



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: AKUVOX (XIAMEN) NETWORKS CO., LTD.

Address: 10/F, No.56 Guanri Road, Software Park II, Xiamen 361009, China

FCC ID: 2AHCR-R20AV5

Product Name: Door Phone

Model Number: R20A

Standard(s): 47 CFR Part 15, Subpart C(15.225)
ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR22060019-00C

Date Of Issue: 2022-08-25

Reviewed By: Sun Zhong

Sun Zhong

Title: Manager

Test Laboratory: China Certification ICT Co., Ltd (Dongguan)

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Door Phone
EUT Model:	R20A
Operation Frequency:	13.56 MHz
Modulation Type:	ASK
Rated Input Voltage:	DC 12V from adapter or POE 48V
Serial Number:	CR22060019-RF-S1
EUT Received Date:	2022.06.23
EUT Received Status:	Good

Operation Frequency Detail:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	13.56	/	/

Antenna Information Detail▲:

Antenna Manufacturer	Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range	§15.203 Requirement
AKUVOX (XIAMEN) NETWORKS CO., LTD.	PCB Loop	50	Unknow	Compliance
The Method of §15.203 Compliance: ☒ Antenna must be permanently attached to the unit. ☐ Antenna must use a unique type of connector to attach to the EUT. ☐ Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

Accessory Information:

No.

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.	
Equipment Modifications:	No	
EUT Exercise Software:	No	
Engineering Mode was provided by manufacturer▲. The maximum power was configured default setting.		
Channel	Frequency (MHz)	Power Level Setting
1	13.56	Default

1.2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Huntkey	Adapter(USB)	HKA01105021-XE	0D1805002143
TP-link	Adapter(POE)	TL-SF1005P	1.1676E+12
AKUVOX	Card reader	N5632	MN52P0024
Unknown	Load 1	10W	1001
Unknown	Load 2	10W	1002
Unknown	Load 3	10W	1003
LANDI	NFC Card	EINOLDA	EMZBNC21103001
TOTO LINK	Router	X5000R	X5000RK9T0560

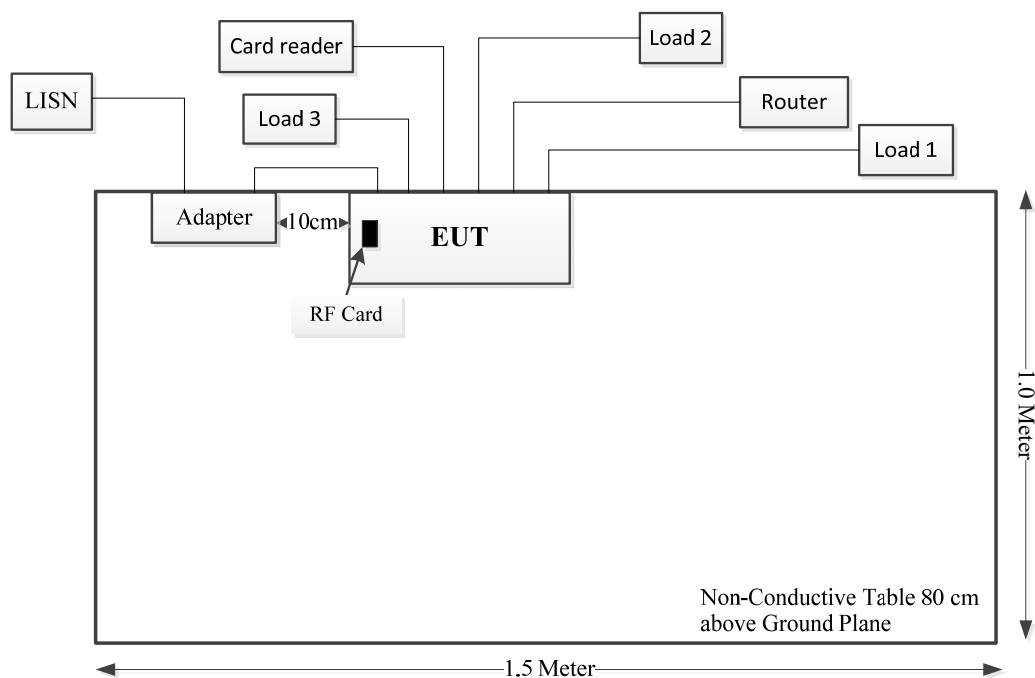
1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	No	3	EUT	Router
RJ45 Cable	No	No	3	POE	Router
RJ45 Cable	No	No	1.5	POE	EUT
Power Cable	No	No	1.2	POE	LISN
Power Cable	No	No	1.5	Adapter	EUT
Cable	No	No	2	EUT	Load 1
Cable	No	No	2	EUT	Load 2
Cable	No	No	2	EUT	Load 3
Cable	No	No	3	EUT	Card reader

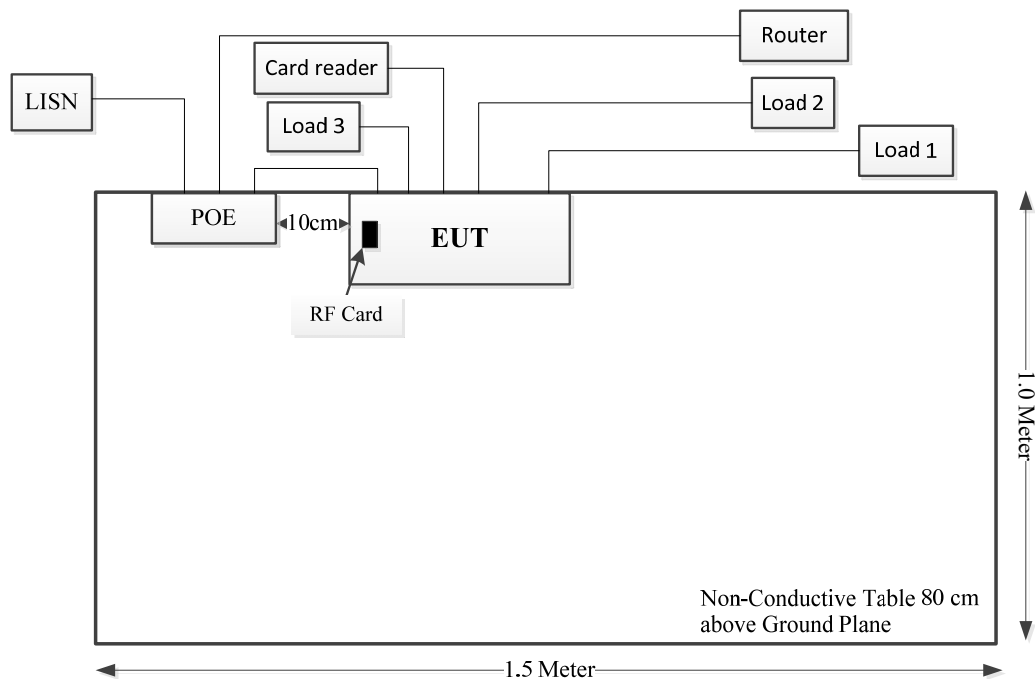
1.2.4 Block Diagram of Test Setup

Conducted emissions:

M1:

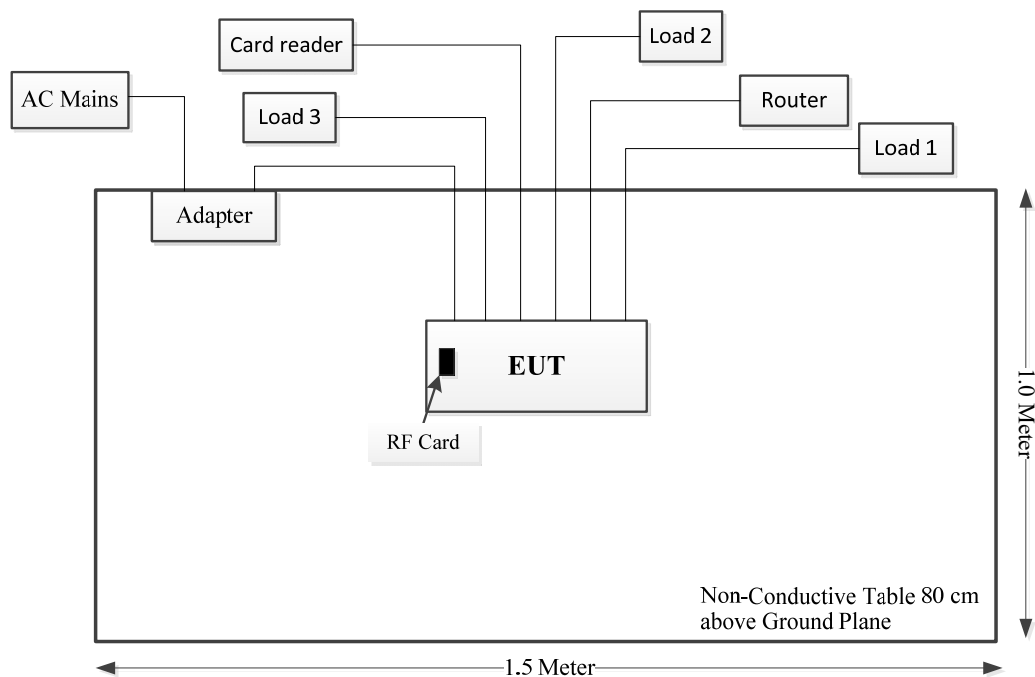


M2:

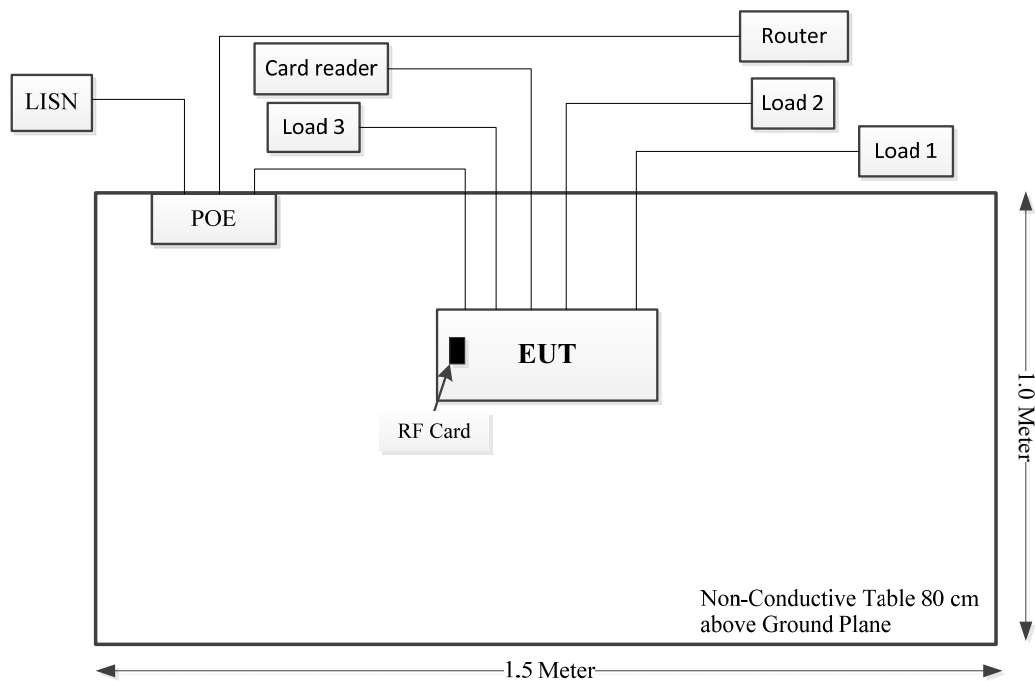


Radiated emissions:

M1:



M2:



1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	$\pm 5\%$
Unwanted Emissions, radiated	9kHz~30MHz: 4.12dB 30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC§15.203	Antenna Requirement	Compliant
FCC§15.207 (a)	Conducted Emissions	Compliant
§15.225 §15.209 §15.205	Radiated Emission Test	Compliant
§15.225(e)	Frequency Stability	Compliant
§15.215(c)	20 dB Bandwidth	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

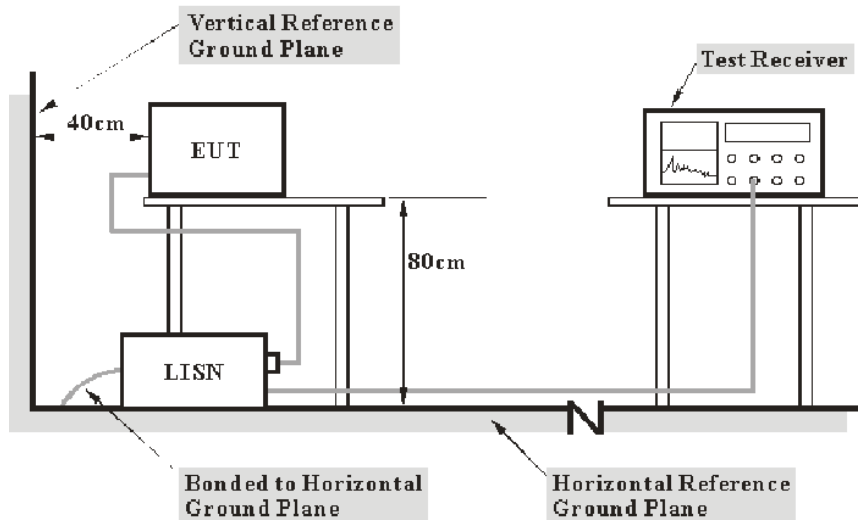
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μ V within the frequency band 535-1705 kHz, as measured using a 50 μ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

3.1.4 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

According FCC publication number 174176, for a device with a permanent antenna operating at or below 30 MHz, the measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiated Emissions

