

# FCC Test Report

Product Name	Innoband Sense Commander
Model No.	SC00
FCC ID.	SP7-SC00

Applicant	Innoband Technologies, Inc.
Address	2526 Qume Drive Suite 21, San Jose, CA 95131, U.S.A

Date of Receipt	Mar. 19, 2013
Issued Date	Apr. 23, 2013
Report No.	133375R-RFUSP07V01
Version	V1.0



The Test Results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: Apr. 23, 2013

Report No. : 133375R-RFUSP07V01



Product Name	Innoband Sense Commander
Applicant	Innoband Technologies, Inc.
Address	2526 Qume Drive Suite 21, San Jose, CA 95131, U.S.A
Manufacturer	ACROCOMM Corp.
Model No.	SC00
FCC ID.	SP7-SC00
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	The logo for Innoband Sense, featuring the word "innoband" in a smaller font above the word "SENSE" in a larger, bold, blue font.
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2012
	ANSI C63.4: 2003
Test Result	Complied

The Test Results relate only to the samples tested.

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Documented By :

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(Senior Adm. Specialist / Rita Huang)

Tested By :

A handwritten signature in blue ink that appears to read "Alan Chen".

(Engineer / Alan Chen)

Approved By :

A handwritten signature in blue ink that appears to read "Vincent Lin".

(Manager / Vincent Lin)

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## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Innoband Sense Commander
Trade Name	
FCC ID.	SP7-SC00
Model No.	SC00
Frequency Range	908.42MHz
Type of Modulation	FSK
Number of Channels	1
Channel Control	Auto
Antenna Type	PIFA
Antenna Gain	Refer to the table "Antenna List"
Power Adapter (1)	<p>MFR: DVE, M/N: DSA-12PFA-09 FUS 120100</p> <p>Input: 100-240V, 50-60Hz, 0.5A</p> <p>Output: +12V=1A</p> <p>Cable in: Shielded, 2.0m</p>
Power Adapter (2)	<p>MFR: AOEM, M/N: ADS012PM-W 120100</p> <p>Input: 100-240V ~ 50-60Hz, 0.5A</p> <p>Output: 12V=1.0A</p> <p>Cable in: Shielded, 2.0m</p>

### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Wgt	IBGSMGPPB01+B	3.14dBi for 908.42MHz

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	908.42MHz				

Note:

1. The EUT is a Innoband Sense Commander with a built-in Z-Wave transceiver module.
2. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.

Test Mode	Mode 1: Transmit
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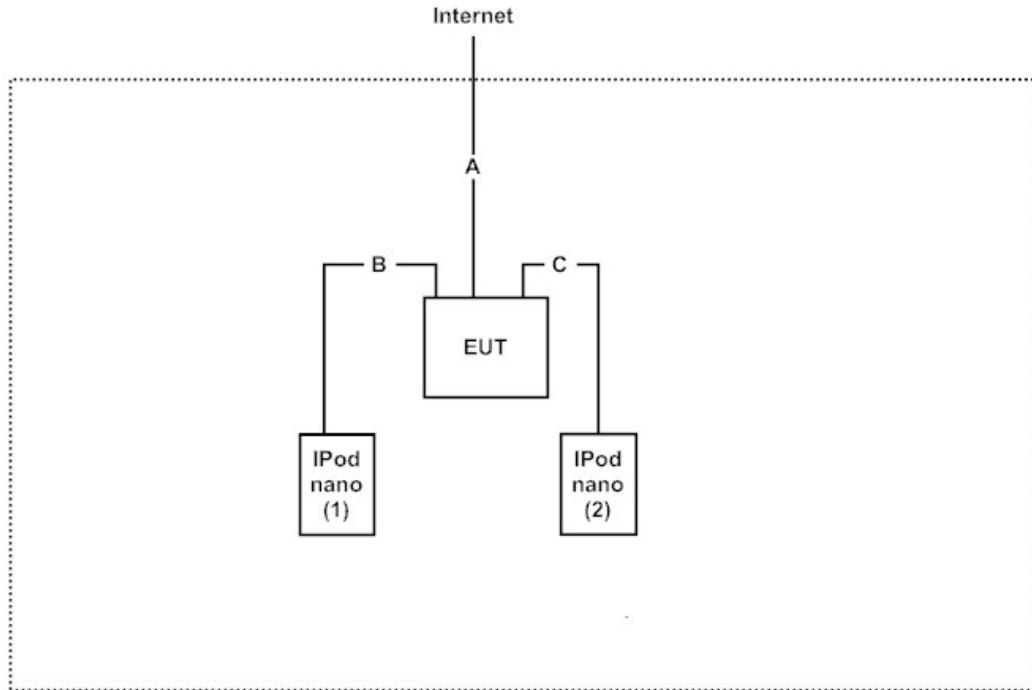
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	IPod nano	Apple	A1199	YM708A72VQ5	N/A
2	IPod nano	Apple	A1199	YM706LSCVQ5	N/A

