



DATE: 07 June 2012

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

AeroScout Ltd.

Equipment under test:

T7 TAG

TAG-7000

Written by: _____

I. Smilansky, Documentation

Approved by: For/ _____

A. Moses, Test Engineer

Approved by: _____

I. Raz, EMC Laboratory Manager

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This report relates only to items tested.



Measurement/Technical Report for AeroScout Ltd.

T7 TAG

TAG-7000

FCC ID: Q3HTAG7000

IC: 5115A-TAG7000

11 June 2012

This report concerns:	Original Grant:	x
	Class I Change:	
	Class II Change:	
Equipment type:	Digital Transmission System	

Limits used:
47CFR15 Section 15.247

Measurement procedure used is KDB 558074 D01 18 January 2012.

Application for Certification
prepared by:

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1. General Information

1.1 Administrative Information

Manufacturer:	AeroScout Ltd.
Manufacturer's Address:	3 Pekeris St. Einstein Entrance 4th Floor Rehovot 76702 Israel Tel: +972-8-9369393 Fax: +972-8-9365977
Manufacturer's Representative:	Dadi Matza
Equipment Under Test (E.U.T):	T7 TAG
Equipment Model No.:	TAG-7000
Equipment Serial No.:	0000CCC5A4A19
Date of Receipt of E.U.T:	01.09.11
Start of Test:	14.09.11
End of Test:	27.10.11
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15, Subpart C



1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.



1.3 Product Description

The AeroScout T7 Tags are a key component of the AeroScout Visibility System. The T7 Tag is a small Wi-Fi and active RFID device that enables the wireless network infrastructure to locate assets not connected to a wireless network. Tagged items are accurately located in real-time and in any environment – from tight indoor locations such as hospital floors to open outdoor spaces such as parking lots.

The T7 Tag is designed to attach to infant's umbilical stub and as a part of the AeroScout Infant Tracking Solution, help prevent infant abductions by alerting when the infant is carried close to an exit door.

1.4 Test Methodology

Radiated testing were performed according to the procedures in KDB 558074 D01 18 January 2012. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing September 3, 2009).

I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 Measurement Uncertainty

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

2. System Test Configuration

2.1 *Justification*

Radiated emission screening was performed in 3 orthogonal orientations. The worst case orientation was the vertical position.

2.2 *EUT Exercise Software*

4A7.00 software was used.

2.3 *Special Accessories*

No special accessories were needed to achieve compliance.

2.4 *Equipment Modifications*

No modifications were needed to achieve compliance.

2.5 *Configuration of Tested System*



Figure 1. Configuration of Tested System

3. Conducted and Radiated Emission Tests Set-up Photos



Figure 2. Conducted Emission From Antenna Test



Figure 3. Radiated Emission Test



4. 6 dB Minimum Bandwidth

4.1 Test Specification

F.C.C. Part 15, Subpart C: (15.247-a2)

4.2 Test procedure

The E.U.T. was set to the applicable test frequency. The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (cable loss = 1 dB). The spectrum analyzer was set to 100 kHz resolution BW. The spectrum bandwidth of the E.U.T. at the point of 6 dB below maximum peak power was measured and recorded.

The E.U.T. was tested at 2412 MHz, 2438 MHz, and 2462 MHz.

4.3 Test Results

Operation Frequency (MHz)	Reading (MHz)	Specification (MHz)
2412	12.63	0.5
2438	12.63	0.5
2462	13.13	0.5

Figure 4 — 6 dB Minimum Bandwidth

JUDGEMENT: Passed

Additional information of the results is given in *Figure 5* to *Figure 7*.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses

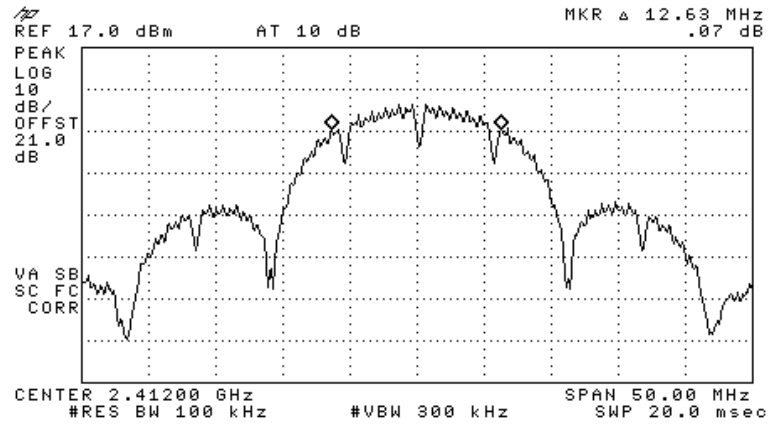


Figure 5 — 2412 MHz

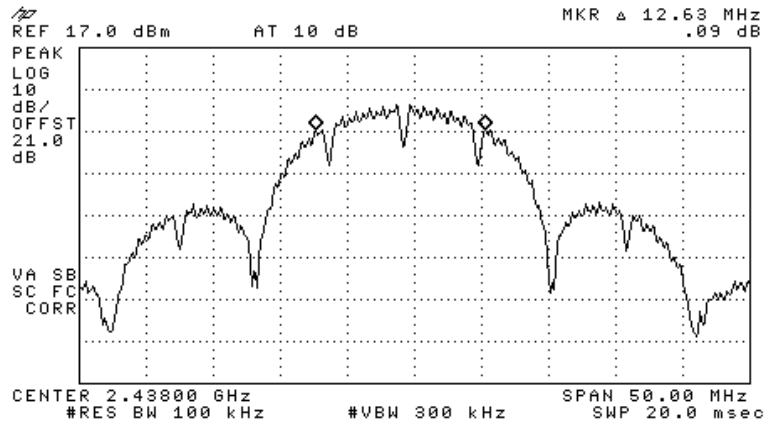


Figure 6 — 2438 MHz

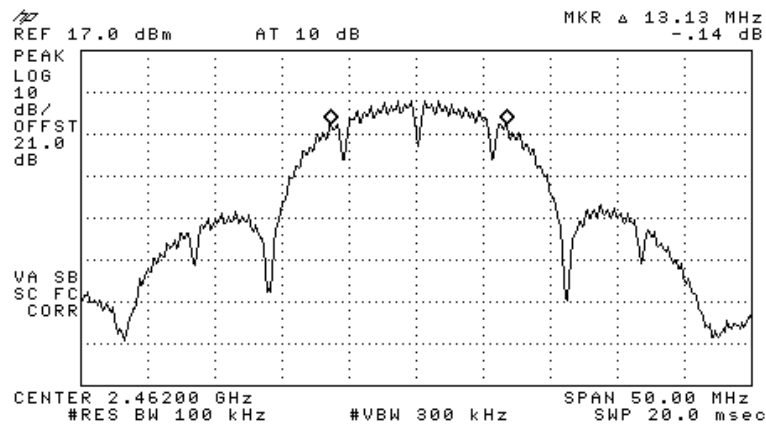


Figure 7 — 2462 MHz



4.4 6 dB Minimum Bandwidth Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 8 Test Equipment Used



5. 26 dB Minimum Bandwidth

5.1 Test Specification

F.C.C. Part 15, Subpart C: (15.247-a2)

5.2 Test procedure

The E.U.T. was set to the applicable test frequency. The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (cable loss = 1 dB). The spectrum analyzer was set to 100 kHz resolution BW. The spectrum bandwidth of the E.U.T. at the point of 6 dB below maximum peak power was measured and recorded.

