From: Harvey, Charles [charles.harvey@cubic.com]
Sent: Tuesday, February 17, 2004 11:37 AM
To: John Kennedy
Subject: FW: FW: FCC File # 0047-EX-ST-2004 [Reference Number: 2866]

Mr. Kennedy,

Pursuant to your Email of 2/13/04, as shown below, the answers to your questions are provided below your questions.

Please advise if this answers all of the questions and if you need any further information. Also, per your request, I submitted an update to the request by printing my name in the signature block.

Thank you for your time.

Sincerely,

Charles W. Harvey

Dear Mr. Charles Harvey:

Is the device to be used an ultra-wideband device?

Is the Peak Effective Radiated Power (Peak ERP) supposed to be 2 milliwatts?

What is the average power over the occupied bandwidth?

What is the pulse repetition frequency?

What is the -10 dB bandwidth?

Confirmation Number: EL14072

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-----Original Message-----
From: Andy Ward [mailto:andy.ward@ubisense.net]
Sent: Friday, February 13, 2004 12:35 PM

To: gary.washam@cubic.com; charles.harvey@cubic.com
Cc: jay.cadman@ubisense.net; rupert.curwen@ubisense.net; pete.steggles@ubisense.net
Subject: Re: FW: FCC File # 0047-EX-ST-2004 [Reference Number: 2866]

Hello Gary and Charles,

Pete Steggles forwarded your mail to me. I've put together some answers below to clarify the FCC's questions.

I have also attached the results of some testing of our UWB transmitter done by the Radiocommunications Agency (the UK's equivalent of the FCC), to help answer any future questions regarding the STA application. You may wish to forward the entire message (and attachment) to the person dealing with your STA application

> Is the device to be used an ultra-wideband device?

Yes. It is a pre-production prototype of an ultra-wideband device which will be used indoors.

> Is the Peak Effective Radiated Power (Peak ERP) supposed to
> be 2 milliwatts?

This is the theoretical/calculated Peak ERP across the entire occupied bandwidth. The measured Peak EIRP across the entire occupied bandwidth is actually a bit lower, -4.5dBm (see attachment).

The RA did not measure the Peak EIRP within a 50MHz bandwidth (re: the 0dBm limit specified in Section 15.517(e) of the FCC Rules), but the Peak EIRPs within a 48MHz bandwidth and a 96MHz bandwidth (centred around the highest radiated emission frequency) were measured and found to be -36.3dBm and -30.3dBm respectively.

> What is the average power over the occupied bandwidth?

The measured RMS EIRP across the entire occupied bandwidth is -29dBm (see attachment).

> What is the pulse repetition frequency?

12MHz (fixed).

> What is the -10 dB bandwidth?

The measured -10dB bandwidth is 2.7GHz (see attachment)

Please get in touch if you require any more information.

Regards,
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From: John Mellish [John.Mellish@ra.gsi.gov.uk]
Sent: Monday, November 03, 2003 10:54 AM
To: Siewyoon Tan
Cc: Bernard Bond; Prem Mangat; andy.ward@ubisense.net
Subject: Re. Measurements on 27/10/03

Hi All,
1: I have now checked to see is the gain of the measuring antenna was suffering any apparent loss of gain due to near-field effects during the measurements. This involved monitoring the received signal level from a radiating source (small aperture), whilst increasing the measurement distance from that used during the measurement (20cm) to two times this distance (40 cm) and noting that the expected decrease (6 dB) in signal level was observed. As this was the case, I conclude that no adjustment for near-field effects is necessary, even although the measurement distance was very short.

2: An Excel spreadsheet is attached. This contains the measurement data, and the calculated EIRP (approximately -48.5 dBm RMS). As the spectral lines were spaced at 12 MHz intervals, this EIRP remains constant for all measuring bandwidths below 12 MHz (and peak = RMS).

3: The spreadsheet also contains calculations to determine the RMS and Peak EIRP's in wider bandwidths, as well as the EIRP of the entire (total) transmission (both Peak and RMS).

4: Conclusions. The UWB transmission observed was exactly as Dr Andy Ward described. It consisted of discrete spectral lines spaced every 12 MHz. Although it was not noise-like, the RMS (and peak) EIRP in a 1 MHz BW was approximately 7 dB below the FCC indoor limit. The RMS and peak EIRP's of the entire transmission (non-band limited) was of the order of -29 and -4.5 dBm respectively.

Please e-mail or telephone to discuss.
Regards
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