EMC TEST REPORT

Test Report No.	**WC809289**	Date of issue:	16 June 2009
Product Name	319.5 MHz Door/Window Sensor		
Model / Serial No(s) Tested	60-326N-10-319.5 (60-326N-11-319.5 identical to tested unit except brown)		
Product Description	Security System Wireless Transmitter		
Manufacturer	GE Security 1275 Red Fox Road Arden Hills MN 55112		
Test Result	■ **Positive** ☐ **Negative**		
Total pages including Appendices	34		

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TÜV SÜD AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1786 Tel: 651 638 0297 Fax: 651 638 0298 Rev. 080408

REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	34	16 June 2009	Initial Release

TÜV SÜD AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1786 Tel: 651 638 0297 Fax: 651 638 0298 Rev. 080408

TEST REPORT CONTENTS **Page(s)**

TÜV SÜD AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1786 Tel: 651 638 0297 Fax: 651 638 0298 Rev. 080408

EMC TEST REGULATIONS:
The tests were performed according to the following regulations:
- FCC Part 15 Subpart C Section 15.231
- Industry Canada RSS-210 Issue 7 Annex 1

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 22° C
Atmospheric pressure	: 100 kPa
Relative Humidity	: 23%

POWER SUPPLY UTILIZED

Power supply system : 3.0 VDC

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

SIGN EXPLANATIONS

☐ - not applicable
■ - applicable

Activation time

FCC 15.231(a)(1) - IC RSS 210 A1.1.1(1)

Test limit

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Test summary

The requirements are: ☐ - MET ☐ - NOT MET ■ - NOT APPLICABLE
The transmitter is not manually operated.

FCC 15.231(a)2), IC RSS 210 A1.1.1(2)

Test limit

A transmitter activated automatically shall cease transmission within 5 seconds after activation

Test summary

The requirements are: ■ - MET ☐ - NOT MET
The transmitter activates automatically and does cease transmission within 5 seconds after activation

Test location

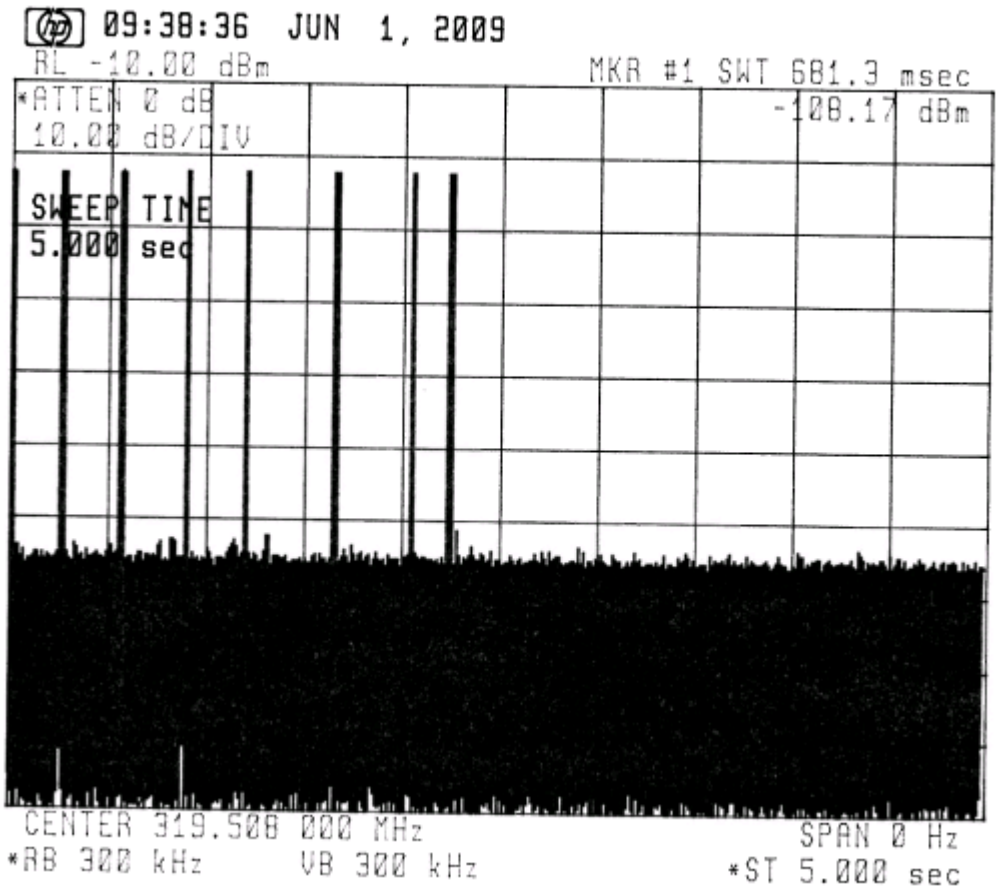
☐ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)
■ - GE Security

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
N/A	70000	Agilent Technologies	Spectrum Analyzer System	G480119x	19 Sep 10

Test data

See plot on next page


09:38:36 JUN 1, 2009
RL -10.00 dBm
MKR #1 SWT 681.3 msec
*ATTEN 0 dB
10.00 dB/DIV
-108.17 dBm
SWEEP TIME
5.000 sec
CENTER 319.500 000 MHz
SPAN 0 Hz
*RB 300 kHz
VB 300 kHz
*ST 5.000 sec

Periodic transmissions
FCC 15.231(a)(3), IC RSS-210 A1.1.1(3)

Test limit
Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

Test summary
The requirements are: ■ - MET ☐ - NOT MET

As permitted, this device will transmit three packets for supervision purposes. The interpacket delay is a random time between 100 ms and 450 ms. The packet itself may be as long as 18.63 ms depending on the data sent. The longest time to conclude a supervisory transmission is then

3 * 18.63 ms + 2 * 450 ms = 955.89 ms.

Supervisory transmissions are sent every 64 minutes.

Transmission of set-up information
FCC 15.231(a)(5)

Test limit
Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

Test summary
The requirements are: ☐ - MET ☐ - NOT MET ■ - NOT APPLICABLE

Field strength of emissions
FCC 15.231(b) - IC RSS 210 A1.1.2

Test limit
The limits are specified at a distance of 3 meters.

