

Test Report No:
2510459R-RFUSV01S-B

TEST REPORT

FCC Rules & Regulations

Product Name	Gaming Mouse
Brand Name	ASUS
Model No.	P521
FCC ID	2AWUFMSP521
Applicant's Name / Address	DongGuan City Heatmoving Electronic Technology Co.,Ltd. XinLid industrial part Jinyuling road #28 SangYuan Village, Dongcheng Distric,DongGuan, 523119 China
Manufacturer's Name	ASUSTeK COMPUTER INC.
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By April Chen	
Tested by Bill Lin	
Approved by Steven Tsai	
Date of Receipt	2025/01/15
Date of Issue	2025/03/18
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	2025/03/18

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	AC Power Line Conducted Emission	PASS	-
4	6dB Bandwidth	PASS	-
5	Maximum Peak Conducted Output Power	PASS	-
6	Power Spectral Density	PASS	-
7	Antenna Port Conducted Emission	PASS	-
8	Radiated Emission	PASS	-

Comments and Explanations
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1. General Information

1.1. EUT Description

Frequency Range	2400 ~ 2483.5 MHz
Operating Frequency / Channel Number	2402 ~ 2480 MHz / 79 Channels
Mode	2.4 GHz Wireless
Type of Modulation	GFSK

Accessories Information				
No.	Equipment Name	Brand Name	Model No.	Remark
1	Dongle	ASUS	P521DONGLE	--
No.	Equipment Name	Description		
2	USB Cable	Shielded, 2m		

Antenna Information				
Item.	Brand Name	Part No.	Type	Gain (dBi)
1	Shenzhen Ainuote communication equipment Co., LTD	15A-G0653-00A	PIFA	0.61

Note: The antenna of EUT conforms to FCC 15.203.

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	20	2422 MHz	40	2442 MHz	60	2462 MHz
01	2403 MHz	21	2423 MHz	41	2443 MHz	61	2463 MHz
02	2404 MHz	22	2424 MHz	42	2444 MHz	62	2464 MHz
03	2405 MHz	23	2425 MHz	43	2445 MHz	63	2465 MHz
04	2406 MHz	24	2426 MHz	44	2446 MHz	64	2466 MHz
05	2407 MHz	25	2427 MHz	45	2447 MHz	65	2467 MHz
06	2408 MHz	26	2428 MHz	46	2448 MHz	66	2468 MHz
07	2409 MHz	27	2429 MHz	47	2449 MHz	67	2469 MHz
08	2410 MHz	28	2430 MHz	48	2450 MHz	68	2470 MHz
09	2411 MHz	29	2431 MHz	49	2451 MHz	69	2471 MHz
10	2412 MHz	30	2432 MHz	50	2452 MHz	70	2472 MHz
11	2413 MHz	31	2433 MHz	51	2453 MHz	71	2473 MHz
12	2414 MHz	32	2434 MHz	52	2454 MHz	72	2474 MHz
13	2415 MHz	33	2435 MHz	53	2455 MHz	73	2475 MHz
14	2416 MHz	34	2436 MHz	54	2456 MHz	74	2476 MHz
15	2417 MHz	35	2437 MHz	55	2457 MHz	75	2477 MHz
16	2418 MHz	36	2438 MHz	56	2458 MHz	76	2478 MHz
17	2419 MHz	37	2439 MHz	57	2459 MHz	77	2479 MHz
18	2420 MHz	38	2440 MHz	58	2460 MHz	78	2480 MHz
19	2421 MHz	39	2441 MHz	59	2461 MHz	-	-

1.2. EUT Information

EUT Power Type	From DC 3.7V (by battery) / DC 5V (by USB)
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1.3. Testing Location Information

