

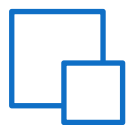
BDL滤波器在车载电机上的应用



汽车直流电机成功应用

TOP-EMC





有刷电机的架构

TOP-EMC



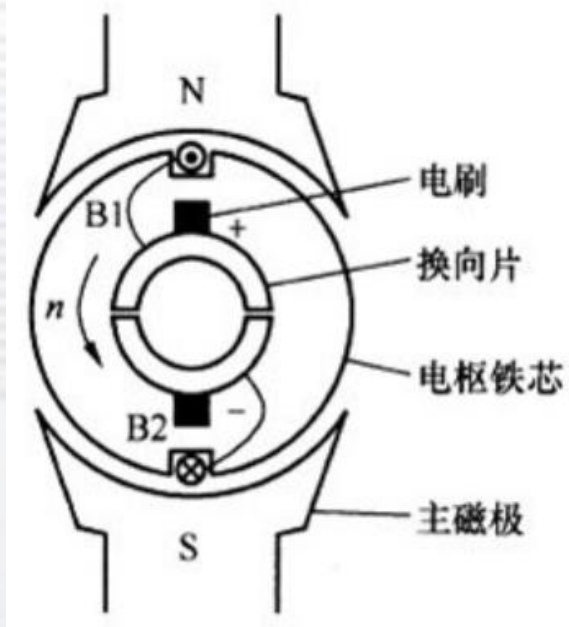
转子

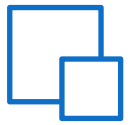


定子和外壳



电刷



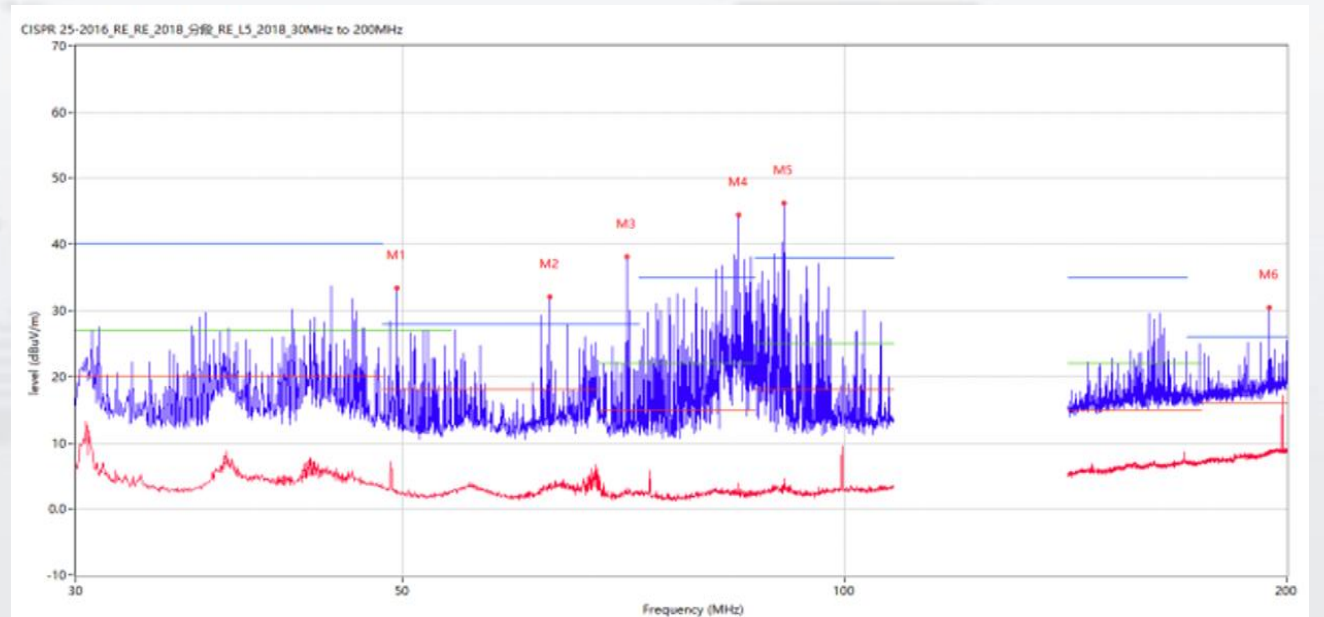


有刷电机的EMI来自哪里？



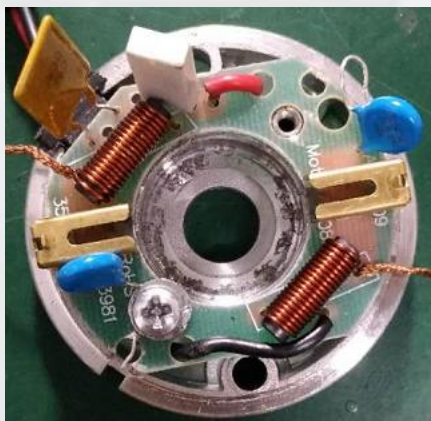
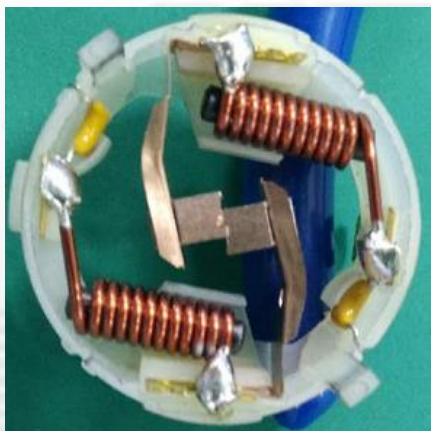
电机在转动换向过程中，碳刷在不断的拉电弧，
产生干扰频谱较宽且连续分布；

