

H.

H = 9 km

Statistics Summary:

| | | | | | |
|--------------------------|-----------------|--|------------|----------------------|------------|
| T | [°C] | | 6.70(24) | 29.70(34) | 52.40(08) |
| P | [torr] [kPa] | | 231.00(10) | 231.00(11) 30.811 | 231.30(23) |
| $\sigma_x(\Delta\alpha)$ | [dB/km] | | 0.103 | 0.091 | 0.107 |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ |
| P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ |
| dB/km | | dB/km | | dB/km | |
| 53.89154 | 0.21(.03) | 53.89180 | 0.42(.03) | 53.89204 | 0.52(.02) |
| 231.1 | 0.39(0.18) | 231.2 | 0.38(-0.04) | 231.2 | 0.37(-0.15) |
| 53.99028 | 0.53(.02) | 53.99051 | 0.31(.02) | 53.99076 | 0.51(.03) |
| 231.0 | 0.44(-0.09) | 231.1 | 0.43(0.12) | 232.1 | 0.43(-0.08) |
| 54.08889 | 0.51(.02) | 54.08916 | 0.48(.03) | 54.08933 | 0.43(.03) |
| 230.9 | 0.49(-0.02) | 231.1 | 0.49(0.01) | 231.3 | 0.49(0.06) |
| 54.18762 | 0.49(.03) | 54.18811 | 0.40(.04) | 54.18804 | 0.49(.03) |
| 231.2 | 0.54(0.05) | 231.0 | 0.53(0.13) | 231.2 | 0.53(0.04) |
| 54.28625 | 0.60(.03) | 54.28644 | 0.55(.02) | 54.28668 | 0.67(.04) |
| 230.9 | 0.57(-0.03) | 231.0 | 0.55(0.00) | 231.3 | 0.54(-0.13) |
| 54.38366 | 0.80(.02) | 54.38389 | 0.58(.03) | 54.38536 | 0.42(.03) |
| 230.9 | 0.61(-0.19) | 231.1 | 0.59(0.01) | 231.1 | 0.57(0.15) |
| 54.42519 | 0.62(.02) | 54.42636 | 0.59(.02) | 54.42754 | 0.53(.03) |
| 230.9 | 0.63(0.01) | 231.0 | 0.61(0.02) | 231.1 | 0.59(0.06) |
| 54.52632 | 0.80(.02) | 54.52761 | 0.78(.02) | 54.52781 | 0.60(.03) |
| 231.0 | 0.71(-0.09) | 231.1 | 0.69(-0.09) | 230.9 | 0.67(0.07) |
| 54.62725 | 0.71(.02) | 54.62751 | 0.96(.03) | 54.62775 | 0.87(.04) |
| 231.1 | 0.80(0.09) | 231.1 | 0.78(-0.18) | 231.2 | 0.76(-0.11) |
| 54.72734 | 0.89(.02) | 54.72757 | 0.86(.03) | 54.72782 | 0.87(.03) |
| 231.0 | 0.87(-0.02) | 231.1 | 0.84(-0.02) | 231.2 | 0.82(-0.05) |
| 54.82730 | 0.99(.03) | 54.82758 | 0.83(.03) | 54.82775 | 0.66(.04) |
| 230.9 | 0.91(-0.08) | 231.1 | 0.87(0.04) | 231.3 | 0.83(0.17) |
| 54.92738 | 1.07(.04) | 54.92787 | 0.74(.03) | 54.92780 | 0.84(.04) |
| 231.1 | 0.97(-0.10) | 231.0 | 0.91(0.17) | 231.2 | 0.86(0.02) |
| 55.02736 | 0.94(.03) | 55.02755 | 1.01(.02) | 55.02780 | 0.90(.04) |
| 230.9 | 1.07(0.13) | 231.0 | 1.00(-0.01) | 231.3 | 0.94(0.04) |
| 55.12610 | 1.39(.02) | 55.12645 | 1.00(.03) | 55.12783 | 0.92(.04) |
| 231.0 | 1.20(-0.19) | 231.2 | 1.13(0.13) | 231.1 | 1.07(0.15) |
| 55.15818 | 1.24(.03) | 55.15936 | 1.04(.03) | 55.16056 | 1.05(.04) |
| 230.9 | 1.24(0.00) | 230.8 | 1.17(0.13) | 231.1 | 1.12(0.07) |
| 55.26066 | 1.46(.04) | 55.26198 | 1.20(.03) | 55.26218 | 1.22(.05) |
| 231.0 | 1.35(-0.11) | 231.1 | 1.27(0.07) | 231.0 | 1.21(-0.01) |
| 55.36295 | 1.36(.03) | 55.36322 | 1.40(.04) | 55.36348 | 1.17(.03) |
