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1. GENERAL INFORMATION

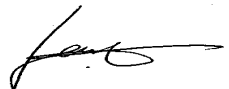
1.1 Verification of Compliance

EUT: DROP BOX MONITOR
Model: IT-317
Applicant: CENTRAK, INC.
Test Type: FCC Part 15.249 &
IC RSS-210 (Issue 8) A2.9 & RSS-Gen (Issue 3)
Result: PASS
Tested by: ADVANCED COMPLIANCE LABORATORY
Test Date: April 2, 2013
Report Number: 0048-130227-01

The above equipment was tested by Compliance Laboratory, Advanced Technologies, Inc. for compliance with the requirement set forth in the FCC rules and regulations Part 15 subpart C. This said equipment in the configuration described in the report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

	Prob. Dist.	Uncertainty(dB)	Uncertainty(dB)	Uncertainty(dB)
		30-1000MHz	1-6.5GHz	Conducted
Combined Std. Uncertainty u_c	norm.	± 2.36	± 2.99	± 1.83



Wei Li
Lab Manager
Advanced Compliance Lab

Date April 2, 2013

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

ITEM	DESCRIPTION	FCC/IC ID	CABLE
Product	DROP BOX MONITOR IT-317 (1)	ST2-IT317 6012A-IT317	
Housing	PLASTICS		
Power Supply	3V DC Battery		
Operation Freq.	904MHz ~ 926MHz		
Receiver	IT-317(RX)	Verification	

(1) EUT submitted for grant.

1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-2003 at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated and conducted data are located at Hillsborough, New Jersey, USA. This site is accepted by FCC to perform measurements under Part 15 or 18 (Registration # 90601) and also designated by IC as “site IC 3130”. This site The NVLAP Lab code for accreditation of FCC EMC Test Method is: 200101-0.

1.6 Test Equipment

Manufacture	Model	Serial No.	Description	Cal Due dd/mm/yy
Hewlett-Packard	HP8546A	3448A0029 0	EMI Receiver	15/10/13
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	15/01/14
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	15/01/14
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	18/03/14
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	24/03/13
EMCO	3115	4945	Double Ridge Guide Horn Antenna	22/01/14

All Test Equipment Used are Calibrated Traceable to NIST Standards.

1.7 Statement for the Document Use

This report shall not be reproduced except in full, without the written approval of the laboratory. And this report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. & Canada Government.

2. PRODUCT LABELING

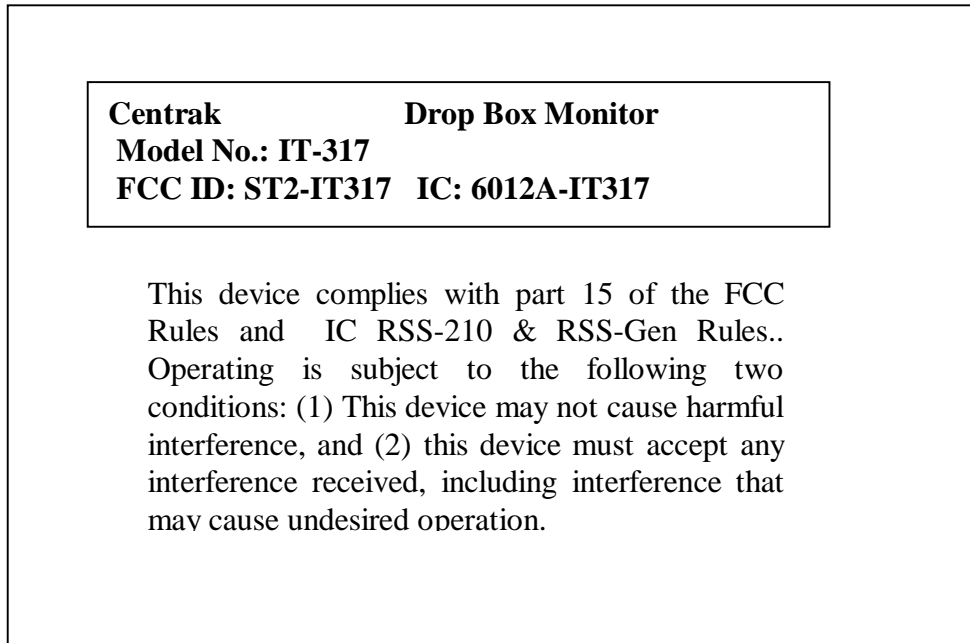


Figure 2.1 FCC/IC ID Label
(Only ID show on the EUT)

