

Testing and certification of electronic and electric appliances, systems, installations and telecommunication systems

TEST REPORT CONCERNING CLASS 2 PERMISSIVE CHANGE IN THE COMPLIANCE OF A DEACTIVATOR OF DISPOSABLE TAGS (PART 15 ANTI-PILFERAGE DEVICE), MANUFACTURER Gigatek Inc. Taiwan BRAND NEDAP, MODEL SMARTDEACT, OPERATING ON 7.8 to 8.5 MHz.

WITH 47 CFR PART 15 (10-1-15 EDITION) AND THE REQUIREMENTS OF INDUSTRY CANADA: RSS-GEN (ISSUE 4, NOVEMBER 2014) AND RSS-210 (ISSUE 9, AUGUST 2016)

> 16110802.fcc01 November 28, 2016

> > FCC listed 90828 Industry Canada 2932G-2

TÜV Rheinland Nederland B.V. P.O. Box 37 9350AA Leek Eiberkamp 10 9351VT Leek The Netherlands Telephone: +31 594 505005 Telefax: +31 594 504804

Internet: www.tuv.com/nl E-mail: products@nl.tuv.com

Project number: 16110802.fcc01



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

MEASUREMENT/TECHNICAL REPORT

Manufacturer: Gigatek Inc. Taiwan Brand: Nedap Model: SMARTDEACT

FCC ID: CGDSMARTDEACT IC: 1444A-SMARTDEACT

This report concerns: Equipment type:	Original grant/certification Part 15 Anti-Pilferage Devic	Class 2 Permissive Change Verification
Report prepared by:	Name Company name Address Postal code/city Mailing address Postal code/city Country Telephone number Telefax number E-mail	: Richard van der Meer : TÜV Rheinland Nederland B.V. : Eiberkamp 10 : 9351VT / Leek : P.O. Box 37 : 9350AA / Leek : The Netherlands : + 31 594 505 005 : + 31 594 504 804 : products@nl.tuv.com

The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-15 Edition) RSS-GEN (ISSUE 4, NOVEMBER 2014), RSS-210 (ISSUE 9, AUGUST 2016) and the measurement procedures of ANSI C63.10-2013. TÜV Rheinland Nederland at Leek, The Netherlands, certifies that the data is accurate and contains a true representation of the emission profile of the Equipment Under Test (EUT) on the date of the test as noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

Date: November 28, 2016

Signature:

11/200

E. van Wal Senior Engineer Telecom TÜV Rheinland Nederland B.V.



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

Summary

The device under test does:

• fulfill the general approval requirements as identified in this test report

not fulfill the general approval requirements as identified in this test report

Description of test item

Test item (EUT)	:	Deactivator of disposable tags-Anti-Pilferage Device
Manufacturer	:	Gigatek Inc. Taiwan
Brand	:	Nedap
Model(s)	:	SMARTDEACT
Serial number(s)	:	
Receipt date	:	November 24, 2016

Applicant information

Applicant's representative	:	Mr. J. Hulshof / Mr. R. Hubers
Company	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Address	:	Parallelweg 2
Postal code	:	7141 DC
City	:	Groenlo
Country	:	The Netherlands
Telephone number	:	+31 544 471 162
Telefax number	:	+31 544 463 475

Test(s) performed

Location Test(s) started Test(s) completed Purpose of test(s)	:	Leek November 24, 2016 November 25, 2016 Equipment Authorization (Class 2 Permissive Change)
Test specification(s)	:	47 CFR Part 15 (10-1-15 Edition) and RSS-GEN (ISSUE 4, NOVEMBER 2014) AND RSS-210 (ISSUE 9, AUGUST 2016)
Test engineer(s)	:	R. van der Meer
Report written by	:	R. van der Meer
Report date	:	November 28, 2016

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> Manufacturer: Brand mark: Model: FCC ID: IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

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1 General information.

- 1.1 Product description.
- 1.1.1 Introduction.

