



Abbott Laboratories
Recapper Module SL Double

FCC 15.225:2023
RSS-210 Issue 10:2019+A1:2020
RSS-Gen Issue 5:2018+A1:2019+A2:2021
13.56 MHz Radio

Report: ABBO0283.2 Rev. 1, Issue Date: December 21, 2023

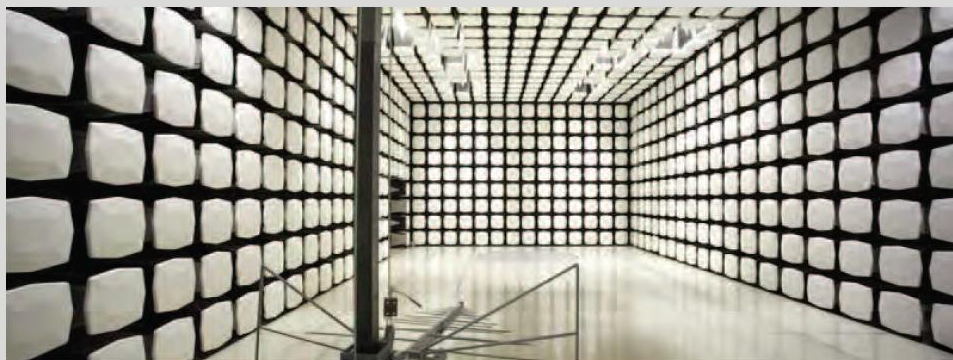


TABLE OF CONTENTS

Section	Page Number
Certificate of Test	3
Revision History	4
Accreditations.....	5
Facilities	6
Measurement Uncertainty	7
Test Setup Block Diagrams.....	8
Product Description.....	11
Power Settings and Antennas	12
Configurations	13
Modifications	16
Powerline Conducted Emissions.....	17
Field Strength of Fundamental	34
Field Strength of Spurious Emissions (Less Than 30 MHz)	45
Field Strength of Spurious Emissions (Greater Than 30 MHz).....	50
Frequency Stability.....	53
Emissions Bandwidth (20 dB)	67
Occupied Bandwidth	70
End of Report.....	73

CERTIFICATE OF TEST



Last Date of Test: October 18, 2023
Abbott Laboratories
EUT: Recapper Module SL Double

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2023	ANSI C63.10:2013
FCC 15.225:2023	
RSS-210 Issue 10:2019+A1:2020	
RSS-Gen Issue 5:2018+A1:2019+A2:2021	

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	
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	
Emissions Bandwidth (20 dB)	Pass	15.215(c)	N/A	6.9.2	
Occupied Bandwidth 99%	Pass	N/A	RSS-Gen 6.7	6.9.3	

Deviations From Test Standards

None

Approved By:

Adam Bruno, Operations Manager

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	Corrected misaligned ANSI section notations.	2023-12-21	3
	Added converted SRE data for RSS to existing module page.	2023-12-21	45-49

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.

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.

Vietnam

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

SCOPE

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

[California](#)

[Minnesota](#)

[Oregon](#)

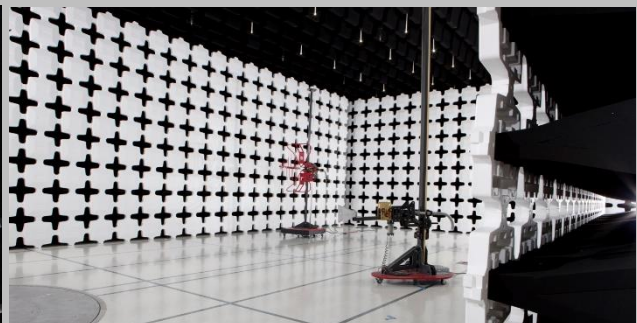
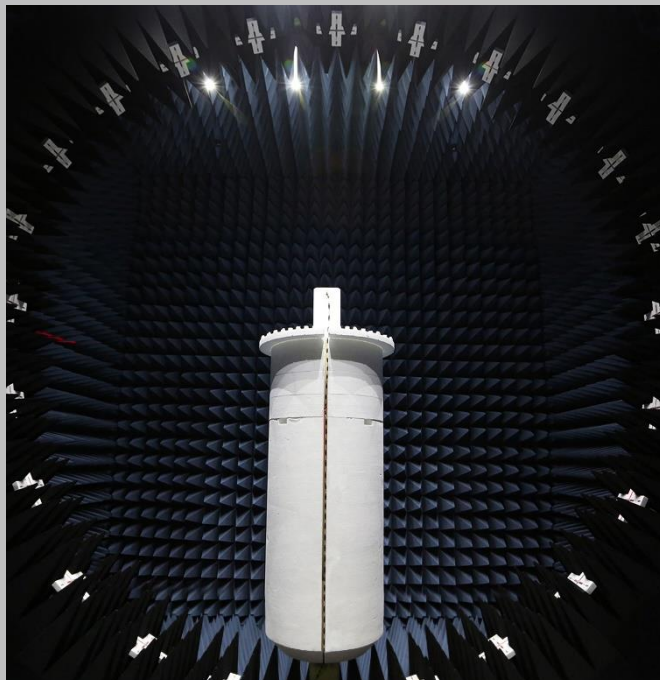
[Texas](#)

[Washington](#)

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425) 984-6600
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY

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 has been performed for each test per our internal quality document QM205.4.6. 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.

Test Location: Texas

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	3.1 dB	-3.1 dB

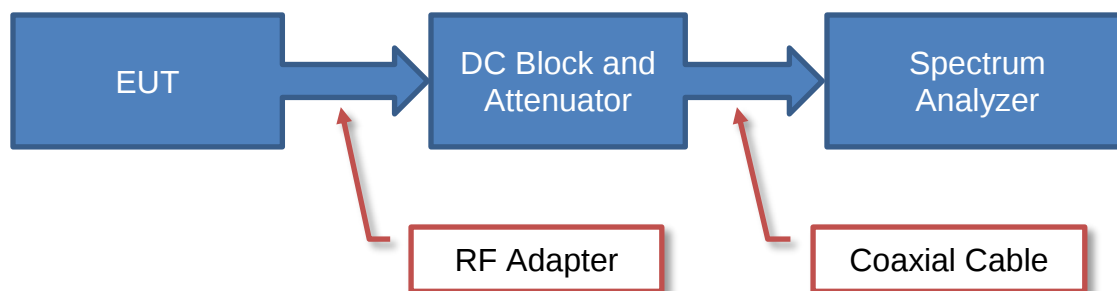
TEST SETUP BLOCK DIAGRAMS

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.

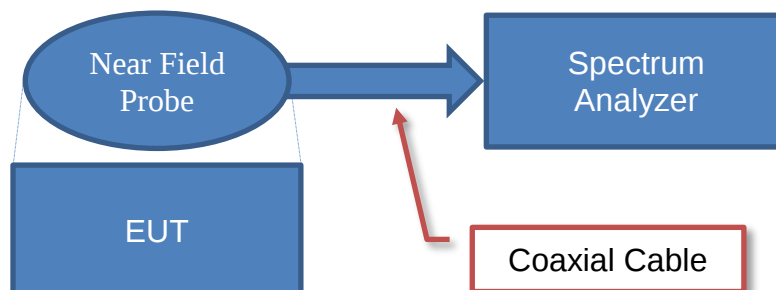
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

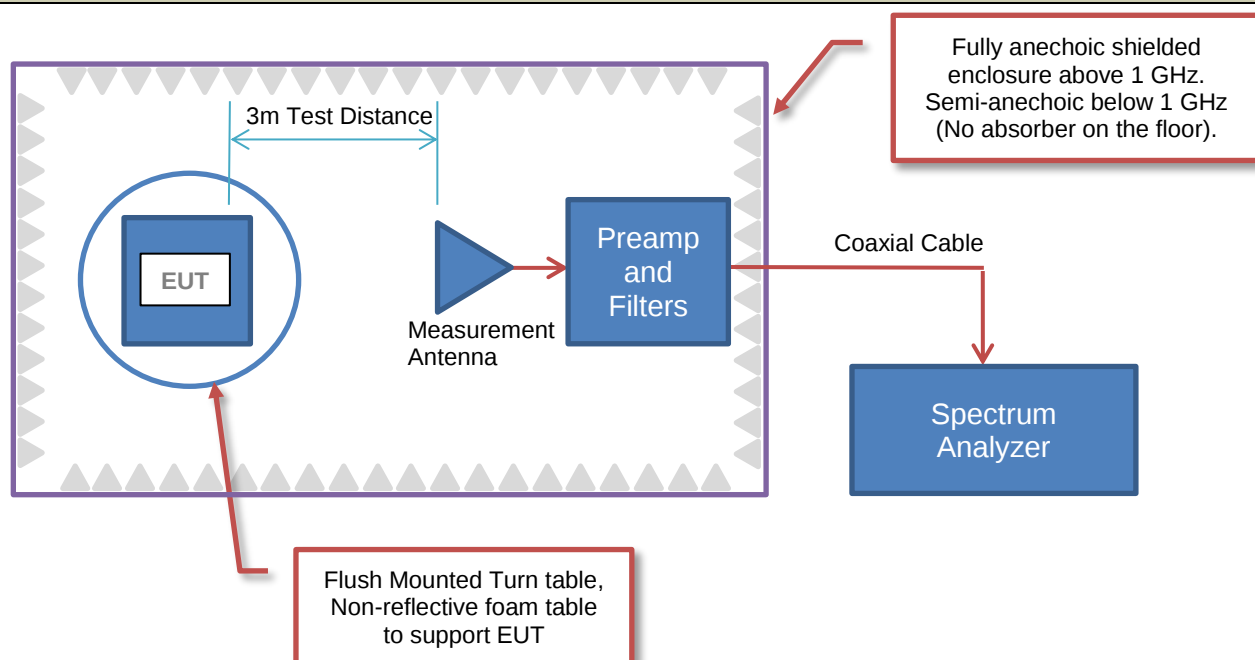


Sample Calculation (logarithmic units)

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			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

Conducted Emissions:

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

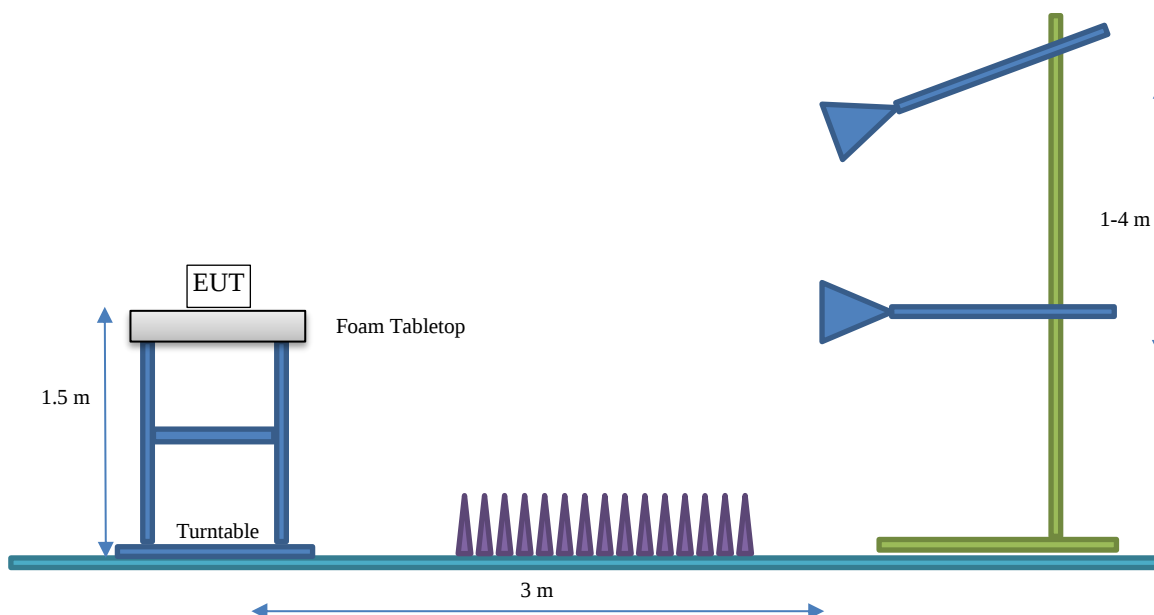
Radiated Power (ERP/EIRP) – Substitution Method:

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:	Abbott Laboratories
Address:	1921 Hurd Drive
City, State, Zip:	Irving, Texas 75038
Test Requested By:	Frank Sun
EUT:	Recapper Module SL Double
First Date of Test:	September 28, 2023
Last Date of Test:	October 18, 2023
Receipt Date of Samples:	September 28, 2023
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

This sample preparation module utilizes an internal robotic mechanism to secure conical plastic caps to close sample tubes carried to the module via CARs, before archiving via the track. The CARs are secured in the module while the recapping action is performed and released when action is completed. This module contains a total of 4 RFID readers including 2 Access Point (1 RFID reader) and 1 Cross Switch (2 RFID readers)

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 GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Dimensions
Embedded Loop Antenna, 2 Turns	GLP Systems	13.56 MHz	51mm x 35mm

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

- ☐ Test software settings Test software/firmware installed on EUT: _See_Configuration_____
- ☒ Rated power settings

POWER SETTING

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

*Power is set internally through product firmware at the default maximum.

*Antenna information/power setting is identical for each 13.56 MHz radio.

CONFIGURATIONS



Configuration ABBO0283-1

Software/Firmware Running During Test	
Description	Version
D000105502 AccessPoint RFID Test Firmware 02-47679 Verification	A
D000105499 CrossSwitch RFID Test Firmware 02-47679 Verification	A

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Recapper Module SL Double (RM)	Abbott Laboratories	06Q09-91	RMSL000023

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remover Module SL (REM)	Abbott Laboratories	06Q11-61	REMSL000019
Track Section 40	Abbott Laboratories	06Q43-61	None
Track Section 40	Abbott Laboratories	06Q43-61	None
Track Section 40	Abbott Laboratories	06Q43-61	None
Track End	Abbott Laboratories	06Q42-51	None
Track End	Abbott Laboratories	06Q42-51	None
Junction Box Assembly	Abbott Laboratories	06U35-06	None
Raspberry Pi	Raspberry Pi	3 Model B V1.2	None
Portable Battery Pack	Power Core	Power Core 26800	T74155A3
Car #1	Abbott Laboratories	04Z95-51	004 7749
Car #2	Abbott Laboratories	04Z95-51	005 8742

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power Cable	No	1.2m	No	AC Mains	Junction Box

CONFIGURATIONS

Configuration ABBO0283-2

Software/Firmware Running During Test	
Description	Version
D000105502 AccessPoint RFID Test Firmware 02-47679 Verification	A
D000105499 CrossSwitch RFID Test Firmware 02-47679 Verification	A

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Recapper Module SL Double (RM)	Abbott Laboratories	06Q09-91	RMSL000023

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Track Section 40	Abbott Laboratories	06Q43-61	None
Track Section 40	Abbott Laboratories	06Q43-61	None
Track Section 40	Abbott Laboratories	06Q43-61	None
Track End	Abbott Laboratories	06Q42-51	None
Track End	Abbott Laboratories	06Q42-51	None
Junction Box Assembly	Abbott Laboratories	06U35-06	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power Cable	No	1.2m	No	AC Mains	Junction Box

CONFIGURATIONS



Configuration ABBO0283-3

Software/Firmware Running During Test	
Description	Version
D000105502 AccessPoint RFID Test Firmware 02-47679 Verification	A
D000105499 CrossSwitch RFID Test Firmware 02-47679 Verification	A

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Recapper Module SL Double (RM)	Abbott Laboratories	06Q09-91	RMSL000023

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Junction Box Assembly	Abbott Laboratories	06U35-06	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power Cable	No	1.2m	No	AC Mains	Junction Box

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2023-09-28	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	2023-09-28	Field Strength of Spurious Emissions (Less Than 30 MHz)	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	2023-09-28	Field Strength of Spurious Emissions (Greater Than 30 MHz)	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	2023-10-06	Emissions Bandwidth (20 dB)	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	2023-10-06	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.
6	2023-10-10	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.
7	2023-10-18	Powerline Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

FCC KDB 174176 D01 AC Conducted FAQ v01r01, June 3, 2015 Section Q5:

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band.

All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2013.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESR7	ARI	2023-09-14	2024-09-14
Power Source/Analyzer	Hewlett Packard	6841A	THC	NCR	NCR
Cable - Conducted Cable Assembly	Northwest EMC	TXA, HFC, TQU, VAC	TXAA	2023-04-18	2024-04-18
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	2023-07-25	2024-07-25

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	3.1 dB	-3.1 dB

CONFIGURATIONS INVESTIGATED

ABBO0283-1

MODES INVESTIGATED

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 1 On
Continuous Transmit, RFID, 13.56 MHz, AccessPoint 2 On
Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 1) On
Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 2) On

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	21.4°C
Attendees:	Frank Sun	Relative Humidity:	38.2%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	29	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

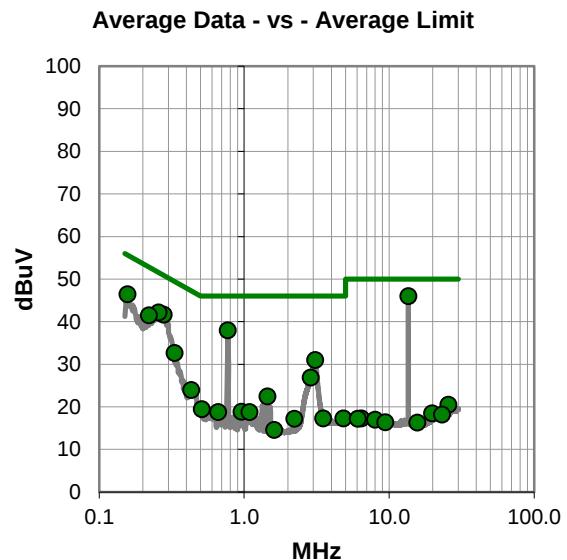
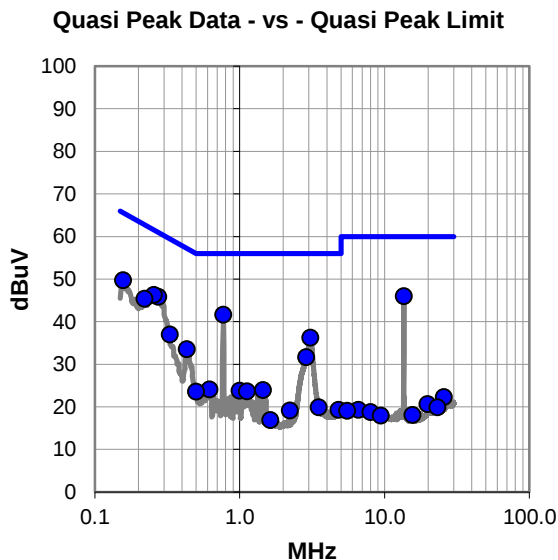
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 1 On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #29

