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NVLAP Lab code: 200068-0
ISO/IEC 17025:1999, ISO 9002:1994

FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: RFID Reader
Model Number: A741
Trademark: GAS N GO

Prepared for Petratec International., Ltd
FCC ID: U54-RDR04005221

According to FCC Part 15 (2006), Subpart C

Test Report#:	*PET-0612-0856SH-FCC2.4G*
Prepared by:	*Chris Huang*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen — *2007, May 17*

Paul Chen — *Date*

Test Location

Tests performed at EMC Compliance Management Group (China) in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location:	*Shanghai Institute of Process Automation Instrumentation (SIPAI)* *103 Caobao Road, Shanghai, 200233*
Tel:	*86-21-64368180*
Fax:	*86-21-64333566*
Registration Number:	*96504*

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Administrative Data

Test Sample	*: RFID Reader*
Model Name	*: A741*
Brand Name	*: Gas N Go*
Date Tested	*: 2007, February 7 & May 11, 15*
Applicant	*: Petratec International., Ltd* *12 Derech Ha' Sharon St. Kfar Saba, Israel*
Telephone	*: 972-9-7466105*
Fax	*: 972-9-7466150*
Manufacturer	*: GRE –Golden Regent Electronics Industrial Ltd.* *Unit 2-5, 18/F, Millennium Trade Centre, No.56* *Kwai Cheong Road, Kwai Chung, N.T., Hong Kong.*
Telephone	*: 852-35824907*
Fax	*: 852-25263884*

EUT Description

Petratec International., Ltd model name A741 (referred to as the EUT in this report) is a RFID reader. It has a 13.56MHz module to read a passive tag while it also has a 2.4GHz module to communicate with GSC. The 2.4GHz part is a transceiver and the 13.56MHz part is a RFID reader. In this report, only 2.4GHz part was tested and recorded.

Test Summary

This report an application for Certification of a Transmitter operation pursuant to FCC 15.247, the product covered by this report is the Model: A741. This report is designed to demonstrate the compliance of this device with the requirements outlined in FCC Part 15.247 using the methods in FCC CFR 47 Part 2.

FCC Section	Requirements	Comments	Remark
15.203	The transmitter shall use a transmitting dedicated antenna employs unique connectors	Compliance	Attachment 1
15.205 / 15.209	Restricted Band of Operation Radiated emissions, general requirements	Compliance	Attachment 2
15.247(b)(3)	Maximum peak output power	Compliance	Attachment 3
15.247(a)(2)	Bandwidth	Compliance	Attachment 4
15.247(e)	Power spectral density	Compliance	Attachment 5
15.247(d)	Band edge	Compliance	Attachment 6
2.1093	RF exposure calculation	Compliance	Attachment 7

Test Mode Justification

The EUT exercise program was used during radiated testing and was designed to exercise the various system components in a manner similar to a typical use.
For emission testing, the unit was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

Equipment Modification

Any modifications installed previous to testing by Petratec International., Ltd. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by EMC Compliance Management Group.

Test System Details

EUT	
Model Name:	**A741**
Description:	**RFID Reader**
Manufacturer:	**Petratec International., Ltd.**
Input Voltage:	**3.6V DC**
Operating Frequency:	**13.56MHz, 2.4GHz**

