7th October 2011

Tim Harrington
Authorization & Evaluation Division
Federal Communications Commission Laboratory
7435 Oakland Mills Road
Columbia, MD 21046

Re: Form 731 Confirmation Number: EA697932 with FCC ID: AZ492FT4898

Dear Mr. Harrington;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida, herein submits its response to the 22rdSeptember 2010 for information in Correspondence Number 39169.

Q1). op. desc. mentions 2.1061 - that rule section does not exist; please revise/explain this AND ALL FUTURE FILINGS please also ensure ALL rules cites across ALL exhibits are valid and up to date

R1). Rule Part 2.1061 removed for Exhibit 12. See attached for amended exhibit.

Q2) op. desc. mentions fccids AZ489FT7035, AZ492FT3821 and AZ492FT4897 - unclear why; please revise/explain.

R2). FCC ID: AZ489FT7035, AZ492FT3821 and AZ492FT4897 were noted for reference purposes but are now deleted from Exhibit 12. See attached for amended exhibit.

Q3). op. desc. mentions 90.539 and 90.543, which are part 90 subpart S 700-band - please revise/explain how applicable this and ALL related exhibits where applicable.

R3). Rule Parts 90.539 and 90.543 are deleted. See attached for amended exhibit.

Q4). op. desc. has "Part 47 Sec. 2.1033 – 2.1055" - please correct here AND ALL FUTURE FILINGS

R4). Part 47 Sec. 2.1033 – 2.1055 is replaced with 47 CFR, Rule Parts 2.1033 – 2.1055. See attached for amended exhibit.

Q5). op. desc. states model number "M30TXS9PW1AN" but RFx exhibit at multiple occurrences across two parts (UHF part 1, VHF part 2) states different model numbers "M30QTS9PW1AN", "M30KTS9PW1AN" a) please revise/explain for ALL related exhibits accordingly, for consistency across filing b) please

explain/demonstrate compliance with 2.908 and 2.931, in case that tested "models" have hardware differences relative to "model" applying for certification

R5). Exhibit 12 reflects only the model number tested which is M30TXS9PW1AN. Model numbers, M30KTS9PW1AN & M30QTS9PW1AN, are identical in terms of layout, components and transmitter performances - such as RF Output Power and Impedance. There is negligible difference in RF Exposure performance between M30TXS9PW1AN and the two referenced model numbers. Therefore, the data from the two models were used to supplement the RFx report to show FCC compliance.

M30KTS9PW1AN and M30QTS9PW1AN model numbers satisfies the requirements of Rule Part 2.908 and 2.931.

Q6). RFx part 2 at page 3 has fccid "AZ492FT3821" - please revise/explain

R6). The RFx report was revised and “AZ492FT3821” was removed.

Q7). RFx part 1 pg 4 has "Refer to previous MPE reports for additional offered antennas" - please revise/explain to have stand-alone self-contained evaluation report

R7). Report was revised. Original wording was replaced with “NA”.

Q8). at Appdx A lower figure, please revise/explain two "blue" dots at center of trunk lid (one is expected), i.e. is that two antenna mounting positions and if yes what purposes / uses, or what are those

R8). There are two blue dots in the lower figure of appendix A. The blue dot on the right is denoted as #2 to identify the center of the trunk for bystander measurements. The blue dot on the left is denoted as #3 to identify the location of the antenna for the passenger. The antenna location for the passenger is slightly offset from the center of the trunk in the direction of the backseat passenger. The distance between the antenna and backseat passenger (85cm) is illustrated in appendix A and is included in section 6.1.2.

Q9). although past applications with similar devices and evaluation methods had considered some text adjustments for disambiguation and self-consistency purposes, please adjust text in 6.1.1 of RFx part 1 as follows or similar for 1st & 3rd para. change from: "MPE measurements for bystander conditions are determined by taking the average of (10) measurements in a 2m vertical line for each of the (3) test locations indicated in appendix A with 20cm increments at the test distance of 90cm from the antenna under test. ... For the current test vehicle, 90cm (directly behind vehicle), 104 cm (45 degree radial) and 110.5 cm (90 degree radial)." to: MPE measurements for bystander 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 90 cm (directly behind vehicle), 104 cm (45 degree radial) and 110.5 cm (90 degree radial). ... similar remarks may apply for RFx "Part 2" (may have different subclause numbering)

R9). The RFx report was revised. Referenced paragraph 1 was changed per feedback and therefore paragraph 3 was deleted. Part 2 of 2 of the RFx report was also revised accordingly.

