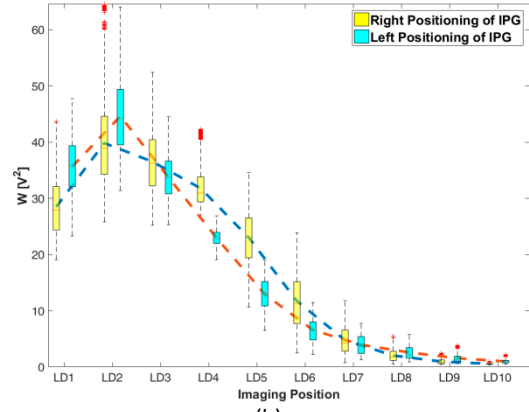
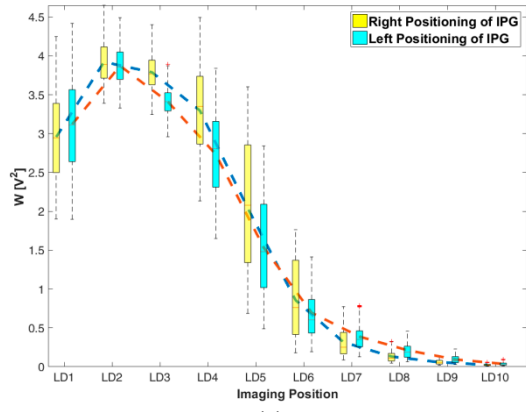


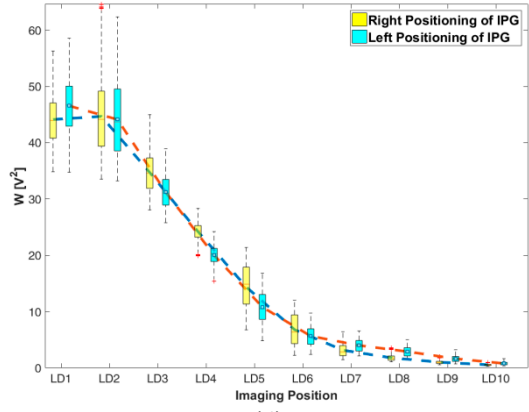
(a)



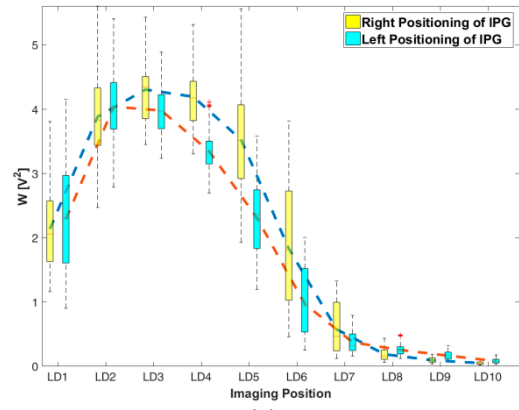
(b)



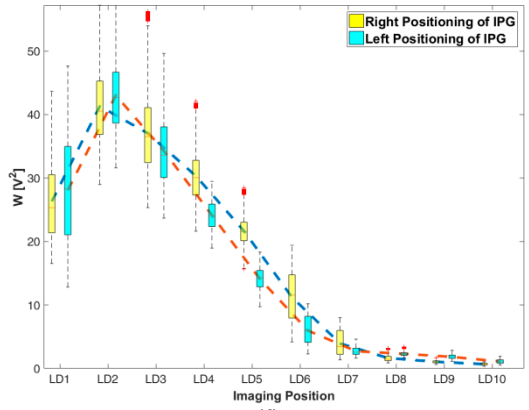
(c)



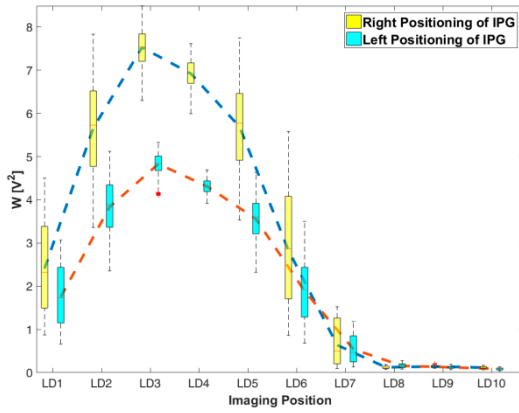
(d)



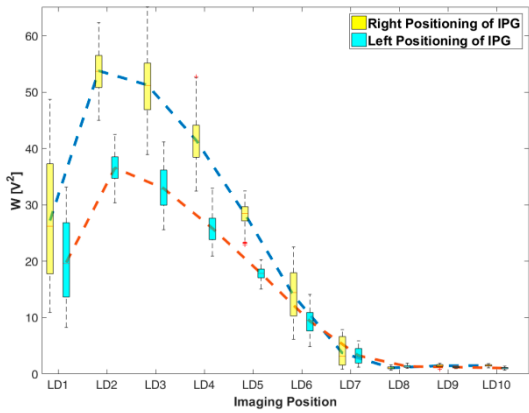
(e)



(f)



(g)



(h)

