



FCC TEST REPORT

FCC ID:2BFPA-CB-SL12V-00

Report Number..... : ZKT-240403L3394

Date of Test..... Mar. 20, 2024 to Mar. 28 2024

Date of issue..... : Mar. 28 2024

Total number of pages..... 34

Test Result : PASS

Testing Laboratory..... : **Shenzhen ZKT Technology Co., Ltd.**

Address : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : **Transtek LLC**

Address : 996 Taji Ct, San Jose, CA95122

Manufacturer's name : **Transtek LLC**

Address : 996 Taji Ct, San Jose, CA95122

Test specification:

Standard..... : FCC CFR Title 47 Part 15 Subpart C Section 15.249
ANSI C63.10:2013

Test procedure..... : /

Non-standard test method : N/A

Test Report Form No..... : TRF-EL-108_V0

Test Report Form(s) Originator..... : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name..... : **Control box of LED signal light**

Trademark : Transtek

Model/Type reference..... : CB-SL12V-00, CB12VYYMMxxxx

Ratings..... : DC 12V From Adapter



Testing procedure and testing location:

Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.

**Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China**

Tested by (name + signature).....: Alen He

Reviewer (name + signature).....: Joe Liu

Approved (name + signature).....: Lake Xie



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1.VERSION

Report No.	Version	Description	Approved
ZKT-240403L3394	Rev.01	Initial issue of report	Mar. 28 2024



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Remark
FCC part 15.203	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emission	PASS	
FCC part 15.15.249 (a)	Field strength of the fundamental signal	PASS	
FCC part 15.15.249 (a) (d)/15.209	Spurious emissions	PASS	
FCC part 15.249 (d)/15.205	Band edge	PASS	
FCC part 15.215 (c)	20dB Occupied Bandwidth	PASS	

NOTE:
(1)“N/A” denotes test is not applicable in this Test Report



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ · where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ · providing a level of confidence of approximately 95 % .

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8dB
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59°C



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION

Product Name:	Control box of LED signal light
Model No.:	CB-SL12V-00, CB12VYYMMxxxx
Model Different.:	The product is different for model name.
Serial No.:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	903.529MHz~926.471MHz
Channel Numbers:	16
Modulation Type:	GFSK
Antenna Type:	External antenna
Antenna gain:	7.39dBi
Power supply:	DC 12V From Adapter
Adapter information:	Manufacturer: MEAN WELL ENTERPRISEC CO., LTD Model: RD-50A Input: AC 100-240V, 50/60Hz 1.3A Output: 12V/2A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	903.529 MHz	11	918.824 MHz				
2	905.059 MHz	12	920.353 MHz				
3	906.588 MHz	13	921.882 MHz				
4	908.118 MHz	14	923.412 MHz				
5	909.647 MHz	15	924.941 MHz				
6	911.176 MHz	16	926.471 MHz				
7	912.706 MHz						
8	914.235 MHz						
9	915.765 MHz						
10	917.294 MHz						

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and



the selected channel see below:

Channel	Frequency
The lowest channel	903.529 MHz
The middle channel	914.235MHz
The Highest channel	926.471MHz



3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	Test Tool
Power level setup	<0dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

EUT

Radiated Emission

EUT

3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
/	ADAPTER	MW	RD-50A	/	/

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\

Radiation emissions& Radio Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024



14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

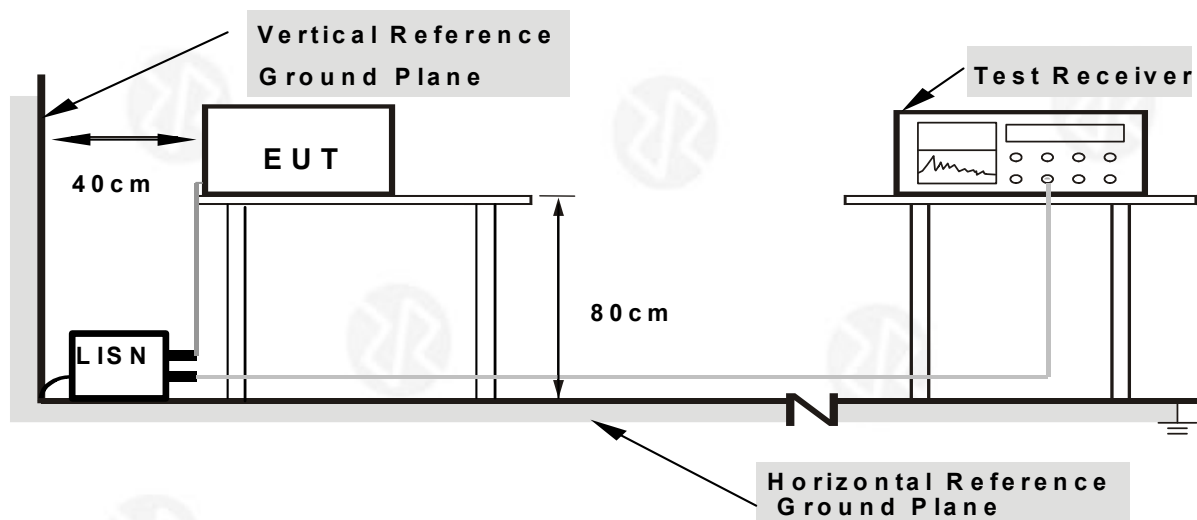
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



