

FCC Test Report

Product Name	Video Reader Pro
Model No.	OP-VID-PRO-RDR
FCC ID	2APJVOPVRC

Applicant	Openpath Security Inc.
Address	13428 Maxella Ave, #866 Marina Del Rey, CA 90292

Date of Receipt	Jul. 01, 2021
Issued Date	Sep. 03, 2021
Report No.	2170041R-RFUSOTHV03
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Report

Issued Date: Sep. 03, 2021

Report No.: 2170041R-RFUSOTHV03



Product Name	Video Reader Pro
Applicant	Openpath Security Inc.
Address	13428 Maxella Ave, #866 Marina Del Rey, CA 90292
Manufacturer	VIVOTEK INC.
Model No.	OP-VID-PRO-RDR
FCC ID.	2APJVOPVRC
EUT Rated Voltage	DC 48V (Power by PoE)
EUT Test Voltage	DC 48V (Power by PoE)
Trade Name	Openpath Security Inc.
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C
Test Result	Complied

Documented By

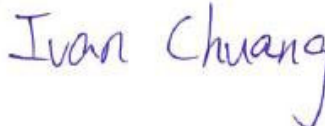
:



(Senior Project Specialist / Joanne Lin)

Tested By

:



(Senior Engineer / Ivan Chuang)

Approved By

:



(Senior Engineer / Jack Hsu)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Tested System Details.....	5
1.3. Configuration of tested System	6
1.4. EUT Exercise Software	6
1.5. Test Facility	7
1.6. List of Test Equipment	8
1.7. Uncertainty	9
2. Conducted Emission.....	10
2.1. Test Setup	10
2.2. Limits	10
2.3. Test Procedure	11
2.4. Test Result of Conducted Emission.....	12
3. Radiated Emission.....	14
3.1. Test Setup	14
3.2. Limits	15
3.3. Test Procedure	16
3.4. Test Result of Radiated Emission.....	17
4. Band Edge	27
4.1. Test Setup	27
4.2. Limits	27
4.3. Test Procedure	28
4.4. Test Result of Band Edge	29
5. Frequency Tolerance	31
5.1. Test Setup	31
5.2. Limits	31
5.3. Test Procedure	31
5.4. Test Result of Frequency Stability.....	32
6. EMI Reduction Method During Compliance Testing	34
Appendix 1: EUT Test Photographs	
Appendix 2: Product Photos-Please refer to the file: 2170041R-Product Photos	

Revision History

Report No.	Version	Description	Issued Date
2170041R-RFUSOTHV03	V1.0	Initial issue of report.	2021-09-03

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Video Reader Pro
Trade Name	Openpath Security Inc.
Model No.	OP-VID-PRO-RDR
FCC ID	2APJVOPVRC
Frequency Range	13.56MHz
Modulation	ASK
Antenna Type	Loop coil Antenna

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is a Video Reader Pro with a built-in 13.56MHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.225.
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
-----------	------------------

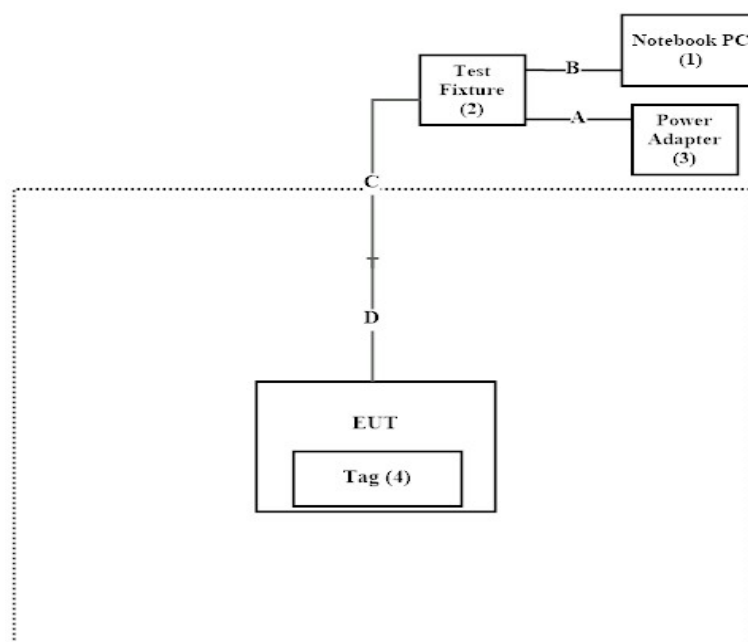
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook PC	DELL	P62G	229FJC2	N/A
2 Test Fixture	Openpath Security Inc	RJ-45-END-SPAN VER 0.1	N/A	N/A
3 Power Adapter	Deevan	DSA-96PFB-48 1	N/A	Non-Shielded, 1.8m
4 Tag	ASUS	NFC Tag	N/A	N/A

Signal Cable Type	Signal cable Description
A Power Cable	Non-Shielded, 1.5m, with one ferrite core bonded.
B LAN Cable	Non-Shielded, 1.8m
C LAN Cable	Non-Shielded, 3m
D PoE Cable	Non-Shielded, 0.36m

1.3. Configuration of tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software "CMD 10.0.19043.1110" on the Notebook PC.
3. Configure the test mode, the test channel.
4. Press "OK" to start the continuous transmit.
5. Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	28 °C
	Humidity (%RH)	10~90 %	55 %
Radiated Emission	Temperature (°C)	10~40 °C	23.4 °C
	Humidity (%RH)	10~90 %	65 %
Conductive	Temperature (°C)	10~40 °C	28 °C
	Humidity (%RH)	10~90 %	53 %

USA : FCC Registration Number: TW0033

Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan,
R.O.C.
Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.6. List of Test Equipment

For Conduction measurements /SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021.06.19	2022.06.18
X	Two-Line V-Network	R&S	ENV216	101306	2021.04.08	2022.04.07
X	Two-Line V-Network	R&S	ENV216	101307	2021.05.04	2022.05.03
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2021.05.24	2022.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

For Conducted measurements /SH3

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Temperature Chamber	KSON	THS-D4T-100	A0606	2021.08.24	2022.08.23
X	Spectrum Analyzer	R&S	FSV40	101149	2021.02.04	2022.02.03
X	AC Power Source	eec	6605	1570547	2020.12.23	2021.12.22

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.