Q10). concerning following from 6.1.1 of RFx part 1: "Note: The distance from the trunk-mounted antenna to the edge of the vehicle is 42cm and the distance from the edge of the vehicle's trunk to the Survey Probe Sensor is 48cm." this is somewhat ambiguous due to Appdx A lower figure appears to show same "breakpoint" (into 42 + 48 dim. lines) of the 90cm distance for what in text seems to be called two different things, i.e. "edge of the vehicle" (unclear whether encompasses bumper protrusion and/or other styling curved structures etc) vs. "edge of the vehicle's trunk" we prefer "edge of the vehicle's trunk" if that will provide tangible identifiable reference point - please confirm distance(s) and/or revise text and figure accordingly

R10). The RFx report was revised. The note now states the following; "**Note: The distance from the centered trunk-mounted antenna to the edge of the vehicle is 42cm and the distance from the edge of the vehicle to the survey probe sensor is 48cm."** Appendix A was also revised. These changes were applied to both parts of the RFx report.

Q11). similar to distance 42cm (or whatever it is) from antenna to REAR "edge of the vehicle's trunk", at Appendix A lower figure for this test setup please revise figure or add note at figure to document distances from antenna to front edge of trunk LID and side edge of trunk LID

R11). Appendix A was revised in both parts of the RFx report.

12) concerning 6.1.1 RFx part1 text: "Each of the offered antennas mounted at the center of the trunk were assessed at the rear of the vehicle while maintaining a twenty (20) centimeter separation distance between the probe sensor and vehicle body." this seems incorrect in that Appdx A lower figure shows REAR spacings of 48cm to "edge of the vehicle's trunk" and 35.5cm to "edge of the vehicle" (bumper), but does not show any 20cm spacing for REAR "bystander test location" as do the 45 deg and 90 deg locations please revise to adjust that 6.1.1 wording for correction, and/or adjust test setup and/or procedure accordingly to match wording

R12 The RFx report was revised. Section 6.1.1 now states "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." Part 2 was also revised.

13) concerning 6.1.2 RFx part1 text: "These measurements are representative of operator and passengers sitting in the front and back seat of the vehicle." - if not in exhibits already please revise/explain: a) for each (one or more?) "occupant test location" is that a vertical test axis relative to ground, or is test axis parallel to seat angle; if the latter, please identify angle b) to constitute "representative" of front and rear occupant positions, please elaborate whether that used minimum three "occupant test locations" for each front and back bench seats (i..e. driver side, mid, passenger side), or if other please elaborate c) same remarks for 6.2.2 RFx part1

R13).

a) 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 probe) 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.

b) 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 highest measured results across the seat for the Head, Chest and Lower Trunk positions are recorded. 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.

Q14). concerning 6.2.1 RFx part1 text: "... at the test distance of 90cm from the antenna under test." notwithstanding subsequent Note, the quoted text is incorrect please revise accordingly, e.g. to omit 90cm here rather describe only the actual setup and consistent with Appdx A figure

R14). The test distance was revised in both parts of the RFx report.

Q15). concerning RFx part 1 Clause 9 tabulated freqs. and etc, and considering pg 1 "disclaimer" about test results at freqs. not allocated nor licensable for US non-federal operations, we are not aware or do not recall whether the matter was decided for test reports to include such data notwithstanding, at minimum the Cl. 9 table should identify any freqs. not in part 90; also could be appropriate to provide some rationale for choice of test freqs.; may also be useful to have some segregation scheme or markings at full results in Cl. 11 please revise accordingly 380-406.1, not 406.1-420, 90 (limited) 420-454, 90 454-456, not 456-462.5375, 90 462.5375-462.7375, not 462.7375-467.5375, 90 467.5375-467.7375, not 467.7375-512, 90

R15). The RFx report was revised. The tables in section 9.0 and 11.0 were updated to identify the frequencies outside the FCC's allocation per FCC Rule Part 2.106. Part 2 of the RFx report was also revised accordingly.
The following information was added to part 1 of section 9.0; "Test frequencies were chosen to include (approximately) the low, middle and high channels of the DUT band and applicable antenna bands."
The following was added to part 2 section 8; "Test frequencies were chosen to include (approximately) the low, middle and high channels of the DUT band and applicable antenna bands.

