Cert. No. 1152.01
Electrical (EMC)

DATE: 18 February 2007

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

FCC EMC/Radio Test Report

for

Hi-G-Tek Ltd.

Equipment under test:

AVL Reader

IG-AV1-43-916 Version B01

Written by: _____
D. Shidlowsky, Documentation

Approved by: _____
E. Pitt, Test Engineer

Approved by: _____
I. Raz, EMC Laboratory Manager

Measurement/Technical Report for
Hi-G-Tek Ltd.

Equipment under test:

AVL Reader

FCC ID: OB6-IGAV243916

DATE: 18 February 2007

This report concerns: Original Grant __ Class II change X

Class B verification ___ Class A verification__ Class I change ____

Equipment type: Radio Transmitter
Request Issue of Grant:
__**x**__Immediately upon completion of review

Limits used:
CISPR 22 _____ Part 15 __x

Measurement procedure used is ANSI C63.4-2003.

Application for Certification
prepared by:
Ishaiahou Raz
ITL (Product Testing) Ltd.
1 Batsheva St. P.O.B. 87
Lod 71100
Israel
Tel: +972-8-915-3100
Fax: +972-8-915-3101
Email: sraz@itl.co.il

Applicant for this device:
(different from "prepared by")
Yossi Hershko
Hi-G-Tek Ltd.
16 Hacharoshet St.
Or Yehuda 60375
Israel
Tel: +972-3-533-9359
Fax: +972-3-533-8225
Email: yossih@higtek.com

TABLE OF CONTENTS

1. General Information

1.1 Administrative Information

Manufacturer:	Hi-G-Tek Ltd.
Manufacturer's Address:	16 Hacharoshet St. Or-Yehuda 60375 Israel Tel: +972-3-533-9359 Fax: +972-3-533-9225
Manufacturer's Representative:	Yossi Hershko Arkady Genin
Equipment Under Test (E.U.T):	AVL Reader
Equipment Model No.:	IG-AV1-43-916 Version B01 *
Equipment Serial No.:	Sample From Production
Date of Receipt of E.U.T:	26.12.06
Start of Test:	26.12.06
End of Test:	26.12.06
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15, Subparts B, C

* This test report is based on the tests on the full configuration model IG-AV2-43-916 Version B01. See customer's declaration on the following page.

Hi-G-Tek Ltd.
16 Hacharoshet Street
Or-Yehuda, 60375, Israel
Tel: 03-5339359 Fax: 03-5339225
www.higtek.com

Wireless Monitoring Solutions for Security and Management

14-AUG-06

DECLARATION

I HEREBY DECLARE THAT MODEL

IG-AV2-43-916

IS A FULL CONFIGURATION MODEL (125kHz transmitter and 916.5 MHz transmitter).

And MODEL

IG-AV1-43-916

DIFFERS FROM THE **IG-AV2-43-916** ONLY BY THE EXTRACTION OF THE 125KHz TRANSMITTER.

Thank you,

Roni Cohen
Manager, Hardware Development

Hi-G-Tek Ltd.
Wireless Monitoring Platform

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), File No. IC 4025.
6. TUV Product Services, England, ASLLAS No. 97201.
7. Nemko (Norway), Authorization No. ELA 207.

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

See details in ITL test report no. E67380.01.

Description of change:

*** RADIO Changes**

1.3.1 Change (1): Ext. antenna (900MHz, magnet mount) replacement

Current antenna model **ASF-3061** (manufactured by PANORAMA) is obsolete, manufacturer offers antenna model **ASOG-910B** as a replacement for the ASF-3061 model.

* Note: Both antennas are $\frac{1}{4}\lambda$ type, no significant modifications are expected.

Ver. A01 HF Antenna	
Manufacturer	Panorama Antennas
Type	Magnet Mount ,quarter wave antenna for900MHz
Model No.	ASF-3061

Ver. B01 HF Antenna	
Manufacturer	Panorama Antennas
Type	Magnet Mount ,quarter wave antenna for900MHz
Model No.	ASOG-910B

*** NON-RADIO Changes**

1.3.2 Change (2): Microprocessor's Resonator replacement

A replacement of 4MHz ceramic resonator with a 6MHz ceramic resonator in order to improve µP capabilities .