高频噪声通过电机引线及外壳缝隙往外辐射。

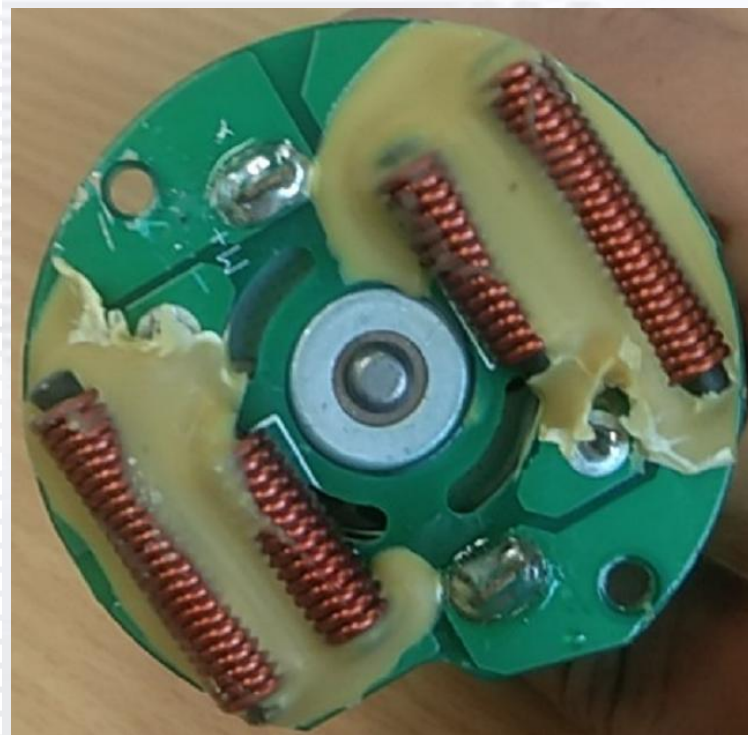




电机内部



电机外部

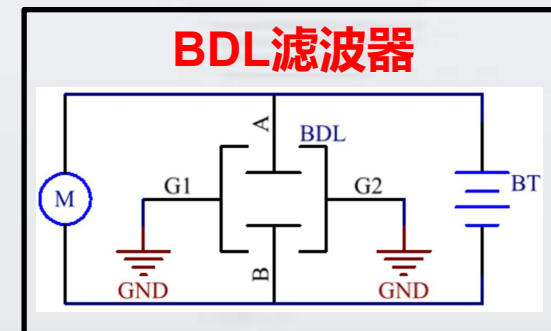
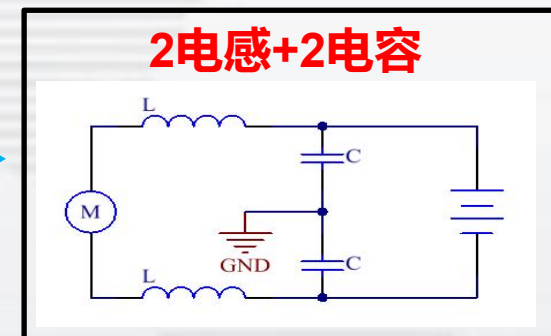
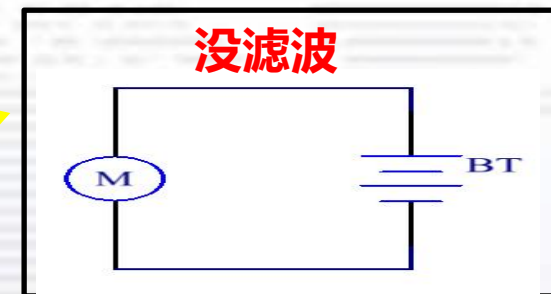
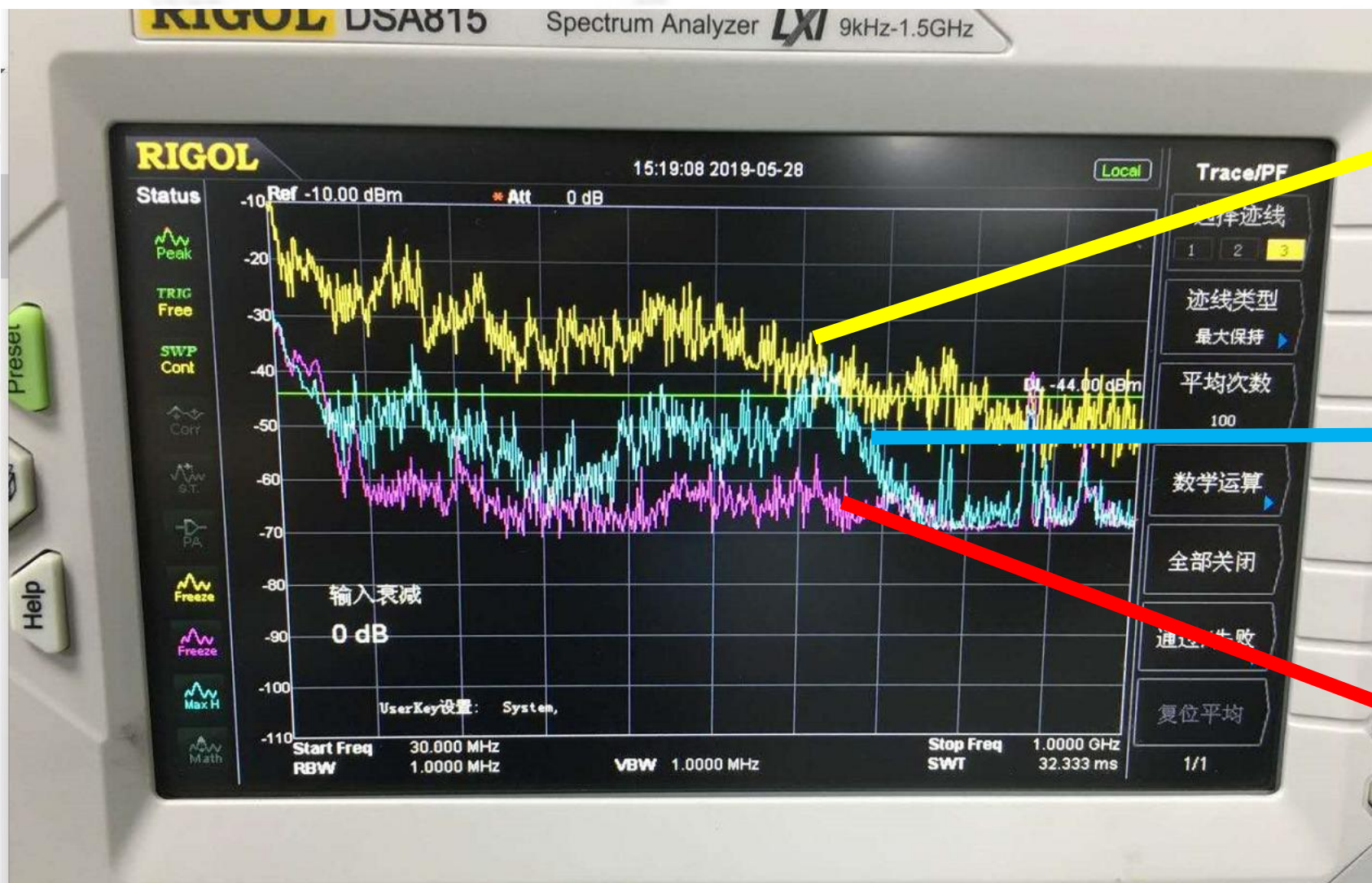


