

## Technical Information

Applicant	Manufacturer
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**Test Specifications:** FCC Part 15, Subpart C Paragraph 15.247, 15.245, FCC Part 15, Subpart B Paragraph 15  
Industry Canada RSS-210 Issue 7 Annex 7, 8, and RSS-Gen Issue 2

**Test Procedure:** ANSI C63.4: 2003

### Test Sample Description

**Test Sample:** wLSN Dual Motion Detector

**Brandname:** Bosch

**Model Number:** ISW-BDL1-W11PGY

**FCC ID:** T3XBDL1-W11PGY

**Type:** Frequency Hoping Spread Spectrum Transceiver and Field Disturbances Sensor

**Power Requirements:** Six (6) 1.5 volts AA Alkaline Batteries

**Frequency of Operation:** 902 MHz to 928 MHz / 10.513 GHz

### Tests Performed

FCC	Industry Canada	Test Method
15.247(a)(1)	RSS-210 Annex 8 A8.1(2)	Carrier Frequency Separation / Number of hopping frequencies
15.247(a)(1)	RSS-210 Annex 8 A8.1(2)	20 dB Bandwidth
15.247(a)(1)(i)	RSS-210 Annex 8 A8.1(3)	Occupancy Time
15.247(b)(2)	RSS-210 Annex 8 A8.4(1)	Output Power
15.247 (d)	RSS-210 Annex 8 A8.5	Transmitter Spurious Radiated Emissions, Restricted Bands / Band edge Measurements
15.207(a)	RSS-Gen Paragraph 7.2.2	Conducted Emissions
15.109(a)	RSS-Gen Paragraph 4.8	Receiver Spurious Radiated Emissions
15.35	RSS-GEN Paragraph 4.5	Duty Cycle Determination
15.245 (b)	RSS-210 Annex 7	Radiated Emissions, Fundamental
15.245 (b)(1)	RSS-210 Annex 7 Note 1	Radiated Emissions, Harmonics
15.245 (b)(3)	RSS-210 Annex 7 Note 3	Radiated Emissions, Band Edges
15.245 (b)(3)	RSS-210 Annex 7 Note 3	Radiated Emissions, Spurious Emissions

## TESTS RESULTS

### DETERMINATION OF FIELD STRENGTH LIMITS

- 15.203: The intentional radiator is designed to ensure that no antenna other than that furnished by the applicant can be used with the device. The antenna is permanently soldered in place to the PCB.
- 15.204: The antenna used is not commercially available. It is a custom designed circularly polarized Omni-directional antenna with 1dBi gain.
- 15.247(a)(1): The frequency hopping system has hopping channel carrier frequencies separated by 100 kHz, which is less than the 20 dB bandwidth of the hopping channel.
- 15.247(a)(1)(i): The frequency hopping system operated in the 902-928 MHz band and uses 59 frequencies. The maximum 20 dB bandwidth of the hopping channel is less than 250 kHz, Measured 43.5 kHz. The average time of occupancy on any frequency is 0.022 seconds within a 20 second period.
- 15.247(b)(3): The device operates in the 902-928 MHz band. The maximum peak output power measured to be 72 mWatts and did not exceed 1 watt.
- 15.247(b)(3): The system operating under the provisions of this section is operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. The maximum Output Power was measured to be 72 mWatts.
- 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the Spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. All emissions, which fell within the restricted bands specified in 15.205(a), were measured and found to be in compliance with the limits specified in 15.209(a).
- 15.109 (a): The field strength of spurious radiated emissions generated by the receiver did not exceed the class B limits specified.
- 15.245 (a) The device is an intentional radiator used as a field disturbance sensor.
- 15.245 (b) The device operates within the 10.500 to 10.550 GHz frequency band. The field strength of the fundamental emission did not exceed 2500 millivolts per meter, average.
- 15.245 (b)(1) The device does not produce harmonic emissions below 17.7 GHz.
- 15.245 (b)(1)(i) The device is intended to be used only within buildings and the field strength of harmonic emissions did not exceed 25.0 millivolts per meter.
- 15.245 (b)(2) All radiated emissions measurements were extrapolated to the specified 3 meter test distance.
- 15.245 (b)(3) The emissions radiated outside of the specified frequency band of 10.500 to 10.550 GHz did not exceed the general radiated emission limits of 15.209.
- 15.245 (b)(4) The requirements of 15.35 for averaging pulsed emissions and limiting peak emissions were met.

15.247(a): Description of pseudorandom hopping sequence -  
The following describes the hopping sequence used by the "Hub" or central point in the network for Beacon announcements as well as the hopping sequence used by the individual points for sending status updates to the Hub.

**Frequency Announcements (Beacon) Hopping**

- Using 59 frequencies channels (all system frequencies)
- Frequency channels are numbered from 0 to 58 (for 59 overall channels)
- Frequency 0 and 1 are adjacent, etc.

The Beacon hop pattern is generated uniquely for each system as follows:

We start with a set of groups

Group 0 = {0,1,2,3,...,9}

Group 1 = {10,11,..., 19}

Group 2 = {20,21,..., 29}

Group 3 = {30,31,..., 39}

Group 4 = {40,41,..., 49}

Group 5 = {50, ..., 58} Note one less than others!

We randomly shuffle the elements within each group

Example:

Shuffled G0 = { 2 5 4 1 7 6 3 8 0 9 }

Shuffled G1 = { 19 18 12 15 14 10 17 16 11 13 }

Shuffled G2 = { 26 21 24 22 29 25 28 23 20 27 }

Shuffled G3 = { 38 33 31 39 32 30 36 34 37 35 }

Shuffled G4 = { 47 45 49 48 42 43 46 41 40 44 }

Shuffled G5 = { 51 58 56 57 52 55 50 53 54 }

Then we pick from one of 60 group permutations that keep the groups as least 2 apart so the frequencies in the hop pattern will be as least 5 channels apart (this translates into 500 KHz apart with our system):

Example: using the following group order:

{ G1, G5, G3, G0, G2, G4 }

Shuffled G1 = { 19 18 12 15 14 10 17 16 11 13 }

Shuffled G5 = { 51 58 56 57 52 55 50 53 54 XX }

Shuffled G3 = { 38 33 31 39 32 30 36 34 37 35 }

Shuffled G0 = { 2 5 4 1 7 6 3 8 0 9 }

Shuffled G2 = { 26 21 24 22 29 25 28 23 20 27 }

Shuffled G4 = { 47 45 49 48 42 43 46 41 40 44 }

We read the elements by columns to form the overall hop pattern

{19,51,38,2,26,47, 18,58,33,5,21,45, 12,56,31,4,24,49, ...

Each base station uses a value generated from its unique serial number to seed the random number generator used in the above operations.

A Node wishing to join a network will pick one of the original groups at random and sample frequencies until it hears a Beacon. The Beacon will contain timing information and the seed so the Node can also calculate the hopping pattern being used and synchronize in time with the Base Station.

### Network Operations Application Slot hopping

- Using 59 frequencies channels (all system frequencies)
- Frequency channels are numbered from 0 to 58 (for 59 overall channels)
- Frequency 0 and 1 are adjacent, etc.

The App Slot hop pattern is generated uniquely for each system as follows:

We use 8 groups of size 7 and keep 00, 22, 44 on the side:

Group 0 = { 01,02,03,04,05,06,07 } 7 elements

Group 1 = { 08,09,10,11,12,13,14 } 7 elements

Group 2 = { 15,16,17,18,19,20,21 } 7 elements

Group 3 = { 23,24,25,26,27,28,29 } 7 elements

Group 4 = { 30,31,32,33,34,35,36 } 7 elements

Group 5 = { 37,38,39,40,41,42,43 } 7 elements

Group 6 = { 45,46,47,48,49,50,51 } 7 elements

Group 7 = { 52,53,54,55,56,57,58 } 7 elements

We randomly shuffle the elements within each group.

Example:

• Group 0 = { 03, 05, 02, 04, 07, 01, 06 } 00

• Group 3 = { 29, 25, 27, 24, 26, 28, 23 } 22

• Group 6 = { 50, 46, 48, 51, 49, 45, 48 } 44

• Group 1 = { 11, 14, 10, 08, 13, 09, 12 }

• Group 4 = { 30, 33, 35, 31, 34, 36, 32 }

• Group 7 = { 58, 52, 55, 54, 53, 57, 56 }

• Group 2 = { 20, 16, 17, 21, 19, 18, 22 }

• Group 5 = { 40, 43, 39, 42, 41, 37, 38 }

Now we read the pattern column by column and add the extras at the end:

• 03,29,50,11,30,58,20,40,05,25,46,14,33,52,16,42,02,...,22,38,00,22,44

The app slot hop pattern uses all system 59 frequencies:

- Every frame (every second) we move in the pattern a total of 12 hops
- We finish the whole pattern in almost 5 seconds ( $5 \times 12 = 60$ )
- Every 5 seconds the pattern shifts by one to the left!

This approach ensures that more than one application slot (of the same type) is used in a second or from second to second, the frequencies used are at least 500 KHz apart. As well, all frequencies are utilized equally when the network is very busy.

#### 15.247(a): Equal hopping Frequency Use

A beacon is transmitted only once on each frequency, every 20 seconds

Beacon is transmitted for 118.3 ms under maximum communication load in the Security system, each frequency is used by a maximum of 4 application slots in every 20 second interval.

The duration of different application slots are:

Alarm = 31.1 ms

Back channel = 155.4 ms

Supervision = 28.6 ms

Maximum usage occurs when alarm, back channel and 2 supervision slots are used (243.7 ms) each frequency is used for a maximum of 362 ms (including Beacon)

- 15.247(a): Receiver Input Bandwidth  
The receiver deviation is controlled by a register setting in the RFIC, the deviation setting is 30 KHz and the Tx deviation is  $\pm 4.95$  KHz.
- 15.247(a): System Receiver Hopping Capability  
Upon power up the nodes will listen for beacons from the base station device. Once a beacon is heard the device uses information in the beacon message to compute the base stations hopping pattern and current system time. The nodes will then hop in synchronization with the base station, periodically receiving beacon messages in order to maintain synchronization.
- 15.247(g): Frequency Hopping Description  
The system consisting of the base station and the nodes meets the requirements of a true frequency hopping system in the following ways:  
1. At power up the nodes synchronize to the base station hop pattern and continually hop in sync with the base station at the system hopping rate.  
2. All devices in the system are changing frequency at the system hopping rate even when there is no data being transmitted, this allows all devices to distribute there transmissions equally over all of the frequencies whether the data is short period bursts or continuous.
- 15.247(h): Frequency Coordination  
All nodes in a system synchronize to and follow the same hopping pattern as the base station that they are synchronized to. Base stations from different systems independently generate their hopping pattern using only a random generator that uses that base stations serial number as the initial seed value. There is no coordination of hopping between nodes in the same system or base stations in different systems for the purpose of unfairly occupying the available spectrum.

## Spectrum Analyzer Desensitization Considerations

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements. FCC specified bandwidths of 100 kHz and 1 MHz were utilized below and above 1 GHz, respectively.

### General Notes

1. All readings were taken utilizing a peak and/or Average detector function at a test distance of 3 meters.
  2. All measurements were made with fully charged batteries installed in the unit.
  3. The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not reported were more than 20dB below the specified limit.
  4. The device has no provisions for external accessories.
  5. The unit tunes over the frequency range of: 915.5 to 921.5 MHz  
The unit was tested at the following frequencies: 915.5 MHz, 918.5 MHz & 921.3 MHz.
  6. The Receiver was tested per "ANSI STANDARD C63.4-2003 12.1.1.2. The receiver was programmed for normal receiver mode. A CW signal was transmitted to stabilize the local oscillator.
- 15.31 (a)(b) All measurements were made in accordance with ANSI C63.4:2003.
- 15.31 (c) The device does not use swept frequency techniques.
- 15.31 (d) All testing was performed on Retlif Testing Laboratories Ronkonkoma, NY test site which has been listed with the FCC.
- 15.31 (f)(1) Where testing was performed at distances other than the specified test distance, the obtained readings were extrapolated to the specified test distance using an inverse linear-distance extrapolation factor (20dB / decade) for measurements between 30 MHz and 40 GHz.
- 15.31 (f)(5) The device was rotated 360° in order to maximize the radiated emissions. The maximum field strength observed has been reported.
- 15.31 (g) All consumer accessible controls were adjusted in order to maximize emissions (MW Range Control).
- 15.31 (m) The device operates at a single frequency of 10.513 GHz.
- 15.31 (o) All emissions within 20 dB of the specified limits have been reported unless otherwise stated.
- 15.33 (a)(2) The device operates above 10 and below 30 GHz at a frequency of 10.513 GHz. Therefore radiated emissions measurements were made from 30 MHz to 52.625 GHz, the fifth harmonic.

### DUTY CYCLE

Drive pulses are applied to Q99 via Q1 and are 17  $\mu$ Sec on time within a period of 1.6 mSec . This yields a duty cycle of 1%, 17  $\mu$ Sec divided by 1.6 mSec. This duty cycle was applied to the obtained peak readings in order to determine the average value of the emissions.

### TEST DISTANCES

In order to obtain adequate system sensitivity at the harmonic frequencies of interest, it was necessary to perform certain measurements at a distance less than 3 meters. Care was taken to ensure that all measurements were taken in the far field region. The antenna was determined to be in the far field IFF:

$$d \geq 2 D^2 / \lambda$$

Where:        d = Test Distance  
               D = Largest Antenna Length  
                $\lambda$  = Wavelength at the Frequency of Interest

Solving for d yields the minimum test distances shown in the table below. Also shown is the actual test distance utilized.

<b>Frequency GHz</b>	<b>Minimum Test Distance Meters</b>	<b>Actual Test Distance Meters</b>
10.525	2.7	3
21.050	1.5	2
31.575	1.0	1
42.100	0.5	1
52.625	0.7	1

### SPECTRUM ANALYZER DESENSITIZATION CONSIDERATIONS

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate peak field strength measurements. The following formula was utilized:

$$\begin{aligned} \text{minimum bandwidth} &= 1 / \{ \text{minimum pulse width (in seconds)} \times 1.5 \} = \text{Hz} \\ &= 1 / \{ 0.000017 \times 1.5 \} = 39.2 \text{ kHz} \end{aligned}$$

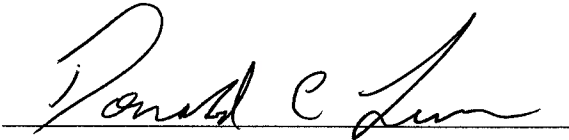
Setting the above equal to zero and utilizing the 17.0 microsecond pulse width yields a minimum required bandwidth of 39.2 kHz. The 1 MHz bandwidth specified in ANSI C63.4 was utilized for all fundamental and harmonic measurements.

### Modifications:

Radio Frequency cans were added to the Radio Frequency portion of the PCB and a software change was utilized to lower the RF IC power output.

## Certification and Signatures

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.



Donald C. Lerner  
EMC Test Engineer



Nicholas Dragotta  
EMC Laboratory Supervisor

### Non-Warranty Provision

The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

### Non-Endorsement

This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.