USA	FCC Designation Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual	Test Date
AC Power Line Conducted Emission	Temperature (°C)	10~40 °C	22.5 °C	2025/02/25
	Humidity (%RH)	10~90 %	56.0 %	
Radiated Emission	Temperature (°C)	10~40 °C	21.7 °C	2025/02/05~2025/02/13
	Humidity (%RH)	10~90 %	60.2 %	
RF Conducted Emission	Temperature (°C)	10~40 °C	23.1 °C	2025/02/12~2025/02/13
	Humidity (%RH)	10~90 %	54.0 %	

1.4. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty
AC Power Line Conducted Emission	± 3.50 dB
6dB Bandwidth	± 1580.61 Hz
Maximum Peak Conducted Output Power	Spectrum Analyzer: ± 2.13 dB Power Meter: ± 1.07 dB
Power Spectral Density	± 2.13 dB
Antenna Port Conducted Emission	± 2.13 dB
Radiated Emission	9 kHz~30 MHz: ± 3.30 dB 30 MHz~1 GHz: ± 4.79 dB 1 GHz~18 GHz: ± 4.17 dB 18 GHz~40 GHz: ± 3.32 dB
Duty Cycle	± 0.51 %

1.5. List of Test Equipment

For Conduction Measurements / HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	EMI Test Receiver	R&S	ESR7	101601	2024/06/24	2025/06/23
V	Two-Line V-Network	R&S	ENV216	101306	2024/04/01	2026/03/31
V	Two-Line V-Network	R&S	ENV216	101307	2023/08/17	2025/08/16
V	Coaxial Cable	SUHNER	RG400_BNC	RF001	2025/01/10	2026/01/09

Note:

1. Two-Line V-Network is calibrated every two years, the other equipment is calibrated every year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2024/12/18	2025/12/17
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2024/05/07	2025/05/06
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240002	2024/05/08	2025/05/07
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240003	2024/05/08	2025/05/07

Note:

1. All equipment is calibrated every year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version : DTC_RF_Tool_Release V100

For Radiated Measurements /HY-CB03

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Loop Antenna	TESEQ	HLA6121	49611	2024/02/23	2025/02/22
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2023/08/09	2025/08/08
V	Horn Antenna	Com-Power	AH-840	101101	2023/12/04	2025/12/03
V	Horn Antenna	RF SPIN	DRH18-E	210507A18ES	2024/05/15	2025/05/14
V	Pre-Amplifier	SGH	SGH0301-9	20211007-11	2025/01/10	2026/01/09
V	Pre-Amplifier	SGH	PRAMP118	20200701	2025/01/10	2026/01/09
V	Pre-Amplifier	EMCI	EMC05820SE	980310	2025/01/10	2026/01/09
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2025/01/10	2026/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160311	2025/01/10	2026/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242	2025/01/10	2026/01/09
V	Filter	MICRO TRONICS	BRM20887	G003	2025/01/05	2026/01/04
	Filter	MICRO TRONICS	BRM50716	G196	2025/01/05	2026/01/04
V	EMI Test Receiver	R&S	ESR3	102793	2024/12/06	2025/12/05
V	Spectrum Analyzer	R&S	FSV3044	101114	2024/02/21	2025/02/20
V	Coaxial Cable	SGH	SGH18	2021005-1	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	SGH18	202108-4	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	HA800	GD20110223-1	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	HA800	GD20110222-3	2025/01/10	2026/01/09

Note:

1. Bi-Log Antenna and Horn Antenna (AH-840) are calibrated every two years, the other equipment is calibrated every year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	DC 5V (by USB)