Ver. A01 Resonator – 4MHz	
Manufacturer	MURATA
Type	4MHz Ceramic resonator, small cap chip type ,
Model No.	CSTCR4M00G55B
Ref. mark	Y1

Ver. B01 Resonator – 6MHz	
Manufacturer	MURATA
Type	6MHz Ceramic resonator, small cap chip type ,
Model No.	CSTCR6M00G15B
Ref. mark	Y1

1.3.3 Change (3): Memory extension

Optional upgrading of the memory size: 64MB EEPROM memory chip instead of current 32KB EEPROM chip.

* Note: PCB will continue to support the original 32MB as well.

Rev. A01 Memo. chip – 32MB	
Manufacturer	MICROCHIP
Type	256k-bit (32MB) Serial Electrically Erasable PROM TSSOP8 package
Model No.	25AA256T-I/ST
Ref. mark	U3

Rev. B01 Memo. chip – 64MB	
Manufacturer	ST Microelectronics
Type	512k-bit (64MB) Serial Electrically Erasable PROM TSSOP8 package
Model No.	M95512WDW6TP
Ref. mark	U3

1.3.4 Change (4): SMT resistor replacement

A replacement of 20ohm SMT resistor (charging current limiter) with a 39.2ohm SMT resistor, in order to restrict charging current.

Ver. A01 20ohm SMT resistor	
Manufacturer	BOURNS
Type	SMT resistor,20 ohm "1206" sized , 0.25W
Model No.	CR1206FX20R0ELF
Ref. mark	R70

Ver. B01 39.2ohm SMT resistor	
Manufacturer	BOURNS
Type	SMT resistor,39.2 ohm "1206" sized , 0.25W
Model No.	CR1206FX39R2ELF
Ref. mark	R70

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 2003. 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 December 12, 2003).
I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 Measurement Uncertainty

Radiated Emission

The Open Site complies with the ±4 dB Normalized Site Attenuation requirements of ANSI C63.4-2003. In accordance with Paragraph 5.4.6.1 of this standard, this tolerance includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies.

2. System Test Configuration

2.1 Justification

See ITL test report E67384.00.

Field Strength of Fundamental and spurious Radiated Emission in the frequency range 9 kHz to 9.2 GHz were re-tested in accordance with correspondence with Timco. See Appendix B Correspondence.

2.2 EUT Exercise Software

See ITL test report E67384.00.

2.3 Special Accessories

See ITL test report E67384.00.

2.4 Equipment Modifications

See ITL test report E67384.00.

2.5 Configuration of Tested System

The configuration of the tested system is described below.

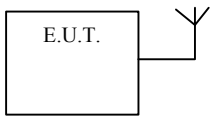

Figure 1. Configuration of Tested System

3. Block Diagram

3.1 Schematic Block/Connection Diagram

See ITL test report E67384.00.

3.2 Theory of Operation

See ITL test report E67384.00.

4. Field Strength of Fundamental

4.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.249(a)

4.2 Test Procedure

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

The E.U.T. was placed on a non-conductive table, 0.8 meters above the O.A.T.S. ground plane.
The EMI receiver was set to the E.U.T. Fundamental Frequency (916.500MHz) and Peak Detection.
The turntable and antenna mast were adjusted for maximum level reading on the EMI receiver.
The measurement was performed for vertical and horizontal polarizations of the test antenna.

4.3 Measured Data

JUDGEMENT: Passed by 0.68 dB

The EUT met the FCC Part 15, Subpart C, Section 15.249(a) specification requirements.

The details of the highest emissions are given in *Figure 2*.

TEST PERSONNEL:

Tester Signature: _____ Date: 23.01.07

Typed/Printed Name: E. Pitt

Field Strength of Fundamental

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Horizontal/Vertical

Test Distance: 3 meters Detector: Peak

Freq. (MHz)	Pol. V/H	Peak Reading (*) (dBμV/m)	Specification (dBμV/m)	Margin (dB)
916.53	H	80.55	94.0	-13.45
916.53	V	93.32	94.0	-0.68

Figure 2. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: Peak

Note: 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 Amp." includes "Correction Factors.

"Correction Factors" = Antenna Correction Factor + Cable Loss.

