Technical Information

	Applicant		Manufacturer	
Name:	Bosch Security Systems	Name:	Bosch Security Systems Inc. China Factory	
Address:	130 Perinton Parkway	Address: Mei Chi Industrial Area, Blk B		
City, State, Zip: Fairport, New York 14450		City, State, 2	Zip: Qian Shan Zhuhai, Guangdong 51907,	
			China	

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

Test Procedure: ANSI C63.4: 2003

Test Sample Description

Test Sample:	wLSN Hub	
Brandname:	Bosch	
Model Number:	ISW-BHB1-WY	
FCC ID:	T3XBHB1-WY	
Туре:	Frequency Hoppir	ng Spread Spectrum Transceiver
Power Requirements:		VDC from Control Panel
Frequency of Op	eration:	902 MHz to 928 MHz

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
15.109(a)	RSS-Gen Paragraph 6	Receiver Spurious Radiated 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 then 250 kHz, Measured 43.0 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 15.0 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 15.0 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.

15.247(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 = { 2541763809 } Shuffled G1 = { 19181215141017161113 } Shuffled G2 = { 26212422292528232027 } Shuffled G3 = { 3833139323036343735 } Shuffled G4 = { 47454948424346414044 } Shuffled G5 = { 51585657525505354 }

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 (5x12=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 ± 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 was tested with a control panel.
- 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.

Modifications:

Software 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

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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	Туре	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	Туре	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	Туре	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	Туре	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	Туре	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, Conducted Emissions, 150 kHz to 30 MHz.

EN	Туре	Manufacturer	Description	Model No.	Cal Date	Due Date
078	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	7/5/2007	7/5/2008
079	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	7/5/2007	7/5/2008
091	Shielded Enclosure	Retlif	10 kHz - 1 GHz	Room 6	10/16/2006	10/16/2007
333	Attenuator	Narda	DC - 11 GHz	768-10	8/10/2007	8/10/2008
7016	EMC Analyzer	Hewlett Packard	9kHz - 1.8GHz	8591EM	7/25/2007	7/25/2008

FCC Part 15 Subpart C, Radiated Harmonic Emissions

EN	Туре	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	9/9/2007
767	Biconilog	EMCO	26 - 2000 MHz	3142B	10/12/2006	10/12/2007

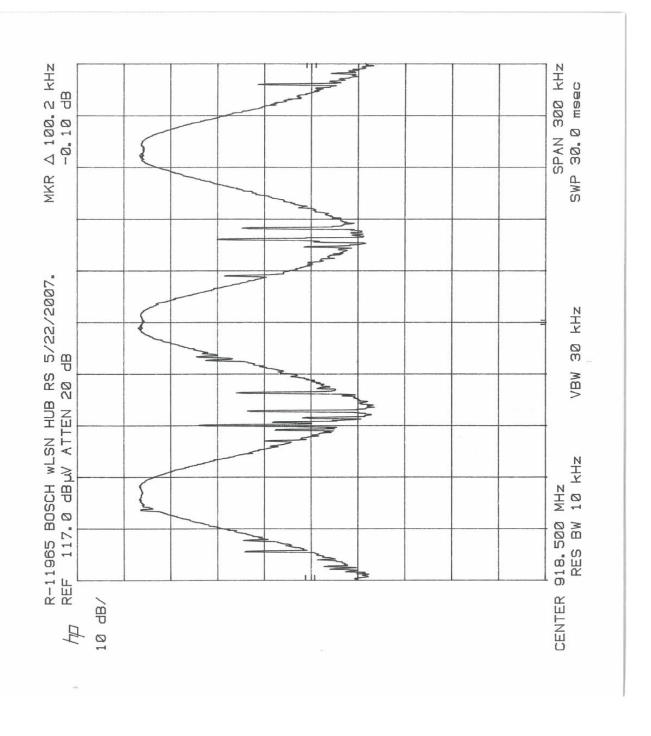
FCC Part 15 Subpart C, Transmitter Spurious Radiated Emissions

EN	Туре	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	9/9/2007
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	Туре	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	9/9/2007
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

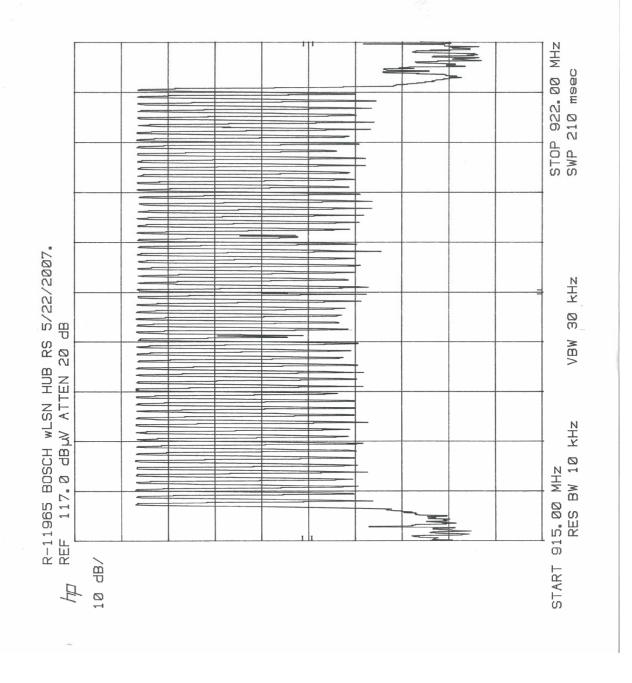
FCC Part 15, Subpart C, 15.247 (a)(1) Carrier Frequency Separation and Number of Hopping Frequency 902 – 928 MHz Band Test Data

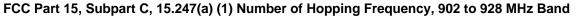


 FCC Part 15, Subpart C, 15.247(a) (1)Hopping Channel Carrier Separation, 902 to 928 MHz Band
 Note: Hopping channel carrier frequency meets the required minimum separation of 26 kHz (Measured carrier separation =100.2kHz)
 FCC ID: T3XBHB1-WY

Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007		Tech: R.S.	Sheet 1 of 2	

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 10 of 62





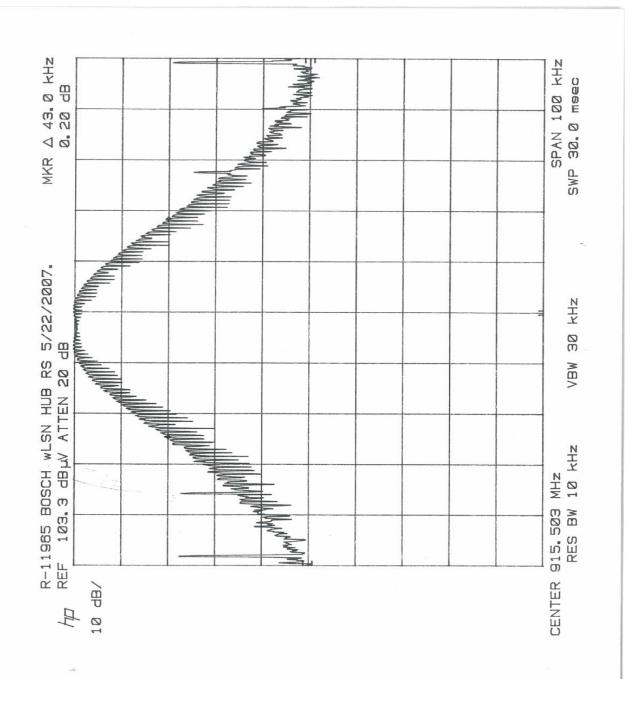
Note: EUT uses 59 hopping frequencies which meets the 50 minimum hopping frequencies required by the 20dB bandwidth if less than 250 kHz(measured BW = 43 kHz).

FCC ID: T3XBHB1-WY

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Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007		Tech: R.S.	Sheet 2 of 2	

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



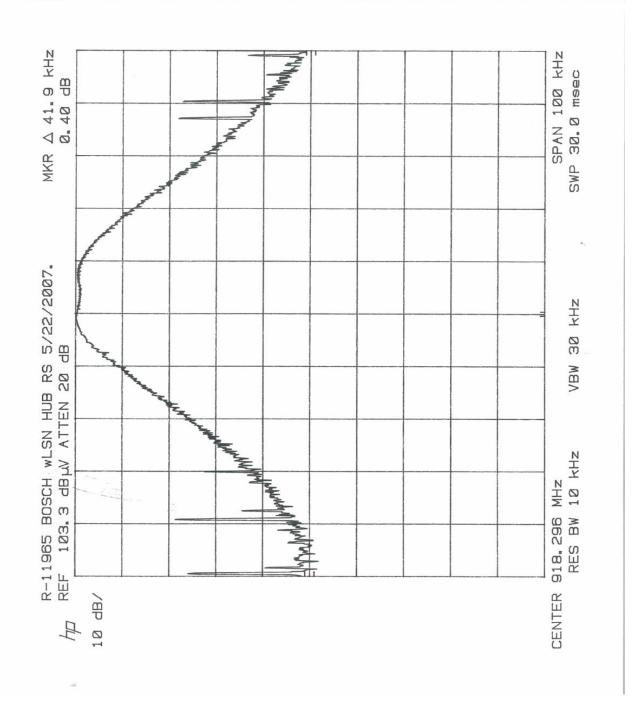
FCC Part 15, Subpart C, 15.247(a) (1) Occupied Bandwidth, 902 to 928 MHz Band

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

Note: EUT transmitting on channel 00 at 915.5 MHz. **FCC ID:**T3XBHB1-WY

Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007		Tech: R.S.		Sheet 1 of 3

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 13 of 62



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

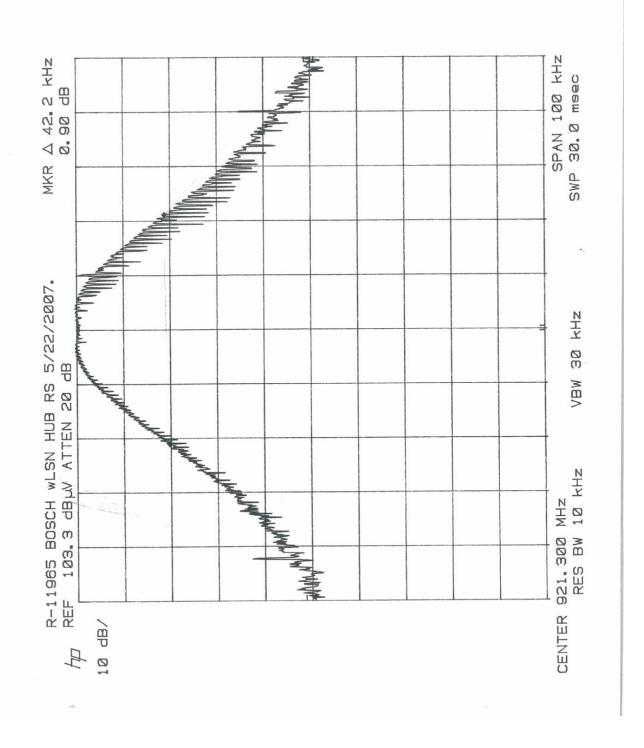
Note: The maximum 20 dB bandwidth of the hopping channel is less then 250 kHz. 20dB bandwidth measured at 41.9 kHz

Note: EUT transmitting on channel 30 at 918.5 MHz.

