Deliverables for the Final Project

FRA Function Settings: (Frequency Response Analysis)

- 1Vpp Amplitude
- High-Z
- 10Hz 10kHz
- At least 60 Points (The more points the better, it will take longer)
- Correct Channels for Vin (Source) Vout (Output)

Specification	Requirement	Proof of Requirement
		(Deliverable in Report)
Speaker Resistance	8 Ohms	Nothing, its given to you
Bass Filter -3dB cut-off	320Hz ±10%	Use FRA function on
(Lowpass Filter)		Oscilloscope.
	(Cut off needs to be in the range of 288Hz – 352Hz)	(Look at settings above)
		2 Probes (Vin, Vout)
	(Shows that your Bass Filter will	
	filter at the right frequency)	A plot of Phase and Magnitude
		of the filter with a cursor or
	(Make sure to isolate the filter)	marker on the -3dB cut off point.
Mid Filter with two -3dB cut-offs	320Hz ±10% to 3200Hz ±10%	Use FRA function on
(Midpass Filter)	320H2 ±10% to 3200H2 ±10%	Oscilloscope.
(Midpass Filter)	(Lower cut off needs to be in the	(Look at settings above)
	range of 288Hz – 352Hz)	(Look at settings above)
	3321127	2 Probes (Vin, Vout)
	(Higher cut off needs to be in	
	the range of 2880Hz – 3520Hz)	A plot of Phase and Magnitude
		of the filter with a cursor on the
	(Shows that your Mid Filter will filter at the right frequency)	lower -3dB cut off point.
		A plot of Phase and Magnitude
	(Make sure to isolate the filter)	of the filter with a cursor on the
		higher -3dB cut off point.
Treble Filter with -3dB cut-off	3200Hz ±10%	Use FRA function on
(Highpass Filter)	(Cut off needs to be in the range	Oscilloscope.
(mg. pass meet)	of 2880Hz – 3520Hz)	(Look at settings above)
	(Shows that your Treble Filter will filter at the right frequency)	2 Probes (Vin, Vout)
		A plot of Phase and Magnitude
	(Make sure to isolate the filter)	of the filter with a cursor or

		marker on the -3dB cut off
		point.
Voma with all aqualizar knobs	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2 Caraanshatsi
Vamp with all equalizer knobs	Vamp < 15mVrms at 200Hz,	3 Screenshots:
turned to minimum settings.	2kHz, 10kHz	2 Buch (Vin Vout)
	(Charres that we we assumble as here	2 Probes (Vin, Vout)
	(Shows that your equalizer has	N. 414
	minimal leakage voltage on low,	Vin = 1Vpp @ 200Hz
	mid and high frequencies, when	Show that: Vamp < 15mVrms
	the volume is the lowest)	N. 414
	(NAsha suga ta tuga all luraha ta	Vin = 1Vpp @ 2000Hz
	(Make sure to turn all knobs to	Show that: Vamp < 15mVrms
	the lowest position)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
		Vin = 1Vpp @ 10000Hz
	100 1100 1100	Show that: Vamp < 15mVrms
Vamp with all equalizer knobs	Vamp = 100 mVrms ± 10% at	3 Screenshots:
turned to maximum settings.	200Hz, 2kHz, 10kHz	2 Buch () (in) (auan)
	(90Vrms < Vamp < 110Vrms)	2 Probes (Vin, Vamp)
	/Characteristics	N. 414
	(Shows that your equalizer has	Vin = 1Vpp @ 200Hz
	the correct gain low, mid and	Show that:
	high frequencies)	90Vrms < Vamp < 110Vrms
	(Make sure to turn all knobs to	Vin = 1Vpp @ 2000Hz
	the highest position)	Show that:
	l manual position,	90Vrms < Vamp < 110Vrms
		Vin = 1Vpp @ 10000Hz
		Show that:
		90Vrms < Vamp < 110Vrms
Vamp,max – Vamp,min max	15mVrms from 200Hz to 10kHz	Use FRA function on
ripple with equalizer at max		Oscilloscope.
	(Shows that your equalizer	(Look at settings above)
	frequency response is a straight	
	line)	2 Probes (Vin, Vamp)
	(Make sure to turn all knobs to	A plot of Phase and Magnitude
	the highest position)	of the equalizer with a cursor on
		the maximum magnitude.
		A plot of Phase and Magnitude
		of the equalizer with a cursor on
		the minimum magnitude.
		A handweitten aslaulatian
		A handwritten calculation
		showing that the difference in

		voltage of the maximum and minimum is less than 15mVrms.
Amplifier Output Power	Pamp > 400mW from 200Hz to 10kHz (Shows that your amplifier is amplifying correctly at all frequencies) (Make sure to turn all knobs to the highest position)	Use FRA function on Oscilloscope. (Look at settings above) 2 Probes (Vin, Vspeaker) A plot of Phase and Magnitude of the whole design with a cursor on the minimum magnitude.
		A picture of the amount of current the amp is drawing from the Power Supply when your design is playing music. A handwritten calculation showing that at the minimum magnitude the power is above 400mW