Field Strength of Fundamental

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Horizontal

Test Distance: 3 meters Detector: Peak

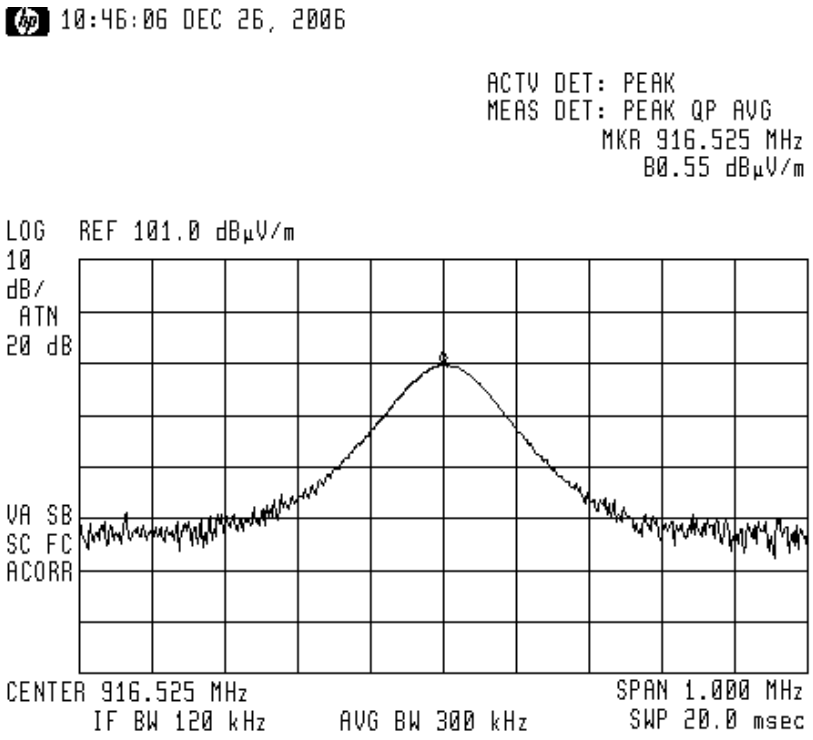

Figure 3. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL Detector: Peak

Field Strength of Fundamental

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Vertical

Test Distance: 3 meters Detector: Peak

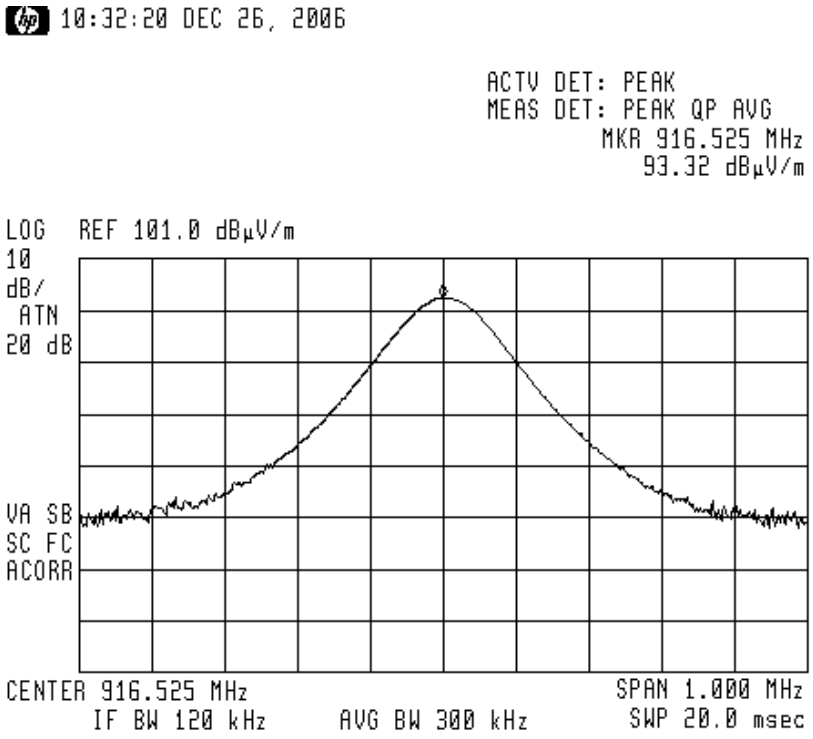

Figure 4. Field Strength of Fundamental. Antenna Polarization: VERTICAL. Detector: Peak

4.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 22, 2006	1 year
RF Section	HP	85420E	3705A00248	November 22, 2006	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	November 30, 2006	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	ThinkJet 2225	2738508357.0	N/A	N/A

5. Radiated Measurement Photo

Figure 5. Radiated Emission Test

6. Spurious Radiated Emission 9kHz-1000 MHz

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 1*.