The brand Nedap model SMARTDEACT, hereafter referred to as EUT is an Anti-Pilferage Device. The SMARTDEACT is meant for deactivation of disposable tags according to the Pulse Listen method. It detects a tag in the field and shall try to deactivate it until it is not functioning anymore. The EUT is a transmitter that uses 8 discrete frequencies, the lowest of which is 7.8 MHz and the highest of which is 8.5 MHz. The 8 frequencies will be considered as one fundamental frequency centered around 8.1 MHz.

The content of this report and measurement results have not been changed other than the way of presenting the data.

1.2 Related submittal(s) and/or Grant(s).

1.2.1 General.

This test report supports the Class 2 Permissive Change in equipment authorization files under registration number.

FCC ID: CGDSMARTDEACT and IC: 1444A-SMARTDEACT.

The change comprise of 3 additional antennas.

1.3 Tested system details.

Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT Manufacturer Brand Model Serial number Voltage input rating Voltage output rating Current input rating Antenna Operating frequency Modulation Remarks	Deactivator of disposable tags-Anti-Pilferage Device Gigatek Inc. Taiwan Nedap SMARTDEACT 12Vdc n.a. External, tested in combination with antenna's AUX3a, AUX3b and3c 7.8 -8.5 MHz (Hopping) AM (Pulsed) n.a.
AUX1 Manufacturer Brand Model Serial number Voltage input rating Voltage output rating Current input rating Remarks	Laptop PC including power supply adapter HP HP Elite 8530p 2CE943F14R Required to program the EUT not part of the testsetup, property applicant



> Manufacturer: Brand mark: Model: FCC ID: IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

AUX2	:	Power supply
Brand	:	Power-win Technology Corp.
Model	:	PW-024A-1Y120K
Serial number	:	
Voltage input rating	:	100 – 240V 50-60Hz
Voltage output rating	:	12Vdc
Current input rating	:	2A
Remarks	:	Connects to EUT

3 new antennas are added to the system, these 3 antennas are:

AUX3a Brand Model Serial number Voltage input rating Voltage output rating Current input rating Remarks		Antenna Nedap MG9800I H425 A 013 n.a. n.a. Connects to EUT
--	--	--

AUX3b	:	Antenna
Brand	:	Nedap
Model	:	HN24-000002
Serial number	:	
Voltage input rating	:	
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	Connects to EUT

AUX3c	:	Antenna
Brand	:	Nedap
Model	:	NCR7878-5000
Serial number	:	
Voltage input rating	:	
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	Connects to EUT









> Manufacturer: Brand mark: Model: FCC ID: IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

AUX4	:	Communication unit
Brand	:	Nedap
Model	:	RENOS-PL
Serial number	:	DO07B045
Voltage input rating	:	
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	Connects to RS 485 port EUT

AUX5	:	Power supply
Brand	:	Power-win Technology Corp.
Model	:	PW-085C-1Y560HPOE
Serial number	:	
Voltage input rating	:	100 – 240V 50-60Hz
Voltage output rating	:	56Vdc
Current output rating	:	1.5A
Remarks	:	Connets to AUX4

AUX6	:	LED lamp
Brand	:	Nedap
Model	:	
Serial number	:	
Voltage input rating	:	
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	



> Manufacturer: Brand mark: Model: FCC ID:

IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT



Photo 1: EUT in a typical setup



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Manufacturer: Gigatek Inc. Taiwan Brand mark: Nedap SMARTDEACT Model: CGDSMARTDEACT FCC ID: 1444A-SMARTDEACT IC:

1.3.1 Description of input and output ports.

Number	Ports	From	То	Shielding	Remarks
1	Power supply	AUX2	EUT	yes / no	None
2	Antenna connection	EUT	AUX3	yes / no	None
3	Power supply	AUX5	AUX4	yes / no	None
4	Communication	EUT	AUX4	yes / no	None
5	LED indication	EUT	AUX6	yes / no	None

Operation mode 1: System "Passive", not detecting a tag. Operation mode 2: System "Active", detecting a tag.



