



World Standardization Certification & Testing CO.,LTD
World Standardization Safety and EMC Testing Centre

FCC ID TEST REPORT

for

Bluetooth Dongle

MODEL: I-BTD-04

FCC ID:WQ7I-BTD

Test Report Number: WSCT09110494E

Issued Date: November 27, 2009

Issued for

Ipopman Technology Limited

Rm A409,4F, East Building 2, Saige Science & Technology Park, Huaqiang North Rd, Futian District, Shenzhen, China

Issued By:

WORLD STANDARDIZATION CERTIFICATION & TESTING CO., LTD.
1-2/F, DaChong Science&Technology Building, No.28 of Tonggu Road,
Nanshan District, ShenZhen.PRC

TEL: +86-755-26996192

FAX: +86-755-26996253

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Revised:None

Revision History Of Report

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	WSCT09110494E	Initial Issue	ALL	Kallen Wang

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1 TEST CERTIFICATION

Product:	Bluetooth Dongle
Model:	I-BTD-04
Applicant:	Ipopman Technology Limited Rm A409,4F, East Building 2, Saige Science & Technology Park, Huaqiang North Rd, Futian District. Shenzhen, China
Manufacturer:	Ipopman Technology Limited Rm A409,4F, East Building 2, Saige Science & Technology Park, Huaqiang North Rd, Futian District. Shenzhen, China
Trade Mark:	N/A
Tested:	November 23 ~ 27,2009
Test Voltage:	DC 5V
Applicable Standards:	FCC Part 15 Subpart C: 2007 ANSI C63.4:2003

Deviation from Applicable Standard

None

The above equipment has been tested by World Standardization Certification & Testing Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: _____

Date: 2009/11/27

(Joe Lin)

Check By: _____

Date: 2009/11/27

(Kelly Wu)

Approved By:

Date: 2009/11/27

(Kallen Wang)



Report reference No.:WSCT09110494E

Issued: November 27, 2009

Revised:None

2 TEST RESULT SUMMARY

Standard	Item	Result
FCC Part 15 Subpart C: Clause 15.249	Conducted emission Test	PASS
	Radiation Emission Test	PASS
	Band edge test	PASS

Note: 1. The test result judgment is decided by the limit of test standard
2. The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

Product	Bluetooth Dongle
Trade Mark	N/A
Model	I-BTD-04
Applicant	Ipopman Technology Limited
Housing material	Plastic/Metal
EUT Type	<input checked="" type="checkbox"/> Engineering Sample. <input type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
Serial Number	N/A
Antenna Type	Integral Antenna
EUT Power Rating	DC 5V
Temperature Range(Operating)	+15 ~+ 35°C
Type of the Equipment	Combined Equipment
Operating Frequency	2402MHz to 2480MHz
Number of Channels	79 Channels
Channel Separation	1MHz
Modulation type	FHSS(Frequency Hopping Spread Spectrum); Adaptive Frequency Hopping(AFH) is used.
Dwell time	Each channel is less than 0.4S.

Model Differences

N/A

Note: N/A stand for no applicable.

Bluetooth module channel form:

Channel No.	Operation Frequency(MHz)	Channel No.	Operation frequency(MHz)
CH1	2402	CH41	2442
CH2	2403	CH42	2443
CH3	2404	CH43	2444
CH4	2405	CH44	2445
CH5	2406	CH45	2446
CH6	2407	CH46	2447
CH7	2408	CH47	2448
CH8	2409	CH48	2449
CH9	2410	CH49	2450
CH10	2411	CH50	2451
CH11	2412	CH51	2452
CH12	2413	CH52	2453
CH13	2414	CH53	2454
CH14	2415	CH54	2455
CH15	2416	CH55	2456
CH16	2417	CH56	2457
CH17	2418	CH57	2458
CH18	2419	CH58	2459
CH19	2420	CH59	2460
CH20	2421	CH60	2461
CH21	2422	CH61	2462
CH22	2423	CH62	2463
CH23	2424	CH63	2464
CH24	2425	CH64	2465
CH25	2426	CH65	2466
CH26	2427	CH66	2467
CH27	2428	CH67	2468
CH28	2429	CH68	2469
CH29	2430	CH69	2470
CH30	2431	CH70	2471
CH31	2432	CH71	2472
CH32	2433	CH72	2473
CH33	2434	CH73	2474
CH34	2435	CH74	2475
CH35	2436	CH75	2476
CH36	2437	CH76	2477
CH37	2438	CH77	2478
CH38	2439	CH78	2479
CH39	2440	CH79	2480
CH40	2441		

