Figure 6: Comparison of Coef-abs-max, Tra-con-max, Fea-con-max, and MSP-con-max rules. (a), (b) and (c), (d) are the high frequency subbands of the labeled parts of Figs.5 (a), (b) and Figs.5 (e), (f). (e), (f) and (g), (h) are the multiscale products of the Figs.6 (a), (b) and Figs.6 (c), (d), respectively. (i)–(l) are decision maps of Coef-abs-max, Tra-con-max, Fea-con-max, and MSP-con-max rules in fusion (a) and (b). (m)–(p) are decision maps of Coef-abs-max, Tra-con-max, Fea-con-max, and MSP-con-max rules in fusion (c) and (d).

Figs.6 (a)–(d) show the high frequency sub-images of the labeled region of Figs.5 (a) and (b), (e) and (f) in LSWT domain. One can see that the values of coefficients in clear part are greater than those of blurry part, even though the source image is in a noisy environment. That is why typical 'Coef-abs-max' is used in MST-based fusion algorithms.

Figs.6 (e)–(h) show the multiscale products of the Figs.6 (a)–(d), respectively. From Figs.6 (g) and (h) we can find that the multiscale products of LSWT can distinguish edge structures from noise effectively. Figs. 6 (i)–(l) are the decision maps, in which the coefficients selected from the image in Fig.6 (b) are represented by white color, whereas the coefficients from Fig.6 (a) are represented by black color. Since labeled part of Fig.6 (b) is clearer than that of Fig.6 (a), the optimal decision map should be in white color in the whole decision map, which means all coefficients should be selected from Fig.6 (b). However, the decision maps of 'Coef-abs-max' rule and 'Tra-con-max' rule, shown in Figs.6 (i) and (j), indicate that these rules do not select the coefficients from the clear part completely even though 'Tra-con-max' shows better performance than 'Coef-abs-max'. Figs.6 (k) and (l) indicate that the proposed feature contrast is more reasonable than the traditional contrast. It is also proven that applying feature such as ISL to the contrast is more reasonable than the absolute value of a single pixel.

Figs.6 (m)–(p) are the decision maps, in which the white color indicates that coefficients are selected from Fig.6 (d), otherwise selected from Fig.6.