



FCC Radio Test Report

FCC ID: 2AZ3ICP180

This report concerns: Original Grant

Project No. : 2408C029

Equipment : Projector

Brand Name : HP

Test Model : CP180

Series Model : N/A

Applicant: GT Technology Chongqing Limited

Address : No.1195 Mingtao 1st Road, Changshou District, Chongqing, P.R. China

Manufacturer : GT Technology Chongqing Limited

Address : No.1195 Mingtao 1st Road, Changshou District, Chongqing, P.R. China

Factory: Guangzhou Rigal Electronics Co., Ltd.

Address : No.3-1, Ruixiang Road, Huadu District, Guangzhou, China

Date of Receipt : Aug. 06, 2024

Date of Test : Aug. 06, 2024 ~ Sep. 24, 2024

Issued Date : Nov. 11, 2024

Report Version : R00

Test Sample : Engineering Sample No.: DG202408065 for conducted, DG202408066

for others

Standard(s) : FCC CFR Title 47, Part 15, Subpart C

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Prepared by

Evan Yand

Approved by

Chay Cai

Room 108-116, 309-310, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.

Tel: +86-769-8318-3000 Web: www.newbtl.com Service mail: btl qa@newbtl.com



Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. BTL assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

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BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective. Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.



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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-2-2408C029	R00	Original Report.	Nov. 11, 2024	Valid



1. APPLICABLE STANDARDS

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

ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of A2LA: KDB 558074 D01 15.247 Meas Guidance v05r02

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

	FCC CFR Title 47, Part 15, Subpart C					
Standard(s) Section	Standard(s) Section Test Item Test Result Judgment R					
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS			
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS			
15.247(a)(2)	Bandwidth	APPENDIX E	PASS			
15.247(b)(3)	Maximum Output Power	APPENDIX F	PASS			
15.247(d)	Conducted Spurious Emission	APPENDIX G	PASS			
15.247(e)	Power Spectral Density	APPENDIX H	PASS			
15.203	Antenna Requirement		PASS	Note(2)		

Note:

- (1) "N/A" denotes test is not applicable to this device.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.



2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of

For Radiated emissions 1GHz to 18GHz:

Room 102 & Room 702, Building 3, No.9, Jinshagang 1st Road, Dalang Town, Dongguan City, Guangdong People's Republic of China.

For other items:

1-2/F, 4/F, Building A, 1-2/F, Building B, 3/F, Building C, No.3, Jinshagang 1st Road, Dalang Town, Dongguan City, Guangdong People's Republic of China.

BTL's Registration Number for FCC: 747969 BTL's Designation Number for FCC: CN1377

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95.45% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. AC power line conducted emissions Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.88

B. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m) CISPR	30MHz ~ 200MHz	V	4.40	
	CICDD	30MHz ~ 200MHz	Н	3.62
	CISPR	200MHz ~ 1,000MHz	V	4.58
		200MHz ~ 1,000MHz	Н	3.98

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB18	CISPR	1GHz ~ 6GHz	4.48
(3m)	CIOPR	6GHz ~ 18GHz	3.88

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (1m)	CISPR	18 ~ 26.5 GHz	3.36



C. Other Measurement:

Test Item	Uncertainty
Bandwidth	0.90 %
Maximum Output Power	1.3 dB
Conducted Spurious Emission	1.9 dB
Power Spectral Density	1.4 dB
Temperature	0.8 °C
Humidity	2.2 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

2.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By	Test Date
AC Power Line Conducted Emissions	26°C	60%	AC 120V/60Hz	Hayden Chen	Aug. 14, 2024
Radiated Emissions-9 kHz to 30 MHz	26°C	47%	AC 120V/60Hz	Hayden Chen	Aug. 19, 2024
Radiated Emissions-30 MHz to 1000 MHz	24°C	57%	AC 120V/60Hz	Calvin Wen	Sep. 23, 2024
Radiated Emissions-Above	25°C	41%	AC 120V/60Hz	Jensen Zhou	Aug. 22, 2024- Sep. 12, 2024
1000 MHz	24°C	55%	AC 120V/60Hz	Berton Luo	Aug. 18, 2024
Bandwidth	27°C	45%	AC 120V/60Hz	Arvin Tong	Sep. 24, 2024
Maximum Output Power	27°C	45%	AC 120V/60Hz	Arvin Tong	Sep. 24, 2024
Conducted Spurious Emission	27°C	45%	AC 120V/60Hz	Arvin Tong	Sep. 24, 2024
Power Spectral Density	27°C	45%	AC 120V/60Hz	Arvin Tong	Sep. 24, 2024



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Projector
Brand Name	HP
Test Model	CP180
Series Model	N/A
Model Difference(s)	N/A
Software Version	CP180 2024/U8/29 13:42:29 2VT681PROJECTOR-userdebug 9PpR1, 180610.011 eng.eng 00.20240829. 134336 dev-keys
Hardware Version	2.69 inch optical,1280*720,150 ANSI Lumens
Power Source	DC voltage supplied from AC adapter. Model: TPN-LA16
Power Rating	I/P: 100-240V~ 1.7A 50-60Hz O/P: 19.5V===3.33A
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps, 2Mbps
Max. Output Power	2Mbps: -11.83 dBm (0.0001 W)

Note

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.



2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

3. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	linil RTANT	SDC F543A	FPC	N/A	2.69



3.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description	
Mode 1	TX Mode_1Mbps Channel 00/19/39	
Mode 2	TX Mode_2Mbps Channel 00/19/39	
Mode 3	TX Mode_2Mbps Channel 00	

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test		
Final Test Mode Description		
Mode 3	TX Mode_2Mbps Channel 00	

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 3	TX Mode_2Mbps Channel 00

Radiated emissions test - Above 1GHz		
Final Test Mode Description		
Mode 1	TX Mode_1Mbps Channel 00/19/39	
Mode 2	TX Mode_2Mbps Channel 00/19/39	

Conducted test		
Final Test Mode	Description	
Mode 1	TX Mode_1Mbps Channel 00/19/39	
Mode 2	TX Mode_2Mbps Channel 00/19/39	

Note:

- (1) For radiated emission above 1 GHz test, the spurious points of 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (2) For AC power line conducted emissions and radiated emissions below 1 GHz test, the 2Mbps Channel 00 is found to be the worst case and recorded.
- (3) For radiated emission Harmonic 18-26.5GHz test, only tested the worst case and recorded.
- (4) For radiated emission above 1GHz test, both Vertical and Horizontal are evaluated, only the worst case (Vertical) is recorded



3.3 PARAMETERS OF TEST SOFTWARE

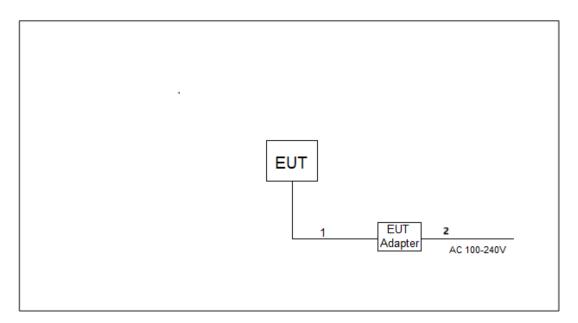
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

Test Software Version	IPOP_V4.0		
Frequency (MHz)	2402	2440	2480
1Mbps	DEF	DEF	DEF
2Mbps	DEF	DEF	DEF

