



**FCC Test Report for
47CFR15, Subpart B for Unintentional Radiators, per Section 101
Equipment authorization of unintentional radiators,
and
47CFR15, Subpart C per Section 209
General Limits for Operation of Intentional Radiators**

on
Smart MDD 5.8GHz Sensor
[FCC ID: LQN2927]

Model and Part Number:
902927(Smart Part No: A4518200110/004)

Report No.
20070122-01-FC15

Judgement
Complies as Tested

Provided for evaluation by
Connaught Electronics, LTD
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Tests and Report by
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ISO 17025 Accredited Compliance Laboratory (RES-GmbH)

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Applicant: Connaught Electronics Ltd.**Report No.:** 20070122-01-FC15

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Product: Smart MDD 5.8GHz Sensor

Model Number:902927

FCC ID:LQN2927

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PART 1 General

Test Information

Product:	Smart MDD 5.8GHz Sensor	
Model Number:	902927	
Manufacturer's Name	Connaught Electronics, LTD	
Manufacturer's Address	IDA Industrial Estate Dunmore Road, Tuam Co. Galway, Ireland	
Contact	Tel: + 011 353 (93) 25128 Mr. Patrick Denny	Fax : +011 353 (93) 25133 Email dennypatrick@cel.ie
Test Laboratory	ITC Engineering Services, Inc. 9959 Calaveras Road, PO Box 543 Sunol, CA 94586-0543 Email: itcemc@itcemc.com Web Site: http://www.itcemc.com	Tel: +1(925) 862-2944 Fax: +1(925) 862-9013
Test Number	20050616-03	
Report Number	20070122-01-Fc15	
Test Date(s) & Issue Date	Jan 8 – Jan 10, 2007	Jan 29, 2007
Test Engineer(s)	Femi Ojo	
Documentation	Femi Ojo	
Test Results	<input checked="" type="checkbox"/> Complies as Tested	<input type="checkbox"/> Fail
Total Number of Pages	31	

The electromagnetic interference and RF tests, which this report describes, were performed by an independent engineering consultancy firm, ITC Engineering Services, Inc. (ITC), in accordance with the requirements specified in the FCC rules, 47CFR Part 15, Subparts B and C. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications specified in this report for compliance must be implemented in all production units for compliance to be maintained.

Tests Performed:

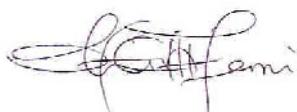
Emissions Requirements:

- OPEN FIELD RADIATED EMISSIONS in accordance with the FCC PART 15 Sub-Part B.

RF Requirements:

- FIELD STRENGTH OF FUNDAMENTAL in accordance with the FCC 47 CFR 15.209.
- SPURIOUS and HARMONIC EMISSIONS in accordance with the FCC 47 CFR 15.209.

Report generated by



Femi Ojo,
Compliance Engineer

Report reviewed by



Michael Gbadebo, P.E, Chief Engineer.
(California License # 11303)

Declaration/Disclaimer

ITC Engineering Services, Inc. (ITC) reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. ITC Engineering Services, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from ITC Engineering Services, Inc. issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full with our written approval. The applicant/manufacturer shall not use this report to claim product endorsement by NIST, NVLAP or any US Government agency.

ITC Engineering Services, Inc. (ITC) is:

Accepted by the Federal Communications Commission (FCC) for FCC Methods, CISPR Methods and AUSTEL Technical Standards (Ref: NVLAP Lab Code 200172-0)

Approved by the Industry Canada for Telecom Testing

Certified by Rockford Engineering Services GmbH for EMC Testing according to the European EMC Directive 89/336/EEC per ISO 17025

Certified by Reg. TP for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001 for RES GmbH (DAR-Registration number: TTI-P-G 159/98-00)

Certified by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI) for EMC testing, in accordance with the Regulations for Voluntary Control Measures, Article 8, Registration Numbers - Site 1: C-1582 and R-1497.

PART 1 General (Cont)

Test Methodology

The electromagnetic interference and RF tests, which this report describes, were performed by an independent engineering consultancy firm, ITC Engineering Services, Inc. (ITC), in accordance with the FCC test procedure ANSI C63.4-2003

Test Facility

The open area test site, the conducted measurement facility, the semi anechoic chamber and the test equipment used to collect the emissions and RF data is located in Sunol, California, and is fully described in site attenuation report. The approved site attenuation description is on file at the Federal Communications Commission.

Table 1 Radio Device Measurement Information

Product Type Model	Smart MDD 5.8GHz Sensor 902927	
Applicant / Manufacturer Address	Connaught Electronics, Ltd. IDA Industrial Estate, Dunmore Road, Tuam, Co. Galway, Ireland	
Contact	Mr. Patrick Denny Tel: +011 353 93 25128	dennypatrick@cel.ie Fax: +011 353 93 25133
Total Number of Pages including Appendices	32 Pages	
Test Report File No.	20070122-01-Fc15	

Table 2 Measurement Uncertainty

150kHz to 30MHz:		
Combined standard uncertainty uc(y)	± 1.68 dB	Normal
Expanded uncertainty U	± 3.36 dB	Normal (k = 2)
30MHz to 1GHz:		
Combined standard uncertainty uc(y)	± 3.24 dB	Normal
Expanded uncertainty U	± 6.48 dB	Normal (k = 2)
1GHz to 18GHz:		
Combined standard uncertainty uc(y)	± 2.48 dB	Normal
Expanded uncertainty U	± 4.96 dB	Normal (k = 2)
Above 18GHz:		
Radiated emission up to 26 GHz	± 3 dB	
Radiated emission up to 40 GHz	± 3 dB	
Radiated emission up to 75 GHz	± 3 dB	

PART 2 RECEIVER MEASUREMENTS

OPEN FIELD RADIATED EMISSIONS

Test Specification: 47 CFR PART 15, Sub-Part B

EUT Description.