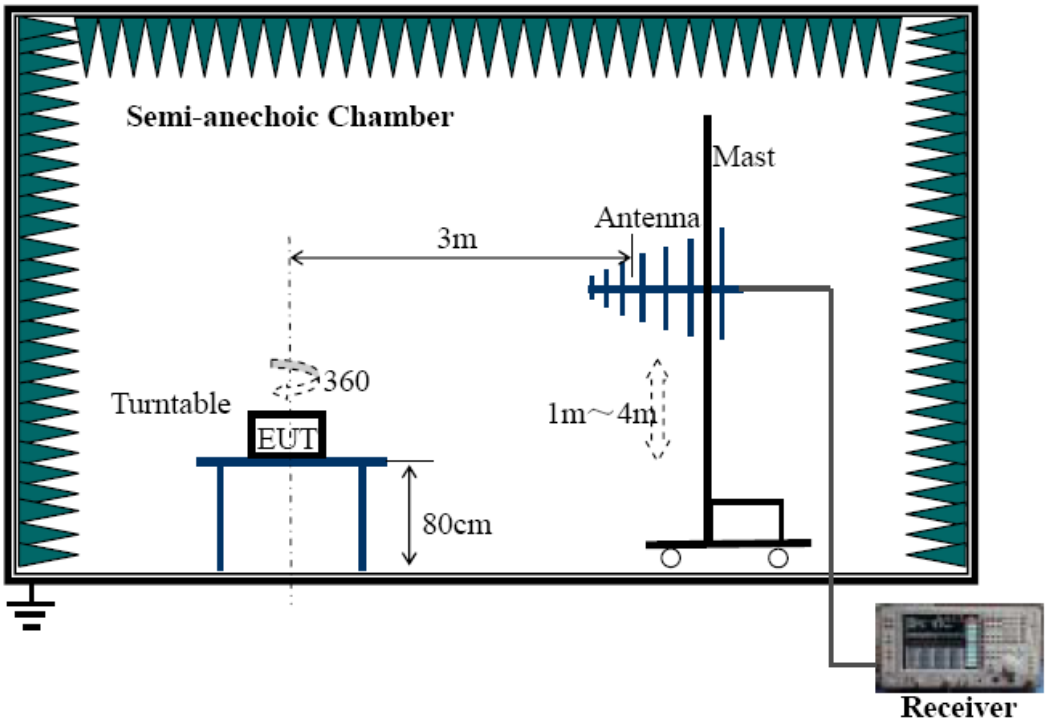
EUT Power Supply
N/A

Support Equipment				
Description	**Model Number**	**Serial Number**	**Manufacturer**	**Power Cable Description**
PC	M4800C	M0633038677	Lenovo	1.8m Unshielded
Monitor	LXM-ML-19BH	6M01876618	Lenovo	1.8m Unshielded
Keyboard	SK-8110	C4739-60101	Lenovo	N/A
Mouse	M-UAE96	LZ6360E0EG	Logitech	N/A

Continue on to the next page…

Cable Description					
Description	**From**	**To**	**Length (Meters)**	**Shielded (Y/N)**	**Ferrite Loaded (Y/N)**
Ethernet Cable	EUT	PC	2.0	N	N
VGA Cable	Monitor	PC	1.5	Y	Y (x2)
Keyboard Cable	Keyboard	PC	1.8	N	N
Mouse Cable	Mouse	PC	1.8	N	N

Configuration of Tested System



ATTACHMENT 1 – ANTENNA REQUIREMENT

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.203
MODEL TESTED:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	25°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, February 7

SETUP METHOD:	N/A
ANTENNA REQUIREMENT:	An intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.
TEST VOLTAGE:	3.6V DC
TEST STATUS:	Normal Operation As Usual
RESULTS:	The EUT meets the Antenna requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	N/A

FCC Section	FCC Rules	Conclusion
15.203	***Described how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.*** ***The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed:*** ● ***The application (or intended use) of the EUT*** ● ***The installation requirements of the EUT*** ● ***The method by which the EUT will be marketed***	***The RF Device uses a permanent antenna with antenna gain 3dBi***

