

APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

109AB-99FT3094

**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
CFR 90 and IC RSS-119.**

**E1-8 Oscillator Frequency Stability**

Specification Requirement IC RSS-119 section 5.3:

Fixed and Base stations operating at 138-174 MHz and 12.5 kHz channel bandwidth must have a frequency stability of better than +/- 2.5 PPM, and those operating at 25 kHz / 30 kHz channel bandwidth must have a frequency stability of better than +/- 5.0 PPM.

Specification Requirement: Reference Part 90.213

Fixed and Base stations operating at 150-174 MHz and 12.5 kHz channel bandwidth must have a frequency stability of better than +/- 2.5 PPM.

Only the more stringent specification limit is shown on the frequency stability exhibits.

Performance was measured at carrier frequencies across the operating band.

**EXHIBIT**      **DESCRIPTION**

E1-8.1      Frequency Stability Vs Temperature

E1-8.2      Frequency Stability Vs Voltage

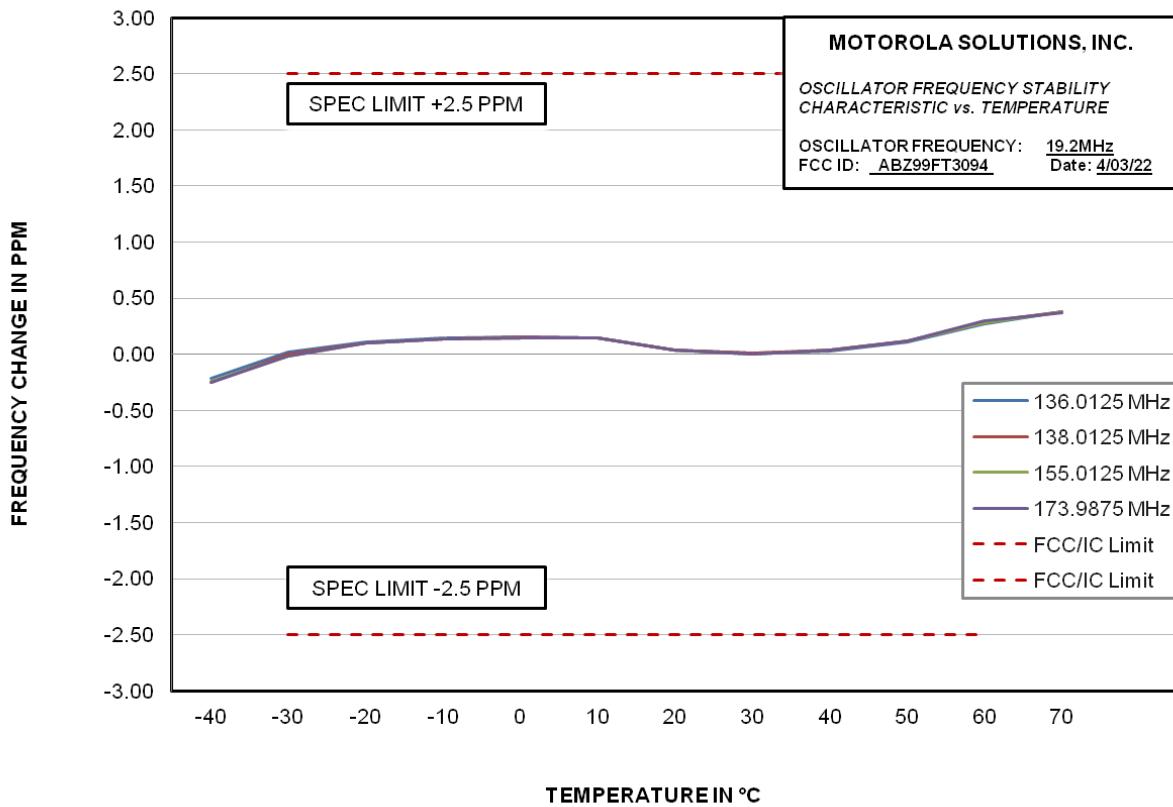
APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

109AB-99FT3094

**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

**E1-8.1 Frequency Stability Vs Temperature**



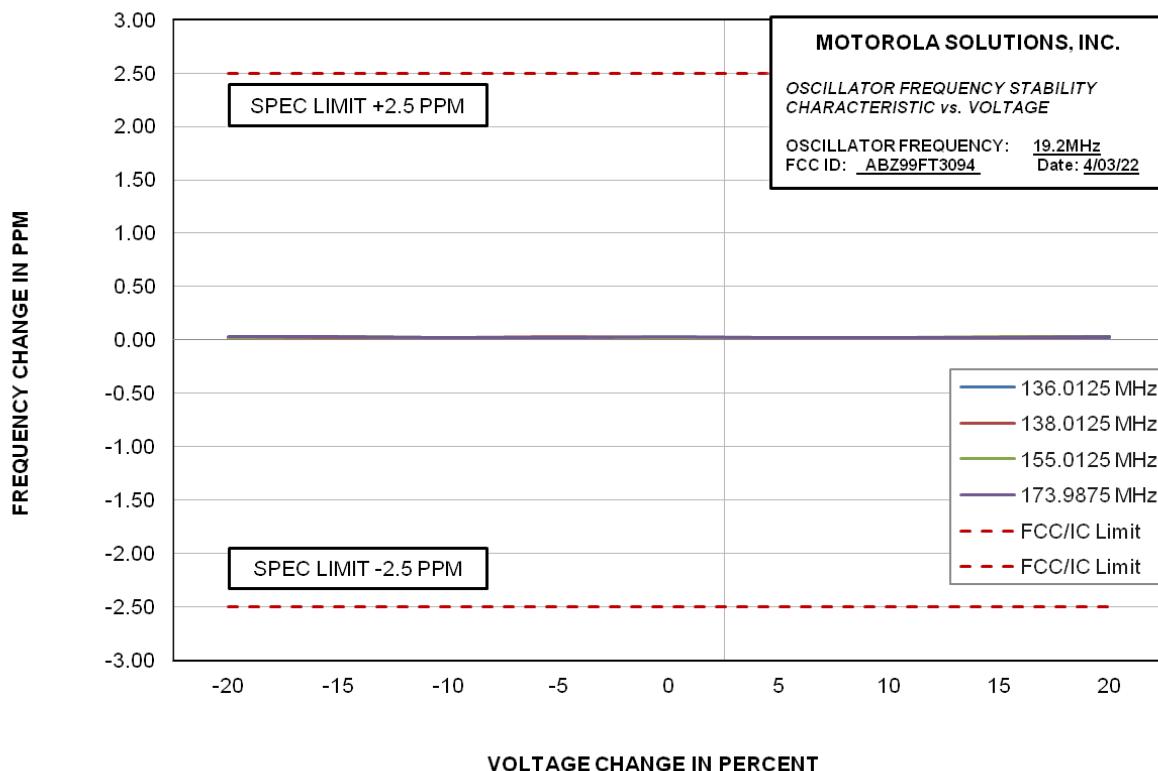
APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

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**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
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E1-11.2 Frequency Stability Vs Voltage



**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

### **E1-9 Frequency Transient Behavior**

Specification Requirement 47 CFR §90.214 and IC RSS-119 section 5.9:

Transmitters designed to operate in the 138-174 MHz (150-174 MHz for FCC) frequency band must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated below:

#### Transient Frequency Behavior 25 kHz Channels

For time intervals:

- a. t1 = 5 ms Maximum Frequency Difference  $\pm 25$  kHz
- b. t2 = 20 ms Maximum Frequency Difference  $\pm 12.5$  kHz
- c. t3 = 5 ms Maximum Frequency Difference  $\pm 25$  kHz

#### Transient Frequency Behavior 12.5 kHz Channels

For time intervals:

- a. t1 = 5 ms Maximum Frequency Difference  $\pm 12.5$  kHz
- b. t2 = 20 ms Maximum Frequency Difference  $\pm 6.25$  kHz
- c. t3 = 5 ms Maximum Frequency Difference  $\pm 12.5$  kHz

Where t1 and t2 are times immediately following when the transmitter is turned on, and t3 is the time from when the transmitter is turned off.

During the time from the end of t2 to the beginning of t3, the frequency difference must not exceed the limits specified in §90.213 / RSS-119 section 5.3.

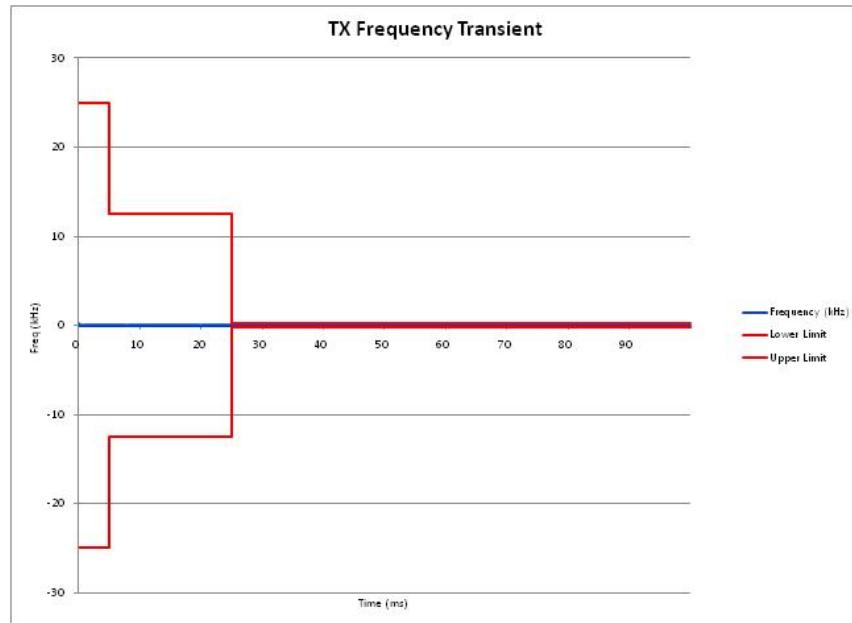
Modulation: Analog Mode Frequency Modulation

Carrier Frequencies: Performance was measured at carrier frequencies at the low end, middle, and high end of the operating band.

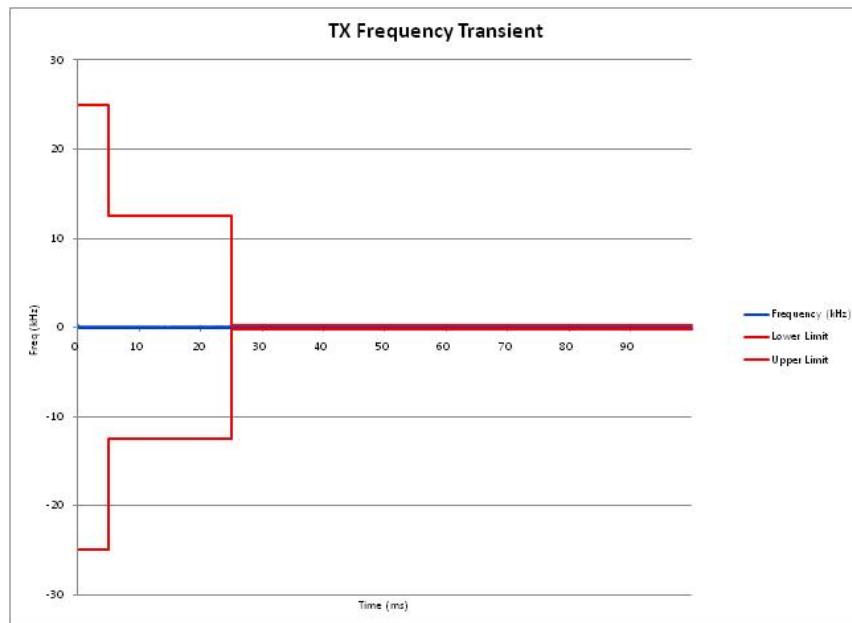
<u>EXHIBIT</u>	<u>DESCRIPTION</u>
E1-9.1-9.3	Frequency Transient Behavior, 25 kHz Channel Key-Up
E1-9.4-9.6	Frequency Transient Behavior, 25 kHz Channel De-Key
E1-9.7-9.9	Frequency Transient Behavior, 12.5 kHz Channel Key-Up
E1-9.10-9.12	Frequency Transient Behavior, 12.5 kHz Channel De-key,

**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.1 Frequency Transient Behavior, 25 kHz Channel Key-Up, 138.0125MHz

