

Test Report No:
2490327R-RFUSV01S-B

TEST REPORT

FCC Rules&Regulations

Product Name	Wireless Mouse
Brand Name	msi
Model No.	MS-8ZB7
FCC ID	I4L-MS-8ZB7
Applicant's Name / Address	MICRO-STAR INT'L Co., LTD. No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)
Manufacturer's Name / Address	MICRO-STAR INT'L Co., LTD. No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)
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	 Vera Hsu
Approved By	 Allen Lin
Date of Receipt	Sep. 10, 2024
Date of Issue	Dec. 12, 2024
Report Version	V1.0

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Appendix D. Test Result of Maximum Power Spectral Density

Appendix E. Test Result of Antenna Port Conducted Emission

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Appendix G. Test Setup Photograph

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	Dec. 12, 2024

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	AC Power Line Conducted Emission	PASS	-
4	Occupied Bandwidth & DTS Bandwidth	PASS	-
5	Maximum Conducted Output Power	PASS	-
6	Maximum Power Spectral Density	PASS	-
7	Antenna Port Conducted Emission	PASS	-
8	Transmitter Radiated Spurious 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.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

Frequency Range	2400 ~ 2483.5 MHz
Operating Frequency	2403 ~ 2475 MHz
Channel Number	5 Channels
Type of Modulation	GFSK

Accessories Information				
No.	Equipment Name	Brand Name	Model No.	Description
1	Wireless USB Dongle	msi	GM31WD	DC 5V / 30mA
2	USB Cable	msi	VERSA PRO USB Cable	Shielded, 2.1m
3	Wireless Charging Dock	msi	MDWC	DC 5V / 1A

Antenna Information				
Ant.	Brand Name	Model No.	Type	Gain (dBi)
1	Chuand Technology	VERSA PRO	PCB	1.43

Working Frequency of Each Channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2403 MHz	02	2461 MHz	03	2423 MHz
04	2475 MHz	05	2440 MHz	-	-

1.2. EUT Information

EUT Power Type	From Host system / Battery			
EUT Function	☒	Point-to-multipoint	☐	Point-to-point

1.3. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 558074 D01 v05r02
- ♦ KDB 414788 D01 v01r01

1.4. Testing Location Information

Testing Location Information		
Test Laboratory : DEKRA Testing and Certification Co., Ltd.		
1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.	
Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
AC Conduction Emission	HC-SR02	Gary Liao	23 / 65	2024/10/29
RF Conducted Emission	HC-SR12	Igor Tseng	22.1 / 50	2024/10/08
Radiated Emission	HC-CB02	Scott Chang	21.3~23.5 / 53~63	2024/10/26~2024/10/29

1.5. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Test item	Uncertainty
AC Power Line Conducted Emission	± 2.34 dB
Occupied Bandwidth & DTS Bandwidth	± 282.55 Hz
Maximum Conducted Output Power	± 1.16 dB
Maximum Power Spectral Density	± 2.47 dB
Antenna Port Conducted Emission	± 2.47 dB
Transmitter Radiated Spurious Emission	± 3.52 dB below 1 GHz ± 3.56 dB above 1 GHz

1.6. List of Test Equipment

HC-SR02

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	9kHz-30MHz, 4line/100A	2023/12/15	2024/12/14
EMI Test Receiver	R&S	ESR3	102608	9 kHz - 3.6 GHz	2024/09/11	2025/09/10
Two-Line V-Network	R&S	ENV216	100096	9kHz-30MHz	2024/06/03	2025/06/02
Coaxial Cable(9 m)	Harbour	RG-400	HC-SR02	9 kHz–2500 MHz	2024/08/15	2025/08/14
EMI Testing System	Audix	e3 210616 dekra V9	HC-SR02	N/A	N/A	N/A

HC-SR12

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	0.3-40 GHz	2023/10/25	2024/10/24
Pulse Power Sensor	Anritsu	MA2411B	1531043	0.3-40 GHz	2023/10/25	2024/10/24
Pulse Power Sensor	Anritsu	MA2411B	1531044	0.3-40 GHz	2023/10/25	2024/10/24
Signal & Spectrum Analyzer	R&S	FSV40	101869	10Hz-40GHz	2024/06/20	2025/06/19

HC-CB02

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Signal and Spectrum Analyzer	R&S	FSVA40	101435	10 Hz-40 GHz	2024/05/17	2025/05/16
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1272	30 MHz-2 GHz	2024/04/29	2025/04/28
Double Ridged Horn Antenna	RF SPIN	DRH18-E	211211A18EN	1G-18GHz	2023/11/09	2024/11/08
Horn Antenna	Schwarzbeck	BBHA 9170	203	18G-40GHz	2024/02/02	2025/02/01
Pre-Amplifier	EMCI	EMC01820I	980365	30M-8 GHz,20 dB	2024/04/02	2025/04/01
Pre-Amplifier	EMEC	EM01G18GA	060741	1G-18 GHz,50 dB	2024/04/23	2025/04/22
Pre-Amplifier	DEKRA	AP-400C	201801231	18G-40 GHz,48 dB	2024/10/15	2025/10/14
EMI Test Receiver	R&S	ESR7	102260	10 Hz-7 GHz	2023/11/27	2024/11/26
Magnetic Loop Antenna	Teseq	HLA 6121	44287	0.01-30 MHz	2024/10/17	2025/10/16
Coaxial Cable	Huber+Suhner	SF104	HC-CB02	30 MHz-18 GHz, 13m	2024/08/13	2025/08/12
Coaxial Cable	Huber+Suhner, Rosnol	SF102_UP0264	HC-CB02-1	18-40 GHz, 3 m	2024/08/13	2025/08/12
Radiated Software	Audix	e3 V9	HC-CB02_1	N/A	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	AC 120V/60Hz

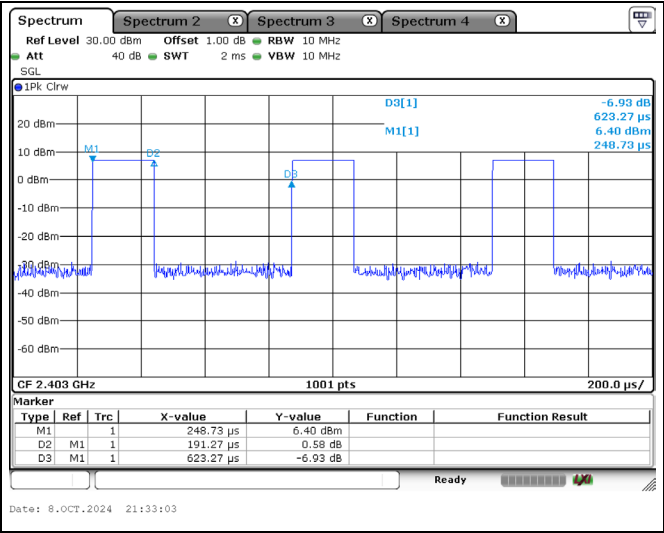
2.2. Test Frequency Mode

Test Software Version	Bus Hound 6.01
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Frequency (MHz)	Power Setting
2403	8
2440	8
2475	8

2.3. Duty Cycle

On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
0.191	0.623	30.66%	5.13	5.236



2.4. The Worst Case Measurement Configuration

Tests Item	AC Power Line Conducted Emission
Test Condition	AC power line conducted measurement for line and neutral
Operating Mode	Transmit

Tests Item	Occupied Bandwidth & DTS Bandwidth Maximum Conducted Output Power Maximum Power Spectral Density Antenna Port Conducted Emission
Test Condition	Conducted measurement at transmit chains

Tests Item	Transmitter Radiated Spurious Emission
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Transmit
Operating Mode > 1GHz	Transmit
The EUT was performed at X axis, Y axis and Z axis position for radiated spurious emission test. The worst case was found at Z axis, so the measurement will follow this same test configuration.	

