

CGISS EME response to FCC correspondence 23042
FCC ID ABZ99FT5001 (CDM1550LS 700MHz)
6/7/02

Q1.) Please submit antenna installation instructions/manual.

R1.) The antenna installation manual is attached as a separate file [antenna install.pdf](#).

Q2.) Please submit raw MPE data for all measured grid points.

R2.) The requested additional MPE data is presented below.

Note: The NARDA meter used to perform the MPE measurements presents its results in percentages of the controlled exposure specification limits.

Controlled spec. limits used for calculations = $f/300 = 2.55 \text{ mW/cm}^2$ for mid-band test frequency of 764 MHz
 External Vehicle Power Density (Pwr. Den. (cal.)) = (% average over body x Controlled spec limit)/2
 Internal Vehicle Power Density (Pwr. Den. (cal.)) = (% average over head/chest/leg x Controlled spec limit)/2

External Vehicle Measurements (Pwr. Den.)						
Antenna Type: HAF4012A 1/4 W (746MHz)			Mounted: Roof center		Length: 8.74 cm	
Power Density E/H (mW/cm²) over body @ 30 cm (min.), 110 cm actual					Comments	
1 (20 cm): 1.50%	6 (120 cm): 7.50%	Average Pwr. Den (%)			Meter Model:	8718 (01122)
2 (40 cm): 1.50%	7 (140 cm): 12.00%	6.83			Probe Model:	8722B (12023)
3 (60 cm): 2.00%	8 (160 cm): 11.50%				Calib. Factor:	0.72
4 (80 cm): 2.00%	9 (180 cm): 12.50%				E/H-Field:	E
5 (100 cm): 6.30%	10 (200 cm): 11.50%				Pwr. Den. (cal.):	0.087

Antenna Type: HAF4012A 1/4 W (764MHz)		Mounted: Roof center		Length: 8.74 cm	
Power Density E/H (mW/cm²) over body @ 30 cm (min.), 110 cm actual				Comments	
1 (20 cm): 2.00%	6 (120 cm): 5%	Average Pwr. Den (%)		Meter Model:	8718 (01122)
2 (40 cm): 2.00%	7 (140 cm): 7%	6.06		Probe Model:	8722B (12023)
3 (60 cm): 2.50%	8 (160 cm): 11.80%			Calib. Factor:	0.72
4 (80 cm): 3%	9 (180 cm): 12.80%			E/H-Field:	E
5 (100 cm): 4%	10 (200 cm): 10.50%			Pwr. Den. (cal.):	0.077

External Vehicle Measurements (Pwr. Den.)					
Antenna Type: HAF4012A 1/4 W (793MHz)		Mounted: Roof center		Length: 8.74 cm	
Power Density E/H (mW/cm ²) over body @ 30 cm (min.), 110 cm actual				Comments	
1 (20 cm): 0.10%	6 (120 cm): 2.50%	Average Pwr. Den (%)		Meter Model:	8718 (01122)
2 (40 cm): 0.15%	7 (140 cm): 4%	3.30		Probe Model:	8722B (12023)
3 (60 cm): 0.40%	8 (160 cm): 9%			Calib. Factor:	0.72
4 (80 cm): 0.30%	9 (180 cm): 8.50%			E/H-Field:	E
5 (100 cm): 1.50%	10 (200 cm): 6.50%			Pwr. Den. (cal.):	0.042

Antenna Type: <u>HAF4012A 1/4 W (746MHz)</u>		Mounted: <u>Trunk center</u>		Length: <u>8.74 cm</u>	
Power Density E/H (mW/cm ²) over body @ 30 cm				Comments	
1 (20 cm):	1%	6 (120 cm):	59%	Average Pwr. Den (%)	Meter Model: 8718 (01122)
2 (40 cm):	2%	7 (140 cm):	18%	18.98	Probe Model: 8722B (12023)
3 (60 cm):	4%	8 (160 cm):	6.80%		Calib. Factor: 0.72
4 (80 cm):	23%	9 (180 cm):	2.50%		E/H-Field: E
5 (100 cm):	72%	10 (200 cm):	1.50%		Pwr. Den. (cal.): 0.24

Antenna Type: <u>HAF4012A 1/4 W (764MHz)</u>		Mounted: <u>Trunk (cnt)</u>		Length: <u>8.74 cm</u>	
Power Density E/H (mW/cm ²) over body @ 30 cm				Comments	
1 (20 cm):	0.50%	6 (120 cm):	36%	Average Pwr. Den (%)	Meter Model: 8718 (01122)
2 (40 cm):	1%	7 (140 cm):	14%	14.60	Probe Model: 8722B (12023)
3 (60 cm):	3%	8 (160 cm):	9%		Calib. Factor: 0.72
4 (80 cm):	22%	9 (180 cm):	4%		E/H-Field: E
5 (100 cm):	55%	10 (200 cm):	1.50%		Pwr. Den. (cal.): 0.186

