

FCC Test Report

Product Name	Humly Room Display One
Model No.	HUM1001
FCC ID	2APYB-HUM1001

Applicant	Certus Eiger Ltd.
Address	814, Houston Center, Mody Road, TST East Kowloon, Hong Kong

Date of Receipt	Oct. 08, 2019
Issued Date	Nov. 13, 2019
Report No.	19A0116R-RFUSP17V01
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.

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Test Report

Issued Date: Nov. 13, 2019

Report No.: 19A0116R-RFUSP17V01



Product Name	Humly Room Display One
Applicant	Certus Eiger Ltd.
Address	814, Houston Center, Mody Road, TST East Kowloon, Hong Kong
Manufacturer	Certus Eiger Ltd.
Model No.	HUM1001
FCC ID.	2APYB-HUM1001
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 110 V / 50 Hz
Trade Name	Humly
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Yun Che Chen
(Engineer / Yunche Chen)

Approved By : Vincent Lin
(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Humly Room Display One
Trade Name	Humly
Model No.	HUM1001
FCC ID	2APYB-HUM1001
Frequency Range	13.56MHz
Modulation	ASK
Antenna Type	Coil Antenna

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is a Humly Room Display One 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
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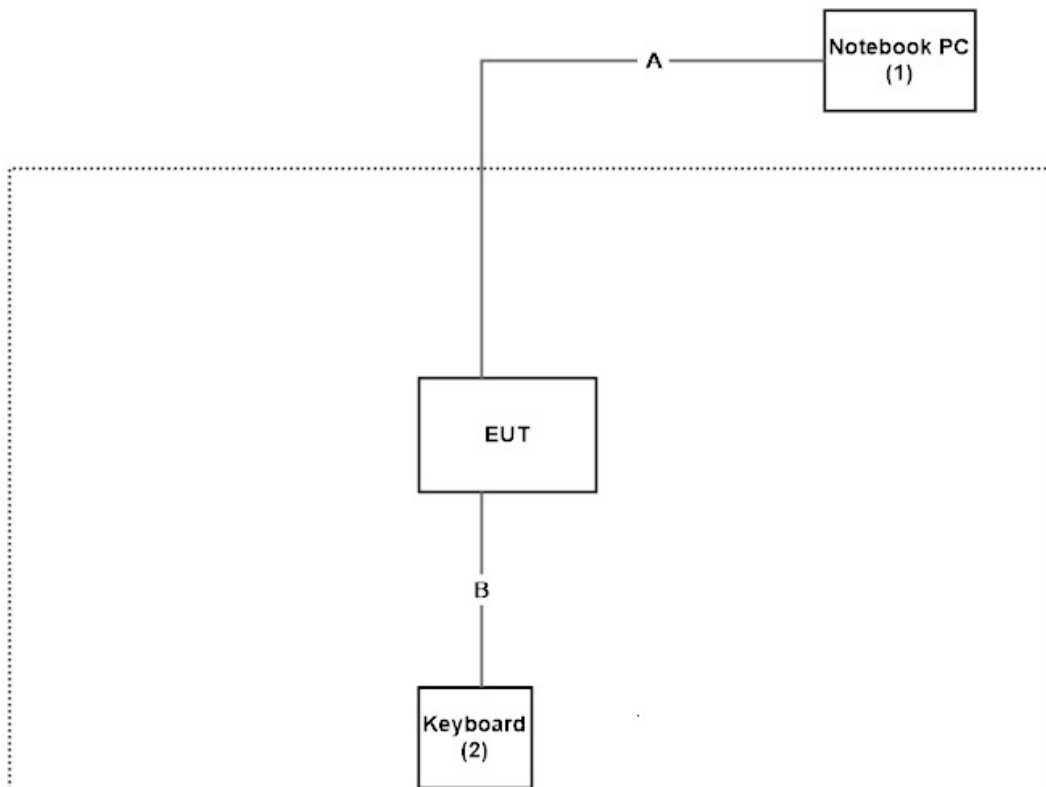
1.3. Tested System Details

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	Latitude E5440	B6TYTZ1	Non-Shielded, 0.8m
2	Keyboard	Dell	SK-8175	MY-0W217F-71619-092-0497-A01	N/A

Signal Cable Type	Signal cable Description
A	LAN Cable
B	Keyboard Cable

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute software “Cmd” on the EUT.
- (3) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

USA : FCC Registration Number: TW3023

Canada : IC Registration Number: 4075A

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan, R.O.C.

Phone number: 886-2-8601-3788

Fax number: 886-2-8601-3789

Email address: info.tw@dekra.com

Website: <http://www.dekra.com.tw>

1.7. List of Test Equipment

Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2019/02/26	2020/02/25
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2019/07/30	2020/07/29
X	EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19	2019/11/18
X	LISN	R&S	ENV216	101105	2019/04/10	2020/04/09
X	LISN	R&S	ESH3-Z5	836679/014	2019/04/10	2020/04/09
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2019/06/20	2020/06/19

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 Conduction Test SystemV9.0.5.

For Radiated measurements /Site3/CB8

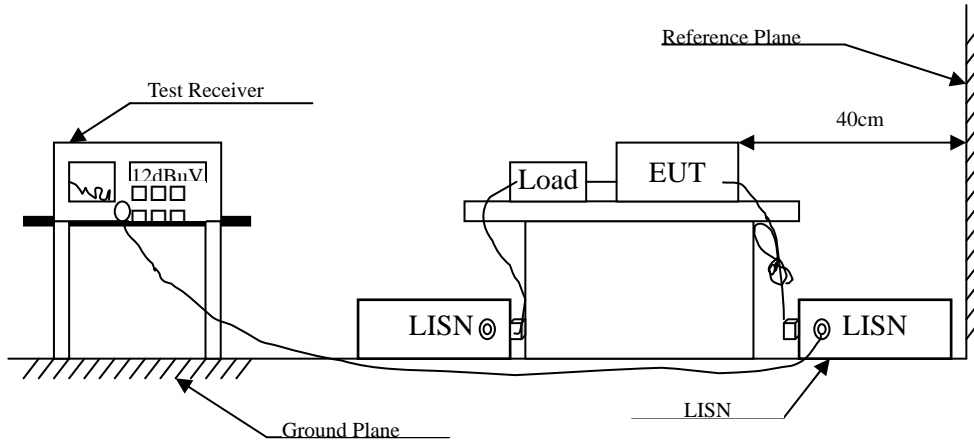
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2019/03/11	2020/03/10
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
	Bilog Antenna	Schaffner Chase	CBL6112B	2794	2019/06/23	2020/06/22
	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1 000D	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC001330	980254	2019/08/22	2020/08/21
	Horn Antenna	ETS-LINDGREN	3117	00228113	2019/05/02	2020/05/01
	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1 000D	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC05820SE	980362	2019/06/26	2020/06/25
	Amplifier	EMCI	EMC051845SE	SN980632	2019/08/08	2020/08/07
	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
	Amplifier + Cable	EMCI	EMC184045SE	980369	2019/04/16	2020/04/15
X	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2019/06/23	2020/06/22
X	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A 120M	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC001330	980255	2019/06/28	2020/06/27
	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

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 :Quietek EMI System V2.1.134.

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.