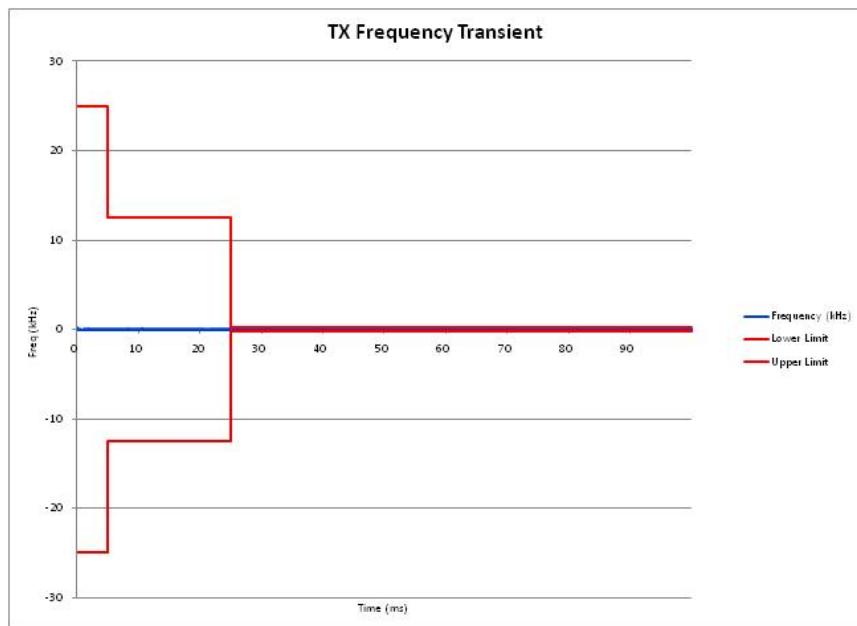


E1-9.2 Frequency Transient Behavior, 25 kHz Channel Key-Up, 155.0125MHz

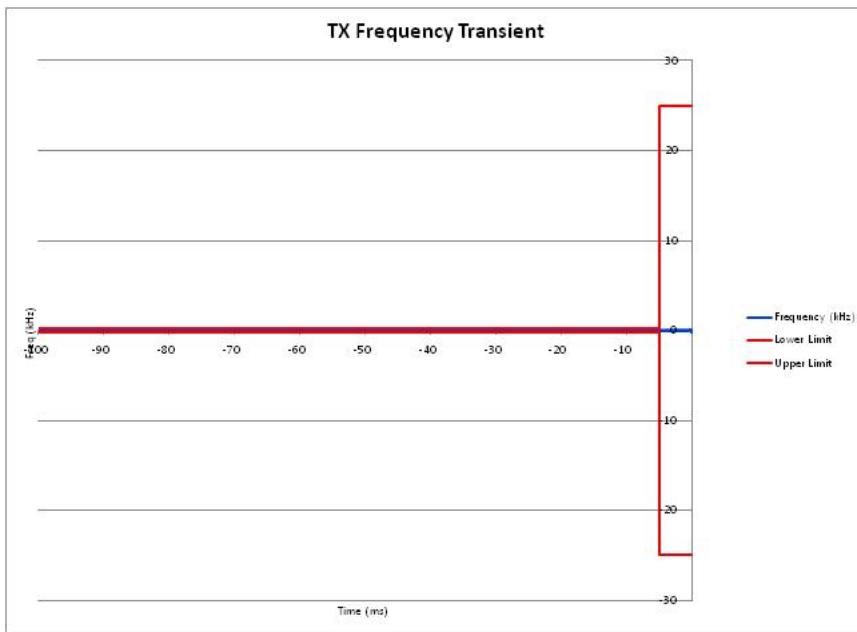


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.3 Frequency Transient Behavior, 25 kHz Channel Key-Up, 173.9875MHz

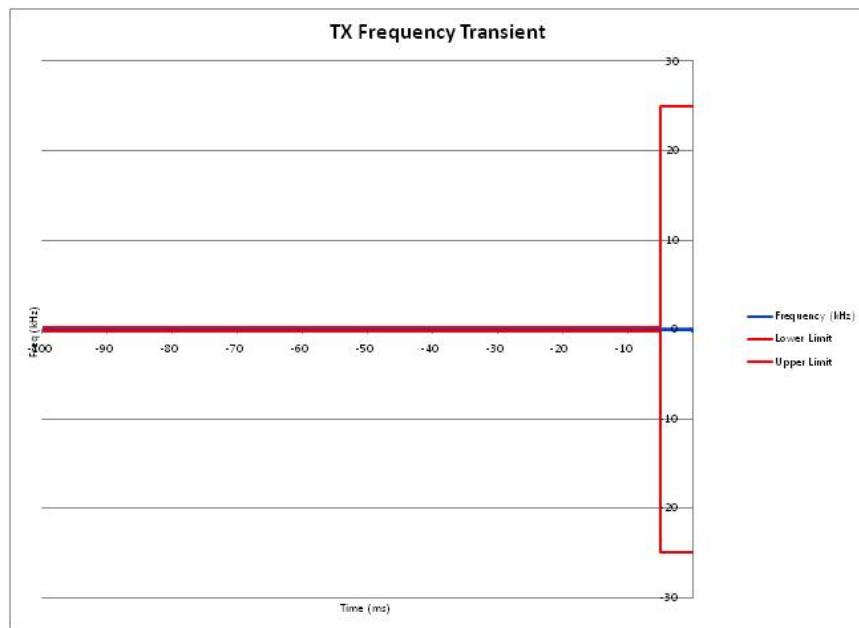


E1-9.4 Frequency Transient Behavior, 25 kHz Channel De-Key, 138.0125 MHz

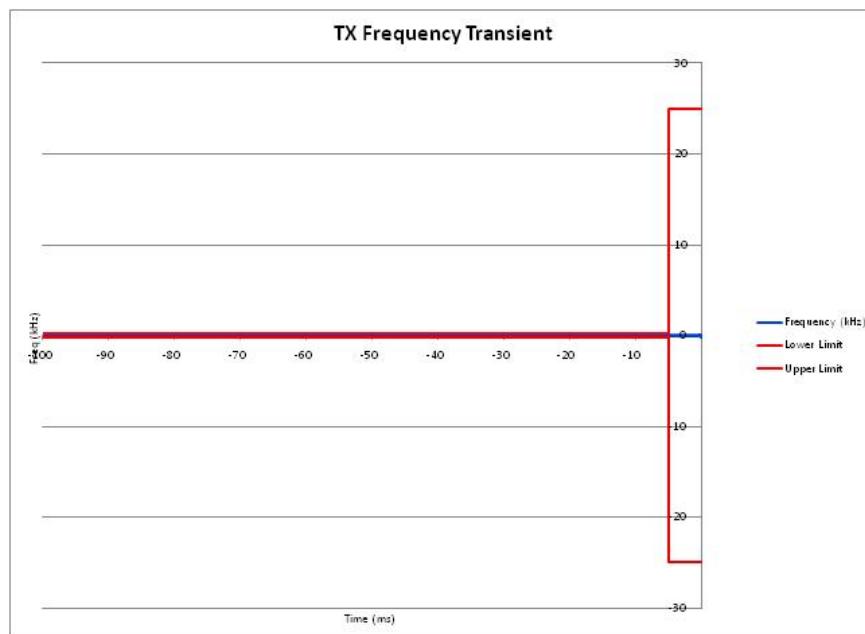


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.5 Frequency Transient Behavior, 25 kHz Channel De-Key, 155.0125 MHz

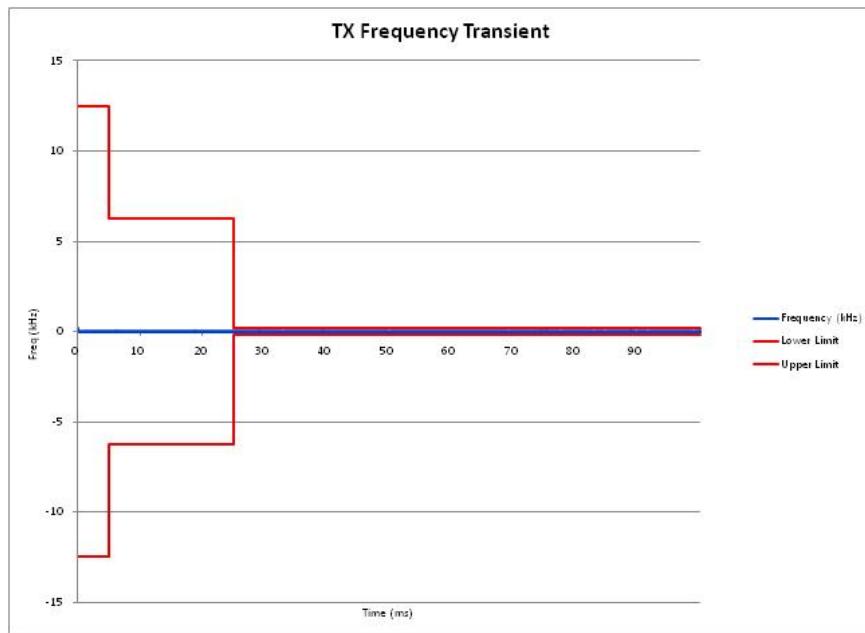


E1-9.6 Frequency Transient Behavior, 25 kHz Channel De-Key, 173.9875 MHz

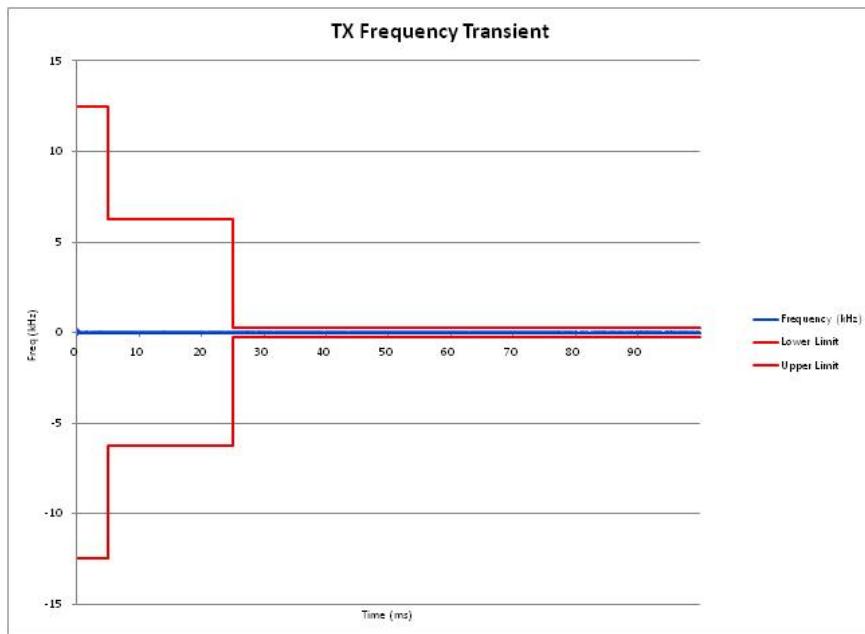


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.7 Frequency Transient Behavior, 12.5 kHz Channel Key-Up, 138.0125 MHz

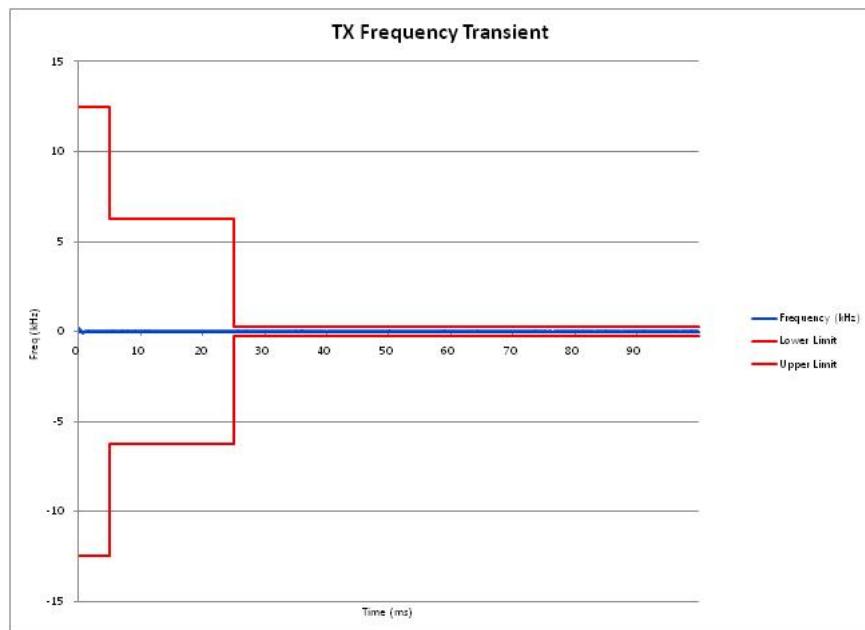


E1-9.8 Frequency Transient Behavior, 12.5 kHz Channel Key-Up, 155.0125 MHz

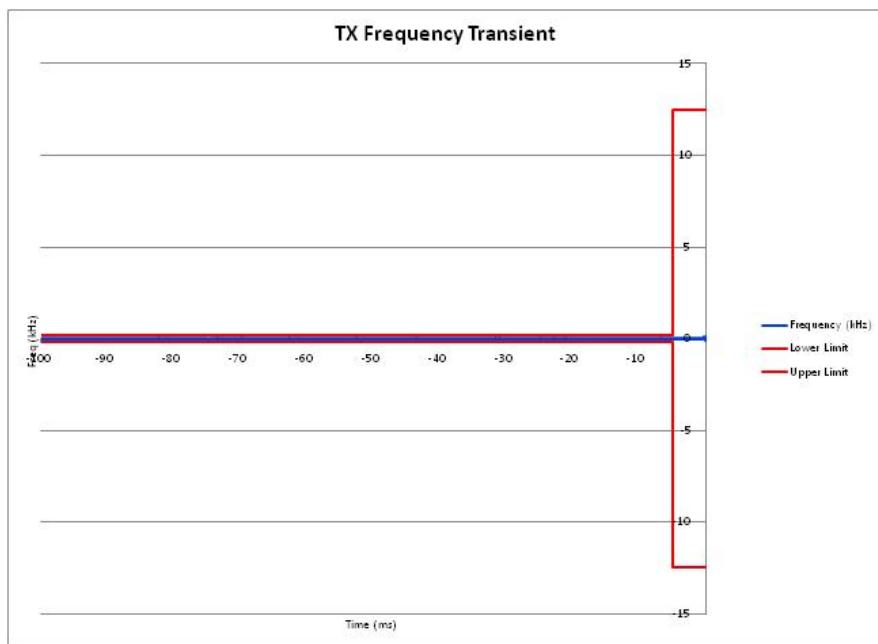


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.9 Frequency Transient Behavior, 12.5 kHz Channel Key-Up, 173.9875 MHz

