



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Grandstream Networks, Inc.

Address: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

FCC ID: YZZGWN7605

Product Name: 802.11ac Wave-2 2×2:2 Wi-Fi Access Point

**Standard(s): FCC Part 15B
ANSI C63.4-2014**

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

Report Number: CR230741405-00AA2

Date Of Issue: 2023/8/12

Reviewed By: Calvin Chen

Title: RF Engineer

Approved By: 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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230741405-00AA2	Original Report	2023/8/12

Note:

This is a CIIPC application of the device, the differences between the original device (FCC Grant Date: 03/26/2020) and the current are as follows:

Updated antenna type and gain.

1. Updated the PoE chip to MP8004.
2. Updated the around the PoE circuit, As the PoE chip changes, the corresponding Hardware changes.
3. Change the antenna.

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

Trade Name:	GRANDSTREAM
EUT Name:	802.11ac Wave-2 2×2:2 Wi-Fi Access Point
EUT Model:	GWN7605
Highest Operation Frequency:	5825 MHz
Rated Input Voltage:	DC 48V From POE
Serial Number:	28GN-1
EUT Received Date:	2023/7/21
EUT Received Status:	Good

Accessory Information:

Accessory Description	Manufacturer	Model
/	/	/

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Typical Use Mode, which was provided by the manufacturer. Test Mode: Operating
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

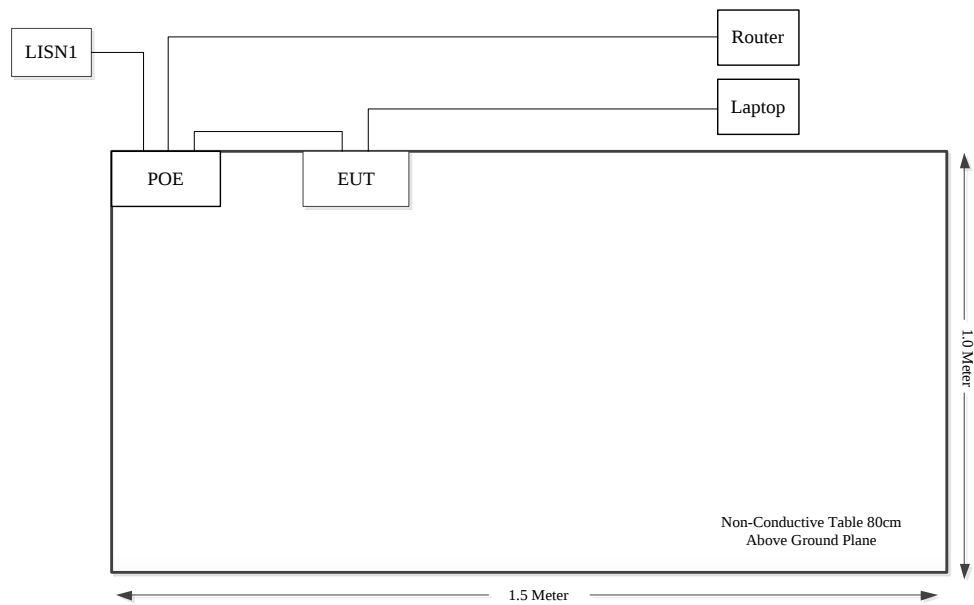
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T460S	60PDTEK8
I.T.E	POE	G1080-PoE48G	EMZBPA21206002
TOTO LINK	Router	X5000R	X5000RK9T0560

1.2.3 Support Cable List and Details

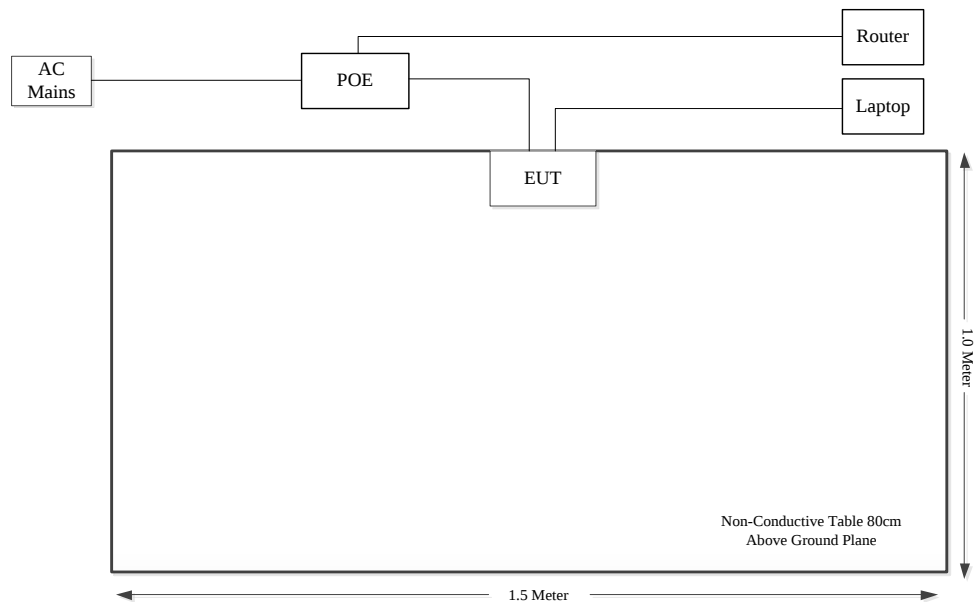
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power Cable	No	No	1.2	POE	LISN
RJ 45 Cable	No	No	3	POE	Router
RJ 45 Cable	No	No	0.3	POE	EUT
RJ 45 Cable	No	No	3	Laptop	EUT

