

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback
Syncing to Laptop
AV Playback, 720p

POWER SETTINGS INVESTIGATED

Battery
230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 1,2,3,5

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
ESD Gun	Schaffner	NSG 435	IGC	2/27/2009	13 mo

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, an ESD Immunity test was performed. The EUT was tested using air and contact discharges. The specified number of air discharges was applied to each of the non-conductive surfaces of the EUT as listed in the data sheet. The specified number of contact discharges was applied to each of the conductive surfaces, seams, and control surfaces of the EUT as listed in the data sheet. If a response is detected after discharge, the type of response, discharge level and location are noted. Testing was conducted with the EUT fully cabled. Discharges were made to the connector shells, not to the individual conductors.

EMC

ESD DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/05/09
Customer:	Microsoft Corporation	Temperature:	22.6 °C
Attendees:	James Wooten	Humidity:	41%
Project:	None	Config. #:	1
Tester:	Travis Rychener	Power:	Battery
		Barometric Pres.:	1020.5
		Job Site:	SU05

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-2:2008
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TEST PARAMETERS

ENERGY STORAGE CAPACITOR	150pf	DISCHARGE RESISTANCE	330 ohms
POLARITY OF OUTPUT VOLTAGE	Positive and Negative	TIME BETWEEN SUCCESSIVE DISCHARGES	>= 1 sec

COMMENTS

Device, Premium Earbuds

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria 1
 Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

Air Discharge

NUMBER OF DISCHARGES	10	10	10	10	10	10	10	10	10	10	10
ESD TEST LEVEL (kV)	2	-2	3	-3	4	-4	8	-8	15	-15	

TEST LOCATION

All Green Arrows - No Observation	o	o	-	-	o	o	o	o	o	o	o
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All Red Arrows - See Below

Contact Discharge

NUMBER OF DISCHARGES	25	25	25	25	25	25	25	25	25	25	25
ESD TEST LEVEL (kV)	2	-2	4	-4	6	-6	8	-8	15	-15	

TEST LOCATION

All Blue Arrows - No Observations	o	o	o	o	o	o	o	o	-	-	
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Horizontal Coupling Plane	o	o	o	o	o	o	o	o	-	-	
---------------------------	---	---	---	---	---	---	---	---	---	---	--

Vertical Coupling Plane	o	o	o	o	o	o	o	o	-	-	
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All Yellow Arrows - See Below

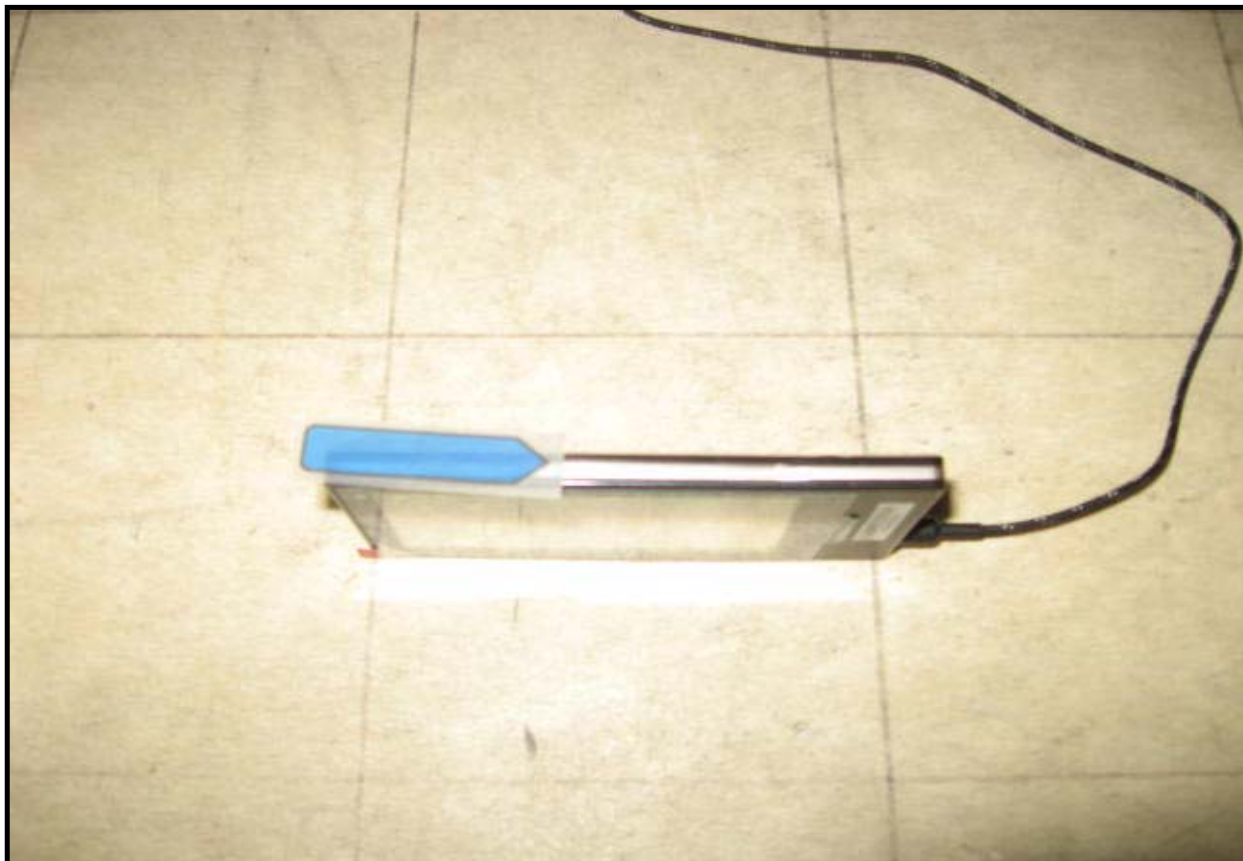
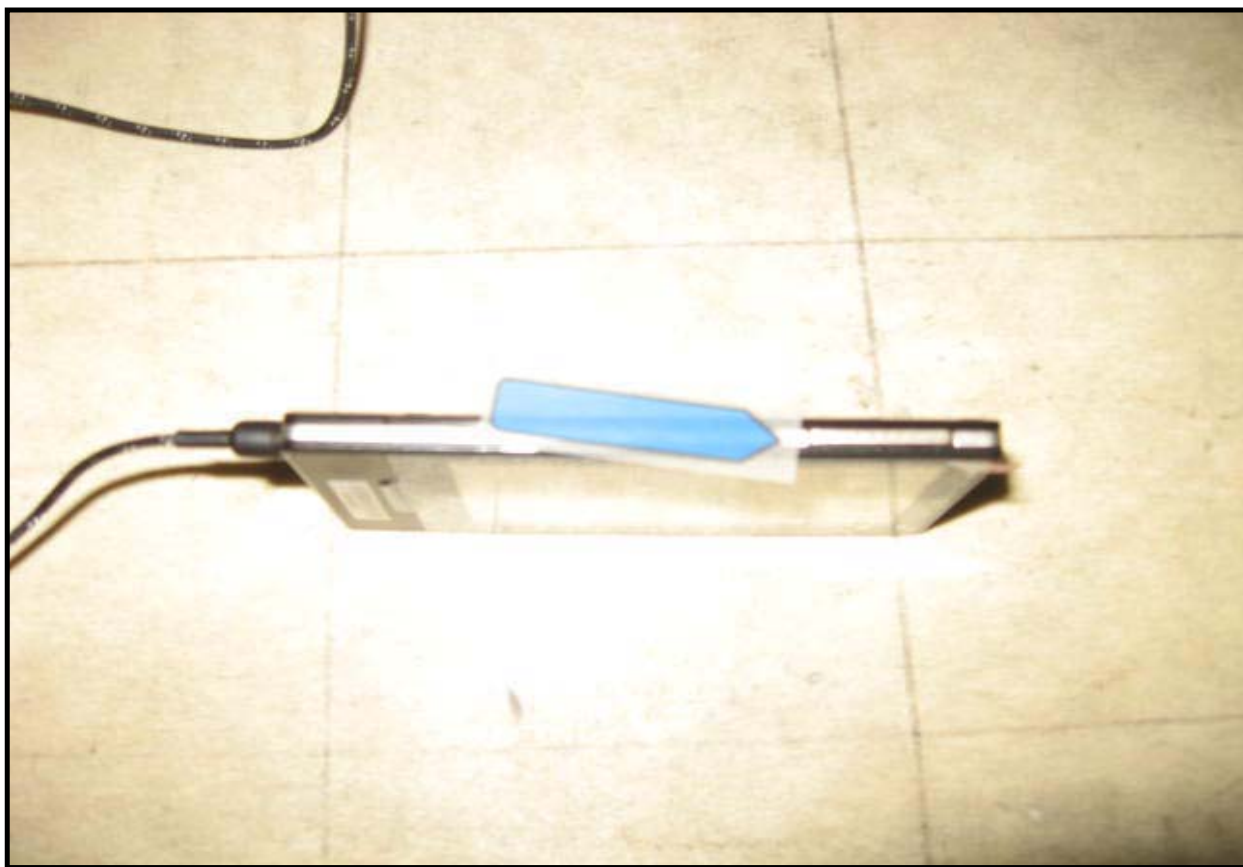
ITEM # PHENOMENA OBSERVED

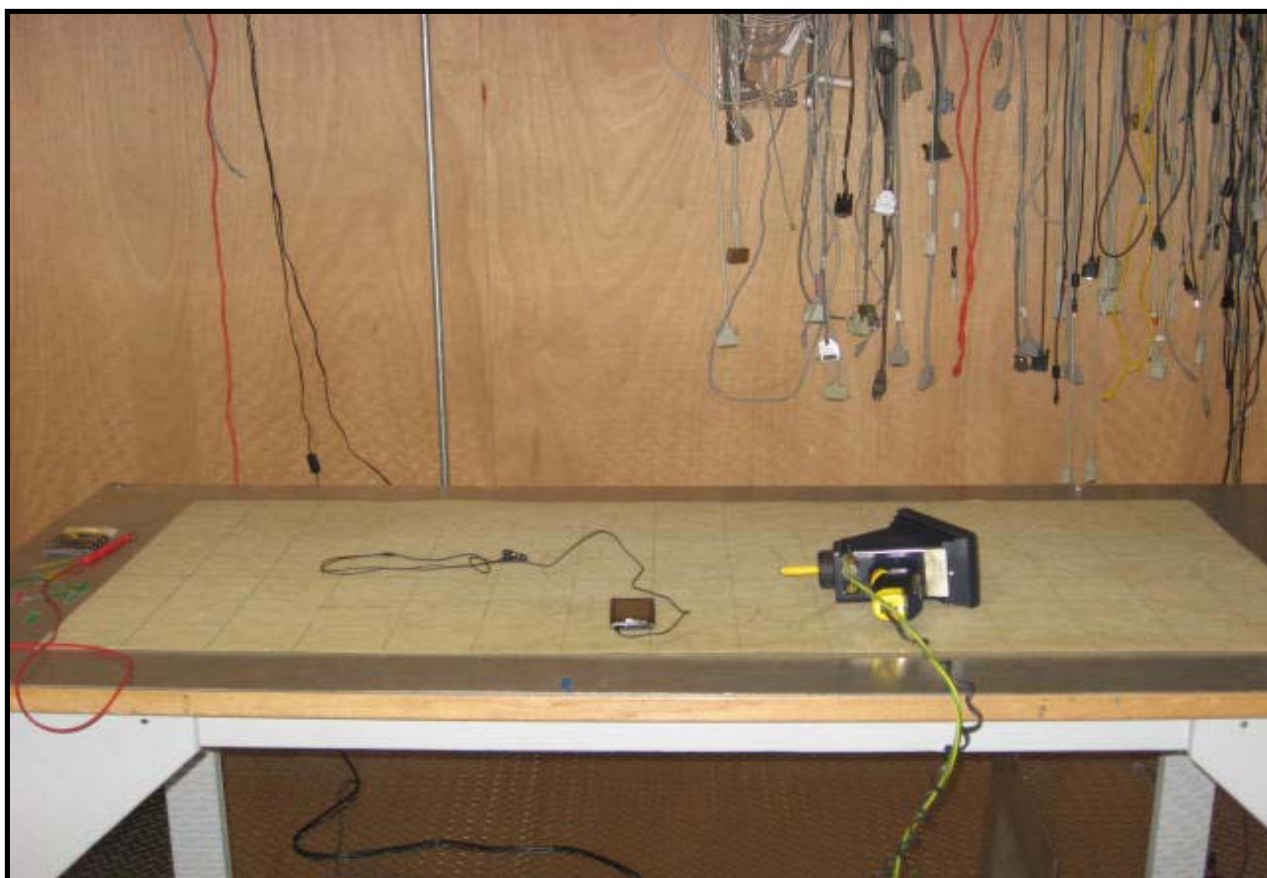
Key: - (Dash) = Not Tested o = No EUT response observed








