April 1, 2020

To: Elite Electronic Engineering
Re: Class II Permissive Change for ABZ99FT3094 for Additional Emission Designator

This memo is in regards to a Motorola type approved transmitter, equipment type ABZ99FT3094. ABZ99FT3094 was originally granted FCC type approval on March 17, 2015.

Per this action, the change requested is to include one additional emission designator, **7X60FXW**. It is spectrally identical to the 7K60F7W, 7K60F7D, 7K60F7E, 7K60FXD, 7K60FXE designators in the initial certification.

The Test Measurement report has been updated to add this designator to the appropriate occupied bandwidth section E1-2.

No schematic, active device, or other circuitry changes have been made to the equipment. This proposed change maintains the existing specifications of the equipment. The equipment will be completely compatible and interchangeable with the existing equipment currently shipped under equipment type ABZ99FT3094. The form, fit, and function of the base radio is identical to the equipment that is currently in production.

Regards,

Bob Sarocka
Motorola Solutions

TCB **TCB**

GRANT OF EQUIPMENT AUTHORIZATION

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

Elite Electronic Engineering, Inc.
1516 Centre Circle
Downers Grove, IL 60515

Date of Grant: 10/11/2005
Application Dated: 10/11/2005

Motorola Inc
1301 East Algonquin Rd
Room 1726
Schaumburg, IL 60196

Attention: Ken Weiss , Lead Electrical Engineer

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: ABZ89FC5810
Name of Grantee: Motorola Inc
Equipment Class: Licensed Non-Broadcast Station Transmitter
Notes: Non-Broadcast Transmitter

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
BC	90	851.0 - 870.0	50.0	1.0 PM	17K7D7D
BC	90	851.0 - 870.0	100.0	1.0 PM	8K70D1W
BC	90	851.0 - 870.0	100.0	1.0 PM	8K10F1E

The antenna(s) used for this transmitter must be fixed-mounted on outdoor permanent structures. RF exposure compliance is addressed at the time of liscensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of 1.1307(b)(3).

BC: The output power is continuously variable from the value listed in this entry to 5%-10% of the value listed.

Report on Test Measurements

Occupied Bandwidth – TDMA Linear Simulcast Modulation (LSM), 12.5 kHz Channel Spacing
There is one exhibit shown for Linear Simulcast Modulation. It can be used in a system configuration based upon channel usage as described in Exhibit B. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type: TDMA Linear Simulcast Modulation, LSM
Emission Designator: 8K70D7W
Channelization: 12.5 kHz
Power Setting: 100 Watts, Average

Specification Requirement § 90.210(d) Emission Limits:
Emission *Mask D.* For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth (f_0) to 5.625 kHz removed from f_0: *Zero dB*

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: *At least 7.27 *(f_d –2.88 kHz) dB*

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: *At least 50 plus 10 log_{10}(P) dB or 70 dB, whichever is the lesser attenuation.*

(4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide to capture the true peak emission of the equipment under test. In order to show compliance with the emissions mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to ensure that the emission profile is developed.

Necessary Bandwidth Calculation: The necessary bandwidth of the modulation signal is not calculable per the formulas defined in 47 CFR 2.202 (b). Specifically, although the modulation for this emission is a composite modulation, the equations given in the composite tables in 2.202 are not applicable since none of them adequately approximate the form of digital modulation used. The necessary bandwidth of 8.70 kHz is based upon a 99% power measurement of the transmitter spectrum, per 2.202 (a).

