Report on Test Measurements

Measurements Report
The measurement report shows compliance information against the pertinent technical standards. Each parameter is measured generally at the low end, middle, and at the high end of the applicable frequency band. Each section of the report contains either verbiage or graphs which show compliance to applicable standards as required, explains testing method used, and indicates what the applicable specification is.

Information and performance relative to 25 kHz 'wideband' operation is included in the report. Although wideband operation in the 150-174 MHz and 421-512 MHz bands is no longer allowable for rule part 90 in the US, it is available for other FCC rule parts and in other countries, including Industry Canada.

The time division multiple access (TDMA) mode of operation provides two voice paths in a 12.5 kHz channel bandwidth and a data rate of 9600 bits per second or 12,000 bits per second in a channel bandwidth of 12.5 kHz. This is equivalent to one voice path per 6.25 kHz of channel bandwidth and 4800 bits per second or greater in a 6.25 kHz channel bandwidth. The GTR 8000 conforms to the spectrum efficiency requirements of FCC rule § 90.203 (j) (5).

A list of test equipment for all sections, and certification signoff page are included at the end of the measurement report.

SUBMITTED MEASURED DATA -- INDEX

Report on Test Measurements

Measurements Report

SUBMITTED MEASURED DATA – INDEX (Continued)

EXHIBIT DESCRIPTION

Report on Test Measurements

RF Power Output Data

The RF power output was measured with the indicated voltage applied to and current into the final RF amplifying device. The DC current indicated is the total for the final RF amplifier stage, consisting of six parallel power transistors.

Linear Modulation Mode:

	138.0125 MHz	155.0125 MHz	173.975 MHz	
Measured RF output	60	60	60	Watts, Average
DC Voltage, final RF amplifier stage/stages	19.8	19.8	19.8	Volts
DC Current, final RF amplifier stage/stages	9.0	10.0	8.5	Amperes
Input power for final RF amplifying device(s)	178	198	168	Watts
Primary Radio Input Supply Voltage	120	120	120	Volts AC
Minimum Measured RF output	2	2	2	Watts, Average
Normal DC Voltage	19.0	19.0	19.0	Volts
Normal DC Current	3.1	3.2	3.1	Amperes
Input power for final RF amplifying device(s)	59	61	59	Watts
Primary Radio Input Supply Voltage	120	120	120	Volts AC

Frequency Modulation and Compatible 4-Level Frequency Modulation Mode:

	138.0125 MHz	155.0125 MHz	174.975 MHz	
Measured RF output	100	100	100	Watts
DC Voltage, final RF amplifier stage/stages	20.3	20.3	20.3	Volts
DC Current, final RF amplifier stage/stages	12.5	14.0	11.5	Amperes
Input power for final RF amplifying device(s)	254	284	233	Watts
Primary Radio Input Supply Voltage	120	120	120	Volts AC
Minimum Measured RF output	2	2	2	Watts, Average
Normal DC Voltage	19.0	19.0	19.0	Volts
Normal DC Current	3.1	3.2	3.1	Amperes
Input power for final RF amplifying device(s)	59	61	59	Watts
Primary Radio Input Supply Voltage	120	120	120	Volts AC

Report on Test Measurements

Occupied Bandwidth – Linear Simulcast Modulation (LSM), 12.5 kHz Channel Spacing
Linear Simulcast Modulation can be used in a system configuration based upon channel usage as described in Exhibit B. The 'D1E' emission designator provides usage for telephony, the 'D1D' provides usage for data / telecommand, and the 'D1W' provides for usage as a combination. All are spectrally identical. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type:	Linear Simulcast Modulation, LSM
Emission Designator:	8K70D1E, 8K70D1D, 8K70D1W
Channelization:	12.5 kHz
Power Setting:	60 Watts, Average

Specification Requirement § 90.210(d) Emission Limits – "D-Mask":
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 log10(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	Meas Occ BW
E1-2.1	Occupied Bandwidth - Linear Simulcast Modulation (LSM), Low End of Band	8.89 kHz
E1-2.2	Occupied Bandwidth - Linear Simulcast Modulation (LSM), Lower End of Band	8.89 kHz
E1-2.3	Occupied Bandwidth - Linear Simulcast Modulation (LSM), Middle of Band	8.96 kHz
E1-2.4	Occupied Bandwidth - Linear Simulcast Modulation (LSM), High End of Band	8.96 kHz

Report on Test Measurements

Occupied Bandwidth – Compatible 4-Level Frequency Modulation (C4FM), 12.5 kHz Channel Spacing
C4FM can be used in a system configuration based upon channel usage as described in Exhibit B. The 'F1E' emission designator provides usage for telephony, the 'F1D' provides usage for data / telecommand, and the 'F1W' provides for usage as a combination. All are spectrally identical. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type:	Compatible 4-Level Frequency Modulation, C4FM
Emission Designator:	8K10F1E, 8K10F1D, 8K10F1W
Channelization:	12.5 kHz
Power Setting:	100 Watts

Specification Requirement § 90.210(d) Emission Limits – "D-Mask":
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	Meas Occ BW
E1-2.5	Occupied Bandwidth - Compatible 4-Level Frequency Modulation (C4FM), Low End of Band	7.87 kHz
E1-2.6	Occupied Bandwidth - Compatible 4-Level Frequency Modulation (C4FM), Lower End of Band	7.87 kHz
E1-2.7	Occupied Bandwidth - Compatible 4-Level Frequency Modulation (C4FM), Middle of Band	7.84 kHz
E1-2.8	Occupied Bandwidth - Compatible 4-Level Frequency Modulation (C4FM), High End of Band	7.86 kHz

Report on Test Measurements

Occupied Bandwidth –H-DQPSK, P25 Two Slot TDMA Digital Modulation, 12.5 kHz Channel Spacing
H-DQPSK modulation can be used in a system configuration based upon channel usage as described in Exhibit B. The 'D7E' emission designator provides usage for telephony, the 'D7D' provides usage for data / telecommand, and the 'D7W' provides for usage as a combination. All are spectrally identical. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type:	H-DQPSK, P25 Two Slot TDMA Digital Modulation
Emission Designator:	9K80D7E, 9K80D7D, 9K80D7W
Channelization:	12.5 kHz
Power Setting:	60 Watts, Average

Specification Requirement § 90.210(d) Emission Limits – "D-Mask":
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:

(2) 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	Meas Occ BW
E1-2.9	Occupied Bandwidth - H-DQPSK P25 Two Slot TDMA Digital Modulation, Low End of Band	8.5 kHz
E1-2.10	Occupied Bandwidth - H-DQPSK P25 Two Slot TDMA Digital Modulation, Lower End of Band	8.59 kHz
E1-2.11	Occupied Bandwidth - H-DQPSK P25 Two Slot TDMA Digital Modulation, Middle of Band	8.45 kHz
E1-2.12	Occupied Bandwidth - H-DQPSK P25 Two Slot TDMA Digital Modulation, High End of Band	8.45 kHz

Report on Test Measurements

Occupied Bandwidth –3600 bps High Speed Trunking Control Data, 25 kHz Channel Spacing
There is one exhibit shown for 3600 bps high speed control data in 25 kHz channels. It can be used in a trunked system configuration based upon channel usage as described in Exhibit B. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type: Frequency Shift Keying Digital Modulation
Emission Designator: 16K0F1D
Channelization: 25 kHz
Power Setting: 100 Watts

Specification Requirement § 90.210(d) Emission Limits – "C-Mask":
Emission *Mask C.* For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P) as follows:

(1) On any frequency from the center of the authorized bandwidth (f0) to 5.625 kHz removed from f0: 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 kHz but not more than 10 kHz: *At least 83 * $log_{10}(f_d / 5)$ dB*

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz but not more than 250 percent of the authorized bandwidth:
*At least 29 * $log_{10}(f_d^2 / 11)$ dB or 50 dB, whichever is the lesser attenuation*

(4) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: *At least 43 plus 10 $log_{10}(P)$ dB*

Necessary Bandwidth Calculation (Analog Emission):
The necessary bandwidth of the modulation per the formulas defined in 47 CFR 2.202 (b) is as follows:

Max Mod Freq, M	*Max Deviation, D*	*2*(M+D)*	*Nec BW*
1.8 kHz	6.2 kHz	16 kHz	16K0

Measurement Procedure and Instrument Settings:
Emission Measurement Analyzer Settings:

Horizontal:	12.5 kHz per Division	Resolution Bandwidth:	300 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 carrier power value from the previous step to generate the emission mask limit.
4) Plot the resulting analyzer trace and the emission mask limit, add text and labeling as appropriate.

EXHIBIT	DESCRIPTION	Meas Occ BW
E1-2.13	Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels, Low End of Band	7.80 kHz
E1-2.14	Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels, Lower End of Band	7.80 kHz
E1-2.15	Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels, Middle of Band	7.81 kHz
E1-2.16	Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels, High End of Band	7.81 kHz

Report on Test Measurements

Occupied Bandwidth –3600 bps High Speed Trunking Control Data, 12.5 kHz Channel Spacing
There is one exhibit shown for 3600 bps high speed control data in 12.5 kHz channels. It can be used in a trunked system configuration based upon channel usage as described in Exhibit B. The occupied bandwidth chart references the following setup and specification requirements.

Modulation Type: Frequency Shift Keying Digital Modulation
Emission Designator: 10K0F1D
Channelization: 12.5 kHz
Power Setting: 100 Watts

Specification Requirement § 90.210(d) Emission Limits – "D-Mask":
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 (f0) to 5.625 kHz removed from f0: 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 (Analog Emission):
The necessary bandwidth of the modulation signal per the formulas defined in 47 CFR 2.202 (b) is as follows:

Max Mod Freq, M	*Max Deviation, D*	*2*(M+D)*	*Nec BW*
1.8 kHz	3.2 kHz	10 kHz	10K0

Measurement Procedure and Instrument Settings:
Emission Measurement Analyzer Settings:

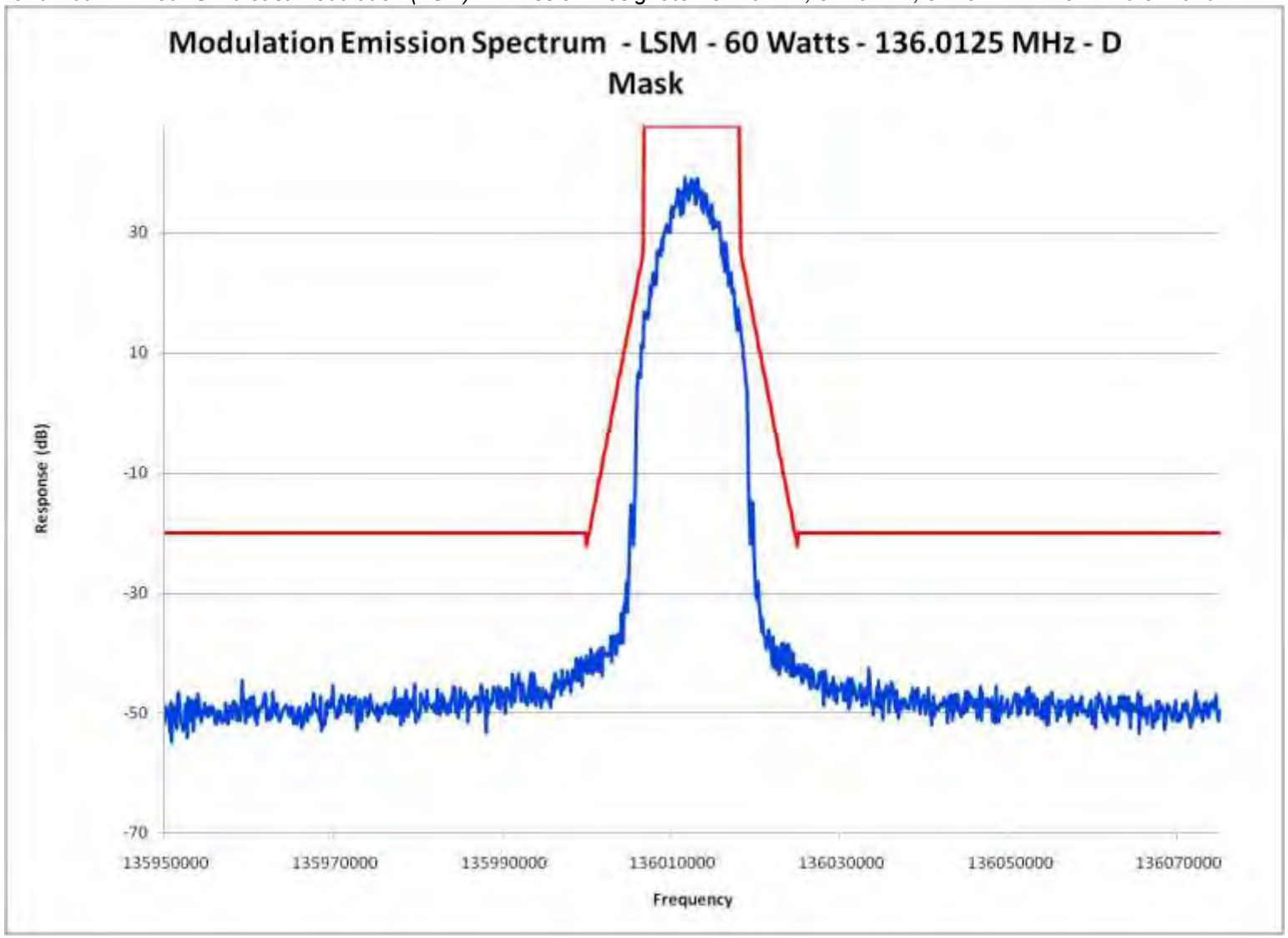
Horizontal:	12.5 kHz per Division	Resolution Bandwidth:	100 Hz
Vertical:	10 dB per Division	Video Bandwidth:	10 kHz
Sweep Time:	72 Seconds (<2000 Hz / Second)	Span:	125 kHz
Detector Mode:	Peak		

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 carrier power value from the previous step to generate the emission mask limit.
4) Plot the resulting analyzer trace and the emission mask limit, add text and labeling as appropriate.

EXHIBIT	DESCRIPTION	Meas Occ BW
E1-2.17	Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels, Low End of Band	5.42 kHz
E1-2.18	Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels, Lower End of Band	5.40 kHz
E1-2.19	Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels, Middle of Band	5.32 kHz
E1-2.20	Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels, High End of Band	5.34 kHz

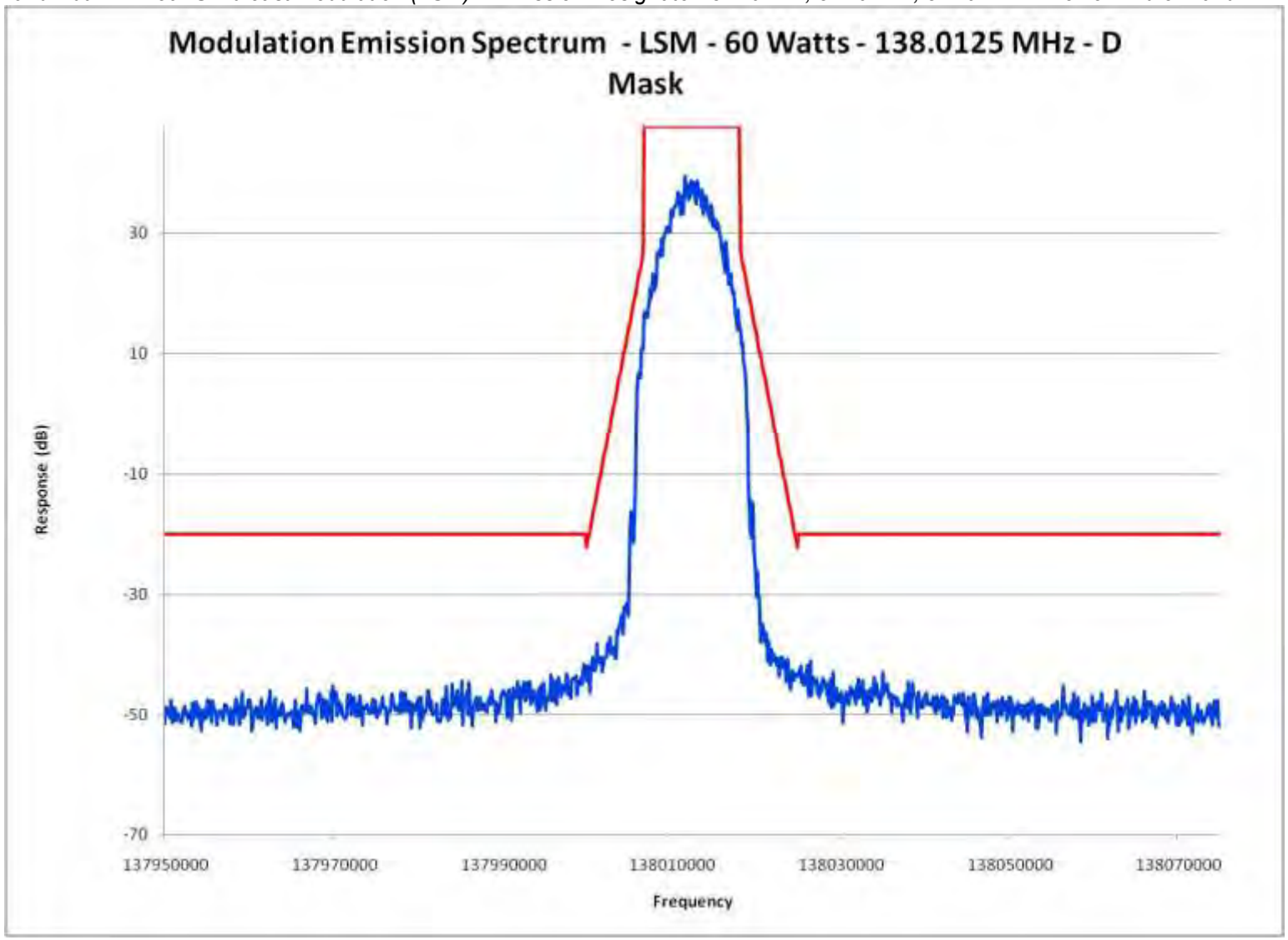
Report on Test Measurements

Occupied Bandwidth – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – Low End of Band



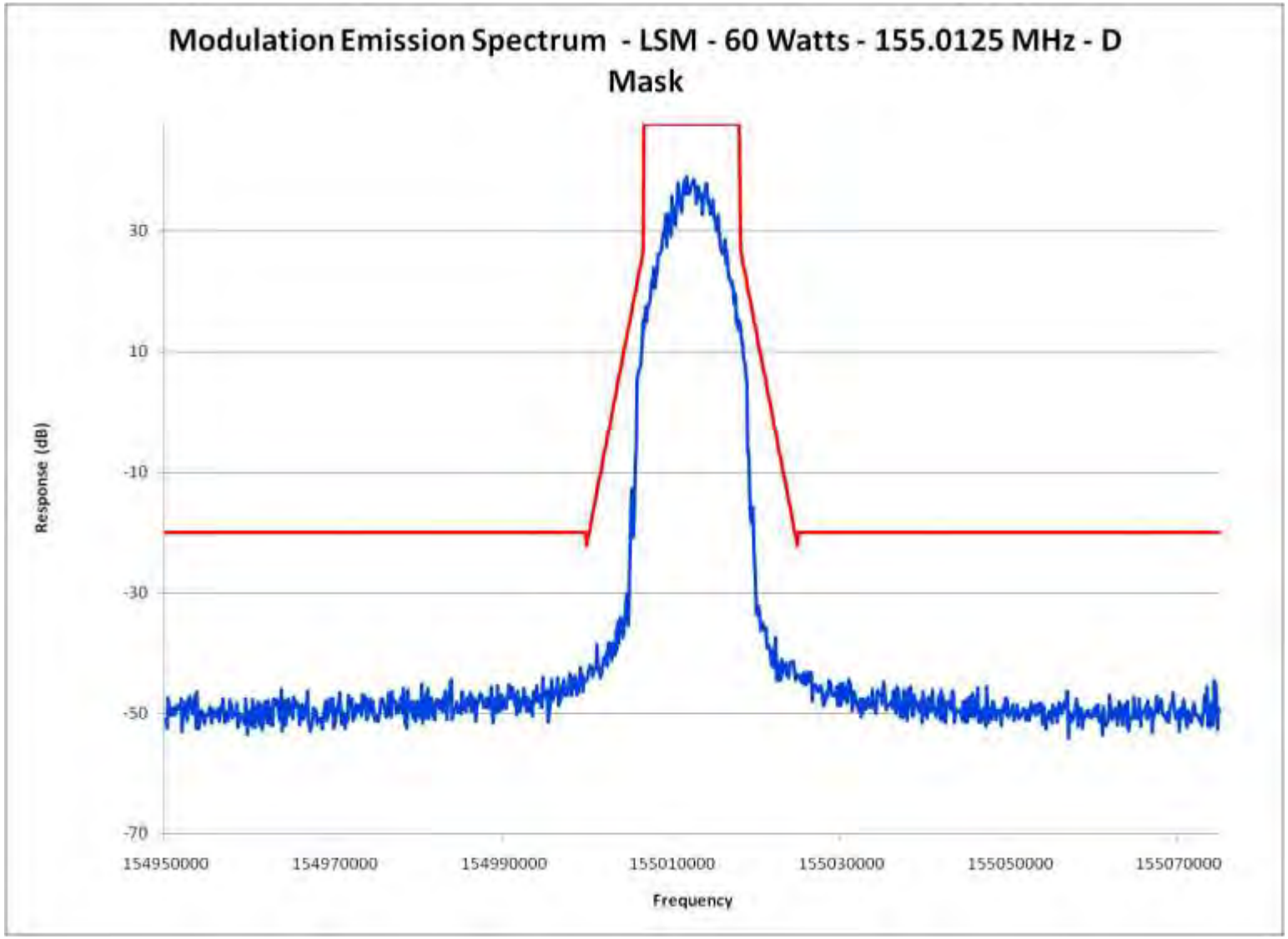
Report on Test Measurements

Occupied Bandwidth – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – Lower End of Band



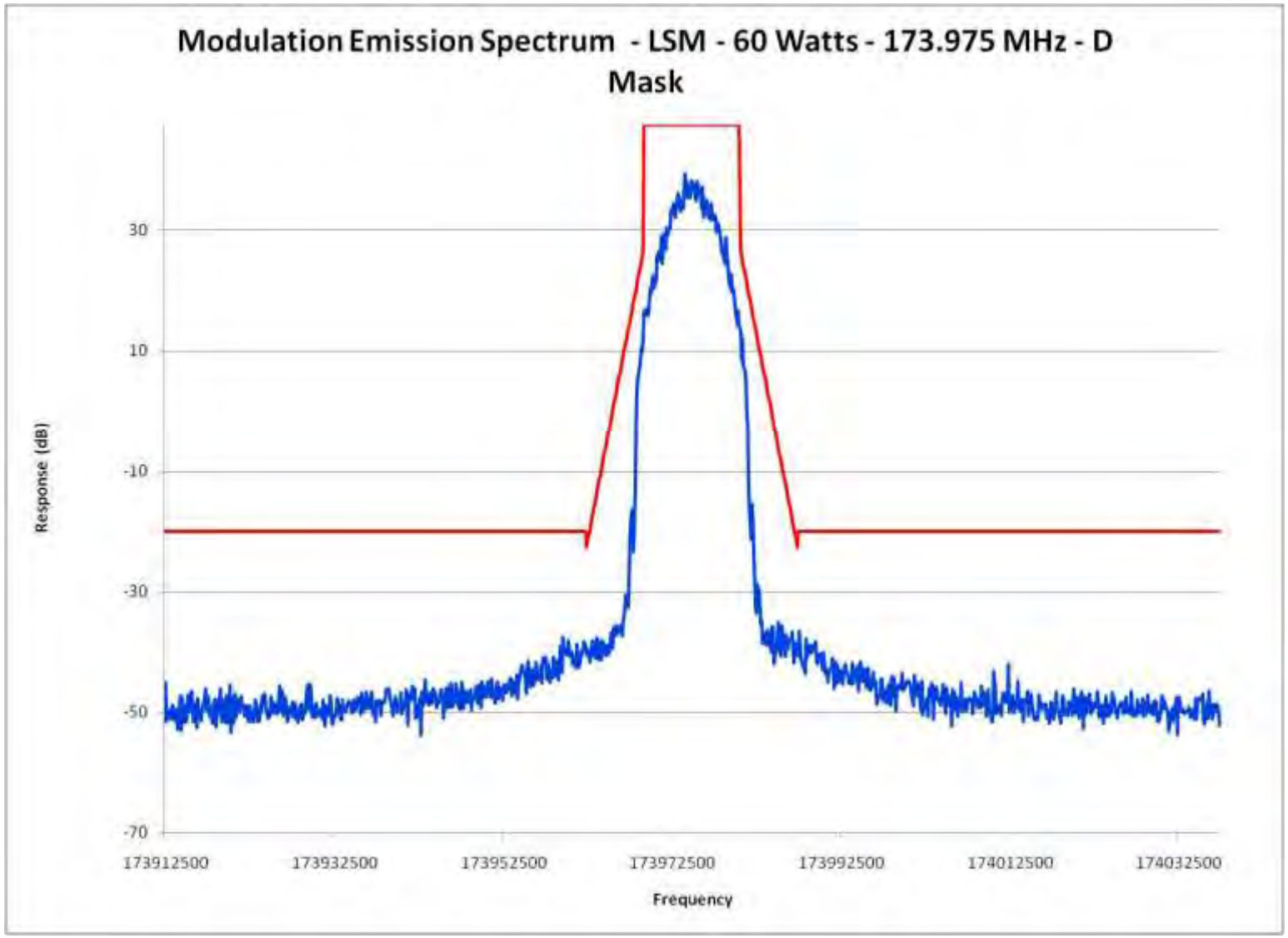
Report on Test Measurements

Occupied Bandwidth – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – Middle of Band



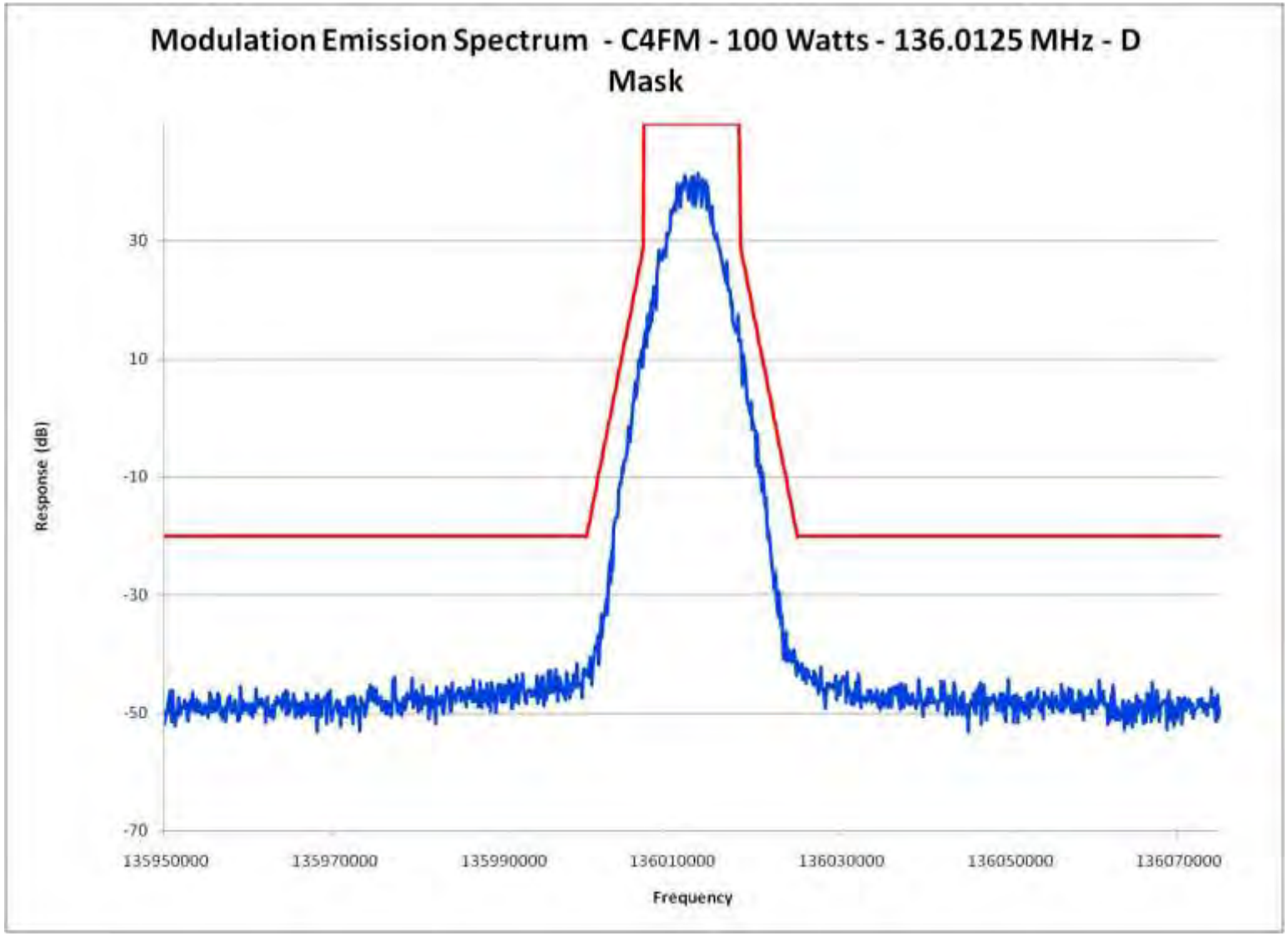
Report on Test Measurements

Occupied Bandwidth – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – High End of Band



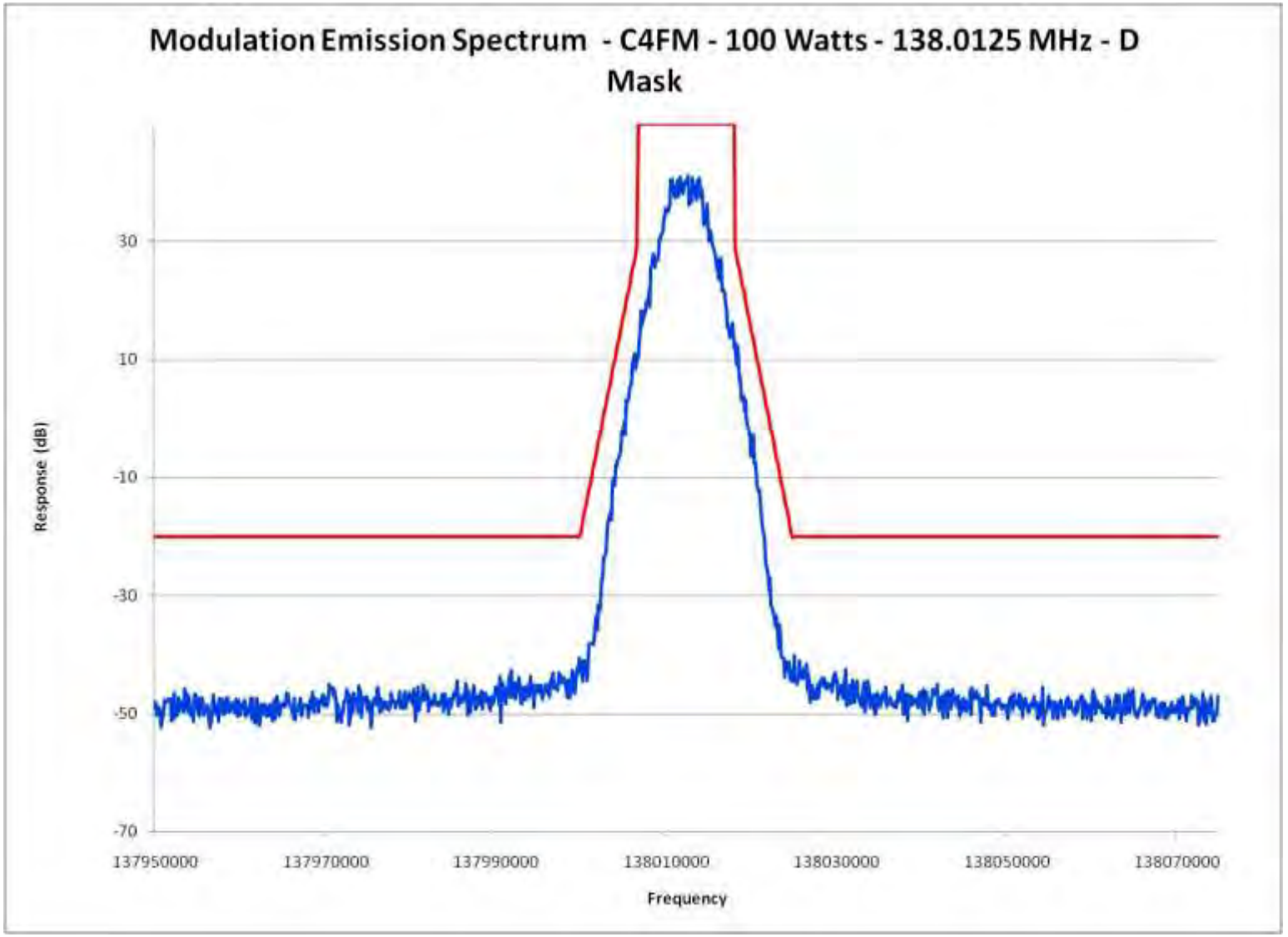
Report on Test Measurements

Occupied Bandwidth – Compatible 4-Level Frequency Modulation (C4FM) – Emission Designator: 8K10D1E, 8K10D1D, 8K10D1W, Low End of Band



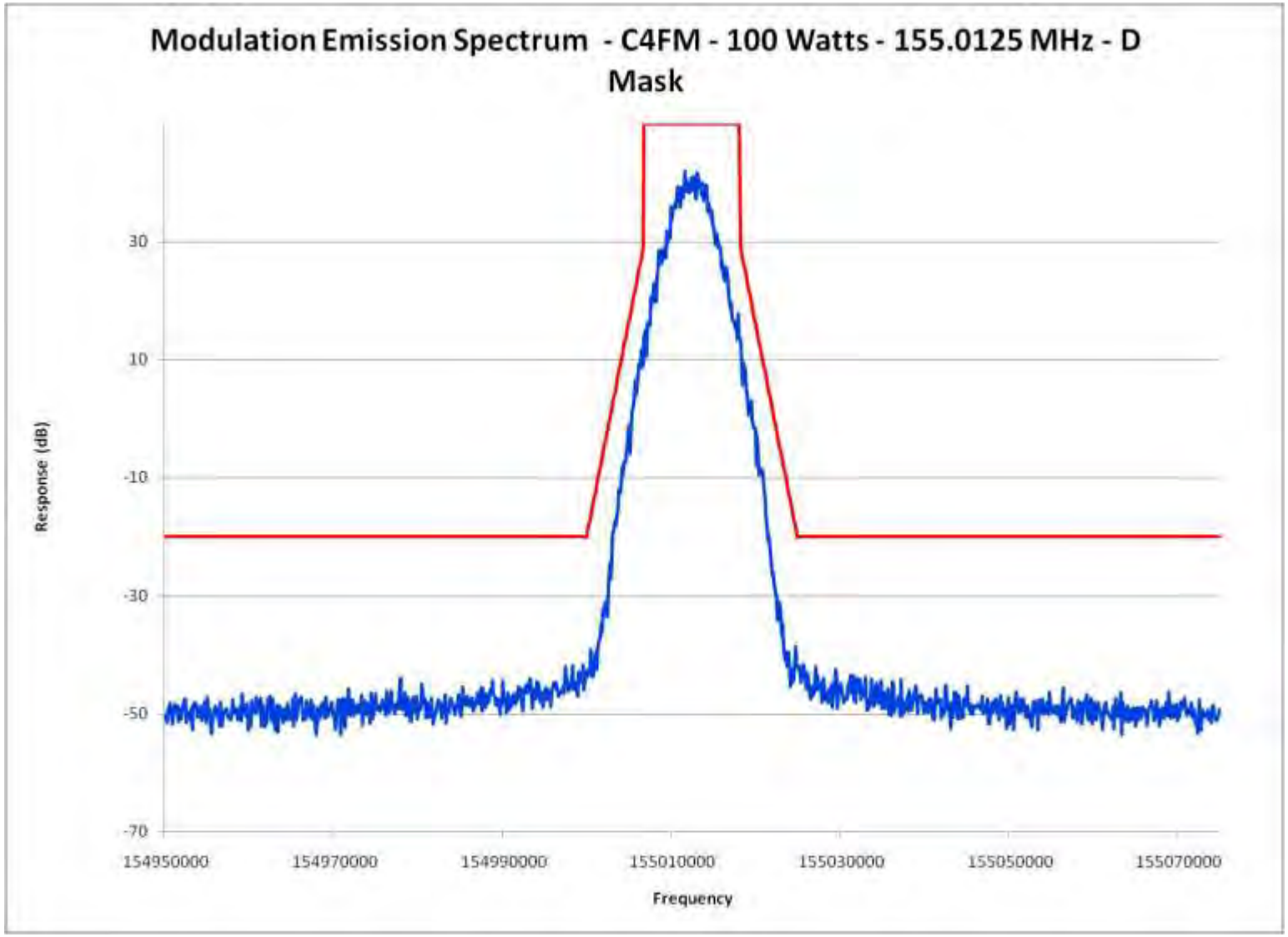
Report on Test Measurements

Occupied Bandwidth – Compatible 4-Level Frequency Modulation (C4FM) – Emission Designator: 8K10D1E, 8K10D1D, 8K10D1W, Lower End of Band



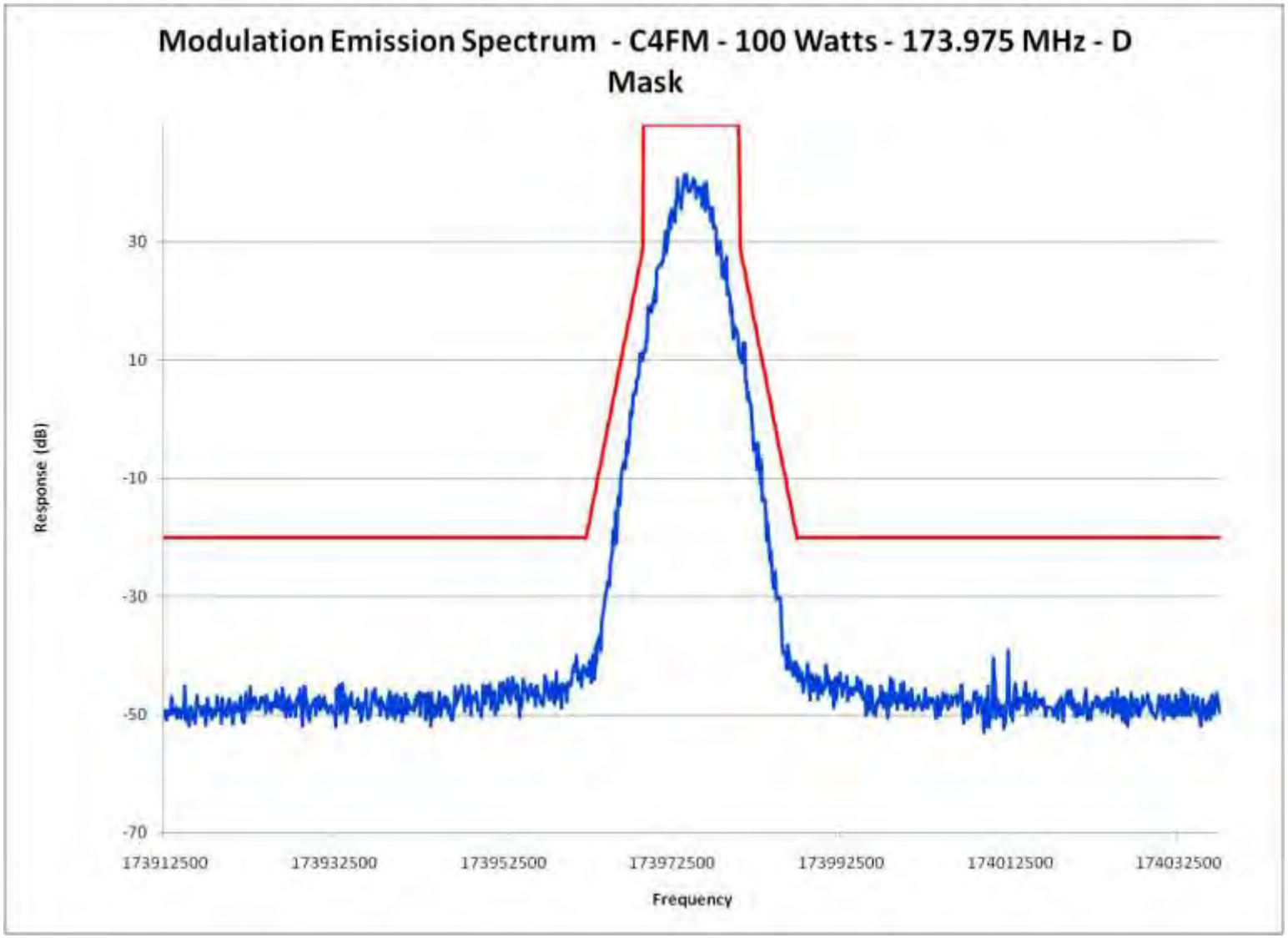
Report on Test Measurements

Occupied Bandwidth – Compatible 4-Level Frequency Modulation (C4FM) – Emission Designator: 8K10D1E, 8K10D1D, 8K10D1W, Middle of Band



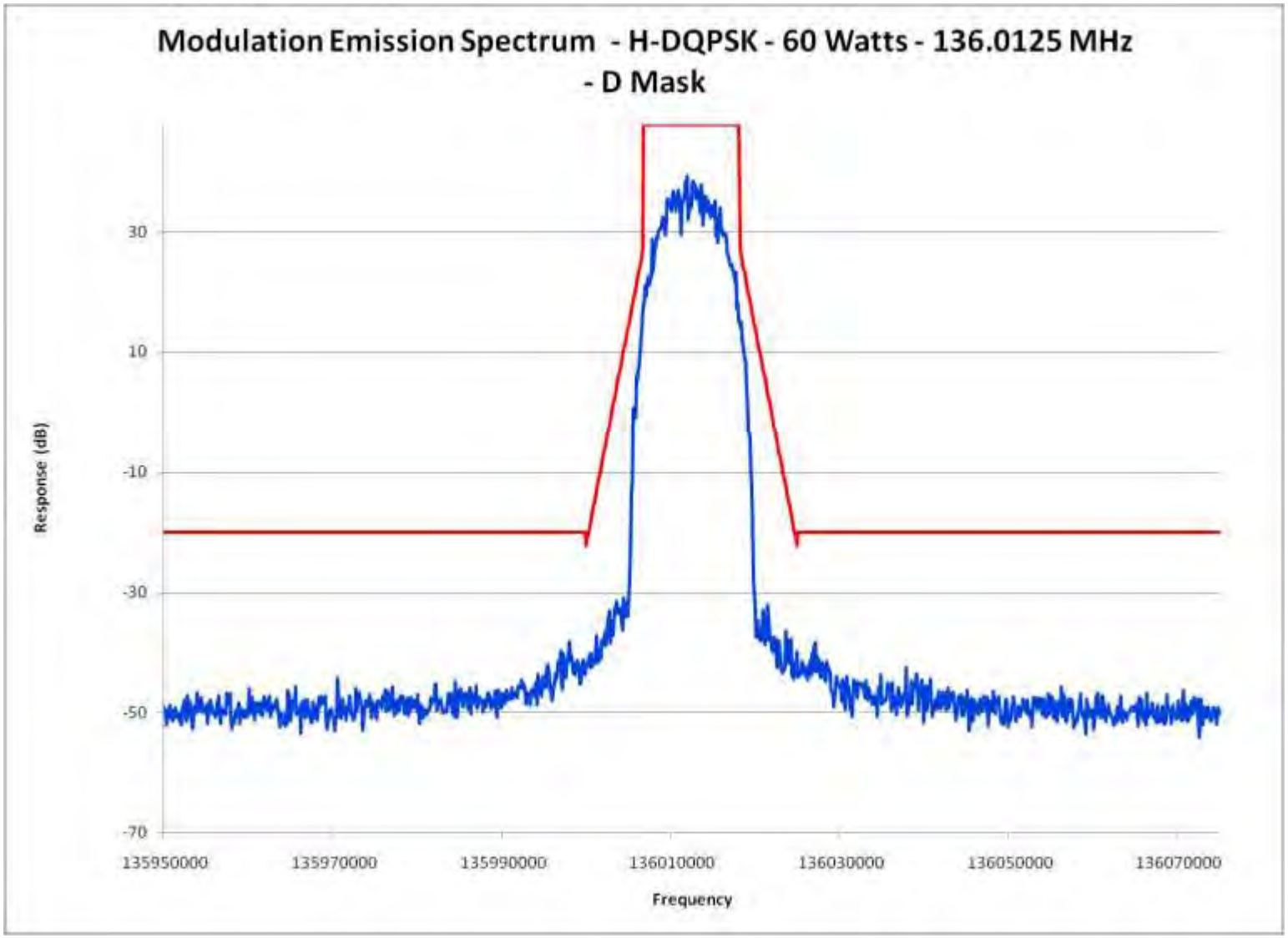
Report on Test Measurements

Occupied Bandwidth – Compatible 4-Level Frequency Modulation (C4FM) – Emission Designator: 8K10D1E, 8K10D1D, 8K10D1W, High End of Band



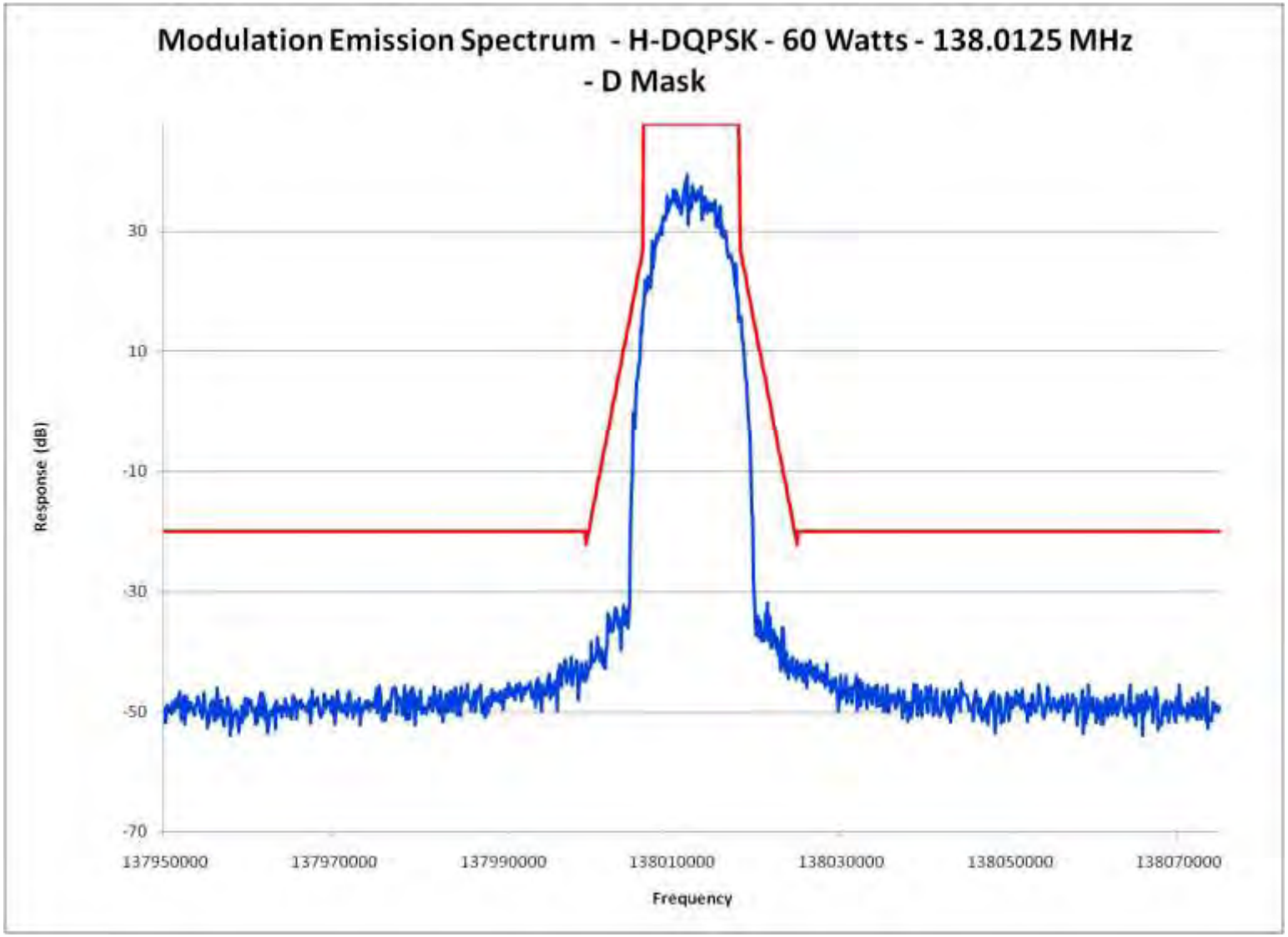
Report on Test Measurements

Occupied Bandwidth – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, Low End of Band



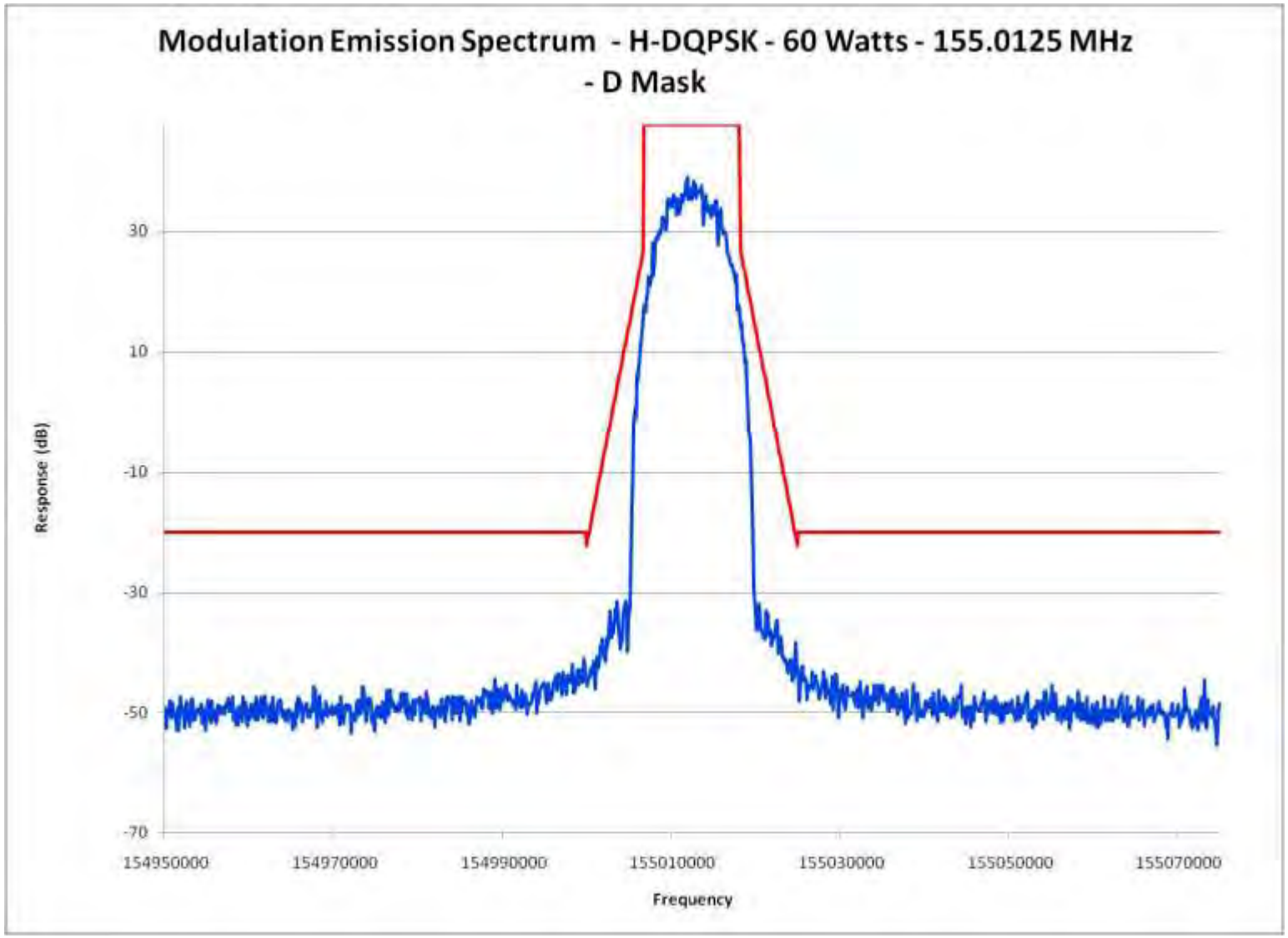
Report on Test Measurements

Occupied Bandwidth – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, Lower End of Band



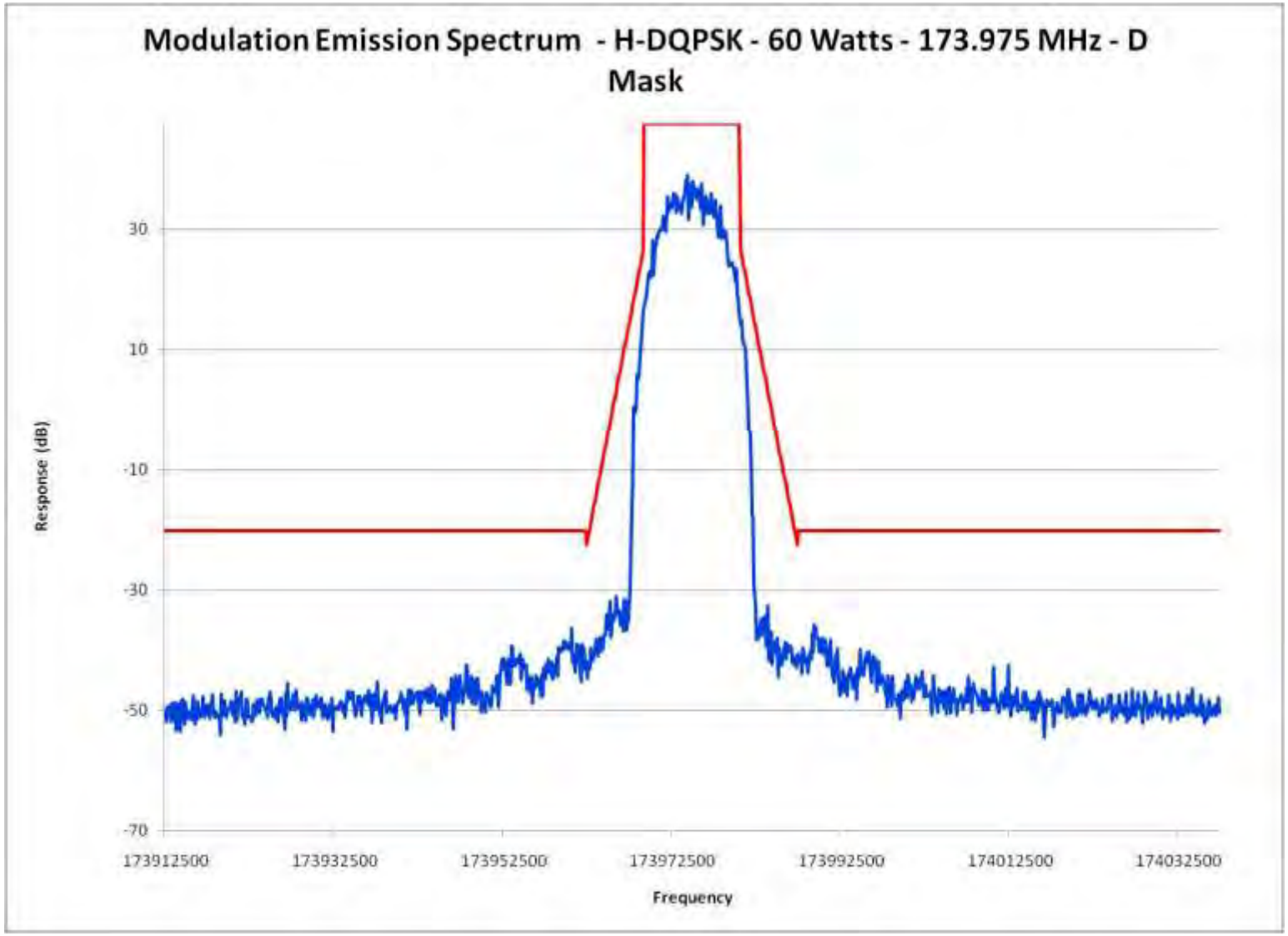
Report on Test Measurements

Occupied Bandwidth – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, Middle of Band



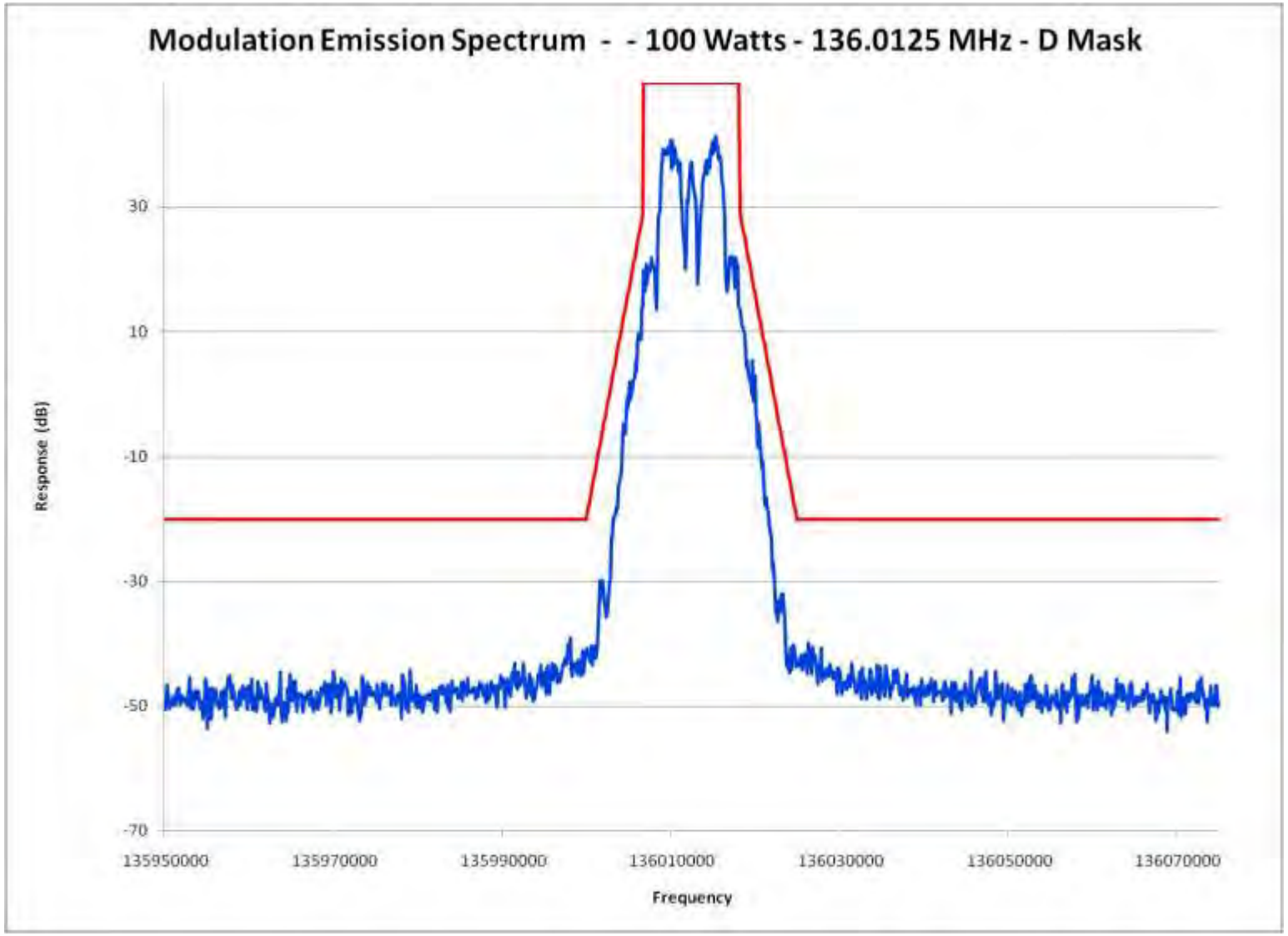
Report on Test Measurements

Occupied Bandwidth – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, High End of Band



