Generalized retracts concerned to free topoplogical groups

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Let $F(X)$ be free topological group over a Tychonoff space X. A subspace Y of X is called an *F-retract* of X if there exists a homomorphism $h\colon F(X) \to F(Y)$ such that $h(y) = y$ for all $y \in Y$. The following result generalizes Theorem 2.5 from [1].

Proposition 0.1. *Let K be an F-retract of X. Then free topological groups over the space X and $(X/K) \vee K$ are topologically isomorphic.*

A topological space X is called retral [2] if X is a retract of some topological group G.

Proposition 0.2. *The following are equivalent for a topological space X:*
1.) X is a retral space;
2.) for any space Y containing X as an F-retract there exists a retraction $Y \to X$.

[1] Okunev O.G. *A method for constructing examples of M-equivalent spaces*// Top. Appl. – 1990. – V.36. – P. 157–171;

[2] Gartside P.M., Reznichenko E.A., Sipacheva O.V. *Mal'tsev and retral spaces* // Top. Appl. – 1997. – V.80. – P. 115–129.