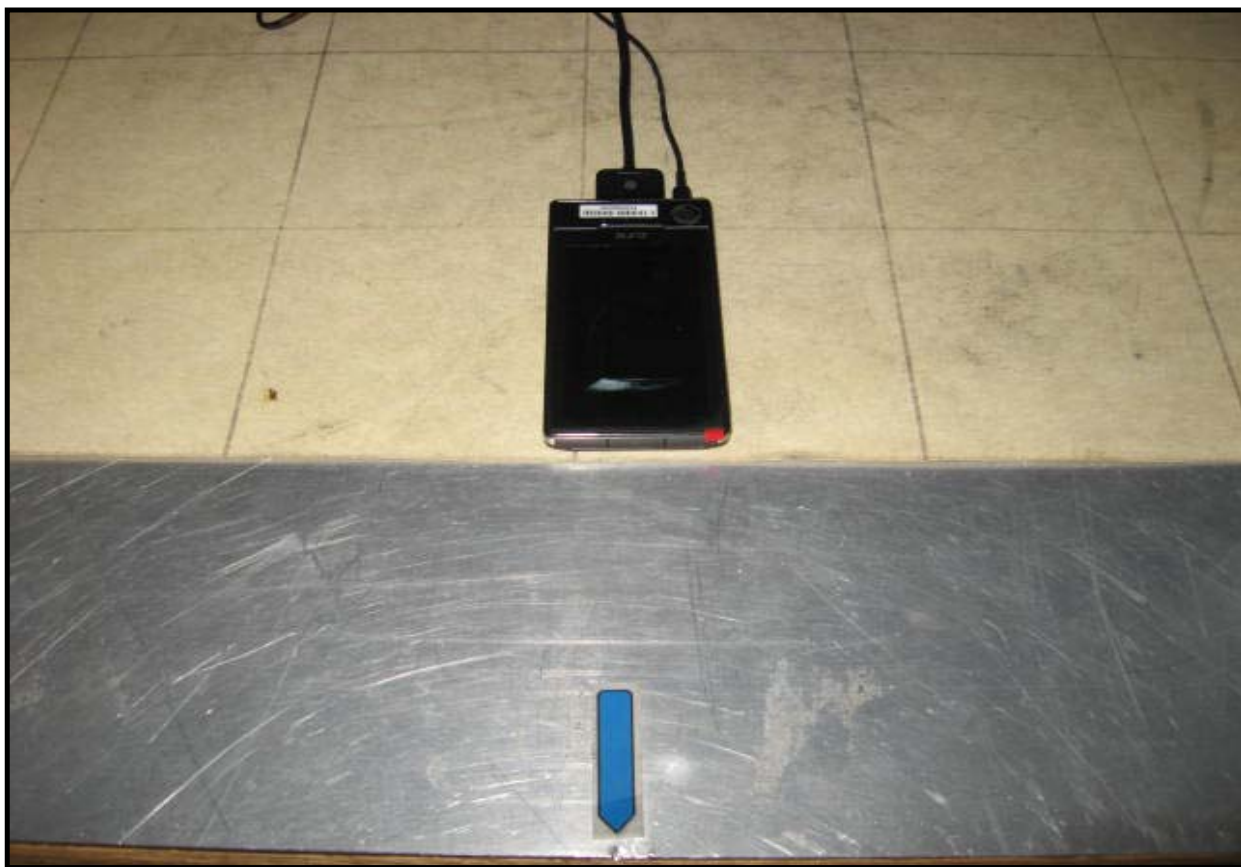


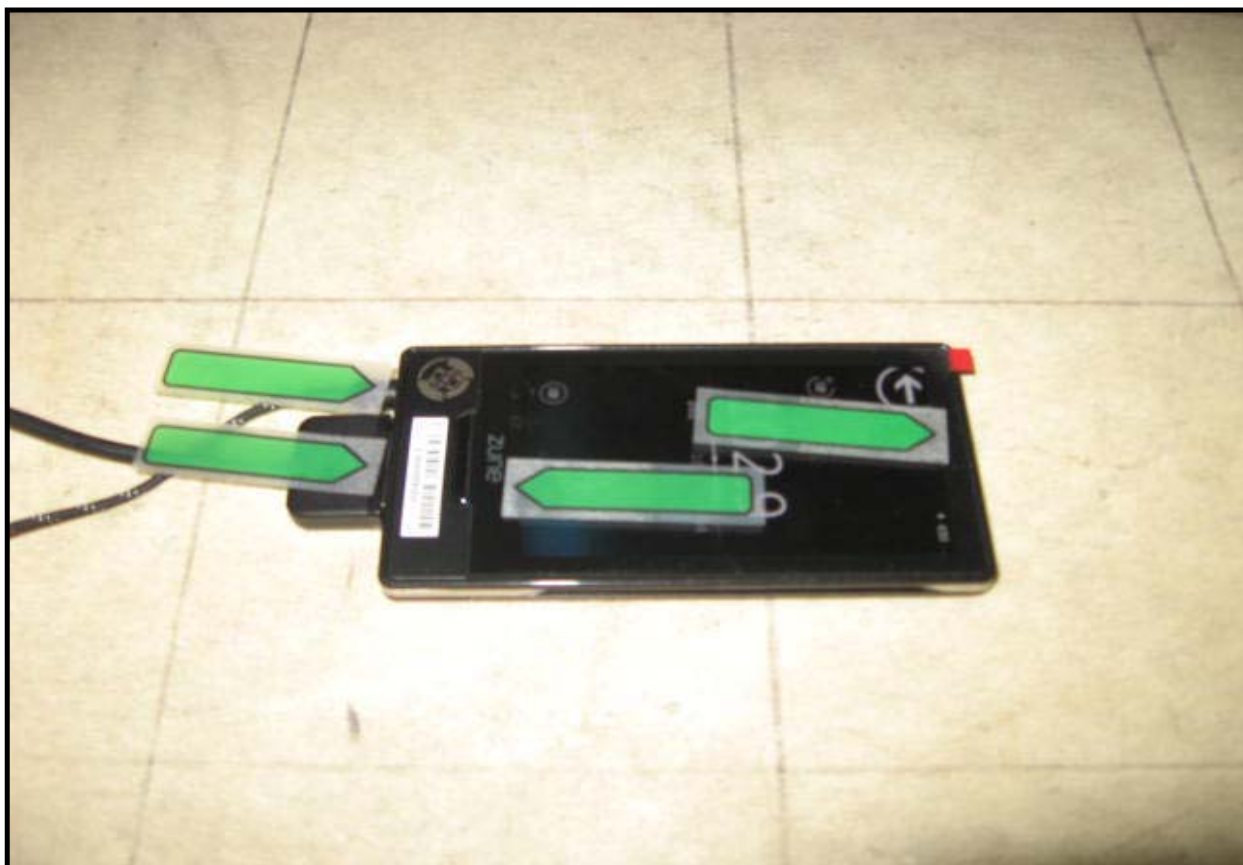


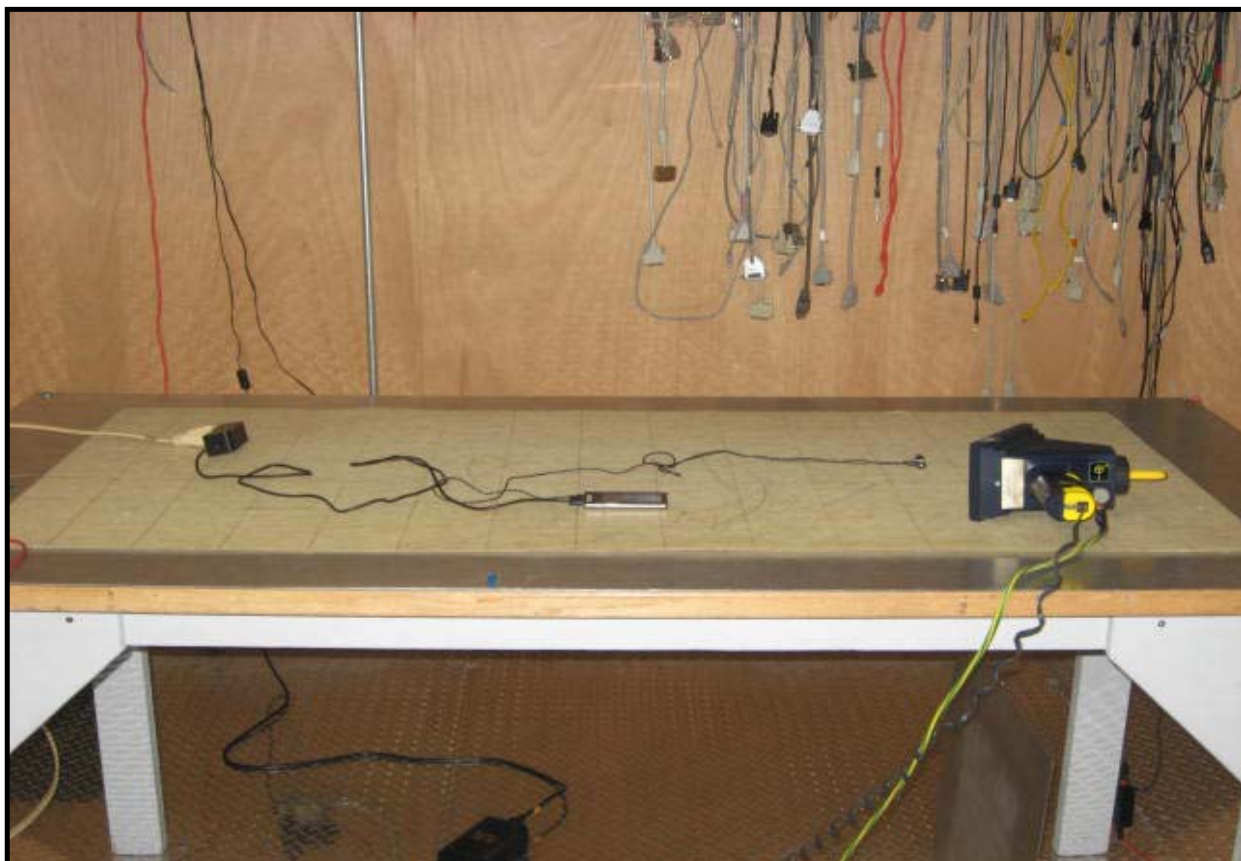




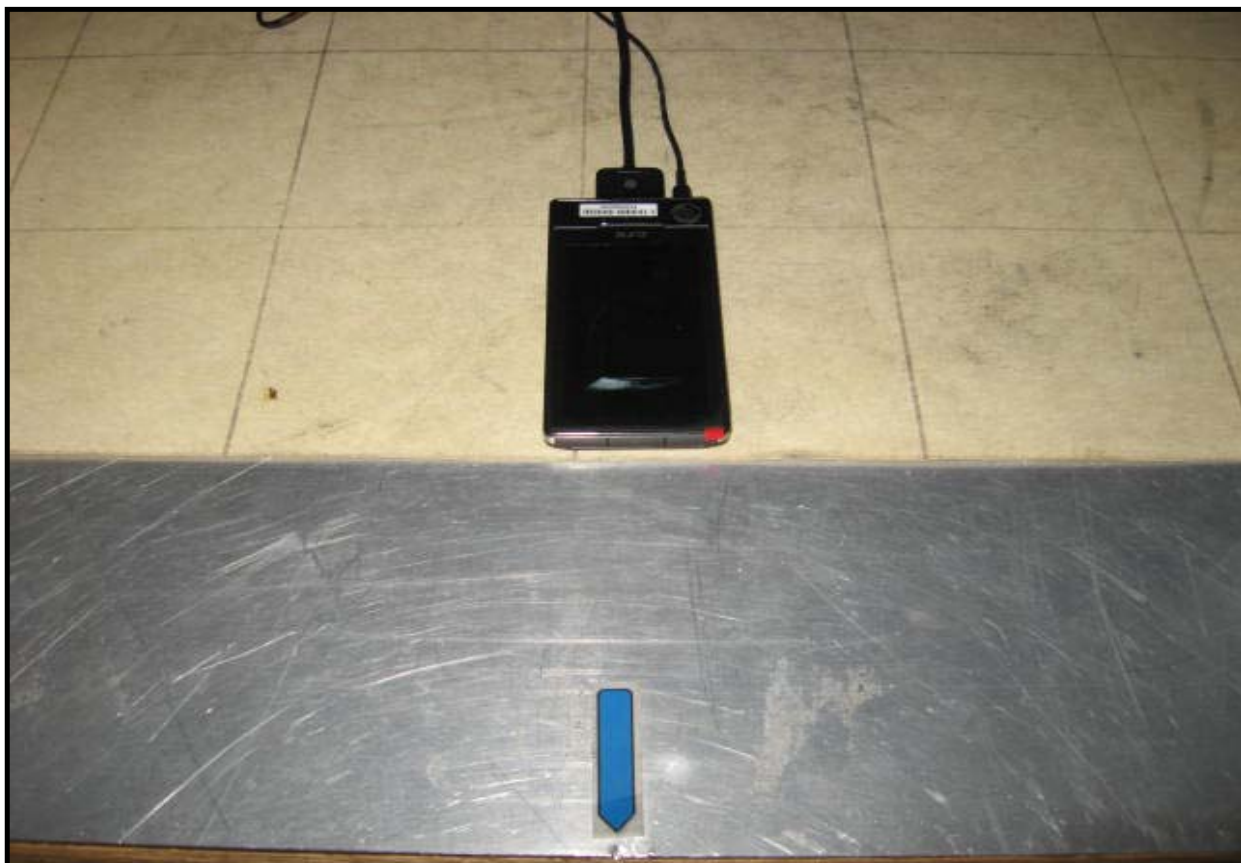
NORTHWEST EMC											ESD DATA SHEET											IMM 2008.10.17 ES
EUT: Zune HD												Work Order: MCSO1426										
Serial Number: 00031391815												Date: 06/05/09										
Customer: Microsoft Corporation												Temperature: 22.6 °C										
Attendees: James Wooten												Humidity: 41%										
Project: None												Config. #: 2										
Tester: Travis Rychener												Power: 230VAC/50Hz										
												Barometric Pres.: 1020.5										
												Job Site: SU05										
TEST SPECIFICATIONS																						
Specification: EN 55024:1998 (Amended by A1:2001 and A2:2003)												Method: IEC 61000-4-2:2008										
TEST PARAMETERS																						
ENERGY STORAGE CAPACITOR: 150pf												DISCHARGE RESISTANCE: 330 ohms										
POLARITY OF OUTPUT VOLTAGE: Positive and Negative												TIME BETWEEN SUCCESSIVE DISCHARGES: >= 1 sec										
COMMENTS																						
Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752																						
EUT OPERATING MODES																						
AV Playback																						
DEVIATIONS FROM TEST STANDARD																						
No deviations.																						