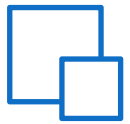
传统处理方案问题

- 不断调整参数，费时费力；
- 插件体积大，人工成本高；
- 电流越大成本越高；
- 要求高，滤波效果不理想；
- 电机小，结构受限。



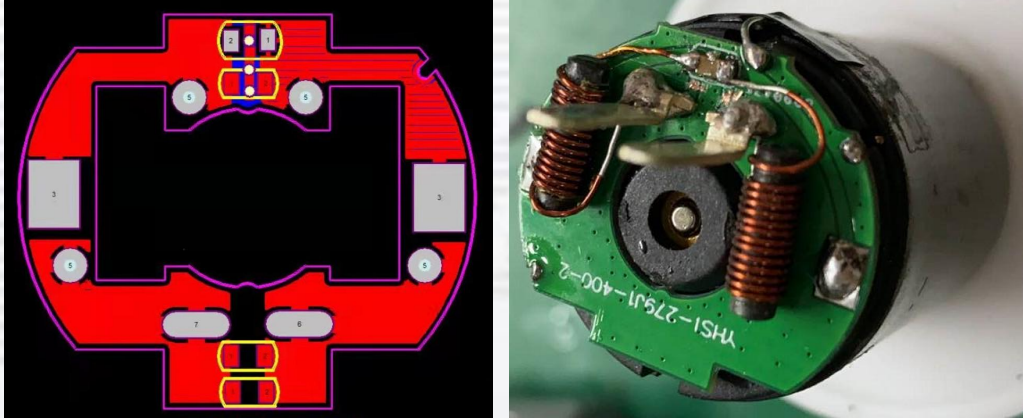
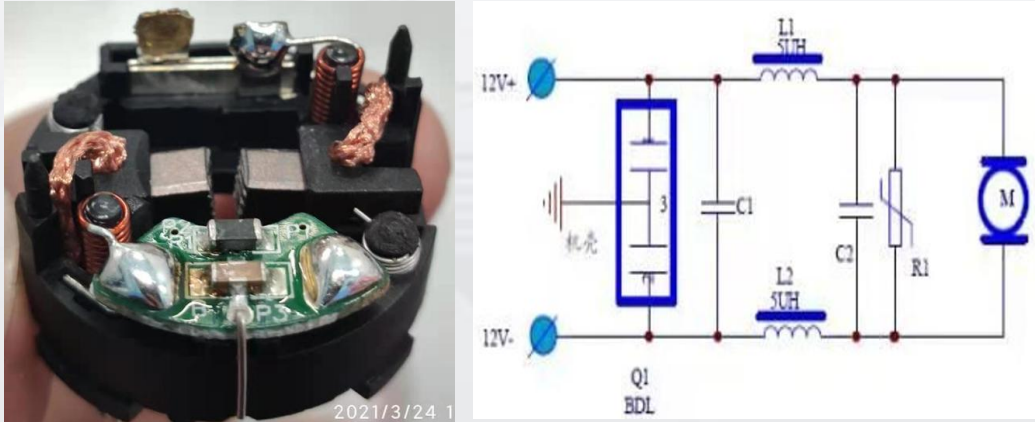
BDL滤波器方案与传统方案对比





