

# Datasheet of SAW Quadplexer 2016 Band25,66,70 Unbalanced

KYOCERA Part No. : SQ20-1745K6SUA1

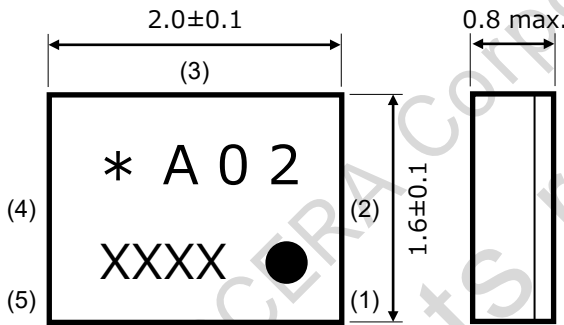
KYOCERA Corporation  
All rights reserved

### Rating

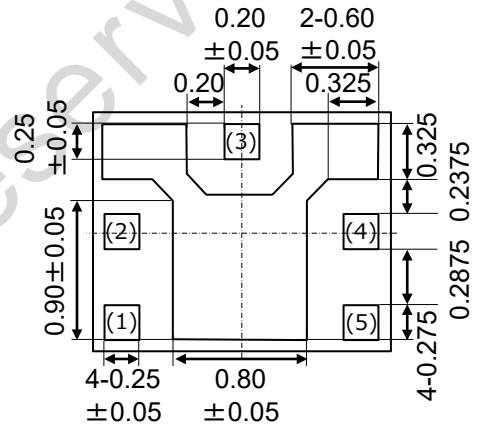
Items	Rating	Unit	Note
Operating Temperature Range	-30 to +85	deg.C	
Storage Temperature Range	-40 to +85	deg.C	
Max Input Power	Tx Band	+30.5	dBm 5,000Hours,DFT-s-OFDM-QPSK,Ta=50deg.C
		+29	dBm 5,000Hours,CP-OFDM-QPSK,Ta=50deg.C
ESD Level	Machine Model	50	Volt Complied to JESD22-A115
Moisture Sensitivity Level		3	Complied to J-STD-033B.1
Tx Port Nominal Impedance	Band25	50+1.5nH	ohm Unbalance
	Band66+70	50+3.6nH	ohm Unbalance
Ant. Port Nominal Impedance		50	ohm Unbalance
Rx Port Nominal Impedance	Band25+70	50+2.8nH//1.0pF	ohm Unbalance
	Band66	50+0.3nH//1.5pF	ohm Unbalance

### Dimensions

(Top View)



(Bottom View)



Unit : mm

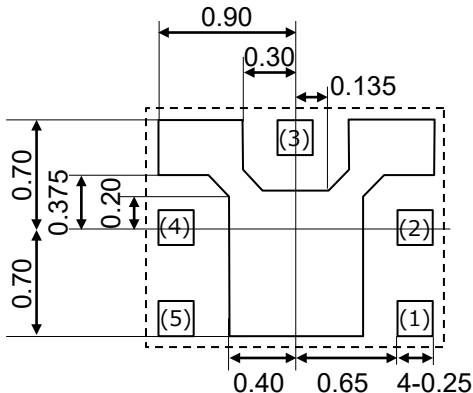
- Unit : mm  
 \* : Identification mark  
 A02 : Identification no.  
 ● : Index mark of pin 1  
 XXXX : Production code

#### Pin allocation

- (1) : B66+70 Tx  
 (2) : B25 Tx  
 (3) : Antenna  
 (4) : B66 Rx  
 (5) : B25+70 Rx  
 Others : GND

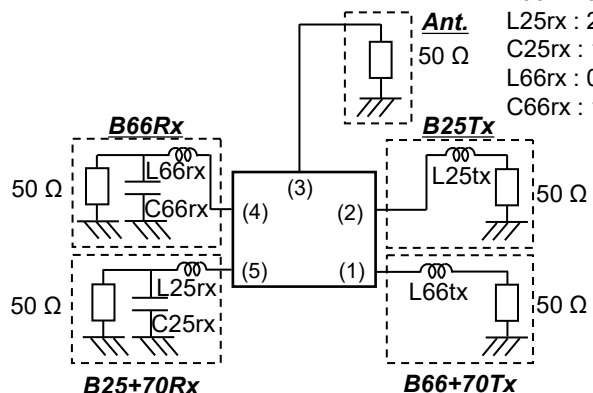
### Recommendable Land Pattern

(Top View) Unit : mm



### Measurement Circuit

(Top View)



- L25tx : 1.5 nH(Ideal)  
 L66tx : 3.6 nH(Ideal)  
 L25rx : 2.8 nH(Ideal)  
 C25rx : 1.0 pF(Ideal)  
 L66rx : 0.3nH(Ideal)  
 C66rx : 1.5 pF(Ideal)

## Electrical Characteristics

Items		Frequency Range [MHz]	Unit	Specification			Notes	
				Min.	Typ.	Max.		
Band25 Tx to ANT	Insertion Loss	1850.25 - 1911	dB	-	1.9	2.8		
		1911 - 1914.75	dB	-	2.2	3.8		
	Passband Ripple	1850.25 - 1914.75	dB	-	1.1	2.8		
	VSWR	Tx	1850.25 - 1914.75	-	-	1.4	2.5	
		Ant	1850.25 - 1914.75	-	-	1.4	2.5	
	Attenuation	10 - 728	dB	30	74	-		
		617 - 652	dB	40	76	-		
		728 - 768	dB	44	72	-		
		869 - 894	dB	44	71	-		
		1166 - 1186	dB	43	67	-		
		1205 - 1250	dB	43	67	-		
		1559 - 1608	dB	43	60	-		
		1930.25 - 1994.75	dB	40	52	-	B25 Rx	
		1995 - 2020	dB	44	59	-	B70 Rx	
		2110 - 2200	dB	44	60	-	B66 Rx	
2350 - 2360		dB	40	61	-			
2400 - 2485		dB	35	58	-			
3700 - 3830	dB	35	65	-	2H			
4900 - 5950	dB	35	51	-				
5550 - 5745	dB	35	53	-	3H			
Band25 ANT to Rx	Insertion Loss	1930.25 - 1994.75	dB	-	2.9	3.8		
	Passband Ripple	1930.25 - 1994.75	dB	-	1.8	2.8		
	VSWR	Ant	1930.25 - 1994.75	-	-	1.5	2.5	
		Rx	1930.25 - 1994.75	-	-	1.7	2.5	
	Attenuation	300 - 310	dB	50	80	-		
		997.5 - 1010	dB	40	63	-		
		1395 - 1400	dB	40	59	-		
		1695 - 1710	dB	45	60	-	B70 Tx	
		1710 - 1780	dB	45	60	-	B66 Tx	
		1850.25 - 1914.75	dB	40	59	-	B25 Tx	
2305 - 2315		dB	45	49	-			
2400 - 2500		dB	45	55	-			
3860.5 - 3989.5		dB	45	60	-	2H		
4900 - 5950	dB	50	65	-				
Band25 Tx to Rx	Isolation	1850.25 - 1911.75	dB	55	61	-	Tx	
		1911.75 - 1914.75	dB	50	65	-	Tx	
		1930.25 - 1933.25	dB	48	61	-	Rx	
		1933.25 - 1994.75	dB	54	63	-	Rx	

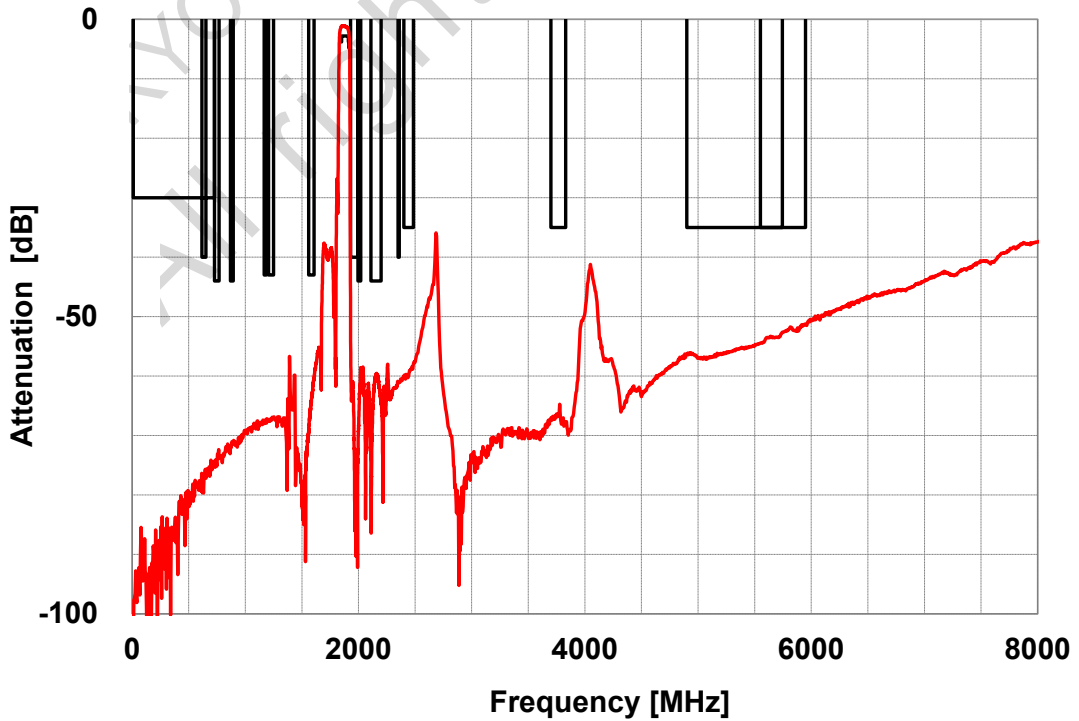
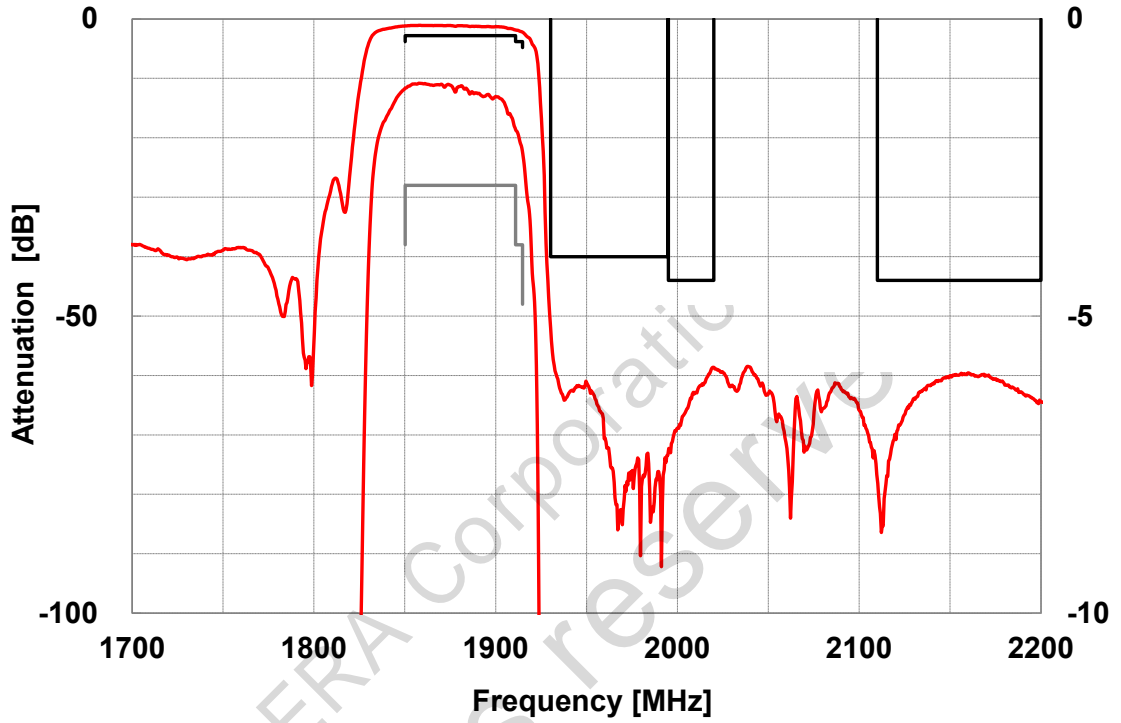
## Electrical Characteristics