EUT FUNCTIONS MONITORED																						
Interruption of Video																						
RESULTS																						
No Anomalies Observed During the Test																						
<div> Meets NWEMC Performance Criteria 1 Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer. <div style="text-align: right;">  Tested By </div> </div>																						
Air Discharge																						
NUMBER OF DISCHARGES												10	10	10	10	10	10	10	10	10	10	10
ESD TEST LEVEL (kV)												2	-2	3	-3	4	-4	8	-8	15	-15	
TEST LOCATION																						
All Green Arrows - No Observation												o	o	-	-	o	o	o	o	o	o	o
All Red Arrows - See Below																						
Contact Discharge																						
NUMBER OF DISCHARGES												25	25	25	25	25	25	25	25	25	25	25
ESD TEST LEVEL (kV)												2	-2	4	-4	6	-6	8	-8	15	-15	
TEST LOCATION																						
All Blue Arrows - No Observations												o	o	o	o	o	o	o	o	o	-	-
Horizontal Coupling Plane												o	o	o	o	o	o	o	o	o	-	-
Vertical Coupling Plane												o	o	o	o	o	o	o	o	o	-	-
All Yellow Arrows - See Below																						
ITEM # PHENOMENA OBSERVED																						
Key: - (Dash) = Not Tested o = No EUT response observed																						

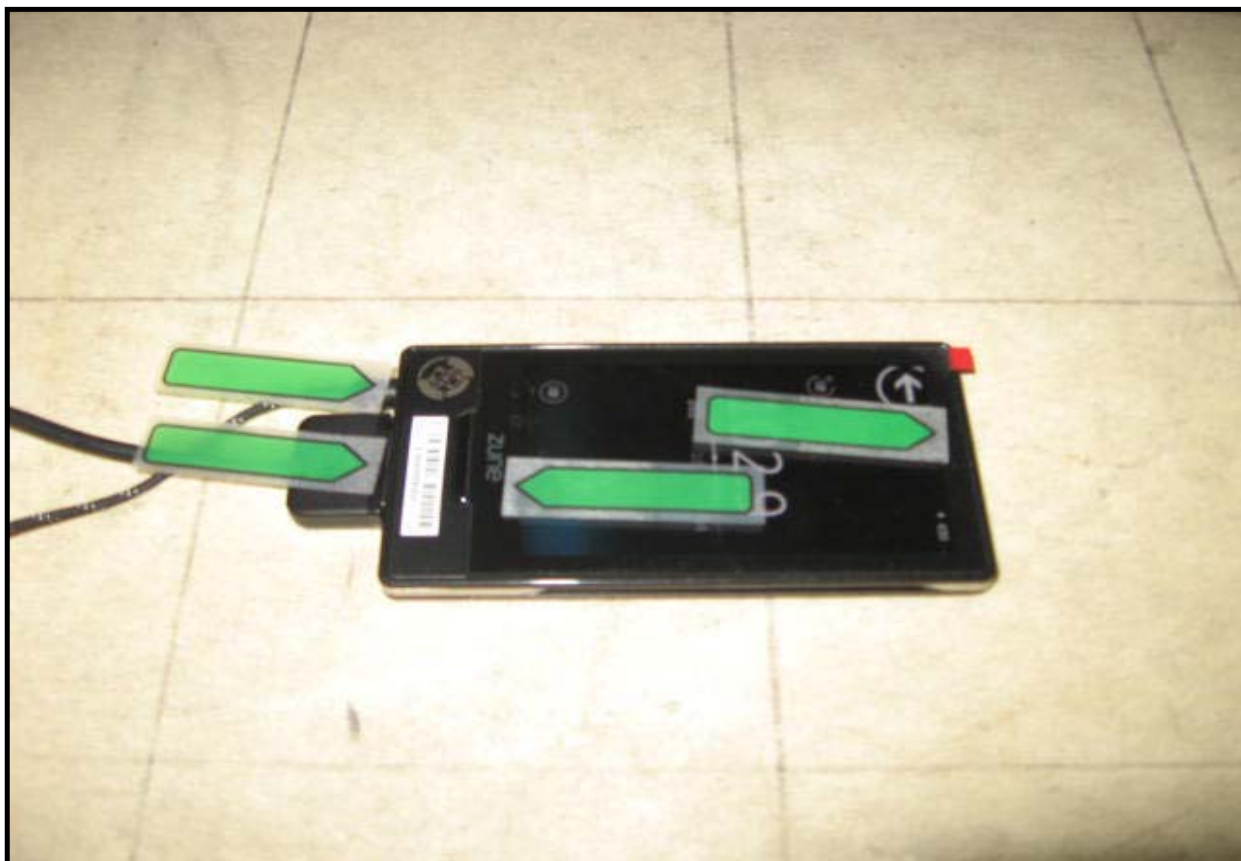
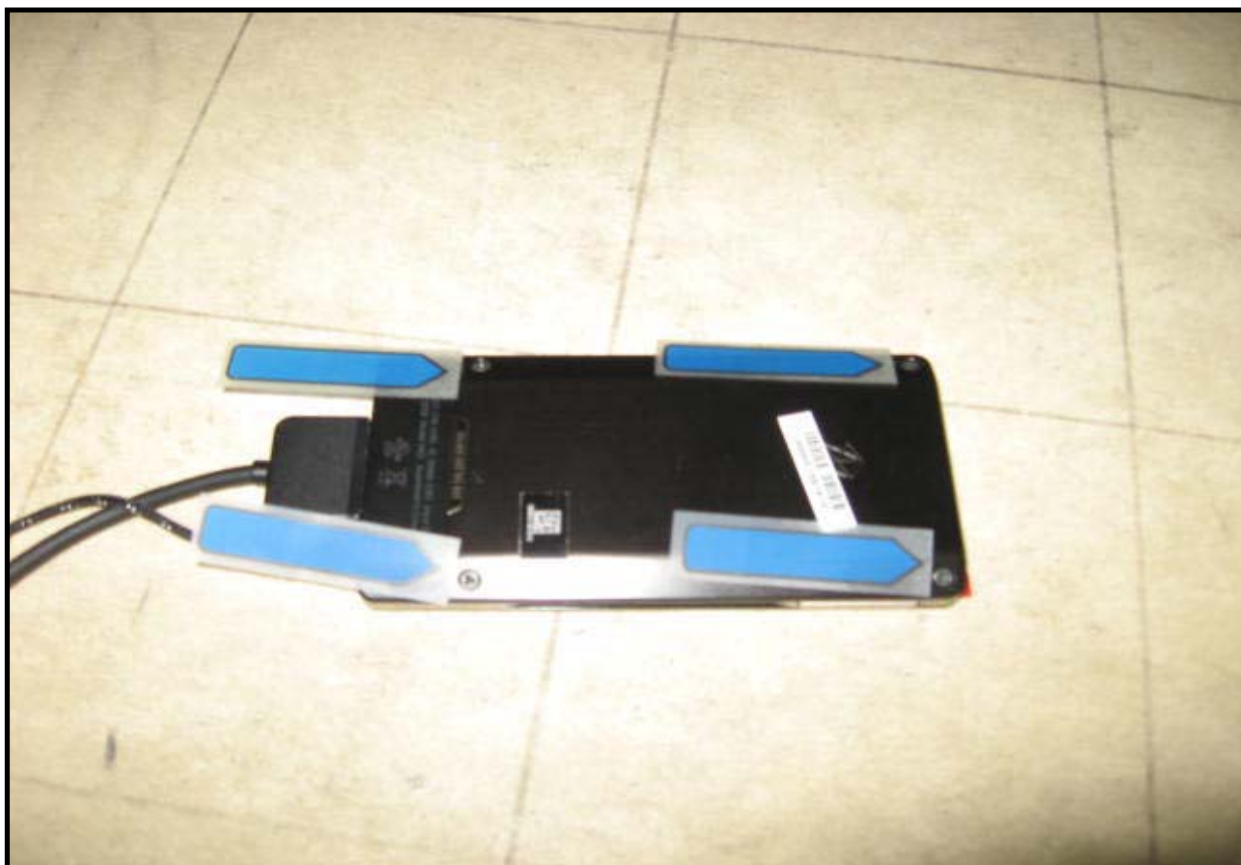