## Equipment List

### FCC Part 15, Subpart C, 15.247 (a)(1) Number of Hopping Frequency and Carrier Separation

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007

### FCC Part 15, Subpart C, Paragraph 15.247(a)(1) Occupied Bandwidth

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007

### FCC Part 15, Subpart C, 15.247(a)(1)(i), Occupancy Time

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007

### FCC Part 15, Subpart C, Radiated Emissions, Fundamental Power Output

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/27/2007	6/27/2008
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/27/2007	6/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	3/30/2007	3/30/2008
767	Biconilog	EMCO	26 - 2000 MHz	3142B	10/12/2006	10/12/2007

### FCC Part 15, Subpart C, 15.247(d) Band Edge Measurements, 902 to 928 MHz Band

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007

## FCC Part 15 Subpart C, Radiated Harmonic Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
032F	H.P. Filter	Microlab/FXR	2 GHz	HD-20N	9/22/2006	9/22/2007
032H	H.P. Filter	Microlab/FXR	4 GHz	HD-40N	2/20/2007	2/20/2008
032J	H.P. Filter	Microlab/FXR	6 GHz	HD-60N	3/13/2007	3/13/2008
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
1049	H.P. Filter	Microlab/FXR	1 GHz	HD-10N	9/22/2006	9/22/2007
128	Double Ridged Guide	Electro-Mechanics	1 GHz - 18 GHz	3105	3/27/2007	3/27/2008
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/27/2007	6/27/2008
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	3/12/2007	3/12/2008
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/27/2007	6/27/2008
379F	H.P. Filter	Microlab/FXR	500 MHz	HA-05N	9/22/2006	9/22/2007
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/9/2005	9/21/2007
767	Biconilog	EMCO	26 - 2000 MHz	3142B	10/12/2006	10/12/2007

## FCC Part 15 Subpart C, Transmitter Spurious Radiated Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
032F	H.P. Filter	Microlab/FXR	2 GHz	HD-20N	9/22/2006	9/22/2007
032H	H.P. Filter	Microlab/FXR	4 GHz	HD-40N	2/20/2007	2/20/2008
032J	H.P. Filter	Microlab/FXR	6 GHz	HD-60N	3/13/2007	3/13/2008
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
1049	H.P. Filter	Microlab/FXR	1 GHz	HD-10N	9/22/2006	9/22/2007
128	Double Ridged Guide	Electro-Mechanics	1 GHz - 18 GHz	3105	3/27/2007	3/27/2008
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/27/2007	6/27/2008
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	3/12/2007	3/12/2008
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/27/2007	6/27/2008
379F	H.P. Filter	Microlab/FXR	500 MHz	HA-05N	9/22/2006	9/22/2007
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/9/2005	9/21/2007
762	AM/FM Signal Generator	Marconi Instru.	10 kHz - 1.2 GHz	2023	7/24/2007	7/24/2008
767	Biconilog	EMCO	26 - 2000 MHz	3142B	10/12/2006	10/12/2007
826	10 DB Atten. (50 ohm)	Narda	DC - 10 GHz, 1W	774-10	5/21/2007	5/21/2008

## FCC Part 15 Subpart B, Class B, Radiated Emissions, 30 MHz to 5 GHz

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
128	Double Ridged Guide	Electro-Mechanics	1 GHz - 18 GHz	3105	3/27/2007	3/27/2008
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/27/2007	6/27/2008
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	3/12/2007	3/12/2008
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/27/2007	6/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	11/10/2006	11/10/2007
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/9/2005	9/21/2007
574	AM/FM Signal Generator	Marconi Instru.	9 kHz - 2.4 GHz	2024	7/25/2006	7/25/2007
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	6/13/2007	6/13/2008
1049	H.P. Filter	Microlab/FXR	1 GHz	HD-10N	9/22/2006	9/22/2007

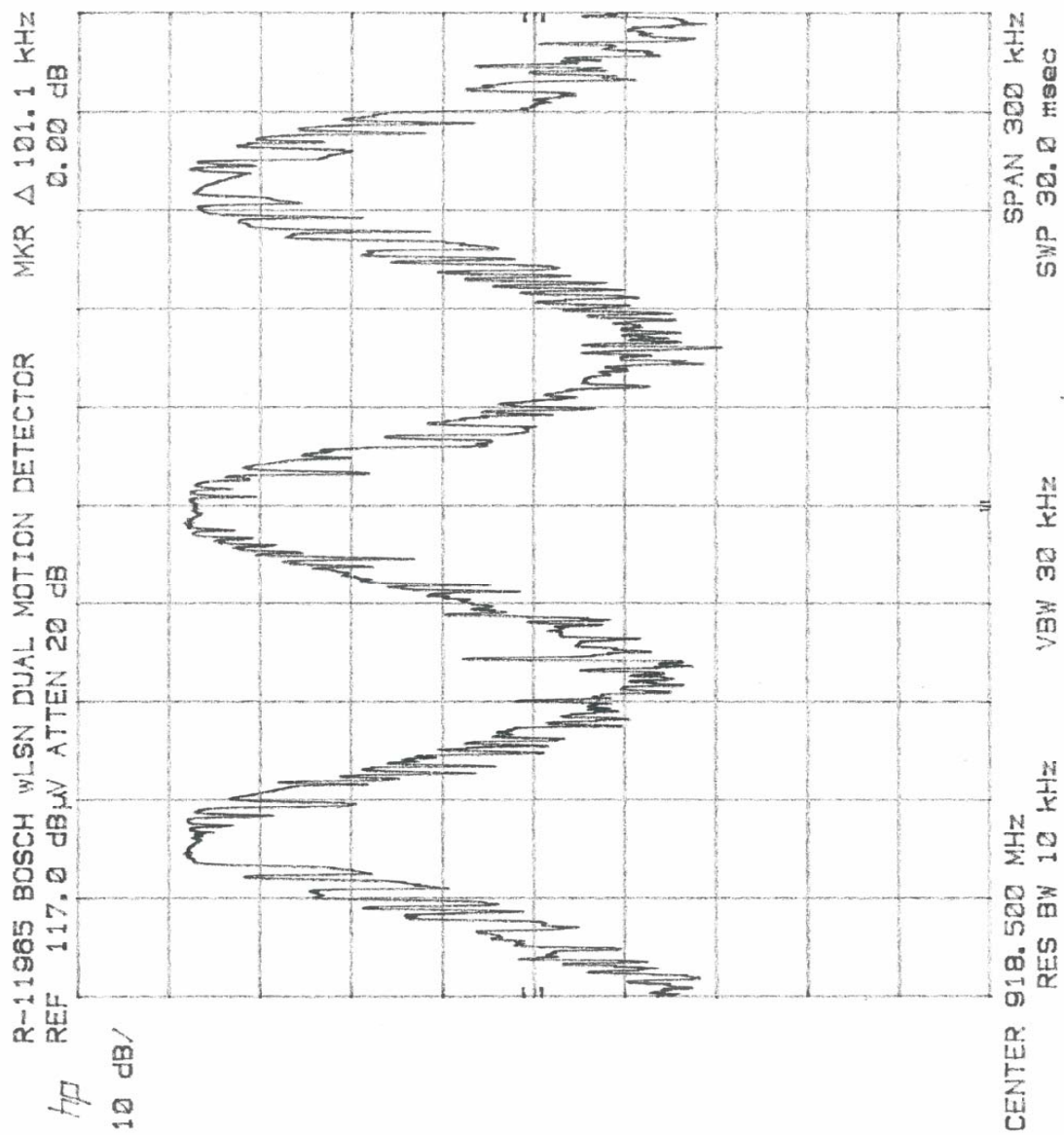
## FCC Part 15.35, Duty Cycle Determination

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/18/2006	10/18/2007

## FCC 15.245 Compliance Testing

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
066	High Gain Horn Antenna	Microlab/FXR	8.2 GHz - 12.4 GHz	X638A	8/30/2007	8/30/2008
067	Open Area Test Site	Retlif	3/10 Meter	RNY	9/12/2006	9/12/2009
1086	Oscilloscope	Tektronix	DC - 500MHz	TDS3052B	3/7/2007	3/7/2008
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	8/24/2007	8/24/2008
129F	High Gain Horn Antenna	Microlab/FXR	18 GHz - 26.5 GHz	K638A	8/30/2007	8/30/2008
129G	High Gain Horn Antenna	Microlab/FXR	26.5 GHz - 40 GHz	U638A	8/30/2007	8/30/2008
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/27/2007	6/27/2008
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	4/27/2007	4/27/2008
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	4/27/2007	4/27/2008
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/27/2007	6/27/2008
4003	Double Ridge Guide	Tensor	1 GHz - 18 GHz	4015	3/27/2007	3/27/2008
420	Amplifier	Hewlett Packard	2.0 GHz - 18 GHz	11975A	11/14/2006	11/14/2007
421	Harmonic Mixer	Hewlett Packard	18 GHz - 26.5 GHz	11970K	10/3/2006	10/3/2009
421A	Harmonic Mixer	Hewlett Packard	26.5 GHz - 40 GHz	11970A	10/3/2006	10/3/2009
421B	Harmonic Mixer	Hewlett Packard	40 GHz - 60 GHz	11970U	10/3/2006	10/3/2009
422B	High Gain Horn	Millitech	40.0 - 60.0 GHz	SGH-19-RP000	10/3/2006	10/3/2009
512	Graphics Plotter	Hewlett Packard	N/A	7470A	10/19/2007	10/19/2008
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/26/2007	9/26/2008
767	Biconilog	EMCO	26 - 2000 MHz	3142B	10/12/2006	10/31/2007

**FCC Part 15, Subpart C, 15.247 (a)(1) Carrier Frequency Separation  
and Number of Hopping Frequency  
902 – 928 MHz Band Test Data**

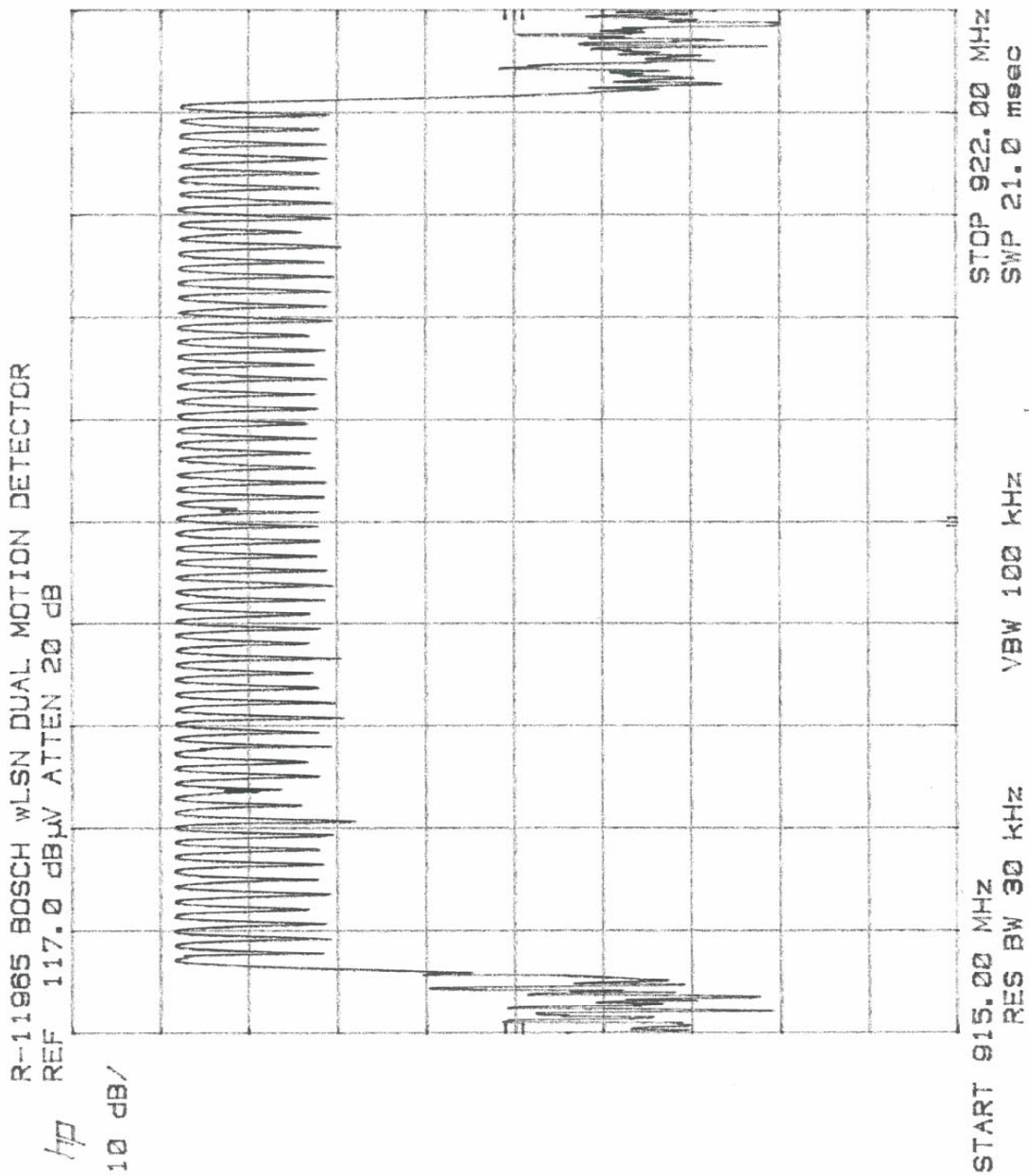


**FCC Part 15, Subpart C, 15.247(a) (1) Hopping Channel Carrier Separation, 902 to 928 MHz Band**

**Note:** Hopping channel carrier frequency meets the required minimum separation of 25 kHz  
 (Measured carrier separation = 101.1 kHz)

FCC ID: T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-8-2007	Tech: R.S.	Sheet 1 of 2