The frequency range 9kHz-1000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.
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-30 MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter.
In the frequency range 30-1000 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.

During this test the E.U.T. was operated in continuous transmission to enable better detection of signals.

6.1 Measured Data

JUDGEMENT: Passed

The signals in the band 9 kHz – 1000 MHz were 20dB below the specification limit.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 15.249 specification.

TEST PERSONNEL:

Tester Signature: _____ Date: 23.01.07

Typed/Printed Name: E. Pitt

6.2 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 22, 2006	1 year
RF Section	HP	85420E	3705A00248	November 22, 2006	1 year
Antenna Bioconical	ARA	BCD 235/B	1041	March 19, 2006	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	November 30, 2006	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 16, 2006	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	ThinkJet 2225	2738508357.0	N/A	N/A

6.3 Field Strength Calculation

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

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

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

7. Spurious Radiated Emission Above 1 GHz

7.1 Spurious Radiated Emission Above 1 GHz

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, 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.

The frequency range 1 –9.2 GHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The emission levels were compared to the requirement of Section 15.249.

In the frequency range 1-2.9 GHz, a computerized EMI receiver complying to CISPR 16 requirements was used. The test distance was 3 meters.

In the frequency range 2.9-9.2 GHz, a spectrum analyzer including a low noise amplifier was used. The test distance was 3 meters. During peak measurements, the I.F. bandwidth was 1 MHz, and video bandwidth 3 MHz. During average measurements, the I.F. bandwidth was 1 MHz and video bandwidth was 100 Hz.

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.).

7.2 Test Data

JUDGEMENT: Passed by 3.1 dB

The margin between the emission level and the specification limit is 3.1 dB in the worst case at the frequency of 2749.56 MHz, horizontal and vertical polarizations.

All other signals not included in the result tables are at least 20dB below the specification limit.

The EUT met the requirements of the F.C.C. Part 15, Subpart C Section 15.249, specification.

The details of the highest emissions are given in *Figure 6* to *Figure 9*.

TEST PERSONNEL:

Tester Signature: _____ Date: 23.01.07

Typed/Printed Name: E. Pitt

Spurious Radiated Emission Above 1 GHz

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Horizontal
Frequency range: 1.0 GHz to 9.2 GHz
Test Distance: 3 meters
Detector: Peak, Average

Signal Number	Frequency (MHz)	Peak dBuV/m	Pk Delta L 1 (dB)	Avg dBuV/m	Av Delta L 2 (dB)	Corr (dB)
1	1833.041555	62.1	-11.9	50.1	-3.9	38.4
2	2749.562335	69.7	-4.3	57.1	3.1	44.6

Figure 6. Spurious Radiated Emission. Antenna Polarization: HORIZONTAL Detector: Peak, Average

Pk Delta/ Av Delta 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" and "Average" include correction factor.

"Correction Factor" = Antenna Factor + Cable Loss

Spurious Radiated Emission Above 1 GHz

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Horizontal
Test Distance: 3 meters