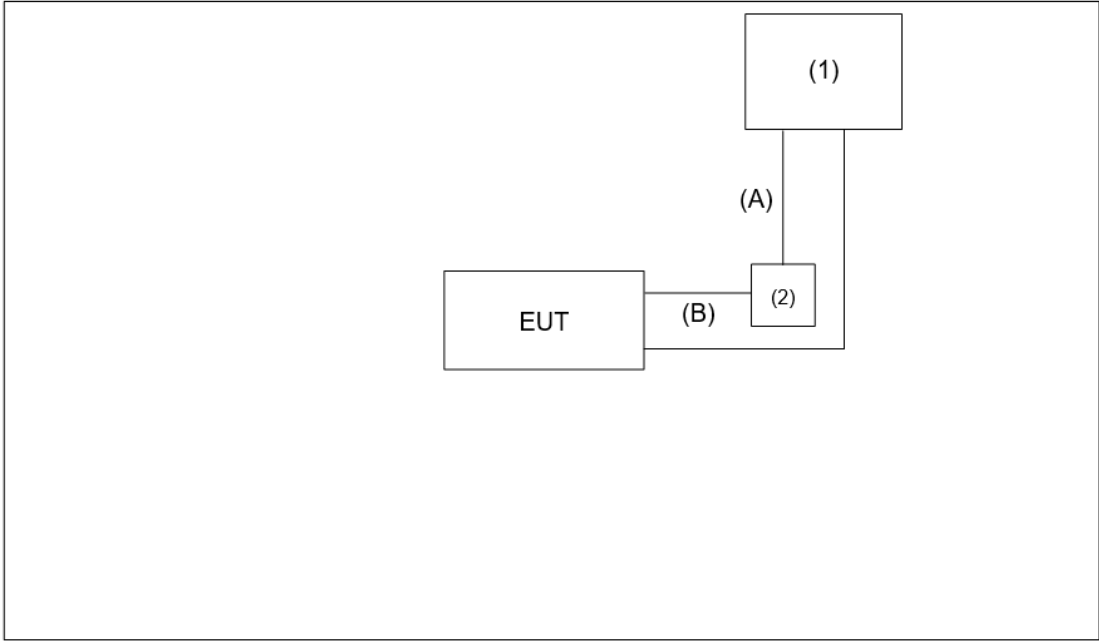
Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. For radiated spurious emission below 1 GHz and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.

2.5. Tested System Details

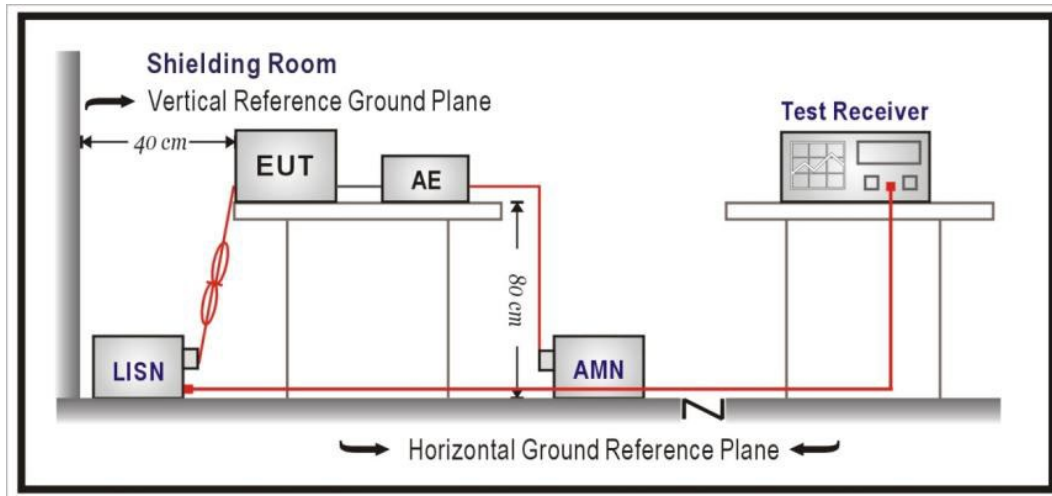
No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	Lenovo	Lenovo Ideapad 110 15IBR	PF01EUZD
2	USB to TTL signal converter	Chuand	BusHound	N/A

2.6. Configuration of Tested System

Connection Diagram		
		
Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 1.8m
B	4 Pin Cable	Non-Shielded, 0.06m

3. AC Power Line Conducted Emission

3.1. Test Setup



3.2. Test Limit

Frequency (MHz)	QP (dBuV)	AV (dBuV)
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

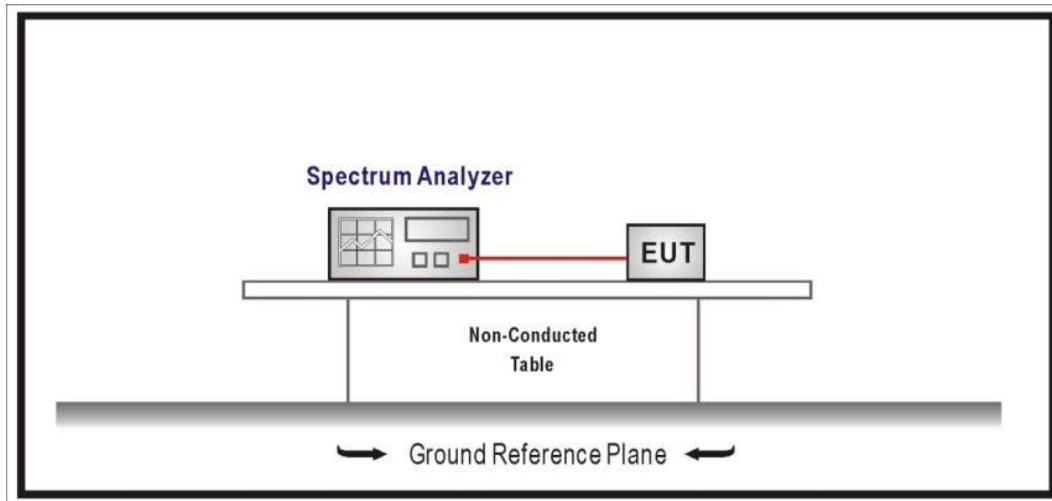
The EUT was setup according to ANSI C63.10: 2013 for AC Power Line Conducted Emissions.

3.4. Test Result of AC Power Line Conducted Emission

Refer as Appendix A

4. Occupied Bandwidth & DTS Bandwidth

4.1. Test Setup



4.2. Test Limit

The 6 dB bandwidth: ≥ 500 kHz.

Occupied Bandwidth: N/A

4.3. Test Procedures

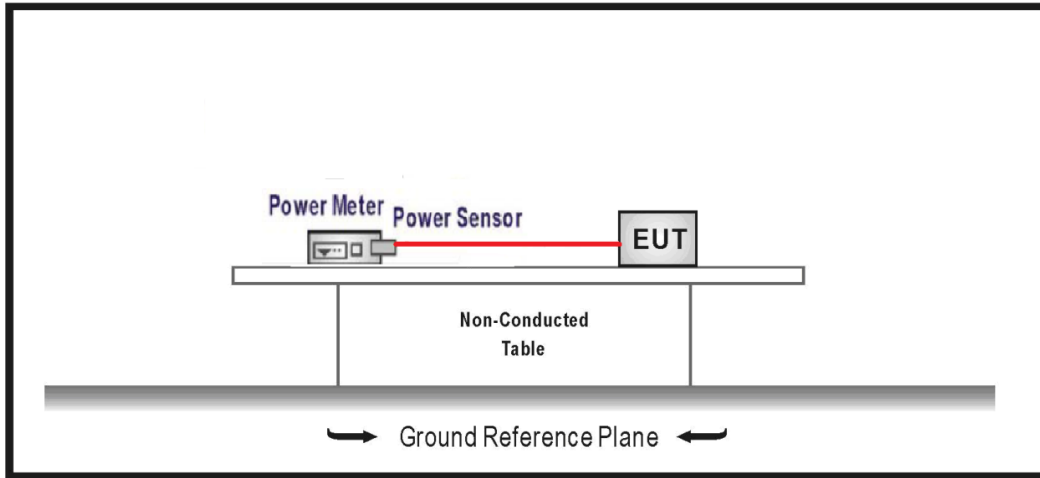
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

4.4. Test Result of Occupied Bandwidth & DTS Bandwidth

Refer as Appendix B

5. Maximum Conducted Output Power

5.1. Test Setup



5.2. Test Limit

The Maximum Conducted Output Power shall be less 1 Watt.

