Exhibit A: Cover Letter

FCC ID: CW21668-2-1W

Information about the Client

Company Name:	Rothenbuhler Engineering Company, Inc.
Address:	PO Box 708, 2191 Rhodes Road
City, State, Zip:	Sedro Woolley, WA, 98284-0708
Test Requested By:	Herb Hainey
Job Number:	ROTH0003

Equipment Under Test (EUT)

EUT Model Number or Product Name:	**Remote Control Blasting Machine**
	FCC ID: CW21668-2-1W

Opinion

Transient Frequency Behavior

Specification Requirements	Method Requirements	Description	Comments/Deviations
FCC CFR 2.1055	FCC CFR 90.213	Transient Frequency Behavior	

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The manufacturer has attested that no modifications were made to the frequency determining circuitry of the radio module used in this family of products. The FCC previously approved this radio module. Engineering data was submitted by Herb Hainey, P.E, to support that this product has not changed and is still in compliance. The final compliance decision was based upon the fact that the FCC has already accepted the data. The engineering data is on file and available upon request.

Reference: Test data from previously submitted product FCC ID: CW21668-1 has been included in Exhibit K.

Frequency Stability vs. Temperature

Specification Requirements	Method Requirements	Description	Comments/Deviations
FCC CFR 2.1055	90.213	Frequency Stability	

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The manufacturer has attested that no modifications were made to the frequency determining circuitry of the radio module used in this family of products. The FCC previously approved this radio module. Engineering data was submitted by Herb Hainey, P.E, to support that this product has not changed and is still in compliance. The final compliance decision was based upon the fact that the FCC has already accepted the data. The engineering data is on file and available upon request.

Reference: Test data from previously submitted product FCC ID: CW21668-1 has been included in Exhibit J.

Frequency Stability vs. Input Power

Specification Requirements	Method Requirements	Description	Comments/Deviations
90.214	90.214	Frequency Stability	

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The manufacturer has attested that no modifications were made to the frequency determining circuitry of the radio module used in this family of products. The FCC previously approved this radio module. Engineering data was submitted by Herb Hainey, P.E, to support that this product has not changed and is still in compliance. The final compliance decision was based upon the fact that the FCC has already accepted the data. The engineering data is on file and available upon request.

Reference: Test data from previously submitted product FCC ID: CW21668-1 has been included in Exhibit J.

Operational Description Clarification

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The operational description included as Exhibit E of the application, describes the RF module as having transmitter output power of .1 to 5 W. The manufacturer has attested that the output power of the RF module is set at the factory and cannot be changed by the user.

Reference: Exhibit E

90.203(j)(3) efficiency exemption

Opinion: The Equipment meets has been exempted from specified by the requirements listed above.

Discussion: In an email from George Tannahill the FCC has allowed this product because of its low duty cycle to be granted.

Reference: E-mail included.

-----Original Message-----
From: Engage Technology [mailto:markr@engagerf.com]
Sent: Monday, January 03, 2000 11:12 AM
To: Tom Jacobson
Subject: Fw: ? -Reply -Reply

-----Original Message-----
From: George Tannahill <GTANNAHI@fcc.gov>
To: markr@foxinternet.net <markr@foxinternet.net>
Date: Wednesday, June 17, 1998 5:23 AM
Subject: Re: ? -Reply -Reply

>Mark,
>
>Pursuant to 90.203(j)(8) we will allow the intermitant operation
>described to be exempted from the 90.203(j)(3) efficiency standard.
>
>Sincerely,
>
>George Tannahill
>
>>>> "MarkR" <markr@foxinternet.net> 06/16/98 04:24pm >>>
>George,
>
>The normal operation would have perhaps 50 command / response
>transmissions, consisting of 100 mS bursts over the period of 10
>minutes or so.
>
>This might happen once or twice per day, for an overall transmission
>duty cycle of 8% during use, or less than 0.01% over a day.
>
>Mark...
>----------
>> From: George Tannahill <GTANNAHI@fcc.gov>
>> To: markr@foxinternet.net
>> Subject: ? -Reply
>> Date: Tuesday, June 16, 1998 11:39 AM
>>
>> Dear Mr. Roberts,
>>
>> Regarding question one of your E-mail, please specify exactly what the
>> "extremely low duty cycle" is. Regarding question two, per 90.203(j)(2), a 25 KHz bandwidth would
>> not be permitted.
>>

>> Sincerely,
>>
>> George Tannahill
>>
>> >>> "MarkR" <markr@foxinternet.net> 06/09/9810:38am >>>
>> George Tannahill FCC
>>
>> Dear George:
>>
>> I sent this message to you last week in the form of a 'Word' document, and
>> as I've had no reply, I figured it may have been miss-delivered...
>>
>> Paul Slavens at Acme Testing, in Washington state suggested I contact you.
>>
>> I am an independent RF consultant, working with a customer on an updated
>> radio product, which will operate under Part 90, Subpart D, Industrial
>> Radio Services, in the VHF band (i.e. 150 - 174 MHz), using F1D emissions.
>> The old product was type accepted in 1992, but the OEM radio boards
>> are no longer available, so all new products will be made with a new radio
>> board from a different manufacturer, which I understand means we need a
>> new acceptance test.
>>
>> The application is for digital remote control of devices. The information
>> passed over the air is small data packets containing a limited set of
>> commands and responses, there is no transmission of arbitrary data,
>> nor voice. The duty cycle of transmission is extremely low. The controller
>> unit transmitter will output 5 Watts, and the remote units 100 mW.
>>
>> From my examination of the Part 90 rules, I have reached some
>> conclusions that I was hoping you would confirm.
>> 1. Given the small amount of information transmitted, we'd like to
>> use a low data rate modem (i.e. under 4800 Baud). 90.203.j.3 specifies a
>> minimum bandwidth efficiency for voice and data communications. As we are
> not transmitting voice nor data, I conclude that this does not apply to
our radio, suggesting that we may operate with a low data rate without having
>> to narrow the bandwidth. Is this correct? (With lesser bandwidth
>> efficiency, we can use a wider FM deviation to acheive greater operating
>> range, and minimize the local oscillator accuracy and phase noise
>> requirements, lowering the cost of the system.)
>>
>> 2. 90.203.j.2 suggests that we must operate with a bandwidth of
>> 12.5 KHz or less. We would prefer to use a 25 KHz channel, to broaden the choice
>> of radio boards. Would a 25 KHz channel be permitted for this low duty
>> cycle,command / response application?
>>
>> Thanks very much for your attention!
>>
>> Sincerely,
>>
>> Mark Roberts
>> Engage Technology