3D Systems Corporation

NextDent 300

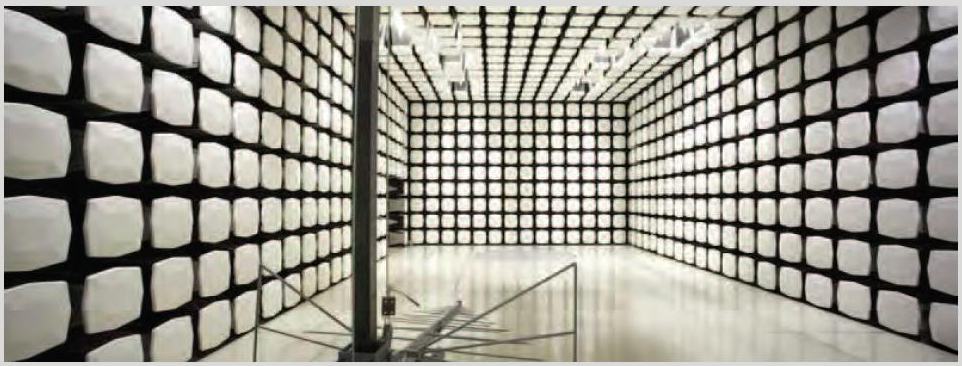
FCC 15.225:2025

RSS-210 Issue 11:2024

RSS-Gen Issue 5:2018+A1:2019+A2:2021

13.56 MHz Radio

Report: 3DSY0191.9 Rev. 01, Issue Date: June 23, 2025



CERT #3310.02

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CERTIFICATE OF TEST

Last Date of Test: May 19, 2025
3D Systems Corporation
EUT: NextDent 300

Radio Equipment Testing

Standards

Specification	Method
FCC 15.225:2025	ANSI C63.10:2020
RSS-210 Issue 11:2024	
RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Guidance

KDB 174176
Notice 2020 - DRS0023

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	Pass	15.207	RSS-Gen 8.8	6.2	All radio related emissions were below the limit. Measurements were taken with the radio on and off to show the remaining emissions are non-radio which will be tested to the applicable product family standard.
Emissions Bandwidth	Pass	15.215(c)	N/A	6.9.2	Per the manufacturer all 8 RFID radios contained in the EUT are identical. Radio 5 was selected to demonstrate compliance to this requirement.
Field Strength of Fundamental	Pass	15.225(a)-(c)	RSS-210 B.6(a)(i-iv)	6.4	
Field Strength of Spurious Emissions (Less than 30 MHz)	Pass	15.225(d), 15.209	RSS-210 B.6(a)(iv)	6.4	
Field Strength of Spurious Emissions (Greater than 30 MHz)	Pass	15.225(d), 15.209	RSS-210 B.6(a)(iv)	6.5	
Frequency Stability	Pass	15.225(e), 15.31(e), 15.215(c), 2.1055	RSS-210 B.6(b)	6.8	Per the manufacturer all 8 RFID radios contained in the EUT are identical. Radio 5 was selected to demonstrate compliance to this requirement.
Occupied Bandwidth	Pass	N/A	RSS-Gen 6.7	6.9.3	Per the manufacturer all 8 RFID radios contained in the EUT are identical. Radio 5 was selected to demonstrate compliance to this requirement.

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

CERTIFICATE OF TEST

element
2022.04.01

Deviations From Test Standards

None

Approved By:

Chuck Heller, Operations Manager
Signed for and on behalf of Element

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Added clarification note for the use of a radio test fixture for Frequency Stability testing.	2025-06-23	64
	Removed redundant configuration 3DSY0199-1 and 3DSY0199-2		16
	Updated configuration from 3DSY0199-1 and 3DSY0199-2 to 3DSY0191-1 and 3DSY0191-2 respectively.		59-60
	Added configuration 3DSY0191-2		38-39, 41, 43, 45, 47, 49, 51, 53
	Updated mode of operation to provide clarity on the state of the EUT during testing.		18-19, 21, 31, 33, 36-37, 59-60, 64-65, 67-68
	Added comment to the Certificate of Test justifying limiting Emissions Bandwidth, Occupied Bandwidth and Frequency Stability to a single radio.		3

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

FDA - Recognized by the FDA as an Accreditation Scheme for Conformity Assessment (ASCA)-accredited testing laboratory for basic safety and essential performance.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

California Minnesota Oregon Washington

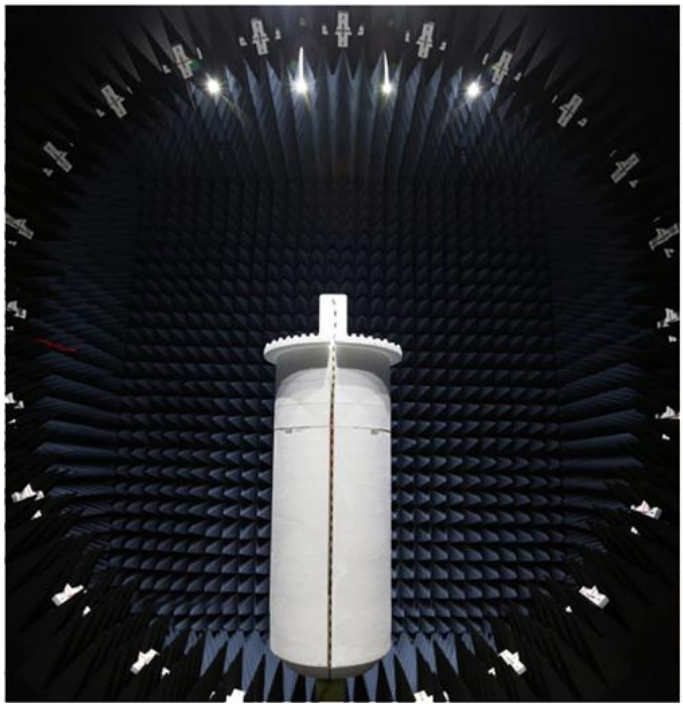
FACILITIES

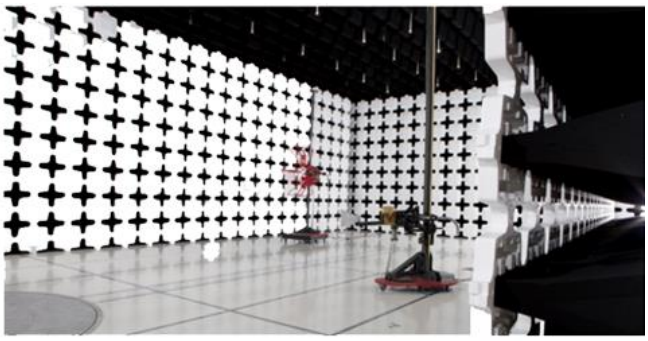
Testing was performed at the following location(s)

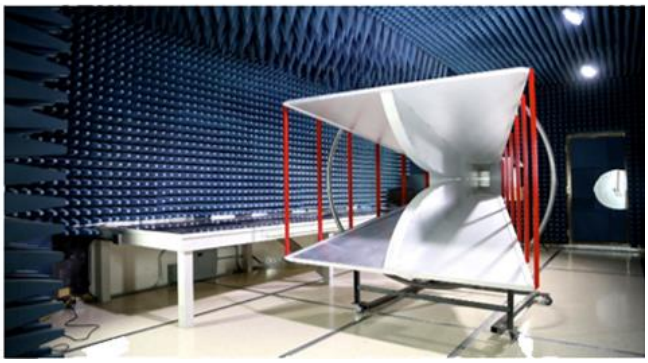
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB (6)	FDA (7)
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☐	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☒	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

(1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
(2) A2LA Certificate No.
(3) ISED Company No.
(4) BSMI No.
(5) VCCI Site Filing No.
(6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MOC, NCC, OFCA
(7) FDA ASCA No.







MEASUREMENT UNCERTAINTY

element
MU 2025-03-26

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation reported is based on statistical analysis that was performed by the laboratory. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (k=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	EV11 (+/-)
10kHz-30MHz	1.7
30MHz-1GHz 3m	4.8
30MHz-1GHz 10m	3.8

AC Powerline Conducted Emissions Measurements (dB)

Range	EV07 (+/-)
9kHz-150kHz LISN	3.6
150kHz-30MHz LISN	3.2
150kHz-30MHz CVP	3.2
150kHz-30MHz Telecom-ISN	4.4

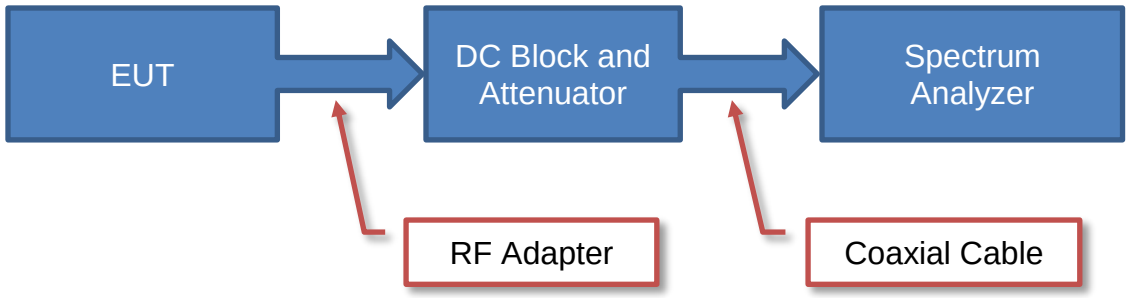
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

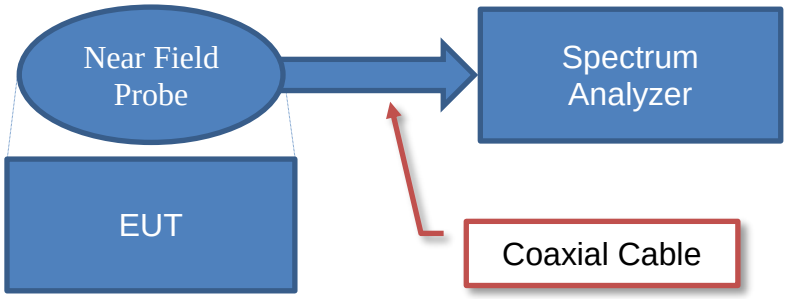
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

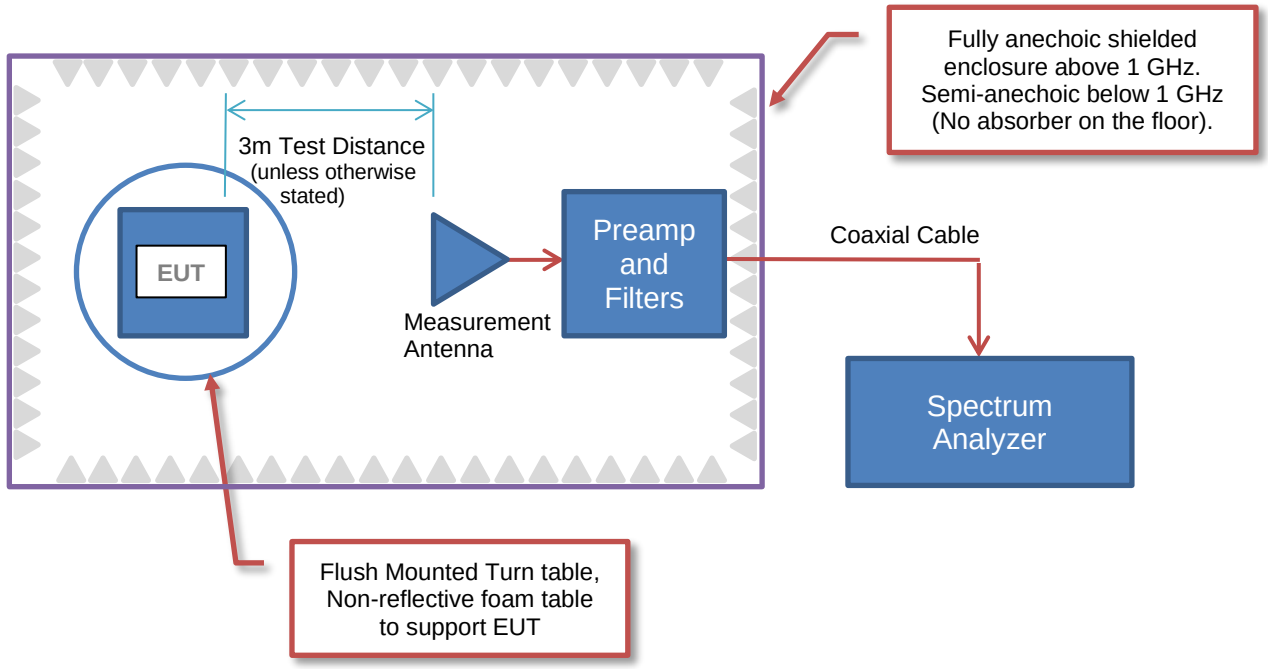


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

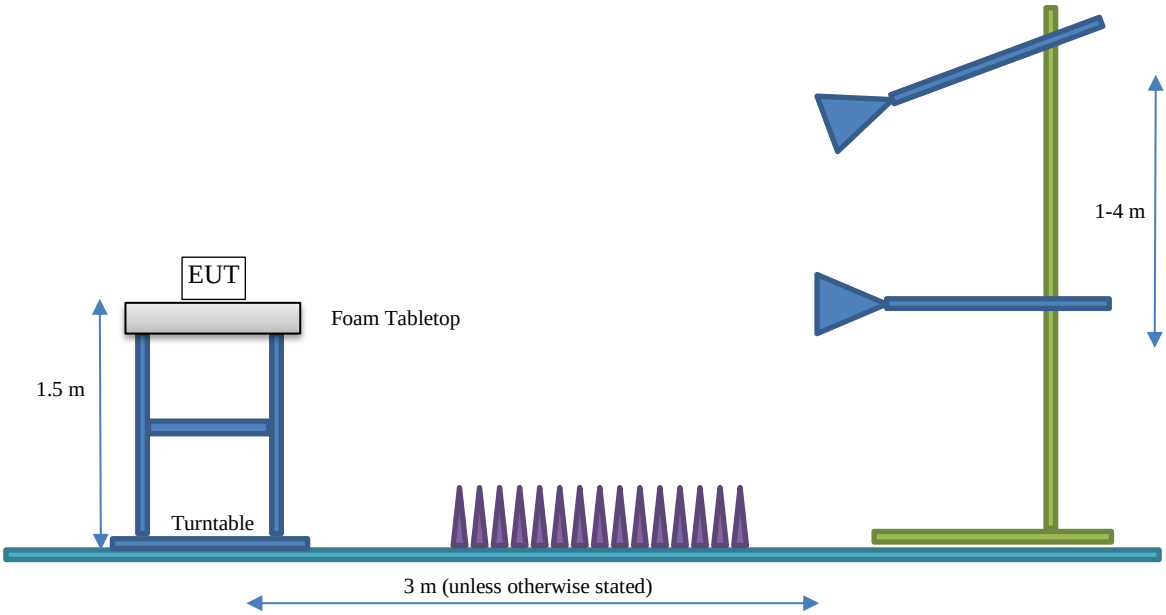
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (dBm ERP/EIRP)
10.0	+	6.0	-	2.15	=	**13.9/16.0**

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	3D Systems Corporation
Address:	333 Three D Systems Circle
City, State, Zip:	Rock Hill, OR 29730
Test Requested By:	Mufeed Yacoub
EUT:	NextDent 300
First Date of Test:	April 10, 2025
Last Date of Test:	May 19, 2025
Receipt Date of Samples:	April 10, 2025
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
3D Printer with 8 13.56 MHz RFID radios.

