



中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Tait International Limited

Address: 245 Wooldridge Road, Harewood, P.O. Box 1645 Christchurch 8051
New Zealand

FCC ID: CASTPEH7G

Product Name: TP3350 Two Way Radio

Type Code/HVIN: TPEH7G

**Test Model: T03-00313-HCAA, T03-00313-HAAA,
T03-00313-HBAA**

**Standard(s): 47 CFR Part 15 Subpart B
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: CR21120026-00A

Date Of Issue: 2022-02-11

Reviewed By: Sun Zhong

Sun Zhong

Title: Manager

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

No. 113, Pingkang Road, Dalang Town, Dongguan,
Guangdong, China
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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:	TP3350 Two Way Radio
EUT Model:	T03-00313-HCAA, T03-00313-HAAA, T03-00313-HBAA
Multiple Model:	T03-00313-HXXX (“XXX” please refer to the DoS)
Highest Operation Frequency:	2480 MHz
Rated Input Voltage:	DC 7.4V from battery or DC 12V from Charger
Serial Number:	CR21120026-RF
EUT Received Date:	CR21120026-RF-S1(Model: T03-00313-HCAA) CR21120026-RF -S2(Model: T03-00313-HAAA) CR21120026-RF -S3(Model: T03-00313-HBAA)
EUT Received Status:	Good
Note: The Multiple models are electrically identical with model: T03-00313-HCAA, please refer to the declaration letter for more detail, which was provided by manufacturer. Tests were performed with all models.	

Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
Adapter	Shenzhen Shi Ying Yuan Electronics Co., Ltd.	ICP30-120-2000	Input: 100-240V~50/60Hz 0.8A Output: 12V 2A
Charger	Tait International Limited	T03-00322-AAA	Not Applicable
Headset		T03-00047-BAAA	Not Applicable
Belt Clip		Not Applicable	Not Applicable

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:Charging
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

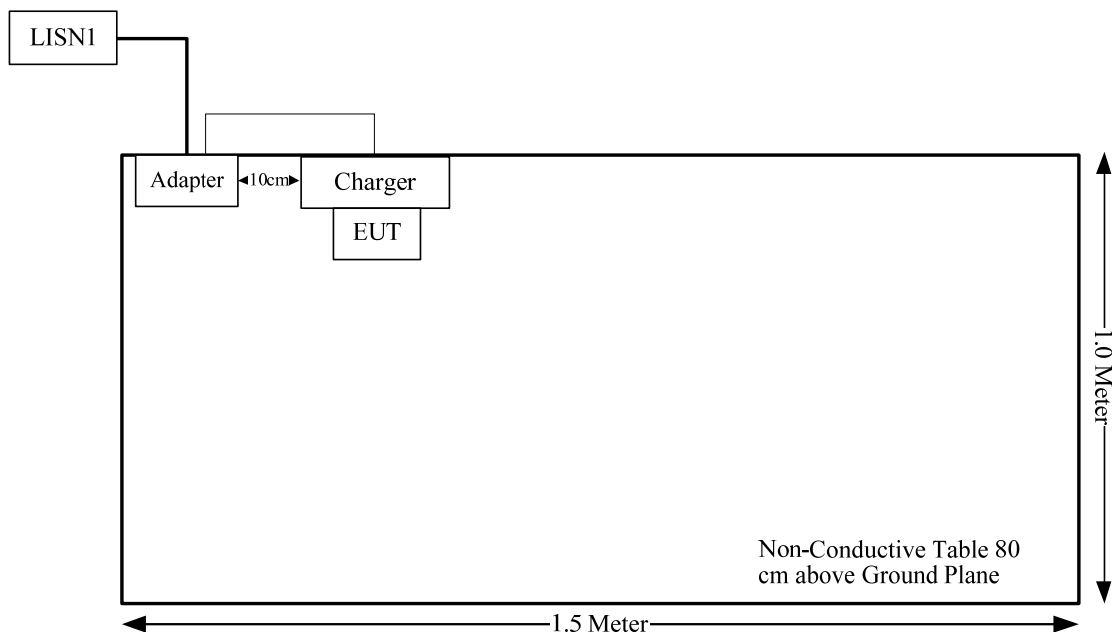
Manufacturer	Description	Model	Serial Number
/	/	/	/

1.2.3 Support Cable List and Details

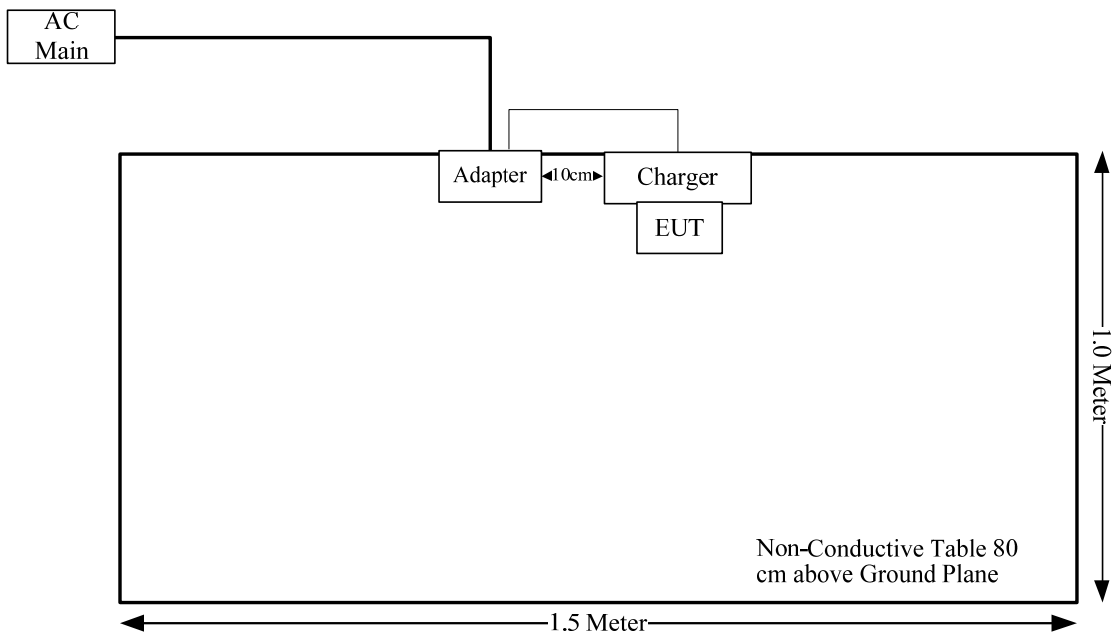
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	Yes	No	1	Adapter	Charger

1.2.4 Block Diagram of Test Setup

Conducted emissions:



Radiated 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)

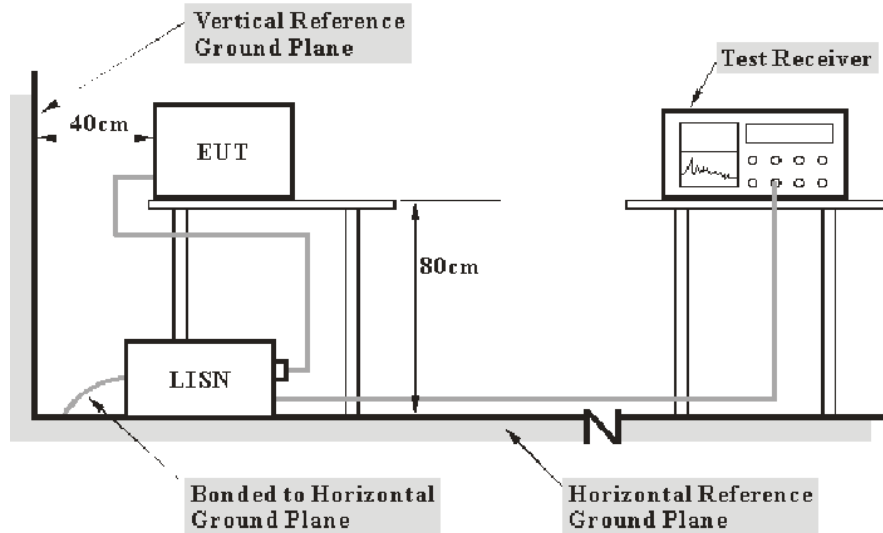
2. SUMMARY OF TEST RESULTS

Standard Clause	Description of Test	Test Result
FCC§15.107	Conducted emissions	Compliant
FCC§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.

