range profile is generated for the different values of the frequency points (201 to 4001).

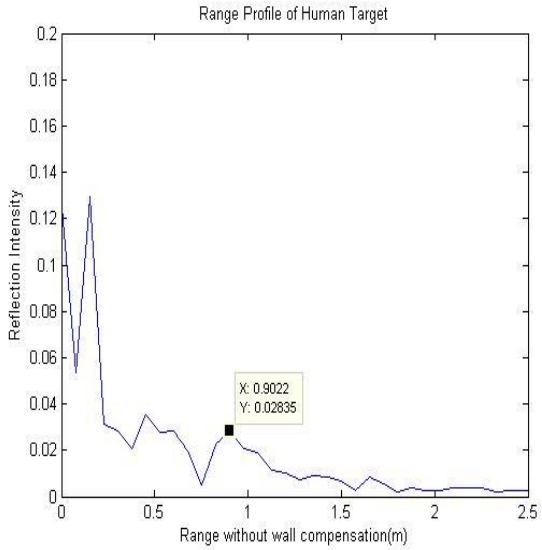
RESULTS

As mentioned in the section4 that A scan method has been applied for the range profile generation of the target keeping the frequency point varied as per the below tables .we have considered different cases for keeping the target at different distances and accordingly the range profile has been calculated and presented graphically. In all cases antenna to wall distance kept is 50cms constant.

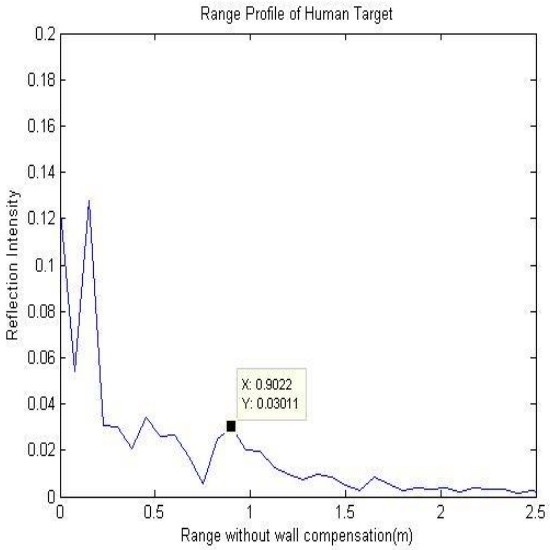
Case a: Antenna to first face of wall distance = 50cms, Wall thickness = 22cms, Wall second face to target=20cms, Actual distance of target from antenna=102cms.

Table 2: Target placed at 20cms from the second face of the wall.

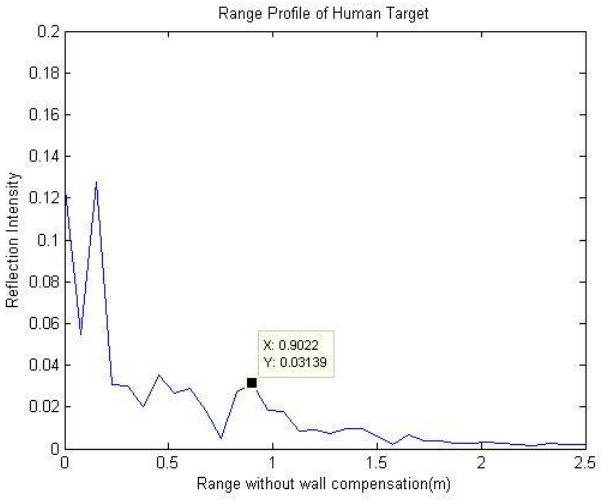
Wall second interface to target in cms	Frequency points	Range of the target in meters
20	201	0.9022
20	801	0.9022
20	1001	0.9022
20	2001	0.9022
20	4001	0.9022



