

# **KYOCERA SAW Filter for Connectivity Application**

Jan., 27, 2014

KYOCERA Corporation  
Corporate Electronic Comp. Group  
Circuit Device Department

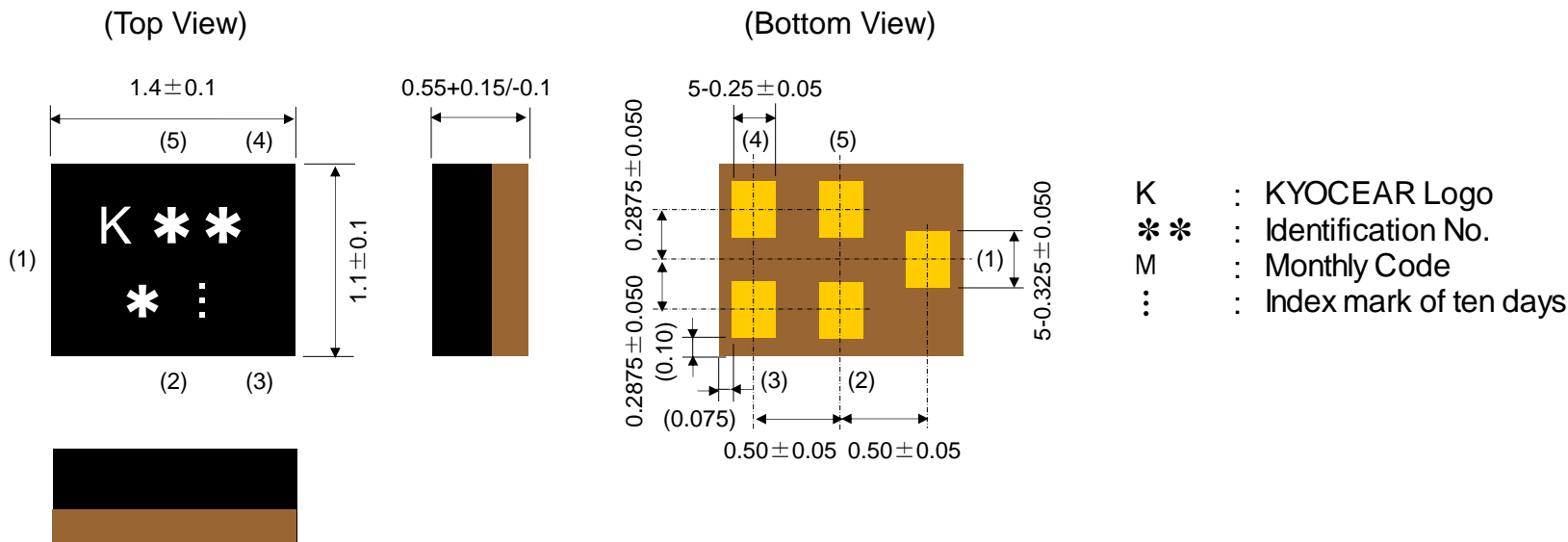
# Line-up of SAW Filter for GNSS / WLAN



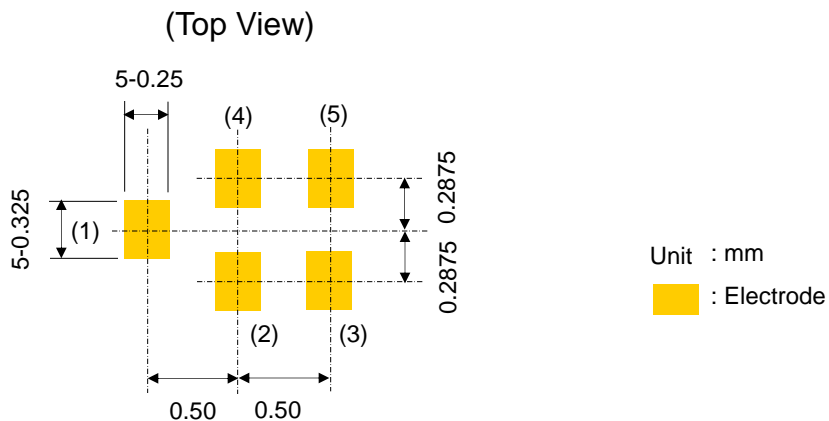
Items	Type Name	Dimensions [ mm ]	Output Imp. [ ohm ]	Sample	Mass Production	Operating Temp. Range [ deg.C ]
GPS (Standard Type)	SF14-1575F5UUA1	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	-30~+85
GPS (Ultra Low Loss Type)	SF14-1575F5UUC1	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	
GPS (Low Loss, Balanced Type)	SF14-1575M5UBA1	1.4 x 1.1 x 0.55	100ohm Balance	Available	Started	
GPS (High Att., Balance Type)	SF14-1575M5UBB1	1.4 x 1.1 x 0.55	100ohm Balance	Available	Started	
GPS/GLONASS/COMPASS	SF14-1582M5UUD2	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	
GPS (Low Loss, Balanced Type)	SF14-1575M5UBA2	1.4 x 1.1 x 0.55	100ohm Balance	Available	Started	-40~+85
GPS (Standard Type)	SF14-1575F5UUA7	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	
GPS/GLONASS/COMPASS	SF14-1582M5UUD1	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	
WLAN/Bluetooth	SF14-2446M5UUA3	1.4 x 1.1 x 0.55	50ohm Unbalance	Available	Started	

# Package Information of 1411 Size SAW Filter

## ■ Dimensions

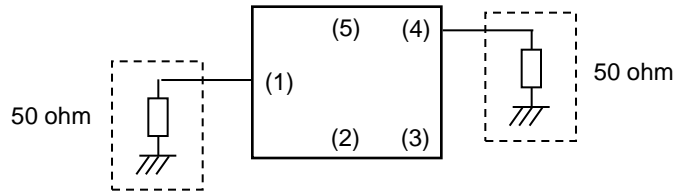


## ■ Recommendable Land Pattern



## ■ Unbalance Output

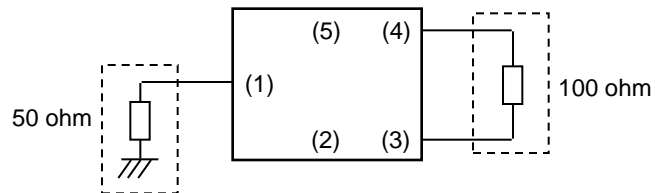
(Top View)



