

**Subhead- 16**  
**Public Address & Sound System**

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.1	<b>Line Array Speaker System</b>					
16.1.i	Supply, Installation, Testing & Commissioning of Two-Way Line Array type Main Auditorium Speaker including accessories of following technical specification or equivalent- Frequency Response: 87Hz-16 kHz Long term / Continuous power- LF: 400W-500W, HF: 30W-120W Program- LF: 800W-1000W, HF: 60W-240W Short term/ Peak power- LF: 1600W-2000W, HF: 120W-480W Nominal Impedance: 8-16 ohm, Calculated Maximum SPL @ 1 m- LF: 122-128dB , HF: 128-132dB. Coverage Pattern: At least 90° H x 10° V CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	433,394.00	433,371.00	433,288.00	433,288.00

Handwritten signatures and initials in blue and black ink are present at the bottom of the page, including a large signature on the left and several smaller initials and marks scattered across the bottom right area.

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.1.2	<p>Supply, Installation, Testing &amp; Commissioning of dual driver Two-Way Line Array type Main Auditorium Speaker including accessories of following technical specification or equivalent-</p> <p>Frequency Response: 87Hz-15.3 kHz</p> <p>Long term / Continuous power- LF: 600W-800W, HF: 50W-150W</p> <p>Program- LF: 1200W-1600W, HF: 100W-260W</p> <p>Short term/ Peak power- LF: 2400W-3200W, HF: 200W-500W</p> <p>Nominal Impedance: 8-16 ohm,</p> <p>Calculated Maximum SPL @ 1 m- LF: 128-135dB , HF: 132-139dB.</p> <p>Coverage Pattern: At least 100° H x 10° V</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	791,078.00	791,056.00	790,973.00	790,973.00
16.2	<b>Point Source Speaker System</b>					
16.2.1	<p>Supply, Installation, Testing &amp; Commissioning of Two-Way Point Source type Speaker (suitable for small medium convention hall, gallery etc.) including accessories of following technical specification or equivalent-</p> <p>Frequency Response: 75Hz-18 kHz</p> <p>System power- Long term / Continuous power: 80W-120W, Program: 160W-240W, Short term/ Peak power: 320W-480W</p> <p>Nominal Impedance: 8 ohm,</p> <p>Calculated Maximum SPL @ 1 m: 90-115dB.</p> <p>Coverage Pattern: At least 60° H x 60° V</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	97,182.00	97,160.00	97,077.00	97,077.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.2.2 Supply, Installation, Testing & Commissioning of Two-Way Point Source type Speaker (suitable for small medium convention hall, gallery etc.) including accessories of following technical specification or equivalent-  
 Frequency Response: 75Hz-18 kHz  
 System power- Long term / Continuous power: 150W-200W, Program: 300W-400W, Short term/ Peak power: 600W-800W  
 Nominal Impedance: 8 ohm,  
 Calculated Maximum SPL @ 1 m: 116-123dB.  
 Coverage Pattern: At least 60° H x 60° V  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

121,723.00      121,701.00      121,618.00      121,618.00

16.2.3 Supply, Installation, Testing & Commissioning of Two-Way Point Source type Main Auditorium Speaker including accessories of following technical specification or equivalent-  
 Frequency Response: 70Hz-16 kHz  
 System power- Long term / Continuous power: 350W-400W, Program: 700W-800W, Short term/ Peak power: 1400W-1600W  
 Nominal Impedance: 8 ohm,  
 Calculated Maximum SPL @ 1 m: 128-135dB.  
 Coverage Pattern: At least 80° H x 50° V  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each      167,124.00      167,102.00      167,018.00      167,018.00

*[Handwritten signatures and initials in blue and black ink, including 'S', 'M', 'A', 'S', 'D', 'R', 'T', 'A']*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.2.4	<p>Supply, Installation, Testing &amp; Commissioning of Two-Way Point Source type Main Auditorium Speaker including accessories of following technical specification or equivalent-</p> <p>Frequency Response: 70Hz-16 kHz</p> <p>System power- Long term / Continuous power: 500W-600W, Program: 1000W-1200W, Short term/ Peak power: 2000W-2400W</p> <p>Nominal Impedance: 8 ohm,</p> <p>Calculated Maximum SPL @ 1 m: 130-139dB.</p> <p>Coverage Pattern: At least 90° H x 45° V</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	228,476.00	228,454.00	228,371.00	228,371.00
16.2.5	<p>Supply, Installation, Testing &amp; Commissioning of Two-Way Point Source type Main Auditorium Speaker including accessories of following technical specification or equivalent-</p> <p>Frequency Response: 70Hz-16 kHz</p> <p>System power- Long term / Continuous power: 800W-1000W, Program: 1600W-2000W, Short term/ Peak power: 2400W-3000W</p> <p>Nominal Impedance: 4-8 ohm,</p> <p>Calculated Maximum SPL @ 1 m: 134-139dB.</p> <p>Coverage Pattern: At least 90° H x 45° V</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	430,939.00	430,917.00	430,834.00	430,834.00