| 231.1 | 1.41(0.05) | 231.1 | 1.31(-0.09) | 231.2 | 1.22(0.05) |
| 55.46440 | 1.58(.03) | 55.46463 | 1.27(.04) | 55.46489 | 1.35(.04) |
| 231.0 | 1.48(-0.10) | 231.2 | 1.36(0.09) | 231.7 | 1.25(-0.10) |
| 55.56570 | 1.63(.03) | 55.56599 | 1.34(.04) | 55.56616 | 1.43(.03) |
| 230.9 | 1.61(-0.02) | 231.1 | 1.47(0.13) | 231.3 | 1.35(-0.08) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|-------------------------|---|-------------------------|---|-------------------------|---|
| f_x [GHz] P [torr] | $\alpha_x(\delta\alpha)$ $\alpha_M(\pm\Delta\alpha)$ | f_x [GHz] P [torr] | $\alpha_x(\delta\alpha)$ $\alpha_M(\pm\Delta\alpha)$ | f_x [GHz] P [torr] | $\alpha_x(\delta\alpha)$ $\alpha_M(\pm\Delta\alpha)$ |
| dB/km | | dB/km | | dB/km | |
| 55.66714 231.2 | 1.83(.03) 1.81(-0.02) | 55.66764 231.0 | 1.49(.03) 1.66(0.17) | 55.66756 231.2 | 1.51(.04) 1.52(0.01) |
| 55.76847 231.0 | 2.00(.03) 2.00(0.00) | 55.76867 231.0 | 1.85(.04) 1.84(-0.01) | 55.76892 231.3 | 1.57(.04) 1.70(0.13) |
| 55.86854 230.9 | 2.21(.03) 2.12(-0.09) | 55.86879 231.1 | 2.06(.03) 1.94(-0.12) | 55.87030 231.2 | 1.67(.04) 1.77(0.10) |
| 55.89116 230.9 | 2.06(.04) 2.15(0.09) | 55.89236 230.9 | 1.98(.02) 1.95(-0.03) | 55.89357 231.1 | 1.82(.04) 1.78(-0.04) |
| 55.99501 231.0 | 2.18(.03) 2.24(0.06) | 55.99634 231.1 | 2.01(.03) 2.00(-0.01) | 55.99654 230.9 | 1.88(.04) 1.80(-0.08) |
| 56.09866 231.1 | 2.47(.03) 2.39(-0.08) | 56.09893 231.1 | 2.24(.04) 2.12(-0.12) | 56.09919 231.2 | 2.02(.04) 1.89(-0.13) |
| 56.20146 231.0 | 2.64(.03) 2.61(-0.03) | 56.20170 231.2 | 2.24(.04) 2.33(0.09) | 56.20196 231.1 | 2.05(.03) 2.09(0.04) |
| 56.30411 230.9 | 2.74(.04) 2.84(0.10) | 56.30440 231.1 | 2.46(.04) 2.55(0.09) | 56.30457 231.3 | 2.37(.04) 2.30(-0.07) |
| 56.40690 231.2 | 2.87(.04) 2.96(0.09) | 56.40740 231.0 | 2.47(.04) 2.65(0.18) | 56.40733 231.2 | 2.25(.04) 2.39(0.14) |
| 56.50959 230.9 | 2.78(.03) 2.97(0.19) | 56.50978 231.0 | 2.52(.04) 2.62(0.10) | 56.51004 231.3 | 2.18(.04) 2.33(0.15) |
| 56.62414 230.9 | 2.96(.03) 2.96(0.00) | 56.62536 230.8 | 2.46(.02) 2.57(0.11) | 56.62659 231.1 | 2.23(.04) 2.26(0.03) |
| 56.72936 231.0 | 3.05(.04) 3.05(0.00) | 56.73071 231.1 | 2.60(.04) 2.65(0.05) | 56.73092 231.3 | 2.27(.04) 2.31(0.04) |
| 56.83438 231.1 | 3.24(.03) 3.25(0.01) | 56.83465 231.1 | 2.94(.04) 2.83(-0.11) | 56.83492 231.2 | 2.35(.05) 2.49(0.14) |
| 56.93852 231.0 | 3.28(.04) 3.44(0.16) | 56.93876 231.2 | 2.87(.04) 3.02(0.15) | 56.93903 232.0 | 2.55(.04) 2.68(0.13) |
| 57.04252 230.9 | 3.61(.04) 3.52(-0.09) | 57.04283 231.1 | 2.90(.04) 3.07(0.17) | 57.04301 231.3 | 2.66(.04) 2.71(0.05) |
| 57.14668 231.2 | 3.31(.03) 3.48(0.17) | 57.14718 231.0 | 2.85(.04) 3.00(0.15) | 57.14711 231.2 | 2.52(.04) 2.61(0.09) |
| 57.25071 230.9 | 3.33(.04) 3.47(0.14) | 57.25090 231.1 | 2.81(.05) 2.96(0.15) | 57.25116 231.3 | 2.32(.03) 2.54(0.22) |