5.3. Test Procedures

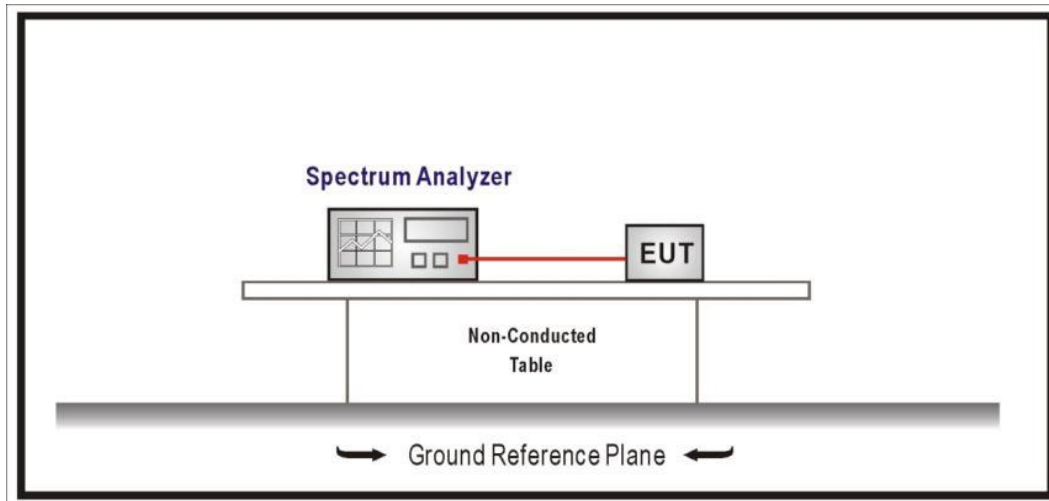
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

5.4. Test Result of Maximum Conducted Output Power

Refer as Appendix C

6. Maximum Power Spectral Density

6.1. Test Setup



6.2. Test Limit

The peak 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

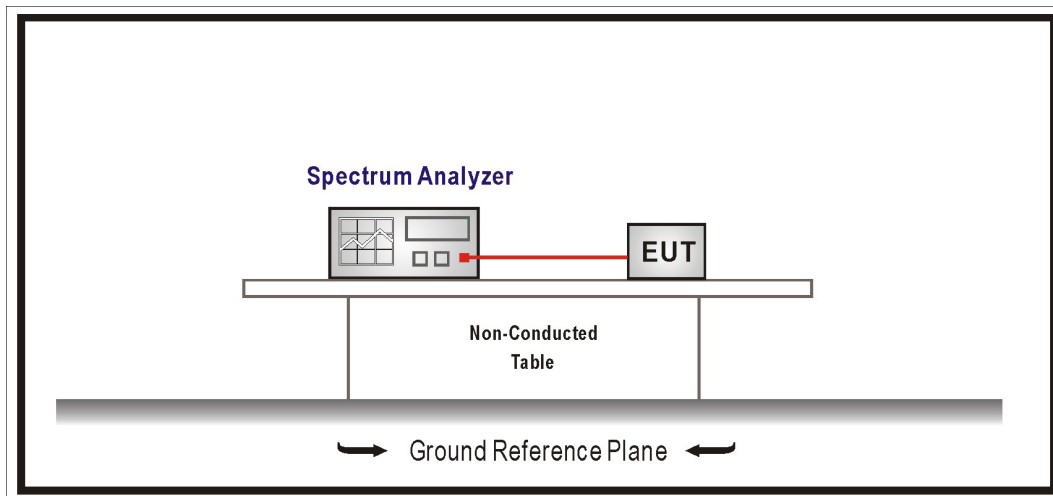
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

6.4. Test Result of Maximum 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.

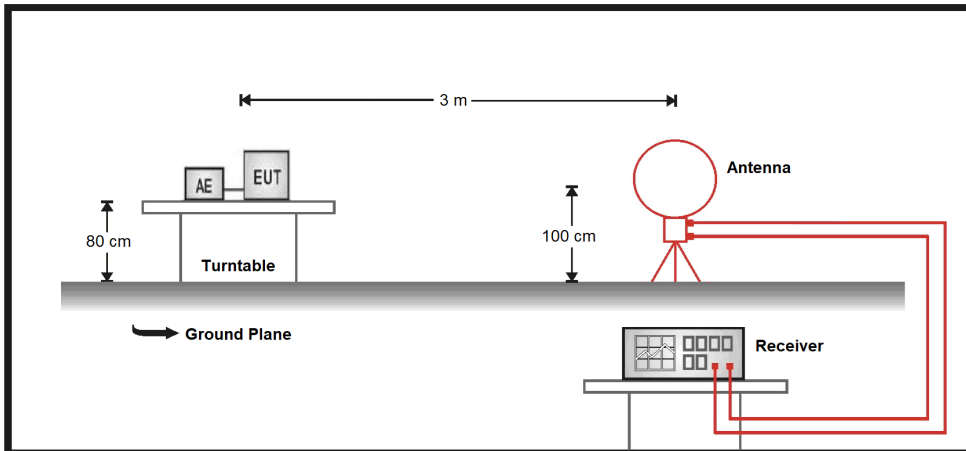
7.4. Test Result of Antenna Port Conducted Emission

Refer as Appendix E

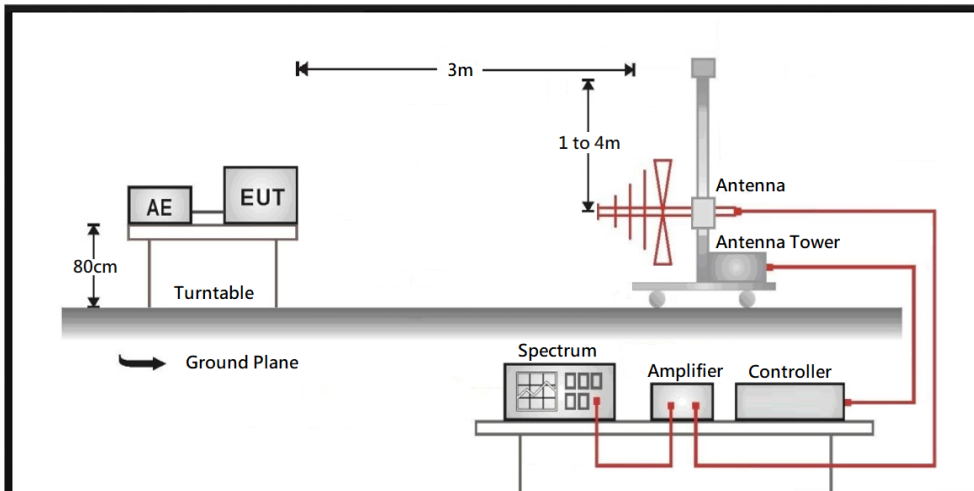
8. Transmitter Radiated Spurious Emission

