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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013
Temperature:	23˚C Humidity: 30%	Pressure:	830 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Video playback mode		
Test Engineer:	Mike Tidquist		

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class A QP (dB)	Margin: FCC Class A AV (dB)
QP	37.517	46.0	15.7	-29.8	31.9	20/V-Pole/1.00	7.18	-
QP	40.556	46.8	13.5	-29.8	30.5	9/V-Pole/1.00	8.61	-
QP	62.801	59.0	7.7	-29.9	36.7	184/V-Pole/2.41	2.36	-
QP	93.273	58.2	8.6	-29.8	37.0	66/V-Pole/4.00	6.48	-
QP	264.000	38.9	12.6	-29.4	22.1	53/H-Pole/3.58	24.31	-
QP	346.501	51.8	14.2	-29.2	36.8	78/H-Pole/2.79	9.62	-
QP	445.501	46.2	17.0	-29.1	34.1	258/H-Pole/1.93	12.30	-
QP	528.001	45.6	18.2	-28.8	35.1	240/H-Pole/2.10	11.34	-
Type	**Frequency (MHz)**	**Level (dBuV)**	**Transducer (dB/m)**	**Gain / Loss (dB)**	**Final (dBuV/m)**	**Azm(deg)/Pol/Hgt (m)**	**Margin: FCC Class A > 1GHz PK (dB)**	**Margin: FCC Class A > 1GHz AV (dB)**
AV	1782.003	78.5	26.5	-61.7	43.2	177/H-Pole/1.00	-	16.71
PK	1782.003	84.2	26.5	-61.7	48.9	177/H-Pole/1.00	31.01	-
AV	1930.502	79.2	27.1	-61.4	45.0	192/H-Pole/1.00	-	15.00
PK	1930.502	85.1	27.1	-61.4	50.9	192/H-Pole/1.00	29.10	-
AV	2524.504	74.7	28.8	-61.3	42.2	118/H-Pole/1.10	-	17.80
PK	2524.504	80.6	28.8	-61.3	48.1	118/H-Pole/1.10	31.85	-
AV	4009.506	68.5	32.6	-59.6	41.5	159/H-Pole/1.52	-	18.46
PK	4009.506	74.5	32.6	-59.6	47.5	159/H-Pole/1.52	32.46	-

The highest emission measured was at **62.801 MHz,** which was **2.36 dB** below the limit.

- "Type" refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
  - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
  - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
  - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The "Final" emissions level is attained by taking the "Level" and adding the "Transducer" factor and the "Gain/Loss" factor. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: 49.6 dBuV + 11.4 dB/m – 28.8 dB = 32.2 dBuV/m. **Important Note**: This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The "Azm/Pol/Hgt" indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The "Margin" is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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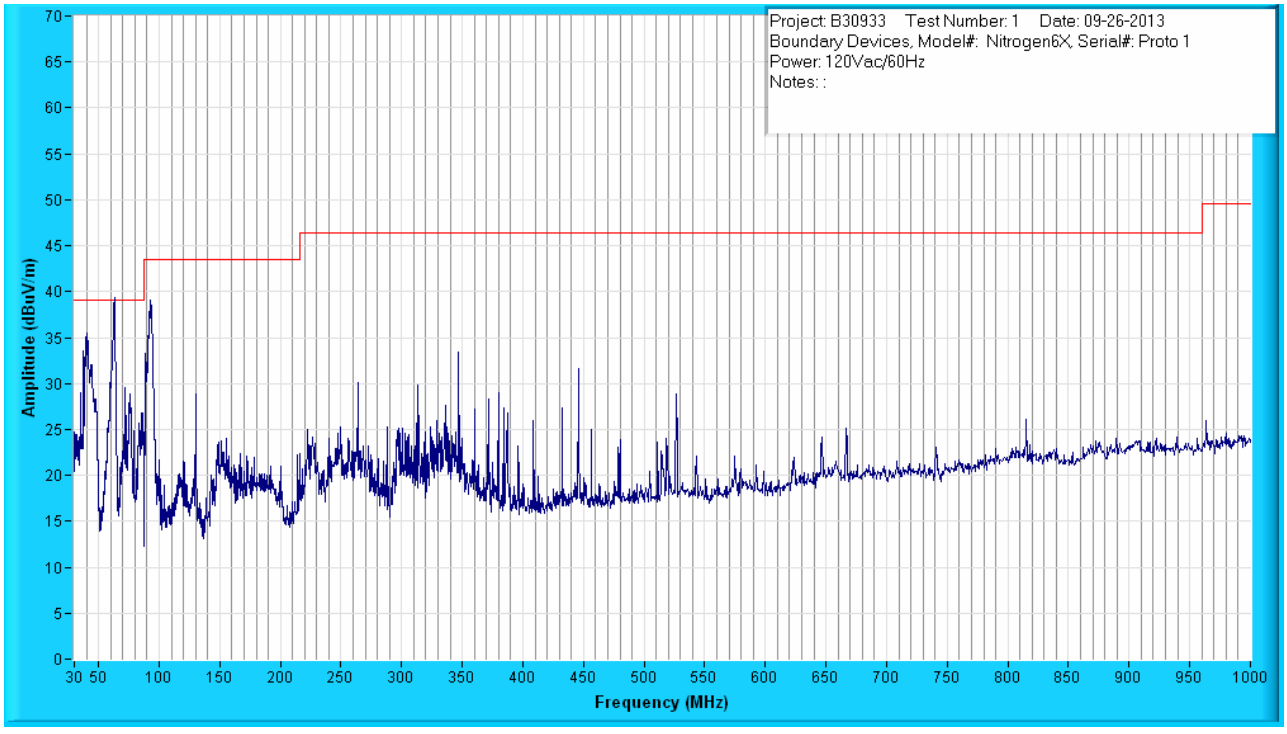

Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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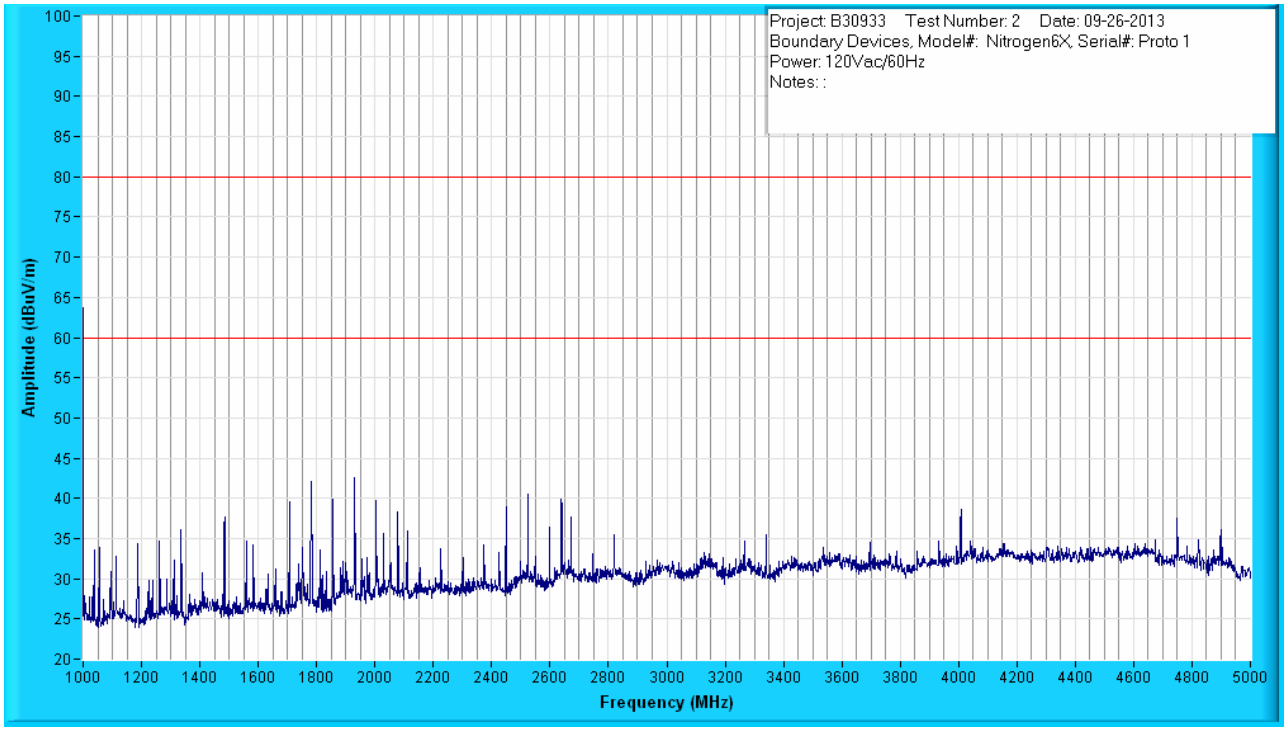

Figure A2: Radiated Emissions Prescan, 1GHz to 5GHz, Peak Measurements at 3m Distance

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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Figure A3: Radiated Emissions Test Setup – Front Side

