



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: SHENZHEN JOYE SENTECH CO., LTD

Address: Room 706, Building-615, Bagualing Industrial Zone, Bagua 2nd Road, Futian, Shenzhen, China

FCC ID: 2BDM5-STR-XBYH3-021

Product Name: range detection module

Standard(s): 47 CFR Part 15, Subpart C(15.249)
ANSI C63.10-2013

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

Report Number: CR231060763-00A

Date Of Issue: 2023/12/1

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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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CONTENTS

DOCUMENT REVISION HISTORY	4
1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
1.2 DESCRIPTION OF TEST CONFIGURATION.....	6
1.2.1 EUT Operation Condition:.....	6
1.2.2 Support Equipment List and Details	6
1.2.3 Support Cable List and Details	6
1.2.4 Block Diagram of Test Setup.....	7
1.3 MEASUREMENT UNCERTAINTY	8
2. SUMMARY OF TEST RESULTS	9
3. REQUIREMENTS AND TEST PROCEDURES	10
3.1 AC LINE CONDUCTED EMISSIONS.....	10
3.1.1 Applicable Standard.....	10
3.1.2 EUT Setup.....	11
3.1.3 EMI Test Receiver Setup	11
3.1.4 Test Procedure	12
3.1.5 Corrected Amplitude & Margin Calculation.....	12
3.2 RADIATED EMISSIONS	13
3.2.1 Applicable Standard.....	13
3.2.2 EUT Setup.....	13
3.2.3 FAR Field Boundary Calculations	15
3.2.4 EMI Test Receiver & Spectrum Analyzer Setup	15
3.2.5 Test Procedure	16
3.2.6 Corrected Amplitude & Margin Calculation.....	16
3.3 20 dB EMISSION BANDWIDTH	17
3.3.1 Applicable Standard.....	17
3.3.2 EUT Setup.....	17
3.3.3 Test Procedure	17
3.4 ANTENNA REQUIREMENT.....	18
3.4.1 Applicable Standard.....	18
3.4.2 Judgment.....	18
4. Test DATA AND RESULTS	19
4.1 AC LINE CONDUCTED EMISSIONS.....	19
4.2 RADIATION SPURIOUS EMISSIONS	22
4.3 20 dB EMISSION BANDWIDTH:	39
5. RF EXPOSURE EVALUATION	41
5.1.1 APPLICABLE STANDARD.....	41
6. EUT PHOTOGRAPHS	42
7. TEST SETUP PHOTOGRAPHS	43

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR231060763-00A	Original Report	2023/12/1

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	range detection module
EUT Model:	JY_STR_xBYH_3_021
Multiple Models:	JY_STR_xBYH_3_0xx
Operation Frequency:	24020-24220 MHz
Modulation Type:	FMCW
Rated Input Voltage:	DC 5V
Serial Number:	2CDT-1
EUT Received Date:	2023/10/20
EUT Received Status:	Good

Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.

Operation Frequency Detail:

Sweep Start Frequency (MHz)	Sweep Stop Frequency (MHz)
24020	24220
Per section 15.31(m), the below frequencies were performed the test as below:	
Test Frequency	Frequency (MHz)
Lowest	24020
Middle	24125
Highest	24220

Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Microstrip array	Unknown	24~24.25GHz	9 dBi
The Method of §15.203 Compliance: ☒ Antenna was permanently attached to the unit. ☐ Antenna use a unique type of connector to attach to the EUT. ☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.			

Accessory Information:

No Accessory.

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. The device has 1T1R
Equipment Modifications:	No
EUT Exercise Software:	sscom
The software was provided by manufacturer▲. The maximum power was configured default setting.	

1.2.2 Support Equipment List and Details

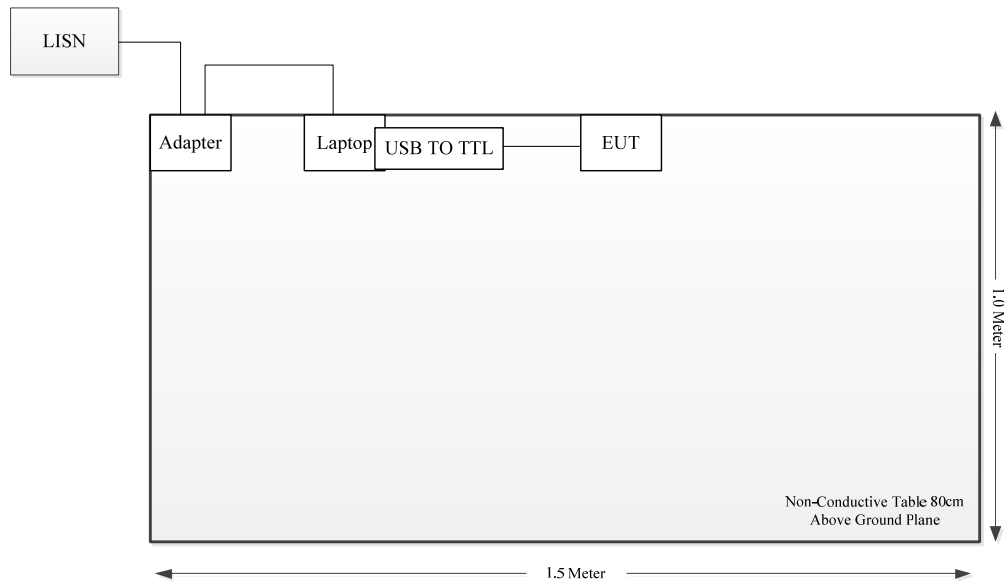
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T460S	60PDTEK8
Lenovo	Adapter	ADLX45DLC3A	00HM613
Unknown	USB TO TTL	Unknown	Unknown

1.2.3 Support Cable List and Details

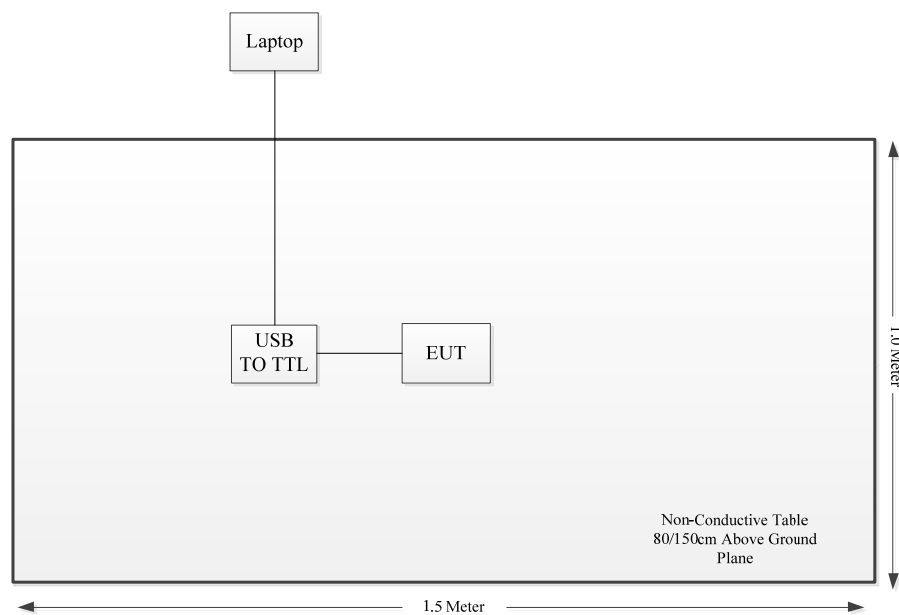
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power Cable	No	No	1.2	Adapter	LISN
Power Cable	No	Yes	1.2	Adapter	Laptop
Cable	No	No	0.5	USB TO TTL	EUT

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Spurious emissions:



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	±5 %
Unwanted Emissions, radiated	9kHz~30MHz: 4.12 dB, 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	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

Standard(s)/Rule(s)	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	Compliant
15.205, §15.209, §15.249	Radiated Emissions	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant
§1.1307	RF Exposure Evaluation	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:

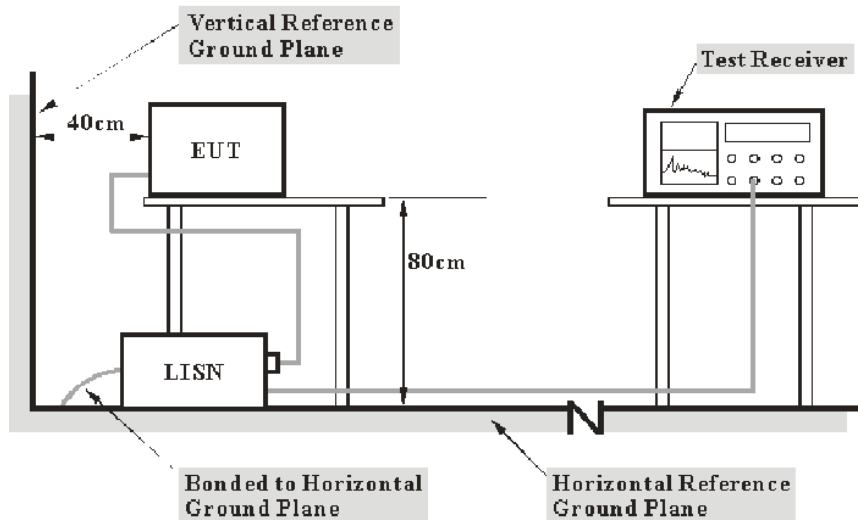
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(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 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 EUT was connected to the outlet of the first 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.