Quasi Peak Data - vs - Quasi Peak Limit

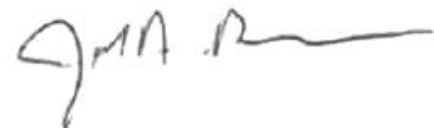
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	25.2	20.8	46.0	60.0	-14.0
0.770	21.5	20.2	41.7	56.0	-14.3
0.274	25.6	20.3	45.9	61.0	-15.1
0.256	25.8	20.5	46.3	61.6	-15.3
0.157	29.2	20.6	49.8	65.6	-15.8
0.220	24.8	20.6	45.4	62.8	-17.4
3.082	16.0	20.3	36.3	56.0	-19.7
0.330	16.8	20.2	37.0	59.5	-22.5
0.431	13.4	20.2	33.6	57.2	-23.6
2.880	11.4	20.3	31.7	56.0	-24.3
0.620	3.9	20.2	24.1	56.0	-31.9
1.448	3.8	20.2	24.0	56.0	-32.0
0.998	3.6	20.2	23.8	56.0	-32.2
1.124	3.5	20.2	23.7	56.0	-32.3
0.499	3.4	20.2	23.6	56.0	-32.4
3.510	-0.5	20.4	19.9	56.0	-36.1
4.819	-1.1	20.4	19.3	56.0	-36.7
2.218	-1.1	20.3	19.2	56.0	-36.8
25.600	0.2	22.1	22.3	60.0	-37.7
1.624	-3.3	20.2	16.9	56.0	-39.1
19.772	-0.6	21.3	20.7	60.0	-39.3
23.130	-1.7	21.6	19.9	60.0	-40.1
6.590	-1.1	20.4	19.3	60.0	-40.7
5.507	-1.3	20.4	19.1	60.0	-40.9
8.000	-1.7	20.5	18.8	60.0	-41.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	25.2	20.8	46.0	50.0	-4.0
0.770	17.8	20.2	38.0	46.0	-8.0
0.157	25.9	20.6	46.5	55.6	-9.1
0.278	21.4	20.3	41.7	50.9	-9.2
0.256	21.7	20.5	42.2	51.6	-9.4
0.220	20.9	20.6	41.5	52.8	-11.3
3.082	10.7	20.3	31.0	46.0	-15.0
0.330	12.5	20.2	32.7	49.5	-16.8
2.880	6.6	20.3	26.9	46.0	-19.1
0.430	3.8	20.2	24.0	47.3	-23.3
1.448	2.3	20.2	22.5	46.0	-23.5
0.510	-0.7	20.2	19.5	46.0	-26.5
0.960	-1.3	20.2	18.9	46.0	-27.1
0.661	-1.4	20.2	18.8	46.0	-27.2
1.090	-1.4	20.2	18.8	46.0	-27.2
3.510	-3.1	20.4	17.3	46.0	-28.7
4.819	-3.1	20.4	17.3	46.0	-28.7
2.218	-3.1	20.3	17.2	46.0	-28.8
25.600	-1.6	22.1	20.5	50.0	-29.5
1.606	-5.6	20.2	14.6	46.0	-31.4
19.772	-2.8	21.3	18.5	50.0	-31.5
23.129	-3.4	21.6	18.2	50.0	-31.8
6.425	-3.1	20.4	17.3	50.0	-32.7
6.070	-3.2	20.4	17.2	50.0	-32.8
8.000	-3.5	20.5	17.0	50.0	-33.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	21.4°C
Attendees:	Frank Sun	Relative Humidity:	38.2%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	30	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

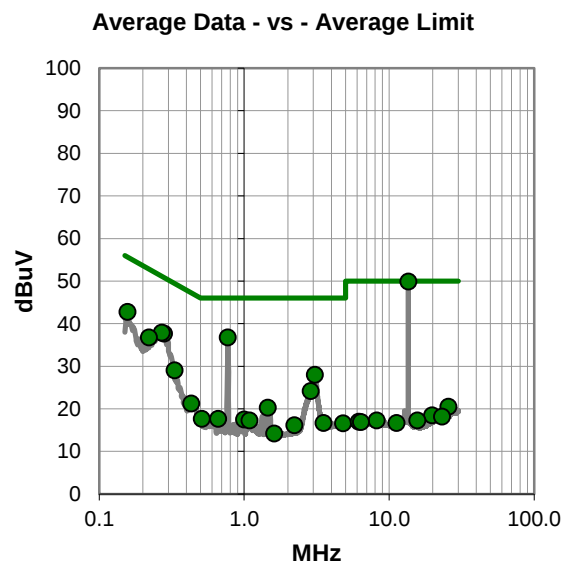
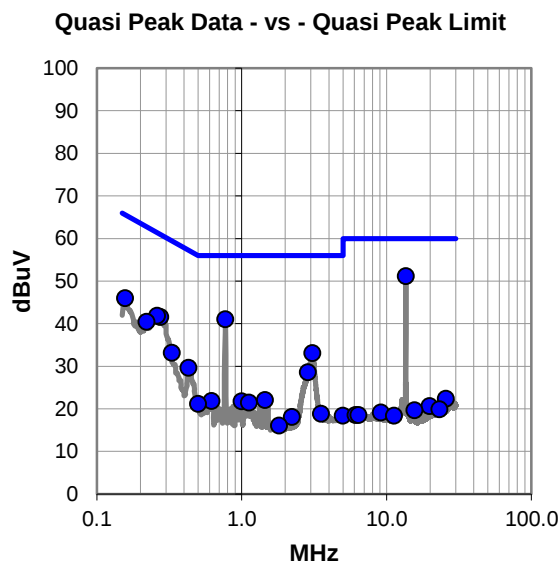
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 1 On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #30

Quasi Peak Data - vs - Quasi Peak Limit

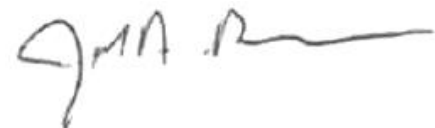
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	30.4	20.8	51.2	60.0	-8.8
0.770	20.9	20.2	41.1	56.0	-14.9
0.274	21.3	20.3	41.6	61.0	-19.4
0.260	21.5	20.4	41.9	61.4	-19.5
0.157	25.4	20.6	46.0	65.6	-19.6
0.220	19.9	20.6	40.5	62.8	-22.3
3.082	12.8	20.3	33.1	56.0	-22.9
0.330	13.0	20.2	33.2	59.5	-26.3
2.870	8.3	20.3	28.6	56.0	-27.4
0.430	9.5	20.2	29.7	57.3	-27.6
1.450	1.9	20.2	22.1	56.0	-33.9
0.620	1.7	20.2	21.9	56.0	-34.1
0.998	1.6	20.2	21.8	56.0	-34.2
1.124	1.3	20.2	21.5	56.0	-34.5
0.499	1.0	20.2	21.2	56.0	-34.8
3.530	-1.5	20.4	18.9	56.0	-37.1
4.994	-2.0	20.4	18.4	56.0	-37.6
25.600	0.3	22.1	22.4	60.0	-37.6
2.220	-2.2	20.3	18.1	56.0	-37.9
19.770	-0.6	21.3	20.7	60.0	-39.3
1.810	-4.2	20.3	16.1	56.0	-39.9
23.129	-1.7	21.6	19.9	60.0	-40.1
15.620	-1.2	20.9	19.7	60.0	-40.3
9.150	-1.4	20.6	19.2	60.0	-40.8
6.124	-1.8	20.4	18.6	60.0	-41.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	29.1	20.8	49.9	50.0	-0.1
0.770	16.6	20.2	36.8	46.0	-9.2
0.157	22.2	20.6	42.8	55.6	-12.8
0.280	17.4	20.3	37.7	50.8	-13.1
0.270	17.6	20.3	37.9	51.1	-13.2
0.220	16.2	20.6	36.8	52.8	-16.0
3.070	7.7	20.3	28.0	46.0	-18.0
0.330	8.9	20.2	29.1	49.5	-20.4
2.870	3.9	20.3	24.2	46.0	-21.8
1.450	0.1	20.2	20.3	46.0	-25.7
0.430	1.1	20.2	21.3	47.3	-26.0
0.510	-2.5	20.2	17.7	46.0	-28.3
0.661	-2.5	20.2	17.7	46.0	-28.3
0.998	-2.7	20.2	17.5	46.0	-28.5
1.090	-2.9	20.2	17.3	46.0	-28.7
3.530	-3.7	20.4	16.7	46.0	-29.3
4.814	-3.8	20.4	16.6	46.0	-29.4
25.600	-1.6	22.1	20.5	50.0	-29.5
2.220	-4.1	20.3	16.2	46.0	-29.8
19.768	-2.8	21.3	18.5	50.0	-31.5
1.606	-6.0	20.2	14.2	46.0	-31.8
23.129	-3.4	21.6	18.2	50.0	-31.8
8.212	-3.2	20.5	17.3	50.0	-32.7
15.620	-3.6	20.9	17.3	50.0	-32.7
6.160	-3.4	20.4	17.0	50.0	-33.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	21.4°C
Attendees:	Frank Sun	Relative Humidity:	38.2%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	31	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

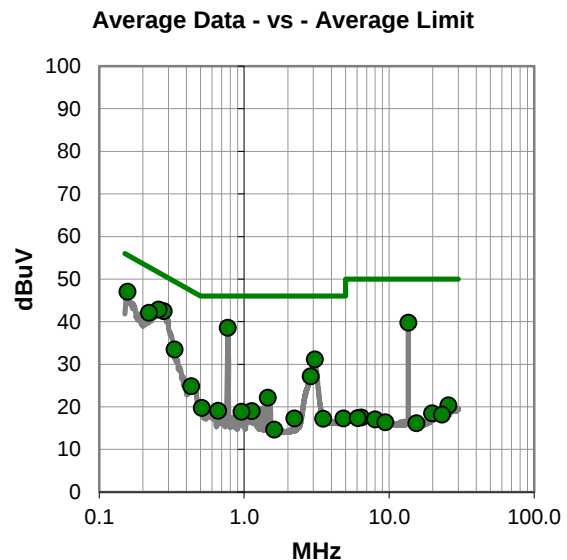
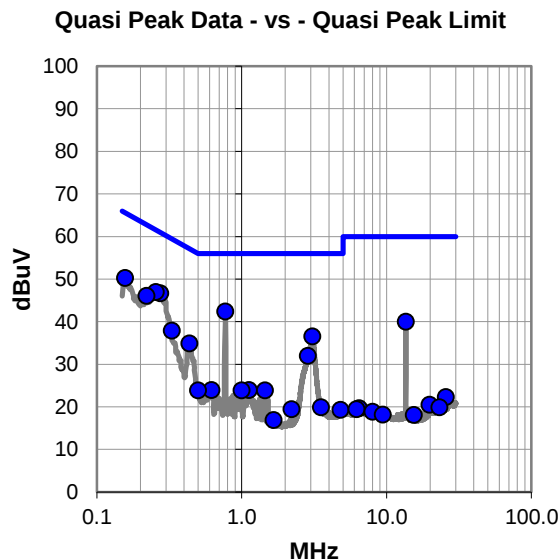
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 2 On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #31

Quasi Peak Data - vs - Quasi Peak Limit

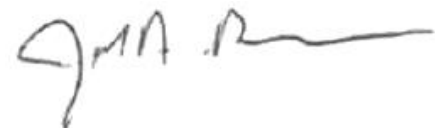
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	22.2	20.2	42.4	56.0	-13.6
0.274	26.4	20.3	46.7	61.0	-14.3
0.256	26.5	20.5	47.0	61.6	-14.6
0.157	29.7	20.6	50.3	65.6	-15.3
0.220	25.5	20.6	46.1	62.8	-16.7
3.082	16.3	20.3	36.6	56.0	-19.4
13.560	19.2	20.8	40.0	60.0	-20.0
0.330	17.7	20.2	37.9	59.5	-21.6
0.436	14.7	20.2	34.9	57.1	-22.2
2.870	11.7	20.3	32.0	56.0	-24.0
0.620	3.8	20.2	24.0	56.0	-32.0
1.124	3.8	20.2	24.0	56.0	-32.0
0.499	3.7	20.2	23.9	56.0	-32.1
1.000	3.7	20.2	23.9	56.0	-32.1
1.450	3.7	20.2	23.9	56.0	-32.1
3.523	-0.5	20.4	19.9	56.0	-36.1
2.213	-0.8	20.3	19.5	56.0	-36.5
4.819	-1.1	20.4	19.3	56.0	-36.7
25.600	0.2	22.1	22.3	60.0	-37.7
1.660	-3.3	20.2	16.9	56.0	-39.1
19.770	-0.8	21.3	20.5	60.0	-39.5
23.130	-1.7	21.6	19.9	60.0	-40.1
6.450	-0.7	20.4	19.7	60.0	-40.3
6.205	-0.9	20.4	19.5	60.0	-40.5
8.000	-1.6	20.5	18.9	60.0	-41.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	18.4	20.2	38.6	46.0	-7.4
0.278	22.2	20.3	42.5	50.9	-8.4
0.157	26.5	20.6	47.1	55.6	-8.5
0.256	22.4	20.5	42.9	51.6	-8.7
13.560	19.0	20.8	39.8	50.0	-10.2
0.220	21.5	20.6	42.1	52.8	-10.7
3.070	10.9	20.3	31.2	46.0	-14.8
0.330	13.3	20.2	33.5	49.5	-16.0
2.870	6.9	20.3	27.2	46.0	-18.8
0.430	4.7	20.2	24.9	47.3	-22.4
1.450	2.0	20.2	22.2	46.0	-23.8
0.510	-0.4	20.2	19.8	46.0	-26.2
0.661	-1.1	20.2	19.1	46.0	-26.9
1.124	-1.2	20.2	19.0	46.0	-27.0
0.960	-1.3	20.2	18.9	46.0	-27.1
2.213	-3.0	20.3	17.3	46.0	-28.7
4.820	-3.1	20.4	17.3	46.0	-28.7
3.510	-3.2	20.4	17.2	46.0	-28.8
25.600	-1.7	22.1	20.4	50.0	-29.6
1.610	-5.5	20.2	14.7	46.0	-31.3
19.770	-2.8	21.3	18.5	50.0	-31.5
23.129	-3.4	21.6	18.2	50.0	-31.8
6.420	-2.9	20.4	17.5	50.0	-32.5
6.074	-3.0	20.4	17.4	50.0	-32.6
8.000	-3.4	20.5	17.1	50.0	-32.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	21.4°C
Attendees:	Frank Sun	Relative Humidity:	38.2%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	32	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

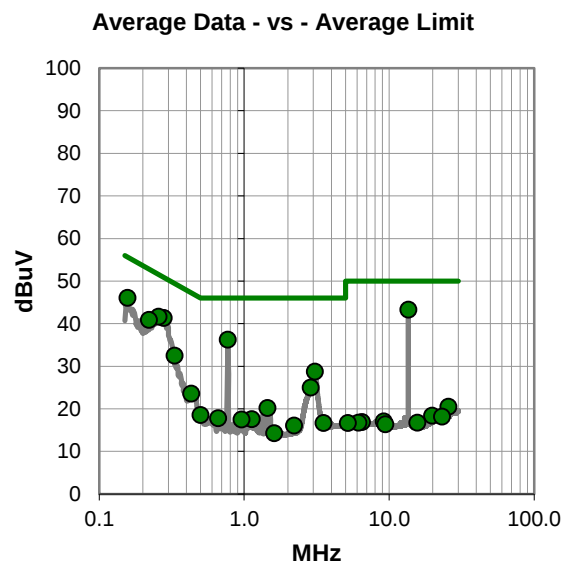
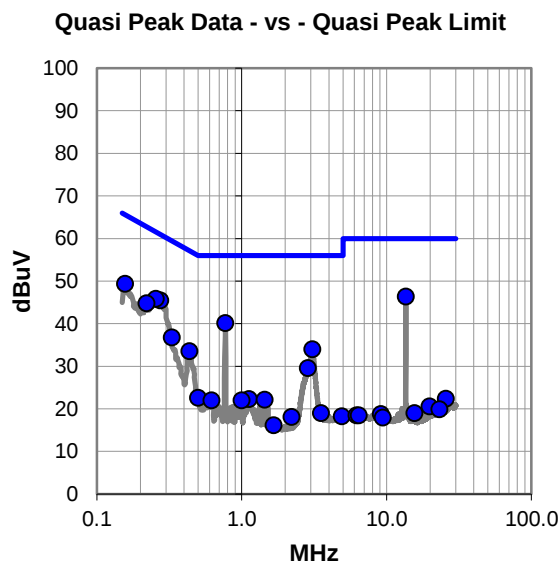
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 2 On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #32

Quasi Peak Data - vs - Quasi Peak Limit

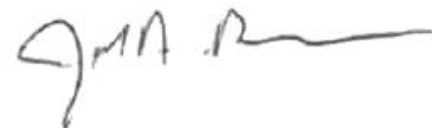
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	25.6	20.8	46.4	60.0	-13.6
0.274	25.2	20.3	45.5	61.0	-15.5
0.256	25.4	20.5	45.9	61.6	-15.7
0.770	20.0	20.2	40.2	56.0	-15.8
0.157	28.8	20.6	49.4	65.6	-16.2
0.220	24.2	20.6	44.8	62.8	-18.0
3.082	13.7	20.3	34.0	56.0	-22.0
0.330	16.6	20.2	36.8	59.5	-22.7
0.436	13.4	20.2	33.6	57.1	-23.5
2.870	9.3	20.3	29.6	56.0	-26.4
0.499	2.4	20.2	22.6	56.0	-33.4
1.124	2.1	20.2	22.3	56.0	-33.7
1.444	2.0	20.2	22.2	56.0	-33.8
0.620	1.8	20.2	22.0	56.0	-34.0
0.998	1.8	20.2	22.0	56.0	-34.0
3.530	-1.4	20.4	19.0	56.0	-37.0
25.600	0.3	22.1	22.4	60.0	-37.6
4.904	-2.1	20.4	18.3	56.0	-37.7
2.210	-2.2	20.3	18.1	56.0	-37.9
19.770	-0.7	21.3	20.6	60.0	-39.4
1.660	-4.0	20.2	16.2	56.0	-39.8
23.129	-1.7	21.6	19.9	60.0	-40.1
15.620	-1.9	20.9	19.0	60.0	-41.0
9.148	-1.8	20.6	18.8	60.0	-41.2
6.214	-1.9	20.4	18.5	60.0	-41.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	22.5	20.8	43.3	50.0	-6.7
0.157	25.5	20.6	46.1	55.6	-9.5
0.278	21.1	20.3	41.4	50.9	-9.5
0.770	16.1	20.2	36.3	46.0	-9.7
0.256	21.2	20.5	41.7	51.6	-9.9
0.220	20.3	20.6	40.9	52.8	-11.9
0.330	12.3	20.2	32.5	49.5	-17.0
3.070	8.5	20.3	28.8	46.0	-17.2
2.870	4.7	20.3	25.0	46.0	-21.0
0.430	3.4	20.2	23.6	47.3	-23.7
1.444	0.0	20.2	20.2	46.0	-25.8
0.499	-1.6	20.2	18.6	46.0	-27.4
0.661	-2.4	20.2	17.8	46.0	-28.2
1.124	-2.6	20.2	17.6	46.0	-28.4
0.960	-2.7	20.2	17.5	46.0	-28.5
3.530	-3.7	20.4	16.7	46.0	-29.3
25.600	-1.6	22.1	20.5	50.0	-29.5
2.210	-4.2	20.3	16.1	46.0	-29.9
19.763	-2.9	21.3	18.4	50.0	-31.6
1.606	-5.9	20.2	14.3	46.0	-31.7
23.130	-3.4	21.6	18.2	50.0	-31.8
9.150	-3.5	20.6	17.1	50.0	-32.9
6.488	-3.5	20.4	16.9	50.0	-33.1
6.140	-3.6	20.4	16.8	50.0	-33.2
15.620	-4.1	20.9	16.8	50.0	-33.2

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	19.9°C
Attendees:	Frank Sun	Relative Humidity:	41.3%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	33	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

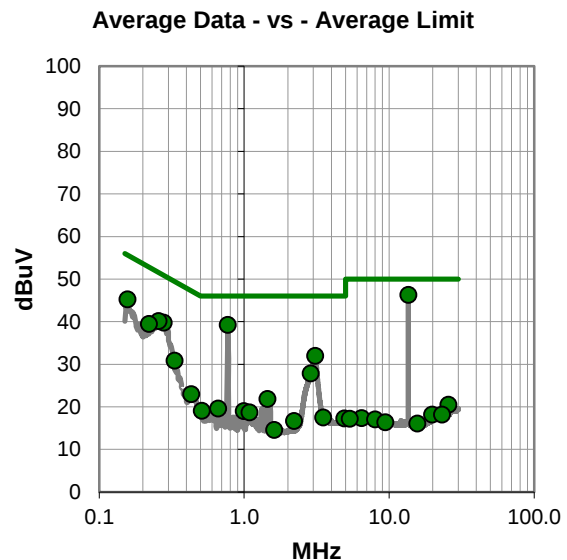
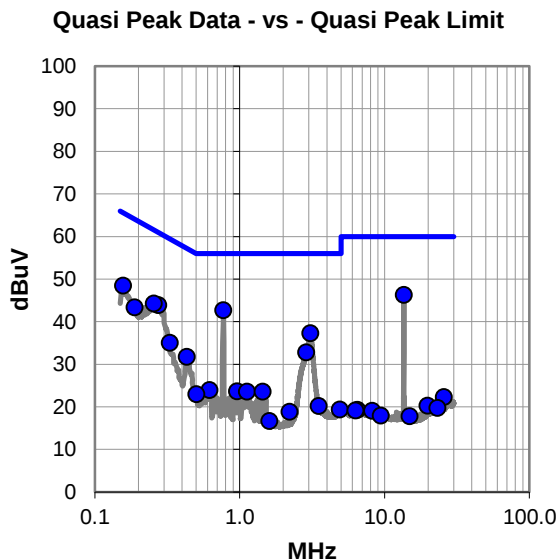
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 1) On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #33

