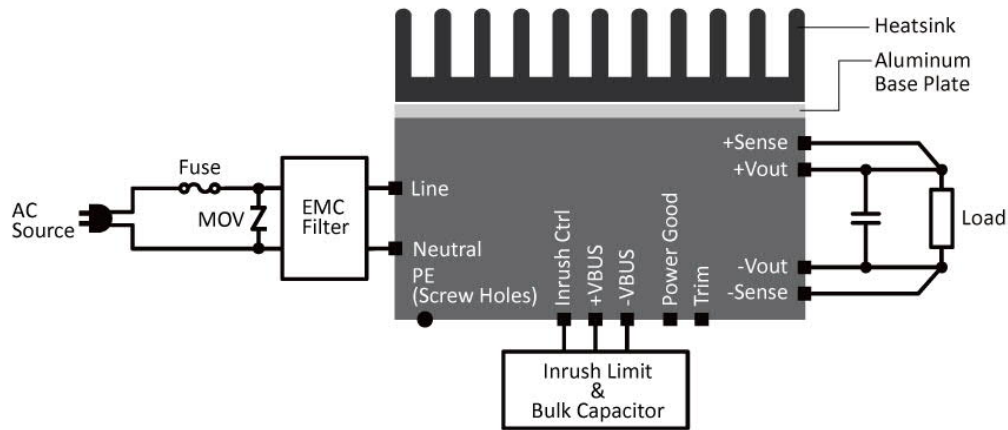


1 TYPICAL APPLICATION

- Below shows some blocks connected between AC source and AC/DC module. Install the circuit of the block which is required.



TBF500 Typical Application

Fig. 1-1 Typical Application

2 EMC CONSIDERATIONS

- The module can meet EMC requirements as below.

Parameter	Conditions		Level	
EMI	EN55032 and FCC Part 15	With external components	Conducted	Class B
			Radiated	Class A
Harmonic currents	EN61000-3-2	Full Load		Class D
Voltage flicker	EN61000-3-3			
EMS	EN55035			
ESD	EN61000-4-2	Air $\pm 8\text{kV}$ and Contact $\pm 6\text{kV}$		Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m		Perf. Criteria A
Fast transient	EN61000-4-4	$\pm 2\text{kV}$		Perf. Criteria A
		With external components		
Surge	EN61000-4-5	DM $\pm 1\text{kV}$ and CM $\pm 2\text{kV}$		Perf. Criteria A
		With external components		
Conducted immunity	EN61000-4-6	10 Vr.m.s		Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	30 A/m		Perf. Criteria A

