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.

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

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APPLICANT: MOTOROLA SOLUTIONS

EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

	Report on Test Measurements
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Report on Test Measurements

RF Power Output Data

The RF power output was measured with the indicated voltage applied to the RF Site. The DC current indicated is the total for the site with 1 channel transmitting at the noted power at the top of rack. Max Power requested is 44W, Lower Power is 2W.

C4FM Modulation

Temperature								
Voltage (V)		48V						
	Low Power	Current	Max Power	Current				
Frequency (MHz)	(W)	(A)	(W)	(A)	Remarks			
768	1.95	44.30	44.16	49.52				
772	1.89	44.24	42.27	49.26				
776	1.87	44.25	40.74	49.34				

LSM Modulation

Temperature					
Voltage (V)		4	18V		
	Low Power	Current	Max Power	Current	
Frequency (MHz)	(W)	(A)	(W)	(A)	Remarks
768	2.03	44.31	44.36	49.48	
772	1.95	44.25	42.40	49.17	
776	1.91	44.22	41.39	49.37	

H-DQPSK Modulation

Temperature		25°C					
Voltage (V)		48V					
	Low Power	Current	Max Power	Current			
Frequency (MHz)	(W)	(A)	(W)	(A)	Remarks		
768	2.00	44.31	43.27	49.24			
772	1.88	44.24	42.46	49.27			
776	1.88	44.27	41.45	49.50			

Report on Test Measurements

Adjacent Channel Power (ACP) Requirements

The transmitter can utilize various modulation modes as determined by customer requirements, channel usage, and system configuration as described in Exhibit B. These modulations are: linear modulations which operate at 40 Watts (average) in 12.5 kHz channels, and Compatible 4-Level Frequency Modulation (C4FM) which is a non linear modulation and operates in 12.k kHz channels at 40 Watts. The two types of linear modulations are similar, Linear Simulcast Modulation (LSM) is for FDMA applications, and H-DQPSK is for TDMA applications. For purposes of the ACP performance present in this exhibit, both of these linear modulations perform similarly and data from only one of them is presented. All of the following charts reference the following setup and specification requirements for the modes summarized as follows:

Modulation Type: LSM / H-DQPSK C4FM Channelization: 12.5 kHz 12.5 kHz

Power Setting: Average 40 Watts Average 40 Watts

Specification Requirement Limits: FCC §90.543, §27.53 and IC RSS-119 section 5.8.9

§ 90.543 Emission limits: For operation in the 769-775 MHz Band § 27.53 Emission limits: For operation in the 775-776 MHz Band 119-5.8.9 Emission limits: For operation in the 768-776 MHz Band

ACCP Tables per 90.543(a), 27.53(e)(6), RSS-119 Sec 5.8.9 Table 13 & 14: For base transmitters designed to operate with a 12.5 kHz channel bandwidth, the ACCP shall be in accordance to the following table.

Offset from Center Frequency (kHz)	Measurement	Maximum ACCP
	Bandwidth (kHz)	(dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.50	25	-60
62.50	25	-65
87.50	25	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
≥400 kHz to 12 MHz 30 (swept)	30 (swept)	-80
12 MHz to paired receive band	30 (swept)	-80
In the paired receive band	30 (swept)	-100

Report on Test Measurements

Adjacent Channel Coupled Power (ACCP) Requirements

ACP measurement procedure: For all measurements modulate the transmitter as it would be modulated in normal operating conditions. The ACP measurements may be made with a spectrum analyzer capable of making direct ACP measurements. "Measurement bandwidth", as used for non-swept measurements, implies an instrument that measures the power in many narrow bandwidths equal to the nominal resolution bandwidth and integrates these powers to determine the total power in the specified measurement bandwidth.

- (1) Setting reference level. Set transmitter to maximum output power. Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth to the channel size. Set the frequency offset of the measurement bandwidth to zero and adjust the center frequency of the instrument to the assigned center frequency to measure the average power level of the transmitter. Record this power level in dBm as the "reference power level".
- (2) Non-swept power measurement. Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth and frequency offset from the assigned center frequency as shown in the tables above. Any value of resolution bandwidth may be used as long as it does not exceed 2 percent of the specified measurement bandwidth. Measure the power level in dBm. These measurements should be made at maximum power. Calculate ACP by subtracting the reference power level measured in (1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above.
- (3) Swept power measurement. Set a spectrum analyzer to 30 kHz resolution bandwidth, 1 MHz video bandwidth and average, sample, or RMS detection. Set the reference level of the spectrum analyzer to the RMS value of the transmitter power. Sweep above and below the carrier frequency to the limits defined in the tables. Calculate ACP by subtracting the reference power level measured in (1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above.

Measurement results:

For measurements less than or equal to 400 kHz offset from the center frequency, the ACCP results are shown in Tabular format. For measurements great than 400 kHz offset from the center frequency, the ACCP results are shown in Graphical format. The results shown are from testing performed at the base radio level without the use of any external transmit filtering.

All results show sufficient margin to the specified requirements.

EXHIBIT	DESCRIPTION
E1-2.1	ACP Tabular Results - Offsets < 400 kHz H-DQPSK , LSM, and C4FM Modes
E1-2.2, 3, 4	ACP Results >400 kHz for H-DQPSK Low End / Middle / High End of band
E1-2.5, 6, 7	ACP Results >400 kHz for LSM, Low End / Middle / High End of band
E1-2.8, 9, 10	ACP Results >400 kHz for C4FM, Low End / Middle / High End of band

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Report on Test Measurements

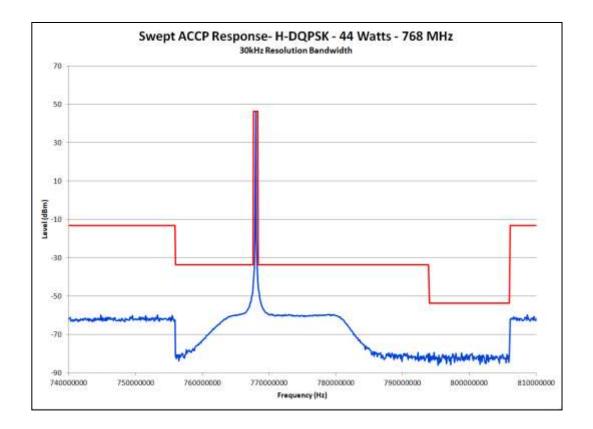
ACP Test Results for offset frequencies < 400 kHz

ACP Test Results: H-DQPSK, Pout = 44 Watts (avg), Channel Spacking = 12.5 kHz								
FCC/IC Requirements			768	MHz	Measureme 772	ent Results MHz	776	MHz
Offset from			Max ACP at low	Max ACP at	Max ACP at low	Max ACP at	Max ACP at low	Max ACP at
Center	Measurement	Maximum	side offset freq	high side offset	side offset freq	high side offset	side offset freq	high side offset
Freq (kHz)	BW (kHz)	ACP (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)
±9.375	6.25	-40	42.2259	41.8889	42.4258	40.9276	42.6507	40.6656
± 15.625	6.25	-60	82.8667	82.8914	83.0306	83.0436	82.3255	82.3052
± 21.875	6.25	-60	86,2269	86.2254	86.1484	86.0267	85.0441	84.9072
±37.5	25	-60	82.2085	82.4156	82.2299	82.3101	81.7023	81.6274
±62.5	25	-65	83,2803	83.2707	83.2287	83.2448	82.5034	82.5374
±87.5	25	-65	83,5345	83.5344	83.48	83,4518	82.6988	82.7009
± 150	100	-65	77.4767	77.4738	77.4338	77.4377	77.3489	77.2881
±250	100	-65	79.7992	79.8705	79.7982	79.7417	79.541	79.6087
±350	100	-65	80.6638	80.7127	80.5871	80.5788	80.3865	80.3644

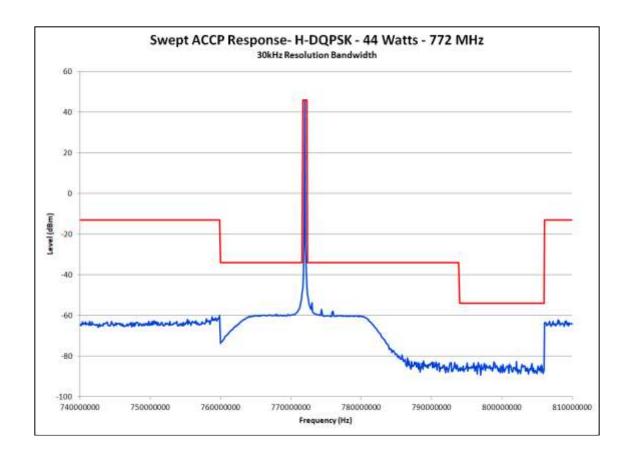
ACP Test	ACP Test Results: LSM, Pout = 44 Watts (avg), Channel Spacking = 12.5 kHz									
FCC	FCC/IC Requirements		Measurement Results							
1			768	MHz	772	MHz	776 MHz			
Offset from			Max ACP at low	Max ACP at	Max ACP at low	Max ACP at	Max ACP at low	Max ACP at		
Center	Measurement	Maximum	side offset freq	high side offset	side offset freq	high side offset	side offset freq	high side offset		
Freq (kHz)	BW (kHz)	ACP (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)		
± 9.375	6.25	-40	43.3685	42.4978	43.3772	42.6003	43.3441	42.5147		
± 15.625	6.25	-60	83,5669	83.4078	83.5736	83.29	82.7904	82.4889		
± 21.875	6.25	-60	86.168	86.1681	86.0015	86.0115	84.8974	84.9487		
±37.5	25	-60	82.2888	82.2563	82.2258	82.3356	81.7271	81.6697		
± 62.5	25	-65	83.3356	83.3678	83.3109	83.2449	82.5613	82.5528		
±87.5	25	-65	83.6356	83.5802	83.5456	83.5432	82.7527	82.6802		
± 150	100	-65	77.5043	77.5161	77.4315	77.418	77.3547	77.3158		
±250	100	-65	79,9051	79.8651	79.67	79,7654	79,6419	79.6518		
1+350	100	-65	80 7699	80 7086	80 5412	80 5259	80 4427	80 4726		