Connaught's product 5.8GHz microwave sensor, model; 902927 (or the EUT) as referred to in this report is an intentional radiator. The EUT was set up at 3 and 10 meters in accordance with the suggested configuration given in FCC Measurement Procedure ANSI C63.4-2003. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The 5.8GHz Microwave Sensor was set up on a wooden non-conductive tabletop, 80 cm above the ground reference plane, in an open field. The transmit function was not activated for the tests.

Table 3 Test Equipment – Radiated Emissions Tests

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Preamplifier	Hewlett-Packard	83051A	00000009025	1-31-2007
Preselector	Hewlett-Packard	85685A	2620A00265	1-31-2007
Biconical Antenna	EMCO	3104	9111-4463	02-16-2007
L.P Ant (200 -1000MHz)	EMCO	3146	2261	02-16-2007
Quasi Peak Adapter	Hewlett-Packard	85650A	2521A00737	1-31-2007
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	1-31-2007
Spectrum Analyzer Display	Hewlett-Packard			1-31-2007
Horn. Ant (Below 18GHz)	EMCO	3115	8812-3050	02-16-2007
Spectrum Analyzer	Hewlett-Packard	8565E	3943A01328	08-16-2007

Table 4 Support Equipment – Radiated Emissions Tests

Description	Manufacturer	Model No.	Serial No.	Calibration Due
DC Power Supply	KEPCO	JQE 150-1.5M	H177085	n/a
Digital Multimeter	Fluke	16	79510141	December 08, 2007

Test Procedure – Radiated Emissions Tests

The measurement range investigated was from 30 MHz to 18 GHz due to lack of emissions activity above 5.8GHz. For measurements below 1GHz, the EUT was set up at 10 meters from the receiving antenna, on an Open Area Test Site (OATS) with the EUT running in a continuous mode. The EUT was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions. Significant peaks from the EUT were then recorded to determine margin to the limits. For measurements above 1GHz, the EUT was set up at 3 meters from the antenna in a semi-anechoic chamber with the EUT running in a continuous mode. The EUT was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions. Significant peaks from the EUT were then recorded to determine margin to the limits.

OPEN FIELD RADIATED EMISSIONS (cont)

Spectrum Analyzer Configuration (during swept frequency scans) – Radiated Emissions

IF Bandwidth..... 120 kHz

Measurements below 1000 MHz (unless stated otherwise)

Analyzer Mode (for Peak Measurements) Peak/Log

Resolution Bandwidth 100 kHz

Video Bandwidth 100 kHz

Analyzer Mode (for Quasi-Peak Measurements)

Quasi-Peak/Linear Resolution Bandwidth 1000 kHz

Video Bandwidth 1000 kHz

Measurements above 1000 MHz (unless stated otherwise)

Quasi-Peak Adapter Mode Disabled

Analyzer Mode (for Peak Measurements) Peak

Resolution Bandwidth 1000 kHz

Video Bandwidth 1000 kHz

Analyzer Mode (for Average Measurements) Video Filter

Resolution Bandwidth 1000 kHz

Video Bandwidth 10 Hz

Table 5 Data Table Legend and Field Strength Calculation – Radiated Emissions Tests

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

The margin in the Table 6 is calculated as follows:

Margin = Corrected Amplitude – Limit, where Corrected Amplitude = Spectrum Analyzer Amplitude + Cable Loss + Antenna Factor – Pre-Amp Gain.

OPEN FIELD RADIATED EMISSIONS Results

Site Used – Radiated Emissions Measurement

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other: _____

Administrative and Environmental Conditions – Radiated Emissions Measurement

Test Date:	Jan 8, 2007
Test Engineer:	Femi Ojo
Temperature	26.6°C
Humidity	30%

Table 6 Test Data for Radiated Emissions Measurement up to 1 GHz at 10 meters

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		NOTES
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	
38.20	3.7	10.9	1.0	15.7	0	2.0	VB	-	-	30.0	-14.3	
45.40	4.9	12.0	1.2	18.1	0	2.0	HB	-	-	30.0	-11.9	
61.15	3.6	9.9	1.2	14.7	90	1.0	VB	-	-	30.0	-15.3	
70.43	7.7	7.6	1.3	16.6	90	4.0	HB	-	-	30.0	-13.4	
84.52	5.7	7.1	1.5	14.3	0	1.0	VB	-	-	30.0	-15.7	
121.76	9.4	11.9	1.7	23.0	180	3.0	VB	-	-	33.0	-10.0	
127.04	4.0	12.6	1.8	18.4	180	4.0	HB	-	-	33.0	-14.6	
150.04	7.1	12.3	1.9	21.3	180	4.0	HB	-	-	33.0	-11.7	
171.53	6.1	16.4	2.2	24.7	0	2.0	VB	-	-	33.0	-8.3	
186.26	7.8	17.8	2.2	27.8	0	3.0	VB	-	-	33.0	-5.2	
190.21	5.2	17.2	2.3	24.7	0	1.0	HB	-	-	33.0	-8.3	
224.95	7.9	11.0	2.5	21.4	180	3.0	VL	-	-	36.0	-14.6	
233.45	4.5	10.9	2.6	18.1	0	4.0	HL	-	-	36.0	-17.9	
281.38	6.4	13.6	3.2	23.2	90	1.0	VL	-	-	36.0	-12.8	
333.26	5.9	14.0	3.5	23.3	180	3.0	HL	-	-	36.0	-12.7	
337.16	4.0	14.7	3.5	22.2	0	1.0	VL	-	-	36.0	-13.8	
426.68	3.8	15.8	3.8	23.4	180	4.0	HL	-	-	36.0	-12.6	
464.53	4.4	16.5	3.6	24.4	0	4.0	HL	-	-	36.0	-11.6	
464.73	5.8	17.4	3.6	26.8	0	1.0	VL	-	-	36.0	-9.2	
537.95	8.4	18.4	3.8	30.6	0	3.0	VL	-	-	36.0	-5.4	
650.94	6.5	18.5	4.1	29.1	180	1.0	VL	-	-	36.0	-6.9	
663.30	8.3	19.7	4.2	32.2	0	4.0	HL	-	-	36.0	-3.8	
737.33	4.1	20.9	4.4	29.3	0	1.0	VL	-	-	36.0	-6.7	

No emission of significant level was observed from 737.33MHz – 1GHz.