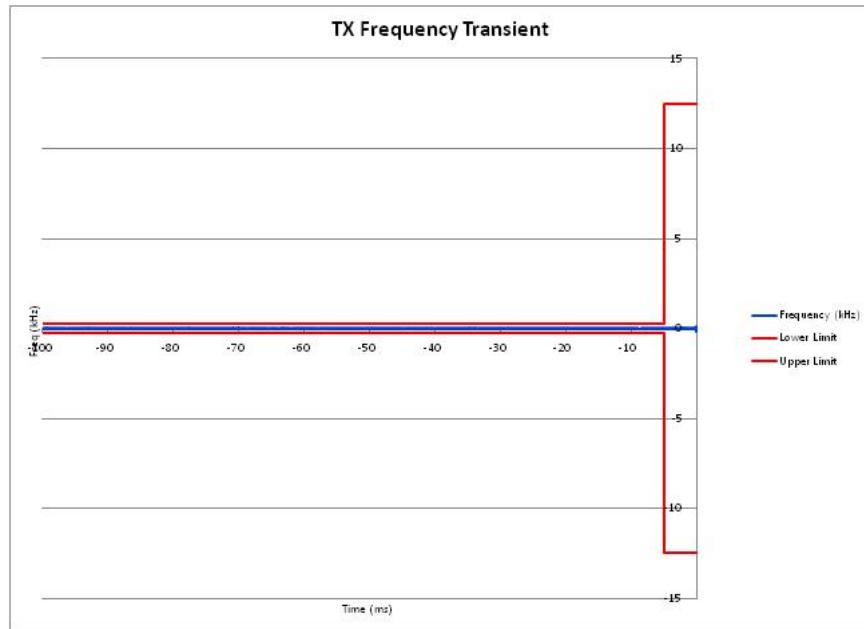


E1-9.10 Frequency Transient Behavior, 12.5 kHz Channel De-key, 138.0125 MHz

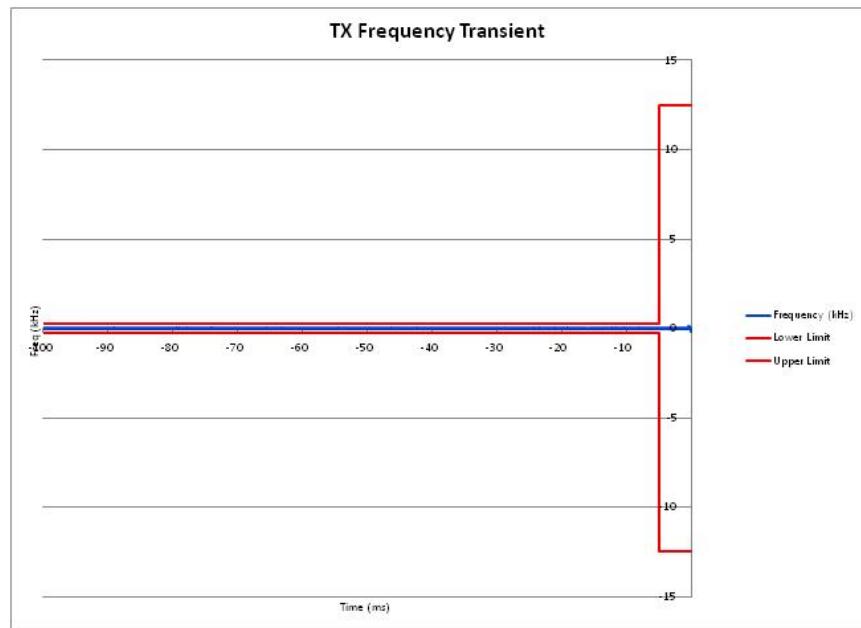


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-9.11 Frequency Transient Behavior, 12.5 kHz Channel De-key, 155.0125 MHz



E1-9.12 Frequency Transient Behavior, 12.5 kHz Channel De-key, 173.9875 MHz



**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

### **E1-10 Audio Frequency Response**

Specification Requirement per TIA 603:

Audio Frequency Response, 25 kHz Channels: The audio frequency response from 300 Hz to 3000 Hz shall not vary more than +1 dB or -3 dB from a true 6 dB per octave pre-emphasis characteristic as referenced to the 1000 Hz level, with an additional 6 dB per octave attenuation allowed from 500 Hz to 300 Hz, and an additional 6 dB per octave attenuation is allowed from 2500 Hz to 3000 Hz in equipment operating in the 25 MHz to 869 MHz range.

Audio Frequency Response, 12.5 kHz Channels: The audio frequency response from 300 Hz to 3000 Hz shall not vary more than +1 dB or -3 dB from a true 6 dB per octave pre-emphasis characteristic as referenced to the 1000 Hz level, with an additional 6 dB per octave attenuation allowed from 500 Hz to 300 Hz. An additional 6 dB per octave rolloff is allowed from 2300 Hz to 2700 Hz, and an additional 12 dB per octave is allowed from 2700 Hz to 3000 Hz in equipment operating in the 896 MHz to 940 MHz range or for 12.5 kHz channel operation.

Modulation: Audio Test Tone

Carrier Frequency: Performance was measured at carrier frequencies at the low end, middle, and high end of the operating band..

Specification: The specification limit is shown on the response plots

<u>EXHIBIT</u>	<u>DESCRIPTION</u>
E1-10.1	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 136.0125 MHz
E1-10.2	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 138.0125 MHz
E1-10.3	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 155.0125 MHz
E1-10.4	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 173.9875 MHz
E1-10.5	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 136.0125 MHz
E1-10.6	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 138.0125 MHz

APPLICANT: MOTOROLA SOLUTIONS

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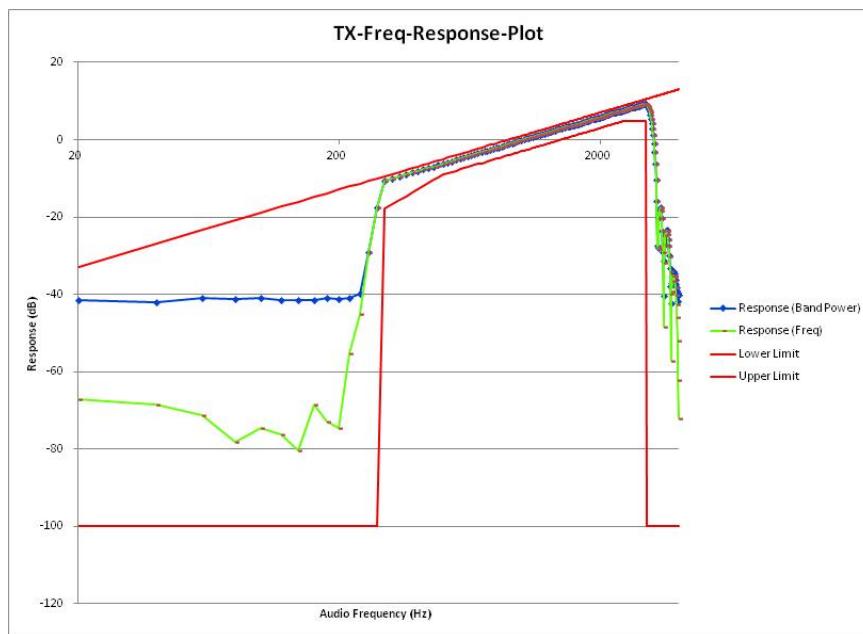
## Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.

E1-10.7      Audio Frequency Response – Modulation Characteristics, 12.5 kHz  
Channels – 155.0125 MHz

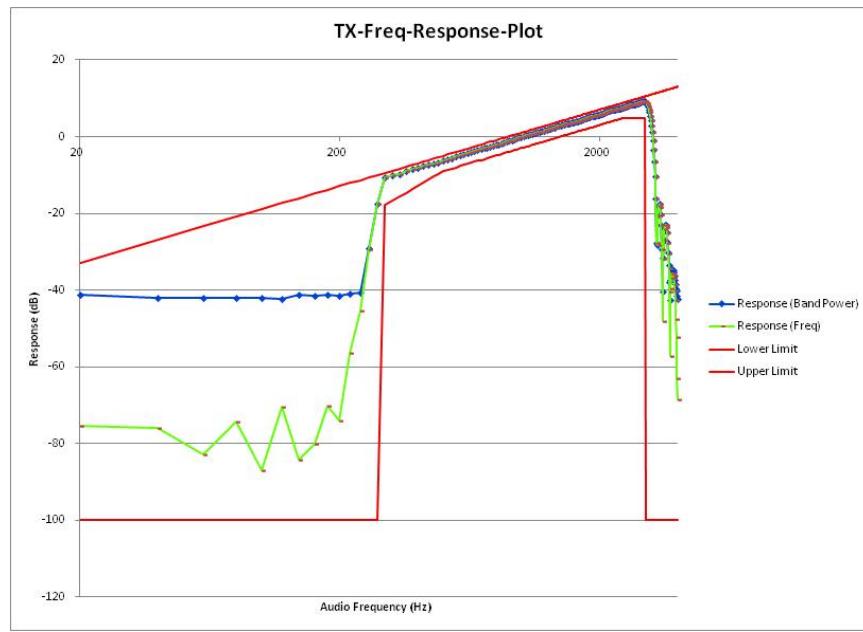
E1-10.8      Audio Frequency Response – Modulation Characteristics, 12.5 kHz  
Channels – 173.9875 MHz

**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-10.1 Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 136.0125 MHz

