



**FCC & Industry Canada Certification
Test Report
for
NBB Controls & Components AG
FCC ID: SJ7HYPRO43
IC ID: 2634B-HYPRO43**

June 29, 2007

Prepared for:

**NBB Controls & Components AG
Otto-Hahn-Straße 1-3
D-75248 Ölbronn-Dürrn**

Prepared By:

**Washington Laboratories, Ltd.
7560 Lindbergh Drive
Gaithersburg, Maryland 20879**



FCC & Industry Canada Certification Test Report
for the
NBB Controls & Components AG
HyPro Radio Remote Control
FCC ID: SJ7HYPRO43
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June 29, 2007

WLL JOB# 9722

Prepared by: James Ritter
Compliance Engineer

Reviewed by: Steven D. Koster
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Abstract

This report has been prepared on behalf of NBB Controls & Components AG to support the attached Application for Equipment Authorization. The test report and application are submitted for a Periodic Intentional Radiator under Part 15.231 of the FCC Rules and Regulations and Spectrum Management and Telecommunications Policy RSS-210 of Industry Canada. This Federal Communication Commission (FCC) Certification Test Report documents the test configuration and test results for a NBB Controls & Components AG HyPro Radio Remote Control.

Testing was performed on an Open Area Test Site (OATS) of Washington Laboratories, Ltd, 7560 Lindbergh Drive, Gaithersburg, MD 20879. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The Industry Canada OATS numbers are 3035A-1 and 3035A-2 for Washington Laboratories, Ltd. Site 1 and Site 2, respectively. Washington Laboratories, Ltd. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

The NBB Controls & Components AG HyPro Radio Remote Control complies with the limits for a Periodic Intentional Radiator device under FCC Part 15.231 and Industry Canada RSS-210.

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1 Introduction

1.1 Compliance Statement

The NBB Controls & Components AG HyPro Radio Remote Control complies with the limits for a Periodic Intentional Radiator device under FCC Part 15.231 and Industry Canada RSS-210.

1.2 Test Scope

Tests for radiated emissions were performed. All measurements were performed according to the 2003 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

1.3 Contract Information

Customer: NBB Controls & Components AG
Otto-Hahn-Straße 1-3
D-75248 Ölbronn-Dürren

Quotation Number: 63502

1.4 Test Dates

Testing was performed from June 22 to June 26, 2007.

1.5 Test and Support Personnel

Washington Laboratories, LTD	James Ritter
Client Representative	Thomas Burchard

2 Equipment Under Test

2.1 EUT Identification & Description

NBB Controls & Components AG HyPro is a portable Radiol Remote Control device used for control and E-Stop of cranes used on industrial and construction sites. The HyPro is powered via 2 “AA” NiMH or Alkaline Batteries .

Table 1. Device Summary

ITEM	DESCRIPTION
Manufacturer:	NBB Controls & Components AG
FCC ID Number	SJ7HYPRO43
Industry Canada Number	2634B-HYPRO43
EUT Name:	Radio Remote Control
Model:	HyPro
FCC Rule Parts:	§15.231
IC Rule Parts:	RSS-210
Frequency Range:	433.1 - 434.75MHz
Maximum Output Power:	NA
Modulation:	GFSK
Occupied Bandwidth:	10 kHz
Keying:	Manual
Type of Information:	Control
Number of Channels:	67
Antenna Type	Integral
Interface Cables:	None
Power Source & Voltage:	2X “AA” NiMH or Alkaline Batteries – 2.4VDC
Channel Spacing	25 kHz
Serial Number of Unit Tested	9994770192

2.2 Test Configuration

The HyPro was tested in a stand-alone configuration.

2.3 Testing Algorithm

The HyPro was tested in a continuous transmit operation.

Worst case emission levels are provided in the test results data.

2.4 Test Location

All measurements herein were performed at Washington Laboratories, Ltd. test center in Gaithersburg, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The Industry Canada OATS numbers are 3035A-1 and 3035A-2 for Washington Laboratories, Ltd. Site 1 and Site 2, respectively. Washington Laboratories, Ltd. has

been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

2.5 Measurements

2.5.1 References

ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation

ANSI C63.4 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Land Mobile FM or PM Communications Equipment Measurement and Performance Standards (ANSI/TIA/EIA-603-93)

2.6 Measurement Uncertainty

All results reported herein relate only to the equipment tested. For the purposes of the measurements performed by Washington Laboratories, the measurement uncertainty is ± 2.3 dB. This has been calculated for a *worst-case situation* (radiated emissions measurements performed on an open area test site).