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

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

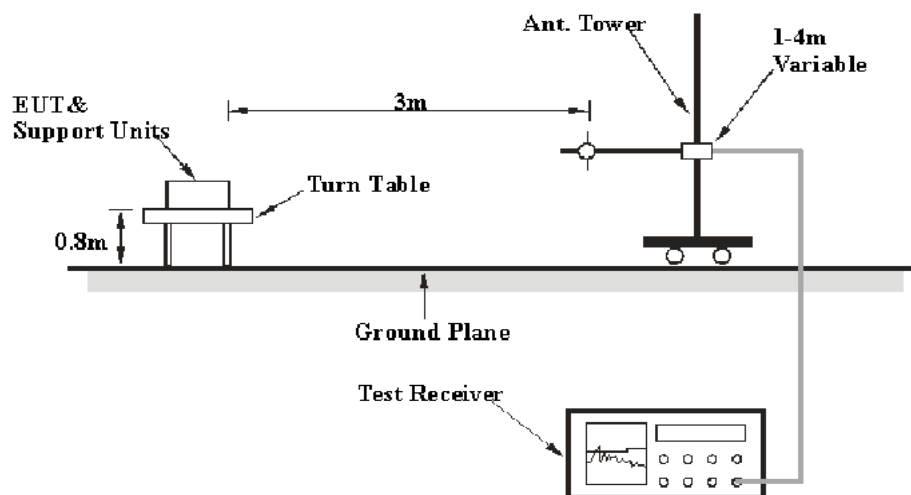
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

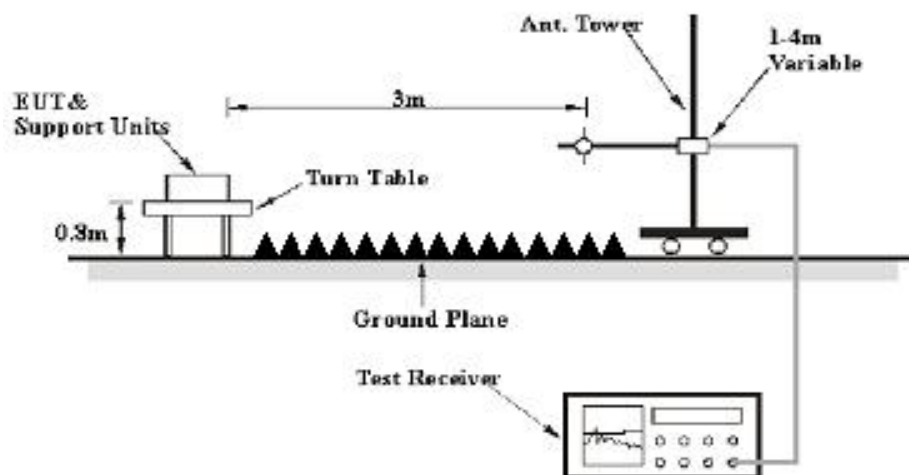
3.2 Radiation Spurious Emissions

3.2.1 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

3.2.2 EMI Test Receiver Setup

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.

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:

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

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	CR21120026-RF-S1 CR21120026-RF-S2 CR21120026-RF-S3	Test Date:	2022-01-24
Test Site:	CE	Test Mode:	Charging
Tester:	Nick Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	20.5	Relative Humidity: (%)	70	ATM Pressure: (kPa)	101.3
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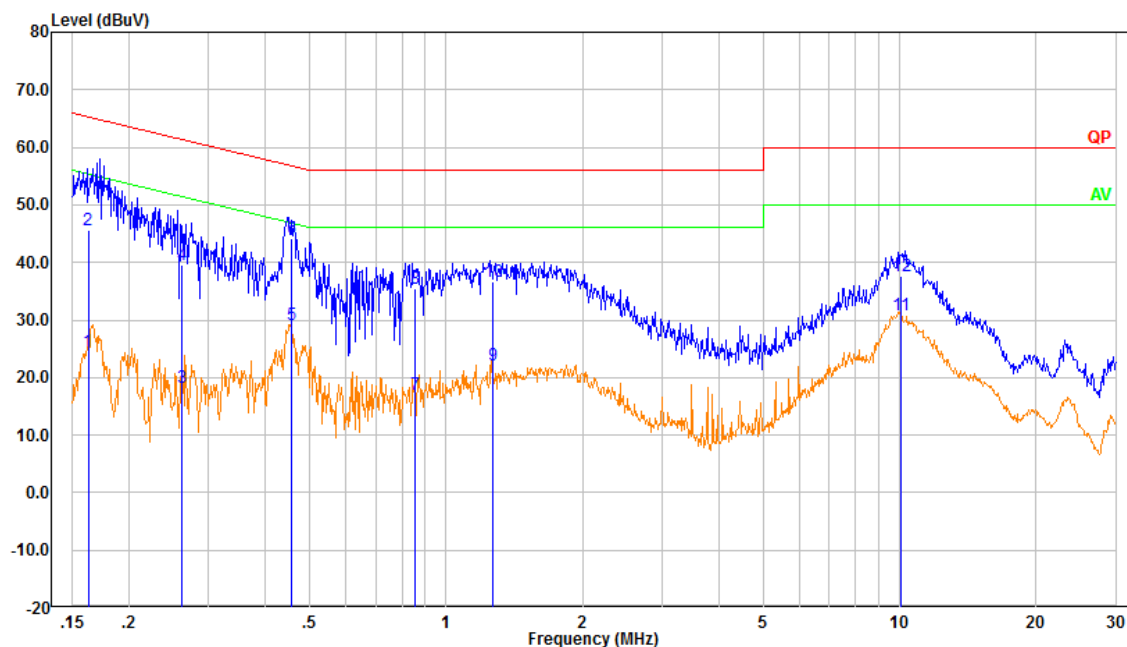
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2021-04-25	2022-04-24
R&S	EMI Test Receiver	ESR3	102726	2021-07-22	2022-07-21
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).*

