TEST REPORT

Reference No......	:	WTX24X08191413W
FCC ID.....	:	2BG33-CTZ1
Applicant.....	:	Cool Tech Zone
Address.....	:	12/23 Lane Cove Rd, Ryde, NSW 2112, Australia
Manufacturer.....	:	Cool Tech Zone
Address.....	:	12/23 Lane Cove Rd, Ryde, NSW 2112, Australia
Product Name	:	Tangara
Model No......	:	CTZ-1
Standards	:	**FCC PART15 SUBPART B**
Date of Receipt sample	:	2024-08-14
Date of Test.....	:	2024-08-14 to 2024-08-14
Date of Issue	:	2024-08-14
Test Report Form No. ...	:	WTX_FCC PART15B_001
Test Result.....	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,
Block 70 Bao'an District, Shenzhen, Guangdong, China
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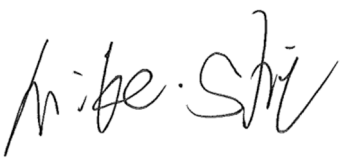
Tested by:



Mike Shi

Approved by:

Jason Su

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Report version

Version No.	Date of issue	Description
Rev.00	2024-08-14	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Tangara
Trade Name:	/
Model No.:	CTZ-1
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC3.7V
Battery Capacity:	2200mAh
Rated Power:	/
Power Adapter Model:	/
Lowest Internal Frequency:	40MHz
Highest Internal Frequency:	2480MHz
Classification of ITE:	Class B

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B: Unintentional Radiators.

ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were provided by the manufacturer, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	Charging mode	The EUT was turned on and powered by the AC adapter, AC 120V 60Hz	DC5V
TM2	Battery mode	Powered by the battery	DC3.7V

EUT Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
/	/	/	/	/

Special Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
Type-C Cable	1.2	Shielded	Without Ferrite	Without Chip

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	/	XY18W-1375-QC3.0	/
Computer	Lenovo	L13 Yoga	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB
Radiated Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
☐Chamber A:Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
Amplifier	HP	8447F	2805A03475	2024-02-24	2025-02-23
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2024-02-24	2025-02-23
☐Chamber A:Above 1GHz					
Amplifier	C&D	PAP-1G18	2002	2024-02-27	2025-02-26
Horn Antenna	ETS	3117	00086197	2024-02-26	2025-02-25
☐Chamber B:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2024-02-24	2025-02-23
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
Amplifier	Agilent	8447D	2944A10457	2024-02-24	2025-02-23
☒Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Amplifier	HP	8447F	2944A03869	2024-02-24	2025-02-23
☒Chamber C:Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2024-02-27	2025-02-26
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
☐Conducted Room 1#					
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2023-12-12	2024-12-11

AC LISN	Schwarz beck	NSLK8126	8126-279	2024-02-24	2025-02-23
☒Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2024-02-24	2025-02-23
LISN	Rohde & Schwarz	ENV 216	100097	2024-02-24	2025-02-23

Software List			
Description	**Manufacturer**	**Model**	**Version**
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 1#)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 2#)*	SKET	EMC-I	V2.0

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107(a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

