MOTOROLA

27th November 2001

Mr. Stan Lyles
Authorization & Evaluation Division
Federal Communications Commission Laboratory
7435 Oakland Mills Road
Columbia, MD 21046

Re: Form 731 Confirmation Number: EA102411 with FCC ID: AZ489FT3803.

Dear Mr. Lyles;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the 14th November 2001request for information in Correspondence Number 21236.

Q1) New data for the field strength of spurious radiation. Please provide the data in the form of decibels relative to the carrier power measured in ERP (dBc) as standard using the "Substitution" method as described in TIA/EIA-603. Please include a sample calculation.

R1) Exhibit 6E1 through 6E-4 in the original application show data that was measured using the “Substitution” method as described in TIA/EIA-603. The data shows that the radiated spurious emissions are below the –20 dbm specification. Reference level is 0dbm since these are absolute readings. There is no reference to the carrier power in ERP because spurious emissions were measured using a non-radiating dummy load as per TIA/EIA-603 section 2.2.12 in order to insure no overloading of measuring test equipment.

The “substitution” method is based on measured data only thus no calculation was used for the data presented.

Q2) The Audio Response plots you have submitted, Exhibit 6B-1 and 6B-2 is not acceptable. Please send plots showing per Section 2.1047(a).

R2) Please see the updated Audio Response plots per section 2.1047(a) in enclosed files (Exhibit 6B1_rev1 and 6B2_rev1).

Q3) Please supply frequency stability data for battery end-point voltage per Section 2.1055 (d) (2). Your data in Exhibit 6G-2 does not cover this range.

R3) Even though the radio hardware is designed to operate down to 2.7 Volts out of a power supply, the radio software limits the lower voltage of operation to be at 4.0 Volts. The radio automatically turns off and cannot be turned on for battery voltages lower or equal to 4.0 Volts, thus operation to 2.7 Volts is something a user would never be able to accomplish.

The voltage extremes for alkaline batteries under no load conditions are 6.4Volts (1.6V/cell x 4) for the high side, and 3.6Volts (0.9V/cell x 4) on the low side. However, under load conditions and specifically in transmit mode (typical 1.0 Amp draw) the maximum voltage of the batteries to the radio is approximately 5.0 Volts. This drop is due to the internal series resistance of the batteries. This is why we do measurements with a power supply (ideal source) to 5.5Volts. The data on the low end is taken to 4.0 Volts due to the automatic shutdown feature explained above.

Q4) The Transmitter Conducted Spurious Emissions plot you have submitted, Exhibit 6F-1 is non-compliance. The spurious frequency 76.1 MHz should be less than -20 dBm. Please resubmit new data. And indicate what changes were made to improve this performance.

R4) Please see new data of the Transmitter Conducted Spurious Emissions that is compliant to the –20 dBm specification in the enclosed file (Exhibit 6F1_rev1, 6F2_rev1, 6F3_rev1 and 6F4_rev1).

Changes were made to part values of passive inter-stage matching components, as well as the addition of resistor R301 which provides a resistive termination to the driver stage as shown in the attached amended Schematic, Exhibit 5 Rev 1. These values were selected to suppress the undesired spurs. The components changed were:

L205 from 6.8 nH to no place
L207 from 680 nH to 120 nH
R301 from no place to 2.2K Ohms

Furthermore, we include the files for the Transmitter Radiated Spurious emissions to show continued compliance in light of the part value changes. (Exhibit 6E1_Rev1, 6E2_Rev1, 6E3_Rev1 and 6E4_Rev1)

Q5) Justification for authorization of the two models mentioned in this filing, each having a distinct power level, to be issued under one FCC ID. CFR 47 Section 2.1043(a) requires that radios having different maximum power outputs must have separate ID's. Since the power is set at the factory and each unit has a fixed power level (either 1 W or 2 W) the FCC considers these two separate radios and thus requires two FCC ID's. It was noted from the circuit description in your Exhibit 4D that the PA matching output components are different for the two maximum power levels.

If you agree, please specify which maximum power level you would like to have filed on this application and we will proceed immediately with the grant. If you wish to pursue approval of the second unit please submit a new filing.

