



EMC Test Data

Client:	Trimble Navagation	Job Number:	J66325
Model:	ROHS Apollo R8 (P/N:60250-xx)	Test-Log Number:	T66376
		Project Manager:	Susan Pelzl
Contact:	Roy Urbach		
Emissions Spec:	EN55022/ FCC	Class:	B
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Trimble Navagation

Model

ROHS Apollo R8 (P/N:60250-xx)

Date of Last Test: 2/6/2007



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EUT INFORMATION

The following information was collected during the test sessions(s).

General Description

The EUT is a radio with different plug-in radio modules. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/230 Volts, 50/60Hz.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Trimble	Apollo R8	Radio with Multiple Radio Modules	ROHSA00002	-
Trimble	59400-70	GSM Radio Module	ROHS GSM Carrier Board #6	-
Trimble	57880-64	450 MHz Radio Module	-	E5MDS-TRM450
Trimble	57880-90	900 MHz Radio Module		
Ault	PW174KA180	AC Adapter for Radio	Date Code 0703 rev A RoHS	DoC

Other EUT Details

The following EUT details should be noted: Apollo R8 GNSS Receiver (RoHS Compliant) P/N: 60250-xx ('xx' is determined by the radio being used: 60250-00 (if no radio is present), 60250-64 (with the -64 radio), 60250-70 (with the -70 radio), and 60250-90 (with the -90 radio).

Bluetooth: The R8-M2 contains the Infineon PBA 31308 Bluetooth module.

450MHz Radio: 430-450MHz Radio Module (Nearly RoHS Compliant) P/N: 57880-64

GSM Radio: GSM 900/1800 Radio Module (RoHS Compliant) P/N: 59400-70

900MHz Radio: 902-928 MHz Radio Module P/N: 57880-90

EUT Enclosure

The EUT enclosure is primarily constructed of plastic. It measures approximately 19 cm wide by 19 cm deep by 10 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	None

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



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Immunity Spec:	-	Environment:	-

Test Configuration # 3

The following information was collected during the test sessions(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	Latitude D160	Laptop PC	Service Tag 3STVK81	DoC
Dell	ADP-90AHB	AC Adapter for Laptop	CN-OC8023-48661-56S-	-
HP	5650	USB Printer	MY3883K42P	DoC

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None	-	-	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)

Interface Ports on EUT

7-Pin Serial/Power Port	Laptop PC DB9 Serial Port and External AC Adapter DC Output	Combo Serial/Power Cable	Shielded	2.0
Serial DB9	Not Cabled	-	-	-
Antenna	External Antenna	-	Direct Connection	-

Additional Cabling on Support Equipment

Dell Laptop Parallel Port	Epson Parallel Printer	Parallel Cable	Shielded	2.0
Dell Laptop DC Input	Dell AC Adapter	DC Cable	Unshielded	1.0
HP Printer AC Input	120V/60Hz Outlet	Attached Power Cord	Unshied	2.0

Note: The Serial DB9 port was not connected during testing since the 7-Pin Serial/Power Port was already connected.

EUT Operation During Emissions Tests

During emissions testing the EUT was transmitting and/or receiving as noted in the test data.



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Conducted Emissions - Power Ports

Test Specific Details

Objective: The objective of this test session is to perform engineering evaluation testing of the EUT with respect to the specification listed above.

Date of Test: 1/29/2007 17:36

Config. Used: 3

Test Engineer: Rafael Varelas

Config Change: Refer to individual runs

Test Location: SVOATS #1

EUT Voltage: 230V/50Hz

General Test Configuration

The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions:

Temperature: 11 °C

Rel. Humidity: 71 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
3	CE, AC Power, 120V/60Hz	EN55022 Class B	Pass	38.8dB μ V @ 1.366MHz (-7.2dB)
4	CE, AC Power, 230V/50Hz	EN55022 Class B	Pass	40.5dB μ V @ 0.196MHz (-13.3dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

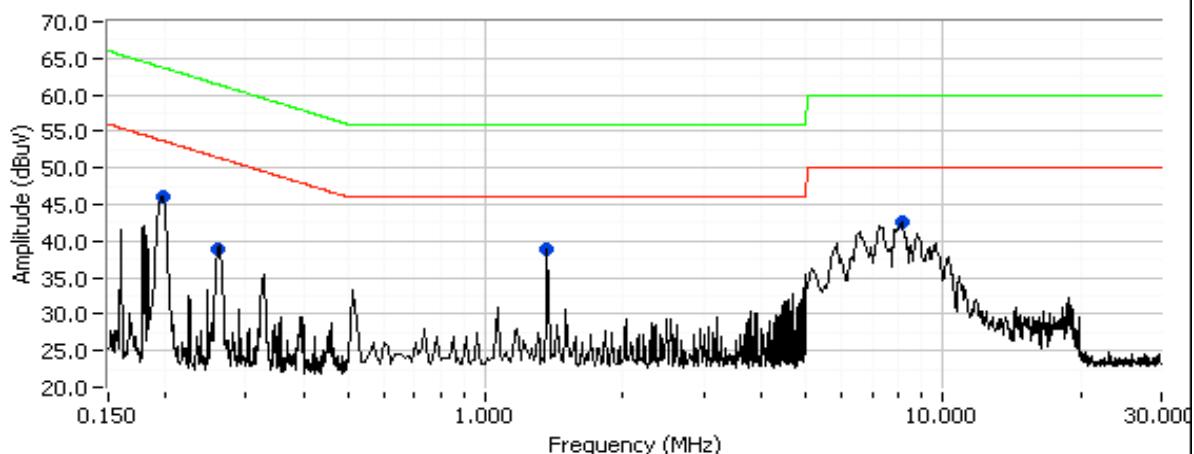
No deviations were made from the requirements of the standard.