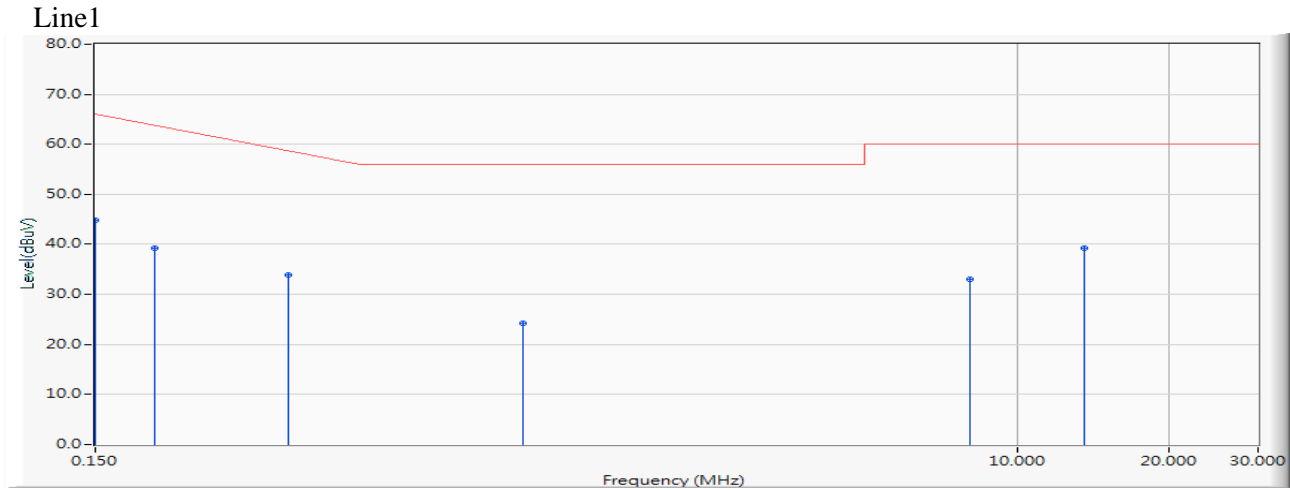
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : Humly Room Display One
 Test Item : Conducted Emission Test
 Test date : 2019/11/08
 Test Mode : Mode 1: Transmit

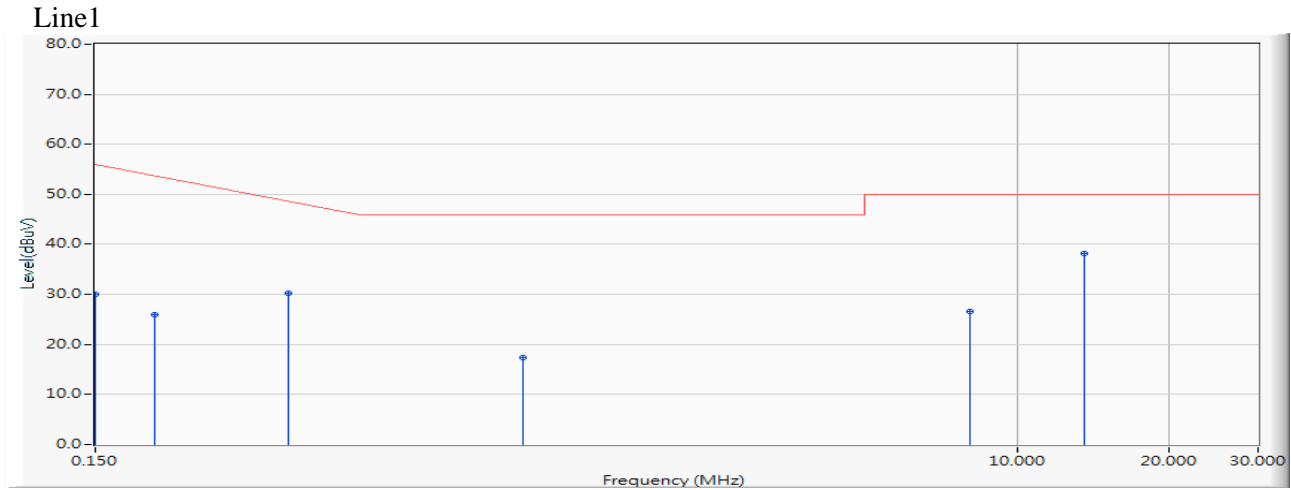


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.668	35.110	44.778	-21.222	66.000	QUASPEAK
2		0.197	9.670	29.650	39.320	-25.337	64.657	QUASPEAK
3		0.361	9.679	24.180	33.859	-26.112	59.971	QUASPEAK
4		1.052	9.717	14.560	24.277	-31.723	56.000	QUASPEAK
5		8.080	9.963	23.150	33.113	-26.887	60.000	QUASPEAK
6	*	13.565	10.076	29.130	39.206	-20.794	60.000	QUASPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Humly Room Display One
 Test Item : Conducted Emission Test
 Test date : 2019/11/08
 Test Mode : Mode 1: Transmit



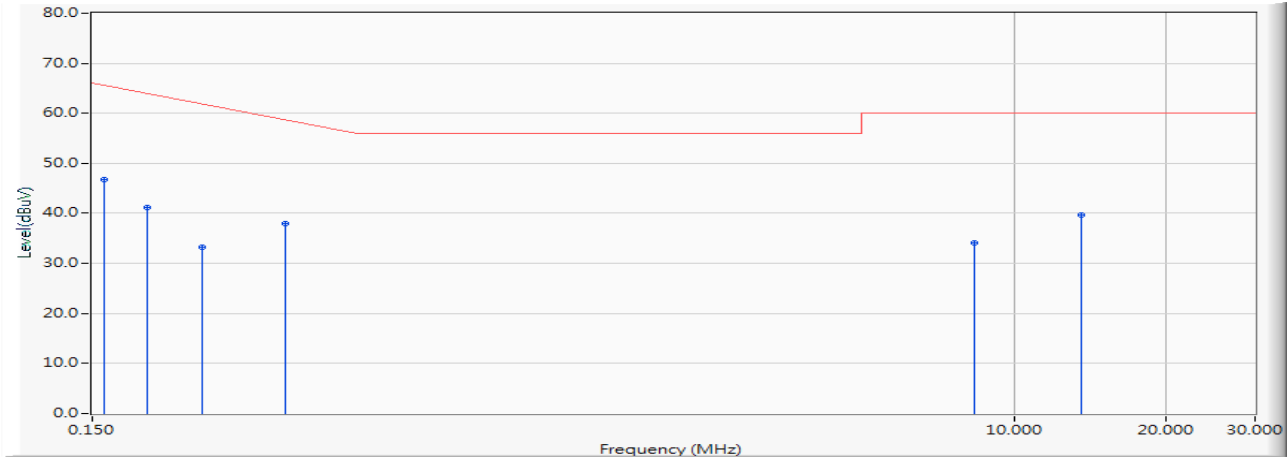
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	9.668	20.410	30.078	-25.922	56.000	AVERAGE
2		0.197	9.670	16.250	25.920	-28.737	54.657	AVERAGE
3		0.361	9.679	20.600	30.279	-19.692	49.971	AVERAGE
4		1.052	9.717	7.570	17.287	-28.713	46.000	AVERAGE
5		8.080	9.963	16.660	26.623	-23.377	50.000	AVERAGE
6	*	13.565	10.076	28.054	38.130	-11.870	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Humly Room Display One
 Test Item : Conducted Emission Test
 Test date : 2019/11/08
 Test Mode : Mode 1: Transmit