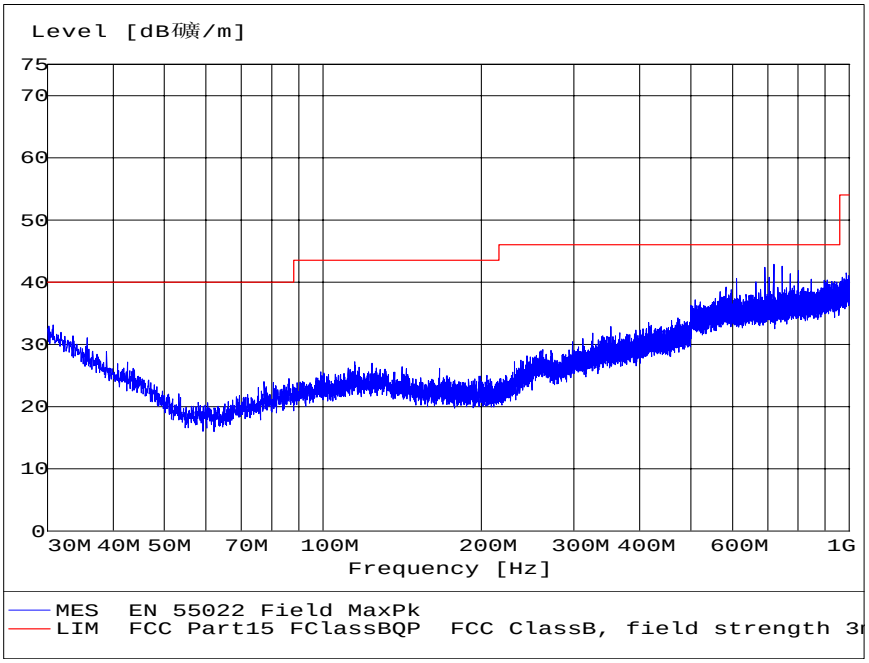
Antenna Location

ATTACHMENT 2 – GENERAL RADIATED EMISSIONS

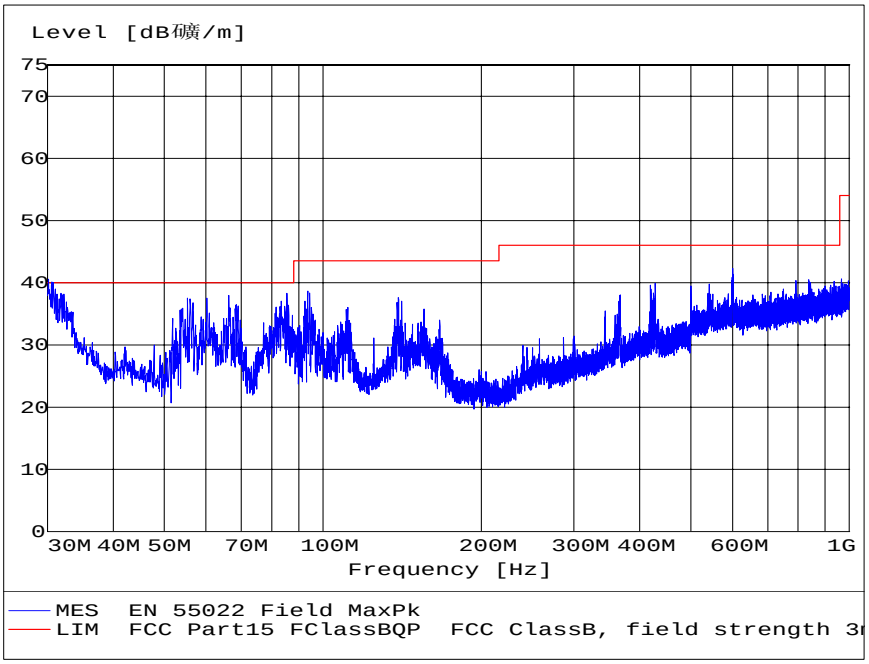
CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.209, 15.205
MODEL TESTED:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	24°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, February 7

SETUP METHOD:	ANSI C63.4 - 2003
TEST PROCEDURE:	The EUT is set up according to the guidelines of ANSI C63.4 for radiated emissions. The length of the antenna was adjusted to the maximum output level. An EMI receiver peak scan is made at the frequency measurement range (pre-scan) in an Anechoic chamber. Signal discrimination is then performed and the significant peaks marked. These peaks are then quasi-peaked for final test at an Open Site Test area. The frequency investigated is from 30MHz to 1GHz. The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor is given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TESTED RANGE:	30MHz to 24,000MHz
TEST VOLTAGE:	3.6V DC
TEST STATUS:	2.4GHz communication operated and 13.56MHz operated
RESULTS:	- The EUT meets the requirements of test reference for Radiated Emissions on horizontal polarization by 3.0 dB at 133.5MHz. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Model: A741



Horizontal Radiated Emission Plot (Peak, Max Hold Mode)



Vertical Radiated Emission Plot (Peak, Max Hold Mode)

