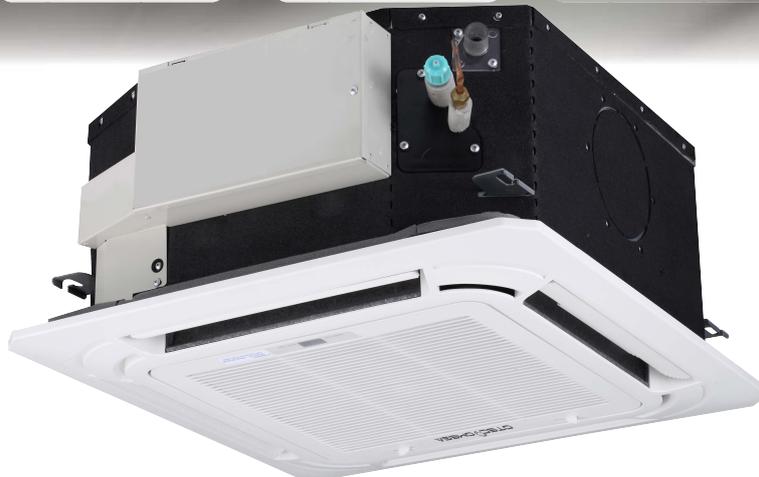


# BECM-D Ultima Series

60Hz Mini Cassette VRF Indoor Unit  
Technical Manual

**208~230V/1/60Hz**



# Engineering Data

**Compact Four-way Cassette VRF IDU**

**AC 60Hz**

**Atom Series**



BECM008Q2A-DWM022

BECM012Q2A-DWM036

BECM010Q2A-DWM028

BECM015Q2A-DWM045

# Compact Four-way Cassette

<b>1 Specifications .....</b>	<b>4</b>
<b>2 Dimensions .....</b>	<b>6</b>
<b>3 Unit Placement .....</b>	<b>7</b>
<b>4 Piping Diagram .....</b>	<b>9</b>
<b>5 Wiring Diagram .....</b>	<b>10</b>
<b>6 Capacity Tables.....</b>	<b>12</b>
<b>7 Electrical Characteristics.....</b>	<b>13</b>
<b>8 Sound Levels .....</b>	<b>14</b>

# Ultima Series VRF Indoor Units

## 1 Specifications

### BECM008Q2A-DWM022 / BECM010Q2A-DWM028

Table 1.1: BECM008(10)Q2A specifications

Model			BECM008Q2A-DWM022	BECM010Q2A-DWM028
Power supply			1 phase, 220-240V, 60Hz	
Cooling <sup>1</sup>	Capacity	kBtu/h	7	9
	Input	W	50	50
Heating <sup>2</sup>	Capacity	kBtu/h	8	10
	Input	W	50	50
Indoor fan motor	Type		AC motor	
	Quantity		1	
Indoor coil	Number of rows		1	1
	Tube pitch × row pitch	in.(mm)	13/16×17/32(21×13.37)	
	Fin spacing	in.(mm)	3/64(1.3)	
	Fin type		Hydrophilic aluminum	
	Diameter & type	in.(mm)	9/32(Φ7), inner-groove tube	
	Dimensions (L×H×W)	in.(mm)	51-9/16×8-9/32×17/32(1310×210×13.37)	
	Number of circuits		2	
Air flow rate (H/M/L)		m <sup>3</sup> /h	397/292/215	408/310/231
		CFM	234/172/127	240/182/136
Sound pressure level (H/M/L) <sup>3</sup>		dB(A)	36/33/23	36/33/23
Indoor unit	Dimensions <sup>4</sup> (W×H×D)	in.(mm)	22-7/16×10-15/64×24-51/64(570×260×630)	
	Packing (W×H×D)	in.(mm)	26-9/16×11-7/32×26-9/16(675×285×675)	
	Net/Gross weight	lbs(kg)	38.4/45(17.4/20.4)	
Panel	Dimensions (W×H×D)	in.(mm)	25-15/32×1-31/32×25-15/32 (647×50×647)	
	Packing (W×H×D)	in.(mm)	28-5/32×4-27/32×28-5/32(715×123×715)	
	Net/Gross weight	lbs(kg)	5.5/9.9(2.5/4.5)	
Refrigerant type			R410A	
Pipe connections	Liquid pipe	in.(mm)	1/4(Φ6.35)	
	Gas pipe	in.(mm)	1/2(Φ12.7)	
	Drain pipe	in.(mm)	OD 63/64 (Φ25)	

Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

## BECM012Q2A-DWM036 / BECM015Q2A-DWM045

Table 1.2: BECM012(15)Q2A specifications

Model			BECM012Q2A-DWM036	BECM015Q2A-DWM045
Power supply			1 phase, 220-240V, 60Hz	
Cooling <sup>1</sup>	Capacity	kBtu/h	12	15
	Input	W	56	56
Heating <sup>2</sup>	Capacity	kBtu/h	13	17
	Input	W	60	60
Indoor fan motor	Type	AC motor		
	Quantity	1		
Indoor coil	Number of rows		2	2
	Tube pitch × row pitch	in.(mm)	13/16×17/32(21×13.37)	
	Fin spacing	in.(mm)	3/64(1.3)	
	Fin type	Hydrophilic aluminum		
	Diameter & type	in.(mm)	9/32(Φ7), inner-groove tube	
	Dimensions (L×H×W)	in.(mm)	51-9/16×8-9/32×1-1/16(1310×210×26.74)	
	Number of circuits	4		
Air flow rate (H/M/L)		m <sup>3</sup> /h	496/359/263	496/359/263
		CFM	292/211/155	292/211/155
Sound pressure level (H/M/L) <sup>3</sup>		dB(A)	42/36/29	42/36/29
Indoor unit	Dimensions <sup>4</sup> (W×H×D)	in.(mm)	22-7/16×10-15/64×24-51/64(570×260×630)	
	Packing (W×H×D)	in.(mm)	26-9/16×11-7/32×26-9/16(675×285×675)	
	Net/Gross weight	lbs(kg)	41.5/48.1(18.8/21.8)	
Panel	Dimensions (W×H×D)	in.(mm)	25-15/32×1-31/32×25-15/32 (647×50×647)	
	Packing (W×H×D)	in.(mm)	28-5/32×4-27/32×28-5/32(715×123×715)	
	Net/Gross weight	lbs(kg)	5.5/9.9(2.5/4.5)	
Refrigerant type			R410A	
Pipe connections	Liquid pipe	in.(mm)	1/4(Φ6.35)	
	Gas pipe	in.(mm)	1/2(Φ12.7)	
	Drain pipe	in.(mm)	OD 63/64 (Φ25)	

Notes:

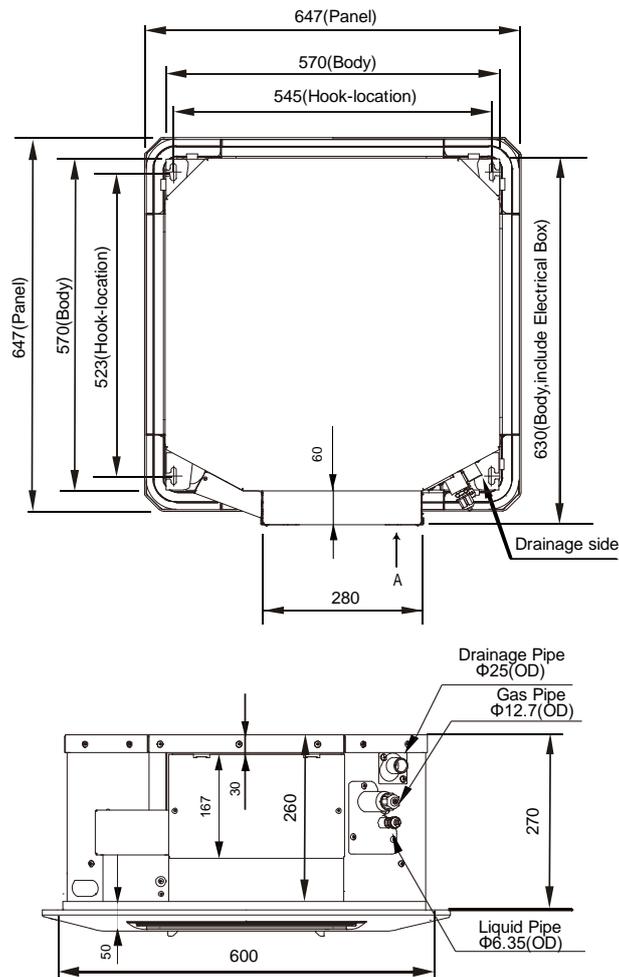
1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