Pin No.	Function
(1)	Input
(2)	GND
(3)	GND
(4)	Output
(5)	GND

## ■ Balance Output

(Top View)



Pin No.	Function
(1)	Input
(2)	GND
(3)	Output
(4)	Output
(5)	GND

## Type Name

SF14-1575F5UUA1

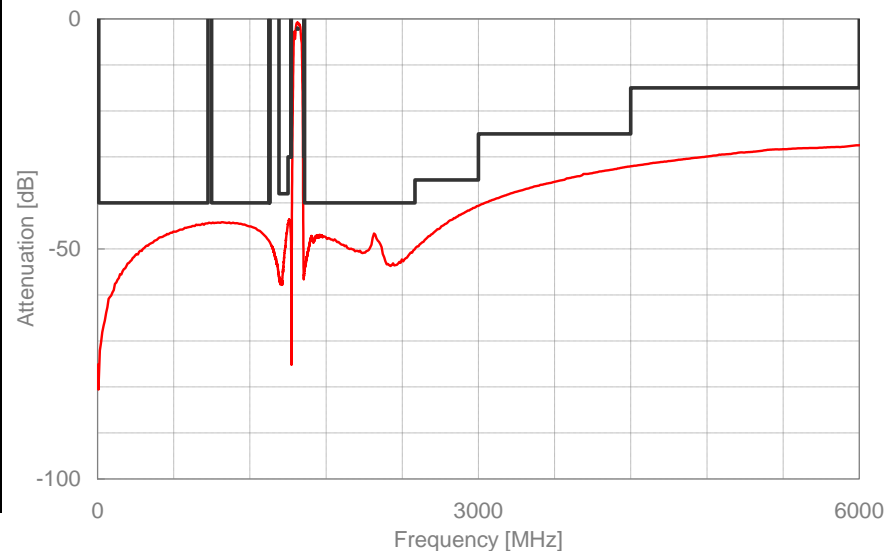
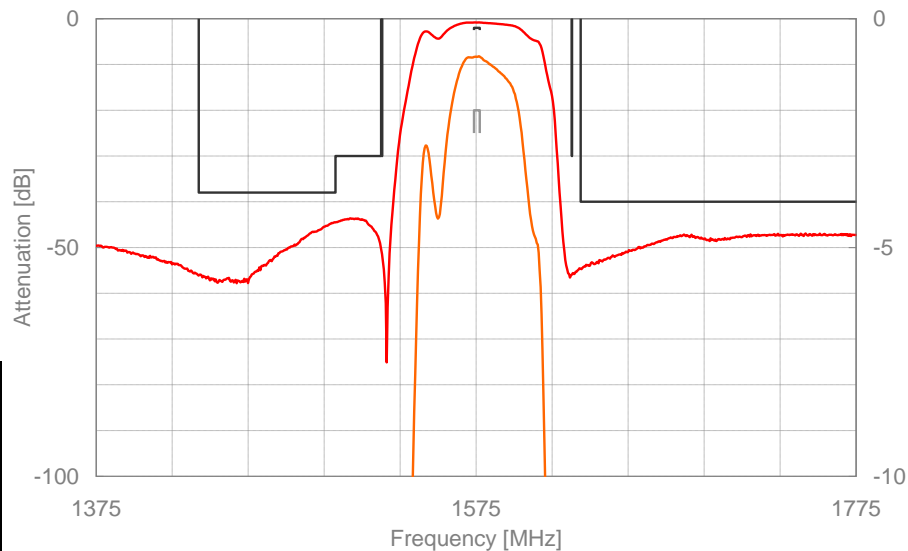
## Feature

- Low Insertion Loss
- High Attenuation @ Tx Band of Mobile Phone

## Specifications

Items	Frequency [MHz]	Specification			Unit
		min.	typ.	max.	
Nominal Center Frequency		1575.42			MHz
Insertion Loss	1573.92 to 1576.92	-	0.8	1.2	dB
Ripple (peak to peak)	1573.92 to 1576.92	-	0.02	0.6	dB
Input VSWR	1573.92 to 1576.92	-	1.1	1.7	-
Output VSWR	1573.92 to 1576.92	-	1.0	1.7	-
Absolute Attenuation	10 to 843	40	45	-	dB
	843 to 870	40	44	-	dB
	898 to 925	40	44	-	dB
	925 to 1350	40	44	-	dB
	1355.25	40	49	-	dB
	1429 to 1501	38	44	-	dB
	1501 to 1525	30	44	-	dB
	1525.42	30	49	-	dB
	1625.42	30	56	-	dB
	1630 to 1893	40	47	-	dB
	1893 to 1920	40	48	-	dB
	1920 to 1940	40	49	-	dB
	1940 to 1980	40	49	-	dB
	1980 to 2500	40	47	-	dB
	2500 to 3000	35	41	-	dB
3000 to 4200	25	32	-	dB	
4200 to 6000	15	27	-	dB	