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§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

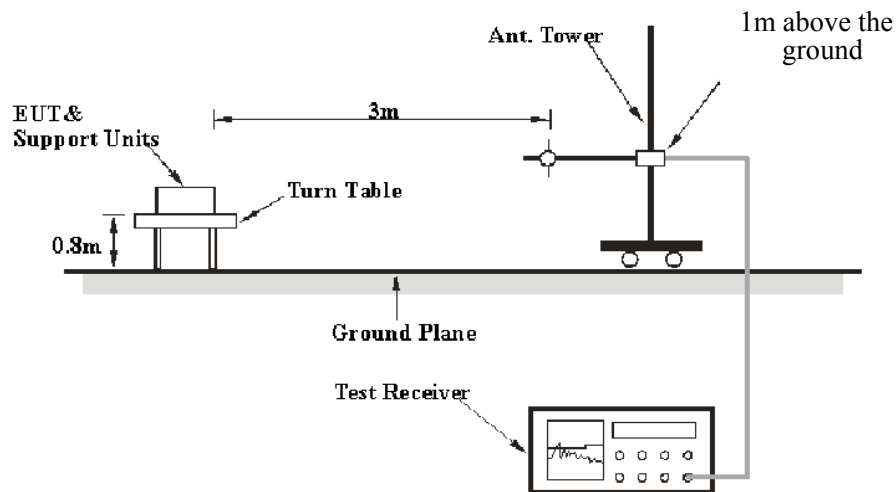
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

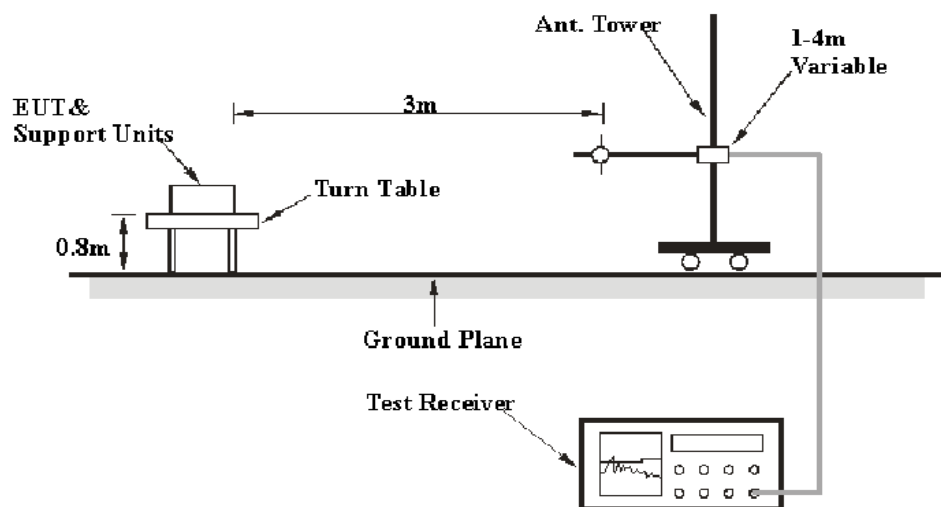
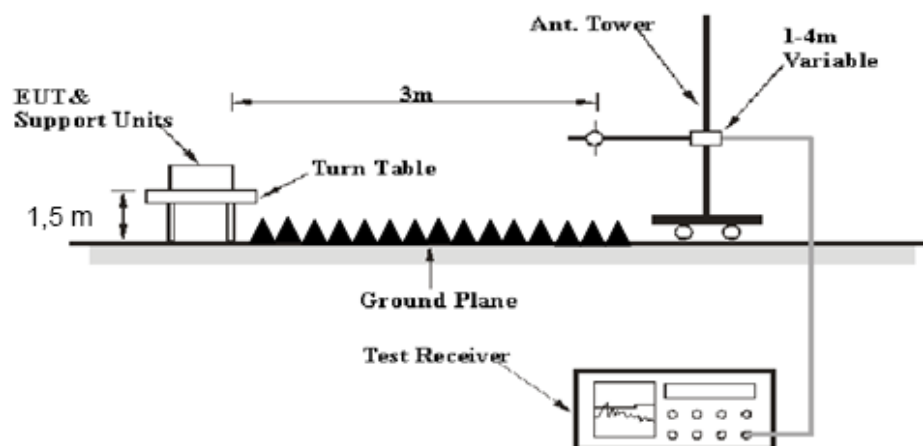
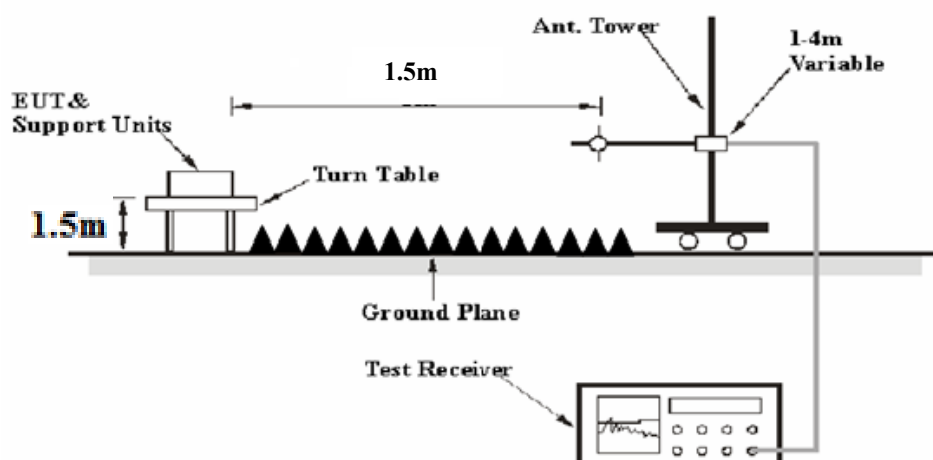
As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

3.2.2 EUT Setup

9kHz-30MHz:



30MHz-1GHz:**1-26.5 GHz:****26.5-40 GHz:**

Above 40GHz:

The antenna is scanned around the entire perimeter surface of the EUT, in both horizontal and vertical polarizations, at the distance of 1.0 m from 40 GHz to 90 GHz, and 0.5 m from 90 GHz to 100 GHz.

The radiated emissions were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.249 limits.

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 FAR Field Boundary Calculations

The far-field boundary is given in ANSI C63.10-2013:

$$R_m = 2D^2 / \lambda$$

Where:

D is the largest dimension of the antenna aperture in m and

λ is the free-space wavelength in m at the frequency of measurement.

The minimum test distance for the frequency range 40GHz-100GHz determine as below:

Model	Frequency Range (GHz)	Largest Dimension of the Horn Antenna (mm)	Minimum Test Distance R_m (m)
M19RH	40-60	46.3	0.57
M12RH	60-90	30.02	0.36
M08RH	90-140	19.7	0.23

Note: The test distances used were 1.0 m from 40 GHz to 90 GHz, and 0.5 m from 90 GHz to 100 GHz, it can be seen that the EUT was always in the Far-field of the Receive Antenna during all Radiated Emissions Tests.

3.2.4 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9kHz to 100 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	300 Hz	1 kHz	200 Hz	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	9 kHz	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	AV

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

3.2.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz - 1 GHz, peak and average detection modes for frequencies above 1 GHz.

According to C63.10, the 26.5-40GHz test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]}/\text{test distance [1.5m]})$ dB = 6.02 dB.

The 40-90GHz test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]}/\text{test distance [1m]})$ dB = 9.54 dB.

The 90-100GHz test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 0.5m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]}/\text{test distance [0.5m]})$ dB = 15.56 dB.