- Note:** 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes

4.1.5 EUT OPERATING CONDITIONS

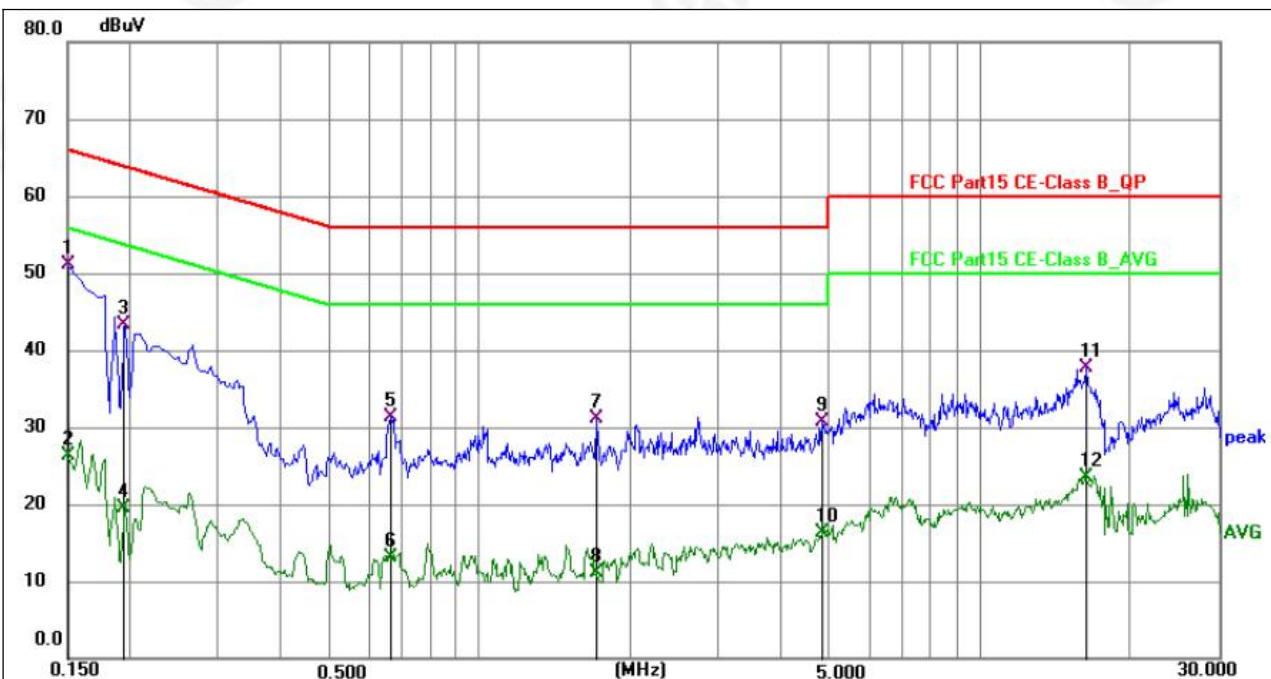
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to Charging during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

4.1.6 Test Result



Temperature :	26℃	Relative Humidity:	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		



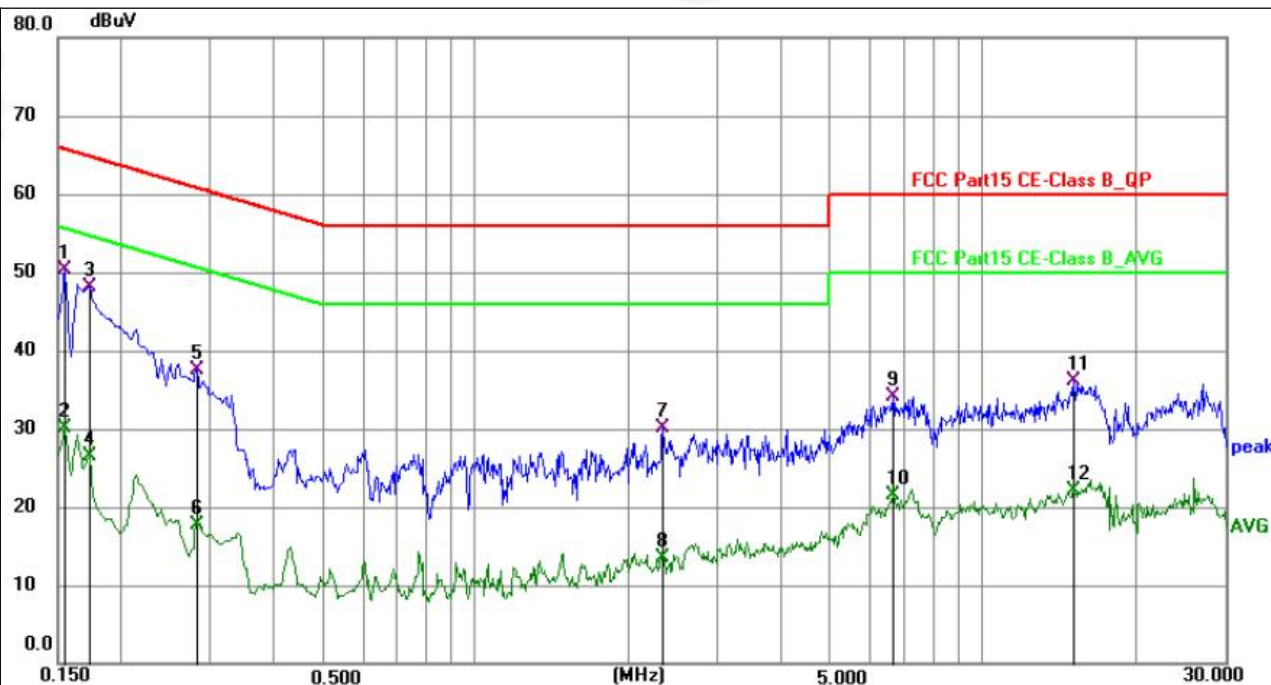
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1500	41.51	9.51	51.02	66.00	-14.98	QP	P	
2	0.1500	16.79	9.51	26.30	56.00	-29.70	AVG	P	
3	0.1949	33.57	9.69	43.26	63.83	-20.57	QP	P	
4	0.1949	9.78	9.69	19.47	53.83	-34.36	AVG	P	
5	0.6630	21.52	9.70	31.22	56.00	-24.78	QP	P	
6	0.6630	3.40	9.70	13.10	46.00	-32.90	AVG	P	
7	1.7159	21.39	9.66	31.05	56.00	-24.95	QP	P	
8	1.7159	1.42	9.66	11.08	46.00	-34.92	AVG	P	
9	4.8434	21.19	9.53	30.72	56.00	-25.28	QP	P	
10	4.8434	6.76	9.53	16.29	46.00	-29.71	AVG	P	
11	16.3365	27.89	9.73	37.62	60.00	-22.38	QP	P	
12	16.3365	13.86	9.73	23.59	50.00	-26.41	AVG	P	

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



Temperature :	26°C	Relative Humidity:	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1545	40.73	9.53	50.26	65.75	-15.49	QP	P	
2	0.1545	20.64	9.53	30.17	55.75	-25.58	AVG	P	
3	0.1725	38.56	9.60	48.16	64.84	-16.68	QP	P	
4	0.1725	16.81	9.60	26.41	54.84	-28.43	AVG	P	
5	0.2805	27.80	9.68	37.48	60.80	-23.32	QP	P	
6	0.2805	8.12	9.68	17.80	50.80	-33.00	AVG	P	
7	2.3370	20.33	9.69	30.02	56.00	-25.98	QP	P	
8	2.3370	3.82	9.69	13.51	46.00	-32.49	AVG	P	
9	6.6525	24.58	9.53	34.11	60.00	-25.89	QP	P	
10	6.6525	12.06	9.53	21.59	50.00	-28.41	AVG	P	
11	15.1395	26.32	9.77	36.09	60.00	-23.91	QP	P	
12	15.1395	12.40	9.77	22.17	50.00	-27.83	AVG	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor



4.2 RADIATED EMISSION MEASUREMENT and Field Strength of The Fundamental Signal

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).