The E.U.T. was tested at 2412 MHz, 2438 MHz, and 2462 MHz.

5.3 Test Results

Operation Frequency (MHz)	Reading (MHz)	Specification (MHz)
2412	20.62	0.5
2438	20.13	0.5
2462	20.5	0.5

Figure 9 26 dB Minimum Bandwidth

JUDGEMENT: Passed

Additional information of the results is given in *Figure 10* to *Figure 12*.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses

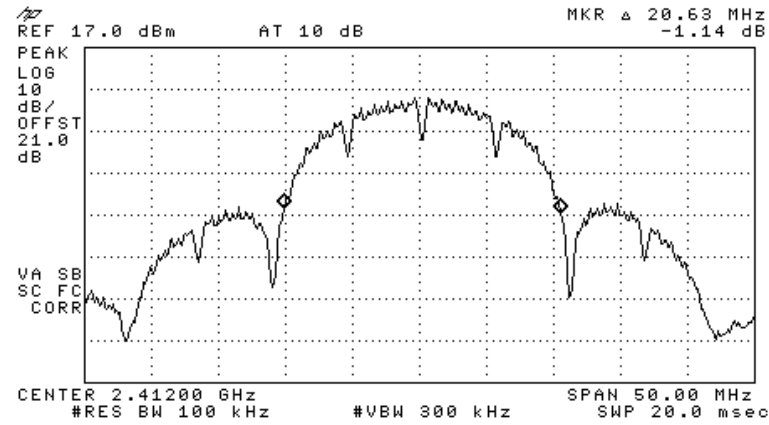


Figure 10 — 2412 MHz

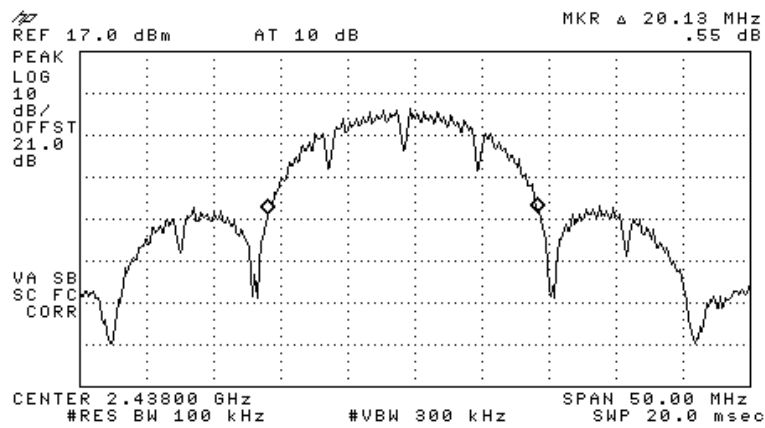


Figure 11 — 2438 MHz

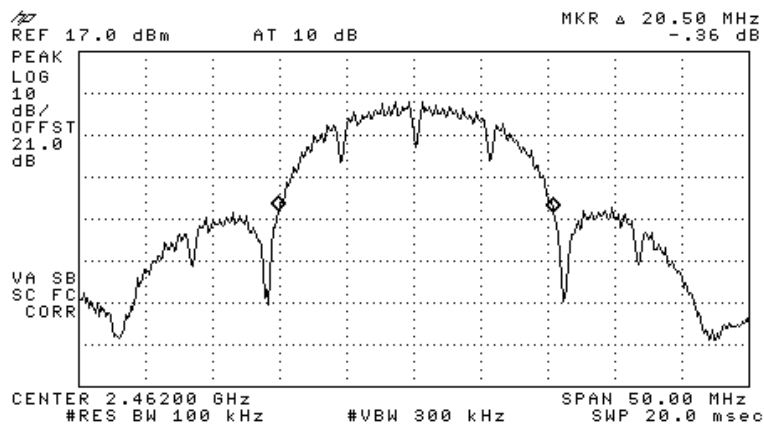


Figure 12 — 2462 MHz



5.4 26 dB Minimum Bandwidth Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 13 Test Equipment Used



6. Maximum Transmitted Peak Power Output

6.1 Test Specification

F.C.C. Part 15, Subpart C Section 15.247(b).

6.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (cable loss = 1 dB). The Spectrum Analyzer was set to 1.0 MHz resolution BW. Peak power level was measured at selected operation frequencies.

The E.U.T. was tested at 2412MHz, 2438MHz, 2462MHz.

6.3 Test Results

Operation Frequency (MHz)	Power (dBm)	Specification (dBm)	Margin (dB)
2412	15.7	30.0	-14.3
2438	16.03	30.0	-14.0
2462	16.72	30.0	-13.3

Figure 14 Maximum Peak Power Output

JUDGEMENT: Passed by 13.3 dB

Additional information of the results is given in *Figure 15* to *Figure 17*.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses

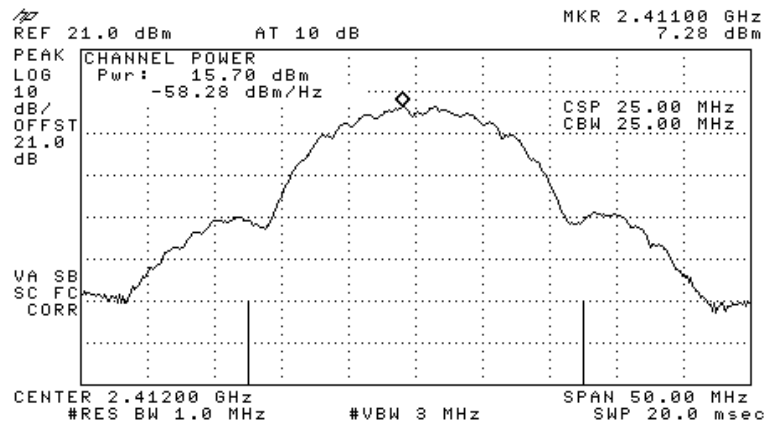


Figure 15 — 2412 MHz

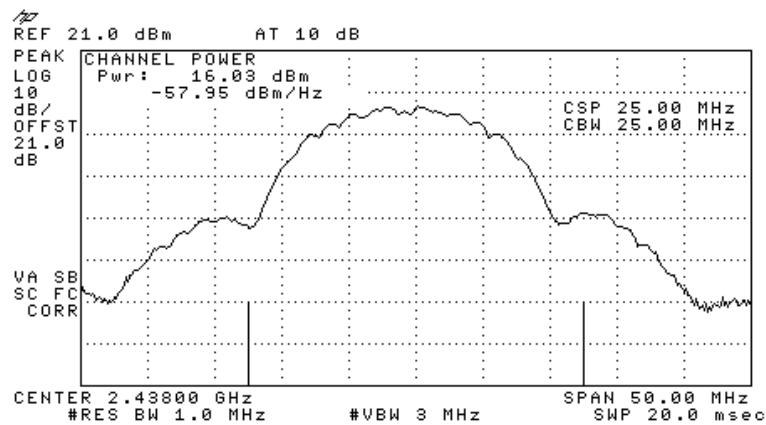


Figure 16 — 2438 MHz

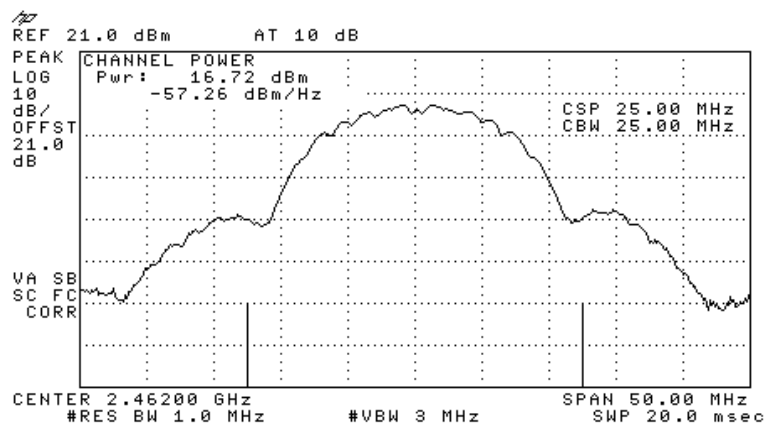


Figure 17 — 2462 MHz



6.4 Maximum Peak Power Output Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 18 Test Equipment Used



7. Peak Power Output Out of 2400-2483.5 MHz Band

7.1 Test procedure

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (cable loss = 1 dB). The spectrum analyzer was set to 100 kHz resolution BW except for the frequency range

9 kHz-150 kHz where the RBW was set to 1kHz and the frequency range 150 kHz-10 MHz where the RBW was set to 10kHz. The frequency range from 9 kHz to 25 GHz was scanned. Level of spectrum components out of the 2400-2483.5 MHz was measured at the selected operation frequencies.

The E.U.T. was tested at 2412MHz, 2438MHz and 2462MHz.

7.2 Test Results

JUDGEMENT: Passed by 5.5 dB

Additional information of the results is given in *Figure 19* to *Figure 27*.

TEST PERSONNEL:

Tester Signature: For/  _____

Date: 11.06.12

Typed/Printed Name: A. Moses

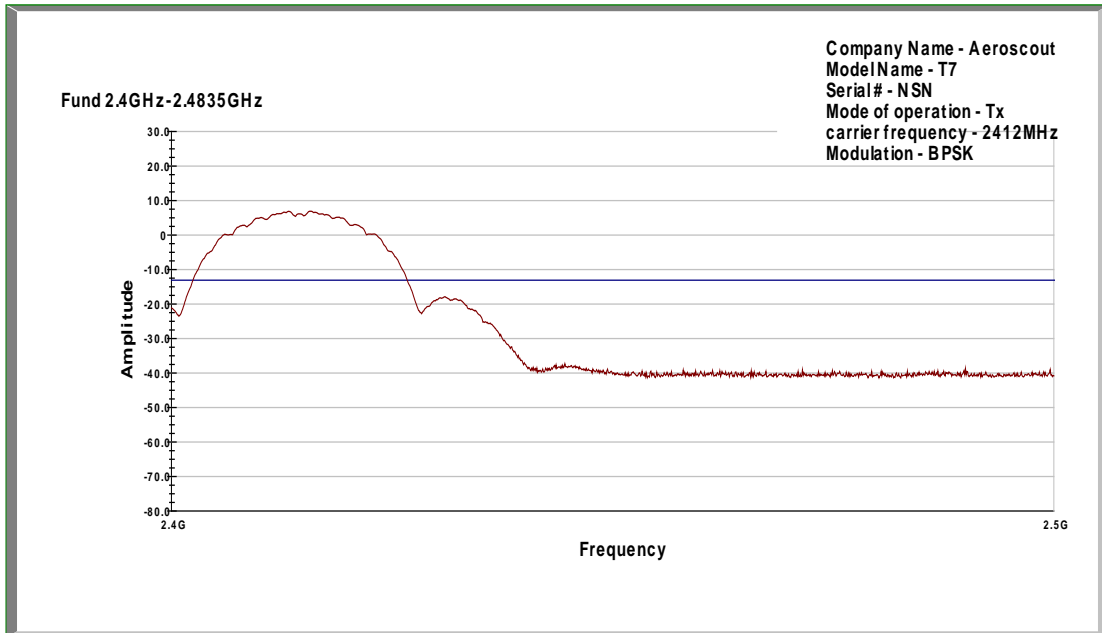


Figure 19 — 2412 MHz

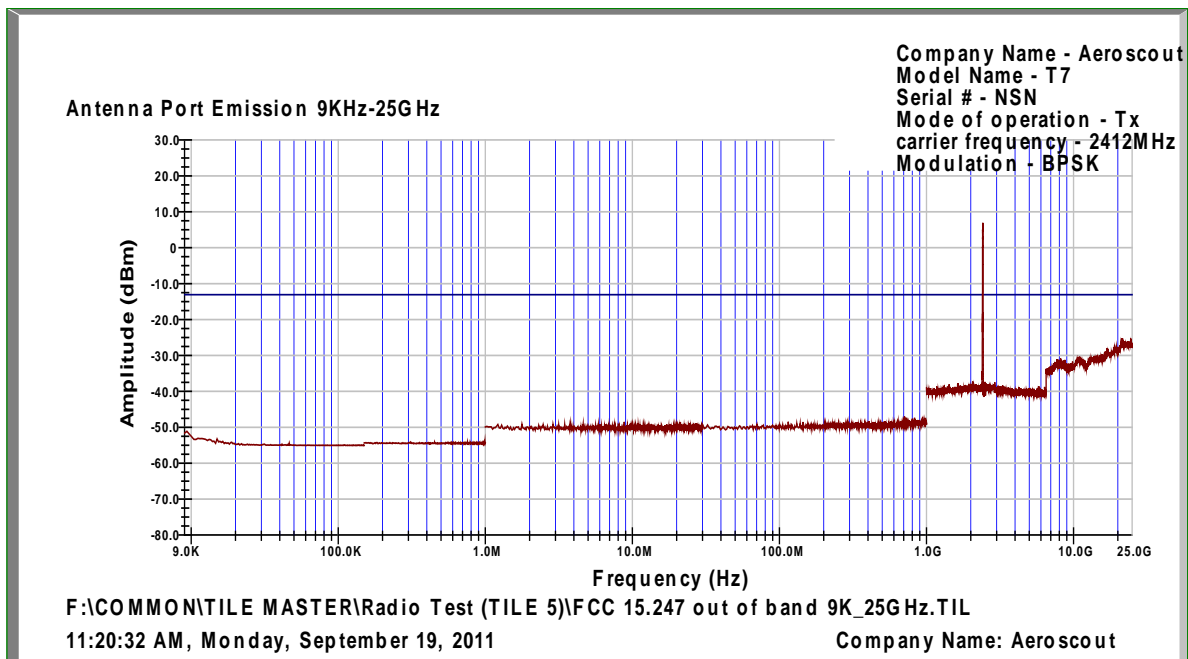


Figure 20 — 2412 MHz



Frequency (MHz)	Peak Measurement (dBm)	Peak Specification (dBm)	Peak Margin (dB)
0.00935	-51.16	-13.1	-38.0
0.993	-54.07	-13.1	-41.0
8.80	-48.5	-13.1	-35.4
709.00	-47.0	-13.1	-33.9
2400.00	-18.64	-13.1	-5.5
2500.00	-37.4	-13.1	-24.3
8100.00	-30.9	-13.1	-17.8
16940.00	-28.0	-13.1	-14.9
21520.00	-25.2	-13.1	-12.1

Figure 21 — 2412 MHz

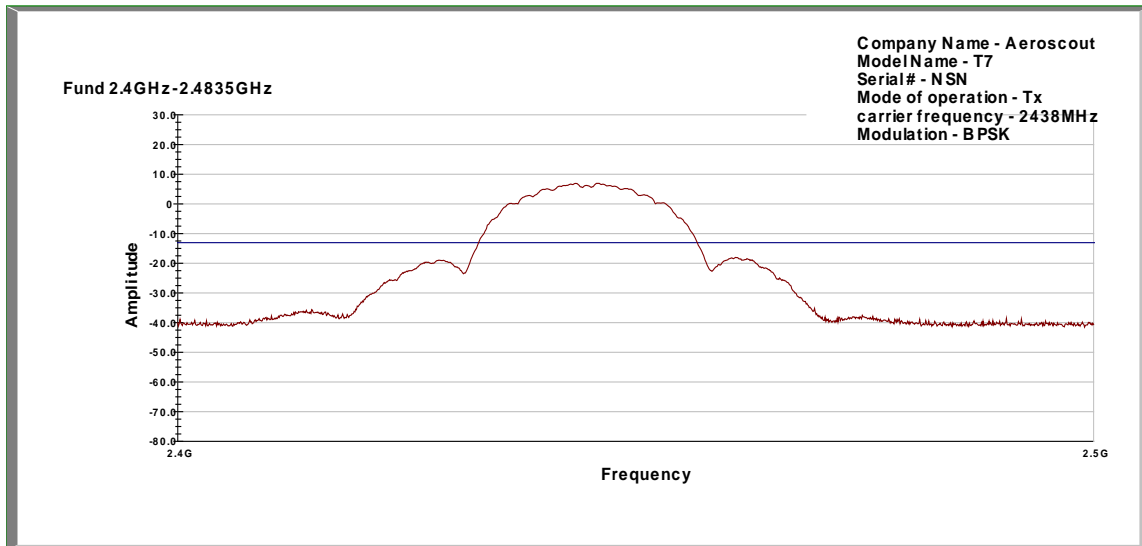


Figure 22 — 2438 MHz

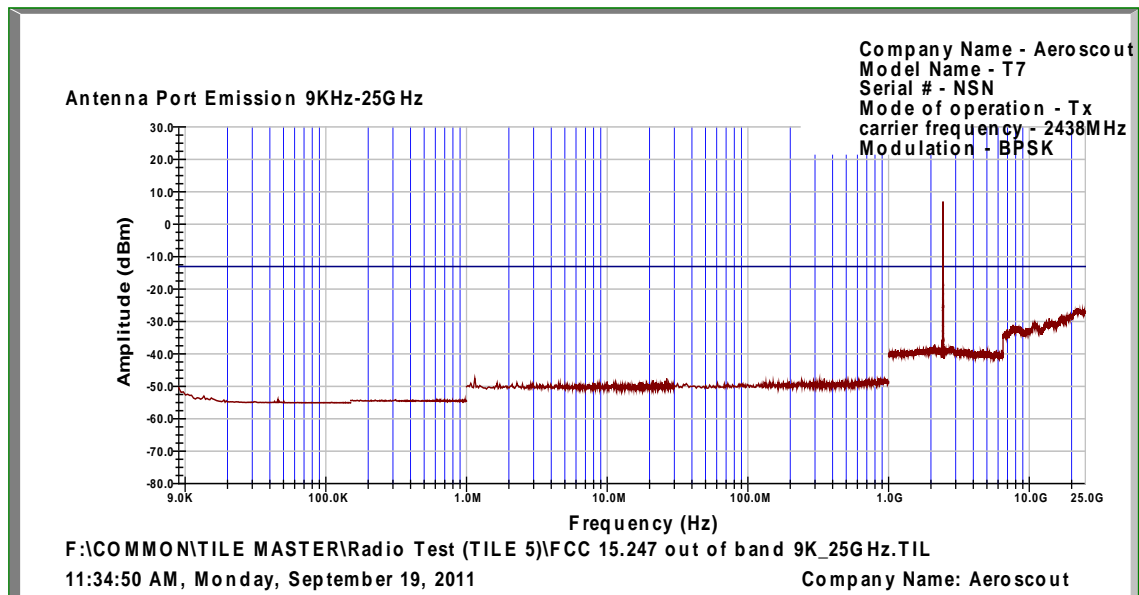


Figure 23 — 2438 MHz



Frequency (MHz)	Peak Measurement (dBm)	Peak Specification (dBm)	Peak Margin (dB)
0.009	-50.46	-13.09	-37.4
0.976	-54.16	-13.09	-41.1
1.145	-47.5	-13.09	-34.4
936.14	-47.5	-13.09	-34.4
2127.60	-37.1	-13.09	-24.0
2773.00	-37.7	-13.09	-24.6
7683.00	-31.0	-13.09	-17.9
16968.00	-28.1	-13.09	-15.0
21900.00	-25.86	-13.09	-12.8