The following measurement uncertainty calculation is provided:

$$\text{Total Uncertainty} = (A^2 + B^2 + C^2)^{1/2}/(n-1)$$

where:

A = Antenna calibration uncertainty, in dB = 2 dB

B = Spectrum Analyzer uncertainty, in dB = 1 dB

C = Site uncertainty, in dB = 4 dB

n = number of factors in uncertainty calculation = 3

Thus, Total Uncertainty = $0.5 (2^2 + 1^2 + 4^2)^{1/2} = \pm 2.3$ dB.

3 Test Equipment

Table 2 shows a list of the test equipment used for measurements along with the calibration information.

Table 2: Test Equipment List

Asset #	Manufacturer/Model	Description	Cal. Due
00528	AGILENT, E4446A	ANALYZER, SPECTRUM	2/15/2008
00066	HP, 8449B	PRE-AMPLIFIER, RF, 1-26.5GHZ	7/22/2007
00071	HP, 85685A	PRESELECTOR, RF	6/26/2007
00073	HP, 8568B	ANALYZER, SPECTRUM	6/26/2007
00069	HP, 85650A	ADAPTER, QP	6/26/2007
00004	ARA, DRG-118/A	ANTENNA, DRG, 1-18GHZ	2/2/2009
00007	ARA, LPB-2520	ANTENNA, BICONILOG ANTENNA	6/7/2008

4 Test Results

4.1 Transmission Cessation from Time-of-Release

FCC Part 15.231 states that a periodic intentional radiator shall cease transmission within a five second period from release of automatic or manual keying of operation.

Testing was conducted to verify that the HyPro Radio Remote Control stopped transmitting within the required time period. A 6 second sweep was made, during which the control toggle was activated and released, and the time to transmission end was measured. Figure 1 shows the indicated time period from un-keying the device until cessation of transmission. The EUT complies with the requirements for this section.