4 TEST METHODOLOGY

4.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the below additional components, and configuration, which produced the worst emission levels, was selected and recorded in this report.

the following test mode was recorder in this report.

Test item	Test mode
Conducted emission Test	CH1, CH40, CH79
Radiation Emission Test	CH1, CH40, CH79
Band Edge Test	CH1, CH79,

4.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

Note: Test program is self-repeating throughout the test.

5 SETUP OF EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF SUPPORT UNITS

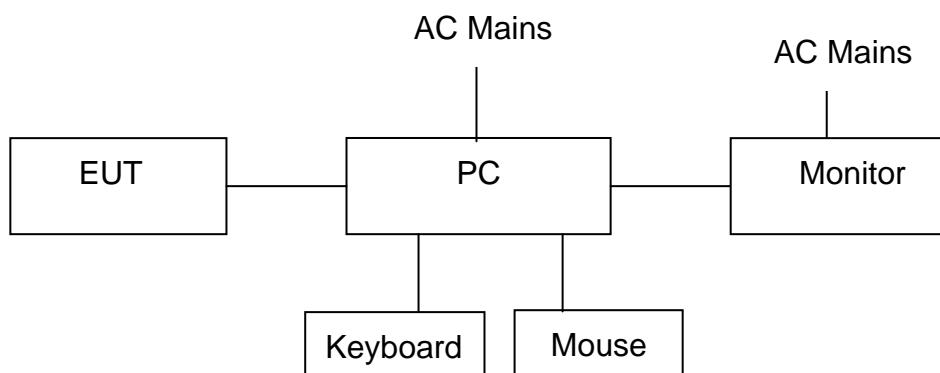
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	PC	DX2700	CNG714077P	N/A	HP	shielded 1.5m	Unshielded 1.8m
2	Monitor	L1706V	CON74535YZ	N/A	HP	Shielded 1.8m	Unshielded 1.8m
3	Keyboard	SK-2800	435302-AA1	N/A	HP	Unshielded 1.5m	N/A
4	Mouse	M-SBF96	417966-001	N/A	HP	Unshielded 1.5m	N/A

Note:

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST



6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at 1-2/F, DaChong Science&Technology Building, No.28 of Tonggu Road, Nanshan District, Shenzhen, PRC

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC (certificate registration number is 276008) TIMCO (certificate registration number is Q2001)
Japan	VCCI (certificate registration number is C-2912, R-2662)
Germany	TUV Rheinland
Canada	INDUSTRY CANADA (certificated registration number is 46405-7700)

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.wsct.org.cn>

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency		Uncertainty
Conducted emissions	9kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~ 1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~ 1000MHz	+/- 4.93dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

7 Test Requirements

7.1. CONDUCTED EMISSION MEASUREMENT

7.1.1. LIMITS

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI	100005	06/23/2010
LISN	AFJ	LS16	16010222119	04/02/2010
LISN(EUT)	Meestec	AN3016	04/10040	04/02/2010

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).
2. N.C.R = No Calibration Request.