FCC ID:T3XBHB1-WY

Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007		Tech: R.S.	Sheet 2 of 3	

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 14 of 62



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 then 250 kHz. 20dB bandwidth measured at 42.2 kHz

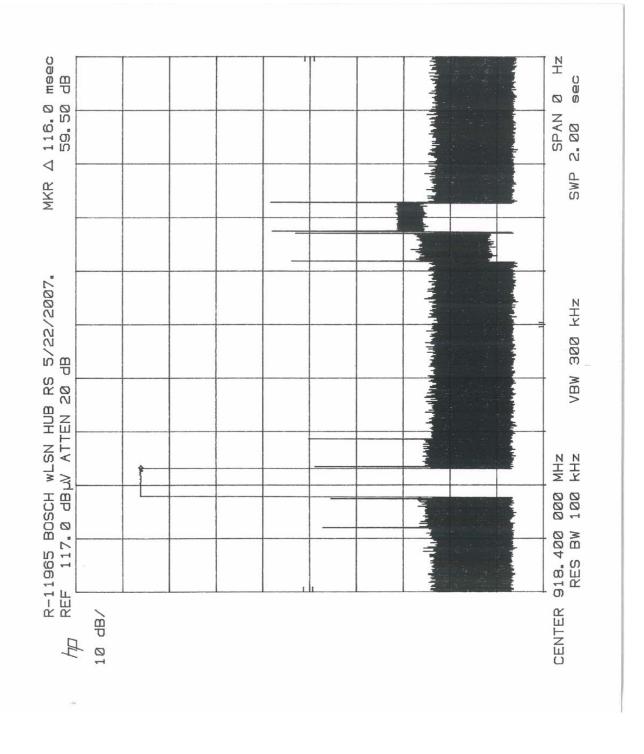
Note: EUT transmitting on channel 58 at 921.3 MHz.

FCC ID:T3XBHB1-WY

Customer	Bos	Bosch Security System.			
Test Sample	wLSN Hub				
Model Number	ISW- BHB1-WY				
Date: 5-22-2007		Tech: R.S.		Sheet 3 of 3	

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 15 of 62

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

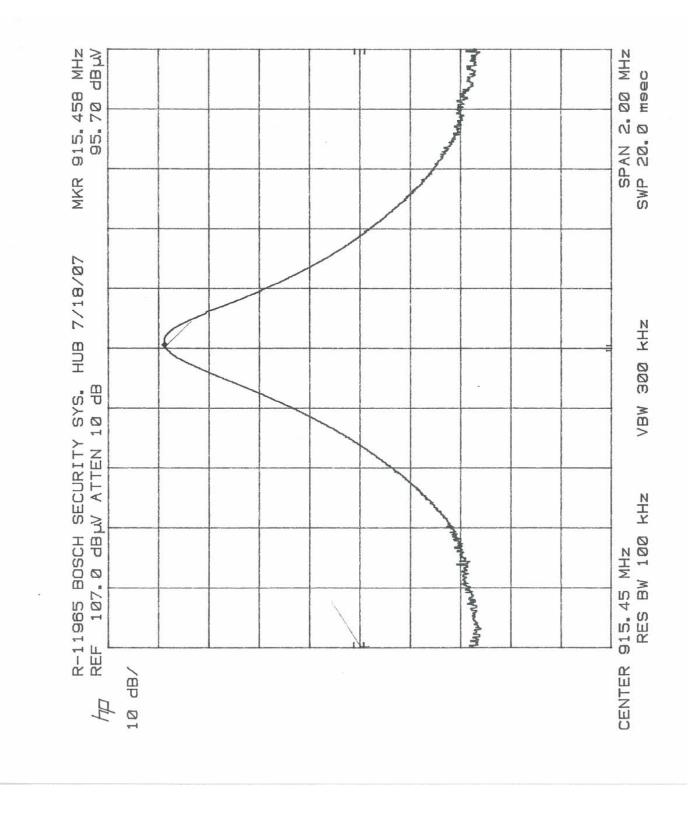
Note: The measured occupancy time does not exceed the 0.4 seconds (Measured time =116mSec.) **FCC ID:** T3XBHB1-WY

Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007	Tech: R.S.	Sheet 1 of 1		

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 17 of 62 FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output Paragraph 15.247(b) (2) Test Data

Test Meth	od:	FCC F	Part 15, Subpar	t C Radiated I	Emissions, Fu	ndamental Po	wer Output.		
Customer	:	Bosch	Security Syste	m.		Job No	b. R-11965	-12	
Test Samp	ole:	wLSN	Hub			Paragrap	h 15.247(b)(2)	
Model No.	:	ISW-	BHB1-WY			FCC IE			
Operating	Mode:	Contir	nuously transmi	tting a 915.5 N	MHz, 918.4 MH	Iz and 921.3	MHz signal.		
Technicia	n:	R. So	R. Soodoo Date: July 18, 2007.						
Notes:	Test Dist	tance: 3	B Meters	Temp :28	°C Humidity	· :74%			
	Detector	: Peak							
Test	Anten	na	EUT	Meter	Correction	Corrected	Converted	Converted	Peak
Freq.	Pol./He	eight	Orientation	Reading	Factor	Reading	Reading	Reading	Limit
MHz	(V/H) / N	leters	X / Y / Z	dBuV	dB	dBuV/m	V/m	milliWatts	Watts
915.5	V / 1	.0	Х	94.2	9.6	103.8	0.15	7.2	1.0
	V / 1	.0	Y	95.1	9.6	104.7	0.17	8.9	
-	V / 1	.0	Z	94.5	9.6	104.1	0.16	7.7	
	H / 2	.1	Х	91.9	9.6	101.5	0.12	4.2	
	H / 1	.0	Y	95.5	9.6	105.1	0.18	9.7	
915.5	H / 1	.0	Z	92.9	9.6	102.5	0.13	5.3	
918.4	V / 1		Х	92.3	9.6	101.9	0.12	4.6	
	V / 1		Y	96.1	9.6	105.7	0.19	11.1	
	V / 2		Z	96.2	9.6	105.8	0.19	11.4	
	H/1		X	96.8	9.6	106.4	0.21	13.1	
	H/1		Y	95.2	9.6	104.8	0.17	9.1	<u> </u>
918.4	H / 1	.0	Z	93.9	9.6	103.5	0.15	6.7	
921.3	V / 2	3	Х	90.0	9.6	99.6	0.10	2.7	<u> </u>
021.0	V / 2		Y	97.4	9.6	107.0	0.10	15.0	
	V / 2		Z	97.2	9.6	106.8	0.22	14.4	
	H/1		X	96.8	9.6	106.4	0.21	13.1	
	H/1		Y	96.2	9.6	105.8	0.19	11.4	
921.3	H/1	.1	Z	94.5	9.6	104.1	0.16	7.7	1.0
	<u> </u>								
								<u>├</u> ───┤	
					+				
	The FUT	meets	the required lim	nit indicated al	ove.			1 1	
			ormulae were us			gth in dBµV ir	nto V/m and V	//m to Watts	
	-		uV/m-120) / 20)			- 1			
	Power = (V/m x 3) ² / 30 Page 1 of 1								

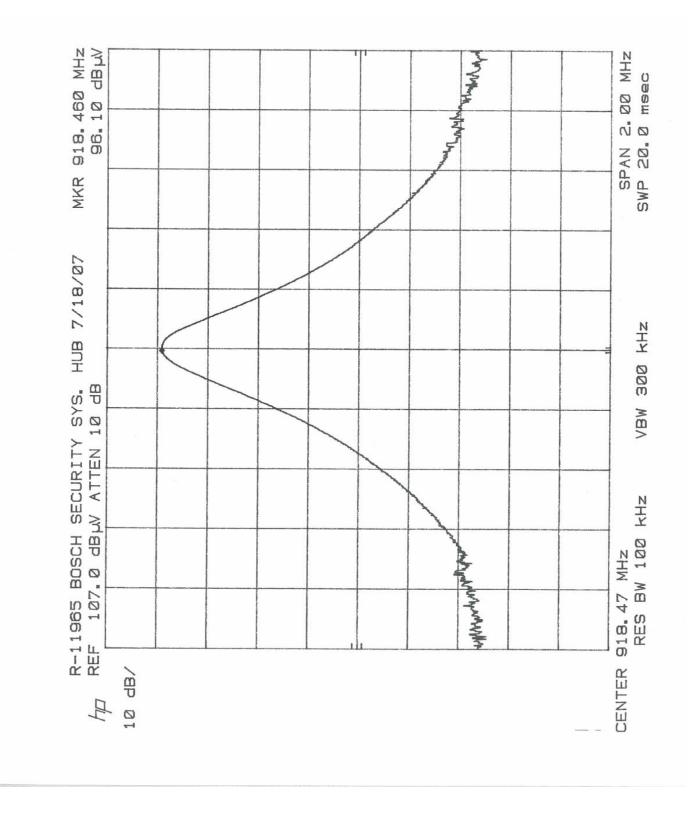
Page 1 of 1



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:T3XBHB1-WY

Customer	Bo	Bosch Security System.			
Test Sample	wLSN Hub				
Model Number	IS\	N- BHB1-WY			
Date: July 18, 2007.		Tech: R.S.	Sheet 1 of 3		

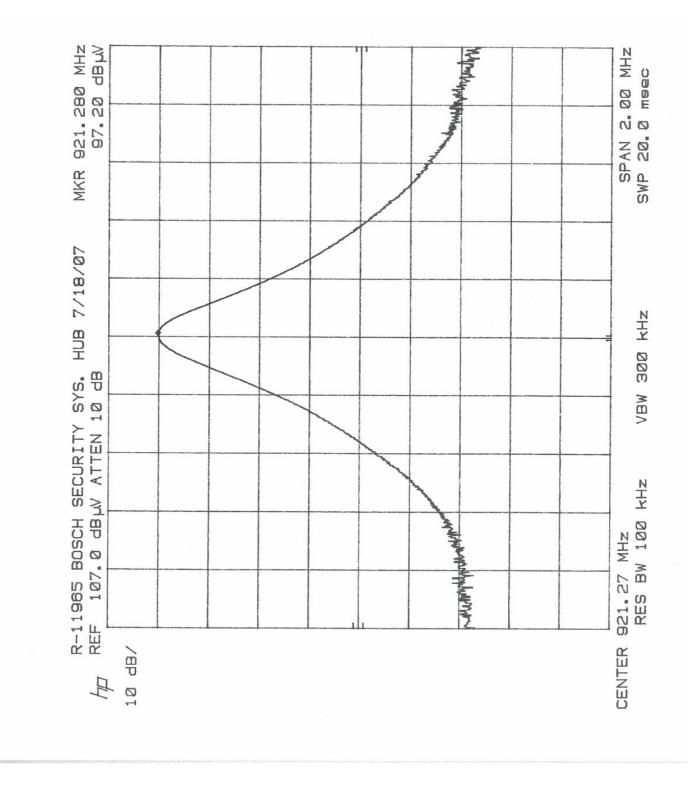
Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 20 of 62



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:T3XBHB1-WY

Customer	Во	Bosch Security System.			
Test Sample	wLSN Hub				
Model Number	ISW- BHB1-WY				
Date: July 18, 2007.		Tech: R.S.	Sheet 2 of 3		