Items		Frequency Range [MHz]	Unit	Specification			Notes	
				Min.	Typ.	Max.		
Band66 Tx to ANT	Insertion Loss	1710.15 - 1779.85	dB	-	1.5	2.5		
	Passband Ripple	1710.15 - 1779.85	dB	-	0.4	1.5		
	VSWR	Tx	1710.15 - 1779.85	-	-	1.4	2.5	
		Ant	1710.15 - 1779.85	-	-	1.3	2.5	
	Attenuation	10 - 849	dB	30	59	-		
		617 - 652	dB	40	63	-		
		1166 - 1186	dB	43	53	-		
		1205 - 1250	dB	43	52	-		
		1559 - 1608	dB	38	44	-		
		1930 - 1995	dB	45	57	-	B25 Rx	
		1995 - 2020	dB	45	56	-	B70 Rx	
		2110 - 2200	dB	45	57	-	B66 Rx	
		2350 - 2360	dB	37	46	-		
		2400 - 2485	dB	35	48	-		
3420 - 3560	dB	30	41	-	2H			
4900 - 5950	dB	30	40	-				
5130 - 5340	dB	30	41	-				
Band66 ANT to Rx	Insertion Loss	2110.15 - 2199.85	dB	-	1.6	2.6		
	Passband Ripple	2110.15 - 2199.85	dB	-	0.4	1.5		
	VSWR	Ant	2110.15 - 2199.85	-	-	1.4	2.5	
		Rx	2110.15 - 2199.85	-	-	1.6	2.5	
	Attenuation	400 - 420	dB	50	75	-		
		663 - 698	dB	40	74	-		
		699 - 733	dB	40	75	-		
		777 - 798	dB	40	73	-		
		824 - 849	dB	40	73	-		
		1055 - 1100	dB	40	72	-		
		1310 - 1360	dB	40	74	-		
		1695 - 1710	dB	45	60	-	B70 Tx	
		1710 - 1780	dB	45	61	-	B66 Tx	
1850 - 1915		dB	40	61	-	B25 Tx		
2305 - 2315		dB	38	54	-			
2400 - 2500	dB	28	58	-				
4220 - 4400	dB	30	39	-	2H			
4900 - 5950	dB	20	35	-				
Band66 Tx to Rx	Isolation	1710.15 - 1779.85	dB	54	60	-	Rx	
		2110.15 - 2199.85	dB	55	60	-	Tx	

## Electrical Characteristics

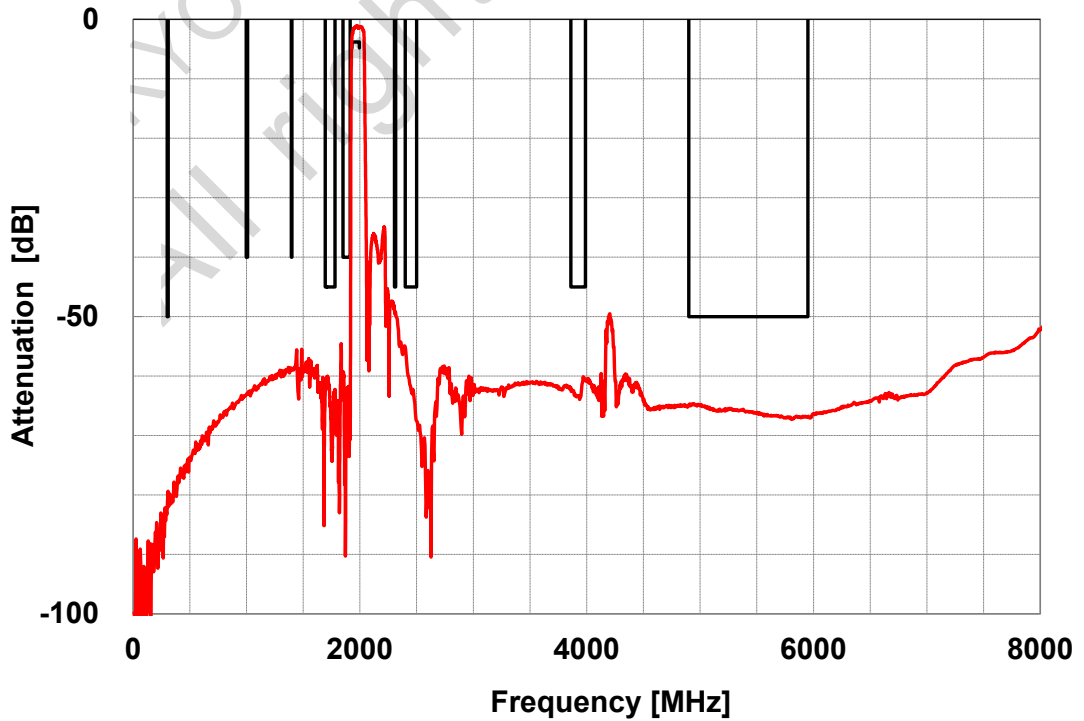
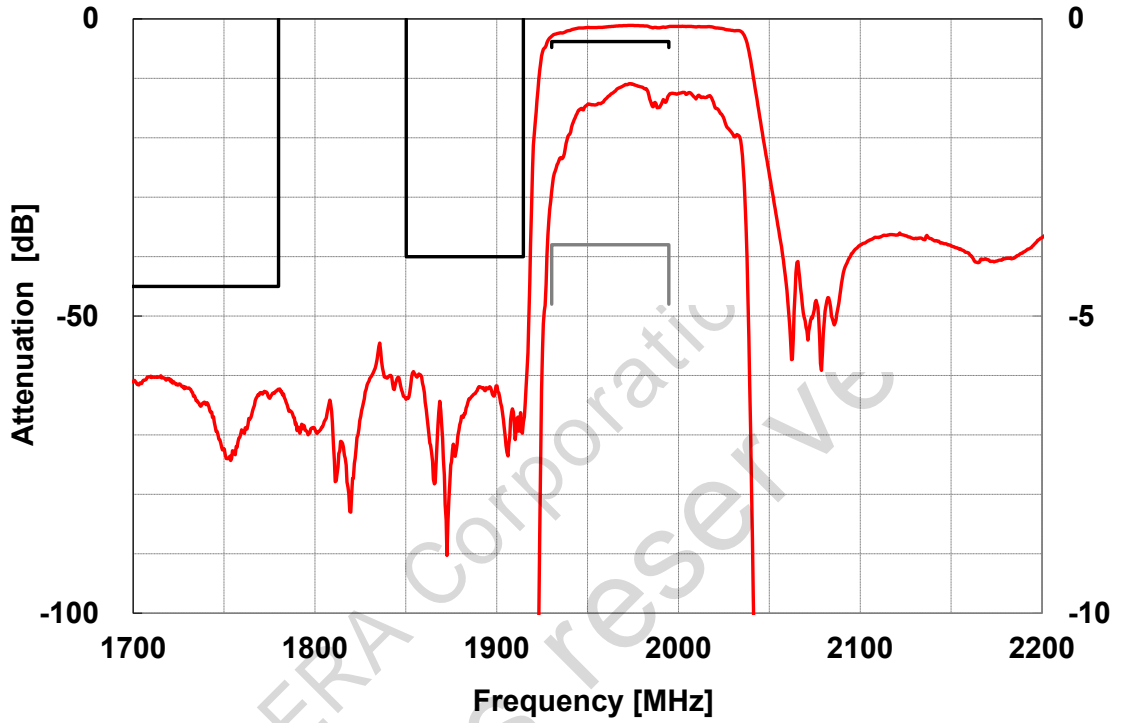
Items		Frequency Range [MHz]	Unit	Specification			Notes	
				Min.	Typ.	Max.		
Band70 Tx to ANT	Insertion Loss	1695.24 - 1709.76	dB	-	1.4	2.3		
	Passband Ripple	1695.24 - 1709.76	dB	-	0.3	1.5		
	VSWR	Tx	1695.24 - 1709.76	-	-	1.2	2.5	
		Ant	1695.24 - 1709.76	-	-	1.3	2.5	
	Attenuation	3390 3420	dB	35	42	-	2H	
Band70 ANT to Rx	Insertion Loss	1995.24 - 2019.76	dB	-	1.5	2.3		
	Passband Ripple	1995.24 - 2019.76	dB	-	0.2	1.5		
	VSWR	Ant	1995.24 - 2019.76	-	-	1.4	2.5	
		Rx	1995.24 - 2019.76	-	-	1.4	2.5	
	Attenuation	3990 - 4040	dB	40	61	-	2H	
Band70 Tx to Rx	Isolation	1695.24 - 1709.76	dB	55	60	-	Rx	
		1995.24 - 2019.76	dB	55	58	-	Tx	
Band70Tx to Band25Rx	Cross Isolation	1695.24 - 1709.76	dB	55	60	-	B70 Tx	
		1930.25 - 1994.75	dB	55	60	-	B25 Rx	
Band70Tx to Band66Rx	Cross Isolation	1695.24 - 1709.76	dB	53	57	-	B70 Tx	
		2110.15 - 2199.85	dB	55	60	-	B66 Rx	
Band25Tx to Band70Rx	Cross Isolation	1850.25 - 1911.75	dB	55	61	-	B25 Tx	
		1911.75 - 1914.75	dB	50	65	-		
		1995.24 - 2019.76	dB	55	62	-	B70 Rx	
Band25Tx to Band66Rx	Cross Isolation	1850.25 - 1914.75	dB	55	62	-	B25 Tx	
		2110.15 - 2199.85	dB	55	58	-	B66 Rx	
Band66Tx to Band70Rx	Cross Isolation	1710.15 - 1779.85	dB	55	60	-	B66 Tx	
		1995.24 - 2019.76	dB	55	58	-	B70 Rx	
Band66Tx to Band25Rx	Cross Isolation	1710.15 - 1779.85	dB	55	60	-	B66 Tx	
		1930.25 - 1994.75	dB	55	60	-	B25 Rx	