30MHz - 1GHz

Horizontal

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	32.8	16.1	0.3	30.1	40.0	-9.9	102	146
2	726.7	19.1	3.1	42.2	46.0	-3.8	83	183
3	755.8	19.4	3.3	41.8	46.0	-4.2	243	200

Vertical

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	32.8	16.1	0.3	38.6	40.0	-1.4	276	154
2	86.2	7.5	0.6	37.9	40.0	-2.1	320	120
3	606.1	18.5	2.5	43.4	46.0	-2.6	38	100

Comments: None

Note: All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

1GHz - 24GHz

Horizontal

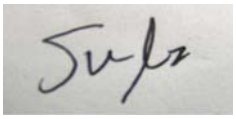
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter PK Limits (dB uV/m)	Margin (dB)	Corrected AV Level (dBuV/m)	3 Meter AV Limits (dBuV/m)	Margin (dB)
1	4887	9.5	63.7	74.0	-10.3	44.2	54.0	-9.8
2	7330	8.9	62.9	74.0	-11.1	42.6	54.0	-11.4
3	9773	8.8	63.3	74.0	-10.7	43.2	54.0	-10.8

Vertical

Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter PK Limits (dB uV/m)	Margin (dB)	Corrected AV Level (dBuV/m)	3 Meter AV Limits (dBuV/m)	Margin (dB)
1	4887	9.5	62.7	74.0	-11.3	43.1	54.0	-10.9
2	7330	8.9	61.1	74.0	-12.9	41.9	54.0	-12.1
3	9773	8.8	62.3	74.0	-11.7	42.6	54.0	-11.4

Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Advantest	R3162	001-33	11/10/06	11/09/07
EMI Receiver	R&S	ESCS30	828985/026	04/18/06	04/17/07
Pre-amp	HP	8449B	2944A06849	10/16/06	10/15/07
Horn Antenna	EMCO	3115	9104-3666	10/16/06	10/15/07
BiLog antenna	Chase	CBL 6112B	2532	03/22/06	03/21/07
3m semi-anechoic chamber	LINDGREN	07′×08′-4	15427-A	02/24/06	02/23/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY:  **REVIEWED BY:** 

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ATTACHMENT 3 – MAXIMUM PEAK OUTPUT POWER

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.247 (b) (3)
MODEL NUMBER:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, May 11

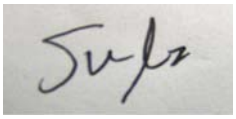
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (b) (3) For system using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850 MHz bands: 1Watt.
TEST PROCEDURE:	The EUT is set up according to the guidelines of ANSI C63.4 for radiated emissions. The length of the antenna was adjusted to the maximum output level. An EMI receiver peak scan is made at the frequency measurement range (pre-scan) in an Anechoic chamber. Signal discrimination is then performed and the significant peaks marked. These peaks are then quasi-peaked for final test at an Open Site Test area. The frequency investigated from 2.3GHz to 2.5GHz The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor is given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TEST VOLTAGE:	3.6V DC
TEST STATUS:	Transmitting continuously with maximum power
RESULTS:	The EUT meets the maximum peak conducted output power requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

Test Result

Frequency (MHz)	*Reading Field Strength Level (dBuV/m)*	*Factor (dB)*	*Maximum Field Strength Level (dBuV/m)*	*Maximum Field Strength Level (V/m)*	*Power Level (W)*	*Limit (W)*	*Result*
2445	*104.6*	*9.7*	*114.3*	*0.5188*	*0.0425*	*1*	*Pass*

Note #1: The maximum field strength level is tested with RBW>6dB bandwidth.
Note #2: Factor = Antenna Factor + Cable Factor – Amplifier Gain=28.5+6.5-25.3=9.7dB
Note #3: P=(E×d)squared/(30×G), for 3dBi gain, the numeric gain is 1.9; d=3m

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Advantest	R3162	001-33	11/10/06	11/09/07
EMI Receiver	R&S	ESCS30	828985/026	04/18/06	04/17/07
Pre-amp	HP	8449B	2944A06849	10/16/06	10/15/07
Horn Antenna	EMCO	3115	9104-3666	10/16/06	10/15/07
BiLog antenna	Chase	CBL 6112B	2532	03/22/06	03/21/07
3m semi-anechoic chamber	LINDGREN	07′×08′-4	15427-A	02/24/06	02/23/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY:  **REVIEWED BY:** 