Quasi Peak Data - vs - Quasi Peak Limit

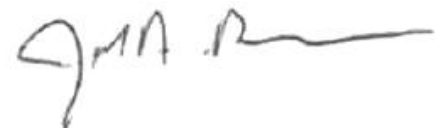
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	22.5	20.2	42.7	56.0	-13.3
13.560	25.5	20.8	46.3	60.0	-13.7
0.157	27.9	20.6	48.5	65.6	-17.1
0.274	23.6	20.3	43.9	61.0	-17.1
0.256	23.8	20.5	44.3	61.6	-17.3
3.082	17.0	20.3	37.3	56.0	-18.7
0.188	22.7	20.7	43.4	64.1	-20.7
2.880	12.5	20.3	32.8	56.0	-23.2
0.330	14.9	20.2	35.1	59.5	-24.4
0.431	11.6	20.2	31.8	57.2	-25.4
0.620	3.8	20.2	24.0	56.0	-32.0
0.960	3.5	20.2	23.7	56.0	-32.3
1.124	3.4	20.2	23.6	56.0	-32.4
1.444	3.4	20.2	23.6	56.0	-32.4
0.503	2.8	20.2	23.0	56.0	-33.0
3.510	-0.2	20.4	20.2	56.0	-35.8
4.913	-1.0	20.4	19.4	56.0	-36.6
2.210	-1.4	20.3	18.9	56.0	-37.1
25.600	0.2	22.1	22.3	60.0	-37.7
1.606	-3.5	20.2	16.7	56.0	-39.3
19.760	-1.0	21.3	20.3	60.0	-39.7
23.130	-1.8	21.6	19.8	60.0	-40.2
6.506	-1.1	20.4	19.3	60.0	-40.7
6.290	-1.2	20.4	19.2	60.0	-40.8
8.212	-1.4	20.5	19.1	60.0	-40.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	25.5	20.8	46.3	50.0	-3.7
0.770	19.1	20.2	39.3	46.0	-6.7
0.157	24.7	20.6	45.3	55.6	-10.3
0.278	19.5	20.3	39.8	50.9	-11.1
0.256	19.7	20.5	40.2	51.6	-11.4
0.220	18.9	20.6	39.5	52.8	-13.3
3.082	11.7	20.3	32.0	46.0	-14.0
2.870	7.6	20.3	27.9	46.0	-18.1
0.330	10.7	20.2	30.9	49.5	-18.6
1.444	1.7	20.2	21.9	46.0	-24.1
0.430	2.8	20.2	23.0	47.3	-24.3
0.661	-0.6	20.2	19.6	46.0	-26.4
0.510	-1.1	20.2	19.1	46.0	-26.9
0.990	-1.2	20.2	19.0	46.0	-27.0
1.088	-1.5	20.2	18.7	46.0	-27.3
3.510	-2.9	20.4	17.5	46.0	-28.5
4.904	-3.1	20.4	17.3	46.0	-28.7
2.209	-3.6	20.3	16.7	46.0	-29.3
25.600	-1.6	22.1	20.5	50.0	-29.5
1.606	-5.6	20.2	14.6	46.0	-31.4
19.760	-3.1	21.3	18.2	50.0	-31.8
23.129	-3.4	21.6	18.2	50.0	-31.8
6.470	-3.0	20.4	17.4	50.0	-32.6
5.350	-3.2	20.4	17.2	50.0	-32.8
8.000	-3.4	20.5	17.1	50.0	-32.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	19.9°C
Attendees:	Frank Sun	Relative Humidity:	41.3%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	34	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

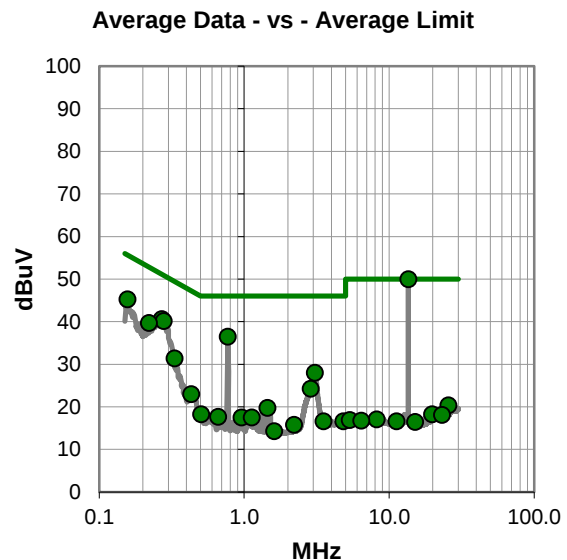
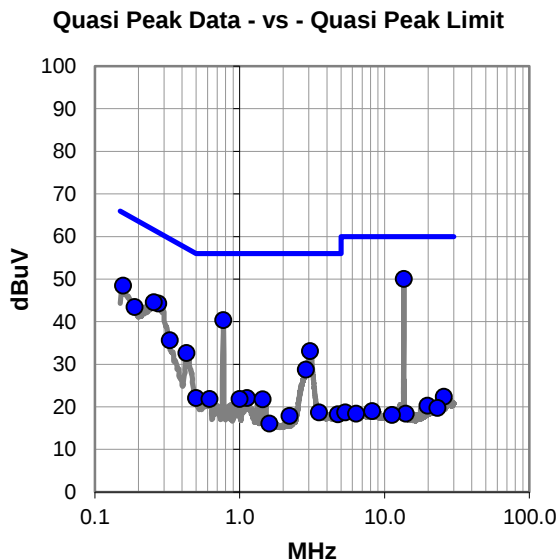
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 1) On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #34

Quasi Peak Data - vs - Quasi Peak Limit

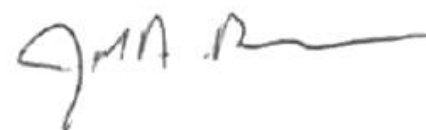
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	29.3	20.8	50.1	60.0	-9.9
0.770	20.2	20.2	40.4	56.0	-15.6
0.274	24.0	20.3	44.3	61.0	-16.7
0.256	24.1	20.5	44.6	61.6	-17.0
0.157	27.9	20.6	48.5	65.6	-17.1
0.188	22.8	20.7	43.5	64.1	-20.6
3.064	12.8	20.3	33.1	56.0	-22.9
0.330	15.5	20.2	35.7	59.5	-23.8
0.430	12.5	20.2	32.7	57.3	-24.6
2.870	8.5	20.3	28.8	56.0	-27.2
0.499	1.9	20.2	22.1	56.0	-33.9
1.124	1.9	20.2	22.1	56.0	-33.9
0.620	1.7	20.2	21.9	56.0	-34.1
0.998	1.7	20.2	21.9	56.0	-34.1
1.440	1.6	20.2	21.8	56.0	-34.2
3.530	-1.7	20.4	18.7	56.0	-37.3
25.600	0.3	22.1	22.4	60.0	-37.6
4.760	-2.1	20.4	18.3	56.0	-37.7
2.209	-2.4	20.3	17.9	56.0	-38.1
19.759	-1.0	21.3	20.3	60.0	-39.7
1.606	-4.1	20.2	16.1	56.0	-39.9
23.130	-1.8	21.6	19.8	60.0	-40.2
8.212	-1.5	20.5	19.0	60.0	-41.0
5.350	-1.7	20.4	18.7	60.0	-41.3
6.350	-2.0	20.4	18.4	60.0	-41.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	29.2	20.8	50.0	50.0	0.0
0.770	16.3	20.2	36.5	46.0	-9.5
0.157	24.7	20.6	45.3	55.6	-10.3
0.270	20.3	20.3	40.6	51.1	-10.5
0.278	19.9	20.3	40.2	50.9	-10.7
0.220	19.1	20.6	39.7	52.8	-13.1
3.064	7.7	20.3	28.0	46.0	-18.0
0.330	11.2	20.2	31.4	49.5	-18.1
2.870	4.0	20.3	24.3	46.0	-21.7
0.430	2.8	20.2	23.0	47.3	-24.3
1.444	-0.4	20.2	19.8	46.0	-26.2
0.503	-1.9	20.2	18.3	46.0	-27.7
0.661	-2.5	20.2	17.7	46.0	-28.3
0.960	-2.7	20.2	17.5	46.0	-28.5
1.124	-2.7	20.2	17.5	46.0	-28.5
3.530	-3.8	20.4	16.6	46.0	-29.4
4.819	-3.8	20.4	16.6	46.0	-29.4
25.600	-1.7	22.1	20.4	50.0	-29.6
2.209	-4.5	20.3	15.8	46.0	-30.2
1.606	-5.9	20.2	14.3	46.0	-31.7
19.760	-3.0	21.3	18.3	50.0	-31.7
23.130	-3.5	21.6	18.1	50.0	-31.9
8.212	-3.4	20.5	17.1	50.0	-32.9
5.350	-3.5	20.4	16.9	50.0	-33.1
6.407	-3.6	20.4	16.8	50.0	-33.2

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	19.9°C
Attendees:	Frank Sun	Relative Humidity:	41.3%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	35	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

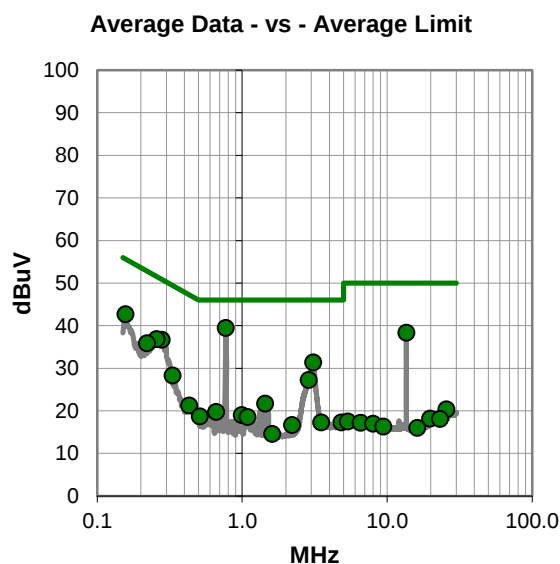
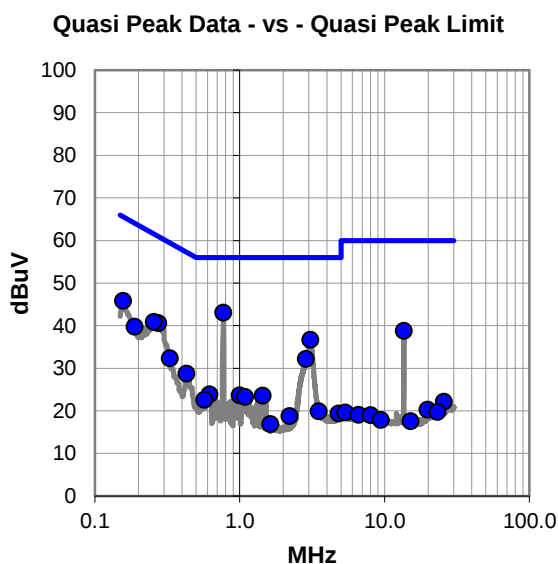
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 2) On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #35

Quasi Peak Data - vs - Quasi Peak Limit

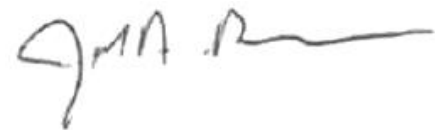
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	22.9	20.2	43.1	56.0	-12.9
3.082	16.4	20.3	36.7	56.0	-19.3
0.157	25.3	20.6	45.9	65.6	-19.7
0.274	20.3	20.3	40.6	61.0	-20.4
0.256	20.4	20.5	40.9	61.6	-20.7
13.560	18.0	20.8	38.8	60.0	-21.2
2.870	11.9	20.3	32.2	56.0	-23.8
0.188	19.1	20.7	39.8	64.1	-24.3
0.330	12.2	20.2	32.4	59.5	-27.1
0.430	8.6	20.2	28.8	57.3	-28.5
0.620	3.7	20.2	23.9	56.0	-32.1
0.998	3.5	20.2	23.7	56.0	-32.3
1.440	3.4	20.2	23.6	56.0	-32.4
1.090	3.1	20.2	23.3	56.0	-32.7
0.571	2.4	20.2	22.6	56.0	-33.4
3.510	-0.5	20.4	19.9	56.0	-36.1
4.820	-1.0	20.4	19.4	56.0	-36.6
2.210	-1.5	20.3	18.8	56.0	-37.2
25.600	0.1	22.1	22.2	60.0	-37.8
1.624	-3.3	20.2	16.9	56.0	-39.1
19.759	-1.0	21.3	20.3	60.0	-39.7
23.130	-1.8	21.6	19.8	60.0	-40.2
5.350	-0.8	20.4	19.6	60.0	-40.4
6.605	-1.3	20.4	19.1	60.0	-40.9
8.000	-1.5	20.5	19.0	60.0	-41.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	19.3	20.2	39.5	46.0	-6.5
13.560	17.6	20.8	38.4	50.0	-11.6
0.157	22.1	20.6	42.7	55.6	-12.9
0.278	16.4	20.3	36.7	50.9	-14.2
3.082	11.1	20.3	31.4	46.0	-14.6
0.256	16.4	20.5	36.9	51.6	-14.7
0.220	15.3	20.6	35.9	52.8	-16.9
2.870	7.0	20.3	27.3	46.0	-18.7
0.330	8.1	20.2	28.3	49.5	-21.2
1.440	1.5	20.2	21.7	46.0	-24.3
0.430	1.1	20.2	21.3	47.3	-26.0
0.661	-0.4	20.2	19.8	46.0	-26.2
0.990	-1.2	20.2	19.0	46.0	-27.0
0.510	-1.5	20.2	18.7	46.0	-27.3
1.088	-1.6	20.2	18.6	46.0	-27.4
3.514	-3.1	20.4	17.3	46.0	-28.7
4.820	-3.1	20.4	17.3	46.0	-28.7
2.210	-3.6	20.3	16.7	46.0	-29.3
25.600	-1.7	22.1	20.4	50.0	-29.6
1.606	-5.6	20.2	14.6	46.0	-31.4
19.759	-3.1	21.3	18.2	50.0	-31.8
23.130	-3.5	21.6	18.1	50.0	-31.9
5.350	-2.9	20.4	17.5	50.0	-32.5
6.540	-3.2	20.4	17.2	50.0	-32.8
8.000	-3.5	20.5	17.0	50.0	-33.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-18
Customer:	Abbott Laboratories	Temperature:	19.9°C
Attendees:	Frank Sun	Relative Humidity:	41.3%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Jarrod Brenden	Job Site:	TX01
Power:	220VAC/60Hz	Configuration:	ABBO0283-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	36	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

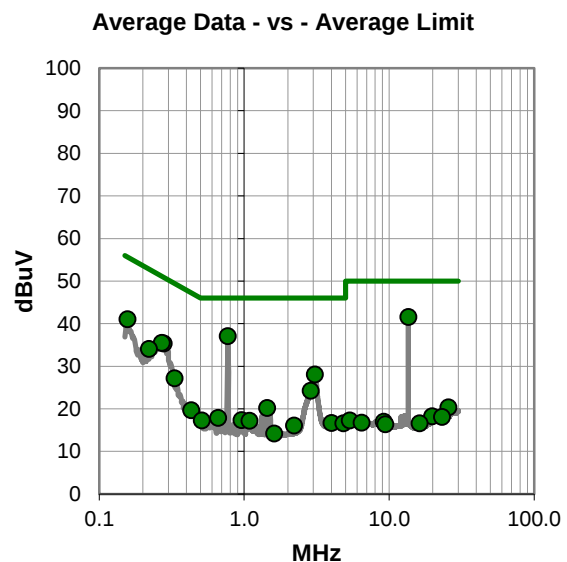
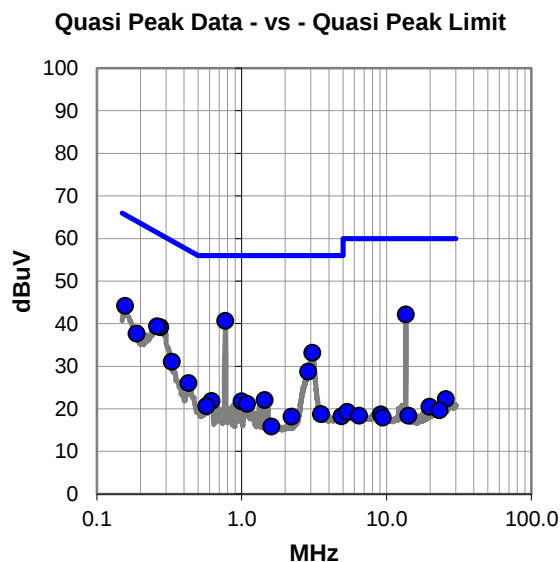
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 2) On

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #36

Quasi Peak Data - vs - Quasi Peak Limit

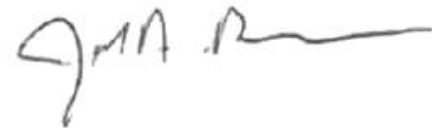
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	20.5	20.2	40.7	56.0	-15.3
13.560	21.4	20.8	42.2	60.0	-17.8
0.157	23.6	20.6	44.2	65.6	-21.4
0.274	18.9	20.3	39.2	61.0	-21.8
0.260	19.0	20.4	39.4	61.4	-22.0
3.082	12.9	20.3	33.2	56.0	-22.8
0.188	17.0	20.7	37.7	64.1	-26.4
2.880	8.5	20.3	28.8	56.0	-27.2
0.330	10.9	20.2	31.1	59.5	-28.4
0.430	5.9	20.2	26.1	57.3	-31.2
1.440	1.9	20.2	22.1	56.0	-33.9
0.620	1.7	20.2	21.9	56.0	-34.1
1.000	1.6	20.2	21.8	56.0	-34.2
1.088	1.0	20.2	21.2	56.0	-34.8
0.571	0.5	20.2	20.7	56.0	-35.3
3.527	-1.6	20.4	18.8	56.0	-37.2
4.882	-2.1	20.4	18.3	56.0	-37.7
25.600	0.2	22.1	22.3	60.0	-37.7
2.210	-2.1	20.3	18.2	56.0	-37.8
19.759	-0.8	21.3	20.5	60.0	-39.5
1.606	-4.3	20.2	15.9	56.0	-40.1
23.129	-1.9	21.6	19.7	60.0	-40.3
5.350	-1.1	20.4	19.3	60.0	-40.7
9.157	-1.9	20.6	18.7	60.0	-41.3
6.470	-2.0	20.4	18.4	60.0	-41.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	20.8	20.8	41.6	50.0	-8.4
0.770	16.9	20.2	37.1	46.0	-8.9
0.157	20.5	20.6	41.1	55.6	-14.5
0.278	15.1	20.3	35.4	50.9	-15.5
0.270	15.2	20.3	35.5	51.1	-15.6
3.070	7.8	20.3	28.1	46.0	-17.9
0.220	13.5	20.6	34.1	52.8	-18.7
2.870	4.0	20.3	24.3	46.0	-21.7
0.330	7.0	20.2	27.2	49.5	-22.3
1.440	0.0	20.2	20.2	46.0	-25.8
0.430	-0.5	20.2	19.7	47.3	-27.6
0.661	-2.3	20.2	17.9	46.0	-28.1
0.960	-2.8	20.2	17.4	46.0	-28.6
0.510	-2.9	20.2	17.3	46.0	-28.7
1.090	-3.0	20.2	17.2	46.0	-28.8
4.000	-3.7	20.4	16.7	46.0	-29.3
4.820	-3.8	20.4	16.6	46.0	-29.4
25.600	-1.7	22.1	20.4	50.0	-29.6
2.210	-4.2	20.3	16.1	46.0	-29.9
19.759	-3.0	21.3	18.3	50.0	-31.7
1.606	-6.0	20.2	14.2	46.0	-31.8
23.129	-3.5	21.6	18.1	50.0	-31.9
5.350	-3.1	20.4	17.3	50.0	-32.7
9.157	-3.6	20.6	17.0	50.0	-33.0
6.443	-3.6	20.4	16.8	50.0	-33.2

