```
\mathsf{demod}[id, (), (mod_0 \dots (module id () (code_0 \dots (0 (expr \dots)) code_n \dots)) mod_n \dots)]]
                                                                                                                                            = ((module id () ((0 (expr...)))))
                                                                                                                                           = demod [id, ((id_r (- phase_r))),
\mathsf{demod}[id, (), ((\mathsf{module}\ id\ ((\mathsf{require}\ id_r @\ phase_r)\ req_m\ ...)\ (code_{m0}\ ...\ (0\ (expr_m\ ...))\ code_{mn}\ ...))
                                                                                                                                                          ((module id (req_m ...) (a
                  (module id_r(req_r...)) (code_{r0} ... (phase_{nr}(expr_r...)) code_{rn} ...))
                                                                                                                                                           (module id_r (reg_r ...) (a
                      mod_n ...) \mathbb{I}
                                                                                                                                                           mod_n ...)
where phase_{nr} = (-phase_r)
\mathsf{demod} \llbracket id, (), ((module id ((require id_r @ phase_r) req_m ...) (code_m ...))
                                                                                                                                            = demod [id, ((id_r (- phase_r))),
                  (module id_r (req_r ...) (code_r ...))
                                                                                                                                                          ((module id (req_m ...) (a
                   mod_n ...)
                                                                                                                                                           (module id_r (req_r ...) (
                                                                                                                                                           mod_n ...)
                                                                                                                                            = demod[id, ((id, (- phase, p
\mathsf{demod}\llbracket id, ((id_c \ phase_c) (id_n \ phase_n) ...),
           ((module id (reg_m ...) (code_{m0} ... (0 (expr_m ...)) code_{mn} ...))
                                                                                                                                                          ((module id (req_m ...) (a
           (module id_c ((require id_r @ phase_r) reg_c ...) (code_c ...))
                                                                                                                                                           (module id_c (req_c ...) (
                                                                                                                                                           (module id_r (req_r ...) (
           (module id_r(req_r...)) (code_{r0} ... (phase_c(expr_r...)) code_{rn} ...))
           mod_n ...)
                                                                                                                                                           mod_n ...)
demod[id, ((id_c phase_c) (id_n phase_n) ...),
                                                                                                                                            = demod[id, ((id_r (- phase_c) p)]
           ((module id (req_m ...) (code_m ...))
                                                                                                                                                          ((module id (req_m ...) (a
           (module id_c ((require id_r @ phase_r) req_c ...) (code_c ...))
                                                                                                                                                           (module id_c (req_c ...) (
            (module id_r (reg_r ...) (code_r ...))
                                                                                                                                                           (module id_r (reg_r ...) (a
           mod_n ...)
                                                                                                                                                           mod_n ...)
\mathsf{demod}[id, ((id_c \ phase_c) \ (id_n \ phase_n) \ ...),
                                                                                                                                            = demod[id, ((id_n phase_n) ...),
           ((module id (req_m ...) (code_m ...))
                                                                                                                                                          ((module id (req_m ...) (a
           (module id_c () (code_c ...))
                                                                                                                                                           (module id_c () (code_c .
           mod_n ...)
                                                                                                                                                           mod_n ...)
                                                                                                                                            = demod[id, (), ((module id (req
\mathsf{demod} \llbracket id_{n}(), (mod_{0} \dots (module id (reg \dots) (code \dots)) \ mod_{n} \dots) \rrbracket
demod[id, ((id_c phase_c) (id_n phase_n) ...),
                                                                                                                                           = demod[id, ((id_c phase_c) (id_n phase_c))]
                                                                                                                                                          ((module id (req_m ...) (
           ((module id (rea_m ...) (code_m ...))
                                                                                                                                                           (module id_c (req_c ...) (
           mod_i ...
           (module id_c (req_c ...) (code_c ...))
                                                                                                                                                           mod_i ...
           mod_n ...)
                                                                                                                                                           mod_n ...)
\mathsf{demod}\llbracket id, ((id_c\ phase_c) (id_n\ phase_n) ...),
                                                                                                                                           = demod[id, ((id_c phase_c) (id_n phase_c))]
           ((module id (rea_m ...) (code_m ...))
                                                                                                                                                          ((module id (rea_m ...) (a
                                                                                                                                                           (module id_c ((require id_c
           (module id_c ((require id_r @ phase_r) req_c ...) (code_c ...))
                                                                                                                                                           (module id_r (req_r ...) (
            mod_i ...
            (module id_r (req_r ...) (code_r ...))
                                                                                                                                                           mod_i ...
                                                                                                                                                           mod_n ...)
           mod_n ...)
```