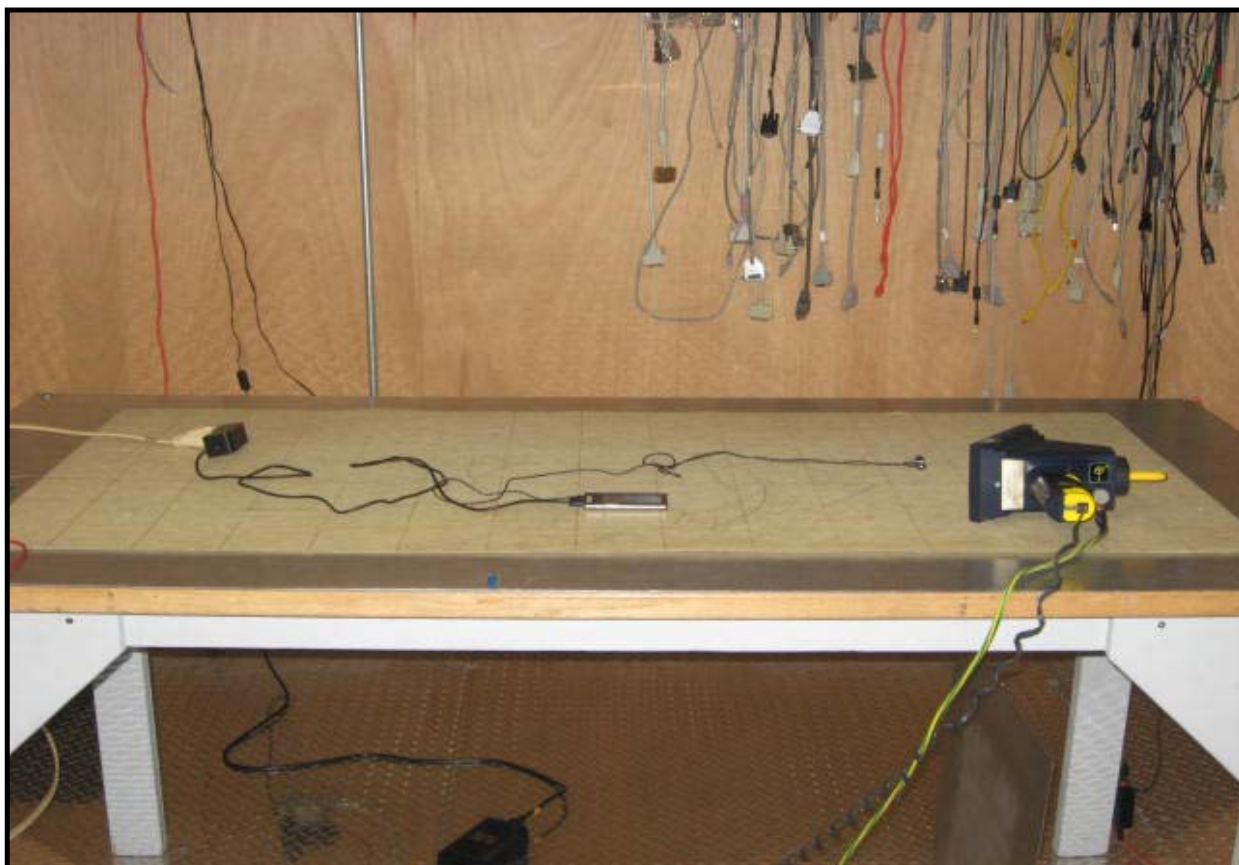












EMC

ESD DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/05/09
Customer:	Microsoft Corporation	Temperature:	22.6 °C
Attendees:	James Wooten	Humidity:	41%
Project:	None	Config. #:	3
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Barometric Pres.:	1020.5
		Job Site:	SU05

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-2:2008
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TEST PARAMETERS

ENERGY STORAGE CAPACITOR	150pf	DISCHARGE RESISTANCE	330 ohms
POLARITY OF OUTPUT VOLTAGE	Positive and Negative	TIME BETWEEN SUCCESSIVE DISCHARGES	>= 1 sec

COMMENTS

Device, Premium Earbuds Sync cable, Laptop

EUT OPERATING MODES

Syncing to Laptop

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria 1
 Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

Air Discharge

NUMBER OF DISCHARGES	10	10	10	10	10	10	10	10	10	10
ESD TEST LEVEL (kV)	2	-2	3	-3	4	-4	8	-8	15	-15

TEST LOCATION

All Green Arrows - No Observation	o	o	-	-	o	o	o	o	o	o
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All Red Arrows - See Below

Contact Discharge

NUMBER OF DISCHARGES	25	25	25	25	25	25	25	25	25	25
ESD TEST LEVEL (kV)	2	-2	4	-4	6	-6	8	-8	15	-15

TEST LOCATION

All Blue Arrows - No Observations	o	o	o	o	o	o	o	o	-	-
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Horizontal Coupling Plane	o	o	o	o	o	o	o	o	-	-
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Vertical Coupling Plane	o	o	o	o	o	o	o	o	-	-
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All Yellow Arrows - See Below

ITEM # PHENOMENA OBSERVED

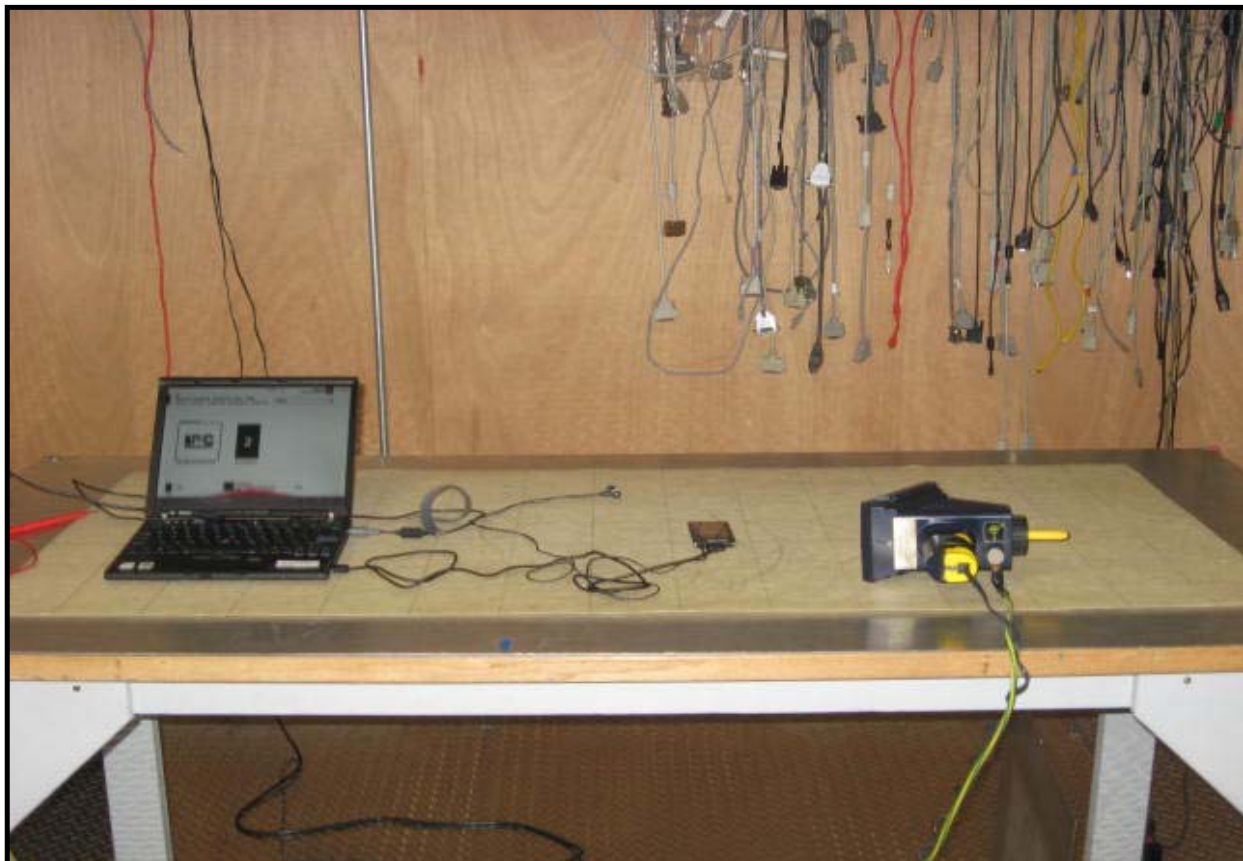
Key: - (Dash) = Not Tested o = No EUT response observed

