FCC ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT CERTIFICATION TO FCC PART 15 REQUIREMENTS

For

INTENTIONAL RADIATOR

of

Car Alarm Transceiver

FCC ID Number	: H5OTR34
Trade Name	: Advance Security Inc.
Model Number	: CA6550RX
Agency Series	: N/A
Report Number	: 90914203-RP1
Date	: October 1, 2009

Issued to

Advance Security Inc.
3F, 48 Ta An Street, Hsi Chih, Taipei Hsien,
TAIWAN R.O.C.

Issued by

Compliance Certification Services Inc.
Linkou BU.
No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township,
Taoyuan County 33841, Taiwan

TEL: (02) 2217-0894
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1. VERIFICATION OF COMPLIANCE

COMPANY NAME	: Advance Security Inc. 3F, 48 Ta An Street, Hsi Chih, Taipei Hsien, TAIWAN R.O.C.
CONTACT PERSON	: Michael Chen / President
TELEPHONE NO.	: 886-2-8648-1688
EUT DESCRIPTION	: Car Alarm Transceiver
MODEL NAME/NUMBER	: CA6550RX
FCC ID	: H5OTR34
DATE TESTED	: September 23, 2009 ~ September 26, 2009
REPORT NUMBER	: 90914203-RP1

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	433.92 MHz Car Alarm Transceiver
MEASUREMENT PROCEDURE	ANSI 63.4 / 2003
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. **Warning**: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services Inc. will constitute fraud and shall nullify the document.

Approved by:

Vince Chiang
Assistant Manager of Sindian BU.

Reviewed by:

Vesta Hsu
Supervisor of report document dept. of Sindian BU.

2. PRODUCT DESCRIPTION

Fundamental Frequency	**433.92 MHz**
Power Source	**12VDC**
Transmitting Time	**Periodic ≤ 5 seconds**
Associated Transceiver	**FCC ID: H5OTR35**

3. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

4. MEASUREMENT STANDARDS

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/2003.

5. TEST METHODOLOGY

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. MEASUREMENT EQUIPMENT USED

Open Area Test Site # 3				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	ADVANTEST	R3261A	N/A	N.C.R
Spectrum Analyzer	Agilent	E4446A	MY48250064	10/28/2009
EMI Test Receiver	R&S	ESVS30	828488/004	03/24/2010
Pre-Amplifier	Mini-Circuits	ZKL-2R5	83153007374	04/14/2010
Pre-Amplifier	Agilent	8449B	3008A01738	04/17/2010
Bilog Antenna	Sunol Sciences	JB1	A031905	05/27/2010
Loop Antenna	EMCO	6502	2356	05/28/2010
Turn Table	Chance Most	CM-T003-1	T807-6	N.C.R
Antenna Tower	Chance Most	CM-A003-1	A807-6	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
RF Switch	ANRITSU	MP59B	M53867	N.C.R
Site NSA	CCS	N/A	N/A	05/22/2010
Test S/W	LabVIEW 6.1 (CCS OATS EMI SW V2.7)			
Above 1GHz Used				
Spectrum Analyzer	Agilent	E4407B	MY44212679	12/28/2009
Bilog Antenna	SCHWAZBECK	VULB9160	3084	09/11/2010
EMI Test Receiver	SCHAFFNER	SCR 3501	436	01/21/2010
Pre-Amplifier	HP	8447D	2944A06530	12/31/2009
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	SIDT EUROPE	9x6x6	N/A	05/15/2010
Test S/W	CCS-3A1RE			

Remark: Each piece of equipment is scheduled for calibration once a year.

SUPPORT EQUIPMENT:

No.	Device Type	Model	Brand
1.	Tool	CA6550RX	Advance Security Inc.

7. POWERLINE RFI LIMIT

CONNECTED TO AC POWER LINE	SECTION 15.207
CARRIER CURRENT SYSTEM IN THE FREQUENCY RANGE OF 450 KHz TO 30 MHz	SECTION 15.205 AND SECTION 15.209, 15.221, 15.223, 15.225 OR 15.227, AS APPROPRIATE.
BATTERY POWER	NO REQUIRED.