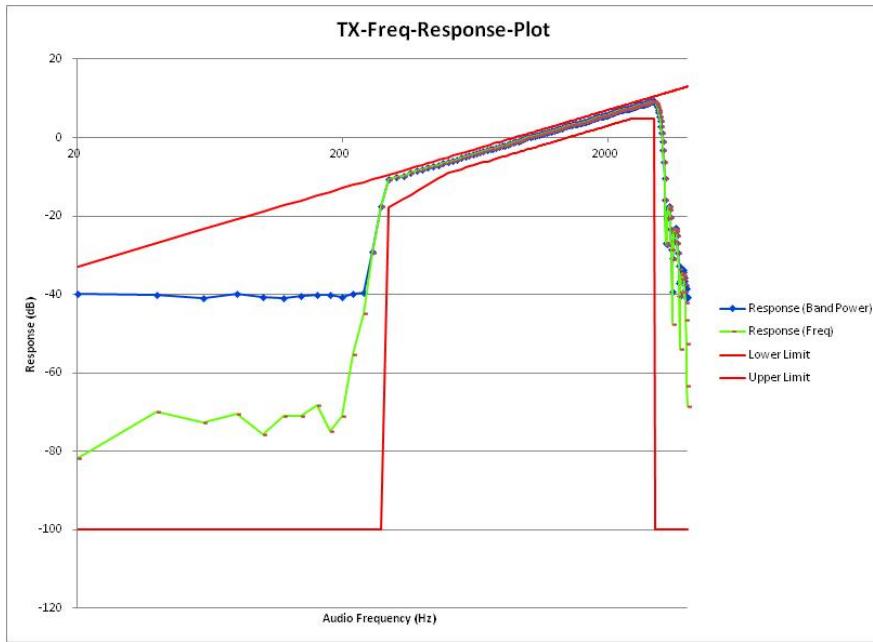


E1-10.2 Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 138.0125 MHz

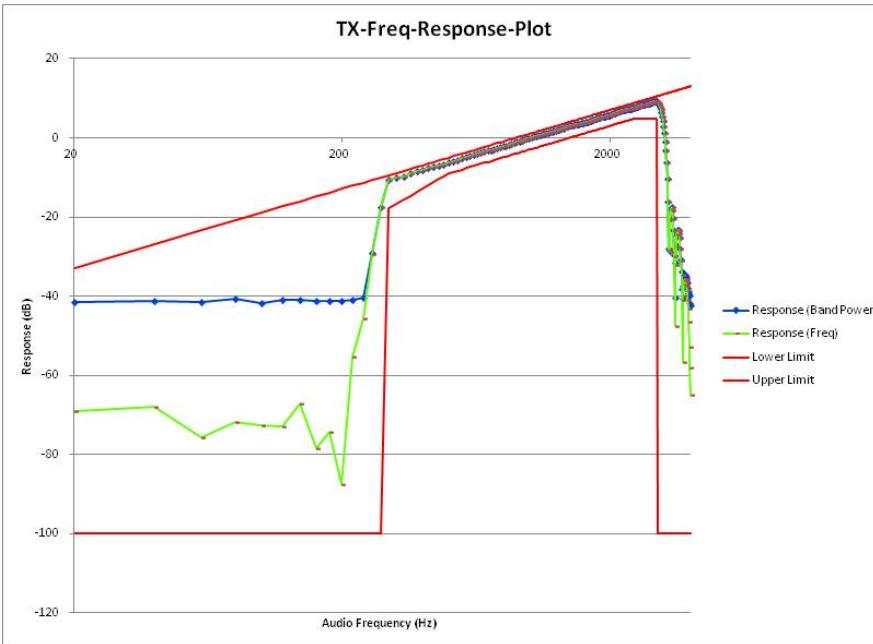


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-10.3 Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 155.0125 MHz



E1-10.4 Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – 173.9875 MHz



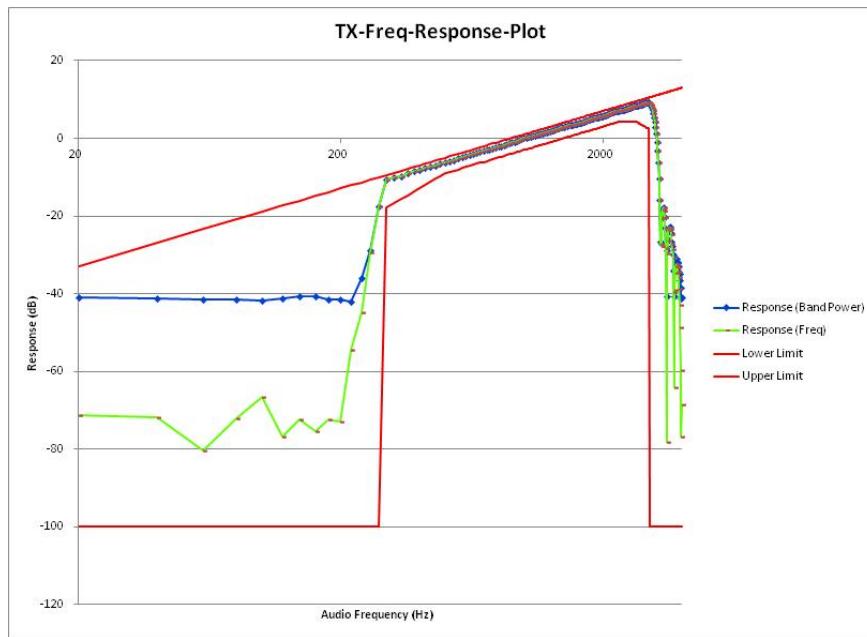
APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

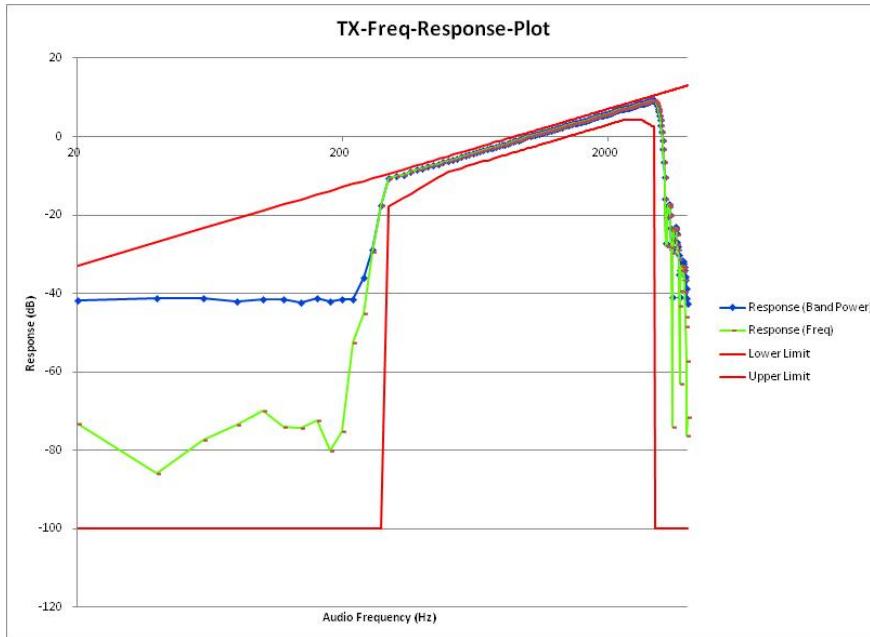
109AB-99FT3094

## Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.

## E1-10.5 Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 136.0125 MHz

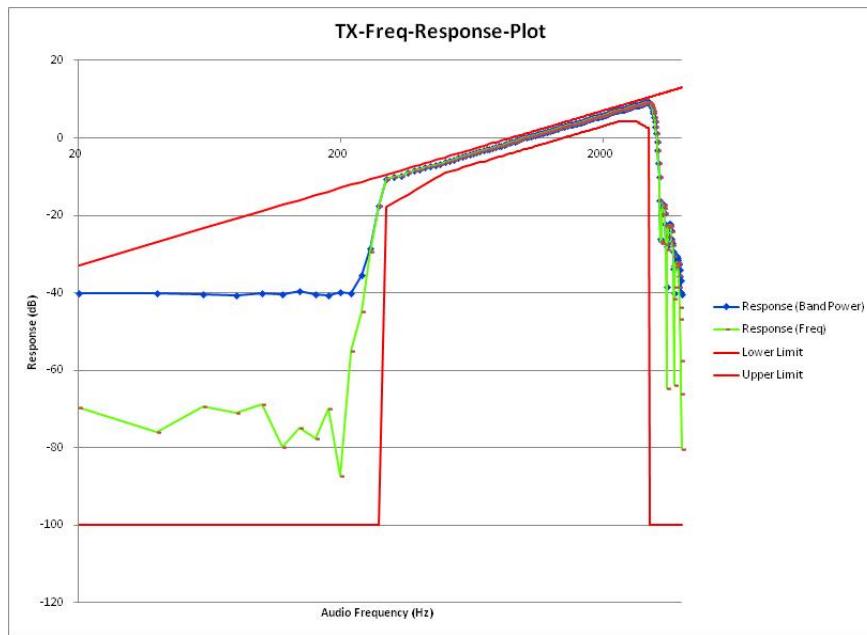


## E1-10.6 Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 138.0125 MHz

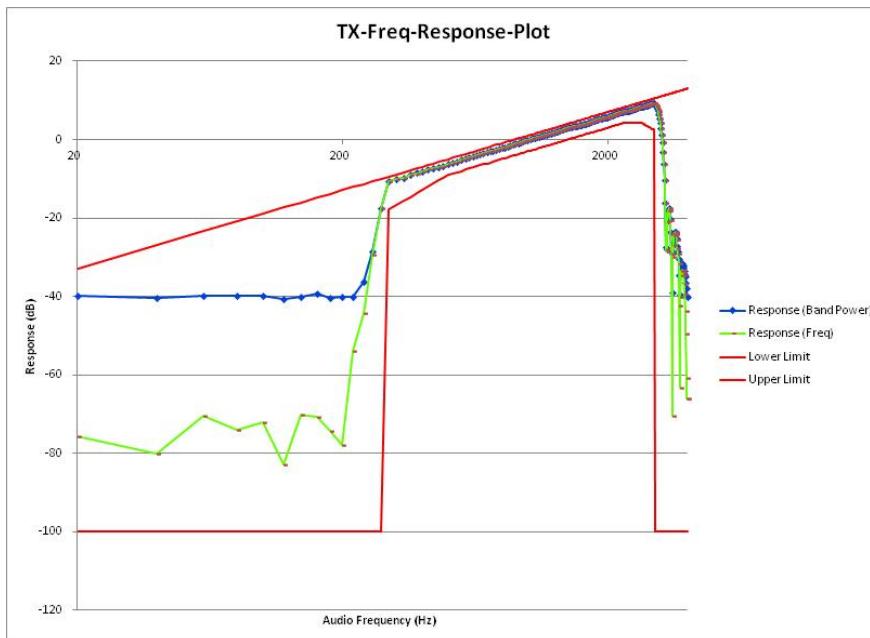


**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-10.7 Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 155.0125 MHz



E1-10.8 Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels – 173.9875 MHz



**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
CFR 90 and IC RSS-119.**

### **E1-11 Modulation Limiting**

Specification Requirement per TIA 603:

Modulation Limiting, 25 kHz Channels: The maximum instantaneous peak and steady state deviations shall not exceed the rated system deviation of +/- 5 kHz at any audio frequency or change in level as specified in the method of measurement.

The minimum value of modulation limiting shall be at least 60% of the rated system deviation, or 3 kHz.

Modulation Limiting, 12.5 kHz Channels: The maximum instantaneous peak and steady state deviations shall not exceed the rated system deviation of +/- 2.5 kHz at any audio frequency or change in level as specified in the method of measurement.

The minimum value of modulation limiting shall be at least 60% of the rated system deviation, or 1.5 kHz..

Modulation: Audio Test Tone, Varying Frequency between 300 Hz and 3000 Hz

Carrier Frequency: Performance was measured at carrier frequencies at the low end, middle, and high end of the operating band.

Modulation Limiting Response Plots:

<b>EXHIBIT</b>	<b>DESCRIPTION</b>
E1-11.1	Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 136.0125 MHz
E1-11.2	Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 138.0125 MHz
E1-11.3	Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 155.0125 MHz
E1-11.4	Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 173.9875 MHz
E1-11.5	Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 136.0125 MHz
E1-11.6	Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 138.0125 MHz

APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

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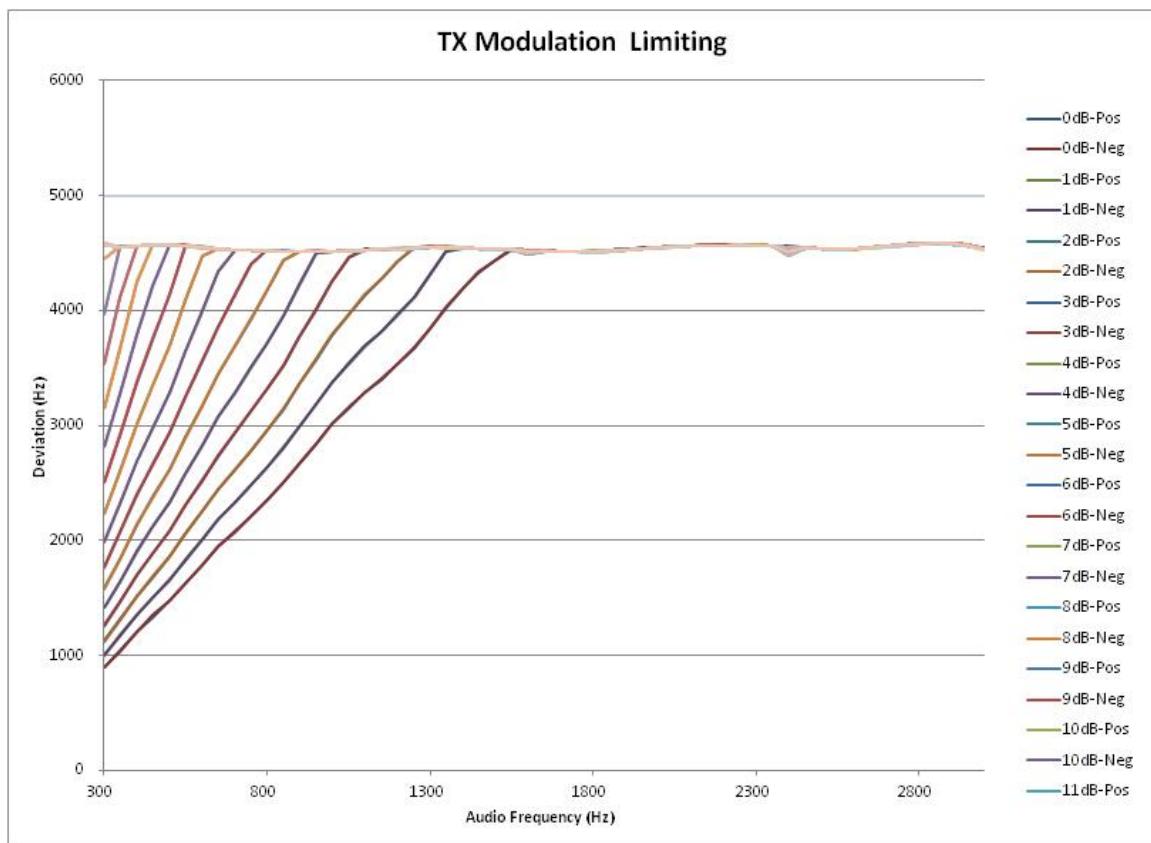
## Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.