**Electrical Characteristics**  
**[Band25 Tx to Ant]**



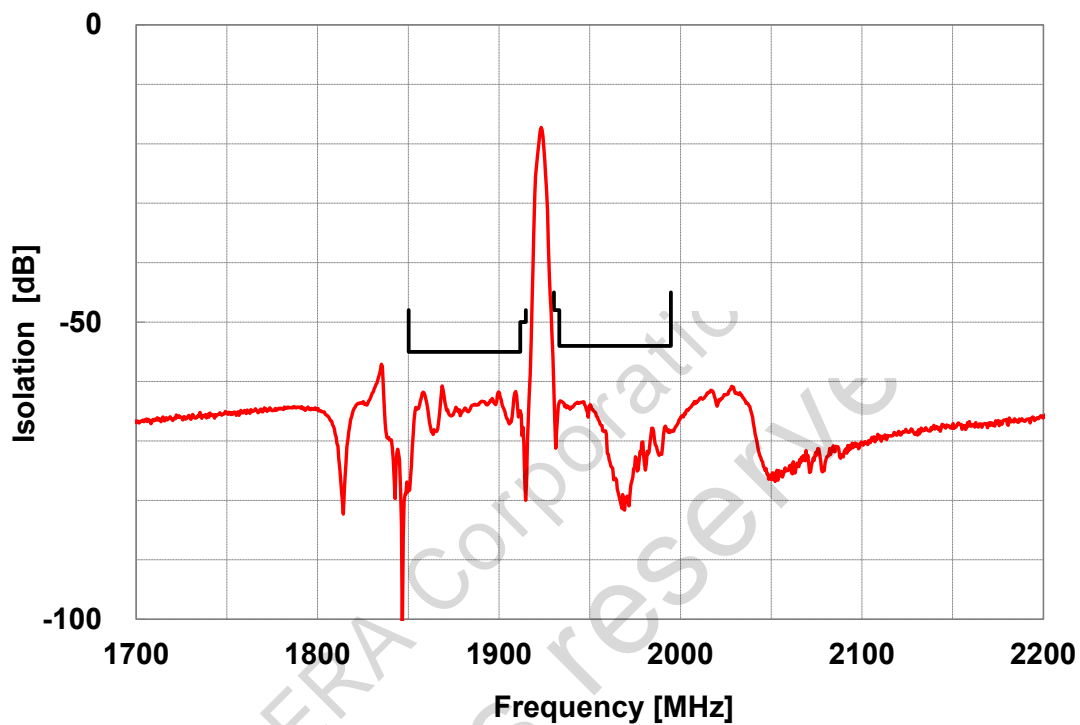
### Electrical Characteristics

[Band25 Ant to Rx]



### Electrical Characteristics

[Band25 Tx to Rx]

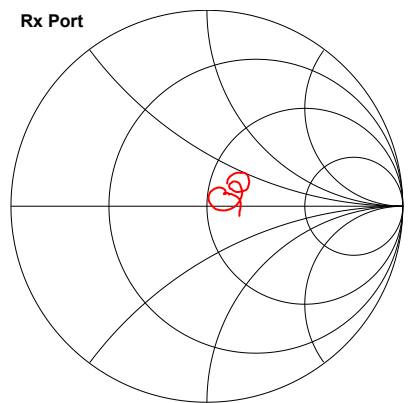
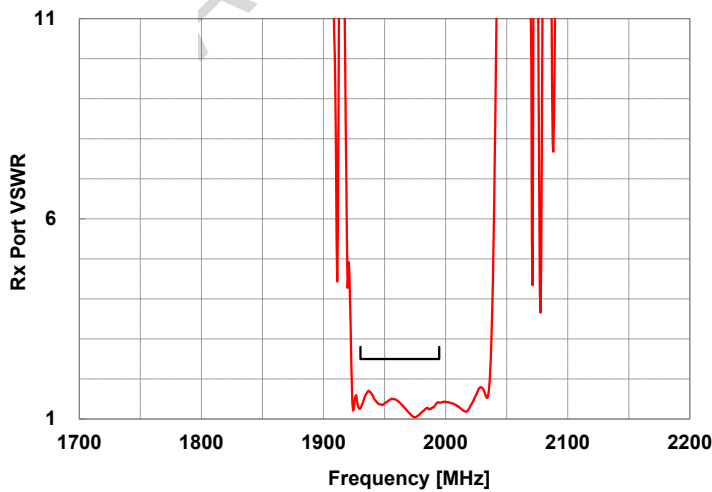
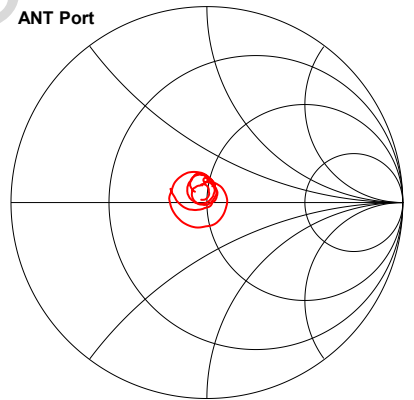
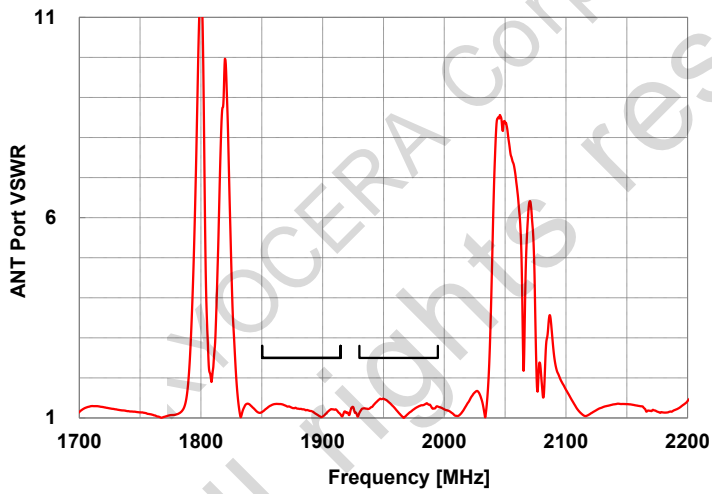
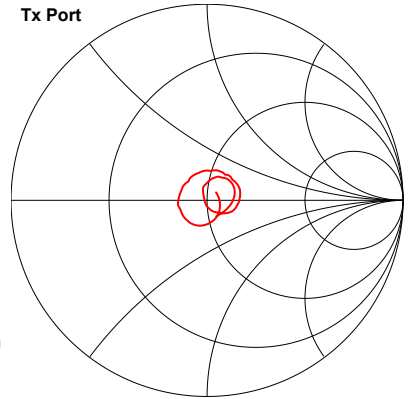
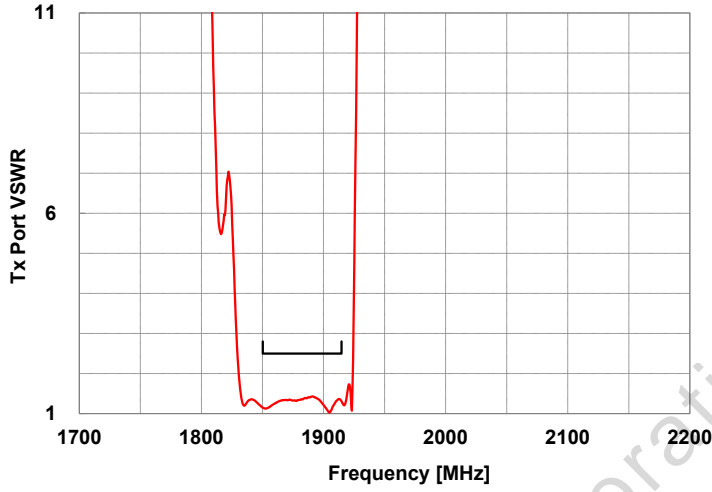


KYOCERA Corporation  
All rights reserved



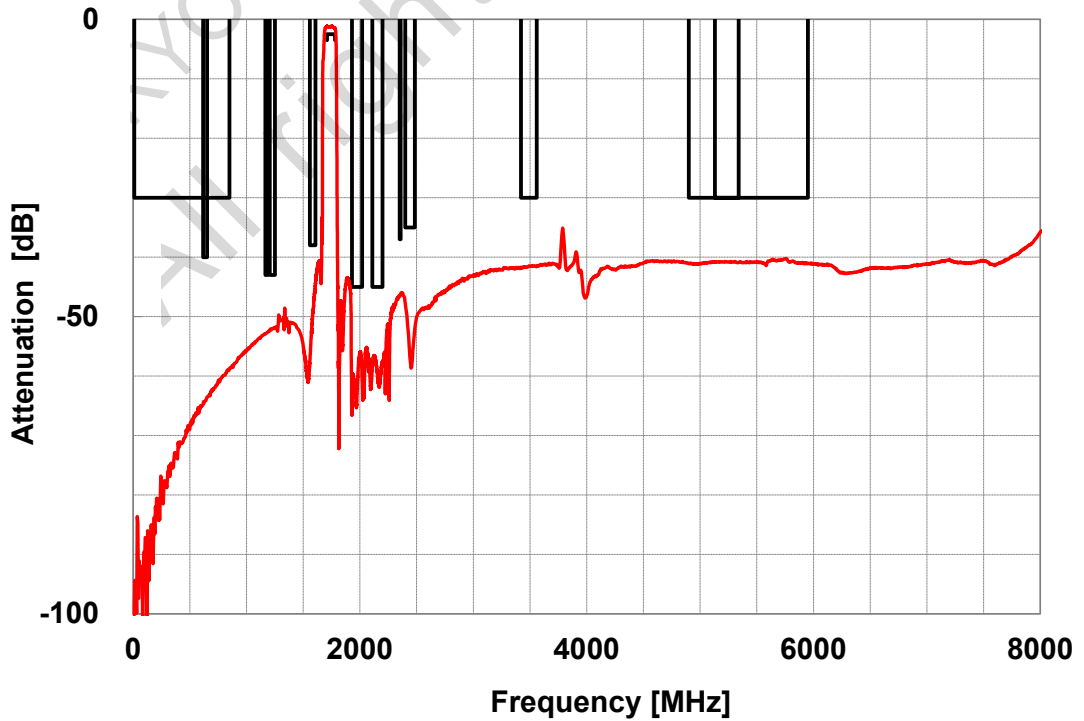
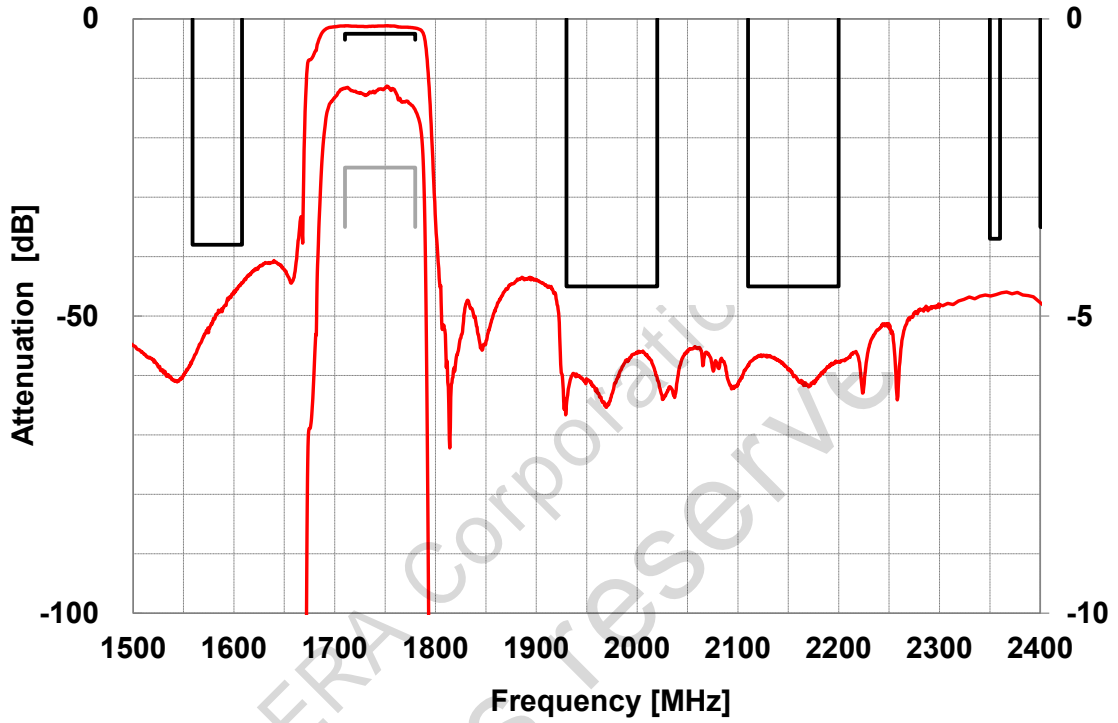
**Electrical Characteristics**