Measurement Procedure and Instrument Settings:
Emission Measurement Analyzer Settings:

Horizontal:	12.5 kHz per Division	Resolution Bandwidth:	100 Hz
Vertical:	10 dB per Division	Video Bandwidth:	10 kHz
Sweep Time:	72 Seconds (<2000 Hz / Second)	Span:	125 kHz
Detector Mode:	Peak		

Test Procedure:
1) Adjust the spectrum analyzer per the values specified in the Emission Measurement Analyzer Settings.
2) Modulate the transmitter with the appropriate signaling pattern, (pseudorandom data) and key the transmitter at the full power rating. Use the analyzer controls to set this signal to the full-scale reference line. Allow the analyzer to sweep fully and store the sweep.
3) Use the band power marker function of the spectrum analyzer to measure the power of the carrier in a 12.5 kHz bandwidth.
4) Use the carrier power value from the previous step to generate the emission mask limit.
5) Plot the resulting analyzer trace and the emission mask limit, add text and labeling as appropriate.

EXHIBIT	DESCRIPTION
E1-2.7	TDMA Linear Simulcast Modulation (LSM)

Report on Test Measurements

Occupied Bandwidth – TDMA Compatible 4-Level Frequency Modulation (C4FM), 12.5 kHz Channel Spacing
There is one exhibit shown for C4FM. It can be used in a system configuration based upon channel usage as described in Exhibit B. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type:	TDMA Compatible 4-Level Frequency Modulation, C4FM
Emission Designator:	8K10F7W
Channelization:	12.5 kHz
Power Setting:	100 Watts

Specification Requirement § 90.210(d) Emission Limits:
Emission *Mask D.* For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth (f_0) to 5.625 kHz removed from f_0: *Zero dB*

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: *At least 7.27 *(f_d –2.88 kHz) dB*

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: *At least 50 plus 10 log_{10}(P) dB or 70 dB, whichever is the lesser attenuation.*

(4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide to capture the true peak emission of the equipment under test. In order to show compliance with the emissions mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to ensure that the emission profile is developed.

Necessary Bandwidth Calculation: An occupied bandwidth of 8.10 kHz was measured for this emission, per 2.202 paragraph (a) of the Rules and Regulations, as that bandwidth which contains 99% of the power in the transmitted signal. For this system, the necessary bandwidth has been chosen to be the same as the occupied bandwidth, thereby per paragraph (b) (2), the necessary bandwidth is 8K10.

Measurement Procedure and Instrument Settings:
Emission Measurement Analyzer Settings:

Horizontal:	12.5 kHz per Division	Resolution Bandwidth:	100 Hz
Vertical:	10 dB per Division	Video Bandwidth:	10 kHz
Sweep Time:	72 Seconds (<2000 Hz / Second)	Span:	125 kHz
Detector Mode:	Peak		

Test Procedure:
1) Adjust the spectrum analyzer per the values specified in the Emission Measurement Analyzer Settings.
2) Modulate the transmitter with the appropriate signaling pattern, (pseudorandom data) and key the transmitter at the full power rating. Use the analyzer controls to set this signal to the full-scale reference line. Allow the analyzer to sweep fully and store the sweep.
3) Use the band power marker function of the spectrum analyzer to measure the power of the carrier in a 12.5 kHz bandwidth.
4) Use the carrier power value from the previous step to generate the emission mask limit.
5) Plot the resulting analyzer trace and the emission mask limit, add text and labeling as appropriate.

EXHIBIT	**DESCRIPTION**
E1-2.8	TDMA Compatible 4-Level Frequency Modulation (C4FM)

Report on Test Measurements

Occupied Bandwidth – TDMA Linear Simulcast Modulation (LSM)