Antenna Type: <u>HAF4012A 1/4 W (793MHz)</u>		Mounted: <u>Trunk center</u>		Length: <u>8.74 cm</u>	
Power Density E/H (mW/cm ²) over body @ 30 cm				Comments	
1 (20 cm):	0%	6 (120 cm):	48%	Average Pwr. Den (%)	Meter Model: 8718 (01122)
2 (40 cm):	0%	7 (140 cm):	23%	16.15	Probe Model: 8722B (12023)
3 (60 cm):	0%	8 (160 cm):	8%		Calib. Factor: 0.72
4 (80 cm):	17%	9 (180 cm):	4.50%		E/H-Field: E
5 (100 cm):	58%	10 (200 cm):	3%		Pwr. Den. (cal.): 0.206

Internal Vehicle Measurements

E-Field:	Ant: HAF4012A 1/4 W (746MHz)	Mounted: Trunk center		Length: 8.74 cm	
Back Seat	Hd: 17%	Ch: 3%	Leg: 4%	Avg = 8%	Pwr. Den. (cal.): 0.102
Front Seat	Hd: 8.5%	Ch: 3.5%	Leg: 2%	Avg = 4.67%	Pwr. Den. (cal.): 0.06
E-Field:	Ant: HAF4012A 1/4 W (764MHz)	Mounted: Trunk center		Length: 8.74 cm	
Back Seat	Hd: 13%	Ch: 6%	Leg: 5%	Avg = 8.13%	Pwr. Den. (cal.): 0.104
Front Seat	Hd: 7%	Ch: 2.5%	Leg: 2%	Avg = 3.83%	Pwr. Den. (cal.): 0.049
E-Field:	Ant: HAF4012A 1/4 W (793MHz)	Mounted: Trunk center		Length: 8.74 cm	
Back Seat	Hd: 16%	Ch: 6.5%	Leg: 2%	Avg = 8.17%	Pwr. Den. (cal.): 0.104
Front Seat	Hd: 5%	Ch: 3.8%	Leg: 5%	Avg = 4.6%	Pwr. Den. (cal.): 0.059

Internal Vehicle Measurements

E-Field:	Ant: HAF4012A 1/4 W (746MHz)	Mounted: Roof center		Length: 8.74 cm	
Back Seat	Hd: 4%	Ch: 3%	Leg: 2%	Avg = 3%	Pwr. Den. (cal.): 0.038
Front Seat	Hd: 3%	Ch: 2.5%	Leg: 3%	Avg = 2.8%	Pwr. Den. (cal.): 0.036
E-Field:	Ant: HAF4012A 1/4 W (764MHz)	Mounted: Roof center		Length: 8.74 cm	
Back Seat	Hd: 4.5%	Ch: 4%	Leg: 2.5%	Avg = 3.74%	Pwr. Den. (cal.): 0.047
Front Seat	Hd: 4%	Ch: 3.5%	Leg: 5.0%	Avg = 4.17%	Pwr. Den. (cal.): 0.053
E-Field:	Ant: HAF4012A 1/4 W (793MHz)	Mounted: Roof center		Length: 8.74 cm	
Back Seat	Hd: 4.0%	Ch: 4.3%	Leg: 3.3%	Avg = 3.87%	Pwr. Den. (cal.): 0.049
Front Seat	Hd: 3.3%	Ch: 3.3%	Leg: 4.0%	Avg = 3.53%	Pwr. Den. (cal.): 0.045

Q3.) Grant will list nominal maximum power only, i.e., 15 W (25 W).

R3.) Motorola has requested that the grant represent the maximum power rather than nominal power for the following reasons:

- a.) We guarantee that the advertised power of the radio (e.g. 15 watts) will be obtained on all radios shipped to all customers. To ensure that, the factory power set point is 10% above the advertised power, or 16.5 watts.
- b.) Our factory final test and Customer Quality Assurance (CQA) limits are chosen so that no radio may leave the factory which is either (1) under the advertised power level of 15 watts or (2) over the FCC filed power level of 18 watts (the CQA limit is slightly below that, at 17.4 watts, to allow a safety margin for measurement correlation errors).
- c.) The EME/SAR data is performed at the 18 watt power level because this ensures that no radio can be shipped to a customer with a greater output power level than that at which the submitted SAR/EME data was measured.

We have maintained this policy for all products we have filed which require SAR/EME compliance testing. If the grant were to reflect a power rating of 15 watts, this would be below the shipping power level of the actual product and also inconsistent with the power levels at which the supplied EMC, ERP and SAR/EME data was measured.

For these reasons, we request that the grant show the maximum power level of 18 watts.