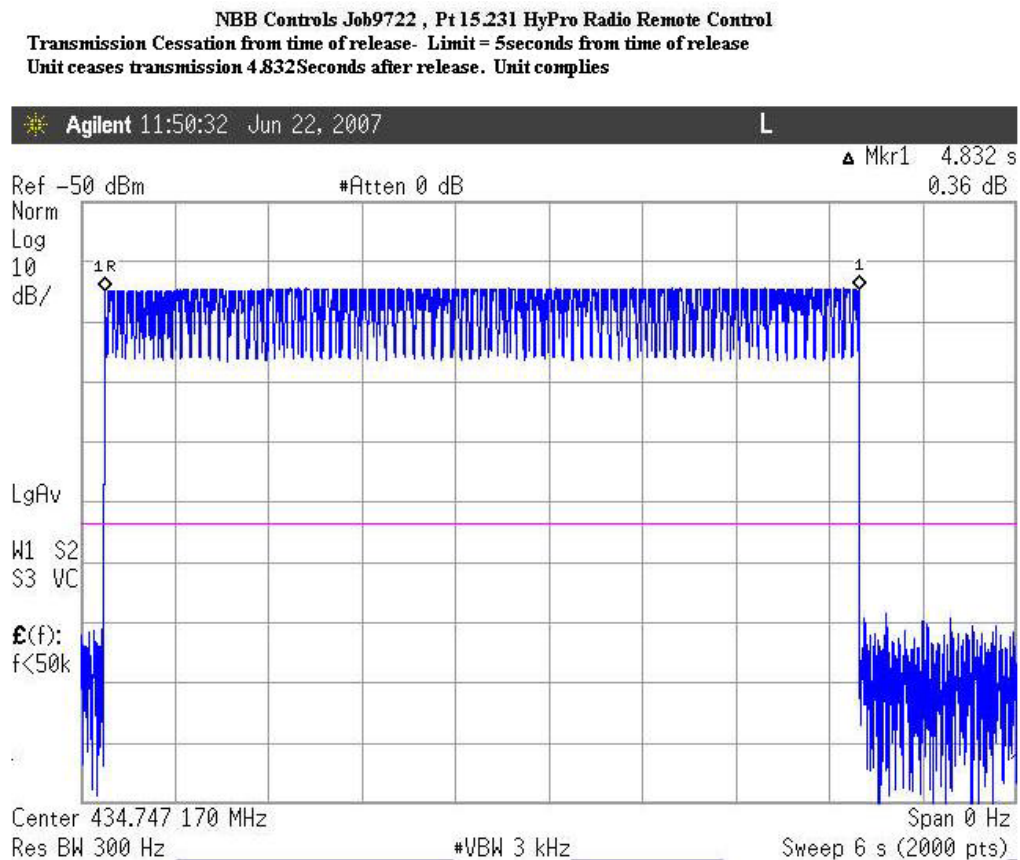


Figure 1. Time Period: Release to Termination of Transmission

4.2 Occupied Bandwidth: (FCC Part §2.1049)

Occupied bandwidth was performed by coupling the output of the EUT to the input of a spectrum analyzer.

FCC Part 15.231 states that the 20 dB bandwidth of the modulated carrier shall be as follows:

Frequency Range (MHz)	Occupied Bandwidth Limit
70-900 MHz	0.25%
>900 MHz	0.5%

At full modulation, the occupied bandwidth was measured as shown:



Figure 2. Occupied Bandwidth, Low Channel

NBB Controls Job9722 , Pt 15.231 HyPro Radio Remote Control 20dB Bandwidth Plot, Center Channel @ 433.9MHz
Limit = 0.25% of Fundamental= 0.25% of 433.9MHz= 1.08MHz
Unit 20dB BW= 10.01kHz- Unit Complies



Figure 3. Occupied Bandwidth, Mid Channel

NBB Controls Job9722 , Pt 15.231 HyPro Radio Remote Control 20dB Bandwidth Plot, High Channel @ 434.75MHz
Limit = 0.25% of Fundamental = 0.25% of 434.75MHz = 1.08MHz
Unit 20dB BW = 10.01kHz - Unit Complies



Figure 4. Occupied Bandwidth, High Channel

Table 3 provides a summary of the Occupied Bandwidth Results.

Table 3. Occupied Bandwidth Results

Frequency	Bandwidth	Limit	Pass/Fail
Low Channel: 433.1MHz	10.03 KHz	1.08 MHz	Pass
Mid Channel: 433.9MHz	10.01 KHz	1.08 MHz	Pass
High Channel: 434.75MHz	10.03 kHz	1.08 MHz	Pass

4.3 Radiated Spurious Emissions

The EUT must comply with requirements for radiated spurious emissions per the limits given in §15.231(a). In addition, any emissions appearing in the restricted bands listed in §15.205 must comply with the general emission limits of 15.209.

4.3.1 Test Procedure

The EUT was placed on motorized turntable for radiated testing on a 3-meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Receiving antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. Both the horizontal and vertical field components were measured.

The emissions were measured using the following resolution bandwidths:

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	100kHz	>100kHz
>1000 MHz	1 MHz	1MHz (peak) 10Hz (Avg)

Emissions were measured to the 10th harmonic of the transmit frequency. The HyPro controller was tested in three orthogonal planes. Worst case emission levels are reported.

The following is a sample calculation used in the data tables for calculating the final field strength of spurious emissions and comparing these levels to the specified limits.

Sample Calculation:

Spectrum Analyzer Voltage (SA Level):	V dBμV (Peak)
Antenna Factor (Ant Corr):	AFdB/m
Cable Loss Correction (Cable Corr):	CCdB
Amplifier Gain:	GdB
Electric Field (Corr Level):	$EdB_{\mu V/m} = VdB_{\mu V} + AFdB/m + CCdB + DCCdB - GdB$

