Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

China Industries Ltd T/A Wow! Stuff

FCC ID:	**YCR-TX-1008H**
Product Description:	**Cyber Dactyl**
Model No.:	**TX-1008**
Supplementary Model No.:	**N/A**
Brand Name:	**TX-Juice**

Prepared for:

China Industries Ltd T/A Wow! Stuff

Creative Industries Centre, Wolverhampton Science Park,
Wolverhampton, WV10 9TG, UK.

Prepared by:

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1. GENERAL INFORMATION

1.1 Client Information

Applicant:	**China Industries Ltd T/A Wow! Stuff**
Address of applicant:	Creative Industries Centre, Wolverhampton Science Park, Wolverhampton, WV10 9TG, UK.
Manufacturer:	**Huatong Metals & Plastic Products Co. Ltd.**
Address of manufacturer:	Yongfeng Industrial District, Henglan Town, Zhongshan, Guangdong

General Description of E.U.T

Items	Description
EUT Description:	Cyber Dactyl
Trade Name:	TX-Juice
Model No.:	TX-1008
Supplementary Model No.:	N/A
Frequency Band:	2420.875MHz ~ 2472MHz
Type of modulation	GFSK
Antenna Gain	0dBi
Antenna Type:	Integral Antenna
Rated Voltage:	6.0 V DC from battery

Remark The test data gathered are from the production sample provided by the manufacturer.*

1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with Section 15.107 and 15.109 under the FCC Rules Part 15 Subpart B and Section 15.207, 15.209,15.249 under the FCC Rules Part 15 Subpart C.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, 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. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

All measurement required was performed at laboratory of Bontek Compliance Testing Laboratory Co., Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China.

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 7631A

The 3m alternate test site of Shenzhen Bontek Compliance Testing Laboratory Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on January, 2011.The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

CNAS – Registration No.: L3923

Shenzhen Bontek Compliance Testing Laboratory Co., Ltd. To ISO/IEC 17025:25 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.The acceptance letter from the CNAS is maintained in our files: Registration: L3923, March, 2012.

TUV – Registration No.: 50242657-0001

Shenzhen Bontek Compliance Testing Laboratory Co., Ltd. An assessment of the laboratory was conducted according to the"Procedures and Conditions for EMC Test Laboratories"with reference to EN ISO/IEC 17025 by a TUV Rheinland auditor. Audit Report NO. 17010783-003

2. SYSTEM TEST CONFIGURATION

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous transmiting application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode. But the EUT is powed by DC 1.5V of battery,this test is not applicable.

Radiated Emissions The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 List of Measuring Equipments

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2014-4-16	2015-4-15
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2013-11-1	2014-10-31
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2014-4-16	2015-4-15
4	BCT-EMC004	Single Power Conductor Module	R&S	NNBM 8124	242	2014-4-16	2015-4-15
5	BCT-EMC005	Single Power Conductor Module	R&S	NNBM 8124	243	2014-4-16	2015-4-15
6	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2014-5-19	2015-5-18
7	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2013-11-28	2014-11-27
8	BCT-EMC021	Triple-Loop Antenna	EVERFINE	LLA-2	711002	2013-11-15	2014-11-14
9	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2014-4-16	2015-4-15
10	BCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2014-4-16	2015-4-15
11	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2014-4-16	2015-4-15
12	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2014-4-16	2015-4-15
13	BCT-EMC036	Spectrum Analyzer	R&S	FSP	100397	2013-11-1	2014-10-31
14	BCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2014-4-16	2015-4-15

3. SUMMARY OF TEST RESULTS

EUT Fundamental Frequency	FCC Rules	Description of Test	Result
2420.875~ 2472MHz	15.207	Disturbance Voltage at The Mains Terminals	N/A , without AC main
	15.215	20 dB Bandwidth	Pass
	15.249	Band Edges Measurement	Pass
	15.249	Spurious Emission	Pass
	15.203	Antenna Requirement	Pass

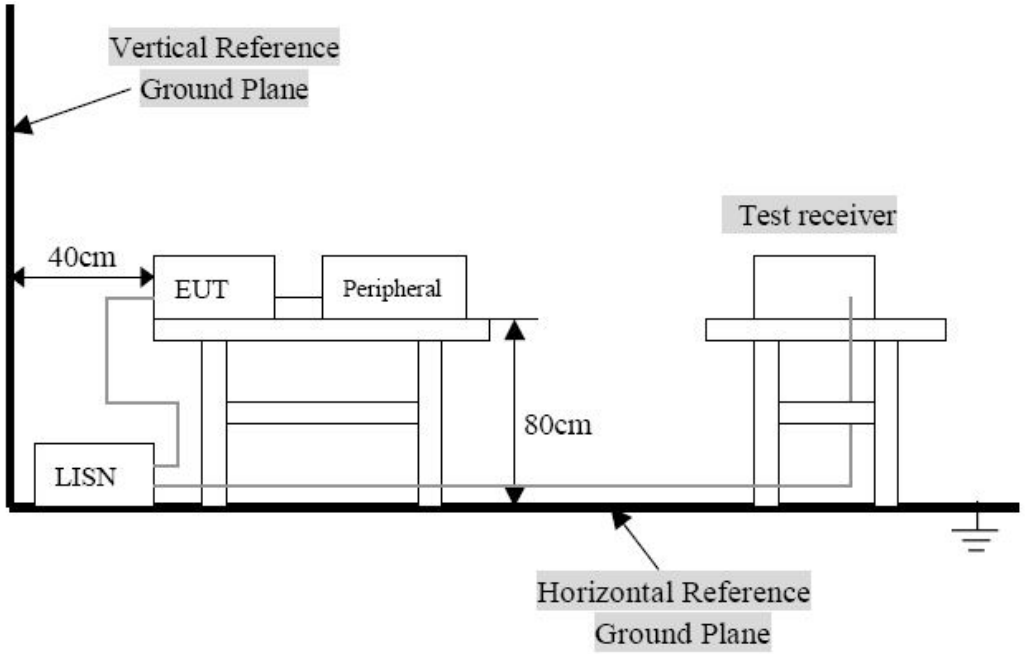
4. TEST OF CONDUCTED EMISSION

4.1 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the 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 below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66～56	56～46
0.500～5.000	56	46
5.000～30.00	60	50

4.2 Test Setup Diagram



Remark: 1. The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC 15.207 limits.