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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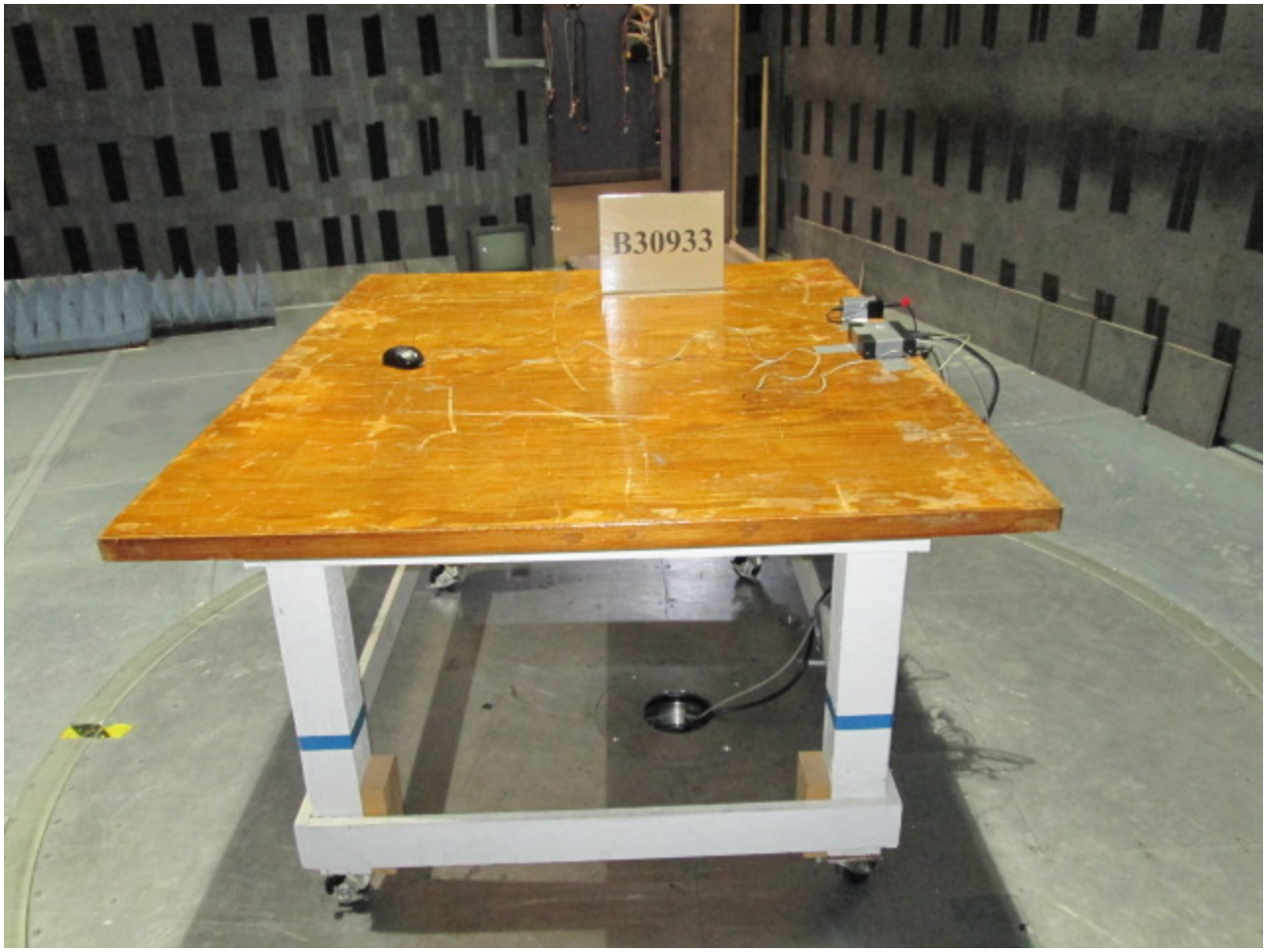

