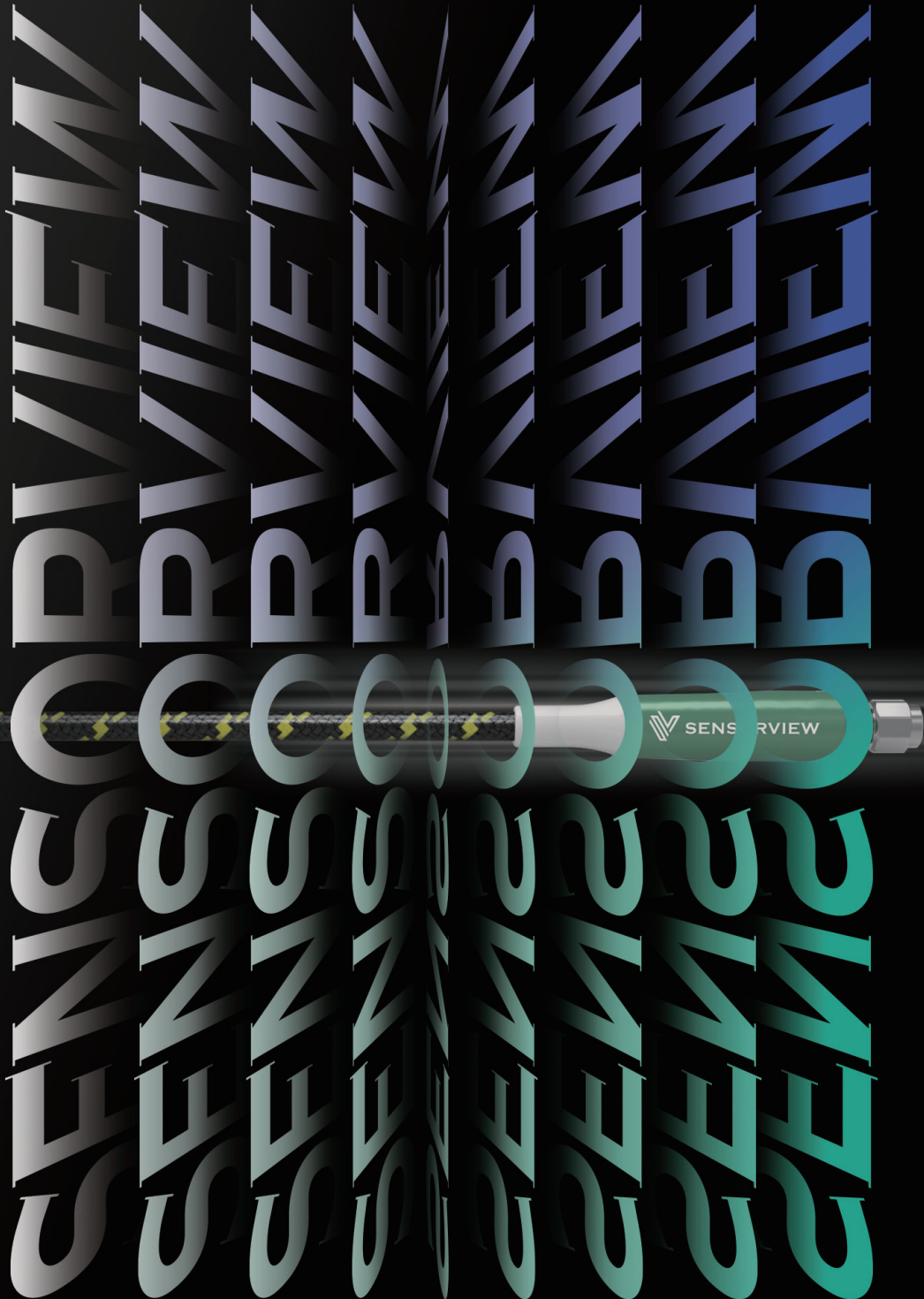


Low Loss. High Flexible.