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 21 of 62

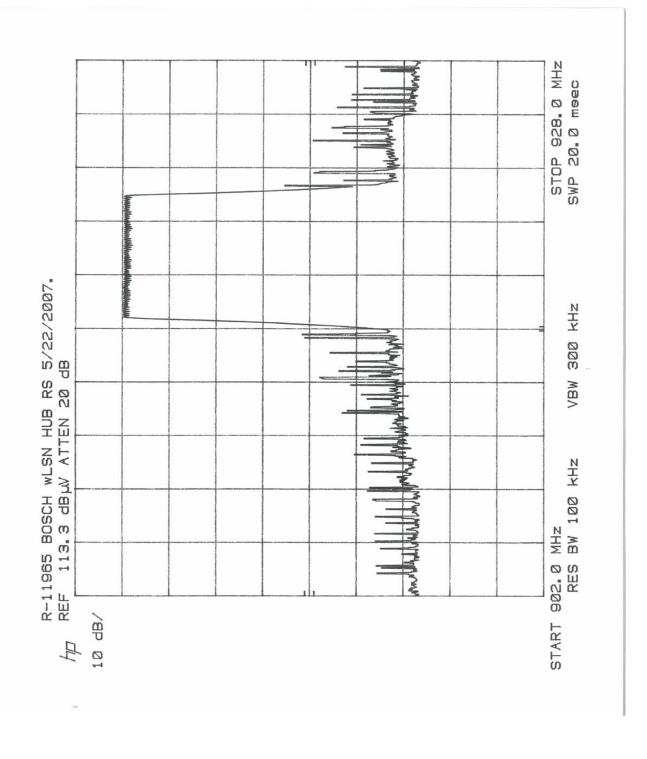


FCC Part 15, Subpart C Radiated Emissions, Fundamental Power Output,Para.15.247(b)(2) Note: EUT transmitting on channel 58 at 921.3 MHz. FCC ID:T3XBHB1-WY

Customer	Bo	Bosch Security System.			
Test Sample	wLSN Hub				
Model Number	ISW- BHB1-WY				
Date: July 18, 2007.		Tech: R.S.	Sheet 3 of 3		

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 22 of 62

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: T3XBHB1-WY

Customer	Bosch Security System.			
Test Sample	wLSN Hub			
Model Number	ISW- BHB1-WY			
Date: 5-22-2007	Tech: R.S.	Sheet 1 of 1		

Retlif Testing Laboratories, Report R-11965-12, Bosch Security Systems, FCC ID: T3XBHB1-WY Page 24 of 62 FCC Part 15, Subpart C, Section 15.207(a), Conducted Emissions, Power Leads, 150 kHz to 30 MHz Transmitter Test Data

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

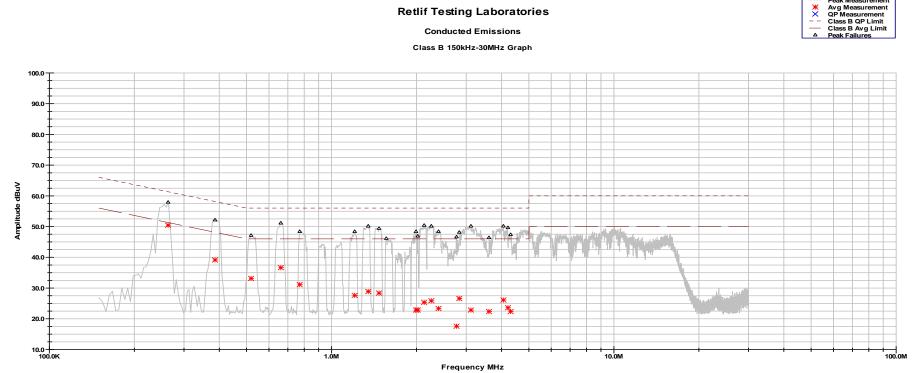
 Mode of Operation:
 Continuously transmitting on channel 00, a 915.5 MHz signal.

 Lead Tested:
 120 VAC/60 Hz hot input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

 Detector / Note:
 Average / Average emissions passed average limit.



Peak Measurement

Operator: LM / RS

02:05:46 PM, Wednesday, September 05, 2007

Page 1 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 Continuously transmitting on channel 00, a 915.5 MHz signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

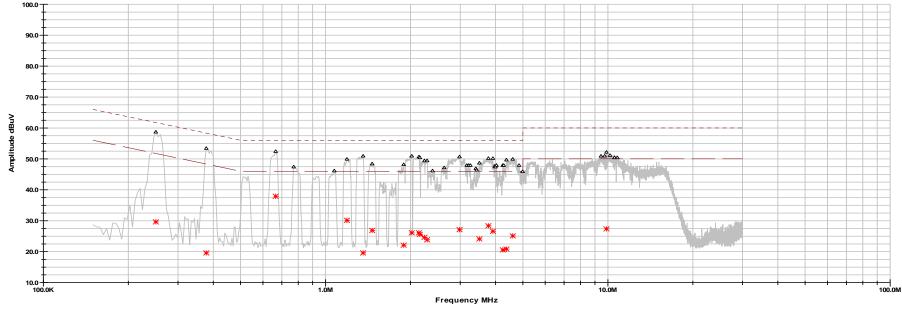
 Detector / Note:
 Average / Average emissions passed average limit.

Peak Measurement
 Avg Measurement
 QP Measurement
 Class B QP Limit
 Class B Avg Limit
 A Peak Failures

Retlif Testing Laboratories

Conducted Emissions

Class B 150kHz-30MHz Graph



Operator: LM / RS

12:49:40 PM, Wednesday, September 05, 2007

Page 2 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 Continuously transmitting on channel 30, a 918.5 MHz signal.

 Lead Tested:
 120 VAC/60 Hz hot input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

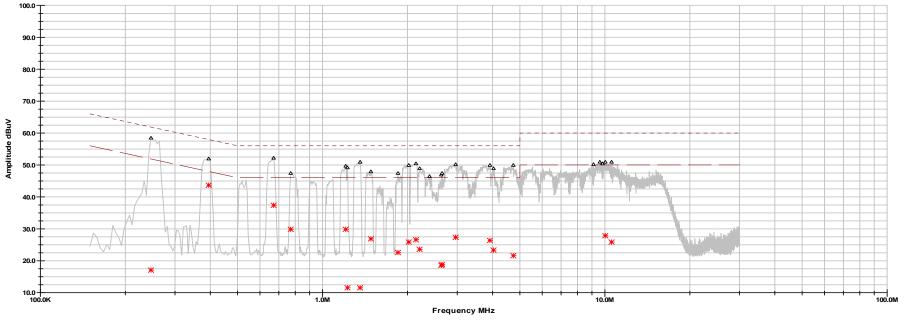
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories





Conducted Emissions



Class B 150kHz-30MHz Graph

Operator: LM / RS

01:07:35 PM, Wednesday, September 05, 2007

Page 1 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 Continuously transmitting on channel 30, a 918.5 MHz signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

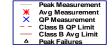
 Technician / Date:
 R. Soodoo / September 05, 2007.

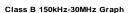
 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

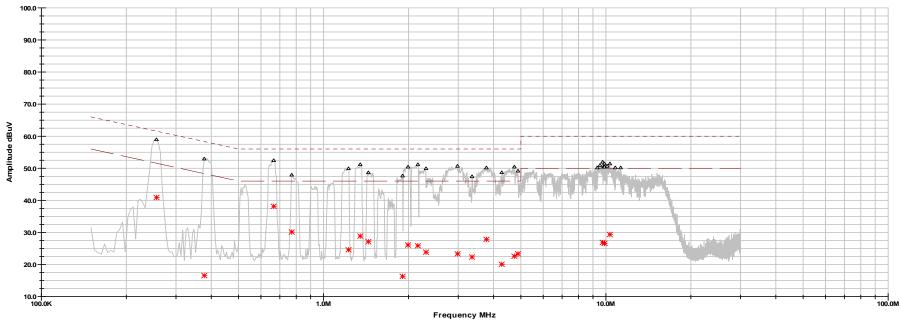
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions







Operator: LM / RS

01:13:45 PM, Wednesday, September 05, 2007

Page 2 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 Continuously transmitting on channel 58, a 921.3 MHz signal.

 Lead Tested:
 120 VAC/60 Hz hot input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

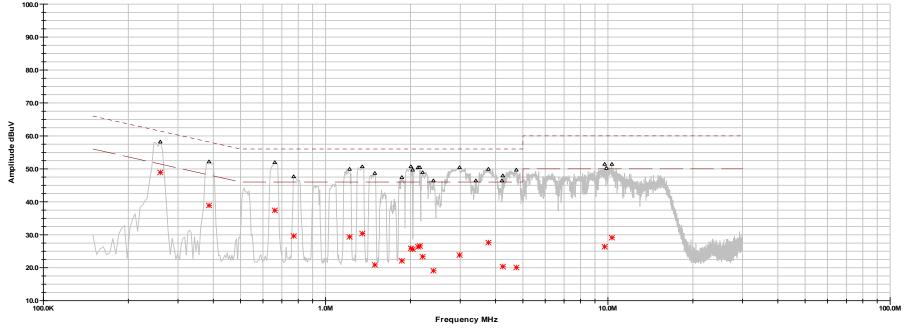
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions



Class B 150kHz-30MHz Graph



Operator: LM / RS

01:27:46 PM, Wednesday, September 05, 2007

Page 1 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

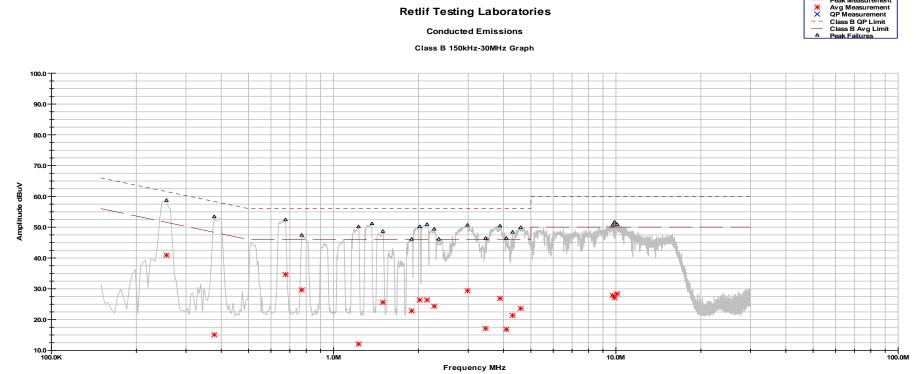
 Mode of Operation:
 Continuously transmitting on channel 58, a 921.3 MHz signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

 Detector / Note:
 Average / Average emissions passed average limit.



Peak Measurement

Operator: LM / RS

01:21:35 PM, Wednesday, September 05, 2007

Page 2 of 2

FCC Part 15, Subpart C, Section 15.207(a), Conducted Emissions, Power Leads, 150 kHz to 30 MHz Receiver Test Data

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 00 (915.5 MHz), continuously receiving a CW signal.

 Lead Tested:
 120 VAC/60 Hz hot input to control panel.

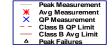
 Technician / Date:
 R. Soodoo / September 05, 2007.