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

TEST DESCRIPTION

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

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable 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.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in 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: $\text{dBuV/m} - 51.5 \text{ dB} = \text{dBuA/m}$. 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
Antenna - Loop	ETS Lindgren	6502	AZM	2022-07-19	2024-07-19
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2023-05-25	2024-05-25
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	1.8 dB	-1.8 dB

FREQUENCY RANGE INVESTIGATED

12.06 MHz TO 15.06 MHz

POWER INVESTIGATED

220VAC/60Hz

CONFIGURATIONS INVESTIGATED

ABBO0283-2

MODES INVESTIGATED

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 1 On
 Continuous Transmit, RFID, 13.56 MHz, AccessPoint 2 On
 Continuous Transmit, RFID, 13.56 MHz, All Radios On
 Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 1) On
 Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 2) On

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	37	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

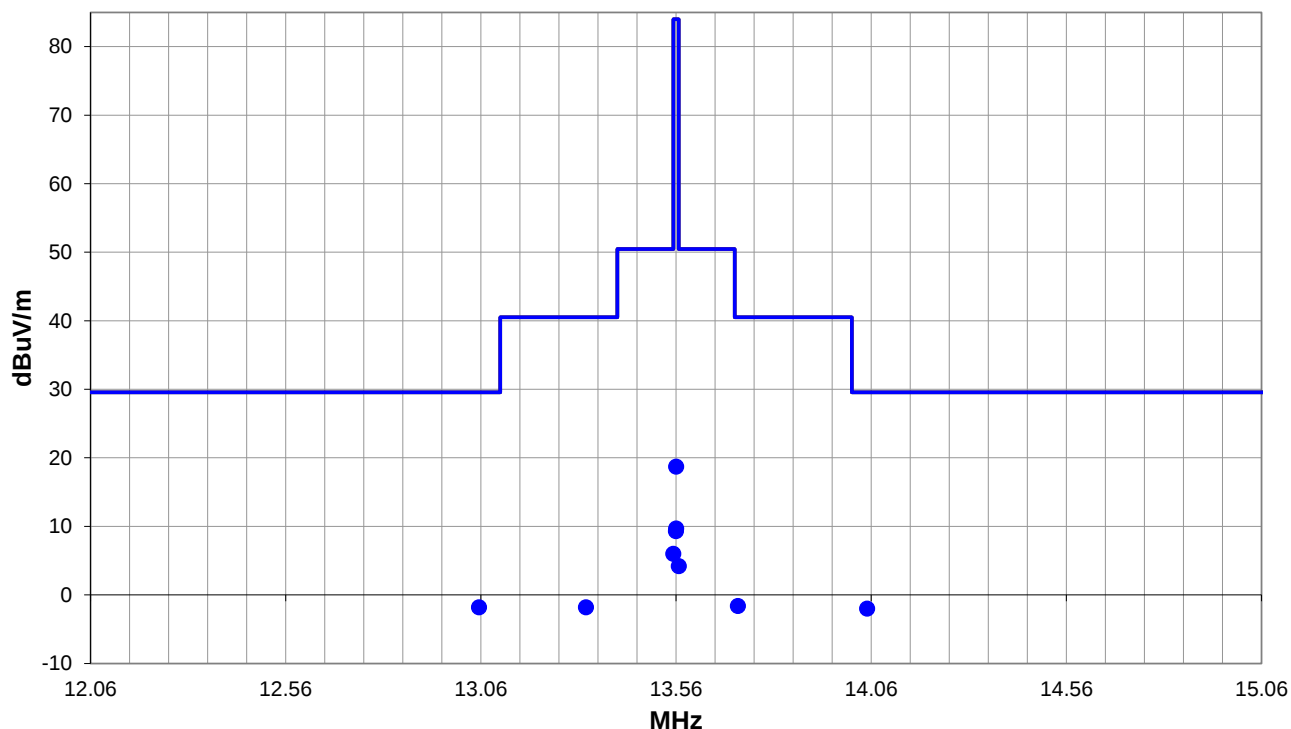
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, All Radios On

DEVIATIONS FROM TEST STANDARD

None



Run #: 37

■ PK ◆ AV ● QP

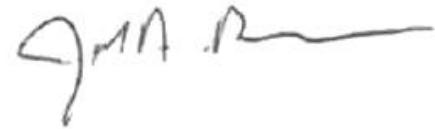
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #37

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)
13.055	5.7	11.6	1.0	229.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.8	29.5	-31.3
14.049	5.5	11.6	1.0	12.0	10.0	0.0	Perp to EUT	QP	-19.1	-2.0	29.5	-31.5
13.719	5.9	11.6	1.0	164.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.6	40.5	-42.1
13.330	5.7	11.6	1.0	291.9	10.0	0.0	Perp to EUT	QP	-19.1	-1.8	40.5	-42.3
13.553	13.5	11.6	1.0	187.0	10.0	0.0	Perp to EUT	QP	-19.1	6.0	50.5	-44.5
13.567	11.7	11.6	1.0	183.0	10.0	0.0	Perp to EUT	QP	-19.1	4.2	50.5	-46.3
13.560	26.2	11.6	1.0	231.0	10.0	0.0	Perp to EUT	QP	-19.1	18.7	84.0	-65.3
13.560	17.2	11.6	1.0	216.0	10.0	0.0	Para to GND	QP	-19.1	9.7	84.0	-74.3
13.560	16.8	11.6	1.0	234.0	10.0	0.0	Para to EUT	QP	-19.1	9.3	84.0	-74.7

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	38	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

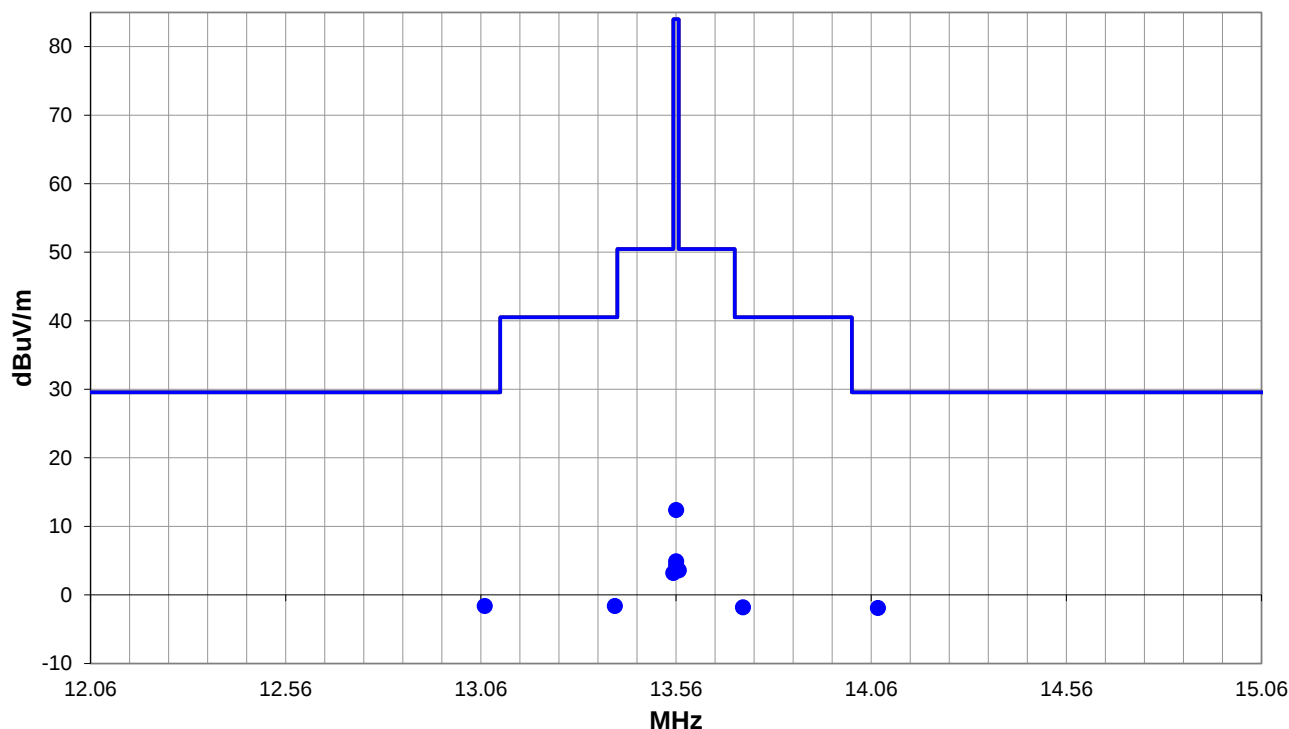
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 1 On

DEVIATIONS FROM TEST STANDARD

None



Run #: 38

■ PK ◆ AV ● QP

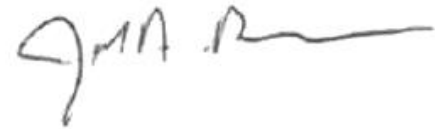
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #38

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)
13.070	5.9	11.6	1.0	216.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.6	29.5	-31.1
14.077	5.6	11.6	1.0	158.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.9	29.5	-31.4
13.404	5.9	11.6	1.0	152.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.6	40.5	-42.1
13.731	5.7	11.6	1.0	111.9	10.0	0.0	Perp to EUT	QP	-19.1	-1.8	40.5	-42.3
13.567	11.1	11.6	1.0	184.9	10.0	0.0	Perp to EUT	QP	-19.1	3.6	50.5	-46.9
13.553	10.7	11.6	1.0	175.0	10.0	0.0	Perp to EUT	QP	-19.1	3.2	50.5	-47.3
13.560	19.9	11.6	1.0	171.0	10.0	0.0	Perp to EUT	QP	-19.1	12.4	84.0	-71.6
13.560	12.4	11.6	1.0	220.9	10.0	0.0	Para to GND	QP	-19.1	4.9	84.0	-79.1
13.560	11.8	11.6	1.0	229.0	10.0	0.0	Para to EUT	QP	-19.1	4.3	84.0	-79.7

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	39	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

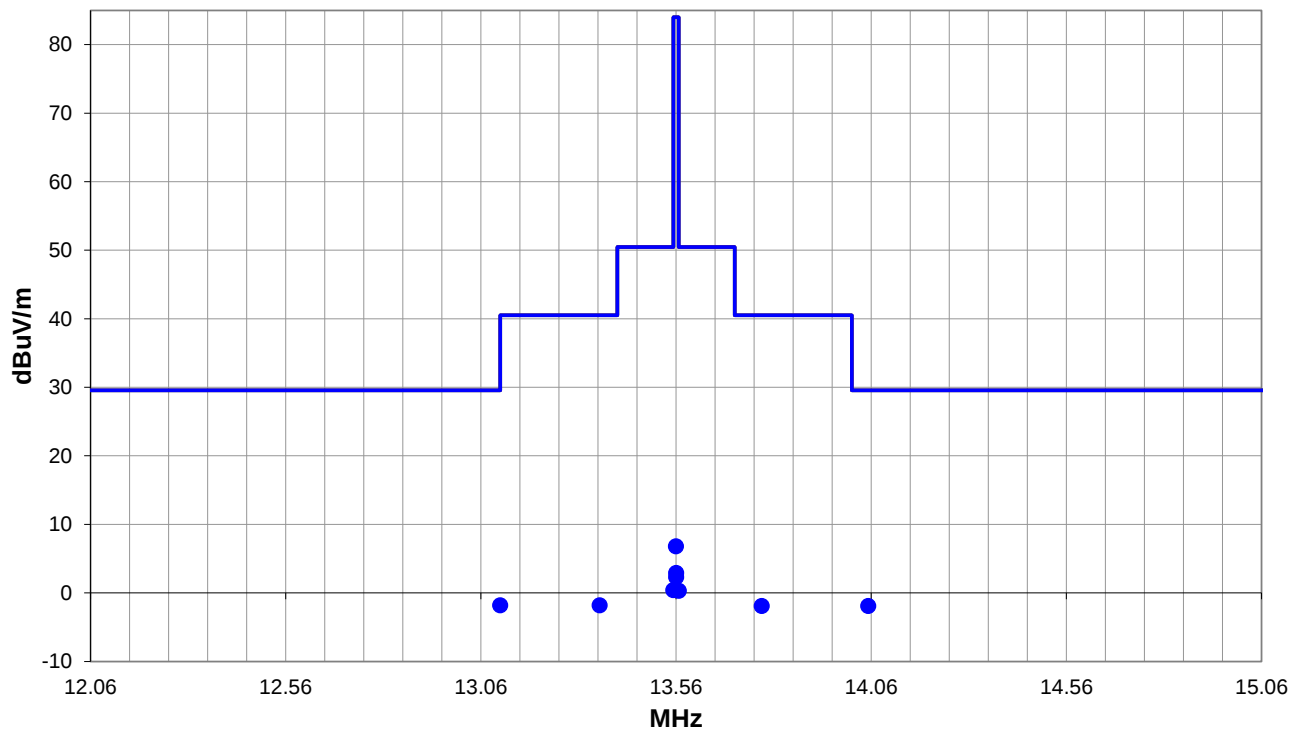
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, AccessPoint 2 On

DEVIATIONS FROM TEST STANDARD

None



Run #: 39

PK AV QP

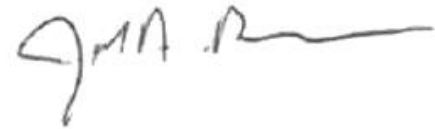
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #39

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)
13.110	5.7	11.6	1.0	19.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.8	29.5	-31.3
14.052	5.6	11.6	1.0	105.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.9	29.5	-31.4
13.365	5.7	11.6	1.0	289.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.8	40.5	-42.3
13.780	5.6	11.6	1.0	360.0	10.0	0.0	Perp to EUT	QP	-19.1	-1.9	40.5	-42.4
13.553	7.9	11.6	1.0	183.0	10.0	0.0	Perp to EUT	QP	-19.1	0.4	50.5	-50.1
13.567	7.8	11.6	1.0	195.9	10.0	0.0	Perp to EUT	QP	-19.1	0.3	50.5	-50.2
13.560	14.3	11.6	1.0	156.0	10.0	0.0	Perp to EUT	QP	-19.1	6.8	84.0	-77.2
13.560	10.4	11.6	1.0	195.9	10.0	0.0	Para to EUT	QP	-19.1	2.9	84.0	-81.1
13.560	9.8	11.6	1.0	219.9	10.0	0.0	Para to GND	QP	-19.1	2.3	84.0	-81.7

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	43	Test Distance (m):	3	Ant. Height(s) (m):	1(m)
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COMMENTS

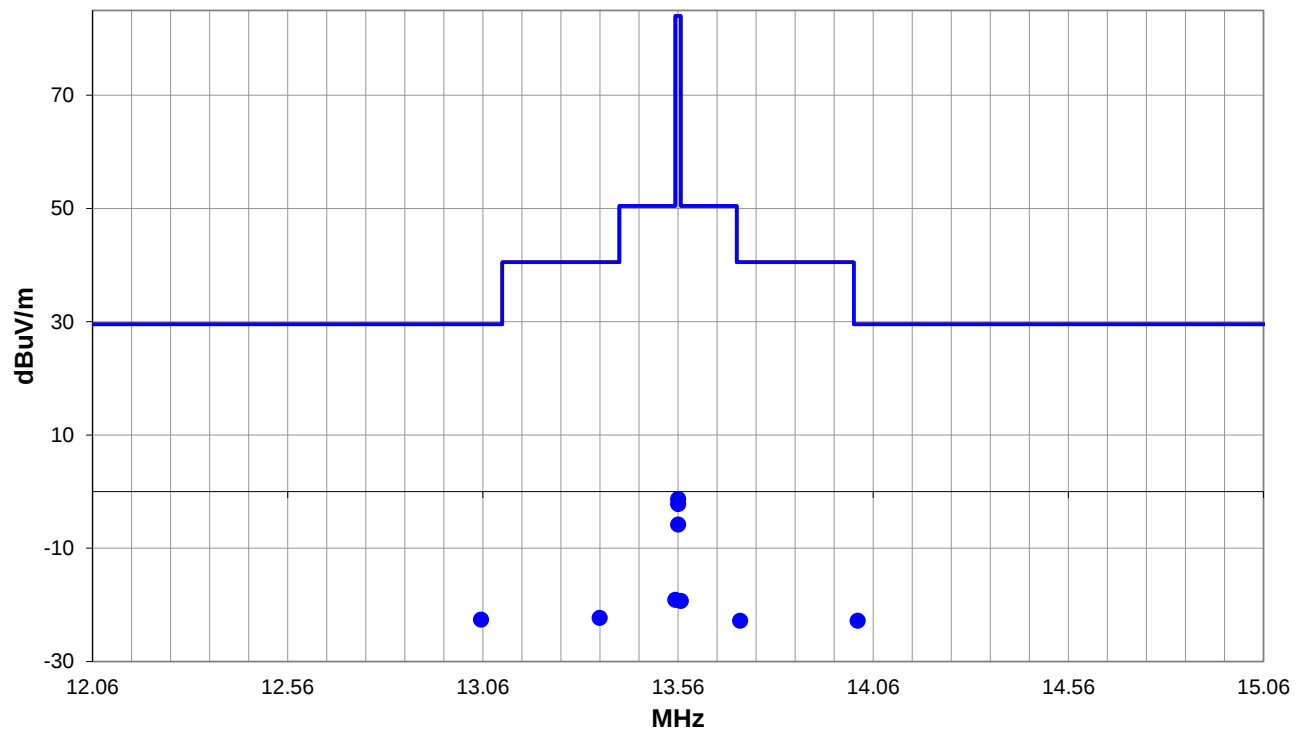
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each). Measurements taken at 3m when fundamental was indistinguishable from noise floor at 10m.