8.1. Test Setup

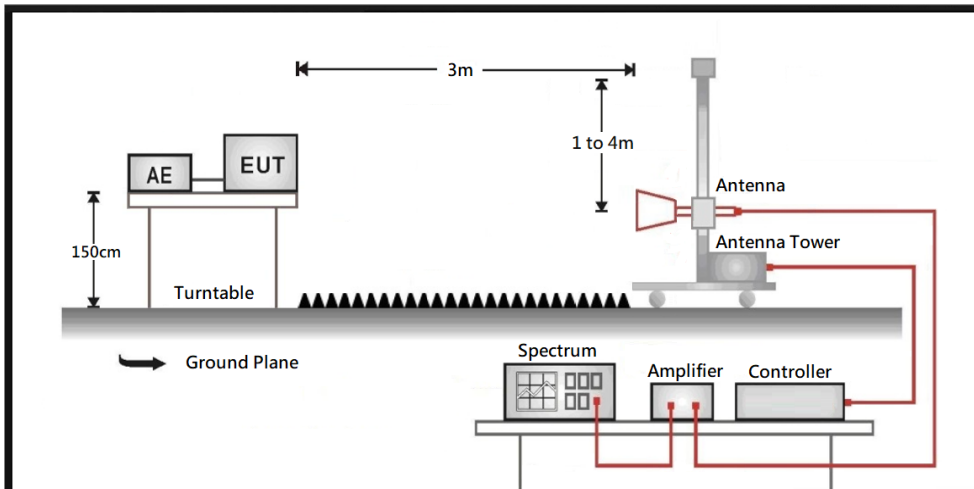
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



8.2. Test Limit

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/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 (dBuV/m) = 20 log Field strength (uV/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.

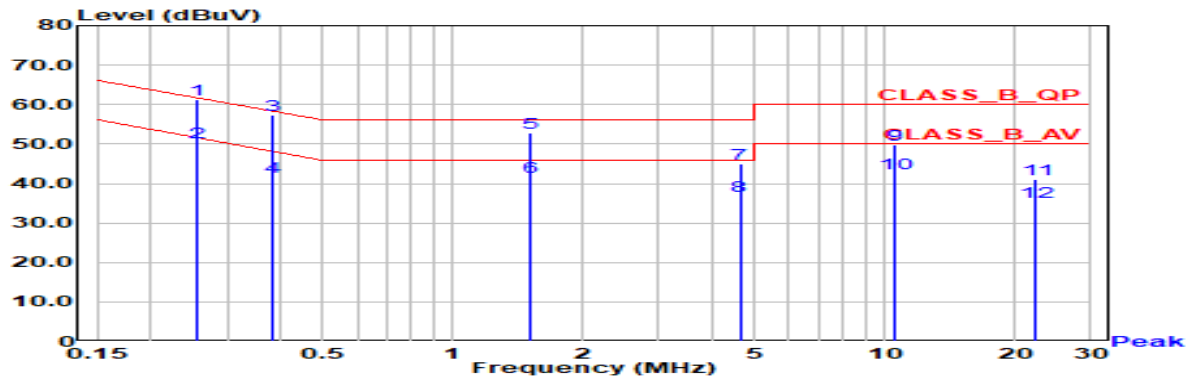
The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.

8.4. Test Result of Transmitter Radiated Spurious Emission

Refer as Appendix F

Appendix A. Test Result of AC Power Line Conducted Emission

Test Mode	Mode 1	Phase	Line
Test Condition	GFSK / 2440 MHz		

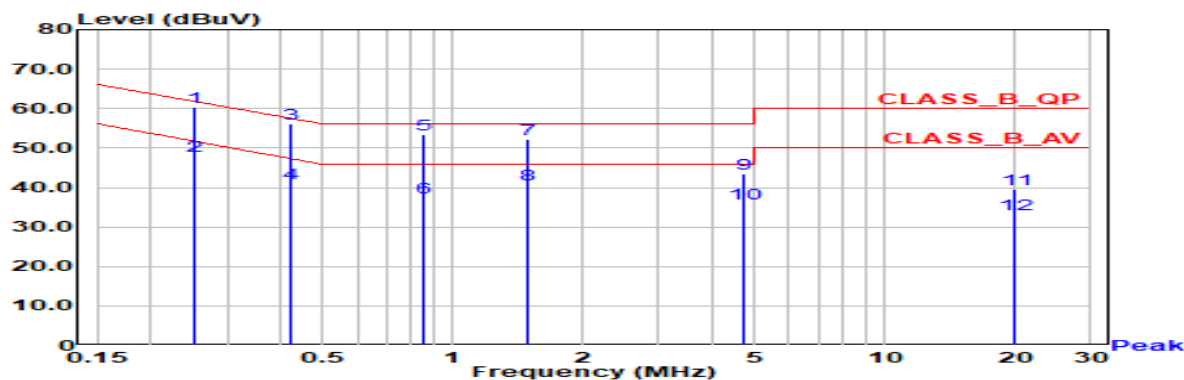


No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
*1	0.254	61.33	61.61	-0.28	51.66	9.67	QP
2	0.254	50.28	51.61	-1.33	40.61	9.67	AV
3	0.380	57.29	58.28	-0.99	47.62	9.67	QP
4	0.380	41.63	48.28	-6.65	31.96	9.67	AV
5	1.513	52.79	56.00	-3.21	42.99	9.80	QP
6	1.513	41.55	46.00	-4.45	31.75	9.80	AV
7	4.616	45.11	56.00	-10.89	35.15	9.96	QP
8	4.616	36.86	46.00	-9.14	26.90	9.96	AV
9	10.613	49.86	60.00	-10.14	39.70	10.16	QP
10	10.613	42.69	50.00	-7.31	32.52	10.16	AV
11	22.355	41.08	60.00	-18.92	30.57	10.51	QP
12	22.355	35.18	50.00	-14.82	24.67	10.51	AV