Table 2-1 EMC requirements

2 EMC CONSIDERATIONS (CONTINUED)

Recommended external EMC filter

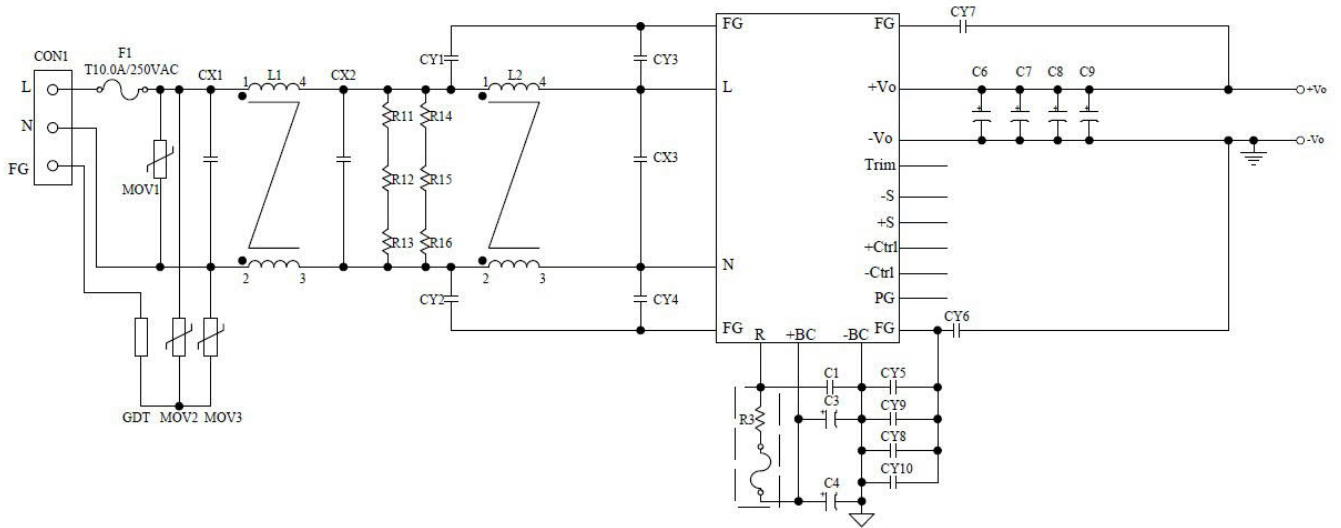
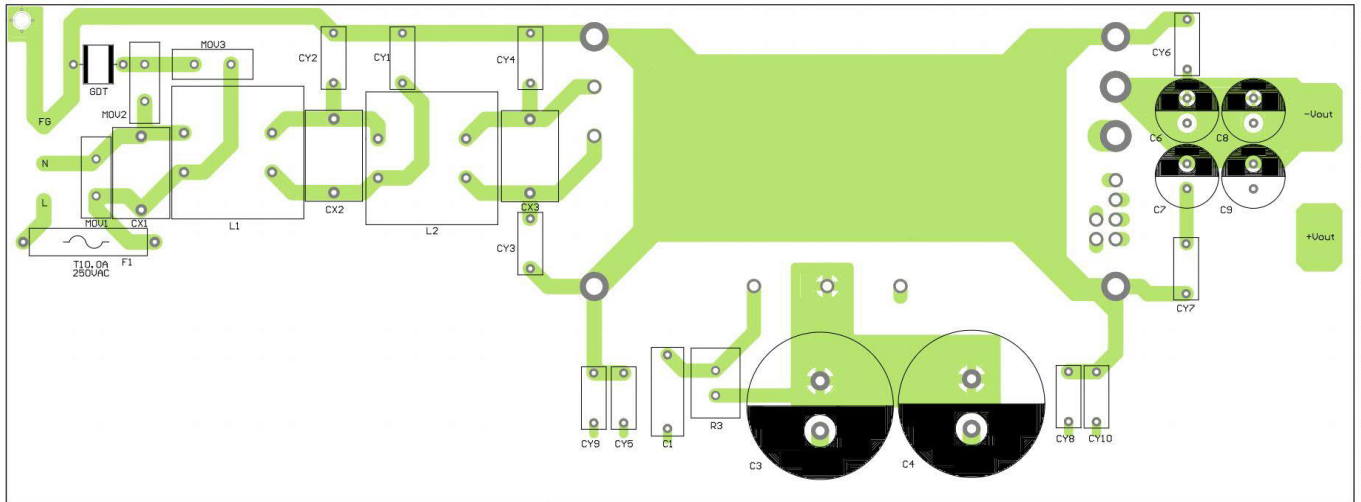