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
Unwanted Emissions, radiated	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	$\pm 5\%$
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

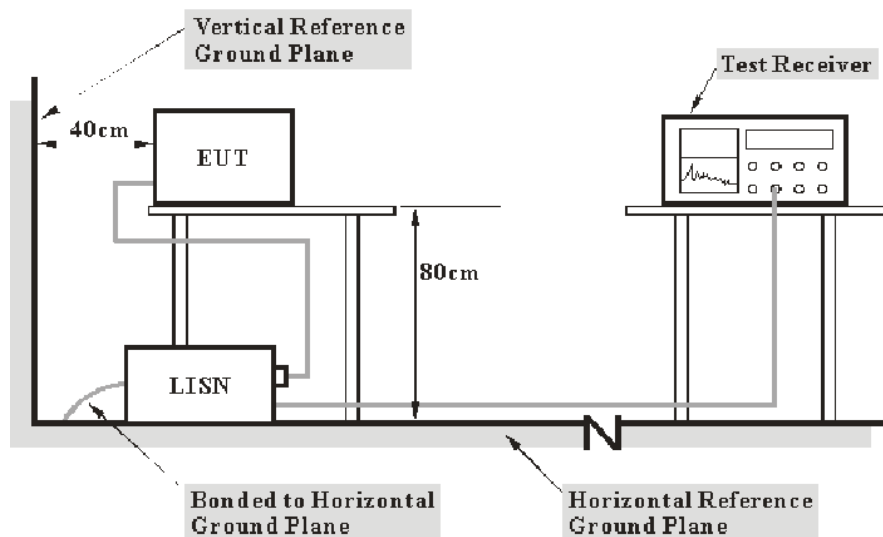
2. SUMMARY OF TEST RESULTS

Standard(s) Section	Description of Test	Result
§15.107	Conducted emissions	Compliant
§15.109	Radiated emissions	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 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 C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

3.1.2 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

3.1.3 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT, the report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

All data was recorded in the Quasi-peak and average detection mode.

The report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

3.1.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

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

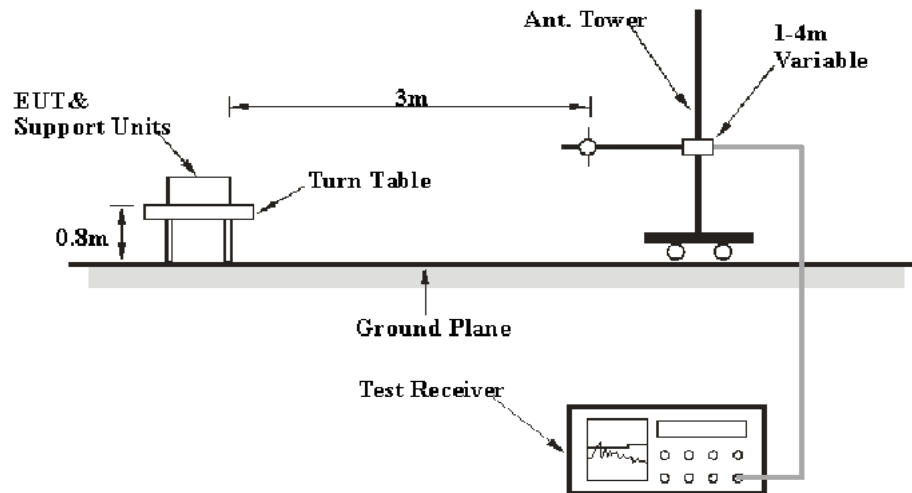
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

