



**COMPUTATIONAL EME COMPLIANCE ASSESSMENT OF THE DIGITAL
VEHICULAR REPEATER (DVR VHF), MOBEXCOM DVRS VHF (DQPM DVR3000P)
AND COMPANION APX SERIES MODEL M37TXS9PW1AN (HUW1001A) MOBILE
RADIO.**

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Introduction

This report summarizes the computational [numerical modeling] analysis performed to document compliance of the DVR VHF, model # MOBEXCOM DVRS VHF (DQPM DVR3000P) with FCC ID # LO6-DVRSVHF interfaced with, and transmitting simultaneously with Companion mobile radio, model # M37TXS9PW1AN (HUW1001A) and vehicle-mounted antennas with the US Federal Communications Commission (FCC) guidelines for human exposure to radio frequency (RF) emissions. The devices operate in the following frequency bands:

Regions	Device	Bands	Frequency Band (MHz)
FCC US	DVR VHF	VHF band	150.8 – 173.4
	Companion Mobile	LMR VHF	150.8 – 173.4
		LMR UHF1	406.1 – 470
		LMR UHF2	450 -512
		LMR 7/800	769-775; 799-824; 851-869

This computational analysis supplements the measurements conducted to evaluate the compliance of the exposure from this DVR and Companion mobile radio with respect to applicable *maximum permissible exposure* (MPE) limits. All test conditions (496 in total) that did not conform with applicable MPE limits were analyzed to determine whether those conditions complied with the *specific absorption rate* (SAR) limits for general public exposure

(1.6 W/kg averaged over 1 gram of tissue and 0.08 W/kg averaged over the whole body) set forth in FCC guidelines, which are based on the IEEE C95.1-1999 standard [1]. With SAR simulation reduction consideration, total 84 test conditions (with 168 independent simulations) had been performed addressing exposure of back and front seat passenger to the DVR VHF repeater with trunk-mounted antennas and Companion mobile radio (VHF, UHF R1, UHF R2 and 7/800) with roof-mount antennas.

For all simulations a commercial code based on Finite-Difference-Time-Domain (FDTD) methodology was employed to carry out the computational analysis. It is well established and recognized within the scientific community that SAR is the primary dosimetric quantity used to evaluate the human body's absorption of RF energy and that MPE limits are in fact derived from SAR. Accordingly, the SAR computations provide a scientifically valid and more relevant estimate of human exposure to RF energy.

Method

The simulation code employed is XFDTD™ v7.6.0, by Remcom Inc., State College, PA. This computational suite provides means to simulate the heterogeneous full human body model defined according to the IEC/IEEE 62704-2-2017 standard and derived from the so-called Visible Human [2], discretized in 3 mm voxels. The IEC/IEEE 62704-2-2017 standard dielectric properties of 39 body tissues are automatically assigned by XFDTD™ at any specific frequency. The “seated” man model was obtained from the standing model by modifying the articulation angles at the hips and the knees. Details of the computational method and model are provided in the Appendix A to this report. The evaluation of the computational uncertainties and results of the benchmark validations are provided in the Appendix B attached to this report. The XFDTD code validation performed according to IEEE/IEC 62704-1:2017 standard by Remcom Inc., is provided in conjunction with this report.

The car model has been imported into XFDTD™ from the CAD file of a sedan car having dimensions 4.98 m (L) x 1.85 m (W) x 1.18 m (H), and discretized with the minimum resolution of 3 mm and the maximum resolution of 8 mm. The Figure 1 below show both the CAD model and the photo of the actual car. This CAD model has been incorporated into the IEC/IEEE 62704-2-2017 standard.

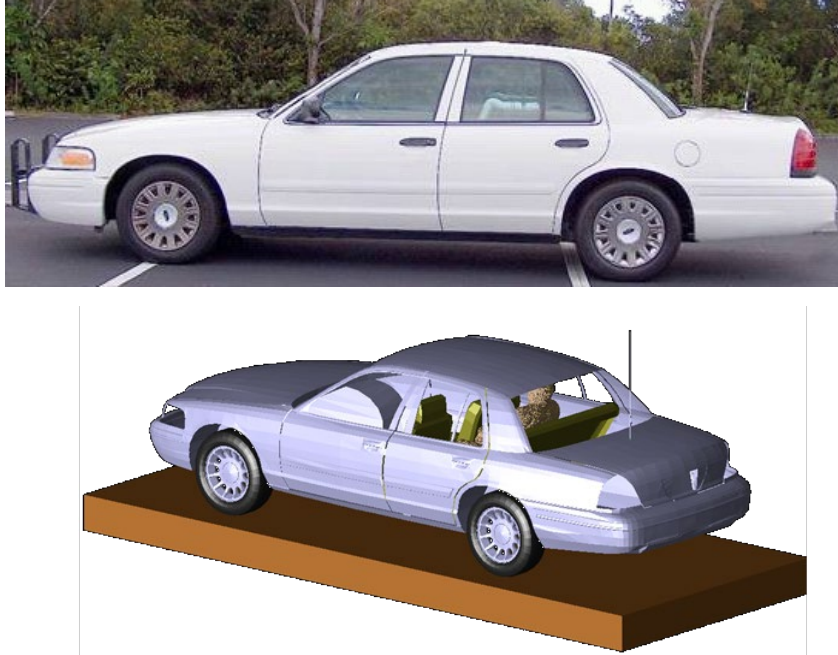


Figure 1: The photo picture of the car used in field measurements and the corresponding CAD model used in simulations

For passenger exposure, Companion mobile antenna position is on the roof and DVR VHF repeater antenna position is on the trunk. The distance of trunk mounted antenna from the passenger head when the passenger is located in the center of the back seat was set at 85 cm, to replicate the experimental conditions used in MPE measurements. Figure 2 shows some of the XFDTD™ computational models used for passenger (back seat) exposure to trunk mounted antennas. Figure 3 shows XFDTD™ computational models used for passenger (front seat) exposure to roof mounted antennas.

According to the IEC/IEEE 62704-2-2017 standard for exposure simulations from vehicle mount antennas the lossy dielectric slab with 30 cm thickness, dielectric constant of 8 and conductivity of 0.01 S/m has been introduced in the computational model to properly account for the effect of the ground (pavement) on exposure.

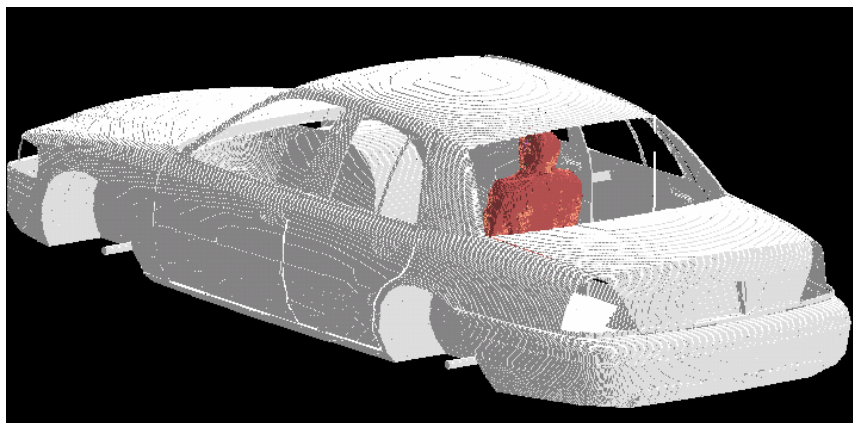


Figure 2: Passenger (back seat) model exposed to a trunk-mount antenna: XFDTD geometry.
The antenna is mounted at 85 cm from the passenger located in the center of the back seat.

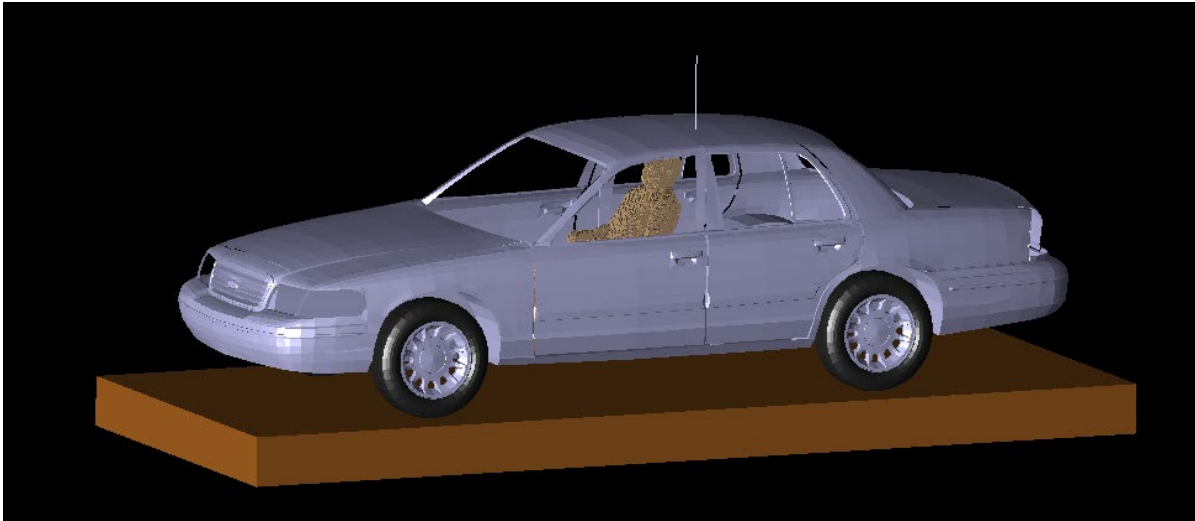


Figure 3: Passenger (front seat) model exposed to a roof-mount antenna: XFDTD geometry.

The computational code employs a time-harmonic excitation to produce a steady state electromagnetic field in the exposed body. Subsequently, the corresponding SAR distribution is automatically processed in order to determine the whole-body and 1-g average SAR. The maximum average output power from DVR VHF repeater is 6W (136-174 MHz) and Companion mobile radio antenna 120W (136-174 MHz, 380-484 MHz), 48W (485-512 MHz), 30W (512-520 MHz), 36W (764-805 MHz) and 42W (806-870 MHz). Since the ohmic losses in the car materials, as well as the mismatch losses at the antenna feed-point are neglected, and source-based time averaging (100% talk time) for DVR VHF repeater and (50% talk time) for Companion mobile radio were employed, all computational results are normalized to full average net output power of DVR VHF repeater, i.e., 6 W (136-174 MHz) and half the average net output power of Companion radio, i.e., 60W (136-174 MHz, 380-484 MHz), 24W (485-512 MHz), 15W (512-520 MHz), 18W (764-805 MHz) and 21W (806-870 MHz); less the corresponding minimum insertion loss in excess of 0.5 dB of the feed cables supplied with the antennas. This power normalization is in accordance with the IEC/IEEE 62704-2-2017 standard.

Results of SAR computations for car passengers

The test conditions requiring SAR computations are summarized in Table 1 (DVR VHF, 100% talk time) and Table 2 (Companion mobile, 50% talk time), together with the antenna data, the SAR results, and power density (P.D.) as obtained from the measurements in the corresponding test conditions. The conditions are for antennas mounted on the trunk (DVR VHF) and on the roof (Companion mobile). The antenna length in Table 1 & 2 includes the 1.8 cm magnetic mount base used in measurements to position the antenna on the vehicle. The same length was used in simulation model.

The passenger is located in the center or on the side of the rear seat, driver or passenger side of the front seat corresponding to the respective configurations defined in the IEC/IEEE 62704-2-2017 standard.

All the transmit frequency, antenna length, and passenger location combinations reported in Table 1 & 2 have been simulated individually. These tables also include the interpolated adjustment factor and corresponding SAR scaled values following requirement of the IEC/IEEE 62704-2-2017 standard.

Table 1a (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
DVR VHF repeater (100% talk-time)

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Trunk	HAD4007A, 1/4 Wave (144-150.8MHz)	50.8	150.8000	0.10	Back Center	0.18	0.008	1.90	2.40	0.34	0.019
					Back Side	0.06	0.005	4.19	3.00	0.27	0.015
Trunk	HAD4008A, 1/4 Wave (150.8-162MHz)	47.3	150.8000	0.10	Back Center	0.18	0.008	1.90	2.40	0.34	0.019
					Back Side	0.06	0.005	4.19	3.00	0.27	0.015
			156.4000	0.14	Back Center	0.12	0.007	1.91	2.41	0.23	0.017
					Back Side	0.15	0.006	4.15	2.99	0.63	0.018
			162.0000	0.23	Back Center	0.16	0.007	1.92	2.42	0.31	0.018
					Back Side	0.16	0.006	4.11	2.98	0.67	0.019
Trunk	HAD4009A, 1/4 Wave (162-174MHz)	44.8	162.0000	0.17	Back Center	0.16	0.008	1.92	2.42	0.31	0.018
					Back Side	0.17	0.007	4.11	2.98	0.68	0.020
			167.7000	0.16	Back Center	0.13	0.006	1.93	2.42	0.25	0.015
					Back Side Fig. 3 & 4	0.17	0.005	4.07	2.98	0.70	0.016
			173.4000	0.19	Back Center	0.10	0.005	1.94	2.43	0.19	0.013
					Back Side	0.13	0.005	4.03	2.97	0.52	0.015

Note:

Blue – the highest SAR results computed for the respective frequency bands

Table 1b (configurations exceed FCC MPE limits):
 Results of the Computations and Adjusted SAR for passenger (front seat) exposure of
 DVR VHF repeater (100% talk-time)

