TEST RESULT SUMMARY

FCC Part 15 Subpart C Section 15.247
FCC Part 15 Subpart C Section 15.207
Industry Canada RSS-210 Issue 6
Industry Canada RSS-Gen Issue 1

MANUFACTURER'S NAME	Digital Angel Corporation
NAME OF EQUIPMENT	DTR Series Reader
MODEL NUMBER(S) TESTED	800800100
MANUFACTURER'S ADDRESS	490 Villaume Avenue South St. Paul, MN 55075
TEST REPORT NUMBER	WC606308
TEST DATE(S)	15 March 2005, 08 – 09 November 2006

According to testing performed at TÜV SÜD America Inc, the above mentioned unit is in compliance with the applicable electromagnetic compatibility (EMC) portions of the requirements defined in FCC Part 15 Subpart C Sections 15.247 and 15.207 and IC RSS-210 Issue 6 and RSS-Gen Issue 1

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV SÜD America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable EMC requirements of FCC Part 15 Subpart C Sections 15.247 *"Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz; General requirements."* and 15.207 *"Conducted Limits"* and IC RSS-210 Issue 6 *"Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"* and IC RSS-Gen *"General Requirements and Information for the Certification of Radiocommunication Equipment".*

Date: 05 December 2006

Location: Taylors Falls MN USA

Ross Johnson & Joe Sausen
EMC Technicians

Joel Schneider
Sr. EMC Engineer

Not Transferable

EMC TEST REPORT

Test Report File No.	:	**WC606308**	Date of issue:	05 December 2006

Model / Serial No(s) Tested	:	800800100 / 0631.1029 & 0305,002
Product Type	:	DTR Series Reader, Hand-Held Wireless ISO Reader
Applicant	:	Digital Angel Corporation
Manufacturer	:	Digital Angel Corporation
License holder	:	Digital Angel Corporation
Address	:	490 Villaume Avenue South St. Paul, MN 55075

Test Result	:	■ **Positive**	☐ **Negative**
Test Project Number References	:	**WC606308**	
Total pages including Appendices	:	**53**	

TÜV SÜD AMERICA Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV SÜD America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP, NIST, or any agency of the US government.

TÜV SÜD AMERICA Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NARTE, and VCCI.

D I R E C T O R Y

Sign Explanations:
☐ - not applicable
■ - applicable

Directory	2
Test Regulations, Environmental conditions, Power supply	3

EMC TEST REGULATIONS:

The tests were performed according to the following regulations :

☐ - EN 50081-1 / 1991
☐ - EN 55014-2: 1997 + Amendment A1: 2001 - Category __
☐ - EN 55024: 1998 + Amendments A1: 2001 + A2: 2003
☐ - EN 60601-1-2: 2001
☐ - EN 61000-6-1: 2001
☐ - EN 61000-6-2: 2001
☐ - EN 61326: 1997 + Amendments A1: 1998 + A2: 2001 + A3: 2003
☐ - EN 61800-3: 1996 + Amendment A11: 2000
☐ - ETS 300 683: 1997
☐ - ETS 300 683: 1997
☐ - ETSI EN 301 489-3 V1.4.1: 2002
☐ - EN 300 220-3 V1.1.1
☐ - EN 300 330-2 V1.1.1
■ - FCC Part 15 Subpart C Section 15.207
☐ - FCC Part 15 Subpart C Section 15.209
■ - FCC Part 15 Subpart C Section 15.247
☐ - FCC Part 15 Subpart C Section 15.249
■ - IC RSS-210 Issue 6
■ - IC RSS-Gen Issue 1
☐ - IC RSS-Gen Issue 1

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 12 - 21 °C
Atmospheric pressure	: 98 kPa
Relative Humidity	: 25 - 36 %

POWER SUPPLY UTILIZED

Power supply system	: 6 VDC Internal Battery (normal use)
	: 110 VAC / 60 Hz - 1 phase to DC battery charger

20 dB Bandwidth
FCC 15.247(a)(1), IC RSS-210 A8.1(1)

Test summary
The requirements are: ■ - MET ☐ - NOT MET
20 dB bandwidth = 800 kHz on low, mid, and high channels

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

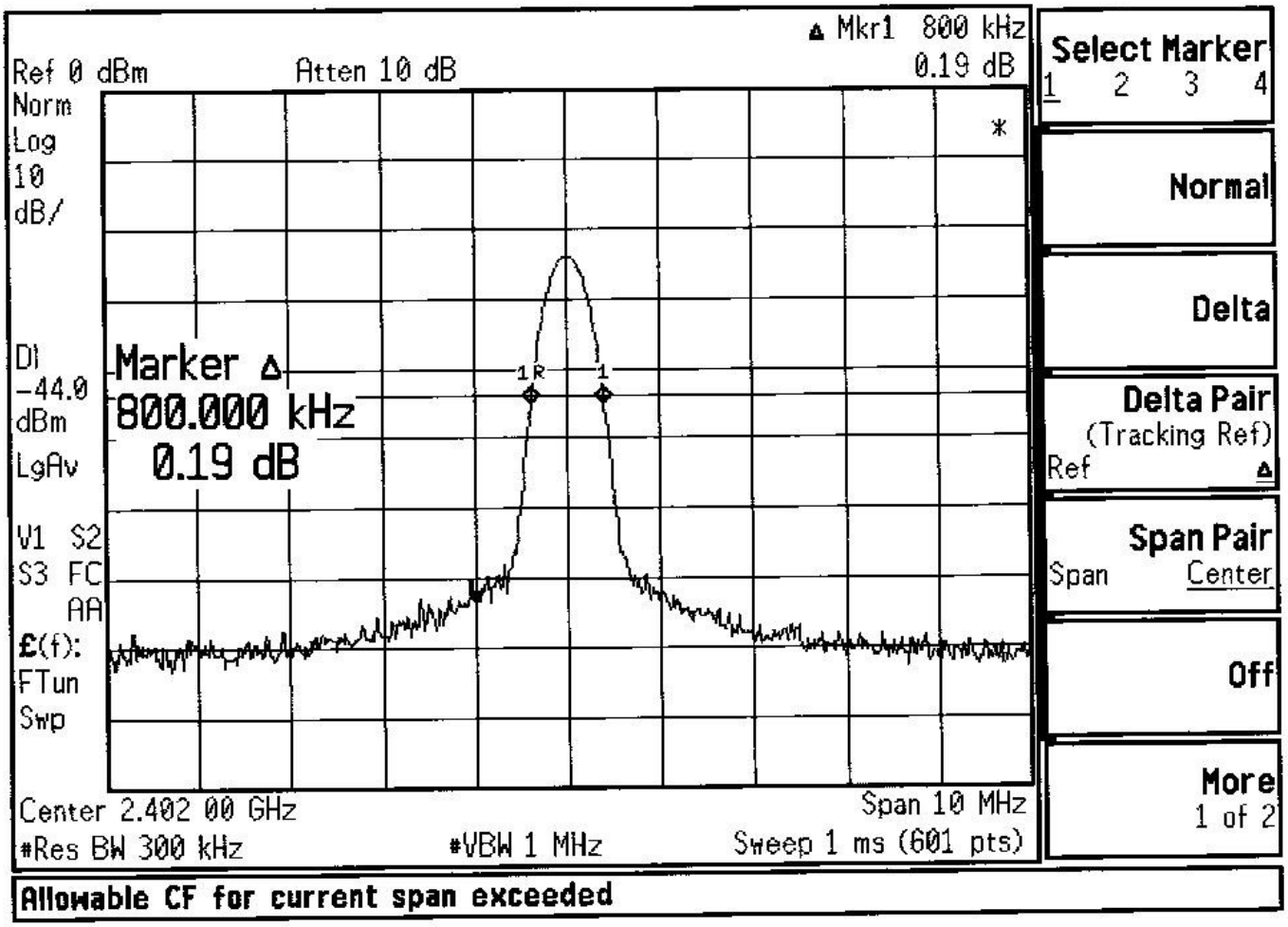
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
	7405-901	EMCO	Near field probe	na	Code Y