Remark: The EUT meets the requirements of FCC class B for open field radiated emissions

OPEN FIELD RADIATED EMISSIONS Results (cont.)

Open Field Radiated Emissions Test Setup Photographs



Figure 1: Open Field Radiated Emissions below 1 GHz (View 1)



Figure 2: Open Field Radiated Emissions below 1 GHz (View 2)

RADIATED EMISSIONS Results (cont.)

Administrative and Environmental Details— Radiated Emissions Measurement

Test Date:	Jan 10, 2007
Test Engineer:	Femi Ojo
Temperature	27.3°C
Humidity	20%

Table 7 Test Data for Radiated Emissions Measurement above 1 GHz @ 3 meters

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB+ AMP	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	NOTES
MHz	dBuV/ m	dB	dB	dBuV/ m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	
1064.20	35.0	24.8	-27.9	31.9	0	2.0	HH			54.0	-22.1	
1343.30	35.3	25.0	-27.8	32.5	0	1.0	VH			54.0	-21.5	
1390.80	35.0	25.5	-27.8	32.7	0	1.0	HH			54.0	-21.3	
1758.70	34.5	26.6	-27.6	33.5	0	1.0	VH			54.0	-20.5	
2093.30	34.7	28.3	-26.7	36.3	0	2.0	HH			54.0	-17.7	
2348.00	34.8	28.4	-27.2	36.0	0	1.0	VH			54.0	-18.0	
2763.00	34.8	29.5	-27.4	36.9	0	1.0	VH			54.0	-17.1	
2773.30	34.5	30.0	-27.4	37.1	180	1.0	HH			54.0	-16.9	
3167.50	36.0	31.0	-26.6	40.4	180	2.0	HH			54.0	-13.6	
3515.30	35.7	31.2	-27.1	39.8	0	1.0	VH			54.0	-14.2	
4277.00	36.0	32.2	-26.7	41.5	0	1.0	VH			54.0	-12.5	
5035.80	35.3	34.3	-25.5	44.1	0	1.0	HH			54.0	-9.9	
5385.00	35.7	34.4	-25.3	44.8	90	1.5	VH			54.0	-9.2	
5798.70	41.8	34.6	-25.4	51.0	0	1.0	VH			54.0	-3.0	Fund
5831.70	41.7	35.2	-25.5	51.4	0	1.0	HH			54.0	-2.6	Fund
6628.00	37.2	34.8	-23.8	48.2	0	1.0	VH			54.0	-5.8	
9613.30	31.2	38.7	-23.4	46.5	180	1.2	VH			54.0	-7.5	
9641.70	30.5	39.3	-24.0	45.8	0	1.0	HH			54.0	-8.2	
12430.00	31.7	38.8	-23.7	46.8	180	1.2	VH			54.0	-7.2	
13103.30	30.8	40.2	-24.7	46.3	180	2.0	HH			54.0	-7.7	
17808.70	30.8	41.2	-25.1	46.9	90	2.0	VH			54.0	-7.1	

No emission of significant level was observed above 17.8GHz.

Remark: The EUT meets the requirements of FCC class B for radiated emissions

RADIATED EMISSIONS Results (cont.)

Radiated Emissions Test Setup Photographs

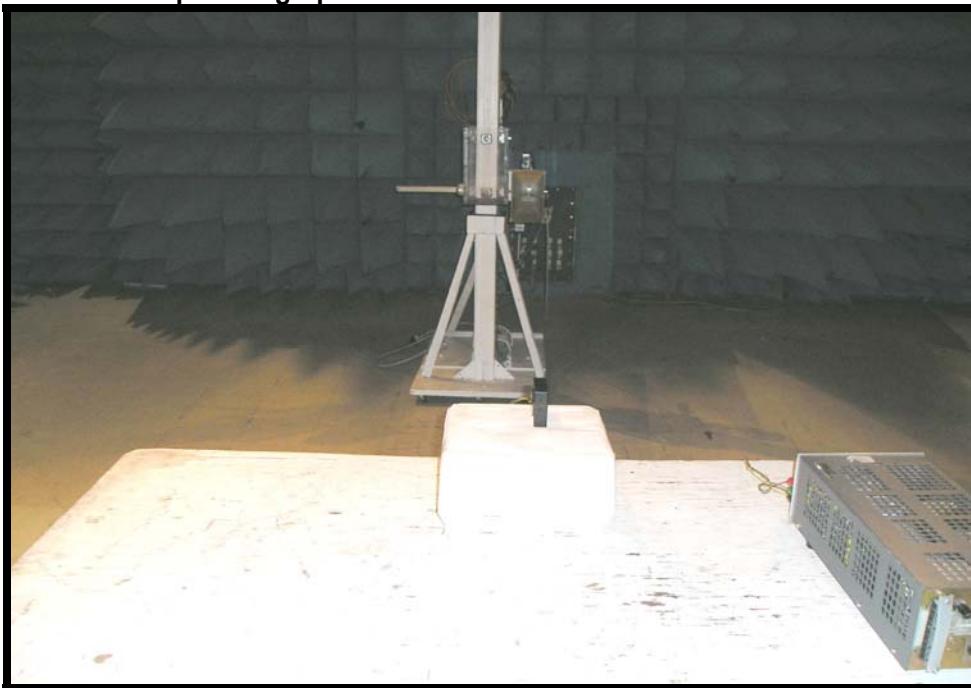


Figure 3: Radiated Emissions above 1 GHz (View 1)



Figure 4: Radiated Emissions above 1 GHz (View 2)

PART 3 RF MEASUREMENTS

Test Specification: 47 CFR PART 15, Sub-Part C

EUT Description:

Connaught's product 5.8GHz microwave sensor, model; 902927 (or the EUT) as referred to in this report is an intentional radiator. The EUT was set up on a wooden table, 80cm above the ground reference plane in a semi anechoic chamber. It was powered and tested in normal continuous mode.

