

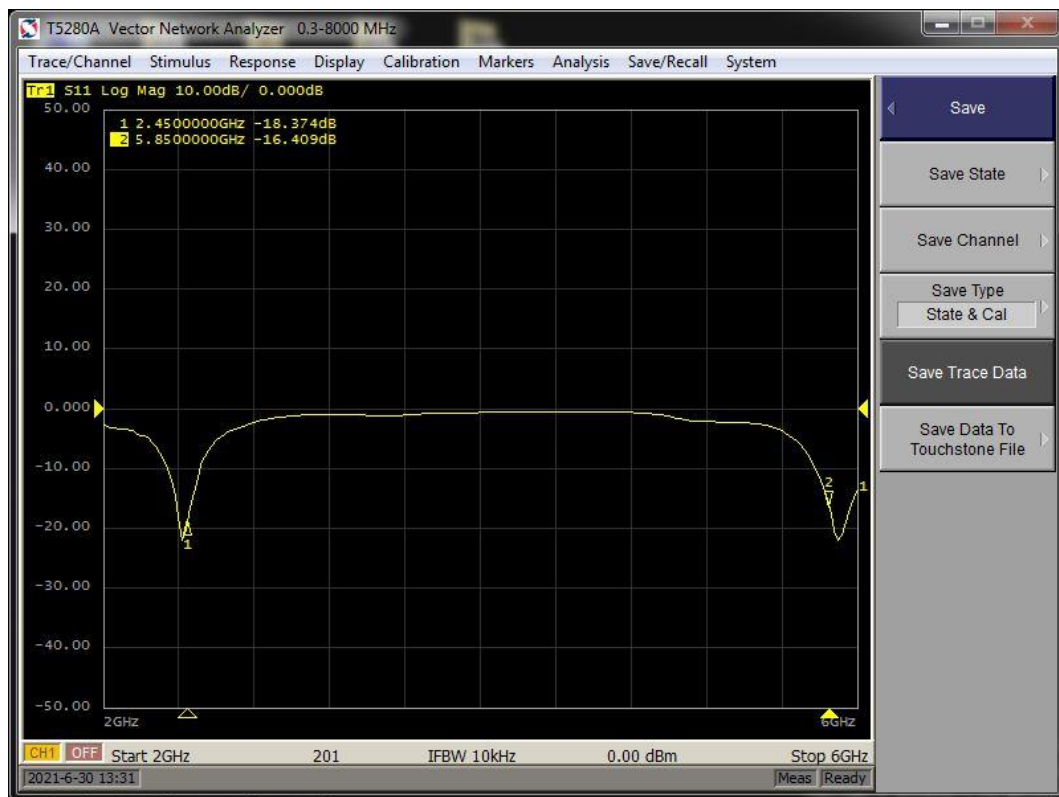
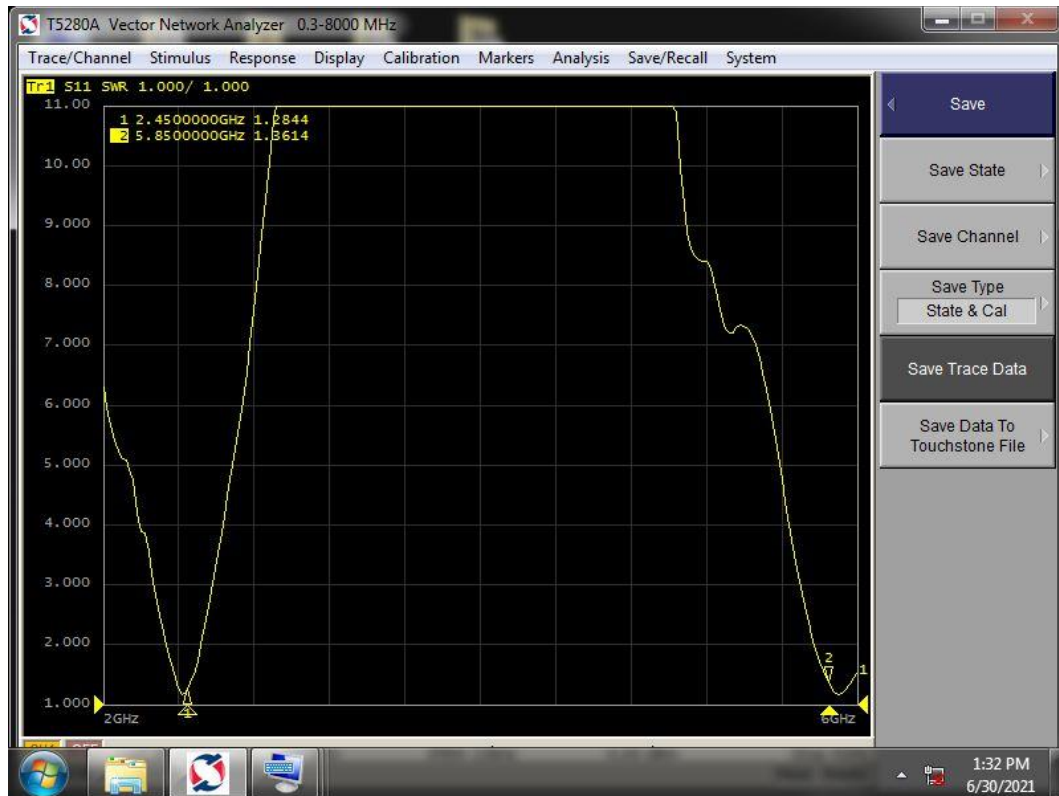
LAMPIRAN A

