

## Balanced Mixers (Waveguide & Coaxial)

### FEATURES

- ❖ Coverage from DC-100GHz
- ❖ Low conversion loss
- ❖ Low LO drive power
- ❖ **Full waveguide band operation**
- ❖ Compact and rugged package

### APPLICATIONS

- ❖ Test equipment
- ❖ Communication systems
- ❖ Radar receivers



**CMB Series**

### DESCRIPTION

Cernex's **CMB Series Balanced Mixers** are offered in coaxial and several waveguide bands to cover the frequency spectrum from DC to 100 GHz. These mixers employ high performance GaAs Schottky beamlead diodes and balanced configuration to produce superior performance with moderate LO pumping level. The mixers are designed for full RF waveguide band operation with extremely wide IF bandwidth. These mixers offer moderate port to port isolation, which is high enough for most applications to eliminate additional filter requirement. These mixers are ideal candidates for test equipment, communication systems and Radar receivers where frequency down conversion is desired.

### SINGLE-BALANCED

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB) Typ.	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
<b>CMB06060310MW</b>	<b>1-6</b>	<b>1-6</b>	<b>DC-3</b>	<b>10</b>	<b>42</b>	<b>32</b>	<b>15</b>	<b>MX2</b>
<b>CMB18180310MW</b>	<b>2-18</b>	<b>2-18</b>	<b>DC-3</b>	<b>10</b>	<b>35</b>	<b>20</b>	<b>14</b>	<b>MX2</b>
CMB26260608MI	2-26.5	2-26.5	0.001-6.0	8.0	25	25	-	-
CMB12150208Y	8-12.5	7-15	DC-2.5	8	30	30	10	-
<b>CMB43431809MW</b>	<b>18-43</b>	<b>18-43</b>	<b>DC-18</b>	<b>9</b>	<b>41</b>	<b>32</b>	<b>17</b>	<b>MX2</b>
<b>CMB40401810MW</b>	<b>19-40</b>	<b>19-40</b>	<b>DC-18</b>	<b>10</b>	<b>38</b>	<b>20</b>	<b>13</b>	<b>MX2</b>
CMB35190311U	25-35	11-19	DC-3.0	11.0	-	-	9	<b>MX2</b>
CMB35090311U	25-35	5-9.5	DC-3.0	11.0	-	-	10	<b>MX2</b>
<b>CMB30310310MW</b>	<b>28-30</b>	<b>27-31</b>	<b>DC-3</b>	<b>10</b>	<b>30</b>	<b>-</b>	<b>5</b>	<b>MX2</b>
CMB46470307X	32-46	29-47	DC-3.0	7.0	-	-	15	<b>MX2</b>
CMB36330410	34-36	30-33	2-4	10	30	30	13	<b>MX2</b>
CMB45240311U	35-45	16-24	DC-3.0	11.0	-	-	10	<b>MX2</b>
CMB7777U107U	76-77	76-77	DC-0.1	7.5	-	-	5	-
CMB7777U108U	76-77	76-77	DC-0.1	8.0	-	-	5.5	-
CMB99990312V	91-99	91-99	DC-3.0	12	-	-	16	-