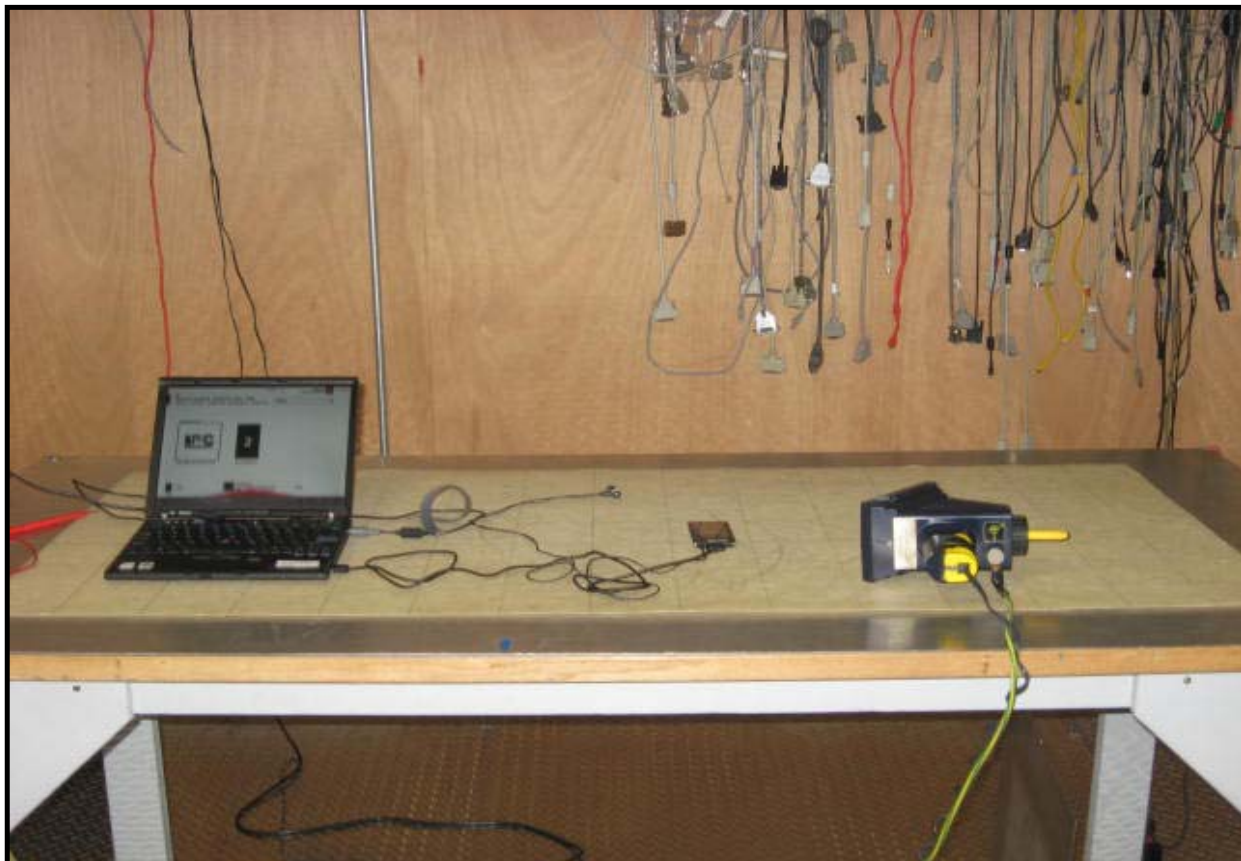













NORTHWEST EMC											ESD DATA SHEET											IMM 2008.10.17 ES
EUT: Zune HD												Work Order: MCSO1426										
Serial Number: 00031391815												Date: 06/05/09										
Customer: Microsoft Corporation												Temperature: 22.6 °C										
Attendees: James Wooten												Humidity: 41%										
Project: None												Config. #: 5										
Tester: Travis Rychener												Power: 230VAC/50Hz										
												Barometric Pres.: 1020.5										
												Job Site: SU05										
TEST SPECIFICATIONS																						
Specification: EN 55024:1998 (Amended by A1:2001 and A2:2003)												Method: IEC 61000-4-2:2008										
TEST PARAMETERS																						
ENERGY STORAGE CAPACITOR: 150pf												DISCHARGE RESISTANCE: 330 ohms										
POLARITY OF OUTPUT VOLTAGE: Positive and Negative												TIME BETWEEN SUCCESSIVE DISCHARGES: >= 1 sec										
COMMENTS																						
Device, HDMI cable and AV Cable to TV, AV dock sn: 091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752																						
EUT OPERATING MODES																						
AV Playback, 720p																						
DEVIATIONS FROM TEST STANDARD																						
No deviations.																						
EUT FUNCTIONS MONITORED																						
Interruption of Video																						
RESULTS																						
Anomalies Observed - See Data Below																						
Meets NWEMC Performance Criteria 3 <i>Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.</i> <div style="text-align: right; margin-top: 10px;">  Tested By _____ </div>																						
Air Discharge																						
NUMBER OF DISCHARGES												10	10	10	10	10	10	10	10	10	10	
ESD TEST LEVEL (kV)												2	-2	3	-3	4	-4	8	-8	15	-15	
TEST LOCATION																						
All Green Arrows - No Observation																						
All Red Arrows - See Below																						
HDMI Port																			A	A		
Power Button																			A	A		
Optical Port																			A	A		
AV Port																			C	C		
Contact Discharge																						
NUMBER OF DISCHARGES												25	25	25	25	25	25	25	25	25	25	
ESD TEST LEVEL (kV)												2	-2	4	-4	6	-6	8	-8	15	-15	
TEST LOCATION																						
All Blue Arrows - No Observations																						
Horizontal Coupling Plane																						
Vertical Coupling Plane																						
All Yellow Arrows - See Below																						
Horizontal Coupling Plane																			A	-		
Vertical Coupling Plane																			A	-		
Serial Number Plate																			B	-		
Screws																			B	-		
Side Metal Bezel																			B	-		
ITEM # PHENOMENA OBSERVED																						
A		Loss Of Signal. Self Recovers																				
B		Resets. User Intervention Required To Start Playing Video																				
C		Powers Off. Requires User Intervention To Power Back On And Start Playing Video																				
Key: - (Dash) = Not Tested o = No EUT response observed																						











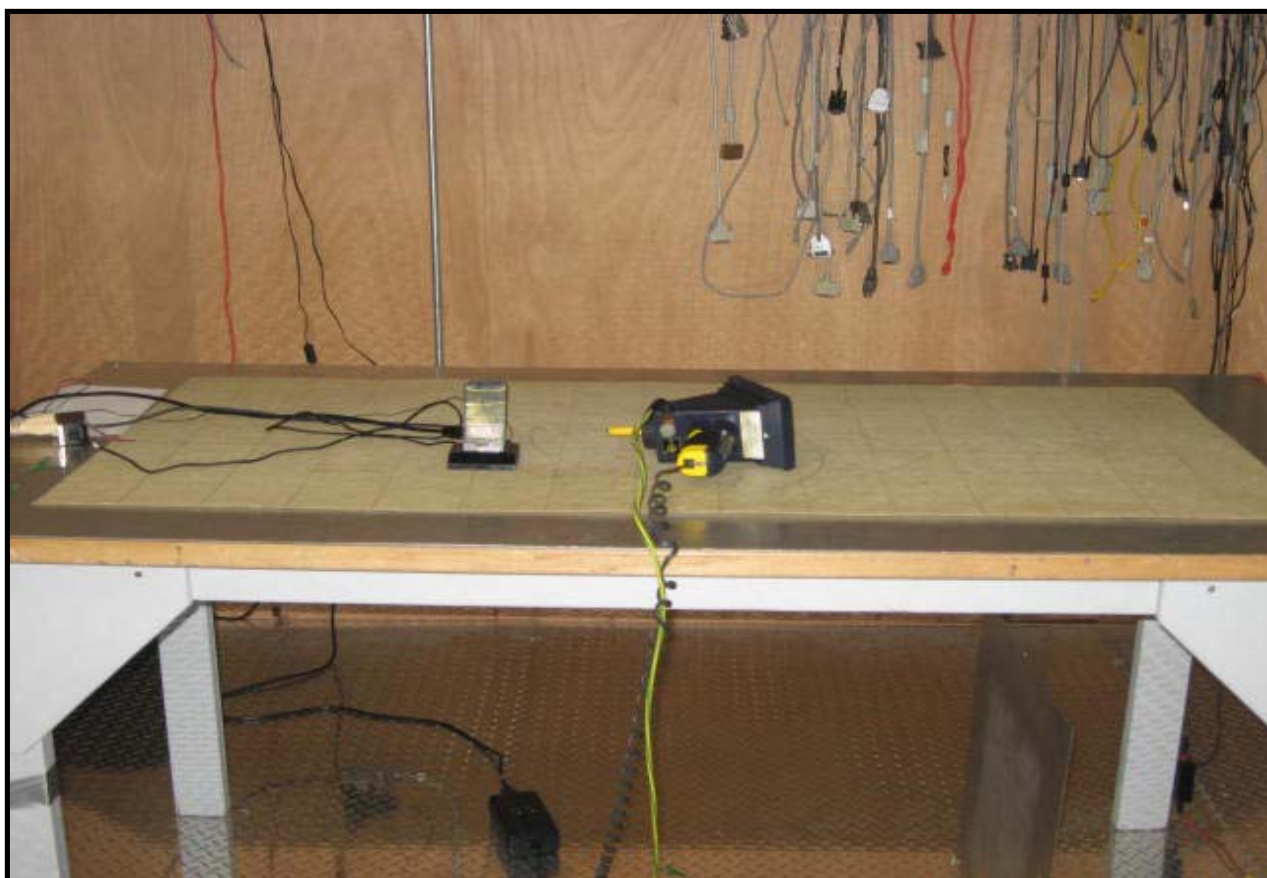


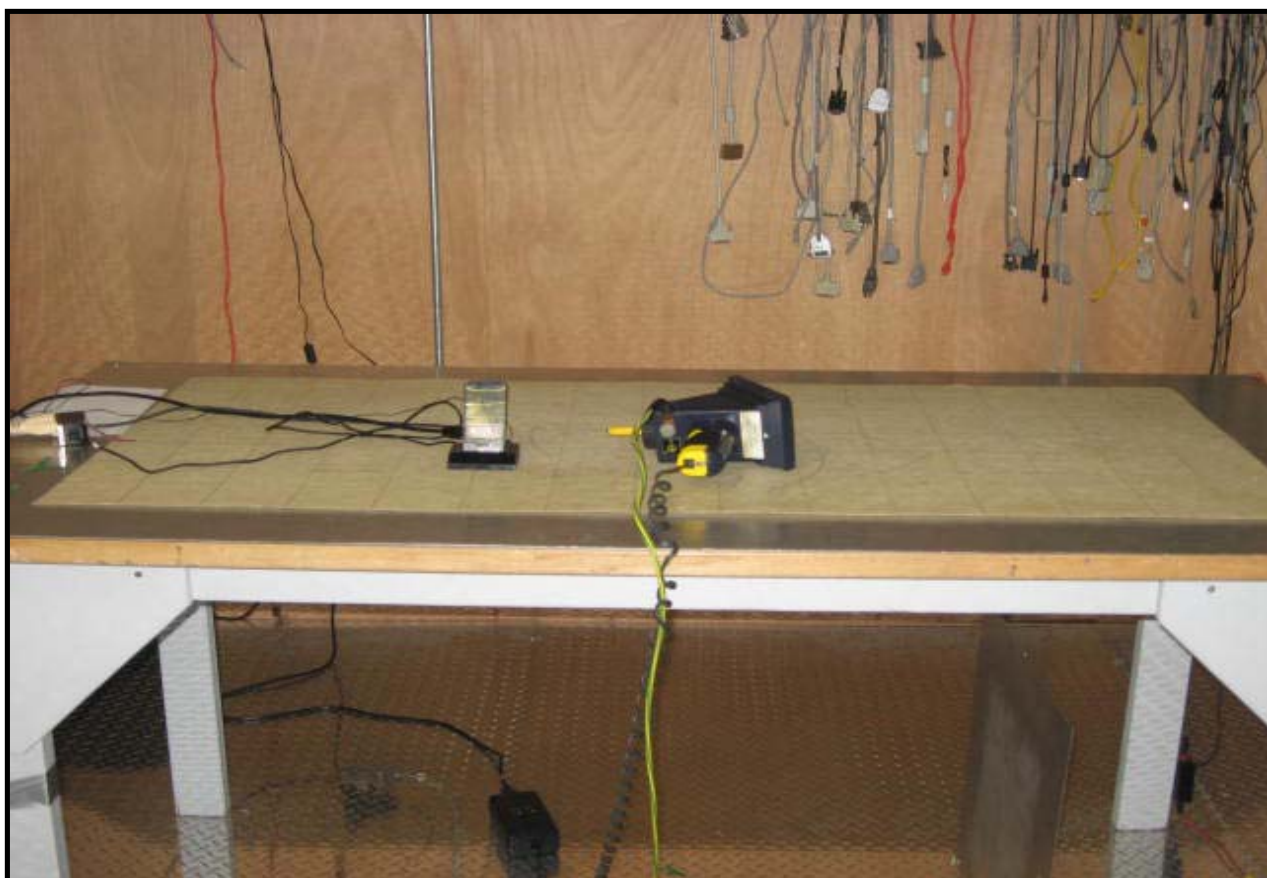












Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback 720p
AV Playback, Composite Out
Synicing to laptop

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 4,5,7

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Head	Amplifier Research	PH2000	SQH	3/27/2009	12 mo
E-Field Probe	Amplifier Research	FL7006	IEL	10/31/2007	24 mo
Antenna, Log Periodic	EMCO	3144	ALI	NCR	0 mo
RF Power Meter	Amplifier Research	PM2002	SPF	12/8/2008	13 mo
Directional Coupler	Amplifier Research	6080	IRC	12/8/2008	13 mo
RF Amplifier	Amplifier Research	150W1000	TRP	NCR	0 mo
Signal Generator	Agilent	E4422B	TGR	12/9/2008	13 mo