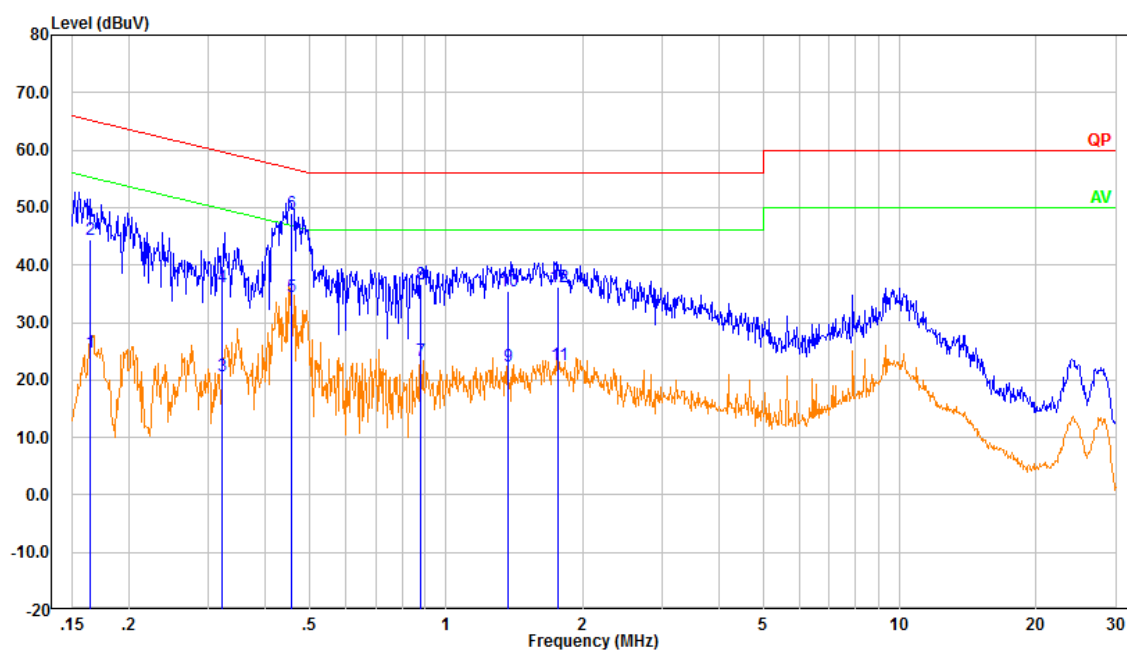
Model: T03-00313-HCAA

Line:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
1	0.163	14.84	9.61	24.45	55.33	30.88	Average
2	0.163	35.92	9.61	45.53	65.33	19.80	QP
3	0.262	8.57	9.61	18.18	51.35	33.17	Average
4	0.262	29.86	9.61	39.47	61.35	21.88	QP
5	0.457	19.49	9.61	29.10	46.75	17.65	Average
6	0.457	34.63	9.61	44.24	56.75	12.51	QP
7	0.853	7.49	9.62	17.11	46.00	28.89	Average
8	0.853	25.72	9.62	35.34	56.00	20.66	QP
9	1.265	12.39	9.62	22.01	46.00	23.99	Average
10	1.265	26.96	9.62	36.58	56.00	19.42	QP
11	10.039	21.18	9.67	30.85	50.00	19.15	Average
12	10.039	27.93	9.67	37.60	60.00	22.40	QP

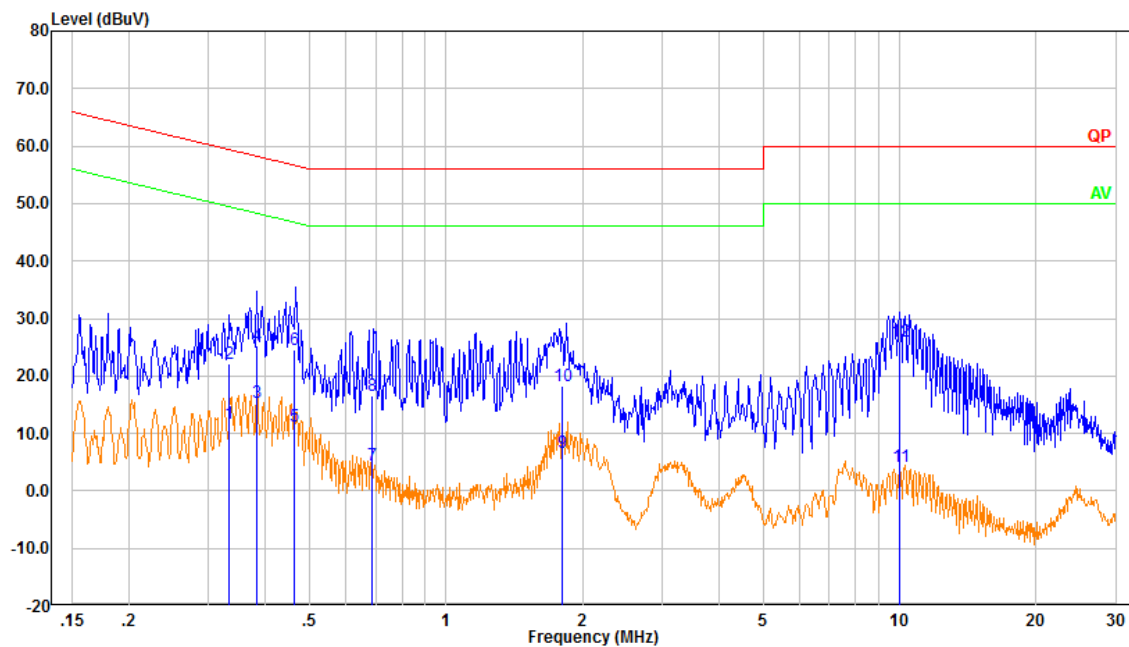
Neutral:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.165	15.13	9.61	24.74	55.23	30.49	Average
2	0.165	34.90	9.61	44.51	65.23	20.72	QP
3	0.322	11.10	9.61	20.71	49.66	28.95	Average
4	0.322	26.67	9.61	36.28	59.66	23.38	QP
5	0.455	24.82	9.61	34.43	46.78	12.35	Average
6	0.455	39.43	9.61	49.04	56.78	7.74	QP
7	0.882	13.83	9.62	23.45	46.00	22.55	Average
8	0.882	27.13	9.62	36.75	56.00	19.25	QP
9	1.369	12.63	9.62	22.26	46.00	23.74	Average
10	1.369	25.78	9.62	35.41	56.00	20.59	QP
11	1.769	13.09	9.63	22.71	46.00	23.29	Average
12	1.769	26.48	9.63	36.11	56.00	19.89	QP

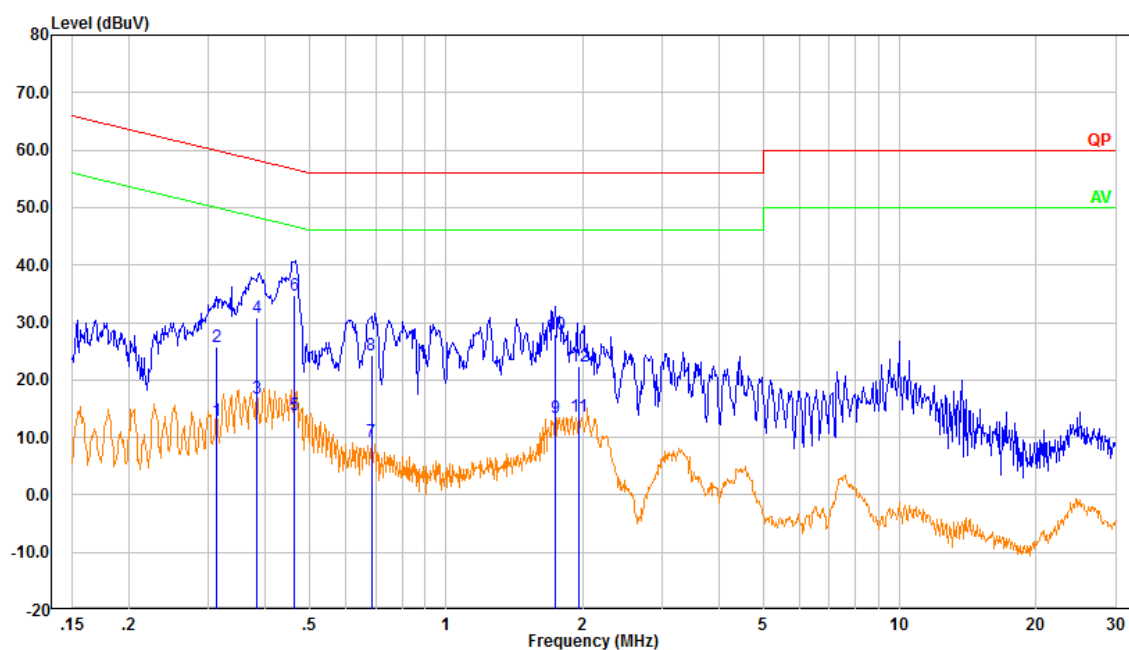
Model: T03-00313-HBAA

Line:



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.332	2.01	9.61	11.62	49.39	37.77	Average
2	0.332	12.44	9.61	22.05	59.39	37.34	QP
3	0.384	5.67	9.61	15.28	48.20	32.92	Average
4	0.384	15.59	9.61	25.20	58.20	33.00	QP
5	0.464	1.72	9.61	11.33	46.62	35.29	Average
6	0.464	14.98	9.61	24.59	56.62	32.03	QP
7	0.688	-5.16	9.62	4.46	46.00	41.54	Average
8	0.688	6.99	9.62	16.61	56.00	39.39	QP
9	1.802	-3.00	9.63	6.63	46.00	39.37	Average
10	1.802	8.69	9.63	18.32	56.00	37.68	QP
11	10.023	-5.40	9.67	4.27	50.00	45.73	Average
12	10.023	16.35	9.67	26.02	60.00	33.98	QP

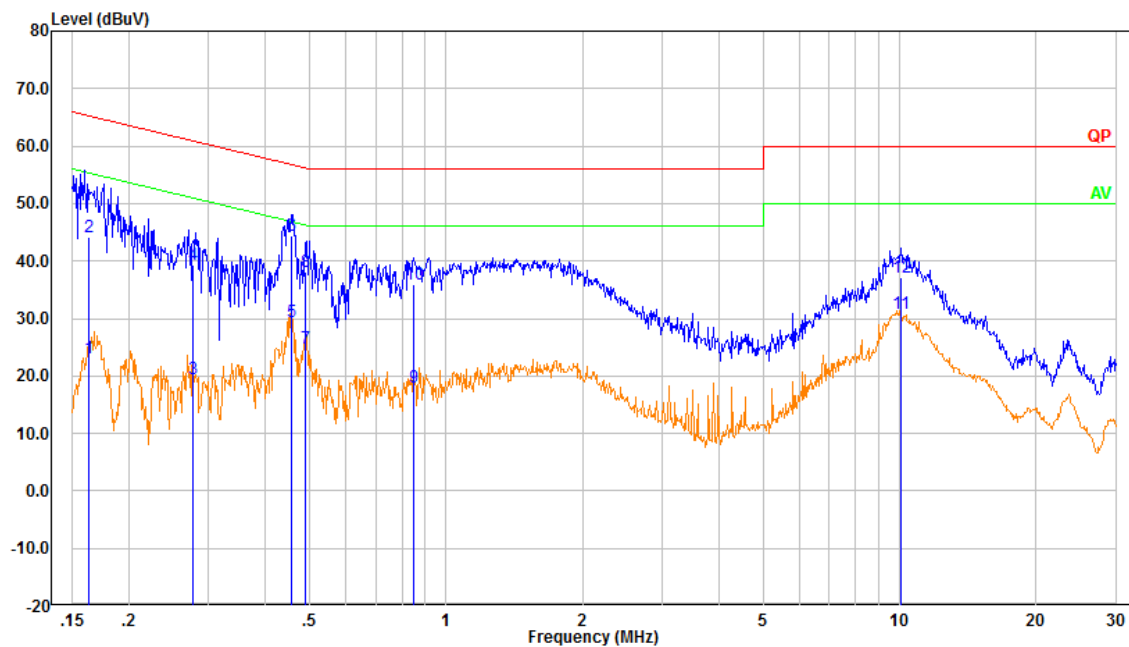
Neutral:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.311	3.35	9.61	12.96	49.93	36.97	Average
2	0.311	16.05	9.61	25.66	59.93	34.27	QP
3	0.383	7.27	9.61	16.88	48.21	31.33	Average
4	0.383	21.32	9.61	30.93	58.21	27.28	QP
5	0.463	4.38	9.61	13.99	46.64	32.65	Average
6	0.463	25.05	9.61	34.66	56.64	21.98	QP
7	0.685	-0.34	9.62	9.28	46.00	36.72	Average
8	0.685	14.59	9.62	24.21	56.00	31.79	QP
9	1.746	3.90	9.63	13.53	46.00	32.47	Average
10	1.746	18.27	9.63	27.89	56.00	28.11	QP
11	1.960	4.08	9.63	13.71	46.00	32.29	Average
12	1.960	12.68	9.63	22.31	56.00	33.69	QP

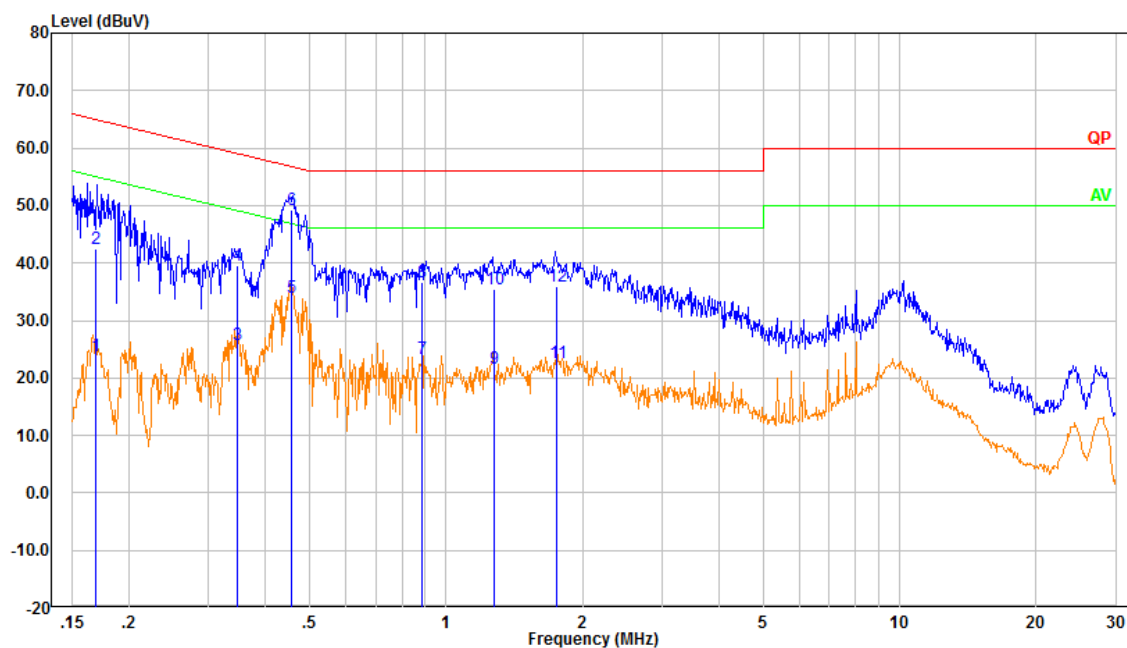
Model: T03-00313-HAAA

Line:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
1	0.163	13.57	9.61	23.18	55.29	32.11	Average
2	0.163	34.45	9.61	44.06	65.29	21.23	QP
3	0.277	9.83	9.61	19.44	50.91	31.47	Average
4	0.277	29.71	9.61	39.32	60.91	21.59	QP
5	0.455	19.70	9.61	29.31	46.78	17.47	Average
6	0.455	34.84	9.61	44.45	56.78	12.33	QP
7	0.490	15.14	9.61	24.75	46.17	21.42	Average
8	0.490	28.41	9.61	38.02	56.17	18.15	QP
9	0.850	8.38	9.62	18.00	46.00	28.00	Average
10	0.850	26.34	9.62	35.96	56.00	20.04	QP
11	10.067	21.11	9.67	30.78	50.00	19.22	Average
12	10.067	27.59	9.67	37.26	60.00	22.74	QP