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.6 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

For 9kHz-26.5GHz:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

For 26.5GHz-40GHz

Factor = Antenna Factor + Cable Loss - Amplifier Gain - Distance extrapolation Factor

For 40GHz-100GHz

Factor = Antenna Factor - Distance extrapolation Factor

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

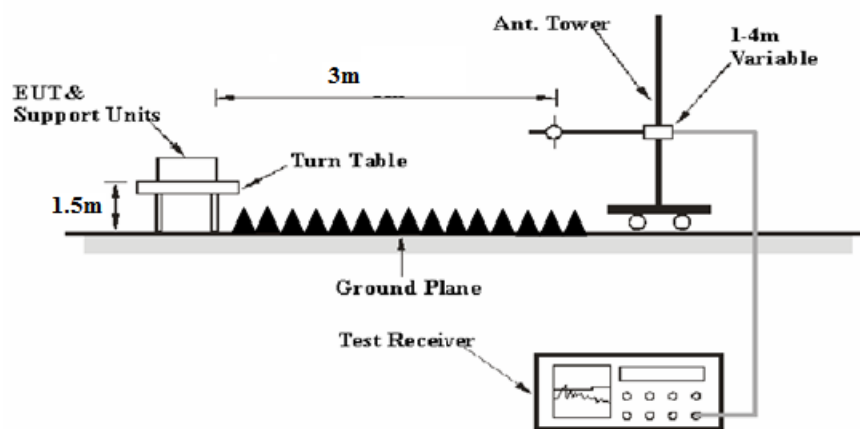
3.3 20 dB Emission Bandwidth

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.

3.3.2 EUT Setup



3.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, unless otherwise specified by the applicable requirement.
- Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

3.4 Antenna Requirement

3.4.1 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 use 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.

3.4.2 Judgment

Please refer to the Antenna Information detail in Section 1.

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	2CDT-1	Test Date:	2023/10/23
Test Site:	CE	Test Mode:	Transmitting(maximum output power mode, high channel)
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.8	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101.3
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/3/31	2024/3/30
R&S	EMI Test Receiver	ESR3	102726	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/8/6	2024/8/5
Audix	Test Software	E3	190306 (V9)	N/A	N/A

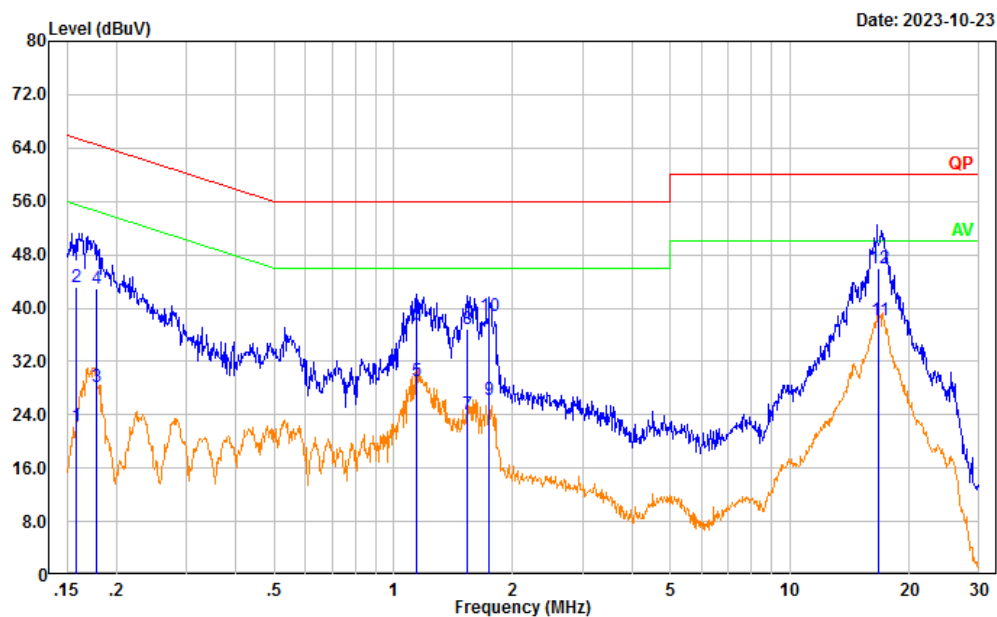
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Project No.: CR231060763-RF

Tester: David Huang

Port: Line

Note: Transmitting



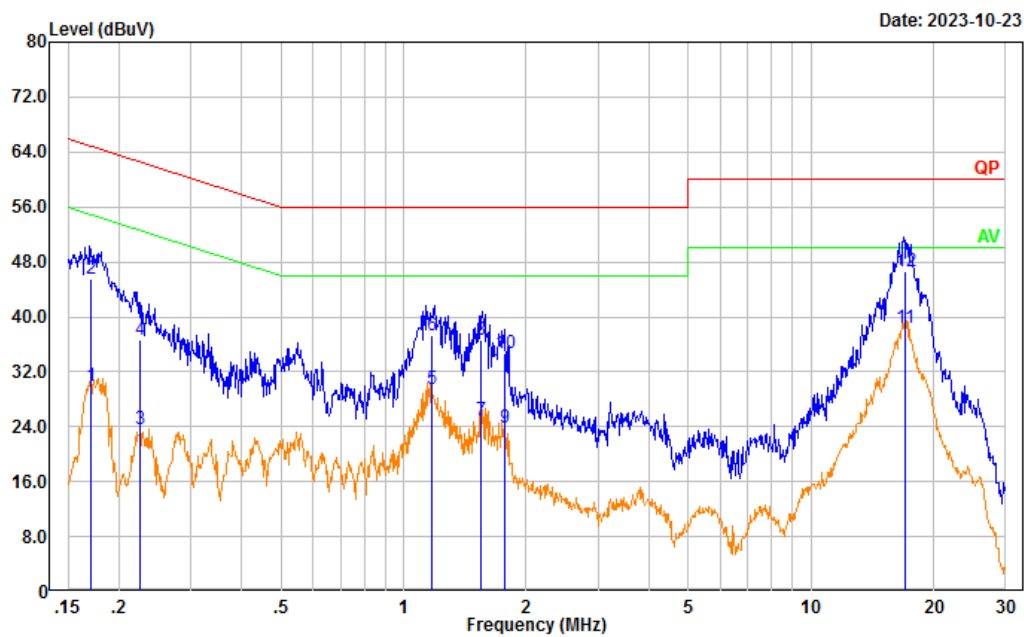
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.159	12.78	9.61	22.39	55.52	33.13	Average
2	0.159	33.53	9.61	43.14	65.52	22.38	QP
3	0.179	18.51	9.61	28.12	54.55	26.43	Average
4	0.179	33.36	9.61	42.97	64.55	21.58	QP
5	1.145	19.37	9.62	28.99	46.00	17.01	Average
6	1.145	27.84	9.62	37.46	56.00	18.54	QP
7	1.529	14.49	9.63	24.12	46.00	21.88	Average
8	1.529	27.13	9.63	36.76	56.00	19.24	QP
9	1.745	16.64	9.63	26.27	46.00	19.73	Average
10	1.745	29.20	9.63	38.83	56.00	17.17	QP
11	16.764	28.37	9.73	38.10	50.00	11.90	Average
12	16.764	36.24	9.73	45.97	60.00	14.03	QP

Project No.: CR231060763-RF

Tester: David Huang

Port: neutral

Note: Transmitting



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.171	20.37	9.61	29.98	54.91	24.93	Average
2	0.171	36.02	9.61	45.63	64.91	19.28	QP
3	0.226	13.92	9.61	23.53	52.58	29.05	Average
4	0.226	26.93	9.61	36.54	62.58	26.04	QP
5	1.170	19.82	9.62	29.44	46.00	16.56	Average
6	1.170	27.73	9.62	37.35	56.00	18.65	QP
7	1.552	15.27	9.63	24.90	46.00	21.10	Average
8	1.552	26.95	9.63	36.58	56.00	19.42	QP
9	1.770	14.13	9.63	23.76	46.00	22.24	Average
10	1.770	24.97	9.63	34.60	56.00	21.40	QP
11	16.975	28.72	9.69	38.41	50.00	11.59	Average
12	16.975	36.87	9.69	46.56	60.00	13.44	QP

4.2 Radiation Spurious Emissions

Serial Number:	2CDT-1	Test Date:	2023/10/30~2023/11/7
Test Site:	966-2,966-1	Test Mode:	Transmitting
Tester:	Vic Du, Mack Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.6~26.7	Relative Humidity: (%)	54~67	ATM Pressure: (kPa)	100.7~101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-6	2023/9/18	2026/9/17
BACL	Loop Antenna	1313-1P	3092721	2023/10/20	2026/10/19
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2023/7/16	2024/7/15
Sonoma	Amplifier	310N	186165	2023/7/16	2024/7/15
AH	Double Ridge Guide Horn Antenna	SAS-571	1394	2023/2/22	2026/2/21
R&S	Spectrum Analyzer	FSV40	101591	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2023/8/6	2024/8/5
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2023/8/6	2024/8/5
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/9	2023/11/8
Audix	Test Software	E3	201021 (V9)	N/A	N/A
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/2/5	2024/2/4
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2023/9/15	2024/9/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2023/8/6	2024/8/5
PASTERNAK	Horn Antenna	PE9850/2F-20	072001	2021/2/5	2024/2/4
OML	Harmonic Mixer	WR19/M19HWD	U60314-1	2023/2/16	2026/2/15
OML	Horn Antenna	M19RH	11648-03	2023/2/27	2026/2/26
OML	Harmonic Mixer	WR12/M12HWD	E60119-1	2023/2/16	2026/2/15
OML	Horn Antenna	M12RH	E60119-2	2023/2/27	2026/2/26
OML	Harmonic Mixer	WR08/M08HWD	F60315-1	2023/2/16	2026/2/15
OML	Horn Antenna	M08RH	F60315-2	2023/2/27	2026/2/26

* 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:

Please refer to the below table and plots.