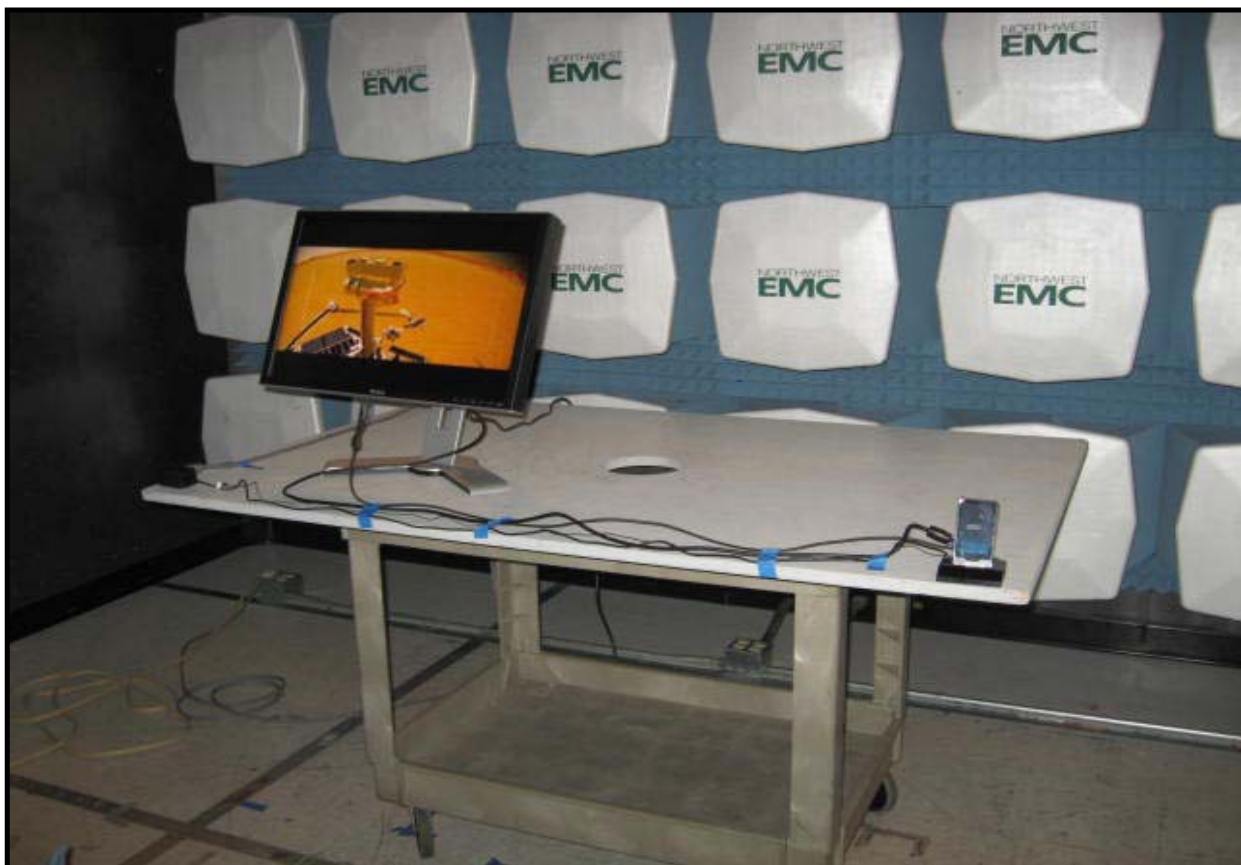
MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a Radiated RF Immunity test was performed according to EN61000-4-3. The EUT was tested with the transmit antenna placed approximately (3) meters from the surfaces of the EUT. The field was first established with no EUT present then maintained at the specified level. If an error is detected, the field strength may have been reduced to a level in which the error disappeared. This would be determined as the threshold of susceptibility. The test was conducted using horizontal and vertical antenna orientations.







Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback
AV Playback, 720p

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 2,5

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Oscilloscope	Hewlett-Packard	54615B	TOD	12/9/2008	13 mo
EFT Generator	Haefely	PEFT Junior	IBB	6/6/2008	18 mo

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, an EFT/Burst Immunity test was performed. The test is intended to demonstrate the immunity of electrical and electronic equipment when subjected to types of transient disturbances such as those originating from switching transients (interruption of inductive loads, relay contact bounce, etc.). The repetitive fast transient test is a test with bursts consisting of a number of fast transients, coupled into power supply, control and signal ports of electrical and electronic equipment. Significant for the test is short rise time, the repetition rate and the low energy of the transients.

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

SIGNAL/CONTROL

n/a		n/a		n/a		n/a		n/a		n/a	
0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

SIGNAL/CONTROL

n/a		n/a		n/a		n/a		n/a		n/a	
0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

ITEM # PHENOMENA OBSERVED

A Video Interrupted, False Touchscreen Commands

Key: o = No EUT response observed

- = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

ITEM # PHENOMENA OBSERVED

A Video Interrupted, False Touchscreen Commands

Key: o = No EUT response observed

- = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

A Video Interrupted, False Touchscreen Commands

Key:

o = No EUT response observed

- = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, Premium Earbuds, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
-	-	-	-	-	-	-	-	-	-	-	-

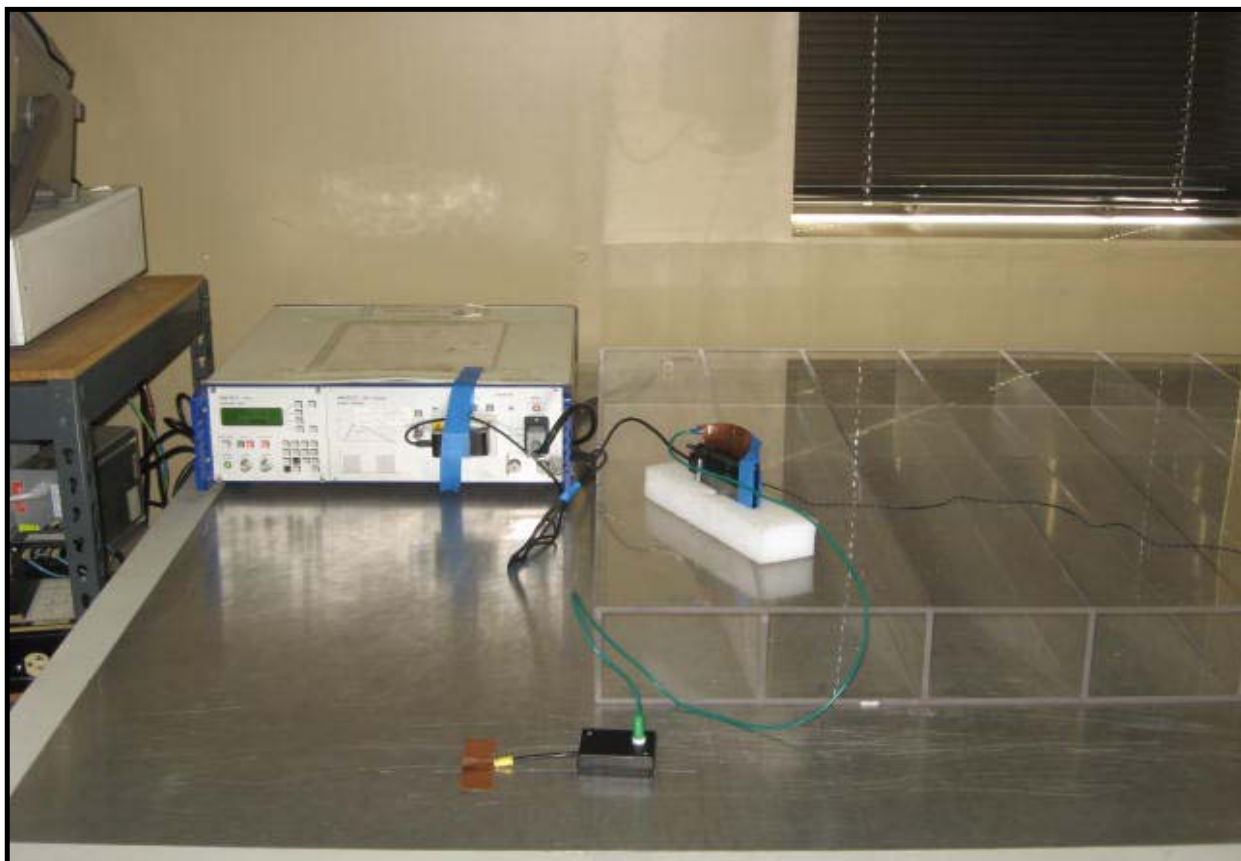
ITEM # PHENOMENA OBSERVED

A Video Interrupted, False Touchscreen Commands

Key:

o = No EUT response observed

- = Not tested



EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

SIGNAL/CONTROL

n/a		n/a		n/a		n/a		n/a		n/a	
0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV	1.0 kV	-1.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

SIGNAL/CONTROL

n/a		n/a		n/a		n/a		n/a		n/a	
0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV	0.5 kV	-0.5 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
----------------	--	---------	--------------------

TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed

- = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV	2.0 kV	-2.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV	3.0 kV	-3.0 kV
o	o	-	-	-	-	o	o	o	o	o	o

ITEM # PHENOMENA OBSERVED

Key: o = No EUT response observed

- = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU03

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
----------------	--	---------	--------------------

TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	15mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	5kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV	5.0 kV	-5.0 kV
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

A	Video Interrupted, False Touchscreen Commands

Key: o = No EUT response observed - = Not tested

EMC

EFT DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU01

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-4:2004
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TEST PARAMETERS

Period Time:	300mS ± 20%	Duration of Burst:	0.75mS ± 20%	Relation of Power Supply:	Asynchronous
Risetime of one Pulse:	5nS ± 30%	Frequency of Burst:	100kHz		
Impulse Duration:	50nS ± 30%				

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Tested By

1 MINUTE POSITIVE BURSTS AND 1 MINUTE NEGATIVE BURSTS AT EACH SETTING

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV	4.0 kV	-4.0 kV
A	A	-	-	-	-	A	A	A	A	A	A

AC/DC

LINE 1		LINE 2		LINE 3		NEUTRAL		GROUND		ALL LINES	
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
-	-	-	-	-	-	-	-	-	-	-	-

ITEM # PHENOMENA OBSERVED

A Video Interrupted, False Touchscreen Commands

Key:

o = No EUT response observed

- = Not tested



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback
AV Playback, 720p

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 2,5

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Surge Generator	Shaffner	NSG 2050 / PNW 2050	IBO	6/6/2008	18 mo
CDN	Shaffner	CDN 131	IOE	NCR	0 mo
Oscilloscope	Hewlett-Packard	54615B	TOD	12/9/2008	13 mo

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a Surge Immunity test was performed. The task of the defined laboratory test is to find the reaction of the EUT under specified operational conditions caused by surge voltages from switching and lightning effects at certain threat levels.

The major mechanisms by which lightning produces surge voltages are the following:

- A direct lightning stroke to an external circuit (outdoor) injecting high currents producing voltages by either flowing through earth resistance or flowing through the impedance of the external circuit;
 - An indirect lightning stroke (i.e. a stroke between or within clouds or to nearby objects which produces electromagnetic fields) that induces voltages/currents on the conductors outside and/or inside a building;
- Lightning earth current flow resulting from nearby direct-to-earth discharges coupling into the common earth paths of the earthing system of the installation.

SURGE DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/02/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	2
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-5:2005
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TEST PARAMETERS

OPEN CIRCUIT VOLTAGE, RISE TIME:	1.2 us ± 30%	SHORT-CIRCUIT CURRENT RISE TIME:	8 us ± 20%
		TIME BETWEEN SUCCESSIVE PULSES:	20 sec.
OPEN CIRCUIT VOLTAGE, TIME TO 1/2-VALUE:	50 us ± 20%	SHORT-CIRCUIT CURRENT TIME TO 1/2-VALUE:	20 us ± 20%

COMMENTS

Device, Premium earbuds, sync cable, Delta PS mn: DPSN-8CB-A rev S3 sn: 00837702385

EUT OPERATING MODES

AV Playback

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

Note: 5 surges each setting

COMMON MODE HIGH LINE TO GROUND (12 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	o	o	-	-
90 PHASE	o	o	o	o	o	o	-	-
180 PHASE	o	o	o	o	o	o	-	-
270 PHASE	o	o	o	o	o	o	-	-

COMMON MODE LOW LINE TO GROUND (12 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	o	o	-	-
90 PHASE	o	o	o	o	o	o	-	-
180 PHASE	o	o	o	o	o	o	-	-
270 PHASE	o	o	o	o	o	o	-	-

DIFFERENTIAL MODE HIGH LINE TO LOW LINE (2 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	-	-	-	-
90 PHASE	o	o	o	o	-	-	-	-
180 PHASE	o	o	o	o	-	-	-	-
270 PHASE	o	o	o	o	-	-	-	-

ITEM #	PHENOMENA OBSERVED

Key: o = No EUT response observed

- = Not tested



SURGE DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/02/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-5:2005
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TEST PARAMETERS

OPEN CIRCUIT VOLTAGE, RISE TIME:	1.2 us ± 30%	SHORT-CIRCUIT CURRENT RISE TIME:	8 us ± 20%
		TIME BETWEEN SUCCESSIVE PULSES:	20 sec.
OPEN CIRCUIT VOLTAGE, TIME TO 1/2-VALUE:	50 us ± 20%	SHORT-CIRCUIT CURRENT TIME TO 1/2-VALUE:	20 us ± 20%

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 00837702385

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



Tested By

Note: 5 surges each setting

COMMON MODE HIGH LINE TO GROUND (12 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	o	o	-	-
90 PHASE	o	o	o	o	o	o	-	-
180 PHASE	o	o	o	o	o	o	-	-
270 PHASE	o	o	o	o	o	o	-	-

COMMON MODE LOW LINE TO GROUND (12 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	o	o	-	-
90 PHASE	o	o	o	o	o	o	-	-
180 PHASE	o	o	o	o	o	o	-	-
270 PHASE	o	o	o	o	o	o	-	-

DIFFERENTIAL MODE HIGH LINE TO LOW LINE (2 ohm Impedance)

	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
0 PHASE	o	o	o	o	-	-	-	-
90 PHASE	o	o	o	o	-	-	-	-
180 PHASE	o	o	o	o	-	-	-	-
270 PHASE	o	o	o	o	-	-	-	-

ITEM #	PHENOMENA OBSERVED

Key: o = No EUT response observed

- = Not tested

SURGE DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/02/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-5:2005
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TEST PARAMETERS

OPEN CIRCUIT VOLTAGE, RISE TIME:	1.2 us ± 30%	SHORT-CIRCUIT CURRENT RISE TIME:	8 us ± 20%
		TIME BETWEEN SUCCESSIVE PULSES:	20 sec.
OPEN CIRCUIT VOLTAGE, TIME TO 1/2-VALUE:	50 us ± 20%	SHORT-CIRCUIT CURRENT TIME TO 1/2-VALUE:	20 us ± 20%

COMMENTS

Device, HDMI cable to TV, AV dock sn:091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 00837702385

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below

Meets NWEMC Performance Criteria

4

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; the EUT would not recover.