Frequency (MHz)	Field Strength of Fundamental (uV/m)		
319.5	6229.167	(75.8 dBuV/m)	average (95.8 dBuV/m peak limit)

Frequency (MHz)	Field Strength of Spurious Emissions (uV/m)		
30-3195	622.9167	(55.8 dBuV/m)	average (75.8 dBuV/m peak limit)
Except for 15.205 bands			
15.205 bands			
30-88	100	(40 dBuV/m)	quasi-peak
88-216	150	(43.5 dBuV/m)	quasi-peak
216-960	200	(46 dBuV/m)	quasi-peak
960-1000	500	(54 dBuV/m)	quasi-peak
1000-3195	500	(54 dBuV/m)	average (74 dBuV/m peak limit)

Test summary
The requirements are: ■ - MET ☐ - NOT MET

The fundamental was measured to be 95.55 dBuV/m in peak detector mode - (0.25 dB below limit)

The fundamental was calculated to be 75.55 dBuV/m in average mode – (0.25 dB below limit)

The average level was obtained by subtracting the duty cycle from the measured peak level. The duty cycle of the transmitted signal was measured to be – the worst case on time over 100 msec is 18.63 msec. In this time frame there are 58 pulses of 100 usec width, 1 pulse of 475 usec width, and 1 pulse of 825 usec width. The duty cycle is thus measured to be 5.8 msec + 0.475 msec + 0.825msec / 100 msec = 7.1 %, which allows for a 22.9 dB reduction. 20 dB duty cycle correction factor was used to demonstrate compliance.

The highest spurious emission was measured to be 51.08 dBuV/m in peak detector mode at 1.598 GHz – (22.9 dB below limit). Subtracting 20 dB for duty cycle correction factor, the average level was 31.08 dBuV/m at 1.598 GHz – (22.9 dB below limit).

Test location
■ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - GE Security

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03995	EM-6917B	Electro-Metrics	Biconicalog Periodic	151	24-Apr-10
WRLE02075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	13-Jan-10
WRLE03847	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	0607	Code B 14-May-10
WRLE10527	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0001	Code B 10-Sep-09
WRLE03058	2	Inmet	20 dB Attenuator	18N20W-20dB	Code B 28-Oct-09
WRLE08052	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	23-Apr-10
WRLE08051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	23-Apr-10

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test data
See data sheets on next pages.

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS			
EUT Model #:	56-915-E	Date:	11/17/2008			
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0	°C
Test Method:	15.231			Air Pressure:	100.0	kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0	%
EUT Description:	319.5 DWS					
Notes:	EP_118_RF7 – * denotes 20 dB duty cycle correction factor subtracted from peak reading to compare to average limit					
Data File Name:	9289.dat			Page:	1 of 3	

List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.231 av	DELTA2
Start Testing - 30 MHz to 3.2 GHz – 120 kHz rbw < 1 GHz – 1 MHz rbw > 1 GHz						
319.457 MHz	109.6 Pk	2.1 / 13.76 / 29.91 / -20.0	75.55	H / 1.00 / 200	-0.25*	n/a
639.013 MHz	58.0 Pk	2.9 / 19.77 / 30.2 / -20.0	30.47	H / 1.00 / 200	-25.33*	n/a
958.522 MHz	45.2 Pk	3.66 / 22.94 / 29.7 / -20.0	22.11	H / 1.00 / 200	-33.69*	n/a
958.514 MHz	47.3 Pk	3.66 / 22.94 / 29.7 / -20.0	24.21	V / 1.00 / 0	-31.59*	n/a
958.512 MHz	49.5 Pk	3.66 / 22.94 / 29.7 / -20.0	26.41	V / 1.20 / 0	-29.39*	n/a
1.278 GHz	47.45 Pk	4.51 / 25.28 / 41.9 / -20.0	15.34	V / 1.00 / 0	-40.46*	n/a
1.597 GHz	60.15 Pk	4.92 / 25.59 / 43.38 / -20.0	27.28	V / 1.00 / 0	-26.72*	n/a
1.597 GHz	60.8 Pk	4.92 / 25.59 / 43.38 / -20.0	27.93	V / 1.00 / 0	-26.07*	n/a
1.917 GHz	50.85 Pk	5.37 / 27.19 / 43.08 / -20.0	20.32	V / 1.00 / 0	-35.48*	n/a
2.237 GHz	53.1 Pk	5.86 / 28.16 / 43.91 / -20.0	23.21	V / 1.00 / 0	-30.79*	n/a
3.195 GHz	42.25 Pk	7.26 / 30.41 / 43.6 / -20.0	16.31	V / 1.00 / 270	-39.49*	n/a
3.195 GHz	52.2 Pk	7.26 / 30.41 / 43.6 / -20.0	26.26	V / 2.00 / 180	-29.54*	n/a
Maximize Highest Emissions						
1.278 GHz	47.5 Pk	4.51 / 25.28 / 41.9 / -20.0	15.39	V / 1.00 / 0	-40.41*	n/a
1.598 GHz	63.95 Pk	4.92 / 25.59 / 43.38 / -20.0	31.08	V / 1.28 / 45	-22.92*	n/a
3.195 GHz	47.85 Pk	7.26 / 30.41 / 43.6 / -20.0	21.91	V / 1.20 / 237	-33.89*	n/a
1.598 GHz	60.55 Pk	4.92 / 25.59 / 43.38 / -20.0	27.68	H / 1.00 / 0	-26.32*	n/a
2.237 GHz	51.6 Pk	5.86 / 28.16 / 43.91 / -20.0	21.71	H / 1.00 / 0	-32.29*	n/a
Maximize Highest Emissions						
1.278 GHz	45.2 Pk	4.51 / 25.28 / 41.9 / -20.0	13.09	H / 1.00 / 0	-42.71*	n/a
1.598 GHz	61.35 Pk	4.92 / 25.59 / 43.38 / -20.0	28.48	H / 1.00 / 163	-25.52*	n/a
3.195 GHz	52.35 Pk	7.26 / 30.41 / 43.6 / -20.0	26.41	H / 1.50 / 0	-29.39*	n/a

Tested by: Dennis E Maloney (Printed) — Dennis Maloney (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS		
EUT Model #:	56-915-E	Date:	11/17/2008		
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0 °C
Test Method:	15.231			Air Pressure:	100.0 kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0 %
EUT Description:	319.5 DWS				
Notes:	EP_118_RF7 – * denotes 20 dB duty cycle correction factor subtracted from peak reading to compare to average limit				
Data File Name:	9289.dat			Page:	2 of 3

