

# Electromagnetic Compatibility Test Report

*Prepared in accordance with*

**FCC Part 15: October 2007, RSS-210: June 2007**

On

## **Electronic Article Surveillance Detection System**

### **Evolve Antenna Family with Integrated Metalpoint**

Prepared for:

Checkpoint Systems Inc.



101 Wolf Drive

Thorofare, NJ 08086

Prepared by:

**TUV Rheinland of North America, Inc.**

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<b>Auftraggeber:</b> <i>Client:</i>		Checkpoint Systems Inc. 101 Wolf Drive Thorofare, NJ 08086	Gregory Sleet (856) 384-2339 / (856) 384-2366 GREG.SLEET@checkpt.com
<b>Bezeichnung:</b> <i>Identification:</i>	Electronic Article Surveillance Detection System	<b>Serien-Nr.:</b> <i>Serial No.</i>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040
<b>Gegenstand der Prüfung:</b> <i>Test item:</i>	Evolve Antenna Family with Integrated Metalpoint	<b>Prüfdatum:</b> <i>Date tested:</i>	4/30/09
<b>Prüfort:</b> <i>Testing location:</i>	TUV Rheinland of North America 12 Commerce Road Newtown, CT 06470-1607 U.S.A.		
<b>Prüfgrundlage:</b> <i>Test specification:</i>	Emissions: FCC Part 15 Subpart C: October 2007 / RSS-210: June 2007 FCC Part 15 Subpart 15.223/RSS-210 Annex A2.3 FCC Part 15 Subpart 15.205 and 15.209		
<b>Prüfergebnis:</b> <i>Test Result</i>	<b>Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The above product was found to be Compliant to the above test standard(s)</b>		
<b>geprüft / tested by:</b> David Hollis		<b>kontrolliert / reviewed by:</b> Bruce Fagley	
5 June 2009 <b>Datum</b> <i>Date</i>		5 June 2009 <b>Datum</b> <i>Date</i>	
<b>Name</b> <i>Name</i>		<b>Name</b> <i>Name</i>	
<b>Unterschrift</b> <i>Signature</i>		<b>Unterschrift</b> <i>Signature</i>	
<b>Sonstiges:</b> <i>Other Aspects:</i>	<b>None</b>		
Abkürzungen: OK, Pass, Compliant, Complies = entspricht Prüfgrundlage Fail, Not Compliant, Does not Comply = entspricht nicht Prüfgrundlage N/A = nicht anwendbar	Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable		
		<b>Industry Canada</b>	
<b>US5112</b>	<b>200111-0</b>	<b>3466D-1</b>	

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## 1 General Information

### 1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15: October 2007, RSS-210: June 2007 based on the results of testing performed on 4/30/09 on the Electronic Article Surveillance Detection System, Model No. Evolve Antenna Family with Integrated Metalpoint, manufactured by Checkpoint Systems Inc.. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

### 1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

### 1.3 Summary of Test Results

<b>Applicant</b>	Checkpoint Systems Inc. 101 Wolf Drive Thorofare, NJ 08086	<b>Tel</b>	(856) 384-2339	<b>Contact</b>	Gregory Sleet
		<b>Fax</b>	(856) 384-2366	<b>e-mail</b>	GREG.SLEET@checkpt.com
<b>Description</b>	Electronic Article Surveillance Detection System	<b>Model Number</b>	Evolve Antenna Family with Integrated Metalpoint		
<b>Serial Number</b>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040	<b>Test Voltage/Freq.</b>	120V/60Hz		
<b>Test Date Completed:</b>	4/30/09	<b>Test Engineer</b>	David Hollis		
<b>Standards</b>	<b>Description</b>	<b>Severity Level or Limit</b>		<b>Criteria</b>	<b>Test Result</b>
FCC Part 15 Subpart C: October 2007 / RSS-210: June 2007	Intentional Radiators / Low Power Licenced Exempt Radiocommunication Devices	See sections below		See Below	Complies
FCC Part 15 Subpart 15.223/RSS-210 Annex A2.3	Operation in the band 1.705- 10 MHz	100µV/m @30m		Limit	Complies
FCC Part 15 Subpart 15.207	Conducted limits	Per table in section 207, 150kHz - 30MHz		Limit	Complies
FCC Part 15 Subpart 15.205 and 15.209	Radiated emission limits; general requirements	Class B and per table in section 205 From Fundamental - 1000MHz		Limit	Complies

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## 2 Laboratory Information

### 2.1 Accreditations & Endorsements

#### 2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 12 Commerce Road, Newtown CT is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No US5112). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

#### 2.1.2 NIST / NVLAP

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200111-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

#### 2.1.3 Industry Canada

Registration No.: 3466D-1. The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2003.

### 2.2 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions measurements is  $\pm 3.2$  dB  
The estimated combined standard uncertainty for conducted emissions measurements is  $\pm 1.2$ dB

### 2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

## 2.4 Measurement Equipment Used

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
Power Supply	California Instruments	5001iX	HK53766	12/15/08	12/15/09	All
Antenna, Bilog	Sunol Sciences	JB3	A022707	12/12/08	12/12/10	RE
Receiver	Hewlett Packard	HP 8546A, 85460A	3330A00125, 3325A00134	08/28/08	08/28/09	RE, CE
Antenna, Bilog	Schaffner	CBL6112D	22238	05/01/08	05/01/10	RE
LISN	Schwarzbeck	NSLK 8126A (4 x 25A)	8126278	08/20/08	08/20/10	CE
Magnetic Field Loop Antenna	Schwarzbeck	FMZB 1516	151600/94	11/12/08	11/12/10	RE<30MHz

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

### 3 Product Information

#### 3.1 Equipment Under Test (EUT) Description

The Evolve Antennas are an Electronic Article Surveillance System (EAS). The system detects target tags attached to merchandise. The targets resonate in the region of 8.2 MHz or 9.0 MHz. When an article of merchandise is purchased, the target is deactivated which causes it to no longer resonate. The Evolve Antennas monitor an area of 3-feet on either side of the antenna in the 7.4 to 10.0 MHz range and trigger an alarm when a non-deactivated target is detected.

The MetalPoint unit is an early warning system that identifies professional thieves as they enter the store so that store personnel can monitor their activities and prevent merchandise from being swept off the store's shelves.

MetalPoint detector alarms are activated when a person carrying foil lined "booster" bags or wearing foil-lined clothing passes through the surveillance area. Silent alarm signals are transmitted from the MetalPoint detector to an external alarm unit to discreetly alert staff members of a potential professional thief. Thieves cannot test the system for any limitations since the alarm will only transmit a low audible signal or a flashing light to store personnel (ref-Metalpoint Sell Sheet)

#### 3.2 Engineering Judgment on Selected Models

The Evolve antenna family consists of P10, P20, G10 and G20 models. All four models are floor standing. The P10 and P20 antenna loops are mounted in a hollow plastic frame. The G10 and G20 antenna loops are mounted in a solid Plexiglas frame that is machined to allow the antenna wire to pass through the frame at various points. Both P and G series have three separate loop antenna configurations per gate. The Metalpoint unit is integrated with the Evolve antenna's O-loop or ground loop. All four antenna models use the same digital electronics and transmitter sections. The primary differences between the models are frame material and frame size. Based on prescan testing, the worst case model from each series (P-series/G-series) was selected for testing.

#### 3.3 General Product Information

The Evolve family of antennas is used for electronic article surveillance. The MetalPoint unit plays a complementary role in deterring retail theft activity by professional thieves carrying foil lined bags. Metalpoint operates by generating RF at a predetermined frequency range and once metal is detected, the unit activates an onboard relay in the Metalpoint chassis. The Evolve antennas continuously scan at a predetermined frequency and detect anti-pilferage tags which pass through the field generated by the antennas. When a tag is detected the system generates an audible alarm and activates a flashing light on the antenna.



### 3.4 EUT Modes of Operation

The equipment under test was operated during the measurement under the following conditions:

- Continuous sweep mode at 8.2 MHz Band
- Continuous sweep mode at 9.0 MHz Dual Band

### 3.5 EUT Test Configurations

Based on prescan testing, the worst case model from each series (P-series/G-series) was selected for testing. The models listed below were selected for final testing and were configured as follows.

**P10:** 8.2 MHz band, transmit power = 31  
9.0 MHz band, transmit power = 31

**G20:** 8.2 MHz band, transmit power = 27  
9.0 MHz band, transmit power = 25

### 3.6 Electrical Support Equipment

None

### 3.7 EUT Equipment/Cabling Information

EUT Port	Connected To	Location	Cable Type	
			Length	Shielded
J20/J22	Master-Submaster pcbs for Synch.	Controller	0.3m	Yes
J18 or J31	Pedestal Main Power	Controller	0.3m	Yes
J14	Inter pedestal Network Com.	Controller	0.3 m	Yes
DC Power	DC Power	Controller	2.4m	No

### 3.8 Modifications

No modifications were required to achieve compliance with the standards listed in this test report.

## 4 Measurements

### 4.1 Operation in the band 1.705-10MHz

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

#### 4.1.1 Over View of Test

<b>Results</b>	<b>Complies</b> (as tested per this report)			<b>Date</b>	4/1/09		
<b>Standard</b>	FCC Part 15 Subpart 15.223/RSS-210 Annex A2.3						
<b>Product Model</b>	Evolve Antenna Family with Integrated Metalpoint		<b>Serial#</b>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040			
<b>Configuration</b>	See test plan for details						
<b>Test Set-up</b>	Tested on a 10m O.A.T.S. placed on turn-table, see test plans for details						
<b>EUT Powered By</b>	120V/60Hz	<b>Temp</b>	22°C	<b>Humidity</b>	45%	<b>Pressure</b>	1001mbar
<b>Frequency Range</b>	100µV @ 30m (see Note)						
<b>Perf. Criteria</b>	Below Limit		<b>Perf. Verification</b>	Readings Under Limit			
<b>Mod. to EUT</b>	None		<b>Test Performed By</b>	David Hollis			

Note: The limits were adjusted in dBµV for a 10m testing resulting in a peak limit of 80dBµV/m. Measurements have been made in all three orthogonal axes of loop antenna and the EUT was rotated to locate the maximum emissions.

#### 4.1.2 Test Procedure

The emissions tests on the fundamental signal were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 1.705 – 10MHz was investigated for this test using a magnetic field loop antenna.

#### 4.1.3 Deviations

Measurement of the fundamental emissions – 1.705 to 10.0 MHz – was performed by setting a spectrum analyzer to “max-hold”, peak detector, 300 kHz bandwidth and a span from 7.4 MHz to 10 MHz. A resolution bandwidth of 300 kHz was used in performing the “true peak” measurements because increasing the bandwidth above 300 kHz did not increase the detected peak of the fundamental. Final Test

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All final radiated emissions measurements were below (in compliance with ) the limits.

#### 4.1.4 Final Measurement Data

##### P-10 8.2 Band TX=31:

<b>Radiated Emissions Measurements</b>										
<b>Standard:</b>	47 CFR FCC Part 15.223				<b>PRESCAN or FINAL:</b>	Final		<b>Date:</b>	4/1/2009	
<b>Device Tested:</b>	Checkpoint - Evolve P10 w/metalpoint				<b>Distance:</b>	10m		<b>File Name:</b>		
<b>Mode:</b>	8.2 Band TX=31									
<b>Modifications:</b>										
Meas #	Freq (MHz)	Measured Peak (dBµV/m)	Peak Limit	Peak Margin	Final Average (dBµV/m)	Average Limit	Average Margin	Result	Orientation (X,Y,Z)	Comment
RBW = 300kHz VBW=300kHz (FCC Settings)										
9.0 Tx Band										
1	7.915	76.78	80.00	-3.22	41.88	60.00	-18.12	Complied	X Orientation	
2	8.4755	76	80.00	-4.00	38.37	60.00	-21.63	Complied	X Orientation	
3	7.915	79.05	80.00	-0.95	41.80	60.00	-18.20	Complied	Y Orientation	
4	8.4755	77.44	80.00	-2.56	41.32	60.00	-18.68	Complied	Y Orientation	
5	7.915	66.38	80.00	-13.62	31.67	60.00	-28.33	Complied	Z Orientation	
6	8.4755	62.77	80.00	-17.23	30.98	60.00	-29.02	Complied	Z Orientation	
Tested by: David Hollis										
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009										
Peak Limit = Average Limit + 20dB = 60dBµV/m + 20dB = 80dBµV/m										
Average limit = 100µV/m @ 30m										
Average Limit = 20*log(100µV) = 40dBµV/m @ 30m										
For 10m measurement the average limit was adjusted = 40log(10/30) = 20dB										
Average limit = 60dBµV/m @ 10m										