ACP Test Results: C4FM, Pout = 44 Watts, Channel Spacking = 12.5 kHz								
FCC/IC Requirements			I		Measureme	ent Results		
			768	MHz	772	MHz	776	MHz
Offset from			Max ACP at low	Max ACP at	Max ACP at low	Max ACP at	Max ACP at low	Max ACP at
Center	Measurement	Maximum	side offset freq	high side offset	side offset freq	high side offset	side offset freq	high side offset
Freq (kHz)	BW (kHz)	ACP (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)	(dBc)	freq (dBc)
± 9.375	6.25	-40	41.4105	41.771	41.344	41.8664	41.4078	41.8414
± 15.625	6.25	-60	84.1393	84.2508	84.2343	84.0534	83.3987	83,3349
± 21.875	6.25	-60	86,6109	86.4561	86.4644	86.5276	85.2505	85.3142
± 37.5	25	-60	82.9524	82.8395	82.7465	82.8519	82.0728	82.1518
± 62.5	25	-65	83.9468	83.928	83.9102	83.863	83,1603	83.093
±87.5	25	-65	84.1819	84.1838	84.164	84.1706	83.252	83.2318
± 150	100	-65	78.095	78.097	78.043	78.0449	78.0457	77.9894
±250	100	-65	80.9537	80.9587	80.9486	80.9151	80.7174	80.8205
±350	100	-65	82.0933	82.0644	82.0892	82.0261	81.86	81.8389

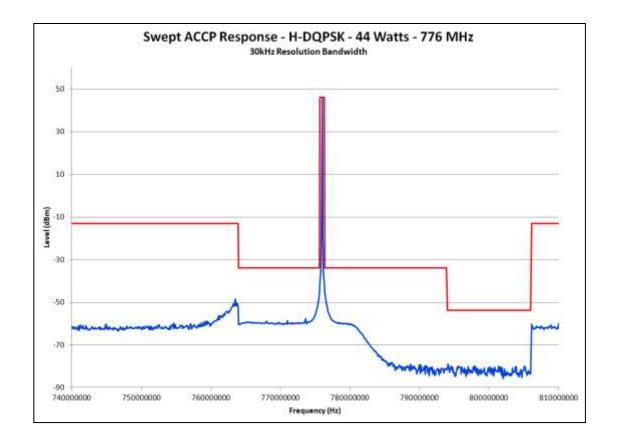
Swept ACCP – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, Low End of Band



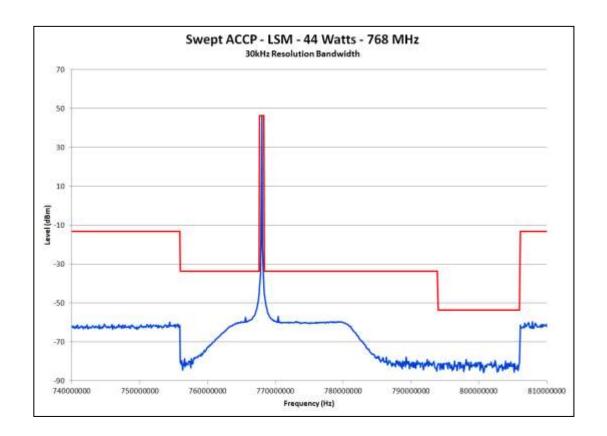
Swept ACCP – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, Mid Band



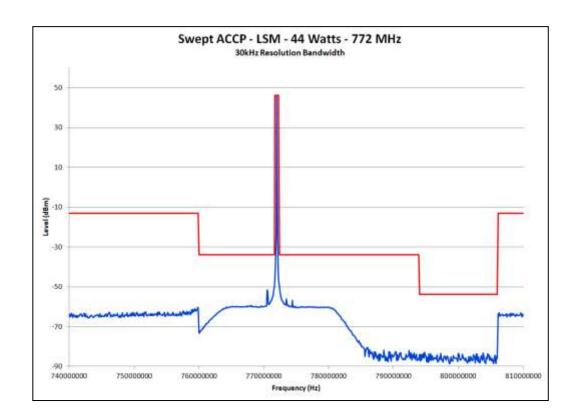
Swept ACCP – H-DQPSK, P25 Two Slot TDMA Digital Modulation – Emission Designator: 9K80D7E, 9K80D7D, 9K80D7W, High End of Band



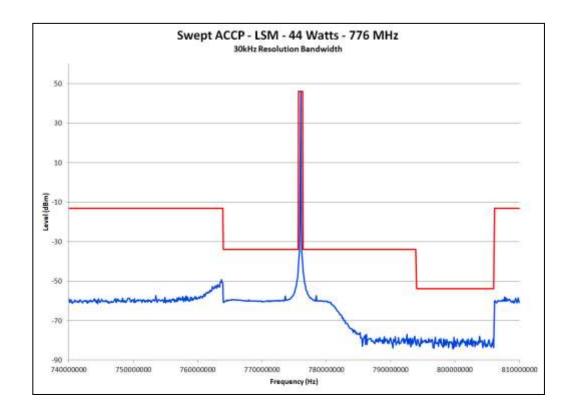
Swept ACCP – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – Low End of Band



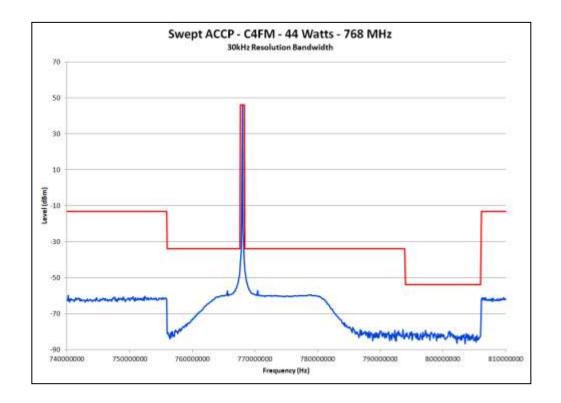
Swept ACCP - Linear Simulcast Modulation (LSM) - Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W - Middle of Band



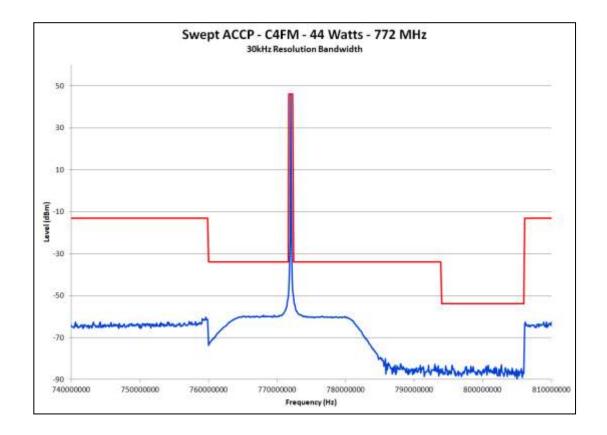
Swept ACCP – Linear Simulcast Modulation (LSM) – Emission Designator: 8K70D1E, 8K70D1D, 8K70D1W – High End of Band



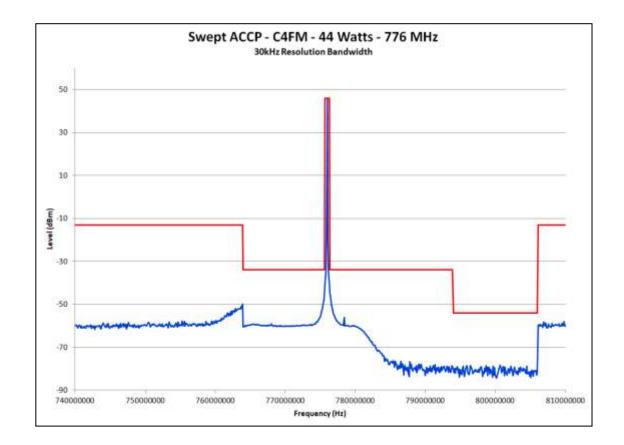
Swept ACCP – Compatible 4-Level Frequency Modulation (C4FM) – Emission Designator: 8K10D1E, 8K10D1D, 8K10D1W, Low End of Band



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



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



Report on Test Measurements

Conducted Spurious Emissions - Harmonics and Emission Spectrum

Specification Requirement RSS-119 section 5.8.9.2, FCC § 90.543(c), and 27.53(d)(3) Emission Limits:

Out-of-band emission limit: On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the mean output power (P): At least 43 plus 10 log₁₀(P) dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

Modulation: Linear Simulcast Modulation (LSM), Compatible 4-Level Frequency Modulation (C4FM) or

P25 Two Slot TDMA Digital Modulation (H-DQPSK) as indicated

Carrier Frequencies: Carrier frequencies of 768, 772, and 776 MHz were measured for conducted carrier

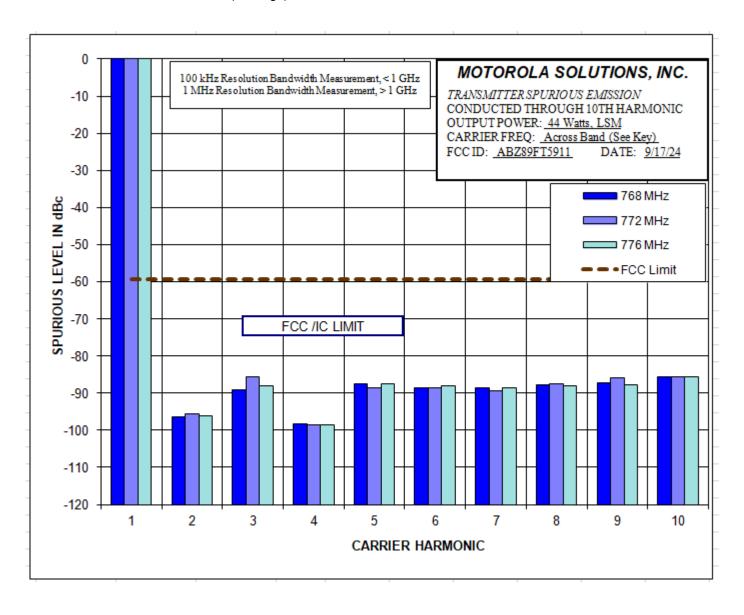
harmonics and conducted emission. These frequencies represent the low end, center, and

high end of the 768-776 MHz band, and are representative of the full operating band.