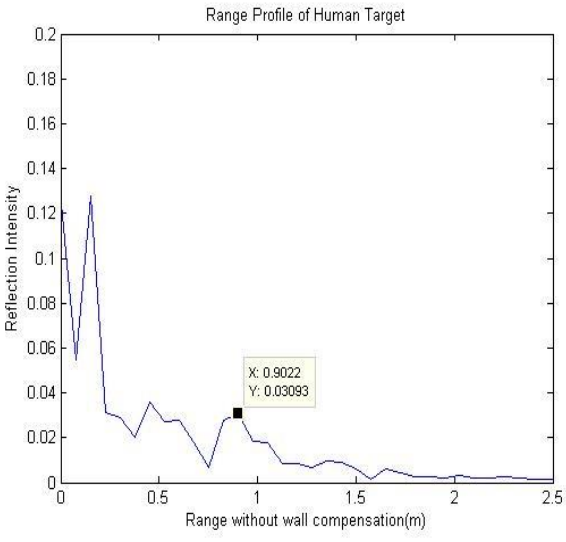
(a) At Frequency points 201



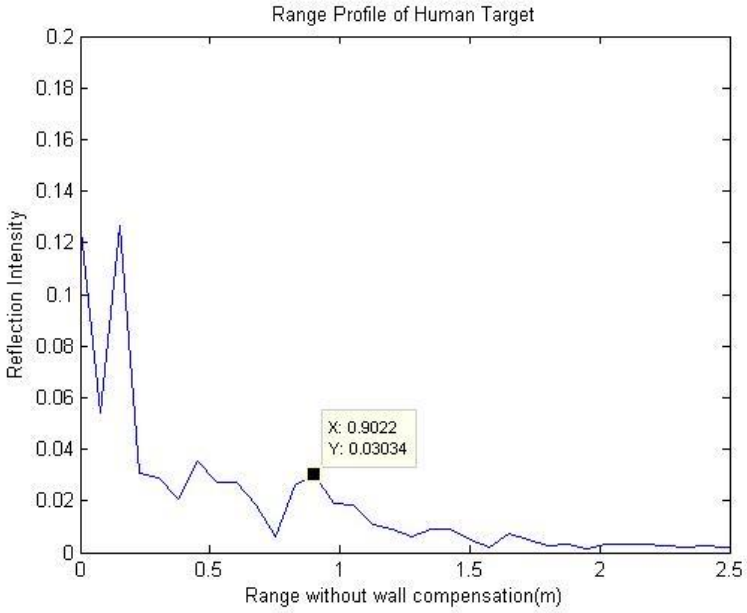
(b) At Frequency points 801



(c) At Frequency points 1001



(d) At Frequency Point 2001



(e) At frequency points 4001

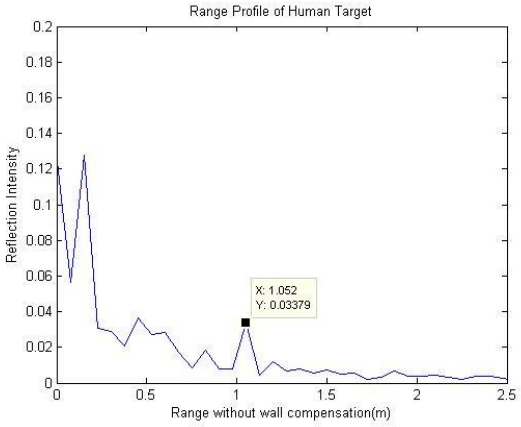
Figure 3, (a),(b),(c),(d)&(e) A scan range profile generation

It is clear from the fig. 3(a to e) that the target located at same distance i.e. 0.902metrs

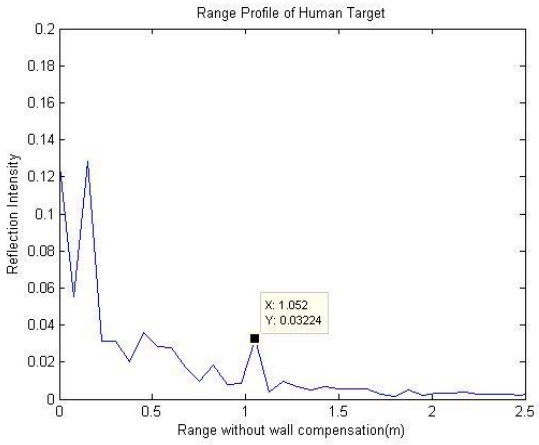
Case b: Antenna to first face of wall distance = 50cms, Wall thickness = 22cms, Wall second face to target=40cms, Actual distance of target from antenna=112cms

Table 3: Target placed at 40cms from the second face of the wall.