Q16). RFx part 1 Cl. 10 has "at the specified distances and test locations indicated in section 5.0 and APPENDIX A", however "section 5.0" is uncertainty - please revise; ALSO please check this entire and ALL future reports before submission to ensure correct cross-referencing other e.g. RFx part 1 Cl. 12 has "section 8.0" which should be 9.0

R16). The RFx report was revised. Section 10.0 now references section6.0 and section 12 now references section 9. Cover page of part 2 standards and guidelines section now references section 3.0. Part 2 section 11.0 now references appendix D.

Q17). the 1st "pseudo equation" (text equation) in Cl. 11 seems unclear, i.e. a) does meter display S (power density) values, in which case factors inherent in reading b) if "post processing" is needed to apply cal factors, unclear that method of this equation is appropriate, or rather should use conversion for each point then spatial average, and probe axis-by-axis applying factors c) Cl. 11 tables shows column "Avg. over Body" in mW/cm^2 units, however factors are used to convert from "raw" probe readings to V/m; therefore seems units may be incorrect for this column d) please revise to clarify data conversion going from single-point reading to Cl. 11 tabulated values; regardless whether preceding remarks may be misunderstanding on our part, example numeric results conversions could aid clarification

R17).

a) The meter displayed S (power density) for both bands in this filing. Note 4 of part 1 section 11.0 was removed.

b) Post processing includes the calibration factors.

c) The units in “Avg. over Body” (mW/cm^2) column is correct.

d) Calculation example;

Table 1 page 8 - Trunk mount antenna HAE6010, freq. 406.5MHz, E-field for back seat passenger;

Three single data points 1.97 mW/cm^2, 0.82mW/cm^2 & 1.05mW/cm^2

The average of the three data points: *body_avg* = 1.28mW/cm^2

Calibration factor (*probe_frequency_cal_factor*) = 0.97

0.97 was determined by linear interpolation between 400 MHz w/correction factor 0.97 and 500 MHz w/ correction factors 0.99.

50% *duty cycle* was applied for PTT operation.

Therefore using the first equation in section 11.0

$$Pwr\_density\_calc = body\_avg * (probe\_frequency\_cal\_factor)^2 * duty\_cycle$$

0.602mW/cm^2 = 1.28mW/cm^2 * 0.97^2*50%

Then using the second equation in section 11.0

$$Pwr\_density\_\max\_calc = pwr\_density\_calc * \frac{\max\_output\_power}{initial\_output\_power}$$

0.602mW/cm^2 = 0.602mW/cm^2 * (120W/120W)

The maximum output and initial output powers are listed in section 11 tables.

Q18). unless due to .pdf font error on our end, use of notation "1/2W", "5/8W" in Cl. 11 tables is confusing, because it implies units of watts rather than more appropriate lambda symbol - please revise

R18). The RFx report was revised. “W” was replaced with lambda symbol.

Q19). for FCC filing purposes, please replace "% of ICNIRP" column using "% of FCC", or at minimum amend such column , as long as page layout remains tractable (fyi antenna gain column etc may be redundant)

R19). The RFx report was revised.

Q20). although we suspect asterisk at left in some rows of Cl. 11 tables means that config. has subsequent SAR evaluation, please revise where appropriate to spell that out close-by or at every table (notwithstanding such mention in Cl. 12)

R20). The RFx report was revised. Sections 11 and 12 were revised accordingly. Part 2 was also revised.