Figure 1: Basic testsetup and connections



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

1.4 Test summary

The EUT was tested in accordance with the specifications given in the table below.

Test St	tandard			
47 CFR Part 15 (10-1-15 Edition)	RSS-Gen issue 4 and RSS-210 Issue 9	Description	Page	Pass / Fail / Not Applicable
15.207(a)	RSS-Gen(7.2.4)	AC Power line Conducted emissions	26 – 26	Not Applicable
15.209, 15.223	RSS-Gen(7.2.5) RSS-210(B.3)	Radiated emissions	13 - 25	Pass
15.223(a)	RSS-Gen (4.6.2) RSS-210(B.3)	Bandwidth of the emission	27 - 28	Not Applicable

Table 1: Test specifications

Testmethods: ANSI C63.10-2013 and RSS-Gen.

1.5 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-15 Edition)), sections 15.31, 15.35, 15.205, 15.209, 15.223 and RSS-GEN (ISSUE 4, NOVEMBER 2014), RSS-210 (ISSUE 9, AUGUST 2016).

The test methods, which have been used, are based on ANSI C63.10-2013.

Radiated emission tests above 30 MHz were performed at a measurement distance of 3 meters. Radiated emission tests below 30 MHz were performed at a measurement distance of 3 meters. To calculate the field strength level from these results to the appropriate distance at which the limit is specified, the appropriate extrapolation factor is used.

The receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver.



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1.6 Test facility.

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland Nederland, located in Leek, 9351VT Eiberkamp 10, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948.

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-2. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

1.7 Test conditions.

Normal test conditions:

Temperature (*)	: +15°C to +35°C
Relative humidity(*)	: 20 % to 75 %
Supply voltage	: 120VAC/60Hz to the AC/DC Power Supply – the DC output was varied across the voltage range specified by the manufacturer
Air pressure	: 950 – 1050 hPa

When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.

1.8 Measurement Uncertainty

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes.

The expanded uncertainty (k = 2) for radiated emissions below 1000 MHz has been determined to be: ± 5.0 dB at 3m.



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2 System test configuration.

2.1 Justification.

The system was configured for testing in a typical situation as a customer would normally use it.

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.10-2013.

2.2 EUT mode of operation.

The EUT has been tested in passive(stand-by)- and deactivate mode, i.e. the EUT is ready to detect a tag and deactivate it. To assess the behavior of the EUT while reading the tag, the EUT is tested with a tag presented such that it continuously reads the tag. The tests have been performed with a complete functioning EUT and interconnections.

Besides the normal hopping mode, the system was also tested on modulated carriers at 7.8 MHz (Freq0), 8.1 MHz (Freq3) and 8.5 MHz (Freq7).

The EUTs 8 frequencies of operation are: 7.8 , 7.9 , 8.0 , 8.1 , 8.2 , 8.3 , 8.4 and 8.5 MHz.

2.3 Special accessories.

No special accessories are used and/or needed to achieve compliance.

2.4 Equipment modifications.

No special accessories are used and/or needed to achieve compliance.

2.5 Product Labeling

The product labeling information is available in the technical documentation package.

2.6 Block diagram of the EUT.

The block diagram is available in the technical documentation package.

2.7 Schematics of the EUT.

The schematics are available in the technical documentation package.

2.8 Part list of the EUT.

The part list is available in the technical documentation package.



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Gigatek Inc. Taiwan
Nedap
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CGDSMARTDEACT
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3 Radiated emission data.

RESULT: PASS

Date of testing:

2016-11-24

Frequency range:

30MHz - 1GHz

Requirements:

FCC 15.205, FCC 15.209, FCC 15.223 and IC RSS-Gen(4.9, 7.2.2 and 7.2.5) and RSS-210(2.3)

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must comply with the radiated emission limits specified in FCC 15.209(a), FCC 15.223 and RSS-Gen.

