A Low SAR Beam Steering Slotted Array Antenna for mmWave 5G Mobile Handsets

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Abstract:
A beam steering array antenna, which reduces SAR value for mm-wave 5G mobile handset is proposed. The proposed design is based on the model of i Phone 6s plus back panel which consists of fully metal covered back cover and LCD shielding. The metal cover has two sub arrays; one formed at the back side, consists of 8 rotated L shaped slots, can be used in talk mode and another formed on the top of the metal frame, consist of 8 rotated rectangular slots can be used in data mode. The proposed antenna array exhibits good reflection coefficient and from the evidence of radiation pattern measured at different scan angles, the structure has acceptable beam steering property. The maximum achievable gain is 16. S5dBi with bandwidth of 3.4 GHZ. The proposed L shaped slotted rectangular sub array reduces SAR to 0.0609 W/Kg and 0.653 W/Kg for 0° and 40° Scan angles respectively.

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