For Radiated measurements /966-3

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2021.04.14	2022.04.13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-678	2020.09.04	2021.09.03
	Horn Antenna	ETS-Lindgren	3117	00201259	2020.10.23	2021.10.22
	Horn Antenna	Com-Power	AH-840	101087	2021.06.16	2022.06.15
X	Pre-Amplifier	EMCI	EMC001330	060736	2021.08.11	2022.08.10
	Pre-Amplifier	EMCI	EMC051835SE	980312	2021.02.24	2022.02.23
	Pre-Amplifier	EMCI	EMC05820SE	980361	2020.12.21	2021.12.20
	Pre-Amplifier	EMCI	EMC184045SE	980314	2021.06.24	2022.06.23
	Filter	MICRO TRONICS	BRM50702	G251	2020.09.17	2021.09.16
	Filter	MICRO TRONICS	BRM50716	G188	2020.09.17	2021.09.16
X	EMI Test Receiver	R&S	ESR	102793	2020.12.17	2021.12.16
X	Spectrum Analyzer	R&S	FSV3044	101113	2021.02.03	2022.02.02
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF003	2021.03.03	2022.03.02
	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2021.06.25	2022.06.24

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

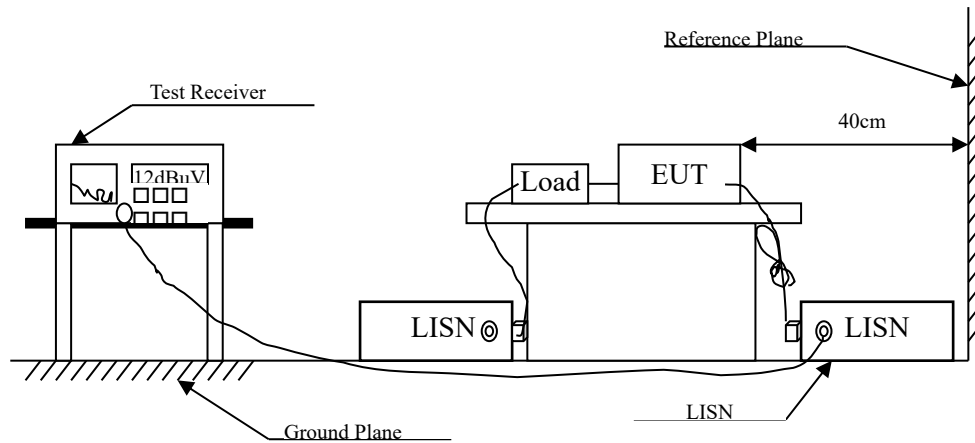
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	± 3.42 dB	
Radiated Emission	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB
Band Edge	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB
Frequency Tolerance	± 682.83 Hz	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 ^(註)	56-46 ^(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

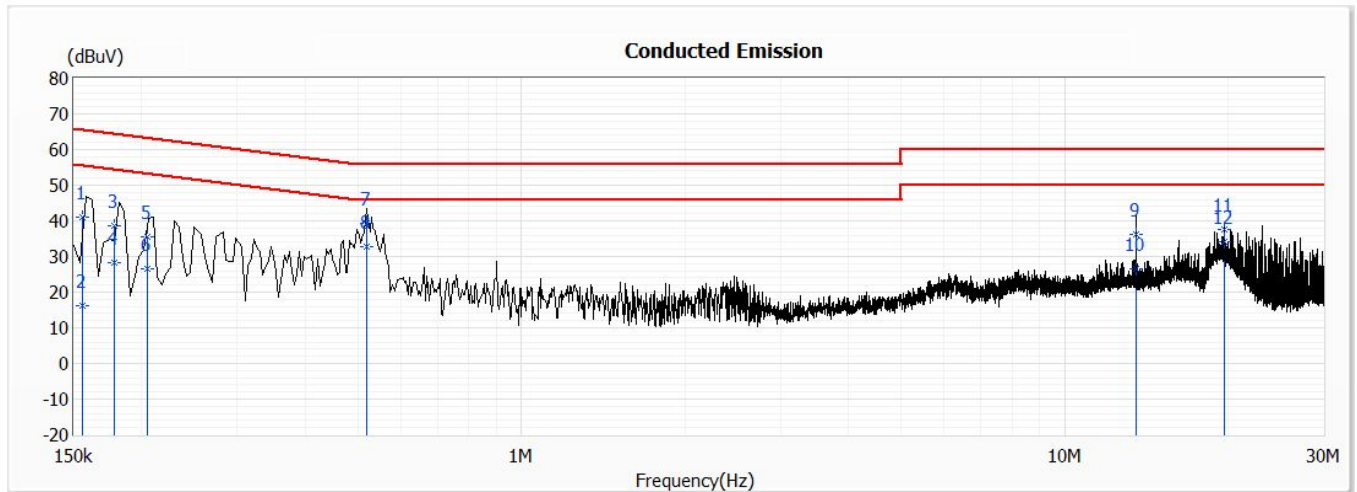
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

Product : Video Reader Pro
 Test Item : Conducted Emission Test
 Power Line : L1
 Test Mode : Mode 1: Transmit
 Test Date : 2021/09/03

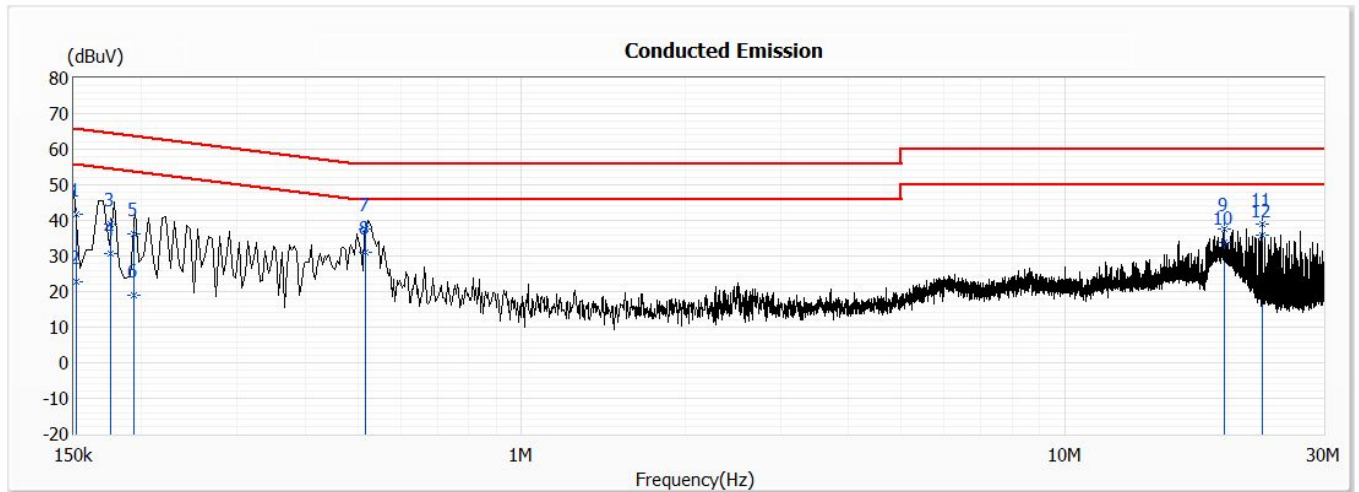


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.156	40.87	65.69	-24.82	31.17	9.70	QP
2	0.156	16.30	55.69	-39.39	6.60	9.70	AV
3	0.178	38.49	64.58	-26.09	28.80	9.69	QP
4	0.178	28.15	54.58	-26.43	18.46	9.69	AV
5	0.205	35.49	63.41	-27.92	25.80	9.69	QP
6	0.205	26.66	53.41	-26.75	16.97	9.69	AV
7	0.518	39.30	56.00	-16.70	29.60	9.70	QP
*8	0.518	32.66	46.00	-13.34	22.96	9.70	AV
9	13.561	36.32	60.00	-23.68	25.48	10.84	QP
10	13.561	26.61	50.00	-23.39	15.77	10.84	AV
11	19.708	37.52	60.00	-22.48	26.76	10.76	QP
12	19.708	34.04	50.00	-15.96	23.28	10.76	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Video Reader Pro
 Test Item : Conducted Emission Test
 Power Line : N
 Test Mode : Mode 1: Transmit
 Test Date : 2021/09/03