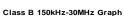
 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

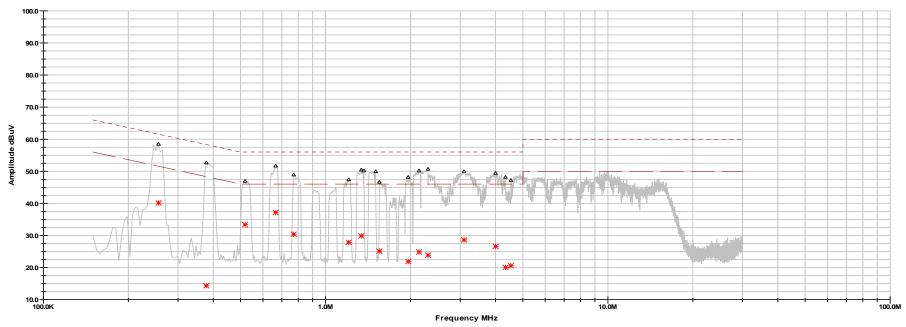
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions







Operator: LM / RS

01:38:08 PM, Wednesday, September 05, 2007

Page 1 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 00 (915.5 MHz), continuously receiving a CW signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

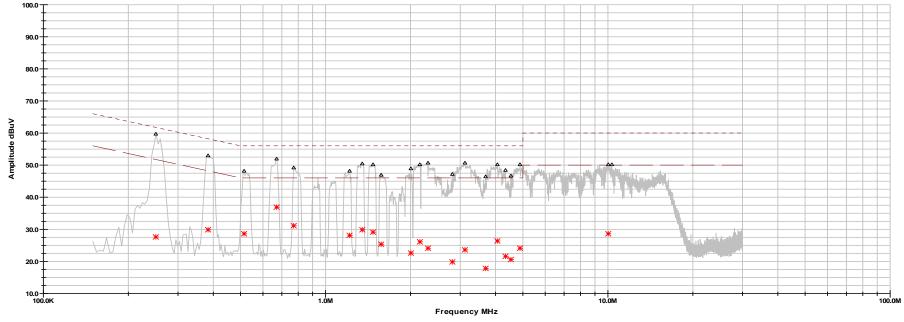
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions



Class B 150kHz-30MHz Graph



Operator: LM / RS

01:44:47 PM, Wednesday, September 05, 2007

Page 2 of 2

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Interior Siren Module.

 Model Number:
 ISW-BSR1-WY

 FCC ID.:
 T3XBSR1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 30 (918.5 MHz), continuously receiving a CW signal.

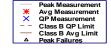
 Lead Tested:
 120 VAC/60 Hz hot input to AC adapter.

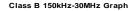
 Technician / Date:
 R. Soodoo / September 05, 2007.

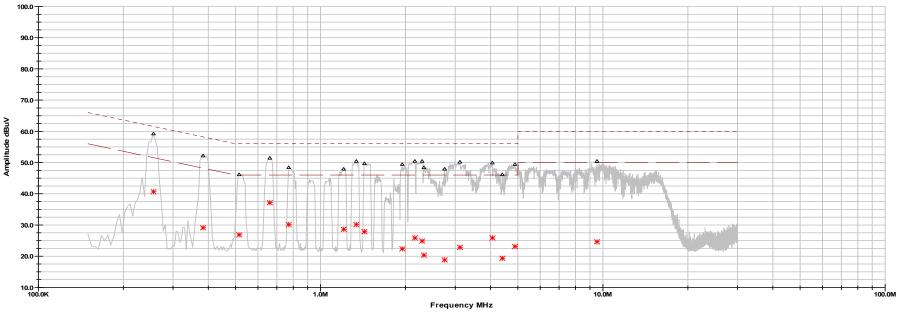
 Detector / Note:
 Peak emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions







Operator: LM / RS

01:57:55 PM, Wednesday, September 05, 2007

Page 1 of 2

RETLIF Testing Laboratories, Job Number R-11965-12

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 30 (918.5 MHz), continuously receiving a CW signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

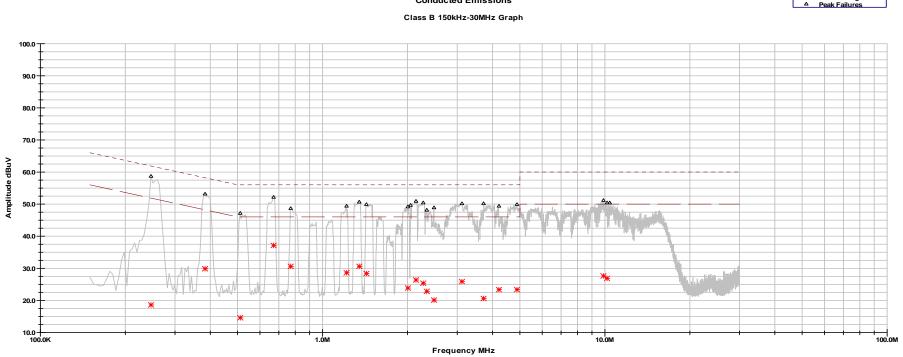
Peak Measurement Avg Measurement QP Measurement

Class B QP Limit

Class B Avg Limit

*

Conducted Emissions



Operator: LM / RS

01:51:50 PM, Wednesday, September 05, 2007

Page 2 of 2

RETLIF Testing Laboratories, Job Number R-11965-12

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 58 (921.3 MHz), continuously receiving a CW signal.

 Lead Tested:
 120 VAC/60 Hz hot input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

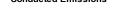
 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

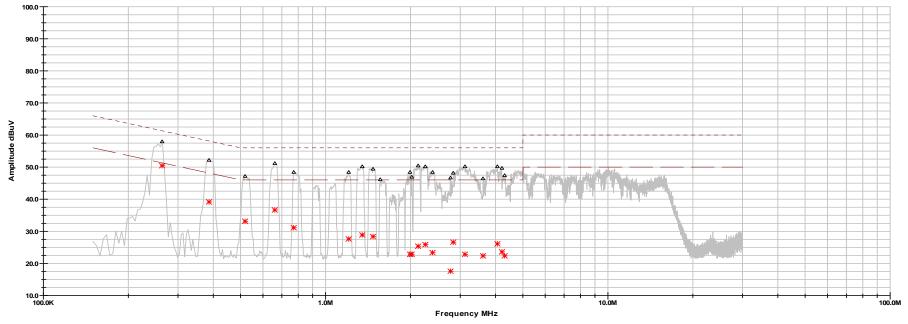
 Detector / Note:
 Average / Average emissions passed average limit.

Retlif Testing Laboratories

Conducted Emissions







Class B 150kHz-30MHz Graph

Operator: LM / RS

02:05:46 PM, Wednesday, September 05, 2007

Page 1 of 2

RETLIF Testing Laboratories, Job Number R-11965-12

FCC Part 15, Subpart C, Conducted Emissions, 150 kHz to 30 MHz

 Customer:
 Bosch Security System.

 Test Sample:
 wLSN Hub.

 Model Number:
 ISW- BHB1-WY

 FCC ID.:
 T3XBHB1-WY

 Test Specification:
 FCC Part 15 Subpart C Section 15.207(a)

 Mode of Operation:
 EUT operating on channel 58 (921.3 MHz), continuously receiving a CW signal.

 Lead Tested:
 120 VAC/60 Hz neutral input to control panel.

 Technician / Date:
 R. Soodoo / September 05, 2007.

 Detector / Note:
 Peak emissions passed Quasi-peak limit. Average detector required.

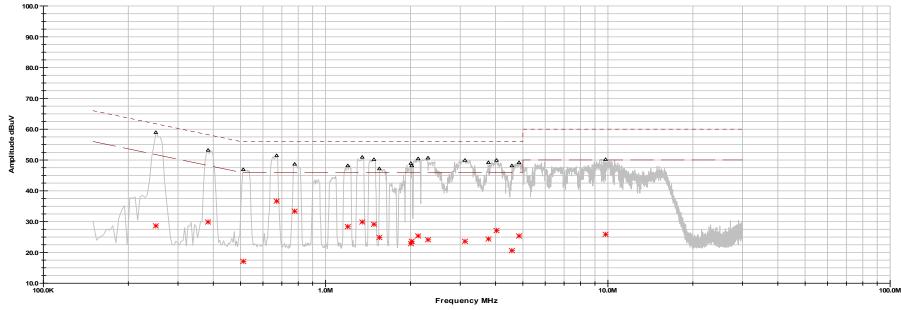
 Detector / Note:
 Average / Average emissions passed average limit.



Retlif Testing Laboratories

Conducted Emissions

Class B 150kHz-30MHz Graph



Operator: LM / RS

02:12:21 PM, Wednesday, September 05, 2007

Page 2 of 2

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

Test Metho	d:	FCC Pa	rt 15 Subpart C	, Radiated Err	issions, Harmo	nics Emission	S.				
Customer:			Security System				R-11965-12				
Test Sample	e:	wLSN H			•	I.					
Model No.:	-	ISW- Bł	HB1-WY			FCC ID:	T3XBHB1-WY				
Operating N	/lode:		ously transmittir	ng a 915.5 MH	lz signal.						
Technician		R. Sood				Date:	August 28-29,20	07			
Notes:		ance: 3 N					1494012020,20				
			nless otherwise	specified							
	Ante	,	EUT	Meter	Correction	Corrected	Converted	Peak			
Test Freq.		leight	Orientation	Reading	Factor	Reading	Reading	Limit			
MHz		Veters	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m			
1831.0	· · ·	1.7	Χ/1/2	57.6	2.3	59.9	988.6	50118.			
1051.0		1.0	Y	58.8	2.3	61.1	1135.0	1			
I		1.0	Z	58.8	2.3	61.1	1135.0				
<u> </u>		1.0	X	57.3	2.3	59.6	955.0				
<u>_</u>		1.2	Ý	54.6	2.3	56.9	699.8				
1831.0		1.5	Z	57.6	2.3	59.9	988.6	50118.			
-				-				1			
2746.5	V /	1.0	Х	48.7	5.2	53.9	495.5	5000.0			
	V / 1.0		Y	53.1	5.2	58.3	822.2				
	V / 1.7		Z	50.4	5.2	55.6	602.6				
	H / 1.0		Х	49.6	5.2	54.8	549.5				
	Η/	1.0	Y	50.9	5.2	56.1	638.3				
2746.5	46.5 H / 1.0		Z	54.0	5.2	59.2	912.0	5000.0			
3662.0		1.0	Х	45.1	10.0	55.1	568.9	5000.0			
		1.0	Y	47.0	10.0	57.0	707.9				
		1.0	Z	45.3	10.0	55.3	582.1				
	Η/		X	45.2	10.0	55.2	575.4				
		1.0	Y	47.3	10.0	57.3	732.8	5000			
3662.0	H/	1.0	Z	46.6	10.0	56.6	676.1	5000.0			
4577.5	V /	16	Х	46.2	13.6	59.8	977.2	5000.0			
		1.0	Y	47.0	13.6	60.6	1071.5				
		1.5	Z	47.0	13.6	60.6	1071.5				
I		1.0	X	48.0	13.6	61.6	1202.3				
I		1.0	Y	47.9	13.6	61.5	1188.5				
4577.5		1.0	Z	48.0	13.6	61.6	1202.3	5000.0			
5493.0		1.0	Х	43.7	17.1	60.8	1096.5	50118.			
		1.0	Y	44.1	17.1	61.2	1148.2				
		1.0	Z	44.6	17.1	61.7	1216.2				
		1.4	Х	43.8	17.1	60.9	1109.2				
		1.0	Y	44.7	17.1	61.8	1230.3				
5493.0		1.0	Z	44.4	17.1	61.5	1188.5	50118.			
	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.										
						do not exceed	the specified lin	nits.			
	*= Noise	e Floor M	easurements (m	ninimum sensi	tivity).						