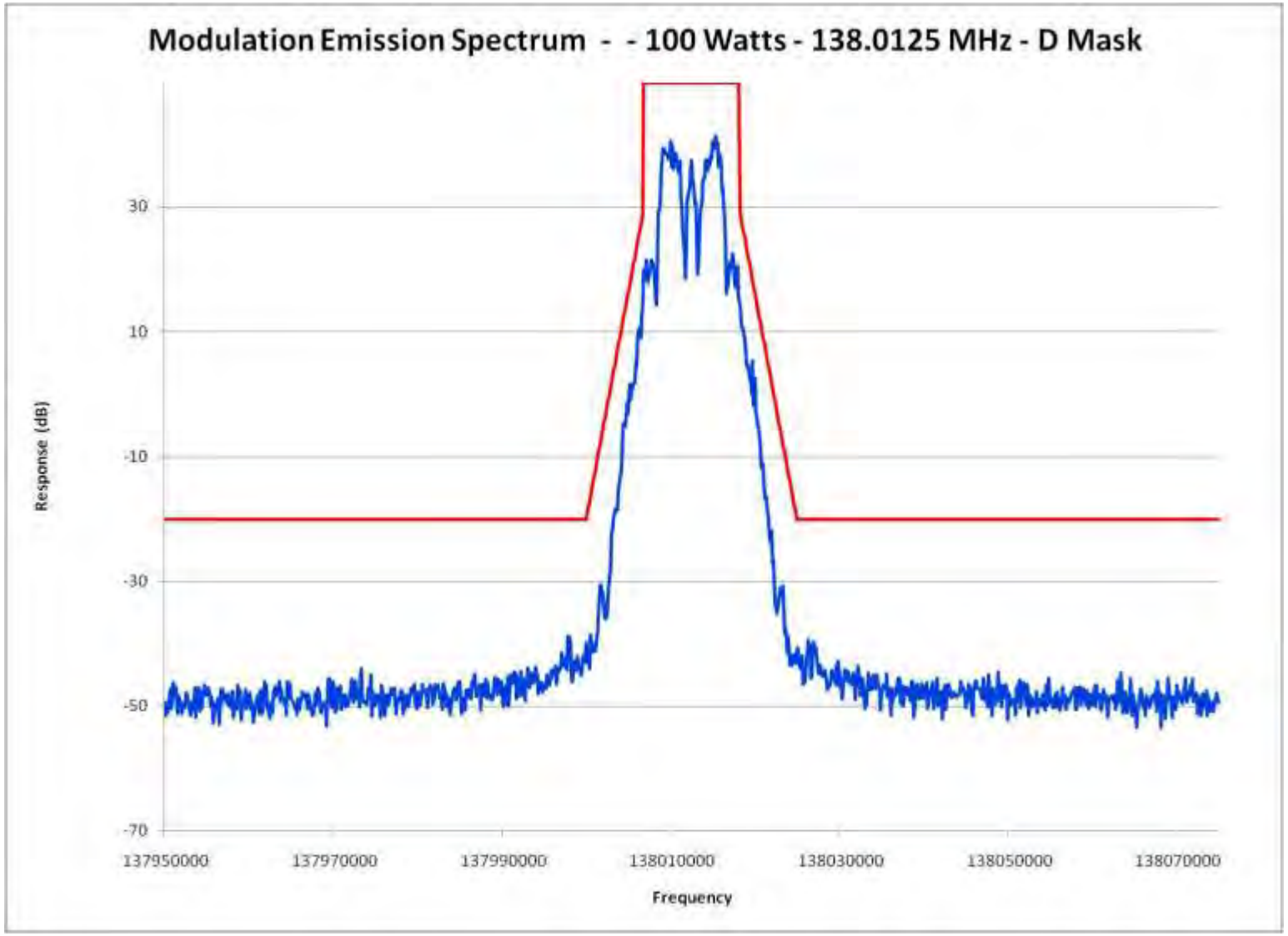
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels – Emission Designator: 16K0F1D, Low End of Band



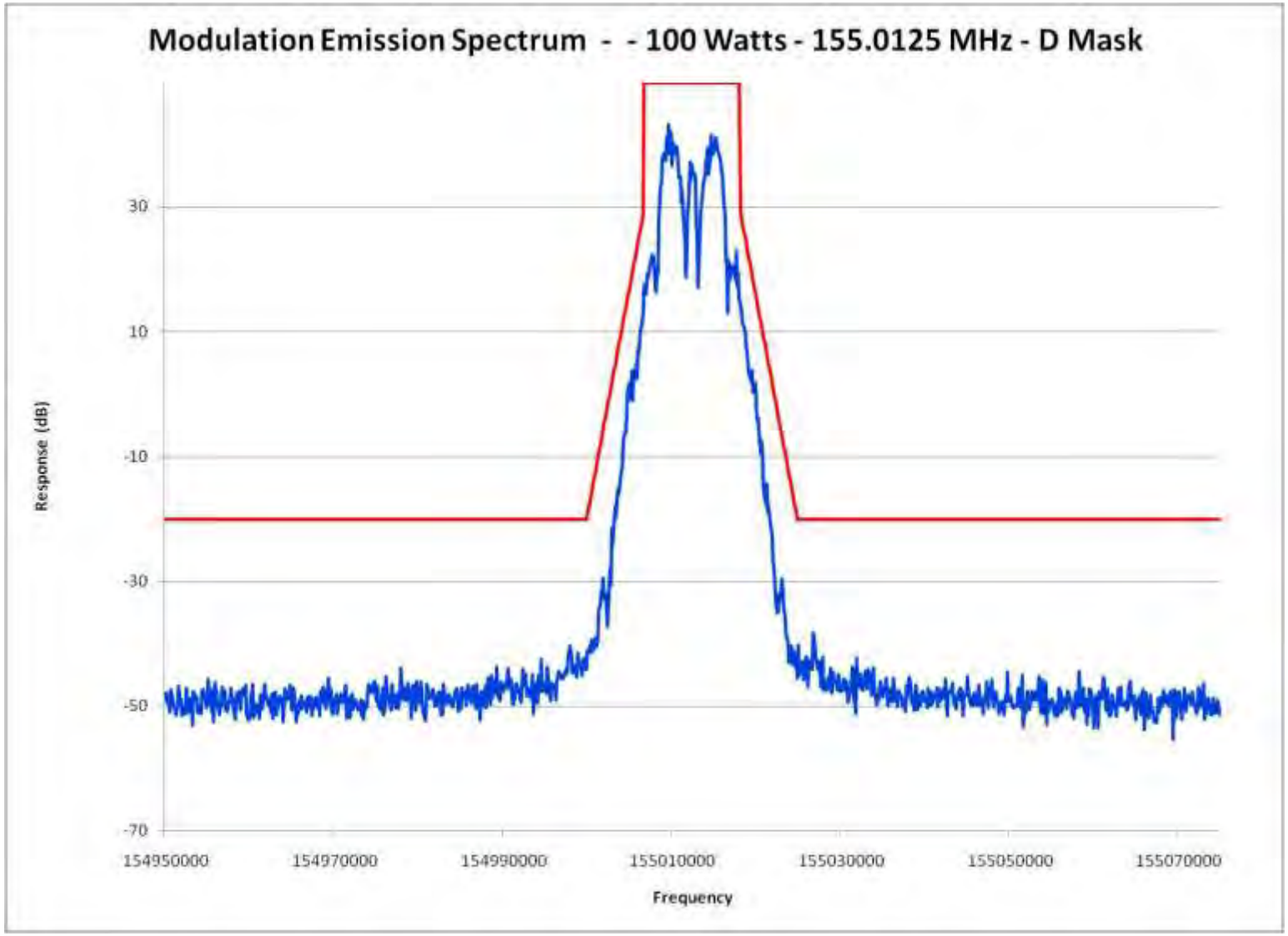
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels – Emission Designator: 16K0F1D, Lower End of Band



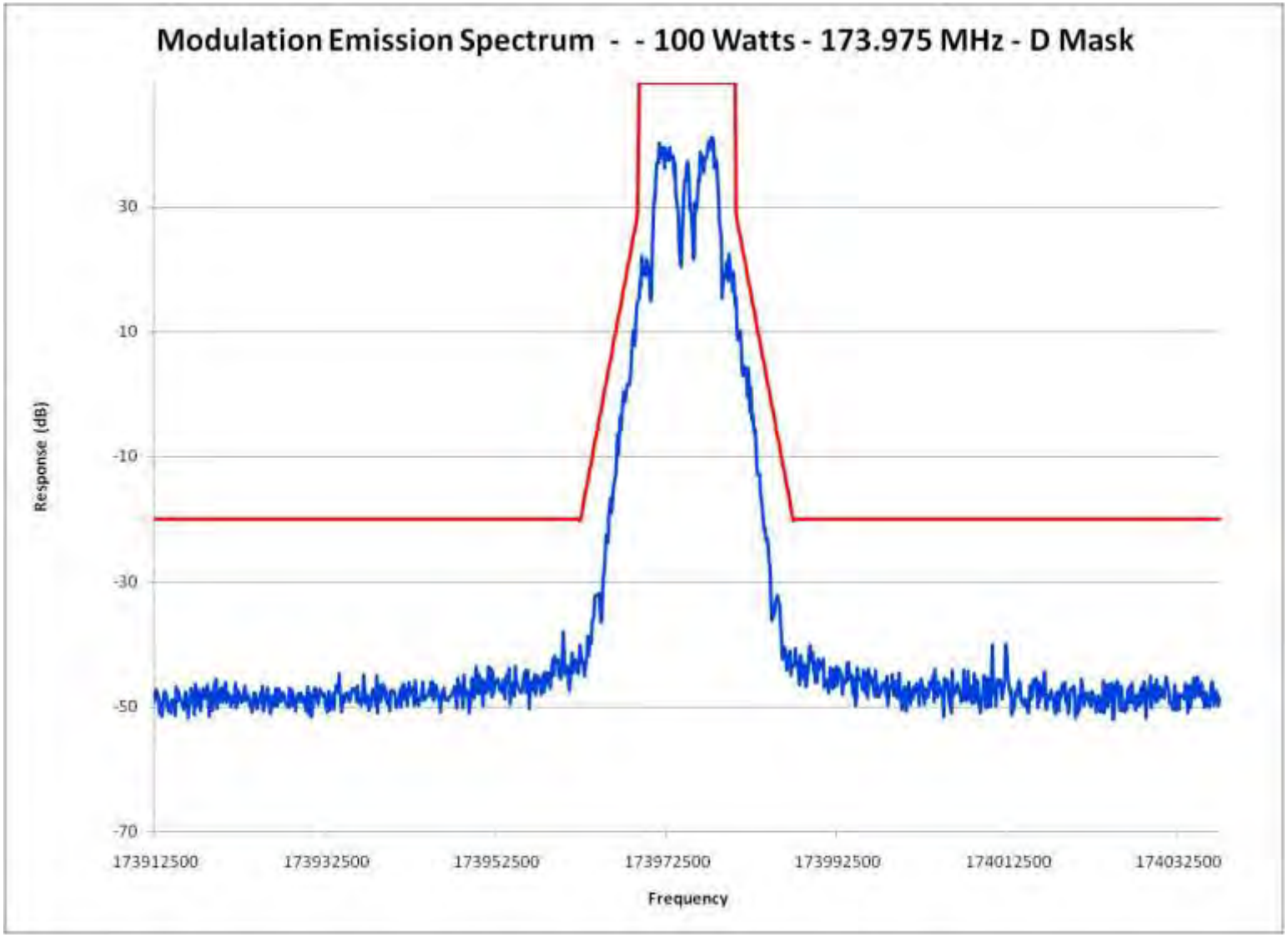
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels – Emission Designator: 16K0F1D, Middle of Band



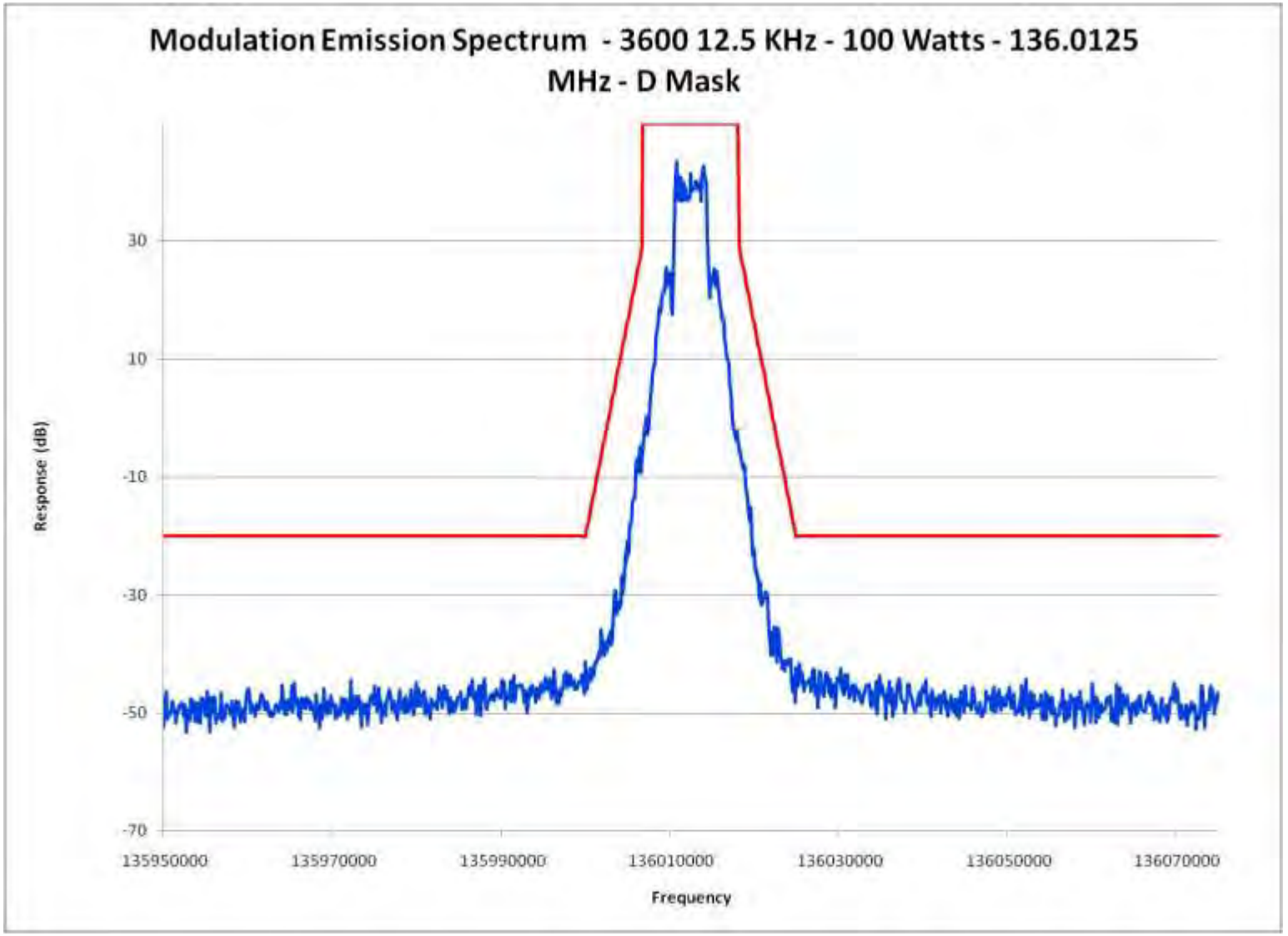
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 25 kHz Channels – Emission Designator: 16K0F1D, High End of Band



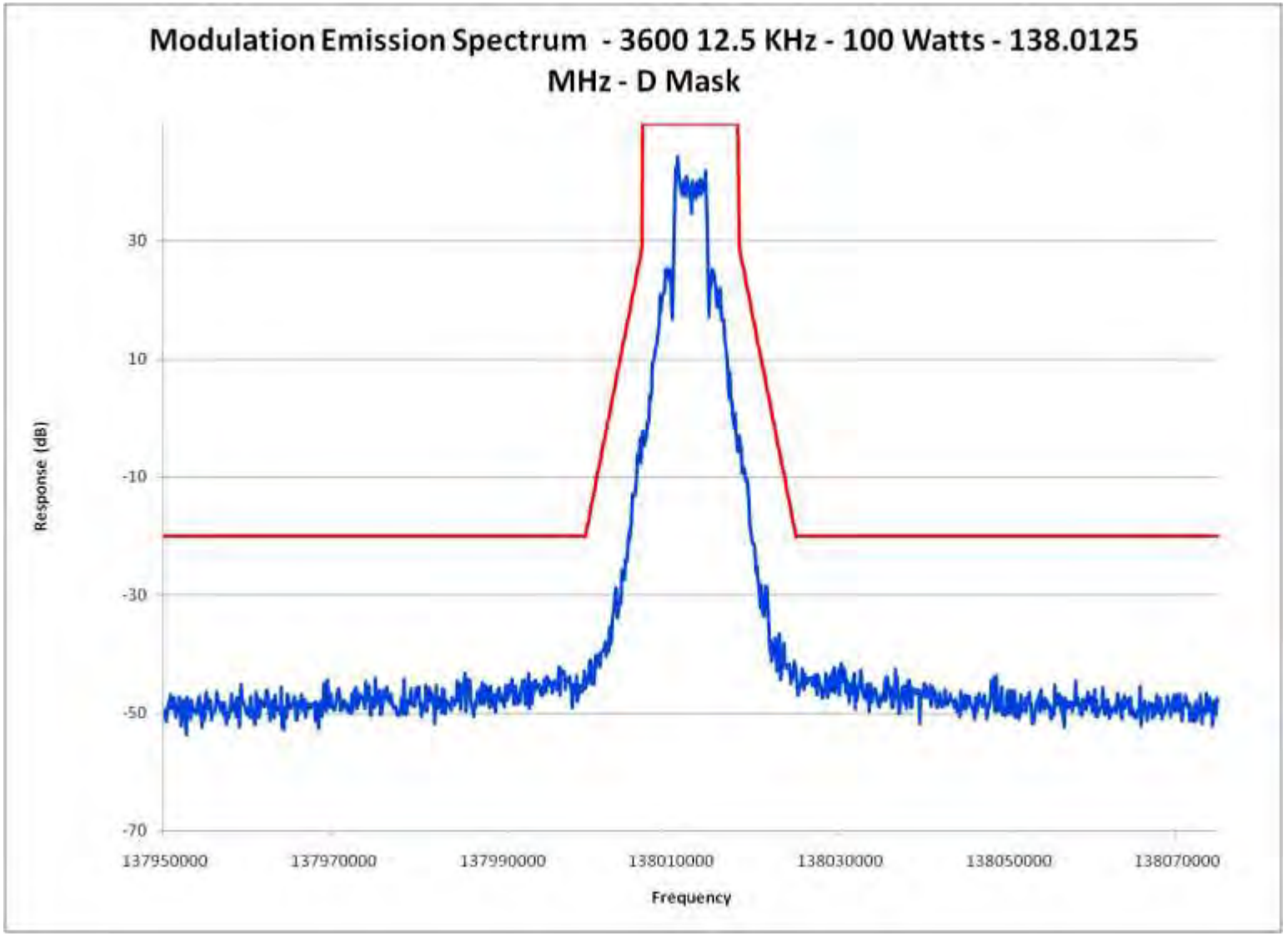
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels – Emission Designator: 10K0F1D, Low End of Band



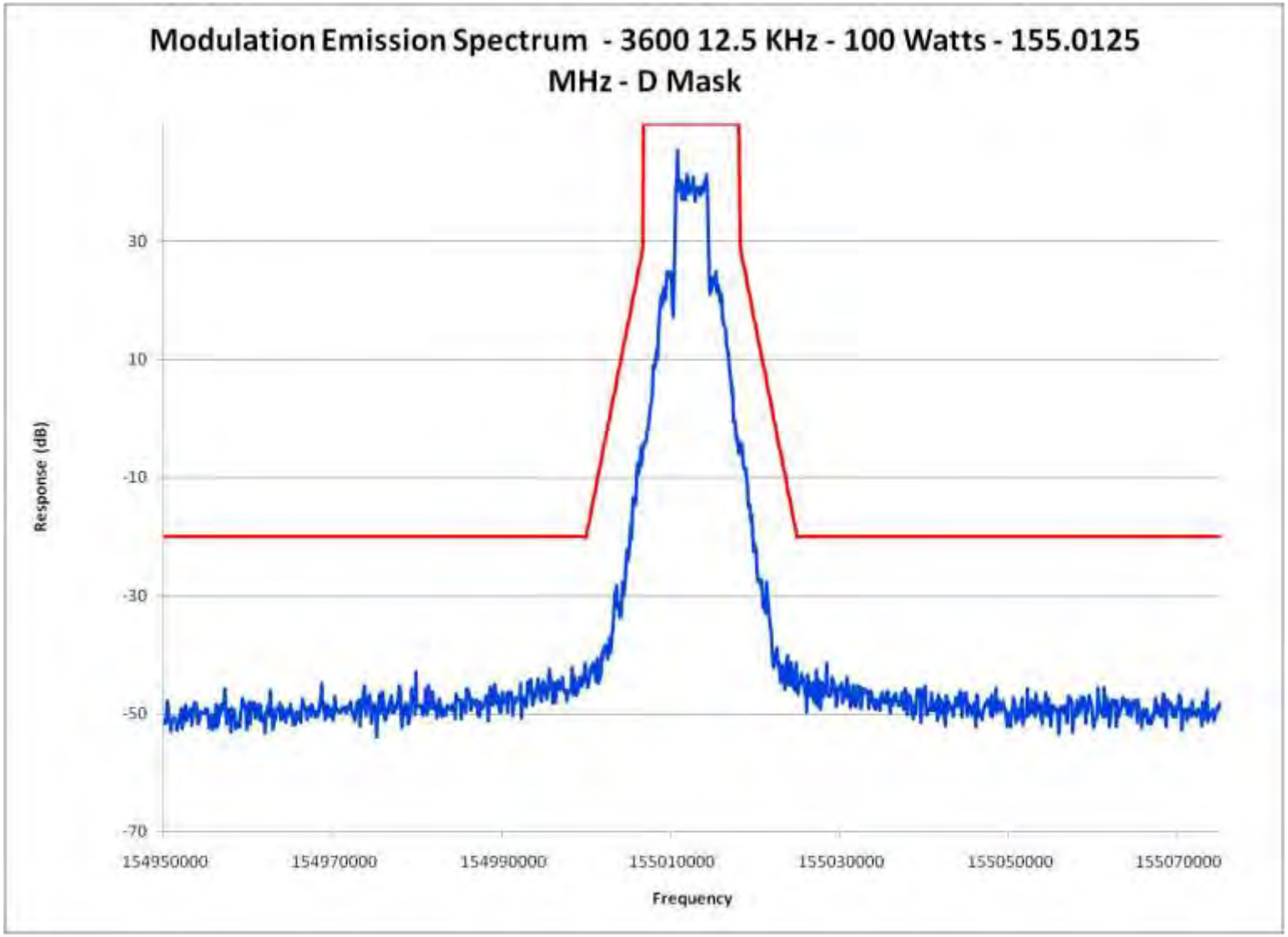
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels – Emission Designator: 10K0F1D, Lower End of Band



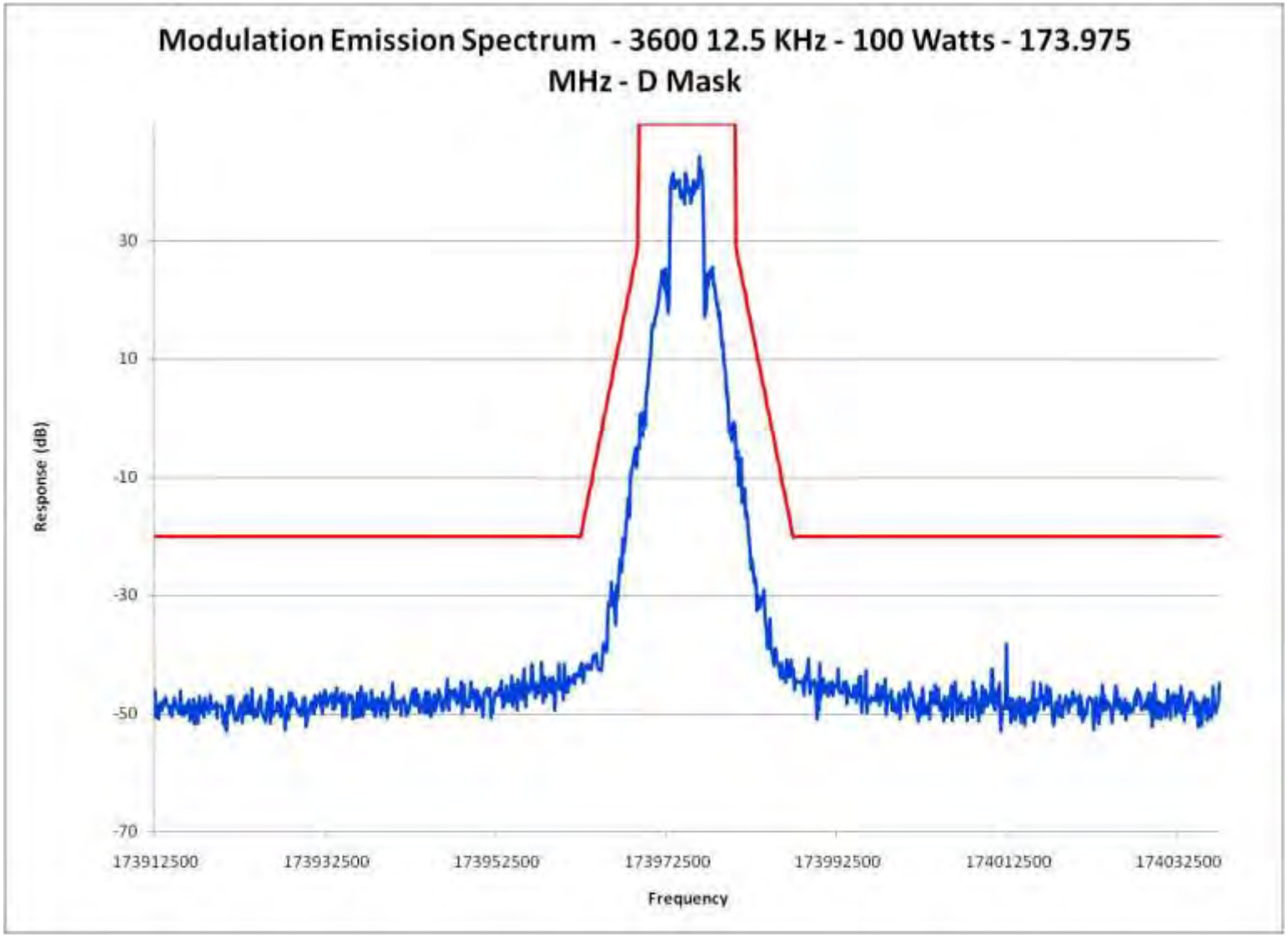
Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels – Emission Designator: 10K0F1D, Middle of Band



Report on Test Measurements

Occupied Bandwidth – Trunking Control Data 3600 bps FSK Modulation, 12.5 kHz Channels – Emission Designator: 10K0F1D, High End of Band



Report on Test Measurements

Conducted Spurious Emissions – Harmonics and Emission Spectrum

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:
(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.*

Specification Requirement § 90.210(b) Emission Limits:
Emission *Mask B:* For transmitters equipped with an audio low pass filter and designed to operate with a 25 kHz channel spacing (authorized bandwidth 20 kHz), the power of any emission must be below the unmodulated carrier power (P) as follows:

On any frequency removed from the assigned frequency by a displacement frequency (F_d in kHz) of:

a) >10 kHz up to and including 20 kHz *At least 25 dB;*
b) >20 kHz up to and including 50 kHz *At least 35 dB;*
c) >50 kHz *least 50 plus 10 log_{10}(P) dB or 80 dB; (whichever is the lesser attenuation).*

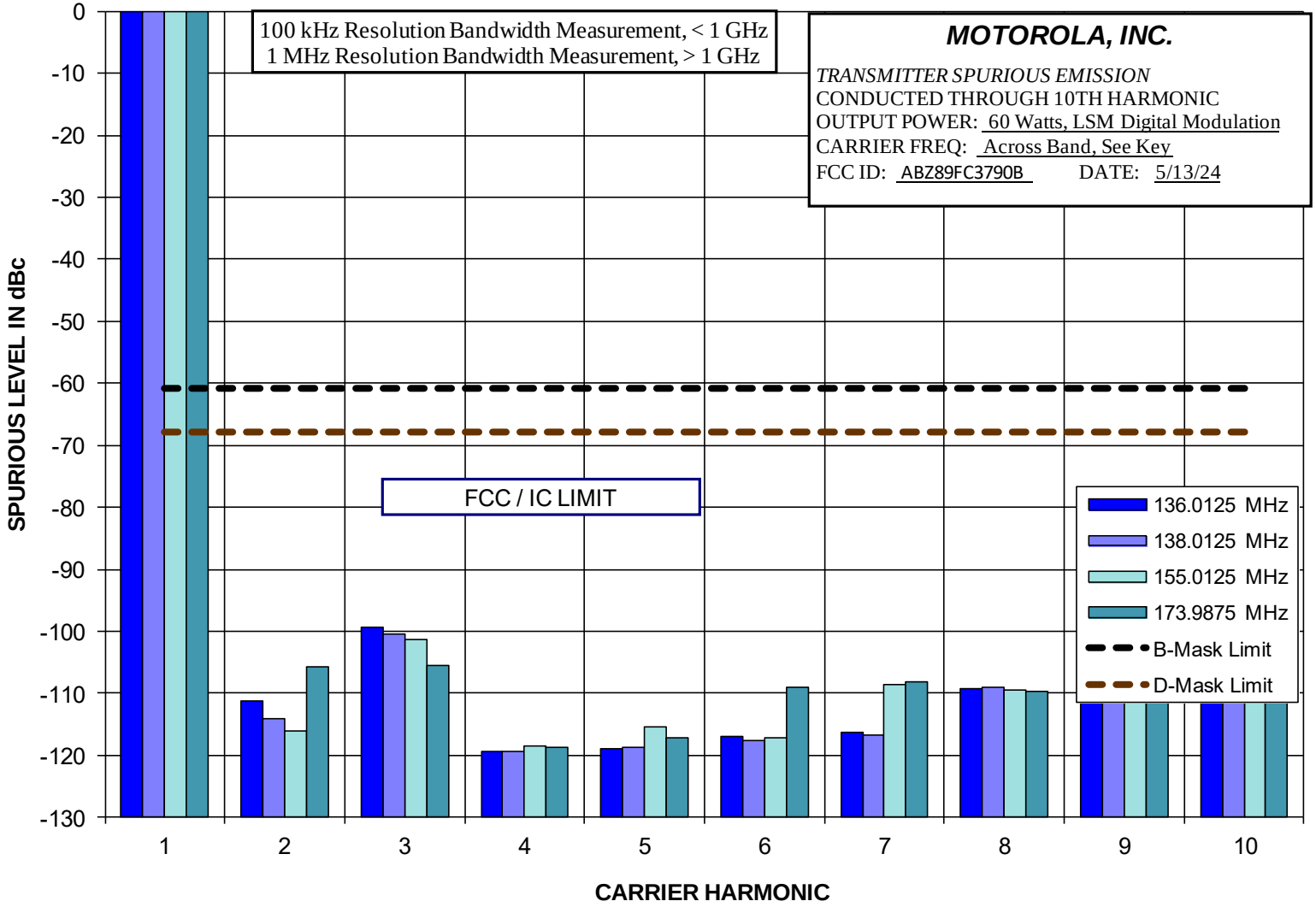
Modulation: Linear Simulcast Modulation (LSM), or Compatible 4-Level Frequency Modulation (C4FM)– Pseudorandom data, or Analog Frequency Modulation as indicated

Carrier Frequencies: Carrier frequencies of 136.0125, 138.0125, 155.0125, and 173.9875 MHz were measured for conducted carrier harmonics. These frequencies represent the low end, center, and high end of the 136-174 MHz band, and are representative of the full 136-174 MHz operating band. Carrier frequencies of 138.0125, 155.0125, and 173.9875 MHz were measured for conducted emission measurements.

EXHIBIT	DESCRIPTION
E1-3.1	Conducted Spurious Harmonic Emissions, Power Output 60 Watts, LSM The specification limit is -67.8 dBc
E1-3.2	Conducted Spurious Harmonic Emissions, Power Output 2 Watts, LSM The specification limit is -53.0 dBc
E1-3.3	Conducted Spurious Harmonic Emissions, Power Output 100 Watts, C4FM The specification limit is -70.0 dBc
E1-3.4	Conducted Spurious Harmonic Emissions, Power Output 2 Watts, C4FM The specification limit is -53.0 dBc
E1-3.5	Conducted Spurious Harmonic Emissions, Power Output 100 Watts, Analog The specification limit is -70.0 dBc
E1-3.6	Conducted Spurious Harmonic Emissions, Power Output 2 Watts, Analog The specification limit is -53.0 dBc
E1-3.7, 8, 9, 10	Conducted Spurious Emission Spectrum, 200 MHz Span, Power Output at 60 Watts, LSM The specification limit is -67.8 dBc
E1-3.11, 12, 13, 14	Conducted Spurious Emission Spectrum, 200 MHz Span, Power Output at 100 Watts, C4FM The specification limit is -70.0 dBc
E1-3.15, 16, 17, 18	Conducted Spurious Emission Spectrum, 200 MHz Span, Power Output at 100 Watts, Analog The specification limit is -70.0 dBc

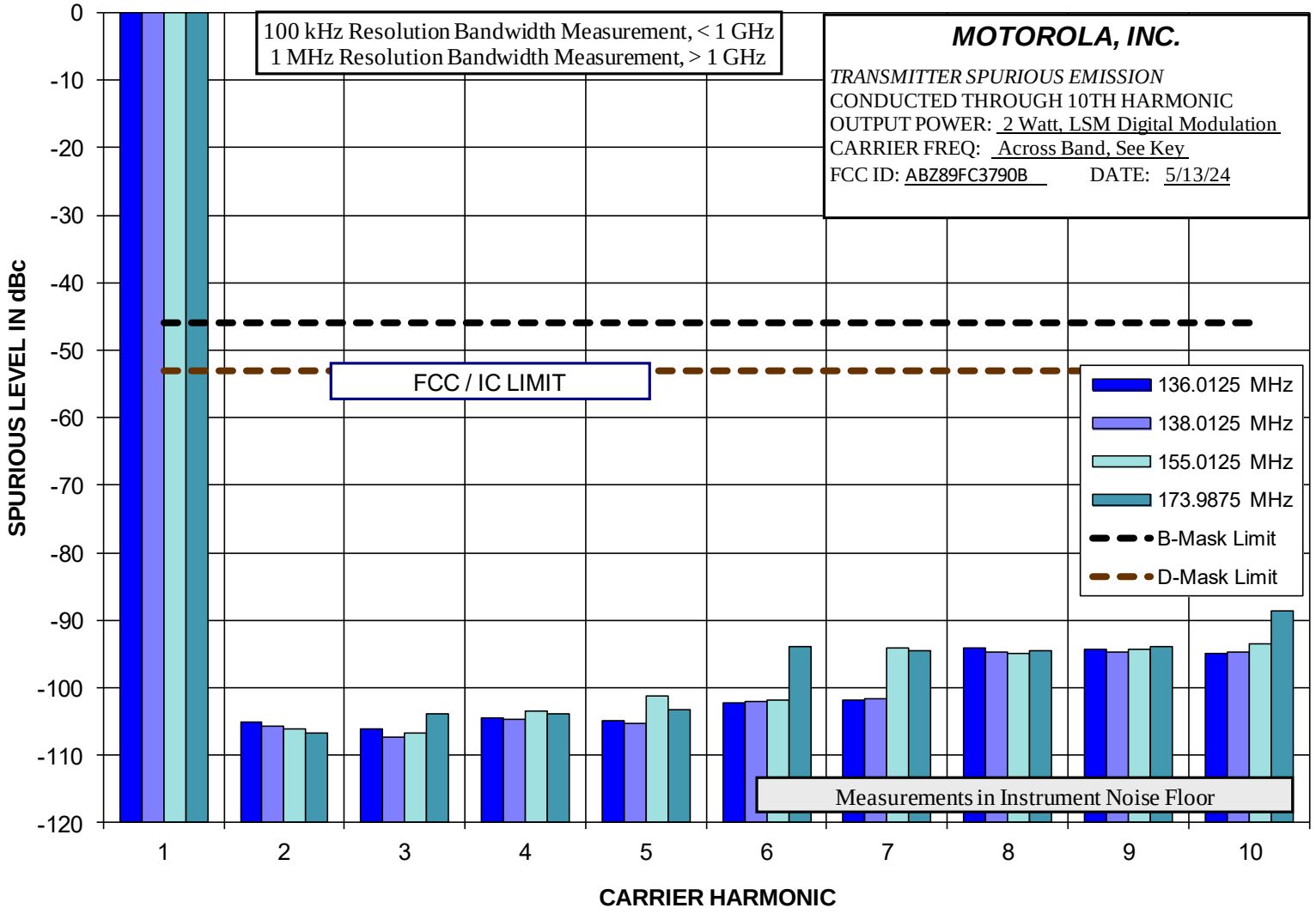
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 60 Watts LSM



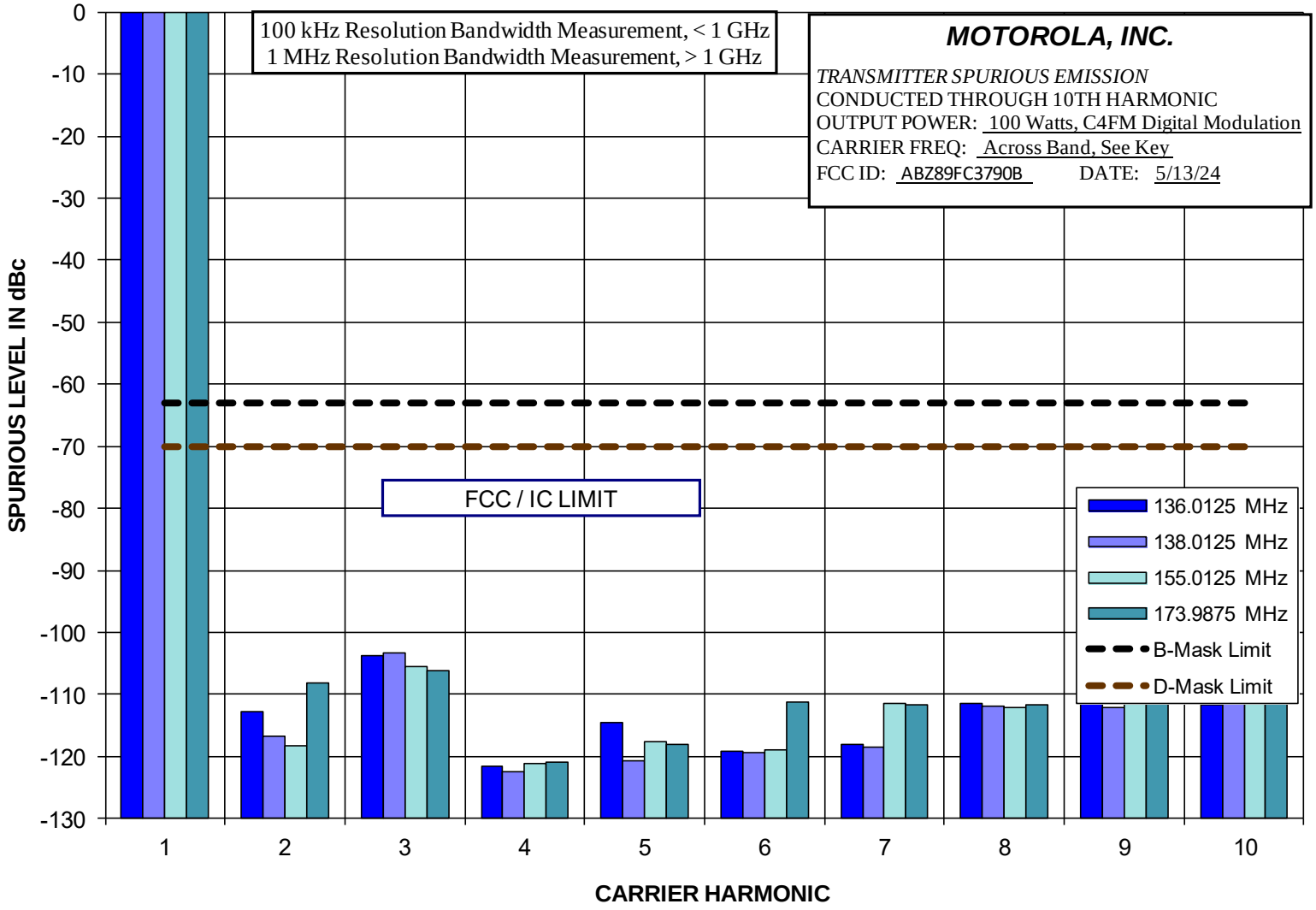
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 2 Watts LSM



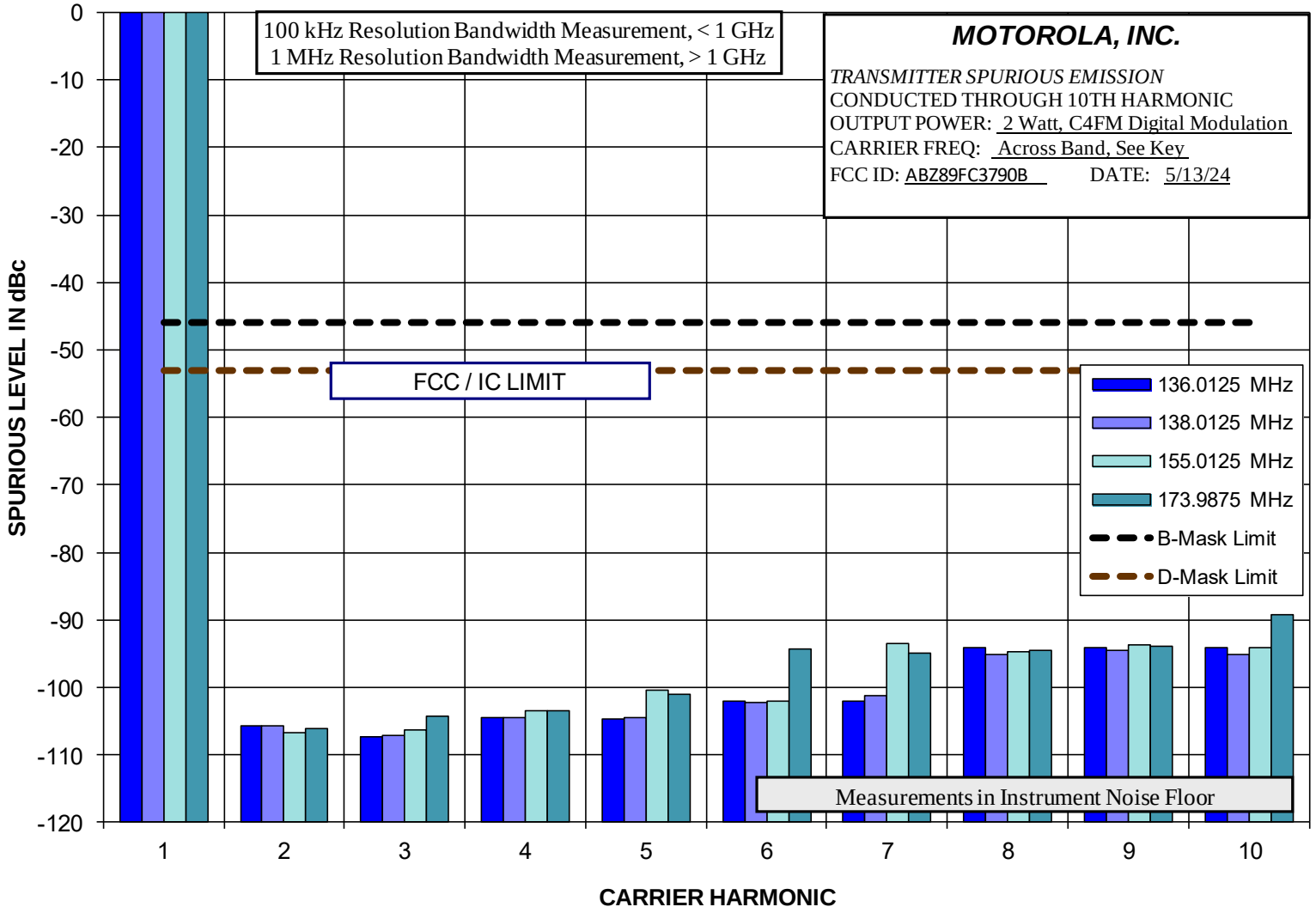
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 100 Watts C4FM



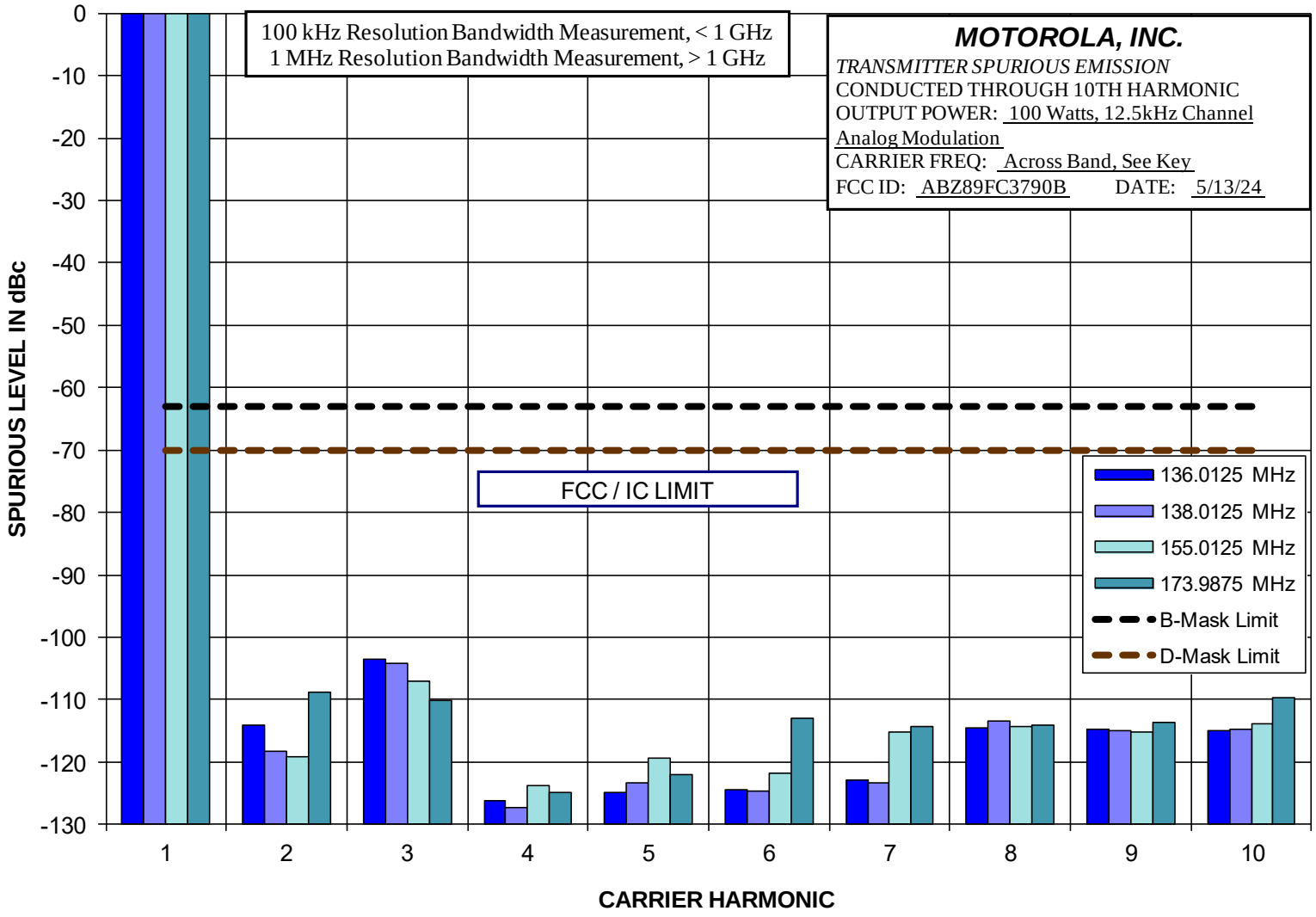
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 2 Watts C4FM



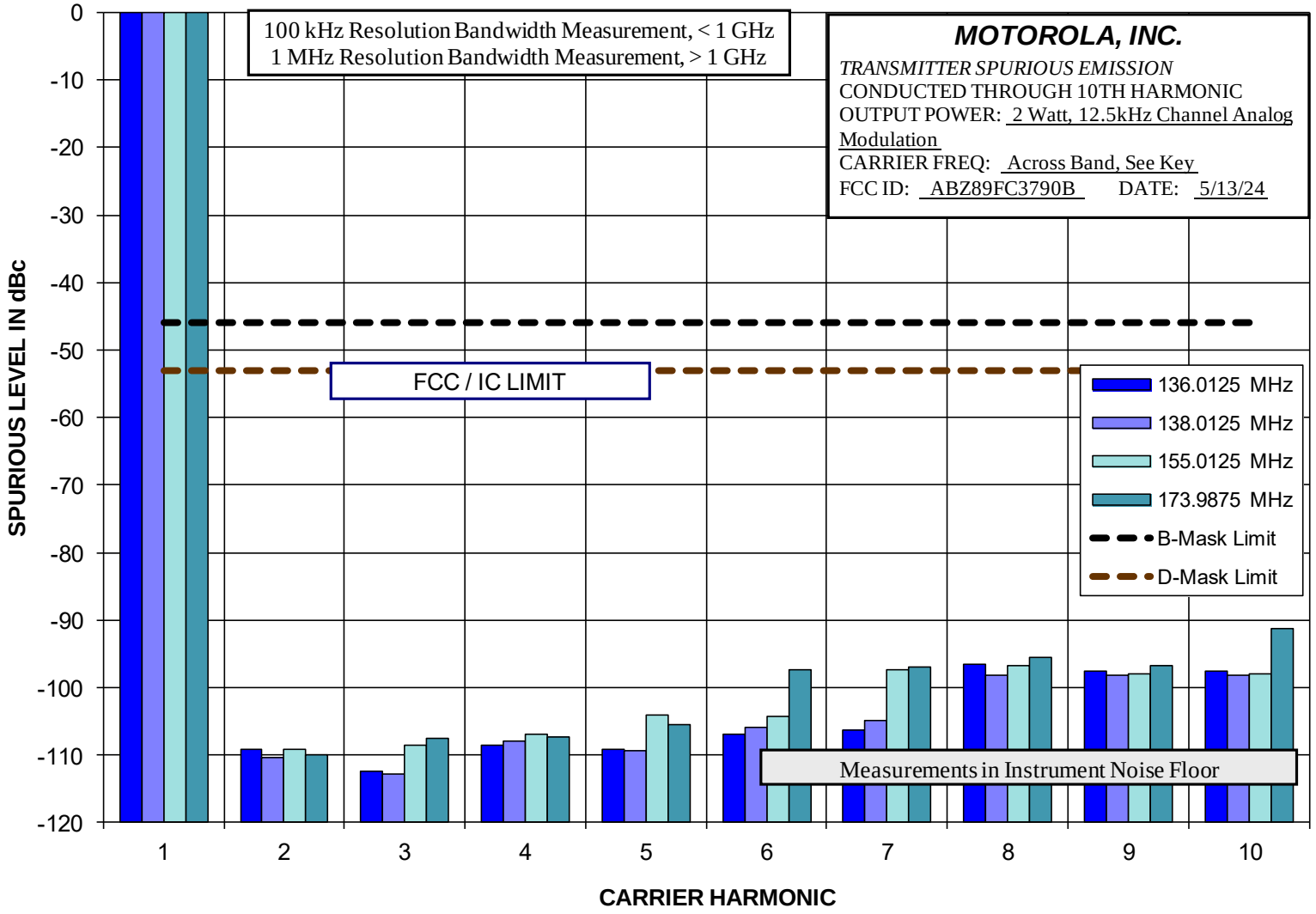
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 100 Watts Analog



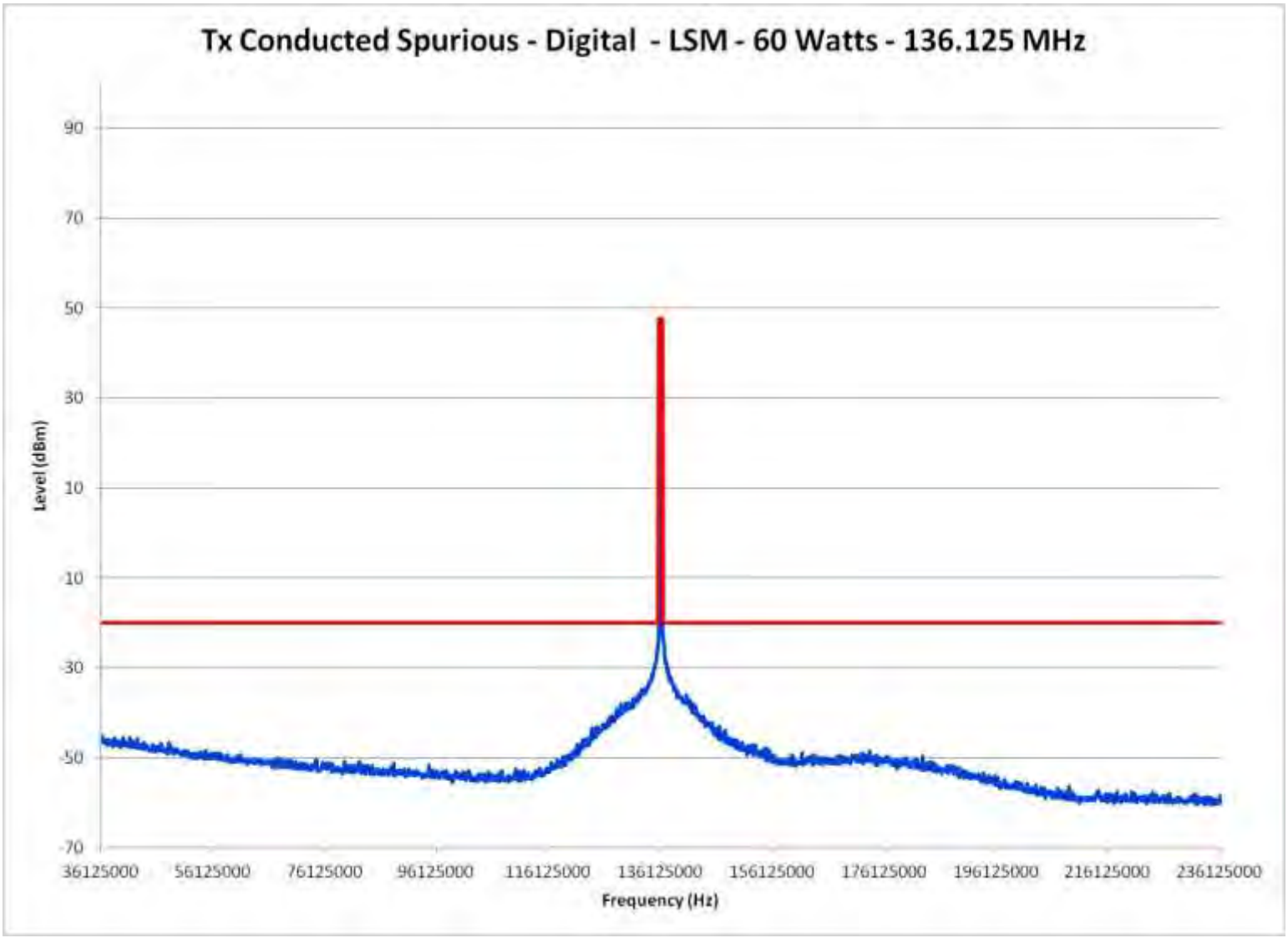
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 2 Watts Analog



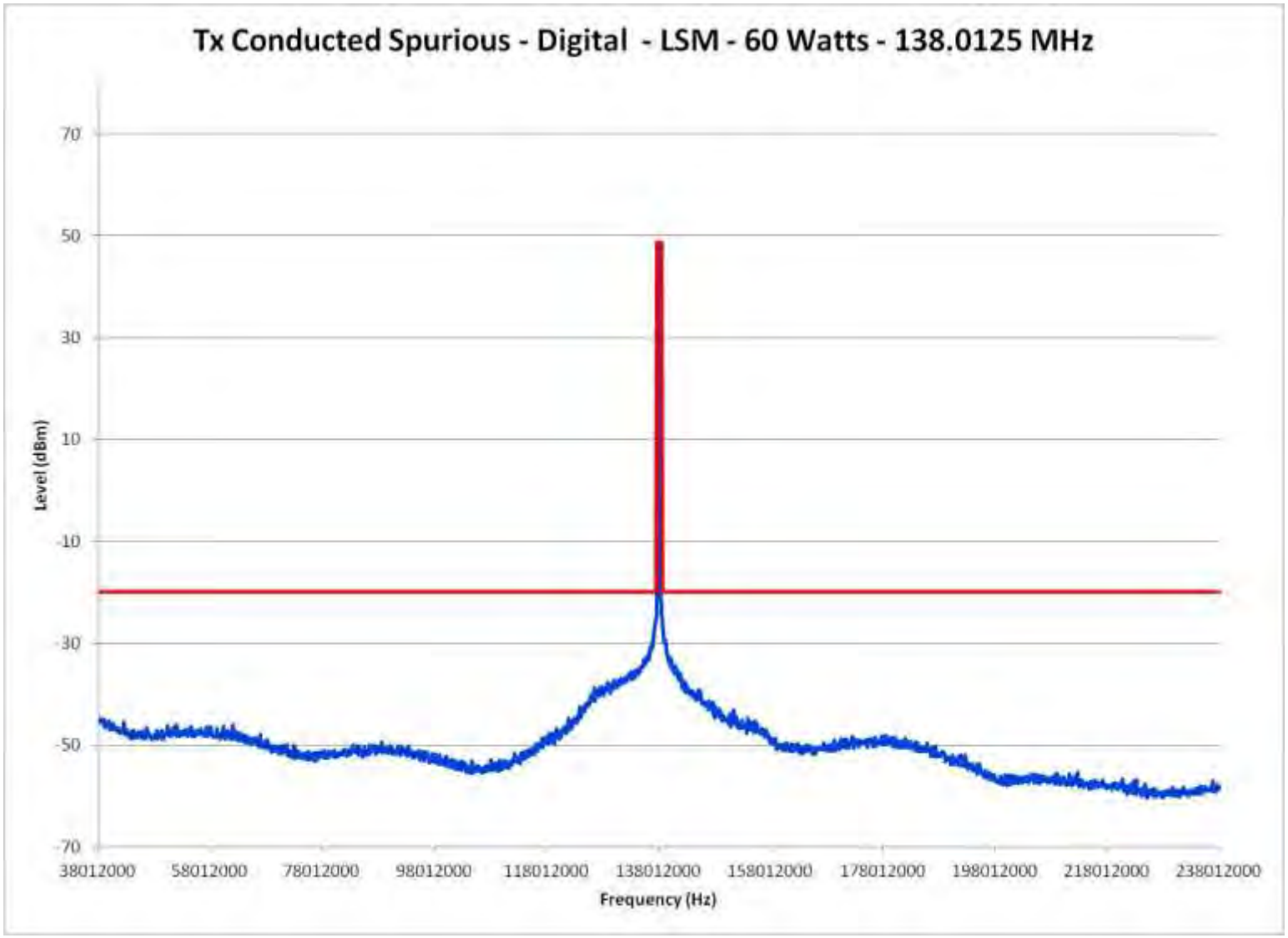
Report on Test Measurements

Conducted Spurious Emission Spectrum – 60 Watts LSM – 200 MHz Span – Low End of Band