Supply Voltage Tested: 13.5VDC

Table 8: Support Equipment – RF Measurements

Description	Manufacturer	Model No.	Serial No.	Calibration Due
DC Power Supply	KEPCO	JQE 150-1.5M	H177085	n/a
Digital Multimeter	Fluke	16	79510141	December 08, 2007

Table 9: Test Equipment – RF Measurements

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Preamplifier	Hewlett-Packard	83051A	00000009025	1-31-2007
Preselector	Hewlett-Packard	85685A	2620A00265	1-31-2007
Biconical Antenna	EMCO	3104	9111-4463	02-16-2007
L.P Ant (200 -1000MHz)	EMCO	3146	2261	02-16-2007
Quasi Peak Adapter	Hewlett-Packard	85650A	2521A00737	1-31-2007
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	1-31-2007
Spectrum Analyzer Display	Hewlett-Packard			1-31-2007
Horn. Ant (Below 18GHz)	EMCO	3115	8812-3050	02-16-2007
Spectrum Analyzer	Hewlett-Packard	8565E	3943A01328	08-16-2007

Table 10 Support Equipment – Radiated Emissions Tests

Description	Manufacturer	Model No.	Serial No.	Calibration Due
DC Power Supply	KEPCO	JQE 150-1.5M	H177085	n/a
Digital Multimeter	Fluke	16	79510141	December 08, 2007

General Test Procedure – RF Tests

For the spurious and harmonics measurements, below 1GHz, the EUT was set up at a 10 meter distance from the receiving antenna, on an Open Area Test Site (OATS), with the EUT running in a continuous mode. The EUT was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions. Significant peaks from the EUT were then recorded to determine margin to the limits. For measurements above 1GHz, the EUT was set up at a 3 meter distance from the antenna, in a semi-anechoic chamber, with the EUT running in a continuous mode. The EUT was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions. Significant peaks from the EUT were then recorded to determine margin to the limits.

For the field strength measurements of the fundamental frequency, the EUT was setup in an anechoic chamber at a 3 meter distance from the receiving antenna. The EUT was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the field strength emission of the fundamental. The maximum level of the fundamental emission from the EUT was measured and recorded at optimum antenna and table orientation to determine margin to the limits.

PART 3 RF MEASUREMENTS (cont.)

Spectrum Analyzer Configuration (during swept frequency scans) – Radiated Emissions

IF Bandwidth..... 120 kHz

Measurements below 1000 MHz (unless stated otherwise)

Analyzer Mode (for Peak Measurements) Peak/Log

Resolution Bandwidth..... 100 kHz

Video Bandwidth..... 100 kHz

Analyzer Mode (for Quasi-Peak Measurements)

Quasi-Peak/Linear Resolution Bandwidth..... 1000 kHz

Video Bandwidth..... 1000 kHz

Measurements above 1000 MHz (unless stated otherwise)

Quasi-Peak Adapter Mode Disabled

Analyzer Mode (for Peak Measurements) Peak

Resolution Bandwidth..... 1000 kHz

Video Bandwidth..... 1000 kHz

Analyzer Mode (for Average Measurements) Video Filter

Resolution Bandwidth..... 1000 kHz

Video Bandwidth..... 10 Hz

Table 11 Data Table Legend and Field Strength Calculation – Radiated Emissions Tests

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

	Polarization	Antenna	Freq Range (MHz)
VB	Vertical	EMCO 3104/sn 4463 Biconical	30 – 200
HB	Horizontal	EMCO 3104/sn 4463 Biconical	30 – 200
VL	Vertical	EMCO 3146/sn. 2261 Log Periodic	200 – 1000
HL	Horizontal	EMCO 3146/sn. 2261 Log Periodic	200 – 1000
VH1	Vertical	EMCO 3115/sn. 8812-3050 Horn	Below 18000
HH1	Horizontal	EMCO 3115/sn. 8812-3050 Horn	Below 18000
VH2	Vertical	HP 3116/sn. 4663 Horn	Below 26500
HH2	Horizontal	HP 3116/sn. 4663 Horn	Below 26500
VH4	Vertical	S&D DBD-520 Horn	Below 75000
HH4	Horizontal	S&D DBD-520 Horn	Below 75000

FIELD STRENGTH OF FUNDAMENTAL

FIELD STRENGTH Measurement

The EUT was set up as described above. The measurement instrumentation used was an Analyzer with bandwidth parameters as stipulated in ANSI C63.4-2003.

Site Used – Field Strength of Fundamental Measurements

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other:

Administrative Details and Environmental Conditions – Field Strength of Fundamental Measurements

Test Date(s):	Jan 10, 2006
Test Engineer(s):	Femi Ojo
Temperature	27.3°C
Humidity	20%

Test Data – Field Strength of Fundamental

The measurement plot below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

Field Strength of Fundamental Plot.