16.3 **Line Array Subwoofer System**

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.3.1	Supply, Installation, Testing & Commissioning of Line Array type Subwoofer including accessories of following technical specification or equivalent- Frequency Response: 40Hz-100 Hz@ ±3dB or 50Hz- 250 Hz @-6dB System power- Long term / Continuous power: 500W-550W, Program: 1000W-1100W, Short term/ Peak power: 2000W-2200W Nominal Impedance: 8 ohm, Calculated Maximum SPL @ 1 m: 130-139dB. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	448,364.00	448,341.00	448,258.00	448,258.00
16.3.2	Supply, Installation, Testing & Commissioning of Line Array type Subwoofer including accessories of following technical specification or equivalent- Frequency Response: 32Hz- 220 Hz @-10dB System power- Long term / Continuous power: 800W-1200W, Program: 1600W-2400W, Short term/ Peak power: 3200W-4800W Nominal Impedance: 8 ohm, Calculated Maximum SPL @ 1 m: 130-145dB. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	470,082.00	470,060.00	469,977.00	469,977.00
16.4	<b>Point Source Subwoofer System</b>					

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.4.1 Supply, Installation, Testing & Commissioning of Point Source type Subwoofer including accessories of following technical specification or equivalent-  
 Frequency Response: 36Hz-250 Hz@ -10dB or 50Hz- 500 Hz @-6dB  
  
 System power- Long term / Continuous power: 300W-400W, Program: 600W-800W, Short term/ Peak power: 1200W-1600W  
 Nominal Impedance: 4-8 ohm,  
 Calculated Maximum SPL @ 1 m: 126-132dB.  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 160,989.00 160,967.00 160,883.00 160,883.00

16.4.2 Supply, Installation, Testing & Commissioning of Point Source type Subwoofer including accessories of following technical specification or equivalent-  
 Frequency Response: 32Hz-150 Hz@ -10dB or 38Hz- 200 Hz @-6dB  
 System power- Long term / Continuous power: 500W-600W, Program: 1000W-1200W, Short term/ Peak power: 2000W-2400W  
 Nominal Impedance: 4-8 ohm,  
 Calculated Maximum SPL @ 1 m: 133-138dB.  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 240,747.00 240,725.00 240,641.00 240,641.00

*[Handwritten signatures and initials in blue and black ink, including 'AA', 'PWS', and others, are present below the table rows.]*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.4.3	Supply, Installation, Testing & Commissioning of Point Source type Subwoofer including accessories of following technical specification or equivalent- Frequency Response: 35Hz-1KHz@ ±3dB System power- Long term / Continuous power: 1600W-2000W, Program: 3200W-4000W, Short term/ Peak power: 6400W-8000W Nominal Impedance: 4-8 ohm, Calculated Maximum SPL @ 1 m: 135-148dB. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	657,943.00	657,921.00	657,838.00	657,838.00
16.5	<b>Stage Monitor Speaker</b>					
16.5.1	Supply, Installation, Testing & Commissioning of 2 way Stage Monitor Speaker including accessories of following technical specification or equivalent- Frequency Response: 70Hz-16KHz System power- Long term / Continuous power: 250W-300W, Program: 500W-600W, Short term/ Peak power: 1000W-1200W Nominal Impedance: 4-8 ohm, Calculated Maximum SPL @ 1 m: 122-131dB. Coverage Pattern: At least 90° H x 50° V CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	187,984.00	187,962.00	187,878.00	187,878.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.5.2 Supply, Installation, Testing & Commissioning of 2 way Stage Monitor Speaker including accessories of following technical specification or equivalent-  
 Frequency Response: 70Hz-20KHz  
 System power- Long term / Continuous power: 500W-800W, Program: 1000W-1600W, Short term/ Peak power: 2000W-2400W  
 Nominal Impedance: 4-8 ohm,  
 Calculated Maximum SPL @ 1 m: 127-137dB.  
 Coverage Pattern: At least 90° H x 45° V  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 228,476.00 228,454.00 228,371.00 228,371.00

**16.6 Side Wall Speaker**

16.6.1 Supply, Installation, Testing & Commissioning of 2 way Side Wall / Delay Speaker including accessories of following technical specification or equivalent-  
 Frequency Response: 60Hz-18KHz  
 System power- Long term / Continuous power: 150W-200W, Program: 200W-400W, Short term/ Peak power: 600W-800W  
 Nominal Impedance: 4-8 ohm,  
 SPL:118-131dB  
 Coverage Pattern: At least 60° H x 60° V  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 120,558.00 120,553.00 120,537.00 120,537.00

*[Handwritten signatures and initials in blue and black ink, including 'PAC', 'Suf', and 'M. H.', along with various scribbles and checkmarks.]*



Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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Supply, Installation, Testing & Commissioning of self powered green room/ control room Speaker including accessories of following technical specification or equivalent-  
 Frequency Response: 70Hz-18KHz  
 System power- 35W-50W,  
 Nominal Impedance: 4-8 ohm,  
 SPL:100-115dB  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 50,861.00 50,856.00 50,840.00 50,840.00