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

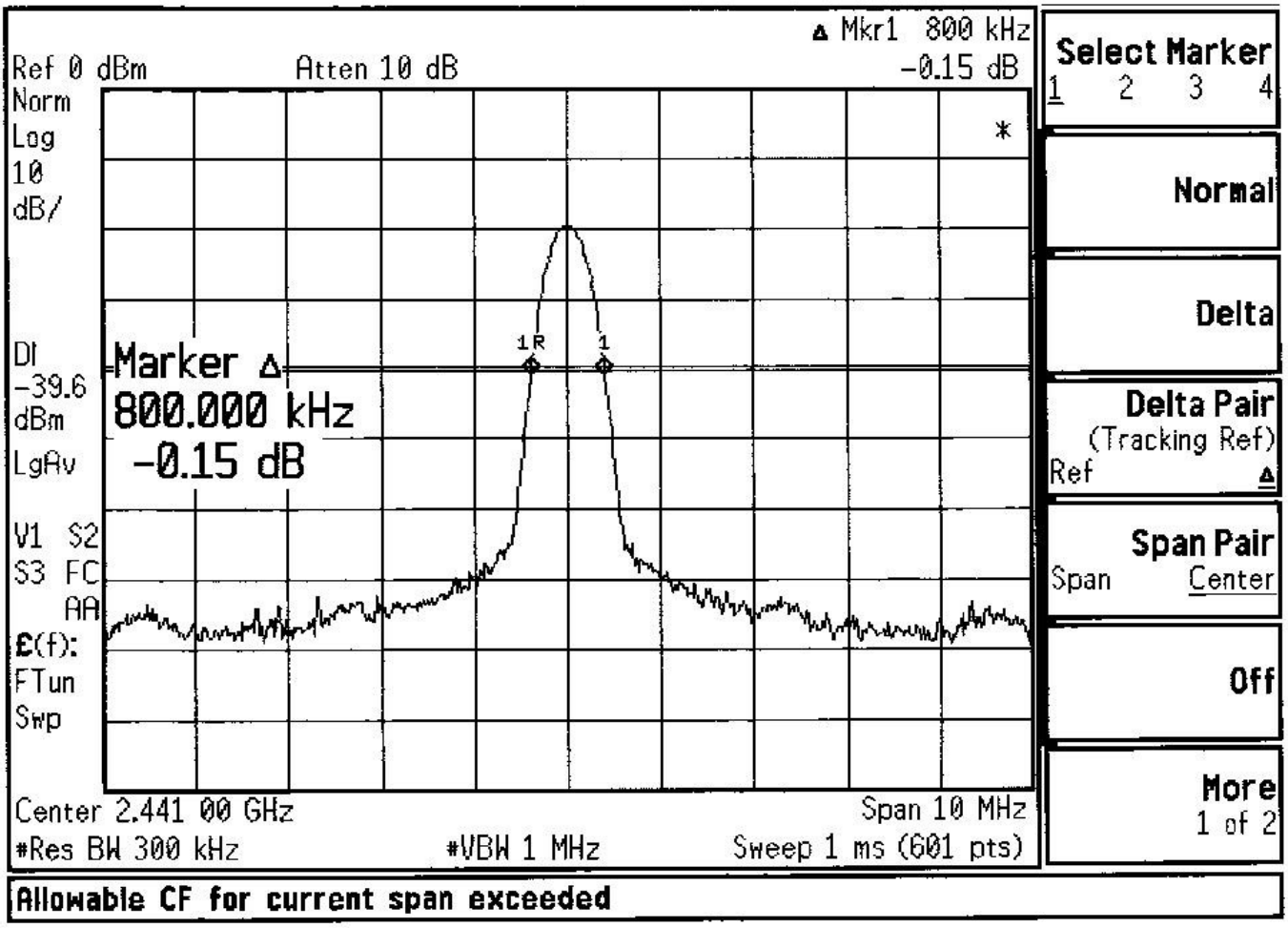
Test limit
No limit specified

Test data
Pages 5 - 7

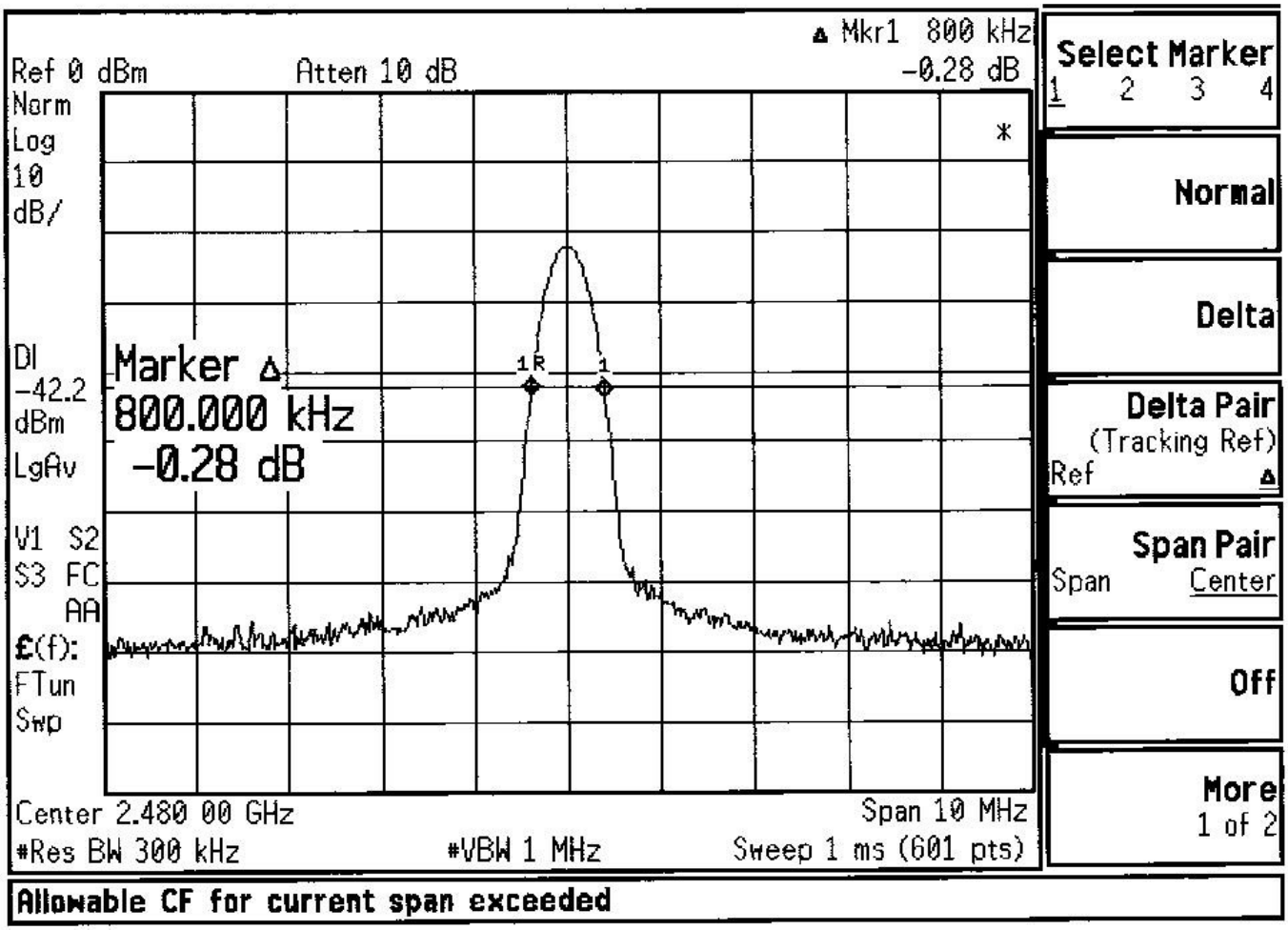
20 dB Bandwidth, Low channel



20 dB Bandwidth, Mid channel



20 dB Bandwidth, High channel



Carrier frequency separation
FCC 15.247(a)(1), IC RSS-210 A8.1(2)

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Carrier frequency separation = 1 MHz

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

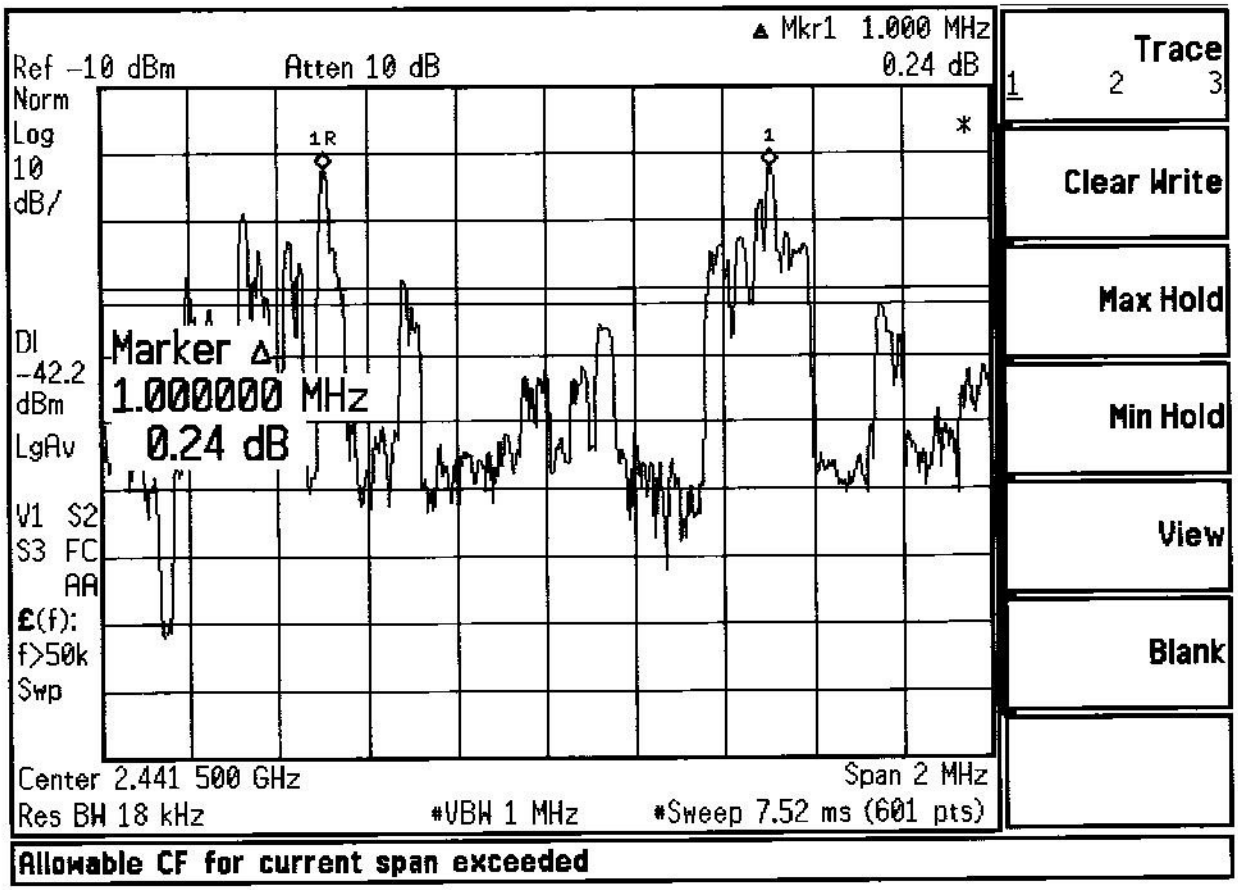
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
	7405-901	EMCO	Near field probe	na	Code Y

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limit
Separation > 800 kHz (20 dB bandwidth)

Test data
Page 9

Carrier frequency separation



Number of hopping channels
FCC 15.247(a)(1)(iii), IC RSS-210 A8.1(4)

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Number of hopping channels = 79

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

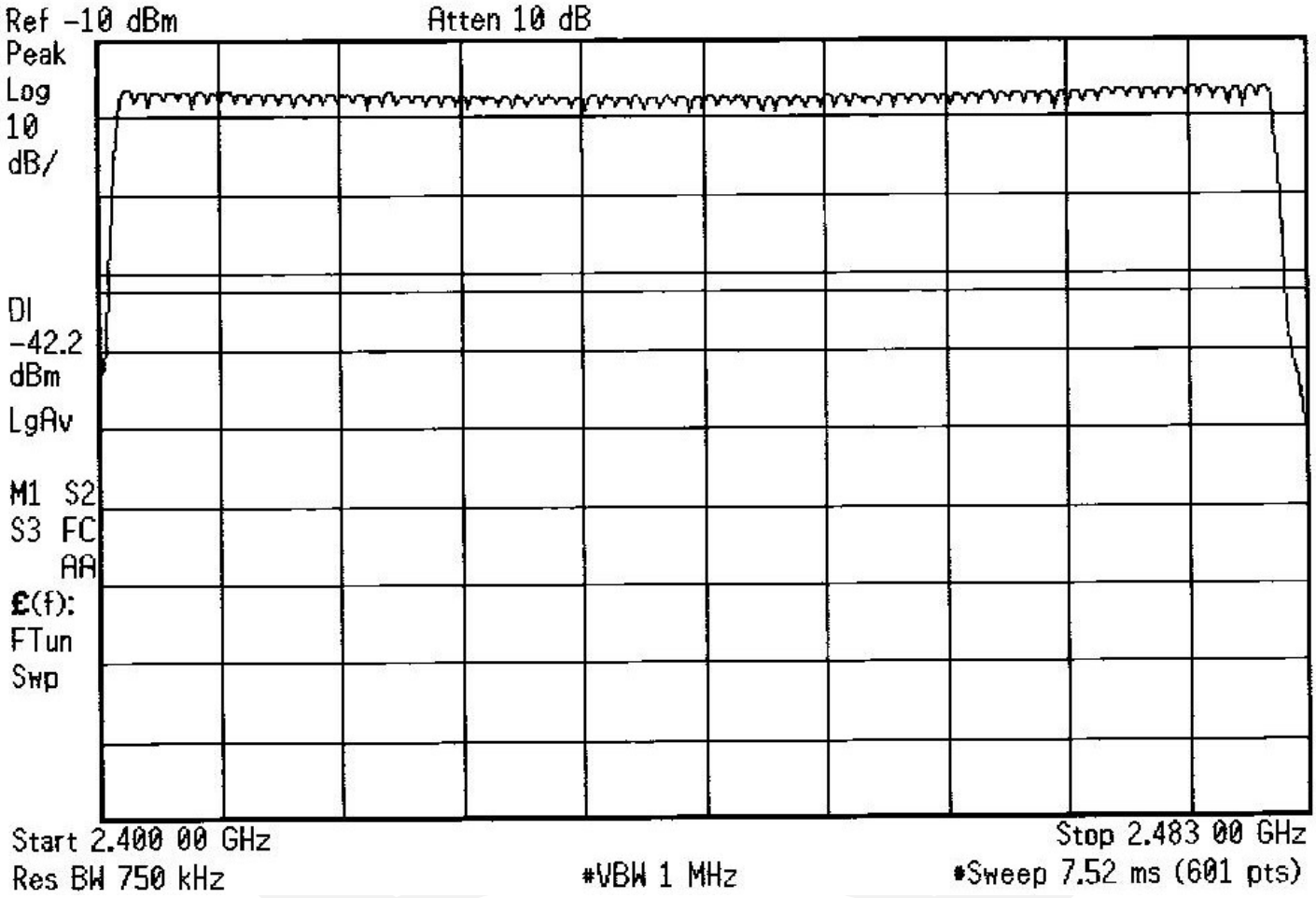
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
	7405-901	EMCO	Near field probe	na	Code Y

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limit
Minimum number of hopping channels = 15

Test data
Page 11

Number of hopping channels



Average time of channel occupancy
FCC 15.247(a)(1)(iii), IC RSS-210 A8.1(4)

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Average time per pulse = 200 μS. Test period = 31.6 seconds (0.4 seconds x 79 channels).
Pulses per test period = 40. Average time of channel occupancy per test period = 8 mS (200 μS x 40 pulses)

