



HONEYWELL INTERNATIONAL INC. TEST REPORT

FOR THE

RADIO ALTIMETER, ALA-52B

FCC PART 87

TESTING

DATE OF ISSUE: NOVEMBER 28, 2007

PREPARED FOR:

Honeywell International Inc.
15001 NE 36th St., M/S B13C
Redmond, WA 98052

W.O. No.: 87255

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: November 13-16, 2007

Report No.: FC07-100

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ADMINISTRATIVE INFORMATION

DATE OF TEST: November 13-16, 2007

DATE OF RECEIPT: November 13, 2007

REPRESENTATIVE: Kenneth Sams

MANUFACTURER:

Honeywell International Inc.
15001 NE 36th St., M/S L1K
Redmond, WA 98052

TEST LOCATION:

CKC Laboratories, Inc.
22116 23rd Drive S.E., Suite A
Bothell, WA 98021-4413

FREQUENCY RANGE TESTED: 10 kHz-40 GHz

TEST METHOD: FCC Part 87 and TIA 603 Rev. C

PURPOSE OF TEST: To perform the testing of the Radio Altimeter, ALA-52B with the requirements for FCC Part 87 devices.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Katie Molina, Senior EMC Engineer/Lab Manager

TEST PERSONNEL:

Ryan Rutledge, EMC Test Technologist

SUMMARY OF RESULTS

Test	Specification/Method	Results
Output Power	2.1046/87.131	Pass
Frequency Stability	2.1055/87.133	Pass
Occupied Bandwidth	2.1049/87.135	Pass
Antenna Conducted Spurious Emissions	2.1051/87.139	Pass
OATS Spurious Emissions	2.1053/87.139	Pass

CONDITIONS DURING TESTING

Deviations from specified test methods: Regarding radiated spurious emissions, TIA-603 Rev C specifies a 10 kHz RBW below 1 GHz but this causes integration problems when measuring down to 10 kHz. To more accurately gather data, standard CISPR bandwidths were used with the VBW greater than or equal to 3 times the RBW.



EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

Radio Altimeter

Manuf: Honeywell International Inc.
Model: ALA-52B
Serial: ALA52B-06008
FCC ID: pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Quantum Interface Panel

Manuf: Honeywell International Inc.
Model: 747-0474-001
Serial: 4

Arinc Bus Analyzer

Manuf: Interface Technology
Model: 429A
Serial: 429288



TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS

FXN

FCC 2.1033 (c)(5) FREQUENCY RANGE

4235 MHz – 4365 MHz

FCC 2.1033 (c)(6) OPERATING POWER

0.4677 Watts

FCC 2.1033 (c)(8) DC VOLTAGES

The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS

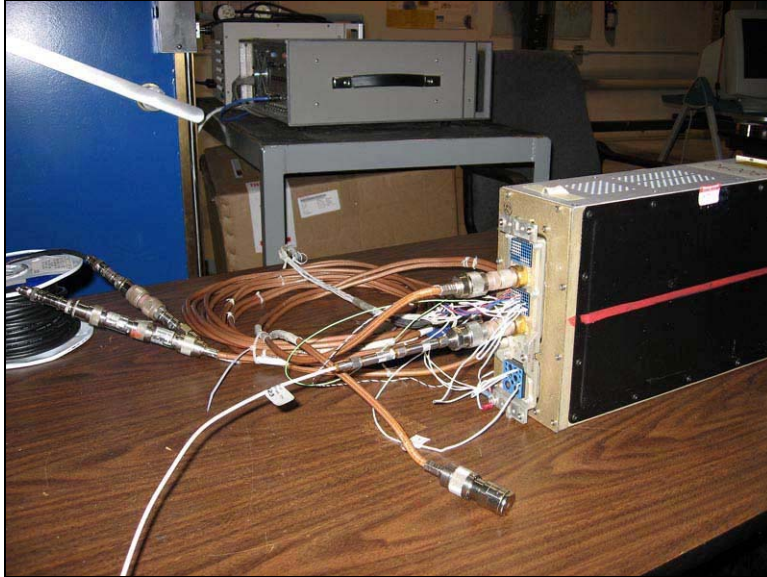
The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION

Frequency

FCC 2.1033(c)(14)/2.1046/87.131 - RF POWER OUTPUT

Test Setup Photos



Test Data

Operating Band	Frequency Range (MHz)	Peak RF Output Power (Watts)
Band 1	4235 to 4348	0.4677
Band 2	4249 to 4365	0.3162
Band 3	4239 to 4361	0.3890



Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.131 Radio Altimeter RF Output Power**
 Work Order #: **87255** Date: 11/13/2007
 Test Type: **Conducted Emissions** Time: 16:29:26
 Equipment: **Radio Altimeter** Sequence#: 1
 Manufacturer: Honeywell Tested By: Ryan Rutledge
 Model: ALA-52B 28VDC
 S/N: ALA52B-06008

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
60" Pasternack 40 GHz Coax	S/N: N/A	05/11/2006	05/11/2008	AN05423
Weinschel 3 dB 40 GHz Attenuator	C5332	10/19/2007	10/19/2009	AN02132
Weinschel 3 dB 40 GHz Attenuator	C5335	10/19/2007	10/19/2009	AN02133

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on bench top. EUT operating frequency range is swept from 4235 to 4365 MHz in 3 different bands. Standard CISPR bandwidths used. Frequency range investigated is 4235 MHz to 4365 MHz.

