Communications Theory

Questions for lab Session 4: Communications Theory

Academic Year 2023/2024

	Grade
Student 1:	T
Student 2:	

Q1. Two scaled versions of the signal are modulated and, afterwards, properly demodulated using the above algebra. Look at the pictures noting the scale of the vertical axis. Can you guess which one is going to sound OK? If not sure, just play both of them for a few seconds. Which one sounds fine? Why not so much the other?

Q2. Provide values for A_m and A_c that cause overmodulation. What do you notice in the plot? Why doesn't it affect the whole signal?

Q3. Test the effects of overmodulation on our ears. Can you pick a pair of values for A_m and A_c such that overmodulation happens but doesn't cause a noticeable degradation on the perceived sound quality? Above which (approximate) value of the modulation index, m, do you start noticing glitches in the audio?

Q4. Below which value of the SNR is the sound not perceived as sharp (clear) anymore? 10 dBs is usually considered a pretty good SNR in high quality radio (see, e.g., the last paragraphs in these notes). According to that, is AM noise-resilient or not?

Q5. What is the power of the signal for an SNR of about 20 dBs?