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

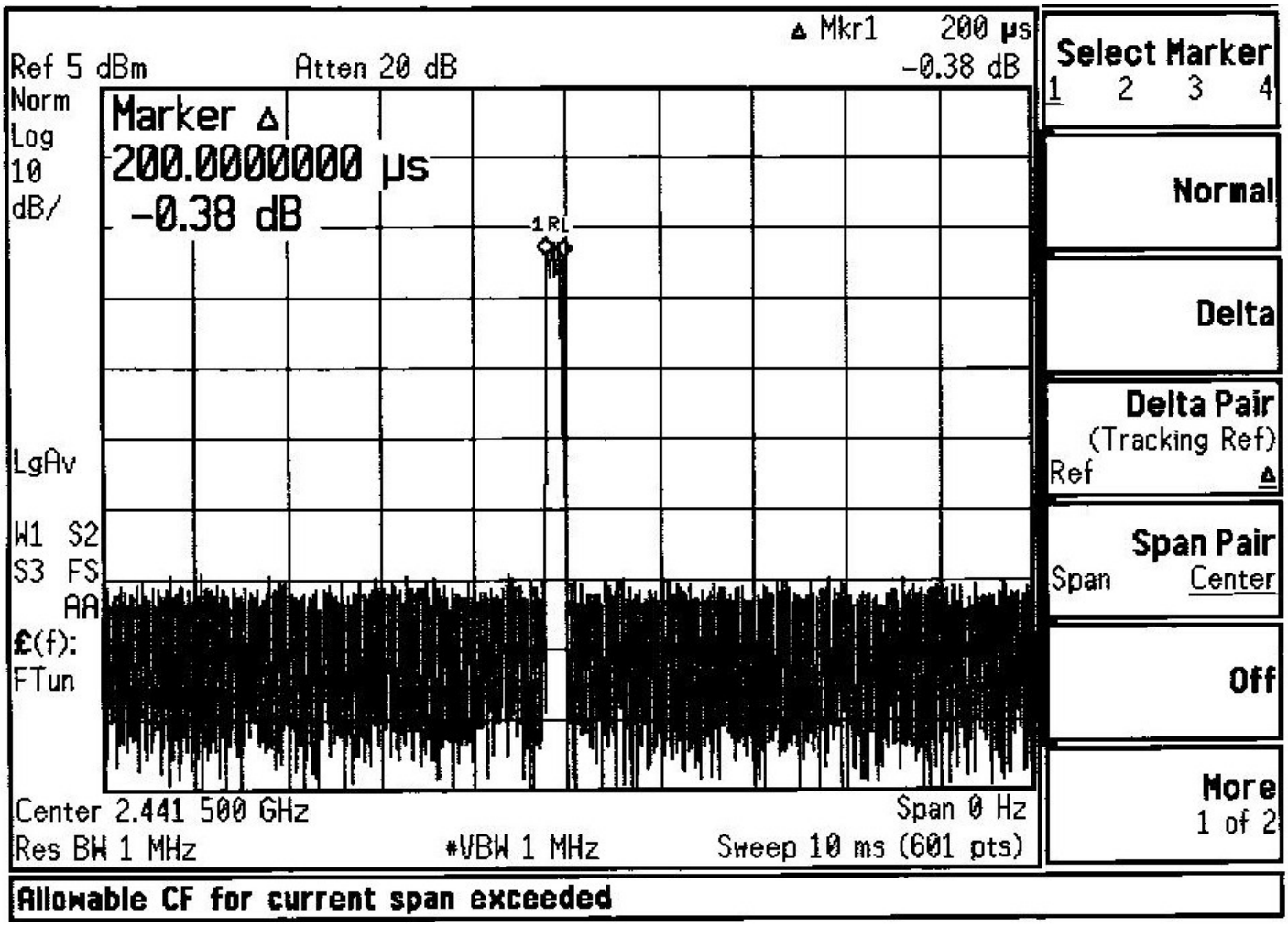
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
	7405-901	EMCO	Near field probe	na	Code Y

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

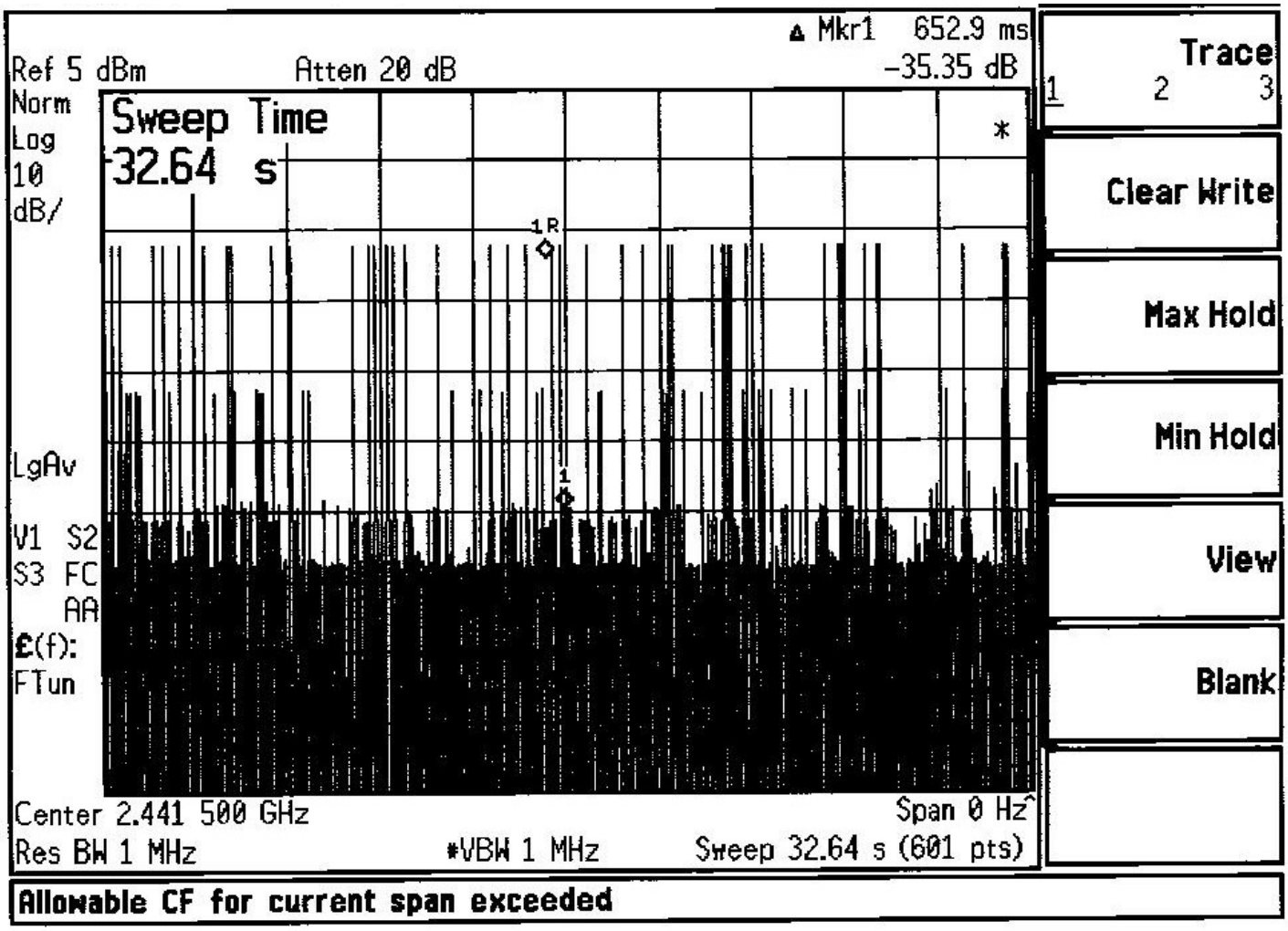
Test limit
The average time of channel occupancy shall not be greater than 0.4 seconds within a period of 31.6 seconds (0.4 seconds x 79 channels).

Test data
Pages 13 - 14

Dwell time = 200 μS / pulse



Pulses per test period = 40



Maximum peak output power
FCC 15.247(b)(1), IC RSS-210 A8.4(2)

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Minimum margin of compliance is 43 dB at 2.480GHz
Radiated measurements performed instead of conducted because the transmit antenna is integral
Antenna gain < 6 dBi

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test distance
■ - 3 meters
☐ - 10 meters

Test Equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	02-May-07
2075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	07-Dec-06
6717	3116	EMCO	Ridge Guide Ant 18-40 GHz	2005	05 Oct 07
2690	8566B	Hewlett-Packard	Spectrum Analyzer	2430A00930	12 May 07
2673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	12 May 07
2684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	15 Mar 07
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
3847	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	0607	Code B
3958	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0002	Code B

Cal Code B = Calibration verification performed internally.

Test limits
Maximum output power shall not exceed 1 W or 30 dBm

Test data
Pages 16 - 19

RADIATED EMISSIONS

Test Report #:	WC606308 Run 2	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	MAXIMUM PEAK OUTPUT POWER				
Data File Name:	6308.dat			Page:	1 of 3

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 125mW (BLUETOOTH) Guidline	DELTA2
ALL READINGS MAXIMIZED.						
2.402 GHz	90.45 Pk	4.15 / 28.76 / 50.03 / 0.0	73.34	V / 1.00 / 277	-42.86	n/a
2.402 GHz	94.6 Pk	4.15 / 28.76 / 50.03 / 0.0	77.49	H / 1.50 / 209	-38.71	n/a
2.441 GHz	97.1 Pk	4.16 / 28.84 / 49.98 / 0.0	80.12	H / 1.00 / 0	-36.08	n/a
2.441 GHz	90.35 Pk	4.16 / 28.84 / 49.98 / 0.0	73.37	V / 1.20 / 212	-42.83	n/a
2.48 GHz	91.7 Pk	4.18 / 28.91 / 49.94 / 0.0	74.85	V / 1.20 / 189	-41.35	n/a
2.48 GHz	100.0 Pk	4.18 / 28.91 / 49.94 / 0.0	83.15	H / 1.00 / 340	-33.05	n/a
sig gen (-21.2dBm) - cable loss (1.4dB) + ant gain (8.9dB) = -13.7dBm (43uW)						

Tested by: Ross Johnson

Printed | Signature

Reviewed by: Greg Jakubowski

Printed | Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 2	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	MAXIMUM PEAK OUTPUT POWER				
Data File Name:	6308.dat			Page:	2 of 3

Measurement summary for limit1: 125mW (BLUETOOTH) Guidline (Pk)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 125mW (BLUETOOTH) Guidline
2.48 GHz	100.0 Pk	4.18 / 28.91 / 49.94 / 0.0	83.15	H / 1.00 / 340	-33.05
2.441 GHz	97.1 Pk	4.16 / 28.84 / 49.98 / 0.0	80.12	H / 1.00 / 0	-36.08
2.402 GHz	94.6 Pk	4.15 / 28.76 / 50.03 / 0.0	77.49	H / 1.50 / 209	-38.71

Tested by: Ross Johnson

Printed | Signature

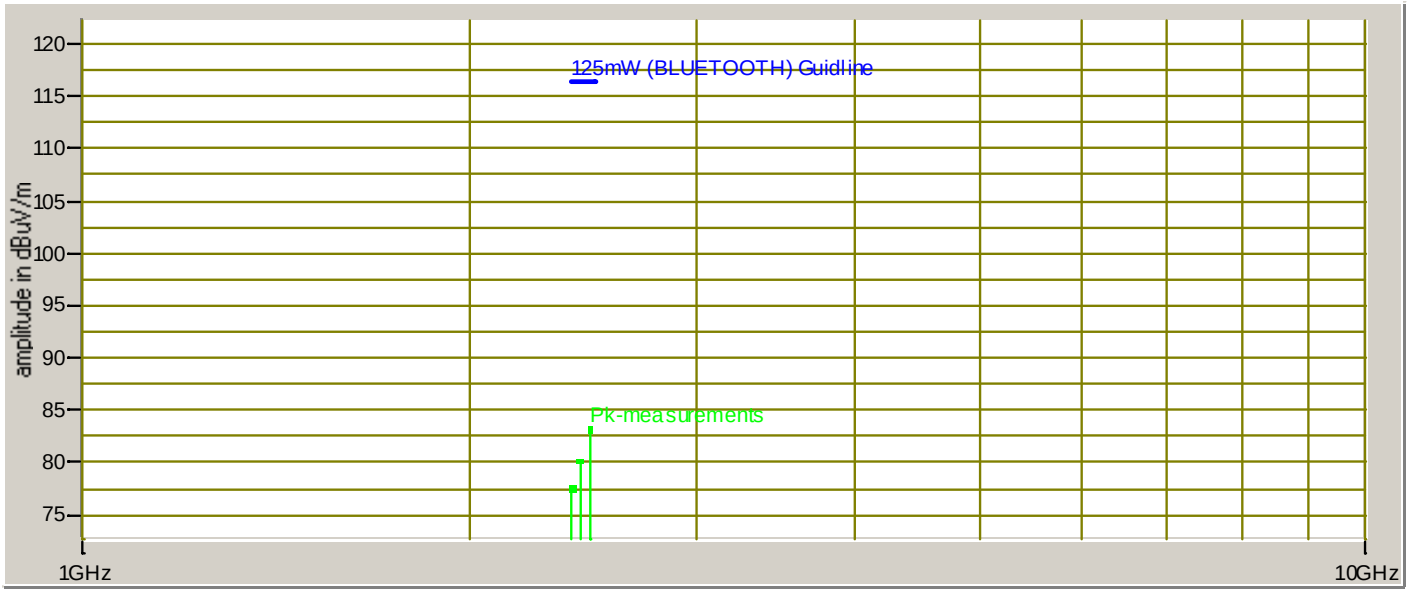
Reviewed by: Greg Jakubowski

Printed | Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 2	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	MAXIMUM PEAK OUTPUT POWER				
Data File Name:	6308.dat			Page:	3 of 3

Graph:



Tested by: Ross Johnson

Printed | Signature

Reviewed by: Greg Jakubowski

Printed | Signature

Equivalent Isotropically Radiated Power (EIRP) Substitution

Company: **Digital Angel**
EUT: **DTR3**
Date: **9-Nov-06**
Tested By: **Ross Johnson**

SUBSTITUTION PERFORMED

Plug in freq, final dBuV/m, Matching Sig gen level, and cable loss
(if using antenna other than dipole also enter ant. Gain) - final matching dBm will automatically be calculated in column F. (Final dBm = Sig gen level (dBm) - Cable loss + Ant. Gain)
Schwarzbeck dipole antenna gain : 2.15dBi -10dB + 1.64dB = -6.21
2.15dBi theoretical gain of a dipole, 10dB internal attenuator, 1.64dB correction for 73 / 50 ohm balun

Freq. (MHz)	Final (dBuV/m)	Matches Sig Gen Level (dBm)	Cable Loss (dB)	Horn Ant. Gain (dB)	Matches Final (dBm)
2480	83.15	-21.2	1.4	8.9	-13.70

SUBSTITUTION EXTRAPOLATED TO OTHER SPURIOUS EMISSIONS

Enter any more spurious frequencies and final dBuV/m. Corresponding final power levels will automatically be calculated.