Radiated emissions which fall outside the operation frequency band and outside restricted bands shall either meet the limit specified in FCC 15.209(a)/ RSS-Gen (7.2.5) or be attenuated at least 20dB below the power level in the 100kHz bandwidth within the band that contains the highest level of the desired power (the less severe limit applies).

Frequency (MHz)	Field strength (microvolts/meter)	Field strength (dBmicrovolts/meter)	Measurement distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Table of applicable limits

Test procedure:

ANSI C63.10-2013, RSS-Gen.

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the EUT orientation (X, Y, Z) were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 30MHz to 1 GHz. Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Field strength values of radiated emissions at frequencies not listed in the tables are more than 20 dB below the applicable limit.



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3.1 Radiated field strength measurements (30 MHz – 1 GHz, E-field)

Frequency (MHz)	Antenna polarisation	Results @3m (dBµV/m)	Limits @3m (dBµV/m)	Pass/Fail
30.00	Vertical	33.8	40.0	Pass
39.13	Vertical	37.4	40.0	Pass
48.06	Vertical	25.6	40.0	Pass
496.64	Vertical	34.6	46.0	Pass
502.46	Vertical	34.9	46.0	Pass
754.66	Vertical	38.9	46.0	Pass





ORI Date: 24.NOV.2016 13:45:40

Plot of the emission (peak)



Brand mark:

Model:

FCC ID: IC: FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

Frequency (MHz)	Antenna polarisation	Results @3m (dBµV/m)	Limits @3m (dBµV/m)	Pass/Fail
31.40	Vertical	35.0	40.0	Pass
32.74	Vertical	36.3	40.0	Pass
80.04	Vertical	21.3	40.0	Pass
116.90	Vertical	25.3	43.5	Pass
239.00	Vertical	26.4	46.0	Pass
511.28	Vertical	35.1	46.0	Pass

Table 2b Radiated emissions of the EUT in combination with AUX3b



ORI

Date: 24.NOV.2016 14:29:56

Plot of the emission (peak)



Brand mark:

Model:

FCC ID: IC: FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

Frequency	Antenna polarisation	Results @3m	Limits @3m	Pass/Fail
(MHz)		(dBµV/m)	(dBµV/m)	
31.94	Vertical	32.6	40.0	Pass
39.70	Vertical	30.1	40.0	Pass
81.98	Vertical	21.7	40.0	Pass
149.76	Vertical	25.2	43.5	Pass
559.78	Vertical	36.5	46.0	Pass
585.00	Vertical	36.4	46.0	Pass

Table 2c Radiated emissions of the EUT in combination with AUX3c



ORI

Date: 24.NOV.2016 15:03:17

Plot of the emission (peak)



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.205, 15.209 15.223, RSS-210 and RSS-Gen, section 2.2 and 2.6 are depicted in Table 2a through 2c.

Notes:

- 1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
- 2. Measurement uncertainty is ± 5.0 dB.
- 3. The EUT was varied in three positions, the measurement antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency
- 4. The EUT was tested in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Worst case (which was for activated mode) values noted.
- 5. Tested with Freq0, Freq3, Freq7 and Hopping mode, worst case values noted.
- 6. The six highest values-relative to the applicable limits- were noted.
- 7. A Quasi-peak detector was used with a bandwidth of 120 kHz.

Used test equipment and ancillaries:

A00444	A00235	A00447	A00314	A00466	A00258	A00357	



(s): FCC Part 15/RSS
UT: Deactivator of disposable tags-Anti-pilferage device
rer: Gigatek Inc. Taiwan
ark: Nedap
del: SMARTDEACT
ID: CGDSMARTDEACT
IC: 1444A-SMARTDEACT

3.2 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field).

RESULT: Pass.

Date of testing: 2016-11-25

Requirements:

The field strength of any emission within the band 1.705–10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts / meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level. For the purposes of this section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in FCC part 15.35(b) for limiting peak emissions apply.