Note:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

Test Mode	Mode 1	Phase	Neutral
Test Condition	GFSK / 2440 MHz		



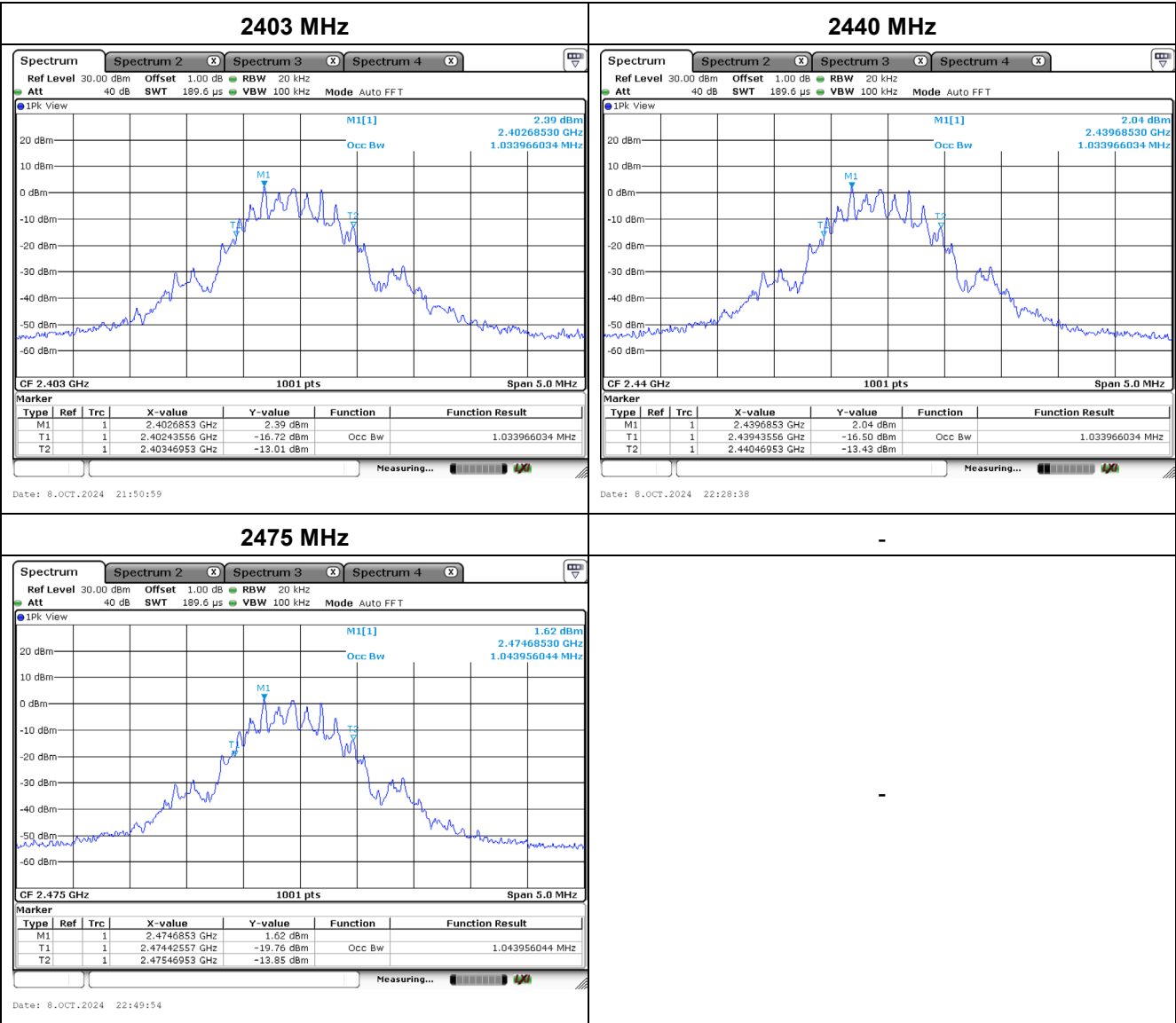
No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
*1	0.253	60.36	61.67	-1.31	50.69	9.67	QP
2	0.253	48.04	51.67	-3.62	38.37	9.67	AV
3	0.423	56.01	57.38	-1.37	46.34	9.67	QP
4	0.423	40.91	47.38	-6.47	31.24	9.67	AV
5	0.854	53.57	56.00	-2.43	43.87	9.70	QP
6	0.854	37.51	46.00	-8.49	27.81	9.70	AV
7	1.498	52.17	56.00	-3.83	42.38	9.79	QP
8	1.498	40.67	46.00	-5.33	30.88	9.79	AV
9	4.712	43.46	56.00	-12.54	33.50	9.96	QP
10	4.712	35.89	46.00	-10.11	25.92	9.96	AV
11	20.030	39.53	60.00	-20.47	29.09	10.44	QP
12	20.030	33.29	50.00	-16.71	22.85	10.44	AV

Note:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

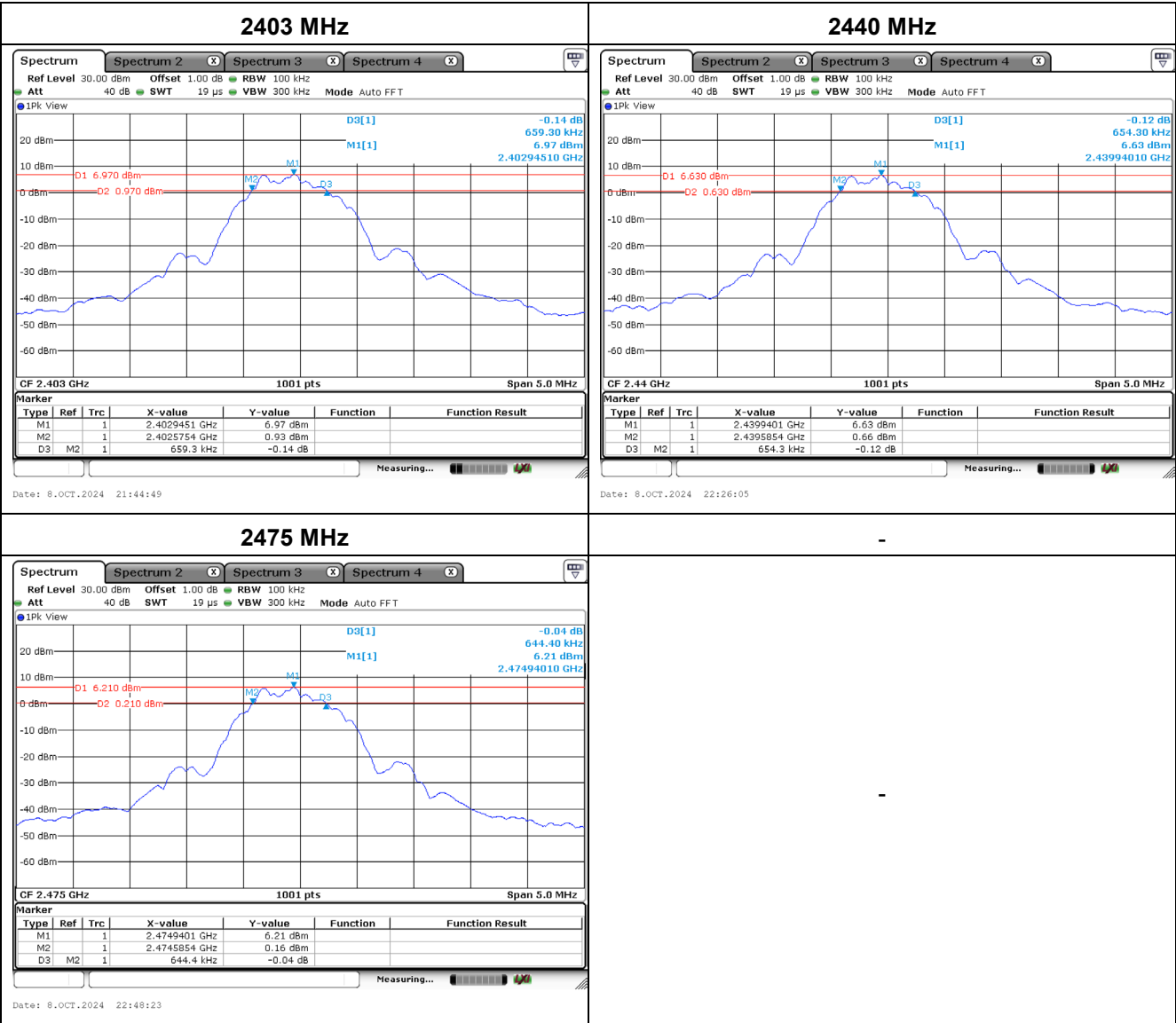
Appendix B.1 Test Result of Occupied Bandwidth

Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
2403	1.033	-
2440	1.033	-
2475	1.043	-



Appendix B.2 Test Result of DTS Bandwidth

Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
2403	0.659	0.50	Pass
2440	0.654	0.50	Pass
2475	0.644	0.50	Pass

