

Appendix A

Non-Conformities for US Radio Equipment Authorization

Non-Conformities FCC ID: EO9DCU5310 (CKC CS Ref # E09-000005-FCC-01)

The items listed below represent requests for information following review of this application for certification under United States (FCC) regulations. Further question may arise pending review of responses to these items.

OK	ID	#	Non-Conformity or Comment	Submitted Response	Respondent / Date of Response
x	C	1	Block Diagram was not provided. Please Provide a Block Diagram of the device for certification.	Block Diagram Provided.	Drew Rosenberg 1/25/09
x	C	2	Label Photo Missing. There was a Photo provided of the Label Placement but there was not a photo or drawing provided of the label itself. Please Provide a Photo or Drawing of the Label.	Label Photos Provided.	Drew Rosenberg 1/27/09
x	C	3	IC and FCC Confidentiality Letters must stand alone. The letter that you provided covers both IC and the FCC. Please provide separate letters for each Agency that you are filing with addressed to the individual Agencies. Letters must also be signed.	Updated separate letters for each agency provided.	Drew Rosenberg 1/29/09
x	C	4	<p>Stacy Destito is the Authorized individual for Itron, Inc. Grantee Code EO9. There is not an authorization letter on file that allows you (Drew Rosenberg) to sign letters on behalf of Stacy Destito and/or Itron, Inc.</p> <p>In accordance with FCC Policy (KDB 852134), please provide all cover letters signed by the authorized individual named in the applicant's grantee code information or by an authorized designee.</p> <p>In the latter case, please also provide letters of authorization signed by the authorized individual designating the alternate(s). In all cases, a paper trail must be demonstrated leading back to the person named under the grantee code.</p>	<p>Authorization Letter to Allow Drew to sign letters provided by Stacy Destito. Document: 2457_001</p>	Stacy Destito 1/26/09
x	C	5	The user manual TDC-0770.pdf exceeds the file size limit of 6MB. Please reduce or separate the user manual into smaller file.	I Will Break this down when The Final Users Manual is received and approved.	Jessina Hunter 2/10/09

				Received Approval of Final Users Manual and broke this version down to below 6 MB each.	Jessina Hunter 3/4/09
x	C	6	Tune up procedure is missing from the application. Please provide the required document needed to licensed device.	<i>Tune up procedure:</i> There is no tune-up procedure for this device. The frequency and amplitude of the transmitter cannot be changed by the end user. Routine calibration is performed whenever the device is returned for service. <i>DC Voltage:12V</i>	<i>Drew Rosenberg</i> <i>2/2/09</i>
x	TL	7	Page 2 of the test report 15.247 fcc-ic_915MHz_MC3_DL10 listed the power in units other than watt. Please provide a updated test report presenting RF Output power as stated in 15.247 (b)(2).	RF Exposure Reports Provided. New Test Report Provided.	1/27/09
x	C	8	The provided operational description does not provide sufficient circuit detail. Please provide a revised operational description addressing the ground system and antenna, please verify whether the Part 101 antenna is shared with the part 15 RF circuit, In addition, please address signal information including modulation type.	<i>A revised technical description is attached. I am also attaching the antenna spec.</i>	<i>Drew Rosenberg</i> <i>2/10/09</i>
x	C	9	The provided internal photographs are not legible. Please provide detailed internal photographs, due to the size of the PCB, the photograph may need to be sectioned and photographed with macro mode. Identity of frequency determining RF component such as crystal shall be legible.	<i>New Internal photos and external photos have been uploaded to the website.</i>	<i>Drew Rosenberg</i> <i>2/10/09</i>
x	C	10	The external photos do not show the two sides. Please provide additional photograph showing the left and right side of the device. In addition, please provide a detail photo where the RF port and I/O	<i>New Internal photos and external photos have been uploaded to the website.</i>	<i>Drew Rosenberg</i> <i>2/10/09</i>