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

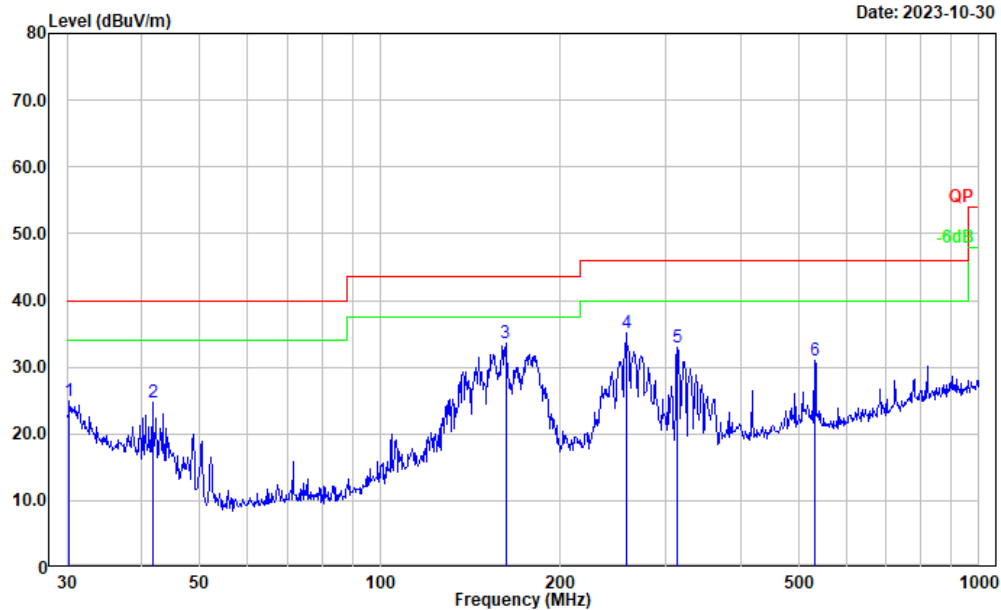
For 9kHz-30MHz, The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be recorded.

1) 30MHz-1GHz:

Low Channel:

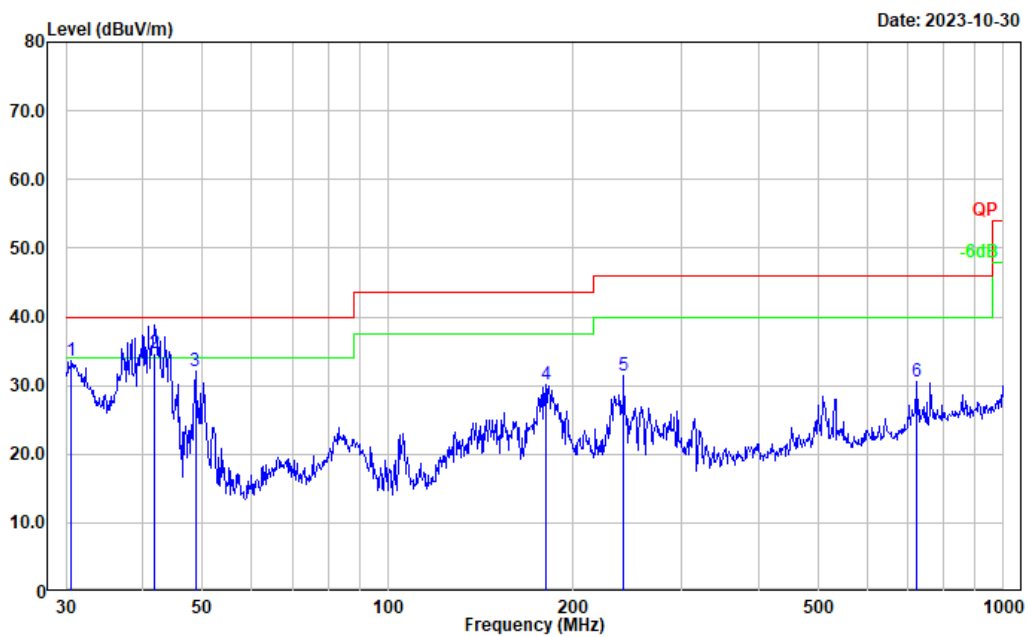
Project No.: CR231060763-RF
Tester: Vic Du
Polarization: horizontal
Note:

Date: 2023-10-30



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.317	29.02	-4.04	24.98	40.00	15.02	Peak
2	41.713	37.09	-12.36	24.73	40.00	15.27	Peak
3	162.041	45.83	-12.15	33.68	43.50	9.82	Peak
4	257.422	47.84	-12.72	35.12	46.00	10.88	Peak
5	313.276	43.53	-10.60	32.93	46.00	13.07	Peak
6	531.964	36.89	-5.99	30.90	46.00	15.10	Peak

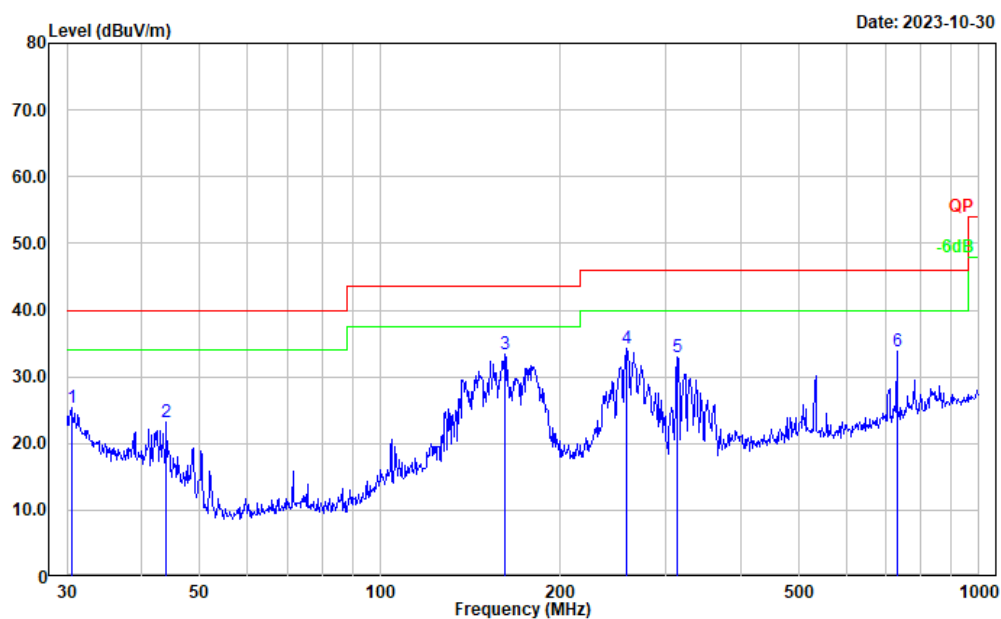
Project No.: CR231060763-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	37.88	-4.28	33.60	40.00	6.40	Peak
2	41.713	47.11	-12.36	34.75	40.00	5.25	QP
3	48.672	48.43	-16.33	32.10	40.00	7.90	Peak
4	180.649	43.69	-13.56	30.13	43.50	13.37	Peak
5	241.676	44.59	-13.08	31.51	46.00	14.49	Peak
6	724.261	33.87	-3.20	30.67	46.00	15.33	Peak

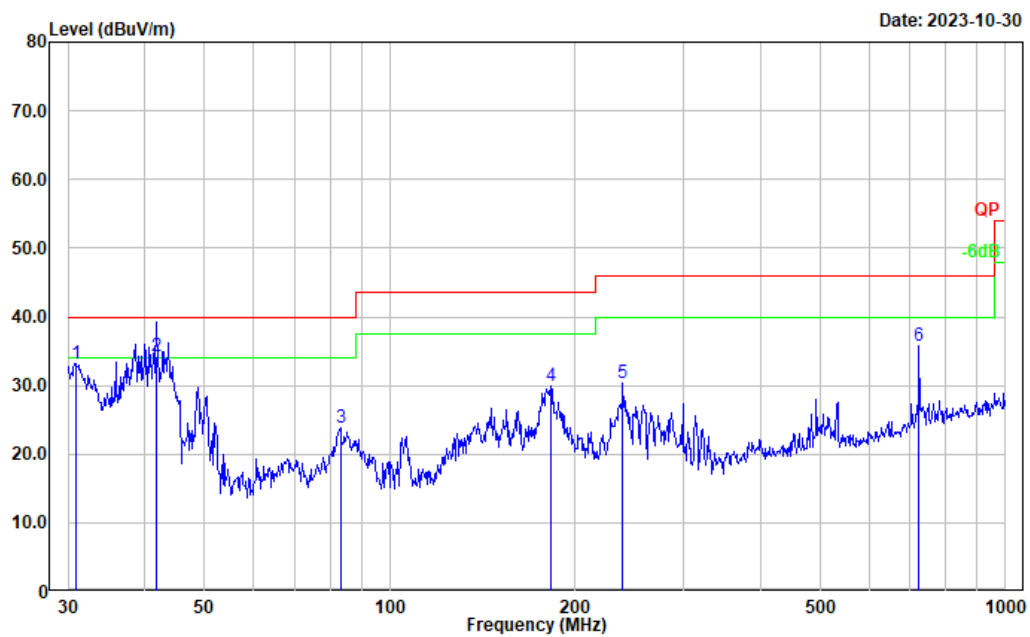
Middle Channel:

Project No.: CR231060763-RF
Tester: Vic Du
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.531	29.52	-4.20	25.32	40.00	14.68	Peak
2	43.966	36.84	-13.67	23.17	40.00	16.83	Peak
3	161.474	45.59	-12.11	33.48	43.50	10.02	Peak
4	258.326	46.85	-12.64	34.21	46.00	11.79	Peak
5	313.276	43.55	-10.60	32.95	46.00	13.05	Peak
6	729.358	36.86	-3.09	33.77	46.00	12.23	Peak

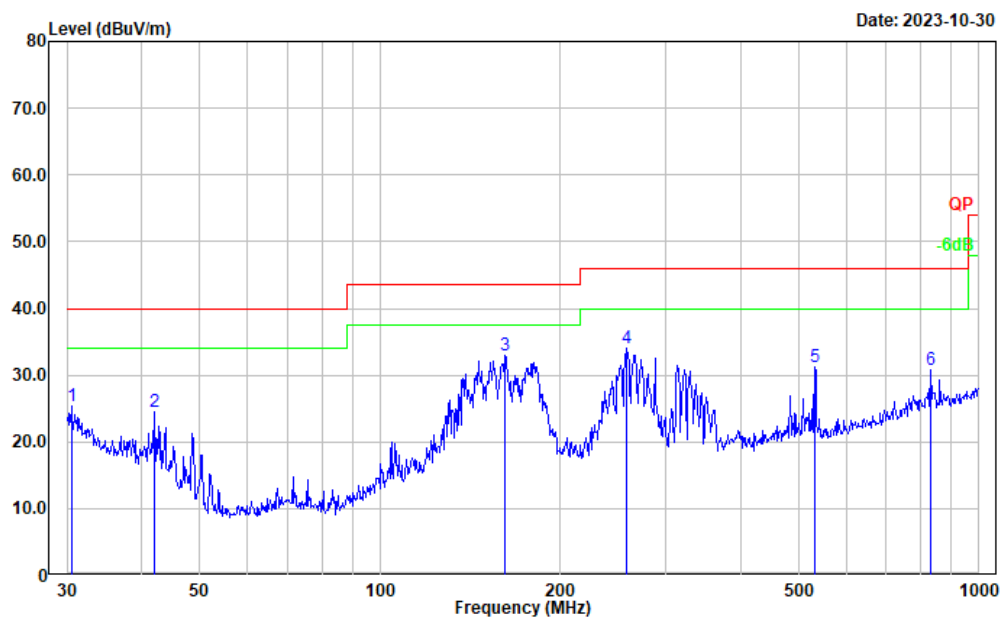
Project No.: CR231060763-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.853	37.71	-4.45	33.26	40.00	6.74	Peak
2	41.713	46.59	-12.36	34.23	40.00	5.77	QP
3	83.230	41.06	-17.23	23.83	40.00	16.17	Peak
4	182.559	43.37	-13.53	29.84	43.50	13.66	Peak
5	239.147	43.37	-13.11	30.26	46.00	15.74	Peak
6	724.261	38.94	-3.20	35.74	46.00	10.26	Peak

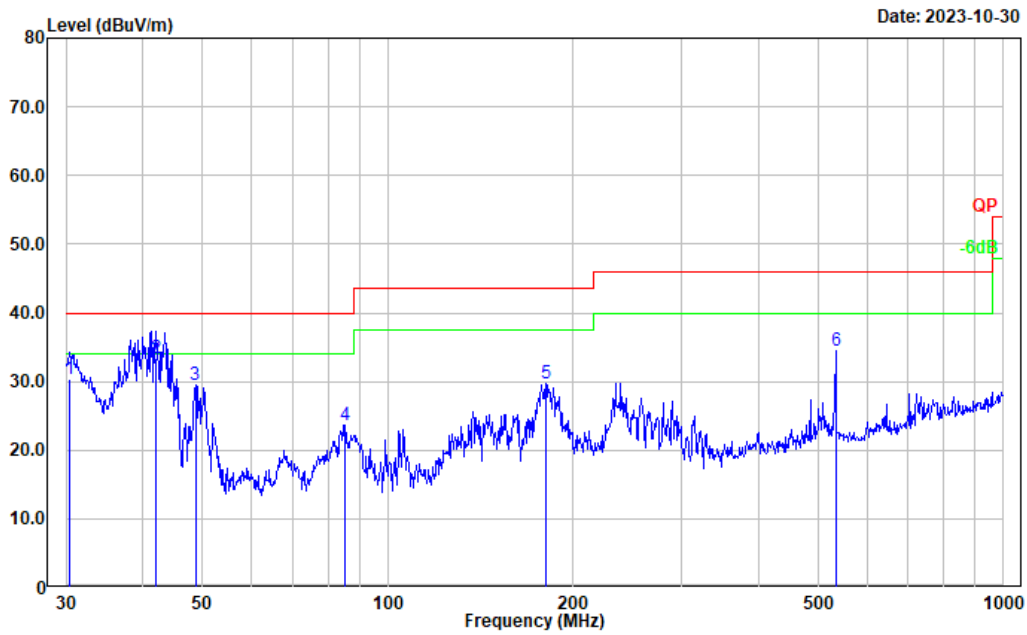
High Channel:

Project No.: CR231060763-RF
Tester: Vic Du
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.531	29.49	-4.20	25.29	40.00	14.71	Peak
2	42.007	37.06	-12.51	24.55	40.00	15.45	Peak
3	161.474	45.14	-12.11	33.03	43.50	10.47	Peak
4	257.422	46.84	-12.72	34.12	46.00	11.88	Peak
5	531.964	37.26	-5.99	31.27	46.00	14.73	Peak
6	830.400	32.58	-1.70	30.88	46.00	15.12	Peak

Project No.: CR231060763-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.424	34.41	-4.13	30.28	40.00	9.72	QP
2	42.007	45.86	-12.51	33.35	40.00	6.65	QP
3	48.672	45.84	-16.33	29.51	40.00	10.49	Peak
4	85.298	40.88	-17.19	23.69	40.00	16.31	Peak
5	180.649	43.19	-13.56	29.63	43.50	13.87	Peak
6	533.832	40.41	-6.00	34.41	46.00	11.59	Peak

2) 1-40GHz:

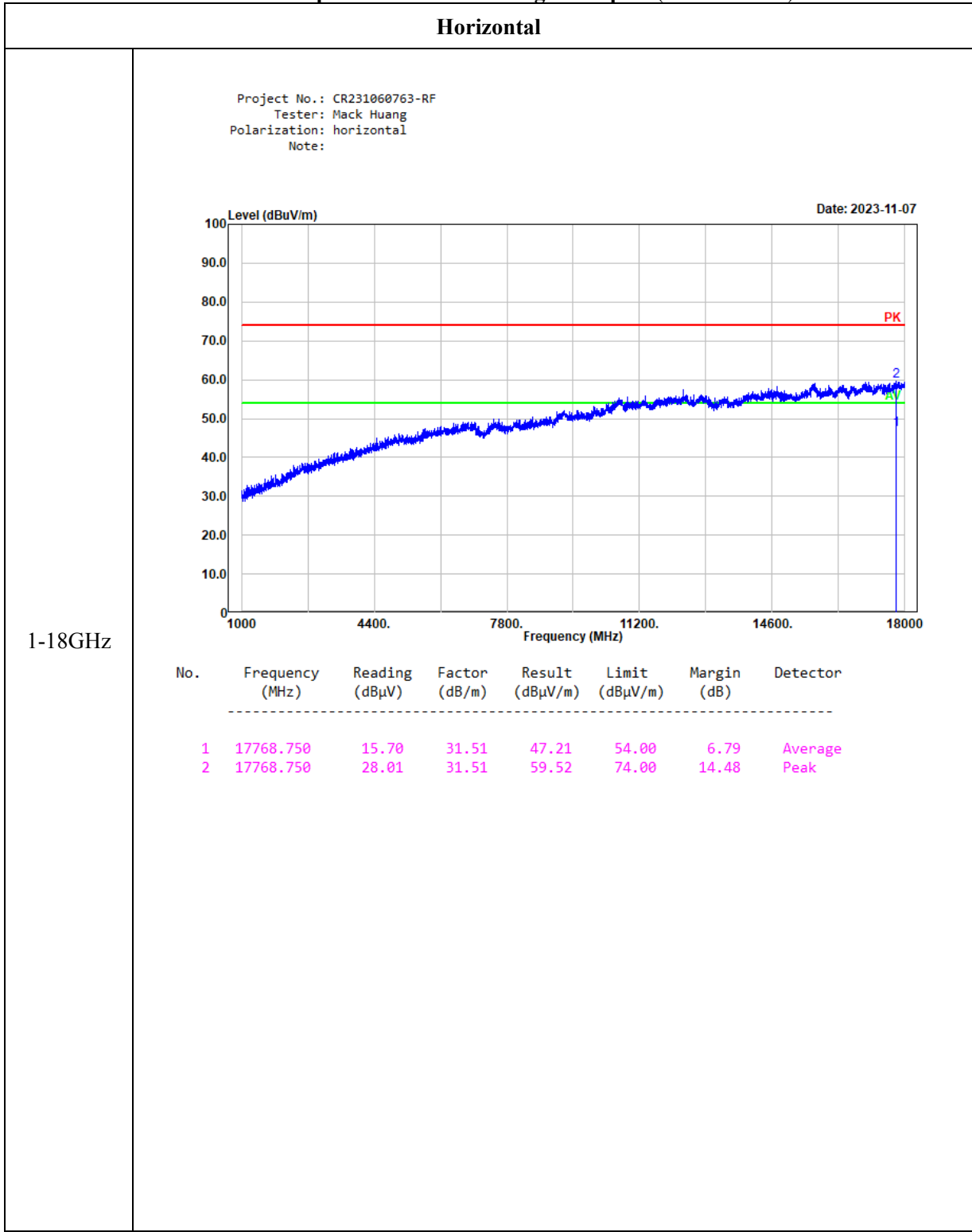
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low channel 24020 MHz							
24020.000	84.80	PK	H	4.72	89.52	127.96	38.44
24020.000	82.20	AV	H	4.72	86.92	107.96	21.04
24020.000	96.08	PK	V	4.72	100.80	127.96	27.16
24020.000	95.22	AV	V	4.72	99.94	107.96	8.02
24000.000	50.79	PK	H	4.69	55.48	74.00	18.52
24000.000	37.78	AV	H	4.69	42.47	54.00	11.53
24000.000	55.94	PK	V	4.69	60.63	74.00	13.37
24000.000	40.62	AV	V	4.69	45.31	54.00	8.69
17768.75	28.01	PK	H	31.51	59.52	74.00	14.48
17768.75	15.70	AV	H	31.51	47.21	54.00	6.79
16986.60	31.51	PK	V	28.04	59.55	74.00	14.45
16986.60	19.20	AV	V	28.04	47.24	54.00	6.76
26159.93	50.76	PK	H	6.69	57.45	74.00	16.55
26159.93	38.51	AV	H	6.69	45.20	54.00	8.80
26284.06	50.58	PK	V	6.97	57.55	74.00	16.45
26284.06	38.27	AV	V	6.97	45.24	54.00	8.76
39805.56	53.60	PK	H	8.86	62.46	74.00	11.54
39805.56	40.92	AV	H	8.86	49.78	54.00	4.22
39362.67	51.82	PK	V	10.18	62.00	74.00	12.00
39362.67	39.37	AV	V	10.18	49.55	54.00	4.45
Middle channel 24125 MHz							
24125.000	85.11	PK	H	4.86	89.97	127.96	37.99
24125.000	84.23	AV	H	4.86	89.09	107.96	18.87
24125.000	96.78	PK	V	4.86	101.64	127.96	26.32
24125.000	94.89	AV	V	4.86	99.75	107.96	8.21
16881.25	30.01	PK	H	27.45	57.46	74.00	16.54
16881.25	18.58	AV	H	27.45	46.03	54.00	7.97
16793.58	29.67	PK	V	26.62	56.29	74.00	17.71
16793.58	17.44	AV	V	26.62	44.06	54.00	9.94
25024.11	50.89	PK	H	6.83	57.72	74.00	16.28
25024.11	38.50	AV	H	6.83	45.33	54.00	8.67
23590.72	52.54	PK	V	5.09	57.63	74.00	16.37
23590.72	40.22	AV	V	5.09	45.31	54.00	8.69
39365.38	51.92	PK	H	10.17	62.09	74.00	11.91
39365.38	39.52	AV	H	10.17	49.69	54.00	4.31
39354.57	51.95	PK	V	10.17	62.12	74.00	11.88
39354.57	39.60	AV	V	10.17	49.77	54.00	4.23

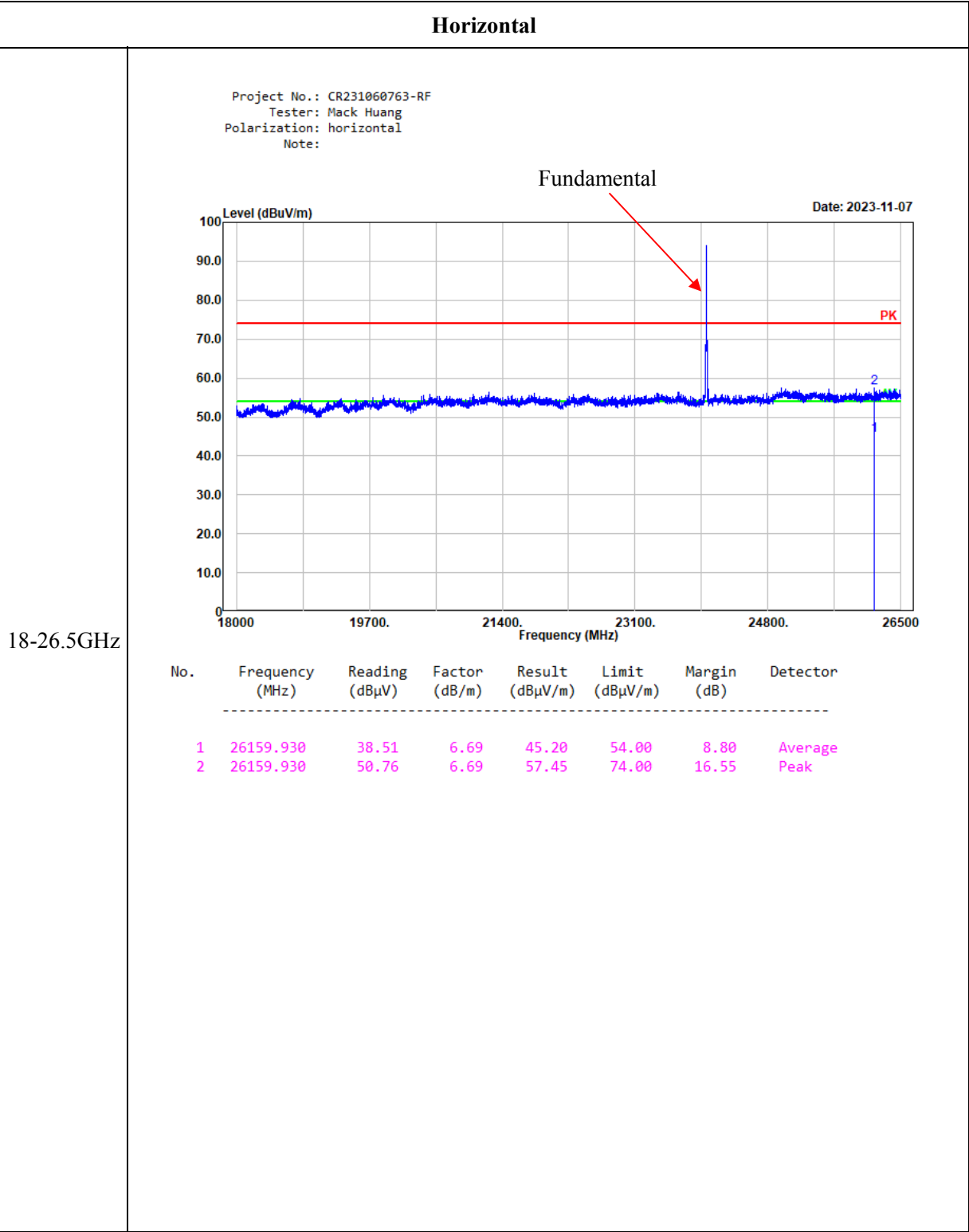
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
High channel				24220	MHz		
24220.000	85.28	PK	H	4.99	90.27	127.96	37.69
24220.000	84.24	AV	H	4.99	89.23	107.96	18.73
24220.000	97.58	PK	V	4.99	102.57	127.96	25.39
24220.000	94.02	AV	V	4.99	99.01	107.96	8.95
24250.000	50.61	PK	H	5.03	55.64	74.00	18.36
24250.000	37.79	AV	H	5.03	42.82	54.00	11.18
24250.000	53.68	PK	V	5.03	58.71	74.00	15.29
24250.000	39.84	AV	V	5.03	44.87	54.00	9.13
17214.33	30.52	PK	H	28.64	59.16	74.00	14.84
17214.33	18.32	AV	H	28.64	46.96	54.00	7.04
16855.41	29.87	PK	V	27.19	57.06	74.00	16.94
16855.41	17.22	AV	V	27.19	44.41	54.00	9.59
24986.70	52.04	PK	H	6.74	58.78	74.00	15.22
24986.70	39.63	AV	H	6.74	46.37	54.00	7.63
25377.78	50.80	PK	V	6.55	57.35	74.00	16.65
25377.78	38.57	AV	V	6.55	45.12	54.00	8.88
39281.66	51.74	PK	H	10.18	61.92	74.00	12.08
39281.66	39.20	AV	H	10.18	49.38	54.00	4.62
39292.46	51.74	PK	V	10.17	61.91	74.00	12.09
39292.46	39.41	AV	V	10.17	49.58	54.00	4.42