	Signal Cable Type	Signal cable Description
A	LAN Cable	Non-Shielded, 2.0m
B	IPod Cable	Shielded, 1.2m
C	IPod Cable	Shielded, 1.2m

### 1.4. Configuration of Test System



### 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Provide the AC Power Source.
- (3) Start transmits continually.
- (4) Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from

Quietek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site:

<http://www.quietek.com/>

Site Description: File on  
Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 92195

Accreditation on NVLAP  
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation  
Site Address: No.5-22, Ruishukeng,  
Linkou Dist. New Taipei City 24451,  
Taiwan, R.O.C.  
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789  
E-Mail : [service@quietek.com](mailto:service@quietek.com)

FCC Accreditation Number: TW1014

## 2. Conducted Emission

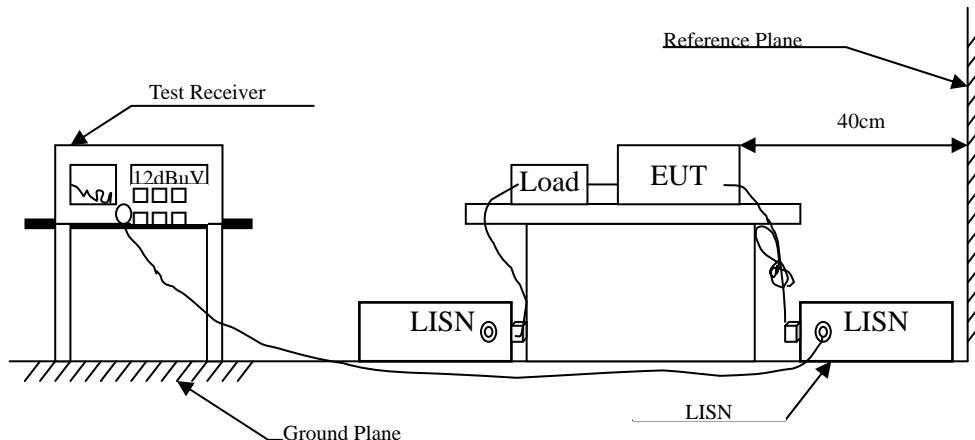
### 2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2012	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2013	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2013	EUT
	DC LISN	Schwarzbeck	8226 / 176	Feb., 2013	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2013	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

