

 MOTOROLA SOLUTIONS	 ACCREDITED TESTING CERT # 2518.01
DECLARATION OF COMPLIANCE: MPE ASSESSMENT	
EME Test Laboratory 8000 West Sunrise Blvd Fort Lauderdale, FL. 33322	Date of Report: May 13, 2014 Report Revision: B
Responsible Engineer: William Elliott (Principal Staff EME Test Engineer) Report author: William Elliott (Principal Staff EME Test Engineer) Date(s) Tested: 02/05/2014 – 02/10/2014; 3/21/2014; 3/24/2014; 3/26/2014 Manufacturer/Location: Motorola Solutions Inc., Penang Malaysia Date submitted for test: 01/20/2014 DUT Description: XPR5580 Dual band 800/900 Vehicular Mobile Radio with GOB BT/GPS using a Color Display control head and a BNC connector. Power for 800 MHz band is 10W to 35W. Power for 900 MHz band is 10W to 30W. Power for 901-902 MHz and 940-941 MHz is limited to 7W ERP. Test TX mode(s): CW Max. Power output: 42W (800MHz), 36W (900MHz), 9W for 901-902 MHz and 940-941 MHz, 10mW (Bluetooth) TX Frequency Bands: 806-825MHz; 851-870MHz; 896-901MHz; 935-940MHz ; 901-902 MHz; 940-941 MHz; 2.402-2.480 GHz (Bluetooth) Signaling type: FM; Analog, APCO 25, and TDMA 1:2 (F2) Model(s) Tested: PMUF1651A Model(s) Certified: PMUF1651A, AAM28UMN9KA1AN, AAM28UMC9KA1AN Serial Number(s): 203TQB0009 / 203TQB0000 Classification: Occupational/Controlled Environment FCC ID: AZ492FT5862 Part 90 (806-824MHz) (851-869MHz) (896-901MHz) & (935-940MHz) ; Part 24 (901-902MHz) & (940-941MHz) IC: 109U-92FT5862 IC bands; (806-824MHz) (851-869MHz) (896-901MHz) (901-902MHz) (935-940MHz) & (940-941MHz) The MPE results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits. FCC rules require compliance for Passengers and Bystanders to the FCC General Population/Uncontrolled limits. The test results clearly demonstrate compliance with ICNIRP Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz).	
Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 3.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc. EME Laboratory. I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-159 April 2006 The results and statements contained in this report pertain only to the device(s) evaluated herein.	
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Document Revision History

Date	Revision	Comments
03/28/2014	O	Initial release
05/01/2014	A	Added sales models AAM28UMN9KA1AN and AAM28UMC9KA1AN
05/14/2014	B	Added correct BT antenna gain info

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1.0 Introduction

This report details the test setup, test equipment and test results of Maximum Permissible Exposure (MPE) performed at Motorola Solutions' outside test site for product model PMUF1651A.

2.0 FCC MPE Summary

Table 1

Equipment Class	Frequency band (MHz)	Passenger (mW/cm ²)	Bystander (mW/cm ²)
TNB	806-940	0.35	0.16
PCB	901-902 / 940-941	0.05	0.06
*DSS	2402 – 2480	NA	NA
*Simultaneous Results		NA	NA

*Note Results not required per KDB 447498

3.0 Abbreviations / Definitions

APCO: Association of Public-Safety Communications Officials

BS: Bystander

CNR: Calibration Not Required

CW: Continuous Wave

DUT: Device Under Test

EME: Electromagnetic Energy

F2: 2 slot Time Division Multiple Access

FHSS: Frequency Hopping Spread Spectrum

FM: Frequency Modulation

FSK: Frequency Shift Keying

4FSK: Four Level Frequency Shift Keying

MPE: Maximum Permissible Exposure

NA: Not Applicable

PB: Passenger Backseat

PF: Passenger Front seat

PTT: Push to Talk

SAR: Specific Absorption Rate

TDMA: Time Division Multiple Access

4.0 Referenced Standards and Guidelines

This product is designed to comply with the following applicable national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; Rule Part 47CFR § 1.1310, § 2.1091 (d) and § 2.1093 for RF Exposure, where applicable.
- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65 (Edition 97-01), FCC, Washington, D.C.: August 1997.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1999
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1992. Specific to FCC rules and regulations.
- Institute of Electrical and Electronics Engineers (IEEE) C95.3-2002
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6 (2009), Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz
- FCC KDB – 447498 D01 General RF Exposure Guidance v05r01 (05/28/2013)
- FCC KDB – 865664 D02 RF Exposure Reporting v01r01 (05/28/2013)

5.0 Power Density Limits

Table 2 – Occupational / Controlled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS 102 issue 4 - 2010
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
30 - 300	1.0				*10.0
10 - 400		10.0			
100 - 300			1.0	10.0	
300 - 1,500	f/300				f/30
300 - 3,000			f/300	f/30	
400 - 2,000		f/40			
1,500 - 15,000					50.0
1,500 - 100,000	5.0				
2,000 – 300,000		50.0			
3,000 - 300,000			10.0	100.0	

*Power density limit is applicable at frequencies greater than 100MHz

Table 3 – General Population / Uncontrolled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS 102 issue 4 – 2010
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
30 – 300	0.2				*2.0
10 – 400		2.0			
100 – 300			0.2		
100 – 400				2.0	
300 – 1,500	f/1,500				f/150
400 – 2,000		f/200		f/200	
300 – 15,000			f/1,500		
1,500 – 15,000					10.0
1,500 – 100,000	1.0				
2,000 – 100,000				10.0	
2,000 – 300,000		10.0			

*Power density limit is applicable at frequencies greater than 100MHz

6.0 N_c Test Channels

The number of test channels is determined by using Equation 1 below. This equation is available in FCC's KDB 447498. The test channels are appropriately spaced across the antenna's frequency range.

Equation 1 – Number of test channels

$$N_c = \text{Round} \{ [100(f_{\text{high}} - f_{\text{low}})/f_c]^{0.5} \times (f_c / 100)^{0.2} \}$$

where N_c is the number of test channels, f_{high} and f_{low} are the highest and lowest frequencies within the transmission band, f_c is the mid-band frequency, and frequencies are in MHz.

7.0 Measurement Equipment

Table 4 - Equipment

Equipment Type	Model #	SN	Calibration Date	Calibration Due Date
Automobile	2003 Ford Crown Victoria, 4-Door	NA	NA	NA
Survey Meter Probe – E-Field	ETS Model HI-2200 ETS Model E100	00086316 000153632	11/19/2013	11/19/2014

E-field measurements are in mW/cm².

8.0 Measurement System Uncertainty Levels

Table 5 - Uncertainty Budget for Near Field Probe Measurements

	Tol. (± %)	Prob. Dist.	Divisor	u_i (±%)	v_i
Measurement System					
Probe Calibration	6.0	N	1.00	6.0	∞
Survey Meter Calibration	3.0	N	1.00	3.0	∞
Hemispherical Isotropy	8.0	R	1.73	4.6	∞
Linearity	5.0	R	1.73	2.9	∞
Pulse Response	1.0	R	1.73	0.6	∞
RF Ambient Noise	3.0	R	1.73	1.7	∞
RF Reflections	8.0	R	1.73	4.6	∞
Probe Positioning	10.0	R	1.73	5.8	∞
Test sample Related					
Antenna Positioning	3.0	N	1.00	3.0	∞
Power drift	5.0	R	1.73	2.9	∞
Combined Standard Uncertainty		RSS		12.2	∞
Expanded Uncertainty (95% CONFIDENCE LEVEL)		$k=2$		24	

9.0 Product and System Description

Model PMUF1651A is a mobile transceiver that utilizes analog & digital two-way radio communications. The analog modulation scheme uses Frequency Modulation (FM). The digital modes use 4 Level Frequency Shift Keying (4FSK) and TDMA. TDMA allocates portions of the RF signal by dividing time into two slots (2 slot TDMA). The system can accommodate 2-voice channels in a standard 12.5 kHz channel. Transmission from a unit or base station is accommodated in time-slot lengths of 30 milliseconds and frame lengths of 60 milliseconds. This product supports voice in analog mode, and both voice and data modes in digital mode.

This device operates in a half duplex system. A half duplex system only allows the user to transmit or receive. This device cannot transmit and receive simultaneously. The user must stop transmitting in order to receive a signal or listen for a response, regardless of PTT button or use of voice activated audio accessories. This type of operation, along with the RF safety booklet, which instructs the user to transmit no more than 50% of the time, justifies the use of 50% duty factor for this device.

The maximum duty cycle for TDMA is 1:2 (50%) and is controlled by software. The FM signal is continuous. However, because of hand shaking or Push-To-Talk (PTT) between users and/or base stations a conservative 50% duty cycle is applied. The TDMA mode was not tested because its duty cycle is inherently 50% and would include an additional 50% duty cycle for PTT.

This device also incorporates a Class 1 (limited to 10mW) Bluetooth device which is Frequency Hopping Spread Spectrum (FHSS) technology. The Bluetooth radio modem is used to wirelessly link audio accessories. The maximum actual transmission duty cycle is imposed by the Bluetooth

standard. Bluetooth v1.1, 1.2, 2.0, and 2.1 packet types of varying duty cycles: 1-slot, 3-slot, and 5-slot packets. A 1-slot audio packet type receives on 1-slot and transmits on 1-slot and this is the worst case for the radio application. The maximum duty cycle thus becomes $366/(625*2) = 29.3\%$ (maximum slot duration excluding guard band is 366 μ s and each slot with guard band is 625 μ s long).

The intended use of the radio is PTT while the device is properly installed in a vehicle with an external antenna mounted at the roof or trunk.

The nominal output power for the frequency ranges 806-825MHz and 851-870MHz is 35W. The maximum power allowed for production in these frequency ranges is 42W. The nominal output power for the frequency ranges 896-901MHz and 935-940MHz is 30W. The maximum power allowed for production in these frequency ranges is 36W. The nominal output power for the frequency ranges 901-902MHz and 940-941MHz is 7W. The maximum power allowed for production in these frequency ranges is 9W (conducted).

This device will be marketed to and used by employees solely for work-related operations, such as public safety agencies, e.g. police, fire and emergency medical. User training is the responsibility of these agencies which can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means.

Accordingly this product is classified as Occupational/Controlled Exposure. However, in accordance with FCC requirements, the passengers inside the vehicle and the bystanders external to the vehicle are evaluated to the General Population/Uncontrolled Exposure Limits.

(Note that "Bystanders" as used herein are people other than operator)

10.0 Additional Options and Accessories

Refer to Table 6 for complete list of tested antennas.

PMAN4004B – Optional GPS Base

Below are additional antenna kits which include the tested antennas, mounting hardware, and optional GPS base:

HAF4013A – Includes mounting hardware and tested antenna HAF4022A.

HAF4032A – Includes mounting hardware, GPS base and tested antenna HAF4022A.

HAF4025A - Includes mounting hardware and tested antenna HAF4019A.

HAF4029A - Includes mounting hardware, GPS base and tested antenna HAF4019A.

HAF4026A - Includes mounting hardware and tested antenna HAF4020A.

HAF4030A - Includes mounting hardware, GPS base and tested antenna HAF4020A.

HAF4027A - Includes mounting hardware and tested antenna HAF4023A.

HAF4033A – Includes mounting hardware, GPS base, and tested antenna HAF4023A.

11.0 Test Set-Up Description

Assessments were performed with mobile radio installed in the test vehicle while engine was at idle, at the specified distances and test locations indicated in sections 11.0, 12.0 and Appendix A.

All antennas described in Table 6 were considered in order to develop the test plan for this product. Antennas were installed and tested per their appropriate mount locations (Roof / Trunk) and defined test channels.

The system was tested using a 16' Teflon RG58A/U cable attaching the radio to the transmit antenna. This cable is shorter than the 17' ARG-58U cables supplied in the customer kits for connecting the radio to the transmit antenna. The cable used in the test setup also has lower attenuation over the test frequency range than the cable provided in the customer kits. The use of a shorter cable with lower attenuation in the test setup ensures that the test data is more conservative with regards to the actual installation. Cable losses are reported in Appendix A.