2. The EUT was charged on the base,and the base was connected to a 120 VAC/ 60Hz power source.

Notes: The EUT is powered by DC 6V from battery without AC mains, this test is unapplicable.

5. Test of Hopping Channel Bandwidth

5.1 Applicable Standard

Section 15.215(c): 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.

5.2 EUT Setup

Spectrum Analyzer

5.3 Test Equipment List and Details

See section 2.4.

5.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
   RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

3. The spectrum width with level higher than 20dB below the peak level.

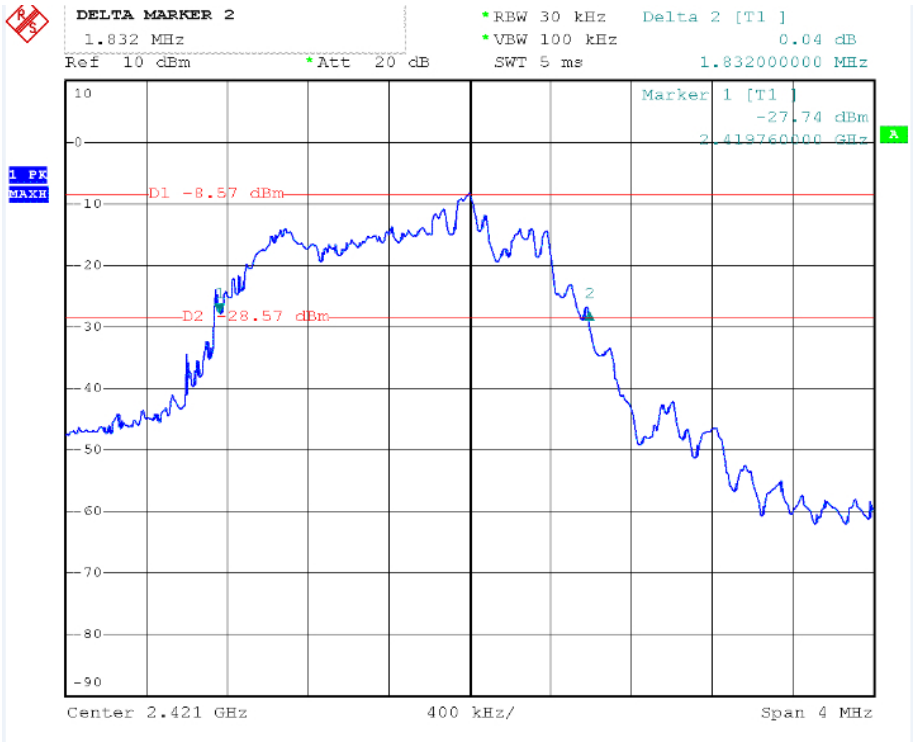
4. Repeat above 1~3 points for the middle and highest channel of the EUT.

5.5 Test Result

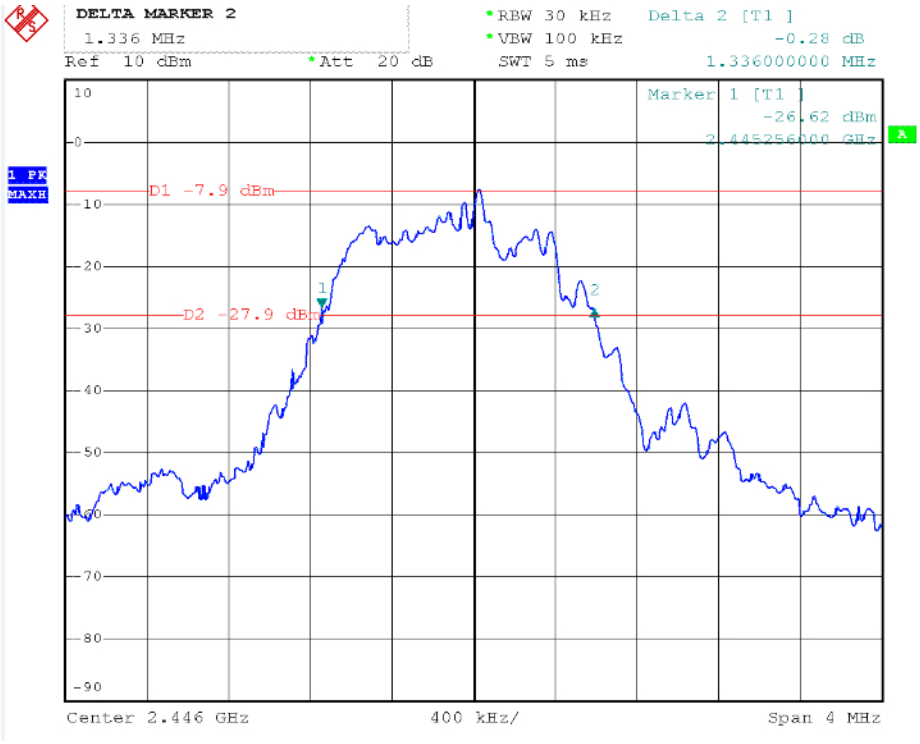
Temperature (℃) : 22~23	EUT: Cyber Dactyl
Humidity (%RH): 50~54	M/N: TX-1008
Barometric Pressure (mbar): 950~1000	Operation Condition: Continuous transmitting

Modulation Type	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)
GFSK	Low	2420.875	1.832
GFSK	Middle	2446.00	1.336
GFSK	High	2472.00	1.504