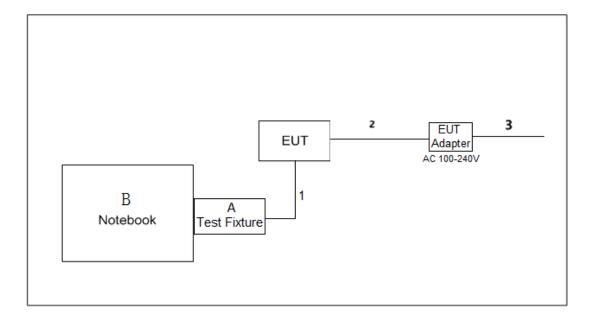


3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

AC power line conducted emissions test and Radiated emissions test – 9kHz to 30MHz



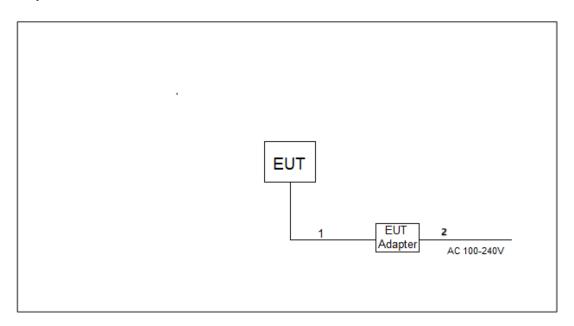
Radiated emissions test - Above 30MHz



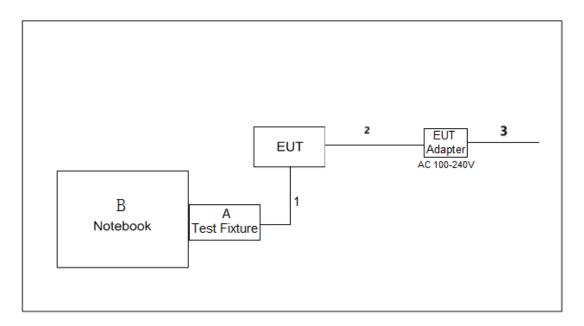


3.5 SUPPORT UNITS

AC power line conducted emissions test and Radiated emissions test – 9kHz to 30MHz



Radiated emissions test - Above 30MHz



3.6 CUSTOMER INFORMATION DESCRIPTION

- 1) The antenna gain is provided by the manufacturer.
- 2) Except for AC power line conducted emissions and radiated emissions, the results of all test items include cable losses. Part of the cable losses (1dB) are provided by the manufacturer, while the other parts of the cable losses are provided by the testing laboratory.



4. AC POWER LINE CONDUCTED EMISSIONS

4.1 LIMIT

Eraguanay of Emission (MHz)	Limit (dBμV)		
Frequency of Emission (MHz)	Quasi-peak	Average	
0.15 - 0.5	66 to 56*	56 to 46*	
0.5 - 5.0	56	46	
5.0 - 30.0	60	50	

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.2 TEST PROCEDURE

- a. 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 equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

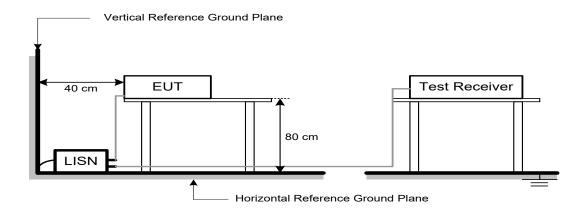
Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.3 DEVIATION FROM TEST STANDARD

No deviation.



4.4 TEST SETUP



4.5 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 continuously transmit during test. This operating condition was tested and used to collect the included data.

4.6 TEST RESULTS

Please refer to the APPENDIX A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of <code>『Note』</code>. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150 kHz to 30 MHz.





5. RADIATED EMISSIONS

5.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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 (Above 1000 MHz)

Frequency	Band edge/ Harmonic at 3m (dBµV/m)		Harmonic at	1m (dBµV/m)
(MHz)	Peak	Average	Peak	Average
Above 1000	74	54	83.5 (Note 5)	63.5 (Note 5)

Note:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

(4)

$$FS_{\text{limit}} = FS_{\text{max}} - 20\log\left(\frac{d_{\text{limit}}}{d_{\text{measure}}}\right)$$

 $20log (d_{limit}/d_{measure})=20log (3/1)=9.5 dB.$

FS_{limit}: Harmonic at 3m Peak and Average limit.

FS_{max}: Harmonic at 1m Peak and Average Maximum value.

d_{limit}: Harmonic at 3m test distance. d_{measure}: Harmonic Actual test distance.



5.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m or 1m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 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.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

The following table is the setting of the receiver:

Spectrum Parameters	Setting	
Start ~ Stop Frequency 9 kHz~150 kHz for RBW 200 Hz		
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz	
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz	

Spectrum Parameters	Setting
Start Frequency 1000 MHz	
Stop Frequency	10th carrier harmonic
RBW / VBW	1 MHz / 3 MHz for PK value
(Emission in restricted band)	1 MHz / 1/T Hz for AVG value

Spectrum Parameters Setting		
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector	
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector	
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector	
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector	
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector	
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector	

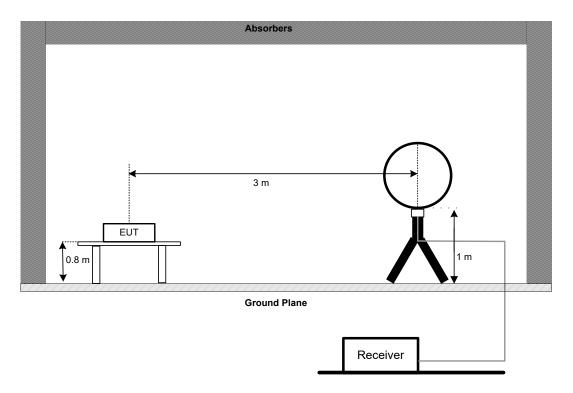


5.3 DEVIATION FROM TEST STANDARD

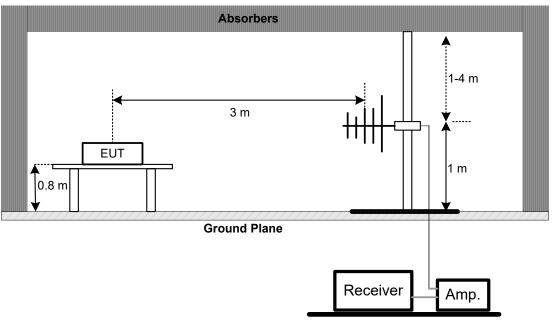
No deviation.