Neutral:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.169	14.18	9.61	23.79	55.01	31.22	Average
2	0.169	32.94	9.61	42.55	65.01	22.46	QP
3	0.346	16.10	9.61	25.71	49.05	23.34	Average
4	0.346	29.84	9.61	39.45	59.05	19.60	QP
5	0.458	24.48	9.61	34.09	46.73	12.64	Average
6	0.458	39.54	9.61	49.15	56.73	7.58	QP
7	0.884	13.75	9.62	23.37	46.00	22.63	Average
8	0.884	26.94	9.62	36.56	56.00	19.44	QP
9	1.280	12.14	9.62	21.76	46.00	24.24	Average
10	1.280	25.89	9.62	35.51	56.00	20.49	QP
11	1.756	13.08	9.63	22.71	46.00	23.29	Average
12	1.756	26.35	9.63	35.98	56.00	20.02	QP

4.2 Radiation Spurious Emissions

Serial Number:	CR21120026-RF-S1 CR21120026-RF-S2 CR21120026-RF-S3	Test Date:	2022-01-25~2022-01-27
Test Site:	966-1, 966-2	Test Mode:	Charging
Tester:	Great Qiao, Tommy Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	19.4~21.1	Relative Humidity: (%)	59~61	ATM Pressure: (kPa)	101.1~101.5
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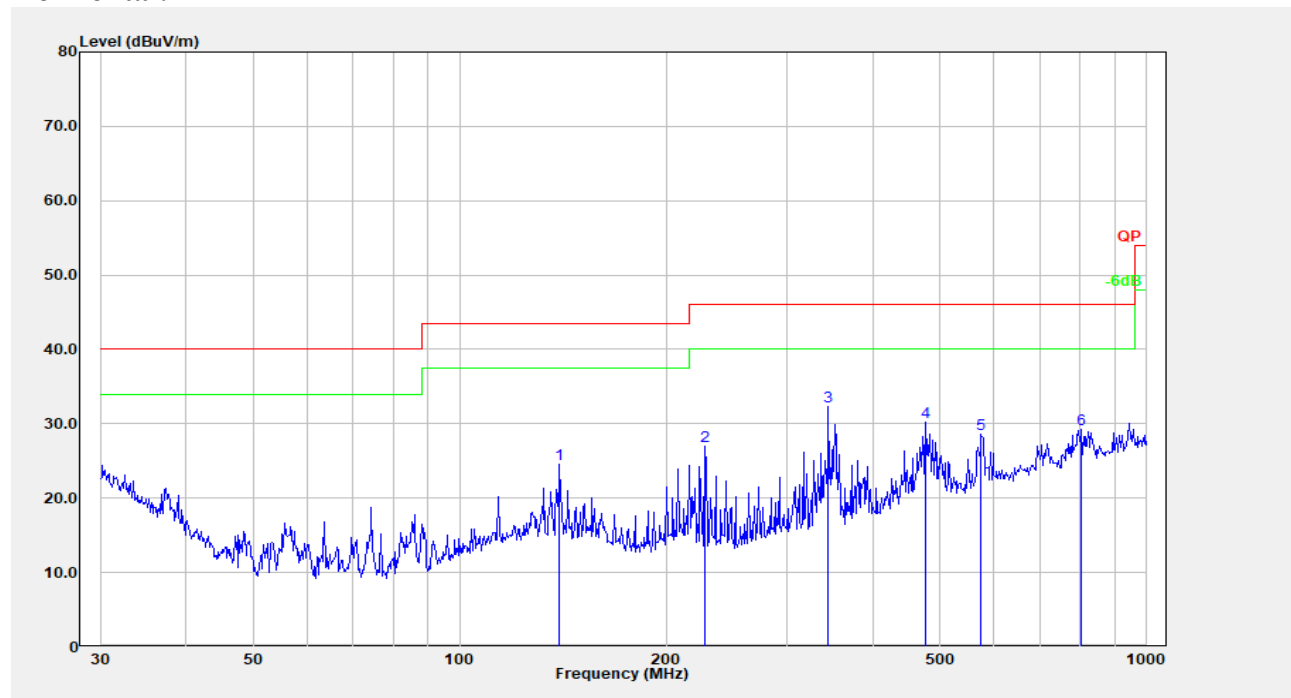
Test Equipment List and Details:

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	2021-07-22	2022-07-21
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2021-07-18	2022-07-17
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2021-07-18	2022-07-17
Sonoma	Amplifier	310N	186165	2021-07-18	2022-07-17
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020-10-13	2023-10-12
R&S	Spectrum Analyzer	FSV40	101591	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2021-08-08	2022-08-07
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2021-08-08	2022-08-07
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2021-11-10	2022-11-09
Audix	Test Software	E3	201021 (V9)	N/A	N/A

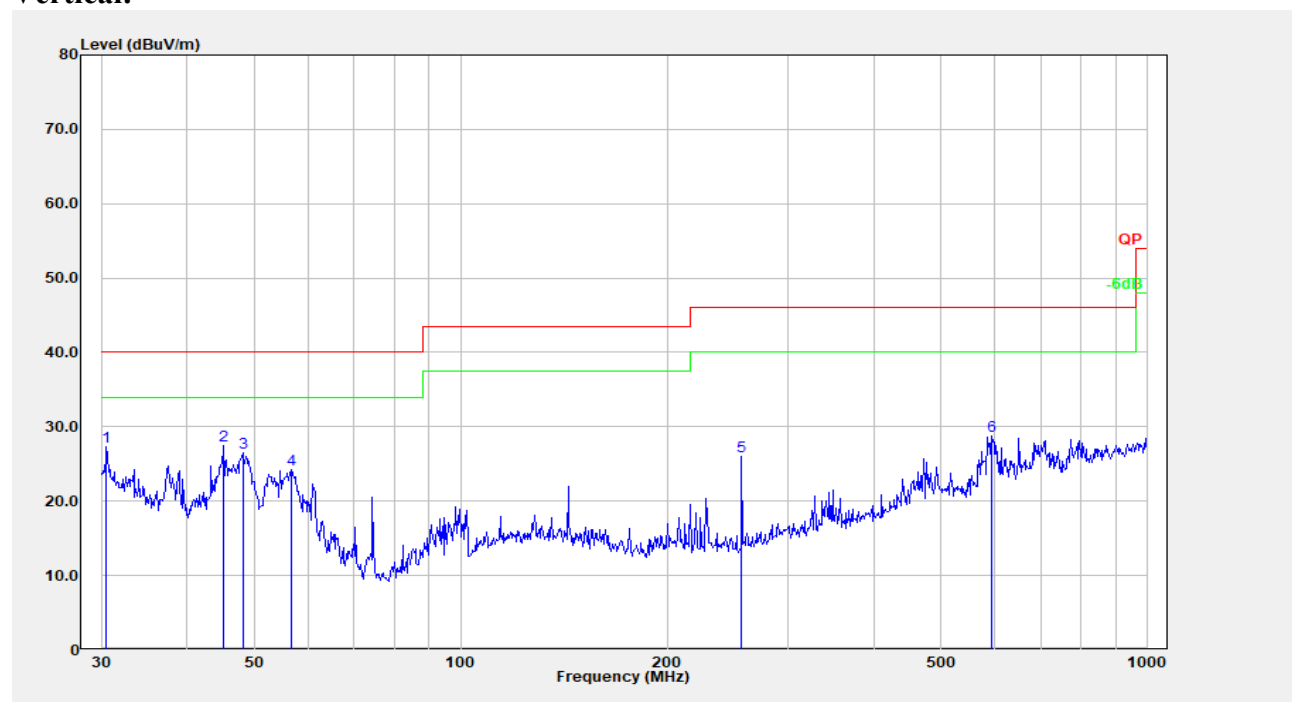
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