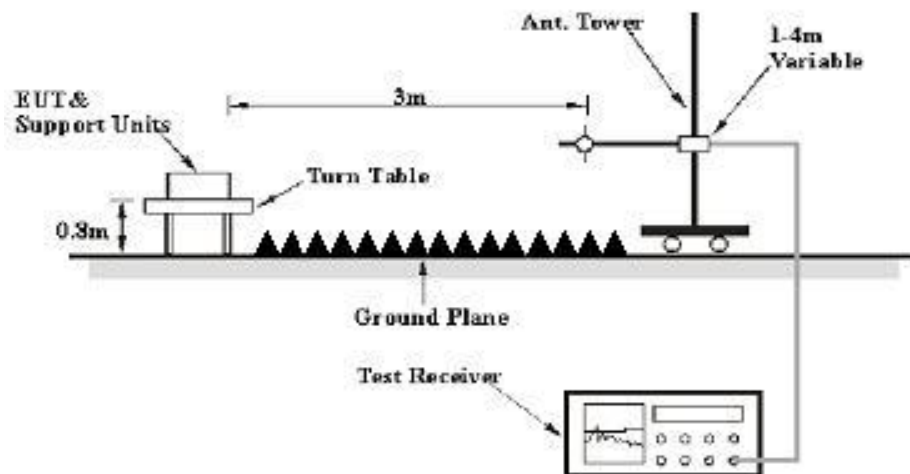
3.2 Radiated Emissions

3.2.1 EUT Setup

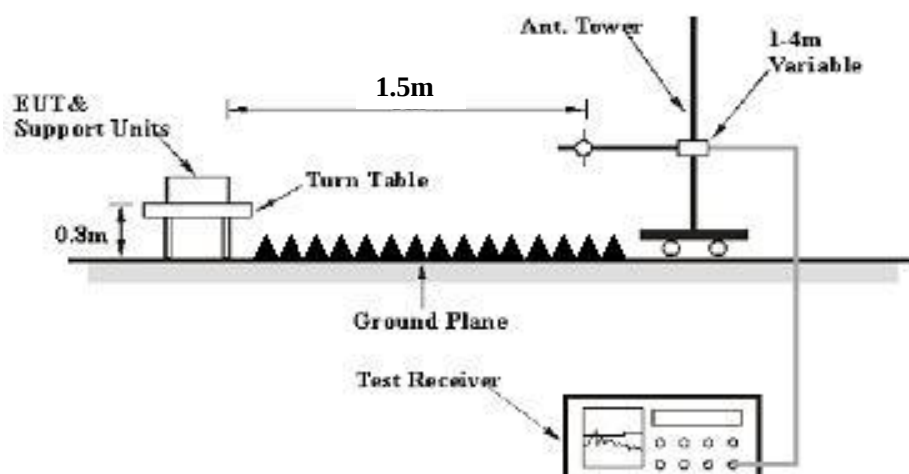
Below 1GHz:



1-26.5 GHz:



26.5-40 GHz:



The radiated emission tests were performed in the 3 meters chamber, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class B limits.

3.2.2 EMI Test Receiver Setup

The system was investigated from 30 MHz to 30 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

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

3.2.3 Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

The 26.5-30GHz test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m

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

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

3.2.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Factor = Antenna Factor + Cable Loss- Amplifier Gain

For 30MHz-26.5GHz:

Result = Reading + Factor

For 26.5GHz-30GHz

Result = Reading + 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

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	28GN-1	Test Date:	2023/7/31
Test Site:	CE	Test Mode:	Operating
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

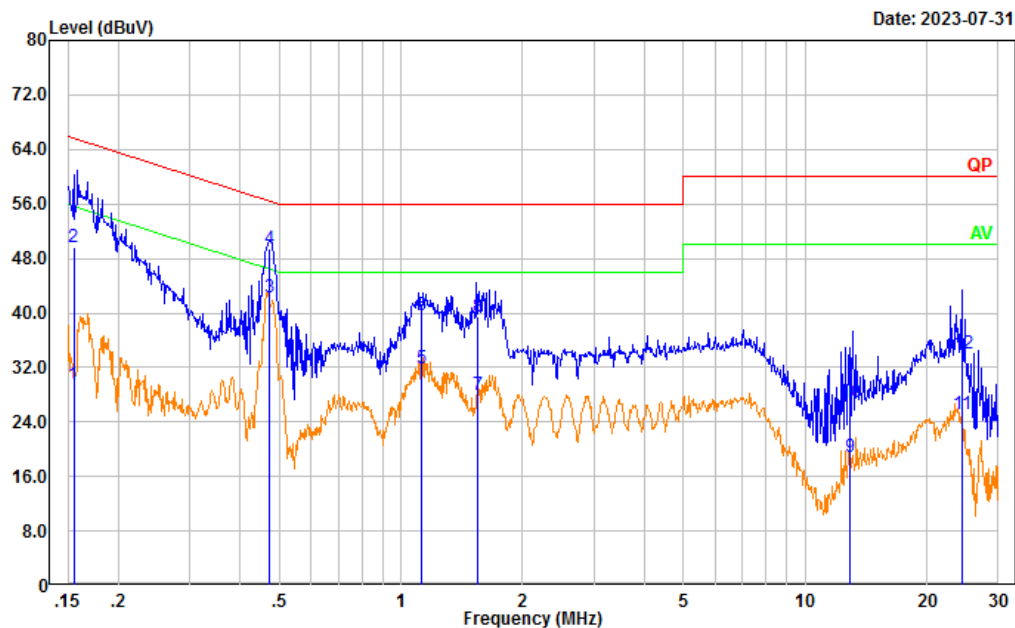
Temperature: (°C)	25.6	Relative Humidity: (%)	55	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	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	2023/08/06	2024/08/05
Audix	Test Software	E3	190306 (V9)	N/A	N/A

