Operators determining the norm

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Let G be a locally compact abelian group, let X be a Banach space and let τ be a strongly continuous bounded representation of G on X. Let $\mathfrak{A}(\tau)$ be the weakly closed subalgebra of $L(X)$ generated by all Fourier transforms $\int_G \tau(t)d\mu(t)$ with $\mu \in M(G)$. We say that $T \in \mathfrak{A}(\tau)$ determines the norm of X if every continuous norm $\|\cdot\|$ on X making the operator $T : (X, \|\cdot\|) \to (X, \|\cdot\|)$ continuous is equivalent to the Banach space norm of X. In this paper we study neccesary and sufficient conditions on T in order to determine the norm of X. Such conditions are mainly related with the topological structure of the Arveson spectrum of T and with the existence of critical eigenvalue of T.