成功案例


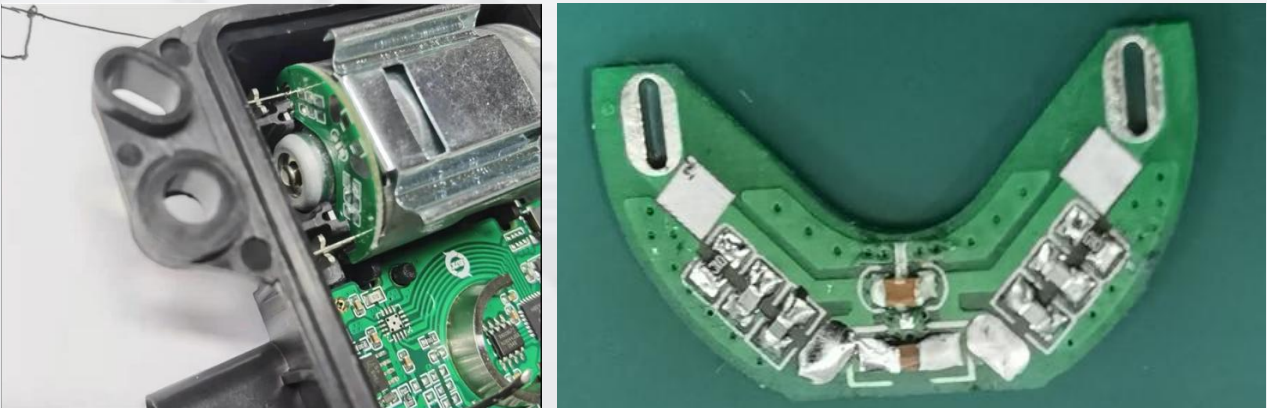
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电机种类	实物图片	车厂	通过标准
雨刮喷水		上汽	CLASS 5
自动尾门		特斯拉	CLASS 5



成功案例


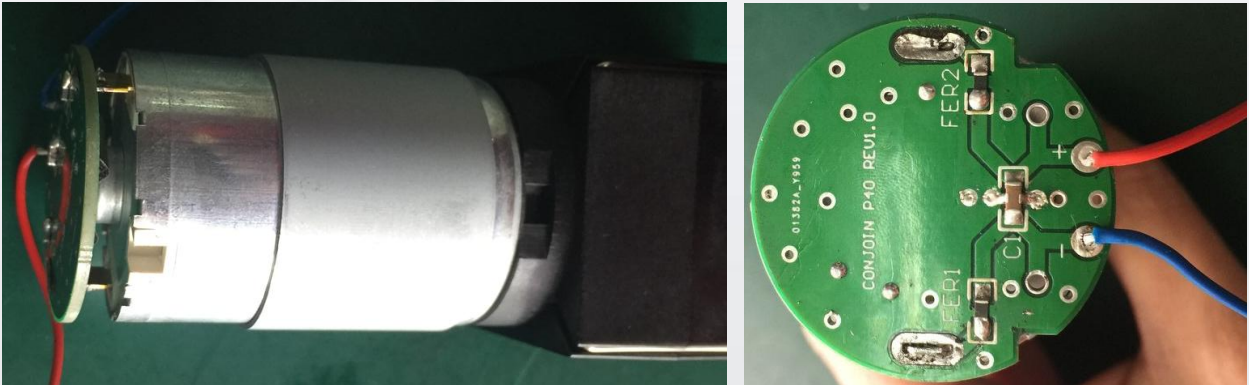
TOP-EMC

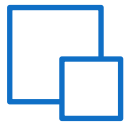
电机种类	实物图片	车厂	通过标准
雨刮		长安	CLASS 4
热管 理水阀		福特	CLASS 5