5.4 TEST SETUP

9 kHz to 30 MHz



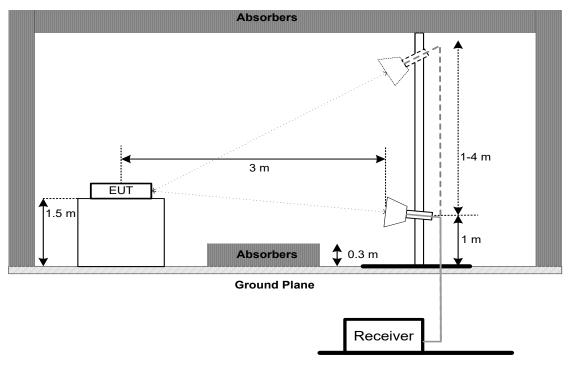
30 MHz to 1 GHz



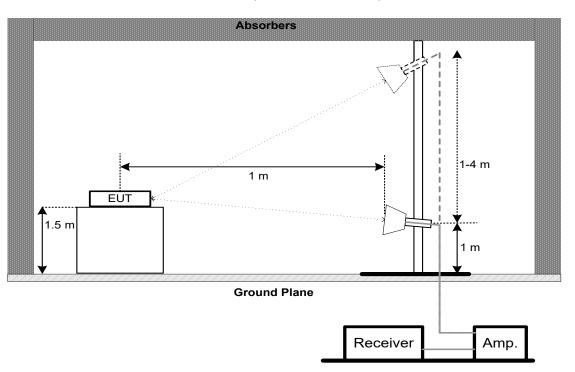


Above 1 GHz

Band edge & Harmonic (1 GHz to 18 GHz)



Harmonic (18 GHz to 26.5 GHz)





5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX B.

Remark:

- (1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

5.7 TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

5.8 TEST RESULT - ABOVE 1000 MHz

Please refer to the APPENDIX D.

Remark:

(1) No limit: This is fundamental signal, the judgment is not applicable. For fundamental signal judgment was referred to Peak output test.



6. BANDWIDTH

6.1 LIMIT

Section	Test Item	Limit
FCC 15.247(a)(2)	6 dB Bandwidth	>= 500 kHz
	99% Emission Bandwidth	-

6.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

For 6 dB Bandwidth:

Spectrum Parameters	Setting	
Span Frequency	> Measurement Bandwidth	
RBW	100 kHz	
VBW	300 kHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

For 99% Emission Bandwidth:

Of 3370 Effilasion Dandwidt	11	
Spectrum Parameters	Setting	
Span Frequency	Between 1.5 times and 5.0 times the OBW	
RBW	30 kHz	
VBW	100 kHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX E.



7. MAXIMUM OUTPUT POWER

7.1 LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000 watt or 30.00 dBm

7.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	≥ 3×RBW
RBW	3 MHz
VBW	3 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX F.



8. CONDUCTED SPURIOUS EMISSION

8.1 LIMIT

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 Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 TEST RESULTS

Please refer to the APPENDIX G.



9. POWER SPECTRAL DENSITY

9.1 LIMIT

Section	Test Item	Limit
FCC 15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

9.2 TEST PROCEDURE

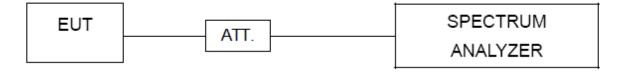
- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting	
Span Frequency	2 MHz (1 Mbps) / 4 MHz (2 Mbps)	
RBW	3 kHz	
VBW	10 kHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

9.6 TEST RESULTS

Please refer to the APPENDIX H.



10. MEASUREMENT INSTRUMENTS LIST

	AC Power Line Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	EMI TEST RECEIVER	R&S	ESCI	100382	Dec. 22, 2024			
2	TWO-LINE V-NETWORK	R&S	ENV216	101447	Dec. 22, 2024			
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A			
4	Cable	N/A	SFT205-NMNM-9M-001	9M	Nov. 27, 2024			
5	643 Shield Room ETS		6*4*3	N/A	N/A			

Radiated Emissions - 9 kHz to 30 MHz							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60 B-034	Mar. 30, 2025		
2	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024		
3	Cable	Cable N/A		N/A	Jun. 09, 2025		
4	Cable	N/A	RG 213/U	N/A	Jun. 09, 2025		
5	Measurement Software	Measurement Farad		N/A	N/A		
6	966 Chamber room	ETS	9*6*6	N/A	May 16, 2025		

	Radiated Emissions - 30 MHz to 1 GHz							
Item	n Kind of Equipment Manufactur		Type No.	Serial No.	Calibrated until			
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	1462	Dec. 13, 2024			
2	Attenuator	EMC INSTRUMENT	EMCI-N-6-06	AT-06009	Dec. 13, 2024			
3	Preamplifier EMC INSTRUMENT		EMC001330	980998	Nov. 17, 2024			
4	Cable	RegalWay	LMR400-NMNM-12.5m	N/A	Jun. 06, 2025			
5	Cable	RegalWay	LMR400-NMNM-3m	N/A	Jun. 06, 2025			
6	Cable	Cable RegalWay		N/A	Jun. 06, 2025			
7	Receiver Agilent		N9038A	MY52130039	Dec. 22, 2024			
8	Positioning Controller MF		MF-7802	N/A	N/A			
9	Measurement Farad		EZ-EMC Ver.NB-03A1-01	N/A	N/A			
10	966 Chamber room	CM	9*6*6	N/A	May 16, 2025			



	Radiated Emissions - 1 GHz to 18 GHz						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Multi-Device Controller	ETS-Lindgren	N/A	N/A	N/A		
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		
3	MXA Signal Analyzer	KEYSIGHT	N9020B	MY63380204	Nov. 17, 2024		
4	Cable	RegalWay	RWLP50-4.0A-SMS M-1.3M	N/A	Jan. 09, 2025		
5	Cable	RegalWay	RWLP50-2.6A-3.5 M2.92MRA-3M	N/A	Jan. 09, 2025		
6	Cable	RegalWay	RWLP50-4.0A-SMS M-9M	N/A	Jan. 09, 2025		
7	966 Chamber room	ETS	RFD-100 (SVSWR)	Q2179	Jan. 09, 2025		
8	Preamplifier EMC INSTRUMENT		EMC118A45SE	981001	May 31, 2025		
9	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A		
10	Filter	STI	STI15-9912	N/A	Nov. 17, 2024		
11	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 20, 2025		

	Radiated Emissions - Above 18 GHz							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	EXA Signal Analyzer	Keysight	N9010A	MY56480488	Dec. 22, 2024			
2	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330-K	619413	Jul. 17, 2025			
3	Cable	RegalWay	RWLP50-2.6A-2.92M 2.92M-1.1M	N/A	Jul. 25, 2025			
4	Cable	Tonscend	HF160-KMKM-3M	N/A	Jul. 25, 2025			
5	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170(3m)	9170-319	Jun. 16, 2025			
6	966 Chamber room CM		9*6*6	N/A	May 19, 2025			
7	Positioning Controller	MF	MF-7802	N/A	N/A			
8	Measurement Software Farad		EZ-EMC Ver.NB-03A1-01	N/A	N/A			

Bandwidth & Maximum Output Power & Power Spectral Density & Conducted Spurious Emission						
Item	Item Kind of Equipment Manufacturer Type No. Serial No. Calibrated					
1	Spectrum Analyzer	R&S	FSP40	100185	May 31, 2025	
2	Measurement Software	Measurement BTI		N/A	N/A	
3	Isolation attenuator	Z-Link	ASMA-16-18-2W	N/A	N/A	

Remark: "N/A" denotes no model name, serial no. or calibration specified. All calibration period of equipment list is one year.