Tested By

Note: 5 surges each setting

COMMON MODE HIGH LINE TO GROUND (12 ohm Impedance)

	+3.0	-3.0	+4.0	-4.0	+5.0	-5.0	+6.0	-6.0
0 PHASE	o	o	o	o	A	-	-	-
90 PHASE	o	o	o	o	-	-	-	-
180 PHASE	o	o	o	o	-	-	-	-
270 PHASE	o	o	o	o	-	-	-	-

COMMON MODE LOW LINE TO GROUND (12 ohm Impedance)

	+3.0	-3.0	+4.0	-4.0	+5.0	-5.0	+6.0	-6.0
0 PHASE	o	o	o	o	-	-	-	-
90 PHASE	o	o	o	o	-	-	-	-
180 PHASE	o	o	o	o	-	-	-	-
270 PHASE	o	o	o	o	-	-	-	-

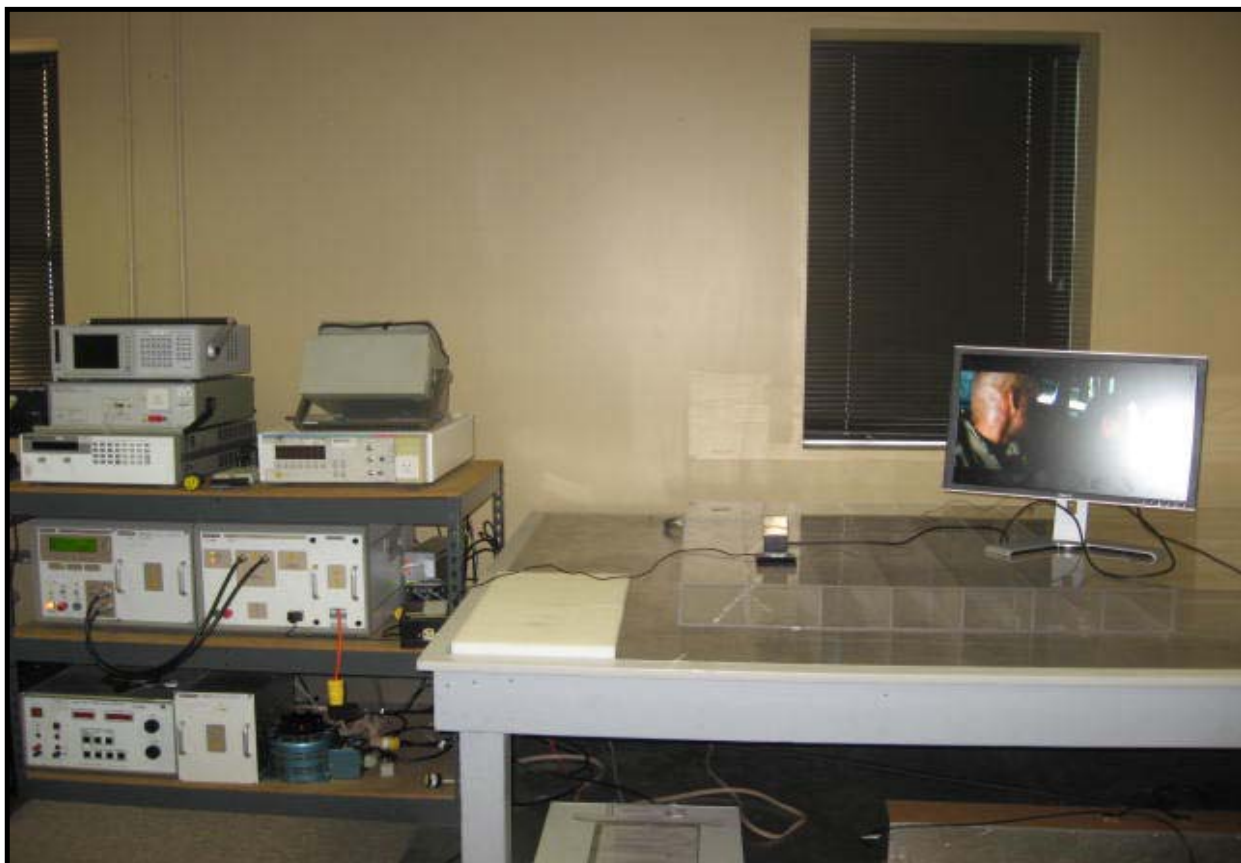
DIFFERENTIAL MODE HIGH LINE TO LOW LINE (2 ohm Impedance)

	+3.0	-3.0	+4.0	-4.0	+5.0	-5.0	+6.0	-6.0
0 PHASE	o	o	o	o	-	-	-	-
90 PHASE	o	o	o	o	-	-	-	-
180 PHASE	o	o	o	o	-	-	-	-
270 PHASE	o	o	o	o	-	-	-	-

ITEM #	PHENOMENA OBSERVED
A	EUT powers off, EUT OK. Power Supply damaged

Key: o = No EUT response observed

- = Not tested



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback, 720p

AV Playback

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 2,5

TEST EQUIPMENT

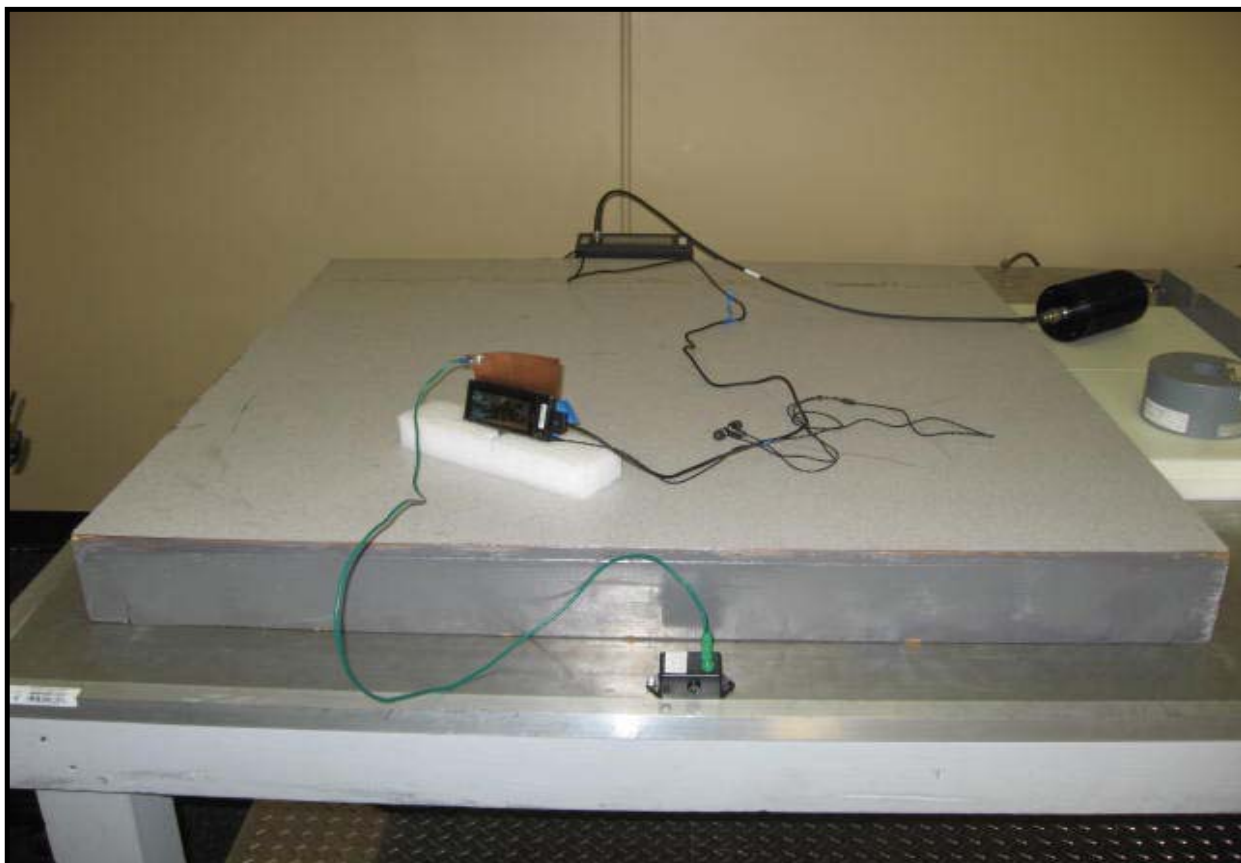
Description	Manufacturer	Model	ID	Last Cal.	Interval
CDN	Dressler	M3	INR	11/5/2008	13 mo
Attenuator-20dB/30W	JFW	50FH-020	RBF	1/14/2009	13 mo
Power Head	Amplifier Research	PH2000	SQH	3/27/2009	12 mo
Power Head	Amplifier Research	PH2000	SPG	12/8/2008	13 mo
Power Meter	Amplifier Research	PM2002	SQB	12/8/2008	13 mo
RF Amplifier	Amplifier Research	75A250	TRM	NCR	0 mo
Signal Generator	Rohde & Schwarz	SML01	TGV	12/8/2008	13 mo