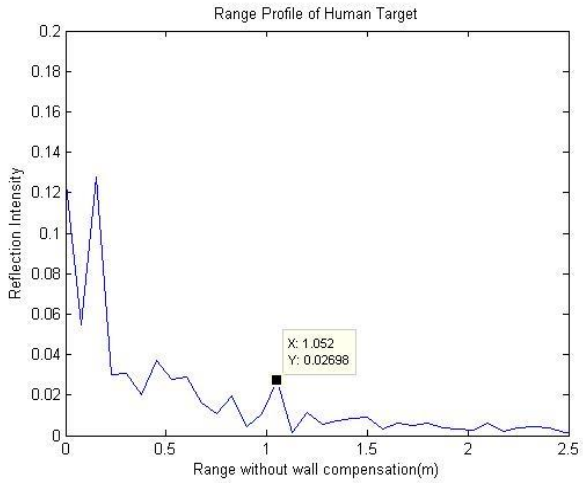
Wall second interface to Target in cms	Frequency points	Range of the target in meters
40	201	1.052
40	801	1.052
40	1001	1.052
40	2001	1.052
40	4001	1.052



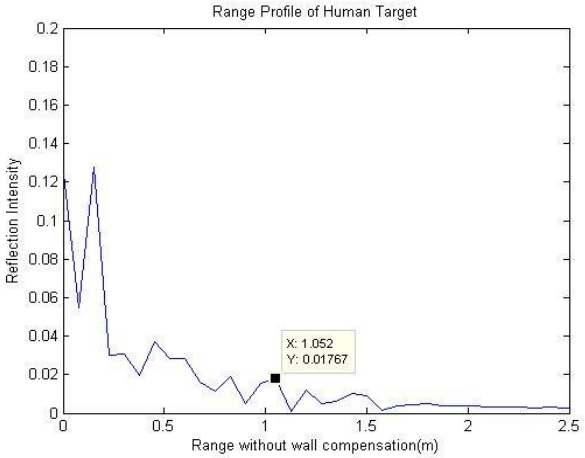
(a), at Frequency points 201



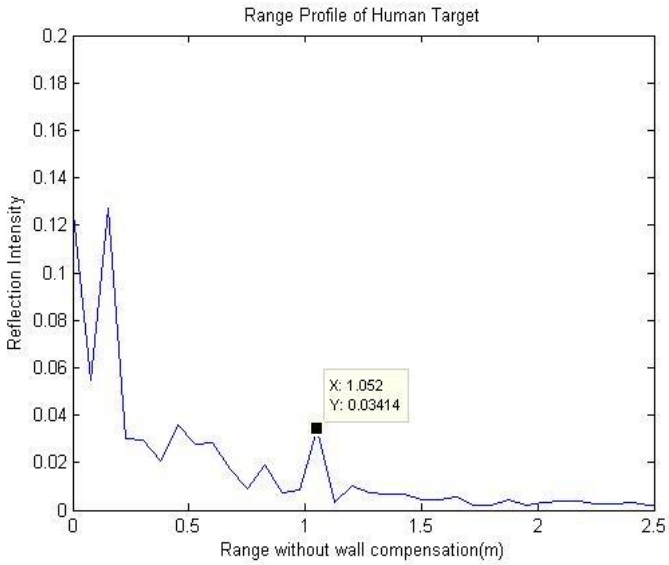
(b), at frequency points 801



(c), At Frequency points 1001



(d), At Frequency points 2001



(e), at frequency points 4001

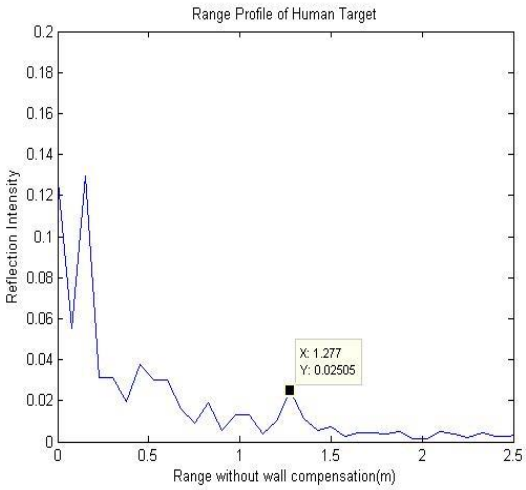
Figure 4, (a), (b), (c), (d) & (e) A scan range profile generation