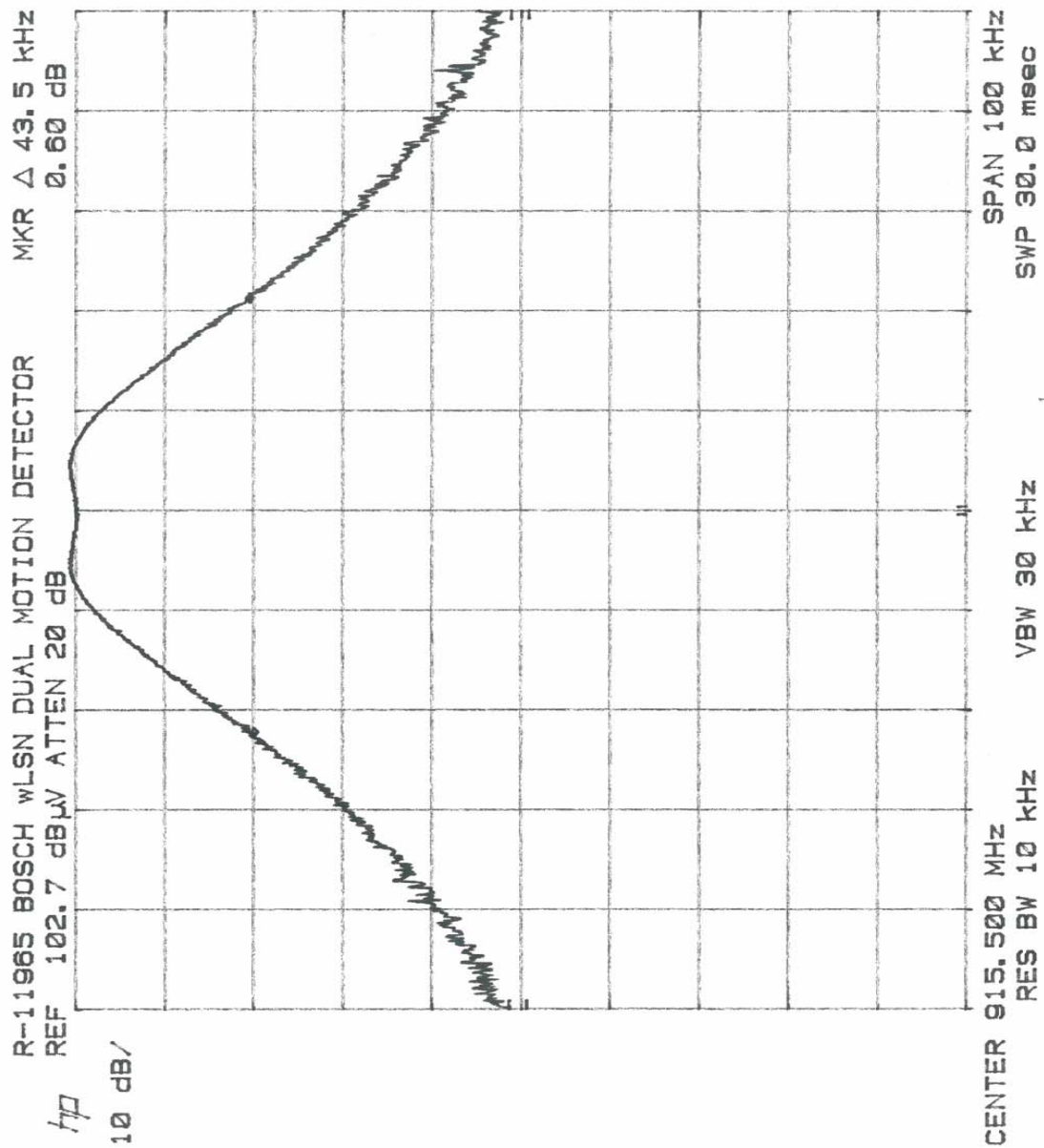
**FCC Part 15, Subpart C, 15.247(a) (1) Number of Hopping Frequency, 902 to 928 MHz Band**

**Note:** EUT uses 59 hopping frequencies which meets the 50 minimum hopping frequencies required by the 20dB bandwidth if less than 250 kHz(measured BW = 44.3 kHz).

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-8-2007	Tech: R.S.	Sheet 2 of 2

**FCC Part 15, Subpart C, 15.247 (a)(1) Occupied Bandwidth, 902 - 928 MHz  
Test Data**



**FCC Part 15, Subpart C, 15.247(a) (1) Occupied Bandwidth, 902 to 928 MHz Band**

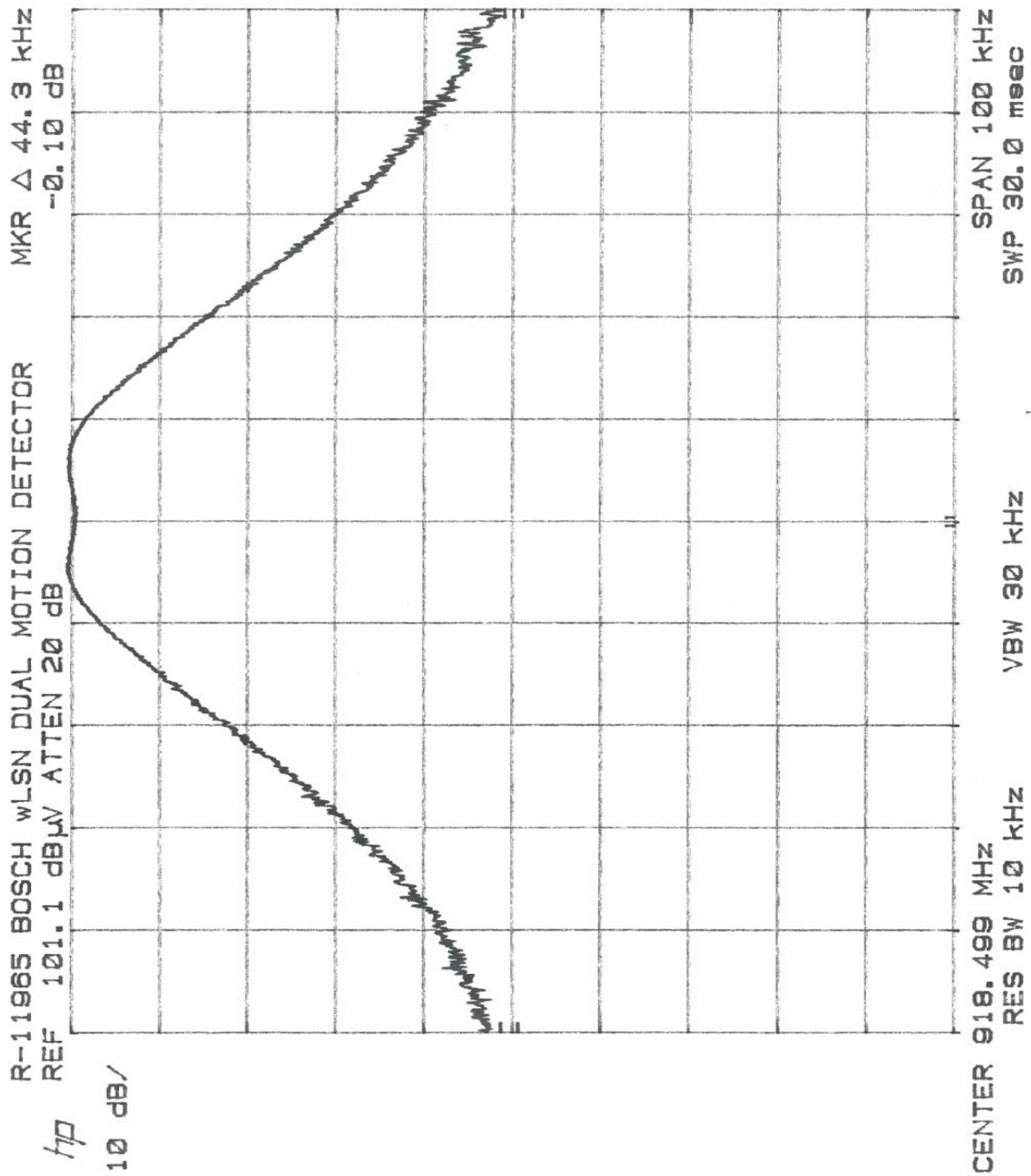
**Note:** The maximum 20 dB bandwidth of the hopping channel is less than 250 kHz. 20dB bandwidth measured at 43.5 kHz

**Note:** EUT transmitting on channel 00 at 915.5 MHz.

**FCC ID:** T3XB DL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-7-2007	Tech: R.S.	Sheet 1 of 3





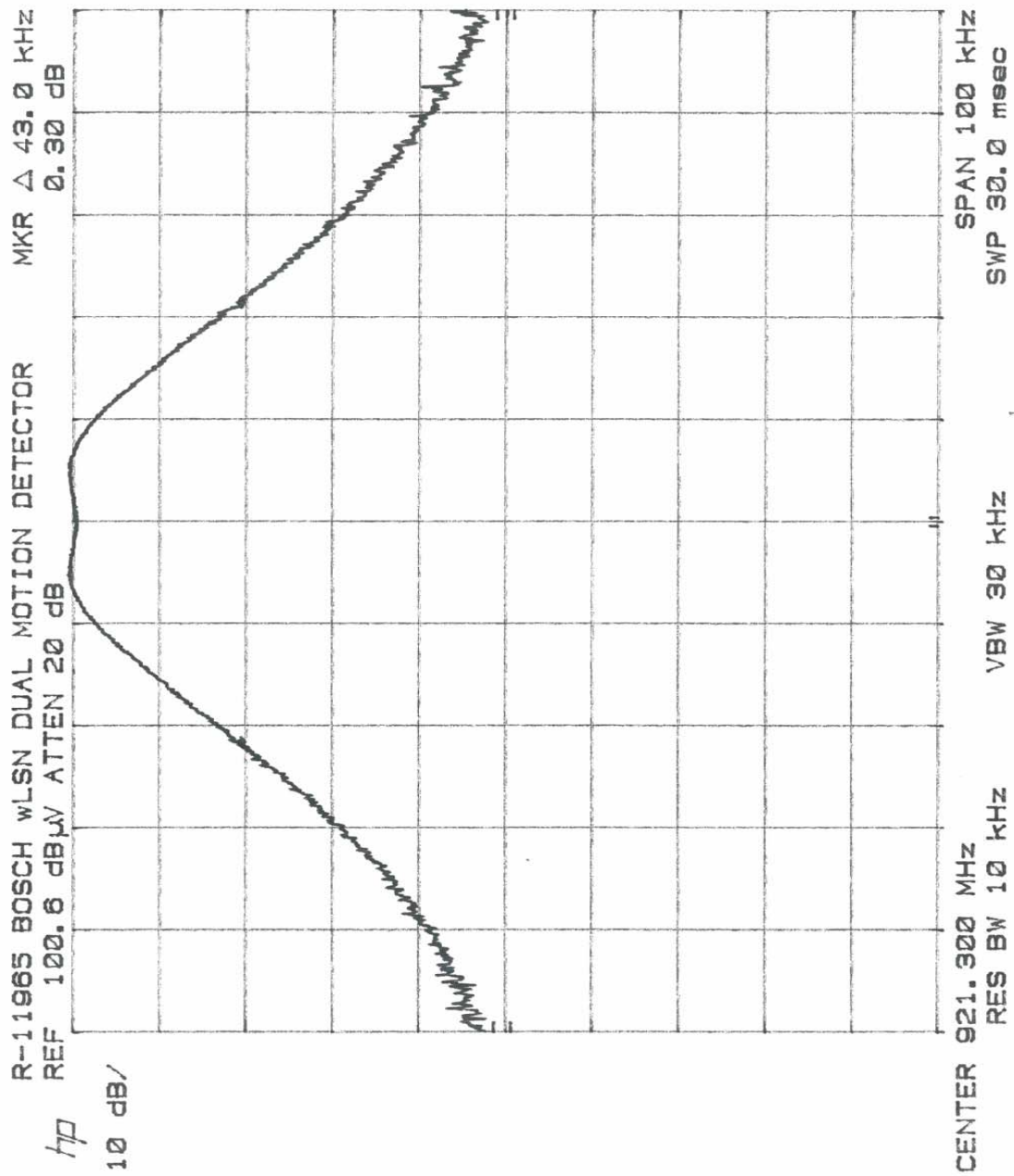
**FCC Part 15, Subpart C, 15.247(a) (1) Occupied Bandwidth, 902 to 928 MHz Band**

**Note:** The maximum 20 dB bandwidth of the hopping channel is less than 250 kHz. 20dB bandwidth measured at 43.3 kHz

**Note:** EUT transmitting on channel 30 at 918.5 MHz.

**FCC ID:** T3XB DL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-7-2007	Tech: R.S.	Sheet 2 of 3



**FCC Part 15, Subpart C, 15.247(a) (1) Occupied Bandwidth, 902 to 928 MHz Band**

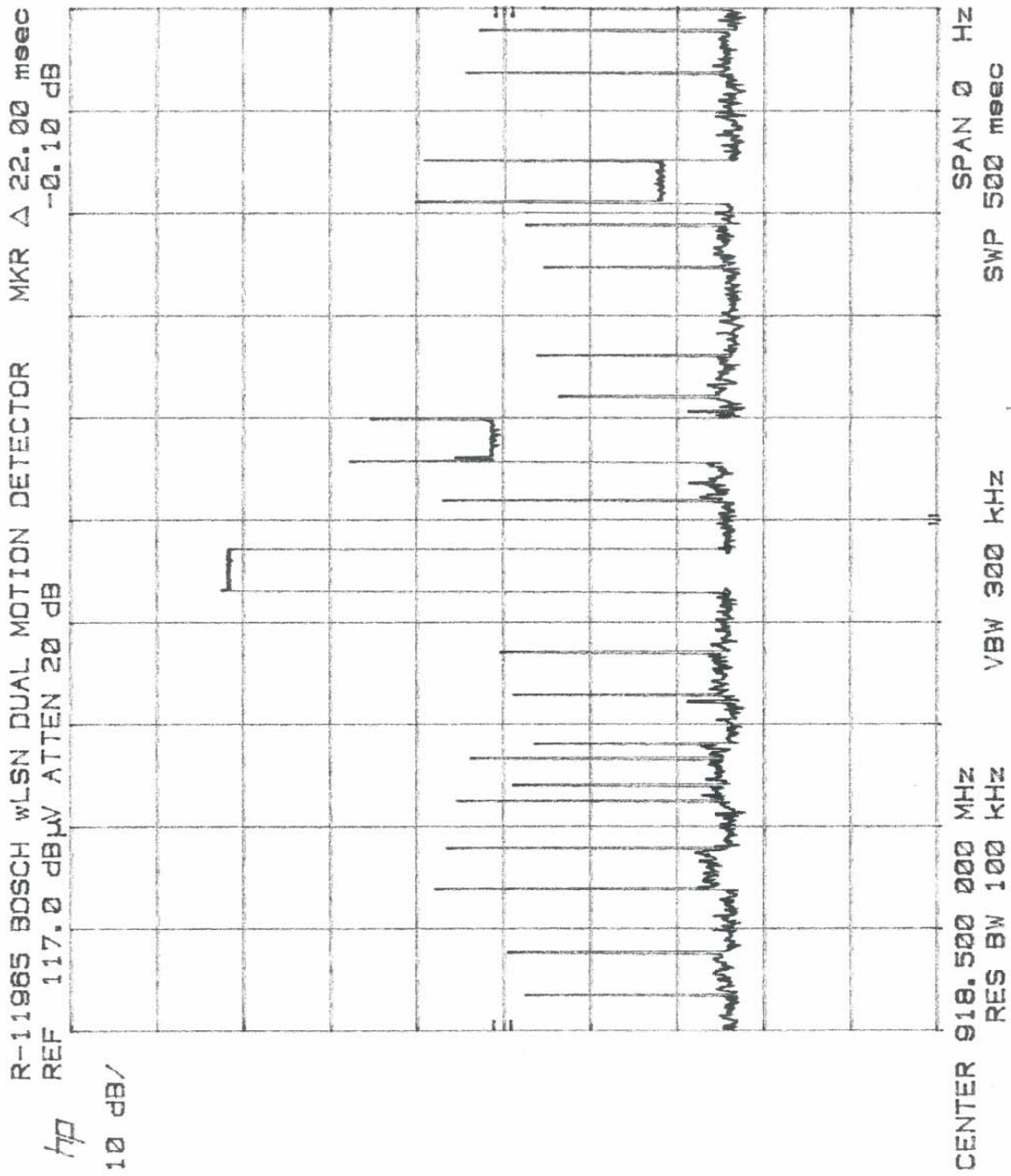
**Note:** The maximum 20 dB bandwidth of the hopping channel is less than 250 kHz. 20dB bandwidth measured at 43.0 kHz

**Note:** EUT transmitting on channel 58 at 921.3 MHz.

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-7-2007	Tech: R.S.	Sheet 3 of 3