## Balanced Mixers (Waveguide & Coaxial)

### DOUBLE-BALANCED

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB)	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
CMBU2U2U208Y	0.00005-0.2	0.00005-0.2	0.00005-0.2	8.0	32	35	10	-
CMBU5U5U506Y	0.0005-0.5	0.0005-0.5	DC-0.5	6.0	40	40	7	-
CMBU6U6U507Y	0.001-0.6	0.001-0.6	DC-0.5	7.5	30	30	17	-
CMBU6U6U607Y	0.001-0.6	0.001-0.6	DC-0.6	7.5	30	33	10	-
CMBU7U7U705Y	0.001-0.7	0.001-0.7	DC-0.7	5.5	35	35	7	-
CMBU8U8U806Y	0.001-0.8	0.001-0.8	DC-0.8	6.5	25	25	17	-
CMB01010107Y	0.001-1	0.001-1	DC-1	7.0	37	26	7	-
CMB0202U608Y	0.002-2.5	0.002-2.5	0.002-0.6	8.5	25	30	7	-
CMB01010107Y1	0.005-1.2	0.005-1.2	DC-1.2	7.5	25	20	17	-
CMB01010106Y1	0.005-1.5	0.005-1.5	DC-1	6.0	30	30	10	-
CMB01010106Y2	0.005-1.5	0.005-1.5	DC-1.5	6.5	35	30	7	-
CMB0101U507Y	0.01-1	0.01-1	0.005-0.5	7.5	40	30	10	-
CMB01010106Y	0.01-1	0.01-1	0.01-1	6.0	45	45	7	-
CMB0101U706Y	0.01-1.5	0.01-1.5	0.01-0.7	6.5	25	30	7	-
CMB0202U808Y	0.01-2	0.01-2	0.01-0.8	8.0	25	30	7	-
CMB03030208Y	0.01-3	0.01-3	0.01-2.5	8.5	25	25	17	-
CMB03030207Y	0.01-3	0.01-3	0.01-2.5	7.5	25	20	10	-
CMB08080207M	0.01-8	0.01-8	DC-2	7.5	50	35	13	I
CMB26260608MM	0.01-26.5	0.01-26.5	0.001-6	8	30	30	15	MXS2
CMB02020107Y	0.04-2.5	0.04-2.5	DC-1	7.5	40	33	10	-
CMB04040208	0.05-4	0.05-4	DC-4	8	25	20	13	-
CMBU7U7U709	0.1-0.75	0.1-0.75	0.1-0.75	8	27	20	10	-
CMB0202U608Y1	0.1-2	0.1-2	DC-0.6	8.0	37	30	7	-
CMB20200607MM	0.5-20	0.5-20	0.001-6	7.5	24	25	13	MXS2
CMB20200208M	1.0-20	1.0-20	0.001-2	7.5	24	25	16	-
CMB02010106	1.5-2.3	1.5-2.3	DC-1	6.5	30	20	7	-
<b>CMB13130808M</b>	<b>1.5-13</b>	<b>1.5-13</b>	<b>0.8-8.5</b>	<b>8</b>	<b>43</b>	<b>I</b>	<b>7</b>	<b>MX2</b>
CMB05050307H	1.8-5	1.8-5	DC-3	8.0*	42	36	15	MX2
CMB04040205MM	2-4	2-4	DC-2	5	28	20	7	MXS2
CMB04040207Y	2-4	2-4	0.02-2	7.5	20	23	10	-
CMB04040207Y1	2-4	2-4	0.02-2.5	7.5	20	23	10	-
CMB08080206MM	2-8	2-8	DC-2	6	38	20	7	MXS2
CMB08080207Y	2-8	2-8	0.02-2.5	7.5	20	23	10	-
CMB08080207Y2	2-8	2-8	0.02-2.5	7.5	20	20	10	-
CMB08080607MM	2-8	2-8	0.001-6	7	20	30	10	MXS2
CMB08080607Y	2-8	2-8	1-6	7.0	20	23	10	-
CMB12120207MM	2-12	2-12	DC-2	6	35	20	7	MXS2
<b>CMB12120308M</b>	<b>2-12</b>	<b>2-12</b>	<b>DC-3</b>	<b>8</b>	<b>47</b>	<b>I</b>	<b>1</b>	<b>MX2</b>