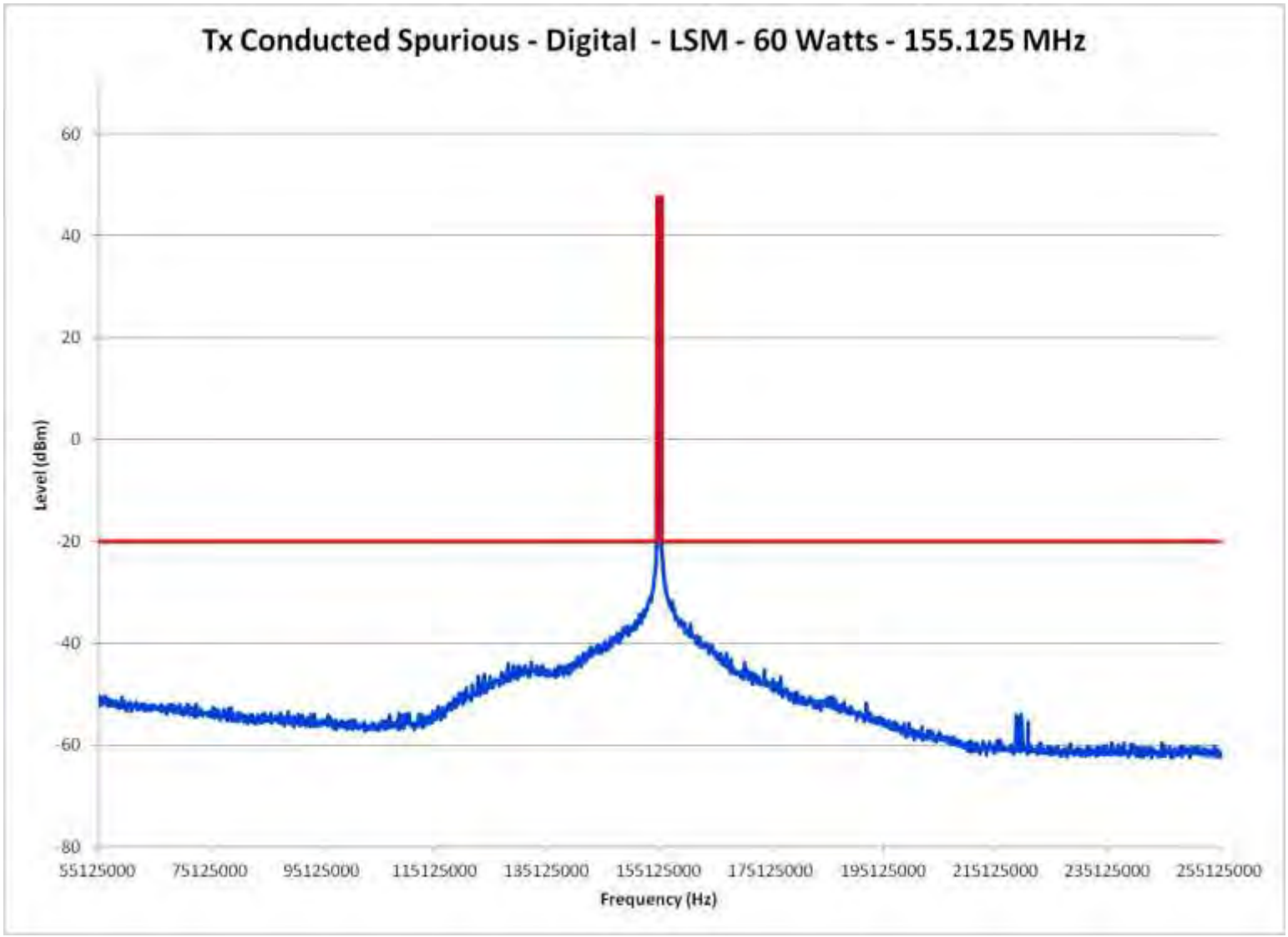
Report on Test Measurements

Conducted Spurious Emission Spectrum – 60 Watts LSM – 200 MHz Span – Lower End of Band



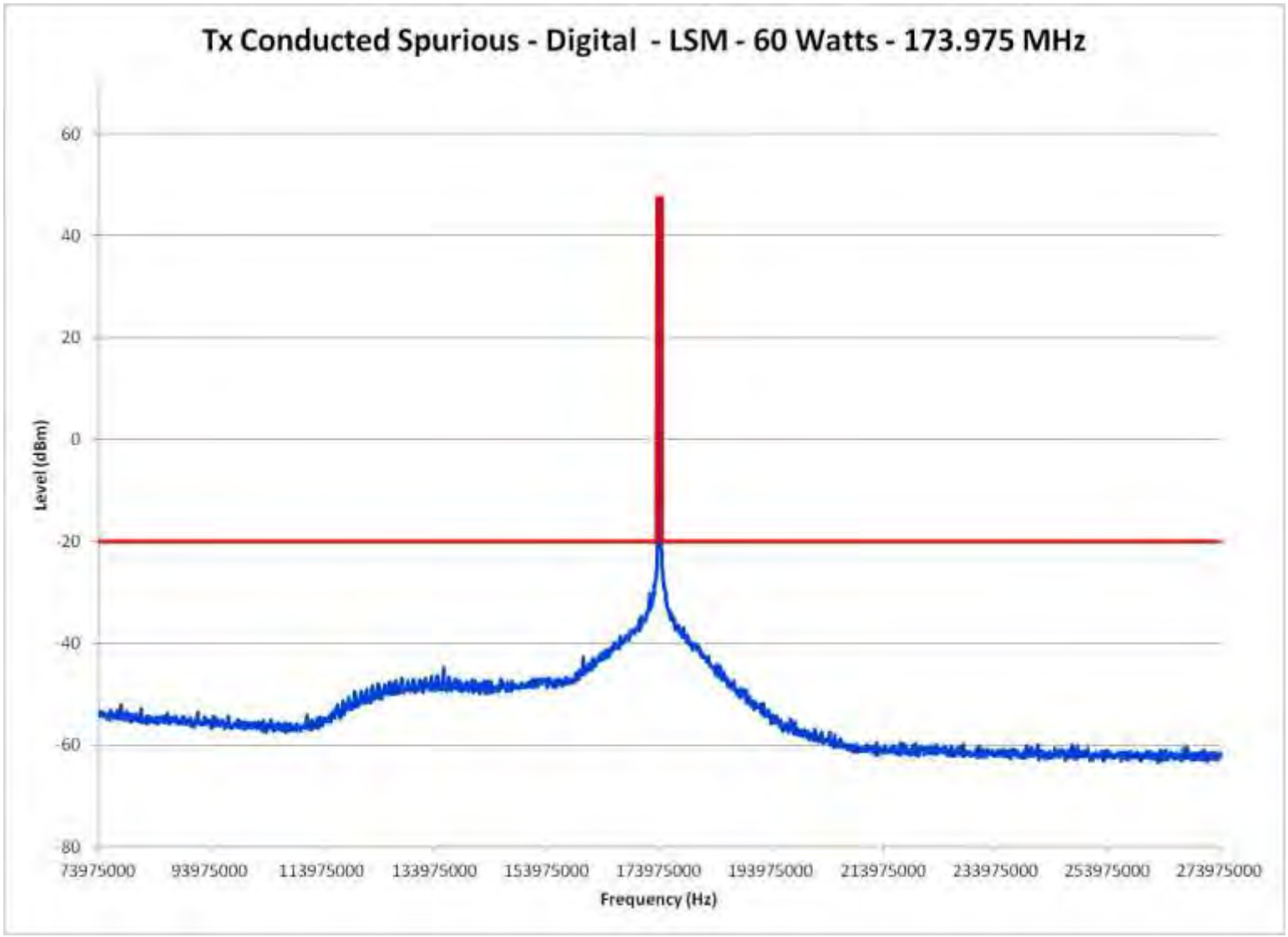
Report on Test Measurements

Conducted Spurious Emission Spectrum – 60 Watts LSM – 200 MHz Span – Middle of Band



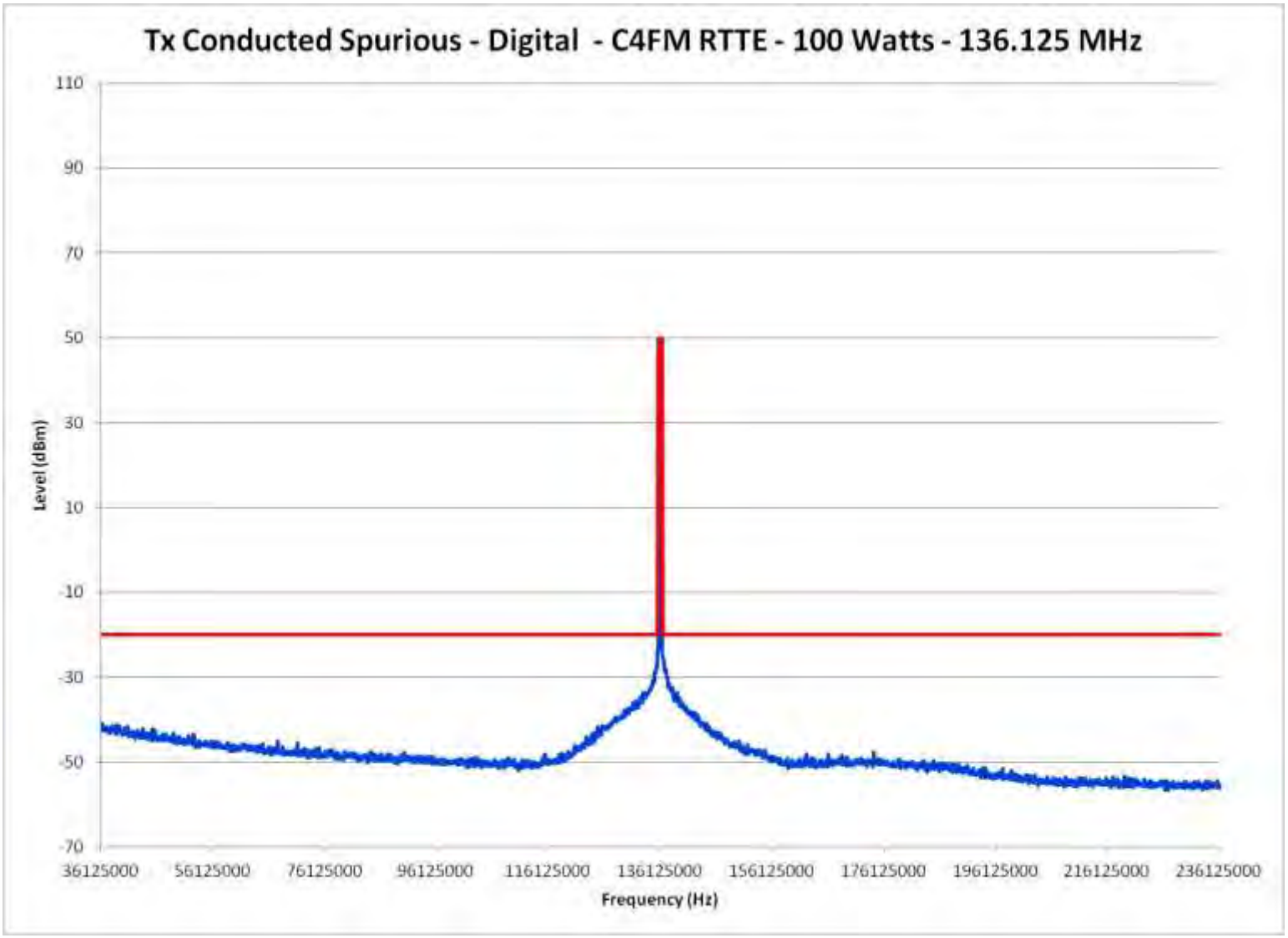
Report on Test Measurements

Conducted Spurious Emission Spectrum – 60 Watts LSM – 200 MHz Span – High End of Band



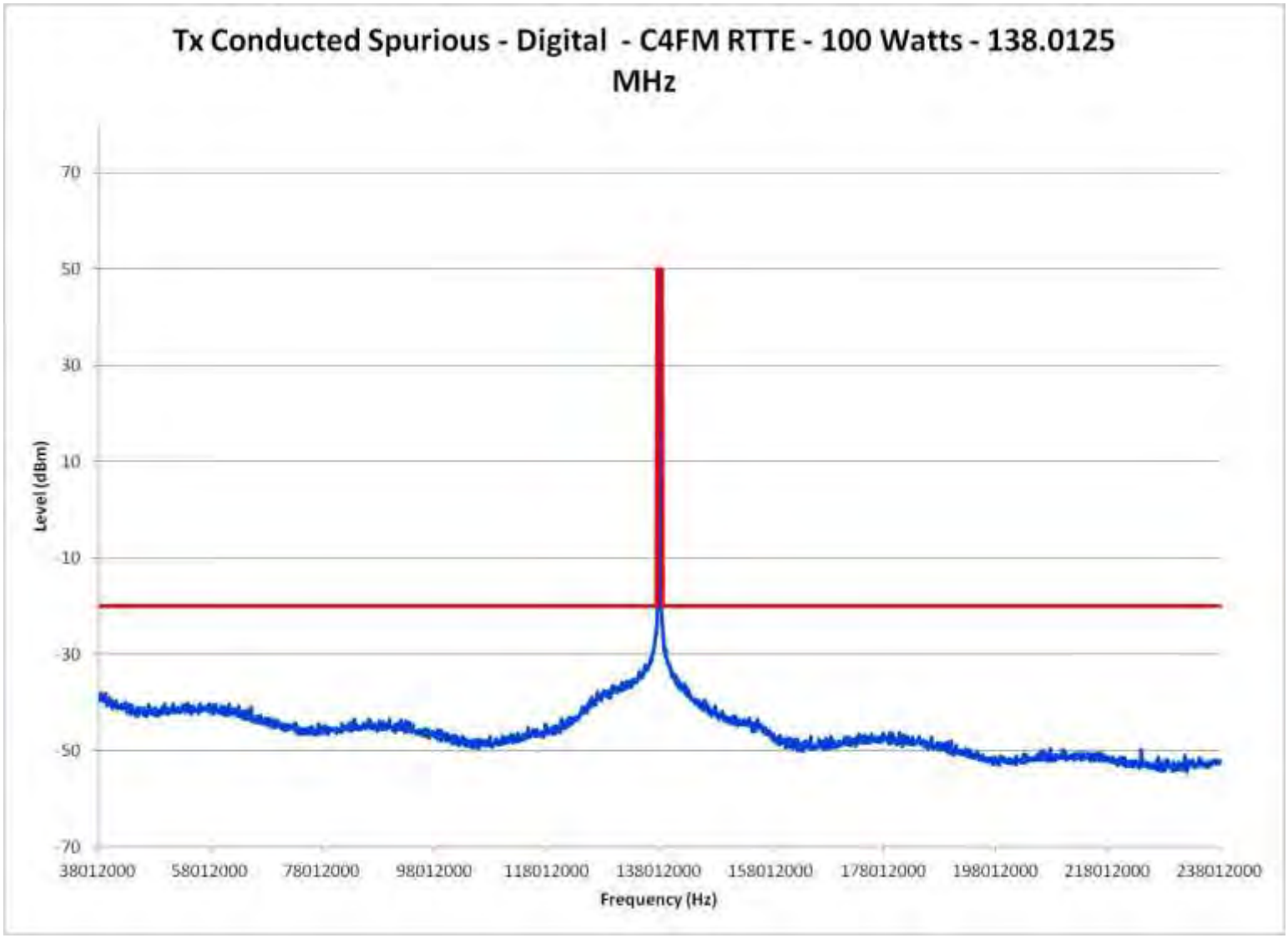
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts C4FM – 200 MHz Span – Low End of Band



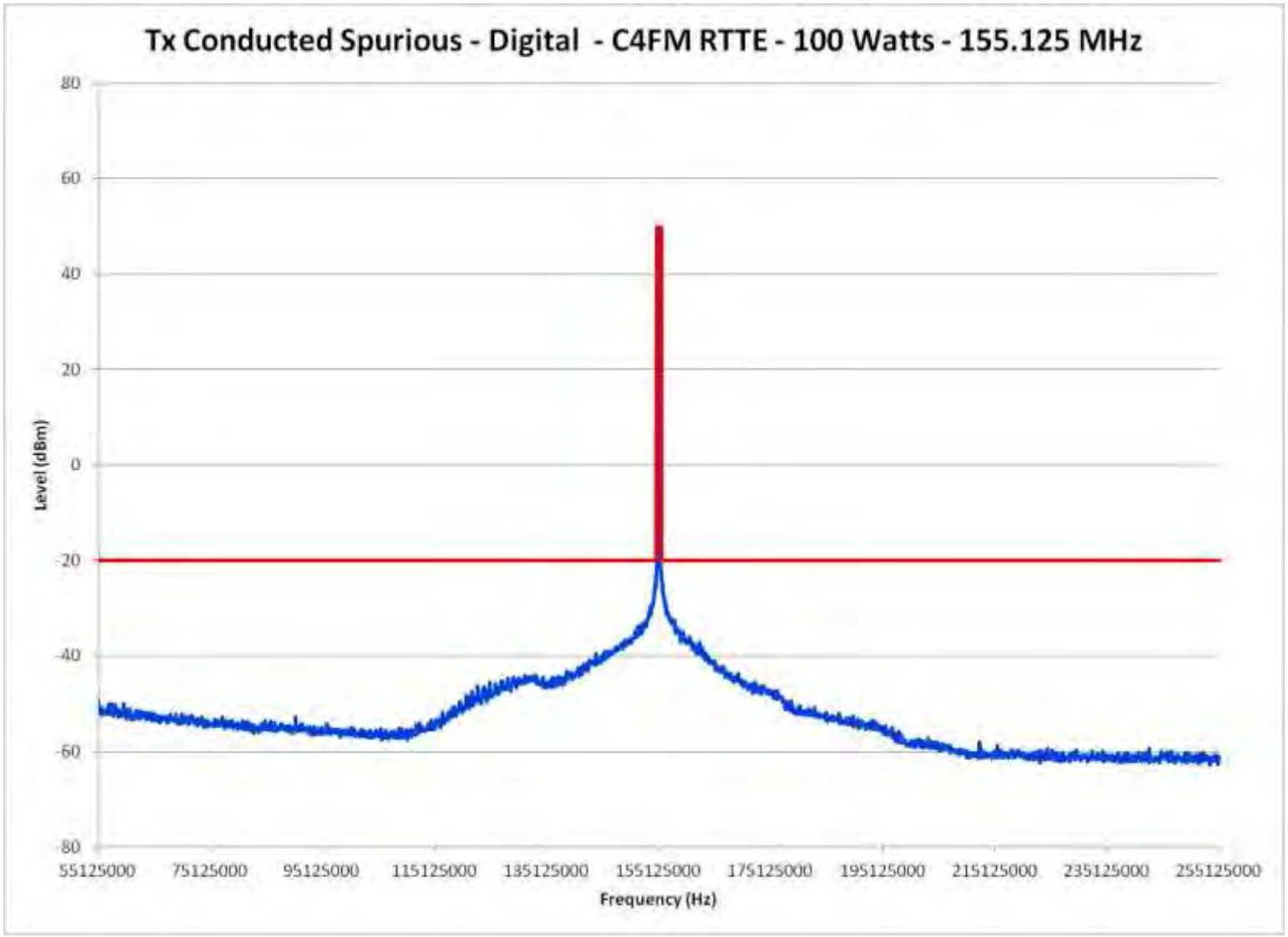
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts C4FM – 200 MHz Span – Lower End of Band



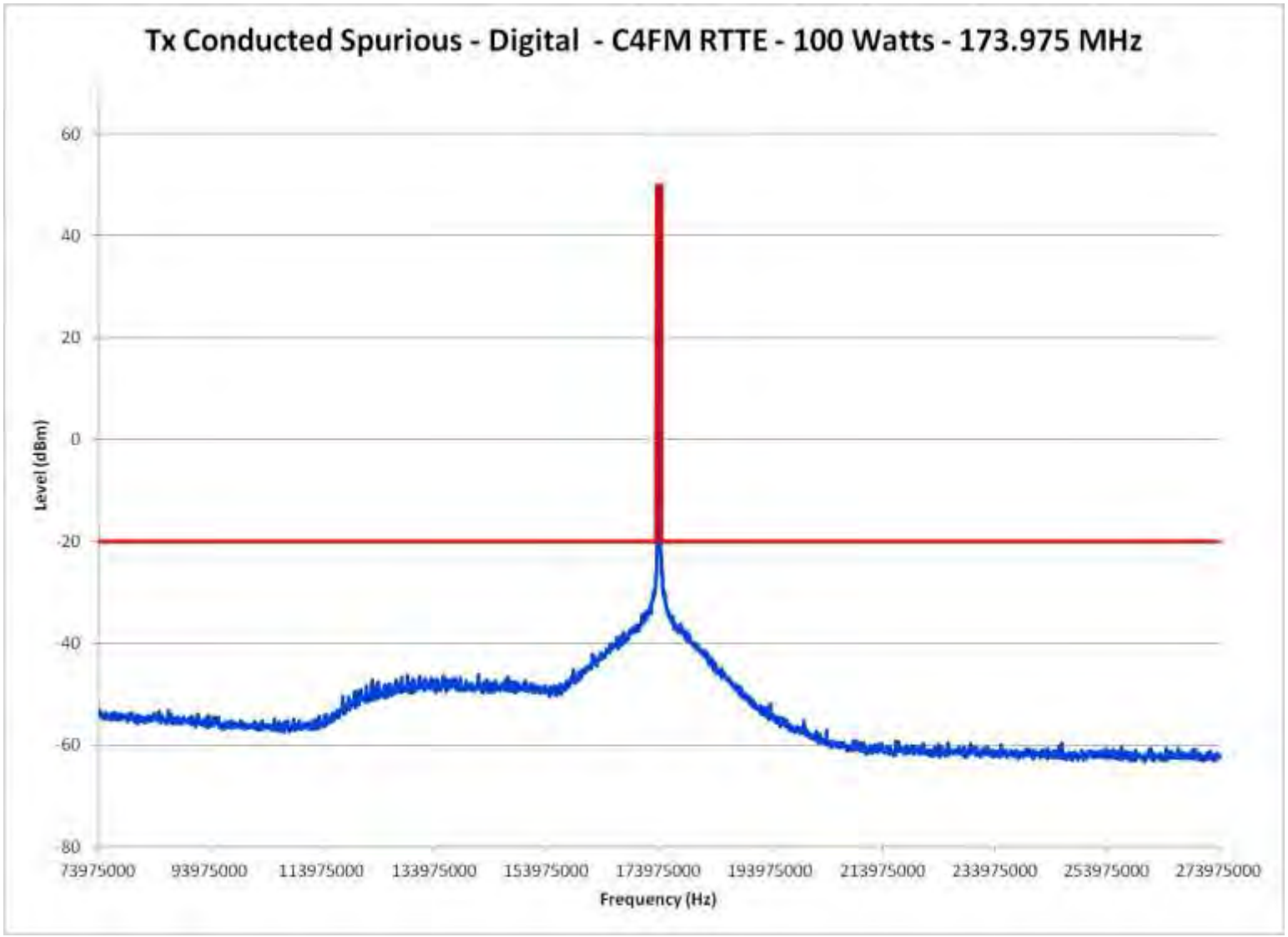
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts C4FM – 200 MHz Span – Middle of Band



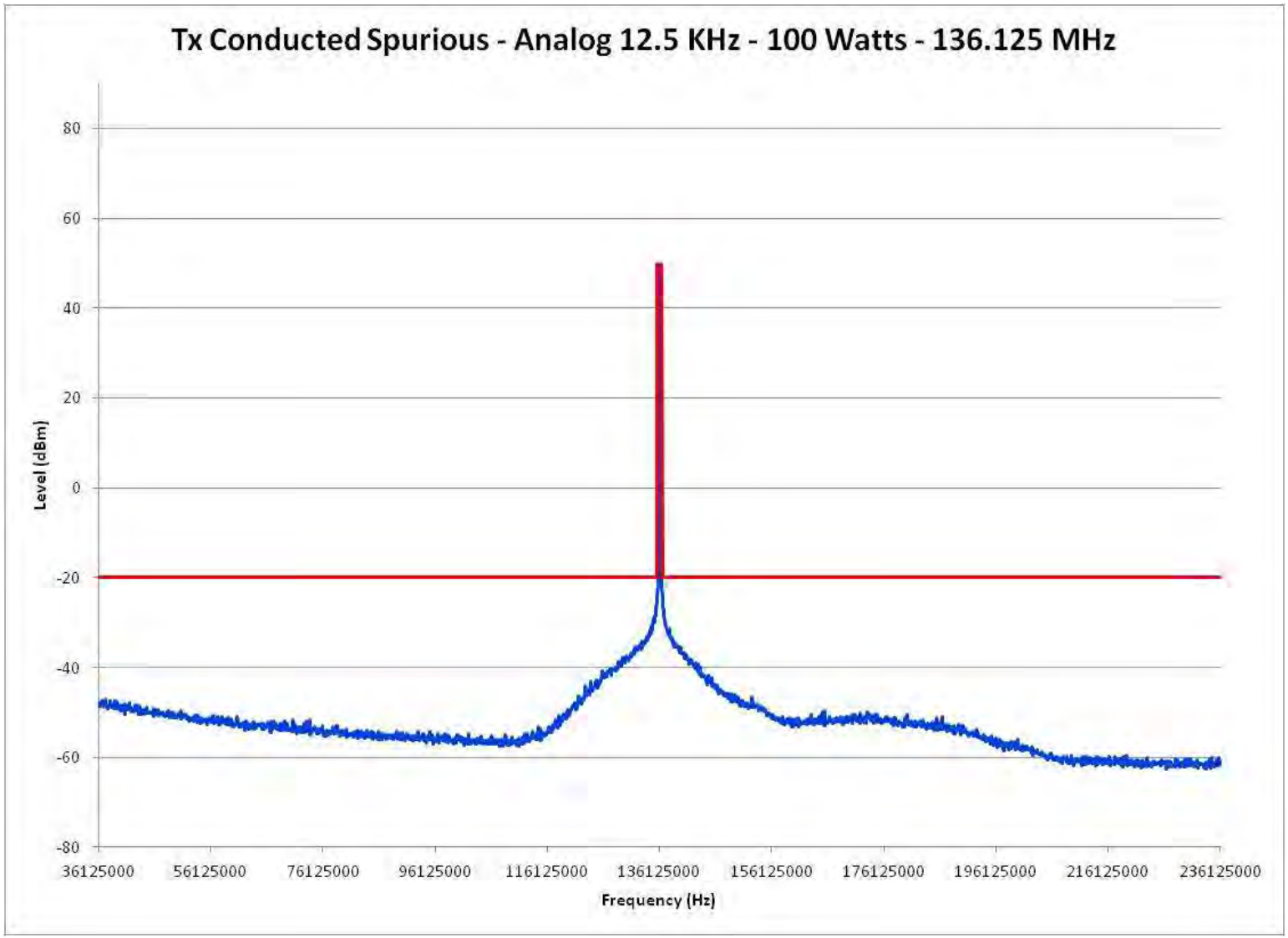
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts C4FM – 200 MHz Span – High End of Band



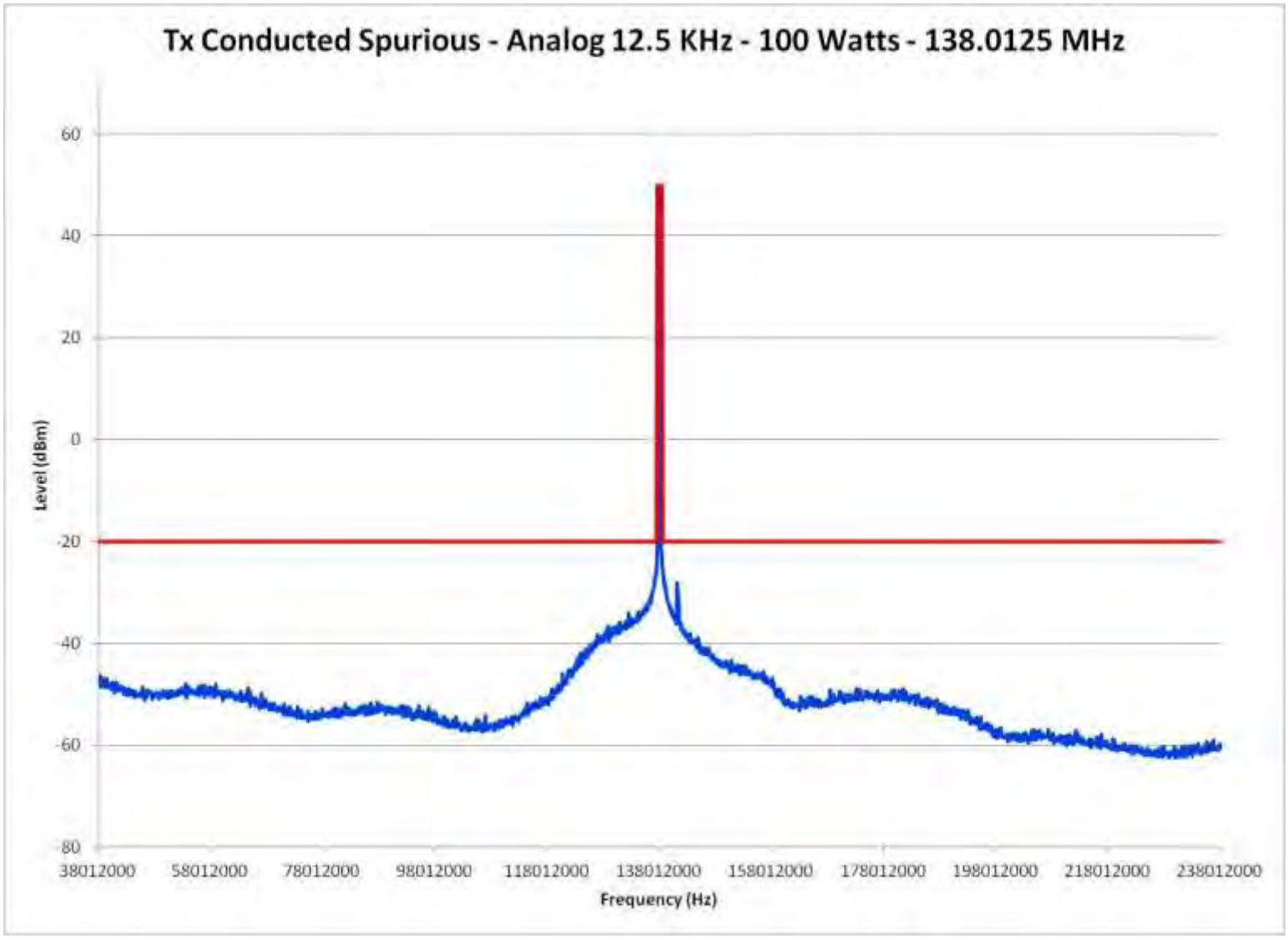
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts Analog – 200 MHz Span – Low End of Band



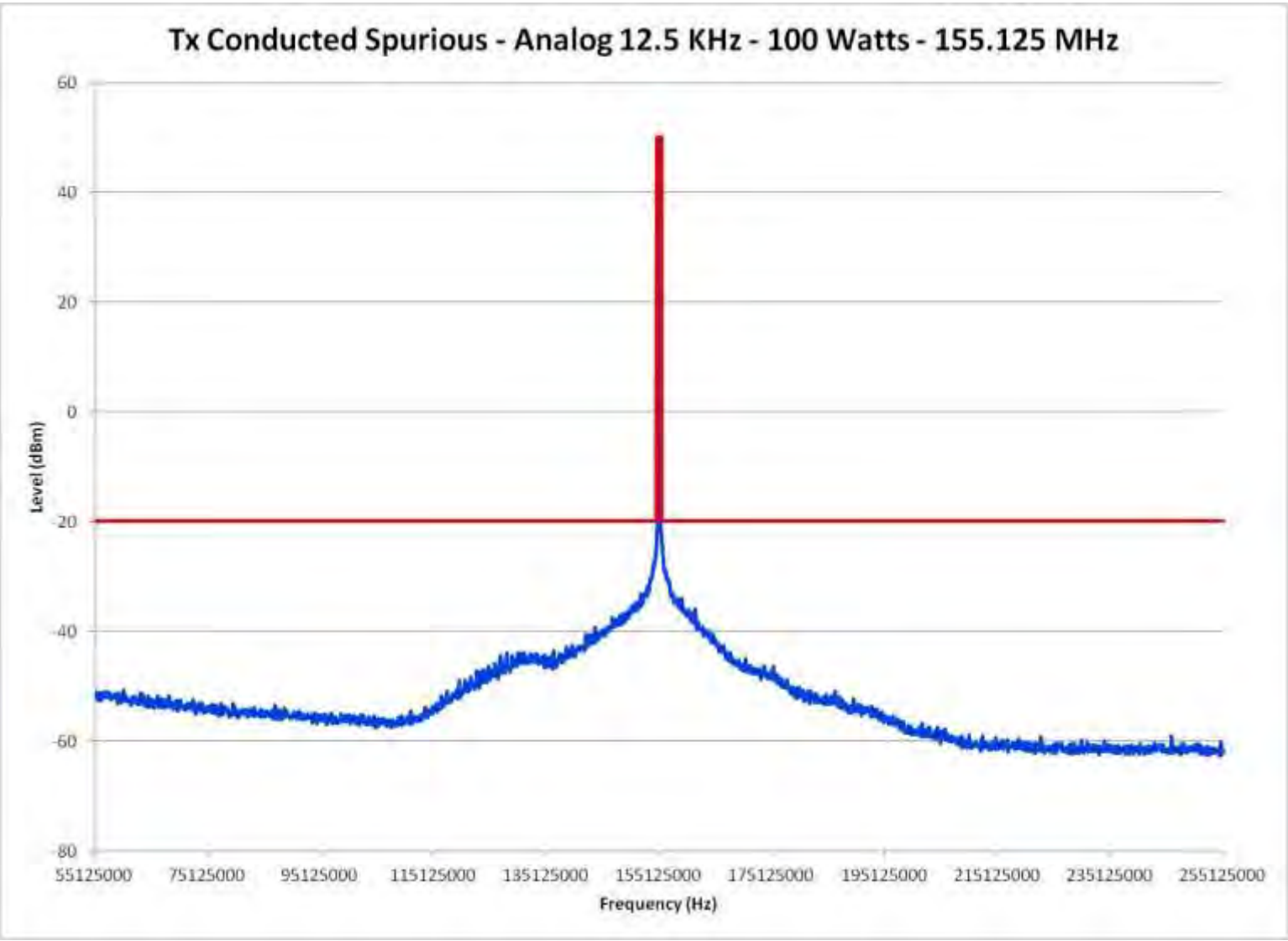
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts Analog – 200 MHz Span – Lower End of Band



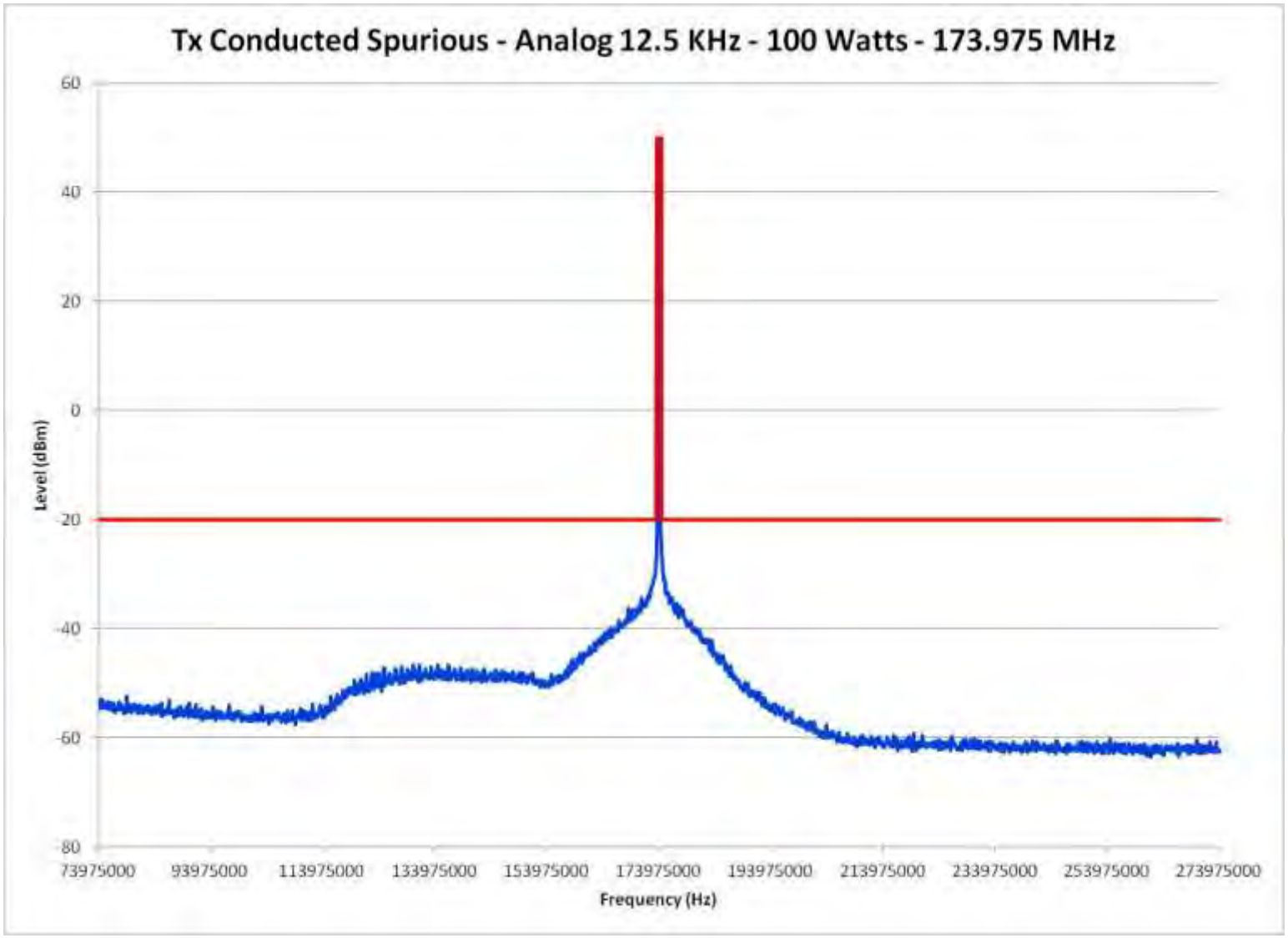
Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts Analog – 200 MHz Span – Middle of Band



Report on Test Measurements

Conducted Spurious Emission Spectrum – 100 Watts Analog – 200 MHz Span – High End of Band



Report on Test Measurements

Radiated Spurious Emissions, Harmonics

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:
(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.*

Modulation: Linear Simulcast Modulation (LSM) Pseudorandom data or Frequency Modulation (Analog) as indicated

Carrier Frequencies: Carrier frequencies of 138.0125, 155.0125, and 173.9875 MHz were measured for radiated carrier harmonics. These frequencies represent the low end, center, and high end of the 136-174 MHz band, and are representative of the full 136-174 MHz operating band.

EXHIBIT	DESCRIPTION
E1-4.1, 2, 3, 4	Radiated Spurious Harmonic Emissions, Power Output 60 Watts, LSM
E1-4.5, 6, 7, 8	Radiated Spurious Harmonic Emissions, Power Output 2 Watts, LSM
E1-4.9, 10, 11, 12	Radiated Spurious Harmonic Emissions, Power Output 100 Watts, C4FM
E1-4.13, 14, 15, 16	Radiated Spurious Harmonic Emissions, Power Output 2 Watts, C4FM

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 60 Watts, 136 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	136MHz
Notes	60W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
272.00	H	11.21	Ambient	-68.21	0.00	0.90	-69.11	116.89	67.78
272.00	V	11.40	Ambient	-67.99	0.00	0.90	-68.89	116.67	67.78
408.00	H	13.81	Ambient	-66.84	0.00	1.10	-67.94	115.72	67.78
408.00	V	15.92		-63.52	0.00	1.10	-64.62	112.40	67.78
544.00	H	12.20	Ambient	-61.55	0.00	1.27	-62.82	110.60	67.78
544.00	V	11.35	Ambient	-69.87	0.00	1.27	-71.14	118.92	67.78
680.00	H	12.36	Ambient	-67.68	0.00	1.42	-69.10	116.88	67.78
680.00	V	11.65	Ambient	-68.65	0.00	1.42	-70.07	117.85	67.78
816.00	H	11.20	Ambient	-69.30	0.00	1.55	-70.85	118.63	67.78
816.00	V	10.93	Ambient	-71.00	0.00	1.55	-72.55	120.33	67.78
952.00	H	12.83	Ambient	-68.60	0.00	1.68	-70.28	118.06	67.78
952.00	V	11.45	Ambient	-55.08	0.00	1.68	-56.76	104.54	67.78
1088.00	H	22.13	Ambient	-44.34	0.45	1.81	-45.70	93.48	67.78
1088.00	V	21.85	Ambient	-44.01	0.45	1.81	-45.36	93.14	67.78
1224.00	H	21.74	Ambient	-43.65	0.23	1.93	-45.34	93.12	67.78
1224.00	V	22.04	Ambient	-42.43	0.23	1.93	-44.12	91.90	67.78
1360.00	H	22.32	Ambient	-43.00	1.35	2.04	-43.70	91.48	67.78
1360.00	V	22.67	Ambient	-42.69	1.35	2.04	-43.38	91.16	67.78

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 60 Watts, 138 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	138MHz
Notes	60W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
276.00	H	11.61	Ambient	-74.64	0.00	0.91	-75.55	125.55	67.78
276.00	V	11.55	Ambient	-72.90	0.00	0.91	-73.81	123.81	67.78
414.00	H	14.48	Ambient	-64.86	0.00	1.11	-65.97	115.97	67.78
414.00	V	16.56		-62.80	0.00	1.11	-63.91	113.91	67.78
552.00	H	12.56	Ambient	-68.10	0.00	1.28	-69.38	119.38	67.78
552.00	V	11.55	Ambient	-70.00	0.00	1.28	-71.28	121.28	67.78
690.00	H	11.74	Ambient	-68.20	0.00	1.43	-69.63	119.63	67.78
690.00	V	11.71	Ambient	-68.00	0.00	1.43	-69.43	119.43	67.78
828.00	H	11.24	Ambient	-68.30	0.00	1.56	-69.86	119.86	67.78
828.00	V	11.06	Ambient	-70.64	0.00	1.56	-72.20	122.20	67.78
966.00	H	11.47	Ambient	-68.02	0.00	1.69	-69.71	119.71	67.78
966.00	V	11.68	Ambient	-67.38	0.00	1.69	-69.07	119.07	67.78
1104.00	H	21.78	Ambient	-44.53	0.44	1.82	-45.92	93.70	67.78
1104.00	V	21.89	Ambient	-43.74	0.44	1.82	-45.12	92.90	67.78
1242.00	H	22.44	Ambient	-42.94	0.32	1.95	-44.57	92.35	67.78
1242.00	V	22.22	Ambient	-42.37	0.32	1.95	-44.00	91.78	67.78
1380.00	H	22.13	Ambient	-43.18	1.59	2.06	-43.64	91.42	67.78
1380.00	V	22.14	Ambient	-43.34	1.59	2.06	-43.80	91.58	67.78

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 60 Watts, 155 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	155MHz
Notes	60W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
310.00	H	11.85	Ambient	-73.80	0.00	0.96	-74.76	122.54	67.78
310.00	V	12.91	Ambient	-72.44	0.00	0.96	-73.40	121.18	67.78
465.00	H	11.55	Ambient	-73.90	0.00	1.18	-75.08	122.86	67.78
465.00	V	14.13	Ambient	-66.48	0.00	1.18	-67.66	115.44	67.78
620.00	H	11.12	Ambient	-75.00	0.00	1.35	-76.35	124.14	67.78
620.00	V	14.03	Ambient	-66.54	0.00	1.35	-67.89	115.68	67.78
775.00	H	11.25	Ambient	-70.50	0.00	1.51	-72.01	119.79	67.78
775.00	V	11.20	Ambient	-65.00	0.00	1.51	-66.51	114.29	67.78
930.00	H	11.60	Ambient	-68.30	0.00	1.66	-69.96	117.74	67.78
930.00	V	11.80	Ambient	-68.16	0.00	1.66	-69.82	117.60	67.78
1085.00	H	21.87	Ambient	-44.64	0.45	1.80	-45.99	93.77	67.78
1085.00	V	21.73	Ambient	-44.17	0.45	1.80	-45.52	93.30	67.78
1240.00	H	22.45	Ambient	-42.93	0.31	1.94	-44.57	92.35	67.78
1240.00	V	22.15	Ambient	-42.43	0.31	1.94	-44.06	91.84	67.78
1395.00	H	22.02	Ambient	-43.28	1.78	2.07	-43.57	91.35	67.78
1395.00	V	22.05	Ambient	-43.52	1.78	2.07	-43.81	91.59	67.78
1550.00	H	21.69	Ambient	-45.59	3.91	2.18	-43.86	91.65	67.78
1550.00	V	21.65	Ambient	-45.25	3.91	2.18	-43.52	91.30	67.78

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 60 Watts, 174 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	174MHz
Notes	60W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
348.00	H	12.70	Ambient	-73.64	0.00	1.02	-74.66	122.44	67.78
348.00	V	13.83	Ambient	-70.22	0.00	1.02	-71.24	119.02	67.78
522.00	H	12.03	Ambient	-68.14	0.00	1.25	-69.39	117.17	67.78
522.00	V	12.15	Ambient	-68.06	0.00	1.25	-69.31	117.09	67.78
696.00	H	12.87	Ambient	-67.46	0.00	1.44	-68.90	116.68	67.78
696.00	V	12.88	Ambient	-66.88	0.00	1.44	-68.32	116.10	67.78
870.00	H	11.43	Ambient	-69.82	0.00	1.60	-71.42	119.20	67.78
870.00	V	11.73	Ambient	-67.54	0.00	1.60	-69.14	116.92	67.78
1044.00	H	21.56	Ambient	-45.37	0.46	1.76	-46.67	94.45	67.78
1044.00	V	21.78	Ambient	-44.74	0.46	1.76	-46.04	93.82	67.78
1218.00	H	22.97	Ambient	-42.42	0.21	1.93	-44.14	91.92	67.78
1218.00	V	21.90	Ambient	-42.53	0.21	1.93	-44.24	92.03	67.78
1392.00	H	22.06	Ambient	-43.24	1.74	2.07	-43.57	91.35	67.78
1392.00	V	22.32	Ambient	-43.23	1.74	2.07	-43.56	91.34	67.78
1566.00	H	21.76	Ambient	-45.72	4.04	2.19	-43.87	91.66	67.78
1566.00	V	21.40	Ambient	-45.63	4.04	2.19	-43.78	91.56	67.78
1740.00	H	20.95	Ambient	-44.67	4.12	2.30	-42.85	90.63	67.78
1740.00	V	21.87	Ambient	-42.08	4.12	2.30	-40.26	88.05	67.78

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 136 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	136MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
272.00	H	12.15	Ambient	-66.17	0.00	0.90	-67.08	100.09	53.01
272.00	V	11.29	Ambient	-74.35	0.00	0.90	-75.25	108.26	53.01
408.00	H	12.78	Ambient	-68.97	0.00	1.10	-70.07	103.08	53.01
408.00	V	12.72	Ambient	-68.67	0.00	1.10	-69.77	102.78	53.01
544.00	H	11.78	Ambient	-61.55	0.00	1.27	-62.82	95.83	53.01
544.00	V	12.33	Ambient	-69.87	0.00	1.27	-71.14	104.15	53.01
680.00	H	11.74	Ambient	-70.21	0.00	1.42	-71.63	104.64	53.01
680.00	V	11.95	Ambient	-56.95	0.00	1.42	-58.37	91.38	53.01
816.00	H	11.59	Ambient	-69.30	0.00	1.55	-70.85	103.86	53.01
816.00	V	11.87	Ambient	-56.02	0.00	1.55	-57.57	90.58	53.01
952.00	H	11.72	Ambient	-56.44	0.00	1.68	-58.11	91.13	53.01
952.00	V	11.41	Ambient	-55.08	0.00	1.68	-56.76	89.77	53.01
1088.00	H	21.81	Ambient	-44.66	0.45	1.81	-46.02	79.03	53.01
1088.00	V	21.99	Ambient	-43.87	0.45	1.81	-45.22	78.23	53.01
1224.00	H	21.70	Ambient	-43.69	0.23	1.93	-45.38	78.39	53.01
1224.00	V	21.80	Ambient	-42.67	0.23	1.93	-44.36	77.37	53.01
1360.00	H	22.13	Ambient	-43.19	1.35	2.04	-43.89	76.90	53.01
1360.00	V	22.36	Ambient	-43.00	1.35	2.04	-43.69	76.70	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 138 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	138MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
276.00	H	11.82	Ambient	-75.00	0.00	0.91	-75.91	108.92	53.01
276.00	V	11.52	Ambient	-72.90	0.00	0.91	-73.81	106.82	53.01
414.00	H	13.44	Ambient	-70.12	0.00	1.11	-71.23	104.24	53.01
414.00	V	13.31	Ambient	-65.00	0.00	1.11	-66.11	99.12	53.01
552.00	H	12.09	Ambient	-68.10	0.00	1.28	-69.38	102.39	53.01
552.00	V	11.28	Ambient	-70.00	0.00	1.28	-71.28	104.29	53.01
690.00	H	10.78	Ambient	-73.40	0.00	1.43	-74.83	107.84	53.01
690.00	V	11.64	Ambient	-68.00	0.00	1.43	-69.43	102.44	53.01
828.00	H	11.55	Ambient	-68.30	0.00	1.56	-69.86	102.87	53.01
828.00	V	10.87	Ambient	-70.64	0.00	1.56	-72.20	105.21	53.01
966.00	H	11.85	Ambient	-67.40	0.00	1.69	-69.09	102.10	53.01
966.00	V	12.32	Ambient	-59.84	0.00	1.69	-61.53	94.54	53.01
1104.00	H	22.01	Ambient	-44.30	0.44	1.82	-45.69	78.70	53.01
1104.00	V	21.93	Ambient	-43.70	0.44	1.82	-45.08	78.09	53.01
1242.00	H	21.97	Ambient	-43.41	0.32	1.95	-45.04	78.05	53.01
1242.00	V	21.84	Ambient	-42.75	0.32	1.95	-44.38	77.39	53.01
1380.00	H	22.16	Ambient	-43.15	1.59	2.06	-43.61	76.62	53.01
1380.00	V	22.39	Ambient	-43.09	1.59	2.06	-43.55	76.56	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 155 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	155MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
310.00	H	12.14	Ambient	-74.72	0.00	0.96	-75.68	108.69	53.01
310.00	V	11.73	Ambient	-73.88	0.00	0.96	-74.84	107.85	53.01
465.00	H	10.67	Ambient	-73.90	0.00	1.18	-75.08	108.09	53.01
465.00	V	10.76	Ambient	-72.20	0.00	1.18	-73.38	106.39	53.01
620.00	H	10.97	Ambient	-75.00	0.00	1.35	-76.35	109.37	53.01
620.00	V	11.24	Ambient	-62.90	0.00	1.35	-64.25	97.27	53.01
775.00	H	11.24	Ambient	-70.50	0.00	1.51	-72.01	105.02	53.01
775.00	V	11.26	Ambient	-65.00	0.00	1.51	-66.51	99.52	53.01
930.00	H	11.71	Ambient	-68.30	0.00	1.66	-69.96	102.97	53.01
930.00	V	12.67	Ambient	-58.80	0.00	1.66	-60.46	93.47	53.01
1085.00	H	21.89	Ambient	-44.62	0.45	1.80	-45.97	78.98	53.01
1085.00	V	21.89	Ambient	-44.01	0.45	1.80	-45.36	78.37	53.01
1240.00	H	22.04	Ambient	-43.34	0.31	1.94	-44.98	77.99	53.01
1240.00	V	22.02	Ambient	-42.56	0.31	1.94	-44.19	77.20	53.01
1395.00	H	22.10	Ambient	-43.20	1.78	2.07	-43.49	76.50	53.01
1395.00	V	22.74	Ambient	-42.83	1.78	2.07	-43.12	76.13	53.01
1550.00	H	21.79	Ambient	-45.49	3.91	2.18	-43.76	76.78	53.01
1550.00	V	21.26	Ambient	-45.64	3.91	2.18	-43.91	76.92	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 174 MHz, LSM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – LSM
Frequency Tested	174MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
348.00	H	12.65	Ambient	-73.64	0.00	1.02	-74.66	107.67	53.01
348.00	V	12.46	Ambient	-71.00	0.00	1.02	-72.02	105.03	53.01
522.00	H	11.36	Ambient	-64.38	0.00	1.25	-65.63	98.64	53.01
522.00	V	11.95	Ambient	-68.74	0.00	1.25	-69.99	103.00	53.01
696.00	H	11.09	Ambient	-68.66	0.00	1.44	-70.10	103.11	53.01
696.00	V	11.83	Ambient	-66.88	0.00	1.44	-68.32	101.33	53.01
870.00	H	11.28	Ambient	-70.34	0.00	1.60	-71.94	104.95	53.01
870.00	V	11.36	Ambient	-68.76	0.00	1.60	-70.36	103.37	53.01
1044.00	H	22.57	Ambient	-44.36	0.46	1.76	-45.66	78.67	53.01
1044.00	V	21.86	Ambient	-44.66	0.46	1.76	-45.96	78.97	53.01
1218.00	H	21.86	Ambient	-43.53	0.21	1.93	-45.25	78.26	53.01
1218.00	V	21.83	Ambient	-42.60	0.21	1.93	-44.31	77.32	53.01
1392.00	H	22.20	Ambient	-43.10	1.74	2.07	-43.43	76.44	53.01
1392.00	V	22.51	Ambient	-43.04	1.74	2.07	-43.37	76.38	53.01
1566.00	H	21.54	Ambient	-45.94	4.04	2.19	-44.09	77.10	53.01
1566.00	V	21.83	Ambient	-45.20	4.04	2.19	-43.35	76.36	53.01
1740.00	H	21.58	Ambient	-44.04	4.12	2.30	-42.22	75.23	53.01
1740.00	V	21.51	Ambient	-42.44	4.12	2.30	-40.62	73.64	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 100 Watts, 136 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	136MHz
Notes	100W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
272.00	H	11.57	Ambient	-66.75	0.00	0.90	-67.66	117.66	70.00
272.00	V	11.66	Ambient	-65.38	0.00	0.90	-66.28	116.28	70.00
408.00	H	13.54	Ambient	-62.30	0.00	1.10	-63.40	113.40	70.00
408.00	V	16.66		-62.80	0.00	1.10	-63.90	113.90	70.00
544.00	H	11.72	Ambient	-61.61	0.00	1.27	-62.88	112.88	70.00
544.00	V	11.56	Ambient	-59.60	0.00	1.27	-60.87	110.87	70.00
680.00	H	11.63	Ambient	-59.73	0.00	1.42	-61.15	111.15	70.00
680.00	V	11.45	Ambient	-57.45	0.00	1.42	-58.87	108.87	70.00
816.00	H	11.29	Ambient	-59.23	0.00	1.55	-60.78	110.78	70.00
816.00	V	11.28	Ambient	-56.61	0.00	1.55	-58.16	108.16	70.00
952.00	H	11.99	Ambient	-56.17	0.00	1.68	-57.84	107.84	70.00
952.00	V	12.75	Ambient	-53.74	0.00	1.68	-55.42	105.42	70.00
1088.00	H	21.90	Ambient	-44.57	0.45	1.81	-45.93	95.93	70.00
1088.00	V	21.72	Ambient	-44.14	0.45	1.81	-45.49	95.49	70.00
1224.00	H	21.69	Ambient	-43.70	0.23	1.93	-45.39	95.39	70.00
1224.00	V	21.83	Ambient	-42.64	0.23	1.93	-44.33	94.33	70.00
1360.00	H	22.70	Ambient	-42.62	1.35	2.04	-43.32	93.32	70.00
1360.00	V	21.97	Ambient	-43.39	1.35	2.04	-44.08	94.08	70.00

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 100 Watts, 138 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	138MHz
Notes	100W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
276.00	H	11.61	Ambient	-75.00	0.00	0.91	-75.91	125.91	70.00
276.00	V	11.55	Ambient	-72.90	0.00	0.91	-73.81	123.81	70.00
414.00	H	14.48	Ambient	-70.12	0.00	1.11	-71.23	121.23	70.00
414.00	V	16.56		-62.80	0.00	1.11	-63.91	113.91	70.00
552.00	H	12.56	Ambient	-68.10	0.00	1.28	-69.38	119.38	70.00
552.00	V	11.55	Ambient	-70.00	0.00	1.28	-71.28	121.28	70.00
690.00	H	11.74	Ambient	-72.50	0.00	1.43	-73.93	123.93	70.00
690.00	V	11.71	Ambient	-68.00	0.00	1.43	-69.43	119.43	70.00
828.00	H	11.24	Ambient	-68.30	0.00	1.56	-69.86	119.86	70.00
828.00	V	11.06	Ambient	-71.00	0.00	1.56	-72.56	122.56	70.00
966.00	H	11.47	Ambient	-67.40	0.00	1.69	-69.09	119.09	70.00
966.00	V	11.68	Ambient	-60.00	0.00	1.69	-61.69	111.69	70.00
1104.00	H	21.79	Ambient	-44.52	0.44	1.82	-45.91	95.91	70.00
1104.00	V	22.03	Ambient	-43.60	0.44	1.82	-44.98	94.98	70.00
1242.00	H	22.07	Ambient	-43.31	0.32	1.95	-44.94	94.94	70.00
1242.00	V	21.94	Ambient	-42.65	0.32	1.95	-44.28	94.28	70.00
1380.00	H	22.37	Ambient	-42.94	1.59	2.06	-43.40	93.40	70.00
1380.00	V	21.98	Ambient	-43.50	1.59	2.06	-43.96	93.96	70.00

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 100 Watts, 155 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	155MHz
Notes	100W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
310.00	H	11.81	Ambient	-74.99	0.00	0.96	-75.95	125.95	70.00
310.00	V	11.90	Ambient	-73.98	0.00	0.96	-74.94	124.94	70.00
465.00	H	10.80	Ambient	-73.84	0.00	1.18	-75.02	125.02	70.00
465.00	V	13.03	Ambient	-65.56	0.00	1.18	-66.74	116.74	70.00
620.00	H	11.70	Ambient	-75.00	0.00	1.35	-76.35	126.35	70.00
620.00	V	12.80	Ambient	-67.34	0.00	1.35	-68.69	118.69	70.00
775.00	H	10.95	Ambient	-70.75	0.00	1.51	-72.26	122.26	70.00
775.00	V	11.09	Ambient	-70.29	0.00	1.51	-71.80	121.80	70.00
930.00	H	11.92	Ambient	-58.98	0.00	1.66	-60.64	110.64	70.00
930.00	V	11.74	Ambient	-67.68	0.00	1.66	-69.34	119.34	70.00
1085.00	H	22.22	Ambient	-44.29	0.45	1.80	-45.64	95.64	70.00
1085.00	V	22.17	Ambient	-43.73	0.45	1.80	-45.08	95.08	70.00
1240.00	H	21.78	Ambient	-43.60	0.31	1.94	-45.24	95.24	70.00
1240.00	V	22.14	Ambient	-42.44	0.31	1.94	-44.07	94.07	70.00
1395.00	H	22.33	Ambient	-42.97	1.78	2.07	-43.26	93.26	70.00
1395.00	V	22.47	Ambient	-43.10	1.78	2.07	-43.39	93.39	70.00
1550.00	H	21.69	Ambient	-45.59	3.91	2.18	-43.86	93.86	70.00
1550.00	V	21.30	Ambient	-45.60	3.91	2.18	-43.87	93.87	70.00

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 100 Watts, 174 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	174MHz
Notes	100W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
348.00	H	12.61	Ambient	-70.55	0.00	1.02	-71.57	121.57	70.00
348.00	V	13.35	Ambient	-69.26	0.00	1.02	-70.28	120.28	70.00
522.00	H	11.76	Ambient	-68.99	0.00	1.25	-70.24	120.24	70.00
522.00	V	12.28	Ambient	-65.18	0.00	1.25	-66.43	116.43	70.00
696.00	H	11.67	Ambient	-67.95	0.00	1.44	-69.39	119.39	70.00
696.00	V	12.08	Ambient	-65.23	0.00	1.44	-66.67	116.67	70.00
870.00	H	11.16	Ambient	-71.89	0.00	1.60	-73.49	123.49	70.00
870.00	V	11.50	Ambient	-68.98	0.00	1.60	-70.58	120.58	70.00
1044.00	H	22.21	Ambient	-44.72	0.46	1.76	-46.02	96.02	70.00
1044.00	V	22.48	Ambient	-44.04	0.46	1.76	-45.34	95.34	70.00
1218.00	H	22.03	Ambient	-43.36	0.21	1.93	-45.08	95.08	70.00
1218.00	V	21.85	Ambient	-42.58	0.21	1.93	-44.29	94.29	70.00
1392.00	H	22.30	Ambient	-43.00	1.74	2.07	-43.33	93.33	70.00
1392.00	V	21.92	Ambient	-43.63	1.74	2.07	-43.96	93.96	70.00
1566.00	H	21.26	Ambient	-46.22	4.04	2.19	-44.37	94.37	70.00
1566.00	V	21.57	Ambient	-45.46	4.04	2.19	-43.61	93.61	70.00
1740.00	H	21.54	Ambient	-44.08	4.12	2.30	-42.26	92.26	70.00
1740.00	V	21.47	Ambient	-42.48	4.12	2.30	-40.66	90.66	70.00

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 136 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	136MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
272.00	H	11.24	Ambient	-75.00	0.00	0.90	-75.90	108.91	53.01
272.00	V	11.62	Ambient	-75.00	0.00	0.90	-75.90	108.91	53.01
408.00	H	13.01	Ambient	-75.00	0.00	1.10	-76.10	109.11	53.01
408.00	V	13.09	Ambient	-67.00	0.00	1.10	-68.10	101.11	53.01
544.00	H	12.02	Ambient	-69.30	0.00	1.27	-70.57	103.58	53.01
544.00	V	11.40	Ambient	-69.00	0.00	1.27	-70.27	103.28	53.01
680.00	H	11.69	Ambient	-70.00	0.00	1.42	-71.42	104.43	53.01
680.00	V	11.40	Ambient	-65.80	0.00	1.42	-67.22	100.23	53.01
816.00	H	11.59	Ambient	-69.30	0.00	1.55	-70.85	103.86	53.01
816.00	V	11.19	Ambient	-67.00	0.00	1.55	-68.55	101.56	53.01
952.00	H	12.08	Ambient	-67.30	0.00	1.68	-68.98	101.99	53.01
952.00	V	12.75	Ambient	-51.06	0.00	1.68	-52.74	85.75	53.01
1088.00	H	21.94	Ambient	-44.53	0.45	1.81	-45.89	78.90	53.01
1088.00	V	22.27	Ambient	-43.59	0.45	1.81	-44.94	77.95	53.01
1224.00	H	21.71	Ambient	-43.68	0.23	1.93	-45.37	78.38	53.01
1224.00	V	22.02	Ambient	-42.45	0.23	1.93	-44.14	77.15	53.01
1360.00	H	22.59	Ambient	-42.73	1.35	2.04	-43.43	76.44	53.01
1360.00	V	22.05	Ambient	-43.31	1.35	2.04	-44.00	77.01	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 138 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	138MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
276.00	H	11.39	Ambient	-75.00	0.00	0.91	-75.91	108.92	53.01
276.00	V	11.62	Ambient	-72.90	0.00	0.91	-73.81	106.82	53.01
414.00	H	13.59	Ambient	-70.12	0.00	1.11	-71.23	104.24	53.01
414.00	V	13.47	Ambient	-65.00	0.00	1.11	-66.11	99.12	53.01
552.00	H	12.11	Ambient	-68.10	0.00	1.28	-69.38	102.39	53.01
552.00	V	10.82	Ambient	-70.00	0.00	1.28	-71.28	104.29	53.01
690.00	H	11.35	Ambient	-72.50	0.00	1.43	-73.93	106.94	53.01
690.00	V	11.28	Ambient	-68.00	0.00	1.43	-69.43	102.44	53.01
828.00	H	11.41	Ambient	-68.30	0.00	1.56	-69.86	102.87	53.01
828.00	V	10.22	Ambient	-71.00	0.00	1.56	-72.56	105.57	53.01
966.00	H	11.80	Ambient	-67.40	0.00	1.69	-69.09	102.10	53.01
966.00	V	11.58	Ambient	-60.00	0.00	1.69	-61.69	94.70	53.01
1104.00	H	22.38	Ambient	-43.93	0.44	1.82	-45.32	78.33	53.01
1104.00	V	22.05	Ambient	-43.58	0.44	1.82	-44.96	77.97	53.01
1242.00	H	22.02	Ambient	-43.36	0.32	1.95	-44.99	78.00	53.01
1242.00	V	22.11	Ambient	-42.48	0.32	1.95	-44.11	77.12	53.01
1380.00	H	21.84	Ambient	-43.47	1.59	2.06	-43.93	76.94	53.01
1380.00	V	22.07	Ambient	-43.41	1.59	2.06	-43.87	76.88	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 155 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	155MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
310.00	H	11.95	Ambient	-75.00	0.00	0.96	-75.96	108.97	53.01
310.00	V	11.36	Ambient	-74.00	0.00	0.96	-74.96	107.97	53.01
465.00	H	10.53	Ambient	-73.90	0.00	1.18	-75.08	108.09	53.01
465.00	V	10.49	Ambient	-72.20	0.00	1.18	-73.38	106.39	53.01
620.00	H	10.65	Ambient	-75.00	0.00	1.35	-76.35	109.37	53.01
620.00	V	11.55	Ambient	-62.90	0.00	1.35	-64.25	97.27	53.01
775.00	H	11.15	Ambient	-70.50	0.00	1.51	-72.01	105.02	53.01
775.00	V	11.28	Ambient	-65.00	0.00	1.51	-66.51	99.52	53.01
930.00	H	11.62	Ambient	-68.30	0.00	1.66	-69.96	102.97	53.01
930.00	V	11.96	Ambient	-59.00	0.00	1.66	-60.66	93.67	53.01
1085.00	H	21.98	Ambient	-44.53	0.45	1.80	-45.88	78.89	53.01
1085.00	V	22.30	Ambient	-43.60	0.45	1.80	-44.95	77.96	53.01
1240.00	H	21.99	Ambient	-43.39	0.31	1.94	-45.03	78.04	53.01
1240.00	V	22.23	Ambient	-42.35	0.31	1.94	-43.98	76.99	53.01
1395.00	H	21.70	Ambient	-43.60	1.78	2.07	-43.89	76.90	53.01
1395.00	V	22.16	Ambient	-43.41	1.78	2.07	-43.70	76.71	53.01
1550.00	H	21.30	Ambient	-45.98	3.91	2.18	-44.25	77.27	53.01
1550.00	V	21.37	Ambient	-45.53	3.91	2.18	-43.80	76.81	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions – Power Output 2 Watts, 174 MHz, C4FM

Test Details	
Manufacturer	Motorola Solutions, Inc.
EUT	GTR8000 Base Radio
Model No.	T7039A - VHF 60W PA
Serial No.	112CWR0096
Mode	Tx – C4FM
Frequency Tested	174MHz
Notes	2W Power

Freq. (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	Attenuation Below Output Power (dB)	Minimum Attenuation (dB)
348.00	H	12.37	Ambient	-75.00	0.00	1.02	-76.02	109.03	53.01
348.00	V	12.40	Ambient	-71.00	0.00	1.02	-72.02	105.03	53.01
522.00	H	11.83	Ambient	-63.00	0.00	1.25	-64.25	97.26	53.01
522.00	V	11.73	Ambient	-69.00	0.00	1.25	-70.25	103.26	53.01
696.00	H	11.51	Ambient	-68.00	0.00	1.44	-69.44	102.45	53.01
696.00	V	11.42	Ambient	-67.00	0.00	1.44	-68.44	101.45	53.01
870.00	H	10.92	Ambient	-72.60	0.00	1.60	-74.20	107.21	53.01
870.00	V	11.54	Ambient	-69.00	0.00	1.60	-70.60	103.61	53.01
1044.00	H	21.73	Ambient	-45.20	0.46	1.76	-46.50	79.51	53.01
1044.00	V	22.43	Ambient	-44.09	0.46	1.76	-45.39	78.40	53.01
1218.00	H	22.03	Ambient	-43.36	0.21	1.93	-45.08	78.09	53.01
1218.00	V	21.98	Ambient	-42.45	0.21	1.93	-44.16	77.17	53.01
1392.00	H	22.18	Ambient	-43.12	1.74	2.07	-43.45	76.46	53.01
1392.00	V	22.06	Ambient	-43.49	1.74	2.07	-43.82	76.83	53.01
1566.00	H	21.81	Ambient	-45.67	4.04	2.19	-43.82	76.83	53.01
1566.00	V	21.20	Ambient	-45.83	4.04	2.19	-43.98	76.99	53.01
1740.00	H	21.35	Ambient	-44.27	4.12	2.30	-42.45	75.46	53.01
1740.00	V	21.63	Ambient	-42.32	4.12	2.30	-40.50	73.52	53.01

Report on Test Measurements

Oscillator Frequency Stability

Manufacturer data for the system site frequency standard was used in generation of the following frequency stability exhibits.