12.0 Method of Measurement with trunk mounted antenna(s)

12.1 External/Bystander vehicle MPE measurements

Antenna is located at the center of the trunk. Refer to Appendix A for antenna location and distance.

MPE measurements for bystander (BS) conditions are determined by taking the average of (10) measurements in a 2 m vertical line for each of the (3) bystander test locations indicated in Appendix A with 20 cm height increments, with antenna to probe sensor separation distances of 62 cm (for rated conducted power between 30-35W) or 35.5 cm (for rated conducted power of 7W) directly behind vehicle, 104 cm (45 degree radial) and 110.5 cm (90 degree radial). The separation distance used for testing is defined from the antenna where as the RF safety booklet defines the same distance from the vehicle body to ensure that the assessment is applicable to other vehicles. The measurement probe is positioned orthogonal to antenna (typically parallel to ground with a vertically mounted antenna) and aimed directly at the antenna's axis. These measurements are representative of persons other than the operator standing next to the vehicle.

Each of the offered antennas mounted at the center of the trunk were assessed at the rear of the vehicle while maintaining a minimum of twenty (20) centimeter separation distance between the probe sensor and vehicle body. The worst case antenna was then tested at a 45° radial at the corner of the trunk, and 90° radial at the side of the trunk.

Note: The distance from the centered trunk-mounted antenna to the rear edge of the vehicle is 42cm and the distance from the rear edge of the vehicle to the survey probe sensor is 20cm.

12.2 Internal/Passenger vehicle MPE measurements

Antenna is located toward the center of the trunk at a minimum 85cm from backseat passenger. Users are instructed, per installation manual, to mount antennas on the roof only if a minimum 85cm cannot be achieved. Refer to Appendix A for antenna location and distance.

MPE measurements for passenger front seat (PF) and backseat (PB) conditions are determined by taking the average of the (3) measurements (Head, Chest, and Lower Trunk) inside the vehicle for both the front and back seats.

The backseat is a bench seat and therefore each position (Head, Chest & Lower Trunk) were scanned across (horizontally) the seat starting from the middle of the seat to the edge of the seat stopping 20 cm from the vehicle door. Similar process was used in the front bucket seat.

The probe handle is oriented parallel (horizontal) to the ground and pointed towards the back of the vehicle. The probe handle is not oriented normal to the seat surface. The probe head (incorporating the field sensors) is scanned continuously (using the max-hold function available in the meter) along three test axes which are parallel to the seat angle (intended as the line determined by the intersection of the plane of the seat and the plane of the backrest) and are 20 cm from the seat surface. One test axis is at the Head height, another is at the Chest height, and another is at the Lower Trunk height. The maximum field level value recorded for each test axis is logged. The MPE is determined by averaging these three maximum values regardless of the geometrical location where they were observed. For instance, the locations of the three maxima may lie on different vertical (relative to ground) lines.

This approach leads to results that are representative of the exposure of vehicle occupants since it is based on an average across the body portions closest to the antenna for both trunk and roof mount positions, and is conservatively biased because the highest results for each test axis are combined, e.g. the highest head exposure could be in the middle of the seat while the highest lower trunk exposure could be closer to the door.

13.0 Method of Measurement with roof mounted antenna(s)

13.1 External/Bystander vehicle MPE measurements

Antenna is located at the center of the roof. Refer to Appendix A for antenna location and distance.

MPE measurements for bystander (BS) conditions are determined by taking the average of (10) measurements in a 2m vertical line for the test location indicated in Appendix A with 20cm increments at the test distance of 117cm from the antenna under test. The measurement probe is positioned orthogonal to antenna (typically parallel to ground with a vertically mounted antenna) and aimed directly at the antenna's axis. These measurements are representative of persons other than the operator standing next to the vehicle.

Note: Actual test distance was approximately 117cm from centered roof-mounted antenna to the probe element (97cm from antenna to edge of car door and 20cm from the edge of the car door to the survey probe sensor); this is the closest distance that can be achieved to a centered roof-mounted antenna used for MPE compliance assessment herein.

13.2 Internal/Passenger vehicle MPE measurements

Antenna is located at the center of the roof. Refer to Appendix A for antenna location and distance.

MPE measurements for passenger front seat (PF) and backseat (PB) conditions are determined by taking the average of the (3) measurements (Head, Chest, and Lower Trunk) inside the vehicle for both the front and back seats.

The backseat is a bench seat and therefore each position (Head, Chest & Lower Trunk) were scanned across (horizontally) the seat starting from the middle of the seat to the edge of the seat stopping 20 cm from the vehicle door. Similar process was used in the front bucket seat.

The probe handle is oriented parallel (horizontal) to the ground and pointed towards the back of the vehicle. The probe handle is not oriented normal to the seat surface. The probe head (incorporating the field sensors) is scanned continuously (using the max-hold function available in the meter) along three test axes which are parallel to the seat angle (intended as the line determined by the intersection of the plane of the seat and the plane of the backrest) and are 20 cm from the seat surface. One test axis is at the Head height, another is at the Chest height, and another is at the Lower Trunk height. The maximum field level value recorded for each test axis is logged. The MPE is determined by averaging these three maximum values regardless of the geometrical location where they were observed. For instance, the locations of the three maxima may lie on different vertical (relative to ground) lines.

This approach leads to results that are representative of the exposure of vehicle occupants since it is based on an average across the body portions closest to the antenna for both trunk and roof mount positions, and is conservatively biased because the highest results for each test axis are combined, e.g. the highest head exposure could be in the middle of the seat while the highest lower trunk exposure could be closer to the door.

14.0 MPE Calculations

The final MPE results for this mobile radio are presented in section 15.0 Tables 7 - 10. These results are based on 50% duty cycle for PTT.

Below is an explanation of how the MPE results are calculated. Refer to Appendix D for MPE measurement results and calculations.

External to vehicle (Bystander) - 10 measurements are averaged over the body (*Avg_over_body*).
Internal to vehicle (Passengers) - 3 measurements are averaged over the body (*Avg_over_body*).

The Average over Body test methodology is consistent with IEEE/ANSI C95.3-2002 guidelines.

Therefore;

Equation 2 – Power Density Calculation (*Calc._P.D.*)

$$\text{Calc._P.D.} = (\text{Avg_over_body}) * (\text{probe_frequency_cal_factor}) * (\text{duty_cycle})$$

Note1: The highest “average” cal factors from the calibration certificates were selected for the applicable frequency range. Linear interpretation was used to determine “probe_frequency_cal_factor” for the specific test frequencies.

Note 2: The E-field probe calibration certificate’s frequency cal factors were determined by measuring V/m. The survey meter’s results were measured in power density (mW/cm²) and therefore the “probe_frequency_cal_factor” was squared in equation 2 to account for these results.

Note 3: The H-field probe calibration certificate’s frequency cal factors were determined by measuring A/m. The survey meter’s results were measured in A/m and therefore the “Avg_over_body” A/m results were converted to power density (mW/cm²) using the equation 3. H-field measurements are only applicable to frequencies below 300MHz.

Equation 3 – Converting A/m to mW/cm²

$$mW / cm^2 = (A / m)^2 * 37.699$$

Equation 4 – Power Density Maximum Calculation

$$Max_Calc._P.D. = P.D._calc * \frac{\max_output_power}{initial_output_power}$$

Note 4: For initial output power > max_output_power; max_output_power / initial output power = 1

15.0 Antenna Summary

Table 6 below summarizes the tested or evaluated antennas and their descriptions, mount location (roof/trunk/internal), overlap of FCC bands, number of test channels per FCC KDB 447498 (FCC N_c) and actual number of tested channels (Actual N_c). This information was used to determine the test configurations presented in this report.

Table 6

#	Antenna Model	Frequency Range (MHz)	Physical Length (cm)	Gain (dBi)	Remarks	Mount Location (Roof/Trunk)	Overlap FCC Bands	FCC N _c	Actual N _c
1	HAF4019A	806-941	7.7	2.14	1/4 wave	R/T	806-940	8	12
2	HAF4020A	806-941	33.5	3.0	1/2 wave	R/T	806-940	6	10
3	HAF4022A	806-941	6.1	3.0	1/4 wave	R/T	806-940	6	10
4	HAF4023A	806-941	56.0	5.0	1/2 wave	R/T	806-940	6	10

Per FCC requirement, the ERP power for the frequency bands 901-902 MHz and 940-941 MHz cannot exceed 7W. Therefore, data indicated in these bands is limited to the HAF4019A antenna.

16.0 Test Results Summary

The following tables below summarize the MPE results for each test configuration: antenna location, test positions (BS-Bystander, PB-Passenger Backseat, PF-Passenger Front seat), E/H field measurements, angle, antenna model & freq. range, maximum output power, initial power, TX frequency, max calculated power density results, applicable FCC/IEEE/ICNIRP specification limits and % of the applicable specification limits.

Table 7
Bystander MPE assessment for trunk mounted antennas

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	BS	E	0	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.13	0.54	23	0.40	31
						40.9	815.5	0.11	0.54	21	0.41	28
						41.8	824.9875	0.12	0.55	22	0.41	29
						41.4	851.0125	0.12	0.57	22	0.43	29
						41.5	860.5	0.13	0.57	23	0.43	31
						41.3	868.0125	0.13	0.58	23	0.43	31
					36	34.8	896.0125	0.12	0.60	20	0.45	26
						34.8	899	0.12	0.60	19	0.45	26
						36.0	935.0125	0.10	0.62	16	0.47	22
						35.6	938	0.08	0.63	12	0.47	16
					9	8.6	901.5125	0.06	0.60	11	0.45	14
						8.6	940.5125	0.05	0.63	8	0.47	11
Trunk	BS	E	0	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.12	0.54	23	0.40	30
						40.9	815.5	0.11	0.54	20	0.41	26
						41.8	824.9875	0.10	0.55	18	0.41	23
						41.4	851.0125	0.11	0.57	20	0.43	27
						41.5	860.5	0.13	0.57	23	0.43	30
						41.3	868.0125	0.14	0.58	23	0.43	31

Table 7 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	BS	E	0	HAF4020A (806 - 941 MHz)	36	34.8	896.0125	0.11	0.60	18	0.45	24
						34.8	899	0.11	0.60	18	0.45	24
						36.0	935.0125	0.09	0.62	14	0.47	19
						35.6	938	0.09	0.63	14	0.47	19
Trunk	BS	E	0	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.15	0.54	27	0.40	36
						40.9	815.5	0.13	0.54	25	0.41	33
						41.8	824.9875	0.12	0.55	22	0.41	29
						41.4	851.0125	0.12	0.57	20	0.43	27
						41.5	860.5	0.13	0.57	24	0.43	31
						41.3	868.0125	0.14	0.58	24	0.43	32
					36	34.8	896.0125	0.11	0.60	18	0.45	24
						34.8	899	0.11	0.60	18	0.45	24
						36.0	935.0125	0.08	0.62	14	0.47	18
						35.6	938	0.09	0.63	14	0.47	18

Table 7 (Cont.)

			Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	BS	E	0	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.16	0.54	29	0.40	39
						40.9	815.5	0.14	0.54	26	0.41	35
						41.8	824.9875	0.12	0.55	22	0.41	29
						41.4	851.0125	0.11	0.57	20	0.43	27
						41.5	860.5	0.10	0.57	17	0.43	23
						41.3	868.0125	0.12	0.58	21	0.43	28
						36	34.8	896.0125	0.10	0.60	16	0.45
					34.8		899	0.10	0.60	17	0.45	22
					36.0		935.0125	0.08	0.62	12	0.47	16
					35.6		938	0.07	0.63	11	0.47	14
45 Degrees												
Trunk	BS	E	45	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.11	0.54	20	0.40	26
90 Degrees												
Trunk	BS	E	90	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.08	0.54	14	0.40	19

Table 8
Passenger MPE assessment for trunk mounted antennas

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PB	E	NA	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.12	0.54	23	0.40	30
						40.9	815.5	0.11	0.54	20	0.41	27
						41.8	824.9875	0.15	0.55	28	0.41	38
						41.4	851.0125	0.13	0.57	22	0.43	30
						41.5	860.5	0.10	0.57	18	0.43	24
						41.3	868.0125	0.10	0.58	16	0.43	22
					36	34.8	896.0125	0.10	0.60	16	0.45	22
						34.8	899	0.10	0.60	17	0.45	23
						36.0	935.0125	0.07	0.62	12	0.47	16
						35.6	938	0.07	0.63	11	0.47	14
					9	8.6	901.5125	0.02	0.60	4	0.45	5
						8.6	940.5125	0.02	0.63	3	0.47	3
Trunk	PB	E	NA	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.22	0.54	42	0.40	56
						40.9	815.5	0.26	0.54	48	0.41	64
						41.8	824.9875	0.29	0.55	53	0.41	70
						41.4	851.0125	0.19	0.57	34	0.43	45
						41.5	860.5	0.16	0.57	28	0.43	38
						41.3	868.0125	0.15	0.58	25	0.43	33

Table 8 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PB	E	NA	HAF4020A (806 - 941 MHz)	36	34.8	896.0125	0.20	0.60	33	0.45	44
						34.8	899	0.20	0.60	33	0.45	44
						36.0	935.0125	0.16	0.62	25	0.47	34
						35.6	938	0.15	0.63	24	0.47	32
Trunk	PB	E	NA	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.25	0.54	47	0.40	63
						40.9	815.5	0.25	0.54	46	0.41	61
						41.8	824.9875	0.35	0.55	64	0.41	86
						41.4	851.0125	0.22	0.57	40	0.43	53
						41.5	860.5	0.18	0.57	31	0.43	41
						41.3	868.0125	0.11	0.58	19	0.43	26
					36	34.8	896.0125	0.13	0.60	21	0.45	28
						34.8	899	0.13	0.60	22	0.45	29
						36.0	935.0125	0.12	0.62	19	0.47	26
						35.6	938	0.13	0.63	21	0.47	27

Table 8 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PB	E	NA	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.16	0.54	30	0.40	40
						40.9	815.5	0.13	0.54	25	0.41	33
						41.8	824.9875	0.17	0.55	32	0.41	42
						41.4	851.0125	0.10	0.57	17	0.43	23
						41.5	860.5	0.09	0.57	16	0.43	21
						41.3	868.0125	0.07	0.58	12	0.43	16
					36	34.8	896.0125	0.06	0.60	11	0.45	14
						34.8	899	0.07	0.60	12	0.45	16
						36.0	935.0125	0.06	0.62	9	0.47	12
						35.6	938	0.05	0.63	8	0.47	11
Trunk	PF	E	NA	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.06	0.54	11	0.40	15
						40.9	815.5	0.02	0.54	5	0.41	6
						41.8	824.9875	0.03	0.55	6	0.41	8
						41.4	851.0125	0.03	0.57	5	0.43	6
						41.5	860.5	0.03	0.57	5	0.43	7
						41.3	868.0125	0.02	0.58	4	0.43	5

Table 8 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PF	E	NA	HAF4019A (806 - 941 MHz)	36	34.8	896.0125	0.03	0.60	5	0.45	6
						34.8	899	0.02	0.60	4	0.45	5
						36.0	935.0125	0.03	0.62	4	0.47	6
						35.6	938	0.02	0.63	4	0.47	5
					9	8.6	901.5125	0.03	0.60	5	0.45	6
						8.6	940.5125	0.05	0.63	8	0.47	11
Trunk	PF	E	NA	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.10	0.54	18	0.40	24
						40.9	815.5	0.07	0.54	14	0.41	18
						41.8	824.9875	0.06	0.55	11	0.41	15
						41.4	851.0125	0.05	0.57	9	0.43	12
						41.5	860.5	0.04	0.57	7	0.43	9
						41.3	868.0125	0.04	0.58	7	0.43	9
					36	34.8	896.0125	0.04	0.60	7	0.45	9
						34.8	899	0.04	0.60	7	0.45	10
						36.0	935.0125	0.06	0.62	9	0.47	12
						35.6	938	0.05	0.63	9	0.47	11

Table 8 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PF	E	NA	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.10	0.54	19	0.40	25
						40.9	815.5	0.10	0.54	18	0.41	24
						41.8	824.9875	0.07	0.55	12	0.41	16
						41.4	851.0125	0.05	0.57	9	0.43	13
						41.5	860.5	0.06	0.57	10	0.43	14
						41.3	868.0125	0.03	0.58	6	0.43	8
					36	34.8	896.0125	0.04	0.60	7	0.45	9
						34.8	899	0.05	0.60	9	0.45	11
						36.0	935.0125	0.04	0.62	6	0.47	8
						35.6	938	0.04	0.63	6	0.47	9
Trunk	PF	E	NA	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.06	0.54	11	0.40	15
						40.9	815.5	0.03	0.54	6	0.41	8
						41.8	824.9875	0.04	0.55	6	0.41	9
						41.4	851.0125	0.02	0.57	4	0.43	5
						41.5	860.5	0.02	0.57	4	0.43	5
						41.3	868.0125	0.02	0.58	4	0.43	5

Table 8 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Trunk	PF	E	NA	HAF4022A (806 - 941 MHz)	36	34.8	896.0125	0.02	0.60	4	0.45	5
						34.8	899	0.02	0.60	3	0.45	4
						36.0	935.0125	0.02	0.62	3	0.47	4
						35.6	938	0.01	0.63	2	0.47	3

Table 9
Bystander MPE assessment for roof mounted antennas

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	BS	E	NA	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.04	0.54	8	0.40	11
						40.9	815.5	0.04	0.54	8	0.41	10
						41.8	824.9875	0.05	0.55	9	0.41	11
						41.4	851.0125	0.05	0.57	8	0.43	11
						41.5	860.5	0.05	0.57	8	0.43	11
						41.3	868.0125	0.05	0.58	8	0.43	11
					36	34.8	896.0125	0.04	0.60	7	0.45	9
						34.8	899	0.04	0.60	7	0.45	9
						36.0	935.0125	0.03	0.62	5	0.47	7
						35.6	938	0.03	0.63	5	0.47	7
					9	8.6	901.5125	0.01	0.60	1	0.45	2
						8.6	940.5125	0.01	0.63	1	0.47	2
Roof	BS	E	NA	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.06	0.54	10	0.40	14
						40.9	815.5	0.06	0.54	11	0.41	15
						41.8	824.9875	0.05	0.55	10	0.41	13
						41.4	851.0125	0.05	0.57	9	0.43	12
						41.5	860.5	0.05	0.57	9	0.43	12
						41.3	868.0125	0.05	0.58	9	0.43	13

Table 9 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	BS	E	NA	HAF4020A (806 - 941 MHz)	36	34.8	896.0125	0.05	0.60	9	0.45	11
						34.8	899	0.05	0.60	8	0.45	11
						36.0	935.0125	0.04	0.62	7	0.47	9
						35.6	938	0.04	0.63	7	0.47	9
Roof	BS	E	NA	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.06	0.54	11	0.40	15
						40.9	815.5	0.07	0.54	12	0.41	16
						41.8	824.9875	0.06	0.55	11	0.41	14
						41.4	851.0125	0.06	0.57	10	0.43	13
						41.5	860.5	0.06	0.57	10	0.43	13
						41.3	868.0125	0.05	0.58	9	0.43	12
					36	34.8	896.0125	0.05	0.60	9	0.45	12
						34.8	899	0.05	0.60	8	0.45	11
						36.0	935.0125	0.04	0.62	7	0.47	9
						35.6	938	0.04	0.63	7	0.47	9

Table 9 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	BS	E	NA	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.05	0.54	8	0.40	11
						40.9	815.5	0.05	0.54	9	0.41	12
						41.8	824.9875	0.05	0.55	8	0.41	11
						41.4	851.0125	0.04	0.57	7	0.43	9
						41.5	860.5	0.04	0.57	6	0.43	8
						41.3	868.0125	0.04	0.58	6	0.43	8
					36	34.8	896.0125	0.03	0.60	6	0.45	7
						34.8	899	0.03	0.60	5	0.45	7
						36.0	935.0125	0.03	0.62	4	0.47	5
						35.6	938	0.03	0.63	4	0.47	6

Table 10
Passenger MPE assessment for roof mounted antennas

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PB	E	NA	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.02	0.54	5	0.40	6
						40.9	815.5	0.01	0.54	2	0.41	3
						41.8	824.9875	0.02	0.55	3	0.41	4
						41.4	851.0125	0.02	0.57	3	0.43	4
						41.5	860.5	0.01	0.57	2	0.43	2
						41.3	868.0125	0.02	0.58	3	0.43	4
					36	34.8	896.0125	0.01	0.60	2	0.45	2
						34.8	899	0.01	0.60	2	0.45	2
						36.0	935.0125	0.01	0.62	2	0.47	2
						35.6	938	0.01	0.63	1	0.47	2
					9	8.6	901.5125	0.00	0.60	0	0.45	1
						8.6	940.5125	0.00	0.63	0	0.47	1
Roof	PB	E	NA	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.05	0.54	9	0.40	12
						40.9	815.5	0.04	0.54	7	0.41	9
						41.8	824.9875	0.03	0.55	5	0.41	6
						41.4	851.0125	0.02	0.57	4	0.43	6
						41.5	860.5	0.02	0.57	3	0.43	4
						41.3	868.0125	0.03	0.58	5	0.43	6

Table 10 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PB	E	NA	HAF4020A (806 - 941 MHz)	36	34.8	896.0125	0.02	0.60	3	0.45	4
						34.8	899	0.02	0.60	3	0.45	4
						36.0	935.0125	0.02	0.62	3	0.47	4
						35.6	938	0.02	0.63	3	0.47	3
Roof	PB	E	NA	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.05	0.54	10	0.40	13
						40.9	815.5	0.03	0.54	5	0.41	7
						41.8	824.9875	0.03	0.55	5	0.41	7
						41.4	851.0125	0.02	0.57	4	0.43	5
						41.5	860.5	0.01	0.57	2	0.43	3
						41.3	868.0125	0.02	0.58	3	0.43	5
					36	34.8	896.0125	0.01	0.60	2	0.45	3
						34.8	899	0.01	0.60	2	0.45	2
						36.0	935.0125	0.01	0.62	1	0.47	2
						35.6	938	0.01	0.63	1	0.47	2

Table 10 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PB	E	NA	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.02	0.54	4	0.40	5
						40.9	815.5	0.01	0.54	3	0.41	4
						41.8	824.9875	0.02	0.55	3	0.41	4
						41.4	851.0125	0.02	0.57	3	0.43	4
						41.5	860.5	0.01	0.57	3	0.43	3
						41.3	868.0125	0.02	0.58	3	0.43	4
					36	34.8	896.0125	0.01	0.60	2	0.45	3
						34.8	899	0.01	0.60	2	0.45	2
						36.0	935.0125	0.01	0.62	1	0.47	2
						35.6	938	0.01	0.63	1	0.47	2
Roof	PF	E	NA	HAF4019A (806 - 941 MHz)	42	40.5	806.0125	0.01	0.54	2	0.40	3
						40.9	815.5	0.01	0.54	2	0.41	2
						41.8	824.9875	0.01	0.55	2	0.41	3
						41.4	851.0125	0.01	0.57	2	0.43	2
						41.5	860.5	0.01	0.57	2	0.43	3
						41.3	868.0125	0.01	0.58	2	0.43	3

Table 10 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PF	E	NA	HAF4019A (806 - 941 MHz)	36	34.8	896.0125	0.01	0.60	1	0.45	2
						34.8	899	0.01	0.60	1	0.45	2
						36.0	935.0125	0.01	0.62	1	0.47	2
						35.6	938	0.01	0.63	1	0.47	2
					9	8.6	901.5125	0.00	0.60	0	0.45	0
						8.6	940.5125	0.01	0.63	1	0.47	1
Roof	PF	E	NA	HAF4020A (806 - 941 MHz)	42	40.5	806.0125	0.02	0.54	4	0.40	5
						40.9	815.5	0.02	0.54	4	0.41	6
						41.8	824.9875	0.03	0.55	5	0.41	7
						41.4	851.0125	0.02	0.57	3	0.43	4
						41.5	860.5	0.02	0.57	4	0.43	5
						41.3	868.0125	0.01	0.58	2	0.43	3
					36	34.8	896.0125	0.01	0.60	2	0.45	3
						34.8	899	0.01	0.60	2	0.45	2
						36.0	935.0125	0.02	0.62	3	0.47	4
						35.6	938	0.02	0.63	3	0.47	4

Table 10 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm^2)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PF	E	NA	HAF4023A (806 - 941 MHz)	42	40.5	806.0125	0.03	0.54	5	0.40	7
						40.9	815.5	0.02	0.54	5	0.41	6
						41.8	824.9875	0.02	0.55	4	0.41	5
						41.4	851.0125	0.01	0.57	2	0.43	3
						41.5	860.5	0.01	0.57	2	0.43	3
						41.3	868.0125	0.01	0.58	2	0.43	3
					36	34.8	896.0125	0.01	0.60	2	0.45	2
						34.8	899	0.01	0.60	2	0.45	2
						36.0	935.0125	0.01	0.62	2	0.47	3
						35.6	938	0.01	0.63	2	0.47	3
Roof	PF	E	NA	HAF4022A (806 - 941 MHz)	42	40.5	806.0125	0.01	0.54	2	0.40	2
						40.9	815.5	0.01	0.54	2	0.41	2
						41.8	824.9875	0.01	0.55	2	0.41	3
						41.4	851.0125	0.01	0.57	1	0.43	2
						41.5	860.5	0.01	0.57	2	0.43	2
						41.3	868.0125	0.01	0.58	1	0.43	2

Table 10 (Cont.)