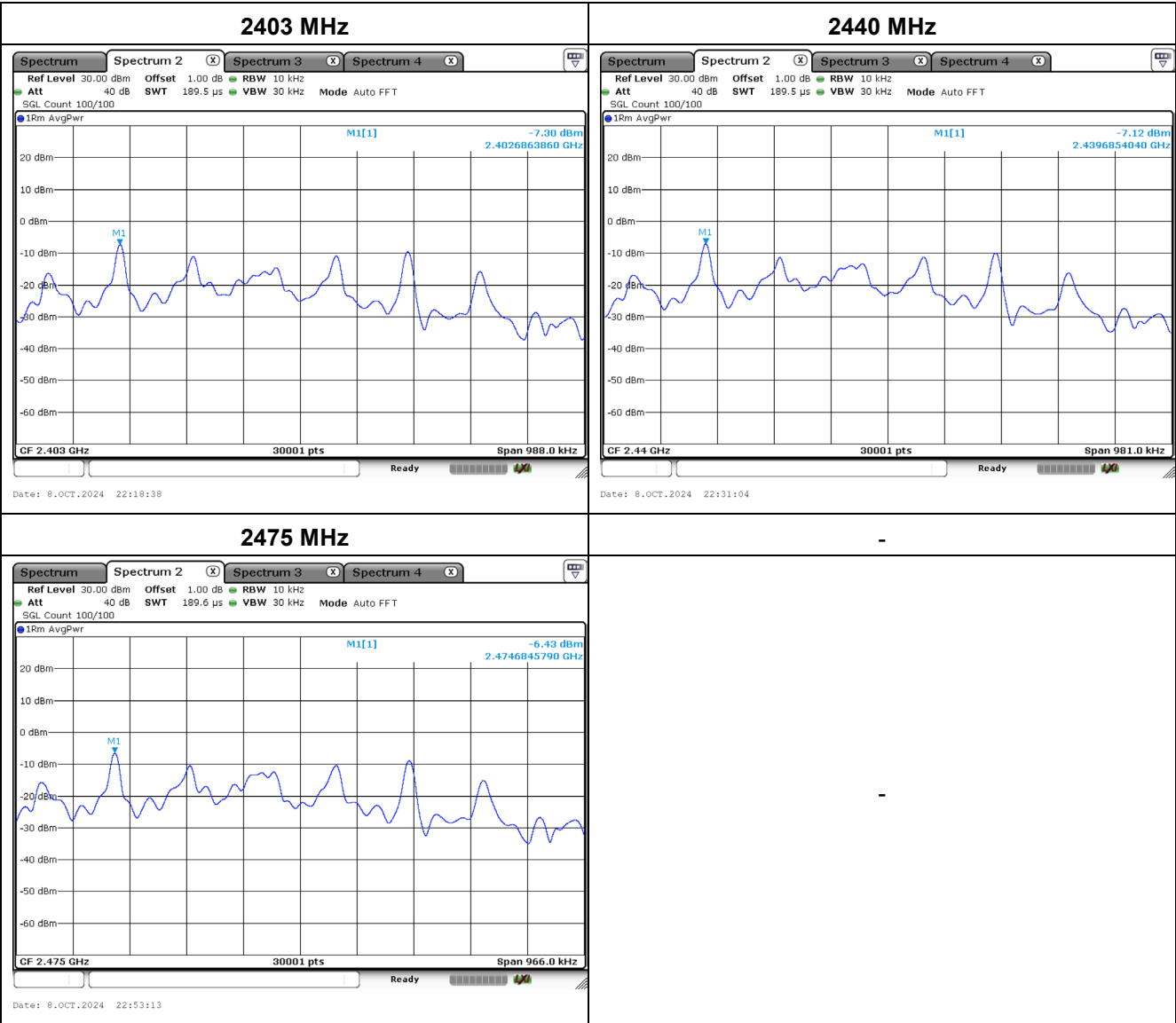


Appendix C. Test Result of Maximum Conducted Output Power

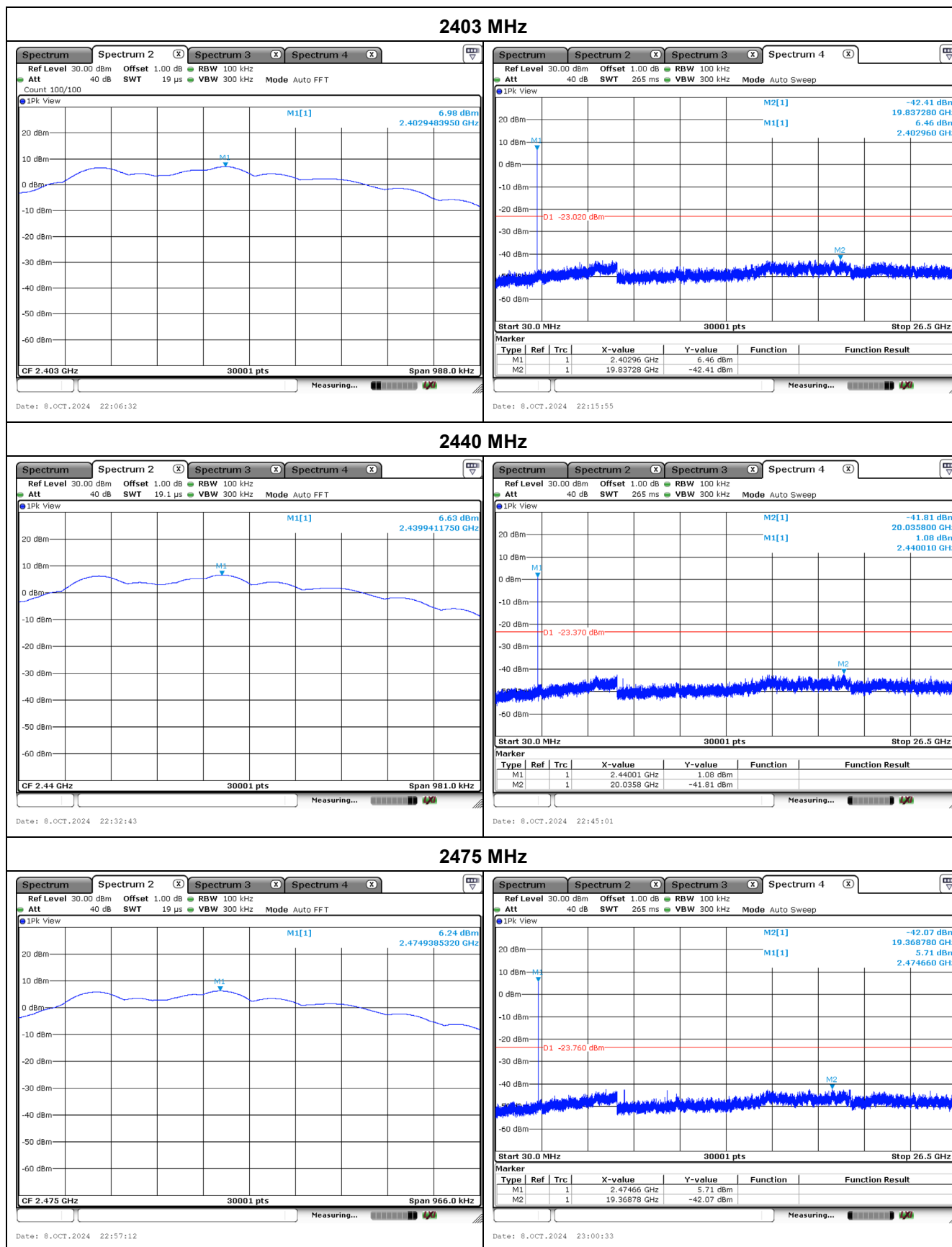
Frequency (MHz)	Maximum Conducted Peak Output Power (dBm)	Limit (dBm)	Result
2403	7.260	30.00	Pass
2440	7.110	30.00	Pass
2475	6.570	30.00	Pass

Appendix D. Test Result of Maximum Power Spectral Density

Frequency (MHz)	Measure Value (dBm/3kHz)	Limit (dBm/3kHz)	Result
2403	-2.165	8.00	Pass
2440	-1.985	8.00	Pass
2475	-1.295	8.00	Pass



Appendix E. Test Result of Antenna Port Conducted Emission

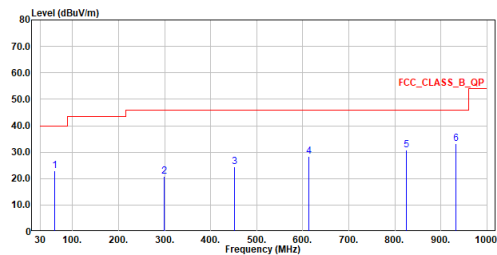




Appendix F. Test Result of Transmitter Radiated Spurious Emission

30 MHz ~ 1 GHz

Site :HC-CB02
Condition :3m Horizontal
Mode :LF_SRD_TX_2440MHz
Test by :Scott Chang