7.1.3. TEST PROCEDURES

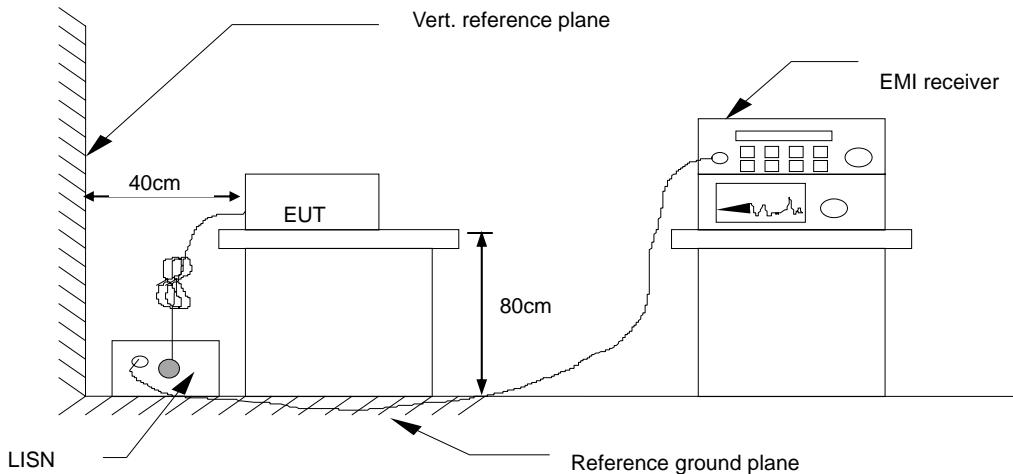
The EUT was put on a wooden table which was 0.8metre high above the ground and connected to the AC mains through a Artificial Mains Network (A.M.N). The mains lead in excess of 1 m separating the EUT from the AMN was folded back and forth parallel to the lead so as to form a bundle with a length of 0.3m to 0.4m. The EUT was kept 0.4m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during conducted emission test.

The bandwidth of the test receiver (ESCI) was set at 9KHz.

The frequency range from 150 KHz to 30 MHz was investigated.

The test data of the worst-case condition(s) was recorded.

7.1.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.5. Test Result

Model No.	I-BTD-04	6dB Bandwidth	10 KHz
Environmental Conditions	26°C, 60% RH	Test Mode	Rx Mode
Detector Function	Peak / Quasi-peak/AV	Test Result	Pass
Test By	Eric Yang		

NOTE: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

2. “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level(dBuV) = Receiver reading