**[Band25]**



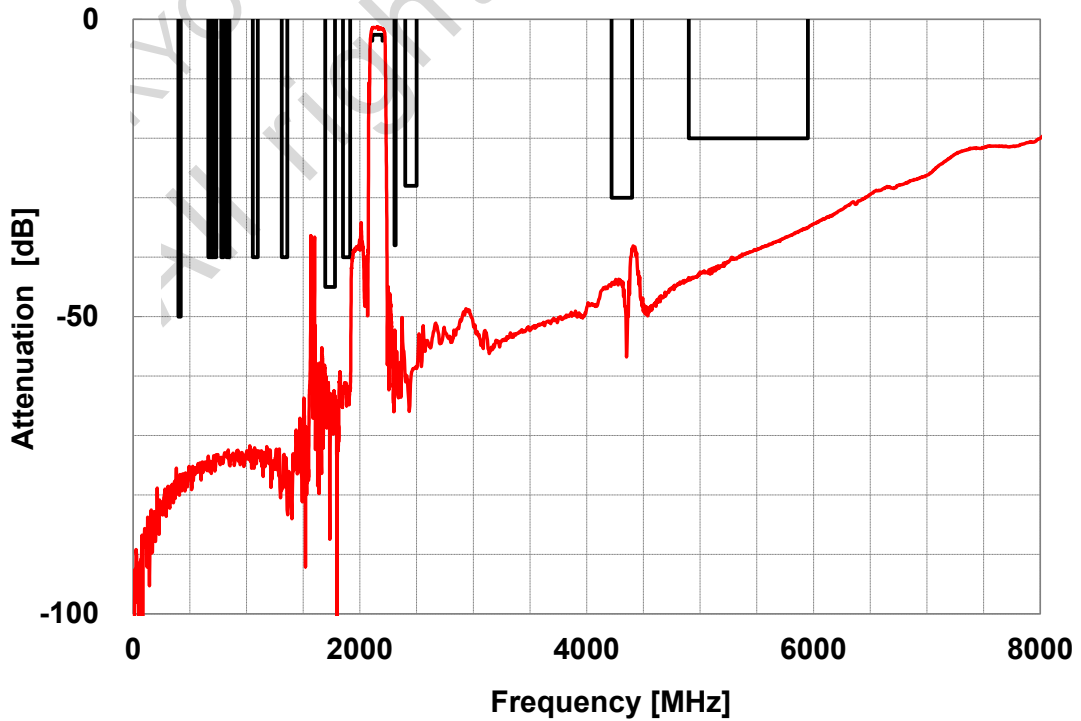
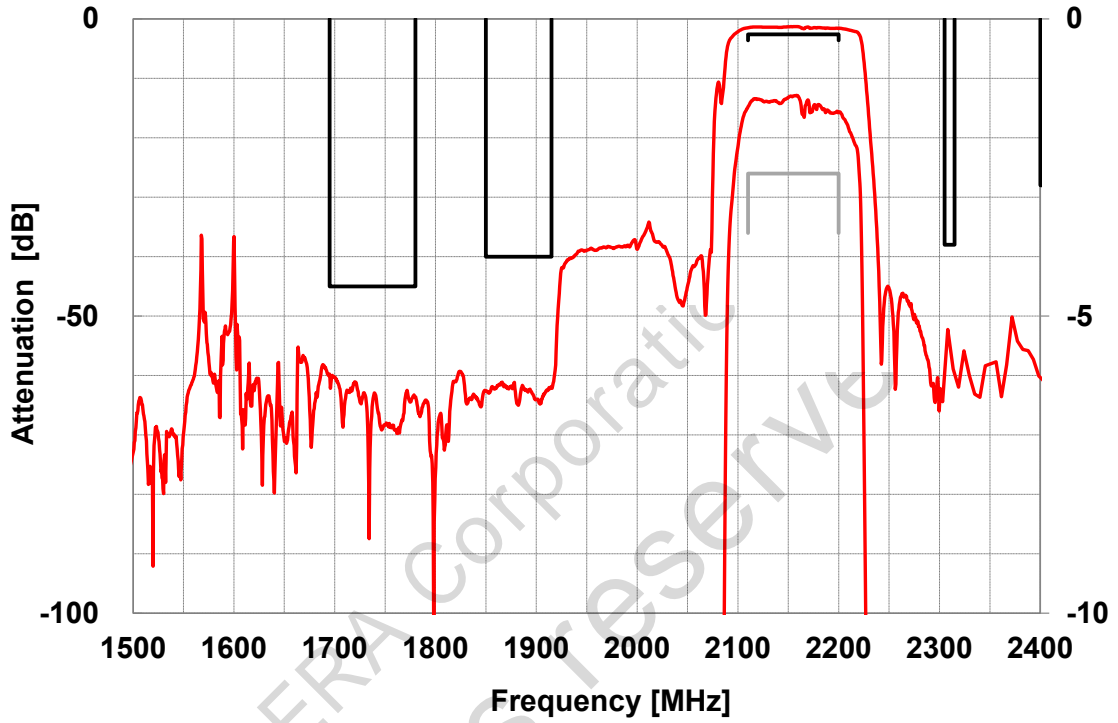
### Electrical Characteristics

[Band66 Tx to Ant]



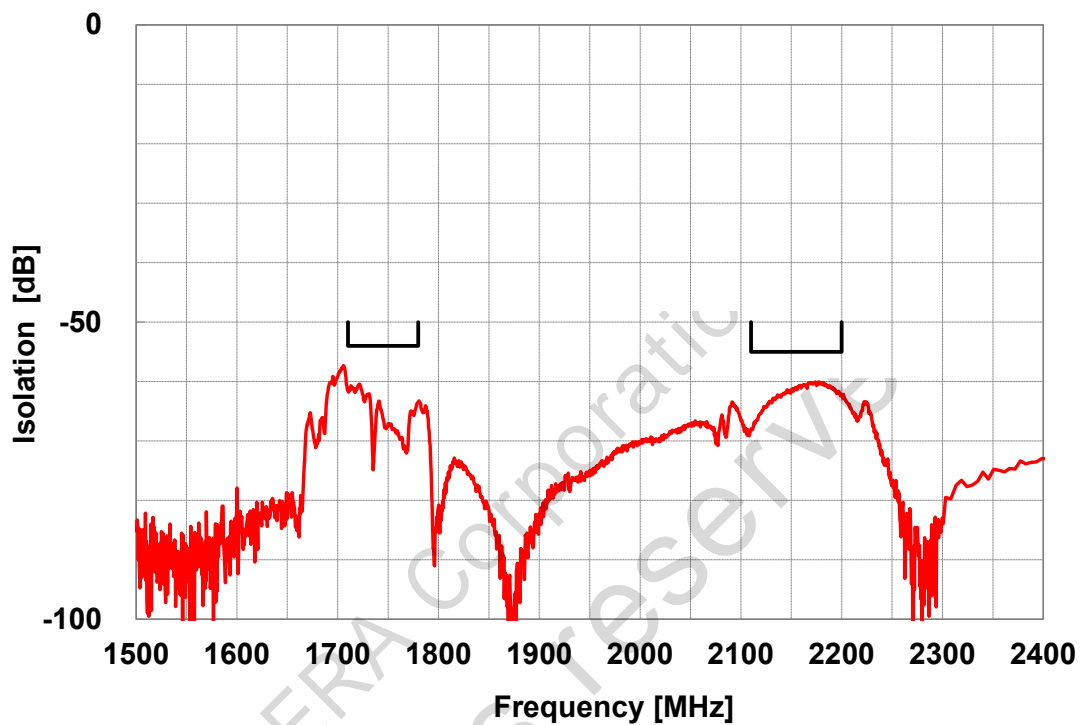
### Electrical Characteristics

[Band66 Ant to Rx]



