SECTION 16780
TELEVISION SYSTEMS

PART 1  GENERAL

1.01 SUMMARY

A. Section Includes:

1. Television signal distribution system.

B. Related Sections:

1. Section 16160 - Cabinets and Enclosures
2. Section 16195 - Identification

1.02 SYSTEM DESCRIPTION

A. Design a complete distribution system to provide an operating signal level of plus 10 dBmV plus or minus 2 dB over frequency range of 40 to 300 MHz at each outlet. Specify that entire system is to be shielded to limit radiation at any portion of system to values listed below as measure by reference dipole.

<table>
<thead>
<tr>
<th>FREQUENCY RANGE</th>
<th>RADIATION LIMIT</th>
<th>TEST DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN MHz</td>
<td>MICROVOLTS/METER</td>
<td></td>
</tr>
<tr>
<td>Up to 54</td>
<td>20</td>
<td>30 feet</td>
</tr>
<tr>
<td>54 - 108</td>
<td>20</td>
<td>10 feet</td>
</tr>
<tr>
<td>108 - 174</td>
<td>10</td>
<td>10 feet</td>
</tr>
<tr>
<td>174 - 216</td>
<td>20</td>
<td>10 feet</td>
</tr>
<tr>
<td>216 - 300</td>
<td>20</td>
<td>30 feet</td>
</tr>
</tbody>
</table>

1.03 REFERENCES

A. Where appropriate, refer to Current ANSI and NEMA Standards for material ratings.

B. Specify Underwriters Laboratories listed equipment, assemblies and materials.

1.04 SUBMITTALS

A. Require submittals under the provisions of Section 16010 - Basic Electrical Requirements and Section 01300 - Submittals.
PART 2  PRODUCTS

2.01  EQUIPMENT

A. Passive Components:

1. Passive components, i.e. splitters, directional couplers, matching networks, matching transformers, to be 75 ohm back matched variety with ban pass capability of 5 to 300 MHz with flatness of plus or minus 0.5 dB or better over entire frequency range of each unit measured. Input and output return loss to be 20 dB or greater for each component over complete frequency range.

B. Wall Plates:

1. Only “back matched” “flat loss” 75 ohm directional coupler wall plates to be used in distribution system and these to meet following technical specifications.

   a. Minimum frequency band pass capability of 5 to 300 MHz with output flatness of plus or minus 0.5 dB or better for each unit over entire frequency range.
   b. Maximum cascaded number of above noted units in any installation not to exceed ten (10).
   c. Each unit to have 20 dB return loss or greater over entire frequency range.
   d. Each unit to have 32 dB output to tap isolation or greater over entire frequency range.

C. Cable:

1. Cable used to be coaxial 75 ohm, plus or minus 2 dB, 100% shielded included patch cords from wall plate to receiver. Structural return loss to be 26 dB or greater in installed position.

D. Cable selection to be on basis of maximum permissible tilt incurred when providing riser with maximum cascade of ten distribution terminal points with an operating signal level of plus 10 dB MV plus or minus 2 dB over frequency range of 40 to 300 MHz at each outlet location. Distribution system to be set up for 2 dB forward output tilt at input to each distribution riser between 40 to 300 MHz and cable type and lengths to be selected to comply with above.

E. Amplifiers:

1. Meet or exceed the following specifications:

   a. Frequency range - 40 to 300 MHz
   b. Gain - 45 dB
   c. Pass band flatness - plus or minus 0.5 dB
   d. Input/Output impedance - 75 ohms
   e. Input/Output return loss (minimum) - 16 dB
   f. Slope and gain - adjustable
   g. Noise figure (maximum) - 12 dB
h. Hum modulation - minus 60 dB  
i. Output level at 20 - channel operation - plus 48 dB MV  
j. Cross modulation ratio at 20 - channel operation - 57 dB  
k. Spurious and intermod signals at 20 - channel operation - minus 60 dB

PART 3 EXECUTION

3.01 INSTALLATION

A. The design shall be based upon plenum rated cable. Conduit may be used at the design team or owner’s preference or request. Non-plenum rated cable shall not be used.

B. Identification of cabling to be performed under provisions of Section 16195 - Identification.

C. Cabinets for equipment to be provided under provisions of Section 16160 - Cabinets and Enclosures.

END OF SECTION 16780