Figure 24 — 2438 MHz

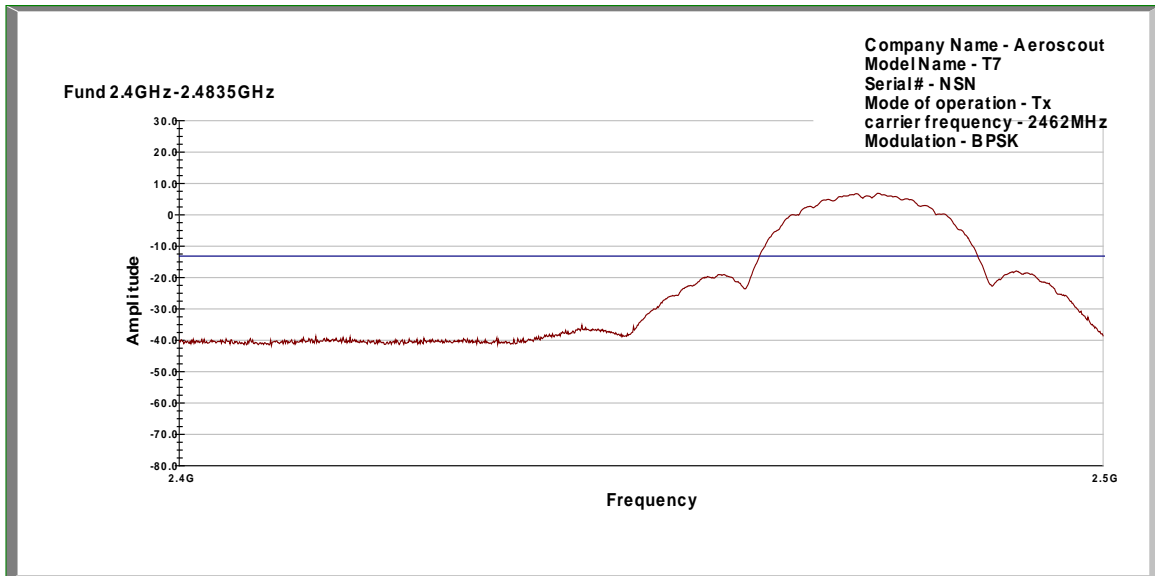


Figure 25 — 2462 MHz

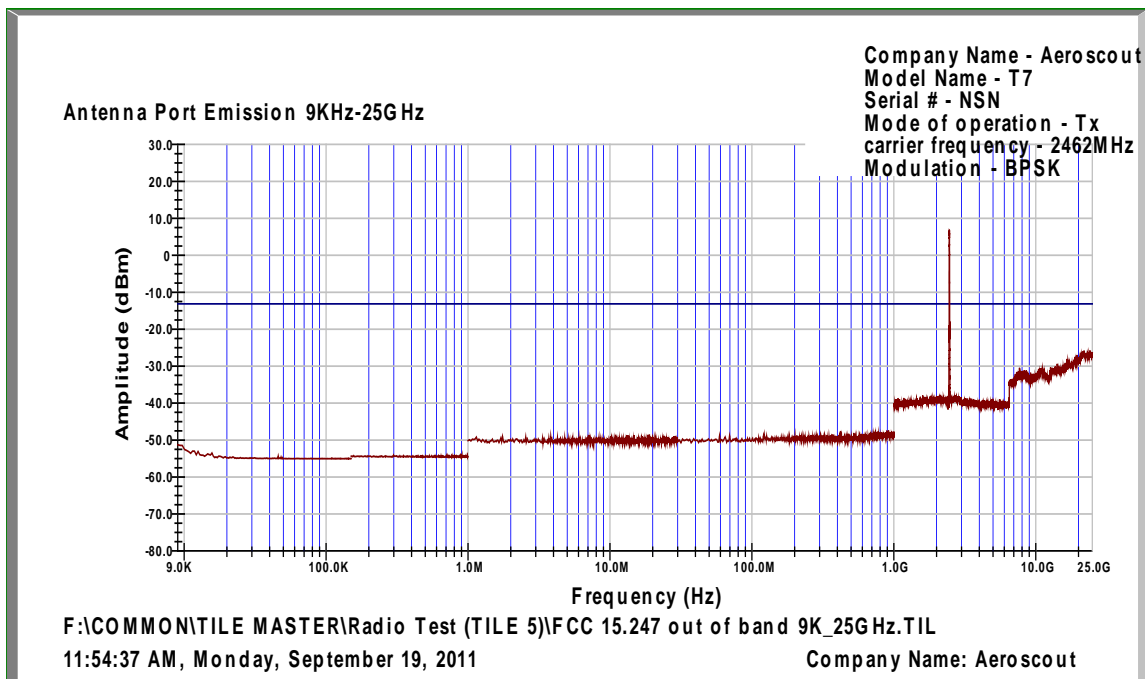


Figure 26 — 2462 MHz



Frequency (MHz)	Peak Measurement (dBm)	Peak Specification (dBm)	Peak Margin (dB)
0.009	-51.3	-13.17	-38.1
0.298	-54.1	-13.17	-40.9
18.98	-48.54	-13.17	-35.4
917.55	-47.45	-13.17	-34.3
2104.00	-37.8	-13.17	-24.6
2486.00	-36.81	-13.17	-23.6
7670.00	-30.47	-13.17	-17.3
16560.00	-28.07	-13.17	-14.9
24080.00	-25.79	-13.17	-12.6

Figure 27 — 2462 MHz



7.3 Peak Power Output Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 28 Test Equipment Used



8. Band Edge Spectrum

8.1 Test Specification

F.C.C. Part 15, Subpart C (15.247)

8.2 Test procedure

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (cable loss = 1 dB). The spectrum analyzer was set to 100 kHz resolution BW. Maximum power level below 2400 MHz and above 2483.5 MHz was measured relative to power level at 2412 MHz, and 2462 MHz correspondingly.