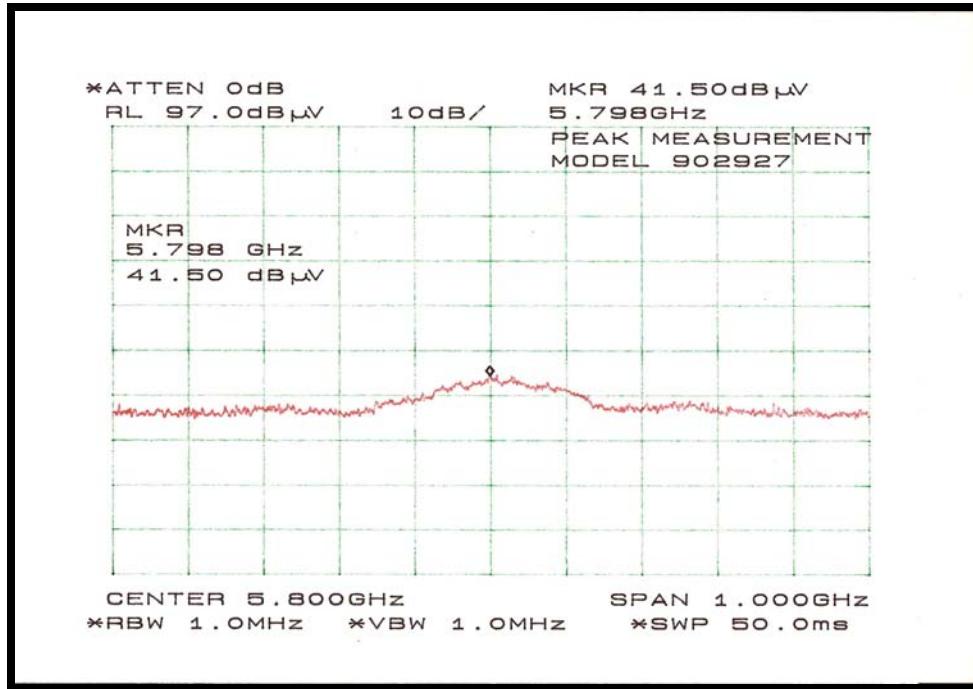


Figure 5: Plot of Field Strength of Fundamental Peak Measurement.

FIELD STRENGTH OF FUNDAMENTAL (cont.)

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB / AMP	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
5.798	41.5	34.6	-25.4	51.0	90	1.0	VH	-	-	74	-23.0	p
5.831	41.0	35.2	-25.5	50.7	0	1.0	HH	-	-	74	-23.3	p

Table 12: Field Strength of Fundamental Test Data – Peak Measurement

The margin in Table 12 is calculated as follows:

Margin = Corrected Amplitude – Limit, where Corrected Amplitude = Spectrum Analyzer Amplitude + Cable Loss + Antenna Factor – Pre-Amp Gain.

Test-Data Summary – Peak Measurement:

Center Frequency = 5800 MHz
 Peak Level: = 51.0dB μ V/m
 Peak Limit (15.209) = 74.00dB μ V/m (54dB μ V/m + 20dB)

Average Level Calculation of Field Strength of Fundamental with Duty Cycle correction.

The duty cycle rating as provided by the manufacturer is 0.83% (or 0.0083) over a 100mSec interval = 0.0083 seconds.

dB (in μ V) Duty Cycle Correction	=0.0083 secs	=20log(0.0083)	= 41. 62dB μ V
Pulse Desensitization Factor (PDF)	= -40dB		
Peak Level with PDF	= 51.0 dB μ V/m + 40dB		= 91.0dB μ V/m
Peak Level with Duty Cycle Correction	=91.0dB μ V/m – 41.62dB		= 49.38dB μ V/m

Test-Data Summary – Average Measurement:

Center Frequency = 5800 MHz
 Average Level: = 49.38dB μ V/m (Calculated).
 Average Limit (15.209) = 54.00dB μ V/m

Remark

The EUT meets the requirements of the test reference for Fundamental Frequency Field Strength.

FIELD STRENGTH OF FUNDAMENTAL (cont.)

OCCUPIED BANDWIDTH measurement

For the measurements, a spectrum analyzer was used. The EUT was measured according to the method specified in ANSI C63.4-2003.

Site Used – Occupied Bandwidth Measurements

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other: _____

Administrative Details – Occupied Bandwidth Measurements

Test Date(s):	Jan 10, 2006
Test Engineer(s):	Femi Ojo
Temperature	27.3°C
Humidity	20%

Test Measurement: Occupied Bandwidth Measurements (Performed in a Semi-Anechoic Chamber)

The EUT was set up on a wooden non-conductive tabletop, 80 cm above the ground plane of the test location. Pre-scan measurements were first performed with a spectrum analyzer at 3 meter from a receiving antenna, in a Semi-Anechoic Chamber at the pre-determined worst-case height at 1 meter and in vertical polarity. The EUT running in continuous mode and was rotated 360 degrees azimuth in its x-y-z axis positions. It was also measured in the horizontal polarity. The analyzer was then placed in 'max-hold' mode to record signal level.

Spectrum Analyzer Configuration (during swept frequency scans) – Occupied Bandwidth

Start Frequency 5.300 GHz
Stop Frequency 6.300 GHz
Sweep Speed 100 mSecs
RES Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Quasi Peak Adapter Mode Bypass
Quasi peak Adapter Bandwidth..... Disabled

FIELD STRENGTH OF FUNDAMENTAL (cont.)

Occupied Bandwidth Measurement Plot

The plot and test data below represents the maximum worst-case results from the measurements performed in accordance to the requirements of the standard and extreme test conditions specified at the beginning of this Part.