成功案例

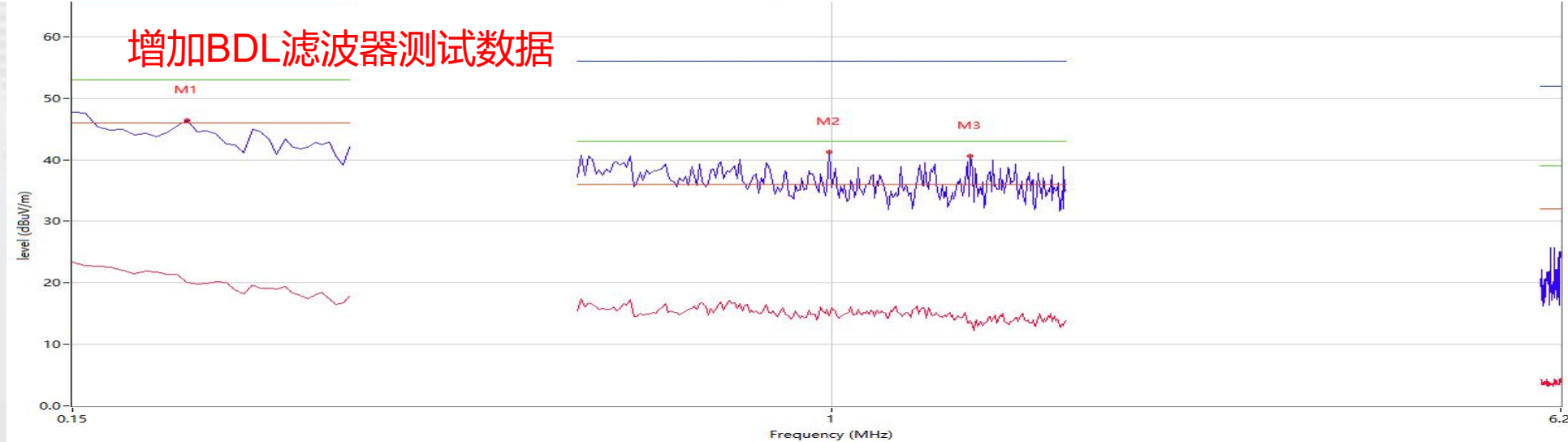
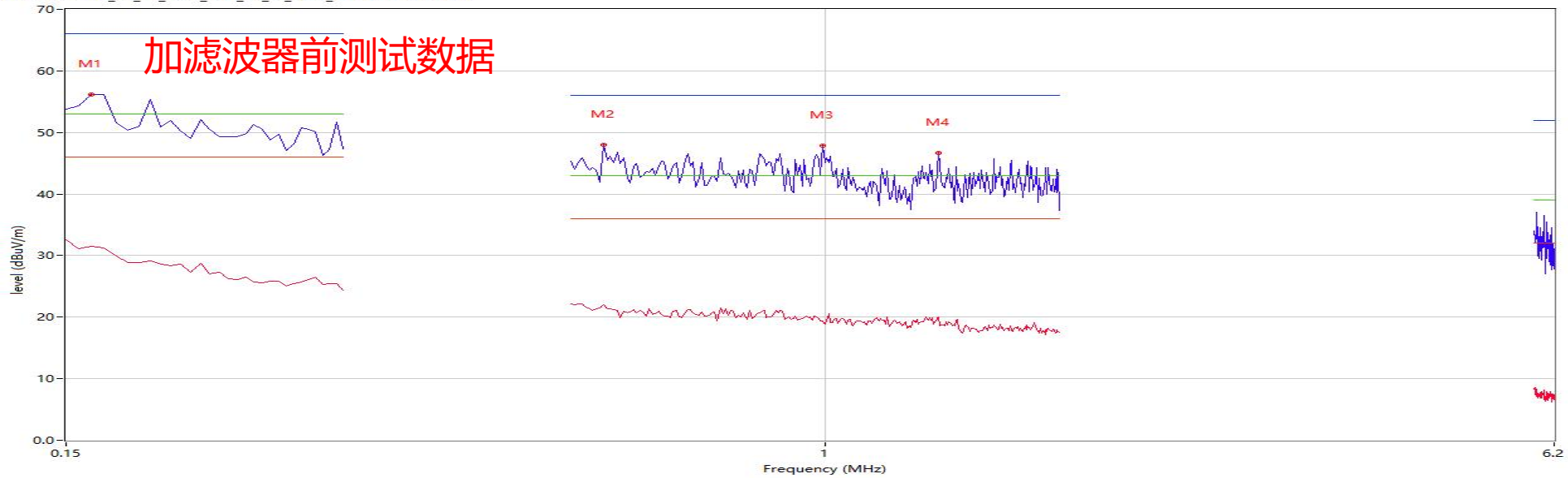
TOP-EMC

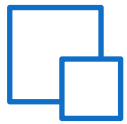
电机种类	实物图片	车厂	通过标准
座椅		奔驰	CLASS 5
腰托		宝马	CLASS 5



测试数据对比 (0.15-30MHz)