Measurement summary for limit1: GE-319.5MHz-av (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.231 av
319.457 MHz	109.6 Pk	2.1 / 13.76 / 29.91 / -20.0	75.55	H / 1.00 / 200	-0.25*
639.013 MHz	58.0 Pk	2.9 / 19.77 / 30.2 / -20.0	30.47	H / 1.00 / 200	-25.33*
958.512 MHz	49.5 Pk	3.66 / 22.94 / 29.7 / -20.0	26.41	V / 1.20 / 0	-29.39*
1.278 GHz	47.5 Pk	4.51 / 25.28 / 41.9 / -20.0	15.39	V / 1.00 / 0	-40.41*
1.597 GHz	60.8 Pk	4.92 / 25.59 / 43.38 / -20.0	27.93	V / 1.00 / 0	-26.07*
1.917 GHz	50.85 Pk	5.37 / 27.19 / 43.08 / -20.0	20.32	V / 1.00 / 0	-35.48*
2.237 GHz	53.1 Pk	5.86 / 28.16 / 43.91 / -20.0	23.21	V / 1.00 / 0	-30.79*
3.195 GHz	42.25 Pk	7.26 / 30.41 / 43.6 / -20.0	16.31	V / 1.00 / 270	-39.49*
3.195 GHz	52.35 Pk	7.26 / 30.41 / 43.6 / -20.0	26.41	H / 1.50 / 0	-29.39*
1.598 GHz	63.95 Pk	4.92 / 25.59 / 43.38 / -20.0	31.08	V / 1.28 / 45	-22.92*

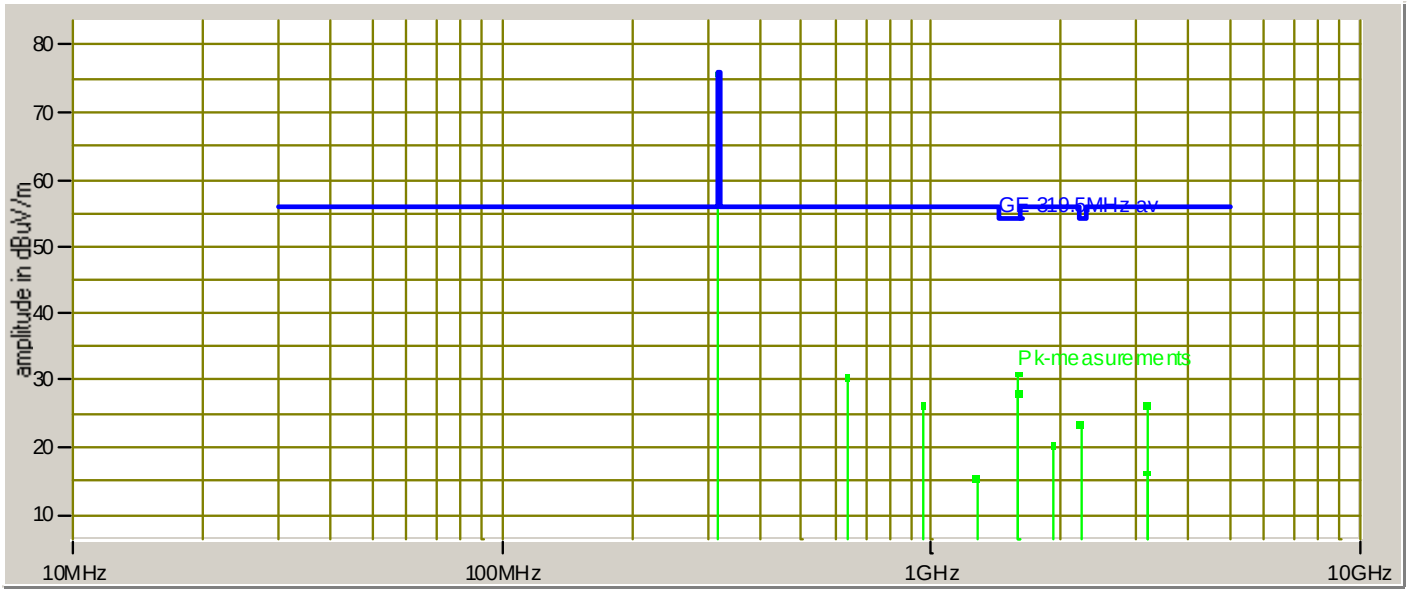
Tested by: Dennis E Maloney (Printed) Dennis Maloney (Signature)

Reviewed by: Joel T Schneider (Printed) Joel T. Schneider (Signature)

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS		
EUT Model #:	56-915-E	Date:	11/17/2008		
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0 °C
Test Method:	15.231			Air Pressure:	100.0 kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0 %
EUT Description:	319.5 DWS				
Notes:	EP_118_RF7 – * denotes 20 dB duty cycle correction factor subtracted from peak reading to compare to average limit				
Data File Name:	9289.dat			Page:	3 of 3

Graph:



Tested by: Dennis E Maloney — Printed

Dennis Maloney — Signature

Reviewed by: Joel T Schneider — Printed

Joel T. Schneider — Signature

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS			
EUT Model #:	56-915-E	Date:	11/17/2008			
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0	°C
Test Method:	15.231			Air Pressure:	100.0	kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0	%
EUT Description:	319.5 DWS					
Notes:	EP_118_RF7					
Data File Name:	9289.dat			Page:	1 of 3	