MEASUREMENT UNCERTAINTY

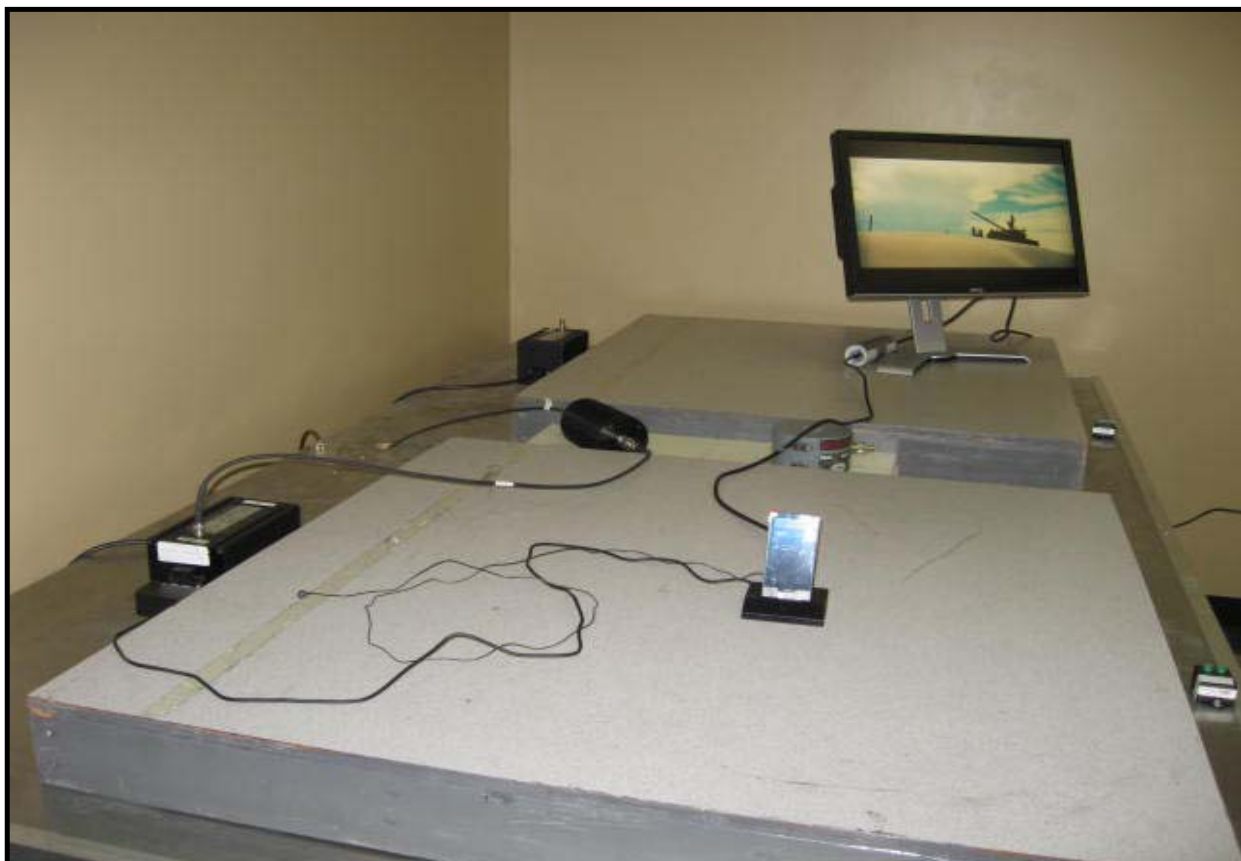
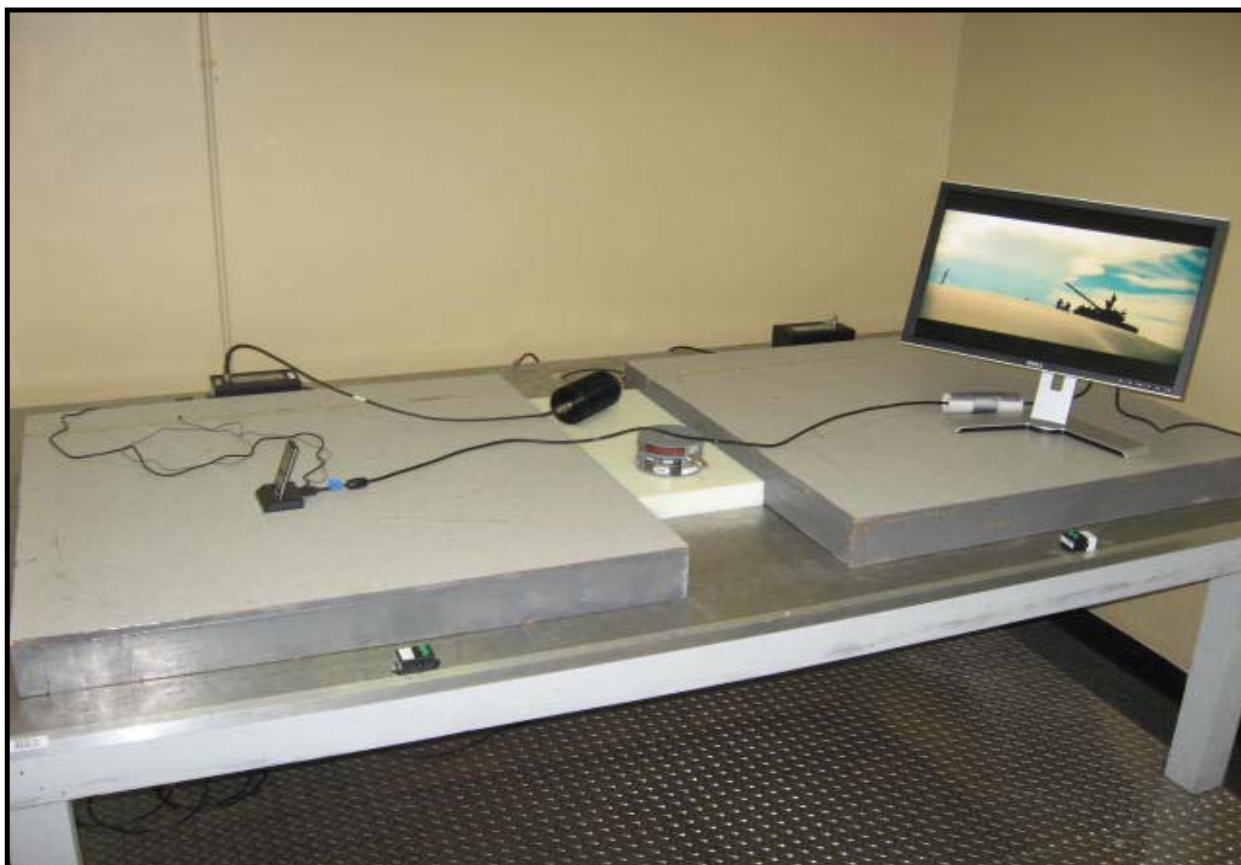
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a Conducted RF Immunity test was performed. The source of disturbance covered by the standard is basically an electromagnetic field, coming from intended RF transmitters, that may act on the whole length of cables connected to an installed equipment. The dimensions of the disturbed equipment, mostly a sub-part of a larger system, are assumed to be small compared with the wavelengths involved. The ingoing and outgoing leads: e.g. mains, communication lines, and interface cables, behave as passive receiving antenna networks because they can be several wavelengths long. The use of coupling and decoupling devices to apply the disturbing signal to one cable at a time, while keeping all other cables non-excited, can only approximate the real situation where disturbing sources act on all cables simultaneously, with a range of different amplitudes and phases. Coupling and decoupling devices are defined by their characteristics. Any coupling and decoupling device fulfilling these characteristics can be used.



[illegible]



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback, 720p

AV Playback, Composite

Syncing To Laptop

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 4,5,7

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Source/Analyzer	Hewlett Packard	6841A	THC	12/7/2007	24 mo
Helmholtz Coil	NWEMC	N/A	IMI	11/26/2008	13 mo

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a Power Frequency Magnetic Field Immunity test was performed. The tests are intended to demonstrate the immunity of equipment when subjected to power frequency magnetic fields related to the specific location and installation condition of the equipment (e.g. proximity of equipment to the disturbance source). The power frequency magnetic field is generated by power frequency current in conductors or, rarely, from other devices (e.g. leakage or transformers) in the proximity of equipment.

EMC**MAGNETIC FIELD IMMUNITY DATA SHEET**

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	4
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-8:2001
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TEST PARAMETERS

TEST LEVEL:	3 A/m
TEST FREQUENCY:	50Hz

COMMENTS

Device, AV cable to TV, AV dock sn: 091800046 Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, Composite

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria
 Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



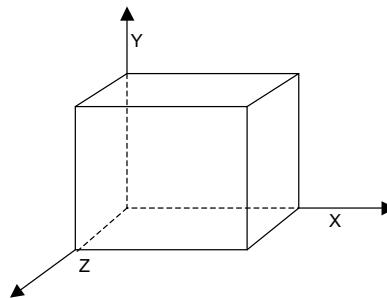
Tested By

Results

X

Y

Z



Item #	PHENOMENA OBSERVED

Key: = No EUT response observed = Not tested



EMC

MAGNETIC FIELD IMMUNITY DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-8:2001
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TEST PARAMETERS

TEST LEVEL:	3 A/m
TEST FREQUENCY:	50Hz

COMMENTS

Device, AV cable to TV, AV dock sn: 091800046 Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



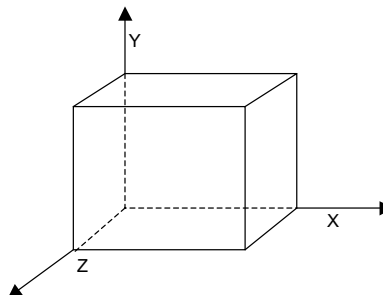
Tested By

Results

X o

Y o

Z o



Item #	PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested



EMC

MAGNETIC FIELD IMMUNITY DATA SHEET

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	7
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-8:2001
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TEST PARAMETERS

TEST LEVEL:	3 A/m
TEST FREQUENCY:	50Hz

COMMENTS

Device, Ax cable to External Speakers, AV dock sn: 091800046, laptop

EUT OPERATING MODES

Syncing to Laptop

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

No Anomalies Observed During the Test

Meets NWEMC Performance Criteria

1

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer.



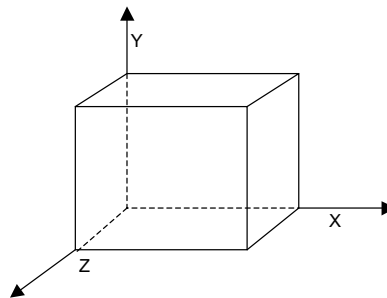
Tested By

Results

X o

Y o

Z o



Item #	PHENOMENA OBSERVED

Key: o = No EUT response observed - = Not tested



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

AV Playback, 720p

POWER SETTINGS INVESTIGATED

230VAC/50Hz

CONFIGURATIONS INVESTIGATED

MCSO1426 - 5

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Oscilloscope	Hewlett-Packard	54615B	TOD	12/9/2008	13 mo
Auto Transformer	EM Test	V4070M1	SPS	NCR	0 mo
EFT Surge VDI Test System	Amplifier Research	UCS 500	ISA	NCR	0 mo

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a Voltage interruption and dip Immunity test was performed. The standard applies to electrical and electronic equipment having a rated input current not exceeding 16 A per phase. It does not apply to electrical and electronic equipment for connection to D.C. networks or 400 Hz A.C. networks. Electrical and electronic equipment may be affected by voltage dips, short interruptions or voltage variations of power supply. Voltage dips and short interruptions are caused by faults in the network, in installations or by a sudden large change of load. In certain cases, two or more consecutive dips or interruptions may occur. The continuously varying loads connected to the network cause voltage variations.

EMC**VOLTAGE DIPS & INTERRUPTIONS DATA SHEET**

EUT:	Zune HD	Work Order:	MCSO1426
Serial Number:	00031391815	Date:	06/04/09
Customer:	Microsoft Corporation	Temperature (°C):	22.6 °C
Attendees:	James Wooten	Relative Humidity:	41%
Project:	None	Config. #:	5
Tester:	Travis Rychener	Power:	230VAC/50Hz
		Bar. Pres. (mb):	1020.5
		Job Site:	SU06

TEST SPECIFICATIONS

Specification:	EN 55024:1998 (Amended by A1:2001 and A2:2003)	Method:	IEC 61000-4-11:2004
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COMMENTS

Device, HDMI cable to TV, AV dock sn: 091800046, Delta PS mn: DPSN-8CB-A rev S3 sn: 002487005752

EUT OPERATING MODES

AV Playback, 720p

DEVIATIONS FROM TEST STANDARD

No deviations.

EUT FUNCTIONS MONITORED

Interruption of Video

RESULTS

Anomalies Observed - See Data Below



Tested By

Results Environmental Phenomena					
Number of Events	Percent Reduction	Duration	Phase Angles Tested	Phenomena Observed	Meets NWEMC Performance Criteria
3	100%	10ms	0°, 90°, 180°, 270°	o	1
3	30%	500ms	0°, 90°, 180°, 270°	o	1
1	>95%	5S	0°	A	3
					N/A
					N/A
					N/A
					N/A
					N/A
					N/A
					N/A
					N/A

Meets NWEMC Performance Criteria 3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.

ITEM #	Phase	Voltage	PHENOMENA OBSERVED
A	0	230	Video and EUT shut off with interrupt, User intervention required to get video playing

Key:

o = No EUT response observed

- = Not tested