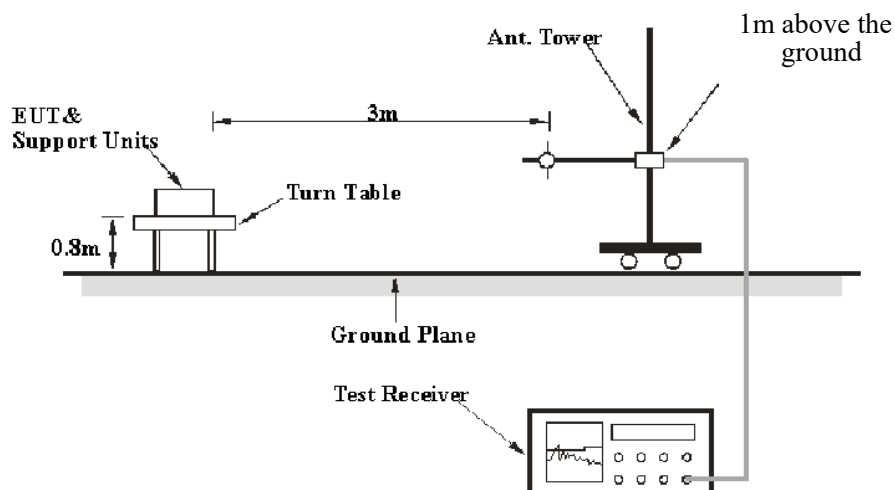
3.2.1 Applicable Standard

As per FCC Part 15.225

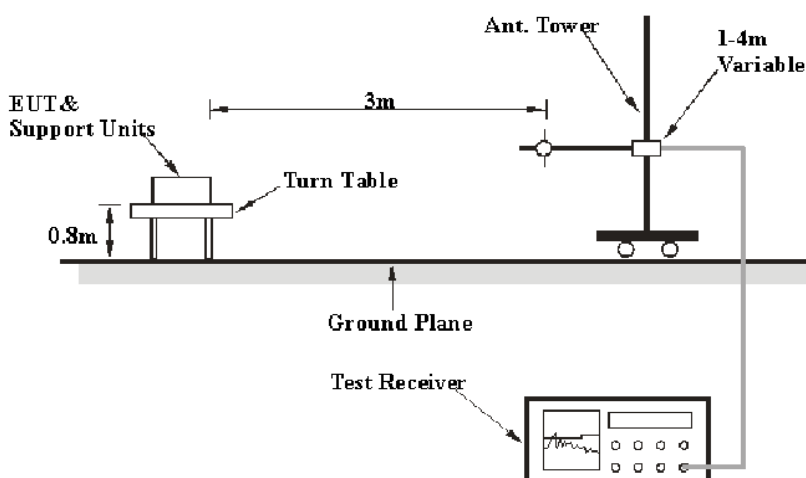
- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) 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 §15.209.

3.2.2 EUT Setup

9kHz-30MHz:



30MHz-1GHz:



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013.

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Detector
9 kHz – 150 kHz	200 Hz	1 kHz	QP
150 kHz – 30 MHz	9 kHz	30 kHz	QP
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

If the maximized peak measured value complies with the limit, then it is unnecessary to perform an QP measurement

3.2.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

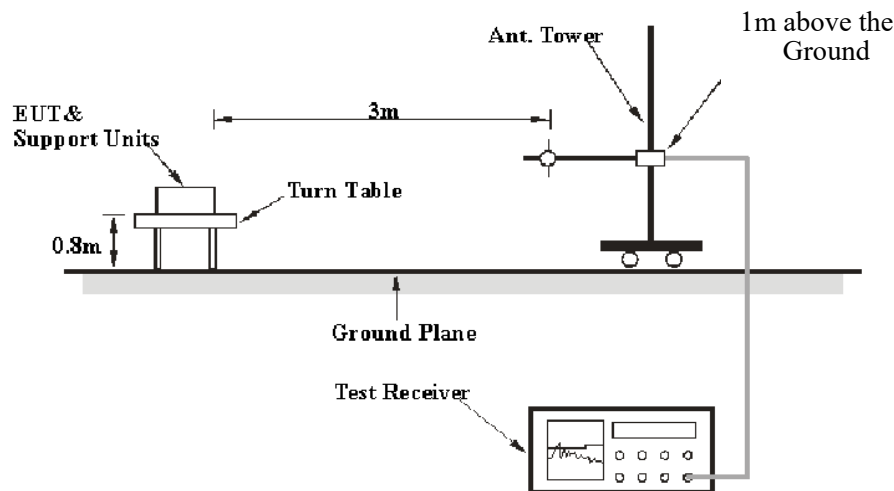
3.3 20 dB Emission Bandwidth:

3.3.1 Applicable Standard

FCC §15.215

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through § 15.257 and in Subpart E of this part, 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 designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of band operation.

3.3.2 EUT Setup



3.3.3 Test Procedure

1. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
2. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

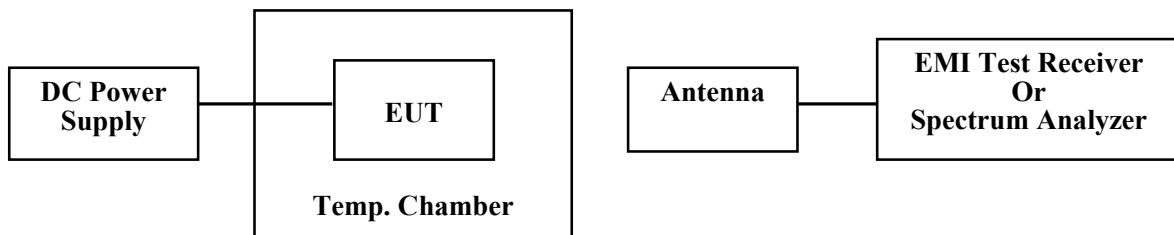
3.4 Frequency Stability

3.4.1 Applicable Standard

As per FCC Part 15.225:

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.

3.4.2 EUT Setup



3.4.3 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power.

The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to the end point of the battery. The output frequency was recorded for each voltage.

3.5 Antenna Requirement

3.5.1 Applicable Standard

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

3.5.2 Judgment

Please refer to the Antenna Information detail in Section 1.

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	CR22060019-RF-S1	Test Date:	2022-08-06
Test Site:	CE	Test Mode:	Transmitting
Tester:	Vic Du	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	27.1	Relative Humidity: (%)	72	ATM Pressure: (kPa)	99.9
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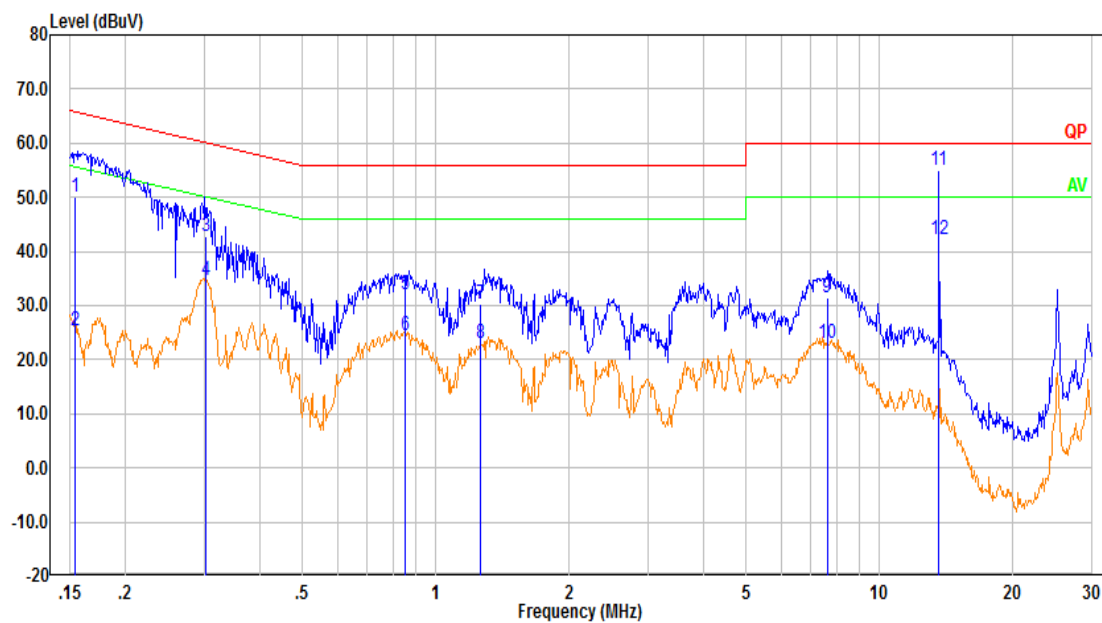
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2022-04-01	2023-03-31
R&S	EMI Test Receiver	ESR3	102726	2022-07-15	2023-07-14
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2021-08-08	2022-08-07
Audix	Test Software	E3	190306 (V9)	N/A	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

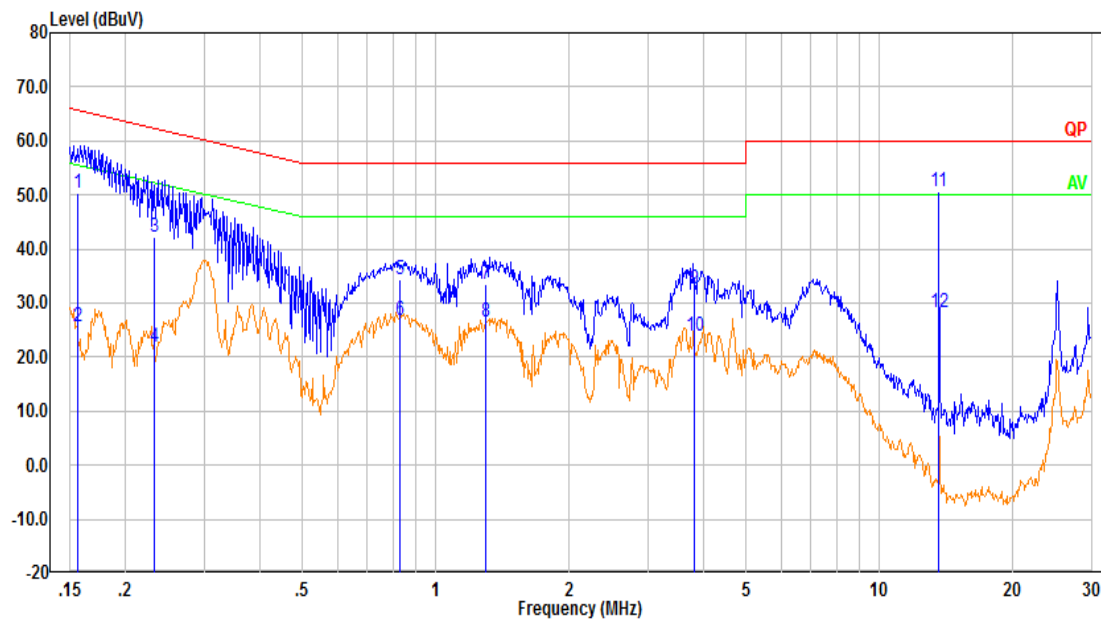
Adapter mode:

Line:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.154	40.32	9.61	49.93	65.79	15.86	QP
2	0.154	15.82	9.61	25.43	55.79	30.36	Average
3	0.304	33.27	9.61	42.88	60.13	17.25	QP
4	0.304	24.93	9.61	34.54	50.13	15.59	Average
5	0.852	22.35	9.62	31.97	56.00	24.03	QP
6	0.852	14.92	9.62	24.54	46.00	21.46	Average
7	1.264	20.67	9.62	30.29	56.00	25.71	QP
8	1.264	13.31	9.62	22.93	46.00	23.07	Average
9	7.617	21.91	9.67	31.58	60.00	28.42	QP
10	7.617	13.44	9.67	23.11	50.00	26.89	Average
11	13.560	45.34	9.68	55.02	60.00	4.98	QP
12	13.560	32.39	9.68	42.07	50.00	7.93	Average

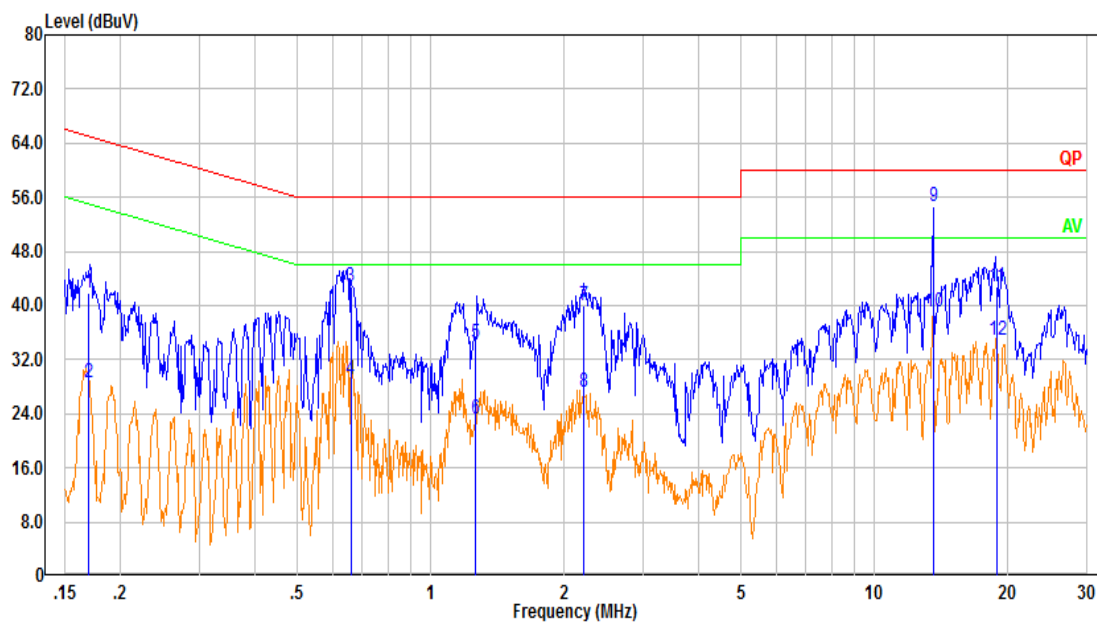
Neutral:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.156	40.63	9.61	50.24	65.69	15.45	QP
2	0.156	15.93	9.61	25.54	55.69	30.15	Average
3	0.232	32.47	9.61	42.08	62.37	20.29	QP
4	0.232	12.28	9.61	21.89	52.37	30.48	Average
5	0.832	24.61	9.62	34.23	56.00	21.77	QP
6	0.832	17.29	9.62	26.91	46.00	19.09	Average
7	1.298	23.77	9.62	33.39	56.00	22.61	QP
8	1.298	16.77	9.62	26.39	46.00	19.61	Average
9	3.835	22.83	9.65	32.48	56.00	23.52	QP
10	3.835	14.12	9.65	23.77	46.00	22.23	Average
11	13.560	41.10	9.68	50.78	60.00	9.22	QP
12	13.560	18.69	9.68	28.37	50.00	21.63	Average