## E1-11.7 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 155.0125 MHz

## E1-11.8 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 173.9875 MHz

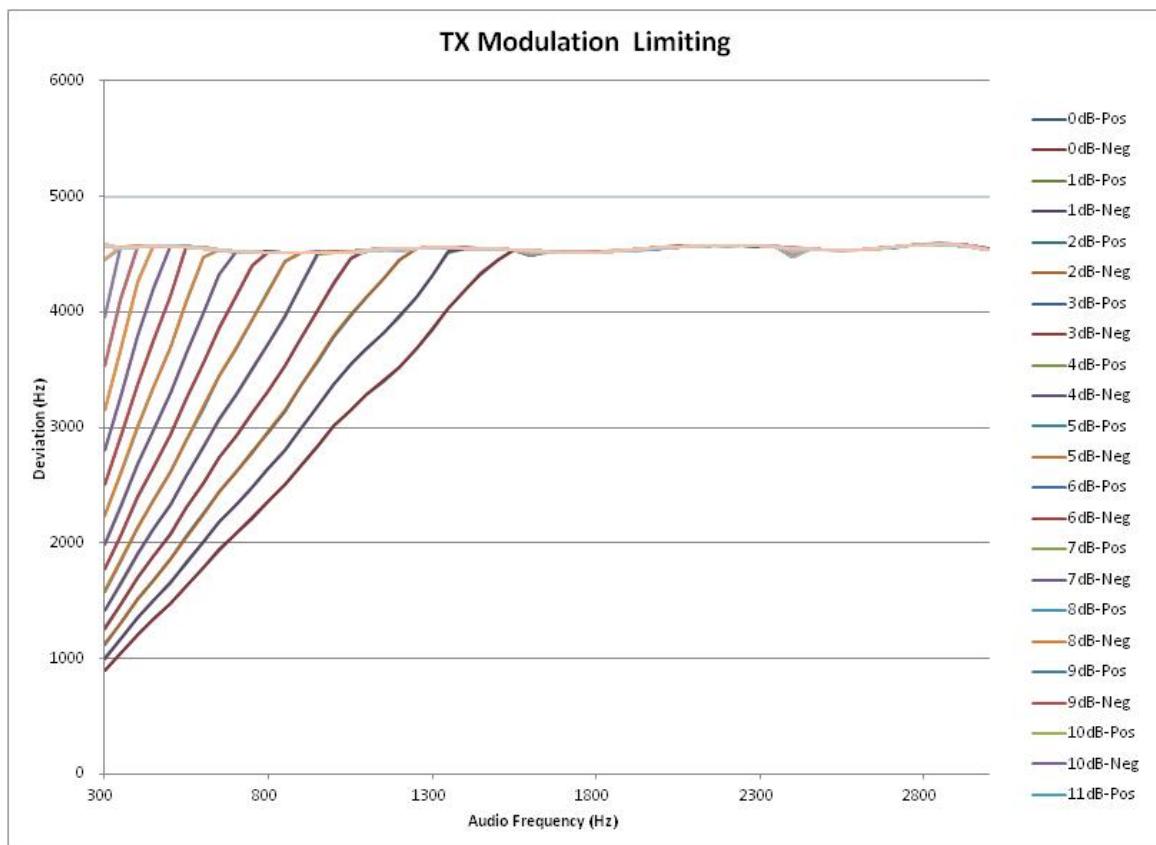
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.1 Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 136.0125 MHz



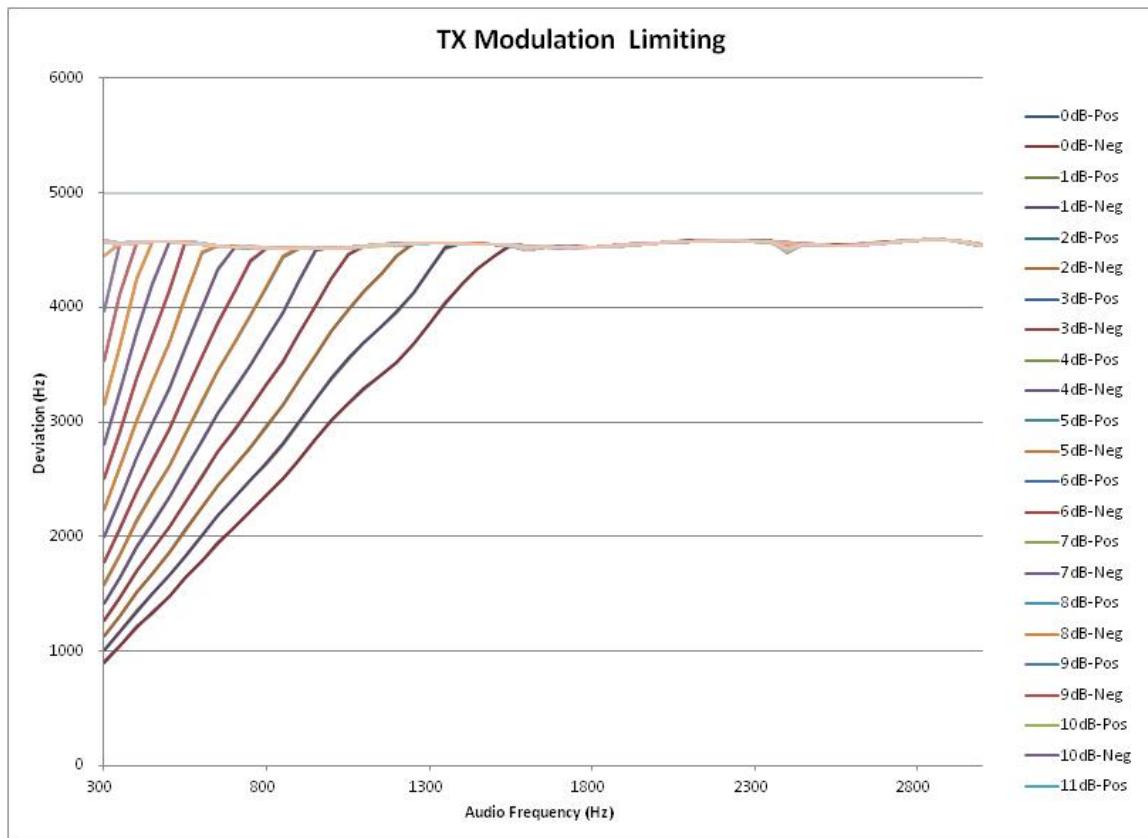
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.2 Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 138.0125 MHz



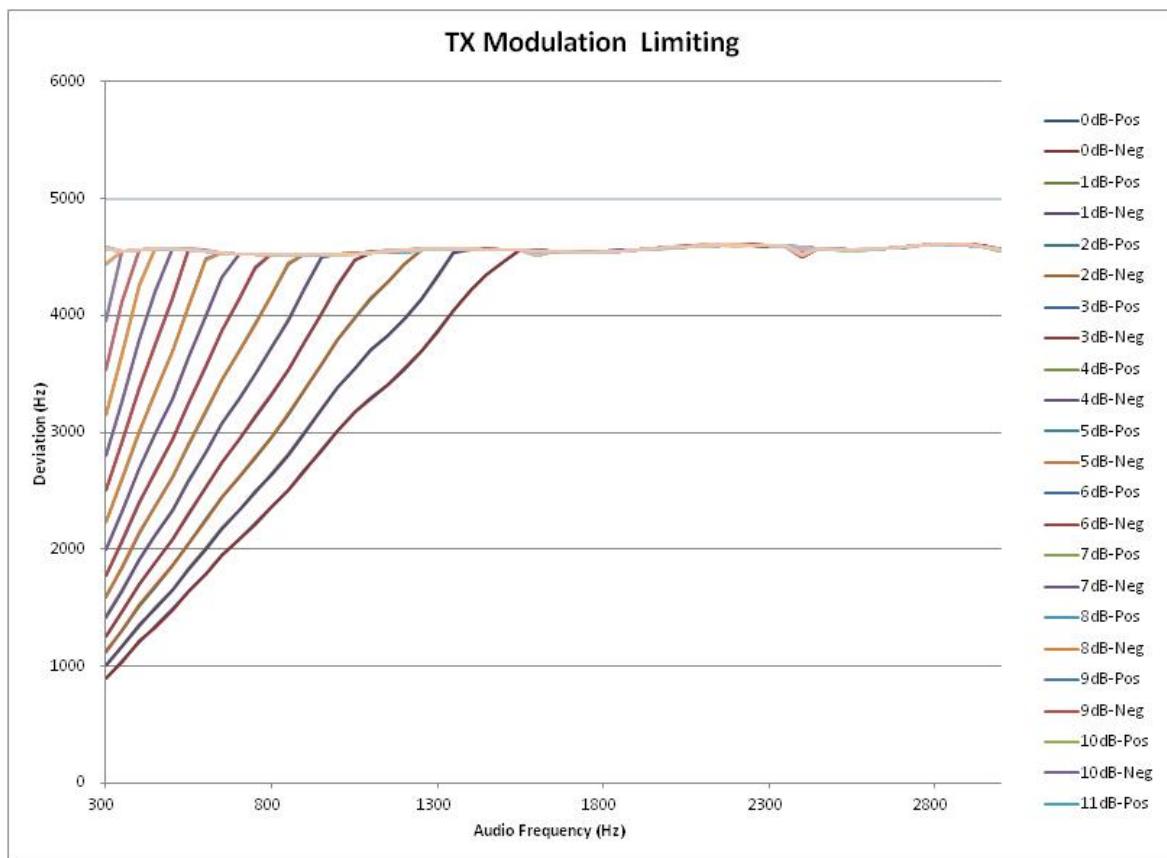
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.3 Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 155.0125 MHz



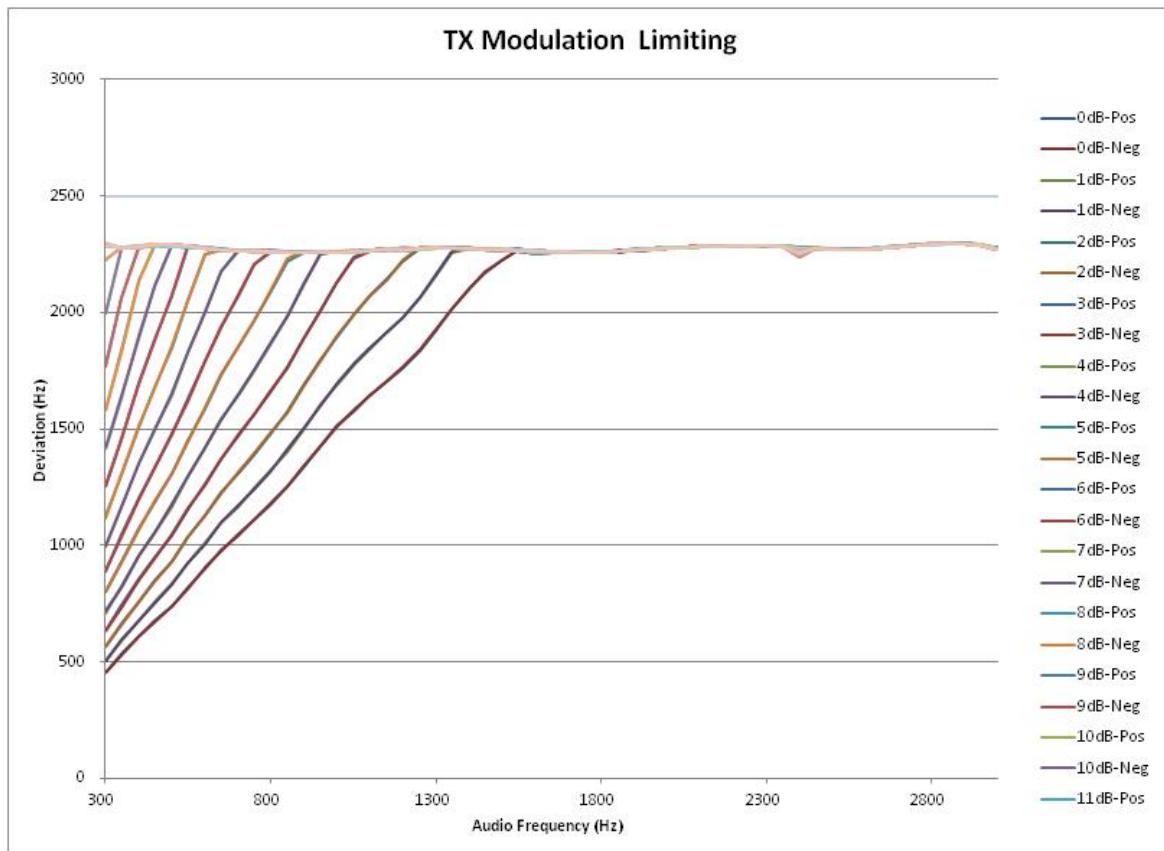
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.4 Audio Modulation Limiting – Modulation Characteristics, 25 kHz Channels – 173.9875 MHz