| 57.35713 230.9 | 3.78(.05) 3.58(-0.20) | 57.35381 231.2 | 3.09(.04) 3.04(-0.05) | 57.35961 231.1 | 2.69(.06) 2.61(-0.08) |
| 57.46372 231.0 | 3.68(.04) 3.82(0.14) | 57.46510 231.1 | 3.32(.06) 3.27(-0.05) | 57.46530 231.0 | 2.76(.06) 2.82(0.06) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ |
| P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ |
| dB/km | | dB/km | | dB/km | |
| 57.57010 | 3.85(.04) | 57.57038 | 3.26(.04) | 57.57065 | 3.12(.05) |
| 231.1 | 4.05(0.20) | 231.1 | 3.48(0.22) | 231.2 | 3.03(-0.09) |
| 57.67560 | 3.97(.05) | 57.67585 | 3.54(.04) | 57.67612 | 3.11(.07) |
| 231.0 | 4.14(0.17) | 231.2 | 3.54(0.00) | 231.6 | 3.07(-0.04) |
| 57.78096 | 4.04(.05) | 57.78127 | 3.37(.07) | 57.78145 | 2.96(.04) |
| 230.9 | 4.09(0.05) | 231.1 | 3.45(0.08) | 231.3 | 2.95(-0.01) |
| 57.88646 | 4.12(.05) | 57.88698 | 3.36(.04) | 57.88692 | 2.93(.06) |
| 231.2 | 4.06(-0.06) | 231.0 | 3.38(0.02) | 231.2 | 2.85(-0.08) |
| 57.99184 | 4.10(.04) | 57.99205 | 3.60(.04) | 57.99231 | 2.72(.06) |
| 230.9 | 4.18(0.08) | 231.0 | 3.46(-0.14) | 231.3 | 2.90(0.18) |
| 58.09565 | 4.50(.03) | 58.09140 | 3.62(.04) | 58.09703 | 3.01(.03) |
| 230.9 | 4.47(-0.03) | 230.9 | 3.71(0.09) | 231.0 | 3.14(0.13) |
| 58.18470 | 4.63(.03) | 58.19948 | 3.92(.05) | 58.18665 | 3.44(.02) |
| 231.0 | 4.83(0.20) | 231.1 | 4.10(0.18) | 231.1 | 3.44(0.00) |
| 58.29041 | 5.00(.04) | 58.30611 | 4.43(.04) | 58.30639 | 3.74(.05) |
| 230.8 | 5.20(0.20) | 231.1 | 4.43(0.00) | 231.3 | 3.80(0.06) |
| 58.37359 | 5.12(.04) | 58.37450 | 4.32(.02) | 58.37485 | 3.55(.03) |
| 231.1 | 5.34(0.22) | 231.0 | 4.52(0.20) | 231.2 | 3.87(0.32) |
| 58.41269 | 5.05(.04) | 58.41293 | 4.46(.04) | 58.41320 | 3.52(.04) |
| 231.1 | 5.35(0.30) | 231.2 | 4.51(0.05) | 231.5 | 3.86(0.34) |
| 58.46668 | 5.16(.04) | 58.46729 | 4.19(.03) | 58.46769 | 3.61(.02) |
| 231.2 | 5.30(0.14) | 231.1 | 4.45(0.26) | 230.9 | 3.78(0.17) |
| 58.51938 | 5.09(.06) | 58.51969 | 4.18(.03) | 58.51987 | 3.47(.04) |
| 230.9 | 5.20(0.11) | 231.1 | 4.34(0.16) | 231.4 | 3.67(0.20) |
| 58.55933 | 4.97(.02) | 58.55982 | 4.12(.02) | 58.56040 | 3.40(.02) |
| 230.9 | 5.11(0.14) | 230.9 | 4.24(0.12) | 231.0 | 3.56(0.16) |
| 58.62622 | 4.78(.03) | 58.62675 | 4.08(.03) | 58.62667 | 3.20(.04) |
| 231.1 | 4.95(0.17) | 231.0 | 4.07(-0.01) | 231.2 | 3.39(0.19) |
| 58.73295 | 4.60(.04) | 58.73316 | 3.70(.03) | 58.73341 | 3.14(.03) |
| 230.9 | 4.75(0.15) | 231.1 | 3.87(0.17) | 231.3 | 3.20(0.06) |
| 58.83834 | 4.57(.02) | 58.83871 | 3.70(.03) | 58.82566 | 3.10(.03) |
| 231.0 | 4.71(0.14) | 231.2 | 3.83(0.13) | 231.1 | 3.15(0.05) |
| 58.91888 | 4.63(.02) | 58.92093 | 4.00(.02) | | |
| 230.9 | 4.79(0.16) | 231.0 | 3.91(-0.09) | | |
| 59.02593 | 4.76(.02) | 59.02634 | 4.02(.01) | 59.04208 | 3.41(.04) |