Specification Requirement: Reference Part 90.213

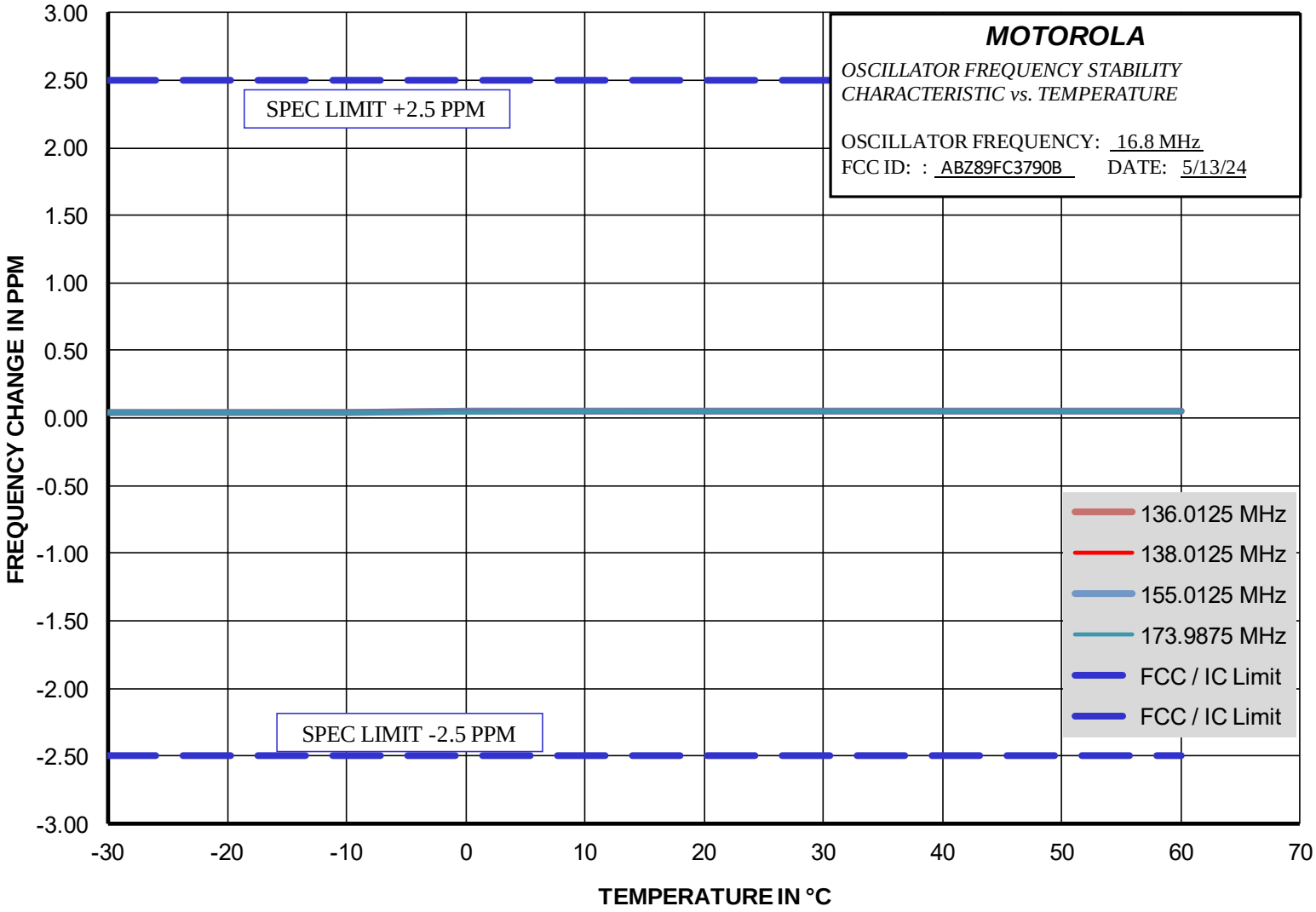
Fixed and Base stations operating at 150-174 MHz and 12.5 kHz channel bandwidth must have a frequency stability of better than +/- 2.5 PPM.

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

EXHIBIT	DESCRIPTION
E1-5.1	Frequency Stability Vs Temperature
E1-5.2	Frequency Stability Vs Voltage

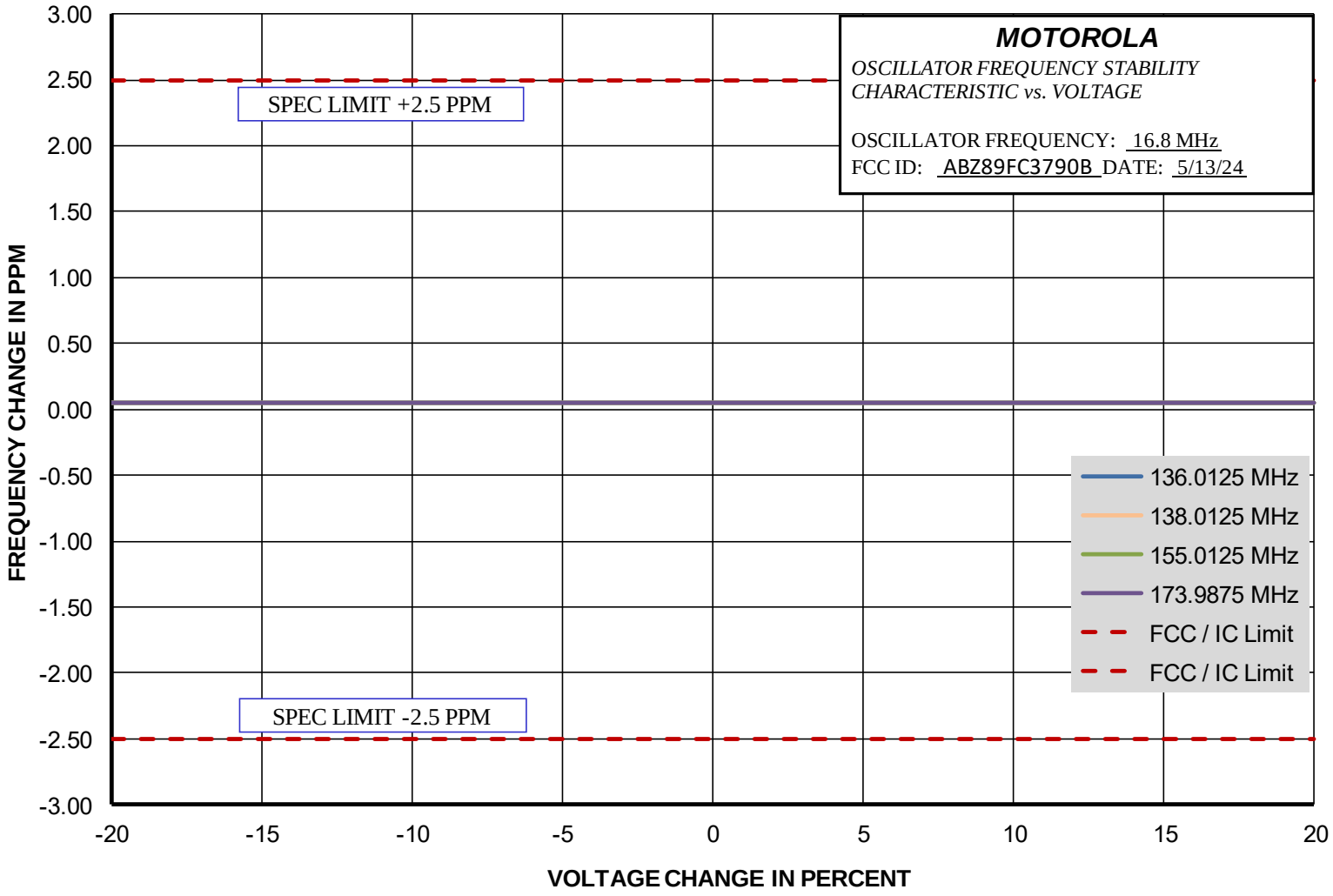
Report on Test Measurements

Frequency Stability Vs Temperature



Report on Test Measurements

Frequency Stability Vs Voltage



Report on Test Measurements

Frequency Transient Behavior

Specification Requirement: Reference Part 90.214

Transmitters designed to operate in the 150-174 MHz 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. t_1 =5 ms Maximum Frequency Difference ±25 kHz

b. t_2 = 20 ms Maximum Frequency Difference ±12.5 kHz

c. t_3 = 5 ms Maximum Frequency Difference ±25 kHz

Transient Frequency Behavior 12.5 kHz Channels

For time intervals:

a. t_1 =5 ms Maximum Frequency Difference ±12.5 kHz

b. t_2 = 20 ms Maximum Frequency Difference ±6.25 kHz

c. t_3 = 5 ms Maximum Frequency Difference ±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.

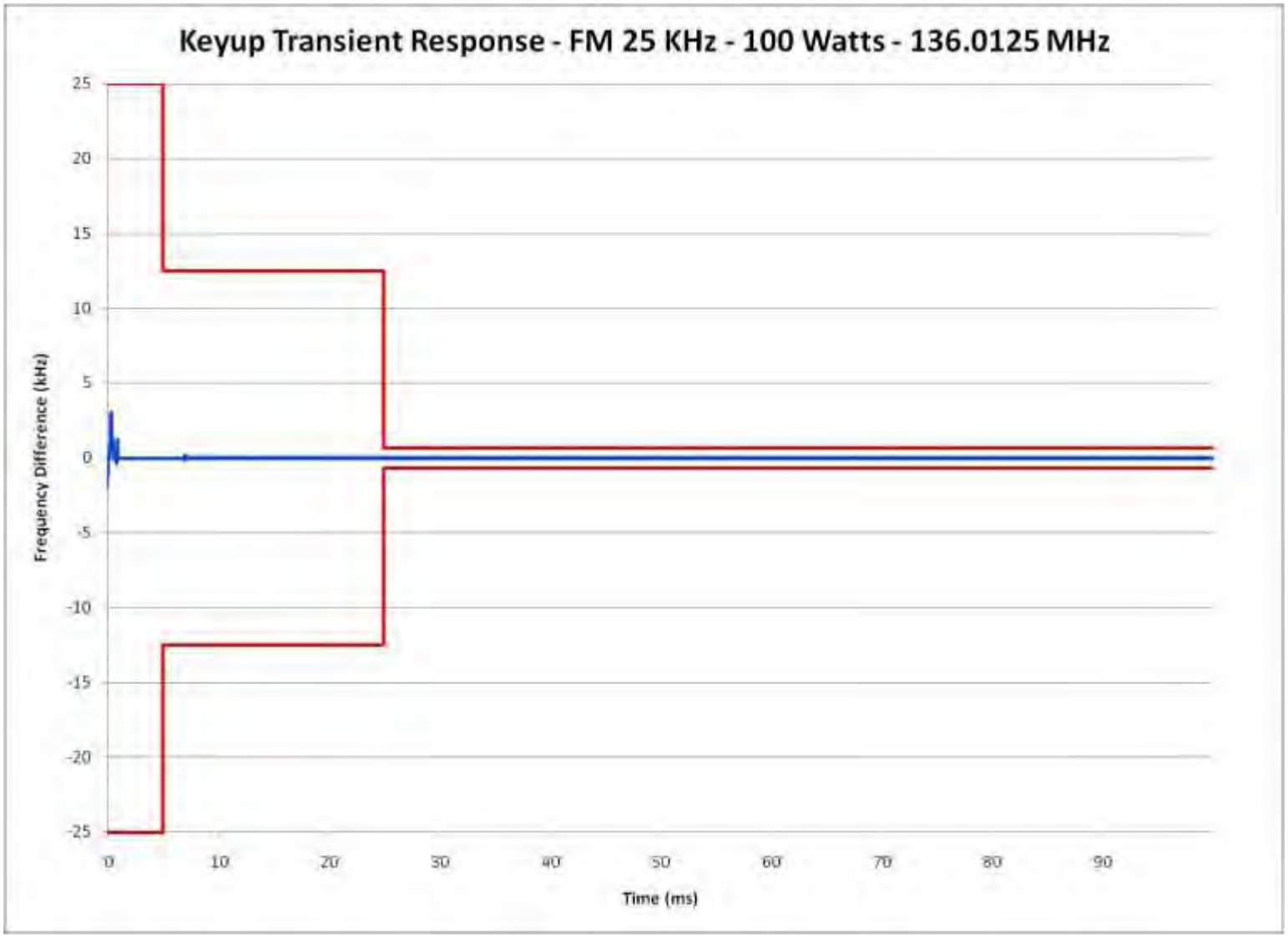
During the time from the end of $t_2$to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

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.

EXHIBIT	DESCRIPTION
E1-6.1, 2, 3, 4	Frequency Transient Behavior, 25 kHz Channel Key-Up
E1-6.5, 6, 7, 8	Frequency Transient Behavior, 25 kHz Channel De-Key
E1-6.9, 10, 11, 12	Frequency Transient Behavior, 12.5 kHz Channel Key-Up
E1-6.13, 14, 15, 16	Frequency Transient Behavior, 12.5 kHz Channel De-key