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Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB)	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
<b>CMB12120308M-01</b>	<b>2-12</b>	<b>2-12</b>	<b>DC-3</b>	<b>8.5</b>	<b>47</b>	<b>-</b>	<b>13</b>	<b>MX2</b>
CMB18180207Y6	2-18	2-18	0.02-2.5	7.5	15	15	10	
CMB18180207Y8	2-18	2-18	0.02-2.5	7.5	20	20	10	
CMB18180408Y	2-18	2-18	0.03-4	8.0	20	23	10	
CMB18180409Y	2-18	2-18	DC-4	9	40	40	8-14	
CMB18180508Y	2-18	2-18	0.03-5	8.0	20	25	10	
CMB18180608Y	2-18	2-18	1-6	8.0	18	20	10-14	
CMB18180607MM	2-18	2-18	0.001-6	7.5	25	27	10	<b>MXS2</b>
CMB18180607Y	2-18	2-18	1-6	7.0	20	23	10	
CMB20200607MM-01	2-20	2-20	0.001-6	7.5	27	27	10	<b>MXS2</b>
CMB20201007MM-01	2-20	2-20	1-10	7	27	27	10	<b>MXS2</b>
CMB22220308M	2-22	2-22	DC-3.5	8.5	51	-	7	
CMB26260607MM	2-26.5	2-26.5	0.001-6	7.5	28	28	10	<b>MXS2</b>
CMB26261007MM	2-26.5	2-26.5	1-10	7.5	28	27	10	<b>MXS2</b>
CMB07070307H	2.5-7	2.5-7	DC-3	7.0*	48	28	15	
CMB06060307	3-6	3-6	DC-3	7	15	15	13	
CMB10100207Y	3-10	3-10	0.02-2.5	7.5	23	25	10	
CMB10100207Y1	3-10	3-10	0.02-2.5	7.5	20	20	10	
CMB10100208Y	3-10	3-10	0.02-2.5	8.0	23	23	10	
CMB10100306MM	3-10	3-10	DC-3	6	40	40	7	<b>MXS2</b>
<b>CMB12120407M</b>	<b>3-12</b>	<b>3-12</b>	<b>DC-4.5</b>	<b>7.5</b>	<b>52</b>	<b>-</b>	<b>13</b>	<b>MX2</b>
CMB18181207MM	3-18	3-18	1-12	7.5	30	23	10	
<b>CMB20200408M</b>	<b>3-20</b>	<b>3-20</b>	<b>DC-4</b>	<b>8.0</b>	<b>54</b>	<b>-</b>	<b>5</b>	<b>MX2</b>
CMB08080307H	4-8	4-8	DC-3	7.0*	40	42	15	<b>MX2</b>
CMB08080206Y	4-8	4-8	0.02-2.5	6.5	23	25	10	
CMB08080207Y3	4-8	4-8	0.02-2.5	7.5	23	25	10	
CMB08080207Y4	4-8	4-8	0.02-2.5	7.5	20	23	10	
CMB08080405MM	4-8	4-8	DC-4	5.5	35	25	7	<b>MXS2</b>
CMB08080406Y	4-8	4-8	1-4	6.5	23	25	10	
CMB10100409	4-10	4-10	DC-4	9	35	15	13	
CMB12120405MM	4-12	4-12	DC-4	5	40	30	7	<b>MXS2</b>
CMB20200406MM	4-20	4-20	DC-4	6	35	30	7	<b>MXS2</b>
<b>CMB28280306C</b>	<b>4-28</b>	<b>4-28</b>	<b>DC-3</b>	<b>8</b>	<b>43</b>	<b>50</b>	<b>17</b>	<b>MX2</b>
<b>CMB24240408M</b>	<b>4.5-24</b>	<b>4.5-24</b>	<b>DC-4</b>	<b>8</b>	<b>49</b>	<b>-</b>	<b>17</b>	<b>MX2</b>
CMB10100207Y2	5-10	5-10	DC-2	7.5	23	23	6	
CMB10100207Y3	5-10	5-10	DC-2	7.5	23	23	6	
CMB18180207Y	5-18	5-18	DC-2	7.5	20	23	6	
CMB18180207Y1	5-18	5-18	DC-2	7.5	20	23	6	
CMB20200310H	5-20	5-20	DC-3	10.0*	30	17	20	



