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## COMPLIANCE TEST REPORT PER FCC PART 15.247 FHSS AND IC RSS-210

<b>Applicant</b>	MOTOROLA MOBILITY, INC.
<b>Address</b>	8000 W. SUNRISE BLVD MAIL STOP 52-5JJ PLANTATION FLORIDA 33322 USA
<b>FCC ID</b>	IHDT56MH1
<b>IC CERTIFICATION</b>	1090-T56MH1
<b>Model Number</b>	H78XAN9JR9AN
<b>Product Description</b>	iDEN i1Q/i1X
<b>Date Sample Received</b>	1/25/2011
<b>Dates Tested</b>	1/31/2011 - 2/7/2011
<b>Tested By</b>	Richard Block
<b>Approved By</b>	Mario de Aranzeta
<b>Report Number</b>	159CT11TestReport i1Q i1X MT TX.pdf
<b>Test Results</b>	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
 WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**





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**ATTESTATION**

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025:2005 requirements.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.



Testing Certificate #0955-01

**AUTHORIZED BY:** Mario de Aranzeta



**SIGNATURE:**

**FUNCTION:** Lab Supervisor/ Test Engineer

**DATE:** February 9, 2011



## REPORT SUMMARY

Disclaimer:	The test results relate only to the items tested.
Purpose of Test:	To demonstrate that the DUT is compliant with FCC Pt 15.247 requirements for a FHSS radio. To demonstrate that the DUT is compliant with IC RSS-210 requirements for a FHSS radio.
Applicable Standards:	FCC Pt 15.247, ANSI C63.4: 2003, ANSI TIA-603: 2004, FCC Pt 15.109, RSS-210, RSS-GEN
Related Reports:	Digital Portion Verified

## TEST ENVIRONMENT AND TEST SETUP

Test Facilities:	All measurements were made at one or more of the test sites of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.
Laboratory Test Conditions:	Temperature: 26°C Humidity: 55%
Test Exercise:	The DUT was set in continuous transmit mode of operation.
Deviation to the Standards:	There was no deviation from the standard.
Modification to the DUT:	No modification was made.
Supporting Accessories:	None

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### DUT SPECIFICATION

<b>Applicable Standard</b>	Part 15.247		
<b>DUT Description</b>	iDEN i1Q/i1X		
<b>FCC ID</b>	IHDT56MH1		
<b>IC CERTIFICATION</b>	1090-T56MH1		
<b>MODEL NUMBER</b>	H78XAN9JR9AN		
<b>Serial Number</b>	364VLYK5VR		
<b>Hardware</b>	P1B-1		
<b>Software</b>	DCD.00.18		
<b>Operating Frequency</b>	TX: 902.525 – 927.475 MHz		
<b>DUT Power Source</b>	<input type="checkbox"/> 110–120Vac/50– 60Hz		
	<input type="checkbox"/> DC Power		
	<input checked="" type="checkbox"/> Battery Operated		
<b>Test Item</b>	<input type="checkbox"/> Prototype	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Production
<b>Type of Equipment</b>	<input type="checkbox"/> Fixed	<input type="checkbox"/> Mobile	<input checked="" type="checkbox"/> Portable

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### EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 3/10/10	3/10/12
AC Voltmeter	HP	400FL	2213A14499	CAL 3/23/09	3/23/11
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 6/10/09	6/10/11
Frequency Counter	HP	5385A	3242A07460	CAL 5/26/09	5/26/11
Hygro-Thermometer	Extech	445703	0602	CAL 1/30/09	1/30/11
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/26/09	5/26/11
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/18/09	5/18/11
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/21/09	11/21/11
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/22/09	11/22/11
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/21/09	11/21/11
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/24/09	11/24/11
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/10	4/25/12

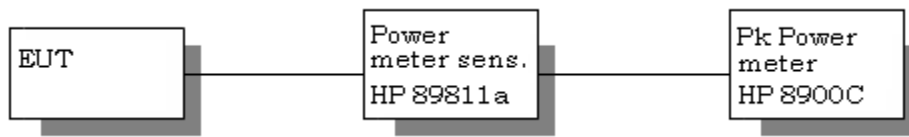
**TEST PROCEDURES**

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The resolution bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

**BANDWIDTH 20 dB:** The measurements were made with the spectrum analyzer's resolution bandwidth (RBW) = 1 MHz and the video bandwidth (VBW) = 3 MHz and the span set as shown on plot.