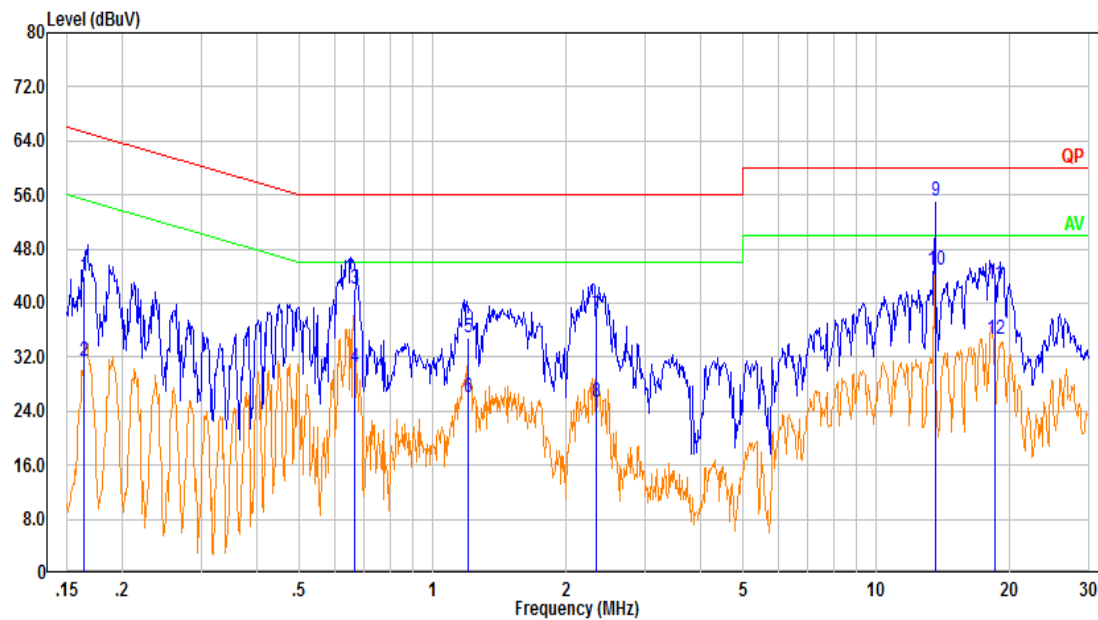
POE mode:

Line:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.169	32.34	9.61	41.95	65.01	23.06	QP
2	0.169	19.05	9.61	28.66	55.01	26.35	Average
3	0.659	33.16	9.62	42.78	56.00	13.22	QP
4	0.659	19.45	9.62	29.07	46.00	16.93	Average
5	1.261	24.85	9.62	34.48	56.00	21.52	QP
6	1.261	13.69	9.62	23.32	46.00	22.68	Average
7	2.214	30.38	9.63	40.01	56.00	15.99	QP
8	2.214	17.54	9.63	27.18	46.00	18.82	Average
9	13.560	44.86	9.68	54.54	60.00	5.46	QP
10	13.560	29.32	9.68	39.00	50.00	11.00	Average
11	18.859	33.04	9.77	42.80	60.00	17.20	QP
12	18.859	25.06	9.77	34.83	50.00	15.17	Average

Neutral:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.164	34.40	9.61	44.01	65.28	21.27	QP
2	0.164	21.83	9.61	31.44	55.28	23.84	Average
3	0.667	32.39	9.62	42.01	56.00	13.99	QP
4	0.667	20.87	9.62	30.49	46.00	15.51	Average
5	1.202	25.17	9.62	34.80	56.00	21.20	QP
6	1.202	16.40	9.62	26.02	46.00	19.98	Average
7	2.329	28.58	9.64	38.21	56.00	17.79	QP
8	2.329	15.71	9.64	25.35	46.00	20.65	Average
9	13.560	45.48	9.68	55.16	60.00	4.84	QP
10	13.560	35.31	9.68	44.99	50.00	5.01	Average
11	18.456	33.04	9.69	42.73	60.00	17.27	QP
12	18.456	25.01	9.69	34.70	50.00	15.30	Average

4.2 Radiation Spurious Emissions

Serial Number:	CR22060019-RF-S1	Test Date:	2022-08-08~2022-08-19
Test Site:	966-2	Test Mode:	Transmitting
Tester:	Gary Ling, Carl Xue	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	27.9~28.1	Relative Humidity: (%)	59~61	ATM Pressure: (kPa)	99.9~100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
TESEQ	HF Loop Antenna	HLA6120	33561	2021-02-03	2024-02-02
Sunol Sciences	Antenna	JB6	A082520-5	2020-10-19	2023-10-18
R&S	EMI Test Receiver	ESR3	102724	2022-07-15	2023-07-14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022-07-17	2023-07-16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022-07-17	2023-07-16
Sonoma	Amplifier	310N	186165	2022-07-17	2023-07-16
Audix	Test Software	E3	201021 (V9)	N/A	N/A

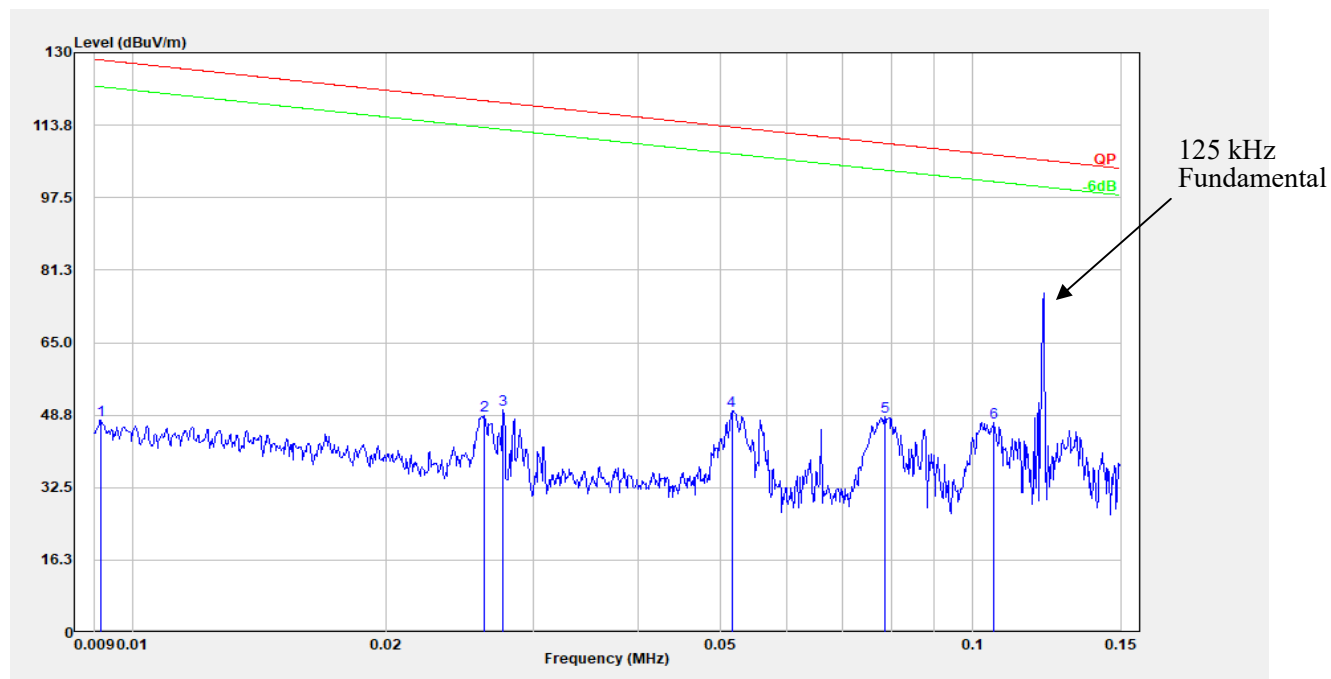
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

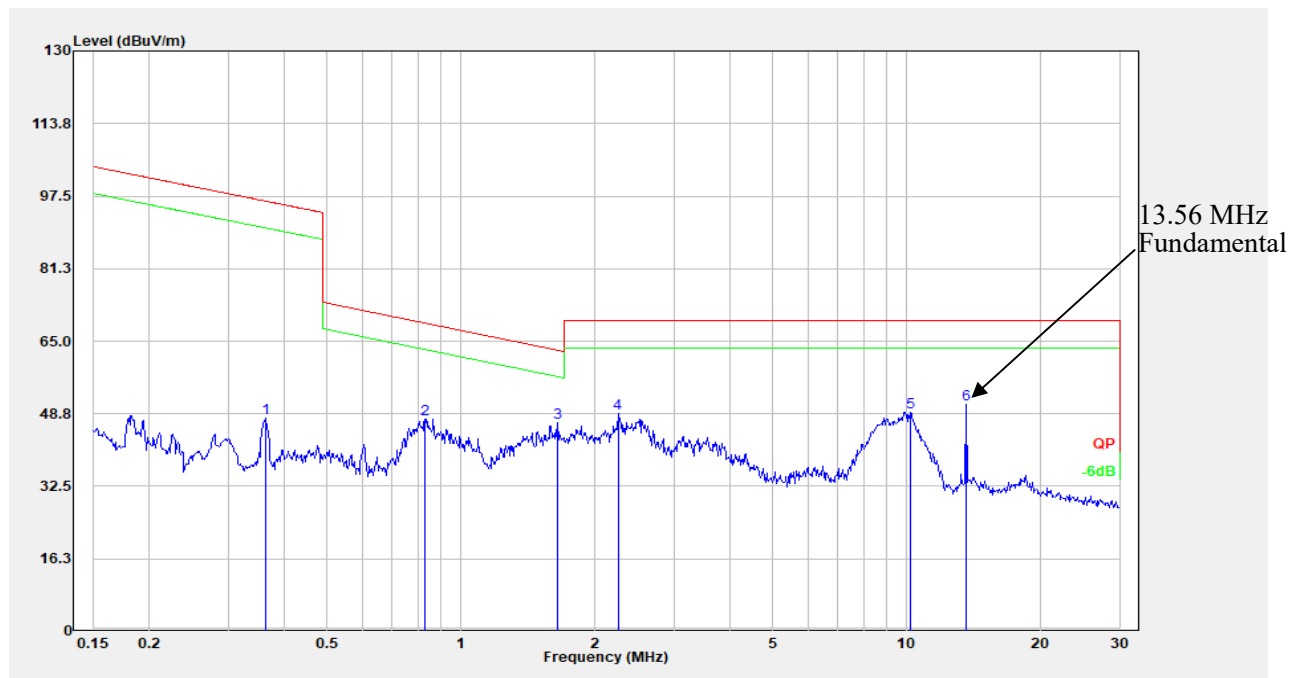
1) 9 kHz~30MHz:

Adapter mode:

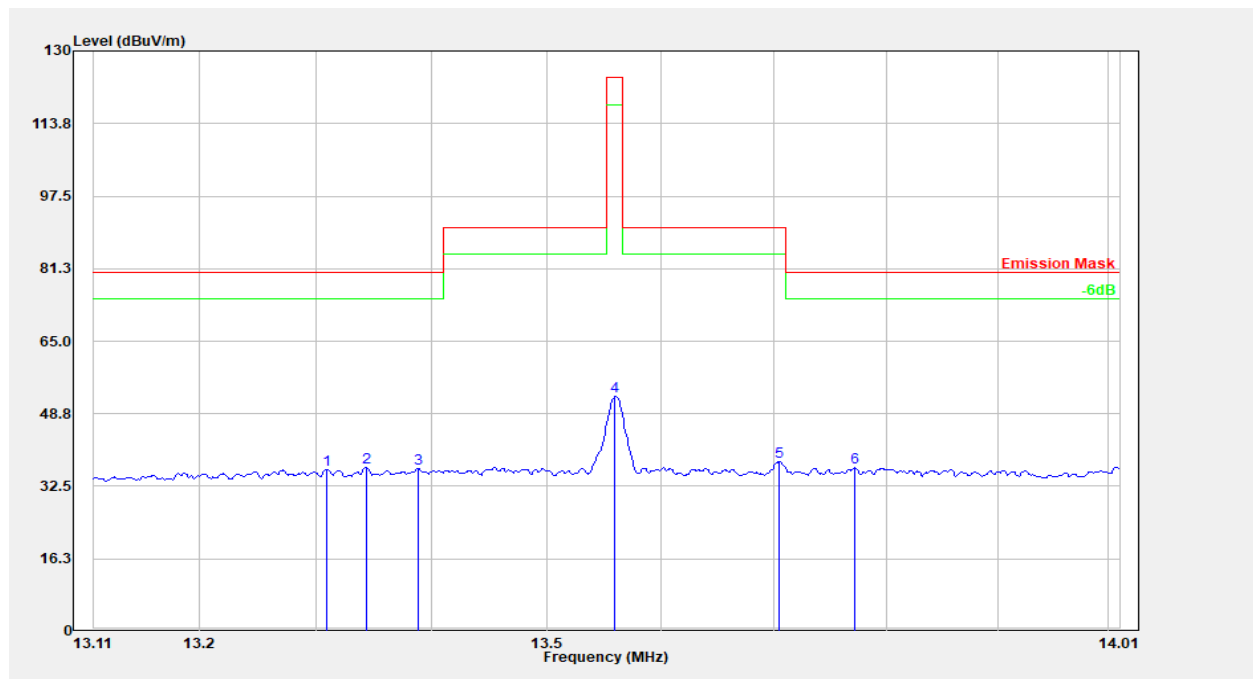
Parallel:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.009	27.10	20.51	47.61	128.37	80.76	Peak
2	0.026	28.15	20.41	48.56	119.23	70.67	Peak
3	0.028	29.51	20.41	49.92	118.79	68.87	Peak
4	0.052	29.26	20.41	49.67	113.34	63.68	Peak
5	0.079	28.15	20.36	48.51	109.70	61.19	Peak
6	0.106	26.96	20.22	47.18	107.09	59.91	Peak