The measured 6 dB bandwidth is 0.876 MHz (see section 5) which is more than 0.81 MHz (10% of the 8.1 MHz of center frequency), hence the limit for the field strength is 100 microvolts/meter (40 dB μ V/m) at a distance of 30 meters.

Radiated and FCC emissions tests were performed using the procedures of ANSI C63.10-2013 including methods for signal maximizations and EUT configuration. The test setup photos report shows the EUT in its maximized configuration. Radiated emission testing was performed at a distance of 3 meters in a 5 meter semi-anechoic chamber. The measured values were corrected to the 30m distance using the extrapolation factor of 40dB/decade as per FCC Part 15.31(f)(2).

Average values are obtained from application of the calculated duty cycle correction factor (See section 6) to the fundamental field strength amplitude measured with a peak detector.



Brand mark:

Model:

FCC ID:

IC:

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Table 3a EUT in combination with AUX3a operating at Lowest Frequency of 7.8 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.814	66.8	Pk	19.6	1	40	47.4	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.814	47.4	62.5	-15.1	40	Pass

*For Duty Cycle Correction factor see section 6

Table 3b EUT in combination with AUX3a operating at middle frequency of 8.1 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.103	66.6	Pk	19.6	1	40	46.9	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.103	46.9	62.5	-15.6	40	Pass

*For Duty Cycle Correction factor see section 6

Table 3c EUT in combination with AUX3a operating at highest frequency of 8.5 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.518	63.9	Pk	19.6	1	40	44.5	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.518	44.5	62.5	-18.0	40	Pass

*For Duty Cycle Correction factor see section 6



Brand mark:

Model:

FCC ID:

IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

Table 4a EUT in combination with AUX3b operating at Lowest Frequency of 7.8 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.807	65.0	Pk	19.6	1	40	45.6	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.807	45.6	62.5	-16.9	40	Pass

*For Duty Cycle Correction factor see section 6

Table 4b EUT in combination with AUX3b operating at middle frequency of 8.1 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.097	62.1	Pk	19.6	1	40	42.7	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.097	42.7	62.5	-19.8	40	Pass

*For Duty Cycle Correction factor see section 6

Table 4c EUT in combination with AUX3b operating at highest frequency of 8.5 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.519	58.6	Pk	19.6	1	40	39.2	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.519	39.2	62.5	-23.3	40	Pass

*For Duty Cycle Correction factor see section 6



Brand mark:

Model:

FCC ID:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT IC:

Table 5a EUT in combination with AUX3c operating at Lowest Frequency of 7.8 MHz

EUT Frequency	Measured Frequency	Measurement results	Dete	ctor	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m			dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.807	57.7	F	۶k	19.6	1	40	38.3	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak Duty Cycle correction factor		Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
7.8	7.807	38.3	62.5	-24.2	40	Pass

*For Duty Cycle Correction factor see section 6

Table 5b EUT in combination with AUX3c operating at middle frequency of 8.1 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.097	56.1	Pk	19.6	1	40	36.7	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.1	8.097	36.7	62.5	-25.8	40	Pass

*For Duty Cycle Correction factor see section 6

Table 5c EUT in combination with AUX3c operating at highest frequency of 8.5 MHz

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.516	54.1	Pk	19.6	1	40	34.7	60	Pass

EUT Frequency	Measured Frequency	Measurement results Peak	Duty Cycle correction factor	Measurement results Av (=Peak – DCcf) (calculated)	Limits Av	Pass/Fail
MHz	MHz	dBµV @30m	dB	dBµV/m@30m	dBµV/m@30m	
8.5	8.516	34.7	62.5	-27.8	40	Pass

*For Duty Cycle Correction factor see section 6



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Manufacturer: Gigatek Inc. Taiwan Brand mark: Nedap SMARTDEACT Model: CGDSMARTDEACT FCC ID: IC: 1444A-SMARTDEACT

Emissions Outside the band - FCC Part 15.233(b)and RSS210 A2.3.