### Electrical Characteristics

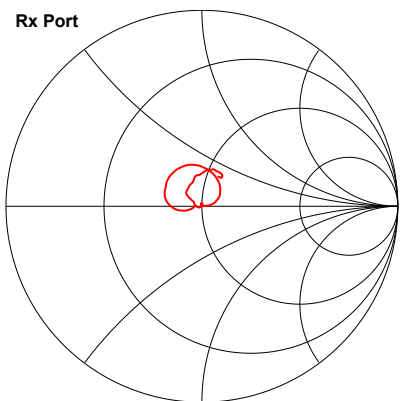
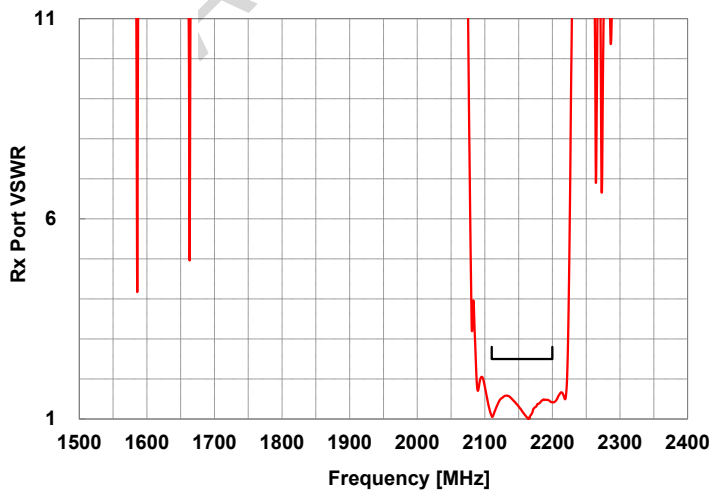
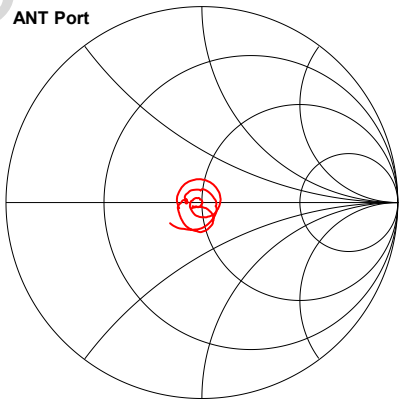
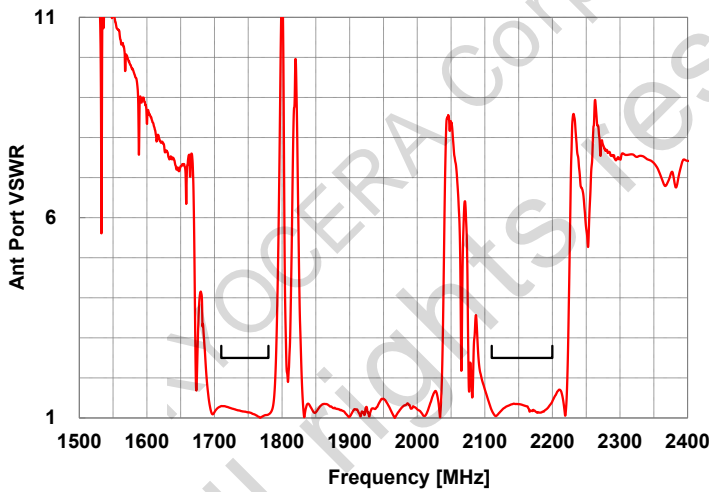
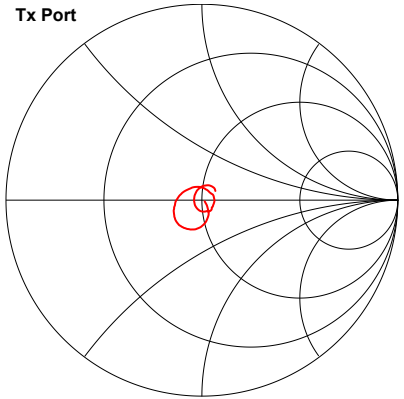
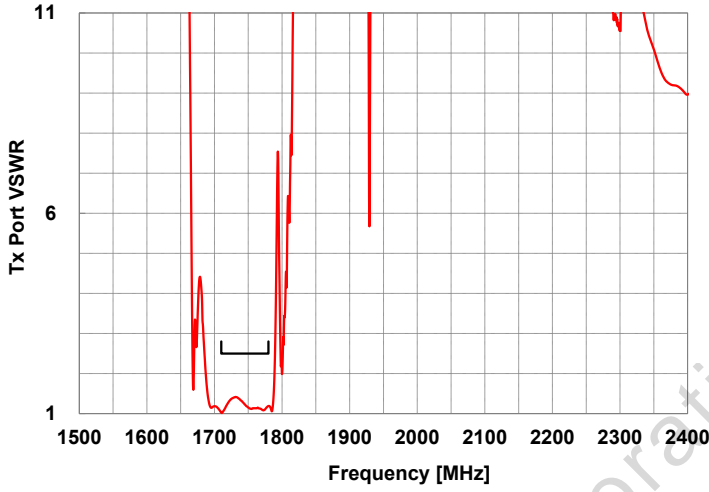
[Band66 Tx to Rx]



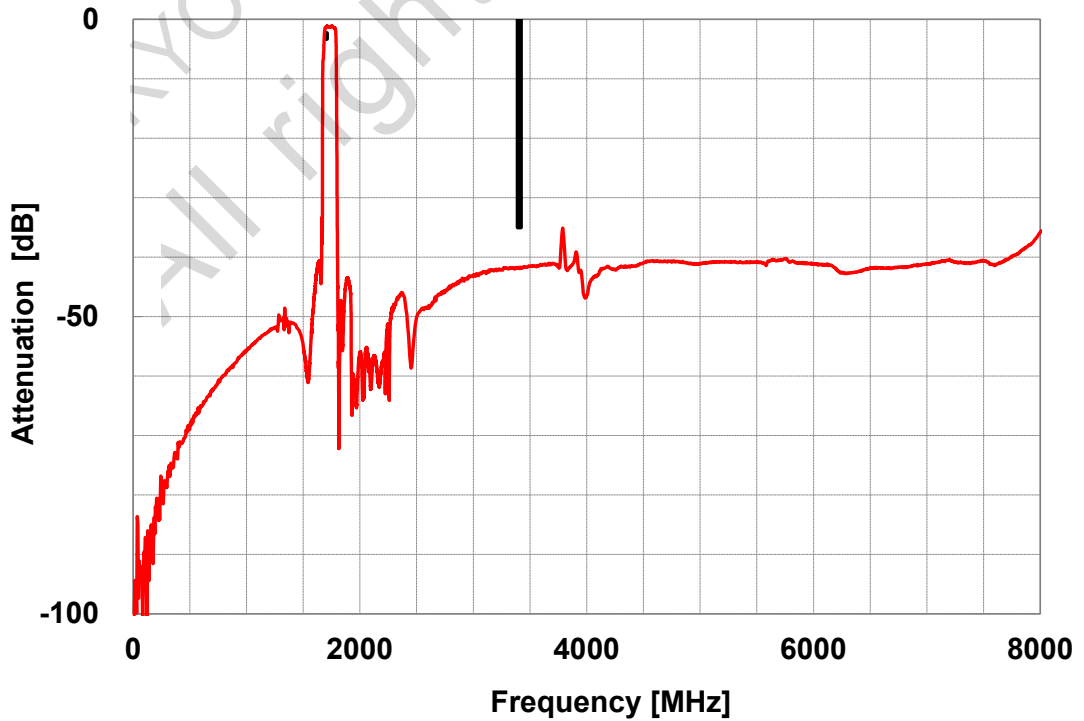
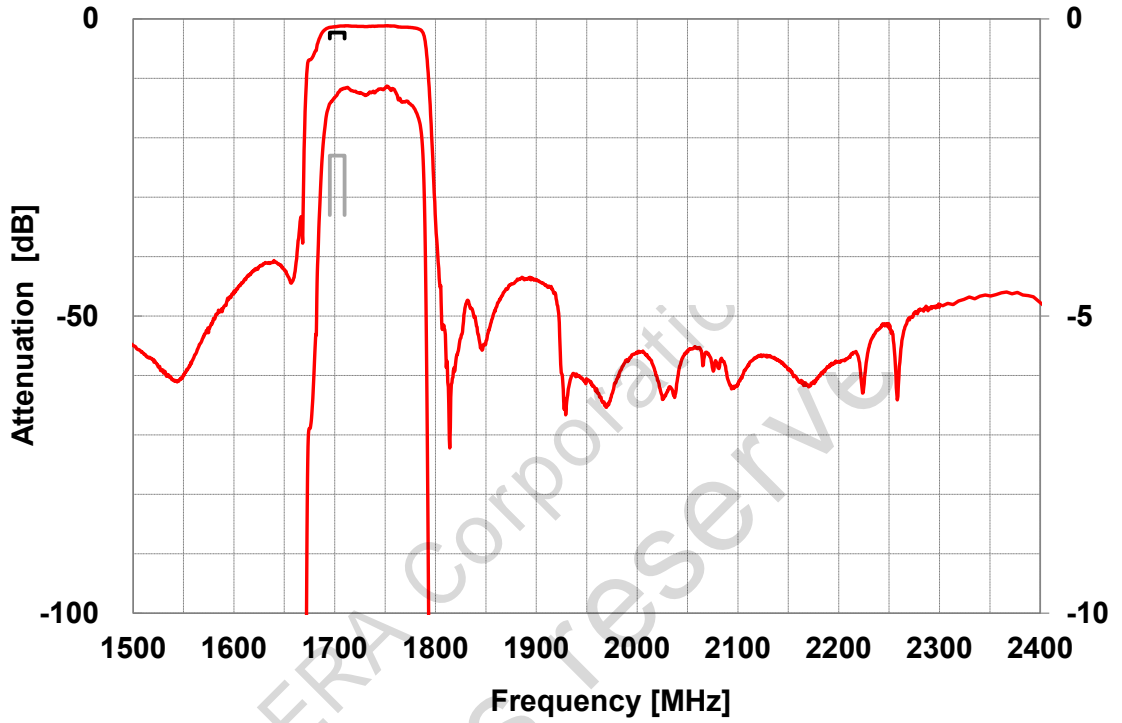
KYOCERA Corporation  
All rights reserved