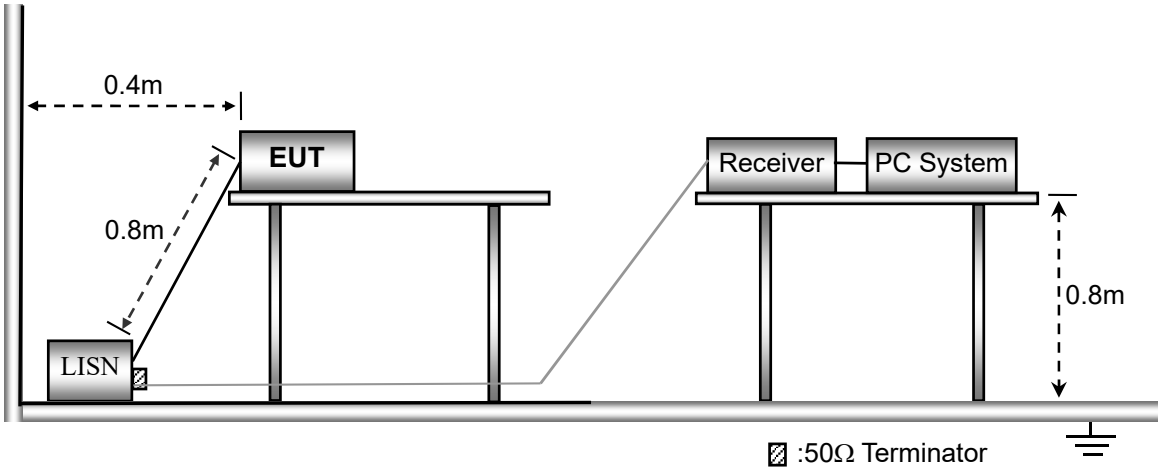
N/A: not applicable

3. CONDUCTED EMISSIONS

3.1 Test Procedure

The test is conducted under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



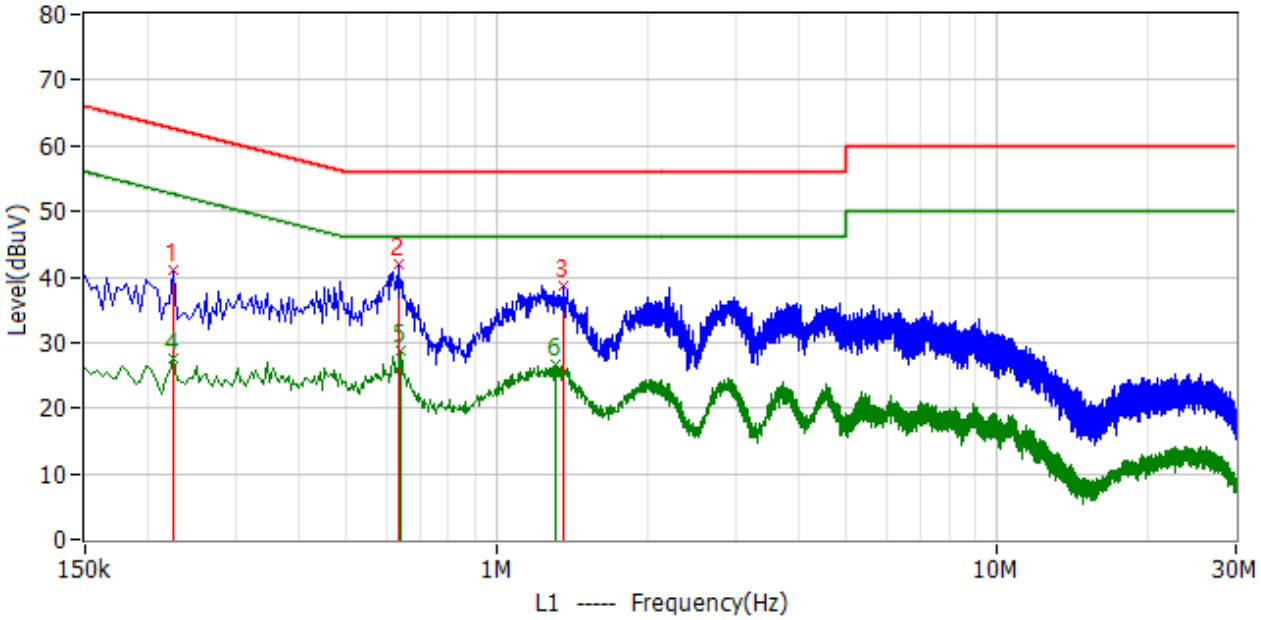
3.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1014 mbar