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.151	41.66	65.93	-24.27	31.95	9.71	QP
2	0.151	22.71	55.93	-33.22	13.00	9.71	AV
3	0.175	39.05	64.72	-25.67	29.34	9.71	QP
4	0.175	30.68	54.72	-24.04	20.97	9.71	AV
5	0.194	36.10	63.87	-27.77	26.39	9.71	QP
6	0.194	19.07	53.87	-34.80	9.36	9.71	AV
7	0.517	37.56	56.00	-18.44	27.85	9.71	QP
8	0.517	30.95	46.00	-15.05	21.24	9.71	AV
9	19.708	37.57	60.00	-22.43	26.73	10.84	QP
10	19.708	33.95	50.00	-16.05	23.11	10.84	AV
11	23.128	38.81	60.00	-21.19	28.01	10.80	QP
*12	23.128	35.89	50.00	-14.11	25.09	10.80	AV

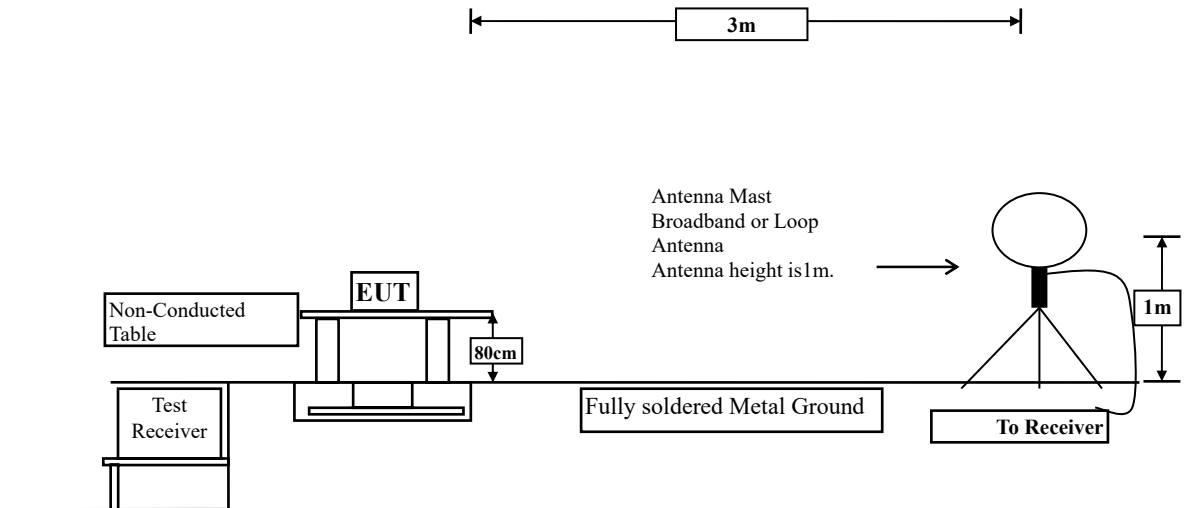
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

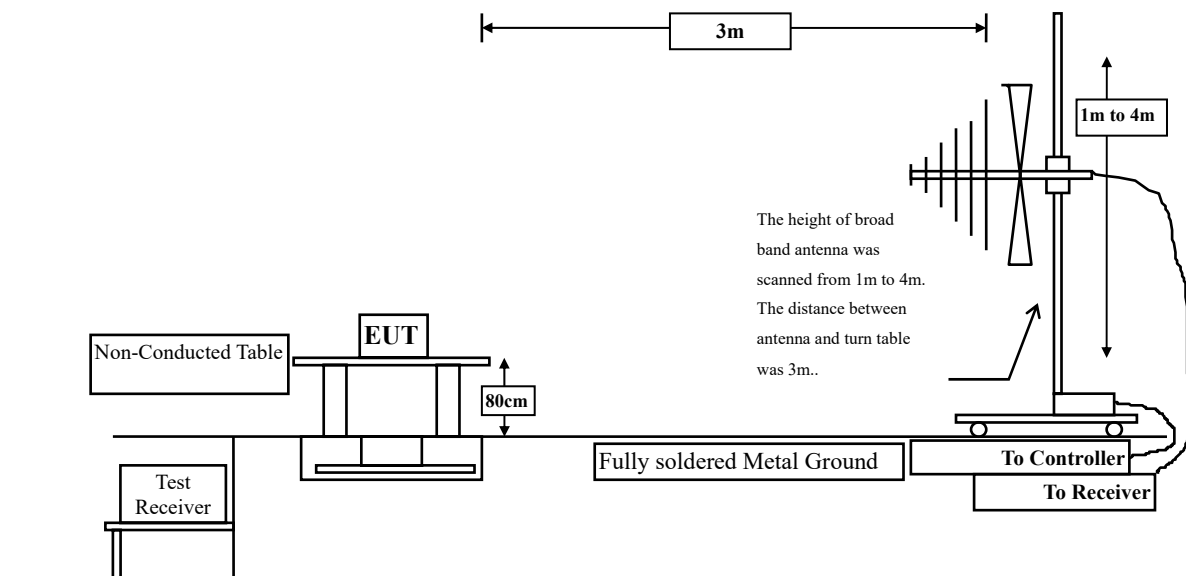
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

➤ Fundamental electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.225 Limits				
Fundamental Frequency MHz	Field strength of fundamental			
	uV/m	Distance (meter)	dBuV/m	Distance (meter)
13.553 – 13.567	15848	30	124	3
13.410 – 13.553 and 13.567 – 13.710	334	30	90.47	3
13.110 – 13.410 and 13.710 – 14.010	106	30	80.50	3
Outside of the 13.110 – 14.010	See 15.209 Limits			

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an quasi-peak detector.

➤ Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

Fundamental electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna which is 1 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

Spurious electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

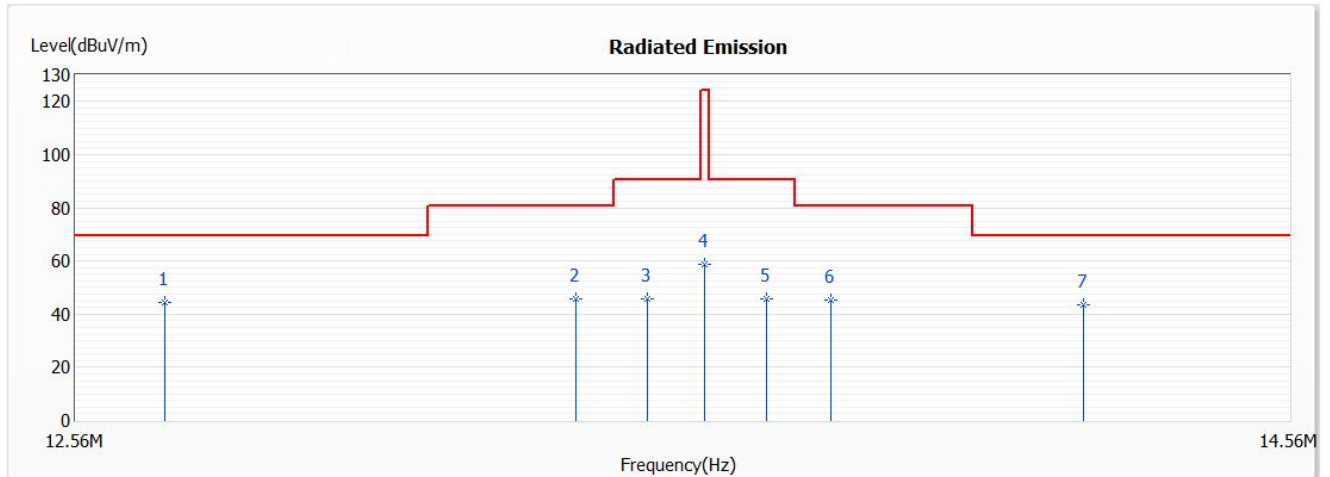
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz. The frequency range from 9kHz to 10th harmonics is checked.