8.3 Test Results

Operation Frequency (MHz)	Band Edge Frequency (MHz)	Spectrum Level (dBm)	Specification (dBm)	Margin (dB)
2412	2400	-28.10	-16.8	-11.3
2462	2483.5	-48.83	-16.7	-32.1

Figure 29 Band Edge Spectrum

JUDGEMENT: Passed by 11.3 dB

Additional information of the results is given in *Figure 30* to *Figure 31*.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses

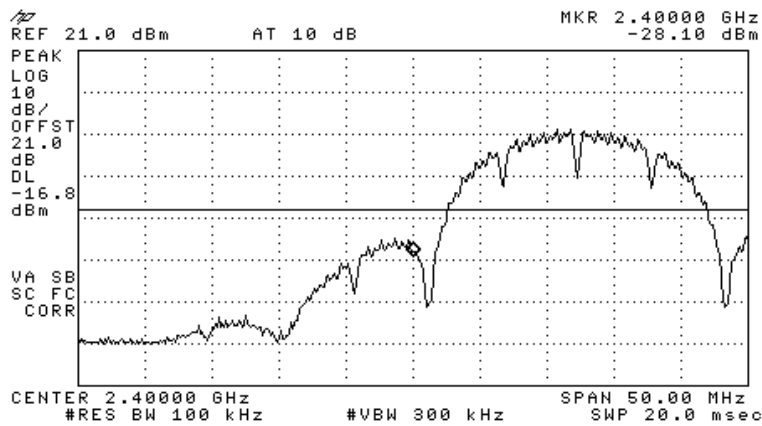


Figure 30 — 2400 MHz

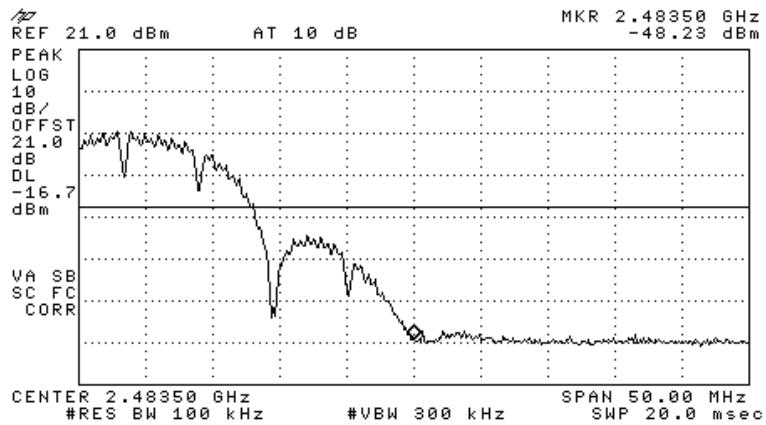


Figure 31 — 2462 MHz



8.4 Band Edge Spectrum Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 32 Test Equipment Used



9. Spurious Radiated Emission, 9 kHz – 30 MHz

9.1 Test Specification

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

9.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 3.1.

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

9.3 Test Results

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 209 specification.

The signals in the band 9 KHz – 30 MHz were below the spectrum analyzer noise level, at least 20 dB below the specification limit.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses



9.4 Radiated Emission Test Instrumentation Used

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	8542E	3906A00276	November 24, 2010	1 year
RF Section	HP	85420E	3705A00248	November 24, 2010	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 19, 2011	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKGC19982	N/A	N/A

Figure 33 Test Equipment Used

9.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

- FS: Field Strength [dB μ v/m]
- RA: Receiver Amplitude [dB μ v]
- AF: Receiving Antenna Correction Factor [dB/m]
- CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dB μ V (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dB μ V

No external pre-amplifiers are used.



10. Spurious Radiated Emission, 30 MHz - 25 GHz

10.1 Test Specification

30 MHz-25000 MHz, F.C.C., Part 15, Subpart C

10.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 1.

The frequency range 30 MHz-1000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

In the frequency range 30 MHz -2.9 GHz The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk. The E.U.T operation mode and test set-up are as described in Section 3.

In the frequency range 2.9-25.0 GHz, a spectrum analyzer including a low noise amplifier was used. During average measurements, the IF bandwidth was 1 MHz and the video bandwidth was 100Hz. During peak measurements, the IF bandwidth was 1 MHz and the video bandwidth was 3 MHz.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. Verification of the E.U.T emissions was based on the following methods: turning the E.U.T on and off; using a frequency span less than 10 MHz; observation of the signal level during turntable rotation. (Background noise is not affected by the rotation of the E.U.T.)

The E.U.T. was tested at 2412MHz, 2438MHz and 2462MHz.

The test distance was 3 meters.



10.3 Test Results

JUDGEMENT: Passed by 0.2 dB

For the operation frequency of 2412 MHz, the margin between the emission level and the specification limit is -1.6 in the worst case at the frequency of 4824 MHz, vertical polarization.

For the operation frequency of 2438 MHz, the margin between the emission level and the specification limit is -0.8 in the worst case at the frequency of 4872 MHz, vertical polarization.

For the operation frequency of 2462 MHz, the margin between the emission level and the specification limit is -0.2 in the worst case at the frequency of 4924 MHz, vertical polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, specification.

The details of the highest emissions are given in *Figure 34* to *Figure 39*.

TEST PERSONNEL:

Tester Signature: For/  _____

Date: 11.06.12

Typed/Printed Name: A. Moses



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak
Operation Frequency: 2412MHz

Freq.	Polarity	Peak Reading	Peak Specification	Peak Margin
(MHz)	(H/V)	(dB μ V/m)	(dB μ V/m)	(dB)
4824.00	H	55.3	74.0	-18.7
4824.00	V	59.5	74.0	-14.5
2390.00	H	57.4	74.0	-16.6
2390.00	V	56.3	74.0	-17.3

Figure 34. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Peak

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

“Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Average
Operation Frequency: 2412MHz

Freq.	Polarity	Average Reading	Average Specification	Average Margin
(MHz)	(H/V)	(dBμV/m)	(dB μV/m)	(dB)
4824.00	H	44.8	54.0	-9.2
4824.00	V	52.4	54.0	-1.6
2390.00	H	44.5	54.0	-9.5
2390.00	V	44.5	54.0	-9.5

**Figure 35. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL.
Detector: Average**

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

“Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak
Operation Frequency: 2437 MHz

Freq.	Polarity	Peak Reading	Peak Specification	Peak Margin
(MHz)	(H/V)	(dB μ V/m)	(dB μ V/m)	(dB)
4872	H	59.7	74.0	-14.3
4872	V	58.5	74.0	-15.5

**Figure 36. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL.
Detector: Peak**

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

“Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Average
Operation Frequency: 2437MHz

Freq.	Polarity	Average Reading	Average Specification	Average Margin
(MHz)	(H/V)	(dBμV/m)	(dB μV/m)	(dB)
4872	H	53.0	54.0	-1
4872	V	53.2	54.0	-0.8

Figure 37. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Average

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

“Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Peak
Operation Frequency: 2462MHz