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Trunk	HAD4007A, 1/4 Wave (144-150.8MHz)	50.8	150.8000	0.11	Driver	0.14	0.005	2.20	2.00	0.31	0.011
					Front Side	0.12	0.005	2.20	2.00	0.25	0.010
Trunk	HAD4008A, 1/4 Wave (150.8-162MHz)	47.3	156.4000	0.10	Driver	0.23	0.006	2.18	2.01	0.51	0.012
					Front Side	0.25	0.006	2.18	2.01	0.55	0.012
Trunk	HAD4009A, 1/4 Wave (162-174MHz)	44.8	173.4000	0.12	Driver	0.14	0.004	2.13	2.05	0.29	0.007
					Front Side	0.17	0.004	2.13	2.05	0.35	0.008

Table 2a (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – VHF Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	AN000131A01, 1/4 wave (136-870MHz)	57.5	158.0125	0.37	Back Center	0.26	0.005	1.33	1.90	0.34	0.010
					Back Side	0.56	0.005	1.02	2.41	0.57	0.012
			165.0125	0.35	Back Center	0.11	0.003	1.37	1.89	0.15	0.006
					Back Side	0.31	0.005	1.04	2.43	0.32	0.012
	HAD4021A, 1/4 Wave (136-174MHz)	53.5	158.0125	0.33	Back Center	0.17	0.004	1.33	1.90	0.22	0.008
					Back Side	0.28	0.004	1.02	2.41	0.29	0.010
			150.8000	0.32	Back Center	0.25	0.006	1.30	1.90	0.32	0.012
					Back Side	0.53	0.008	1.00	2.40	0.53	0.019
	HAD4017A, 1/4 Wave (146-174MHz)	48.0	165.0125	0.42	Back Center	0.05	0.003	1.37	1.89	0.07	0.005
					Back Side	0.18	0.004	1.04	2.43	0.19	0.010
			158.0125	0.36	Back Center	0.17	0.004	1.33	1.90	0.22	0.008
					Back Side	0.29	0.004	1.02	2.41	0.29	0.010
	HAD4022A, 5/8 Wave (132-174MHz)	98.3	165.0125	0.17	Back Center	0.05	0.003	1.37	1.89	0.07	0.005
					Back Side	0.14	0.003	1.04	2.43	0.15	0.008
		104.5	158.0125	0.15	Back Center	0.12	0.004	1.33	1.90	0.16	0.007
					Back Side	0.17	0.003	1.02	2.41	0.18	0.006
		115.8	150.8000	0.11	Back Center	0.16	0.004	1.30	1.90	0.21	0.007
					Back Side	0.28	0.004	1.00	2.40	0.28	0.010
		91.7	173.0125	0.09	Back Center	0.24	0.005	1.40	1.89	0.33	0.009
					Back Side	0.37	0.010	1.05	2.44	0.39	0.025

Table 2a continued (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – VHF Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	RAD4010ARB, 1/2 Wave (136-174MHz)	118.3	158.0125	0.09	Back Center	0.10	0.003	1.33	1.90	0.13	0.006
					Back Side	0.11	0.002	1.02	2.41	0.11	0.004
		105.5	173.0125	0.07	Back Center	0.15	0.003	1.40	1.89	0.21	0.006
					Back Side	0.22	0.006	1.05	2.44	0.24	0.015
		114.3	165.0125	0.06	Back Center	0.04	0.002	1.37	1.89	0.05	0.003
					Back Side	0.08	0.002	1.04	2.43	0.08	0.005
		128.6	150.8000	0.06	Back Center	0.12	0.003	1.30	1.90	0.16	0.006
					Back Side	0.20	0.003	1.00	2.40	0.20	0.008
	HAD4016A, 1/4 Wave (136-162MHz)	53.1	162.0000	0.34	Back Center	0.06	0.003	1.35	1.90	0.08	0.006
					Back Side	0.21	0.004	1.03	2.42	0.22	0.009
			156.4000	0.32	Back Center	0.24	0.005	1.33	1.90	0.31	0.010
					Back Side	0.34	0.005	1.01	2.41	0.35	0.011
	HAD4007A, 1/4 Wave (144-150.8MHz)	50.8	150.8000	0.37	Back Center	0.25	0.006	1.30	1.90	0.32	0.012
					Back Side	0.53	0.008	1.00	2.40	0.54	0.020
	HAD4008A, 1/4 Wave (150.8-162MHz)	47.3	162.0000	0.36	Back Center	0.06	0.003	1.35	1.90	0.08	0.006
					Back Side	0.22	0.004	1.03	2.42	0.22	0.009
			156.4000	0.35	Back Center	0.23	0.005	1.33	1.90	0.31	0.010
					Back Side	0.35	0.005	1.01	2.41	0.35	0.011
	HAD4009A, 1/4 Wave (162-174MHz)	44.8	165.0125	0.35	Back Center	0.05	0.003	1.37	1.89	0.07	0.005
					Back Side	0.18	0.004	1.04	2.43	0.19	0.010
			162.0000	0.29	Back Center	0.06	0.003	1.35	1.90	0.08	0.006
					Back Side	0.22	0.004	1.03	2.42	0.22	0.009

Table 2a continued (configurations exceed FCC MPE limits):
 Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
 Companion mobile radio (50% talk-time) – UHF R1 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	AN000131A01, 1/4 wave (136-870MHz)	57.5	406.5000	0.11	Back Center	0.38	0.009	2.41	1.81	0.92	0.017
					Back Side	0.46	0.011	1.60	2.83	0.74	0.031
			438.0125	0.09	Back Center	0.30	0.008	2.55	1.80	0.76	0.014
					Back Side	0.34	0.007	1.67	2.88	0.56	0.021
			450.0125	0.09	Back Center	0.32	0.007	2.60	1.80	0.82	0.013
					Back Side	0.32	0.007	1.70	2.90	0.54	0.020
			469.9875	0.08	Back Center	0.25	0.005	2.61	1.85	0.65	0.010
					Back Side	0.20	0.007	1.69	2.85	0.34	0.021
	HAE6011A, 5/8 Wave (380-433MHz)	92.8	406.5000	0.03	Back Center	0.20	0.004	2.41	1.81	0.49	0.008
					Back Side	0.27	0.006	1.60	2.83	0.43	0.017
			432.9875	0.03	Back Center	0.16	0.006	2.53	1.81	0.41	0.010
					Back Side	0.13	0.005	1.66	2.87	0.22	0.016
	HAE6013A, 1/2 Wave (380-470MHz)	30.8	406.5000	0.12	Back Center	0.29	0.010	2.41	1.81	0.70	0.018
					Back Side	0.64	0.011	1.60	2.83	1.02	0.031
			450.0125	0.11	Back Center	0.32	0.007	2.60	1.80	0.82	0.013
					Back Side	0.24	0.006	1.70	2.90	0.40	0.017
	HAE6031A, 1/2 Wave (380-520MHz)	29.8	406.5000	0.11	Back Center	0.29	0.010	2.41	1.81	0.69	0.017
					Back Side	0.63	0.011	1.60	2.83	1.01	0.031
			438.0125	0.10	Back Center	0.33	0.008	2.55	1.80	0.85	0.014
					Back Side	0.23	0.006	1.67	2.88	0.39	0.018

Table 2a continued (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – UHF R1 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	RAE4014ARB, 5/8 Wave (445-470MHz)	89.0	469.9875	0.03	Back Center	0.11	0.002	2.61	1.85	0.29	0.004
					Back Side	0.08	0.003	1.69	2.85	0.14	0.008
		92.7	450.0125	0.01	Back Center	0.06	0.002	2.60	1.80	0.17	0.003
					Back Side	0.07	0.002	1.70	2.90	0.11	0.005
		90.5	460.0000	0.01	Back Center	0.04	0.002	2.60	1.83	0.11	0.003
					Back Side	0.07	0.002	1.70	2.88	0.12	0.006
	HAE4011A, 1/2 Wave (450-470MHz)	73.2	469.9875	0.03	Back Center	0.13	0.002	2.61	1.85	0.33	0.004
					Back Side	0.05	0.002	1.69	2.85	0.09	0.007
	HAE4003A, 1/4 Wave (450-470MHz)	17.8	460.0000	0.02	Back Center	0.33	0.005	2.60	1.83	0.85	0.008
					Back Side	0.16	0.005	1.70	2.88	0.27	0.013
			450.0125	0.02	Back Center	0.26	0.006	2.60	1.80	0.68	0.012
					Back Side	0.22	0.005	1.70	2.90	0.37	0.016
	HAE6016A, 1/4 Wave (450-512MHz)	10.1	450.0125	0.08	Back Center	0.25	0.006	2.60	1.80	0.66	0.011
					Back Side	0.21	0.005	1.70	2.90	0.36	0.015
			469.9875	0.08	Back Center	0.21	0.004	2.61	1.85	0.54	0.008
					Back Side	0.14	0.005	1.69	2.85	0.23	0.016
	HAE6015A, 1/2 Wave (450-520MHz)	28.0	450.0125	0.10	Back Center	0.30	0.007	2.60	1.80	0.78	0.013
					Back Side	0.23	0.006	1.70	2.90	0.40	0.017
			469.9875	0.07	Back Center	0.25	0.005	2.61	1.85	0.66	0.009
					Back Side	0.15	0.006	1.69	2.85	0.26	0.018

Table 2a continued (configurations exceed FCC MPE limits):
 Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
 Companion mobile radio (50% talk-time) – UHF R2 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	AN000131A01, 1/4 wave (136-870MHz)	57.5	450.0125	0.09	Back Center	0.32	0.007	2.60	1.80	0.82	0.013
					Back Side	0.32	0.007	1.70	2.90	0.54	0.020
			482.5000	0.09	Back Center Fig. 5 & 6	0.54	0.007	2.61	1.88	1.40	0.013
					Back Side	0.41	0.008	1.69	2.83	0.69	0.023
			469.9875	0.08	Back Center	0.25	0.005	2.61	1.85	0.65	0.010
					Back Side	0.20	0.007	1.69	2.85	0.34	0.021
	HAE6013A, 1/2 Wave (380-470MHz)	30.8	450.0125	0.11	Back Center	0.32	0.007	2.60	1.80	0.82	0.013
					Back Side	0.24	0.006	1.70	2.90	0.40	0.017
			469.9875	0.06	Back Center	0.27	0.005	2.61	1.85	0.69	0.010
					Back Side	0.16	0.007	1.69	2.85	0.27	0.019
	HAE6031A, 1/2 Wave (380-520MHz)	29.8	450.0125	0.11	Back Center	0.32	0.007	2.60	1.80	0.83	0.013
					Back Side	0.24	0.006	1.70	2.90	0.40	0.017
			482.5000	0.10	Back Center	0.39	0.006	2.61	1.88	1.01	0.012
					Back Side	0.43	0.007	1.69	2.83	0.72	0.020
			469.9875	0.07	Back Center	0.26	0.005	2.61	1.85	0.68	0.010
					Back Side	0.15	0.006	1.69	2.85	0.26	0.018
	HAE4004A, 1/4 Wave (470-512MHz)	16.8	482.5000	0.05	Back Center	0.34	0.005	2.61	1.88	0.88	0.010
					Back Side	0.36	0.006	1.69	2.83	0.61	0.018
			496.5000	0.03	Back Center	0.04	0.002	2.61	1.92	0.12	0.004
					Back Side	0.09	0.002	1.69	2.79	0.14	0.006
	HAE4012A, 1/2 Wave (470-495MHz)	68.5	470.0125	0.04	Back Center	0.12	0.003	2.61	1.85	0.32	0.005
					Back Side	0.07	0.002	1.69	2.85	0.12	0.006
	HAE4013A, 1/2 Wave (494-512MHz)	64.3	494.9875	0.01	Back Center	0.03	0.001	2.61	1.92	0.08	0.002
					Back Side	0.02	0.001	1.69	2.80	0.04	0.003

Note:

Bold Blue – the highest SAR results computed for the respective frequency bands

Table 2a continued (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – UHF R2 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	RAE4014ARB, 5/8 Wave (445-470MHz)	89.0	469.9875	0.03	Back Center	0.11	0.002	2.61	1.85	0.29	0.004
					Back Side	0.08	0.003	1.69	2.85	0.14	0.008
		92.7	450.0125	0.01	Back Center	0.06	0.002	2.60	1.80	0.17	0.003
					Back Side	0.07	0.002	1.70	2.90	0.11	0.005
		90.5	460.0000	0.01	Back Center	0.04	0.002	2.60	1.83	0.11	0.003
					Back Side	0.07	0.002	1.70	2.88	0.12	0.006
	HAE4011A, 1/2 Wave (450-470MHz)	73.2	469.9875	0.03	Back Center	0.13	0.002	2.61	1.85	0.33	0.004
					Back Side	0.05	0.002	1.69	2.85	0.09	0.007
	HAE4003A, 1/4 Wave (450-470MHz)	17.8	460.0000	0.02	Back Center	0.33	0.005	2.60	1.83	0.85	0.008
					Back Side	0.16	0.005	1.70	2.88	0.27	0.013
			450.0125	0.02	Back Center	0.26	0.006	2.60	1.80	0.68	0.012
					Back Side	0.22	0.005	1.70	2.90	0.37	0.016
	HAE6016A, 1/4 Wave (450-512MHz)	10.1	450.0125	0.08	Back Center	0.25	0.006	2.60	1.80	0.66	0.011
					Back Side	0.21	0.005	1.70	2.90	0.36	0.015
			469.9875	0.08	Back Center	0.21	0.004	2.61	1.85	0.54	0.008
					Back Side	0.14	0.005	1.69	2.85	0.23	0.016
	HAE6015A, 1/2 Wave (450-520MHz)	28.0	450.0125	0.10	Back Center	0.30	0.007	2.60	1.80	0.78	0.013
					Back Side	0.23	0.006	1.70	2.90	0.40	0.017
			482.5000	0.10	Back Center	0.38	0.006	2.61	1.88	0.99	0.011
					Back Side	0.42	0.007	1.69	2.83	0.70	0.020
			469.9875	0.07	Back Center	0.25	0.005	2.61	1.85	0.66	0.009
					Back Side	0.15	0.006	1.69	2.85	0.26	0.018