Corr. Factor (dB) = Attenuator Factor+ Cable loss

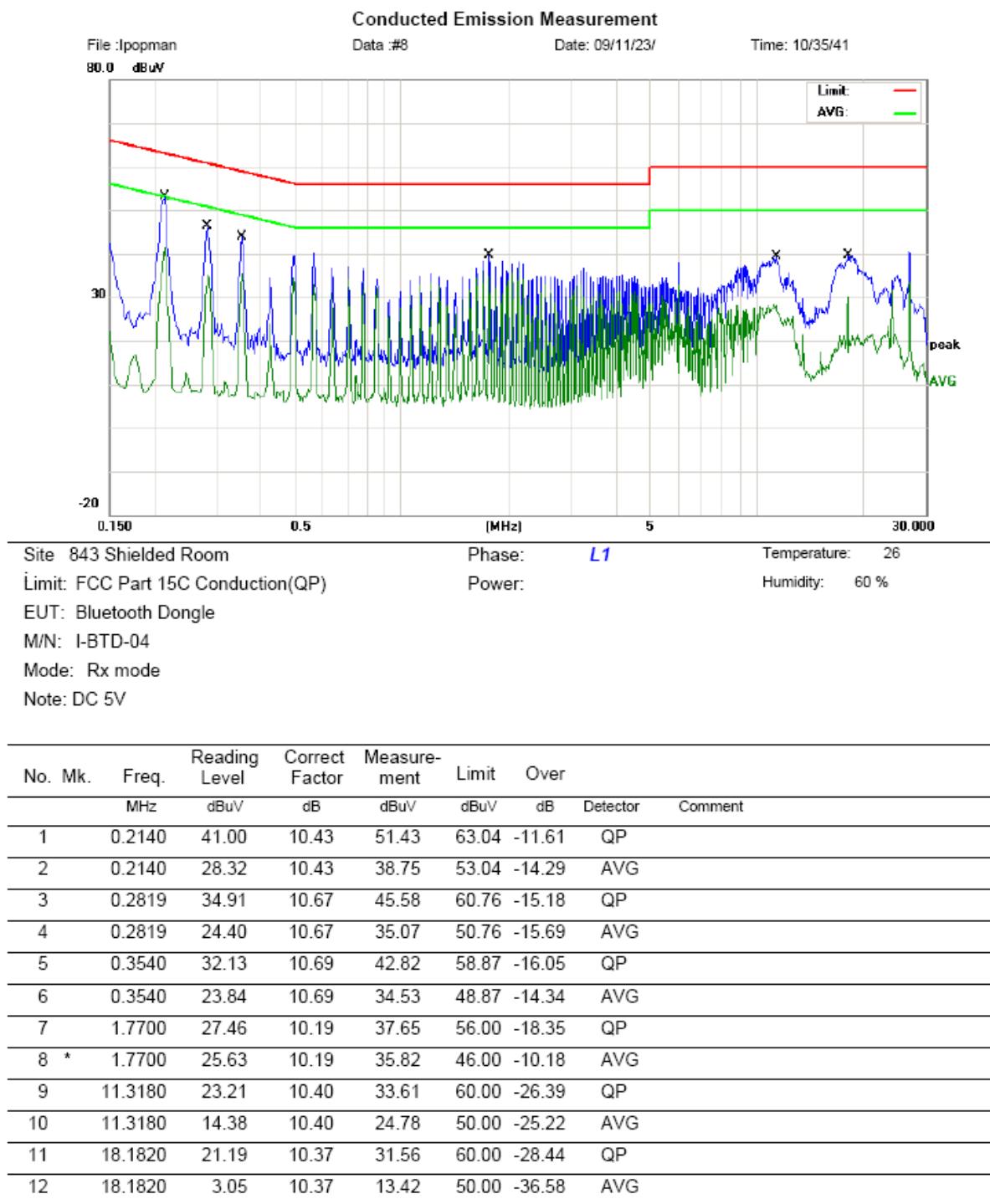
Level (dBuV) = Reading level(dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Level (dBuV) – Limits (dBuV)

Q.P.=Quasi-Peak

Please refer to following diagram for individual



*:Maximum data x:Over limit !:over margin

(Reference Only)