11. EUT TEST PHOTO

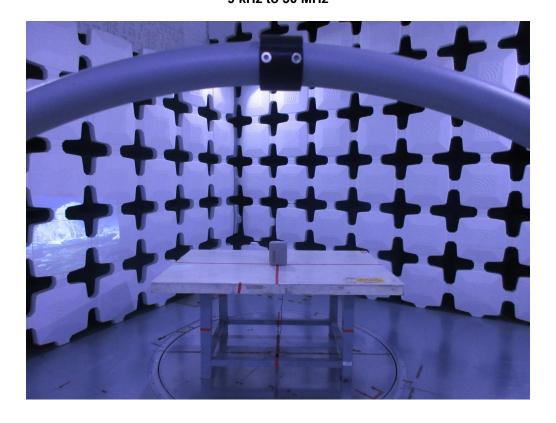
AC Power Line Conducted Emissions Test Photos

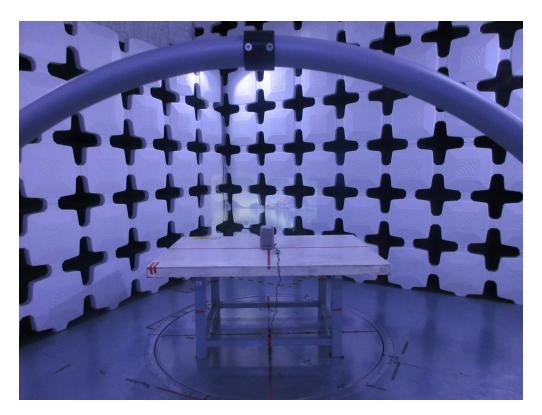






Radiated Emissions Test Photos 9 kHz to 30 MHz

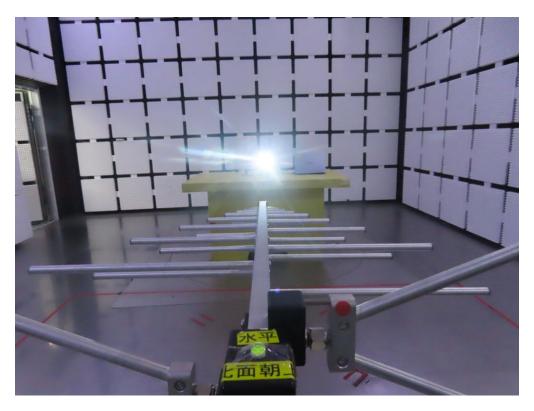






Radiated Emissions Test Photos

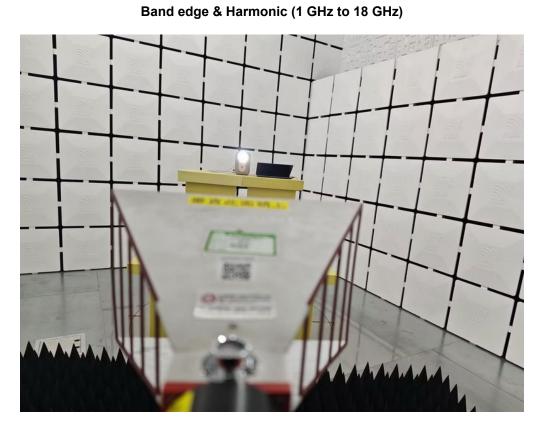
30 MHz to 1000 MHz







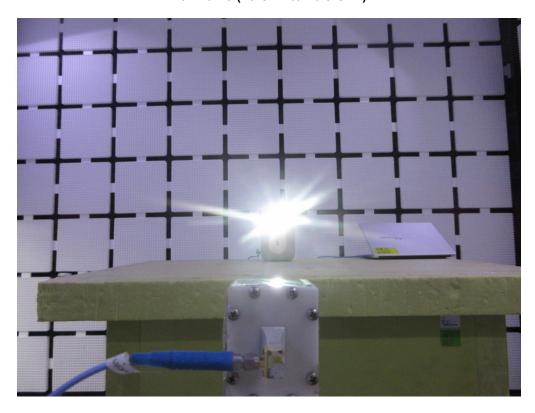
Radiated Emissions Test Photos







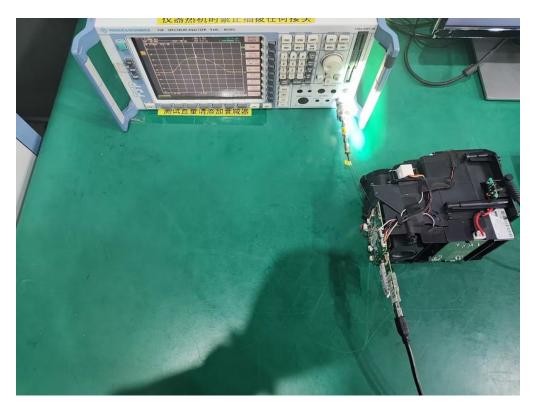
Radiated Emissions Test Photos Harmonic (18 GHz to 26.5 GHz)







Conducted Test Photos



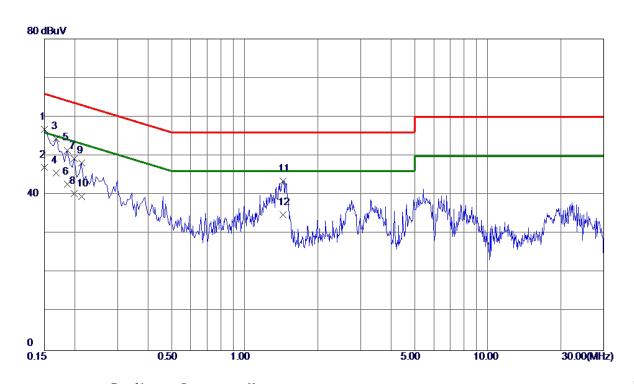




APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	







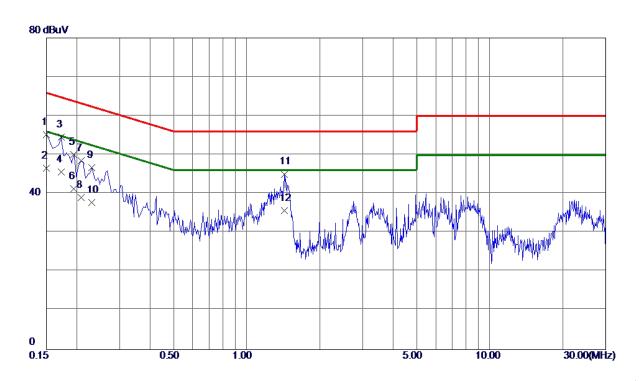
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0. 1500	46. 79	9. 96	56. 75	66.00	-9. 25	QP	
2 *	0.1500	37. 10	9. 96	47.06	56.00	-8. 94	AVG	
3	0. 1680	44. 49	9. 97	54. 46	65. 06	-10. 60	QP	
4	0. 1680	35. 60	9. 97	45. 57	55. 06	-9. 49	AVG	
5	0. 1860	41. 47	9. 97	51. 44	64. 21	-12. 77	QP	
6	0. 1860	32. 81	9. 97	42. 78	54. 21	-11. 43	AVG	
7	0. 1995	39. 32	9. 98	49. 30	63. 63	-14. 33	QP	
8	0. 1995	30. 40	9. 98	40. 38	53. 63	-13. 25	AVG	
9	0. 2130	38. 16	10. 00	48. 16	63. 09	-14. 93	QP	
10	0. 2130	29. 60	10. 00	39. 60	53. 09	-13. 49	AVG	
11	1. 4370	32. 25	11. 28	43. 53	56. 00	-12. 47	QP	
12	1. 4370	23. 59	11. 28	34. 87	46. 00	-11. 13	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0. 1500	45. 21	9. 93	55. 14	66.00	-10.86	QP	
2	0. 1500	36. 70	9. 93	46. 63	56.00	-9. 37	AVG	
3	0. 1725	44. 66	9. 93	54. 59	64. 84	-10. 25	QP	
4 *	0. 1725	35. 60	9. 93	45. 53	54.84	-9. 31	AVG	
5	0. 1949	40. 19	9. 94	50. 13	63. 83	-13. 70	QP	
6	0. 1949	31. 30	9. 94	41. 24	53. 83	-12. 59	AVG	
7	0. 2085	38. 55	9. 95	48. 50	63. 26	-14. 76	QP	
8	0. 2085	29. 10	9. 95	39. 05	53. 26	-14. 21	AVG	
9	0. 2310	36. 73	9. 99	46. 72	62. 41	-15. 69	QP	
10	0. 2310	27. 80	9. 99	37. 79	52. 41	-14. 62	AVG	
11	1. 4280	33. 81	11. 23	45. 04	56. 00	-10. 96	QP	
12	1. 4280	24. 50	11. 23	35. 73	46. 00	-10. 27	AVG	