Transducer Legend:

T1=CAB-ANP05423-051006	T2=ATT-AN02132-101907
T3=ATT-AN02133-101907	

Measurement Data:

Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	4272.600M	124.8	+3.0	+3.0	+2.9		+0.0	133.7	133.7	+0.0	RF Ou
									Band 1		
2	4280.400M	124.0	+3.0	+3.0	+2.9		+0.0	132.9	133.7	-0.8	RF Ou
									Band 3		
3	4300.200M	123.1	+3.0	+3.0	+2.9		+0.0	132.0	133.7	-1.7	RF Ou
									Band 2		

FCC 2.1033(c)(14)/2.1049(i)/87.135- OCCUPIED BANDWIDTH

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717
 Customer: **Honeywell International Inc.**
 Specification: **87.133 Radio Altimeter Frequency Stability**
 Work Order #: **87255** Date: 11/13/2007
 Test Type: **Conducted Emissions** Time: 16:04:10
 Equipment: **Radio Altimeter** Sequence#: 2
 Manufacturer: Honeywell Tested By: Ryan Rutledge
 Model: ALA-52B 28VDC
 S/N: ALA52B-06008

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
60" Pasternack 40 GHz Coax	S/N: N/A	05/11/2006	05/11/2008	AN05423
Weinschel 3 dB 40 GHz Attenuator	C5332	10/19/2007	10/19/2009	AN02132
Weinschel 3 dB 40 GHz Attenuator	C5335	10/19/2007	10/19/2009	AN02133

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

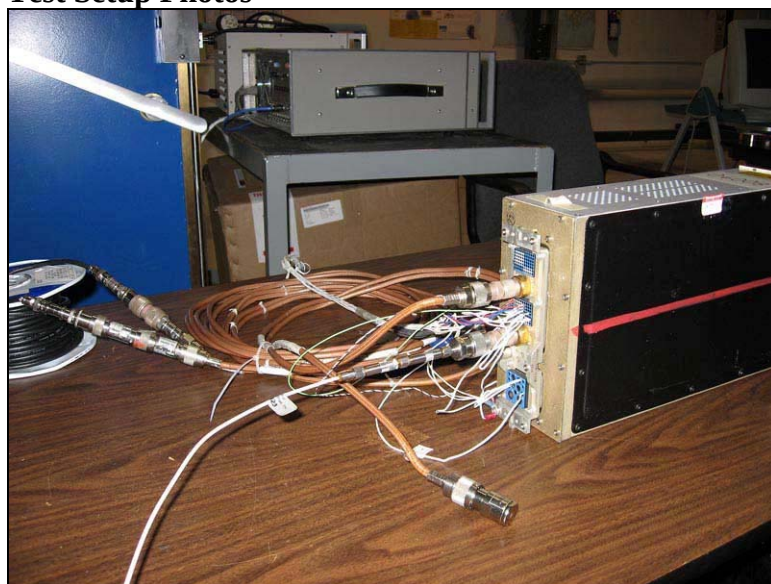
Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

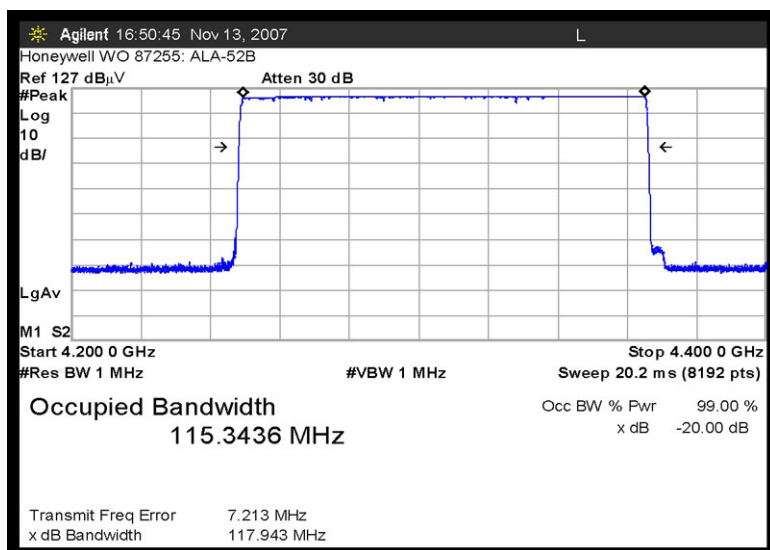
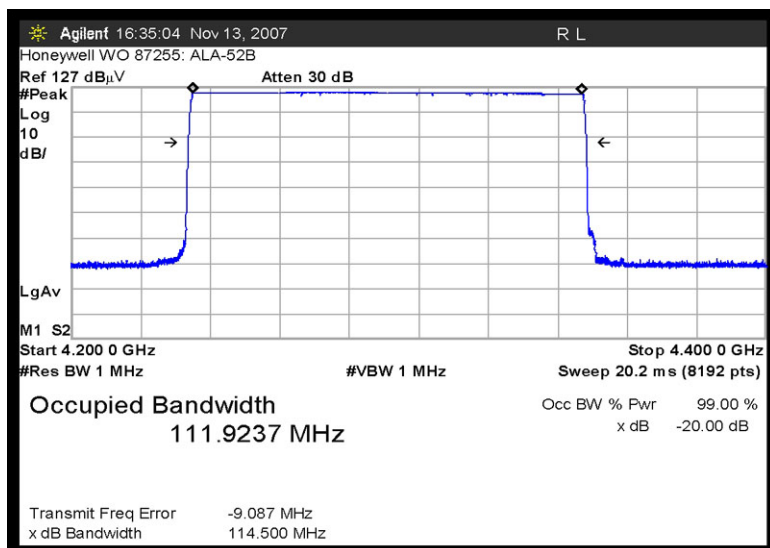
Test Conditions / Notes:

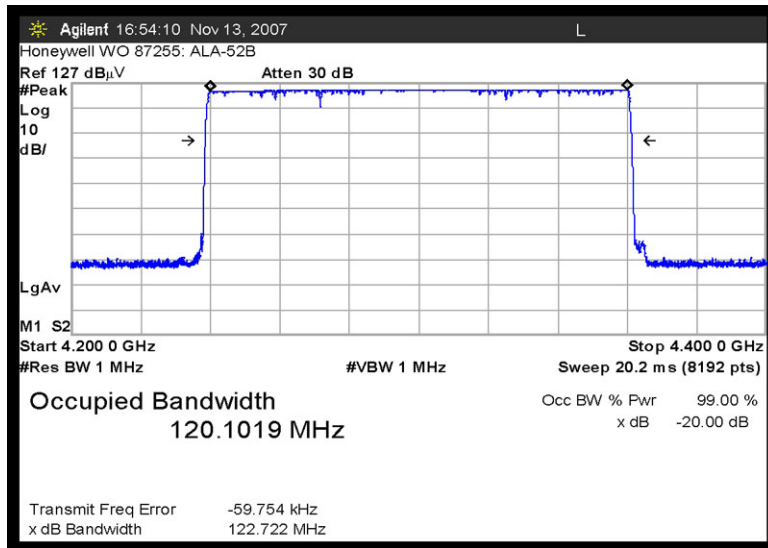
EUT set up on bench top. EUT operating frequency range is swept from 4235 to 4365 MHz in 3 different bands. Standard CISPR bandwidths used. Frequency range investigated is 4200 MHz to 4400 MHz.

Test Setup Photos



Test Plots





FCC 2.1033(c)(14)/2.1051/87.139 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.139 4291.5 MHz 468 mW Band 1**
 Work Order #: **87255**
 Test Type: **Conducted Emissions**
 Equipment: **Radio Altimeter**
 Manufacturer: Honeywell
 Model: ALA-52B
 S/N: ALA52B-06008

Date: 11/14/2007
 Time: 09:03:01
 Sequence#: 5
 Tested By: Ryan Rutledge
 28VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
20 dB Attenuator	S/N: 9927	07/20/2007	07/20/2009	ANP05508
5' Micro-Sys Cable		10/25/2007	10/25/2009	ANP05329

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on bench top. EUT operating frequency is swept from 4235 to 4348 MHz in frequency band 1. Standard CISPR bandwidths used. Frequency range investigated in this file is 10 kHz to 1 GHz.

Transducer Legend:

T1=ATT-ANP05508-072007

T2=CAB-ANP05329-102507

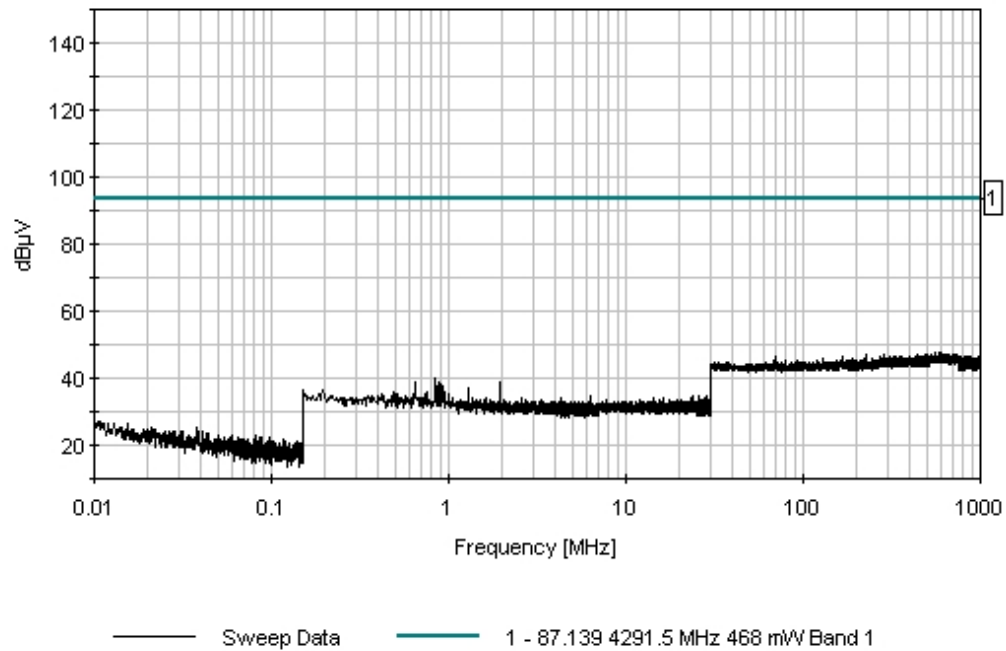
Measurement Data:

Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	588.519M	26.9	+20.2	+0.4			+0.0	47.5	93.7	-46.2	RF Ou
2	550.940M	26.8	+20.2	+0.4			+0.0	47.4	93.7	-46.3	RF Ou
3	601.486M	26.8	+20.2	+0.4			+0.0	47.4	93.7	-46.3	RF Ou
4	580.475M	26.7	+20.2	+0.4			+0.0	47.3	93.7	-46.4	RF Ou
5	598.124M	26.7	+20.2	+0.4			+0.0	47.3	93.7	-46.4	RF Ou
6	692.971M	26.7	+20.2	+0.4			+0.0	47.3	93.7	-46.4	RF Ou
7	711.701M	26.6	+20.2	+0.4			+0.0	47.2	93.7	-46.5	RF Ou
8	732.591M	26.6	+20.2	+0.4			+0.0	47.2	93.7	-46.5	RF Ou
9	436.283M	26.7	+20.1	+0.3			+0.0	47.1	93.7	-46.6	RF Ou
10	499.555M	26.6	+20.2	+0.3			+0.0	47.1	93.7	-46.6	RF Ou
11	284.287M	26.6	+20.1	+0.3			+0.0	47.0	93.7	-46.7	RF Ou
12	594.042M	26.4	+20.2	+0.4			+0.0	47.0	93.7	-46.7	RF Ou
13	224.857M	26.6	+20.1	+0.2			+0.0	46.9	93.7	-46.8	RF Ou
14	553.942M	26.3	+20.2	+0.4			+0.0	46.9	93.7	-46.8	RF Ou
15	288.009M	26.4	+20.1	+0.3			+0.0	46.8	93.7	-46.9	RF Ou
16	489.230M	26.4	+20.1	+0.3			+0.0	46.8	93.7	-46.9	RF Ou
17	360.285M	26.3	+20.1	+0.3			+0.0	46.7	93.7	-47.0	RF Ou
18	746.158M	26.1	+20.2	+0.4			+0.0	46.7	93.7	-47.0	RF Ou
19	877.023M	26.1	+20.2	+0.4			+0.0	46.7	93.7	-47.0	RF Ou
20	740.515M	26.0	+20.2	+0.4			+0.0	46.6	93.7	-47.1	RF Ou

CKC Laboratories Date: 11/14/2007 Time: 09:03:01 Honeywell International Inc. WO#: 87255
87.139 4291.5 MHz 468 mW Band 1 Test Lead: RF Output port 28VDC Sequence#: 5 Polarity: RF Output port
Notes: EUT set up on bench top. EUT operating frequency is swept from 4235 to 4348 MHz in frequency band 1. Standard





Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.139 4307 MHz 468 mW Band 2**
 Work Order #: **87255**
 Test Type: **Conducted Emissions**
 Equipment: **Radio Altimeter**
 Manufacturer: Honeywell
 Model: ALA-52B
 S/N: ALA52B-06008

Date: 11/14/2007
 Time: 08:55:39
 Sequence#: 4
 Tested By: Ryan Rutledge
 28VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
20 dB Attenuator	S/N: 9927	07/20/2007	07/20/2009	ANP05508
5' Micro-Sys Cable		10/25/2007	10/25/2009	ANP05329

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on bench top. EUT operating frequency is swept from 4249 to 4365 MHz in frequency band 2. Standard CISPR bandwidths used. Frequency range investigated in this file is 10 kHz to 1 GHz.

Transducer Legend:

T1=ATT-ANP05508-072007	T2=CAB-ANP05329-102507
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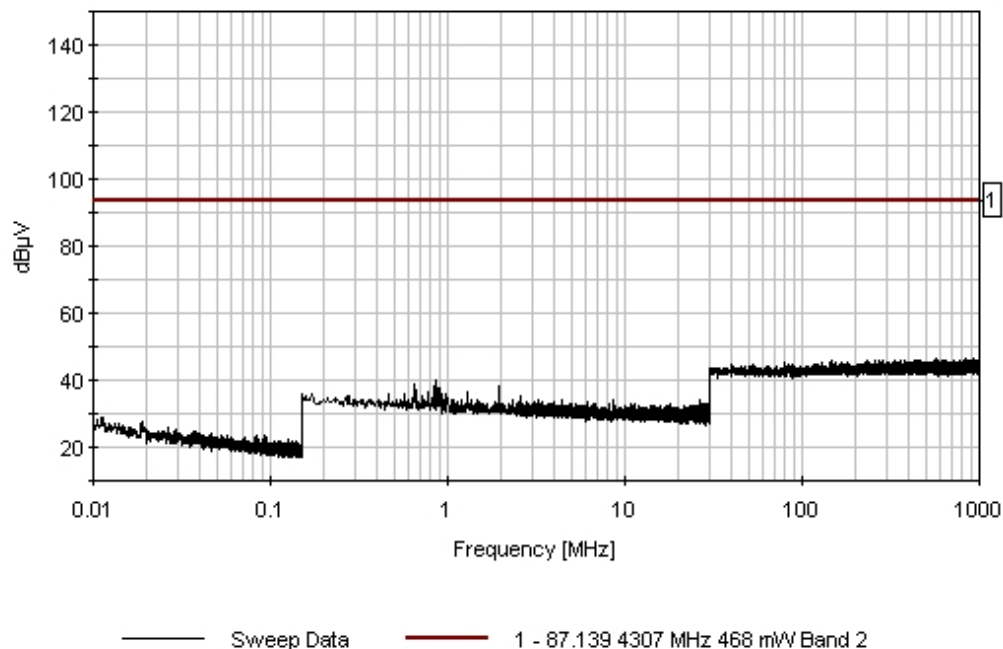
Measurement Data: Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	829.239M	26.1	+20.2	+0.4			+0.0	46.7	93.7	-47.0	RF Ou
2	992.689M	25.6	+20.3	+0.5			+0.0	46.4	93.7	-47.3	RF Ou
3	936.093M	25.5	+20.3	+0.5			+0.0	46.3	93.7	-47.4	RF Ou
4	571.831M	25.6	+20.2	+0.4			+0.0	46.2	93.7	-47.5	RF Ou
5	572.911M	25.6	+20.2	+0.4			+0.0	46.2	93.7	-47.5	RF Ou
6	146.458M	25.8	+20.1	+0.2			+0.0	46.1	93.7	-47.6	RF Ou
7	869.099M	25.5	+20.2	+0.4			+0.0	46.1	93.7	-47.6	RF Ou
8	911.120M	25.3	+20.3	+0.5			+0.0	46.1	93.7	-47.6	RF Ou
9	967.068M	25.3	+20.3	+0.5			+0.0	46.1	93.7	-47.6	RF Ou

10	996.335M	25.3	+20.3	+0.5	+0.0	46.1	93.7	-47.6	RF Ou
11	998.339M	25.3	+20.3	+0.5	+0.0	46.1	93.7	-47.6	RF Ou
12	258.234M	25.6	+20.1	+0.3	+0.0	46.0	93.7	-47.7	RF Ou
13	441.926M	25.6	+20.1	+0.3	+0.0	46.0	93.7	-47.7	RF Ou
14	899.354M	25.3	+20.3	+0.4	+0.0	46.0	93.7	-47.7	RF Ou
15	930.210M	25.2	+20.3	+0.5	+0.0	46.0	93.7	-47.7	RF Ou
16	999.053M	25.2	+20.3	+0.5	+0.0	46.0	93.7	-47.7	RF Ou
17	878.584M	25.3	+20.2	+0.4	+0.0	45.9	93.7	-47.8	RF Ou
18	991.142M	25.1	+20.3	+0.5	+0.0	45.9	93.7	-47.8	RF Ou
19	994.045M	25.1	+20.3	+0.5	+0.0	45.9	93.7	-47.8	RF Ou
20	998.924M	25.1	+20.3	+0.5	+0.0	45.9	93.7	-47.8	RF Ou

CKC Laboratories Date: 11/14/2007 Time: 08:55:39 Honeywell International Inc. WO#: 87255
87.139 4307 MHz 468 mW Band 2 Test Lead: RF Output port 28VDC Sequence#: 4 Polarity: RF Output port
Notes: EUT set up on bench top. EUT operating frequency is swept from 4249 to 4365 MHz in frequency band 2. Standar





Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.139 4291.5 MHz 468 mW Band 1**
 Work Order #: **87255**
 Test Type: **Conducted Emissions**
 Equipment: **Radio Altimeter**
 Manufacturer: Honeywell
 Model: ALA-52B
 S/N: ALA52B-06008

Date: 11/14/2007
 Time: 11:17:35
 Sequence#: 6
 Tested By: Ryan Rutledge
 28VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
60" Pasternack 40 GHz Coax	S/N: N/A	05/11/2006	05/11/2008	AN05423
Weinschel 3 dB 40 GHz Attenuator	C5332	10/19/2007	10/19/2009	AN02132
Weinschel 3 dB 40 GHz Attenuator	C5335	10/19/2007	10/19/2009	AN02133

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on bench top. EUT operating frequency is swept from 4235 to 4348 MHz in frequency band 1. Standard CISPR bandwidths used. Frequency range investigated in this file is 1 GHz to 40 GHz.