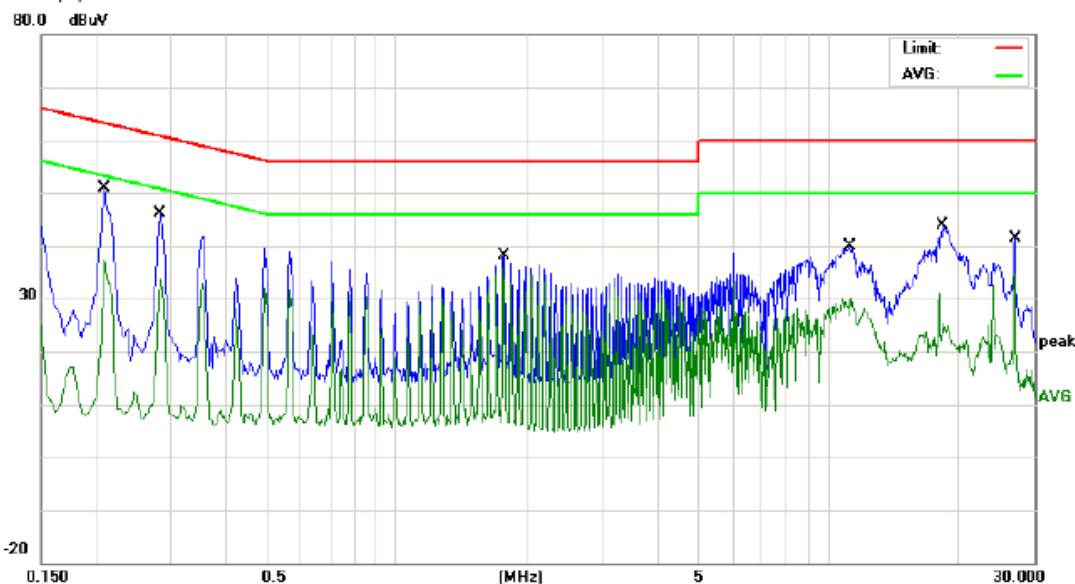
Conducted Emission Measurement

File :ipopman

Data :#9

Date: 09/11/23/

Time: 10:41:01



Site: 843 Shielded Room

 Phase: **N**

Temperature: 26

Limit: FCC Part 15C Conduction(QP)

Power:

Humidity: 60 %

EUT: Bluetooth Dongle

M/N: I-BTD-04

Mode: Rx mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	39.88	10.42	50.30	63.20	-12.90	QP	
2		0.2100	24.72	10.42	35.14	53.20	-18.06	AVG	
3		0.2819	34.78	10.67	45.45	60.76	-15.31	QP	
4		0.2819	22.24	10.67	32.91	50.76	-17.85	AVG	
5		1.7740	26.81	10.19	37.00	56.00	-19.00	QP	
6	*	1.7740	23.81	10.19	34.00	46.00	-12.00	AVG	
7		11.2540	21.58	10.40	31.98	60.00	-28.02	QP	
8		11.2540	5.57	10.40	15.97	50.00	-34.03	AVG	
9		18.3380	21.31	10.36	31.67	60.00	-28.33	QP	
10		18.3380	11.20	10.36	21.56	50.00	-28.44	AVG	
11		27.0340	28.23	10.38	38.61	60.00	-21.39	QP	
12		27.0340	24.36	10.38	34.74	50.00	-15.26	AVG	

*:Maximum data x:Over limit !:over margin

(Reference Only)

7.2. Radiation Emission Test

7.2.1. Limits

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency	Field Strength of Fundamental		Field Strength of Spurious	
	mV/meter	dBuV/meter	uV/meter	dBuV/meter
902-928MHz	50	94	500	54
2400-2483.5MHz	50	94	500	54
5725-5875MHz	50	94	500	54
24.0-24.25GHz	250	108	2500	68

The above field strength limits are specified at a distance of 3 meters. Emissions radiated outside of the specified bands,shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength uV/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

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Frequency Range of Radiated Measurement(For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes(MHz)	Range(MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 th harmonic of the highest frequency or 40GHz, whichever is lower

7.2.2. Test procedure

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band of 30MHz to 1GHz, The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna (calibrated by dipole antenna) was used as a receiving antenna. At the frequency band of 1GHz to 25GHz, The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used as a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 120 KHz and 300KHz for Quasi-peak detection at frequency below 1GHz.

The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 3MHz for Peak detection at frequency above 1GHz.