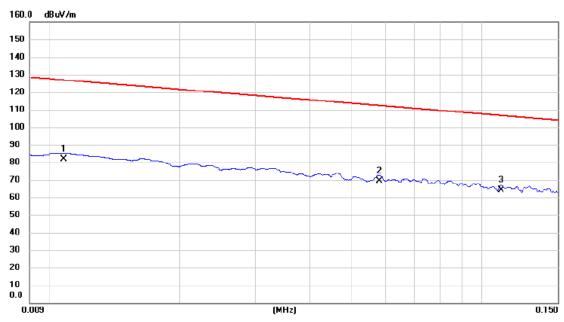
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ





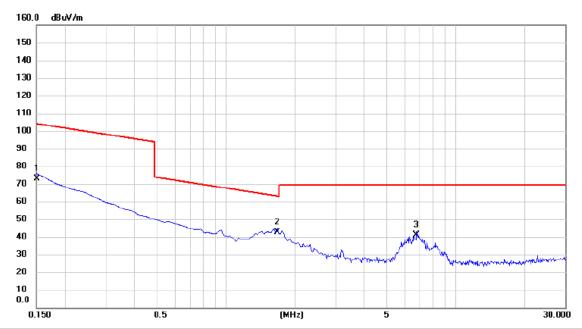


No. Mk.	Freq.		Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0108	61.30	20.52	81.82	126.94	-45.12	AVG	
2	0.0580	48.19	21.23	69.42	112.34	-42.92	AVG	
3 *	0.1108	42.84	21.31	64.15	106.72	-42.57	QP	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.





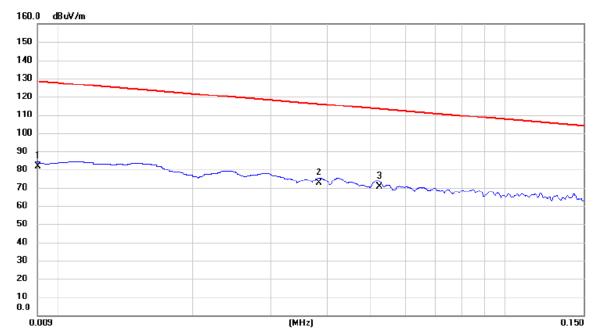


No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.1500	51.84	21.27	73.11	104.09	-30.98	AVG	
2 *	1.6724	21.61	21.13	42.74	63.14	-20.40	QP	
3	6.7470	19.96	21.19	41.15	69.54	-28.39	QP	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.







No. Mk.	Freq.		Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0090	61.32	20.40	81.72	128.52	-46.80	AVG	
2	0.0384	51.48	21.14	72.62	115.92	-43.30	AVG	
3 *	0.0524	49.52	21.21	70.73	113.22	-42.49	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







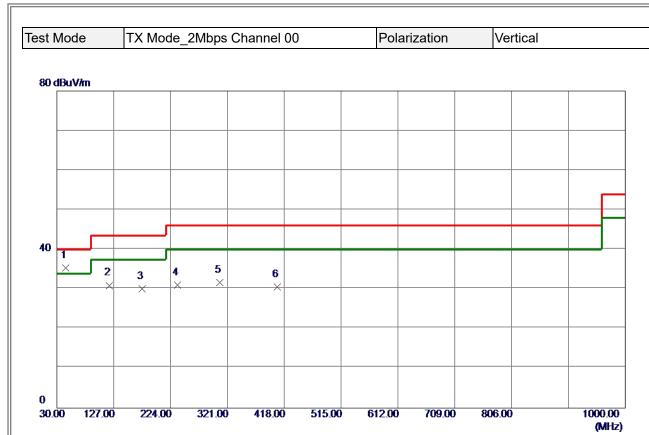
No. Mk.	Freq.			Measure- ment		Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.1500	52.95	21.27	74.22	104.09	-29.87	AVG	
2 *	1.5828	22.13	21.14	43.27	63.62	-20.35	QP	
3	6.9558	17.34	21.19	38.53	69.54	-31.01	QP	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	<u>,</u>



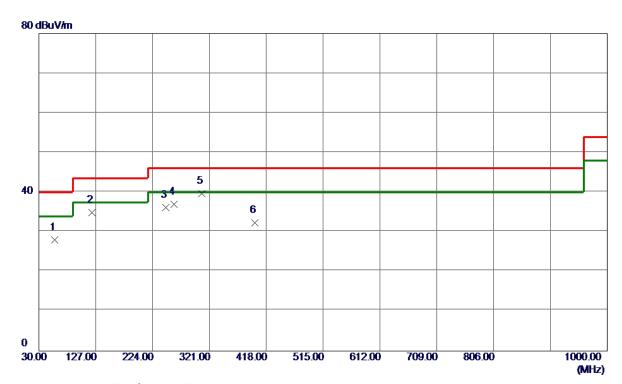


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	45. 0350	46. 70	-11. 36	35. 34	40.00	-4. 66	Peak	
2	119. 2400	44. 21	-13. 25	30. 96	43. 52	-12. 56	Peak	
3	175. 0150	41.86	-11. 76	30. 10	43. 52	-13. 42	Peak	
4	235. 6400	44. 09	-13. 10	30. 99	46.02	-15. 03	Peak	
5	308. 3900	42.01	-10. 37	31. 64	46. 02	-14. 38	Peak	
6	406. 3599	38. 42	-7. 88	30. 54	46. 02	-15. 48	Peak	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	56. 6750	39. 54	-11. 60	27. 94	40.00	-12.06	Peak	
2	120. 2100	47. 97	-13. 15	34. 82	43. 52	-8. 70	Peak	
3	246. 7950	48. 68	-12. 47	36. 21	46.02	-9. 81	Peak	
4	260. 8599	48. 99	-12. 02	36. 97	46.02	-9. 05	Peak	
5 *	308. 3900	50. 12	-10. 37	39. 75	46.02	-6. 27	Peak	
6	398. 1150	40. 44	-8. 08	32. 36	46.02	-13. 66	Peak	