**Electrical Characteristics**

**[Band66]**

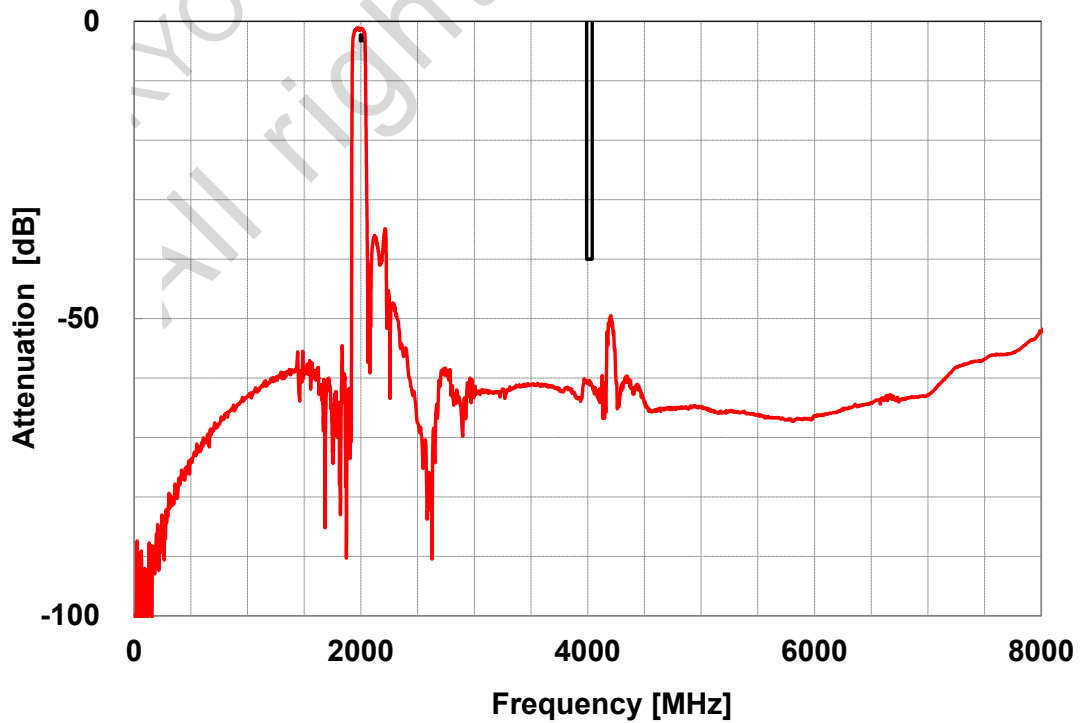
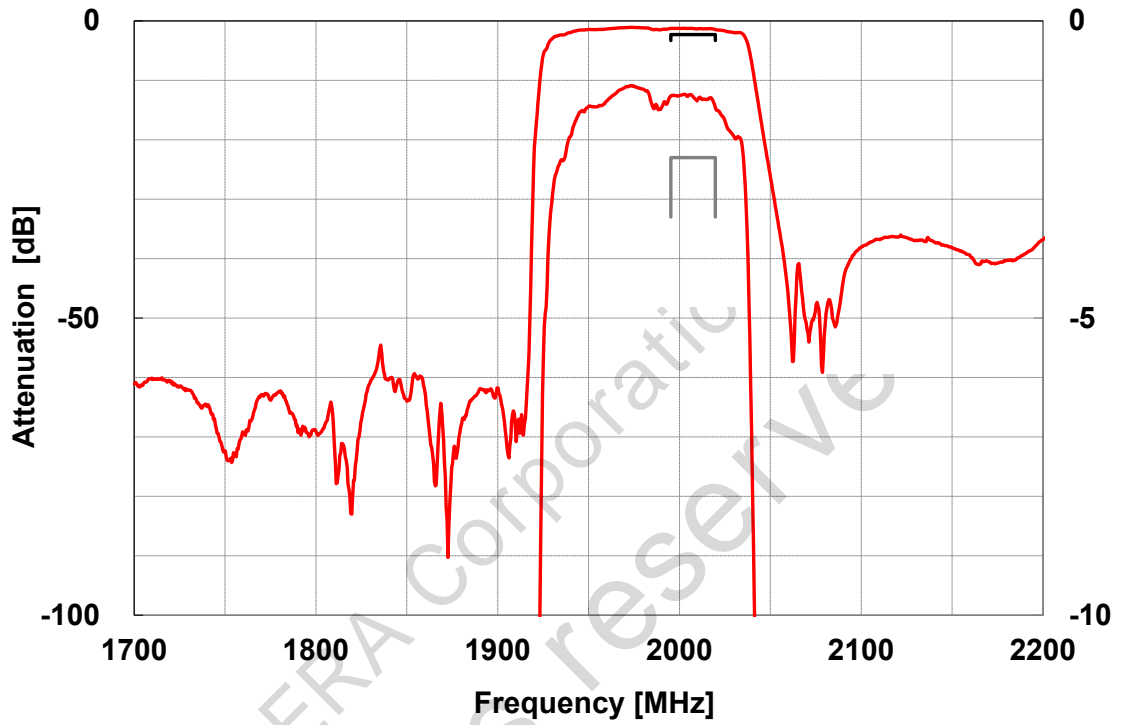


**Electrical Characteristics**  
**[Band70 Tx to Ant]**



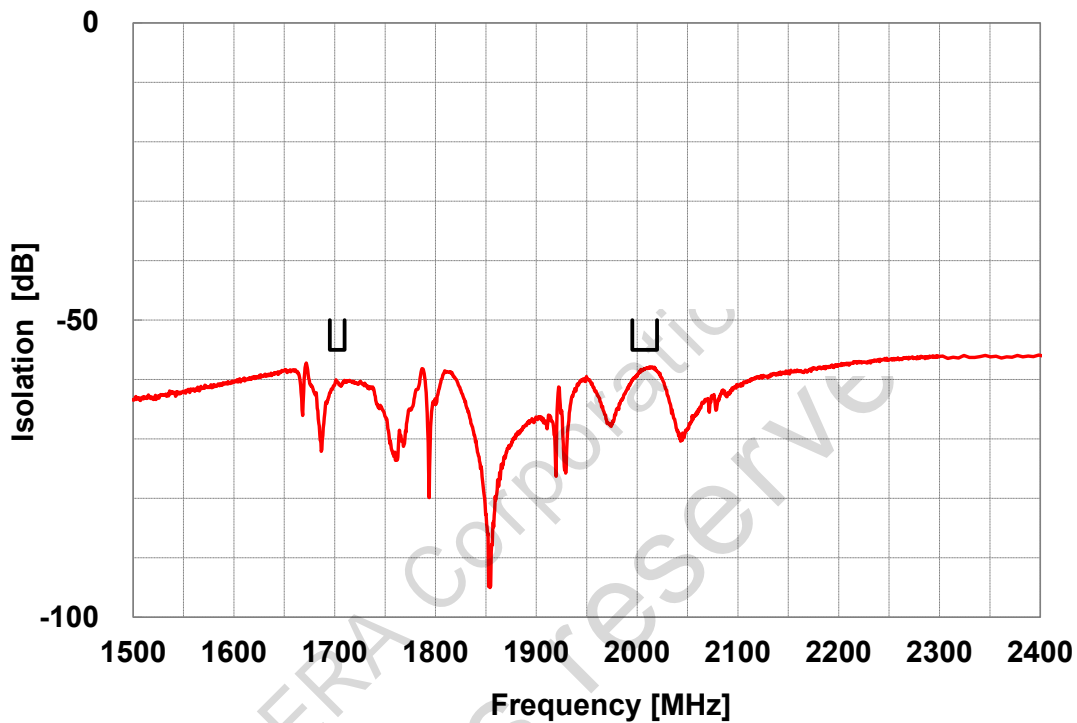
**Electrical Characteristics**

[Band70 Ant to Rx]



### Electrical Characteristics

[Band70 Tx to Rx]

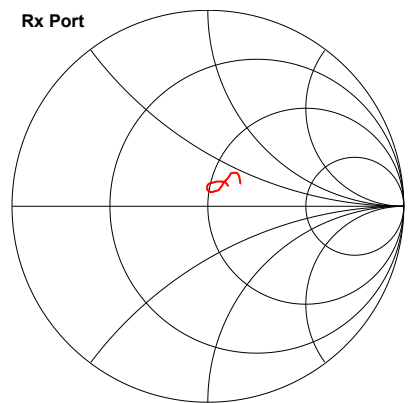
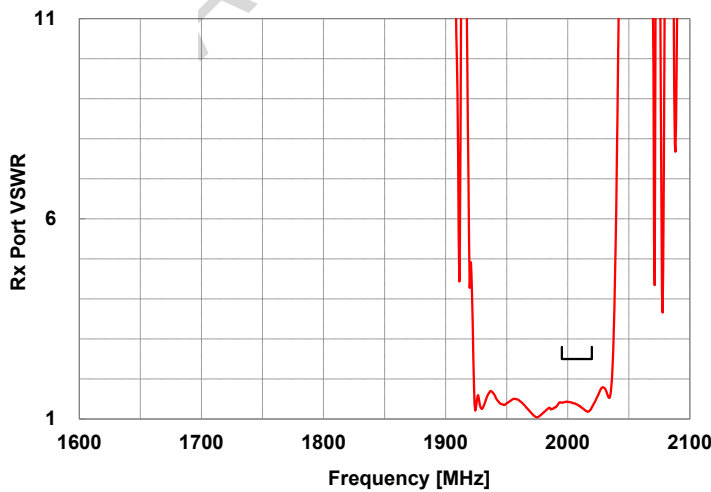
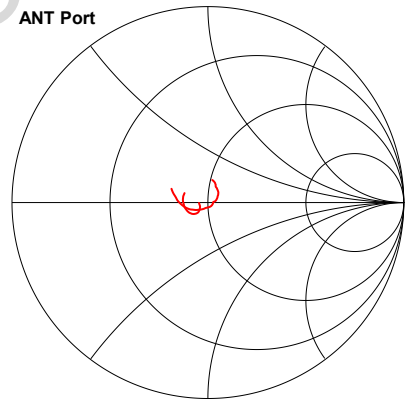
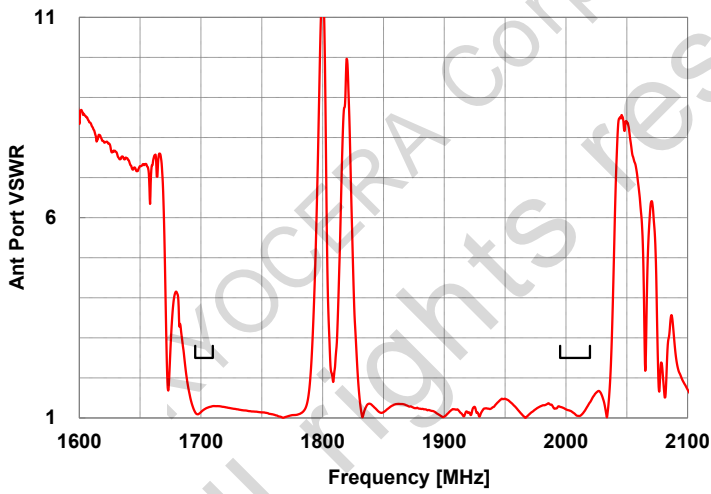
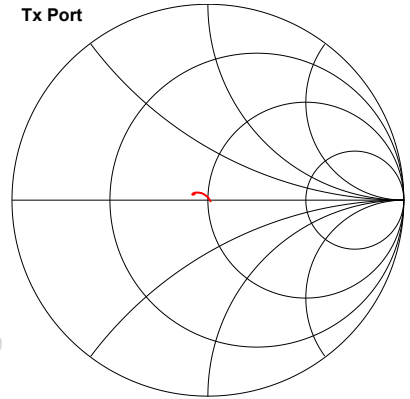
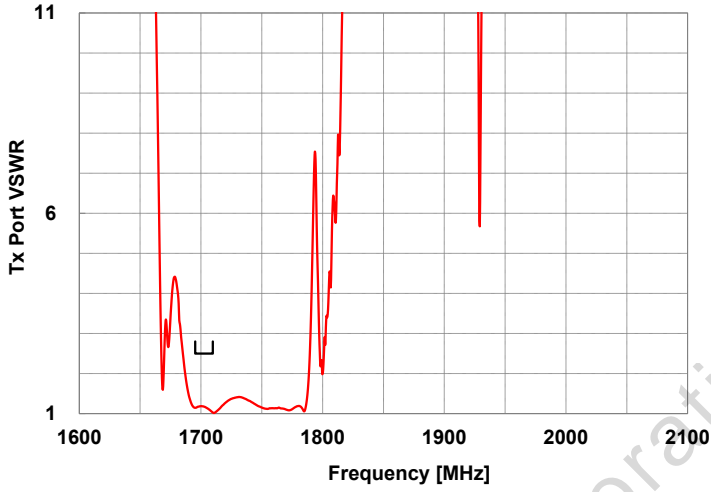