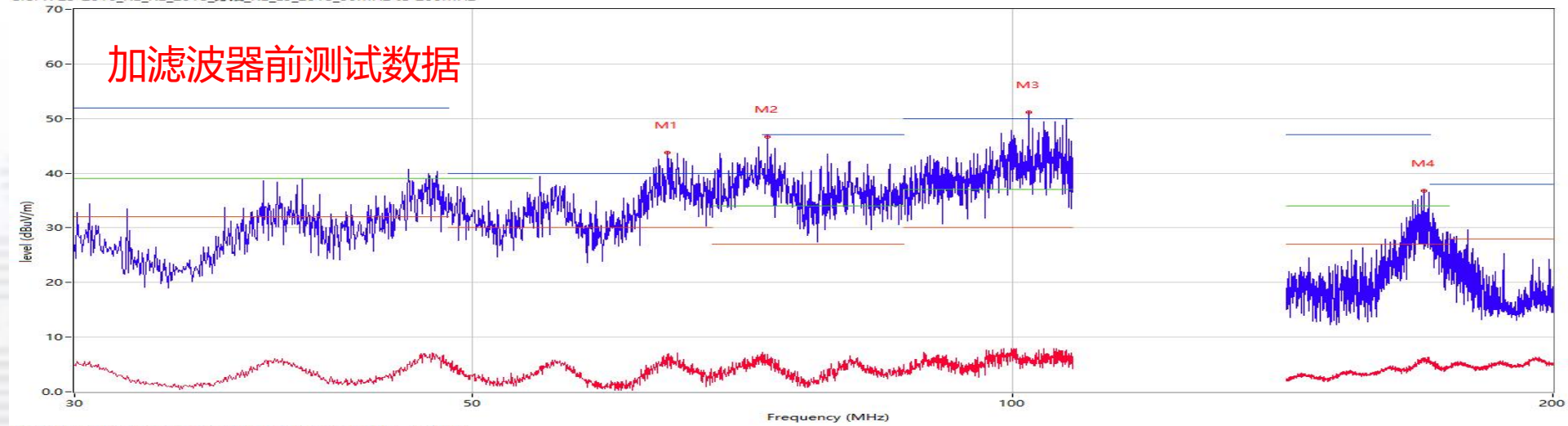
CISPR 25-2016_RE_RE_2018_分段_RE_L3_2018_0.15MHz to 30MHz



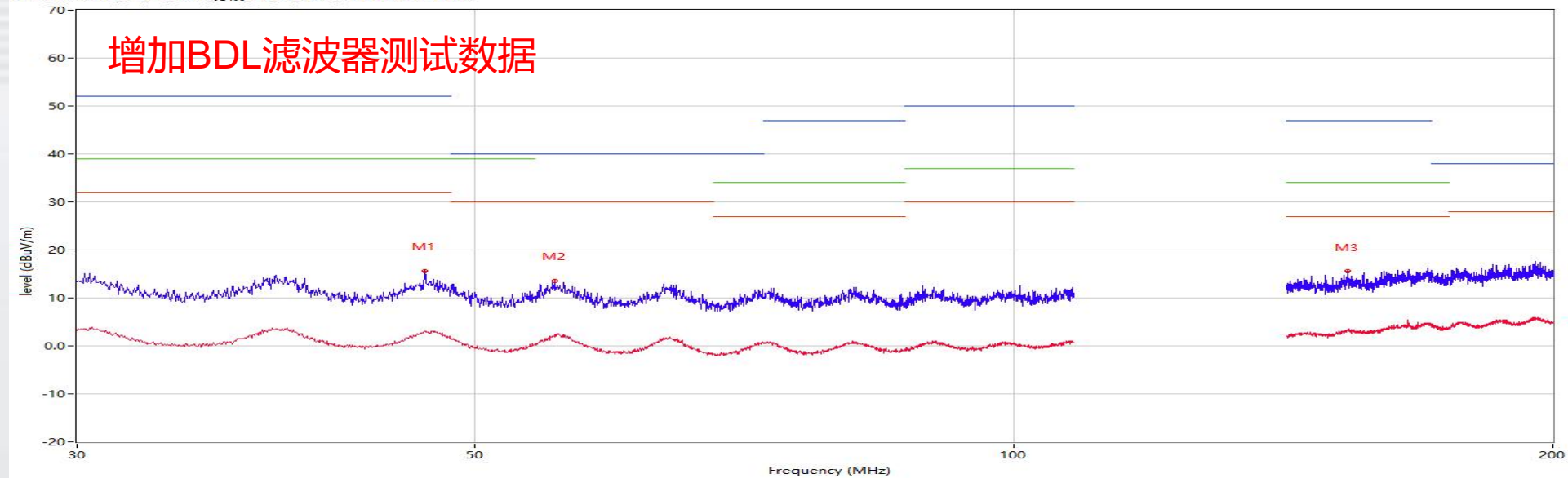


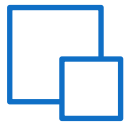
测试数据对比 (30-200MHz)