# Ultima Series VRF Indoor Units

## 2 Dimensions

### 2.1 Unit Dimensions

Figure 2.1: BECM008(10,12,15)Q2A Compact Four-way Cassette dimensions (unit: mm)



## 3 Unit Placement

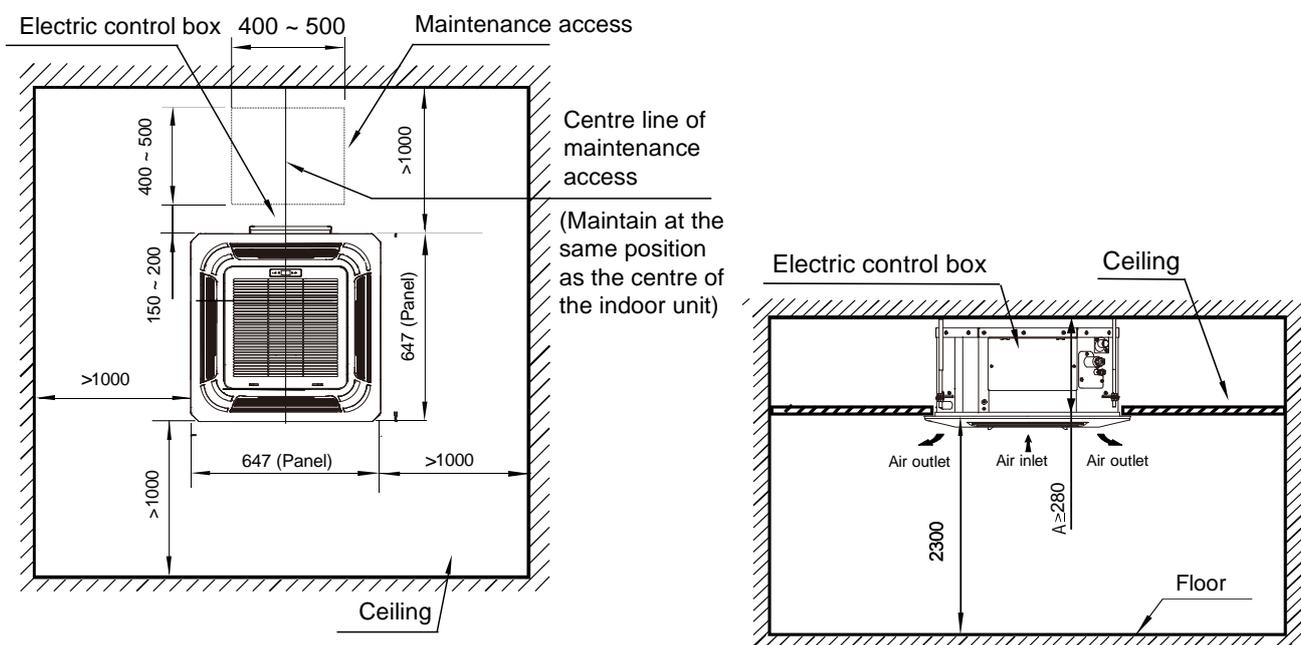
### 3.1 Placement Considerations

Unit placement should take account of the following considerations:

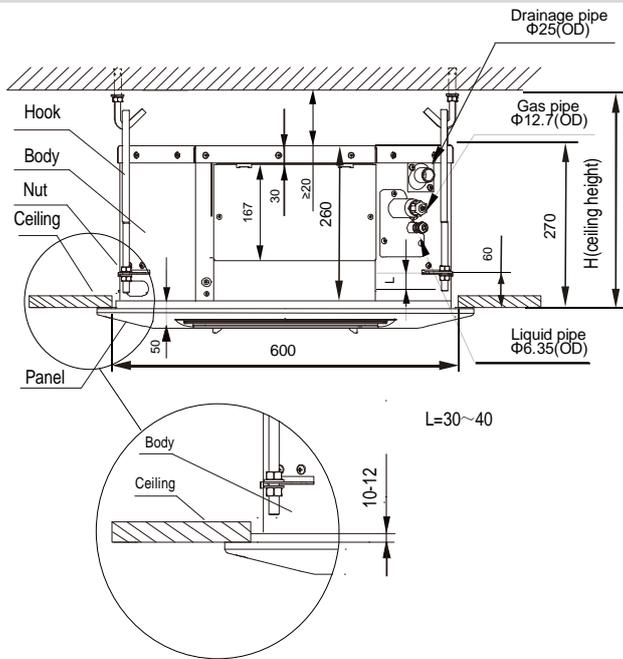
- Units should not be installed in the following locations:
  - Where exposure to direct radiation from a high-temperature heat source or to interference from a source of electromagnetic radiation may occur.
  - Where dust or dirt may affect heat exchangers.
  - Where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
  - Where exposure to salinity may occur, such as seaside locations.
  - Where highly flammable materials are present.
  - Where exposure to oily air may occur, such as a kitchen.
  - Where exposure to very high humidity may occur, such as a laundry.
- Units should be installed in positions where:
  - The ceiling is horizontal and is able to bear the unit's weight.
  - There are no obstructions that could impede the airflow into and out of the unit.
  - The airflow out of the unit can reach throughout the room.
  - There is sufficient space for access during installation, servicing and maintenance.
  - The refrigerant piping and drain piping can be easily connected to the refrigerant piping and drain piping systems.
  - Short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) will not occur.

### 3.2 Space Requirements

Figure 3.1: BECM008(10,12,15)Q2A Compact Four-way Cassette space requirements (unit: mm)



# Ultima Series VRF Indoor Units

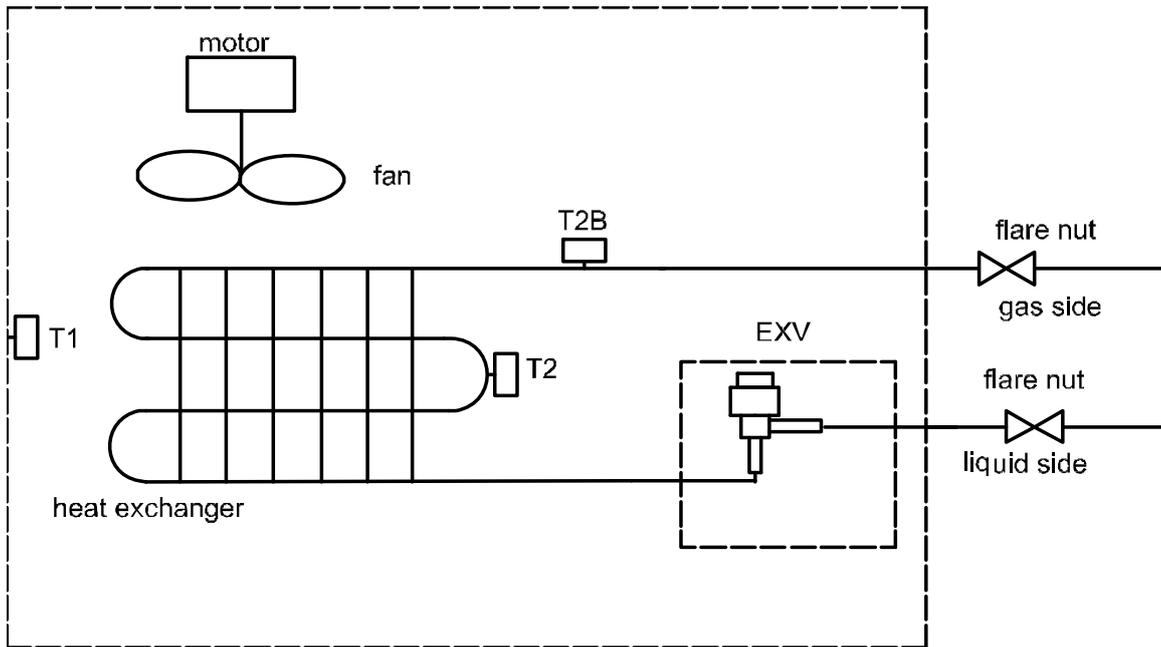


**Notes:**

1. The centerline of the maintenance hole should be in the same position as the centerline of the indoor unit.

## 4 Piping Diagram

Figure 4.1: BECM008(10,12,15)Q2A Compact Four-way Cassette piping diagram



Legend	
T1	Indoor ambient temperature sensor
T2	Indoor heat exchanger mid-point temperature sensor
T2B	Indoor heat exchanger outlet temperature sensor



### Notes for installers and service engineers

#### Caution

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals – loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- Switch ENC1 (indoor unit capacity setting) is factory-set and its setting should normally not be changed. The only circumstances in which a switch ENC1 might need to be set in the field is when replacing a main PCB. When replacing a main PCB, ensure that the capacity setting on switch ENC1 on the new PCB is consistent with the unit capacity given on the unit's nameplate.