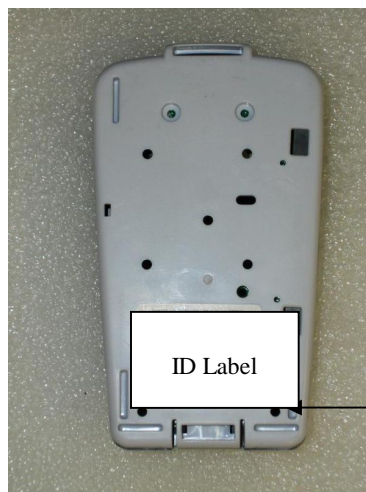


Figure 2.2 Location of the Label

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). And its antenna was permanently attached to the EUT with max length, 3". Testing was performed as EUT was continuously operated at the following frequency channels: Low=904MHz, Middle= 915MHz, High=926MHz.

Fresh external battery was used for extended operating time.

3.2 Special Accessories

N/A

3.3 Configuration of Tested System

Figure 3.1 to Figure 3.3 illustrate this system, which is tested standing along.







Figure 3.1 Radiated Test Setup

4. SYSTEM SCHEMATICS

See Attachment.

Figure 4.1 System Schematics

5. RADIATED EMISSION DATA

5.1 Field Strength Calculation

The corrected field strength is automatically calculated by EMI Receiver using following:

$$FS = RA + AF + CF + AG$$

where FS: Corrected Field Strength in dB μ V/m

RA: Amplitude of EMI Receiver before correction in dB μ V

AF: Antenna Factor in dB/m

CF: Cable Attenuation Factor in dB

AG: Built-in Preamplifier Gain in dB (Stored in receiver as part of the calibration data)

THE "DUTY CYCLE CORRECTION FACTOR" FOR SPURIOUS RADIATED EMISSIONS IS;
 $20 \log * (4 \text{ ms} / 100 \text{ ms}) = -28 \text{ dB}$, WHICH WAS USED TO CORRECT THE AVERAGE RADIATED EMISSION READINGS.

5.2 Test Methods and Conditions

The initial step in collecting radiated data is a EMI Receiver scan of the measurement range below 30MHz using peak detector and 9KHz IF bandwidth / 30KHz video bandwidth. For the range 30MHz - 1GHz, 100KHz IF bandwidth / 100KHz video bandwidth are used. Both bandwidths are 1MHz for above 1GHz measurement. Up to 10th harmonics were investigated.

5.3 Test Data

The following data lists the significant emission frequencies, polarity and position, peak reading of the EMI Receiver, the FCC limit, and the difference between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1.

Test Personnel: _____



Typed/Printed Name: Edward Lee

Date: April 2, 2013

Radiated Test Data (CH-904MHz/915MHz/926MHz)