Freq. MHz	Final dBuV/m	Correction Factor	Final dBm	Final uW	Final nW
2480	83.15	96.85	-13.70	42.657952	42657.952
2402	77.49	96.85	-19.36	11.587774	11587.774
2441	80.12	96.85	-16.73	21.232445	21232.445

Spurious emissions
FCC 15.247(d), IC RSS-210 A8.5

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Minimum margin of compliance is 0.65 dB at 4.804 GHz

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test distance
■ - 3 meters
☐ - 10 meters

Test Equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	02-May-07
2075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	07-Dec-06
6717	3116	EMCO	Ridge Guide Ant 18-40 GHz	2005	05 Oct 07
2690	8566B	Hewlett-Packard	Spectrum Analyzer	2430A00930	12 May 07
2673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	12 May 07
2684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	15 Mar 07
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
3847	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	0607	Code B
3958	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0002	Code B

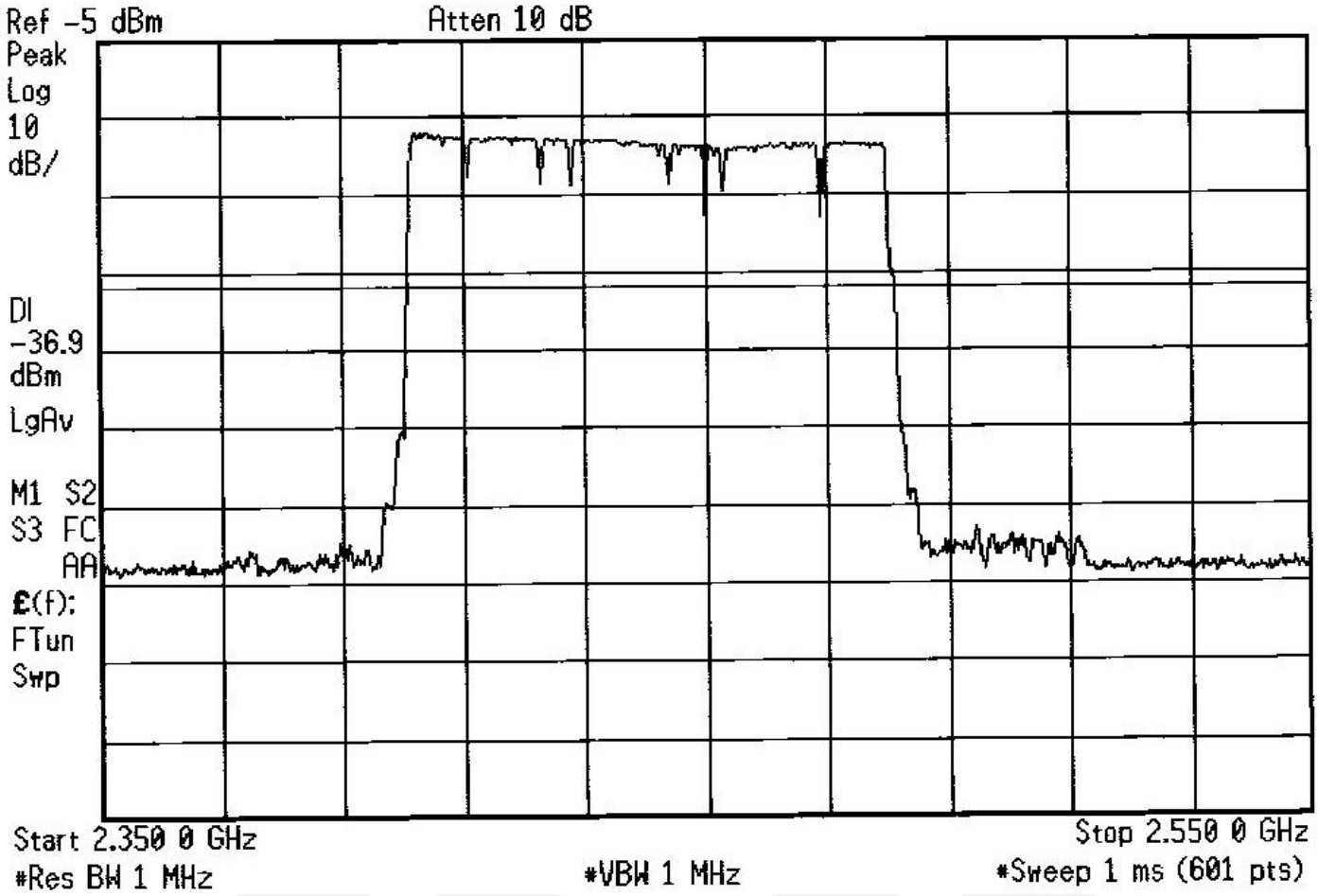
Cal Code B = Calibration verification performed internally.

Test limit
-20 dBc and;
Test limit in restricted bands

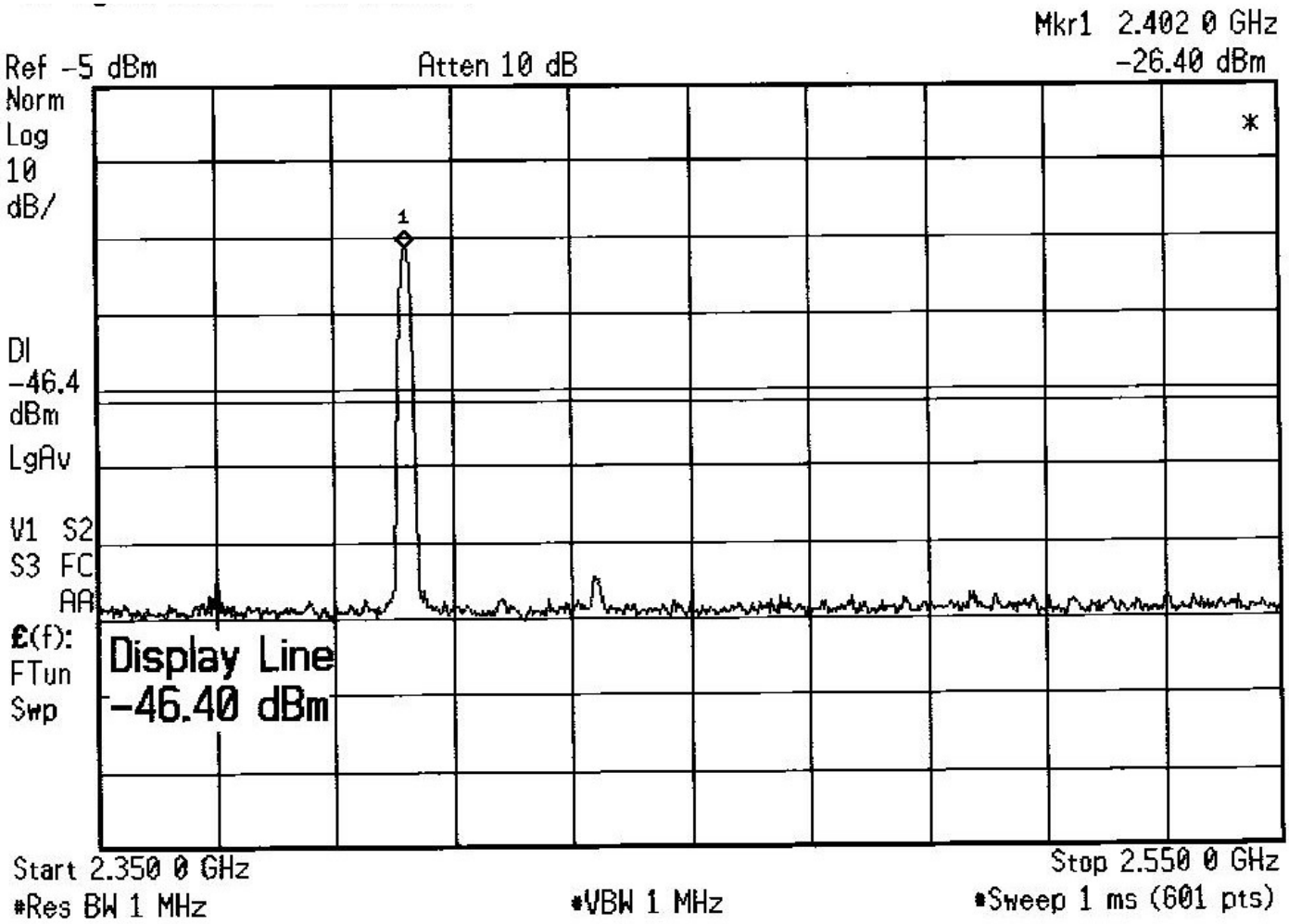
Frequncy (MHz)	Field strength (μV/meter)	Field strength (dB μV/meter)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test data
Pages 21 - 30