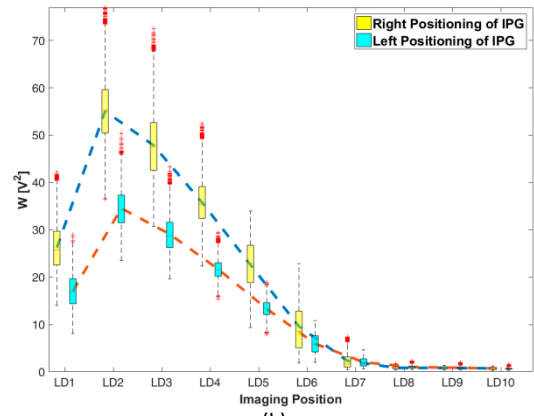
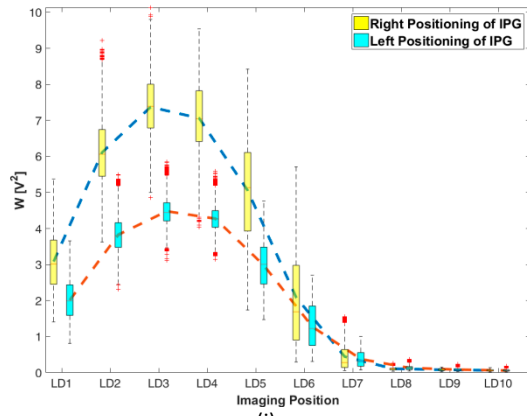
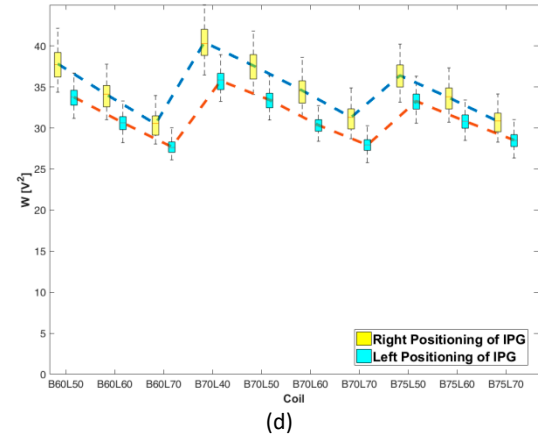
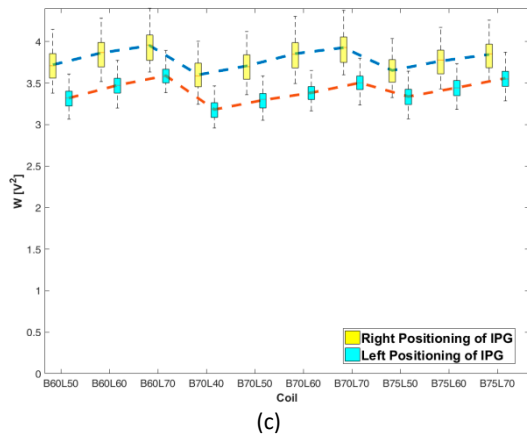
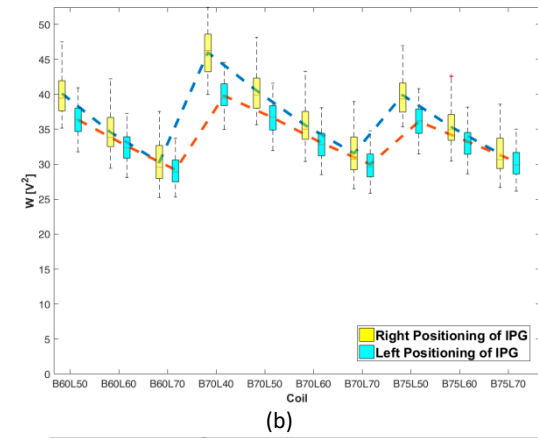
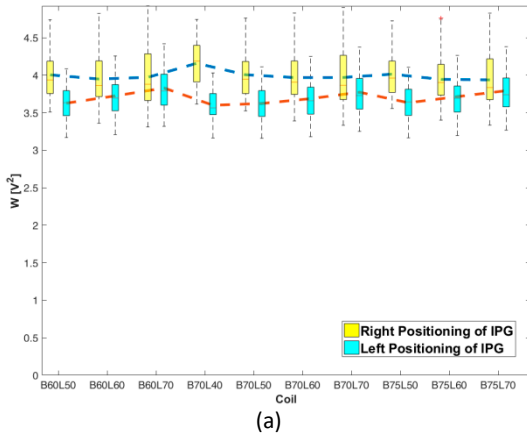


Figure S1: Distribution of the magnitude of the tangential electrical field at 64 MHz inside the models Ella (a, b), Billie (c, d), Louis (e, f), Glenn (g, h) and Fats (i, k) over all imaging positions. At the left column was investigated constant  $B_{1\text{RMS}}^+$  at the iso center of the coil and at the right column the limiting value of the global SAR was considered.