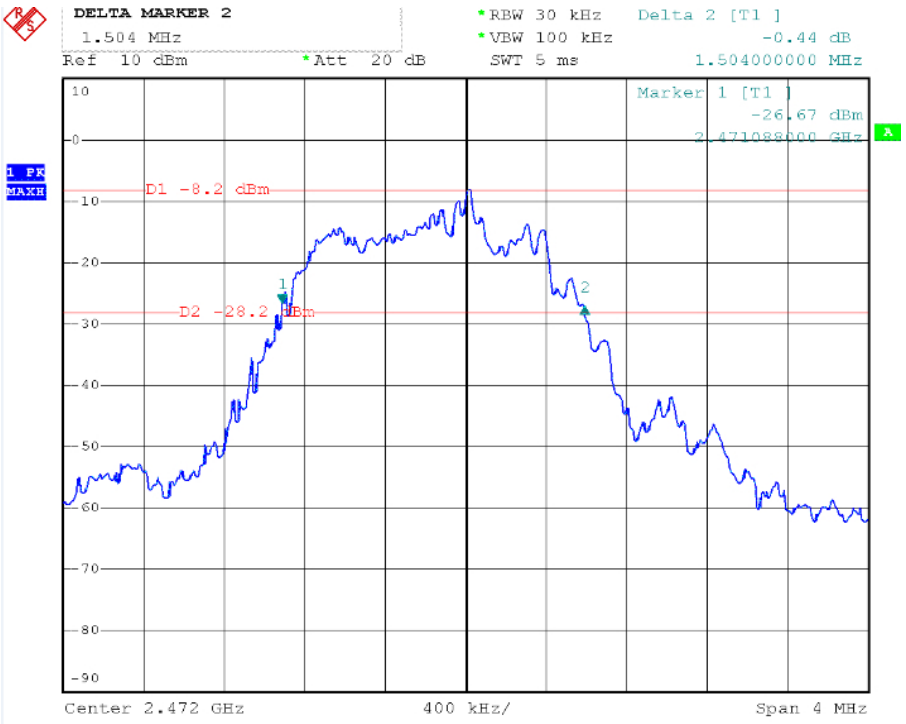
Channel Low



Channel Mid



Channel High



6. BAND EDGES MEASUREMENT

6.1 Limit of Band Edges Measurement

1. In the above emission table, the tighter limit applies at the band edges.

2. As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

6.2 Radiate EUT Setup

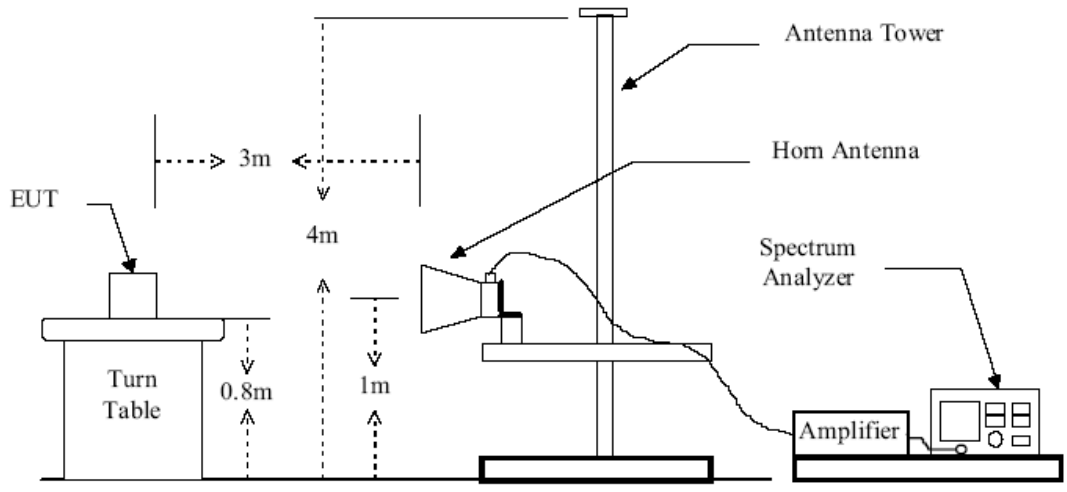


Figure 2 : Frequencies measured above 1 GHz configuration

6.3 Test Procedure

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

1). Configure the EUT according to ANSI C63.4:2003.

2). The EUT was placed on the top of the turntable 0.8 meter above ground.

3). The receiving antenna was placed 3 meters far away from the turntable.

4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.

5). The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

6.4 Test Result

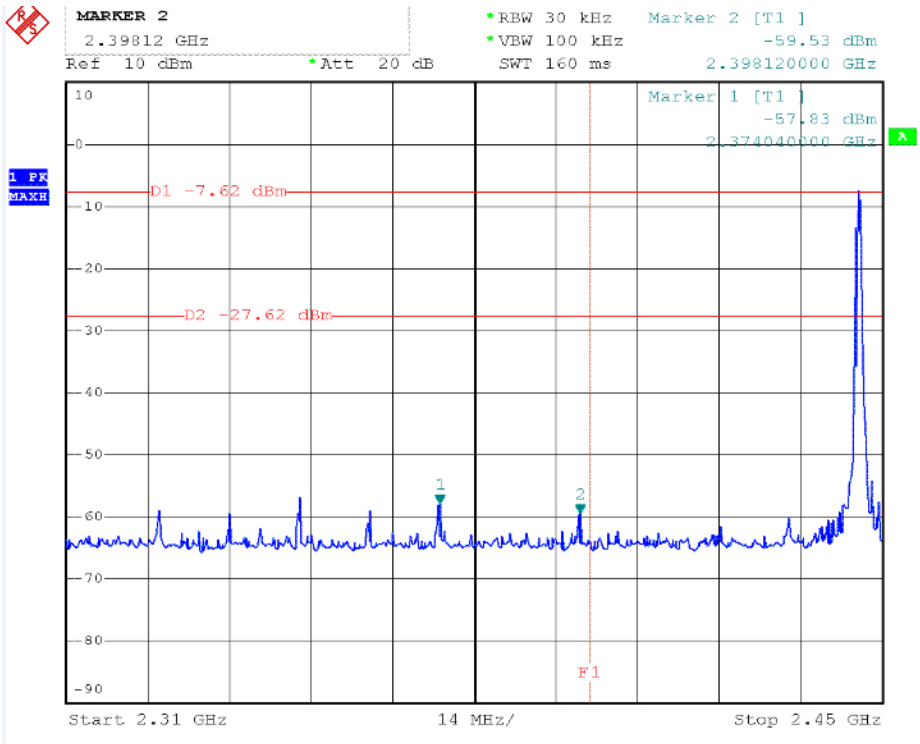
Temperature (℃) : 22~23	EUT: Cyber Dactyl
Humidity (%RH): 50~54	M/N: TX-1008
Barometric Pressure (mbar): 950~1000	Operation Condition: Continuous transmitting