Frequency range: 1.0 GHz to 9.2 GHz
Detector: Peak, Average

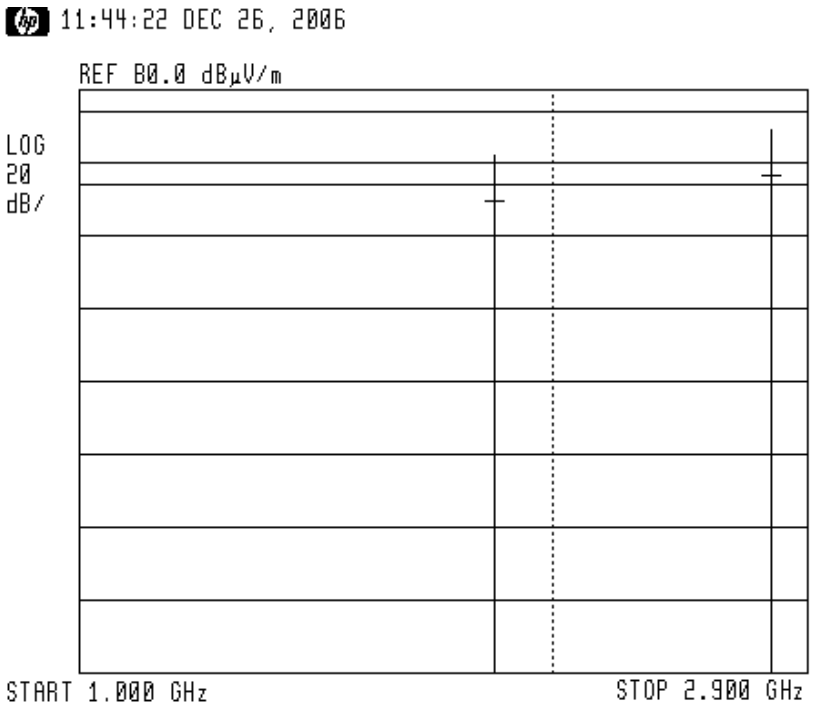

Figure 7. Spurious Radiated Emission. Antenna Polarization: HORIZONTAL Detector: Peak, Average

Notes:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV/m).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Average detection is designated by the first dash mark (from the top) of each vertical line.*

Spurious Radiated Emission Above 1 GHz

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Vertical
Test Distance: 3 meters
Frequency range: 1.0 GHz to 9.2 GHz
Detector: Peak, Average

Signal Number	Frequency (MHz)	Peak dBuV/m	Pk Delta L 1 (dB)	Avg dBuV/m	Av Delta L 2 (dB)	Corr (dB)
1	1833.041400	62.5	-11.5	50.2	-3.8	38.4
2	2749.562335	69.7	-4.3	57.1	3.1	44.6

Figure 8. Spurious Radiated Emission. Antenna Polarization: VERTICAL. Detector: Peak, Average

Pk Delta/Av Delta 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" and "Average" include correction factor.

"Correction Factor" = Antenna Factor + Cable Loss

Spurious Radiated Emission Above 1 GHz

E.U.T Description	AVL Reader
Model Number	IG-AV1-43-916 Version B01
Serial Number:	Sample From Production

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Vertical
Test Distance: 3 meters
Frequency range: 1.0 GHz to 9.2 GHz
Detector: Peak, Average

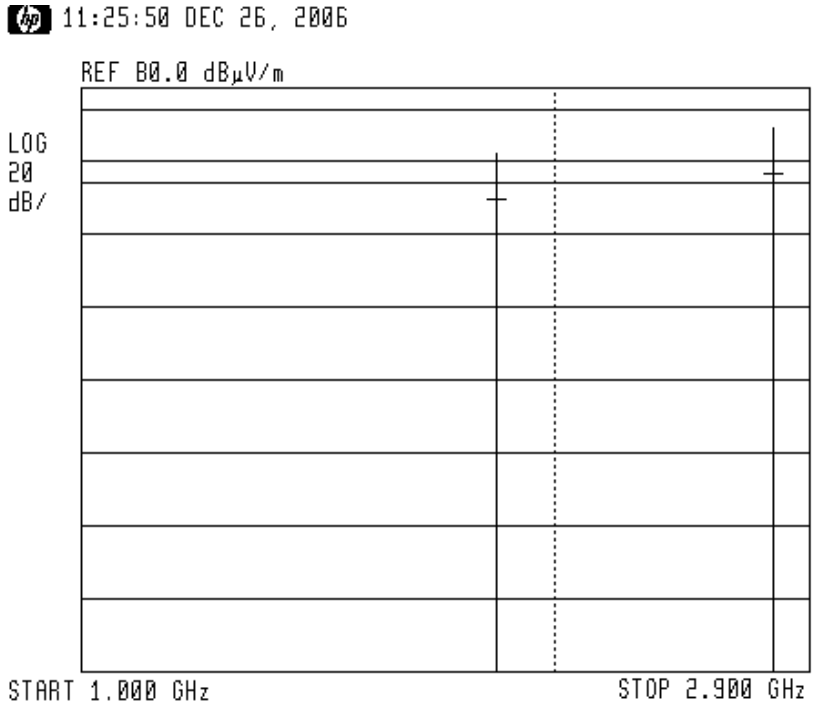

Figure 9. Spurious Radiated Emission. Antenna Polarization: VERTICAL. Detector: Peak, Average