			ports can be identified.		
x	C	11	<p>From the photograph, this device appears to be a portable device where emission profile of three orthogonal orientations needs to be investigated. However it is not clear whether the emission profile of three orthogonal orientations were investigated and the worst case was presented for the report.</p> <p>Please verify whether the worse case of the three orthogonal orientations was investigated. Alternatively IF the only possible orientation to be used in the field is identical to the position as tested, then a statement claiming as such is sufficient to meet compliance</p> <p>2/15/09: The response did not clarify whether the worse case of the three orthogonal orientations of the portable device was investigated.</p>	<p>This device transmits through a roof-mounted vehicle antenna, which we supply to the customer. A metal ground plane was used to simulate the vehicle roof. The DUT was placed on the turntable underneath the metal ground plane.</p> <p>See attached email for prior discussion with CKC on this subject. - Metal Counterpoise</p> <p>Worst case of the three orthogonal orientations was investigated 3/2/09 (EW okayed)</p>	<p>Drew Rosenberg 2/2/09</p> <p>Drew Rosenberg 2/28/09</p>
x	TL	12	<p>Description of test setup is not available. From the setup photo Test Setup Photos 15.247.doc, only a transmitting antenna was placed on the turn table. Please provide a test description or revised photograph addressing the connection of RF and I/O port during the test for 15.247.</p> <p>2/15/09: The response did not clarify how the EUT and support devices were connected.</p>	<p>This device transmits through a roof-mounted vehicle antenna, which we supply to the customer. A metal ground plane was used to simulate the vehicle roof. The DUT was placed on the turntable underneath the metal ground plane.</p> <p>See attached email for prior discussion with CKC on this subject. - Metal Counterpoise</p> <p>The EUT and all support devices were connected. 3/2/09 (EW okayed)</p>	<p>Drew Rosenberg 2/2/09</p> <p>Drew Rosenberg 2/28/09</p>

x	TL	13	<p>The user manual indicates a GPS antenna can be attached to the device, however there is no indication whether a GPS antenna was attached to the device during the test. Please clarify whether a GPS antenna was attached to the device during the test. Alternatively compliance to 15.111 suffices to meet this non-compliance.</p>	<p>The GPS antenna is embedded in the roof-mount antenna base that Itron provides to its customers.</p> <p>Two RF cables run from that antenna to the DUT. There are 4 RF connectors total on the DUT:</p> <ol style="list-style-type: none"> 1) Primary antenna – for all transmissions from the device, as well as a 908-924MHz receiver. 2) GPS antenna 3) Side looker 1 (receive-only) 4) Side looker 2 (receive-only) <p>2/14/09 EW note, clarifies, the base embedded GPS antenna was connected to the device during emission testing.</p>	<p>Drew Rosenberg 2/2/09</p>
x	TL	14	<p>Page 3 of the test report identifies the device is to be powered with mobile battery system. however there is no indication of a fresh battery being used nor a external power supply that provides the exact output voltage to that of a mobile battery system.</p> <p>Please verify whether a freshly charged automobile battery was used, alternative please identify the DC voltage being used during the test if an external power supply was used.</p>	<p>Updated test reports have been provided.</p>	<p>Drew Rosenberg 2/10/09</p>
x	TL	15	<p>The radiated and conducted spurious emission was performed from 9kHz-GHz, however there is no indication of appropriate RBW and detector function being employed for measurement covering 9kHz-9.4GHz. Please provide a revised test report 15.247 fcc-ic_915MHz_MC3_DL10.</p>	<p>Annex A of the 15.247 test report addresses radiated and conducted measurement procedures.</p> <p>Annex A of the Part 101 test report addresses the antenna substitution method of measuring EIRP and</p>	<p>Drew Rosenberg 2/5/09</p>