Test Metho	d:	FCC Pa	rt 15 Subpart C	, Radiated Em	issions, Harmo	nics Emissio	ns.				
Customer:		Bosch S	Security System			Job No.	R-11965-12				
Test Sample	e:	wLSN F									
Model No.:		ISW- Bł	HB1-WY			FCC ID:	T3XBHB1-WY				
Operating N	/lode:	Continu	ously transmittir	ng a 915.5 MH	z signal.		-				
Technician		R. Sooc		9		Date:	August 28-29,20	07			
Notes:		ance: 3 M									
			nless otherwise	specified							
	Ante		EUT	Meter	Correction	Corrected	Converted	Peak			
Test Freq.		leight	Orientation	Reading	Factor	Reading	Reading	Limit			
MHz		Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m			
6408.5	()	1.0	X	46.3	7.3	53.6	478.6	50118.0			
		1.0	Y	45.9	7.3	53.2	457.1				
I		1.0	Z	46.6	7.3	53.9	495.5				
		1.0	 X	46.0	7.3	53.3	462.4				
		1.0	Y	47.5	7.3	54.8	549.5				
6408.5		1.0	Z	46.1	7.3	53.4	467.7	50118.0			
7324.0	V /	1.0	Х	47.2	8.0	55.2	575.4	5000.0			
	V /	1.0	Y	46.9	8.0	54.9	555.9				
	V / 1.0		Z	46.7	8.0	54.7	543.3	i			
	Η/	1.0	Х	46.3	8.0	54.3	518.8				
	Η/	1.0	Y	47.3	8.0	55.3	582.1				
7324.0	H / 1.0		H / 1.0		Z	47.4	8.0	55.4	588.8	5000.0	
8239.5		1.0	X	42.5	10.3	52.8	*436.5	5000.0			
		1.0	Y	42.5	10.3	52.8	*436.5				
		1.0	Z	42.5	10.3	52.8	*436.5				
I		1.0	X	42.5	10.3	52.8	*436.5				
		1.0	Y	42.5	10.3	52.8	*436.5	5000.0			
8239.5	H/	1.0	Z	42.5	10.3	52.8	*436.5	5000.0			
9155.0	V /	1.0	Х	42.5	12.4	54.9	*555.9	5000.0			
	V /	1.0	Y	42.5	12.4	54.9	*555.9				
		1.0	Z	42.5	12.4	54.9	*555.9				
Ì	Η/	1.0	Х	42.5	12.4	54.9	*555.9				
	Η/	1.0	Y	42.5	12.4	54.9	*555.9				
9155.0	Η/	1.0	Z	42.5	12.4	54.9	*555.9	5000.0			
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more										
		. ,	U				ed the specified lin				
			easurements (N				•				

Test Metho	d: F	CC Part 15 Subpa	art C, Radiate	ed Emissions, Ha	armonics Emissio	ns.				
Customer:	B	osch Security Sys	tem.		Job No.	R-11965-12				
Test Sample	e: w	LSN Hub								
Model No.:	IS	W-BHB1-WY			FCC ID:	T3XBHB1-WY				
Operating M	Mode: C	ontinuously transr	nitting a 915	.5 MHz signal.	•					
Technician		. Soodoo	U	5	Date:	August 28-29,2	007			
Notes:		ce: 3 Meters								
		verage, unless oth	erwise spec	ified						
	Antenna	EUT	Average	Correction	Corrected	Converted				
Test Freq.	Pol./Heigh		Reading	Factor	Reading	Reading	Avg. Limit			
MHz	(V/H)-	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m			
1831.0	V / 1.7	X	55.2	2.3	57.5	749.9	5011.8			
	V / 1.0	Y	55.2	2.3	57.5	749.9				
i	V / 1.0	Z	55.1	2.3	57.4	741.3	1			
	H / 1.0	Х	49.2	2.3	51.5	375.8	İ			
i	H / 1.2	Y	52.9	2.3	55.2	575.4	i			
1831.0	H / 1.5	Z	55.0	2.3	57.3	732.8	5011.8			
2746.5	V / 1.0	Х	41.9	5.2	47.1	226.5	500.0			
	V / 1.0	Y	47.0	5.2	52.2	407.4				
	V / 1.7	Z	46.1	5.2	51.3	367.3				
	H / 1.0	Х	44.1	5.2	49.3	291.7				
	H / 1.0	Y	45.0	5.2	50.2	323.6				
2746.5	H / 1.0	Z	47.6	5.2	52.8	436.5	500.0			
3662.0	V / 1.0	Х	32.9	10.0	42.9	139.6	500.0			
1	V / 1.0	Y	36.9	10.0	46.9	221.3	000.0			
	V / 1.0	Z	33.6	10.0	43.6	151.4	1			
I	H / 1.0	 X	33.2	10.0	43.2	144.5				
I	H / 1.0	Y	38.5	10.0	48.5	266.1				
3662.0	H / 1.0	Z	37.5	10.0	47.5	237.1	500.0			
4577.5	V / 1.6	<u> </u>	33.9	13.6	47.5	237.1	500.0			
	V / 1.0	Y	39.3	13.6	52.9	441.6				
	V / 1.5	Z	36.1	13.6	49.7	305.5				
	H / 1.0	X	34.5	13.6	48.1	254.1				
/ /577 5	H / 1.0 H / 1.0	Y Z	40.2 40.0	13.6 13.6	53.8	489.8	500.0			
4577.5	Π/Ι.Ο	<u>∠</u>	40.0	13.0	53.6	478.6	500.0			
5493.0	V / 1.0	X	31.2	17.1	48.3	260.0	5011.8			
	V / 1.0	Y	30.8	17.1	47.9	248.3				
	V / 1.0	Z	32.3	17.1	49.4	295.1	i			
	H/1.4	Х	30.3	17.1	47.4	234.4	i			
	H / 1.0	Y	33.4	17.1	50.5	335.0				
5493.0	H / 1.0	Z	34.0	17.1	51.1	358.9	5011.8			
	The frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more									
		3 below the specif				ed the specified	limits.			
	*=Noise Flo	oor Measurement	s (Minimum	system sensitivit	ty)					

Test Metho	d:	FCC	Part 15 Subpa	rt C, Radiate	d Emissions, Ha	armonics Emissio	ns.				
Customer:		Boscl	h Security Sys	tem.		Job No.	R-11965-12				
Test Sample	e:	wLSN	N Hub								
Model No.:		ISW-	BHB1-WY			FCC ID:	T3XBHB1-WY				
Operating N	Node:	Conti	nuously transr	nitting a 915.	5 MHz signal.	I					
Technician		R. So		U		Date:	August 28-29,20	007			
Notes:	Test Dista	ance: 3 Meters									
	Detector:	Avera	ige, unless oth	erwise speci	fied						
	Antenr	1	EUT	Average	Correction	Corrected	Converted				
Test Freq.	Pol./Hei		Orientation	Reading	Factor	Reading	Reading	Avg. Limit			
MHz	(V/H)	-	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m			
6408.5	V / 1.0	0	Х	34.4	7.3	41.7	121.6	5011.8			
	V / 1.0	0	Y	34.3	7.3	41.6	120.2				
	V / 1.0	0	Z	36.7	7.3	44.0	158.5				
	H / 1.0	0	Х	31.6	7.3	38.9	88.1				
	H / 1.0		H / 1.0		Y	39.7	7.3	47.0	223.9		
6408.5	H / 1.0	0	Z	35.5	7.3	42.8	138.0	5011.8			
7324.0	V / 1.0		Х	39.5	8.0	47.5	237.1	500.0			
	V / 1.0		Y	37.5	8.0	45.5	188.4				
	V / 1.0		Z	36.2	8.0	44.2	162.2				
	H / 1.0		Х	32.7	8.0	40.7	108.4				
7004.0	H / 1.0		Y	37.5	8.0	45.5	188.4	500.0			
7324.0	H / 1.0	0	Z	38.7	8.0	46.7	216.3	500.0			
8239.5	V / 1.0	0	Х	33.2	10.3	43.5	*149.6	500.0			
0239.3	V / 1.0		Y	33.2	10.3	43.5	*149.6	300.0			
	V / 1.0		Z	33.2	10.3	43.5	*149.6				
	H / 1.0		X	33.2	10.3	43.5	*149.6				
	H/1.0		Y	33.2	10.3	43.5	*149.6				
8239.5	H/1.0		Z	33.2	10.3	43.5	*149.6	500.0			
9155.0	V / 1.0	0	Х	33.1	12.4	45.5	*188.4	500.0			
	V / 1.0	0	Y	33.1	12.4	45.5	*188.4				
	V / 1.0	0	Z	33.1	12.4	45.5	*188.4				
	H/1.0	0	Х	33.1	12.4	45.5	*188.4				
	H/1.0		Y	33.1	12.4	45.5	*188.4				
9155.0	H / 1.0	0	Z	33.1	12.4	45.5	*188.4	500.0			
		e frequency range was scanned from 30 MHz to 10.0 GHz. All emissions not recorded were more an 20 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.									
							ea the specified	imits.			
	Than 20	dB be	low the specif	ied limit. Em		EUT do not exce					