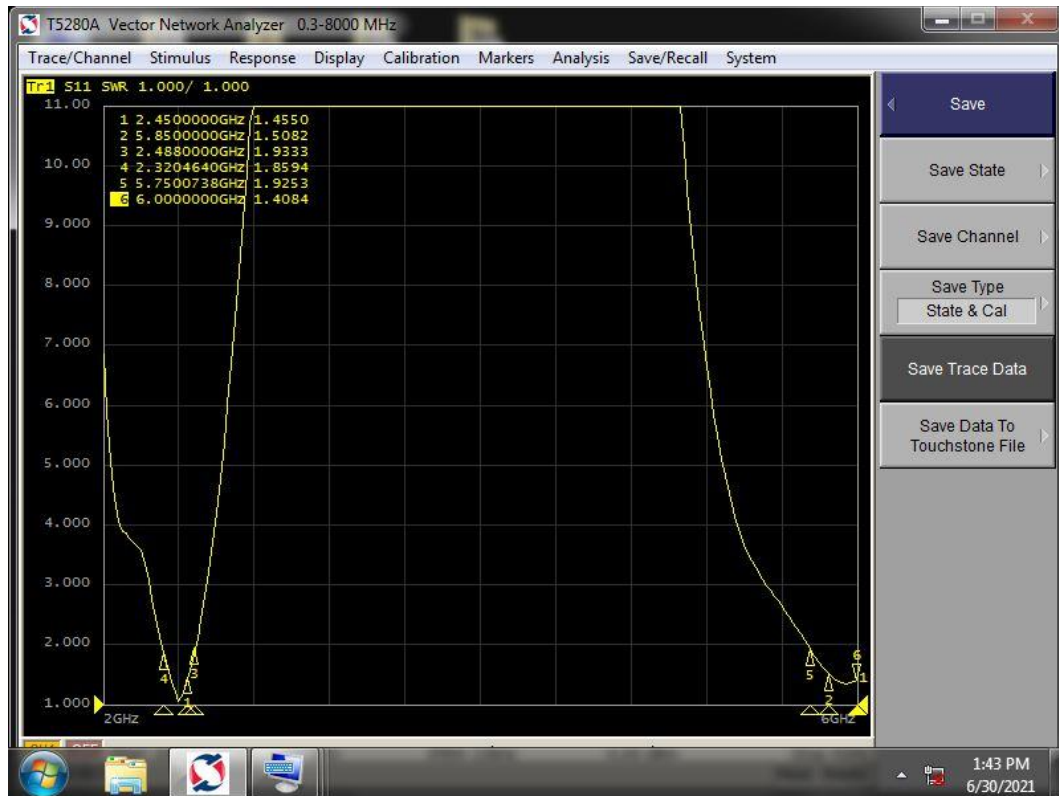
DOKUMENTASI HASIL PENGUKURAN

VSWR, BANDWIDTH DAN RETURN LOSS

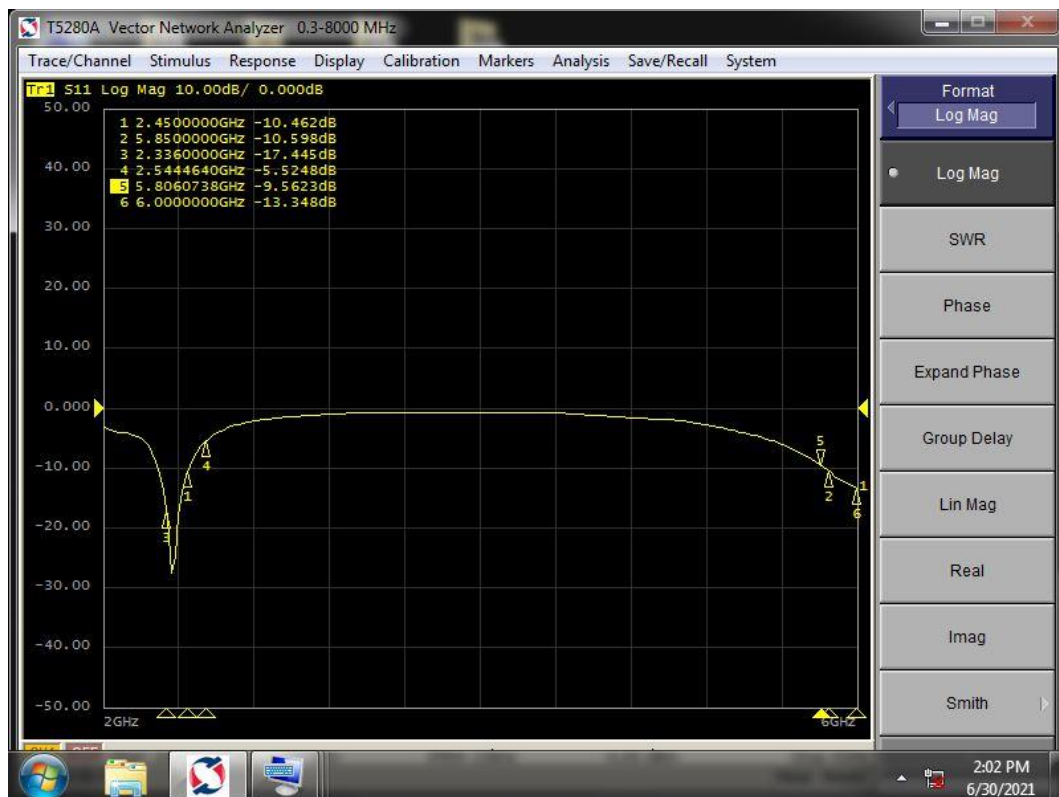
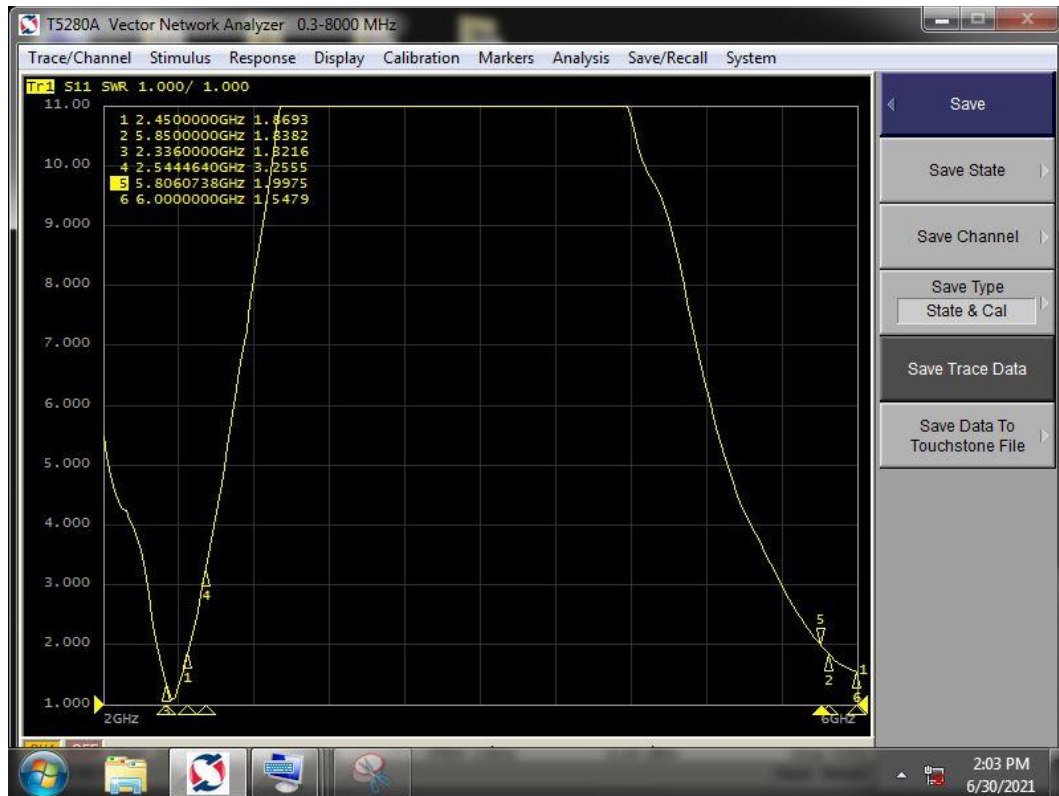
KONDISI BIASA DAN ON BODY SERTA PADA SAAT UJI FLEKSIBILITAS