Table 2a continued (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – UHF R2 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	RAE4016ARB, 5/8 Wave (494-512MHz)	85.7	494.9875	0.01	Back Center	0.02	0.0004	2.61	1.92	0.05	0.001
					Back Side	0.03	0.0006	1.69	2.80	0.05	0.002
		83.6	503.0000	0.004	Back Center	0.02	0.0005	2.62	1.94	0.05	0.001
					Back Side	0.02	0.0008	1.68	2.78	0.04	0.002
		83.3	511.9875	0.003	Back Center	0.02	0.0005	2.62	1.96	0.05	0.001
					Back Side	0.03	0.0007	1.68	2.76	0.04	0.002

Table 2a continued (configurations exceed FCC MPE limits):
Results of the Computations and Adjusted SAR for passenger (back seat) exposure of
Companion mobile radio (50% talk-time) – 7/800 Band

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	AN000131A01, 1/4 wave (136-870MHz)	57.5	775.9125	0.02	Back Center	0.02	0.001	2.69	2.64	0.05	0.002
					Back Side	0.02	0.001	1.61	2.16	0.04	0.002
	HAF4013A, 1/4 Wave (764-870MHz)	7.9	775.9125	0.02	Back Center	0.04	0.001	2.69	2.64	0.10	0.002
					Back Side	0.03	0.001	1.61	2.16	0.04	0.002
	HAF4014A, 1/4 Wave (764-870MHz)	59.5	823.9875	0.01	Back Center	0.02	0.001	2.64	2.71	0.04	0.002
					Back Side	0.01	0.001	1.58	2.14	0.02	0.001
	HAF4016A, 1/4 Wave (764-870MHz)	10.8	775.9125	0.02	Back Center	0.04	0.001	2.69	2.64	0.10	0.002
					Back Side	0.03	0.001	1.61	2.16	0.04	0.002
	HAF4017A, 1/4 Wave (764-870MHz)	36.3	775.9125	0.04	Back Center	0.07	0.002	2.69	2.64	0.20	0.004
					Back Side	0.06	0.002	1.61	2.16	0.09	0.004

Table 2b (configurations exceed FCC MPE limits):
 Results of the Computations and Adjusted SAR for passenger (front seat) exposure of
 Companion mobile radio (50% talk-time)

Mount Location	Antenna Kit#	Antenna Length (cm)	Freq (MHz)	P.D. (mW/cm ²)	Exposure Location	Computations SAR (W/kg)		Interpolated Adjustment Factors		Adjusted SAR Results (W/kg)	
						1 g	WB	1 g	WB	1 g	WB
Roof	HAD4008A, 1/4 Wave (150.8-162MHz)	53.5	162.0000	0.16	Driver	0.10	0.005	1.05	1.64	0.11	0.009
					Front Side	0.17	0.007	1.05	1.64	0.18	0.012
	HAD4009A, 1/4 Wave (162-174MHz)	48.0	165.0125	0.18	Driver	0.11	0.005	1.07	1.65	0.12	0.009
					Front Side	0.13	0.006	1.07	1.65	0.13	0.009

The SAR distribution in the exposure condition that gave highest adjusted 1-g SAR for DVR VHF is reported in Figure 3. (167.7000 MHz, passenger on the side of the back seat, HAD4009A antenna).

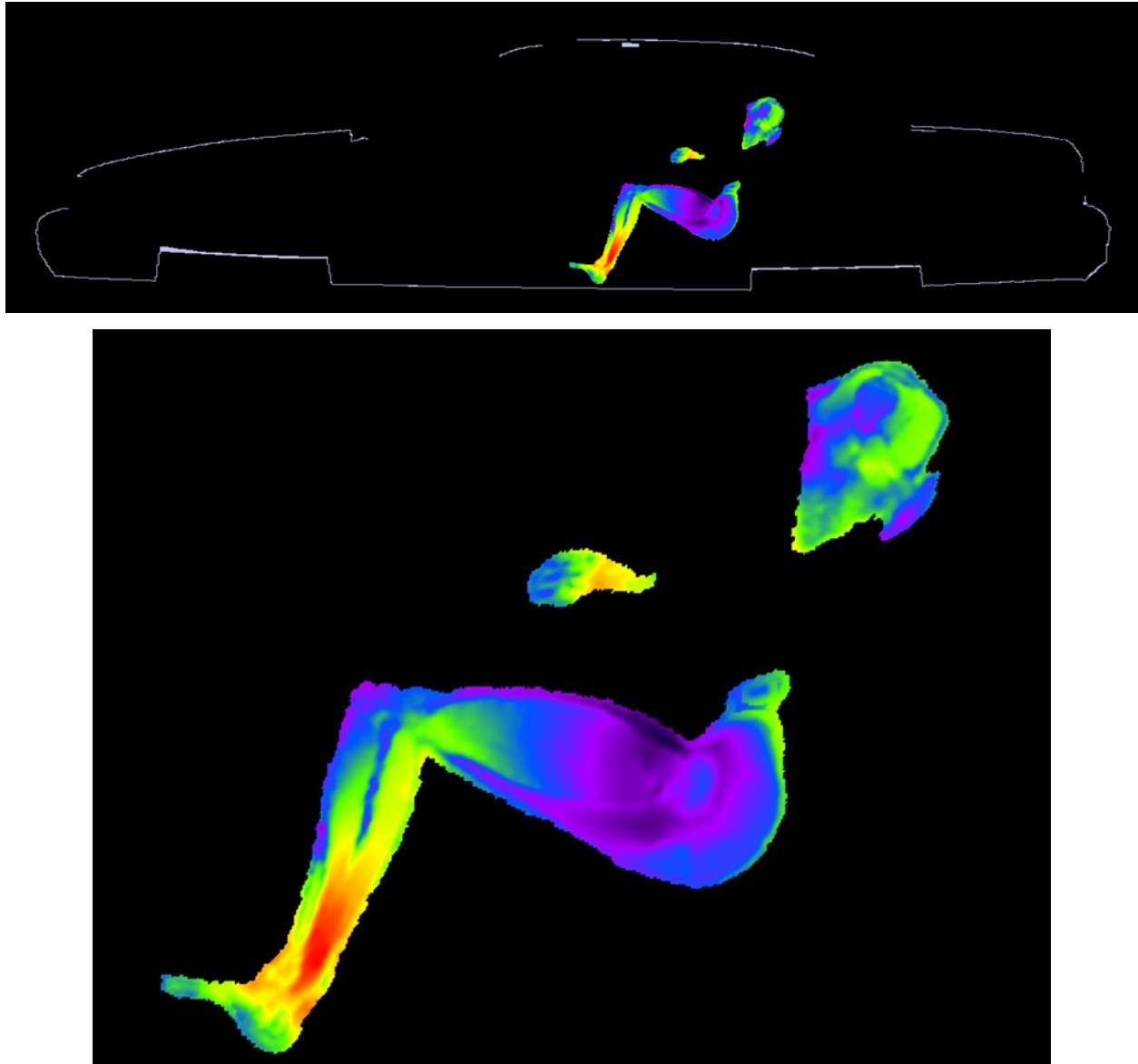
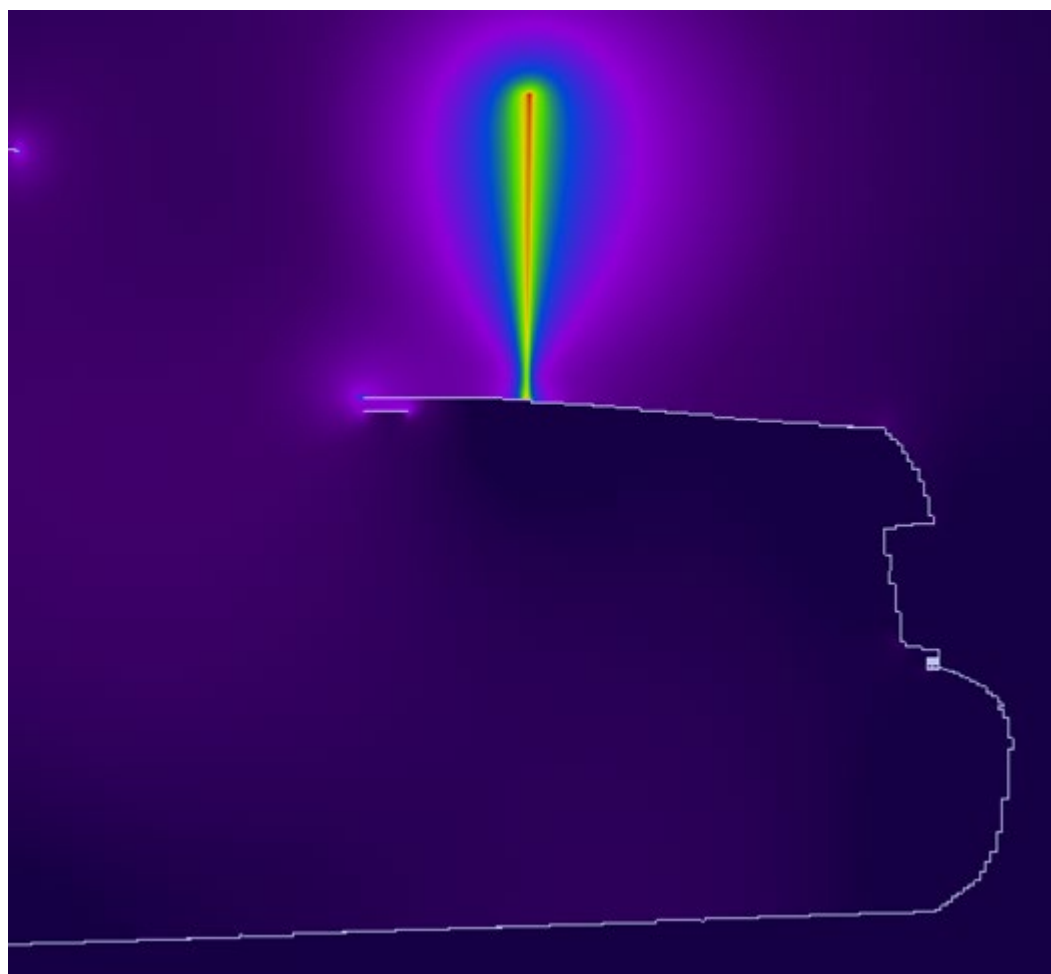
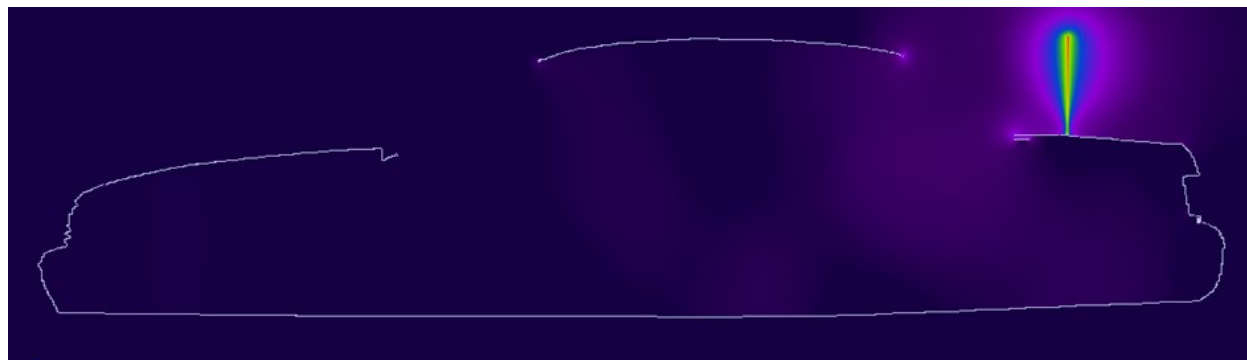
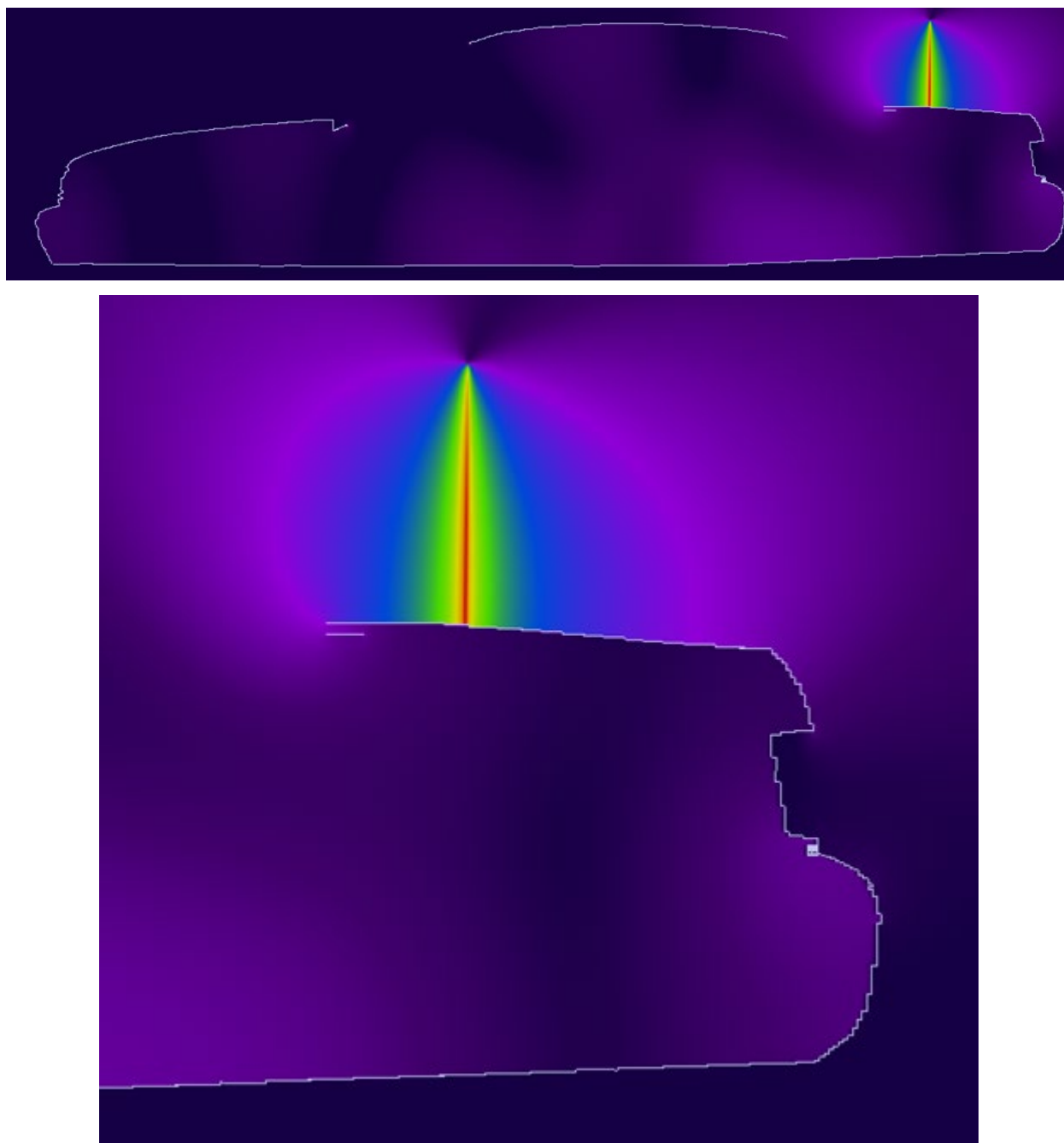


Figure 3. SAR distribution at 167.7000 MHz in the passenger model located on the side of the back seat, produced by the trunk-mount HAD4009A antenna. The contour plot is relative to the plane where the peak 1-g average SAR for this exposure condition occurs.