8. RADIATED EMISSION LIMITS

GENERAL REQUIREMENTS	SECTION 15.209
RESTRICTED BANDS OF OPERATION	SECTION 15.205
PERIODIC OPERATION IN THE BAND 40.66 -40.70 MHz AND ABOVE 70 MHz.	SECTION 15.231
RECEIVER MODE	SECTION 15.109

9. SYSTEM TEST CONFIGURATION

Use a block of foam and combined it with EUT wrapping rubber band around it. This way it can test X, Y and Z axis. To activate continuous transmitting & receiving, place a small plastic block between rubber band and EUT push button.

Radiated Open Site Test Set-up (Transmitter Mode)

X-axis

Y-axis

Z-axis

Radiated Open Site Test Set-Up (Receiver Mode)

10. TEST PROCEDURE

Radiated Emissions, 15.231(4)(b)

Test Set-up for frequency range 30 – 1000 MHz

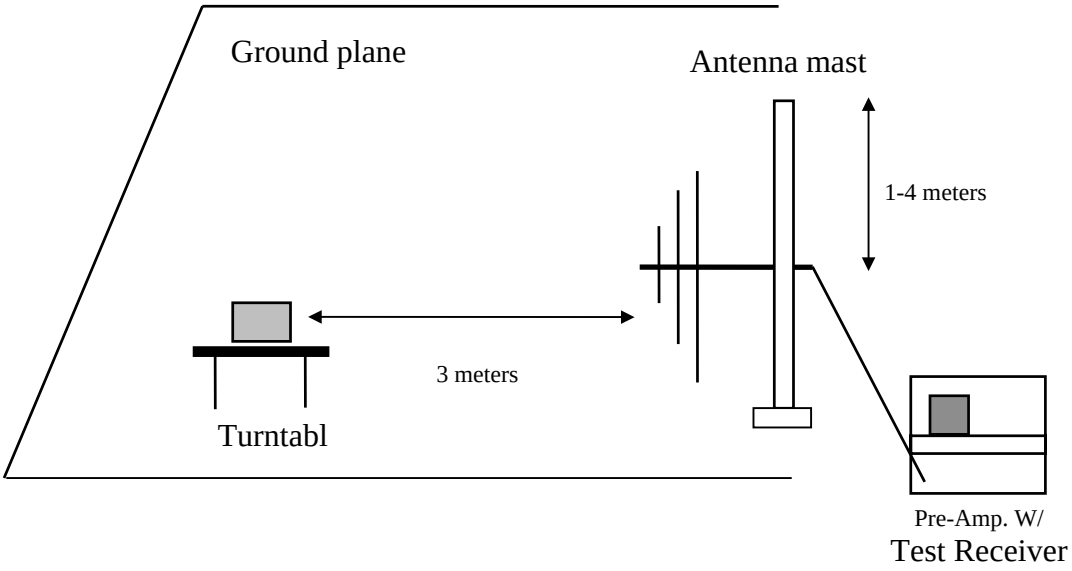


Fig. 1

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3-meters from the EUT.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