Notes:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV/m).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Average detection is designated by the first dash mark (from the top) of each vertical line.*

7.3 Test Instrumentation Used, Spurious Radiated Measurements Above 1 GHz

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Receiver	HP	85422E	3906A00276	November 22, 2006	1 year
RF Section	HP	85420E	3705A00248	November 22, 2006	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	ThinkJet2225	2738508357	N/A	N/A
Antenna-Log Periodic	A.H.System	SAS-200/511	253	January 24,2005	2 year
Spectrum Analyzer	HP	8592L	3926A01204	November 21, 2006	1 year

8. APPENDIX A - CORRECTION FACTORS

8.1 Correction factors for CABLE

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.5
20.0	0.7
30.0	1.0
40.0	1.2
50.0	1.3
60.0	1.5
70.0	1.6
80.0	1.7
90.0	1.8
100.0	1.9
150.0	2.4
200.0	2.7
250.0	3.0
300.0	3.3
350.0	3.7
400.0	4.0
450.0	4.3
500.0	4.7
600.0	4.9
700.0	5.4
800.0	5.8
900.0	6.3
1000.0	6.7

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	7.5
1400.0	8.2
1600.0	9.0
1800.0	9.6
2000.0	10.7
2300.0	11.1
2600.0	11.8
2900.0	12.8

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".

8.2 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.

8.3 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.

8.4 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	11.4
400.0	14.5
500.0	15.2
600.0	17.3
700.0	19.0
850.0	20.1
1000.0	22.2

Distance of 10 meters

FREQUENCY (MHz)	AFE (dB/m)
200.0	9.0
250.0	10.1
300.0	11.2
400.0	14.4
500.0	15.2
600.0	17.2
700.0	19.0
850.0	20.1
1000.0	22.1

NOTES:

1. *Antenna serial number is 1038.*
2. *The above lists are located in file number 38M3O.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".*

8.5 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".

8.6 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".

8.7 Correction factors for ACTIVE LOOP ANTENNA

Model 6502
S/N 9506-2950

FREQUENCY	Magnetic Antenna Factor	Electric Antenna Factor
(MHz)	(dB)	(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

9. APPENDIX B - CORRESPONDENCE

Date: 30.11.2006

From: EMC

To: 'FAQ@timcoengr.com'

Subject: FCC Approval for Changes in AVL Reader- Hi-G-Tek

Hi,

1. This inquiry concerns 2 products that were approved for FCC ID via Timco , FCC ID # OB6-IGAV143916; OB6-IGAV243916.

2. Attached is the customer information concerning changes in the radio (antenna replacement) and non-radio parts of the products.

3. We suggest using Permissive Change Class II and testing as follows:

   a. Field strength of Fundamental for 916MHz only.

   b. Spurious radiated emission 9kHz-9.2GHz

4. Please comment/verify.

Regards

Shaike Raz
EMC Laboratory Manager
EMC Laboratory
ITL (Product Testing) Ltd.
Kfar Bin Nun
Israel
Tel: +972-8-979-7799
Fax: +972-8-979-7702
Email: sraz@itl.co.il/emc@itl.co.il
http://www.itl.co.il

Date: 30.11.2006

From: sid [sid@timco.cc]

To: Yossi Hershko , Hi-G-Tek Ltd.; Emc

Subject: RE: Request for changes application - AVL Reader

4 Dec 2006

Shaike,

In order to approve a new antenna you must file a class II change with radiation data on the new antenna.

Regards,

Sid

-----Original Message-----
From: Yossi Hershko , Hi-G-Tek Ltd. [mailto:yossih@higtek.com]
Sent: Wednesday, November 29, 2006 3:43 AM
To: Emc
Cc: Shmuel Hazon; רוני
Subject: Request for changes application - AVL Reader

Shaike Shalom,

Attached hereby is an application for product's changes concerning AVL Reader 916Mhz, the application applies on both AVL Reader 916 models ; IGAV143916, IGAV243916.

Please advise further actions needed to proceed.

Best Regards,

Yossi Hershko
Product Engineer
HI-G-TEK Ltd
16 hacharoshet St.
Or-Yehuda 60375
ISRAEL
Tel. +972-3-5339359 Ext. 228
Fax. +972-3-5339225
Cell. +972-52-3786480
www.higtek.com