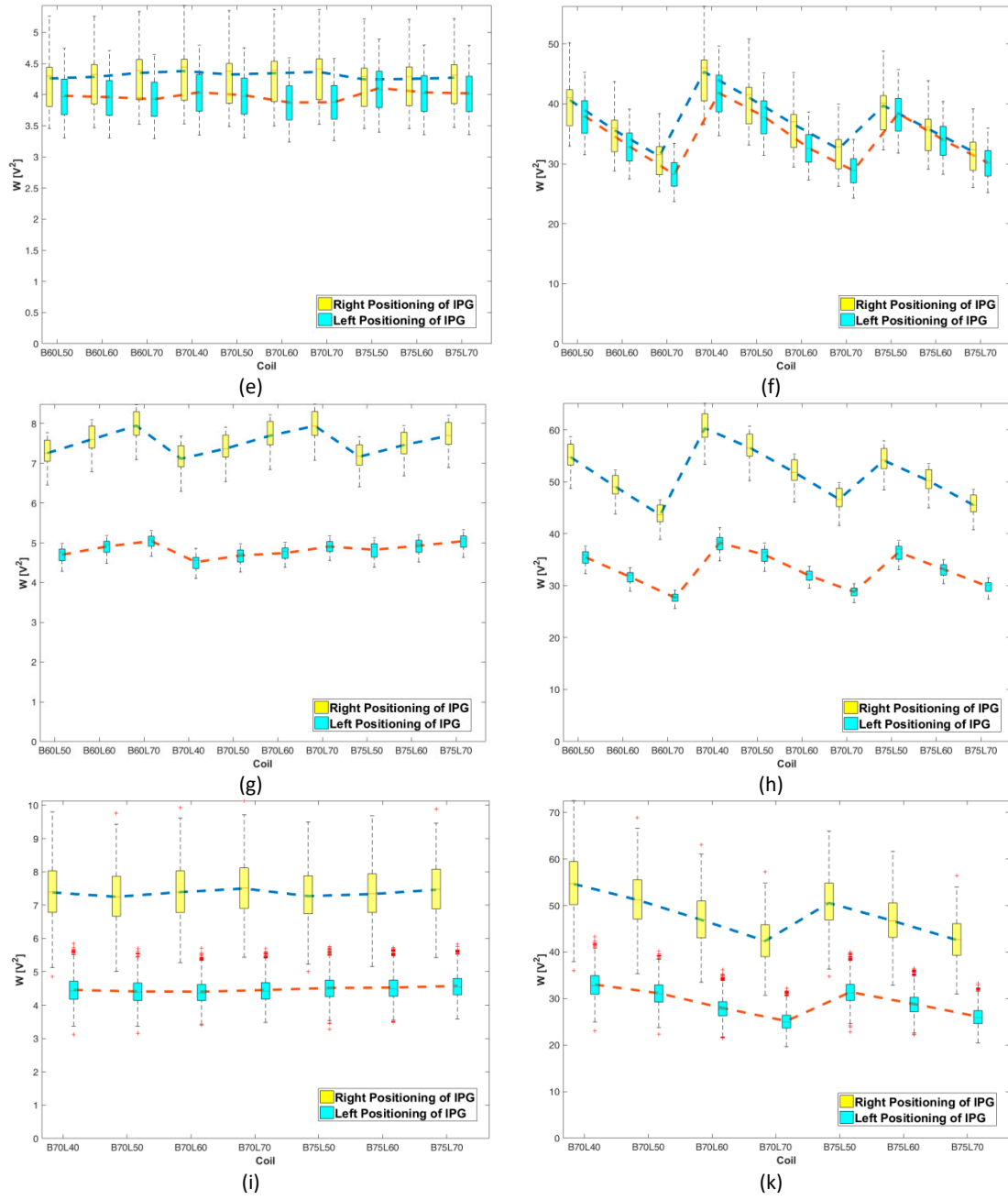
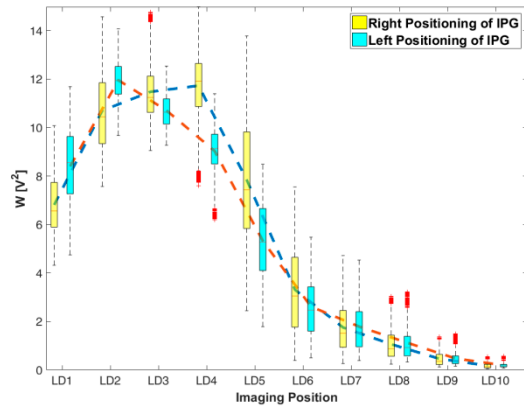
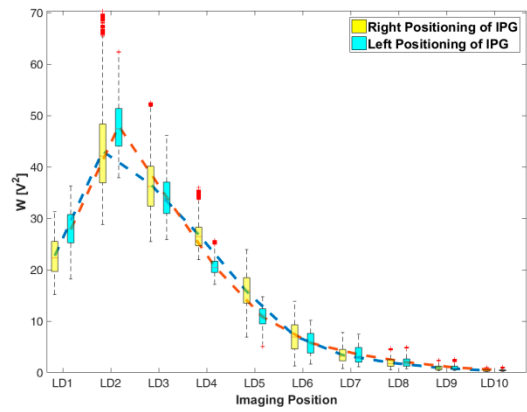


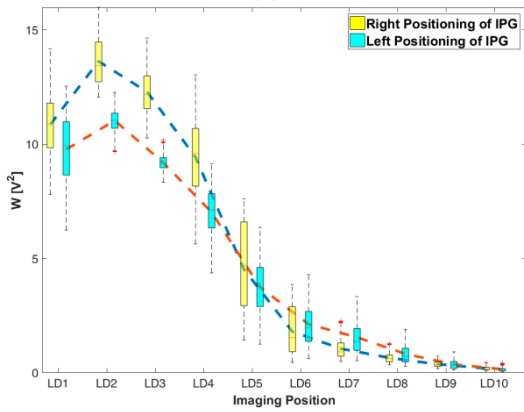
Figure S2: Distribution of the magnitude of the tangential electrical field at 64 MHz inside the models Ella (a, b), Billie (c, d), Louis (e, f), Glenn (g, h) and Fats (i, k) over all coil configurations. At the left column was investigated constant  $B_{1+RMS}$  at the iso center of the coil and at the right column the limiting value of the global SAR was considered.



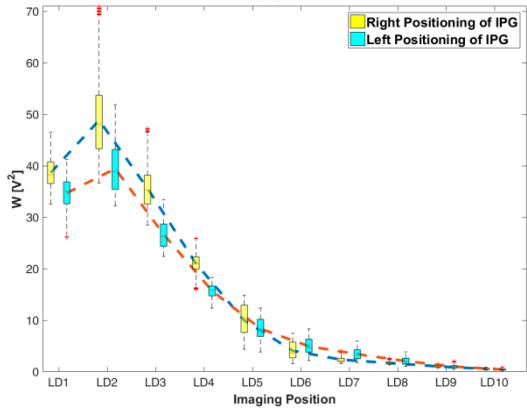
(a)



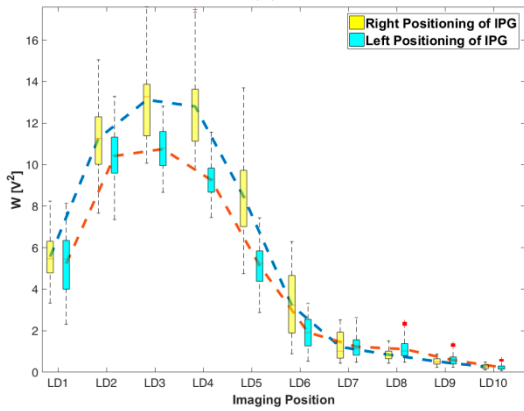
(b)



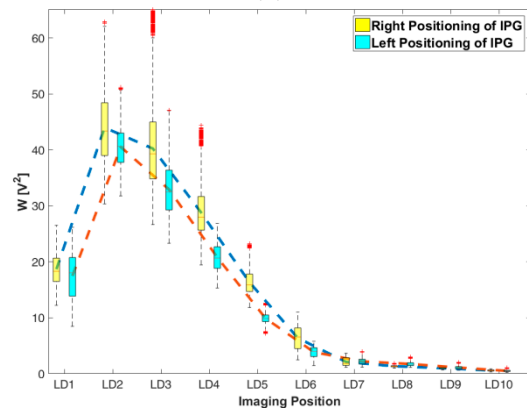
(c)