It is clear from the fig. 4(a to e) that the target located at same distance i.e.1.052meters

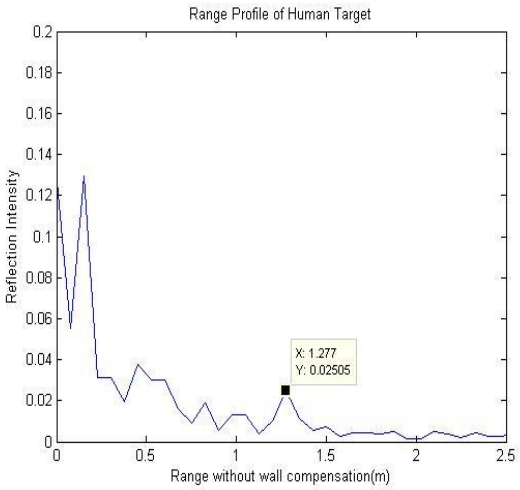
Case c: Antenna to first face of wall distance = 50cms, Wall thickness = 22cms, Wall second face to target=40cms, Actual distance of target from antenna=130cms

Table 4: Target placed at 60cms from the second face of the wall.

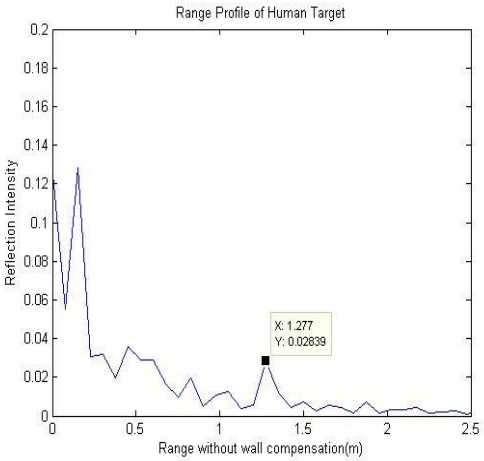
Wall second interface to Target in cms	Frequency points	Range of the target in meters
60	401	1.277
60	801	1.277
60	1001	1.277
60	2001	1.277
60	4001	1.277