| 230.8 | 4.98(0.22) | 231.1 | 4.09(0.07) | 231.2 | 3.44(0.03) |
| 59.11016 | 4.91(.02) | 59.14998 | 4.11(.03) | 59.15025 | 3.67(.03) |
| 231.1 | 5.13(0.22) | 231.2 | 4.28(0.17) | 232.0 | 3.59(-0.08) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ |
| P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ |
| dB/km | | dB/km | | dB/km | |
| 59.20443 | 5.12(.02) | 59.20504 | 4.23(.02) | 59.20546 | 3.51(.02) |
| 231.2 | 5.21(0.09) | 231.0 | 4.30(0.07) | 231.0 | 3.61(0.10) |
| 59.25776 | 5.12(.03) | 59.25808 | 4.21(.02) | 59.25826 | 3.63(.04) |
| 230.9 | 5.21(0.09) | 231.1 | 4.30(0.09) | 231.3 | 3.60(-0.03) |
| 59.29824 | 5.21(.02) | 59.29874 | 4.19(.01) | 59.29934 | 3.46(.01) |
| 230.9 | 5.21(0.00) | 230.9 | 4.28(0.09) | 231.1 | 3.58(0.12) |
| 59.36596 | 5.08(.02) | 59.36649 | 4.13(.02) | 59.36641 | 3.32(.03) |
| 231.1 | 5.19(0.11) | 231.0 | 4.26(0.13) | 231.2 | 3.54(0.22) |
| 59.39394 | 5.07(.02) | 59.39423 | 4.14(.01) | 59.39511 | 3.38(.01) |
| 231.0 | 5.19(0.12) | 231.0 | 4.25(0.11) | 231.0 | 3.54(0.16) |
| 59.47403 | 5.15(.02) | 59.47424 | 4.16(.03) | 59.47450 | 3.28(.03) |
| 230.9 | 5.20(0.05) | 231.1 | 4.26(0.10) | 231.3 | 3.55(0.27) |
| 59.56174 | 5.08(.01) | 59.56275 | 4.25(.01) | 59.56317 | 3.32(.01) |
| 230.9 | 5.23(0.15) | 231.0 | 4.29(0.04) | 231.0 | 3.57(0.25) |
| 59.58075 | 5.11(.03) | 59.58101 | 4.13(.03) | 59.58263 | 3.37(.03) |
| 230.9 | 5.23(0.12) | 231.0 | 4.29(0.16) | 231.2 | 3.57(0.20) |
| 59.65305 | 5.08(.02) | 59.66815 | 4.14(.03) | 59.66836 | 3.52(.04) |
| 230.9 | 5.23(0.15) | 231.1 | 4.26(0.12) | 231.2 | 3.54(0.02) |
| 59.76144 | 5.08(.01) | 59.76186 | 4.06(.01) | 59.76231 | 3.32(.01) |
| 230.8 | 5.17(0.09) | 231.1 | 4.20(0.14) | 231.1 | 3.47(0.15) |
| 59.84673 | 4.96(.01) | 59.84767 | 4.09(.01) | 59.84803 | 3.36(.01) |
| 231.1 | 5.15(0.19) | 231.0 | 4.16(0.07) | 231.2 | 3.42(0.06) |
| 59.94217 | 5.10(.01) | 59.94280 | 4.08(.01) | 59.94323 | 3.31(.01) |
| 231.2 | 5.23(0.13) | 231.1 | 4.22(0.14) | 230.9 | 3.46(0.15) |
| 60.03716 | 5.29(.01) | 60.03766 | 4.33(.01) | 60.03827 | 3.54(.01) |
| 230.9 | 5.43(0.14) | 230.9 | 4.41(0.08) | 231.0 | 3.63(0.09) |
| 60.13406 | 5.82(.02) | 60.13435 | 4.57(.01) | 60.13524 | 3.78(.01) |
| 231.0 | 5.77(-0.05) | 230.9 | 4.72(0.15) | 231.0 | 3.93(0.15) |
| 60.21511 | 6.01(.10) | | | 60.21560 | 3.95(.09) |
| 230.9 | 6.08(0.07) | | | 231.3 | 4.22(0.27) |
| 60.29482 | 6.14(.01) | 60.29583 | 5.07(.01) | 60.29626 | 4.23(.01) |
| 230.9 | 6.33(0.19) | 231.0 | 5.28(0.21) | 231.0 | 4.46(0.23) |
| 60.32320 | 6.08(.07) | 60.32357 | 5.25(.07) | 60.32510 | 4.26(.09) |
| 230.9 | 6.39(0.31) | 231.2 | 5.34(0.09) | 231.2 | 4.52(0.26) |
| 60.38725 | 6.25(.01) | 60.38935 | 5.20(.01) | 60.38928 | 4.32(.01) |
| 230.9 | 6.45(0.20) | 230.9 | 5.39(0.19) | 231.2 | 4.58(0.26) |