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

Test Metho	d:	FCC Pa	rt 15 Subpart C	, Radiated Err	issions, Harmo	nics Emission	S.						
Customer:			Security System				R-11965-12						
Test Sample	e:	wLSN H											
Model No.:	-	ISW- Bł	HB1-WY			FCC ID:	T3XBHB1-WY						
Operating N	lode:		ously transmittir	ng a 918.4 MH	z signal.								
Technician:		R. Sood				Date:	August 28-29,20	07					
Notes:	Test Dist					Dutor	, laguel 20 20,20						
Notes.			nless otherwise	specified									
	Ante		EUT	Meter	Correction	Corrected	Converted	Pea	ak				
Test Freq.	Pol./H		Orientation	Reading	Factor	Reading	Reading	Lim					
MHz	(V/H)/N		X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/					
1836.8	<u>,</u>	/1.6 X 59.7 2.3		62.0	1258.9	5011							
1030.0	V /		Y	55.9	2.3	58.2	812.8	1 3011	0.0				
I	V /		Z	59.6	2.3	61.9	1244.5						
I	H/		X	59.5	2.3	61.8	1230.3						
<u> </u>	H/		Y	56.3	2.3	58.6	851.1						
1836.8	H/		Z	56.0	2.3	58.3	822.2	5011	8.0				
	/		<u></u>	00.0	2.0	00.0		3011	5.0				
2755.2	V / 1.0		V / 1.0		V / 1.0		Х	48.9	5.2	54.1	507.0	5000	0.0
1	V / 1.0		Ŷ	49.1	5.2	54.3	518.8						
	V / 1.0		Z	51.1	5.2	56.3	653.1						
	Η/		Х	47.6	5.2	52.8	436.5	1 i					
	Η/		Y	51.2	5.2	56.4	660.7	1 i					
2755.2	H / 1.8		Z	49.9	5.2	55.1	568.9	5000	0.0				
3673.6	V /			47.3	10.0	57.3	732.8	5000	0.0				
	V /		Y	46.6	10.0	56.6	676.1						
	V /		Z	48.3	10.0	58.3	822.2						
	Η/		Х	46.7	10.0	56.7	683.9						
	Η/		Y	48.0	10.0	58.0	794.3						
3673.6	Η/	1.0	Z	48.4	10.0	58.4	831.8	5000	0.0				
4592.0	V /	1.0	Х	47.3	13.6	60.9	1109.2	5000	0.0				
	V /		Ŷ	46.9	13.6	60.5	1059.3						
	V /		Z	48.1	13.6	61.7	1216.2						
	H/		X	47.2	13.6	60.8	1096.5						
	Η/		Ŷ	48.0	13.6	61.6	1202.3						
4592.0	Η/		Z	47.8	13.6	61.4	1174.9	5000	0.0				
5510.4	\/ /	1.0	V		47.4		1240.0	5044	0.0				
1	V /		X Y	45.5	17.1	62.6	1349.0	5011	0.0				
	V /		Y Z	45.5	17.1	62.6	1349.0 *1035.1						
I	H/		<u> </u>	43.2 42.7	17.1 17.1	60.3 59.8	*977.2						
	<u>н/</u> Н/		X Y		17.1								
5510.4	<u>н/</u> Н/		ř Z	45.4 42.7		62.5 59.8	1333.5 *977.2	5014	0 0				
5510.4					17.1			5011					
	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.												
			easurements (m				u ine specillea ill	nins.					
	= NOISE		easurements (II	minum sensi	uvity).								

Test Method	d:	FCC Pa	rt 15 Subpart C	, Radiated Em	issions, Harmo	nics Emissio	ns.		
Customer:		Bosch S	Security System			Job No.	R-11965-12		
Test Sample	e:	wLSN F	lub		·				
Model No.:		ISW- Bł	HB1-WY			FCC ID:	T3XBHB1-WY		
Operating N	lode:	Continu	ously transmittir	ng a 918.4 MH	lz signal.				
Technician:		R. Sood	loo	•		Date:	August 28-29,20	07	
Notes:	Test Dist	ance: 3 N	Neters		·				
	Detector	: Peak, u	nless otherwise	specified					
		enna	EUT	Meter	Correction	Corrected	Converted	Pea	k
Test Freq.		leight	Orientation	Reading	Factor	Reading	Reading	Lim	
MHz	(V/H)-I	Meters	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/r	n
6428.8	<u>,</u> ,	1.0	X	45.9	7.3	53.2	457.1	50118	
		1.0	Y	45.4	7.3	52.7	431.5		
İ	V /	1.0	Z	44.6	7.3	51.9	393.6	i	
	Η/	1.0	Х	45.5	7.3	52.8	436.5	i	
	Η/	1.0	Y	45.4	7.3	52.7	431.5	İ	
6428.8	H / 1.0		Z	46.0	7.3	53.3	462.4	50118	3.0
7347.2	V / 1.0 V / 1.0 V / 1.0		Х	45.5	8.0	53.5	473.2	5000	.0
			Y	44.9	8.0	52.9	441.6		
			Z	45.7	8.0	53.7	484.2		
		1.0	Х	45.6	8.0	53.6	478.6		
		1.0	Y	46.5	8.0	54.5	530.9		
7347.2	7347.2 H / 1.0		Z	47.7	8.0	55.7	609.5	5000	.0
0005.0			X	40.5	40.0	50.0	* 400 5		
8265.6		1.0	X	42.5	10.3	52.8	*436.5	5000	.0
		1.0	Y Z	42.5 42.5	10.3 10.3	52.8	*436.5		
		1.0 1.0	X	42.5	10.3	52.8 52.8	*436.5		
		1.0	X Y	42.5	10.3	52.8	*436.5		
8265.6		1.0	Z	42.5	10.3	52.8	*436.5	5000	0
0200.0	117	1.0	۷.	42.0	10.0	52.0	+00.0	5000	.0
9184.0	V /	1.0	Х	42.5	12.4	54.9	*555.9	5000	0.0
		1.0	Y	42.5	12.4	54.9	*555.9		
ĺ		1.0	Z	42.5	12.4	54.9	*555.9	i	
İ	Η/	1.0	Х	42.5	12.4	54.9	*555.9	i	
		1.0	Y	42.5	12.4	54.9	*555.9	ĺ	
9184.0	Η/	1.0	Z	42.5	12.4	54.9	*555.9	5000	0.0
								<u> </u>	
	The free			d from 20 ML					
							s not recorded we		
			asurements (N				ed the specified lin	1115.	
				minum syste	III SCHSILIVILY)				

Test Metho	d:	FCC I	Part 15 Subpa	rt C, Radiate	ed Emissions, Ha	armonics Emissio	ns.			
Customer:		Bosch	n Security Sys	tem.		Job No.	R-11965-12			
Test Sampl	e:	wLSN	I Hub							
Model No.:		ISW-	BHB1-WY			FCC ID:	T3XBHB1-WY			
Operating I	Mode:	Conti	nuously transr	nitting a 918	.4 MHz signal.	•				
Technician		R. So		U	0	Date:	August 28-29,20)07		
Notes:	Test Dista									
			ge, unless oth	erwise spec	ified					
	Antenr	1	EUT	Average	Correction	Corrected	Converted			
Test Freq.	Pol./Hei		Orientation	Reading	Factor	Reading	Reading	Avg. Limit		
MHz	(V/H)	-	X/Y/Z	dBµV	dB	dBµV/m	UV/m	uV/m		
1836.8	V / 1.0		Χ/1/2	58.7	2.3	61.0	1122.0	5011.8		
	V / 1.0		Y	53.3	2.3	55.6	602.6	1		
I	V / 1.0		Z	57.8	2.3	60.1	1011.6			
<u> </u>	H / 1.0		<u>X</u>	56.7	2.3	59.0	891.3			
I	H/1.		Y	54.0	2.3	56.3	653.1			
1836.8			Z	53.3	2.3	55.6	602.6	5011.8		
1000.0	,	-	-	00.0	2.0	00.0	002.0	0011.0		
2755.2	2755.2 V / 1.0		Х	41.5	5.2	46.7	216.3	500.0		
	V / 1.0		Y	41.0	5.2	46.2	204.2	1		
I	V / 1.0		Z	46.0	5.2	51.2	363.1			
I	H / 1.0		X	37.5	5.2	42.7	136.5			
	H/1.		Y	46.3	5.2	51.5	375.8			
2755.2	H / 1.8		Z	43.5	5.2	48.7	272.3	500.0		
3673.6	V / 1.0	0	Х	35.3	10.0	45.3	184.1	500.0		
	V / 1.0	0	Y	34.1	10.0	44.1	160.3			
	V / 1.0	0	Z	39.0	10.0	49.0	281.8			
	H / 1.	5	Х	34.7	10.0	44.7	171.8			
	H / 1.0	0	Y	38.7	10.0	48.7	272.3			
3673.6	H / 1.0	0	Z	40.2	10.0	50.2	323.6	500.0		
4592.0	V / 1.0	0	V	25.7	12.6	40.2	201 7	E00.0		
4392.0	V / 1.0		X Y	35.7 33.5	13.6 13.6	49.3 47.1	291.7 226.5	500.0		
I	V / 1.0		Z	38.9	13.6	52.5	421.7			
I	H / 1.0		<u> </u>	33.3	13.6	46.9	221.3			
I	H/1.		Y	38.0	13.6	<u>46.9</u> 51.6	380.2			
4592.0	H/1.		r Z	34.9	13.6	48.5	266.1	500.0		
	,	-	<u> </u>	0.10	10.0		200.1	000.0		
5510.4	V / 1.0	0	Х	31.6	17.1	48.7	272.3	5011.8		
	V / 1.0	0	Y	31.9	17.1	49.0	281.8			
İ	V / 1.0	0	Z	31.4	17.1	48.5	*266.1			
İ	H / 1.0	0	Х	31.4	17.1	48.5	*266.1	İ		
	H / 1.0	0	Y	33.0	17.1	50.1	319.9			
5510.4	H / 1.0	0	Z	31.4	17.1	48.5	*266.1	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 I	Measurements	s (Minimum	system sensitivit	ty)				

Test Metho	d:	FCC	Part 15 Subpa	rt C, Radiate	ed Emissions, Ha	armonics Emissio	ns.											
Customer:		Bosc	h Security Sys	tem.		Job No.	R-11965-12											
Test Sampl	e:	wLSI	N Hub			·												
Model No.:		ISW-	BHB1-WY			FCC ID:	T3XBHB1-WY											
Operating N	Node:	Cont	inuously transr	nitting a 918.	4 MHz signal.													
Technician			ooboc			Date:	August 28-29,2007											
Notes:	Test Dist	tance: 3 Meters																
			age, unless oth	erwise speci	fied													
	Anten		EUT	Average	Correction	Corrected	Converted											
Test Freq.	Pol./Height		Orientation	Reading	Factor	Reading	Reading	Avg. Limit										
MHz	(V/H)-		X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m										
6428.8	V / 1	.0	Х	33.6	7.3	40.9	110.9	5011.8										
	V / 1		Y	33.3	7.3	40.6	107.2											
i	V / 1	.0	Z	32.3	7.3	39.6	95.5											
	H/1		Х	31.3	7.3	38.6	85.1											
	H/1.		Y	31.6	7.3	38.9	88.1	İ										
6428.8	H / 1.0		Z	33.7	7.3	41.0	112.2	5011.8										
7347.2	V / 1	.0	Х	31.3	8.0	39.3	92.3	500.0										
	V / 1	.0	Y	32.0	8.0	40.0	100.0											
	V / 1	.0	Z	32.6	8.0	40.6	107.2											
	H/1	.0	Х	32.1	8.0	40.1	101.2											
	H/1	.0	Y	37.2	8.0	45.2	182.0											
7347.2	H/1	.0	Z	39.2	8.0	47.2	229.1	500.0										
8265.6	V / 1	.0	Х	33.2	10.3	43.5	*149.6	500.0										
	V / 1		Y	33.2	10.3	43.5	*149.6											
	V / 1		Z	33.2	10.3	43.5	*149.6											
	H/1	.0	Х	33.2	10.3	43.5	*149.6											
	H/1		Y	33.2	10.3	43.5	*149.6											
8265.6	H / 1	.0	Z	33.2	10.3	43.5	*149.6	500.0										
9184.0	V / 1		Х	33.1	12.4	45.5	*188.4	500.0										
	V / 1		Y	33.1	12.4	45.5	*188.4											
	V / 1		Z	33.1	12.4	45.5	*188.4											
	H/1		X	33.1	12.4	45.5	*188.4											
	H/1		Y	33.1	12.4	45.5	*188.4											
9184.0	H/1	.0	Z	33.1	12.4	45.5	*188.4	500.0										
	The free		range was so	anned from ?	1 30 MHz to 10.0 (GHz. All emission:	s not recorded w	ere more										
			U			EUT do not exce												
							ica no specified											
	-110156		measurements		System sensitivi	·y/		*=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