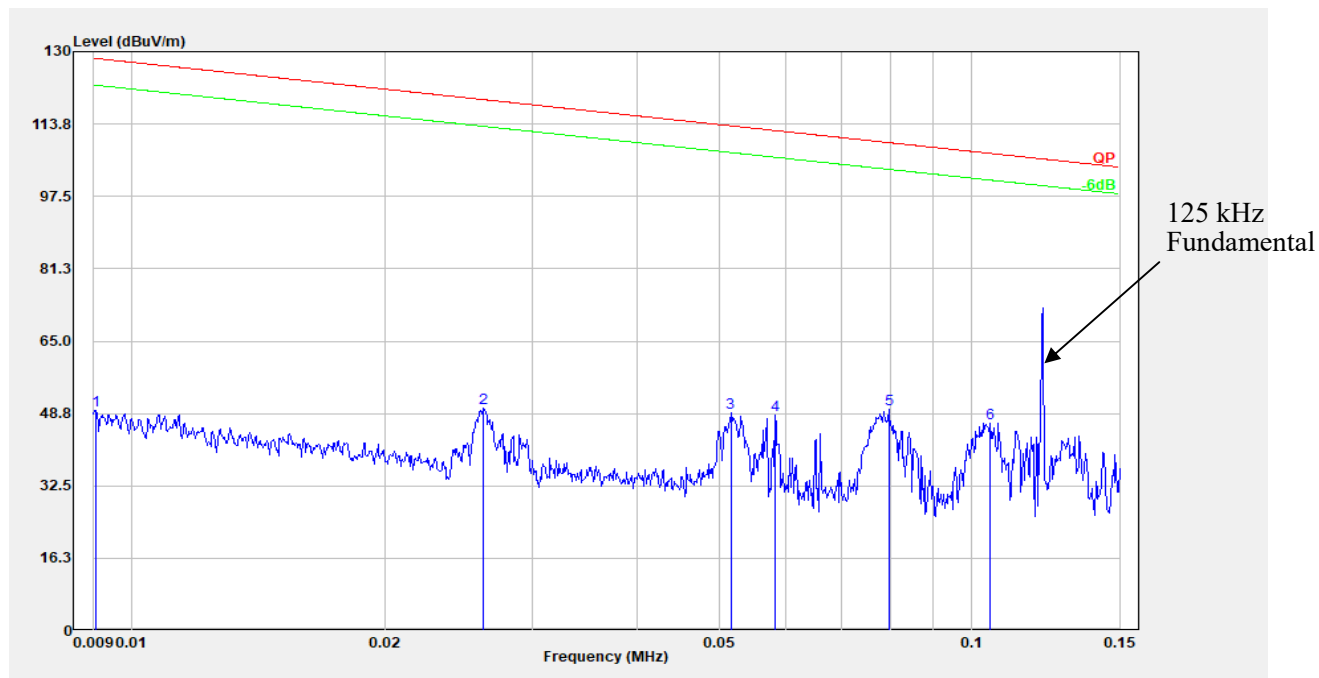


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.365	27.78	20.09	47.87	96.35	48.48	Peak
2	0.830	27.56	20.03	47.59	69.12	21.53	Peak
3	1.645	26.72	19.95	46.67	63.06	16.39	Peak
4	2.249	28.89	19.96	48.85	69.54	20.69	Peak
5	10.179	28.86	20.30	49.17	69.54	20.37	Peak
6	13.551	30.37	20.39	50.75	69.54	18.79	Peak

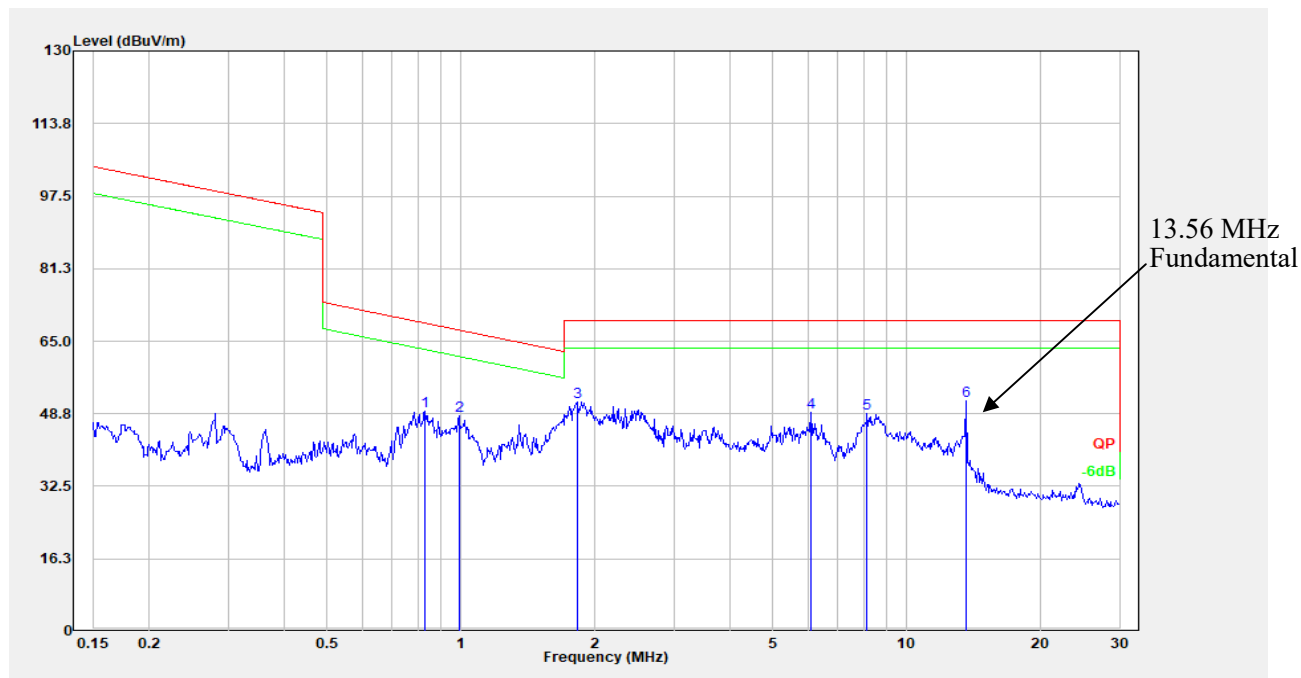


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	13.309	15.95	20.38	36.33	80.51	44.18	Peak
2	13.343	16.29	20.38	36.67	80.51	43.84	Peak
3	13.388	16.05	20.38	36.43	80.51	44.08	Peak
4	13.560	32.26	20.39	52.64	124.00	71.36	Peak
5	13.705	17.60	20.39	38.00	90.47	52.47	Peak
6	13.772	16.27	20.39	36.67	80.51	43.84	Peak

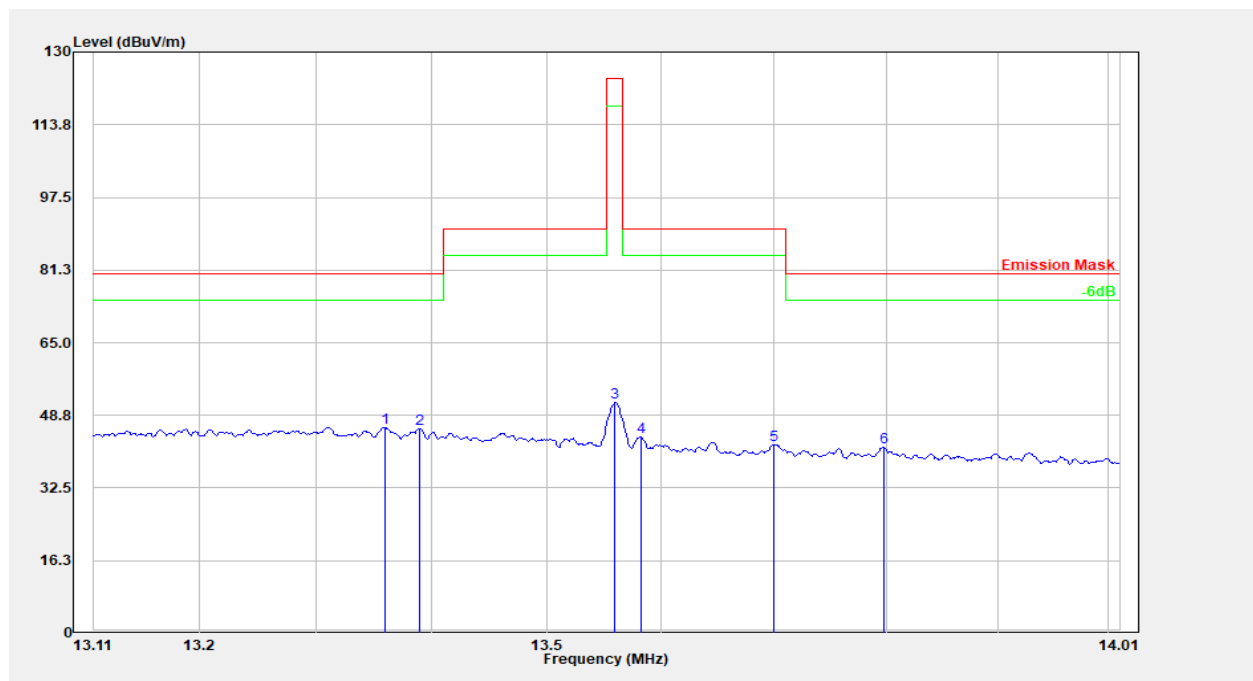
Perpendicular:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.026	37.06	20.41	57.47	119.31	61.83	Peak
2	0.053	32.68	20.41	53.09	113.10	60.01	Peak
3	0.057	30.16	20.41	50.57	112.49	61.91	Peak
4	0.058	29.86	20.41	50.27	112.29	62.02	Peak
5	0.080	30.39	20.36	50.75	109.58	58.83	Peak
6	0.105	26.39	20.22	46.61	107.16	60.55	Peak

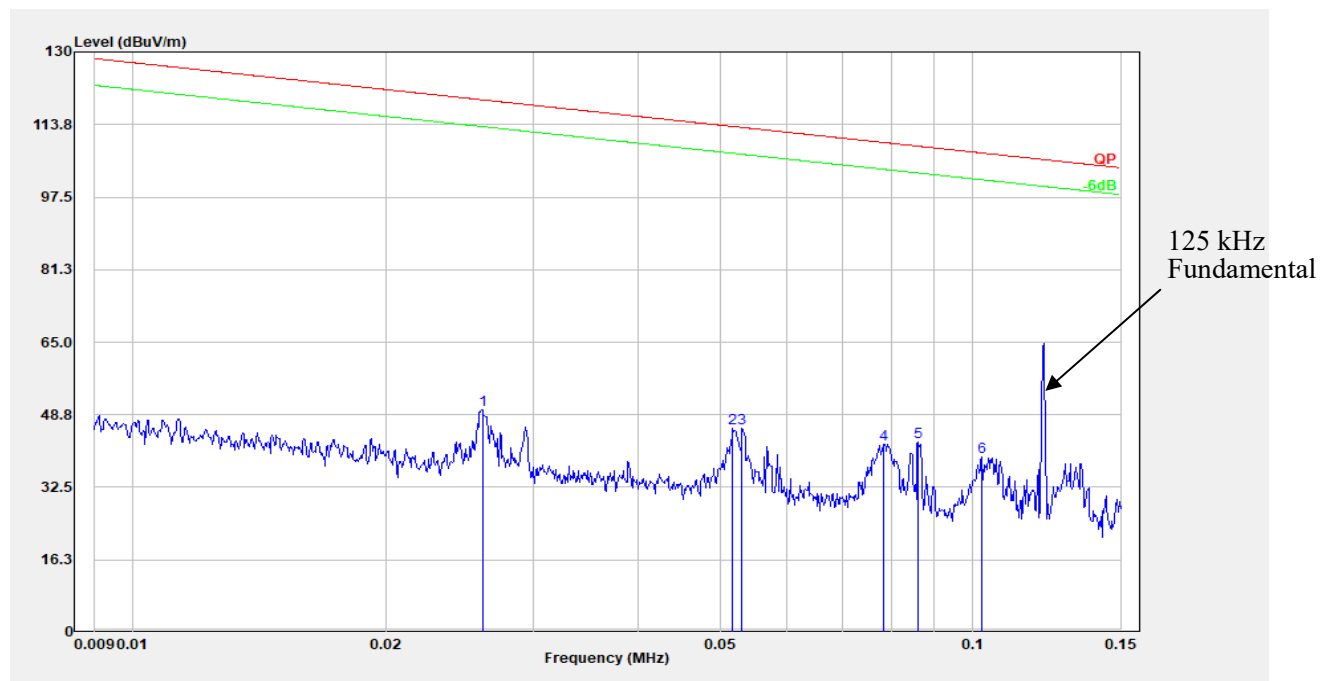


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.830	29.39	20.03	49.42	69.12	19.70	Peak
2	0.989	28.34	20.03	48.37	67.57	19.20	Peak
3	1.819	31.47	19.95	51.42	69.54	18.12	Peak
4	6.089	29.00	20.04	49.04	69.54	20.50	Peak
5	8.148	28.78	20.15	48.93	69.54	20.61	Peak
6	13.551	31.13	20.39	51.52	69.54	18.02	Peak