# Ultima Series VRF Indoor Units

## 6 Capacity Tables

### 6.1 Cooling Capacity Table

Table 6.1: BECM008(10,12,15)Q2A Compact Four-way Cassette cooling capacity

Model	Indoor air temperature (°C WB/DB)													
	14/20		16/23		18/26		19/27		20/28		22/30		24/32	
	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
BECM008Q2A-DWM022	2.0	2.0	2.1	1.9	2.2	1.9	2.2	1.8	2.3	1.8	2.3	1.7	2.4	1.7
BECM010Q2A-DWM028	2.5	2.5	2.7	2.5	2.8	2.4	2.8	2.3	2.9	2.3	2.9	2.2	3.0	2.1
BECM012Q2A-DWM036	3.2	3.0	3.4	3.0	3.6	3.1	3.6	2.9	3.7	2.9	3.8	2.8	3.9	2.7
BECM015Q2A-DWM045	4.0	3.8	4.3	3.8	4.5	3.8	4.5	3.7	4.6	3.6	4.7	3.4	4.8	3.3

Abbreviations:

TC: Total capacity (kW)

SC: Sensible capacity(kW)

Notes:

1.Shaded cells indicate rating condition

### 6.2 Heating Capacity Table

Table 6.2: BECM008(10,12,15)Q2A Compact Four-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
BECM008Q2A-DWM022	2.6	2.6	2.4	2.3	2.3	2.1
BECM010Q2A-DWM028	3.4	3.4	3.2	3.1	3.0	2.8
BECM012Q2A-DWM036	4.2	4.2	4.0	3.8	3.8	3.5
BECM015Q2A-DWM045	5.3	5.3	5.0	4.8	4.7	4.4

Abbreviations:

TC: Total capacity (kW)

Notes:

1.Shaded cells indicate rating condition

## 7 Electrical Characteristics

Table 7.1: BECM008(10,12,15)Q2A Compact Four-way Cassette electrical characteristics

Model name	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
BECM008Q2A-DWM022	60	220-240	198	264	0.2	15	0.05	0.16
BECM010Q2A-DWM028	60	220-240	198	264	0.2	15	0.05	0.16
BECM012Q2A-DWM036	60	220-240	198	264	0.2	15	0.06	0.16
BECM015Q2A-DWM045	60	220-240	198	264	0.2	15	0.06	0.16

Abbreviations:

MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

# Ultima Series VRF Indoor Units

## 8 Sound Levels

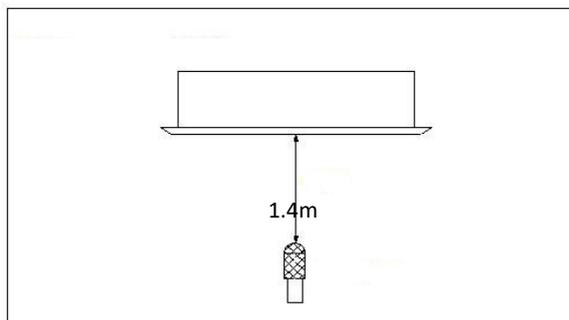
### 8.1 Overall

Table 8.1: BECM008(10,12,15)Q2A Compact Four-way Cassette sound pressure levels<sup>1</sup> Figure 8.1: BECM008(10,12,15)Q2A Compact Four-way Cassette sound pressure level measurement

Model name	Sound pressure levels dB(A)		
	H	M	L
BECM008Q2A-DWM022	36	33	23
BECM010Q2A-DWM028	36	33	23
BECM012Q2A-DWM036	42	36	29
BECM015Q2A-DWM045	42	36	29

Notes:

1. Sound pressure levels are measured 1.4m below the unit in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.



### 8.2 Octave Band Levels

Figure 8.2: BECM008Q2A-DWM022 octave band levels

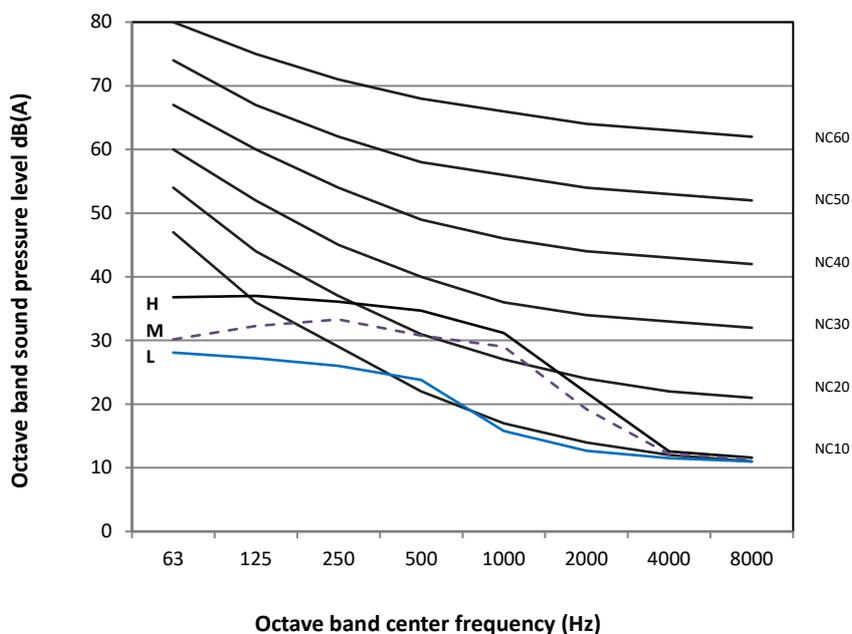
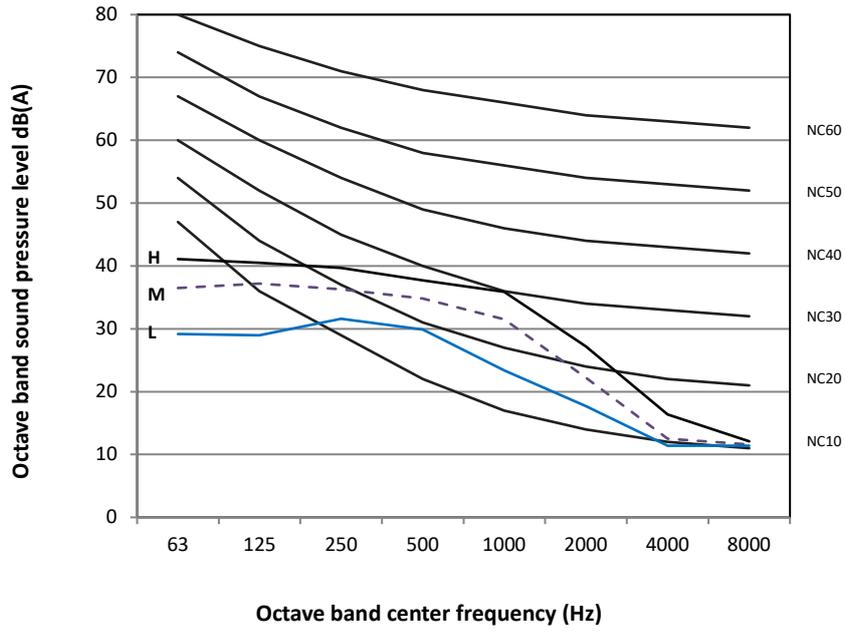


Figure 8.3: BECM012Q2A-DWM036 octave band levels





**OMEGA**  
ENVIRONMENTAL  
TECHNOLOGIES LLC.

17702 Mitchell North, #101  
Irvine, CA. 92614 .USA  
Tel: 714 795 2830  
Fax: 714 966 1646  
info@omegainverter.com  
www.omegainverter.com

**OTEC**<sup>TM</sup>  
AIR CONDITIONING

**Showroom & Technology Center**  
11380 Interchange Circle North  
Miramar, FL 33025 .USA  
Tel: 305 901 1270  
Fax: 954 212 8280  
info@otecomega.com  
www.otecomega.com

BEQM2A-TM1D0823