



Eye-BERT Micro

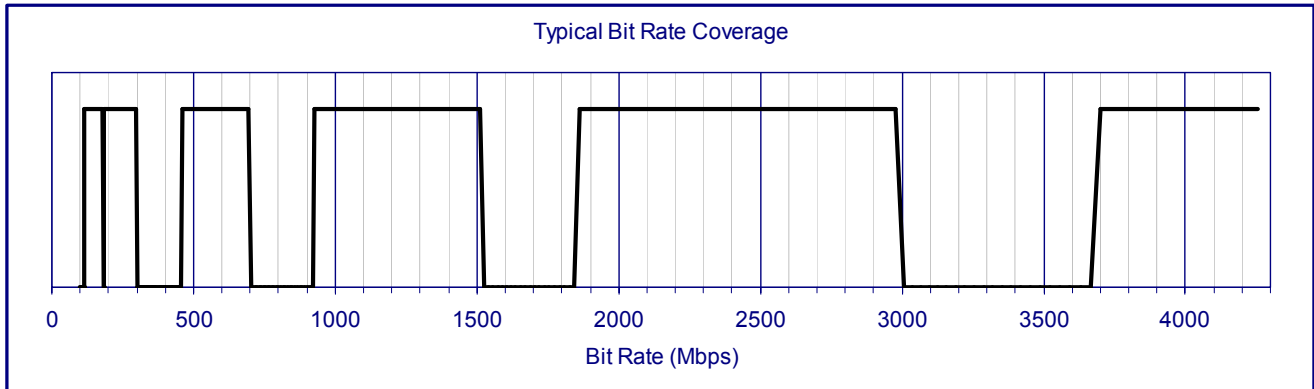
Application Note: Variable Bit Rate

Variable Bit Rate / Frequency Generation:

The Eye-BERT Micro is capable of generating custom bit rates and optical signals of most any frequency between 3MHz and 2.1GHz, however there are some limitations due to the internal clocking structure. In frequency generator mode a 50/50% square wave is generated at the specified frequency. The frequency generator makes use of the programmable pattern generator to create 5 different frequencies at ratios of /40, /20, /10, /4, /2.

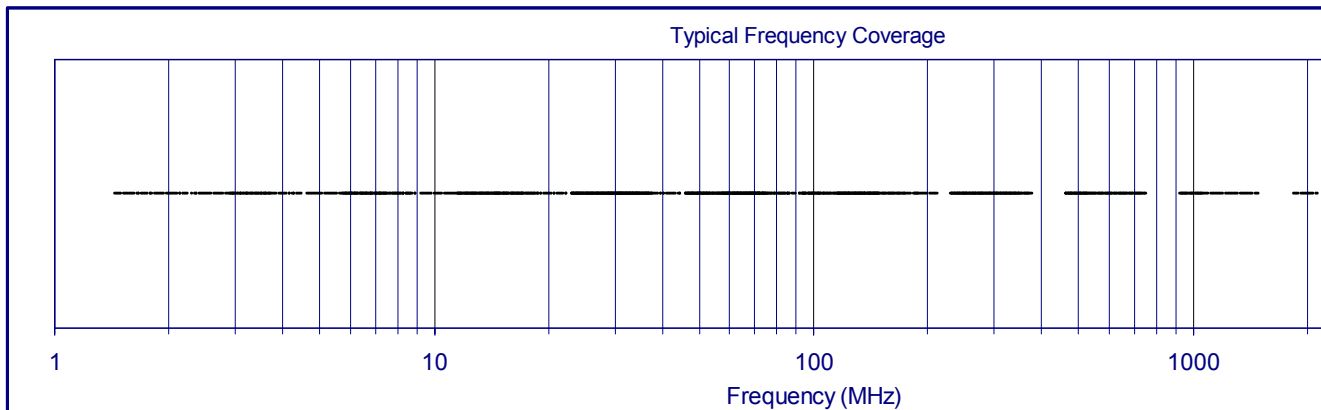
Typical Bit Rate Coverage:

The plot below shows the bit rates that are typically supported by the Eye-BERT Micro. These values will change slightly from unit to unit and over temperature; a **FREQUENCY ERROR** message on the user interface will indicate if a particular rate is not supported. All standard advertised rates (shown on the user interface) are always supported.



Typical Frequency Generator Coverage:

The plot below shows the frequencies that are typically supported by the Eye-BERT Micro. These values were generated based on the bit rate coverage data factoring in each of the five possible divider ratios. If a **FREQUENCY ERROR** message occurs then the frequency generator mode is disabled. Note the X axis of this plot is in log scale.