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**P-10 9.0 Band TX=31:**

<b>Radiated Emissions Measurements</b>										
<b>Standard:</b>	47 CFR FCC Part 15.223				<b>PRESCAN or FINAL:</b>	Final		<b>Date:</b>	3/30/2009	
<b>Device Tested:</b>	Checkpoint - Evolve P10 w/metalpoint				<b>Distance:</b>	10m		<b>File Name:</b>		
<b>Mode:</b>	9.0 Tx Band (31Tx)									
<b>Modifications:</b>										
Meas #	Freq (MHz)	Measured Peak (dBµV/m)	Peak Limit	Peak Margin	Final Average (dBµV/m)	Average Limit	Average Margin	Result	Orientation (X,Y,Z)	Comment
RBW = 300kHz VBW=300kHz (FCC Settings)										
9.0 Tx Band										
1	8.065	71.4	80.00	-8.60	42.86	60.00	-17.14	Complied	X Orientation	
2	8.316046	71.41	80.00	-8.59	33.07	60.00	-26.93	Complied	X Orientation	
3	9.056476	74.22	80.00	-5.78	37.08	60.00	-22.92	Complied	X Orientation	
4	9.339	73.72	80.00	-6.28	43.65	60.00	-16.35	Complied	X Orientation	
5	8.065	66.18	80.00	-13.82	37.12	60.00	-22.88	Complied	Y Orientation	
6	8.316046	67.09	80.00	-12.91	32.20	60.00	-27.80	Complied	Y Orientation	
7	9.056476	70.45	80.00	-9.55	30.64	60.00	-29.36	Complied	Y Orientation	
8	9.339	71.59	80.00	-8.41	41.86	60.00	-18.14	Complied	Y Orientation	
9	8.065	61.9	80.00	-18.10	30.26	60.00	-29.74	Complied	Z Orientation	
10	8.316046	59.77	80.00	-20.23	29.86	60.00	-30.14	Complied	Z Orientation	
11	9.056476	60.82	80.00	-19.18	30.91	60.00	-29.09	Complied	Z Orientation	
12	9.339	63.92	80.00	-16.08	38.46	60.00	-21.54	Complied	Z Orientation	
Tested by: David Hollis										
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009										
Peak Limit = Average Limit + 20dB = 60dBµV/m + 20dB = 80dBµV/m										
Average limit = 100µV/m @ 30m										
Average Limit = 20*log(100µV) = 40dBµV/m @ 30m										
For 10m measurement the average limit was adjusted = 40log(10/30) = 20dB										
Average limit = 60dBµV/m@10m										

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**G-20 8.2 Band TX=27:**

<b>Radiated Emissions Measurements</b>											
<b>Standard:</b>		47 CFR FCC Part 15.223			<b>PRESCAN or FINAL:</b>		Final		<b>Date:</b>		4/2/2009
<b>Device Tested:</b>		Checkpoint - G20 New Choke			<b>Distance:</b>		10m		<b>File Name:</b>		
<b>Mode:</b>		8.2 Tx Band (27Tx)									
<b>Modifications:</b>											
Meas #	Freq (MHz)	Measured Peak (dBµV/m)	Peak Limit	Peak Margin	Final Average (dBµV/m)	Average Limit	Average Margin	Result	Orientation (X,Y,Z)	Comment	
RBW = 300kHz VBW=300kHz (FCC Settings)											
8.2 Tx Band											
1	8.05	79.59	80.00	-0.41	43.27	60.00	-16.73	Complied	X Orientation		
2	8.44	78.82	80.00	-1.18	43.75	60.00	-16.25	Complied	X Orientation		
3	8.05	75.23	80.00	-4.77	41.05	60.00	-18.95	Complied	Y Orientation		
4	8.44	77.65	80.00	-2.35	42.45	60.00	-17.55	Complied	Y Orientation		
5	8.05	64.48	80.00	-15.52	35.18	60.00	-24.82	Complied	Z Orientation		
6	8.44	64.23	80.00	-15.77	35.58	60.00	-24.42	Complied	Z Orientation		
<b>Tested by:</b>		David Hollis									
		TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009									
		Peak Limit = Average Limit + 20dB = 60dBµV/m + 20dB = 80dBµV/m									
		Average limit = 100µV/m @ 30m									
		Average Limit = 20*log(100µV) = 40dBµV/m @ 30m									
		For 10m measurement the average limit was adjusted = 40log(10/30) = 20dB									
		Average limit = 60dBµV/m@10m									

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**G-20 9.0 Band TX=25:**

<b>Radiated Emissions Measurements</b>											
<b>Standard:</b>		47 CFR FCC Part 15.223				<b>PRESCAN or FINAL:</b>		Final		<b>Date:</b> 4/2/2009	
<b>Device Tested:</b>		Checkpoint - G20				<b>Distance:</b>		10m		<b>File Name:</b>	
<b>Mode:</b>		9.0 Band TX=25									
<b>Modifications:</b>											
Meas #	Freq (MHz)	Measured Peak (dBµV/m)	Peak Limit	Peak Margin	Final Average (dBµV/m)	Average Limit	Average Margin	Result	Orientation (X,Y,Z)	Comment	
RBW = 300kHz VBW=300kHz (FCC Settings)											
9.0 Tx Band											
1	8.298	75.3	80.00	-4.70	39.88	60.00	-20.12	Complied	X Orientation		
2	9.063	79.29	80.00	-0.71	52.78	60.00	-7.22	Complied	X Orientation		
4	8.298	74	80.00	-6.00	38.45	60.00	-21.55	Complied	Y Orientation		
5	9.063	79.08	80.00	-0.92	44.07	60.00	-15.93	Complied	Y Orientation		
7	8.298	60.16	80.00	-19.84	34.67	60.00	-25.33	Complied	Z Orientation		
8	9.063	68.6	80.00	-11.40	38.62	60.00	-21.38	Complied	Z Orientation		
<b>Tested by:</b>		David Hollis									
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009											
Peak Limit = Average Limit + 20dB = 60dBµV/m + 20dB = 80dBµV/m											
Average limit = 100µV/m @ 30m											
Average Limit = 20*log(100µV) = 40dBµV/m @ 30m											
For 10m measurement the average limit was adjusted = 40log(10/30) = 20dB											
Average limit = 60dBµV/m@10m											

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#### 4.1.5 Photos



Figure 1 - Radiated Emissions Test Setup (Semi-Anechoic Chamber) – P-10

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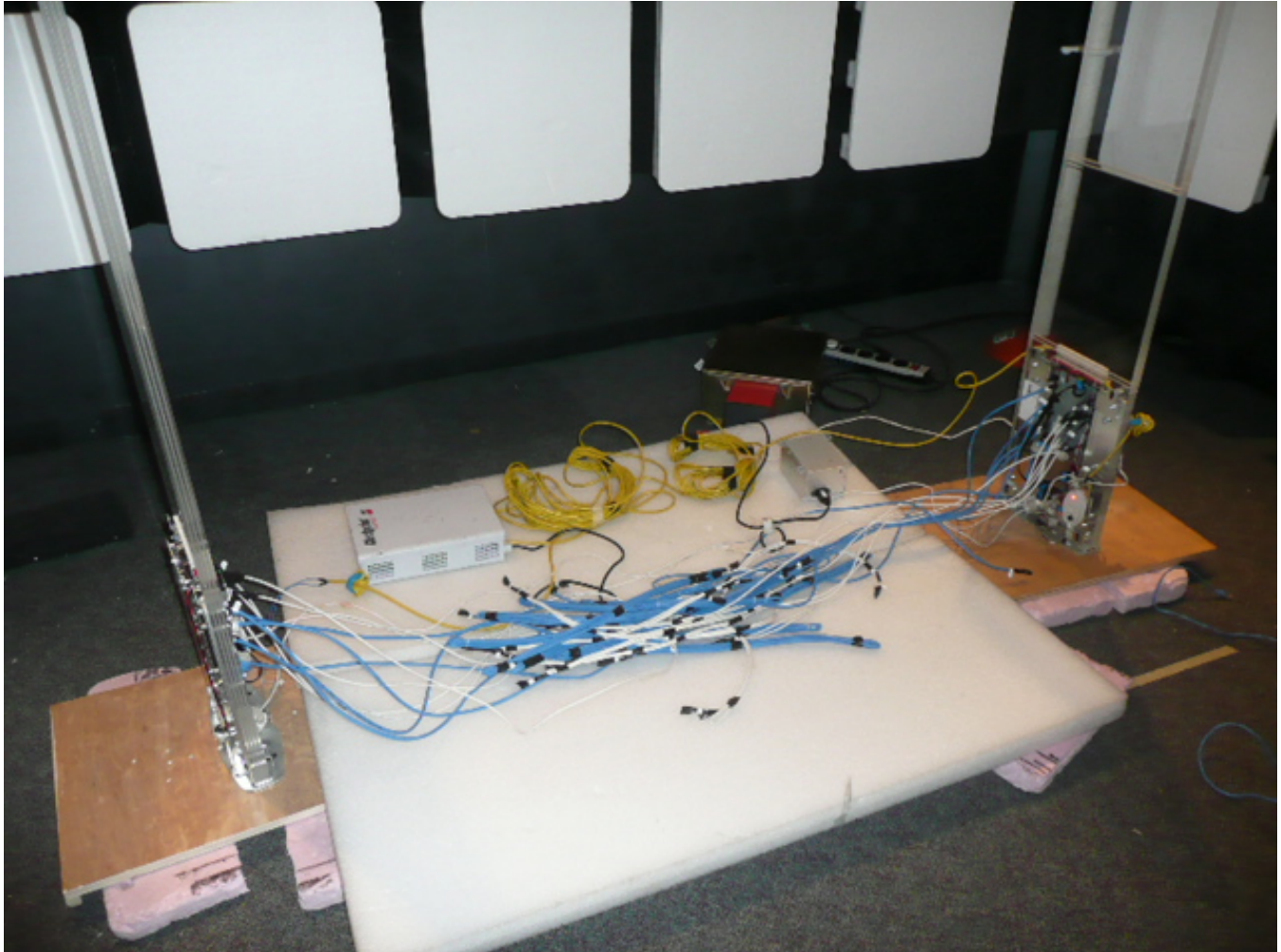


Figure 2 - Radiated Emissions Test Setup (Semi-Anechoic Chamber) – G-20

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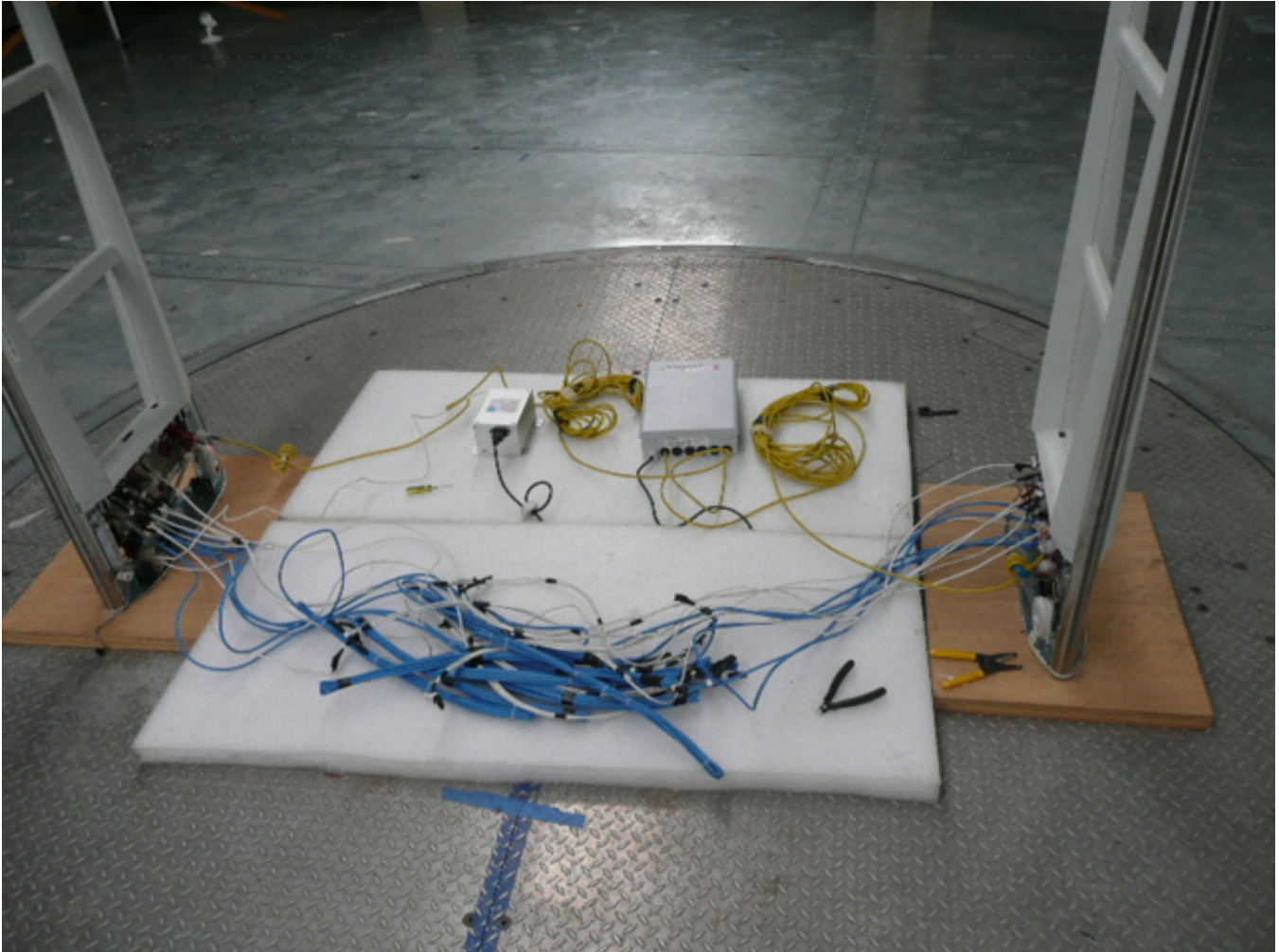