The field strength of emissions outside of the band 1.705–10.0 MHz shall not exceed the general radiated emission limits in § 15.209 and RSS-Gen section 7.2.5 table 5.

Test procedure: ANSI C63.10-2013.

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	15.700 ^h	10.2	Qp	19.7	1	40	-9.1	29.5	Pass
Hopping	16.985 ^h	5.2	Qp	19.7	1	40	-14.1	29.5	Pass
8.1	24.300 ^h	10.4	Qp	19.7	1	40	-8.9	29.5	Pass
8.5	25.460 ^h	10.7	Qp	19.7	1	40	-8.6	29.5	Pass
Hopping	24.835 ^h	4.6	Qp	19.7	1	40	-14.7	29.5	Pass
Hopping	28.440	4.0	Qp	19.7	1	40	-15.3	29.5	Pass

Table 7a Radiated emissions of the EUT in combination with AUX3a, outside of the band 1.705-10.0 MHz.



ORT Date: 25.NOV.2016 10:47:10

Plot of the emission (peak), Hopping mode



IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	15.700 ^h	13.0	Qp	19.7	1	40	-6.3	29.5	Pass
Hopping	16.985 ^h	5.5	Qp	19.7	1	40	-13.8	29.5	Pass
8.1	16.200 ^h	10.4	Qp	19.7	1	40	-8.9	29.5	Pass
8.1	24.300 ^h	10.5	Qp	19.7	1	40	-8.8	29.5	Pass
8.5	25.500 ^h	10.4	Qp	19.7	1	40	-8.9	29.5	Pass
Hopping	25.357 ^h	5.0	Qp	19.7	1	40	-14.3	29.5	Pass
Hopping	28.400	4.0	Qp	19.7	1	40	-15.3	29.5	Pass

Table 7b Radiated emissions of the EUT in combination with AUX3b, outside of the band 1.705–10.0 MHz.



ORI

Date: 25.NOV.2016 10:54:12

Plot of the emission (peak), Hopping mode



IC:

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EUT Frequency	Measured Frequency	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits	Pass/Fail
MHz	MHz	dBµV @3m		dB	dB	dB	dBµV/m@30m	dBµV/m@30m	
7.8	15.620 ^h	10.3	Qp	19.7	1	40	-9.0	29.5	Pass
Hopping	16.985 ^h	5.4	Qp	19.7	1	40	-13.9	29.5	Pass
8.1	24.300 ^h	5.3	Qp	19.7	1	40	-14.0	29.5	Pass
8.5	25.500 ^h	5.4	Qp	19.7	1	40	-13.9	29.5	Pass
Hopping	25.285 ^h	5.0	Qp	19.7	1	40	-14.3	29.5	Pass
Hopping	28.440	4.5	Qp	19.7	1	40	-14.8	29.5	Pass

Table 7c Radiated emissions of the EUT in combination with AUX3c, outside of the band 1.705–10.0 MHz.



ORI

Date: 25.NOV.2016 11:37:31

Plot of the emission (peak), Hopping mode



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

Restricted band operation:

The EUT is a Carrier hopped system and its hopping frequencies are: 7.8, 7.9, 8.0, 8.1, 8.2, 8.3, 8.4 and 8.5 MHz. These hopping frequencies are outside of the restricted band frequencies.

Notes:

- 1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 7.8 MHz: 13.0 dB μ v + 19.7 dB + 1dB 40dB= -6.3 dB μ V/m.
- 2. A resolution bandwidth of 9kHz was used during testing
- 3. The six highest values-relative to the applicable limits- were noted.
- 4. The loop antenna was varied in horizontal and vertical orientations and also around its axis. The reported value is the worst case found at the reported frequency.
- 5. Measurement uncertainty is ± 5.0 dB
- 6. Tested with Freq0, Freq3, Freq7 and Hopping mode, worst case values noted.
- 7. The EUT was tested in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity-this proved to be the worst case). Worst case values noted.
- 8. Restricted bands especially between 7 MHz and 9 MHz were investigated and were found to be below the levels as reported in Tables 7a, 7b, 7c and 7d.