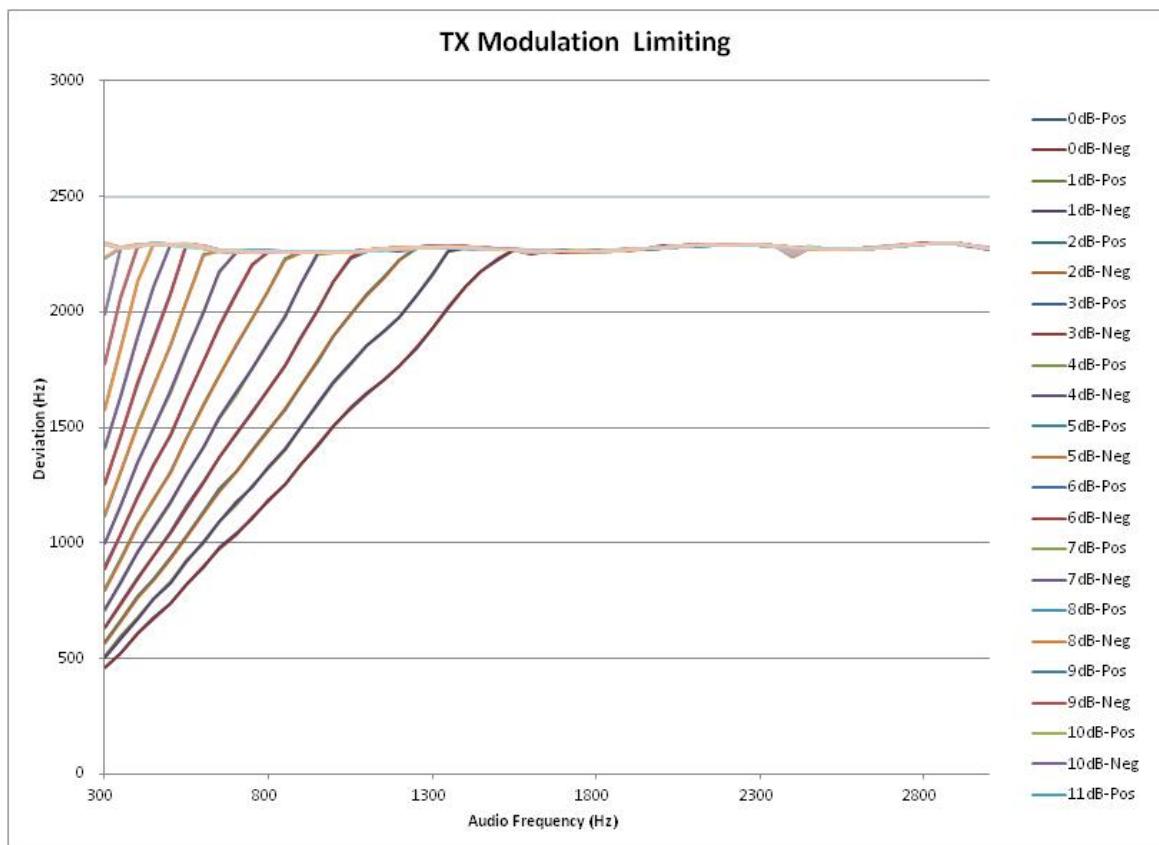
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.5 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 136.0125 MHz



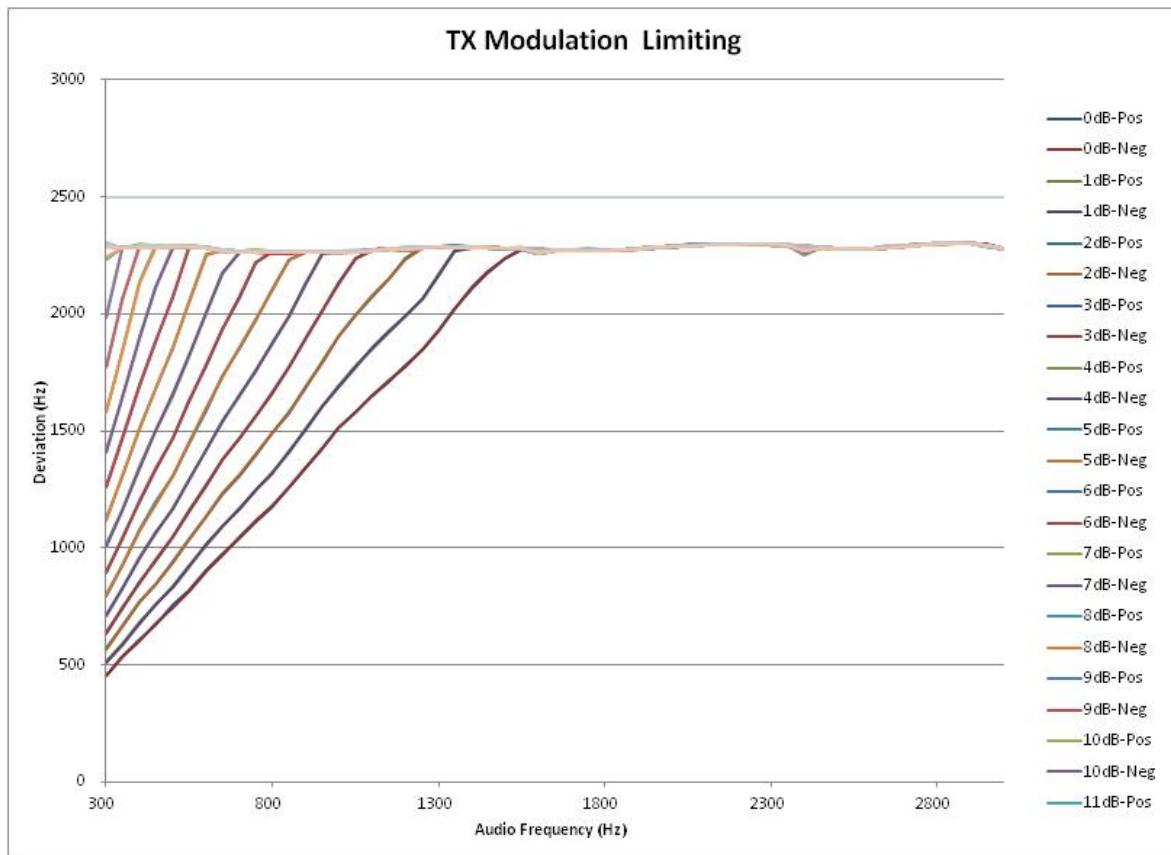
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.6 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 138.0125 MHz



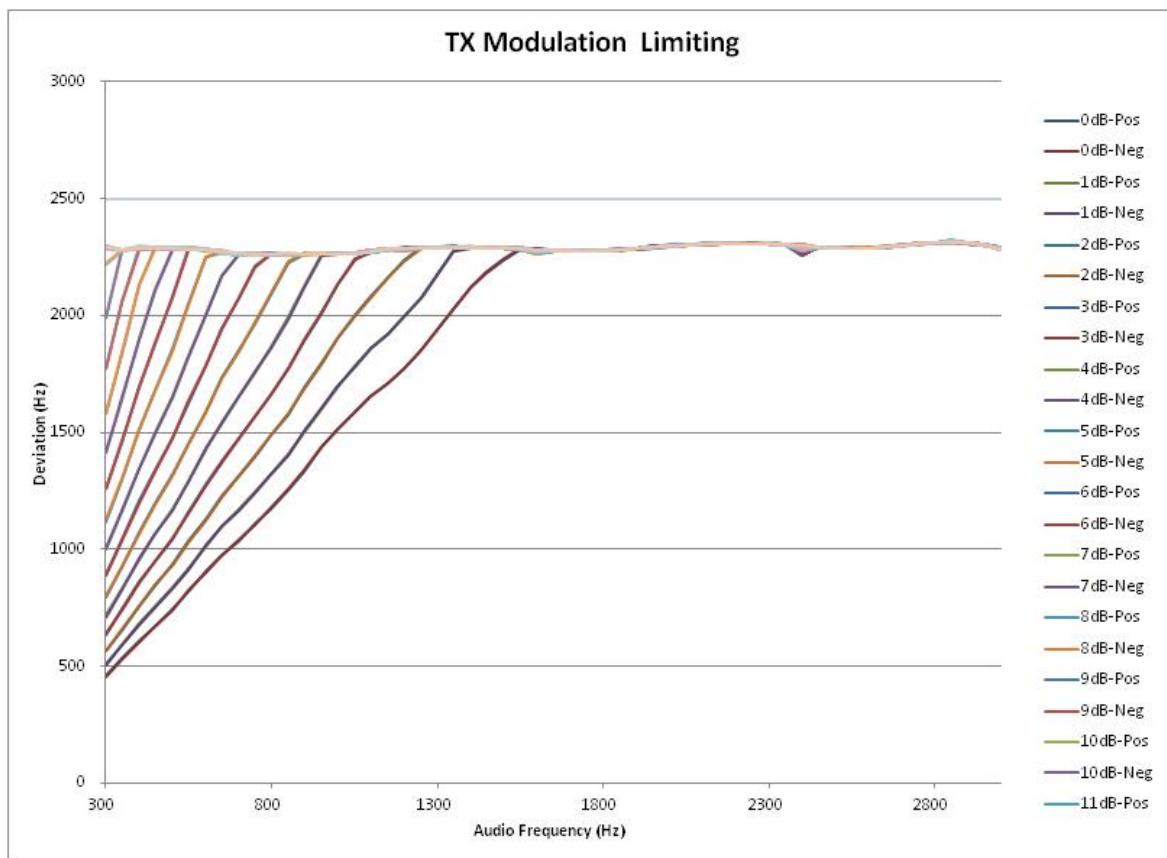
**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.7 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 155.0125 MHz



**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

E1-11.8 Audio Modulation Limiting – Modulation Characteristics, 12.5 kHz Channels – 173.9875 MHz



APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

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**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
CFR 90 and IC RSS-119.**

**E1-12 Test Setup Details**

Test Location:

(for all tests except radiated emissions)

Motorola Solutions, Inc., Schaumburg Lab

2000 Progress Parkway, Schaumburg, IL 60196

FCC Registration Number 786245

IC CAB Identifier US0220

Test Engineer Matt Nawrocki

(for radiated emissions)

Elite Electronic Engineering Inc.