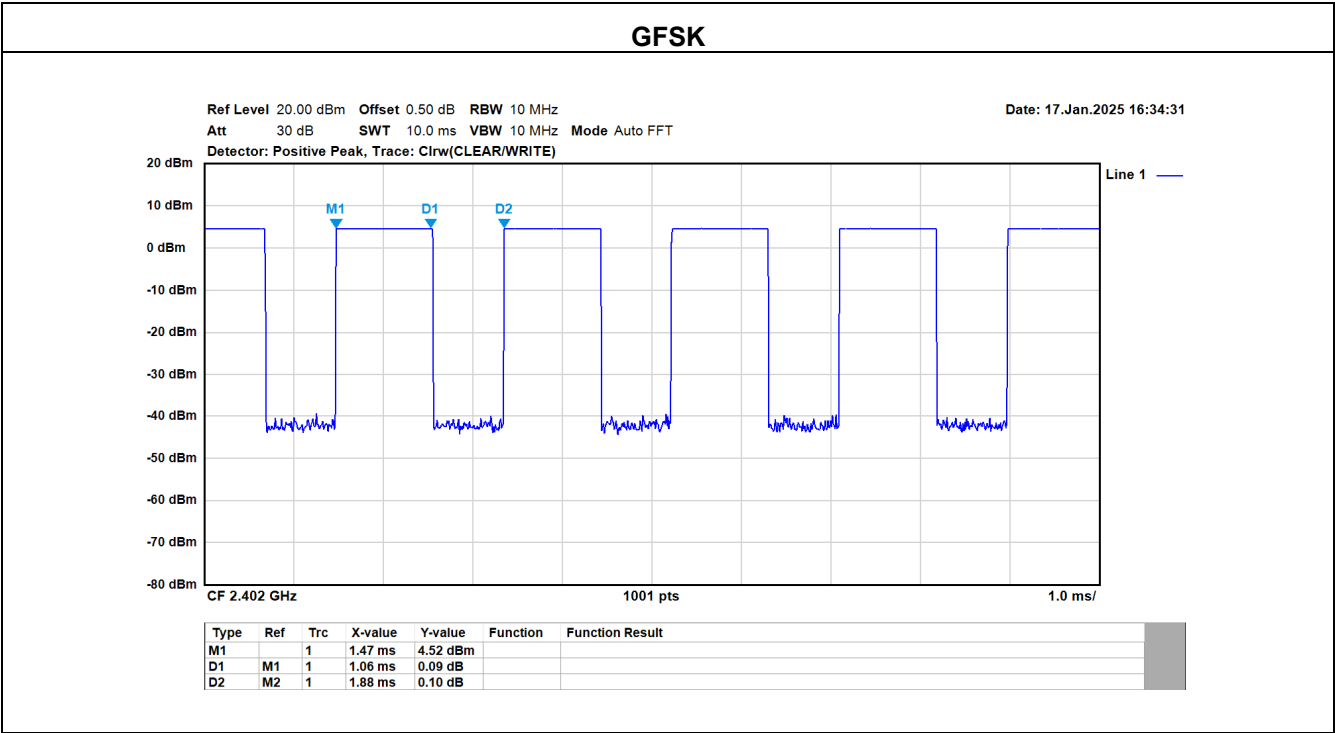
2.2. Test Frequency Mode

Test Software Version	RF DTM / Version 2.3.1
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Modulation	Frequency (MHz)	Power Setting
GFSK	2402	4
	2440	4
	2480	4

2.3. Duty Cycle

Modulation	On Times (ms)	On+Off Times (ms)	Duty Cycle (%)	Duty Factor (dB)	VBW (Hz)
GFSK	1.0600	1.8800	56.38	2.49	1000