Test set-up for measurements above 1GHz

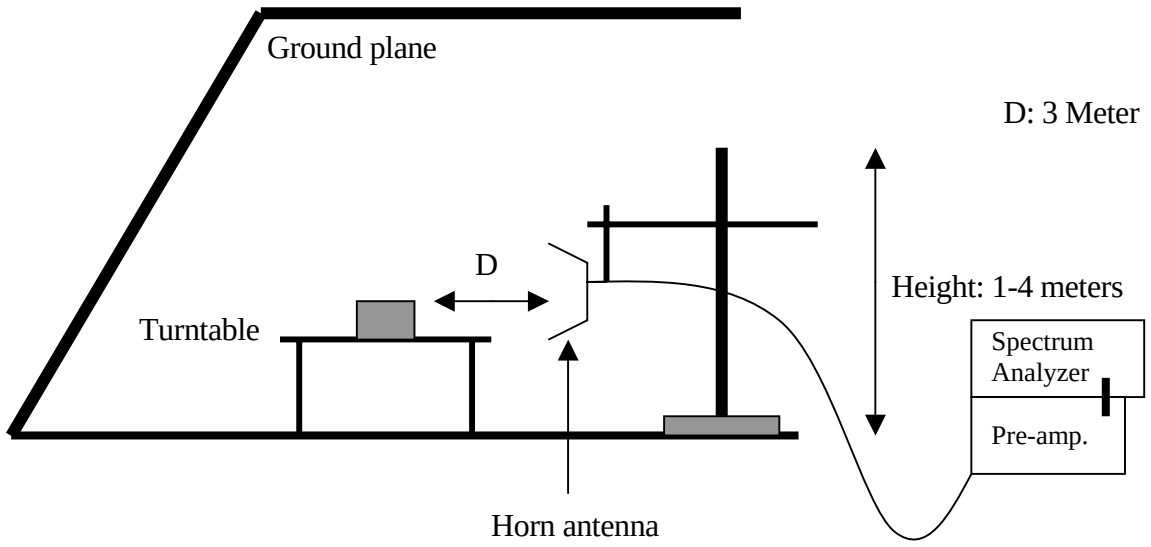


Fig. 2

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 1-meters from the EUT. The EUT antenna was mounted vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

11. Equipment Modifications

To achieve compliance to FCC Section 15.231 technical limits, the following change(s) were made during compliance testing:

NONE

12. TEST RESULT

Powerline RFI Class B	Eut	Radiated Emission Limits	Eut
SECTION 15.207		SECTION 15.209	X
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	X
BATTERY POWER	X	SECTION 15.231 (b)	X
		SECTION 15.231 (e)	
		SECTION 15.109	X

12.1 Maximum Modulation Percentage (M%)

CALCULATION:

Average Reading = Peak Reading (dBuV/m)+ 20log (Duty Cycle)

In order to determine possible Maximum Modulation percentage, alternations are made to the EUT. We measured:

	Tp (ms)	Ton (ms)	M% = (Ton/Tp)*100%	C.F. = 20*log(M%)
EUT	101.8	(19*0.76)+(59*0.14) = 22.7	22.70	-12.879dB

Note: Tp>100ms. Use 100 ms for calcuation.

12.2 The Emissions Bandwidth

The bandwidth of the emissions were investigated per 15.231(c)

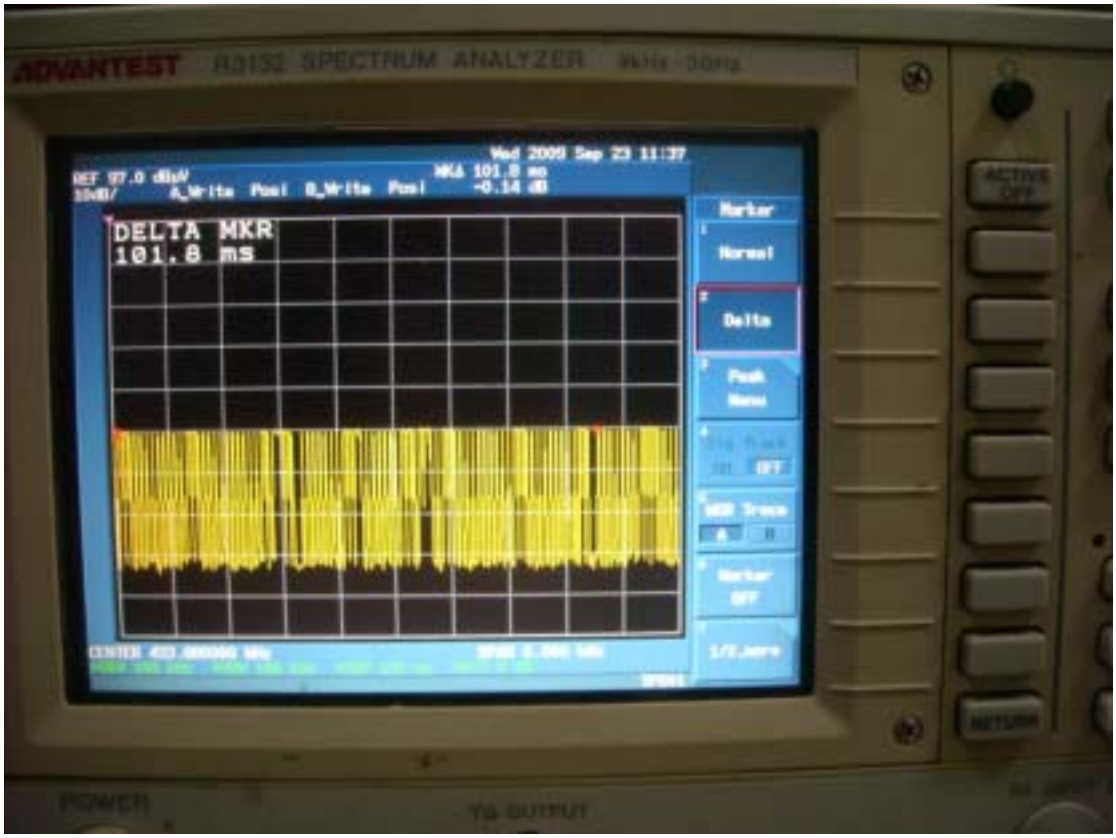
Frequency (MHz)	Botton#1 BW (kHz)	Limit (MHz)	Result
433.92	380.00	1.0848	PASS