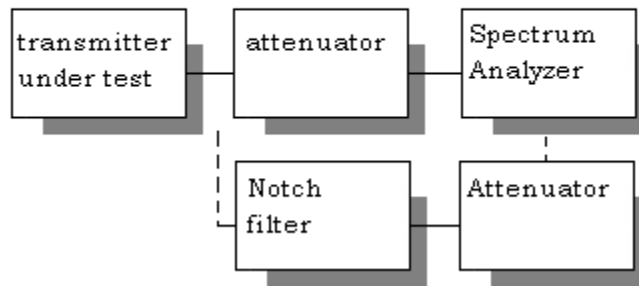
**RF Power Output:** The RF power output was measured at the antenna feed point using a peak power meter.

Output Power Test Setup Diagram



**ANTENNA CONDUCTED EMISSIONS:** The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 MHz and the spectrum was scanned from 30 MHz to the 10<sup>th</sup> Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer using a peak power meter. The antenna is non-directional and doesn't exceed 6 dBi gain. The power output was measured at three places in the band highest is reported below.

Spurious Emissions at Antenna Terminals





**RADIATION INTERFERENCE:** The test procedure used was ANSI C63.4-2003 using an Agilent spectrum receiver with preselector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

**RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND:** An in band field strength measurement of the fundamental emission using the RBW and detector function required by ANSI C63.4-2003 and the FCC rules.

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## RF OUTPUT POWER

**Rules Part No.:** 15.247(b), RSS-210

**Requirements:** The maximum peak output power shall not exceed 1 watt (30 dBm). If directional transmitting antennas with a gain of more than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Test Data:**

<b>Frequency MHz</b>	<b>Power mW</b>
902.525	800
915.525	800
927.475	800

**FIELD STRENGTH OF SPURIOUS EMISSIONS**

**Rules Part No.:** 15.247(c), 15.205 & 15.209(b), RSS-210

**Requirements:**

§15.247(c) & §15.205	
(Fundamental) Frequency	(Field Strength) Limits
902 – 928 MHz 2.4 – 2.4835 GHz	127.37 dBµV/m
§15.209	
30 - 88 MHz	40 dBµV/m @3M
88 -216 MHz	43.5 dBµV/m @3M
216 -960 MHz	46 dBµV/m @3M
ABOVE 960 MHz	54dBµV/m

Emissions that fall in the restricted bands (15.205) must be less than or equal to 500 µV/m (54 dBµV/m). Spurious not in a restricted band must be 20 dBc.

Harmonics were measured to the 10<sup>th</sup> harmonic.

**Test Data:**

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
902.5	902.53	67.3	H	1.95	23.33	92.58	34.80
902.5	902.53	78.7	V	1.95	22.67	103.32	24.06
902.5	1,805.00	18.2	H	2.74	29.95	50.89	3.11
902.5	1,805.00	19.6	V	2.74	29.95	52.29	1.71
902.5	2,707.50	8.8	V	3.40	32.54	44.74	9.26
902.5	2,707.50	9.2	H	3.40	32.54	45.14	8.86
902.5	3,610.10	6.1	H	4.15	32.98	43.23	10.77
902.5	3,610.10	6.2	V	4.15	32.98	43.33	10.67
902.5	4,512.60	8.1	V	4.76	34.10	46.96	7.04
902.5	4,512.60	8.4	H	4.76	34.10	47.26	6.74
902.5	5,415.10	3.7	H	5.12	34.60	43.42	10.58
902.5	5,415.10	5.2	V	5.12	34.60	44.92	9.08
902.5	6,317.60	4.5	V	5.40	35.65	45.55	8.45
902.5	6,317.60	5.5	H	5.40	35.65	46.55	7.45
902.5	7,220.20	5.3	H	5.73	36.04	47.07	6.93