Figure A4: Radiated Emissions Test Setup – Right Side

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

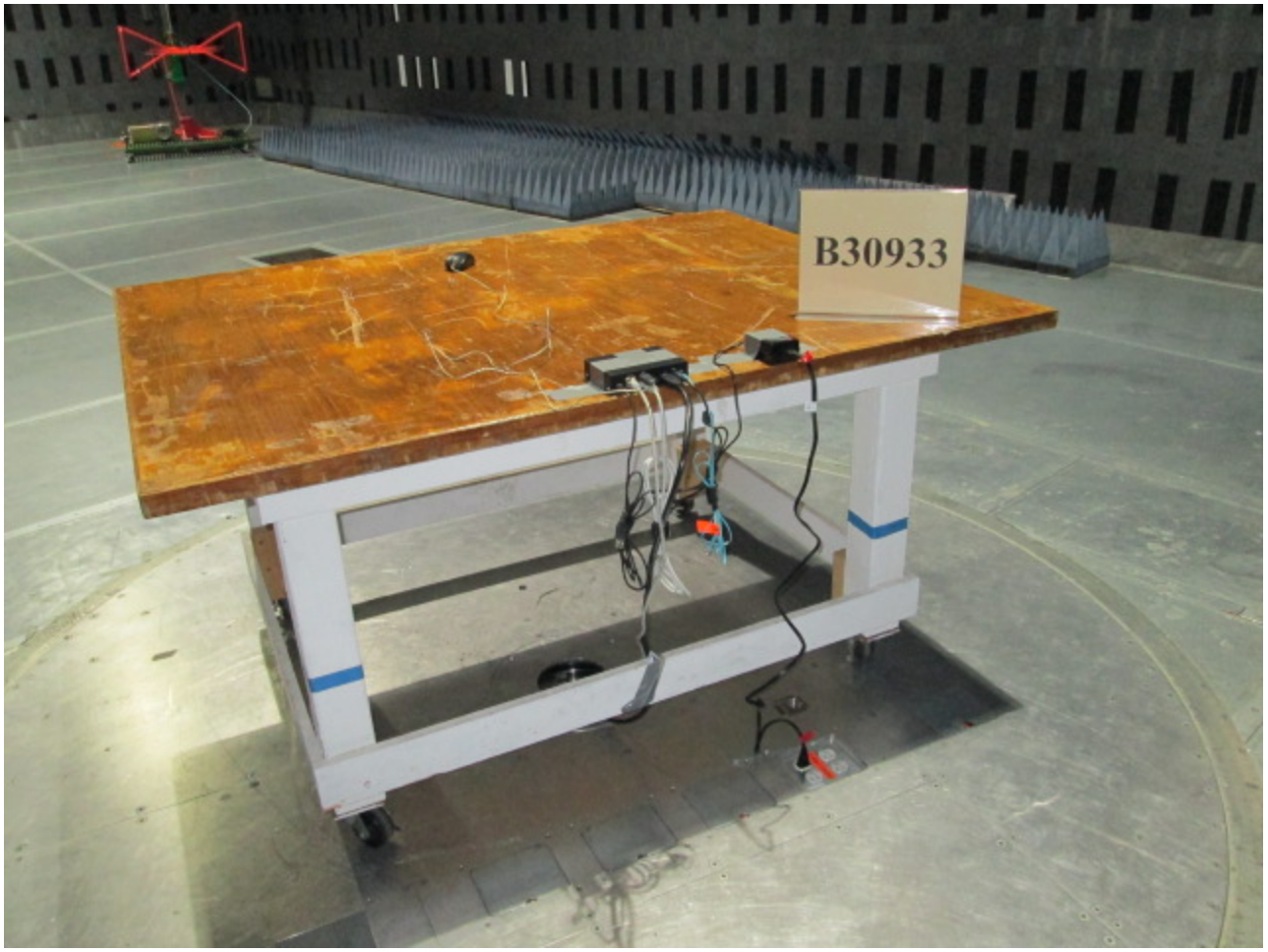

Figure A5: Radiated Emissions Test Setup – Back Side

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

Figure A6: Radiated Emissions Test Setup – Left Side

emc integrity incorporated

Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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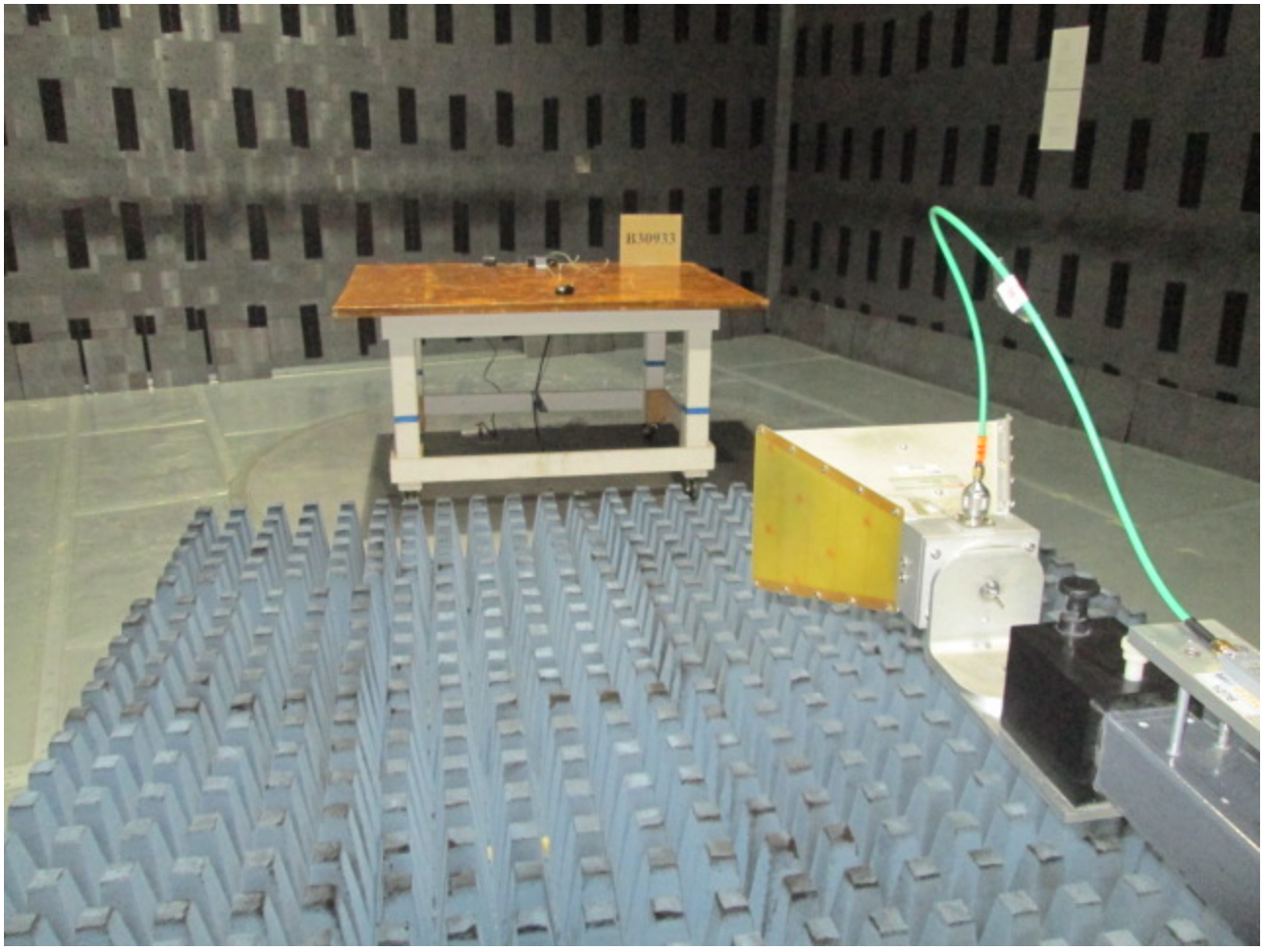

Figure A7: Radiated Emissions Test Setup – Front Side @ 3M

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Radiated Emissions, FCC Part 15

Manufacturer:	Boundary Devices	Project Number:	B30933
Customer Representative:	Pejman Kalkhoran	Test Area:	10M #1
Model:	Nitrogen6X	S/N:	Proto 1
Standard Referenced:	FCC Part 15, Class A	Date:	September 26, 2013

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1030	EMCO	3115	9906-5816	Double-ridged Horn (1 - 18 GHz)	04/19/2013	04/19/2014
1219	Mini-Circuits	ZKL-2	062905	Preamp, 10 - 2000 MHz, 30 dB	02/08/2013	02/08/2014
1223	Hewlett Packard	85650A	3303A01859	Quasi-Peak Adaptor	03/12/2013	03/12/2014
1231	Sunol Sciences	JB1	A071605-1	Bilog Antenna, 30 MHz to 2.0 GHz	11/28/2012	11/28/2013
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	08/16/2012	10/16/2013
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	07/29/2013	07/29/2014
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1276	Narda	DBL-0218N308	037-038	1GHz to 18GHz Preamplifier, 60dB gain nominal	04/15/2013	04/15/2014
1335	Hewlett Packard	85662A	2542A10937	Spectrum Analyzer Display	03/12/2013	03/12/2014
1336	Hewlett Packard	8566B	2532A02062	Spectrum Analyzer RF Section	03/12/2013	03/12/2014
1338	Hewlett Packard	85685A	3506A01551	RF Preselector	03/12/2013	03/12/2014
1405	EXTECH Instruments	445715	N/A	Hygro-Thermometer	08/06/2013	08/06/2014