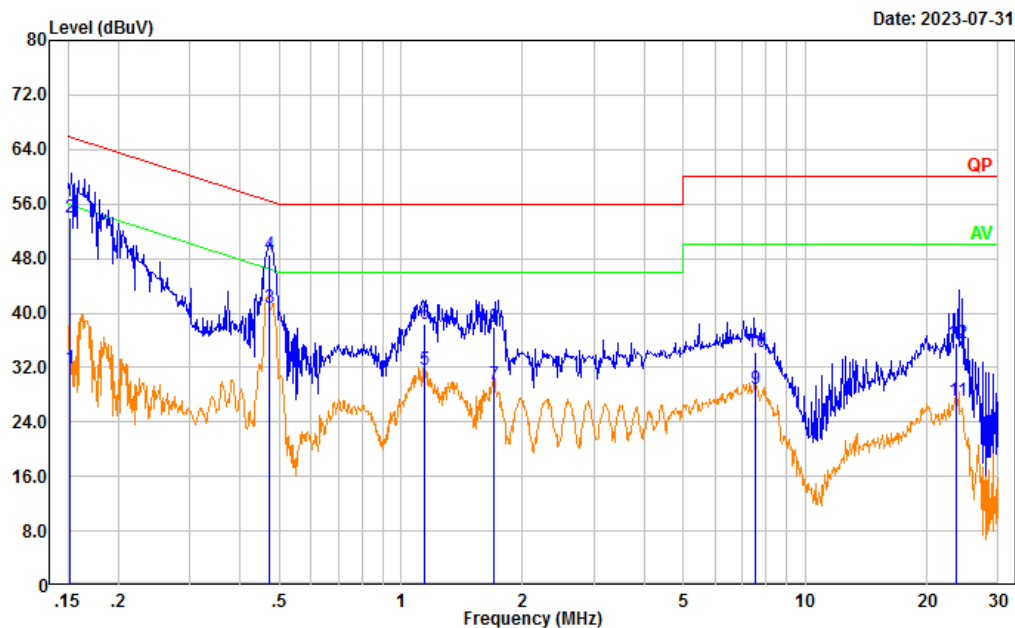
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Mode: Operating
Port: Line
Note:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.155	19.86	9.61	29.47	55.73	26.26	Average
2	0.155	40.00	9.61	49.61	65.73	16.12	QP
3	0.472	32.56	9.61	42.17	46.48	4.31	Average
4	0.472	39.77	9.61	49.38	56.48	7.10	QP
5	1.120	22.35	9.62	31.97	46.00	14.03	Average
6	1.120	29.96	9.62	39.58	56.00	16.42	QP
7	1.553	18.28	9.63	27.91	46.00	18.09	Average
8	1.553	29.86	9.63	39.49	56.00	16.51	QP
9	12.895	9.22	9.68	18.90	50.00	31.10	Average
10	12.895	17.22	9.68	26.90	60.00	33.10	QP
11	24.351	15.24	9.81	25.05	50.00	24.95	Average
12	24.351	24.21	9.81	34.02	60.00	25.98	QP

Test Mode: Operating
Port: neutral
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.152	22.29	9.61	31.90	55.89	23.99	Average
2	0.152	44.28	9.61	53.89	65.89	12.00	QP
3	0.474	31.22	9.61	40.83	46.44	5.61	Average
4	0.474	39.05	9.61	48.66	56.44	7.78	QP
5	1.145	22.00	9.62	31.62	46.00	14.38	Average
6	1.145	28.67	9.62	38.29	56.00	17.71	QP
7	1.698	19.91	9.63	29.54	46.00	16.46	Average
8	1.698	28.36	9.63	37.99	56.00	18.01	QP
9	7.527	19.27	9.67	28.94	50.00	21.06	Average
10	7.527	24.66	9.67	34.33	60.00	25.67	QP
11	23.676	17.30	9.75	27.05	50.00	22.95	Average
12	23.676	25.89	9.75	35.64	60.00	24.36	QP

4.2 Radiated Emissions

Serial Number:	28GN-1	Test Date:	Below 1GHz: 2023/8/1 Above 1GHz: 2023/8/12
Test Site:	966-2,966-1	Test Mode:	Operating
Tester:	Carl Xue, coco Tian	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.5~27.3	Relative Humidity: (%)	52~64	ATM Pressure: (kPa)	99.7~99.9
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
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
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
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
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2022/9/16	2023/9/15
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2023/8/6	2024/8/5
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/2/5	2024/2/4
PASTERNAK	Horn Antenna	PE9850/2F-20	072001	2021/2/5	2024/2/4