3.4 Summary of Test Results

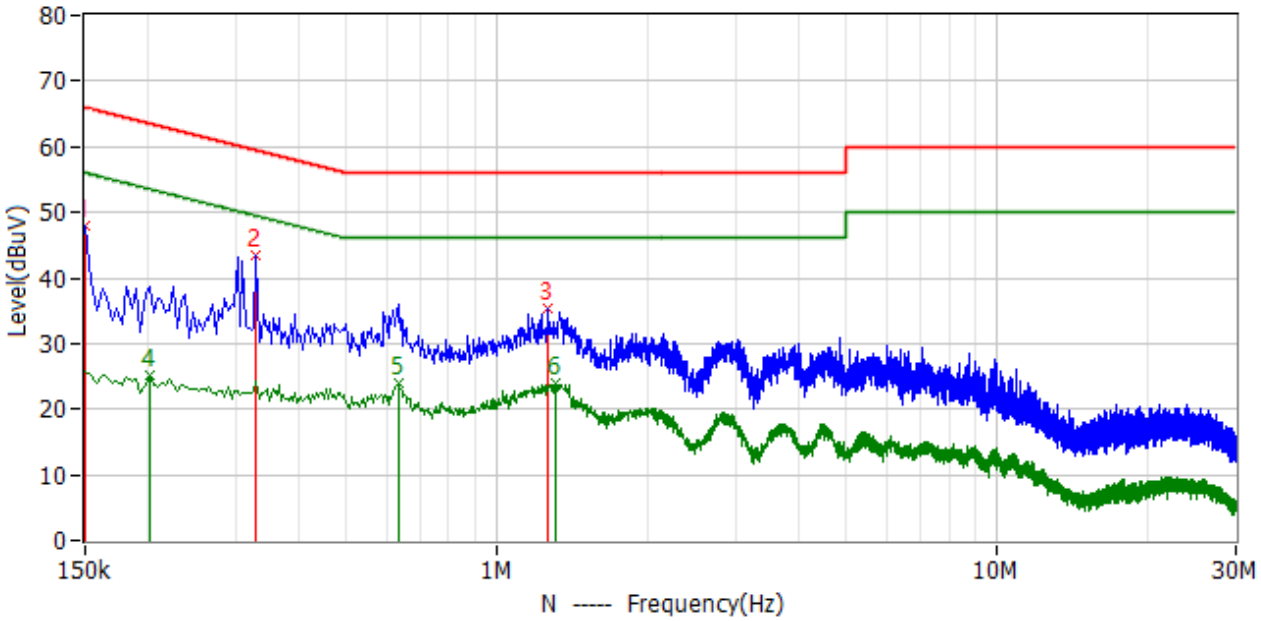
Please find the results below:

Test mode:	TM1	Polarity:	Line



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector
1*	226.000kHz	31.5	9.6	41.1	62.6	-21.5	PK
2*	634.000kHz	32.1	9.7	41.8	56.0	-14.2	PK
3*	1.358MHz	29.0	9.6	38.6	56.0	-17.4	PK
4*	226.000kHz	18.1	9.6	27.7	52.6	-24.9	AV
5*	642.000kHz	19.1	9.7	28.8	46.0	-17.2	AV
6*	1.306MHz	17.2	9.6	26.8	46.0	-19.2	AV

Test mode:	TM1	Polarity:	Neutral



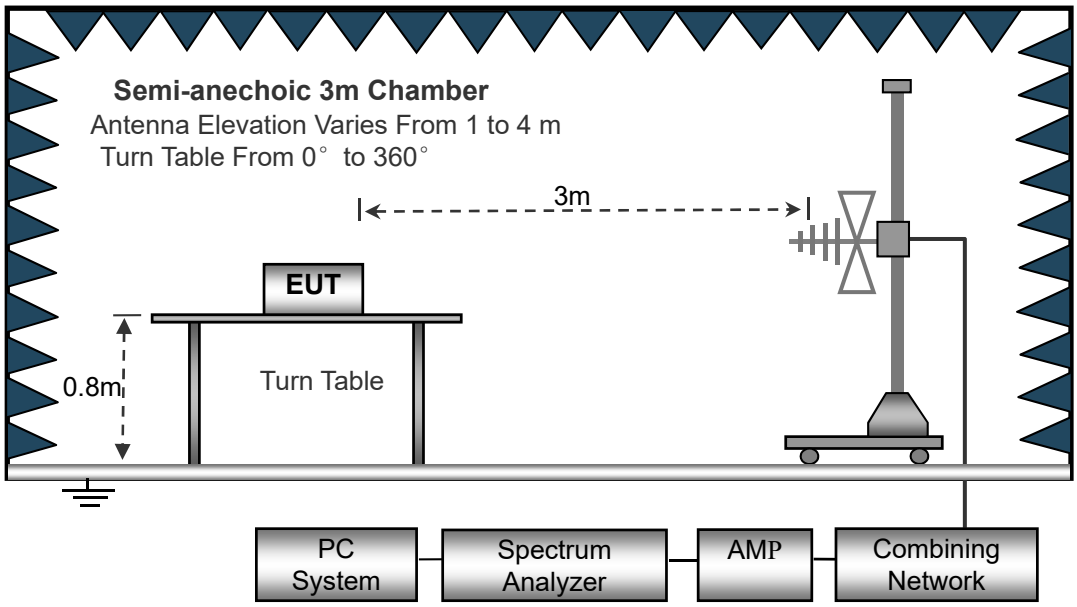
No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector
1*	150.000kHz	38.2	9.7	47.9	66.0	-18.1	PK
2*	330.000kHz	33.8	9.6	43.4	59.5	-16.0	PK
3*	1.266MHz	25.8	9.6	35.4	56.0	-20.6	PK
4*	202.000kHz	15.6	9.5	25.1	53.5	-28.4	AV
5*	634.000kHz	14.4	9.7	24.1	46.0	-21.9	AV
6*	1.306MHz	14.4	9.6	24.0	46.0	-22.0	AV