# MICROWAVE CABLE FlexStable®

Coolductor® Conflon® Zenild® Aeroflon® Nanoflon®



## Cable Design & Core Material

**SENSORVIEW** designs and produces the cable & connector solutions for microwave & millimeter wave systems by incorporating inhouse material technologies which guarantee excellent electrical performance versus flexure and temperature variation.

### Aeroflon® Dielectric

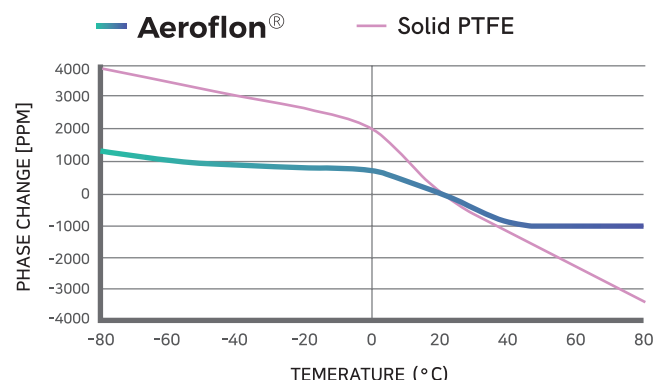
#### For low loss and stable electrical performance

Sensorview has developed a new PTFE dielectric, named Aeroflon®, demonstrating Dk (dielectric constant) about 1.6~1.7 and Df (loss tangent) about 0.0001@10GHz, which enables to achieve much lower loss in property of Microwave & mmWave coaxial cable compared to general PTFE cable.

Sensorview's Aeroflon® has a smaller "Knee" in its CTE (Coefficient of Thermal Expansion) profile around room temperature and remains the same even when exposed to extreme temperature, therefore, it is excellent to apply in harsh environment.



#### PTFE Knee Graph



Low insertion loss

Phase stable vs Temperature

Insertion loss stable vs flexure

Phase stable vs flexure

Low VSWR up to 67GHz

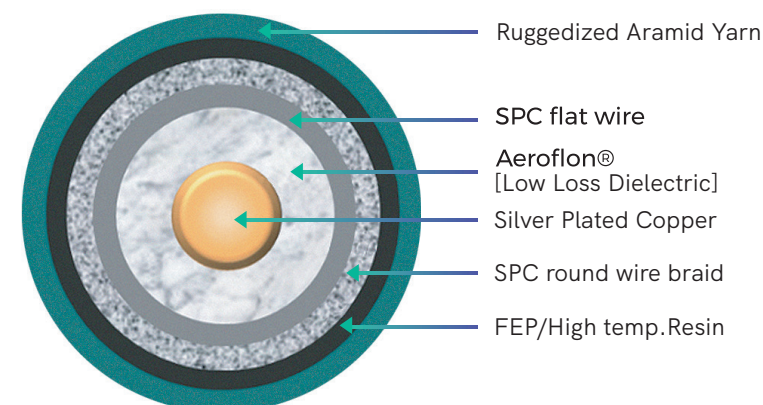
### Relative matching

Relative matching matches phase between two (which is one pair) or more cable assemblies which belongs to one another. Therefore, it is manufactured as sets with relative phase tolerance. Sensorview's default phase matching tolerance is  $\pm 0.3^\circ/\text{GHz}$ . (e.g. an 18GHz cable can be phase matched to  $\pm 5.4^\circ$ )

### Absolute matching

Absolute matching provides the matches in its assemblies to be at an absolute electrical length (Group delay). Any cable of a set can be replaced and manufactured in different location using any test equipment brand.