Line2



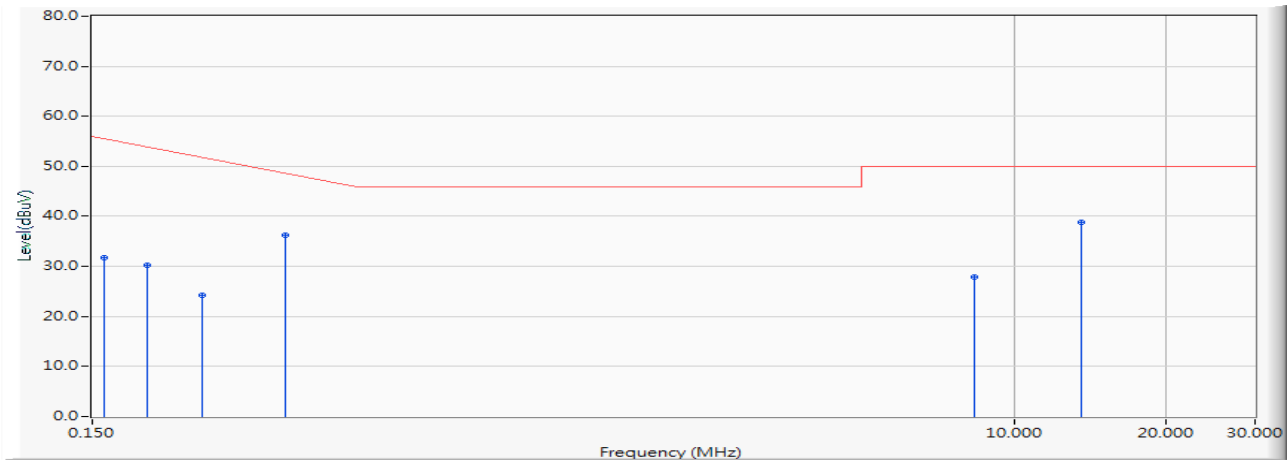
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.708	37.130	46.838	-18.933	65.771	QUASPEAK
2		0.193	9.700	31.480	41.180	-23.591	64.771	QUASPEAK
3		0.248	9.703	23.510	33.213	-29.987	63.200	QUASPEAK
4		0.361	9.709	28.270	37.979	-21.992	59.971	QUASPEAK
5		8.353	10.040	24.160	34.200	-25.800	60.000	QUASPEAK
6		13.565	10.186	29.394	39.580	-20.420	60.000	QUASPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Humly Room Display One
 Test Item : Conducted Emission Test
 Test date : 2019/11/08
 Test Mode : Mode 1: Transmit

Line2



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.158	9.708	21.980	31.688	-24.083	55.771	AVERAGE
2		0.193	9.700	20.500	30.200	-24.571	54.771	AVERAGE
3		0.248	9.703	14.540	24.243	-28.957	53.200	AVERAGE
4		0.361	9.709	26.510	36.219	-13.752	49.971	AVERAGE
5		8.353	10.040	17.880	27.920	-22.080	50.000	AVERAGE
6	*	13.565	10.186	28.674	38.860	-11.140	50.000	AVERAGE

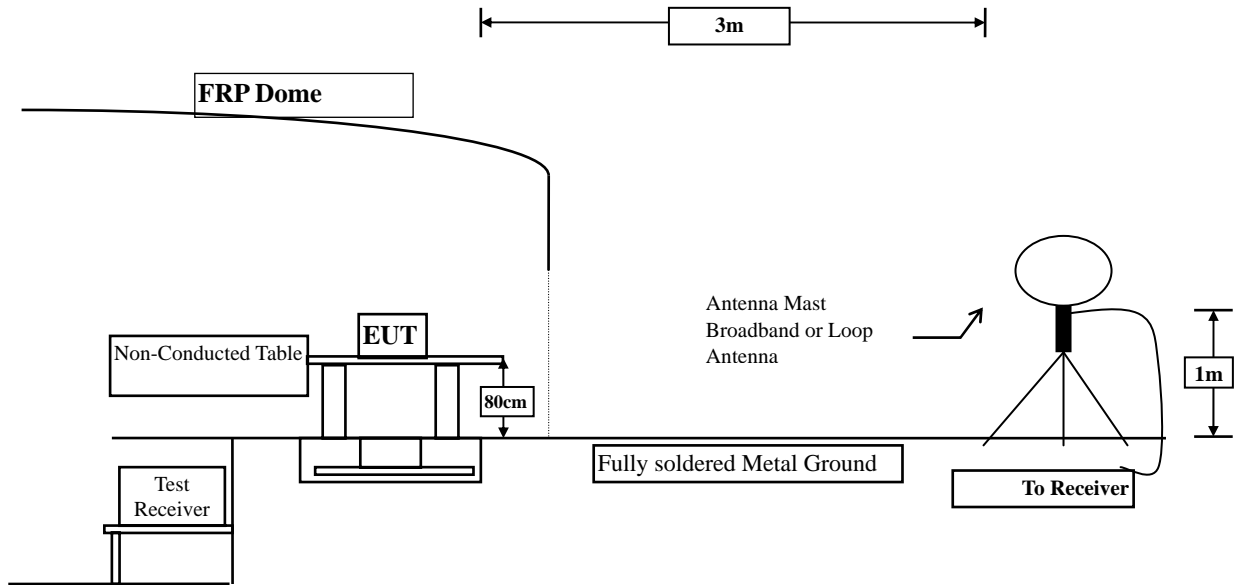
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

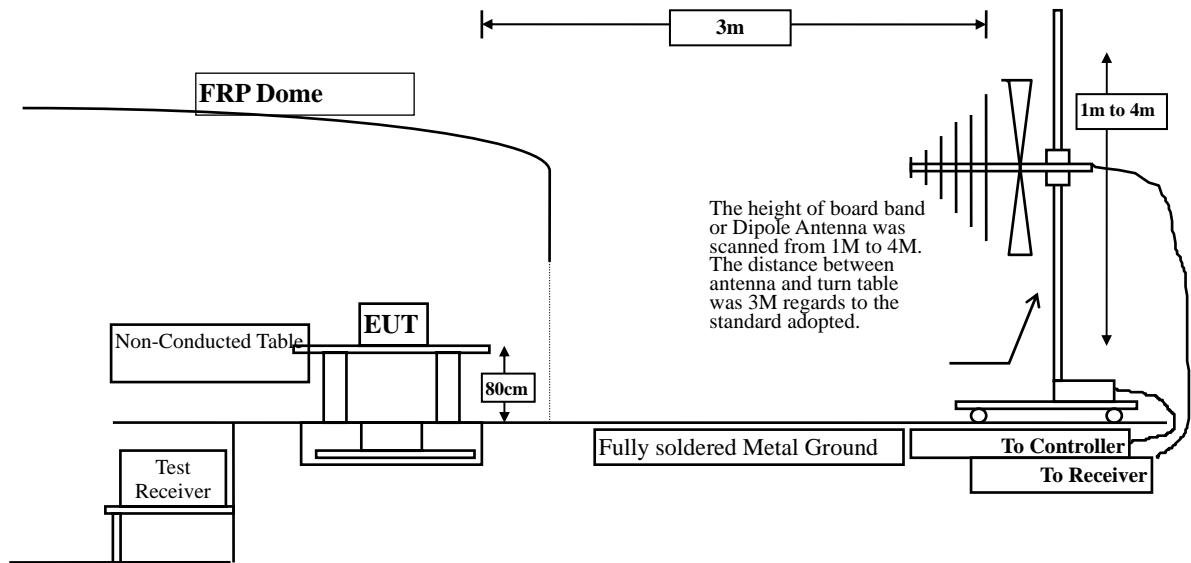
3. Radiated Emission

3.1. Test Setup

9kHz~30MHz



30MHz~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 average detector.

► Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	See Remark ¹	300
0.490-1.705	24000/F(kHz)	See Remark ¹	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	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 1 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 C6310: 2013 on radiated measurement.

On any frequency the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as

measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

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. Uncertainty

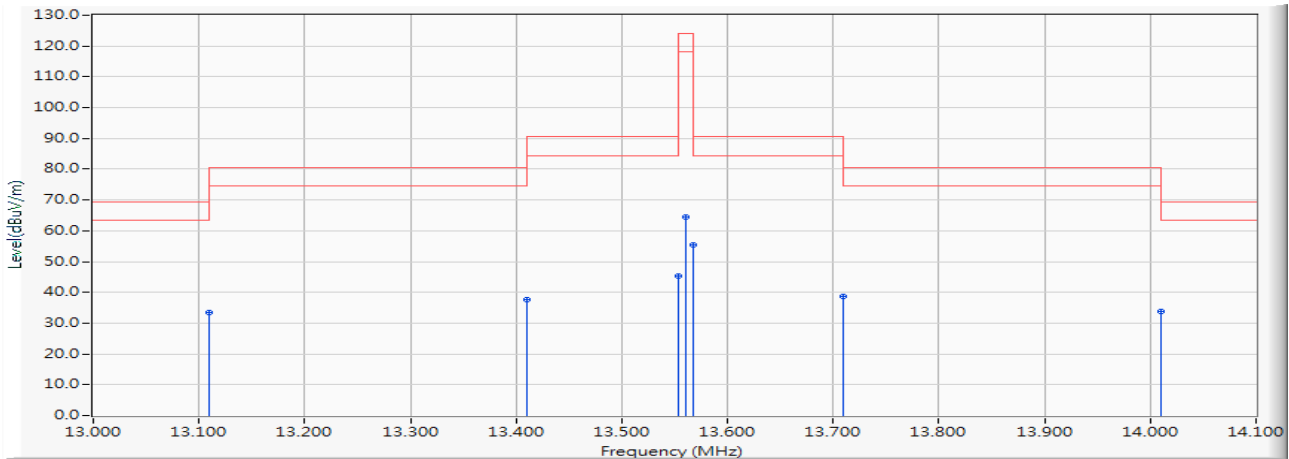
± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

3.5. Test Result of Radiated Emission

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

X-axis - HORIZONTAL



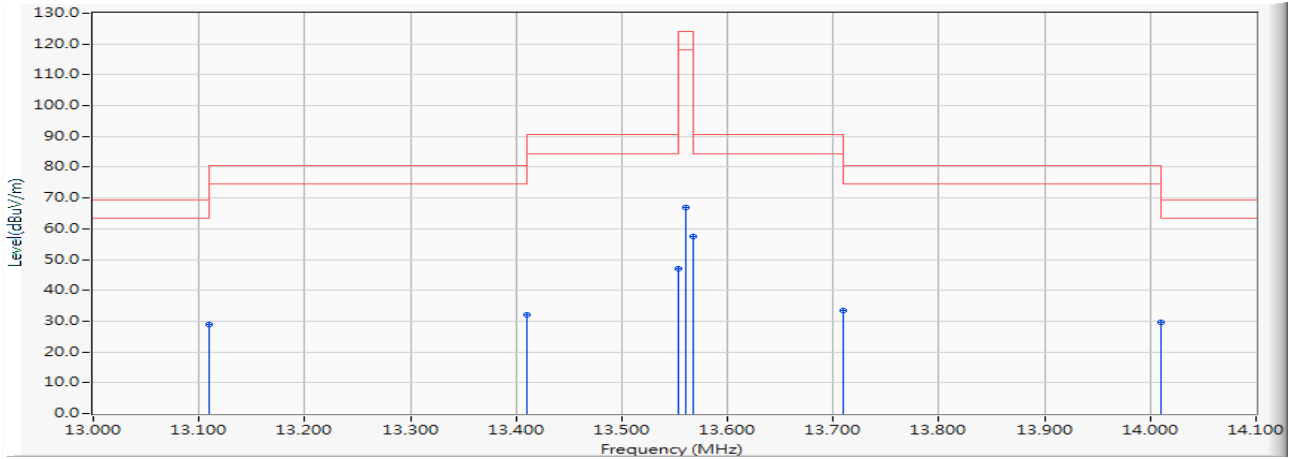
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	12.300	33.310	-36.190	69.500	QUASPEAK
2	13.410	21.040	16.700	37.740	-42.760	80.500	QUASPEAK
3	13.553	21.056	24.200	45.256	-45.214	90.470	QUASPEAK
4	13.560	21.058	43.400	64.458	-59.542	124.000	QUASPEAK
5	* 13.567	21.060	34.200	55.260	-35.210	90.470	QUASPEAK
6	13.710	21.070	17.700	38.770	-41.730	80.500	QUASPEAK
7	14.010	21.100	12.700	33.800	-35.700	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. “*” means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

X-axis - VERTICAL



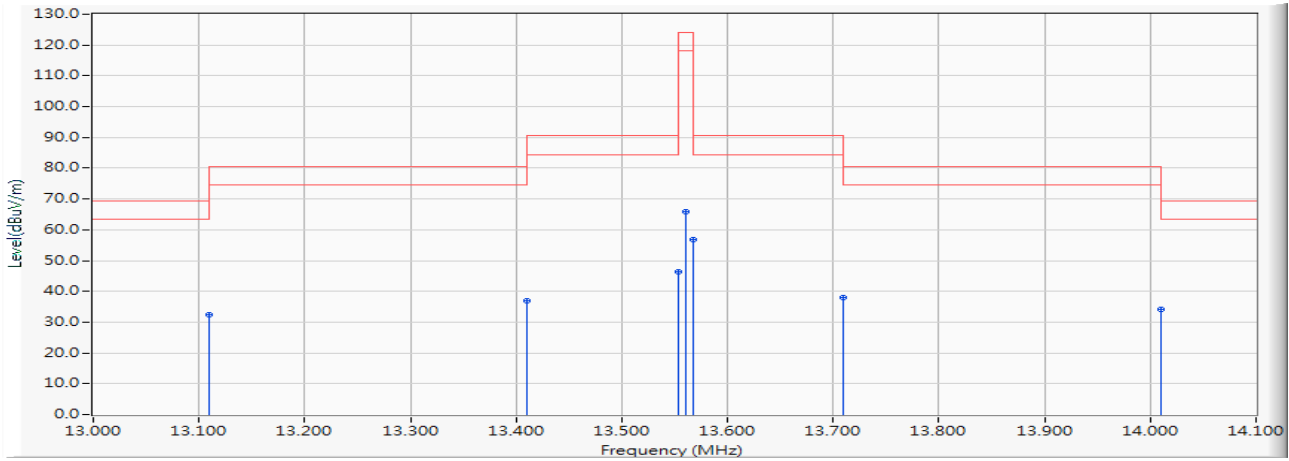
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	7.800	28.810	-40.690	69.500	QUASPEAK
2	13.410	21.040	11.100	32.140	-48.360	80.500	QUASPEAK
3	13.553	21.056	26.100	47.156	-43.314	90.470	QUASPEAK
4	13.560	21.058	45.900	66.958	-57.042	124.000	QUASPEAK
5	* 13.567	21.060	36.400	57.460	-33.010	90.470	QUASPEAK
6	13.710	21.070	12.400	33.470	-47.030	80.500	QUASPEAK
7	14.010	21.100	8.400	29.500	-40.000	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. "*" means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Y-axis - HORIZONTAL