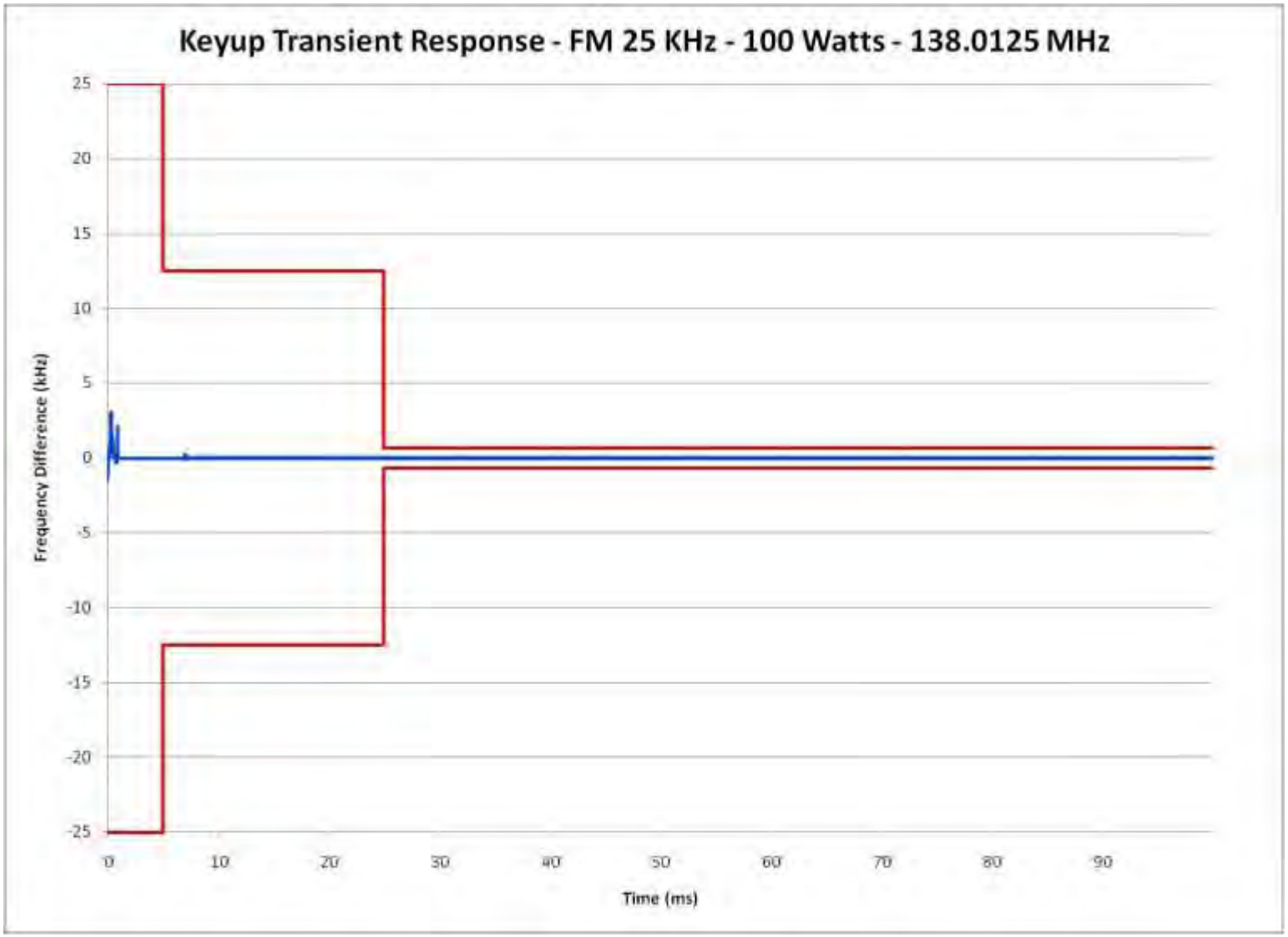
Report on Test Measurements

Frequency Transient – Key-up – 25 kHz Channels – Low End of Band



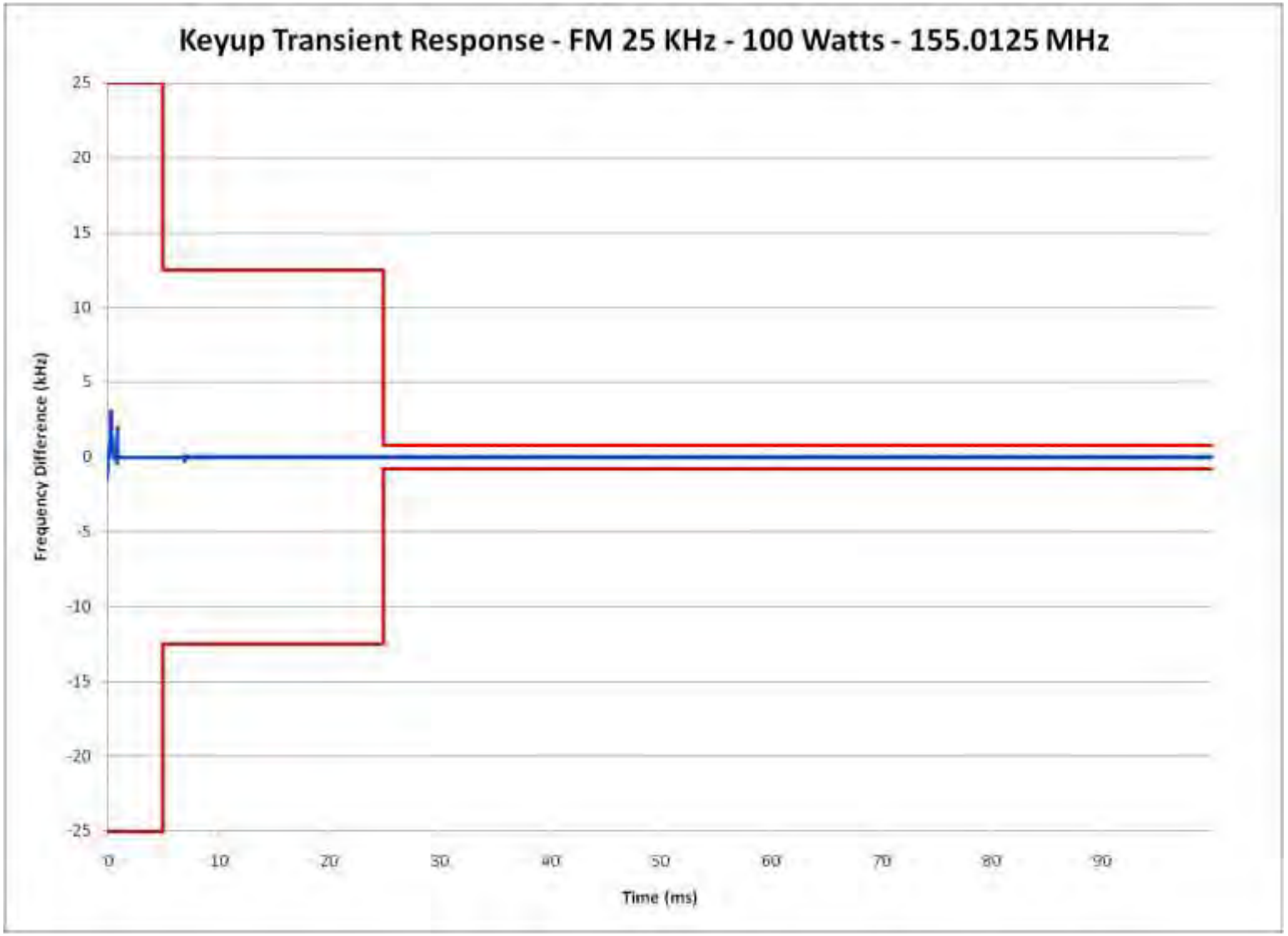
Report on Test Measurements

Frequency Transient – Key-up – 25 kHz Channels – Lower End of Band



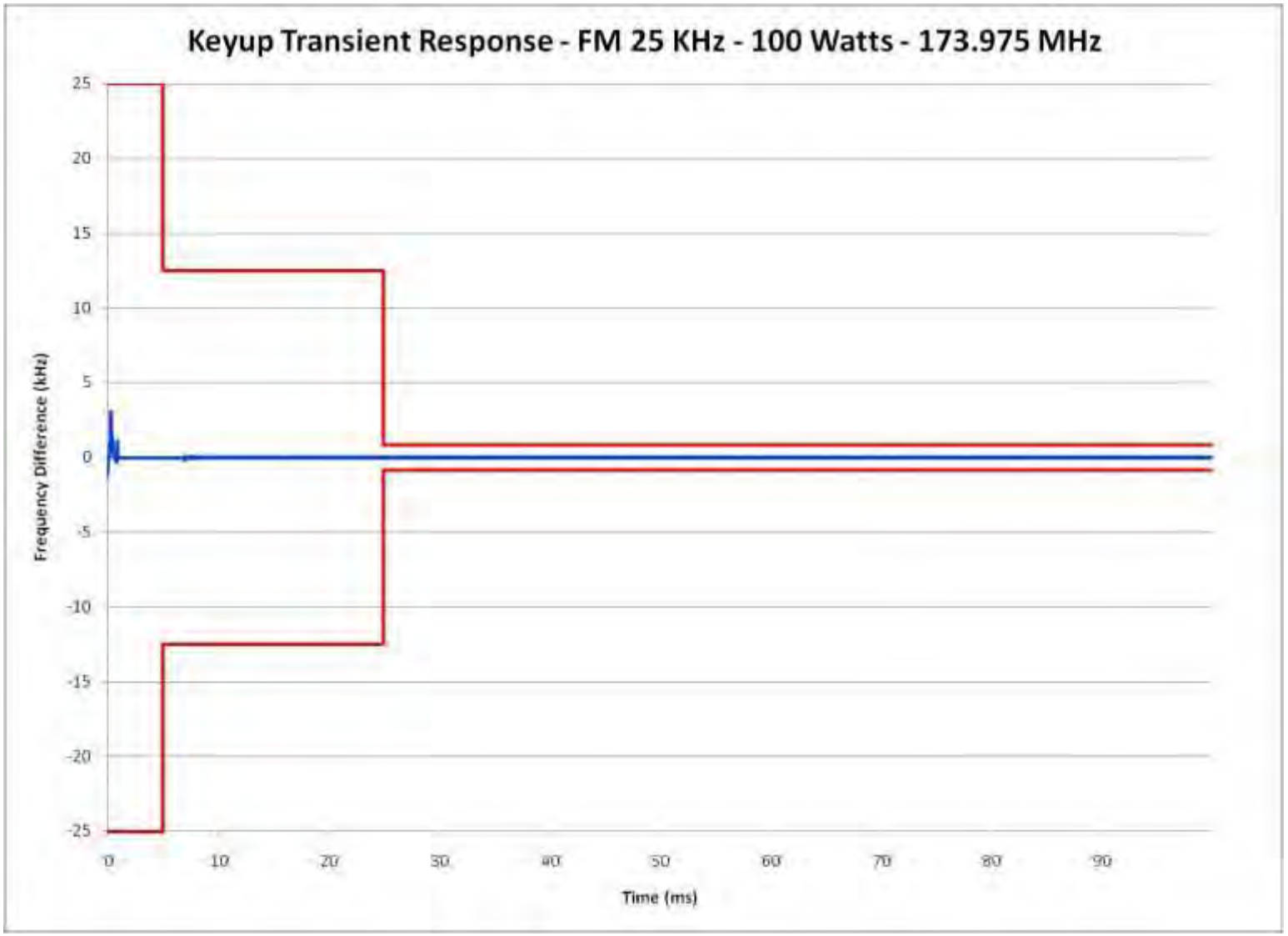
Report on Test Measurements

Frequency Transient – Key-up – 25 kHz Channels – Middle of Band



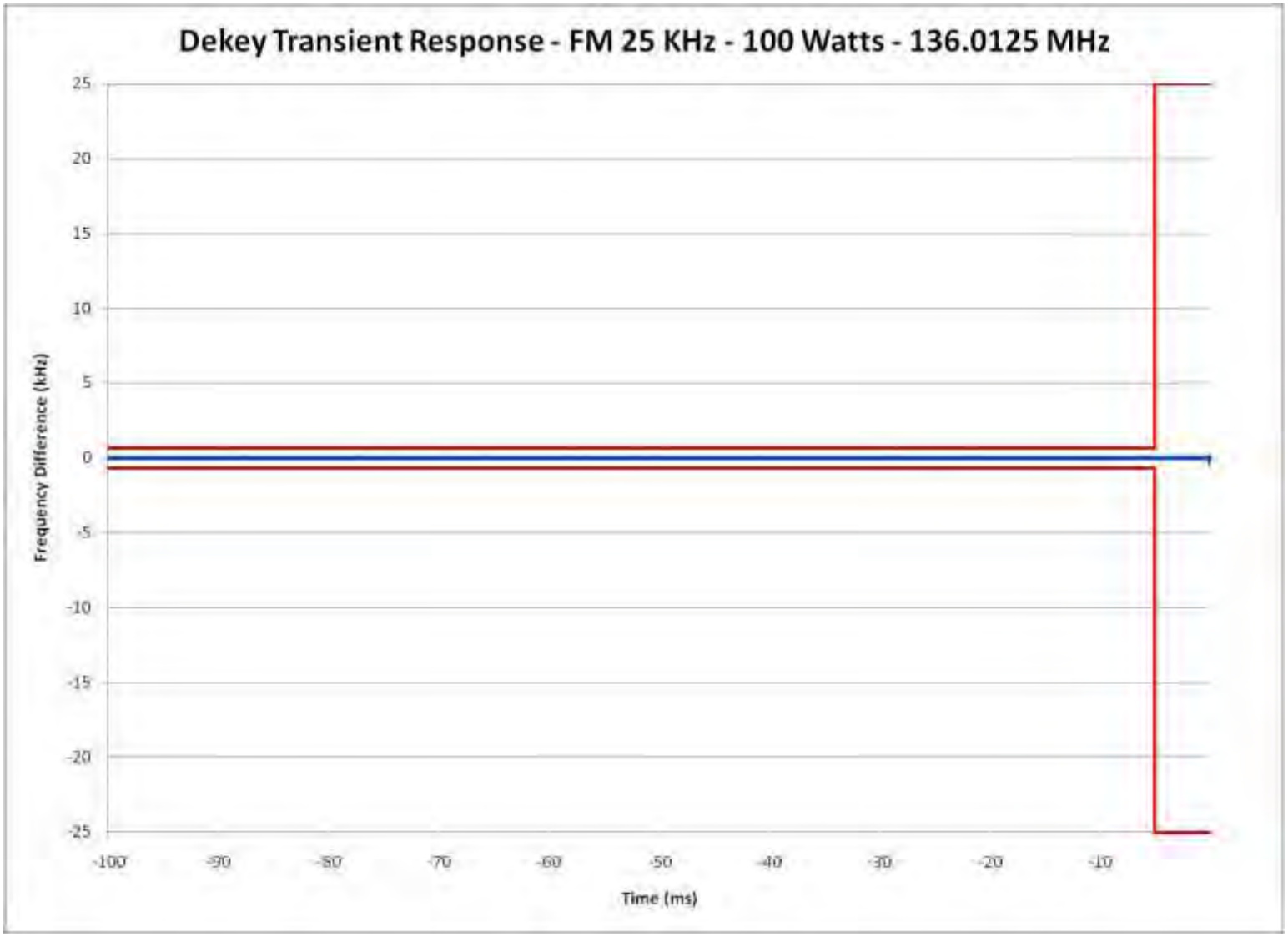
Report on Test Measurements

Frequency Transient – Key-up – 25 kHz Channels – High End of Band



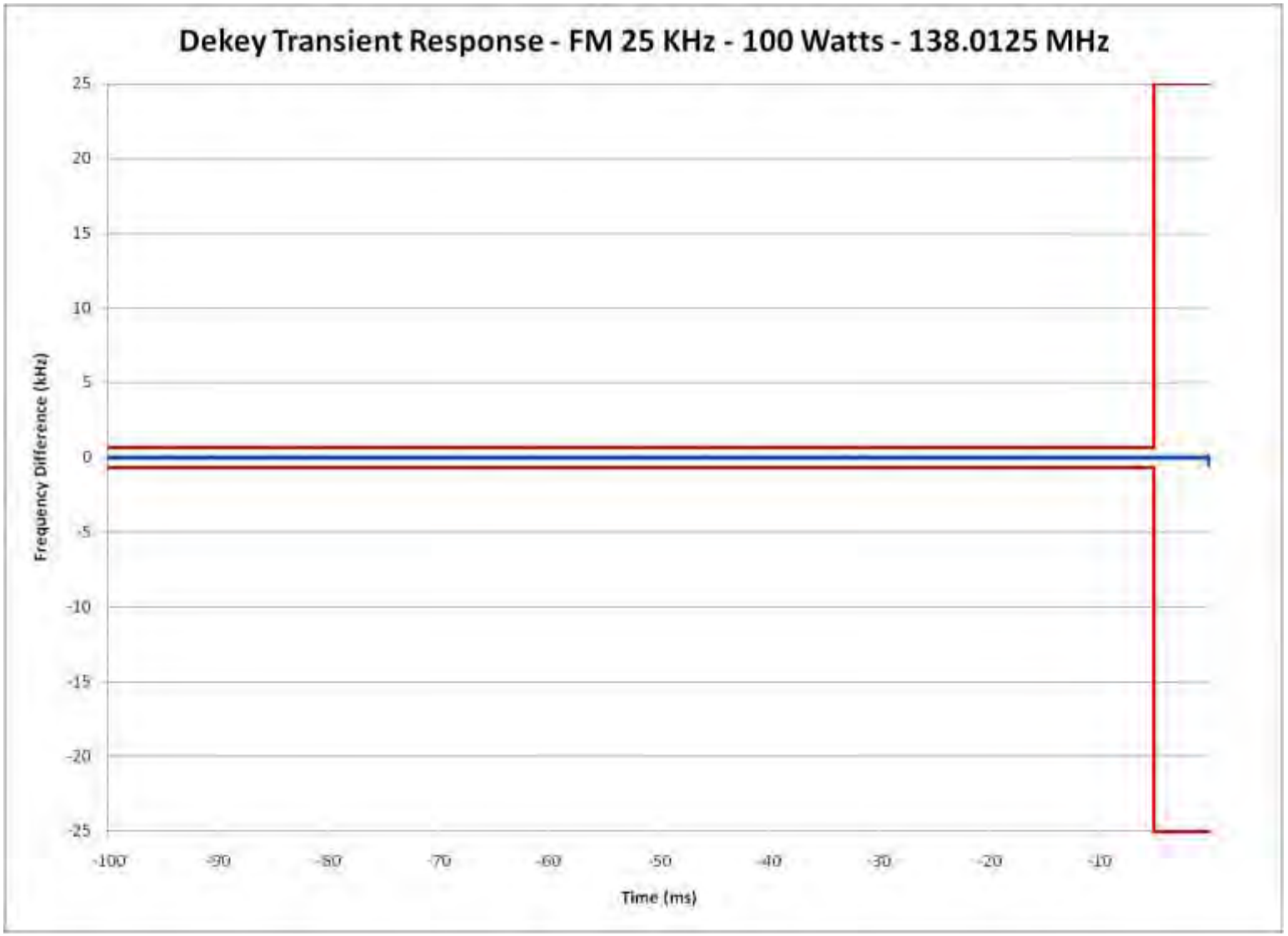
Report on Test Measurements

Frequency Transient – De-Key – 25 kHz Channels – Low End of Band



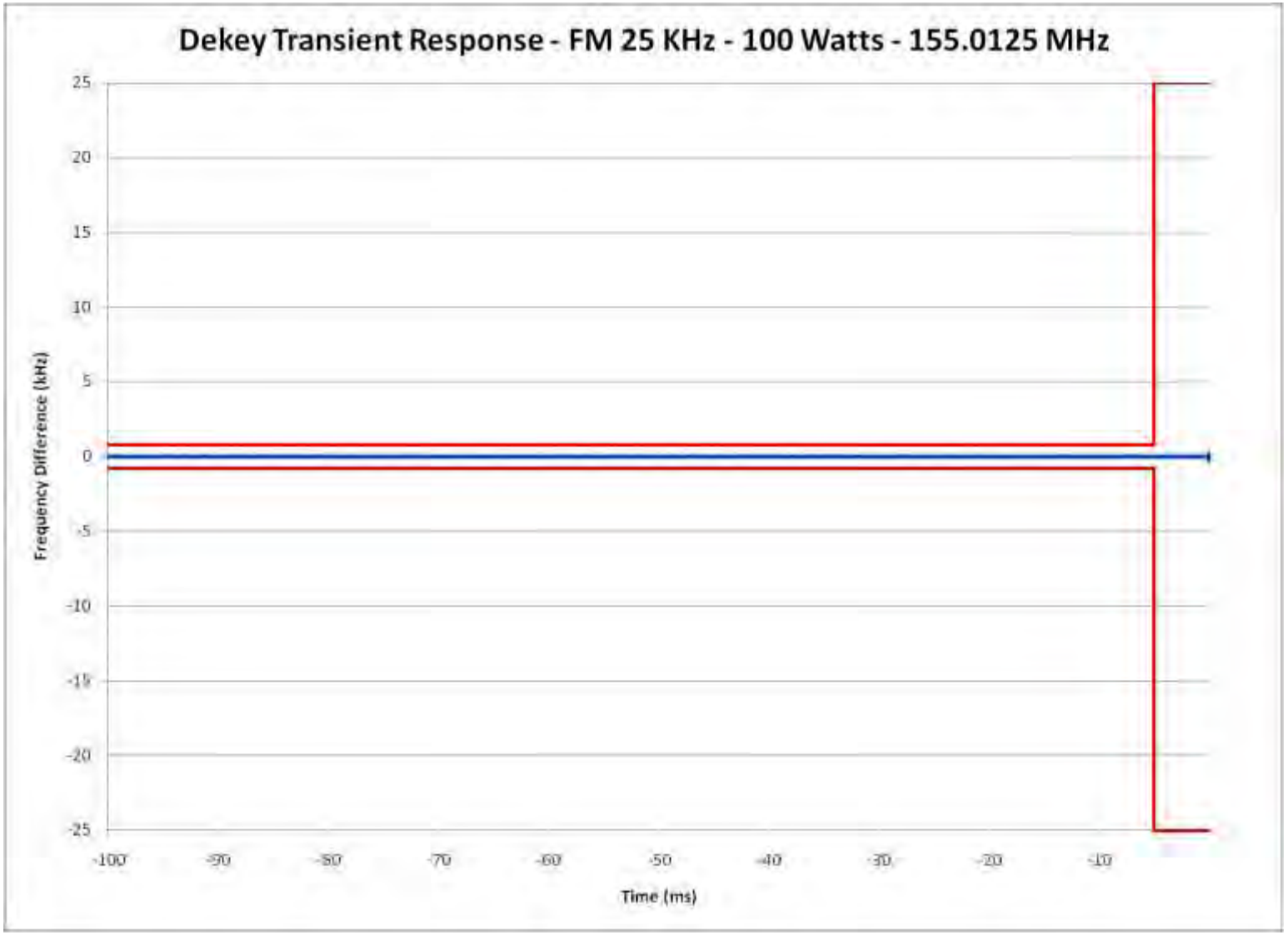
Report on Test Measurements

Frequency Transient – De-Key – 25 kHz Channels – Lower End of Band



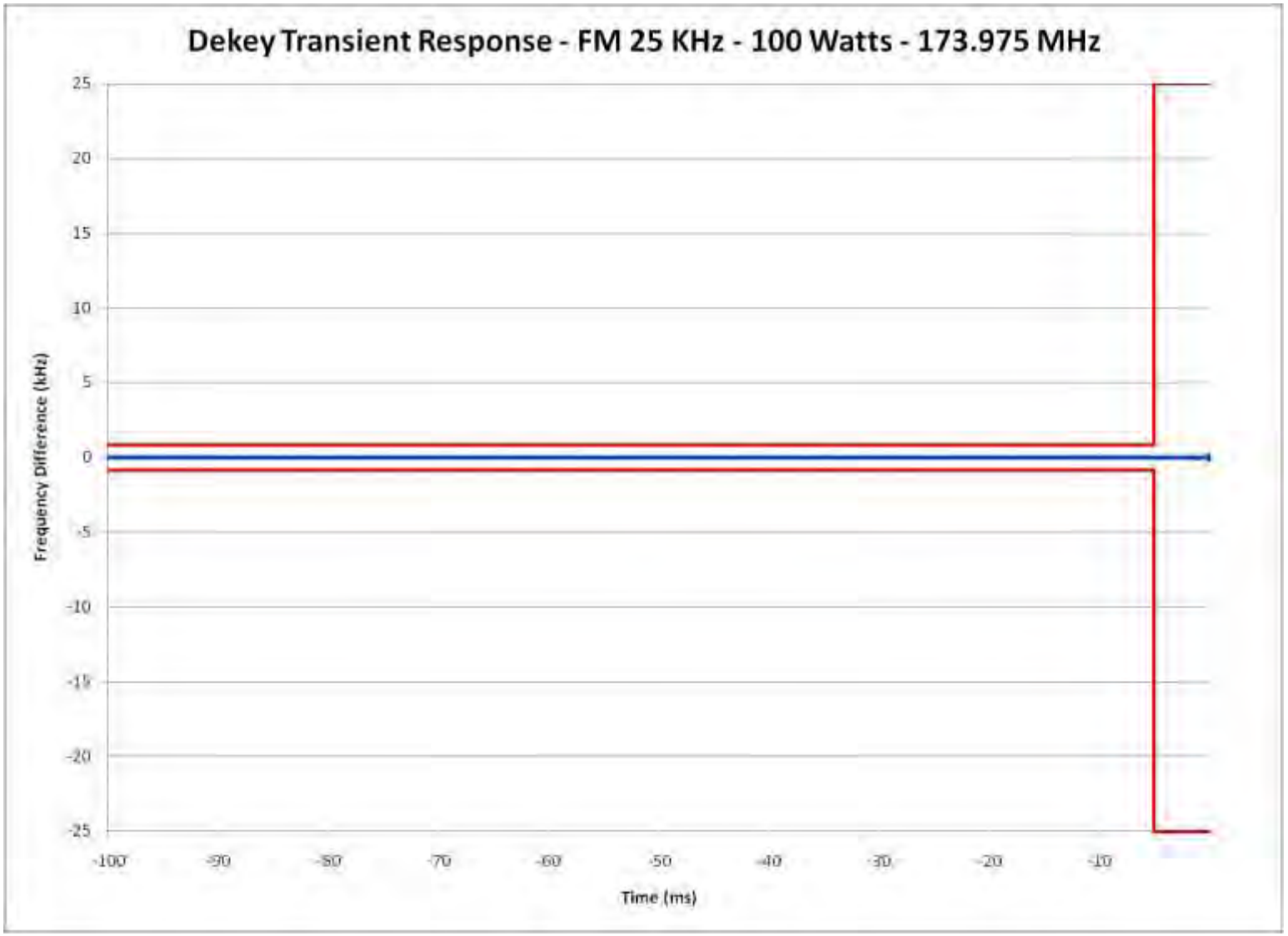
Report on Test Measurements

Frequency Transient – De-Key – 25 kHz Channels – Middle of Band



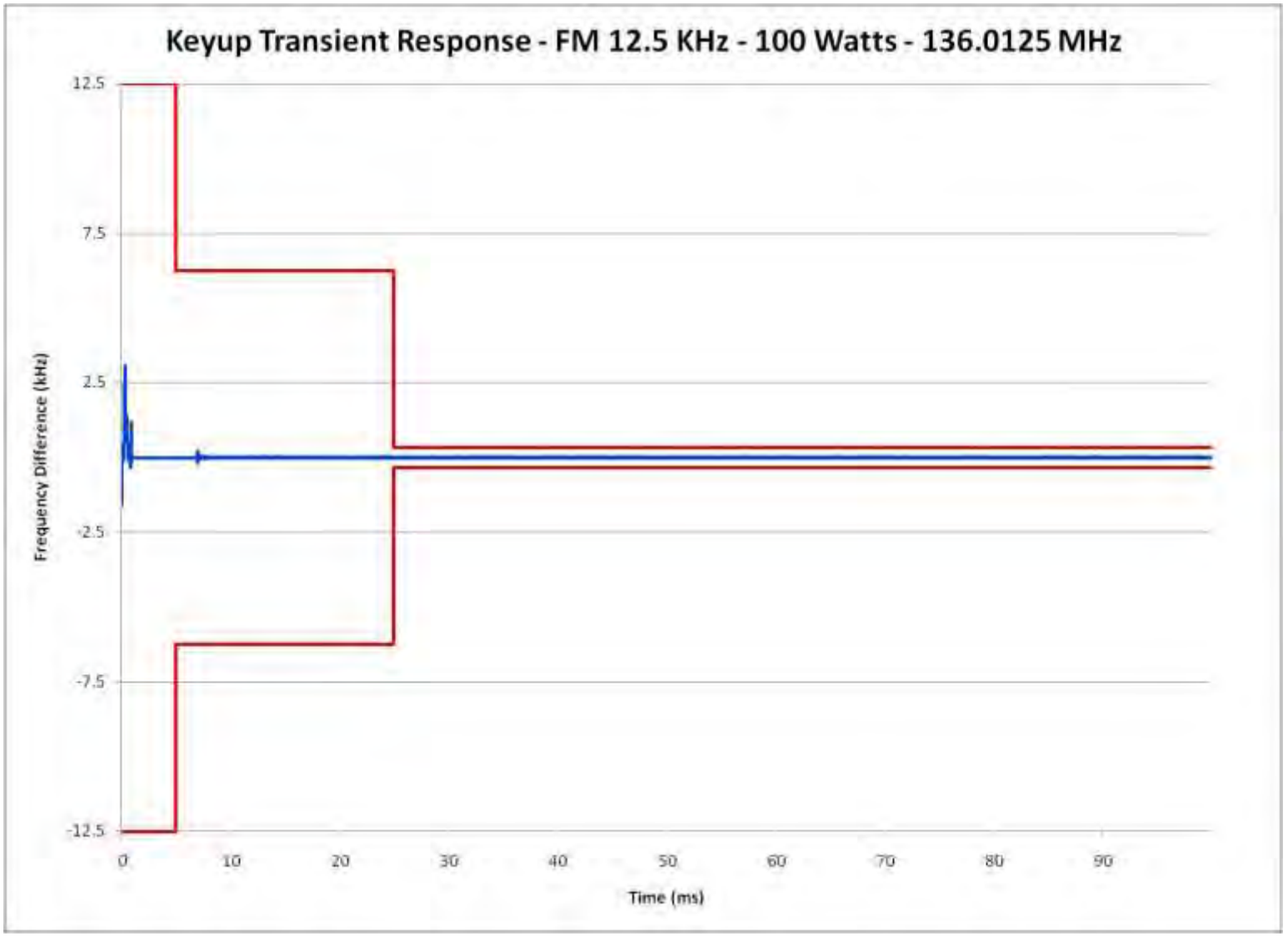
Report on Test Measurements

Frequency Transient – De-Key – 25 kHz Channels – High End of Band



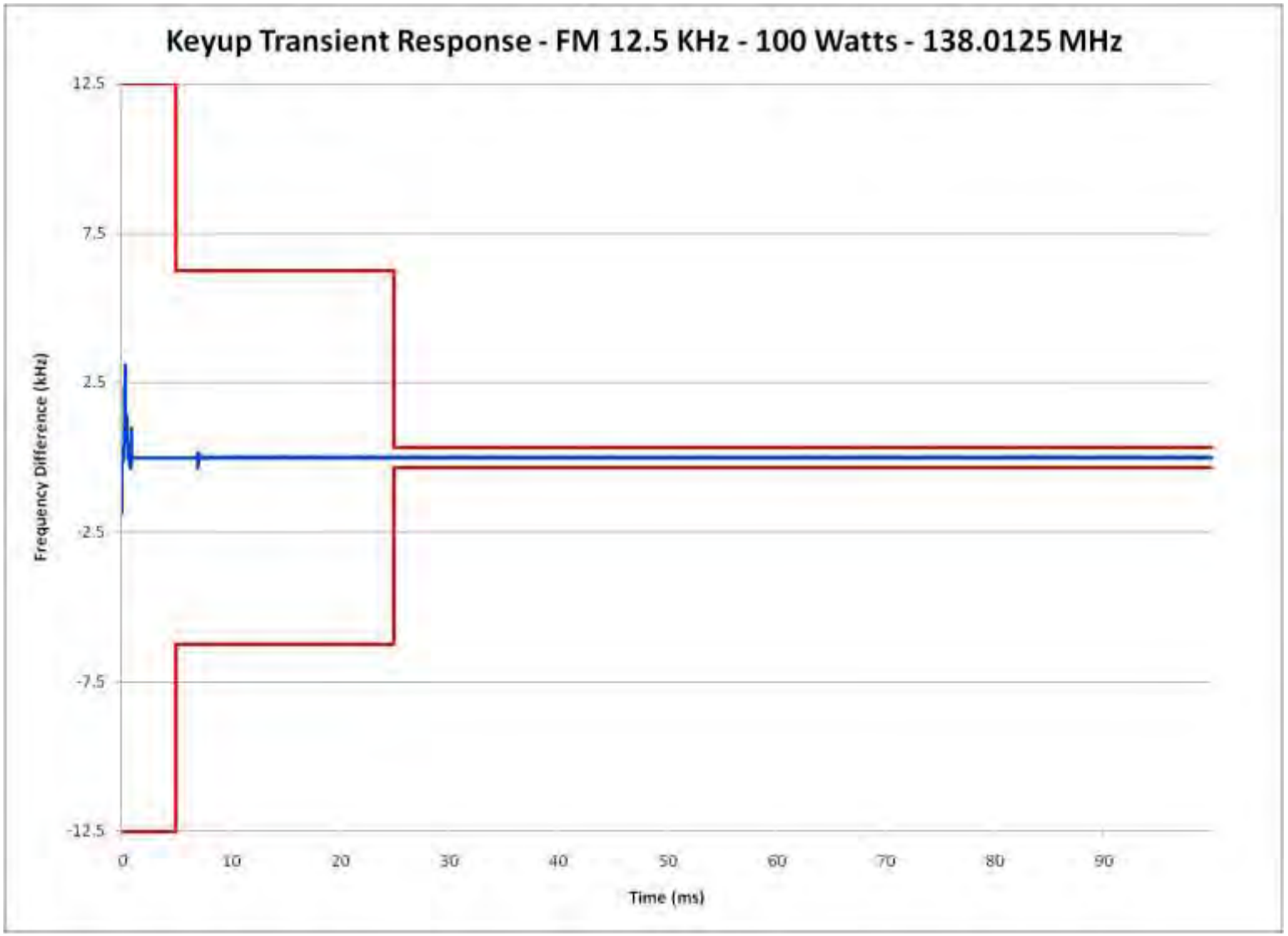
Report on Test Measurements

Frequency Transient – Key-up – 12.5 kHz Channels – Low End of Band



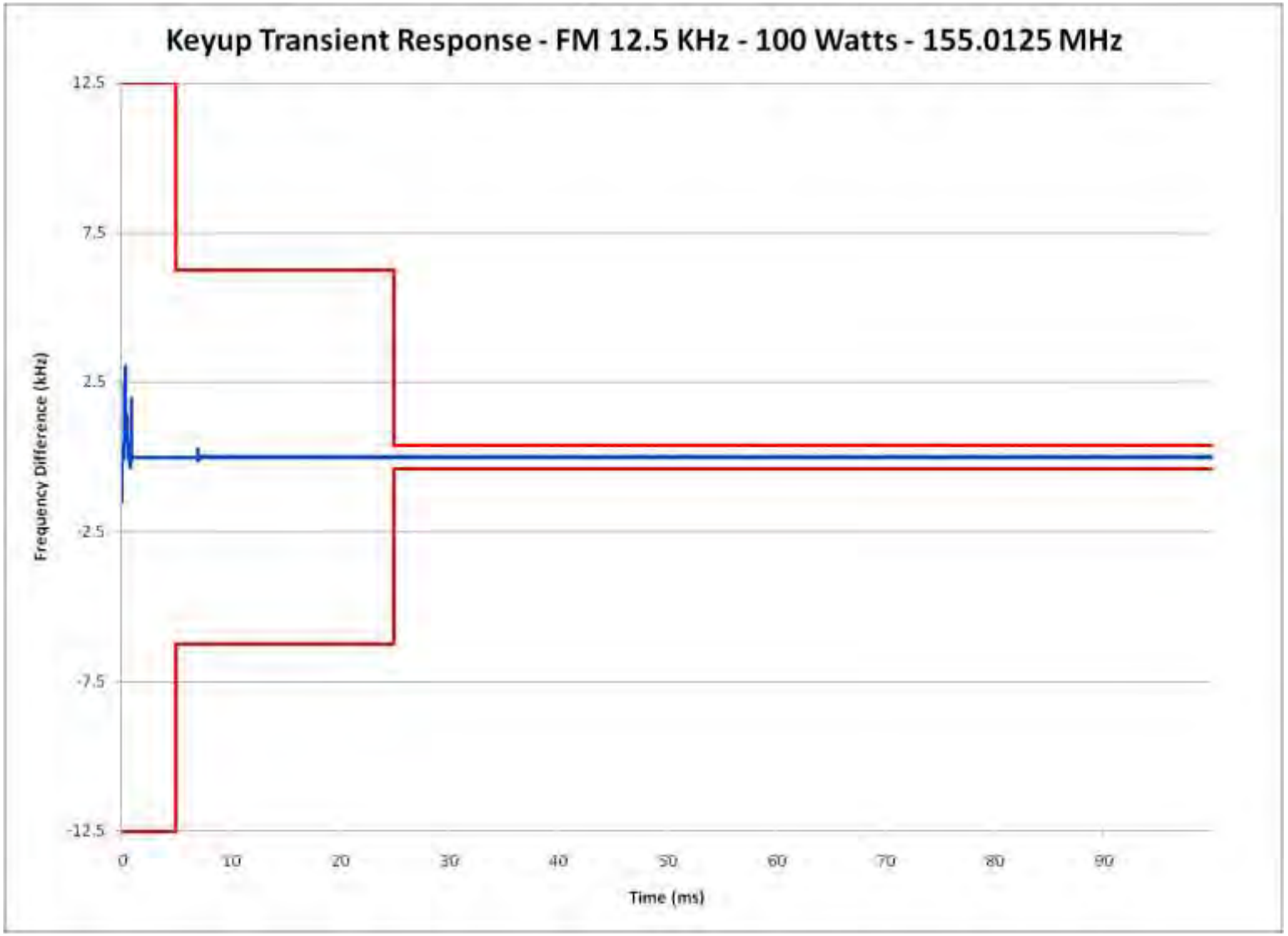
Report on Test Measurements

Frequency Transient – Key-up – 12.5 kHz Channels – Lower End of Band



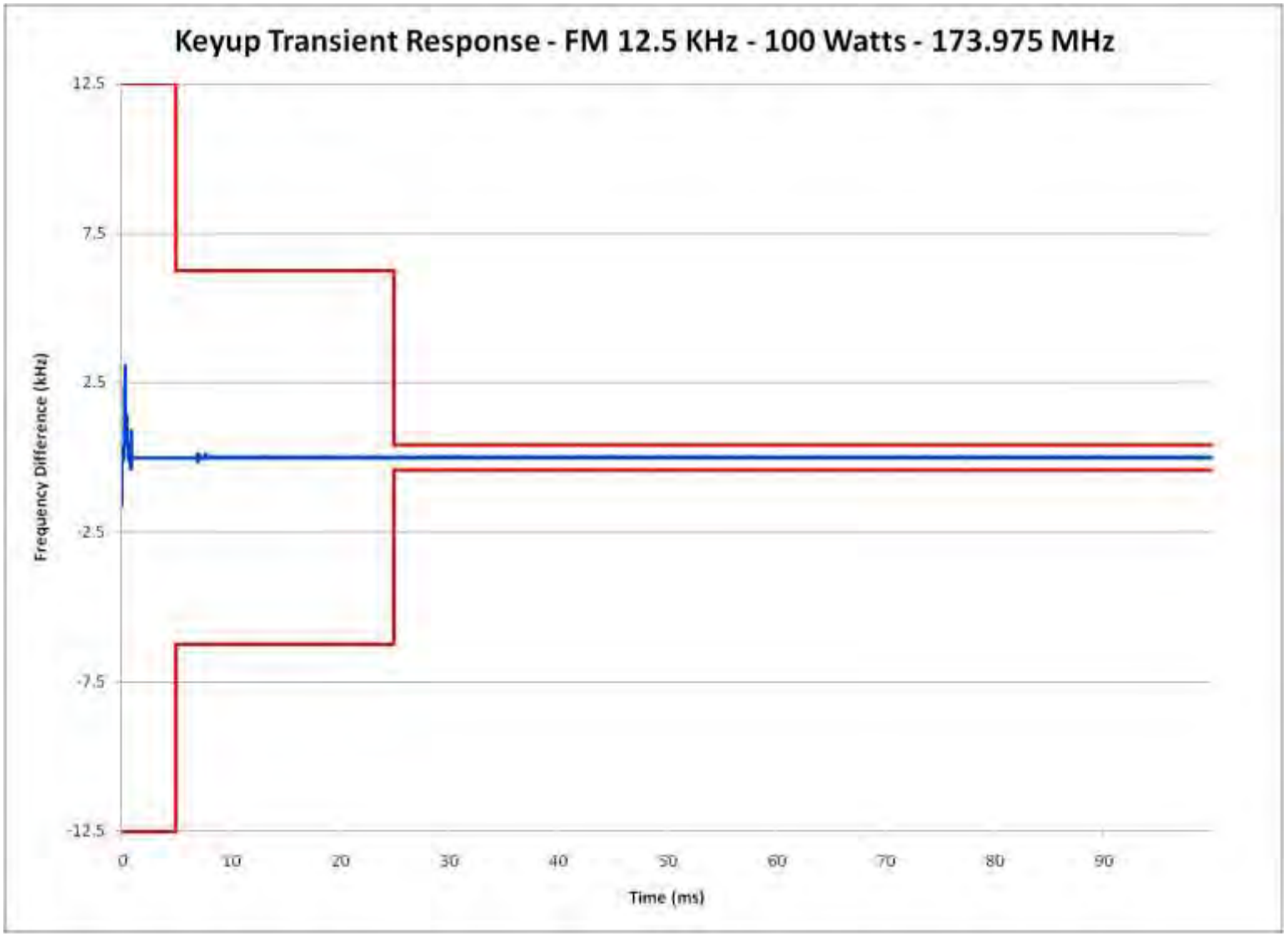
Report on Test Measurements

Frequency Transient – Key-up – 12.5 kHz Channels – Middle of Band



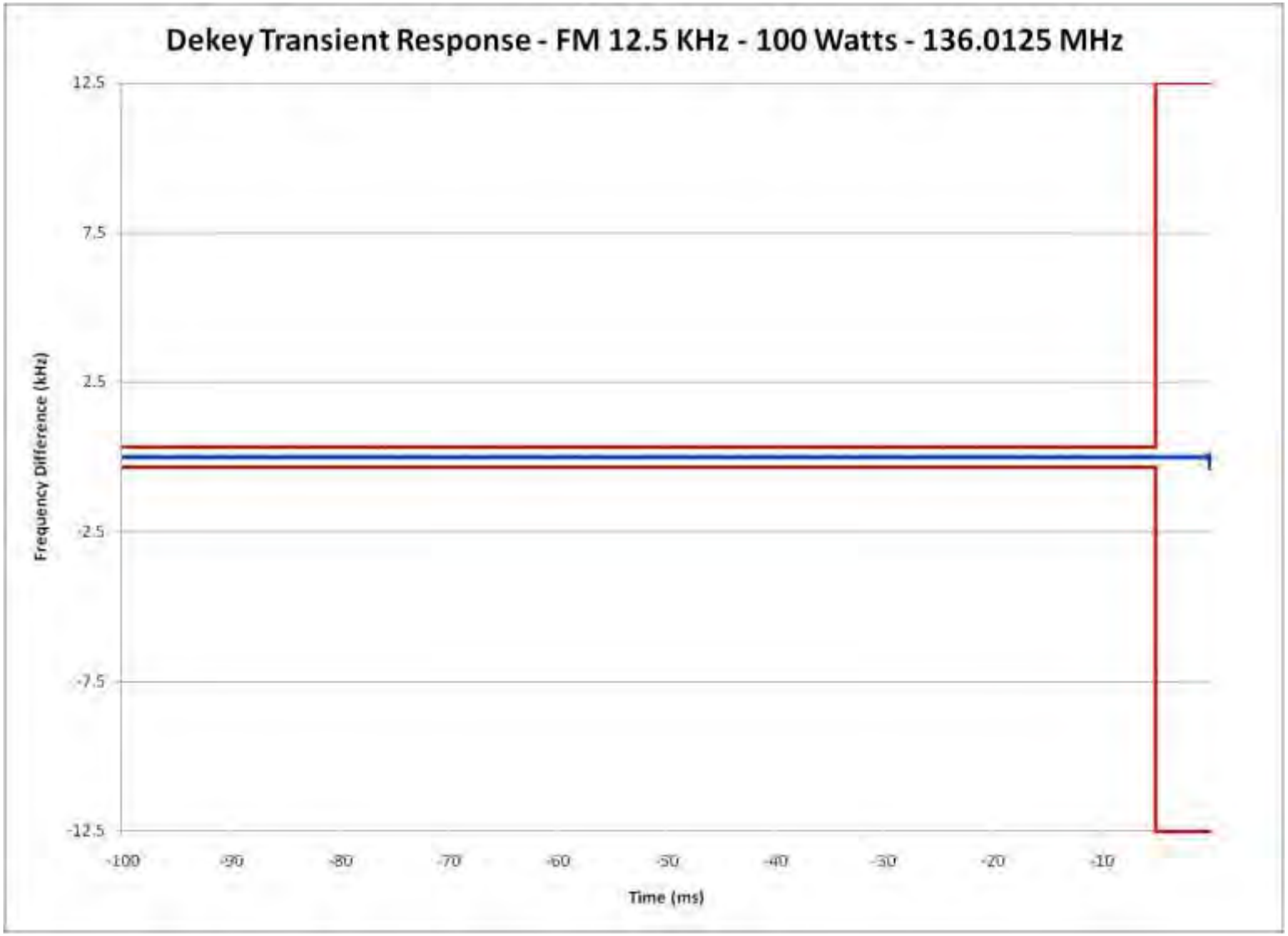
Report on Test Measurements

Frequency Transient – Key-up – 12.5 kHz Channels – High End of Band



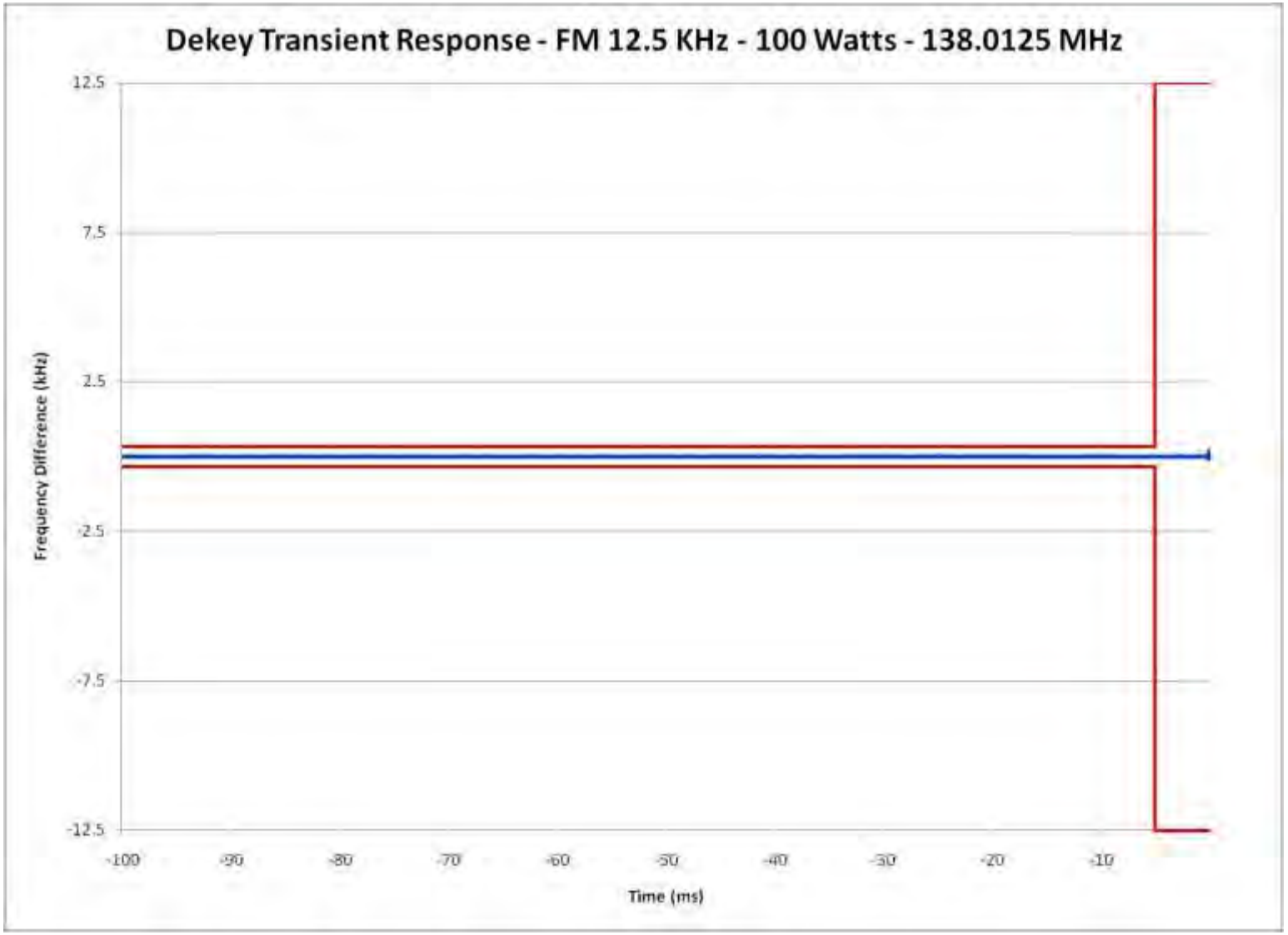
Report on Test Measurements

Frequency Transient – De-Key – 12.5 kHz Channels – Low End of Band



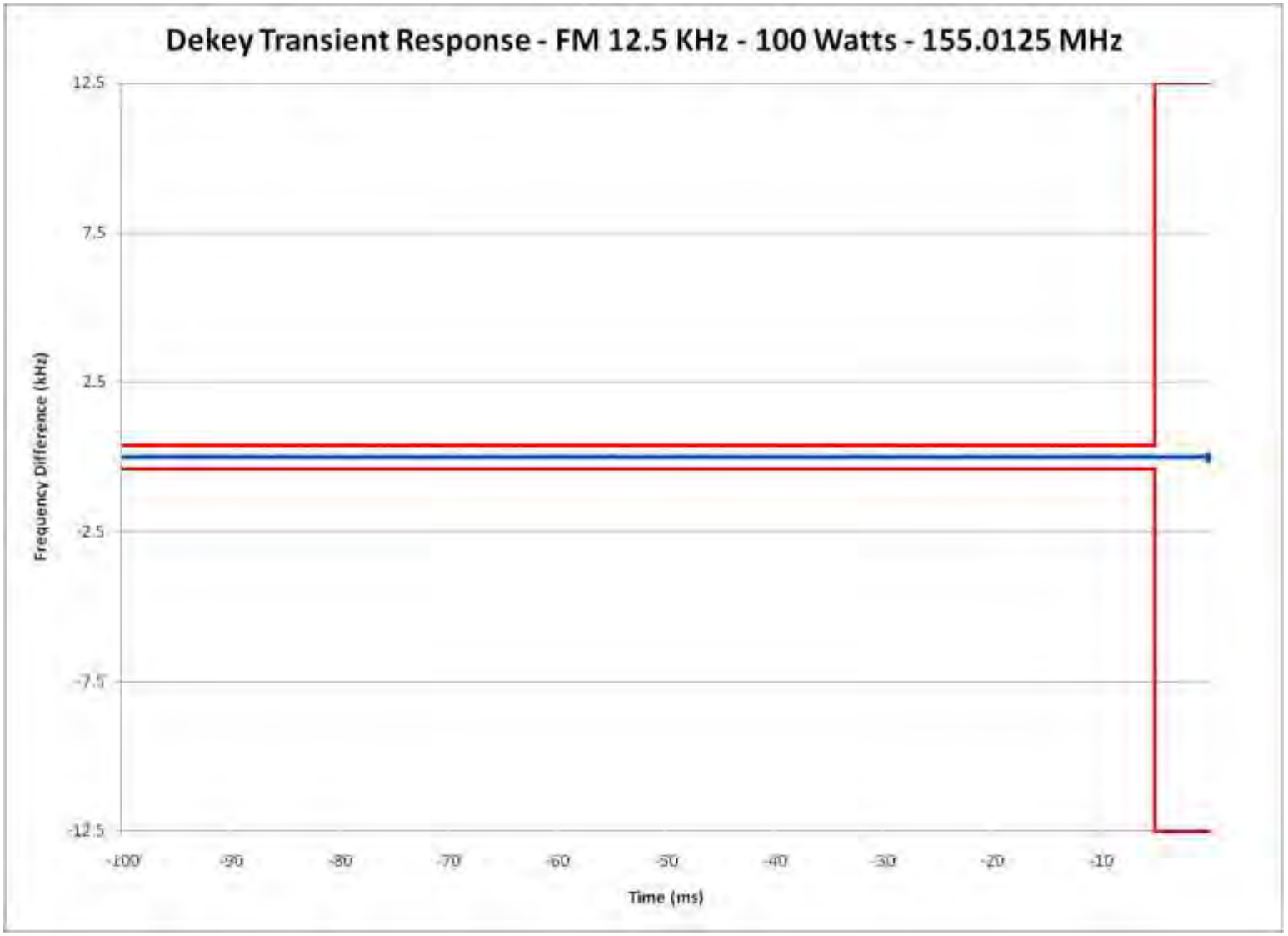
Report on Test Measurements

Frequency Transient – De-Key – 12.5 kHz Channels – Lower End of Band



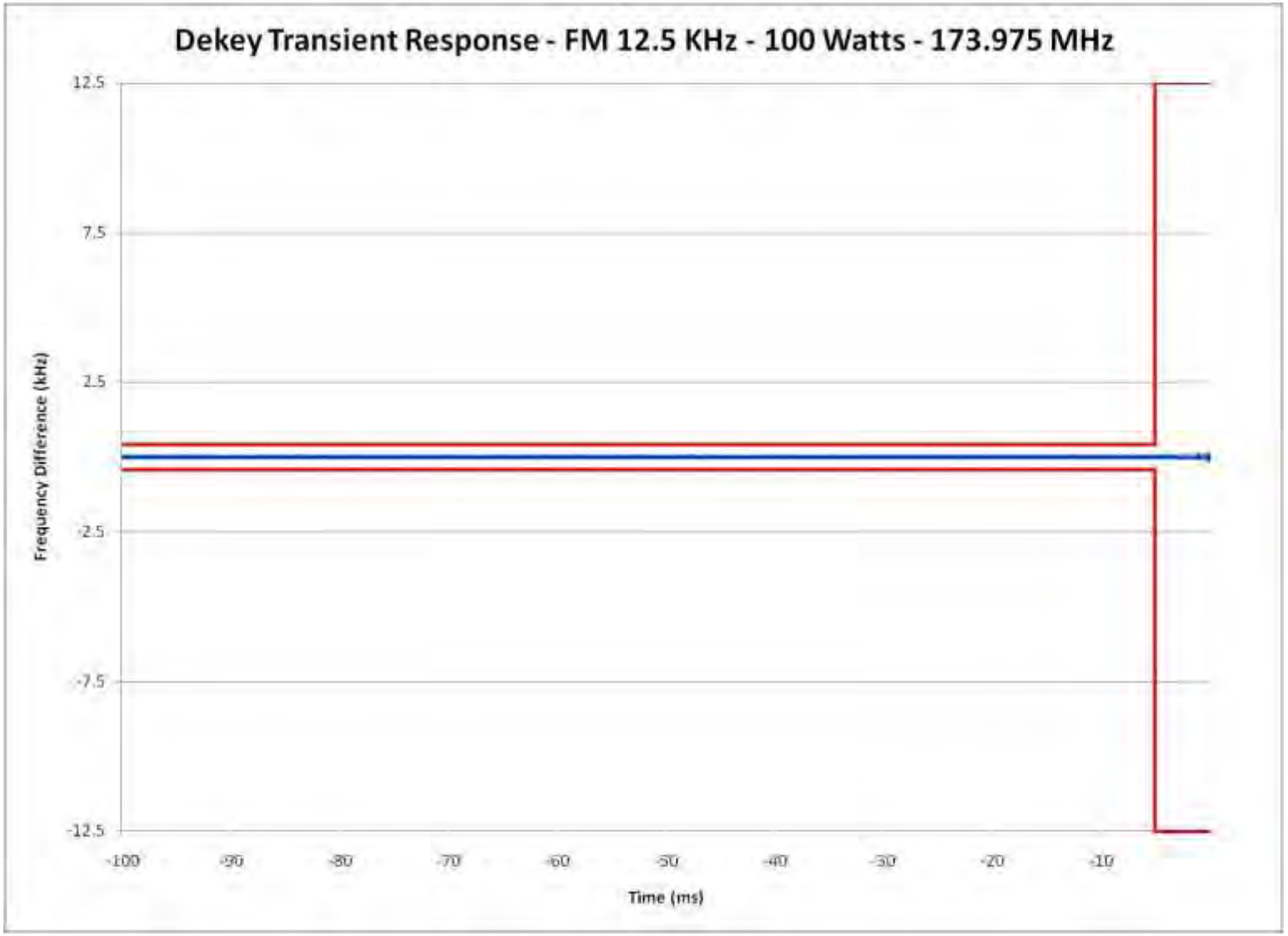
Report on Test Measurements

Frequency Transient – De-Key – 12.5 kHz Channels – Middle of Band



Report on Test Measurements

Frequency Transient – De-Key – 12.5 kHz Channels – High End of Band



APPLICANT: MOTOROLA SOLTUIONS

Report on Test Measurements

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.

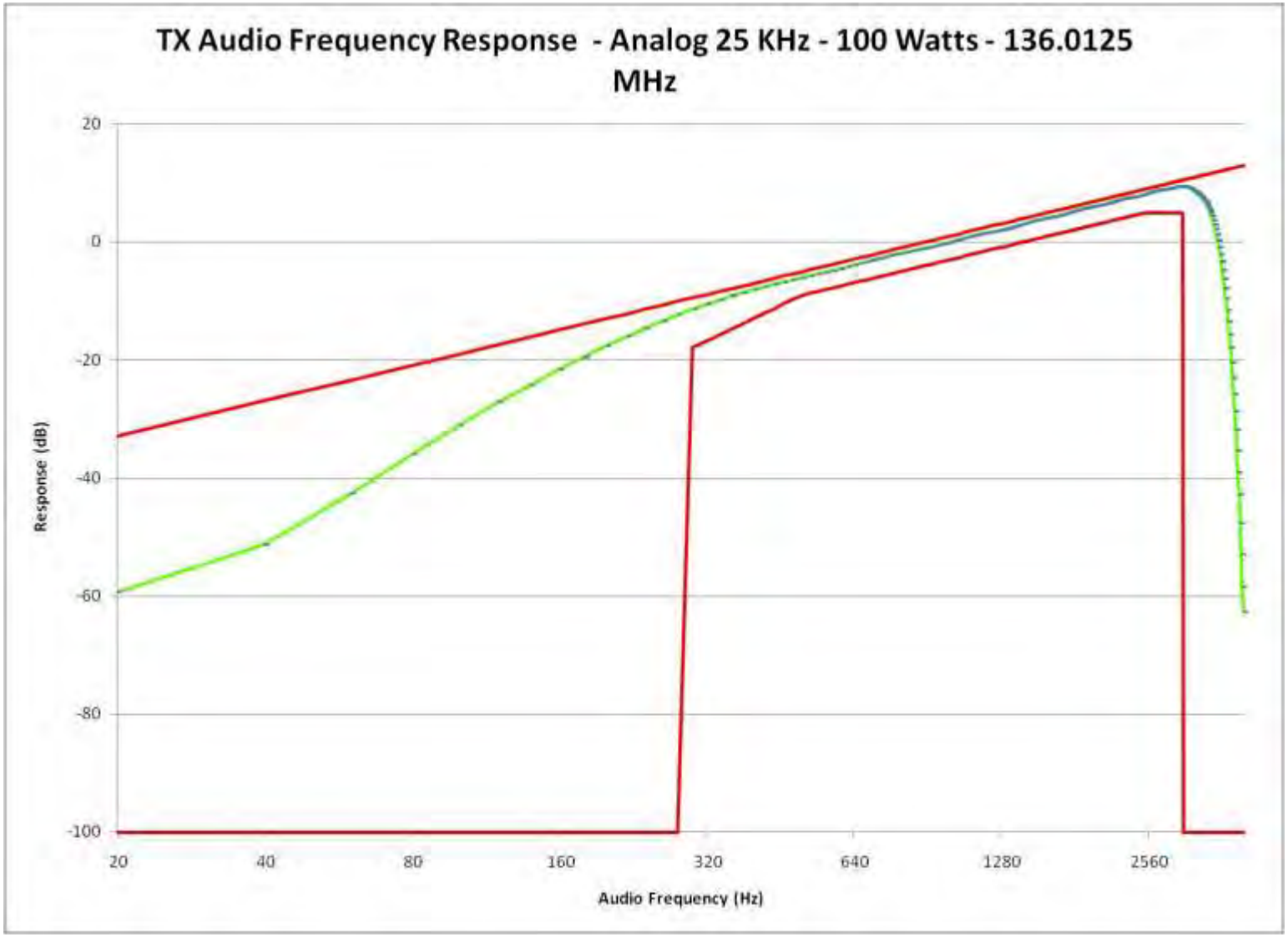
Modulation: Audio Test Tone

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

EXHIBIT	DESCRIPTION
E1-7.1	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – Low End of Band
E1-7.2	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – Lower End of Band
E1-7.3	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – Middle of Band
E1-7.4	Audio Frequency Response – Modulation Characteristics, 25 kHz Channels – High End of Band
E1-7.5	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels– Low End of Band
E1-7.6	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels– Lower End of Band
E1-7.7	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels– Middle of Band
E1-7.8	Audio Frequency Response – Modulation Characteristics, 12.5 kHz Channels– High End of Band
	The specification limit is shown on the response plots

Report on Test Measurements

Audio Frequency Response – 25 kHz Channels – Low End of Band

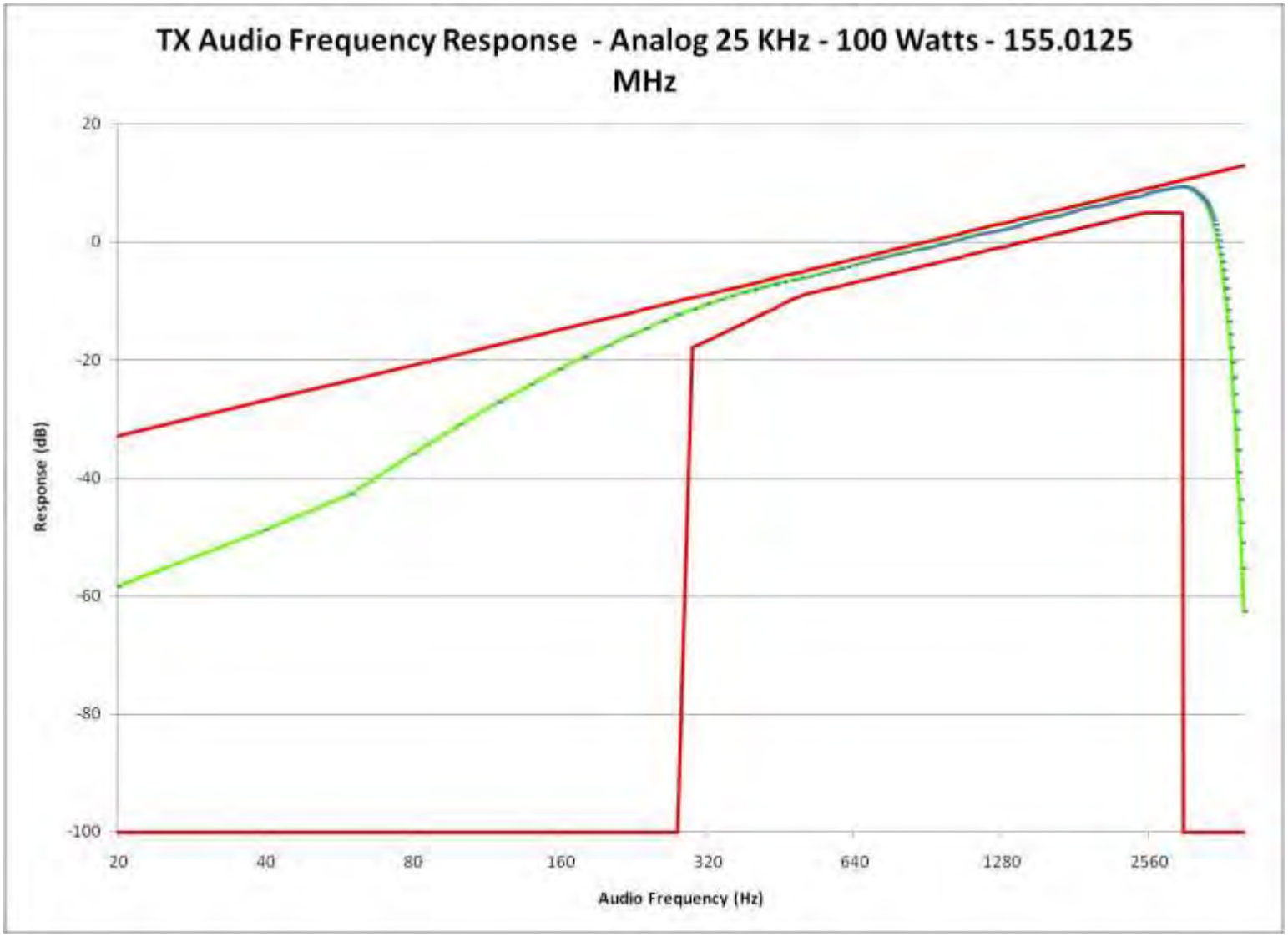


Report on Test Measurements

Audio Frequency Response – 25 kHz Channels – Lower End of Band

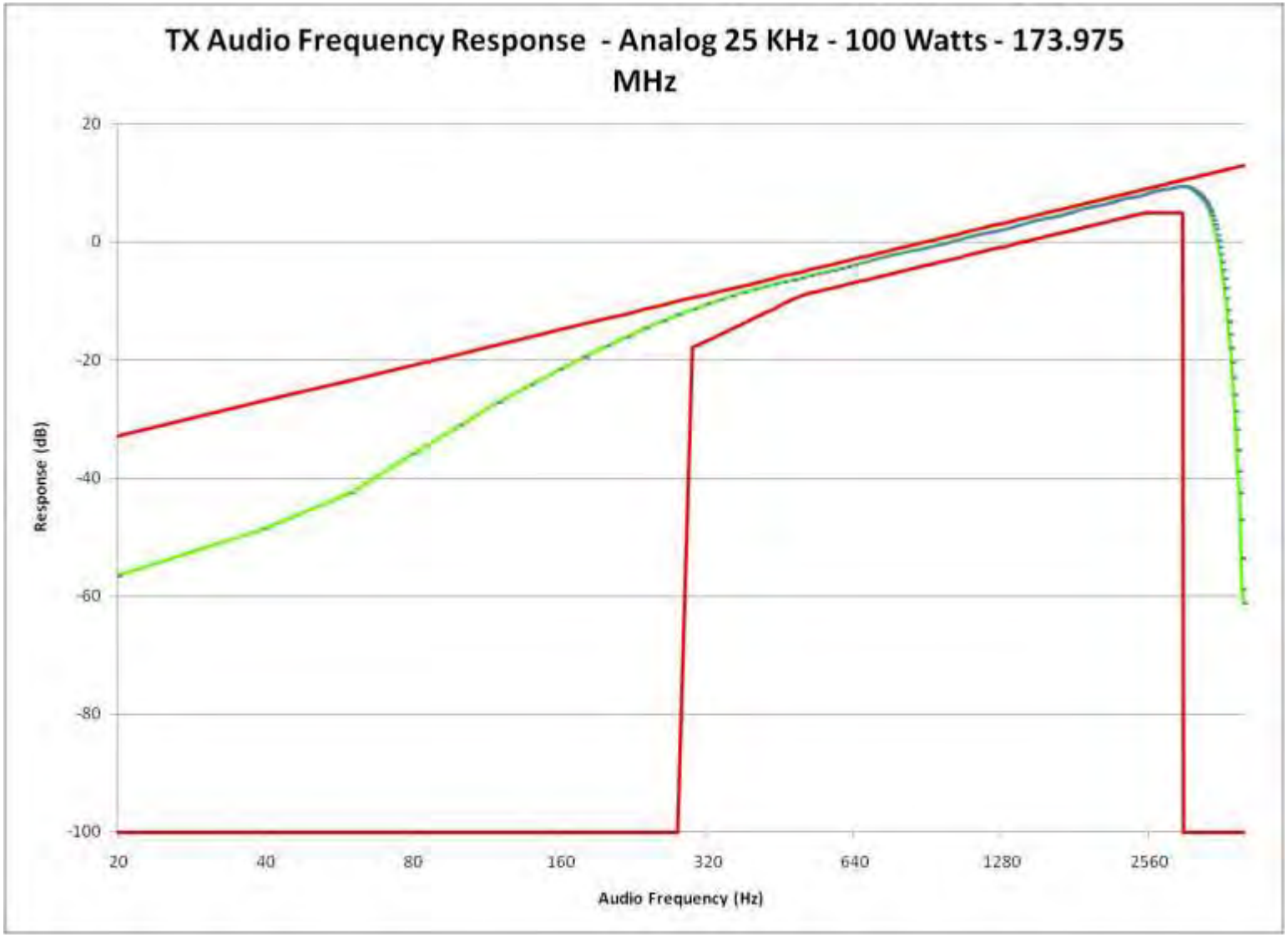
Report on Test Measurements

Audio Frequency Response – 25 kHz Channels – Middle of Band



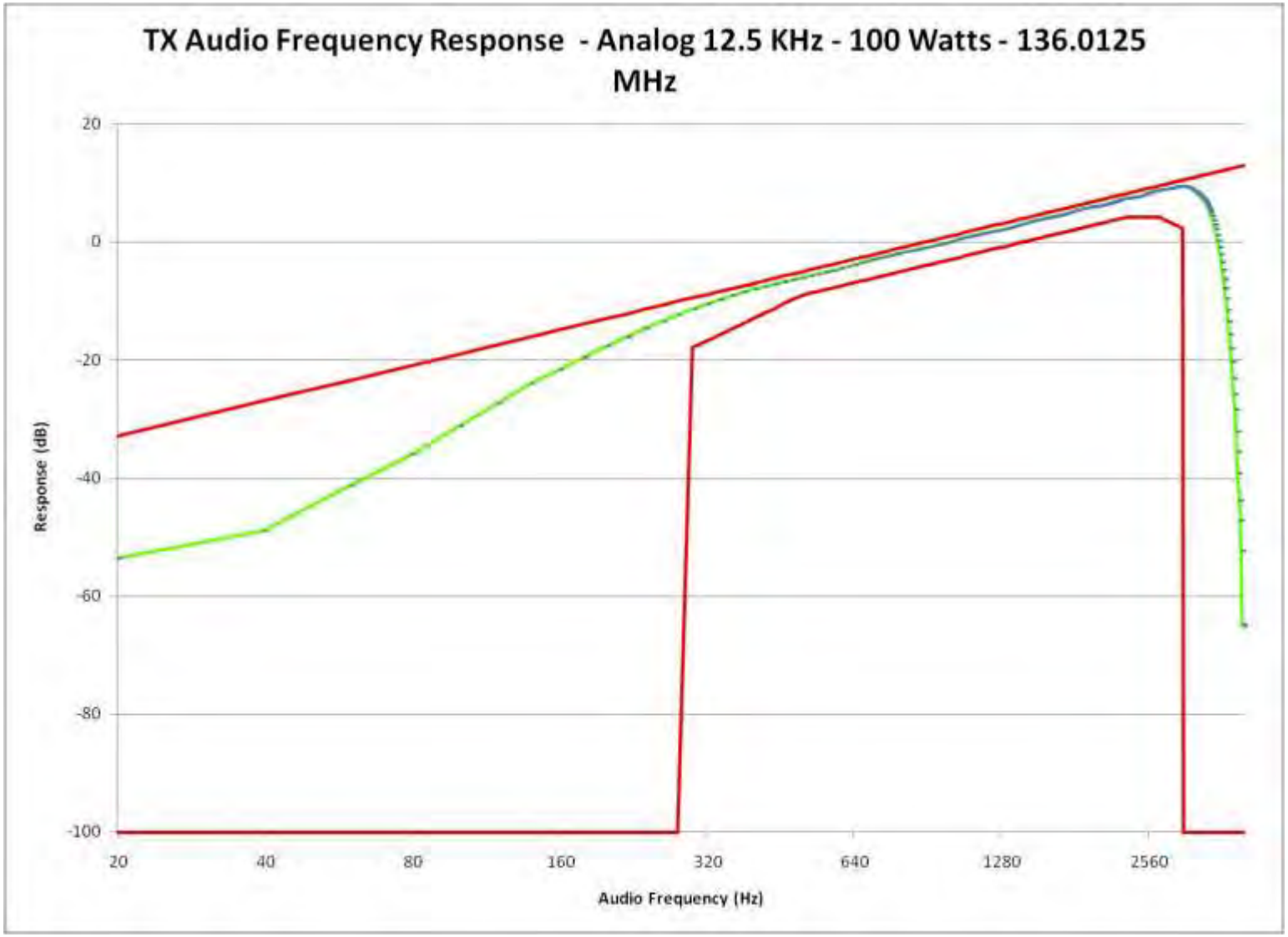
Report on Test Measurements

Audio Frequency Response – 25 kHz Channels – High End of Band



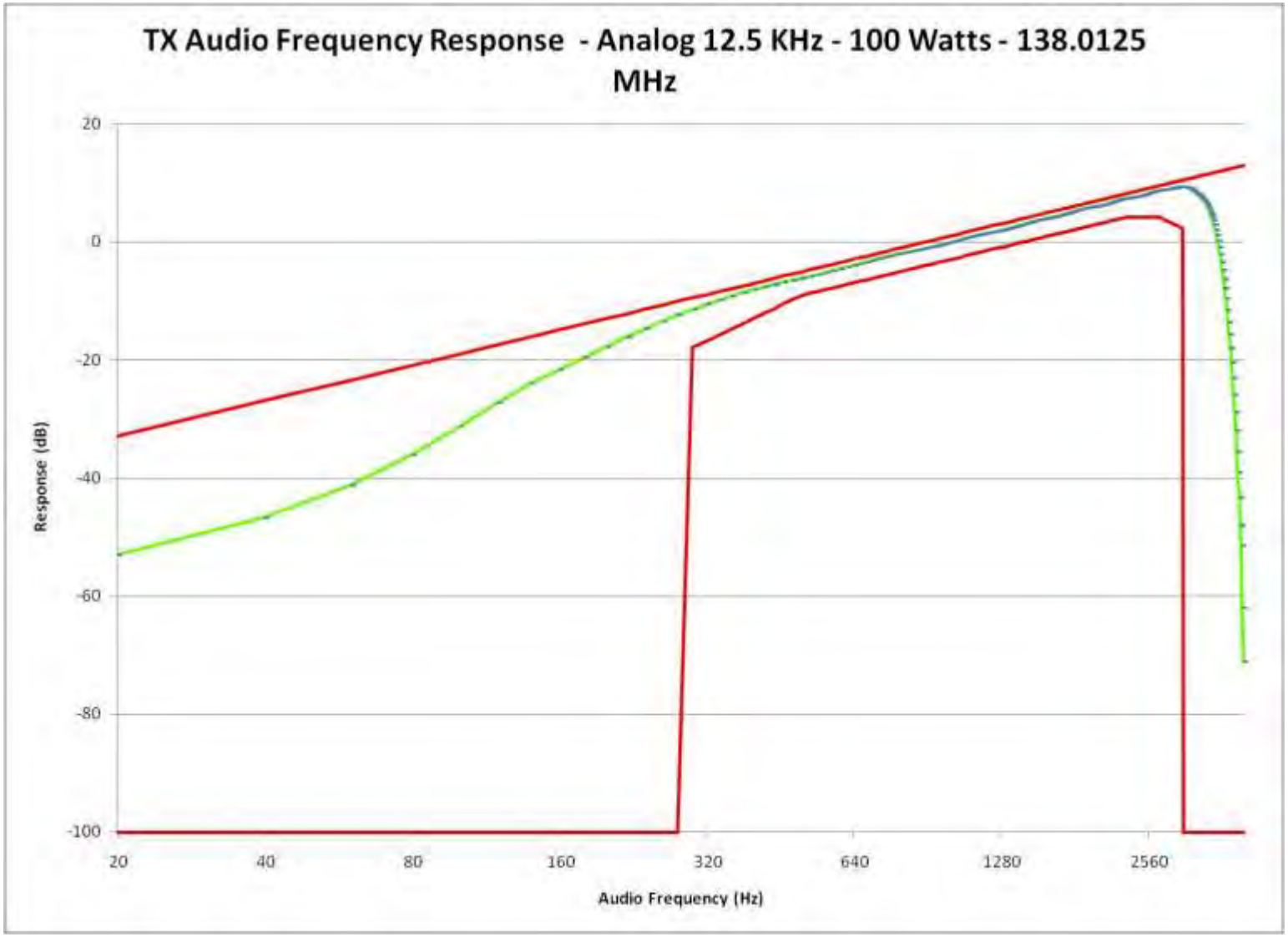
Report on Test Measurements

Audio Frequency Response – 12.5 kHz Channels – Low End of Band



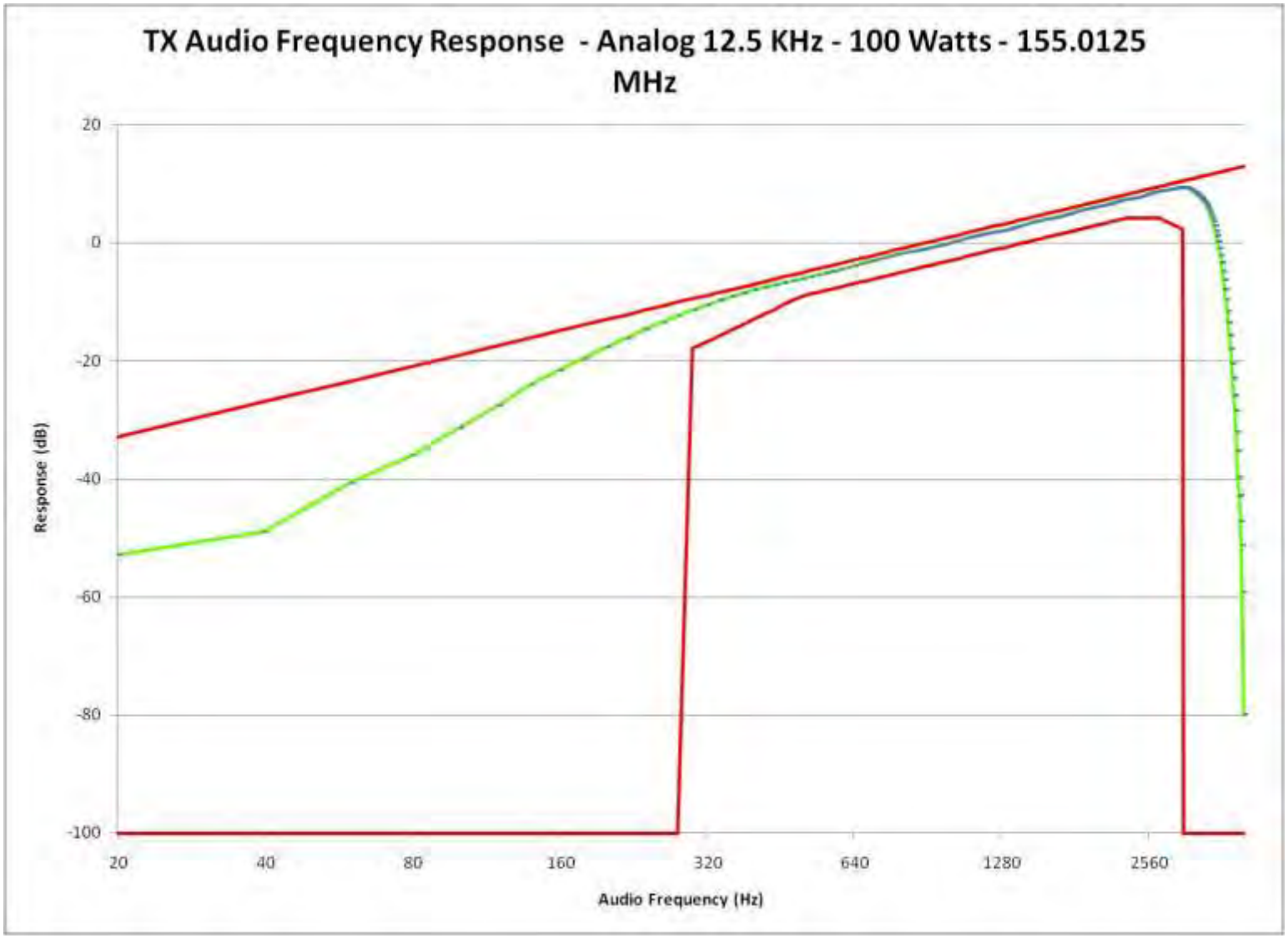
Report on Test Measurements

Audio Frequency Response – 12.5 kHz Channels – Lower End of Band



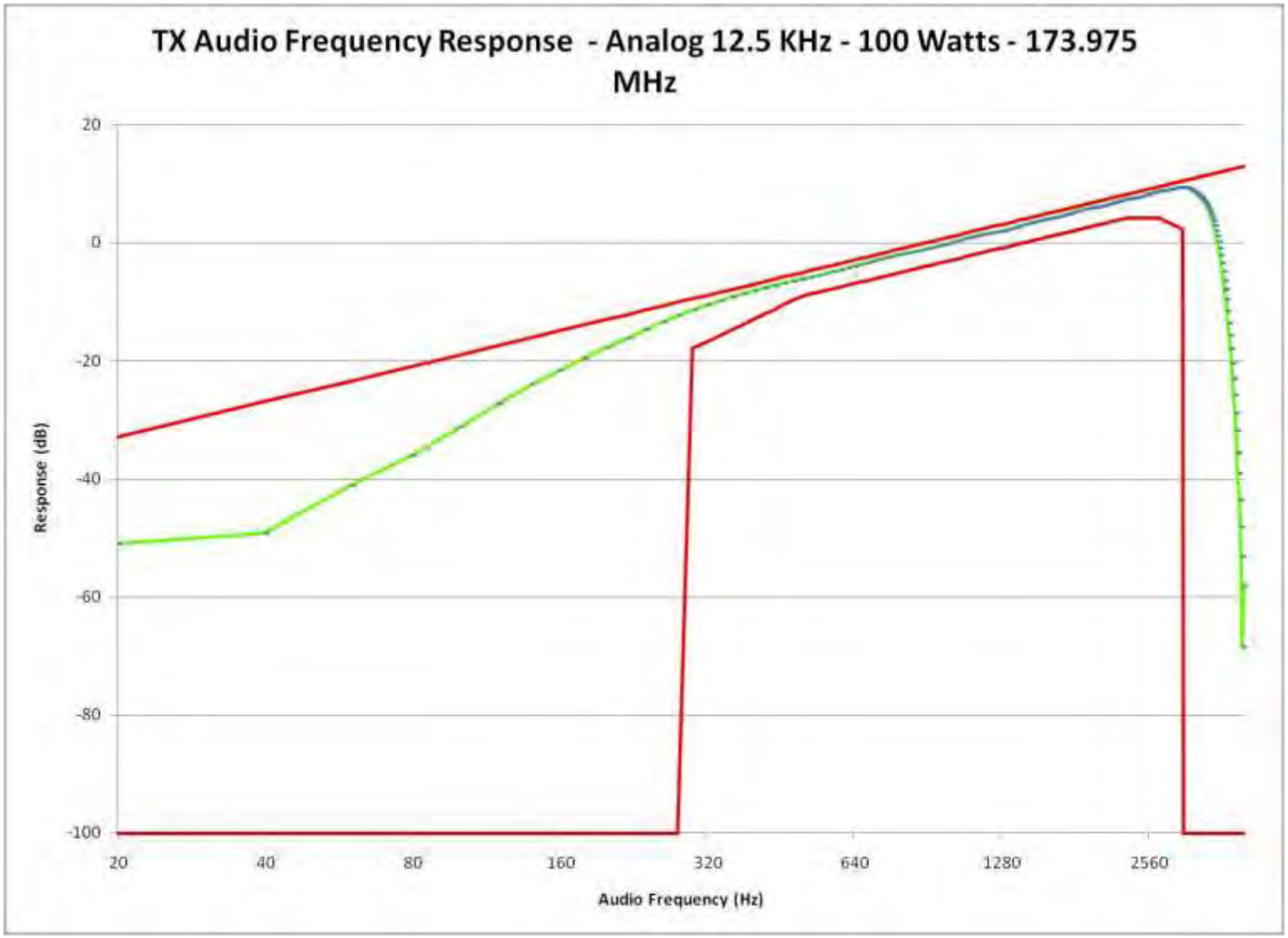
Report on Test Measurements

Audio Frequency Response – 12.5 kHz Channels – Middle of Band



Report on Test Measurements

Audio Frequency Response – 12.5 kHz Channels– High End of Band



Report on Test Measurements

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.

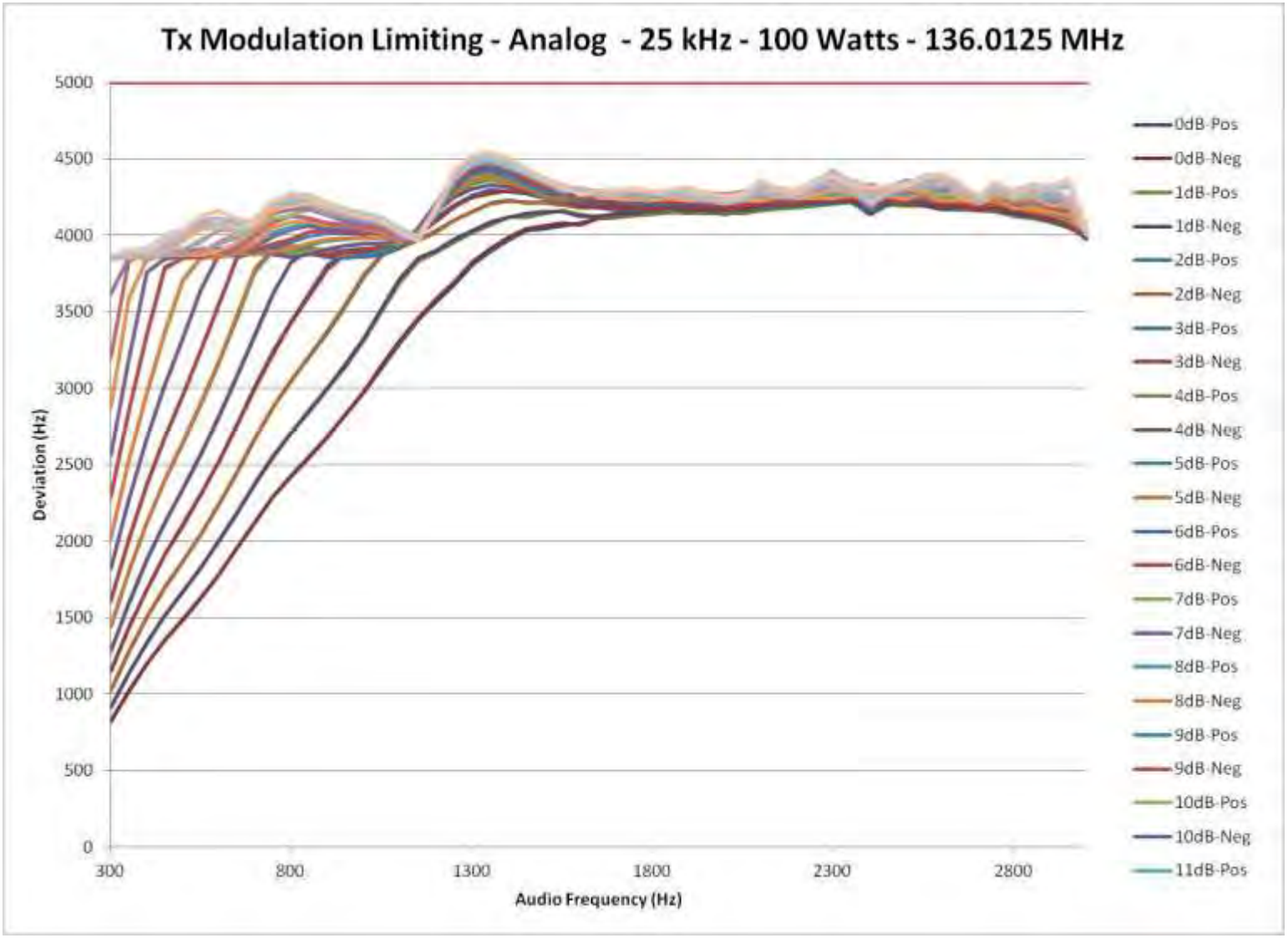
Modulation:	Audio Test Tone, Varying Frequency between 300 Hz and 3000 Hz
Carrier Frequency:	Performance was measured at carrier frequencies at the low end, middle, and high end of the operating band.

Modulation Limiting Response Plots:

EXHIBIT	DESCRIPTION
E1-8.1	Modulation Limiting Response – Modulation Characteristics, 25 kHz Channels – Low End of Band
E1-8.2	Modulation Limiting Response – Modulation Characteristics, 25 kHz Channels – Lower End of Band
E1-8.3	Modulation Limiting Response – Modulation Characteristics, 25 kHz Channels – Middle of Band
E1-8.4	Modulation Limiting Response – Modulation Characteristics, 25 kHz Channels – High End of Band
E1-8.5	Modulation Limiting Response – Modulation Characteristics, 12.5 kHz Channels – Low End of Band
E1-8.6	Modulation Limiting Response – Modulation Characteristics, 12.5 kHz Channels – Lower End of Band
E1-8.7	Modulation Limiting Response – Modulation Characteristics, 12.5 kHz Channels – Middle of Band
E1-8.8	Modulation Limiting Response – Modulation Characteristics, 12.5 kHz Channels – High End of Band

