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Electromagnetic Emissions Test Report and Application for Grant of Equipment Authorization pursuant to FCC Part 15 Subpart C Specifications and Industry Canada RSS 210 Issue 4 for a 2.4 GHz Field Disturbance Sensor on the Intellisense (aka Ademco) Model: 5897-35

FCC ID:	CFS8DL5897
GRANTEE:	Intellisense (aka Ademco) 625 Coolidge Drive Folsom, CA 95630
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Avenue Sunnyvale, CA 94086
REPORT DATE:	October 9, 2001
FINAL TEST DATE:	September 25, 2001

AUTHORIZED SIGNATORY: _____

Mark Briggs
Director of Engineering

NVLAP

DECLARATIONS OF COMPLIANCE

Equipment Name and Model:

5897-35

Manufacturer:

Intellisense (aka Ademco)
625 Coolidge Drive
Folsom, CA 95630

Tested to applicable standards:

RSS-210, Issue 4, December 2000 (Low Power License-Exempt Radiocommunication Devices)
FCC Part 15 Subpart C (15.245)

Measurement Facility Description Filed With Department of Industry:

Departmental Acknowledgement Number: IC2845 **SV2** Dated August 8, 2001

I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned departmental standards (through the use of ANSI C63.4 as detailed in section 5.3 of RSS-210, Issue 4); and that the equipment performed in accordance with the data submitted in this report.

Signature	_____
Name	Mark Briggs
Title	Director of Engineering
Company	Elliott Laboratories Inc.
Address	684 W. Maude Ave Sunnyvale, CA 94086 USA
Date:	October 9, 2001

Maintenance of compliance with the above standards is the responsibility of the manufacturer. Any modification of the product, which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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SCOPE

An electromagnetic emissions test has been performed on the Intellisense (aka Ademco) model 5897-35 pursuant to Subpart C of Part 15 of FCC Rules for a 15.245 device and RSS-210 Issue 4 for licence-exempt transmitters. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4-1992 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Intellisense (aka Ademco) model 5897-35 and therefore apply only to the tested sample. The sample was selected and prepared by David Mahan of Intellisense (aka Ademco).

OBJECTIVE

The primary objective of the manufacturer is compliance with Subpart C of Part 15 of FCC Rules for the radiated and conducted emissions of intentional radiators. Certification of these devices is required as a prerequisite to marketing as defined in Part 2 the FCC Rules.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to the FCC. The FCC issues a grant of equipment authorization upon successful completion of their review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

SUMMARY OF RESULTS

The test data below represents the highest recorded measurements with respect to the FCC Part 15 Subpart C and RSS 210 limits. Unless stated otherwise, the complete data can be found in the Tests Data Sheets (Exhibit 2) submitted with this report.

FCC Part 15 Section	RSS 210 Section	Description	Comments	Result
Operation in the 2.4 GHz Band				
15.245 (b)	6.2.2 (n)	Fundamental	103 dBuV/m @ 3m (142mV/m)	Pass
15.245 (b) (3)	6.2.2 (n) (3)	Bandedge Measurement	Refer to Plot	Pass
Spurious Emissions				
15.245 (b) (1) / 15.209	6.2.2 (n) (1)	Spurious Emissions above 1GHz	-10.48dB @ 17,146 MHz	Pass

MEASUREMENT UNCERTAINTIES

ISO Guide 25 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.2

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Intellisense (aka Ademco) model 5897-35 is a wireless field disturbance sensor designed to be used in alarm systems. The field disturbance sensor operates at 2.4 GHz. Alarm activation and control is provided by an on-board transceiver operating at 345 MHz. The field disturbance sensor operates under FCC Part 15.245 and the transceiver operates under 15.231(a).

Normally, the EUT would be wall-mounted during operation. The EUT was treated as tabletop equipment during testing to simulate the end user environment.

The EUT is powered from internal batteries. The sample was received and tested on September 25, 2001. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Intellisense	Ademco Model 5897-35	Wireless Alarm Sensor	-	-

ENCLOSURE

The EUT enclosure is primarily constructed of fabricated sheet steel. It measures approximately 7 cm wide by 6 cm deep by 13 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

No local or remote support equipment was used during testing.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on September 25, 2001 at the Elliott Laboratories Open Area Test Site #2 located at 684 West Maude Avenue, Sunnyvale, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4-1992. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The FCC requires that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst-case orientation is used for final measurements.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

If the EUT is a handheld or bodyworn device then according to ANSI 63.4-1992 (Section 13.1.4.1) test is to be performed for three orthogonal axes. The orthogonal axes that produces the highest amplitude closest to the limit is then used to perform Final measurements of the fundamental spurious emissions.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission, is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions, which have values close to the specification limit, may also be measured with a tuned dipole antenna to determine compliance.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

FUNDAMENTAL AND HARMONIC LIMITS

The table below shows the limits for both the Fundamental and Harmonic emissions for each frequency band of operation detailed in Section 15.245 (b) and RSS-210 6.2.2 (n).