Fig. 2-1 Recommended EMC Filter

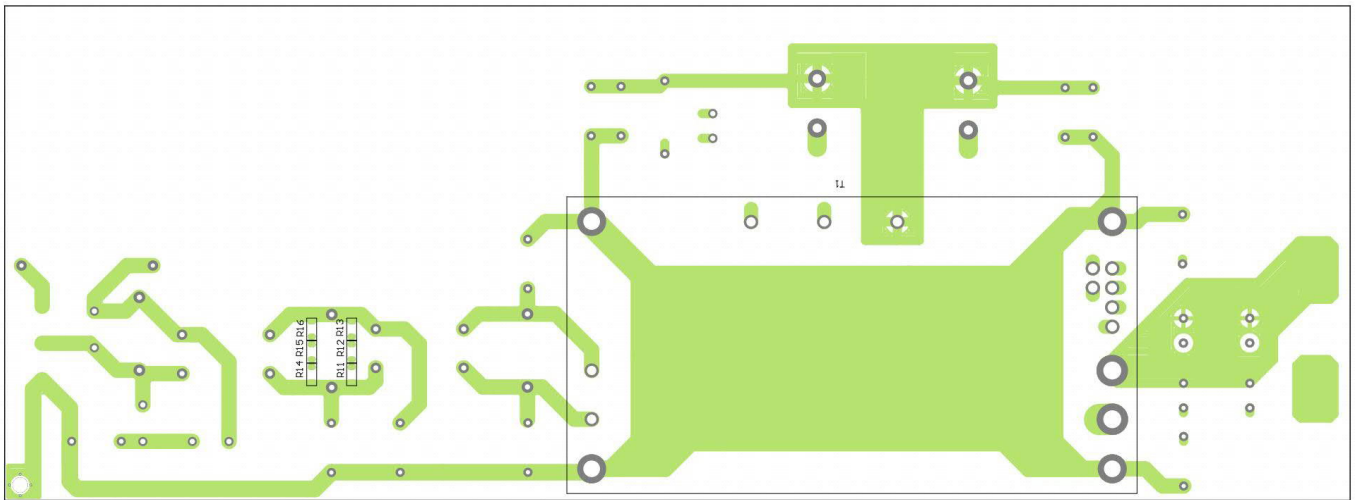
SYMBOL	TBF500US12	TBF500US24	TBF500US28	TBF500US48	TBF500US54
C6、C7、C8、C9	2200uF/16V (Rubycon ZLH series)	470uF/50V (Rubycon ZLH series)	470uF/50V (Rubycon ZLH series)	180uF/80V (Rubycon ZLH series)	180uF/80V (Rubycon ZLH series)
F1	10A/ 250VAC (Littelfuse 215 series)				
MOV1	Φ14/ 470V (Thinking TVR series)				
CX1、CX2、CX3	0.68μF/ 305VAC (Hua Jung MKP series)				
L1、L2	6.9mH MIN. (T22*14*10C/ A10/ 32Ts)				
C3、C4	270μF/ 450VDC (Rubycon VXH series)				
CY1、CY2、CY6、CY7	2200pF/ 250VAC (TDK CD series)				
CY3、CY4	220pF/ 250VAC (TDK CD series)				
CY9、CY10	470pF/ 250VAC (TDK CD series)				
CY5、CY8	680pF/ 250VAC (TDK CD series)				
CY3、CY4、CY9、CY10 (FG)	BEAD CORE (King CORE K5B RH3.5*4*1.2)				
R3	Thermal Fuse Resistor 12Ω/ 130℃/ 5W (TZAI YUAN FSQM series)				
C1	1μF / 450VDC (Nitsuko FPS series)				