EXHIBIT	DESCRIPTION
E1-3.1	Conducted Spurious Harmonic Emissions, Power Output 44 Watts (Average), LSM
	The specification limit is -66.4 dBc (-20dBm)
E1-3.2	Conducted Spurious Harmonic Emissions, Power Output 2 Watts (Average), LSM
	The specification limit is -53.0 dBc (-20dBm)
E1-3.3	Conducted Spurious Harmonic Emissions, Power Output 44 Watts, C4FM
	The specification limit is -66.4 dBc (-20dBm)
E1-3.4	Conducted Spurious Harmonic Emissions, Power Output 2 Watts, C4FM
	The specification limit is -53.0 dBc (-20dBm)
E1-3.5	Conducted Spurious Harmonic Emissions, Power Output 44 Watts, H-DQPSK
	The specification limit is -66.4 dBc (-20dBm)
E1-3.6	Conducted Spurious Harmonic Emissions, Power Output 2 Watts, H-DQPSK
	The specification limit is -53.0 dBc (-20dBm)

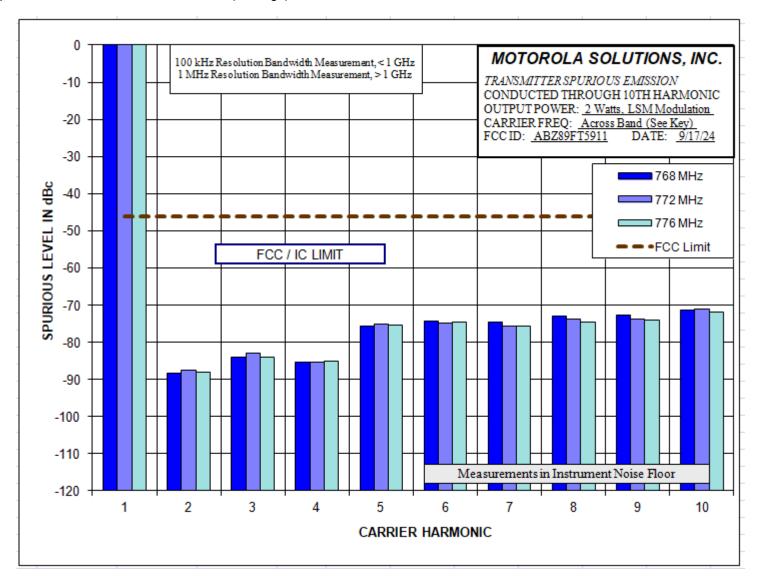
Report on Test Measurements

Conducted Spurious Harmonic Emissions – 44 Watts (Average) LSM

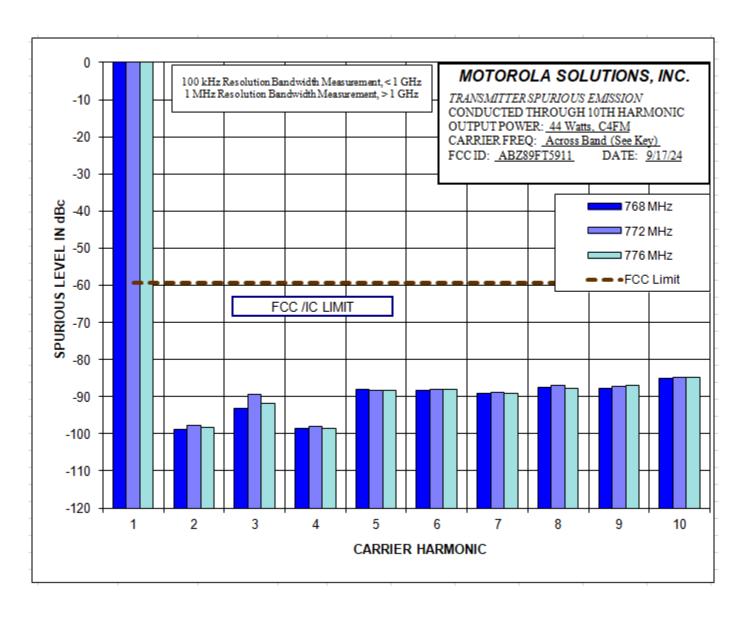


EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

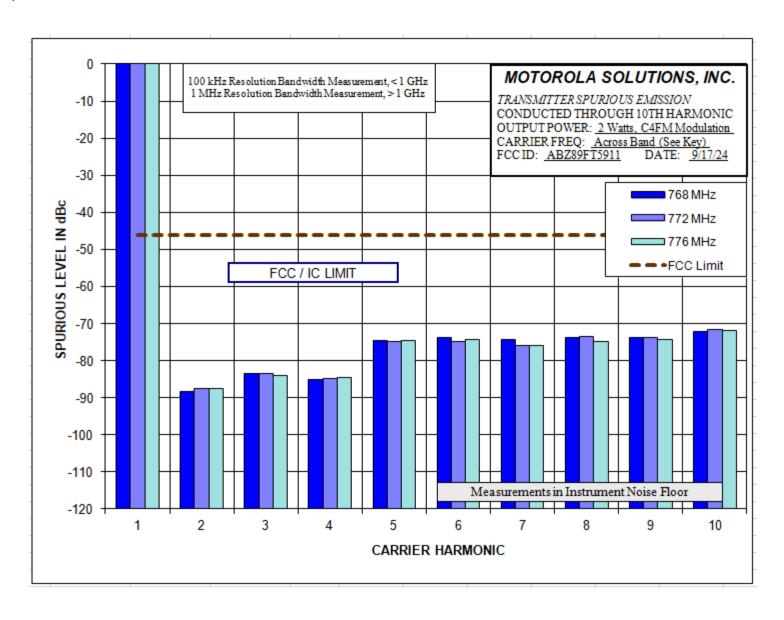
Conducted Spurious Harmonic Emissions – 2 Watts (Average) LSM



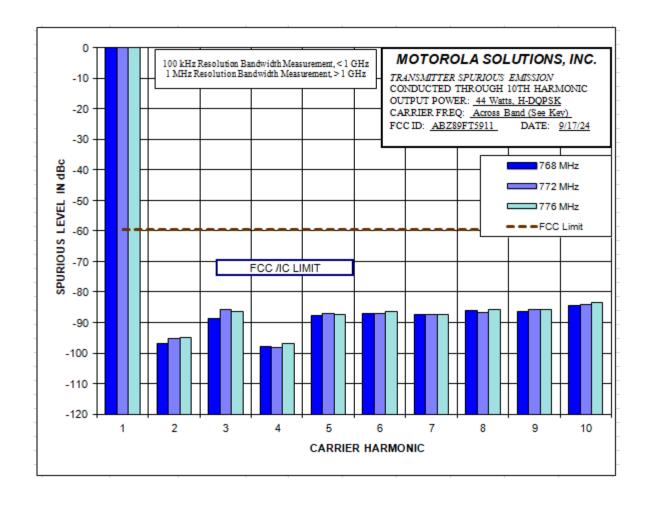
Conducted Spurious Harmonic Emissions – 44 Watts C4FM



Conducted Spurious Harmonic Emissions – 2 Watts C4FM

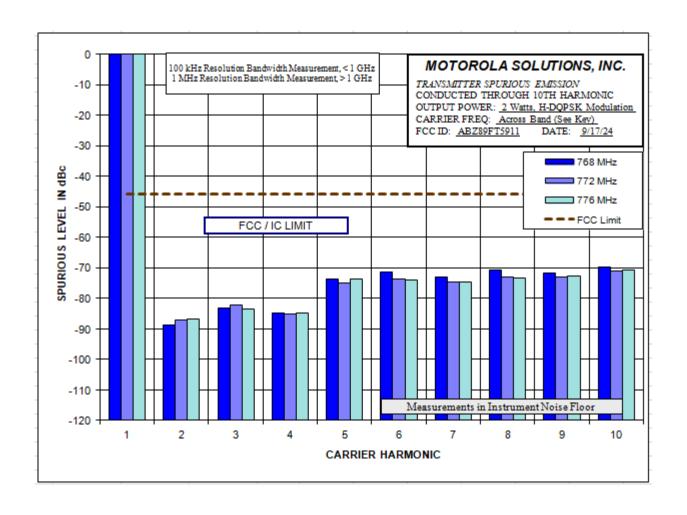


Conducted Spurious Harmonic Emissions – 44 Watts H-DQPSK



Report on Test Measurements

Conducted Spurious Harmonic Emissions – 2 Watts H-DQPSK



Report on Test Measurements

Radiated Spurious Emissions, Harmonics

Specification Requirement RSS-119 section 5.8.9.2, FCC § 90.543(c), and 27.53(d)(3) Emission Limits: Out-of-band emission limit: On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the mean output power (P): At least 43 plus 10 $log_{10}(P)$ dB, measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

Linear Simulcast Modulation (LSM), Compatible 4-Level Frequency Modulation (C4FM) or Modulation:

P25 Two Slot TDMA Digital Modulation (H-DQPSK) as indicated

Carrier Frequencies: Radiated Spurious Emissions was run with 9 carriers transmitting at 44W and 2W per

carrier. Frequencies tested were 768 (C4FM), 769 (LSM), 770 (H-DQPSK), 771 (C4FM), 772 (LSM), 773 (H-DQPSK),774 (C4FM), 775 (LSM), 776 (H-DQPSK). These frequencies

represent the low end, center, and high end of the 768-776 MHz band, and are

representative of the full operating band.