KYOCERA Corporation  
 All rights reserved



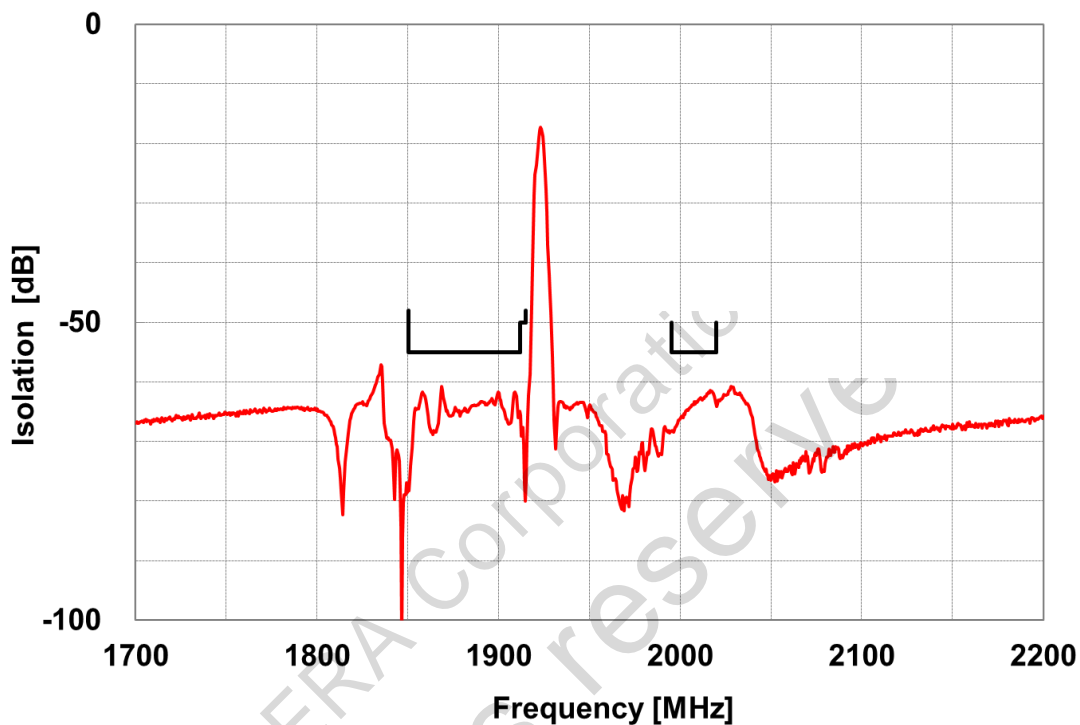
# Electrical Characteristics

## [Band70]

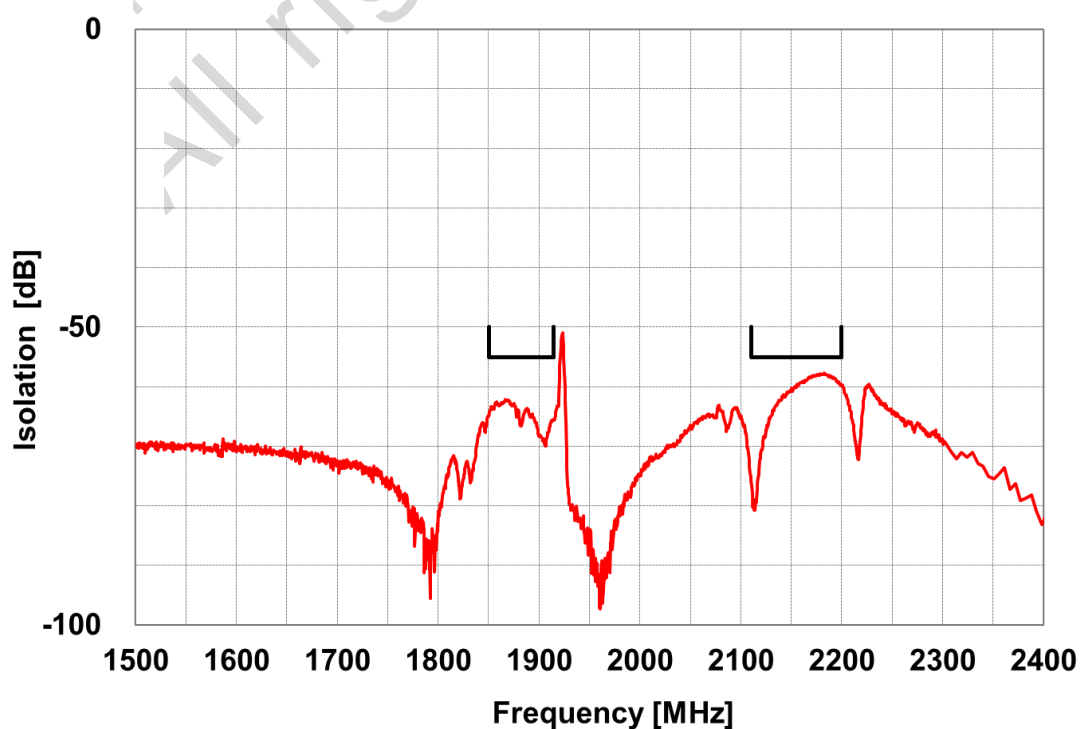


### Electrical Characteristics

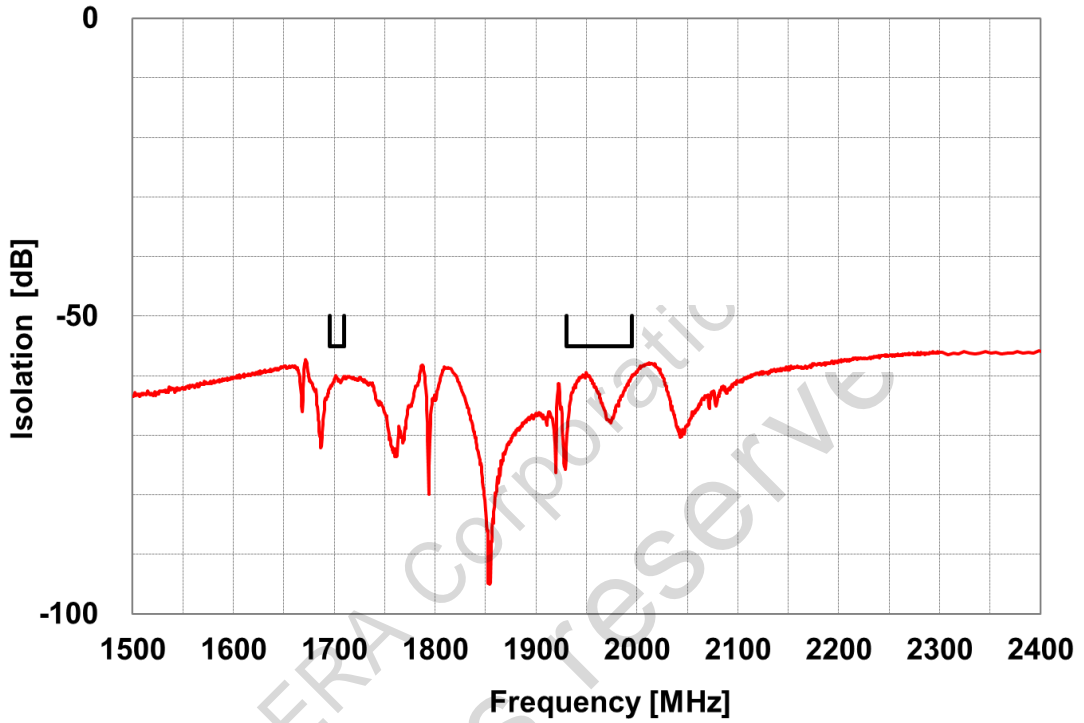
[Band25 Tx to Band70 Rx]



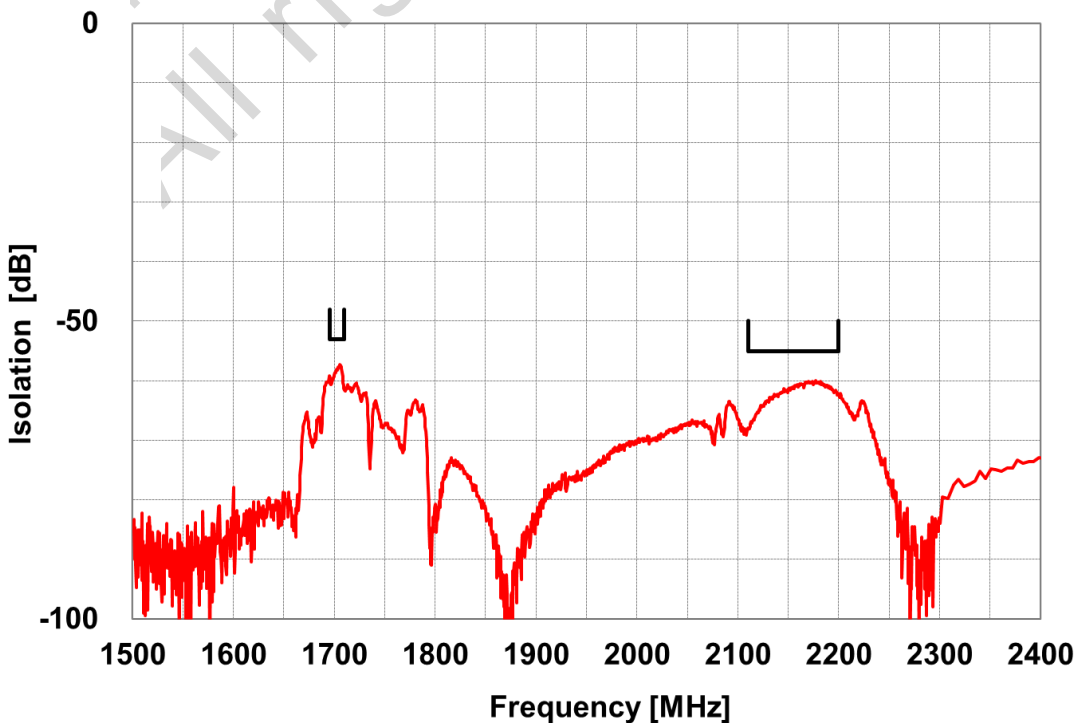
[Band25 Tx to Band66 Rx]