The two pictures below in Figure 4. show the E and H field distributions in the plane of the antenna corresponding to the condition in Figure 3.



a)



b)

Figure 4. (a) E-field magnitude distribution corresponding to exposure condition of Figure 3, and (b) H-field magnitude distribution corresponding to exposure condition of Figure 3.

The highest adjusted 1-g SAR was produced in the passenger exposure condition with HAD4009A antenna at 167.7000 MHz (passenger on the side of the back seat).

The SAR distribution in the exposure condition that gave highest adjusted 1-g SAR for Companion mobile radio is reported in Figure 5. (482.5000 MHz, passenger on the center of the back seat, AN000131A01 antenna).

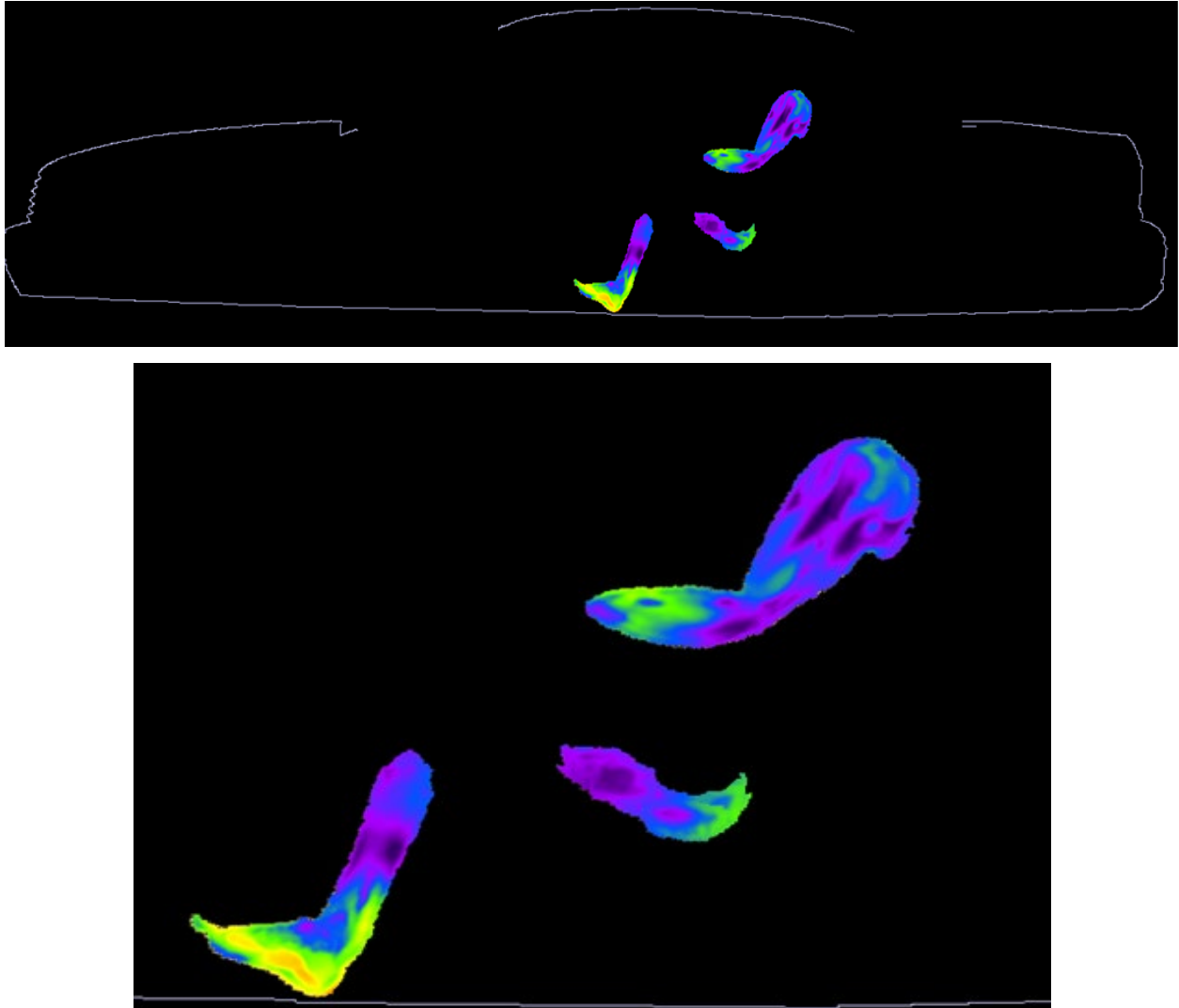
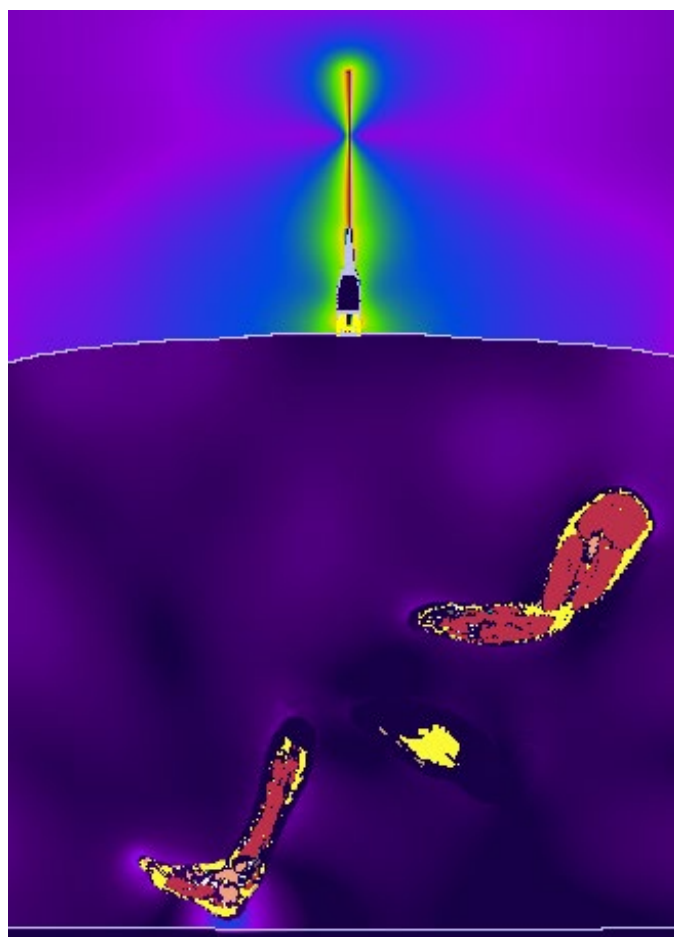
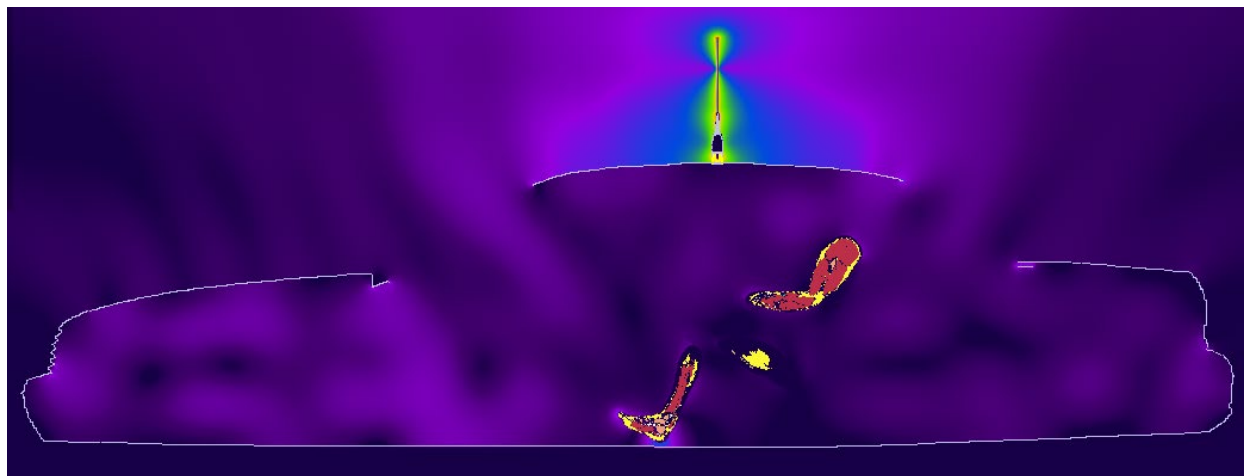
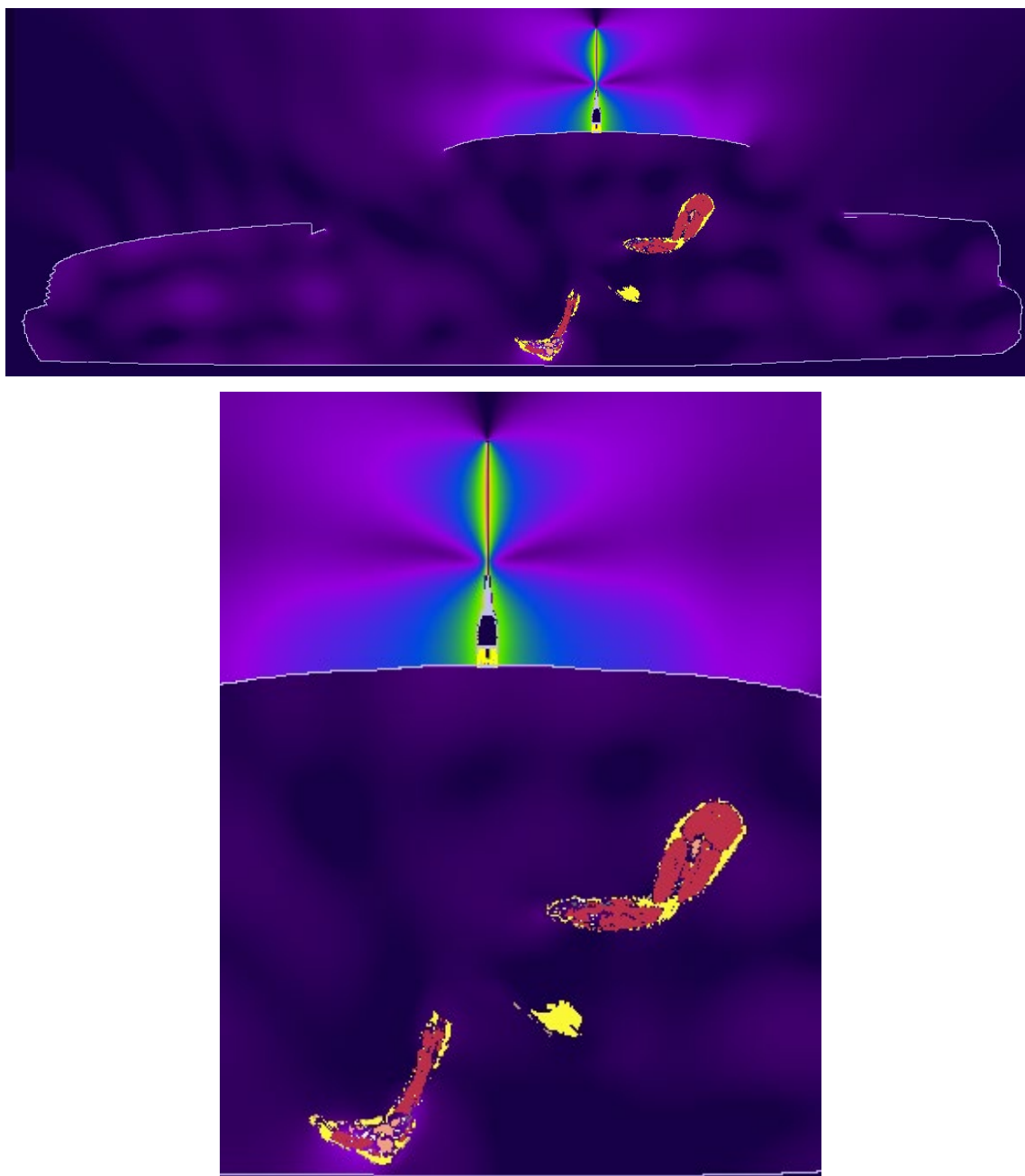


Figure 5. SAR distribution at 482.5000 MHz in the passenger model located on the center of the back seat, produced by the roof-mount AN000131A01 antenna. The contour plot is relative to the plane where the peak 1-g average SAR for this exposure condition occurs.

