$$\phi_{domain} \stackrel{\text{def}}{=} \texttt{true}$$
$$C \stackrel{\text{def}}{=} \{1\}$$
$$\phi_{license}(x) \stackrel{\text{def}}{=} \neg\texttt{REL}(x) \wedge \neg\texttt{GLO}(x) \wedge ((\texttt{TB}(x) \wedge \neg\texttt{V}(x)) \Rightarrow \neg\exists y[\texttt{TT}(y) \wedge x \diamond y])$$

$$\phi_{\triangleleft}(x,y) \stackrel{\text{def}}{=} (x \lhd_{180} y) \vee (x \lhd_{30} y) \vee (x \diamond y \wedge \texttt{V}(y) \wedge \neg\exists z[x \lhd_{180} z])$$

$$\textsf{vl}(x) \stackrel{\text{def}}{=} (\exists yz[y \lhd_{60} x \Rightarrow (y \diamond z \wedge \texttt{GLO}(z))]) \vee (\exists y[x \diamond y \wedge \texttt{GLO}(y) \wedge \texttt{wide}(y)])$$

$$\phi_{l}(x) \stackrel{\text{def}}{=} \texttt{TT}(x) \wedge \texttt{alv}(x) \wedge \texttt{nar}(x) \wedge \exists y[x \diamond y \wedge \texttt{voc}(y) \wedge \texttt{TB}(y) \wedge \texttt{uvul}(y)]$$
$$\phi_{æ}(x) \stackrel{\text{def}}{=} \texttt{TB}(x) \wedge \texttt{phar}(x) \wedge \texttt{V}(x)$$
$$\phi_{f}(x) \stackrel{\text{def}}{=} \texttt{LIPS}(x) \wedge \texttt{dent}(x) \wedge \texttt{crit}(x) \wedge \textsf{vl}(x)$$
$$\phi_{t}(x) \stackrel{\text{def}}{=} \texttt{TT}(x) \wedge \texttt{alv}(x) \wedge \texttt{clo}(x) \wedge \textsf{vl}(x)$$

$$\phi_{domain} \stackrel{\text{def}}{=} \texttt{true}$$
$$C \stackrel{\text{def}}{=} \{1,2,3,4\}$$
$$\phi^{1}_{license}(x) \stackrel{\text{def}}{=} \texttt{true}$$
$$\phi^{2}_{license}(x) \stackrel{\text{def}}{=} \text{f}(x) \vee \text{t}(x) \vee \text{l}(x)$$
$$\phi^{3}_{license}(x) \stackrel{\text{def}}{=} \text{l}(x)$$
$$\phi^{4}_{license}(x) \stackrel{\text{def}}{=} \text{t}(x) \vee \text{f}(x) \wedge \neg\exists y[y \lhd x \wedge \text{f}(y) \vee \text{t}(y)]$$

$$\phi^{1,1}_{\diamond}(x,y) \stackrel{\text{def}}{=} x \lhd y \wedge æ(y) \wedge \neg æ(x)$$
$$\phi^{1,3}_{\diamond}(x,y) \stackrel{\text{def}}{=} (x = y) \wedge \text{l}(x)$$
$$\phi^{1,4}_{\diamond}(x,y) \stackrel{\text{def}}{=} (x = y) \wedge \text{t}(x) \vee \text{f}(x)$$
$$\phi^{1,1}_{\lhd_{180}}(x,y) \stackrel{\text{def}}{=} x \lhd y \wedge æ(x) \wedge \neg æ(y)$$
$$\phi^{1,2}_{\lhd_{60}}(x,y) \stackrel{\text{def}}{=} (x = y)$$
$$\phi^{1,1}_{\lhd_{30}}(x,y) \stackrel{\text{def}}{=} \neg æ(x) \wedge \neg æ(y) \wedge \exists z[z \lhd x \wedge æ(z)]$$

$$\phi^{1}_{\texttt{LIPS}}(x) \stackrel{\text{def}}{=} \text{f}(x)$$
$$\phi^{2}_{\texttt{LIPS}}(x) \stackrel{\text{def}}{=} \phi^{1}_{\texttt{LIPS}}(x)$$
$$\phi^{1}_{\texttt{TT}}(x) \stackrel{\text{def}}{=} \text{t}(x) \vee \text{l}(x)$$
$$\phi^{2}_{\texttt{TT}}(x) \stackrel{\text{def}}{=} \phi^{1}_{\texttt{TT}}(x)$$
$$\phi^{1}_{\texttt{TB}}(x) \stackrel{\text{def}}{=} æ(x)$$
$$\phi^{3}_{\texttt{TB}}(x) \stackrel{\text{def}}{=} \text{l}(x)$$
$$\phi^{4}_{\texttt{GLO}}(x) \stackrel{\text{def}}{=} \text{t}(x) \vee \text{f}(x)$$
$$\phi^{1}_{\texttt{dent}} \stackrel{\text{def}}{=} \text{f}(x)$$
$$\phi^{1}_{\texttt{alv}} \stackrel{\text{def}}{=} \text{t}(x)$$
$$\phi^{1}_{\texttt{phar}} \stackrel{\text{def}}{=} æ(x)$$
$$\phi^{3}_{\texttt{uvul}} \stackrel{\text{def}}{=} \text{l}(x)$$
$$\phi^{1}_{\texttt{clo}} \stackrel{\text{def}}{=} \text{t}(x)$$
$$\phi^{1}_{\texttt{crit}} \stackrel{\text{def}}{=} \text{f}(x)$$
$$\phi^{1}_{\texttt{V}} \stackrel{\text{def}}{=} æ(x)$$
$$\phi^{1}_{\texttt{nar}} \stackrel{\text{def}}{=} \text{l}(x)$$
$$\phi^{3}_{\texttt{nar}} \stackrel{\text{def}}{=} \text{l}(x)$$
$$\phi^{4}_{\texttt{wide}} \stackrel{\text{def}}{=} \text{t}(x) \vee \text{f}(x)$$