### Structures



#### Ruggedized Flexible Low Loss Cable series

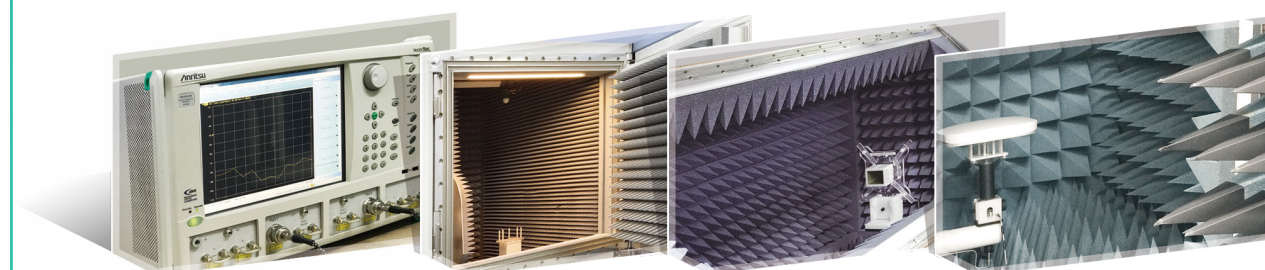
- Aramid Yarn Jacket / High abrasion resistance
- High temperature strength / High durability
- High operating frequency / Phase and I/L stability



### Where to use

- Network Analyzer
- RF Test Lab & Production Test Line

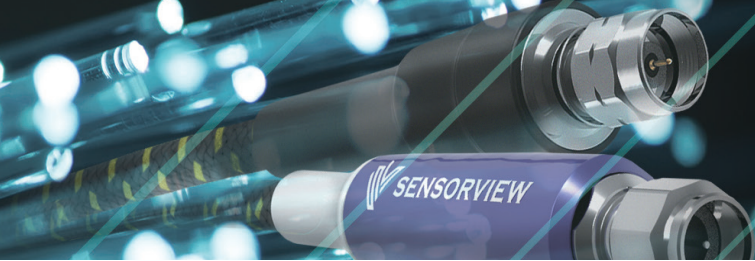
- OTA (Over-The-Air) Chamber
- Shield Box



### Part Number Naming

|                                                                                                 |      |                                                                                        |
|-------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------|
| <b>##M##YD</b><br><div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> </div> | 1 ## | Series No.<br>ex) 5, 7, 8, 9, 11, 13, ...                                              |
|                                                                                                 | 2 M  | Material of jacket<br>ex) A : Aramid   S : High temperature resin   F : FEP   U : PUR  |
|                                                                                                 | 3 ## | Maximum Operating Frequency<br>ex) 67 : 67GHz   50 : 50GHz   40 : 40GHz   26 : 26.5GHz |
|                                                                                                 | 4 Y  | Application<br>ex) G : General   L : Light Weight (Zenild)   W : Military (Tape Wrap)  |
|                                                                                                 | 5 D  | Solid type center conductor<br>ex) No 'D' : Stranded type center conductor             |





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FOR 5G AND BEYOND-5G

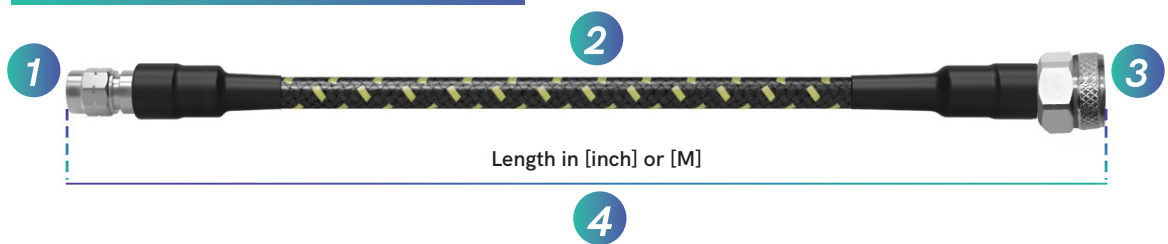


# MICROWAVE CABLE FlexStable®

## Aeroflon® Series | Microwave cable

**SENSORVIEW** has developed and manufactured its own dielectric material, Aeroflon®, which contributed to the development of our signature series of microwave cable. This material enables Aeroflon® series to conquer securing its cable to have low loss, IL & Phase stability, outstanding flexibility and smaller bend radius.

