

Information about the Applicant

Company Name	Motorola Inc.
Grantee	Mike Ramnath
Address	8000 West Sunrise Blvd.
City, State, Zip	Ft. Lauderdale, FL 33322
Job Number	SPTE0008
Model	F4421A & F4426A
FCC ID	AZ489FT7008
Agent	Rod Munro
Approval Type	Original
Equipment Class	Mobile Cellular/PCS GSM Transceiver
Rule Part	22H and 24E

Overview

Reference cover letter provided by the client. This compliance opinion covers the GSM radio and is one of two compliance opinions, one for the Bluetooth and one for the GSM.

Recommendation

All items have been resolved to my satisfaction; I am therefore recommending this for approval.

Signature

Findings	
Specification	Finding
2.1033(b)(6)	2.1033 specifies that a report of measurements showing compliance with the pertinent FCC technical requirements. This report shall identify the test procedure used (e.g., specify the FCC test procedure, or industry test procedure that was used), the date the measurements were made, the location where the measurements were made, and the device that was tested (model and serial number, if available). The date the measurements were made, and the location where the measurements were made was not provided in the supplemental reports.
15.207 (c)	Page 9 of the users manual indicates the EUT may be "On" while charging. Section 15.207 states Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits. No conducted emissions data was submitted.
15.101	As specified in 15.101, approval is required for digital devices. The Power Pad host is a digital device. Please provide information to support that compliance.
Simultaneous Transmissions Co-Location	The radios must be tested individually. Assuming that the radios do not share an antenna, only radiated tests for simultaneous transmission is required. If the radios share an antenna, antenna conducted measurements would also be required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even if the FCC requests one set of data, they are responsible for compliance for all modes of simultaneous transmission. No data was supplied to support the requirement.
Other	The Supplemental Test Report has calculated the output power incorrectly for the mid and high channels.
15.247(c)	The Supplemental Bluetooth Test Report indicates in the procedure that an HP 8562A was used for conducted spurious emissions. The measurement procedure indicates testing was done to 25 GHz. The equipment list specifies the frequency band of the equipment used is 10 kHz – 22 GHz. The equipment used is not capable of making the measurement described.
15.105	The manual on page IV incorrectly refers to "Part 90" of the FCC rules.
OET 65 Supplement C EAB Part 22/24 SAR Review Reminder Sheet	Please provide a discussion harmonizing the conducted powers stated in the EMC and SAR report. FCC Requirement: "Conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance" The supplemental EMC Report for FCC ID: AZ489FT7008 indicates output power was provided by the Motorola SAR lab on 9/06/03 – 9/08/03 & 10/02/03. The SAR report doesn't contain power measurements that match EMC report. The SAR report has power slump data measured with a thermocouple sensor (fine for relative measurement). The EMC report has average power readings using Gigatronics power meter and sensor (that provide more accurate measurement of modulated signals). The SAR Report should contain similar measurements.
47 CFR 22.913a 47 CFR 24.232b	"Part 22/24 limits are in terms of ERP and EIRP, as measured using substitution method not calculation...Please submit (Part 22, 24 handsets) radiated power using substitution method." No ERP of fundamental data for GSM (see 47 CFR 22.913a), no EIRP for PCS (see 24.232b). Calculations from conducted data not allowed. Must be radiated measurement using substitution method of TIA / EIA 603 2.2.12. We received a request from the FCC last August: "Part 22/24 limits are in terms of ERP and EIRP, as measured using substitution method not calculation...Please submit (Part 22, 24 handsets) radiated power using substitution method."
OET 65 Supplement C EAB Part 22/24 SAR Review Reminder Sheet	SAR report used 12.5% scaling factor or 1:8 which is typical for GSM. Please confirm 1:8 data only mode rather than the more typical 2:8 or 3:8 for GPRS is accurately representative for this product.

Opinions

Specification Requirements	Description
2.1049, 22.917, 24.238	Occupied Bandwidth

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The Applicant has submitted test results in the form of a test report

Reference: The original Test Report and grant of approval

Specification Requirements	Description
2.1051, 22.917, 24.238	Spurious Emissions, Antenna Conducted

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The Applicant has submitted test results in the form of a test report

Reference: The original Test Report and grant of approval

Specification Requirements	Description
2.1053, 22.917, 24.238	Spurious Emissions, Radiated Emissions

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The Applicant has submitted test results in the form of a test report.

Reference: Supplemental Test Report

Specification Requirements	Description
2.1055, 22.355, 24.235	Frequency Stability

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: The Applicant has submitted test results in the form of a test report.

Reference: Test Report

Specification Requirements	Description
22.913a and 24.232b	Power Output

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: "Part 22/24 limits are in terms of ERP and EIRP, as measured using substitution method not calculation...Please submit (Part 22, 24 handsets) radiated power using substitution method."

No ERP of fundamental data for GSM (see 47 CFR 22.913a), no EIRP for PCS (see 24.232b). Calculations from conducted data not allowed. Must be radiated measurement using substitution method of TIA / EIA 603 2.2.12. We received a request from the FCC last August:

"Part 22/24 limits are in terms of ERP and EIRP, as measured using substitution method not calculation...Please submit (Part 22, 24 handsets) radiated power using substitution method."

The applicant has submitted additional information demonstrating compliance. The measurements were made as prescribed in TIA-603-B 2.2.17.2.2, a – f. Even though this method had deficiencies as confirmed in an e-mail from Tim Harrington of the FCC, we were obligated to accept the method as it is prescribed by the FCC to demonstrate compliance to the requirement.

Reference: Test Report

Specification Requirements	Description
2.1091	RF Exposure

Opinion: The Equipment meets the intent specified by the requirements listed above.

Discussion: SAR report used 12.5% scaling factor or 1:8 which is typical for GSM. Please confirm 1:8 data only mode rather than the more typical 2:8 or 3:8 for GPRS is accurately representative for this product.

The applicant has submitted additional information demonstrating compliance.

Reference: SAR report and supplemental information

Specification Requirements	Description
Additional Requirements	Simultaneous Transmissions

Opinion: The Equipment does not meet the intent specified by the requirements listed above.

Discussion: The radios must be tested individually. Assuming that the radios do not share an antenna, only radiated tests for simultaneous transmission is required. If the radios share an antenna, antenna conducted measurements would also be required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even if the FCC requests one set of data, they are responsible for compliance for all modes of simultaneous transmission. Aggregate power must be considered in RF exposure evaluation.

The applicant has submitted additional information demonstrating compliance.

Reference: Supplemental Report