| 60.49697 | 5.99(.01) | 60.49740 | 4.96(.01) | 60.49786 | 4.21(.01) |
| 230.8 | 6.26(0.27) | 231.1 | 5.22(0.26) | 231.0 | 4.41(0.20) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|----------------------------------|---|----------------------------------|---|----------------------------------|---|
| f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) | f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) | f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) |
| dB/km | | dB/km | | dB/km | |
| 60.58331 231.1 | 5.80(.01) 5.94(0.14) | 60.58427 231.0 | 4.70(.01) 4.91(0.21) | 60.58463 231.2 | 3.97(.01) 4.11(0.14) |
| 60.67994 231.2 | 5.39(.01) 5.56(0.17) | 60.68056 231.0 | 4.47(.01) 4.55(0.08) | 60.68100 230.9 | 3.60(.01) 3.78(0.18) |
| 60.77609 230.9 | 5.14(.01) 5.29(0.15) | 60.77660 230.9 | 4.22(.01) 4.31(0.09) | 60.77721 231.1 | 3.38(.01) 3.56(0.18) |
| 60.87418 231.0 | 5.06(.01) 5.20(0.14) | 60.87447 230.9 | 4.17(.01) 4.25(0.08) | 60.87537 231.0 | 3.32(.01) 3.53(0.21) |
| 61.02788 230.8 | 5.08(.01) 5.33(0.25) | 61.02890 231.0 | 4.29(.01) 4.44(0.15) | 61.02934 231.0 | 3.58(.01) 3.74(0.16) |
| 61.12141 230.8 | 5.25(.02) 5.40(0.15) | 61.12356 230.8 | 4.34(.01) 4.53(0.19) | 61.12362 231.0 | 3.64(.01) 3.86(0.22) |
| 61.23263 230.8 | 5.29(.02) 5.30(0.01) | 61.23296 231.1 | 4.25(.01) 4.45(0.20) | 61.23339 231.1 | 3.59(.01) 3.78(0.19) |
| 61.31985 231.2 | 5.08(.02) 5.12(0.04) | 61.32085 231.0 | 4.16(.01) 4.26(0.10) | 61.32121 231.0 | 3.42(.01) 3.60(0.18) |
| 61.41772 230.9 | 4.91(.01) 4.94(0.03) | 61.41844 231.1 | 3.96(.01) 4.09(0.13) | 61.41874 231.1 | 3.37(.01) 3.44(0.07) |
| 61.51500 230.8 | 4.87(.02) 4.89(0.02) | 61.51551 231.0 | 4.03(.01) 4.07(0.04) | 61.51612 230.9 | 3.38(.01) 3.42(0.04) |
| 61.61430 230.9 | 4.97(.01) 5.01(0.04) | 61.61462 230.9 | 4.05(.01) 4.20(0.15) | 61.61549 231.1 | 3.50(.01) 3.57(0.07) |
| 61.76092 231.0 | 5.17(.01) 5.24(0.07) | 61.76225 231.1 | 4.40(.01) 4.47(0.07) | 61.76238 231.1 | 3.75(.01) 3.86(0.11) |
| 61.85559 230.8 | 5.16(.01) 5.25(0.09) | 61.85778 230.8 | 4.39(.01) 4.48(0.09) | 61.85783 230.9 | 3.73(.01) 3.87(0.14) |
| 61.96814 230.7 | 5.04(.01) 5.12(0.08) | 61.96849 231.0 | 4.26(.01) 4.34(0.08) | 61.96892 231.0 | 3.58(.01) 3.72(0.14) |
| 62.05642 231.2 | 5.11(.01) 5.05(-0.06) | 62.05743 231.0 | 4.29(.01) 4.26(-0.03) | 62.05781 231.0 | 3.59(.01) 3.63(0.04) |
| 62.15547 230.8 | 5.08(.01) 5.10(0.02) | 62.15619 231.1 | 4.25(.01) 4.32(0.07) | 62.15651 231.1 | 3.59(.01) 3.70(0.11) |
| 62.25393 230.8 | 5.16(.01) 5.27(0.11) | 62.25443 231.0 | 4.50(.01) 4.53(0.03) | 62.25507 230.9 | 3.75(.01) 3.92(0.17) |
| 62.35450 230.8 | 5.27(.01) 5.43(0.16) | 62.35474 230.8 | 4.67(.01) 4.72(0.05) | 62.35562 231.1 | 4.01(.01) 4.15(0.14) |