				Annex B of the part 101 test report addresses field strength measurement procedures. Conducted measurements were not provided in the original test report but are in the modified one. Conducted measurement procedures are included in that section of the modified test report.	
x	TL	16	Page 18 of the rest report 15.247 fcc-ic_915MHz_MC3_DL10, a correction factor has been added to the limit line, which is not appropriate. Please provide a revised test report with the limit expressed in the same emission level as stated in the requirement, with any applicable correction factor presented in a separated column.	Updated test reports have been provided.	Drew Rosenberg 2/10/09
x	TL	17	<p>Page 18 of the rest report 15.247 fcc-ic_915MHz_MC3_DL10, In accordance with FCC DA00-705, "The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$."</p> <p>Please provide a revised test report showing Peak reading, averaged reading measured with VBW=10Hz and a "further adjusted" average reading using a duty cycle correction if the average reading measured with VBW at 10Hz did not meet the limit.</p> <p>Please provide an updated user manual incorporating the statement required by 15.21</p>	<p>A peak measurement was performed. Given that the duty cycle corrected peak measurement passes the requirements, an average measurement is not required.</p> <p>2/14/09 EW, RC to make the final call.</p> <p>2/27/09: Randy approved peaks with duty cycle coercion factor applied.</p>	Drew Rosenberg 2/5/09
x	C	18	Per 15.203, part 15 intentional radiator shall employ unique antenna connector, unless the device is to be professionally installed. Please	Regarding #18, we are interested in pursuing the professional	Drew Rosenberg 1/30/09

		<p>clarify whether antenna connector other than BNC, TNC, N, CMA, MMCX ,F or other commonly available antenna connector was used for the Part 15 transmitter.</p> <p>2/15/09: Please describe how is the pursuant of professional installation with reference to FCC document KDB189073 achieved for the product.</p>	<p>installation exemption. What artifacts are needed from us to show that the necessary controls are in place to prevent an untrained person from installing this equipment?</p> <p>One thing to note – some of our customers will not use the feature that requires part 15 transmissions, but will use it in the same way that they use its predecessor today (receive-only, part 101 licensed). We can place restrictions in our mobile collection software application in order to limit professional installation to this one feature.</p> <p><i>022708 the following KDB was send to the FCC KDB 243519.</i></p> <p><i>Subject: Unlicensed and Licensed transmitter using same RF port. Question: We have an application in review where the same RF output port is used for operation under both licensed and unlicensed rule parts. The final device is not accessible to consumers, the product is limited for a specific use and marketed only to utility companies. For operation under the unlicensed rule parts, must the applicant demonstrate compliance with 15.203? 3/3/09 FCC replied 15.203 must be met</i></p>	
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				3/3/09, Drew provided Professional installation letter.	
x	TL	19	The bandedge plot of page 24 and page 25 of the test report 15.247 fcc-ic_915MHz_MC3_DL10 does showed compliance at 908 and 924 MHz. please proved a revised test report show compliance at the assigned band of 902-928MHz	The transmitter only transmits between 908 and 924MHz. The bandedge plots show that emissions at 902 and 928 are below the limits when the transmitter is at its highest and lowest channels.	Drew Rosenberg 2/5/09
x	A	20	Emission designator listed on the application report and TCB website is 11K0A2D. However emission designator listed on IC application for the same device is A3D with a measured 99%BW of 3.64kHz, which would make the emission designator 3K64A3D. Please verify which emission designator is correct 11K0A2D or 3K64A3D.	<p>We are requesting that the emissions designator reported to the FCC be 11K0A3D. The 2 was a typo. Although the OBW is much lower (3.64kHz), we are requesting that the emissions designator be reported with an 11k so that existing customers do not have to change their existing licenses. This is a replacement for FCC ID EO9DCU5000 and it would be an unnecessary expense to our customers to have to update those licenses.</p> <p>Note that the emissions designator on the grant for EO9DCU5000 is 11k0A2D, but this was also a typo. The correspondence attached to the EO9DCU5000 grant on the FCC website specifies that the true emissions designator should be 11k0A3D. See attached for details.</p> <p>I have an amendment to the</p>	Drew Rosenberg 2/2/09
					Drew Rosenberg