4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

4.2 Block Diagram of Test Setup



4.3 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Correct
Correct=Ant.Factor + Cable Loss - Ampl.Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.5 Environmental Conditions

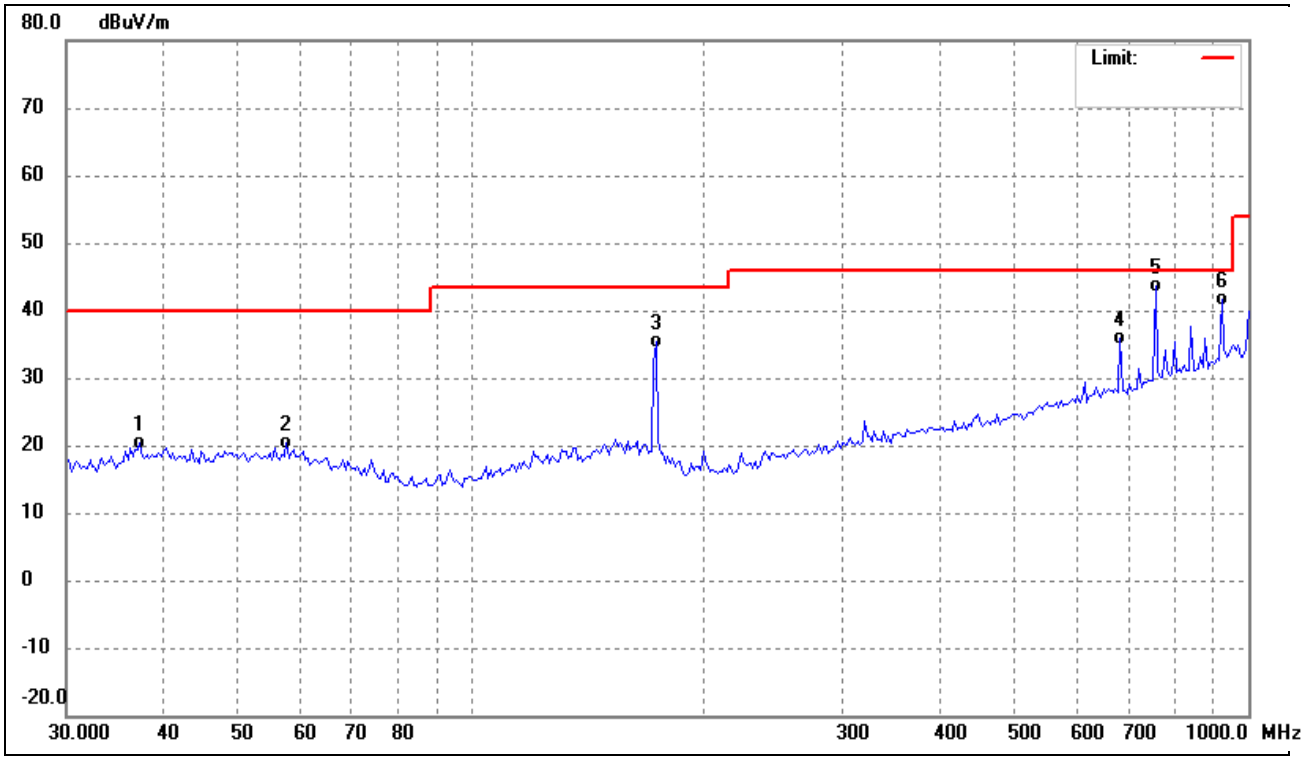
Temperature:	26.4°C
Relative Humidity:	52 %
ATM Pressure:	1011 mbar

4.6 Summary of Test Results

Please find the results below:

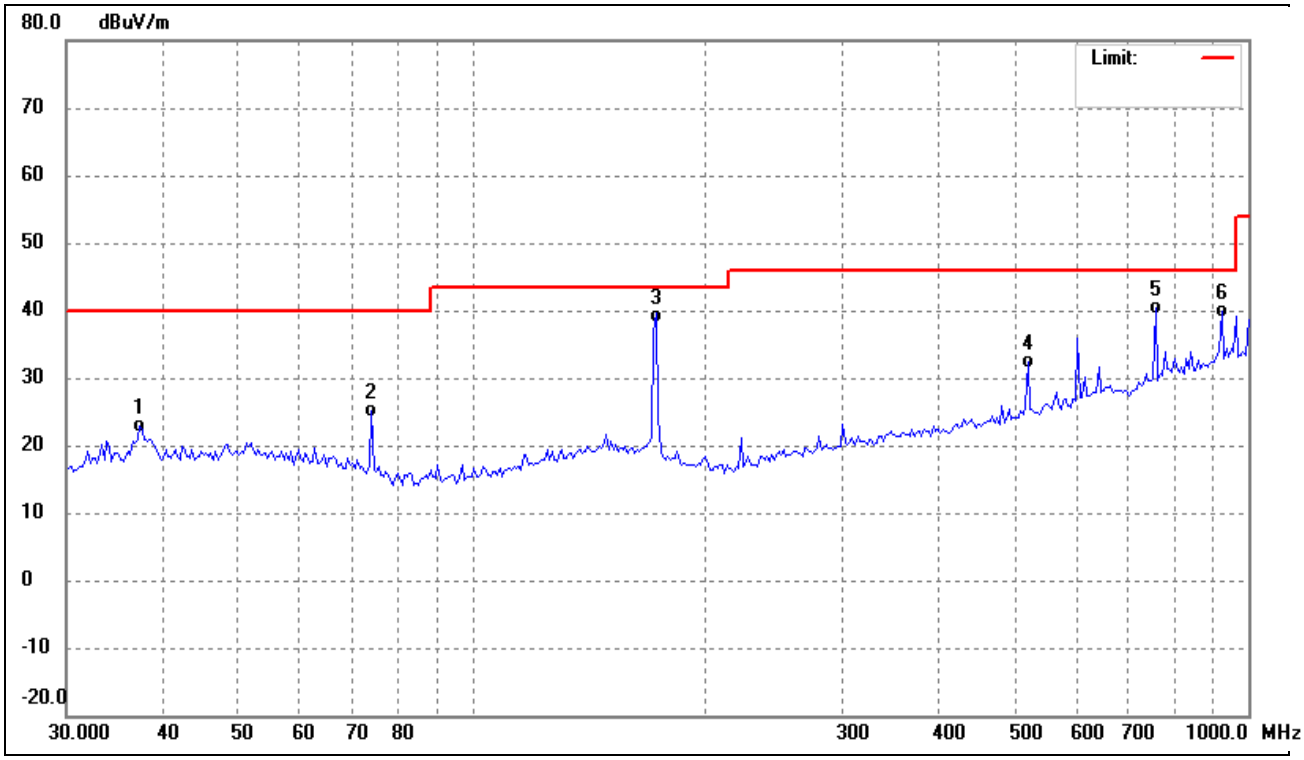
Below 1GHz

Test mode:	TM2	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	37.3017	28.82	-8.53	20.29	40.00	-19.71	-	-	QP
2	57.6693	28.57	-8.29	20.28	40.00	-19.72	-	-	QP
3	172.5976	43.96	-8.68	35.28	43.50	-8.22	-	-	QP
4	684.2258	37.11	-1.27	35.84	46.00	-10.16	-	-	QP
5	760.2867	43.29	0.35	43.64	46.00	-2.36	-	-	QP
6	925.6132	38.93	2.72	41.65	46.00	-4.35	-	-	QP