Figure 3 – Radiated Emissions Test Setup – P-10

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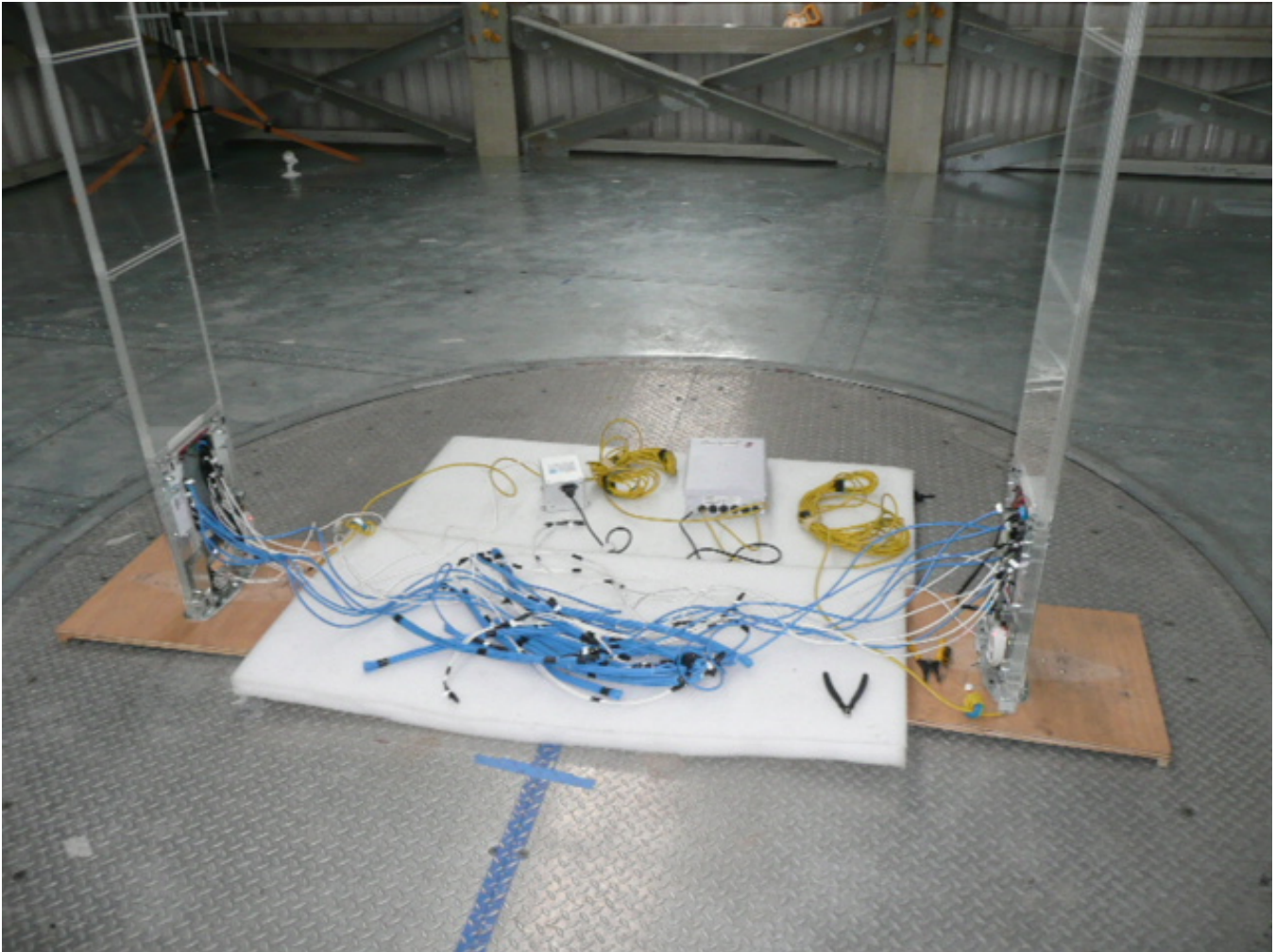


Figure 4 – Radiated Emissions Test Setup – G-20

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## 4.2 Conducted Limits

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other near by electronic equipment.

### 4.2.1 Over View of Test

<b>Results</b>	<b>Complies</b> (as tested per this report)				<b>Date</b>	05/20/2008	
<b>Standard</b>	FCC Part 15 Subpart 15.223/RSS-210 Annex A2.3						
<b>Product Model</b>	Evolve Antenna Family with Integrated Metalpoint			<b>Serial#</b>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040		
<b>Configuration</b>	See test plan for details						
<b>Test Set-up</b>	Tested in shielded room		EUT placed on table		see test plans for details		
<b>EUT Powered By</b>	120V/60Hz	<b>Temp</b>	22° C	<b>Humidity</b>	45%	<b>Pressure</b>	1004mbar
<b>Frequency Range</b>	150kHz - 30MHz						
<b>Perf. Criteria</b>	Per table in section 207 (Below Limit )		<b>Perf. Verification</b>	Readings Under Limit for L1 and L2			
<b>Mod. to EUT</b>	None			<b>Test Performed By</b>	David Hollis		

### 4.2.2 Test Procedure

Conducted and FCC emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 150kHz - 30MHz was investigated for conducted emissions.

Conducted Emissions measurements were performed in the shielded room using procedures specified in the test plan and standard.

### 4.2.3 Deviations

There were no deviations from the test methodology listed in the test plan for the conducted emission test.


### 4.2.4 Final Test

All final conducted emissions measurements were below (in compliance with) the limits.

### 4.2.5 Final Measurement Data

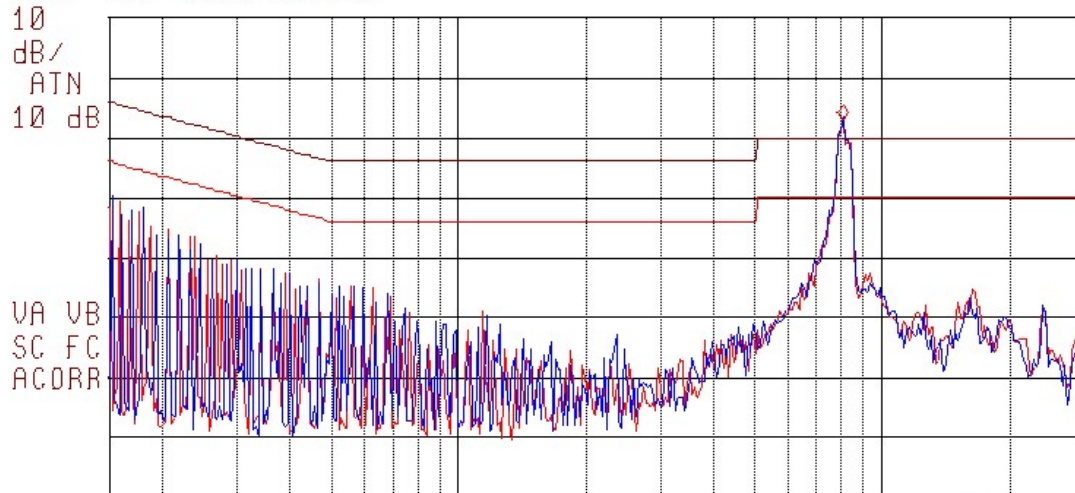
NOTES:

**Conducted Emissions @ 120V/60Hz**  
**P-10 8.2Tx Band**  
**Line / Neutral**

 14:39:50 APR 16, 2009  
CHECKPOINT P10 B.2 TX=31 120/60

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 6.06 MHz  
62.66 dB $\mu$ V/m

LOG REF 60.0 dB $\mu$ V/m



START 150 kHz STOP 30.00 MHz  
L #IF BW 9.0 kHz AVG BW 30 kHz SWP 2.49 sec


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<b>Conducted Emissions Measurements</b>												
<b>Standard:</b> FCC Part 15.207										<b>Date:</b> 4/16/09		
<b>Device Tested:</b> Checkpoint P10 8.2 Band TX=31 new choke 120/60										<b>File:</b> .xls		
Signal Num	Freq MHz	Peak Amp dBuV	QP Amp dBuV	Avg Amp dBuV	QP Limit dBuV	Avg Limit dBuV	Conductor	QP Δ dB	QP Result	Avg Δ dB	Average Result	Mode
1	0.1842	50.84	43.41	20.05	64.29	54.29	Line	-20.88	Complied	-34.24	Complied	
2	1.1433	33.66	25.85	4.57	56.00	46.00	Line	-30.15	Complied	-41.43	Complied	
3	2.3580	25.60	21.69	15.32	56.00	46.00	Line	-34.31	Complied	-30.68	Complied	
4	8.0913	63.85	59.62	47.66	60.00	50.00	Line	-0.38	Complied	-2.34	Complied	
5	16.3632	34.83	31.98	22.80	60.00	50.00	Line	-28.02	Complied	-27.20	Complied	
6	23.8502	30.97	27.19	12.19	60.00	50.00	Line	-32.81	Complied	-37.81	Complied	
7	0.1842	51.19	43.54	20.62	64.29	54.29	Neutral	-20.75	Complied	-33.67	Complied	
8	1.1433	34.22	26.17	4.40	56.00	46.00	Neutral	-29.83	Complied	-41.60	Complied	
9	2.3580	27.39	23.31	15.67	56.00	46.00	Neutral	-32.69	Complied	-30.33	Complied	
10	8.0913	64.11	59.86	48.69	60.00	50.00	Neutral	-0.14	Complied	-1.31	Complied	Maximum Emissions
11	16.3632	34.30	31.23	21.25	60.00	50.00	Neutral	-28.77	Complied	-28.75	Complied	
12	23.8502	30.87	27.47	12.29	60.00	50.00	Neutral	-32.53	Complied	-37.71	Complied	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												
CE22_B.xls Revised 21OCT2005												

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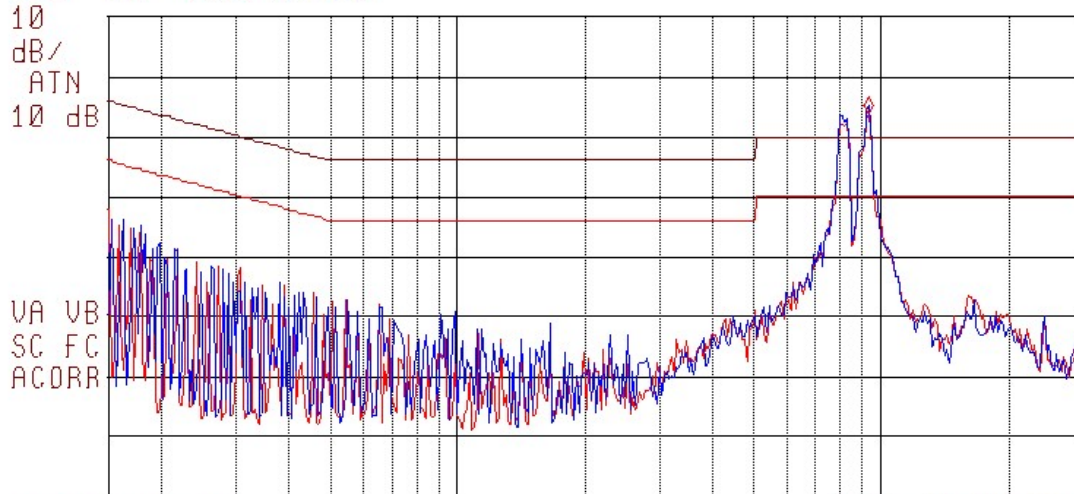
NOTES:

**Conducted Emissions @ 120V/60Hz**  
**P-10 9.0 Tx Band**  
**Line / Neutral**

 13:57:08 APR 16, 2009  
CHECKPOINT P10 9.0 TX=31 120/60

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 9.33 MHz  
63.93 dB $\mu$ V/m

LOG REF 80.0 dB $\mu$ V/m



START 150 kHz STOP 30.00 MHz  
L #IF BW 9.0 kHz AVG BW 30 kHz SWP 2.49 sec

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Conducted Emissions Measurements												
Standard: FCC Part 15.207										Date: 4/16/09		
Device Tested: Checkpoint P10 9.0 Band TX=31 new choke 120/60										File: .xls		
Signal Num	Freq MHz	Peak Amp dBuV	QP Amp dBuV	Avg Amp dBuV	QP Limit dBuV	Avg Limit dBuV	Conductor	QP Δ dB	QP Result	Avg Δ dB	Average Result	Mode
1	0.1699	46.56	37.87	13.06	64.96	54.96	Line	-27.09	Complied	-41.90	Complied	
2	0.9922	29.37	23.40	18.95	56.00	46.00	Line	-32.60	Complied	-27.05	Complied	
3	8.0399	62.60	59.65	45.79	60.00	50.00	Line	-0.35	Complied	-4.21	Complied	
4	9.3465	63.90	59.85	45.52	60.00	50.00	Line	-0.15	Complied	-4.48	Complied	Maximum Emissions
5	16.3738	35.09	31.69	23.32	60.00	50.00	Line	-28.31	Complied	-26.68	Complied	
6	24.1863	30.81	26.35	13.10	60.00	50.00	Line	-33.65	Complied	-36.90	Complied	
7	0.1699	46.21	37.99	12.89	64.96	54.96	Neutral	-26.97	Complied	-42.07	Complied	
8	0.9922	33.54	31.02	26.16	56.00	46.00	Neutral	-24.98	Complied	-19.84	Complied	
9	8.0399	63.30	59.52	46.36	60.00	50.00	Neutral	-0.48	Complied	-3.64	Complied	
10	9.3465	64.72	59.76	45.55	60.00	50.00	Neutral	-0.24	Complied	-4.45	Complied	
11	16.3738	34.11	31.02	22.18	60.00	50.00	Neutral	-28.98	Complied	-27.82	Complied	
12	24.1863	31.59	27.08	14.15	60.00	50.00	Neutral	-32.92	Complied	-35.85	Complied	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												


CE22\_B.xls Revised 21OCT2005

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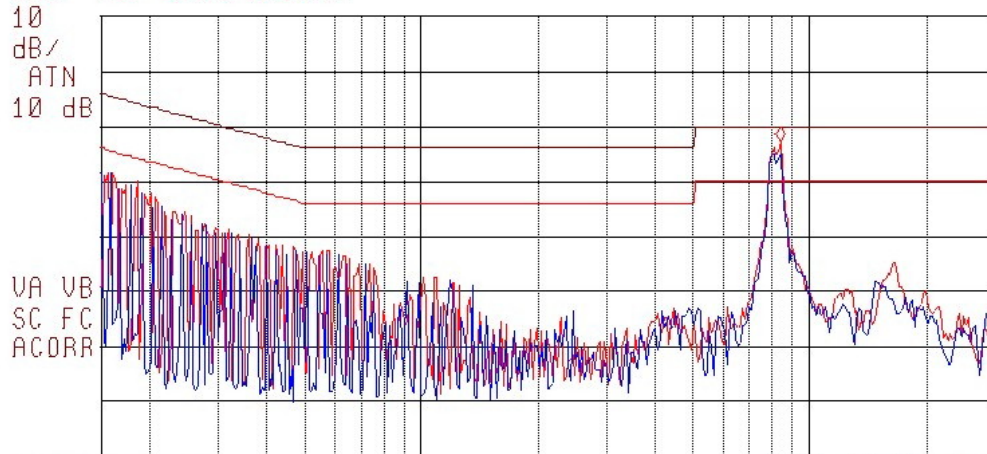


NOTES:

**Conducted Emissions @ 120V/60Hz**  
**G-20 8.2 Tx Band**  
**Line / Neutral**

 10:14:39 APR 16, 2009  
CHECKPOINT G20 8.2 TX=27 120/60  
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 8.43 MHz  
57.00 dB $\mu$ V/m

LOG REF 60.0 dB $\mu$ V/m



START 150 kHz      STOP 30.00 MHz  
#IF BW 9.0 kHz      AVG BW 30 kHz      SWP 2.49 sec

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Conducted Emissions Measurements												
Standard: FCC Part 15.207										Date: 4/16/09		
Device Tested: Checkpoint G20 8.2 Band tx=27 new choke 120VAC/60Hz										File: .xls		
Signal Num	Freq	Peak Amp	QP Amp	Avg Amp	QP Limit	Avg Limit	Conductor	QP Δ	QP Result	Avg Δ	Average Result	Mode
	MHz	dBuV	dBuV	dBuV	dBuV	dBuV		dB		dB		
1	0.1600	51.34	43.50	19.18	65.46	55.46	Line	-21.96	Complied	-36.28	Complied	
2	1.1776	33.77	25.44	16.99	56.00	46.00	Line	-30.56	Complied	-29.01	Complied	
3	4.6536	23.04	24.79	19.61	56.00	46.00	Line	-31.21	Complied	-26.39	Complied	
4	8.0604	57.69	53.08	42.45	60.00	50.00	Line	-6.92	Complied	-7.55	Complied	
5	8.4688	58.85	54.77	41.45	60.00	50.00	Line	-5.23	Complied	-8.55	Complied	Maximum Emissions
6	16.0645	35.30	30.00	19.21	60.00	50.00	Line	-30.00	Complied	-30.79	Complied	
7	0.1600	51.19	44.19	18.64	65.46	55.46	Neutral	-21.27	Complied	-36.82	Complied	
8	1.1776	35.31	27.16	21.59	56.00	46.00	Neutral	-28.84	Complied	-24.41	Complied	
9	4.6536	26.98	26.11	21.66	56.00	46.00	Neutral	-29.89	Complied	-24.34	Complied	
10	8.0604	57.47	53.85	42.09	60.00	50.00	Neutral	-6.15	Complied	-7.91	Complied	
11	8.4688	58.43	54.75	41.70	60.00	50.00	Neutral	-5.25	Complied	-8.30	Complied	
12	16.0645	30.03	24.45	25.63	60.00	50.00	Neutral	-35.55	Complied	-24.37	Complied	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												
										CE22_B_01 Revised 21 OCT 2005		

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NOTES:

**Conducted Emissions @ 120V/60Hz**  
**G-20 9.0 Tx Band**  
**Line / Neutral**

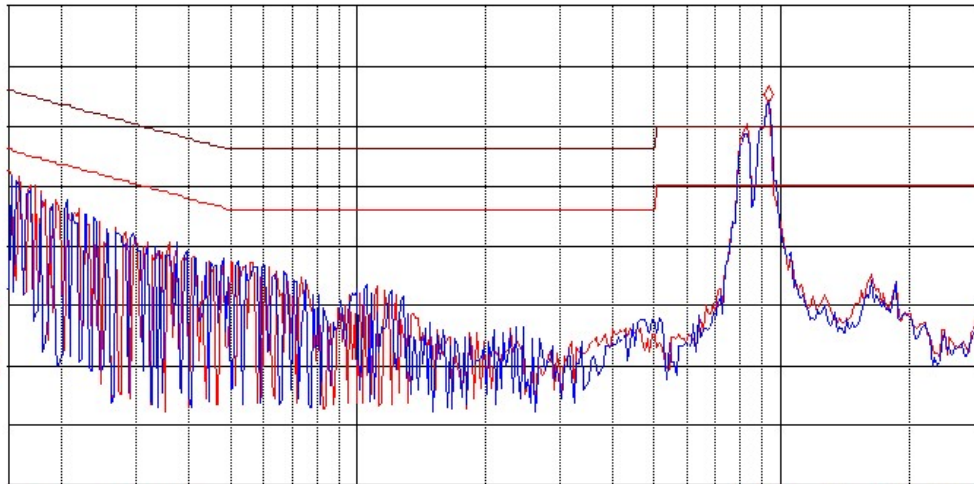
 08:16:54 APR 16, 2009  
CHECKPOINT G20 9.0 TX=25 120/60

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 9.33 MHz  
63.74 dB $\mu$ V/m

LOG REF 80.0 dB $\mu$ V/m

10  
dB/  
ATN  
10 dB

VA VB  
SC FC  
ACDRR



CENTER 15.08 MHz

#IF BW 9.0 kHz

AVG BW 30 kHz

SPAN 29.85 MHz

SWP 2.49 sec

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<b>Conducted Emissions Measurements</b>												
<b>Standard:</b> FCC Part 15.207										<b>Date:</b> 4/16/09		
<b>Device Tested:</b> Checkpoint G20 9.0 Band tx=25 new choke 120VAC/60Hz										<b>File:</b> .xls		
Signal Num	Freq	Peak Amp	QP Amp	Avg Amp	QP Limit	Avg Limit	Conductor	QP Δ	QP Result	Avg Δ	Average Result	Mode
	MHz	dBuV	dBuV	dBuV	dBuV	dBuV		dB		dB		
1	0.1600	51.68	43.88	18.74	65.46	55.46	Line	-21.58	Complied	-36.72	Complied	
2	1.0524	33.81	25.31	10.62	56.00	46.00	Line	-30.69	Complied	-35.38	Complied	
3	4.7121	27.32	25.06	20.15	56.00	46.00	Line	-30.94	Complied	-25.85	Complied	
4	8.3174	61.47	57.21	41.30	60.00	50.00	Line	-2.79	Complied	-8.70	Complied	
5	9.2776	61.62	58.82	44.49	60.00	50.00	Line	-1.18	Complied	-5.51	Complied	Maximum Emissions
6	16.8669	34.54	31.81	25.82	60.00	50.00	Line	-28.19	Complied	-24.18	Complied	
7	0.1600	51.62	43.84	17.70	65.46	55.46	Neutral	-21.62	Complied	-37.76	Complied	
8	1.0524	34.19	26.06	16.62	56.00	46.00	Neutral	-29.94	Complied	-29.38	Complied	
9	4.7121	28.09	26.38	22.34	56.00	46.00	Neutral	-29.62	Complied	-23.66	Complied	
10	8.3174	61.47	57.16	41.55	60.00	50.00	Neutral	-2.84	Complied	-8.45	Complied	
11	9.2776	61.43	58.63	44.28	60.00	50.00	Neutral	-1.37	Complied	-5.72	Complied	
12	16.8669	34.27	30.28	22.61	60.00	50.00	Neutral	-29.72	Complied	-27.39	Complied	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												
CE22_B.xls Revised 21OCT2005												

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NOTES:

**Conducted Emissions @ 120V/60Hz**  
**Metalpoint w/P10**  
**Line / Neutral**



08:26:24 APR 17, 2009

CHECKPOINT METALPOINT W/P10 9.0 120/60

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 4.44 MHz

41.25 dB $\mu$ V/m

LOG REF 60.0 dB $\mu$ V/m

10

dB/

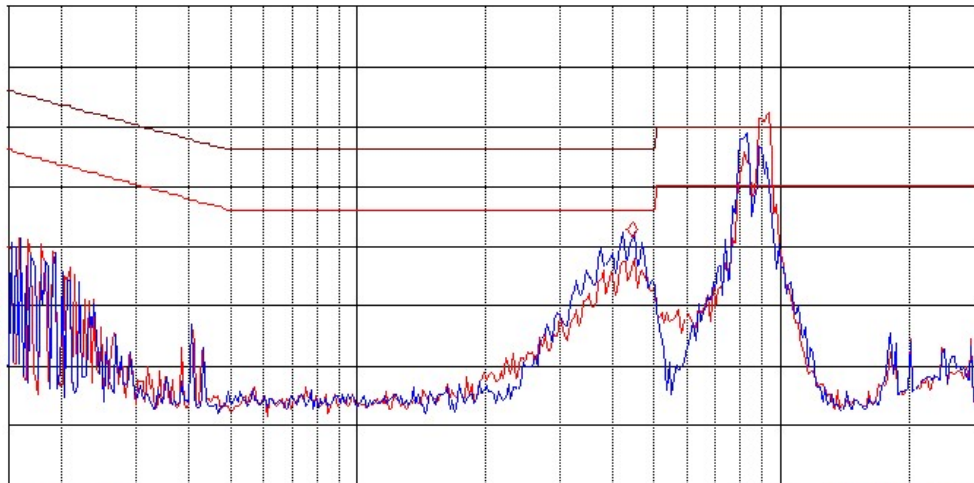
ATN

10 dB

VA VB

SC FC

ACDRB



START 150 kHz

#IF BW 9.0 kHz

AVG BW 30 kHz

STOP 30.00 MHz

SWP 2.49 sec

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Conducted Emissions Measurements												
Standard: FCC Part 15.207										Date: 4/17/09		
Device Tested: Checkpoint Metalpoint wP10 9.0 120VAC/60Hz										File: .xls		
Signal Num	Freq MHz	Peak Amp dBuV	QP Amp dBuV	Avg Amp dBuV	QP Limit dBuV	Avg Limit dBuV	Conductor	QP Δ dB	QP Result	Avg Δ dB	Average Result	Mode
1	0.1700	40.90	33.52	7.93	64.96	54.96	Line	-31.44	Complied	-47.03	Complied	
2	0.4115	26.76	19.33	4.68	57.62	47.62	Line	-38.29	Complied	-42.94	Complied	
3	4.2486	38.48	34.97	26.08	56.00	46.00	Line	-21.03	Complied	-19.92	Complied	
4	8.3103	56.72	51.88	34.65	60.00	50.00	Line	-8.12	Complied	-15.35	Complied	
5	9.3237	63.53	58.23	42.10	60.00	50.00	Line	-1.77	Complied	-7.90	Complied	Maximum Emissions
6	18.0600	22.83	17.22	9.07	60.00	50.00	Line	-42.78	Complied	-40.93	Complied	
7	0.1700	40.81	33.61	7.80	64.96	54.96	Neutral	-31.35	Complied	-47.16	Complied	
8	0.4115	27.11	19.82	4.62	57.62	47.62	Neutral	-37.80	Complied	-43.00	Complied	
9	4.2486	38.36	34.87	26.05	56.00	46.00	Neutral	-21.13	Complied	-19.95	Complied	
10	8.3103	57.57	52.58	35.09	60.00	50.00	Neutral	-7.42	Complied	-14.91	Complied	
11	9.3237	63.13	58.04	41.85	60.00	50.00	Neutral	-1.96	Complied	-8.15	Complied	
12	18.0600	24.13	17.35	9.20	60.00	50.00	Neutral	-42.65	Complied	-40.80	Complied	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 CE22_B.xls Revised 21OCT2005												

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#### 4.2.6 Photos



Figure 5 – Conducted Emissions Test Setup – P-10

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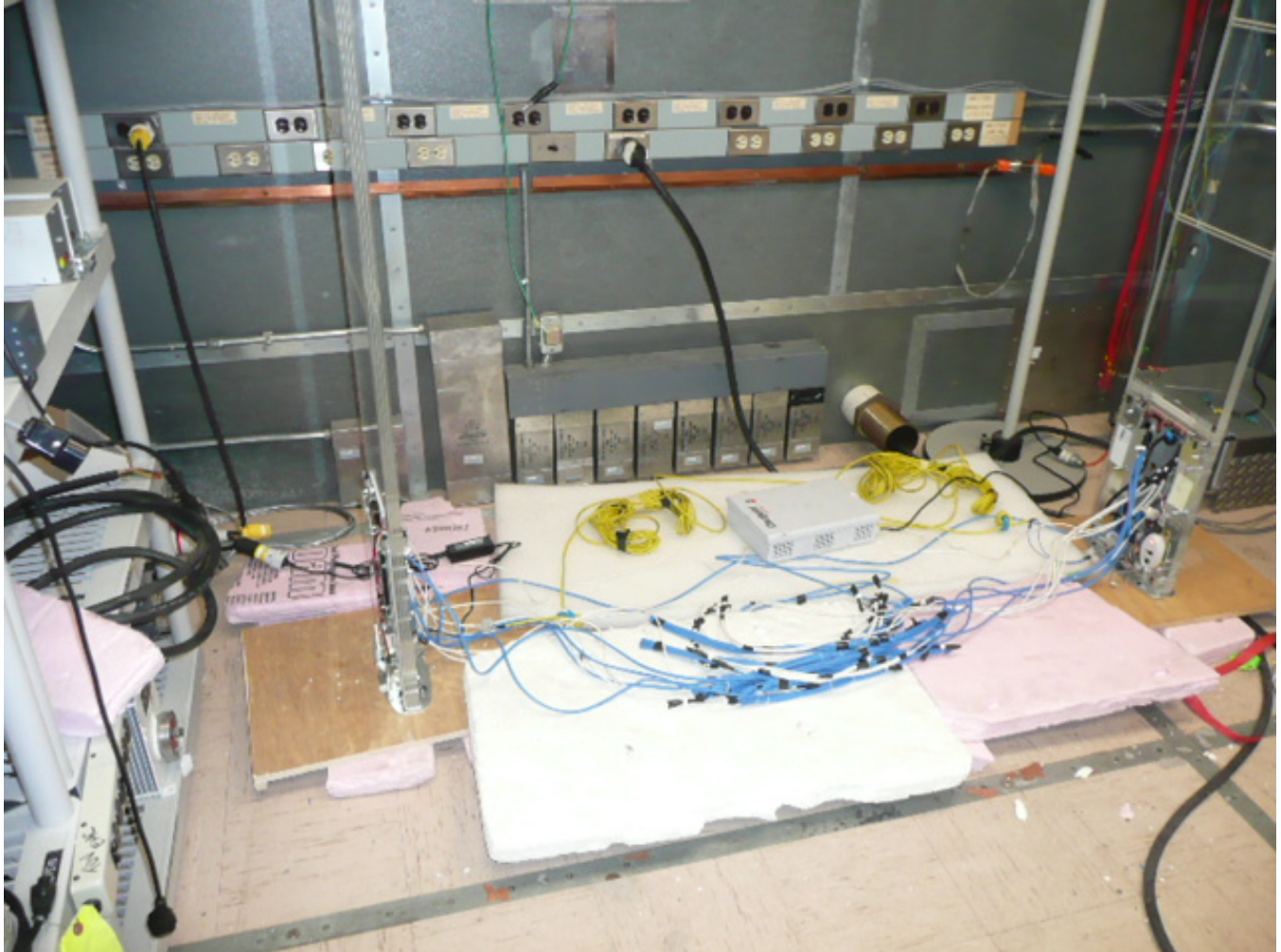


Figure 6 – Conducted Emissions Test Setup – G-20

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### 4.3 Radiated Emissions Limits

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

#### 4.3.1 Test Over View

<b>Results</b>	<b>Complies</b> (as tested per this report)			<b>Date</b>	4/1/09		
<b>Standard</b>	FCC Part 15 Subpart 15.205 and 15.209						
<b>Product Model</b>	Evolve Antenna Family with Integrated Metalpoint			<b>Serial#</b>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040		
<b>Configuration</b>	See test plan for details						
<b>Test Set-up</b>	Tested on a 10m O.A.T.S. placed on turn-table, see test plans for details						
<b>EUT Powered By</b>	120V/60Hz	<b>Temp</b>	22° C	<b>Humidity</b>	45%	<b>Pressure</b>	1004mbar
<b>Frequency Range</b>	From Fundamental - 1000MHz						
<b>Perf. Criteria</b>	Below Limit		<b>Perf. Verification</b>	Readings under Limit			
<b>Mod to EUT</b>	None		<b>Test Performed By</b>	David Hollis			

#### 4.3.2 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 30MHz to 1000MHz was investigated for radiated emissions.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made. Harmonics and spurious emissions testing <30MHz were performed at 10m distance on the OATS using a magnetic field loop antenna. Harmonics and spurious emissions test >30MHz were performed on the 3 m OATS using a Bilog antenna

#### 4.3.3 Deviations

There were no deviations from the test methodology listed in the test plan for the harmonic current emissions test.

#### 4.3.4 Final Test

All final radiated emissions measurements were below (in compliance with) the limits.

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### 4.3.5 Final Measurement Data

#### P-10 8.2 Band TX=31 Final <30MHz (Harmonics):

Radiated Emissions Measurements													
<b>Standard:</b>		47 CFR 15.209, Harmonics Below 30MHz					<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b> 4/1/09			
<b>Device Tested:</b>		Checkpoint Evolve P10 w/ Metalpoint. 8.2 band TX=31					<b>Distance:</b>		10m	<b>File:</b>			
Measured Level													
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment	
1	15.9200	46.85	37.97	34.03	49.54	-11.57	18.95	Complied	Y	90	1.00		
2	16.9560	44.38	37.04	32.07	49.54	-12.50	19.99	Complied	Y	90	1.00		
3	23.8800	47.28	37.71	31.53	49.54	-11.83	18.95	Complied	Y	90	1.00		
4	25.4340	44.44	36.43	31.39	49.54	-13.11	19.99	Complied	Y	90	1.00		
Tested by: David Hollis													
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFC15B.xlt Revised 10MAR03													

#### P-10 8.2 Band TX=31 RE Final >30MHz:

Radiated Emissions Measurements													
<b>Standard:</b>		47 CFR 15.209, Class B					<b>PRESCAN or FINAL:</b>		final	<b>Date:</b> 4/1/09			
<b>Device Tested:</b>		Checkpoint Evolve P10 8.2 band TX=31					<b>Distance:</b>		3.0m	<b>File:</b>			
Measured Level													
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment	
1	33.8125	31.34	23.36	9.68	40.00	-16.64	15.54	Complied	Vertical	0	1.60		
2	40.3875	36.19	30.04	7.14	40.00	-9.96	12.16	Complied	Vertical	0	1.60		
3	48.4300	34.19	28.34	11.18	40.00	-11.66	9.24	Complied	Vertical	0	1.60		
4	55.6875	36.86	29.44	12.60	40.00	-10.56	7.89	Complied	Vertical	270	1.60		
5	76.0625	39.95	34.13	13.46	40.00	-5.87	7.33	Complied	Vertical	0	1.60		
6	83.2820	36.99	30.57	23.00	40.00	-9.43	8.66	Complied	Vertical	270	1.60		
7	86.7175	24.79	19.84	10.76	40.00	-20.16	9.58	Complied	Vertical	0	1.60		
8	92.0000	38.17	33.28	24.01	43.50	-10.22	10.72	Complied	Vertical	0	1.60		
9	118.2534	32.86	24.65	13.62	43.50	-18.85	13.36	Complied	Vertical	270	1.60		
10	143.0000	25.20	17.92	4.98	43.50	-25.58	12.02	Complied	Vertical	270	1.60		
11	222.6125	35.30	29.23	3.89	46.00	-16.77	11.86	Complied	Vertical	270	1.60		
12	480.0125	32.34	29.90	27.49	46.00	-16.10	19.66	Complied	Vertical	270	1.60		
13	560.0250	35.35	32.95	29.82	46.00	-13.05	21.70	Complied	Vertical	270	1.60		
14	818.7750	30.74	22.93	15.21	46.00	-23.07	23.81	Complied	Vertical	270	1.60		
15	845.0625	35.97	27.85	15.02	46.00	-18.15	24.62	Complied	Vertical	270	1.60		
Tested by: David Hollis													
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFC15B.xlt Revised 10MAR03													

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**P-10 9.0 Band TX=31 Final <30MHz (Harmonics)**

<b>Radiated Emissions Measurements</b>												
<b>Standard:</b>	47 CFR 15.209, Harmonics Below 30MHz					<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b>		3/30/09	
<b>Device Tested:</b>	Checkpoint Evolve P10 w/ Metalpoint. 9.0 band TX=31					<b>Distance:</b>		10m	<b>File:</b>			
Measured Level												
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	16.1300	37.44	31.67	25.15	49.54	-17.87	18.95	Complied	X	270	1.00	
2	24.1950	38.57	32.40	25.75	49.54	-17.14	19.99	Complied	X	270	1.00	
3	16.1300	41.94	33.64	25.63	49.54	-15.90	18.95	Complied	Y	270	1.00	
4	24.1950	35.07	27.61	21.44	49.54	-21.93	19.99	Complied	Y	270	1.00	
5	16.1300	40.43	34.06	26.98	49.54	-15.48	18.95	Complied	Z	270	1.00	
6	24.1950	40.81	35.28	28.67	49.54	-14.26	19.99	Complied	Z	270	1.00	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009											REFCC15B.rtl Revised 10MAR03	