				<p>following response. 2 was not a typo – 3 was. The emissions designator end with A3D:</p> <p>3 - A single channel containing quantized or digital information with the use of a modulating sub-carrier, excluding time-division multiplex</p> <p>This is not an analog transmission.</p>	2/5/09
x	TL	21	Power listed on page 2 of the test report FCC part 101 and IC rss119 MC3 DL10 is in dBw, please provide a revised test report expressing output power in W, in addition to dBw.	Updated test reports have been provided.	Drew Rosenberg 2/10/09
x	C	22	DC voltage and current into the final several elements of the final radio frequency amplifying device is not provided. Please furnish information required to meet 2.1033 (c) (8)	9 Volts and a maximum of 2 Amps is applied to the part 101 MAS transmitter PA.	Drew Rosenberg 2/6/09
x	C	23	Please provide tune up procedure to meet 2.1033 (c) (9) requirement.	<p><i>Tune up procedure:</i></p> <p>There is no tune-up procedure for this device. The frequency and amplitude of the transmitter cannot be changed by the end user. Routine calibration is performed whenever the device is returned for service.</p>	<i>Drew Rosenberg</i> 2/2/09

				<i>DC Voltage:12V</i>	
x	TL	24	Conducted spurious at antenna terminal is missing from the test report FCC part 101 and IC rss119 MC3 DL10. Please provide a revised test report meeting 2.1051 requirement.	Updated test reports have been provided.	Drew Rosenberg 2/10/09
x	TL	25	The provided setup photograph, "Test Setup Photos Part 101.pdf" does not include the transmitting antenna. Please provide a setup photograph and test condition to clarify whether the test setup meets the radiate spurious emission 2.1053 under normal conditions of installation and operation	The antenna port was terminated during the part 101 radiated spurious emissions test. The unit ships with a roof-mount vehicle antenna.	Drew Rosenberg 2/5/09
x	TL	26	<p>Page 18 of the user manual TDC-0770.pdf indicates an optional Side looker Antenna can be used with the device. However this antenna was not used in the evaluation of the RF profile nor any detail of this antenna was provided. Please provide a revised test report with the inclusion of a Side Looker antenna to justify a worse case emission profile was evaluated.</p> <p>2/15/09: Please clarify whether the Sidelooking antenna was connected during emission testing to ensuring the received only antenna did not unintentionally become a RF path, radiating unwanted RF emission such as LO frequency of the receiver or other digital controller.</p>	<p>The device has four RF connectors:</p> <ol style="list-style-type: none"> 1) GPS receiver 2) Primary antenna (5dBi roof-mount, for transmit and receive in the 908-924MHz band, transmit only in the 952-960MAS band) 3) Side-looking receivers (receive-only) <p>The device never transmits outside of the receive-only side-looking ports. The side-looking antennas are also mounted somewhere on the vehicle roof through the use of a magnet.</p> <p>2/27/09 15.111 provided.</p>	Drew Rosenberg 2/2/09
x	TL	27	The radiated and conducted spurious emission was performed from 9kHz-GHz, however there is no indication of appropriate RBW and detector function being employed for measurement covering 9kHz-9.4GHz. Please provide a revised test report FCC part 101 and IC rss119 MC3 DL10.	<p>Annex A of the 15.247 test report addresses radiated and conducted measurement procedures.</p> <p>Annex A of the Part 101 test report addresses the antenna substitution method of measuring EIRP and Annex B of the part 101 test report</p>	Drew Rosenberg 2/5/09