CISPR 25-2016_RE_RE_2018_分段_RE_L3_2018_30MHz to 200MHz



CISPR 25-2016_RE_RE_2018_分段_RE_L3_2018_30MHz to 200MHz

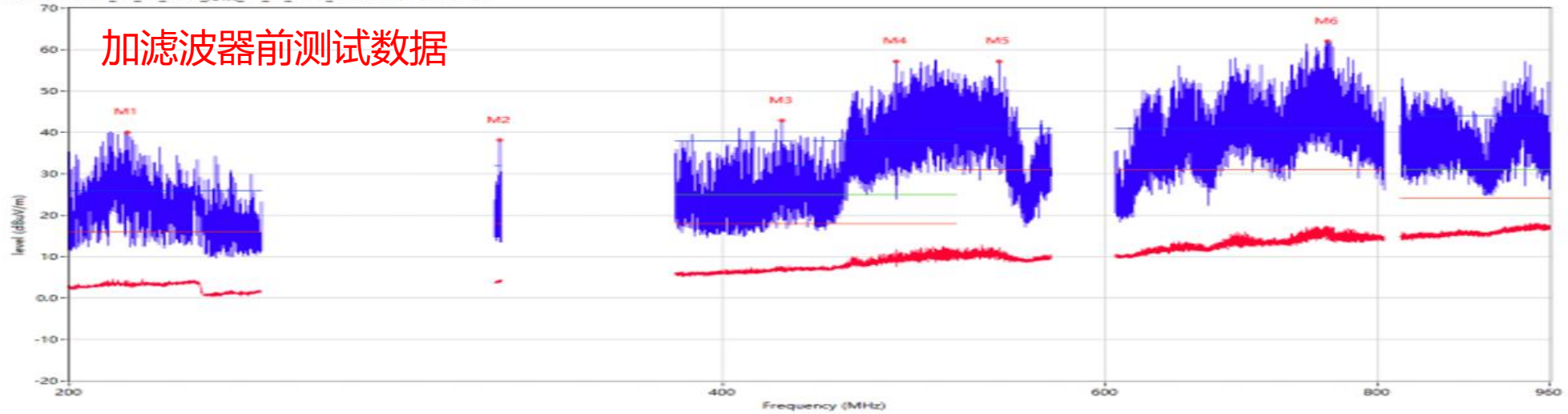




测试数据对比 (200-1000MHz)

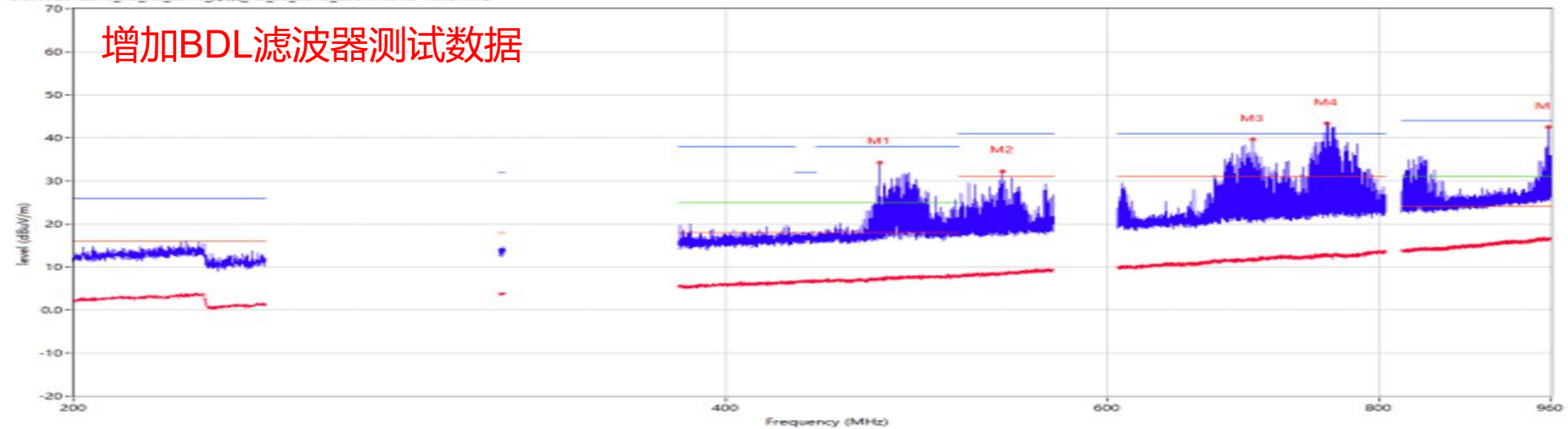
CISPR 25-2016_RE_RE_2018_分段_RE_L5_2018_200MHz to 1000MHz