1. Kondisi Biasa

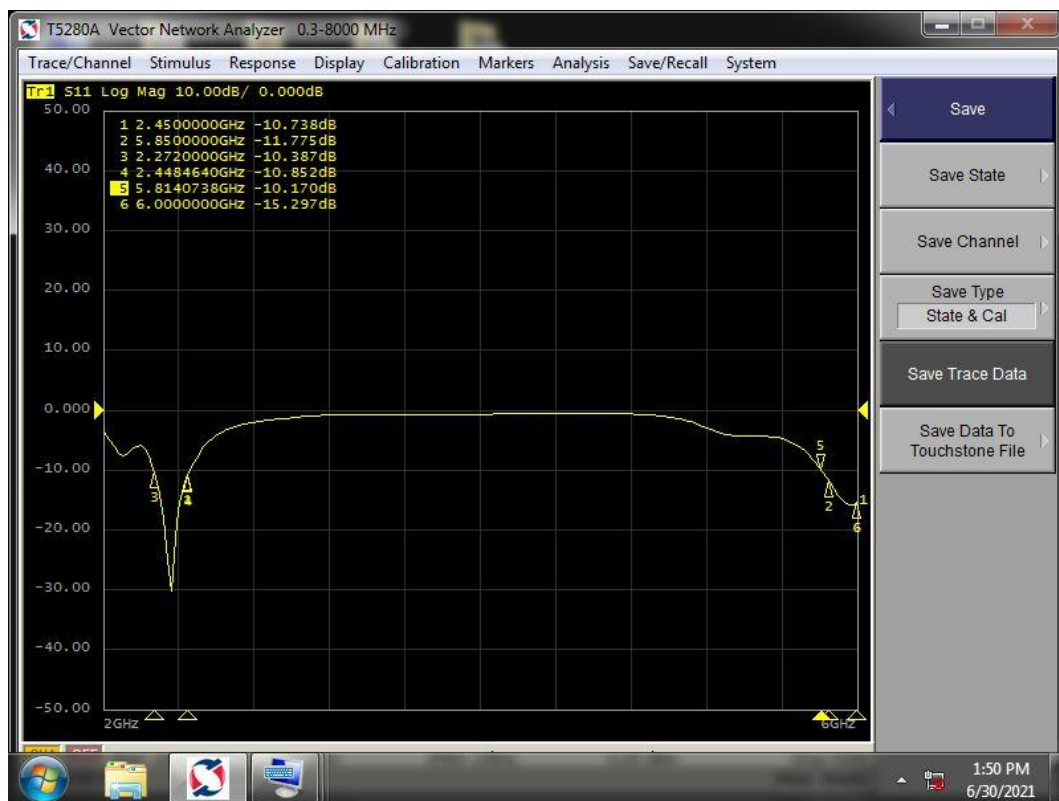


2. Kondisi *On-Body*

3. Uji Fleksibilitas Diameter 7 cm



4. Uji Fleksibilitas Diameter 8 cm



LAMPIRAN B
DOKUMENTASI HASIL PENGUKURAN
GAIN DAN POLA RADIASI
KONDISI BIASA DAN ON BODY
SERTA PADA SAAT UJI FLEKSIBILITAS