Data

The table below shows the raw bit rate data, the bit rate was increased in increments of 1% from 100Mbps to 4.29Gbps. A value of "1" next to the rate indicates that the rate is supported and a value of 0 indicates that it is not. From this data, frequency generator coverage data can be generated.

Rate	OK	187	1	353	0	668	1	1264	1	2390	1
100	0	189	1	357	0	675	1	1277	1	2414	1
101	0	190	1	360	0	682	1	1290	1	2438	1
102	0	192	1	364	0	689	1	1302	1	2463	1
103	0	194	1	368	0	696	1	1315	1	2487	1
104	0	196	1	371	0	703	0	1329	1	2512	1
105	0	198	1	375	0	710	0	1342	1	2537	1
106	0	200	1	379	0	717	0	1355	1	2563	1
107	0	202	1	383	0	724	0	1369	1	2588	1
108	0	204	1	386	0	731	0	1383	1	2614	1
109	0	206	1	390	0	738	0	1396	1	2640	1
110	0	208	1	394	0	746	0	1410	1	2667	1
111	0	210	1	398	0	753	0	1424	1	2693	1
112	0	213	1	402	0	761	0	1439	1	2720	1
113	0	215	1	406	0	768	0	1453	1	2747	1
114	0	217	1	410	0	776	0	1468	1	2775	1
116	1	219	1	414	0	784	0	1482	1	2803	1
117	1	221	1	419	0	792	0	1497	1	2831	1
118	1	223	1	423	0	800	0	1512	1	2859	1
119	1	226	1	427	0	808	0	1527	0	2888	1
120	1	228	1	431	0	816	0	1543	0	2917	1
122	1	230	1	436	0	824	0	1558	0	2946	1
123	1	232	1	440	0	832	0	1574	0	2975	1
124	1	235	1	444	0	840	0	1589	0	3005	0
125	1	237	1	449	0	849	0	1605	0	3035	0
126	1	240	1	453	0	857	0	1621	0	3065	0
128	1	242	1	458	0	866	0	1637	0	3096	0
129	1	244	1	462	1	875	0	1654	0	3127	0
130	1	247	1	467	1	883	0	1670	0	3158	0
132	1	249	1	472	1	892	0	1687	0	3190	0
133	1	252	1	476	1	901	0	1704	0	3222	0
134	1	254	1	481	1	910	0	1721	0	3254	0
136	1	257	1	486	1	919	0	1738	0	3287	0
137	1	259	1	491	1	928	1	1756	0	3319	0
138	1	262	1	496	1	938	1	1773	0	3353	0
140	1	265	1	501	1	947	1	1791	0	3386	0
141	1	267	1	506	1	957	1	1809	0	3420	0
143	1	270	1	511	1	966	1	1827	0	3454	0
144	1	273	1	516	1	976	1	1845	0	3489	0
145	1	275	1	521	1	986	1	1864	1	3524	0
147	1	278	1	526	1	995	1	1882	1	3559	0
148	1	281	1	532	1	1005	1	1901	1	3594	0
150	1	284	1	537	1	1015	1	1920	1	3630	0
151	1	287	1	542	1	1026	1	1939	1	3667	0
153	1	289	1	548	1	1036	1	1959	1	3703	1
154	1	292	1	553	1	1046	1	1978	1	3740	1
156	1	295	1	559	1	1057	1	1998	1	3778	1
158	1	298	1	564	1	1067	1	2018	1	3816	1
159	1	301	0	570	1	1078	1	2038	1	3854	1
161	1	304	0	576	1	1089	1	2059	1	3892	1
162	1	307	0	581	1	1100	1	2079	1	3931	1
164	1	310	0	587	1	1111	1	2100	1	3971	1
166	1	314	0	593	1	1122	1	2121	1	4010	1
167	1	317	0	599	1	1133	1	2142	1	4050	1
169	1	320	0	605	1	1144	1	2164	1	4091	1
171	1	323	0	611	1	1156	1	2185	1	4132	1
172	1	326	0	617	1	1167	1	2207	1	4173	1
174	1	330	0	623	1	1179	1	2229	1	4215	1
176	1	333	0	630	1	1191	1	2252	1	4257	1
178	1	336	0	636	1	1203	1	2274	1		
179	1	340	0	642	1	1215	1	2297	1		
181	0	343	0	649	1	1227	1	2320	1		
183	0	346	0	655	1	1239	1	2343	1		
185	1	350	0	662	1	1252	1	2366	1		