Confirmation of the logic in the definition of the *k*-triangular set function

Abstract: We evaluate the logic of the definition of the *k*-triangular function in set theory and find it tautologous, hence confirming it as a theorem.

We assume the method and apparatus of Meth8/VŁ4 with `T`autology as the designated *proof* value, **F** as contradiction, `N` as truthity (non-contingency), and `C` as falsity (contingency). The 16-valued truth table is row-major and horizontal.

LET p, q, r, s, t: *A*, *B*, *k*, *m*, Σ;
~ Not; + Or, ∪, add ; - Not Or, subtract; & And, ∩, multiply;
> Imply, lesser than ; < Not Imply, lesser than, ∈;
= Equivalent; @ Not Equivalent;
% possibility, for one or some, ∃; # necessity, for all or every, ∀;
~(y < x) (x ≤ y) ; (p@p) **F** as contradiction, zero 0, null Ø

From: Boccuto, A.; Dimitriou, A. (2018). Dieudonné-type theorems for lattice group-valued k-triangular set functions. vixra.org/pdf/1811.0496v1.pdf boccuto@yahoo.it

Definitions 2.6 (b) We say that *m* is *k*-triangular on *L* iff

$m(A) - k\, m(B) \leq m(A \cup B) \leq m(A) + k\, m(B)$
whenever $A,B \in \Sigma$, $A \cap B = \emptyset$ and $0 = m(\emptyset) \leq m(A)$ for each $A \in \Sigma$. (2.6.1)

((((p&q)<t)&((p&q)=(p@p)))&((%p<t)>~((s&p)<((p@p)=(s&(p@p)))))) >
~(~(((s&p)+(r&(s&q)))<(s&(p+q)))<((s&p)-(r&(s&q)))) ;
`TTTT TTTT TTTT TTTT` (2.6.2)

Eq. 2.6.2 as rendered is tautologous, hence confirming the logic of the definition of the *k*-triangular function as a theorem in set theory.