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					L-R	L-I		
<b>CMB30302010M</b>	<b>5-30</b>	<b>5-30</b>	<b>2-20</b>	<b>10</b>	<b>44</b>	<b>-</b>	<b>9</b>	<b>MX2</b>
CMB14140607H	5.5-14	5.5-14	DC-6	7.0*	45	24	15	
CMB14140607H-01	5.5-14	5.5-14	DC-6	7.5	40	40	15	
CMB10100307Y	6-10	6-10	DC-3	7.5	23	23	6	
CMB11110207H	6-11	6-11	DC-2	7.0*	40	40	15	
CMB12120408Y-03	6-12	6-12	DC-4	8.0	30	26	13	
<b>CMB14140506C</b>	<b>6-14</b>	<b>6-14</b>	<b>DC-5</b>	<b>6.0</b>	<b>43</b>	<b>39</b>	<b>19</b>	<b>MX2</b>
<b>CMB14140506C-01</b>	<b>6-14</b>	<b>6-14</b>	<b>DC-5</b>	<b>6.5</b>	<b>43</b>	<b>37</b>	<b>13</b>	<b>MX2</b>
CMB14140507C-01	6-14	6-14	DC-5	7.5	43	37	9	
CMB16160405MM	6-16	6-16	DC-4	5.5	35	30	7	<b>MXS2</b>
CMB18180208	6-18	6-18	DC-2	8.5	35	30	13	
CMB1818U209-01	6-18	6-18	0.004-0.21	9.0	25	25	10-13	
CMB18180305Y	6-18	6-18	DC-3	9.0	35	30	13	
CMB18180307Y	6-18	6-18	DC-3	7.5	23	20	6	
CMB18180405MM	6-18	6-18	DC-4	5.5	33	30	7	<b>MXS2</b>
CMB18180405Y	6-18	6-18	DC-4	5.5	35	35	7	
CMB18180610H	6-18	6-18	DC-6	10.0*	28	20	15	<b>MX2</b>
CMB20200605MM	6-20	6-20	DC-6	5.5	40	20	7	<b>MXS2</b>
CMB20200607	6-20	6-20	DC-6	7.5	40	20	13-16	
CMB20200607-03	6-20	6-20	DC-6	8.5	-	-	-	<b>MX2</b>
CMB26261009H	6-26	6-26	DC-10	9.0	38	38	13	<b>MX2</b>
<b>CMB26260907M</b>	<b>6-26.5</b>	<b>6-26.5</b>	<b>DC-9</b>	<b>7.5</b>	<b>53</b>	<b>-</b>	<b>13</b>	<b>MX2</b>
<b>CMB45450309C</b>	<b>6-45</b>	<b>6-45</b>	<b>DC-3</b>	<b>9.0</b>	<b>41</b>	<b>42</b>	<b>17</b>	<b>MX2</b>
CMB14140507H-01	7-14	7-14	DC-5	7.5	40	30	11.5	
CMB14140508H	7-14	7-14	DC-5	8.0*	45	35	11.5	<b>MX2</b>
CMB18180307Y1	7-18	7-18	DC-3	7.5	23	23	20	
CMB18180310Y	7-18	7-18	DC-3	10.0	23	23	13	
CMB43431009H	7-43	7-43	DC-10	9.0	35	35	13	
CMB12120207Y	8-12	8-12	DC-2	7.0	23	30	6	
CMB12120307Y	8-12	8-12	DC-3	7.5	23	23	6	
CMB12120206Y	8-12	8-12	0.02-2.5	6.5	23	25	10	
CMB12120207Y1	8-12	8-12	0.02-2.5	7.5	23	25	10	
CMB12120207Y2	8-12	8-12	0.02-2.5	7.5	20	20	10	
CMB12120406Y	8-12	8-12	1-4	6.5	23	25	10	
CMB18180207Y2	8-18	8-18	DC-2	7.5	23	25	6	
CMB18180207Y3	8-18	8-18	0.02-2.5	7.5	23	25	10	
CMB18180406MM	8-18	8-18	DC-4	6.0	35	30	7	<b>MXS2</b>
CMB18180607Y1	8-18	8-18	1-6	7.0	25	25	10	
<b>CMB32321208M</b>	<b>8-32</b>	<b>8-32</b>	<b>0-12</b>	<b>8.0</b>	<b>46</b>	<b>-</b>	<b>7</b>	<b>MX2</b>