Spectrum Mask Measurement

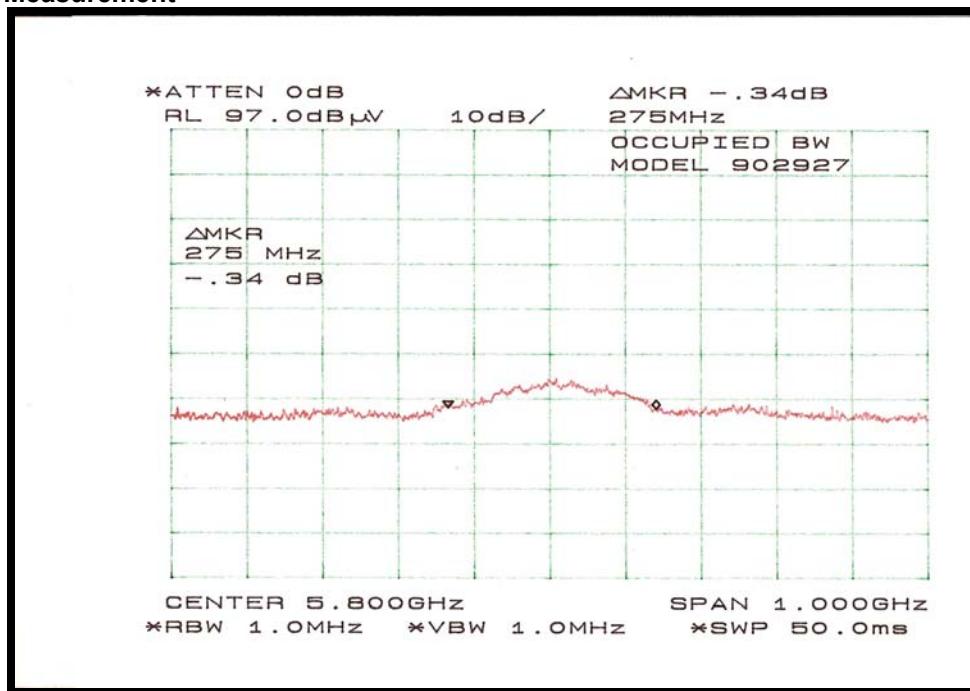


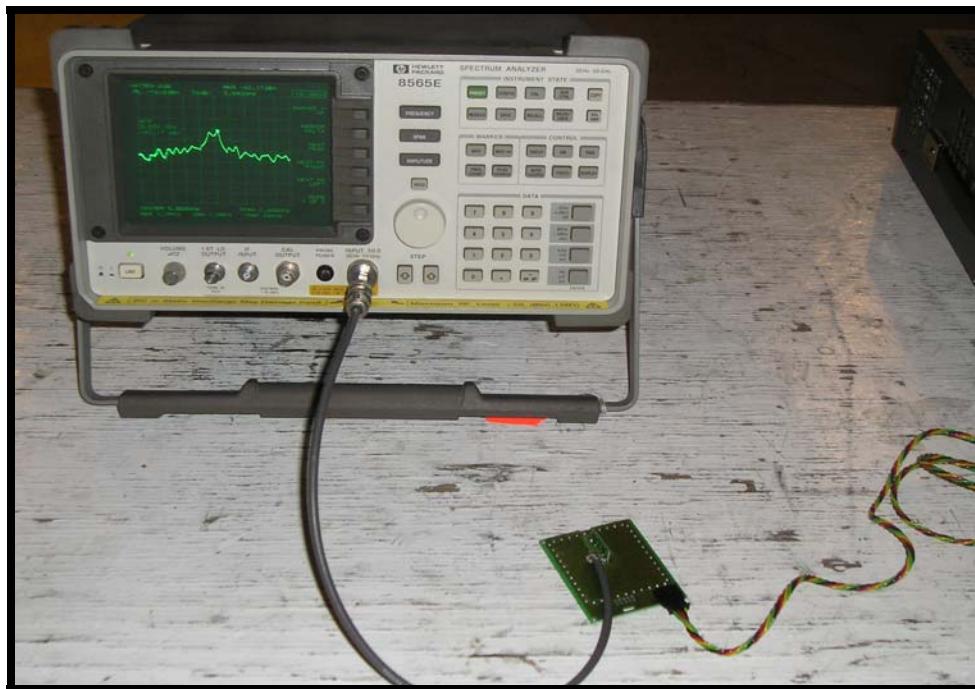
Figure 6: Occupied Bandwidth Plot

Test-Data Summary – Occupied Bandwidth:

Center frequency: 5800 MHz
Mask Bandwidth: 275 MHz

Occupied Bandwidth Data:

Upper Frequency (F_u)	$=f_0 + 275/2$	$=5800 \text{ MHz} + 137.5$	$=5937.5 \text{ MHz}$
Lower Frequency (f_L)	$=f_0 - 275/2$	$=5800 \text{ MHz} - 137.5$	$=5662.5 \text{ MHz}$

FIELD STRENGTH OF FUNDAMENTAL (cont.)**Measurement Photographs for Field Strength of Fundamental and Occupied Bandwidth****Figure 7 Test Set Up Photos – Field Strength of Fundamental Measurement (Front)**

SPURIOUS EMISSIONS, HARMONICS, and Emissions in the RESTRICTED BANDS

Test Specification: FCC PART 15, SECTION 47 CFR 15.205
FCC PART 15, SECTION 47 CFR 15.209

Test Procedure – Spurious Emissions:

The measurement range investigated was from 30 MHz to 18 GHz due to lack of emissions activity above 5.8GHz. The measurement instrumentation used was an Analyzer with bandwidth parameters as stipulated in ANSI C63.4-2003

Site Used – Harmonics Emissions Measurements

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other:

Administrative Details and Environmental Conditions– Spurious and Restricted Bands Emissions

Test Date(s):	Jan 8, 2007 & Jan 10, 2006
Test Engineer:	Femi Ojo
Temperature(s)	26.6°C & 27.3°C
Humidity(s)	30% & 20%

Spectrum Analyzer Configuration (during swept frequency scans) – Spurious and Restricted Emissions

IF Bandwidth.....120 kHz

Measurements below 1000 MHz (unless stated otherwise)

- Analyzer Mode (for Peak Measurements) Peak/Log
- Resolution Bandwidth..... 100 kHz
- Video Bandwidth..... 100 kHz
- Analyzer Mode (for Quasi-Peak Measurements)
- Quasi-Peak/Linear Resolution Bandwidth..... 1000 kHz
- Video Bandwidth..... 1000 kHz

Measurements above 1000 MHz (unless stated otherwise)

- Quasi-Peak Adapter Mode Disabled (if available)
- Analyzer Mode (for Peak Measurements) Peak
- Resolution Bandwidth..... 1000 kHz
- Video Bandwidth..... 1000 kHz
- Analyzer Mode (for Average Measurements) Video Filter
- Resolution Bandwidth..... 1000 kHz
- Video Bandwidth..... 10 Hz

SPURIOUS, HARMONICS, and RESTRICTED BANDS Emissions (cont.)**Test Details – Spurious and Restricted Bands Emissions**

Transmitter	Operating Mode
Limit	47CFR 15.209 (a)

The tables below shows the summary of the highest amplitudes of the spurious RF radiated emissions from the equipment under test.