Operating Frequency (MHz)	Field strength (millivolts/m)	Harmonics (millivolts/m)
902 - 928	500	1.6
2435 - 2465	500	1.6
5785 – 5815	500	1.6
10.5 – 10.55 GHz	2500	25
24.075 – 24.175 GHz	2500	25

RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for unwanted (spurious) emissions falling in the restricted bands detailed in Part 15.205 and Industry Canada RSS-210 Table 2.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

CONDUCTED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for emissions on the AC power line as detailed in FCC Part 15.207 and Industry Canada RSS-210 section 6.6.

Frequency Range (MHz)	Limit (uV)	Limit (dBuV)
0.450 to 30.000	250	48

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - B = C$$

and

$$C - S = M$$

where:

R_r = Receiver Reading in dBuV

B = Broadband Correction Factor*

C = Corrected Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

* Broadband Level - Per ANSI C63.4, 13 dB may be subtracted from the quasi-peak level if it is determined that the emission is broadband in nature. If the signal level in the average mode is six dB or more below the signal level in the peak mode, the emission is classified as broadband.

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

APPENDIX 1:Test Equipment Calibration Data

Radiated Emissions, 1000 - 25000 MHz, 25-Sep-01 03:31 PM
Engineer: jmartinez

Manufacturer	Description	Model #	Assett #	Cal interval	Last Calibrated	Cal Due
EMCO	Horn Antenna, D. Ridge 1-18GHz	3115	868	12	10/26/2000	10/26/2001
Filtek	High Pass Filter, 1GHz	HP12/1000-5BA	957	12	3/27/2001	3/27/2002
Hewlett Packard	Microwave EMI test system (SA40, 30Hz - 40GHz)	84125C	1149	12	2/5/2001	2/5/2002
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	12	8/21/2001	8/21/2002
Hewlett Packard	Spectrum Analyzer 9KHz - 26GHz	8563E	284	12	2/22/2001	2/22/2002
Narda West	High Pass Filter 4.0 GHz,	60583 HXF370	247	12	3/16/2001	3/16/2002

Radiated Emissions, 26-Sep-01 01:45 AM
Engineer: Rafael

Manufacturer	Description	Model #	Assett #	Cal interval	Last Calibrated	Cal Due
EMCO	Horn Antenna, D. Ridge 1-18GHz	3115	868	12	10/26/2000	10/26/2001
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	12	3/27/2001	3/27/2002
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	12	8/21/2001	8/21/2002
Hewlett Packard	Spectrum Analyzer 9KHz - 26GHz	8563E	284	12	2/22/2001	2/22/2002
Rohde & Schwarz	Test Receiver, 20-1300 MHz	ESVP	1317	12	5/9/2001	5/9/2002

APPENDIX 2:Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T44829 8 Pages

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Emissions Spec:	15.245 & 15.231, RSS-210	Class:	Transmitter
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Ademco

Model

5897-35

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Emissions Spec:	15.245 & 15.231, RSS-210	Class:	Transmitter
Immunity Spec:	-	Environment:	-

EUT INFORMATION

General Description

The EUT is a Wireless Field Disturbance Sensor which is designed to be used in alarm systems. Operating Frequency is 2.4 GHz and 345 MHz. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end user environment. The electrical rating of the EUT is 12Vdc.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Intellisense	5897-35	Field disturbance sensor	101	CFS8DLS897

Other EUT Details

The unit contains two transmitter that operate at different frequencies one at 345 MHz and the other at 2.4 GHz.

EUT Enclosure

The EUT enclosure is primarily constructed of fabricated sheet steel. It measures approximately 7 cm wide by 6 cm deep by 13 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	None

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Emissions Spec:	15.245 & 15.231, RSS-210	Class:	Transmitter
Immunity Spec:	-	Environment:	-

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Interface Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
None				

EUT Operation During Emissions

Transmitting periodically at 8 minutes for the 2.4 GHz and continously for the 345 MHz transmitter.

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Spec:	15.245 & 15.231, RSS-210	Class:	N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/25/01
Test Engineer: jmartinez
Test Location: SVOATS #2

Config. Used: 1
Config Change: None
EUT Voltage: 12Vdc

General Test Configuration

The EUT was located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Per ANSI 63.4-1992 (Section 13.1.4.1) states that handheld or bodyworn transmitters are to be tested on three orthogonal axes. The orthorgonal axes that produces the highest amplitude closest to the limit is then used to peformed the spurious emission.