1. Kondisi Biasa

| | | | | |
|--|----------|--------------|----------|--------------|
| Power Tx (dBm) | 0 | | | |
| D (m) | 0,065 | | | |
| Jarak Pengukur | 0,5 | | | |
| Frekuensi (GHz) | 2,45 | | 5,85 | |
| Lamda (m) | 0,122 | | 0,051 | |
| Medan Jauh (m) | 0,069 | | 0,165 | |
| Lfs (dB) | 34,21 | | 41,77 | |
| Daya Terima 2 Antena Under Test | | | | |
| Sampel | 2,45 GHz | | 5,85 GHz | |
| | -dBm | Numerik | -dBm | Numerik |
| 1 | 27,07 | 0,0019633603 | 35,28 | 0,0002964831 |
| 2 | 27,33 | 0,0018492686 | 35,11 | 0,0003083188 |
| 3 | 27,09 | 0,0019543395 | 35,39 | 0,0002890680 |
| 4 | 27,12 | 0,0019408859 | 35,32 | 0,0002939003 |
| 5 | 27,01 | 0,0019906733 | 35,92 | 0,0002558586 |
| 6 | 27,13 | 0,0019364220 | 35,22 | 0,0003006076 |
| 7 | 27,18 | 0,0019142559 | 35,93 | 0,0002552114 |
| 8 | 27,03 | 0,0019815270 | 35,29 | 0,0002958012 |
| 9 | 27,19 | 0,0019098533 | 35,87 | 0,0002588213 |
| 10 | 27,09 | 0,0019543395 | 35,28 | 0,0002964831 |
| 11 | 27,11 | 0,0019453601 | 35,28 | 0,0002964149 |
| 12 | 27,02 | 0,0019860949 | 35,91 | 0,0002564484 |
| 13 | 27,01 | 0,0019906733 | 35,83 | 0,0002612161 |
| 14 | 27,21 | 0,0019010783 | 35,27 | 0,0002971666 |
| 15 | 27,27 | 0,0018749945 | 35,18 | 0,0003033891 |
| 16 | 27,18 | 0,0019142559 | 35,28 | 0,0002964831 |
| 17 | 27,01 | 0,0019906733 | 35,28 | 0,0002964831 |
| 18 | 27,13 | 0,0019364220 | 35,80 | 0,0002630268 |
| 19 | 27,12 | 0,0019408859 | 35,82 | 0,0002617580 |
| 20 | 27,07 | 0,0019633603 | 35,99 | 0,0002517097 |
| Daya Rata2 (-dB) | -27,12 | 0,0019419362 | -35,50 | 0,0002817325 |
| Variasi Medan (dB) | 0,32 | 1,08 | 0,88 | 1,22 |
| Daya Max (-dBm) | -26,80 | 0,0020904268 | -34,62 | 0,0003450936 |
| Daya Min (-dBm) | -27,44 | 0,0018039934 | -36,38 | 0,0002300048 |
| AUT | | | | |
| Gain rata2 (dBi) | 6,01 | | 5,45 | |
| Gain min (dBi) | 5,85 | | 5,01 | |
| Gain max (dBi) | 6,17 | | 5,89 | |

2. Kondisi On Body

| | | | |
|------------------|-------|-------|--|
| Power Tx (dBm) | 0 | | |
| D (m) | 0,065 | | |
| Jarak Pengukuran | 0,5 | | |
| Frekuensi (GHz) | 2,45 | 5,85 | |
| Lambda (m) | 0,122 | 0,051 | |
| Medan Jauh (m) | 0,069 | 0,165 | |
| Lfs (dB) | 34,21 | 41,77 | |

| Daya Terima 2 Antena Under Test | | | | |
|---------------------------------|----------|--------------|----------|--------------|
| Sampel | 2,45 GHz | | 5,85 GHz | |
| | -dBm | Numerik | -dBm | Numerik |
| 1 | 28,01 | 0,0015812480 | 36,18 | 0,0002409905 |
| 2 | 28,19 | 0,0015170504 | 36,05 | 0,0002483133 |
| 3 | 28,34 | 0,0014655478 | 36,14 | 0,0002432204 |
| 4 | 28,23 | 0,0015031420 | 36,01 | 0,0002506109 |
| 5 | 28,44 | 0,0014321879 | 36,15 | 0,0002426610 |
| 6 | 28,04 | 0,0015703628 | 36,34 | 0,0002322737 |
| 7 | 28,42 | 0,0014387986 | 36,18 | 0,0002409905 |
| 8 | 28,23 | 0,0015031420 | 36,41 | 0,0002285599 |
| 9 | 28,09 | 0,0015523870 | 36,19 | 0,0002404363 |
| 10 | 28,32 | 0,0014723125 | 36,22 | 0,0002387811 |
| 11 | 28,42 | 0,0014387986 | 36,12 | 0,0002443431 |
| 12 | 28,22 | 0,0015066071 | 36,13 | 0,0002437811 |
| 13 | 28,12 | 0,0015417005 | 36,13 | 0,0002437811 |
| 14 | 28,23 | 0,0015031420 | 36,11 | 0,0002449063 |
| 15 | 28,31 | 0,0014757065 | 36,24 | 0,0002376840 |
| 16 | 28,19 | 0,0015170504 | 36,12 | 0,0002443431 |
| 17 | 28,32 | 0,0014723125 | 36,43 | 0,0002275097 |
| 18 | 28,41 | 0,0014421154 | 36,22 | 0,0002387811 |
| 19 | 28,07 | 0,0015595525 | 36,21 | 0,0002393316 |
| 20 | 28,29 | 0,0014825181 | 36,18 | 0,0002409905 |
| Daya Rata2 (-dBm) | -28,24 | 0,0014987841 | -36,19 | 0,0002406145 |
| Variasi Medar | 0,43 | 1,10 | 0,42 | 1,10 |
| Daya Max (-dBm) | -27,81 | 0,0016547755 | -35,77 | 0,0002650463 |
| Daya Min (-dBm) | -28,67 | 0,0013574976 | -36,61 | 0,0002184348 |
| AUT | | | | |
| Gain rata2 (dB) | 5,45 | | 5,11 | |
| Gain min (dB) | 5,23 | | 4,90 | |
| Gain max (dB) | 5,66 | | 5,32 | |

3. Kondisi Bending 7 cm

| | | | |
|------------------|-------|-------|--|
| Power Tx (dBm) | 0 | | |
| D (m) | 0,065 | | |
| Jarak Pengukuran | 0,5 | | |
| Frekuensi (GHz) | 2,45 | 5,85 | |
| Lambda (m) | 0,122 | 0,051 | |
| Medan Jauh (m) | 0,069 | 0,165 | |
| Lfs (dB) | 34,21 | 41,77 | |