Testing Objective:
To demonstrate compliance of the 13.56 MHz radio to FCC 15.225 requirements. and RSS-210 Annex B.6 specifications.

POWER SETTINGS AND ANTENNAS

The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA INFORMATION

Type	Provided by:	Frequency Range (MHz)
PCB Trace: 5.5 cm x 4.2 cm, 5 turn loop	3D Systems Corporation	13.56

The EUT was tested using the power settings provided by the manufacturer which were based upon:

☐ Test software settings Software / firmware used for testing: 3.0.2.2162.120
☒ Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Type	Protocol	Data Rate	Power Setting (mW)
13.56 MHz RFID, OOK	ISO 15693	26.48 kbps	200

CONFIGURATIONS

Configuration 3DSY0191-1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
3D Printer	3D Systems Corporation	NextDent 300	311OH34424311
RFID Tag x 8	NXP	ICODE DNA	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Z Book Studio G4	2UF29US#ABA

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	3.0	No	AC Power	3D Printer
Cat5e Ethernet	No	4.6	No	Remote Laptop	3D Printer

Configuration 3DSY0191-2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
3D Printer	3D Systems Corporation	NextDent 300	311OH34424311

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Z Book Studio G4	2UF29US#ABA

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	3.0	No	AC Power	3D Printer
Cat5e Ethernet	No	4.6	No	Remote Laptop	3D Printer

CONFIGURATIONS

Configuration 3DSY0191-3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Temperature Test Fixture	3D Systems Corporation	None	#1

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Support PC	3D Systems	None	#2
Display	ViewSonic	VS16263	UG018080101
USB Mouse	seenda	MS059	WGSBDTX059-24-01-30
USB Keyboard	Dell	KB212-B	CN-0DJ454-71581-46A-0247-A01

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.8	No	AC Power	Temperature Test Fixture
AC Power	No	1.8	No	AC Power	Support PC
I/O Cables	No	1.0	No	Support PC	Temperature Test Fixture
DVI Cable	Yes	1.5	No	Support PC	Display
AC Power	No	1.8	No	AC Power	Display
USB (Mouse)	Yes	1.8	No	Support PC	USB Mouse
USB (Keyboard)	Yes	1.8	No	Support PC	Keyboard

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2025-04-10	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2025-04-10	Field Strength of Spurious Emissions (Less than 30MHz)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2025-04-16	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2025-04-21	Emissions Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2025-04-17	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2025-04-22	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.
7	2025-05-19	Field Strength of Spurious Emissions (Greater than 30MHz)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network.

Measurements are made using a LISN (Line Impedance Stabilization Network). The 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used.

The intentional radiator is integrated into a Class A digital device. Measurements were performed with the radio on and off to show that the radio portion of the digital device is not contributing to any of the emissions that exceed the limits. Emissions that exceed the limits will be tested to the applicable product family standard. These emissions are reported in the tabular data but will not have a limit or margin value associated with them.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
LISN	Solar Electronics	9252-50-R-24-BNC	LIR	2024-09-13	2025-09-13
Cable - Conducted Cable Assembly	Northwest EMC	EVG, HHD, RKT, VAB	EVGA	2025-04-08	2026-04-08
Receiver	Gauss Instruments	TDEMI 30M	ARN	2024-05-22	2025-05-22

CONFIGURATIONS INVESTIGATED

3DSY0191-1
3DSY0191-2

MODES INVESTIGATED

13.56 MHz RFID, ISO 15693, OOK, RFID Radios polling disabled
13.56 MHz RFID, ISO 15693, OOK, 8 RFID Radios sequentially polling for tags

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-2

TEST PARAMETERS

Run #:	10	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

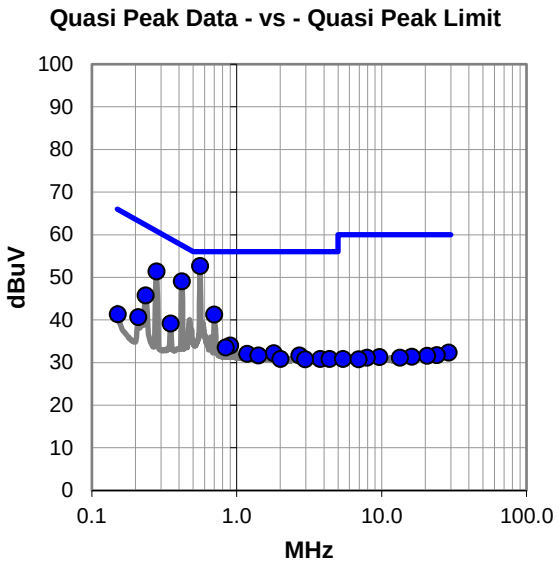
Heaters off. No RFID tags.

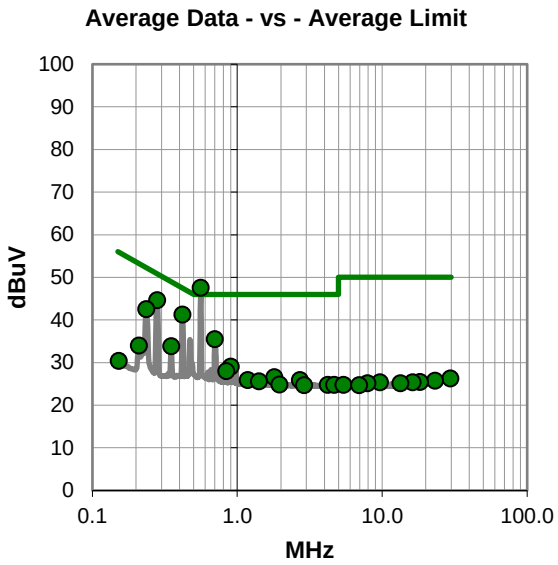
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID Radios sequentially polling for tags

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #10

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.8	19.9	52.7	56.0	-3.3
0.419	29.2	19.9	49.1	57.5	-8.4
0.280	31.5	19.9	51.4	60.8	-9.4
0.699	21.4	19.9	41.3	56.0	-14.7
0.235	25.8	20.0	45.8	62.3	-16.5
0.350	19.3	19.9	39.2	59.0	-19.8
0.902	14.1	19.9	34.0	56.0	-22.0
0.838	13.7	19.9	33.6	56.0	-22.4
0.210	20.7	20.0	40.7	63.2	-22.5
1.802	12.2	20.0	32.2	56.0	-23.8
1.180	12.2	19.9	32.1	56.0	-23.9
1.413	11.7	20.0	31.7	56.0	-24.3
2.704	11.6	20.1	31.7	56.0	-24.3
0.152	21.2	20.2	41.4	65.9	-24.5
2.005	10.9	20.0	30.9	56.0	-25.1
3.768	10.7	20.2	30.9	56.0	-25.1
4.366	10.6	20.3	30.9	56.0	-25.1
2.973	10.7	20.1	30.8	56.0	-25.2
28.936	10.1	22.3	32.4	60.0	-27.6
23.971	10.1	21.7	31.8	60.0	-28.2
20.608	10.2	21.4	31.6	60.0	-28.4
16.163	10.2	21.2	31.4	60.0	-28.6
9.644	10.8	20.5	31.3	60.0	-28.7
7.922	10.7	20.5	31.2	60.0	-28.8
13.359	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.7	19.9	47.6		
0.280	24.8	19.9	44.7	50.8	-6.1
0.419	21.4	19.9	41.3	47.5	-6.2
0.235	22.6	20.0	42.6	52.3	-9.7
0.699	15.6	19.9	35.5	46.0	-10.5
0.350	14.0	19.9	33.9	49.0	-15.1
0.902	9.2	19.9	29.1	46.0	-16.9
0.838	8.1	19.9	28.0	46.0	-18.0
0.210	14.0	20.0	34.0	53.2	-19.2
1.804	6.6	20.0	26.6	46.0	-19.4
1.177	6.0	19.9	25.9	46.0	-20.1
2.704	5.8	20.1	25.9	46.0	-20.1
1.413	5.6	20.0	25.6	46.0	-20.4
1.957	4.9	20.0	24.9	46.0	-21.1
4.210	4.5	20.3	24.8	46.0	-21.2
4.654	4.5	20.3	24.8	46.0	-21.2
2.883	4.6	20.1	24.7	46.0	-21.3
29.482	4.0	22.3	26.3	50.0	-23.7
23.129	4.2	21.6	25.8	50.0	-24.2
18.241	4.2	21.3	25.5	50.0	-24.5
9.645	4.9	20.5	25.4	50.0	-24.6
16.227	4.2	21.2	25.4	50.0	-24.6
7.922	4.7	20.5	25.2	50.0	-24.8
13.357	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-2

TEST PARAMETERS

Run #:	11	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

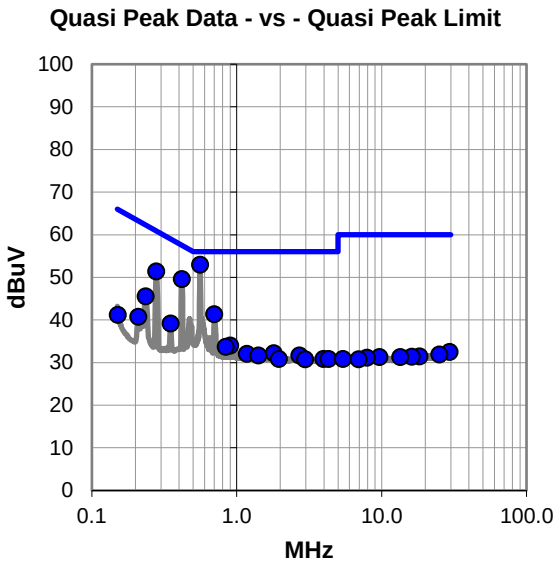
Heaters off. No RFID tags.

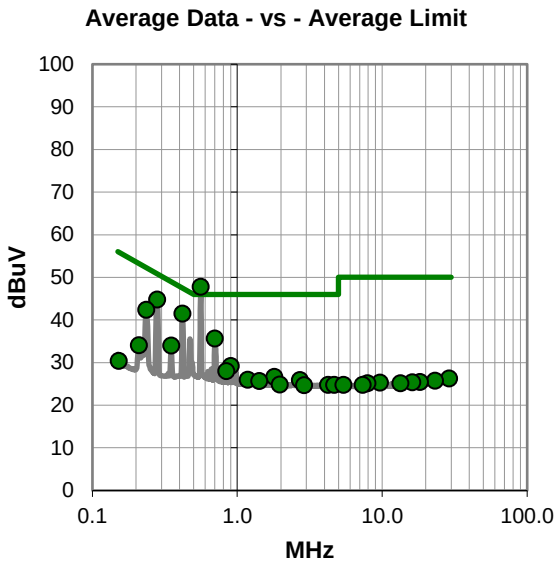
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID Radios sequentially polling for tags

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #11

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	33.1	19.9	53.0	56.0	-3.0
0.419	29.7	19.9	49.6	57.5	-7.9
0.278	31.5	19.9	51.4	60.9	-9.5
0.699	21.5	19.9	41.4	56.0	-14.6
0.235	25.6	20.0	45.6	62.3	-16.7
0.350	19.3	19.9	39.2	59.0	-19.8
0.901	14.1	19.9	34.0	56.0	-22.0
0.838	13.8	19.9	33.7	56.0	-22.3
0.210	20.8	20.0	40.8	63.2	-22.4
1.802	12.2	20.0	32.2	56.0	-23.8
1.175	12.2	19.9	32.1	56.0	-23.9
1.409	11.7	20.0	31.7	56.0	-24.3
2.704	11.6	20.1	31.7	56.0	-24.3
0.152	21.0	20.2	41.2	65.9	-24.7
1.954	10.9	20.0	30.9	56.0	-25.1
3.965	10.7	20.2	30.9	56.0	-25.1
4.293	10.6	20.3	30.9	56.0	-25.1
2.965	10.7	20.1	30.8	56.0	-25.2
29.426	10.2	22.3	32.5	60.0	-27.5
24.963	10.2	21.7	31.9	60.0	-28.1
18.243	10.2	21.3	31.5	60.0	-28.5
16.156	10.2	21.2	31.4	60.0	-28.6
9.644	10.8	20.5	31.3	60.0	-28.7
13.417	10.4	20.9	31.3	60.0	-28.7
7.922	10.7	20.5	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.9	19.9	47.8		
0.280	24.9	19.9	44.8	50.8	-6.0
0.419	21.6	19.9	41.5	47.5	-6.0
0.235	22.4	20.0	42.4	52.3	-9.9
0.699	15.8	19.9	35.7	46.0	-10.3
0.350	14.1	19.9	34.0	49.0	-15.0
0.902	9.3	19.9	29.2	46.0	-16.8
0.838	8.1	19.9	28.0	46.0	-18.0
0.210	14.1	20.0	34.1	53.2	-19.1
1.804	6.7	20.0	26.7	46.0	-19.3
1.178	6.1	19.9	26.0	46.0	-20.0
2.704	5.8	20.1	25.9	46.0	-20.1
1.415	5.7	20.0	25.7	46.0	-20.3
1.958	4.9	20.0	24.9	46.0	-21.1
4.236	4.5	20.3	24.8	46.0	-21.2
4.656	4.5	20.3	24.8	46.0	-21.2
2.887	4.6	20.1	24.7	46.0	-21.3
28.918	4.1	22.2	26.3	50.0	-23.7
23.129	4.2	21.6	25.8	50.0	-24.2
18.243	4.2	21.3	25.5	50.0	-24.5
16.166	4.2	21.2	25.4	50.0	-24.6
9.644	4.8	20.5	25.3	50.0	-24.7
7.922	4.7	20.5	25.2	50.0	-24.8
13.357	4.3	20.9	25.2	50.0	-24.8
5.408	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-2

TEST PARAMETERS

Run #:	12	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

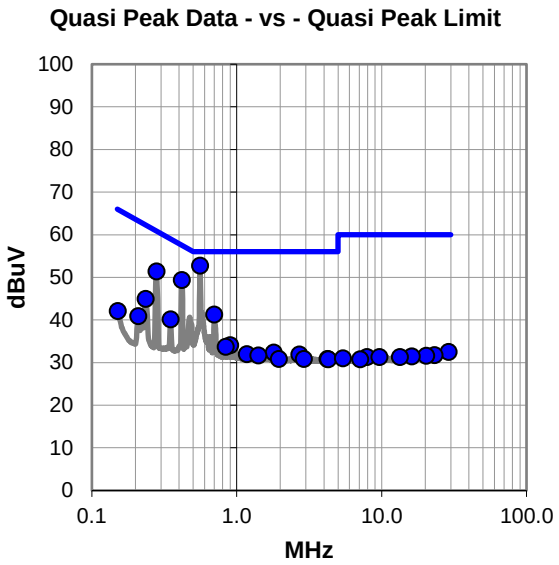
Heaters off. No RFID tags.