Table 2-2 B.O.M. of External EMI Filter

2 EMC CONSIDERATIONS (CONTINUED)



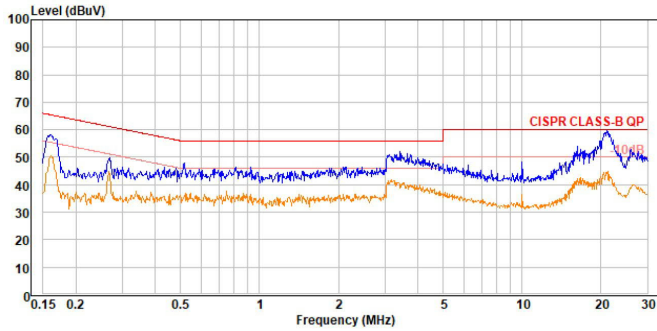
TOP VIEW



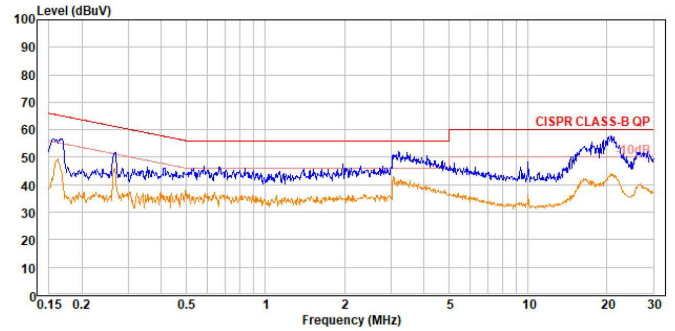
BOTTOM VIEW

Fig. 2-2 Recommended Layout Pattern

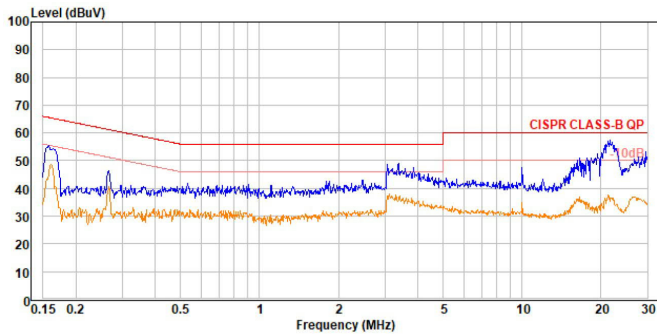
3 EMI TEST RESULTS



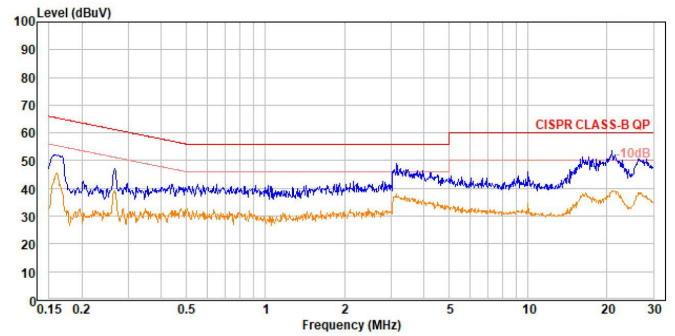
TBF500US12
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; LINE



TBF500US12
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; LINE

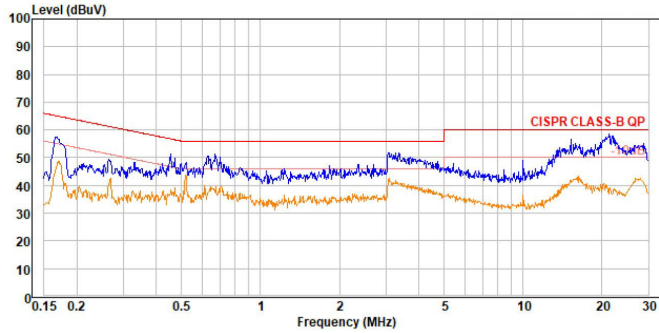


TBF500US12
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; NEUTRAL

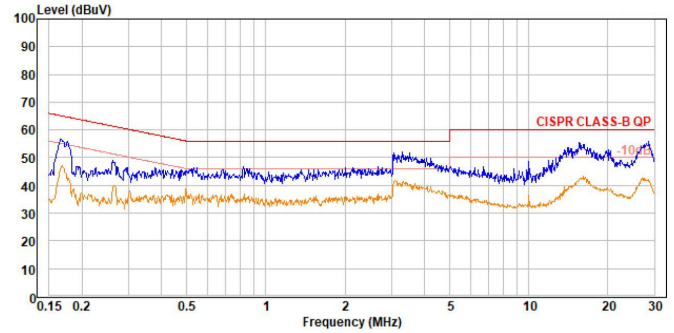


TBF500US12
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; NEUTRAL

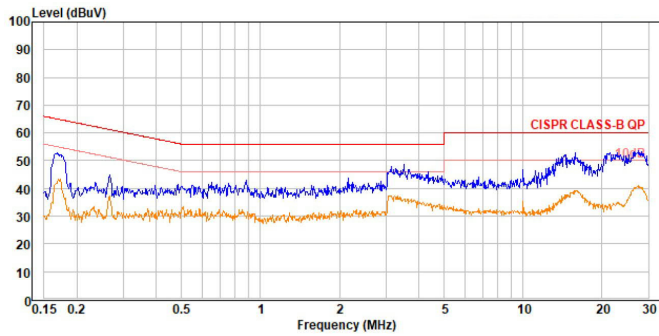
3 EMI TEST RESULTS (CONTINUED)



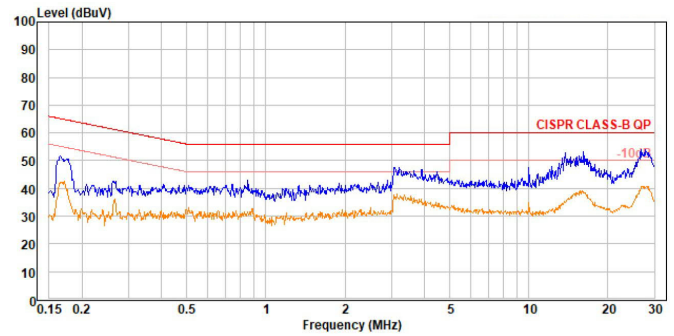
TBF500US24
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; LINE



