

UNIVERSITY OF WYOMING
 POLY(IONIC LIQUID): MAGNETIC PERMITTIVITY AND PERMEABILITY

Sband

| AVERAGE VALUES | | | | |
|----------------|-------|-------|------|------|
| FREQ | EPS-R | EPS-I | MU-R | MU-I |
| 2.50 | 4.62 | -.37 | 1.13 | -.08 |
| 2.69 | 4.63 | -.37 | 1.08 | -.07 |
| 2.88 | 4.62 | -.37 | 1.06 | -.06 |
| 3.06 | 4.61 | -.37 | 1.06 | -.05 |
| 3.25 | 4.60 | -.36 | 1.06 | -.04 |
| 3.44 | 4.59 | -.35 | 1.06 | -.04 |
| 3.63 | 4.60 | -.35 | 1.05 | -.03 |
| 3.81 | 4.60 | -.35 | 1.05 | -.02 |
| 4.00 | 4.59 | -.36 | 1.06 | -.03 |

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| | FREQ | EPS-R | EPS-I | MU-R | MU-I |
|---|------|-------|-------|------|------|
| F | 2.50 | 4.61 | -.44 | 1.15 | -.01 |
| R | 2.50 | 4.63 | -.30 | 1.11 | -.16 |
| F | 2.69 | 4.63 | -.42 | 1.07 | -.02 |
| R | 2.69 | 4.63 | -.32 | 1.08 | -.13 |
| F | 2.88 | 4.62 | -.42 | 1.06 | -.01 |
| R | 2.88 | 4.62 | -.32 | 1.06 | -.11 |
| F | 3.06 | 4.61 | -.41 | 1.05 | -.01 |
| R | 3.06 | 4.61 | -.32 | 1.07 | -.09 |
| F | 3.25 | 4.60 | -.40 | 1.05 | .00 |
| R | 3.25 | 4.61 | -.32 | 1.07 | -.08 |
| F | 3.44 | 4.59 | -.39 | 1.05 | .00 |
| R | 3.44 | 4.59 | -.31 | 1.06 | -.08 |
| F | 3.63 | 4.60 | -.39 | 1.04 | .01 |
| R | 3.63 | 4.59 | -.32 | 1.06 | -.06 |
| F | 3.81 | 4.60 | -.39 | 1.03 | .02 |
| R | 3.81 | 4.59 | -.31 | 1.06 | -.05 |
| F | 4.00 | 4.59 | -.41 | 1.05 | .02 |
| R | 4.00 | 4.58 | -.31 | 1.07 | -.07 |

Freq = frequency in GHz
 EPS-R = MAGNETIC PERMITTIVITY, REAL
 EPS-I = MAGNETIC PERMITTIVITY, IMAGINARY
 MU-R = MAGNETIC PERMEABILITY, REAL
 MU-I = MAGNETIC PERMEABILITY, IMAGINARY
 F = Forward values calculated from S12&S11
 R = Reverse values calculated from S21&S22

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Xband

| AVERAGE VALUES | | | | |
|----------------|-------|-------|------|------|
| FREQ | EPS-R | EPS-I | MU-R | MU-I |
| 8.00 | 4.36 | -.26 | 1.06 | .02 |
| 8.50 | 4.36 | -.26 | 1.07 | -.01 |
| 9.00 | 4.36 | -.27 | 1.05 | -.01 |
| 9.50 | 4.36 | -.27 | 1.05 | -.02 |
| 10.00 | 4.36 | -.27 | 1.04 | -.01 |
| 10.50 | 4.35 | -.27 | 1.04 | -.01 |
| 11.00 | 4.35 | -.27 | 1.03 | -.01 |
| 11.50 | 4.35 | -.27 | 1.03 | .00 |
| 12.00 | 4.37 | -.31 | 1.04 | -.01 |

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| | FREQ | EPS-R | EPS-I | MU-R | MU-I |
|---|-------|-------|-------|------|------|
| F | 8.00 | 4.35 | -.41 | 1.10 | .15 |
| R | 8.00 | 4.37 | -.12 | 1.02 | -.12 |
| F | 8.50 | 4.36 | -.40 | 1.11 | .12 |
| R | 8.50 | 4.36 | -.12 | 1.02 | -.14 |
| F | 9.00 | 4.37 | -.41 | 1.10 | .11 |
| R | 9.00 | 4.36 | -.12 | 1.01 | -.14 |
| F | 9.50 | 4.37 | -.42 | 1.10 | .11 |
| R | 9.50 | 4.35 | -.12 | 1.00 | -.14 |
| F | 10.00 | 4.37 | -.42 | 1.09 | .11 |
| R | 10.00 | 4.35 | -.12 | .99 | -.13 |
| F | 10.50 | 4.37 | -.44 | 1.09 | .11 |
| R | 10.50 | 4.34 | -.11 | .99 | -.14 |
| F | 11.00 | 4.36 | -.44 | 1.09 | .11 |
| R | 11.00 | 4.33 | -.11 | .98 | -.13 |
| F | 11.50 | 4.37 | -.44 | 1.09 | .12 |
| R | 11.50 | 4.33 | -.11 | .98 | -.13 |
| F | 12.00 | 4.40 | -.47 | 1.09 | .11 |
| R | 12.00 | 4.35 | -.14 | .99 | -.13 |

Freq = frequency in GHz
 EPS-R = MAGNETIC PERMITTIVITY, REAL
 EPS-I = MAGNETIC PERMITTIVITY, IMAGINARY
 MU-R = MAGNETIC PERMEABILITY, REAL
 MU-I = MAGNETIC PERMEABILITY, IMAGINARY
 F = Forward values calculated from S12&S11
 R = Reverse values calculated from S21&S22

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