Example of SMA to N cable assembly



PART NO. **SMA(M)\_STZ8\_01-11A8G-N(M)\_STZ8\_01 -1M**

### MECH./ENV. PROPERTIES

| Type                        | 8GHz Low Loss - Resin Jacket | 8GHz Low Loss - Aramid Jacket | 8GHz Low Loss (Super Flex) PUR Jacket | 8GHz Low Loss (Super Flex) Resin Jacket | 8GHz Low Loss (Flex) FEP Jacket | 8GHz Low Loss (Super Flex) Aramid Jacket |
|-----------------------------|------------------------------|-------------------------------|---------------------------------------|-----------------------------------------|---------------------------------|------------------------------------------|
| Cable Part No.              | 11S8GD                       | 11A8GD                        | 11U8G                                 | 11S8G                                   | 11F8G                           | 11A8G                                    |
| Center Conductor Type       | Solid                        |                               | Stranded                              |                                         |                                 |                                          |
| Center Conductor Dim. [mm]  | 1.12                         |                               | 19/0.225                              |                                         |                                 |                                          |
| Overall Outer Diameter [mm] | 5.2 ± 0.1                    | 5.8 ± 0.1                     | 5.2 ± 0.1                             | 5.2 ± 0.1                               | 4.9 ± 0.1                       | 5.8 ± 0.1                                |
| Minimum Bend Radius [mm]    | 25                           |                               |                                       |                                         |                                 |                                          |
| Weight [g/m]                | 50.6                         | 54                            | 53.3                                  | 49.9                                    | 53.3                            | 53.3                                     |
| Temperature Range [°C]      | -50 ~ 135                    |                               | -50 ~ 85                              | -50 ~ 135                               | -50 ~ 125                       | -50 ~ 135                                |

| 18GHz Low Loss (Super Flex) Resin Jacket | 18GHz Low Loss - FEP Jacket |
|------------------------------------------|-----------------------------|
| 9S18G                                    | 9F18GD                      |
| Stranded                                 | Solid                       |
| 19/0.18                                  | 0.91                        |
| 4.2 ± 0.1                                | 3.8 ± 0.1                   |
| 15                                       | 20                          |
| 34.4                                     | 33                          |
| -50 ~ 135                                | -50 ~ 125                   |

| 26.5GHz Low Loss (Flex) FEP Jacket | 26.5GHz Low Loss (Super Flex) Resin Jacket | 26.5GHz Low Loss (Super Flex) Aramid Jacket |
|------------------------------------|--------------------------------------------|---------------------------------------------|
| 13F26                              | 13S26                                      | 13A26                                       |
| Stranded                           |                                            |                                             |
| 19/0.287                           |                                            |                                             |
| 5.7 ± 0.1                          | 6.2 ± 0.1                                  | 6.7 ± 0.1                                   |
| 30                                 |                                            |                                             |
| 56.2                               | 73.4                                       | 81.4                                        |
| -50 ~ 125                          | -50 ~ 135                                  |                                             |

| 33GHz Low Loss - Resin Jacket | 33GHz Low Loss - Aramid Jacket | 33GHz Low Loss (Super Flex) Resin Jacket | 33GHz Low Loss (Super Flex) Aramid Jacket |
|-------------------------------|--------------------------------|------------------------------------------|-------------------------------------------|
| 11S33D                        | 11A33D                         | 11S33                                    | 11A33                                     |
| Solid                         |                                | Stranded                                 |                                           |
| 1.12                          |                                | 19/0.225                                 |                                           |
| 5.3 ± 0.1                     | 5.8 ± 0.1                      | 5.3 ± 0.1                                | 5.8 ± 0.1                                 |
| 25                            |                                |                                          |                                           |
| 53.2                          | 59.2                           | 52.9                                     | 58.9                                      |
| -50 ~ 135                     |                                |                                          |                                           |