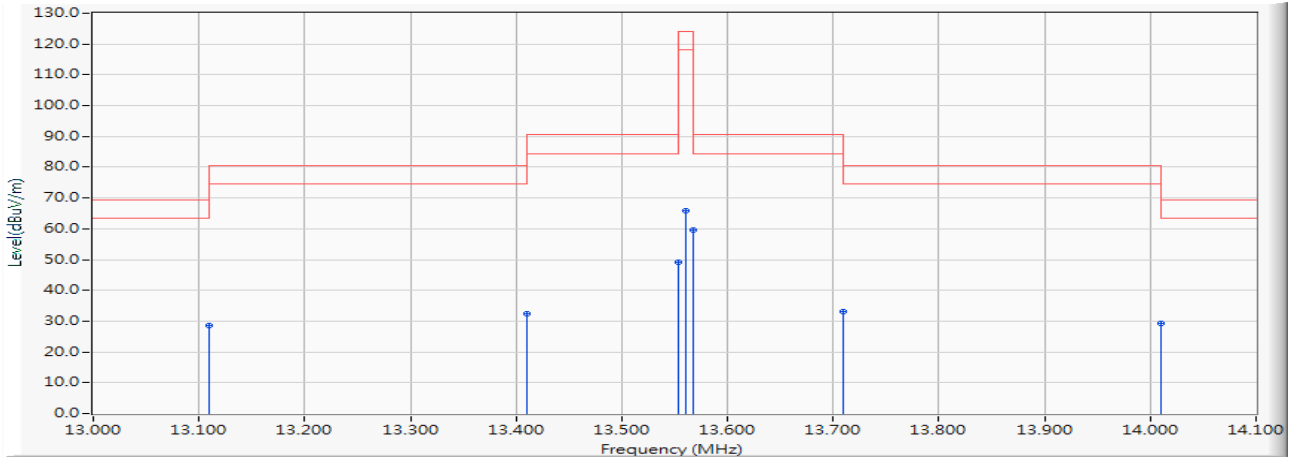
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	11.500	32.510	-36.990	69.500	QUASPEAK
2	13.410	21.040	15.800	36.840	-43.660	80.500	QUASPEAK
3	13.553	21.056	25.300	46.356	-44.114	90.470	QUASPEAK
4	13.560	21.058	44.900	65.958	-58.042	124.000	QUASPEAK
5	* 13.567	21.060	35.600	56.660	-33.810	90.470	QUASPEAK
6	13.710	21.070	16.800	37.870	-42.630	80.500	QUASPEAK
7	14.010	21.100	13.000	34.100	-35.400	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. "*" means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Y-axis - VERTICAL



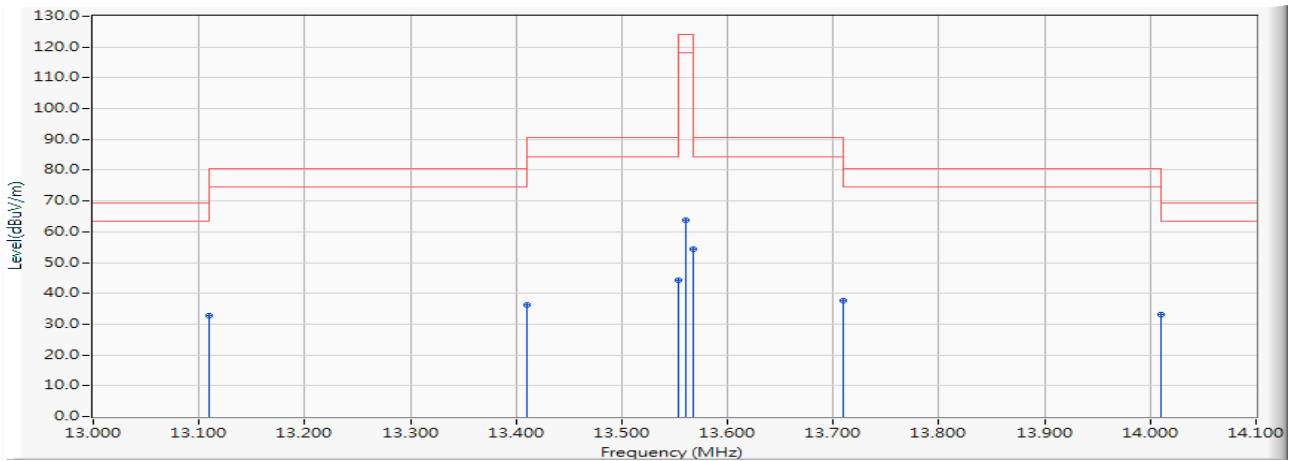
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	7.700	28.710	-40.790	69.500	QUASPEAK
2	13.410	21.040	11.200	32.240	-48.260	80.500	QUASPEAK
3	13.553	21.056	28.000	49.056	-41.414	90.470	QUASPEAK
4	13.560	21.058	44.900	65.958	-58.042	124.000	QUASPEAK
5	* 13.567	21.060	38.400	59.460	-31.010	90.470	QUASPEAK
6	13.710	21.070	12.000	33.070	-47.430	80.500	QUASPEAK
7	14.010	21.100	8.200	29.300	-40.200	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. "*" means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Z-axis- HORIZONTAL