Test Metho	d:	FCC Pa	art 15 Subpart C	, Radiated Em	issions, Harm	onics Emissions	6.				
Customer:			Security System		,		R-11965-12				
Test Sampl	e:	wLSN F							-		
Model No.:			HB1-WY			FCC ID:	T3XBHB1-WY				
Operating N	/lode:		ously transmittir	ng a 921.3 MH	z signal.						
Technician		R. Sooc		.g = 0		Date:	August 28-29,20)07			
Notes:		ance: 3 M				Duto:	10g001 20 20,20				
Notes.			nless otherwise	specified							
	Ante		EUT	Meter	Correction	Corrected	Converted	Peak			
Test Freq.		leight	Orientation	Reading	Factor	Reading	Reading	Limit			
MHz		Veters	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m			
1842.6	· · ·	1.0	X X	59.5	2.3	61.8	1230.3	50118			
1042.0	V /		Y	55.8	2.3	58.1	803.5	1	.0		
		1.0	Z	60.6	2.3	62.9	1396.4				
		1.0	X	58.3	2.3	60.6	1071.5				
I	H/		Y	57.3	2.3	59.6	955.0				
1842.6	H/		Z	57.1	2.3	59.4	933.3	50118	0		
101210	11/2.1		<u> </u>	07.1	2.0			00110	.0		
2763.9	V / 1.0		V / 1.0		Х	48.7	5.2	53.9	495.5	5000.	0
	V / 1.0		Y	49.7	5.2	54.9	555.9	1	0		
I	V / 1.0				Z	51.9	5.2	57.1	716.1		
I	H / 1.0				X	50.1	5.2	55.3	582.1		
I		1.0	Y	51.9	5.2	57.1	716.1				
2763.9		1.4	Z	50.7	5.2	55.9	623.7	5000.	0		
									-		
3685.2	V /	1.0	Х	47.6	10.0	57.6	758.6	5000.	0		
	V /	1.0	Y	46.4	10.0	56.4	660.7				
	V /	1.0	Z	48.6	10.0	58.6	851.1	İ			
	Η/	1.0	Х	48.0	10.0	58.0	794.3	ĺ			
	Η/	1.0	Y	48.0	10.0	58.0	794.3				
3685.2	Η/	1.0	Z	47.8	10.0	57.8	776.2	5000.	0		
4606.5	V /		Х	47.4	13.6	61.0	1122.0	5000.	0		
	V /		Y	47.1	13.6	60.7	1083.9				
		1.0	Z	47.5	13.6	61.1	1135.0				
		1.0	X	47.2	13.6	60.8	1096.5				
		1.0	Y	48.0	13.6	61.6	1202.3				
4606.5	H/	1.0	Z	46.9	13.6	60.5	1059.3	5000.	0		
5527.8	\/ /	1.0	Х	42.6	17.1	59.7	*966.1	50118	0		
1		1.0	X Y	42.6	17.1	62.8	1380.4		.0		
I		1.0	ř Z	45.7	17.1	62.8	1380.4				
I		1.0	X	43.1	17.1	59.7	*966.1				
I		1.0	A Y	42.0	17.1	62.6	1349.0				
5527.8		1.0	r Z	45.5	17.1	62.8	1349.0	50118	0		
0021.0									.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).									
	110130				···· · /·						

Test Metho	d:	FCC Pa	rt 15 Subpart C	, Radiated Em	issions, Harmo	nics Emissior	าร.			
Customer:		Bosch S	Security System			Job No.	R-11965-12			
Test Sample	e:	wLSN F								
Model No.:		ISW- BI	HB1-WY			FCC ID:	T3XBHB1-WY			
Operating N	lode:	Continu	ously transmittir	ng a 921.3 MH	lz signal.		-			
Technician:		R. Sood		0	<u> </u>	Date:	August 28-29,20	07		
Notes:		tance: 3 M			ł		0 /			
			nless otherwise	specified						
		enna	EUT	Meter	Correction	Corrected	Converted	Peak		
Test Freq.		leight	Orientation	Reading	Factor	Reading	Reading	Limit		
MHz	(V/H)-	Meters	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m		
6449.1	V / 1.0		X	46.6	7.3	53.9	495.5	50118.0		
		1.0	Y	46.8	7.3	54.1	507.0			
İ	V /	1.0	Z	45.8	7.3	53.1	451.9	İ		
	Η/	1.0	Х	45.6	7.3	52.9	441.6			
	H /	1.0	Y	45.9	7.3	53.2	457.1			
6449.1	H / 1.0		Z	49.9	7.3	57.2	724.4	50118.0		
7370.4	V / 1.0 V / 1.0 V / 1.0		Х	47.6	8.0	55.6	602.6	5000.0		
					Y	46.8	8.0	54.8	549.5	
			Z	46.9	8.0	54.9	555.9			
	H / 1.0				Х	46.8	8.0	54.8	549.5	
		1.0	Y	49.2	8.0	57.2	724.4			
7370.4	Η/	1.0	Z	49.9	8.0	57.9	785.2	5000.0		
0004 7		1.0	X	42.5	10.3	50.0	* 400 5	5000.0		
8291.7		1.0 1.0	X Y	42.5	10.3	52.8 52.8	*436.5	5000.0		
I		1.0	Z	42.5	10.3	52.8	*436.5			
I		1.0	X	42.5	10.3	52.8	*436.5			
I		1.0	Y	42.5	10.3	52.8	*436.5			
8291.7		1.0	Z	42.5	10.3	52.8	*436.5	5000.0		
9213.0	V /	1.0	Х	42.5	12.4	54.9	*555.9	5000.0		
	V /	1.0	Y	42.5	12.4	54.9	*555.9			
	V /	1.0	Z	42.5	12.4	54.9	*555.9			
	Η/	1.0	Х	42.5	12.4	54.9	*555.9			
		1.0	Y	42.5	12.4	54.9	*555.9			
9213.0	Η/	1.0	Z	42.5	12.4	54.9	*555.9	5000.0		
							+			
							+			
							+			
	The free	auencv ra	nde was scanne	ed from 30 MH	z to 10.0 GHz	All emissions	not recorded we	re more		
			U				d the specified lir			
			easurements (N							
				- ,	,,					

Test Meth	nod:	FCC	Part 15 Subpa	art C, Radiat	ed Emissions, F	armonics Emissio	ns.				
Custome	r:		h Security Sys			Job No.	R-11965-12				
Test Sam	ple:		N Hub								
Model No		ISW-	BHB1-WY			FCC ID:	T3XBHB1-WY				
Operating	g Mode:	Cont	inuously transr	nitting a 921	.3 MHz signal.		L				
Technicia			podoo	J		Date:	August 28-29,	2007			
Notes:			3 Meters								
			age, unless oth	nerwise spec	cified						
	Anter		EUT	Average	Correction	Corrected	Converted				
Test Freq	I. Pol./He		Orientation	Reading	Factor	Reading	Reading	Avg. Limit			
MHz	MHz (V/H		X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m			
1842.6	V/1	,	Χ Χ	58.3	2.3	60.6	1071.5	5011.8			
1042.0	V / 1		Y	52.6	2.3	54.9	555.9	1			
I	V / 1		Z	57.9	2.3	60.2	1023.3				
<u> </u>	H/1		<u>х</u>	56.6	2.3	58.9	881.0	I			
I	H/1		Y	55.9	2.3	58.2	812.8	I			
1842.6			Z	55.8	2.3	58.1	803.5	5011.8			
	11/2		۷.	00.0	2.0	00.1	000.0	0011.0			
2763.9	V / 1	0	Х	41.4	5.2	46.6	213.8	500.0			
1	V / 1		Y	44.6	5.2	49.8	309.0	1			
I	V / 1		Z	48.2	5.2	53.4	467.7	1			
I	H/1		X	45.1	5.2	50.3	327.3				
I	H/1		Y	47.6	5.2	52.8	436.5	I			
2763.9	H/1		Z	45.7	5.2	50.9	350.8	500.0			
3685.2	V / 1	.0	Х	38.8	10.0	48.8	275.4	500.0			
	V / 1	.0	Y	36.7	10.0	46.7	216.3				
	V / 1	.0	Z	40.8	10.0	50.8	346.7				
	H / 1	.0	Х	38.1	10.0	48.1	254.1				
	H/1	.0	Y	40.9	10.0	50.9	350.8				
3685.2	H/1	.0	Z	39.8	10.0	49.8	309.0	500.0			
1000 5											
4606.5	V / 1		X	36.6	13.6	50.2	323.6	500.0			
<u> </u>	V / 1		Y	35.1	13.6	48.7	272.3	<u> </u>			
<u> </u>	V / 1		Z	38.5	13.6	52.1	402.7	!			
<u> </u>	H/1		Х	34.5	13.6	48.1	254.1	<u>.</u>			
4000 5	H/1		Y	33.5	13.6	47.1	226.5				
4606.5	H/1	.0	Z	34.4	13.6	48.0	251.2	500.0			
5527.8	V / 1	0	Х	30.9	17.1	48.0	*251.2	5011.8			
	V / 1		Y	33.5	17.1	50.6	338.8				
I	V / 1		Z	31.9	17.1	49.0	281.8	I			
<u> </u>	H/1		<u>х</u>	30.9	17.1	48.0	*251.2	I			
<u> </u>	H/1		Y	32.8	17.1	49.9	312.6	I			
5527.8	H/1		Z	33.6	17.1	50.7	342.8	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.									
					system sensitiv						
	-110130	1 1001	mousurement		System Scholliv	(())					

Test Metho	d:	FCC	Part 15 Subpa	rt C, Radiate	d Emissions, Ha	armonics Emissior	IS.										
Customer:		Bosc	h Security Sys	tem.		Job No.	R-11965-12										
Test Sample	e:	wLSI	N Hub														
Model No.:		ISW-	BHB1-WY			FCC ID:	T3XBHB1-WY										
Operating N	Node:	Cont	inuously transr	nitting a 921.	3 MHz signal.	1											
Technician			ooboc	j		Date:	August 28-29,2007										
Notes:	Test Dist	ance:	3 Meters														
	Detector:	Avera	age, unless oth	erwise speci	fied												
	Anten		EUT	Average	Correction	Corrected	Converted										
Test Freq.	Pol./He	ight	Orientation	Reading	Factor	Reading	Reading	Avg. Limit									
MHz	(V/H))-	X/Y/Z	dBµV	dB	dBµV/m	uV/m	uV/m									
6449.1	V / 1.	0	Х	36.0	7.3	43.3	146.2	5011.8									
	V / 1.	0	Y	37.0	7.3	44.3	164.1										
	V / 1.	0	Z	34.1	7.3	41.4	117.5										
	H / 1.	.0	Х	31.0	7.3	38.3	82.2										
	H/1.		Y	30.9	7.3	38.2	81.3										
6449.1	H / 1.	.0	Z	39.9	7.3	47.2	229.1	5011.8									
7370.4	V / 1.		X	39.3	8.0	47.3	231.7	500.0									
	V / 1.		Y	37.8	8.0	45.8	195.0										
	V / 1.		Z	38.8	8.0	46.8	218.8										
	H/1.		X	36.4	8.0	44.4	166.0										
7070.4	H/1.		Y 7	43.9	8.0	51.9	393.6	500.0									
7370.4	H/1.	.0	Z	45.1	8.0	53.1	451.9	500.0									
8291.7	V / 1.	0	Х	33.2	10.3	43.5	*149.6	500.0									
0291.7	V / 1.		Y	33.2	10.3	43.5	*149.6	500.0									
I	V / 1.		Z	33.2	10.3	43.5	*149.6										
I	H/1.		X	33.2	10.3	43.5	*149.6										
	H/1		Y	33.2	10.3	43.5	*149.6										
8291.7	H / 1.		Z	33.2	10.3	43.5	*149.6	500.0									
9213.0	V / 1.	0	Х	33.1	12.4	45.5	*188.4	500.0									
	V / 1.	0	Y	33.1	12.4	45.5	*188.4										
	V / 1.	0	Z	33.1	12.4	45.5	*188.4										
	H/1.	.0	Х	33.1	12.4	45.5	*188.4										
	H/1.	.0	Y	33.1	12.4	45.5	*188.4										
9213.0	H / 1.	.0	Z	33.1	12.4	45.5	*188.4	500.0									
	The C																
			U			GHz. All emissions											
						EUT do not excee	ed the specified	III NITS.									
	=INOISE	r100ľ	weasurements	s (iviinimum :	system sensitivit	ly)		*=Noise Floor Measurements (Minimum system sensitivity)									