| 40GHz Low Loss (Super Flex) Resin Jacket | 40GHz Low Loss (Super Flex) Aramid Jacket |
|------------------------------------------|-------------------------------------------|
| 9S40                                     | 9A40                                      |
| Stranded                                 |                                           |
| 19/0.18                                  |                                           |
| 5.0 ± 0.1                                | 5.6 ± 0.1                                 |
| 25                                       |                                           |
| 44.4                                     | 48.6                                      |
| -50 ~ 135                                |                                           |

| 40GHz Low Loss (Flex) PFA Jacket |
|----------------------------------|
| 8F40WD                           |
| Solid                            |
| 0.83                             |
| 3.9 ± 0.1                        |
| 25                               |
| 50                               |
| -50 ~ 125                        |

| 50GHz Low Loss (Super Flex) Aramid Jacket |
|-------------------------------------------|
| 7A50D                                     |
| Solid                                     |
| 0.7                                       |
| 4.6 ± 0.1                                 |
| 20                                        |
| 34.1                                      |
| -50 ~ 135                                 |

| 67GHz Low Loss (Super Flex) Aramid Jacket |
|-------------------------------------------|
| 5A67D                                     |
| Solid                                     |
| 0.5                                       |
| 3.6 ± 0.1                                 |
| 20                                        |
| 25                                        |
| -50 ~ 85                                  |

### ELECTRICAL PROPERTIES

| Maximum Frequency                     | 8GHz           |  |  |  |
|---------------------------------------|----------------|--|--|--|
| Impedance (Nominal)                   | 50 ± 1 Ohm     |  |  |  |
| Velocity Propagation                  | 77% (nominal)  |  |  |  |
| Phase Stability vs. Flexure (Typical) | Max. 2° @ 8GHz |  |  |  |
| Loss Stability vs. Flexure (Typical)  | +/- 0.02 dB    |  |  |  |
| RF Leakage                            | -85dB          |  |  |  |

| Bulk Cable Attenuation @25°C at Sea Level | [dB/m] | [dB/ft] | [dB/m] | [dB/ft] |
|-------------------------------------------|--------|---------|--------|---------|
| 1GHz                                      | -0.34  | -0.104  | -0.36  | -0.108  |
| 2GHz                                      | -0.49  | -0.149  | -0.51  | -0.155  |
| 3GHz                                      | -0.61  | -0.185  | -0.63  | -0.192  |
| 4GHz                                      | -0.71  | -0.216  | -0.73  | -0.224  |
| 5GHz                                      | -0.80  | -0.243  | -0.83  | -0.252  |
| 6GHz                                      | -0.88  | -0.268  | -0.91  | -0.277  |
| 8GHz                                      | -1.03  | -0.314  | -1.07  | -0.325  |

| Average Power Rating [Watt] @25°C at Sea Level | 561 | 505 |
|------------------------------------------------|-----|-----|
| 1GHz                                           | 397 | 357 |
| 2GHz                                           | 324 | 292 |
| 3GHz                                           | 281 | 253 |
| 4GHz                                           | 251 | 226 |
| 5GHz                                           | 229 | 206 |
| 6GHz                                           | 198 | 178 |
| 8GHz                                           |     |     |

| 18GHz | [dB/m] | [dB/ft] | [dB/m] | [dB/ft] |
|-------|--------|---------|--------|---------|
| 1GHz  | -0.37  | -0.114  | -0.34  | -0.104  |
| 3GHz  | -0.67  | -0.205  | -0.61  | -0.186  |
| 6GHz  | -0.97  | -0.295  | -0.88  | -0.268  |
| 9GHz  | -1.21  | -0.369  | -1.10  | -0.335  |
| 12GHz | -1.42  | -0.433  | -1.29  | -0.393  |
| 15GHz | -1.61  | -0.490  | -1.46  | -0.445  |
| 18GHz | -1.82  | -0.553  | -1.65  | -0.503  |