List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.231 pk	DELTA2
Start Testing - 30 MHz to 3.2 GHz – 120 kHz RBW < 1 GHz – 1 MHz RBW > 1 GHz						
319.457 MHz	109.6 Pk	2.1 / 13.76 / 29.91 / 0.0	95.55	H / 1.00 / 200	-0.25	n/a
639.013 MHz	58.0 Pk	2.9 / 19.77 / 30.2 / 0.0	50.47	H / 1.00 / 200	-25.33	n/a
958.522 MHz	45.2 Pk	3.66 / 22.94 / 29.7 / 0.0	42.11	H / 1.00 / 200	-33.69	n/a
958.514 MHz	47.3 Pk	3.66 / 22.94 / 29.7 / 0.0	44.21	V / 1.00 / 0	-31.59	n/a
958.512 MHz	49.5 Pk	3.66 / 22.94 / 29.7 / 0.0	46.41	V / 1.20 / 0	-29.39	n/a
1.278 GHz	47.45 Pk	4.51 / 25.28 / 41.9 / 0.0	35.34	V / 1.00 / 0	-40.46	n/a
1.597 GHz	60.15 Pk	4.92 / 25.59 / 43.38 / 0.0	47.28	V / 1.00 / 0	-26.72	n/a
1.597 GHz	60.8 Pk	4.92 / 25.59 / 43.38 / 0.0	47.93	V / 1.00 / 0	-26.07	n/a
1.917 GHz	50.85 Pk	5.37 / 27.19 / 43.08 / 0.0	40.32	V / 1.00 / 0	-35.48	n/a
2.237 GHz	53.1 Pk	5.86 / 28.16 / 43.91 / 0.0	43.21	V / 1.00 / 0	-30.79	n/a
3.195 GHz	42.25 Pk	7.26 / 30.41 / 43.6 / 0.0	36.31	V / 1.00 / 270	-39.49	n/a
3.195 GHz	52.2 Pk	7.26 / 30.41 / 43.6 / 0.0	46.26	V / 2.00 / 180	-29.54	n/a
Maximize Highest Emissions						
1.278 GHz	47.5 Pk	4.51 / 25.28 / 41.9 / 0.0	35.39	V / 1.00 / 0	-40.41	n/a
1.598 GHz	63.95 Pk	4.92 / 25.59 / 43.38 / 0.0	51.08	V / 1.28 / 45	-22.92	n/a
3.195 GHz	47.85 Pk	7.26 / 30.41 / 43.6 / 0.0	41.91	V / 1.20 / 237	-33.89	n/a
1.598 GHz	60.55 Pk	4.92 / 25.59 / 43.38 / 0.0	47.68	H / 1.00 / 0	-26.32	n/a
2.237 GHz	51.6 Pk	5.86 / 28.16 / 43.91 / 0.0	41.71	H / 1.00 / 0	-32.29	n/a
Maximize Highest Emissions						
1.278 GHz	45.2 Pk	4.51 / 25.28 / 41.9 / 0.0	33.09	H / 1.00 / 0	-42.71	n/a
1.598 GHz	61.35 Pk	4.92 / 25.59 / 43.38 / 0.0	48.48	H / 1.00 / 163	-25.52	n/a
3.195 GHz	52.35 Pk	7.26 / 30.41 / 43.6 / 0.0	46.41	H / 1.50 / 0	-29.39	n/a

Tested by: Dennis E Maloney (Printed) — Dennis Maloney (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS		
EUT Model #:	56-915-E	Date:	11/17/2008		
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0 °C
Test Method:	15.231			Air Pressure:	100.0 kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0 %
EUT Description:	319.5 DWS				
Notes:	EP_118_RF7				
Data File Name:	9289.dat			Page:	2 of 3

Measurement summary for limit1: GE-319.5MHz-pk (Pk)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.231 pk
319.457 MHz	109.6 Pk	2.1 / 13.76 / 29.91 / 0.0	95.55	H / 1.00 / 200	-0.25
1.598 GHz	63.95 Pk	4.92 / 25.59 / 43.38 / 0.0	51.08	V / 1.28 / 45	-22.92
639.013 MHz	58.0 Pk	2.9 / 19.77 / 30.2 / 0.0	50.47	H / 1.00 / 200	-25.33
1.597 GHz	60.8 Pk	4.92 / 25.59 / 43.38 / 0.0	47.93	V / 1.00 / 0	-26.07
958.512 MHz	49.5 Pk	3.66 / 22.94 / 29.7 / 0.0	46.41	V / 1.20 / 0	-29.39
3.195 GHz	52.35 Pk	7.26 / 30.41 / 43.6 / 0.0	46.41	H / 1.50 / 0	-29.39
2.237 GHz	53.1 Pk	5.86 / 28.16 / 43.91 / 0.0	43.21	V / 1.00 / 0	-30.79
1.917 GHz	50.85 Pk	5.37 / 27.19 / 43.08 / 0.0	40.32	V / 1.00 / 0	-35.48
3.195 GHz	42.25 Pk	7.26 / 30.41 / 43.6 / 0.0	36.31	V / 1.00 / 270	-39.49
1.278 GHz	47.5 Pk	4.51 / 25.28 / 41.9 / 0.0	35.39	V / 1.00 / 0	-40.41

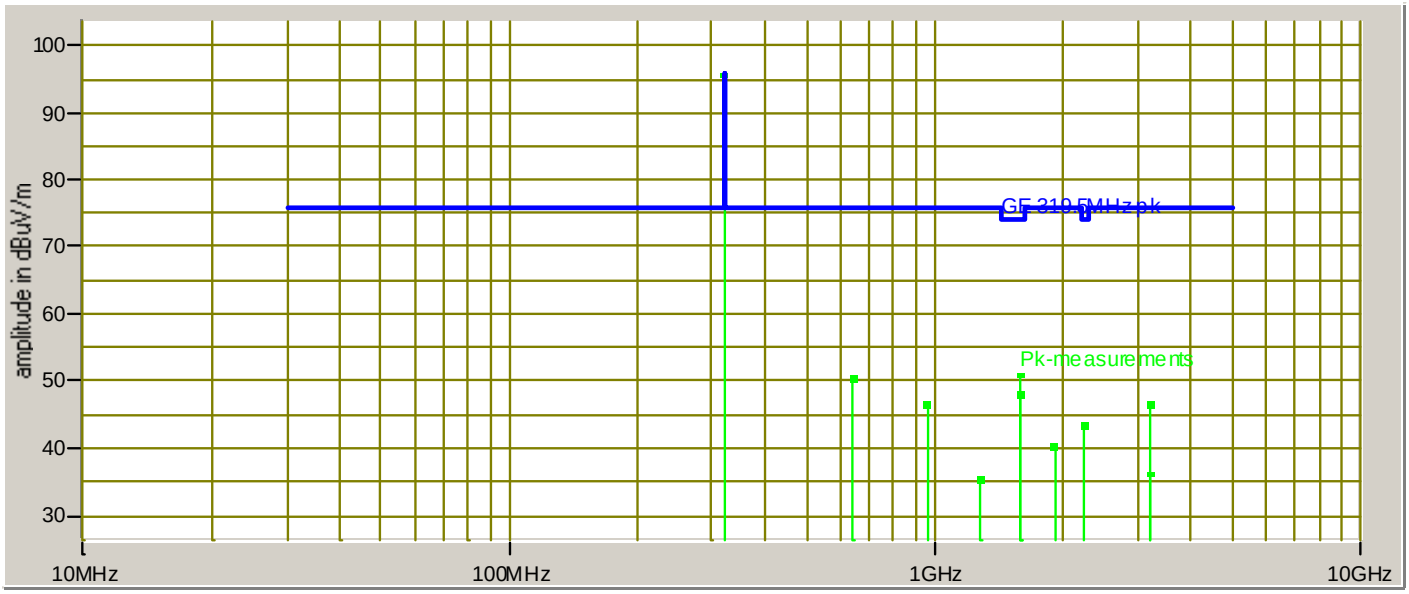
Tested by: Dennis E Maloney (Printed) — Dennis Maloney (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