Transducer Legend:

T1=CAB-ANP05423-051006	T2=ATT-AN02132-101907
T3=ATT-AN02133-101907	

Measurement Data:

Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	4324.662M	124.0	+3.0	+3.0	+2.9	+0.0		132.9	133.7	-0.8	RF Ou
									Fundamental		
2	37362.130M	66.2	+10.3	+3.6	+3.3	+0.0		83.4	93.7	-10.3	RF Ou
3	37457.180M	66.3	+10.3	+3.6	+3.2	+0.0		83.4	93.7	-10.3	RF Ou
4	37675.290M	66.3	+10.3	+3.6	+3.2	+0.0		83.4	93.7	-10.3	RF Ou
5	37332.140M	53.2	+10.3	+3.6	+3.3	+0.0		70.4	93.7	-23.3	RF Ou
	Ave										
^	37332.110M	66.8	+10.3	+3.6	+3.3	+0.0		84.0	93.7	-9.7	RF Ou

7	37280.160M Ave	53.1	+10.3	+3.6	+3.3	+0.0	70.3	93.7	-23.4	RF Ou
^	37280.090M	68.0	+10.3	+3.6	+3.3	+0.0	85.2	93.7	-8.5	RF Ou
9	37602.280M Ave	53.1	+10.3	+3.6	+3.2	+0.0	70.2	93.7	-23.5	RF Ou
^	37602.250M	67.2	+10.3	+3.6	+3.2	+0.0	84.3	93.7	-9.4	RF Ou
11	37461.080M Ave	53.0	+10.3	+3.6	+3.2	+0.0	70.1	93.7	-23.6	RF Ou
^	37461.180M	66.8	+10.3	+3.6	+3.2	+0.0	83.9	93.7	-9.8	RF Ou
13	37775.250M Ave	52.9	+10.4	+3.5	+3.2	+0.0	70.0	93.7	-23.7	RF Ou
^	37775.340M	67.0	+10.4	+3.5	+3.2	+0.0	84.1	93.7	-9.6	RF Ou
15	37734.360M Ave	52.9	+10.3	+3.6	+3.2	+0.0	70.0	93.7	-23.7	RF Ou
^	37734.320M	67.4	+10.3	+3.6	+3.2	+0.0	84.5	93.7	-9.2	RF Ou



Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.139 4307 MHz 468 mW Band 2**
 Work Order #: **87255**
 Test Type: **Conducted Emissions**
 Equipment: **Radio Altimeter**
 Manufacturer: Honeywell
 Model: ALA-52B
 S/N: ALA52B-06008

Date: 11/14/2007
 Time: 11:44:01
 Sequence#: 7
 Tested By: Ryan Rutledge
 28VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
60" Pasternack 40 GHz Coax	S/N: N/A	05/11/2006	05/11/2008	AN05423
Weinschel 3 dB 40 GHz Attenuator	C5332	10/19/2007	10/19/2009	AN02132
Weinschel 3 dB 40 GHz Attenuator	C5335	10/19/2007	10/19/2009	AN02133

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on bench top. EUT operating frequency is swept from 4249 to 4365 MHz in frequency band 2. Standard CISPR bandwidths used. Frequency range investigated in this file is 1 GHz to 40 GHz.

Transducer Legend:

T1=CAB-ANP05423-051006	T2=ATT-AN02132-101907
T3=ATT-AN02133-101907	

Measurement Data:

Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	4335.667M	123.4	+3.0	+3.0	+2.9	+0.0		132.3	133.7	-1.4	RF Ou
									Fundamental		
2	37830.360M	66.6	+10.4	+3.5	+3.2	+0.0		83.7	93.7	-10.0	RF Ou
3	37214.050M	66.5	+10.2	+3.6	+3.2	+0.0		83.5	93.7	-10.2	RF Ou
4	37337.120M	66.2	+10.3	+3.6	+3.3	+0.0		83.4	93.7	-10.3	RF Ou
5	37368.130M	66.2	+10.3	+3.6	+3.3	+0.0		83.4	93.7	-10.3	RF Ou
6	37461.180M	66.3	+10.3	+3.6	+3.2	+0.0		83.4	93.7	-10.3	RF Ou

7	37288.160M Ave	53.2	+10.3	+3.6	+3.3	+0.0	70.4	93.7	-23.3	RF Ou
^	37288.090M	66.6	+10.3	+3.6	+3.3	+0.0	83.8	93.7	-9.9	RF Ou
9	37394.140M Ave	53.0	+10.3	+3.6	+3.3	+0.0	70.2	93.7	-23.5	RF Ou
^	37394.140M	66.9	+10.3	+3.6	+3.3	+0.0	84.1	93.7	-9.6	RF Ou
11	37494.110M Ave	53.1	+10.3	+3.6	+3.2	+0.0	70.2	93.7	-23.5	RF Ou
^	37494.200M	67.4	+10.3	+3.6	+3.2	+0.0	84.5	93.7	-9.2	RF Ou
13	37729.360M Ave	53.0	+10.3	+3.6	+3.2	+0.0	70.1	93.7	-23.6	RF Ou
^	37729.310M	67.0	+10.3	+3.6	+3.2	+0.0	84.1	93.7	-9.6	RF Ou



FCC 2.1033(c)(14)/2.1053/87.139 - FIELD STRENGTH OF SPURIOUS RADIATION

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.139 Radiated Spurious Band 1 (4291.5 MHz 468 mW)**
 Work Order #: **87255** Date: 11/14/2007
 Test Type: **Radiated Scan** Time: 16:11:59
 Equipment: **Radio Altimeter** Sequence#: 12
 Manufacturer: Honeywell Tested By: Ryan Rutledge
 Model: ALA-52B
 S/N: ALA52B-06008