1516 Centre Circle Dr., Downers Grove, IL 60515

FCC Registration Number 269750

IC Registration Number 2987A

IC CAB Identifier US0107

Test Engineer Tylar Jozefczyk

APPLICANT: MOTOROLA SOLUTIONS

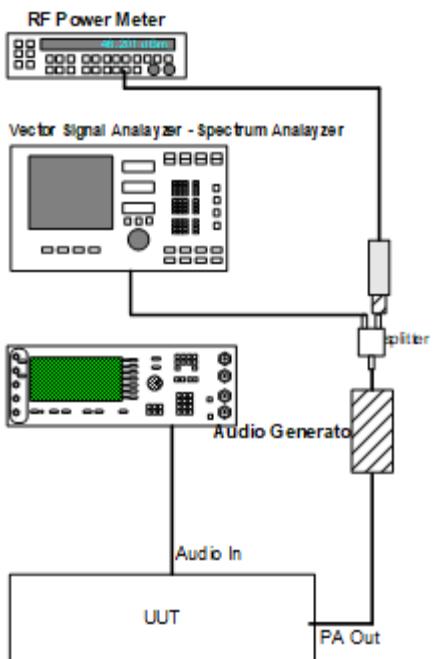
EQUIPMENT TYPE: ABZ99FT3094

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**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

Test Setup: Motorola Solutions

RF Output Power, Occupied Bandwidth, Frequency Stability, Frequency Transient Behavior, Modulation Characteristics



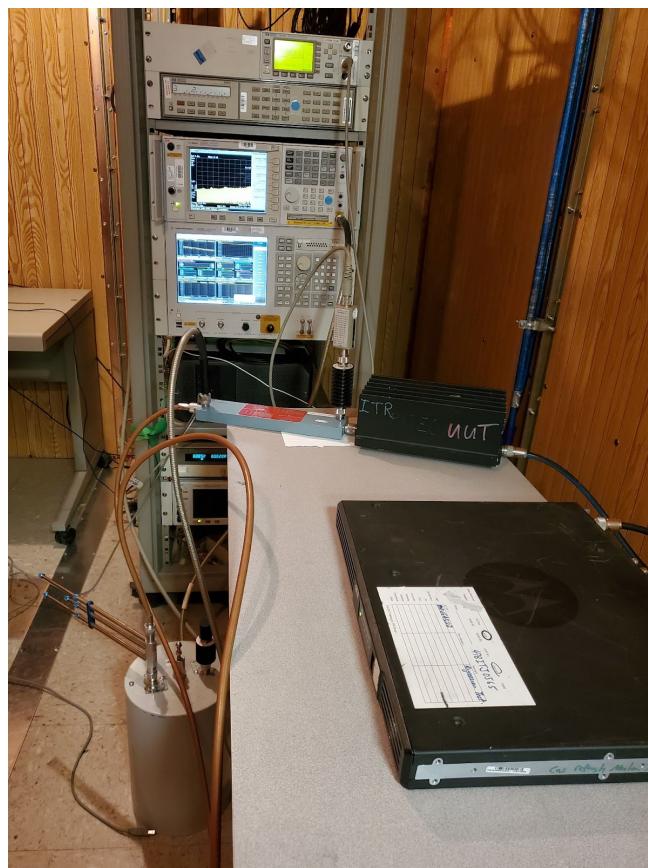
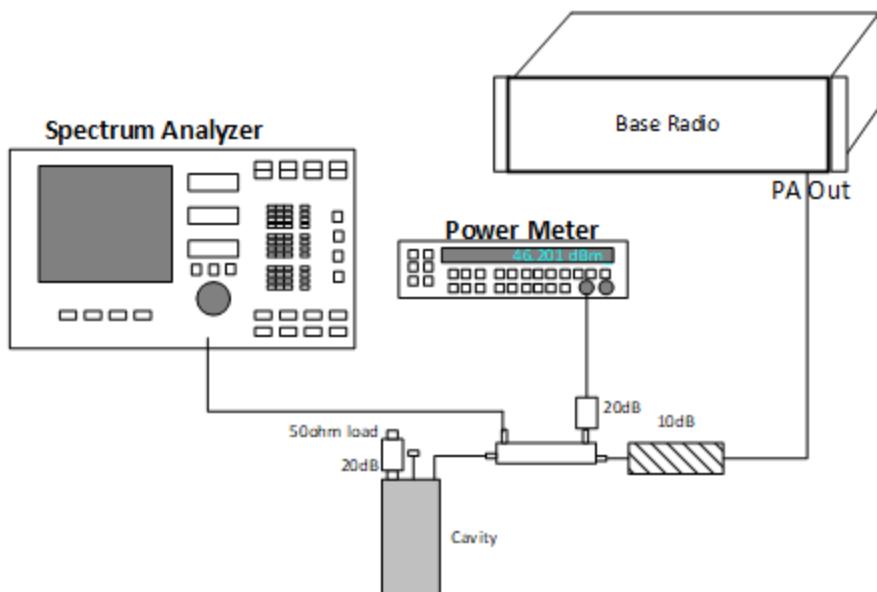
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Conducted Spurious Emissions Close-in



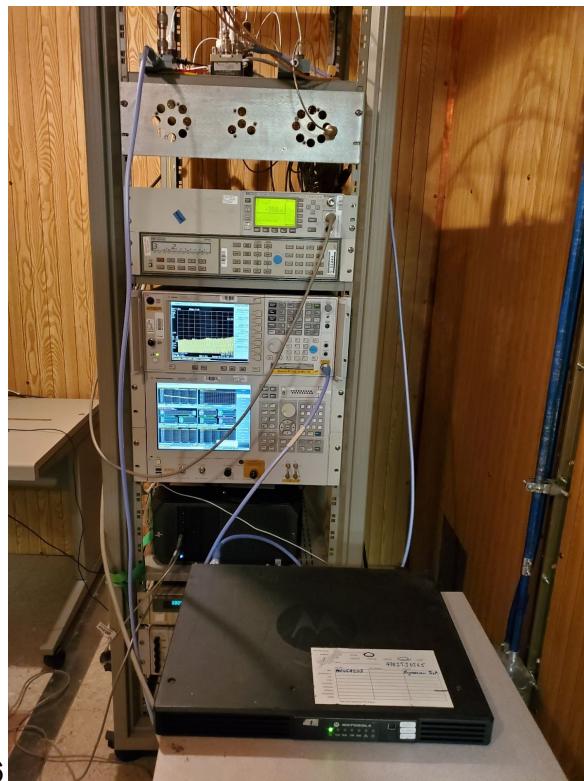
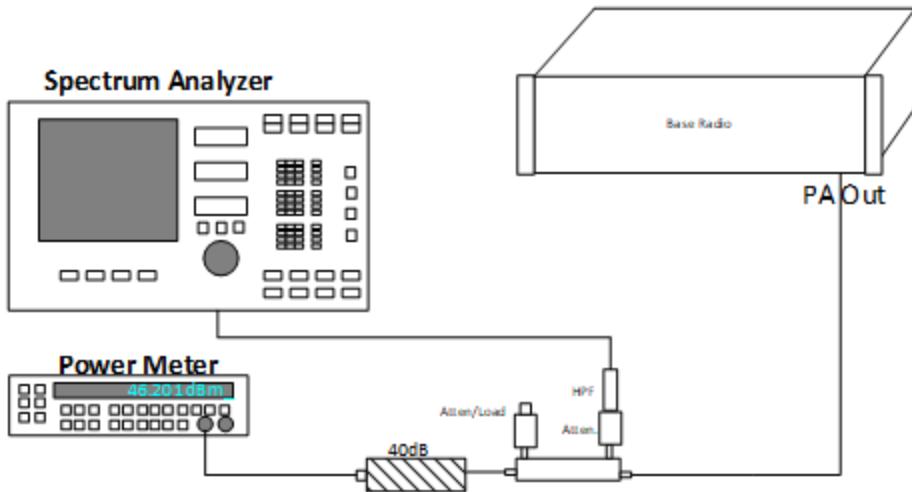
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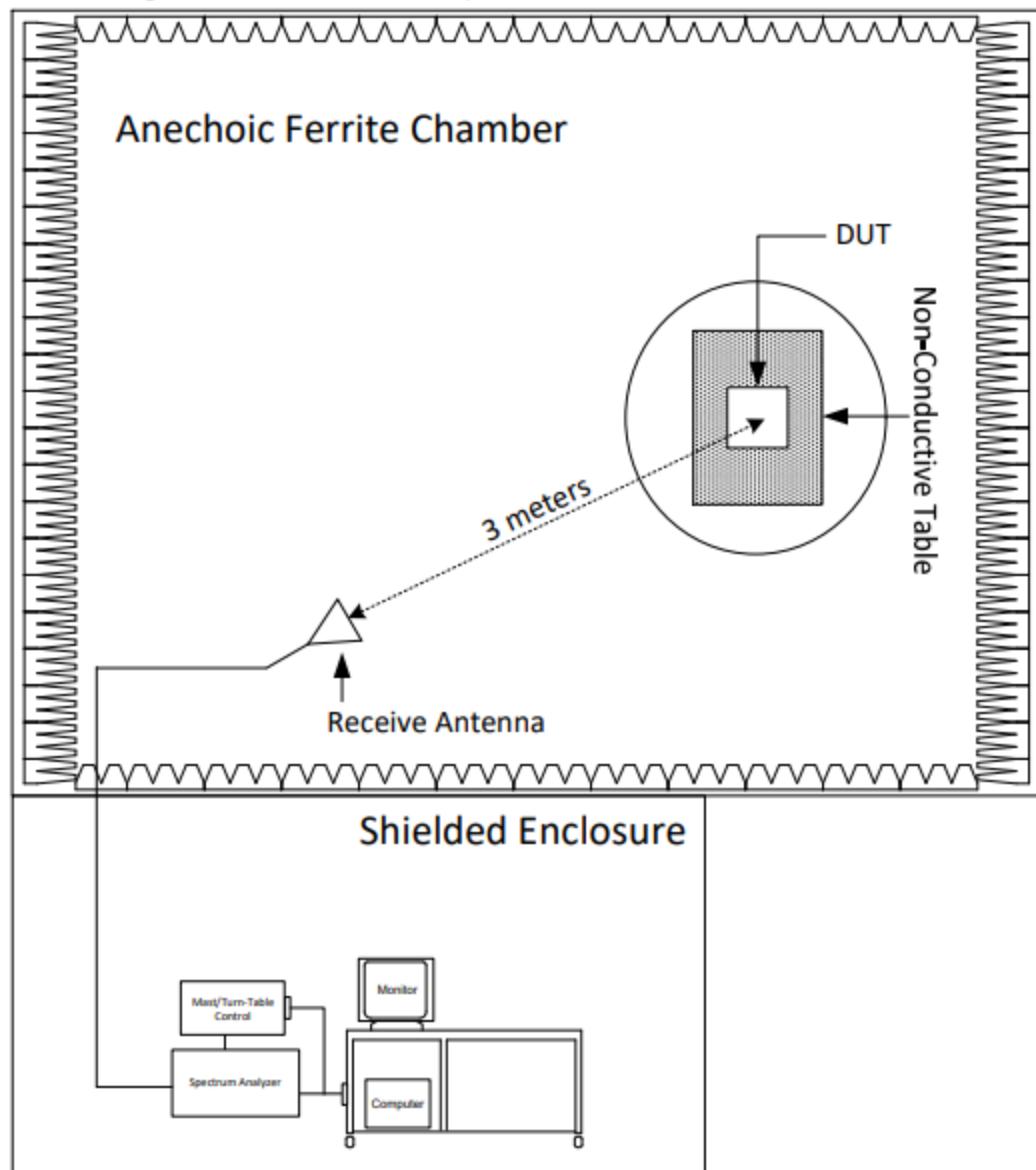
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Conducted Harmonic Emissions