Table 13 Test Data – Spurious and Restricted Bands Emissions below 1GHz

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		NOTES
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	
38.20	3.7	10.9	1.0	15.7	0	2.0	VB	-	-	30.0	-14.3	
45.40	4.9	12.0	1.2	18.1	0	2.0	HB	-	-	30.0	-11.9	
61.15	3.6	9.9	1.2	14.7	90	1.0	VB	-	-	30.0	-15.3	
70.43	7.7	7.6	1.3	16.6	90	4.0	HB	-	-	30.0	-13.4	
84.52	5.7	7.1	1.5	14.3	0	1.0	VB	-	-	30.0	-15.7	
121.76	9.4	11.9	1.7	23.0	180	3.0	VB	-	-	33.0	-10.0	
127.04	4.0	12.6	1.8	18.4	180	4.0	HB	-	-	33.0	-14.6	
150.04	7.1	12.3	1.9	21.3	180	4.0	HB	-	-	33.0	-11.7	
171.53	6.1	16.4	2.2	24.7	0	2.0	VB	-	-	33.0	-8.3	
186.26	7.8	17.8	2.2	27.8	0	3.0	VB	-	-	33.0	-5.2	
190.21	5.2	17.2	2.3	24.7	0	1.0	HB	-	-	33.0	-8.3	
224.95	7.9	11.0	2.5	21.4	180	3.0	VL	-	-	36.0	-14.6	
233.45	4.5	10.9	2.6	18.1	0	4.0	HL	-	-	36.0	-17.9	
281.38	6.4	13.6	3.2	23.2	90	1.0	VL	-	-	36.0	-12.8	
333.26	5.9	14.0	3.5	23.3	180	3.0	HL	-	-	36.0	-12.7	
337.16	4.0	14.7	3.5	22.2	0	1.0	VL	-	-	36.0	-13.8	
426.68	3.8	15.8	3.8	23.4	180	4.0	HL	-	-	36.0	-12.6	
464.53	4.4	16.5	3.6	24.4	0	4.0	HL	-	-	36.0	-11.6	
464.73	5.8	17.4	3.6	26.8	0	1.0	VL	-	-	36.0	-9.2	
537.95	8.4	18.4	3.8	30.6	0	3.0	VL	-	-	36.0	-5.4	
650.94	6.5	18.5	4.1	29.1	180	1.0	VL	-	-	36.0	-6.9	
663.30	8.3	19.7	4.2	32.2	0	4.0	HL	-	-	36.0	-3.8	
737.33	4.1	20.9	4.4	29.3	0	1.0	VL	-	-	36.0	-6.7	

No emission of significant level was observed from 737.33MHz – 1GHz.

Table 14 Test Data for Radiated Emissions Measurement above 1 GHz @ 3 meters

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		NOTES
FREQ	AMPL	ANT	CAB+AMP	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	
1064.20	35.0	24.8	-27.9	31.9	0	2.0	HH	-	-	54.0	-22.1	
1343.30	35.3	25.0	-27.8	32.5	0	1.0	VH	-	-	54.0	-21.5	
1390.80	35.0	25.5	-27.8	32.7	0	1.0	HH	-	-	54.0	-21.3	
1758.70	34.5	26.6	-27.6	33.5	0	1.0	VH	-	-	54.0	-20.5	
2093.30	34.7	28.3	-26.7	36.3	0	2.0	HH	-	-	54.0	-17.7	
2348.00	34.8	28.4	-27.2	36.0	0	1.0	VH	-	-	54.0	-18.0	
2763.00	34.8	29.5	-27.4	36.9	0	1.0	VH	-	-	54.0	-17.1	
2773.30	34.5	30.0	-27.4	37.1	180	1.0	HH	-	-	54.0	-16.9	
3167.50	36.0	31.0	-26.6	40.4	180	2.0	HH	-	-	54.0	-13.6	

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Product: Smart MDD 5.8GHz Sensor
Model Number:902927
FCC ID:LQN2927

3515.30	35.7	31.2	-27.1	39.8	0	1.0	VH			54.0	-14.2	
4277.00	36.0	32.2	-26.7	41.5	0	1.0	VH			54.0	-12.5	
5035.80	35.3	34.3	-25.5	44.1	0	1.0	HH			54.0	-9.9	
5385.00	35.7	34.4	-25.3	44.8	90	1.5	VH			54.0	-9.2	
5798.70	41.8	34.6	-25.4	51.0	0	1.0	VH			54.0	-3.0	Fund
5831.70	41.7	35.2	-25.5	51.4	0	1.0	HH			54.0	-2.6	Fund
6628.00	37.2	34.8	-23.8	48.2	0	1.0	VH			54.0	-5.8	
9613.30	31.2	38.7	-23.4	46.5	180	1.2	VH			54.0	-7.5	
9641.70	30.5	39.3	-24.0	45.8	0	1.0	HH			54.0	-8.2	
12430.00	31.7	38.8	-23.7	46.8	180	1.2	VH			54.0	-7.2	
13103.30	30.8	40.2	-24.7	46.3	180	2.0	HH			54.0	-7.7	
17808.70	30.8	41.2	-25.1	46.9	90	2.0	VH			54.0	-7.1	

No emission of significant level was observed above 17.8GHz.

Test-Data Summary – Spurious, Harmonics, and Restricted Bands Measurements

The margin in Table 14 is calculated as follows:

Margin = Corrected Amplitude – Limit, where Corrected Amplitude = Spectrum Analyzer Amplitude + Cable Loss + Antenna Factor – Pre-Amp Gain.