16.9 **Ceiling Speaker**

Supply, Installation, Testing & Commissioning of Professional heavy duty, ceiling mounted speaker ideal for airports, lounges, convention centers, corporate boardrooms, hotels / hospitality, houses of worship, museums offices, of patois, spaces schools, theaters and theme parks, superior sound quantity, wide dispersion and smooth off-axis coverage of following technical specification or equivalent-  
 Frequency range (nominal): 85Hz to 18 KHz. (±3db).  
 Nominal impedance: 8Ω  
 Nominal sensitivity(1w, 2m) : 90dB SPL  
 Components : LF & HF driver.  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

16.9.1	1.5W-5W	Each	6,074.00	6,069.00	6,053.00	6,053.00
16.9.2	6W-12W	Each	10,737.00	10,732.00	10,716.00	10,716.00
16.9.3	15W-20W	Each	20,921.00	20,916.00	20,900.00	20,900.00
16.9.4	21W-30W	Each	27,915.00	27,910.00	27,894.00	27,894.00

*[Handwritten signatures and initials in blue and black ink are present below the table rows, including names like 'Rahman', 'Suf', and 'Anwar']*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.10 **Column Speaker**

Supply, Installation, Testing & Commissioning of Column / wall speaker ideal for airports, lounges, convention centers, corporate boardrooms, hotels / hospitality, houses of worship, museums offices, of patois, spaces schools, theaters and theme parks, superior sound quantity, wide dispersion and smooth off-axis overage, superior sound quality, wide dispersion and smooth off axis coverage, fast and easy installation of following technical specification or equivalent-

Line voltage : 70V / 100V

Sensitivity : >85dB.

Frequency response: 150Hz-15KHz.

Enclosure material : Plastic Line

Dispersion angle : 100°.

CE Certified/UL Listed

Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.

Model & sample to be approved by the Engineer in charge.

16.10.1	10W - 15W	Each	18,099.00	18,094.00	18,078.00	18,078.00
16.10.2	16W - 20W	Each	21,780.00	21,775.00	21,759.00	21,759.00
16.10.3	21W - 30W	Each	24,234.00	24,229.00	24,213.00	24,213.00
16.10.4	50W - 60W	Each	31,596.00	31,592.00	31,576.00	31,576.00
16.10.5	70W - 80W	Each	50,616.00	50,611.00	50,595.00	50,595.00

16.11 **Garden Speaker**

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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Supply, Installation, Testing & Commissioning of Garden Speaker of following technical specification or equivalent-  
 10W-20W  
 Sensitivity : 82-88dB  
 Frequency response : 80Hz-15KHz.  
 Coverage Angle: 360° horizontal, 160° vertical  
 Minimum IP 55 rating  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each                      51,720.00                      51,715.00                      51,699.00                      51,699.00

16.12 **Horn Speaker**

Supply, Installation, Testing & Commissioning of Horn Speaker of following technical specification or equivalent-  
 15W-20W  
 Sensitivity : 100-110dB  
 Frequency response : 400 Hz – 7.5 kHz  
 Minimum IP 65 rating  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each                      15,399.00                      15,395.00                      15,379.00                      15,379.00

16.13 **Power Amplifier**

*[Handwritten signatures and scribbles in black and blue ink are present below the table, including a large signature in blue ink above the 15,395.00 value.]*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.13.1	Supply, Installation, Testing & Commissioning of dual channel power amplifier including accessories of following technical specification or equivalent- Stereo Power Output : RMS (Dual Channels)- 8Ωx2: 215W- 350W ,4Ωx2: 350W- 460W Bridged Mono Power Output : RMS- 8Ωx1: 700W- 950W Frequency Response: 20Hz- 20 KHz Signal to Noise Ratio > 97 dB Total Harmonic Distortion (THD) <0.5% Power Supply: 120 or 230 Vac 50Hz. Class: AB/ D/ H CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	143,197.00	143,174.00	143,091.00	143,091.00
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16.13.2	Supply, Installation, Testing & Commissioning of dual channel power amplifier including accessories of following technical specification or equivalent- Stereo Power Output : RMS (Dual Channels)- 8Ωx2: 475W- 630W ,4Ωx2: 800W- 1000W Bridged Mono Power Output : RMS- 8Ωx1: 1600W- 1950W Frequency Response: 20Hz- 20 KHz Signal to Noise Ratio ≥100 dB Total Harmonic Distortion (THD) <0.5% Power Supply: 120 or 230 Vac 50Hz. Class: H CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	191,542.00	191,520.00	191,437.00	191,437.00
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Handwritten signatures and initials are present below the table, corresponding to the items listed. The signatures are in various colors (black, blue, red) and styles.