2.4. Measurement Configuration

Test Mode	Mode 1 (Transmit)	GFSK
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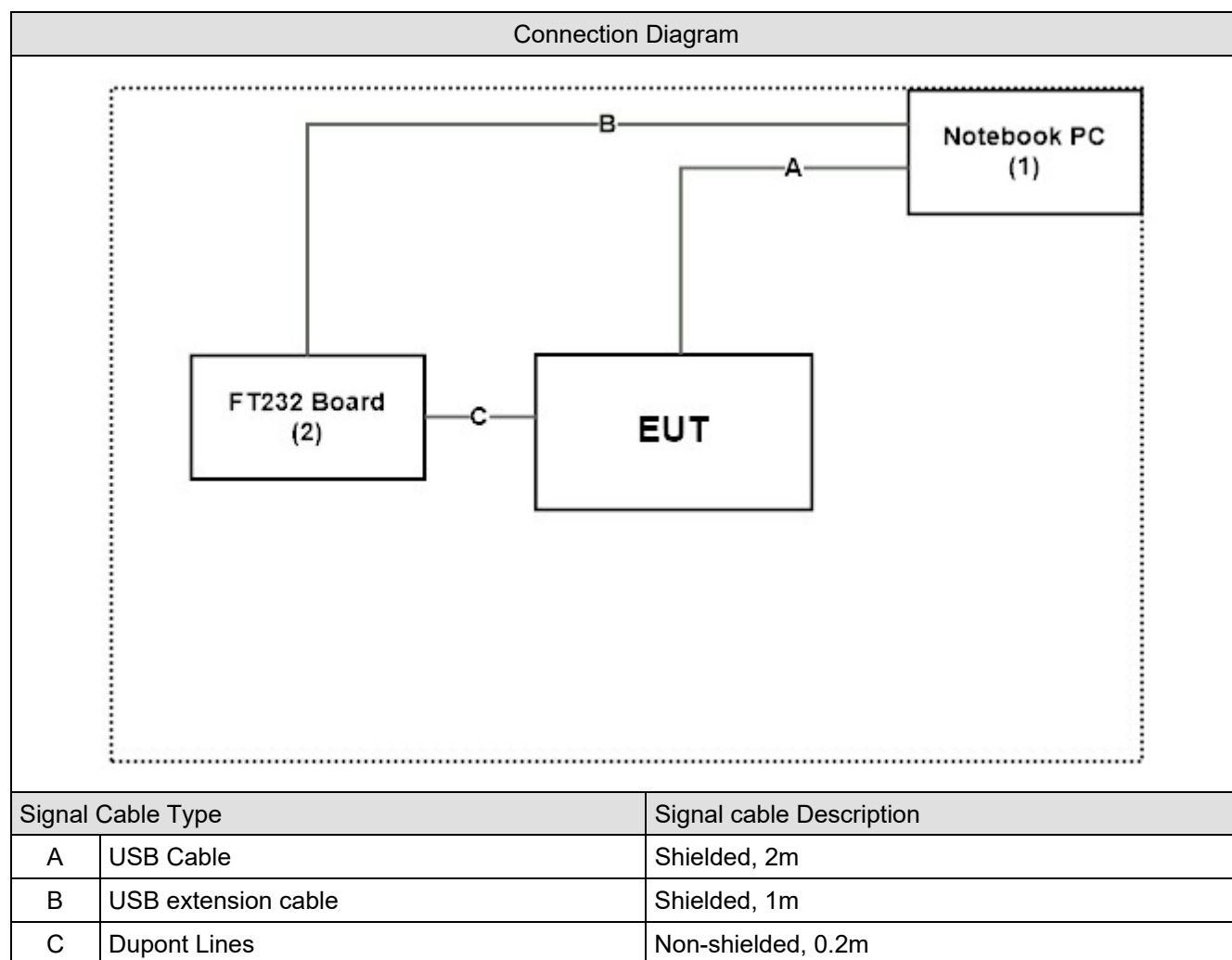
Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

2.5. Tested System Details

No.	Equipment	Brand Name	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	N/A	N/A
2	FT232 Board	xintaiweidianzi	P521 FT232 Board	N/A	N/A