| Daya Terima 2 Antena Under Test | | | | |
|---------------------------------|----------|--------------|----------|--------------|
| Sampel | 2,45 GHz | | 5,85 GHz | |
| | -dBm | Numerik | -dBm | Numerik |
| 1 | 30,42 | 0,0009078205 | 38,92 | 0,0001282331 |
| 2 | 30,42 | 0,0009078205 | 38,93 | 0,0001279381 |
| 3 | 30,48 | 0,0008953648 | 38,94 | 0,0001276439 |
| 4 | 30,84 | 0,0008241381 | 38,92 | 0,0001282331 |
| 5 | 30,48 | 0,0008953648 | 38,74 | 0,0001336596 |
| 6 | 30,65 | 0,0008609938 | 38,42 | 0,0001438799 |
| 7 | 30,63 | 0,0008649679 | 38,74 | 0,0001336596 |
| 8 | 30,65 | 0,0008609938 | 38,47 | 0,0001422329 |
| 9 | 30,52 | 0,0008871560 | 38,42 | 0,0001438799 |
| 10 | 30,87 | 0,0008184648 | 38,72 | 0,0001342765 |
| 11 | 30,98 | 0,0007979947 | 38,22 | 0,0001506607 |
| 12 | 30,89 | 0,0008147043 | 38,12 | 0,0001541700 |
| 13 | 30,88 | 0,0008165824 | 38,42 | 0,0001438799 |
| 14 | 30,96 | 0,0008016781 | 38,56 | 0,0001393157 |
| 15 | 30,98 | 0,0007979947 | 38,67 | 0,0001358313 |
| 16 | 30,50 | 0,0008912509 | 38,95 | 0,0001273503 |
| 17 | 30,29 | 0,0009354057 | 38,58 | 0,0001386756 |
| 18 | 30,11 | 0,0009749896 | 38,65 | 0,0001364583 |
| 19 | 30,49 | 0,0008933055 | 38,65 | 0,0001364583 |
| 20 | 30,88 | 0,0008165824 | 38,66 | 0,0001361445 |
| Daya Rata2 (-dBm) | -30,64 | 0,0008631787 | -38,63 | 0,0001371290 |
| Variasi Medan | 0,87 | 1,22 | 0,83 | 1,21 |
| Daya Max (-dBm) | -29,77 | 0,0010546314 | -37,80 | 0,0001660082 |
| Daya Min (-dBm) | -31,51 | 0,0007064813 | -39,46 | 0,0001132738 |
| AUT | | | | |
| Gain rata2 (dBi) | 4,25 | | 3,89 | |
| Gain min (dBi) | 3,81 | | 3,47 | |
| Gain max (dBi) | 4,68 | | 4,30 | |

4. Kondisi Bending 8 cm

| | | | |
|-----------------|-------|-------|--|
| Power Tx (dBm) | 0 | | |
| D (m) | 0,065 | | |
| Jarak Pengukur | 0,5 | | |
| Frekuensi (GHz) | 2,45 | 5,85 | |
| Lamda (m) | 0,122 | 0,051 | |
| Medan Jauh (m) | 0,069 | 0,165 | |
| Lfs (dB) | 34,21 | 41,77 | |

| Daya Terima 2 Antena Under Test | | | | |
|---------------------------------|----------|--------------|----------|--------------|
| Sampel | 2,45 GHz | | 5,85 GHz | |
| | -dBm | Numerik | -dBm | Numerik |
| 1 | 28,44 | 0,0014321879 | 36,34 | 0,0002322737 |
| 2 | 28,43 | 0,0014354894 | 36,43 | 0,0002275097 |
| 3 | 28,09 | 0,0015523870 | 36,21 | 0,0002393316 |
| 4 | 28,37 | 0,0014554591 | 36,42 | 0,0002280342 |
| 5 | 28,33 | 0,0014689263 | 36,42 | 0,0002280342 |
| 6 | 28,32 | 0,0014723125 | 36,92 | 0,0002032357 |
| 7 | 28,30 | 0,0014791084 | 36,42 | 0,0002280342 |
| 8 | 28,67 | 0,0013583134 | 36,42 | 0,0002280342 |
| 9 | 28,93 | 0,0012793813 | 36,49 | 0,0002243882 |
| 10 | 28,32 | 0,0014723125 | 36,42 | 0,0002280342 |
| 11 | 28,22 | 0,0015066071 | 36,43 | 0,0002275097 |
| 12 | 28,43 | 0,0014354894 | 36,44 | 0,0002269865 |
| 13 | 28,46 | 0,0014256076 | 36,41 | 0,0002285599 |
| 14 | 28,42 | 0,0014387986 | 36,88 | 0,0002051162 |
| 15 | 28,43 | 0,0014354894 | 36,87 | 0,0002055891 |
| 16 | 28,76 | 0,0013304544 | 36,76 | 0,0002108628 |
| 17 | 28,53 | 0,0014028137 | 36,42 | 0,0002280342 |
| 18 | 28,66 | 0,0013614447 | 36,88 | 0,0002051162 |
| 19 | 28,64 | 0,0013677288 | 36,74 | 0,0002118361 |
| 20 | 28,42 | 0,0014387986 | 36,23 | 0,0002382319 |
| Daya Rata2 (-dBm) | -28,45 | 0,0014274555 | -36,52 | 0,0002227376 |
| Variasi Medan | 0,84 | 1,21 | 0,71 | 1,18 |
| Daya Max (-dBm) | -27,61 | 0,0017320586 | -35,81 | 0,0002622972 |
| Daya Min (-dBm) | -29,29 | 0,0011764205 | -37,23 | 0,0001891444 |
| AUT | | | | |
| Gain rata2 (dBi) | 5,34 | | 4,94 | |
| Gain min (dBi) | 4,92 | | 4,59 | |
| Gain max (dBi) | 5,76 | | 5,30 | |