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.13.3	<p>Supply, Installation, Testing &amp; Commissioning of dual channel power amplifier including accessories of following technical specification or equivalent-</p> <p>Stereo Power Output : RMS (Dual Channels)- 8Ωx2: 650W- 880W ,4Ωx2: 1200W- 1300W</p> <p>Bridged Mono Power Output : RMS- 8Ωx1: 2400W- 2600W</p> <p>Frequency Response: 20Hz- 20 KHz</p> <p>Signal to Noise Ratio ≥100 dB</p> <p>Total Harmonic Distortion (THD) &lt;0.5%</p> <p>Power Supply: 120 or 230 Vac 50Hz.</p> <p>Class: H</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	209,948.00	209,926.00	209,842.00	209,842.00
16.13.4	<p>Supply, Installation, Testing &amp; Commissioning of 4 channel power amplifier including accessories of following technical specification or equivalent-</p> <p>Stereo Power Output : RMS - 8Ωx4: 1200W- 1900W ,4Ωx4: 2000W- 2400W</p> <p>Bridged Mono Power Output : RMS- 8Ωx2: 4000W- 4800W</p> <p>Frequency Response: 20Hz- 20 KHz</p> <p>Signal to Noise Ratio &gt;108 dB</p> <p>Total Harmonic Distortion (THD) &lt;0.35%</p> <p>Power Supply: 100 to 230 Vac 50Hz.</p> <p>Class: H</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	372,532.00	372,510.00	372,426.00	372,426.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.14 **Mixing Console**

16.14.1 Supply, Installation, Testing & Commissioning of 16 channel mixing console of following technical specification or equivalent-  
 Input Channels: 16 channels , stereo channels:2  
 Output Channels: minimum Stereo Out: 2, Monitor Out: 1, Aux Send: 4, Group Out: 2  
 Bus: 9 (minimum)  
 Frequency Response : 22Hz - 20KHz  
 Phantom Power Voltage +48 V  
 High Pass Filter :80-100Hz, 12-18dB per octave  
 Level Meter : 12 -segment LED meter  
 Power Requirements AC 100-240 V, 50 Hz  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each                      198,905.00                      198,860.00                      198,694.00                      198,694.00

*[Handwritten signatures and initials in blue and black ink, including a large signature in blue ink and several initials in black ink.]*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.14.2	<p>Supply, Installation, Testing &amp; Commissioning of 24 channel mixing console of following technical specification or equivalent-</p> <p>Input Channels: 24 channels , stereo channels:4</p> <p>Output Channels: minimum Stereo Out: 2, Monitor Out: 1, Aux Send: 4, Group Out: 4</p> <p>Bus: 9 (minimum)</p> <p>Frequency Response : 22Hz - 20KHz</p> <p>Phantom Power Voltage +48 V</p> <p>High Pass Filter :80-100Hz, 12-18dB per octave</p> <p>Level Meter : 12 -segment LED meter</p> <p>Power Requirements AC 100-240 V, 50 Hz</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	274,982.00	274,937.00	274,771.00	274,771.00
16.14.3	<p>Supply, Installation, Testing &amp; Commissioning of 32 channel mixing console of following technical specification or equivalent-</p> <p>Input Channels: 32 channels , stereo channels:4</p> <p>Output Channels: minimum Stereo Out: 2, Monitor Out: 1, Aux Send: 4, Group Out: 4</p> <p>Bus: 9 (minimum)</p> <p>Frequency Response : 22Hz - 20KHz</p> <p>Phantom Power Voltage +48 V</p> <p>High Pass Filter :80-100Hz, 12-18dB per octave</p> <p>Level Meter : 12 -segment LED meter</p> <p>Power Requirements AC 100-240 V, 50 Hz</p> <p>CE Certified/UL Listed</p> <p>Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.</p> <p>Model &amp; sample to be approved by the Engineer in charge.</p>	Each	321,609.00	321,565.00	321,398.00	321,398.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.14.4	Supply, Installation, Testing & Commissioning of 32 channel Digital Mixing Console of following technical specification or equivalent- Input Channels: 32 channels (minimum), Output Channels: 16 XLR analogue line outputs (minimum), AES out Frequency Response : 22Hz - 20KHz Phantom Power Voltage +48 V Data I/O: 1 x Ethernet (minimum) USB: 1 (minimum) Faders: 26 x Motorized (minimum) Headphones: 1 x 1/4" A/D Resolution: 24-bit/48kHz Screen: minimum 5" Touchscreen Power Requirements AC 100-240 V, 50 Hz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	867,278.00	867,234.00	867,067.00	867,067.00
<b>16.15</b>	<b>Mixer Amplifier</b>					
16.15.1	Supply, Installation, Testing & Commissioning of mixers-amplifier of following technical specification or equivalent- input : minimum 8 power output: 2 x 40W RMS input sensitivity: 4ohm/8ohm power supply: 100-240 Vac , 50 Hz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	151,540.00	151,496.00	151,329.00	151,329.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.15.2	Supply, Installation, Testing & Commissioning of mixers-amplifier of following technical specification or equivalent- input : minimum 6 power output: 2 x 250W RMS input sensitivity: 4ohm/8ohm power supply: 100-240 Vac , 50 Hz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	250,134.00	250,129.00	250,108.00	250,108.00
16.15.3	Supply, Installation, Testing & Commissioning of mixers-amplifier of following technical specification or equivalent- input : minimum 4 power output: 120 RMS input sensitivity: 4ohm/8ohm Frequency Response 35-20000Hz power supply: 100-240 Vac , 50 Hz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	88,470.00	88,426.00	88,259.00	88,259.00