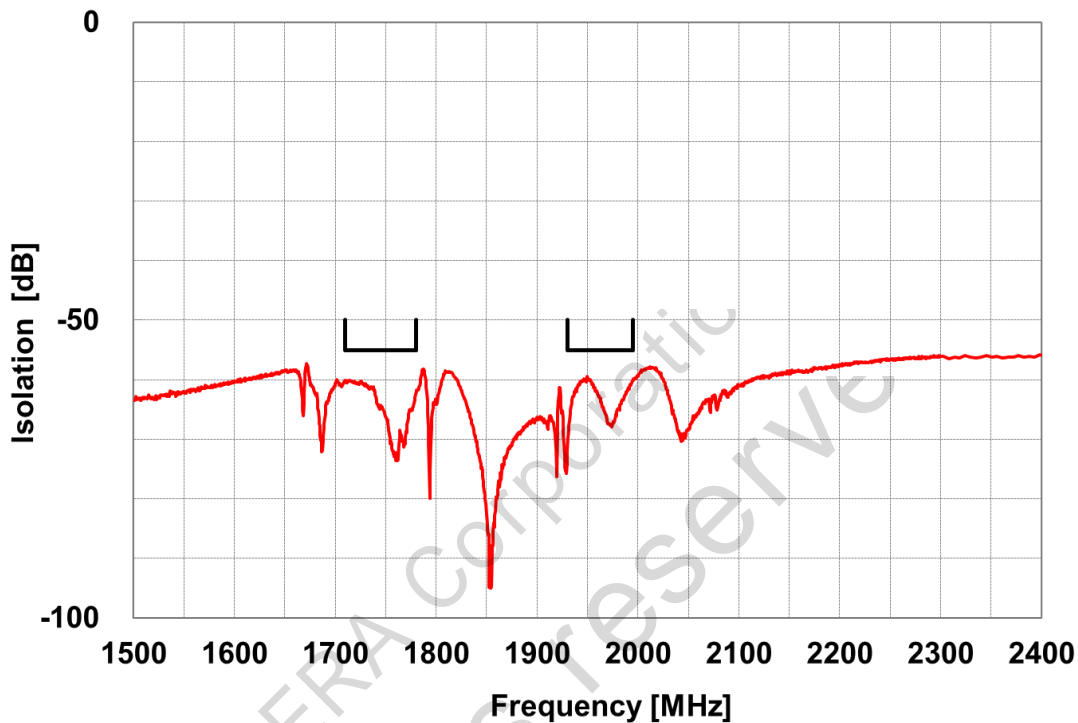
**Electrical Characteristics**  
**[Band70 Tx to Band25 Rx]**



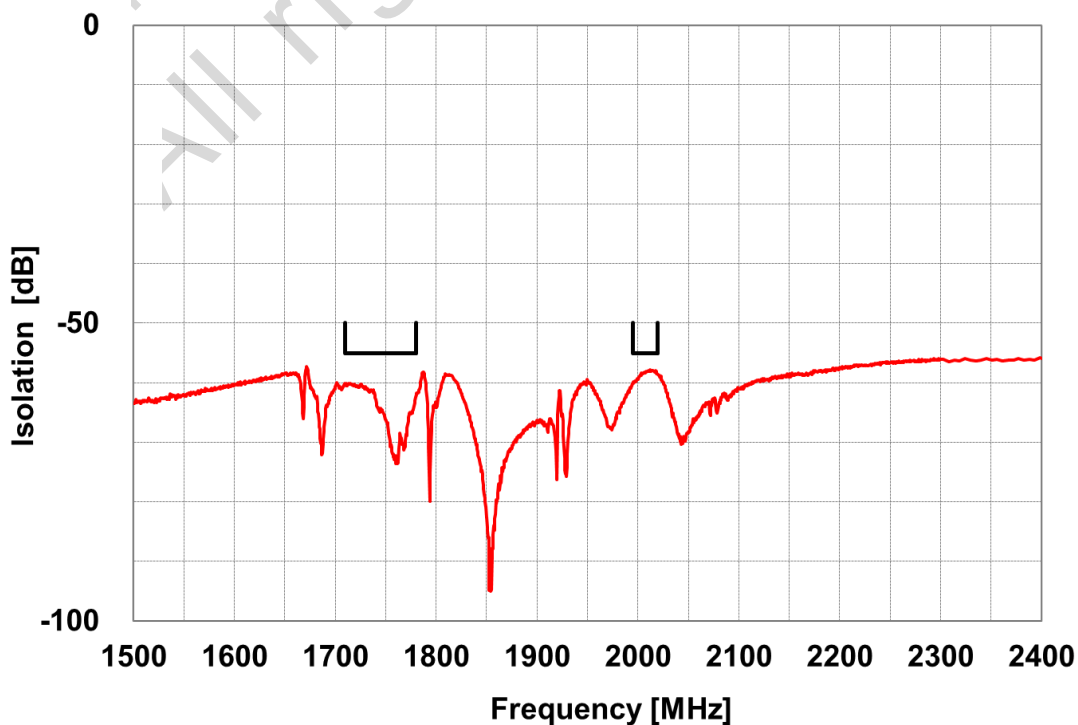
**[Band70 Tx to Band66 Rx]**



**Electrical Characteristics**  
**[Band66 Tx to Band25 Rx]**

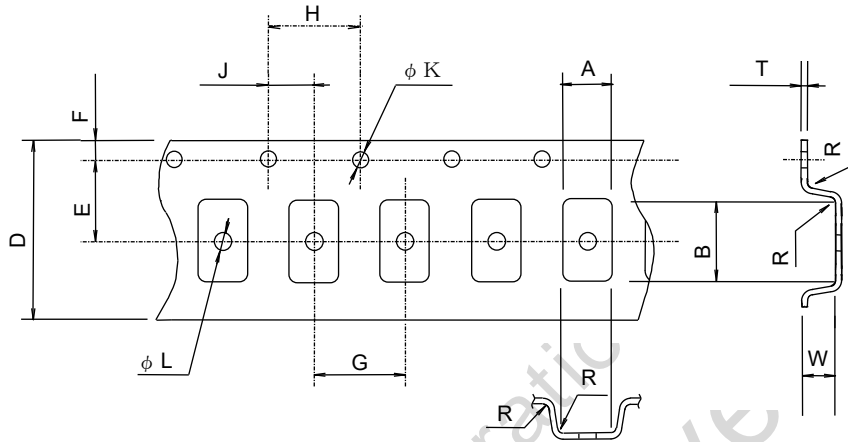


**[Band66 Tx to Band70 Rx]**



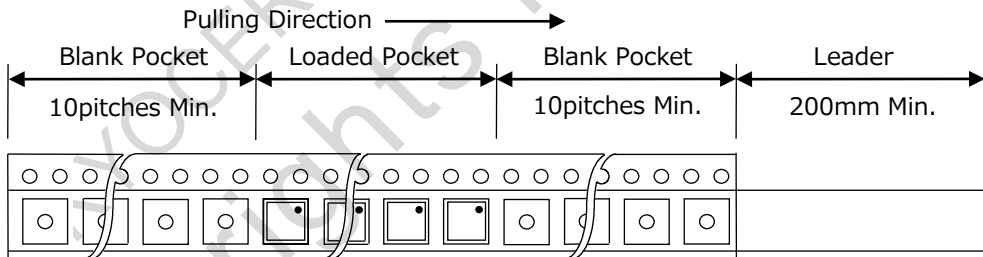
### Tape & Reel Specification

#### [Tape]

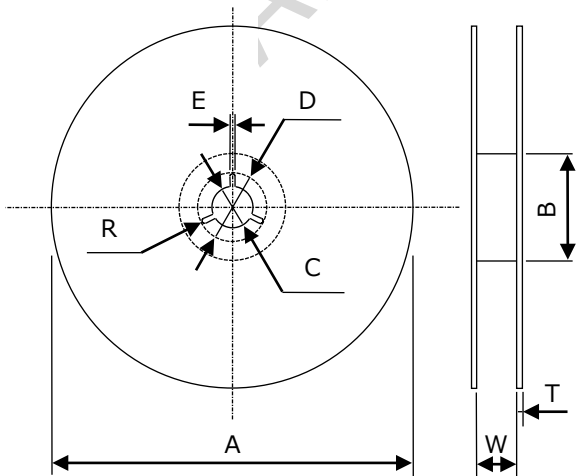


Part	A	B	D	E	F
Dimension	1.8±0.1	2.3±0.10	8.0±0.2	3.5±0.05	1.75±0.1
Part	G	H	J	ΦK	ΦL
Dimension	4.0±0.1	4.0±0.1	2.00±0.05	1.5±0.1	1.1±0.1
Part	R	W	T		
Dimension	0.3 MAX	1.0±0.1	0.20±0.05		

Unit[mm]



#### [Reel]



Part	A	B	C	D
Dimension	178 ± 2	60 ± 2	13.0 ± 0.2	21.0 ± 0.8
Part	E	R	W	T
Dimension	2.0 ± 0.5	1	9.5 ± 1.0	2.0 ± 0.2

Unit : mm

## Notice

1. Characteristics described in this datasheet are for references specifications shall be based on written documents agreed by each party.
2. Contents in this datasheet are subject to change without notice. It is recommended to confirm the latest information at the time of usage. Also, this datasheet is revised once a year. We may not be able to accept requests based on old datasheets.
3. Products in this datasheet are intended to be used in general electronic equipment such as office equipment, audio and visual equipment, communication equipment, measurement instrument and home appliances. It is absolutely recommended to consult with our sales representatives in advance upon planning to use our products in applications which require extremely high quality and reliability such as aircraft and aerospace equipment, traffic systems, safety systems, power plant and medical equipment including life maintenance systems.
4. Even though we strive for improvements of quality and reliability of products, it is requested to design with enough safety margin in equipment or systems in order not to threaten human lives directly or damage human bodies or properties by an accidental result of products.
5. It is requested to design based on guaranteed specifications for such as maximum ratings, operating voltage and operating temperature. It is not the scope of our guarantee for unsatisfactory results due to misuse or inadequate usage of products in the datasheet.
6. Operation summaries and circuit examples in this datasheet are intended to explain typical operation and usage of the product. It is recommended to perform circuit and assembly design considering surrounding conditions upon using products in this datasheet.
7. Technical information described in this datasheet is meant to explain typical operations and applications of products, and it is not intended to guarantee or license intellectual properties or other industrial rights of the third party or Kyocera.
8. Trademarks, logos and brand names used in this datasheet are owned by Kyocera or the corresponding third party.
9. Certain products in this datasheet are subject to the Foreign Exchange and Foreign Trade Control Act of Japan, and require the license from Japanese Government upon exporting the restricted products and technical information under the law. Besides, it is requested not to use products and technical information in the datasheet for the development and/or manufacture of weapons of mass destruction or other conventional weapons, nor to provide them to any third party with the possibility of having such purposes.
10. It is prohibited to reprint and reproduce a part or whole of this datasheet without permission.