1) 30MHz-1GHz:

Model: T03-00313-HCAA

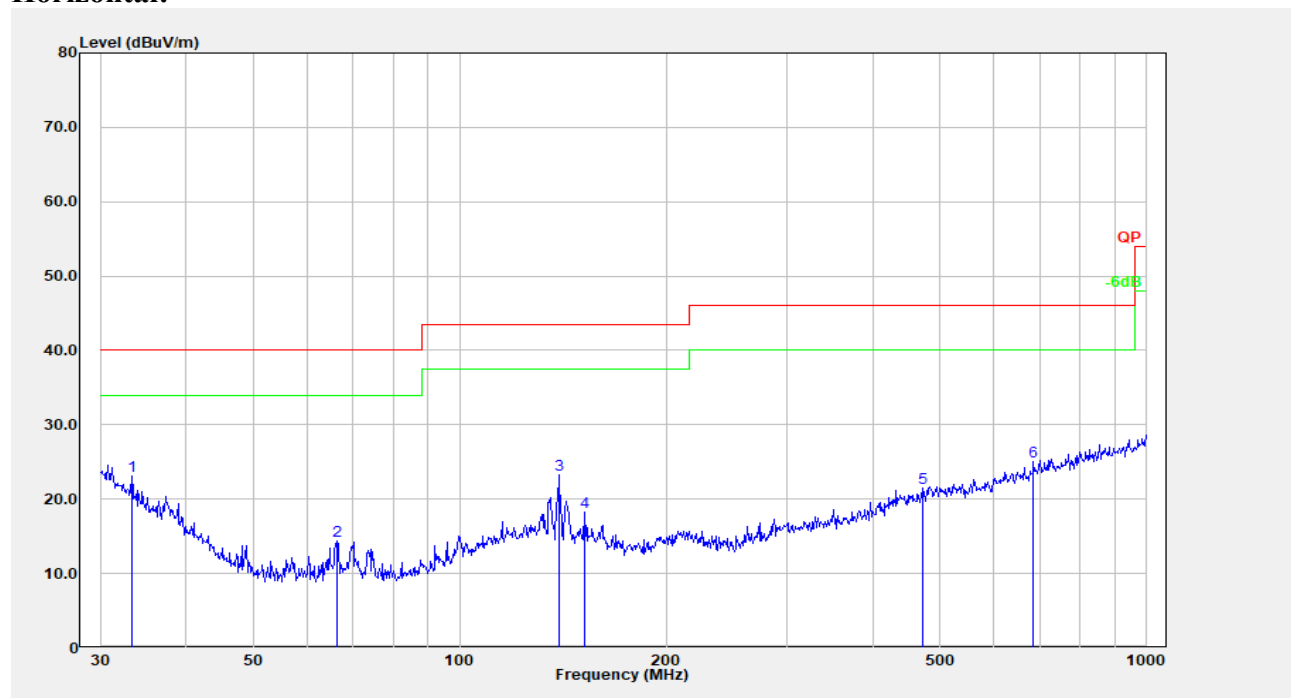
Horizontal:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	139.851	36.62	-12.12	24.50	43.50	19.00	Peak
2	227.691	40.04	-13.10	26.95	46.00	19.05	Peak
3	344.386	42.53	-10.25	32.28	46.00	13.72	Peak
4	477.169	36.68	-6.51	30.17	46.00	15.83	Peak
5	574.626	34.37	-5.84	28.53	46.00	17.47	Peak
6	804.603	31.60	-2.42	29.18	46.00	16.82	Peak

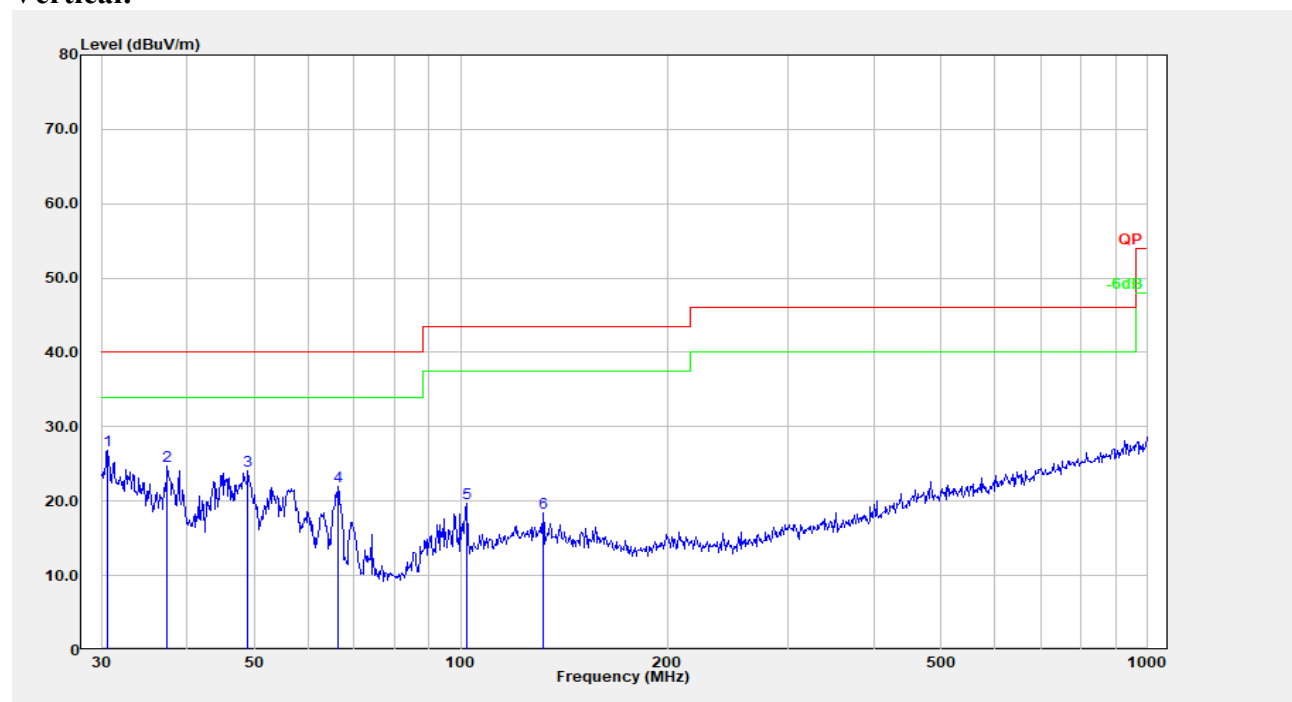
Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.531	31.51	-4.20	27.31	40.00	12.69	Peak
2	45.217	42.02	-14.58	27.44	40.00	12.56	Peak
3	48.163	42.83	-16.33	26.49	40.00	13.51	Peak
4	56.792	41.76	-17.53	24.23	40.00	15.77	Peak
5	256.521	38.85	-12.87	25.97	46.00	20.03	Peak
6	593.050	34.18	-5.47	28.71	46.00	17.29	Peak