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<b>Tuned Frequency MHz</b>	<b>Emission Frequency MHz</b>	<b>Meter Reading dBuV</b>	<b>Ant. Polarity</b>	<b>Coax Loss dB</b>	<b>Correction Factor dB/m</b>	<b>Field Strength dBuV/m</b>	<b>Margin dB</b>
902.5	7,220.20	5.4	V	5.73	36.04	47.17	6.83
902.5	8,122.70	5.5	H	6.25	36.00	47.75	6.25
902.5	8,122.70	7.6	V	6.25	36.00	49.85	4.15
902.5	9,025.20	4.7	V	6.61	36.32	47.63	6.37
902.5	9,025.20	4.8	H	6.61	36.32	47.73	6.27
915.5	915.53	77.3	H	1.97	23.34	102.61	24.77
915.5	915.53	88.0	V	1.97	22.60	112.57	14.81
915.5	1,831.00	18.9	V	2.76	30.12	51.78	2.22
915.5	1,831.00	19.1	H	2.76	30.12	51.98	2.02
915.5	2,746.50	6.7	V	3.42	32.55	42.67	11.33
915.5	2,746.50	8.7	H	3.42	32.55	44.67	9.33
915.5	3,662.10	6.6	H	4.20	33.06	43.86	10.14
915.5	3,662.10	7.2	V	4.20	33.06	44.46	9.54
915.5	4,577.60	5.2	V	4.79	34.10	44.09	9.91
915.5	4,577.60	8.6	H	4.79	34.10	47.49	6.51
915.5	5,493.10	3.0	V	5.15	34.69	42.84	11.16
915.5	5,493.10	4.9	H	5.15	34.69	44.74	9.26
915.5	6,408.60	4.5	V	5.42	35.73	45.65	8.35
915.5	6,408.60	4.8	H	5.42	35.73	45.95	8.05
915.5	7,324.20	4.7	H	5.79	36.06	46.55	7.45
915.5	7,324.20	5.7	V	5.79	36.06	47.55	6.45
915.5	8,239.70	4.6	V	6.30	36.00	46.90	7.10
915.5	8,239.70	6.0	H	6.30	36.00	48.30	5.70
915.5	9,155.20	6.9	H	6.65	36.39	49.94	4.06
915.5	9,155.20	7.2	V	6.65	36.39	50.24	3.76
927.5	927.48	77.0	H	1.99	23.45	102.44	24.94
927.5	927.48	87.5	V	1.99	22.67	112.16	15.22
927.5	1,854.90	14.8	V	2.78	30.27	47.85	6.15
927.5	1,854.90	16.2	H	2.78	30.27	49.25	4.75
927.5	2,782.40	9.0	H	3.45	32.56	45.01	8.99
927.5	2,782.40	10.5	V	3.45	32.56	46.51	7.49
927.5	3,709.90	8.8	H	4.24	33.14	46.18	7.82
927.5	3,709.90	10.1	V	4.24	33.14	47.48	6.52
927.5	4,637.30	7.2	H	4.82	34.10	46.12	7.88
927.5	4,637.30	9.9	V	4.82	34.10	48.82	5.18
927.5	5,564.80	6.9	H	5.17	34.79	46.86	7.14
927.5	5,564.80	7.0	V	5.17	34.79	46.96	7.04
927.5	6,492.30	4.1	H	5.45	35.79	45.34	8.66
927.5	6,492.30	4.3	V	5.45	35.79	45.54	8.46