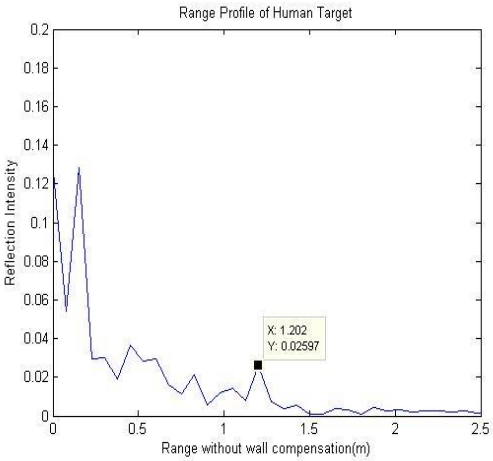
(a) at Frequency points 201



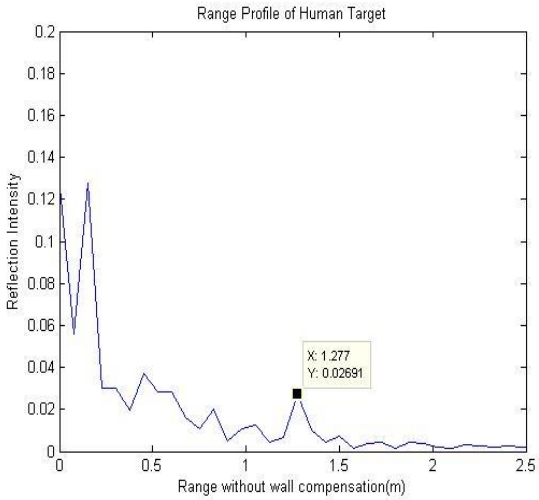
(b), at Frequency Points 801



(c), at frequency Points 1001



(d), at frequency points 2001



(e), at frequency points 4001

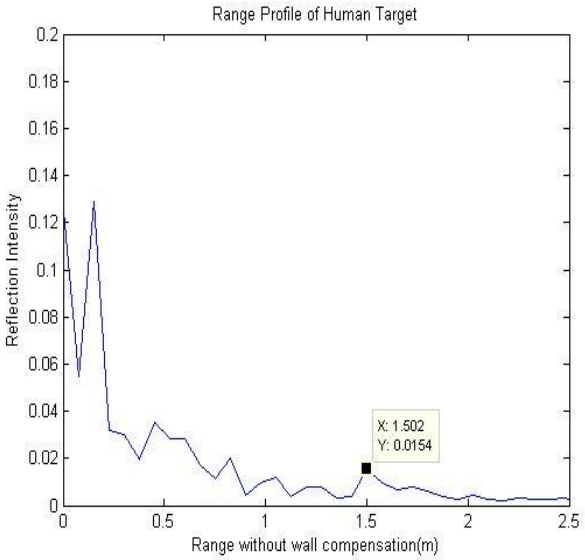
Figure 5, (a), (b), (c), (d) & (e) A scan range profile generation

It is clear from the fig.5(a to e) that the target located at same distance i.e.1.277metrs

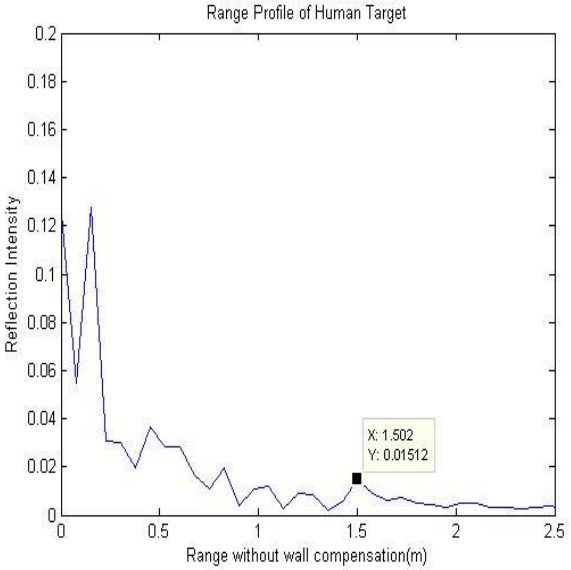
Case d: Antenna to first face of wall distance = 50cms, Wall thickness = 22cms,Wall second face to target=80cms ,Actual distance of target from antenna=160cms

Table 5: Target placed at 80cms from the second face of the wall

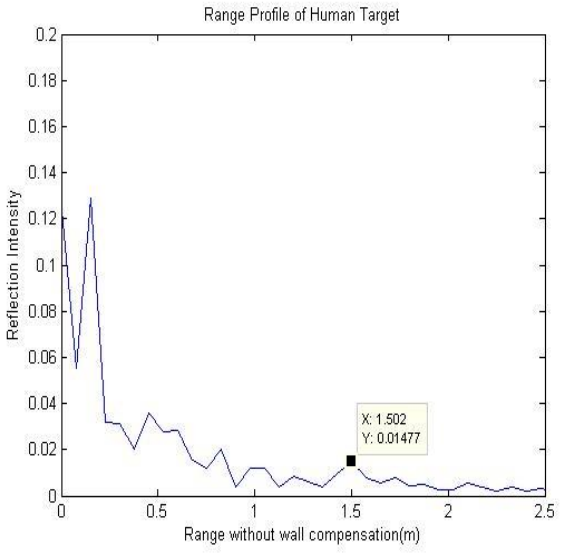
Wall second interface to Target	Frequency points	Range of the target
80	401	1.502
80	801	1.502
80	1001	1.502
80	2001	1.502
80	4001	1.502