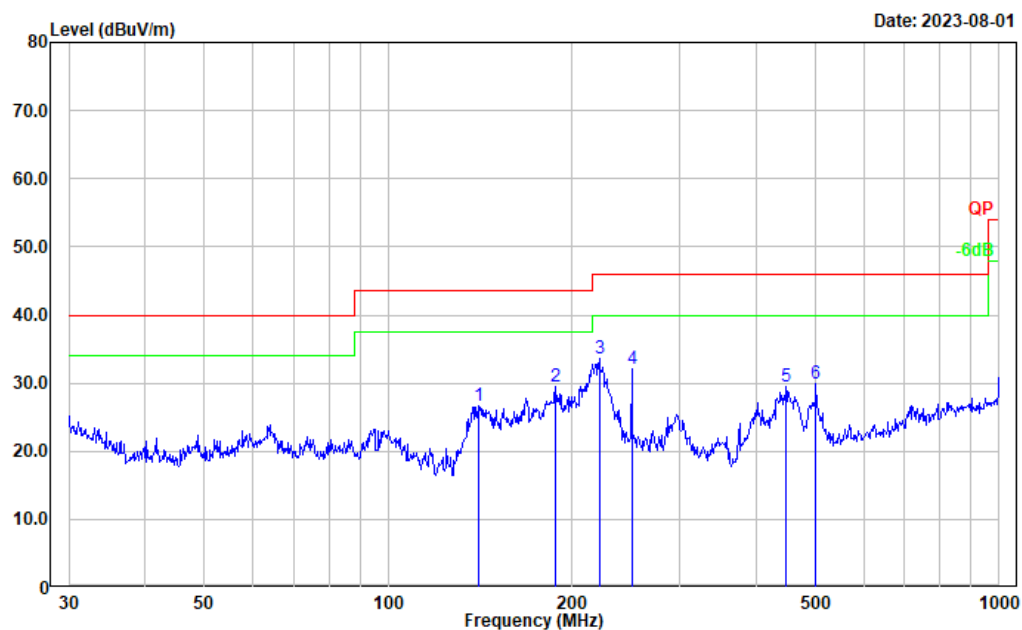
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Please refer to the below table and plots.

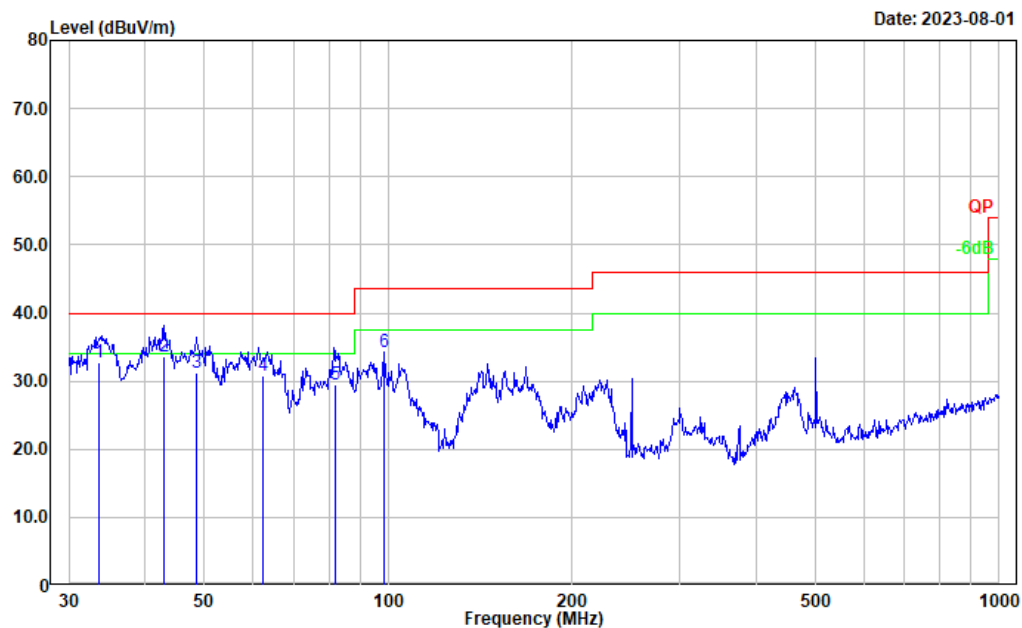
1) 30MHz-1GHz:

Test Mode: Operating
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	140.342	38.46	-11.89	26.57	43.50	16.93	Peak
2	187.753	42.95	-13.53	29.42	43.50	14.08	Peak
3	221.392	46.53	-12.84	33.69	46.00	12.31	Peak
4	250.301	45.20	-13.08	32.12	46.00	13.88	Peak
5	447.982	36.42	-7.02	29.40	46.00	16.60	Peak
6	501.179	35.94	-5.99	29.95	46.00	16.05	Peak

