

1GHz以上のEMI測定を行うお客様へ

「Band E パルス応答特性」の A2LA認定校正開始のお知らせ

E.6 Test of measuring receiver response above 1 GHz to pulses

Pulse generators with a uniform spectrum up to 18 GHz are not feasible. To test the response of measuring receivers above 1 GHz to pulses and to verify the amplitude relationship of various types of measuring receivers, it is practical to use a pulse-modulated carrier tuned to the receive frequency. The pulse width shall be less than or equal to $(1/3 B_{imp})$. The accuracy of the impulse width is important for the precise generation of a certain impulse area as required in the relevant subclause. In addition to a measurement of the pulse duration using an oscilloscope, the pulse duration of a rectangular pulse can be verified by the distance between the minima on the spectrum display (see Figure E.3 for a sample waveform).

For the measuring receiver with a peak detector with a bandwidth B_{imp} of 1 MHz, an impulse area (e.m.f.) of $1.4/B_{imp}$ mVs is required, that is, 1.4 nVs for a response equal to that of an unmodulated sine-wave signal tuned to the receive frequency having an e.m.f. with rms value of 2 mV [66 dB(μ V)]. A pulse-modulated carrier having the required impulse area can be generated with the various pulse widths as shown in Table E.2.

Table E.2 – Carrier level for pulse-modulated signal of 1.4 nVs

Pulse width τ_{imp} (ns)	Carrier level $A_{carrier}$ (dB(μ V))
100	68
200	67

For a measuring receiver with a linear average detector, the impulse area (area) equal to an unmodulated sine-wave signal at the receive frequency having an e.m.f. with the value of 2 mV [66 dB(μ V)] shall be $1.4/B_{imp}$ mVs (using the pulse repetition rate). For $B_{imp} = 50$ MHz, the impulse area is 28 nVs, that is, 26 dB higher than for the peak measuring receiver with a B_{imp} of 1 MHz.

For a measuring receiver with an rms detector, the impulse area (area) equal to an unmodulated sine-wave signal at the receive frequency having an e.m.f. with the value of 2 mV [66 dB(μ V)] shall be $44(B_{imp})^{1/2}$ nVs for pulse repetition rate of 1 kHz. For an impulse bandwidth B_{imp} of 1 MHz, the corresponding $A_{carrier}$ is 70 dB. Therefore, the required impulse area is 10.4 nVs, that is, 20.5 dB higher than for the peak measuring receiver with a B_{imp} of 1 MHz.

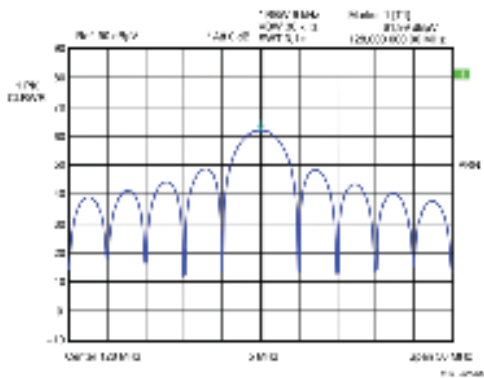
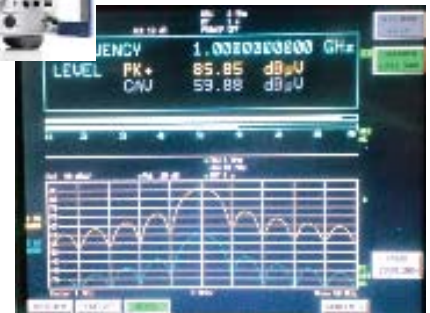


Figure E.3 – Example (spectrum) of a pulse-modulated signal with a pulse width of 200 ns

(CISPR16-1-1より抜粋)



N9038A MXE EMI Receiver



『1GHz以上のEMI測定を行うお客様に朗報です』

弊社キャリブレーション・ラボラトリーが、6月に行ったA2LA更新審査において、CISPR16-1-1: 2010 に要求されている

「Band E パルス応答特性」の★認定校正を取得しました。

1 GHz 以上のEMI測定には欠かせない校正項目ですので、今までご利用いただいたインパルス帯域幅オプションとあわせて、こちらのオプションもご利用ください。

なお、製造メーカーのPerformance Testに基づいた「フル校正」には、本校正内容も含まれています。

株式会社 東陽テクニカ
キャリブレーション・ラボラトリー

〒103-8284
東京都中央区八重洲1-1-6

フリーダイヤル: 0120-70-1040
電話: 03-3245-1102
FAX: 03-3246-0645
電子メール: cal-lab@toyo.co.jp