4.2.2 TEST PROCEDURE

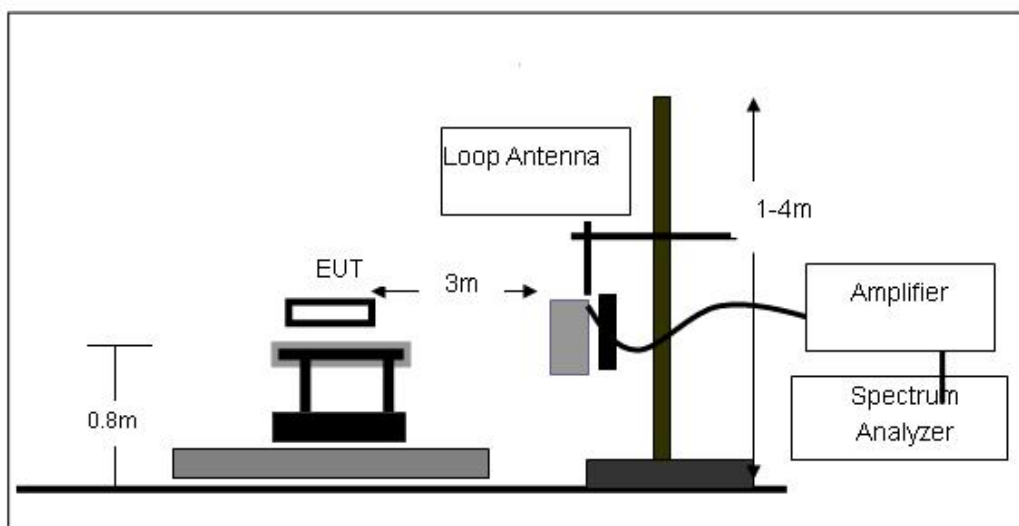
- The measuring distance of at 3 m shall be used for measurements at frequency up to 25GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-chamber test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8m; above 1GHz, the height was 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
Note:
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

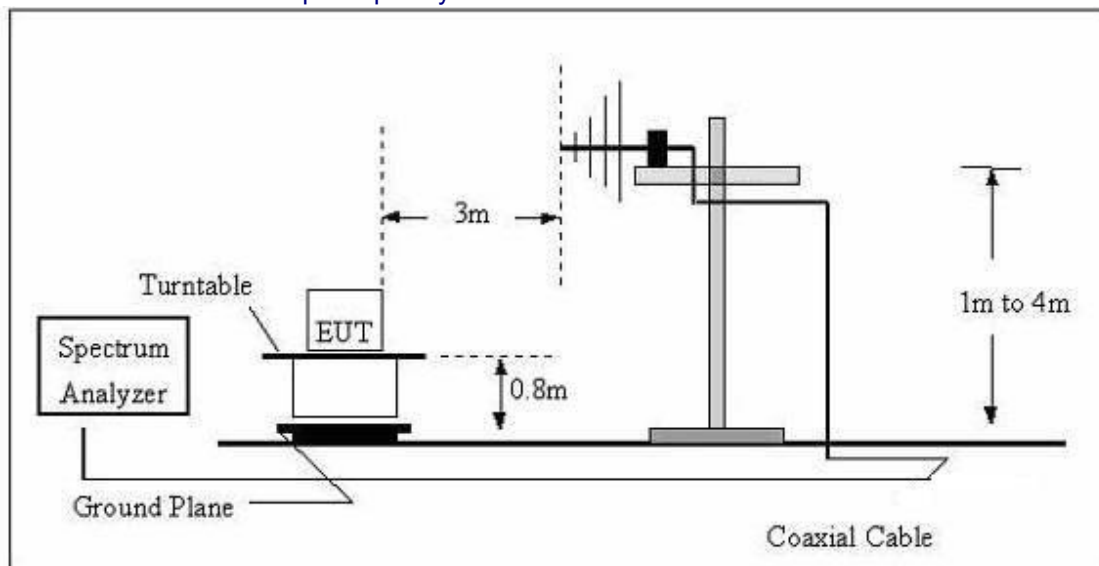
4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