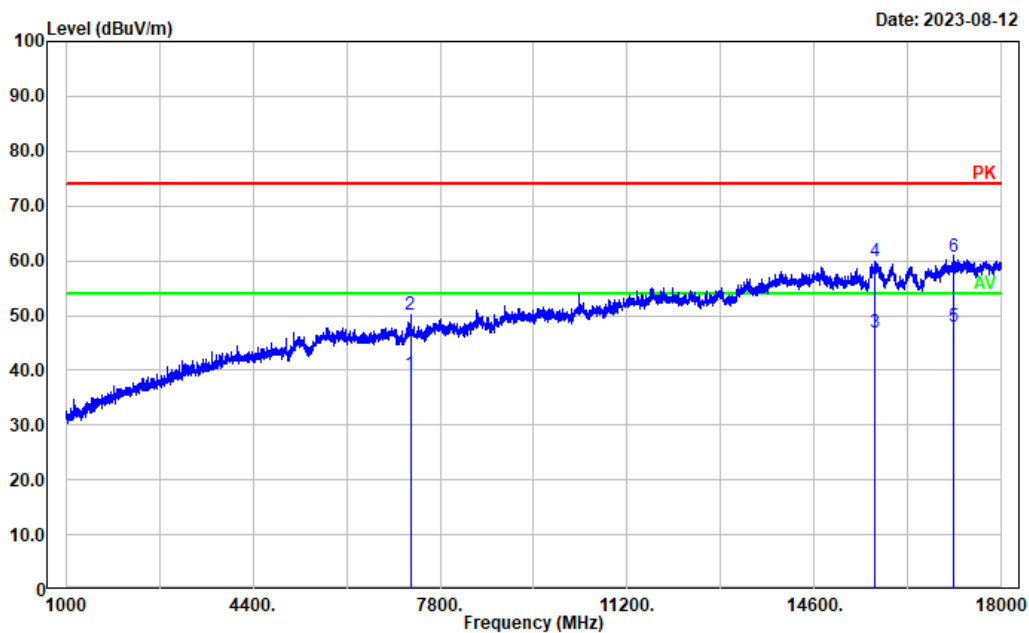
Test Mode: Operating
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	33.657	39.24	-6.41	32.83	40.00	7.17	QP
2	43.042	46.67	-13.09	33.58	40.00	6.42	QP
3	48.428	47.53	-16.27	31.26	40.00	8.74	QP
4	62.496	47.95	-17.19	30.76	40.00	9.24	QP
5	82.044	46.88	-17.36	29.52	40.00	10.48	QP
6	98.487	48.92	-14.66	34.26	43.50	9.24	Peak

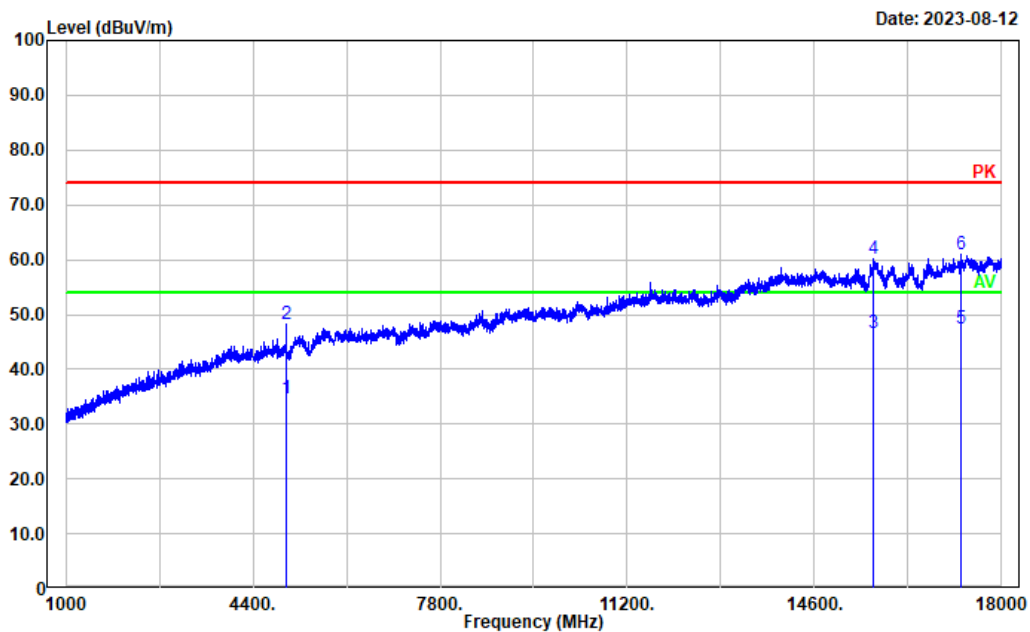
2) Above 1GHz:

Test Mode: Operating
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7260.652	24.64	14.60	39.24	54.00	14.76	Average
2	7260.652	35.49	14.60	50.09	74.00	23.91	Peak
3	15694.340	24.62	22.30	46.92	54.00	7.08	Average
4	15694.340	37.55	22.30	59.85	74.00	14.15	Peak
5	17129.430	21.67	26.30	47.97	54.00	6.03	Average
6	17129.430	34.54	26.30	60.84	74.00	13.16	Peak