EXHIBIT	DESCRIPTION
E1-4.1	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 768 MHz, C4FM
E1-4.2	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 768 MHz, C4FM
E1-4.3	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 769 MHz, LSM
E1-4.4	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 769 MHz, LSM
E1-4.5	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 770 MHz, H-DQPSK
E1-4.6	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 770 MHz, H-DQPSK
E1-4.7	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 771 MHz, C4FM
E1-4.8	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 771 MHz, C4FM
E1-4.9	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 772 MHz, LSM
E1-4.10	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 772 MHz, LSM
E1-4.11	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 773 MHz, H-DQPSK
E1-4.12	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 773 MHz, H-DQPSK
E1-4.13	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 774MHz, C4FM
E1-4.14	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 774 MHz, C4FM
E1-4.15	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average), 775 MHz, LSM
E1-4.16	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 775 MHz, LSM
E1-4.17	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average),776 MHz, H-DQPSK
E1-4.18	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 776 MHz, H-DQPSK
E1-4.19	Radiated Spurious Harmonic Emissions, Power Output 44 Watts (Average),768-776 MHz
E1-4.20	Radiated Spurious Harmonic Emissions, Power Output 2 Watts (Average), 768-776 MHz

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 768MHz, C4FM

	Test Details							
Manufacturer	Manufacturer Motorola Solutions Inc.							
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	768MHz							
Notes	44W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1536.00	Н	54.07		-53.07	3.79	2.17	-51.45	97.89	66.43
1536.00	V	56.51		-50.31	3.79	2.17	-48.69	95.12	66.43
2304.00	Н	51.50	*	-50.41	3.32	2.68	-49.77	96.21	66.43
2304.00	٧	50.02	*	-51.59	3.32	2.68	-50.95	97.39	66.43
3072.00	Н	50.38	*	-50.31	4.84	3.15	-48.61	95.04	66.43
3072.00	٧	50.41	*	-50.04	4.84	3.15	-48.34	94.78	66.43
3840.00	Н	50.08	*	-52.12	6.39	3.51	-49.24	95.67	66.43
3840.00	V	50.30	*	-49.25	6.39	3.51	-46.37	92.81	66.43
4608.00	Н	49.73	*	-48.57	6.80	3.80	-45.58	92.01	66.43
4608.00	٧	49.57	*	-48.70	6.80	3.80	-45.71	92.14	66.43
5376.00	Н	49.20	*	-47.88	7.85	4.10	-44.13	90.56	66.43
5376.00	V	49.05	*	-48.03	7.85	4.10	-44.28	90.71	66.43
6144.00	Н	48.48	*	-48.05	8.39	4.42	-44.07	90.50	66.43
6144.00	V	48.77	*	-48.25	8.39	4.42	-44.28	90.71	66.43
6912.00	Н	48.51	*	-48.09	8.99	4.76	-43.86	90.30	66.43
6912.00	V	48.81	*	-48.22	8.99	4.76	-44.00	90.43	66.43
7680.00	Н	49.03	*	-47.84	10.08	5.08	-42.83	89.27	66.43
7680.00	V	48.90	*	-48.38	10.08	5.08	-43.37	89.81	66.43

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Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 776 MHz, C4FM

	Test Details							
Manufacturer	lanufacturer Motorola Solutions Inc.							
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	768MHz							
Notes	2W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1536.00	Н	52.25	*	-54.89	3.79	2.17	-53.27	86.29	53.01
1536.00	٧	57.63		-49.19	3.79	2.17	-47.57	80.58	53.01
2304.00	Н	50.36	*	-51.55	3.32	2.68	-50.91	83.93	53.01
2304.00	٧	51.05	*	-50.56	3.32	2.68	-49.92	82.94	53.01
3072.00	Н	49.58	*	-51.11	4.84	3.15	-49.41	82.42	53.01
3072.00	٧	49.77	*	-50.68	4.84	3.15	-48.98	81.99	53.01
3840.00	Н	49.54	*	-52.66	6.39	3.51	-49.78	82.79	53.01
3840.00	٧	48.99	*	-50.56	6.39	3.51	-47.68	80.69	53.01
4608.00	Н	49.21	*	-49.09	6.80	3.80	-46.10	79.11	53.01
4608.00	٧	49.01	*	-49.26	6.80	3.80	-46.27	79.28	53.01
5376.00	Н	48.89	*	-48.19	7.85	4.10	-44.44	77.45	53.01
5376.00	٧	49.13	*	-47.95	7.85	4.10	-44.20	77.21	53.01
6144.00	Н	49.51	*	-47.02	8.39	4.42	-43.04	76.05	53.01
6144.00	٧	48.47	*	-48.55	8.39	4.42	-44.58	77.59	53.01
6912.00	Н	48.79	*	-47.81	8.99	4.76	-43.58	76.59	53.01
6912.00	٧	48.57	*	-48.46	8.99	4.76	-44.24	77.25	53.01
7680.00	Н	48.92	*	-47.95	10.08	5.08	-42.94	75.95	53.01
7680.00	٧	48.43	*	-48.85	10.08	5.08	-43.84	76.85	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 769 MHz, LSM

	Test Details						
Manufacturer	Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	769MHz						
Notes	44W Power						
Date Tested	4/12/2024 through 4/13/2024						

				Calculated	Equivalent			Attenuation	
		Meter		Sig. Gen.	Antenna	Cable		Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1538.00	Н	54.33		-52.84	3.81	2.17	-51.20	97.64	66.43
1538.00	٧	56.64		-50.19	3.81	2.17	-48.56	94.99	66.43
2307.00	Н	51.28	*	-50.62	3.31	2.68	-50.00	96.43	66.43
2307.00	٧	51.20	*	-50.40	3.31	2.68	-49.78	96.21	66.43
3076.00	Н	51.03	*	-49.63	4.85	3.15	-47.93	94.37	66.43
3076.00	٧	50.37	*	-50.05	4.85	3.15	-48.35	94.79	66.43
3845.00	Н	49.71	*	-52.39	6.39	3.51	-49.51	95.95	66.43
3845.00	٧	49.28	*	-50.26	6.39	3.51	-47.38	93.81	66.43
4614.00	Н	49.31	*	-48.98	6.79	3.81	-46.00	92.43	66.43
4614.00	٧	49.07	*	-49.19	6.79	3.81	-46.20	92.63	66.43
5383.00	Н	49.40	*	-47.66	7.85	4.10	-43.91	90.35	66.43
5383.00	٧	49.13	*	-47.93	7.85	4.10	-44.18	90.62	66.43
6152.00	Н	49.09	*	-47.40	8.40	4.42	-43.42	89.85	66.43
6152.00	٧	48.81	*	-48.21	8.40	4.42	-44.23	90.67	66.43
6921.00	Н	48.47	*	-48.16	9.00	4.77	-43.93	90.36	66.43
6921.00	٧	48.52	*	-48.54	9.00	4.77	-44.31	90.74	66.43
7690.00	Н	48.96	*	-47.92	10.09	5.08	-42.92	89.35	66.43
7690.00	٧	49.21	*	-48.07	10.09	5.08	-43.06	89.49	66.43

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 769 MHz, LSM

	Test Details							
Manufacturer	Manufacturer Motorola Solutions Inc.							
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	769MHz							
Notes	2W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1538.00	Н	51.67	*	-55.50	3.81	2.17	-53.86	86.87	53.01
1538.00	٧	57.70		-49.13	3.81	2.17	-47.50	80.51	53.01
2307.00	Н	50.63	*	-51.27	3.31	2.68	-50.65	83.66	53.01
2307.00	٧	50.62	*	-50.98	3.31	2.68	-50.36	83.37	53.01
3076.00	Н	49.53	*	-51.13	4.85	3.15	-49.43	82.44	53.01
3076.00	٧	50.43	*	-49.99	4.85	3.15	-48.29	81.30	53.01
3845.00	Н	48.94	*	-53.16	6.39	3.51	-50.28	83.29	53.01
3845.00	٧	49.13	*	-50.41	6.39	3.51	-47.53	80.54	53.01
4614.00	Н	49.23	*	-49.06	6.79	3.81	-46.08	79.09	53.01
4614.00	٧	48.51	*	-49.75	6.79	3.81	-46.76	79.77	53.01
5383.00	Н	49.54	*	-47.52	7.85	4.10	-43.77	76.78	53.01
5383.00	٧	48.37	*	-48.69	7.85	4.10	-44.94	77.95	53.01
6152.00	Н	48.85	*	-47.64	8.40	4.42	-43.66	76.67	53.01
6152.00	٧	48.23	*	-48.79	8.40	4.42	-44.81	77.82	53.01
6921.00	Н	48.06	*	-48.57	9.00	4.77	-44.34	77.35	53.01
6921.00	V	48.18	*	-48.88	9.00	4.77	-44.65	77.66	53.01
7690.00	Н	48.64	*	-48.24	10.09	5.08	-43.24	76.25	53.01
7690.00	٧	49.61	*	-47.67	10.09	5.08	-42.66	75.67	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 770 MHz, H-DQPSK