POLA RADIASI PADA KONDISI BIASA 2,45 GHz dan 5,85 GHz

| Sudut | | Simulasi | Normalisasi Simulasi | Pengukuran | Normalisasi Pengukuran | Numerik |
|-------|------|----------|----------------------|------------|------------------------|----------|
| 0 | 0 | 5,693976 | 0 | -27,33 | -0,01 | 0,9977 |
| 10 | 10 | 5,495477 | -0,1984985 | -28,83 | -1,51 | 0,706318 |
| 20 | 20 | 4,908504 | -0,785471429 | -28,38 | -1,06 | 0,78343 |
| 30 | 30 | 3,958653 | -1,735323049 | -27,34 | -0,02 | 0,995405 |
| 40 | 40 | 2,688078 | -3,005897163 | -28,39 | -1,07 | 0,781628 |
| 50 | 50 | 1,153756 | -4,540219656 | -29,38 | -2,06 | 0,6223 |
| 60 | 60 | -0,57668 | -6,270659967 | -29,42 | -2,1 | 0,616595 |
| 70 | 70 | -2,43435 | -8,128323827 | -32,33 | -5,01 | 0,3155 |
| 80 | 80 | -4,36491 | -10,058888 | -32,32 | -5 | 0,316228 |
| 90 | 90 | -6,34852 | -12,04249427 | -36,32 | -9 | 0,125893 |
| 100 | 100 | -8,41035 | -14,10432617 | -35,42 | -8,1 | 0,154882 |
| 110 | 110 | -10,5757 | -16,26966448 | -37,42 | -10,1 | 0,097724 |
| 120 | 120 | -12,6212 | -18,31516494 | -38,22 | -10,9 | 0,081283 |
| 130 | 130 | -13,5259 | -19,21984937 | -40,2 | -12,88 | 0,051523 |
| 140 | 140 | -12,3769 | -18,07088388 | -47,92 | -20,6 | 0,00871 |
| 150 | 150 | -10,3244 | -16,01836499 | -42,38 | -15,06 | 0,031189 |
| 160 | 160 | -8,56825 | -14,26222358 | -40,58 | -13,26 | 0,047206 |
| 170 | 170 | -7,47372 | -13,16769184 | -47,24 | -19,92 | 0,010186 |
| 180 | 180 | -7,10657 | -12,80054135 | -45,32 | -18 | 0,015849 |
| 190 | -170 | -7,47372 | -13,16769174 | -43,93 | -16,61 | 0,021827 |
| 200 | -160 | -8,56825 | -14,2622234 | -43,22 | -15,9 | 0,025704 |
| 210 | -150 | -10,3244 | -16,01836472 | -43,98 | -16,66 | 0,021577 |
| 220 | -140 | -12,3769 | -18,0708835 | -42,83 | -15,51 | 0,028119 |
| 230 | -130 | -13,5259 | -19,2198489 | -47,24 | -19,92 | 0,010186 |
| 240 | -120 | -12,6212 | -18,31516456 | -47,92 | -20,6 | 0,00871 |
| 250 | -110 | -10,5757 | -16,26966426 | -42,38 | -15,06 | 0,031189 |
| 260 | -100 | -8,41035 | -14,10432604 | -36,23 | -8,91 | 0,128529 |
| 270 | -90 | -6,34852 | -12,04249418 | -33,24 | -5,92 | 0,255859 |
| 280 | -80 | -4,36491 | -10,0588879 | -32,33 | -5,01 | 0,3155 |
| 290 | -70 | -2,43435 | -8,128323706 | -32,32 | -5 | 0,316228 |
| 300 | -60 | -0,57668 | -6,270659825 | -28,39 | -1,07 | 0,781628 |
| 310 | -50 | 1,153756 | -4,540219506 | -27,32 | 0 | 1 |
| 320 | -40 | 2,688079 | -3,005897024 | -27,42 | -0,1 | 0,977237 |
| 330 | -30 | 3,958653 | -1,735322934 | -28,39 | -1,07 | 0,781628 |
| 340 | -20 | 4,908504 | -0,785471349 | -29,38 | -2,06 | 0,6223 |
| 350 | -10 | 5,495477 | -0,198498459 | -29,41 | -2,09 | 0,618016 |

| Sudut | | Simulasi | Normalisasi Simulasi | Pengukuran | Normalisasi Pengukuran | Numerik |
|-------|------|--------------|----------------------|------------|------------------------|-------------|
| 0 | 0 | 0,109924548 | -0,73599309 | -35,23 | -0,02 | 0,995405417 |
| 10 | 10 | -0,414836852 | -1,26075449 | -35,21 | 0 | 1 |
| 20 | 20 | -1,101095159 | -1,947012797 | -35,96 | -0,75 | 0,841395142 |
| 30 | 30 | -0,517848335 | -1,363765973 | -35,29 | -0,08 | 0,981747943 |
| 40 | 40 | 0,509712759 | -0,336204879 | -35,75 | -0,54 | 0,8830799 |
| 50 | 50 | 0,845916994 | -6,43622E-07 | -35,75 | -0,54 | 0,8830799 |
| 60 | 60 | 0,325516565 | -0,520401073 | -35,97 | -0,76 | 0,839459987 |
| 70 | 70 | -0,875597524 | -1,721515162 | -37,64 | -2,43 | 0,571478637 |
| 80 | 80 | -2,552329892 | -3,39824753 | -38,99 | -3,78 | 0,418793565 |
| 90 | 90 | -4,596185318 | -5,442102956 | -40,74 | -5,53 | 0,279898132 |
| 100 | 100 | -7,118685245 | -7,964602883 | -41,38 | -6,17 | 0,241546083 |
| 110 | 110 | -10,64777269 | -11,49369033 | -42,84 | -7,63 | 0,172583789 |
| 120 | 120 | -16,8853476 | -17,73126524 | -41,32 | -6,11 | 0,244906324 |
| 130 | 130 | -29,91639137 | -30,76230901 | -39,66 | -4,45 | 0,358921935 |
| 140 | 140 | -16,543664 | -17,38958164 | -39,9 | -4,69 | 0,339625273 |
| 150 | 150 | -12,26963922 | -13,11555685 | -39,87 | -4,66 | 0,341979443 |
| 160 | 160 | -10,81596947 | -11,66188711 | -40,2 | -4,99 | 0,316956746 |
| 170 | 170 | -10,6744032 | -11,52032083 | -41,82 | -6,61 | 0,218272991 |
| 180 | 180 | -10,80400235 | -11,64991999 | -41,38 | -6,17 | 0,241546083 |
| 190 | -170 | -10,67440684 | -11,52032448 | -43,93 | -8,72 | 0,134276496 |
| 200 | -160 | -10,81597334 | -11,66189098 | -43,22 | -8,01 | 0,158124804 |
| 210 | -150 | -12,26964181 | -13,11555945 | -43,98 | -8,77 | 0,132739446 |
| 220 | -140 | -16,54366532 | -17,38958296 | -48,22 | -13,01 | 0,050003453 |
| 230 | -130 | -29,91637892 | -30,76229656 | -39,67 | -4,46 | 0,358096437 |
| 240 | -120 | -16,88534844 | -17,73126607 | -38,02 | -2,81 | 0,523600437 |
| 250 | -110 | -10,64777374 | -11,49369137 | -38,64 | -3,43 | 0,453941617 |
| 260 | -100 | -7,118685988 | -7,964603626 | -40,89 | -5,68 | 0,270395836 |
| 270 | -90 | -4,596185656 | -5,442103294 | -39,67 | -4,46 | 0,358096437 |
| 280 | -80 | -2,55232984 | -3,398247478 | -38,02 | -2,81 | 0,523600437 |
| 290 | -70 | -0,875597196 | -1,721514834 | -37,64 | -2,43 | 0,571478637 |
| 300 | -60 | 0,325517046 | -0,520400592 | -35,29 | -0,08 | 0,981747943 |
| 310 | -50 | 0,845917638 | 0 | -35,75 | -0,54 | 0,8830799 |
| 320 | -40 | 0,509713785 | -0,336203853 | -35,23 | -0,02 | 0,995405417 |
| 330 | -30 | -0,517846726 | -1,363764364 | -35,21 | 0 | 1 |
| 340 | -20 | -1,10109369 | -1,947011328 | -35,96 | -0,75 | 0,841395142 |
| 350 | -10 | -0,414836333 | -1,260753971 | -35,29 | -0,08 | 0,981747943 |