<b>Tuned Frequency MHz</b>	<b>Emission Frequency MHz</b>	<b>Meter Reading dBuV</b>	<b>Ant. Polarity</b>	<b>Coax Loss dB</b>	<b>Correction Factor dB/m</b>	<b>Field Strength dBuV/m</b>	<b>Margin dB</b>
927.5	7,419.80	6.0	H	5.85	36.08	47.93	6.07
927.5	7,419.80	8.5	V	5.85	36.08	50.43	3.57
927.5	8,347.20	5.0	V	6.34	36.00	47.34	6.66
927.5	8,347.20	5.3	H	6.34	36.00	47.64	6.36
927.5	9,274.70	5.3	V	6.68	36.46	48.44	5.56
927.5	9,274.70	5.9	H	6.68	36.46	49.04	4.96

\* = 20 dB or more below the limit

All readings are peak unless marked otherwise.

Harmonics were checked through the 10<sup>th</sup> harmonic.

## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** 15.207

**Requirements:**

Frequency (MHz)	Quasi Peak Limits (dB $\mu$ V)	Average Limits (dB $\mu$ V)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

**Test Data:** The attached graphs represent the emissions read for power line conducted for this device. Both lines were observed.

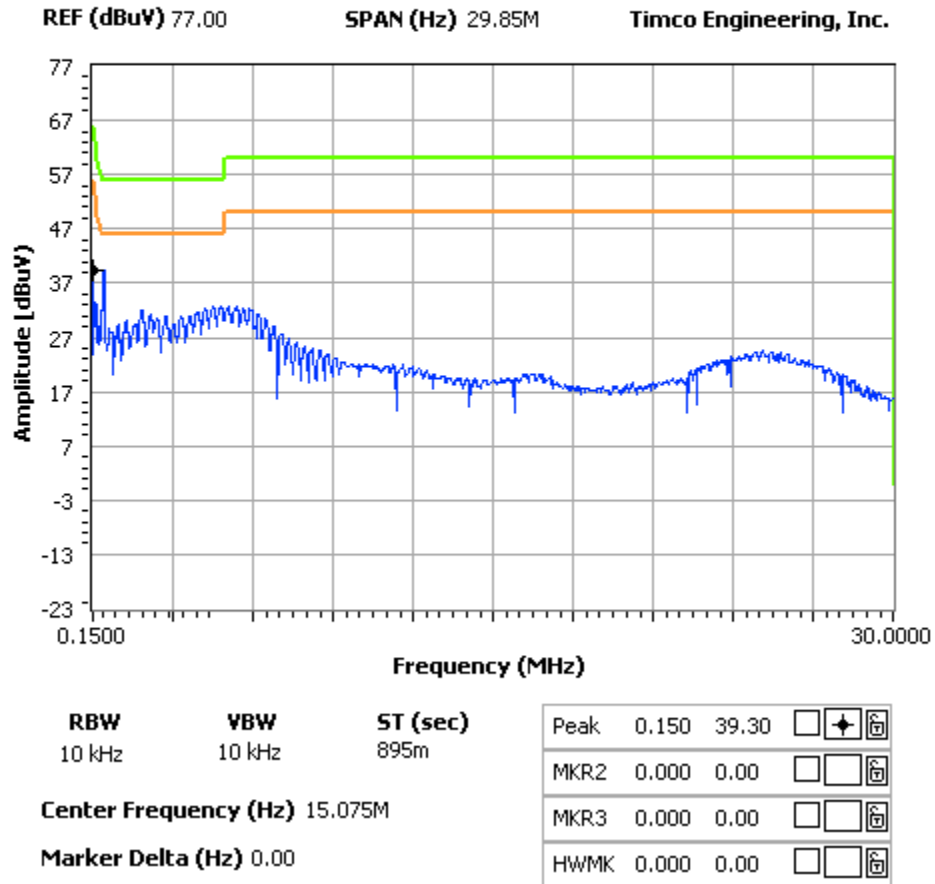


ADAPTOR CHARGING, TX ON  
MOTOTALK  
POWERLINE CONDUCTED EMISSIONS – LINE 1

**NOTES:**

POWERLINE CONDUCTED -- LINE 1  
MOTOTALK TX 915.525 MHz

**FCC 15.107 Mask Class B**



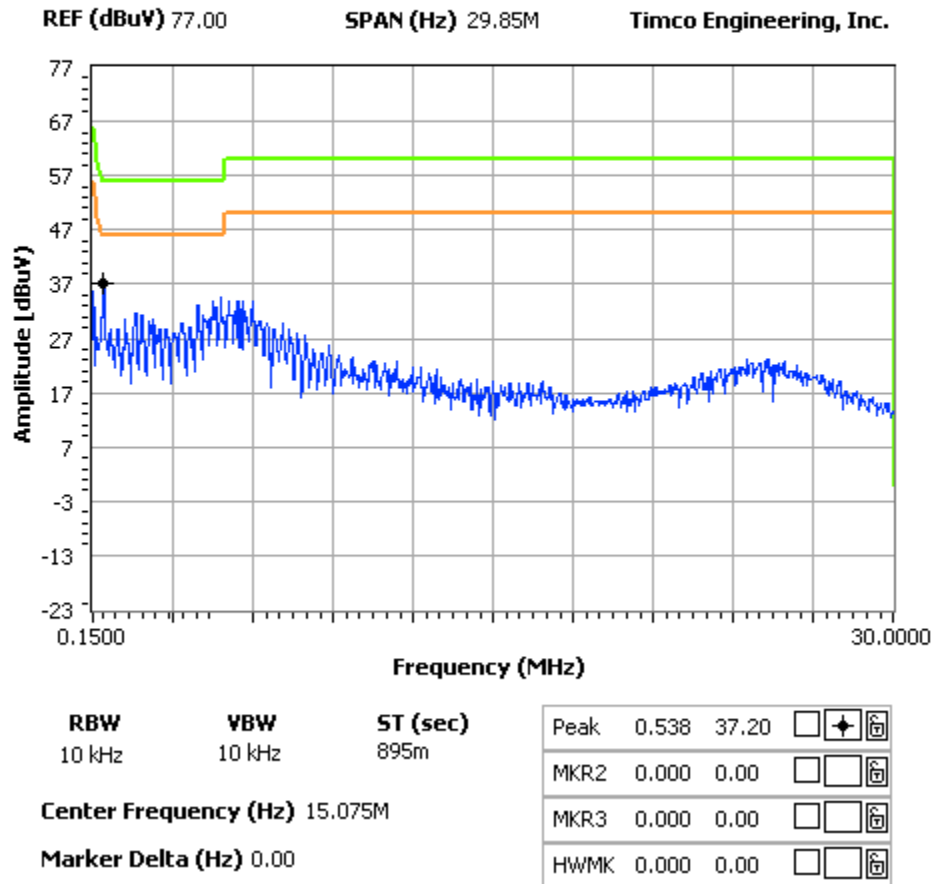
Applicant: MOTOROLA MOBILITY, INC.  
 FCC ID: IHDT56MH1 IC: 1090-T56MH1  
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POWERLINE CONDUCTED EMISSIONS – LINE 2

**NOTES:**

POWERLINE CONDUCTED -- LINE 2  
 MOTOTALK TX 915.525 MHz

**FCC 15.107 Mask Class B**



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**OCCUPIED BANDWIDTH**

**Rules Part No.:** 15.247(a)(2)

**Test Data:**

Three places in the band were measured and the worst case reported.