	Test Details							
Manufacturer	Manufacturer Motorola Solutions Inc.							
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	770MHz							
Notes	44W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1540.00	Н	55.56		-51.63	3.83	2.17	-49.98	96.41	66.43
1540.00	٧	58.43		-48.42	3.83	2.17	-46.77	93.20	66.43
2310.00	Н	51.67	*	-50.22	3.30	2.69	-49.61	96.04	66.43
2310.00	٧	50.78	*	-50.81	3.30	2.69	-50.20	96.63	66.43
3080.00	Н	50.22	*	-50.42	4.85	3.15	-48.72	95.15	66.43
3080.00	٧	50.59	*	-49.81	4.85	3.15	-48.11	94.54	66.43
3850.00	Н	49.66	*	-52.35	6.39	3.51	-49.47	95.90	66.43
3850.00	٧	49.57	*	-49.95	6.39	3.51	-47.07	93.51	66.43
4620.00	Н	48.81	*	-49.47	6.79	3.81	-46.49	92.93	66.43
4620.00	٧	48.71	*	-49.53	6.79	3.81	-46.55	92.98	66.43
5390.00	Н	49.21	*	-47.84	7.86	4.11	-44.09	90.52	66.43
5390.00	٧	49.24	*	-47.81	7.86	4.11	-44.06	90.49	66.43
6160.00	Н	49.57	*	-46.88	8.41	4.43	-42.90	89.33	66.43
6160.00	٧	49.30	*	-47.72	8.41	4.43	-43.74	90.17	66.43
6930.00	Н	48.47	*	-48.19	9.02	4.77	-43.95	90.38	66.43
6930.00	٧	48.73	*	-48.36	9.02	4.77	-44.11	90.55	66.43
7700.00	Н	49.05	*	-47.85	10.10	5.09	-42.84	89.27	66.43
7700.00	٧	49.27	*	-48.01	10.10	5.09	-43.00	89.43	66.43

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Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 770 MHz, H-DQPSK

	Test Details							
Manufacturer	Manufacturer Motorola Solutions Inc.							
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	770MHz							
Notes	2W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1540.00	Н	52.90	*	-54.29	3.83	2.17	-52.64	85.65	53.01
1540.00	٧	57.42		-49.43	3.83	2.17	-47.78	80.79	53.01
2310.00	Н	51.13	*	-50.76	3.30	2.69	-50.15	83.16	53.01
2310.00	٧	50.24	*	-51.35	3.30	2.69	-50.74	83.75	53.01
3080.00	Н	49.47	*	-51.17	4.85	3.15	-49.47	82.48	53.01
3080.00	٧	50.36	*	-50.04	4.85	3.15	-48.34	81.35	53.01
3850.00	Н	49.50	*	-52.51	6.39	3.51	-49.63	82.64	53.01
3850.00	٧	48.88	*	-50.64	6.39	3.51	-47.76	80.77	53.01
4620.00	Н	48.67	*	-49.61	6.79	3.81	-46.63	79.64	53.01
4620.00	٧	48.07	*	-50.17	6.79	3.81	-47.19	80.20	53.01
5390.00	Н	48.70	*	-48.35	7.86	4.11	-44.60	77.61	53.01
5390.00	٧	49.34	*	-47.71	7.86	4.11	-43.96	76.97	53.01
6160.00	Н	48.73	*	-47.72	8.41	4.43	-43.74	76.75	53.01
6160.00	٧	48.75	*	-48.27	8.41	4.43	-44.29	77.30	53.01
6930.00	Н	48.13	*	-48.53	9.02	4.77	-44.29	77.30	53.01
6930.00	٧	49.19	*	-47.90	9.02	4.77	-43.65	76.66	53.01
7700.00	Н	48.18	*	-48.72	10.10	5.09	-43.71	76.72	53.01
7700.00	٧	48.67	*	-48.61	10.10	5.09	-43.60	76.61	53.01

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Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 771 MHz, C4FM

Test Details							
Manufacturer	Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	771MHz						
Notes	44W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1542.00	Н	55.77		-51.44	3.84	2.18	-49.78	96.21	66.43
1542.00	٧	55.46		-51.40	3.84	2.18	-49.74	96.17	66.43
2313.00	Н	51.07	*	-50.81	3.30	2.69	-50.21	96.64	66.43
2313.00	٧	50.40	*	-51.18	3.30	2.69	-50.58	97.01	66.43
3084.00	Н	49.72	*	-50.89	4.86	3.15	-49.19	95.63	66.43
3084.00	٧	50.07	*	-50.30	4.86	3.15	-48.60	95.03	66.43
3855.00	Н	49.21	*	-52.70	6.40	3.51	-49.82	96.25	66.43
3855.00	٧	49.34	*	-50.17	6.40	3.51	-47.29	93.72	66.43
4626.00	Н	49.17	*	-49.10	6.79	3.81	-46.13	92.56	66.43
4626.00	٧	49.26	*	-48.96	6.79	3.81	-45.98	92.42	66.43
5397.00	Н	49.26	*	-47.78	7.86	4.11	-44.02	90.46	66.43
5397.00	٧	48.82	*	-48.22	7.86	4.11	-44.46	90.90	66.43
6168.00	Н	48.70	*	-47.71	8.42	4.43	-43.72	90.16	66.43
6168.00	٧	48.99	*	-48.03	8.42	4.43	-44.05	90.48	66.43
6939.00	Н	48.94	*	-47.76	9.03	4.77	-43.50	89.93	66.43
6939.00	٧	48.01	*	-49.11	9.03	4.77	-44.85	91.29	66.43
7710.00	Н	48.89	*	-48.03	10.11	5.09	-43.01	89.45	66.43
7710.00	٧	49.55	*	-47.74	10.11	5.09	-42.72	89.15	66.43

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Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 771 MHz, C4FM

Test Details							
Manufacturer	Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	771MHz						
Notes	2W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1542.00	Н	51.66	*	-55.55	3.84	2.18	-53.89	86.90	53.01
1542.00	٧	58.28		-48.58	3.84	2.18	-46.92	79.93	53.01
2313.00	Н	50.45	*	-51.43	3.30	2.69	-50.83	83.84	53.01
2313.00	٧	50.91	*	-50.67	3.30	2.69	-50.07	83.08	53.01
3084.00	Н	50.03	*	-50.58	4.86	3.15	-48.88	81.89	53.01
3084.00	٧	49.61	*	-50.76	4.86	3.15	-49.06	82.07	53.01
3855.00	Н	48.74	*	-53.17	6.40	3.51	-50.29	83.30	53.01
3855.00	٧	49.38	*	-50.13	6.40	3.51	-47.25	80.26	53.01
4626.00	Н	49.55	*	-48.72	6.79	3.81	-45.75	78.76	53.01
4626.00	٧	48.15	*	-50.07	6.79	3.81	-47.09	80.10	53.01
5397.00	Н	48.68	*	-48.36	7.86	4.11	-44.60	77.61	53.01
5397.00	٧	48.41	*	-48.63	7.86	4.11	-44.87	77.88	53.01
6168.00	Н	48.47	*	-47.94	8.42	4.43	-43.95	76.96	53.01
6168.00	٧	47.00	*	-50.02	8.42	4.43	-46.04	79.05	53.01
6939.00	Н	48.95	*	-47.75	9.03	4.77	-43.49	76.50	53.01
6939.00	٧	48.68	*	-48.44	9.03	4.77	-44.18	77.19	53.01
7710.00	Н	48.51	*	-48.41	10.11	5.09	-43.39	76.40	53.01
7710.00	٧	48.71	*	-48.58	10.11	5.09	-43.56	76.57	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 772 MHz, LSM

	Test Details							
Manufacturer Motorola Solutions Inc.								
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	772W							
Notes	44W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1544.00	Н	57.00		-50.24	3.86	2.18	-48.56	94.99	66.43
1544.00	٧	55.60		-51.28	3.86	2.18	-49.60	96.03	66.43
2316.00	Н	51.61	*	-50.27	3.29	2.69	-49.67	96.10	66.43
2316.00	٧	50.53	*	-51.05	3.29	2.69	-50.45	96.88	66.43
3088.00	Н	51.16	*	-49.43	4.86	3.16	-47.72	94.16	66.43
3088.00	٧	49.36	*	-50.99	4.86	3.16	-49.28	95.71	66.43
3860.00	Н	49.07	*	-52.75	6.40	3.52	-49.86	96.30	66.43
3860.00	٧	50.00	*	-49.49	6.40	3.52	-46.61	93.05	66.43
4632.00	Н	49.72	*	-48.54	6.78	3.81	-45.57	92.01	66.43
4632.00	٧	49.32	*	-48.88	6.78	3.81	-45.91	92.35	66.43
5404.00	Н	48.54	*	-48.48	7.87	4.11	-44.72	91.16	66.43
5404.00	٧	49.33	*	-47.69	7.87	4.11	-43.93	90.37	66.43
6176.00	Н	48.50	*	-47.87	8.42	4.43	-43.88	90.32	66.43
6176.00	٧	48.13	*	-48.89	8.42	4.43	-44.90	91.34	66.43
6948.00	Н	48.35	*	-48.38	9.05	4.78	-44.11	90.54	66.43
6948.00	٧	47.84	*	-49.31	9.05	4.78	-45.04	91.47	66.43
7720.00	Н	48.98	*	-47.96	10.12	5.09	-42.94	89.37	66.43
7720.00	٧	49.61	*	-47.68	10.12	5.09	-42.66	89.09	66.43

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Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 772 MHz, LSM

Test Details							
Manufacturer	Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	772W						
Notes	2W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1544.00	Н	52.91	*	-54.33	3.86	2.18	-52.65	85.66	53.01
1544.00	٧	58.16		-48.72	3.86	2.18	-47.04	80.05	53.01
2316.00	Н	50.45	*	-51.43	3.29	2.69	-50.83	83.84	53.01
2316.00	٧	50.79	*	-50.79	3.29	2.69	-50.19	83.20	53.01
3088.00	Н	49.90	*	-50.69	4.86	3.16	-48.98	81.99	53.01
3088.00	٧	50.12	*	-50.23	4.86	3.16	-48.52	81.53	53.01
3860.00	Н	48.67	*	-53.15	6.40	3.52	-50.26	83.27	53.01
3860.00	٧	49.67	*	-49.82	6.40	3.52	-46.94	79.95	53.01
4632.00	Н	49.14	*	-49.12	6.78	3.81	-46.15	79.16	53.01
4632.00	٧	48.50	*	-49.70	6.78	3.81	-46.73	79.74	53.01
5404.00	Н	49.05	*	-47.97	7.87	4.11	-44.21	77.22	53.01
5404.00	٧	48.65	*	-48.37	7.87	4.11	-44.61	77.62	53.01
6176.00	Н	47.82	*	-48.55	8.42	4.43	-44.56	77.57	53.01
6176.00	٧	47.94	*	-49.08	8.42	4.43	-45.09	78.10	53.01
6948.00	Н	48.61	*	-48.12	9.05	4.78	-43.85	76.86	53.01
6948.00	٧	48.36	*	-48.79	9.05	4.78	-44.52	77.53	53.01
7720.00	Н	48.08	*	-48.86	10.12	5.09	-43.84	76.85	53.01
7720.00	٧	48.63	*	-48.66	10.12	5.09	-43.64	76.65	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 773 MHz, H-DQPSK