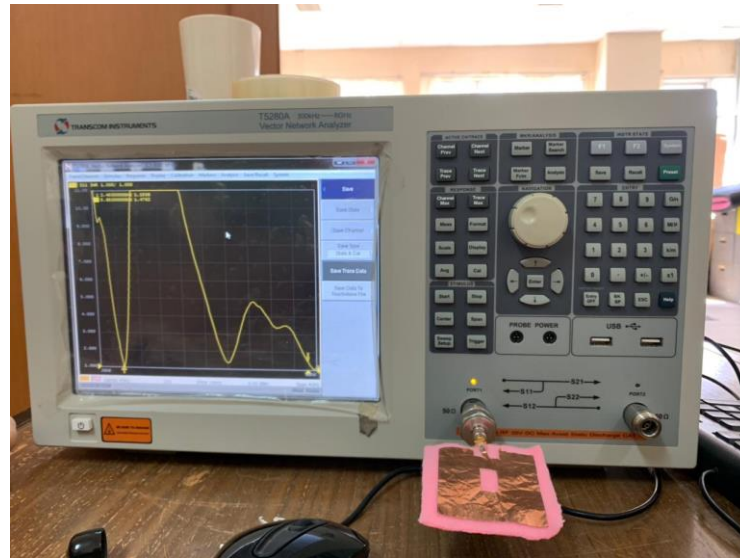
POLA RADIASI PADA On-Body 2,45 GHz dan 5,85 GHz

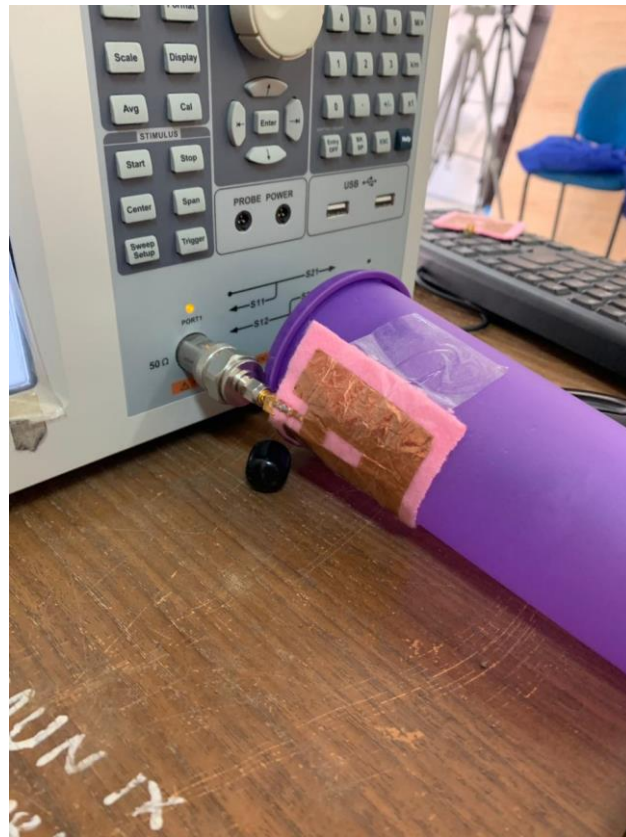
| Sudut | | Simulasi | Normalisasi Simulasi | Pengukuran | Normalisasi Pengukuran | Numerik |
|-------|------|----------|----------------------|------------|------------------------|---------|
| 0 | 0 | 6,87905 | 0 | -27,32 | -1,09 | 0,77804 |
| 10 | 10 | 6,63884 | -0,240209616 | -27,33 | -1,1 | 0,77625 |
| 20 | 20 | 5,9246 | -0,954444454 | -28,39 | -2,16 | 0,60814 |
| 30 | 30 | 4,75615 | -2,122897092 | -29,38 | -3,15 | 0,48417 |
| 40 | 40 | 3,16892 | -3,710126302 | -29,89 | -3,66 | 0,43053 |
| 50 | 50 | 1,21791 | -5,661141528 | -32,33 | -6,1 | 0,24547 |
| 60 | 60 | -1,01878 | -7,897826039 | -32,32 | -6,09 | 0,24604 |
| 70 | 70 | -3,43867 | -10,31772134 | -35,32 | -9,09 | 0,12331 |
| 80 | 80 | -5,92515 | -12,80419379 | -35,42 | -9,19 | 0,1205 |
| 90 | 90 | -8,37966 | -15,25870596 | -37,02 | -10,79 | 0,08337 |
| 100 | 100 | -10,7786 | -17,65767169 | -40,32 | -14,09 | 0,03899 |
| 110 | 110 | -13,2064 | -20,08545646 | -42,34 | -16,11 | 0,02449 |
| 120 | 120 | -15,7829 | -22,66196799 | -43,44 | -17,21 | 0,01901 |
| 130 | 130 | -18,4229 | -25,30194182 | -40,32 | -14,09 | 0,03899 |
| 140 | 140 | -20,4368 | -27,31588664 | -44,85 | -18,62 | 0,01374 |
| 150 | 150 | -20,5692 | -27,4482847 | -47,92 | -21,69 | 0,00678 |
| 160 | 160 | -18,9175 | -25,79657744 | -42,38 | -16,15 | 0,02427 |
| 170 | 170 | -17,2103 | -24,08930431 | -40,58 | -14,35 | 0,03673 |
| 180 | 180 | -16,5506 | -23,42963638 | -47,24 | -21,01 | 0,00793 |
| 190 | -170 | -17,2103 | -24,0893035 | -44,29 | -18,06 | 0,01563 |
| 200 | -160 | -18,9175 | -25,79657565 | -41,42 | -15,19 | 0,03027 |
| 210 | -150 | -20,5692 | -27,4482824 | -40,39 | -14,16 | 0,03837 |
| 220 | -140 | -20,4368 | -27,31588547 | -39,24 | -13,01 | 0,05 |
| 230 | -130 | -18,4229 | -25,30194162 | -36,39 | -10,16 | 0,09638 |
| 240 | -120 | -15,7829 | -22,66196779 | -30,42 | -4,19 | 0,38107 |
| 250 | -110 | -13,2064 | -20,08545607 | -30,88 | -4,65 | 0,34277 |
| 260 | -100 | -10,7786 | -17,65767126 | -27,38 | -1,15 | 0,76736 |
| 270 | -90 | -8,37966 | -15,25870562 | -28,32 | -2,09 | 0,61802 |
| 280 | -80 | -5,92515 | -12,80419359 | -26,23 | 0 | 1 |
| 290 | -70 | -3,43867 | -10,31772125 | -27,38 | -1,15 | 0,76736 |
| 300 | -60 | -1,01878 | -7,897826031 | -27,31 | -1,08 | 0,77983 |
| 310 | -50 | 1,21791 | -5,661141563 | -26,32 | -0,09 | 0,97949 |
| 320 | -40 | 3,16892 | -3,710126354 | -27,33 | -1,1 | 0,77625 |
| 330 | -30 | 4,75615 | -2,122897143 | -28,83 | -2,6 | 0,54954 |
| 340 | -20 | 5,9246 | -0,954444493 | -28,38 | -2,15 | 0,60954 |
| 350 | -10 | 6,63884 | -0,240209637 | -27,34 | -1,11 | 0,77446 |