Freq.	Polarity	Peak Reading	Peak Specification	Peak Margin
(MHz)	(H/V)	(dBμV/m)	(dB μV/m)	(dB)
2483.50	H	56.7	74.0	-17.3
2483.50	V	54.9	74.0	-19.1
4924.00	H	57.7	74.0	-16.3
4924.00	V	59.2	74.0	-14.8

Figure 38. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Peak

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

“Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Spurious Radiated Emission

E.U.T Description T7 TAG
Type TAG-7000
Serial Number: 0000CCC5A4A19

Specification: FCC, Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical Frequency range: 1.0 GHz to 25.0 GHz
Test Distance: 3 meters Detector: Average
Operation Frequency: 2462 MHz

Freq.	Polarity	Average Reading	Average Specification	Average Margin
(MHz)	(H/V)	(dBμV/m)	(dB μV/m)	(dB)
2483.50	H	45.2	54.0	-8.8
2483.50	V	45.2	54.0	-8.8
4924.00	H	53.2	54.0	-0.8
4924.00	V	53.8	54.0	-0.2

Figure 39. Radiated Emission. Antenna Polarization: HORIZONTAL / VERTICAL. Detector: Average

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

Correction Factor = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



10.4 **Field Strength Calculation Below 1 GHz**

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$[\text{dB}\mu\text{v/m}] \text{ FS} = \text{RA} + \text{AF} + \text{CF}$$

FS: Field Strength [dB μ v/m]
RA: Receiver Amplitude [dB μ v]
AF: Receiving Antenna Correction Factor [dB/m]
CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dB μ V (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dB μ V

No external pre-amplifiers are used.



**10.5 Spurious Radiated Emission 30 MHz – 25 GHz Test
Equipment Used**

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Period
EMI Receiver	HP	8542E	3906A00276	November 24, 2010	1 Year
RF Filter Section	HP	85420E	3705A00248	November 24, 2010	1 Year
Antenna Biconical	ARA	BCD 235/B	1041	August 31, 2011	1 Year
Antenna Log Periodic	ARA	LPD-2010/A	1038	March 29, 2011	1 Year
Antenna Log Periodic	A.H. Systems	SAS-200/511	253	January 27, 2011	2 Years
Double Ridged Waveguide Horn Antenna	EMCO	3115	2984	March 14, 2010	2 Years
Horn Antenna	ARA	SWH-28	1008	January 26, 2011	2 Years
Low Noise Amplifier	Narda	LNA-DBS-0411N313	013	November 5, 2010	1 Year
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	January 4, 2011	1 Year
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 Year
Spectrum Analyzer	HP	8564E	3442A00275	January 11, 2011	1 Year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKG19982	N/A	N/A



11. Transmitted Power Density

11.1 Test Specification

F.C.C. Part 15, Subpart C (15.247(d))

11.2 Test procedure

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (20dB) and an appropriate coaxial cable (cable loss = 1 dB). The spectrum analyzer was set to 3 kHz resolution BW. and sweep time of 1 second for each 3 kHz “window”. The spectrum peaks were located at each of the 3 operating frequencies.

11.3 Test Results

Operation Frequency (MHz)	Reading Spectrum Analyzer (dBm)	Specification (dBm)	Margin (dB)
2412	-17.36	8.0	-25.4
2438	-17.17	8.0	-25.2
2462	-17.19	8.0	-25.2

Figure 40 Test Results

JUDGEMENT: Passed by 25.2 dB

Additional information of the results is given in *Figure 41* to *Figure 43*.

TEST PERSONNEL:

Tester Signature: For/ 

Date: 11.06.12

Typed/Printed Name: A. Moses

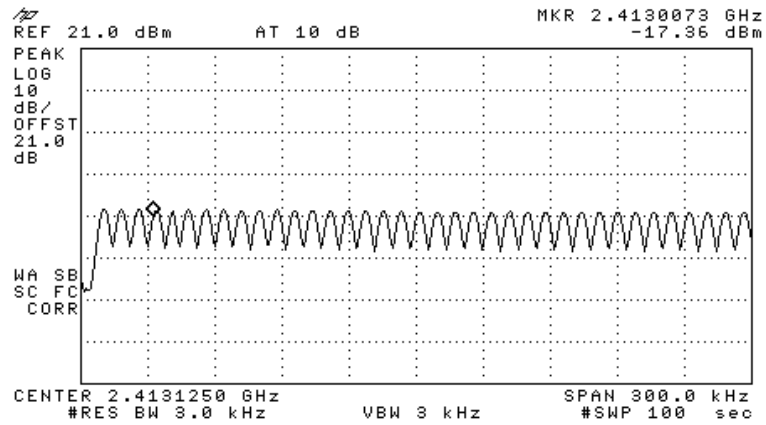


Figure 41 — 2412 MHz

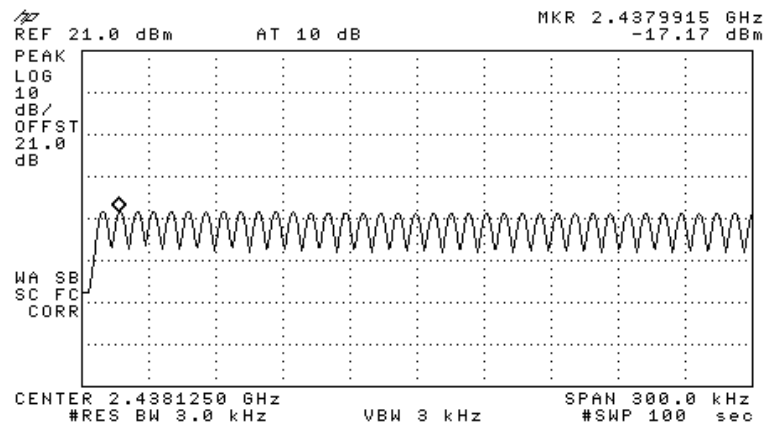


Figure 42 — 2438 MHz

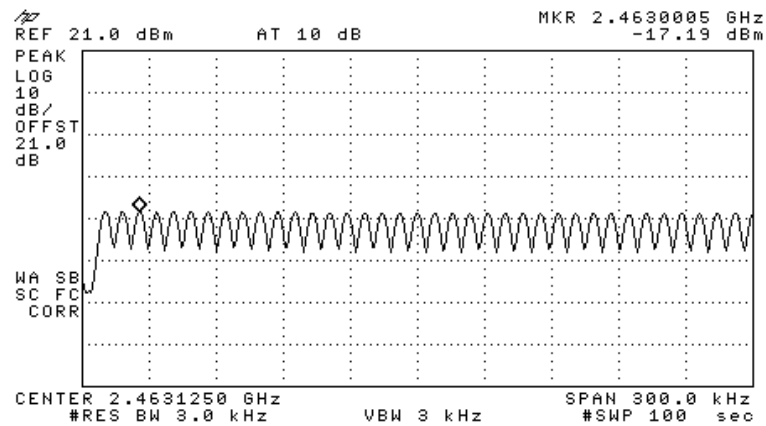


Figure 43 — 2462 MHz



11.4 Transmitted Power Density Test Equipment Used.

Instrument	Manufacturer	Model	Serial/Part Number	Calibration	
				Last Calibration Date	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 21, 2011	1 year
Attenuator	Jyebao	-	FAT-AM5AF5G6G2W20	September 14, 2011	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	January 4, 2011	1 year

Figure 44 Test Equipment Used



12. Antenna Gain/Information

The antenna gain is -4 dBi.