## Typical Curve Data



## Type Name

SF14-1575F5UUC1

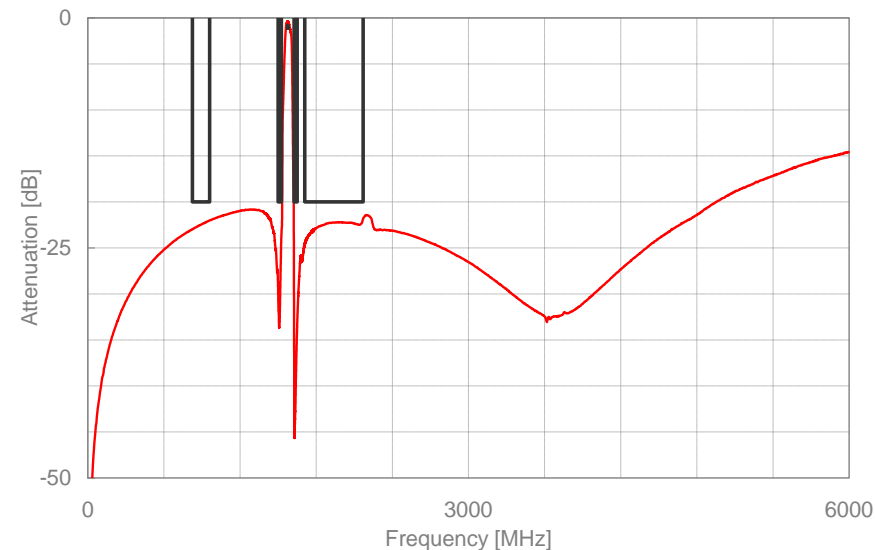
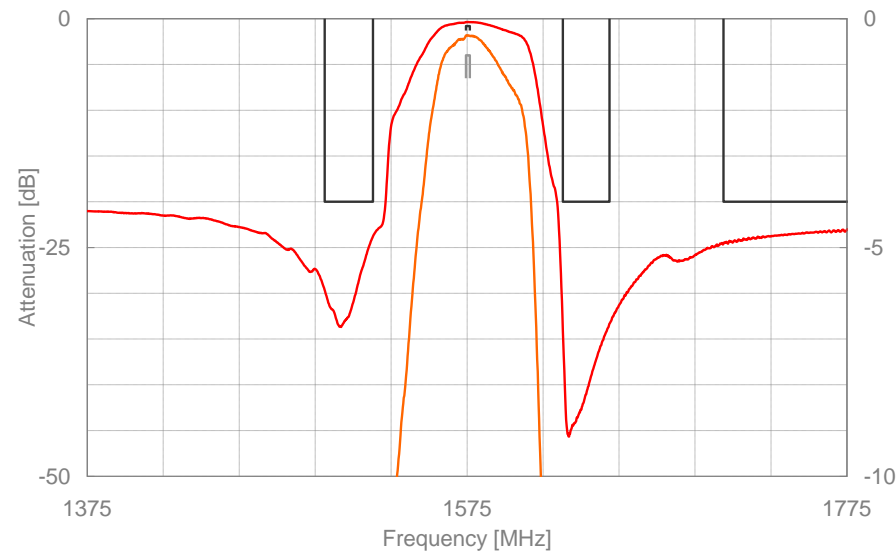
## Feature

- Ultra Low Insertion Loss

## Specifications

Items	Frequency [MHz]	Specification			Unit
		min.	typ.	max.	
Nominal Center Frequency		1575.42			MHz
Insertion Loss	1574.42 to 1576.42	-	0.45	0.8	dB
Ripple (peak to peak)	1574.42 to 1576.42	-	0.1	0.6	dB
Input VSWR	1574.42 to 1576.42	-	1.0	1.8	-
Output VSWR	1574.42 to 1576.42	-	1.0	1.8	-
Absolute Attenuation	824 to 960	20	22	-	dB
	1500 to 1525.42	20	24	-	dB
	1625.42 to 1650	20	34	-	dB
	1710 to 2170	20	22	-	dB

## Typical Curve Data



## Type Name

SF14-1575M5UBA1

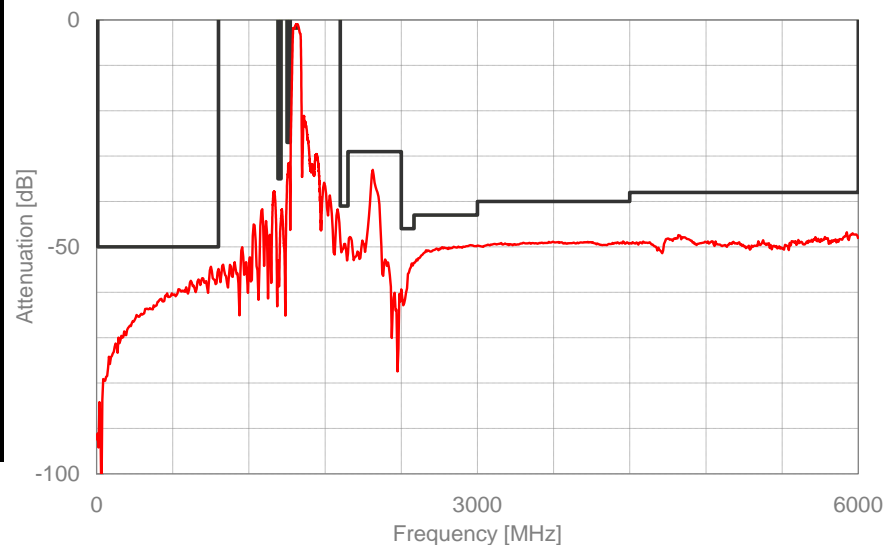
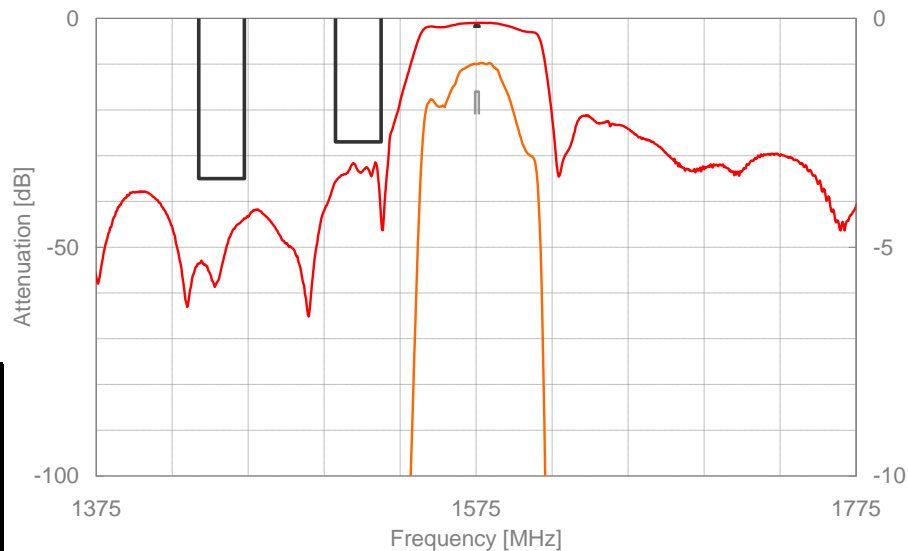
## Feature