APPENDIX I

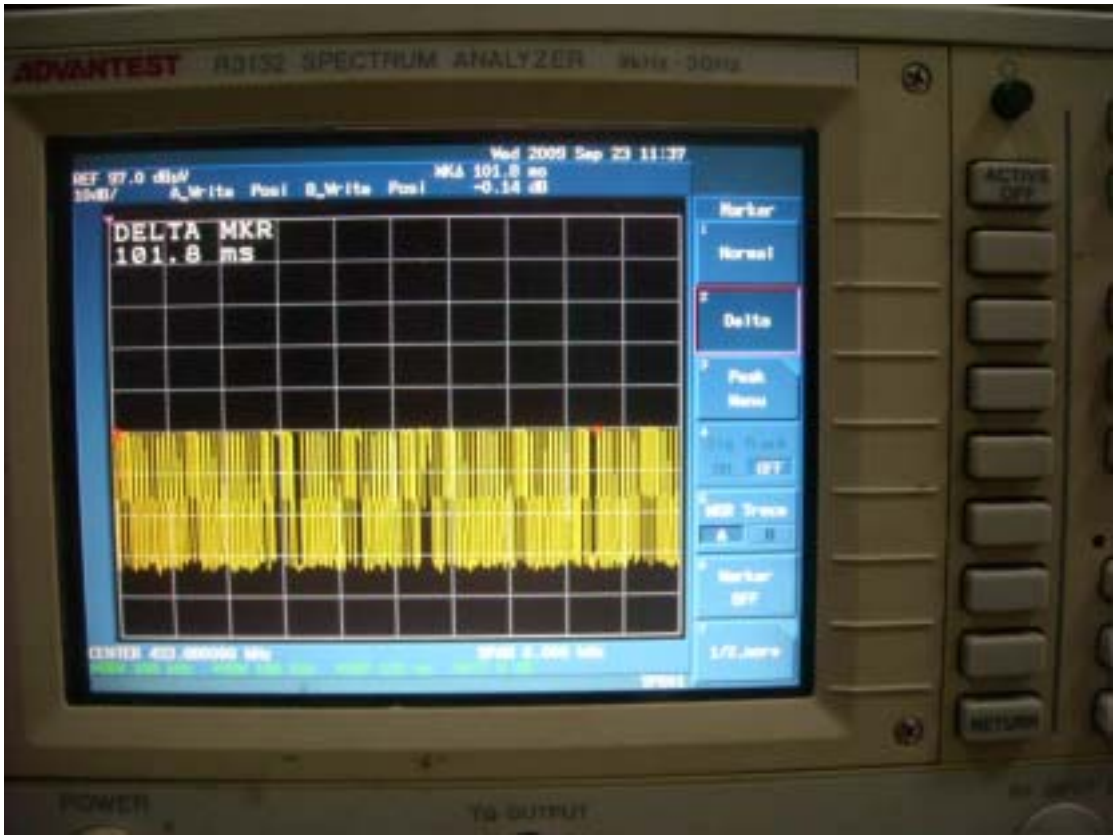
TEST DATA

Test Plot: Maximum Modulation Percentage (M%)