Table 4. Radiated Emissions Test Data –Low Channel @ 433.1MHz

Peak Data - Harmonics

Frequency	Polarity	Az	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Amp Gain	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Deg	(m)	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
433.09	V	270.0	1.5	55.3	16.2	3.8	0.0	75.3	5798.0	109622.3	-25.5
866.19	V	180.0	1.8	5.2	21.5	6.0	0.0	32.7	43.3	10962.2	-48.1
1299.28	V	180.0	1.0	46.1	25.9	1.4	32.1	41.2	115.3	10962.2	-39.6
1732.37	V	0.0	1.0	46.6	27.3	1.5	32.0	43.4	148.3	10962.2	-37.4
2165.47	V	0.0	1.0	46.1	28.4	1.6	32.0	44.0	159.1	10962.2	-36.8
2598.56	V	0.0	1.0	45.5	29.3	1.5	32.0	44.3	163.8	10962.2	-36.5
3031.66	V	0.0	1.0	44.4	30.0	1.6	32.0	44.0	158.3	10962.2	-36.8
3464.75	V	0.0	1.0	43.7	30.6	2.3	31.9	44.5	168.3	10962.2	-36.3
3897.84	V	0.0	1.0	42.4	31.0	2.9	31.9	44.3	165.0	5000.0	-29.6
4330.94	V	0.0	1.0	41.9	31.7	3.2	31.9	45.0	176.9	5000.0	-29.0
433.09	H	180.0	1.6	47.0	16.2	3.8	0.0	67.0	2229.9	109622.3	-33.8
866.19	H	180.0	1.3	3.5	21.5	6.0	0.0	31.0	35.6	10962.2	-49.8
1299.28	H	180.0	1.0	45.4	25.9	1.4	32.1	40.6	106.9	10962.2	-40.2
1732.37	H	180.0	1.0	44.4	27.3	1.5	32.0	41.2	115.2	10962.2	-39.6
2165.47	H	180.0	1.0	44.4	28.4	1.6	32.0	42.3	131.0	10962.2	-38.5
2598.56	H	180.0	1.0	44.8	29.3	1.5	32.0	43.6	151.5	10962.2	-37.2
3031.66	H	180.0	1.0	41.4	30.0	1.6	32.0	41.0	112.1	10962.2	-39.8
3464.75	H	180.0	1.0	43.9	30.6	2.3	31.9	44.8	173.4	10962.2	-36.0
3897.84	H	180.0	1.0	41.6	31.0	2.9	31.9	43.6	151.1	5000.0	-30.4
4330.94	H	180.0	1.0	42.4	31.7	3.2	31.9	45.5	188.3	5000.0	-28.5

AVG Data - Harmonics

Frequency	Polarity	Az	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Amp Gain	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Degree	(m)	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
433.09	V	270.0	1.2	50.5	16.2	3.8	0.0	70.5	3336.4	10962.2	-10.3
866.19	V	180.0	1.5	-1.2	21.5	6.0	0.0	26.3	20.7	1096.2	-34.5
1299.28	V	180.0	1.0	32.0	25.9	1.4	32.1	27.2	22.8	1096.2	-33.6
1732.37	V	0.0	1.0	34.1	27.3	1.5	32.0	30.9	35.0	1096.2	-29.9
2165.47	V	0.0	1.0	35.0	28.4	1.6	32.0	33.0	44.5	1096.2	-27.8
2598.56	V	0.0	1.0	33.2	29.3	1.5	32.0	32.0	39.9	1096.2	-28.8
3031.66	V	0.0	1.0	33.6	30.0	1.6	32.0	33.2	45.7	1096.2	-27.6
3464.75	V	0.0	1.0	33.0	30.6	2.3	31.9	33.9	49.3	1096.2	-26.9
3897.84	V	0.0	1.0	33.7	31.0	2.9	31.9	35.7	60.7	500.0	-18.3
4330.94	V	0.0	1.0	32.6	31.7	3.2	31.9	35.7	60.6	500.0	-18.3
433.09	H	180.0	1.0	42.1	16.2	3.8	0.0	62.1	1268.5	10962.2	-18.7
866.19	H	180.0	1.0	-3.1	21.5	6.0	0.0	24.4	16.6	1096.2	-36.4
1299.28	H	180.0	1.0	34.0	25.9	1.4	32.1	29.2	28.8	1096.2	-31.6
1732.37	H	180.0	1.0	33.6	27.3	1.5	32.0	30.4	33.1	1096.2	-30.4