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 1) On

DEVIATIONS FROM TEST STANDARD

None



Run #: 43

■ PK ◆ AV ● QP

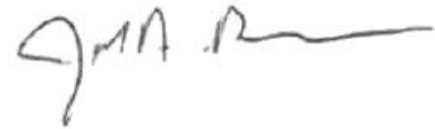
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #43

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)
13.055	5.8	11.6	1.0	201.0	3.0	0.0	Perp to EUT	QP	-40.0	-22.6	29.5	-52.1
14.020	5.6	11.6	1.0	321.9	3.0	0.0	Perp to EUT	QP	-40.0	-22.8	29.5	-52.3
13.359	6.1	11.6	1.0	130.9	3.0	0.0	Perp to EUT	QP	-40.0	-22.3	40.5	-62.8
13.719	5.6	11.6	1.0	87.0	3.0	0.0	Perp to EUT	QP	-40.0	-22.8	40.5	-63.3
13.553	9.3	11.6	1.0	178.9	3.0	0.0	Perp to EUT	QP	-40.0	-19.1	50.5	-69.6
13.567	9.1	11.6	1.0	318.0	3.0	0.0	Perp to EUT	QP	-40.0	-19.3	50.5	-69.8
13.560	27.1	11.6	1.0	177.0	3.0	0.0	Perp to EUT	QP	-40.0	-1.3	84.0	-85.3
13.560	26.2	11.6	1.0	258.0	3.0	0.0	Para to EUT	QP	-40.0	-2.2	84.0	-86.2
13.560	22.6	11.6	1.0	114.0	3.0	0.0	Para to GND	QP	-40.0	-5.8	84.0	-89.8

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	45	Test Distance (m):	3	Ant. Height(s) (m):	1(m)
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COMMENTS

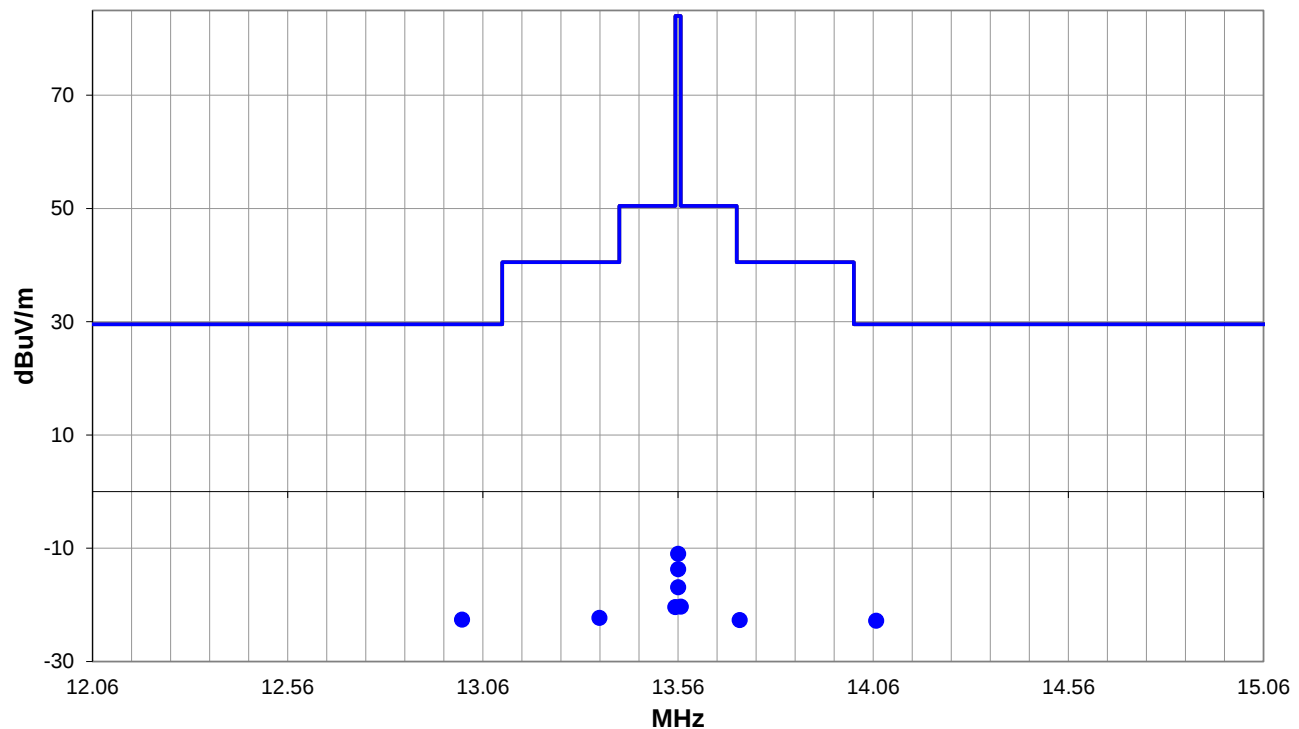
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each). Measurements taken at 3m when fundamental was indistinguishable from noise floor at 10m.

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, CrossSwitch (Radio 2) On

DEVIATIONS FROM TEST STANDARD

None



Run #: 45

■ PK ◆ AV ● QP

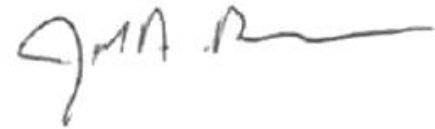
FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #45

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)
13.007	5.8	11.6	1.0	56.0	3.0	0.0	Perp to EUT	QP	-40.0	-22.6	29.5	-52.1
14.068	5.6	11.6	1.0	309.0	3.0	0.0	Perp to EUT	QP	-40.0	-22.8	29.5	-52.3
13.359	6.1	11.6	1.0	99.9	3.0	0.0	Perp to EUT	QP	-40.0	-22.3	40.5	-62.8
13.718	5.7	11.6	1.0	271.0	3.0	0.0	Perp to EUT	QP	-40.0	-22.7	40.5	-63.2
13.567	8.1	11.6	1.0	69.9	3.0	0.0	Perp to EUT	QP	-40.0	-20.3	50.5	-70.8
13.553	8.0	11.6	1.0	310.9	3.0	0.0	Perp to EUT	QP	-40.0	-20.4	50.5	-70.9
13.560	17.4	11.6	1.0	214.9	3.0	0.0	Perp to EUT	QP	-40.0	-11.0	84.0	-95.0
13.560	14.7	11.6	1.0	276.0	3.0	0.0	Para to EUT	QP	-40.0	-13.7	84.0	-97.7
13.560	11.5	11.6	1.0	133.0	3.0	0.0	Para to GND	QP	-40.0	-16.9	84.0	-100.9

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)



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. 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 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

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 in 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: $\text{dBuV/m} - 51.5 \text{ dB} = \text{dBuA/m}$. 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
Antenna - Loop	ETS Lindgren	6502	AZM	2022-07-19	2024-07-19
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2023-05-25	2024-05-25
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	1.8 dB	-1.8 dB

FREQUENCY RANGE INVESTIGATED

9 kHz TO 30 MHz

POWER INVESTIGATED

220VAC/60Hz

CONFIGURATIONS INVESTIGATED

ABBO0283-2

MODES INVESTIGATED

Continuous Transmit, RFID, 13.56 MHz, All Radios On

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013

TEST PARAMETERS

Run #:	46	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

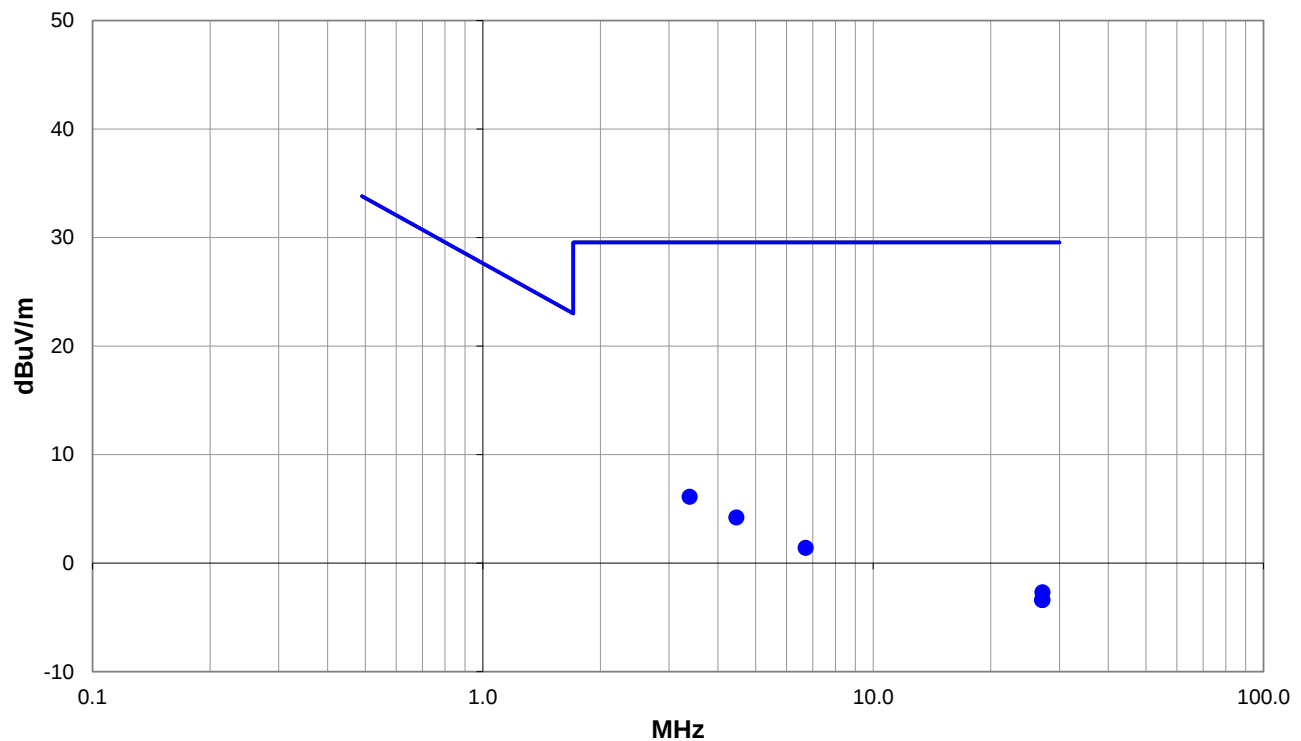
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, All Radios On

DEVIATIONS FROM TEST STANDARD

None



Run #: 46

■ PK ◆ AV ● QP

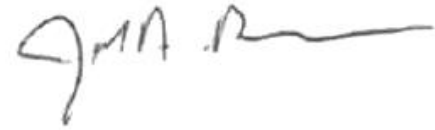
FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

RESULTS - Run #46

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)
3.387	13.6	11.6	1.0	180.0	10.0	0.0	Perp to EUT	QP	-19.1	6.1	29.5	-23.4
4.462	11.5	11.8	1.0	238.9	10.0	0.0	Perp to EUT	QP	-19.1	4.2	29.5	-25.3
6.711	8.8	11.7	1.0	81.0	10.0	0.0	Perp to EUT	QP	-19.1	1.4	29.5	-28.1
27.120	6.4	10.0	1.0	36.0	10.0	0.0	Perp to EUT	QP	-19.1	-2.7	29.5	-32.2
27.123	5.7	10.0	1.0	7.0	10.0	0.0	Para to GND	QP	-19.1	-3.4	29.5	-32.9
27.057	5.7	10.0	1.0	158.0	10.0	0.0	Para to EUT	QP	-19.1	-3.4	29.5	-32.9

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

EUT:	Recapper	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	46	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

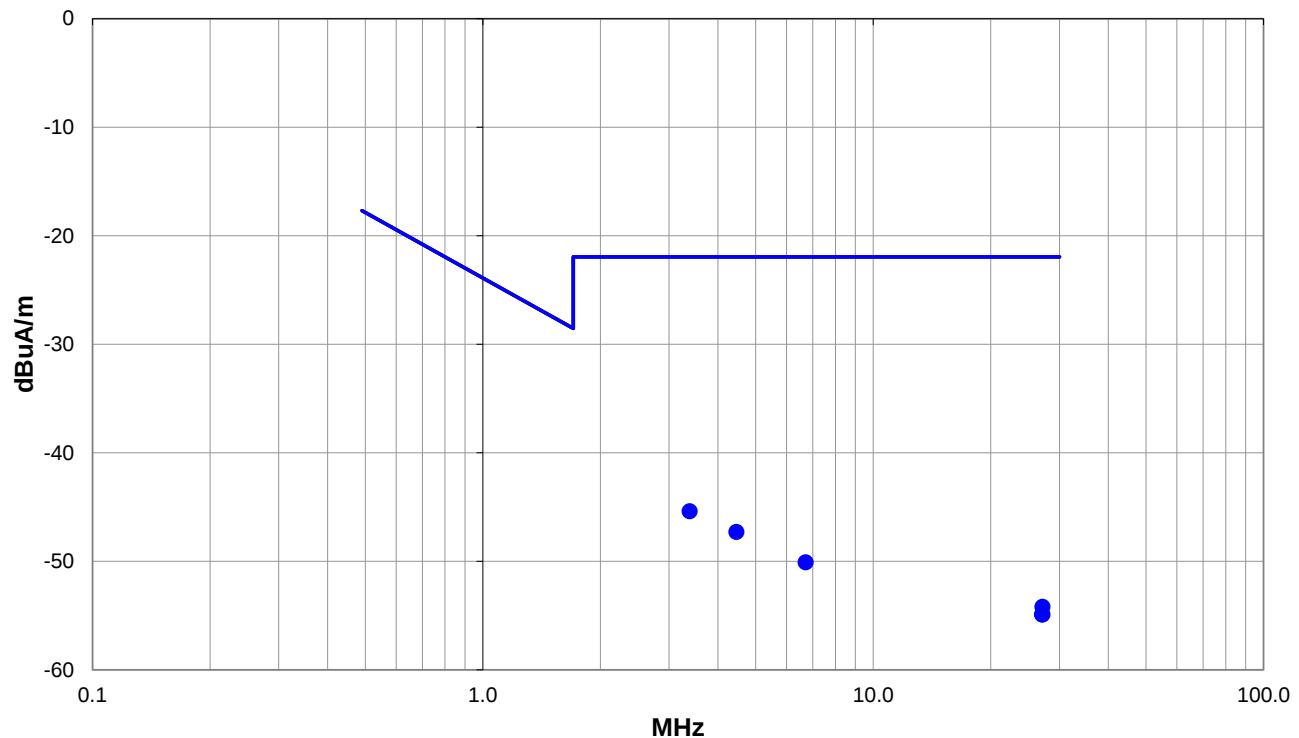
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, All Radios On

DEVIATIONS FROM TEST STANDARD

None



Run #: 46

■ PK ◆ AV ● QP

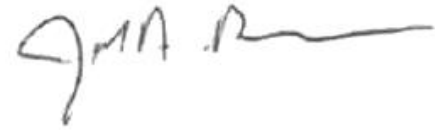
FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

RESULTS - Run #46

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 (dBuA/m)	Spec. Limit (dBuA/m)	Compared to Spec. (dB)
3.387	13.6	-39.9	1.0	180.0	10.0	0.0	Perp to EUT	QP	-19.1	-45.4	-22.0	-23.4
4.462	11.5	-39.7	1.0	238.9	10.0	0.0	Perp to EUT	QP	-19.1	-47.3	-22.0	-25.3
6.711	8.8	-39.8	1.0	81.0	10.0	0.0	Perp to EUT	QP	-19.1	-50.1	-22.0	-28.1
27.120	6.4	-41.5	1.0	36.0	10.0	0.0	Perp to EUT	QP	-19.1	-54.2	-22.0	-32.2
27.057	5.7	-41.5	1.0	158.0	10.0	0.0	Para to EUT	QP	-19.1	-54.9	-22.0	-32.9
27.123	5.7	-41.5	1.0	7.0	10.0	0.0	Para to GND	QP	-19.1	-54.9	-22.0	-32.9

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

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 and 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 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

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	ETS Lindgren	3143B	AYF	2023-05-03	2025-05-03
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2023-05-25	2024-05-25
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	2023-04-11	2024-04-11
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	2023-07-21	2024-07-21
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	4.7 dB	-4.7 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 1000 MHz

POWER INVESTIGATED

220VAC/60Hz

CONFIGURATIONS INVESTIGATED

ABBO0283-2

MODES INVESTIGATED

Continuous Transmit, RFID, 13.56 MHz, All Radios On

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-09-28
Customer:	Abbott Laboratories	Temperature:	20.5°C
Attendees:	Frank Sun	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Jarrod Brenden	Job Site:	TX02
Power:	220VAC/60Hz	Configuration:	ABBO0283-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019 +A1:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	36	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

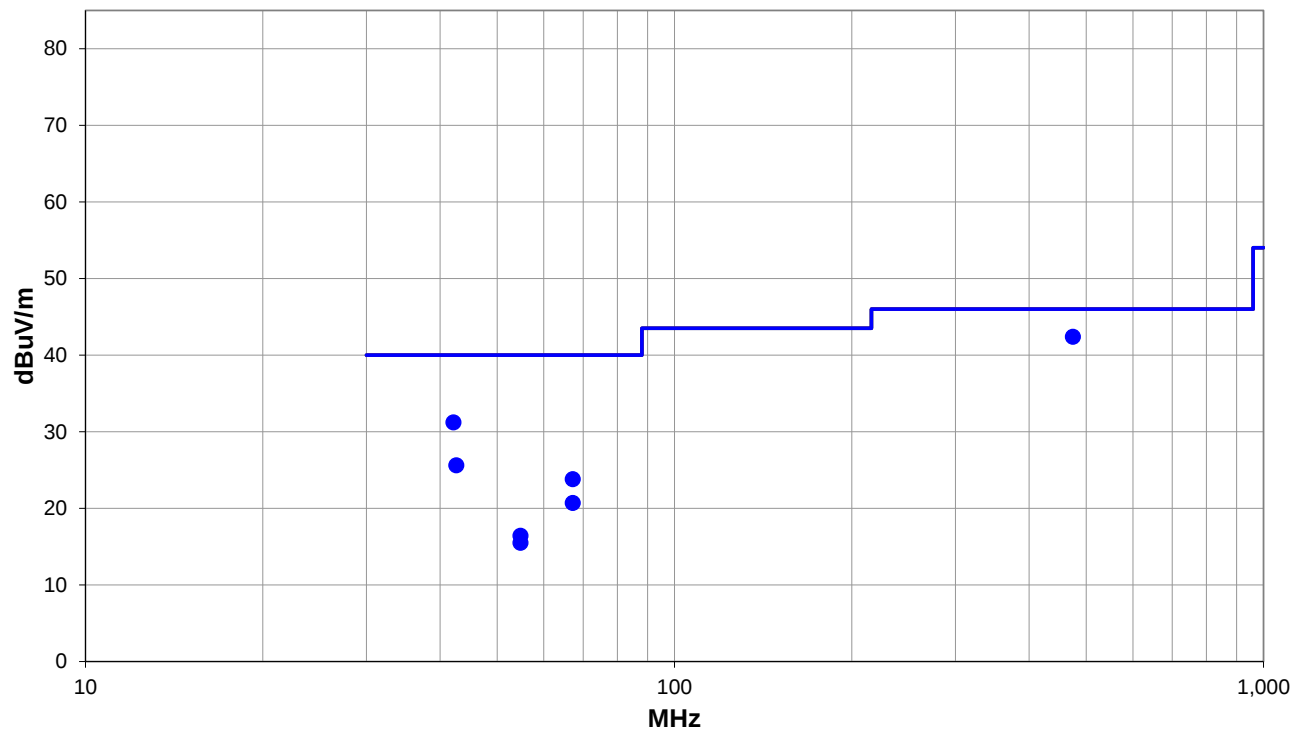
Floor Standing Unit. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

EUT OPERATING MODES

Continuous Transmit, RFID, 13.56 MHz, All Radios On

DEVIATIONS FROM TEST STANDARD

None



Run #: 36

■ PK ◆ AV ● QP

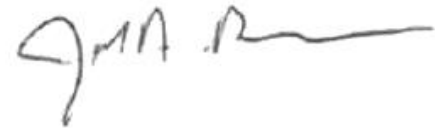
FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

RESULTS - Run #36

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)
474.605	54.0	-11.6	1.75	174.0	3.0	0.0	Vert	QP	0.0	42.4	46.0	-3.6
42.144	55.2	-24.0	1.0	301.0	3.0	0.0	Vert	QP	0.0	31.2	40.0	-8.8
42.614	49.8	-24.2	3.45	64.9	3.0	0.0	Horz	QP	0.0	25.6	40.0	-14.4
67.195	49.8	-26.0	1.0	337.0	3.0	0.0	Vert	QP	0.0	23.8	40.0	-16.2
67.202	46.7	-26.0	3.86	56.0	3.0	0.0	Horz	QP	0.0	20.7	40.0	-19.3
54.770	43.3	-26.9	4.0	304.9	3.0	0.0	Horz	QP	0.0	16.4	40.0	-23.6
54.758	42.4	-26.9	1.0	1.0	3.0	0.0	Vert	QP	0.0	15.5	40.0	-24.5

CONCLUSION

Pass



Tested By

FREQUENCY STABILITY

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.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the 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 $\pm 0.01\%$ is equivalent to 100 ppm
The formula to check for compliance is:

$$\text{ppm} = (\text{Measured Frequency} / \text{Measured Nominal Frequency} - 1) * 1,000,000$$

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Thermometer	Omega Engineering, Inc.	HH311	DUI	2023-03-02	2024-03-02
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBH	NCR	NCR
Power Source/Analyzer	Hewlett Packard	6841A	THC	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2023-08-31	2024-08-31
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXJ	2023-08-30	2024-08-30
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXK	2023-08-30	2024-08-30

FREQUENCY STABILITY

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-10
Customer:	Abbott Laboratories	Temperature:	20.4°C
Attendees:	Frank Sun	Relative Humidity:	50.2%
Customer Project:	None	Bar. Pressure (PMSL):	1010 mbar
Tested By:	Jarrod Brenden	Job Site:	TX07
Power:	220VAC/60Hz	Configuration:	ABBO0283-3
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

COMMENTS

All losses in measurement path were accounted for: DC blocks, cables, and attenuators where used. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each). RFID radios operate with modulation OOK, 100%, ISO 15693 at full rated power.

