

**Appendix K – Acoustical Analysis**

This appendix contains the cut sheets and other data for the manufacturer information provided for chillers, fan coil units, and cooling towers used as a part of the acoustical breadth work. There is data from York, Carrier, and Marley included.

Please see the all the acoustical information on the following pages.



Issue Date: 03/06  
 Project: Project  
 Engineer: Sales Eng  
 Customer: customer

Program: LTC  
 Rev: v1\_57.idd  
 Date: 03/29/06  
 Page: 2 of 2

MODEL	YKACADQ3-CKF	(MOTOR SELECTED BY USER)	
REFRIGERANT	134A	GEAR CODE	XC(SPEC)
RATED CAPACITY (TR)	350	SPECIFIED CAPACITY (TR)	350
INPUT POWER (KW)	216	MAX MOTOR LOAD (KW)	213
VOLTAGE / HZ	460 / 60		
ORIFICE (VARY)	VALVE:2	DIFFUSER	FIXED
FLA	311	LRA	1950
MIN CIR. AMPS.	388	MAX C.B.	600
FULL LOAD (kW/TR)	0.617	NPLV	0.381

STARTER TYPE (10) VARIABLE SPEED DRIVE

	Evaporator	Condenser
FLUID	WATER*	WATER*
% BY WEIGHT	0.0*	0.0*
TUBE MTI NO.	271*	260*
PASSES	2*	2*
FOUL FACTOR	0.00010*	0.00025*
FLUID ENT TEMP (°F)	56.00	85.00*
FLUID LEV TEMP (°F)	44.00*	94.31
FLUID FLOW (gpm)	700.0*	1050.0*
FLUID PRDROP (ft)	11.5	10.9

(\*) Designates Specified Input

#### YORK CENTRIFUGAL LIQUID CHILLER SOUND PRESSURE LEVELS- Cooling (ARI 550)

SOUND PRESSURE LEVELS IN DB RE 20 MICROPASCALS (STANDARD)									
PCT LOAD	OCTAVE BAND CENTER FREQUENCY, HZ								A-WEIGHTED DBA
	63	125	250	500	1000	2000	4000	8000	
100.0	75.0	75.0	75.0	74.0	74.0	75.0	71.0	67.0	79.5
75.0	75.0	74.0	72.0	70.5	71.0	72.0	70.0	65.0	77.0
50.0	75.0	73.5	70.5	68.0	68.0	69.0	68.0	62.0	74.5
25.0	75.0	80.0	78.0	76.0	75.0	78.0	76.0	69.0	82.5

The octave and A-Weighted sound pressure levels are the levels expected to be obtained if measurements are performed in accordance with ARI Standard 575-94, Method of measuring machinery sound within equipment rooms.

TOLERANCES: The sound level of identical unit selections can vary due to manufacturing tolerance and test repeatability. Variations of +3 DBA on the A-Weighted levels and +5 DB on the octave band levels are possible.

Rating certified in accordance with ARI STD. 550/590.

Water-chilling packages using the vapor compression cycle certification program.

Materials and construction per mechanical specifications - Form 160.73-EG1.

# Acoustic Summary For FCU-1

Project: Nathan- Thesis Project FCUs  
Prepared By:

03/29/2006  
03:56PM

## Unit Parameters

Tag Name:.....**FCU-1**  
Quantity: ..... **1**  
Unit Model: .....**42SGA03**  
Unit Type: .....**42SGA Concealed Modular Unit**  
Unit Size: ..... **300**  
System Type: .....**4-Pipe Heating and Cooling**  
Cooling Coil: ..... **Cold Fluid Cooling**  
Cooling Coil Rows: ..... **3 Rows**  
Heating Coil: .....**Hot Fluid Heating**  
Heating Coil Rows: ..... **1 Row**  
Shipping Options: .....**Standard**  
Fan Speed: ..... **High**  
Motor/Drive: .....**Standard**

## Standard Fan Coil:

Octave Band Center Frequency, Hz	125	250	500	1k	2k	4k	8k	dBA
Sound Power, dB	64.5	57	52.5	49	41	39	35.5	
A-Weighted Sound Power, dBA								55

## Notes

Estimated Sound Power levels – dB re: 1 picowatt

Estimated Sound Power levels given above are assumed to originate at the acoustic center of the fan coil.