RADIATED EMISSIONS

Test Report #:	WC809289 Run 4	Test Area:	LTS		
EUT Model #:	56-915-E	Date:	11/17/2008		
EUT Serial #:	319.5 DWS	EUT Power:	3 VDC	Temperature:	22.0 °C
Test Method:	15.231			Air Pressure:	100.0 kPa
Customer:	GE Security Inc. - MN			Rel. Humidity:	23.0 %
EUT Description:	319.5 DWS				
Notes:	EP_118_RF7				
Data File Name:	9289.dat			Page:	3 of 3

Graph:



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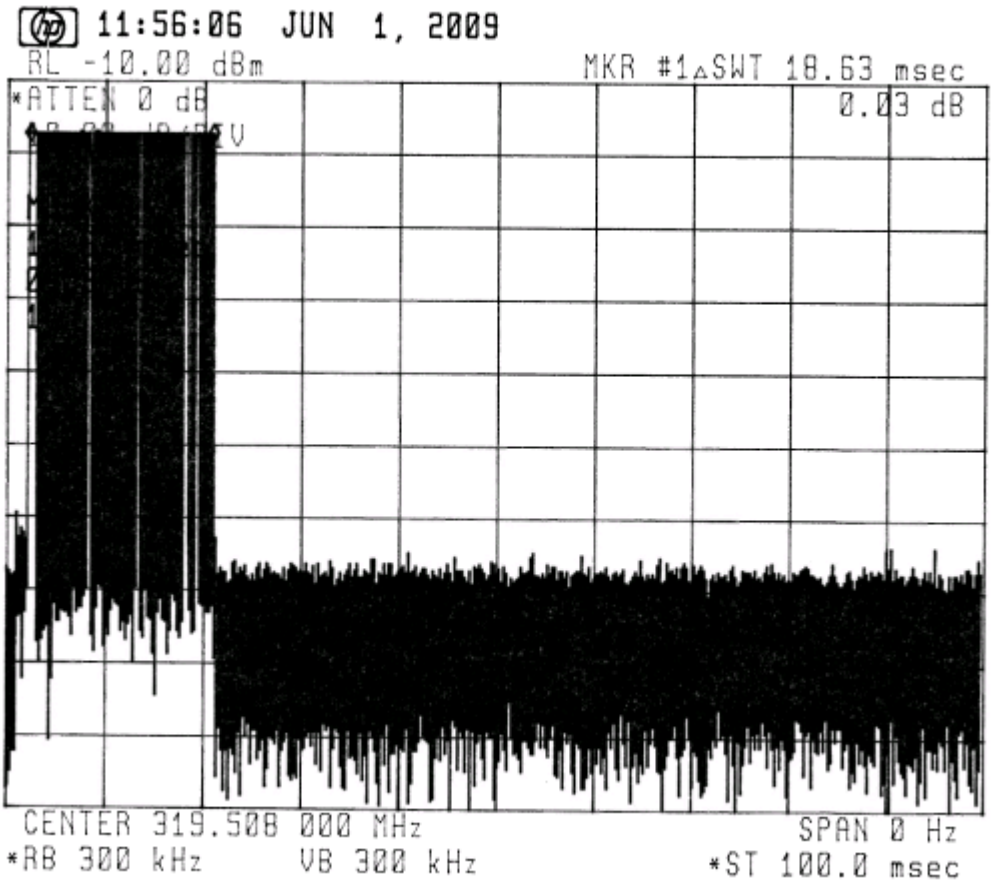
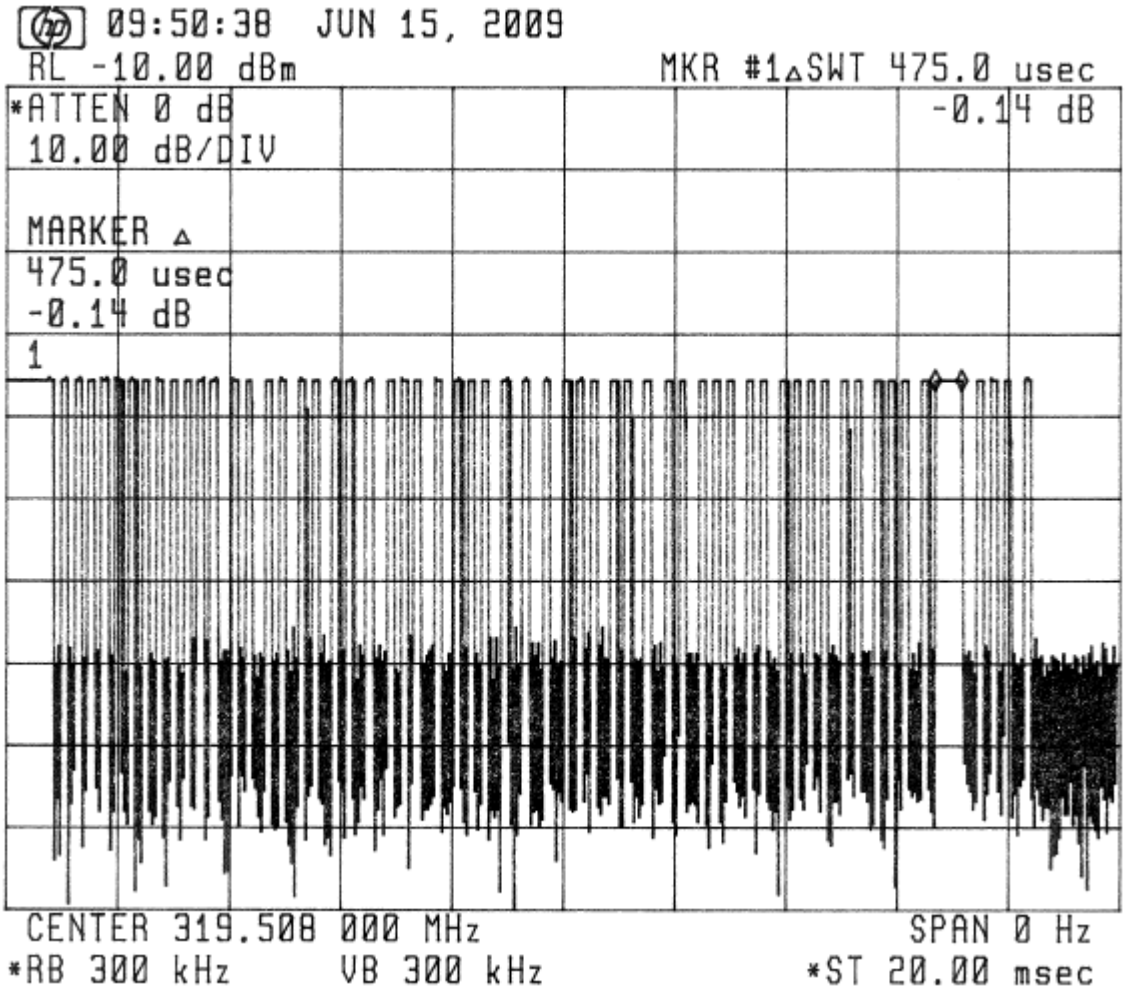
Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