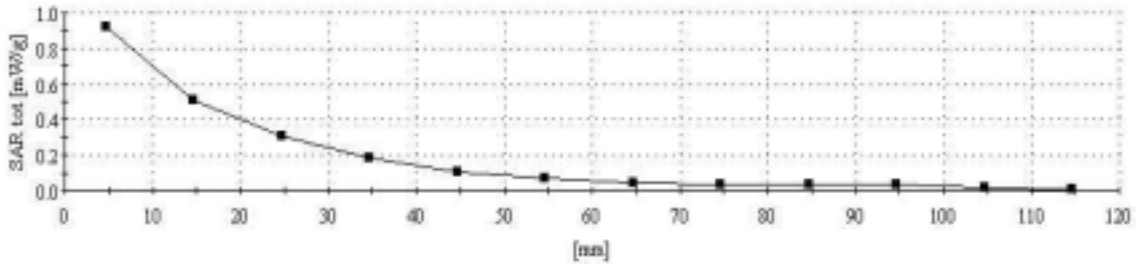
R5) With respect to the possible use of two FCC ID numbers, Exhibit 4 may be confusing. In fact, the PA matching output components are not different for the two maximum power levels. If one were to look at the boards of the two radios, from a hardware standpoint, the circuits are identical.
The difference in the models is simply in the way the radios are adjusted during manufacturing. For that reason, we provided data at both power levels.
We regret any confusion that Exhibit 4 caused, but the approach we propose does not result in two different devices. We have amended Exhibit 4D to 4D Rev. 1 to clear up any confusion.

The Commission has very recently approved the UHF version of the same radio (EA102194) in which the manufacturer could select the output power from the powers specified on the Grant of Equipment Authorization, but the user could not change the output power. Because this unit is one radio, we respectfully ask that if be approved with a note on the grant explaining that the power is factory set at either one watt or two watts. Such a condition should eliminate any confusion as to the nature of the device.

Q6) Please submit a graph of SAR reading vs depth (z-axis scan) for the peak SAR condition in the EUT configuration having the maximum reported volume-averaged SAR. Graph for this z-axis scan must be generated such that the probe comes out of liquid, or the SAR goes to zero, whichever comes first. Reading points should be spaced at 1 cm.

R6) Please see the graph of SAR reading vs depth (z-axis scan) for the peak SAR condition in the EUT configuration having the maximum reported volume-averaged SAR below.

XV2600; 11/21/01
Product: XV2600 Date: 011121
Run Number: 011121-01 Run Time: (19 min)
Model: NUD2839A Sn: 158ABN0021
TX Freq: 155MHz ANTENNA Position: FIXED
Accessories: Battery(53871- NiMH), CarryCase(1585176C03-Holster) RMS(53862)
Antenna Distance from Phantom Surface: A(base):25mm B(center): 33 mm C(tip): 45
Room Temp: 23.0 Liquid Temp: 22.9
PROBE CAL DATE: 010316
flat Acrylic Phantom; Section; Position: ; Frequency: 154 MHz
Probe: ET3DV6R - SN1417; ConvF(7.90,7.90,7.90); Probe Cal Date: 16/03/01
Crest Factor: 1.0; IEEE BOD/Y 150MHz σ = 0.80 mho/m ε_r = 61.1 ρ = 1.00 g/cm^3
:, 0
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0



Q7) If interpolation or extrapolation has been employed to get probe cal factor ConvF, explicit details of those calculations must be included in report. For example, please report explicit details, including all intermediate steps in the calculation and intermediate liquid parameters, of how 835 or 900 MHZ head factors were used to get 150 MHZ body and head factors.

R7) Neither interpolation nor extrapolation has been used for the ConF. All conversion factors are generated using numerical assessment. Please see document1 from SPEAG for additional information.

Q8) SAR Test Report:
For 300 MHZ dipole:
Head ConvF=7.2
Body ConvF=7.3

For 150 MHz:
Head ConvF=8.2
Body ConvF=7.9

Please explain the relatively larger difference in 150 MHZ head vs body factors. The DASY manual indicates that body factor should be lower than head factor.

R8) SPEAG used numerical analysis to provide Motorola the ConvF for head and body tissues for both frequencies. SPEAG responded to FCC's question 8 with the following explanation: "The conversion factor is a function of surrounding medium and frequency and has been assessed by a full-wave 3D FDTD analysis. Since the dielectric parameter goes up by +15% for head tissue between 300 and 150 MHz and that of body tissue by 6% only, a different ratio for the conversion factor can be expected. Please also consider that the uncertainty given for the ConvF are much larger than the change in ratio".

Contact me at (954) 723-5793 if you require any additional information.

Regards,
/s/ Mike Ramnath
FCC Liaison
Email: mike.ramnath@motorola.com