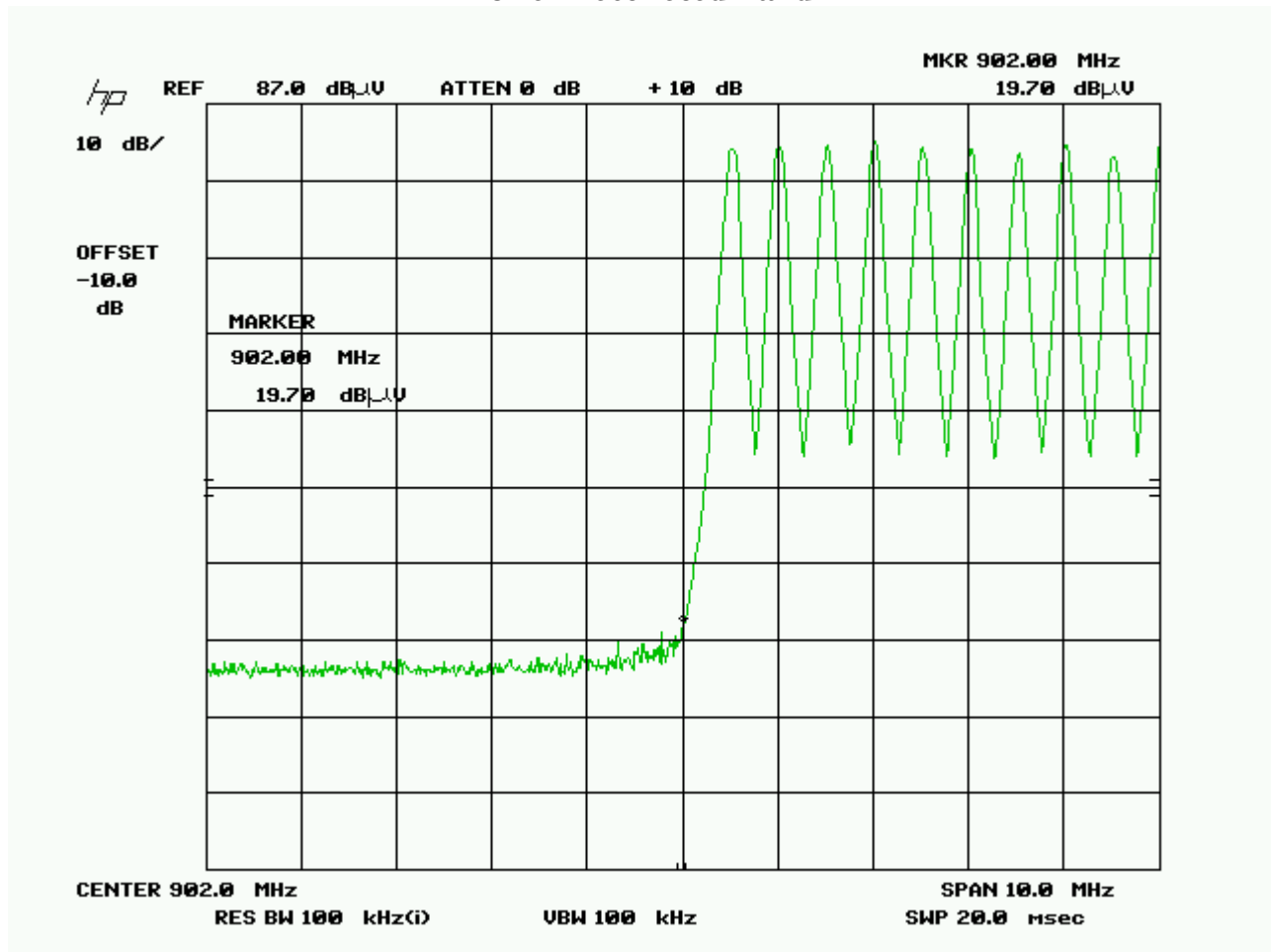
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### RADIATED SPURIOUS EMISSIONS INTO RESTRICTED BAND

**Requirements:** Emissions that fall in the restricted bands (15.205) otherwise see limits in table of radiated spurious emissions.