- Low Insertion Loss
- High Attenuation @ Tx Band of Mobile Phone

## Specifications

	Frequency Range (MHz)	Specification			Unit
		min.	typ.	max.	
Nominal Frequency	-	1575.42			MHz
Insertion Loss	1574.42 to 1576.42	-	1.1	1.6	dB
Amplitude Ripple(P-P)	1574.42 to 1576.42	-	0.01	1.0	dB
Input VSWR	1574.42 to 1576.42	-	1.1	1.6	-
Output VSWR	1574.42 to 1576.42	-	1.1	1.6	-
Absolute Attenuation	10 to 810	50	57	-	dB
	810 to 960	50	55	-	dB
	1429 to 1453	35	44	-	dB
	1501 to 1525	27	32	-	dB
	1920 to 1980	41	49	-	dB
	1980 to 2400	29	33	-	dB
	2400 to 2500	46	54	-	dB
	2500 to 3000	43	50	-	dB
	3000 to 4200	40	49	-	dB
4200 to 6000	38	47	-	dB	
Amplitude Imbalance	1574.42 to 1576.42	-1.4	0.3	+1.4	dB
Phase Imbalance	1574.42 to 1576.42	-8.0	2.0	+8.0	deg.

## Typical Curve Data



## Type Name

SF14-1575M5UBB1

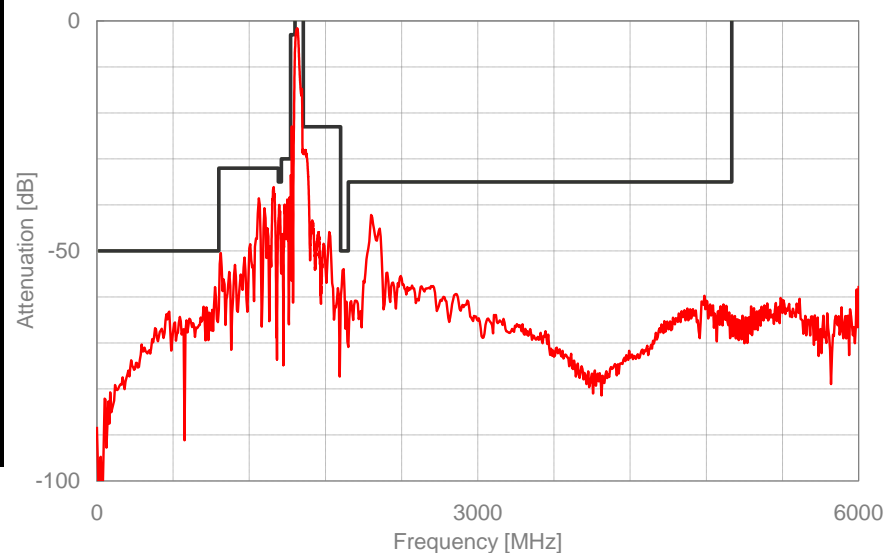
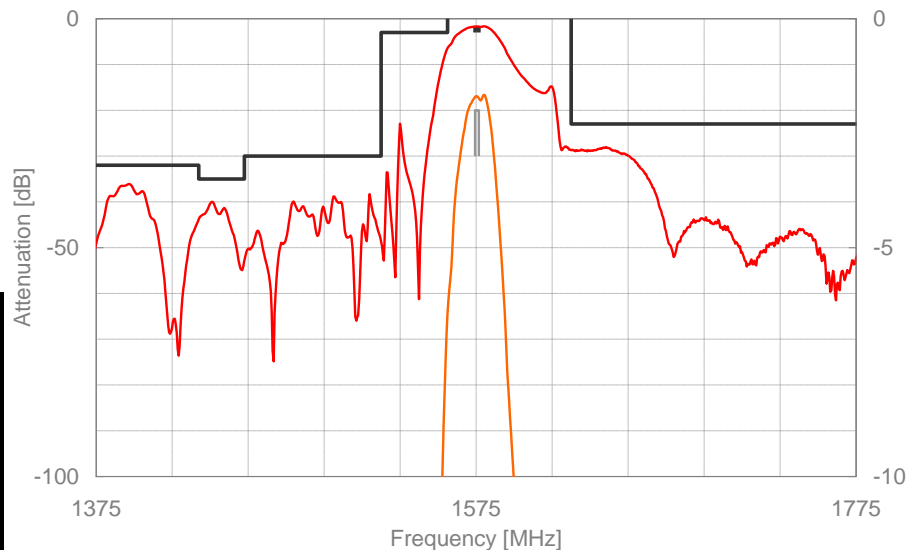
## Feature

- High Attenuation @ Tx Band of Mobile Phone

## Specifications

	Frequency Range (MHz)	Specification			Unit
		min.	typ.	max.	
Nominal Frequency	-	1575.42			MHz
Insertion Loss	1574.42 to 1576.42	-	1.7	2.0	dB
Amplitude Ripple(P-P)	1574.42 to 1576.42	-	0.05	1.0	dB
Input VSWR	1574.42 to 1576.42	-	1.3	1.8	-
Output VSWR	1574.42 to 1576.42	-	1.1	1.8	-
Absolute Attenuation	10 to 250	50	76	-	dB
	250 to 810	50	63	-	dB
	810 to 960	50	58	-	dB
	960 to 1429	32	36	-	dB
	1429 to 1453	35	40	-	dB
	1453 to 1525	30	38	-	dB
	1525 to 1560	3	6	-	dB
	1625 to 1920	23	28	-	dB
	1920 to 5000	50	54	-	dB
Amplitude Imbalance	1574.42 to 1576.42	-1.8	-0.6	+1.8	dB
Phase Imbalance	1574.42 to 1576.42	-11	-4.5	+11	deg.

