

Appendix A

Non-Conformities for US Radio Equipment Authorization

Non-Conformities FCC ID: OQL-R-DS (Ref # E05-000371-1)

The items listed below represent requests for information following review of this application. Further question may arise pending review of responses to these items.

OK	#	Non-Conformity or Comment	Submitted Response	Respondent / Date of Response
x	1	It is noted that the UKAS accreditation does not cover measurements below 30MHz. Please submit justification for acceptance of test data for the measurements performed in this frequency range. Please submit a copy of the UKAS accreditation.	The laboratory is accredited for ETSI standards EN300 339 and ETS 300 683, these being radio specific. All testing performed by the laboratory uses UKAS calibrated instrumentation and the same methods and procedures as for ISO 17025 accredited work. Issue 028 attached.	Pac International 2/2/06
x	2	It is recommended by the FCC that the cover letter requesting confidentiality reference both 47 CFR §0.457 and §0.459 for completeness. Please revise as appropriate.	Revised.	Pac International 2/2/06
x	3	Test report introduction states that the device may use DoC procedures for equipment authorization. This is incorrect with respect to intentional radiators. In accordance with §15.201 Equipment authorization requirement. (b) Except as otherwise exempted in paragraph (c) of this section and in §15.23 of this part, all intentional radiators operating under the provisions of this part shall be certificated by the Commission pursuant to the procedures in Subpart J of Part 2 of this chapter prior to marketing.	This was an error due to a misunderstanding of guidance obtained from the FCC for another product. Now revised in TR2.	Pac International 2/2/06
NO	4	Test report states testing was performed on DC lines. Please justify rationale for test deviation on AC mains conducted emissions. This device obviously obtains power from a source which is connected to AC mains. Reference 15.207 (c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not	The EUT has no AC power port; it is DC powered via the signal cable and the power source is the responsibility of the user. A typical bench power supply was used as the EUT power source. Section 1.8	Pac International 2/2/06 SEE BELOW

		operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.	para 2 of the report references Clause 15.208(c) and explains that the emissions from the EUT power source masked the emissions from the EUT. Therefore measurements on the DC lines were performed against 15.107 Class A limits to accurately characterize the emissions for the EUT.	
x	5	Please provide demonstration of compliance to 15.31(e), output power stability under voltage variations	Output power tests at 53%, 100% and 171% of nominal voltage were performed against the requirements of EN300 330-1; these have been added to 1926TR2.	Pac International 2/2/06
x	6	Test distance for 15.209 measurements below 30MHz states 10m, however there is no indicated correction factor in accordance with 15.31(f). Additionally, the spec limits for 15.209 are incorrect, possibly due to inclusion of the correction factor into the spec limit. The spec limits must be show as listed in 15.209 and any correction factors applied to the test data for comparison to the limit. Please revise the test report to indicate exact method of determining compliance with 15.209 limits in the frequency range below 30MHz.	Correction factors were included in the spec limit but there were errors in these limits. Report 1926TR2 has been revised to apply correction to measured data.	Pac International 2/2/06
x	7	The test data does not show calculations for measurement data for readings below 30MHz. Based on notes indicated in the test report, the TCB wishes to further review the measurement data in order to more accurately assess compliance for this rule part. Please provide all correction factors and raw data used for these measurements	Report 1926TR2 has been revised to show calculations for measurement data on readings below 30MHz	Pac International 2/2/06
x	8	The test report does not state to which limit compliance is assessed. Please revise the test report to indicate exact method of determining compliance with applicable limits in the frequency range above 30MHz Notes: Test distance for measurements above 30MHz states 10m, however there is no indicated correction factor in accordance with 15.31(f). Additionally, the spec limits in this range appear to be for 15.109 b (class A limits), however there is no such indication. In	The tables in Paras 2.3.1, 2.3.2, 2.3.3 and pages A6, B1, C10 give limits used. Report 1926TR2 has been revised to refer to 15.209 Para 6.2.1 and 6.2.2. indicate the method used. Report 1926TR2	Pac International 2/2/06