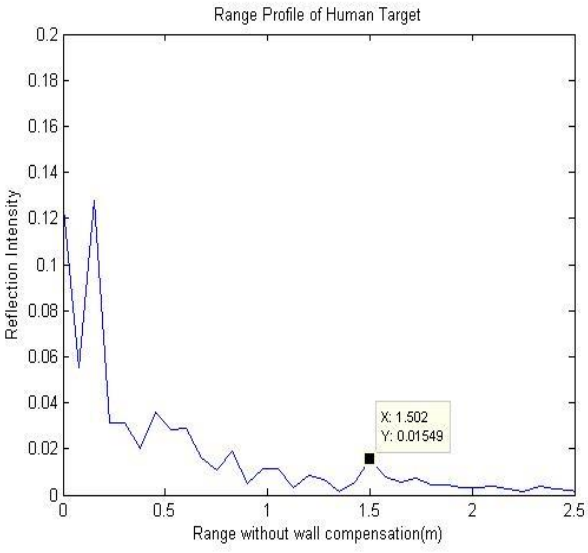
(a) at frequency 401



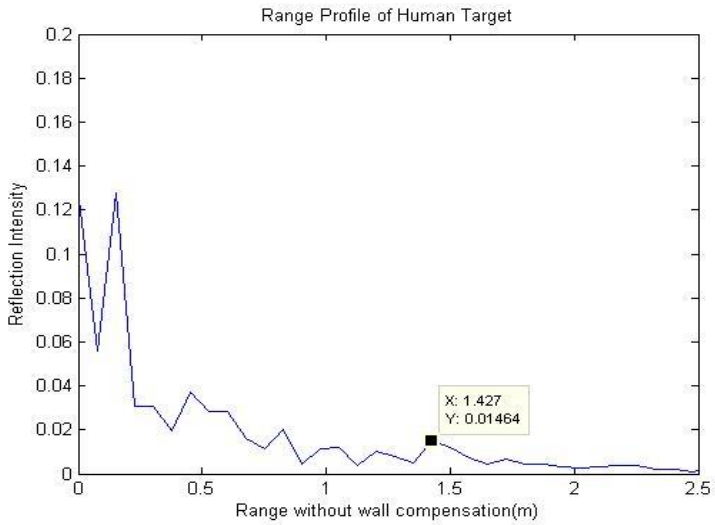
(b) at frequency 801



(c),at frequency point 1001



(d) at frequency point 2001



(e) at frequency point 4001

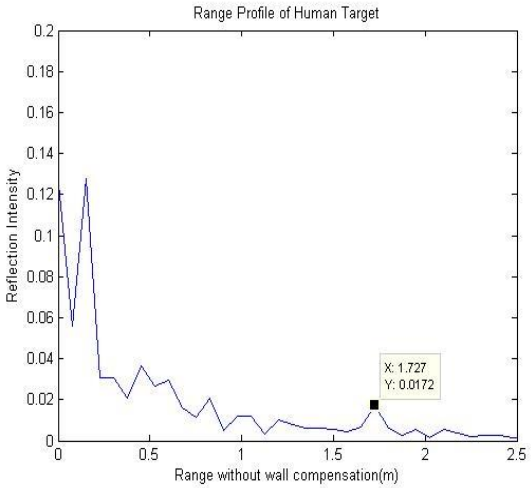
Figure 6, (a), (b), (c), (d) & (e) A scan range profile generation

It is clear from the fig.6(a to e) that the target located at same distance i.e. approximately 1.502meters

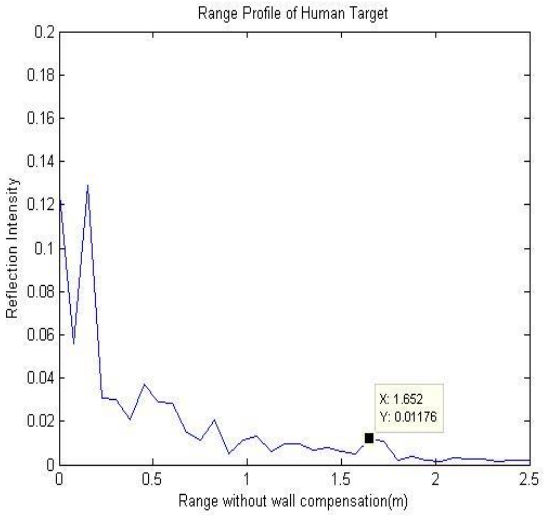
Case e: Antenna to first face of wall distance = 50cms, Wall thickness = 22cms, Wall second face to target=80cms, Actual distance of target from antenna=170cms