Frequency (MHz)	Polarity (V,H) Position (X,Y,Z)	Antenna Height (m)	Azimuth (Degree)	Peak Reading at 3m (2) (dBuV/m)	Peak Reading After Correction (dBuV/m)	FCC/IC 3m Limit (1) (dBuV/m)	Difference (dBuV/m)
904	V/Y	1.2	270	88.6	88.6	94	-5.4
1808	V/Y	1.1	235	70.9	42.9	54	-11.1
2712	V/Y	1.1	235	69.1	41.1	54	-12.9
904	H/Y	1.1	050	91.6	91.6	94	-2.4
1808	H/Y	1.0	045	69.3	41.3	54	-12.7
2712	H/Y	1.0	170	63.8	35.8	54	-18.2
915	V/Y	1.2	270	87.6	87.6	94	-6.4
1830	V/Y	1.1	235	72.2	44.2	54	-9.8
2745	V/Y	1.1	235	70.3	42.3	54	-11.7
915	H/Y	1.1	220	89.0	89.0	94	-5
1828	H/Y	1.1	045	72.0	44.0	54	-10
2745	H/Y	1.0	180	64.4	36.4	54	-17.6
926	V/Y	1.2	180	86.6	86.6	94	-7.4
1852	V/Y	1.0	235	71.9	43.9	54	-10.1
2778	V/Y	1.0	235	69.6	41.6	54	-12.4
926	H/Y	1.1	000	87.2	87.2	94	-6.8
1852	H/Y	1.0	045	72.4	44.4	54	-9.6
2778	H/Y	1.0	170	65.2	37.2	54	-16.8
904	V/Z	1.2	065	92.7	92.7	94	-1.3
1808	V/Z	1.1	090	67.6	39.6	54	-14.4
2712	V/Z	1.1	135	68.1	40.1	54	-13.9
904	H/Z	1.1	050	89.3	89.3	94	-4.7
1808	H/Z	1.0	170	65.9	37.9	54	-16.1
2712	H/Z	1.0	180	68.5	40.5	54	-13.5
915	V/Z	1.2	235	91.8	91.8	94	-2.2
1830	V/Z	1.1	090	68.9	40.9	54	-13.1
2745	V/Z	1.1	135	66.9	38.9	54	-15.1
915	H/Z	1.1	050	86.8	86.8	94	-7.2
1830	H/Z	1.1	180	68.4	40.4	54	-13.6
2745	H/Z	1.0	135	68.2	40.2	54	-13.8
926	V/Z	1.2	065	90.0	90.0	94	-4

1852	V/Z	1.0	090	70.2	42.2	54	-11.8
2778	V/Z	1.0	135	66.6	38.6	54	-15.4
926	H/Z	1.1	050	84.8	84.8	94	-9.2
1852	H/Z	1.0	170	69.1	41.1	54	-12.9
2778	H/Z	1.0	180	67.3	39.3	54	-14.7