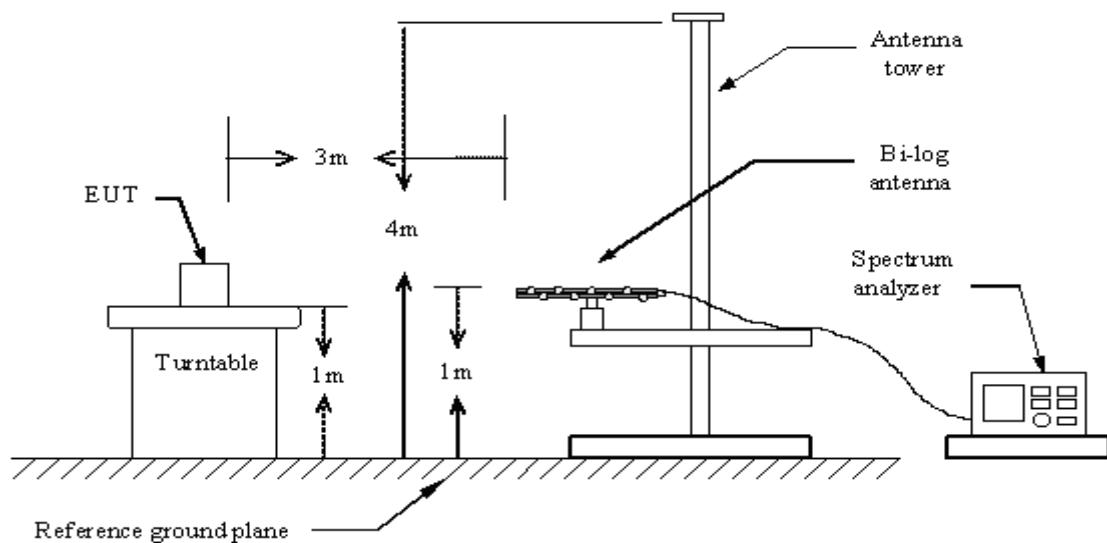
The resolution bandwidth of the test receiver was 1MHz and the video bandwidth are 10Hz for Average detection at frequency above 1GHz.

The EUT was tested in Chamber Site.

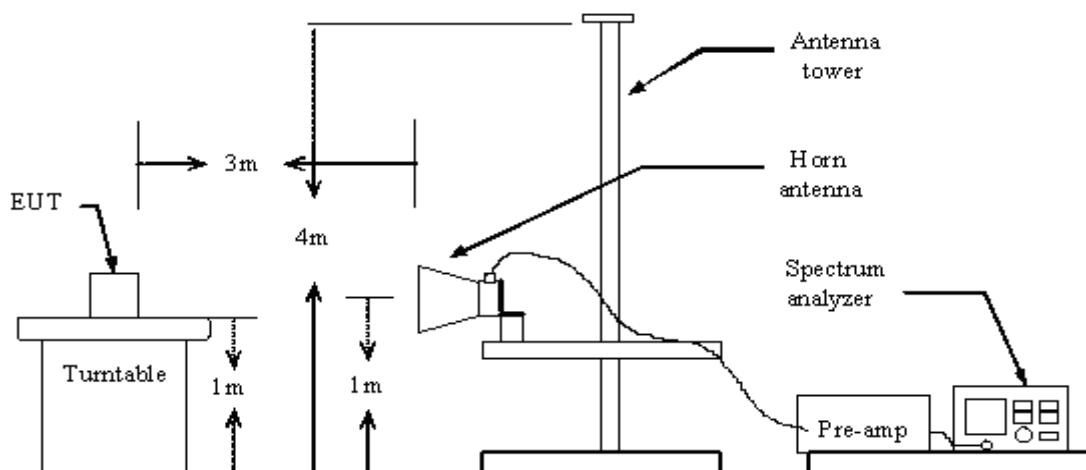
The test data of the worst case condition(s) was reported on the following pages.

7.2.3 Test setup diagram

Below 1GHz



Above 1GHz



7.2.4. Test Result

CH1 2402MHz test data

Frequency MHz	Emission Level dB μ V/m	Over Limits dB	Limits dB μ V/m	Detector	Polarity	Result
2402.00	83.46	-30.54	114.00	PK	H	PASS
2402.00	66.41	-27.59	94.00	AV	H	PASS
162.00	40.30	-3.20	43.50	QP	H	PASS
256.53	41.33	-4.67	46.00	QP	H	PASS
388.00	41.20	-4.8	46.00	QP	H	PASS
1508.00	55.17	-18.83	74.00	PK	H	PASS
1508.00	42.89	-11.11	54.00	AV	H	PASS
1602.00	58.18	-15.82	74.00	PK	H	PASS
1602.00	46.58	-7.42	54.00	AV	H	PASS
15468.5	65.70	-8.3	74.00	PK	H	PASS
15468.5	50.30	-3.7	54.00	AV	H	PASS
2402.00	75.32	-38.68	114.00	PK	V	PASS
2402.00	60.72	-33.28	94.00	AV	V	PASS
46.00	36.63	-3.37	40.00	QP	V	PASS
162.00	44.2	-5.3	43.50	QP	V	PASS
703.54	41.31	-4.69	43.50	QP	V	PASS
1602.00	57.21	-16.79	74.00	PK	V	PASS
1602.00	44.91	-9.09	54.00	AV	V	PASS
2499.70	54.79	-19.21	74.00	PK	V	PASS
2499.70	42.99	-11.01	54.00	AV	V	PASS
15514.2	65.20	-8.80	74.00	PK	V	PASS
15514.2	49.60	-4.4	54.00	AV	V	PASS