Occupied Bandwidth -- TDMA - Linear Simulcast Modulation - 8K70D7W - 100 Watts

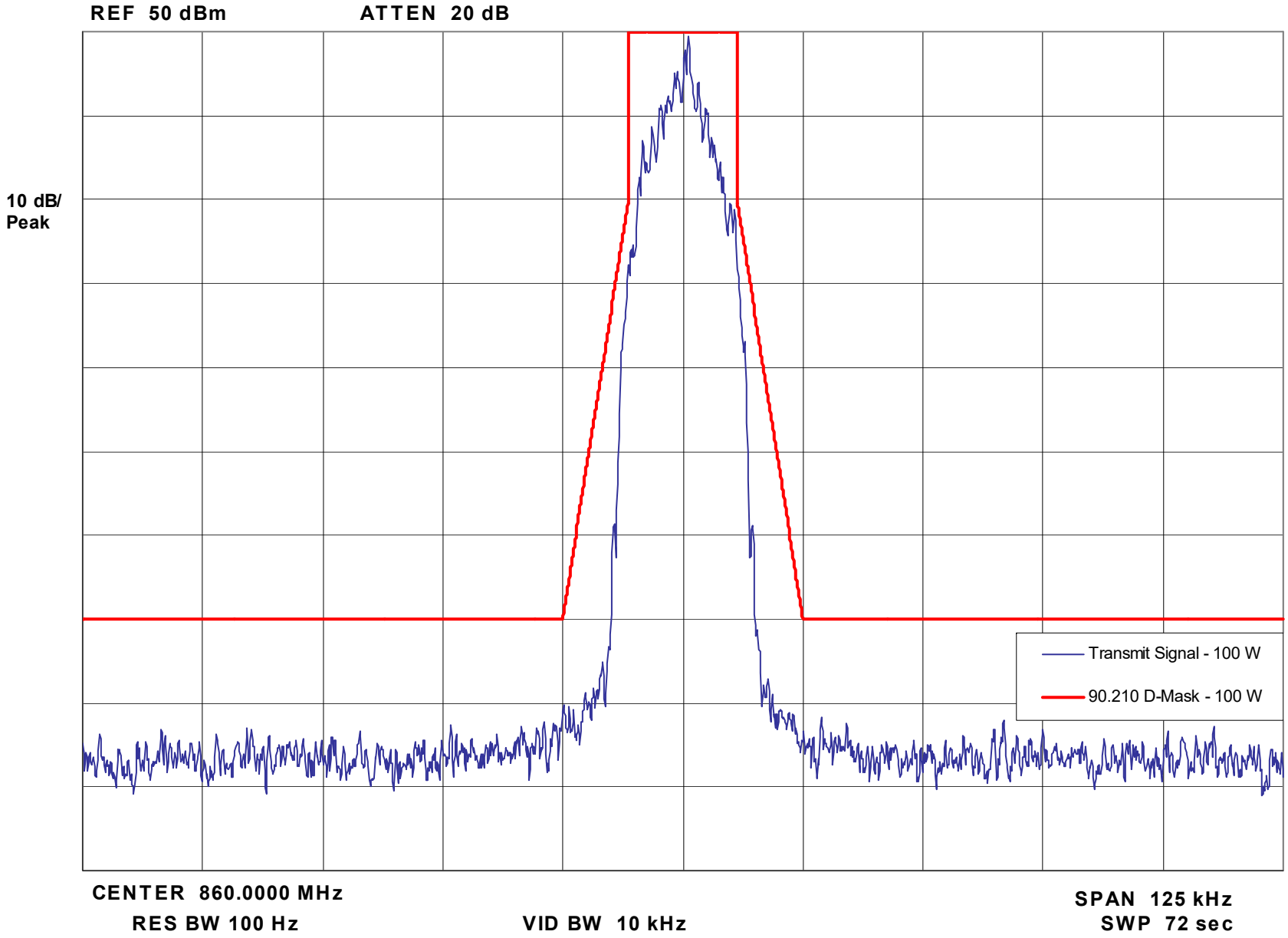

EXHIBIT E1-2.7

Report on Test Measurements

Occupied Bandwidth – TDMA Compatible 4-Level Frequency Modulation (C4FM)

Occupied Bandwidth -- TDMA - Compatible 4-Level Frequency Modulation - 8K10F7W - 100 Watts