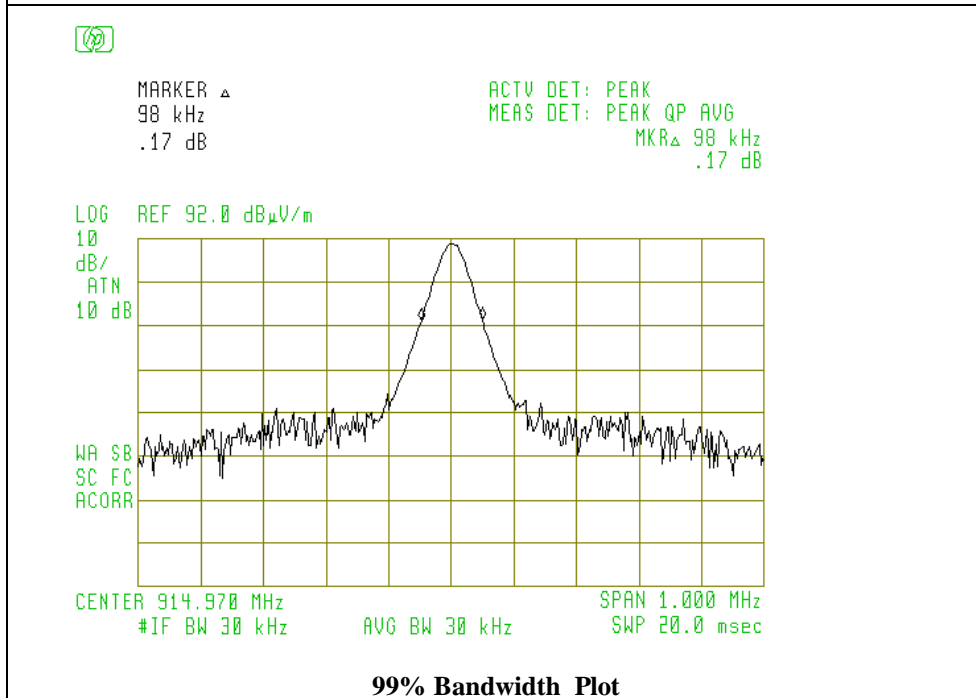
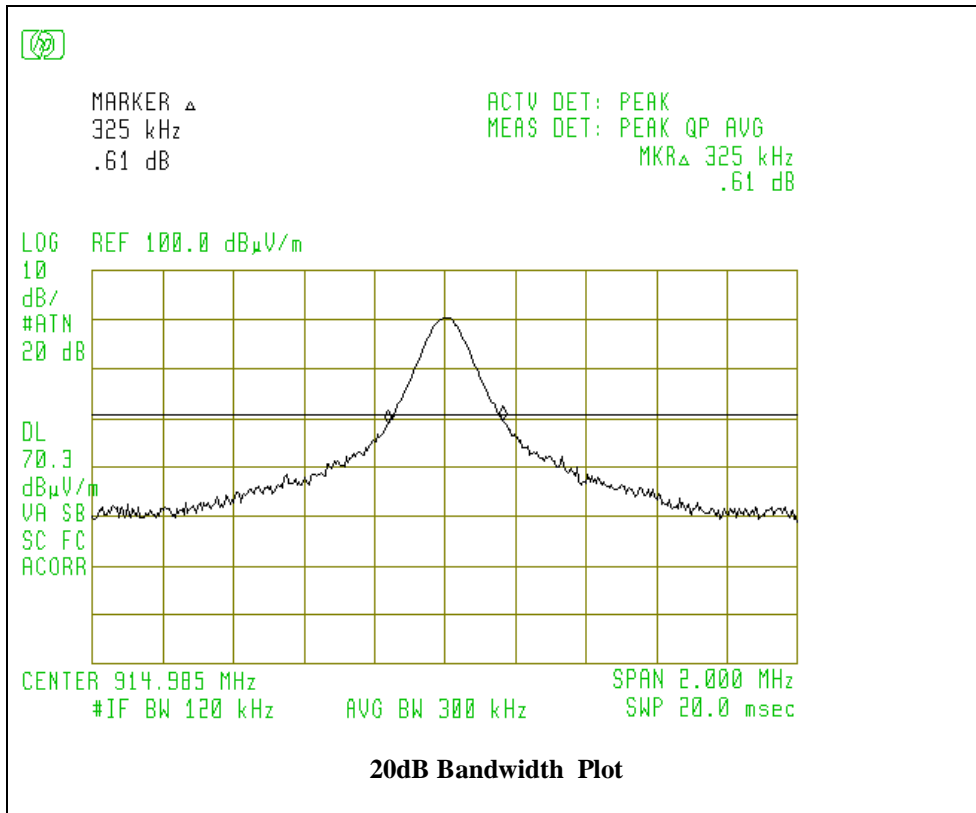
(1) The limit for emissions within the 902-928MHz band is 50mV(94dB) per FCC Sec. 15.249 & IC RSS-210 Annex 2.9. The limit for its harmonics is 500uV (54dB). Other spurious emissions shall be lower than either its fundamental by 50dB or the limit defined in Sec. 15.209, whichever is higher.