Trunk/ Roof	Test Position	E/H Field	Angle (Degree)	Antenna Model	Max Pwr (W)	Initial Pwr (W)	Tx Freq (MHz)	Max Calc. P.D. (mW/ cm ²)	FCC Limit	% To FCC Spec Limit	ICNIRP Limit	% To ICNIRP Spec Limit
Roof	PF	E	NA	HAF4022A (806 - 941 MHz)	36	34.8	896.0125	0.01	0.60	1	0.45	1
						34.8	899	0.01	0.60	1	0.45	1
						36.0	935.0125	0.01	0.62	1	0.47	2
						35.6	938	0.01	0.63	1	0.47	2

Assessment of Bluetooth Radio and Simultaneous Transmission

Pursuant to the guidance in KDB 447498 Section 7.1 and the provision in CFR 47 Part 2.1091(c)(3), the standalone MPE categorical exclusion applies to the Bluetooth transmitter in this mobile device and no further evaluation is required.

Since the transmitter was evaluated for MPE compliance and the Bluetooth radio qualifies for the standalone test exclusion, according to KDB 447498 Section 7.2 the mobile platform qualifies to be evaluated to determine if the simultaneous transmission MPE exclusion applies.

The simultaneous transmission MPE exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance according to the ratio of field strengths or power density to the MPE limit at the test frequency.

The worst case MPE evaluation for the transmitter was at 806.0125 MHz for the Passenger Back position with the HAF4023A antenna mounted on the trunk of the test vehicle.

The Max Calc power density in this condition is 0.35 mW/cm². The applicable FCC limit at that frequency is 0.55 mW/cm².

The MPE ratio for the transmitter is therefore $0.35/0.55 = 0.64$

The following formula was used to calculate the power density of the Bluetooth radio.

$$S = \frac{P_t G_t}{4\pi d^2 L} F = \frac{c P_m G_t}{4\pi d^2 L} F$$

Where

Maximum output power,

P_m

Duty cycle, c

frequency, f

Antenna gain, G_t
 Cable loss, L
 Distance, d
 Enhancement factor, F

A worst case separation distance of 20 cm was chosen even though in practice the separation distances between the user and the Bluetooth antenna will be greater than that. The enhancement factor described in OET Bulletin 65 (2.56) was used to account for reflections.

The maximum power for the Bluetooth radio is 10mW and the internal PIFA antenna gain is 2.5dBi. The calculated MPE for the Bluetooth radio is therefore 0.0027 mW/cm^2 . The applicable FCC limit at Bluetooth frequencies is 1.0.

The MPE ratio for the Bluetooth transmitter is therefore $0.0027/1.0 = 0.0027$

The sum of the MPE ratios for the simultaneous transmitting antennas is:

$$0.65 + 0.0027 = 0.6527$$

The sum of the MPE ratios is < 1 , therefore the simultaneous transmission MPE exclusion does apply.

17.0 Conclusion

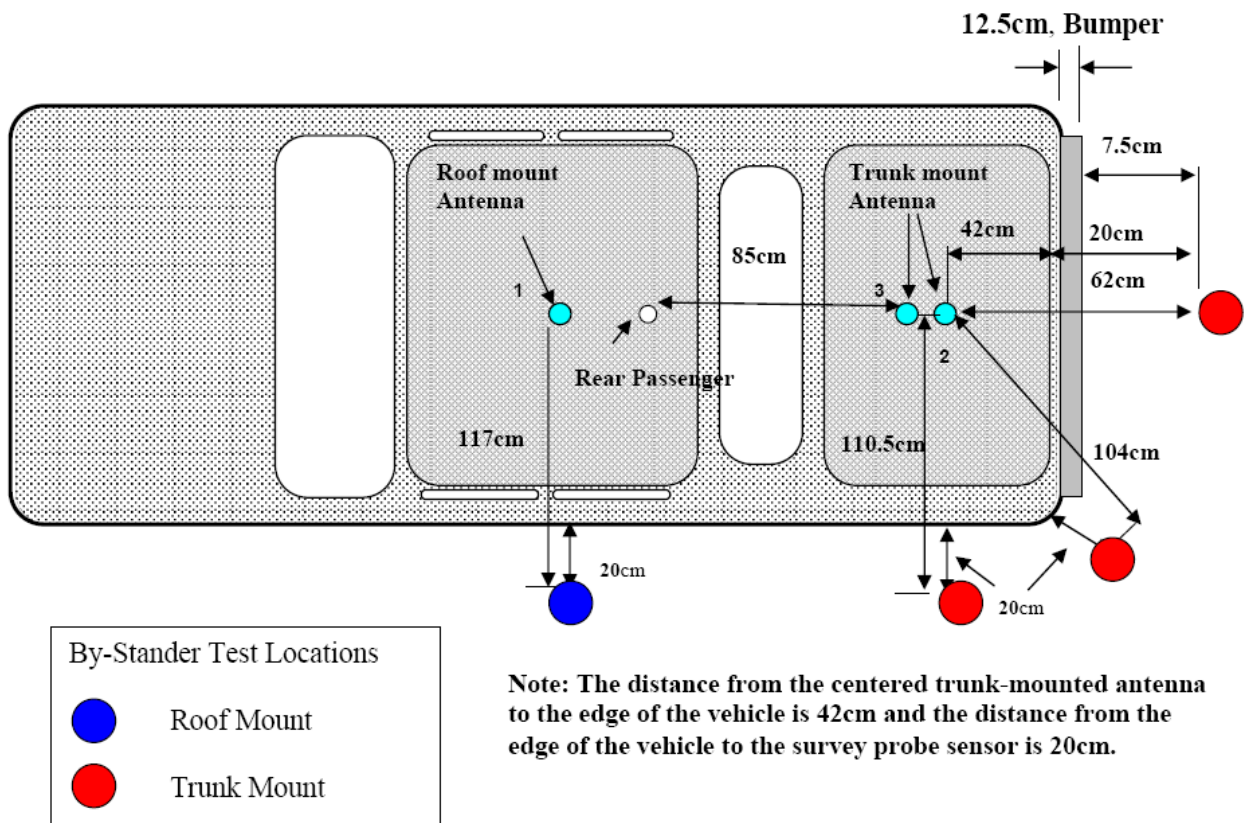
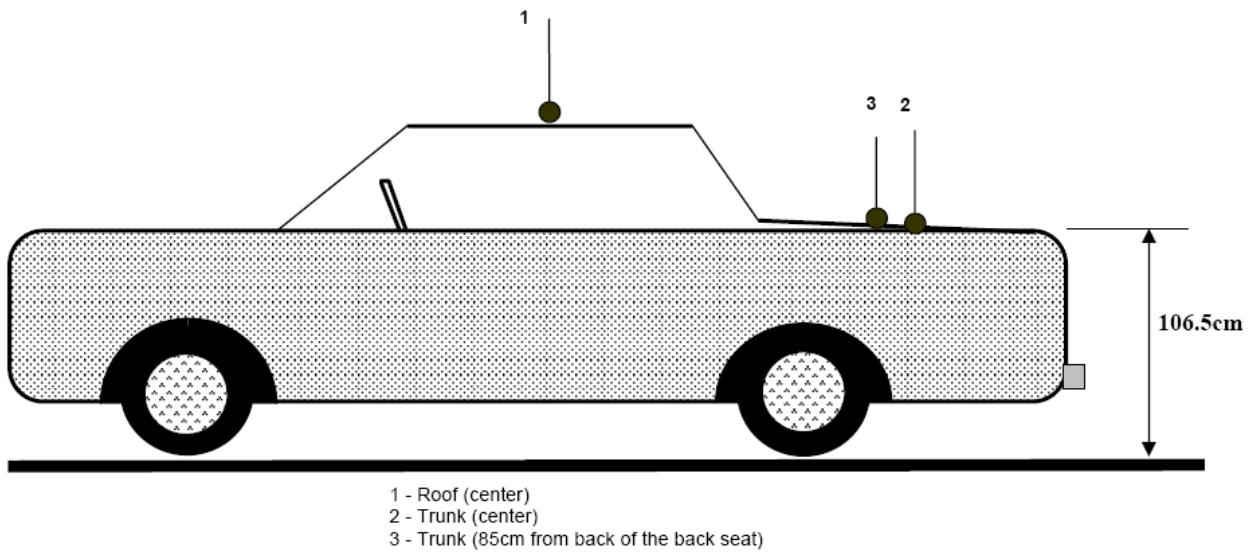
The assessments for this device were performed with an output power range as indicated in section 15.0 Tables 7 - 10. The maximum allowable output power is equal to the upper limit of the final test factory transmit power specification of 42W (806-940 MHz). The highest power density results for the mobile device scaled to the maximum allowable power output are indicated in the Table 10 for internal/passenger to the vehicle, and external/bystander to the vehicle.

Table 11: Maximum MPE RF Exposure Summary

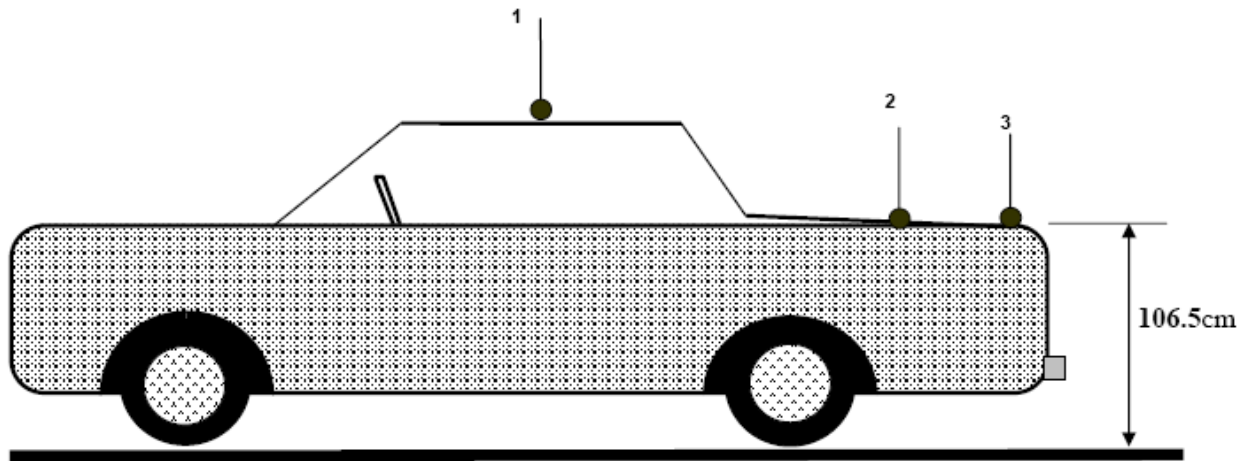
Designator	Frequency (MHz)	Passenger (mW/cm ²)	Bystander (mW/cm ²)
Overall / FCC / IC	806-940	0.35	0.16

These MPE results herein demonstrate compliance to the FCC/IEEE/ICNIRP Occupational/Controlled Exposure limit. FCC rules require compliance for Passengers and Bystanders to the FCC General Population/Uncontrolled limits.