Horizontal:

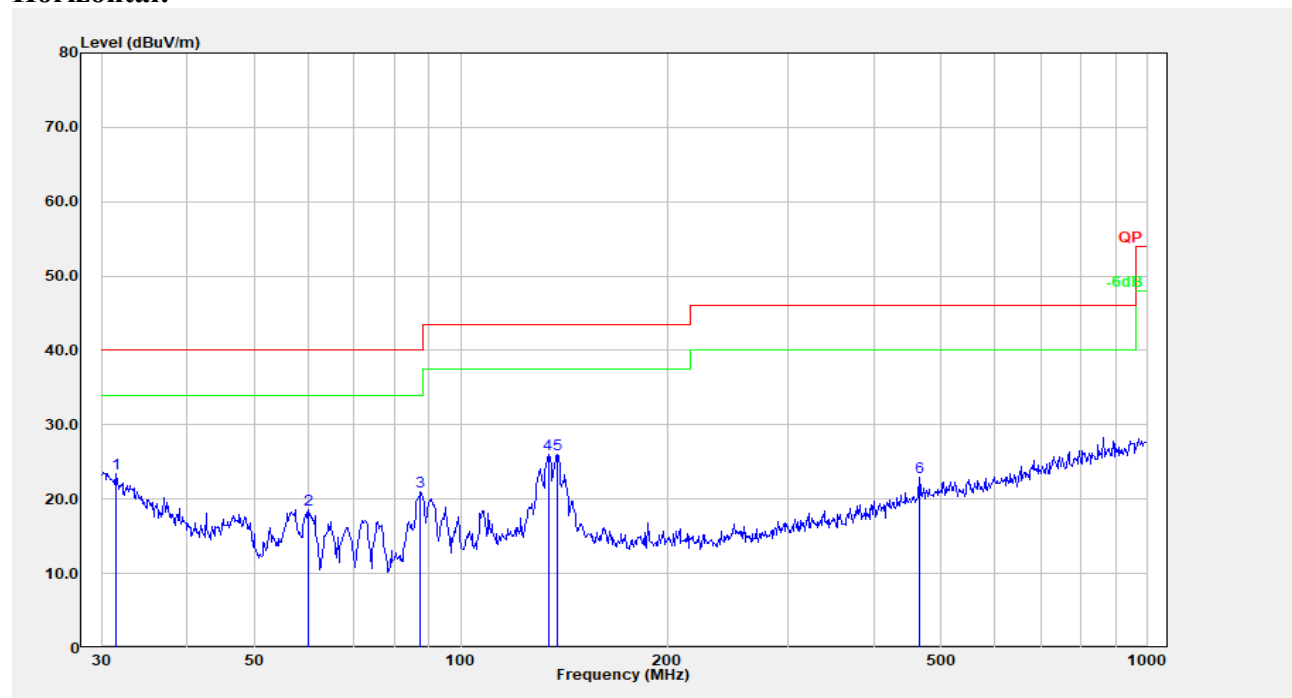


No.	Frequency	Reading	Factor	Result	Limit	Margin	Detector
	(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
1	33.328	29.44	-6.36	23.08	40.00	16.92	Peak
2	66.266	31.52	-17.07	14.44	40.00	25.56	Peak
3	139.361	35.36	-12.09	23.27	43.50	20.23	Peak
4	152.130	30.60	-12.28	18.32	43.50	25.18	Peak
5	472.176	28.11	-6.56	21.55	46.00	24.45	Peak
6	684.745	28.93	-3.82	25.11	46.00	20.89	Peak

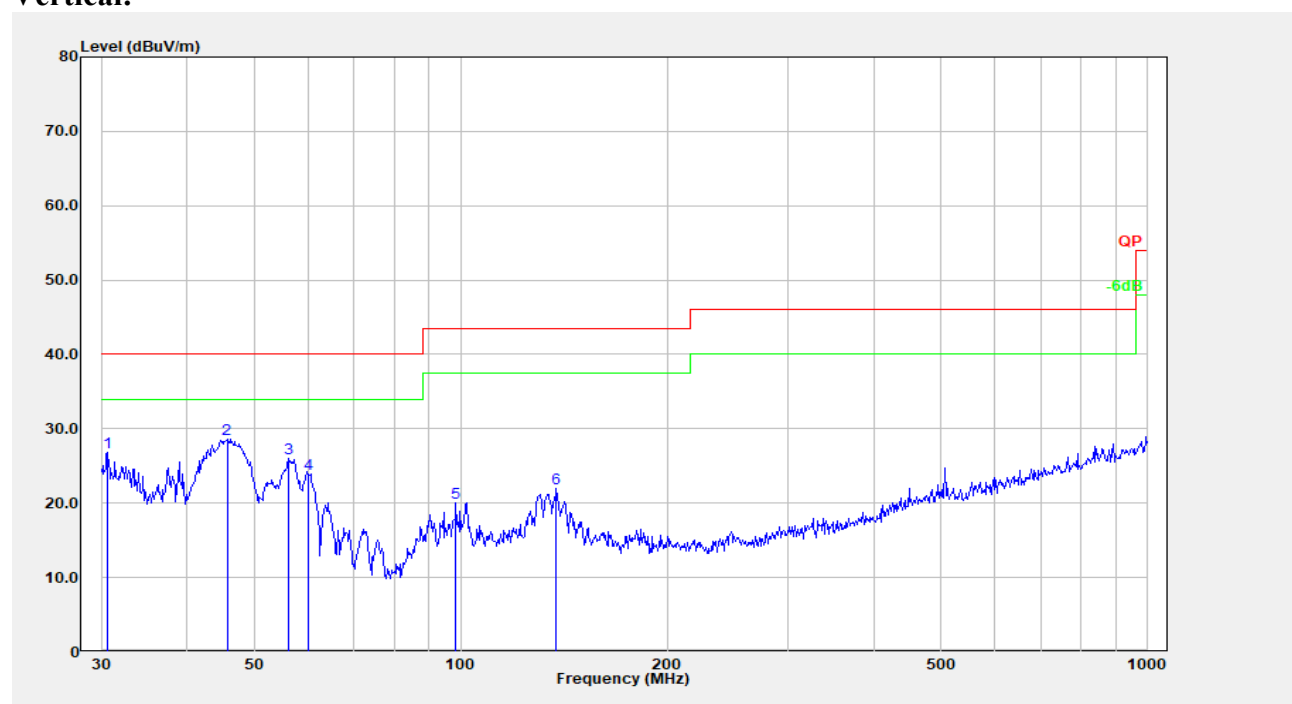
Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	31.16	-4.28	26.88	40.00	13.12	Peak
2	37.416	34.25	-9.49	24.76	40.00	15.24	Peak
3	49.014	40.83	-16.82	24.01	40.00	15.99	Peak
4	66.266	39.04	-17.07	21.97	40.00	18.03	Peak
5	102.001	33.93	-14.22	19.71	43.50	23.79	Peak
6	131.758	30.03	-11.64	18.39	43.50	25.11	Peak