| 26.5GHz | [dB/m] | [dB/ft] |
|---------|--------|---------|
| 1GHz    | 309    | 343     |
| 3GHz    | 178    | 198     |
| 6GHz    | 126    | 140     |
| 9GHz    | 104    | 115     |
| 12GHz   | 90     | 100     |
| 15GHz   | 80     | 89      |
| 18GHz   | 73     | 81      |

| 26.5GHz | [dB/m] | [dB/ft] |
|---------|--------|---------|
| 1GHz    | 696    | 665     |
| 3GHz    | 402    | 284     |
| 6GHz    | 285    | 272     |
| 10GHz   | 220    | 211     |
| 12GHz   | 201    | 192     |
| 18GHz   | 164    | 157     |
| 26.5GHz | 136    | 130     |

| 33GHz | [dB/m] | [dB/ft] | [dB/m] | [dB/ft] |
|-------|--------|---------|--------|---------|
| 1GHz  | -0.31  | -0.095  | -0.33  | -0.101  |
| 3GHz  | -0.55  | -0.168  | -0.56  | -0.171  |
| 6GHz  | -0.67  | -0.204  | -0.75  | -0.229  |
| 12GHz | -1.05  | -0.320  | -1.07  | -0.326  |
| 18GHz | -1.30  | -0.396  | -1.40  | -0.427  |
| 28GHz | -1.70  | -0.518  | -1.79  | -0.546  |
| 33GHz | -1.85  | -0.564  | -2.00  | -0.610  |

| Average Power Rating [Watt] @25°C at Sea Level | 561 | 505 |
|------------------------------------------------|-----|-----|
| 1GHz                                           | 324 | 292 |
| 3GHz                                           | 229 | 206 |
| 6GHz                                           | 162 | 146 |
| 12GHz                                          | 133 | 119 |
| 18GHz                                          | 106 | 96  |
| 33GHz                                          | 98  | 88  |

| 40GHz | [dB/m] | [dB/ft] |
|-------|--------|---------|
| 1GHz  | 369    |         |
| 3GHz  | 213    |         |
| 6GHz  | 151    |         |
| 12GHz | 107    |         |
| 18GHz | 87     |         |
| 28GHz | 70     |         |
| 40GHz | 59     |         |

| 40GHz | [dB/m] | [dB/ft] |
|-------|--------|---------|
| 1GHz  | 400    |         |
| 3GHz  | 240    |         |
| 6GHz  | 160    |         |
| 12GHz | 120    |         |
| 18GHz | 90     |         |
| 28GHz | 70     |         |
| 40GHz | 60     |         |

| 50GHz | [dB/m] | [dB/ft] |
|-------|--------|---------|
| 1GHz  | 320    |         |
| 3GHz  | 185    |         |
| 6GHz  | 131    |         |
| 12GHz | 93     |         |
| 28GHz | 61     |         |
| 40GHz | 51     |         |
| 50GHz | 45     |         |

| 67GHz | [dB/m] | [dB/ft] |
|-------|--------|---------|
| 1GHz  | 224    |         |
| 6GHz  | 92     |         |
| 18GHz | 53     |         |
| 27GHz | 44     |         |
| 40GHz | 36     |         |
| 50GHz | 32     |         |
| 67GHz | 28     |         |





**Microwave Coaxial Connector Technologies**

**SENSORVIEW** coaxial connectors are designed and fabricated to guarantee an optimized performance of the final goods. Our connectors therefore guarantee low return loss which results in optimum transmission. We can tailor our connectors to match the requirements of specific equipment and application.