Ambient Conditions:

Temperature: 24.4°C
Rel. Humidity: 44%

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	Fundamental Measurement	15.245 (b)	Pass	-11dB @ 2450 MHz
2a	RE, 1000 - 25000 MHz - Spurious Emissions	15.245 (b)(1)	Pass	-10.48dB @ 17146 MHz
2b	RE, 1000 - 25000 MHz - Spurious Emissions	15.245 (b)(1)	Pass	-12dB @ 9798 MHz
3	Bandedge Measurement	15.245 (b(3)	Pass	Refer to Plot

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

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EMC Test Data

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Spec:	15.245 & 15.231, RSS-210	Class:	N/A

Run #1: Fundamental Frequency Measurement.

Frequency	Level	Pol	15.245 (b)		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Field sensor Frensel Lens down.								
2450.000	103.0	v	114.0	-11.0	Pk	11	1.9	Peak Reading, Average Limit
2450.000	80.1	h	114.0	-33.9	Pk	360	1.5	Peak Reading, Average Limit
Field sensor Frensel Lens Up.								
2450.000	95.0	v	114.0	-19.0	Pk	0	2.0	Peak Reading, Average Limit
2450.000	89.4	h	114.0	-24.6	Pk	349	1.7	Peak Reading, Average Limit

Elliott

EMC Test Data

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Spec:	15.245 & 15.231, RSS-210	Class:	N/A

Run #2a: Radiated Spurious Emissions, 1000-24000 MHz. Operating Frequency 2450 MHz
Field sensor Frensel Lens down.

Limit for emissions outside of restricted bands:	64 dBuV/m

Frequency	Level	Pol	15.245(b)(1)		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4899.525	46.0	H	74.0	-28.0	Pk	106	1.6	Note 1
4898.339	33.1	H	54.0	-20.9	Avg	106	1.6	Note 1
7348.000	44.6	H	74.0	-29.4	Pk	5	1.1	Note 1 & 3
7348.000	38.2	H	54.0	-15.8	Avg	10	1.1	Note 1 & 3
9798.000	51.0	H	64.0	-13.0	Pk	0	1.1	Note 2 & 3
12247.00	50.1	H	74.0	-23.9	Pk	0	1.1	Note 1 & 3
12247.00	37.4	H	54.0	-16.6	Avg	0	1.1	Note 1 & 3
14697.00	50.1	H	64.0	-13.9	Pk	0	1.1	Note 2 & 3
17146.00	53.5	H	64.0	-10.5	Pk	0	1.1	Note 2 & 3
19596.00	49.8	H	74.0	-24.2	Pk	0	1.1	Note 1 & 3
19596.00	38.6	H	54.0	-15.4	Avg	0	1.1	Note 1 & 3
22045.00	51.0	H	74.0	-23.0	Pk	0	1.1	Note 1 & 3
22045.00	38.5	H	54.0	-15.5	Avg	0	1.1	Note 1 & 3
24495.00	51.0	H	64.0	-13.0	Pk	0	1.1	Note 2 & 3
4899.525	48.9	v	74.0	-25.1	Pk	360	1.2	Note 1
4898.339	37.5	v	54.0	-16.5	Avg	360	1.2	Note 1
7348.000	51.0	v	74.0	-23.0	Pk	5	1.1	Note 1 & 3
7348.000	38.2	v	54.0	-15.8	Avg	10	1.1	Note 1 & 3
9798.000	51.2	v	64.0	-12.8	Pk	0	1.1	Note 2 & 3
12247.00	49.9	v	74.0	-24.1	Pk	0	1.1	Note 1 & 3
12247.00	38.3	v	54.0	-15.7	Avg	0	1.1	Note 1 & 3
14697.00	49.6	v	64.0	-14.4	Pk	0	1.1	Note 2 & 3
17146.00	52.5	v	64.0	-11.5	Pk	0	1.1	Note 2 & 3
19596.00	52.3	v	74.0	-21.7	Pk	0	1.1	Note 1 & 3
19596.00	39.6	v	54.0	-14.4	Avg	0	1.1	Note 1 & 3
22045.00	51.4	v	74.0	-22.6	Pk	0	1.1	Note 1 & 3
22045.00	38.6	v	54.0	-15.4	Avg	0	1.1	Note 1 & 3
24495.00	52.0	v	64.0	-12.0	Pk	0	1.1	Note 2

Note 1:	For emissions in restricted bands below 17.7 GHz, the limit of 15.209 was used. For emissions in restricted bands at and above 17.7 GHz, the appropiate limits specified in 15.245(b)(1)(i)(ii)(iii) was used.
Note 2:	For all other emissions, the limits found in Section 15.245 (b) were used.
Note 3:	No emissions detected 20-dB from the limit. Readings are noise floor measurements.