The pictures below in Figure 6 show the E and H field distributions in the plane of the antenna corresponding to the condition in Figure 5.



a)



b)

Figure 6. (a) E-field magnitude distribution corresponding to exposure condition of Figure 5, and (b) H-field magnitude distribution corresponding to exposure condition of Figure 5.

The highest adjusted 1-g SAR was produced in the passenger exposure condition with AN000131A01 antenna at 482.5000 MHz (passenger on the center of the back seat).

SAR Simulation Reduction Considerations

Per Response to Inquiry to FCC (Tracking Number 528198), for a particular antenna that has more than one configuration which exceeds the MPE limit, SAR simulation shall begin with the worst case configuration (mount location and frequency channel). If the SAR value is less than 50% of the limit, no further SAR evaluation is needed for that antenna.

If the worst case configuration SAR value is above 50% of the limit, SAR simulation shall be done on the subsequent worse configuration (ranked in descending MPE percentage to limit). If the subsequent SAR value is below 75% of the limit, no further SAR evaluation is needed for that antenna, otherwise the SAR simulations for the remaining antenna configurations shall continue until the SAR value is below 75% of the limit.

Table 3 below list all the configurations that did not conform to applicable MPE limits (ranked in descending MPE percentage to limit) and apply SAR simulation reduction consideration as mentioned above.

Table 3a: SAR Simulation Reduction Considerations for Passenger (back seat)

VHF Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4008A	162.0000	HAD4017A	165.0125	329.91	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	The 2nd highest MPE configuration has SAR below 75% of the limit
	162.0000		158.0125	296.81	Back Side	0.67	0.019	0.19	0.010	0.86	0.03	
	156.4000		165.0125	286.31	Back Center	0.31	0.018	0.22	0.008	0.53	0.03	
	150.8000		165.0125	264.11	Back Side	0.67	0.019	0.29	0.010	0.96	0.03	
	156.4000		158.0125	253.21								
	150.8000		158.0125	231.01								
	162.0000		150.8000	225.71								
	162.0000		173.0125	190.91								
	156.4000		150.8000	182.11								
	150.8000		150.8000	159.91								
	156.4000		173.0125	147.31								
	150.8000		173.0125	125.11								
HAD4008A	162.0000	*HAD4022A	165.0125	202.81	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	
	162.0000		158.0125	191.81	Back Side	0.67	0.019	0.15	0.008	0.82	0.03	
	162.0000		150.8000	173.61	Back Center	0.31	0.018	0.21	0.007	0.52	0.03	
	162.0000		173.0125	161.91	Back Side	0.67	0.019	0.28	0.010	0.95	0.03	
	156.4000		165.0125	159.21	Back Center	0.31	0.018	0.33	0.009	0.64	0.03	
	156.4000		165.0125	159.21	Back Side	0.67	0.019	0.39	0.025	1.06	0.04	
	150.8000		165.0125	159.21	Back Center	0.23	0.017	0.07	0.005	0.30	0.02	
			158.0125	148.21	Back Side	0.63	0.018	0.15	0.008	0.78	0.03	
			158.0125	148.21	Back Center	0.23	0.017	0.16	0.007	0.39	0.02	
			165.0125	137.01	Back Side	0.63	0.018	0.18	0.006	0.81	0.02	
			165.0125	137.01	Back Center	0.34	0.019	0.07	0.005	0.41	0.02	
					Back Side	0.27	0.015	0.15	0.008	0.42	0.02	

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)**VHF Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4008A	162.0000	HAD4017A	165.0125	329.91	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.19	0.010	0.86	0.03	
	162.0000		158.0125	296.81	Back Center	0.31	0.018	0.22	0.008	0.53	0.03	
					Back Side	0.67	0.019	0.29	0.010	0.96	0.03	
	156.4000		165.0125	286.31								
	150.8000		165.0125	264.11								
	156.4000		158.0125	253.21								
	150.8000		158.0125	231.01								
	162.0000		150.8000	225.71								
	162.0000		173.0125	190.91								
	156.4000		150.8000	182.11								
	150.8000		150.8000	159.91								
	156.4000		173.0125	147.31								
	150.8000		173.0125	125.11								
HAD4008A	162.0000	*HAD4022A	165.0125	202.81	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	
					Back Side	0.67	0.019	0.15	0.008	0.82	0.03	
	162.0000		158.0125	191.81	Back Center	0.31	0.018	0.16	0.007	0.47	0.03	
					Back Side	0.67	0.019	0.18	0.006	0.85	0.03	
	162.0000		150.8000	173.61	Back Center	0.31	0.018	0.21	0.007	0.52	0.03	
					Back Side	0.67	0.019	0.28	0.010	0.95	0.03	
	162.0000		173.0125	161.91	Back Center	0.31	0.018	0.33	0.009	0.64	0.03	
					Back Side	0.67	0.019	0.39	0.025	1.06	0.04	
	156.4000		165.0125	159.21	Back Center	0.23	0.017	0.07	0.005	0.30	0.02	
					Back Side	0.63	0.018	0.15	0.008	0.78	0.03	
	156.4000		158.0125	148.21	Back Center	0.23	0.017	0.16	0.007	0.39	0.02	
					Back Side	0.63	0.018	0.18	0.006	0.81	0.02	
	150.8000		165.0125	137.01	Back Center	0.34	0.019	0.07	0.005	0.41	0.02	
					Back Side	0.27	0.015	0.15	0.008	0.42	0.02	
HAD4008A	156.4000	*RAD4010ARB	150.8000	130.01	Back Center	0.23	0.017	0.21	0.007	0.44	0.02	
					Back Side	0.63	0.018	0.28	0.010	0.91	0.03	
	150.8000		158.0125	126.01	Back Center	0.34	0.019	0.16	0.007	0.50	0.03	
					Back Side	0.27	0.015	0.18	0.006	0.45	0.02	
	156.4000		173.0125	118.31	Back Center	0.23	0.017	0.33	0.009	0.56	0.03	
					Back Side	0.63	0.018	0.39	0.025	1.02	0.04	
	150.8000		150.8000	107.81	Back Center	0.34	0.019	0.21	0.007	0.55	0.03	
					Back Side	0.27	0.015	0.28	0.010	0.55	0.03	
HAD4008A	162.0000	*RAD4010ARB	158.0125	163.41	Back Center	0.31	0.018	0.13	0.006	0.44	0.02	
					Back Side	0.67	0.019	0.11	0.004	0.78	0.02	
	162.0000		173.0125	151.91	Back Center	0.31	0.018	0.21	0.006	0.52	0.02	
					Back Side	0.67	0.019	0.24	0.015	0.91	0.03	
	162.0000		165.0125	149.01	Back Center	0.31	0.018	0.05	0.003	0.36	0.02	
					Back Side	0.67	0.019	0.08	0.005	0.75	0.02	
	162.0000		150.8000	147.61	Back Center	0.31	0.018	0.16	0.006	0.47	0.02	
					Back Side	0.67	0.019	0.20	0.008	0.87	0.03	
	156.4000		158.0125	119.81	Back Center	0.23	0.017	0.13	0.006	0.36	0.02	
					Back Side	0.63	0.018	0.11	0.004	0.74	0.02	
	156.4000		173.0125	108.31	Back Center	0.23	0.017	0.21	0.006	0.44	0.02	
					Back Side	0.63	0.018	0.24	0.015	0.87	0.03	
	156.4000		165.0125	105.41	Back Center	0.23	0.017	0.05	0.003	0.28	0.02	
					Back Side	0.63	0.018	0.08	0.005	0.71	0.02	
HAD4008A	162.0000	HAD4016A	162.0000	288.81	Back Center	0.31	0.018	0.08	0.006	0.39	0.02	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.22	0.009	0.89	0.03	
	162.0000		156.4000	278.61	Back Center	0.31	0.018	0.31	0.010	0.62	0.03	
					Back Side	0.67	0.019	0.35	0.011	1.02	0.03	
	162.0000		150.8000	268.61								
	156.4000		162.0000	245.21								
	156.4000		156.4000	235.01								
	156.4000		150.8000	225.01								
	150.8000		162.0000	223.01								
	150.8000		156.4000	212.81								
	150.8000		150.8000	202.81								
HAD4008A	162.0000	HAD4007A	150.8000	302.71	Back Center	0.31	0.018	0.32	0.012	0.63	0.03	
					Back Side	0.67	0.019	0.54	0.020	1.21	0.04	
	156.4000		150.8000	259.11	Back Center	0.23	0.017	0.32	0.012	0.55	0.03	
					Back Side	0.63	0.018	0.54	0.020	1.17	0.04	
	150.8000		150.8000	236.91								The 2nd highest MPE configuration has SAR below 75% of the limit

Note:

* Antenna length trimmed to frequency.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)**VHF Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4009A	173.4000	*HAD4022A	165.0125	180.31	Back Center	0.19	0.013	0.07	0.005	0.26	0.02	
	162.0000		165.0125	174.21	Back Side	0.52	0.015	0.15	0.008	0.67	0.02	
	173.4000		158.0125	169.31	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	
	167.7000		158.0125	169.31	Back Side	0.68	0.020	0.15	0.008	0.83	0.03	
	162.0000		165.0125	168.31	Back Center	0.19	0.013	0.16	0.007	0.35	0.02	
	167.7000		165.0125	168.31	Back Side	0.52	0.015	0.18	0.006	0.70	0.02	
	162.0000		158.0125	163.21	Back Center	0.25	0.015	0.07	0.005	0.32	0.02	
	167.7000		158.0125	163.21	Back Side	0.70	0.016	0.15	0.008	0.85	0.02	
	173.4000		158.0125	157.31	Back Center	0.31	0.018	0.16	0.007	0.47	0.03	
	162.0000		158.0125	157.31	Back Side	0.68	0.020	0.18	0.006	0.86	0.03	
	167.7000		150.8000	151.11	Back Center	0.25	0.015	0.16	0.007	0.41	0.02	
	162.0000		150.8000	151.11	Back Side	0.70	0.016	0.18	0.006	0.88	0.02	
HAD4009A	173.4000	*RAD4010ARB	150.8000	145.01	Back Center	0.19	0.013	0.21	0.007	0.40	0.02	
	162.0000		150.8000	145.01	Back Side	0.52	0.015	0.28	0.010	0.80	0.03	
	173.4000		173.0125	139.41	Back Center	0.31	0.018	0.21	0.007	0.52	0.03	
	167.7000		173.0125	139.41	Back Side	0.68	0.020	0.28	0.010	0.96	0.03	
	162.0000		150.8000	139.11	Back Center	0.19	0.013	0.33	0.009	0.52	0.02	
	167.7000		150.8000	139.11	Back Side	0.52	0.015	0.39	0.025	0.91	0.04	
	162.0000		173.0125	133.31	Back Center	0.25	0.015	0.21	0.007	0.46	0.02	
	167.7000		173.0125	133.31	Back Side	0.70	0.016	0.28	0.010	0.98	0.03	
	162.0000		173.0125	133.31	Back Center	0.31	0.018	0.33	0.009	0.64	0.03	
	167.7000		173.0125	133.31	Back Side	0.68	0.020	0.39	0.025	1.07	0.05	
	162.0000		173.0125	127.41	Back Center	0.25	0.015	0.33	0.009	0.58	0.02	
	167.7000		173.0125	127.41	Back Side	0.70	0.016	0.39	0.025	1.09	0.04	
HAD4009A	173.4000	*RAD4010ARB	158.0125	140.91	Back Center	0.19	0.013	0.13	0.006	0.32	0.02	
	162.0000		158.0125	134.81	Back Side	0.52	0.015	0.11	0.004	0.63	0.02	
	173.4000		173.0125	129.41	Back Center	0.31	0.018	0.13	0.006	0.44	0.02	
	167.7000		173.0125	129.41	Back Side	0.68	0.020	0.11	0.004	0.79	0.02	
	173.4000		158.0125	128.91	Back Center	0.19	0.013	0.21	0.006	0.40	0.02	
	162.0000		158.0125	128.91	Back Side	0.52	0.015	0.24	0.015	0.76	0.03	
	173.4000		165.0125	126.51	Back Center	0.25	0.015	0.13	0.006	0.38	0.02	
	162.0000		165.0125	126.51	Back Side	0.70	0.016	0.11	0.004	0.81	0.02	
	167.7000		150.8000	125.11	Back Center	0.19	0.013	0.05	0.003	0.24	0.02	
	162.0000		150.8000	125.11	Back Side	0.52	0.015	0.08	0.005	0.60	0.02	
	167.7000		173.0125	123.31	Back Center	0.31	0.018	0.21	0.006	0.35	0.02	
	162.0000		173.0125	123.31	Back Side	0.68	0.020	0.24	0.015	0.72	0.02	
HAD4009A	173.4000	HAD4016A	165.0125	120.41	Back Center	0.31	0.018	0.05	0.003	0.36	0.02	
	162.0000		165.0125	120.41	Back Side	0.68	0.020	0.08	0.005	0.76	0.03	
	167.7000		150.8000	119.01	Back Center	0.31	0.018	0.16	0.006	0.47	0.02	
	162.0000		150.8000	119.01	Back Side	0.68	0.020	0.20	0.008	0.88	0.03	
	167.7000		173.0125	117.41	Back Center	0.25	0.015	0.21	0.006	0.46	0.02	
	162.0000		173.0125	117.41	Back Side	0.70	0.016	0.24	0.015	0.94	0.03	
	167.7000		165.0125	114.51	Back Center	0.25	0.015	0.05	0.003	0.30	0.02	
	162.0000		165.0125	114.51	Back Side	0.70	0.016	0.08	0.005	0.78	0.02	
	167.7000		150.8000	113.11	Back Center	0.25	0.015	0.16	0.006	0.41	0.02	
	162.0000		150.8000	113.11	Back Side	0.70	0.016	0.20	0.008	0.90	0.02	
	167.7000		162.0000	266.31	Back Center	0.19	0.013	0.08	0.006	0.27	0.02	
	162.0000		162.0000	260.21	Back Side	0.52	0.015	0.22	0.009	0.74	0.02	
HAD4009A	173.4000	HAD4016A	156.4000	256.11								The highest MPE configuration has SAR below 50% of the limit.
	167.7000		162.0000	254.31								
	162.0000		156.4000	250.01								
	173.4000		150.8000	246.11								
	167.7000		156.4000	244.11								
	162.0000		156.4000	240.01								
	167.7000		150.8000	234.11								
	162.0000		150.8000	234.11								
HAD4009A	173.4000	HAD4007A	150.8000	280.21	Back Center	0.19	0.013	0.32	0.012	0.51	0.03	
	162.0000		150.8000	274.11	Back Side	0.52	0.015	0.54	0.020	1.06	0.04	
	167.7000		150.8000	268.21	Back Center	0.31	0.018	0.32	0.012	0.63	0.03	
					Back Side	0.68	0.020	0.54	0.020	1.22	0.04	
					Back Center	0.25	0.015	0.32	0.012	0.57	0.03	
					Back Side	0.70	0.016	0.54	0.020	1.24	0.04	