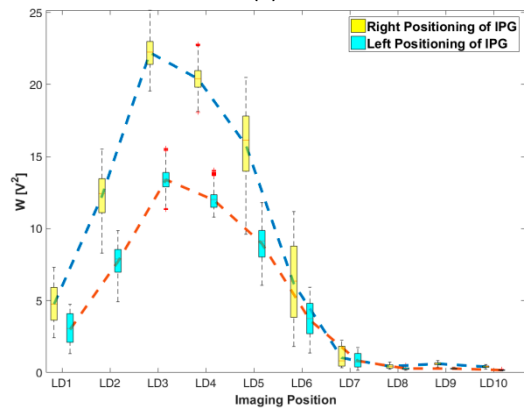
(d)



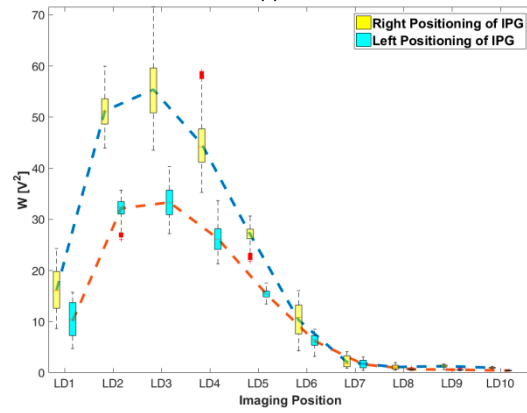
(e)



(f)



(g)



(h)

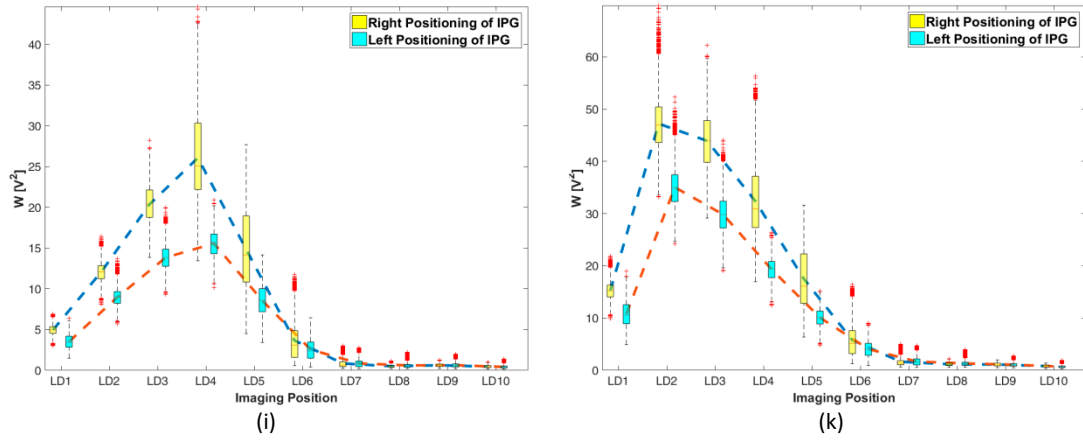
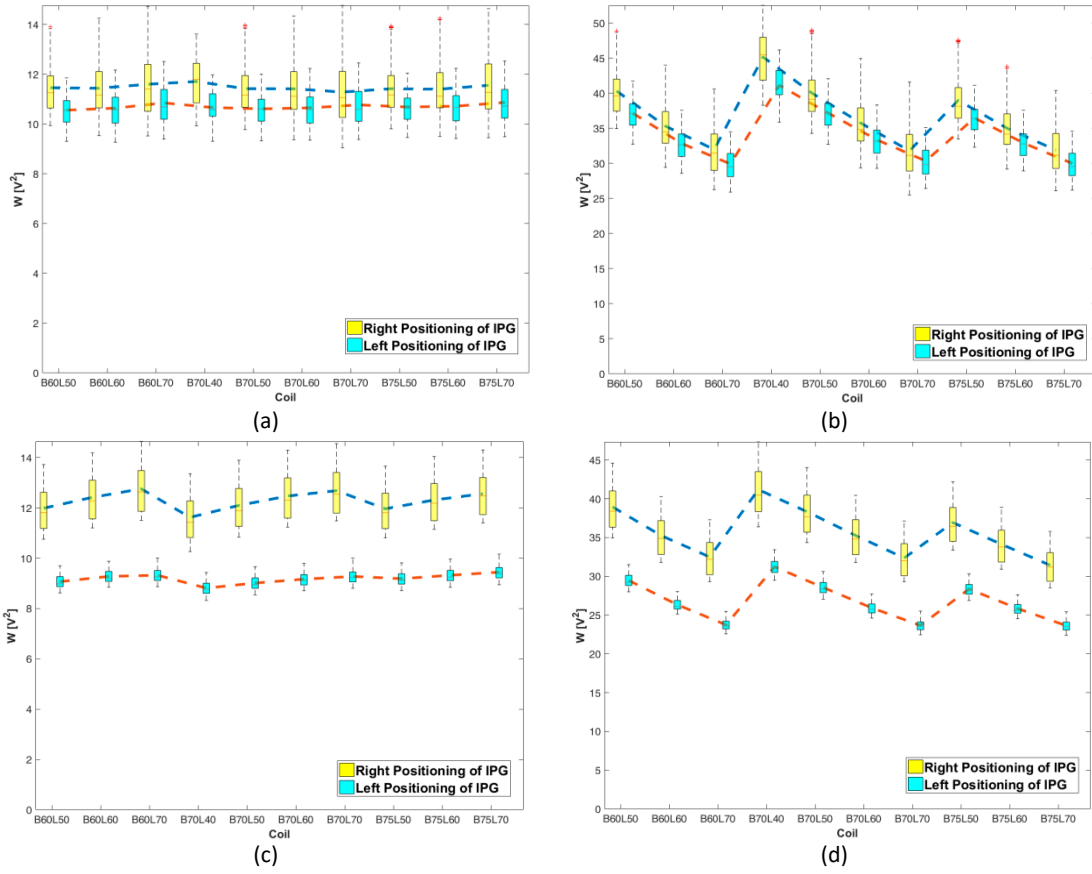


Figure S3: Distribution of the magnitude of the tangential electrical field at 128 MHz inside the models Ella (a, b), Billie (c, d), Louis (e, f), Glenn (g, h) and Fats (i, k) over all imaging positions. At the left column was investigated constant  $B_{1+}^{\text{RMS}}$  at the iso center of the coil and at the right column the limiting value of the global SAR was considered.