Model: T03-00313-HAAA

Horizontal:

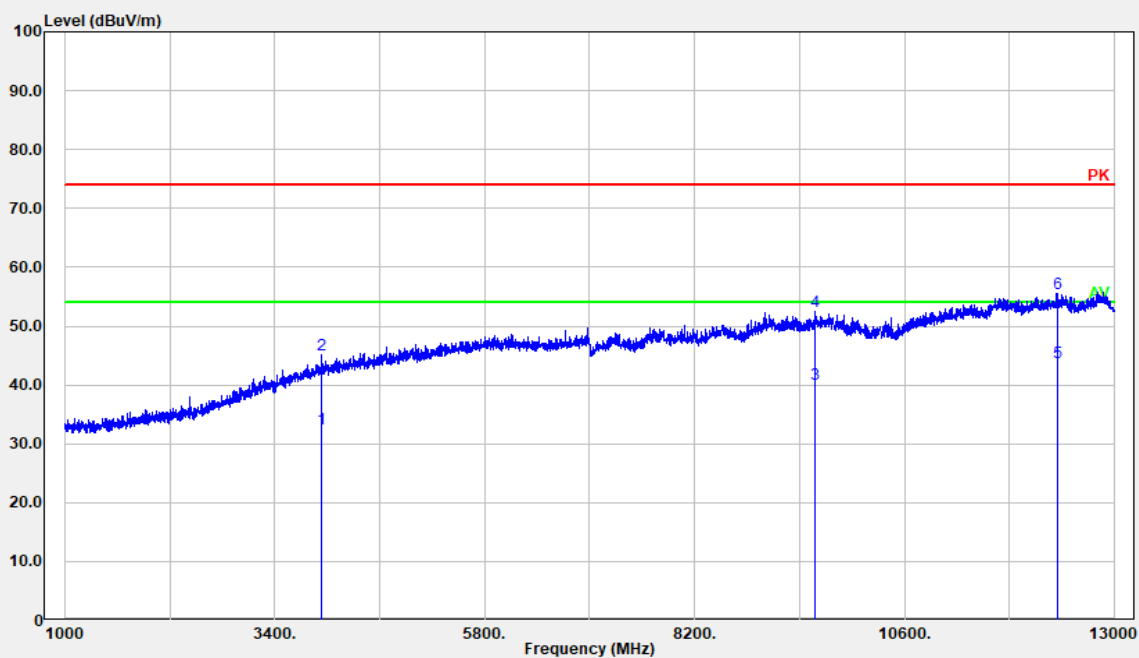
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	31.510	28.45	-4.95	23.50	40.00	16.50	Peak
2	60.069	36.28	-17.64	18.65	40.00	21.35	Peak
3	87.418	38.35	-17.31	21.03	40.00	18.97	Peak
4	134.088	37.81	-11.80	26.01	43.50	17.49	Peak
5	138.387	38.10	-12.06	26.03	43.50	17.47	Peak
6	465.599	29.71	-6.70	23.01	46.00	22.99	Peak

Vertical:

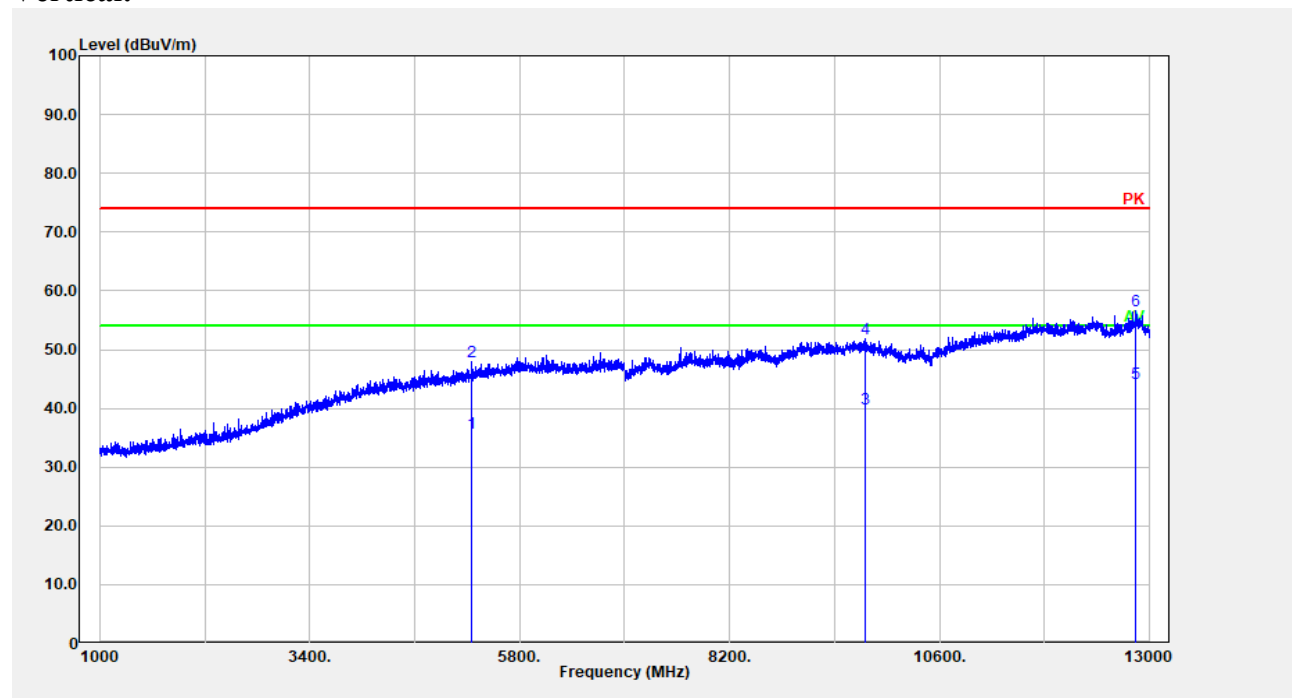
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	31.06	-4.28	26.78	40.00	13.22	Peak
2	45.695	43.43	-14.88	28.55	40.00	11.45	Peak
3	56.197	43.54	-17.53	26.01	40.00	13.99	Peak
4	60.069	41.62	-17.64	23.98	40.00	16.02	Peak
5	98.487	35.00	-14.93	20.07	43.50	23.43	Peak
6	137.903	34.02	-12.05	21.98	43.50	21.52	Peak

2) Above 1GHz (All models T03-00313-HCAA, T03-00313-HBAA, T03-00313-HAAA were pre-scanned, T03-00313-HCAA was found to be the worst case and its data is shown in the below):

Horizontal:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	3933.387	23.36	9.16	32.52	54.00	21.48	Average
2	3933.387	35.95	9.16	45.11	74.00	28.89	Peak
3	9574.515	21.58	18.57	40.15	54.00	13.85	Average
4	9574.515	33.93	18.57	52.50	74.00	21.50	Peak
5	12359.070	22.30	21.52	43.82	54.00	10.18	Average
6	12359.070	34.03	21.52	55.55	74.00	18.45	Peak

Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	5248.850	23.84	11.92	35.76	54.00	18.24	Average
2	5248.850	36.03	11.92	47.95	74.00	26.05	Peak
3	9752.150	21.27	18.56	39.83	54.00	14.17	Average
4	9752.150	33.23	18.56	51.79	74.00	22.21	Peak
5	12851.170	22.05	22.10	44.15	54.00	9.85	Average
6	12851.170	34.43	22.10	56.53	74.00	17.47	Peak

*****END OF REPORT*****