Radio test result

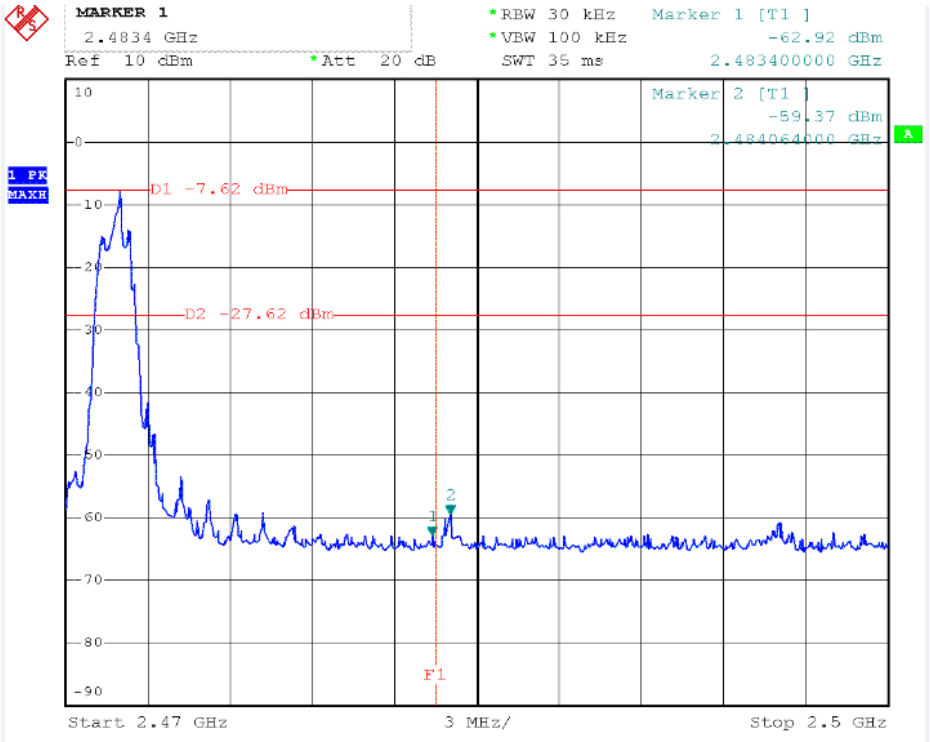
Frequency (MHz)	Antenna Polarization	Emission Read Value (dBμV/m)	Limits (dBμV/m)
2396.48	H	41.33	54
2495.86	H	40.65	54

Frequency (MHz)	Antenna Polarization	Emission Read Value (dBμV/m)	Limits (dBμV/m)
2396.48	V	42.36	54
2495.86	V	39.68	54

Conducted test result
CH Low



CH High



7. SPURIOUS EMISSIONS

7.1 Limit of Spurious Emissions

1. In the section 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:

2. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Fundamental Frequency (MHz)	Field Strength of Fundamental Field Strength (mV/m)	Field Strength of Harmonics (μmV/m)
902-928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