2.6. Configuration of Tested System

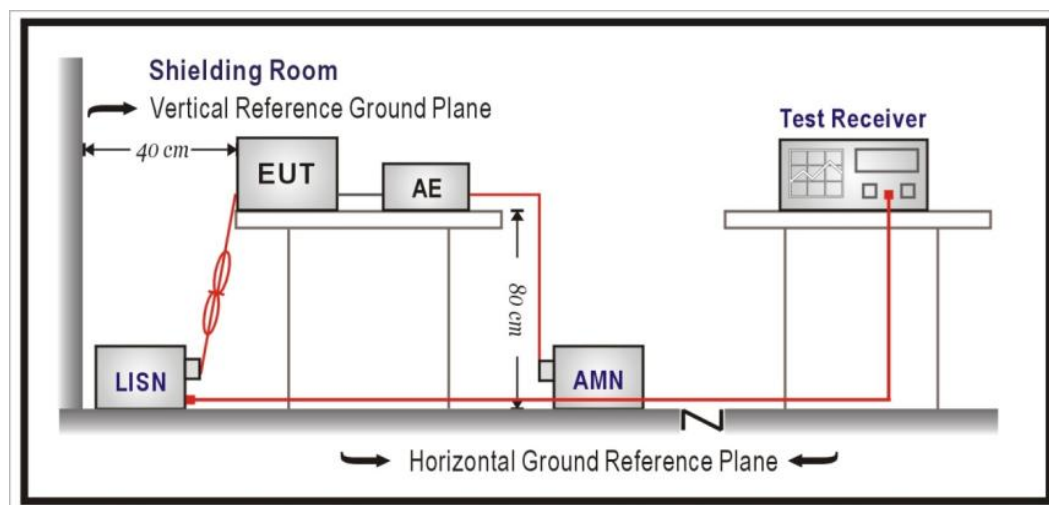


2.7. EUT Operating Procedures

1	Setup the EUT as shown in Section 2.6.
2	Execute software “RF DTM / Version 2.3.1” on the Notebook PC.
3	Configure the test mode, the test channel, and the data rate.
4	Press “OK” to start the continuous Transmit.
5	Verify that the EUT works properly.

3. AC Power Line Conducted Emission

3.1. Test Setup



3.2. Test Limit

Frequency (MHz)	QP (dB μ V)	AV (dB μ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

3.3. Test Procedure

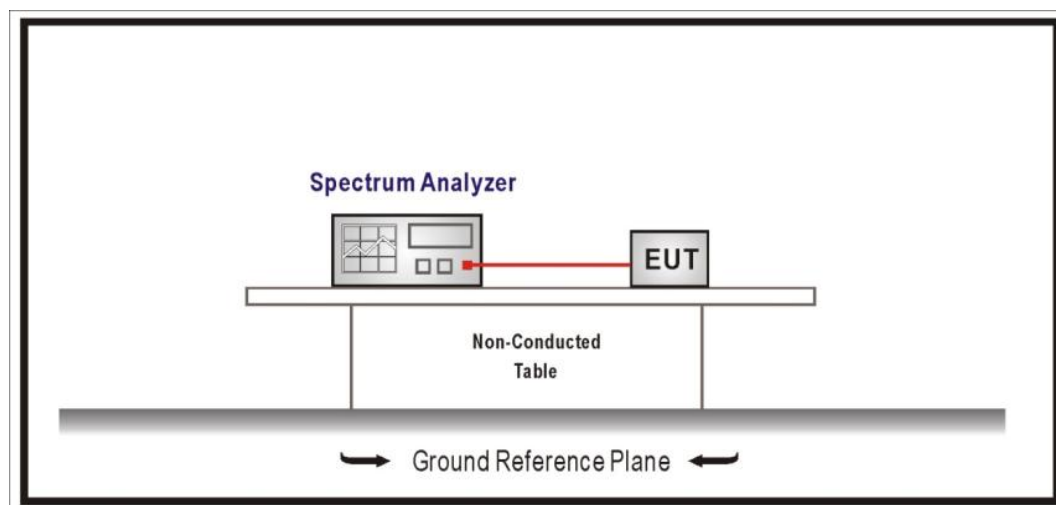
The EUT was setup according to ANSI C63.10: 2013 for AC Power Line Conducted Emissions.

3.4. Test Result of AC Power Line Conducted Emission

Refer as Appendix A

4. 6dB Bandwidth

4.1. Test Setup



4.2. Test Limit

The 6 dB bandwidth: ≥ 500 kHz.