### 2.2. Test Setup



### 2.3. Limits

<b>FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit</b>		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : Innoband Sense Commander  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmit (Adapter: DVE / DSA-12PFA-09 FUS 120100)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.166	9.790	17.660	27.450	-38.093	65.543
0.580	9.790	11.750	21.540	-34.460	56.000
1.494	9.800	10.630	20.430	-35.570	56.000
5.138	9.840	13.180	23.020	-36.980	60.000
9.115	9.956	20.110	30.066	-29.934	60.000
16.732	10.100	27.720	37.820	-22.180	60.000
<b>Average</b>					
0.166	9.790	14.090	23.880	-31.663	55.543
0.580	9.790	6.880	16.670	-29.330	46.000
1.494	9.800	8.080	17.880	-28.120	46.000
5.138	9.840	9.160	19.000	-31.000	50.000
9.115	9.956	13.940	23.896	-26.104	50.000
16.732	10.100	22.320	32.420	-17.580	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Innoband Sense Commander  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmit (Adapter: DVE / DSA-12PFA-09 FUS 120100)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.166	9.770	22.200	31.970	-33.573	65.543
0.248	9.770	18.540	28.310	-34.890	63.200
0.334	9.770	16.090	25.860	-34.883	60.743
0.580	9.770	19.130	28.900	-27.100	56.000
2.482	9.790	14.750	24.540	-31.460	56.000
18.400	10.200	25.150	35.350	-24.650	60.000
<b>Average</b>					
0.166	9.770	21.270	31.040	-24.503	55.543
0.248	9.770	17.200	26.970	-26.230	53.200
0.334	9.770	14.710	24.480	-26.263	50.743
0.580	9.770	17.270	27.040	-18.960	46.000
2.482	9.790	9.020	18.810	-27.190	46.000
18.400	10.200	18.620	28.820	-21.180	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Innoband Sense Commander  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmit (Adapter: AOEM / ADS012PM-W 120100)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.166	9.790	17.660	27.450	-38.093	65.543
0.580	9.790	11.750	21.540	-34.460	56.000
1.494	9.800	10.630	20.430	-35.570	56.000
5.138	9.840	13.180	23.020	-36.980	60.000
9.115	9.956	20.110	30.066	-29.934	60.000
16.732	10.100	27.720	37.820	-22.180	60.000
<b>Average</b>					
0.166	9.790	14.090	23.880	-31.663	55.543
0.580	9.790	6.880	16.670	-29.330	46.000
1.494	9.800	8.080	17.880	-28.120	46.000
5.138	9.840	9.160	19.000	-31.000	50.000
9.115	9.956	13.940	23.896	-26.104	50.000
16.732	10.100	22.320	32.420	-17.580	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Innoband Sense Commander  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmit (Adapter: AOEM / ADS012PM-W 120100)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.166	9.770	22.200	31.970	-33.573	65.543
0.248	9.770	18.540	28.310	-34.890	63.200
0.334	9.770	16.090	25.860	-34.883	60.743
0.580	9.770	19.130	28.900	-27.100	56.000
2.482	9.790	14.750	24.540	-31.460	56.000
18.400	10.200	25.150	35.350	-24.650	60.000
<b>Average</b>					
0.166	9.770	21.270	31.040	-24.503	55.543
0.248	9.770	17.200	26.970	-26.230	53.200
0.334	9.770	14.710	24.480	-26.263	50.743
0.580	9.770	17.270	27.040	-18.960	46.000
2.482	9.790	9.020	18.810	-27.190	46.000
18.400	10.200	18.620	28.820	-21.180	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

### 3. Radiated Emission

#### 3.1. Test Equipment

The following test equipment are used during the radiated emission test:

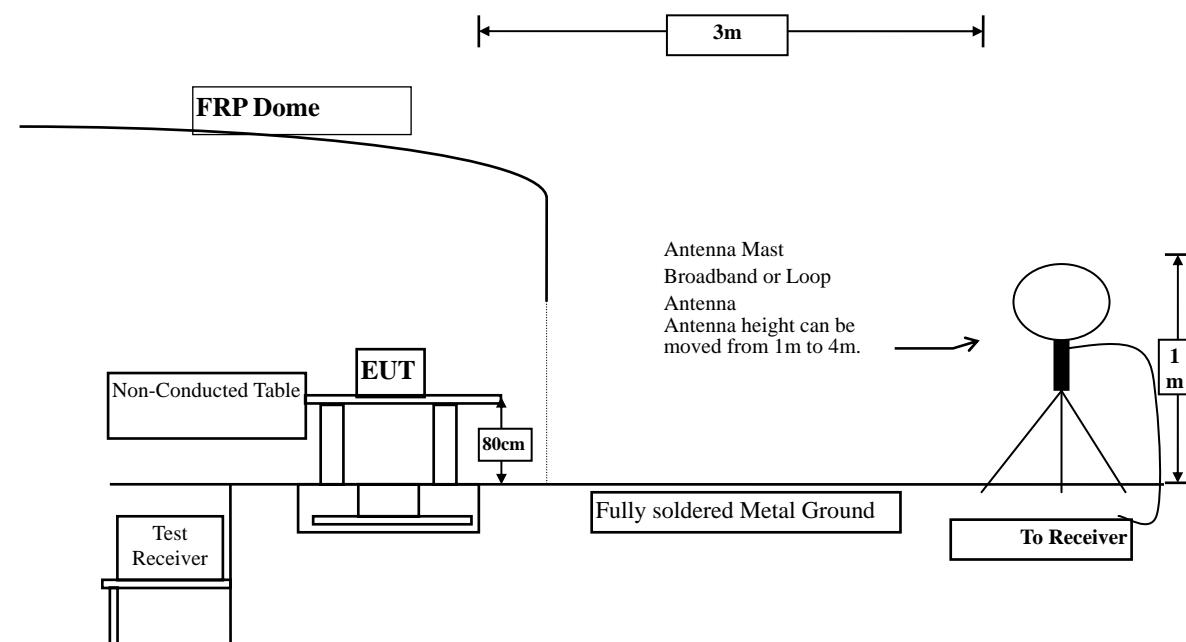
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2012
	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	QuietTek	QTK-CABLE/ CAB5	Feb., 2013
	X	Controller	QuietTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