	Test Details							
Manufacturer Motorola Solutions Inc.								
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	773MHz							
Notes	44W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1546.00	Н	57.08		-50.18	3.88	2.18	-48.48	94.92	66.43
1546.00	٧	55.36		-51.53	3.88	2.18	-49.84	96.27	66.43
2319.00	Н	50.95	*	-50.92	3.28	2.69	-50.33	96.76	66.43
2319.00	٧	50.38	*	-51.19	3.28	2.69	-50.60	97.03	66.43
3092.00	Н	49.70	*	-50.87	4.87	3.16	-49.16	95.59	66.43
3092.00	٧	49.95	*	-50.37	4.87	3.16	-48.66	95.10	66.43
3865.00	Н	49.49	*	-52.23	6.40	3.52	-49.35	95.78	66.43
3865.00	٧	49.41	*	-50.07	6.40	3.52	-47.19	93.62	66.43
4638.00	Н	48.74	*	-49.51	6.78	3.81	-46.55	92.98	66.43
4638.00	٧	48.30	*	-49.89	6.78	3.81	-46.92	93.36	66.43
5411.00	Н	49.04	*	-47.97	7.88	4.11	-44.20	90.63	66.43
5411.00	٧	48.65	*	-48.36	7.88	4.11	-44.59	91.02	66.43
6184.00	Н	48.28	*	-48.05	8.43	4.44	-44.06	90.50	66.43
6184.00	٧	48.03	*	-48.99	8.43	4.44	-45.00	91.43	66.43
6957.00	Н	48.84	*	-47.92	9.06	4.78	-43.64	90.07	66.43
6957.00	٧	48.57	*	-48.61	9.06	4.78	-44.33	90.76	66.43
7730.00	Н	48.21	*	-48.75	10.13	5.10	-43.72	90.16	66.43
7730.00	٧	49.14	*	-48.16	10.13	5.10	-43.12	89.56	66.43

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Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 773 MHz, H-DQPSK

	Test Details							
Manufacturer Motorola Solutions Inc.								
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	773MHz							
Notes	2W Power							
Date Tested	4/12/2024 through 4/13/2024							

				Calculated	Equivalent			Attenuation	
		Meter		Sig. Gen.	Antenna	Cable		Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1546.00	Н	52.33	*	-54.93	3.88	2.18	-53.23	86.24	53.01
1546.00	٧	58.00		-48.89	3.88	2.18	-47.20	80.21	53.01
2319.00	Н	50.30	*	-51.57	3.28	2.69	-50.98	83.99	53.01
2319.00	٧	50.18	*	-51.39	3.28	2.69	-50.80	83.81	53.01
3092.00	Н	49.85	*	-50.72	4.87	3.16	-49.01	82.02	53.01
3092.00	٧	49.93	*	-50.39	4.87	3.16	-48.68	81.69	53.01
3865.00	Н	49.20	*	-52.52	6.40	3.52	-49.64	82.65	53.01
3865.00	٧	49.46	*	-50.02	6.40	3.52	-47.14	80.15	53.01
4638.00	Н	48.45	*	-49.80	6.78	3.81	-46.84	79.85	53.01
4638.00	٧	49.22	*	-48.97	6.78	3.81	-46.00	79.01	53.01
5411.00	Н	49.57	*	-47.44	7.88	4.11	-43.67	76.68	53.01
5411.00	٧	48.81	*	-48.20	7.88	4.11	-44.43	77.44	53.01
6184.00	Н	48.51	*	-47.82	8.43	4.44	-43.83	76.84	53.01
6184.00	٧	48.05	*	-48.97	8.43	4.44	-44.98	77.99	53.01
6957.00	Н	49.24	*	-47.52	9.06	4.78	-43.24	76.25	53.01
6957.00	٧	48.84	*	-48.34	9.06	4.78	-44.06	77.07	53.01
7730.00	Н	48.25	*	-48.71	10.13	5.10	-43.68	76.69	53.01
7730.00	٧	48.61	*	-48.69	10.13	5.10	-43.65	76.67	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 774 MHz, C4FM

Test Details						
Manufacturer	Motorola Solutions Inc.					
EUT	UHF Radio					
Model No.	DBR M12 700MHz					
Serial No.	700EMC					
Mode	Tx					
Frequency Tested	774MHz					
Notes	44W Power					
Date Tested	4/12/2024 through 4/13/2024					

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1548.00	Н	56.85		-50.43	3.89	2.18	-48.72	95.16	66.43
1548.00	٧	59.12		-47.79	3.89	2.18	-46.07	92.51	66.43
2322.00	Н	51.35	*	-50.51	3.28	2.69	-49.93	96.36	66.43
2322.00	٧	50.63	*	-50.93	3.28	2.69	-50.35	96.78	66.43
3096.00	Н	50.05	*	-50.49	4.87	3.16	-48.78	95.22	66.43
3096.00	٧	50.48	*	-49.81	4.87	3.16	-48.10	94.54	66.43
3870.00	Н	48.57	*	-53.06	6.41	3.52	-50.17	96.61	66.43
3870.00	٧	48.72	*	-50.74	6.41	3.52	-47.86	94.29	66.43
4644.00	Н	49.37	*	-48.87	6.77	3.82	-45.92	92.35	66.43
4644.00	٧	49.00	*	-49.17	6.77	3.82	-46.21	92.65	66.43
5418.00	Н	48.85	*	-48.14	7.89	4.12	-44.37	90.80	66.43
5418.00	٧	48.52	*	-48.47	7.89	4.12	-44.70	91.13	66.43
6192.00	Н	48.66	*	-47.64	8.44	4.44	-43.64	90.07	66.43
6192.00	٧	48.14	*	-48.88	8.44	4.44	-44.89	91.32	66.43
6966.00	Н	48.91	*	-47.88	9.08	4.79	-43.59	90.03	66.43
6966.00	٧	49.48	*	-47.72	9.08	4.79	-43.43	89.87	66.43
7740.00	Н	49.22	*	-47.76	10.14	5.10	-42.73	89.16	66.43
7740.00	٧	48.50	*	-48.80	10.14	5.10	-43.76	90.20	66.43

EQUIPMENT TYPE: ABZ89FT5911

109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 774 MHz, C4FM

	Test Details						
Manufacturer	anufacturer Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	774MHz						
Notes	2W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1548.00	Н	52.64	*	-54.64	3.89	2.18	-52.93	85.94	53.01
1548.00	٧	58.68		-48.23	3.89	2.18	-46.51	79.52	53.01
2322.00	Н	51.39	*	-50.47	3.28	2.69	-49.89	82.90	53.01
2322.00	٧	50.28	*	-51.28	3.28	2.69	-50.70	83.71	53.01
3096.00	Н	50.25	*	-50.29	4.87	3.16	-48.58	81.59	53.01
3096.00	٧	49.72	*	-50.57	4.87	3.16	-48.86	81.87	53.01
3870.00	Н	48.44	*	-53.19	6.41	3.52	-50.30	83.31	53.01
3870.00	٧	49.33	*	-50.13	6.41	3.52	-47.25	80.26	53.01
4644.00	Н	49.05	*	-49.19	6.77	3.82	-46.24	79.25	53.01
4644.00	٧	49.00	*	-49.17	6.77	3.82	-46.21	79.22	53.01
5418.00	Н	49.24	*	-47.75	7.89	4.12	-43.98	76.99	53.01
5418.00	٧	49.51	*	-47.48	7.89	4.12	-43.71	76.72	53.01
6192.00	Н	48.54	*	-47.76	8.44	4.44	-43.76	76.77	53.01
6192.00	٧	49.73	*	-47.29	8.44	4.44	-43.30	76.31	53.01
6966.00	Н	49.95	*	-46.84	9.08	4.79	-42.55	75.56	53.01
6966.00	٧	49.10	*	-48.10	9.08	4.79	-43.81	76.82	53.01
7740.00	Н	48.66	*	-48.32	10.14	5.10	-43.29	76.30	53.01
7740.00	٧	49.33	*	-47.97	10.14	5.10	-42.93	75.94	53.01

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 775 MHz, LSM

	Test Details						
Manufacturer	Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	775MHz Power						
Notes	44W						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1550.00	Н	54.74		-52.57	3.91	2.18	-50.84	97.27	66.43
1550.00	٧	58.95		-47.97	3.91	2.18	-46.24	92.68	66.43
2325.00	Н	52.16	*	-49.69	3.27	2.70	-49.12	95.55	66.43
2325.00	٧	50.75	*	-50.80	3.27	2.70	-50.23	96.66	66.43
3100.00	Н	50.07	*	-50.45	4.87	3.16	-48.74	95.17	66.43
3100.00	٧	49.58	*	-50.69	4.87	3.16	-48.98	95.41	66.43
3875.00	Н	48.95	*	-52.58	6.41	3.52	-49.70	96.13	66.43
3875.00	٧	49.34	*	-50.11	6.41	3.52	-47.22	93.66	66.43
4650.00	Н	49.33	*	-48.90	6.77	3.82	-45.95	92.39	66.43
4650.00	٧	48.66	*	-49.49	6.77	3.82	-46.54	92.97	66.43
5425.00	Н	48.60	*	-48.38	7.90	4.12	-44.60	91.03	66.43
5425.00	٧	48.31	*	-48.67	7.90	4.12	-44.89	91.32	66.43
6200.00	Н	48.14	*	-48.12	8.44	4.44	-44.12	90.55	66.43
6200.00	٧	48.07	*	-48.95	8.44	4.44	-44.95	91.39	66.43
6975.00	Н	48.67	*	-48.15	9.09	4.79	-43.85	90.29	66.43
6975.00	V	48.12	*	-49.11	9.09	4.79	-44.81	91.25	66.43
7750.00	Н	48.24	*	-48.76	10.14	5.10	-43.72	90.16	66.43
7750.00	٧	49.10	*	-48.20	10.14	5.10	-43.16	89.60	66.43

EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 775 MHz, LSM

	Test Details							
Manufacturer Motorola Solutions Inc.								
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	775MHz Power							
Notes	2W							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1550.00	Н	56.38	*	-50.93	3.91	2.18	-49.20	82.21	53.01
1550.00	٧	58.96		-47.96	3.91	2.18	-46.23	79.24	53.01
2325.00	Н	51.48	*	-50.37	3.27	2.70	-49.80	82.81	53.01
2325.00	٧	50.89	*	-50.66	3.27	2.70	-50.09	83.10	53.01
3100.00	Н	50.23	*	-50.29	4.87	3.16	-48.58	81.59	53.01
3100.00	٧	50.03	*	-50.24	4.87	3.16	-48.53	81.54	53.01
3875.00	Н	49.25	*	-52.28	6.41	3.52	-49.40	82.41	53.01
3875.00	٧	50.35	*	-49.10	6.41	3.52	-46.21	79.22	53.01
4650.00	Н	49.24	*	-48.99	6.77	3.82	-46.04	79.05	53.01
4650.00	٧	48.46	*	-49.69	6.77	3.82	-46.74	79.75	53.01
5425.00	Н	49.34	*	-47.64	7.90	4.12	-43.86	76.87	53.01
5425.00	٧	48.54	*	-48.44	7.90	4.12	-44.66	77.67	53.01
6200.00	Н	48.02	*	-48.24	8.44	4.44	-44.24	77.25	53.01
6200.00	٧	48.07	*	-48.95	8.44	4.44	-44.95	77.96	53.01
6975.00	Н	49.00	*	-47.82	9.09	4.79	-43.52	76.53	53.01
6975.00	٧	48.77	*	-48.46	9.09	4.79	-44.16	77.17	53.01
7750.00	Н	48.96	*	-48.04	10.14	5.10	-43.00	76.01	53.01
7750.00	٧	48.75	*	-48.55	10.14	5.10	-43.51	76.52	53.01

109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 776 MHz, H-DQPSK

	Test Details						
Manufacturer Motorola Solutions Inc.							
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	776MHz Power						
Notes	44W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1552.00	Н	53.82		-53.51	3.92	2.18	-51.77	84.78	66.43
1552.00	٧	58.85		-48.08	3.92	2.18	-46.34	79.35	66.43
2328.00	Н	51.07	*	-50.77	3.26	2.70	-50.21	83.22	66.43
2328.00	٧	50.31	*	-51.23	3.26	2.70	-50.67	83.68	66.43
3104.00	Н	50.19	*	-50.30	4.88	3.16	-48.59	81.60	66.43
3104.00	٧	50.01	*	-50.23	4.88	3.16	-48.51	81.52	66.43
3880.00	Н	48.87	*	-52.57	6.41	3.53	-49.68	82.69	66.43
3880.00	٧	49.64	*	-49.79	6.41	3.53	-46.91	79.92	66.43
4656.00	Н	48.63	*	-49.59	6.77	3.82	-46.65	79.66	66.43
4656.00	٧	48.68	*	-49.45	6.77	3.82	-46.51	79.52	66.43
5432.00	Н	49.38	*	-47.59	7.91	4.12	-43.80	76.81	66.43
5432.00	٧	48.92	*	-48.05	7.91	4.12	-44.26	77.27	66.43
6208.00	Н	48.81	*	-47.41	8.45	4.45	-43.40	76.41	66.43
6208.00	٧	48.39	*	-48.63	8.45	4.45	-44.63	77.64	66.43
6984.00	Н	48.97	*	-47.88	9.11	4.79	-43.57	76.58	66.43
6984.00	٧	49.13	*	-48.13	9.11	4.79	-43.82	76.83	66.43
7760.00	Н	48.37	*	-48.63	10.15	5.11	-43.59	76.60	66.43
7760.00	٧	48.52	*	-48.77	10.15	5.11	-43.73	76.74	66.43

EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 776 MHz, H-DQPSK

	Test Details						
Manufacturer	Manufacturer Motorola Solutions Inc.						
EUT	UHF Radio						
Model No.	DBR M12 700MHz						
Serial No.	700EMC						
Mode	Tx						
Frequency Tested	776MHz Power						
Notes	2W Power						
Date Tested	4/12/2024 through 4/13/2024						

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
1552.00	Н	52.29	*	-55.04	3.92	2.18	-53.30	86.31	53.01
1552.00	٧	59.30		-47.63	3.92	2.18	-45.89	78.90	53.01
2328.00	Н	51.03	*	-50.81	3.26	2.70	-50.25	83.26	53.01
2328.00	٧	50.81	*	-50.73	3.26	2.70	-50.17	83.18	53.01
3104.00	Н	49.97	*	-50.52	4.88	3.16	-48.81	81.82	53.01
3104.00	٧	50.11	*	-50.13	4.88	3.16	-48.41	81.42	53.01
3880.00	Н	49.62	*	-51.82	6.41	3.53	-48.93	81.94	53.01
3880.00	V	48.88	*	-50.55	6.41	3.53	-47.67	80.68	53.01
4656.00	Н	49.54	*	-48.68	6.77	3.82	-45.74	78.75	53.01
4656.00	٧	48.98	*	-49.15	6.77	3.82	-46.21	79.22	53.01
5432.00	Н	49.31	*	-47.66	7.91	4.12	-43.87	76.88	53.01
5432.00	V	48.24	*	-48.73	7.91	4.12	-44.94	77.95	53.01
6208.00	Н	47.98	*	-48.24	8.45	4.45	-44.23	77.24	53.01
6208.00	٧	48.05	*	-48.97	8.45	4.45	-44.97	77.98	53.01
6984.00	Н	48.63	*	-48.22	9.11	4.79	-43.91	76.92	53.01
6984.00	V	48.61	*	-48.65	9.11	4.79	-44.34	77.35	53.01
7760.00	Н	48.52	*	-48.48	10.15	5.11	-43.44	76.45	53.01
7760.00	٧	48.72	*	-48.57	10.15	5.11	-43.53	76.54	53.01

EQUIPMENT TYPE: ABZ89FT5911

109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 44 Watts (Average), 768-776 MHz

	Test Details							
Manufacturer Motorola Solutions Inc.								
EUT	UHF Radio							
Model No.	DBR M12 700MHz							
Serial No.	700EMC							
Mode	Tx							
Frequency Tested	768-776MHz							
Notes	44W Power							
Date Tested	4/12/2024 through 4/13/2024							

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
767.99	Н	40.9		-29.8	0.0	1.5	-31.3	77.7	66.4
767.99	٧	38.6		-30.1	0.0	1.5	-31.6	78.0	66.4
765.99	Н	41.8		-28.9	0.0	1.5	-30.4	76.9	66.4
765.99	٧	32.5		-36.2	0.0	1.5	-37.7	84.1	66.4
776.01	Н	44.1		-26.4	0.0	1.5	-27.9	74.3	66.4
776.01	٧	41.4		-27.0	0.0	1.5	-28.5	74.9	66.4
3187.50	Н	51.5		-48.5	5.1	3.2	-46.6	93.0	66.4
3187.50	٧	51.8		-47.9	5.1	3.2	-46.0	92.4	66.4
3375.00	Н	50.5		-49.7	5.6	3.3	-47.5	93.9	66.4
3375.00	٧	52.0		-48.4	5.6	3.3	-46.1	92.6	66.4
3437.50	Н	50.6		-49.6	5.7	3.3	-47.2	93.7	66.4
3437.50	٧	50.9		-49.4	5.7	3.3	-47.0	93.5	66.4
4062.50	Н	49.9		-49.2	6.7	3.6	-46.1	92.6	66.4
4062.50	٧	50.3		-48.7	6.7	3.6	-45.7	92.1	66.4
4437.50	Н	50.3		-48.3	7.0	3.7	-45.0	91.4	66.4
4437.50	٧	49.8		-48.9	7.0	3.7	-45.6	92.1	66.4

EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

Report on Test Measurements

Radiated Spurious Harmonic Emissions — Power Output 2 Watts (Average), 768-776 MHz

Test Details				
Manufacturer	Motorola Solutions Inc.			
EUT	UHF Radio			
Model No.	DBR M12 700MHz			
Serial No.	700EMC			
Mode	Tx			
Frequency Tested	768-776MHz			
Notes	2W Power			
Date Tested	4/12/2024 through 4/13/2024			

		Meter		Calculated Sig. Gen.	Equivalent Antenna	Cable		Attenuation Below	Minimum
Freq.	Ant	Reading		Reading	Gain	Loss	ERP	Output Power	Attenuation
MHz	Pol	(dBuV)	Ambient	(dBm)	(dB)	(dB)	(dBm)	(dB)	(dB)
767.30	Н	15.1		-55.6	0.0	1.5	-57.1	90.1	53.0
767.30	٧	14.3		-54.3	0.0	1.5	-55.8	88.9	53.0
875.00	Н	13.7		-56.1	0.0	1.6	-57.7	90.7	53.0
875.00	٧	13.6		-53.5	0.0	1.6	-55.1	88.1	53.0
837.98	Н	21.6		-48.5	0.0	1.6	-50.1	83.1	53.0
837.98	٧	19.3		-48.0	0.0	1.6	-49.5	82.5	53.0
1100.40	Н	50.4		-56.7	0.4	1.8	-58.1	91.1	53.0
1100.40	٧	51.5		-55.0	0.4	1.8	-56.3	89.4	53.0
2500.00	Н	50.4		-51.1	3.0	2.8	-50.9	83.9	53.0
2500.00	٧	51.2		-50.1	3.0	2.8	-49.9	82.9	53.0
3187.30	Н	49.8		-50.2	5.1	3.2	-48.4	81.4	53.0
3187.30	٧	50.1		-49.6	5.1	3.2	-47.8	80.8	53.0

PPLICANT: MOTOROLA SOLUTIONS EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

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 RSS-119 Section 5.3

Fixed and Base stations operating at 764-776 MHz and 794-806 MHz must have a frequency stability of better than +/- 0.1 PPM for 6.25 kHz and 12.5 kHz.