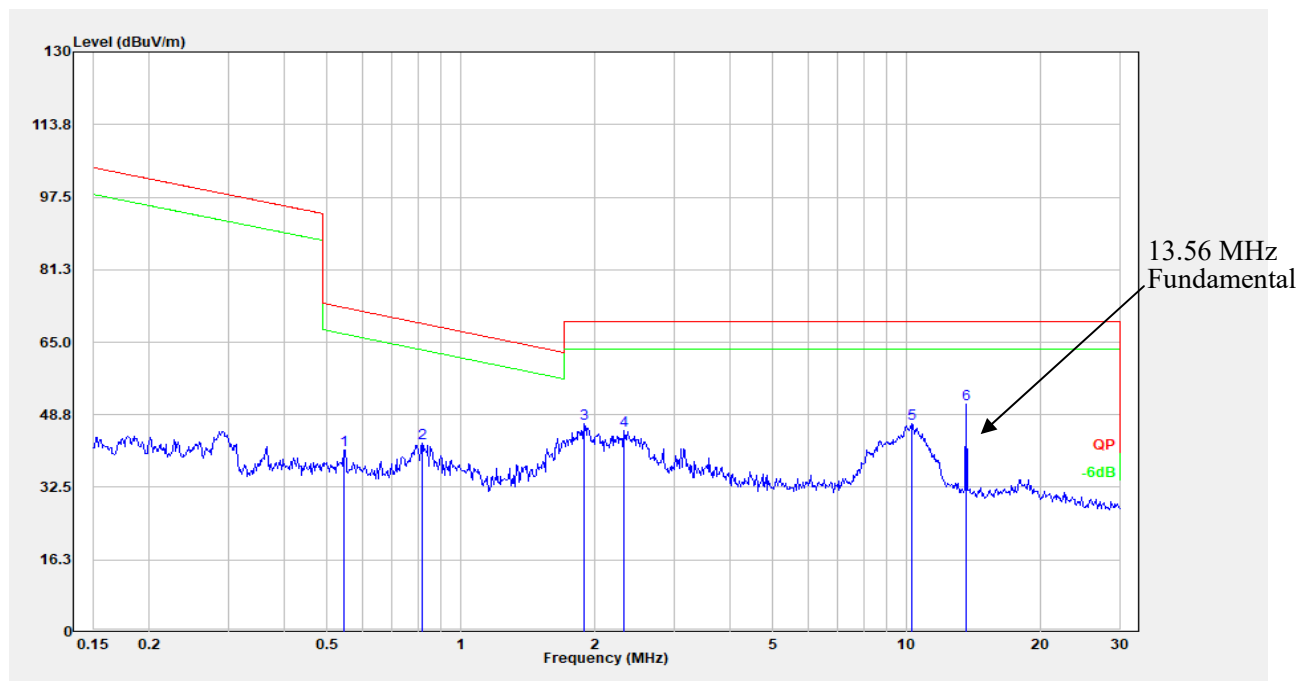


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	13.359	25.57	20.38	45.95	80.51	34.56	Peak
2	13.390	25.43	20.38	45.82	80.51	34.69	Peak
3	13.560	31.18	20.39	51.56	124.00	72.44	Peak
4	13.583	23.51	20.39	43.90	90.47	46.57	Peak
5	13.700	21.83	20.39	42.22	90.47	48.25	Peak
6	13.798	21.20	20.39	41.60	80.51	38.91	Peak

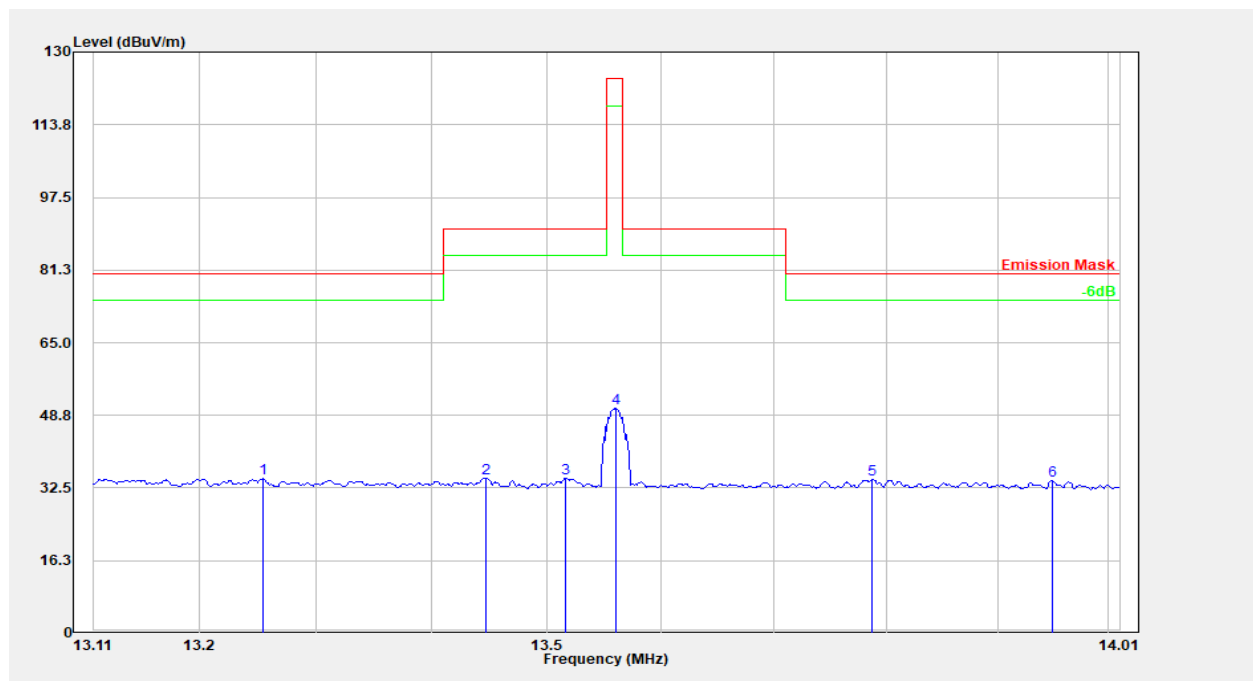
Ground-parallel:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.009	28.99	20.51	49.50	128.47	78.97	Peak
2	0.026	29.67	20.41	50.08	119.23	69.15	Peak
3	0.052	28.51	20.41	48.92	113.34	64.43	Peak
4	0.058	27.86	20.41	48.27	112.29	64.02	Peak
5	0.080	29.39	20.36	49.75	109.58	59.83	Peak
6	0.105	26.39	20.22	46.61	107.16	60.55	Peak



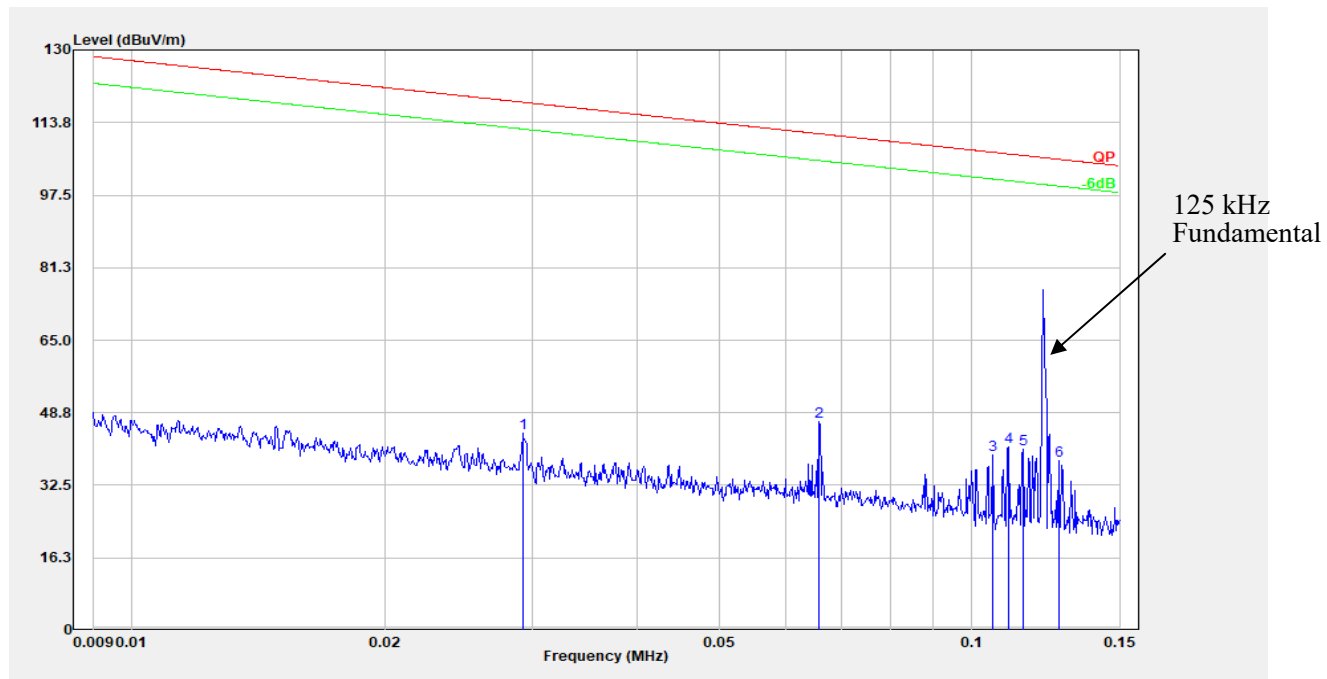
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.546	20.79	20.02	40.81	72.83	32.03	Peak
2	0.817	22.46	20.03	42.49	69.26	26.78	Peak
3	1.888	26.70	19.96	46.66	69.54	22.88	Peak
4	2.321	25.18	19.97	45.15	69.54	24.39	Peak
5	10.233	26.39	20.30	46.69	69.54	22.85	Peak
6	13.551	30.74	20.39	51.12	69.54	18.42	Peak



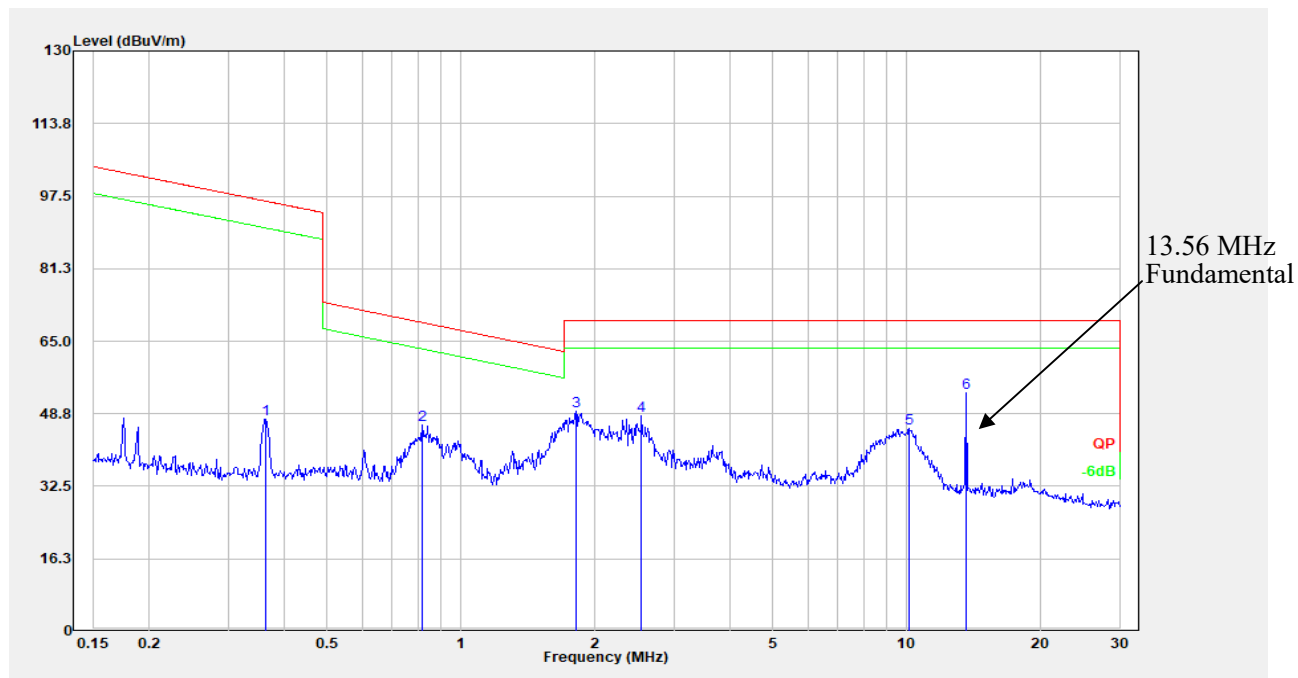
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	13.254	14.21	20.38	34.59	80.51	45.92	Peak
2	13.447	14.40	20.38	34.79	90.47	55.68	Peak
3	13.517	14.33	20.39	34.72	90.47	55.75	Peak
4	13.561	29.85	20.39	50.23	124.00	73.77	Peak
5	13.788	14.00	20.39	34.40	80.51	46.11	Peak
6	13.949	13.78	20.40	34.18	80.51	46.34	Peak