## Typical Curve Data





## Type Name

SF14-1582M5UUD2

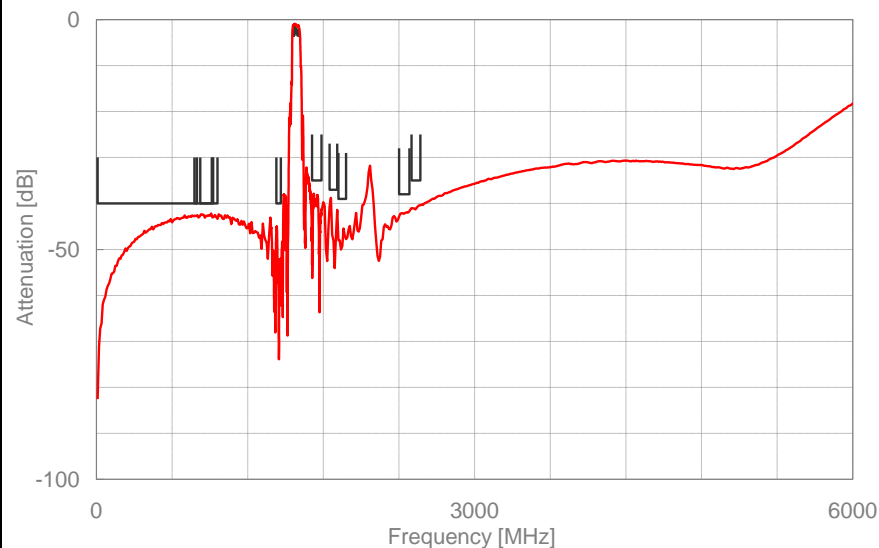
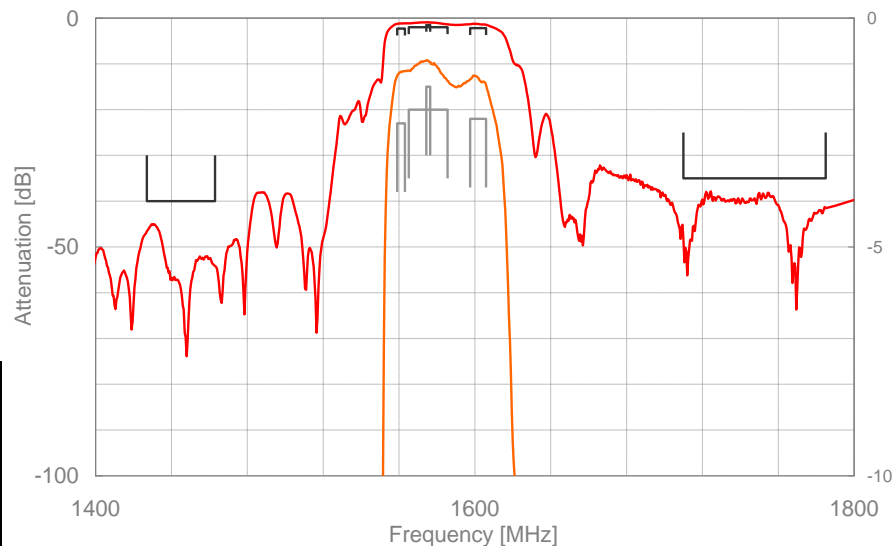
## Feature

- Multi-GNSS SAW Filter
- Low Insertion Loss

## Specifications

Items	Frequency [MHz]		Tentative Specification			Unit
			min.	typ.	max.	
Nominal Center Frequency	-		1582			MHz
Insertion Loss	1574.39	to 1576.45	-	0.9	1.5	dB
	1565.19	to 1585.65	-	1.2	2.0	dB
	1559.05	to 1563.15	-	1.2	2.3	dB
	1597.55	to 1605.89	-	1.4	2.2	dB
Group Delay Ripple	1597.55	to 1605.89	-	5.5	15	ns
Input VSWR	1574.39	to 1576.45	-	1.2	2.0	-
	1565.19	to 1585.65	-	1.7	2.0	-
	1559.05	to 1563.15	-	1.3	2.2	-
	1597.55	to 1605.89	-	1.5	2.0	-
Output VSWR	1574.39	to 1576.45	-	1.2	2.0	-
	1565.19	to 1585.65	-	1.7	2.0	-
	1559.05	to 1563.15	-	1.3	2.3	-
	1597.55	to 1605.89	-	1.6	2.0	-
Absolute Attenuation	777	to 798	40	42	-	dB
	824	to 915	40	42	-	dB
	10	to 925	40	42	-	dB
	925	to 960	40	42	-	dB
	1427	to 1463	40	45	-	dB
	1710	to 1785	35	37	-	dB
	1850	to 1910	37	39	-	dB
	1920	to 1980	39	45	-	dB
700MHz harmonic	Input : 15dBm at 787.76MHz Measure : second harmonic at 1575.52MHz		-	-77	-73	dBm