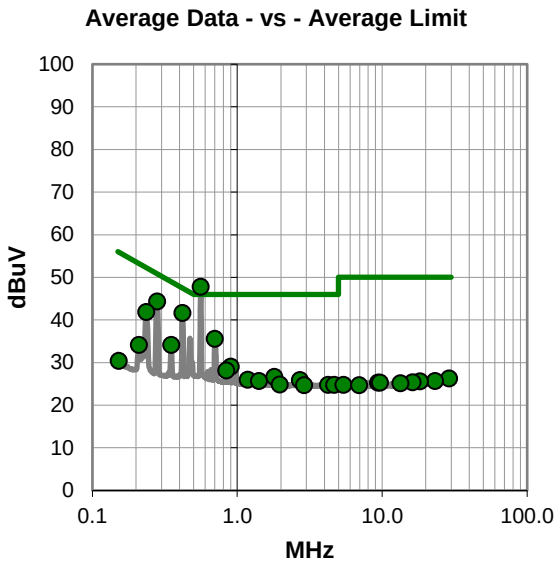
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, RFID Radios polling disabled

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #12

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.9	19.9	52.8	56.0	-3.2
0.419	29.5	19.9	49.4	57.5	-8.1
0.280	31.5	19.9	51.4	60.8	-9.4
0.699	21.4	19.9	41.3	56.0	-14.7
0.235	25.0	20.0	45.0	62.3	-17.3
0.350	20.3	19.9	40.2	59.0	-18.8
0.902	14.2	19.9	34.1	56.0	-21.9
0.210	20.9	20.0	40.9	63.2	-22.3
0.838	13.8	19.9	33.7	56.0	-22.3
1.804	12.4	20.0	32.4	56.0	-23.6
0.152	21.9	20.2	42.1	65.9	-23.8
1.177	12.1	19.9	32.0	56.0	-24.0
2.706	11.8	20.1	31.9	56.0	-24.1
1.413	11.7	20.0	31.7	56.0	-24.3
1.954	10.9	20.0	30.9	56.0	-25.1
2.912	10.8	20.1	30.9	56.0	-25.1
4.230	10.6	20.3	30.9	56.0	-25.1
4.276	10.5	20.3	30.8	56.0	-25.2
29.044	10.2	22.3	32.5	60.0	-27.5
23.127	10.2	21.6	31.8	60.0	-28.2
20.320	10.3	21.3	31.6	60.0	-28.4
16.166	10.3	21.2	31.5	60.0	-28.5
7.922	10.8	20.5	31.3	60.0	-28.7
9.641	10.8	20.5	31.3	60.0	-28.7
13.357	10.4	20.9	31.3	60.0	-28.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.9	19.9	47.8		
0.419	21.8	19.9	41.7	47.5	-5.8
0.280	24.5	19.9	44.4	50.8	-6.4
0.699	15.7	19.9	35.6	46.0	-10.4
0.235	21.9	20.0	41.9	52.3	-10.4
0.350	14.3	19.9	34.2	49.0	-14.8
0.902	9.2	19.9	29.1	46.0	-16.9
0.838	8.3	19.9	28.2	46.0	-17.8
0.210	14.2	20.0	34.2	53.2	-19.0
1.804	6.7	20.0	26.7	46.0	-19.3
1.180	6.1	19.9	26.0	46.0	-20.0
2.704	5.8	20.1	25.9	46.0	-20.1
1.413	5.7	20.0	25.7	46.0	-20.3
1.958	4.9	20.0	24.9	46.0	-21.1
4.221	4.5	20.3	24.8	46.0	-21.2
4.653	4.5	20.3	24.8	46.0	-21.2
2.886	4.6	20.1	24.7	46.0	-21.3
28.931	4.0	22.3	26.3	50.0	-23.7
23.127	4.1	21.6	25.7	50.0	-24.3
18.243	4.3	21.3	25.6	50.0	-24.4
16.226	4.2	21.2	25.4	50.0	-24.6
9.363	4.8	20.5	25.3	50.0	-24.7
9.641	4.8	20.5	25.3	50.0	-24.7
13.357	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-2

TEST PARAMETERS

Run #:	13	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

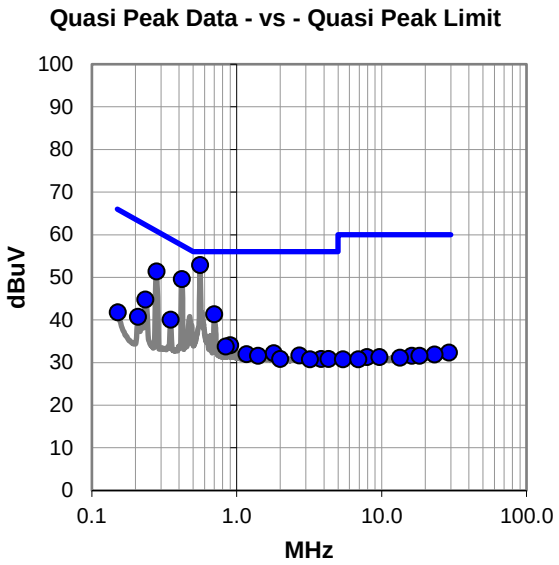
Heaters off. No RFID tags.

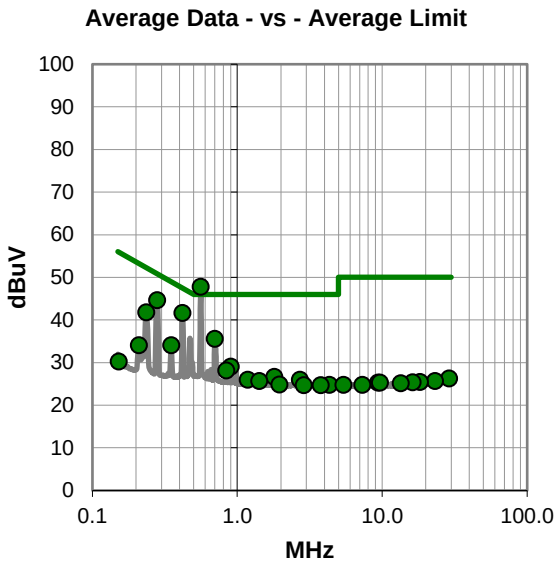
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, RFID Radios polling disabled

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #13

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	33.0	19.9	52.9	56.0	-3.1
0.419	29.7	19.9	49.6	57.5	-7.9
0.280	31.5	19.9	51.4	60.8	-9.4
0.699	21.5	19.9	41.4	56.0	-14.6
0.234	24.8	20.0	44.8	62.3	-17.5
0.350	20.2	19.9	40.1	59.0	-18.9
0.902	14.2	19.9	34.1	56.0	-21.9
0.838	13.9	19.9	33.8	56.0	-22.2
0.208	20.8	20.0	40.8	63.3	-22.5
1.804	12.2	20.0	32.2	56.0	-23.8
1.172	12.1	19.9	32.0	56.0	-24.0
0.152	21.6	20.2	41.8	65.9	-24.1
2.706	11.6	20.1	31.7	56.0	-24.3
1.406	11.6	20.0	31.6	56.0	-24.4
1.995	10.9	20.0	30.9	56.0	-25.1
3.820	10.7	20.2	30.9	56.0	-25.1
4.305	10.6	20.3	30.9	56.0	-25.1
3.209	10.7	20.1	30.8	56.0	-25.2
29.194	10.1	22.3	32.4	60.0	-27.6
23.127	10.3	21.6	31.9	60.0	-28.1
16.166	10.4	21.2	31.6	60.0	-28.4
18.243	10.3	21.3	31.6	60.0	-28.4
7.924	10.8	20.5	31.3	60.0	-28.7
9.642	10.8	20.5	31.3	60.0	-28.7
13.356	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.9	19.9	47.8		
0.419	21.8	19.9	41.7	47.5	-5.8
0.280	24.8	19.9	44.7	50.8	-6.1
0.699	15.7	19.9	35.6	46.0	-10.4
0.235	21.8	20.0	41.8	52.3	-10.5
0.350	14.2	19.9	34.1	49.0	-14.9
0.902	9.2	19.9	29.1	46.0	-16.9
0.838	8.3	19.9	28.2	46.0	-17.8
0.210	14.1	20.0	34.1	53.2	-19.1
1.804	6.7	20.0	26.7	46.0	-19.3
1.178	6.1	19.9	26.0	46.0	-20.0
2.706	5.9	20.1	26.0	46.0	-20.0
1.415	5.7	20.0	25.7	46.0	-20.3
1.957	4.9	20.0	24.9	46.0	-21.1
4.322	4.5	20.3	24.8	46.0	-21.2
2.881	4.6	20.1	24.7	46.0	-21.3
3.759	4.5	20.2	24.7	46.0	-21.3
29.024	4.0	22.3	26.3	50.0	-23.7
23.127	4.1	21.6	25.7	50.0	-24.3
18.243	4.2	21.3	25.5	50.0	-24.5
16.227	4.2	21.2	25.4	50.0	-24.6
9.361	4.8	20.5	25.3	50.0	-24.7
9.642	4.8	20.5	25.3	50.0	-24.7
13.418	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-1

TEST PARAMETERS

Run #:	14	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

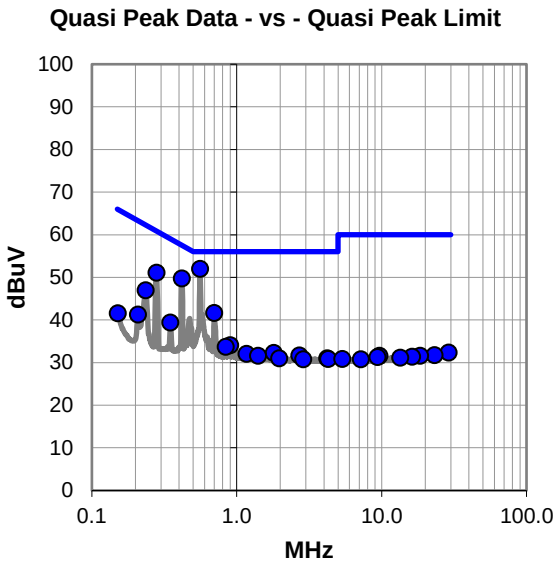
Heaters off. RFID tags present.

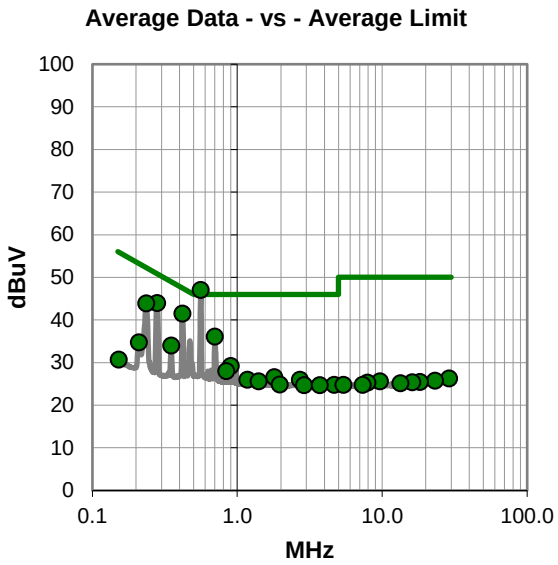
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, RFID Radios polling disabled

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #14

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.1	19.9	52.0	56.0	-4.0
0.419	29.9	19.9	49.8	57.5	-7.7
0.280	31.2	19.9	51.1	60.8	-9.7
0.699	21.8	19.9	41.7	56.0	-14.3
0.235	27.0	20.0	47.0	62.3	-15.3
0.348	19.5	19.9	39.4	59.0	-19.6
0.902	14.2	19.9	34.1	56.0	-21.9
0.208	21.3	20.0	41.3	63.3	-22.0
0.838	13.8	19.9	33.7	56.0	-22.3
1.802	12.3	20.0	32.3	56.0	-23.7
1.171	12.2	19.9	32.1	56.0	-23.9
0.152	21.4	20.2	41.6	65.9	-24.3
2.704	11.6	20.1	31.7	56.0	-24.3
1.403	11.6	20.0	31.6	56.0	-24.4
1.961	11.0	20.0	31.0	56.0	-25.0
4.225	10.7	20.3	31.0	56.0	-25.0
4.279	10.6	20.3	30.9	56.0	-25.1
2.883	10.7	20.1	30.8	56.0	-25.2
28.927	10.1	22.3	32.4	60.0	-27.6
23.127	10.2	21.6	31.8	60.0	-28.2
9.659	11.1	20.5	31.6	60.0	-28.4
18.426	10.3	21.3	31.6	60.0	-28.4
16.227	10.2	21.2	31.4	60.0	-28.6
9.373	10.8	20.5	31.3	60.0	-28.7
13.417	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.2	19.9	47.1		
0.419	21.6	19.9	41.5	47.5	-6.0
0.280	24.1	19.9	44.0	50.8	-6.8
0.235	23.9	20.0	43.9	52.3	-8.4
0.699	16.2	19.9	36.1	46.0	-9.9
0.350	14.1	19.9	34.0	49.0	-15.0
0.902	9.3	19.9	29.2	46.0	-16.8
0.840	8.1	19.9	28.0	46.0	-18.0
0.210	14.8	20.0	34.8	53.2	-18.4
1.804	6.6	20.0	26.6	46.0	-19.4
1.175	6.1	19.9	26.0	46.0	-20.0
2.706	5.9	20.1	26.0	46.0	-20.0
1.404	5.6	20.0	25.6	46.0	-20.4
1.960	4.9	20.0	24.9	46.0	-21.1
4.654	4.5	20.3	24.8	46.0	-21.2
2.887	4.6	20.1	24.7	46.0	-21.3
3.710	4.6	20.1	24.7	46.0	-21.3
29.015	4.0	22.3	26.3	50.0	-23.7
23.127	4.2	21.6	25.8	50.0	-24.2
9.656	5.1	20.5	25.6	50.0	-24.4
18.243	4.2	21.3	25.5	50.0	-24.5
16.166	4.2	21.2	25.4	50.0	-24.6
7.922	4.8	20.5	25.3	50.0	-24.7
13.359	4.3	20.9	25.2	50.0	-24.8
0.152	10.5	20.2	30.7	55.9	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-1

TEST PARAMETERS

Run #:	15	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

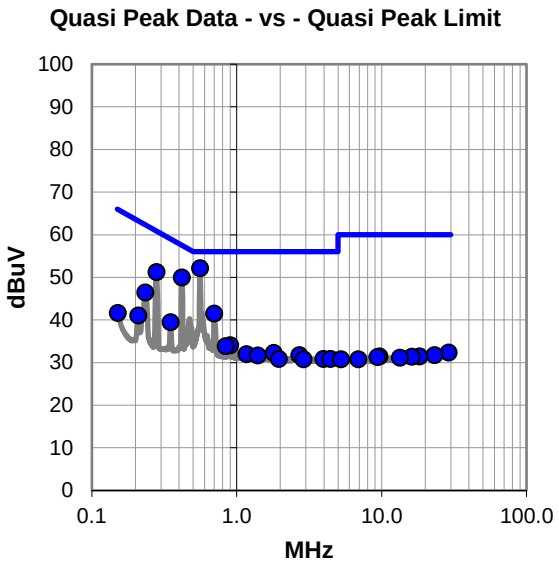
Heaters off. RFID tags present.