Connector technologies

FEM analysis for impedance matching

Milling & Plating

Molding & Polishing

Stamping & Soldering

Characterization

Laser, Ultrasonic, Sealing

Coaxial connector & adapter series

| Coaxial Connector |                  |  |
|-------------------|------------------|--|
| Frequency [GHz]   | Connector        |  |
| DC ~ 67GHz        | 1.85mm (V)       |  |
| DC ~ 50GHz        | 2.4mm            |  |
| DC ~ 40GHz        | 2.92mm (K), SMPM |  |
| DC ~ 33GHz        | HFSMA®           |  |
| DC ~ 26.5GHz      | 3.5mm, SMP       |  |
| DC ~ 18GHz        | SMA, N           |  |

| Precision Coaxial Adapter |                  |           |
|---------------------------|------------------|-----------|
| Frequency [GHz]           | Interface        | VSWR Max. |
| DC ~ 67GHz                | 1.85mm           | <1.25     |
| DC ~ 50GHz                | 2.4mm            | <1.25     |
| DC ~ 40GHz                | 2.92mm (K), SMPM | <1.25     |
| DC ~ 33GHz                | HFSMA®           | <1.25     |
| DC ~ 26.5GHz              | HFSMA®, SMP      | <1.22     |
| DC ~ 18GHz                | SMA, N           | <1.2      |