## Typical Curve Data



## Type Name

SF14-1575M5UBA2

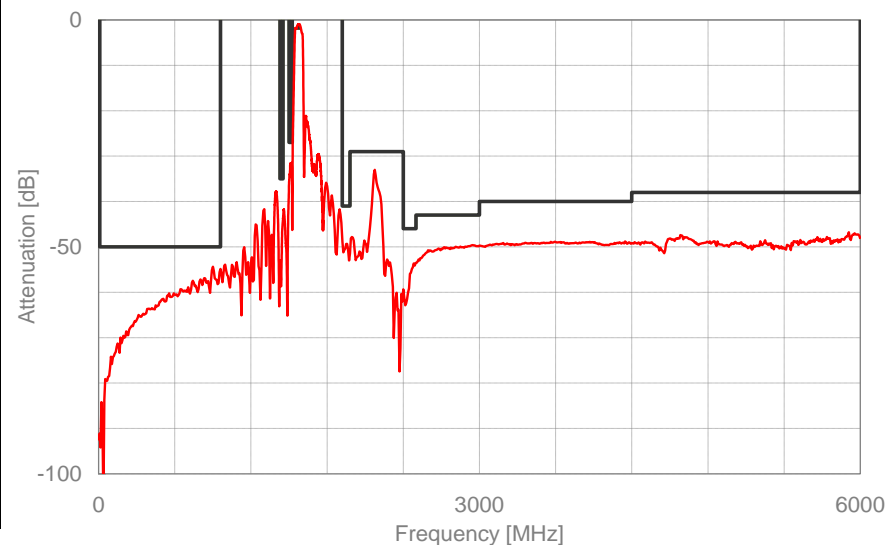
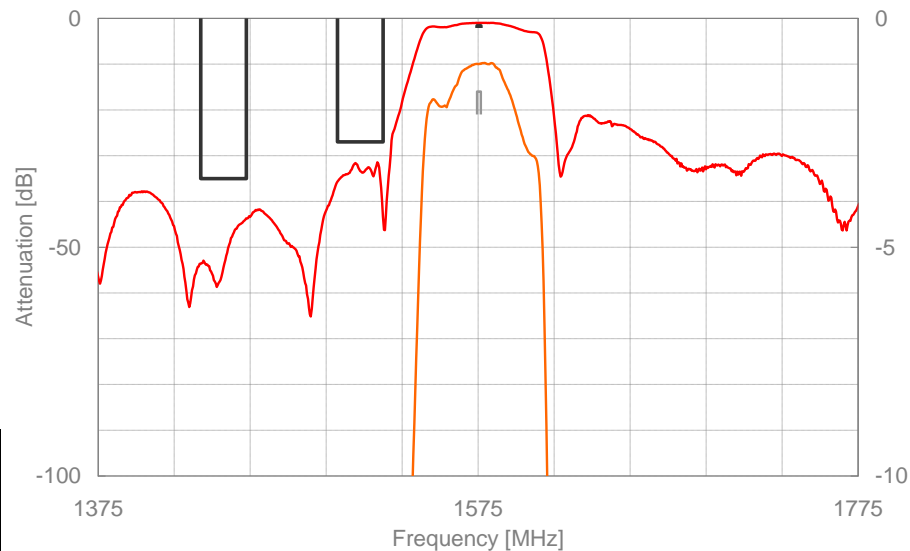
## Feature

- Low Insertion Loss
- High Attenuation @ Tx Band of Mobile Phone
- Operating Temp. Range : -40 to +85 deg. C

## Specifications

	Frequency Range (MHz)	Specification			Unit
		min.	typ.	max.	
Nominal Frequency	-	1575.42			MHz
Insertion Loss	1574.42 to 1576.42	-	1.1	1.6	dB
Amplitude Ripple(P-P)	1574.42 to 1576.42	-	0.01	1.0	dB
Input VSWR	1574.42 to 1576.42	-	1.1	1.7	-
Output VSWR	1574.42 to 1576.42	-	1.1	1.7	-
Absolute Attenuation	10 to 810	50	57	-	dB
	810 to 960	50	55	-	dB
	1429 to 1453	35	44	-	dB
	1501 to 1525	27	32	-	dB
	1920 to 1980	41	49	-	dB
	1980 to 2400	29	33	-	dB
	2400 to 2500	46	54	-	dB
	2500 to 3000	43	50	-	dB
	3000 to 4200	40	49	-	dB
4200 to 6000	38	47	-	dB	
Amplitude Imbalance	1574.42 to 1576.42	-1.4	0.3	+1.4	dB
Phase Imbalance	1574.42 to 1576.42	-8.0	2.0	+8.0	deg.

## Typical Curve Data



## Type Name

SF14-1575F5UUA7

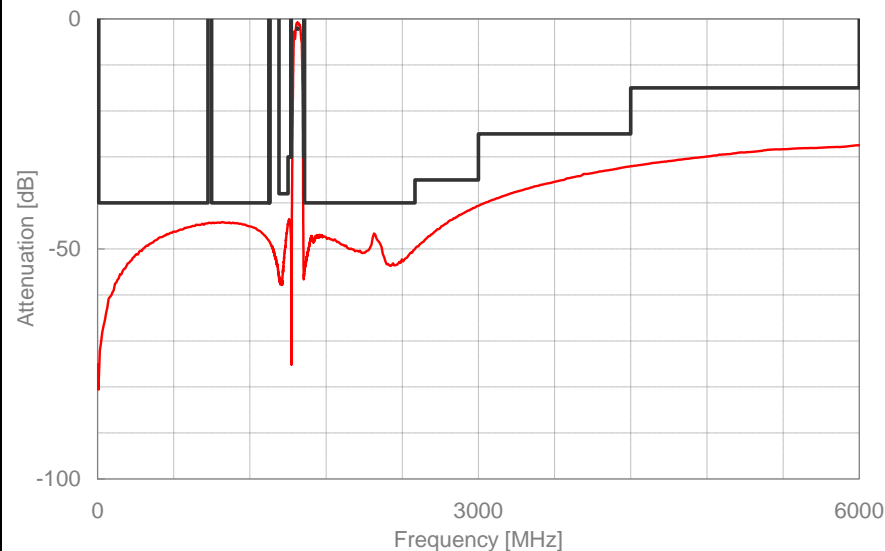
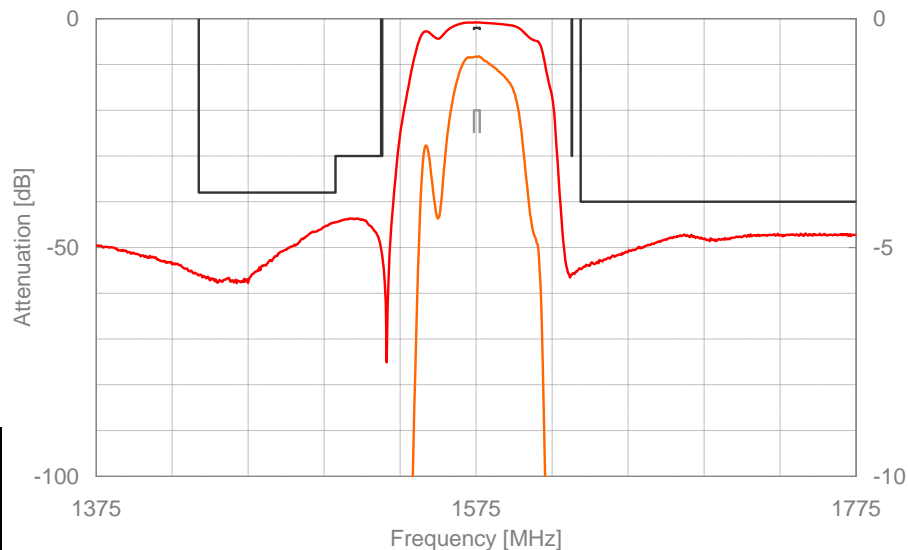
## Feature