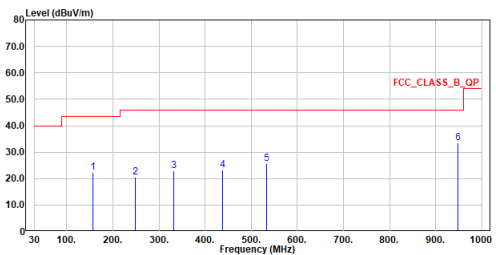


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	60.846	22.91	40.00	-17.09	25.54	-2.63	QP
2	298.302	20.88	46.00	-25.12	22.94	-2.06	QP
3	451.271	24.53	46.00	-21.47	22.34	2.19	QP
4	612.970	28.33	46.00	-17.67	22.54	5.79	QP
5	825.109	30.90	46.00	-15.10	22.00	8.90	QP
6	932.294	33.23	46.00	-12.77	23.03	10.20	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m Vertical
Mode :LF_SRD_TX_2440MHz
Test by :Scott Chang



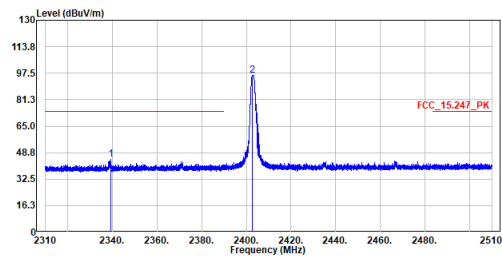
No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	156.100	22.41	43.50	-21.09	25.01	-2.60	QP
2	248.250	20.48	46.00	-25.52	24.22	-3.74	QP
3	331.767	23.08	46.00	-22.92	24.12	-1.04	QP
4	437.303	23.37	46.00	-22.63	21.58	1.79	QP
5	533.430	25.62	46.00	-20.38	22.06	3.56	QP
6	948.687	33.42	46.00	-12.58	22.76	10.66	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Above 1 GHz

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2403MHz
Test by :Scott Chang

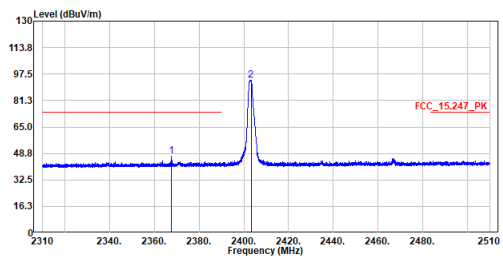


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2339.260	44.48	74.00	-29.52	32.80	11.68	Peak
2	2402.700	96.06	74.00	-29.52	84.06	12.00	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2403MHz
Test by :Scott Chang

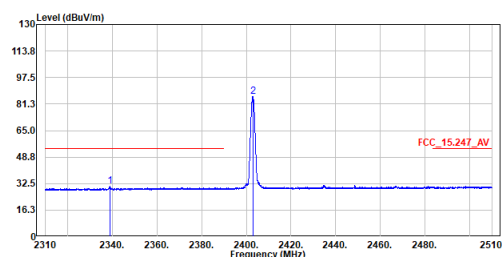


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2367.720	46.87	74.00	-27.13	35.05	11.82	Peak
2	2403.200	93.53	74.00	-27.13	81.53	12.00	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2403MHz
Test by :Scott Chang

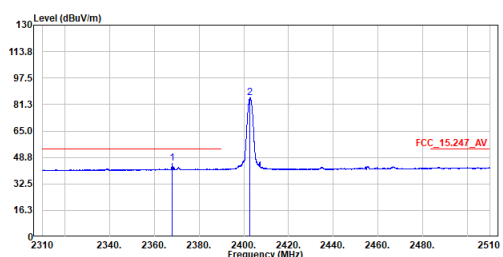


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2338.820	30.69	54.00	-23.31	19.01	11.68	Average
2	2402.880	85.88	74.00	-23.31	73.88	12.00	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2403MHz
Test by :Scott Chang

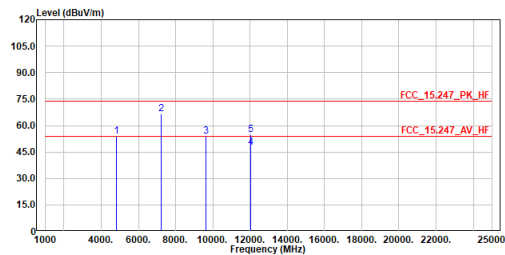


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2368.000	45.29	54.00	-8.71	33.47	11.82	Average
2	2402.700	85.33	74.00	-8.71	73.33	12.00	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
Mode :SRD_TX_2403MHz
Test by :Scott Chang

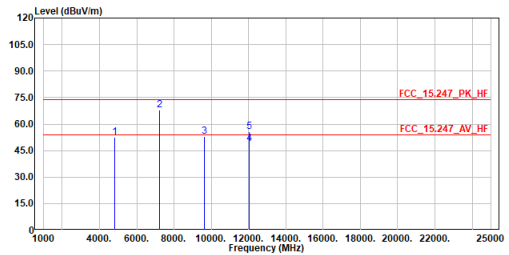


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4806.000	53.96	74.00	-20.04	68.70	-14.74	Peak
2	7209.000	66.69	74.00	-7.31	74.67	-7.98	Peak
3	9612.000	53.90	74.00	-20.10	58.46	-4.56	Peak
4	12016.000	47.33	54.00	-6.67	48.70	-1.37	Average
5	12016.000	54.61	74.00	-19.39	55.98	-1.37	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
Mode :SRD_TX_2403MHz
Test by :Scott Chang

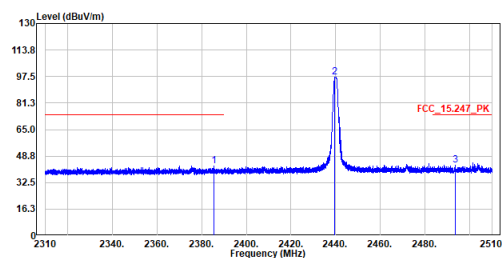


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4806.000	52.73	74.00	-21.27	67.47	-14.74	Peak
2	7209.000	67.93	74.00	-6.07	75.91	-7.98	Peak
3	9612.000	53.14	74.00	-20.86	57.70	-4.56	Peak
4	12016.000	48.68	54.00	-5.32	50.05	-1.37	Average
5	12016.000	55.84	74.00	-18.16	57.21	-1.37	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2440MHz
Test by :Scott Chang

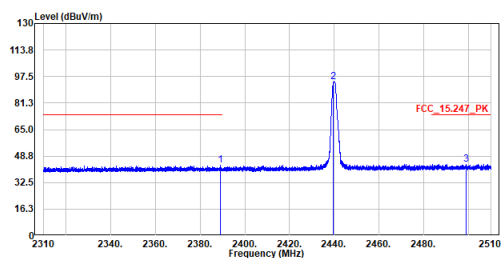


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2385.580	42.89	74.00	-31.11	30.99	11.90	Peak
2	2439.680	97.19	-----	-----	85.01	12.18	Peak
3	2493.560	43.17	74.00	-30.83	30.72	12.45	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2440MHz
Test by :Scott Chang

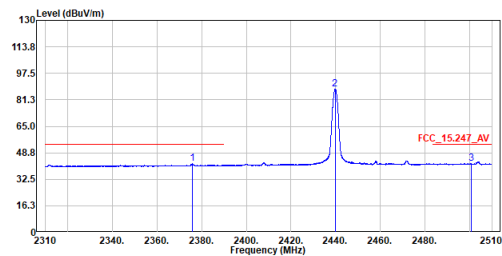


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2388.900	43.23	74.00	-30.77	31.30	11.93	Peak
2	2439.680	94.40	-----	-----	82.22	12.18	Peak
3	2498.920	43.71	74.00	-30.29	31.23	12.48	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2440MHz
Test by :Scott Chang