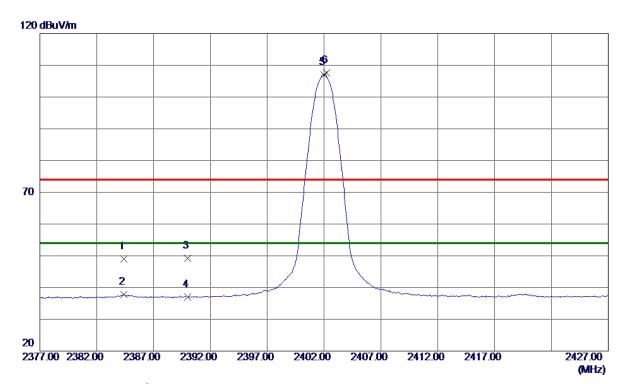
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ



Test Mode	TX 2402 MHz _CH00_1Mbps	Polarization	Vertical

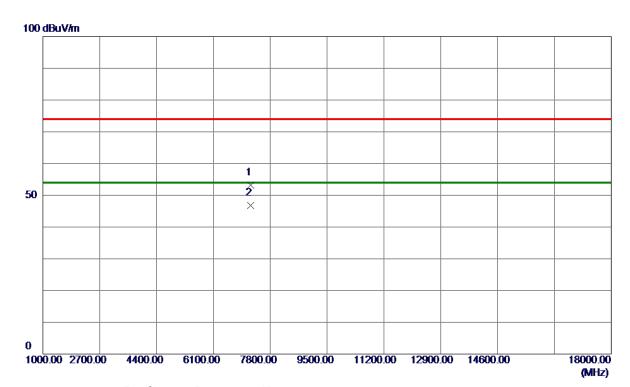


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2384. 4000	39. 48	9. 44	48. 92	74.00	−25. 08	Peak	
2	2384. 4000	28. 32	9. 44	37. 76	54.00	-16. 24	AVG	
3	2390. 0000	39. 74	9. 44	49. 18	74.00	-24. 82	Peak	
4	2390. 0000	27. 61	9. 44	37. 05	54.00	-16. 95	AVG	
5 *	2402. 0000	97. 65	9. 45	107. 10	54.00	53. 10	AVG	No Limit
6	2402. 2000	98. 07	9. 45	107. 52	74.00	33. 52	Peak	No Limit

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2402 MHz	CH00_1Mbps	Polarization	Vertical

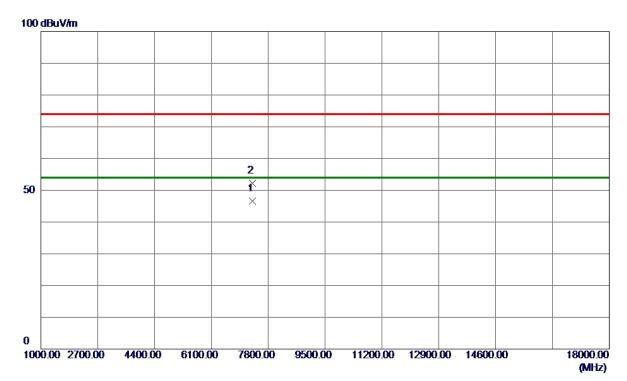


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	7205. 1400	44. 89	8. 38	53. 27	74.00	-20. 73	Peak	
2 *	7206. 4800	38. 34	8. 39	46. 73	54. 00	-7. 27	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Ī	Test Mode	TX 2440 MHz	CH19 1Mbps	Polarization	Vertical

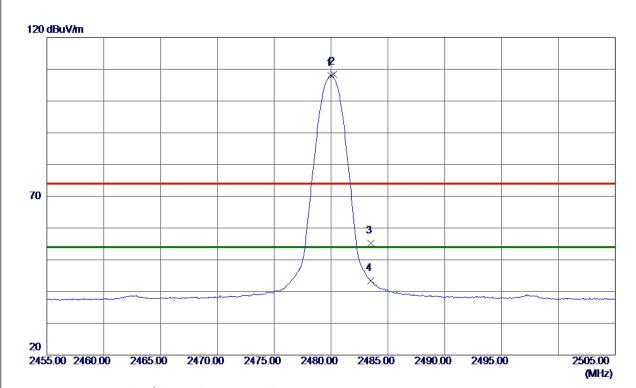


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	7320. 4400	37. 97	8. 66	46. 63	54.00	-7. 37	AVG	
2	7320. 5800	43. 56	8. 66	52. 22	74. 00	-21. 78	Peak	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2480 MHz _CH39_1Mbps	Polarization	Vertical

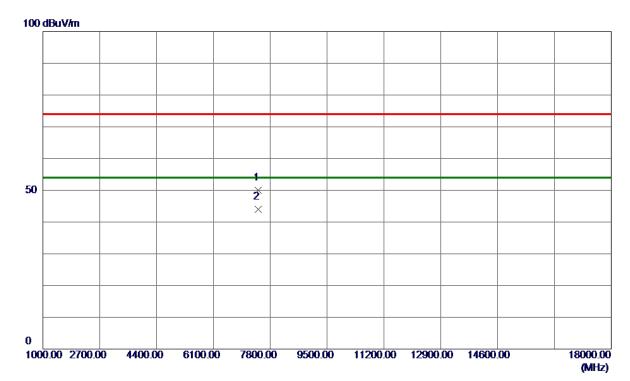


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2480.0000	98. 53	9. 47	108.00	54.00	54.00	AVG	No Limit
2	2480. 2000	98. 99	9. 47	108. 46	74.00	34. 46	Peak	No Limit
3	2483. 5000	45.82	9. 47	55. 29	74.00	-18. 71	Peak	
4	2483. 5000	33. 98	9. 47	43. 45	54.00	-10. 55	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2480 MHz _0	CH39_1Mbp	s Polar	rization	Vertical

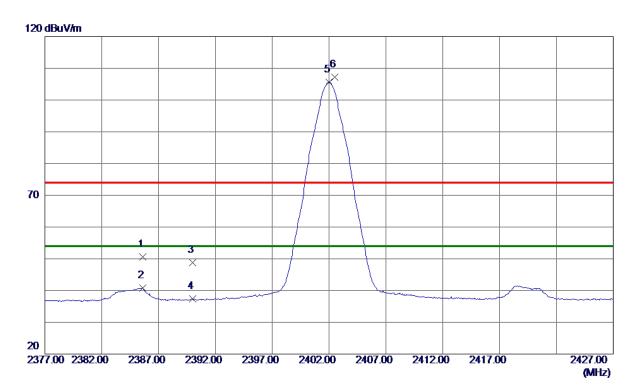


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	7439. 3400	41. 14	8. 94	50. 08	74.00	-23. 92	Peak	
2 *	7440. 3400	35. 02	8. 94	43. 96	54.00	-10. 04	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2402 MHz	CH00 2Mbps	Polarization	Vertical	