Specification Requirement: Reference FCC Part 90.539(b)

Transmitters designed to operate in 769-775 MHz and 799-805 MHz frequency bands must meet the frequency stability requirements in this section:

(b) The frequency stability of base transmitters operating in the narrowband segment must be 100 parts per billion or better.

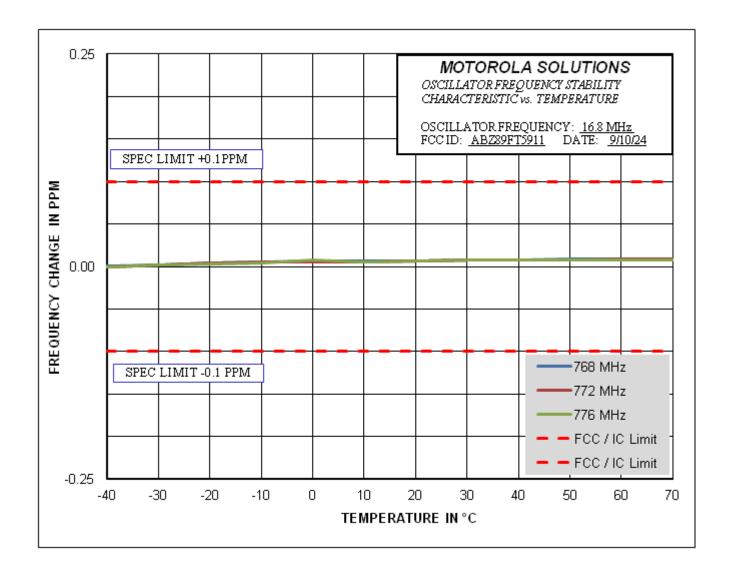
Specification Requirement: Reference FCC Part 27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

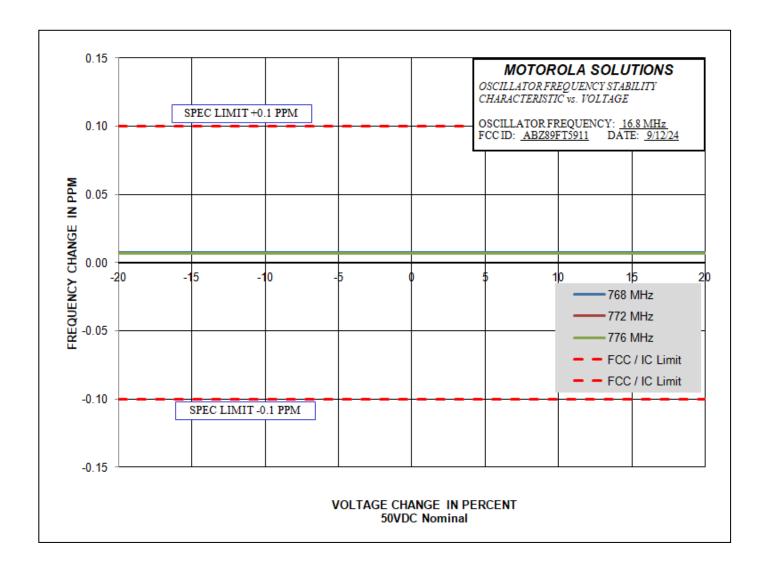
The specification limits for IC and FCC are identical, 0.1 part per million. This specification limit is shown on the following charts. Performance was measured at carrier frequencies at the low end, middle, and high end of the operating band.

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

Frequency Stability Vs Temperature



Frequency Stability Vs Voltage



APPLICANT: MOTOROLA SOLUTIONS EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

Report on Test Measurements

Test Setup Details

Test Locations:

(for all tests except radiated emissions)
Motorola Solutions, Inc., Schaumburg Lab
2000 Progress Parkway, Schaumburg, IL 60196
FCC Registration Number 786245
IC CAB Identifier US0220
Test Engineer Ted Lietz

(for radiated emissions)
Elite Electronic Engineering Inc.
1516 Centre Circle Dr., Downers Grove, IL 60515
FCC Registration Number 269750
IC Registration Number 2987A
IC CAB Identifier US0107
Test Engineer Javier Cardenas

Report on Test Measurements

Test Equipment List (Motorola)

Model	Manufacturer	Description	Serial Number	Last Cal	Interval
N9030A	Keysight/Agilent/HP	PXA Signal Analyzer, 3 Hz to 50 GHz	MY53310751	8/21/2024	8/21/2025
NRP-Z11	Rohde & Schwarz	Power Sensor	101590	8/21/2024	8/21/2025
SMU200A	Rohde & Schwarz	Signal Generator / Power Meter	101350	12/30/2021	12/29/2024
34401A	Keysight/Agilent/HP	Digital Multimeter	3146A59752	8/29/2022	8/29/2026
E5071C	Keysight/Agilent/HP	ENA Series Network analyzer	MY46316134	8/20/2024	8/20/2025
RP7935A	Keysight/Agilent/HP	Regenerative Power Supply	MY58000200	9/12/2023	9/12/2024

Test Equipment List (Elite)

18. 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	
NTA4	BILOG ANTENNA	TESEQ	6112D	46660	20-2000GHZ	10/26/2022	10/26/2024
NWQ2	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66659	1GHZ-18GHZ	4/26/2024	4/26/2026
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
SCB1	PROGRAMABLE POWER SUPPLY	CALIFORNIA INSTRUMENTS	CSW5550-208/156- 321-ELF	1513A01938		NOTE 1	
SCB2	PROGRAMABLE POWER SUPPLY	CALIFORNIA INSTRUMENTS	CSW5550-208/156- 321-ELF	1513A02092		NOTE 1	
SHC2	Power Supplies	HENGFU	HF60W-SL-24	A11372702	24V	NOTE 1	
VBV2	COMMERCIAL RADIATED EMISSIONS.EXE	ELITE			_	N/A	
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1		1/0	

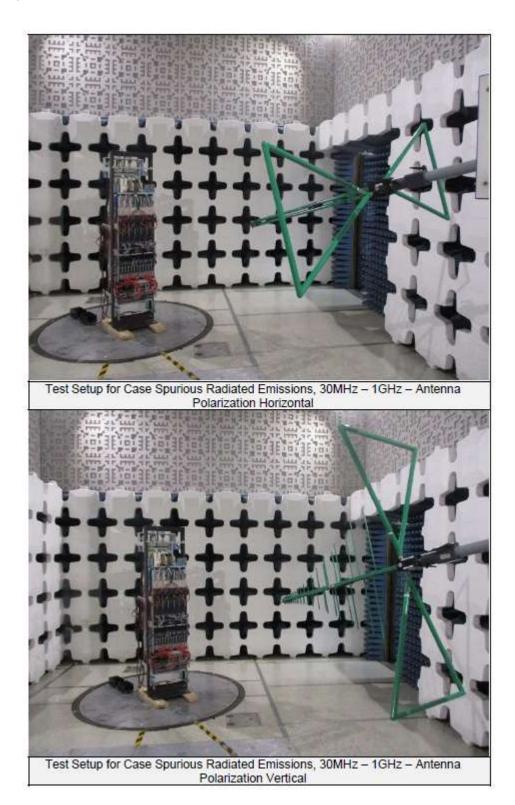
N/A: Not Applicable

I/O: Initial Only

CNR: Calibration Not Required

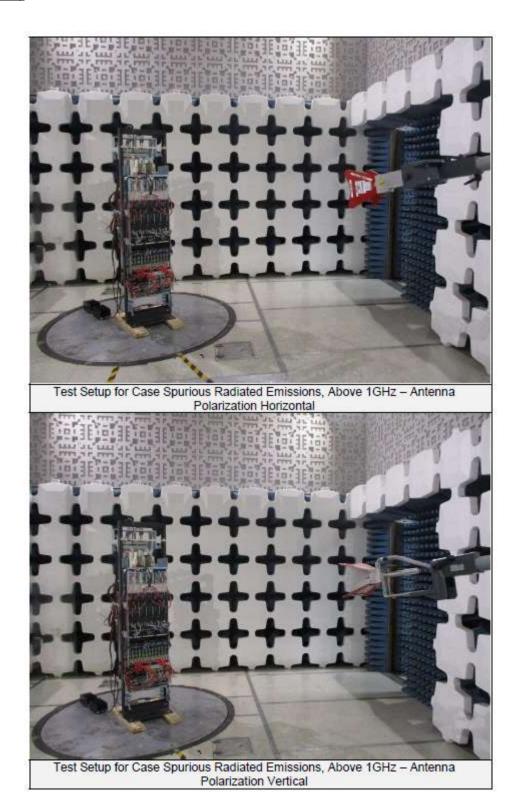
NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

Test Setup (Elite)



Report on Test Measurements

Test Setup (Elite)



APPLICANT: MOTOROLA SOLUTIONS EQUIPMENT TYPE: ABZ89FT5911 109AB-T5911

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: BS Mathematics, Illinois State University, Normal, IL, USA

<u>35</u> years of Design and Development experience in the field of two-way radio communication.

NAME: Ted Lietz

SIGNATURE:

DATE: September 13, 2024

POSITION: Principal 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

Hatter R Nawworks

DATE: September 17, 2024

POSITION: Engineering Manager