The antenna is a loop antenna.



13. R.F Exposure/Safety

The E.U.T. is use for keeping track of babies in hospitals. The typical distance between the E.U.T. and the user is 1cm.

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1307(b)(1) Requirements

(a) FCC limits at MHz is: $1 \frac{mW}{cm^2}$

Using table 1 of Section 1.1310 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(b) The power density produced by the E.U.T. is:

$$S = \frac{P_t G_t}{4\pi R^2}$$

P_t- Transmitted Power 16.72 dBm (Peak) = 46.99 mW

G_T- Antenna Gain, -4 dBi = 0.4 numeric

R- Distance from Transmitter using 1cm worst case

(c) The duty cycle of transmission in actual worst case is 500µsec every 1 second (500µsec\100msec<1%).

The average power source is:

$$P_{AV} = 46.99 \times 0.02 = 2.35mW$$

(d) The peak power density (time averaging) is:

$$S_{AV} = \frac{2.35 \times 0.4}{4\pi(1)^2} = 0.075 \frac{mW}{cm^2}$$

(e) This is below the FCC limit.



14. APPENDIX A - CORRECTION FACTORS

14.1 Correction factors for CABLE from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
90.0	1.6		
100.0	1.7		
150.0	2.0		
200.0	2.3		
250.0	2.7		
300.0	3.1		
350.0	3.4		
400.0	3.7		
450.0	4.0		
500.0	4.3		
600.0	4.7		
700.0	5.3		
800.0	5.9		
900.0	6.3		
1000.0	6.7		

NOTES:

- 1. The cable type is RG-214.*
- 2. The overall length of the cable is 27 meters.*
- 3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".*



14.2 Correction factors for CABLE
from EMI receiver
to test antenna
at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

- 1. The cable type is RG-8.*
- 2. The overall length of the cable is 10 meters.*



14.3 Correction factors for CABLE
from spectrum analyzer
to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

- 1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.*
- 2. The cable is used for measurements above 2.9 GHz.*
- 3. The overall length of the cable is 10 meters.*



14.4 Correction factors for LOG PERIODIC ANTENNA

**Type LPD 2010/A
at 3 and 10 meter ranges.**

Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.8
400.0	15.3
500.0	15.6
600.0	18.7
700.0	19.1
800.0	20.2
900.0	21.1
1000.0	23.2

NOTES:

1. Antenna serial number is 1038.
2. The above lists are located in file number 38M30.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.
3. The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".



14.5 Correction factors for

LOG PERIODIC ANTENNA

**Type SAS-200/511
at 3 meter range.**

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

NOTES:

- 1. Antenna serial number is 253.*
- 2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.*
- 3. The files mentioned above are located on the disk marked "Antenna Factors".*



**14.6 Correction factors for BICONICAL ANTENNA
Type BCD-235/B,
at 3 meter range**

FREQUENCY (MHz)	AFE (dB/m)
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

NOTES:

- 1. Antenna serial number is 1041.*
- 2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".*



14.7 Correction factors for Double-Ridged Waveguide Horn

**Model: 3115, S/N 29845
at 3 meter range.**

FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENN A Gain (dBi)	FREQUENCY (GHz)	ANTENNA FACTOR (dB 1/m)	ANTENNA Gain (dBi)
1.0	24.8	5.4	10.0	38.8	11.4
1.5	26.1	7.6	10.5	38.9	11.8
2.0	28.6	7.7	11.0	39.0	12.1
2.5	29.8	8.4	11.5	39.6	11.8
3.0	31.4	8.4	12.0	39.8	12.0
3.5	32.4	8.7	12.5	39.6	12.5
4.0	33.7	8.6	13.0	40.0	12.5
4.5	33.4	9.9	13.5	39.8	13.0
5.0	34.5	9.7	14.0	40.2	13.0
5.5	35.1	9.9	14.5	40.6	12.9
6.0	35.4	10.4	15.0	41.3	12.4
6.5	35.6	10.8	15.5	39.5	14.6
7.0	36.2	10.9	16.0	38.8	15.5
7.5	37.3	10.4	16.5	40.0	14.6
8.0	37.7	10.6	17.0	41.4	13.4
8.5	38.3	10.5	17.5	44.8	10.3
9.0	38.5	10.8	18.0	47.2	8.1
9.5	38.7	11.1			



14.8 Correction factors for

Horn Antenna

**Model: SWH-28
at 1 meter range.**

FREQUENCY (GHz)	APE (dB /m)	Gain (dB1)
18.0	40.3	16.1
19.0	40.3	16.3
20.0	40.3	16.1
21.0	40.3	16.3
22.0	40.4	16.8
23.0	40.5	16.4
24.0	40.5	16.6
25.0	40.5	16.7
26.0	40.6	16.4



14.9 Correction factors for ACTIVE LOOP ANTENNA

Model 6502

S/N 9506-2950

FREQUENCY (MHz)	Magnetic Antenna Factor (dB)	Electric Antenna Factor (dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2



15. Comparison Industry Canada Requirements With FCC

AeroScout T7 Tag

M/N : TAG-7000

IC: 5115A-TAG2300 FCC ID: Q3HTAG2300

Test	FCC	IC
<input type="checkbox"/> Max power / Peak power	15.247(b)(3)	RSS 210 Issue 8 A8.4(4)
<input type="checkbox"/> 6dB BW	15.247(a)2	RSS 210 Issue 8 A8.2a
<input type="checkbox"/> Power density	15.247(e)	RSS 210 Issue 8 A8.2b
<input type="checkbox"/> Spurious radiated emission in the restricted band	15.205(c)	RSS 210 Issue 8 2.5 RSS Gen 7.2.2 (Table 1)
<input type="checkbox"/> Band edge spectrum	15.247(d)	RSS 210 Issue 8 A8.5
<input type="checkbox"/> RF Exposure Limits	1.1307(b)(1)	RSS 102 4.4