Notes: 1. The readings were Quasi-Peak values below 1GHz.

2. The readings were Peak values + Average values above 1GHz

3. Emission Level = Antenna Factor + Cable Loss + Meter Reading

CH40 2441MHz test data

Frequency MHz	Emission Level dB μ V/m	Over Limits dB	Limits dB μ V/m	Detector	Polarity	Result
2441.00	86.33	-27.67	114.00	PK	H	PASS
2441.00	71.74	-25.26	94.00	AV	H	PASS
162.00	39.8	-3.70	43.50	QP	H	PASS
256.95	36.83	-9.17	46.00	QP	H	PASS
449.04	41.8	-4.20	46.00	QP	H	PASS
1598.5	54.60	-19.40	74.00	PK	H	PASS
1598.5	42.00	-12.00	54.00	AV	H	PASS
2669.5	53.98	-20.02	74.00	PK	H	PASS
2669.5	42.08	-11.92	54.00	AV	H	PASS
15468.5	64.78	-9.22	74.00	PK	H	PASS
15468.5	49.18	-4.82	54.00	AV	H	PASS
2441.00	87.02	-26.98	114.00	PK	V	PASS
2441.00	73.41	-20.59	94.00	AV	V	PASS
46.85	35.30	-4.70	40.00	QP	V	PASS
162.00	39.70	-3.80	43.50	QP	V	PASS
376.29	42.40	-3.60	43.50	QP	V	PASS
1094.00	56.91	-17.09	74.00	PK	V	PASS
1094.00	43.00	-11.00	54.00	AV	V	PASS
1602.00	54.50	-19.50	74.00	PK	V	PASS
1602.00	41.00	-13.00	54.00	AV	V	PASS
15438.0	65.40	-8.60	74.00	PK	V	PASS
15438.0	50.00	-4.00	54.00	AV	V	PASS

Notes:

1. The readings were Quasi-Peak values below 1GHz.
2. The readings were Peak values + Average values above 1GHz
3. Emission Level = Antenna Factor + Cable Loss + Meter Reading

CH79 2480MHz test data

Frequency MHz	Emission Level dB μ V/m	Over Limits dB	Limits dB μ V/m	Detector	Polarity	Result
2480.00	88.20	-25.80	114.00	PK	H	PASS
2480.00	73.44	20.56	94.00	AV	H	PASS
162.00	40.0	-3.5	43.50	QP	H	PASS
256.00	41.8	-4.2	46.00	QP	H	PASS
769.14	40.84	-5.16	46.00	QP	H	PASS
1600.00	56.80	-17.2	74.00	PK	H	PASS
1600.00	43.20	-10.8	54.00	AV	H	PASS
2127.00	52.3	-21.70	74.00	PK	H	PASS
2127.00	40.40	-13.60	54.00	AV	H	PASS
15468.5	64.78	-9.22	74.00	PK	H	PASS
15468.5	49.18	-4.82	54.00	AV	H	PASS
2480.00	82.86	-31.14	114.00	PK	V	PASS
2480.00	70.77	-23.23	94.00	AV	V	PASS
162.00	38.3	-5.2	40.00	QP	V	PASS
445.89	40.1	-5.9	43.50	QP	V	PASS
575.10	43.8	-2.2	43.50	QP	V	PASS
1089.00	55.72	-18.28	74.00	PK	V	PASS
1089.00	42.32	-11.68	54.00	AV	V	PASS
1598.50	55.40	-18.60	74.00	PK	V	PASS
1598.50	42.0	-12.00	54.00	AV	V	PASS
15438.0	65.40	-8.60	74.00	PK	V	PASS
15438.0	50.00	-4.00	54.00	AV	V	PASS

Notes: 1. The readings were Quasi-Peak values below 1GHz.