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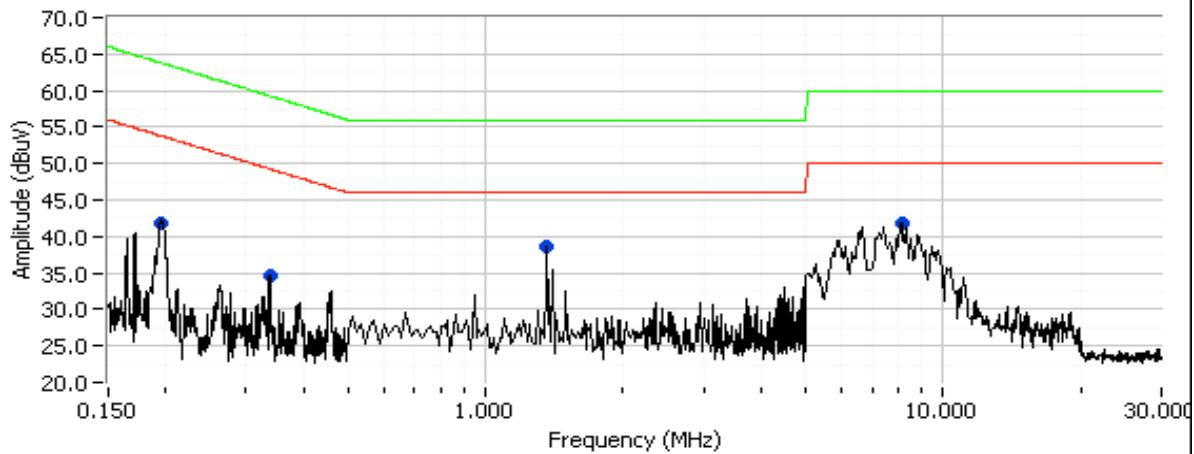
Run #3: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

Power Supply Mfr: AULT, Model # PW174KA180, Date Code 0703 Rev.A
 EUT 57880-64, 450 MHz Radio Module

Run #3: .15 - 30 MHz, 120V/60Hz, Line



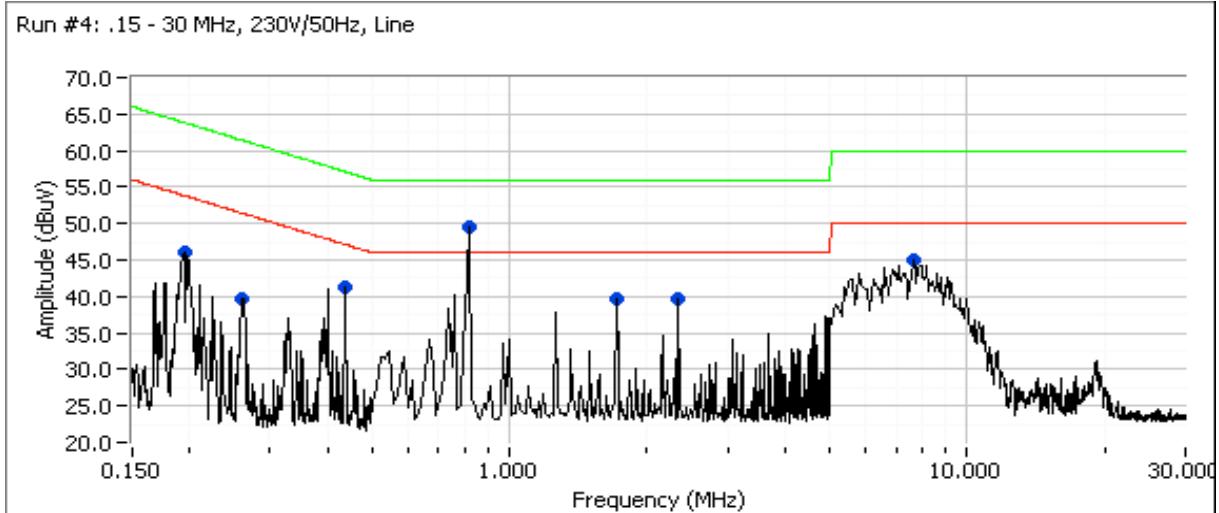
Run #3: .15 - 30 MHz, 120V/60Hz, Neutral