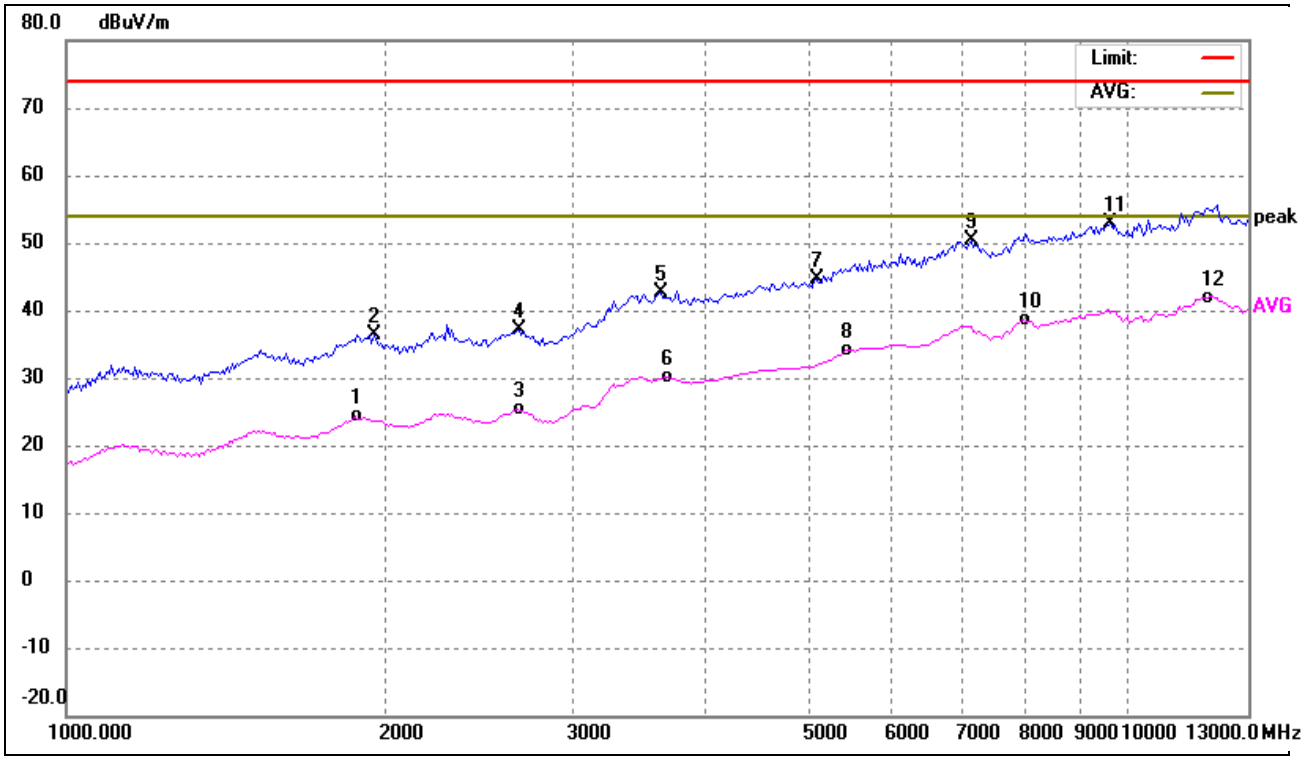
Test mode:	TM2	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	37.3017	31.45	-8.53	22.92	40.00	-17.08	-	-	QP
2	74.2696	36.25	-11.18	25.07	40.00	-14.93	-	-	QP
3	172.5976	47.70	-8.68	39.02	43.50	-4.48	-	-	QP
4	520.2078	36.90	-4.41	32.49	46.00	-13.51	-	-	QP
5	760.2867	39.93	0.35	40.28	46.00	-5.72	-	-	QP
6	925.6131	37.24	2.72	39.96	46.00	-6.04	-	-	QP