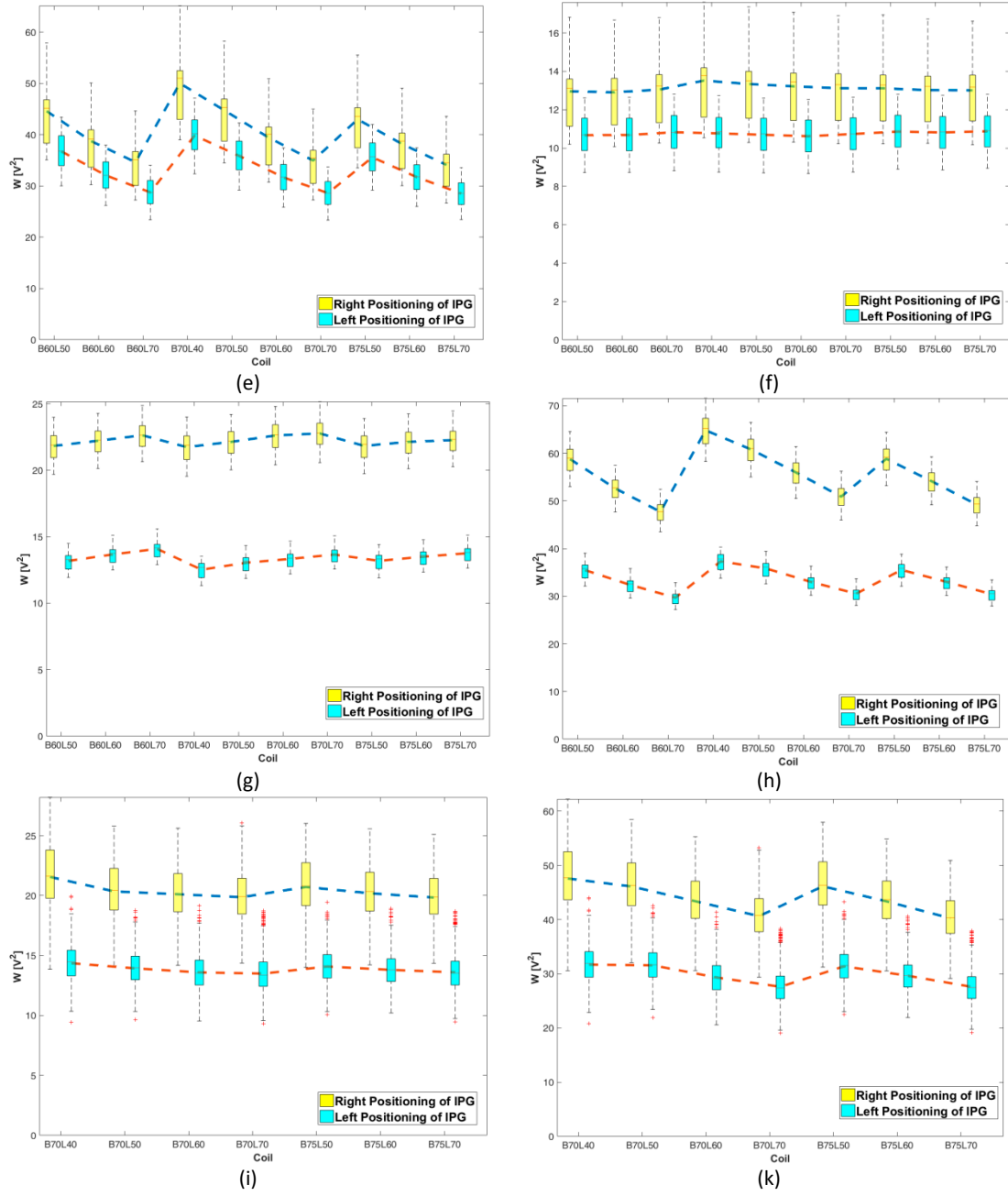


Figure S4: Distribution of the magnitude of the tangential electrical field at 128 MHz inside the models Ella (a, b), Billie (c, d), Louis (e, f), Glenn (g, h) and Fats (i, k) over all coil configurations. At the left column was investigated constant  $B_{1+}^+_{RMS}$  at the iso center of the coil and at the right column the limiting value of the global SAR was considered.