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)**VHF Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			Ig	WB	Ig	WB	Ig	WB	
HAD4009A	173.4000	*HAD4022A	165.0125	180.31	Back Center	0.19	0.013	0.07	0.005	0.26	0.02	
	162.0000		165.0125	174.21	Back Side	0.52	0.015	0.15	0.008	0.67	0.02	
	173.4000		158.0125	169.31	Back Center	0.31	0.018	0.07	0.005	0.38	0.02	
	167.7000		158.0125	169.31	Back Side	0.68	0.020	0.15	0.008	0.83	0.03	
	162.0000		165.0125	168.31	Back Center	0.19	0.013	0.16	0.007	0.35	0.02	
	167.7000		165.0125	168.31	Back Side	0.52	0.015	0.18	0.006	0.70	0.02	
	162.0000		158.0125	163.21	Back Center	0.25	0.015	0.07	0.005	0.32	0.02	
	167.7000		158.0125	163.21	Back Side	0.70	0.016	0.15	0.008	0.85	0.02	
	173.4000		158.0125	157.31	Back Center	0.31	0.018	0.16	0.007	0.47	0.03	
	162.0000		158.0125	157.31	Back Side	0.68	0.020	0.18	0.006	0.86	0.03	
	173.4000		150.8000	151.11	Back Center	0.25	0.015	0.16	0.007	0.41	0.02	
	167.7000		150.8000	151.11	Back Side	0.70	0.016	0.18	0.006	0.88	0.02	
HAD4009A	173.4000	*RAD4010ARB	150.8000	145.01	Back Center	0.19	0.013	0.21	0.007	0.40	0.02	
	162.0000		150.8000	145.01	Back Side	0.52	0.015	0.28	0.010	0.80	0.03	
	173.4000		173.0125	139.41	Back Center	0.31	0.018	0.21	0.007	0.52	0.03	
	167.7000		173.0125	139.41	Back Side	0.68	0.020	0.28	0.010	0.96	0.03	
	162.0000		150.8000	139.11	Back Center	0.19	0.013	0.33	0.009	0.52	0.02	
	167.7000		150.8000	139.11	Back Side	0.52	0.015	0.39	0.025	0.91	0.04	
	162.0000		173.0125	133.31	Back Center	0.25	0.015	0.21	0.007	0.46	0.02	
	167.7000		173.0125	133.31	Back Side	0.70	0.016	0.28	0.010	0.98	0.03	
	162.0000		173.0125	133.31	Back Center	0.31	0.018	0.33	0.009	0.64	0.03	
	167.7000		173.0125	133.31	Back Side	0.68	0.020	0.39	0.025	1.07	0.05	
	162.0000		173.0125	127.41	Back Center	0.25	0.015	0.33	0.009	0.58	0.02	
	167.7000		173.0125	127.41	Back Side	0.70	0.016	0.39	0.025	1.09	0.04	
HAD4009A	173.4000	*RAD4010ARB	158.0125	140.91	Back Center	0.19	0.013	0.13	0.006	0.32	0.02	
	162.0000		158.0125	134.81	Back Side	0.52	0.015	0.11	0.004	0.63	0.02	
	173.4000		173.0125	129.41	Back Center	0.31	0.018	0.13	0.006	0.44	0.02	
	167.7000		173.0125	129.41	Back Side	0.68	0.020	0.11	0.004	0.79	0.02	
	173.4000		158.0125	128.91	Back Center	0.19	0.013	0.21	0.006	0.40	0.02	
	167.7000		158.0125	128.91	Back Side	0.52	0.015	0.24	0.015	0.76	0.03	
	173.4000		165.0125	126.51	Back Center	0.25	0.015	0.13	0.006	0.38	0.02	
	162.0000		165.0125	126.51	Back Side	0.70	0.016	0.11	0.004	0.81	0.02	
	173.4000		150.8000	125.11	Back Center	0.19	0.013	0.05	0.003	0.24	0.02	
	162.0000		150.8000	125.11	Back Side	0.52	0.015	0.08	0.005	0.60	0.02	
	167.7000		173.0125	123.31	Back Center	0.19	0.013	0.16	0.006	0.35	0.02	
	162.0000		173.0125	123.31	Back Side	0.52	0.015	0.20	0.008	0.72	0.02	
HAD4009A	173.4000	*RAD4010ARB	165.0125	120.41	Back Center	0.31	0.018	0.05	0.003	0.36	0.02	
	162.0000		165.0125	120.41	Back Side	0.68	0.020	0.08	0.005	0.76	0.03	
	162.0000		150.8000	119.01	Back Center	0.31	0.018	0.16	0.006	0.47	0.02	
	167.7000		150.8000	119.01	Back Side	0.68	0.020	0.20	0.008	0.88	0.03	
	167.7000		173.0125	117.41	Back Center	0.25	0.015	0.21	0.006	0.46	0.02	
	167.7000		173.0125	117.41	Back Side	0.70	0.016	0.24	0.015	0.94	0.03	
	167.7000		165.0125	114.51	Back Center	0.25	0.015	0.05	0.003	0.30	0.02	
	167.7000		165.0125	114.51	Back Side	0.70	0.016	0.08	0.005	0.78	0.02	
	167.7000		150.8000	113.11	Back Center	0.25	0.015	0.16	0.006	0.41	0.02	
	167.7000		150.8000	113.11	Back Side	0.70	0.016	0.20	0.008	0.90	0.02	
HAD4009A	173.4000	HAD4016A	162.0000	266.31	Back Center	0.19	0.013	0.08	0.006	0.27	0.02	
	162.0000		162.0000	260.21	Back Side	0.52	0.015	0.22	0.009	0.74	0.02	
	173.4000		156.4000	256.11								The highest MPE configuration has SAR below 50% of the limit.
	167.7000		162.0000	254.31								
	162.0000		156.4000	250.01								
	173.4000		150.8000	246.11								
	167.7000		156.4000	244.11								
	162.0000		150.8000	240.01								
HAD4009A	167.7000	HAD4007A	150.8000	234.11								
	173.4000		150.8000	280.21	Back Center	0.19	0.013	0.32	0.012	0.51	0.03	
	162.0000		150.8000	274.11	Back Side	0.52	0.015	0.54	0.020	1.06	0.04	
	167.7000		150.8000	268.21	Back Center	0.31	0.018	0.32	0.012	0.63	0.03	
					Back Side	0.68	0.020	0.54	0.020	1.22	0.04	
					Back Center	0.25	0.015	0.32	0.012	0.57	0.03	
					Back Side	0.70	0.016	0.54	0.020	1.24	0.04	

Note:

* Antenna length trimmed to frequency.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)**VHF Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			Ig	WB	Ig	WB	Ig	WB	
HAD4009A	173.4000	HAD4008A	162.0000	277.31	Back Center	0.19	0.013	0.08	0.006	0.27	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.52	0.015	0.22	0.009	0.74	0.02	
	162.0000		162.0000	271.21								
	173.4000		156.4000	270.11								
	167.7000		162.0000	265.31								
	162.0000		156.4000	264.01								
	167.7000		156.4000	258.11								
	173.4000		150.8000	220.41								
	162.0000		150.8000	214.31								
	167.7000		150.8000	208.41								
HAD4009A	173.4000	HAD4009A	165.0125	268.41	Back Center	0.19	0.013	0.07	0.005	0.26	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.52	0.015	0.19	0.010	0.71	0.03	
	162.0000		165.0125	262.31								
	167.7000		165.0125	256.41								
	173.4000		162.0000	239.11								
	162.0000		162.0000	233.01								
	167.7000		162.0000	227.11								
	173.4000		173.0125	151.51								
	162.0000		173.0125	145.41								
	167.7000		173.0125	139.51								
HAD4007A	150.8000	AN000131A01	158.0125	240.1	Back Center	0.34	0.019	0.34	0.010	0.68	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.27	0.015	0.57	0.012	0.84	0.03	
	150.8000		165.0125	229.6	Back Center	0.34	0.019	0.15	0.006	0.49	0.03	
					Back Side	0.27	0.015	0.32	0.012	0.59	0.03	
	150.8000		150.8000	197.1								
			173.0125	117.2								
HAD4007A	150.8000	HAD4021A	158.0125	219.3	Back Center	0.34	0.019	0.22	0.008	0.56	0.03	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.27	0.015	0.29	0.010	0.56	0.03	
	150.8000		150.8000	212.5								
			165.0125	193.1								
	150.8000		173.0125	103.9								
HAD4007A	150.8000	HAD4017A	165.0125	266.5	Back Center	0.34	0.019	0.07	0.005	0.41	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.27	0.015	0.19	0.010	0.46	0.03	
	150.8000		158.0125	233.4								
			150.8000	162.3								
	150.8000		173.0125	127.5								
HAD4007A	150.8000	*HAD4022A	165.0125	139.4	Back Center	0.34	0.019	0.07	0.005	0.41	0.02	
					Back Side	0.27	0.015	0.15	0.008	0.42	0.02	
	150.8000		158.0125	128.4	Back Center	0.34	0.019	0.16	0.007	0.50	0.03	
					Back Side	0.27	0.015	0.18	0.006	0.45	0.02	
	150.8000		150.8000	110.2	Back Center	0.34	0.019	0.21	0.007	0.55	0.03	
					Back Side	0.27	0.015	0.28	0.010	0.55	0.03	
HAD4007A	150.8000	*RAD4010ARB	158.0125	100.0	Back Center	0.34	0.019	0.13	0.006	0.47	0.03	
					Back Side	0.27	0.015	0.11	0.004	0.38	0.02	
HAD4007A	150.8000	HAD4016A	162.0000	225.4	Back Center	0.34	0.019	0.08	0.006	0.42	0.03	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.27	0.015	0.22	0.009	0.49	0.02	
	150.8000		156.4000	215.2								
	150.8000		150.8000	205.2								
HAD4007A	150.8000	HAD4007A	150.8000	239.3	Back Center	0.34	0.019	0.32	0.012	0.66	0.03	
					Back Side	0.27	0.015	0.54	0.020	0.81	0.04	
HAD4007A	150.8000	HAD4008A	162.0000	236.4	Back Center	0.34	0.019	0.08	0.006	0.42	0.03	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.27	0.015	0.22	0.009	0.49	0.02	
	150.8000		156.4000	229.2								
	150.8000		150.8000	179.5								
HAD4007A	150.8000	HAD4009A	165.0125	227.5	Back Center	0.34	0.019	0.07	0.005	0.41	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.27	0.015	0.19	0.010	0.46	0.03	
	150.8000		162.0000	198.2								
	150.8000		173.0125	110.6								

Note:

* Antenna length trimmed to frequency.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
UHF R1 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4008A	162.0000	AN000131A01	406.5000	157.51	Back Center	0.31	0.018	0.92	0.017	1.23	0.04	The 4th highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.74	0.031	1.41	0.05	
	162.0000		438.0125	150.11	Back Center	0.31	0.018	0.76	0.014	1.07	0.03	
					Back Side	0.67	0.019	0.56	0.021	1.23	0.04	
	162.0000		450.0125	149.31	Back Center	0.31	0.018	0.82	0.013	1.13	0.03	
					Back Side	0.67	0.019	0.54	0.020	1.21	0.04	
	162.0000		469.9875	141.91	Back Center	0.31	0.018	0.65	0.010	0.96	0.03	
					Back Side	0.67	0.019	0.34	0.021	1.01	0.04	
	162.0000		422.0125	141.61								
	156.4000		406.5000	113.91								
	156.4000		438.0125	106.51								
	156.4000		450.0125	105.71								
HAD4008A	162.0000	HAE6011A	406.5000	128.91	Back Center	0.31	0.018	0.49	0.008	0.80	0.03	
					Back Side	0.67	0.019	0.43	0.017	1.10	0.04	
	162.0000		432.9875	127.11	Back Center	0.31	0.018	0.41	0.010	0.72	0.03	
	162.0000		419.5000	126.31	Back Side	0.67	0.019	0.22	0.016	0.89	0.04	The 2nd highest MPE configuration has SAR below 75% of the limit
HAD4008A	162.0000	HAE6013A	406.5000	160.91	Back Center	0.31	0.018	0.70	0.018	1.01	0.04	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	1.02	0.031	#1.69	0.05	
	162.0000		450.0125	154.91	Back Center	0.31	0.018	0.82	0.013	1.13	0.03	
					Back Side	0.67	0.019	0.40	0.017	1.07	0.04	
	162.0000		438.0125	151.81								
	162.0000		422.0125	139.81								
	162.0000		469.9875	135.21								
	162.0000		460.0000	133.71								
	156.4000		406.5000	117.31								
	156.4000		450.0125	111.31								
	156.4000		438.0125	108.21								
HAD4008A	162.0000	HAE6031A	406.5000	158.31	Back Center	0.31	0.018	0.69	0.017	1.00	0.04	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	1.01	0.031	#1.68	0.05	
	162.0000		438.0125	153.41	Back Center	0.31	0.018	0.85	0.014	1.16	0.03	
					Back Side	0.67	0.019	0.39	0.018	1.06	0.04	
	162.0000		450.0125	152.81								
	162.0000		422.0125	142.91								
	162.0000		469.9875	141.21								
	156.4000		406.5000	114.71								
	156.4000		438.0125	109.81								
	156.4000		450.0125	109.21								
HAD4008A	162.0000	*RAE4014ARB	469.9875	126.81	Back Center	0.31	0.018	0.29	0.004	0.60	0.02	
					Back Side	0.67	0.019	0.14	0.008	0.81	0.03	
	162.0000		450.0125	122.61	Back Center	0.31	0.018	0.17	0.003	0.48	0.02	
	162.0000		460.0000	121.61	Back Side	0.67	0.019	0.11	0.005	0.78	0.02	
					Back Center	0.31	0.018	0.11	0.003	0.42	0.02	
					Back Side	0.67	0.019	0.12	0.006	0.79	0.03	
HAD4008A	162.0000	HAE4011A	469.9875	127.81	Back Center	0.31	0.018	0.33	0.004	0.64	0.02	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.09	0.007	0.76	0.03	
	162.0000		450.0125	126.31								
	162.0000		460.0000	122.71								
HAD4008A	162.0000	HAE4003A	460.0000	124.81	Back Center	0.31	0.018	0.85	0.008	1.16	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.27	0.013	0.94	0.03	
	162.0000		450.0125	124.01	Back Center	0.31	0.018	0.68	0.012	0.99	0.03	
					Back Side	0.67	0.019	0.37	0.016	1.04	0.04	
	162.0000		469.9875	123.61								
HAD4008A	162.0000	HAE6016A	450.0125	142.91	Back Center	0.31	0.018	0.66	0.011	0.97	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.36	0.015	1.03	0.03	
	162.0000		469.9875	141.91	Back Center	0.31	0.018	0.54	0.008	0.85	0.03	
					Back Side	0.67	0.019	0.23	0.016	0.90	0.04	
	162.0000		460.0000	140.01								
			450.0125	106.51								
HAD4008A	162.0000	HAE6015A	450.0125	150.11	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.40	0.017	1.07	0.04	
	162.0000		469.9875	140.91	Back Center	0.31	0.018	0.66	0.009	0.97	0.03	
					Back Side	0.67	0.019	0.26	0.018	0.93	0.04	
	162.0000		460.0000	140.01								
	156.4000		450.0125	106.51								

Note:

* Antenna length trimmed to frequency.

Refer to Combined SAR Simulation Method.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)**UHF R1 Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4009A	173.4000	HAE4003A	460.0000	102.3	Back Center	0.19	0.013	0.85	0.008	1.04	0.02	
					Back Side	0.52	0.015	0.27	0.013	0.79	0.03	
	173.4000		450.0125	101.5	Back Center	0.19	0.013	0.68	0.012	0.87	0.025	
					Back Side	0.52	0.015	0.37	0.016	0.89	0.031	
	173.4000		469.9875	101.1								The 2nd highest MPE configuration has SAR below 75% of the limit
HAD4009A	173.4000	HAE6016A	450.0125	120.4	Back Center	0.19	0.013	0.66	0.011	0.85	0.02	
					Back Side	0.52	0.015	0.36	0.015	0.88	0.03	
	173.4000		469.9875	119.4	Back Center	0.19	0.013	0.54	0.008	0.73	0.02	
					Back Side	0.52	0.015	0.23	0.016	0.75	0.03	
	173.4000		460.0000	117.5								
	162.0000		450.0125	114.3								
	162.0000		469.9875	113.3								
	162.0000		460.0000	111.4								
	167.7000		450.0125	108.4								
	167.7000		469.9875	107.4								
	167.7000		460.0000	105.5								
HAD4009A	173.4000	HAE6015A	450.0125	127.6	Back Center	0.19	0.013	0.78	0.013	0.97	0.03	
					Back Side	0.52	0.015	0.4	0.017	0.92	0.03	
	162.0000		450.0125	121.5	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	
					Back Side	0.68	0.020	0.4	0.017	1.08	0.04	
	173.4000		469.9875	118.4								
	173.4000		460.0000	117.5								
	167.7000		450.0125	115.6								
	162.0000		469.9875	112.3								
	162.0000		460.0000	111.4								
	167.7000		469.9875	106.4								
	167.7000		460.0000	105.5								

* Antenna length trimmed to frequency.

Total config exceed MPE: limit 21

Max SAR 0.68 0.02 0.85 0.02 1.09 0.04

Note:

* Antenna length trimmed to frequency.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
UHF R1 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			Ig	WB	Ig	WB	Ig	WB	
HAD4009A	173.4000	HAE4003A	460.0000	102.3	Back Center	0.19	0.013	0.85	0.008	1.04	0.02	
					Back Side	0.52	0.015	0.27	0.013	0.79	0.03	
	173.4000		450.0125	101.5	Back Center	0.19	0.013	0.68	0.012	0.87	0.025	
					Back Side	0.52	0.015	0.37	0.016	0.89	0.031	
	173.4000		469.9875	101.1								The 2nd highest MPE configuration has SAR below 75% of the limit
HAD4009A	173.4000	HAE6016A	450.0125	120.4	Back Center	0.19	0.013	0.66	0.011	0.85	0.02	
					Back Side	0.52	0.015	0.36	0.015	0.88	0.03	
	173.4000		469.9875	119.4	Back Center	0.19	0.013	0.54	0.008	0.73	0.02	
					Back Side	0.52	0.015	0.23	0.016	0.75	0.03	
	173.4000		460.0000	117.5								
	162.0000		450.0125	114.3								
	162.0000		469.9875	113.3								
	162.0000		460.0000	111.4								
	167.7000		450.0125	108.4								
	167.7000		469.9875	107.4								
	167.7000		460.0000	105.5								The 2nd highest MPE configuration has SAR below 75% of the limit
HAD4009A	173.4000	HAE6015A	450.0125	127.6	Back Center	0.19	0.013	0.78	0.013	0.97	0.03	
					Back Side	0.52	0.015	0.4	0.017	0.92	0.03	
	162.0000		450.0125	121.5	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	
					Back Side	0.68	0.020	0.4	0.017	1.08	0.04	
	173.4000		469.9875	118.4								
	173.4000		460.0000	117.5								
	167.7000		450.0125	115.6								
	162.0000		469.9875	112.3								
	162.0000		460.0000	111.4								
	167.7000		469.9875	106.4								
	167.7000		460.0000	105.5								The 2nd highest MPE configuration has SAR below 75% of the limit

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
UHF R2 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4008A	162.0000	AN000131A01	450.0125	149.3	Back Center	0.31	0.018	0.82	0.013	1.13	0.03	The 3rd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.54	0.020	1.21	0.04	
	162.0000		482.5000	145.2	Back Center	0.31	0.018	1.40	0.013	#1.71	0.03	
					Back Side	0.67	0.019	0.69	0.023	1.36	0.04	
	162.0000		469.9875	141.9	Back Center	0.31	0.018	0.65	0.010	0.96	0.03	
					Back Side	0.67	0.019	0.34	0.021	1.01	0.04	
	162.0000		496.5000	127.5								
	162.0000		511.9875	123.7								
	156.4000		450.0125	105.7								
	156.4000		482.5000	101.6								
HAD4008A	162.0000	HAE6013A	450.0125	154.9	Back Center	0.31	0.018	0.82	0.013	1.13	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.4	0.017	1.07	0.04	
			469.9875	135.2	Back Center	0.31	0.018	0.69	0.010	1.00	0.03	
					Back Side	0.67	0.019	0.27	0.019	0.94	0.04	
			460.0000	133.7								
			450.0125	111.3								
HAD4008A	162.0000	HAE6031A	450.0125	152.8	Back Center	0.31	0.018	0.83	0.013	1.14	0.03	The 3rd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.4	0.017	1.07	0.04	
	162.0000		482.5000	149.4	Back Center	0.31	0.018	1.01	0.012	1.32	0.03	
					Back Side	0.67	0.019	0.72	0.020	1.39	0.04	
	162.0000		469.9875	141.2	Back Center	0.31	0.018	0.68	0.010	0.99	0.03	
					Back Side	0.67	0.019	0.26	0.018	0.93	0.04	
	162.0000		496.5000	126.8								
	162.0000		511.9875	123.0								
	156.4000		450.0125	109.2								
	156.4000		482.5000	105.8								
HAD4008A	162.0000	HAE4004A	482.5000	133.7	Back Center	0.31	0.018	0.88	0.010	1.19	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.61	0.018	1.28	0.04	
	162.0000		496.5000	126.0	Back Center	0.31	0.018	0.12	0.004	0.43	0.02	
					Back Side	0.67	0.019	0.14	0.006	0.81	0.03	
	162.0000		470.0125	125.5								
	162.0000		511.9875	121.0								
HAD4008A	162.0000	HAE4012A	470.0125	130.9	Back Center	0.31	0.018	0.32	0.005	0.63	0.02	The highest MPE configuration has SAR below 50% of the limit
					Back Side	0.67	0.019	0.12	0.006	0.79	0.03	
	162.0000		482.5000	129.4								
	162.0000		494.9875	120.6								
HAD4008A	162.0000	HAE4013A	494.9875	121.6	Back Center	0.31	0.018	0.08	0.002	0.39	0.02	The highest MPE configuration has SAR below 50% of the limit
					Back Side	0.67	0.019	0.04	0.003	0.71	0.02	
	162.0000		503.0000	119.4								
	162.0000		511.9875	118.7								
HAD4008A	162.0000	*RAE4014ARB	469.9875	126.8	Back Center	0.31	0.018	0.29	0.004	0.60	0.02	
					Back Side	0.67	0.019	0.14	0.008	0.81	0.03	
	162.0000		450.0125	122.6	Back Center	0.31	0.018	0.17	0.003	0.48	0.02	
					Back Side	0.67	0.019	0.11	0.005	0.78	0.02	
	162.0000		460.0000	121.6	Back Center	0.31	0.018	0.11	0.003	0.42	0.02	
					Back Side	0.67	0.019	0.12	0.006	0.79	0.03	
HAD4008A	162.0000	HAE4011A	469.9875	127.8	Back Center	0.31	0.018	0.33	0.004	0.64	0.02	The highest MPE configuration has SAR below 50% of the limit
					Back Side	0.67	0.019	0.09	0.007	0.76	0.03	
	162.0000		450.0125	126.3								
	162.0000		460.0000	122.7								
HAD4008A	162.0000	HAE4003A	460.0000	124.8	Back Center	0.31	0.018	0.85	0.008	1.16	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.27	0.013	0.94	0.03	
	162.0000		450.0125	124.0	Back Center	0.31	0.018	0.68	0.012	0.99	0.03	
					Back Side	0.67	0.019	0.37	0.016	1.04	0.04	
	162.0000		469.9875	123.6								
HAD4008A	162.0000	HAE6016A	450.0125	142.9	Back Center	0.31	0.018	0.66	0.011	0.97	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.36	0.015	1.03	0.03	
	162.0000		469.9875	141.9	Back Center	0.31	0.018	0.54	0.008	0.85	0.03	
					Back Side	0.67	0.019	0.23	0.016	0.90	0.04	
	162.0000		482.5000	141.2								
	162.0000		460.0000	140.0								
	162.0000		496.5000	128.1								
	162.0000		511.9875	121.8								
HAD4008A	162.0000	HAE6015A	450.0125	150.1	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	The 3rd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.67	0.019	0.4	0.017	1.07	0.04	
	162.0000		482.5000	147.5	Back Center	0.31	0.018	0.99	0.011	1.30	0.03	
					Back Side	0.67	0.019	0.7	0.020	1.37	0.04	
	162.0000		469.9875	140.9	Back Center	0.31	0.018	0.66	0.009	0.97	0.03	
					Back Side	0.67	0.019	0.26	0.018	0.93	0.04	
	162.0000		460.0000	140.0								
	162.0000		496.5000	127.9								
	162.0000		511.9875	123.3								
	156.4000		450.0125	106.5								
	156.4000		482.5000	103.9								
HAD4008A	162.0000	*RAE4016ARB	494.9875	120.3	Back Center	0.31	0.018	0.05	0.001	0.36	0.02	
					Back Side	0.67	0.019	0.05	0.002	0.72	0.02	
	162.0000		503.0000	119.1	Back Center	0.31	0.018	0.05	0.001	0.36	0.02	
					Back Side	0.67	0.019	0.04	0.002	0.71	0.02	
	162.0000		511.9875	118.8	Back Center	0.31	0.018	0.05	0.001	0.36	0.02	
					Back Side	0.67	0.019	0.04	0.002	0.71	0.02	

Notes:

* Antenna length trimmed to frequency.

Refer to Combined SAR Simulation Method.