- Low Insertion Loss
- High Attenuation @ Tx Band of Mobile Phone
- Operating Temp. Range : -40 to +85 deg. C

## Specifications

Items	Frequency [MHz]	Specification			Unit
		min.	typ.	max.	
Nominal Center Frequency		1575.42			MHz
Insertion Loss	1573.92 to 1576.92	-	0.8	1.2	dB
Ripple (peak to peak)	1573.92 to 1576.92	-	0.02	0.6	dB
Input VSWR	1573.92 to 1576.92	-	1.1	1.7	-
Output VSWR	1573.92 to 1576.92	-	1.0	1.7	-
Absolute Attenuation	10 to 843	40	45	-	dB
	843 to 870	40	44	-	dB
	898 to 925	40	44	-	dB
	925 to 1350	40	44	-	dB
	1355.25	40	49	-	dB
	1429 to 1501	38	44	-	dB
	1501 to 1525	30	44	-	dB
	1525.42	30	49	-	dB
	1625.42	30	56	-	dB
	1630 to 1893	40	47	-	dB
	1893 to 1920	40	48	-	dB
	1920 to 1940	40	49	-	dB
	1940 to 1980	40	49	-	dB
	1980 to 2500	40	47	-	dB
	2500 to 3000	35	41	-	dB
3000 to 4200	25	32	-	dB	
4200 to 6000	15	27	-	dB	

## Typical Curve Data



## Type Name

SF14-1582M5UUD1

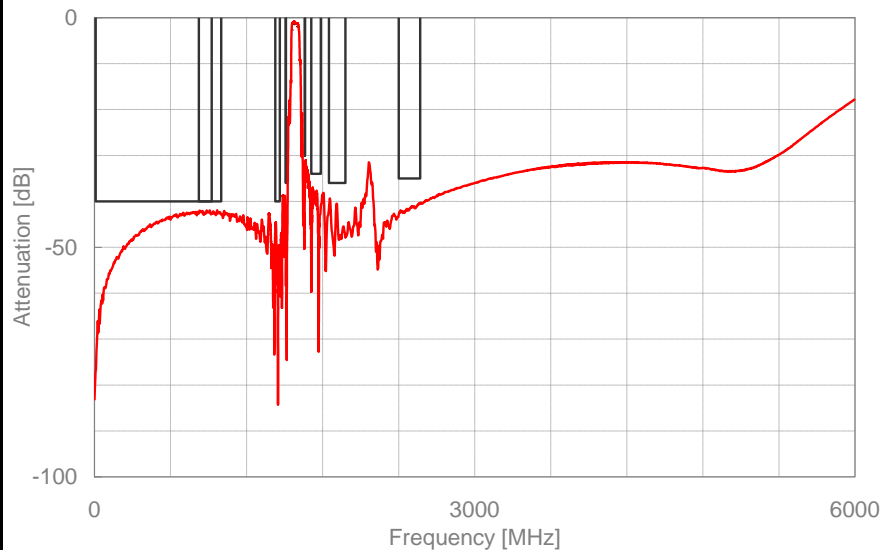
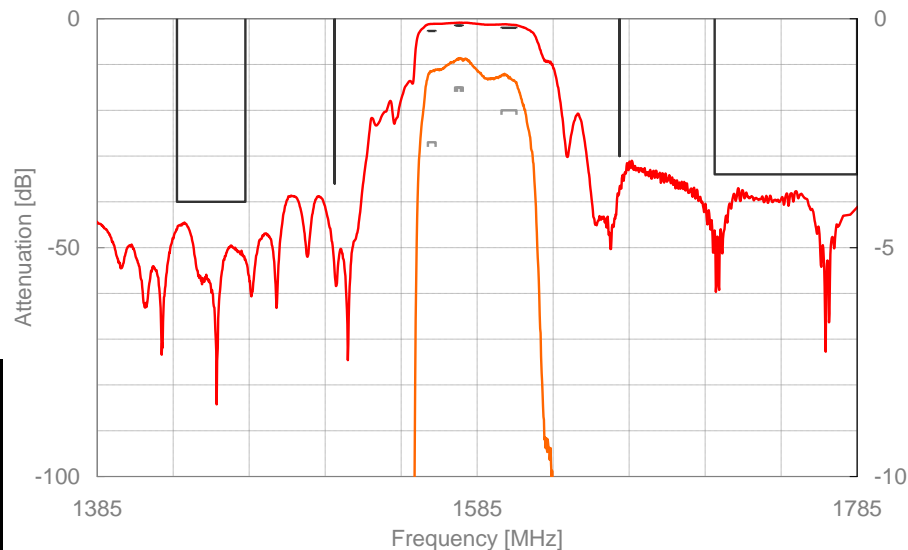
## Feature

