From: Ardavan Ghassemi <AGhassemi@hamamatsu.com>
Subject: **RE: R9779-20 MOD Spec/Price Proposal**
Date: September 19, 2013 9:04:53 PM EDT
To: Steffen Strauch <strauch@sc.edu>

Dear Steffen,

It's great to hear from you. I'm very glad to hear that PSI has approved MUSE.

The specs and pricing from last year still apply. To review, below, please find a comparison between the specs of R9779-20 MOD for JSA's Hall B FTOF instrument and what we had proposed to you in order to reduce price:

Parameters	JSA Specs	Proposal to PSI
SK	100 uA/lm typical	95 uA/lm typical
SP at 1500V	100 A/lm typical	Same
Gain at 1500V	5E+05 min., 1E+06 typical	Same
IDP at 1500V	50 nA max.	Same

where SK is photocathode sensitivity, SP is anode sensitivity (Sk x Gain), and IDP is anode dark current.

At a qty. of 180 units, our budgetary unit price estimate of R9779-20 MOD with JSA's specs is around $1050. This figure with the proposed SK spec change is lowered to $850.

I hope you find the above info helpful and the pricing satisfactory. Please don' hesitate to let me know if you have any question or comment in this regard or if I can help you with anything else.
Best Regards,

Ardavan Ghassemi
Technical Sales Rep for Scientific Projects
Hamamatsu Corp.
(P) 908.252.7632
http://www.hamamatsu.com

From: Steffen Strauch [strauch@sc.edu]
Sent: Monday, September 16, 2013 5:58 PM
To: Ardavan Ghassemi
Subject: Re: R9779-20 MOD Spec/Price Proposal

Dear Ardavan,

About a year ago you kindly provided me with price estimates for your R9779-20 MOD photo-multiplier and a slightly less sensitive PMT. Having received approval by PSI, the MUSE collaboration is currently preparing funding proposals for the experiment. I would very much appreciate if you could update your last spec/price proposal so we can have an accurate estimate for our budget.

If we can present a reasonable budget and if we get approved by our agencies, we hope to receive a first part of funding next year. At that time we would be able to start ordering the first PMTs.

Many thanks and all the best,
Steffen Strauch

On Aug 8, 2012, at 11:27 AM, <AGhassemi@hamamatsu.com> <AGhassemi@hamamatsu.com> wrote:

Dear Steffen,

Many thanks for the clarifications. Considering your concern about unit price and its impact on funding availability, I discussed various options with our production team in Japan on how we might be able to reduce the unit price without a significant sacrifice of performance. Our discussions converged on one spec whose relaxation by a small extent can result in a considerable reduction in price. Here's a comparison between the specs of R9779-20 MOD for JSA's Hall B FTOF instrument and what we'd like to propose to you:

Parameters	JSA Specs	Proposal to PSI
SK	100 uA/lm typical	95 uA/lm typical
SP at 1500V	100 A/lm typical	Same
Gain at 1500V	5E+05 min., 1E+06 typical	Same
IDP at 1500V	50 nA max.	Same

where SK is photocathode sensitivity, SP is anode sensitivity, and IDP is anode dark current.

At a qty. of 180pcs, our budgetary unit price estimate of R9779-20 MOD with JSA's specs is around $1050. This figure with our proposed SK spec change is lowered to $850.

I hope you find the above info helpful in your decision making. Please let me know if you have any question or comment or if I can help you with anything else.

Ardavan Ghassemi

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(P) 908.252.7632
http://sales.hamamatsu.com

Steffen Strauch <strauch@sc.edu>
08/03/2012 02:20 PM

To <AGhassemi@hamamatsu.com> <AGhassemi@hamamatsu.com>
cc
Subject Re: Request of a quote: PMT R9779-20 MOD

Dear Ardavan,

In response to your questions let me clarify:

1. While we won't use the detectors in conjunction with a magnetic spectrometer we still prefer to have magnetic shielding, at least to some extend. As you point out even smaller fields could compromise the signal. Having the shield from the start would also make our detector more flexible in future applications without the need to retrofit it.