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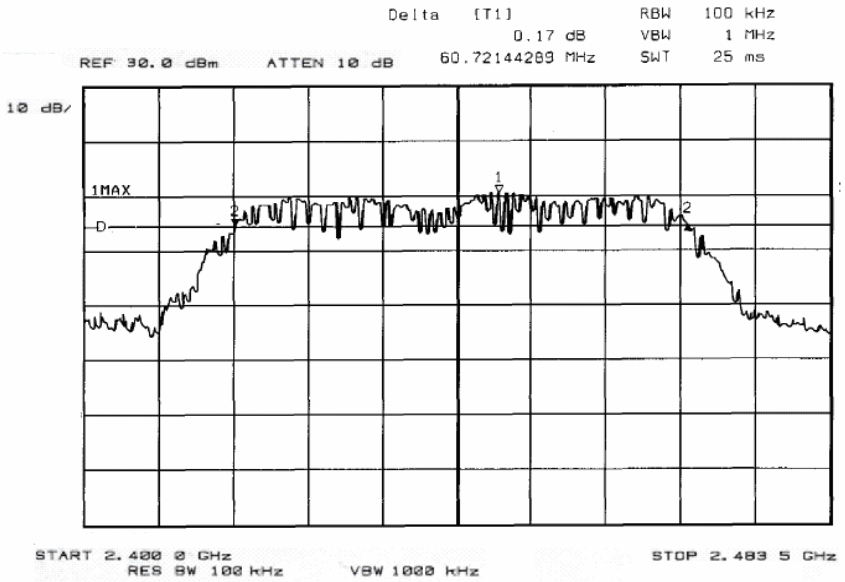
ATTACHMENT 4 – BANDWIDTH

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.247 (a)(2)
MODEL NUMBERS:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, May 15

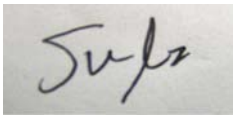
SETUP METHOD:	ANSI C63.4 - 2003
BANDWIDTH REQUIREMENT:	FCC 15.247 (a) (2) (i) The minimum 6 dB bandwidth shall be at least 500kHz.
TEST PROCEDURE:	Set the spectrum as follow: Span=100MHz, centered on the plot; RBW=100kHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Use the search peak function to set the marker to the peak of the emission; Use the delta-mark function to measure 6dB down to both sides of the emission; The 6dB BW is the delta reading between two 6dB down marker.
TEST VOLTAGE:	3.6V DC
TEST STATUS:	Transmitting continuously
RESULTS:	The EUT meets the bandwidth requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Test Result

6dB Bandwidth	*Limit*	*Result*
60.72MHz	*500kHz*	*Pass*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Advantest	R3162	001-33	11/10/06	11/09/07
EMI Receiver	R&S	ESCS30	828985/026	04/18/06	04/17/07
Pre-amp	HP	8449B	2944A06849	10/16/06	10/15/07
Horn Antenna	EMCO	3115	9104-3666	10/16/06	10/15/07
BiLog antenna	Chase	CBL 6112B	2532	03/22/06	03/21/07
3m semi-anechoic chamber	LINDGREN	07′×08′-4	15427-A	02/24/06	02/23/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY:  **REVIEWED BY:** 