3.4. Test Result of Radiated Emission

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal_X-axis



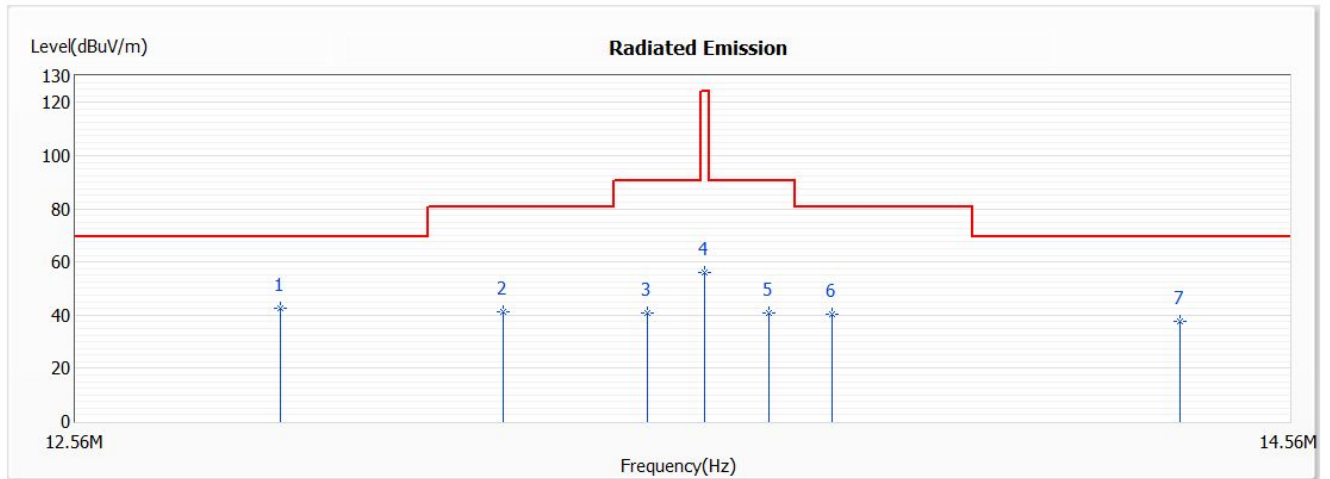
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	12.698	44.39	69.50	-25.11	24.11	20.28	QP
2	13.348	45.94	80.50	-34.56	25.72	20.22	QP
3	13.466	45.67	90.47	-44.80	25.50	20.17	QP
4	13.560	58.72	124.00	-65.28	38.58	20.14	QP
5	13.662	45.75	90.47	-44.72	25.65	20.10	QP
6	13.770	45.09	80.50	-35.41	25.04	20.05	QP
7	14.200	43.50	69.50	-26.00	23.55	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical_X-axis



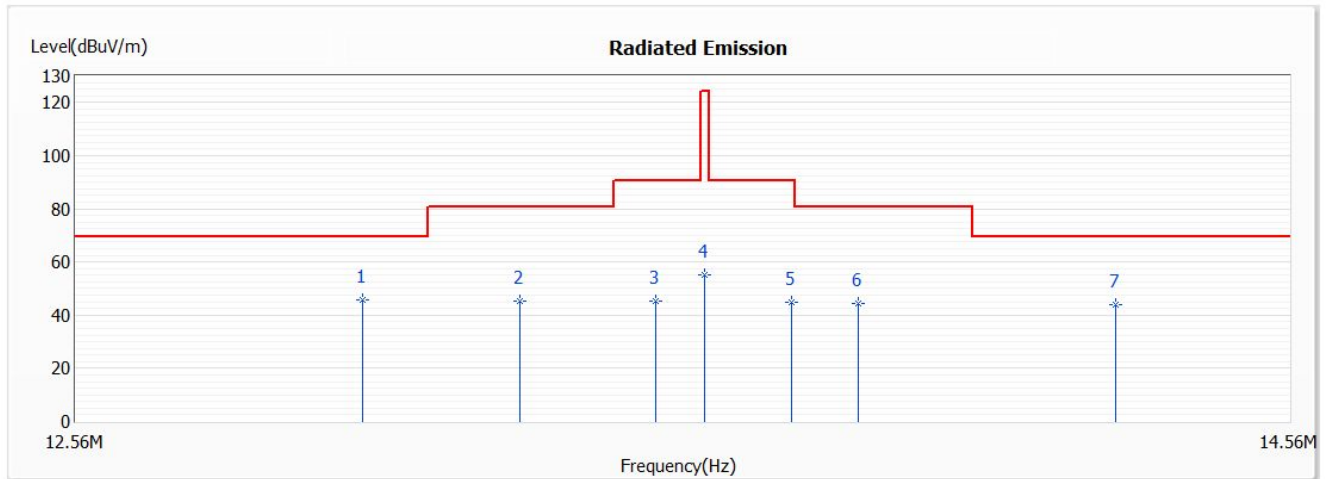
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	12.878	42.50	69.50	-27.00	22.17	20.33	QP
2	13.232	41.17	80.50	-39.33	20.90	20.27	QP
3	13.466	40.82	90.47	-49.65	20.65	20.17	QP
4	13.560	56.00	124.00	-68.00	35.86	20.14	QP
5	13.666	40.60	90.47	-49.87	20.51	20.09	QP
6	13.772	40.27	80.50	-40.23	20.22	20.05	QP
7	14.368	37.66	69.50	-31.84	17.71	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal_Y-axis



