

05 September 2006

American TCB
6731 Whittier Avenue
McLean VA 22101

RE: ADC Telecommunications
Revised Response to 12 June 2006 Comments

FCC ID: F8I-DSC1901A

In response to your comments on the above submittal from 12 June 2006.

1. ATCB Comment: Recent information from the FCC cites that the cover letters for confidentiality must be signed by the contact in the FCC database for the applicant or someone listed in the technical/non-technical portion of the 731 form. Please correct as necessary.

TÜV RESPONSE: A new confidentiality request letter signed by Mark Miska has been uploaded.

2. ATCB Comment: The host unit internal photographs do not appear to show top and bottom of the daughter board shown in the photographs. Also, is this daughter board present in the STM? Please correct and clarify.

TÜV RESPONSE: Daughter board photos have been added to the host and remote (STM) photo files. **ADC SCS1900 Int Pix 1-Host-REV.pdf** and **ADC SCS1900 Int Pix 2-STM+Duplexer-REV.pdf** have been uploaded.

3. ATCB Comment: Output power on the application forms cite about 6 Watts, while the operational description mentions. Was the device operating at full output power during testing? Please comment?

ADC RESPONSE: The -10 dBm level is with regard to the input of the system in the TX path, the output is the referenced 6 Watts for this application.

4. ATCB Comment: FYI....The operational description suggest single and dual band solutions. Note this application only covers the single band solution.

ADC RESPONSE: Noted. The Dual band solution is simply combining two single band systems into one chassis.

5. ATCB Comment: Please explain if the host unit connects directly to a base station via coax cable and whether it connects directly to antenna or amplifier. If it does, then the host portion of the system will typically require its own Certification. If it does not then it is typically subject to Part 15 digital device subject to Verification and does not require an FCC ID. Please explain, and where relevant, please provide the FCC ID of the host as the FCC asks for this information.

RESPONSE: Yes, the Host unit does connect directly to the BTS via coax. The Host unit does not connect to an antenna or amplifier, thus it is a Part 15 device and has been tested and is compliant as such. No FCC ID is necessary. An FCC Compliance label will be affixed to the Host as shown in the uploaded file ADC SCS1900 Label-FCC Part 15.pdf.

6. ATCB Comment: Per FCC guidelines, please justify the input drive level used (maximum input rating and maximum gain settings for all tests/modulations).

ADC RESPONSE: Industry practice has generally set our input signal power level. Industry practice has generally set our various (through the use of various Linear Power Amplifiers) output signal power level.

The appropriate input drive level is -40 dBm this signal level was used for all tests. There is no difference between using the -40 dBm signal versus using a -10 dBm signal and administering 30 dB of internal software attenuation, thus resulting in a -40 dBm composite signal.

7. ATCB Comment: The application does not appear to provide a description of all circuitry and devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation, and for limiting power as required by 2.1033(c)(10).

ADC RESPONSE: The input to the Host Unit has a digital attenuation chip (ALC) to provide protection from overdrive with 5-10 millisecond attack time / 100 millisecond decay time and 31 dB of head room, such that single channel operation, or multi-channel operation will not exceed nominal gain of the system.

The frequency stability is derived by the BTS, base transceiver station. Our product uses internal frequency stability to keep the signal inside our filter bandwidths. This means that our frequency can change, but the frequency that we transmit is still at the original frequency. The remote system uses the data over the fiber optic path to phase/frequency lock to the host. The purpose is to frequency lock the up- and down-conversion local oscillators, and thereby eliminate any end-to-end frequency shift.

Our spurious limitation is completed with the duplexer. The ALC also suppresses in-band spurious by preventing PA overdrive, while the duplexer suppresses out-of-band spurious.

We do not modulate the RF, so we do not have a modulation limiter. We are not changing the modulation of the RF or the occupied bandwidth of any channel. We are transporting the signal, as is, over an optical link. The RF input is not changed in the RF output.

We have a constant gain device, so the setup controls the output. We do have an overdrive and overpower limit control that prevents excess power.

8. ATCB Comment: The application does not appear to provide a detailed description of the modulation system to be used, including the response characteristics (frequency, phase and amplitude) of any filters provided, and a description of the modulating wavetrain, and for the maximum rated conditions at which the equipment will be operated for each modulation as required by (2.1033(c)(13)).