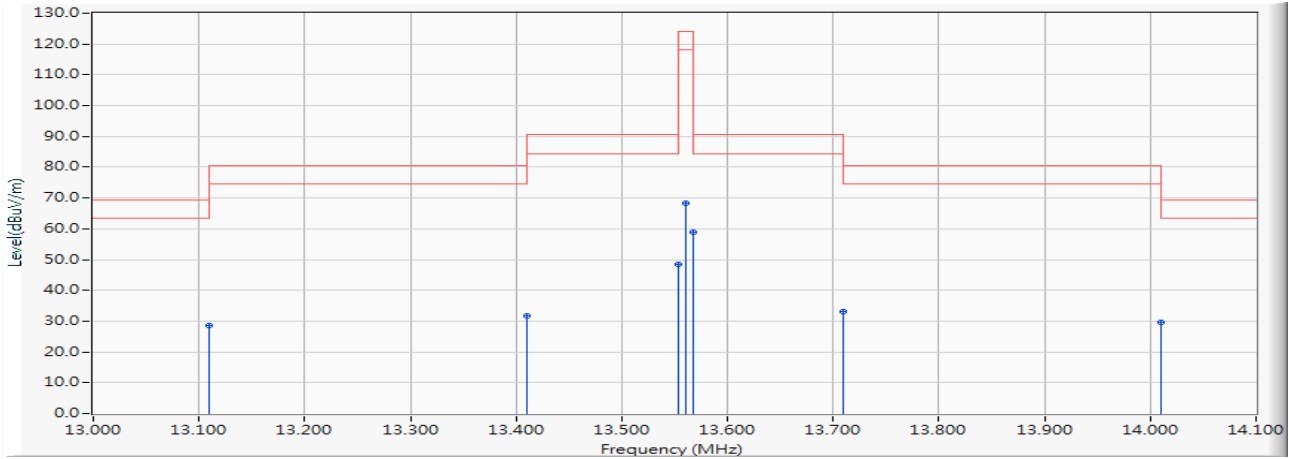
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	11.900	32.910	-36.590	69.500	QUASPEAK
2	13.410	21.040	15.100	36.140	-44.360	80.500	QUASPEAK
3	13.553	21.056	23.200	44.256	-46.214	90.470	QUASPEAK
4	13.560	21.058	42.600	63.658	-60.342	124.000	QUASPEAK
5	* 13.567	21.060	33.300	54.360	-36.110	90.470	QUASPEAK
6	13.710	21.070	16.700	37.770	-42.730	80.500	QUASPEAK
7	14.010	21.100	12.100	33.200	-36.300	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. “*” means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Z-axis - VERTICAL



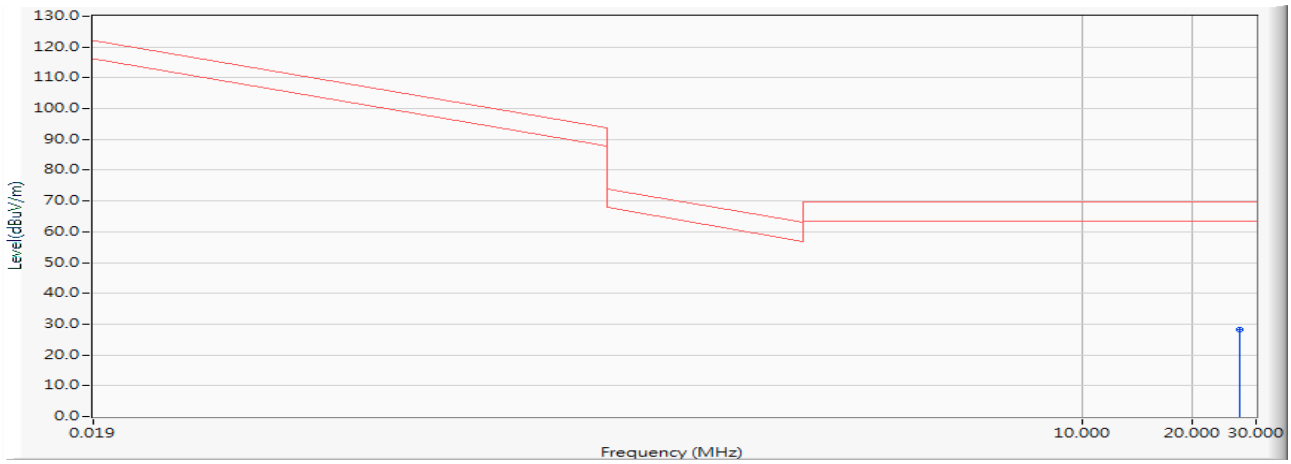
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	7.500	28.510	-40.990	69.500	QUASPEAK
2	13.410	21.040	10.800	31.840	-48.660	80.500	QUASPEAK
3	13.553	21.056	27.400	48.456	-42.014	90.470	QUASPEAK
4	13.560	21.058	47.300	68.358	-55.642	124.000	QUASPEAK
5	* 13.567	21.060	37.900	58.960	-31.510	90.470	QUASPEAK
6	13.710	21.070	12.000	33.070	-47.430	80.500	QUASPEAK
7	14.010	21.100	8.500	29.600	-39.900	69.500	QUASPEAK

Note:

1. Fundamental Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. "*" means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : General Radiated Emission Data (below 30MHz)
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Horizontal

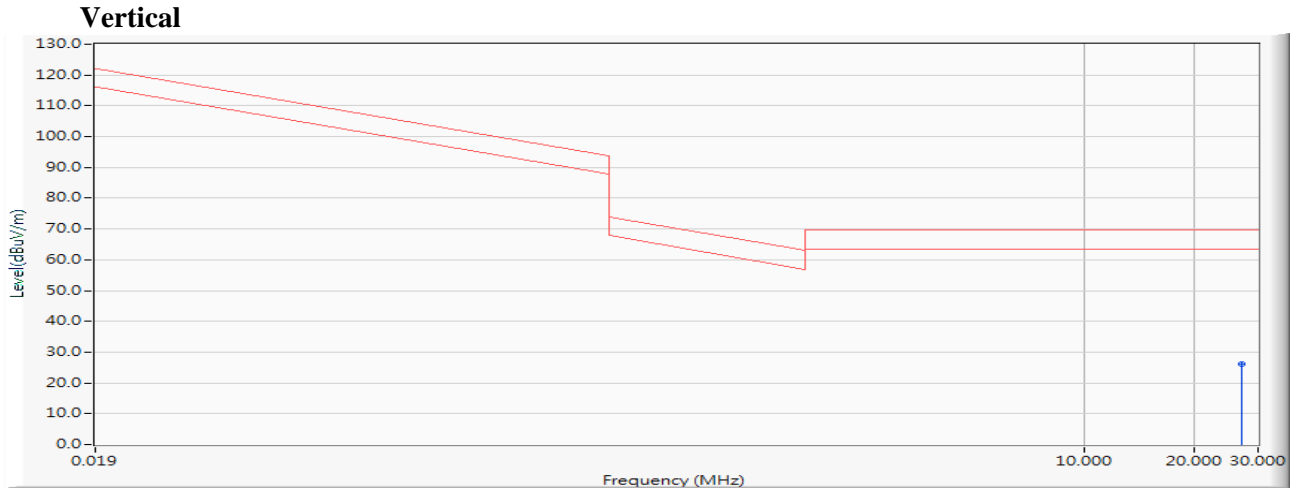


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	27.120	21.700	6.500	28.200	-41.340	69.540	QUASPEAK

Note:

1. Limit=29.54dBuV/m + 40*Log (30(m)/3(m))=69.54dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. “*” means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : General Radiated Emission Data (below 30MHz)
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit



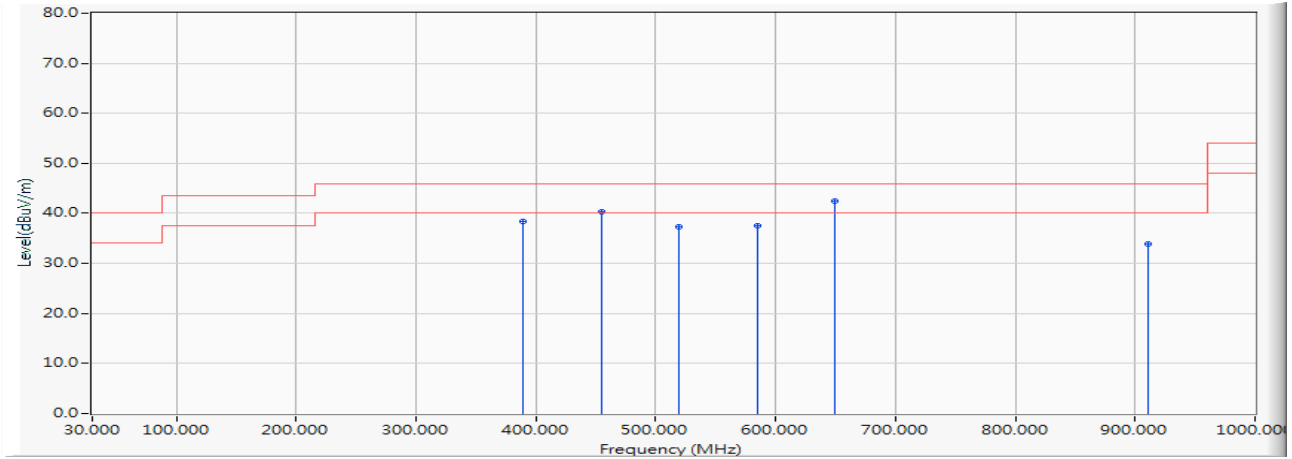
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	27.120	21.700	4.400	26.100	-43.440	69.540	QUASPEAK

Note:

1. $Limit = 29.54 \text{ dBuV/m} + 40 * \text{Log} (30 \text{ (m)} / 3 \text{ (m)}) = 69.54 \text{ dBuV/m}$
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. "*" means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Humly Room Display One
 Test Item : General Radiated Emission Data (above 30MHz)
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Horizontal



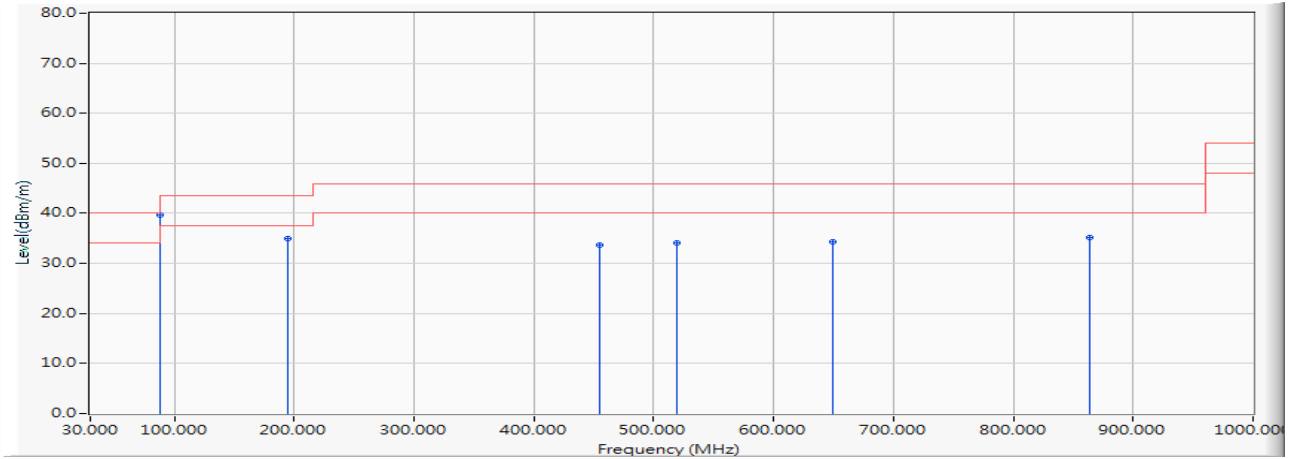
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	389.870	-11.240	49.709	38.469	-7.531	46.000	QUASPEAK
2	454.860	-8.291	48.510	40.219	-5.781	46.000	QUASPEAK
3	519.850	-9.905	47.253	37.348	-8.652	46.000	QUASPEAK
4	584.840	-6.436	43.932	37.496	-8.504	46.000	QUASPEAK
5	* 649.830	-7.458	50.016	42.558	-3.442	46.000	QUASPEAK
6	910.760	-8.018	42.012	33.994	-12.006	46.000	QUASPEAK

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 : Humly Room Display One
 Test Item : General Radiated Emission Data (above 30MHz)
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Vertical



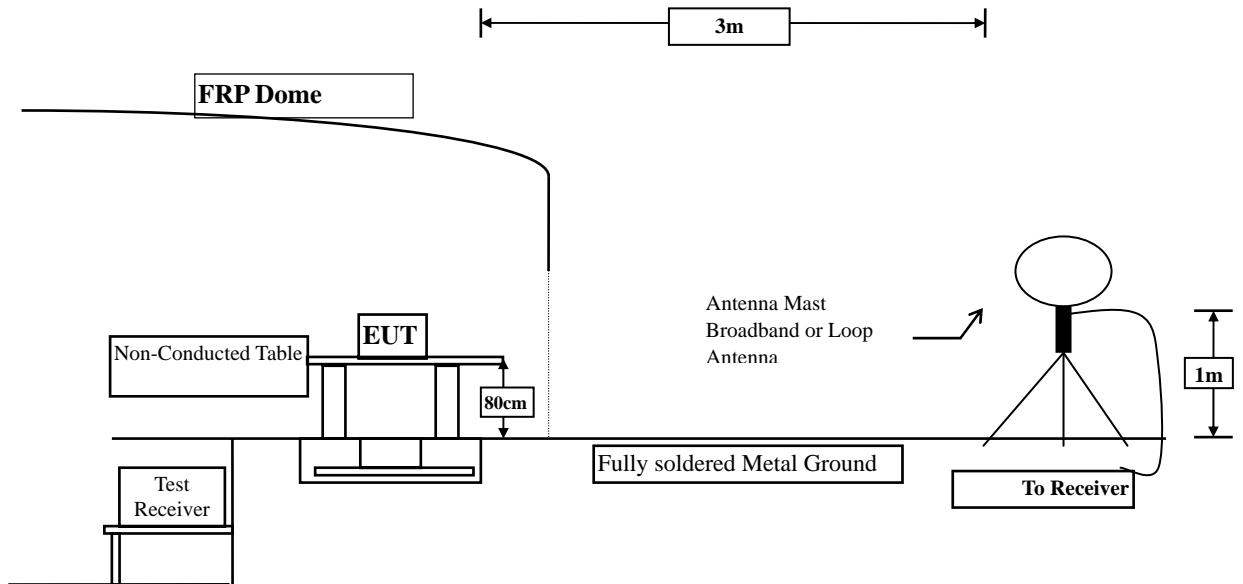
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Detector Type
1	*	88.200	-16.564	56.269	39.705	-3.795	43.500	QUASPEAK
2		194.900	-17.384	52.369	34.985	-8.515	43.500	QUASPEAK
3		454.860	-8.291	41.909	33.618	-12.382	46.000	QUASPEAK
4		519.850	-9.905	44.070	34.165	-11.835	46.000	QUASPEAK
5		649.830	-7.458	41.791	34.333	-11.667	46.000	QUASPEAK
6		864.200	-6.919	42.058	35.139	-10.861	46.000	QUASPEAK

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



4.2. Limits

In any 9 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50 dB below that in the 9 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