TBF500US24
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; LINE

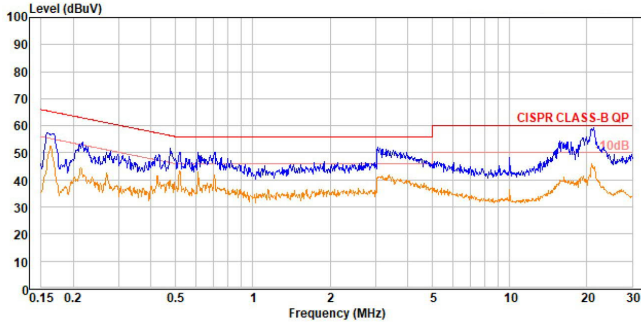


TBF500US24
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; NEUTRAL

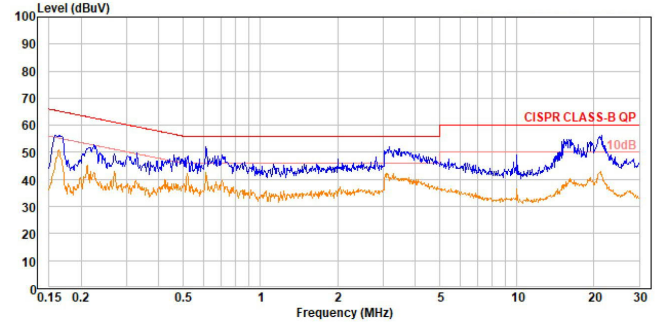


TBF500US24
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; NEUTRAL

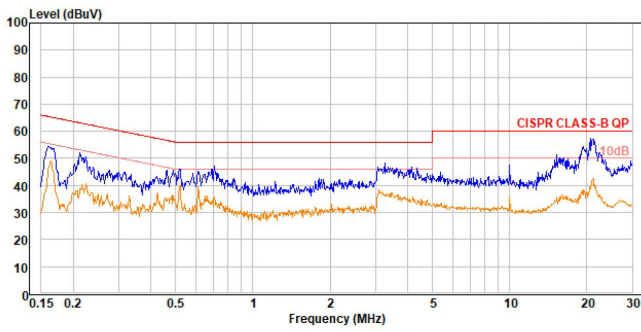
3 EMI TEST RESULTS (CONTINUED)



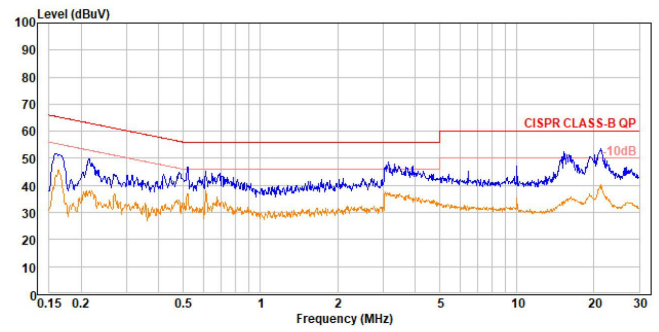
TBF500US28
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; LINE



TBF500US28
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; LINE

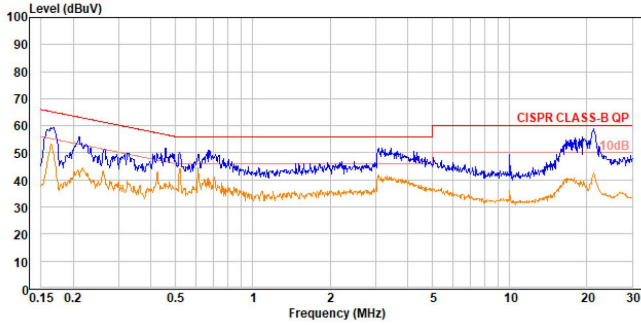


TBF500US28
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; NEUTRAL

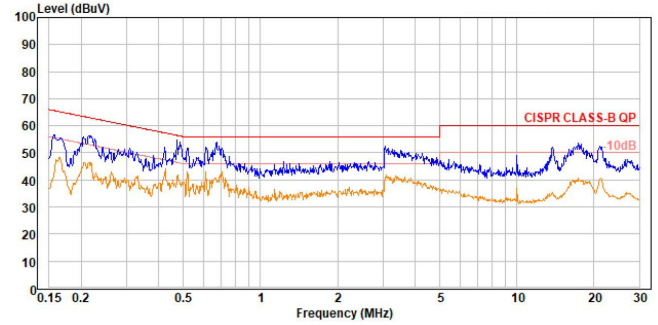


TBF500US28
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; NEUTRAL

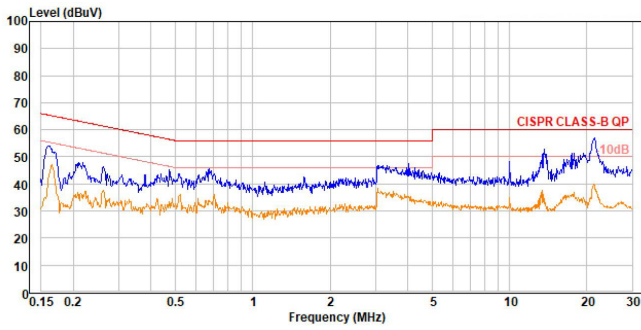
3 EMI TEST RESULTS (CONTINUED)



