

Experiment No. 8 : Sensitivity Characteristics

Object:- Plot the Sensitivity Characteristics of Superhetrodyne Radio Receiver.

Apparatus Used:-

1. Sciencetech AM Receiver Trainer Kit Model ST2202
2. Sciencetech 2 MHz AM/FM/Function Generator Model ST4062
3. Pacific AF Signal Generator Model PG18
4. 20 MHz CRO Model

Procedure:-

1. Obtain an AM signal from the Function Output socket of Sciencetech 2 MHz AM/FM/Function Generator Model ST4062 by selecting its function switch to “Sine” & its Modulation switch to “AM Standard” positions and feed an AF Sinusoidal signal from another signal generator to its “Modulation Input” socket.
2. View the AM signal obtained as above, on the CRO screen and adjust the relevant controls to keep the AM Level within 800mV range, audio frequency in 400 Hz to 2 KHz, carrier frequency in the Medium wave broadcast range (700 KHz, 800 KHz, 900 KHz, & so on) and set its modulation index to 30 %.
3. Now turn ON the AM receiver kit ST2202 and make the following setting on it:-
 - (a) Set the detector switch in diode mode.
 - (b) Set the AGC switch to “out”
 - (c) Set the volume control fully clockwise
4. Apply the AM signal as adjusted above in step 2, to the Rx input socket of the AM receiver ST2202.
5. Tune the receiver to the carrier frequency of the input AM signal and adjust “Gain” potentiometer provided in the RF section of **ST2202** so as to get unclipped demodulated signal at detector’s output. (The maximum level of the unclipped demodulated signal at detector’s output will ensure the correct tuning of the receiver.)
6. Record input carrier frequency, and the voltage level at receiver’s final output stage i.e., audio amplifier’s output on CRO.
7. Now, keep on changing the input carrier frequency in steps of 100 KHz (in the medium-wave broadcast range) and also tuning the receiver to that frequency and repeat the above step at 6.

Tabulate the readings as under:-

S. No.	Carrier Frequency (or, tuned freq.)	Rx Output voltage Level (at tp ₃₈ or tp ₃₉)
1	800 KHz	
2	900 KHz	
8	1500 KHz	

Plot the graph between **Rx Output voltage Level & tuned frequency**. Also record the specifications of the AM signal generated by using the two signal gerators.(i.e., A_m , m , f_m & f_c)