40-100GHz:

Frequency (GHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low channel				24.02	GHz		
48.040	45.78	PK	H	30.50	76.28	87.96	11.68
48.040	32.10	AV	H	30.50	62.60	67.96	5.36
48.040	46.88	PK	V	30.50	77.38	87.96	10.58
48.040	33.54	AV	V	30.50	64.04	67.96	3.92
72.060	40.12	PK	H	34.25	74.37	87.96	13.59
72.060	27.41	AV	H	34.25	61.66	67.96	6.30
72.060	42.01	PK	V	34.25	76.26	87.96	11.70
72.060	29.37	AV	V	34.25	63.62	67.96	4.34
96.080	43.53	PK	H	30.30	73.83	87.96	14.13
96.080	30.25	AV	H	30.30	60.55	67.96	7.41
96.080	44.14	PK	V	30.30	74.44	87.96	13.52
96.080	31.27	AV	V	30.30	61.57	67.96	6.39
Middle channel				24.125	GHz		
48.250	46.20	PK	H	30.54	76.74	87.96	11.22
48.250	33.77	AV	H	30.54	64.31	67.96	3.65
48.250	47.01	PK	V	30.54	77.55	87.96	10.41
48.250	34.56	AV	V	30.54	65.10	67.96	2.86
72.375	40.58	PK	H	34.30	74.88	87.96	13.08
72.375	28.11	AV	H	34.30	62.41	67.96	5.55
72.375	41.23	PK	V	34.30	75.53	87.96	12.43
72.375	28.69	AV	V	34.30	62.99	67.96	4.97
96.500	43.46	PK	H	30.35	73.81	87.96	14.15
96.500	30.59	AV	H	30.35	60.94	67.96	7.02
96.500	44.10	PK	V	30.35	74.45	87.96	13.51
96.500	31.62	AV	V	30.35	61.97	67.96	5.99
High channel				24.22	GHz		
48.440	47.11	PK	H	30.57	77.68	87.96	10.28
48.440	34.56	AV	H	30.57	65.13	67.96	2.83
48.440	47.81	PK	V	30.57	78.38	87.96	9.58
48.440	34.21	AV	V	30.57	64.78	67.96	3.18
72.660	41.13	PK	H	34.34	75.47	87.96	12.49
72.660	28.36	AV	H	34.34	62.70	67.96	5.26
72.660	40.06	PK	V	34.34	74.40	87.96	13.56
72.660	27.14	AV	V	34.34	61.48	67.96	6.48
96.880	43.78	PK	H	30.40	74.18	87.96	13.78
96.880	30.20	AV	H	30.40	60.60	67.96	7.36
96.880	44.36	PK	V	30.40	74.76	87.96	13.20
96.880	31.29	AV	V	30.40	61.69	67.96	6.27

Listed with the worst radiation spurious emissions margin test plots(Low Channel)

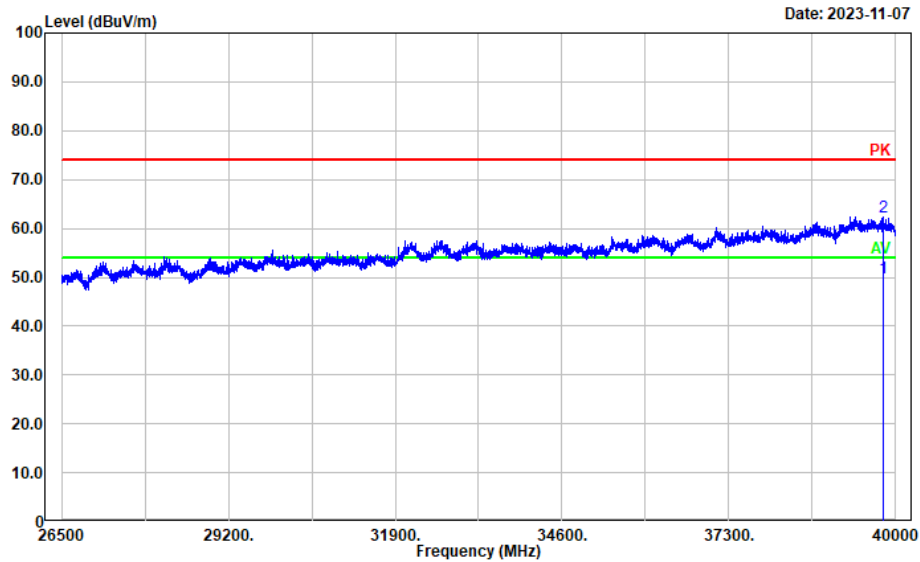




Horizontal

26.5-40GHz

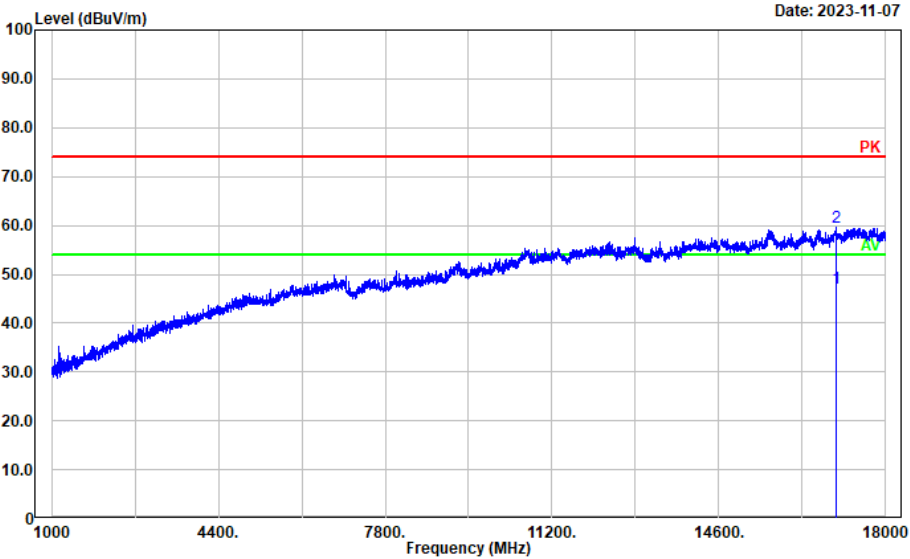
Project No.: CR231060763-RF
Tester: Mack Huang
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	39805.560	40.92	8.86	49.78	54.00	4.22	Average
2	39805.560	53.60	8.86	62.46	74.00	11.54	Peak