Frequency (MHz)	Polarity H/V	Az Degree	Ant. Height (m)	SA Level (dBuV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBuV/m)	Corr. Level (uV/m)	Limit (uV/m)	Margin dB
2165.47	H	180.0	1.0	35.0	28.4	1.6	32.0	33.0	44.5	1096.2	-27.8
2598.56	H	180.0	1.0	33.4	29.3	1.5	32.0	32.2	40.9	1096.2	-28.6
3031.66	H	180.0	1.0	33.3	30.0	1.6	32.0	32.9	44.1	1096.2	-27.9
3464.75	H	180.0	1.0	34.0	30.6	2.3	31.9	34.9	55.3	1096.2	-25.9
3897.84	H	180.0	1.0	33.5	31.0	2.9	31.9	35.5	59.3	500.0	-18.5
4330.94	H	180.0	1.0	33.2	31.7	3.2	31.9	36.3	65.0	500.0	-17.7

Non- Harmonic Resticted Bands

Frequency (MHz)	Polarity H/V	Azimuth Degree	Ant. Height (m)	SA Level (dBuV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Corr. Level (dBuV/m)	Corr. Level (uV/m)	Limit (uV/m)	Margin dB
249.18	V	0.0	1.3	3.7	13.3	2.9	19.9	9.9	200.0	-26.1
249.18	H	0.0	3.2	3.5	13.3	2.9	19.7	9.6	200.0	-26.3

Table 5. Radiated Emissions Test Data –Center Channel @ 433.9MHz

Peak Data - Harmonics

Frequency (MHz)	Polarity H/V	Az Deg	Ant. Height (m)	SA Level (dBuV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBuV/m)	Corr. Level (uV/m)	Limit (uV/m)	Margin dB
433.90	V	0.0	1.3	54.2	16.2	3.8	0.0	74.2	5117.9	109958.3	-26.6
867.80	V	90.0	1.4	3.1	21.6	6.0	0.0	30.7	34.1	10995.8	-50.2
1301.70	V	180.0	1.0	44.1	25.9	1.4	32.1	39.3	92.1	5000.0	-34.7
1735.60	V	180.0	1.0	44.0	27.3	1.5	32.0	40.8	109.7	10995.8	-40.0
2169.50	V	200.0	1.0	43.8	28.4	1.6	32.0	41.8	122.8	10995.8	-39.0
2603.40	V	200.0	1.0	44.3	29.3	1.5	32.0	43.1	143.5	10995.8	-37.7
3037.30	V	180.0	1.0	44.2	30.0	1.6	32.0	43.8	155.2	10995.8	-37.0
3471.20	V	190.0	1.0	43.0	30.6	2.3	31.9	43.9	156.1	10995.8	-37.0
3905.10	V	270.0	1.0	43.0	31.0	2.9	31.9	45.0	177.3	5000.0	-29.0
4339.00	V	270.0	1.0	42.1	31.7	3.2	31.9	45.2	181.4	5000.0	-28.8
433.90	H	90.0	1.0	47.1	16.2	3.8	0.0	67.1	2259.9	109958.3	-33.7
867.80	H	90.0	1.0	1.8	21.6	6.0	0.0	29.4	29.4	10995.8	-51.5
1301.70	H	90.0	1.0	43.5	25.9	1.4	32.1	38.7	85.9	5000.0	-35.3
1735.60	H	180.0	1.0	43.8	27.3	1.5	32.0	40.6	107.2	10995.8	-40.2
2169.50	H	190.0	1.0	44.0	28.4	1.6	32.0	42.0	125.6	10995.8	-38.8
2603.40	H	180.0	1.0	41.8	29.3	1.5	32.0	40.6	107.6	10995.8	-40.2
3037.30	H	200.0	1.0	41.5	30.0	1.6	32.0	41.1	113.7	10995.8	-39.7
3471.20	H	180.0	1.0	42.0	30.6	2.3	31.9	42.9	139.1	10995.8	-38.0
3905.10	H	0.0	1.0	42.0	31.0	2.9	31.9	44.0	158.0	5000.0	-30.0
4339.00	H	0.0	1.0	39.5	31.7	3.2	31.9	42.6	134.5	5000.0	-31.4