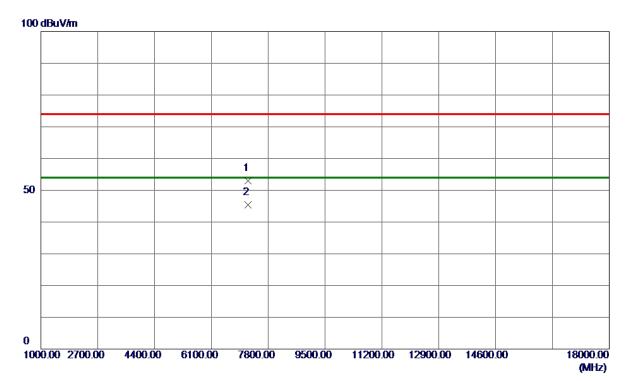


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2385. 6000	41. 22	9. 44	50. 66	74.00	-23. 34	Peak	
2	2385. 6000	31. 34	9. 44	40. 78	54.00	-13. 22	AVG	
3	2390. 0000	39. 38	9. 44	48. 82	74.00	-25. 18	Peak	
4	2390. 0000	28. 05	9. 44	37. 49	54.00	-16. 51	AVG	
5 *	2402. 0000	96. 14	9. 45	105. 59	54.00	51. 59	AVG	No Limit
6	2402. 5000	97. 84	9. 45	107. 29	74.00	33. 29	Peak	No Limit

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2402 MHz _CH00_2Mbps	Polarization	Vertical

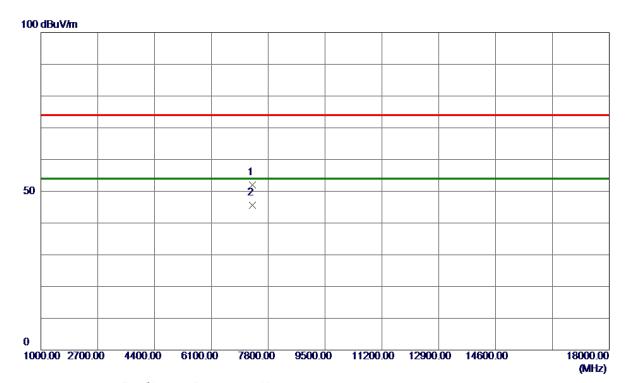


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	7204. 5000	44. 61	8. 38	52. 99	74.00	-21. 01	Peak	
2 *	7204. 7000	37. 11	8. 38	45. 49	54.00	-8. 51	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2440 MHz _CH19_2Mbps	Polarization	Vertical

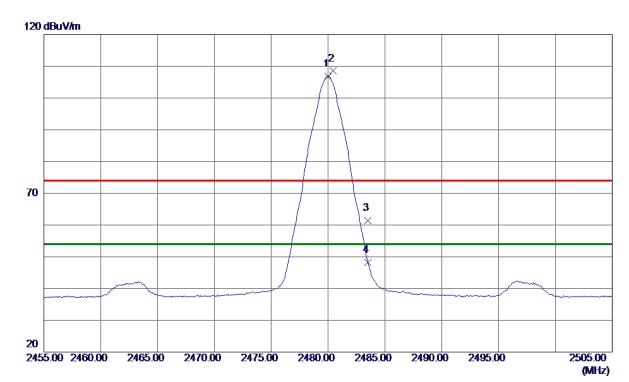


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	7318. 4000	43. 30	8. 65	51. 95	74.00	-22. 05	Peak	
2 *	7321. 1400	36. 87	8. 66	45. 53	54. 00	-8. 47	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Vertical

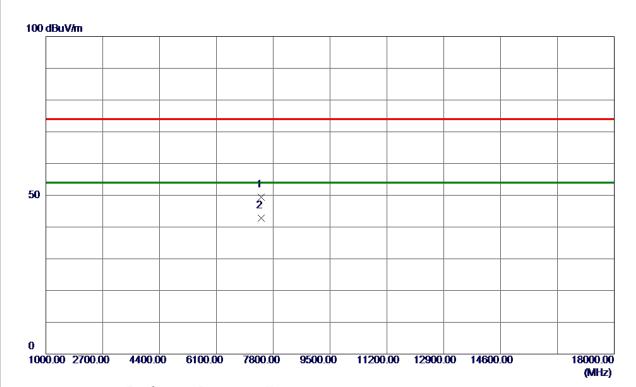


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2480. 0000	97. 30	9. 47	106. 77	54.00	52. 77	AVG	No Limit
2	2480. 4500	99. 03	9. 47	108. 50	74.00	34. 50	Peak	No Limit
3	2483. 5000	51. 99	9. 47	61. 46	74.00	-12. 54	Peak	
4	2483. 5000	38. 80	9. 47	48. 27	54. 00	-5. 73	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	TX 2480 MHz	CH39_2Mbps	Polarization	Vertical

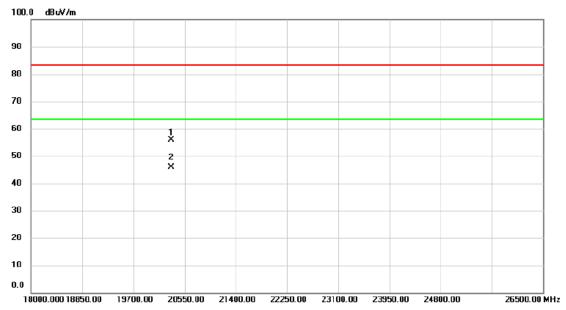


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	7438. 4600	40. 50	8. 93	49. 43	74.00	-24. 57	Peak	
2 *	7438. 5800	33. 91	8. 94	42.85	54. 00	-11. 15	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.





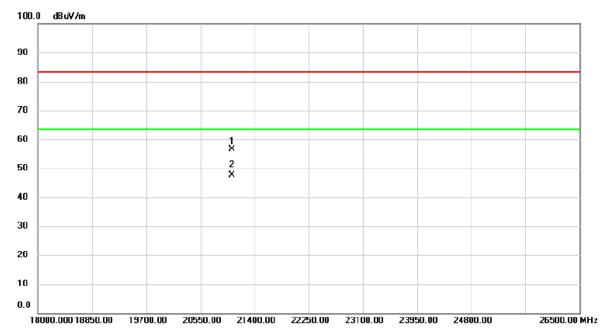


No.	Mk.	Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2	0324.75	45.59	10.18	55.77	83.50	-27.73	peak	
2	* 2	0324.75	35.78	10.18	45.96	63.50	-17.54	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







No.	Mk	. Freq.		Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		21043.00	46.77	9.97	56.74	83.50	-26.76	peak	
2	*	21043.00	37.77	9.97	47.74	63.50	-15.76	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

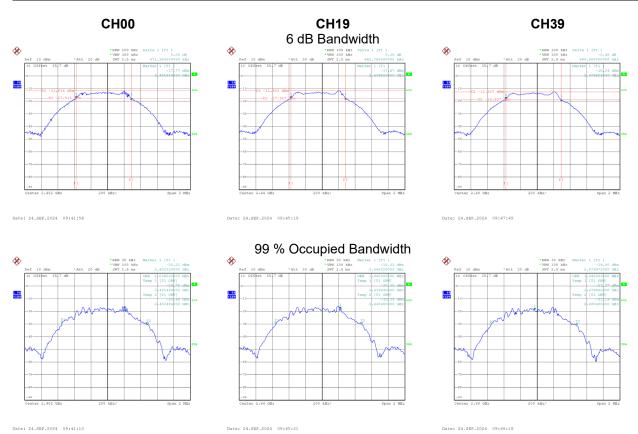


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Test Mode	TX Mode 1	Mbps
100t Wood	17(11)040 1	111220