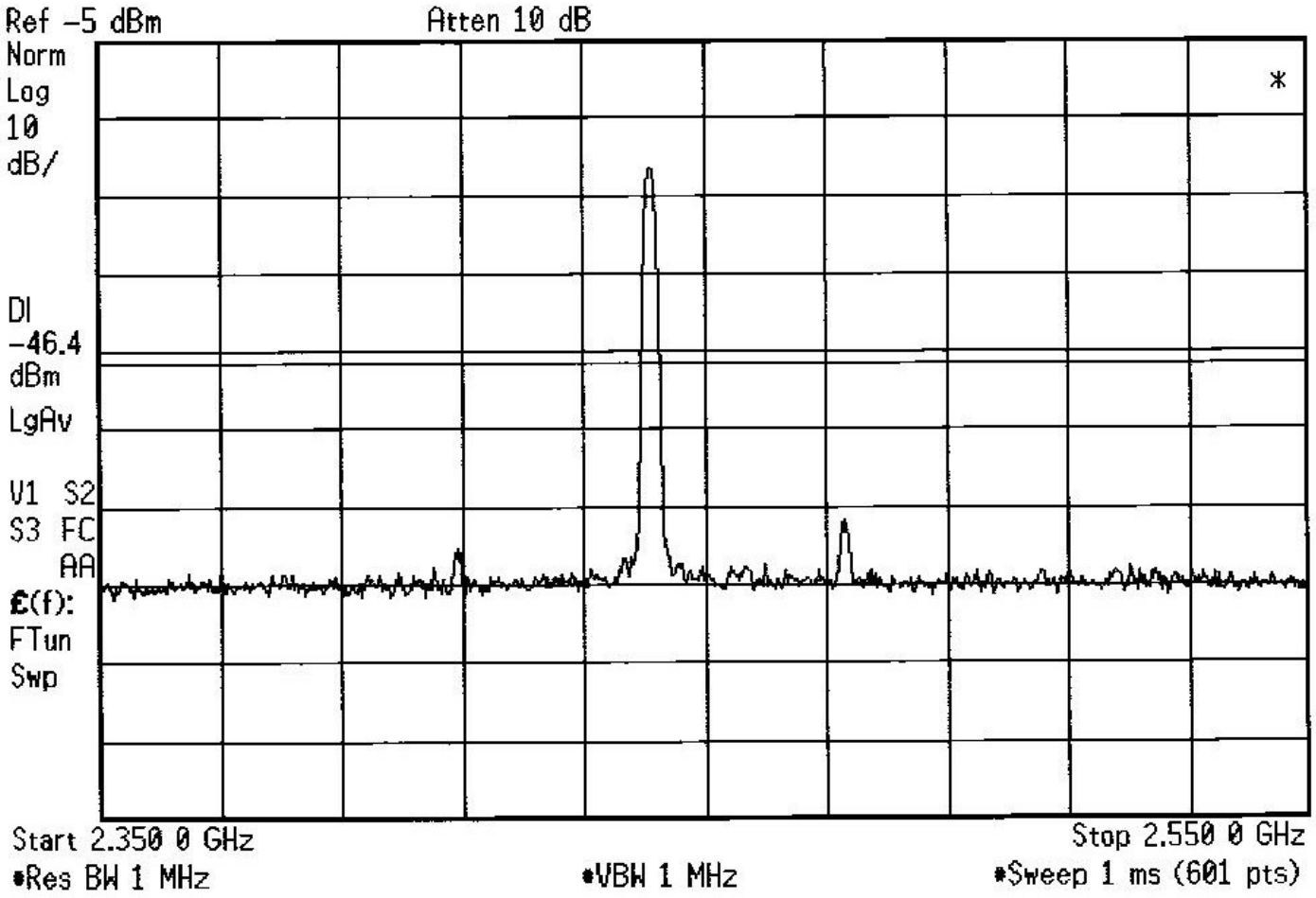
Spurious emissions, Normal modulation



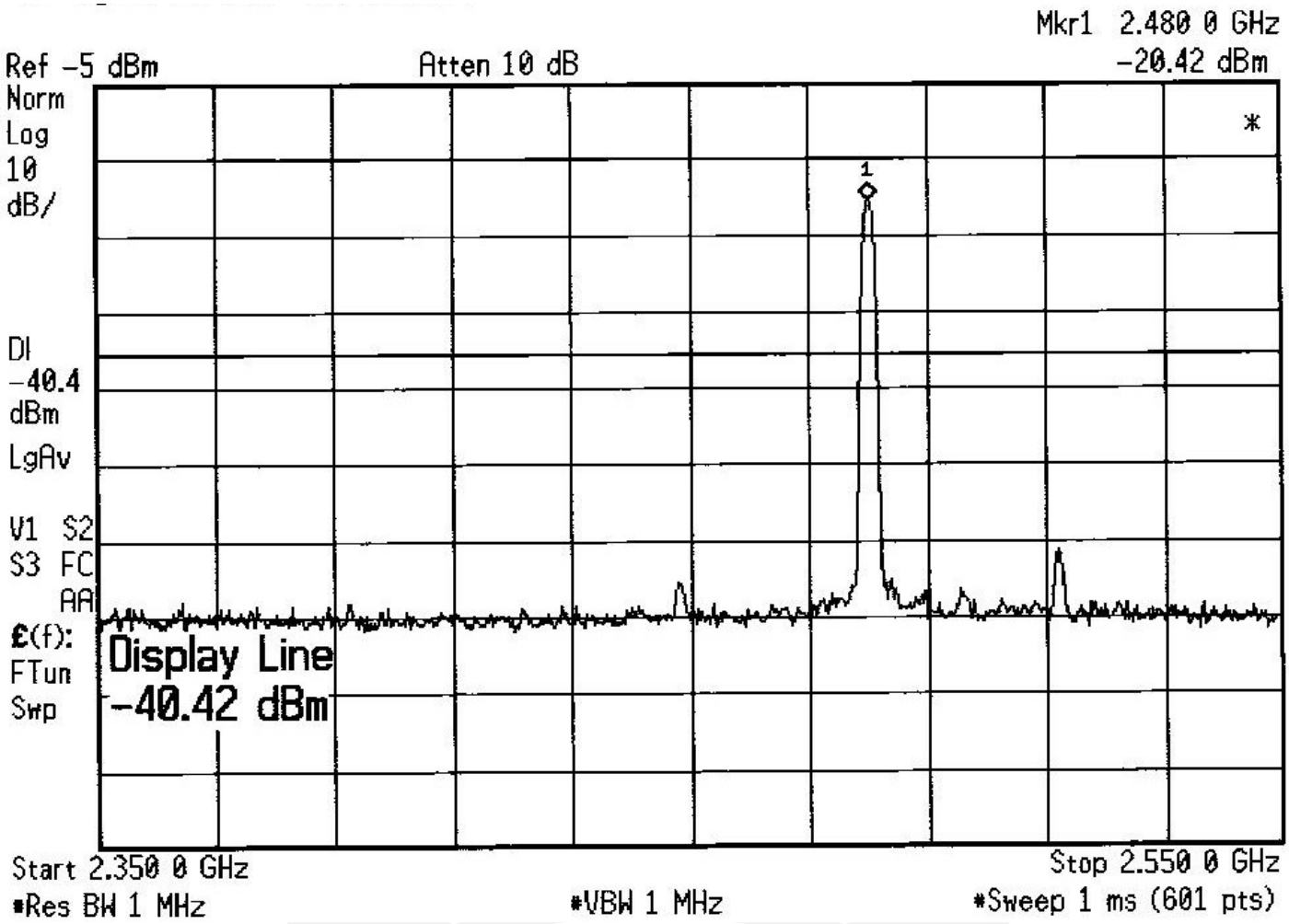
Low channel


Mkr1 2.402 0 GHz
-26.40 dBm
Ref -5 dBm
Atten 10 dB
Norm
Log
10
dB/
1
Dl
-46.4
dBm
LgAv
V1 S2
S3 FC
AA
£(f):
FTun
Swp
Display Line
-46.40 dBm
Start 2.350 0 GHz
#Res BW 1 MHz
#VBW 1 MHz
Stop 2.550 0 GHz
#Sweep 1 ms (601 pts)

Mid channel


Ref -5 dBm
Atten 10 dB
Norm
Log
10
dB/
Dl
-46.4
dBm
LgAv
V1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.350 0 GHz
#Res BW 1 MHz
#VBW 1 MHz
Stop 2.550 0 GHz
#Sweep 1 ms (601 pts)

High channel



RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	1 of 6

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 FCC B >1GHz 3m
LOW CHANNEL - 2.402GHz.						
1.201 GHz	32.66 Av	3.01 / 24.13 / 29.37 / 0.0	30.43	V / 1.00 / 0	n/a	-23.57
MAXIMIZED.						
1.201 GHz	34.28 Av	3.01 / 24.13 / 29.37 / 0.0	32.05	V / 1.00 / 82	n/a	-21.95
1.201 GHz	36.05 Av	3.01 / 24.13 / 29.37 / 0.0	33.82	H / 1.00 / 0	n/a	-20.18
MAXIMIZED.						
1.201 GHz	40.49 Av	3.01 / 24.13 / 29.37 / 0.0	38.26	H / 1.00 / 170	n/a	-15.74
1.201 GHz	43.45 Pk	3.01 / 24.13 / 29.37 / 0.0	41.22	H / 1.00 / 170	n/a	-12.78*
MIDDLE CHANNEL - 2.411GHz.						
1.221 GHz	30.53 Av	3.04 / 24.27 / 29.34 / 0.0	28.5	V / 1.00 / 0	n/a	-25.5
1.221 GHz	40.2 Pk	3.04 / 24.27 / 29.34 / 0.0	38.17	V / 1.00 / 0	n/a	-15.83*
MAXIMIZED.						
1.221 GHz	31.51 Av	3.04 / 24.27 / 29.34 / 0.0	29.48	V / 1.00 / 176	n/a	-24.52
1.221 GHz	33.05 Av	3.04 / 24.27 / 29.34 / 0.0	31.02	H / 1.00 / 0	n/a	-22.98
MAXIMIZED.						
1.221 GHz	34.31 Av	3.04 / 24.27 / 29.34 / 0.0	32.28	H / 1.35 / 0	n/a	-21.72
1.221 GHz	41.95 Pk	3.04 / 24.27 / 29.34 / 0.0	39.92	H / 1.35 / 0	n/a	-14.08*
HIGH CHANNEL - 2.480GHz.						
1.24 GHz	30.24 Av	3.08 / 24.59 / 29.32 / 0.0	28.59	V / 1.35 / 0	n/a	-25.41

Tested by: Ross Johnson — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	2 of 6

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 FCC B >1GHz 3m
MAXIMIZED.						
1.24 GHz	33.13 Av	3.08 / 24.59 / 29.32 / 0.0	31.48	V / 1.20 / 322	n/a	-22.52
1.24 GHz	35.4 Pk	3.08 / 24.59 / 29.32 / 0.0	33.75	V / 1.20 / 0	n/a	-20.25*
1.24 GHz	32.0 Av	3.08 / 24.59 / 29.32 / 0.0	30.35	H / 1.00 / 0	n/a	-23.65
MAXIMIZED.						
1.24 GHz	36.55 Av	3.08 / 24.59 / 29.32 / 0.0	34.9	H / 1.30 / 43	n/a	-19.1
1.24 GHz	41.2 Pk	3.08 / 24.59 / 29.32 / 0.0	39.55	H / 1.30 / 43	n/a	-14.45*
NORMAL OPERATION (FREQUENCY HOPPING MODE)						
223.985 MHz	31.6 Pk	1.24 / 11.2 / 29.6 / 0.0	14.44	V / 1.00 / 0	-31.56*	n/a
MAXIMIZED.						
223.985 MHz	35.8 Pk	1.24 / 11.2 / 29.6 / 0.0	18.64	V / 2.30 / 300	-27.36*	n/a
223.985 MHz	35.25 Pk	1.24 / 11.2 / 29.6 / 0.0	18.09	H / 1.00 / 0	-27.91*	n/a
MAXIMIZED.						
223.985 MHz	42.25 Pk	1.24 / 11.2 / 29.6 / 0.0	25.09	H / 1.20 / 0	-20.91*	n/a
LOW CHANNEL 2.402 GHz.						
2.37 GHz	47.9 Av	4.14 / 28.7 / 50.06 / 0.0	30.69	H / 1.00 / 0	n/a	-23.31
2.418 GHz	46.33 Av	4.16 / 28.79 / 50.01 / 0.0	29.27	H / 1.00 / 0	n/a	-24.73
2.434 GHz	52.72 Av	4.16 / 28.82 / 49.99 / 0.0	35.72	H / 1.00 / 0	n/a	-18.28

Tested by: Ross Johnson — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	3 of 6

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 FCC B >1GHz 3m
4.804 GHz	62.13 Av	6.17 / 32.5 / 47.45 / 0.0	53.35	H / 1.00 / 0	n/a	-0.65
4.804 GHz	63.25 Pk	6.17 / 32.5 / 47.45 / 0.0	54.47	H / 1.00 / 0	n/a	0.47*
MAXIMIZED.						
4.804 GHz	43.75 Av	6.17 / 32.5 / 47.45 / 0.0	34.97	H / 1.10 / 9	n/a	-19.03
4.804 GHz	50.95 Pk	6.17 / 32.5 / 47.45 / 0.0	42.17	H / 1.10 / 9	n/a	-11.83*
MIDDLE CHANNEL						
4.882 GHz	48.01 Av	6.23 / 32.6 / 47.37 / 0.0	39.47	H / 1.50 / 209	n/a	-14.53
4.882 GHz	53.5 Pk	6.23 / 32.6 / 47.37 / 0.0	44.96	H / 1.50 / 209	n/a	-9.04*
HIGH CHANNEL						
4.96 GHz	59.31 Av	6.28 / 32.7 / 47.28 / 0.0	51.02	H / 1.20 / 330	n/a	-2.98
4.96 GHz	61.1 Pk	6.28 / 32.7 / 47.28 / 0.0	52.81	H / 1.20 / 330	n/a	-1.19*
VERTICAL POLARIZATION YIELDED NO HIGHER EMISSIONS.						
END OF SCAN 30 - 25000MHz						

Tested by: Ross Johnson — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	4 of 6

Measurement summary for limit1: FCC-B <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m
223.985 MHz	42.25 Pk	1.24 / 11.2 / 29.6 / 0.0	25.09	H / 1.20 / 0	-20.91*

Tested by: Ross Johnson — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	5 of 6

Measurement summary for limit2: FCC B >1GHz 3m (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 FCC B >1GHz 3m
4.804 GHz	62.13 Av	6.17 / 32.5 / 47.45 / 0.0	53.35	H / 1.00 / 0	-0.65
4.96 GHz	59.31 Av	6.28 / 32.7 / 47.28 / 0.0	51.02	H / 1.20 / 330	-2.98
4.882 GHz	48.01 Av	6.23 / 32.6 / 47.37 / 0.0	39.47	H / 1.50 / 209	-14.53
1.201 GHz	40.49 Av	3.01 / 24.13 / 29.37 / 0.0	38.26	H / 1.00 / 170	-15.74
2.434 GHz	52.72 Av	4.16 / 28.82 / 49.99 / 0.0	35.72	H / 1.00 / 0	-18.28
1.24 GHz	36.55 Av	3.08 / 24.59 / 29.32 / 0.0	34.9	H / 1.30 / 43	-19.1
1.221 GHz	34.31 Av	3.04 / 24.27 / 29.34 / 0.0	32.28	H / 1.35 / 0	-21.72
2.37 GHz	47.9 Av	4.14 / 28.7 / 50.06 / 0.0	30.69	H / 1.00 / 0	-23.31
2.418 GHz	46.33 Av	4.16 / 28.79 / 50.01 / 0.0	29.27	H / 1.00 / 0	-24.73
1.201 GHz	43.45 Pk	3.01 / 24.13 / 29.37 / 0.0	41.22	H / 1.00 / 170	-12.78*
1.221 GHz	41.95 Pk	3.04 / 24.27 / 29.34 / 0.0	39.92	H / 1.35 / 0	-14.08*
1.24 GHz	41.2 Pk	3.08 / 24.59 / 29.32 / 0.0	39.55	H / 1.30 / 43	-14.45*
4.804 GHz	63.25 Pk	6.17 / 32.5 / 47.45 / 0.0	54.47	H / 1.00 / 0	0.47*
4.882 GHz	53.5 Pk	6.23 / 32.6 / 47.37 / 0.0	44.96	H / 1.50 / 209	-9.04*
4.96 GHz	61.1 Pk	6.28 / 32.7 / 47.28 / 0.0	52.81	H / 1.20 / 330	-1.19*

