

From: glen.moore@ntscorp.com
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Cc: nick.kobrosly@ntscorp.com
Subject: ATCB Response

Tim,

Please find enclosed the responses to all of the issues on the UDIRPT900 submission. Please call me if you have any questions or concerns

Thank you
Glen Moore

1) It is not clear if this device fully demodulates and then remodulates only a recognized signal. This is being submitted for CDMA, but it is unsure how this device behave in the presence of TDMA/GSM, etc. signals as well. Please explain. Additionally, please note that currently only CDMA appears to be covered by testing. For other modulations testing must have been performed if intended to be used for these modulations (conducted spurious, intermodulation, input/output bandwidth). Please review FCC amplifier/booster guidance attached for complete information. NOTE: One test report suggests TDMA as well.

Response: The RPT900 device does not demodulate or re-modulate an incoming signal. It is fundamentally a bi-directional amplifier (signal booster) although it is constructed around the heterodyne principal. The unit comprises of saw filters and cavity filters.

The incoming signals are only down converted to an IF level frequency of 70 megahertz and band width limited to 25 megahertz by a SAW filter. Note, no alteration to the signal occurs anywhere in the system.

This device is to be certified for CDMA signals, not TDMA

This device is not a receiver, only a linear bi-directional amplifier. This device does not de-modulate or re-modulate signals.

2) Please provide a Tune up procedure over the power range provided (2.1033(c)(9)).

Response: No tune up procedure is required for this device

3) Please provide a parts list for this device. As a minimum this must include the active components in the RF circuitry.

Response: All parts and component designations are clearly indicated on the schematics which has always been accepted in the past

4) If necessary, please update the confidentiality to include the parts list and tune up procedures provided.

Response: Not applicable, components are clearly indicated on schematics, and no tune up is required

5) Per FCC guidelines for repeaters and boosters, please justify the input drive level used (why was the level selected, was it the maximum input rating and maximum gain set and then used for all tests).

Response: The input drive level of -65dBm is the optimal maximum input level with maximum gain set of 95dB. This maximum input level was used through out all the tests. The combination if maximum input level and maximum gain level of 95dB will provide a rated power output of 1 watt.

6) Please confirm testing was done as maximum output levels the device is cable of.

Response: The device was tested at maximum power levels at all times.

7) This device appears to be being approved for 1 W output power. However users manual page 19 suggests +39 dBm. Please review/explain/correct as necessary.

Response: Page 19 on the user manual has been changed to +30dBm

8) While the Telcosat report does appear to shown various occupied bandwidth outputs, this does not appear to be compared to the inputs (i.e. both input and output occupied bandwidths measured and shown) per the FCC guidance on amplifiers, repeaters, and boosters. Please see attachment.

Response: Please refer to page 9. The test up for the repeater shows an actual screen shot of a CDMA input signal, and also showing the resulting CDMA out-put signal.

9) Test report should support compliance by comparing results obtained to limits, either by providing limit lines on the plots or a separate tables which compare measurements against the limits. Telcosat report should be updated for this.

Response: To comply we have inserted limit lines on page 8.

10) Generally spurious emissions (conducted and radiated) should start at the lower of 9 kHz or lowest frequency generated within the device (including IF, TXCO, etc). Currently conducted spurious appears to only start at 820 MHz only (single channel test) although there are additional plots at the back of the Telcosat report. Additionally these results should utilize 100 kHz as specified by Part 22. Please correct.

Response: Please refer to page 16. The device was re-measured using 100KHz RBW. Document has been updated.

11) It is uncertain if proper modulation was used for single channel test for conducted spurious emissions. Please review.

Response: Report has been updated with correct test data

12) The two tone method appears to only support compliance in the passband. 2.1057 should be followed to support compliance below and above the passband for spurious emissions and also using a 100 kHz RBW as specified by 22.917.

Response: Report has been updated with correct data

13) Please explain power output results. For instance, 2 tones show a composite power of 1 Watt output. Is the output one watt for single or multiple carriers. Please explain.

Response: Maximum power out-put is 1 watt for this device.
If there are two carriers then it is two carriers at +27dBm (equivalent to 1 watt composite power)

14) It is uncertain if the power results were taken using CW signals or proper modulation. FCC requires proper modulation present.

Response: Report updated and uploaded

15) FCC requires applicant to understand their responsibilities under Sections 22.383 for related booster/inbuilding operations. Please confirm applicant understands their responsibilities under this section of the rules.

Response: We have a copy of the rules pertaining to sec 22.383. Related to booster in building operations. We fully understand the rules and the responsibilities.