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Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB)	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
<b>CMB43431008M</b>	<b>8-43</b>	<b>8-43</b>	<b>0-10</b>	<b>8.0</b>	<b>40</b>	<b>-</b>	<b>15</b>	<b>MX2</b>
CMB42422209QM	9-42	9-42	1-22	9	25	25	9	<b>MXS1</b>
CMB20200406MM-01	10-20	10-20	DC-4	6	35	30	7	<b>MXS2</b>
<b>CMB44441407M</b>	<b>10-44</b>	<b>10-44</b>	<b>DC-14</b>	<b>7.6</b>	<b>47</b>	<b>-</b>	<b>7</b>	<b>MX2</b>
CMB20200608H	11-20	11-20	DC-6	8.0*	44	40	11	
<b>CMB40401208M</b>	<b>11-40</b>	<b>11-40</b>	<b>DC-12</b>	<b>8</b>	<b>47</b>	<b>-</b>	<b>12</b>	<b>MX2</b>
CMB18180207Y4	12-18	12-18	0.02-2.5	7.5	23	25	10	
CMB18180207Y5	12-18	12-18	0.02-2.5	7.5	20	23	10	
CMB18180208Y	12-18	12-18	DC-2	8	30	30	13	
CMB18180407Y	12-18	12-18	1-4	7.0	25	25	10	
CMB23230210H	14-23	14-23	DC-2	10.5*	38	45	15	
CMB26260807H	14-26	14-26	DC-8	7.5*	39	35	13	
<b>CMB67672107M</b>	<b>14-67</b>	<b>14-67</b>	<b>DC-21</b>	<b>7</b>	<b>53</b>	<b>-</b>	<b>9</b>	<b>MX2</b>
<b>CMB26260906C</b>	<b>16-26</b>	<b>16-26</b>	<b>DC-9</b>	<b>6.5</b>	<b>40</b>	<b>48</b>	<b>13</b>	<b>MX2</b>
CMB30300210Y	18-30	18-30	DC-2	10	30	26	13	
CMB32320807H	18-32	18-32	DC-8	7.5*	38	40	13	
CMB36360309A	18-36	18-36	DC-3	9.5	22	22	2	
CMB36360310A	18-36	18-36	DC-3	10	30	26	15	
<b>CMB46462006M</b>	<b>18-46</b>	<b>18-46</b>	<b>0-20</b>	<b>6.5</b>	<b>35</b>	<b>-</b>	<b>16</b>	<b>MX2</b>
CMB50502008H	18-50	18-50	DC-20	8	40	25	15	<b>MX2</b>
<b>CMB50502008M</b>	<b>18-50</b>	<b>18-50</b>	<b>DC-20</b>	<b>8</b>	<b>43</b>	<b>-</b>	<b>12</b>	<b>MX2</b>
<b>CMB57572108M</b>	<b>18-57</b>	<b>18-57</b>	<b>DC-21</b>	<b>8</b>	<b>35</b>	<b>-</b>	<b>7</b>	<b>MX2</b>
CMB32321010C	20-32	20-32	DC-10	10	35	30	15	<b>MX2</b>
CMB32321010Y	20-32	20-32	DC-10	7	30	26	13	
CMB40401808H	24-40	24-40	DC-18	8.0*	35	28	13	<b>MX2</b>
CMB40400809H	25-40	25-40	DC-8	9.5*	42	35	13	<b>MX2</b>
CMB40241612Y	25-40	25-40	8-16	10.0	30	26	13	
<b>CMB67673009M</b>	<b>25-67</b>	<b>25-67</b>	<b>DC-30</b>	<b>9.0</b>	<b>33</b>	<b>-</b>	<b>6</b>	<b>MX2</b>
<b>CMB45451206C</b>	<b>26-45</b>	<b>26-45</b>	<b>DC-12</b>	<b>6.5</b>	<b>37</b>	<b>29</b>	<b>25</b>	<b>MX2</b>
CMB45451206C-01	26-45	26-45	DC-12	6.5	37	29	17	MX2
<b>CMB46462008C</b>	<b>30-46</b>	<b>30-46</b>	<b>5-20</b>	<b>8.0</b>	<b>30</b>	<b>20</b>	<b>19</b>	<b>MX2</b>
CMB64640508H	54-64	54-64	DC-5	8.0*	30	25	13	
CMB76761013-01	71-76	71-76	DC-10	13.0	-	-	14	