POE mode:

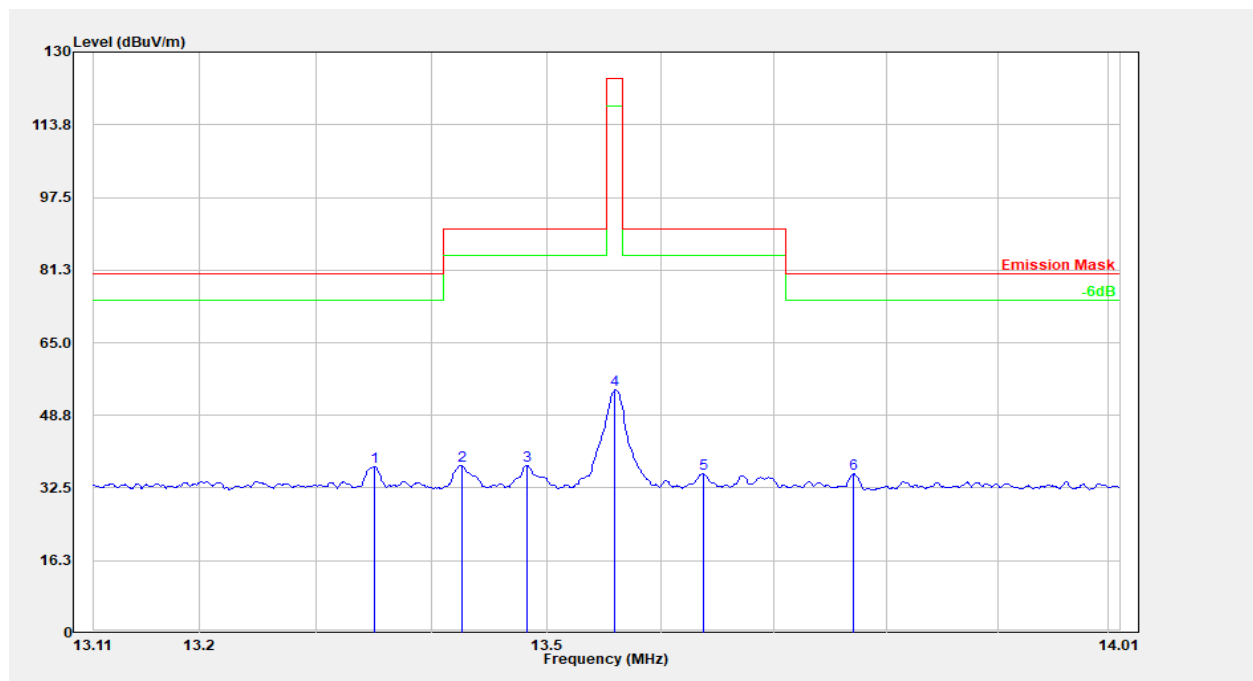
Parallel:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.029	23.71	20.41	44.12	118.31	74.19	Peak
2	0.066	26.26	20.42	46.68	111.24	64.56	Peak
3	0.106	19.05	20.22	39.27	107.09	67.81	Peak
4	0.111	20.76	20.22	40.98	106.72	65.74	Peak
5	0.115	20.27	20.22	40.49	106.38	65.89	Peak
6	0.127	17.81	20.22	38.03	105.52	67.49	Peak

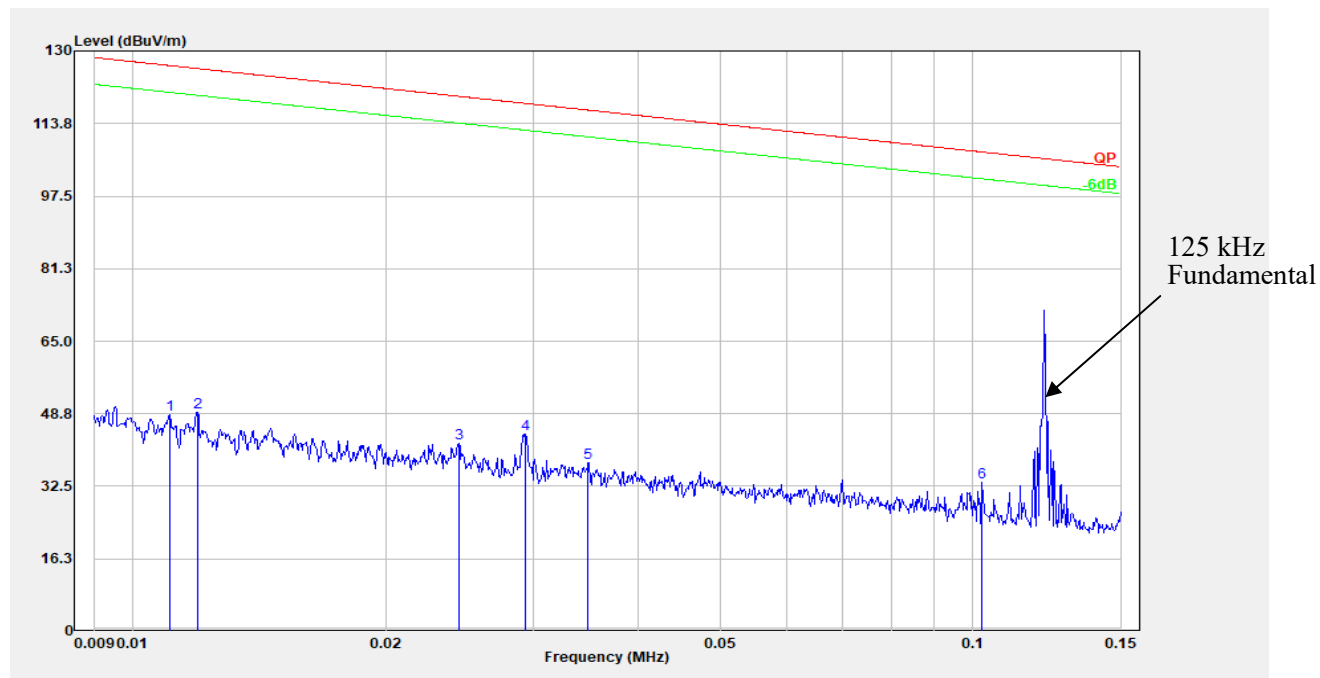


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.363	27.57	20.09	47.66	96.40	48.74	Peak
2	0.817	26.22	20.03	46.25	69.26	23.01	Peak
3	1.810	29.42	19.95	49.37	69.54	20.17	Peak
4	2.540	28.21	19.97	48.18	69.54	21.36	Peak
5	10.125	25.09	20.30	45.40	69.54	24.14	Peak
6	13.551	33.08	20.39	53.46	69.54	16.08	Peak

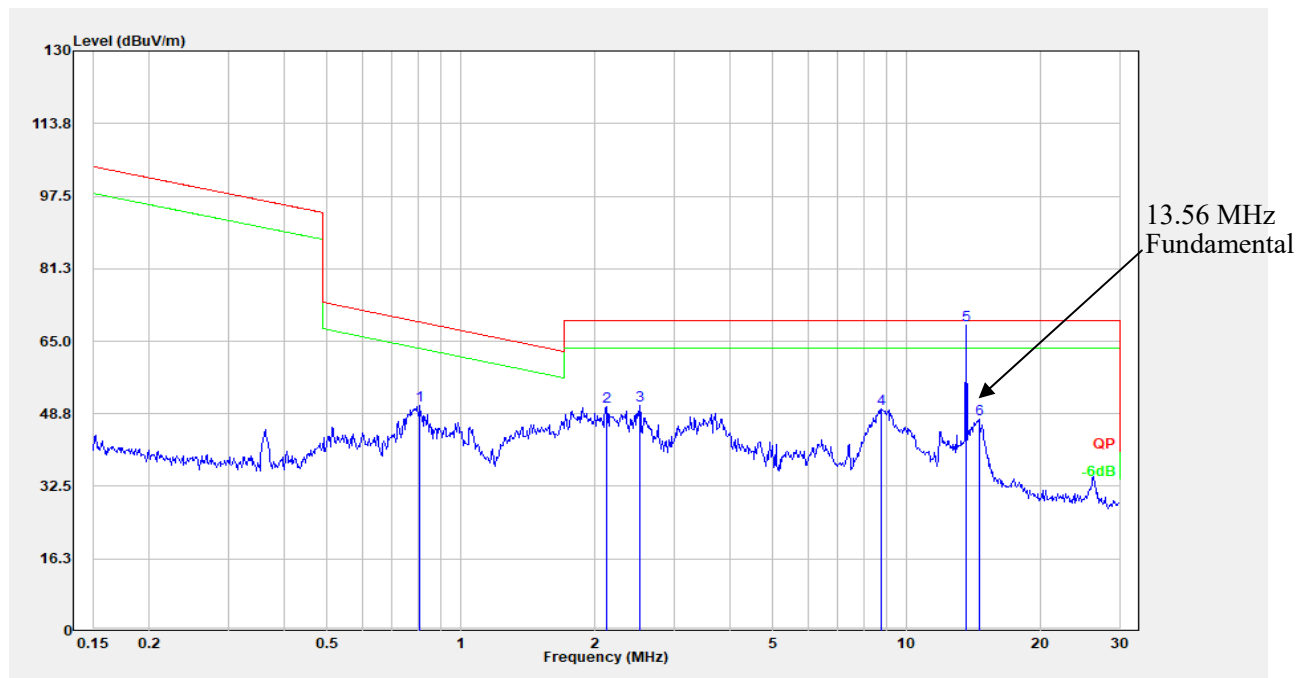


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	13.350	16.86	20.38	37.24	80.51	43.27	Peak
2	13.426	17.17	20.38	37.55	90.47	52.92	Peak
3	13.483	17.14	20.38	37.52	90.47	52.95	Peak
4	13.560	34.06	20.39	54.45	124.00	69.55	Peak
5	13.637	15.27	20.39	35.66	90.47	54.81	Peak
6	13.771	15.29	20.39	35.68	80.51	44.83	Peak

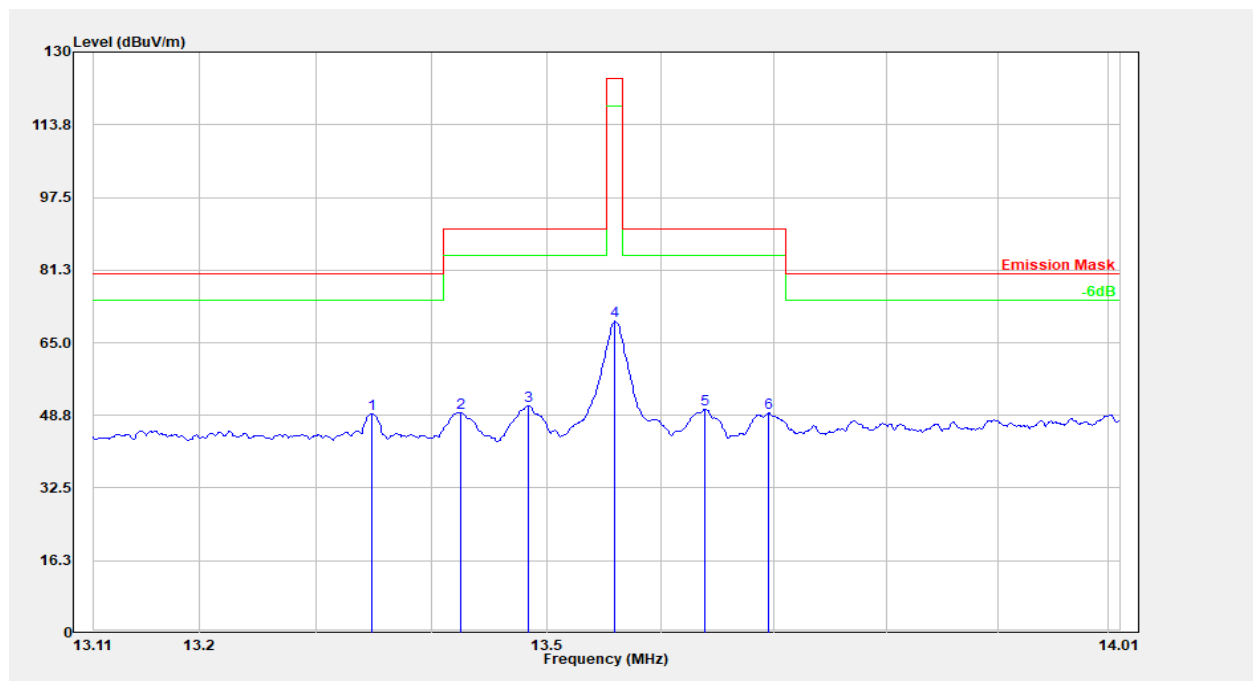
Perpendicular:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.011	27.93	20.51	48.44	126.74	78.29	Peak
2	0.012	28.60	20.51	49.11	126.08	76.97	Peak
3	0.024	21.81	20.42	42.23	119.84	77.62	Peak
4	0.029	23.79	20.41	44.20	118.26	74.06	Peak
5	0.035	17.37	20.41	37.78	116.77	78.98	Peak
6	0.103	13.29	20.22	33.51	107.38	73.87	Peak