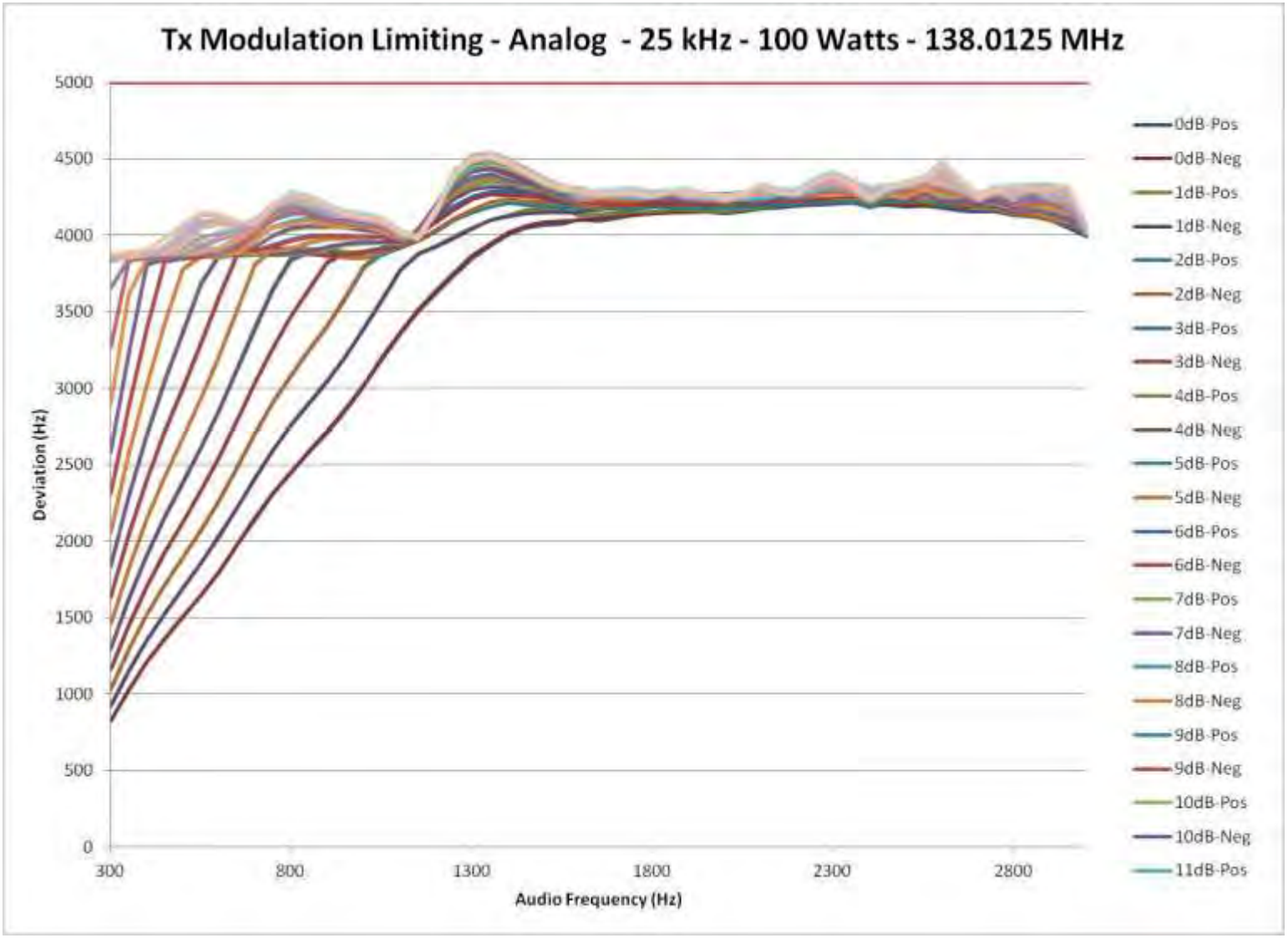
Report on Test Measurements

Modulation Limiting – 25 kHz Channels – Low End of Band



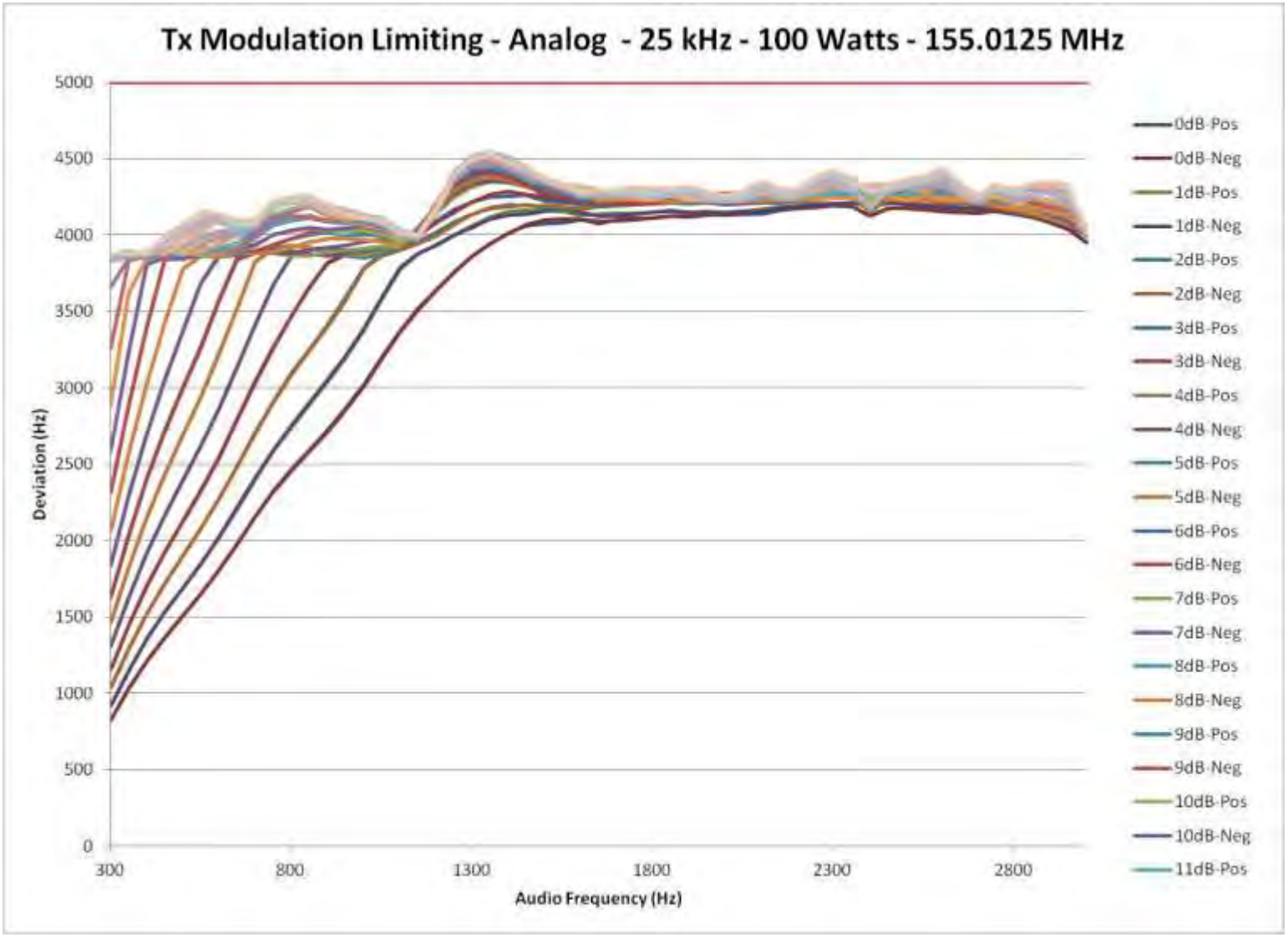
Report on Test Measurements

Modulation Limiting – 25 kHz Channels – Lower End of Band



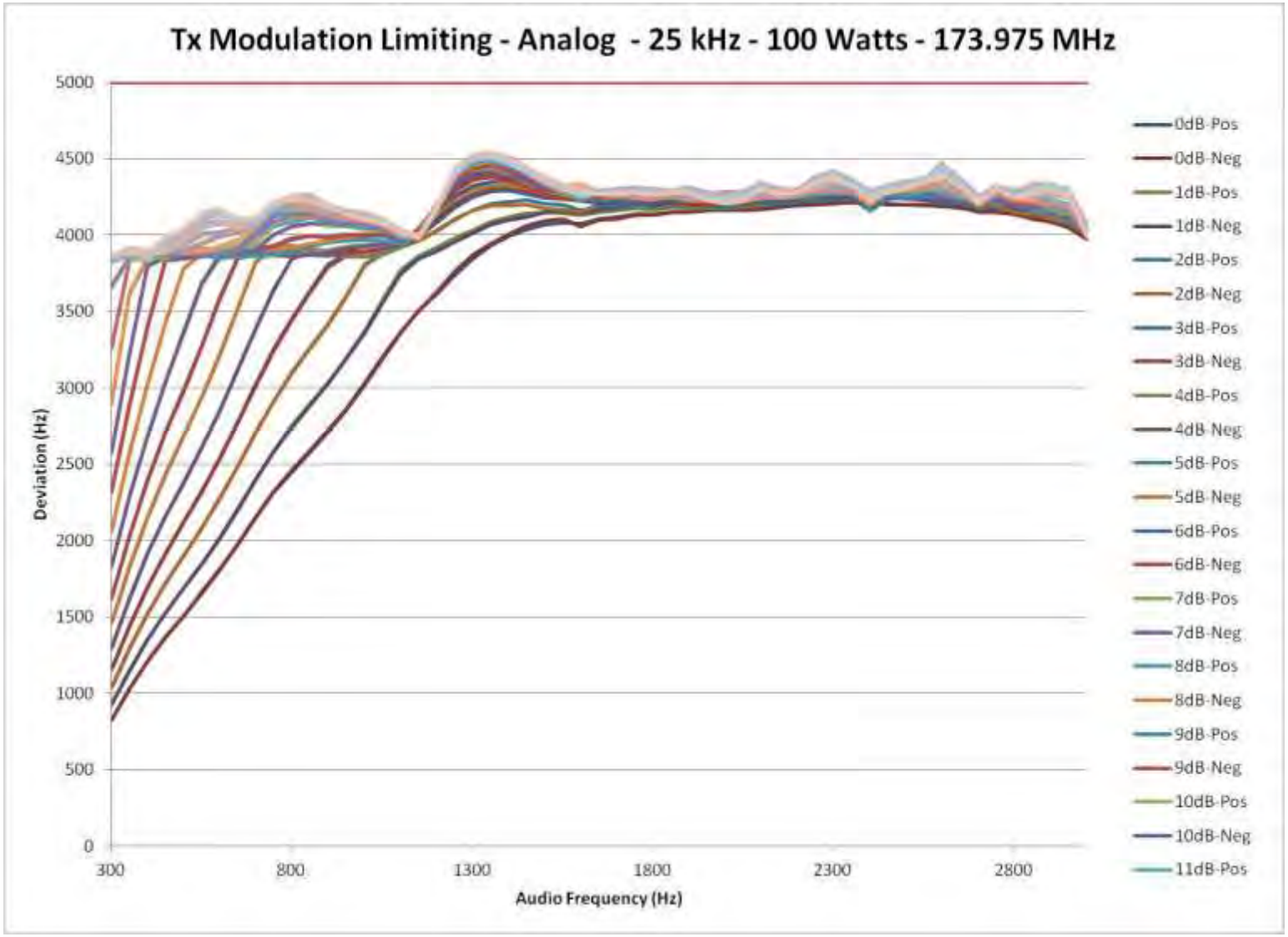
Report on Test Measurements

Modulation Limiting – 25 kHz Channels – Middle of Band



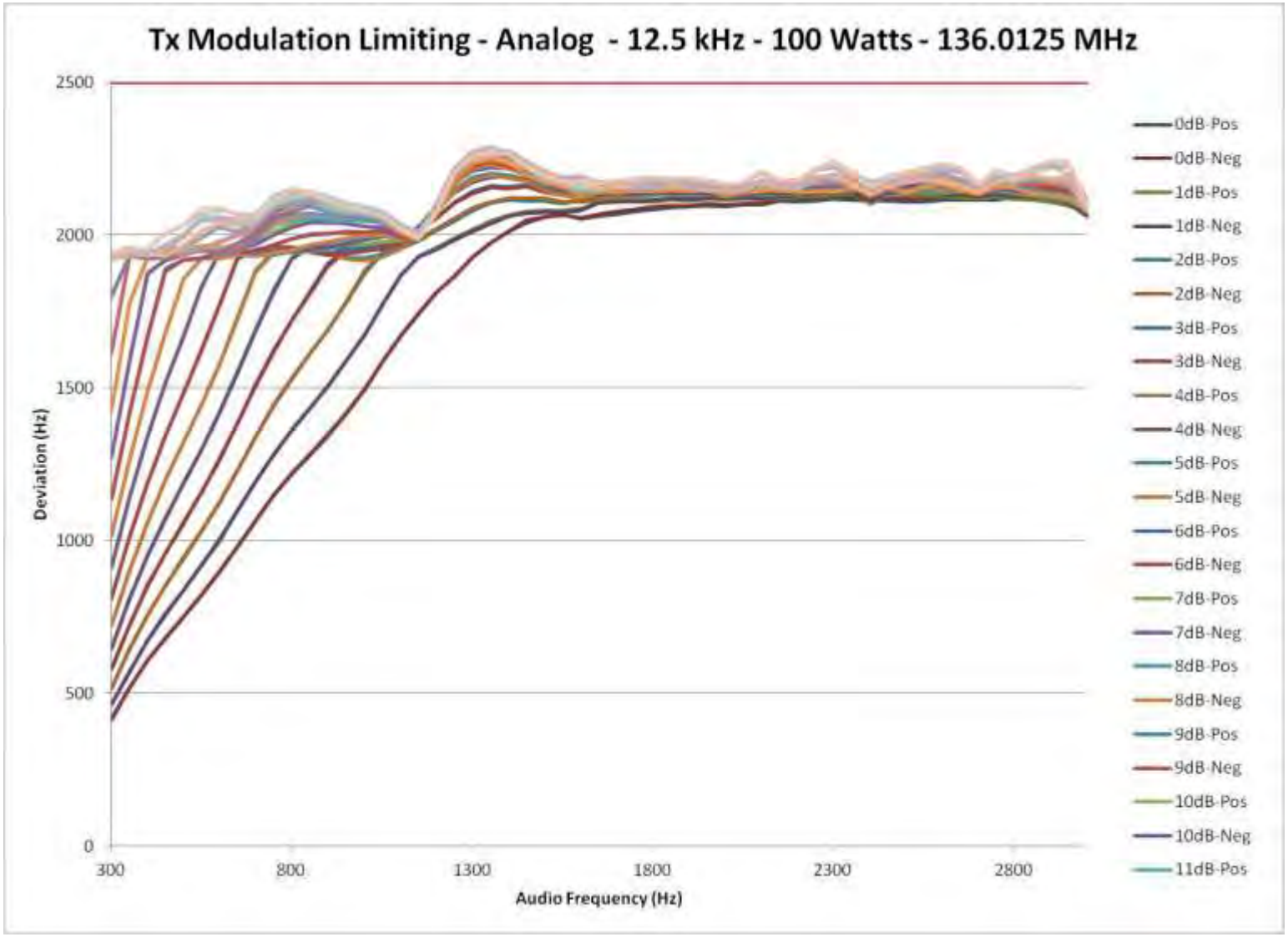
Report on Test Measurements

Modulation Limiting – 25 kHz Channels – High End of Band



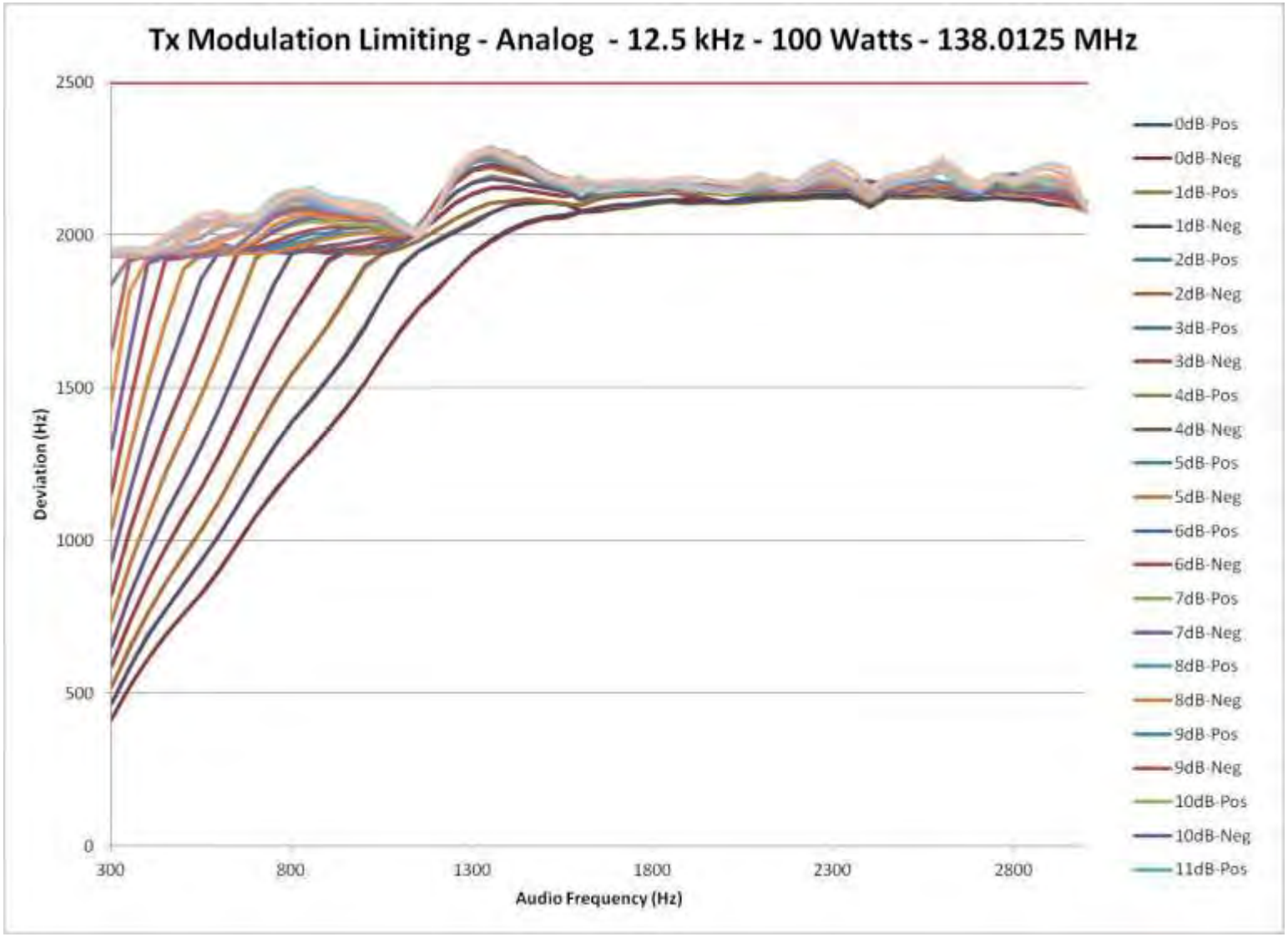
Report on Test Measurements

Modulation Limiting – 12.5 kHz Channels – Low End of Band



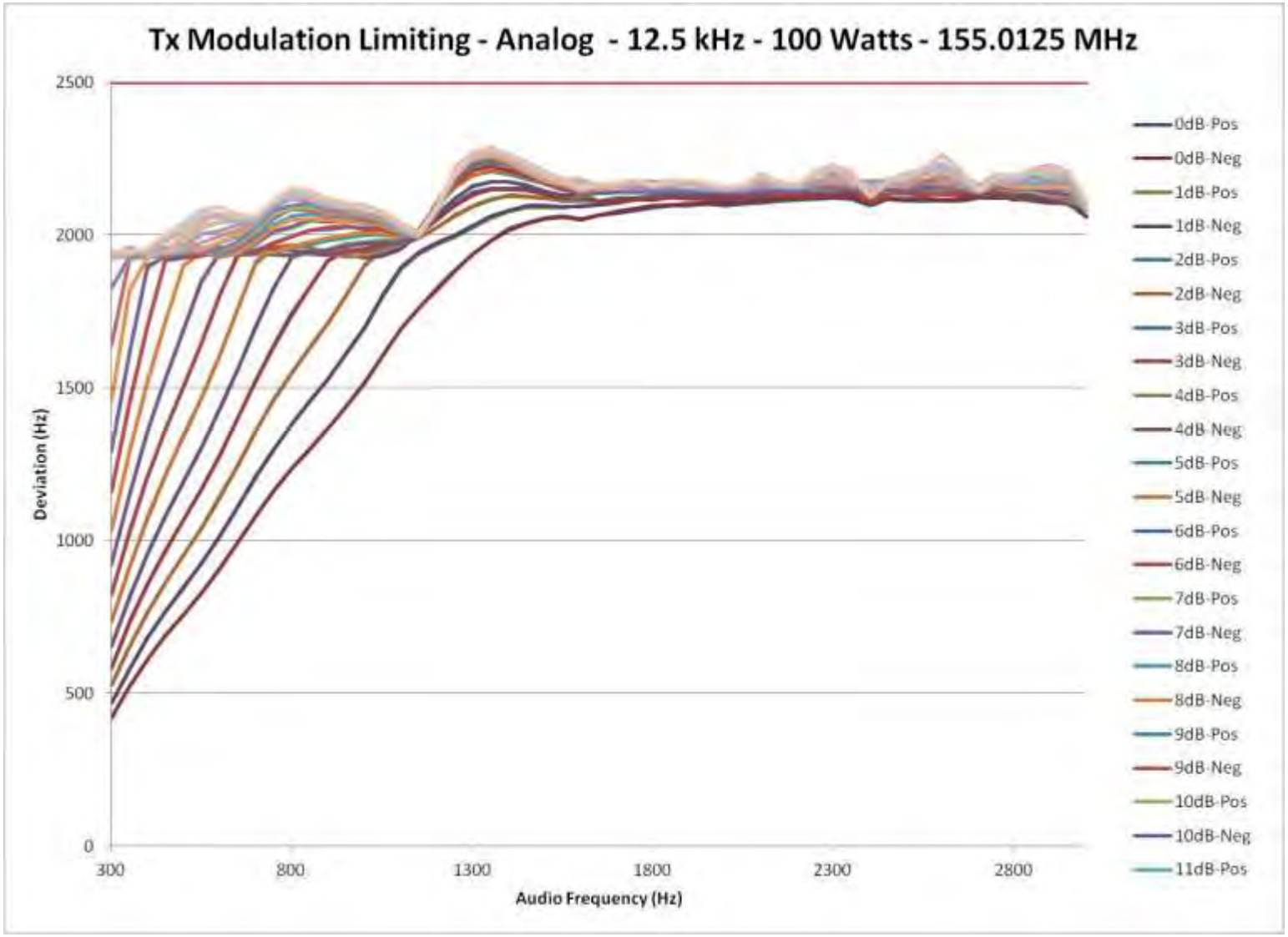
Report on Test Measurements

Modulation Limiting – 12.5 kHz Channels – Lower End of Band



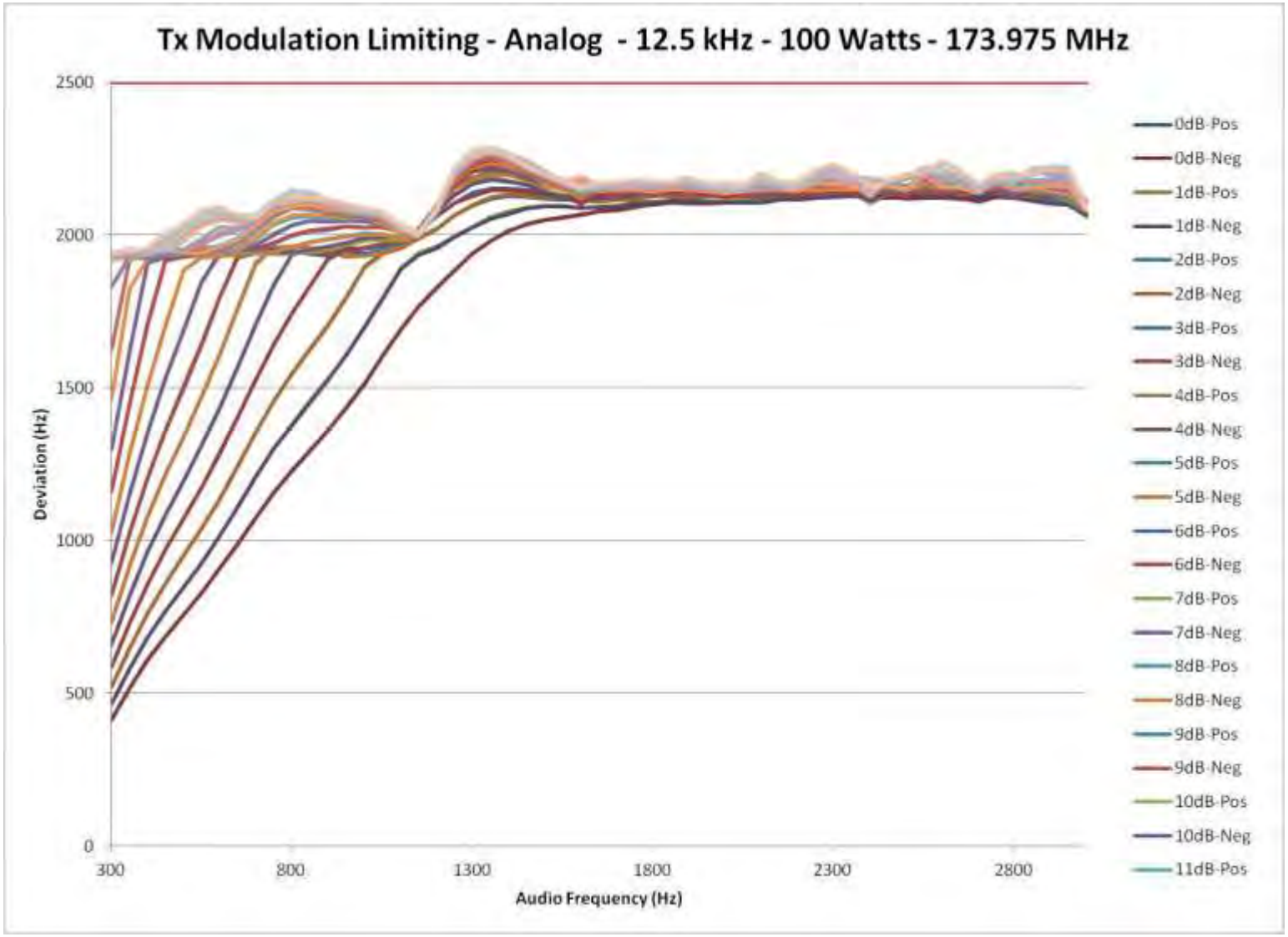
Report on Test Measurements

Modulation Limiting – 12.5 kHz Channels – Middle of Band



Report on Test Measurements

Modulation Limiting – 12.5 kHz Channels – High End of Band



Report on Test Measurements

Occupied Bandwidth – Analog Voice Frequency Modulation, 25 kHz Channel Spacing
The exhibits in this section show occupied bandwidth plots for analog voice modulation. Data is shown with the modulating audio tone itself, the tone plus Private Line (PL) sub-audible tone signaling, and tone plus Digital Private Line (DPL) sub-audible signaling, 150 bps low speed data, and 300 bps low speed data. PL and DPL are used in "Conventional" systems, whereas 150 bps and 300 bps low speed data are used in "Trunking" systems.

The occupied bandwidth charts reference the following setup and specification requirements.

Modulation Type:	Analog Voice
Emission Designator:	16K0F3E
Channelization:	25 kHz
Deviation Limit:	±5.0 kHz Max
Power Setting:	100 Watts

Specification Requirement § 90.210(b) Emission Limits – "B-Mask":
For transmitters equipped with an audio low pass filter and designed to operate with a 25 kHz channel spacing (authorized bandwidth 20 kHz), the power of any emission must be below the unmodulated carrier power (P) as follows:

On any frequency removed from the assigned frequency by a displacement frequency (F_d in kHz) of:

a) >10 kHz up to and including 20 kHz — *At least 25 dB;*
b) >20 kHz up to and including 50 kHz — *At least 35 dB;*
c) >50 kHz — *at least 43+10 * Log_{10} (P) dB or 80 dB; (whichever is the lesser attenuation).*

Necessary Bandwidth Calculation:
The necessary bandwidth of the modulation signal per the formulas defined in 47 CFR 2.202 (b) is as follows:

Max Mod Freq, M	*Max Deviation, D*	*2*(M+D)*	*Nec BW*
3 kHz	5 kHz	16 kHz	16K0

Emission Measurement Analyzer Settings:

Horizontal:	12.5 kHz per Division	Resolution Bandwidth:	300 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) Key the station with no modulation to obtain the unmodulated carrier reference level on the analyzer. Use the analyzer controls to set this reference to a full-scale reference line. Store this analyzer trace in trace A.
2) Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation.
3) Allow the analyzer to sweep, and record the resultant emission levels in trace B.
4) Plot the resulting analyzer trace. The occupied bandwidth mask is then added along with additional labeling as appropriate.

EXHIBIT	**DESCRIPTION**
E1-9.1, 2, 3, 4	Carrier with 2500 Hz Audio Tone, 25 kHz Channels
E1-9.5, 6, 7, 8	Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 25 kHz Channels
E1-9.9, 10, 11, 12	Carrier with 2500 Hz Audio Tone and Digital Private Line (DPL) Signaling, 25 kHz Channels
E1-9.13, 14, 15, 16	Carrier with 2500 Hz Audio Tone and 150 bps Low Speed Data Signaling, 25 kHz Channels
E1-9.17, 18, 19, 20	Carrier with 2500 Hz Audio Tone and 300 bps Low Speed Data Signaling, 25 kHz Channels

Report on Test Measurements

EXHIBIT	DESCRIPTION	Meas Occ BW:		
		No PL	PL	DPL
E1-9.1, 5, 9	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 136.0125 MHz	14.85 kHz	11.67 kHz	11.82 kHz
E1-9.2,6,10	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 138.125 MHz	14.85 kHz	11.66 kHz	11.81 kHz
E1-9.3, 7, 11	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 155.125 MHz	14.85 kHz	11.67 kHz	11.79 kHz
E1-9.4, 8, 12	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 173.9750 MHz	14.84 kHz	11.64 kHz	11.87 kHz

EXHIBIT	DESCRIPTION	Meas Occ BW:	
		150bps	300bps
E1-9.13, 17	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 136.125 MHz	11.68 kHz	11.90 kHz
E1-9.14, 18	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 138.125 MHz	11.68 kHz	11.89 kHz
E1-9.15, 19	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 155.125 MHz	11.69 kHz	11.90 kHz
E1-9.16, 20	Carrier with 2500 Hz Audio Tone, 25 kHz Channels, 173.9750 MHz	11.73 kHz	11.64 kHz

Report on Test Measurements

Occupied Bandwidth – Analog Voice Frequency Modulation, 12.5 kHz Channel Spacing
The exhibits in this section show occupied bandwidth plots for analog voice modulation. Data is shown with the modulating audio tone itself, the tone plus Private Line (PL) sub-audible tone signaling, and tone plus Digital Private Line (DPL) sub-audible signaling, 150 bps low speed data, and 300 bps low speed data. PL and DPL are used in "Conventional" systems, whereas 150 bps and 300 bps low speed data are used in "Trunking" systems.

The occupied bandwidth charts reference the following setup and specification requirements.

Modulation Type:	Analog Voice
Emission Designator:	11K0F3E
Channelization:	12.5 kHz
Deviation Limit:	±5.0 kHz Max
Power Setting:	100 Watts

Specification Requirement § 90.210(d) Emission Limits – "D-Mask":
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:

(2) 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 (Analog Emission):
The necessary bandwidth of the modulation signal per the formulas defined in 47 CFR 2.202 (b) is as follows:

Max Mod Freq, M	*Max Deviation, D*	*2*(M+D)*	*Nec BW*
3 kHz	2.5 kHz	11 kHz	11K0

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		

Report on Test Measurements

Occupied Bandwidth –12.5 kHz Channel Spacing (continued)

Test Procedure (Analog Voice):

1) Key the station with no modulation to obtain the unmodulated carrier reference level on the analyzer. Use the analyzer controls to set this reference to a full-scale reference line. Store this analyzer trace in trace A.
2) Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation.
3) Allow the analyzer to sweep, and record the resultant emission levels in trace B.
4) Plot the resulting analyzer trace. The occupied bandwidth mask is then added along with additional labeling as appropriate.

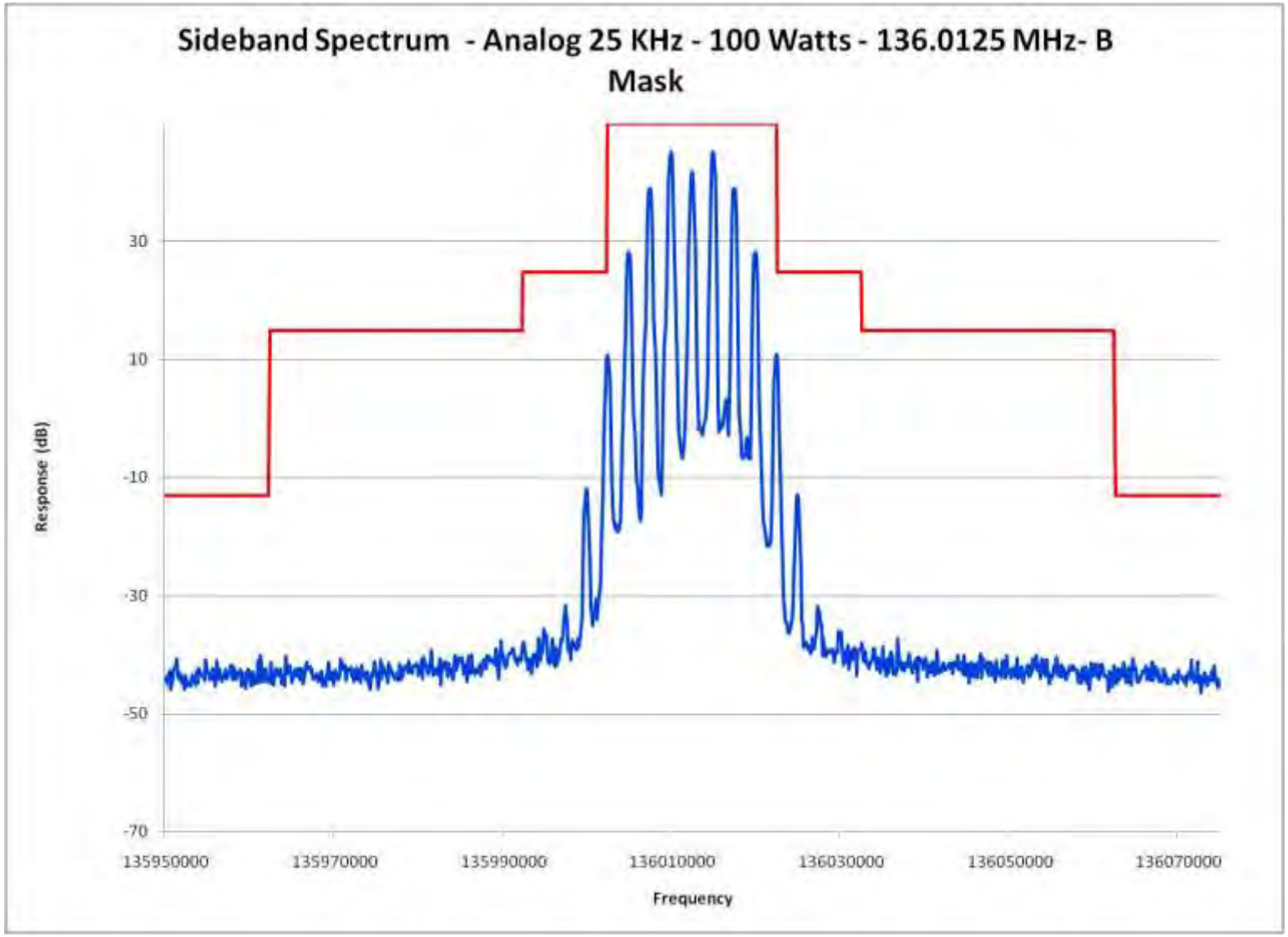
EXHIBIT	DESCRIPTION
E1-9.21, 22, 23, 24	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels
E1-9.25, 26, 27, 28	Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 12.5 kHz Channels
E1-9.29, 30, 31, 32	Carrier with 2500 Hz Audio Tone and Digital Private Line (DPL) Signaling, 12.5 kHz Channels
E1-9.33, 34, 35, 36	Carrier with 2500 Hz Audio Tone and 150 bps Low Speed Data Signaling, 12.5 kHz Channels
E1-9.37, 38, 39, 40	Carrier with 2500 Hz Audio Tone and 300 bps Low Speed Data Signaling, 12.5 kHz Channels

EXHIBIT	DESCRIPTION	Meas Occ BW:		
		No PL	PL	DPL
E1-9.21, 25, 29	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 136.0125 MHz	9.96 kHz	6.03 kHz	5.99 kHz
E1-9.22, 26, 30	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 138.0125 MHz	9.96 kHz	6.03 kHz	5.99 kHz
E1-9.23, 27, 31	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 155.0125 MHz	9.96 kHz	6.03 kHz	5.99 kHz
E1-9.24, 28, 32	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 173.9750 MHz	9.96 kHz	6.03 kHz	6.00 kHz

EXHIBIT	DESCRIPTION	Meas Occ BW:	
		150bps	300bps
E1-9.33, 37	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 136.0125 MHz	5.97 kHz	5.98 kHz
E1-9.34, 38	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 138.0125 MHz	5.98 kHz	5.98 kHz
E1-9.35, 39	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 155.0125 MHz	5.98 kHz	5.98 kHz
E1-9.36, 40	Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels, 173.9750 MHz	5.98 kHz	5.98 kHz

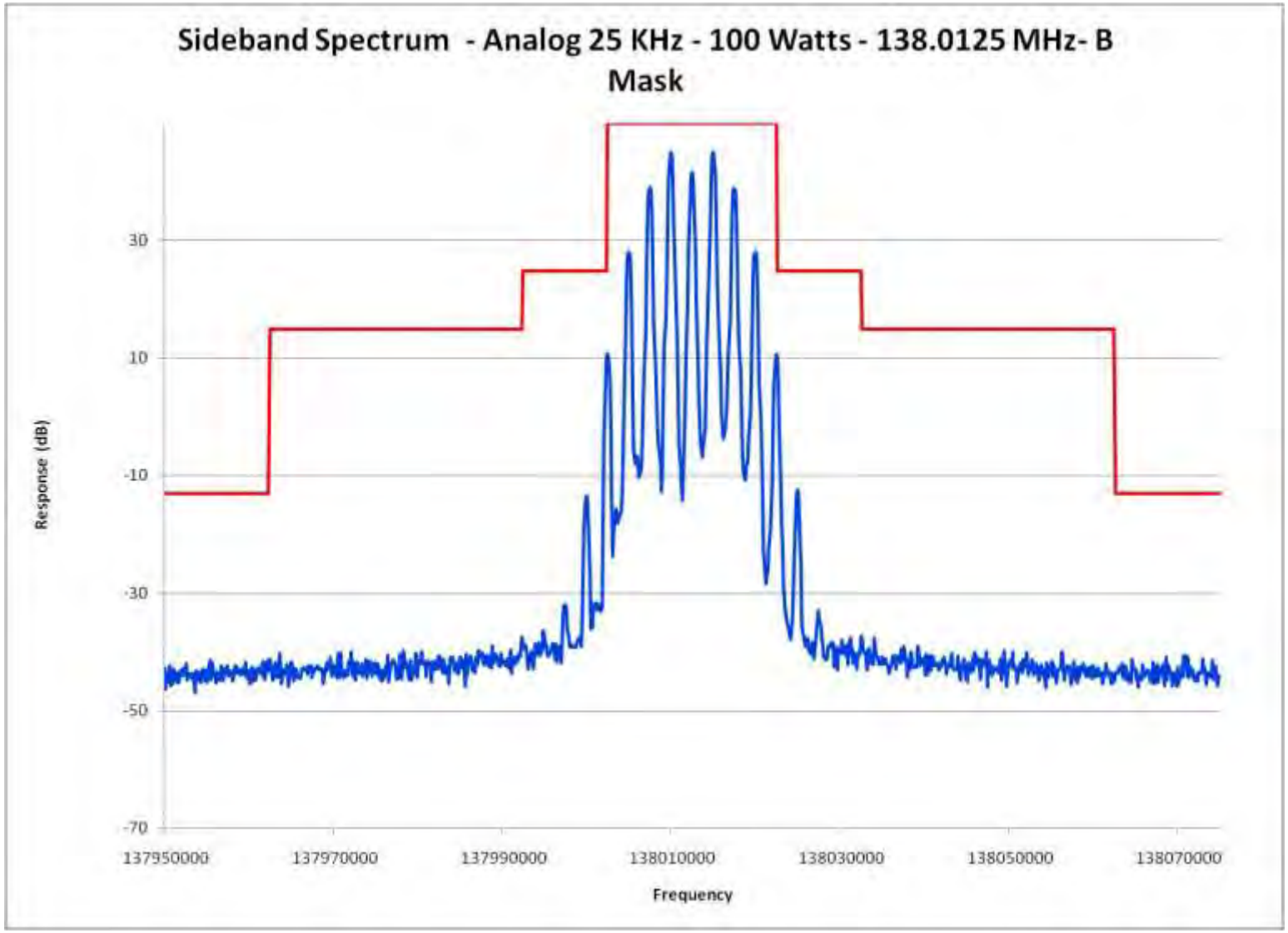
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 25 kHz Channels – Emission Designator: 16K0F3E – Low End of Band



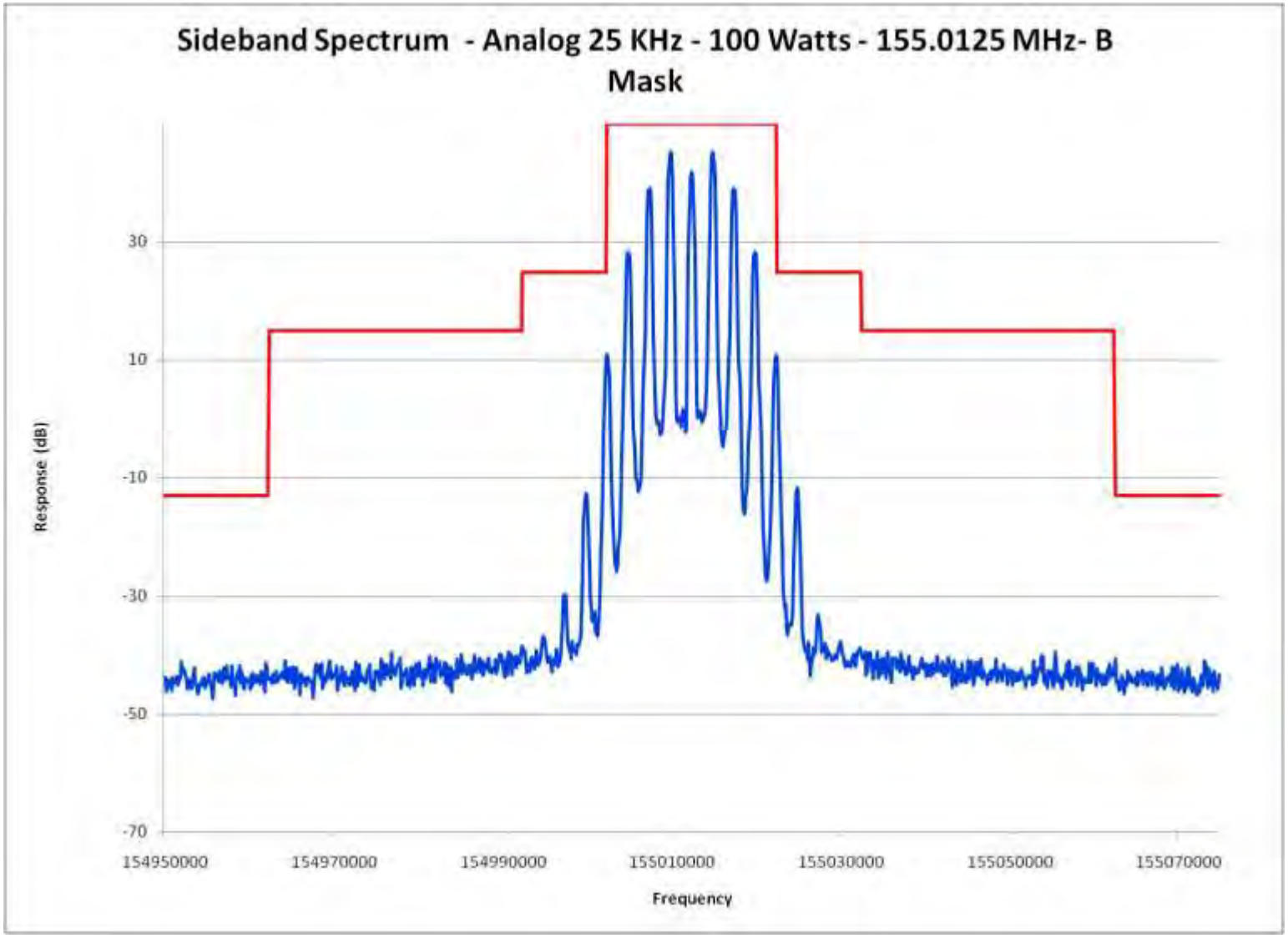
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 25 kHz Channels – Emission Designator: 16K0F3E – Lower End of Band



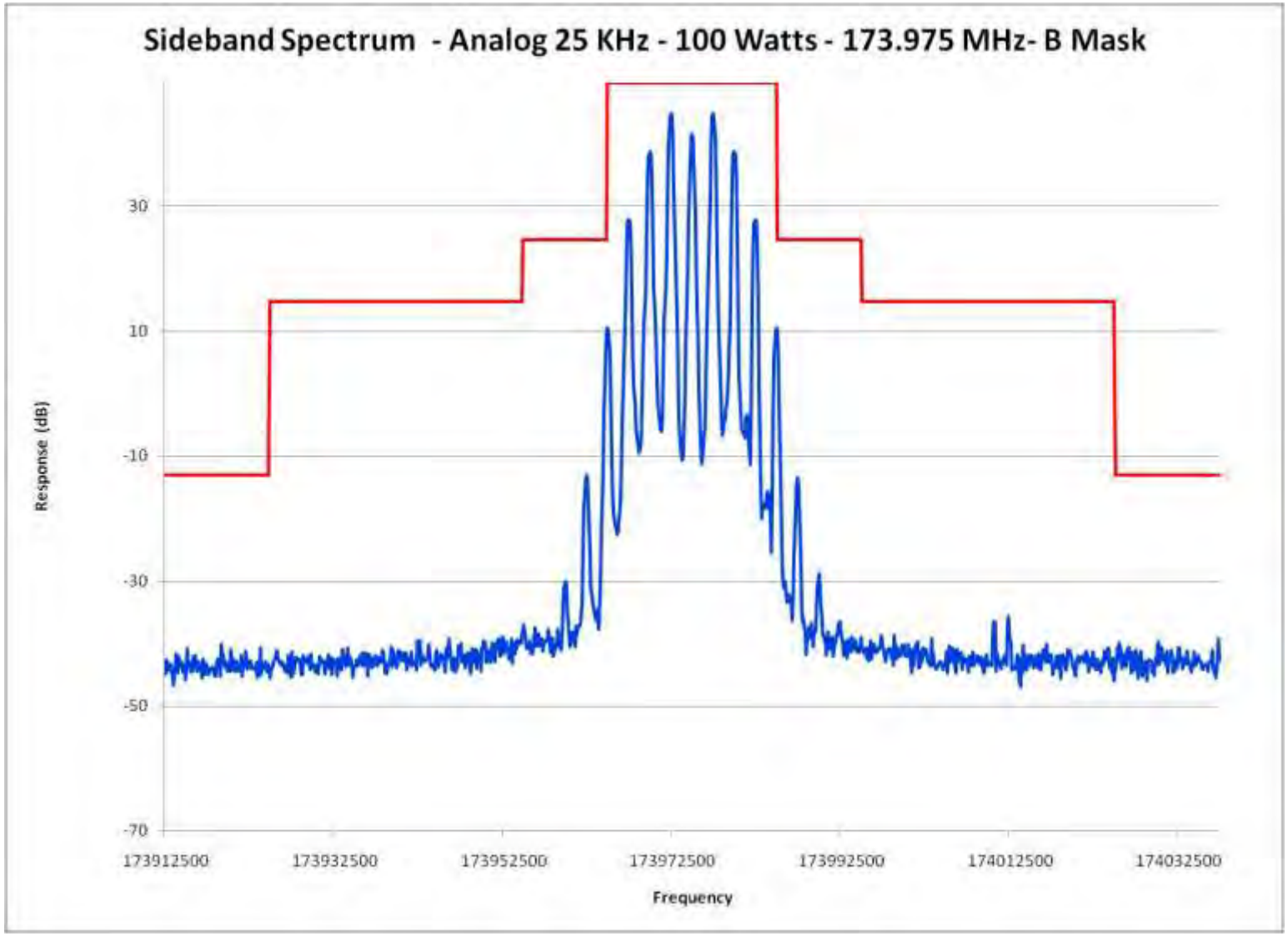
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 25 kHz Channels – Emission Designator: 16K0F3E – Middle of Band



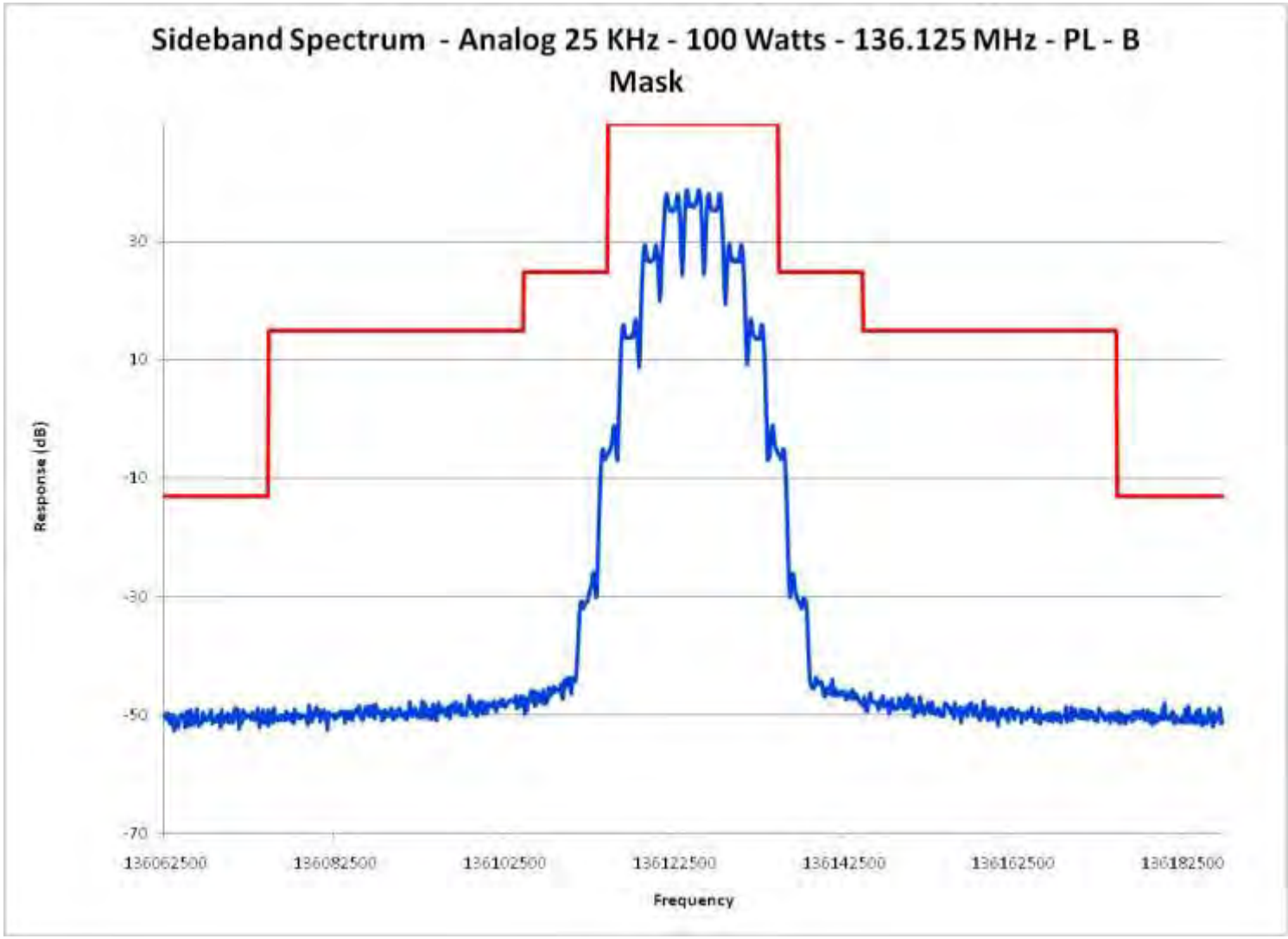
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 25 kHz Channels – Emission Designator: 16K0F3E – High End of Band



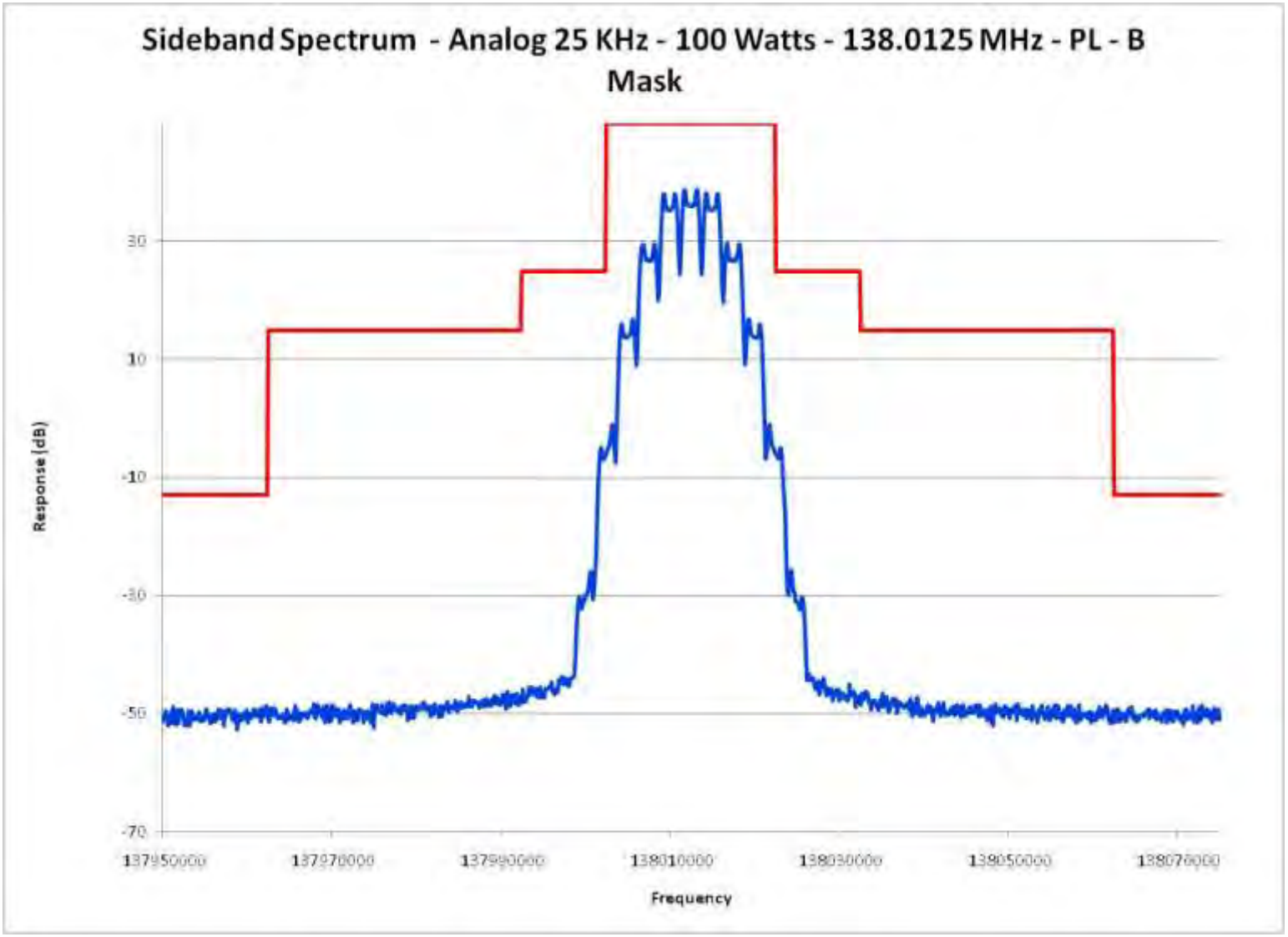
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Low End of Band



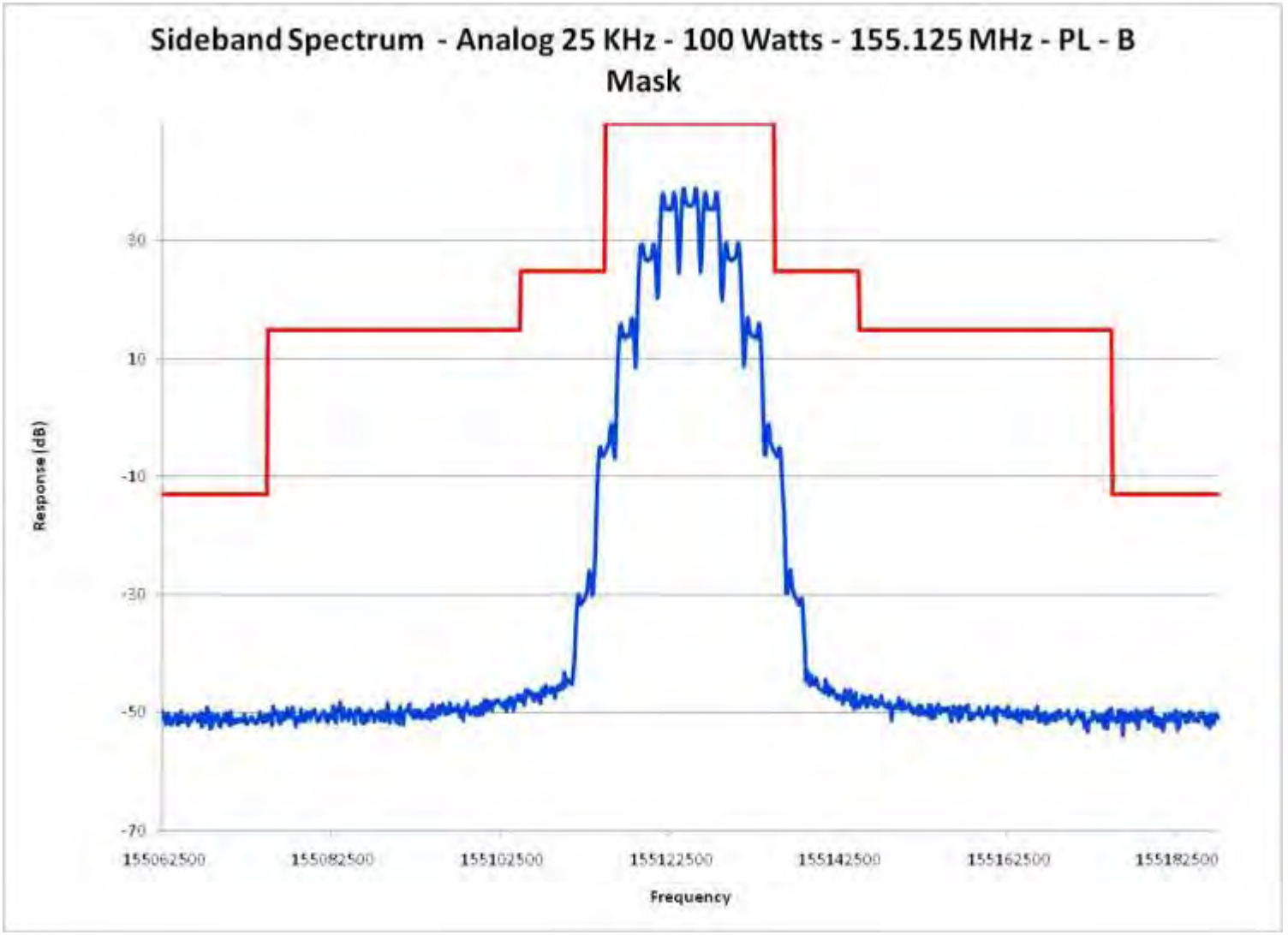
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Lower End of Band



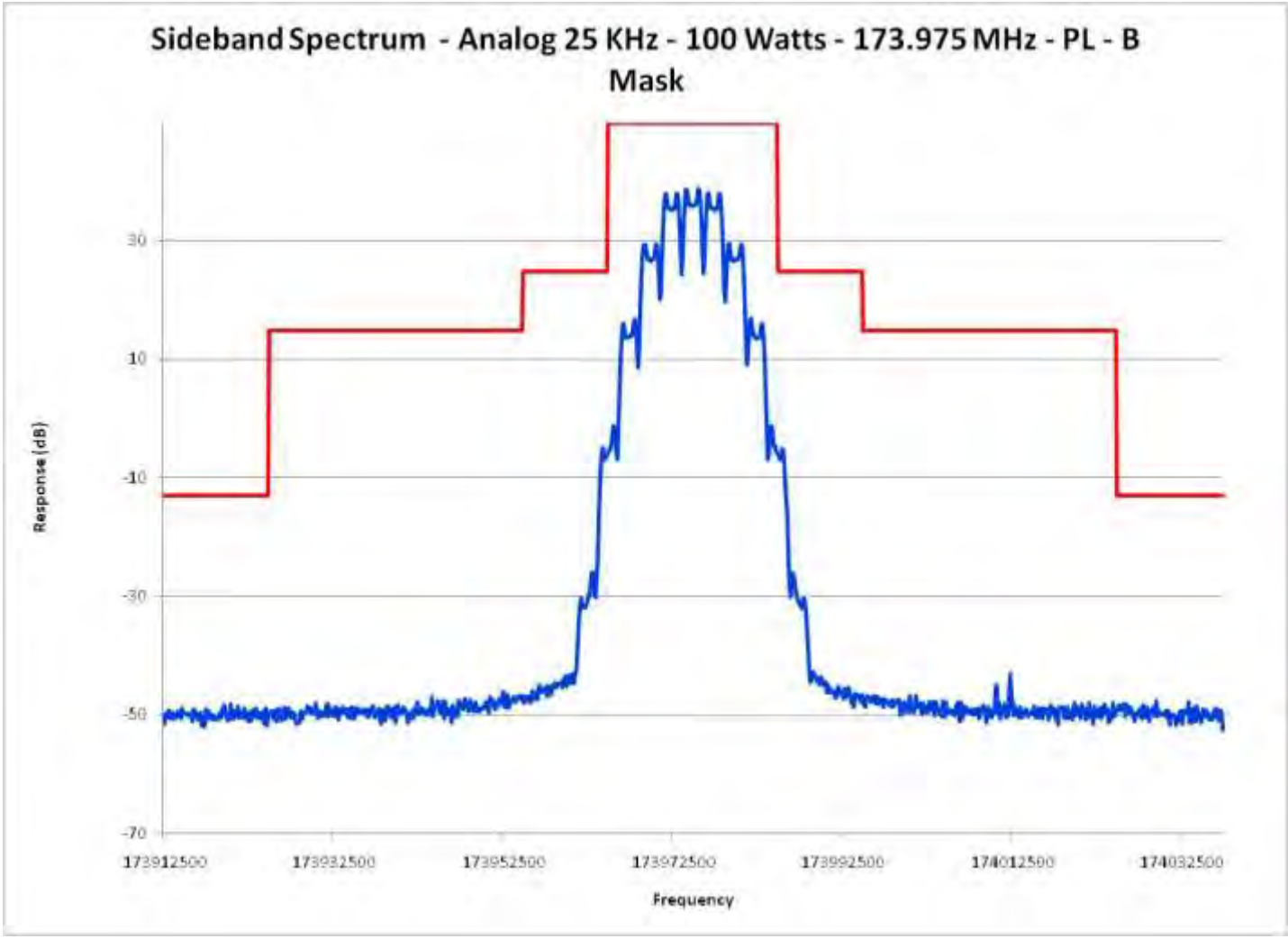
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Middle of Band



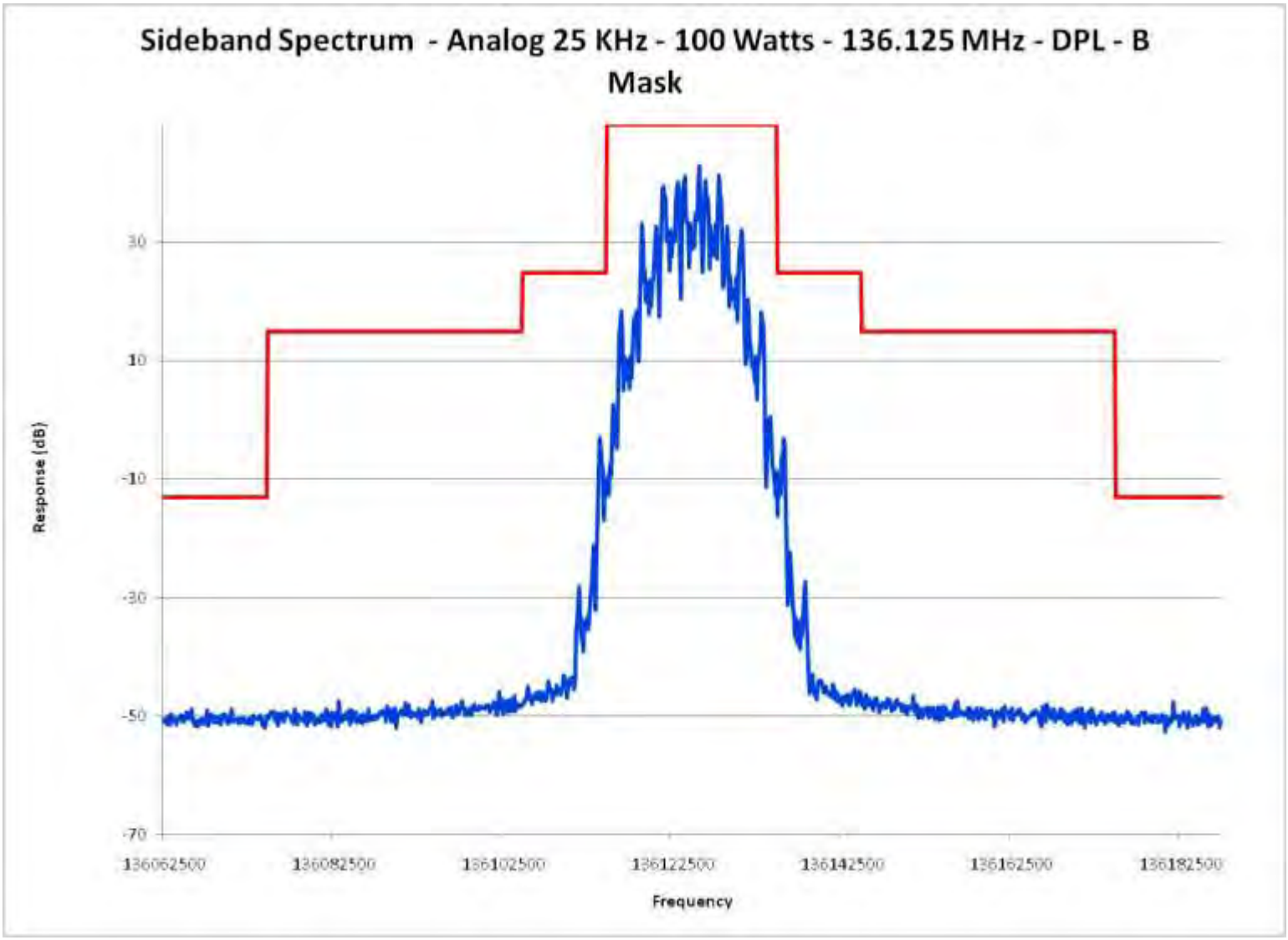
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – High End of Band



