

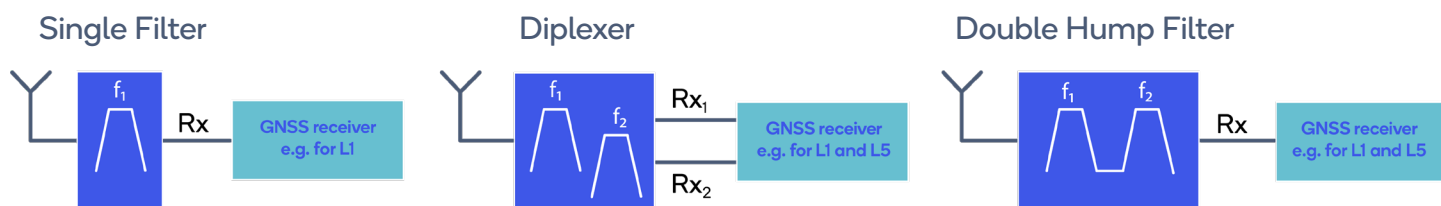
# SAW Filters

for GNSS Receivers in Industrial-IoT  
and Consumer Applications

Qualcomm

Our SAW filters are designed for spectrum challenging applications. The GNSS product range includes single filters with their small packaging footprint as little as 0.9 mm x 0.7 mm, duplexers and double hump filters. These components cover all common GNSS frequency ranges of GPS, Galileo, Glonass and Beidou, including the L2, L5, L and L1 bands. Many filters provide a group delay ripple of 5 ns for best precise positioning performance.

## Our GNSS Filter Types



## Features

- Frequency spectrum 1166 ... 1284 MHz, 1539 ... 1606 MHz
- Package sizes [mm x mm]: 0.9 x 0.7, 1.1 x 0.9, 1.4 x 1.1 and 1.5 x 1.1
- Group delay ripple down to 5 ns

## Product Range

| Pass Band [MHz]  |                   |                  |          | Package Size [mm x mm] |           |           |           |           | Other |              |              |                              |                              |               |         |
|------------------|-------------------|------------------|----------|------------------------|-----------|-----------|-----------|-----------|-------|--------------|--------------|------------------------------|------------------------------|---------------|---------|
| Lower Freq [MHz] | Center Freq [MHz] | Upper Freq [MHz] | BW [MHz] | 0.9 x 0.7              | 1.1 x 0.9 | 1.4 x 1.1 | 1.5 x 1.1 | 3.0 x 3.0 | Band  | IL, typ [dB] | IL, max [dB] | Group delay ripple, typ [ns] | Group delay ripple, max [ns] | Top, max [°C] | Comment |

| Single Filters for L and L1 band |        |      |    |       |       |       |  |  |      |          |         |        |     |    |   |
|----------------------------------|--------|------|----|-------|-------|-------|--|--|------|----------|---------|--------|-----|----|---|
| 1559                             | 1583   | 1606 | 47 | B7504 |       |       |  |  | L1   | 0.9-1.2  | 14-2.0  | 4      | 15  | 85 | low insertion attenuation + high attenuation      |
| 1559                             | 1583   | 1606 | 47 |       | B8813 |       |  |  | L1   | 0.85-1.2 | 14-1.9  | 3      | 12  | 85 | low insertion attenuation                         |
| 1559                             | 1583   | 1606 | 47 |       | B7560 |       |  |  | L1   | 1.7      | 2.0-2.4 | 14-1.6 | 5   | 85 | low group delay ripple                            |
| 1539                             | 1572.5 | 1606 | 67 |       | B7561 |       |  |  | L+L1 | 1.1-1.7  | 1.5-2.5 | 2-4    | 6-8 | 85 | low group delay ripple                            |
| 1559                             | 1583   | 1606 | 47 |       |       | B8313 |  |  | L1   | 0.8-1.3  | 1.3-2.0 | 4      | 12  | 85 | low insertion attenuation                         |
| 1559                             | 1583   | 1606 | 47 |       |       | B9621 |  |  | L1   | 1.0-1.4  | 1.4-2.4 | 4      | 20  | 95 | industrial grade                                  |
| 1574                             | 1583   | 1606 | 32 |       | B7527 |       |  |  | L1   | 0.95-1.7 | -       | 8      | -   | 85 | B24 suppression between 1526-1536 & 1627-1680 MHz |