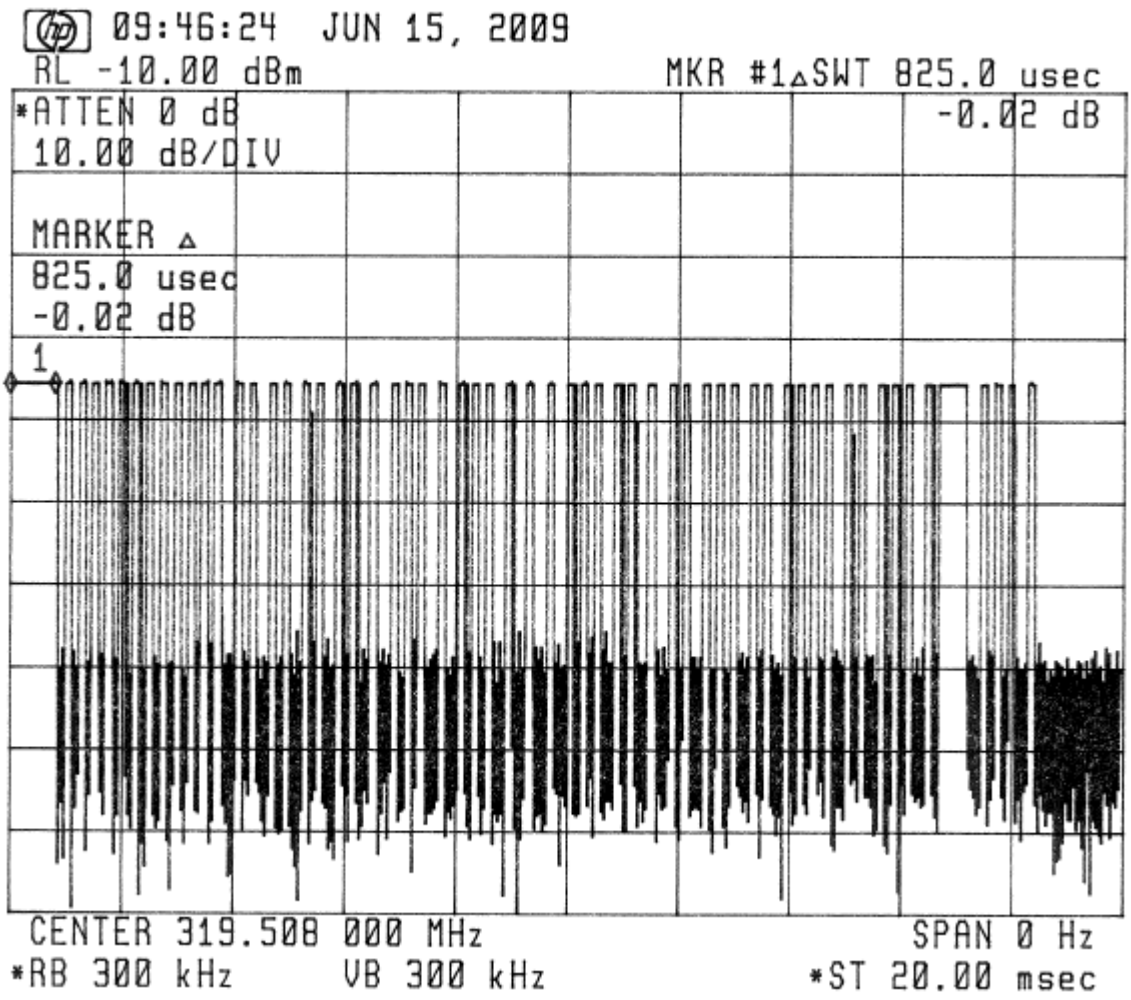


Worst case 100 msec on time = 18.63 msec

The smallest width pulses are 100 usec wide, there are 58 pulses.



1 pulse at 475 usec



1 pulse at 825 usec

Test Setup Photo - Field strength of emissions
FCC 15.231(b) - IC RSS 210 A1.1.2

Bandwidth of emission
FCC 15.231(c) - IC RSS 210 A1.1.3

Test limit
The bandwidth of the emission shall be no wider than 0.25% of the center frequency, as determined at the points 20 dB down from the unmodulated carrier. The emission shall be no wider than 798.75 kHz.