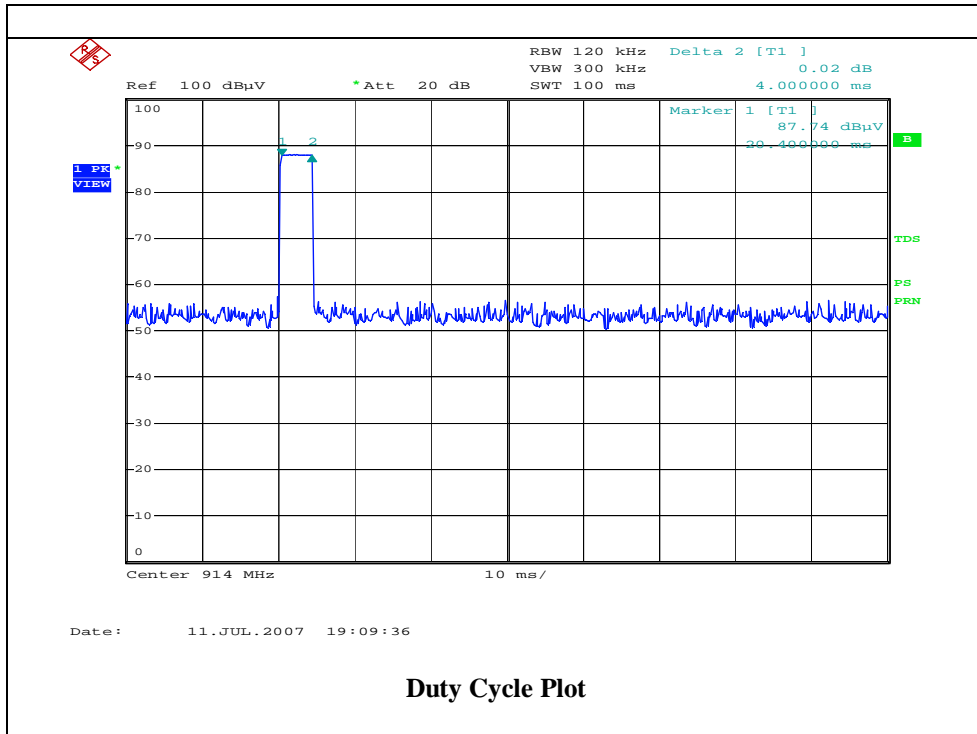
(2) If the peak reading is less than the FCC/IC quasi-peak or average limit, it'll be not necessary to show the measured/ calculated quasi-peak or average reading.

Other Spurious outside of the band 902-928MHz

Frequency (MHz)	Polarity (V,H) Position (X,Y,Z)	Antenna Height (m)	Azimuth (Degree)	Peak Reading at 3m (2) (dBuV/m)	Peak Reading After Correction (dBuV/m)	FCC/IC 3m Limit (1) (dBuV/m)	Difference (dBuV/m)
696	V/Z	1.1	235	41.8		46.5	-4.7
707	V/Z	1.1	090	39.3		46.5	-7.2
717	V/Z	1.1	090	40.5		46.5	-6.0
746	V/Z	1.1	235	36.5		46.5	-10.0
748	H/Y	1.0	090	38.1		46.5	-8.4
757	H/Y	1.0	090	35.0		46.5	-11.5
824	H/Y	1.0	180	41.1		46.5	-5.4
876	H/Y	1.0	180	41.1		46.5	-5.4

Comparing to the limit defined in FCC Sec. 15.209/IC RSS-Gen, emissions below the limit by 20dB were not recorded.





6. EUT RECEIVING MODE VERIFICATION

Radiated Test Data for Receiving Mode (worst case: Z-position)

Frequency (MHz)	Polarity (H or V)	Antenna Height (m)	Azimuth (Degree)	Peak Reading at 3m(2) (dBuV/m)	FCC/IC 3m Limit(1) (dBuV/m)	Difference (dBuV/m)
31.8	V	1.2	045	34.0	40.0	-6.0
39.8	V	1.2	045	36.5	40.0	-3.5
47.9	V	1.1	045	33.5	40.0	-6.5
55.7	V	1.1	090	35.1	40.0	-4.9
260	V	1.1	180	35.8	46.5	-10.7
39.8	H	1.4	235	32.0	40.0	-8.0
55.7	H	1.4	235	34.3	40.0	-5.7
63.3	H	1.4	180	33.7	40.0	-6.3
78.1	H	1.2	180	30.8	40.0	-9.2
260	H	1.0	235	35.9	46.5	-10.6
314	H	1.0	180	34.5	46.5	-12.0
370	H	1.0	180	35.2	46.5	-11.3

(1) Receiving mode spurious emissions shall be lower than the limit defined in FCC Sec. 15.209 & IC RSS-GEN.

(2) If the peak reading is less than the FCC/IC quasi-peak or average limit, it'll be not necessary to show the measured/ calculated quasi-peak or average reading.

7. PHOTOS OF TESTED EUT

The following photos show the inside details of the EUT.