16.16 **Microphone**

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.16.1	Supply, Installation, Testing & Commissioning of vocal/ dynamic microphone of following technical specification or equivalent- Characteristics: Dynamic, Polar pattern: supercardioid/ cardioid, Frequency Response 80Hz~13 kHz, Output impedance 500-600ohm. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	16,749.00	16,747.00	16,738.00	16,738.00
16.16.2	Supply, Installation, Testing & Commissioning of gooseneck/ podium microphone with on-off switch of following technical specification or equivalent- Polar pattern: cardioid Frequency Response 80Hz~18 kHz, Output impedance 220-600ohm. Maximum SPL: 120-125dB Microphone Length: 45 cm minimum CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	53,070.00	53,067.00	53,059.00	53,059.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.16.3	Supply, Installation, Testing & Commissioning of large diaphragm cardioid condenser microphone of following technical specification or equivalent- Polar pattern : cardioid Frequency Response 20Hz~20 kHz, Bass Cut Filter: 80-300 Hz, 12 dB/octave SNR; 75-85dB CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	36,259.00	36,257.00	36,248.00	36,248.00
16.16.4	Supply, Installation, Testing & Commissioning of Wireless Microphones (Hand Held Type) of following technical specification or equivalent- suitable for 1 transmitter, Preset with 16 selectable UHF channel, RF frequency range :600 MHz-750MHz or any suitable carrier frequency range ,Channel 16, Frequency Response: 50Hz-18KHz, operating range 100m. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	67,672.00	67,669.00	67,661.00	67,661.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barisal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.16.5	<p>Supply, Installation, Testing &amp; Commissioning of Wireless Microphones (Tie Clip Type) of following technical specification or equivalent- suitable for 1 transmitter, Preset with 16 selectable UHF channel, RF frequency range :700MHz-750MHz or any suitable carrier frequency range ,Channel 16, Frequency Response: 50Hz-18KHz, operating range 100m. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model &amp; sample to be approved by the Engineer in charge.</p>	Each	58,837.00	58,835.00	58,826.00	58,826.00
16.16.6	<p>Supply, Installation, Testing &amp; Commissioning of Wireless Microphones (Headset Type) of following technical specification or equivalent- Suitable for 1 transmitter, Preset with 8 selectable UHF channel, RF frequency range :700MHz-750MHz or any suitable carrier frequency range ,Channel 8 (minimum), Frequency Response: 50Hz-18KHz, operating range 100m. CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model &amp; sample to be approved by the Engineer in charge.</p>	Each	51,720.00	51,718.00	51,709.00	51,709.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.16.7	Supply, Installation, Testing & Commissioning of Cardioids Condenser Hanging Microphone of following technical specification or equivalent- Polar pattern : cardioid Frequency Response 80Hz~20 kHz, Low-Frequency Roll-Off 80 Hz, 18 dB/octave Output impedance 220-250ohm. Maximum SPL: 130-135dB CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	43,131.00	43,128.00	43,120.00	43,120.00
16.16.8	Supply, Installation, Testing & Commissioning of Instrument Microphone of following technical specification or equivalent- Polar pattern : cardioid Frequency Response 50Hz-16 kHz, CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	21,903.00	21,900.00	21,892.00	21,892.00
16.16.9	Supply, Installation, Testing & Commissioning of Boundary Microphone with on/off switch of following technical specification or equivalent- Polar pattern: cardioid Frequency Response 50Hz-20 kHz, SNR: 68-72dB Maximum sound pressure level: 132-140 dB CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	63,991.00	63,988.00	63,980.00	63,980.00

Each

63,991.00

63,988.00

63,980.00

63,980.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.17	<p>Supply, Installation, Testing &amp; Commissioning of Professional Studio Headphones of following technical specification or equivalent-</p> <p>Driver size (mm): 30 (minimum)  Sensitivity (dB SPL/V @ 1 kHz): 80~125  Rated impedance (<math>\Omega</math>): 55  Audio frequency bandwidth (Hz): 15 - 20000  Type: Stereo plug – 3.5mm (1/8-inch) with 6.3 mm (1/4") screw-on adapter  Gender: Male  Contacts: 3-pin  CE Certified/UL Listed  Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  Model &amp; sample to be approved by the Engineer in charge.</p>	Each	65,095.00	65,095.00	65,095.00	65,095.00
16.18	<p>Supply, Installation, Testing &amp; Commissioning of Audio crossover of following technical specification or equivalent-</p> <p>Connectors 1/4" TRS (pin 2 hot), input impedance : balanced 20k ohm, unbalanced 10k ohm, max. input level : +20dBu balanced or unbalanced, output impedance : balanced 50ohm, unbalanced 100 ohm, max. output level : +21dBu, subwoofer output : 1/4" TRS (pin 2 hot), signal to noise ratio : 90 dB, THD + noise : &lt; 0.004%, inter channel crosstalk : &lt; -80dB, 20Hz to 20kHz, frequency range: 45Hz -10kHz, hum and noise : -95dB, frequency response : &lt; 3Hz to &gt;.90kHz, +0/-3 dB  CE Certified/UL Listed  Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  Model &amp; sample to be approved by the Engineer in charge.</p>	Each	74,236.00	74,230.00	74,205.00	74,205.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.19 Supply, Installation, Testing & Commissioning of Audio equalizers of following technical specification or equivalent-