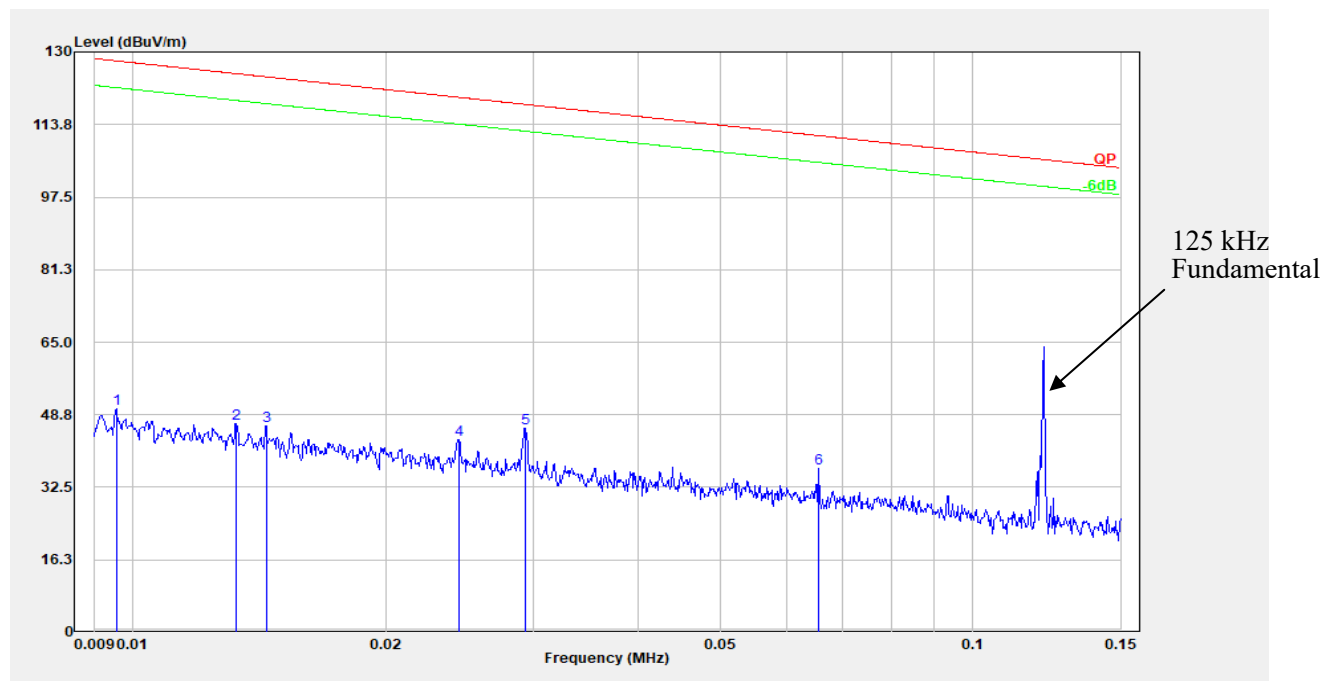


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.809	30.62	20.03	50.65	69.36	18.71	Peak
2	2.121	30.30	19.96	50.26	69.54	19.28	Peak
3	2.513	30.62	19.97	50.59	69.54	18.95	Peak
4	8.776	29.74	20.20	49.94	69.54	19.60	Peak
5	13.551	48.33	20.39	68.72	69.54	0.82	Peak
6	14.517	27.17	20.41	47.58	69.54	21.96	Peak

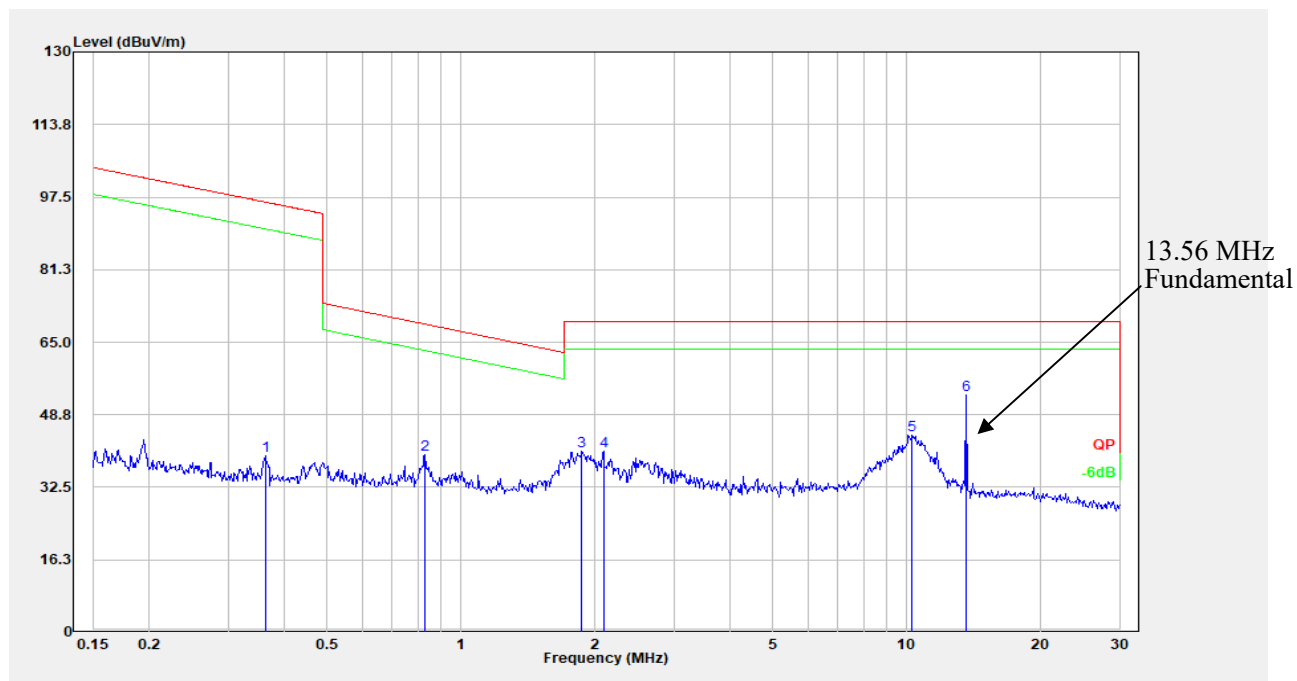


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	13.349	28.79	20.38	49.17	80.51	31.34	Peak
2	13.425	28.99	20.38	49.38	90.47	41.09	Peak
3	13.484	30.52	20.38	50.91	90.47	39.56	Peak
4	13.560	49.39	20.39	69.78	124.00	54.22	Peak
5	13.639	29.60	20.39	49.98	90.47	40.49	Peak
6	13.695	28.86	20.39	49.25	90.47	41.22	Peak

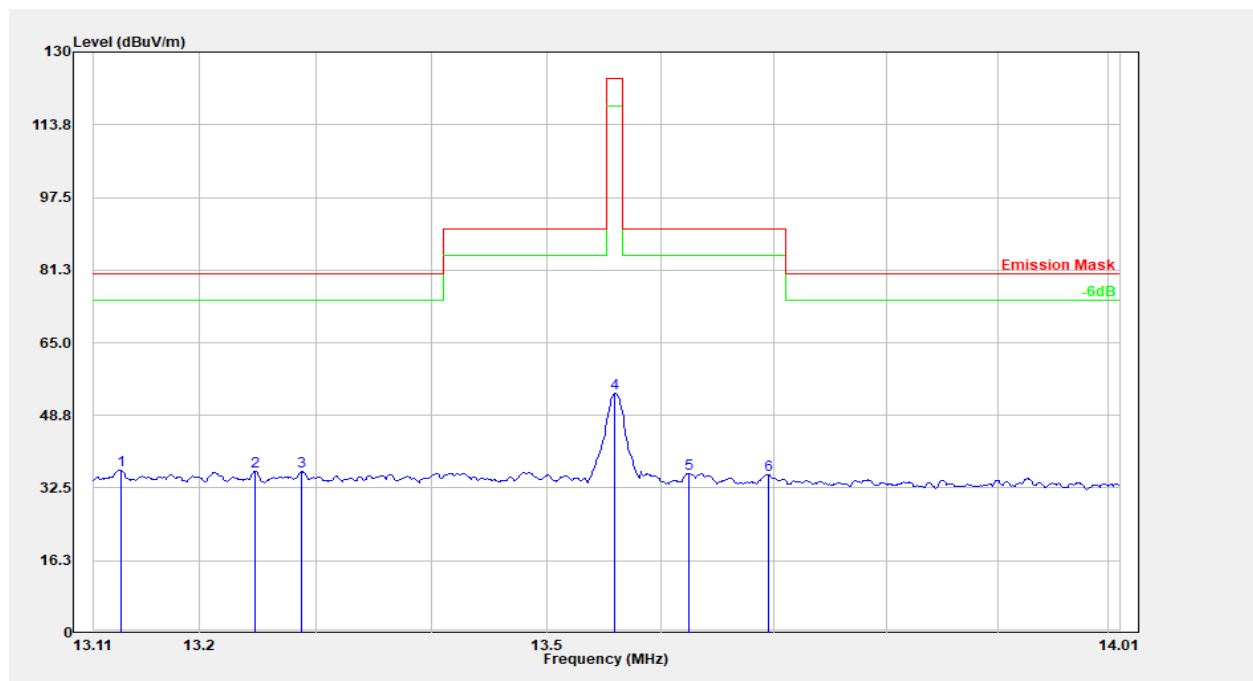
Ground-parallel:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.010	29.67	20.51	50.18	128.01	77.83	Peak
2	0.013	26.21	20.51	46.72	125.15	78.43	Peak
3	0.014	25.85	20.51	46.36	124.44	78.08	Peak
4	0.024	22.67	20.42	43.09	119.84	76.75	Peak
5	0.029	25.41	20.41	45.82	118.26	72.44	Peak
6	0.066	16.40	20.42	36.81	111.27	74.46	Peak



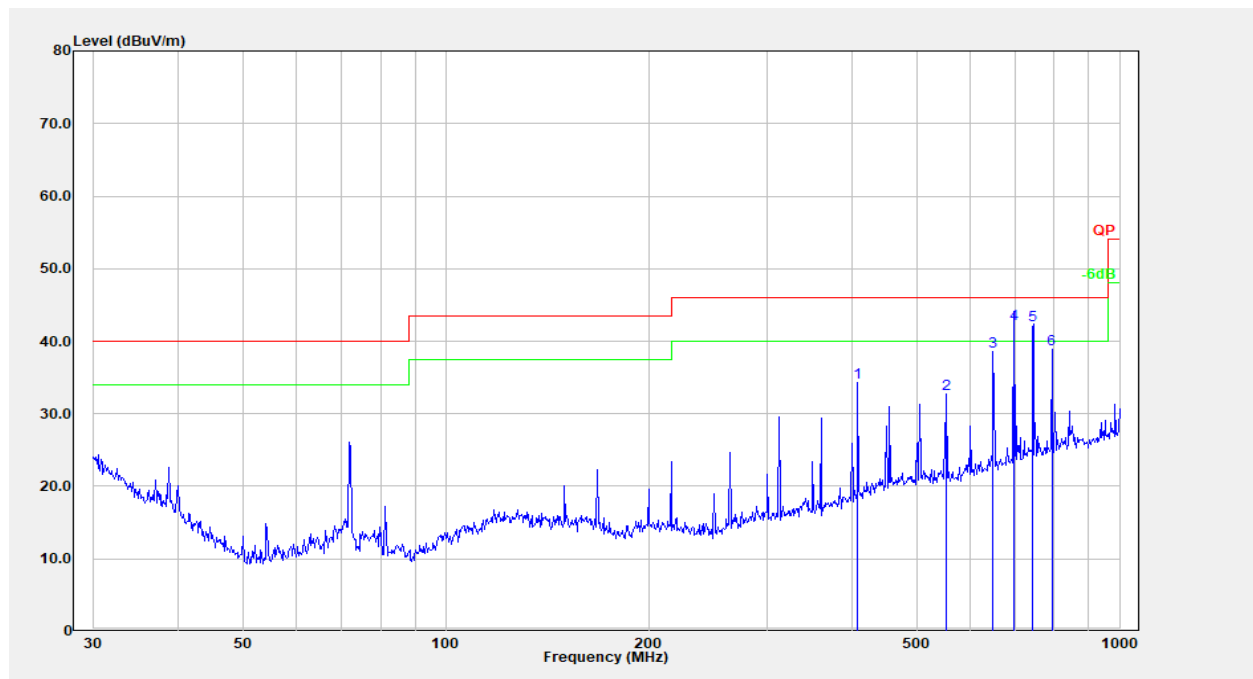
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.363	19.54	20.09	39.63	96.40	56.77	Peak
2	0.830	19.74	20.03	39.77	69.12	29.35	Peak
3	1.868	20.70	19.96	40.66	69.54	28.88	Peak
4	2.088	20.64	19.96	40.60	69.54	28.94	Peak
5	10.288	23.79	20.31	44.10	69.54	25.44	Peak
6	13.551	32.77	20.39	53.16	69.54	16.38	Peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	13.133	16.23	20.37	36.60	80.51	43.91	Peak
2	13.248	15.90	20.38	36.28	80.51	44.23	Peak
3	13.288	15.79	20.38	36.17	80.51	44.34	Peak
4	13.560	33.35	20.39	53.74	124.00	70.26	Peak
5	13.625	15.40	20.39	35.79	90.47	54.68	Peak
6	13.695	15.13	20.39	35.52	90.47	54.95	Peak

