



FCC Radio Test Report

FCC ID: ZMOSU806LA

This report concerns: Original Grant

Project No. : 2205C056
Equipment : LTE Module
Brand Name : Fibocom
Test Model : SU806-LA

Series Model : N/A

Applicant: Fibocom Wireless Inc.

Address : 1101, Tower A, Building 6, Shenzhen International Innovation Valley,

Dashi 1st Rd, Nanshan, Shenzhen, China

Manufacturer: Fibocom Wireless Inc.

Address : 1101, Tower A, Building 6, Shenzhen International Innovation Valley,

Dashi 1st Rd, Nanshan, Shenzhen, China

Date of Receipt : May 16, 2022

Date of Test : May 18, 2022 ~ Jun. 15, 2022

Issued Date : Jun. 15, 2022

Report Version : R01

Test Sample : Engineering Sample No.: DG20220516109 **Standard(s)** : FCC CFR Title 47, Part 15, Subpart C

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

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

Prepared by : Grani Zhou

Grani Zhou

Approved by : Steven Lu

Steven Lu

lac-MRA



Add: No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792

People's Republic of China Tel: +86-769-8318-3000

Web: www.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** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** 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

in determining the Pass/Fail results.

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



Table of Contents	Page
REPORT ISSUED HISTORY	6
1 . SUMMARY OF TEST RESULTS	7
1.1 TEST FACILITY	8
1.2 MEASUREMENT UNCERTAINTY	8
1.3 TEST ENVIRONMENT CONDITIONS	9
2. GENERAL INFORMATION	10
2.1 GENERAL DESCRIPTION OF EUT	10
2.2 DESCRIPTION OF TEST MODES	11
2.3 PARAMETERS OF TEST SOFTWARE	11
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	12
2.5 SUPPORT UNITS	12
3 . AC POWER LINE CONDUCTED EMISSIONS	13
3.1 LIMIT	13
3.2 TEST PROCEDURE	13
3.3 DEVIATION FROM TEST STANDARD	13
3.4 TEST SETUP	14
3.5 EUT OPERATING CONDITIONS	14
3.6 TEST RESULTS	14
4 . RADIATED EMISSIONS	15
4.1 LIMIT	15
4.2 TEST PROCEDURE	16
4.3 DEVIATION FROM TEST STANDARD	17
4.4 TEST SETUP	17
4.5 EUT OPERATING CONDITIONS	18
4.6 TEST RESULT - 9 KHZ TO 30 MHZ	18
4.7 TEST RESULT - 30 MHZ TO 1000 MHZ	18
4.8 TEST RESULT - ABOVE 1000 MHZ	18
5 . BANDWIDTH	19
5.1 LIMIT	19
5.2 TEST PROCEDURE	19
5.3 DEVIATION FROM STANDARD	19
5.4 TEST SETUP	19



Table of Contents	Page
5.5 EUT OPERATION CONDITIONS	19
5.6 TEST RESULTS	19
6 . MAXIMUM OUTPUT POWER	20
6.1 LIMIT	20
6.2 TEST PROCEDURE	20
6.3 DEVIATION FROM STANDARD	20
6.4 TEST SETUP	20
6.5 EUT OPERATION CONDITIONS	20
6.6 TEST RESULTS	20
7. CONDUCTED SPURIOUS EMISSION	21
7.1 LIMIT	21
7.2 TEST PROCEDURE	21
7.3 DEVIATION FROM STANDARD	21
7.4 TEST SETUP	21
7.5 EUT OPERATION CONDITIONS	21
7.6 TEST RESULTS	21
8 . POWER SPECTRAL DENSITY	22
8.1 LIMIT	22
8.2 TEST PROCEDURE	22
8.3 DEVIATION FROM STANDARD	22
8.4 TEST SETUP	22
8.5 EUT OPERATION CONDITIONS	22
8.6 TEST RESULTS	22
9 . MEASUREMENT INSTRUMENTS LIST	23
10 . EUT TEST PHOTO	25
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	30
APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ	33
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	38
APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ	41
APPENDIX E - BANDWIDTH	54
APPENDIX F - MAXIMUM OUTPUT POWER	56



Table of Contents	Page
APPENDIX G - CONDUCTED SPURIOUS EMISSION	58
APPENDIX H - POWER SPECTRAL DENSITY	60



REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2205C056	R00	Original Report.	Jun. 13, 2022	Invalid
BTL-FCCP-5-2205C056	R01	Updated AC Power Line Conducted Emissions and Radiated Emissions(9 kHz to 30 MHz) test items.	Jun. 15, 2022	Valid



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
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.



1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

BTL's Registration Number for FCC: 357015 BTL's Designation Number for FCC: CN1240

1.2 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% 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	2.60

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	30MHz ~ 200MHz	V	4.36	
	CISPR	30MHz ~ 200MHz	Н	3.32
(3m)	CIOPK	200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	Н	3.96

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 CISPR	1GHz ~ 6GHz	3.80	
(3m)	CISPR	6GHz ~ 18GHz	4.82

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03	03 CISPR	18 ~ 26.5 GHz	3.62
(1m)	CISPR	26.5 ~ 40 GHz	4.00



C. Other Measurement:

Test Item	Uncertainty
Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Conducted Spurious Emission	±2.71 dB
Power Spectral Density	±0.86 dB
Temperature	±0.08 °C
Humidity	±1.5%