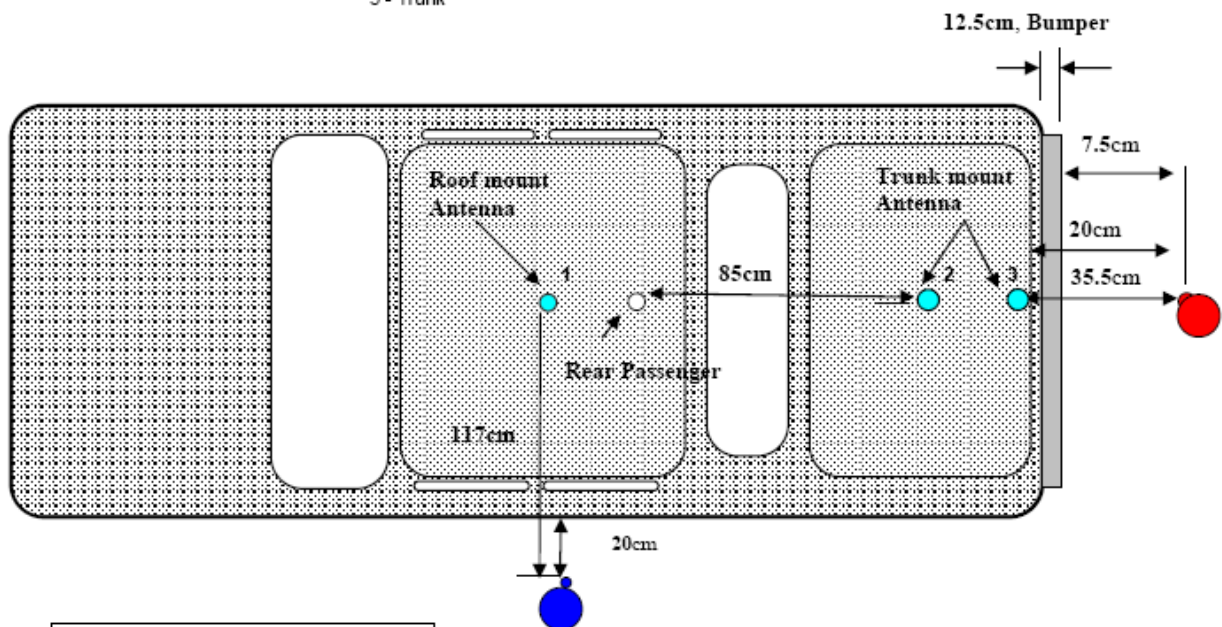
Appendix A - Antenna Locations, Test Distances, and Cable Losses



Separation Distance: 60 cm



- 1 - Roof
- 2 - Trunk (center)
- 3 - Trunk



By-Stander Test Locations

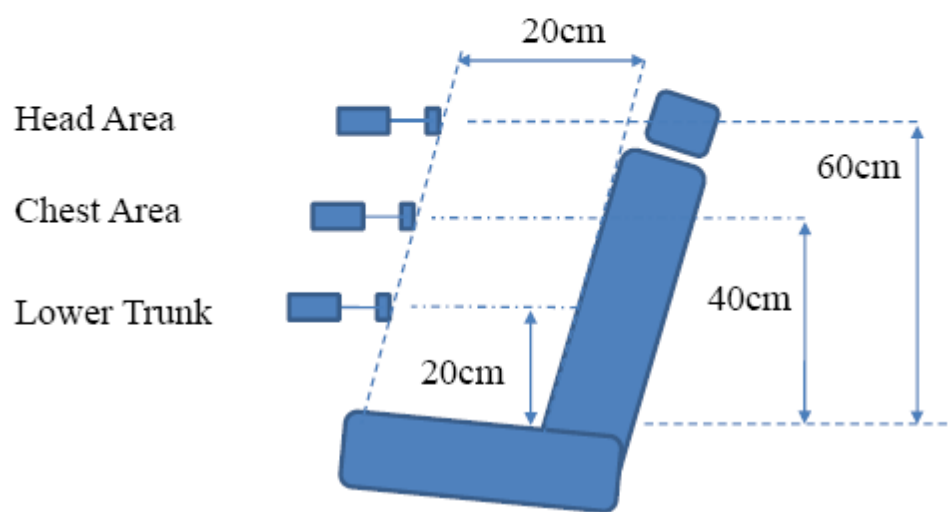
- Roof Mount
- Trunk Mount

Separation Distance: 20 cm

Seat scan areas
(Applicable to both front and back seats)

Meter - Probe

 Probe diameter is 5.5cm



Cable Losses

Test Cable

Teflon RG58A/U Loss Per 100 Feet

160 MHz - 5 dB

450 MHz - 9 dB

1 GHz - 13.8 dB

Customer Cable

ARG-58U Loss Per 100 Feet

200 MHz - 6.0 dB

400 MHz - 8.8 dB

1 GHz - 14.9 dB

Appendix B - Probe Calibration Certificates

Service Test Report
QAF 1126, 03/11

Report ID: 100134



An ESCO Technologies Company

1301 Arrow Point Drive
Cedar Park, Texas 78613
(512) 531-6400

An ESCO Technologies Company

Tracking # S000029260

Equipment CheckAttested by GC Date: 19-Nov-13
www.ets-lindgren.com**Certificate of Test Conformance**

Page 1 of 1

Reference: S 000029260**Customer:** AGILENT/MOTOROLA (FL)

The instrument listed below has been tested and verified to Internal Quality Standards. Test data is Attached. Equipment used during instrument testing is controlled by laboratory compliance with ISO/IEC 17025-2005 and ANSI/NCSL Z540-1-1994 using ETS-Lindgren Quality Management System internal procedures.

Manufacturer ETS-Lindgren
Instrument Type RF Survey Meter
Model HI-2200
Serial Number/ID 00086316

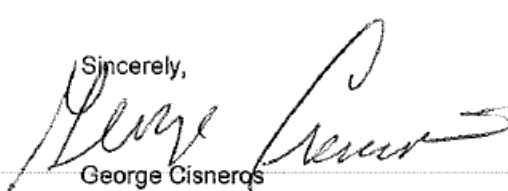
Status In
In Tolerance
Date Completed
19-Nov-13
Status Out
Compliant with Internal Quality Standards

Remarks

Tested with customer's probes.

I would like to take this opportunity to express our appreciation for using ETS-Lindgren for your EMI test equipment services and I am looking forward to continued business with your organization. Please feel free to contact our offices at (512) 531-6400, if you have any questions regarding this report.

Sincerely,


George Cisneros

Calibration Supervisor

Date Attested: 19-Nov-13



An ESCO Technologies Company

1301 Arrow Point Drive
Cedar Park, Texas 78613
(512) 531-6400



Track# S000029260 Ltd Cal ☐
By AS Date 19-Nov-13
Next Cal Due
www.ets-lindgren.com

Cert I.D.: 100134

Certificate of Calibration Conformance

Page 1 of 3

The instrument identified below has been individually calibrated in compliance with the following standard(s):

IEEE 1309 - 2005, Institute of Electrical and Electronics Engineers, Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas from 9 kHz to 40 GHz

Environment: Laboratory MTE is maintained in a temperature controlled environment with ambient conditions from 18 to 28 C, relative humidity less than 90%. The instrument under test has been calibrated in a suitable environment using an EMCO TEM Cell 5101C, GTEM! 5305 and an RF Shielded EMC Chamber which is conducive to maintaining accurate and reliable measurement quality.

Manufacturer:	ETS-Lindgren	Operating Range:	100kHz - 5GHz
Model Number:	E100	Instrument Type:	Isotropic Probe > 1 GHz
Serial Number/ ID:	00153632	Date Code:	
Tracking Number:	S 000029260	Alternate ID:	AAAA244
Date Completed:	19-Nov-13	Customer:	AGILENT/MOTOROLA (FL)
Test Type:	Standard Field, Field Strength		
Calibration Uncertainty:	Std Field Method 10kHz - 18000 MHz, +/-0.7 dB, 26.5GHz - 40GHz, +/- 0.95 dB, Isotropy +/- 0.86 k=2, (95% Confidence Level)		

Test Remarks: Provided special frequencies. Calibrated with HI-2200, sn 00086316.

Calibration Traceability: All Measuring and Test Equipment (MTE) identified below are traceable to the SI units through the National Institute for Standards and Technology (NIST) or other recognized National Metrology Institute. Calibration Laboratory and Quality System controls are compliant with ISO/IEC 17025-2005 and ANSI/NC SL Z540-1-1994.

Standards and Equipment Used:

Make / Model / Name / S/N / Recall Date

Agilent/HP	8648C	Signal Generator	3623A03573	23-Jan-14
Agilent	E4419B	Power Meter	MY45104171	02-Oct-14
Agilent/HP	8648C	Signal Generator	3847A04406	23-Jan-14
Agilent	E4419B	Power Meter	MY45103242	23-Jan-14
Rohde & Schwarz	857.8008.02	Power Meter NRVD	100451	03-May-14
Hewlett Packard	83650L	Synthesized Sweep Gen	3844A00422	03-May-14

Condition of Instrument
Upon Receipt:

In Tolerance to Internal Quality Standards

On Release:

In Tolerance to Internal Quality Standards

Calibration Completed By

Alan Schifferdecker, Calibration Technician

Attested and Issued on 19-Nov-13

George Cisneros, Calibration Supervisor

CALIBRATION REPORT

Electric Field Sensor

<i>Model</i>	<i>S/N</i>
E100	00153632
HI-2200	00086316

Date: 19 Nov 2013

_ New Instrument

_ Other

_ Out of Tolerance

☒ Within Tolerance

Frequency Response

<i>Frequency Response</i>	<i>Nominal Field</i>	<i>Cal Factor*</i>	<i>Deviation</i>
<i>MHz</i>	<i>V/m</i>	<i>(E_{Applied}/E_{Indicated})</i>	<i>dB</i>
1	1	20	1.06
2	15	20	0.99
3	30	20	0.99
4	75	20	1.01
5	100	20	1.02
6	150	20	1.01
7	200	20	1.00
8	250	20	0.92
9	300	20	0.92
10	400	20	0.92
11	500	20	0.94
12	600	20	0.96
13	700	20	0.99
14	800	20	1.01
15	900	20	0.94
16	1000	20	0.92
17	2000	20	1.02
18	2450	20	1.00
19	3000	20	0.99
20	3500	20	0.97
21	4000	20	0.98
22	4500	20	1.33
23	5000	20	1.46
24	5500	20	1.40

* Corrected electric field values (V/m) can be obtained by multiplying the Cal Factor with the indicated E field readings.