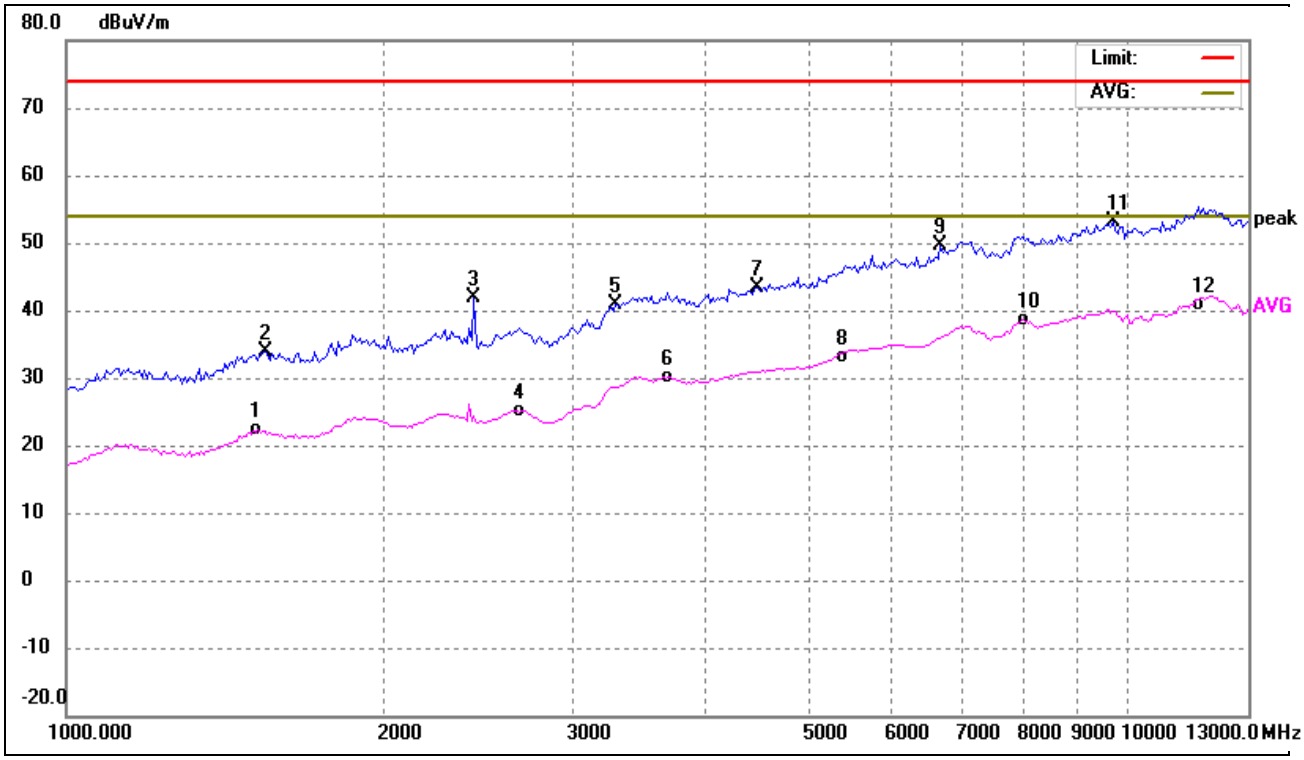
Above 1GHz

Test mode:	TM2	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	1872.177	44.69	-20.38	24.31	54.00	-29.69	-	-	AVG
2	1950.768	56.32	-19.92	36.40	74.00	-37.60	-	-	peak
3	2655.503	43.61	-18.34	25.27	54.00	-28.73	-	-	AVG
4	2669.188	55.32	-18.31	37.01	74.00	-36.99	-	-	peak
5	3633.458	57.03	-14.35	42.68	74.00	-31.32	-	-	peak
6	3689.923	44.46	-14.41	30.05	54.00	-23.95	-	-	AVG
7	5101.001	56.58	-11.90	44.68	74.00	-29.32	-	-	peak
8	5481.612	44.15	-10.02	34.13	54.00	-19.87	-	-	AVG
9	7124.563	56.36	-6.01	50.35	74.00	-23.65	-	-	peak
10	7977.558	43.67	-5.05	38.62	54.00	-15.38	-	-	AVG
11	9648.659	56.30	-3.40	52.90	74.00	-21.10	-	-	peak
12	11790.404	42.15	-0.20	41.95	54.00	-12.05	-	-	AVG

Test mode:	TM2	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	1516.423	44.97	-22.52	22.45	54.00	-31.55	-	-	AVG
2	1539.989	56.24	-22.37	33.87	74.00	-40.13	-	-	peak
3	2420.831	60.62	-18.80	41.82	74.00	-32.18	-	-	peak
4	2655.503	43.49	-18.34	25.15	54.00	-28.85	-	-	AVG
5	3295.380	56.49	-15.60	40.89	74.00	-33.11	-	-	peak
6	3689.923	44.56	-14.41	30.15	54.00	-23.85	-	-	AVG
7	4485.869	56.57	-13.14	43.43	74.00	-30.57	-	-	peak
8	5315.134	43.96	-10.83	33.13	54.00	-20.87	-	-	AVG
9	6664.041	56.88	-7.32	49.56	74.00	-24.44	-	-	peak
10	7977.558	43.61	-5.05	38.56	54.00	-15.44	-	-	AVG
11	9698.383	56.43	-3.39	53.04	74.00	-20.96	-	-	peak
12	11550.460	41.55	-0.72	40.83	54.00	-13.17	-	-	AVG

Remark:'-'Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

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