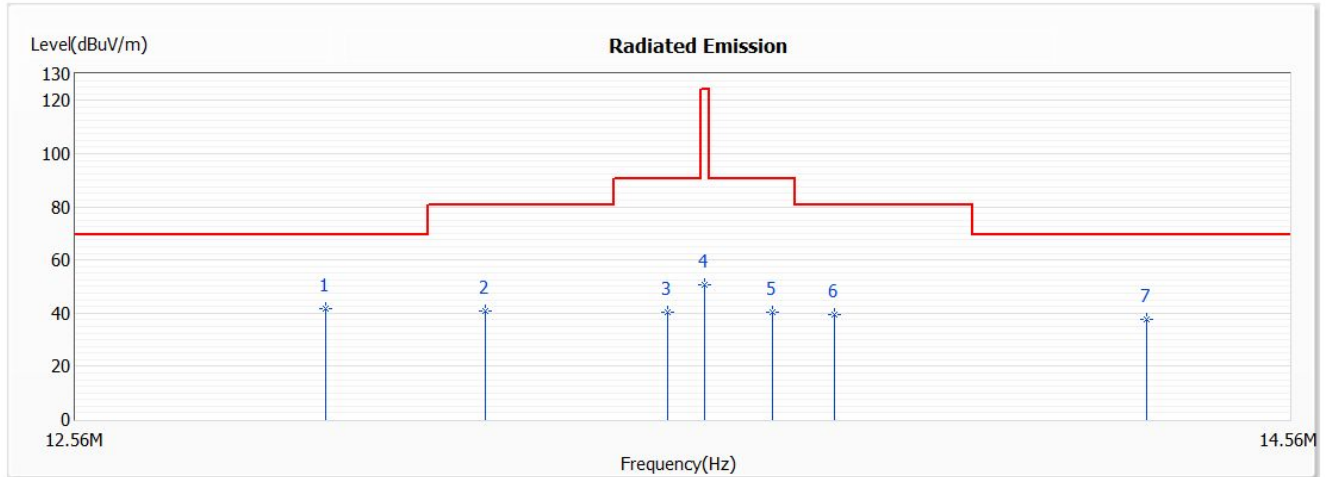
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.006	45.72	69.50	-23.78	25.36	20.36	QP
2	13.258	45.36	80.50	-35.14	25.10	20.26	QP
3	13.480	45.38	90.47	-45.09	25.21	20.17	QP
4	13.560	55.27	124.00	-68.73	35.13	20.14	QP
5	13.704	44.76	90.47	-45.71	24.68	20.08	QP
6	13.816	44.50	80.50	-36.00	24.47	20.03	QP
7	14.254	43.85	69.50	-25.65	23.90	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical_Y-axis



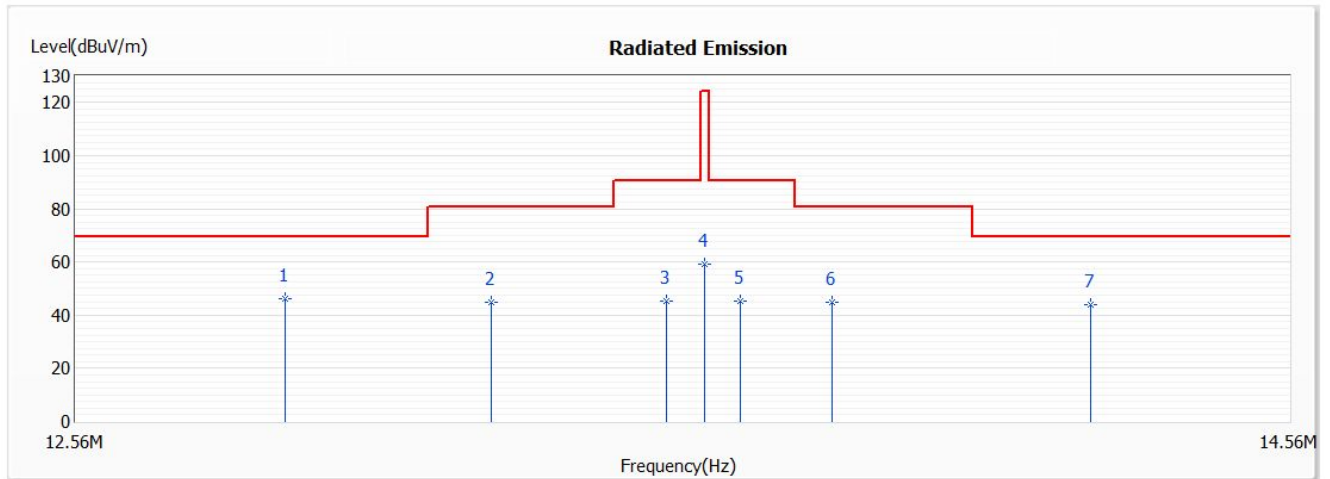
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	12.948	41.88	69.50	-27.62	21.53	20.35	QP
2	13.202	40.88	80.50	-39.62	20.60	20.28	QP
3	13.498	40.28	90.47	-50.19	20.12	20.16	QP
4	13.560	50.56	124.00	-73.44	30.42	20.14	QP
5	13.672	40.21	90.47	-50.26	20.12	20.09	QP
6	13.776	39.47	80.50	-41.03	19.42	20.05	QP
7	14.308	37.64	69.50	-31.86	17.69	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal_Z-axis



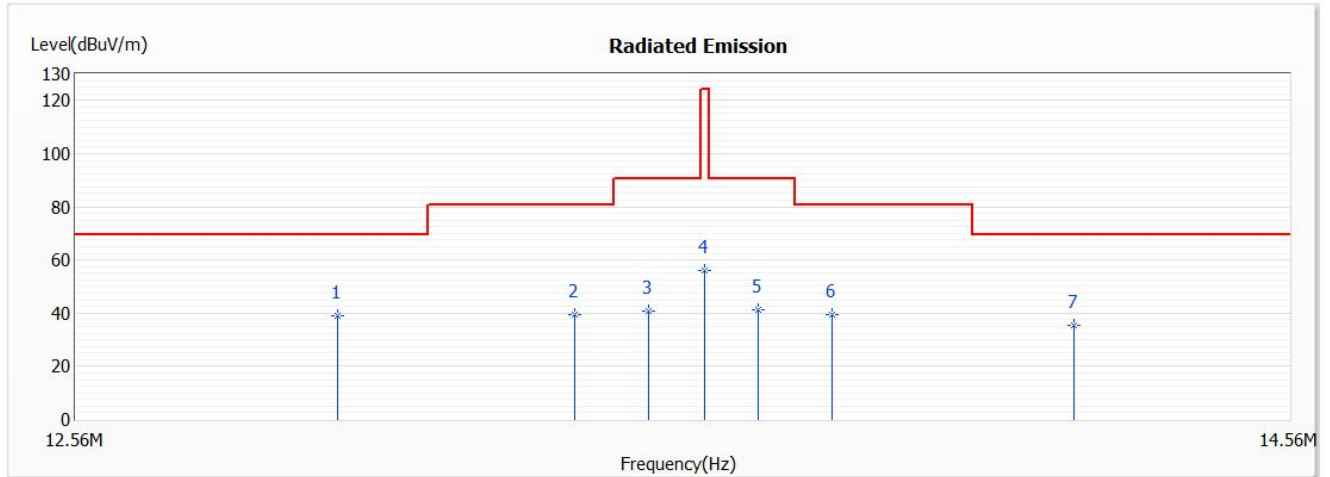
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	12.884	46.06	69.50	-23.44	25.73	20.33	QP
2	13.212	45.04	80.50	-35.46	24.76	20.28	QP
3	13.496	45.07	90.47	-45.40	24.91	20.16	QP
4	13.560	59.25	124.00	-64.75	39.11	20.14	QP
5	13.618	45.38	90.47	-45.09	25.27	20.11	QP
6	13.772	44.80	80.50	-35.70	24.75	20.05	QP
7	14.212	44.08	69.50	-25.42	24.13	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : Fundamental Radiated Emission
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical_Z-axis