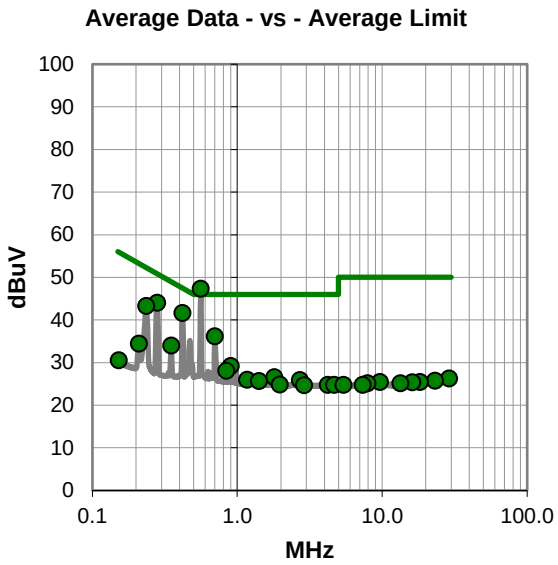
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, RFID Radios polling disabled

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #15

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.3	19.9	52.2	56.0	-3.8
0.419	30.1	19.9	50.0	57.5	-7.5
0.280	31.4	19.9	51.3	60.8	-9.5
0.699	21.6	19.9	41.5	56.0	-14.5
0.234	26.5	20.0	46.5	62.3	-15.8
0.350	19.6	19.9	39.5	59.0	-19.5
0.902	14.2	19.9	34.1	56.0	-21.9
0.210	21.1	20.0	41.1	63.2	-22.1
0.838	14.0	19.9	33.9	56.0	-22.1
1.802	12.3	20.0	32.3	56.0	-23.7
1.172	12.1	19.9	32.0	56.0	-24.0
0.152	21.5	20.2	41.7	65.9	-24.2
2.706	11.7	20.1	31.8	56.0	-24.2
1.398	11.7	20.0	31.7	56.0	-24.3
1.958	10.9	20.0	30.9	56.0	-25.1
3.960	10.7	20.2	30.9	56.0	-25.1
4.441	10.6	20.3	30.9	56.0	-25.1
2.892	10.7	20.1	30.8	56.0	-25.2
29.018	10.1	22.3	32.4	60.0	-27.6
23.129	10.2	21.6	31.8	60.0	-28.2
9.650	11.0	20.5	31.5	60.0	-28.5
18.243	10.2	21.3	31.5	60.0	-28.5
16.166	10.2	21.2	31.4	60.0	-28.6
9.389	10.8	20.5	31.3	60.0	-28.7
13.357	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.5	19.9	47.4		
0.419	21.8	19.9	41.7	47.5	-5.8
0.280	24.2	19.9	44.1	50.8	-6.7
0.235	23.3	20.0	43.3	52.3	-9.0
0.699	16.3	19.9	36.2	46.0	-9.8
0.350	14.1	19.9	34.0	49.0	-15.0
0.902	9.3	19.9	29.2	46.0	-16.8
0.838	8.2	19.9	28.1	46.0	-17.9
0.210	14.5	20.0	34.5	53.2	-18.7
1.804	6.6	20.0	26.6	46.0	-19.4
1.171	6.1	19.9	26.0	46.0	-20.0
2.704	5.8	20.1	25.9	46.0	-20.1
1.409	5.7	20.0	25.7	46.0	-20.3
1.958	4.9	20.0	24.9	46.0	-21.1
4.210	4.5	20.3	24.8	46.0	-21.2
4.654	4.5	20.3	24.8	46.0	-21.2
2.887	4.6	20.1	24.7	46.0	-21.3
28.939	4.0	22.3	26.3	50.0	-23.7
23.129	4.2	21.6	25.8	50.0	-24.2
9.651	5.0	20.5	25.5	50.0	-24.5
18.243	4.2	21.3	25.5	50.0	-24.5
16.166	4.2	21.2	25.4	50.0	-24.6
7.922	4.7	20.5	25.2	50.0	-24.8
13.357	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-1

TEST PARAMETERS

Run #:	16	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

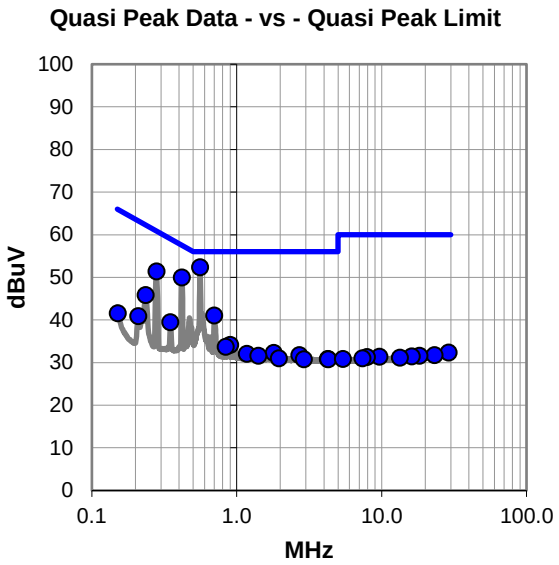
Heaters off. RFID tags present.

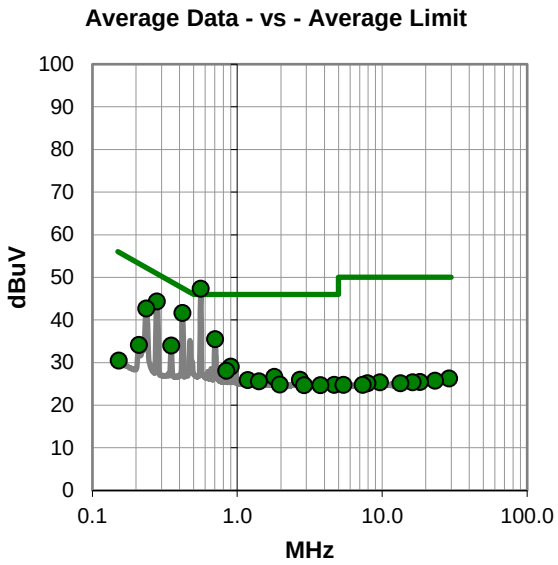
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID Radios sequentially polling for tags

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #16

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.5	19.9	52.4	56.0	-3.6
0.419	30.1	19.9	50.0	57.5	-7.5
0.280	31.5	19.9	51.4	60.8	-9.4
0.699	21.2	19.9	41.1	56.0	-14.9
0.235	25.9	20.0	45.9	62.3	-16.4
0.348	19.6	19.9	39.5	59.0	-19.5
0.902	14.3	19.9	34.2	56.0	-21.8
0.210	20.9	20.0	40.9	63.2	-22.3
0.838	13.8	19.9	33.7	56.0	-22.3
1.802	12.3	20.0	32.3	56.0	-23.7
1.175	12.2	19.9	32.1	56.0	-23.9
2.704	11.7	20.1	31.8	56.0	-24.2
0.152	21.4	20.2	41.6	65.9	-24.3
1.410	11.6	20.0	31.6	56.0	-24.4
1.960	11.0	20.0	31.0	56.0	-25.0
4.261	10.6	20.3	30.9	56.0	-25.1
2.912	10.7	20.1	30.8	56.0	-25.2
4.276	10.5	20.3	30.8	56.0	-25.2
28.991	10.1	22.3	32.4	60.0	-27.6
23.127	10.2	21.6	31.8	60.0	-28.2
18.243	10.3	21.3	31.6	60.0	-28.4
16.165	10.3	21.2	31.5	60.0	-28.5
9.647	10.9	20.5	31.4	60.0	-28.6
7.924	10.8	20.5	31.3	60.0	-28.7
13.357	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.5	19.9	47.4		
0.419	21.8	19.9	41.7	47.5	-5.8
0.278	24.5	19.9	44.4	50.9	-6.5
0.235	22.7	20.0	42.7	52.3	-9.6
0.701	15.6	19.9	35.5	46.0	-10.5
0.350	14.1	19.9	34.0	49.0	-15.0
0.902	9.2	19.9	29.1	46.0	-16.9
0.838	8.2	19.9	28.1	46.0	-17.9
0.210	14.2	20.0	34.2	53.2	-19.0
1.804	6.7	20.0	26.7	46.0	-19.3
2.706	5.9	20.1	26.0	46.0	-20.0
1.177	6.0	19.9	25.9	46.0	-20.1
1.410	5.6	20.0	25.6	46.0	-20.4
1.960	4.9	20.0	24.9	46.0	-21.1
4.654	4.5	20.3	24.8	46.0	-21.2
2.889	4.6	20.1	24.7	46.0	-21.3
3.752	4.5	20.2	24.7	46.0	-21.3
28.953	4.0	22.3	26.3	50.0	-23.7
23.129	4.2	21.6	25.8	50.0	-24.2
18.241	4.2	21.3	25.5	50.0	-24.5
9.644	4.9	20.5	25.4	50.0	-24.6
16.227	4.2	21.2	25.4	50.0	-24.6
7.922	4.7	20.5	25.2	50.0	-24.8
13.357	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-22
Customer:	3D Systems Corporation	Temperature:	18.9°C
Attendees:	Jaime Smith	Relative Humidity:	35.9%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mb
Tested By:	Jeff Alcoke	Job Site:	EV07
Power:	120VAC/60Hz	Configuration:	3DSY0191-1

TEST PARAMETERS

Run #:	17	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

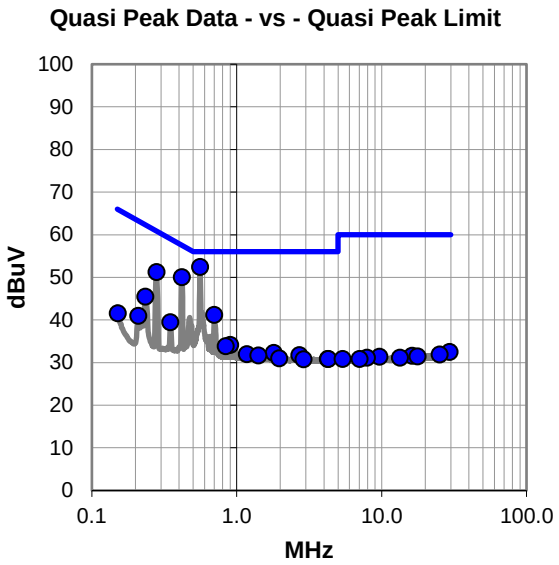
Heaters off. RFID tags present.

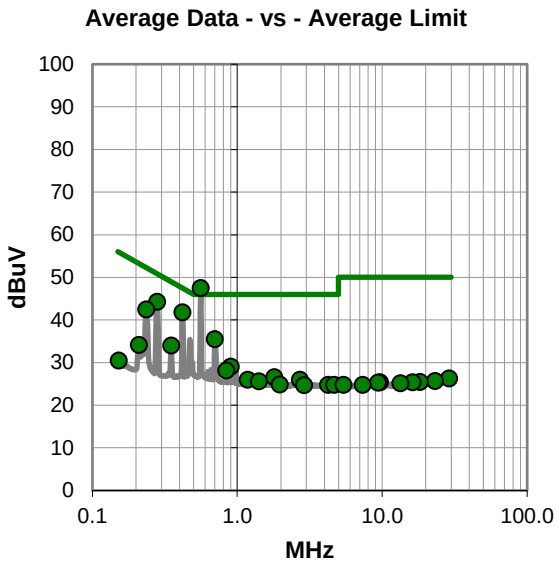
EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID Radios sequentially polling for tags

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #17

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	32.6	19.9	52.5	56.0	-3.5
0.419	30.2	19.9	50.1	57.5	-7.4
0.280	31.4	19.9	51.3	60.8	-9.5
0.699	21.3	19.9	41.2	56.0	-14.8
0.234	25.5	20.0	45.5	62.3	-16.8
0.348	19.6	19.9	39.5	59.0	-19.5
0.902	14.3	19.9	34.2	56.0	-21.8
0.838	14.0	19.9	33.9	56.0	-22.1
0.210	21.0	20.0	41.0	63.2	-22.2
1.804	12.3	20.0	32.3	56.0	-23.7
1.174	12.1	19.9	32.0	56.0	-24.0
2.706	11.7	20.1	31.8	56.0	-24.2
0.152	21.4	20.2	41.6	65.9	-24.3
1.413	11.7	20.0	31.7	56.0	-24.3
1.961	11.0	20.0	31.0	56.0	-25.0
4.259	10.6	20.3	30.9	56.0	-25.1
4.285	10.6	20.3	30.9	56.0	-25.1
2.890	10.7	20.1	30.8	56.0	-25.2
29.392	10.2	22.3	32.5	60.0	-27.5
25.120	10.2	21.7	31.9	60.0	-28.1
16.227	10.4	21.2	31.6	60.0	-28.4
17.694	10.3	21.2	31.5	60.0	-28.5
9.645	10.9	20.5	31.4	60.0	-28.6
7.922	10.7	20.5	31.2	60.0	-28.8
13.354	10.3	20.9	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.559	27.6	19.9	47.5		
0.419	21.9	19.9	41.8	47.5	-5.7
0.280	24.4	19.9	44.3	50.8	-6.5
0.235	22.5	20.0	42.5	52.3	-9.8
0.699	15.6	19.9	35.5	46.0	-10.5
0.350	14.1	19.9	34.0	49.0	-15.0
0.902	9.2	19.9	29.1	46.0	-16.9
0.838	8.3	19.9	28.2	46.0	-17.8
0.210	14.2	20.0	34.2	53.2	-19.0
1.804	6.6	20.0	26.6	46.0	-19.4
1.177	6.1	19.9	26.0	46.0	-20.0
2.706	5.9	20.1	26.0	46.0	-20.0
1.413	5.6	20.0	25.6	46.0	-20.4
1.960	4.9	20.0	24.9	46.0	-21.1
4.224	4.5	20.3	24.8	46.0	-21.2
4.653	4.5	20.3	24.8	46.0	-21.2
2.883	4.6	20.1	24.7	46.0	-21.3
29.014	4.0	22.3	26.3	50.0	-23.7
23.126	4.1	21.6	25.7	50.0	-24.3
18.241	4.2	21.3	25.5	50.0	-24.5
9.645	4.9	20.5	25.4	50.0	-24.6
16.226	4.2	21.2	25.4	50.0	-24.6
9.366	4.8	20.5	25.3	50.0	-24.7
13.357	4.3	20.9	25.2	50.0	-24.8
5.409	4.5	20.3	24.8	50.0	-25.2

CONCLUSION

See Certificate of Test

Tested By

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

TEST DESCRIPTION

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.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

As defined in FCC 15.215 Part (c), intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise by specified in the specific rule section under which the equipment operates, is contained within the frequency band designed in the rule section under which the equipment is operated.

The 20 dB bandwidth must be contained within the band 13.110-14.010 MHz. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the emissions bandwidth (EBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto and a peak detector was used.

Per ANSI C63.10a:2024, Clause 6.9.2 b) The nominal IF filter bandwidth shall be within 1-5% of the OBW without going below the values in Clause 6.9.1. In this frequency range (9 kHz – 30 MHz) the minimum RBW is 0.1 kHz.