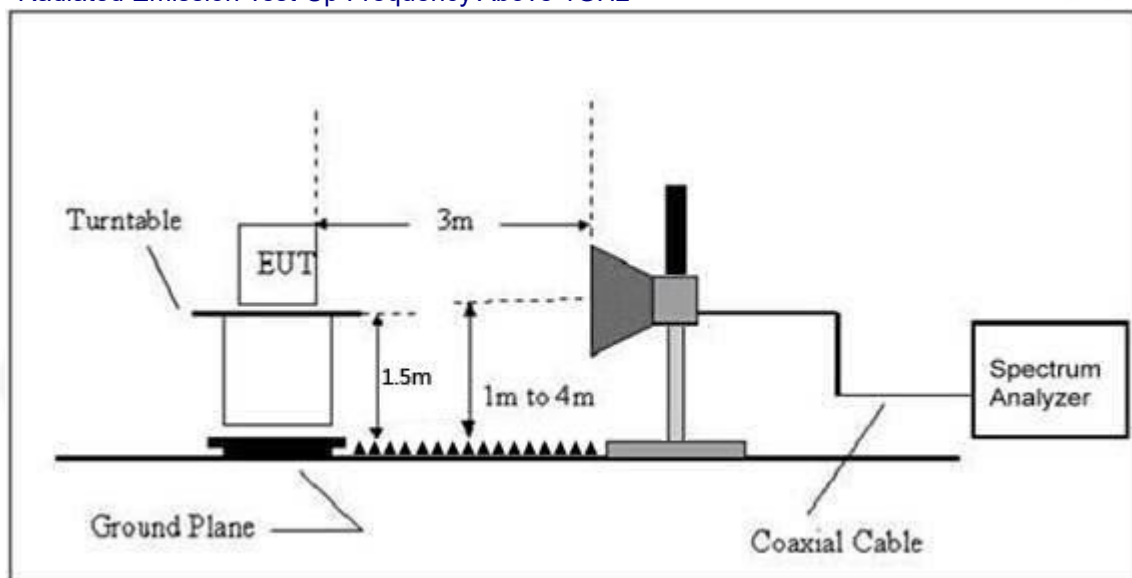




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

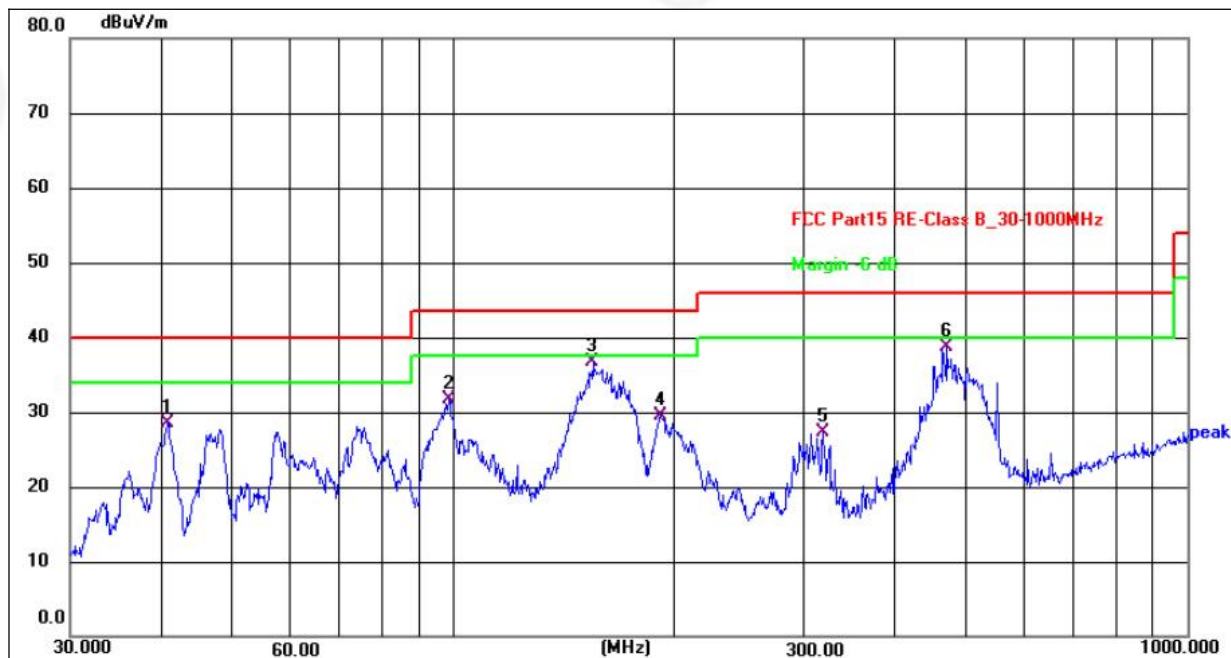
4.2.6 TEST RESULTS (Between 9KHz – 30 MHz)

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



Between 30MHz – 1GHz (Worst case GFSK 903.529 MHz)

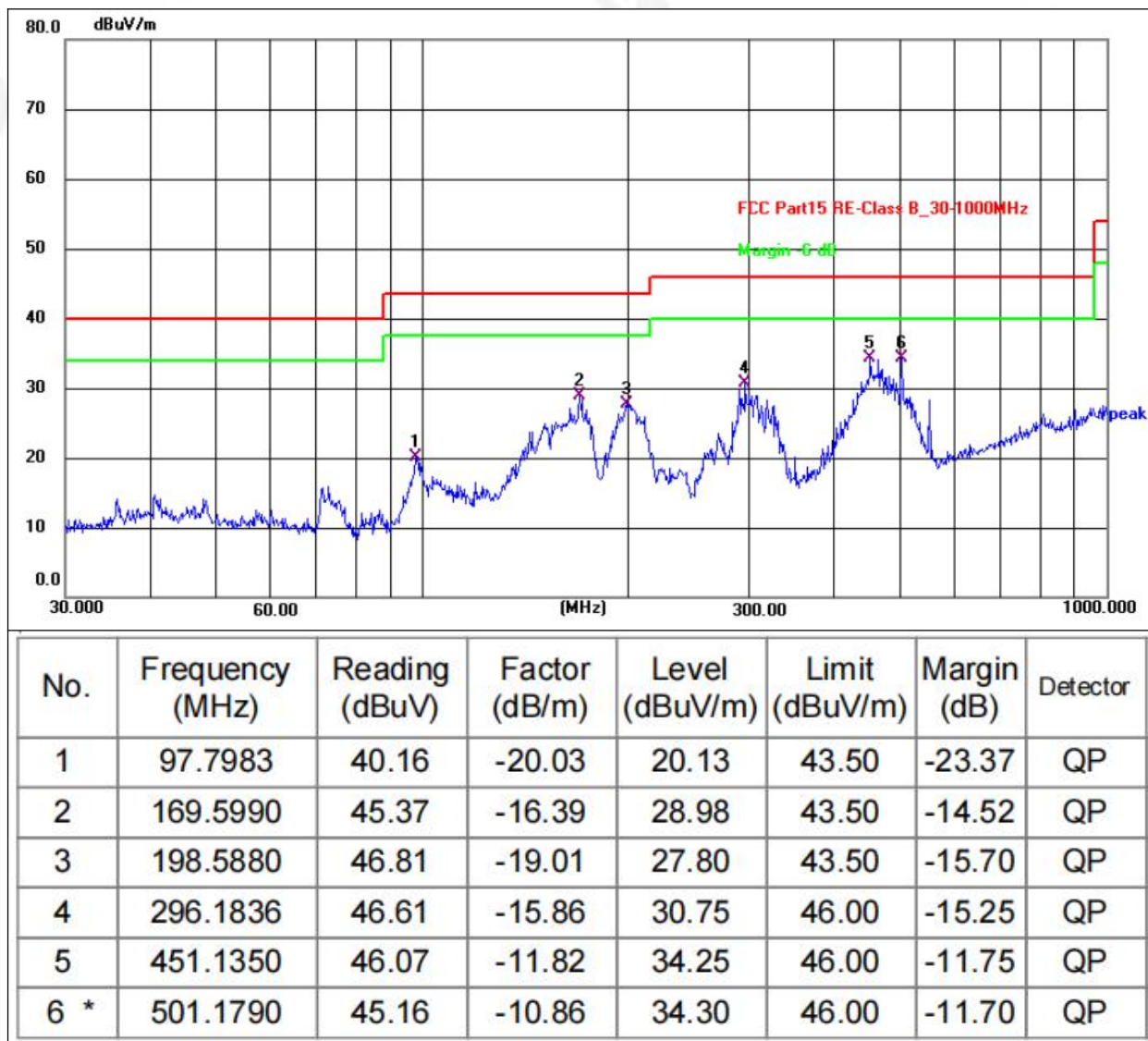
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.7016	44.25	-15.73	28.52	40.00	-11.48	QP
2	98.4866	51.69	-20.03	31.66	43.50	-11.84	QP
3 *	154.8204	52.52	-15.86	36.66	43.50	-6.84	QP
4	191.7450	48.33	-18.78	29.55	43.50	-13.95	QP
5	318.8170	42.72	-15.42	27.30	46.00	-18.70	QP
6	470.5232	50.10	-11.45	38.65	46.00	-7.35	QP