				addresses field strength measurement procedures. Conducted measurements were not provided in the original test report but are in the modified one. Conducted measurement procedures are included in that section of the modified test report.	
x	C	28	Antenna installation instruction in the user manual is missing a statement addressing antenna separation for RF exposure compliance. Please provide a update user manual with antenna separation distance identified in the antenna installation section,	<p>The following verbiage is on page two of the users manual that was submitted, TDC-0770.pdf. Please let us know if more is required.</p> <p>RF EXPOSURE To comply with FCC requirements, maintain a separation distance of at least 40.0 centimetres between the antenna and all persons.</p> <p>ELECTROMAGNETIC COMPATIBILITY Use only approved accessories with this equipment. In general all cables must be high quality, shielded, correctly terminated, and normally restricted to 2 meters in length. The Mobile Collector Lite employs special provisions to avoid radio interference and should not be altered or substituted. Unapproved modifications or operation beyond or in conflict with these instructions for use, may void authorization by the authorities to operate the equipment.</p>	Drew Rosenberg 2/6/09
x	C	29	Please provide an updated label with labeling requirements in accordance with 15.19	Updated Label Provided.	Drew Rosenberg 1/27/09
x	C	30	Please provide an updated user's manual incorporating the statement required by 15.21	<p>The following verbiage is on page two of the users manual that was submitted, TDC-0770.pdf. Please let us know if more is required.</p> <p>RF EXPOSURE To comply with FCC requirements, maintain a separation distance of at least 40.0 centimetres between the antenna and all persons.</p> <p>ELECTROMAGNETIC COMPATIBILITY Use only approved accessories with this equipment. In general all cables must be high quality, shielded, correctly terminated, and normally restricted to 2 meters in length. The</p>	Drew Rosenberg 2/6/09

				Mobile Collector Lite employs special provisions to avoid radio interference and should not be altered or substituted. Unapproved modifications or operation beyond or in conflict with these instructions for use, may void authorization by the authorities to operate the equipment.	
x	C	31	It is unclear how the device complies to 101.141 requirement. Please provide a description of bit rate complying with 101.141 requirement.	<p>We are in contact with Steve Buenzow at the FCC on this topic. Historically, MAS transmitters have been exempt from this requirement, but Steve is working to get us something that we can use for this submittal.</p> <p>I recommend moving forward with all other items on this grant for now. By then, I hope to have something that can close this out as well.</p> <p>101.139 (authorization of transmitters) does not list the 952-960MHz band as having to meet the payload requirements specified in 101.141.</p>	<p>Drew Rosenberg 2/10/09</p> <p>Drew Rosenberg 3/2/09</p>
x	TL	32	<p>The transmit signal of device is declared as Amplitude modulated however the provided emission mask complies to 101.111 (a)(5) is designated for transmissions employing digital modulation techniques on the 900 MHz multiple address frequencies with a 12.5 KHz bandwidth.</p> <p>Please confirm whether the correct emission mask was used for the applicable modulation type.</p>	<p>The signal is digital.</p> <p>For historical purposes: The part 101 section of this device is the functional equivalent to the following FCC IDs. EO9DCU5000, EO9FNCCU4, EO9FC200A, EO9D5R, EO9G5RL, and EO9MC</p> <p>2/15/09: Customer clarifies the signal is digital modulated.</p>	<p>Drew Rosenberg 2/10/09</p>

x	C	33	<p>The Emission designator listed A3D does not meet the definition of Digital modulation. Please elaborated the relationship between A3D as listed and Digitally modulated signal as declared to meet non-compliance #32.</p> <p>A : AM (Amplitude Modulation), double sideband, full carrier 3 : Single analog channel D : Data, telemetry, telecommand</p> <p>2 : Digital, with modulation</p>	Our emissions designator should say A2D. 3 is a typo	3/4/09 Drew Rosenberg,
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The items indicated above must be submitted before processing can continue on the referenced application. Failure to provide the requested information within 60 days may result in application dismissal pursuant to Section 2.917(c) and forfeiture of the filing fee pursuant to Section 1.1106.

How to read the table:

OK column indicates closure by CKC CS.

ID column is for use with Agents to assist in identifying the probable source for closure.

A - Application issue

TL - Test lab issue

C - Client issue

R - Retesting may be necessary

column indicates unique or separate non-conformity items (note some items may be related).

Non-Conformity or Comment column indicates the evaluators specific question or comment.

Submitted response column indicates the response or a summary of the response provided.

Respondent / Date of Response column indicates the responding party or agent and the date of the response was either received or logged.