DEVIATIONS FROM TEST STANDARD

None

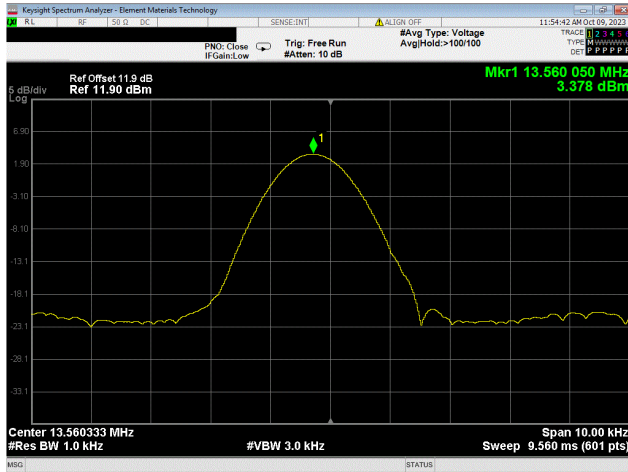
TEST RESULTS

	Measured Value (MHz)	Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results
RFID, 13.56 MHz					
AccessPoint 1					
Nominal Temperature, 20°C					
Voltage, 115%, 253V	13.56005	13.56002	2.46	100	Pass
Voltage, Nominal, 220V	13.56002	13.56002	0.00	100	Pass
Voltage, 85%, 187V	13.56003	13.56002	1.23	100	Pass
Nominal AC Voltage, 220V					
Temp, 50°C	13.55990	13.56002	8.58	100	Pass
Temp, 40°C	13.55995	13.56002	4.94	100	Pass
Temp, 30°C	13.55998	13.56002	2.46	100	Pass
Temp, 20°C	13.56002	13.56002	0.00	100	Pass
Temp, 10°C	13.56007	13.56002	3.69	100	Pass
Temp, 0°C	13.56012	13.56002	7.40	100	Pass
Temp, -10°C	13.56013	13.56002	8.63	100	Pass
Temp, -20°C	13.56013	13.56002	8.63	100	Pass
AccessPoint 2					
Nominal Temperature, 20°C					
Voltage, 115%, 253V	13.56003	13.56003	0.02	100	Pass
Voltage, Nominal, 220V	13.56003	13.56003	0.00	100	Pass
Voltage, 85%, 187V	13.56005	13.56003	1.20	100	Pass
Nominal AC Voltage, 220V					
Temp, 50°C	13.55995	13.56003	6.17	100	Pass
Temp, 40°C	13.55997	13.56003	4.94	100	Pass

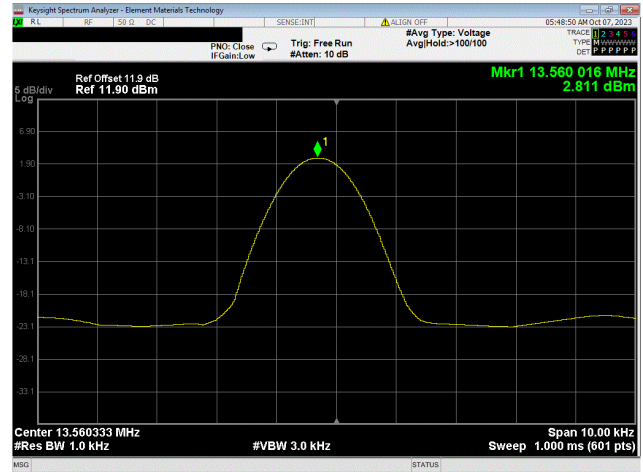
FREQUENCY STABILITY

	Measured Value (MHz)	Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results
Temp, 30°C	13.56002	13.56003	1.25	100	Pass
Temp, 20°C	13.56005	13.56003	1.20	100	Pass
Temp, 10°C	13.56008	13.56003	3.66	100	Pass
Temp, 0°C	13.56013	13.56003	7.37	100	Pass
Temp, -10°C	13.56015	13.56003	8.58	100	Pass
Temp, -20°C	13.56012	13.56003	6.12	100	Pass
CrossSwitch (Radio 1)					
Nominal Temperature, 20°C					
Voltage, 115%, 253V	13.56007	13.56005	1.18	100	Pass
Voltage, Nominal, 220V	13.56005	13.56005	0.00	100	Pass
Voltage, 85%, 187V	13.56007	13.56005	1.18	100	Pass
Nominal AC Voltage, 220V					
Temp, 50°C	13.55997	13.56005	6.22	100	Pass
Temp, 40°C	13.56000	13.56005	3.74	100	Pass
Temp, 30°C	13.56002	13.56005	2.53	100	Pass
Temp, 20°C	13.56007	13.56005	1.18	100	Pass
Temp, 10°C	13.56010	13.56005	3.64	100	Pass
Temp, 0°C	13.56013	13.56005	6.12	100	Pass
Temp, -10°C	13.56013	13.56005	6.12	100	Pass
Temp, -20°C	13.56010	13.56005	3.64	100	Pass
CrossSwitch (Radio 2)					
Nominal Temperature, 20°C					
Voltage, 115%, 253V	13.56008	13.56007	1.23	100	Pass
Voltage, Nominal, 220V	13.56007	13.56007	0.00	100	Pass
Voltage, 85%, 187V	13.56010	13.56007	2.46	100	Pass
Nominal AC Voltage, 220V					
Temp, 50°C	13.55997	13.56007	7.40	100	Pass
Temp, 40°C	13.55998	13.56007	6.17	100	Pass
Temp, 30°C	13.56003	13.56007	2.46	100	Pass
Temp, 20°C	13.56008	13.56007	1.23	100	Pass
Temp, 10°C	13.56013	13.56007	4.92	100	Pass
Temp, 0°C	13.56017	13.56007	7.40	100	Pass
Temp, -10°C	13.56018	13.56007	8.63	100	Pass
Temp, -20°C	13.56015	13.56007	6.17	100	Pass

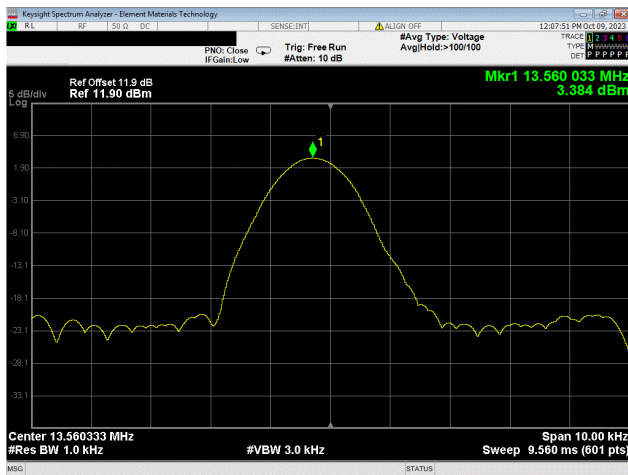
FREQUENCY STABILITY



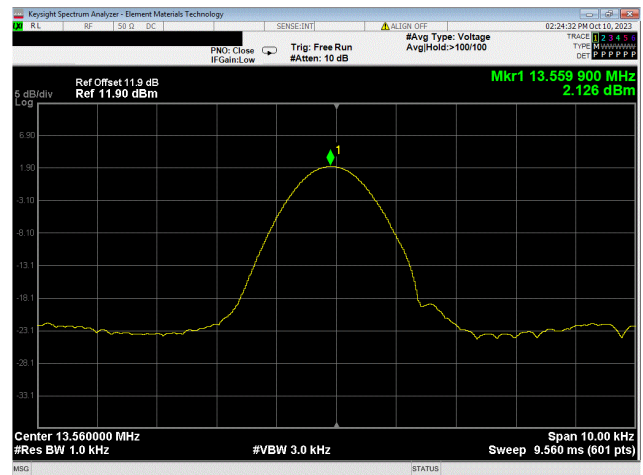
RFID, 13.56 MHz
AccessPoint 1
Nominal Temperature, 20°C
Voltage, 115%, 253V



RFID, 13.56 MHz
AccessPoint 1
Nominal Temperature, 20°C
Voltage, Nominal, 220V

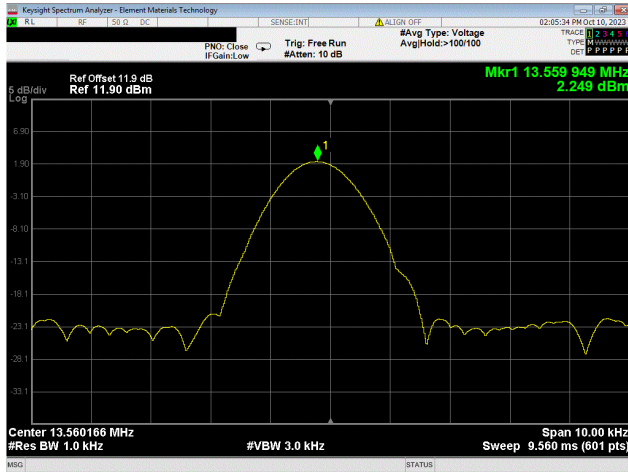


RFID, 13.56 MHz
AccessPoint 1
Nominal Temperature, 20°C
Voltage, 85%, 187V

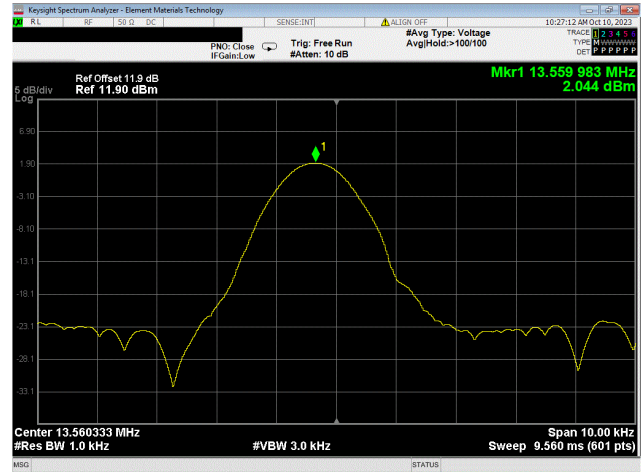


RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 50°C

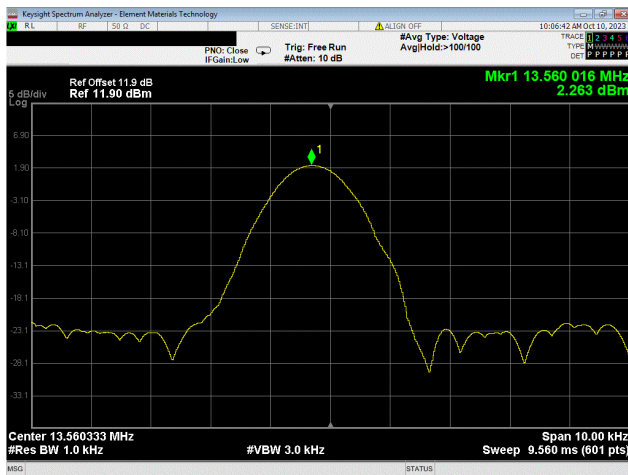
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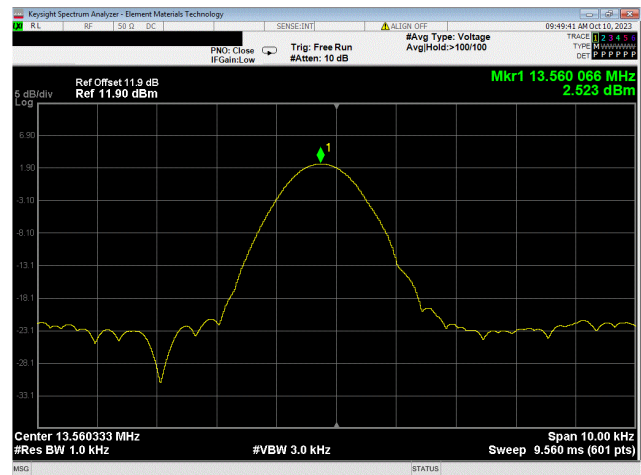
RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 40°C



RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 30°C

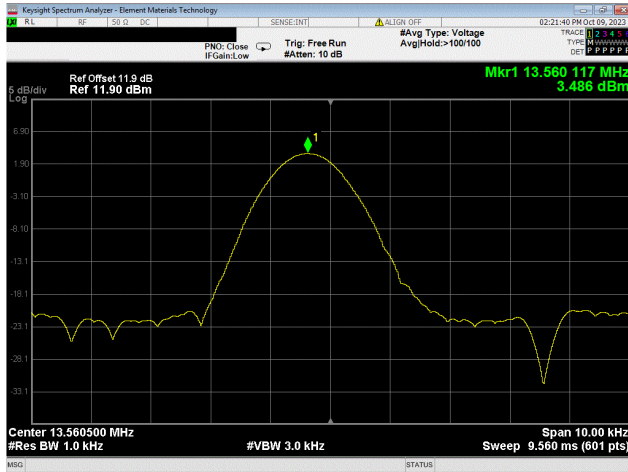


RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 20°C

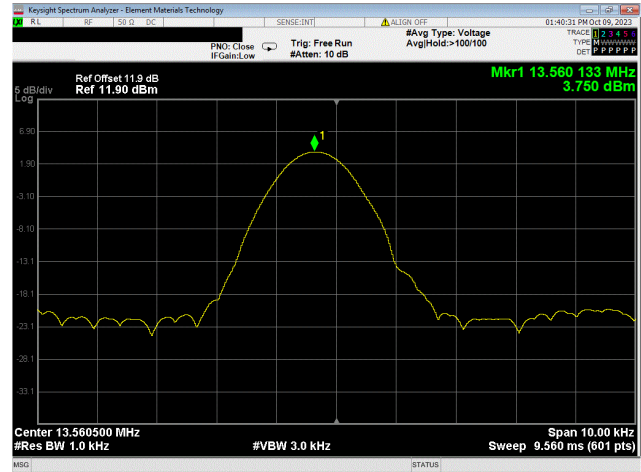


RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 10°C

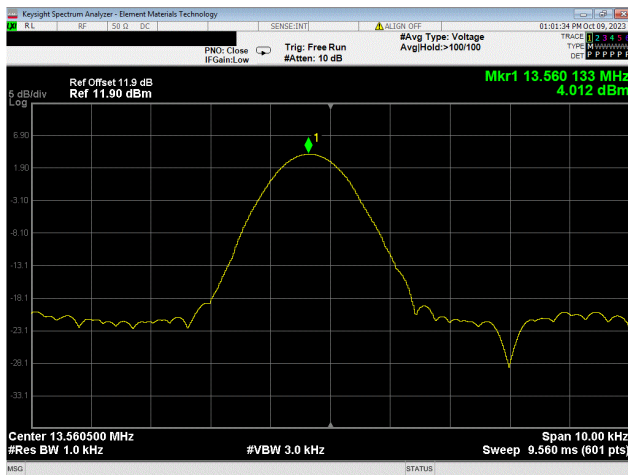
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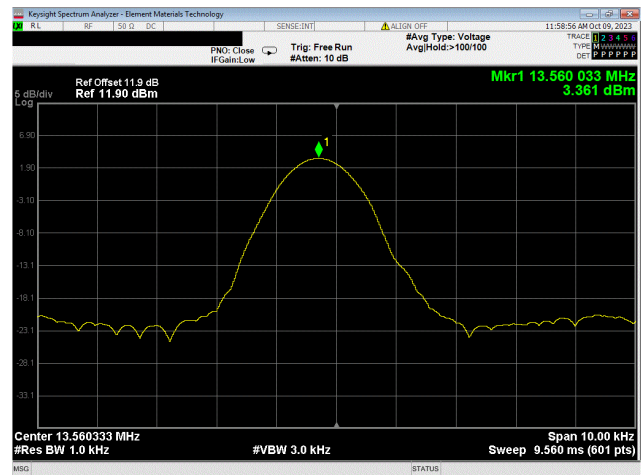
RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, 0°C



RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, -10°C

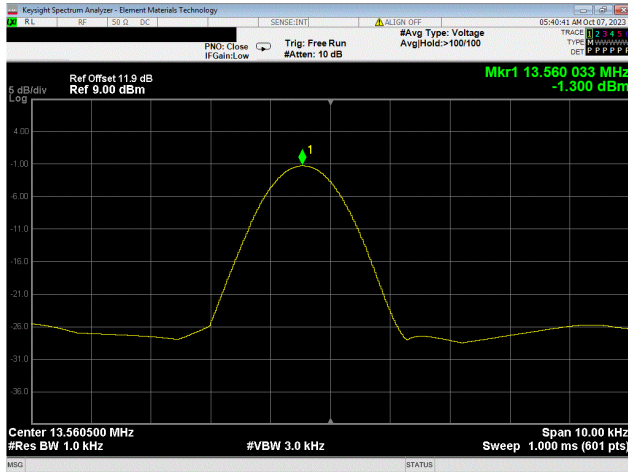


RFID, 13.56 MHz
AccessPoint 1
Nominal AC Voltage, 220V
Temp, -20°C

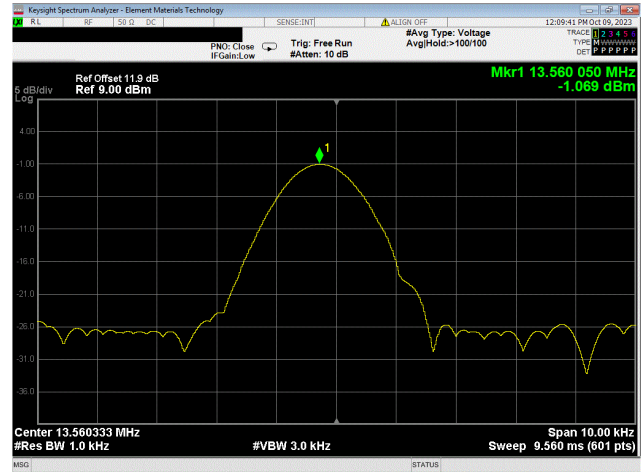


RFID, 13.56 MHz
AccessPoint 2
Nominal Temperature, 20°C
Voltage, 115%, 253V

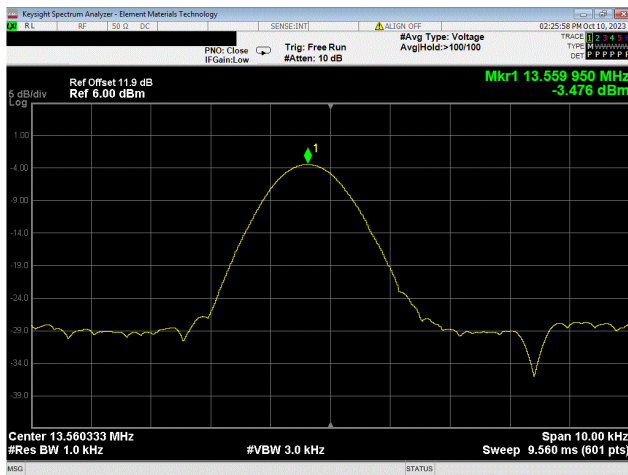
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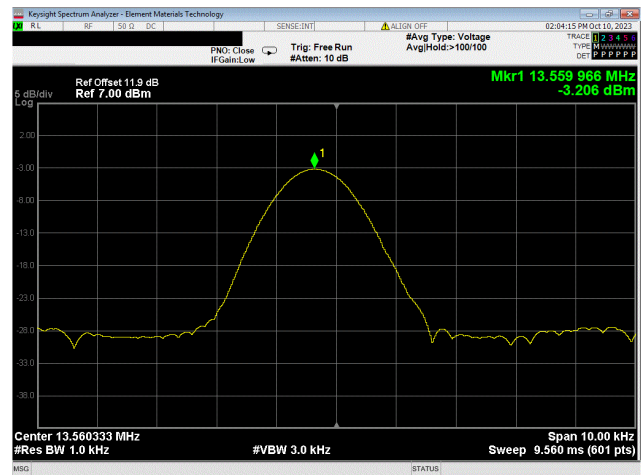
RFID, 13.56 MHz
AccessPoint 2
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
AccessPoint 2
Nominal Temperature, 20°C
Voltage, 85%, 187V