| CABLE SERIES                                                                                          |       |        |         |       |       |       |       | CONNECTOR FOR CABLE |       |        |         |       |       |       |       |        |        |                      |                      |
|-------------------------------------------------------------------------------------------------------|-------|--------|---------|-------|-------|-------|-------|---------------------|-------|--------|---------|-------|-------|-------|-------|--------|--------|----------------------|----------------------|
| Cable Type (Old)                                                                                      | 8 GHz | 18 GHz | 26.5GHz | 33GHz | 40GHz | 50GHz | 67GHz | Part Number         | 8 GHz | 18 GHz | 26.5GHz | 33GHz | 40GHz | 50GHz | 67GHz | Type   | Gender | Straight/Right Angle | REMARKS              |
| 11S8GD (CSV3D)<br>11A8GD( CSVA3D)<br>11U8G (CSVP3)<br>11S8G (CSV3S)<br>11F8G (CSVF3)<br>11A8G (CSVA3) |       |        |         |       |       |       |       | SMA(M)_STZ8_01      |       |        |         |       |       |       |       | SMA    | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | SMA(F)_STZ8_01      |       |        |         |       |       |       |       | SMA    | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | N(M)_STZ8_01        |       |        |         |       |       |       |       | N Type | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | N(F)_STZ8_01        |       |        |         |       |       |       |       | N Type | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | N(M)_RAZ8_01        |       |        |         |       |       |       |       | N Type | Male   | Right Angle          |                      |
|                                                                                                       |       |        |         |       |       |       |       | SMA(M)_MSZ8_01      |       |        |         |       |       |       |       | SMA    | Male   | Straight             | Metal Sleeve         |
|                                                                                                       |       |        |         |       |       |       |       | SMA(F)_MSZ8_01      |       |        |         |       |       |       |       | SMA    | Female | Straight             | Metal Sleeve         |
| 11F8G (CSVF3)                                                                                         |       |        |         |       |       |       |       | SMA(M)_RAZ8_02      |       |        |         |       |       |       |       | SMA    | Male   | Right Angle          | 11F8G Phase Matching |
| 9S18G / 9F18GD                                                                                        |       |        |         |       |       |       |       | SMA(M)_SH18_01      |       |        |         |       |       |       |       | SMA    | Male   | Straight             | Short Type           |
| 13F26 (CSVF1)<br>13S26 (CSV3S1)<br>13A26 (CSVA1)                                                      |       |        |         |       |       |       |       | SMA(M)_ST18_01      |       |        |         |       |       |       |       | SMA    | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | SMA(M)_RAZ8_01      |       |        |         |       |       |       |       | SMA    | Male   | Right Angle          |                      |
|                                                                                                       |       |        |         |       |       |       |       | SMA(F)_ST18_01      |       |        |         |       |       |       |       | SMA    | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | N(M)_ST18_01        |       |        |         |       |       |       |       | N Type | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | N(F)_ST18_01        |       |        |         |       |       |       |       | N Type | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | TNC(M)_ST18_01      |       |        |         |       |       |       |       | TNC    | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(M)_ST18_01      |       |        |         |       |       |       |       | 2.4mm  | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(F)_ST18_01      |       |        |         |       |       |       |       | 2.4mm  | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | HFSMA(M)_ST26_01    |       |        |         |       |       |       |       | HFSMA  | Male   | Straight             |                      |
| 11S33D / 11A33D / 11S33 / 11A33 (CSV2)                                                                |       |        |         |       |       |       |       | 3P5(M)_ST26_01      |       |        |         |       |       |       |       | 3.5mm  | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 3P5(M)_ST26_01      |       |        |         |       |       |       |       | 3.5mm  | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | HFSMA(M)_ST33_01    |       |        |         |       |       |       |       | HFSMA  | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | HFSMA(M)_ST26_02    |       |        |         |       |       |       |       | HFSMA  | Male   | Straight             | 9S40 / 9A40          |
|                                                                                                       |       |        |         |       |       |       |       | K(M)_ST40_01        |       |        |         |       |       |       |       | 2.92mm | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | K(F)_ST40_01        |       |        |         |       |       |       |       | 2.92mm | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | K(M)_SH40_01        |       |        |         |       |       |       |       | 2.92mm | Male   | Straight             | Short Type           |
|                                                                                                       |       |        |         |       |       |       |       | K(F)_SH40_01        |       |        |         |       |       |       |       | 2.92mm | Female | Straight             | Short Type           |
|                                                                                                       |       |        |         |       |       |       |       | K(M)_MS40_01        |       |        |         |       |       |       |       | 2.92mm | Male   | Straight             | Metal Sleeve         |
|                                                                                                       |       |        |         |       |       |       |       | K(F)_MS40_01        |       |        |         |       |       |       |       | 2.92mm | Female | Straight             | Metal Sleeve         |
| 9S40 (CSV3S4)<br>9A40 (CSVA4)                                                                         |       |        |         |       |       |       |       | K(M)_RA40_01        |       |        |         |       |       |       |       | 2.92mm | Male   | Right Angle          |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(M)_ST40_01      |       |        |         |       |       |       |       | 2.4mm  | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(F)_ST40_01      |       |        |         |       |       |       |       | 2.4mm  | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(M)_MS40_01      |       |        |         |       |       |       |       | 2.4mm  | Male   | Straight             | Metal Sleeve         |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(F)_MS40_01      |       |        |         |       |       |       |       | 2.4mm  | Female | Straight             | Metal Sleeve         |
|                                                                                                       |       |        |         |       |       |       |       | 8F40WD              |       |        |         |       |       |       |       | 2.92mm | Male   | Straight             | Phase Stability      |
|                                                                                                       |       |        |         |       |       |       |       | K(M)_ST40_91        |       |        |         |       |       |       |       | 2.92mm | Male   | Straight             |                      |
| 7A50D (CSVA5)                                                                                         |       |        |         |       |       |       |       | 2P4(M)_ST50_01      |       |        |         |       |       |       |       | 2.4mm  | Male   | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(F)_ST50_01      |       |        |         |       |       |       |       | 2.4mm  | Female | Straight             |                      |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(M)_MS50_01      |       |        |         |       |       |       |       | 2.4mm  | Male   | Straight             | Metal Sleeve         |
|                                                                                                       |       |        |         |       |       |       |       | 2P4(F)_MS50_01      |       |        |         |       |       |       |       | 2.4mm  | Female | Straight             | Metal Sleeve         |
| 5A67D                                                                                                 |       |        |         |       |       |       |       | V(M)_ST67_01        |       |        |         |       |       |       |       | 1.85mm | Male   | Straight             |                      |

**SENSORVIEW** HFSMA® series is the extended frequency SMA connector that works up to 33GHz which mates with the standard SMA, 3.5mm, 2.92mm(K) and maintains the same mechanical interface.

**YOUR TRUSTED PARTNER  
FOR 5G AND BEYOND-5G**



**SENSORVIEW**

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