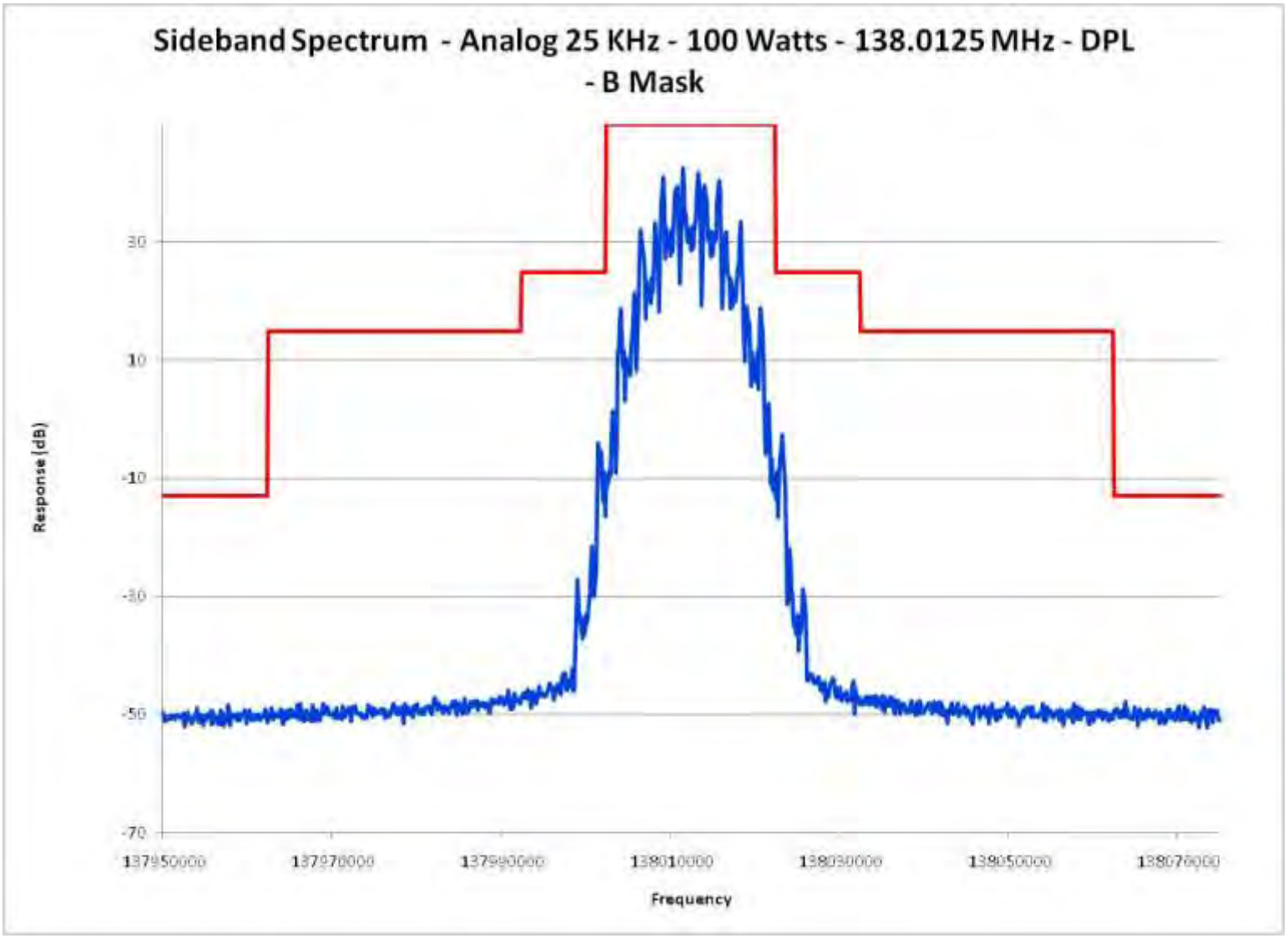
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and Digital Private Line (DPL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Low End of Band



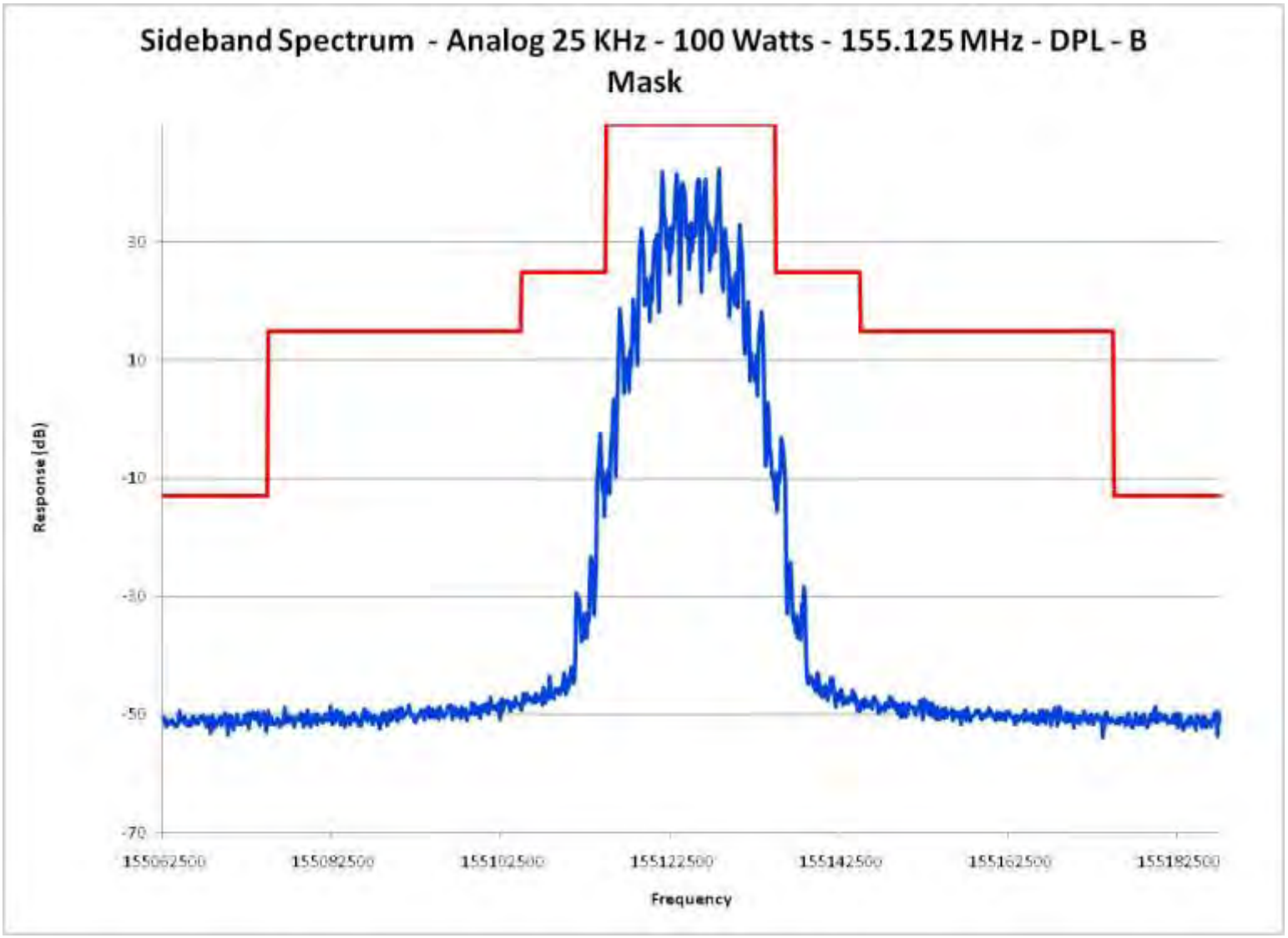
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and Digital Private Line (DPL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Lower End of Band



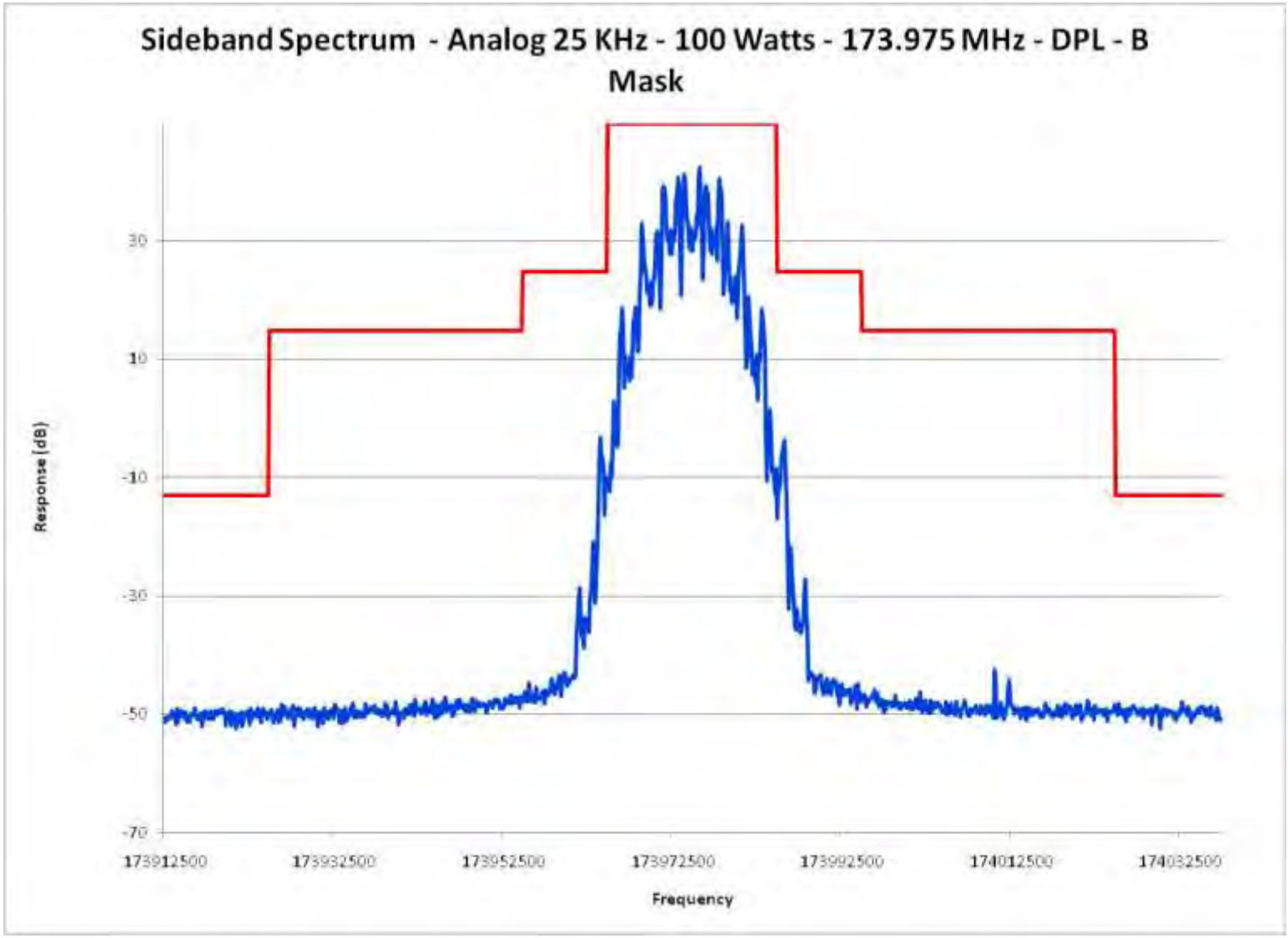
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and Digital Private Line (DPL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Middle of Band



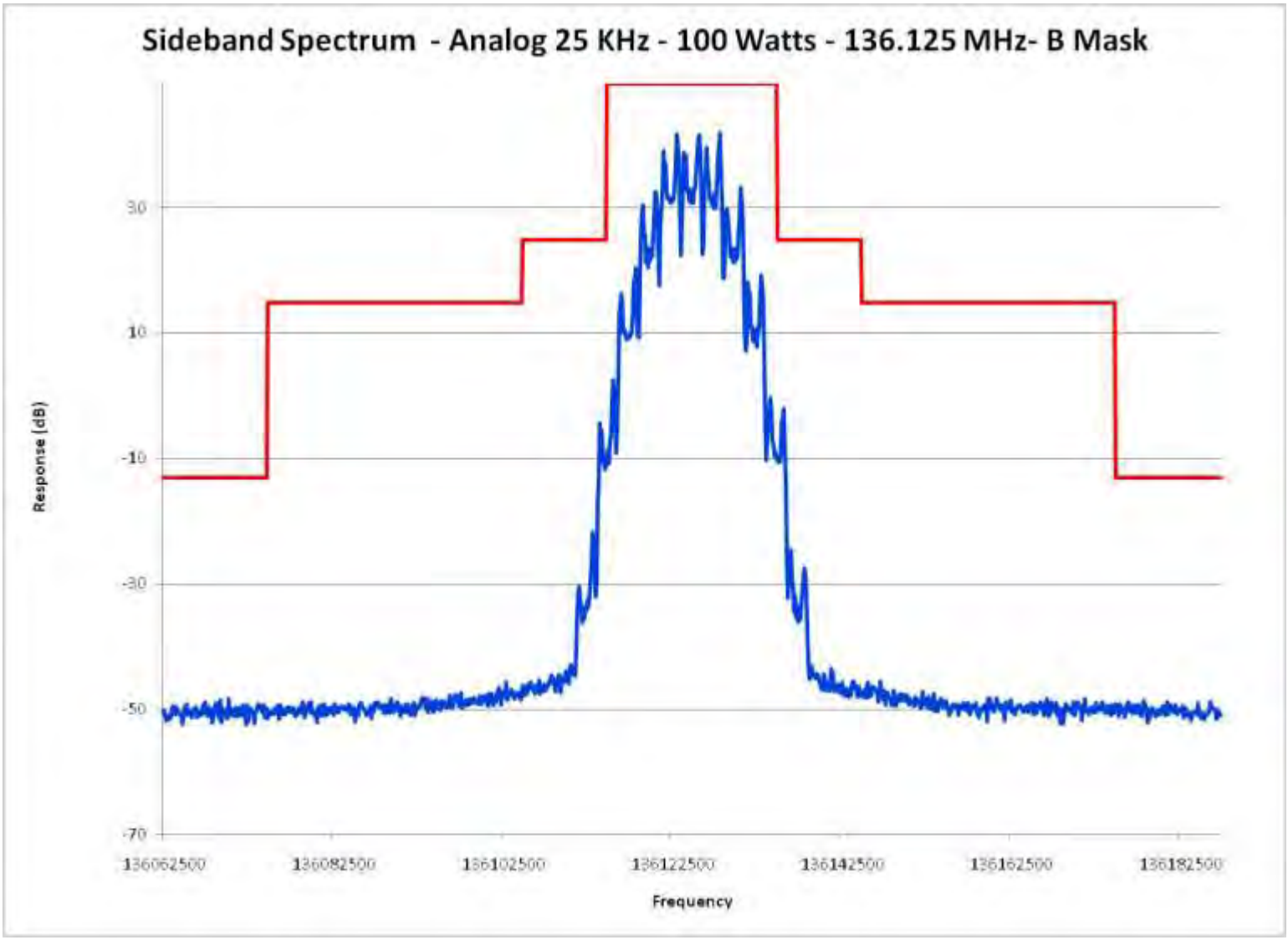
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and Digital Private Line (DPL) Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – High End of Band



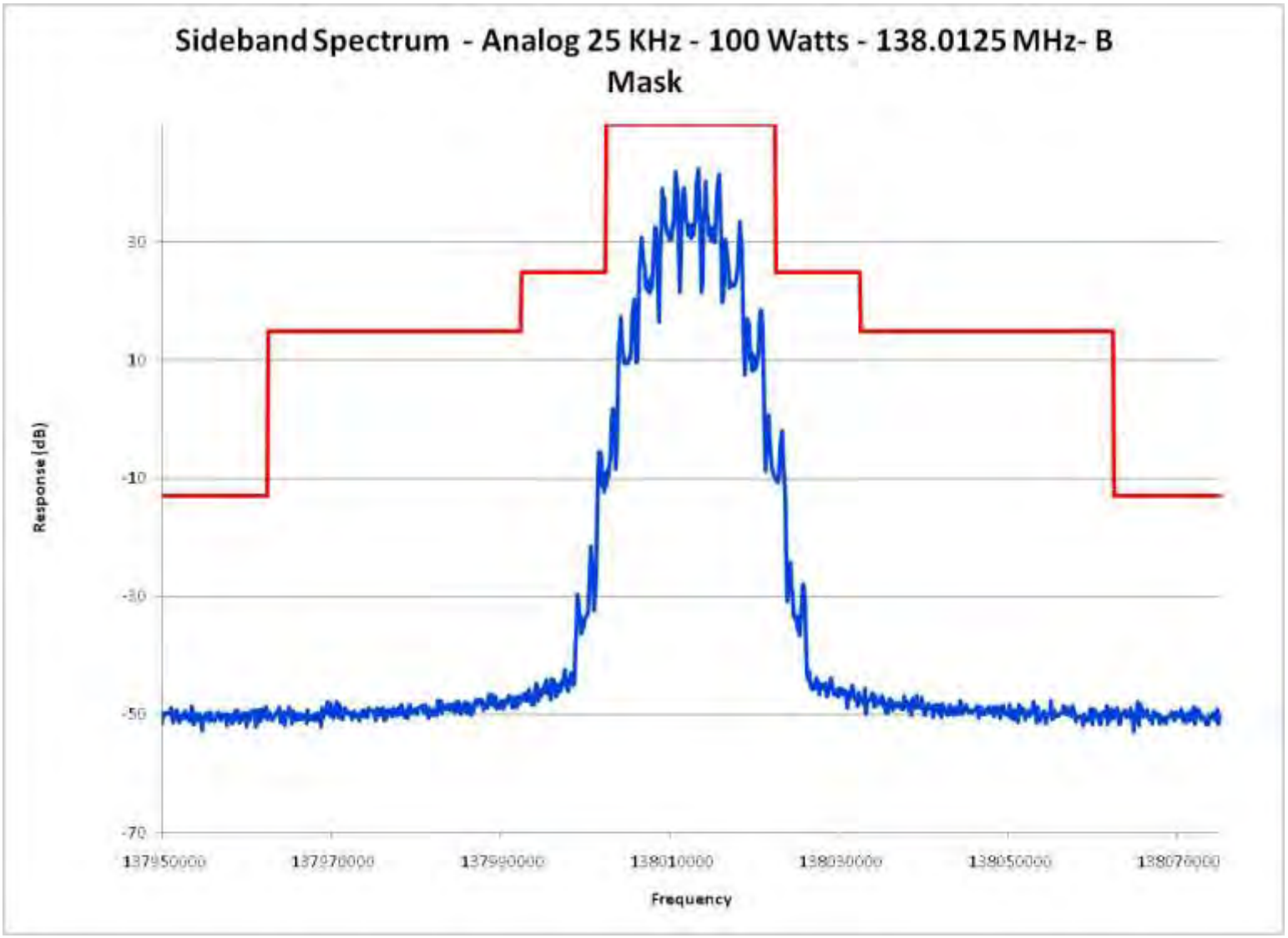
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 150 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Low End of Band



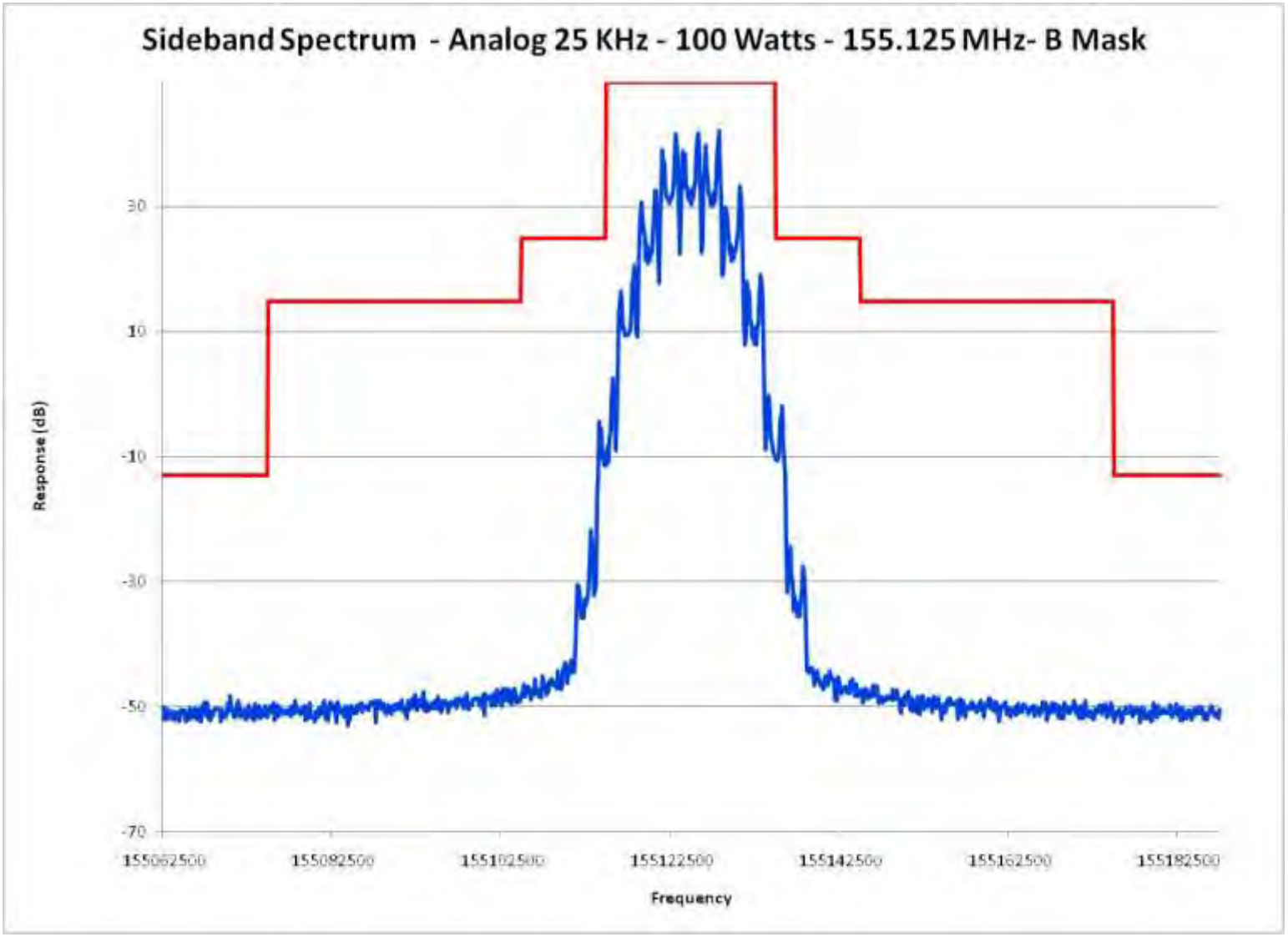
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 150 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Lower End of Band



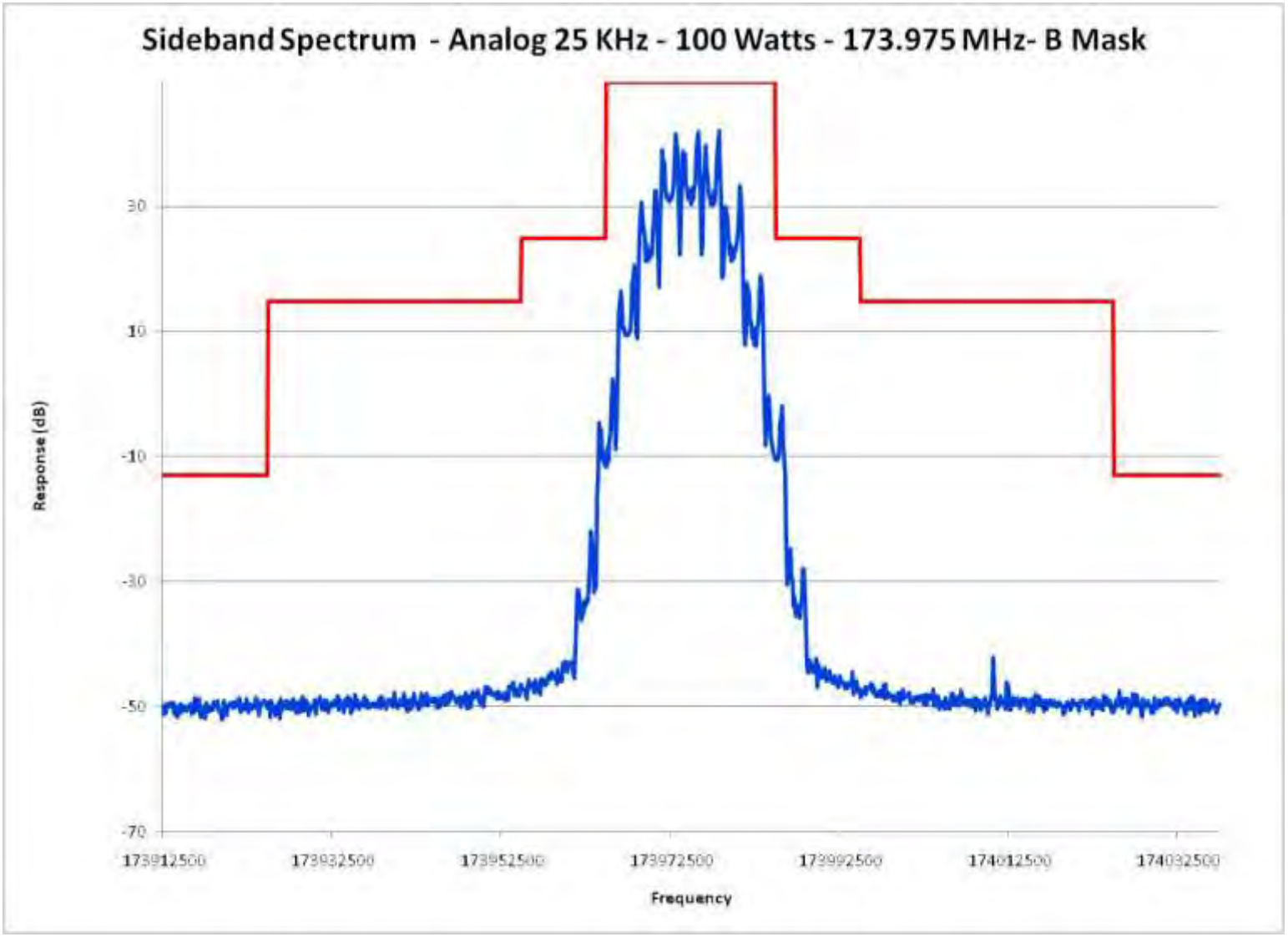
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 150 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Middle of Band



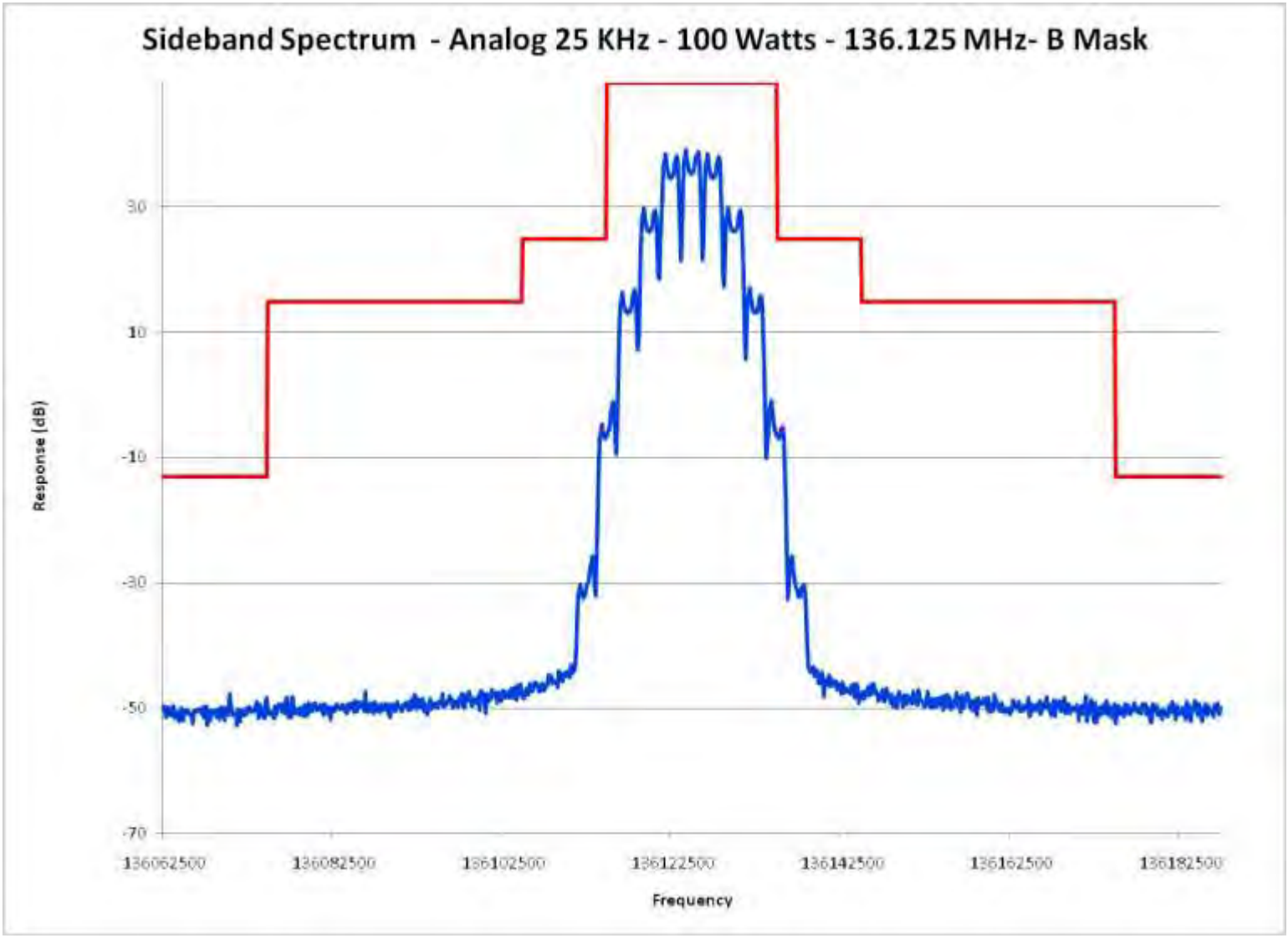
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 150 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – High End of Band



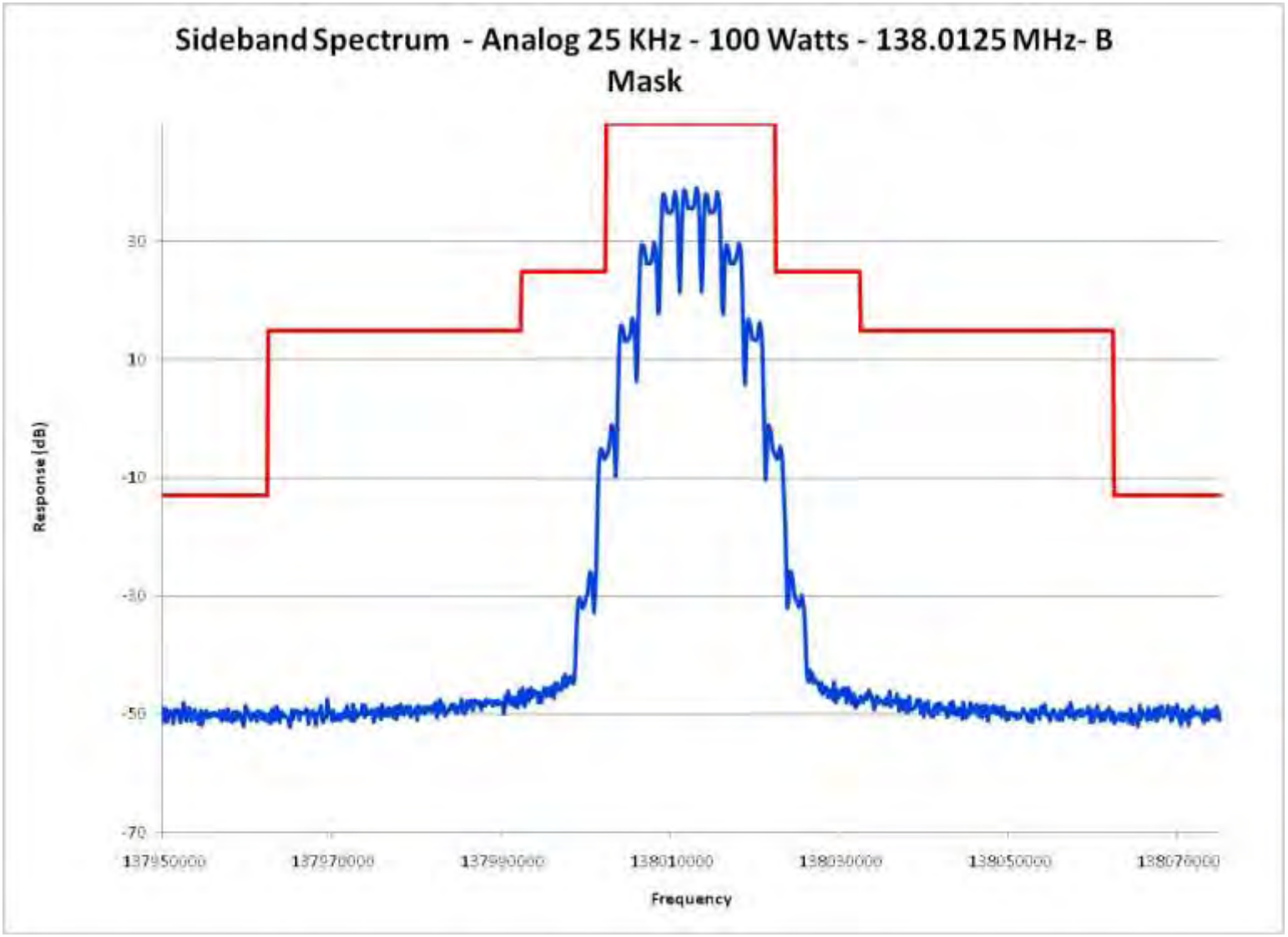
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 300 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Low End of Band



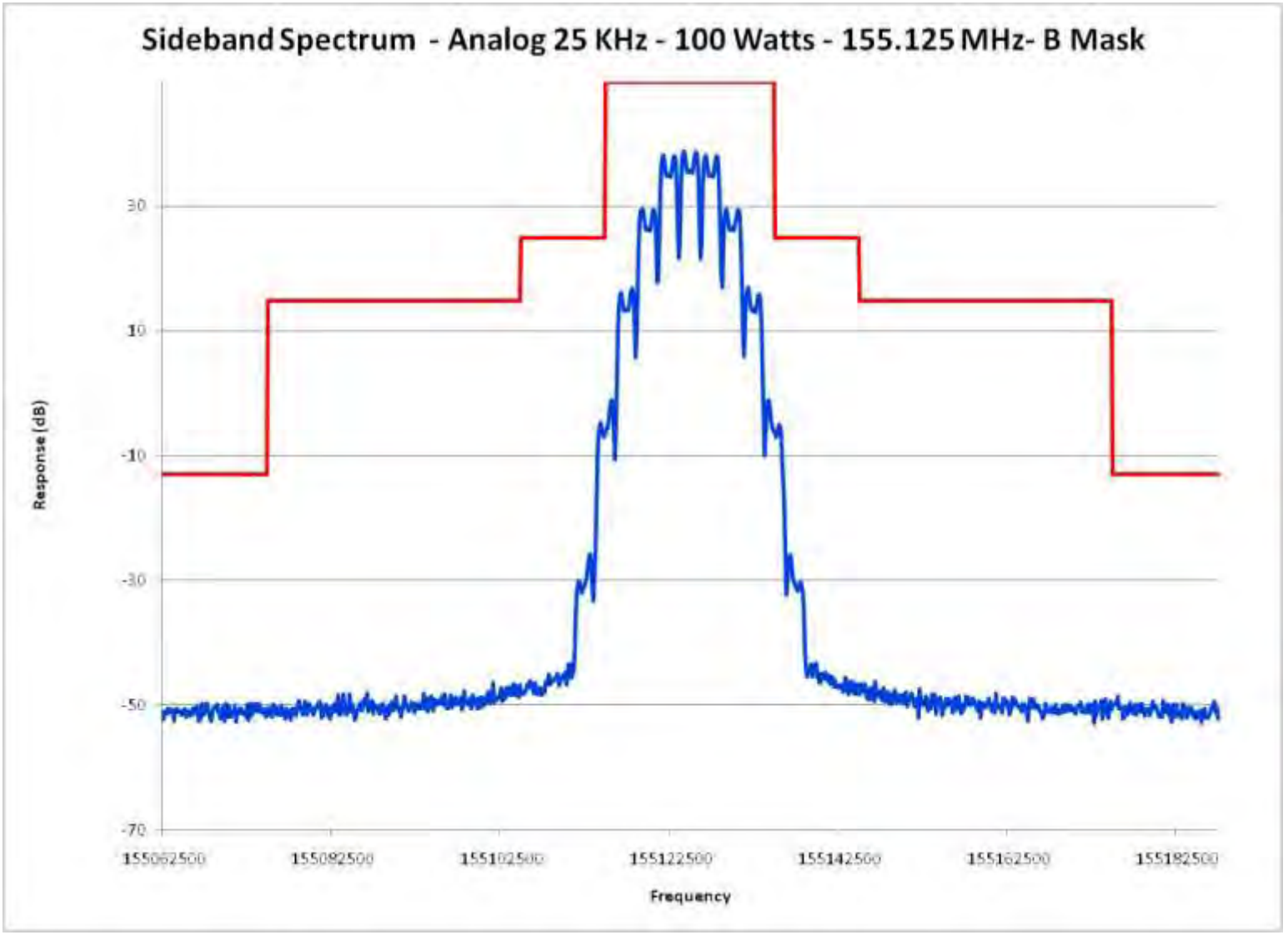
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 300 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Lower End of Band



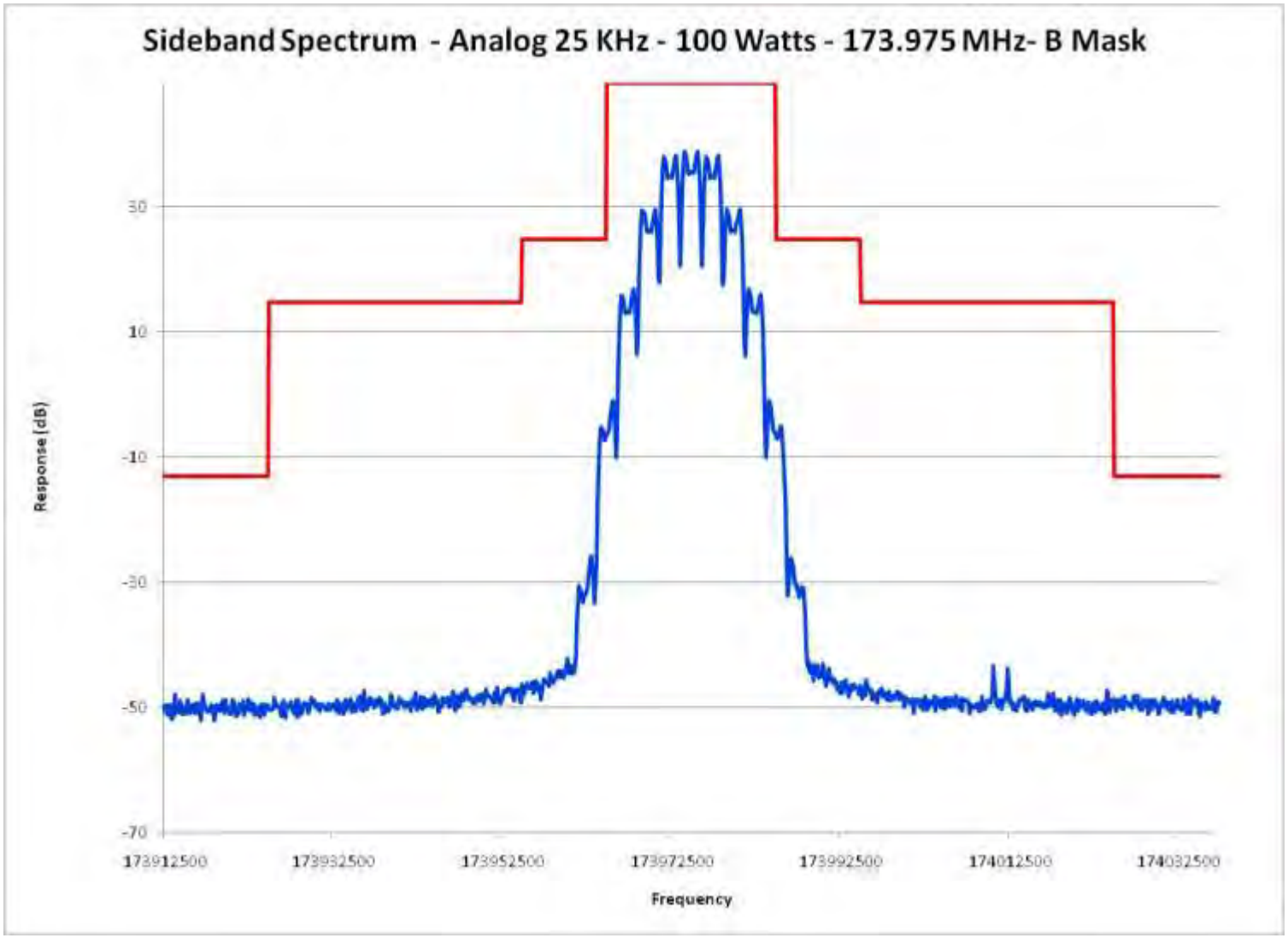
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 300 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – Middle of Band



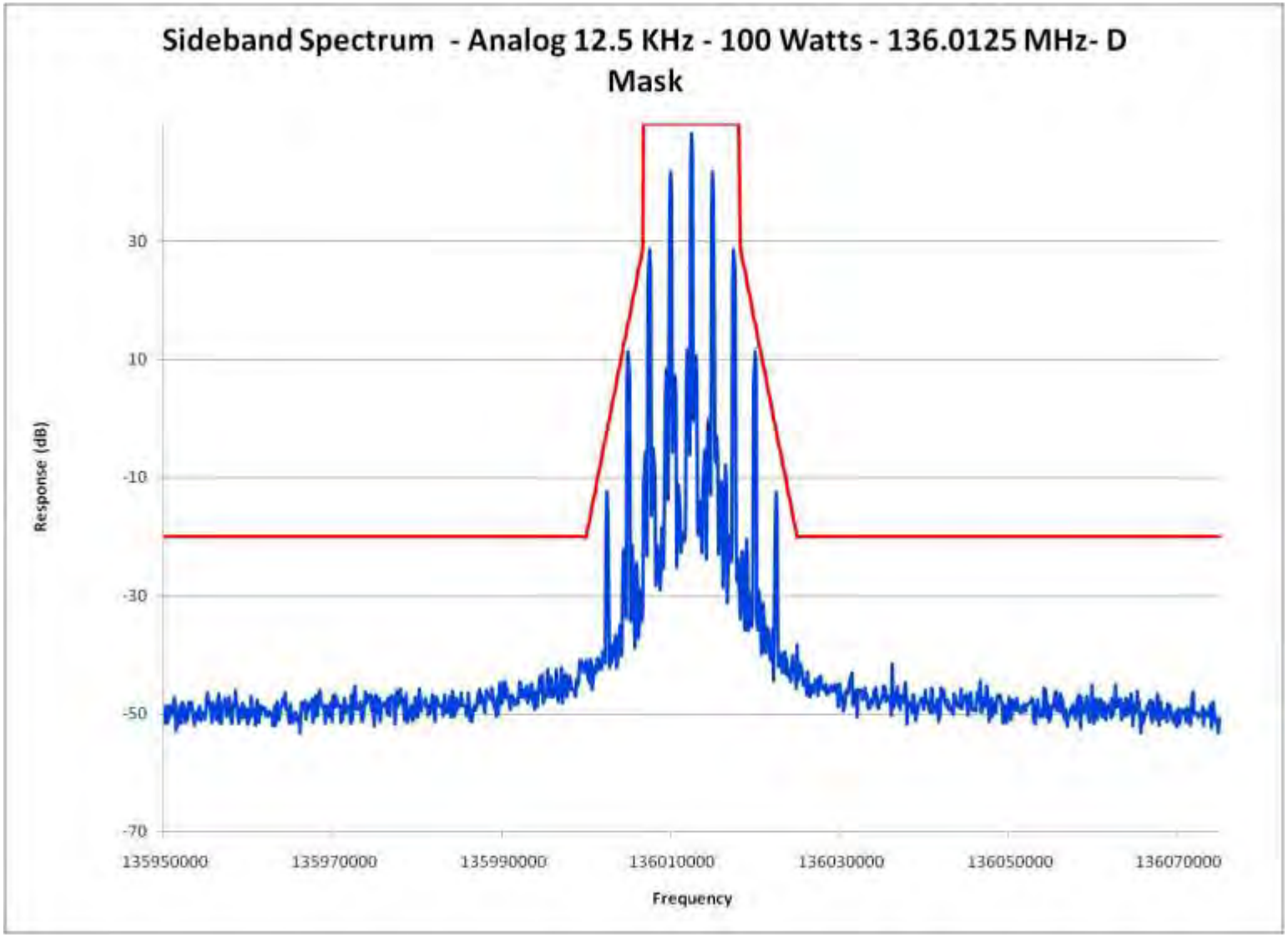
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone and 300 bps Low Speed Data Signaling, 25 kHz Channels – Emission Designator: 16K0F3E – High End of Band



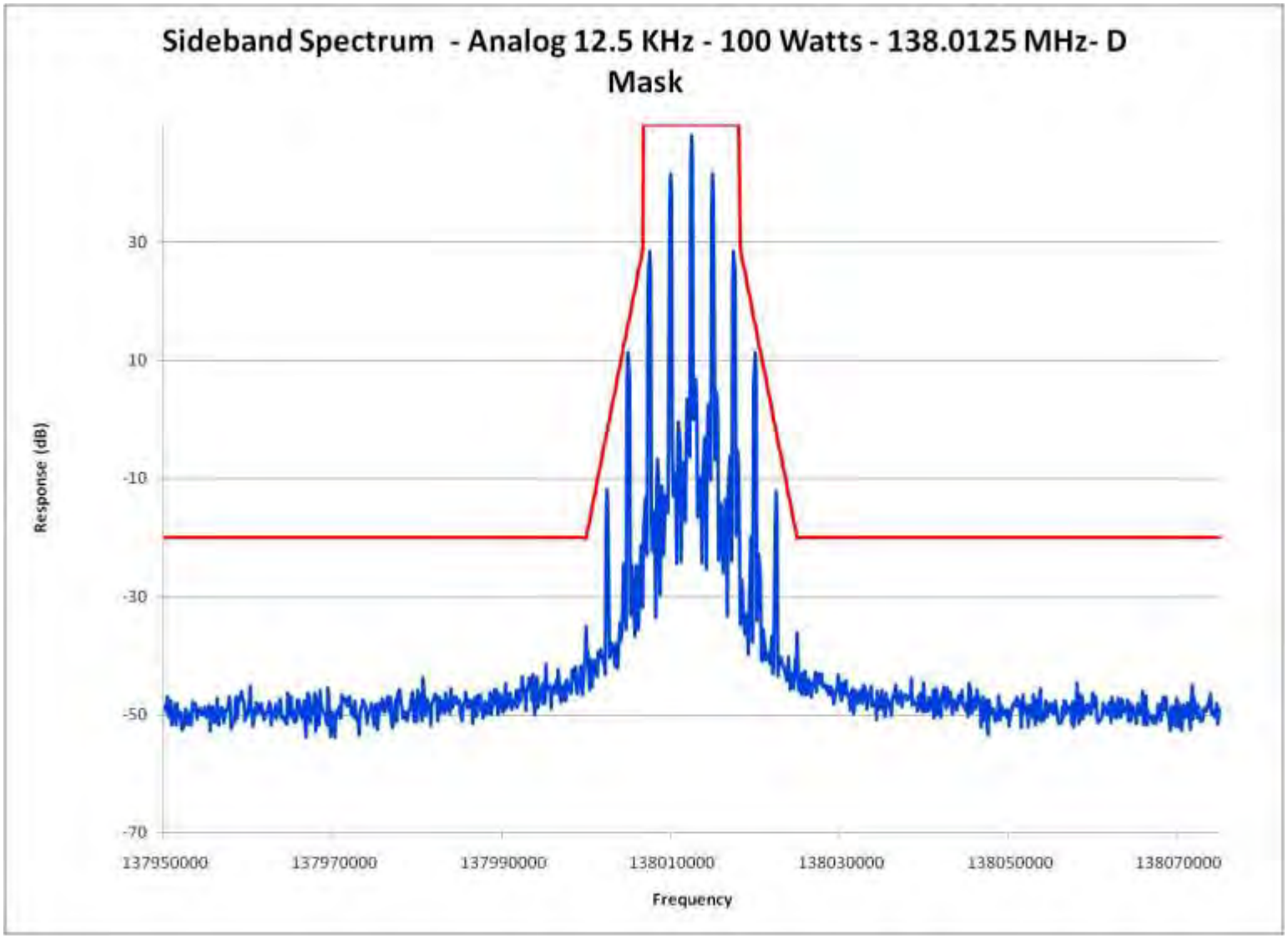
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



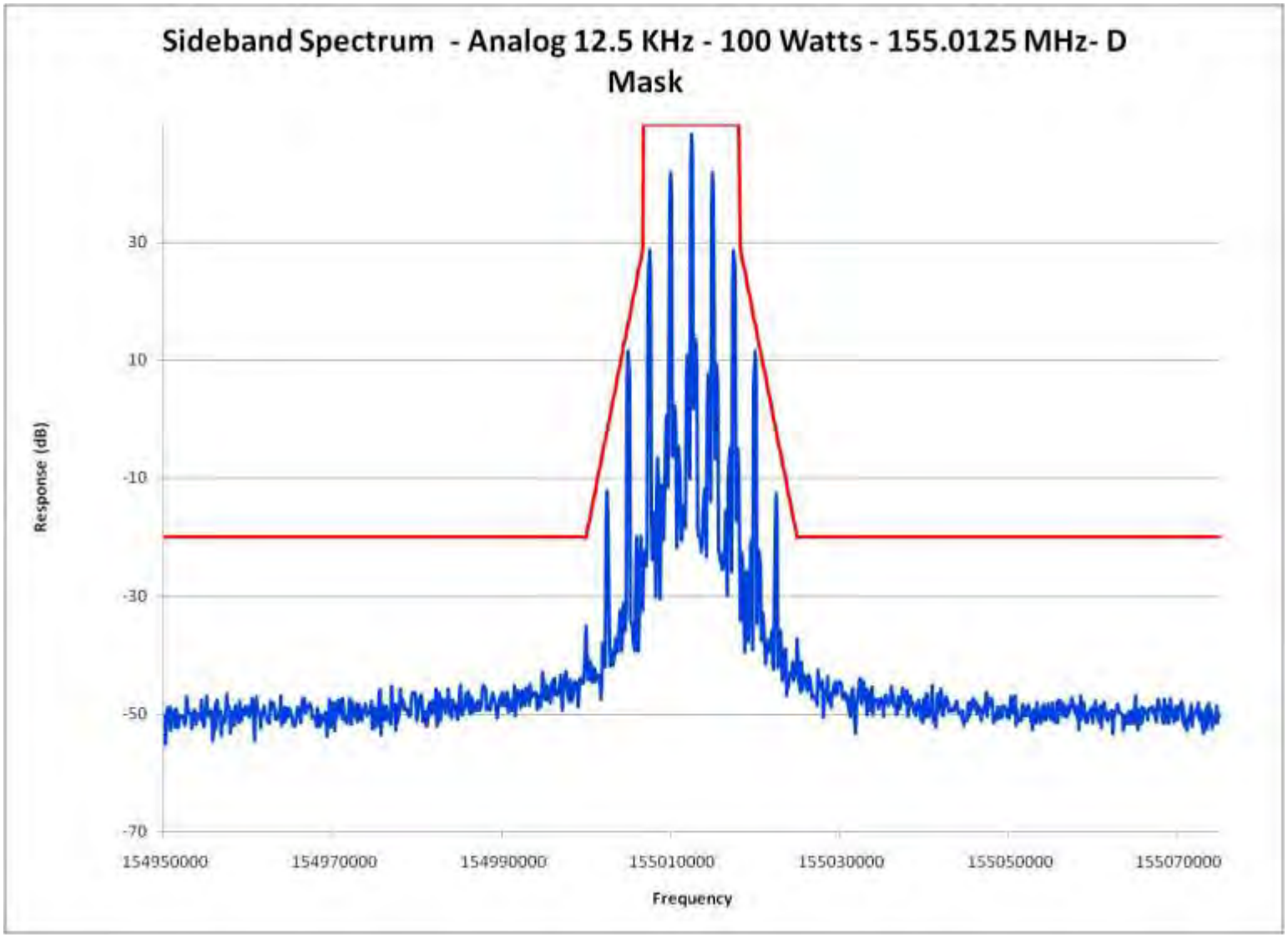
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels – Emission Designator: 11K0F3E – Lower End of Band



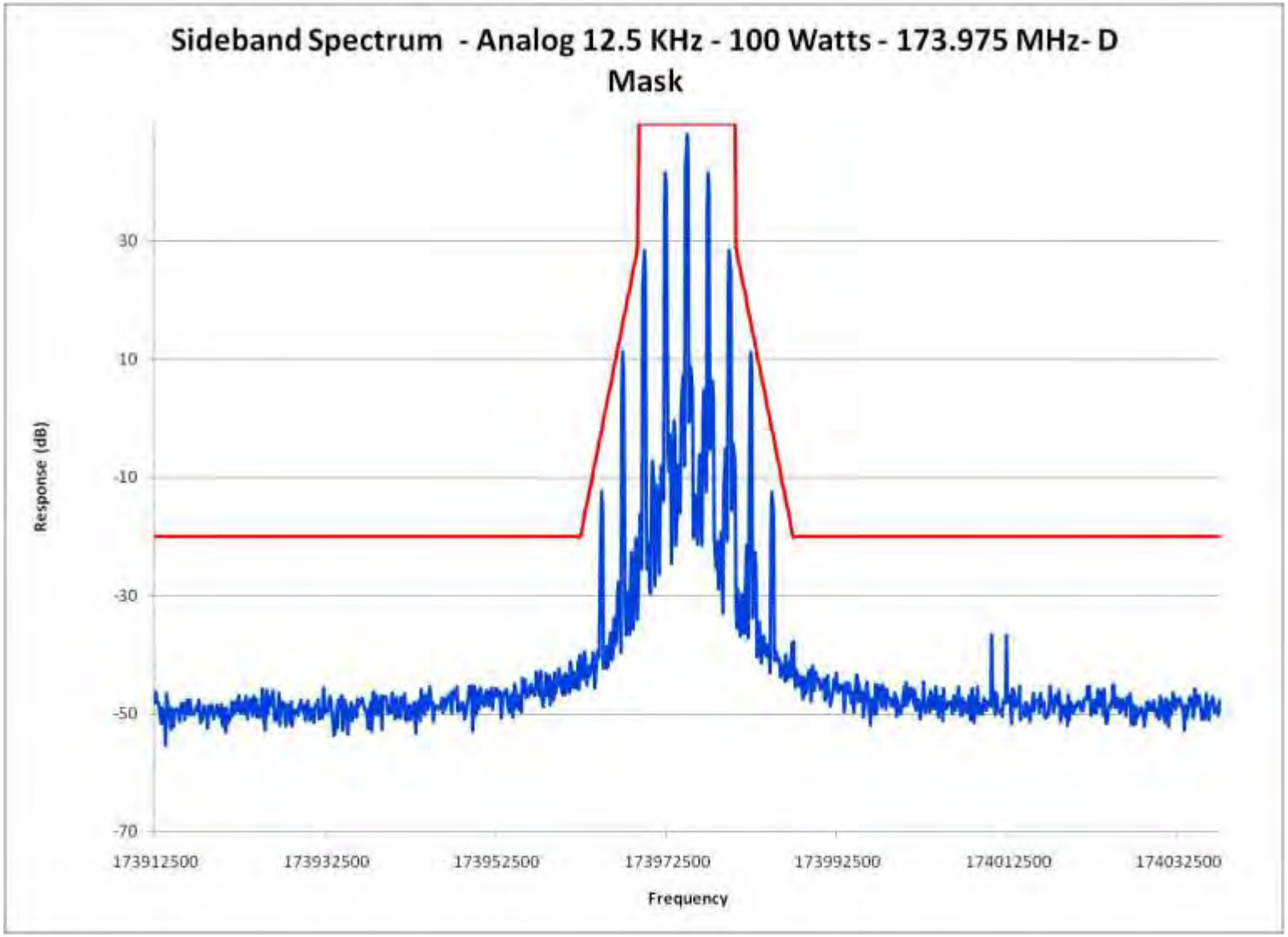
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels – Emission Designator: 11K0F3E – Middle of Band



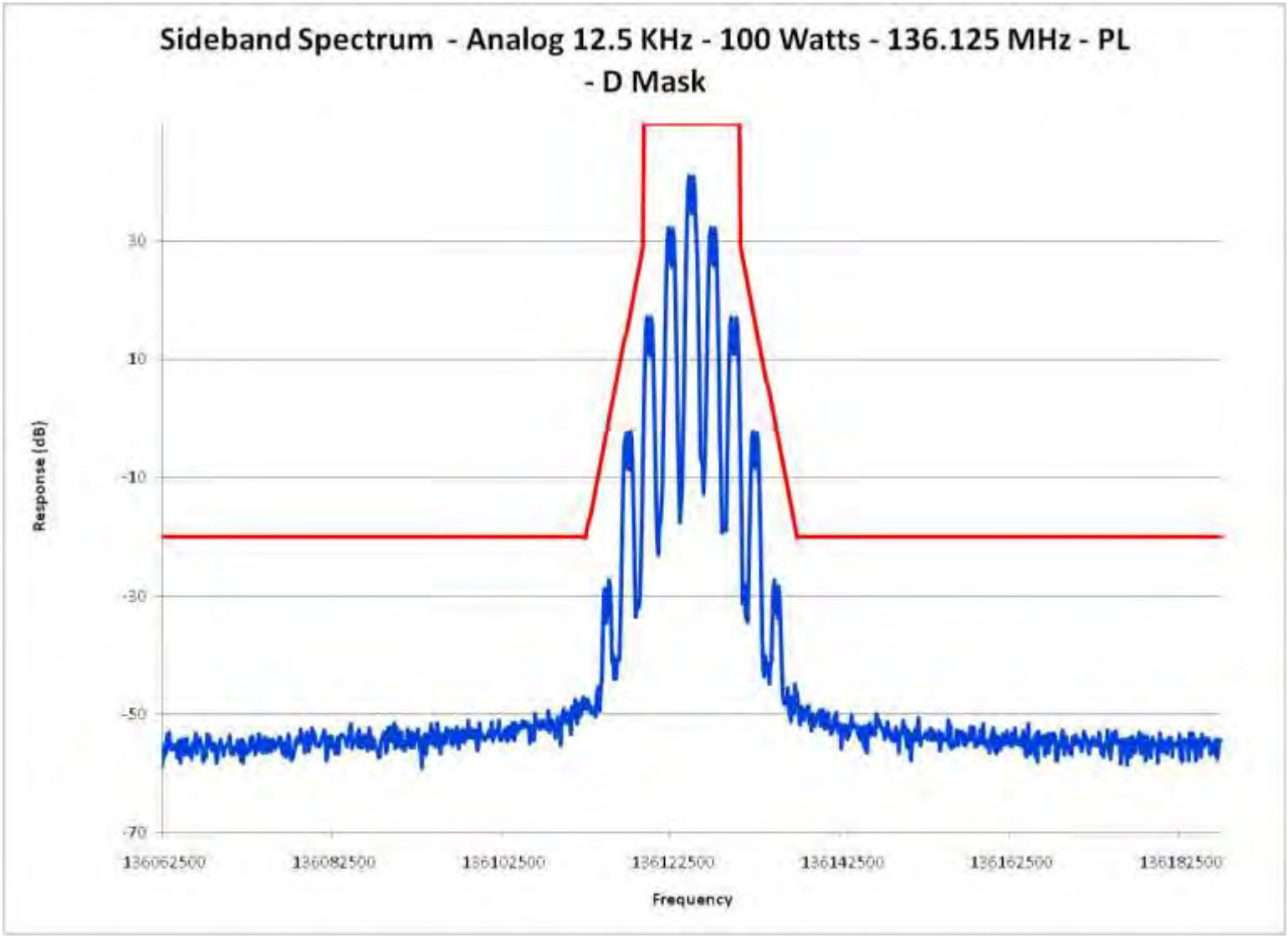
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone, 12.5 kHz Channels – Emission Designator: 11K0F3E – High End of Band