| MRI System | Anatomical Model | IPG Positioning | Landmark        |                 |                 |                 |                 |                 |                 |                 |                 |                  |
|------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|            |                  |                 | LD <sub>1</sub> | LD <sub>2</sub> | LD <sub>3</sub> | LD <sub>4</sub> | LD <sub>5</sub> | LD <sub>6</sub> | LD <sub>7</sub> | LD <sub>8</sub> | LD <sub>9</sub> | LD <sub>10</sub> |
| 1.5 T      | Duke             | Right           | -4.00           | -1.45           | -0.25           | <b>0</b>        | -0.70           | -3.36           | -9.35           | -15.81          | -18.72          | -20.65           |
|            |                  | Left            | -3.23           | -0.80           | <b>0</b>        | -0.13           | -1.55           | -4.73           | -9.24           | -10.81          | -12.38          | -15.27           |
|            | Ella             | Right           | -4.00           | -1.88           | -0.54           | <b>0</b>        | -1.23           | -4.61           | -9.53           | -14.62          | -18.69          | -21.94           |
|            |                  | Left            | -1.95           | -0.47           | <b>0</b>        | -0.54           | -2.71           | -6.66           | -9.38           | -12.37          | -15.57          | -18.74           |
|            | Billie           | Right           | -2.10           | -0.50           | <b>0</b>        | -0.62           | -2.80           | -7.29           | -12.41          | -16.06          | -19.52          | -23.42           |
|            |                  | Left            | -1.42           | -0.10           | <b>0</b>        | -0.95           | -3.81           | -7.85           | -10.49          | -13.25          | -17.48          | -21.56           |
|            | Louis            | Right           | -3.94           | -1.41           | -0.13           | <b>0</b>        | -0.99           | -3.98           | -10.00          | -14.85          | -17.34          | -20.39           |
|            |                  | Left            | -2.92           | -0.67           | <b>0</b>        | -0.46           | -2.19           | -6.28           | -11.09          | -12.32          | -14.40          | -18.02           |
|            | Glenn            | Right           | -5.21           | -1.65           | -0.18           | <b>0</b>        | -1.07           | -4.25           | -11.59          | -17.53          | -17.43          | -18.20           |
|            |                  | Left            | -4.42           | -1.28           | -0.05           | <b>0</b>        | -1.08           | -3.93           | -9.81           | -14.68          | -15.91          | -17.91           |
|            | Fats             | Right           | -3.45           | -1.08           | <b>0</b>        | -0.16           | -1.59           | -6.24           | -13.82          | -17.50          | -18.64          | -20.28           |
|            |                  | Left            | -3.05           | -0.89           | <b>0</b>        | -0.15           | -1.73           | -5.46           | -11.28          | -14.84          | -16.29          | -18.24           |
|            | Duke             | Right           | -1.69           | -0.31           | <b>0</b>        | -0.53           | -1.74           | -4.77           | -10.65          | -15.34          | -17.45          | -19.72           |
|            |                  | Left            | -1.53           | -0.09           | <b>0</b>        | -1.09           | -3.50           | -6.93           | -8.74           | -9.59           | -11.41          | -14.29           |
|            | Ella             | Right           | -1.56           | -0.44           | <b>0</b>        | -0.24           | -2.23           | -5.72           | -9.64           | -12.91          | -16.68          | -20.83           |
|            |                  | Left            | -0.56           | <b>0</b>        | -0.41           | -1.56           | -3.91           | -6.82           | -9.68           | -12.89          | -16.50          | -20.24           |
| 3 T        | Billie           | Right           | -1.08           | <b>0</b>        | -0.10           | -1.43           | -4.31           | -9.23           | -12.29          | -14.05          | -16.77          | -20.47           |
|            |                  | Left            | -0.60           | <b>0</b>        | -0.48           | -1.88           | -4.46           | -7.36           | -9.77           | -12.50          | -16.32          | -20.91           |
|            | Louis            | Right           | -2.29           | -0.61           | <b>0</b>        | -0.60           | -2.32           | -5.97           | -11.79          | -13.84          | -15.57          | -18.46           |
|            |                  | Left            | -1.41           | -0.01           | <b>0</b>        | -1.07           | -3.50           | -7.35           | -10.40          | -11.94          | -14.36          | -18.19           |
|            | Glenn            | Right           | -3.43           | -0.91           | <b>0</b>        | -0.41           | -2.05           | -5.88           | -13.98          | -16.72          | -16.08          | -17.57           |
|            |                  | Left            | -3.14           | -0.69           | <b>0</b>        | -0.52           | -2.31           | -5.97           | -12.24          | -16.63          | -17.39          | -19.24           |
|            | Fats             | Right           | -1.04           | -0.19           | <b>0</b>        | -0.92           | -2.98           | -7.80           | -13.71          | -14.96          | -15.74          | -17.82           |
|            |                  | Left            | -1.08           | <b>0</b>        | -0.19           | -1.43           | -3.65           | -7.41           | -11.73          | -13.06          | -14.40          | -16.90           |

Table S1: Deviation in dB of the mean W value for different landmark positions. The coil was adjusted to generate  $B_{1\text{ RMS}}^+ = 2\mu\text{T}$  at the iso center.

| MRI System | Anatomical Model | IPG Positioning | Landmark        |                 |                 |                 |                 |                 |                 |                 |                 |                  |
|------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|            |                  |                 | LD <sub>1</sub> | LD <sub>2</sub> | LD <sub>3</sub> | LD <sub>4</sub> | LD <sub>5</sub> | LD <sub>6</sub> | LD <sub>7</sub> | LD <sub>8</sub> | LD <sub>9</sub> | LD <sub>10</sub> |
| 1.5 T      | Duke             | Right           | -2.13           | <b>0</b>        | -0.45           | -1.36           | -2.73           | -5.36           | -10.92          | -16.84          | -18.71          | -19.70           |
|            |                  | Left            | -2.03           | <b>0</b>        | -0.96           | -2.25           | -4.24           | -7.46           | -11.25          | -12.25          | -13.17          | -14.93           |
|            | Ella             | Right           | -1.45           | <b>0</b>        | -0.31           | -1.00           | -2.28           | -5.41           | -9.61           | -13.45          | -16.86          | -18.54           |
|            |                  | Left            | -0.93           | <b>0</b>        | -1.18           | -2.87           | -5.34           | -8.2            | -10.72          | -13.09          | -15.1           | -16.88           |
|            | Billie           | Right           | -0.02           | <b>0</b>        | -1.06           | -2.59           | -4.72           | -8.41           | -11.90          | -14.23          | -16.55          | -19.16           |
|            |                  | Left            | <b>0</b>        | -0.29           | -1.77           | -3.63           | -6.47           | -9.27           | -10.86          | -12.29          | -14.79          | -17.99           |
|            | Louis            | Right           | -2.04           | <b>0</b>        | -0.45           | -1.30           | -2.75           | -5.46           | -10.70          | -14.42          | -15.85          | -17.71           |
|            |                  | Left            | -1.79           | <b>0</b>        | -1.04           | -2.49           | -4.74           | -8.56           | -12.21          | -12.77          | -13.64          | -15.82           |
|            | Glenn            | Right           | -3.11           | <b>0</b>        | -0.21           | -1.13           | -2.75           | -5.70           | -12.27          | -16.92          | -15.46          | -15.45           |
|            |                  | Left            | -2.68           | <b>0</b>        | -0.46           | -1.51           | -3.10           | -5.81           | -10.86          | -14.49          | -14.71          | -15.34           |
|            | Fats             | Right           | -3.31           | <b>0</b>        | -0.66           | -1.93           | -3.82           | -8.08           | -15.23          | -18.50          | -18.55          | -19.22           |
|            |                  | Left            | -3.09           | <b>0</b>        | -0.77           | -2.03           | -4.07           | -7.71           | -12.87          | -15.68          | -16.34          | -17.27           |
|            | Duke             | Right           | -4.18           | <b>0</b>        | -0.21           | -1.54           | -3.56           | -6.89           | -12.72          | -16.75          | -18.50          | -20.45           |
|            |                  | Left            | -4.41           | <b>0</b>        | -0.69           | -2.44           | -5.65           | -9.30           | -11.09          | -11.50          | -12.99          | -15.46           |
|            | Ella             | Right           | -2.76           | <b>0</b>        | -0.66           | -2.02           | -4.22           | -7.86           | -11.21          | -13.80          | -17.04          | -21.15           |
|            |                  | Left            | -2.30           | <b>0</b>        | -1.47           | -3.66           | -6.26           | -9.06           | -11.74          | -14.69          | -17.60          | -20.37           |
| 3 T        | Billie           | Right           | -0.99           | <b>0</b>        | -1.33           | -3.59           | -6.64           | -11.15          | -13.38          | -14.76          | -16.67          | -19.49           |
|            |                  | Left            | -0.45           | <b>0</b>        | -1.70           | -3.90           | -6.72           | -9.17           | -10.73          | -13.13          | -16.39          | -19.80           |
|            | Louis            | Right           | -3.74           | <b>0</b>        | -0.43           | -1.90           | -4.36           | -8.20           | -13.74          | -15.13          | -16.31          | -18.59           |
|            |                  | Left            | -3.52           | <b>0</b>        | -0.97           | -2.94           | -6.15           | -10.09          | -12.76          | -13.82          | -15.77          | -19.08           |
|            | Glenn            | Right           | -5.35           | -0.33           | <b>0</b>        | -0.96           | -3.07           | -7.07           | -15.08          | -17.42          | -16.04          | -17.51           |
|            |                  | Left            | -5.07           | -0.11           | <b>0</b>        | -1.05           | -3.34           | -7.14           | -13.27          | -17.04          | -17.65          | -19.11           |
|            | Fats             | Right           | -4.88           | <b>0</b>        | -0.29           | -1.81           | -4.65           | -9.60           | -15.22          | -16.36          | -16.56          | -17.91           |
|            |                  | Left            | -5.18           | <b>0</b>        | -0.70           | -2.54           | -5.36           | -9.41           | -13.63          | -14.73          | -15.45          | -17.24           |