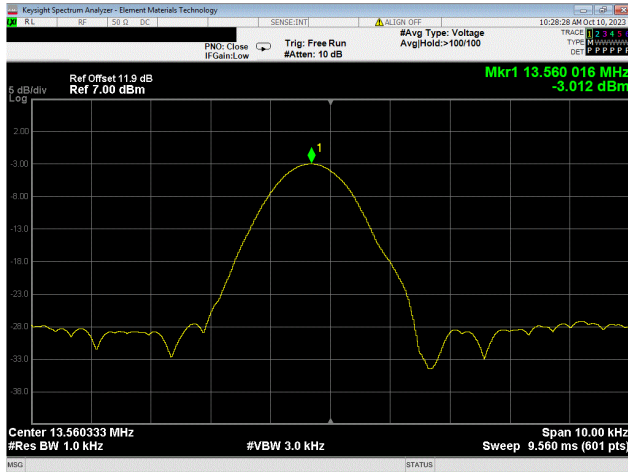


RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 50°C

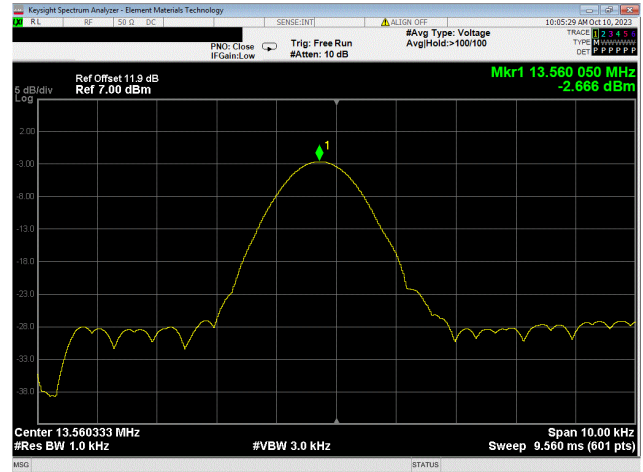


RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 40°C

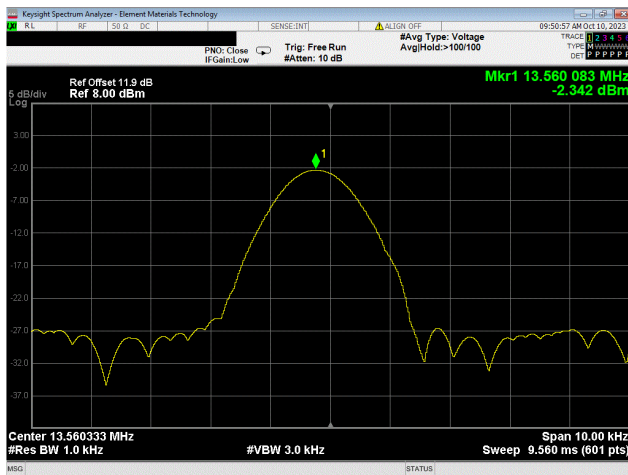
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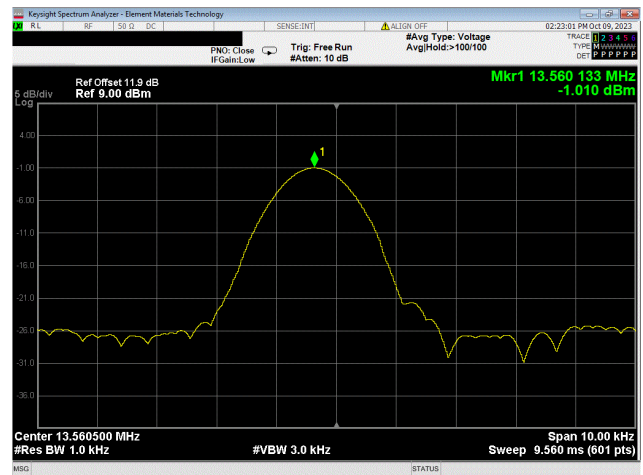
RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 30°C



RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 20°C

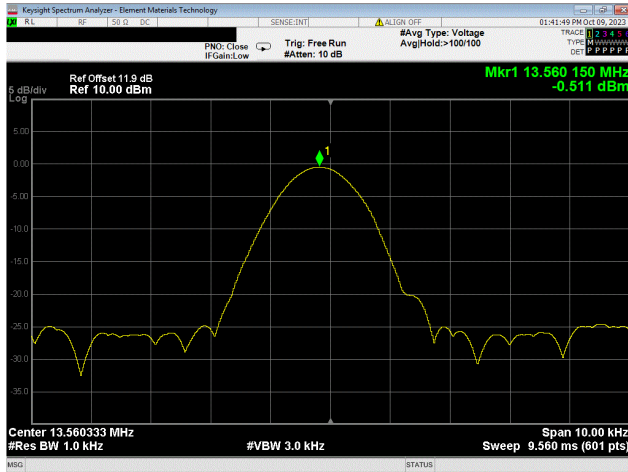


RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 10°C

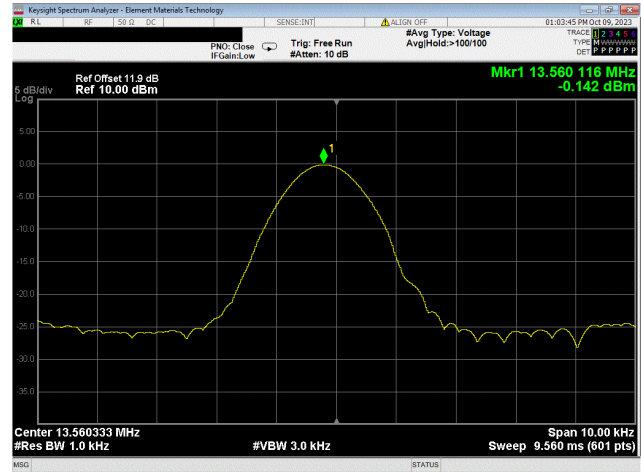


RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, 0°C

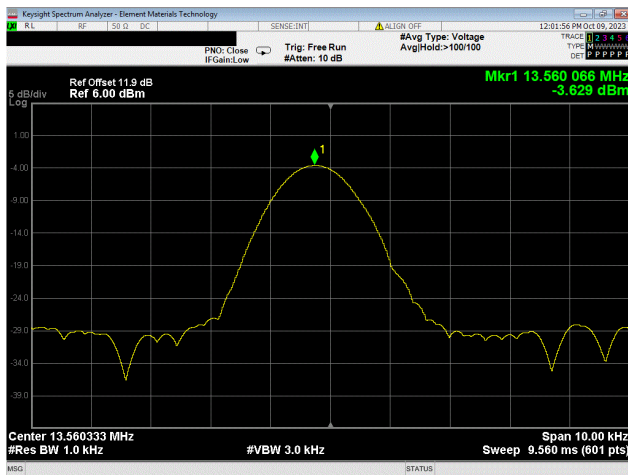
FREQUENCY STABILITY



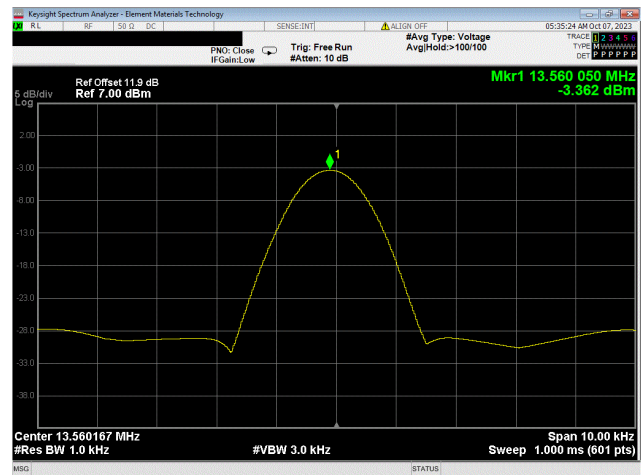
RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, -10°C



RFID, 13.56 MHz
AccessPoint 2
Nominal AC Voltage, 220V
Temp, -20°C

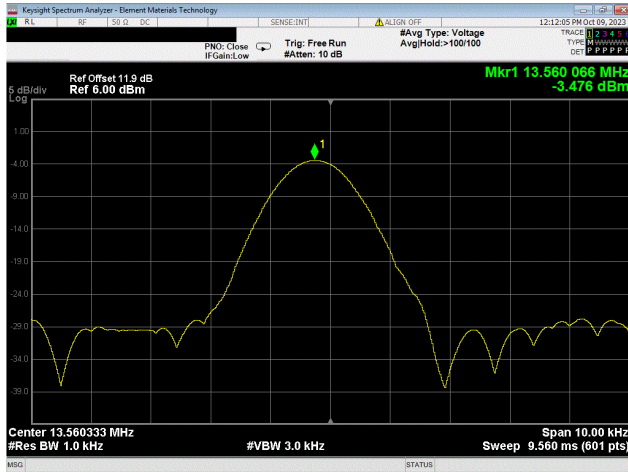


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal Temperature, 20°C
Voltage, 115%, 253V

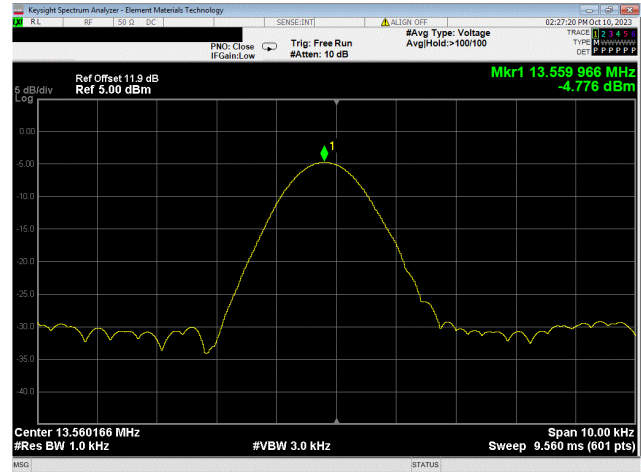


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal Temperature, 20°C
Voltage, Nominal, 220V

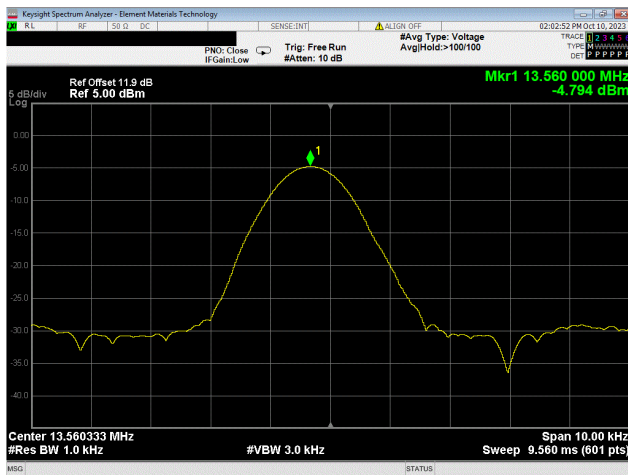
FREQUENCY STABILITY



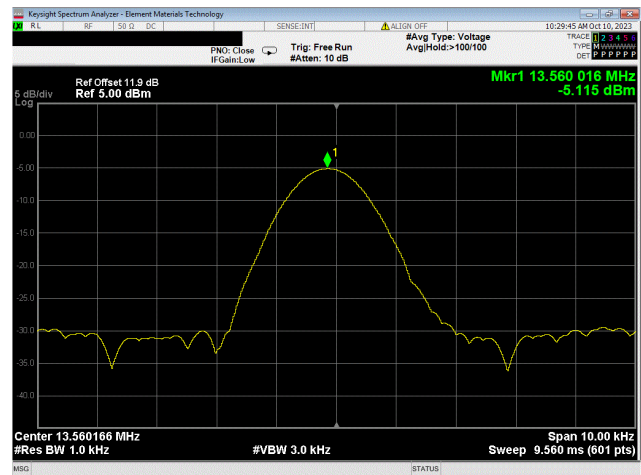
RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal Temperature, 20°C
Voltage, 85%, 187V



RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 50°C

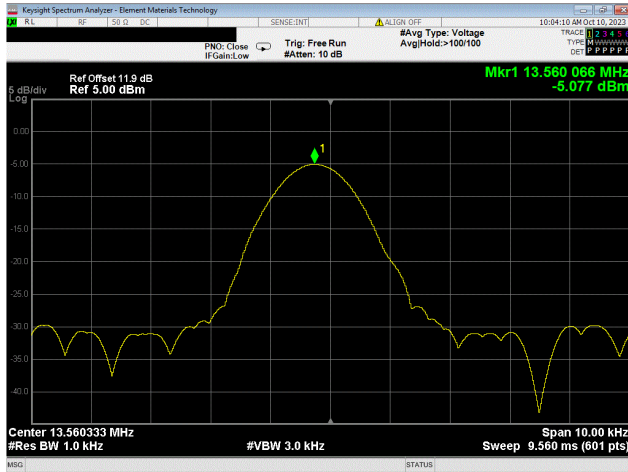


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 40°C

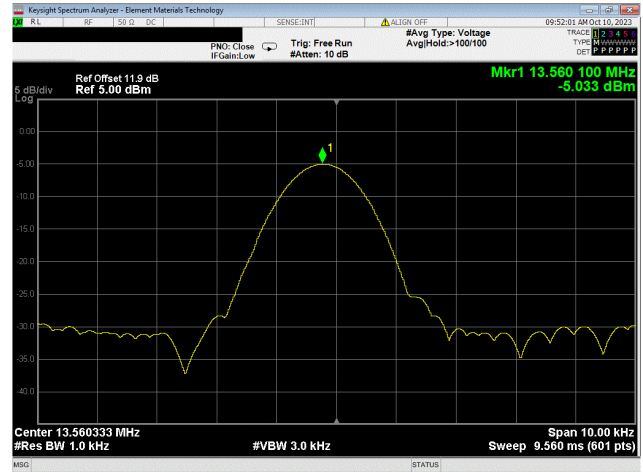


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 30°C

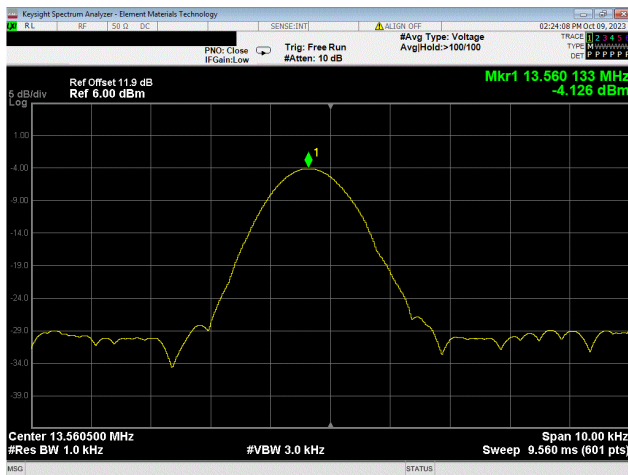
FREQUENCY STABILITY



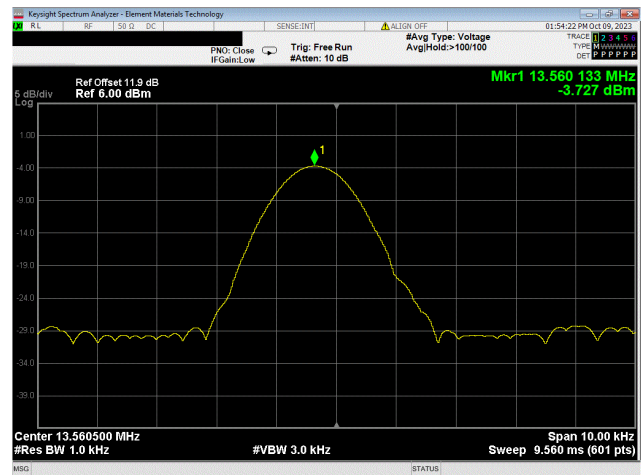
RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 20°C



RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 10°C

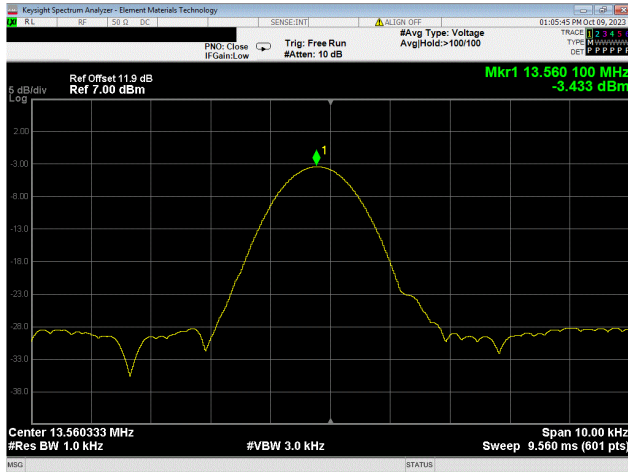


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, 0°C

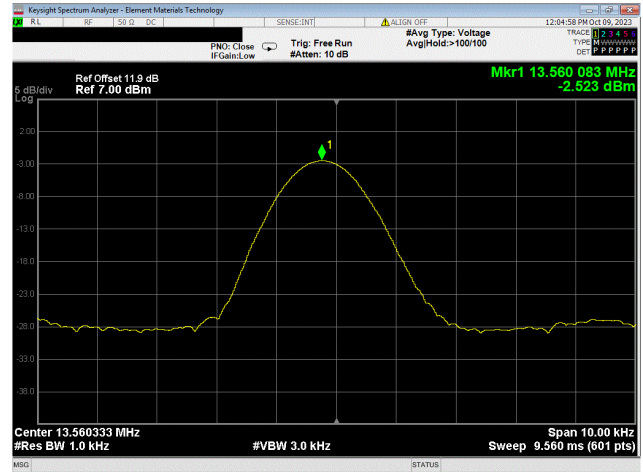


RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, -10°C

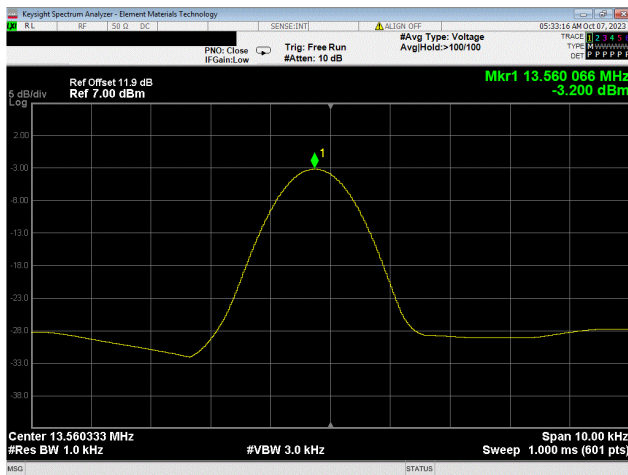
FREQUENCY STABILITY



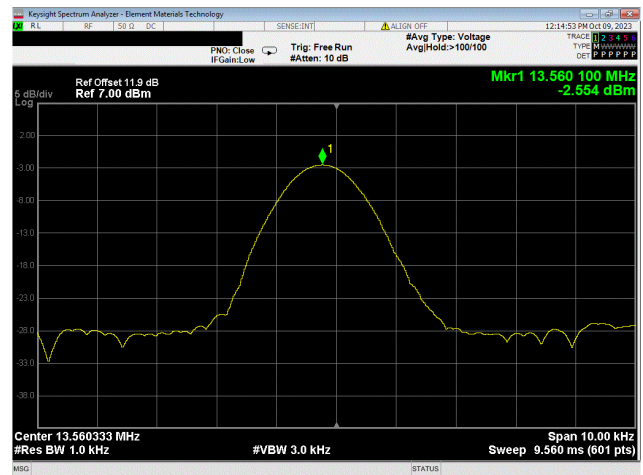
RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal AC Voltage, 220V
Temp, -20°C