- Constant Q filters • Switchable 6dB / 12dB fader range • Switchable bypass with LED indicator • Four LED output level meter plus input clip indicator • Input gain adjustable between -6 dB and +6dB. • Built in soft limit helps prevent overloads that damage speakers. • XLR / 1 / 4" TRS balanced / unbalanced inputs/outputs • Ground lift switch quickly solves earth loop and external noise issues Balanced 20k ohm, unbalanced 10k ohm, > +21dBu balanced or unbalanced, > 40dB, typically > 5dB at 1kHz, Impedance-balanced / unbalanced, RF filtered, balanced 100 ohm, unbalanced 50 ohm, > +21dBu balanced / unbalanced into 2k ohm or greater, 20Hz to 20kHz, +0.5 /-1dB, < 10Hz to > 50kHz, +0.5 /-3dB, signal to noise : 90dB, THD + noise : < 0.004%.

CE Certified/UL Listed  
Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
Model & sample to be approved by the Engineer in charge.

Each 61,966.00 61,960.00 61,934.00 61,934.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.20 Supply, Installation, Testing & Commissioning of Audio multi effect processor of following technical specification or equivalent- Wave-adaptive virtual room reverb algorithms for natural reverb and delay. Up to 7 adjustable parameters plus 2-band EQ per effect. 24-bit A / D and D / A converters with 64 / 128-times oversampling. True stereo processing for realistic channel separation in stereo image. 100 factory presets plus 100 user memory locations. Analog Audio Performance: Frequency Response 10 Hz – 20kHz +0 dB/-0.5 dB. THD+N <0.0019% 10Hz – 20kHz. Dynamic Range >109 dB (A-weighted) A/A. Crosstalk typical <-80 dB 20Hz – 20kHz. Digital Input and Output: Connectors Dual RCA (S/PDIF). Format S/PDIF 24-bit. Sample Rate 44.1 or 48kHz. Processing Delay 3.7 ms @ 48 kHz. Frequency Response 10Hz to 22kHz ±0.5 dB @ 48kHz. CE Certified/UL Listed  
Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
Model & sample to be approved by the Engineer in charge.

Each 68,101.00 68,095.00 68,069.00 68,069.00

*[Handwritten signatures and scribbles in blue and black ink are present below the table, including a large signature on the left and several smaller ones on the right.]*



Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.24	Supplying and Fixing of Standard Rack suitable for Sound System equipments. Made of 18 SWG MS sheet & MS angle of proper size and painted with plastic paint. Dimension: 20 inch x 20 inch x 60 inch or equivalent. No. of rack : 5 Fixed foot : 2, Rotating wheel:2, Local Custom Made. Model & sample to be approved by the Engineer in charge.	Each	10,430.00	10,424.00	10,398.00	10,398.00
16.25	Supplying & Fixing of wall / pad mounted rack cabinet with low noise, fan on top, 2 side door, cam lock, front door glass with cam lock, 1 wall mounted power distribution unit, 6-way, welded frame with epoxy power coating painted, reliable structure, removable side panels, optional side locks, cable entry on both top cover and bottom panel. (Foreign Made). Model & sample to be approved by the Engineer in charge.					
16.25.1	Size : 600 x 450 x 368 mm or equivalent , 2 nos 4" fan	Each	9,203.00	9,197.00	9,171.00	9,171.00
16.25.2	Size : 600 x 450 x 635 mm or equivalent , 2 nos 4" fan	Each	17,792.00	17,786.00	17,760.00	17,760.00
16.25.3	Size : 600 x 1000 x 1016 mm or equivalent , 4 nos top fan	Each	37,425.00	37,419.00	37,393.00	37,393.00
16.25.4	Size : 600 x 1000 x 2019 mm or equivalent , 4 nos top fan	Each	43,560.00	43,554.00	43,528.00	43,528.00
16.26	Supplying and Fixing of XLR connectors (M+F), speaker stereo connectors, chassis mount etc. (minimum 4 Speaker & 6 microphone connection)	Lot	7,976.00	7,976.00	7,976.00	7,976.00
16.27	Supplying and Fixing of Sound junction box for stage floor, one box containing of 5 socket outlet for the system (Local Custom Made).	Set	4,908.00	4,908.00	4,908.00	4,908.00
16.28	Supplying and Fixing of Best quality foreign made cables suitable for connection of microphone & speaker.					
16.28.1	Microphone cables, 23 AWG (copper made twin core shielded , PVC Jacket, Cross linked PE Insulation, Dielectric strength: minimum 500 Vac )	Meter	160.00	160.00	160.00	160.00
16.28.2	Speaker cables, 12 AWG (copper made twin core shielded , PVC Jacket, PE Insulation, Dielectric strength: minimum 500 Vac )	Meter	152.00	152.00	152.00	152.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.29 Supplying and Fixing of **Direct Inject Box/ Direct Box** with the with the features of Premium Performance. Rugged Design. Stackable Chassis with Durable Rubber Foot. Gold-plated XLR Connector. Recessed Chrome Toggle Switches. Hi-Z ¼" Input Jack. Parallel ¼" Thru Jack. Transformer Isolated. Premium Shielded dbx Custom Transformer. Balanced XLR Lo-Z Output. 3-Way 0/20/40 dB Pad Switch. Flat/High-Cut Filter Switch. Output Polarity Invert Switch. Ground Lift Switch. +48V Phantom Powered Operation. Green LED Phantom Power. Indicator. Low-Noise Active Circuitry.  
 CE Certified/UL Listed  
 Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.  
 Model & sample to be approved by the Engineer in charge.

