Comment: ORINCON Corporation, San Diego, CA. (sparky)
X-Sender: cgreene@204.188.6.10
Mime-Version: 1.0
Date: Fri, 31 Oct 1997 08:11:56 -0800
To: art@orincon.com, art@mpl.ucsd.edu
From: "Charles Greene jr." <cgreene@Greeneridge.com>
Subject: Re: Calibration Data
Status:

Hello Art,

You are right, I would not recognize you by sight, but I've seen your name
many times. Glad you stopped by my table at Orlando--should I do that again
in Monaco? As of now, I don't even plan to attend the conference.

The receiver sensitivity numbers are in volts/kHz and relate to the number
of volts out of the FM discriminator for so much deviation (in kHz) in the
input. The sonobuoy calibrations are in so many kHz deviation per
micropascal pressure at the hydrophone. When you put the receiver together
with the sonobuoy you get volts/kHz * kHz/uPa = so many volts/uPa, which is
like a regular hydrophone sensitivity. I could look up the specifics for
the AN/SSQ-41B and AN/SSQ-57A and AN/SSQ-53B sonobuoys I've used, and feel
free to ask me to. It took my mental molasses processes a long time before
I felt confident about what I was doing, especially with regard to the
sonobuoy specification. In the end the sonobuoy data agreed with the
hydrophone data (recorded independently).

The sonobuoys are frequency dependent, so your sensitivities are not
constant with frequency. We use a digital filtering process to compensate
for the sonobuoy slope so that our processed sounds are as they were in the
water. This can be important for impulsive or transient sounds covering a
band of frequencies if you are interested in an accurate waveform. Blue
whale calls are not always tonal, are they?

If you tape recorded the sonobuoy receiver outputs, then you have to include
the tape recorder gain as well. In the end, you see so many volts vs. time;
your question is what were the micropascals vs. time.

You'll probably be at the ASA meeting in San Diego 1-5 December. I
currently have a conflict with a field project early in the week but I hope
to be there Thursday and Friday--see you then?

Regards,
Charles Greene

At 18:26 10-30-1997 -0800, you wrote:
>Dr. Greene,
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>I'm a graduate student working for John Hildebrand at SIO. You may remember
>me from the marine mammal conference held in 1995. I presented a poster on
>the use of SOSUS to detect and recognize blue and humpback whales using
>neural networks. I am currently processing data collected using ICOM radios
>which were purchased from your company. I have the calibration sheets, but
>do not know how to translate them into receiver gain numbers. Can you
>explain to me how to use the calibration data to obtain the receiver gain?
>A goal of my work is to determine source levels of blue whale calls. Any
>information will be appreciated.
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>Thanks!
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June 16,1996

Testing of system of 5 modified Icom IC-R100 Communcation
Receivers:

Signal loss thru 100-plus feet of RG-8 A/U cable was
measured as -3dbm.

Sensitivity measurements of the 5 units being fed thru the
masthead preamp and the above mentioned cable, for 20dbm
quieting are as follows:

Channel	ICOM S/N	Level, dbm
1	05730	-104.9
2	05794	-104.8
3	05708	-104.7
4	05799	-104.9
5	05704	-104.9

Instruments used were a Marconi 2031 signal generator and a
Fluke 8060A True RMS Multimeter.

                                           mk

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Icom R100 Calibration Report

s/n 6147
26sept97

f mod,Hz	10 kHz peak dev.			50 kHz peak dev.		
	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	49.66	0.0050	-46.08	241.7	0.0048	-46.31
20	48.93	0.0049	-46.21	238.2	0.0048	-46.44
50	48.74	0.0049	-46.24	237.3	0.0047	-46.47
100	48.71	0.0049	-46.25	237.3	0.0047	-46.47
200	48.72	0.0049	-46.25	237.3	0.0047	-46.47
500	48.64	0.0049	-46.26	236.8	0.0047	-46.49
1000	48.50	0.0049	-46.29	235.8	0.0047	-46.53
2000	48.15	0.0048	-46.35	234.5	0.0047	-46.58
5000	47.42	0.0047	-46.48	231.9	0.0046	-46.67
10000	46.24	0.0046	-46.70	226.4	0.0045	-46.88
15000	44.15	0.0044	-47.10	216.9	0.0043	-47.25
20000	41.13	0.0041	-47.72	202.6	0.0041	-47.85

Sensitivity for 20dB quieting: -102.9dBm

Icom R100 Calibration Report

s/n 05730   CH. 1
11 June 96

f mod,Hz	10 kHz peak dev.			50 kHz peak dev.		
	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	49.3	0.0049	−46.14	237.6	0.0048	−46.46
20	47.9	0.0048	−46.39	231.5	0.0046	−46.69
50	47.5	0.0048	−46.47	229.8	0.0046	−46.75
100	47.4	0.0047	−46.48	229.6	0.0046	−46.76
200	47.4	0.0047	−46.48	229.6	0.0046	−46.76
500	47.3	0.0047	−46.50	228.9	0.0046	−46.79
1000	47.0	0.0047	−46.56	227.5	0.0046	−46.84
2000	46.5	0.0047	−46.65	225.8	0.0045	−46.90
5000	45.8	0.0046	−46.78	223.5	0.0045	−46.99
10000	44.2	0.0044	−47.09	218.5	0.0044	−47.19
15000	42.0	0.0042	−47.54	210.8	0.0042	−47.50
20000	39.2	0.0039	−48.13	201.3	0.0040	−47.90