**FCC Part 15, Subpart C, 15.247 (a)(1)(i) Occupancy Time  
902 - 928 MHz Test Data**



**FCC Part 15, Subpart C, 15.247( a)(1)(i) Occupancy Time, 902 to 928 MHz Band**

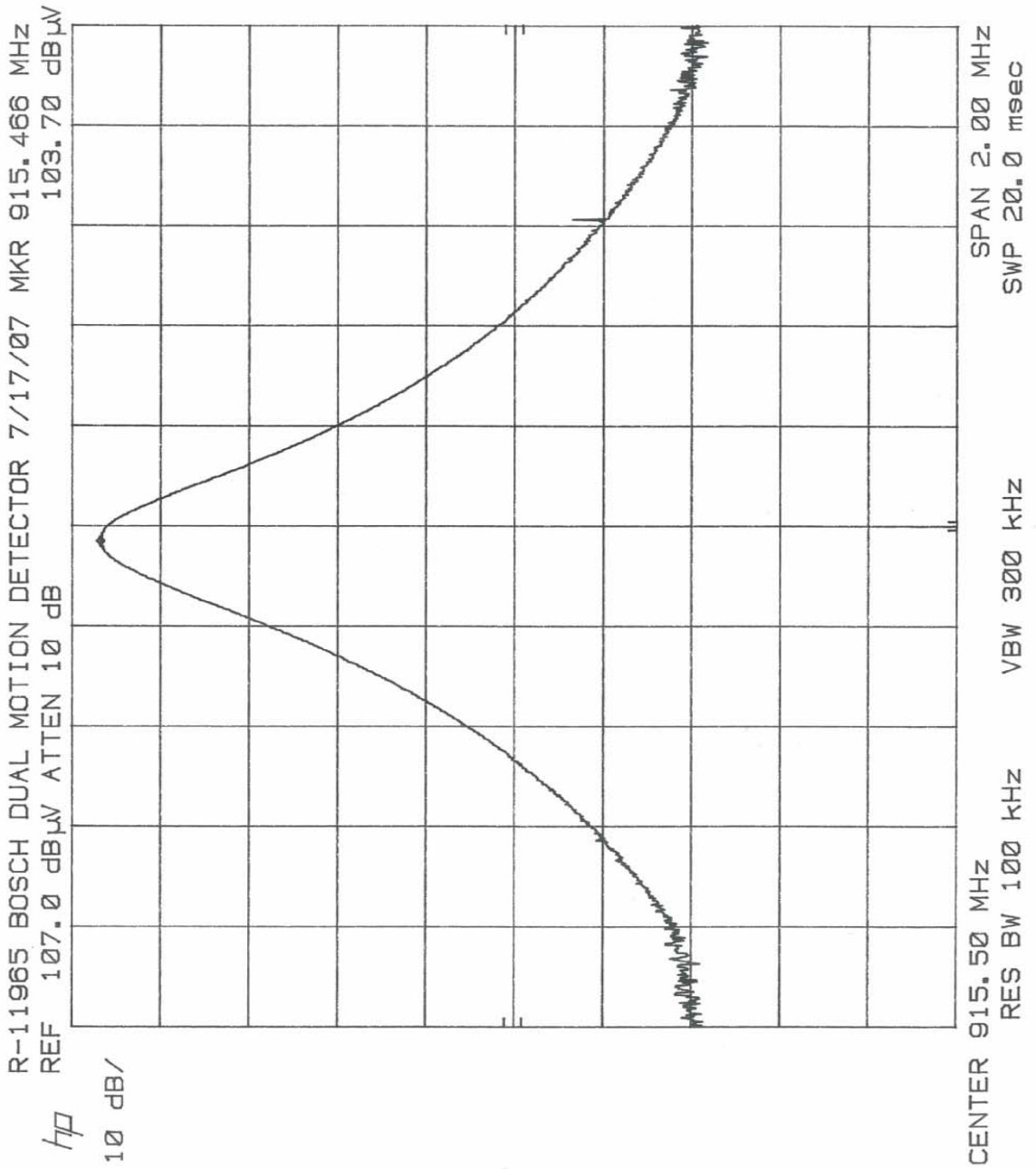
**Note:** The measured occupancy time does not exceed the 0.4 seconds (Measured time =22.0mSec.)

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-8-2007	Tech: R.S.	Sheet 1 of 1

**FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output  
Paragraph 15.247(b) (2)  
Test Data**

<b>Test Method:</b>		FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output.						
<b>Customer:</b>		Bosch Security System.	<b>Job No.</b>		R-11965-13			
<b>Test Sample:</b>		wLSN Dual Motion Detector	<b>Paragraph</b>		15.247(b)(2)			
<b>Model No.:</b>		ISW- BDL1-W11PGY	<b>FCC ID:</b>		T3XBDL1-W11PGY			
<b>Operating Mode:</b>		Continuously transmitting a 915.5 MHz, 918.4 MHz and 921.3 MHz signal.						
<b>Technician:</b>		R. Soodoo	<b>Date:</b>		July 17, 2007.			
<b>Notes:</b> Test Distance: 3 Meters Temp :26°C Humidity :71% Detector: Peak								
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Converted Reading	Peak Limit
MHz	(V/H) / Meters	X / Y / Z	dBuV	dB	dBuV/m	V/m	milliWatts	Watts
915.5	V / 1.1	X	95.5	9.6	105.1	0.18	9.7	1.0
	V / 1.3	Y	99.2	9.6	108.8	0.28	22.8	
	V / 1.2	Z	103.6	9.6	113.2	0.46	62.7	
	H / 1.7	X	97.9	9.6	107.5	0.24	16.9	
	H / 2.1	Y	96.7	9.6	106.3	0.21	12.8	
915.5	H / 1.7	Z	92.1	9.6	101.7	0.12	4.4	
918.4	V / 1.2	X	96.6	9.6	106.2	0.20	12.5	
	V / 1.0	Y	97.1	9.6	106.7	0.22	14.0	
	V / 1.0	Z	104.2	9.6	113.8	0.49	72.0	
	H / 2.1	X	99.0	9.6	108.6	0.27	21.7	
	H / 2.0	Y	97.4	9.6	107.0	0.22	15.0	
918.4	H / 1.8	Z	88.9	9.6	98.5	0.08	2.1	
921.3	V / 1.3	X	95.8	9.6	105.4	0.19	10.4	
	V / 1.2	Y	97.6	9.6	107.2	0.23	15.7	
	V / 1.0	Z	101.0	9.6	110.6	0.34	34.4	
	H / 2.3	X	98.8	9.6	108.4	0.26	20.8	
	H / 1.4	Y	97.7	9.6	107.3	0.23	16.1	
921.3	H / 1.2	Z	90.1	9.6	99.7	0.10	2.8	1.0
The EUT meets the required limit indicated above.								
The following Formulae were used to convert the field strength in dBuV into V/m and V/m to Watts								
<b><math>V/m = 10^{(( dBuV/m-120) / 20)}</math></b>								
<b><math>Power = (V/m \times 3)^2 / 30</math></b>								

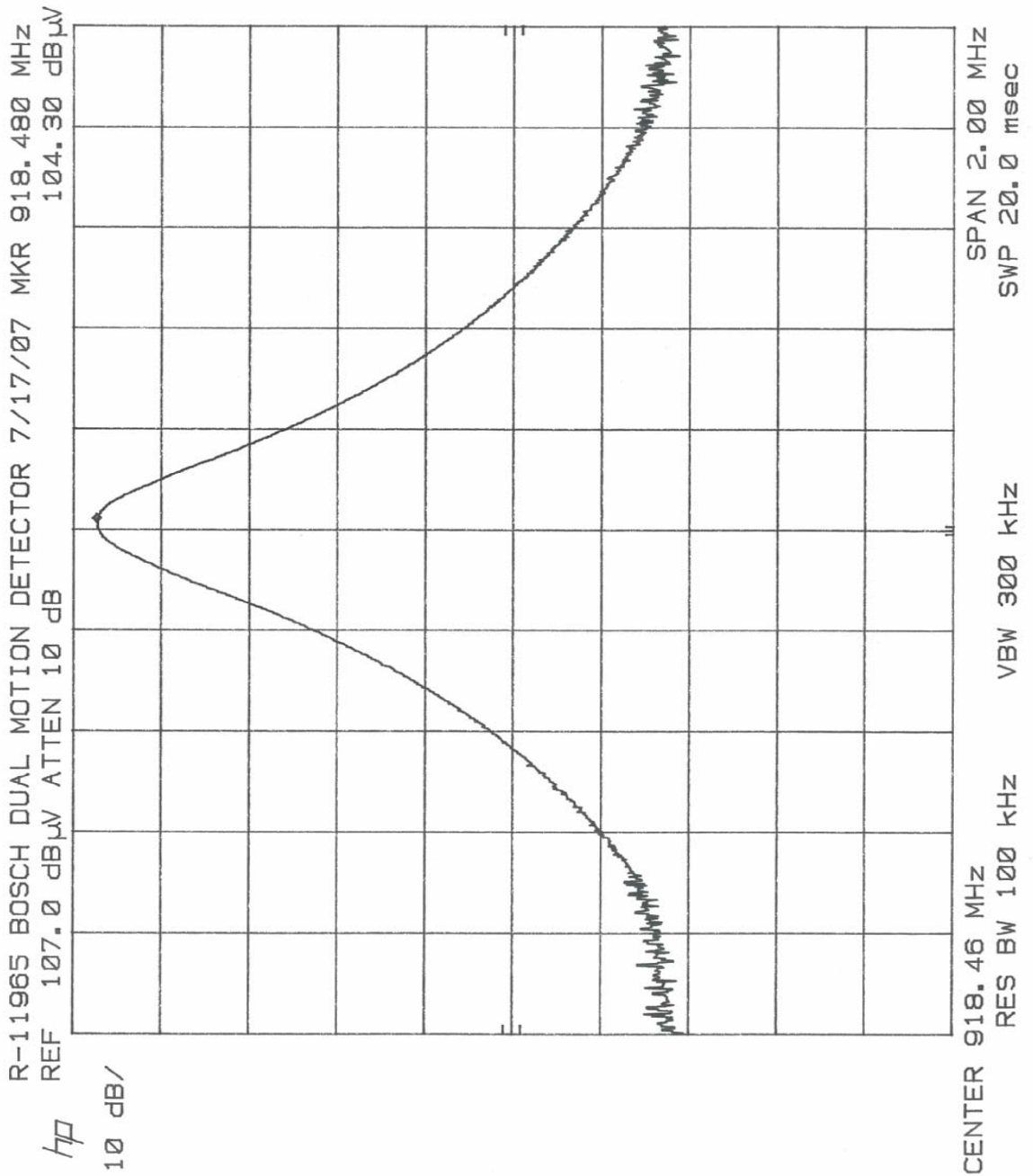


**FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output, Para. 15.247(b)(2)**

**Note:** EUT transmitting on channel 00 at 915.5 MHz.

**FCC ID:** T3XB DL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: July 17, 2007.	Tech: R.S.	Sheet 1 of 3



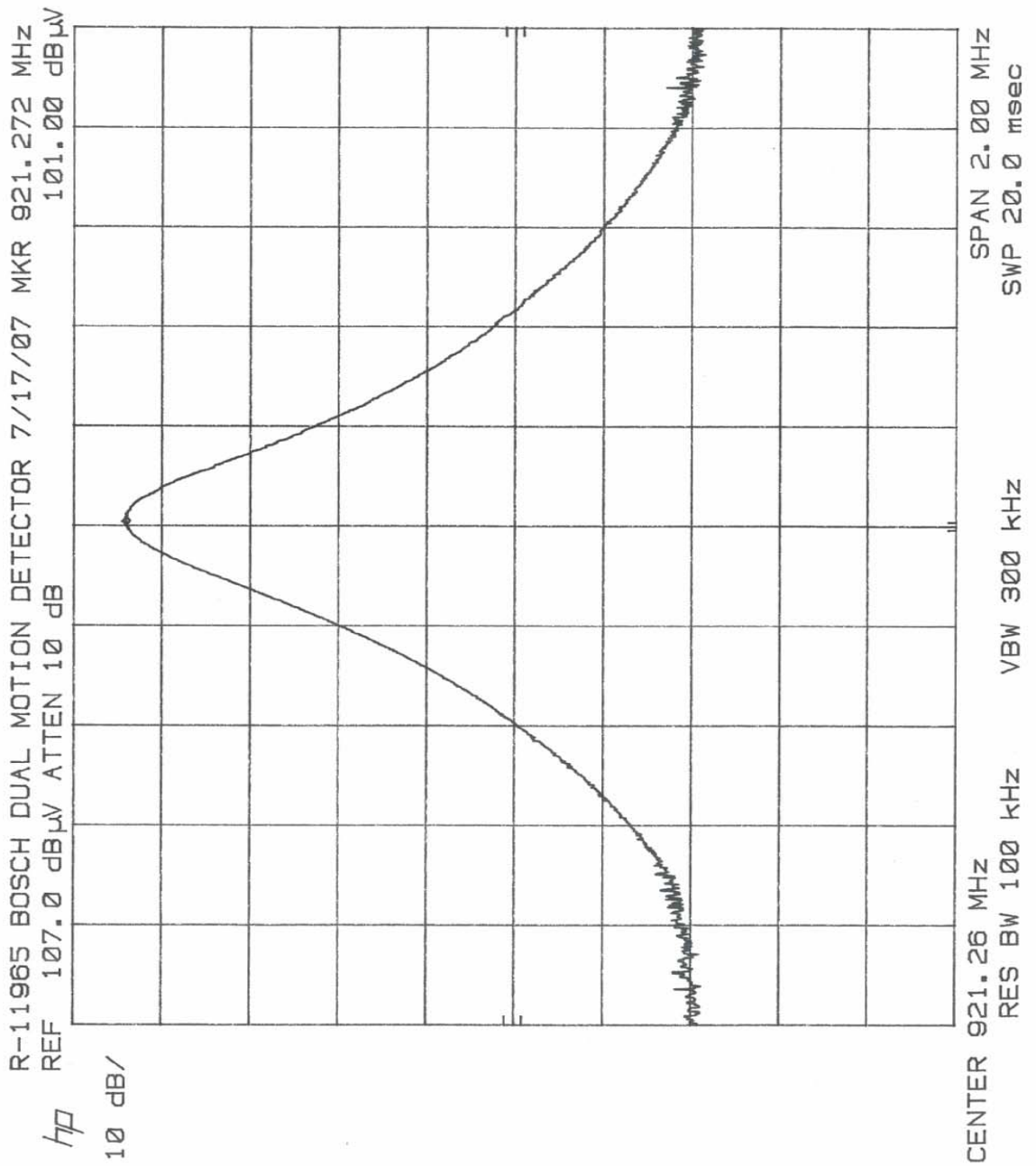
**FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output, Para. 15.247(b)(2)**

**Note:** EUT transmitting on channel 30 at 918.4 MHz.

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: July 17, 2007.	Tech: R.S.	Sheet 2 of 3