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

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

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. Uncertainty

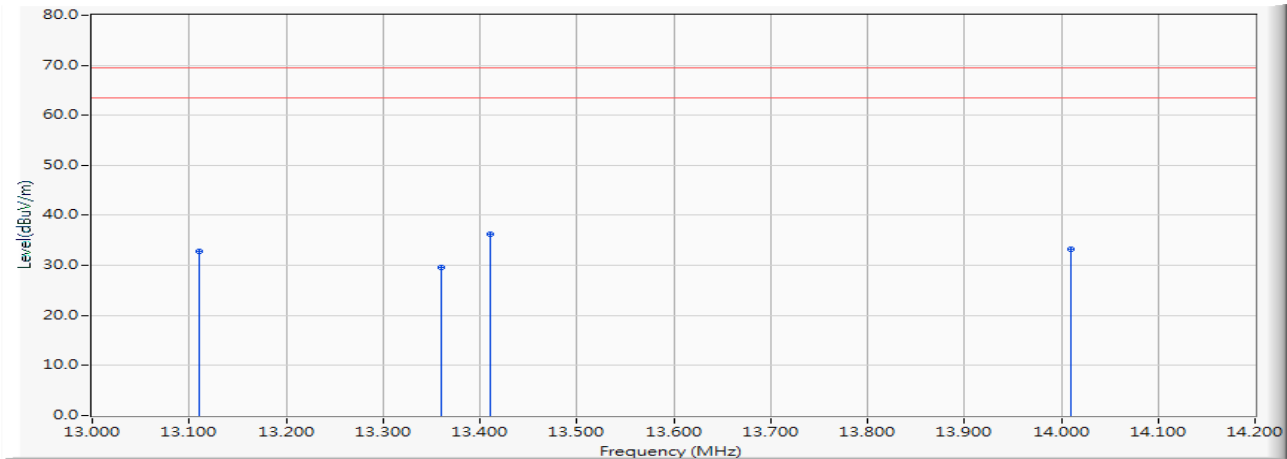
± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Band Edge

Product : Humly Room Display One
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

HORIZONTAL



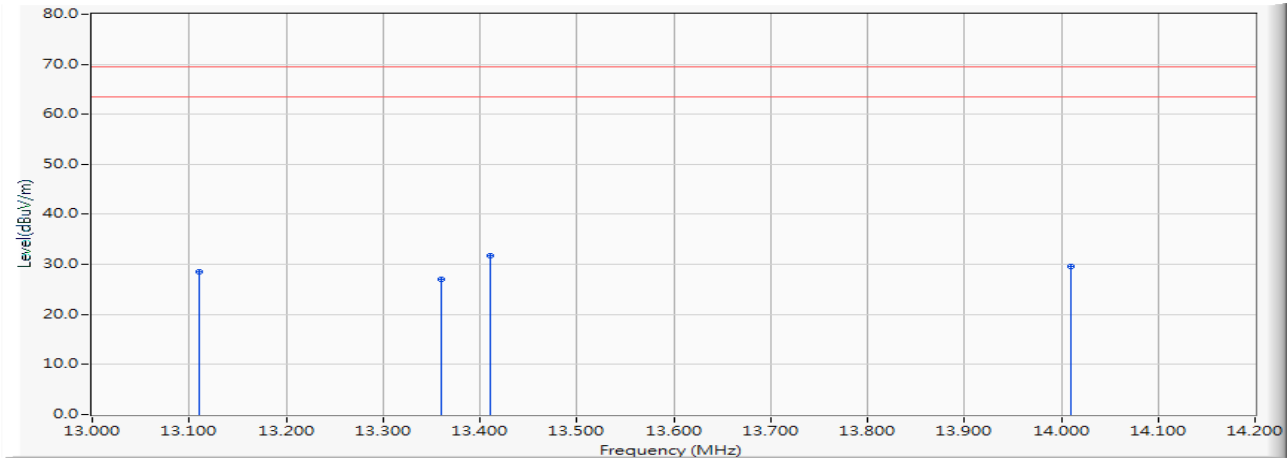
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	11.900	32.910	-36.630	69.540	QUASPEAK
2	13.360	21.040	8.500	29.540	-40.000	69.540	QUASPEAK
3	* 13.410	21.040	15.100	36.140	-33.400	69.540	QUASPEAK
4	14.010	21.100	12.100	33.200	-36.340	69.540	QUASPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Humly Room Display One
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

VERTICAL



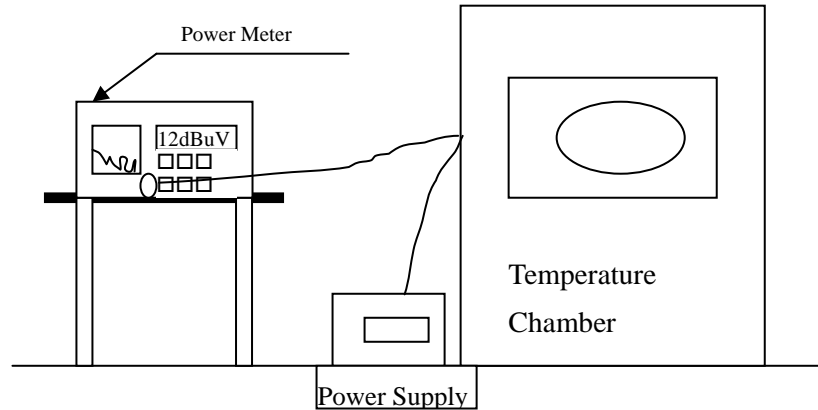
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	13.110	21.010	7.500	28.510	-41.030	69.540	QUASPEAK
2	13.360	21.040	6.000	27.040	-42.500	69.540	QUASPEAK
3	* 13.410	21.040	10.800	31.840	-37.700	69.540	QUASPEAK
4	14.010	21.100	8.500	29.600	-39.940	69.540	QUASPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is 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 over 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. Uncertainty

± 283 Hz

5.5. Test Result of Frequency Stability

Product : Humly Room Display One
 Test Item : Frequency Tolerance
 Test Site : Temperature Chamber
 Test date : 2019/10/31
 Test Mode : Mode 1: Transmit

Temperature (°C)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	110	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	
20	121	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	
20	99	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	
50	110	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	
40	110	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	
30	110	start	13.56	13.56123	0.009071	±0.01 %
		2mins	13.56	13.56123	0.009071	
		5mins	13.56	13.56123	0.009071	
		10mins	13.56	13.56123	0.009071	

10	110	start	13.56	13.56124	0.009145	± 0.01 %
		2mins	13.56	13.56124	0.009145	
		5mins	13.56	13.56124	0.009145	
		10mins	13.56	13.56124	0.009145	
0	110	start	13.56	13.56124	0.009145	± 0.01 %
		2mins	13.56	13.56124	0.009145	
		5mins	13.56	13.56124	0.009145	
		10mins	13.56	13.56124	0.009145	
-10	110	start	13.56	13.56124	0.009145	± 0.01 %
		2mins	13.56	13.56124	0.009145	
		5mins	13.56	13.56124	0.009145	
		10mins	13.56	13.56124	0.009145	
-20	110	start	13.56	13.56124	0.009145	± 0.01 %
		2mins	13.56	13.56124	0.009145	
		5mins	13.56	13.56124	0.009145	
		10mins	13.56	13.56124	0.009145	

6. EMI Reduction Method During Compliance Testing

No modification was made during testing.