Linearity

maximum linearity deviation is 0.1 dB

(measurements taken from 0.3 V/m to 800 V/m at 27.12 MHz)

Test Conditions

Calibration performed at ambient room temperature: 23 ±3°C



PROBE ROTATIONAL RESPONSE

Model E100
S/N 00153632
Date Date of Calibration 19 November 2013
Time 10:42:55 PM
Isotropy * + 0.123 dB/ -0.123 dB

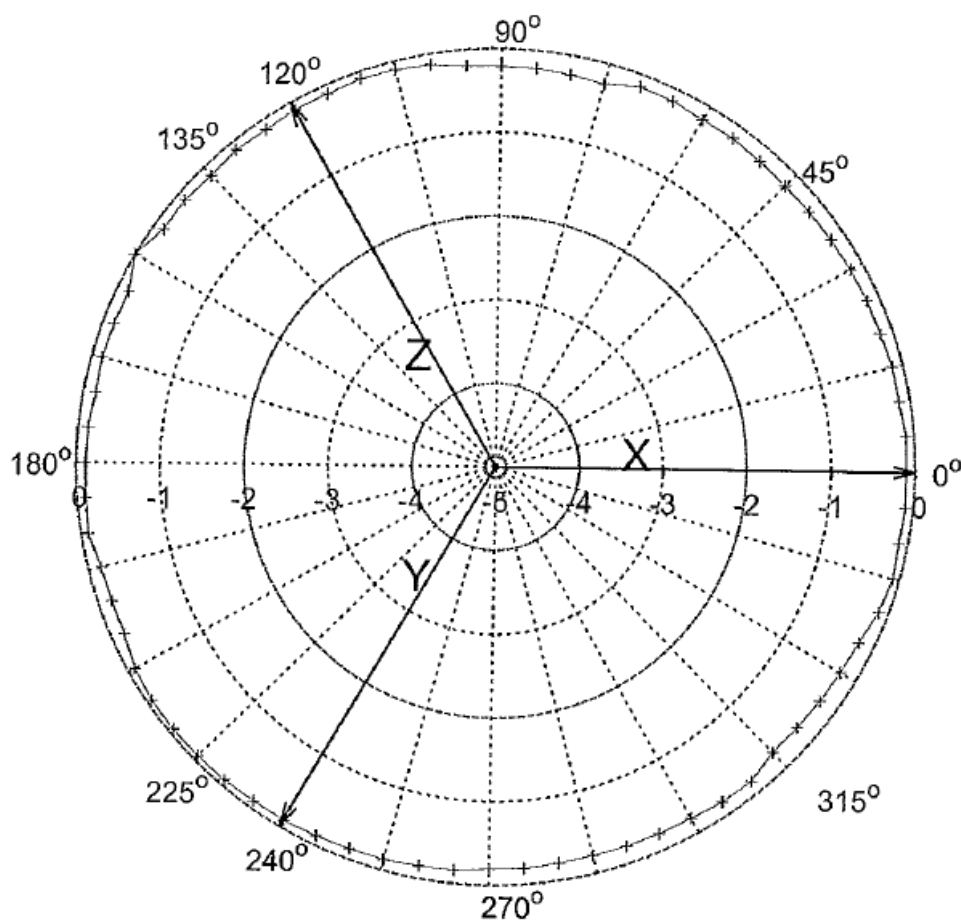


Figure 1: Probe Isotropic Response Chart.

Isotropic response is measured in a 20 V/m field at 400 MHz

*Isotropy is the maximum deviation from the geometric mean as defined by IEEE 1309-2005.

Appendix C - Photos of Assessed Antennas

(Refer to Exhibit 7B)

Appendix D – MPE Measurement Results

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.		Test Pos.	MPE Measurements										DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Bystander (BS) Positions													
										20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm	200 cm				
Trunk	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	BS	0.009	0.021	0.044	0.136	0.549	0.654	0.520	0.310	0.119	0.042	0.5	0.240	0.122	0.13
Trunk	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	BS	0.007	0.017	0.038	0.121	0.467	0.566	0.492	0.332	0.140	0.041	0.5	0.222	0.111	0.11
Trunk	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	BS	0.005	0.021	0.041	0.140	0.518	0.561	0.491	0.380	0.202	0.071	0.5	0.243	0.120	0.12
Trunk	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	BS	0.005	0.015	0.040	0.151	0.543	0.587	0.530	0.382	0.228	0.101	0.5	0.258	0.123	0.12
Trunk	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	BS	0.006	0.015	0.049	0.167	0.598	0.655	0.565	0.382	0.238	0.117	0.5	0.279	0.131	0.13
Trunk	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	BS	0.006	0.016	0.054	0.165	0.585	0.694	0.633	0.370	0.220	0.117	0.5	0.286	0.132	0.13
Trunk	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	BS	0.004	0.021	0.052	0.148	0.491	0.678	0.656	0.308	0.114	0.066	0.5	0.254	0.113	0.12
Trunk	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	BS	0.004	0.022	0.048	0.149	0.495	0.680	0.658	0.324	0.110	0.057	0.5	0.255	0.113	0.12
Trunk	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	BS	0.007	0.022	0.059	0.150	0.441	0.644	0.575	0.294	0.093	0.031	0.5	0.232	0.101	0.10
Trunk	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	BS	0.007	0.024	0.062	0.151	0.150	0.419	0.553	0.281	0.082	0.027	0.5	0.176	0.076	0.08
Trunk	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	BS	0.009	0.034	0.059	0.167	0.411	0.324	0.175	0.079	0.034	0.091	0.5	0.138	0.061	0.06
Trunk	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	BS	0.012	0.030	0.042	0.147	0.383	0.275	0.140	0.071	0.035	0.014	0.5	0.115	0.050	0.05
Trunk	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.021	0.045	0.097	0.331	1.004	0.650	0.068	0.024	0.039	0.030	0.5	0.231	0.117	0.12
Trunk	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	BS	0.017	0.037	0.082	0.294	0.878	0.582	0.067	0.049	0.052	0.027	0.5	0.209	0.104	0.11
Trunk	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	BS	0.009	0.029	0.063	0.249	0.777	0.526	0.077	0.075	0.097	0.047	0.5	0.195	0.096	0.10
Trunk	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	BS	0.006	0.021	0.146	0.238	0.814	0.660	0.145	0.146	0.127	0.071	0.5	0.237	0.113	0.11
Trunk	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	BS	0.007	0.021	0.078	0.279	0.970	0.851	0.230	0.080	0.148	0.105	0.5	0.277	0.130	0.13
Trunk	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	BS	0.008	0.022	0.081	0.285	0.994	0.930	0.259	0.068	0.133	0.094	0.5	0.287	0.133	0.14

MPE calculations are defined in section 13.0.

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.			MPE Measurements										DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Bystander (BS) Positions												
											20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm	200 cm			
Trunk	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	BS	0.005	0.025	0.079	0.236	0.833	0.821	0.232	0.026	0.038	0.045	0.5	0.234	0.104	0.11
Trunk	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	BS	0.005	0.028	0.076	0.231	0.847	0.839	0.227	0.028	0.032	0.037	0.5	0.235	0.104	0.11
Trunk	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	BS	0.007	0.028	0.089	0.245	0.791	0.735	0.101	0.022	0.015	0.010	0.5	0.204	0.089	0.09
Trunk	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	BS	0.007	0.031	0.097	0.255	0.776	0.723	0.096	0.020	0.013	0.003	0.5	0.202	0.088	0.09
Trunk	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	BS	0.015	0.031	0.077	0.267	0.956	0.678	0.221	0.393	0.117	0.010	0.5	0.277	0.140	0.15
Trunk	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	BS	0.010	0.023	0.054	0.229	0.851	0.665	0.202	0.404	0.152	0.017	0.5	0.261	0.130	0.13
Trunk	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	BS	0.004	0.016	0.044	0.189	0.764	0.696	0.185	0.328	0.158	0.026	0.5	0.241	0.119	0.12
Trunk	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	BS	0.003	0.012	0.039	0.153	0.783	0.897	0.176	0.203	0.119	0.028	0.5	0.241	0.115	0.12
Trunk	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	BS	0.005	0.013	0.053	0.189	0.941	1.080	0.232	0.175	0.127	0.034	0.5	0.285	0.133	0.13
Trunk	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	BS	0.006	0.014	0.058	0.198	0.951	1.150	0.271	0.147	0.091	0.031	0.5	0.292	0.135	0.14
Trunk	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	BS	0.004	0.020	0.054	0.165	0.774	0.989	0.216	0.084	0.022	0.018	0.5	0.235	0.104	0.11
Trunk	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	BS	0.003	0.020	0.052	0.162	0.755	0.988	0.211	0.092	0.022	0.015	0.5	0.232	0.103	0.11
Trunk	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	BS	0.006	0.018	0.058	0.154	0.667	0.837	0.123	0.073	0.015	0.001	0.5	0.195	0.085	0.08
Trunk	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	BS	0.006	0.017	0.060	0.161	0.657	0.851	0.111	0.072	0.010	0.003	0.5	0.195	0.085	0.09

MPE calculations are defined in section 13.0.

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.			MPE Measurements										DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Bystander (BS) Positions													
											20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm					200 cm
Trunk	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.011	0.027	0.054	0.176	0.672	0.806	0.645	0.387	0.155	0.056	0.5	0.299	0.151	0.16	
Trunk	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	BS	0.008	0.020	0.045	0.142	0.564	0.684	0.657	0.445	0.183	0.054	0.5	0.280	0.140	0.14	
Trunk	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	BS	0.005	0.018	0.043	0.136	0.504	0.563	0.508	0.392	0.206	0.080	0.5	0.246	0.121	0.12	
Trunk	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	BS	0.004	0.013	0.035	0.134	0.475	0.533	0.528	0.354	0.206	0.088	0.5	0.237	0.112	0.11	
Trunk	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	BS	0.006	0.012	0.036	0.124	0.449	0.488	0.430	0.299	0.185	0.086	0.5	0.212	0.099	0.10	
Trunk	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	BS	0.006	0.017	0.048	0.144	0.514	0.637	0.579	0.347	0.203	0.105	0.5	0.260	0.120	0.12	
Trunk	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	BS	0.004	0.016	0.041	0.124	0.387	0.566	0.545	0.257	0.098	0.058	0.5	0.210	0.093	0.10	
Trunk	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	BS	0.004	0.019	0.040	0.125	0.409	0.574	0.569	0.267	0.103	0.054	0.5	0.216	0.096	0.10	
Trunk	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	BS	0.006	0.017	0.045	0.109	0.320	0.486	0.444	0.237	0.079	0.028	0.5	0.177	0.077	0.08	
Trunk	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	BS	0.006	0.016	0.043	0.102	0.276	0.421	0.380	0.200	0.064	0.023	0.5	0.153	0.067	0.07	
WC 45																								
Trunk	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.006	0.016	0.053	0.130	0.248	0.451	0.457	0.299	0.191	0.152	0.5	0.200	0.101	0.11	
WC 90																								
Trunk	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.008	0.012	0.017	0.039	0.136	0.293	0.354	0.291	0.189	0.111	0.5	0.145	0.073	0.08	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements							
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Trunk	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	PB	0.262	0.225	0.205	0.5	0.231	0.117	0.12	
Trunk	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	PB	0.312	0.159	0.167	0.5	0.213	0.106	0.11	
Trunk	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	PB	0.545	0.184	0.209	0.5	0.313	0.154	0.15	
Trunk	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	PB	0.229	0.251	0.309	0.5	0.263	0.125	0.13	
Trunk	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	PB	0.263	0.165	0.218	0.5	0.215	0.101	0.10	
Trunk	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	PB	0.269	0.147	0.19	0.5	0.202	0.094	0.10	
Trunk	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	PB	0.261	0.242	0.14	0.5	0.214	0.095	0.10	
Trunk	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	PB	0.227	0.304	0.132	0.5	0.221	0.098	0.10	
Trunk	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	PB	0.251	0.131	0.119	0.5	0.167	0.073	0.07	
Trunk	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	PB	0.225	0.121	0.11	0.5	0.152	0.066	0.07	
Trunk	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	PB	0.06	0.053	0.035	0.5	0.049	0.022	0.02	
Trunk	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	PB	0.049	0.036	0.022	0.5	0.036	0.016	0.02	

MPE calculations are defined in section 13.0.