4.3. Test Procedures

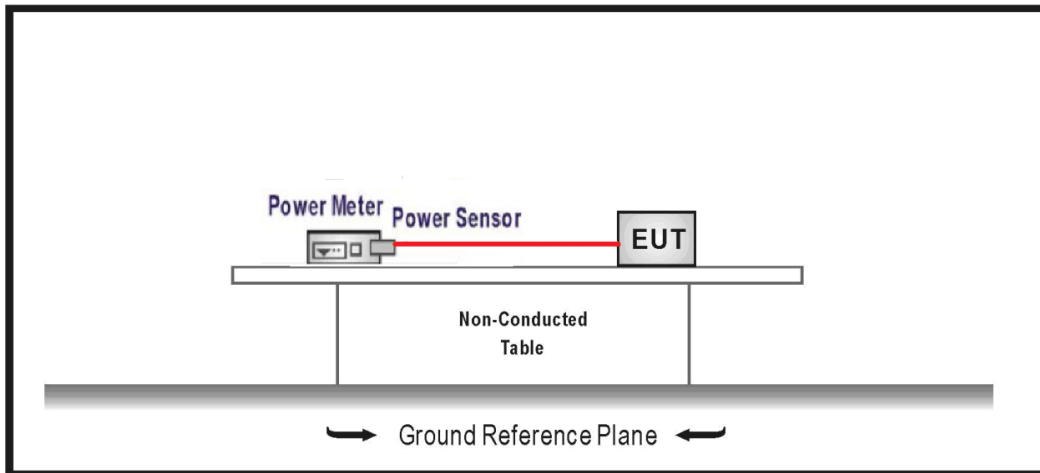
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

4.4. Test Result of 6dB Bandwidth

Refer as Appendix B

5. Maximum Peak Conducted Output Power

5.1. Test Setup



5.2. Test Limit

The Maximum Peak Conducted Output Power shall be less 1 Watt.

5.3. Test Procedures

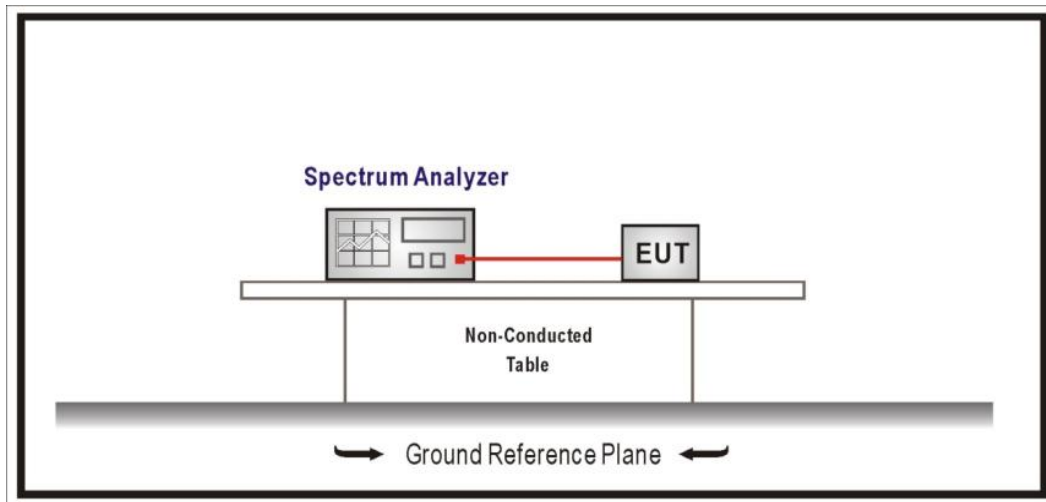
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

5.4. Test Result of Maximum Peak Conducted Output Power

Refer as Appendix C

6. Power Spectral Density

6.1. Test Setup



6.2. Test Limit

The power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission.