Tested by: Ross Johnson — Printed

 — Signature

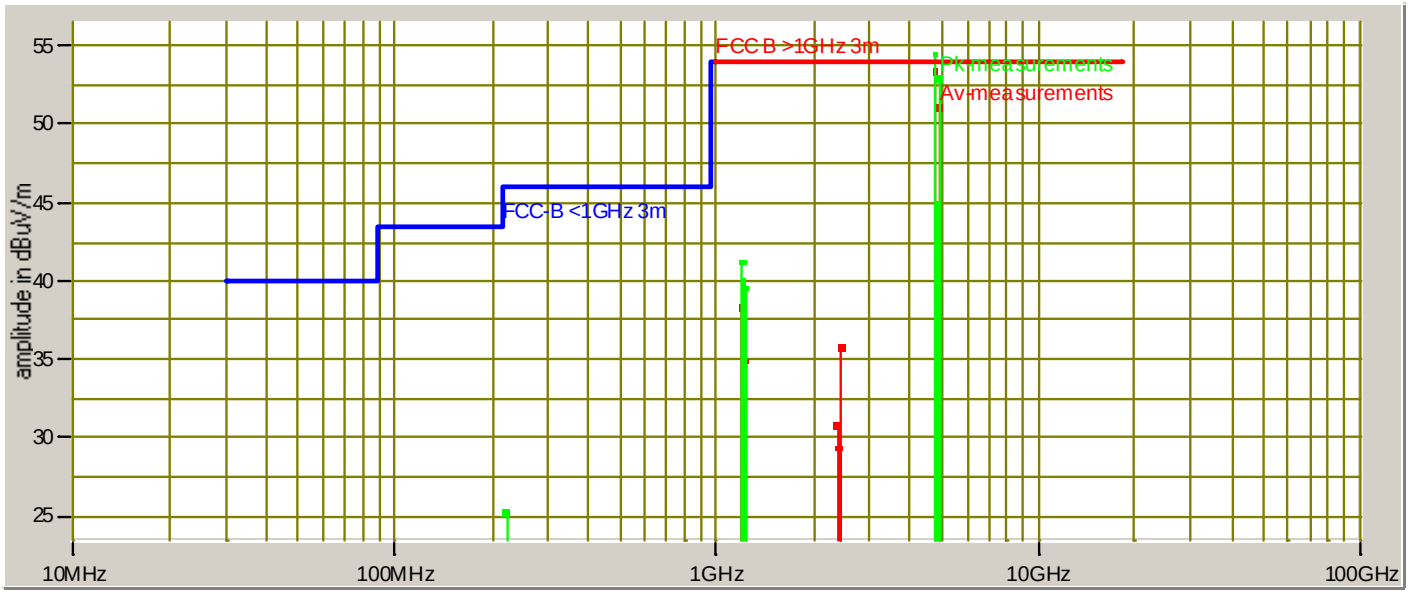
Reviewed by: Greg Jakubowski — Printed

 — Signature

RADIATED EMISSIONS

Test Report #:	WC606308 Run 1	Test Area:	LTS		
EUT Model #:	DTR3	Date:	11/9/2006		
EUT Serial #:	0631.1029	EUT Power:	6 VDC-BATTERY	Temperature:	21.0 °C
Test Method:	FCC-B/ IC			Air Pressure:	98.0 kPa
Customer:	DIGITAL ANGEL			Rel. Humidity:	36.0 %
EUT Description:	BLUE TOOTH ENABLED MICROCHIP READER				
Notes:	SPURIOUS SCAN				
Data File Name:	6308.dat			Page:	6 of 6

Graph:



Tested by: Ross Johnson — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

Conducted Limits - AC Power lines
FCC 15.207(a), IC RSS-Gen 7.2.2

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Minimum margin of compliance = 3.1 dB at 199.64 kHz
Measurements made under test report number WC501242, 15 March 2005

Test location
☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
2417	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN (yellow tape*)	8812-1439	Code B
2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	14-Feb-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limit

Frequncy (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency

Test data
Pages 32 - 36

CONDUCTED EMISSIONS

Test Report #:	WC501242 Run 5	Test Area:	STS		
EUT Model #:	DTR Handheld	Date:	3/15/2005		
EUT Serial #:		EUT Power:	60 Hz / 110 VAC	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Digital Angel			Rel. Humidity:	25.0 %
EUT Description:	Self contained handheld transceiver.				
Notes:					
Data File Name:	1242.dat			Page:	1 of 5

List of measurements for run #: 5

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
199.64 kHz	58.45 Qp	0.0 / 2.01 / 0.0 / 0.0	60.46	N	-3.17	n/a
199.64 kHz	48.35 Av	0.0 / 2.01 / 0.0 / 0.0	50.36	N	n/a	-3.27
199.64 kHz	58.39 Qp	0.0 / 2.01 / 0.0 / 0.0	60.4	N	-3.23	n/a
199.64 kHz	48.35 Av	0.0 / 2.01 / 0.0 / 0.0	50.36	N	n/a	-3.27
199.64 kHz	58.27 Qp	0.0 / 2.01 / 0.0 / 0.0	60.28	N	-3.35	n/a
199.64 kHz	48.26 Av	0.0 / 2.01 / 0.0 / 0.0	50.27	N	n/a	-3.36
600.45 kHz	34.07 Qp	0.0 / 0.1 / 0.0 / 0.0	34.17	N	-21.83	n/a
600.45 kHz	32.87 Av	0.0 / 0.1 / 0.0 / 0.0	32.97	N	n/a	-13.03
1.101 MHz	32.3 Qp	0.0 / 0.05 / 0.0 / 0.0	32.35	N	-23.65	n/a
1.101 MHz	31.18 Av	0.0 / 0.05 / 0.0 / 0.0	31.23	N	n/a	-14.77
4.609 MHz	37.46 Qp	0.1 / 0.05 / 0.0 / 0.0	37.61	N	-18.39	n/a
4.609 MHz	36.36 Av	0.1 / 0.05 / 0.0 / 0.0	36.51	N	n/a	-9.49
8.129 MHz	34.42 Qp	0.2 / 0.05 / 0.0 / 0.0	34.67	N	-25.33	n/a
8.129 MHz	31.18 Av	0.2 / 0.05 / 0.0 / 0.0	31.43	N	n/a	-18.57
30.0 MHz	17.47 Qp	0.5 / 0.1 / 0.0 / 0.0	18.07	N	-41.93	n/a
30.0 MHz	12.41 Av	0.5 / 0.1 / 0.0 / 0.0	13.01	N	n/a	-36.99
199.64 kHz	58.21 Qp	0.0 / 2.01 / 0.0 / 0.0	60.22	L1	-3.41	n/a
199.64 kHz	46.75 Av	0.0 / 2.01 / 0.0 / 0.0	48.76	L1	n/a	-4.87
600.45 kHz	28.47 Qp	0.0 / 0.1 / 0.0 / 0.0	28.57	L1	-27.43	n/a
600.45 kHz	27.15 Av	0.0 / 0.1 / 0.0 / 0.0	27.25	L1	n/a	-18.75
1.101 MHz	23.21 Qp	0.0 / 0.05 / 0.0 / 0.0	23.26	L1	-32.74	n/a
1.101 MHz	20.41 Av	0.0 / 0.05 / 0.0 / 0.0	20.46	L1	n/a	-25.54
4.609 MHz	14.31 Qp	0.1 / 0.05 / 0.0 / 0.0	14.46	L1	-41.54	n/a
4.609 MHz	8.43 Av	0.1 / 0.05 / 0.0 / 0.0	8.58	L1	n/a	-37.42
8.129 MHz	35.52 Qp	0.2 / 0.05 / 0.0 / 0.0	35.77	L1	-24.23	n/a
8.129 MHz	31.06 Av	0.2 / 0.05 / 0.0 / 0.0	31.31	L1	n/a	-18.69
30.0 MHz	0.0 Qp	0.5 / 0.1 / 0.0 / 0.0	0.6	L1	-59.4	n/a

Tested by: J. C. Sausen — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

CONDUCTED EMISSIONS

Test Report #:	WC501242 Run 5	Test Area:	STS		
EUT Model #:	DTR Handheld	Date:	3/15/2005		
EUT Serial #:		EUT Power:	60 Hz / 110 VAC	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Digital Angel			Rel. Humidity:	25.0 %
EUT Description:	Self contained handheld transceiver.				
Notes:					
Data File Name:	1242.dat			Page:	2 of 5

List of measurements for run #: 5

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
30.0 MHz	6.0 Av	0.5 / 0.1 / 0.0 / 0.0	6.6	L1	n/a	-43.4
2.111 MHz	25.31 Qp	0.1 / 0.05 / 0.0 / 0.0	25.46	L1	-30.54	n/a
2.111 MHz	22.91 Av	0.1 / 0.05 / 0.0 / 0.0	23.06	L1	n/a	-22.94
2.111 MHz	32.94 Qp	0.1 / 0.05 / 0.0 / 0.0	33.09	N	-22.91	n/a
2.111 MHz	31.24 Av	0.1 / 0.05 / 0.0 / 0.0	31.39	N	n/a	-14.61

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

Reviewed by: Greg Jakubowski — Printed

G Jakubowski — Signature

CONDUCTED EMISSIONS

Test Report #:	WC501242 Run 5	Test Area:	STS		
EUT Model #:	DTR Handheld	Date:	3/15/2005		
EUT Serial #:		EUT Power:	60 Hz / 110 VAC	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Digital Angel			Rel. Humidity:	25.0 %
EUT Description:	Self contained handheld transceiver.				
Notes:					
Data File Name:	1242.dat			Page:	3 of 5

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
199.64 kHz	58.45 Qp	0.0 / 2.01 / 0.0 / 0.0	60.46	N	-3.17
4.609 MHz	37.46 Qp	0.1 / 0.05 / 0.0 / 0.0	37.61	N	-18.39
600.45 kHz	34.07 Qp	0.0 / 0.1 / 0.0 / 0.0	34.17	N	-21.83
2.111 MHz	32.94 Qp	0.1 / 0.05 / 0.0 / 0.0	33.09	N	-22.91
1.101 MHz	32.3 Qp	0.0 / 0.05 / 0.0 / 0.0	32.35	N	-23.65
8.129 MHz	35.52 Qp	0.2 / 0.05 / 0.0 / 0.0	35.77	L1	-24.23
30.0 MHz	17.47 Qp	0.5 / 0.1 / 0.0 / 0.0	18.07	N	-41.93

Tested by: J. C. Sausen — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

CONDUCTED EMISSIONS

Test Report #:	WC501242 Run 5	Test Area:	STS		
EUT Model #:	DTR Handheld	Date:	3/15/2005		
EUT Serial #:		EUT Power:	60 Hz / 110 VAC	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Digital Angel			Rel. Humidity:	25.0 %
EUT Description:	Self contained handheld transceiver.				
Notes:					
Data File Name:	1242.dat			Page:	4 of 5

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
199.64 kHz	48.35 Av	0.0 / 2.01 / 0.0 / 0.0	50.36	N	-3.27
4.609 MHz	36.36 Av	0.1 / 0.05 / 0.0 / 0.0	36.51	N	-9.49
600.45 kHz	32.87 Av	0.0 / 0.1 / 0.0 / 0.0	32.97	N	-13.03
2.111 MHz	31.24 Av	0.1 / 0.05 / 0.0 / 0.0	31.39	N	-14.61
1.101 MHz	31.18 Av	0.0 / 0.05 / 0.0 / 0.0	31.23	N	-14.77
8.129 MHz	31.18 Av	0.2 / 0.05 / 0.0 / 0.0	31.43	N	-18.57
30.0 MHz	12.41 Av	0.5 / 0.1 / 0.0 / 0.0	13.01	N	-36.99