Sensitivity for 20db quieting −102.7dbm

Icom R100 Calibration Report

s/n 05794   CH. 2
11 June 96

	10 kHz peak dev.			50 kHz peak dev.		
f mod,Hz	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	52.3	0.0052	−45.63	256.4	0.0051	−45.80
20	50.9	0.0051	−45.87	249.6	0.0050	−46.03
50	50.5	0.0051	−45.93	247.6	0.0050	−46.10
100	50.5	0.0051	−45.93	247.3	0.0049	−46.11
200	50.5	0.0051	−45.93	247.1	0.0049	−46.12
500	50.4	0.0050	−45.95	246.2	0.0049	−46.15
1000	50.0	0.0050	−46.02	244.5	0.0049	−46.21
2000	49.6	0.0050	−46.09	242.5	0.0049	−46.29
5000	48.9	0.0049	−46.21	239.8	0.0048	−46.38
10000	47.3	0.0047	−46.50	234.1	0.0047	−46.59
15000	45.0	0.0045	−46.94	225.8	0.0045	−46.90
20000	42.2	0.0042	−47.49	215.3	0.0043	−47.32

Sensitivity for 20db quieting −102.8dbm

Icom R100 Calibration Report

s/n 05708   CH 3
11 June 96

f mod,Hz	10 kHz peak dev.			50 kHz peak dev.		
	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	51.6	0.0052	−45.75	245.8	0.0049	−46.17
20	50.1	0.0050	−46.00	239.5	0.0048	−46.39
50	49.6	0.0050	−46.09	237.8	0.0048	−46.46
100	49.6	0.0050	−46.09	237.7	0.0048	−46.46
200	49.5	0.0050	−46.11	237.8	0.0048	−46.46
500	49.3	0.0049	−46.14	237.3	0.0047	−46.47
1000	48.9	0.0049	−46.21	236.0	0.0047	−46.52
2000	48.4	0.0048	−46.30	234.2	0.0047	−46.59
5000	47.7	0.0048	−46.43	231.9	0.0046	−46.67
10000	46.1	0.0046	−46.73	227.0	0.0045	−46.86
15000	43.9	0.0044	−47.15	219.5	0.0044	−47.15
20000	41.2	0.0041	−47.70	210.1	0.0042	−47.53

Sensitivity for 20db quieting −102.5dbm

Icom R100 Calibration Report

s/n 05799   Ch. 4
11 June 96

f mod,Hz	10 kHz peak dev.			50 kHz peak dev.		
	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	50.5	0.0051	−45.93	248.9	0.0050	−46.06
20	49.1	0.0049	−46.18	242.3	0.0048	−46.29
50	48.7	0.0049	−46.25	240.4	0.0048	−46.36
100	48.7	0.0049	−46.25	240.1	0.0048	−46.37
200	48.7	0.0049	−46.25	239.9	0.0048	−46.38
500	48.6	0.0049	−46.27	239.1	0.0048	−46.41
1000	48.3	0.0048	−46.32	237.4	0.0047	−46.47
2000	47.9	0.0048	−46.39	235.4	0.0047	−46.54
5000	47.2	0.0047	−46.52	232.7	0.0047	−46.64
10000	45.7	0.0046	−46.80	227.2	0.0045	−46.85
15000	43.4	0.0043	−47.25	219.1	0.0044	−47.17
20000	40.9	0.0041	−47.77	209.1	0.0042	−47.57

Sensitivity for 20db quieting −102.6dbm

Icom R100 Calibration Report

s/n 05704 C4.5
11 June 96

f mod,Hz	10 kHz peak dev.			50 kHz peak dev.		
	Vout, mV	V/kHz	dB 1V/kHz	Vout, mV	V/kHz	dB 1V/kHz
10	52.6	0.0053	−45.58	251.8	0.0050	−45.96
20	51.1	0.0051	−45.83	245.4	0.0049	−46.18
50	50.7	0.0051	−45.90	243.7	0.0049	−46.24
100	50.6	0.0051	−45.92	243.5	0.0049	−46.25
200	50.5	0.0051	−45.93	243.6	0.0049	−46.25
500	50.4	0.0050	−45.95	243.0	0.0049	−46.27
1000	50.0	0.0050	−46.02	241.2	0.0048	−46.33
2000	49.5	0.0050	−46.11	239.3	0.0048	−46.40
5000	48.7	0.0049	−46.25	236.7	0.0047	−46.50
10000	47.1	0.0047	−46.54	231.5	0.0046	−46.69
15000	44.8	0.0045	−46.97	223.8	0.0045	−46.98
20000	42.0	0.0042	−47.54	214.0	0.0043	−47.37

Sensitivity for 20db quieting −102.2dbm