2. The readings were Peak values + Average values above 1GHz

3. Emission Level = Antenna Factor + Cable Loss + Meter Reading

7.3. Band edge test

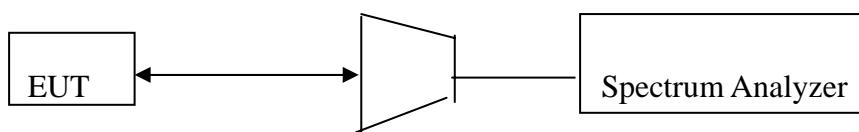
7.3.1. Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in 100kHz bandwidth within the band that contains the highest level of the desired power.

7.3.2. Test procedure

1. The EUT was placed on a turntable which is 0.8m above ground plane.
2. Set EUT as continuous transmitting mode.
3. Set the EUT work on the CH1, CH79 individually.
4. Set SPA Frequency = Operation frequency, for PK: RBW =100kHz, VBW=100KHz
5. Set SPA trace max hold, then view.

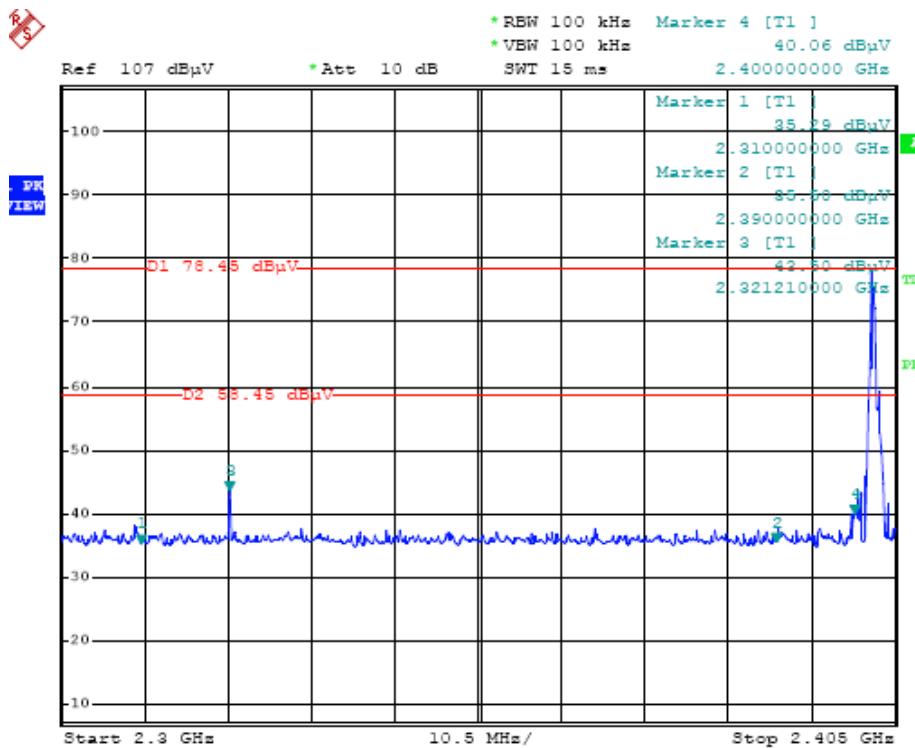
7.3.3. Test setup diagram



7.3.4. Test result

Pass.

CH1 2402MHz



CH79 2480MHz

