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| **Artist** | **Original Audio** | **Telephone** | **AM Radio** | **DAB Radio** | **FM Radio** |
| Antonio Vivaldi | 100% | 60% | 70% | 90% | 80% |
| Dave Brubeck | 100% | 50% | 60% | 85% | 85% |
| Enid Blyton | 100% | 65% | 65% | 85% | 85% |
| Nickelback | 100% | 60% | 60% | 90% | 80% |

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| **Artist** | **Original Audio** | | **Telephone** | | **AM Radio** | | **DAB Radio** | | **FM Radio** | |
|  | Signal Bandwidth | % of Original | Signal Bandwidth | % of Original | Signal Bandwidth | % of Original | Signal Bandwidth | % of Original | Signal Bandwidth | % of Original |
| Antonio Vivaldi | 15000 | 100% | 3385 | 22.56 | 6938 | 46.25 | 13800 | 92 | 14215 | 94.7 |
| Dave Brubeck | 20723 | 100% | 3385 | 16.33 | 6981 | 53.69 | 13873 | 66.94 | 14943 | 72.11 |
| Enid Blyton | 15586 | 100% | 3385 | 21.72 | 7366 | 47.26 | 13916 | 89.29 | 14901 | 95.61 |
| Nickelback | 22000 | 100% | 3385 | 15.39 | 6981 | 31.73 | 13916 | 63.25 | 14986 | 68.12 |

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| **Signal** | **Equation f(t) = A sin (2.π.f.t)** | **Spectrum** |
| [1 kHz Sinusoidal](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/wavfiles/Sine1kHz.wav) | f(t) = 1 sin (2.π.1000.t) |  |
| [3 kHz Sinusoidal](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/wavfiles/Sine3kHz.wav) | f(t) = 1/3 sin (2.π.3000.t) |  |
| [5 kHz Sinusoidal](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/wavfiles/Sine5kHz.wav) | f(t) = 1/5 sin (2.π.5000.t) |  |
| [1 kHz, 3kHz and 5kHz Sinusoidal Combined](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/wavfiles/ThreeSines.wav) | f(t) = 1 sin (2.π.1000.t) + 1/3 sin (2.π.3000.t) + 1/5 sin (2.π.5000.t) |  |

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| **Signal - Oscilloscope View** | **Signal - Spectrum View)** | **Peak to Peak Voltage** | **Frequency** | **Equation** |
| [Signal α](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/OscilloscopeSignalA.psdata) | [Signal α](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/SpectrumSignalA.psdata) | 10 V | 2kHz | f(t) = ½ sin (2.π.2000.t) |
| [Signal β](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/OscilloscopeSignalB.psdata) | [Signal β](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/SpectrumSignalB.psdata) | 3.33 V | 6kHz | f(t) = 1/6 sin (2.π.6000.t) |
| [Signal γ](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/OscilloscopeSignalC.psdata) | [Signal γ](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/SpectrumSignalC.psdata) | 1.984 V | 10kHz | f(t) = 1/10 sin (2.π.10000.t) |
| [Signal δ](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/OscilloscopeSignalD.psdata) | [Signal δ](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/PicoScopeFiles/SpectrumSignalD.psdata) | 10 V | 2kHz | f(t) = ½ sin (2.π.2000.t) |

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| **Signal** | **Time Domain** | **Frequency Domain** | **Transmission Bandwidth** |
| Sine |  |  | 20kHz |
| Square - This represents Data. |  |  | 20 kHz |
| Audio -  [How You Remind Me](http://staffweb.cms.gre.ac.uk/~sp02/Signals&Modulation/AudioFiles/Telephone/Nickelback%20-%20How%20You%20Remind%20Me%20-%20POTS.wav) |  |  | 20 kHz |

* 1. Change the diode in both directions, and complete the graphs in the following table

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| **Diode Direction** | .Diode | .Diode |
| **Time Domain** |  |  |
| **Frequency Domain** |  |  |

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| **Carrier Frequency** | **Transmission Identify** |
| 9kHz | RADIONAVIGATION UK1 |
| 18kHz | FIXED MARITIME MOBILE 5.57 UK2 |
| 75kHz | FIXED  MARITIME MOBILE 5.57  RADIO NAVIGATION 5.60 |
| 124kHz | FIXED  MARITIME MOBILE  RADIONAVIGATION 5.60 |