Table 6: Target placed at 100cms from the second face of the wall

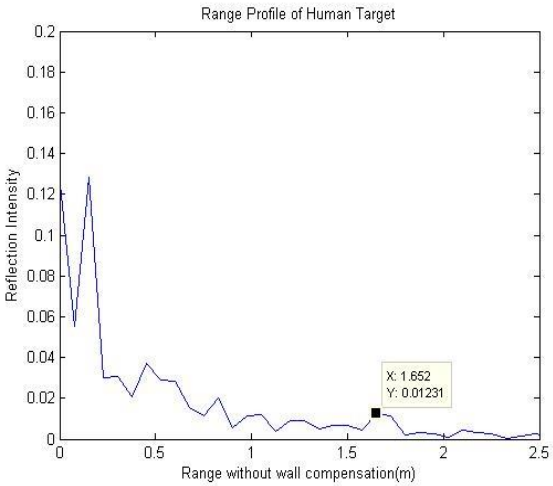
Wall second interface to Target	Frequency points	Range of the target
100	401	1.652
100	801	1.652
100	1001	1.652
100	2001	1.652
100	4001	1.652



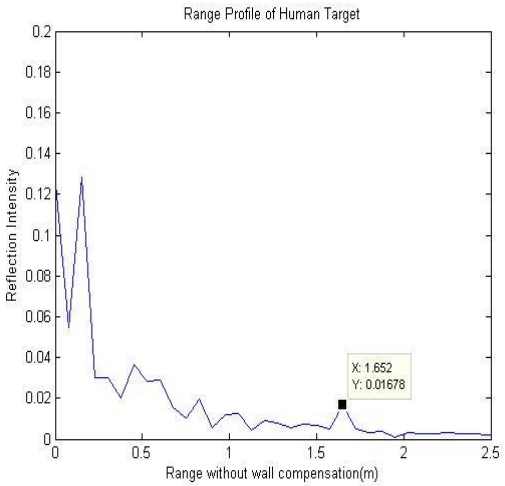
(a) at frequency points 401



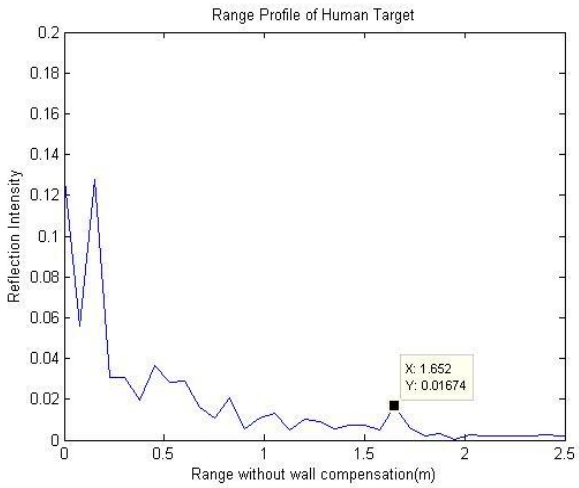
(b) at Frequency points 801



(c) at frequency points 1001



(d) at frequency points 2001



(e) at frequency points 4001

Figure 7, (a), (b), (c), (d) & (e) A scan range profile generation

It is clear from the fig.7(a to e) that the target located at same distance i.e. approximately 1.652meters

OBSERVATION

It is observed from all the graphical results as mentioned in section 5 that the range of the object marked in x-coordinate, remains unaltered despite of the change in the frequency points as mentioned in the tables (2 to 7). It is also to be noted that the exact target range cannot be generated due to the signal path loss as medium changes i.e. air to wall , within wall and wall to air in both the directions (antenna to target and vice versa)

CONCLUSION AND FUTURE WORK

This section concludes the entire work done for sensitivity analysis of UWB radar system wherein the operating parameter of the UWB radar like frequency point has been varied from 201 to 4001 by keeping the target at different standoff distances and accordingly the range of the target has been generated for each standoff distance by applying A scan method. It has been concluded from the experimental results that the change in frequency points do not affect the range of the target estimation. Though the wall parameters like wall thickness and dielectric constant [7] [11] play an important role for collecting the true information about the target as wrong estimation of these parameters leads to the dislocation of the target. However, in the present work, analysis has been made considering the operating parameter like frequency point of the radar system for target range generation. The present work sets a bench mark for the researchers to do analysis considering the effect of frequency points on the image of the target in TWI system.

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