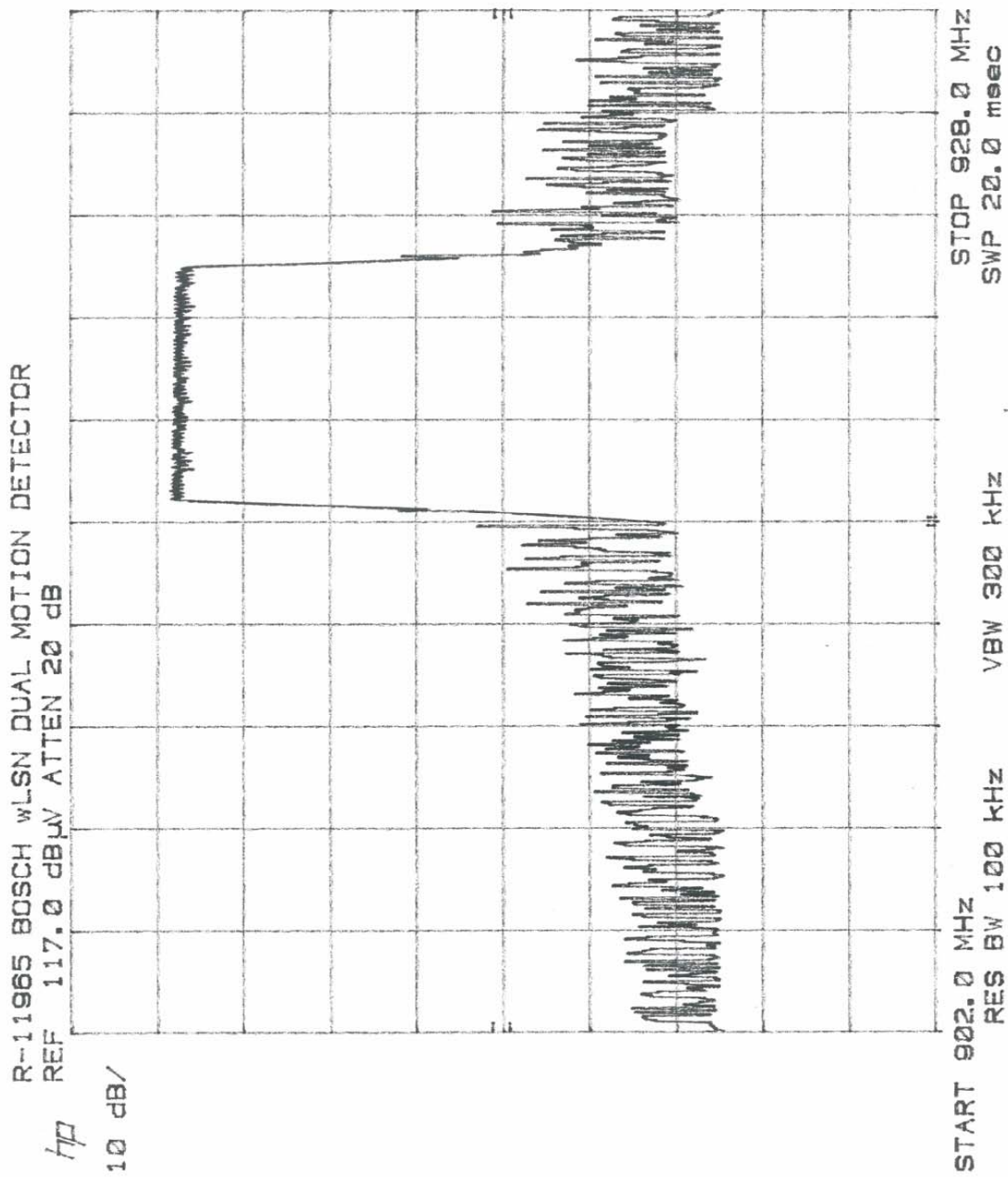
**FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output, Para. 15.247(b)(2)**

**Note:** EUT transmitting on channel 58 at 921.3 MHz.

**FCC ID:** T3XB DL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: July 17, 2007.	Tech: R.S.	Sheet 3 of 3

**FCC Part 15, Subpart C, 15.247(d) Band Edge Measurements  
902 - 928 MHz Range  
Test Data**



**FCC Part 15, Subpart C, 15.247(d) Band Edge Measurements, 902 to 928 MHz Band**

**Note:** The EUT complies with the Band Edge Measurements.

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-08-2007	Tech: R.S.	Sheet 1 of 1

**FCC Part 15 Subpart C, Radiated Emissions, Harmonics  
Paragraphs 15.247(d)  
EUT transmitting at the Fundamental signal of 915.5 MHz**

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.						
<b>Customer:</b>	Bosch Security System.	<b>Job No.</b>		R-11965-13			
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY	<b>FCC ID:</b>		T3XBDL1-W11PGY			
<b>Operating Mode:</b>	Continuously transmitting a 915.5 MHz signal.						
<b>Technician:</b>	R. Soodoo	<b>Date:</b>		September 09, 2007.			
<b>Notes:</b>	Test Distance: 3 Meters Detector: Peak, Unless otherwise specified						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
1831.0	V / 1.5	X	66.4	2.3	68.7	2722.7	50118.0
	V / 1.1	Y	71.1	2.3	73.4	4677.4	
	V / 1.4	Z	56.7	2.3	59.0	891.3	
	H / 1.5	X	65.8	2.3	68.1	2541.0	
	H / 2.0	Y	55.1	2.3	57.4	741.3	
1831.0	H / 1.0	Z	61.0	2.3	63.3	1462.2	50118.0
2746.5	V / 1.0	X	53.2	5.2	58.4	831.8	5000.0
	V / 1.0	Y	52.6	5.2	57.8	776.2	
	V / 1.0	Z	51.8	5.2	57.0	707.9	
	H / 1.3	X	50.6	5.2	55.8	616.6	
	H / 1.7	Y	51.2	5.2	56.4	660.7	
2746.5	H / 1.0	Z	50.4	5.2	55.6	602.6	5000.0
3662.0	V / 1.0	X	37.4	10.0	47.4	234.4	5000.0
	V / 1.0	Y	38.1	10.0	48.1	254.1	
	V / 1.0	Z	38.7	10.0	48.7	272.3	
	H / 1.0	X	37.0	10.0	47.0	223.9	
	H / 1.0	Y	40.3	10.0	50.3	327.3	
3662.0	H / 1.0	Z	39.1	10.0	49.1	285.1	5000.0
4577.5	V / 1.3	X	48.2	13.6	61.8	1230.3	5000.0
	V / 1.0	Y	47.6	13.6	61.2	1148.2	
	V / 1.0	Z	47.3	13.6	60.9	1109.2	
	H / 1.3	X	46.3	13.6	59.9	988.6	
	H / 1.0	Y	55.0	13.6	68.6	2691.5	
4577.5	H / 1.7	Z	49.9	13.6	63.5	1496.2	5000.0
5493.0	V / 1.5	X	42.5	17.1	59.6	955.0	50118.0
	V / 1.0	Y	41.6	17.1	58.7	861.0	
	V / 1.0	Z	37.9	17.1	55.0	562.3	
	H / 1.2	X	38.2	17.1	55.3	582.1	
	H / 1.0	Y	43.9	17.1	61.0	1122.0	
5493.0	H / 1.0	Z	38.2	17.1	55.3	582.1	50118.0
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
*= Noise Floor Measurements (minimum sensitivity).							

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.						
<b>Customer:</b>	Bosch Security System.	<b>Job No.</b>	R-11965-13				
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY	<b>FCC ID:</b>	T3XBDL1-W11PGY				
<b>Operating Mode:</b>	Continuously transmitting a 915.5 MHz signal.						
<b>Technician:</b>	R. Soodoo	<b>Date:</b>	September 09, 2007.				
<b>Notes:</b>	Test Distance: 3 Meters Detector: Peak, unless otherwise specified						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
6408.5	V / 1.5	X	38.1	19.9	58.0	794.3	50118.0
	V / 1.0	Y	37.9	19.9	57.8	776.2	
	V / 1.0	Z	37.5	19.9	57.4	741.3	
	H / 1.3	X	36.4	19.9	56.3	653.1	
	H / 1.0	Y	38.6	19.9	58.5	841.4	
6408.5	H / 1.0	Z	37.7	19.9	57.6	758.6	50118.0
7324.0	V / 1.6	X	36.9	21.3	58.2	812.8	5000.0
	V / 1.0	Y	35.4	21.3	56.7	683.9	
	V / 1.0	Z	39.3	21.3	60.6	1071.5	
	H / 1.4	X	40.0	21.3	61.3	1161.4	
	H / 1.2	Y	37.9	21.3	59.2	912.0	
7324.0	H / 1.0	Z	38.3	21.3	59.6	955.0	5000.0
8239.5	V / 1.0	X	42.5	23.6	66.1	*2018.4	5000.0
	V / 1.0	Y	42.5	23.6	66.1	*2018.4	
	V / 1.0	Z	42.5	23.6	66.1	*2018.4	
	H / 1.0	X	42.7	23.6	63.6	*2065.4	
	H / 1.0	Y	42.7	23.6	63.6	*2065.4	
8239.5	H / 1.0	Z	42.7	23.6	63.6	*2065.4	5000.0
9155.0	V / 1.0	X	42.1	25.5	67.6	*2398.8	5000.0
	V / 1.0	Y	42.1	25.5	67.6	*2398.8	
	V / 1.0	Z	42.1	25.5	67.6	*2398.8	
	H / 1.0	X	42.0	25.5	67.5	*2371.4	
	H / 1.0	Y	42.0	25.5	67.5	*2371.4	
9155.0	H / 1.0	Z	42.0	25.5	67.5	*2371.4	5000.0
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
*=Noise Floor Measurements ( Minimum system sensitivity)							

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 915.5 MHz signal.							
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	September 09, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	uV/m	uV/m
1831.0	V / 1.5	X	64.5	2.3	-13.2	53.6	478.6	5011.8
	V / 1.1	Y	68.1	2.3	-13.2	57.2	724.4	
	V / 1.4	Z	50.1	2.3	-13.2	39.2	91.2	
	H / 1.5	X	64.0	2.3	-13.2	53.1	451.9	
	H / 2.0	Y	51.5	2.3	-13.2	40.6	107.2	
1831.0	H / 1.0	Z	53.3	2.3	-13.2	42.4	131.8	5011.8
2746.5	V / 1.0	X	51.8	5.2	-13.2	43.8	154.9	500.0
	V / 1.0	Y	50.9	5.2	-13.2	42.9	139.6	
	V / 1.0	Z	50.7	5.2	-13.2	42.7	136.5	
	H / 1.3	X	49.3	5.2	-13.2	41.3	116.1	
	H / 1.7	Y	49.0	5.2	-13.2	41.0	112.2	
2746.5	H / 1.0	Z	47.9	5.2	-13.2	39.9	98.9	500.0
3662.0	V / 1.0	X	26.5	10.0	-13.2	23.3	14.6	500.0
	V / 1.0	Y	32.1	10.0	-13.2	28.9	27.9	
	V / 1.0	Z	32.8	10.0	-13.2	29.6	30.2	
	H / 1.0	X	28.2	10.0	-13.2	25.0	17.8	
	H / 1.0	Y	32.2	10.0	-13.2	29.0	28.2	
3662.0	H / 1.0	Z	32.8	10.0	-13.2	29.6	30.2	500.0
4577.5	V / 1.3	X	46.2	13.6	-13.2	46.6	213.8	500.0
	V / 1.0	Y	44.6	13.6	-13.2	45.0	177.8	
	V / 1.0	Z	41.9	13.6	-13.2	42.3	130.3	
	H / 1.3	X	44.3	13.6	-13.2	44.7	171.8	
	H / 1.0	Y	51.0	13.6	-13.2	51.4	371.5	
4577.5	H / 1.7	Z	45.1	13.6	-13.2	45.5	188.4	500.0
5493.0	V / 1.5	X	39.3	17.1	-13.2	43.2	144.5	5011.8
	V / 1.0	Y	34.5	17.1	-13.2	38.4	83.2	
	V / 1.0	Z	30.8	17.1	-13.2	34.7	54.3	
	H / 1.2	X	30.7	17.1	-13.2	34.6	53.7	
	H / 1.0	Y	39.9	17.1	-13.2	43.8	154.9	
5493.0	H / 1.0	Z	31.4	17.1	-13.2	35.3	58.2	5011.8
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more								
Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.								
*=Noise Floor Measurements ( Minimum system sensitivity)								

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 915.5 MHz signal.							
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	September 09, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	uV/m	uV/m
6408.5	V / 1.5	X	29.3	19.9	-13.2	36.0	63.1	5011.8
	V / 1.0	Y	27.8	19.9	-13.2	34.5	53.1	
	V / 1.0	Z	28.0	19.9	-13.2	34.7	54.3	
	H / 1.3	X	24.9	19.9	-13.2	31.6	38.0	
	H / 1.0	Y	29.3	19.9	-13.2	36.0	63.1	
6408.5	H / 1.0	Z	29.5	19.9	-13.2	36.2	64.6	5011.8
7324.0	V / 1.6	X	27.8	21.3	-13.2	35.9	62.4	500.0
	V / 1.0	Y	24.6	21.3	-13.2	32.7	43.2	
	V / 1.0	Z	30.9	21.3	-13.2	39.0	89.1	
	H / 1.4	X	30.2	21.3	-13.2	38.3	82.2	
	H / 1.2	Y	28.7	21.3	-13.2	36.8	69.2	
7324.0	H / 1.0	Z	25.1	21.3	-13.2	33.2	45.7	500.0
8239.5	V / 1.0	X	33.2	23.6	-13.2	42.6	*151.4	500.0
	V / 1.0	Y	33.2	23.6	-13.2	42.6	*151.4	
	V / 1.0	Z	33.2	23.6	-13.2	42.6	*151.4	
	H / 1.0	X	32.8	23.6	-13.2	43.2	*144.5	
	H / 1.0	Y	32.8	23.6	-13.2	43.2	*144.5	
8239.5	H / 1.0	Z	32.8	23.6	-13.2	43.2	*144.5	500.0
9155.0	V / 1.0	X	33.1	25.5	-13.2	45.4	*186.2	500.0
	V / 1.0	Y	33.1	25.5	-13.2	45.4	*186.2	
	V / 1.0	Z	33.1	25.5	-13.2	45.4	*186.2	
	H / 1.0	X	33.2	25.5	-13.2	45.5	*188.4	
	H / 1.0	Y	33.2	25.5	-13.2	45.5	*188.4	
9155.0	H / 1.0	Z	33.2	25.5	-13.2	45.5	*188.4	500.0
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.								
* =Noise Floor Measurements ( Minimum system sensitivity)								



**FCC Part 15 Subpart C, Radiated Emissions, Harmonics  
Paragraphs 15.247(d)  
EUT transmitting at the Fundamental signal of 918.4 MHz**

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.						
<b>Customer:</b>	Bosch Security System.	<b>Job No.</b>		R-11965-13			
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY	<b>FCC ID:</b>		T3XBDL1-W11PGY			
<b>Operating Mode:</b>	Continuously transmitting a 918.4 MHz signal.						
<b>Technician:</b>	D. Lerner, R. Soodoo	<b>Date:</b>		September 10 & 13, 2007.			
<b>Notes:</b>	Test Distance: 3 Meters Detector: Peak, Unless otherwise specified						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
1836.8	V / 2.5	X	63.2	2.3	65.5	1883.6	50118.0
	V / 1.0	Y	55.3	2.3	57.6	758.6	
	V / 1.0	Z	63.8	2.3	66.1	2018.4	
	H / 1.0	X	60.9	2.3	63.2	1445.4	
	H / 1.0	Y	56.5	2.3	58.8	871.0	
1836.8	H / 1.5	Z	61.8	2.3	64.1	1603.2	50118.0
2755.2	V / 1.6	X	44.0	5.2	49.2	288.4	5000.0
	V / 1.1	Y	55.0	5.2	60.2	1023.3	
	V / 1.0	Z	54.1	5.2	59.3	922.6	
	H / 1.3	X	45.6	5.2	50.8	346.7	
	H / 1.0	Y	51.7	5.2	56.9	699.8	
2755.2	H / 1.5	Z	54.0	5.2	59.2	912.0	5000.0
3673.6	V / 1.4	X	37.4	10.0	47.4	234.4	5000.0
	V / 1.0	Y	47.6	10.0	57.6	758.6	
	V / 1.0	Z	47.7	10.0	57.7	767.4	
	H / 1.8	X	38.2	10.0	48.2	257.0	
	H / 1.5	Y	47.5	10.0	57.5	749.9	
3673.6	H / 1.4	Z	48.0	10.0	58.0	794.3	5000.0
4592.0	V / 2.0	X	47.3	13.6	60.9	1109.2	5000.0
	V / 1.0	Y	51.7	13.6	65.3	1840.8	
	V / 1.0	Z	53.5	13.6	67.1	2264.6	
	H / 1.6	X	44.7	13.6	58.3	822.2	
	H / 1.3	Y	52.2	13.6	65.8	1949.8	
4592.0	H / 1.0	Z	55.0	13.6	68.6	2691.5	5000.0
5510.4	V / 1.7	X	41.5	17.1	58.6	851.1	50118.0
	V / 1.0	Y	47.4	17.1	64.5	1678.8	
	V / 1.0	Z	47.5	17.1	64.6	1698.2	
	H / 1.5	X	37.7	17.1	54.8	549.5	
	H / 1.0	Y	47.8	17.1	64.9	1757.9	
5510.4	H / 1.0	Z	48.7	17.1	65.8	1949.8	50118.0
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.						
	*= Noise Floor Measurements (minimum sensitivity).						