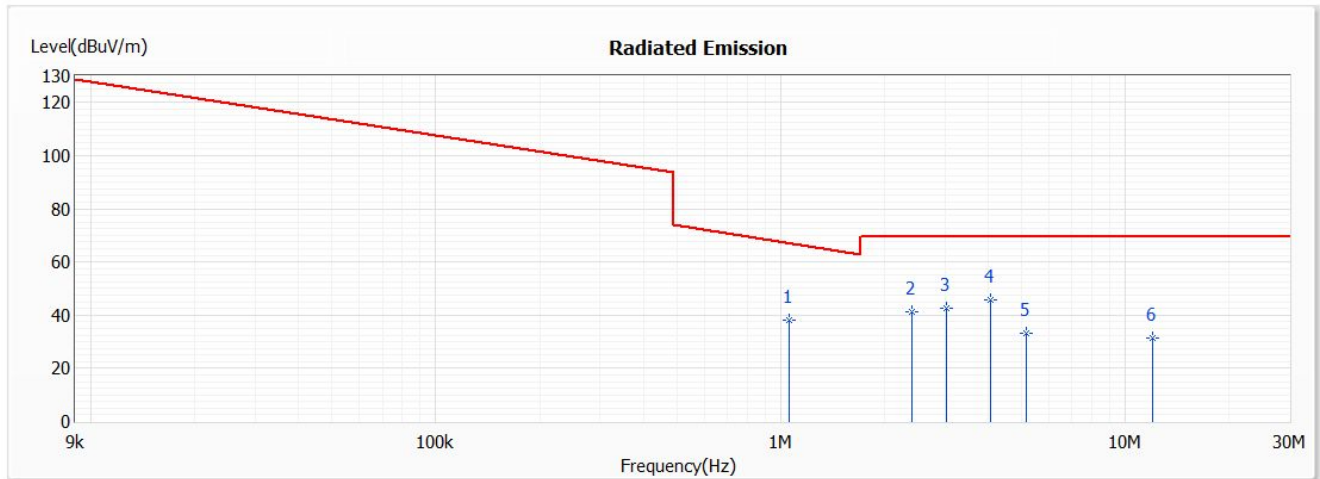
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	12.968	38.84	69.50	-30.66	18.49	20.35	QP
2	13.346	39.47	80.50	-41.03	19.25	20.22	QP
3	13.468	40.57	90.47	-49.90	20.40	20.17	QP
4	13.560	55.91	124.00	-68.09	35.77	20.14	QP
5	13.648	41.11	90.47	-49.36	21.01	20.10	QP
6	13.772	39.49	80.50	-41.01	19.44	20.05	QP
7	14.182	35.33	69.50	-34.17	15.38	19.95	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : General Radiated Emission Data (below 30MHz)
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal Z-axis



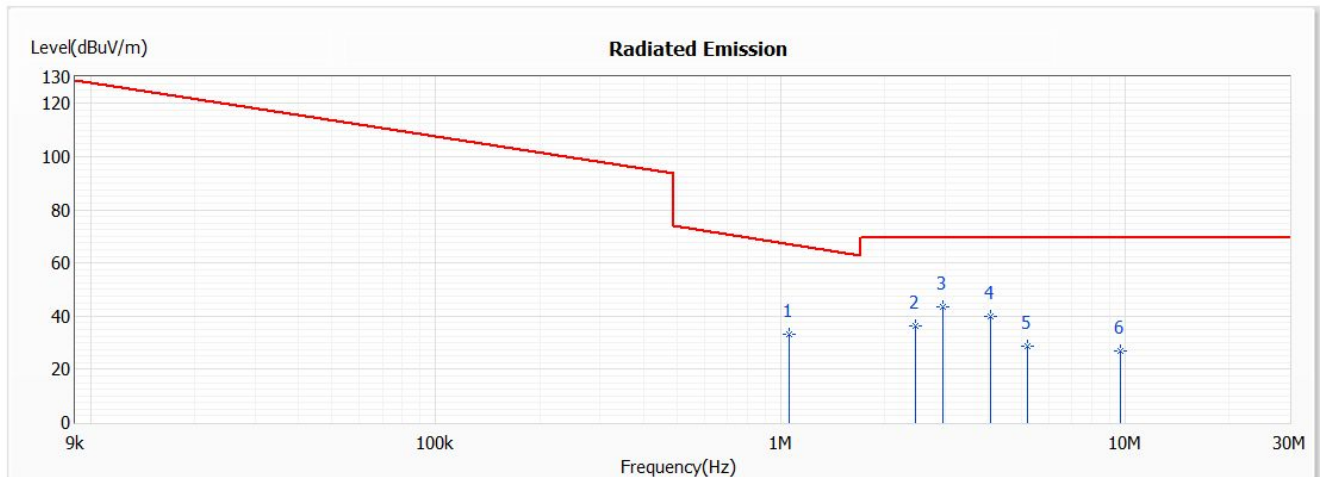
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	1.059	38.24	67.12	-28.88	18.16	20.08	QP
2	2.408	41.20	69.54	-28.34	21.10	20.10	QP
3	3.038	42.41	69.54	-27.13	22.30	20.11	QP
* 4	4.058	45.79	69.54	-23.75	25.64	20.15	QP
5	5.167	33.28	69.54	-36.26	13.18	20.10	QP
6	12.035	31.23	69.54	-38.31	11.14	20.09	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : General Radiated Emission Data (below 30MHz)
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical Z-axis



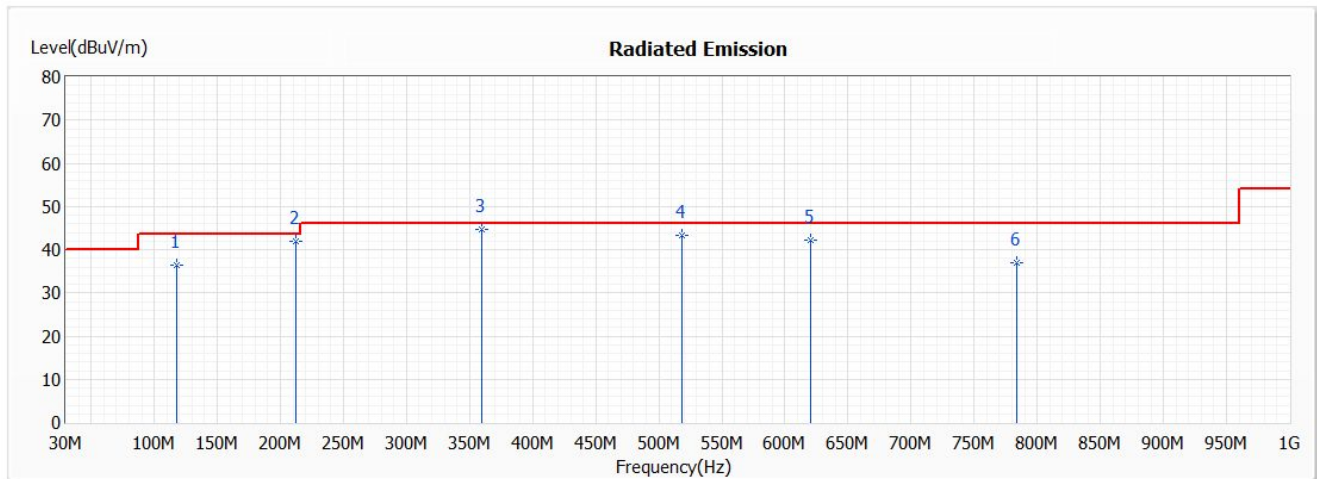
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	1.059	33.27	67.12	-33.85	13.19	20.08	QP
2	2.468	36.46	69.54	-33.08	16.36	20.10	QP
* 3	2.948	43.43	69.54	-26.11	23.32	20.11	QP
4	4.058	39.76	69.54	-29.78	19.61	20.15	QP
5	5.227	28.84	69.54	-40.70	8.74	20.10	QP
6	9.666	26.91	69.54	-42.63	6.84	20.07	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Video Reader Pro
 Test Item : General Radiated Emission Data (above 30MHz)
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal Z-axis