6.3. Test Procedures

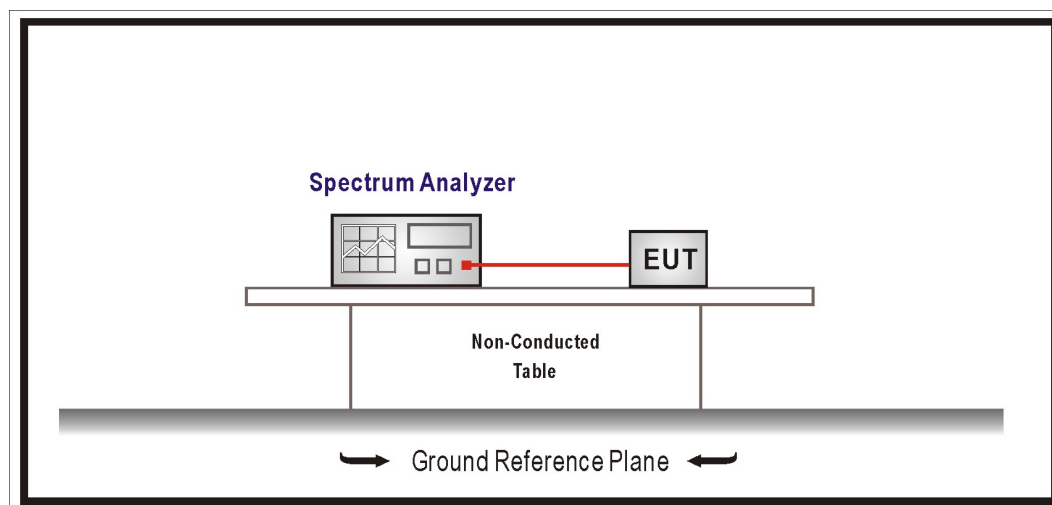
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

6.4. Test Result of Power Spectral Density

Refer as Appendix D

7. Antenna Port Conducted Emission

7.1. Test Setup



7.2. Test Limit

RF output power procedure	Limit (dBc)
Peak output power procedure	20
Average output power procedure	30

Remarks:

1. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limit.
2. If the transmitter complies with the conducted power limit based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

7.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074.

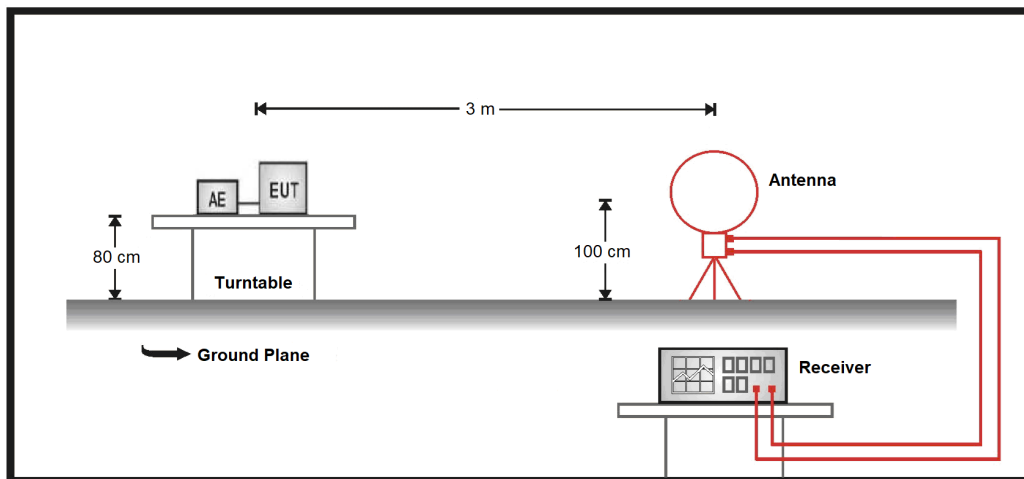
7.4. Test Result of Antenna Port Conducted Emission