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.						
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13	
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY	
<b>Operating Mode:</b>	Continuously transmitting a 918.4 MHz signal.						
<b>Technician:</b>	D. Lerner, R. Soodoo				<b>Date:</b>	September 10 & 13, 2007.	
<b>Notes:</b>	Test Distance: 3 Meters Detector: Peak, unless otherwise specified						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
6428.8	V / 1.3	X	46.3	19.9	66.2	*2041.7	50118.0
	V / 1.0	Y	46.3	19.9	66.2	*2041.7	
	V / 1.0	Z	49.2	19.9	69.1	2851.0	
	H / 1.6	X	46.3	19.9	66.2	*2041.7	
	H / 1.0	Y	46.3	19.9	66.2	*2041.7	
6428.8	H / 1.0	Z	46.3	19.9	66.2	*2041.7	50118.0
7347.2	V / 1.0	X	46.3	21.3	67.6	*2398.8	5000.0
	V / 1.0	Y	46.3	21.3	67.6	*2398.8	
	V / 1.0	Z	46.3	21.3	67.6	*2398.8	
	H / 1.0	X	46.3	21.3	67.6	*2398.8	
	H / 1.0	Y	46.3	21.3	67.6	*2398.8	
7347.2	H / 1.0	Z	46.3	21.3	67.6	*2398.8	5000.0
8265.6	V / 1.0	X	42.5	23.6	66.1	*2018.4	5000.0
	V / 1.0	Y	42.5	23.6	66.1	*2018.4	
	V / 1.0	Z	42.5	23.6	66.1	*2018.4	
	H / 1.0	X	42.7	23.6	63.6	*2065.4	
	H / 1.0	Y	42.7	23.6	63.6	*2065.4	
8265.6	H / 1.0	Z	42.7	23.6	63.6	*2065.4	5000.0
9184.0	V / 1.0	X	42.1	25.5	67.6	*2398.8	5000.0
	V / 1.0	Y	42.1	25.5	67.6	*2398.8	
	V / 1.0	Z	42.1	25.5	67.6	*2398.8	
	H / 1.0	X	42.0	25.5	67.5	*2371.4	
	H / 1.0	Y	42.0	25.5	67.5	*2371.4	
9184.0	H / 1.0	Z	42.0	25.5	67.5	*2371.4	5000.0
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.						
	* =Noise Floor Measurements ( Minimum system sensitivity)						

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 918.4 MHz signal.							
<b>Technician:</b>	D. Lerner, R. Soodoo				<b>Date:</b>	September 10 & 13, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	UV/m	uV/m
1836.8	V / 2.5	X	58.0	2.3	-13.2	47.1	226.5	5011.8
	V / 1.0	Y	53.5	2.3	-13.2	42.6	134.9	
	V / 1.0	Z	63.1	2.3	-13.2	52.2	407.4	
	H / 1.0	X	54.3	2.3	-13.2	43.4	147.9	
	H / 1.0	Y	54.5	2.3	-13.2	43.6	151.4	
1836.8	H / 1.5	Z	60.6	2.3	-13.2	49.7	305.5	5011.8
2755.2	V / 1.6	X	42.6	5.2	-13.2	34.6	53.7	500.0
	V / 1.1	Y	51.9	5.2	-13.2	43.9	156.7	
	V / 1.0	Z	50.7	5.2	-13.2	42.7	136.5	
	H / 1.3	X	44.3	5.2	-13.2	36.3	65.3	
	H / 1.0	Y	46.1	5.2	-13.2	38.1	80.4	
2755.2	H / 1.5	Z	54.0	5.2	-13.2	46.0	199.5	500.0
3673.6	V / 1.4	X	27.5	10.0	-13.2	24.3	16.4	500.0
	V / 1.0	Y	34.5	10.0	-13.2	31.3	36.7	
	V / 1.0	Z	36.0	10.0	-13.2	32.8	43.7	
	H / 1.8	X	32.3	10.0	-13.2	29.1	28.5	
	H / 1.5	Y	35.3	10.0	-13.2	32.1	40.3	
3673.6	H / 1.4	Z	36.8	10.0	-13.2	33.6	47.9	500.0
4592.0	V / 2.0	X	46.4	13.6	-13.2	46.8	218.8	500.0
	V / 1.0	Y	44.1	13.6	-13.2	44.5	167.9	
	V / 1.0	Z	49.5	13.6	-13.2	49.9	312.6	
	H / 1.6	X	42.0	13.6	-13.2	42.4	131.8	
	H / 1.3	Y	46.4	13.6	-13.2	46.8	218.8	
4592.0	H / 1.0	Z	52.3	13.6	-13.2	52.7	431.5	500.0
5510.4	V / 1.7	X	37.4	17.1	-13.2	41.3	116.1	5011.8
	V / 1.0	Y	34.5	17.1	-13.2	38.4	83.2	
	V / 1.0	Z	36.7	17.1	-13.2	40.6	107.2	
	H / 1.5	X	30.9	17.1	-13.2	34.8	55.0	
	H / 1.0	Y	34.6	17.1	-13.2	38.5	84.1	
5510.4	H / 1.0	Z	39.4	17.1	-13.2	43.3	146.2	5011.8
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more								
Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.								
*=Noise Floor Measurements ( Minimum system sensitivity)								

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 918.4 MHz signal.							
<b>Technician:</b>	D. Lerner, R. Soodoo				<b>Date:</b>	September 10 & 13, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	uV/m	uV/m
6428.8	V / 1.0	X	35.7	19.9	-13.2	42.4	*131.8	5011.8
	V / 1.0	Y	35.7	19.9	-13.2	42.4	*131.8	
	V / 1.0	Z	36.0	19.9	-13.2	42.7	136.5	
	H / 1.0	X	35.7	19.9	-13.2	42.4	*131.8	
	H / 1.0	Y	35.7	19.9	-13.2	42.4	*131.8	
6428.8	H / 1.0	Z	35.7	19.9	-13.2	42.4	*131.8	5011.8
7347.2	V / 1.0	X	35.7	21.3	-13.2	43.8	*154.9	500.0
	V / 1.0	Y	35.7	21.3	-13.2	43.8	*154.9	
	V / 1.0	Z	35.7	21.3	-13.2	43.8	*154.9	
	H / 1.0	X	35.7	21.3	-13.2	43.8	*154.9	
	H / 1.0	Y	35.7	21.3	-13.2	43.8	*154.9	
7347.2	H / 1.0	Z	35.7	21.3	-13.2	43.8	*154.9	500.0
8265.6	V / 1.0	X	35.7	23.6	-13.2	46.1	*201.8	500.0
	V / 1.0	Y	35.7	23.6	-13.2	46.1	*201.8	
	V / 1.0	Z	35.7	23.6	-13.2	46.1	*201.8	
	H / 1.0	X	35.7	23.6	-13.2	46.1	*201.8	
	H / 1.0	Y	35.7	23.6	-13.2	46.1	*201.8	
8265.6	H / 1.0	Z	35.7	23.6	-13.2	46.1	*201.8	500.0
9184.0	V / 1.0	X	35.7	25.5	-13.2	48.0	*251.2	500.0
	V / 1.0	Y	35.7	25.5	-13.2	48.0	*251.2	
	V / 1.0	Z	35.7	25.5	-13.2	48.0	*251.2	
	H / 1.0	X	35.7	25.5	-13.2	48.0	*251.2	
	H / 1.0	Y	35.7	25.5	-13.2	48.0	*251.2	
9184.0	H / 1.0	Z	35.7	25.5	-13.2	48.0	*251.2	500.0
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.								
*=Noise Floor Measurements ( Minimum system sensitivity)								

**FCC Part 15 Subpart C, Radiated Emissions, Harmonics  
Paragraphs 15.247(d)  
EUT transmitting at the Fundamental signal of 921.3 MHz**

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.						
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13	
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY	
<b>Operating Mode:</b>	Continuously transmitting a 921.3 MHz signal.						
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	September 13, 2007.	
<b>Notes:</b>	Test Distance: 3 Meters Detector: Peak, Unless otherwise specified						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	X / Y / Z	dB $\mu$ V	dB	dB $\mu$ V/m	uV/m	uV/m
1842.6	V / 1.0	X	61.5	2.3	63.8	1548.8	50118.0
	V / 1.0	Y	61.0	2.3	63.3	1462.2	
	V / 1.0	Z	63.0	2.3	65.3	1840.8	
	H / 1.0	X	60.8	2.3	63.1	1428.9	
	H / 1.0	Y	67.1	2.3	69.4	2951.2	
1842.6	H / 1.7	Z	64.5	2.3	66.8	2187.8	50118.0
2763.9	V / 1.0	X	52.2	5.2	57.4	741.3	5000.0
	V / 1.2	Y	53.1	5.2	58.3	822.2	
	V / 1.0	Z	49.1	5.2	54.3	518.8	
	H / 1.0	X	48.1	5.2	53.3	462.4	
	H / 2.0	Y	53.8	5.2	59.0	891.3	
2763.9	H / 1.0	Z	54.4	5.2	59.6	955.0	5000.0
3685.2	V / 1.0	X	46.1	10.0	56.1	638.3	5000.0
	V / 1.8	Y	46.3	10.0	56.3	653.1	
	V / 1.0	Z	47.4	10.0	57.4	741.3	
	H / 1.0	X	46.0	10.0	56.0	631.0	
	H / 1.9	Y	45.8	10.0	55.8	616.6	
3685.2	H / 1.0	Z	45.9	10.0	55.9	623.7	5000.0
4606.5	V / 1.8	X	49.0	13.6	62.6	1349.0	5000.0
	V / 1.0	Y	49.7	13.6	63.3	1462.2	
	V / 1.0	Z	48.9	13.6	62.5	1333.5	
	H / 2.0	X	48.5	13.6	62.1	1273.5	
	H / 1.6	Y	51.6	13.6	65.2	1819.7	
4606.5	H / 1.3	Z	52.3	13.6	65.9	1972.4	5000.0
5527.8	V / 1.6	X	46.0	17.1	63.1	1428.9	50118.0
	V / 1.4	Y	44.8	17.1	61.9	1244.5	
	V / 1.0	Z	45.8	17.1	62.9	1396.4	
	H / 1.0	X	45.0	17.1	62.1	1273.5	
	H / 1.5	Y	45.4	17.1	62.5	1333.5	
5527.8	H / 1.0	Z	46.1	17.1	63.2	1445.4	50118.0
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.						
	* = Noise Floor Measurements (minimum sensitivity).						

<b>Test Method:</b>		FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.					
<b>Customer:</b>		Bosch Security System.	<b>Job No.</b>		R-11965-13		
<b>Test Sample:</b>		wLSN Dual Motion Detector					
<b>Model No.:</b>		ISW- BDL1-W11PGY	<b>FCC ID:</b>		T3XBDL1-W11PGY		
<b>Operating Mode:</b>		Continuously transmitting a 921.3 MHz signal.					
<b>Technician:</b>		R. Soodoo	<b>Date:</b>		September 13, 2007.		
<b>Notes:</b> Test Distance: 3 Meters Detector: Peak, unless otherwise specified							
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
6449.1	V / 1.0	X	46.3	19.9	66.2	*2041.7	50118.0
	V / 1.0	Y	46.3	19.9	66.2	*2041.7	
	V / 1.0	Z	46.3	19.9	66.2	*2041.7	
	H / 1.0	X	46.3	19.9	66.2	*2041.7	
	H / 1.0	Y	47.3	19.9	67.2	2290.9	
6449.1	H / 1.0	Z	46.3	19.9	66.2	*2041.7	50118.0
7370.4	V / 1.0	X	46.3	21.3	67.6	*2398.8	5000.0
	V / 1.0	Y	46.3	21.3	67.6	*2398.8	
	V / 1.0	Z	46.3	21.3	67.6	*2398.8	
	H / 1.0	X	46.3	21.3	67.6	*2398.8	
	H / 1.0	Y	46.3	21.3	67.6	*2398.8	
7370.4	H / 1.0	Z	46.3	21.3	67.6	*2398.8	5000.0
8291.7	V / 1.0	X	42.5	23.6	66.1	*2018.4	5000.0
	V / 1.0	Y	42.5	23.6	66.1	*2018.4	
	V / 1.0	Z	42.5	23.6	66.1	*2018.4	
	H / 1.0	X	42.7	23.6	63.6	*2065.4	
	H / 1.0	Y	42.7	23.6	63.6	*2065.4	
8291.7	H / 1.0	Z	42.7	23.6	63.6	*2065.4	5000.0
9213.0	V / 1.0	X	42.1	25.5	67.6	*2398.8	5000.0
	V / 1.0	Y	42.1	25.5	67.6	*2398.8	
	V / 1.0	Z	42.1	25.5	67.6	*2398.8	
	H / 1.0	X	42.0	25.5	67.5	*2371.4	
	H / 1.0	Y	42.0	25.5	67.5	*2371.4	
9213.0	H / 1.0	Z	42.0	25.5	67.5	*2371.4	5000.0
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
* = Noise Floor Measurements ( Minimum system sensitivity)							