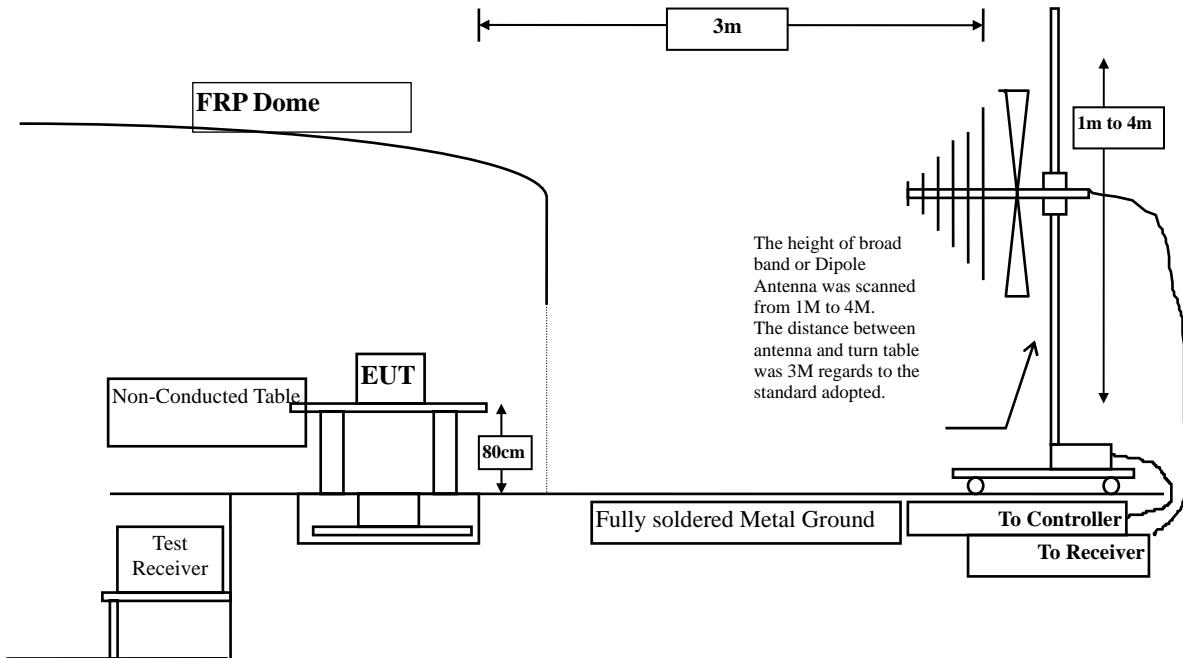
1. All equipments are calibrated every one year.
2. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
3. The test instruments marked with “X” are used to measure the final test results.