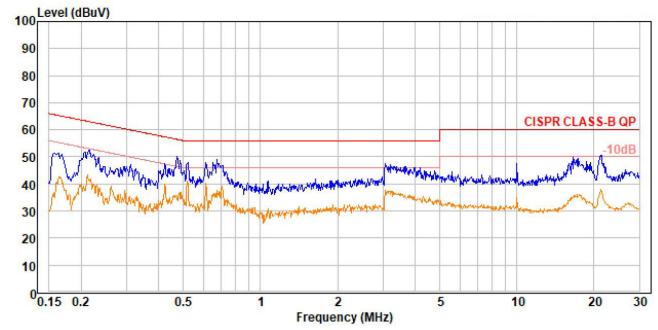
TBF500US48
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; LINE



TBF500US48
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; LINE

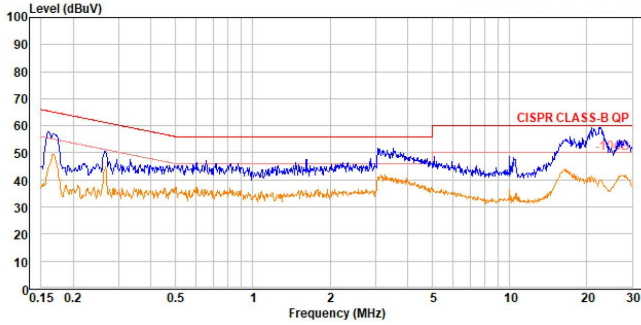


TBF500US48
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; NEUTRAL

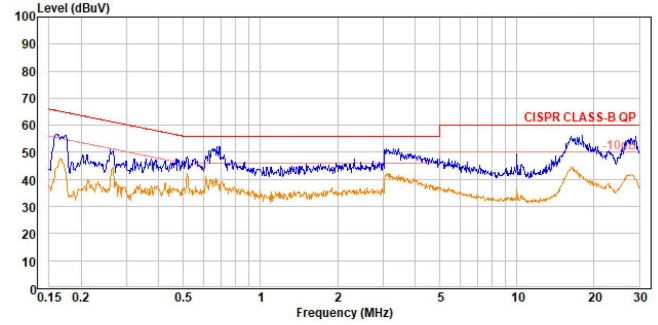


TBF500US48
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; NEUTRAL

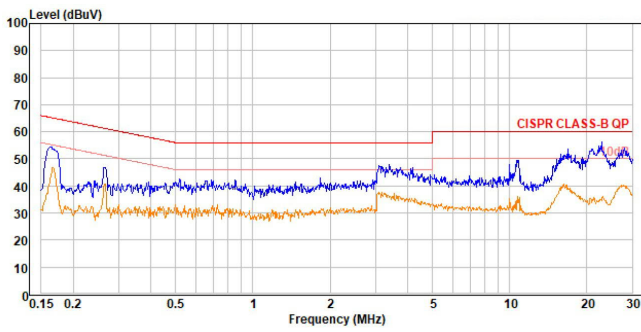
3 EMI TEST RESULTS (CONTINUED)



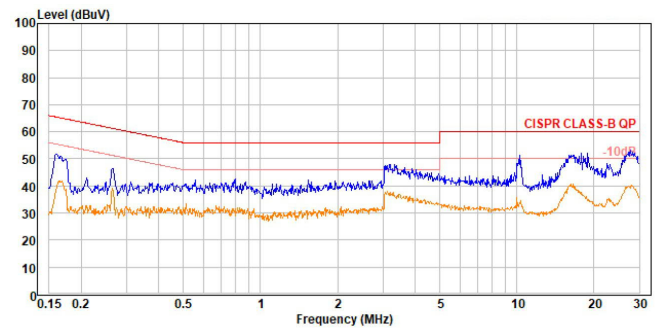
TBF500US54
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; LINE



TBF500US54
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; LINE



TBF500US54
Conduction Emission of EN55032 Class B
Vin=115VAC; Full Load; NEUTRAL



TBF500US54
Conduction Emission of EN55032 Class B
Vin=230VAC; Full Load; NEUTRAL