Each 47,241.00 47,235.00 47,209.00 47,209.00

16.30 Supply and fixing of **Line Array rigging accessories** with the features of Flying Bar for Line Array Subwoofer, 4Nos.of Joint bar for hanging Line array speaker with subwoofer and locally fabricated MS frame for security purpose to hookup from main ceiling including necessary rowel bolt with supporting chain Lever(suitable for 4 unit).Model & sample to be approved by the Engineer in charge.

Lot 330,567.00 330,561.00 330,535.00 330,535.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.31	Supply, Installation, Testing & Commissioning of Digital Signal Processors (DSP) based Digital loudspeaker management system of following technical specification or equivalent- Frequency Response ( $\pm 0.5$ dB): 20Hz - 20KHz A/D D/A Converter :24-bit S/N Ratio: >105dB Number of input: minimum 2 Number of output: minimum 6 PC connections: USB, RS485 CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	301,240.00	301,234.00	301,209.00	301,209.00
16.32	Supply, Installation, Testing & Commissioning of Digital Signal Processors (DSP) based Digital loudspeaker management system of following technical specification or equivalent- Frequency Response ( $\pm 0.5$ dB): 20Hz - 20KHz A/D D/A Converter :24-bit S/N Ratio: >105dB Number of inputs: minimum 12 (with 48v Phantom Power per Channel) Number of outputs: minimum 8 Low Latency, Fault Tolerant Digital Audio Bus & Configurable signal processing CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	485,543.00	485,537.00	485,511.00	485,511.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
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16.33	Supply, Installation, Testing & Commissioning of Feedback Suppressor of following technical specification or equivalent- Number of Inputs: 2 (minimum) Input Connectors: Female XLR and 1/4" TRS Input Type: Electronically balanced/unbalanced, RF filtered Input Impedance: Balanced 50kΩ, Unbalanced 25kΩ Number of Outputs: 2 (minimum) Output Connectors: Male XLR and 1/4" TRS Output Type: Electronically balanced/unbalanced, RF filtered Output Impedance: Balanced >120 Ω, Unbalanced >60 Ω Inter-channel Crosstalk: >80 dB typical CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	76,691.00	76,684.00	76,659.00	76,659.00
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16.34	Supply, Installation, Testing & Commissioning of Stage Box of following technical specification or equivalent- Mic/Line In :16 Line Out :8 48V Phantom power indicator Frequency Response : +/-1dB, 20Hz – 20kHz T.H.D. Mic Sensitivity -30dBu: < 0.01% @ 1kHz Residual noise: -85dBu Crosstalk (@ 1kHz) Mic – Mic: <-80dB @ 1kHz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	257,557.00	257,551.00	257,526.00	257,526.00
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16.35	<b>Public Address and Voice Alarm (Zone Based)</b>	Each	257,557.00	257,551.00	257,526.00	257,526.00
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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.35.1	<p>Supply, Installation, Testing &amp; Commissioning of Integrated Public Address and Voice Alarm with built-in or separately installed 500W Class-D amplifier, complete with microphone bases/call station and other accessories to work as an single unit 8-zone VA/PA system of following technical specification or equivalent:            Zone/ Speaker Group: 8            Frequency response : 100 Hz- 13 KHz            Impedance: 250- 600 ohm            Amplifier : 500W, Class-D            Power supply: 15-30 Vdc or 220-240 Vac, 50 Hz            Operating Temperature &amp; humidity: -10°C~+50°C (14°F~+122°F) &amp; &lt;95% without condensation            CE Certified/UL Listed            Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.            Model &amp; sample to be approved by the Engineer in charge.</p>	Each	399,404.00	399,398.00	399,372.00	399,372.00
16.35.2	<p>Supply, Installation, Testing &amp; Commissioning of Microphones Bases / Call Station including power supply and other accessories of following technical specification or equivalent:            Zone/ Speaker Group: 8            Frequency response : 100 Hz- 10 KHz            Impedance: 600 ohm            Power supply: 15-24 Vdc            CE Certified/UL Listed            Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh.            Model &amp; sample to be approved by the Engineer in charge.</p>	Each	80,372.00	80,366.00	80,340.00	80,340.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.35.3	Supply, Installation, Testing & Commissioning of 8 zone selection switch / 8 zone extender including accessories of following technical specification or equivalent: Zone/ Speaker Group: 8 Dual channel operation 500W/100V output capacity Power supply: 15-30 Vdc or 100-240 Vac, 50 Hz Operating Temperature & humidity: -10°C~+50°C (14°F~+122°F) & <95% without condensation CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	215,347.00	215,341.00	215,315.00	215,315.00
16.35.4	Supply, Installation, Testing & Commissioning of Mixer Pre-Amplifier of following technical specification or equivalent: 12 Inputs and 4 Outputs Impedance: 2.2 KOhm for mono channel mic, for line 33 KOhm, for stereo 22 KOhm SNR: >96dB Frequency Response: 50 Hz-18 KHz CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	243,569.00	243,563.00	243,537.00	243,537.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk)	Unit Rate in Chattogram & Sylhet Zone (Tk)	Unit Rate in Khulna, Barishal & Gopalganj (Tk)	Unit Rate in Rajshahi & Rangpur (Tk)
16.35.5	Supply, Installation, Testing & Commissioning of 4 Channel Amplifier of following technical specification or equivalent: Rated Power : 4x 120-125W RMS Amplifier Output: 70/100V Frequency Response: 80Hz-18KHz SNR: >85dB Power supply: 220-240 Vac, 50 Hz Operating Temperature & humidity: -10°C~+45°C & <95% without condensation CE Certified/UL Listed Country of Origin: USA, UK, Japan, EU Countries; suitable for use in tropical country like Bangladesh. Model & sample to be approved by the Engineer in charge.	Each	276,699.00	276,693.00	276,668.00	276,668.00