<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 921.3 MHz signal.							
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	September 13, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	uV/m	uV/m
1842.6	V / 1.0	X	59.7	2.3	-13.2	48.8	275.4	5011.8
	V / 1.0	Y	59.3	2.3	-13.2	48.4	263.0	
	V / 1.0	Z	61.6	2.3	-13.2	50.7	342.8	
	H / 1.0	X	55.9	2.3	-13.2	45.0	177.8	
	H / 1.0	Y	63.9	2.3	-13.2	53.0	446.7	
1842.6	H / 1.7	Z	63.2	2.3	-13.2	52.3	412.1	5011.8
2763.9	V / 1.0	X	46.4	5.2	-13.2	38.4	83.2	500.0
	V / 1.2	Y	50.1	5.2	-13.2	42.1	127.4	
	V / 1.0	Z	42.2	5.2	-13.2	34.2	51.3	
	H / 1.0	X	39.5	5.2	-13.2	31.5	37.6	
	H / 1.0	Y	51.6	5.2	-13.2	43.6	151.4	
2763.9	H / 1.0	Z	52.1	5.2	-13.2	44.1	160.3	500.0
3685.2	V / 1.0	X	35.4	10.0	-13.2	32.2	40.7	500.0
	V / 1.8	Y	34.7	10.0	-13.2	31.5	37.6	
	V / 1.0	Z	37.0	10.0	-13.2	33.8	49.0	
	H / 1.0	X	33.0	10.0	-13.2	29.8	30.9	
	H / 1.9	Y	35.2	10.0	-13.2	32.0	39.8	
3685.2	H / 1.0	Z	32.5	10.0	-13.2	29.3	29.2	500.0
4606.5	V / 1.8	X	43.1	13.6	-13.2	43.5	149.6	500.0
	V / 1.0	Y	43.7	13.6	-13.2	44.1	160.3	
	V / 1.0	Z	43.6	13.6	-13.2	44.0	158.5	
	H / 1.0	X	41.5	13.6	-13.2	41.9	124.5	
	H / 1.6	Y	47.7	13.6	-13.2	48.1	254.1	
4606.5	H / 1.3	Z	49.2	13.6	-13.2	49.6	302.0	500.0
5527.8	V / 1.6	X	35.7	17.1	-13.2	39.6	95.5	5011.8
	V / 1.4	Y	32.3	17.1	-13.2	36.2	64.6	
	V / 1.0	Z	32.5	17.1	-13.2	36.4	66.1	
	H / 1.0	X	30.3	17.1	-13.2	34.2	51.3	
	H / 1.5	Y	33.0	17.1	-13.2	36.9	70.0	
5527.8	H / 1.0	Z	36.5	17.1	-13.2	40.4	104.7	5011.8
The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more								
Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.								
*=Noise Floor Measurements ( Minimum system sensitivity)								

<b>Test Method:</b>	FCC Part 15 Subpart C, Radiated Emissions, Harmonics Emissions.							
<b>Customer:</b>	Bosch Security System.				<b>Job No.</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>FCC ID:</b>	T3XBDL1-W11PGY		
<b>Operating Mode:</b>	Continuously transmitting a 921.3 MHz signal.							
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	September 13, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters				Duty Cycle: 22.0%			
	Detector: Average, unless otherwise specified				Duty Cycle Correction: -13.2dB			
Test Freq.	Antenna Pol./Height	EUT Orientation	Average Reading	Correction Factor	Duty cycle Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-	X / Y / Z	dBµV	dB	dB	dBµV/m	uV/m	uV/m
6449.1	V / 1.0	X	35.7	19.9	-13.2	42.4	*131.8	5011.8
	V / 1.0	Y	35.7	19.9	-13.2	42.4	*131.8	
	V / 1.0	Z	35.7	19.9	-13.2	42.4	*131.8	
	H / 1.0	X	35.7	19.9	-13.2	42.4	*131.8	
	H / 1.0	Y	36.0	19.9	-13.2	42.7	136.5	
6449.1	H / 1.0	Z	35.7	19.9	-13.2	42.4	*131.8	5011.8
7370.4	V / 1.0	X	35.7	21.3	-13.2	43.8	*154.9	500.0
	V / 1.0	Y	35.7	21.3	-13.2	43.8	*154.9	
	V / 1.0	Z	35.7	21.3	-13.2	43.8	*154.9	
	H / 1.0	X	35.7	21.3	-13.2	43.8	*154.9	
	H / 1.0	Y	35.7	21.3	-13.2	43.8	*154.9	
7370.4	H / 1.0	Z	35.7	21.3	-13.2	43.8	*154.9	500.0
8291.7	V / 1.0	X	35.7	23.6	-13.2	46.1	*201.8	500.0
	V / 1.0	Y	35.7	23.6	-13.2	46.1	*201.8	
	V / 1.0	Z	35.7	23.6	-13.2	46.1	*201.8	
	H / 1.0	X	35.7	23.6	-13.2	46.1	*201.8	
	H / 1.0	Y	35.7	23.6	-13.2	46.1	*201.8	
8291.7	H / 1.0	Z	35.7	23.6	-13.2	46.1	*201.8	500.0
9213.0	V / 1.0	X	35.7	25.5	-13.2	48.0	*251.2	500.0
	V / 1.0	Y	35.7	25.5	-13.2	48.0	*251.2	
	V / 1.0	Z	35.7	25.5	-13.2	48.0	*251.2	
	H / 1.0	X	35.7	25.5	-13.2	48.0	*251.2	
	H / 1.0	Y	35.7	25.5	-13.2	48.0	*251.2	
9213.0	H / 1.0	Z	35.7	25.5	-13.2	48.0	*251.2	500.0
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more							
	Than 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
	*=Noise Floor Measurements ( Minimum system sensitivity)							

**FCC Part 15 Subpart C, Spurious Case Radiated Emissions,  
Paragraph 15.247(d)  
Test Data**







**FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz,  
Paragraph 15.109(a)  
Receiver Test Data**

<b>Test Method:</b>	<b>FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz, Para:15.109(a)</b>							
<b>Customer:</b>	Bosch Security System.	<b>Job No.:</b>		R-11965-13				
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY	<b>Serial No.:</b>		N/A				
<b>Operating Mode:</b>	EUT operating on channel 00(915.5MHz), continuously receiving a CW signal.							
<b>Technician:</b>	R.Soodoo	<b>Date:</b>		September 13, 2007				
<b>Notes:</b>	Test Distance: 3 Meters		Temp:24.0°C		Humidity:36.0%			
	Detector: Quasi-Peak Below 1 GHz, Peak above 1 GHz							
Frequency	Antenna Position	EUT Orientation	Meter Readings	Correction Factor	Corrected Reading	Converted Reading	Limit	
MHz	(V/H) / Meters	Degrees	dBuV	dB	dBuV/m	uV/m	uV/m	
30.0							100	
88.0							100	
88.0							150	
216.0							150	
216.0							200	
			<b>No emission observed at the specified test distance</b>					
960.0							200	
960.0							500	
5000.0							500	
The frequency range was scanned from 30 MHz to 5.0 GHz.								
The emissions observed from the EUT do not exceed the specified limits.								
Emissions not recorded were more than 20dB under the specified limit.								

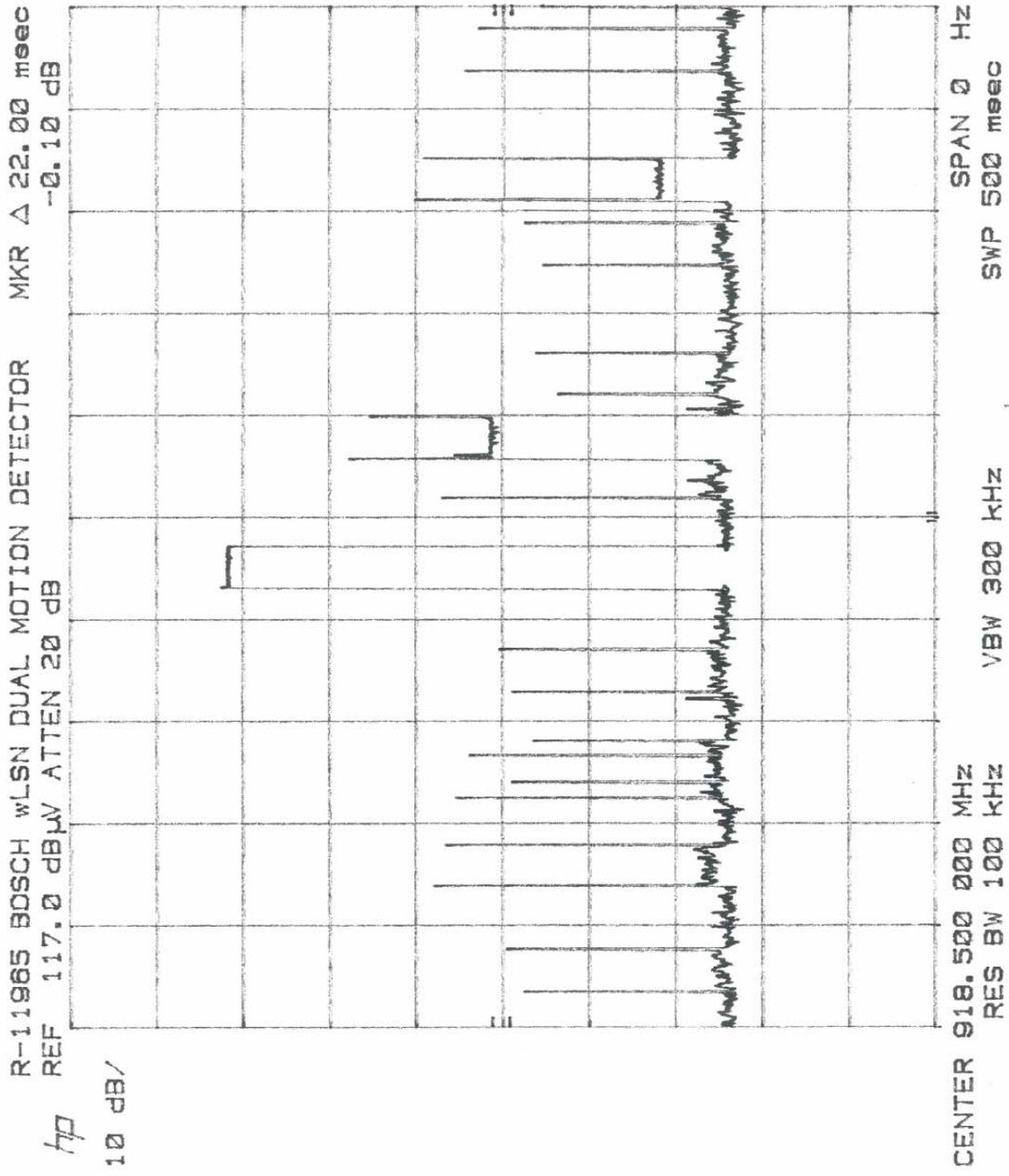


<b>Test Method:</b>	<b>FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz, Para:15.109(a)</b>							
<b>Customer:</b>	Bosch Security System.				<b>Job No.:</b>	R-11965-13		
<b>Test Sample:</b>	wLSN Dual Motion Detector							
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>Serial No.:</b>	N/A		
<b>Operating Mode:</b>	EUT operating on channel 30(918.5MHz), continuously receiving a CW signal.							
<b>Technician:</b>	R.Soodoo				<b>Date:</b>	September 13, 2007.		
<b>Notes:</b>	Test Distance: 3 Meters		Temp:24.0°C		Humidity:13.0%			
	Detector: Quasi-Peak Below 1 GHz, Peak above 1 GHz							
Frequency	Antenna Position	EUT Orientation	Meter Readings	Correction Factor	Corrected Reading	Converted Reading	Limit	
MHz	(V/H) / Meters	Degrees	dBµV	dB	dBµV/m	uV/m	uV/m	
30.0							100	
88.0							100	
88.0							150	
216.0	<b>No emission observed at the specified test distance</b>							150
216.0								200
960.0							200	
960.0							500	
5000.0							500	
The frequency range was scanned from 30 MHz to 5.0 GHz.								
The emissions observed from the EUT do not exceed the specified limits.								
Emissions not recorded were more than 20dB under the specified limit.								

<b>Test Method:</b>	<b>FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz, Para:15.109(a)</b>						
<b>Customer:</b>	Bosch Security System.				<b>Job No.:</b>	R-11965-13	
<b>Test Sample:</b>	wLSN Dual Motion Detector						
<b>Model No.:</b>	ISW- BDL1-W11PGY				<b>Serial No.:</b>	N/A	
<b>Operating Mode:</b>	EUT operating on channel 58(921.3MHz), continuously receiving a CW signal.						
<b>Technician:</b>	R.Soodoo				<b>Date:</b>	September 13, 2007	
<b>Notes:</b>	Test Distance: 3 Meters		Temp:24.0°C		Humidity:36.0%		
	Detector: Quasi-Peak Below 1 GHz, Peak above 1 GHz						
Frequency	Antenna Position	EUT Orientation	Meter Readings	Correction Factor	Corrected Reading	Converted Reading	Limit
MHz	(V/H) / Meters	Degrees	dBµV	dB	dBµV/m	uV/m	uV/m
30.0							100
88.0							100
88.0							150
216.0							150
216.0							200
960.0							200
960.0							500
5000.0							500
The frequency range was scanned from 30 MHz to 5.0 GHz.							
The emissions observed from the EUT do not exceed the specified limits.							
Emissions not recorded were more than 20dB under the specified limit.							

**No emission observed at the specified test distance**

**FCC Part 15.35, Duty Cycle Determination  
Test Data**



**Test Method: FCC Part 15.35, Duty Cycle Determination.**

**Notes:** Duty cycle = (22mSec / 100) = 0.22 = 22%  
 = 20 log 0.22 = -13.2 dB

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 6-8-2007	Tech: R.S.	Sheet 1 of 1

**FCC Part 15, Subpart C, 15.247, 10.513 GHz Field Disturbance Sensor  
Test Data**

**15.245 (b) Test Data**  
**Radiated Emissions, Fundamental**

TEST SAMPLE: 10.525 GHz Field Disturbance Sensor  
 FCC ID:T3XBDL-W11PGY  
 APPLICANT: Bosch Security Systems  
 TEST METHOD: Radiated Emissions, Fundamental  
 SPECIFICATION: FCC Part 15, Section 15.245 (b)  
 PERFORMED BY: R. Soodoo  
 DATE: October 18,2007.

Field Strength of Fundamental

Frequency GHz	Antenna Position H / V	EUT Orientation X / Y / Z	Meter Reading dBµV	Antenna Factor +dB	Corrected Reading dBµV/m	Converted Reading mV/m	Limit at 3 Meters mV/m
10.513	H-1.1	X	81.9	5.5	87.4	23.4	2,500
	V-1.3	X	84.2	5.5	89.7	30.5	2,500
	H-1.1	Y	80.8	5.5	86.3	20.7	2,500
	V-1.3	Y	80.7	5.5	86.2	20.4	2,500
	H-1.1	Z	89.1	5.5	94.6	53.7	2,500
	V-1.3	Z	77.9	5.5	83.4	14.8	2,500

Detector Function: Peak  
 Test Distance: 3 Meters  
 Resolution Bandwidth: 1 MHz  
 Video Bandwidth: 3 MHz

**15.245 (b)(1), Test Data  
Radiated Emissions, Harmonics**



TEST SAMPLE: 10.525 GHz Field Disturbance Sensor  
 FCC ID:T3XBDL-W11PGY  
 APPLICANT: Bosch Security Systems  
 TEST METHOD: Radiated Emissions, Harmonics  
 SPECIFICATION: FCC Part 15, Section 15.245 (b)(1)  
 PERFORMED BY: R. Soodoo  
 DATE: October 18,2007.