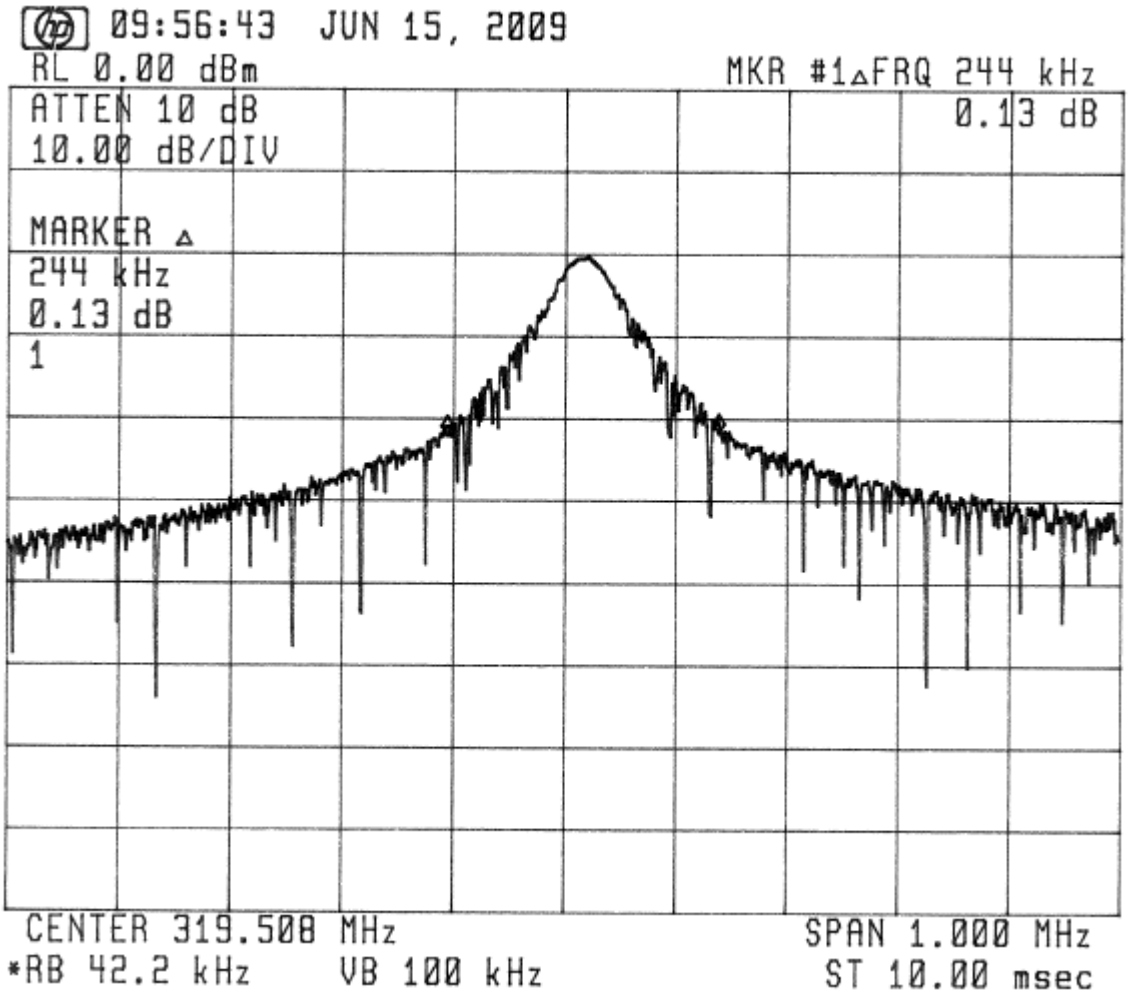
Test summary
The requirements are: ■ - MET ☐ - NOT MET
The bandwidth of the emission was measured to be 244 kHz.

Test location
☐ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)
■ - GE Security

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
N/A	N9010A	Agilent Technologies	EXA Signal Analyzer	MY48031158	15 Oct 09

Test data
See plot on next page


09:56:43 JUN 15, 2009
RL 0.00 dBm
MKR #1ΔFRQ 244 kHz
ATTEN 10 dB
0.13 dB
10.00 dB/DIV
MARKER Δ
244 kHz
0.13 dB
1
CENTER 319.500 MHz
SPAN 1.000 MHz
*RB 42.2 kHz
VB 100 kHz
ST 10.00 msec

Equipment Under Test (EUT) Test Operation Mode:

The device under test was operated under the following conditions during emissions testing:

☐ - Standby

☐ - Test program (H - Pattern)

☐ - Test program (color bar)

☐ - Test program (customer specific)

☐ - Practice operation

☐ - Normal Operating Mode

■ - See Software and/or Operating Modes in Appendix A

Configuration of the device under test:

■ - See Constructional Data Form and Block Diagram in Appendix A

☐ - See Product Information Form in Appendix B

GENERAL REMARKS:

None

Modifications required to pass:

■ None
☐ As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:

■ None
☐ As indicated in the Test Plan
☐

SUMMARY:

The requirements according to the technical regulations are
■ - met and the equipment under test does fulfill the general approval requirements.
☐ - **not** met and the equipment under test does **not** fulfill the general approval requirements.

EUT Received Date:	17 November 2008
Condition of EUT:	Normal
Testing Start Date:	17 November 2008
Testing End Date:	15 June 2009

TÜV SÜD AMERICA INC

Tested by:

Dennis Maloney
EMC Technician

Approved by:

Joel T Schneider
Senior EMC Engineer

Appendix A

Constructional Data Form

and

Block Diagram

Form

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company: Ge Security
Address: 1275 Red Fox Road
Arden Hills MN

Contact: Ken Nelson Position: DEG
Phone: 651-779-4825 Fax:
E-mail Address: Kenl.Nelson@ge.com

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description: wireless transmitter
EUT Name: 319.5MHz Door Window sensor
Model No.: 60-362N-10-319.5 Serial No.:
Product Options:
Configurations to be tested:

Equipment Modification (*If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)*

Modifications since last test:
Modifications made during test:

Test Objective(s): ***Please indicate the tests to be performed, entering the applicable standard(s) where noted.***

- ☐ EMC Directive 2004/108/EC (EMC) Std:
- ☐ Machinery Directive 89/392/EEC (EMC) Std:
- ☐ Medical Device Directive 93/42/EEC (EMC) Std:
- ☐ Vehicle Directive: ☐ 2001/3/EC (EMC) ☐ 2004/104/EC (EMC) ☐ Other Vehicle Std:
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☒ FCC: Class ☐ A ☒ B Part 15C
- ☐ VCCI: Class ☐ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B (Separate Report)
- ☐ Canada: Class ☐ A ☐ B
- ☐ Australia: Class ☐ A ☐ B
- ☐ Other:

Third Party Certification, if applicable (*Signature on Page 6 Required)

- ☐ Attestation of Conformity (AoC)*
- ☐ Statement of Compliance (previously CoC)*
- ☐ EMC Certification (used with Octagon Mark)*
- ☐ Compliance Document*

Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III
(Press **F1** when field is selected to show additional information on Protection Class.)