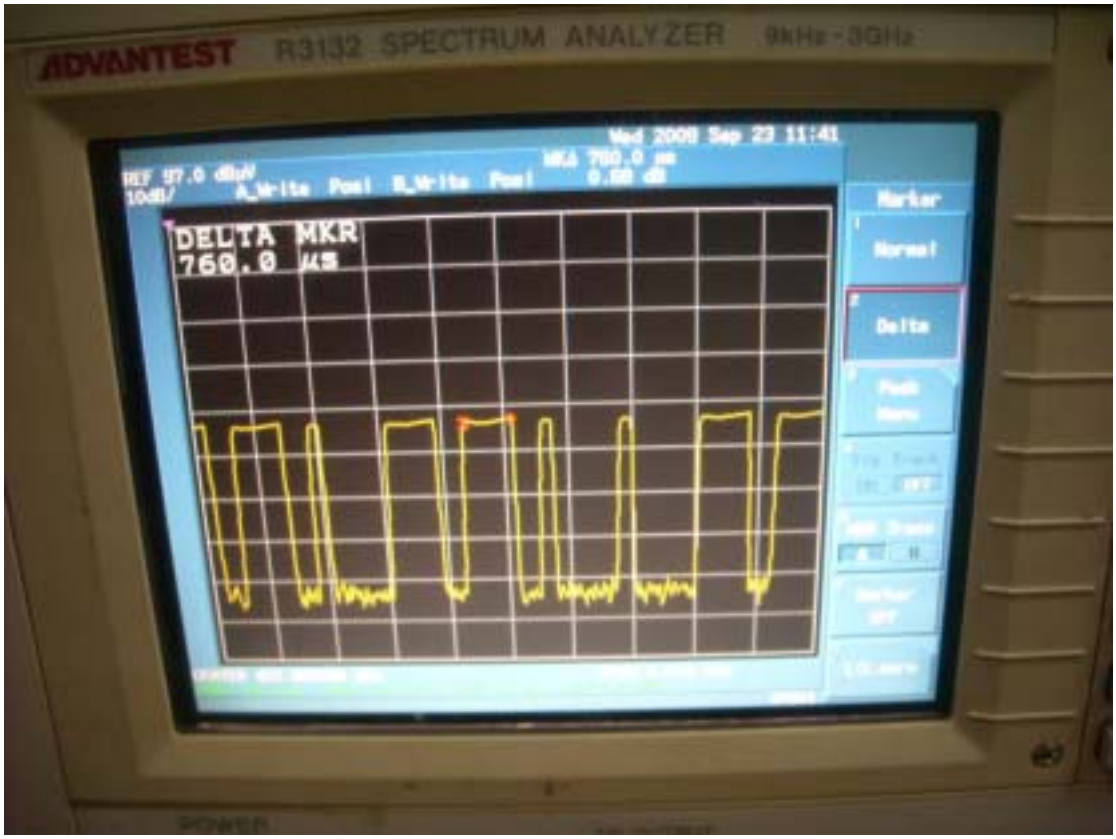
Tp



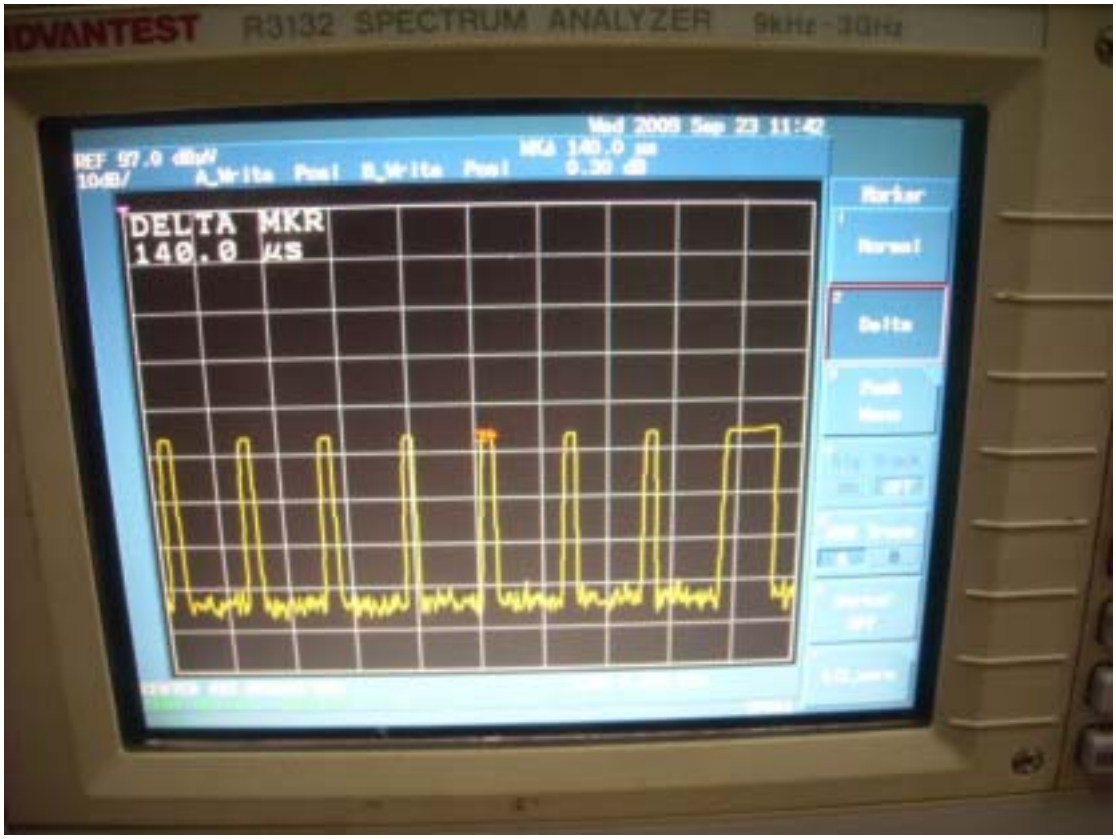
Channel Number



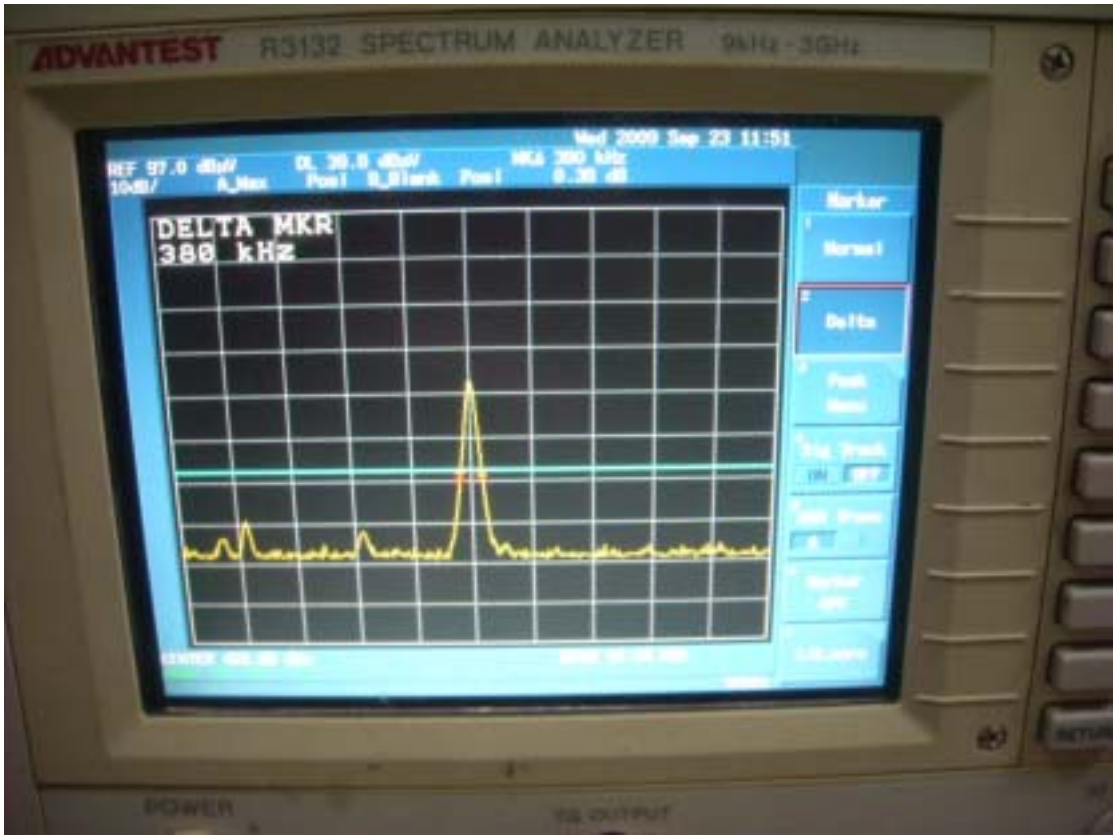
Ton


ADVANTEST R3132 SPECTRUM ANALYZER