16) Duty cycle in test report (NTS) appears to define a duty cycle of 1%. Please explain as these device are considered to be capable of much more.

Response: This was a type error in the report and has been corrected to 100%

In

17) NTS test report cites test methods of ANSI C63.4. First, please note that the 2003 edition is the only edition that should be used. Second, while this method may be applicable to certain Part 15 tests, tests to licensed rule Parts (Part 22) must follow EIA/TIA 603 test requires, supplemented by any additional requires given in the applicable rule parts (if applicable). Please review/correct as necessary. In addition, it appears that for some Part 22 tests, various detectors were used (average, QP). Please note that the same detector as used for measurement of the fundamental is expected to be used (i.e. peak/average, etc.). In addition, the use of QP detector is generally not seen for licensed devices. Please review/correct.

Response: References in the report have been corrected and a revised report uploaded on July 6, 2006. Although a qp detector was used for measurements below 1 GHz (a limitation of the automated software), it was verified that the emission was a cw signal, therefore making detector selection irrelevent. Please also note that these signals were 39 dB or more below the limit.

18) Kindly adjust frequency stability results to be compared to the limits. Limits currently given in ppm while results are in Hz.

Response: Report has been updated to show limits in both units

19) While this device does not require MPE evaluation (measurements), information to support safe compliance distances and non-colocation of antennas should be supported in both the RF exposure information and the users manual. Typical information required in the manual may be something to the following or similar:

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Note that co-location is generally defined as antenna to antenna distance of < 20 cm. Please update RF exposure to show either compliance to the limits at 20 cm, or to calculated a safe distance (only if distance is > 20 cm). Additionally RF exposure should define maximum antenna gain being approved for the system. Note that generally RSS-102, section 2.6 requires this type of information to be provided as well.

Response: Updated and uploaded to your website on July 6, 2006

20) Please provide radiated/conducted test photographs available as a separate exhibit. Although not required, FCC typically desires this.

Response: A separate file was upload July 6, 2006 at 8:55 pm mst

21) Please note that items (i.e. block diagram, operational description) appear in the manual, while confidentiality does not cover the manual. Generally the users manual can not be held confidential. Please correct the manual to remove items such as block diagram, operational description, etc. if relevant.

Response: We will leave the block diagram and operational description in the manual.

22) Users Manual does not appear to address the RX portion of this system is subject to Part 15 and the manual does not appear to include information required by 15.21 and the label does not appear to include the information required by 15.19(a)(1) (for the RX).

Response: As per point 1, this is not applicable to this device

23) FYI....Please note that RX emissions are subject to Part 15 Verification (equivalent to Class B levels) in addition to any applicable digital device emissions.

Response: As per point 1, this is not applicable to this device

24) FYI....Please review amplifier/booster/repeater guidance from the FCC and ensure all information is provided within the application as required.

Response: ok

For IC:

25) Please correct the IC form to:

- include the applicant's name as appropriate.
- NTS site IC number.
- worse case TX spurious levels and worse case RX emissions.

Response: Corrected application uploaded on July 6. Note that as per point 1 worst case RX emissions do not apply

26) Please adjust the IC labeling to include "IC:" not simply "IC" as required by IC labeling requirements.

Response: Label exhibit modified and uploaded on July 6, 2006

27) For IC an appropriate RSS-102 attestation should be provided. Please see most recent ATCB IC forms which includes these attestations (attached). Annex B should be provided and Annex A may also need to be provided. Please review.

Response: Uploaded on July 6, 2006

28) It does not appear that RX emissions per RSS-GEN Section 4.8 & 6 were provided. Please review.

Response: As per point 1, this device is not a receiver therefore this is not required

29) It is uncertain if the levels were increased to -43 dBw (-13 dBm) as given in RSS-131 4.3.1 given the reference levels specified on page 8 of the Telcosat report. Please explain.

Response: Telcosat followed the procedure in RSS 131 4.3.1

30) The notice required by RSS-133 section 5.3 does not appear to be present in the users manual.

Response: The manual has been updated

31) Please explain how multicarrier backoff of power is accomplished as required by RSS-133 6.2.

Response: The Telcosat Repeater is protected from being over loaded by strong signals by PIN limiter microwave diodes. The threshold of the limiter diodes are set to prevent the unit from operating above the rated 1 watt composite power. Limiting diodes are located in the front end and the IF stage of the repeater.

The repeater has a linear operating range capable of accepting input signal levels from -115dBm to -65dBm single carrier,

Linear multi-carrier operations will be assured by proper set up of the repeater system by placing the existing individual input signals in the middle of the linear operational range. This is achieved by using the built in digital attenuators, therefore providing proper head room for multiple carrier operations.