Remark

The EUT meets the requirements of the test reference for Spurious and Restricted Bands emissions levels specified in the 47CFR15.209

SPURIOUS and RESTRICTED BANDS Emissions (cont)

Test Photographs



Figure 8: Spurious emissions below 1 GHz (View 1)



Figure 9: Spurious emissions below 1GHz (View 2)

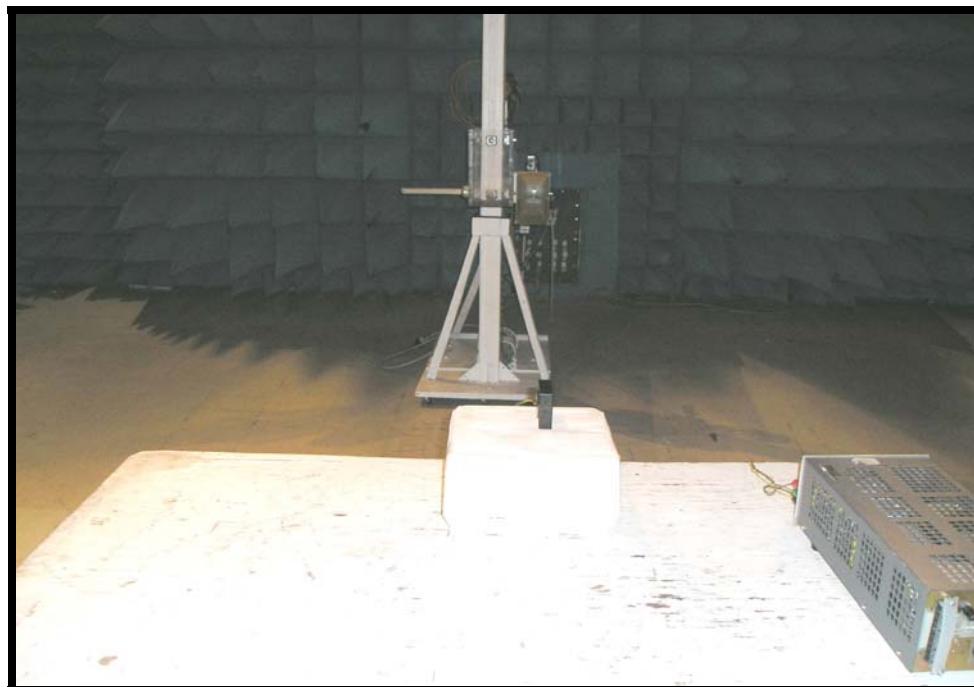
Spurious emissions (cont.)**Test Photographs (cont.)**

Figure 10: Spurious emission above 1 GHz (View 1)



Figure 11: Spurious emission above 1 GHz (View 2)

PART 4 APPENDICES

A. EUT Technical Specification

Applicant	Connaught Electronics, Ltd.	
Product Specifications		
Description	5.8GHz MDD Sensor	
Frequency Range	5616.0 MHz to 5984.0 MHz	
CEL Number(s)	CEL	902927
Cable(s)	n/a	
Peak Output Power	-40.0dBm	
Main board	Manufacturer	CEL
	Part Number	171718 Rev 001.2
	Dimension	Approx. 65mm x 59mm
	Connector(s)	One (1) 4-pin
Antenna Board	Manufacturer	CEL
	Dimension	Approx. 23mm x 10mm
	Layers	2-sided
	Antenna	Two (2) 10mm Dual loop, 1mm traces
Ports	One (1) 4-pin	
Power Supply(s)	DC Cell	
	Input	13.5Vdc/50mA
	Output	n/a

B. EUT Photographs



Figure 12: EUT Top View



Figure 13: EUT Front View



Figure 14: EUT Rear View



Figure 15: EUT Internal View 1

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Tel: [925] 862-2944 Fax: [925] 862-9013
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Product: Smart MDD 5.8GHz Sensor
Model Number:902927
FCC ID:LQN2927

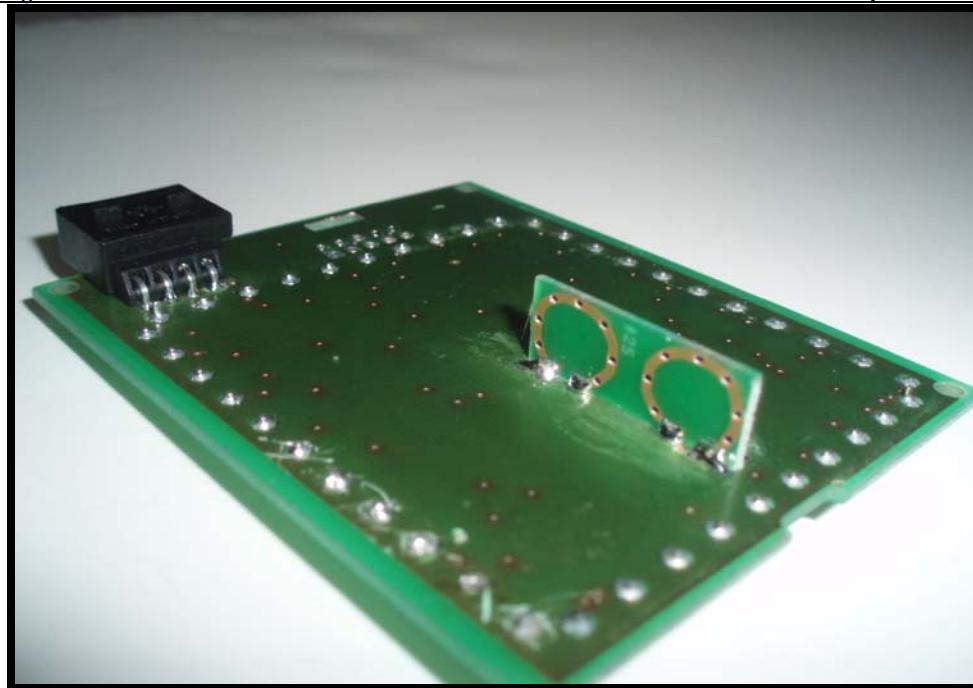


Figure 16: EUT Internal View 2

C. Modification Letter

To Whom It May Concern:

This is to certify that no modifications were necessary for Smart MDD 5.8GHz Microwave Sensor, model 902927 to comply with the required Requirements of:

FCC Rules and Regulations per 47 CFR 15.209

It is the manufacturer's responsibility to ensure that additional production units of Smart MDD 5.8GHz Microwave Sensor, model 902927 are manufactured with identical electrical and mechanical characteristics. For further information, please contact the manufacturer at:

Connaught Electronics, Ltd.
IDA Industrial Estate, Dunmore Road,
Tuam, Co. Galway, Ireland

Tel: +353 932-5128
Attention: Mr. Patrick Denny