ADC RESPONSE: Please see answer to Question 7, above.

9. ATCB Comment: The application does not appear to contain information regarding both DC voltages AND currents applied into the several elements of the final radio frequency amplifying device for normal operation over the power range been provided? (2.1033(c)(8)).

TUV/ADC RESPONSE: The cover letter has been revised to include this information and file **ADC SCS1900 Cover Letter-REV.pdf** has been uploaded.

10. ATCB COMMENT: RF Exposure limits do not appear to be correct and therefore affect the calculations and what appears to the calculated distance and what may be reported in the manual. Please review and correct as necessary.

RESPONSE: Revised SAR letters have been uploaded. Files **ADC SCS1900 FCC SAR-MPE Calculation Letter-REV.pdf** and **ADC SCS1900 IC SAR LTR.pdf**. (See also #18 below.)

11. ATCB COMMENT: Test methods given in the back of the report (page C2) and the substitution method on the same page cite ANSI C63.4. Testing for licensed devices must follow EIA/TIA 603. Please review and correct as necessary.

TÜV RESPONSE: The test report has been revised. Files **ADC SCS1900 FCC Report WC505741 Rev B-Part 1.pdf** and **ADC SCS1900 FCC Report WC505741 Rev B-Part 2.pdf** have been uploaded.

12. ATCB COMMENT: Typical TDMA signals for US are 1930.04 – 1989.92 MHz. However it appears measurements were made at 1930.20 MHz and 1989.80 (page A34 & A43) and may possibly be above limit at bandedge 894 MHz. Please explain.

ATCB RESPONSE: No data for this PCS device shows bandedge at 894 MHz.

The system is completely transparent from input to output, is broadband, and has no channelization. The licensed operator/customer of the equipment will only operate the equipment according to the FCC channel plan as their base station equipment will only operate according to the licensed channel plan. The reference test signals used generally show that no modulation spurious transmit outside of the authorized frequency range. I typically like to leave about 200 kHz spacing between the signal and the band edge, as it is easier to create “standard” data drawings when using a consistent frequency test platform that is ambiguous of modulation. FCC and IC guidelines typically mention “near” the highest and lowest frequencies to be shown.

TÜV: The test report has been revised. Files **ADC SCS1900 FCC Report WC505741 Rev B-Part 1.pdf** and **ADC SCS1900 FCC Report WC505741 Rev B-Part 2.pdf** have been uploaded.

13. ATCB COMMENT: Various intermodulation results do not appear to utilize the required 1 MHz RBW setting (i.e. < 1 GHz). Please review/comment/correct as necessary.

TÜV RESPONSE: Below 1 GHz, no significant emissions were detected. Although a 100 kHz RBW setting was used instead of 1 MHz, measurement data could be increased by 10 dB to compensate and still remain below the -13 dBm limit.

14. ATCB COMMENT: Please explain the purpose of the 73 to 50 Ohm conversion in the substitution method used.

TÜV RESPONSE: The tunable dipole antenna we use, to substitute for the EUT, includes a 73 to 50 ohm balun. It becomes part of the correction factor used to determine the total gain of the dipole. This information was supplied by the manufacturer, Schwarzbeck.

15. ATCB COMMENT: Users Manual does not appear to address the fact that 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).

ADC RESPONSE: 15.21 states:

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The following statement has been added to the user manual (15.21):

Caution: Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The following statement has been added to the user manual (15.15):

15.5 General conditions of operation.

- (a) Persons operating intentional or unintentional radiators shall not be deemed to have any vested or recognizable right to continued use of any given frequency by virtue of prior registration or certification of equipment.
- (b) Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.
- (c) The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.

15.19(a)(1) states:

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or verification shall be labeled as follows:

- (1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under part 73 of this chapter, land mobile operation under part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

The following label statement will be added to the Host unit as shown below (15.19):

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This label information shown will be printed onto a label and placed on the Host unit in the area designated by the arrow in the revised label info file, which has been revised to include a photo showing this labels placement also.

TÜV: File **ADC SCS1900 Label-FCC Part 15.pdf** has been uploaded.