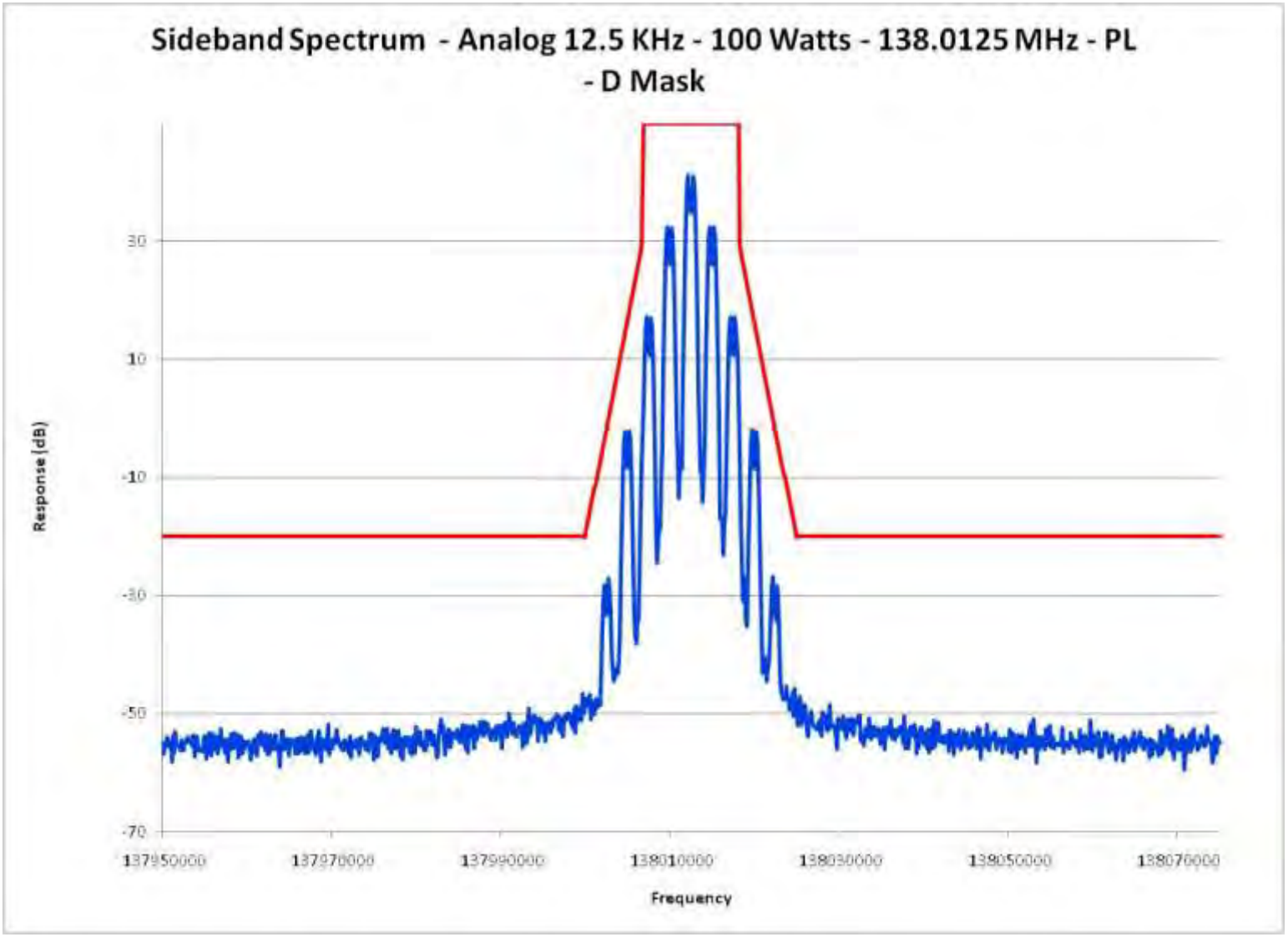
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



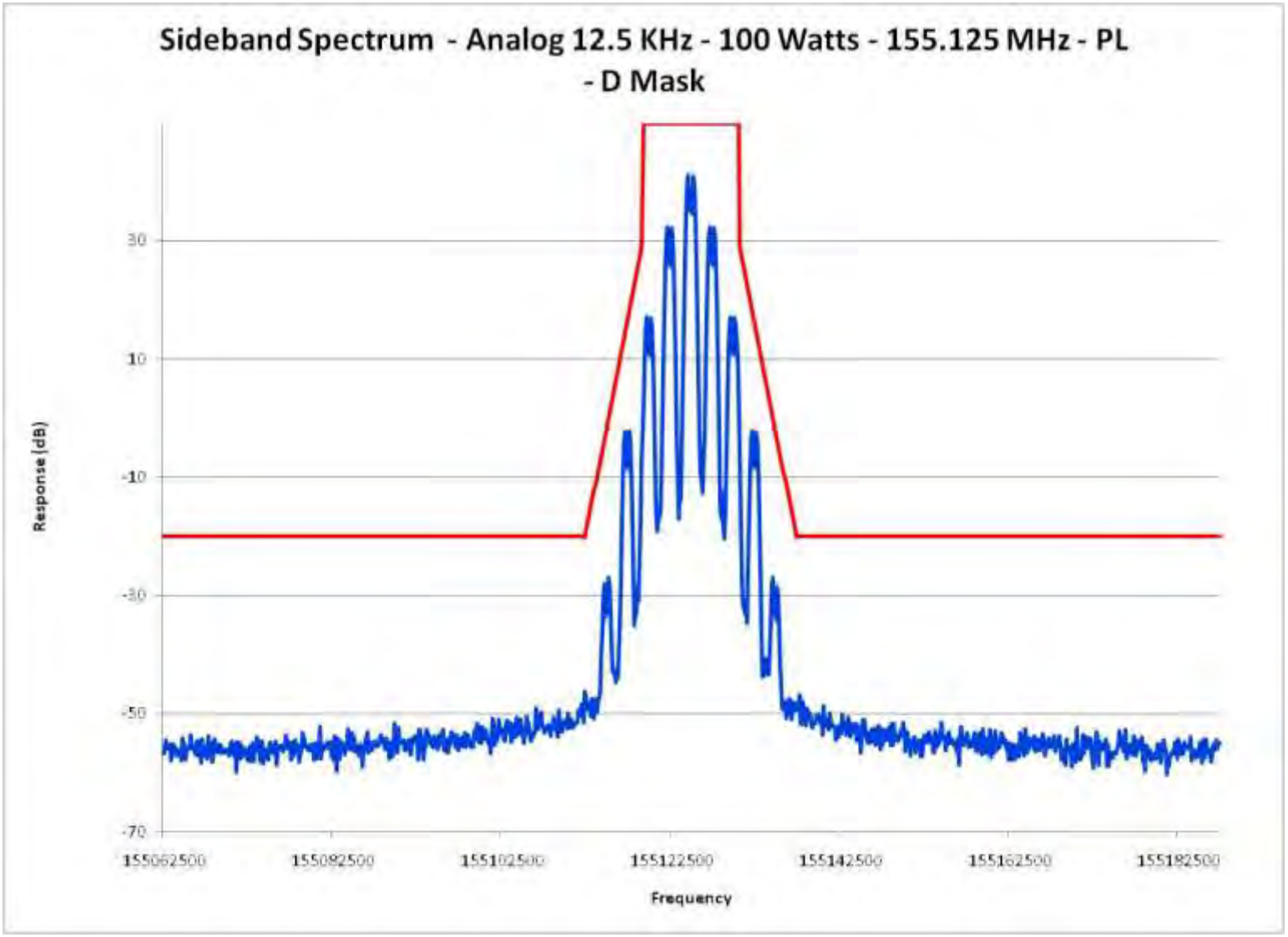
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Lower End of Band



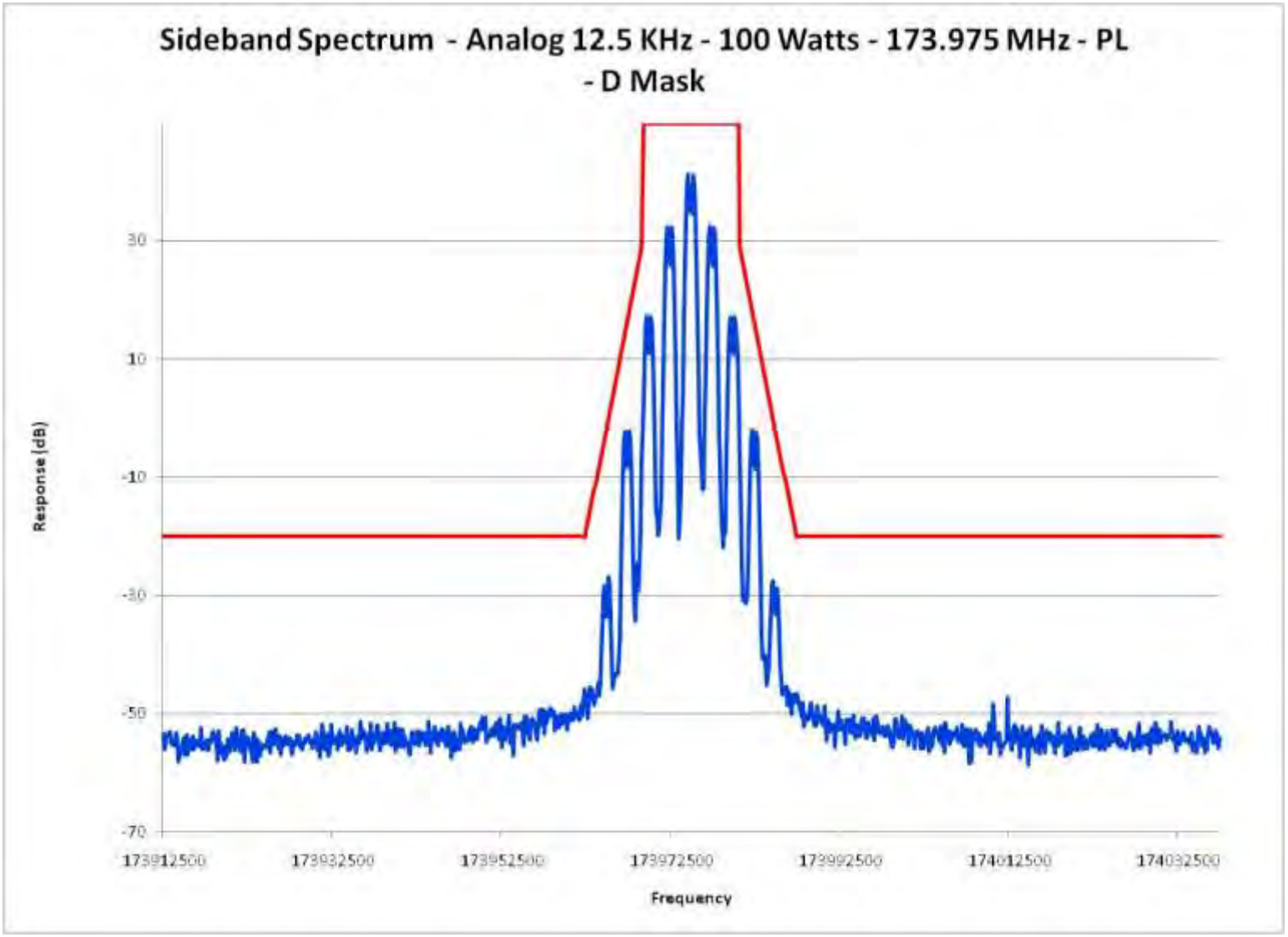
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Middle of Band



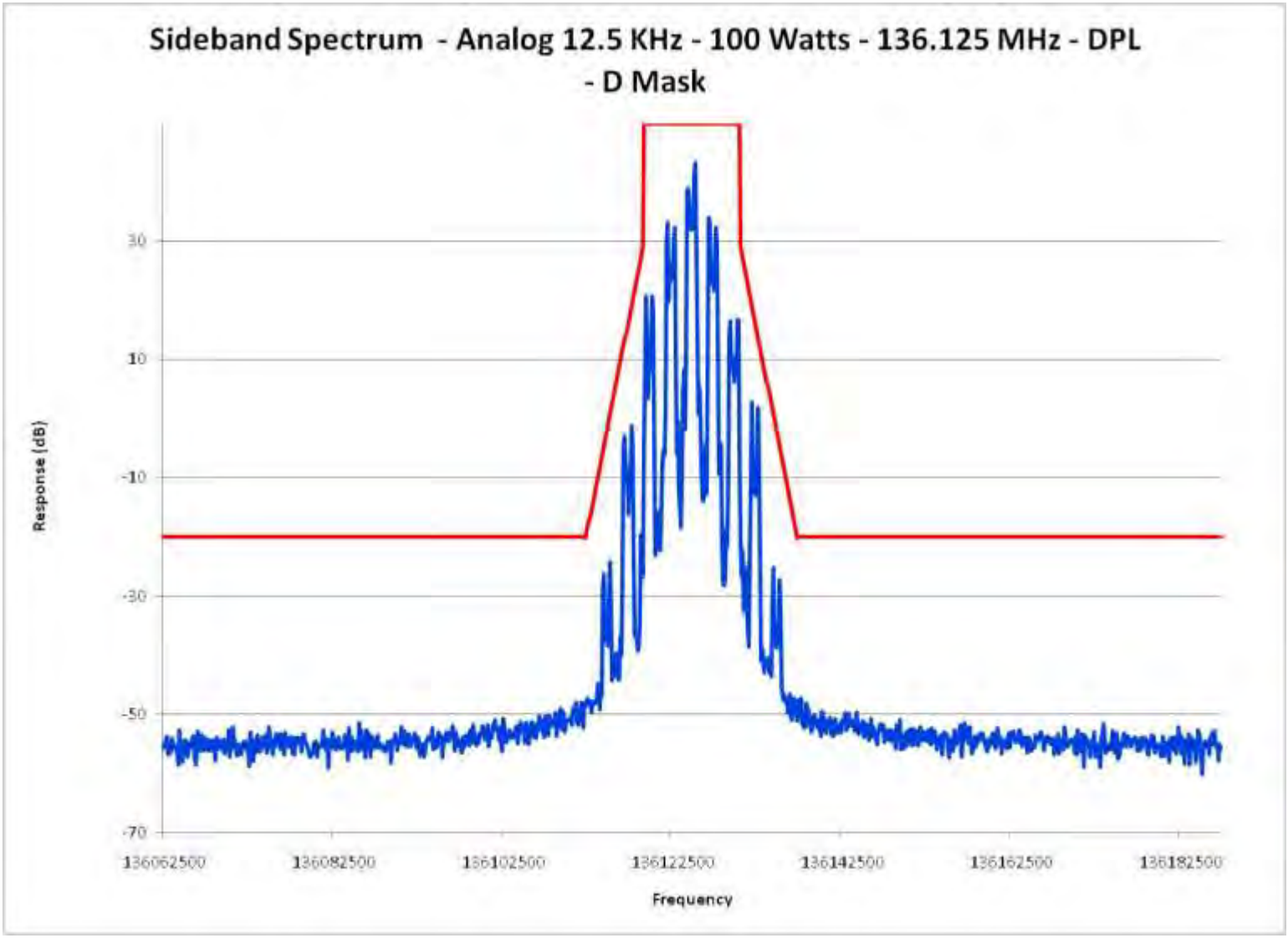
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Audio Tone and Private Line (PL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – High End of Band



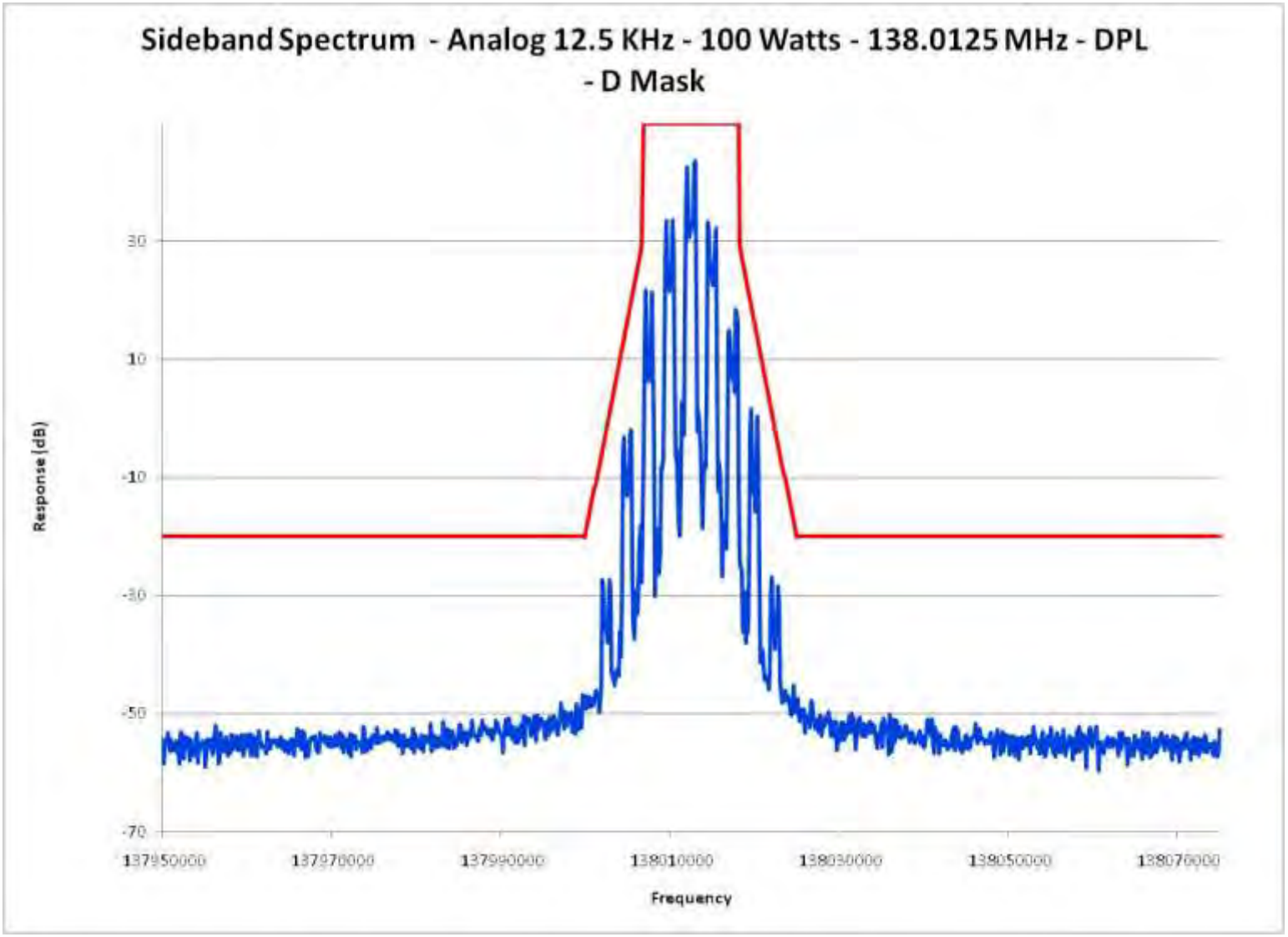
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, Digital Private Line (DPL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



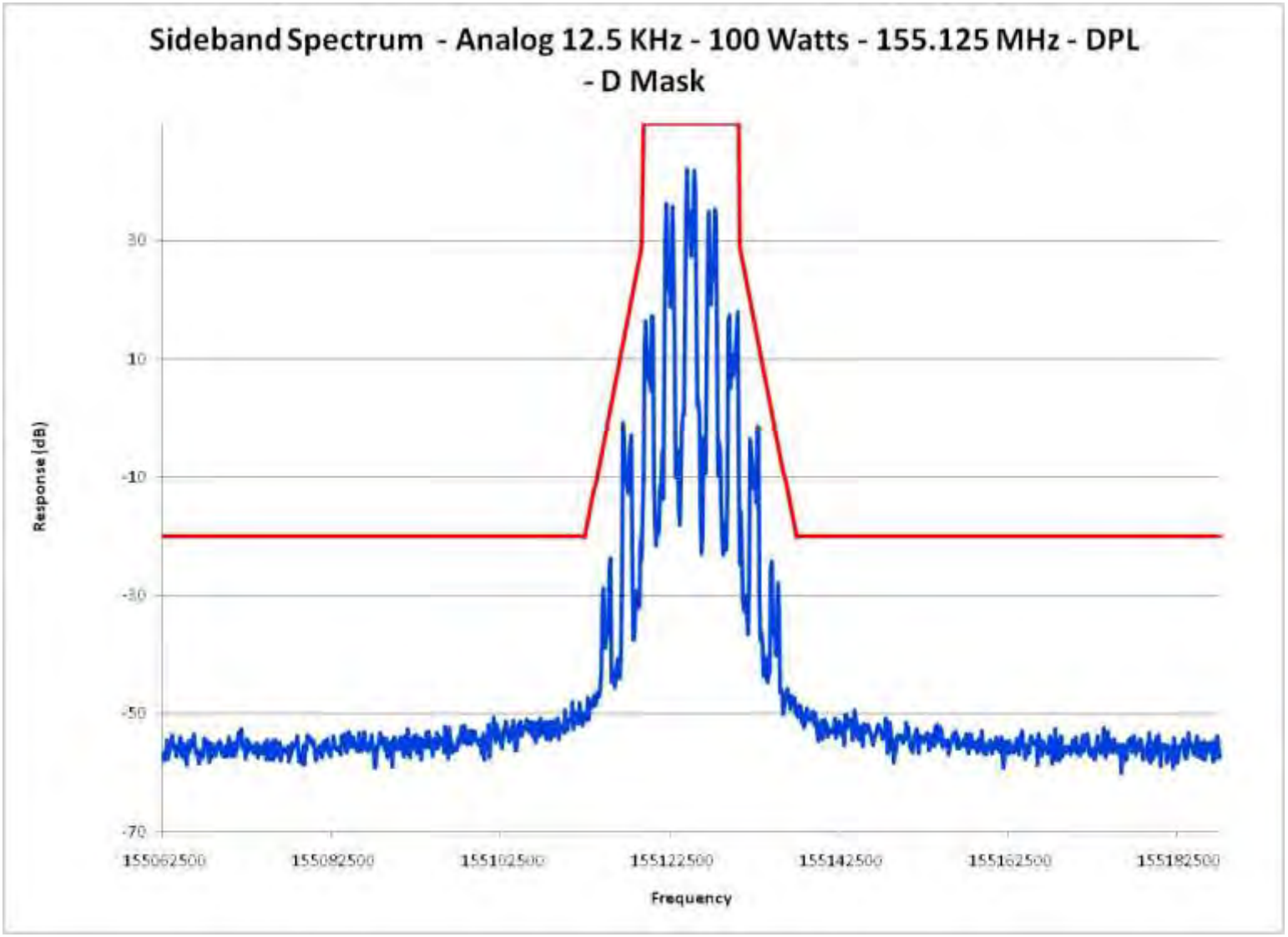
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, Digital Private Line (DPL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



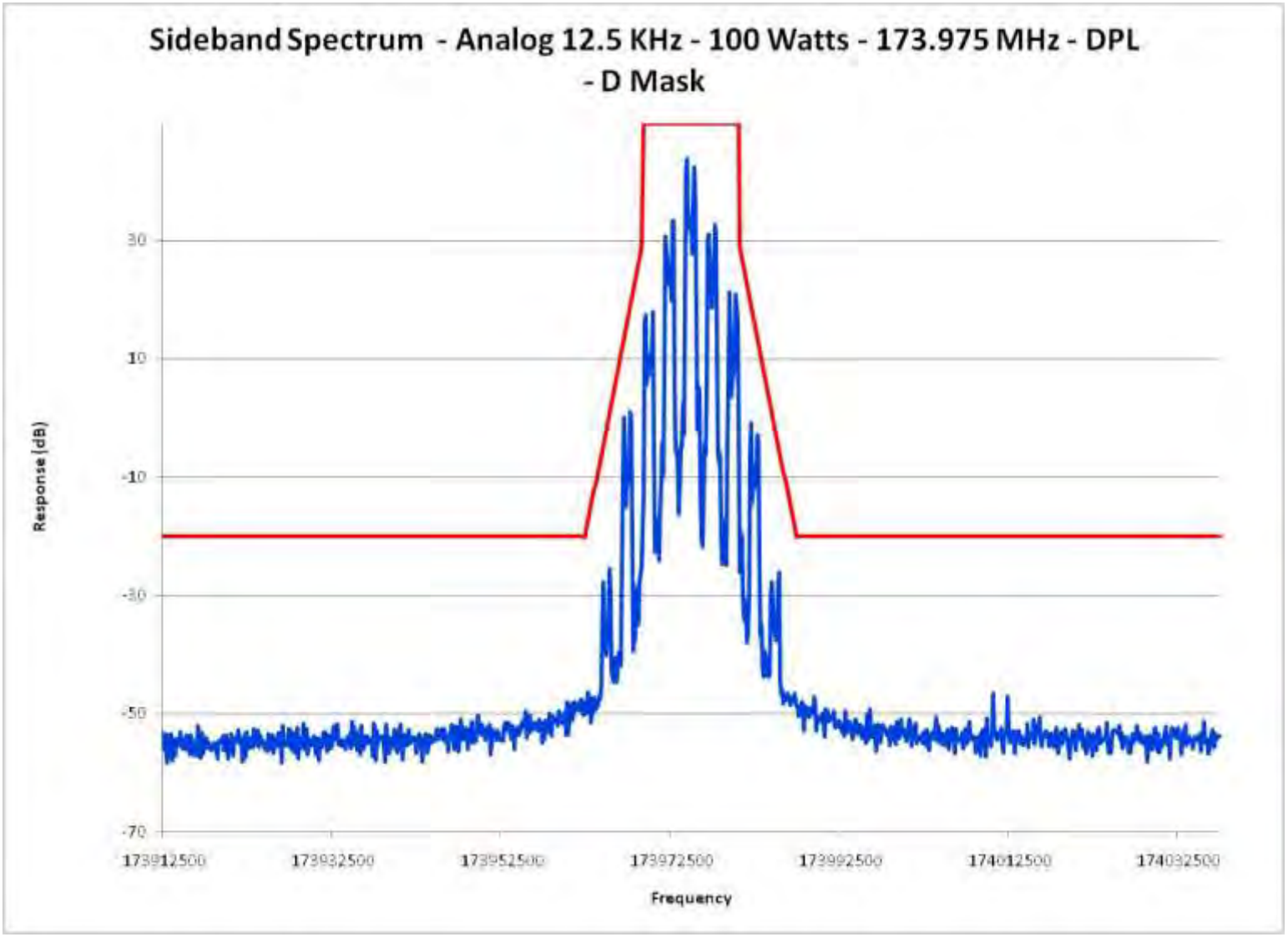
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, Digital Private Line (DPL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Middle of Band



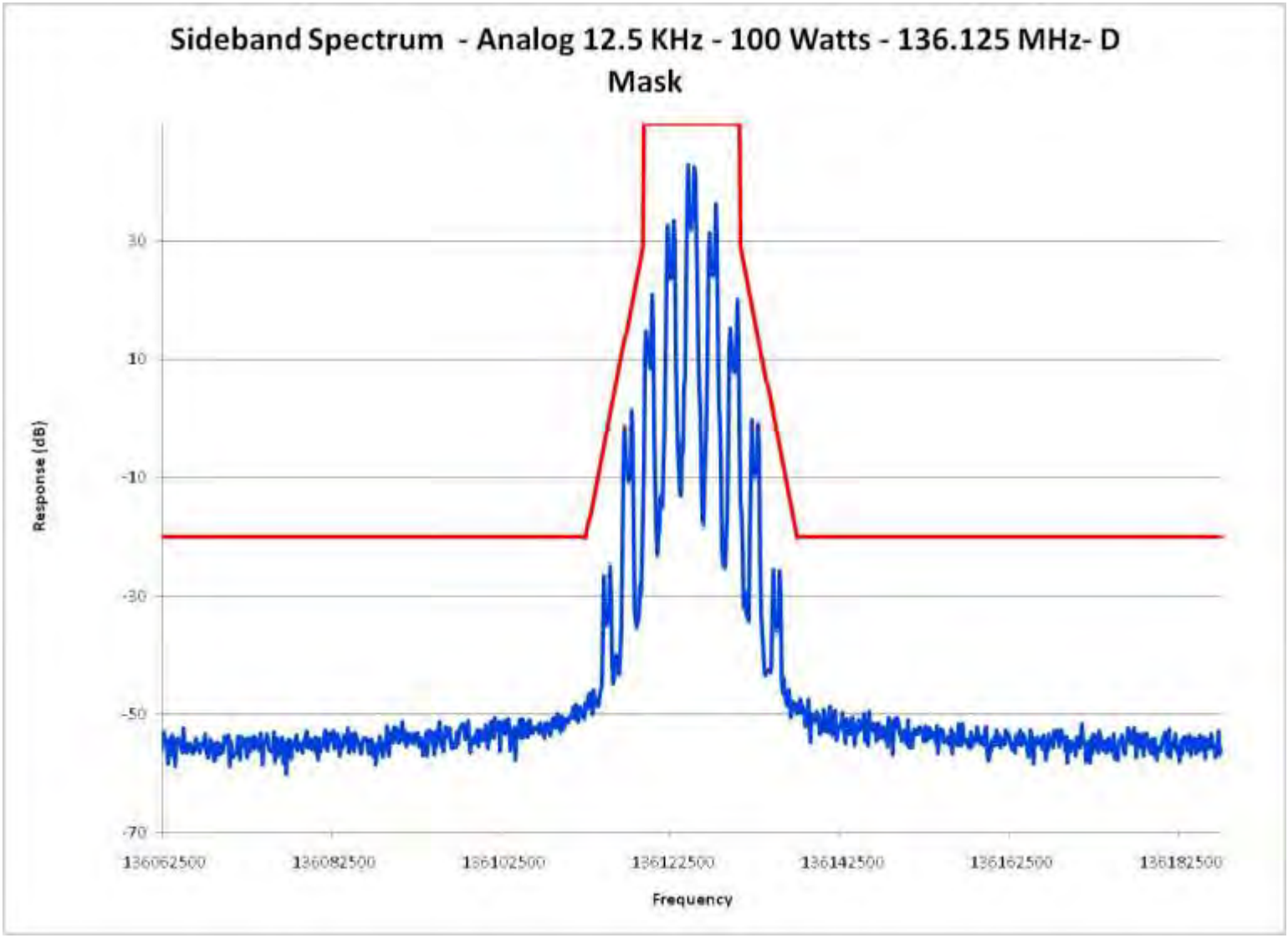
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, Digital Private Line (DPL) Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – High End of Band



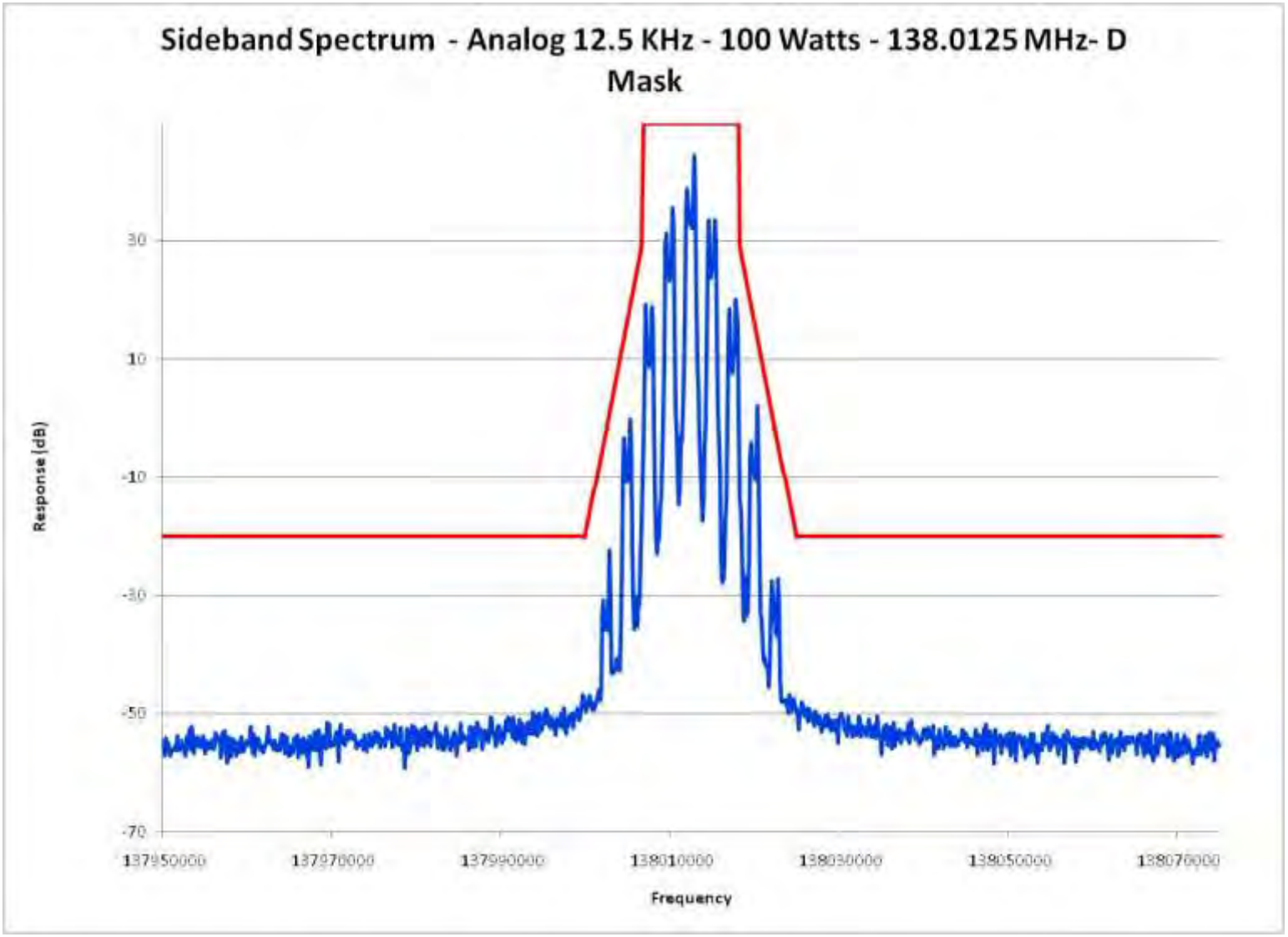
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 150 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



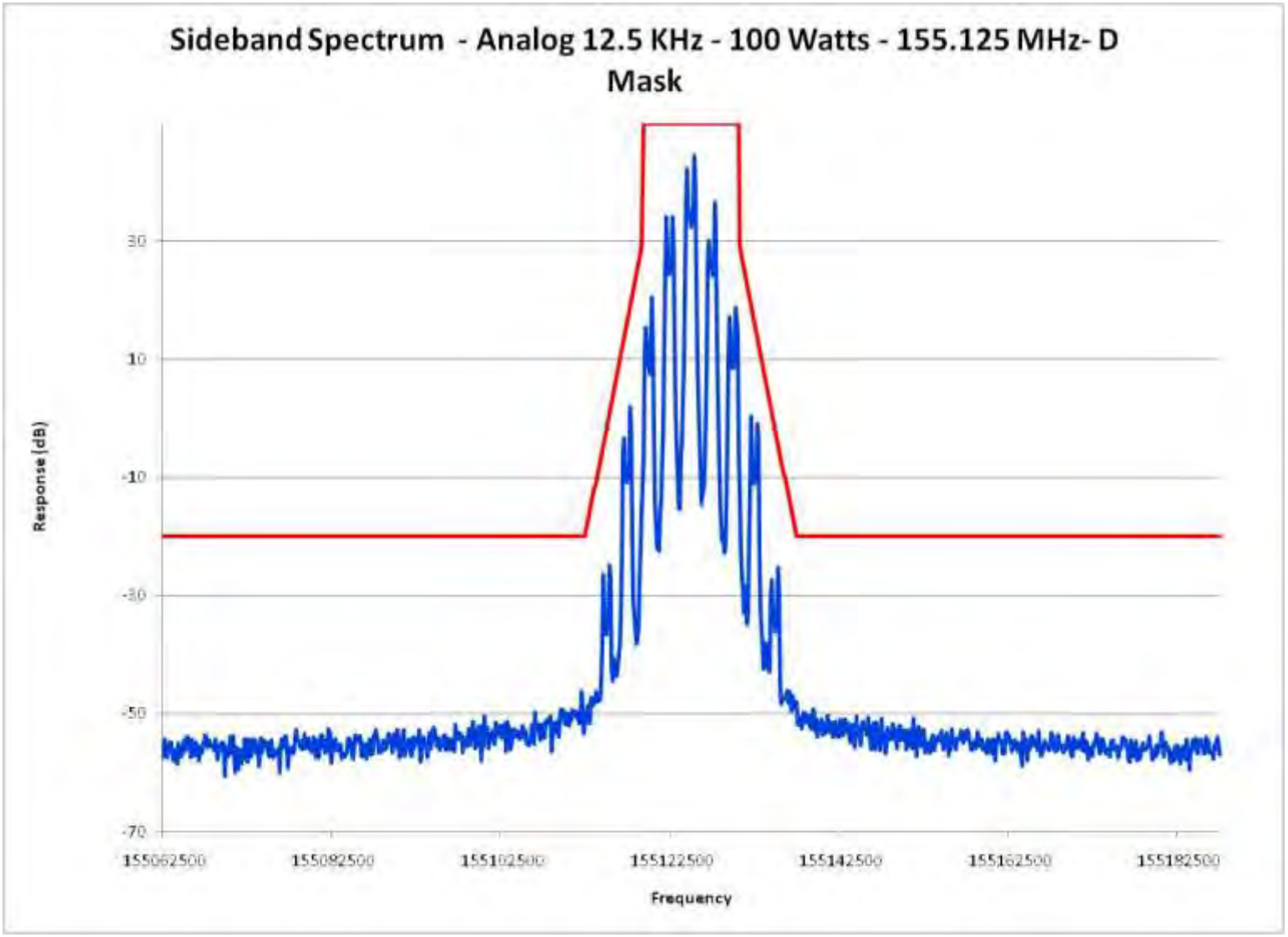
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 150 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Lower End of Band



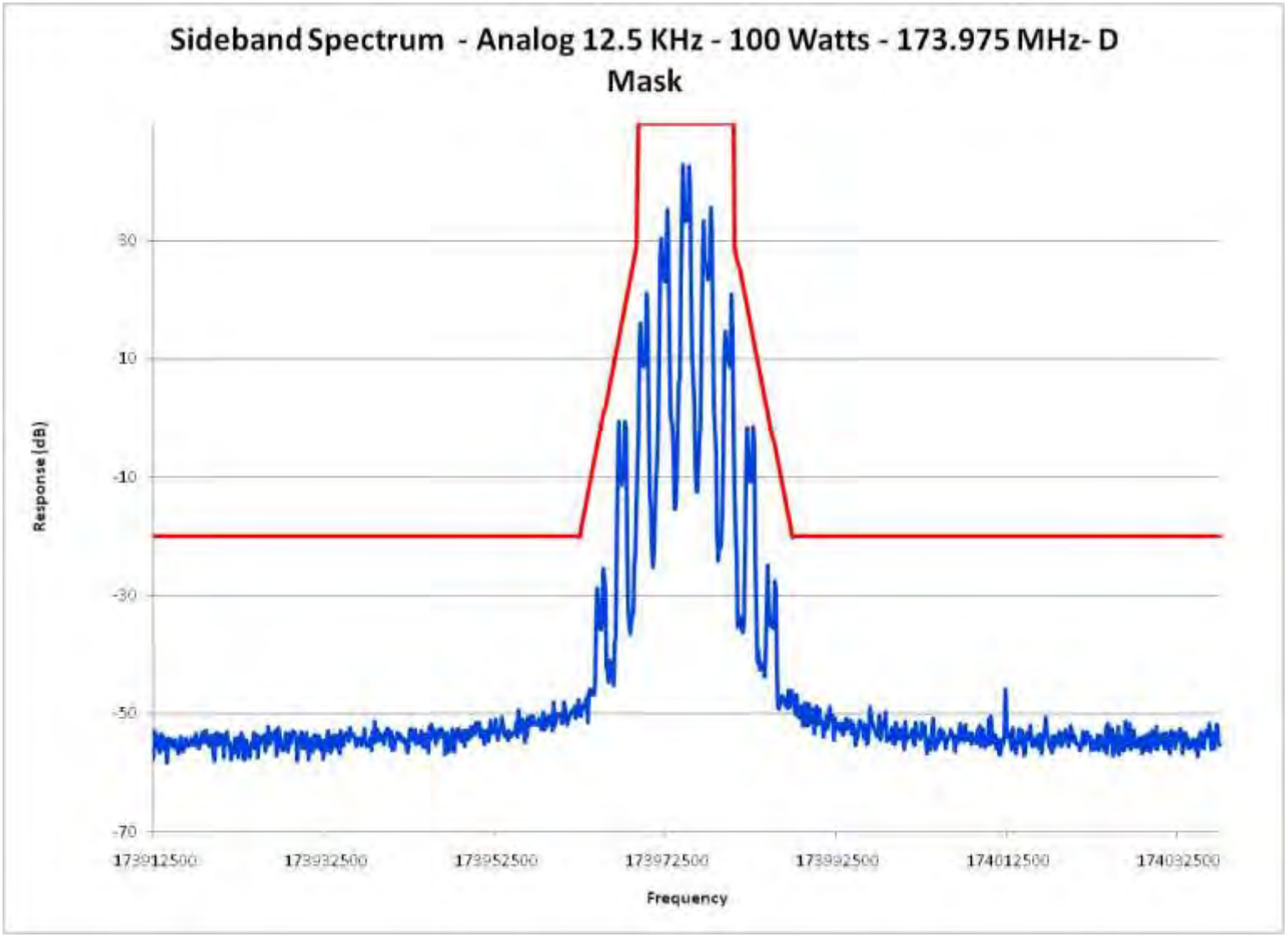
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 150 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Middle of Band



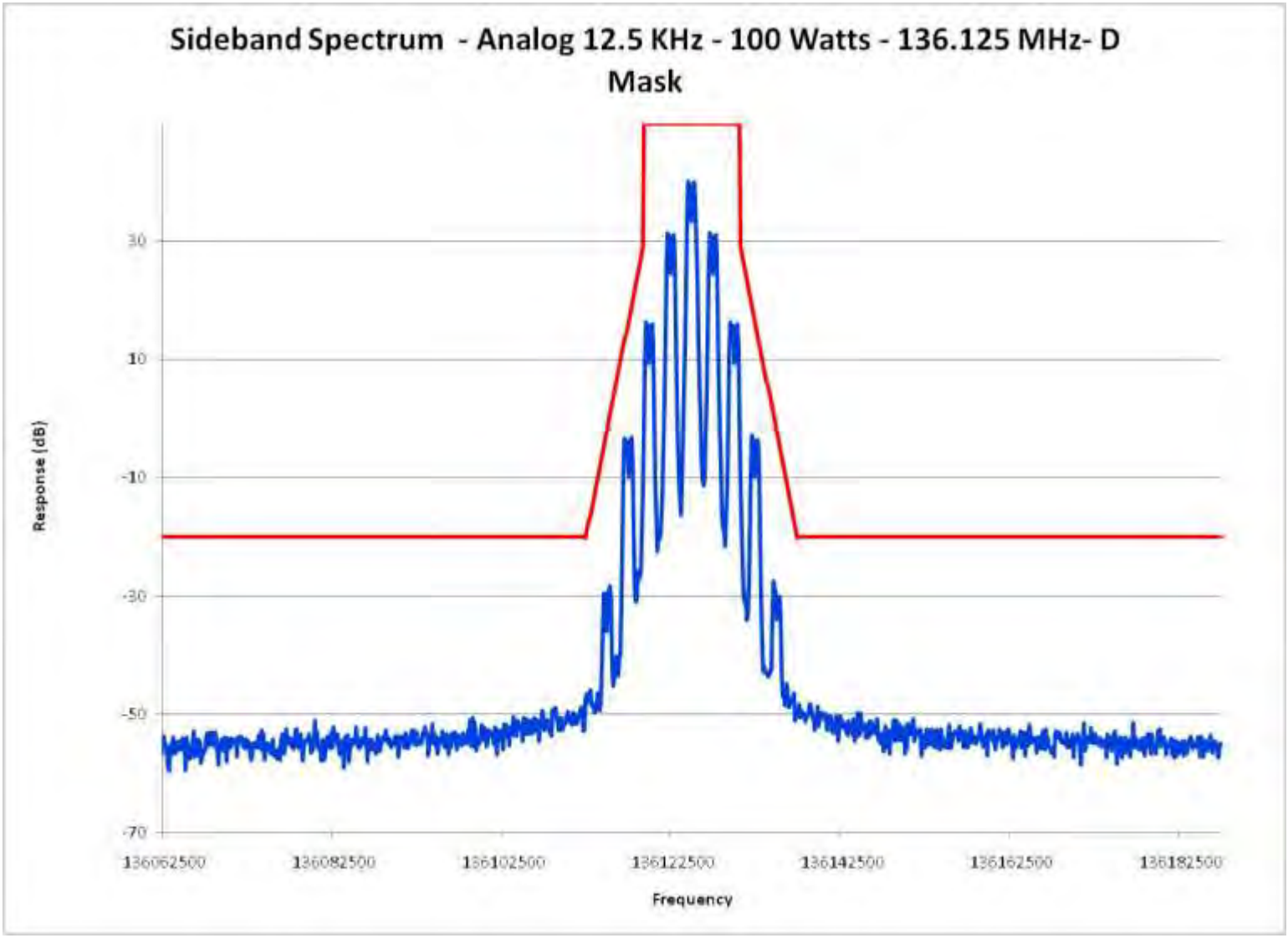
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 150 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – High End of Band



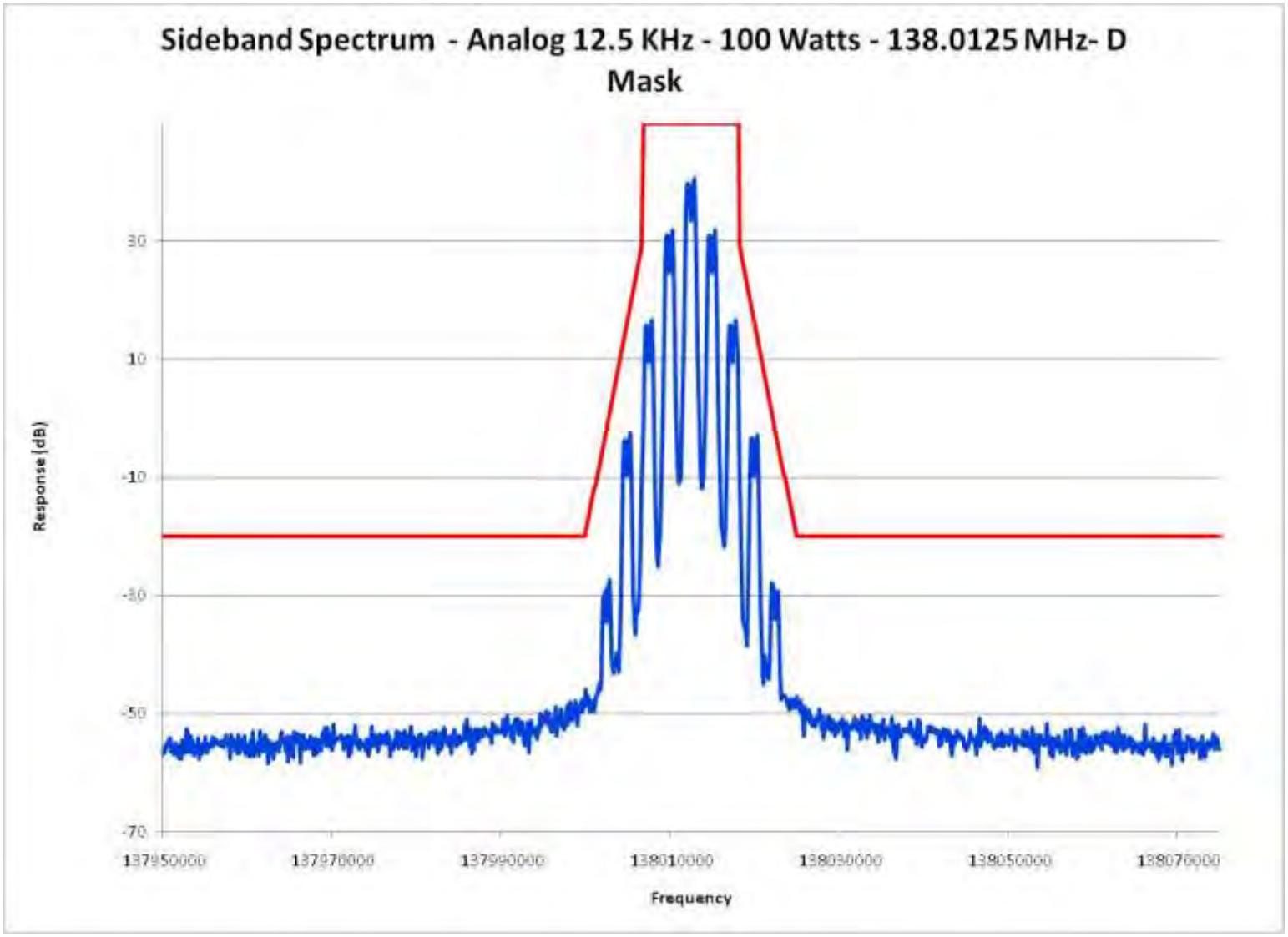
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 300 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



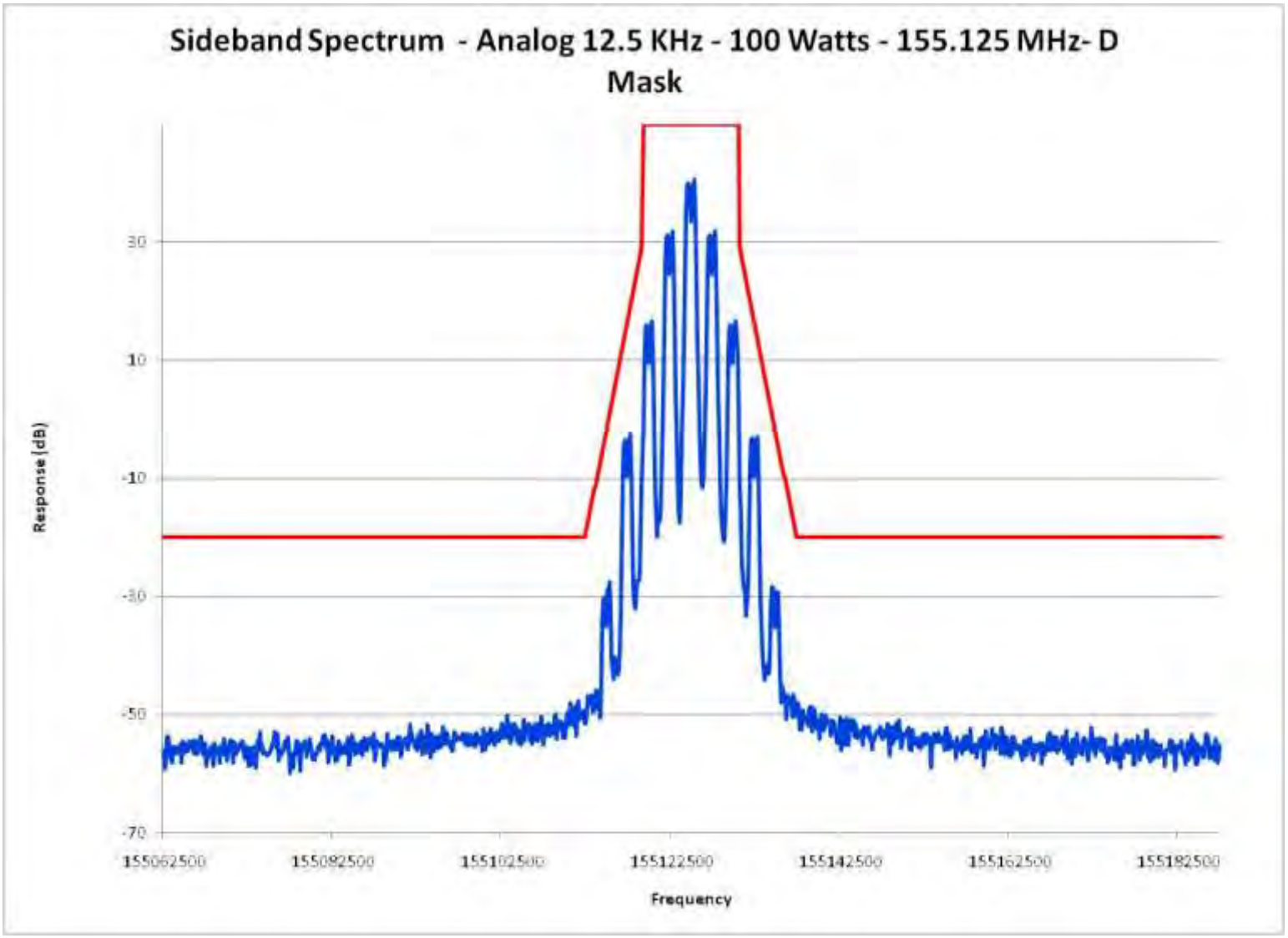
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 300 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Low End of Band



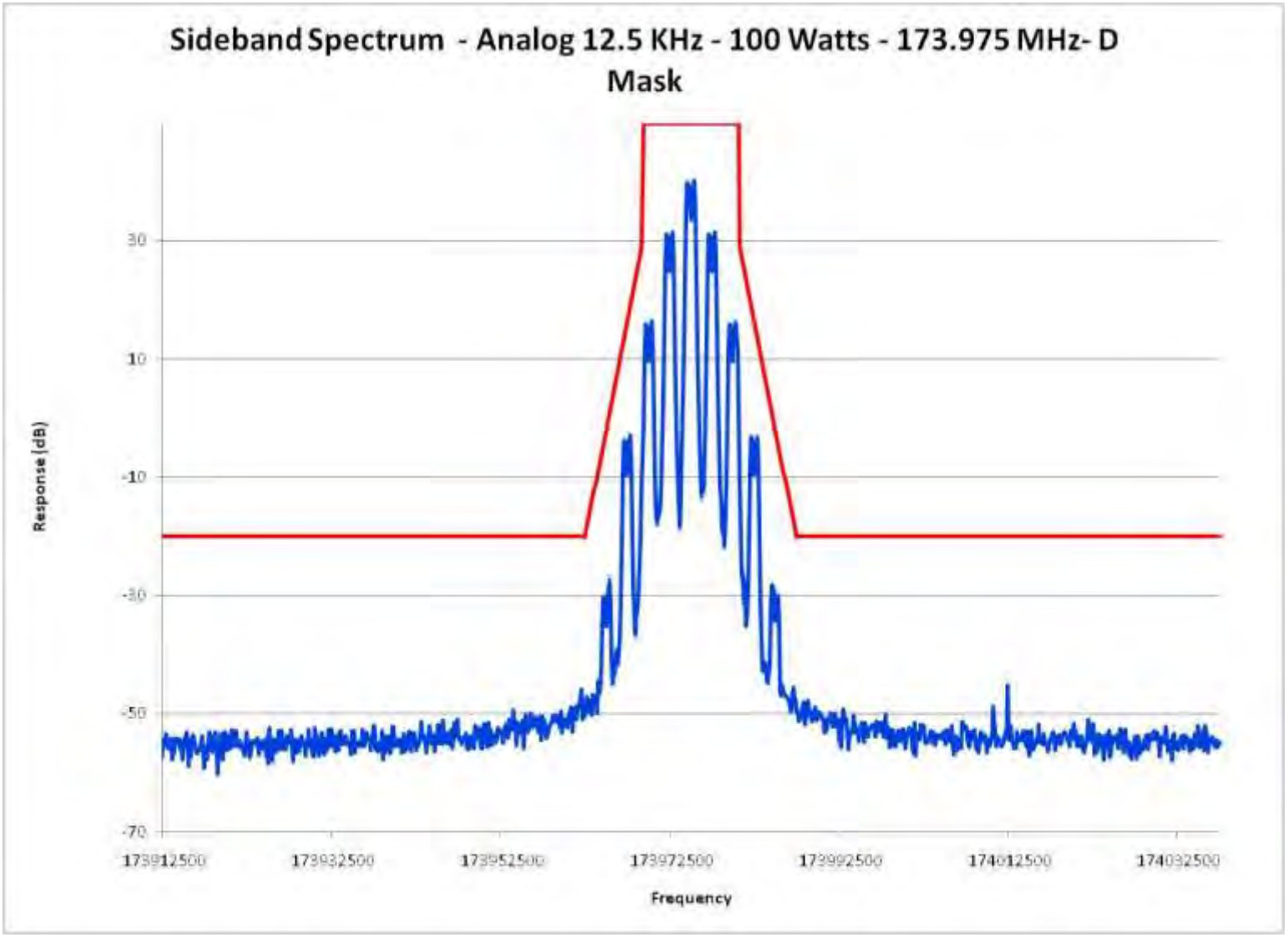
Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 300 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – Middle of Band



Report on Test Measurements

Occupied Bandwidth – Carrier with 2500 Hz Tone, 300 bps Low Speed Data Signaling, 12.5 kHz Channels – Emission Designator: 11K0F3E – High End of Band



Report on Test Measurements

Motorola Solutions Test Equipment List

Manufacturer	Model	Serial Number	Description	Last Cal	Interval
Keysight/Agilent/HP	N9030A	MY53310751	PXA Signal Analyzer, 3 Hz to 50 GHz	09-07-2022	09-07-2024
Keysight/Agilent/HP	U8903A	my50500002	Audio Analyzer, 10 Hz to 100 kHz	09-20-2023	09-20-2024
Rohde & Schwarz	NRP-Z11	101590	Power Sensor	08-31-2022	8-31-2024
Rohde & Schwarz	SMU200A	101350	Signal Generator / Power Meter	12-30-2021	12-29-2024
Keysight/Agilent/HP	34401A	3146A59752	Digital Multimeter	08-29-2022	08-29-2026
Keysight/Agilent/HP	8482a	gg00004032	Power Sensor	08-23-2023	08-23-2024
Keysight/Agilent/HP	E5071C	MY46316134	ENA Series Network analyzer	08-23-2023	08-23-2024
Keysight/Agilent/HP	E4440A	my46185813	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	09-06-2022	09-06-2024
Keysight/Agilent/HP	8753es	us39175306	S-parameter Network Analyzer	08-23-2023	08-23-2024

Elite Electronic Engineering Test Equipment List

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	3/20/2024	3/20/2025
CDZ4	LAB WORKSTATION	ELITE	LWS-10		WINDOWS 10	CNR	
NSDS1	UNIVERSAL SPHERICAL DIPOLE SOURCE	AET	USDS-H	AET-1116		NOTE 1	
NTA2	BILOG ANTENNA	TESEQ	6112D	28040	25-1000MHz	5/19/2022	5/19/2024
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	5/26/2022	5/26/2024
R21F	3M ANECHOIC CHAMBER NSA	EMC TEST SYSTEMS	3M ANECHOIC		30MHZ-18GHZ	3/1/2024	3/1/2025
RBG3	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101592	2HZ-44GHZ	3/7/2024	3/7/2025
SCB0	PROGRAMABLE POWER SUPPLY	CALIFORNIA INSTRUMENTS	CSW5550-208/156-321-ELF	1513A01939		NOTE 1	
SCB3	PROGRAMABLE POWER SUPPLY	CALIFORNIA INSTRUMENTS	CSW5550-208/156-321-ELF	1513A02091		NOTE 1	
SHC2	Power Supplies	HENGFU	HF60W-SL-24	A11372702	24V	NOTE 1	
VBV2	COMMERCIAL RADIATED EMISSIONS.EXE	ELITE		---	---	N/A	

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.

Test Setup for Spurious Radiated Emissions, 30MHz – 1GHz – Antenna Polarization Horizontal

Test Setup for Spurious Radiated Emissions, 30MHz – 1GHz – Antenna Polarization Vertical

Report on Test Measurements

Test Setup for Spurious Radiated Emissions, Above 1GHz – Antenna Polarization Horizontal

Test Setup for Spurious Radiated Emissions, Above 1GHz – Antenna Polarization Vertical

Report on Test Measurements

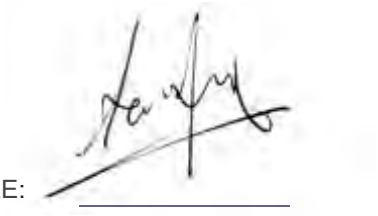
Statement of Certification

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, Purdue University, West Lafayette, Indiana, USA

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

NAME: Sanford Yue



SIGNATURE: _____

DATE: May 30, 2024

POSITION: Senior Staff Engineer

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: Matt Nawrocki

SIGNATURE: _____

DATE: May 30, 2024

POSITION: Engineering Manager