## Balanced Mixers (Waveguide & Coaxial)

### TRIPLE-BALANCED MIXERS

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB)	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
CMB07070406QM	0.001-7	0.001-7	0.001-4	6.5	24	-	15	MXS1
CMB12120407QM	0.01-12	0.01-12	0.001-4	7.5	24	-	15	MXS1
CMB18181007QM	0.01-18	0.01-18	0.001-10	7.5	25	-	15	MXS1
CMB18181808QM	0.01-18	0.01-18	0.01-18	8.5	30	-	15	MXS1
CMB20201007QM	0.01-20	0.01-20	0.001-10	7.5	24	-	15	MXS1
CMB20201808QM	0.01-20	0.01-20	0.01-18	8.5	30	-	15	MXS1
CMB26261008M	2-26.5	2-26.5	1-10	8.5	23	25	13	
CMB26260608M1	2-26.5	2-26.5	0.001-6	8.0	25	25	13	
CMB22222210H	16-22	16-22	16-22	10.0	45	45	15	MX2

### ACTIVE MIXERS

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss (dB)	Isolation		LO Drive Level (dBm)	Size
					L-R	L-I		
CMB30150610U	20.0 -30.0	10.0-15.0	DC-6.0	10.0	29	-	-4	
CMB35190311U	25.0-35.0	11.0-19.0	DC-3.0	11.0	-	-	9	
CMB45240311U	35.0-45.0	16.0-24.0	DC-3.0	11.0	-	-	10	
CMB65320512U	55.0-65.0	27.5-32.5	DC-5.0	-20	-	-	10	
CMB7777U108U	76.0-77.0	76.0-77.0	DC-0.10	8.0	22	-	5.5	
CMB7777U107U	76.0-77.0	76.0 -77.0	DC -0.10	7.5	25	-	7	

Waveguide Band	K	Ka	Q	U	V	E	W
Waveguide Size	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
LO Frequency Range (GHz)	18 to 26.5	26.5 to 40	33 to 50	40 to 60	50 to 75	60 to 90	75 to 110
IF Frequency Range (GHz)	0.01 to 8	0.01 to 14	0.01 to 17	0.01 to 18	0.01 to 18	0.01 to 18	0.01 to 18
LO Pumping Level (dBm)	10 to 13	10 to 13	10 to 13	10 to 13	10 to 13	10 to 13	10 to 13
Conversion Loss (dB, Typical)	7.5	8.0	8.5	9.0	9.5	10.0	11.0
Port Isolation (dB, Typical)	20	20	20	20	20	20	20
Maximum Input Signal Level	+ 18 dBm						

### WAVEGUIDE MIXERS

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	CONVERSION LOSS (dB) Typ.	ISOLATIONS		LO DRIV LEVEL (dBm)	WR
					L-R (dB)	L-I (dB)		
CMB4950U809	49.2	50.0	0.8	9.0	-	-	-	19
CMB75180308-01	50-75	12.5-18.5	0.01-3	6	-	-	12-15	15
CMB66660110	57-66	57-66	DC-1	10	-	-	10	15
CMB90901210	60-90	60-90	DC-12	10	-	-	10	12



## Balanced Mixers (Waveguide & Coaxial)

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Model Number	RF (GHz)	LO (GHz)	IF (GHz)	CONVERSION LOSS (dB) Typ.	ISOLATIONS L-R (dB) L-I (dB)	LO DRIV LEVEL (dBm)	WR
CMB751101210	75-110	75-110	DC-12	12	25	10	10
CMB1101103509	75-110	75-110	DC-35	9.5	-	13	10
CMB110180313	75-110	12.5-18.33	0.01-3	8	-	12-15	10
CMB1701700608	110-170	110-170	0.01-6	8	-	0	06
CMB3303300608	220-330	220-330	0.01-6	8	-	0	03

**Notes:** The operation frequency range for RF port is full waveguide band. Contact factory for other waveguide bands and specifications. Integrated Local Oscillator is also available as an option.