

Timco Engineering Inc.  
849 NW State Road 45  
Newberry FL 32669

From: Mario de Aranzeta  
To: Martin Perrine  
mperrine@fcc.gov  
FCC Equipment Authorization Branch

Re: FCC ID: BBOPR3000

Applicant: Cobra Electronics Corporation  
Correspondence Reference Number: 6905  
731 Confirmation Number: TC868999

Subject: Request for additional information

1) Clarification of setup for occupied BW measurements. Please justify reference level and apparent conducted power of 73.7 dBuV. User manual and SAR report suggest 2 W. Also, please provide data for both GMRS and FRS modes.

The reference level in the OBW plot is arbitrary and in no way should be used as a reference to anything except the CW plot. The RF is sampled to a level that keeps it on the scale of the analyzer and maintained at that level from CW to Occupied. Conducted power is not provided as the UUT has a permanently attached antenna. The output power measured by TEI was ERP not conducted. A block diagram of the test setup is included on the next page.

Occupied bandwidth of the GMRS and FRS is identical. The manufacturer makes no distinction in modulation limiting or audio frequency response and therefore occupied bandwidth between the services are the same. The test reports will now have two necessary bandwidth calculations even though they are identical.

2) Measurement details of conducted spurious emissions testing. Please provide measurement BW and detector type.

This device is required to have a fixed, permanently attached antenna; therefore conducted spurious emissions testing is not required.

3) Details of radiated spurious testing. Please provide bandwidths and detector types. Confirm that the substitution method was used. Provide full measurement data and example calculations. Provide photograph of full test setup with and without substitution antenna in place. Provide new test data if substitution was not used.

Pages 12 and 13 of our test report show details of spurious radiated emissions done via the substitution method. Our method closely follows that of TIA 603. A peak detector and appropriate bandwidths of the analyzer were used. Enclosed on pages 4 and 5 please find the details on radiated spurious emissions and substitution method.

COBRA ELECTRONICS CORPORATION  
FCC ID: BBOPR3000  
REF: CORRESPONDENCE ID #: 6905

T:\C\COBRA\1220UT2\oet 6905\Cobraelectronics 2003 fcc response.doc

4) Tune-up procedure, block diagram and parts lists.

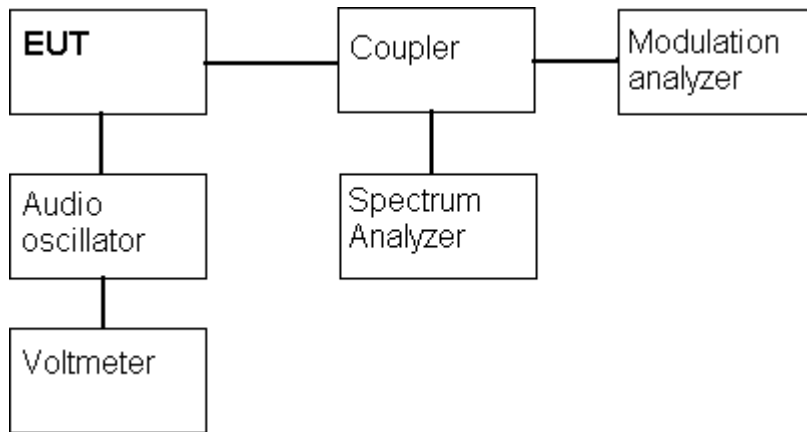
This information is supplied in a separate exhibit.

COBRA ELECTRONICS CORPORATION

FCC ID: BBOPR3000

REF: CORRESPONDENCE ID #: 6905

T:\C\COBRA\1220UT2\oet 6905\Cobraelectronics 2003 fcc response.doc



The antenna of the EUT is coupled to the spectrum analyzer and to the modulation analyzer with a near field probe.

TEST DATA (GMRS):

Emission Frequency MHz	Field Strength dBuV/m	Generator Level	Coax Loss	Gain Relative to a dipole	dB below carrier	dBm	Margin dB
462.70	126.20	29.5	0.5	0	0.00	29	0.00
925.40	73.4	-22.2	1.0	2.85	53	-24	11
1,388.20	72	-21.5	1.1	4.60	54	-25	12
1,850.90	75	-18.0	1.15	5.10	51	-22	9
2,313.70	73	-18.8	1.25	6.50	53	-24	11
2,776.40	69	-22.3	1.30	7.00	57	-28	15
3,239.10	77	-14.0	1.35	7.30	49	-20	7
3,701.90	71	-20.3	1.45	7.20	55	-26	13
4,164.60	63	-28.2	1.45	7.20	63	-34	21
4,627.40	69	-34.6	1.50	8.15	57	-28	15

Sample calculation for substitution method:

Signal gen. (dBm) – coax loss (dB) + dipole difference (dB) = (dBm)

TEST DATA (FRS):

Emission Frequency MHz	Field Strength dBuV/m	Generator Level	Coax Loss	Gain Relative to a dipole	dB below carrier	dBm	Margin dB
467.50	122.50	25.7	0.5	0	0.00	25.2	0.00
935.10	74	-22.2	1.0	2.85	49	-24	10.8
1,402.70	72	-29.5	1.1	4.60	51	-26	12.8
1,870.30	79	-23.0	1.15	5.10	44	-19	5.8
2,337.90	73	-30.3	1.25	6.50	50	-25	11.8
2,805.40	67	-36.7	1.30	7.00	56	-31	17.8
3,273.00	73	-31.0	1.35	7.30	50	-25	11.8
3,740.60	69	-34.7	1.45	7.20	54	-29	15.8
4,208.20	64	-39.7	1.45	7.20	59	-34	20.8
4,675.80	63	-41.6	1.50	8.15	60	-35	21.8

Sample calculation for substitution method:

Signal gen. (dBm) – coax loss (dB) + dipole difference (dB) = (dBm)

COBRA ELECTRONICS CORPORATION

FCC ID: BBOPR3000

REF: CORRESPONDENCE ID #: 6905



COBRA ELECTRONICS CORPORATION  
FCC ID: BBOPR3000  
REF: CORRESPONDENCE ID #: 6905

T:\C\COBRA\1220UT2\oet 6905\Cobraelectronics 2003 fcc response.doc