#### 3.2. Test Setup

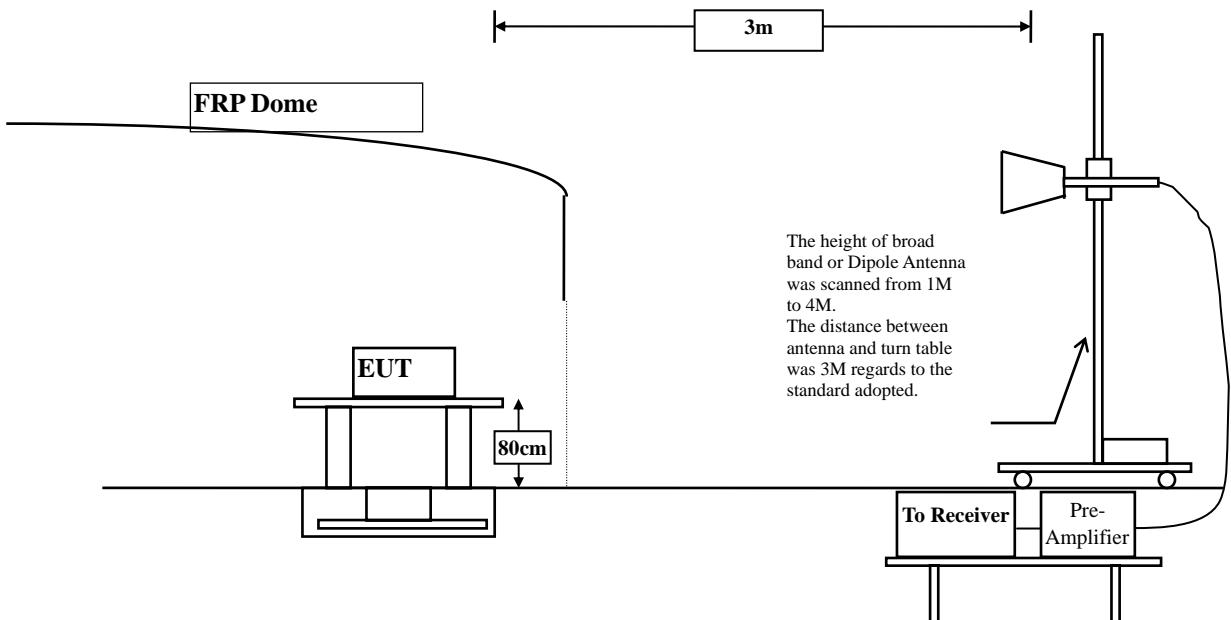
Under 30MHz Test Setup



Below 1GHz



Above 1GHz



### 3.3. Limits

#### ➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBuV/m @3m)	(uV/m @3m)	(dBuV/m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### ➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### **3.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 3MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

### **3.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

### 3.6. Test Result of Radiated Emission

Product : Innoband Sense Commander  
 Test Item : Fundamental Radiated Emission  
 Test Site : No.3OATS  
 Test Mode : Mode 1: Transmit

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
908.392	-6.234	97.400	91.166	-22.834	114.000
<b>Horizontal</b>					
<b>Quasi-Peak Detector:</b>					
908.392	-6.234	97.170	90.936	-3.064	94.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
908.420	-2.811	94.180	91.369	-22.631	114.000
<b>Vertical</b>					
<b>Quasi-Peak Detector:</b>					
908.396	-2.811	93.990	91.179	-2.821	94.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Innoband Sense Commander  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

### Horizontal

#### Peak Detector:

1816.000	-0.506	46.400	45.894	-28.106	74.000
2724.000	-2.135	42.150	40.015	-33.985	74.000
3632.000	-1.278	43.140	41.862	-32.138	74.000
4540.000	0.734	40.150	40.884	-33.116	74.000

#### Average

#### Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Innoband Sense Commander  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Vertical</b>					
<b>Peak Detector:</b>					
1816.000	-0.506	46.260	45.754	-28.246	74.000
2724.000	-2.135	42.590	40.455	-33.545	74.000
3632.000	-1.278	43.260	41.982	-32.018	74.000
4540.000	0.734	41.450	42.184	-31.816	74.000
<b>Average</b>					
<b>Detector:</b>					
--					

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Innoband Sense Commander  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (Adapter: DVE / DSA-12PFA-09 FUS 120100)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
94.020	11.871	23.176	35.047	-8.453	43.500
249.220	16.214	18.097	34.311	-11.689	46.000
398.600	23.069	15.175	38.244	-7.756	46.000
542.160	25.901	15.165	41.066	-4.934	46.000
643.040	22.926	17.597	40.523	-5.477	46.000
982.540	29.206	17.087	46.293	-7.707	54.000
<b>Vertical</b>					
107.600	18.622	17.382	36.004	-7.496	43.500
249.220	17.334	18.097	35.431	-10.569	46.000
379.200	23.101	15.016	38.117	-7.883	46.000
584.840	19.683	21.163	40.846	-5.154	46.000
755.560	24.386	16.993	41.379	-4.621	46.000
968.960	25.446	14.807	40.253	-13.747	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Innoband Sense Commander  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (Adapter: AOEM / ADS012PM-W 120100)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
154.160	-8.002	42.524	34.522	-8.978	43.500
266.680	-5.510	37.759	32.249	-13.751	46.000
381.140	1.386	34.581	35.967	-10.033	46.000
598.420	3.524	34.012	37.536	-8.464	46.000
738.100	3.332	33.974	37.306	-8.694	46.000
899.120	5.717	32.853	38.570	-7.430	46.000
<b>Vertical</b>					
154.160	-5.272	42.524	37.252	-6.248	43.500
297.720	-4.356	36.075	31.719	-14.281	46.000
396.660	-2.039	42.244	40.205	-5.795	46.000
598.420	1.114	34.012	35.126	-10.874	46.000
800.180	2.637	37.601	40.238	-5.762	46.000
963.140	3.581	32.562	36.143	-17.857	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