The spectrum analyzer bandwidth measurement function was used to measure the 20 dB bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2024-06-17	2025-06-17
Attenuator	S.M. Electronics	SA26B-20	AWV	2025-03-21	2026-03-21
Attenuator	Fairview Microwave	18B5W-26	RFZ	2024-06-26	2025-06-26
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	2025-03-26	2026-03-26

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	#1	Date:	2025-04-21
Customer:	3D Systems Corporation	Temperature:	20.1°C
Attendees:	None	Relative Humidity:	37.2%
Customer Project:	None	Bar. Pressure (PMSL):	1025 mbar
Tested By:	Jeff Alcoke	Job Site:	EV06
Power:	120VAC/60Hz	Configuration:	3DSY0191-3

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

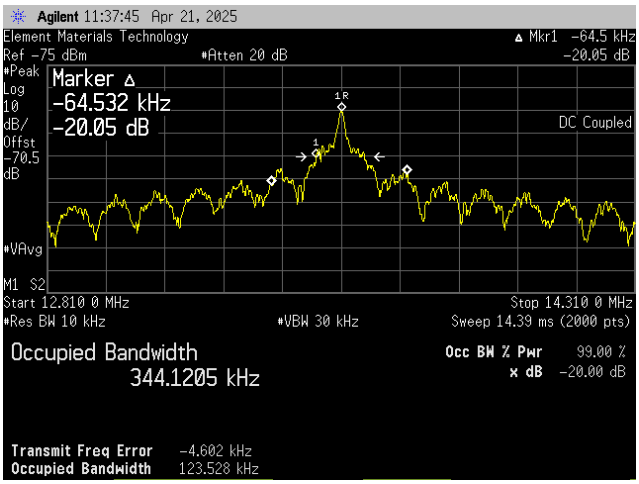
Tested By

TEST RESULTS

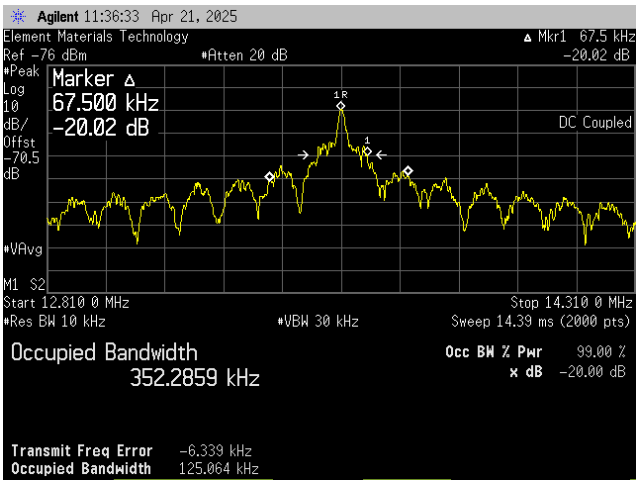
	20dB BW (kHz)	F_low (MHz)	F_High (MHz)	Meas Value In Band (Y / N)	Limit (MHz)	Result
13.56 MHz RFID, ISO/IEC 15693, Radio 5						
Normal Conditions	123.528	13.406472	-	Y	13.110 ≤ f	Pass
Normal Conditions	125.064	-	13.685064	Y	*f ≤ 14.010*	Pass

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



13.56 MHz RFID, ISO/IEC 15693, Radio 5
Normal Conditions



13.56 MHz RFID, ISO/IEC 15693, Radio 5
Normal Conditions

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

TEST DESCRIPTION

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARF	2024-10-14	2025-10-14
Cable	None	10m Test Distance Cable	EVL	2025-01-20	2026-01-20
Antenna - Loop	EMCO	6502	AOA	2024-10-23	2026-10-23

FREQUENCY RANGE INVESTIGATED

12 MHz TO 15 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

3DSY0191-1
3DSY0191-2

MODES INVESTIGATED

13.56 MHz RFID, ISO 15693, OOK, Radio 0 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 1 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 2 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 3 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 4 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 5 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 6 polling for tag
13.56 MHz RFID, ISO 15693, OOK, Radio 7 polling for tag

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	20	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

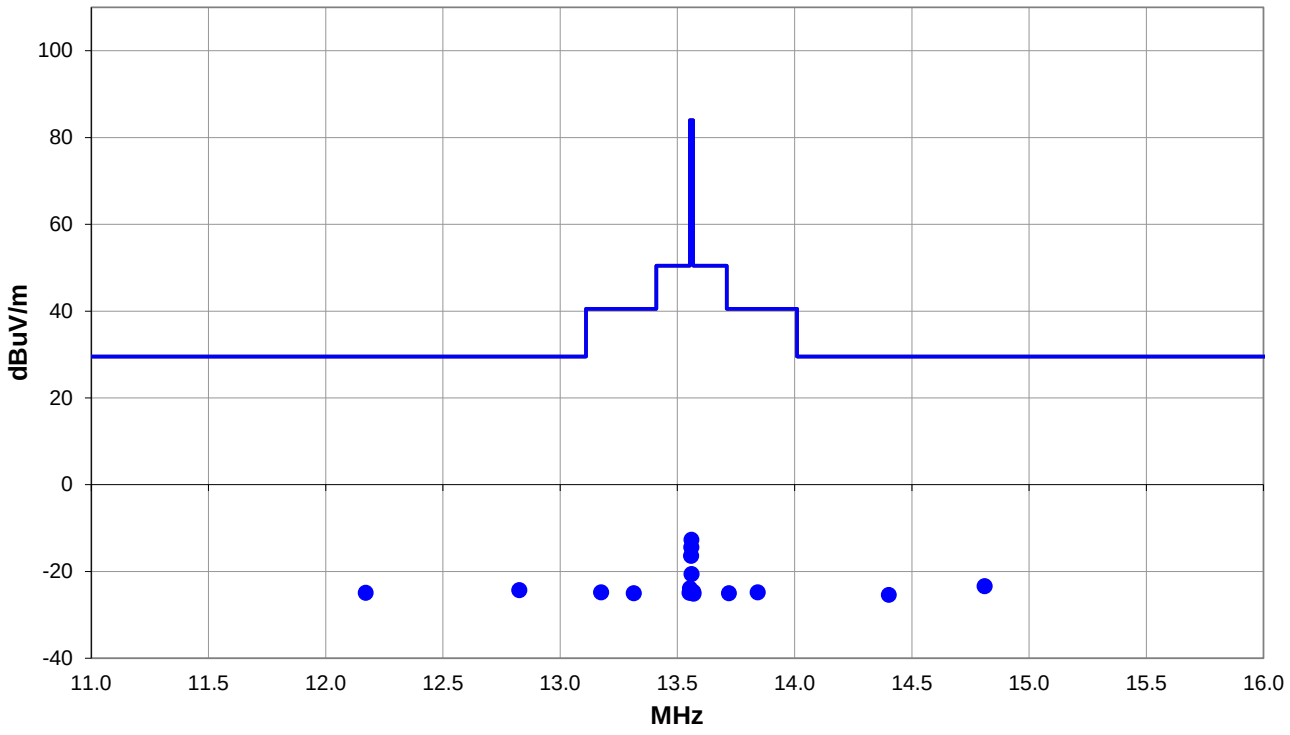
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 0 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 20 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #20

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.810	5.8	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-23.4	29.5	-52.9	Tag present
12.825	4.9	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	29.5	-53.8	No tag
12.170	4.2	10.9	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	Tag present
14.402	3.9	10.7	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-25.4	29.5	-54.9	No tag
13.175	4.4	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.8	40.5	-65.3	No tag
13.842	4.4	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.8	40.5	-65.3	Tag present
13.720	4.2	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	No tag
13.314	4.2	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	Tag present
13.553	5.3	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-23.9	50.5	-74.4	No tag
13.568	4.5	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.7	50.5	-75.2	No tag
13.552	4.3	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	50.5	-75.4	Tag present
13.569	4.1	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	50.5	-75.6	Tag present
13.560	16.5	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-12.7	84.0	-96.7	No tag
13.560	14.8	10.8	1.0	263.0	3.0	0.0	Perp EUT	QP	-40.0	-14.4	84.0	-98.4	No tag
13.558	12.8	10.8	1.0	230.0	3.0	0.0	Par GND	QP	-40.0	-16.4	84.0	-100.4	No tag
13.560	8.6	10.8	1.0	212.0	3.0	0.0	Par EUT	QP	-40.0	-20.6	84.0	-104.6	Tag present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	21	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

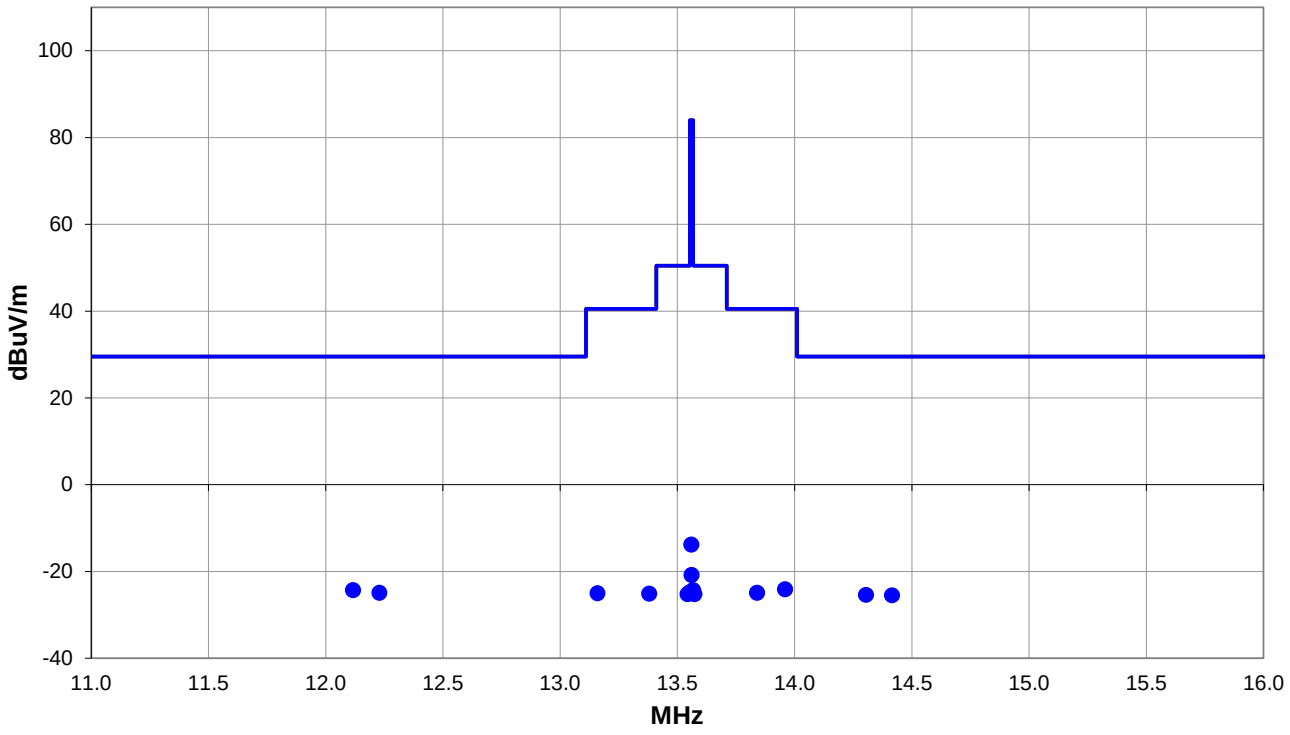
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 1 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 21 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #21

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12.116	4.8	10.9	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	29.5	-53.8	No tag
12.229	4.2	10.9	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	Tag Present
14.304	3.9	10.7	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.4	29.5	-54.9	No tag
14.415	3.8	10.7	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.5	29.5	-55.0	Tag Present
13.959	5.1	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.1	40.5	-64.6	Tag Present
13.840	4.3	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	40.5	-65.4	No tag
13.159	4.2	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	Tag Present
13.379	4.1	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No tag
13.567	4.9	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	50.5	-74.8	No tag
13.553	4.4	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-24.8	50.5	-75.3	No tag
13.543	4.0	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	50.5	-75.7	Tag Present
13.573	4.0	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	50.5	-75.7	Tag Present
13.559	15.4	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-13.8	84.0	-97.8	No tag
13.560	8.4	10.8	1.0	360.0	3.0	0.0	Par EUT	QP	-40.0	-20.8	84.0	-104.8	Tag Present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Julie Husko and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	22	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

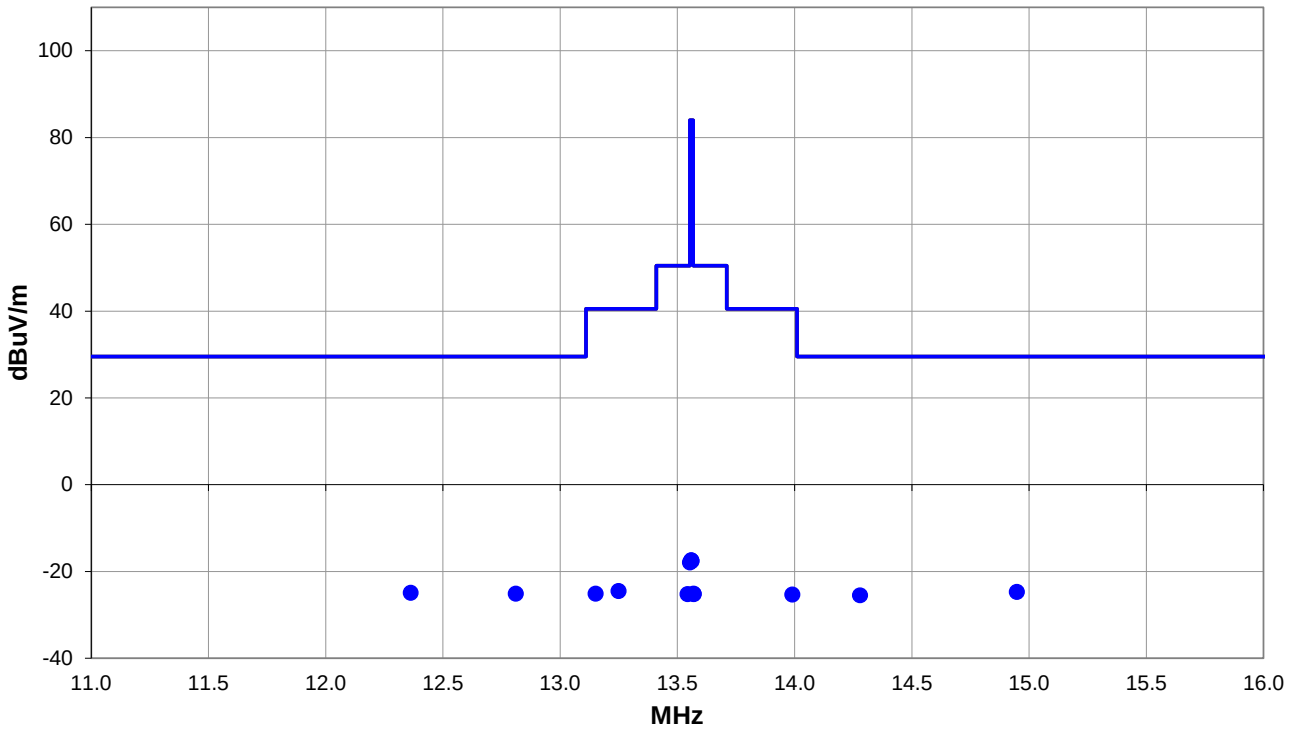
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 2 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 22 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #22