3.2.1 Test equipment used (for reference see test equipment listing).

A00141	A01491	A00450	A00444	A00235	A00447	A00314
A00357						



FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

4 AC Power-line Conducted emission data.

4.1 AC Power Line Conducted Emission data of the EUT.

RESULT: Not re-tested.



Test specification	(s
Description of E	U

(s): FCC Part 15/RSS
UT: Deactivator of disposable tags-Anti-pilferage device
rer: Gigatek Inc. Taiwan
ark: Nedap
del: SMARTDEACT
ID: CGDSMARTDEACT
IC: 1444A-SMARTDEACT

5 6 dB Bandwidth

5.1 6 dB Bandwidth of the emission

Taken from the original certification (testreport 14031106.fcc01_Rev02_Nedap_SMARTDEACT_Testreport_FCC-IC.pdf).

RESULT: PASS

Date of testing:

2014-03-27

Requirements:

The 6 dB bandwidth of the fundamental emission shall be measured in order to find out the exact allowed limit of the field strength of any emission within the band 1.705-10.0 MHz.

Testprocedure: ANSI C63.4:2009



Plot1a: plot of the emission. Measured value is 876 kHz as measured on a spectrum analyzer.



> Manufacturer: Brand mark: Model: FCC ID:

IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT



Plot1b: plot of the 99% emission bandwidth. Measured value is 1584 kHz as measured on a spectrum analyzer.



Test specification	(s
Description of E	U.

FCC Part 15/RSS 5): Deactivator of disposable tags-Anti-pilferage Ť: device Gigatek Inc. Taiwan Manufacturer: Brand mark: Nedap SMARTDEACT Model: CGDSMARTDEACT FCC ID: IC: 1444A-SMARTDEACT

Duty Cycle 6

Taken from the original certification (testreport 14031106.fcc01_Rev02_Nedap_SMARTDEACT_Testreport_FCC-IC.pdf).

Notes: 16 peaks were observed in a 100 ms interval. Each peak was measured to have a duration of 4.685 µs. This yields a total on-time of 0.07496 ms in a 100 ms interval. Using the formula Average factor (dB) = 20*LOG(0.07496ms / 100ms), the duty cycle average factor is therefore -62.5 dB.



Plot 2a: number of peaks in 100ms.



IC:

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT





Manufacturer: Gig Brand mark: Ne Model: SM FCC ID: CG IC: 14

FCC Part 15/RSS Deactivator of disposable tags-Anti-pilferage device Gigatek Inc. Taiwan Nedap SMARTDEACT CGDSMARTDEACT 1444A-SMARTDEACT

7 List of utilized test equipment.

To facilitate inclusion of the test equipment, used for performing the tests, on each page of this test report, each item of test equipment and ancillaries, such as cables, must be identified (numbered) by the test laboratory.

Inventory number	Description	Brand	Model	Serial number	Last cal.	Next cal.
A00141	Tripod for A001491	Chase			NA	NA
A01491	Loop antenna	Chase	HLA6120	1107	05/2016	05/2017
A00466	Biconilog Testantenna	Teseq	CBL 6111D	35555	10/2016	10/2017
A00450	Controller	Maturo	SCU/088/80908 11		NA	NA
A00444	Temperature- Humiditymeter	Extech	SD500		04/2016	04/2017
A00235	Test site	Comtest	FCC listed: 90828		04/2014	04/2017
A00258	Antenna mast	EMCS	AP-4702C		NA	NA
A00447	Cable S-AR	Gigalink	APG0500		01/2016	01/2017
A00357	Variac	Tektronix	-	08-9510	NA	NA
A00314	Measurement receiver	R&S	ESCS30	100872	03/2016	03/2017

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing. NA= Not Applicable.

<<< END OF REPORT >>>