**P-10 9.0 Band TX=31 Final >30MHz (Harmonics)**

<b>Radiated Emissions Measurements</b>												
<b>Standard:</b>	47 CFR 15.209, Class B					<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b>		3/30/09	
<b>Device Tested:</b>	Checkpoint Evolve P10 w/ Metalpoint. 9.0 band TX=31					<b>Distance:</b>		3.0m	<b>File:</b>			
Measured Level												
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	32.7125	26.11	19.75	12.05	40.00	-20.25	16.17	Complied	Vertical	0	1.60	
2	33.2900	33.51	25.04	11.04	40.00	-14.96	15.84	Complied	Vertical	0	1.60	
3	40.3575	36.10	29.54	7.45	40.00	-10.46	12.17	Complied	Vertical	0	1.60	
4	41.6300	34.10	27.82	6.97	40.00	-12.18	11.67	Complied	Vertical	0	1.60	
5	45.1500	25.23	14.74	6.60	40.00	-25.26	10.37	Complied	Horizontal	0	1.20	
6	48.8125	24.32	18.92	11.05	40.00	-21.08	9.11	Complied	Vertical	0	1.00	
7	56.5250	39.77	31.94	20.74	40.00	-8.06	7.77	Complied	Vertical	90	1.70	
8	58.0000	35.16	29.75	20.95	40.00	-10.25	7.58	Complied	Vertical	90	1.70	
9	72.7350	36.11	28.40	19.49	40.00	-11.60	6.97	Complied	Vertical	90	1.70	
10	74.9600	34.68	27.22	16.01	40.00	-12.78	7.21	Complied	Vertical	90	1.70	
11	80.7800	38.30	31.16	18.25	40.00	-8.84	7.97	Complied	Horizontal	90	1.70	
12	121.1175	33.15	26.32	12.02	43.50	-17.18	13.41	Complied	Horizontal	90	1.50	
13	226.1025	36.50	31.39	4.45	46.00	-14.61	12.13	Complied	Horizontal	90	1.50	
14	600.0375	40.34	34.70	30.48	46.00	-11.30	21.24	Complied	Horizontal	90	1.50	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009											REFCC15B.rtl Revised 10MAR03	

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**G-20 8.2 Band TX=27 Final <30MHz (Harmonics):**

<b>Radiated Emissions Measurements</b>												
<b>Standard:</b>	47 CFR 15.209, Harmonics Below 30MHz				<b>PRESCAN or FINAL:</b>			Final	<b>Date:</b> 3/30/09			
<b>Device Tested:</b>	Checkpoint Evolve G20. 8.2 Band tx=27				<b>Distance:</b>			10m	<b>File:</b>			
Measured Level												
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	16.1000	58.10	47.95	41.76	49.54	-1.59	19.47	Complied	X	270	1.00	
2	16.8800	49.79	41.78	37.07	49.54	-7.76	19.57	Complied	X	270	1.00	
3	25.3200	50.21	42.55	37.74	49.54	-6.99	20.81	Complied	X	270	1.00	
4	25.5150	48.91	42.16	36.71	49.54	-7.38	20.87	Complied	X	270	1.00	
5	16.1000	51.82	44.96	41.22	49.54	-4.58	19.47	Complied	Y	270	1.00	
6	16.8800	50.30	41.75	36.89	49.54	-7.79	19.57	Complied	Y	270	1.00	
7	25.3200	49.80	42.69	37.78	49.54	-6.85	20.81	Complied	Y	270	1.00	
8	25.5150	50.10	42.70	37.79	49.54	-6.84	20.87	Complied	Y	270	1.00	
9	16.1000	49.35	41.69	38.44	49.54	-7.85	19.47	Complied	Z	270	1.00	
10	16.8800	49.27	41.72	36.86	49.54	-7.82	19.57	Complied	Z	270	1.00	
11	25.3200	50.70	42.98	37.94	49.54	-6.56	20.81	Complied	Z	270	1.00	
12	25.5150	50.99	42.75	37.81	49.54	-6.79	20.87	Complied	Z	270	1.00	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFCC15B.xlt Revised 10MAR03												

**G-20 8.2 Band TX=27 RE Final >30MHz:**

<b>Radiated Emissions Measurements</b>												
<b>Standard:</b>	47 CFR 15.209, Class B				<b>PRESCAN or FINAL:</b>			Final	<b>Date:</b> 3/30/09			
<b>Device Tested:</b>	Checkpoint Evolve G20. 8.2 band TX=27				<b>Distance:</b>			3.0m	<b>File:</b>			
Measured Level												
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	57.5000	33.88	27.35	20.03	40.00	-12.65	7.64	Complied	Vertical	270	1.60	
2	64.6004	35.23	28.18	20.53	40.00	-11.82	7.01	Complied	Vertical	270	1.60	
3	81.4000	37.05	32.06	23.58	40.00	-7.94	8.14	Complied	Vertical	270	1.60	
4	119.4000	38.09	30.30	23.58	43.50	-13.20	13.45	Complied	Vertical	270	1.60	
5	121.1300	43.57	36.02	22.03	43.50	-7.48	13.41	Complied	Vertical	270	1.50	
6	129.4000	36.12	28.75	22.81	43.50	-14.75	12.82	Complied	Vertical	270	1.50	
7	147.4000	31.98	26.51	21.21	43.50	-16.99	11.89	Complied	Vertical	270	1.70	
8	457.0000	40.91	34.97	30.07	46.00	-11.03	19.45	Complied	Vertical	270	1.70	
9	559.9994	46.55	40.71	34.52	46.00	-5.29	21.70	Complied	Vertical	270	1.70	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFCC15B.xlt Revised 10MAR03												

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**G-20 9.0 Band TX=25 Final <30MHz (Harmonics)**

<b>Radiated Emissions Measurements</b>													
<b>Standard:</b>		47 CFR 15.209, Harmonics Below 30MHz					<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b> 3/30/09			
<b>Device Tested:</b>		Checkpoint Evolve G20 . 9.0 band TX=25					<b>Distance:</b>		10m	<b>File:</b>			
Measured Level													
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment	
1	16.5960	48.87	41.75	36.78	49.54	-7.79	19.54	Complied	X	270	1.00		
2	18.1260	53.25	41.11	36.53	49.54	-8.43	19.72	Complied	X	270	1.00		
3	24.8940	50.01	42.22	37.32	49.54	-7.32	20.69	Complied	X	270	1.00		
4	27.1890	50.90	42.79	37.88	49.54	-6.75	21.40	Complied	X	270	1.00		
5	16.5960	48.52	41.59	36.66	49.54	-7.95	19.54	Complied	Y	270	1.00		
6	18.1260	49.90	41.62	37.23	49.54	-7.92	19.72	Complied	Y	270	1.00		
7	24.8940	50.30	42.40	37.57	49.54	-7.14	20.69	Complied	Y	270	1.00		
8	27.1890	50.29	45.29	37.83	49.54	-4.25	21.40	Complied	Y	270	1.00		
9	16.5960	49.37	41.79	36.72	49.54	-7.75	19.54	Complied	Z	270	1.00		
10	18.1260	49.09	41.23	36.31	49.54	-8.31	19.72	Complied	Z	270	1.00		
11	24.8940	50.53	42.89	37.76	49.54	-6.65	20.69	Complied	Z	270	1.00		
12	27.1890	50.21	43.02	38.23	49.54	-6.52	21.40	Complied	Z	270	1.00		
Tested by: David Hollis													
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFCC15B.xlt Revised 10MAR03													

**G-20 9.0 Band TX=25 Final >30MHz (Harmonics)**

<b>Radiated Emissions Measurements</b>													
<b>Standard:</b>		47 CFR 15.209, Class B					<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b> 4/2/09			
<b>Device Tested:</b>		Checkpoint G20 9.0 Tx, new choke, 2.84 firmware tx=25					<b>Distance:</b>		3.0m	<b>File:</b>			
Measured Level													
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment	
1	36.2870	34.84	29.38	23.67	40.00	-10.62	14.19	Complied	Vertical	270	1.60		
2	40.8562	32.16	26.67	21.32	40.00	-13.33	11.98	Complied	Vertical	270	1.60		
3	41.6875	31.76	26.41	21.03	40.00	-13.59	11.65	Complied	Vertical	270	1.60		
4	99.5400	37.19	30.94	24.99	43.50	-12.56	11.83	Complied	Vertical	270	1.60		
5	121.1000	38.39	30.40	23.23	43.50	-13.10	13.41	Complied	Vertical	270	1.60		
6	132.9620	37.57	34.38	30.06	43.50	-9.12	12.57	Complied	Vertical	270	1.60		
7	162.3875	41.01	38.58	36.85	43.50	-4.92	11.57	Complied	Vertical	270	1.40		
8	226.0000	33.56	27.94	22.77	46.00	-18.06	12.12	Complied	Vertical	270	1.40		
9	424.7000	39.23	34.22	29.48	46.00	-11.78	18.82	Complied	Vertical	270	1.40		
10	457.0250	40.36	34.84	29.86	46.00	-11.16	19.45	Complied	Vertical	270	1.40		
11	560.0013	44.21	39.50	33.41	46.00	-6.50	21.70	Complied	Vertical	270	1.40		
12	800.0109	46.69	42.39	37.10	46.00	-3.61	23.18	Complied	Vertical	270	1.40		
Tested by: David Hollis													
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 REFCC15B.xlt Revised 10MAR03													

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<b>Radiated Emissions Measurements</b>												
<b>Standard:</b>	47 CFR 15.209, Harmonics Below 30MHz				<b>PRESCAN or FINAL:</b>			Final	<b>Date:</b> 3/30/09			
<b>Device Tested:</b>	Checkpoint Metalpoint 21.6kHz.				<b>Distance:</b>			10m	<b>File:</b>			
Measured Level												
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	0.021588	55.24	54.82	54.68	100.90	-46.08	18.95	Complied	X	270	1.00	
2	0.021588	78.64	75.41	74.03	100.90	-25.49	19.99	Complied	y	270	1.00	
3	0.021588	56.84	50.92	48.58	100.90	-49.98	18.95	Complied	z	270	1.00	
Tested by: David Hollis												
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009												
												REFCC15B.xls Revised 10MAR03

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### 4.3.6 Operation in Restricted Bands

The EUT is a digital swept frequency hopping transmitter. The EUT hops on discrete frequencies. The discrete frequencies that can be transmitted by the EUT are as follows:

Original Emerald frequency tables

/\* Center frequency 8.2MHz +/- 410KHz \*/

Value CT\_8200\_300[] = {8610, 8555, 8500, 8446, 8391, 8337, 8282, 8227, 8173, 8118, 8063, 8009, 7954, 7899, 7845, 7790};

/\* Center frequency 8.6MHz +/- 430KHz \*/

Value CT\_8600\_300[] = {9030, 8973, 8915, 8858, 8801, 8743, 8686, 8629, 8571, 8514, 8457, 8399, 8342, 8285, 8227, 8170};

/\* Center frequency 9.0MHz +/- 450KHz \*/

Value CT\_9000\_300[] = {9450, 9390, 9330, 9270, 9210, 9150, 9090, 9030, 8970, 8910, 8850, 8790, 8730, 8670, 8610, 8550};

/\* Center frequency 9.2MHz +/- 460KHz \*/

Value CT\_9200\_300[] = {9660, 9599, 9537, 9476, 9415, 9353, 9292, 9231, 9169, 9108, 9047, 8985, 8924, 8863, 8801, 8740}; /\* Center frequency 9.5MHz +/- 480KHz \*/ Value CT\_9500\_300[] = {9980, 9916, 9852, 9788, 9724, 9660, 9596, 9532, 9468, 9404, 9340, 9276, 9212, 9148, 9084, 9020};

/\* Mult tag with bins 0-7 center frequency 9.2MHz and bins 8-16 center frequency 8.2MHz each range +/- 300KHz \*/

Value CTMult\_9200\_8200\_300[] = {9500, 9404, 9329, 9243, 9157, 9071, 8986, 8900, 8500, 8414, 8329, 8243, 8157, 8071, 7986, 7900}; Skinny Pulse frequency tables.....

/\* This table is used for mult band (8.2/9.2) skinny pulse, using PW of 4us JRG\_SP \*/

Value CTMult\_sp[] = {9325, 9325, 9325, 9325, 9075, 9075, 9075, 9075, 8325, 8325, 8325, 8075, 8075, 8075, 8075};

/\* This table is used for 8.2 band skinny pulse, using PW of 4us JRG\_SP \*/ Value CT\_8200\_sp[] = {8450, 8450, 8450, 8450, 8325, 8325, 8325, 8325, 8075, 8075, 8075, 8075, 7950, 7950, 7950, 7950};

The restricted frequency bands (per FCC Part 15 Clause 15.205) in the operating frequency band of the EUT are as follows:

8.291 – 8.294 MHz

8.362 – 8.366 MHz

8.37625 – 8.38675 MHz

8.41425 – 8.41475 MHz

The transmitter is not capable of hopping into, or operating, in the restricted frequency bands and therefore complies with the restriction.