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.948	4.5	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-24.7	29.5	-54.2	No Tag
12.362	4.2	10.9	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	Tag Present
12.811	4.1	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	29.5	-54.6	No Tag
14.279	3.8	10.7	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.5	29.5	-55.0	Tag Present
13.249	4.7	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	40.5	-65.0	No Tag
13.151	4.1	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	Tag Present
13.990	3.9	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.3	40.5	-65.8	No Tag
13.553	11.3	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-17.9	50.5	-68.4	No Tag
13.568	4.1	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	50.5	-75.6	No Tag
13.543	4.0	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	50.5	-75.7	Tag Present
13.570	4.0	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	50.5	-75.7	Tag Present
13.559	11.8	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-17.4	84.0	-101.4	No Tag
13.560	11.7	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-17.5	84.0	-101.5	Tag Present
13.561	11.6	10.8	1.0	316.0	3.0	0.0	Par EUT	QP	-40.0	-17.6	84.0	-101.6	Tag Present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Julie Husko and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	23	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

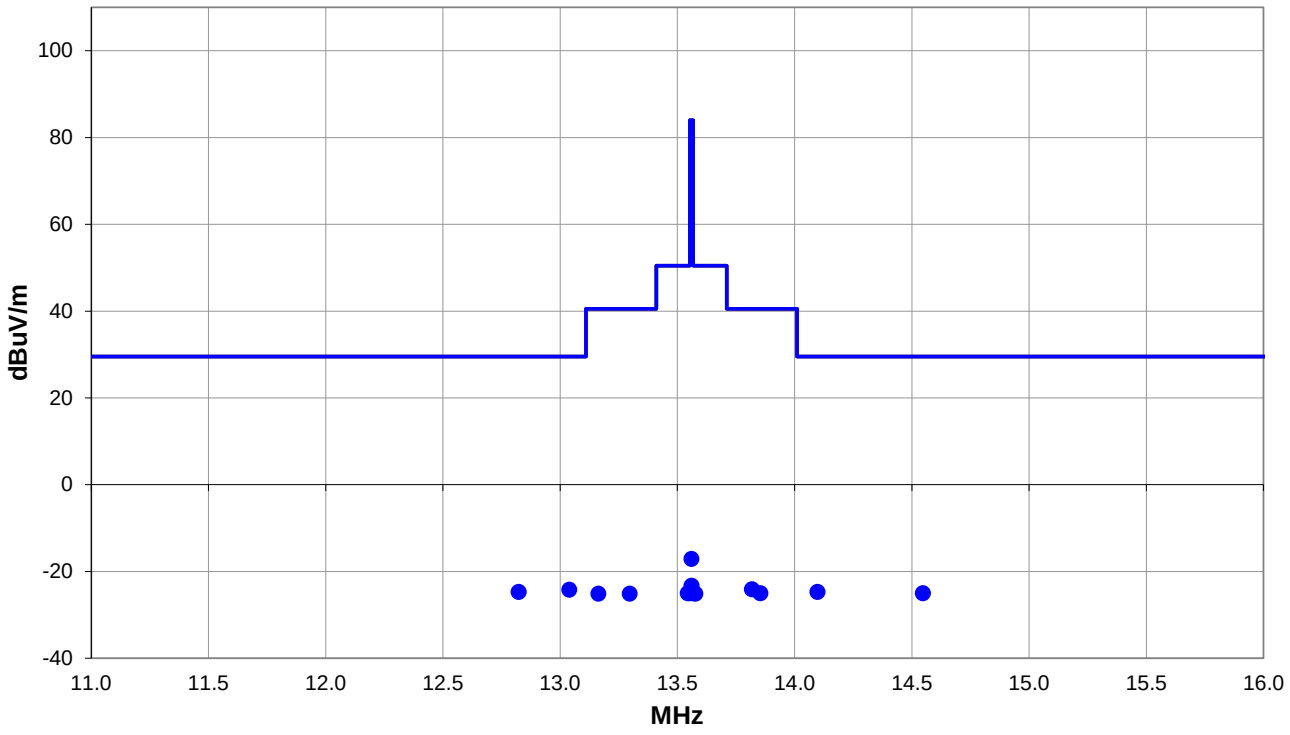
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 3 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 23 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #23

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
13.039	5.0	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-24.2	29.5	-53.7	Tag Present
12.823	4.5	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-24.7	29.5	-54.2	No Tag
14.097	4.5	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-24.7	29.5	-54.2	No Tag
14.547	4.3	10.7	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	29.5	-54.5	Tag Present
13.818	5.1	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-24.1	40.5	-64.6	Tag Present
13.854	4.2	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	No Tag
13.296	4.1	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No Tag
13.163	4.1	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	Tag Present
13.553	4.2	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	No Tag
13.568	4.2	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	No Tag
13.544	4.2	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	Tag Present
13.577	4.1	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	50.5	-75.6	Tag Present
13.560	12.1	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-17.1	84.0	-101.1	No Tag
13.560	5.9	10.8	1.0	267.0	3.0	0.0	Par EUT	QP	-40.0	-23.3	84.0	-107.3	Tag Present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Duane Niesen and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	24	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

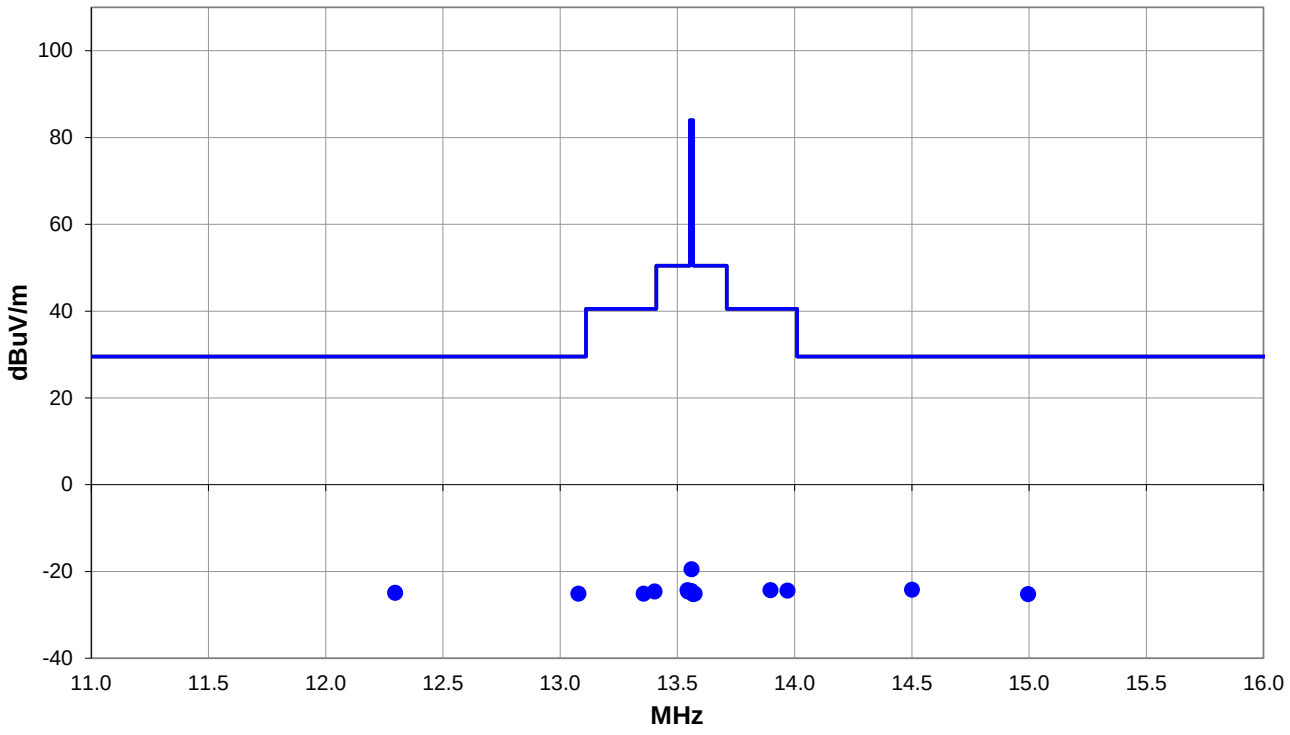
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 4 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 24 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #24

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.500	5.1	10.7	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.2	29.5	-53.7	No tag
12.296	4.2	10.9	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	No Tag
13.077	4.1	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	29.5	-54.6	Tag present
14.995	4.0	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	29.5	-54.7	Tag present
13.897	4.9	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	40.5	-64.8	No tag
13.969	4.8	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.4	40.5	-64.9	Tag present
13.403	4.6	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.6	40.5	-65.1	Tag present
13.356	4.1	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No tag
13.543	4.9	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	50.5	-74.8	Tag present
13.545	4.6	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.6	50.5	-75.1	No tag
13.573	4.1	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	50.5	-75.6	No tag
13.567	4.0	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-25.2	50.5	-75.7	Tag present
13.560	9.7	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-19.5	84.0	-103.5	No Tag
13.559	4.7	10.8	1.0	315.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	84.0	-108.5	Tag present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-11
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Duane Niesen and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	28	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

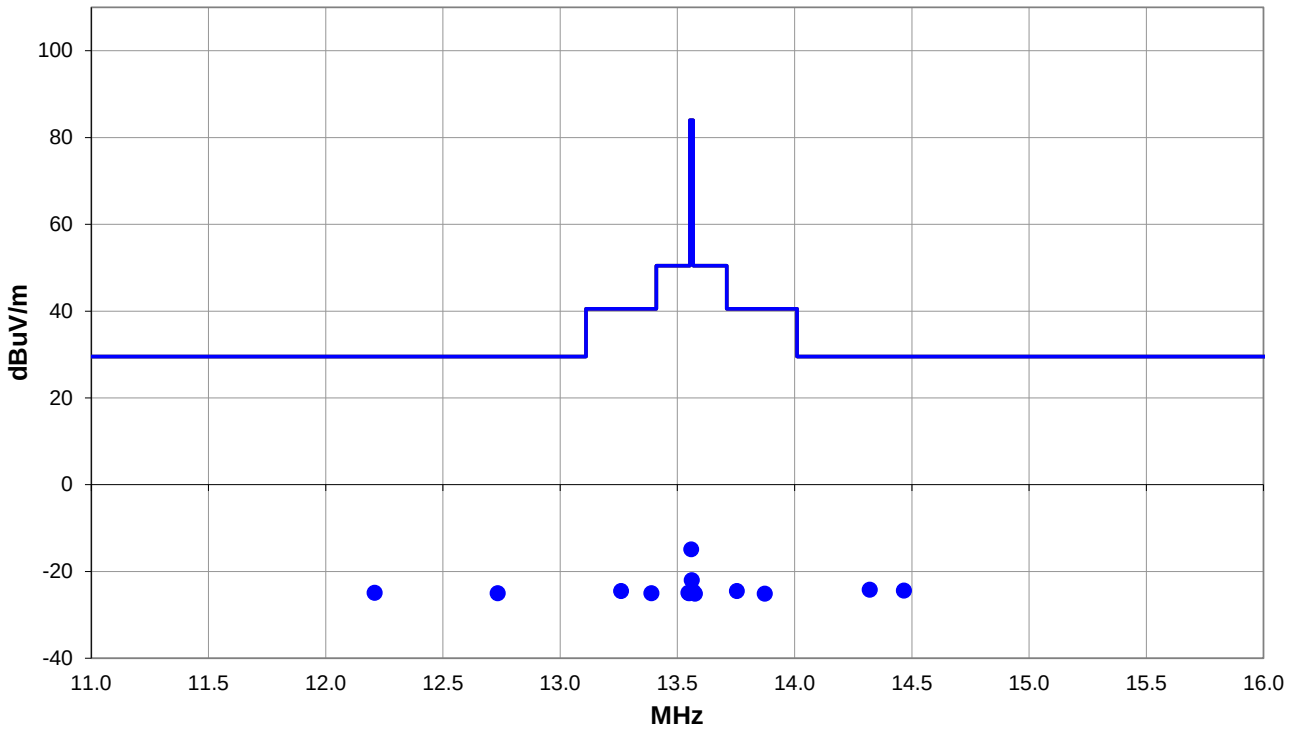
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 5 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 28 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #28

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.320	5.1	10.7	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.2	29.5	-53.7	Tag present
14.466	4.9	10.7	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.4	29.5	-53.9	No tag
12.209	4.2	10.9	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	No tag
12.734	4.2	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	29.5	-54.5	Tag present
13.260	4.7	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	40.5	-65.0	Tag present
13.753	4.7	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	40.5	-65.0	Tag present
13.389	4.2	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	No tag
13.873	4.1	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No tag
13.567	4.6	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.6	50.5	-75.1	No tag
13.547	4.3	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	50.5	-75.4	Tag present
13.550	4.2	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	No tag
13.575	4.1	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	50.5	-75.6	Tag present
13.559	14.3	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-14.9	84.0	-98.9	No tag
13.561	7.2	10.8	1.0	306.0	3.0	0.0	Par EUT	QP	-40.0	-22.0	84.0	-106.0	Tag present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-11
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Duane Niesen and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	29	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

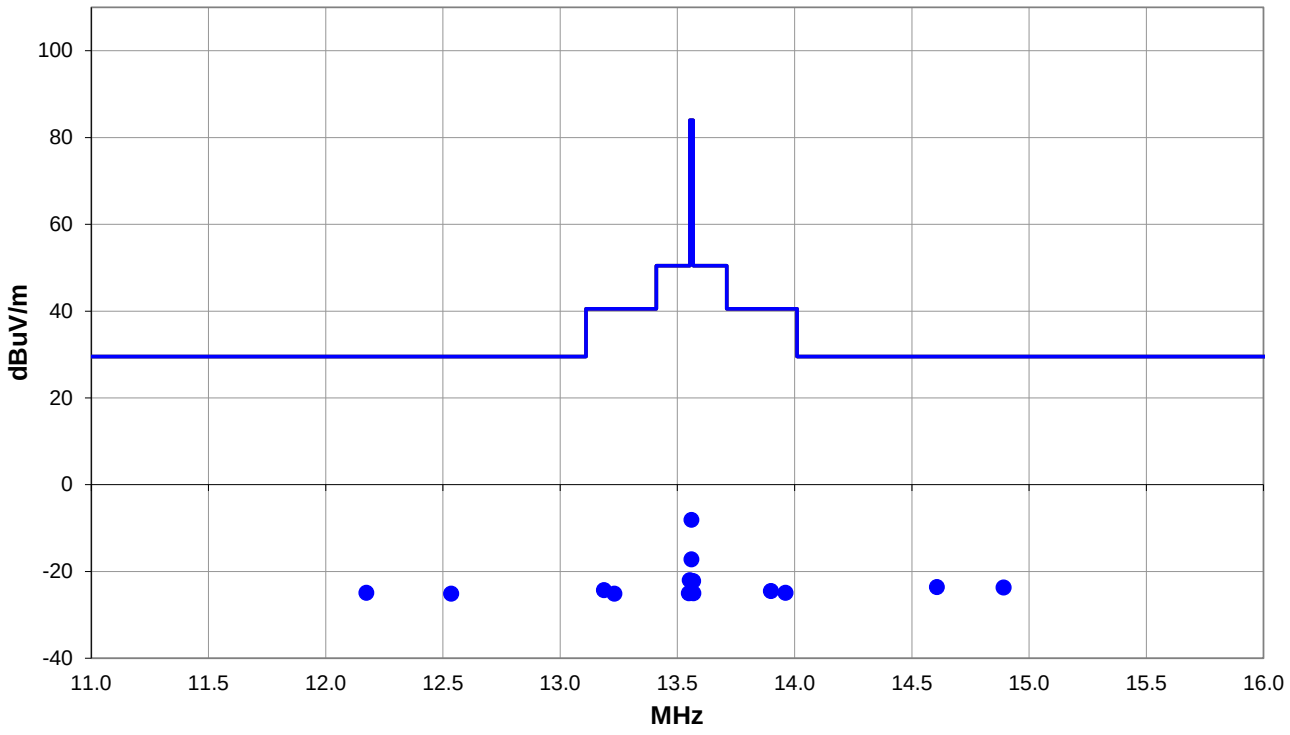
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 6 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 29 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #29