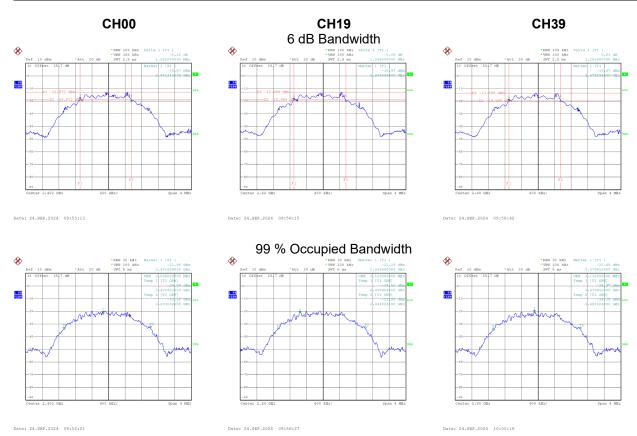
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result
00	2402	0.672	1.036	0.5	Pass
19	2440	0.663	1.040	0.5	Pass
39	2480	0.668	1.040	0.5	Pass





Test Mode	TX Mode	2Mbps
103t Wood	I I N WIOGC	_ZIVIDP3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result
00	2402	1.242	2.096	0.5	Pass
19	2440	1.258	2.120	0.5	Pass
39	2480	1.254	2.112	0.5	Pass





APPENDIX F - MAXIMUM OUTPUT POWER



Test Mode TX Mode 1Mbps

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	-11.84	0.0001	30.00	1.0000	Pass
2440	-12.02	0.0001	30.00	1.0000	Pass
2480	-12.67	0.0001	30.00	1.0000	Pass

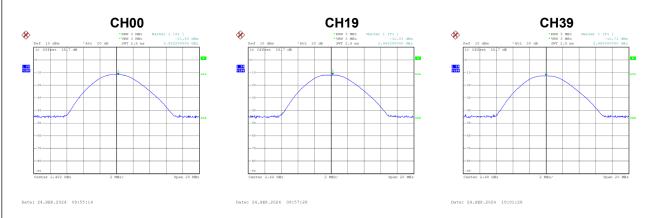
Note: Output power = Measure result + Cable loss



Hest Mode	ITX Mode 2Mbps	
I CSL IVIOUC		

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	-11.83	0.0001	30.00	1.0000	Pass
2440	-12.03	0.0001	30.00	1.0000	Pass
2480	-12.71	0.0001	30.00	1.0000	Pass

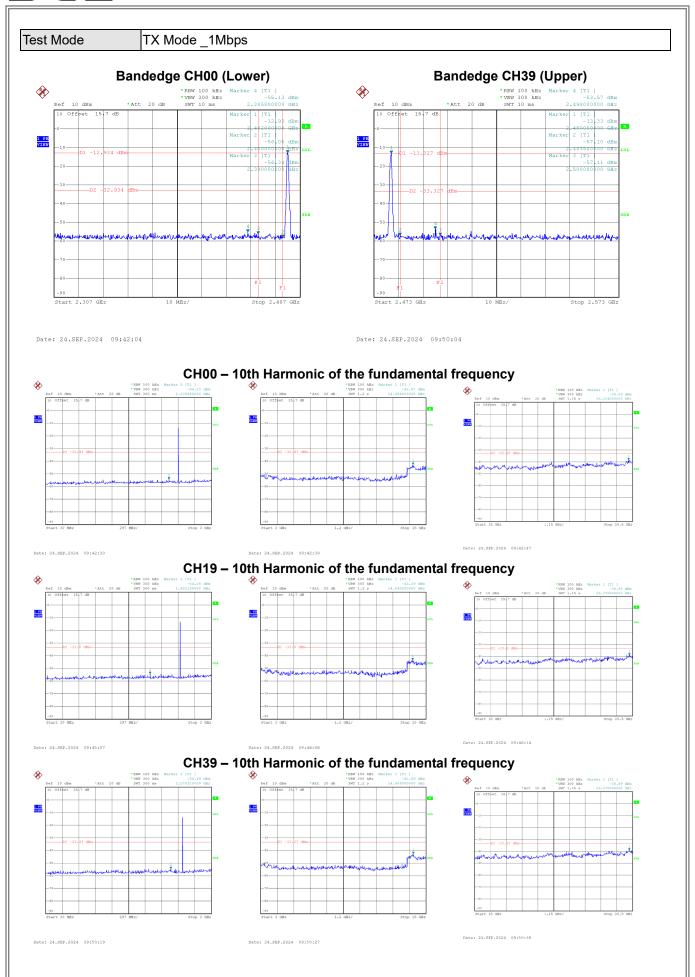
Note: Output power = Measure result + Cable loss



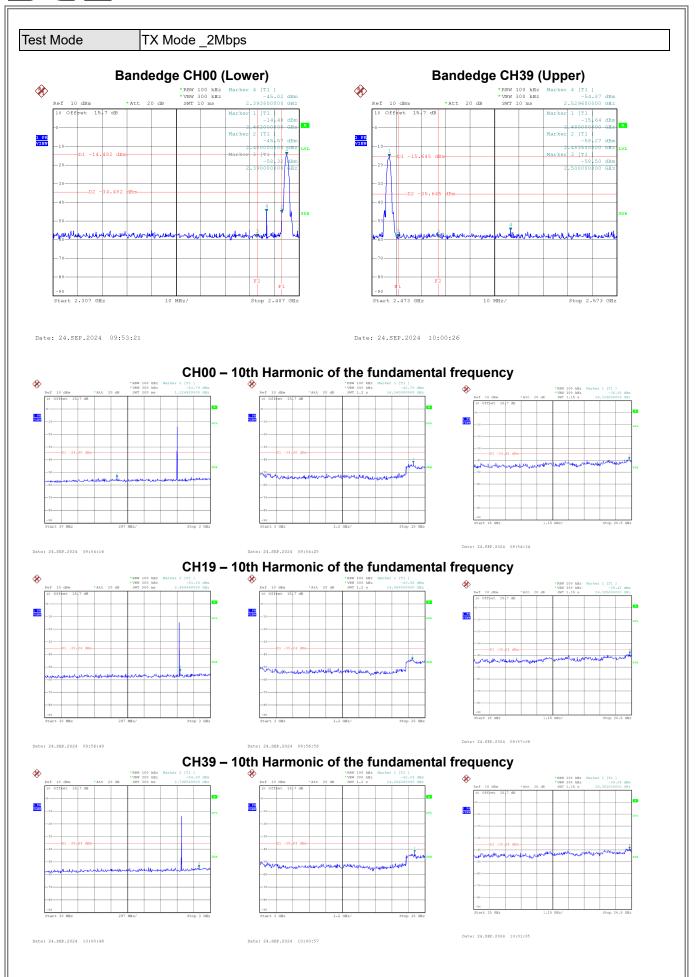


APPENDIX G - CONDUCTED SPURIOUS EMISSION











APPENDIX H - POWER SPECTRAL DENSITY



I	Test Mode	TX Mode _	1Mbps

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-28.82	8.00	Pass
19	2440	-28.54	8.00	Pass
39	2480	-29.78	8.00	Pass



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rest iviode	IX Mode Zimbbs
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Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-31.53	8.00	Pass
19	2440	-31.73	8.00	Pass
39	2480	-32.57	8.00	Pass



End of Test Report