3. In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

7.2 EUT Setup

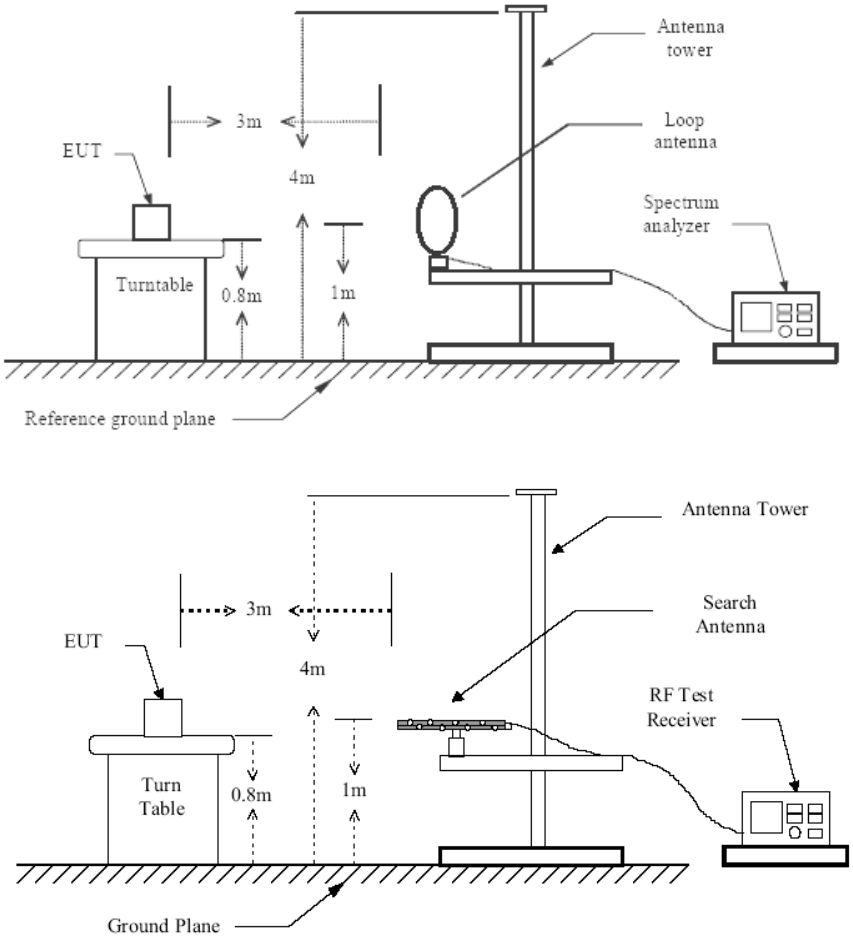


Figure 1 : Frequencies measured below 1 GHz configuration

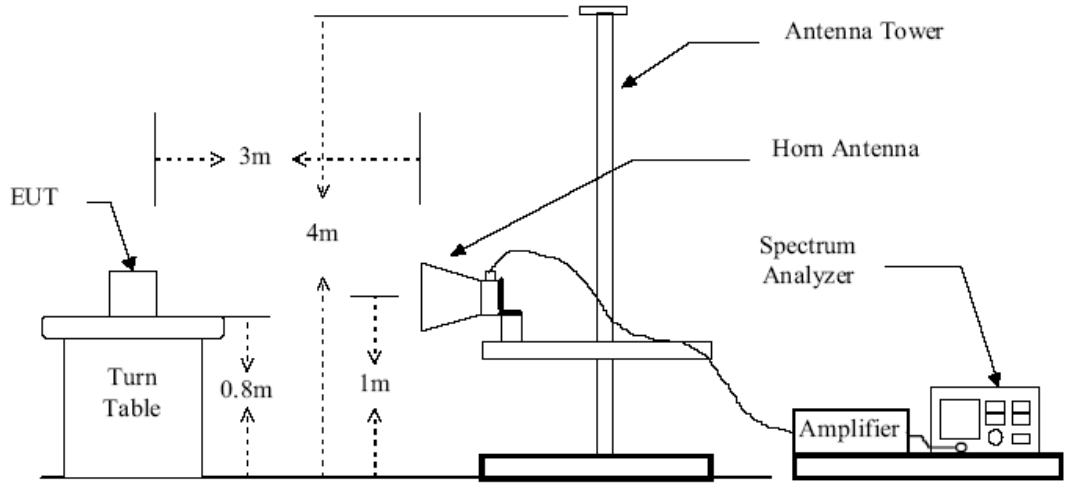


Figure 2 : Frequencies measured above 1 GHz configuration

7.3 Test Procedure

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

1). Configure the EUT according to ANSI C63.4:2003.

2). The EUT was placed on the top of the turntable 0.8 meter above ground.

3). The receiving antenna was placed 3 meters far away from the turntable.

4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.

5). The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

7.4 Spurious Emissions Test Result

Temperature (℃) : 22~23	EUT: Cyber Dactyl
Humidity (%RH): 50~54	M/N: SK-078AG
Barometric Pressure (mbar): 950~1000	Operation Condition: Continuous transmitting

Note: In this testing, the EUT was respectively tested in three different orientations. That is:

1. EUT was lie vertically, and then its Antenna oriented upward
2. EUT was lie vertically, and then its Antenna oriented downward
3. EUT was lie flatwise, and then its Antenna oriented to the receiving antenna

The worst test data see following pages

When the EUT was lie flatwise, and its Antenna oriented to the receiving antenna, the worst test data was got as following table.

WORST-CASE RADIATED EMISSION BELOW 30 MHz

Normal operating Mode:

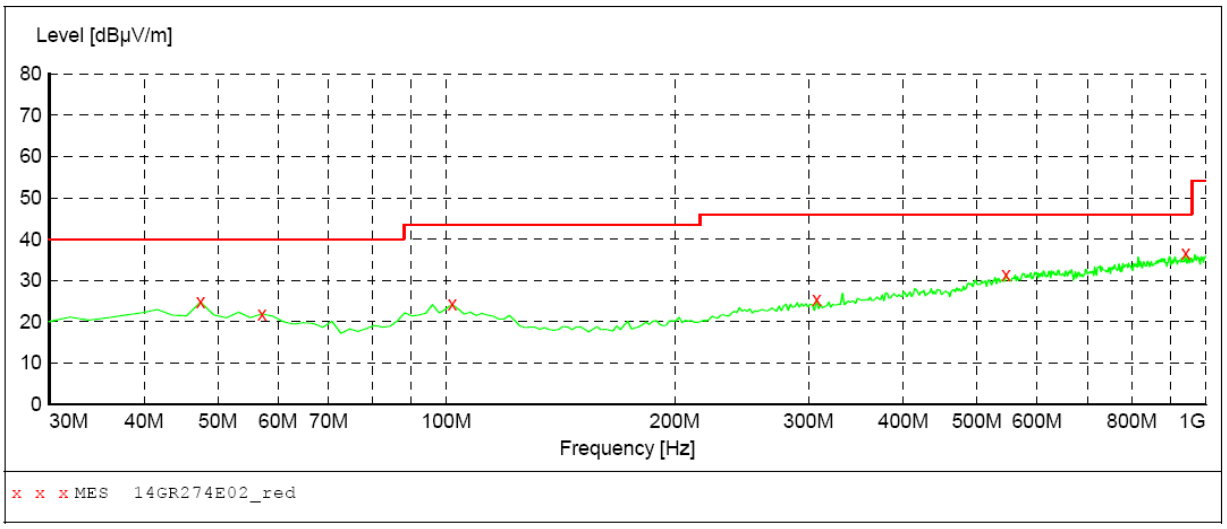
Frequency	Meter Reading	Antenna Factor	Cable Loss	Emission Levels	Limits	Margin	Detector Mode
(MHz)	(dBμV)	(dB/M)	(dB)	(dBμV/M)	(dBμV/M)	(dB)	PK/QP
2.11	24.57	8.25	1.01	31.81	67	-35.19	QP
18.82	23.77	7.57	1.2	30.14	49.5	-19.36	QP
23.68	24.61	8.64	1.05	32.2	49.5	-17.3	QP
27.91	24.76	7.22	1.69	30.29	49.5	-19.21	QP

The worst Spurious Emission Data Below 1GHz Channel Low:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Horizontal
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E02_red"