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.607	5.6	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-23.6	29.5	-53.1	No tag
14.891	5.5	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-23.7	29.5	-53.2	Tag present
12.173	4.2	10.9	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	No tag
12.535	4.1	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	29.5	-54.6	Tag present
13.187	4.9	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	40.5	-64.8	Tag present
13.899	4.7	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	40.5	-65.0	Tag present
13.961	4.3	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	40.5	-65.4	No tag
13.231	4.1	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No tag
13.553	7.2	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-22.0	50.5	-72.5	No tag
13.567	7.0	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-22.2	50.5	-72.7	No tag
13.549	4.2	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	Tag present
13.568	4.2	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	50.5	-75.5	Tag present
13.560	21.1	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-8.1	84.0	-92.1	No tag
13.560	12.0	10.8	1.0	312.0	3.0	0.0	Par EUT	QP	-40.0	-17.2	84.0	-101.2	Tag present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-11
Customer:	3D Systems Corporation	Temperature:	19.4°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Duane Niesen and Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	30	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

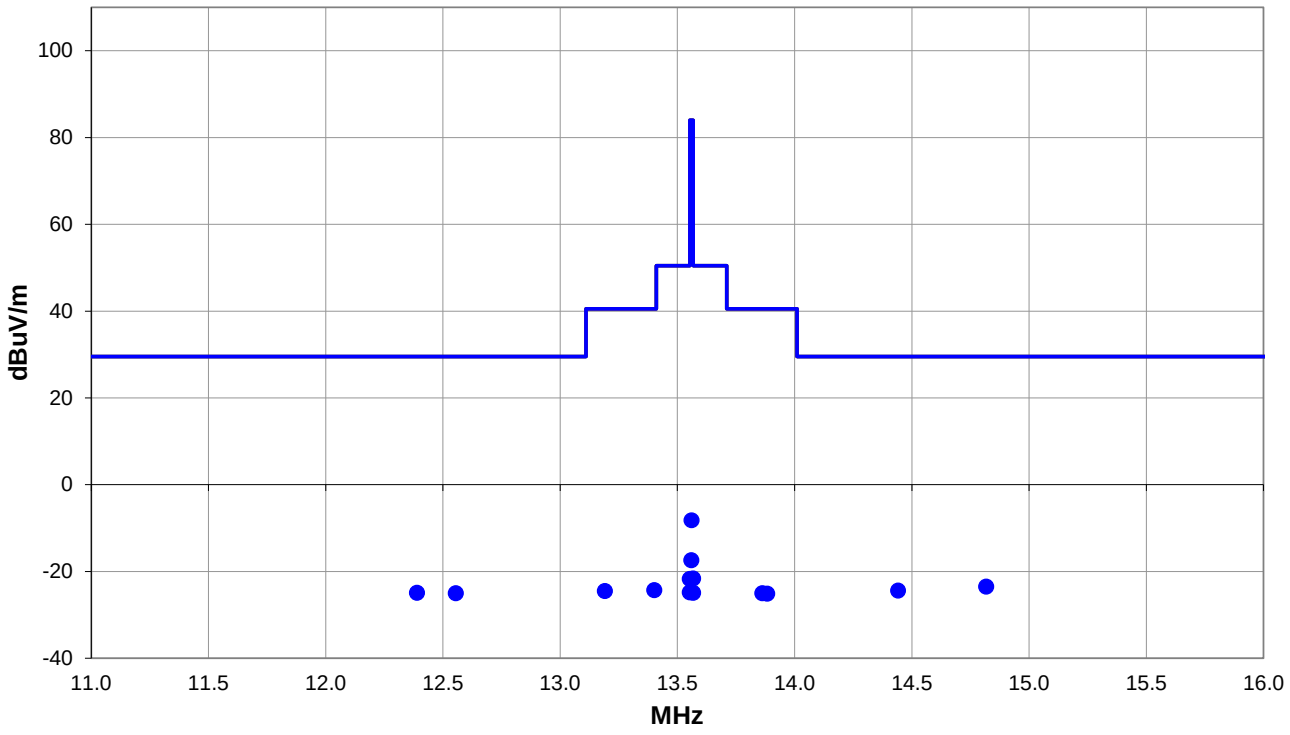
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, Radio 7 polling for tag

DEVIATIONS FROM TEST STANDARD

None



Run #: 30 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #30

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14.817	5.7	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-23.5	29.5	-53.0	Tag present
14.441	4.9	10.7	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.4	29.5	-53.9	No tag
12.389	4.2	10.9	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	29.5	-54.4	Tag present
12.555	4.2	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	29.5	-54.5	No tag
13.401	4.9	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.3	40.5	-64.8	Tag present
13.190	4.7	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.5	40.5	-65.0	No tag
13.862	4.2	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-25.0	40.5	-65.5	Tag present
13.883	4.1	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-25.1	40.5	-65.6	No tag
13.567	7.6	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-21.6	50.5	-72.1	No tag
13.553	7.5	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-21.7	50.5	-72.2	No tag
13.553	4.4	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.8	50.5	-75.3	Tag present
13.567	4.3	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-24.9	50.5	-75.4	Tag present
13.560	21.0	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-8.2	84.0	-92.2	No tag
13.559	11.8	10.8	1.0	304.0	3.0	0.0	Par EUT	QP	-40.0	-17.4	84.0	-101.4	Tag present

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. A reference preview scan (pre-scan) is included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those is RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARF	2024-10-14	2025-10-14
Cable	None	10m Test Distance Cable	EVL	2025-01-20	2026-01-20
Antenna - Loop	EMCO	6502	AOA	2024-10-23	2026-10-23

FREQUENCY RANGE INVESTIGATED

9 kHz TO 30 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

3DSY0191-1
3DSY0191-2

MODES INVESTIGATED

13.56 MHz RFID, ISO 15693, OOK, 8 RFID radios sequentially polling tags

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	311OH34424311	Date:	2025-04-10
Customer:	3D Systems Corporation	Temperature:	19.3°C
Attendees:	Jaime Smith	Relative Humidity:	45.5%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Jeff Alcoke	Job Site:	EV11
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	19	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

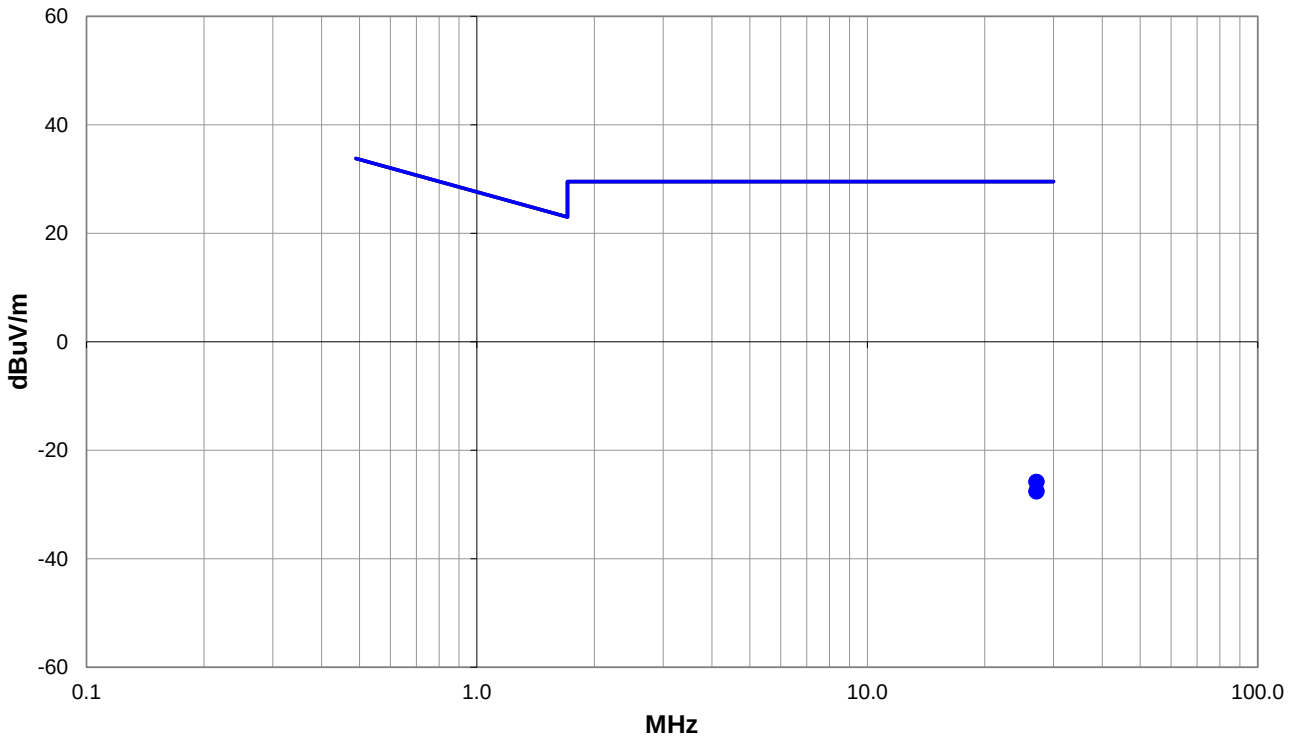
None

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID radios sequentially polling tags

DEVIATIONS FROM TEST STANDARD

None



Run #: 19 ■ PK ◆ AV ● QP

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #19

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
27.122	5.4	8.8	1.0	65.0	3.0	0.0	Perp EUT	QP	-40.0	-25.8	29.5	-55.3	Tags present
27.122	5.4	8.8	1.0	65.0	3.0	0.0	Perp EUT	QP	-40.0	-25.8	29.5	-55.3	No Tags
27.123	3.7	8.8	1.0	345.0	3.0	0.0	Par EUT	QP	-40.0	-27.5	29.5	-57.0	Tags present
27.115	3.6	8.8	1.0	245.0	3.0	0.0	Par GND	QP	-40.0	-27.6	29.5	-57.1	Tags present

CONCLUSION

Pass

Tested By

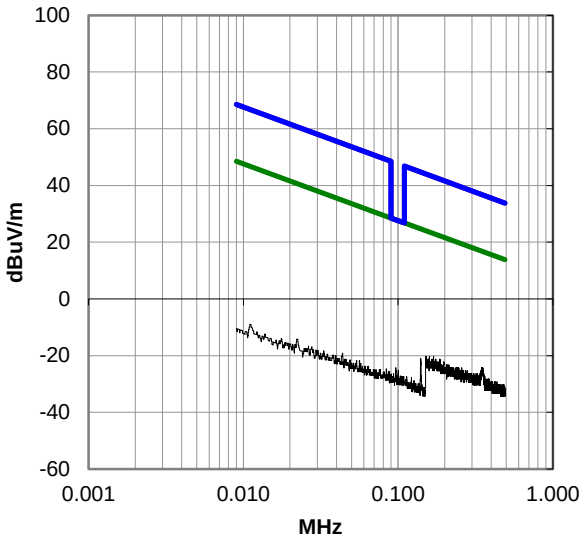
FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

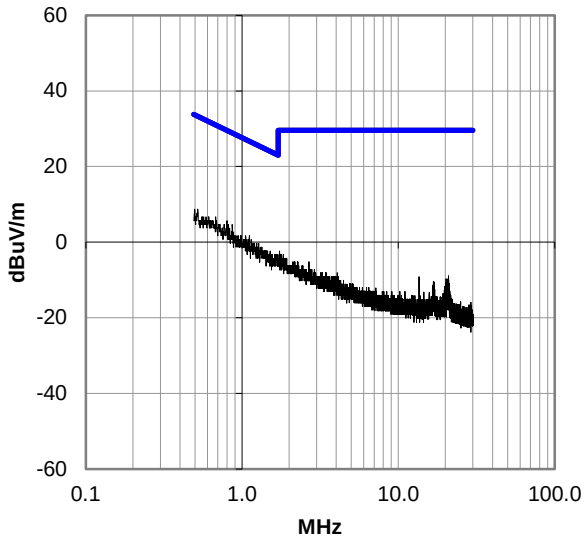
PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

0.009-0.49 MHz, Run 17



0.49-30 MHz, Run 18



FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the operating channel.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out-of-band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Biconilog	Teseq	CBL 6141B	AXR	2025-04-15	2027-04-15
Cable	N/A	Bilog Cables	EVA	2024-10-29	2025-10-29
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2024-10-28	2025-10-28

FREQUENCY RANGE INVESTIGATED

30 MHz TO 1000 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

3DSY0191-1
3DSY0191-2

MODES INVESTIGATED

13.56 MHz RFID, ISO 15693, OOK, 8 RFID radios sequentially polling tags

FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

EUT:	NextDent 300	Work Order:	3DSY0199
Serial Number:	311OH34424311	Date:	2025-05-19
Customer:	3D Systems Corporation	Temperature:	19.5°C
Attendees:	Jaimie Smith	Relative Humidity:	43.5%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Cole Ghizzone	Job Site:	EV01
Power:	110VAC/60Hz	Configuration:	3DSY0191-1 3DSY0191-2