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		



Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3.During testing, the 902-928 MHz fundamental frequency was filtered out



1GHz~25GHz

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:903.529MHz									
V	1807.058	50.35	30.33	6.32	24.55	50.89	74.00	-23.11	Pk
V	1807.058	43.88	30.33	6.32	24.55	44.42	54.00	-9.58	AV
V	2710.587	54.72	30.85	7.45	24.69	56.01	74.00	-17.99	Pk
V	2710.587	43.34	30.85	7.45	24.69	44.63	54.00	-9.37	AV
V	3614.116	52.87	31.02	8.99	25.57	56.41	74.00	-17.59	Pk
V	3614.116	43.07	31.02	8.99	25.57	46.61	54.00	-7.39	AV
H	903.529	52.70	30.55	5.77	24.66	52.58	74.00	-21.42	Pk
H	903.529	43.90	30.55	5.77	24.66	43.78	54.00	-10.22	AV
H	1807.058	53.82	30.33	6.32	24.55	54.36	74.00	-19.64	Pk
H	1807.058	43.59	30.33	6.32	24.55	44.13	54.00	-9.87	AV
H	2710.587	51.09	30.85	7.45	24.69	52.38	74.00	-21.62	Pk
H	2710.587	43.45	30.85	7.45	24.69	44.74	54.00	-9.26	AV
H	3614.116	51.56	31.02	8.99	25.57	55.10	74.00	-18.90	Pk
H	3614.116	43.25	31.02	8.99	25.57	46.79	54.00	-7.21	AV

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:914.235MHz									
V	1828.470	50.60	30.33	6.32	24.55	51.14	74.00	-22.86	Pk
V	1828.470	43.61	30.33	6.32	24.55	44.15	54.00	-9.85	AV
V	2742.705	50.96	30.85	7.45	24.69	52.25	74.00	-21.75	Pk
V	2742.705	43.76	30.85	7.45	24.69	45.05	54.00	-8.95	AV
V	3656.940	53.20	31.02	8.99	25.57	56.74	74.00	-17.26	Pk
V	3656.940	43.15	31.02	8.99	25.57	46.69	54.00	-7.31	AV
H	914.235	50.65	30.55	5.77	24.66	50.53	74.00	-23.47	Pk
H	914.235	43.42	30.55	5.77	24.66	43.30	54.00	-10.70	AV
H	1828.470	51.03	30.33	6.32	24.55	51.57	74.00	-22.43	Pk
H	1828.470	43.35	30.33	6.32	24.55	43.89	54.00	-10.11	AV
H	2742.705	52.00	30.85	7.45	24.69	53.29	74.00	-20.71	Pk
H	2742.705	43.76	30.85	7.45	24.69	45.05	54.00	-8.95	AV
H	3656.940	51.04	31.02	8.99	25.57	54.58	74.00	-19.42	Pk
H	3656.940	43.03	31.02	8.99	25.57	46.57	54.00	-7.43	AV



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Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:926.471MHz									
V	1852.942	53.59	30.33	6.32	24.55	54.13	74.00	-19.87	Pk
V	1852.942	43.82	30.33	6.32	24.55	44.36	54.00	-9.64	AV
V	2779.413	52.76	30.85	7.45	24.69	54.05	74.00	-19.95	Pk
V	2779.413	43.11	30.85	7.45	24.69	44.40	54.00	-9.60	AV
V	3705.884	51.19	31.02	8.99	25.57	54.73	74.00	-19.27	Pk
V	3705.884	43.43	31.02	8.99	25.57	46.97	54.00	-7.03	AV
H	926.471	53.83	30.55	5.77	24.66	53.71	74.00	-20.29	Pk
H	926.471	43.03	30.55	5.77	24.66	42.91	54.00	-11.09	AV
H	1852.942	52.84	30.33	6.32	24.55	53.38	74.00	-20.62	Pk
H	1852.942	43.27	30.33	6.32	24.55	43.81	54.00	-10.19	AV
H	2779.413	50.40	30.85	7.45	24.69	51.69	74.00	-22.31	Pk
H	2779.413	43.65	30.85	7.45	24.69	44.94	54.00	-9.06	AV
H	3705.884	52.17	31.02	8.99	25.57	55.71	74.00	-18.29	Pk
H	3705.884	43.14	31.02	8.99	25.57	46.68	54.00	-7.32	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Field Strength of The Fundamental Signal Data

Low CH

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
903.529	89.25	PK	222	1.9	H	-4.06	85.19	114.00	-28.81
903.529	87.26	Ave	52	1.1	V	-4.06	83.20	94.00	-10.80
903.529	90.63	PK	62	1.8	H	-4.06	86.57	114.00	-27.43
903.529	88.26	Ave	103	1.5	V	-4.06	84.20	94.00	-9.80

Mid CH

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
914.235	88.36	PK	60	1.5	H	-3.97	84.39	114.00	-29.61
914.235	86.25	Ave	25	1.4	V	-3.97	82.28	94.00	-11.72
914.235	88.39	PK	199	1.4	H	-3.97	84.42	114.00	-29.58
914.235	85.16	Ave	12	1.8	V	-3.97	81.19	94.00	-12.81

High CH

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
926.471	90.25	PK	354	1.5	H	-3.90	86.35	114.00	-27.65
926.471	88.25	Ave	4	2.0	V	-3.90	84.35	94.00	-9.65
926.471	89.14	PK	169	1.1	H	-3.90	85.24	114.00	-28.76
926.471	87.24	Ave	220	1.6	V	-3.90	83.34	94.00	-10.66



5. RADIATED BAND EMISSION MEASUREMENT

5.1 TEST REQUIREMENT:

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (900MHz to 1000MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Below 1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Average	1MHz	3MHz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

5.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.



- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the Highest channel

Note:

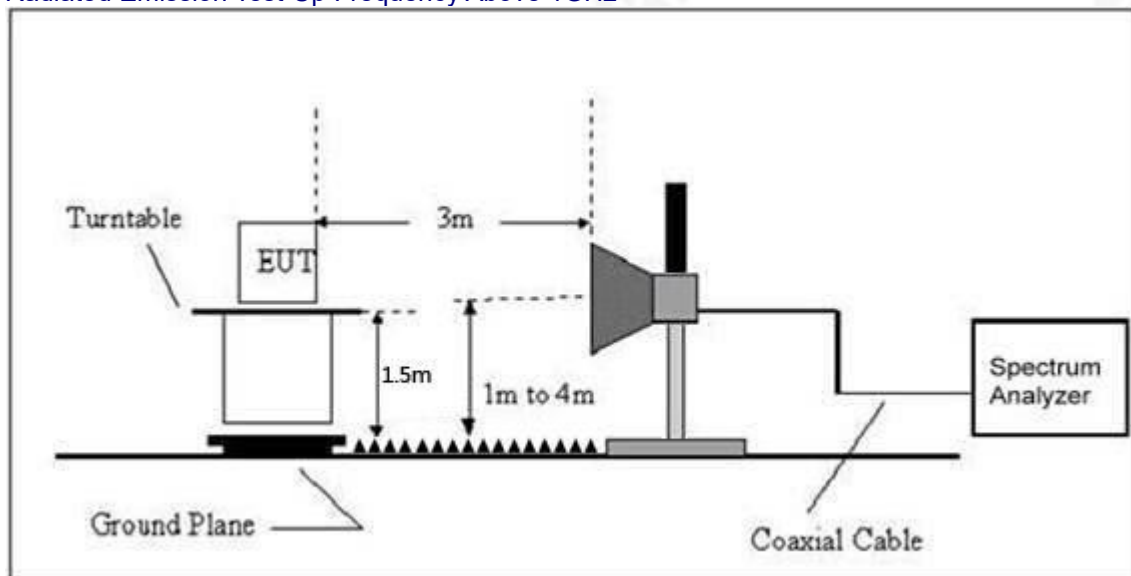
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



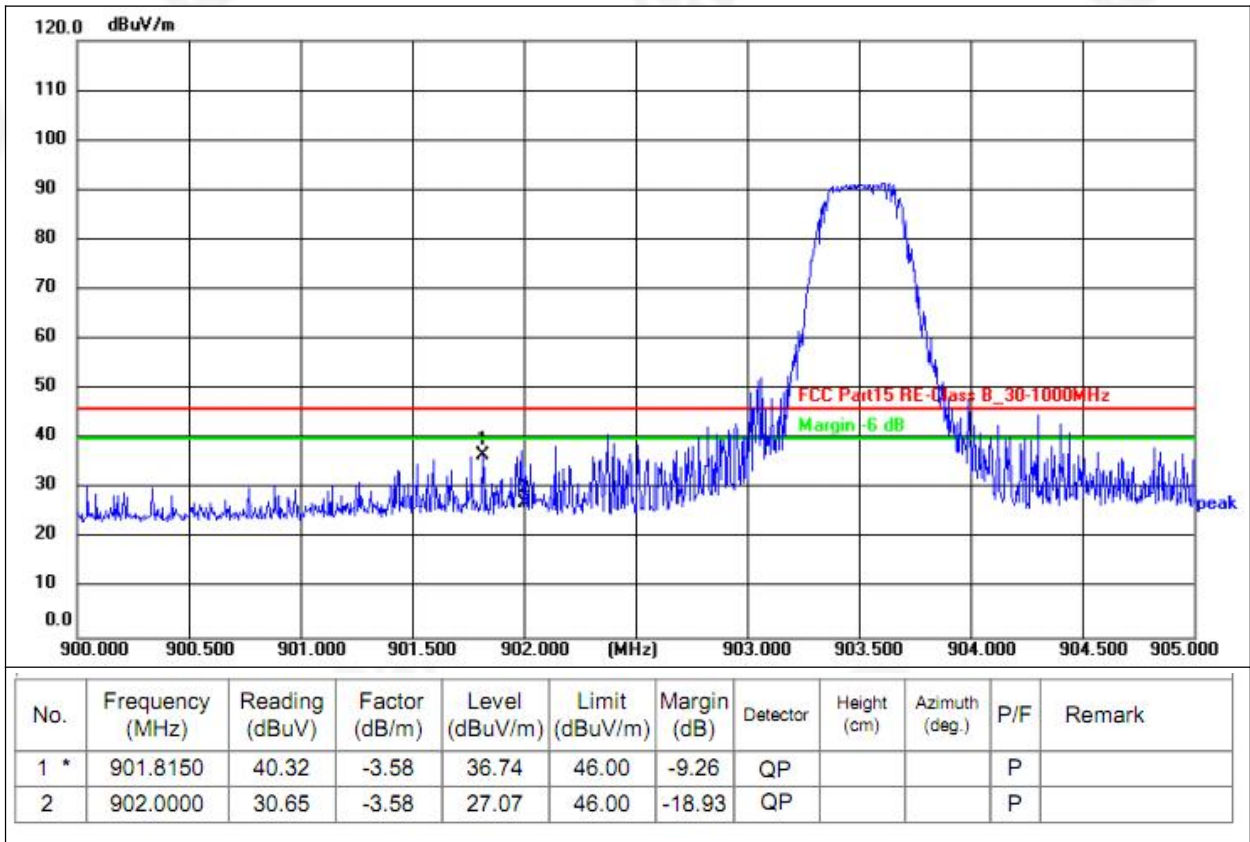
5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