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the ARI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

# Acoustic Summary For FCU-2

Project: Nathan- Thesis Project FCUs  
Prepared By:

03/29/2006  
03:56PM

## Unit Parameters

Tag Name:.....**FCU-2**  
Quantity: ..... **1**  
Unit Model: .....**42SGA04**  
Unit Type: .....**42SGA Concealed Modular Unit**  
Unit Size: ..... **400**  
System Type: .....**4-Pipe Heating and Cooling**  
Cooling Coil: ..... **Cold Fluid Cooling**  
Cooling Coil Rows: ..... **3 Rows**  
Heating Coil: .....**Hot Fluid Heating**  
Heating Coil Rows: ..... **1 Row**  
Shipping Options: .....**Standard**  
Fan Speed: ..... **High**  
Motor/Drive: .....**Standard**

## Standard Fan Coil:

Octave Band Center Frequency, Hz	125	250	500	1k	2k	4k	8k	dBA
Sound Power, dB	69	59.5	55.5	50.5	41.5	39.5	36.5	
A-Weighted Sound Power, dBA								58

## Notes

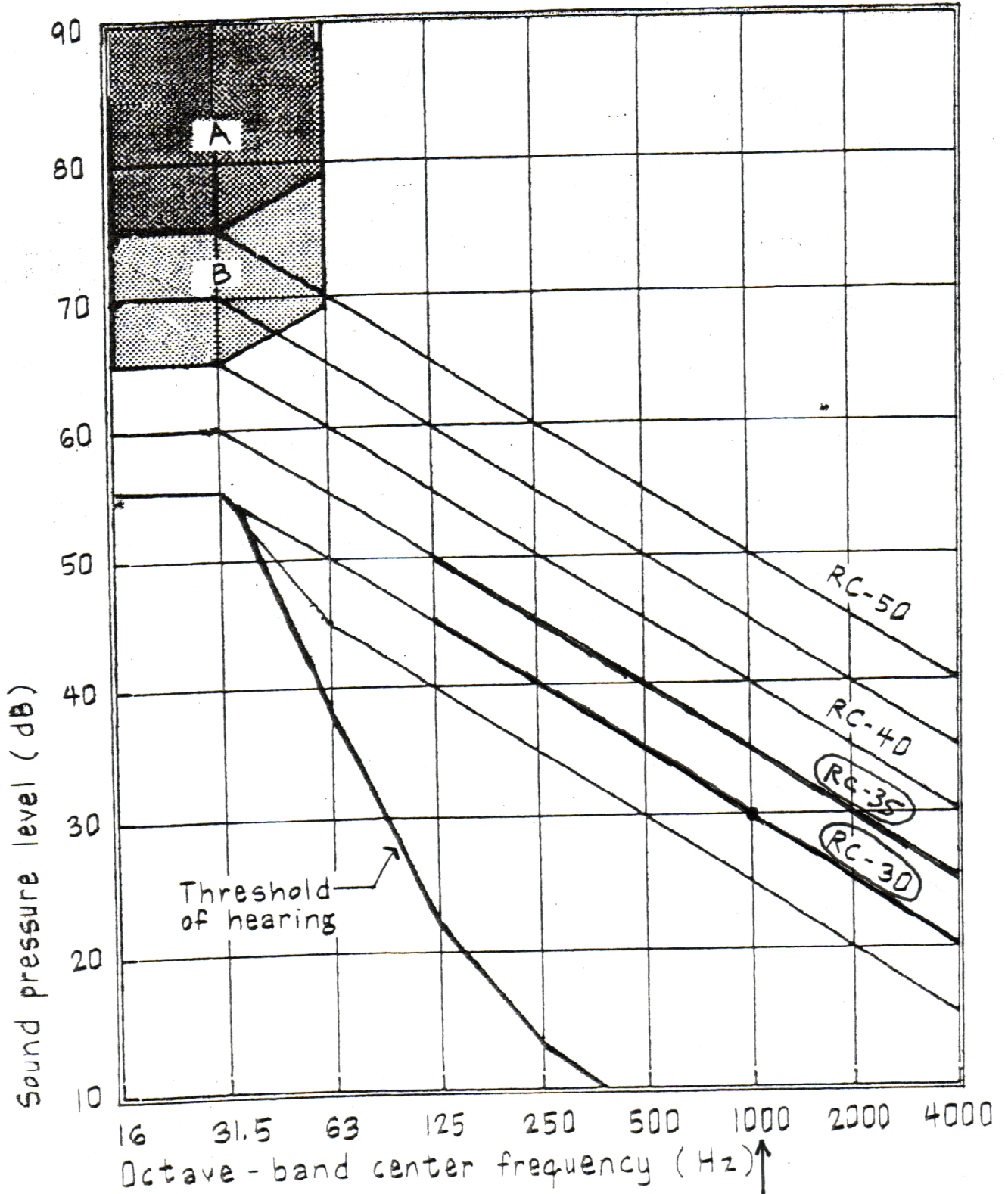
Estimated Sound Power levels – dB re: 1 picowatt

Estimated Sound Power levels given above are assumed to originate at the acoustic center of the fan coil.

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the ARI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

# CHILLER AND FAN COIL UNIT ACOUSTICS

## Room Criteria (RC) Curves



CHILLER:

MECHANICAL ROOM  
TO RESTAURANT  
USE RC-35

FAN COIL UNIT:

GUEST ROOM  
RC-30