

Response to the FCC to progress the Approval of T2015-K27-F00 (CASTEL0036) - 4 August 2000

With regards to your email of 12 Jul 2000, please see our responses below in bold.

Date: Wed, 12 Jul 2000 16:47:26 -0400
From: oetech@fccsun07w.fcc.gov (OET)
To: steve.crompton@tait.co.nz

To: Stephen Crompton, Tait Electronics Ltd
From: Joe Dichoso
jdichoso@fcc.gov
FCC Application Processing Branch

Re: FCC ID CASTEL0036
Applicant: Tait Electronics Ltd
Correspondence Reference Number: 15034
731 Confirmation Number: EA97145
Date of Original E-Mail: 07/12/2000

Please address the following RF safety information. Place your reply in the RF exposure info folder.

Tait, EA 97145 -

1. The MPE report proposed a warning statement indicating a separation distance of 0.75 cm (7.5 mm), which should have been 75.0 cm or more.

This is only MFlom's recommendation. Please see our Installation Guide where this error has been corrected.

The Warning should indicate that the separation distance is required for FCC RF exposure compliance.

Our warning uses the phrase "To comply with FCC RF Exposure limits, ...". Is this OK?

The installation instructions indicated the separation is applicable for installation on the fender or trunk of vehicles when the minimum separation distance can be observed. A separation distance of 30 inches from all persons is typically not available along the fender or on the trunk of most vehicle. Please clarify, revise, incorporate relevant info in the manual and upload the manual.

We also noticed this contradiction in the MFlom recommendation, and recognised that we could not use their wording which specifically mentions the fender and the trunk. Initially we were going to specify that the installation should be along the centre-line of the roof, to ensure that the safe distance could be maintained. However, we decided that it was sufficient to state the safe distance alone, and let that dictate where on the vehicle the antenna could be mounted safely.

Do you agree with this approach?

2. Device operates in two bands, 896-901 MHz and 935-940 MHz. MPE was performed at 939.9 MHz, corresponding to the upper band. MPE limit is lowest at 896 MHz in the lower band (f/1500).

We agree that MFlom seem to have made the measurements at the wrong frequency.

EMC report indicates device can have higher output in the lower band, up to a maximum output of

17.55W conducted output.

15W is our nominal output power, which actually varies across the RF band, and unit to unit. Our maximum transmit power is 18W.

For the antenna tested (4.5 dBi gain), an EIRP of 49.5W can be expected for the lower band, instead of the 45W EIRP indicated in the MPE report (which is in error; 15.1 W & 4.5dBi equals 42.6 W EIRP ??).

The maximum EIRP, based on 18W conducted, is 50.8W

MPE results also indicated if averaging is done for middle portion of a person's body, it would exceed MPE limit.

We assumed that the average over the whole body was the important result. Please let us know exactly what the pass criteria is.

Please address issues, re-measure MPE and increase separation distance accordingly as needed.

Is it necessary to re-measure? Instead we propose to re-calculate the safe distance based on a new frequency of 896MHz and a new max Tx power of 18W.

The new limit is $896/1500 \times 10 = 5.98 \text{ w/sqm}$
The new safe distance calculation is $R = \text{SQRT}(50.8 / (4 \times \text{Pi} \times 5.98)) = 0.823\text{m}$

3. As indicated in previous correspondence, a manual has not been submitted for this filing. Please upload manual with the final antenna requirement, installation instructions and warnings incorporated in it.

This was uploaded on 14 July 2000. Do you have any comments on it

Note: EMC report indicates maximum expected output for 896-901 MHZ band is 17.55 W and 15.46 W for the 935-940 MHZ band.

Filing has requested only 15 W for both bands.

15W is our nominal output power, and hence the way we describe our product.

Proposed Grant Conditions - Device is approved to operate with a 4.5dBi antenna for vehicle-mount operations as described in the filing. The antenna must be installed to provide a separation distance of 75 cm (30 inches) or more from persons to satisfy MPE compliance. Users and installers must be provide with installation instructions to satisfy RF exposure requirements.

This radio is likely to be installed with a variety of antennas. As indicated in our Installation Guide, we would like to propose an approach where we specify different safe distances depending on the antenna used.

Is this acceptable? If so, then we would expect the Grant Conditions not to specify a particular antenna or separation distance, but instead to refer to our Installation Guide.

Please give us your feedback on these points. Alternatively, may we phone to discuss them.

Regards,
Steve Crompton & Richard Burgess
4 August 2000