- Low Insertion Loss
- Operating Temp. Range : -40 to +85 deg. C

## Specifications

Items	Frequency [MHz]		Specification			Unit	Note
			min.	typ.	max.		
Nominal Center Frequency	-		1582			MHz	
Insertion Loss	1574.39	to 1576.45	-	0.9	1.5	dB	
	1597.78	to 1605.66	-	1.4	2.0	dB	
	1559.05	to 1563.15	-	1.4	2.8	dB	-40 to +85°C
					2.7	dB	
	1573.37	to 1577.47	-	0.9	1.5	dB	
Input VSWR	1574.39	to 1576.45	-	1.2	1.8	-	
	1597.78	to 1605.66		1.5	2.0	-	
	1559.05	to 1563.15		1.4	2.2	-	
	1573.37	to 1577.47		1.3	1.8	-	
Output VSWR	1574.39	to 1576.45	-	1.2	1.8	-	
	1597.78	to 1605.66		1.6	2.0	-	
	1559.05	to 1563.15		1.3	2.3	-	
	1573.37	to 1577.47		1.3	1.8	-	
Absolute Attenuation	10	to 1000	40	42	-	dB	
	824	to 925	40	42	-	dB	
	1427	to 1463	40	45	-	dB	
	1510		36	49	-	dB	
	1660		30	37	-	dB	
	1710	to 1785	34	37	-	dB	
	1850	to 1980	36	39	-	dB	
	2400	to 2570	35	40	-	dB	

## Typical Curve Data



## Type Name

SF14-2446M5UUA3

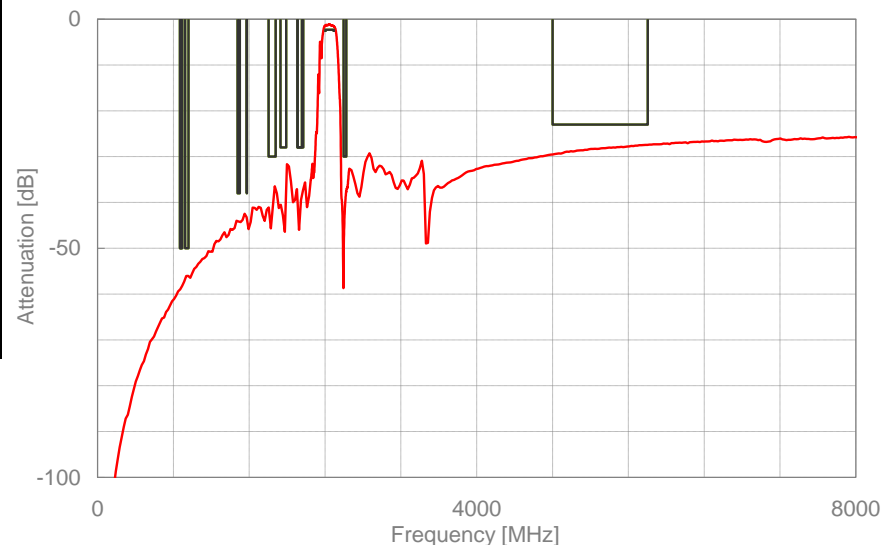
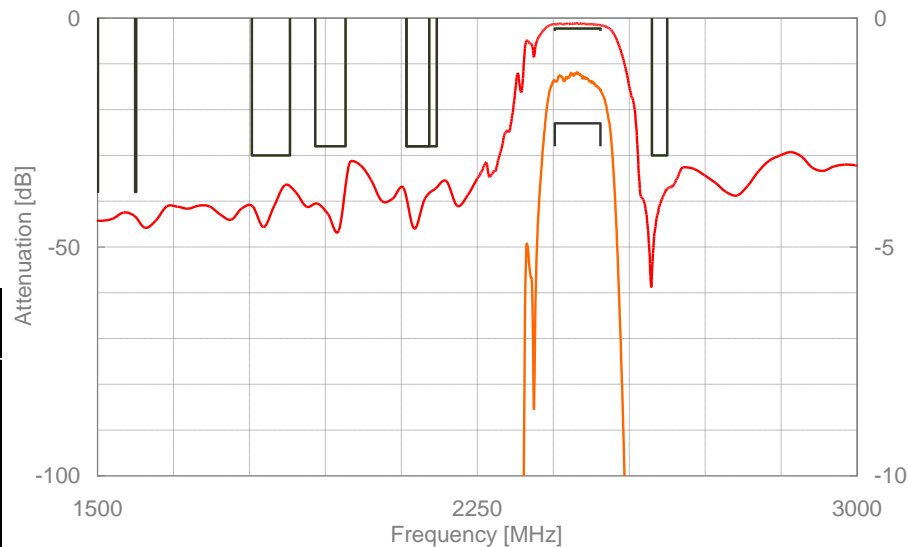
## Feature

- Low Insertion Loss

## Specifications

Items	Frequency (MHz)	Specification			Unit
		min.	typ.	max.	
Insertion Loss	2400 to 2493	-	1.5	2.3	dB
Ripple	2400 to 2493	-	0.3	1.4	dB
Input VSWR	2400 to 2493	-	1.3	2.1	-
Output VSWR	2400 to 2493	-	1.3	2.1	-
Absolute Attenuation	875 to 885	50	59	-	dB
	869 to 894	50	58	-	dB
	925 to 960	50	56	-	dB
	1477 to 1501	38	44	-	dB
	1574.42 to 1576.42	38	44	-	dB
	1805 to 1880	30	37	-	dB
	1930 to 1990	28	33	-	dB
	2110 to 2155	28	38	-	dB
	2110 to 2170	28	36	-	dB
	2595 to 2625	30	39	-	dB
4800 to 5805	23	27	-	dB	
Input Impedance	50//2.7nH			ohm	
Output Impedance	50//2.7nH			ohm	

## Typical Curve Data



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