Q21). RFx part 1 Appdx D pg 1 mentions "(26 in total)", however my count shows 27 asterisks in Cl. 11 tables - please revise where appropriate and to explain relations between the 26 or 27 asterisk-cases and overlap with and purpose for "52 independent simulations"

R21). The number “26” was changed to “27” (typo correction). In addition the footnote has been added on page 1 to explain the relation between 27 conditions and 52 simulations:

[1] The number of individual simulations includes: 20 bystander simulations (the front and back bystander orientations in 10 test conditions), 30 passenger simulations (the center and side location at the back seat in 15 test conditions), and 2 passenger simulations in the front seat location.

Q22). RFx part 1 Appdx D pg 1 says "single band UHF", however "Appendix" to Appdx D includes numerous VHF and UHF details, i.e. inconsistent / misleading for general remark please revise TO CLEARLY INDICATE / SEGREGATE whatever items in Appdx-D-Appdx are for this product, and which details are for BACKGROUND / EXAMPLE please consider/address also preceding remark about 2.908 etc as part of this "single band" inconsistency

R22). The “Appendix” to Appendix D has been revised to include the information, validation data and examples for the frequency band of the product (i.e. UHF or VHF).

Q23). for RFx part 1 Appdx D pg 2 "CAD file of a sedan car", and pg 21 "Car body. We developed one very similar to the car used for MPE measurements", to demonstrate like structures please amend with for example overlays of CAD model car and car photos for '03 Crown Vic

R23). The picture of the CAD model and photo picture of the car used in measurement have been added on page 2 of the Appendix D.

Q24). for RFx part 1 Appdx D figs 1 & 2, of not in report already please explain / show effect of "45 deg tilt" of phantom, to give frontal incidence as is done for 0 deg and 90 deg "bystander test locations"

R24) The “45 deg” condition refers to the field measurements and SAR simulations at the location close to the corner of the trunk. In this condition, the bystander model has the same orientation as in the 90 deg condition. Those orientations have been retained because 45 deg rotation of the human body model may lead to unpredictable change in tissue composition which may significantly deviate from the original voxel model. Regardless of the bystander orientation in all simulations the closest distance from the body to the antenna does not exceed the simulated separation distance.

Q25). several places in RFx part 1 Appdx D mention "rms power" - please refrain from use "rms power" for FCC compliance purposes FOR THIS ALL FUTURE FILINGS, e.g. consistent with following from ANSI C63.10-2009: root-mean-square (rms) power: (deprecated) Apparent power of an AC power that is calculated by multiplying root-mean-square (rms) current by the root-mean-square voltage. NOTE 1—In a purely resistive circuit rms power is held to be the equivalent heating effect of a DC power and can be deemed to be true power. In a circuit that consists of reactance as well as resistance the apparent power is greater than the true power (the vector difference between true power and apparent power is called reactive power). ... NOTE 2—From the above definition it becomes clear that unless any measuring system can be completely devoid of reactance then the measured power cannot be considered to be rms power. It therefore becomes apparent that this parameter would be difficult to measure with any degree of accuracy at RF frequencies.

R25). The term “rms” was replaced with “average” in all places were it still was present.

Q26). for RFx part 1 Appdx D tables 1 & 2, please amend columns: a) measured MPE as available for each modeled condition b) fig. # for each modeled condition which subsequently shows field distrib. plot in this Appdx

R26). The power density data have been added to the Table 1 and 2 as well as the reference to the figures showing the SAR/field distribution where available.

Q27). for RFx part 1 Appdx D pg 9 etc, as described in preceding remarks "90 cm" between antenna and "bystander test location" is misnomer for some locations - please revise for consistency

R27). To clarify the description position of the bystander the text was revised as follows: “With trunk mount antennas, the bystander is placed at the corner of the trunk, at the back of the trunk or on the side of the trunk as close as possible to the car while maintaining at least 90 cm separation from the antenna and 20 cm separation from the car.”

Q28). preceding remarks are based on review of RFx (shorthand for "RF exposure") "Part 1 of 2" - we are sending these now to facilitate reply process; similar remarks would apply as appropriate where "Part 2 of 2" has similar basic content, and for separate other pending FCC ID where similar

R28). Part 2 of 2 of the RFx report was revised.

Sincerely,
/s/ Mike Ramnath (signed)
Manager, Regulatory Compliance
954-723-5793
Email: Mike.Ramnath@motorola.com