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MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements						
										Passenger Positions						
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor	Test Pos.	Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom 1/3	DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Trunk	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PB	0.602	0.277	0.406	0.5	0.428	0.217	0.22
Trunk	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PB	0.885	0.342	0.299	0.5	0.509	0.254	0.26
Trunk	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PB	1.081	0.391	0.285	0.5	0.586	0.288	0.29
Trunk	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PB	0.485	0.281	0.419	0.5	0.395	0.187	0.19
Trunk	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PB	0.458	0.226	0.347	0.5	0.344	0.161	0.16
Trunk	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PB	0.474	0.25	0.201	0.5	0.308	0.143	0.15
Trunk	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PB	0.525	0.501	0.27	0.5	0.432	0.192	0.20
Trunk	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PB	0.494	0.584	0.213	0.5	0.430	0.190	0.20
Trunk	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PB	0.593	0.213	0.28	0.5	0.362	0.158	0.16
Trunk	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PB	0.511	0.248	0.267	0.5	0.342	0.149	0.15

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements							
	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Ant Loc.													DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Trunk	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	PB	0.77	0.342	0.34	0.5	0.484	0.245	0.25	
Trunk	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	PB	0.747	0.281	0.437	0.5	0.488	0.244	0.25	
Trunk	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	PB	1.273	0.546	0.331	0.5	0.717	0.353	0.35	
Trunk	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	PB	0.676	0.338	0.385	0.5	0.466	0.221	0.22	
Trunk	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	PB	0.463	0.325	0.335	0.5	0.374	0.175	0.18	
Trunk	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	PB	0.298	0.183	0.237	0.5	0.239	0.111	0.11	
Trunk	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	PB	0.35	0.241	0.238	0.5	0.276	0.123	0.13	
Trunk	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	PB	0.329	0.307	0.212	0.5	0.283	0.125	0.13	
Trunk	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	PB	0.45	0.273	0.112	0.5	0.278	0.121	0.12	
Trunk	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	PB	0.456	0.275	0.147	0.5	0.293	0.127	0.13	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements							
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Trunk	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PB	0.416	0.307	0.201	0.5	0.308	0.156	0.16	
Trunk	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PB	0.355	0.218	0.207	0.5	0.260	0.130	0.13	
Trunk	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PB	0.594	0.209	0.25	0.5	0.351	0.173	0.17	
Trunk	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PB	0.303	0.097	0.206	0.5	0.202	0.096	0.10	
Trunk	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PB	0.286	0.094	0.183	0.5	0.188	0.088	0.09	
Trunk	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PB	0.213	0.081	0.162	0.5	0.152	0.070	0.07	
Trunk	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PB	0.179	0.12	0.112	0.5	0.137	0.061	0.06	
Trunk	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PB	0.197	0.144	0.129	0.5	0.157	0.069	0.07	
Trunk	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PB	0.201	0.097	0.09	0.5	0.129	0.056	0.06	
Trunk	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PB	0.189	0.084	0.068	0.5	0.114	0.049	0.05	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom 1/3				
Trunk	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	PF	0.089	0.058	0.197	0.5	0.115	0.058	0.06
Trunk	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	PF	0.043	0.049	0.053	0.5	0.048	0.024	0.02
Trunk	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	PF	0.034	0.048	0.124	0.5	0.069	0.034	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	PF	0.071	0.033	0.068	0.5	0.057	0.027	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	PF	0.057	0.043	0.082	0.5	0.061	0.028	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	PF	0.025	0.046	0.076	0.5	0.049	0.023	0.02
Trunk	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	PF	0.066	0.04	0.075	0.5	0.060	0.027	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	PF	0.031	0.043	0.069	0.5	0.048	0.021	0.02
Trunk	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	PF	0.083	0.07	0.037	0.5	0.063	0.028	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	PF	0.085	0.048	0.025	0.5	0.053	0.023	0.02
Trunk	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	PF	0.018	0.02	0.151	0.5	0.063	0.028	0.03
Trunk	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	PF	0.106	0.168	0.074	0.5	0.116	0.050	0.05

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom 1/3				
Trunk	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PF	0.165	0.124	0.274	0.5	0.188	0.095	0.10
Trunk	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PF	0.106	0.125	0.2	0.5	0.144	0.072	0.07
Trunk	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PF	0.114	0.089	0.166	0.5	0.123	0.061	0.06
Trunk	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PF	0.155	0.052	0.107	0.5	0.105	0.050	0.05
Trunk	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PF	0.073	0.046	0.132	0.5	0.084	0.039	0.04
Trunk	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PF	0.038	0.065	0.14	0.5	0.081	0.038	0.04
Trunk	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PF	0.063	0.111	0.083	0.5	0.086	0.038	0.04
Trunk	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PF	0.089	0.1	0.105	0.5	0.098	0.043	0.04
Trunk	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PF	0.156	0.151	0.077	0.5	0.128	0.056	0.06
Trunk	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PF	0.143	0.154	0.071	0.5	0.123	0.053	0.05

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom 1/3				
Trunk	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	PF	0.154	0.188	0.236	0.5	0.193	0.097	0.10
Trunk	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	PF	0.16	0.232	0.182	0.5	0.191	0.096	0.10
Trunk	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	PF	0.085	0.132	0.183	0.5	0.133	0.066	0.07
Trunk	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	PF	0.151	0.092	0.091	0.5	0.111	0.053	0.05
Trunk	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	PF	0.129	0.069	0.176	0.5	0.125	0.058	0.06
Trunk	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	PF	0.048	0.065	0.108	0.5	0.074	0.034	0.03
Trunk	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	PF	0.074	0.106	0.093	0.5	0.091	0.040	0.04
Trunk	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	PF	0.109	0.119	0.11	0.5	0.113	0.050	0.05
Trunk	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	PF	0.081	0.125	0.051	0.5	0.086	0.037	0.04
Trunk	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	PF	0.108	0.136	0.032	0.5	0.092	0.040	0.04

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Trunk	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PF	0.08	0.089	0.166	0.5	0.112	0.056	0.06	
Trunk	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PF	0.055	0.078	0.069	0.5	0.067	0.034	0.03	
Trunk	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PF	0.045	0.047	0.121	0.5	0.071	0.035	0.04	
Trunk	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PF	0.062	0.028	0.053	0.5	0.048	0.023	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PF	0.046	0.027	0.062	0.5	0.045	0.021	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PF	0.038	0.035	0.067	0.5	0.047	0.022	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PF	0.04	0.039	0.058	0.5	0.046	0.020	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PF	0.039	0.032	0.058	0.5	0.043	0.019	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PF	0.062	0.056	0.02	0.5	0.046	0.020	0.02	
Trunk	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PF	0.038	0.036	0.009	0.5	0.028	0.012	0.01	

MPE calculations are defined in section 13.0.

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.			MPE Measurements										DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
							Bystander (BS) Positions																
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm				
Roof	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	BS	0.003	0.005	0.006	0.007	0.027	0.059	0.091	0.181	0.220	0.212	0.5	0.081	0.041	0.04
Roof	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	BS	0.003	0.006	0.006	0.010	0.029	0.051	0.096	0.200	0.226	0.203	0.5	0.083	0.041	0.04
Roof	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	BS	0.004	0.006	0.007	0.012	0.038	0.053	0.106	0.219	0.250	0.252	0.5	0.095	0.047	0.05
Roof	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	BS	0.003	0.005	0.007	0.016	0.032	0.045	0.106	0.182	0.274	0.265	0.5	0.094	0.044	0.05
Roof	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	BS	0.003	0.006	0.005	0.014	0.030	0.048	0.114	0.199	0.312	0.280	0.5	0.101	0.047	0.05
Roof	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	BS	0.003	0.004	0.005	0.013	0.032	0.059	0.117	0.209	0.311	0.272	0.5	0.103	0.047	0.05
Roof	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	BS	0.003	0.003	0.003	0.021	0.029	0.045	0.087	0.194	0.276	0.225	0.5	0.089	0.039	0.04
Roof	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	BS	0.003	0.003	0.004	0.021	0.024	0.044	0.090	0.197	0.280	0.212	0.5	0.088	0.039	0.04
Roof	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	BS	0.002	0.002	0.005	0.017	0.014	0.039	0.086	0.175	0.210	0.192	0.5	0.074	0.032	0.03
Roof	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	BS	0.002	0.002	0.005	0.014	0.015	0.037	0.087	0.171	0.198	0.180	0.5	0.071	0.031	0.03
Roof	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	BS	0.001	0.001	0.001	0.005	0.007	0.011	0.020	0.047	0.043	0.053	0.5	0.019	0.008	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	BS	0.001	0.001	0.001	0.003	0.003	0.010	0.020	0.041	0.053	0.047	0.5	0.018	0.008	0.01
Roof	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.006	0.015	0.014	0.010	0.058	0.136	0.201	0.322	0.217	0.083	0.5	0.106	0.054	0.06
Roof	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	BS	0.006	0.011	0.011	0.021	0.063	0.130	0.208	0.368	0.254	0.103	0.5	0.118	0.059	0.06
Roof	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	BS	0.007	0.010	0.012	0.020	0.065	0.104	0.195	0.316	0.236	0.137	0.5	0.110	0.054	0.05
Roof	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	BS	0.006	0.007	0.008	0.021	0.054	0.079	0.192	0.288	0.300	0.121	0.5	0.108	0.051	0.05
Roof	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	BS	0.006	0.007	0.007	0.019	0.047	0.086	0.195	0.314	0.320	0.122	0.5	0.112	0.053	0.05
Roof	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	BS	0.004	0.012	0.013	0.018	0.055	0.108	0.214	0.310	0.296	0.127	0.5	0.116	0.054	0.05

MPE calculations are defined in section 13.0.

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.			MPE Measurements										DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Bystander (BS) Positions													
											20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm					200 cm
Roof	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	BS	0.006	0.003	0.005	0.036	0.059	0.090	0.190	0.328	0.286	0.108	0.5	0.111	0.049	0.05	
Roof	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	BS	0.004	0.007	0.005	0.039	0.062	0.088	0.178	0.320	0.279	0.099	0.5	0.108	0.048	0.05	
Roof	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	BS	0.008	0.004	0.006	0.033	0.028	0.096	0.189	0.304	0.239	0.082	0.5	0.099	0.043	0.04	
Roof	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	BS	0.005	0.004	0.005	0.032	0.028	0.097	0.188	0.305	0.231	0.074	0.5	0.097	0.042	0.04	
Roof	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	BS	0.004	0.018	0.021	0.013	0.064	0.173	0.299	0.377	0.179	0.026	0.5	0.117	0.059	0.06	
Roof	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	BS	0.006	0.014	0.019	0.020	0.076	0.138	0.317	0.433	0.226	0.042	0.5	0.129	0.064	0.07	
Roof	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	BS	0.006	0.010	0.018	0.027	0.068	0.117	0.283	0.397	0.229	0.052	0.5	0.121	0.059	0.06	
Roof	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	BS	0.006	0.008	0.012	0.017	0.045	0.083	0.229	0.360	0.336	0.082	0.5	0.118	0.056	0.06	
Roof	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	BS	0.003	0.007	0.006	0.014	0.051	0.082	0.227	0.371	0.353	0.084	0.5	0.120	0.056	0.06	
Roof	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	BS	0.002	0.009	0.005	0.015	0.044	0.080	0.193	0.364	0.306	0.124	0.5	0.114	0.053	0.05	
Roof	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	BS	0.004	0.004	0.002	0.022	0.041	0.077	0.187	0.379	0.301	0.110	0.5	0.113	0.050	0.05	
Roof	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	BS	0.003	0.004	0.003	0.025	0.049	0.067	0.167	0.372	0.307	0.090	0.5	0.109	0.048	0.05	
Roof	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	BS	0.003	0.002	0.006	0.020	0.015	0.074	0.176	0.349	0.289	0.086	0.5	0.102	0.044	0.04	
Roof	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	BS	0.003	0.002	0.005	0.020	0.016	0.066	0.167	0.349	0.278	0.085	0.5	0.099	0.043	0.04	

MPE calculations are defined in section 13.0.