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EMC Test Data

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Spec:	15.245 & 15.231, RSS-210	Class:	N/A

Run #2b: Radiated Spurious Emissions, 1000-24000 MHz. Operating Frequency 2450 MHz
Field sensor Frensel Lens Up.

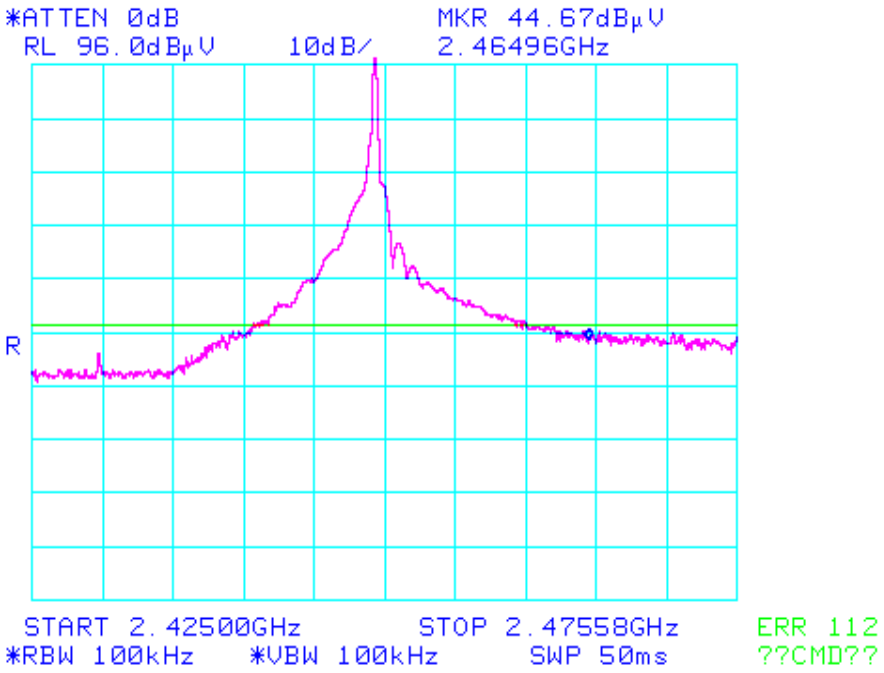
Limit for emissions outside of restricted bands:	64 dBuV/m

Frequency	Level	Pol	15.245(b)(1)		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4899.525	48.0	H	74.0	-26.0	Pk	106	1.6	Note 1
4898.339	33.0	H	54.0	-21.0	Avg	106	1.6	Note 1
7348.000	49.5	H	74.0	-24.5	Pk	5	1.1	Note 1 & 3
7348.000	36.2	H	54.0	-17.8	Avg	10	1.1	Note 1 & 3
9798.000	52.0	H	64.0	-12.0	Pk	0	1.1	Note 2 & 3
12247.00	51.2	H	74.0	-22.8	Pk	0	1.1	Note 1 & 3
12247.00	39.8	H	54.0	-14.2	Avg	0	1.1	Note 1 & 3
4899.525	47.8	v	74.0	-26.2	Pk	360	1.2	Note 1
4898.339	32.3	v	54.0	-21.7	Avg	360	1.2	Note 1
7348.000	49.8	v	74.0	-24.2	Pk	5	1.1	Note 1 & 3
7348.000	38.6	v	54.0	-15.4	Avg	10	1.1	Note 1 & 3
9798.000	51.5	v	64.0	-12.5	Pk	0	1.1	Note 2 & 3
12247.00	50.2	v	74.0	-23.8	Pk	0	1.1	Note 1 & 3
12247.00	39.5	v	54.0	-14.5	Avg	0	1.1	Note 1 & 3

Note 1:	For emissions in restricted bands below 17.7 GHz, the limit of 15.209 was used. For emissions in restricted bands at and above 17.7 GHz, the appropiate limits specified in 15.245(b)(1)(i)(ii)(iii) was used.
Note 2:	For all other emissions, the limits found in Section 15.245 (b) were used.
Note 3:	No emissions detected 20-dB from the limit. Readings are noise floor measurements.
Note 4:	For this particular orientation only measured up to the fifth harmonic.

Client:	Intellisense	Job Number:	J44732
Model:	Ademco Model 5897-35	T-Log Number:	T44829
		Proj Eng:	Mark Briggs
Contact:	David Mahan		
Spec:	15.245 & 15.231, RSS-210	Class:	N/A

Run #3: Bandedge Measurement.



Note 1:	Correction factors applied to the bandedge plot. Measurement was taken at 3 meter distance from the EUT.