TEST PARAMETERS

Run #:	4	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

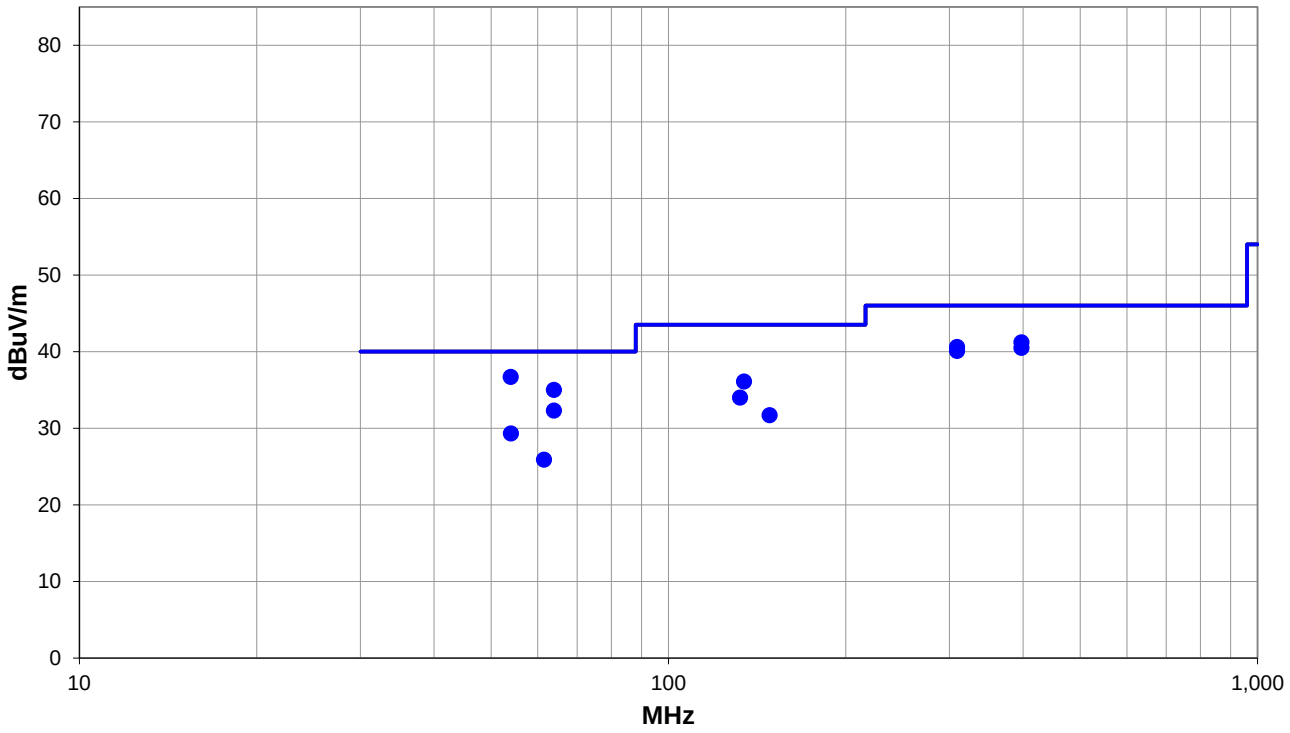
Please reference data comments below for presence of RFID tags

EUT OPERATING MODES

13.56 MHz RFID, ISO 15693, OOK, 8 RFID radios sequentially polling tags

DEVIATIONS FROM TEST STANDARD

None



Run #: 4 ■ PK ◆ AV ● QP

FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

RESULTS - Run #4

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
53.990	41.0	-4.3	1.3	258.0	3.0	0.0	Vert	QP	0.0	36.7	40.0	-3.3	Tags removed
397.335	38.6	2.6	1.0	310.0	3.0	0.0	Horz	QP	0.0	41.2	46.0	-4.8	Tags present
63.918	42.5	-7.5	1.5	207.0	3.0	0.0	Vert	QP	0.0	35.0	40.0	-5.0	Tags present
309.002	40.8	-0.2	1.0	335.0	3.0	0.0	Horz	QP	0.0	40.6	46.0	-5.4	Tags removed
397.334	37.9	2.6	1.0	317.0	3.0	0.0	Horz	QP	0.0	40.5	46.0	-5.5	Tags removed
308.998	40.3	-0.2	1.0	317.0	3.0	0.0	Horz	QP	0.0	40.1	46.0	-5.9	Tags present
134.378	39.2	-3.1	1.0	178.0	3.0	0.0	Vert	QP	0.0	36.1	43.5	-7.4	Tags removed
63.882	39.8	-7.5	1.0	199.0	3.0	0.0	Vert	QP	0.0	32.3	40.0	-7.7	Tags removed
132.282	37.1	-3.1	1.0	0.0	3.0	0.0	Vert	QP	0.0	34.0	43.5	-9.5	Tags present
54.008	33.6	-4.3	4.0	167.0	3.0	0.0	Horz	QP	0.0	29.3	40.0	-10.7	Tags present
148.415	34.6	-2.9	1.0	322.0	3.0	0.0	Vert	QP	0.0	31.7	43.5	-11.8	Tags removed
61.456	32.8	-6.9	1.8	210.0	3.0	0.0	Vert	QP	0.0	25.9	40.0	-14.1	Tags present

CONCLUSION

Pass

Tested By

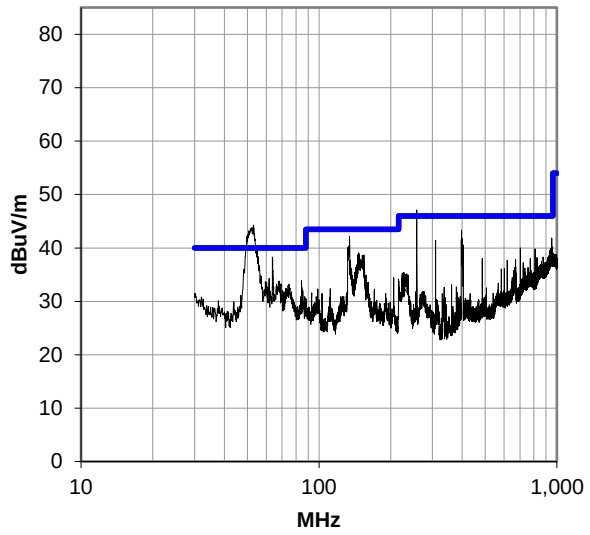
FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHz)

element
WTD.2025.03.25.0
EmiR5 2024.05.24.5
PSA-ESCI 2024.11.22.0

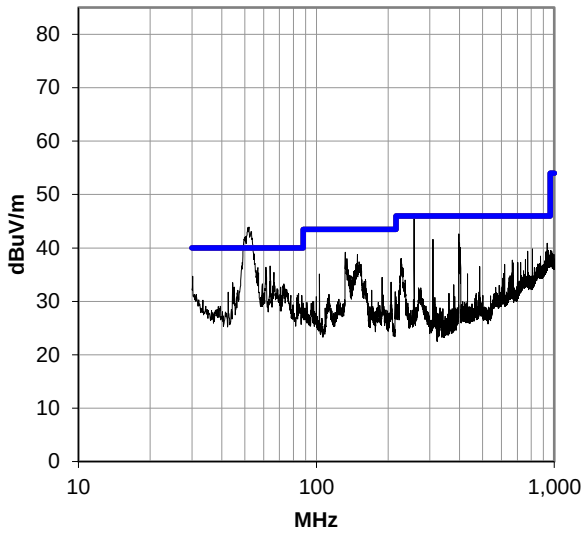
PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

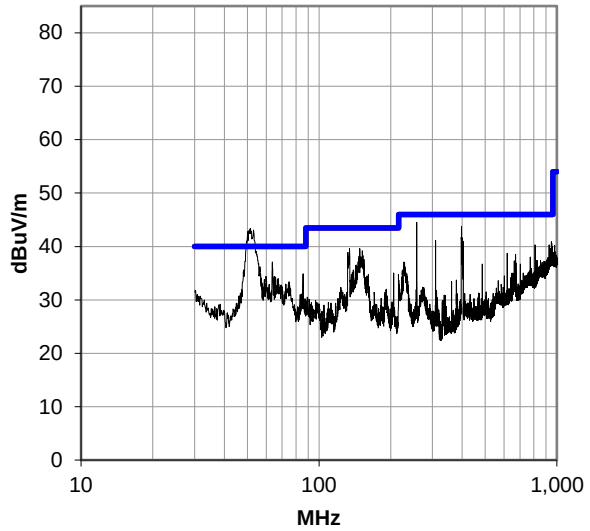
30-1000 MHz, Run 4: Radios Off – No RFID Tags



30-1000 MHz, Run 2: Radios On – With RFID Tags



30-1000 MHz, Run 3: Radios On – No RFID Tags



FREQUENCY STABILITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

TEST DESCRIPTION

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.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets. Testing was done while the EUT was continuously polling.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -20 ° to +50° C and at 10°C intervals.

The requirement of a frequency tolerance of ±0.01% is equivalent to 100 ppm
The formula to check for compliance is:

ppm = (Measured Frequency / Measured Nominal Frequency - 1) * 1,000,000

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2024-06-17	2025-06-17
DC Block	Fairview Microwave	SD3379	AMX	2025-03-21	2026-03-31
Attenuator	S.M. Electronics	SA26B-20	AWV	2025-03-21	2026-03-21
Attenuator	Fairview Microwave	18B5W-26	RFZ	2024-06-26	2025-06-26
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	2025-03-26	2026-03-26
Meter - Multimeter	Fluke	77 III	MMG	2025-01-28	2026-01-28
Transformer	Powerstat	236B	XFI	NCR	NCR
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-1-1-H/AC	TBI	NCR	NCR
Thermometer	Omegaette	HH311	DTY	2025-04-14	2026-04-14

FREQUENCY STABILITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	#1	Date:	2025-04-17
Customer:	3D Systems Corporation	Temperature:	19.6°C
Attendees:	Jaime Smith	Relative Humidity:	39.4%
Customer Project:	None	Bar. Pressure (PMSL):	1025 mbar
Tested By:	Jeff Alcoke	Job Site:	EV06
Power:	120VAC/60Hz	Configuration:	3DSY0191-3

COMMENTS

Due to the small size of the temperature chamber, a test fixture that contains all the radio equipment and radio control circuitry installed in the EUT was used to demonstrate compliance.

Extreme Voltage 115% = 138 VAC/60Hz, Extreme Voltage 85% = 102VAC/60Hz

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

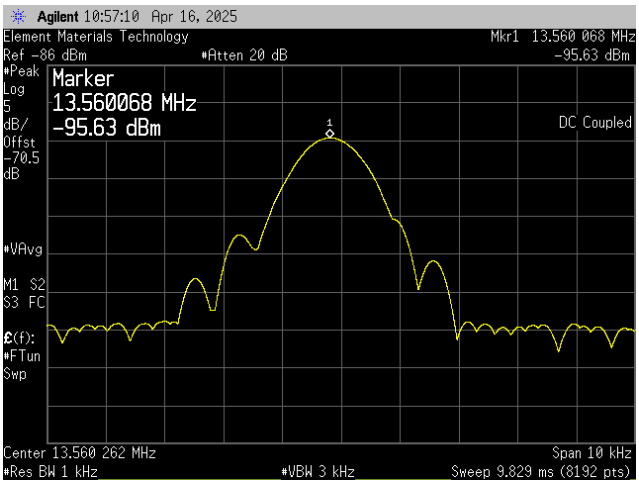
Tested By

TEST RESULTS

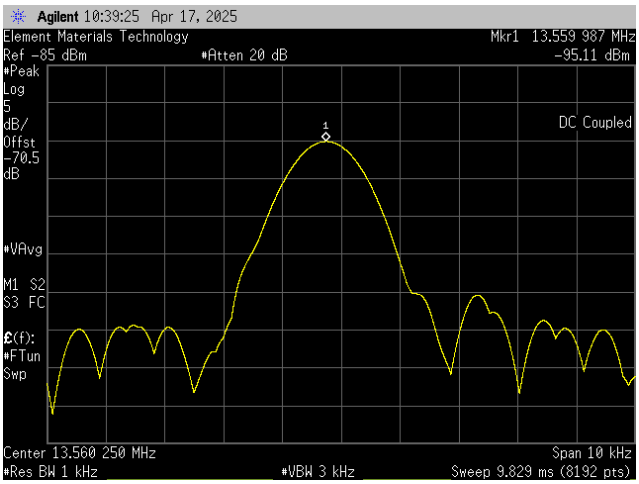
	Measured Value (MHz)	Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results
13.56 MHz RFID, ISO/IEC 15693, Radio 5					
Normal Conditions	13.560068	13.560068	0	100	Pass
Extreme Voltage 115%	13.560067	13.560068	0.07	100	Pass
Extreme Voltage 85%	13.560068	13.560068	0	100	Pass
Extreme Temperature +50°C	13.560046	13.560068	1.62	100	Pass
Extreme Temperature +40°C	13.560046	13.560068	1.62	100	Pass
Extreme Temperature +30°C	13.560067	13.560068	0.07	100	Pass
Extreme Temperature +20°C	13.560083	13.560068	1.11	100	Pass
Extreme Temperature +10°C	13.560096	13.560068	2.06	100	Pass
Extreme Temperature +0°C	13.560084	13.560068	1.18	100	Pass
Extreme Temperature -10°C	13.560056	13.560068	0.88	100	Pass
Extreme Temperature -20°C	13.559987	13.560068	5.97	100	Pass

FREQUENCY STABILITY

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0



13.56 MHz RFID, ISO/IEC 15693, Radio 5
Normal Conditions



13.56 MHz RFID, ISO/IEC 15693, Radio 5
Extreme Temperature -20°C

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

TEST DESCRIPTION

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.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth as defined in RSS-Gen.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2024-06-17	2025-06-17
Attenuator	S.M. Electronics	SA26B-20	AWV	2025-03-21	2026-03-21
Attenuator	Fairview Microwave	18B5W-26	RFZ	2024-06-26	2025-06-26
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	2025-03-26	2026-03-26
DC Block	Fairview Microwave	SD3379	AMX	2025-03-21	2026-03-31

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.10.31.2
WTD.2025.03.25.0

EUT:	NextDent 300	Work Order:	3DSY0191
Serial Number:	#1	Date:	2025-04-16
Customer:	3D Systems Corporation	Temperature:	20°C
Attendees:	Jaime Smith	Relative Humidity:	37.9%
Customer Project:	None	Bar. Pressure (PMSL):	1025 mbar
Tested By:	Jeff Alcoke	Job Site:	EV06
Power:	120VAC/60Hz	Configuration:	3DSY0191-3

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

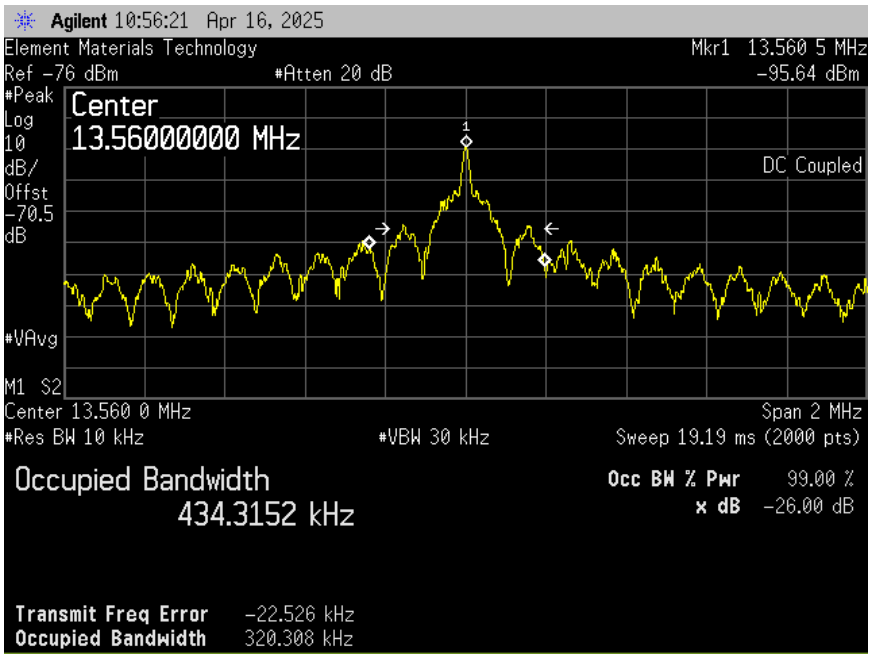
N/A

Tested By

TEST RESULTS

	Value	Limit	Result
13.56 MHz RFID, ISO/IEC 15693, Radio 5			
Normal Conditions	434.315 kHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)



13.56 MHz RFID, ISO/IEC 15693, Radio 5
Normal Conditions

End of Test Report