TUV: **Page ix of the manual has been revised and file ADC SCS1900 Manual - page ix_revised FCC paragraph.pdf has been uploaded.**

For IC:

16. ATCB COMMENT: For IC labeling, the device must also include a) the model number and b) applicant as Certified. Please correct.

RESPONSE: The label has been revised and file **ADC SCS1900 Label Info-REV.pdf** has been uploaded. Please note that the Model number is indicated on the label as XXXX-XXXXXXX with Notes 1 and 4 referenced below the label. Note 4 lists the two model numbers pertaining to this product that will be inserted in place of the shown Xs as appropriate.

17. ATCB COMMENT: This application appears to be for multiple models under an existing family approval. Therefore, please include a list of all models to be included in the family and sufficient information to show that each of the devices can be approved under one Certification Number.

ADC RESPONSE: Models are **DGVC-431X0000100SYS**, **DGVC-441X0000100SYS**, **DGVC-451X0000100SYS**, and **DGVC-461X0000100SYS**

The only differences between these four systems is a passive filtering device – duplexer. All systems were tested for emissions with no differences found, other than the conducted measurements within their respective authorized bands.

TUV: The application has been revised to remove the “X” from each model and files **ADC SCS1900 RSP-100-REV.pdf** and **ADC SCS1900 Cover Letter-REV.pdf** have been uploaded.

18. ATCB COMMENT: Given the exemption powers of RSS-102 are exceeded, please also provide Appendix A (see ATCB IC form) for RF exposure.

RESPONSE: File RSP-100 Annex A has been added to the revised application file **ADC SCS1900 IC RSP-100-REV.pdf** and uploaded.

19. ATCB COMMENT: Advertising material states output power is 6.5 Watts composite. FCC shows approximately 5.9 Watts single channel, but IC report shows about 10.4 Watts for 2 channels. It does not appear that composite power is 5.9 Watts (or 6.5 Watts). Please explain/correct as necessary. Also, please explain compliance to the 3.5 dB requirement for reduction of power and how this is accomplished.

ADC RESPONSE: Variance in manufacturing specifications and test protocol must be considered for this test. FCC requires single carrier test method, IC requires dual carrier “over drive” method. The TCB and FCB submittals are separate packages and the output measurements should be treated as such.

The advertising material meets the requirements for RSS-131 Section 4.3.1 and 6.2 (below):
Section 4.3.1: Record all signal levels and their frequencies. Calculate the mean output power (Pmean) under this testing condition using $P_{mean} = P_{o1} + 3 \text{ dB}$.

Section 6.2: The manufacturer's output power rating Prated MUST NOT be greater than Pmean for all types of enhancers.

The following statement is included in the manual:

Note 1: Per Industry Canada Section 5.3 - The rated output power of this equipment is for single carrier operation. For situations where multiple carrier signals are present, the rating would have to be reduced by 3.5 dB especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

TUV: Page 2-26 of the manual has been revised and file **ADC SCS1900 Manual REV - page 2-26.pdf** has been uploaded.

20. ATCB COMMENT: Please confirm that for spurious emissions (radiated) that 2 signals were present for testing.

RESPONSE: The IC Test Report has been revised and files **ADC SCS1900 IC Report WC505741.1 Rev A-Part 1.pdf** and **ADC SCS1900 IC Report WC505741.1 Rev A-Part 2.pdf** have been uploaded.

21. ATCB COMMENT: Please explain if the bandwidths provided are following IC's desired 99% methodology. See attached document previously provided that discusses this as well as RSS-GEN section 4.4.1.

RESPONSE: The IC Test Report has been revised and files **ADC SCS1900 IC Report WC505741.1 Rev A-Part 1.pdf** and **ADC SCS1900 IC Report WC505741.1 Rev A-Part 2.pdf** have been uploaded.

22. ATCB COMMENT: It does not appear that RX emissions per RSS-GEN Section 4.8 & 6 were provided.

RESPONSE: The IC Test Report has been revised and file **ADC SCS800 IC Report WC505740-1 Rev A.pdf** has been uploaded. However, the client contacted Industry Canada with regards to the applicable portions for certifying their equipment and the IC states that only RSS-131 requirements need to be met. Thus, sections 4.8 and 6.0 of RSS-GEN should not be applicable. The response from Industry Canada has been uploaded.

Please let us know if anything further is required.

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