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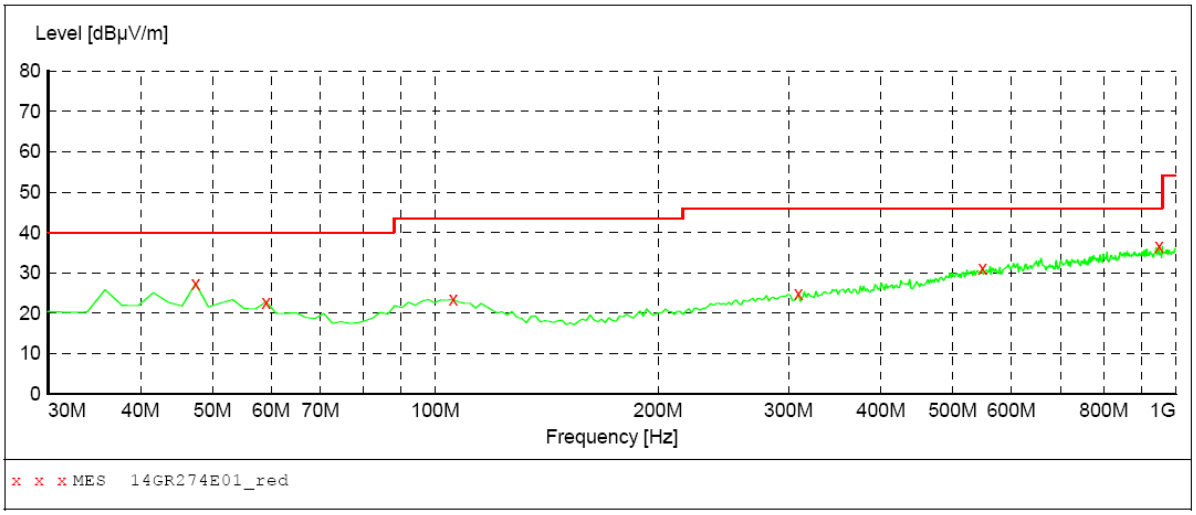
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	24.80	15.8	40.0	15.2	QP	100.0	0.00	HORIZONTAL
57.160000	21.90	15.1	40.0	18.1	QP	100.0	0.00	HORIZONTAL
101.780000	24.20	17.3	43.5	19.3	QP	100.0	0.00	HORIZONTAL
307.420000	25.30	18.9	46.0	20.7	QP	100.0	0.00	HORIZONTAL
546.040000	31.50	24.9	46.0	14.5	QP	300.0	0.00	HORIZONTAL
941.800000	36.50	29.5	46.0	9.5	QP	100.0	0.00	HORIZONTAL

The worst Spurious Emission Data Below 1GHz Channel Low:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Vertical
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E01_red"

7/8/2014 14:17

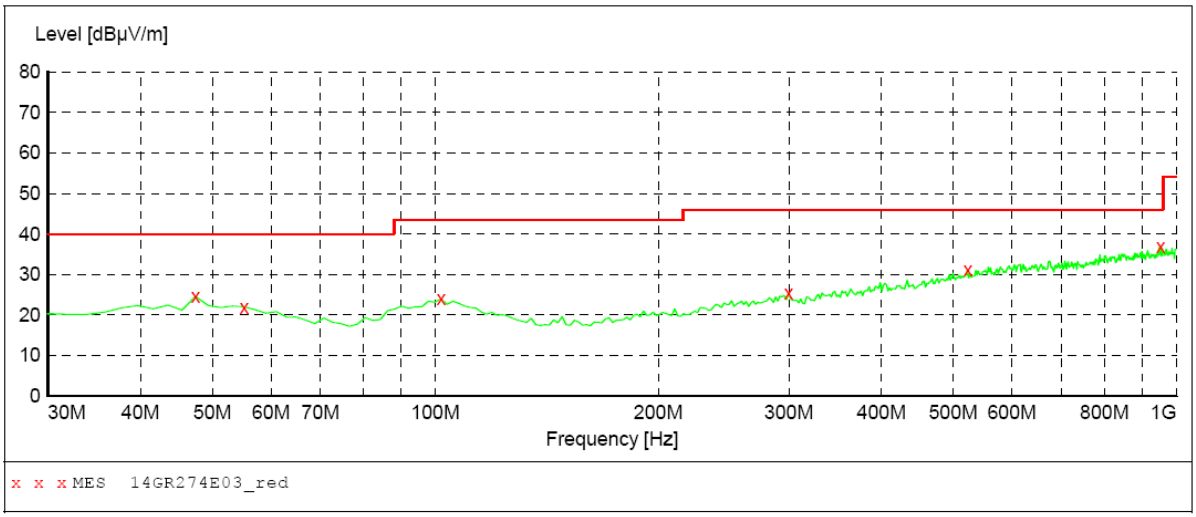
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	27.40	15.8	40.0	12.6	QP	100.0	0.00	VERTICAL
59.100000	22.80	14.6	40.0	17.2	QP	100.0	0.00	VERTICAL
105.660000	23.50	16.9	43.5	20.0	QP	100.0	0.00	VERTICAL
309.360000	24.90	18.9	46.0	21.1	QP	100.0	0.00	VERTICAL
547.980000	31.10	24.9	46.0	14.9	QP	100.0	0.00	VERTICAL
949.560000	36.70	29.6	46.0	9.3	QP	100.0	0.00	VERTICAL

The worst Spurious Emission Data Below 1GHz Channel Middle:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Horizontal
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E03_red"