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
UHF R2 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results		APX 8500 HP Mobile Adjusted SAR Results		Combine Adjusted SAR Results		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4009A	173.4000	HAE6016A	450.0125	120.41	Back Center	0.19	0.013	0.66	0.011	0.85	0.02	
					Back Side	0.52	0.015	0.36	0.015	0.88	0.03	
	173.4000		469.9875	119.41	Back Center	0.19	0.013	0.54	0.008	0.73	0.02	
					Back Side	0.52	0.015	0.23	0.016	0.75	0.03	The 2nd highest MPE configuration has SAR below 75% of the limit
	173.4000		482.5000	118.71								
	173.4000		460.0000	117.51								
	162.0000		450.0125	114.31								
	162.0000		469.9875	113.31								
	162.0000		482.5000	112.61								
	162.0000		460.0000	111.41								
	167.7000		450.0125	108.41								
	167.7000		469.9875	107.41								
	167.7000		482.5000	106.71								
	173.4000		496.5000	105.61								
	167.7000		460.0000	105.51								
HAD4009A	173.4000	HAE6015A	450.0125	127.61	Back Center	0.19	0.013	0.78	0.013	0.97	0.03	
					Back Side	0.52	0.015	0.4	0.017	0.92	0.03	
	173.4000		482.5000	125.01	Back Center	0.19	0.013	0.99	0.011	1.18	0.02	
					Back Side	0.52	0.015	0.7	0.020	1.22	0.04	The 3rd highest MPE configuration has SAR below 75% of the limit
	162.0000		450.0125	121.51	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	
					Back Side	0.68	0.020	0.4	0.017	1.08	0.04	
	162.0000		482.5000	118.91								
	173.4000		469.9875	118.41								
	173.4000		460.0000	117.51								
	167.7000		450.0125	115.61								
	167.7000		482.5000	113.01								
	162.0000		469.9875	112.31								
	162.0000		460.0000	111.41								
	167.7000		469.9875	106.41								
	167.7000		460.0000	105.51								
	173.4000		496.5000	105.41								
	173.4000		511.9875	100.81								

* Antenna length trimmed to frequency.

Total config exceed MPE limit: 27

Max SAR 0.68 0.02 0.99 0.02 1.22 0.04

Note:

* Antenna length trimmed to frequency.

Blue – the highest SAR results computed for passenger (Back Seat)

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
UHF R2 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results		APX 8500 HP Mobile Adjusted SAR Results		Combine Adjusted SAR Results		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			lg	WB	lg	WB	lg	WB	
HAD4009A	173.4000	HAE6016A	450.0125	120.41	Back Center	0.19	0.013	0.66	0.011	0.85	0.02	The 2nd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.52	0.015	0.36	0.015	0.88	0.03	
	173.4000		469.9875	119.41	Back Center	0.19	0.013	0.54	0.008	0.73	0.02	
					Back Side	0.52	0.015	0.23	0.016	0.75	0.03	
	173.4000		482.5000	118.71								
	173.4000		460.0000	117.51								
	162.0000		450.0125	114.31								
	162.0000		469.9875	113.31								
	162.0000		482.5000	112.61								
	162.0000		460.0000	111.41								
	167.7000		450.0125	108.41								
	167.7000		469.9875	107.41								
	167.7000		482.5000	106.71								
	173.4000		496.5000	105.61								
	167.7000		460.0000	105.51								
HAD4009A	173.4000	HAE6015A	450.0125	127.61	Back Center	0.19	0.013	0.78	0.013	0.97	0.03	The 3rd highest MPE configuration has SAR below 75% of the limit
					Back Side	0.52	0.015	0.4	0.017	0.92	0.03	
	173.4000		482.5000	125.01	Back Center	0.19	0.013	0.99	0.011	1.18	0.02	
					Back Side	0.52	0.015	0.7	0.020	1.22	0.04	
	162.0000		450.0125	121.51	Back Center	0.31	0.018	0.78	0.013	1.09	0.03	
					Back Side	0.68	0.020	0.4	0.017	1.08	0.04	
	162.0000		482.5000	118.91								
	173.4000		469.9875	118.41								
	173.4000		460.0000	117.51								
	167.7000		450.0125	115.61								
	167.7000		482.5000	113.01								
	162.0000		469.9875	112.31								
	162.0000		460.0000	111.41								
	167.7000		469.9875	106.41								
	167.7000		460.0000	105.51								
	173.4000		496.5000	105.41								
	173.4000		511.9875	100.81								

Table 3a continued: SAR Simulation Reduction Considerations for Passenger (back seat)
7/800 Band

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			Ig	WB	Ig	WB	Ig	WB	
HAD4008A	162.0000	AN000131A01	775.9125	121.7	Back Center	0.31	0.018	0.05	0.002	0.36	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.67	0.019	0.04	0.002	0.71	0.02	
	162.0000		806.0125	121.0								
	162.0000		770.0125	120.5								
	162.0000		823.9875	120.2								
	162.0000		851.0125	119.4								
	162.0000		862.0125	119.2								
	162.0000		868.9875	118.9								
HAD4008A	162.0000	HAF4013A	775.9125	120.9	Back Center	0.31	0.018	0.1	0.002	0.41	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.67	0.019	0.04	0.002	0.71	0.02	
	162.0000		806.0125	120.6								
	162.0000		770.0125	120.2								
	162.0000		823.9875	119.9								
	162.0000		868.9875	119.7								
	162.0000		862.0125	119.0								
	162.0000		851.0125	118.9								
HAD4008A	162.0000	HAF4014A	823.9875	119.7	Back Center	0.31	0.018	0.05	0.002	0.36	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.67	0.019	0.04	0.001	0.71	0.02	
	162.0000		851.0125	119.5								
	162.0000		868.9875	119.2								
	162.0000		862.0125	118.9								
	162.0000		806.0125	118.7								
	162.0000		775.9125	118.1								
	162.0000		770.0125	117.9								
HAD4008A	162.0000	HAF4016A	775.9125	121.5	Back Center	0.31	0.018	0.1	0.002	0.41	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.67	0.019	0.04	0.002	0.71	0.02	
	162.0000		770.0125	121.1								
	162.0000		806.0125	120.9								
	162.0000		823.9875	120.2								
	162.0000		868.9875	119.1								
	162.0000		862.0125	119.0								
	162.0000		851.0125	118.9								
HAD4008A	162.0000	HAF4017A	775.9125	126.2	Back Center	0.31	0.018	0.2	0.004	0.51	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.67	0.019	0.09	0.004	0.76	0.02	
	162.0000		770.0125	125.4								
	162.0000		806.0125	123.3								
	162.0000		823.9875	121.5								
	162.0000		868.9875	119.8								
	162.0000		851.0125	119.6								
	162.0000		862.0125	119.0								
HAD4009A	173.4000	HAF4017A	775.9125	103.7	Back Center	0.19	0.013	0.20	0.004	0.39	0.02	The highest MPE configuration has SAR below 50% of the limit.
					Back Side	0.52	0.015	0.09	0.004	0.61	0.02	
	173.4000		770.0125	102.9								
	173.4000		806.0125	100.8								

Table 3b: SAR Simulation Reduction Considerations for Passenger (front seat)**VHF Band**

DVRS VHF		APX 8500 HP Mobile		Combine MPE (%)	Exposure Location	DVRS VHF Adjusted SAR Results (W/kg)		APX 8500 HP Mobile Adjusted SAR Results (W/kg)		Combine Adjusted SAR Results (W/kg)		SAR Simulation Reduction
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)			1g	WB	1g	WB	1g	WB	
HAD4007A	150.8000	HAD4009A	165.0125	105.5	Driver Side	0.31 0.25	0.011 0.010	0.12 0.13	0.009 0.009	0.43 0.38	0.02 0.02	
HAD4008A	156.4000	HAD4008A	162.0000	100.71	Driver Side	0.51 0.55	0.012 0.012	0.11 0.18	0.009 0.012	0.62 0.73	0.02 0.02	
	162.0000		162.0000	100.11								The highest MPE configuration has SAR below 50% of the limit.
HAD4008A	156.4000	HAD4009A	165.0125	109.01	Driver Side	0.51 0.55	0.012 0.012	0.12 0.13	0.009 0.009	0.63 0.68	0.02 0.02	
	162.0000		165.0125	108.41								The highest MPE configuration has SAR below 50% of the limit.
	150.8000		165.0125	104.91								
HAD4009A	173.4000	HAD4009A	165.0125	268.41	Driver Side	0.29 0.35	0.007 0.008	0.12 0.13	0.009 0.009	0.41 0.48	0.02 0.02	
	162.0000		165.0125	262.31								The highest MPE configuration has SAR below 50% of the limit.
	167.7000		165.0125	256.41								

Note:

Blue – the highest SAR results computed for passenger (Front Seat)**Combined SAR Simulation Method**

When the sum of the peak 1-g average SAR values for DVRS VHF and Companion mobile in a specific operating mode and exposure condition combination is below the SAR limit (1.6 W/kg), the combined exposure for that configuration is compliant since the combined peak 1-g average SAR does not exceed the sum of the peaks induced by the individual transmitter (DVRS VHF and Companion mobile). However, the sum of the peak SAR values may overestimate the actual combined SAR because the corresponding peaks from different transmitters are frequently not collocated within the exposed human body.

When the sum of the peak SAR values is greater than the limit, the actual combined peak 1-g average SAR may still be compliant. To determine compliance, the combined SAR distribution may be computed by summing up the individual SAR distributions from different transmitters and evaluating the corresponding combined peak 1-g average SAR value. Accordingly, for such configurations the combined SAR was evaluated with the DVRS VHF antenna position on the trunk and Companion mobile position on the roof in same simulation. Figure 7 shows XFDTD™ computational models used for passenger (back seat) exposure to trunk and roof mounted antennas simultaneously.

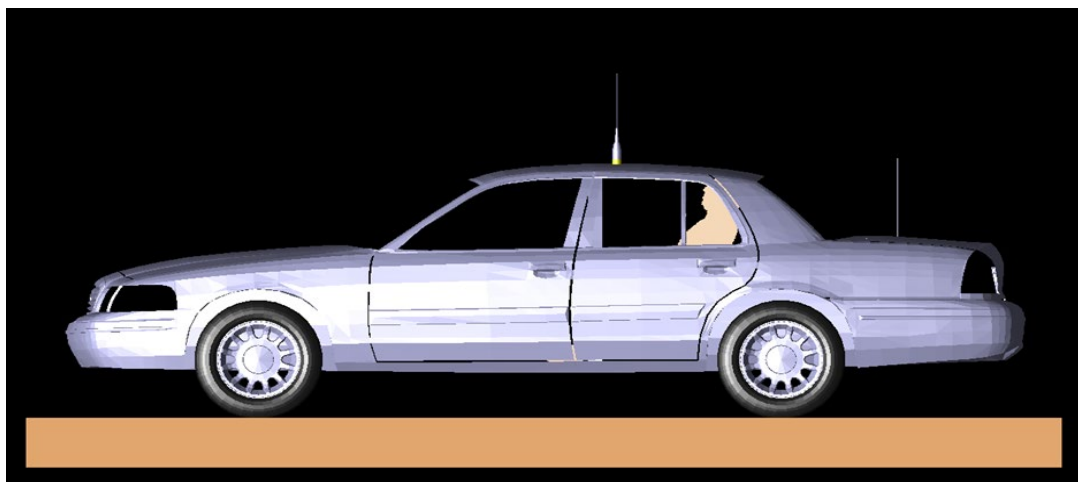


Figure 7: Passenger (back seat) model exposed to a roof-mount and trunk-mounted antennas

Compliance with the 1-g average SAR limit of 1.6W/kg demonstrated through combined SAR distribution evaluation is indicated with “#” in Table 3. Table 4 presents the maximum combined SAR simulation results.

Table 4: Combined SAR Simulation Results

DVRS VHF		APX 8500 HP Mobile		Exposure Condition	Combined SAR Simulation Result (W/kg)
Antenna Kit#	Freq (MHz)	Antenna Kit#	Freq (MHz)		
HAD4008A	162.0000	HAE6013A	406.5000	Back Side	1.02
HAD4008A	162.0000	HAE6031A	406.5000	Back Side	1.01
HAD4008A	162.0000	AN00131A01	482.5000	Back Center	0.96

Results of SAR computations for combined exposure

From all simulated results the worst case peak SAR values were identified for both DVR VHF and Companion mobile radio exposure and then combined to produce the composite peak SAR value in corresponding locations of the human body model. Table 5 and Table 6 present the worst case composite peak SAR value.

Table 5: Worst case peak 1-g average SAR for passenger exposure conditions and combined 1-g average SAR from simultaneous exposure.

	Passenger location	DVR VHF [W/kg]	mobile radio [W/kg]	Total [W/kg]
FCC US	Back Center	0.19	1.40	1.59
	Back Side	0.52	1.02	1.54
	Driver	0.51	0.12	0.63
	Front Side	0.55	0.18	0.73

Table 6: Worst case peak whole body average SAR for passenger exposure conditions and combined whole body average SAR from simultaneous exposure.

	Passenger location	DVR VHF [W/kg]	mobile radio [W/kg]	Total [W/kg]
FCC US	Back Center	0.018	0.018	0.036
	Back Side	0.020	0.031	0.051
	Driver	0.012	0.009	0.021
	Front Side	0.012	0.012	0.024

From Table 5 and Table 6 the maximum combined peak 1-g SAR is 1.59 W/kg, less than the 1.6 W/kg limit, while the maximum combined whole-body average SAR is 0.051 W/kg, less than the 0.08 W/kg limit.

Conclusions

Under the test conditions described for evaluating passenger exposure to the RF electromagnetic fields emitted by vehicle-mounted antennas used in conjunction with these mobile radio products, the present analysis shows that the computed SAR values are compliant with the US FCC exposure limits for the general public.

References

- [1] IEEE Standard C95.1-1999. *IEEE Standard for Safety Levels with Respect to Human Exposure to RF Electromagnetic Fields*, 3 kHz to 300 GHz.
- [2] http://www.nlm.nih.gov/research/visible/visible_human.html
- [3] Simon, W., Bit-Babik, G., “Effect of the variation in population on the whole-body average SAR of persons exposed to vehicle mounted antennas W. Simon”, ICEAA September 2-7, 2012, Cape 1380 Town.