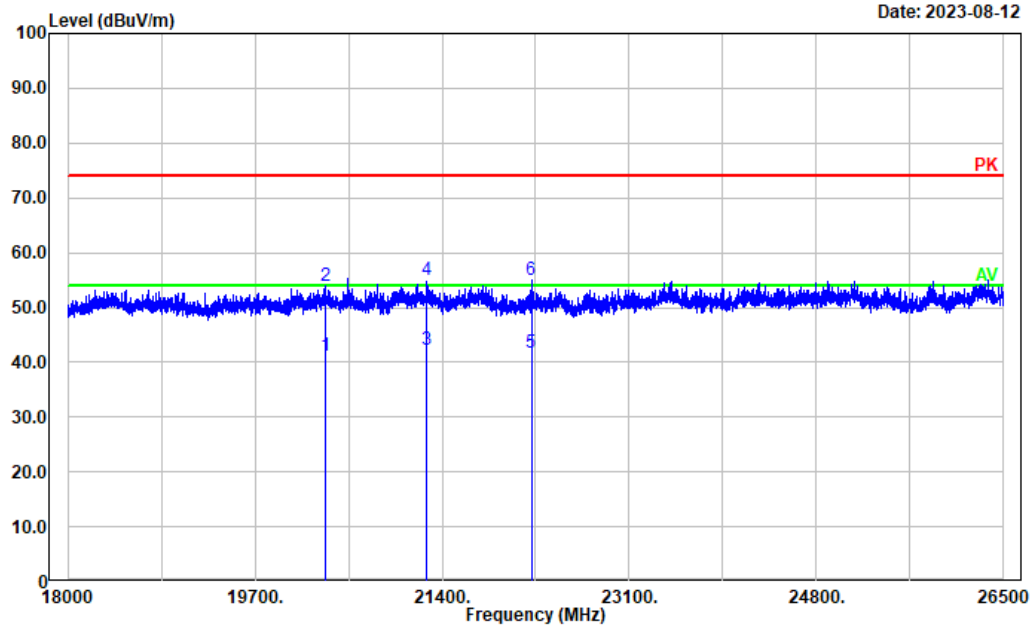
Test Mode: Operating
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	4995.799	23.60	11.20	34.80	54.00	19.20	Average
2	4995.799	36.99	11.20	48.19	74.00	25.81	Peak
3	15673.930	24.34	22.32	46.66	54.00	7.34	Average
4	15673.930	37.97	22.32	60.29	74.00	13.71	Peak
5	17272.250	20.33	26.99	47.32	54.00	6.68	Average
6	17272.250	33.95	26.99	60.94	74.00	13.06	Peak

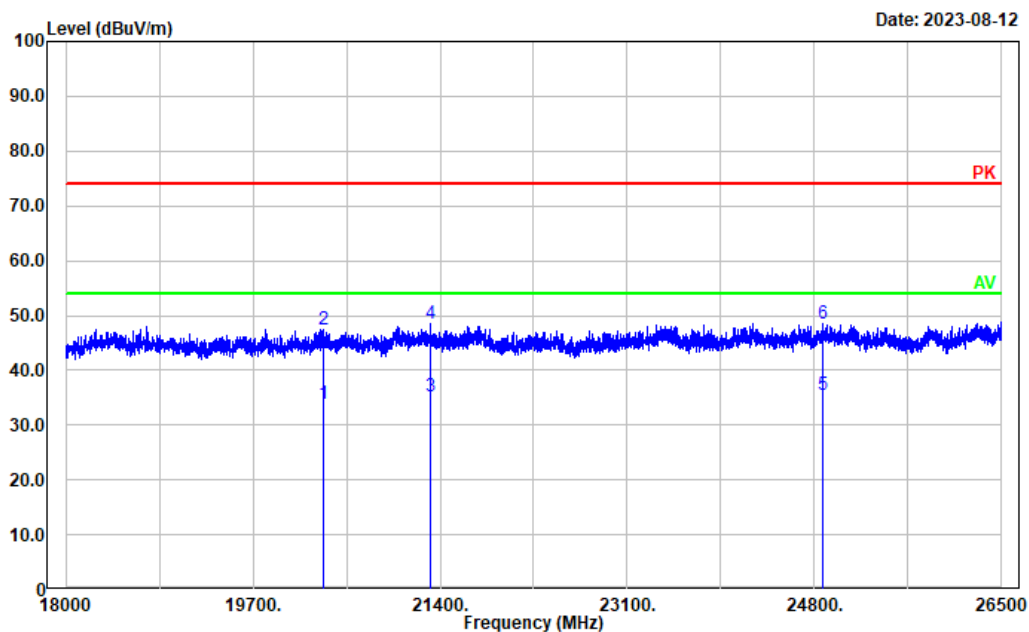
Test Mode: Operating
Polarization: Horizontal
Note:

Date: 2023-08-12



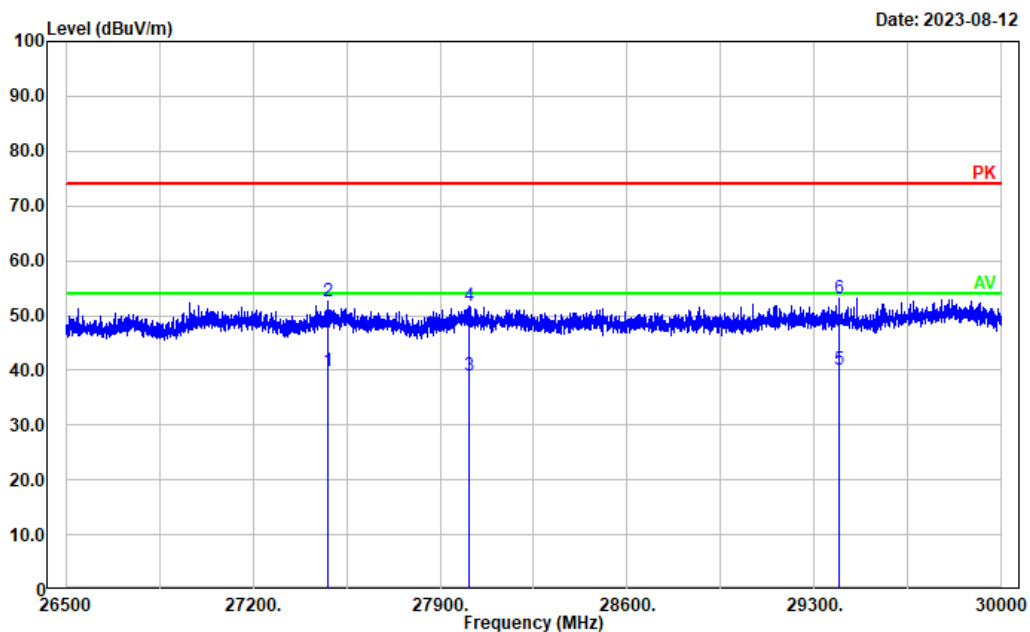
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	20343.070	36.52	4.58	41.10	54.00	12.90	Average
2	20343.070	49.38	4.58	53.96	74.00	20.04	Peak
3	21257.850	37.53	4.85	42.38	54.00	11.62	Average
4	21257.850	50.03	4.85	54.88	74.00	19.12	Peak
5	22210.040	36.52	5.24	41.76	54.00	12.24	Average
6	22210.040	49.88	5.24	55.12	74.00	18.88	Peak

Test Mode: Operating
Polarization: Vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	20334.570	35.45	-1.45	34.00	54.00	20.00	Average
2	20334.570	48.96	-1.45	47.51	74.00	26.49	Peak
3	21307.160	36.52	-1.25	35.27	54.00	18.73	Average
4	21307.160	49.82	-1.25	48.57	74.00	25.43	Peak
5	24871.070	35.52	0.09	35.61	54.00	18.39	Average
6	24871.070	48.40	0.09	48.49	74.00	25.51	Peak

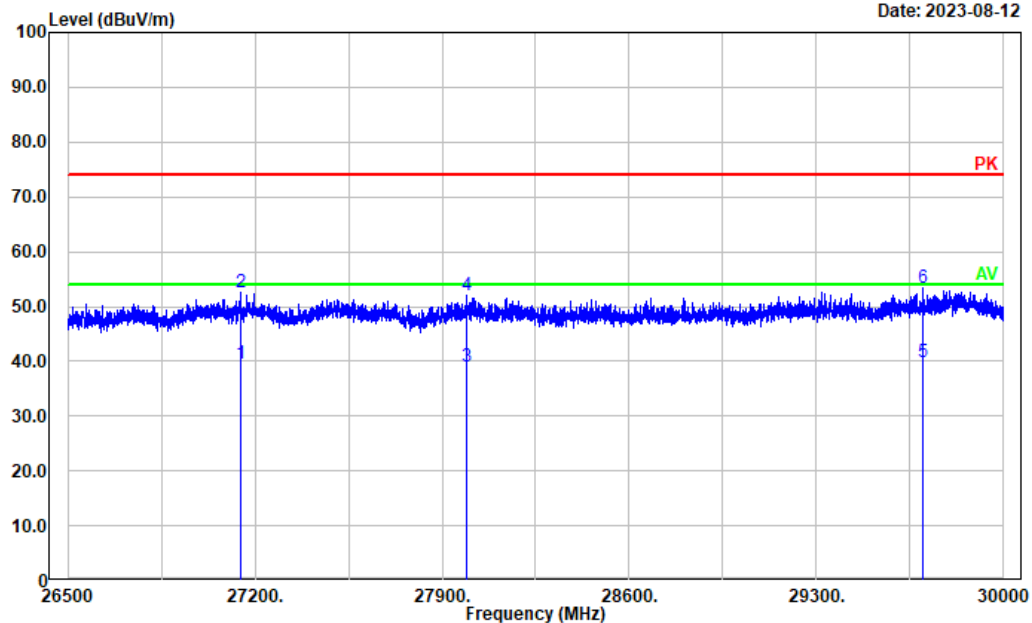
Test Mode: Operating
Polarization: Horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	27482.300	37.51	2.35	39.86	54.00	14.14	Average
2	27482.300	50.32	2.35	52.67	74.00	21.33	Peak
3	28006.000	35.52	3.47	38.99	54.00	15.01	Average
4	28006.000	48.17	3.47	51.64	74.00	22.36	Peak
5	29390.180	35.47	4.69	40.16	54.00	13.84	Average
6	29390.180	48.39	4.69	53.08	74.00	20.92	Peak

Test Mode: Operating
Polarization: Vertical
Note:

Date: 2023-08-12



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	27145.530	37.54	2.08	39.62	54.00	14.38	Average
2	27145.530	50.48	2.08	52.56	74.00	21.44	Peak
3	27989.900	35.61	3.43	39.04	54.00	14.96	Average
4	27989.900	48.54	3.43	51.97	74.00	22.03	Peak
5	29698.240	34.53	5.39	39.92	54.00	14.08	Average
6	29698.240	47.96	5.39	53.35	74.00	20.65	Peak

====END OF REPORT====