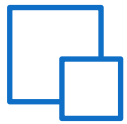
加滤波器前测试数据



CISPR 25-2016_RE_RE_2018_分段_RE_L5_2018_200MHz to 1000MHz

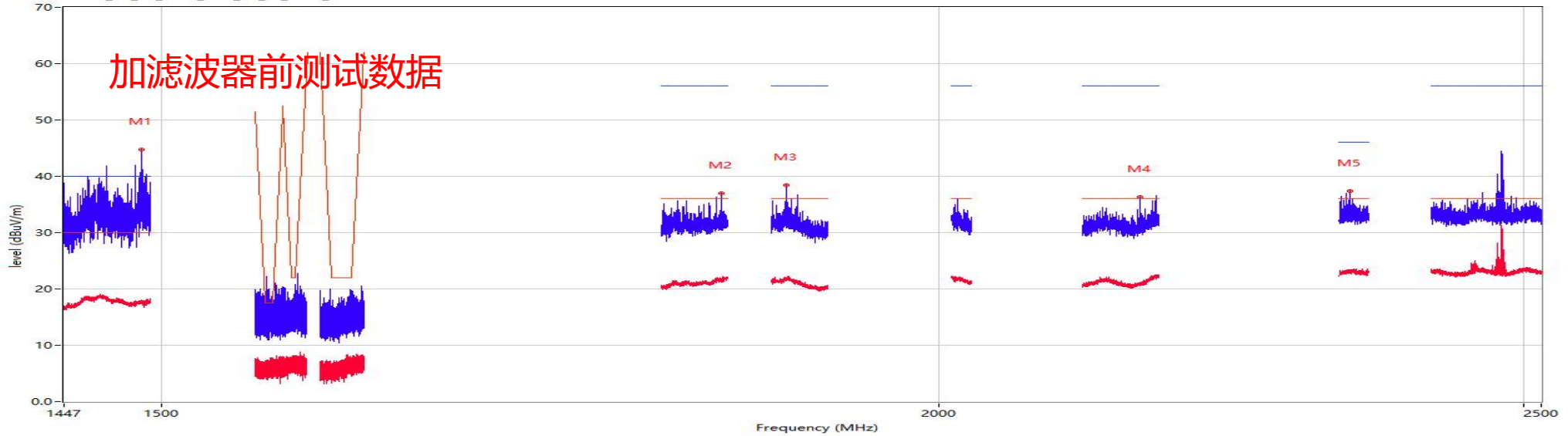
增加BDL滤波器测试数据



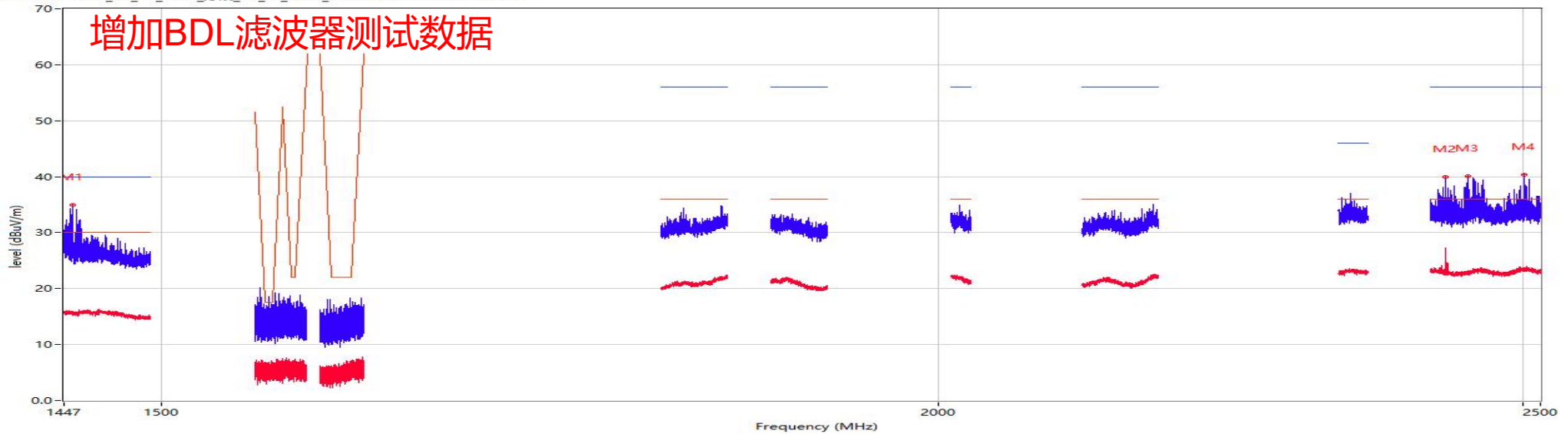


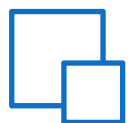
测试数据对比 (1-2.5GHz)

CISPR 25-2016_RE_RE_2018_分段_RE_L3_2018_1000MHz to 2500MHz-GPS



CISPR 25-2016_RE_RE_2018_分段_RE_L3_2018_1000MHz to 2500MHz-GPS

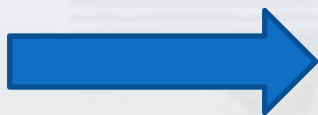


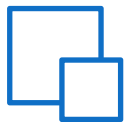


BDL对比传统方法的优点

TOP-EMC

- 1、滤波效果好，滤波频段宽，**方案成本低**；（最多可节省5.0RMB）
- 2、单颗器件代替多种不同参数器件组合，**减少研发时间**；
- 3、贴片工艺，减少人工焊接成本，简化生产工艺，**提高生产效率**；
- 4、定制化PCB，操作简单有效，**可取代复杂的屏蔽和磁环工艺**！





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