DELTA MKR
760.0 µs
Marker
Normal
Delta

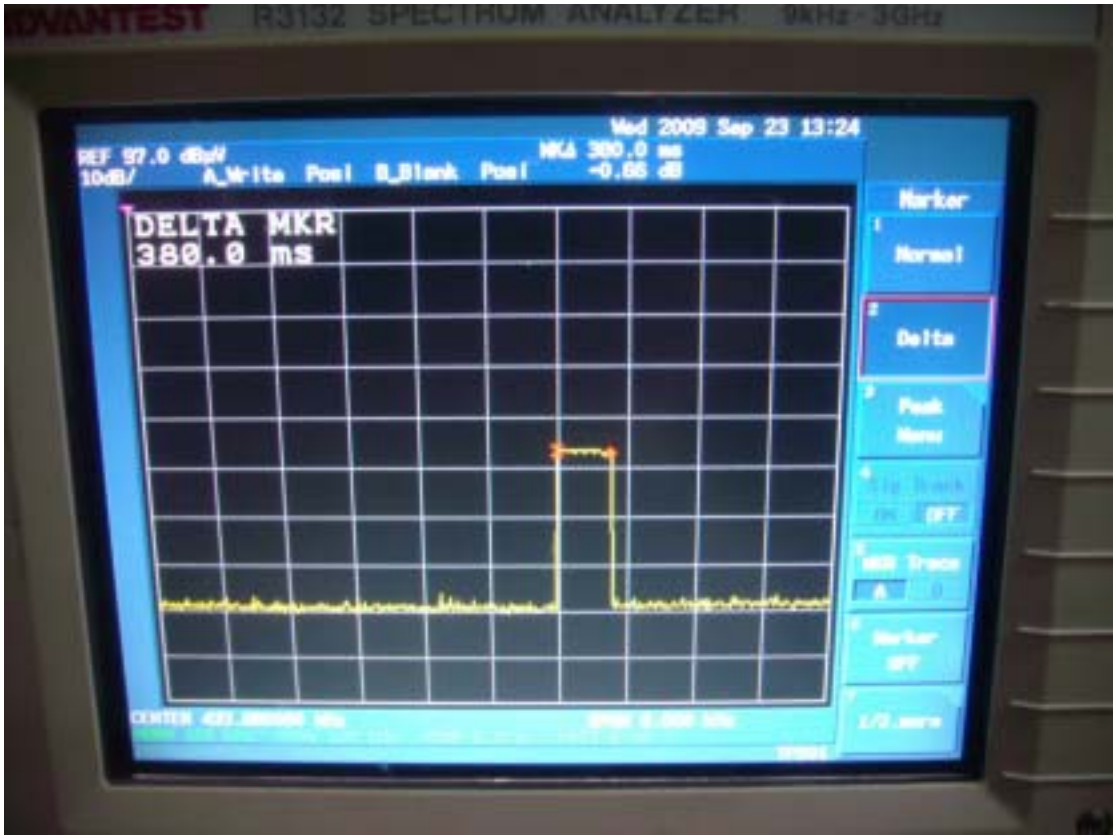
Ton


ADVANTEST R3132 SPECTRUM ANALYZER
DELTA MKR
140.0 µs
Marker
Normal
Delta

Test Plot: The Emissions Bandwidth



Transmitting Time



TEST RESULTS

Below 1 GHz

Operation Mode:	TX Mode	**Test Date:**	September 26, 2009
Temperature:	26°C	**Humidity:**	78% RH
Tested by:	Benson Yang		

Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol (H/V)
433.89	63.90	51.02	-8.36	42.66	80.83	-38.17	3mV_X
867.89	34.60	21.72	-1.88	19.84	60.83	-40.99	3mV_X
433.89	63.20	50.32	-8.36	41.96	80.83	-38.87	3mV_Y
867.90	33.30	20.42	-1.88	18.54	60.83	-42.29	3mV_Y
433.92	62.20	49.32	-8.36	40.96	80.83	-39.87	3mV_Z
867.91	33.90	21.02	-1.88	19.14	60.83	-41.69	3mV_Z
433.90	62.70	49.82	-8.36	41.46	80.83	-39.37	3mH_X
867.90	33.70	20.82	-1.88	18.94	60.83	-41.89	3mH_X
433.89	61.90	49.02	-8.36	40.66	80.83	-40.17	3mH_Y
867.91	34.00	21.12	-1.88	19.24	60.83	-41.59	3mH_Y
433.90	61.70	48.82	-8.36	40.46	80.83	-40.37	3mH_Z
867.89	34.40	21.52	-1.88	19.64	60.83	-41.19	3mH_Z

Factor = Antenna Factor + Cable Loss - Pre Amplifier

Av Rdg = Pk Rdg-12.879dB

Notes:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
3. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 120kHz.*

Operation Mode: RX Mode (X-axis) **Test Date:** September 26, 2009

Temperature: 26°C **Humidity:** 78% RH

Tested by: Benson Yang

Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q/A)	Pol. (H/V)
431.99	35.60	-8.41	27.19	46.00	-18.81	Q	V
432.86	34.40	-8.39	26.01	46.00	-19.99	Q	V
432.93	33.70	-8.39	25.31	46.00	-20.69	Q	V
433.10	34.00	-8.38	25.62	46.00	-20.38	Q	V
434.40	32.70	-8.35	24.35	46.00	-21.65	Q	V
435.49	33.50	-8.32	25.18	46.00	-20.82	Q	V
431.99	35.20	-8.41	26.79	46.00	-19.21	Q	H
432.87	34.20	-8.39	25.81	46.00	-20.19	Q	H
432.93	33.00	-8.39	24.91	46.00	-21.09	Q	H
433.20	34.20	-8.38	25.82	46.00	-20.18	Q	H
434.40	33.20	-8.35	24.85	46.00	-21.15	Q	H
435.50	33.70	-8.32	25.38	46.00	-20.62	Q	H

Notes:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
3. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 120kHz.*

Above 1 GHz

Operation Mode:	TX Mode (X-axis)	**Test Date:**	September 26, 2009
Temperature:	26°C	**Humidity:**	78% RH
Tested by:	Benson Yang		

Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark (P/A)	Pol (H/V)
1875.00	49.05	36.17	-6.70	29.47	60.83	-31.36	Peak	3mV
2463.00	54.31	41.43	-4.40	37.03	60.83	-23.80	Peak	3mV
3247.00	50.12	37.24	-1.50	35.74	60.83	-25.09	Peak	3mV
1175.00	49.95	37.07	-10.60	26.47	74.00	-47.53	Peak	3mH
1175.00	---	---	---	---	54.00	---	Average	3mH
2463.00	51.73	38.85	-4.40	34.45	60.83	-26.38	Peak	3mH
3016.00	49.99	37.11	-2.20	34.91	60.83	-25.92	Peak	3mH

Factor = Antenna Factor + Cable Loss - Pre Amplifier

Notes:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (if: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode (RBW=VBW=1MHz) of the emission shown in Rdg column.*
4. *Average detector mode (RBW=1MHz, VBW=10Hz) for restricted frequency bands.*
5. *Average measured mode (Pk Rdg – 12.879dB) for not restricted frequency bands.*
6. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

Operation Mode: RX Mode **Test Date:** September 26, 2009

Temperature: 26°C **Humidity:** 78% RH

Tested by: Benson Yang

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
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* No Any Emissions Were Found Within 20dB Below Limits From 1 GHz To 2 GHz.										

Notes:

1. *Measuring frequencies from 1 GHz to 2 GHz.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
5. *Spectrum AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*