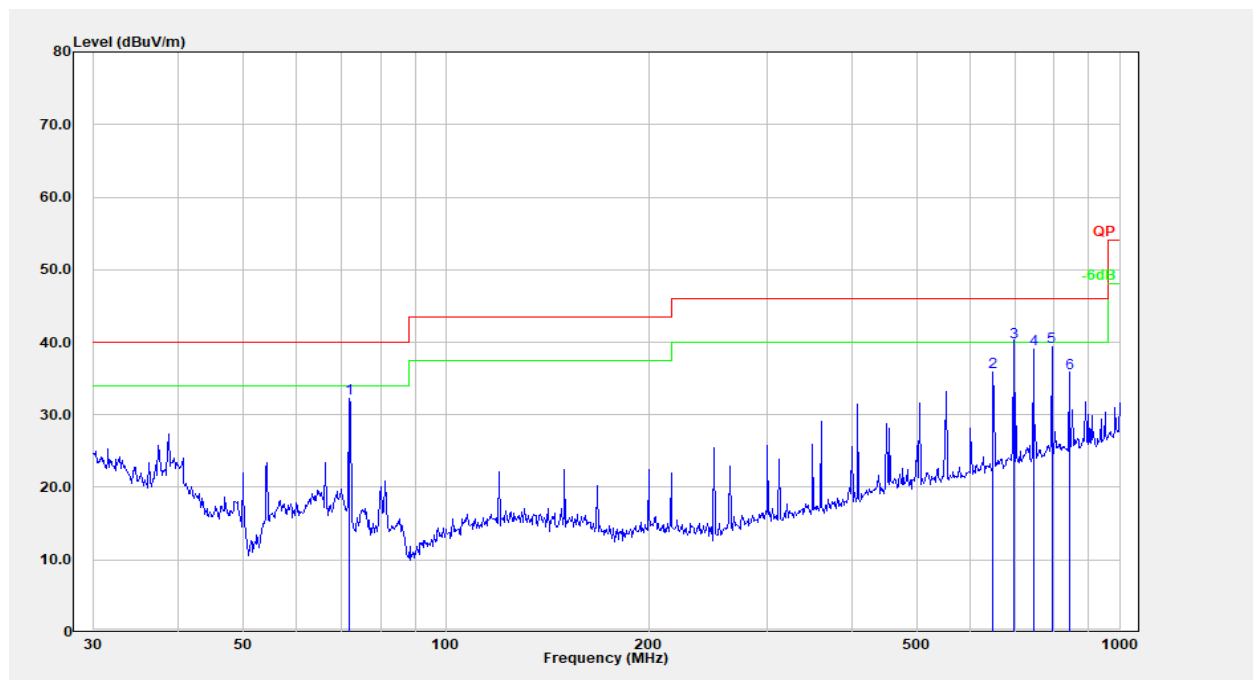
2) 30 MHz~1GHz

Adapter mode:

Horizontal

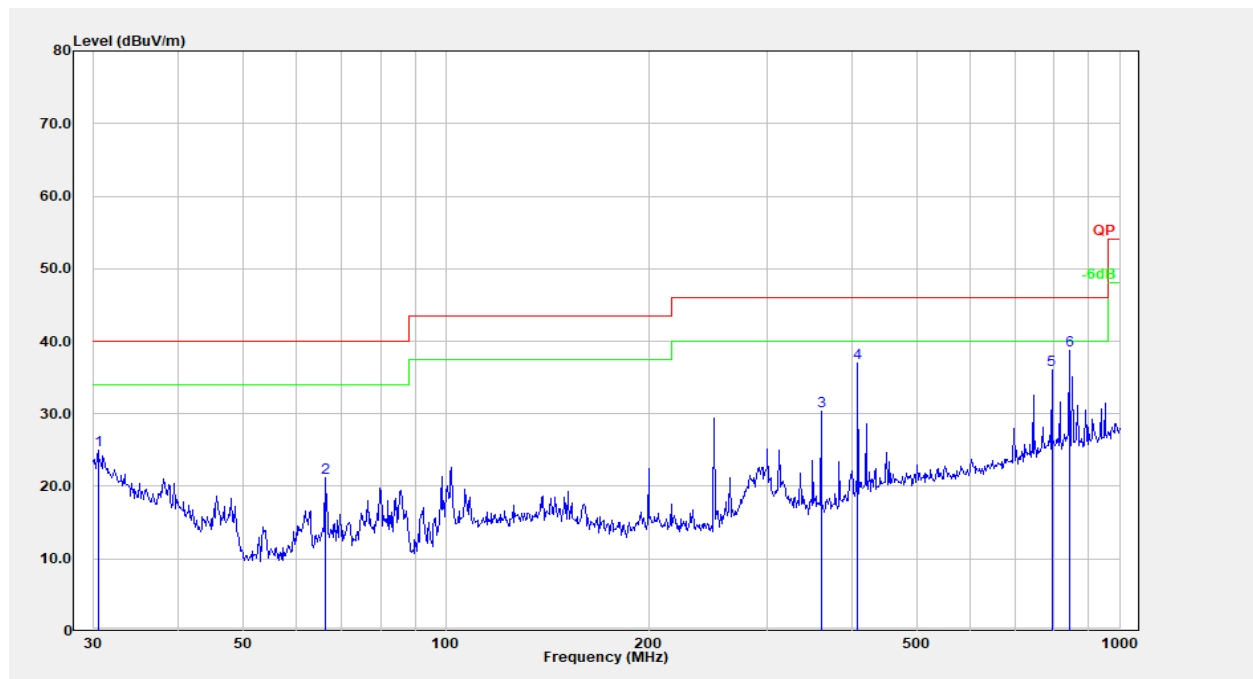
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	408.946	42.95	-8.66	34.29	46.00	11.71	Peak
2	552.883	38.74	-5.95	32.79	46.00	13.21	Peak
3	649.660	42.99	-4.40	38.59	46.00	7.41	Peak
4	696.077	46.04	-3.66	42.38	46.00	3.62	QP
5	744.063	45.39	-3.12	42.27	46.00	3.73	QP
6	793.396	41.37	-2.51	38.86	46.00	7.14	Peak

Vertical



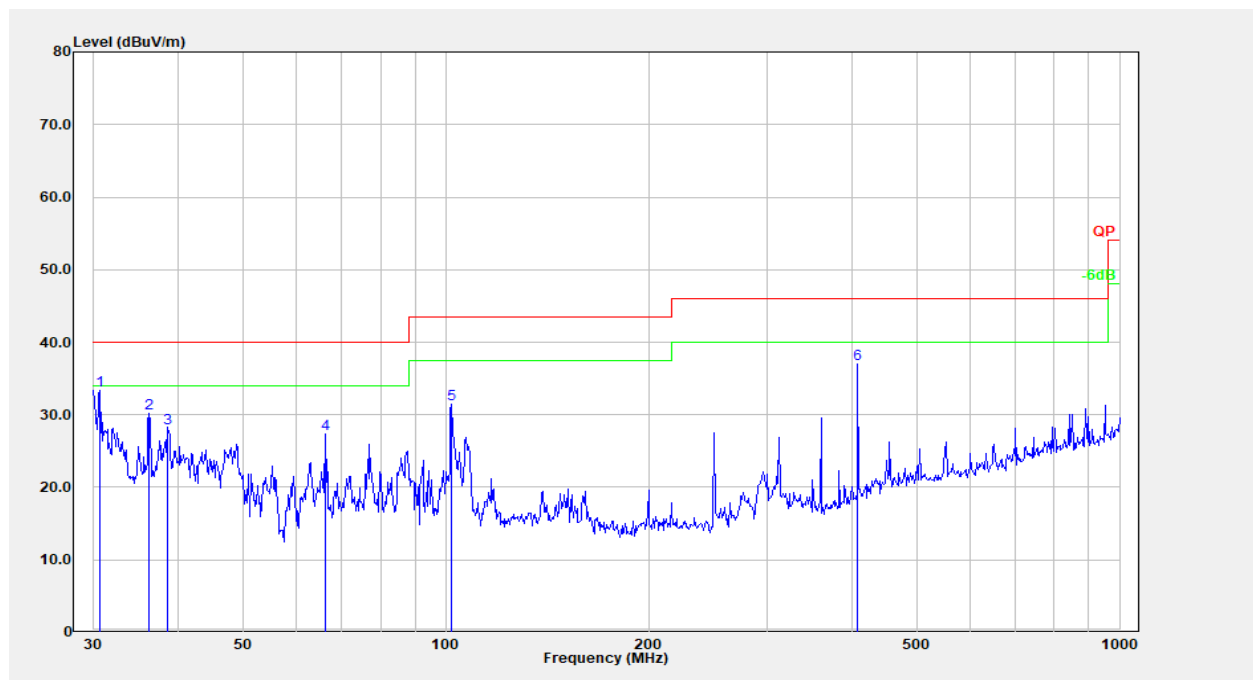
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	71.832	49.09	-16.91	32.18	40.00	7.82	Peak
2	649.660	40.27	-4.40	35.87	46.00	10.13	Peak
3	696.050	43.69	-3.66	40.03	46.00	5.97	QP
4	744.866	42.17	-3.11	39.06	46.00	6.94	Peak
5	793.396	41.82	-2.51	39.31	46.00	6.69	Peak
6	842.130	37.67	-1.86	35.81	46.00	10.19	Peak

POE mode:

Horizontal

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.424	29.04	-4.12	24.92	40.00	15.08	Peak
2	66.266	38.21	-17.07	21.13	40.00	18.87	Peak
3	360.448	40.35	-10.04	30.30	46.00	15.70	Peak
4	408.946	45.59	-8.66	36.93	46.00	9.07	Peak
5	793.396	38.53	-2.51	36.03	46.00	9.97	Peak
6	842.130	40.60	-1.86	38.75	46.00	7.25	Peak

Vertical



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	37.66	-4.28	33.38	40.00	6.62	Peak
2	36.254	38.75	-8.62	30.13	40.00	9.87	Peak
3	38.616	38.63	-10.41	28.22	40.00	11.78	Peak
4	66.266	44.40	-17.07	27.33	40.00	12.67	Peak
5	102.001	45.61	-14.22	31.39	43.50	12.11	Peak
6	408.946	45.73	-8.66	37.07	46.00	8.93	Peak

4.3 20 dB Emission Bandwidth

Serial Number:	CR22060019-RF-S1	Test Date:	2022-08-08
Test Site:	966-2	Test Mode:	Transmit
Tester:	Gary Ling	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	27.2	Relative Humidity: (%)	56	ATM Pressure: (kPa)	100.2
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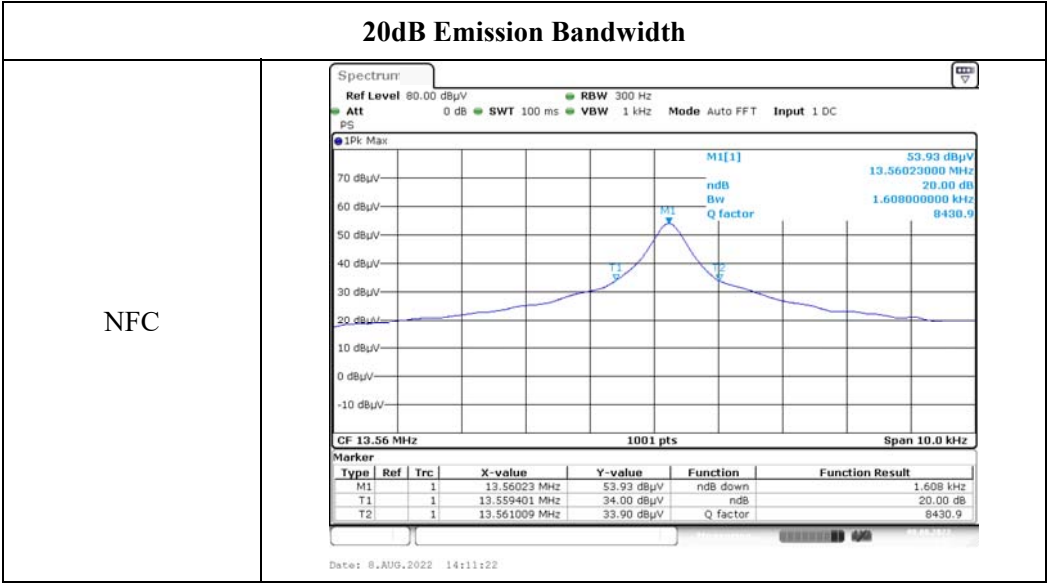
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
TESEQ	HF Loop Antenna	HLA6120	33561	2021-02-03	2024-02-02
R&S	EMI Test Receiver	ESR3	102724	2022-07-15	2023-07-14
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0470-02	2022-07-17	2023-07-16
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0780-01	2022-07-17	2023-07-16
Audix	Test Software	E3	201021 (V9)	N/A	N/A

*** Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Test Frequency (MHz)	20 dB Bandwidth (Hz)
13.56	1608



4.4 Frequency Stability

Serial Number:	CR22060019-RF-S1	Test Date:	2022-08-08
Test Site:	RF	Test Mode:	Transmit
Tester:	Gary Ling	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	28.1	Relative Humidity: (%)	59	ATM Pressure: (kPa)	100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
TESEQ	HF Loop Antenna	HLA6120	33561	2021-02-03	2024-02-02
R&S	EMI Test Receiver	ESR3	102724	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
YINSAIGE	Coaxial Cable	SS402	SJ0300001	Each time	N/A
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29

*** Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:
DC12V:**

$f_0 = 13.56 \text{ MHz}$				
Temperature	Voltage	Measured frequency	Frequency Error	Limit
℃	V _{DC}	MHz	Hz	Hz
-20	12	13.5602315	231.5	±1356
-10		13.5602345	234.5	±1356
0		13.5602385	238.5	±1356
10		13.5602361	236.1	±1356
20		13.5602300	230.0	±1356
25		13.5602369	236.9	±1356
30		13.5602387	238.7	±1356
40		13.5602313	231.3	±1356
50		13.5602399	239.9	±1356
20	10.2	13.5602412	241.2	±1356
20	13.8	13.5602456	245.6	±1356

DC48V:

$f_0 = 13.56 \text{ MHz}$				
Temperature	Voltage	Measured frequency	Frequency Error	Limit
℃	V _{DC}	MHz	Hz	Hz
-20	48	13.5602780	278.0	±1356
-10		13.5602766	276.6	±1356
0		13.5602527	252.7	±1356
10		13.5602568	256.8	±1356
20		13.5602320	232.0	±1356
25		13.5602717	271.7	±1356
30		13.5602807	280.7	±1356
40		13.5602717	271.7	±1356
50		13.5602721	272.1	±1356
20	40.8	13.5602452	245.2	±1356
20	55.2	13.5602469	246.9	±1356

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