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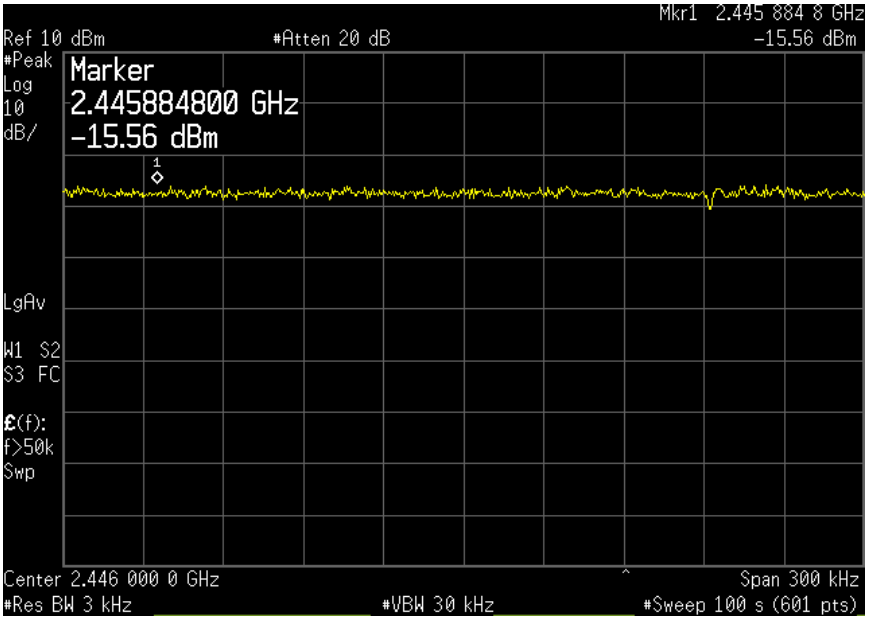
ATTACHMENT 5 – POWER SPECTRAL DENSITY

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.247 (e)
MODEL NUMBER:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, May 15

SETUP METHOD:	ANSI C63.4 - 2003
POWER SPECTRAL DENSITY REQUIREMENT:	FCC 15.247 (e) For digitally modulated systems, the power density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
TEST PROCEDURE:	Set the spectrum as follow: 1. Tune the spectrum to the highest point of the maximized fundamental emission. Set the RBW=3kHz , VBW>RBW, span=300kHz, sweep=100s 2. From the peak level obtained in (1), derive the field strength, E, by applying the appropriate factor, using the equation P=(E×d)squared/(30×G), calculate a power level fro comparison to the +8dBm limit.
TEST VOLTAGE:	3.6V DC
TEST STATUS:	Transmitting continuously
RESULTS:	The EUT meets the power spectral density requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



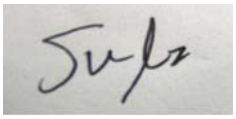
Power Spectral Density Plot

Test Result

Frequency (MHz)	*Reading Field Strength Level (dBuV/m)*	*Factor (dB)*	*Maximum Field Strength Level (dBuV/m)*	*Maximum Field Strength Level (V/m)*	*Power Level (dBm)*	*Limit (dBm)*	*Result*
2445	*91.4*	*9.7*	*100.1*	*0.1*	*1.984*	*8*	*Pass*

Note #1: The maximum field strength level is tested with RBW>6dB bandwidth.
Note #2: Factor = Antenna Factor + Cable Factor – Amplifier Gain=28.5+6.5-25.3=9.7dB
Note #3: P=(E×d)squared/(30×G), for 3dBi gain, the numeric gain is 1.9; d=3m

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Agilent	E4440A	US5000675	11/10/06	11/09/07
EMI Receiver	R&S	ESCS30	828985/026	04/18/06	04/17/07
Pre-amp	HP	8449B	2944A06849	10/16/06	10/15/07
Horn Antenna	EMCO	3115	9104-3666	10/16/06	10/15/07
BiLog antenna	Chase	CBL 6112B	2532	03/22/06	03/21/07
3m semi-anechoic chamber	LINDGREN	07′×08′-4	15427-A	02/24/06	02/23/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY:  **REVIEWED BY:** 

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 6 – BAND EDGE TEST

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC Part 15.247 (d)
MODEL NUMBER:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, February 7

SETUP METHOD:	ANSI C63.4 - 2003
BANDEDGE REQUIREMENT:	FCC 15.247 (d) In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiators shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
TEST PROCEDURE:	The EUT is set up according to the guidelines of ANSI C63.4 for radiated emissions. The length of the antenna was adjusted to the maximum output level. An EMI receiver peak scan is made at the frequency measurement range (pre-scan) in an Anechoic chamber. Signal discrimination is then performed and the significant peaks marked. These peaks are then quasi-peaked for final test at an Open Site Test area. The frequency investigated is from 30MHz to 1GHz. The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor is given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TEST VOLTAGE:	3.6V DC
TEST STATUS:	Transmitting continuously
RESULTS:	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.

CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

Band Edge Test Table

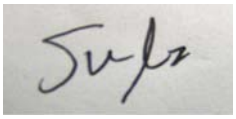
Antenna Horizontal									
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB)**	**Corrected Level (dBuV/m)**	**Frequency of the highest peak level (MHz)**	**Highest Peak level in 100kHz within th band (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	2399.9	28.3	6.3	25.6	63.3	2445	88.8	68.8	-5.5
2	2483.6	27.5	6.7	25.7	58.7	2445	88.8	68.8	-10.1
Antenna Vertical									
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB)**	**Corrected Level (dBuV)**	**Frequency of the highest peak level (MHz)**	**Highest Peak level in 100kHz within th band (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
1	2399.9	28.3	6.3	25.6	62.4	2445	88.8	68.8	-6.4
2	2483.6	27.5	6.7	25.7	59.1	2445	88.8	68.8	-9.7

Note: In any 100kHz bandwidth outside the operating frequency band, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Restrict band data

Antenna Horizontal							
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB)**	**Corrected PK Level (dBuV/m)**	**Limits PK (dBuV/m)**	**Margin PK (dB)**
1	2390.0	28.3	6.3	25.6	59.9	74.0	-14.1
2	2483.5	27.5	6.7	25.7	57.5	74.0	-16.5
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB**	**Corrected AV Level (dBuV/m)**	**Limits AV (dBuV/m)**	**Margin AV (dB)**
1	2390.0	28.3	6.3	25.6	47.9	54.0	-6.1
2	2483.5	27.5	6.7	25.7	43.2	54.0	-10.8
Antenna Vertical							
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB)**	**Corrected PK Level (dBuV)**	**Limits PK (dBuV/m)**	**Margin PK (dB)**
1	2390.0	28.3	6.3	25.6	57.7	74.0	-16.3
2	2483.5	27.5	6.7	25.7	55.8	74.0	-18.2
Signal	**Frequency (MHz)**	**Antenna Factor (dB/m)**	**Cable Factor (dB)**	**Amp Factor (dB**	**Corrected AV Level (dBuV)**	**Limits AV (dBuV/m)**	**Margin AV (dB)**
1	2390.0	28.3	6.3	25.6	45.8	54.0	-8.2
2	2483.5	27.5	6.7	25.7	43.9	54.0	-10.1

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Advantest	R3162	001-33	11/10/06	11/09/07
EMI Receiver	R&S	ESCS30	828985/026	04/18/06	04/17/07
Pre-amp	HP	8449B	2944A06849	10/16/06	10/15/07
Horn Antenna	EMCO	3115	9104-3666	10/16/06	10/15/07
BiLog antenna	Chase	CBL 6112B	2532	03/22/06	03/21/07
3m semi-anechoic chamber	LINDGREN	07′×08′-4	15427-A	02/24/06	02/23/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY:  **REVIEWED BY:** 

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 7 – RF EXPOSURE CALCULATION

CLIENT:	Petratec International., Ltd	**TEST STANDARD:**	FCC 1.1307(b)(1) FCC 2.1093
MODEL NUMBER:	A741	**PRODUCT:**	RFID Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Sulz	**DATE OF TEST:**	2007, May 15

SETUP METHOD: N/A

TEST PROCEDURE:

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

MPE PREDICTION:

Equation from page 18 of OET Bulletin 65, Edition 97-01
S=PG/4 πR2
Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the center of radiation of the antenna
2400MHz – 2483.5MHz
Maximum peak output power at antenna input terminal: 0.0425W
Predication frequency: 2445MHz
Antenna gain: 3dBi
Prediction distance: 30cm
Power density at predication frequency at 30cm: 0.00714 mW/cm2
MPE limit for uncontrolled exposure at prediction frequency: 1.0mW/cm2

TEST RESULT:

The EUT is a portable outdoor device. 1.0mW/cm2 limit applies. The prediction distance is 30cm.