| Sudut | | Simulasi | Normalisasi Simulasi | Pengukuran | Normalisasi Pengukuran | Numerik |
|-------|------|----------|----------------------|------------|------------------------|---------|
| 0 | 0 | -0,1297 | 0 | -35,39 | -0,61 | 0,86896 |
| 10 | 10 | -0,2028 | -0,073022718 | -35,48 | -0,7 | 0,85114 |
| 20 | 20 | -0,6198 | -0,490095754 | -34,78 | 0 | 1 |
| 30 | 30 | -1,064 | -0,934256191 | -35,84 | -1,06 | 0,78343 |
| 40 | 40 | -1,0629 | -0,933196415 | -36,24 | -1,46 | 0,7145 |
| 50 | 50 | -1,2606 | -1,13090547 | -35,48 | -0,7 | 0,85114 |
| 60 | 60 | -2,3707 | -2,240959732 | -36,24 | -1,46 | 0,7145 |
| 70 | 70 | -4,5168 | -4,387041233 | -40,24 | -5,46 | 0,28445 |
| 80 | 80 | -7,3142 | -7,184515176 | -43,82 | -9,04 | 0,12474 |
| 90 | 90 | -9,9485 | -9,818729604 | -47,93 | -13,15 | 0,04842 |
| 100 | 100 | -11,58 | -11,45016763 | -44,8 | -10,02 | 0,09954 |
| 110 | 110 | -12,477 | -12,34682583 | -47,92 | -13,14 | 0,04853 |
| 120 | 120 | -14,58 | -14,44988274 | -48,93 | -14,15 | 0,03846 |
| 130 | 130 | -18,556 | -18,42632949 | -51,31 | -16,53 | 0,02223 |
| 140 | 140 | -16,424 | -16,29446397 | -47,92 | -13,14 | 0,04853 |
| 150 | 150 | -16,392 | -16,26245726 | -48,84 | -14,06 | 0,03926 |
| 160 | 160 | -17,992 | -17,86190173 | -47,92 | -13,14 | 0,04853 |
| 170 | 170 | -15,062 | -14,9318843 | -48,93 | -14,15 | 0,03846 |
| 180 | 180 | -14,932 | -14,80262701 | -47,93 | -13,15 | 0,04842 |
| 190 | -170 | -15,062 | -14,93188333 | -47,2 | -12,42 | 0,05728 |
| 200 | -160 | -17,992 | -17,86190046 | -48,84 | -14,06 | 0,03926 |
| 210 | -150 | -16,392 | -16,26245544 | -47,92 | -13,14 | 0,04853 |
| 220 | -140 | -16,424 | -16,2944627 | -48,93 | -14,15 | 0,03846 |
| 230 | -130 | -18,556 | -18,42633107 | -41,89 | -7,11 | 0,19454 |
| 240 | -120 | -14,58 | -14,44988463 | -38,28 | -3,5 | 0,44668 |
| 250 | -110 | -12,477 | -12,34682705 | -37,32 | -2,54 | 0,55719 |
| 260 | -100 | -11,58 | -11,45016835 | -40,86 | -6,08 | 0,2466 |
| 270 | -90 | -9,9485 | -9,818729782 | -42,38 | -7,6 | 0,17378 |
| 280 | -80 | -7,3142 | -7,184515216 | -49,61 | -14,83 | 0,03289 |
| 290 | -70 | -4,5168 | -4,387041227 | -47,93 | -13,15 | 0,04842 |
| 300 | -60 | -2,3707 | -2,240959582 | -44,32 | -9,54 | 0,11117 |
| 310 | -50 | -1,2606 | -1,130905446 | -40,32 | -5,54 | 0,27925 |
| 320 | -40 | -1,0629 | -0,933196726 | -36,24 | -1,46 | 0,7145 |
| 330 | -30 | -1,064 | -0,934256209 | -35,48 | -0,7 | 0,85114 |
| 340 | -20 | -0,6198 | -0,49009559 | -36,24 | -1,46 | 0,7145 |
| 350 | -10 | -0,2028 | -0,073022949 | -35,21 | -0,43 | 0,90573 |

LAMPIRAN C
DOKUMENTASI SAAT PENGUKURAN

PENGUKURAN PARAMETER DALAM







PENGUKURAN PARAMETER LUAR