**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

Test Setup: Elite



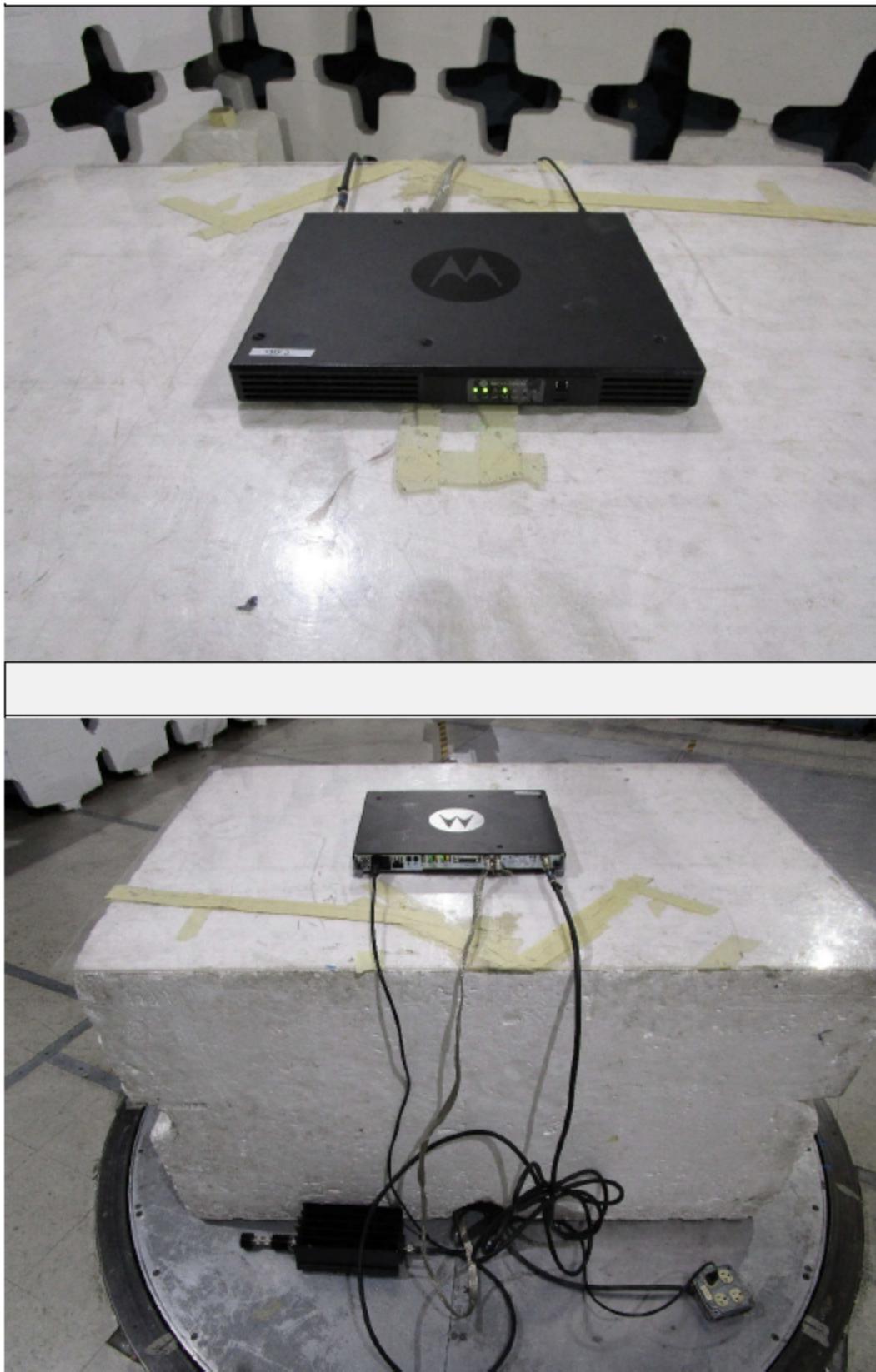
**Radiated Measurements Test Setup**

APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

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CFR 90 and IC RSS-119.**

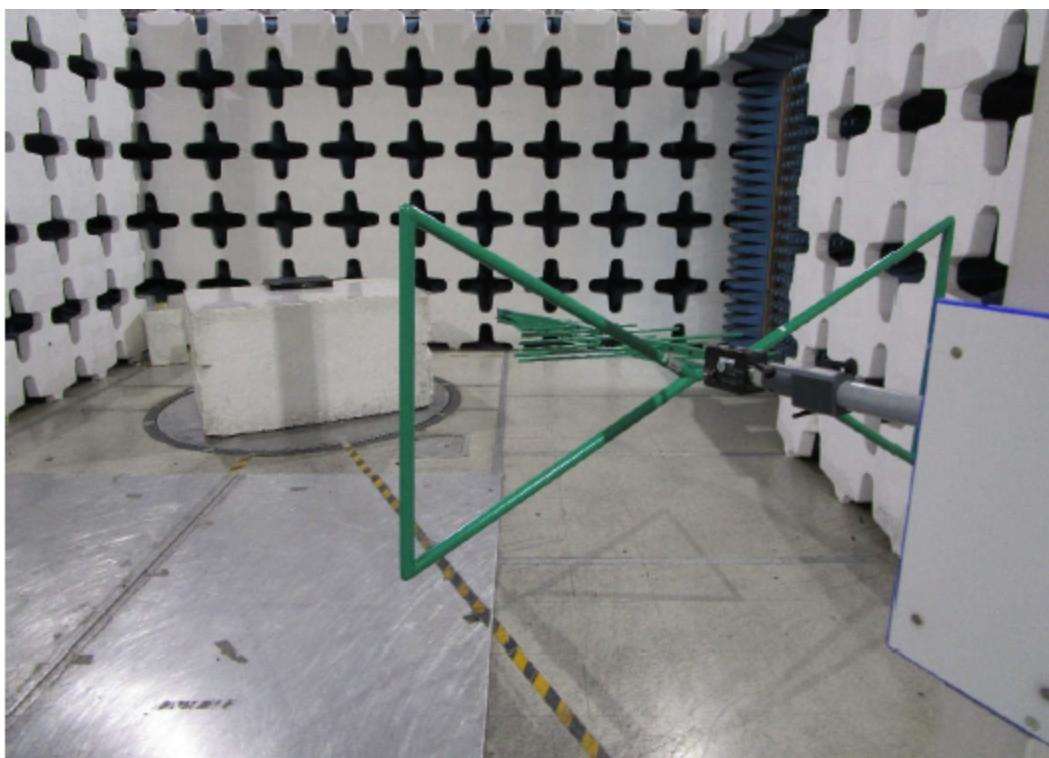


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**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
CFR 90 and IC RSS-119.**



Test Setup for Radiated Emissions: 30MHz to 1GHz, Horizontal Polarization



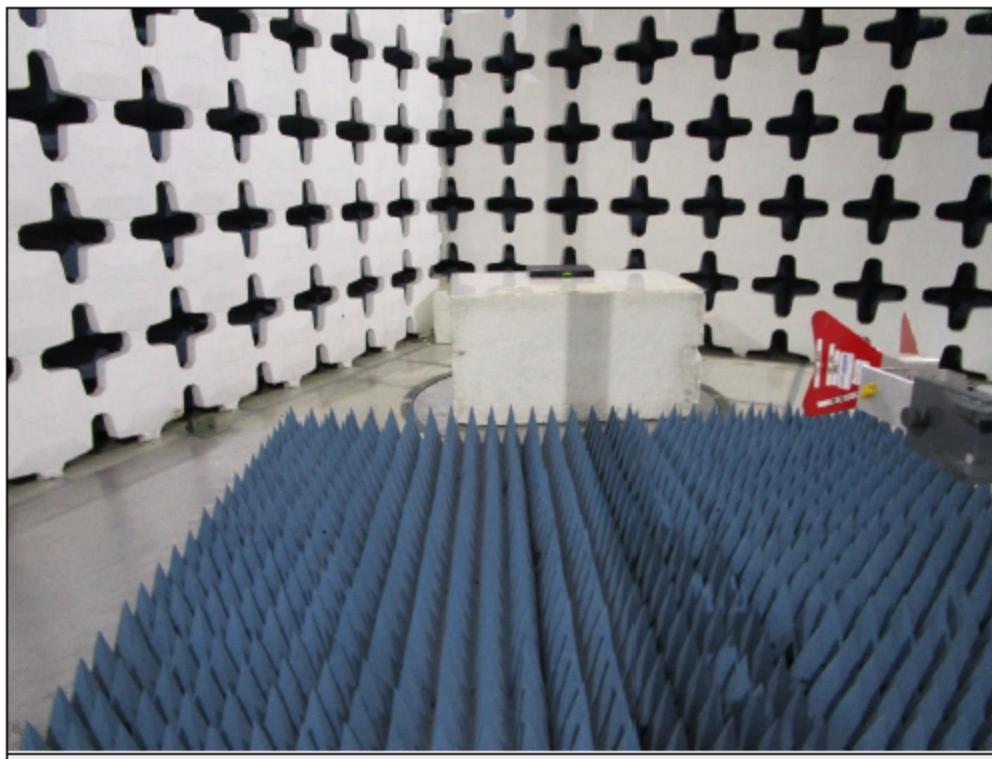
Test Setup for Radiated Emissions: 30MHz to 1GHz, Vertical Polarization

APPLICANT: MOTOROLA SOLUTIONS

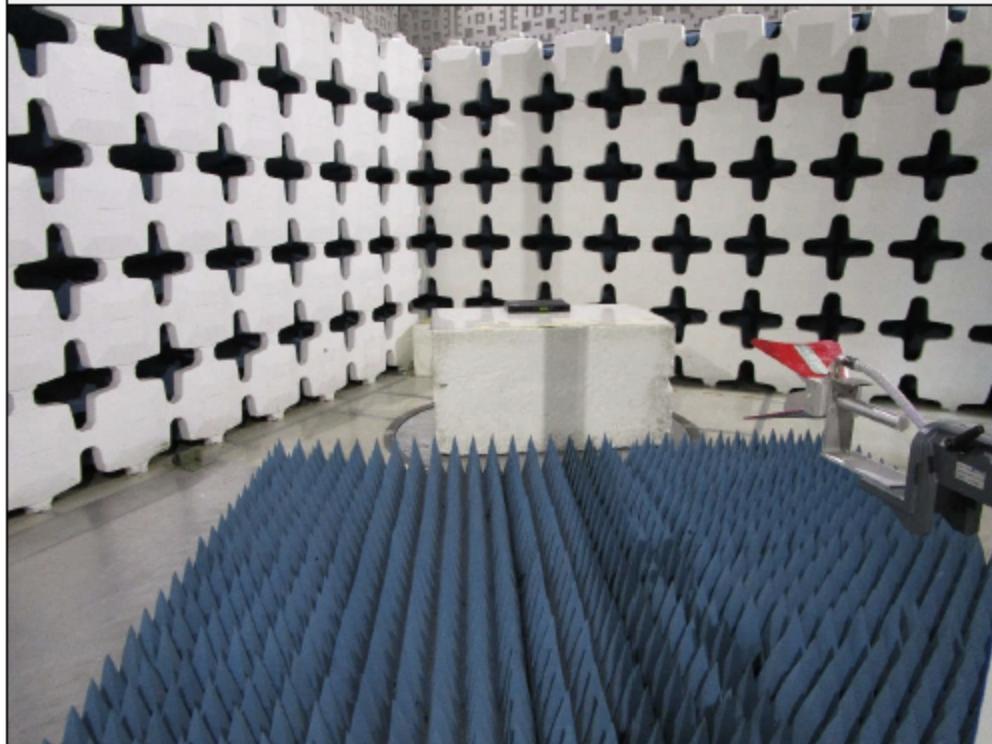
EQUIPMENT TYPE: ABZ99FT3094

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Test Setup for Radiated Emissions: 1GHz to 2GHz, Horizontal Polarization



Test Setup for Radiated Emissions: 1GHz to 2GHz, Vertical Polarization

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**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47 CFR 90 and IC RSS-119.**

Test Equipment List – Motorola Solutions

Manufacturer	Model	Serial Number	Description	Last Cal	Interval
Keysight/Agilent/HP	N9030A	MY53310751	PXA Signal Analyzer, 3 Hz to 50 GHz	09-21-2021	9/21/2022
Keysight/Agilent/HP	U8903A	my50500002	Audio Analyzer, 10 Hz to 100 kHz	08-23-2021	8/23/2022
Keysight/Agilent/HP	8482a	gg00004032	Power Sensor	09-20-2021	9/20/2022
Keysight/Agilent/HP	E5071C	MY46316134	ENA Series Network analyzer	09-23-2021	9/23/2022
Thermotron	WS-108-C HM-15-15-5-S	9107	Temperature Chamber		
Keysight/Agilent/HP	E4440A	my46185813	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	08-12-2020	8/12/2022
Keysight/Agilent/HP	8753es	us39175306	S-parameter Network Analyzer	09-28-2021	9/28/2022

Test Equipment List – Elite

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW3	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10-12	PL2924	1GHZ-20GHZ	3/9/2022	3/9/2023
CDZ4	LAB WORKSTATION	ELITE	LWS-10		WINDOWS 10	CNR	
GRE1	SIGNAL GENERATOR	AGILENT	E4438C	MY42081749	250KHZ-6GHZ	3/7/2022	3/7/2023
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	7/28/2020	7/28/2022
NSDS1	UNIVERSAL SPHERICAL DIPOLE SOURCE	AET	USDS-H	AET-1116		NOTE 1	
NTA4	BILOG ANTENNA	TESEQ	6112D	46660	20-2000GHZ	10/5/2020	10/5/2022
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	4/28/2020	4/28/2022
NWQ2	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66659	1GHZ-18GHZ	4/7/2020	4/7/2022
RBG2	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101591	2HZ-44GHZ	3/11/2021	4/11/2022
SHC2	Power Supplies	HENGFU	HF60W-SL-24	A11372702	24V	NOTE 1	
VBV2	CISPR EN FCC ICES RE.EXE	ELITE	CISPR EN FCC ICES RE.EXE	--	--	N/A	
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	--	I/O	

N/A: Not Applicable

I/O: Initial Only

CNR: Calibration Not Required

NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ99FT3094

109AB-99FT3094

**Report on Test Measurements for FCC ID ABZ99FT3094, HVIN SLR 5700-VHF per FCC 47  
CFR 90 and IC RSS-119.**

**E1-13 Statement of Certification**

The technical data supplied with this application, having been taken under my supervision is hereby duly certified. The following is a statement of my qualifications:

College Degree: BSEE, University of Illinois, Urbana-Champaign, Illinois, USA

36 years of Design and Development experience in the field of two-way radio communication.

NAME: Robert Sarocka



SIGNATURE: \_\_\_\_\_

DATE: May 12, 2022

POSITION: Technical Manager

I hereby certify that the above application was prepared under my direction and that to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct:

NAME: Jerry Flondro



SIGNATURE: \_\_\_\_\_

DATE: May 12, 2022

POSITION: Director

REPORT END