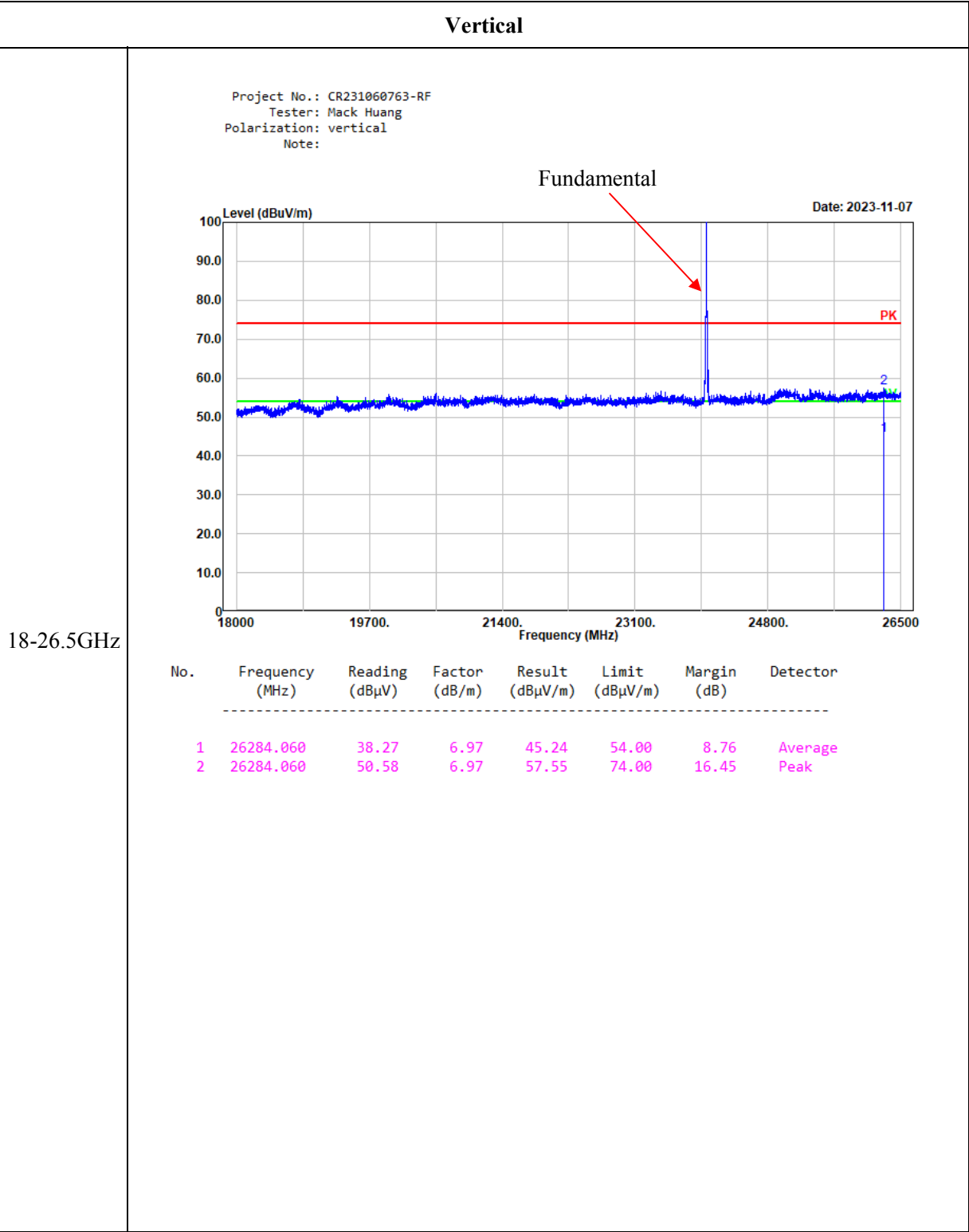
Vertical

Project No.: CR231060763-RF
Tester: Mack Huang
Polarization: vertical
Note:



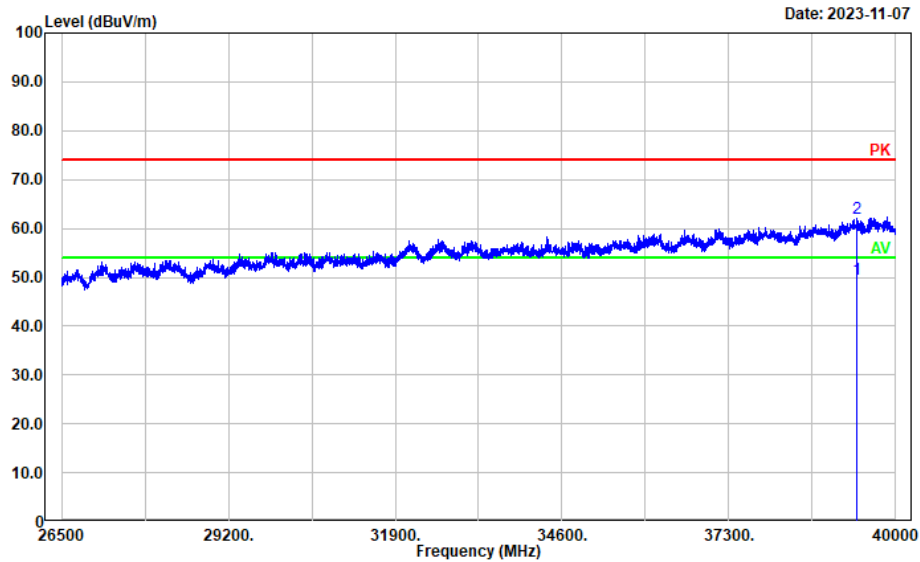
1-18GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	16986.600	19.20	28.04	47.24	54.00	6.76	Average
2	16986.600	31.51	28.04	59.55	74.00	14.45	Peak



Vertical

Project No.: CR231060763-RF
Tester: Mack Huang
Polarization: vertical
Note:



26.5-40GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	39362.670	39.37	10.18	49.55	54.00	4.45	Average
2	39362.670	51.82	10.18	62.00	74.00	12.00	Peak

4.3 20 dB Emission Bandwidth:

Serial Number:	2CDT-1	Test Date:	2023/11/3
Test Site:	966-1	Test Mode:	Transmitting
Tester:	Mack Huang	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	25.8	Relative Humidity: (%)	54	ATM Pressure: (kPa)	100.7
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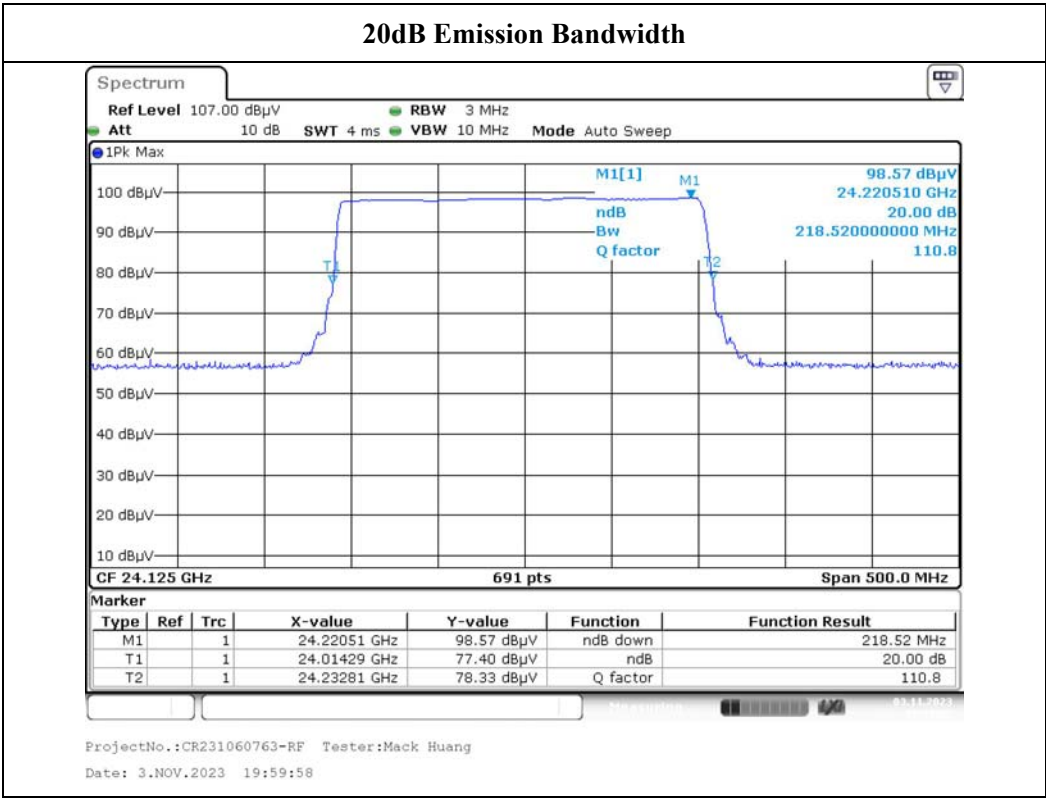
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101591	2023/3/31	2024/3/30
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/2/5	2024/2/4
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2023/9/15	2024/9/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2023/8/6	2024/8/5

*** 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 Mode	20 dB Bandwidth (MHz)
Sweep Mode	218.520



5. RF EXPOSURE EVALUATION

5.1.1 Applicable Standard

According to §1.1307(b)(3)(i)

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^2 f$.
1,500-100,000	$19.2 R^2$.

5.1.2 Measurement Result

Frequency (MHz)	$\lambda/2\pi$ (mm)	Distance (mm)	Exemption ERP		Maximum EIRP (dBm)	ERP (dBm)	MPE-Based Exemption
			(mW)	(dBm)			
24020-24220	1.99	200	768	28.85	7.37	5.22	Compliant

Note:

1. This device maximum E-Field level is 102.57 dB μ V/m at 3m, so the EIRP power is 7.37 dBm,
2. EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2 (dB),
3. ERP= EIRP(dBm)- 2.15 (dB)

Result: Compliant. RF Exposure is exemption.

6. EUT PHOTOGRAPHS

Please refer to the attachment CR231060763-EXP EUT EXTERNAL PHOTOGRAPHS and
CR231060763-INP EUT INTERNAL PHOTOGRAPHS

7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR231060763-00A-TSP TEST SETUP PHOTOGRAPHS.

===== END OF REPORT =====