AVG Data - Harmonics

Frequency	Polarity	Az	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Amp Gain	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Degree	(m)	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
433.90	V	0.0	1.3	49.5	16.2	3.8	0.0	69.5	2979.2	10995.8	-11.3
867.80	V	90.0	1.3	-3.2	21.6	6.0	0.0	24.4	16.5	1099.6	-36.5
1301.70	V	180.0	1.0	32.3	25.9	1.4	32.1	27.5	23.7	500.0	-26.5
1735.60	V	180.0	1.0	35.0	27.3	1.5	32.0	31.8	38.9	1099.6	-29.0
2169.50	V	200.0	1.0	33.2	28.4	1.6	32.0	31.2	36.2	1099.6	-29.6
2603.40	V	200.0	1.0	33.1	29.3	1.5	32.0	31.9	39.5	1099.6	-28.9
3037.30	V	180.0	1.0	34.0	30.0	1.6	32.0	33.6	48.0	1099.6	-27.2
3471.20	V	190.0	1.0	34.0	30.6	2.3	31.9	34.9	55.4	1099.6	-26.0
3905.10	V	270.0	1.0	32.6	31.0	2.9	31.9	34.6	53.5	500.0	-19.4
4339.00	V	270.0	1.0	33.1	31.7	3.2	31.9	36.2	64.4	500.0	-17.8
433.90	H	90.0	1.0	46.1	16.2	3.8	0.0	66.1	2014.2	10995.8	-14.7
867.80	H	90.0	1.0	-6.0	21.6	6.0	0.0	21.6	12.0	1099.6	-39.3
1301.70	H	90.0	1.0	33.8	25.9	1.4	32.1	29.0	28.1	500.0	-25.0
1735.60	H	180.0	1.0	33.0	27.3	1.5	32.0	29.8	30.9	1099.6	-31.0
2169.50	H	190.0	1.0	33.6	28.4	1.6	32.0	31.6	37.9	1099.6	-29.2
2603.40	H	180.0	1.0	33.5	29.3	1.5	32.0	32.3	41.4	1099.6	-28.5
3037.30	H	200.0	1.0	33.0	30.0	1.6	32.0	32.6	42.7	1099.6	-28.2
3471.20	H	180.0	1.0	34.1	30.6	2.3	31.9	35.0	56.0	1099.6	-25.9
3905.10	H	0.0	1.0	34.7	31.0	2.9	31.9	36.7	68.2	500.0	-17.3
4339.00	H	0.0	1.0	35.1	31.7	3.2	31.9	38.2	81.0	500.0	-15.8

Non- Harmonic Resticted Bands

Frequency	Polarity	Azimuth	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Degree	(m)	(dBuV)	(dB/m)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
249.18	V	0.0	1.3	3.7	13.3	2.9	19.9	9.9	200.0	-26.1
249.18	H	0.0	3.2	3.5	13.3	2.9	19.7	9.6	200.0	-26.3

Table 6. Radiated Emissions Test Data, -High Channel @ 434.75MHz

Peak Data - Harmonics

Frequency	Polarity	Az	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Amp Gain	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Degree	(m)	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
434.75	V	45.0	1.5	54.5	16.2	3.8	0.0	74.5	5308.2	109958.3	-26.3
869.50	V	90.0	1.8	6.4	21.6	6.0	0.0	34.0	50.1	10995.8	-46.8
1304.25	V	0.0	1.0	46.2	25.9	1.4	32.1	41.4	116.9	5000.0	-32.6
1739.00	V	0.0	1.0	46.5	27.3	1.5	32.0	43.3	145.9	10995.8	-37.5
2173.75	V	0.0	1.0	45.1	28.4	1.6	32.0	43.1	142.9	10995.8	-37.7
2608.50	V	0.0	1.0	44.2	29.3	1.5	32.0	43.0	142.0	10995.8	-37.8
3043.25	V	0.0	1.0	42.9	30.1	1.6	32.0	42.5	133.9	10995.8	-38.3
3478.00	V	0.0	1.0	42.1	30.6	2.3	31.9	43.0	140.9	10995.8	-37.8
3912.75	V	0.0	1.0	42.8	31.0	2.9	31.9	44.8	173.6	5000.0	-29.2
4347.50	V	0.0	1.0	41.2	31.7	3.2	31.9	44.3	163.2	5000.0	-29.7
434.75	H	180.0	1.6	47.4	16.2	3.8	0.0	67.4	2344.0	109958.3	-33.4
869.50	H	180.0	1.3	3.9	21.6	6.0	0.0	31.5	37.5	10995.8	-49.3
1304.25	H	180.0	1.0	45.0	25.9	1.4	32.1	40.2	102.3	5000.0	-33.8
1739.00	H	180.0	1.0	48.3	27.3	1.5	32.0	45.1	180.4	10995.8	-35.7
2173.75	H	180.0	1.0	44.9	28.4	1.6	32.0	42.8	138.7	10995.8	-38.0
2608.50	H	180.0	1.0	43.9	29.3	1.5	32.0	42.7	137.2	10995.8	-38.1
3043.25	H	180.0	1.0	41.8	30.1	1.6	32.0	41.5	118.4	10995.8	-39.4
3478.00	H	180.0	1.0	42.7	30.6	2.3	31.9	43.6	151.0	10995.8	-37.2
3912.75	H	180.0	1.0	40.5	31.0	2.9	31.9	42.5	133.1	5000.0	-31.5
4347.50	H	189.0	1.0	40.5	31.7	3.2	31.9	43.6	152.0	5000.0	-30.3