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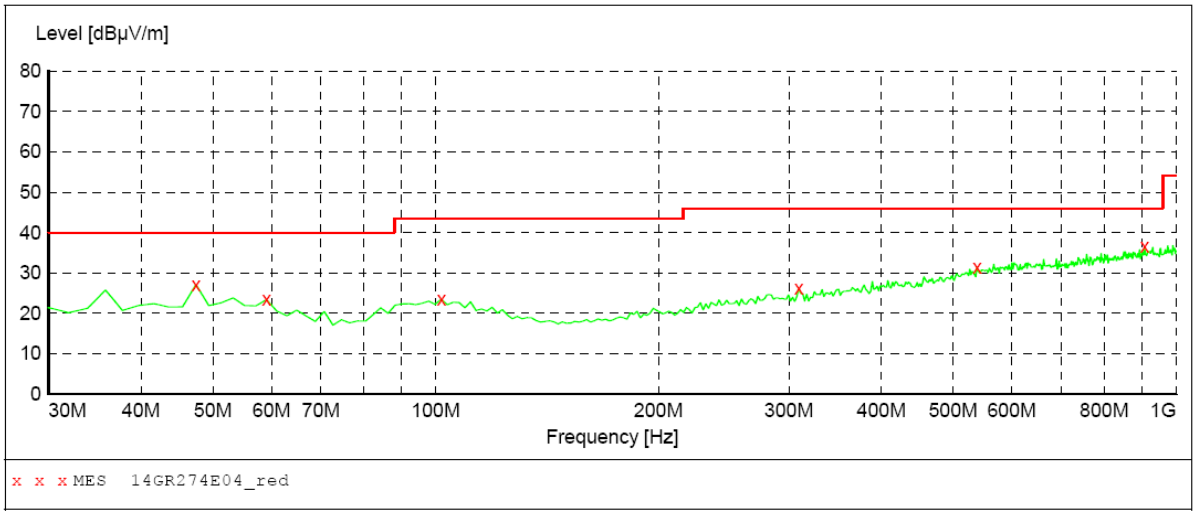
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	24.60	15.8	40.0	15.4	QP	100.0	0.00	HORIZONTAL
55.220000	22.00	15.6	40.0	18.0	QP	100.0	0.00	HORIZONTAL
101.780000	24.00	17.3	43.5	19.5	QP	300.0	0.00	HORIZONTAL
299.660000	25.40	18.7	46.0	20.6	QP	100.0	0.00	HORIZONTAL
522.760000	31.20	24.4	46.0	14.8	QP	100.0	0.00	HORIZONTAL
951.500000	36.80	29.6	46.0	9.2	QP	100.0	0.00	HORIZONTAL

The worst Spurious Emission Data Below 1GHz Channel Middle:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Vertical
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E04_red"

7/8/2014 14:22

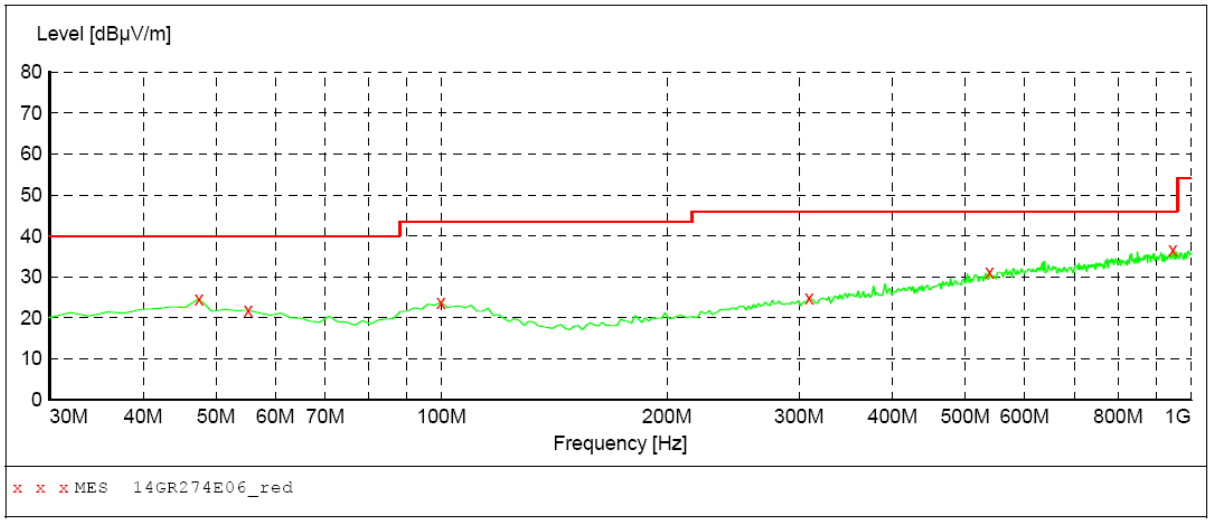
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	27.10	15.8	40.0	12.9	QP	100.0	0.00	VERTICAL
59.100000	23.40	14.6	40.0	16.6	QP	100.0	0.00	VERTICAL
101.780000	23.50	17.3	43.5	20.0	QP	100.0	0.00	VERTICAL
309.360000	26.20	18.9	46.0	19.8	QP	100.0	0.00	VERTICAL
538.280000	31.40	24.7	46.0	14.6	QP	100.0	0.00	VERTICAL
906.880000	36.50	29.2	46.0	9.5	QP	100.0	0.00	VERTICAL

The worst Spurious Emission Data Below 1GHz Channel High:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Horizontal
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E06_red"