Field Strength of Harmonics - Peak

Frequency GHz	Antenna Position & Distance H / V	EUT Orientation X / Y / Z	Meter Reading dBµV	Correctio n Factor dB	Test Distance Correction dB	Corrected Reading dBµV/m	Converted Reading uV/m	Peak Limit at 3 Meters uV/m
21.026	H – 1.0	X	53.1	8.7	-3.5	58.3	*822.2	250000.
	V – 1.0	X	53.1	8.7	-3.5	58.3	*822.2	
	H – 1.0	Y	53.1	8.7	-3.5	58.3	*822.2	
	V – 1.0	Y	53.1	8.7	-3.5	58.3	*822.2	
	H – 1.0	Z	53.1	8.7	-3.5	58.3	*822.2	
21.026	V – 1.0	Z	53.1	8.7	-3.5	58.3	*822.2	250000
31.539	H – 1.0	X	37.7	35.8	-9.5	64.0	*1584.9	250000
	V – 1.0	X	37.7	35.8	-9.5	64.0	*1584.9	
	H – 1.0	Y	37.7	35.8	-9.5	64.0	*1584.9	
	V – 1.0	Y	37.7	35.8	-9.5	64.0	*1584.9	
	H – 1.0	Z	37.7	35.8	-9.5	64.0	*1584.9	
31.539	V – 1.0	Z	37.7	35.8	-9.5	64.0	*1584.9	250000
42.042	H – 1.0	X	39.0	39.9	-9.5	69.4	*2951.2	250000
	V – 1.0	X	39.0	39.9	-9.5	69.4	*2951.2	
	H – 1.0	Y	39.0	39.9	-9.5	69.4	*2951.2	
	V – 1.0	Y	39.0	39.9	-9.5	69.4	*2951.2	
	H – 1.0	Z	39.0	39.9	-9.5	69.4	*2951.2	
42.042	V – 1.0	Z	39.0	39.9	-9.5	69.4	*2951.2	250000
52.555	H – 1.0	X	39.0	41.1	-9.5	70.6	*3388.4	250000
	V – 1.0	X	39.0	41.1	-9.5	70.6	*3388.4	
	H – 1.0	Y	39.0	41.1	-9.5	70.6	*3388.4	
	V – 1.0	Y	39.0	41.1	-9.5	70.6	*3388.4	
	H – 1.0	Z	39.0	41.1	-9.5	70.6	*3388.4	
52.555	V – 1.0	Z	39.0	41.1	-9.5	70.6	*3388.4	250000

\* Denotes Minimum Sensitivity of Measurement System.

Field Strength of Harmonics - Average

Frequency GHz	Antenna Position H / V	EUT Orientation X / Y / Z	Peak Reading uV/m	Duty Cycle %		Average Reading uV/m	Limit at 3 Meters uV/m
21.026	H – 1.0	X	822.2	1.0		8.2	25,000
	V – 1.0	X	822.2	1.0		8.2	
	H – 1.0	Y	822.2	1.0		8.2	
	V – 1.0	Y	822.2	1.0		8.2	
	H – 1.0	Z	822.2	1.0		8.2	
21.026	V – 1.0	Z	822.2	1.0		8.2	25,000
31.539	H – 1.0	X	1584.9	1.0		15.9	25,000
	V – 1.0	X	1584.9	1.0		15.9	
	H – 1.0	Y	1584.9	1.0		15.9	
	V – 1.0	Y	1584.9	1.0		15.9	
	H – 1.0	Z	1584.9	1.0		15.9	
31.539	V – 1.0	Z	1584.9	1.0		15.9	25,000
42.042	H – 1.0	X	2951.2	1.0		29.5	25,000
	V – 1.0	X	2951.2	1.0		29.5	
	H – 1.0	Y	2951.2	1.0		29.5	
	V – 1.0	Y	2951.2	1.0		29.5	
	H – 1.0	Z	2951.2	1.0		29.5	
42.042	V – 1.0	Z	2951.2	1.0		29.5	25,000
52.555	H – 1.0	X	3388.4	1.0		33.9	25,000
	V – 1.0	X	3388.4	1.0		33.9	
	H – 1.0	Y	3388.4	1.0		33.9	
	V – 1.0	Y	3388.4	1.0		33.9	
	H – 1.0	Z	3388.4	1.0		33.9	
52.555	V – 1.0	Z	3388.4	1.0		33.9	25,000

Detector Function: Peak / Duty Cycle Applied to Obtain Average Levels  
 Test Distance: As Specified for each frequency  
 Resolution Bandwidth: 1 MHz  
 Video Bandwidth: 3 MHz

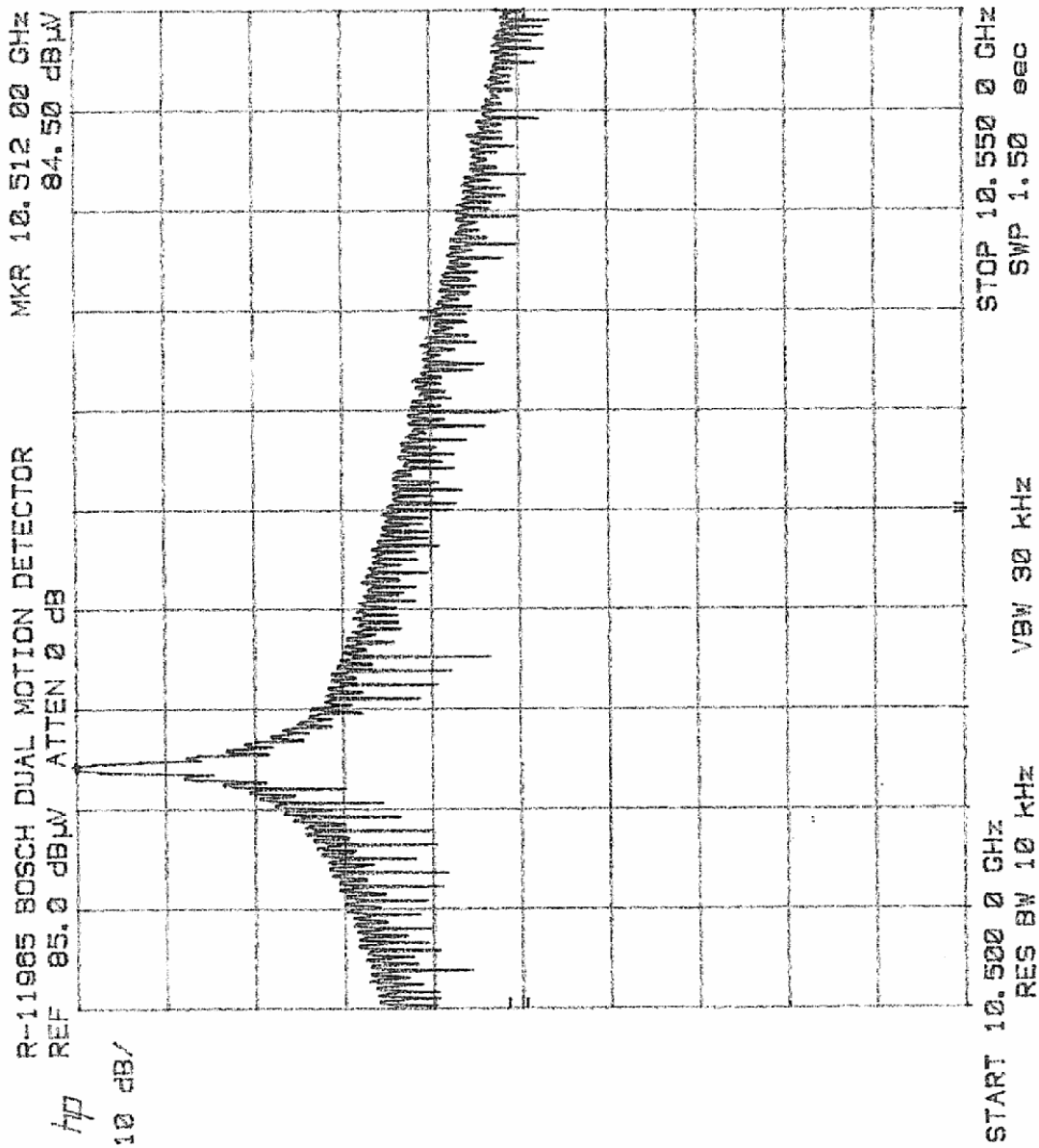
**15.245 (b)(3), Test Data  
Radiated Emissions, Band Edges**

TEST SAMPLE: 10.525 GHz Field Disturbance Sensor  
FCC ID:T3XBDL-W11PGY  
APPLICANT: Bosch Security Systems  
TEST METHOD: Radiated Emissions, Band Edges  
SPECIFICATION: FCC Part 15, Section 15.245 (b)(3)  
PERFORMED BY: R. Soodoo  
DATE: October 18,2007.

The emission at the Lower (10.5GHz) and Upper (10.55GHz) Band edge were attenuated by 50dB. See attached plot.

**15.245 (b), Test Data  
Occupied Bandwidth**

**FCC Part 15, Subpart C, 15.247 (b)(3) Band Edge, 10.500 – 10.550 GHz  
Test Data**



**FCC Part 15, Subpart C, 15.247(b) (3) Band Edge, 10.5 to 10.55 GHz Band**

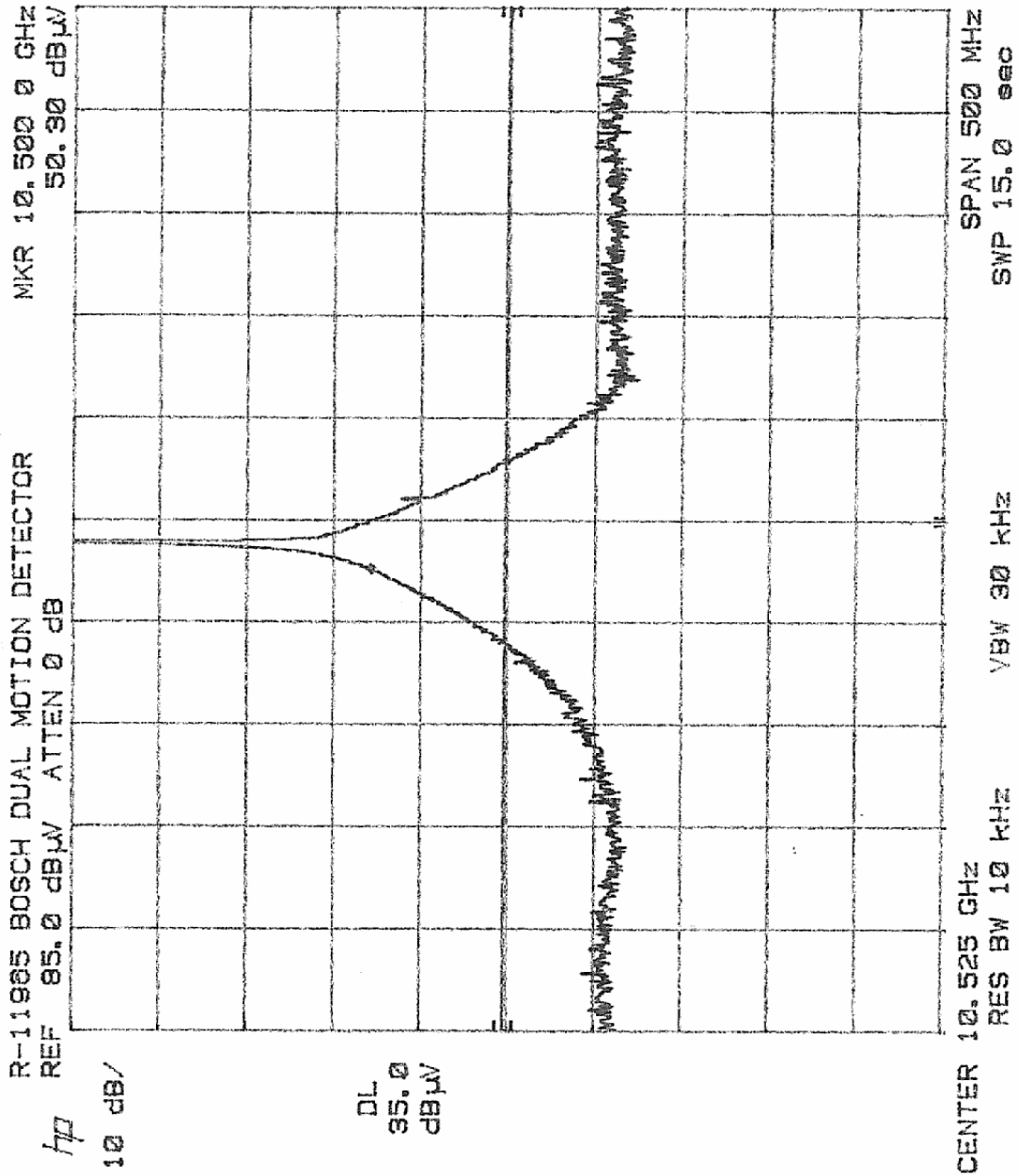
**Note:** The fundamental frequency transmits within the specified band.

**FCC ID:** T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 10-24-2007	Tech: R.S	Sheet 1 of 2

**FCC Part 15, Subpart C, 15.247 (b) Occupied Bandwidth, 10.500 – 10.550 GHz  
Test Data**





**FCC Part 15, Subpart C, 15.247(b) Occupied Bandwidth, 10.5 to 10.55 GHz Band**

**Note:** The emissions radiating outside the band are attenuated by >50dB

**Note:** \* At this band edge frequency, the measured emission of 10.5 GHz = 38.4 dBμV.  
 (Limits = 54dBuV average)

**FCC ID:**T3XBDL1-W11PGY

Customer	Bosch Security System.	
Test Sample	wLSN Dual Motion Detector	
Model Number	ISW- BDL1-W11PGY	
Date: 10-24-2007	Tech: R.S	Sheet 2 of 2

**15.245 (b)(3), Test Data  
Radiated Emissions, Spurious**

TEST SAMPLE: 10.525 GHz Field Disturbance Sensor  
 FCC ID:T3XB DL-W11PGY  
 APPLICANT: Bosch Security Systems  
 TEST METHOD: Spurious Emissions, 30 MHz to 52.625 GHz  
 SPECIFICATION: FCC Part 15, Section 15.245 (b)(3)  
 PERFORMED BY: R. Soodoo  
 DATE: October 18, 2007.

Frequency GHz	Antenna Distance Meters		Meter Reading dB $\mu$ V	Antenna Factor +dB	Test Distance Correction -dB	Corrected Reading dB $\mu$ V/m	Converted Reading uV/m	Limit at 3 Meters uV/m
0.030	3		-					100 QP
0.088	3		-					100 / 150
0.216	3		-					150 / 200
0.960	3		-					200 / 500
1.0	3		-					500
1.0	1		-					5000 Pk 500 Ave
52.625	1		-					5000 Pk 500 Ave

The frequency range was scanned from 30 MHz to 52.625 GHz. No spurious emissions were observed within 20 dB of the specified limit in the 30 MHz to 40 GHz range. No spurious emissions were observed within 10 dB of the specified limit above 40 GHz.

	For F < 1 GHz	For F > 1 GHz
Resolution Bandwidth:	100 kHz	1 MHz
Video Bandwidth:	300 kHz	3 MHz
Detector:	Quasi-Peak	Peak / Average