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

Test	Metho	d:	FCC Pa	art 15 Subpar	t C, Spuriou	us Case Radi	ated Emi	ssions, Parag	raph 15.247(d)		
Cust	Customer:			Bosch Security System. Job No.: R-11965-12								
Test Sample:			wLSN Hub									
Model No.:		ISW- B	ISW- BHB1-WY FCC ID: T3XBHB1-WY									
Oper	ating N	lode:	Continu	Continuously Transmitting on channel 00, 915.5 MHz signal.								
Tech	nician:		R. Soo	R. Soodoo Date: May 30-31, 2007.								
Notes	Notes:		Distance: 3 Meters Temp: 32.9°C Humidity: 26%									
		Detec	tor: Qua	asi-Peak from 3	30 MHz to 1	GHz, Peak al	bove 1 Gl	Ηz	-			
Frequ	Frequency		enna sition	EUT Orientation	Meter Readings	Correction Factor		ected ading	Converted Reading	Quasi Peak Limit		
M	Hz	(V/H) /	Meters	Degrees	dBuV	dB	dB	uV/m	uV/m	uV/m		
30	.00									100		
	<u> </u>											
88	.00									100		
	.00									150		
04										150		
	216.0 216.0									150 200		
21	0.0 I									200		
	<u> </u>											
	0.4		1.0	90.0	3.0	26.6		9.6	30.2			
	9.4		2.0	17.0	3.0	27.4		0.4	33.1			
	0.0 6.9		1.0 1.2	100.0 117.0	6.0 9.0	27.4 29.3		3.4 3.3	46.8 82.2			
	4.1		1.2	100.0	9.0 13.0	29.3		2.4	131.8			
	2.7		2.0	7.0	8.0	29.5		7.5	75.0			
	<u> </u>											
96	0.0									200		
	0.0									500		
	-											
400												
100	00.0									500		
		The fre	quency rar	nge was scanned	from 30 MHz to	0 10 GHz.						
		The em	issions ob	served from the E	UT do not exce	ed the specified						
		Emissio	ons not rec	orded were more	than 20dB und	er the specified li	mit.					

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Test Met	hod:	FCC P	art 15 Subpar	t C, Spuriou	us Case Radi	ated Emi	ssions, Parag	raph 15.247(d)		
Customer:			Bosch Security System. Job No.: R-11965-12								
Test Sample: Model No.:		wLSN Hub									
		ISW- B	HB1-WY				FCC ID:	T3XBHB1-V	VY		
Operatin	g Mode:		Continuously Transmitting on channel 30, 918.4 MHz signal.								
Technicia	-	R. Soo	•				Date:	May 30-31,	2007.		
Notes:	Test I	Distance: 3 Meters Temp: 32.9°C Humidity: 269									
			asi-Peak from	30 MHz to 1	GHz. Peak at		•				
								<u> </u>	Quasi		
Frequence		enna sition	EUT Orientation	Meter	Correction Factor		ected ading	Converted	Peak		
Frequenc	y Po	SILION	Onentation	Readings	Factor	Rea	ading	Reading	Limit		
MHz	(V/H)	/ Meters	Degrees	dBuV	dB	dB	uV/m	uV/m	uV/m		
30.00									100		
88.00									100		
88.00									150		
216.0									150		
216.0									200		
689.0	V	/ 1.2	118.0	11.0	26.2	37	7.2	72.4			
807.9		/ 1.3	180.0	22.0	27.3		9.3	291.7			
933.2	H,	/ 1.0	0.0	10.0	29.5	39	9.5	94.4			
960.0									200		
960.0									500		
964.0		/ 1.0	11.0	11.0	29.7).7	108.4			
972.2	V.	/ 1.3	118.0	21.0	29.8	50).8	346.7			
I											
<u> </u>											
10000.0									500		
			nge was scanned			limito					
			served from the E corded were more								

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Test I	Metho	d:	FCC P	art 15 Subpar	t C, Spuriou	us Case Radi	ated Emi	ssions, Parag	raph 15.247(d)		
Customer:			Bosch Security System. Job No.: R-11965-12									
Test Sample:		wLSN	wLSN Hub									
Model No.:		ISW- B	ISW- BHB1-WY FCC ID: T3XBHB1-WY									
Opera	ating N	lode:	Continu	Continuously Transmitting on channel 58, 921.3 MHz signal.								
	nician		R. Soo	P	0	,		Date:	May 30-31,	2007.		
Notes			Distance: 3 Meters Temp: 32.9°C Humidity: 26%									
				asi-Peak from 3	30 MHz to 1	GHz, Peak al		•	,			
Freau	Frequency		enna sition	nna EUT Meter Correction Cor			ected ading	Converted Reading	Quasi Peak			
•					-					Limit		
MF	IZ	(V/H) /	Meters	Degrees	dBuV	dB	dB	uV/m	uV/m	uV/m		
30	00									100		
l	30.00											
88.										100		
88.	00									150		
216	216.0									150		
216										200		
										200		
i												
!												
			4.0	404.0	0.0	07.0						
<u>803</u> 810			1.0 1.6	134.0 107.0	8.0 15.0	27.3 27.3		5.3 2.3	58.2 130.3			
010	5.0	V /	1.0	107.0	15.0	21.3	42	2.3	130.3			
İ												
ĺ												
960	10									200		
960										500		
ĺ												
1000	0.0									500		
		The free	quency rar	nge was scanned	from 30 MHz to	10 GHz						
		The em	issions ob	served from the E	UT do not exce	ed the specified	limits.					
				orded were more								
Dee												

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

Test Metho	d:	FCC P	art 15, Subpa	rt B, Class I	B, Radiated E	mission	s, 30 MHz	to 5.	0 GHz, Para:	15.109(a	a)	
Customer:			Security Syste		Job N		R-11965-12					
Test Sampl	e:	wLSN	wLSN Hub									
Model No.:		ISW- B	ISW- BHB1-WY Serial No.: N/A									
Operating I	Mode:	EUT op	EUT operating on channel 00(915.5MHz), continuously receiving a CW signal.									
Technician	:	R.Sood	doo				Da	ate:	September 8	5, 2007		
		Distance	: 3 Meters				Temp:40.0	0°C	Humidity	/:41.0%		
	Detec	tor: Qua	asi-Peak Belov	v 1 GHz, Pea	ak above 1 Gl	Ηz	-		-			
An		enna sition	EUT Orientation	Meter Readings	Correction Factor		ected ading		Converted Reading	Limit		
MHz		/ Meters	Degrees	dBuV	dB		suV/m		uV/m	uV/r	m	
	(1,1,1),		209.000							0.171		
30.0										100)	
<u> </u>												
88.0										100	<u> </u>	
88.0										150		
											<u>, </u>	
216.0										150		
216.0		— N	o emission	observed	d at the spe	ecified	test dista	ance	e	200)	
I												
960.0										200		
960.0										500)	
<u> </u>												
<u> </u>												
<u>i</u>												
İ										i		
<u> </u>												
<u> </u>												
5000.0										500)	
			nge was scanned								<u> </u>	
			served from the E									
	Emissi	ons not rec	corded were more	tnan 20dB und	er the specified li	mit.						

Test Method:		FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz, Para:15.109(a)										
Customer:		Bosch	Bosch Security System. Job No.: R-11965-12									
Test Sampl	e:	wLSN I	wLSN Hub									
Model No.:		ISW- B	SW- BHB1-WY Serial No.: N/A									
Operating I	Node:	EUT op	EUT operating on channel 30(918.5MHz), continuously receiving a CW signal.									
Technician		R.Sood	R.Soodoo Date: September 5, 1									
Notes:	Test D	Distance	3 Meters				Temp:40	.0°C	Humidity:	41.0%		
	Detec	tor: Qua	asi-Peak Belov	v 1 GHz, Pea	ak above 1 G	Hz	-		-			
	Ant	enna	EUT	Meter	Correction	Corr	ected	0	Converted	l incit		
Frequency	Pos	sition	Orientation	Readings	Factor	Rea	ading		Reading	Limit		
MHz	(V/H) /	Meters	Degrees	dBµV	dB	dB	µV/m		uV/m	uV/m		
_												
30.0										100		
I												
88.0										100		
88.0										150		
										I		
216.0		🔤 No	emission o	observed	at the spec	cified te	st dista	nce		150		
216.0					-					200		
960.0										200		
960.0										500		
İ												
5000.0										500		
			nge was scanned									
			served from the E									
	LIIISSIC	nissions not recorded were more than 20dB under the specified limit.										

Test Method:		FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 5.0 GHz, Para:15.109(a)										
Customer:		Bosch	Bosch Security System. Job No.: R-11965-12									
Test Sampl	e:	wLSN	wLSN Hub									
Model No.:		ISW- B	SW- BHB1-WY Serial No.: N/A									
Operating N	/lode:	EUT op	EUT operating on channel 58(921.3MHz), continuously receiving a CW signal.									
Technician	:	R.Sood	R.Soodoo Date: September 5, 2									
Notes:	Test D	Distance	: 3 Meters				Temp:40	.0°С	Humidity:	41.0%		
Detector: Quasi-Peak Below 1 GHz, Peak above 1 GHz												
	Ant	enna	EUT	Meter	Correction	Corr	Corrected		Converted	Limit		
Frequency	Pos	sition	Orientation	Readings	Factor	Rea	ading		Reading	LIIIII		
MHz	(V/H) /	Meters	Degrees	dBµV	dB	dB	µV/m		uV/m	uV/m		
										400		
30.0										100		
88.0										100		
88.0										150		
216.0					of the one	aifiad f	aat diata			150		
216.0			o emission	observed	at the spe	cified to	est dista	ince		200		
960.0										200		
960.0										500		
5000.0										500		
			nge was scanned									
			served from the E orded were more									
	LIIIISSIC				or and specified li							