## 4. Band Edge

### 4.1. Test Equipment

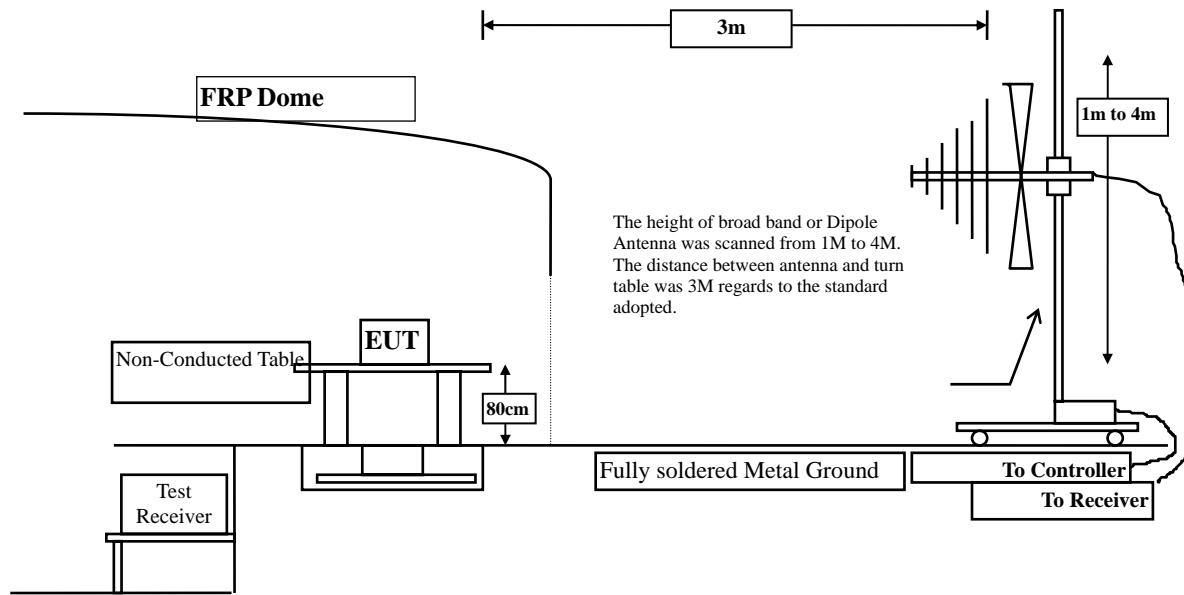
The following test equipments are used during the band edge tests:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
		Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
		Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/925975	Mar, 2013
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2013
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

1. All equipments are calibrated every one year.
2. The test equipments marked by “X” are used to measure the final test results.

## 4.2. Test Setup



## 4.3. Limit

Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

#### **4.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30 )is 120 kHz, above 1GHz are 1 MHz.

#### **4.5. Uncertainty**

Radiated is  $\pm$  3.9 dB.