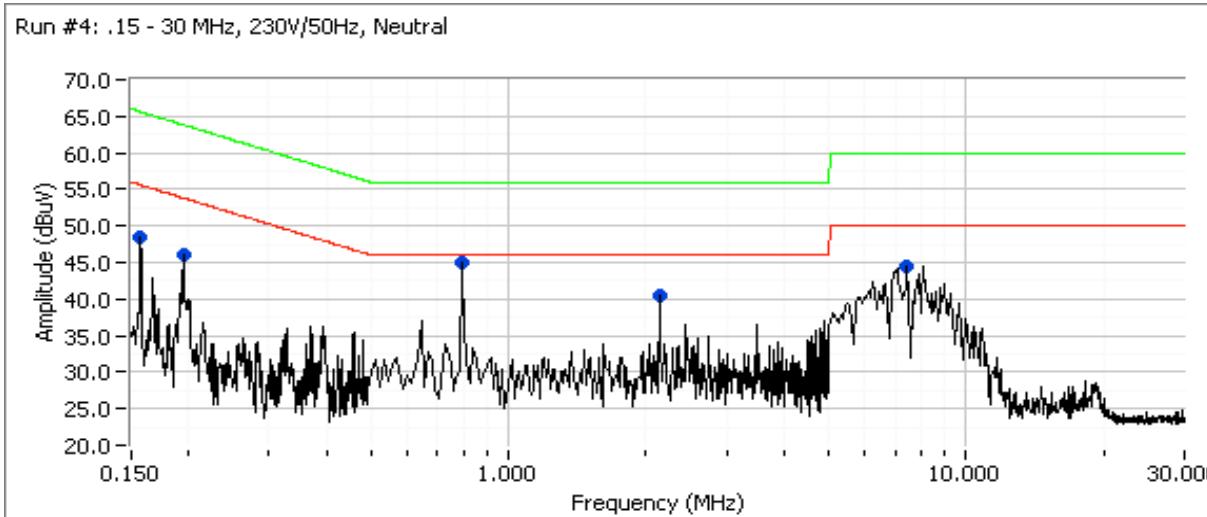
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Standard:	EN55022/ FCC	Class:	B

Run #3: Continued
Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dB μ V	AC Line	EN55022 B		Detector QP/Ave	Comments
			Limit	Margin		
1.366	38.8	Line	46.0	-7.2	Peak	Ambient
8.125	42.7	Line	50.0	-7.3	Peak	
1.366	38.7	Neutral	46.0	-7.3	Peak	Ambient
0.197	46.1	Line	53.7	-7.6	Peak	
8.125	41.9	Neutral	50.0	-8.1	Peak	
0.196	41.9	Neutral	53.8	-11.9	Peak	
0.261	38.8	Line	51.4	-12.6	Peak	
0.338	34.6	Neutral	49.2	-14.6	Peak	

Run #4: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
Power Supply Mfr: AULT, Model # PW174KA180, Date Code 0703 Rev.A
EUT 57880-64, 450 MHz Radio Module


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Standard:	EN55022/ FCC	Class:	B

Run #4: Continued

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dB μ V	AC Line	EN55022 B		Detector QP/Ave	Comments
0.810	49.6	Line	46.0	3.6	Peak	Ambient
0.811	45.1	Neutral	46.0	-0.9	Peak	Ambient
7.630	44.9	Line	50.0	-5.1	Peak	
7.432	44.5	Neutral	50.0	-5.5	Peak	
2.151	40.4	Neutral	46.0	-5.6	Peak	Random Spike
0.435	41.3	Line	47.1	-5.8	Peak	Random spike
1.714	39.7	Line	46.0	-6.3	Peak	random spike
2.329	39.6	Line	46.0	-6.4	Peak	
0.157	48.4	Neutral	55.6	-7.2	Peak	
0.195	46.1	Neutral	53.8	-7.7	Peak	
0.196	46.0	Line	53.8	-7.8	Peak	
0.260	39.8	Line	51.4	-11.6	Peak	



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Run #4: Continued

Final quasi-peak and average readings

Frequency MHz	Level dB μ V	AC Line	EN55022 Class B Limit	Margin	Detector QP/Ave	Comments
0.196	40.5	Line	53.8	-13.3	AVG	
0.196	48.0	Line	63.8	-15.8	QP	
7.630	42.9	Line	60.0	-17.1	QP	
7.630	32.5	Line	50.0	-17.5	AVG	
7.432	42.1	Neutral	60.0	-17.9	QP	
7.432	31.5	Neutral	50.0	-18.5	AVG	
0.157	41.6	Neutral	65.6	-24.0	QP	
2.329	30.8	Line	56.0	-25.2	QP	
2.151	19.5	Neutral	46.0	-26.5	AVG	Random Spike
0.435	30.7	Line	57.2	-26.5	QP	Random spike
1.714	29.4	Line	56.0	-26.6	QP	random spike
2.151	29.1	Neutral	56.0	-26.9	QP	Random Spike
0.435	10.5	Line	47.2	-36.7	AVG	Random spike
0.157	18.4	Neutral	55.6	-37.2	AVG	
2.329	4.4	Line	46.0	-41.6	AVG	
1.714	3.3	Line	46.0	-42.7	AVG	random spike