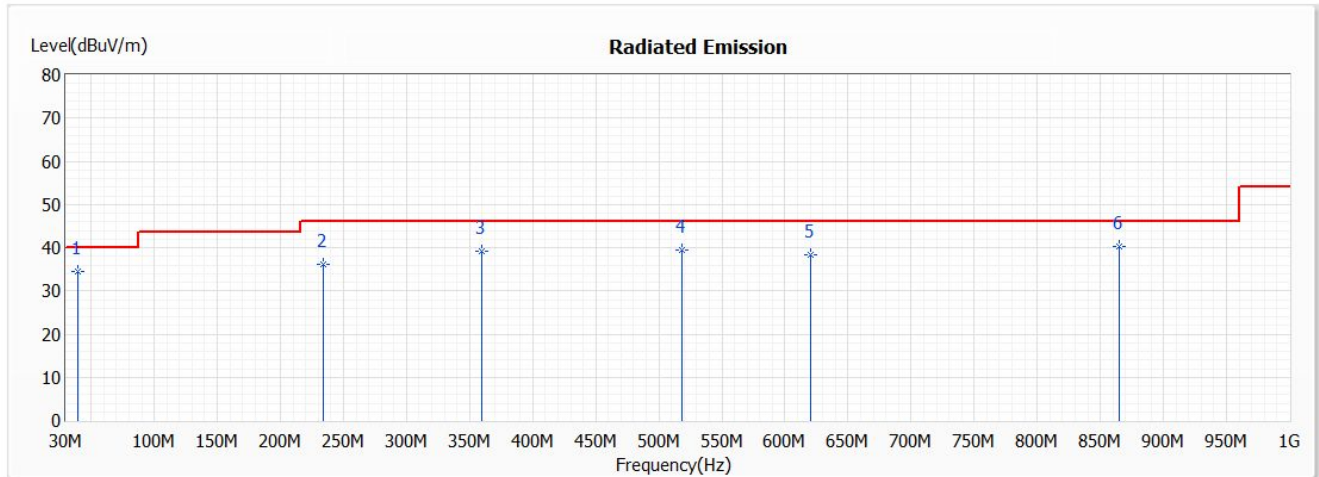
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	118.270	36.29	43.50	-7.21	57.93	-21.64	QP
2	212.360	42.06	43.50	-1.44	63.71	-21.65	QP
* 3	359.800	44.62	46.00	-1.38	61.36	-16.74	QP
4	517.910	43.27	46.00	-2.73	56.34	-13.07	QP
5	620.730	42.28	46.00	-3.72	53.29	-11.01	QP
6	783.690	36.95	46.00	-9.05	45.30	-8.35	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Video Reader Pro
 Test Item : General Radiated Emission Data (above 30MHz)
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical Z-axis



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	39.700	34.36	40.00	-5.64	53.55	-19.19	QP
2	233.700	36.23	46.00	-9.77	56.50	-20.27	QP
3	359.800	39.15	46.00	-6.85	55.89	-16.74	QP
4	517.910	39.48	46.00	-6.52	52.55	-13.07	QP
5	620.730	38.30	46.00	-7.70	49.31	-11.01	QP
6	865.170	40.26	46.00	-5.74	47.96	-7.70	QP

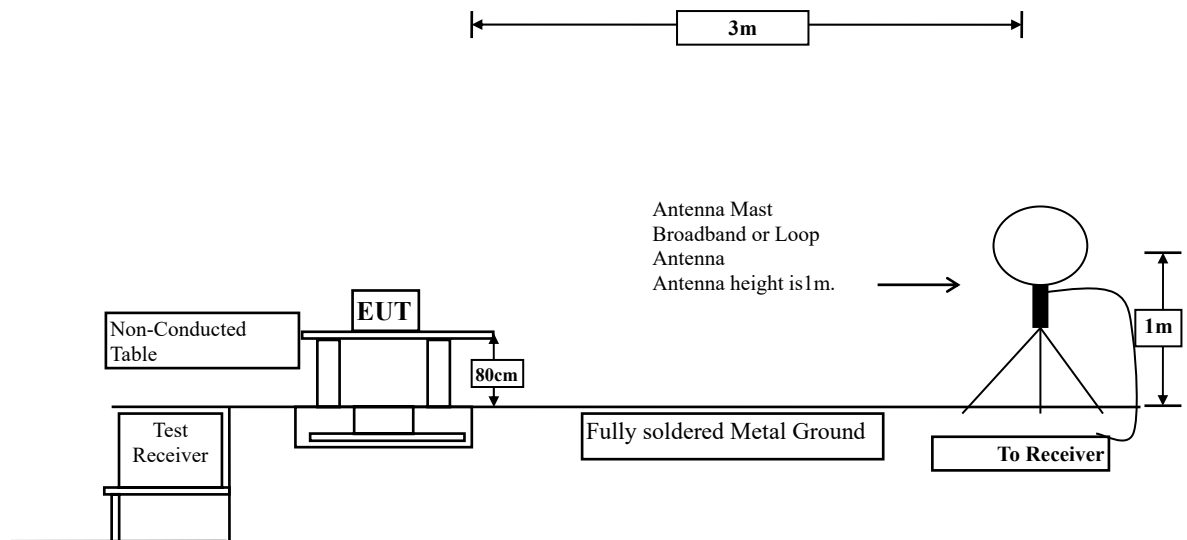
Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4. Band Edge

4.1. Test Setup

Radiated Emission Under 30MHz



4.2. Limits

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in Section 15.209. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