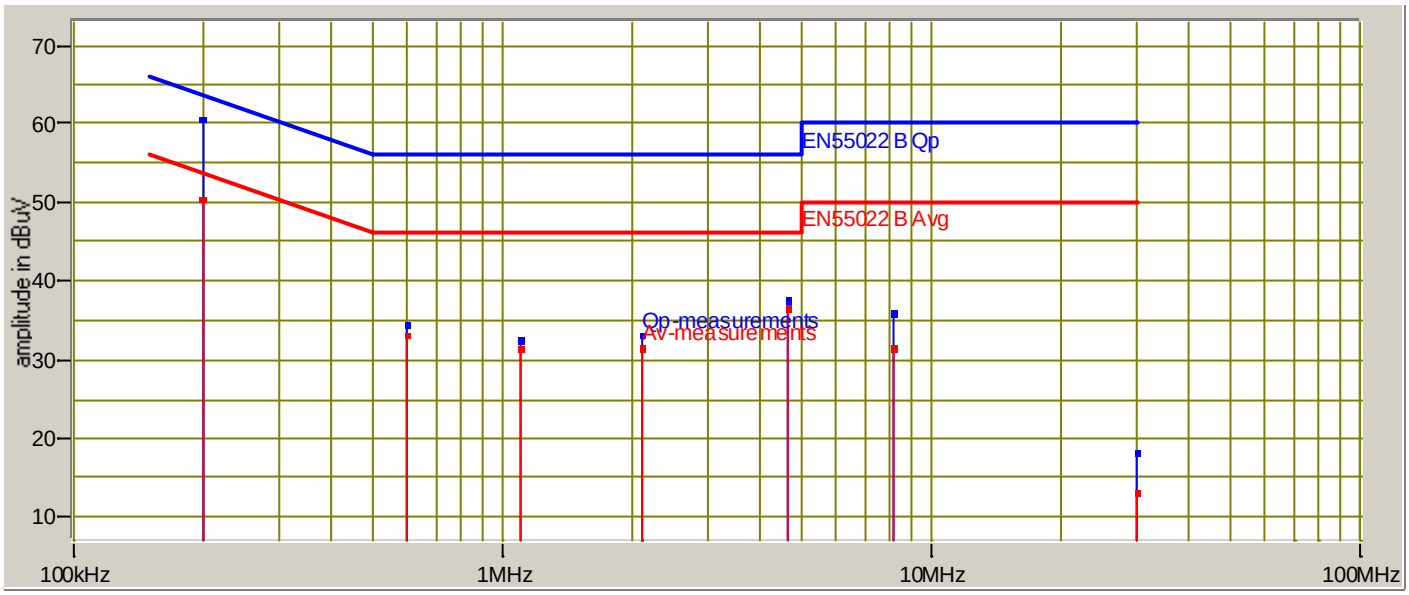
Tested by: J. C. Sausen — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

CONDUCTED EMISSIONS

Test Report #:	WC501242 Run 5	Test Area:	STS		
EUT Model #:	DTR Handheld	Date:	3/15/2005		
EUT Serial #:		EUT Power:	60 Hz / 110 VAC	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Digital Angel			Rel. Humidity:	25.0 %
EUT Description:	Self contained handheld transceiver.				
Notes:					
Data File Name:	1242.dat			Page:	5 of 5

Graph:



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Tested by: J. C. Sausen — Printed — Signature

Reviewed by: Greg Jakubowski — Printed — Signature

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Large Test Site

Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.

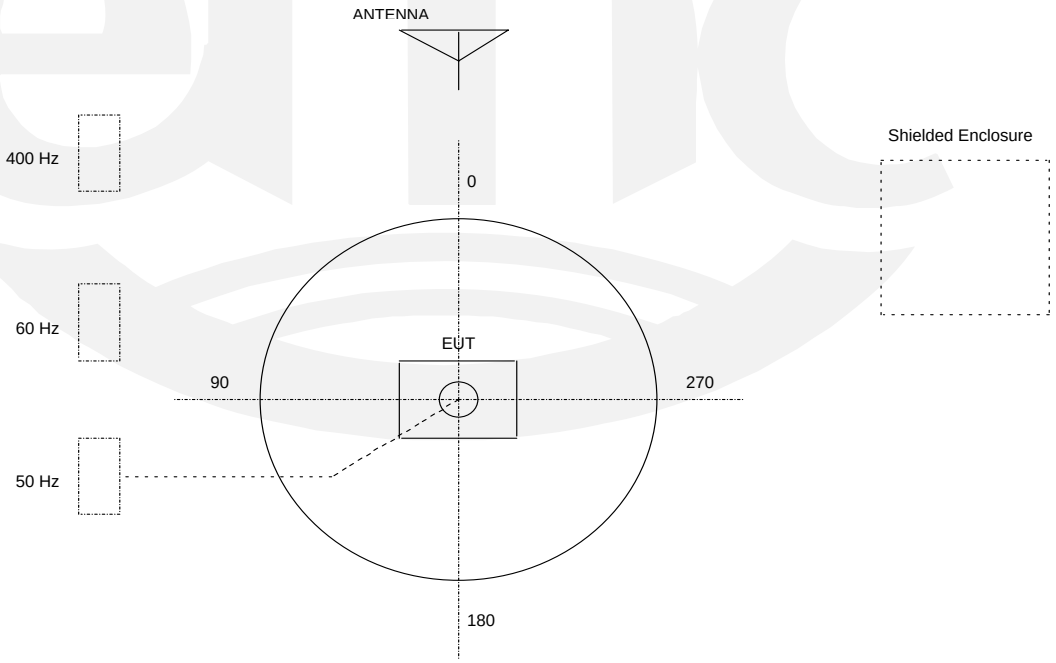
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.

3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.

4. The circle is a 6.7 meter diameter turntable.

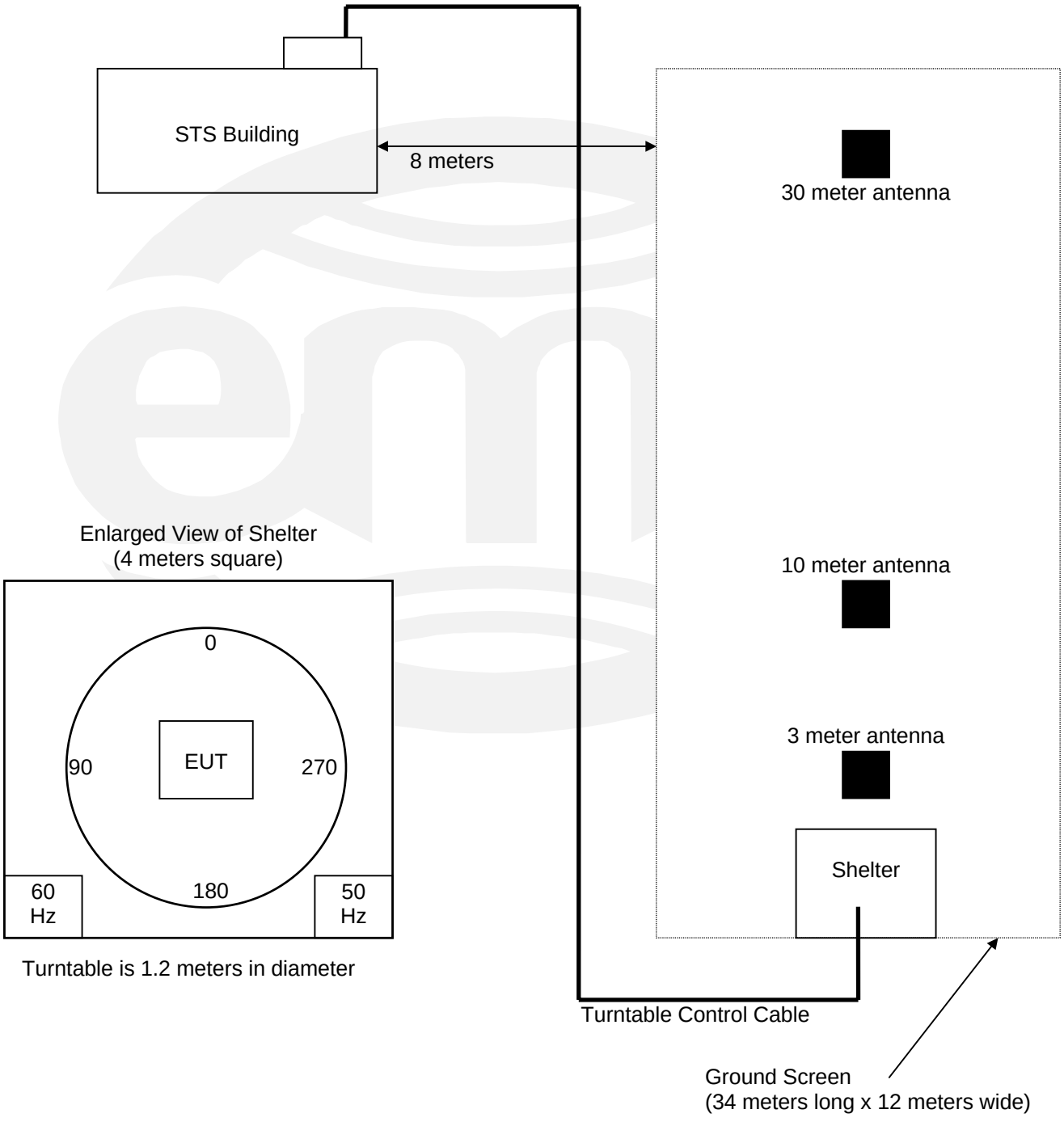
5. A ground plane is in the plane of this sheet.

6. The test sample is shown in the azimuthal position representing zero degrees.

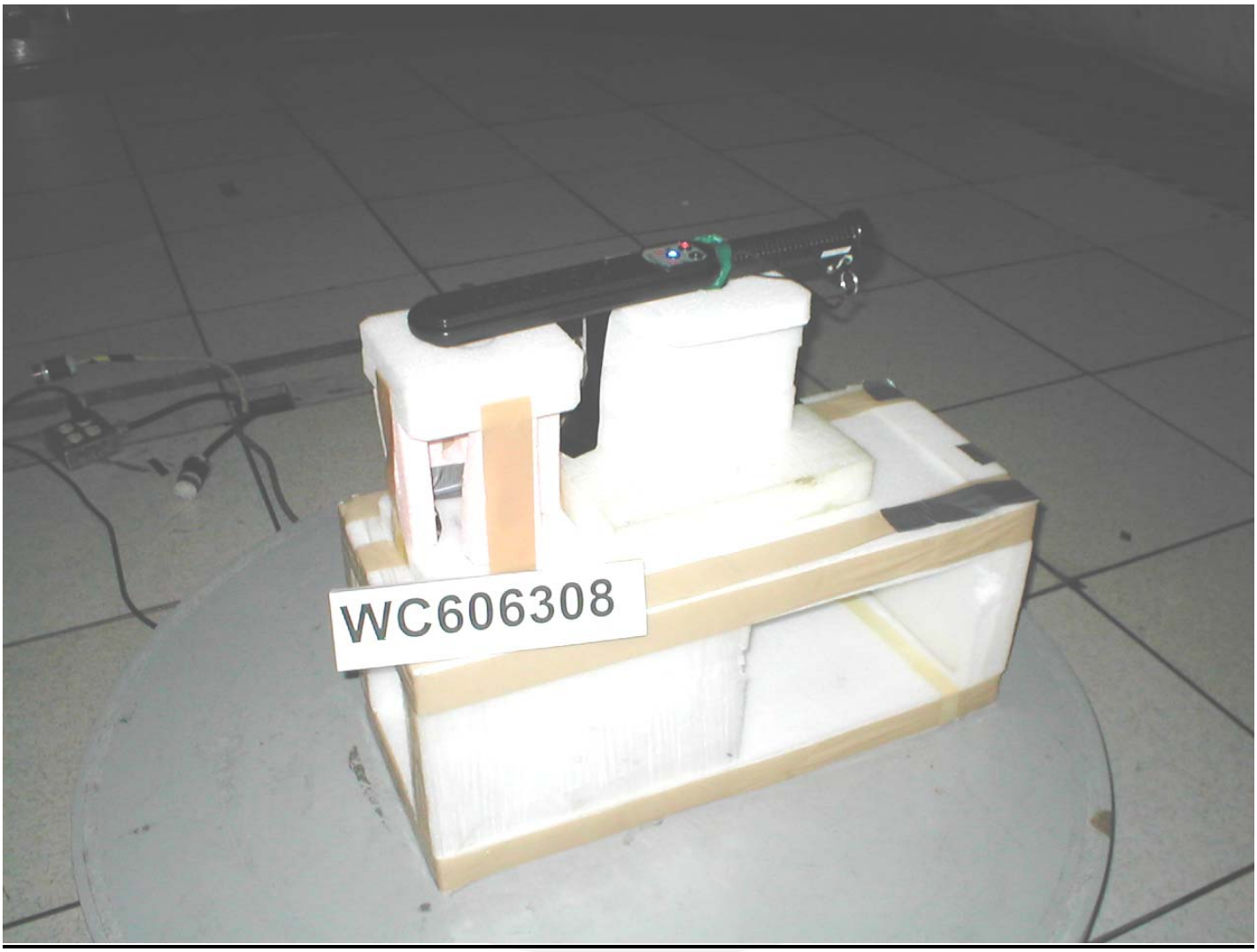


TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Small Test Site (STS)