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal Temperature, 20°C
Voltage, 115%, 253V

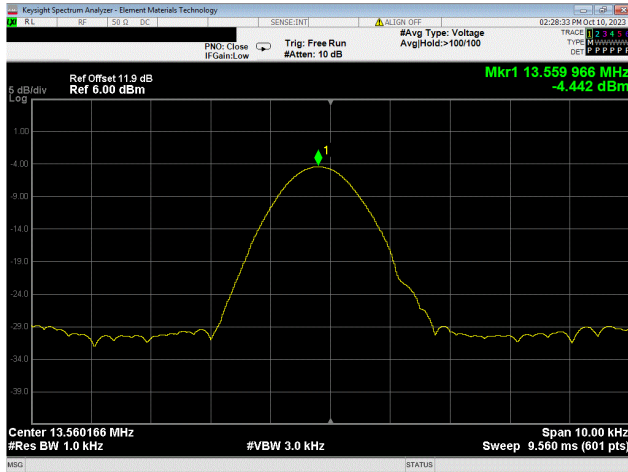


RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal Temperature, 20°C
Voltage, Nominal, 220V

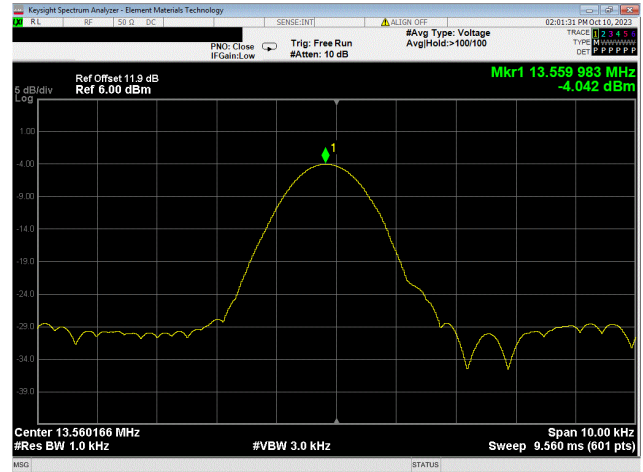


RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal Temperature, 20°C
Voltage, 85%, 187V

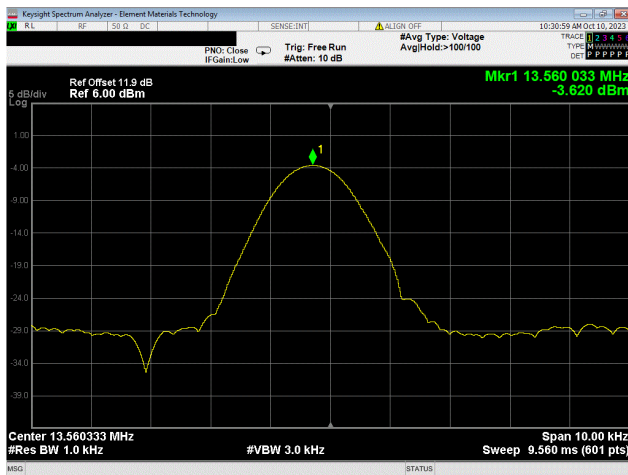
FREQUENCY STABILITY



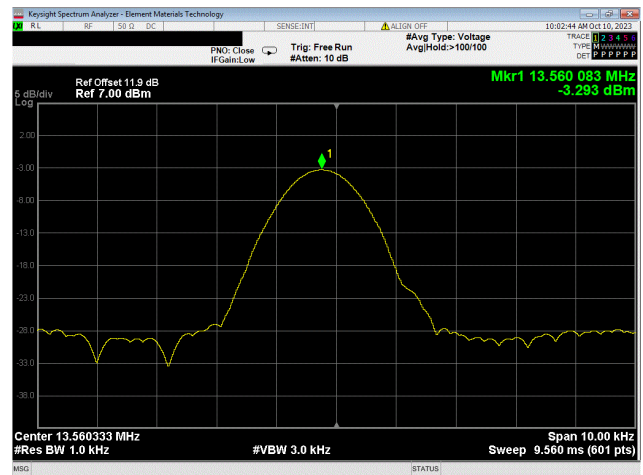
RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 50°C



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 40°C

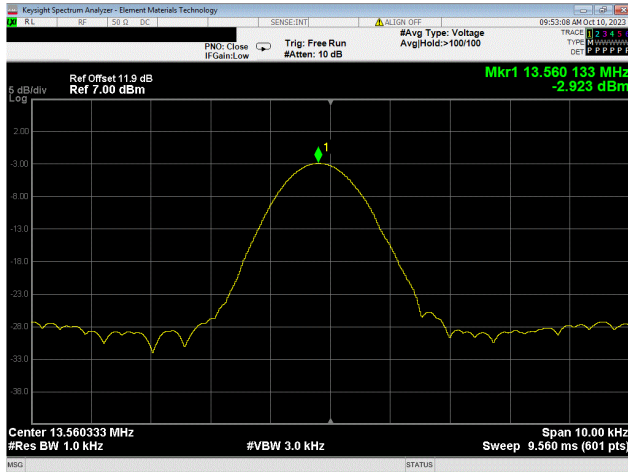


RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 30°C

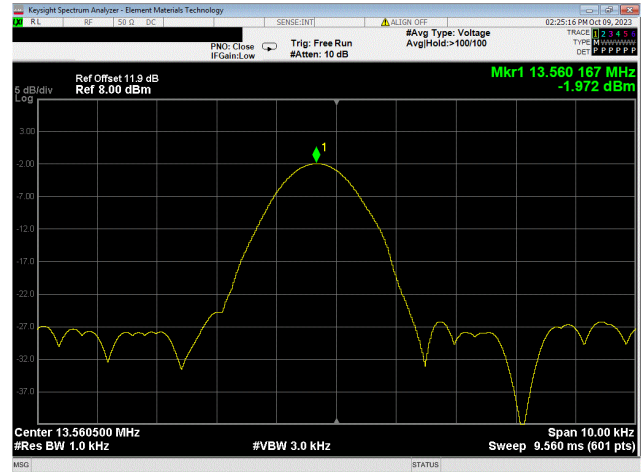


RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 20°C

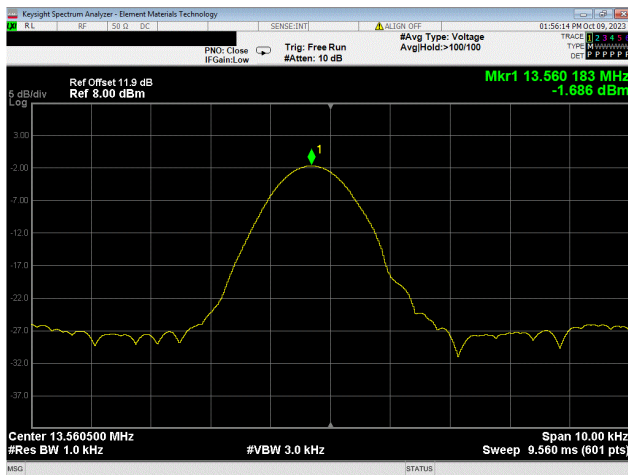
FREQUENCY STABILITY



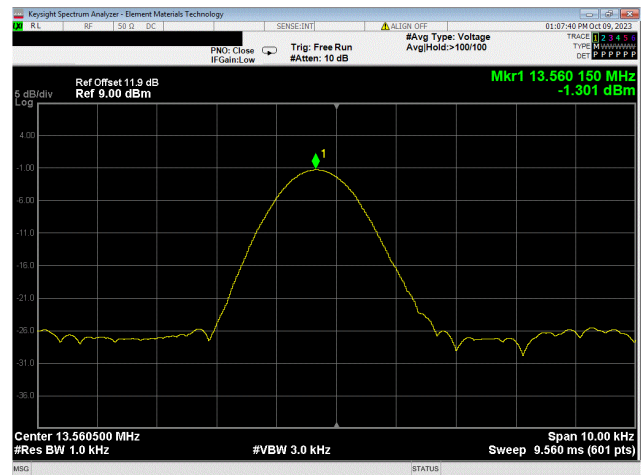
RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 10°C



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, 0°C



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, -10°C



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal AC Voltage, 220V
Temp, -20°C

EMISSIONS BANDWIDTH (20 DB)

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.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the 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 be 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 spectrum analyzer bandwidth measurement function was used to measure the 20 dB bandwidth. 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.

Due to the amplitude of the carrier with respect to the modulated signal, the EUT was unable to meet the 1-5% RBW requirement when based off the measured 20 dB Bandwidth. Therefore the 99% Bandwidth was used to determine the RBW settings for the 20 dB Bandwidth. This is considered worst case.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Thermometer	Omega Engineering, Inc.	HH311	DUI	2023-03-02	2024-03-02
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBH	NCR	NCR
Power Source/Analyzer	Hewlett Packard	6841A	THC	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2023-08-31	2024-08-31
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXJ	2023-08-30	2024-08-30
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXK	2023-08-30	2024-08-30

EMISSIONS BANDWIDTH (20 DB)

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-06
Customer:	Abbott Laboratories	Temperature:	20.8°C
Attendees:	Frank Sun	Relative Humidity:	49.4%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mbar
Tested By:	Jarrod Brenden	Job Site:	TX07
Power:	220VAC/60Hz	Configuration:	ABBO0283-3
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013

COMMENTS

All losses in measurement path were accounted for: DC blocks, cables, and attenuators where used. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

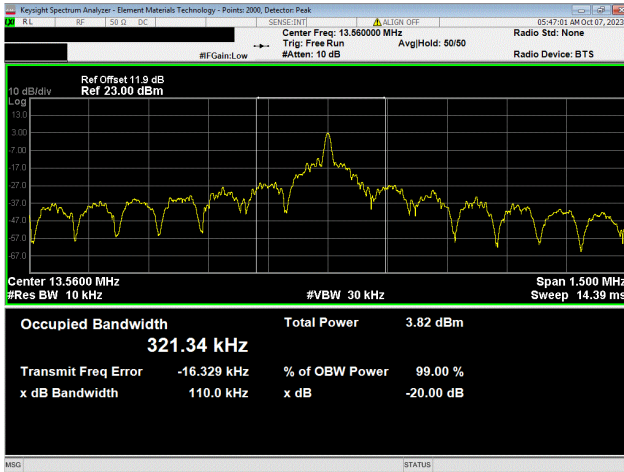
DEVIATIONS FROM TEST STANDARD

None

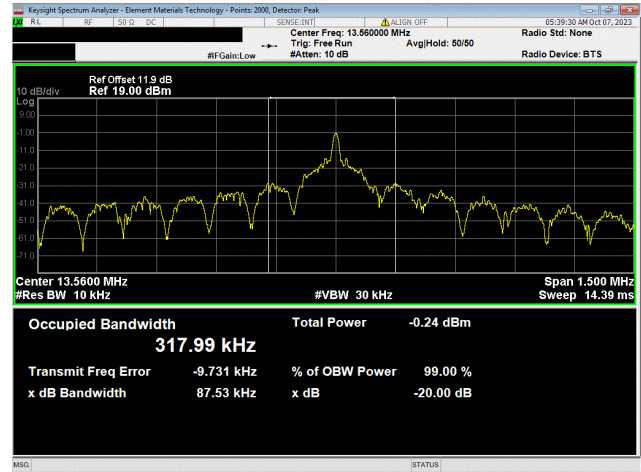
TEST RESULTS

	Value	Limit	Result
RFID, 13.56 MHz			
AccessPoint 1			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	110.011 kHz	Within	Pass
AccessPoint 2			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	87.532 kHz	Within	Pass
CrossSwitch (Radio 1)			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	105.617 kHz	Within	Pass
CrossSwitch (Radio 2)			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	113.153 kHz	Within	Pass

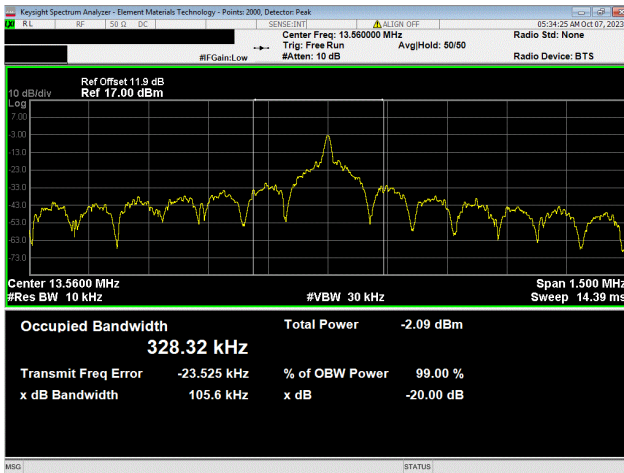
EMISSIONS BANDWIDTH (20 DB)



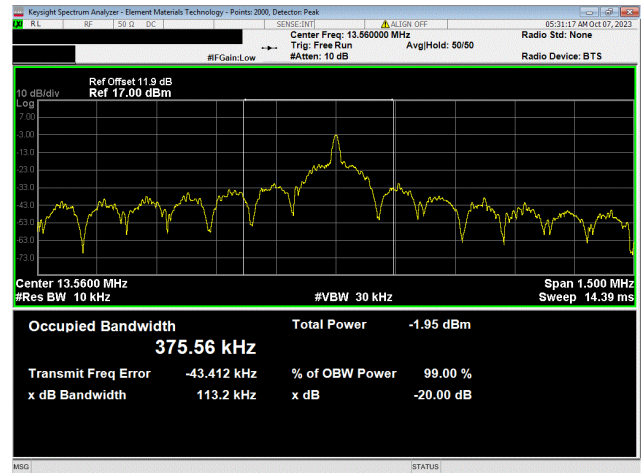
RFID, 13.56 MHz
AccessPoint 1
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
AccessPoint 2
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal Temperature, 20°C
Voltage, Nominal, 220V

OCCUPIED BANDWIDTH

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.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the 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 Peak detector with max hold was used until the trace stabilized.

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
Thermometer	Omega Engineering, Inc.	HH311	DUI	2023-03-02	2024-03-02
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBH	NCR	NCR
Power Source/Analyzer	Hewlett Packard	6841A	THC	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Generator - Signal	Agilent	N5173B	TIW	2023-08-07	2026-08-07
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2023-08-31	2024-08-31
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXJ	2023-08-30	2024-08-30
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXK	2023-08-30	2024-08-30

OCCUPIED BANDWIDTH

EUT:	Recapper Module SL Double	Work Order:	ABBO0283
Serial Number:	RMSL000023	Date:	2023-10-06
Customer:	Abbott Laboratories	Temperature:	21.3°C
Attendees:	Frank Sun	Relative Humidity:	48.2%
Customer Project:	None	Bar. Pressure (PMSL):	1010 mbar
Tested By:	Jarrod Brenden	Job Site:	TX07
Power:	220VAC/60Hz	Configuration:	ABBO0283-3
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

COMMENTS

All losses in measurement path were accounted for: DC blocks, cables, and attenuators where used. Test protocol D000132788/A. EUT contains 3 PCBs with RFID radios; 2 AccessPoint (1 radio each) and 1 CrossSwitch (2 radios each).

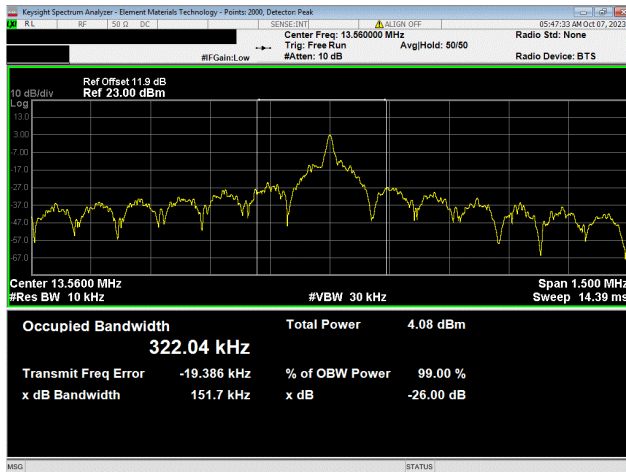
DEVIATIONS FROM TEST STANDARD

None

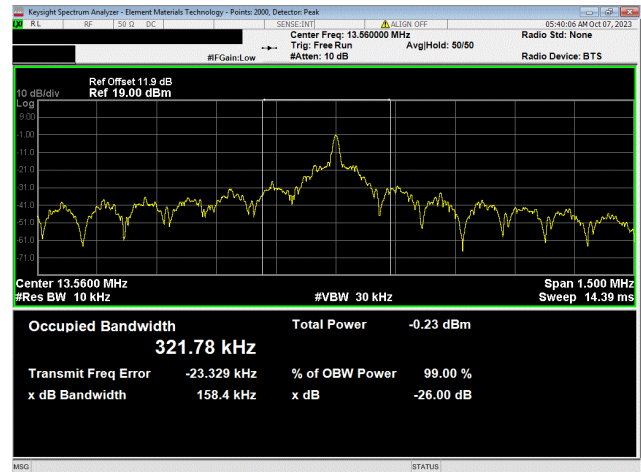
TEST RESULTS

	Value	Limit	Result
RFID, 13.56 MHz			
AccessPoint 1			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	322.042 kHz	N/A	N/A
AccessPoint 2			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	321.776 kHz	N/A	N/A
CrossSwitch (Radio 1)			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	337.653 kHz	N/A	N/A
CrossSwitch (Radio 2)			
Nominal Temperature, 20°C			
Voltage, Nominal, 220V	328.212 kHz	N/A	N/A

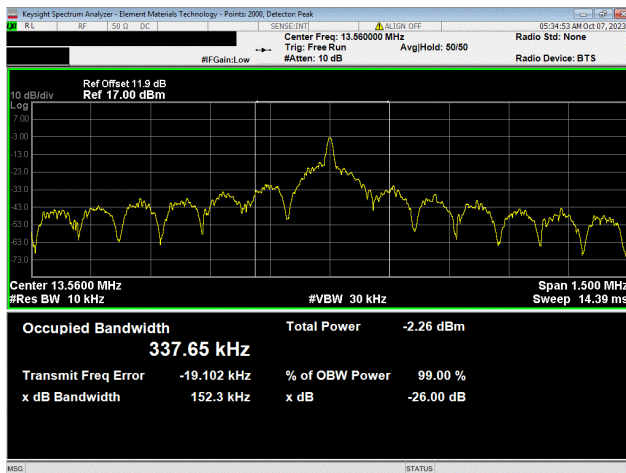
OCCUPIED BANDWIDTH



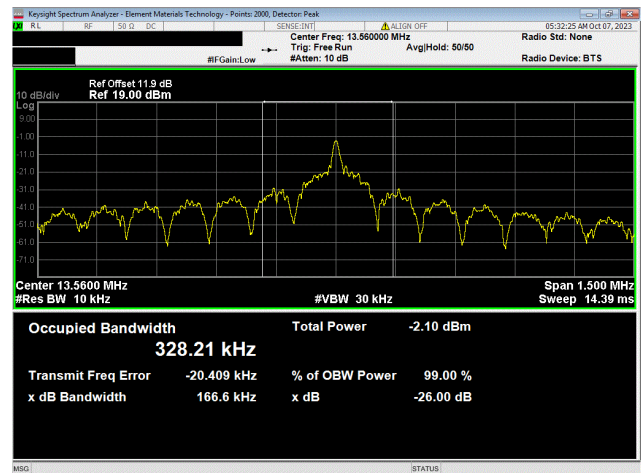
RFID, 13.56 MHz
AccessPoint 1
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
AccessPoint 2
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
CrossSwitch (Radio 1)
Nominal Temperature, 20°C
Voltage, Nominal, 220V



RFID, 13.56 MHz
CrossSwitch (Radio 2)
Nominal Temperature, 20°C
Voltage, Nominal, 220V

End of Test Report