**Test Procedure:** An in band field strength measurement of the fundamental Emission using the RBW and detector function required by C63.4-2000 and FCC Rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

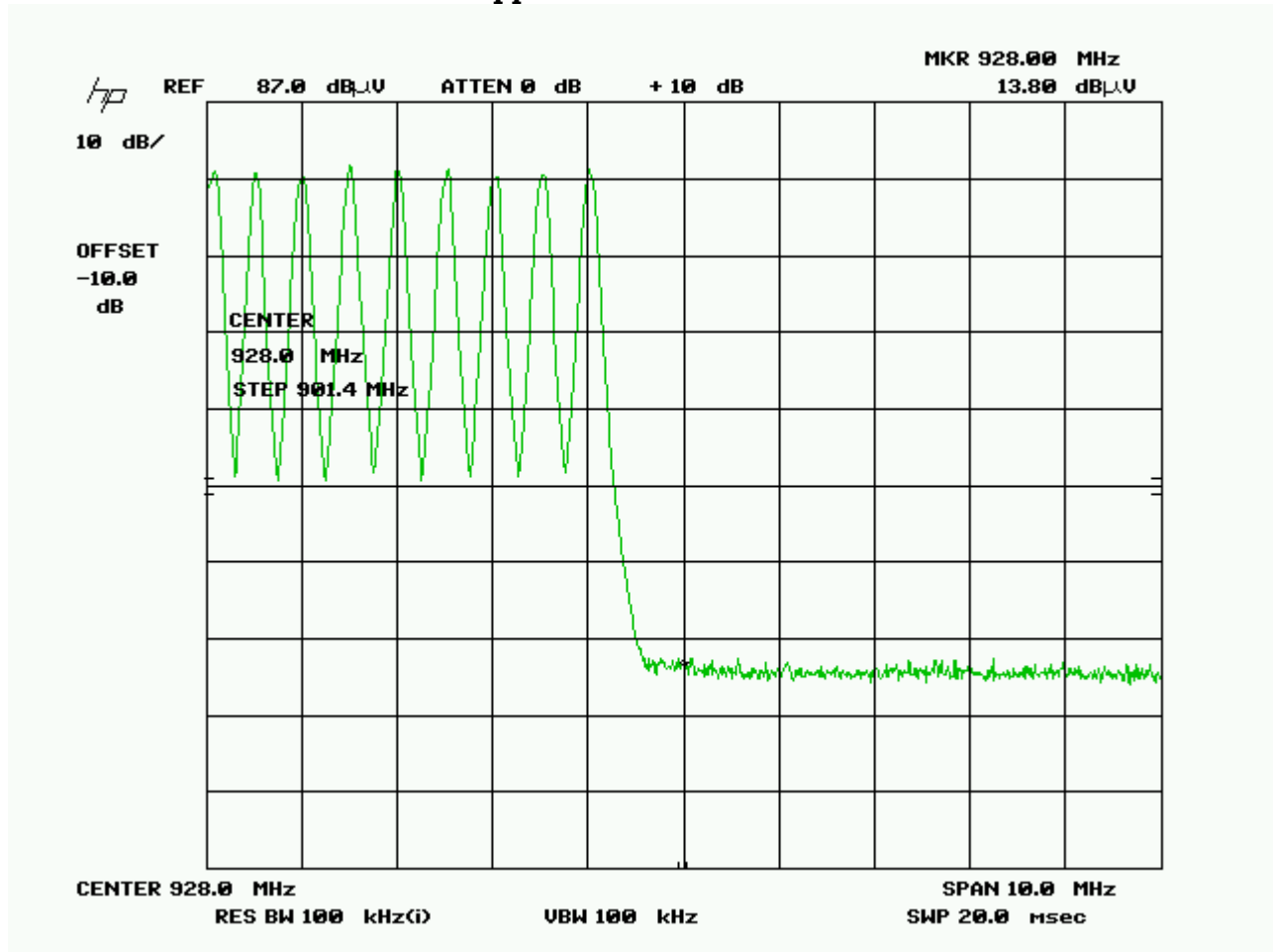
#### Lower Restricted Band



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
902.5	902.00	19.7	V	1.95	22.68	44.33	1.67

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### Upper Restricted Band



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
927.5	928.00	13.8	V	1.99	22.68	38.47	7.53