| 62.49398 231.0 | 5.13(.01) 5.28(0.15) | 62.49533 231.1 | 4.57(.01) 4.61(0.04) | 62.49546 231.1 | 4.07(.01) 4.05(-0.02) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|----------------------------------|---|----------------------------------|---|----------------------------------|---|
| f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) | f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) | f _x [GHz] P [torr] | α _x (δα) α _M (±Δα) |
| dB/km | | dB/km | | dB/km | |
| 62.58978 230.8 | 4.88(.01) 4.93(0.05) | 62.59199 230.8 | 4.24(.01) 4.27(0.03) | 62.59205 230.9 | 3.53(.01) 3.73(0.20) |
| 62.70367 230.7 | 4.49(.01) 4.48(-0.01) | 62.70402 231.0 | 3.72(.01) 3.87(0.15) | 62.70446 231.0 | 3.27(.01) 3.37(0.10) |
| 62.79300 231.1 | 4.15(.01) 4.22(0.07) | 62.79402 231.0 | 3.57(.01) 3.66(0.09) | 62.79440 231.0 | 3.11(.01) 3.20(0.09) |
| 62.89323 230.8 | 3.98(.01) 4.02(0.04) | 62.89396 231.0 | 3.49(.01) 3.53(0.04) | 62.89427 231.1 | 3.07(.01) 3.13(0.06) |
| 62.99286 230.8 | 3.78(.01) 3.80(0.02) | 62.99337 231.0 | 3.32(.01) 3.37(0.05) | 62.99401 230.9 | 2.95(.01) 3.02(0.07) |
| 63.09462 230.8 | 3.52(.01) 3.47(-0.05) | 63.09487 230.8 | 3.11(.01) 3.08(-0.03) | 63.09576 231.1 | 2.81(.01) 2.76(-0.05) |
| 63.22704 231.0 | 3.02(.01) 3.03(0.01) | 63.22840 231.0 | 2.76(.00) 2.67(-0.09) | 63.22853 231.1 | 2.51(.01) 2.38(-0.13) |
| 63.32397 230.8 | 2.83(.01) 2.81(-0.02) | 63.32620 230.8 | 2.45(.01) 2.50(0.05) | 63.32626 231.0 | 2.23(.01) 2.23(0.00) |
| 63.43919 230.7 | 2.61(.01) 2.69(0.08) | 63.43955 231.0 | 2.46(.01) 2.43(-0.03) | 63.43999 231.1 | 2.20(.01) 2.21(0.01) |
| 63.52957 231.1 | 2.61(.01) 2.61(0.00) | 63.53061 231.0 | 2.40(.01) 2.39(-0.01) | 63.53099 231.0 | 2.14(.01) 2.20(0.06) |
| 63.63098 230.8 | 2.48(.01) 2.44(-0.04) | 63.63171 231.1 | 2.18(.01) 2.24(0.06) | 63.63203 231.0 | 2.00(.01) 2.07(0.07) |
| 63.73177 230.8 | 2.12(.01) 2.20(0.08) | 63.73229 230.9 | 2.02(.01) 2.02(0.00) | 63.73294 230.9 | 1.79(.01) 1.85(0.06) |
| 63.83474 230.8 | 2.00(.01) 2.00(0.00) | 63.83499 230.8 | 1.76(.01) 1.82(0.06) | 63.83589 231.1 | 1.68(.01) 1.67(-0.01) |
| 63.96009 231.0 | 1.77(.01) 1.86(0.09) | 63.96148 231.1 | 1.70(.01) 1.72(0.02) | 63.96161 231.1 | 1.71(.01) 1.60(-0.11) |
| 64.05814 230.8 | 1.72(.01) 1.80(0.08) | 64.06041 230.8 | 1.73(.01) 1.70(-0.03) | 64.06047 230.9 | 1.70(.01) 1.60(-0.10) |
| 64.17471 230.7 | 1.67(.01) 1.68(0.01) | 64.17508 231.0 | 1.49(.01) 1.59(0.10) | 64.17548 231.0 | 1.44(.01) 1.52(0.08) |
| 64.26614 231.1 | 1.53(.00) 1.53(0.00) | 64.26719 231.0 | 1.34(.01) 1.44(0.10) | 64.26755 231.3 | 1.37(.01) 1.36(-0.01) |
| 64.36871 230.9 | 1.44(.00) 1.37(-0.07) | 64.36942 231.0 | 1.43(.01) 1.29(-0.14) | 64.36976 231.1 | 1.24(.01) 1.21(-0.03) |
| 64.47052 230.9 | 1.29(.01) 1.27(-0.02) | 64.47113 231.0 | 1.30(.01) 1.20(-0.10) | 64.47186 230.9 | 1.19(.01) 1.13(-0.06) |

H = 9.0 km