## Product Range

| Pass Band [MHz]  |                   |                  |          | Package Size [mm x mm] |           |           |           |           | Other |              |              |                              |                              |               |         |
|------------------|-------------------|------------------|----------|------------------------|-----------|-----------|-----------|-----------|-------|--------------|--------------|------------------------------|------------------------------|---------------|---------|
| Lower Freq [MHz] | Center Freq [MHz] | Upper Freq [MHz] | BW [MHz] | 0.9 x 0.7              | 1.1 x 0.9 | 1.4 x 1.1 | 1.5 x 1.1 | 3.0 x 3.0 | Band  | IL, typ [dB] | IL, max [dB] | Group delay ripple, typ [ns] | Group delay ripple, max [ns] | Top, max [°C] | Comment |

| Single Filters for L2 and L5 Band |      |      |     |       |       |       |  |  |       |         |         |       |       |     |   |
|-----------------------------------|------|------|-----|-------|-------|-------|--|--|-------|---------|---------|-------|-------|-----|---|
| 1166                              | 1176 | 1186 | 20  | B7505 |       |       |  |  | L5    | 0.9     | 1.3     | -     | -     | 85  | low insertion attenuation; L5, E5a                        |
| 1166                              | 1176 | 1186 | 20  |       | B8884 |       |  |  | L5    | 1.0     | 1.6     | -     | -     | 85  | low insertion attenuation; L5, E5a                        |
| 1166                              | 1176 | 1186 | 20  |       | B7525 |       |  |  | L5    | 1.3     | 1.6     | 9     | 20    | 85  | L5, E5a; focus on nearby selectivity                      |
| 1166                              | 1199 | 1232 | 33  |       | B7562 |       |  |  | L2/L5 | 1.5     | 2.2     | 3-4   | 5-7   | 85  | L5, E5a, E5b, G3, B2-1, L2; low group delay ripple        |
| 1164                              | 1192 | 1219 | 55  |       |       | B2637 |  |  | L5    | 1.5     | 2.6     | 12-15 | 25-50 | 125 | L5, E5a, E5b, G3, B2-1                                    |
| 1197                              | 1223 | 1249 | 52  |       | B2632 |       |  |  | L2    | 1.0-1.3 | 1.8-2.2 | 2-4   | 5-8   | 125 | L5, E5a, E5b, G3, B2-1, L2, G2; low group delay ripple    |
| 1212                              | 1235 | 1257 | 45  |       |       | B2635 |  |  | L2    | 2       | 2.8     | 2-15  | 10-35 | 125 | L2, G2  |
| 1166                              | 1197 | 1228 | 62  |       | B8889 |       |  |  | L2/L5 | 0.9-1.4 | 1.3-2.6 | -     | -     | 85  | L5, E5a, E5b, G3, B2-1, L2                                |
| 1166                              | 1225 | 1284 | 118 |       |       | B2642 |  |  | L2/L5 | 1.1-2.2 | 1.5-2.4 | 6-10  | 10-27 | 105 | ultra-wide band; L5, E5a, E5b, G3, B2-1, L2, G2, B3-1, E6 |

| Duplexers and Double Hump Filters for L, L1, L2 and L5 Band |      |      |    |  |  |  |       |  |          |         |         |     |     |    |  |
|---|------|------|----|--|--|--|-------|--|----------|---------|---------|-----|-----|----|--|
| 1166  | 1176 | 1186 | 20 |  |  |  | B1267 |  | L1+L5    | 1.2     | 2.2     | -   | -   | 85 | diplexer; L5, E5a                            |
| 1559  | 1583 | 1606 | 47 |  |  |  |       |  |          | 1.2-1.5 | 1.5-2.2 | 3   | -   |    |  |
| 1166  | 1197 | 1228 | 62 |  |  |  | B9973 |  | L1+L2/L5 | 1.2-1.7 | 2.0-2.1 | -   | -   | 85 | diplexer; L5, E5a, E5b, G3, B2-1, L2         |
| 1559  | 1583 | 1606 | 47 |  |  |  |       |  |          | 1.3-1.6 | 1.7-2.0 | -   | -   |    |  |
| 1166  | 1177 | 1187 | 21 |  |  |  | B8389 |  | L1+L5    | 1.0     | 1.6     | 3   | 6   | 85 | double hump; L5, E5a, low group delay ripple |
| 1559  | 1583 | 1606 | 47 |  |  |  |       |  |          | 1.8     | 2.5     | 2-3 | 5-8 |    |  |

Technical data subject to change. Filter specification must be taken from the respective product data sheet.

For datasheets see [rffe.qualcomm.com](http://rffe.qualcomm.com)