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	06/16/2006	06/16/2008	AN02673
Bothell 5m Cable Set	S/N: P05444	04/26/2007	04/26/2009	ANP05444
20' RG-214 Coax	S/N: 16	11/09/2006	11/09/2008	ANP05360
HP 8447D PreAmp	S/N: 2944A08601	07/10/2006	07/10/2008	AN01517
Chase BILOG	S/N: 2458	01/31/2007	01/31/2009	AN01993
EMCO Mag Loop Antenna	S/N: 2156	02/20/2006	02/20/2008	AN00052
60" Pasternack 40 GHz Coax	S/N: N/A	05/11/2006	05/11/2008	AN05423
30' Andrews Heliex 18 GHz	S/N: N/A	06/19/2006	06/19/2008	AN05545
EMCO 3115 Horn Ant	S/N: 9606-4854	12/13/2005	12/13/2007	AN01412
HP 83017A .5 - 26.5 GHz Pre-amp	S/N: 3123A00464	10/02/2007	10/02/2009	AN01271
120" Pasternack 40 GHz Coax	S/N: N/A	07/20/2007	07/20/2009	AN05425
18-26 GHz Horn	S/N: 1114018	04/14/2006	04/14/2008	AN02742
26-40 GHz Horn	S/N: 1114020	04/14/2006	04/14/2008	AN02743

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

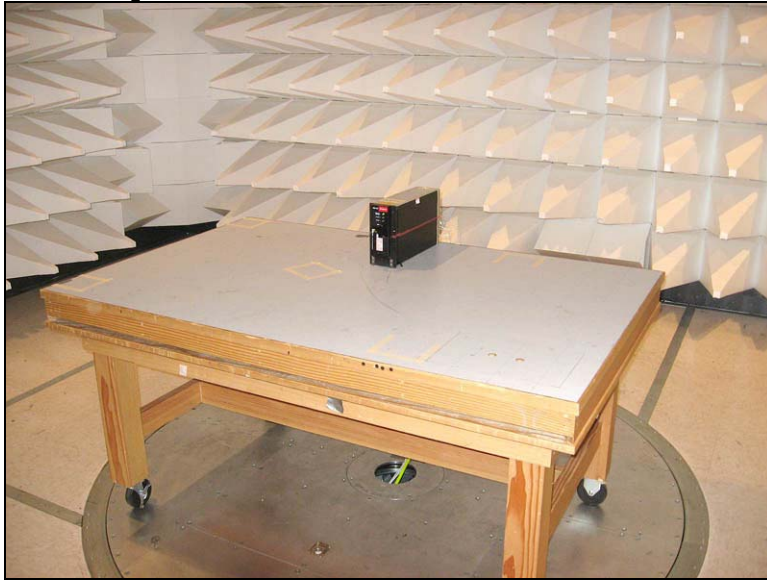
Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up on wooden table in chamber. EUT operating frequency is swept from 4235 to 4348 MHz in frequency band 1 and from 4249 to 4365 MHz in frequency band 2. Standard CISPR bandwidths used except for VBW=3*RBW. Frequency range investigated 10 kHz to 40 GHz.

Test Setup Photos



Test Data

Operating Frequency: 4235 MHz – 4365 MHz

Channels: Bands 1 & 2

Highest Measured Output Power: 26.70 ERP (dBm) 0.4677 ERP (Watts)

Distance: 3 meters

Limit: $43 + 10\log(P) = 39.70$ dBc

Frequency (MHz)	Reference Level	Antenna Polarity	dBc
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	(dBm)	(H/V)	
20.00	-24.3	Horiz	51.00
0.01	-25.4	Horiz	52.10
0.19	-25.7	Horiz	52.40
28.00	-37.1	Horiz	63.80
18.00	-39.9	Horiz	66.60
19.00	-42.6	Horiz	69.30
30.00	-48.2	Horiz	74.90
22.00	-51.1	Horiz	77.80
0.01	-24.7	Vert	51.40
0.16	-26.6	Vert	53.30
20.00	-40.1	Vert	66.80
18.00	-43.4	Vert	70.10
16.00	-44.6	Vert	71.30
16.67	-48.3	Vert	75.00
26.00	-49.9	Vert	76.60
14.00	-50.1	Vert	76.80
28.00	-50.6	Vert	77.30
30.00	-51.9	Vert	78.60
22.00	-55.6	Vert	82.30
20.00	-24.3	Horiz	51.00
0.01	-24.8	Horiz	51.50
0.15	-25.1	Horiz	51.80
28.00	-37.4	Horiz	64.10
18.00	-37.8	Horiz	64.50
19.00	-43	Horiz	69.70
18.66	-47	Horiz	73.70
30.00	-48.2	Horiz	74.90
22.00	-51.4	Horiz	78.10
0.01	-25.3	Vert	52.00
0.15	-26.3	Vert	53.00
20.00	-40.1	Vert	66.80
18.00	-42.7	Vert	69.40
16.00	-45.6	Vert	72.30
16.67	-48.1	Vert	74.80
26.00	-49.7	Vert	76.40
14.00	-50.1	Vert	76.80
28.00	-50.6	Vert	77.30
30.00	-51.9	Vert	78.60
21.99	-55.5	Vert	82.20
445.55	-57.9	Horiz	84.60
448.55	-58.2	Horiz	84.90