| 6.7°C | | 29.7°C | | 52.4°C | |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ | f_x [GHz] | $\alpha_x(\delta\alpha)$ |
| P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ | P [torr] | $\alpha_M(\pm\Delta\alpha)$ |
| dB/km | | dB/km | | dB/km | |
| 64.57483 | 1.25(.01) | 64.57507 | 1.23(.01) | 64.57602 | 1.08(.01) |
| 230.9 | 1.21(-0.04) | 230.9 | 1.16(-0.07) | 231.1 | 1.12(0.04) |
| 64.69321 | 1.23(.01) | 64.69453 | 1.10(.01) | 64.69466 | 1.06(.01) |
| 230.8 | 1.13(-0.10) | 230.8 | 1.10(0.00) | 231.1 | 1.08(0.02) |
| 64.79185 | 0.96(.01) | 64.79426 | 0.98(.00) | 64.79465 | 1.05(.01) |
| 230.9 | 1.03(0.07) | 230.8 | 0.99(0.01) | 231.1 | 0.97(-0.08) |
| 64.91023 | 0.88(.01) | 64.91056 | 0.84(.00) | 64.91101 | 0.88(.01) |
| 230.9 | 0.89(0.01) | 231.1 | 0.86(0.02) | 231.0 | 0.83(-0.05) |
| 65.00270 | 0.81(.01) | 65.00372 | 0.83(.00) | 65.00414 | 0.84(.01) |
| 230.8 | 0.82(0.01) | 231.1 | 0.79(-0.04) | 231.3 | 0.77(-0.07) |
| 65.10646 | 0.79(.00) | 65.10717 | 0.85(.00) | 65.10752 | 0.81(.01) |
| 230.9 | 0.78(-0.01) | 231.0 | 0.76(-0.09) | 231.0 | 0.75(-0.06) |
| 65.20943 | 0.82(.01) | 65.21007 | 0.70(.01) | 65.21079 | 0.67(.01) |
| 230.8 | 0.73(-0.09) | 231.0 | 0.73(0.03) | 230.9 | 0.73(0.06) |
| 65.31494 | 0.67(.00) | 65.31519 | 0.70(.01) | 65.31612 | 0.60(.01) |
| 230.9 | 0.66(-0.01) | 230.9 | 0.66(-0.04) | 231.0 | 0.66(0.06) |
| 65.42625 | 0.56(.01) | 65.42760 | 0.56(.00) | 65.42772 | 0.63(.01) |
| 230.7 | 0.58(0.02) | 230.8 | 0.57(0.01) | 231.2 | 0.56(-0.07) |
| 65.52602 | 0.55(.01) | 65.52847 | 0.45(.01) | 65.52885 | 0.56(.01) |
| 230.9 | 0.52(-0.03) | 230.8 | 0.51(0.06) | 231.1 | 0.50(-0.06) |
| 65.64574 | 0.57(.01) | 65.64608 | 0.47(.01) | 65.64654 | 0.51(.01) |
| 230.9 | 0.48(-0.09) | 231.1 | 0.48(0.01) | 231.0 | 0.48(-0.03) |
| 65.73927 | 0.42(.01) | 65.74030 | 0.38(.01) | 65.74072 | 0.40(.01) |
| 230.8 | 0.45(0.03) | 231.1 | 0.46(0.08) | 231.3 | 0.47(0.07) |
| 65.84421 | 0.37(.01) | 65.84494 | 0.37(.01) | 65.84529 | 0.41(.01) |
| 230.9 | 0.41(0.04) | 231.0 | 0.41(0.04) | 231.1 | 0.42(0.01) |
| 65.94836 | 0.37(.00) | 65.94899 | 0.26(.01) | 65.94973 | 0.21(.01) |
| 230.8 | 0.36(-0.01) | 231.0 | 0.36(0.10) | 230.9 | 0.36(0.15) |
| 66.05505 | 0.21(.00) | 66.05531 | 0.24(.01) | 66.05625 | 0.23(.01) |
| 230.8 | 0.32(0.11) | 230.9 | 0.32(0.08) | 231.0 | 0.32(0.09) |
| 66.15931 | 0.30(.01) | 66.16066 | 0.34(.01) | 66.16080 | 0.23(.01) |
| 230.7 | 0.30(0.00) | 230.8 | 0.30(-0.04) | 231.2 | 0.30(0.07) |
| 66.26020 | 0.28(.01) | 66.26267 | 0.10(.01) | 66.26306 | 0.22(.01) |
| 230.9 | 0.28(0.00) | 230.8 | 0.28(0.18) | 231.1 | 0.29(0.07) |

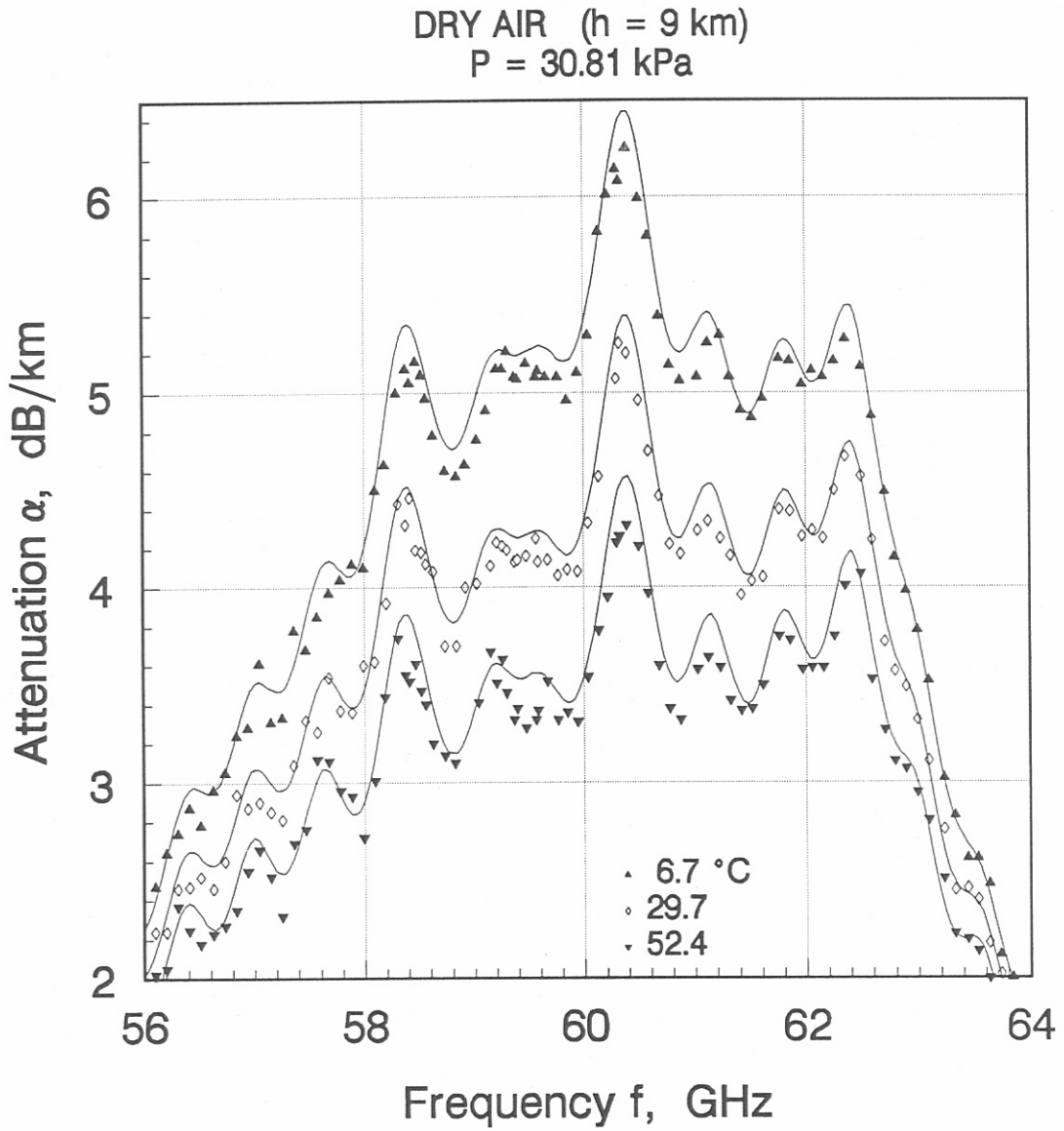


Figure A-8a. Predicted and measured attenuation rates of dry air, α_M and α_x , at H = 9 km (see H.) for frequencies between 56 and 64 GHz.