Table S2: Deviation in dB of the mean W value for different landmark positions. The coil was adjusted to generate the limiting SAR value.



| MRI System | Anatomical Model | IPG Positioning | Coil   |        |          |        |        |        |          |        |        |          |
|------------|------------------|-----------------|--------|--------|----------|--------|--------|--------|----------|--------|--------|----------|
|            |                  |                 | B60L50 | B60L60 | B60L70   | B70L40 | B70L50 | B70L60 | B70L70   | B75L50 | B75L60 | B75L70   |
| 1.5 T      | Duke             | Right           | -0.15  | -0.09  | -0.02    | -0.16  | -0.13  | -0.11  | <b>0</b> | -0.15  | -0.14  | -0.04    |
|            |                  | Left            | -0.17  | -0.03  | -0.03    | -0.27  | -0.22  | -0.25  | -0.16    | -0.18  | -0.09  | <b>0</b> |
|            | Ella             | Right           | -0.43  | -0.13  | <b>0</b> | -1.29  | -0.71  | -0.44  | -0.17    | -0.68  | -0.44  | -0.18    |
|            |                  | Left            | -1.30  | -0.50  | <b>0</b> | -2.24  | -1.43  | -0.75  | -0.24    | -1.49  | -0.78  | -0.27    |
|            | Billie           | Right           | -1.55  | -0.58  | <b>0</b> | -2.60  | -1.60  | -0.84  | -0.24    | -1.57  | -0.88  | -0.32    |
|            |                  | Left            | -1.82  | -0.66  | <b>0</b> | -2.86  | -1.80  | -0.93  | -0.26    | -1.74  | -0.88  | -0.25    |
|            | Louis            | Right           | -0.25  | -0.06  | <b>0</b> | -0.55  | -0.29  | -0.16  | -0.05    | -0.31  | -0.19  | -0.09    |
|            |                  | Left            | -0.32  | -0.09  | -0.04    | -0.64  | -0.37  | -0.31  | -0.16    | -0.30  | -0.14  | <b>0</b> |
|            | Glenn            | Right           | -0.21  | -0.11  | -0.03    | -0.28  | -0.14  | -0.09  | <b>0</b> | -0.23  | -0.14  | -0.07    |
|            |                  | Left            | -0.25  | -0.10  | -0.09    | -0.33  | -0.24  | -0.30  | -0.18    | -0.14  | -0.07  | <b>0</b> |
|            | Fats             | Right           | -      | -      | -        | -0.53  | -0.33  | -0.18  | -0.02    | -0.29  | -0.16  | <b>0</b> |
|            |                  | Left            | -      | -      | -        | -0.38  | -0.28  | -0.21  | -0.11    | -0.31  | -0.15  | <b>0</b> |
|            | Duke             | Right           | -0.21  | -0.11  | -0.06    | -0.06  | -0.03  | -0.04  | <b>0</b> | -0.15  | -0.14  | <b>0</b> |
|            |                  | Left            | -0.11  | -0.12  | -0.03    | -0.06  | -0.10  | -0.21  | -0.14    | -0.11  | -0.12  | <b>0</b> |
|            | Ella             | Right           | -0.18  | -0.23  | -0.16    | -0.35  | -0.22  | -0.28  | -0.30    | -0.27  | -0.28  | <b>0</b> |
|            |                  | Left            | -0.10  | -0.09  | -0.07    | -0.10  | -0.07  | -0.13  | -0.11    | -0.10  | -0.09  | <b>0</b> |
| 3 T        | Billie           | Right           | -0.32  | -0.12  | <b>0</b> | -0.53  | -0.30  | -0.16  | -0.06    | -0.38  | -0.21  | -0.08    |
|            |                  | Left            | -0.27  | -0.14  | -0.11    | -0.45  | -0.29  | -0.23  | -0.15    | -0.26  | -0.17  | <b>0</b> |
|            | Louis            | Right           | -0.19  | -0.23  | -0.20    | -0.28  | -0.08  | -0.16  | -0.21    | -0.22  | -0.24  | <b>0</b> |
|            |                  | Left            | -0.06  | -0.08  | -0.06    | -0.02  | -0.06  | -0.17  | -0.13    | -0.06  | -0.09  | <b>0</b> |
|            | Glenn            | Right           | -0.17  | -0.11  | -0.03    | -0.15  | -0.08  | -0.04  | <b>0</b> | -0.22  | -0.15  | -0.17    |
|            |                  | Left            | -0.27  | -0.14  | <b>0</b> | -0.45  | -0.29  | -0.27  | -0.14    | -0.32  | -0.22  | -0.27    |
|            | Fats             | Right           | -      | -      | -        | -0.19  | -0.18  | -0.25  | -0.22    | -0.23  | -0.25  | <b>0</b> |
|            |                  | Left            | -      | -      | -        | -0.11  | -0.08  | -0.23  | -0.20    | -0.16  | -0.19  | <b>0</b> |