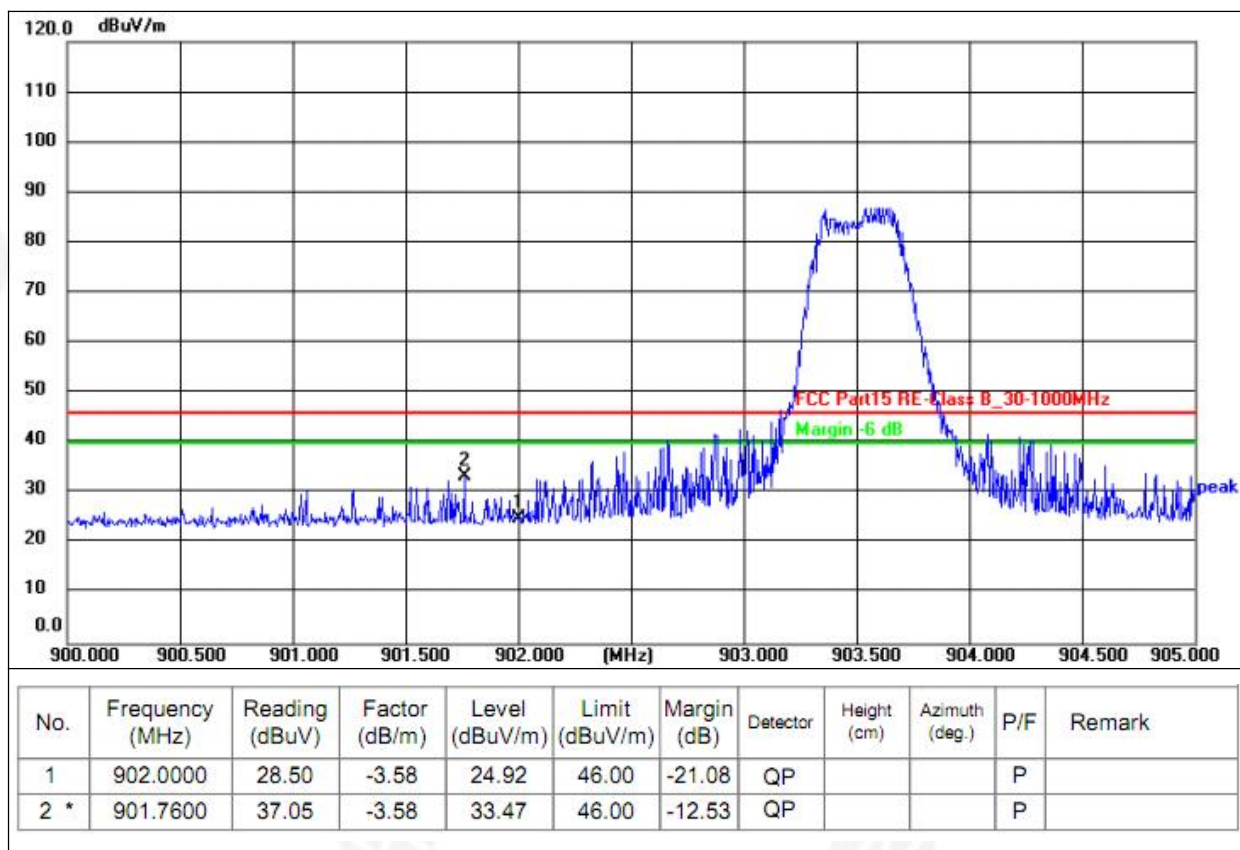
5.6 TEST RESULT

Polarization:	H
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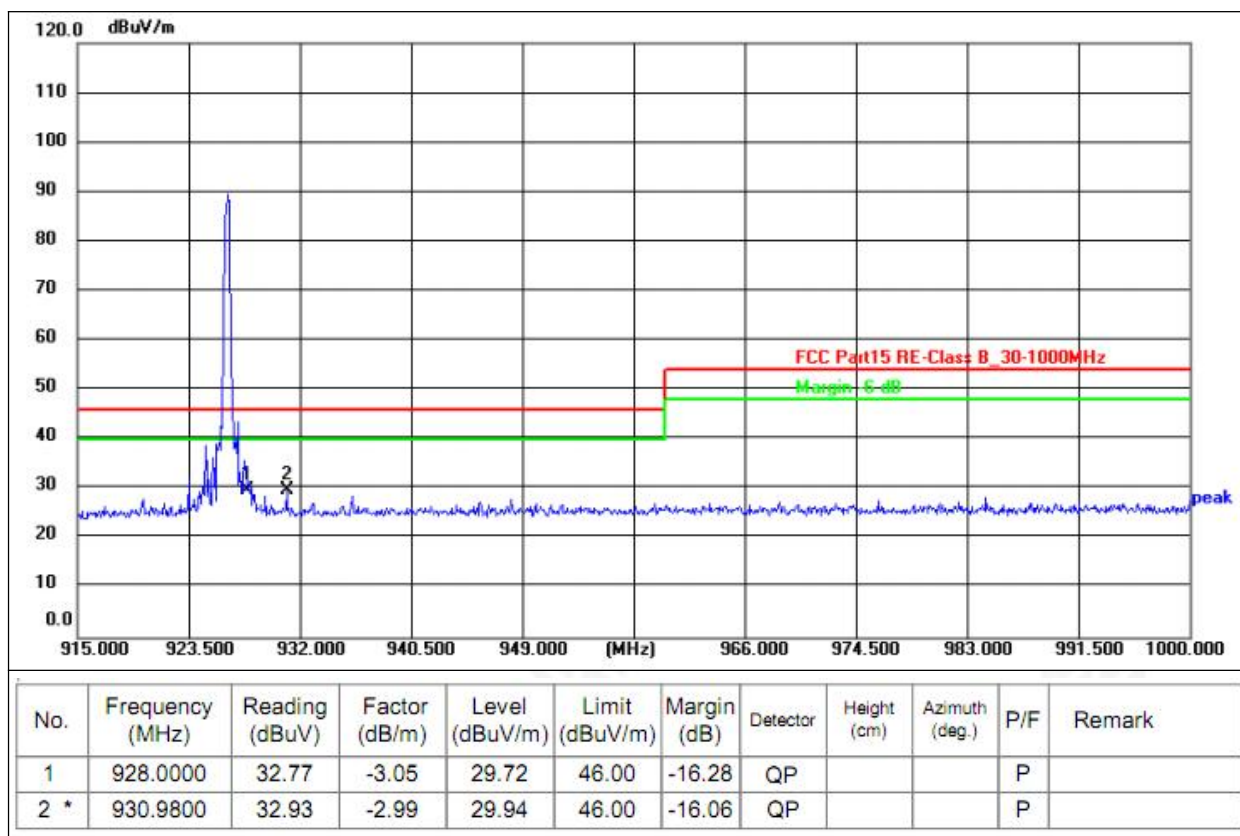