2. For our PSI experiment we need both, timing and energy outputs. I am reluctant to rely on only the anode output and a subsequent signal splitting. If not done very well we might catch noise, might need to lower thresholds, and ultimately jeopardize a clean timing signal. Good timing resolution is crucial for us. Excellent timing resolution was achieved with the R9779-20 MOD setup after time-walk corrections and we plan to follow a similar approach.

For now, I would appreciate if your quote would contain shielding and two signal outputs. We might be forced to rethink our options or look for alternative solutions if our budget would not allow us to duplicate the Hall B solution.

Thank you very much,
Steffen Strauch

On Aug 2, 2012, at 12:14 PM, <AGhassemi@hamamatsu.com> <AGhassemi@hamamatsu.com> wrote:

Steffen,

Attached, please find the datasheet of R9779-20 MOD, the PMT assembly that we provided to JSA's Hall B FTOF project. Our production team in Japan has asked for a couple of clarifications in order to be able to estimate production cost. Based on their cost figures, I can then decide on our pricing for you, so please let me know of the following:

1. Magnetic Shield: Also, attached, please find data on gain instability of R9779 (without shielding) in a range of magnetic field intensities. In even a relatively low magnetic field intensity of 0.5G, a bare PMT's gain can vary by 10%. I know you said yesterday that you don't believe magnetic shielding would be necessary for your project, but I'd like to ask that you please take this data into consideration and let me know whether or not that would still be the case.

2. Dynode-8 Output: JSA had requested that R9779-20 MOD to provide an output at its last dynode stage in addition to the typical anode output. This additional output at dynode 8 increases the price of the product, so please let me know whether the PSI project will need it or not.

I look forward to hearing from you on the above questions. In the meantime, please let me know if you have any question or comment for me or if I can help you with anything else.

Ardavan Ghassemi
<Mail Attachment.jpeg>
Applications/Sales Specialist for Scientific Projects
(P) 908.252.7632
http://sales.hamamatsu.com

Steffen Strauch <strauch@sc.edu>
08/01/2012 01:55 PM

To <AGhassemi@hamamatsu.com> <AGhassemi@hamamatsu.com>
cc
Subject Re: Request of a quote: PMT R9779-20 MOD

Dear Ardavan,

Many thanks for your reply. I am in my office and you can reach me this afternoon at

(803) 777-8197

Thank you,
Steffen Strauch

On Aug 1, 2012, at 12:04 PM, <AGhassemi@hamamatsu.com> <AGhassemi@hamamatsu.com> wrote:

Dear Steffen,

This is Ardavan Ghassemi, Hamamatsu's sales and technical contact for HEP projects in the US.

I'd be glad to talk to you about R9779-20 MOD and your project. Please let me know of your phone no. along with a date/time that you'd be available for a phone conversation. I look forward to hearing from you.

Ardavan Ghassemi
<Mail Attachment.jpeg>
Applications/Sales Specialist for Scientific Projects
(P) 908.252.7632
http://sales.hamamatsu.com
----- Forwarded by Ardavan Ghassemi/HC/hamamatsu on 08/01/2012 11:44 AM -----

Steffen Strauch <strauch@sc.edu>
08/01/2012 10:24 AM

To order@hamamatsu.com
cc
Subject Request of a quote: PMT R9779-20 MOD

Dear Thomas Bailey,

I colleague of mine at the University of South Carolina, Prof. Ralf W. Gothe, gave me your contact information. As part of the upgrade at Jefferson Lab, he is building the Forward Time-of-Flight (FTOF) detector for Hall B. For this detector Ralf is using HAMAMATSU R9779-20 MOD photomultipliers.

I am exploring the options to build a similar TOF detector for a planned experiment at the Paul Scherrer Institute. The detector for the PSI experiment requires about 180 PMTs and we envision to build the detector within the next year or two. Following Ralf's recommendation I would like to use the R9779-20 MOD PMTs for our new detector. I would very much appreciate if you could send me a quote for 180 of these PMTs. I understand that the cost for the PMTs for the Hall B project was about $800 per piece and hope you could offer us the PMTs at a similar price.

Many thanks and all the best,

Steffen Strauch

Department of Physics and Astronomy
University of South Carolina
Columbia, SC 29208

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<R9779-20MOD data sheet for CLAS12 F-TOF (July 2010).pdf><R9779 magnetic field characteristics.pdf>

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