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#### 4.4 Emissions Bandwidth

This test measures the emission bandwidth of the fundamental frequency generated by the EUT that may be outside the allowed transmission frequency

##### 4.4.1 Test Over View

<b>Results</b>	<b>Complies</b> (as tested per this report)			<b>Date</b>	4/15/09		
<b>Standard</b>	FCC Part 15 Subpart 15.215 and RSS-210						
<b>Product Model</b>	Evolve Antenna Family with Integrated Metalpoint			<b>Serial#</b>	721603501D10419138, 721603501D10419126, 721603500D12118038, 721603500D12118040		
<b>Configuration</b>	See test plan for details						
<b>Test Set-up</b>	Tested on a 10m O.A.T.S. placed on turn-table, see test plans for details						
<b>EUT Powered By</b>	120V/60Hz	<b>Temp</b>	22° C	<b>Humidity</b>	45%	<b>Pressure</b>	1004mbar
<b>Frequency Range</b>	8.2MHz and 9.0MHz Band						
<b>Perf. Criteria</b>	Within Frequency Range		<b>Perf. Verification</b>	Readings under Limit			
<b>Mod to EUT</b>	None		<b>Test Performed By</b>	David Hollis			

##### 4.4.2 Test Procedure

The emissions of the fundamental were measured with a loop antenna in 3 orthogonal orientations. The measurement of the bandwidth was done at -6db and -20dB on each side of the fundamental frequency. The test method includes signal maximizations of EUT configuration, by turning the turntable 360degrees and recording the highest emissions. The photos included with the report show the EUT in its maximized configuration.

##### 4.4.3 Deviations

There were no deviations from the test methodology listed in the test plan for the Bandwidth Emissions test.

##### 4.4.4 Final Test

All final radiated emissions measurements were below (in compliance with) the limits.

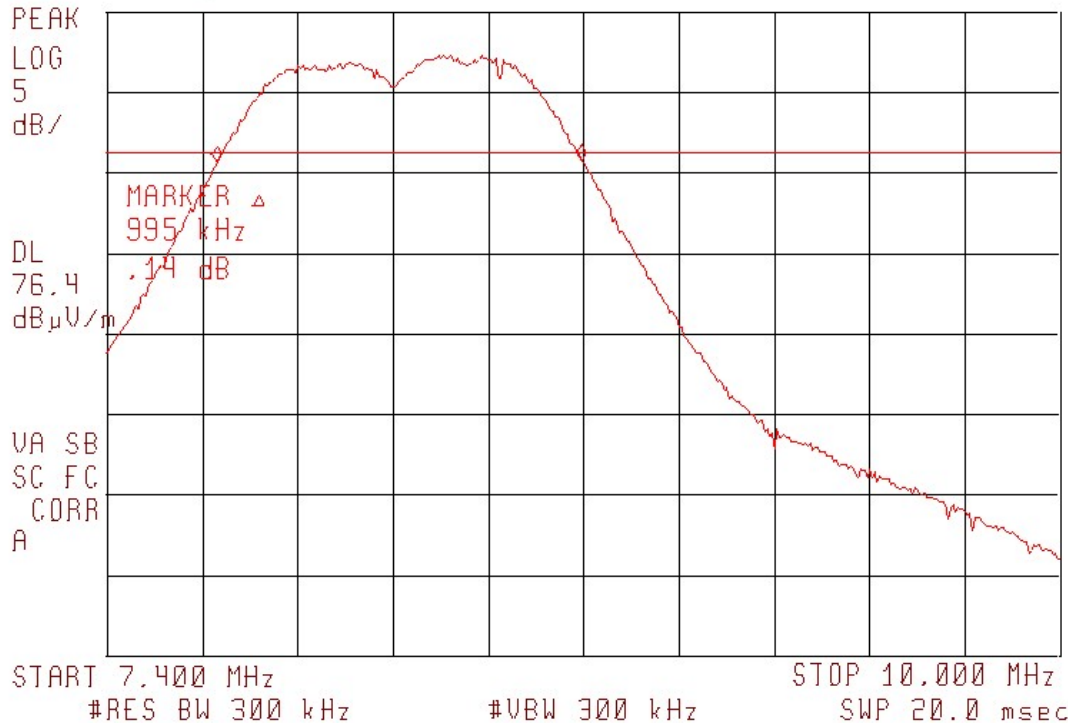


#### 4.4.5 Final Measurement Data

NOTES:

**Emission Bandwidth**  
**P-10 8.2 Band**  
**6dB Bandwidth**

 12:25:48 APR 15, 2009  
CHECKPOINT P10 8.2 BAND TX=31 6dB BW MEAS. MKR $\Delta$  995 kHz  
REF 85.0 dB $\mu$ V/m AT 10 dB .14 dB

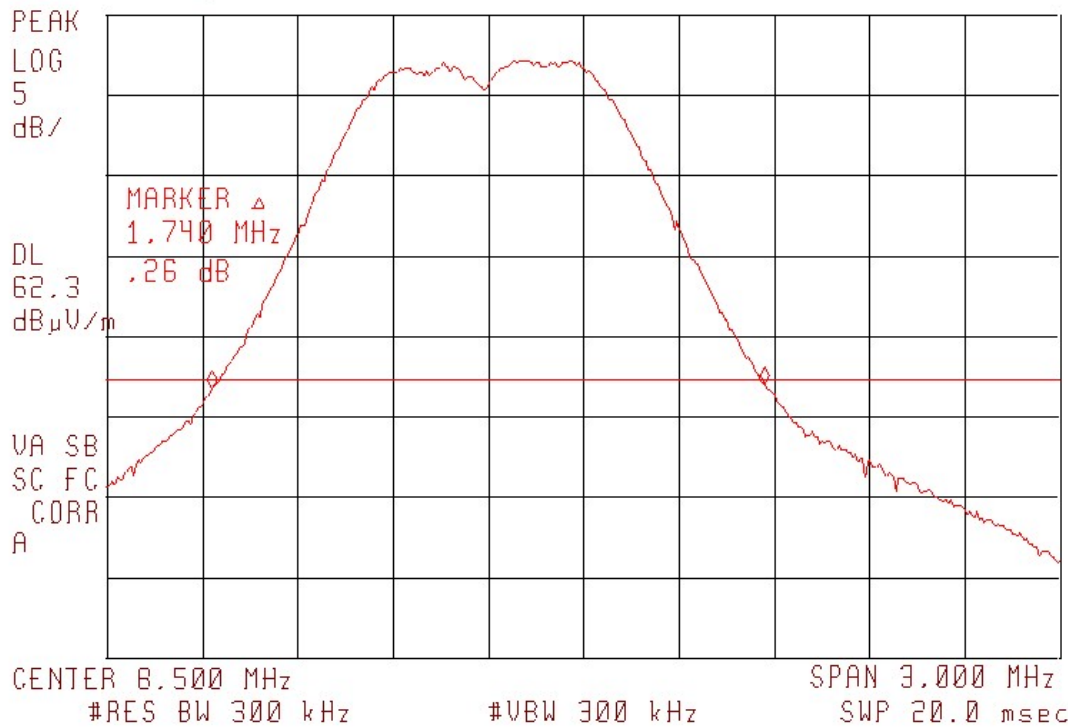


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NOTES:

**Emission Bandwidth**  
**P-10 8.2 Band**  
**20 dB Bandwidth**

 12:39:29 APR 15, 2009  
CHECKPOINT P10 6.2 TX=31 20dB BW MEAS. MKR $\Delta$  1.740 MHz  
REF 65.0 dB $\mu$ V/m AT 10 dB .26 dB

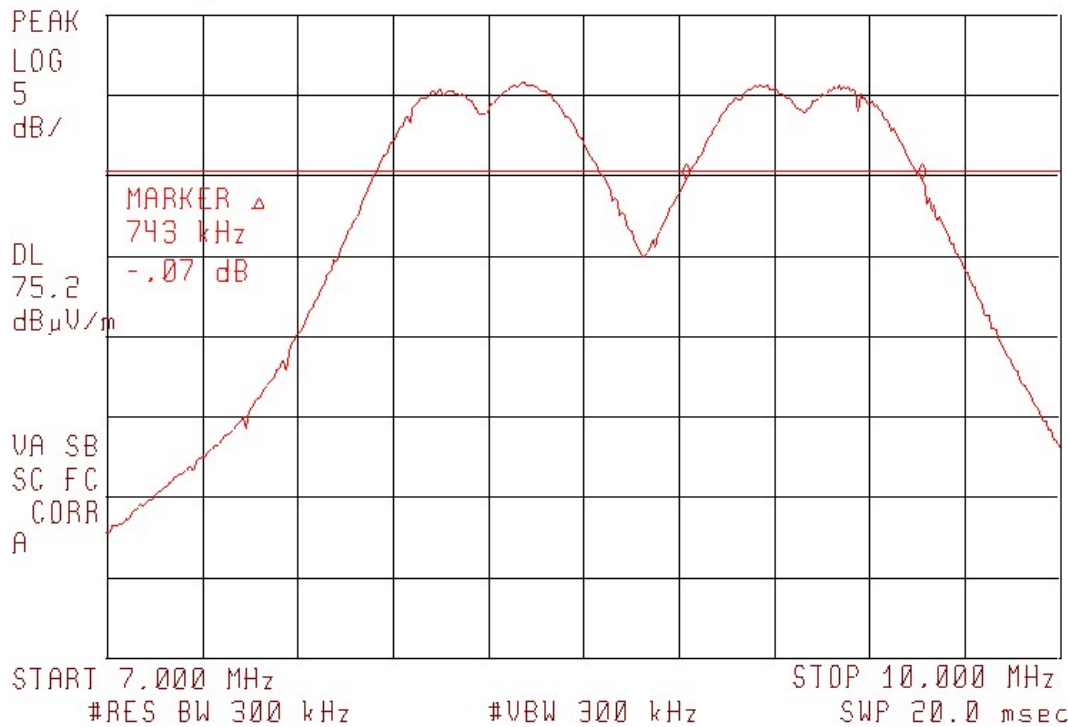


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NOTES:

**Emission Bandwidth**  
**P-10 9.0 Band**  
**6 dB Bandwidth**

 12:51:13 APR 15, 2009  
CHECKPOINT P10 9.0 TX=31 6dB BW MEAS. MKR $\Delta$  743 kHz  
REF 85.0 dB $\mu$ V/m AT 10 dB -.07 dB

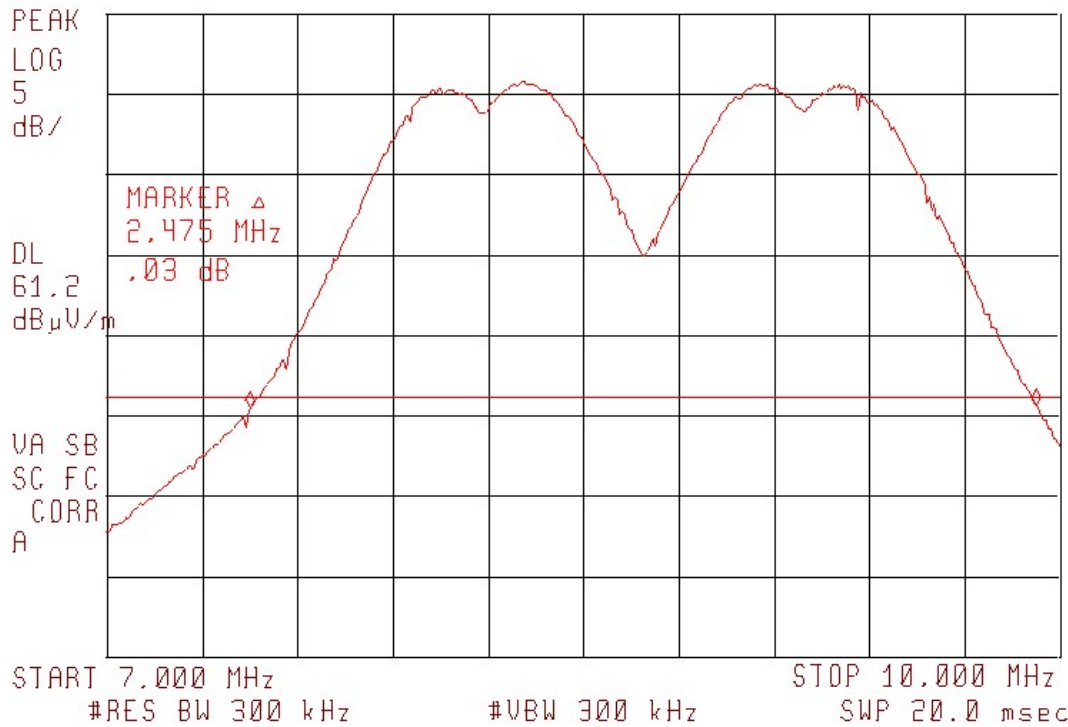


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NOTES:

**Emission Bandwidth**  
**P-10 9.0 Band**  
**20 dB Bandwidth**

 12:53:14 APR 15, 2009  
CHECKPOINT P10 9.0 TX=31 20dB BW MEAS. MKR $\Delta$  2.475 MHz  
REF 65.0 dB $\mu$ V/m AT 10 dB .03 dB

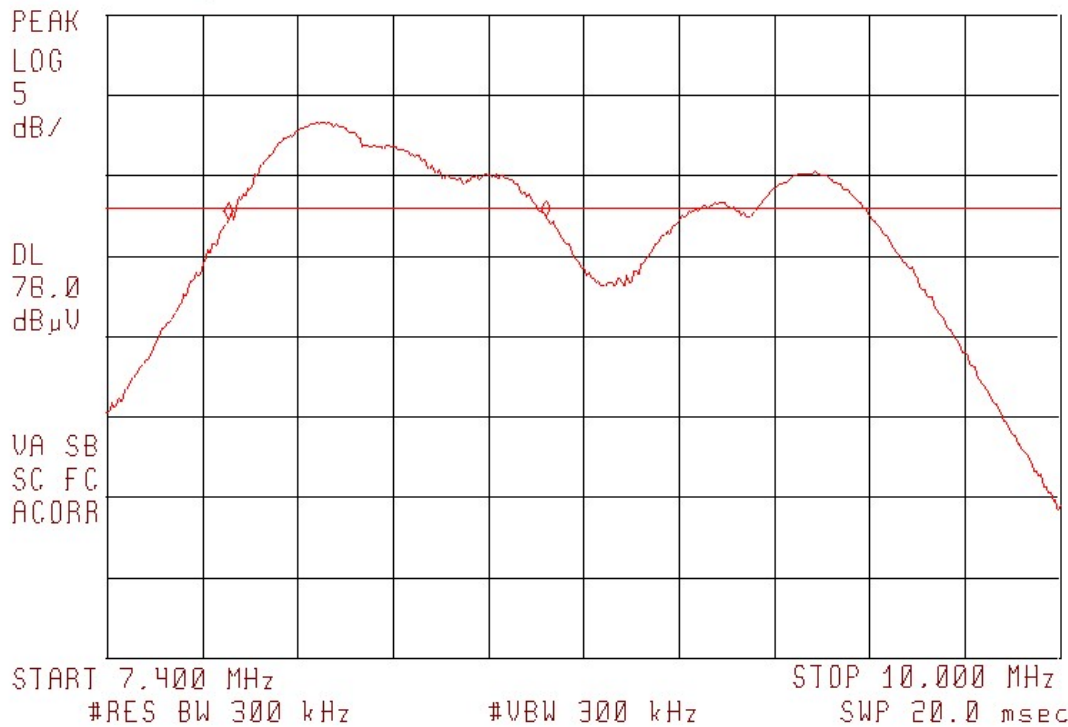


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NOTES:

**Emission Bandwidth**  
**G-20 8.2 Band**  
**6 dB Bandwidth**

 08:03:08 APR 15, 2009  
CHECKPOINT G20 8.2 BAND TX=27 6dB BW MEAS. MKR $\Delta$  865 kHz  
REF 90.0 dB $\mu$ V AT 10 dB .05 dB

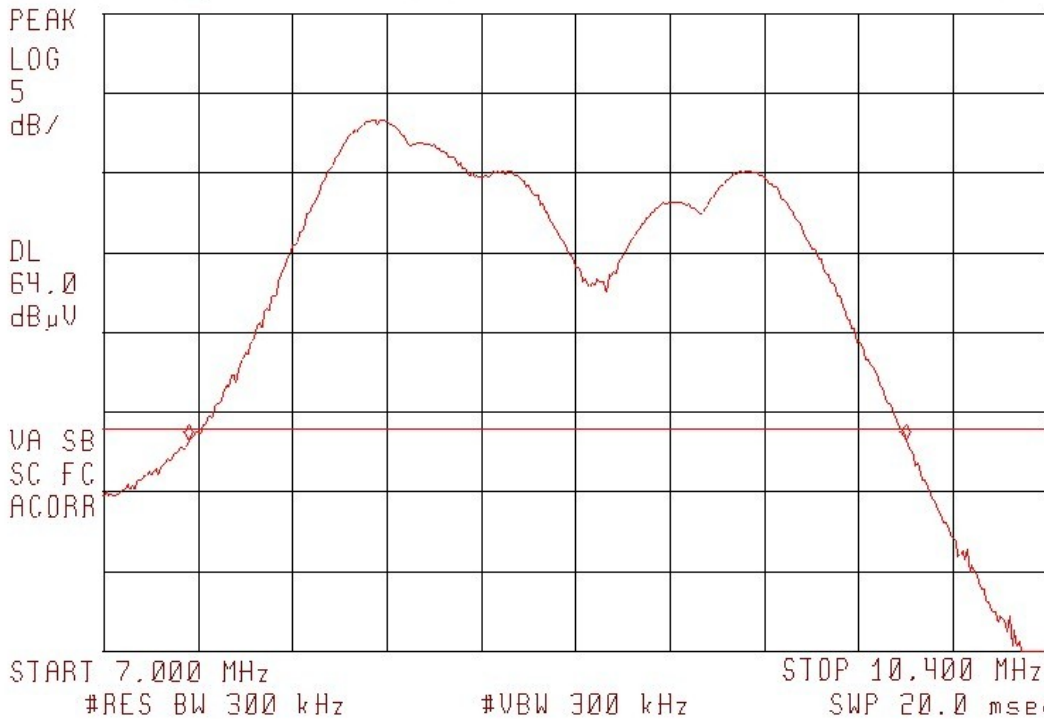


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NOTES:

**Emission Bandwidth**  
**G-20 8.2 Band**  
**20 dB Bandwidth**

 08:07:37 APR 15, 2009  
CHECKPOINT G20 8.2 TX=27 20dB BW MEAS. MKRΔ 2.564 MHz  
REF 90.0 dBμV AT 10 dB .05 dB

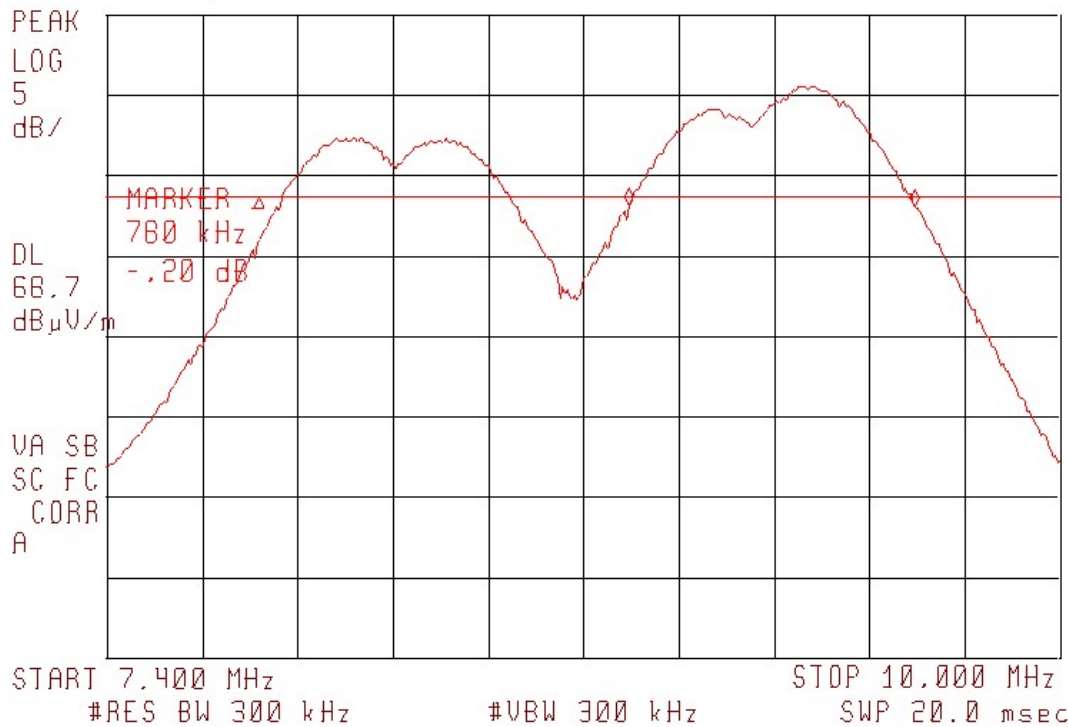


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NOTES:

**Emission Bandwidth**  
**G-20 9.0 Band**  
**6 dB Bandwidth**

 15:36:28 APR 14, 2009  
CHECKPOINT G20 9.0 TX=25 6dB BW MEAS. MKR $\Delta$  700 kHz  
REF 00.0 dB $\mu$ V/m AT 10 dB -.20 dB

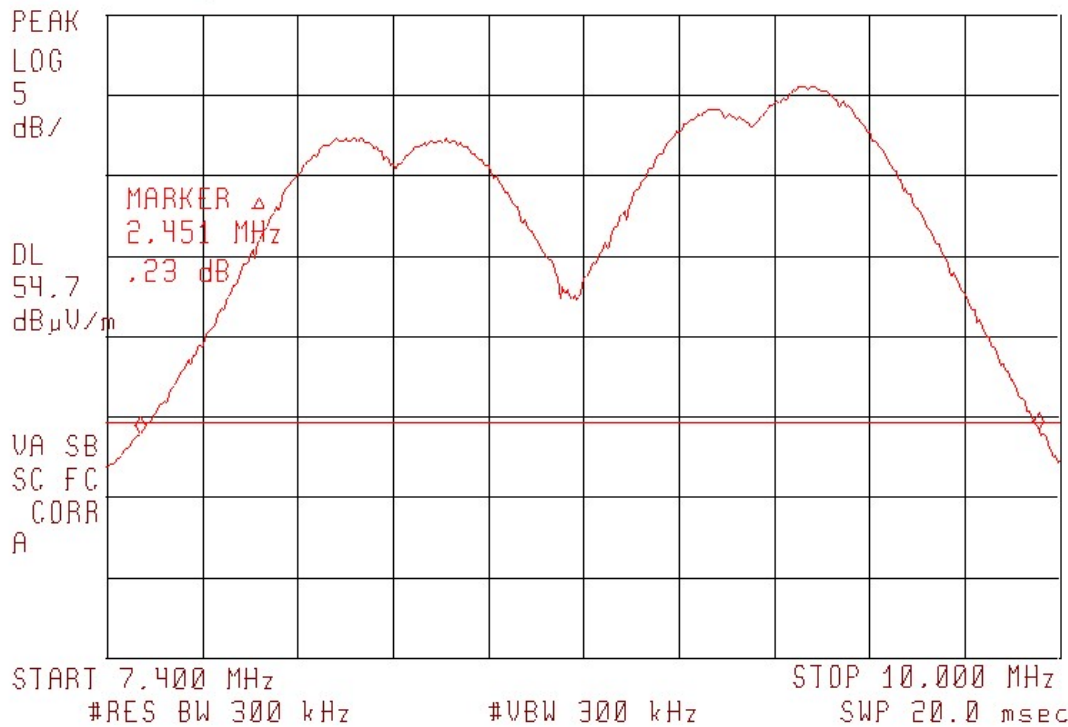


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NOTES:

**Emission Bandwidth**  
**G-20 9.0 Band**  
**20 dB Bandwidth**

 15:44:17 APR 14, 2009  
CHECKPOINT G20 9.0 TX=25 20dB BW MEAS. MKR $\Delta$  2.451 MHz  
REF 80.0 dB $\mu$ V/m AT 10 dB .23 dB



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<b>Band Edge Measurement</b>									
<b>Standard:</b>		47 CFR FCC Part 15.215 /RSS-210			<b>PRESCAN or FINAL:</b>		Final	<b>Date:</b> 4/15/2009	
<b>Device Tested:</b>		Checkpoint - Evolve Antenna Family			<b>Distance:</b>		10m	<b>File:</b>	
Measured Level									
Meas #	TX Band	-6dB Low End (MHz)	-6dB High End (MHz)	Measured Bandwidth (MHz)	-20dB Low End (MHz)	-20dB High End (MHz)	Measured Bandwidth (MHz)	Orientation (X,Y,Z)	Comment
RBW = 300kHz VBW=300kHz (FCC Settings)									
P-10 8.2 Band	8.2	7.699	8.694	0.995	7.330	9.070	1.740	X Orientation	
P-10 9.0 Band	9.0	8.823	9.566	0.743	7.450	9.925	2.475	X Orientation	
G-20 8.2 Band	8.2	7.732	8.603	0.865	7.306	9.890	2.584	X Orientation	
G-20 9.0 Band	9.0	8.824	9.604	0.780	7.491	9.948	2.457	X Orientation	
Tested by: David Hollis									
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009									

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