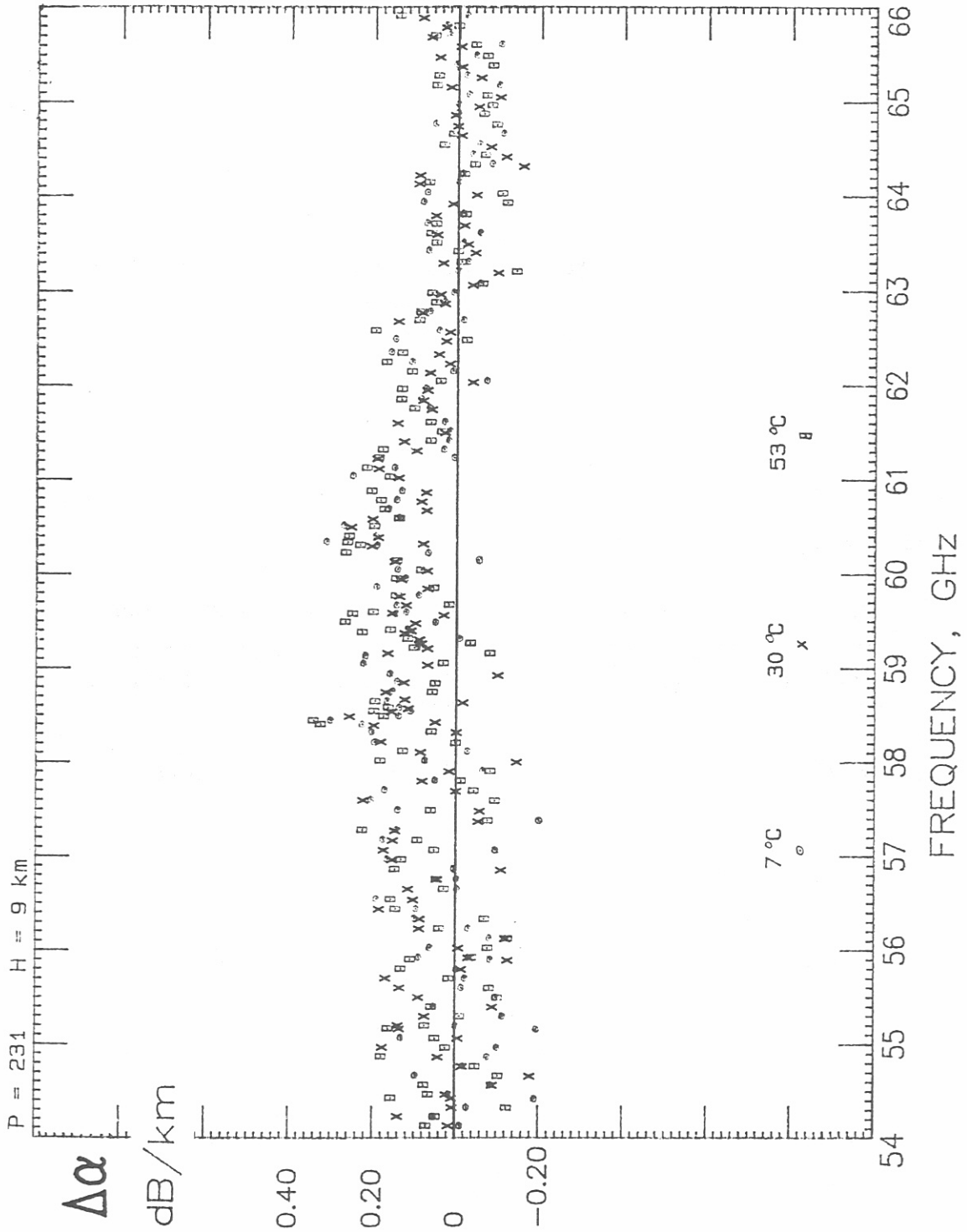


Figure A-8b. Differences $\Delta\alpha = \alpha_M - \alpha_x$ between predicted and measured attenuation for the results listed under H.