436.07	-58.6	Horiz	85.30
450.23	-58.9	Horiz	85.60
446.27	-59.3	Horiz	86.00
446.51	-59.3	Horiz	86.00
452.75	-59.3	Horiz	86.00
449.75	-59.5	Horiz	86.20
441.83	-59.6	Horiz	86.30
449.27	-59.6	Horiz	86.30
434.87	-59.9	Horiz	86.60
454.68	-59.9	Horiz	86.60
453.11	-60.1	Horiz	86.80
443.99	-60.2	Horiz	86.90
443.51	-60.3	Horiz	87.00
428.38	-60.4	Horiz	87.10
457.20	-60.5	Horiz	87.20
432.82	-60.6	Horiz	87.30
444.71	-60.6	Horiz	87.30
455.64	-60.8	Horiz	87.50
40.02	-50.9	Vert	77.60
32.00	-51.7	Vert	78.40
30.00	-53.4	Vert	80.10
42.01	-54.6	Vert	81.30
46.01	-54.8	Vert	81.50
44.01	-55.5	Vert	82.20
40.85	-55.6	Vert	82.30
43.34	-56.3	Vert	83.00
36.02	-56.5	Vert	83.20
42.48	-56.6	Vert	83.30
33.29	-57.6	Vert	84.30
47.97	-57.6	Vert	84.30
61.98	-57.9	Vert	84.60
33.96	-58	Vert	84.70
44.57	-58	Vert	84.70
428.50	-58.4	Vert	85.10
38.02	-58.5	Vert	85.20
432.82	-59.5	Vert	86.20
47.30	-59.9	Vert	86.60
53.99	-60	Vert	86.70
445.91	-59	Horiz	85.70
443.27	-59.5	Horiz	86.20
445.67	-59.6	Horiz	86.30

447.95	-59.6	Horiz	86.30
446.15	-59.7	Horiz	86.40
449.03	-59.7	Horiz	86.40
449.75	-59.8	Horiz	86.50
458.16	-60	Horiz	86.70
447.47	-60.1	Horiz	86.80
443.63	-60.2	Horiz	86.90
441.83	-60.4	Horiz	87.10
452.39	-60.5	Horiz	87.20
454.68	-60.5	Horiz	87.20
455.16	-60.5	Horiz	87.20
457.20	-60.5	Horiz	87.20
451.91	-60.6	Horiz	87.30
440.87	-60.7	Horiz	87.40
39.98	-52.4	Vert	79.10
31.96	-52.5	Vert	79.20
30.00	-53.4	Vert	80.10
36.02	-54.1	Vert	80.80
46.01	-55.5	Vert	82.20
33.99	-56.5	Vert	83.20
44.14	-56.5	Vert	83.20
43.31	-56.7	Vert	83.40
36.66	-56.9	Vert	83.60
37.99	-57.5	Vert	84.20
48.00	-57.6	Vert	84.30
41.98	-57.7	Vert	84.40
62.01	-58	Vert	84.70
2,356.35	-54.6	Horiz	81.30
2,356.47	-55.3	Vert	82.00
1,873.16	-56.3	Vert	83.00
1,872.37	-57.4	Horiz	84.10
1,064.46	-58.3	Horiz	85.00
4,302.20	-75.8	Horiz	102.50
4,235.70	-76.2	Vert	102.90
1,319.70	-51.8	Horiz	78.50
3,051.50	-53.5	Horiz	80.20
2,079.82	-56.7	Vert	83.40
1,857.81	-56.8	Vert	83.50
2,063.20	-56.9	Horiz	83.60
4,356.90	-77.3	Horiz	104.00
4,263.40	-77.4	Vert	104.10



FCC 2.1033(c)(14)/2.1055/87.133- FREQUENCY STABILITY

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Honeywell International Inc.**
 Specification: **87.133 Radio Altimeter Frequency Stability**
 Work Order #: **87255** Date: 11/16/2007
 Test Type: **Conducted Scan** Time: 13:08:45
 Equipment: **Radio Altimeter** Sequence#: 18
 Manufacturer: Honeywell Tested By: Ryan Rutledge
 Model: ALA-52B 28VDC
 S/N: ALA52B-06008

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A	S/N: US44300437	05/27/2006	05/27/2008	AN02673
20 dB Attenuator	S/N: 9927	07/20/2007	07/20/2009	ANP05508
5' Micro-Sys Cable		10/25/2007	10/25/2009	ANP05329
Temperature Chamber	3673-9	01/29/2007	01/29/2009	AN02757

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Radio Altimeter*	Honeywell	ALA-52B	ALA52B-06008

Support Devices:

Function	Manufacturer	Model #	S/N
Quantum Interface Panel	Honeywell	747-0474-001	4
Arinc Bus Analyzer	Interface Technology	429A	429288

Test Conditions / Notes:

EUT set up in temperature chamber for Frequency Stability tests. EUT operating frequency is swept the full operating range from 4235 to 4365 MHz by transmitting in bands 1 and 2. Standard CISPR bandwidths used. Frequency range investigated and plotted is 4000 MHz to 4600 MHz.

Transducer Legend:

T1=ATT-ANP05508-072007	T2=CAB-ANP05329-102507
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Measurement Data: Reading listed by margin.

Test Lead: RF Output port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	4267.000M	110.9	+20.7	+1.1			+0.0	132.7	133.7	-1.0	RF Ou

Test Setup Photos



Test Plots