		general, equipment which is an intentional radiator or is digital circuitry which has direct control over intentional radiator circuitry is itself considered part of the radio and is thus required to comply with the intentional radiator requirements of 15.209.	has been revised to show calculations for measurement data on readings below 30MHz Report 1926TR2 has been revised to refer to 15.209 This would happen since any digital circuitry cannot be separated from the intentional radiator.	
x	9	According to the block diagram, the CPU appears to have direct control over the Intentional radiator circuitry within the device. If this is correct, then radiated emissions measurements to 15.209 must be performed according to 15.33 (9kHz to 1000MHz). If this is incorrect, then emissions measurements to 15.209 must be performed over the frequency range of 9kHz to 30MHz. The emissions reported indicate a frequency range of investigation of 9kHz to 1.705 MHz. Please explain.	Pre scans were performed up from 9kHz to 30MHz and 30MHz to 1GHz then the EUT was transferred to the OATS. The two emissions reported below 30MHz were the only ones that were identified on the OATS. Report 1926TR2 has been revised to clarify that the range 9kHz to 30MHz was investigated.	Pac International 2/2/06
x	10	Please describe the signal characteristics of the EUT. If the device is pulsed, was duty cycle correct factor employed?	The unit was tested over a duty cycle far in excess of that experienced in the field. This was achieved by having a card taped to the reader and continuously generating read cycles. In the field this would only happen when access to a door was required.	Pac International 2/2/06
x	11	Please provide a description of the peripherals used during testing in accordance with 2.1033(b)(8)	1926TR2 has been revised to provide a description of the Farnell Linear PSU used during testing in accordance with 2.1033(b)(8).	Pac International 2/2/06
x	12	Please demonstrate compliance to 15.209(c) The level of any	The statement in 6.2.4 of the TR2	Pac International

		unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission.	report now addresses this point	2/2/06
no	13	Please supply the RFID tag return frequency in order to demonstrate compliance with 15.205, restricted bands of operation; the RF ID tag return frequency cannot be in a restricted band.	The tags used to support the readers during testing were standard 125KHz proximity tags manufactured by Sokymat under their part number 914103. Each tag has a unique serial number that is communicated to the reader by means of transformer action performed by loading an alternating magnetic field generated by the reader. The tags are passive and derive their power from the magnetic field produced from the reader. The power is picked up from a coil in the tag and across that coil is a capacitor and a micro chip. When the chip is activated it switches in and out an extra resistive load across the coil in such a way as to produce a Manchester encoded representation of the serial number and other header information. The tags do not radiate any RF field but simply place a varying load on the reader's exciting field.	Pac International 2/2/06 see below
no	14	The limits supplied for the DC emissions testing appear to have been assessed against 15.107 class A limits which are inappropriate for an intentional radiators. Please revise test report as appropriate based on response from previous non-conformities.	The table in 2.3.1 of the TR2 report now shows measurements referred to 15.207 (a). For the Designer Standard the measurements come in below the limit line with the worst being -1dB down from the limit.	Pac International 2/2/06 See below

Non-Conformities FCC ID: OQL-R-DS (Ref # E05-000371-2)

The items listed below represent requests for information following review of this application. Further question may arise pending review of responses to these items.

OK	#	Non-Conformity or Comment	Submitted Response	Respondent / Date of Response
	1	The DC conducted emissions provided are not sufficient to demonstrate compliance to 15.207 requirements. As stated by the FCC in May 2003 TCB Training notes, "For transmitters that use AC to DC power adapters that are not supplied by the grantee, compliance must be shown with an unmodified "off the shelf" AC to DC power adapter." Original Item: "Test report states testing was performed on DC lines. Please justify rationale for test deviation on AC mains conducted emissions. This device obviously obtains power from a source which is connected to AC mains. Reference 15.207 (c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits."	Updated test report includes AC conducted data which satisfies 15.207	3/6/06
	2	The provided explanation did not include the RF Tag return frequency. This may also be determined by the receiver band within the equipment. Original Item: "Please supply the RFID tag return frequency in order to demonstrate compliance with 15.205, restricted bands of operation; the RF ID tag return frequency cannot be in a restricted band."	Point 2 about the return frequency of the token. There really isn't one. These tokens do not radiate they simply put a pulsed load on the excitation coil. It's not like a smart card that receives energy and sync pulses at one frequency and radiates at another. Our token simply presents a pulsing passive load when in the excitation field.	Pac International 2/7/06

	3	Due to FCC website limitations, all documents uploaded to the FCC website must be smaller than 4MB. Please provide a test report in sections no larger than 4MB.	Test report updated / separated into three parts.	3/6/06
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