avg	Max	Min	Avg	Max
Gain (dB)	10	4200	41.82	42.92	44.20	41.66	43.80	46.59
Gain Flatness (dB)	10	4200	0.80	0.99	1.12	0.98	1.30	1.71
P1dB (dBm)	10	4200	28.85	31.44	33.30	28.45	32.80	36.03
P3dB (dBm)	10	4200	29.81	31.72	33.33	31.60	34.84	37.23
OIP3 Lower Sideband (dBm)	11.0001	4200	41.54	47.09	61.45	42.51	45.97	47.92
OIP3 Upper Sideband (dBm)	11.0001	4200	41.94	49.85	67.81	42.20	45.69	51.05
OIP3 Worse of Upper/Lower (dBm)	11.0001	4200	41.54	47.09	61.45	42.20	45.69	47.92
Input Return Loss (dB)	10	4200	9.00	17.12	27.68	8.14	18.56	30.81
Output Return Loss (dB)	10	4200	8.40	13.69	31.22	8.33	15.26	55.89
Input VSWR (:1)	10	4200	1.09	1.38	2.10	1.06	1.32	2.29
Output VSWR (:1)	10	4200	1.09	1.38	2.10	1.00	1.53	2.24

Note: Data summary above is based on measured data for the connectorized modules (ZHL-4240WX+ and ZHL-10M4G21W1X+). One can expect similar performance between the connectorized modules and respective rack mount units (TVA-11-422A+ and ZHL-10M4G21W2+).

3) TYPICAL PERFORMANCE GRAPHS AT ROOM TEMPERATURE:





Note: Graphs above are based on measured data for the connectorized modules (ZHL-4240WX+ and ZHL-10M4G21W1X+). One can expect similar performance between the connectorized modules and respective rack mount units (TVA-11-422A+ and ZHL-10M4G21W2+).

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