7/8/2014 14:25

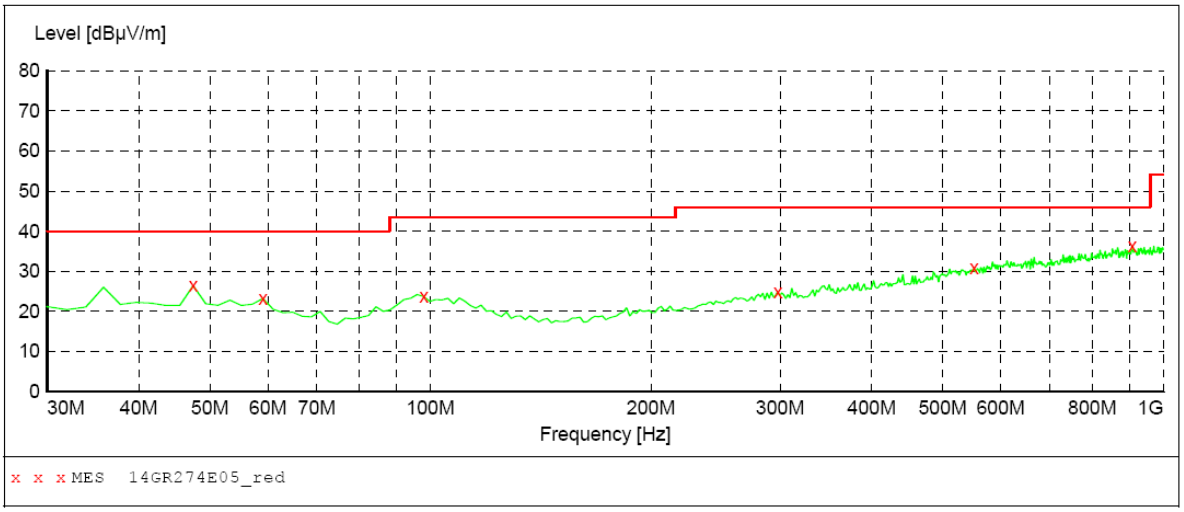
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	24.70	15.8	40.0	15.3	QP	100.0	0.00	HORIZONTAL
55.220000	21.90	15.6	40.0	18.1	QP	100.0	0.00	HORIZONTAL
99.840000	23.90	17.5	43.5	19.6	QP	100.0	0.00	HORIZONTAL
309.360000	24.90	18.9	46.0	21.1	QP	100.0	0.00	HORIZONTAL
538.280000	31.20	24.7	46.0	14.8	QP	100.0	0.00	HORIZONTAL
945.680000	36.50	29.5	46.0	9.5	QP	100.0	0.00	HORIZONTAL

The worst Spurious Emission Data Below 1GHz Channel High:

EUT:	Cyber Dactyl
M/N:	TX-1008
Operating Condition:	Continuous transmitting
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 6.0V From battery
Comment:	Polarization: Vertical
	Tem:25℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "14GR274E05_red"

7/8/2014 14:23

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	26.40	15.8	40.0	13.6	QP	100.0	0.00	VERTICAL
59.100000	23.20	14.6	40.0	16.8	QP	100.0	0.00	VERTICAL
97.900000	23.70	17.4	43.5	19.8	QP	100.0	0.00	VERTICAL
297.720000	24.90	18.7	46.0	21.1	QP	100.0	0.00	VERTICAL
551.860000	30.80	25.0	46.0	15.2	QP	100.0	0.00	VERTICAL
906.880000	36.40	29.2	46.0	9.6	QP	100.0	0.00	VERTICAL

The worst Spurious Emission Data above 1GHz Channel Low

Channel Low（2420.875MHz）								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2420.875	H	1	83.13	-7.15	75.98	114	-38.02	P
			70.15	-7.15	63	94	-31	A
2420.875	V	1	85.31	-7.15	78.16	114	-35.84	P
			71.32	-7.15	64.17	94	-29.83	A
4841.75	H	1	40.31	1.07	41.38	74	-32.62	P
			29.4	1.07	30.47	54	-23.53	A
4841.75	V	1	41.44	1.07	42.51	74	-31.49	P
			29.62	1.07	30.69	54	-23.31	A
7262.625	H	1	40.4	7.38	47.78	74	-26.22	P
			30.1	7.38	37.48	54	-16.52	A
7262.625	V	1	41.66	7.38	49.04	74	-24.96	P
			30.51	7.38	37.89	54	-16.11	A
9683.5	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
9683.5	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
12021.67	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
12021.67	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
25380.37	----	----	----	----	----	----	----	----

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier

Margin = Level-Limit

Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value

2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.

4. The test limit distance is 3m limit

The worst Spurious Emission Data above 1GHz Channel Middle

Channel Low（2446MHz）								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2446	H	1	81.33	-6.37	74.96	114	-39.04	P
			69.45	-6.37	63.08	94	-30.92	A
2446	V	1	83.51	-6.37	77.14	114	-36.86	P
			70.42	-6.37	64.05	94	-29.95	A
4892	H	1	39.15	1.07	40.22	74	-33.78	P
			30.27	1.07	31.34	54	-22.66	A
4892	V	1	40.36	1.07	41.43	74	-32.57	P
			29.85	1.07	30.92	54	-23.08	A
7338	H	1	39.36	7.49	46.85	74	-27.15	P
			29.15	7.49	36.64	54	-17.36	A
7338	V	1	40.36	7.49	47.85	74	-26.15	P
			30.15	7.49	37.64	54	-16.36	A
9784	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
9784	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
12191.67	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
12191.67	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
25380.37	----	----	----	----	----	----	----	----

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier

Margin = Level-Limit

Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value

2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.

4. The test limit distance is 3m limit

The worst Spurious Emission Data above 1GHz Channel High

Channel Low（2472MHz）								
Maximum Frequency (MHz)	Polarity and Level					Limit (dBμV/m)	Margin (dBμV/m)	Mark (P/Q/A)
	Polarity	Height (m)	Reading dBμV	Transd	Result dBμV/m			
2472	H	1	82.13	-6.05	76.08	114	-37.92	P
			69.82	-6.05	63.77	94	-30.23	A
2472	V	1	84.52	-6.05	78.47	114	-35.53	P
			71.09	-6.05	65.04	94	-28.96	A
4944	H	1	39.35	1.07	40.42	74	-33.58	P
			29.13	1.07	30.2	54	-23.8	A
4944	V	1	40.12	1.07	41.19	74	-32.81	P
			31.44	1.07	32.51	54	-21.49	A
7416	H	1	40.31	7.61	47.92	74	-26.08	P
			29.4	7.61	37.01	54	-16.99	A
7416	V	1	41.13	7.61	48.74	74	-25.26	P
			31.51	7.61	39.12	54	-14.88	A
9888	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
9888	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
12361.67	H	1	----	----	----	----	----	P
			----	----	----	----	----	A
12361.67	V	1	----	----	----	----	----	P
			----	----	----	----	----	A
25380.37	----	----	----	----	----	----	----	----

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier

Margin = Level-Limit

Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value

2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.

4. The test limit distance is 3m limit

8. ANTENNA REQUIREMENT

8.1 Standard Applicable

Section 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.

8.2 Antenna Connected Construction

The antenna is designed with permanent attachment and no consideration of replacement.