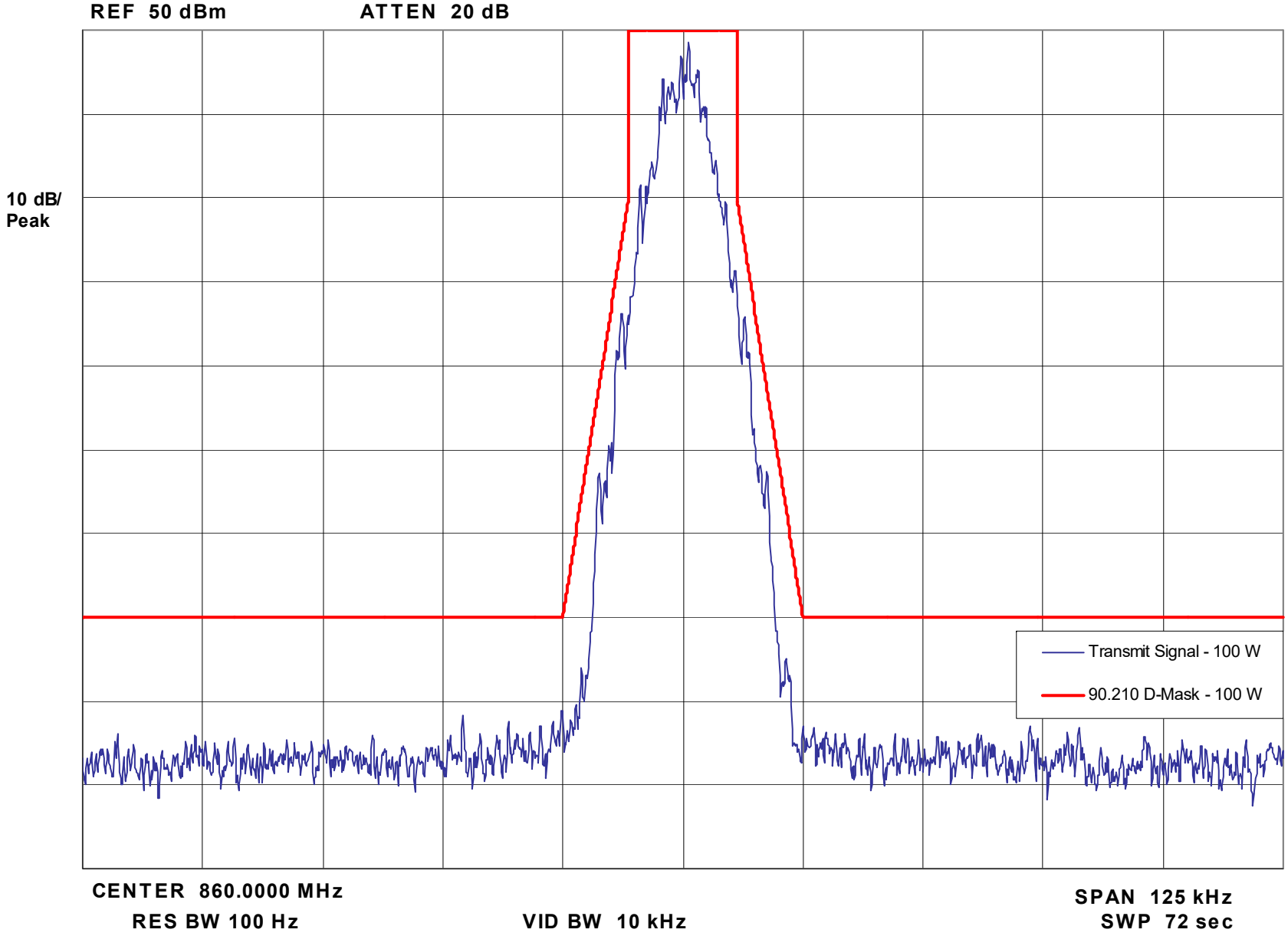

EXHIBIT E1-2.8

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