4.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

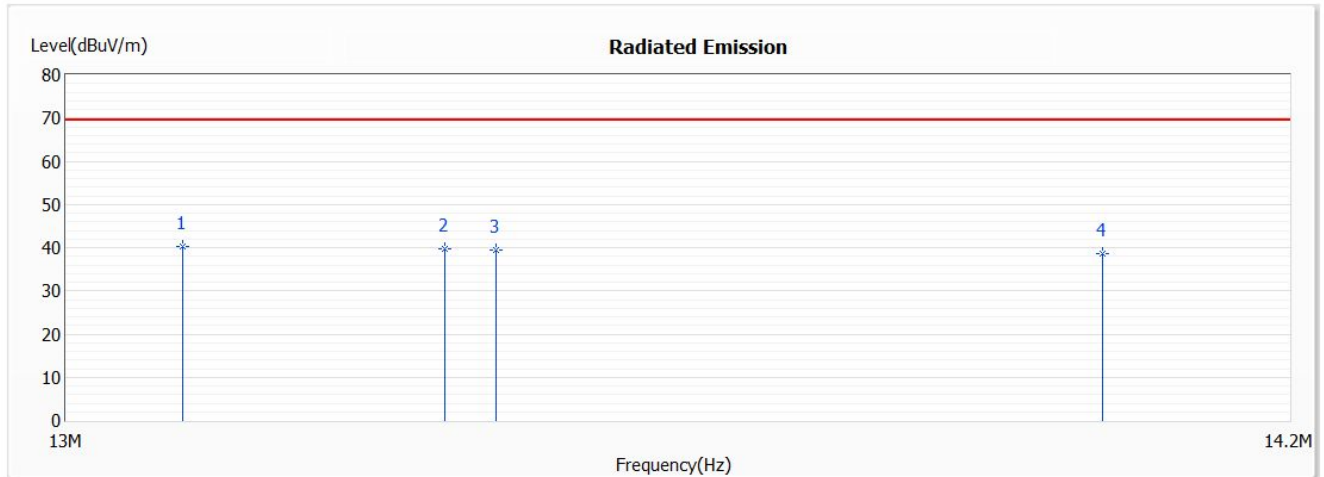
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

4.4. Test Result of Band Edge

Product : Video Reader Pro
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Horizontal Z-axis



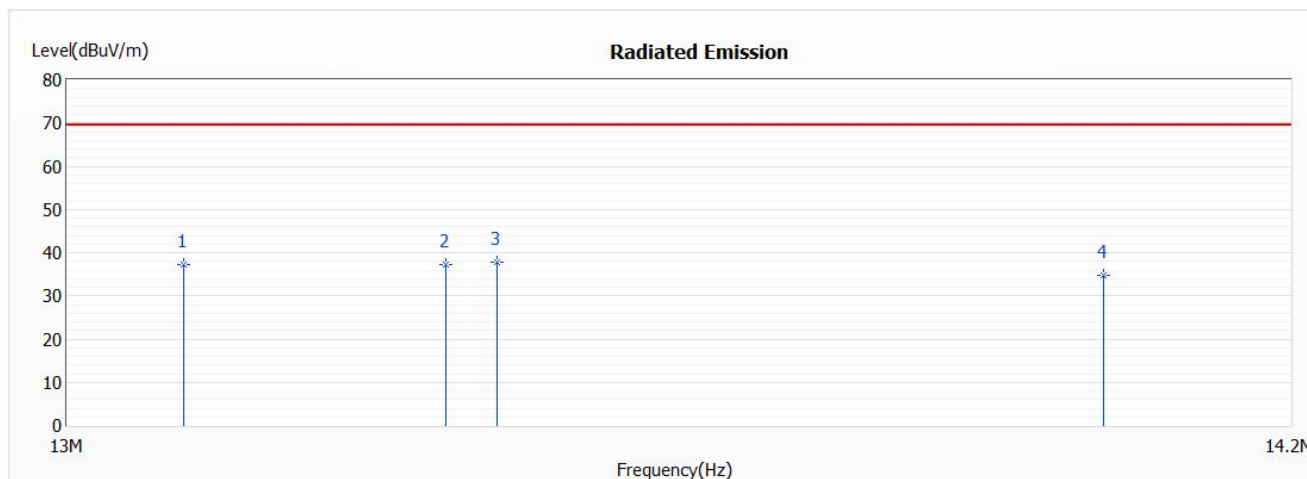
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.110	40.26	69.54	-29.28	19.94	20.32	QP
2	13.360	39.62	69.54	-29.92	19.40	20.22	QP
3	13.410	39.33	69.54	-30.21	19.13	20.20	QP
4	14.010	38.61	69.54	-30.93	18.65	19.96	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Video Reader Pro
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit
 Test date : 2021/07/09

Vertical Z-axis



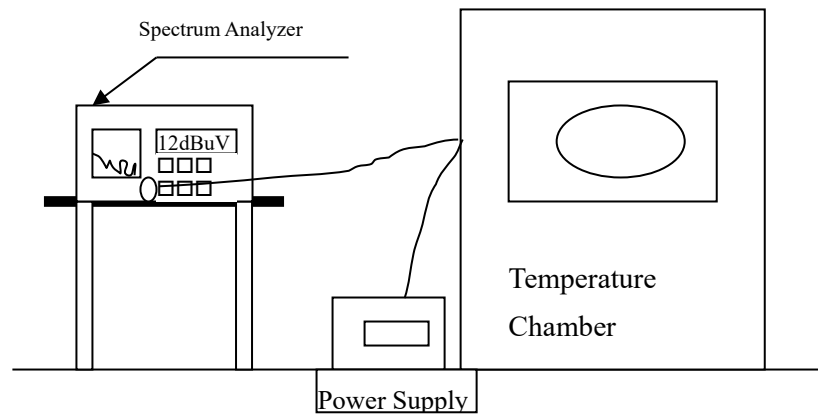
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.110	37.15	69.54	-32.39	16.83	20.32	QP
2	13.360	37.27	69.54	-32.27	17.05	20.22	QP
* 3	13.410	37.83	69.54	-31.71	17.63	20.20	QP
4	14.010	34.70	69.54	-34.84	14.74	19.96	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

5. Frequency Tolerance

5.1. Test Setup



5.2. Limits

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency.

5.3. Test Procedure

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.4. Test Result of Frequency Stability

Product : Video Reader Pro
 Test Item : Frequency Tolerance
 Test Mode : Mode 1: Transmit
 Test date : 2021/08/19

Temperature (°C)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	120	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56077	0.005678	
		5mins	13.56	13.56073	0.005383	
		10mins	13.56	13.56072	0.005310	
20	130.2	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56071	0.005236	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56069	0.005088	
20	102	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56071	0.005236	
		10mins	13.56	13.56072	0.005310	
50	120	start	13.56	13.56072	0.005310	±0.01 %
		2mins	13.56	13.56073	0.005383	
		5mins	13.56	13.56071	0.005236	
		10mins	13.56	13.56077	0.005678	
40	120	start	13.56	13.56066	0.004867	±0.01 %
		2mins	13.56	13.56061	0.004499	
		5mins	13.56	13.56066	0.004867	
		10mins	13.56	13.56031	0.002286	
30	120	start	13.56	13.56077	0.005678	±0.01 %
		2mins	13.56	13.56071	0.005236	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56068	0.005015	

10	120	start	13.56	13.56078	0.005752	± 0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56070	0.005162	
		10mins	13.56	13.56070	0.005162	
0	120	start	13.56	13.56078	0.005752	± 0.01 %
		2mins	13.56	13.56077	0.005678	
		5mins	13.56	13.56072	0.005310	
		10mins	13.56	13.56071	0.005236	
-10	120	start	13.56	13.56072	0.005310	± 0.01 %
		2mins	13.56	13.56070	0.005162	
		5mins	13.56	13.56071	0.005236	
		10mins	13.56	13.56072	0.005310	
-20	120	start	13.56	13.56070	0.005162	± 0.01 %
		2mins	13.56	13.56072	0.005310	
		5mins	13.56	13.56073	0.005383	
		10mins	13.56	13.56072	0.005310	

6. EMI Reduction Method During Compliance Testing

No modification was made during testing.