Polarization: V

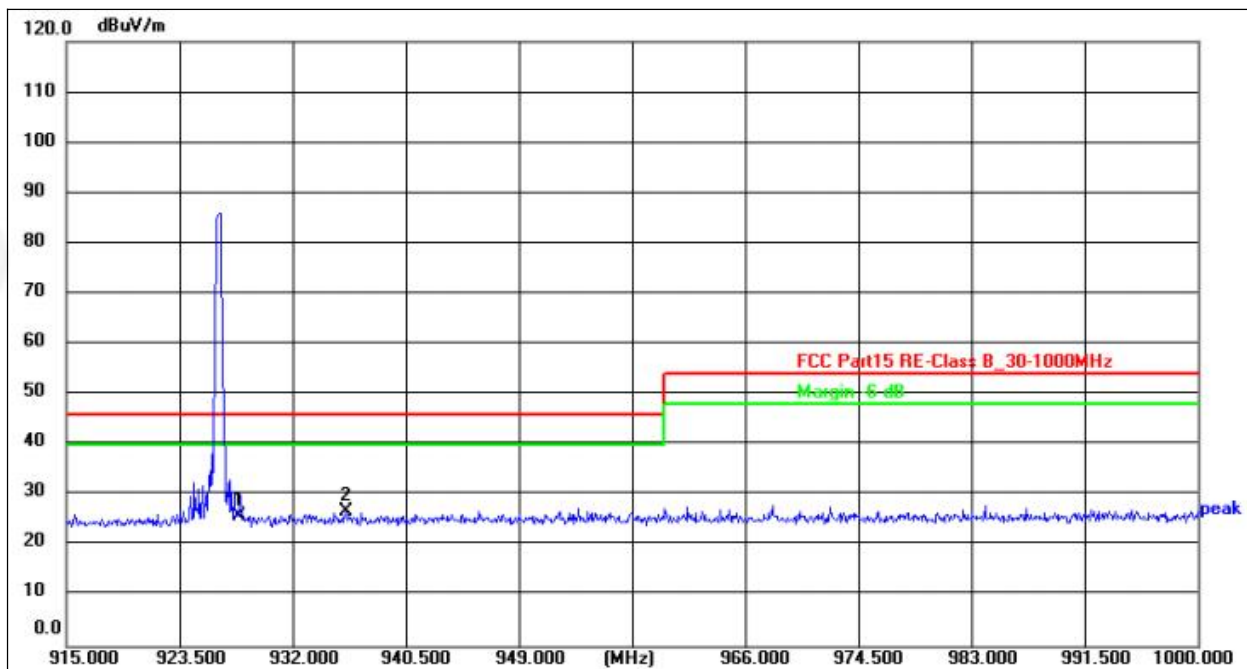


Polarization: H





Polarization: V



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	928.0000	28.96	-3.05	25.91	46.00	-20.09	QP			P	
2 *	935.9950	29.84	-2.89	26.95	46.00	-19.05	QP			P	



6. CHANNEL BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.249
Test Method:	KDB558074 D0115.249 Meas Guidance v05r02

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.249) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.249	Bandwidth	(-20dB bandwidth)	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set RBW = 9.1 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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 6 dB relative to the maximum level measured in the fundamental emission.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

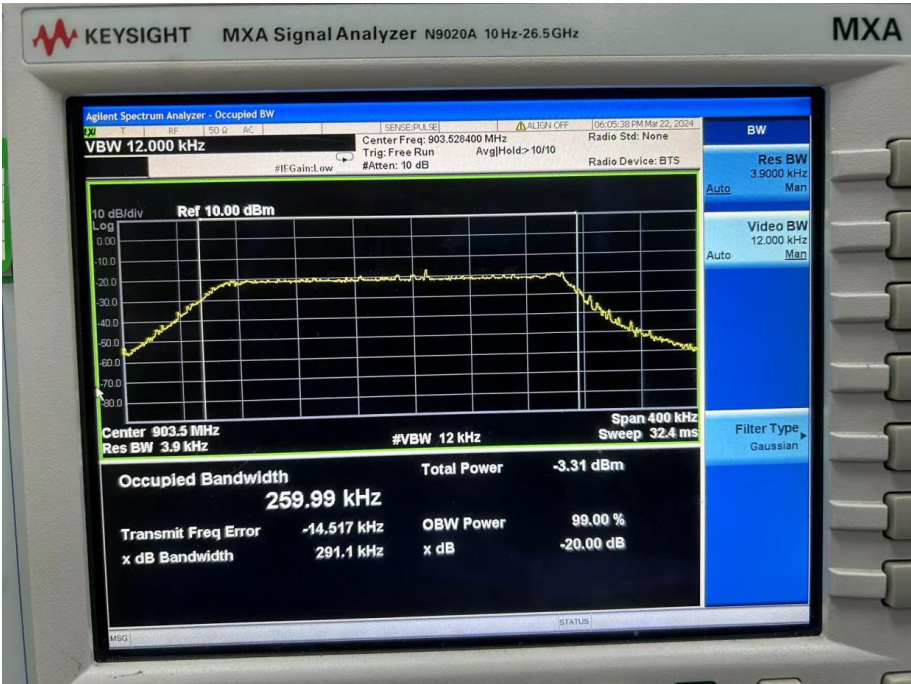
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



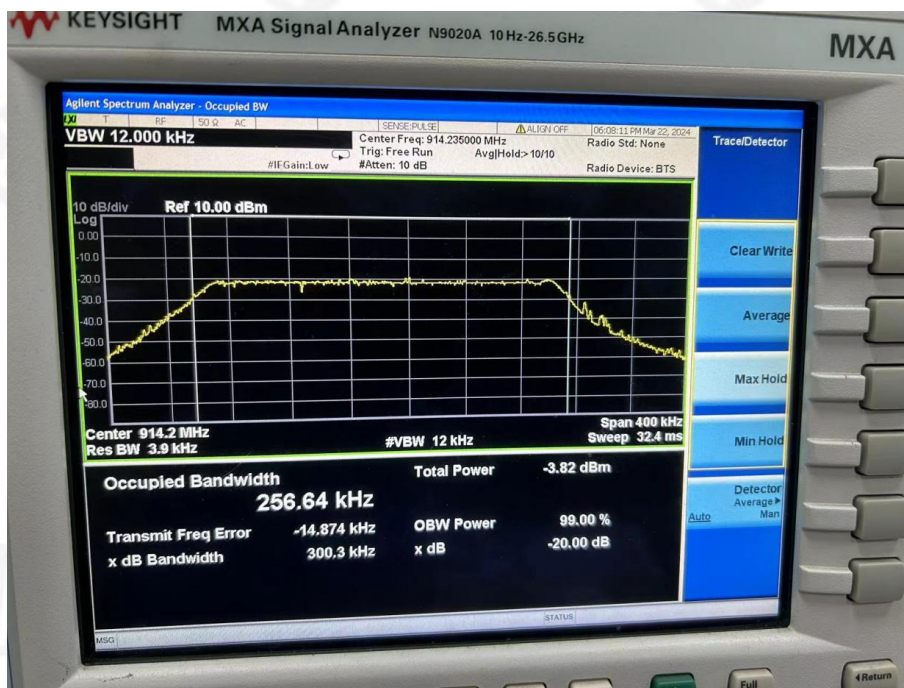
6.6 TEST RESULT

Temperature :	26℃	Relative Humidity :	54%
Test Mode :	GFSK	Test Voltage :	AC 120V/60Hz

Test channel	-20dB Channel Bandwidth (MHz)	Result
Lowest	0.291	Pass
Middle	0.300	
Highest	0.289	



-20dB Bandwidth 903.529MHz Ant1



-20dB Bandwidth 914.235MHz Ant1



-20dB Bandwidth 926.471MHz Ant1



8.ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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, 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.	
EUT Antenna:	
The antenna is a External antenna, the best case gain of the antenna is 7.39dBi, reference to the appendix II for details	



11. TEST SETUP PHOTO

Reference to the appendix I for details.

12. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

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