Refer as Appendix E

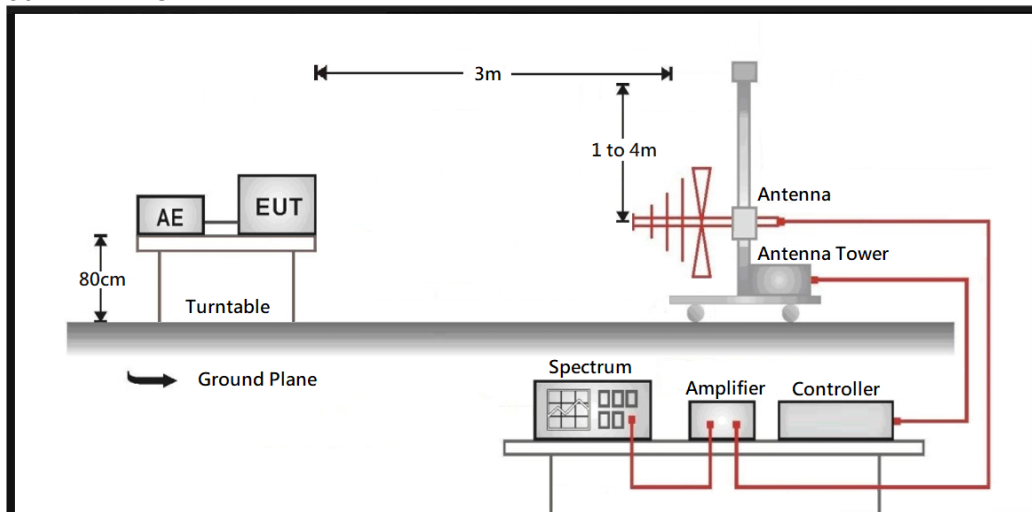
8. Radiated Emission

8.1. Test Setup

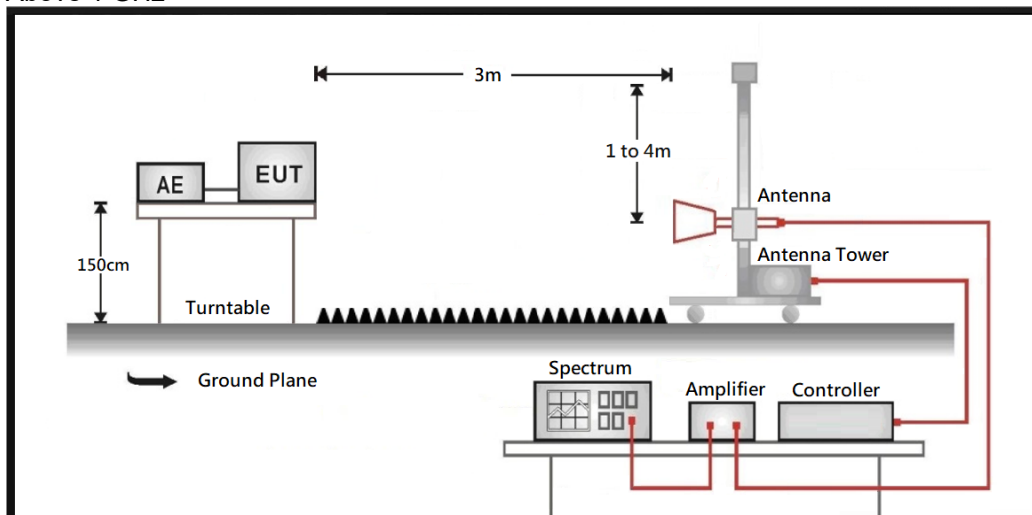
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



8.2. Test Limit

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	20 log (2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20 log (24000/F(kHz))	30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Remarks:

1. Field strength ($\text{dB}\mu\text{V/m}$) = 20 log Field strength ($\mu\text{V/m}$)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074.

The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

On any frequency or frequencies from 9 kHz (include The the lowest oscillator frequency generated within the device up to the 10th harmonic) to 1000 MHz, the limit shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limit shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.

8.4. Test Result of Radiated Emission

Refer as Appendix F