AVG Data - Harmonics

Frequency	Polarity	Az	Ant. Height	SA Level	Ant. Corr.	Cable Corr.	Amp Gain	Corr. Level	Corr. Level	Limit	Margin
(MHz)	H/V	Degree	(m)	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	dB
434.75	V	45.0	1.2	48.2	16.2	3.8	0.0	68.2	2570.1	11031.3	-12.7
869.50	V	90.0	1.5	2.7	21.6	6.0	0.0	30.3	32.7	1103.1	-30.6
1304.25	V	0.0	1.0	31.3	25.9	1.4	32.1	26.5	21.2	500.0	-27.4
1739.00	V	0.0	1.0	35.0	27.3	1.5	32.0	31.8	39.0	1103.1	-29.0
2173.75	V	0.0	1.0	33.5	28.4	1.6	32.0	31.5	37.6	1103.1	-29.4
2608.50	V	0.0	1.0	34.0	29.3	1.5	32.0	32.8	43.9	1103.1	-28.0
3043.25	V	0.0	1.0	34.1	30.1	1.6	32.0	33.7	48.6	1103.1	-27.1
3478.00	V	0.0	1.0	33.8	30.6	2.3	31.9	34.7	54.2	1103.1	-26.2
3912.75	V	0.0	1.0	33.2	31.0	2.9	31.9	35.2	57.5	500.0	-18.8
4347.50	V	0.0	1.0	32.7	31.7	3.2	31.9	35.8	61.6	500.0	-18.2
434.75	H	180.0	1.0	41.8	16.2	3.8	0.0	61.8	1230.1	11031.3	-19.1
869.50	H	180.0	1.0	1.2	21.6	6.0	0.0	28.8	27.5	1103.1	-32.1
1304.25	H	180.0	1.0	34.2	25.9	1.4	32.1	29.4	29.4	500.0	-24.6
1739.00	H	180.0	1.0	34.0	27.3	1.5	32.0	30.8	34.7	1103.1	-30.0
2173.75	H	180.0	1.0	34.1	28.4	1.6	32.0	32.1	40.4	1103.1	-28.7
2608.50	H	180.0	1.0	32.9	29.3	1.5	32.0	31.7	38.7	1103.1	-29.1

3043.25	H	180.0	1.0	33.5	30.1	1.6	32.0	33.2	45.5	1103.1	-27.7
3478.00	H	180.0	1.0	33.7	30.6	2.3	31.9	34.6	53.5	1103.1	-26.3
3912.75	H	180.0	1.0	33.2	31.0	2.9	31.9	35.2	57.5	500.0	-18.8
4347.50	H	189.0	1.0	33.0	31.7	3.2	31.9	36.1	63.8	500.0	-17.9

Non- Harmonic Resticted Bands

Frequency (MHz)	Polarity H/V	Azimuth Degree	Ant. Height (m)	SA Level (dBuV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Corr. Level (dBuV/m)	Corr. Level (uV/m)	Limit (uV/m)	Margin dB
249.18	V	0.0	1.3	3.7	13.3	2.9	19.9	9.9	200.0	-26.1
249.18	H	0.0	3.2	3.5	13.3	2.9	19.7	9.6	200.0	-26.3