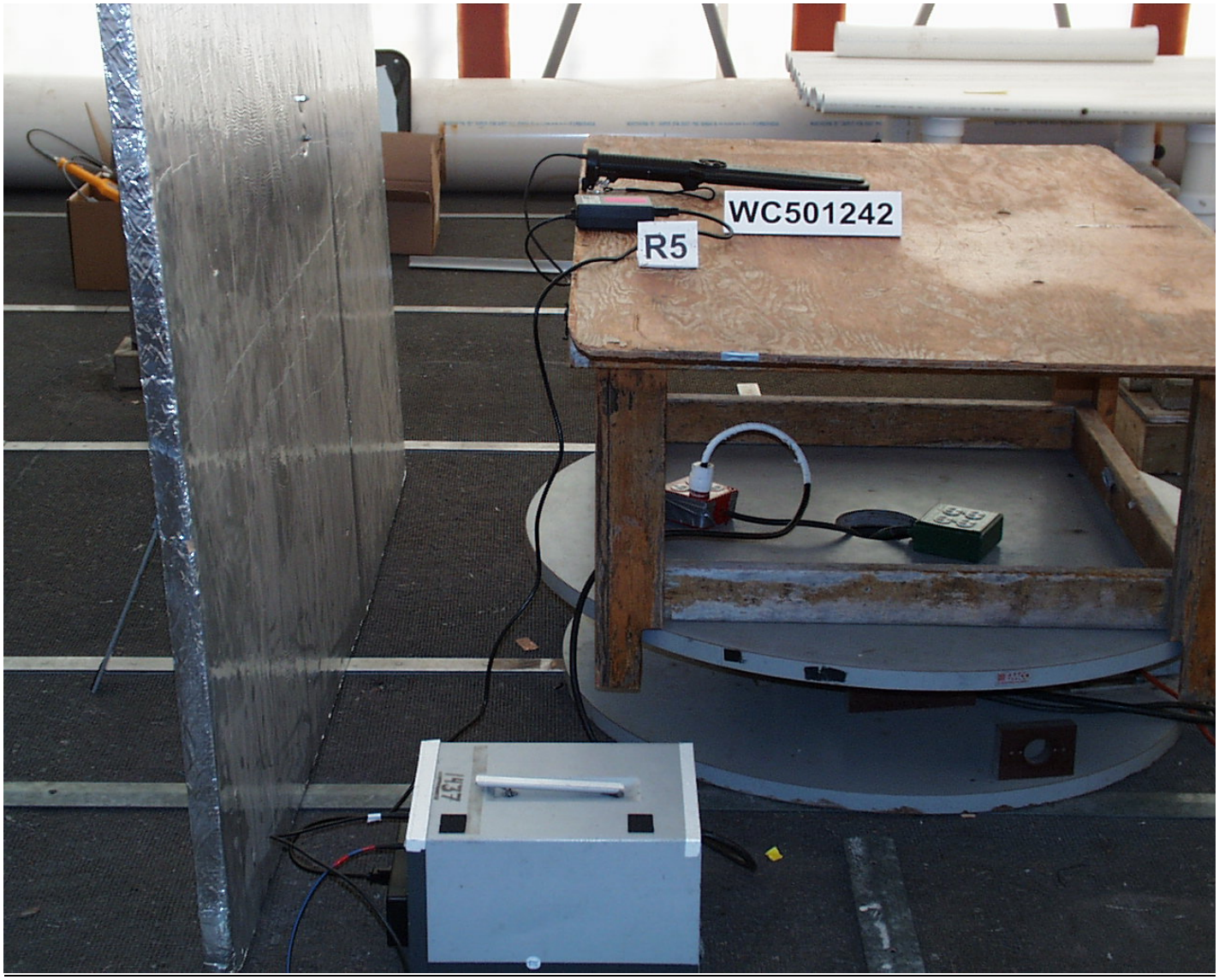


Test-setup photo(s):
Radiated emissions test



Test-setup photo(s):
Conducted emissions test - under test report number WC501242, 15 March 2005

Test-setup photo(s):
Conducted emissions test - under test report number WC501242, 15 March 2005



Equipment Under Test (EUT) Test Operation Mode:

The device under test was operated under the following conditions during immunity testing :

☐ - Standby

☐ - Test program (H - Pattern)

☐ - Test program (color bar)

☐ - Test program (customer specific)

☐ - Practice operation

☐ - Normal operating mode

■ - Bluetooth transmitting at lowest, middle, and highest frequencies (for testing purposes).

■ - Bluetooth frequency hopping (typical operating mode).

Configuration of the device under test:

■ - See Appendix A and test setup photo(s)

☐ - See Product Information Form(s) in Appendix B

DEVIATIONS FROM STANDARD:

None.

GENERAL REMARKS:

Conducted emissions data of the AC lines of the battery charger were taken under test report number WC501242, 15 March 2005. Measurements were not repeated during November 2006 testing because the EUT and charger had not changed.

Modifications required to pass:

■ None
☐ As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:

■ None
☐ As indicated in the Test Plan

SUMMARY:

The requirements according to the technical regulations are

■ - met and the device under test does fulfill the general approval requirements.
☐ - **not** met and the device under test does **not** fulfill the general approval requirements..

EUT Received Date: 15 March 2005

Condition of EUT: Normal

Testing Start Date: 15 March 2005

Testing End Date: 09 November 2006

TÜV SÜD AMERICA INC

Ross Johnson & Joe Sausen
EMC Technicians

Joel Schneider
Sr. EMC Engineer

Appendix A

Constructional Data Form

and

Block Diagram

Form

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company:	Digital Angel Corporation		
Address:	490 Villaume Avenue		
	South St. Paul, MN 55075		
Contact:	Corey Punt	Position:	R&D Engineer
Phone:	651-552-6313	Fax:	651-455-0413
E-mail Address:	cpunt@digitalangelcorp.com		

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description	Hand-Held Wireless ISO Reader
EUT Name	DTR Series Reader
Model No.:	800800100 Serial No.: 0631.1029 & 0305,002
Product Options:	Memory enabled (DTR3), No memory enabled (DTR1)
Configurations to be tested:	

Equipment Modification (*If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)*

Modifications since last test:	None
Modifications made during test:	None

Test Objective(s): ***Please indicate the tests to be performed, entering the applicable standard(s) where noted.***

- ☒ EMC Directive 89/336/EEC (EMC) Std:
- ☐ Machinery Directive 89/392/EEC (EMC Std:
- ☐ Medical Device Directive 93/42/EEC (EMC) Std:
- ☐ Vehicle Directive 72/245/EEC (EMC) Std:
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☒ FCC: Class ☐ A ☐ B Part 15
- ☐ VCCI: Class ☐ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B
- ☐ Canada: Class ☐ A ☐ B
- ☐ Australia: Class ☐ A ☐ B
- ☐ Other:

Third Party Certification, if applicable (*Signature on Page 6 Required)

- ☐ Attestation of Conformity (AoC)*
- ☐ Certificate of Conformity (CoC)*
- Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III
  (Press **F1** when field is selected to show additional information on Protection Class.)
- ☒ FCC / TCB Certification
- ☐ E-Mark Certification
- ☐ EMC Certification (used with Octagon Mark)*
- ☐ Compliance Document*
- ☒ Industry Canada / FCB Certification
- ☐ Taiwan Certification

EMC Test Plan and Constructional Data Form

America

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TÜV SÜD America should:

☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____

☐ Continue testing to complete test series.

☐ Continue testing to define corrective action.

☐ Stop testing.

EUT Specifications and Requirements

Length: 19.5 in Width: 3.0 in Height: 2.875 in Weight: _____

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: Battery (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: _____

Current (Amps/phase(max)): _____ Current (Amps/phase(nominal)): _____

Other 110V / 60Hz to battery charger during AC line conducted emissions test

Other Special Requirements

Unit will not operate when connected to battery charger.

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Small Business

EUT Power Cable

☐ Permanent OR ☐ Removable Length (in meters): _____

☐ Shielded OR ☐ Unshielded

☒ Not Applicable

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables

Type	Analog	Digital	During Test: Active	During Test: Passive	Qty	Shielding: Yes	Shielding: No	Shielding: Type	Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	☒	☐	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
RS232	☐	☒	☒	☐	1	☒	☐	Foil over braid	Metallic 5-pin Water Resistant	Metal 9-pin D-sub	Characteristic Impedance	3	☒	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
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	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: 49PCAM4E.sa

Description: Standard software for the DTR3.

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV SÜD America Representative if additional assistance is required.

1. Bluetooth transmitting at lowest, middle, and highest frequencies (for testing purposes).

2. Bluetooth frequency hopping (typical operating mode).

3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
Cattle Reader	DTR3	0631.1029	P8F800100

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc) This information is required for FCC & Taiwan testing.

Description	*Model #*	*Serial #*	*FCC ID #*
Dell Laptop Computer	Latitude D400	9X021	QDS-BRCM1007
Bluetooth USB Adapter	F8T1001 ver 2	P81374-A	K7SF8T001V2

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
32.768 kHz		Mini Pocket Reader Assy (top)	
4.2944 MHz		Mini Pocket Reader Assy (bottom)	Main clock for reader
16.0 MHz		Bluetooth Board (daughter board)	Main clock for Bluetooth

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
AVT	800414 Rev E		☐ Switched-mode: (Frequency) _____ ☐ Linear ☒ Other: 6 Volt Battery
AVT	C3H205210NAU	2504	☒ Switched-mode: (Frequency) _____ ☐ Linear ☒ Other: Battery Charger (only)

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)				
Description	***Manufacturer***	***Part # or Value***	***Qty***	***Component # / Location***

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

(PLEASE INSERT "**ELECTRONIC SIGNATURE**" BELOW IF POSSIBLE)

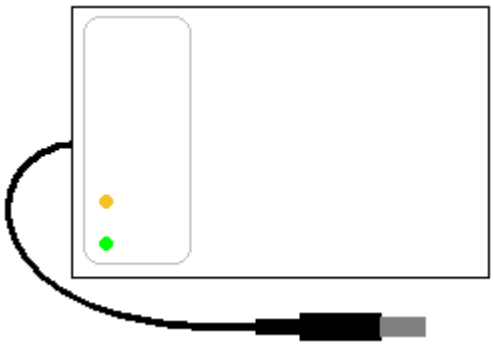
Authorization Signatures (Signature Required for Certifications checked on pg 1)

Corey Punt	11-27-06
Customer authorization to perform tests according to this test plan.	Date
Corey Punt	11-27-06
Test Plan/CDF Prepared By (please print)	Date

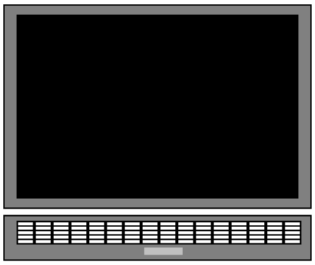
EMC Block Diagram Form

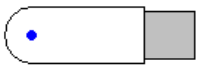
System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.

Reader (EUT)



Charger (EUT for conducted only)





Computer and USB Dongle (equipment outside testing field)

Authorization Signatures

Corey Punt	11-27-06
Customer authorization to perform tests according to this test plan.	Date
Corey Punt	11-27-06
Test Plan/CDF Prepared By (please print)	Date

Appendix B

Measurement Protocol

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Emissions testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ±1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Conducted Emissions

The final level, in dBμV, equals the EMI receiver level plus the cable loss and LISN factor.

Radiated Emissions

The final level, in dBμV/m, equals the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ	LEVEL		CABLE/ANT/PREAMP			FINAL	POL/HGT/AZ			DELTA1
(MHz)	(dBuV)		(dB)	(dB/m)	(dB)	(dBuV/m)		(m)	(deg)	
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5 =	29.1	V	1.0	0.0	-10.9

Substitution

The transmitter is replaced by a substitution antenna. The substitution antenna is orientated for worst case polarity and the length of the substitution antenna is adjusted to correspond to the frequency of the transmitter. The substitution antenna is connected to a calibrated signal generator. If necessary, the input attenuator setting of the measuring receiver is adjusted in order to increase the sensitivity of the measuring receiver. The test antenna is raised and lowered through the specified range of height to ensure that the maximum signal is received. The input signal to the substitution antenna is adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver. The input level to the substitution antenna is recorded as power level, corrected for any change of input attenuator setting of the measuring receiver. The measure of the effective radiated power is recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.