- ☒ FCC / TCB Certification
- ☐ E-Mark Certification
- ☒ Industry Canada / FCB Certification
- ☐ Taiwan Certification

EMC Test Plan and Constructional Data Form

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TÜV SÜD America should:

☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____

☒ Continue testing to complete test series.

☐ Continue testing to define corrective action.

☐ Stop testing.

EUT Specifications and Requirements

Length: 3.25in. Width: 1.50in. Height: 1.0in. Weight: _____

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 3.0Vdc (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: _____

Current (Amps/phase(max)): _____ Current (Amps/phase(nominal)): _____

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Residential and small commercial security systems

EUT Power Cable

☐ Permanent OR ☒ Removable Length (in meters): 9

☐ Shielded OR ☐ Unshielded

☐ Not Applicable

Form

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables

			During Test			Shielding								
Type	Analog	Digital	Active	Passive	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	☒	☐	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
22G, stranded	☒	☐	☐	☐		☐	☒					9	☒	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level:

Description:

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1.

2.

3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
NA			

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc) This information is required for FCC & Taiwan testing.

Description	*Model #*	*Serial #*	*FCC ID #*
NA			

Oscillator Frequencies

Manufacturer	*Frequency*	*Derived Frequency*	*Component # / Location*	*Description of Use*

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
na			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*
NA		

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Component # / Location*
NA				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

NA

PLEASE ENTER NAMES BELOW (INSERT ELECTRONIC SIGNATURE IF POSSIBLE)

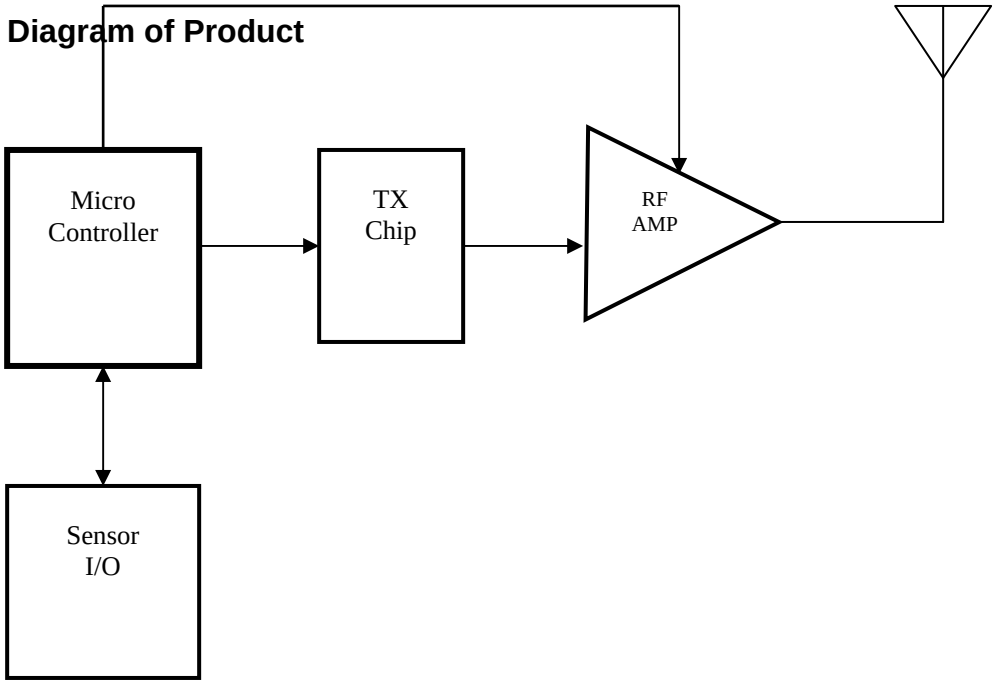
Authorization (Signature Required if a Third Party Certification is checked on pg 1)

Ken Nelson	6/8/09
Customer authorization to perform tests according to this test plan.	Date
Test Plan/CDF Prepared By (please print)	Date

EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.

Block Diagram of Product



Authorization Signatures

Ken Nelson	6/8/09
Customer authorization to perform tests according to this test plan.	Date
Test Plan/CDF Prepared By (please print)	Date

Appendix B

Measurement Protocol

MEASUREMENT PROTOCOL
GENERAL INFORMATION

Test Methodology
Emissions testing is performed according to the procedures in ANSI C63.4-2003, FCC KDB Publication 558074, the article "The Measurement of Occupied Bandwidth" by Industry Canada's certification bureau, & FCC Public Notice DA 02-2138.

Measurement Uncertainty
The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ±1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification
The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Conducted Emissions
Final measurement levels are determined by connecting the antenna port of the DUT to a spectrum analyzer input via coaxial adapters, high frequency coax, and attenuators as necessary. The loss created by the interconnect apparatus is offset by settings within the analyzer. Specific analyzer settings are determined by the procedures throughout this report.

Radiated Emissions
Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth, and peak and average detection. The antenna is positioned 3 meters horizontally from the EUT. The antenna height is positioned 1-4 meters above the ground plane. Measurement scans are made with both horizontal and vertical antenna polarizations. Average measurements above 1 GHz are achieved using a peak detector with 1 MHz RBW and 10 Hz VBW.

The final level, in dBμV/m, equals the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data. Intentional radiators are rotated through 3 orthogonal axes to determine the maximum emission test position.

Example:

FREQ (MHz)	LEVEL (dBuV)		CABLE/ANT/PREAMP (dB) (dB/m) (dB)			FINAL (dBuV/m)		POL/HGT/AZ (m) (deg)		DELTA1
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5 =	29.1	V	1.0	0.0	-10.9

Test Equipment
All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.