MPE measurement data for Bystander

D.U.T. Info.							Probe Info.			MPE Measurements									DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Bystander (BS) Positions													
										20 cm	40 cm	60 cm	80 cm	100 cm	120 cm	140 cm	160 cm	180 cm					200 cm
Roof	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	BS	0.003	0.007	0.010	0.007	0.026	0.072	0.101	0.206	0.232	0.204	0.5	0.087	0.044	0.05
Roof	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	BS	0.003	0.007	0.011	0.011	0.039	0.058	0.106	0.213	0.247	0.240	0.5	0.094	0.047	0.05
Roof	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	BS	0.005	0.007	0.009	0.015	0.041	0.048	0.104	0.196	0.240	0.249	0.5	0.091	0.045	0.05
Roof	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	BS	0.004	0.007	0.006	0.014	0.035	0.043	0.110	0.174	0.180	0.251	0.5	0.082	0.039	0.04
Roof	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	BS	0.002	0.003	0.005	0.012	0.027	0.038	0.078	0.145	0.233	0.208	0.5	0.075	0.035	0.04
Roof	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	BS	0.003	0.007	0.004	0.009	0.025	0.039	0.082	0.152	0.220	0.222	0.5	0.076	0.035	0.04
Roof	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	BS	0.002	0.004	0.003	0.017	0.030	0.043	0.074	0.144	0.225	0.186	0.5	0.073	0.032	0.03
Roof	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	BS	0.002	0.004	0.003	0.017	0.026	0.035	0.064	0.139	0.198	0.176	0.5	0.066	0.029	0.03
Roof	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	BS	0.002	0.002	0.004	0.014	0.024	0.036	0.061	0.119	0.166	0.157	0.5	0.059	0.025	0.03
Roof	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	BS	0.002	0.001	0.004	0.016	0.019	0.039	0.065	0.133	0.170	0.153	0.5	0.060	0.026	0.03

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.		Test Pos.	MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom				
Roof	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	PB	0.053	0.029	0.06	0.5	0.047	0.024	0.02
Roof	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	PB	0.025	0.02	0.03	0.5	0.025	0.012	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	PB	0.043	0.028	0.035	0.5	0.035	0.017	0.02
Roof	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	PB	0.029	0.031	0.053	0.5	0.038	0.018	0.02
Roof	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	PB	0.012	0.023	0.028	0.5	0.021	0.010	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	PB	0.034	0.03	0.037	0.5	0.034	0.016	0.02
Roof	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	PB	0.018	0.026	0.029	0.5	0.024	0.011	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	PB	0.014	0.028	0.025	0.5	0.022	0.010	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	PB	0.012	0.028	0.032	0.5	0.024	0.010	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	PB	0.01	0.019	0.025	0.5	0.018	0.008	0.01
Roof	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	PB	0.004	0.005	0.006	0.5	0.005	0.002	0.00
Roof	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	PB	0.004	0.006	0.007	0.5	0.006	0.002	0.00

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.		Test Pos.	MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom				
Roof	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PB	0.091	0.065	0.118	0.5	0.091	0.046	0.05
Roof	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PB	0.084	0.043	0.087	0.5	0.071	0.036	0.04
Roof	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PB	0.041	0.031	0.084	0.5	0.052	0.026	0.03
Roof	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PB	0.037	0.043	0.068	0.5	0.049	0.023	0.02
Roof	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PB	0.023	0.046	0.037	0.5	0.035	0.017	0.02
Roof	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PB	0.034	0.076	0.06	0.5	0.057	0.026	0.03
Roof	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PB	0.023	0.045	0.048	0.5	0.039	0.017	0.02
Roof	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PB	0.021	0.045	0.039	0.5	0.035	0.015	0.02
Roof	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PB	0.028	0.056	0.044	0.5	0.043	0.019	0.02
Roof	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PB	0.032	0.037	0.039	0.5	0.036	0.016	0.02

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements							
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Roof	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	PB	0.099	0.066	0.142	0.5	0.102	0.052	0.05	
Roof	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	PB	0.048	0.041	0.079	0.5	0.056	0.028	0.03	
Roof	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	PB	0.051	0.048	0.08	0.5	0.060	0.029	0.03	
Roof	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	PB	0.041	0.043	0.049	0.5	0.044	0.021	0.02	
Roof	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	PB	0.02	0.032	0.035	0.5	0.029	0.014	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	PB	0.03	0.052	0.047	0.5	0.043	0.020	0.02	
Roof	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	PB	0.02	0.028	0.035	0.5	0.028	0.012	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	PB	0.017	0.031	0.024	0.5	0.024	0.011	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	PB	0.011	0.029	0.024	0.5	0.021	0.009	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	PB	0.023	0.026	0.013	0.5	0.021	0.009	0.01	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements							
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Roof	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PB	0.04	0.038	0.048	0.5	0.042	0.021	0.02	
Roof	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PB	0.021	0.024	0.042	0.5	0.029	0.014	0.01	
Roof	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PB	0.045	0.026	0.037	0.5	0.036	0.018	0.02	
Roof	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PB	0.022	0.028	0.051	0.5	0.034	0.016	0.02	
Roof	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PB	0.024	0.032	0.035	0.5	0.030	0.014	0.01	
Roof	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PB	0.034	0.033	0.047	0.5	0.038	0.018	0.02	
Roof	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PB	0.018	0.021	0.037	0.5	0.025	0.011	0.01	
Roof	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PB	0.013	0.019	0.032	0.5	0.021	0.009	0.01	
Roof	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PB	0.015	0.026	0.018	0.5	0.020	0.009	0.01	
Roof	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PB	0.014	0.025	0.016	0.5	0.018	0.008	0.01	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Roof	HAF4019A (806 - 941 MHz)	2.14	806.0125	42	40.5	CW	E	1.01	PF	0.014	0.016	0.028	0.5	0.019	0.010	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	815.5	42	40.9	CW	E	1.00	PF	0.013	0.012	0.026	0.5	0.017	0.008	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	824.9875	42	41.8	CW	E	0.99	PF	0.01	0.034	0.03	0.5	0.025	0.012	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	851.0125	42	41.4	CW	E	0.95	PF	0.009	0.027	0.018	0.5	0.018	0.009	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	860.5	42	41.5	CW	E	0.94	PF	0.024	0.029	0.022	0.5	0.025	0.012	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	868.0125	42	41.3	CW	E	0.93	PF	0.022	0.022	0.026	0.5	0.023	0.011	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	896.0125	36	34.8	CW	E	0.89	PF	0.019	0.01	0.019	0.5	0.016	0.007	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	899	36	34.8	CW	E	0.88	PF	0.014	0.01	0.024	0.5	0.016	0.007	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	935.0125	36	36.0	CW	E	0.87	PF	0.021	0.024	0.015	0.5	0.020	0.009	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	938	36	35.6	CW	E	0.87	PF	0.027	0.021	0.014	0.5	0.021	0.009	0.01	
Roof	HAF4019A (806 - 941 MHz)	2.14	901.5125	9	8.6	CW	E	0.88	PF	0.002	0.004	0.007	0.5	0.004	0.002	0.00	
Roof	HAF4019A (806 - 941 MHz)	2.14	940.5125	9	8.6	CW	E	0.87	PF	0.004	0.005	0.03	0.5	0.013	0.006	0.01	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.		Test Pos.	MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom				
Roof	HAF4020A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PF	0.034	0.037	0.04	0.5	0.037	0.019	0.02
Roof	HAF4020A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PF	0.022	0.056	0.061	0.5	0.046	0.023	0.02
Roof	HAF4020A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PF	0.033	0.088	0.061	0.5	0.061	0.030	0.03
Roof	HAF4020A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PF	0.03	0.044	0.029	0.5	0.034	0.016	0.02
Roof	HAF4020A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PF	0.04	0.055	0.038	0.5	0.044	0.021	0.02
Roof	HAF4020A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PF	0.037	0.023	0.019	0.5	0.026	0.012	0.01
Roof	HAF4020A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PF	0.032	0.03	0.024	0.5	0.029	0.013	0.01
Roof	HAF4020A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PF	0.023	0.019	0.022	0.5	0.021	0.009	0.01
Roof	HAF4020A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PF	0.056	0.032	0.025	0.5	0.038	0.016	0.02
Roof	HAF4020A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PF	0.048	0.045	0.038	0.5	0.044	0.019	0.02

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)	
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Test Pos.	Passenger Positions						
											Head/ Top 1/3	Chest/ Middle 1/3					Lower Trunk/ Bottom 1/3
Roof	HAF4023A (806 - 941 MHz)	5	806.0125	42	40.5	CW	E	1.01	PF	0.061	0.048	0.05	0.5	0.053	0.027	0.03	
Roof	HAF4023A (806 - 941 MHz)	5	815.5	42	40.9	CW	E	1.00	PF	0.04	0.058	0.048	0.5	0.049	0.024	0.02	
Roof	HAF4023A (806 - 941 MHz)	5	824.9875	42	41.8	CW	E	0.99	PF	0.036	0.046	0.052	0.5	0.045	0.022	0.02	
Roof	HAF4023A (806 - 941 MHz)	5	851.0125	42	41.4	CW	E	0.95	PF	0.024	0.036	0.02	0.5	0.027	0.013	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	860.5	42	41.5	CW	E	0.94	PF	0.036	0.03	0.017	0.5	0.028	0.013	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	868.0125	42	41.3	CW	E	0.93	PF	0.033	0.028	0.03	0.5	0.030	0.014	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	896.0125	36	34.8	CW	E	0.89	PF	0.026	0.015	0.019	0.5	0.020	0.009	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	899	36	34.8	CW	E	0.88	PF	0.016	0.022	0.021	0.5	0.020	0.009	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	935.0125	36	36.0	CW	E	0.87	PF	0.036	0.03	0.021	0.5	0.029	0.013	0.01	
Roof	HAF4023A (806 - 941 MHz)	5	938	36	35.6	CW	E	0.87	PF	0.045	0.027	0.026	0.5	0.033	0.014	0.01	

MPE calculations are defined in section 13.0.

MPE measurement data for Passenger

D.U.T. Info.							Probe Info.			MPE Measurements			DUT Max. TX Factor	Avg. over Body (mW/ cm2)	Calc. P.D. (mW/ cm2)	Max Calc. P.D. (mW/ cm2)
Ant Loc.	Ant. Model/ Desc.	Ant. Gain (dBi)	Tx Freq (MHz)	Max Pwr (W)	Initial Pwr (W)	Test Mode	E/H Field	Probe Cal. Factor		Passenger Positions						
										Head/ Top 1/3	Chest/ Middle 1/3	Lower Trunk/ Bottom 1/3				
Roof	HAF4022A (806 - 941 MHz)	3	806.0125	42	40.5	CW	E	1.01	PF	0.024	0.013	0.013	0.5	0.017	0.008	0.01
Roof	HAF4022A (806 - 941 MHz)	3	815.5	42	40.9	CW	E	1.00	PF	0.016	0.022	0.019	0.5	0.019	0.009	0.01
Roof	HAF4022A (806 - 941 MHz)	3	824.9875	42	41.8	CW	E	0.99	PF	0.014	0.034	0.031	0.5	0.026	0.013	0.01
Roof	HAF4022A (806 - 941 MHz)	3	851.0125	42	41.4	CW	E	0.95	PF	0.012	0.022	0.018	0.5	0.017	0.008	0.01
Roof	HAF4022A (806 - 941 MHz)	3	860.5	42	41.5	CW	E	0.94	PF	0.024	0.024	0.012	0.5	0.020	0.009	0.01
Roof	HAF4022A (806 - 941 MHz)	3	868.0125	42	41.3	CW	E	0.93	PF	0.021	0.013	0.01	0.5	0.015	0.007	0.01
Roof	HAF4022A (806 - 941 MHz)	3	896.0125	36	34.8	CW	E	0.89	PF	0.016	0.01	0.017	0.5	0.014	0.006	0.01
Roof	HAF4022A (806 - 941 MHz)	3	899	36	34.8	CW	E	0.88	PF	0.009	0.011	0.019	0.5	0.013	0.006	0.01
Roof	HAF4022A (806 - 941 MHz)	3	935.0125	36	36.0	CW	E	0.87	PF	0.023	0.017	0.016	0.5	0.019	0.008	0.01
Roof	HAF4022A (806 - 941 MHz)	3	938	36	35.6	CW	E	0.87	PF	0.019	0.019	0.02	0.5	0.019	0.008	0.01

MPE calculations are defined in section 13.0.