Table S3: Deviation in dB of the mean W value for different coil configuration at landmark LD<sub>3</sub>. The coil was adjusted to generate to generate  $B_1^+_{\text{RMS}}=2\mu\text{T}$  at the iso center.

| MRI System | Anatomical Model | IPG Positioning | Coil     |        |        |          |          |        |        |          |        |        |
|------------|------------------|-----------------|----------|--------|--------|----------|----------|--------|--------|----------|--------|--------|
|            |                  |                 | B60L50   | B60L60 | B60L70 | B70L40   | B70L50   | B70L60 | B70L70 | B75L50   | B75L60 | B75L70 |
| 1.5 T      | Duke             | Right           | -0.37    | -0.62  | -0.97  | <b>0</b> | -0.14    | -0.35  | -0.66  | -0.35    | -0.51  | -0.78  |
|            |                  | Left            | -0.14    | -0.43  | -0.92  | -0.02    | -0.04    | -0.40  | -0.77  | <b>0</b> | -0.26  | -0.62  |
|            | Ella             | Right           | -0.55    | -1.12  | -1.71  | <b>0</b> | -0.4     | -0.91  | -1.46  | -0.57    | -1.01  | -1.51  |
|            |                  | Left            | -0.57    | -1.26  | -1.9   | <b>0</b> | -0.48    | -1.13  | -1.7   | -0.49    | -1.05  | -1.61  |
|            | Billie           | Right           | -0.48    | -1.17  | -1.86  | <b>0</b> | -0.51+   | -1.08  | -1.72  | -0.71    | -1.22  | -1.80  |
|            |                  | Left            | -0.40    | -1.09  | -1.83  | <b>0</b> | -0.47    | -1.13  | -1.74  | -0.47    | -1.04  | -1.63  |
|            | Louis            | Right           | -0.18    | -0.52  | -0.97  | <b>0</b> | -0.18    | -0.47  | -0.88  | -0.41    | -0.65  | -1.01  |
|            |                  | Left            | -0.09    | -0.49  | -1.05  | <b>0</b> | -0.17    | -0.62  | -1.04  | -0.11    | -0.47  | -0.90  |
|            | Glenn            | Right           | -0.19    | -0.26  | -0.51  | -0.17    | <b>0</b> | -0.06  | -0.28  | -0.21    | -0.24  | -0.44  |
|            |                  | Left            | -0.17    | -0.33  | -0.68  | -0.09    | -0.07    | -0.33  | -0.57  | <b>0</b> | -0.18  | -0.45  |
|            | Fats             | Right           | -        | -      | -      | <b>0</b> | -0.06    | -0.27  | -0.66  | -0.16    | -0.32  | -0.64  |
|            |                  | Left            | -        | -      | -      | <b>0</b> | -0.10    | -0.49  | -0.87  | -0.03    | -0.32  | -0.69  |
|            | Duke             | Right           | -0.38    | -0.56  | -0.82  | <b>0</b> | -0.10    | -0.25  | -0.49  | -0.20    | -0.35  | -0.59  |
|            |                  | Left            | -0.20    | -0.27  | -0.38  | -0.15    | <b>0</b> | -0.08  | -0.19  | 0.00     | -0.05  | -0.18  |
|            | Ella             | Right           | -0.49    | -1.16  | -1.51  | <b>0</b> | -0.55    | -0.85  | -1.31  | -0.68    | -1.00  | -1.44  |
|            |                  | Left            | -0.38    | -0.81  | -1.17  | <b>0</b> | -0.29    | -0.68  | -1.03  | -0.36    | -0.70  | -1.05  |
| 3 T        | Billie           | Right           | -0.42    | -1.06  | -1.62  | <b>0</b> | -0.49    | -1.06  | -1.62  | -0.68    | -1.21  | -1.73  |
|            |                  | Left            | -0.24    | -0.86  | -1.44  | <b>0</b> | -0.44    | -0.99  | -1.49  | -0.48    | -0.99  | -1.48  |
|            | Louis            | Right           | -0.21    | -0.56  | -0.92  | <b>0</b> | -0.21    | -0.49  | -0.90  | -0.41    | -0.67  | -1.05  |
|            |                  | Left            | <b>0</b> | -0.20  | -0.49  | -0.07    | -0.10    | -0.30  | -0.53  | -0.11    | -0.28  | -0.55  |
|            | Glenn            | Right           | -0.34    | -0.23  | -0.30  | <b>0</b> | -0.09    | -0.18  | -0.08  | -0.19    | -0.14  | -0.24  |
|            |                  | Left            | -0.29    | -0.13  | -0.14  | <b>0</b> | -0.13    | -0.03  | -0.03  | -0.11    | -0.34  | -0.04  |
|            | Fats             | Right           | -        | -      | -      | <b>0</b> | -0.01    | -0.22  | -0.53  | -0.05    | -0.23  | -0.52  |
|            |                  | Left            | -        | -      | -      | -0.36    | -0.22    | -0.23  | -0.36  | <b>0</b> | -0.11  | -0.33  |

Table S4: Deviation in dB of the mean W value for different coil configuration at landmark LD<sub>3</sub>. The coil was adjusted to generate the limiting SAR value.