Subhead-16

Annexure-16

Selection of Loudspeaker type:

In order to achieve much more consistent sound levels from the front to the back of the listening area Line array type sound system is preferable. Line arrays are made up of multiple modules, so by adjusting the physical angle and the amplitude of individual modules, a higher sound level can be projected toward the back of the room than toward the front, resulting in more consistent coverage throughout the space.

Point Source Speaker system can be used when the ratio of long distance ( $D_L$ ) to the short distance ( $D_S$ ) is about 2 as shown in Figure 16.1. With some special arrangement  $D_L/D_S$  ratio can be extended up to 3.

When the  $D_L/D_S$  ratio is more than 3, Line Array Speaker System is preferable.

To use Line Array Speaker System, the mounting height of the speakers should be at least 8 meters or above.

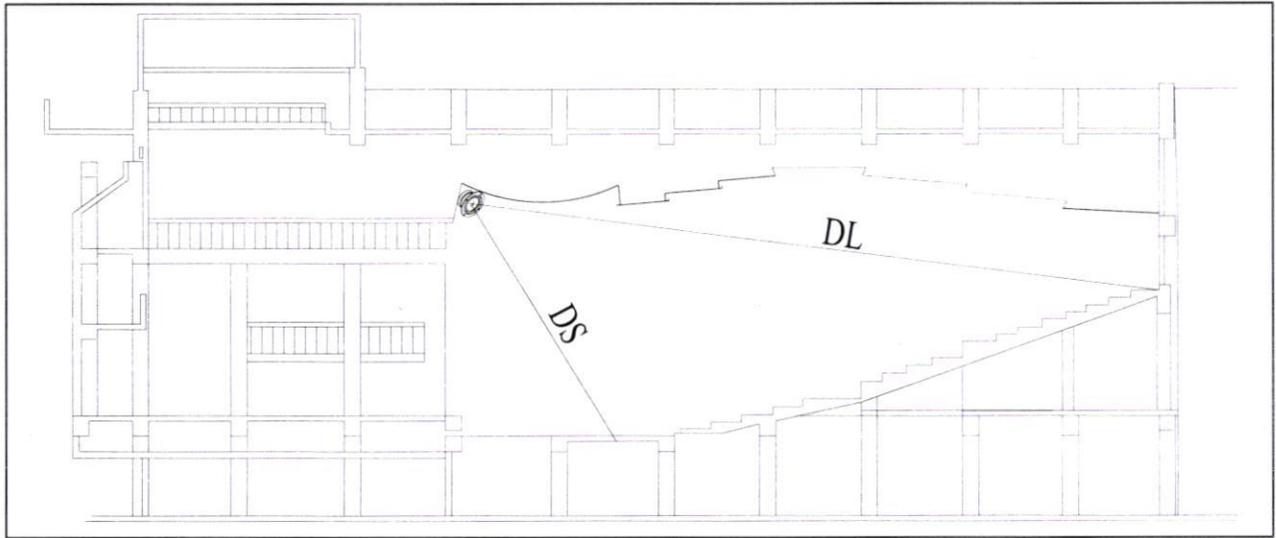


Figure-16.1 : Sectional view of an auditorium showing  $D_L$  and  $D_S$

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