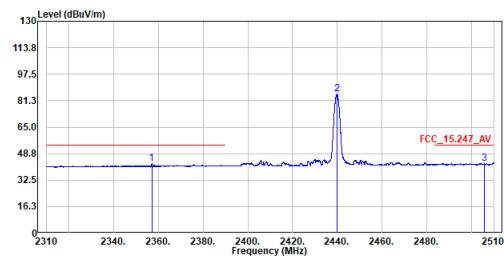


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2375.840	41.97	54.00	-12.03	30.11	11.86	Average
2	2439.720	87.81	-----	-----	75.63	12.18	Average
3	2500.620	42.25	54.00	-11.75	29.77	12.48	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2440MHz
Test by :Scott Chang

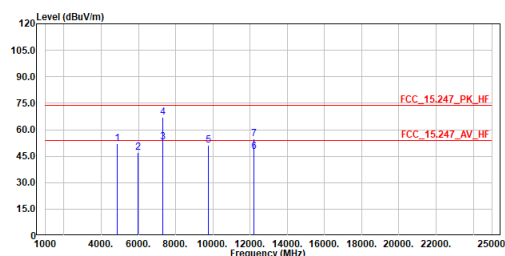


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2357.020	42.54	54.00	-11.46	30.78	11.76	Average
2	2439.760	85.38	-----	-----	73.20	12.18	Average
3	2505.720	42.73	54.00	-11.27	30.22	12.51	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
Mode :SRD_TX_2440MHz
Test by :Scott Chang

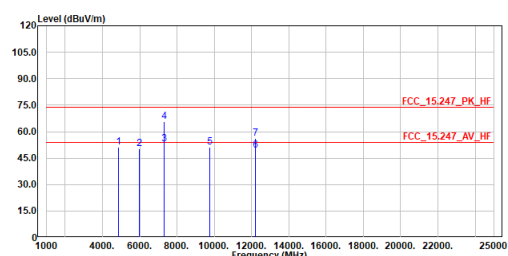


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	52.22	74.00	-21.78	66.68	-14.46	Peak
2	5975.900	47.10	74.00	-26.90	59.47	-12.37	Peak
3	7320.000	53.15	54.00	-0.85	61.01	-7.86	Average
4	7320.000	66.80	74.00	-7.20	74.66	-7.86	Peak
5	9760.000	51.09	74.00	-22.91	55.34	-4.25	Peak
6	12200.000	47.45	54.00	-6.55	48.37	-0.92	Average
7	12200.000	54.77	74.00	-19.23	55.69	-0.92	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
Mode :SRD_TX_2440MHz
Test by :Scott Chang

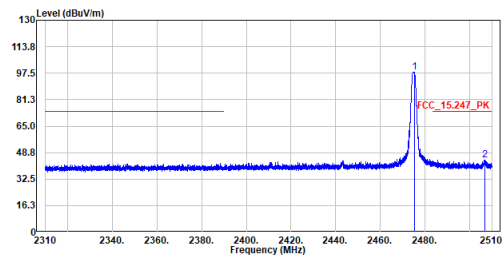


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4880.000	51.00	74.00	-23.00	65.46	-14.46	Peak
2	5975.900	50.17	74.00	-23.83	62.54	-12.37	Peak
3	7320.000	52.83	54.00	-1.17	60.69	-7.86	Average
4	7320.000	65.69	74.00	-8.31	73.55	-7.86	Peak
5	9760.000	51.21	74.00	-22.79	55.46	-4.25	Peak
6	12200.000	49.55	54.00	-4.45	50.47	-0.92	Average
7	12200.000	56.33	74.00	-17.67	57.25	-0.92	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2475MHz
Test by :Scott Chang

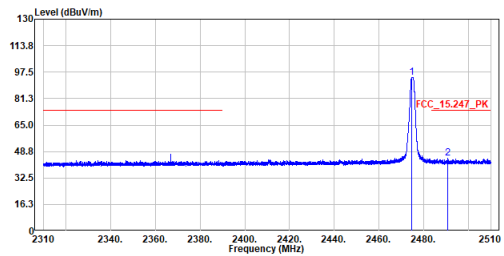


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2475.220	98.11	-----	-----	85.76	12.35	Peak
2	2506.740	43.99	74.00	-30.01	31.48	12.51	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 3000
Mode :SRD_TX_2475MHz
Test by :Scott Chang

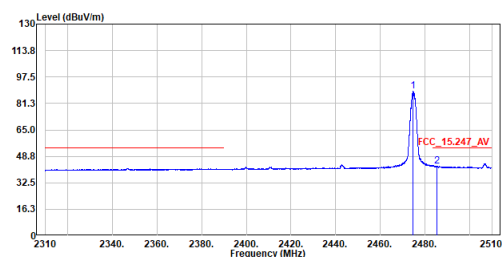


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2474.720	94.29	-----	-----	81.94	12.35	Peak
2	2490.820	44.80	74.00	-29.20	32.37	12.43	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Horizontal
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2475MHz
Test by :Scott Chang

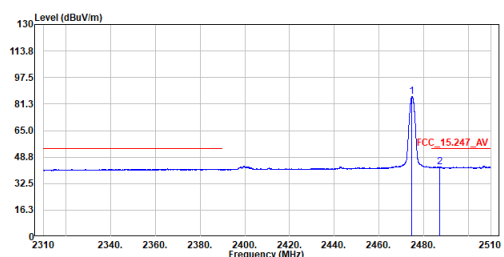


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2474.780	88.62	-----	-----	76.27	12.35	Average
2	2485.240	42.76	54.00	-11.24	30.36	12.40	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
Condition :3m ,Vertical
RB/VB(kHz):1000 / 0.01
Mode :SRD_TX_2475MHz
Test by :Scott Chang

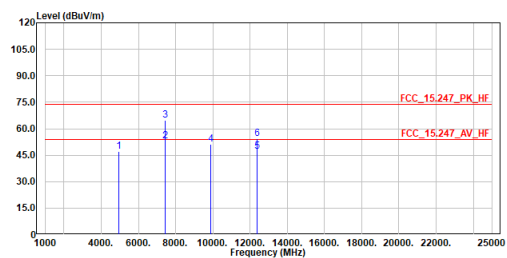


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2474.760	85.92	-----	-----	73.57	12.35	Average
2	2487.120	42.75	54.00	-11.25	30.33	12.42	Average

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
 Condition :3m ,Horizontal
 Mode :SRD_TX_2475MHz
 Test by :Scott Chang

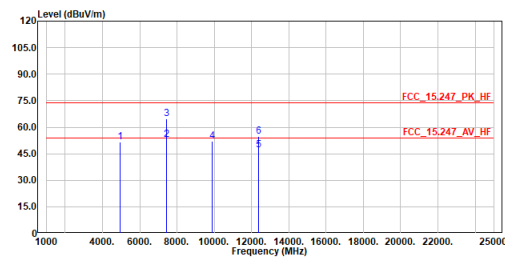


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4950.000	47.12	74.00	-26.88	61.30	-14.18	Peak
2	7425.000	53.01	54.00	-0.99	60.76	-7.75	Average
3	7425.000	64.68	74.00	-9.32	72.43	-7.75	Peak
4	9900.000	51.30	74.00	-22.70	55.27	-3.97	Peak
5	12375.000	46.88	54.00	-7.12	47.36	-0.48	Average
6	12375.000	54.20	74.00	-19.80	54.68	-0.48	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :HC-CB02
 Condition :3m ,Vertical
 Mode :SRD_TX_2475MHz
 Test by :Scott Chang



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4950.000	51.82	74.00	-22.18	66.00	-14.18	Peak
2	7425.000	52.91	54.00	-1.09	60.66	-7.75	Average
3	7425.000	64.83	74.00	-9.17	72.58	-7.75	Peak
4	9900.000	52.04	74.00	-21.96	56.01	-3.97	Peak
5	12375.000	47.15	54.00	-6.85	47.63	-0.48	Average
6	12375.000	54.80	74.00	-19.20	55.28	-0.48	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.