#### 4.6. Test Result of Band Edge

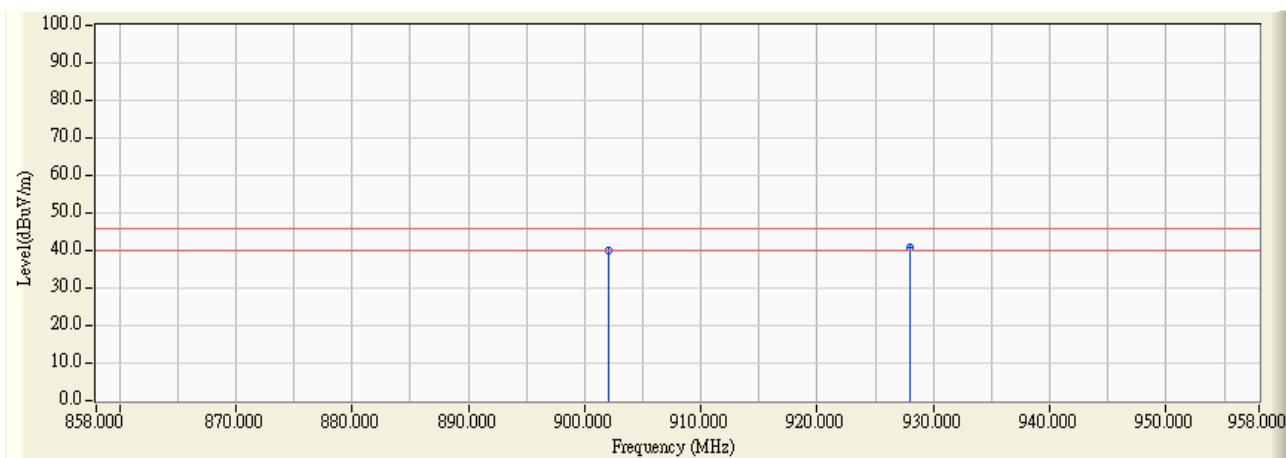
Product : Innoband Sense Commander  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit

##### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Result
01 (Quasi-Peak)	902.000	27.337	12.788	40.125	-5.875	46.000	Pass
01 (Quasi-Peak)	928.000	28.645	12.101	40.746	-5.254	46.000	Pass

Figure Channel 01:

Horizontal (Quasi-Peak)



Note: RBW=120kHz, VBW=1MHz, Sweep=500ms

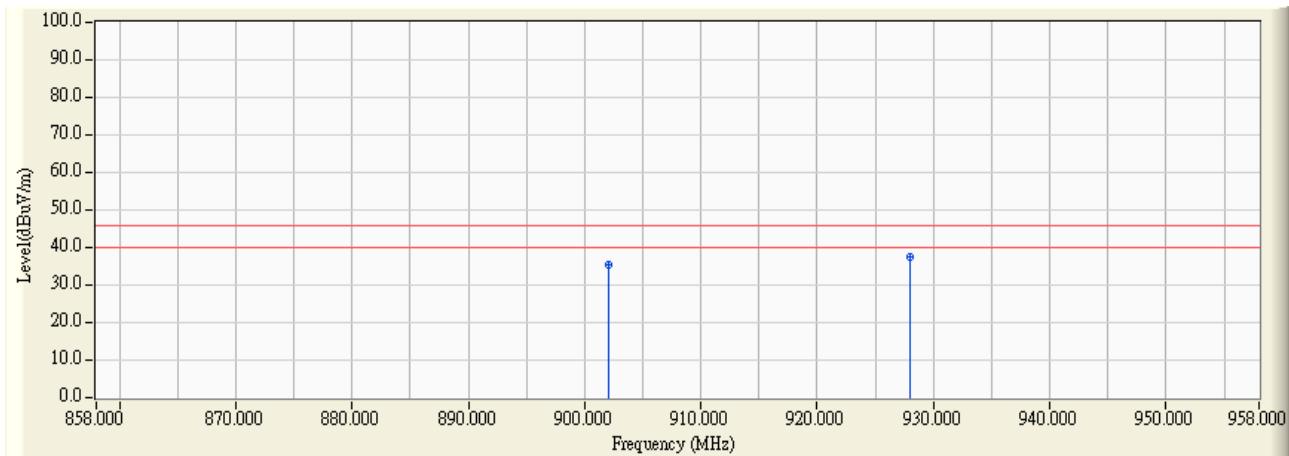
Product : Innoband Sense Commander  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Result
01 (Quasi-Peak)	902.000	23.075	12.354	35.429	-10.571	46.000	Pass
01 (Quasi-Peak)	928.000	25.066	12.323	37.389	-8.611	46.000	Pass

**Figure Channel 01:**

**Vertical (Quasi-Peak)**



Note: RBW=120kHz, VBW=1MHz, Sweep=500ms

## 5. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1 : EUT Test Photographs

Attachment 2 : EUT Detailed Photographs