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

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25°C	56%	DC 3.8V	Rod Tang
Radiated Emissions-9 kHz to 30 MHz	24°C	58%	DC 3.8V	Rod Tang
Radiated Emissions-30 MHz to 1000 MHz	26°C	52%	DC 3.8V	Berton Luo
Radiated Emissions-Above 1000 MHz	22°C	50%	DC 3.8V	Berton Luo
Bandwidth	25°C	60%	DC 3.8V	Silly Zheng
Maximum Output Power	25°C	60%	DC 3.8V	Silly Zheng
Conducted Spurious Emission	25°C	60%	DC 3.8V	Silly Zheng
Power Spectral Density	25°C	60%	DC 3.8V	Silly Zheng



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Module
Brand Name	Fibocom
Test Model	SU806-LA
Series Model	N/A
Model Difference(s)	N/A
Software Version	SU806-LA-Q3E. 01. 101
Hardware Version	V1.0
Power Source	DC voltage supplied from external power supply.
Power Rating	Supply voltage: 3.5~4.2V, Typical supply voltage: 3.8V
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps
Max. Output Power	1Mbps: 2.62 dBm (0.0018 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:

An	nt.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1		shenzhen bogesi communication technology co., ltd	GHT-019A	Dipole	SMA Male J	2.3

Note:

The antenna gain is provided by the manufacturer.



2.2 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_1Mbps 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 2 TX Mode_1Mbps Channel 00			

Radiated emissions test - Below 1GHz			
Final Test Mode Description			
Mode 2	TX Mode_1Mbps Channel 00		

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

Conducted test			
Final Test Mode Description			
Mode 1 TX Mode_1Mbps 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 1Mbps Channel 00 is found to be the worst case and recorded.

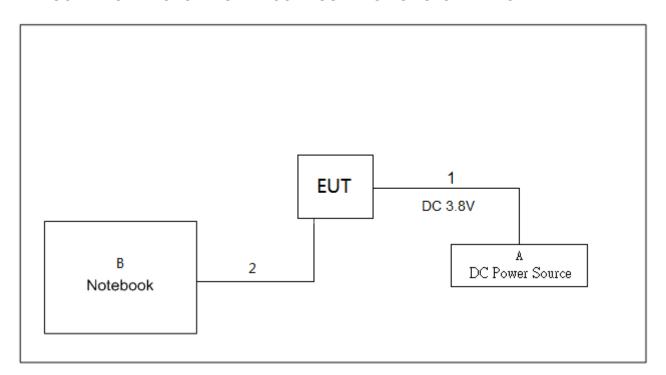
2.3 PARAMETERS OF TEST SOFTWARE

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	Pandora_R22.20.4001		
Frequency (MHz)	2402	2440	2480
1Mbps	Default	Default	Default



2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
Α	DC Power Source	TRUE-POWER	GPC30300N	NA
В	Notebook	Lenovo	V310-14ISK	LR07GZNB

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1m
2	USB Cable	NO	NO	0.8m



3. AC POWER LINE CONDUCTED EMISSIONS

3.1 LIMIT

Eraguanay of Emission (MHz)	Limit (dl	ΒμV)
Frequency of Emission (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5.0	56	6
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.

3.2 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:

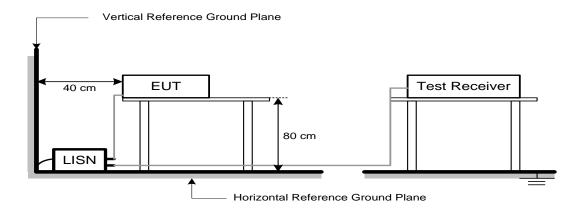
Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.3 DEVIATION FROM TEST STANDARD

No deviation.



3.4 TEST SETUP



3.5 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.

3.6 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.



4. RADIATED EMISSIONS

4.1 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)

Fraguency (MHz)	(dBuV/m	n at 3 m)
Frequency (MHz)	Peak	Average
Above 1000	74	54

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).



4.2 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 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 1 GHz)
- 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

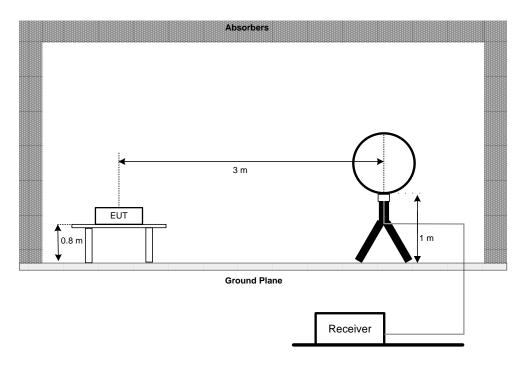


4.3 DEVIATION FROM TEST STANDARD

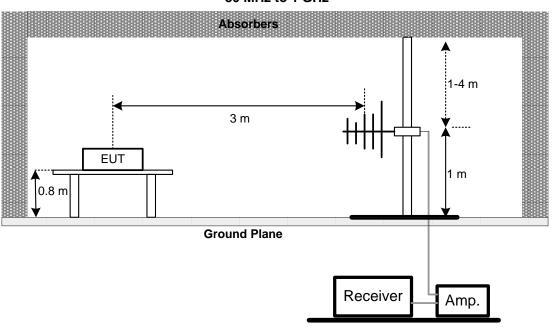
No deviation.

4.4 TEST SETUP

9 kHz to 30 MHz

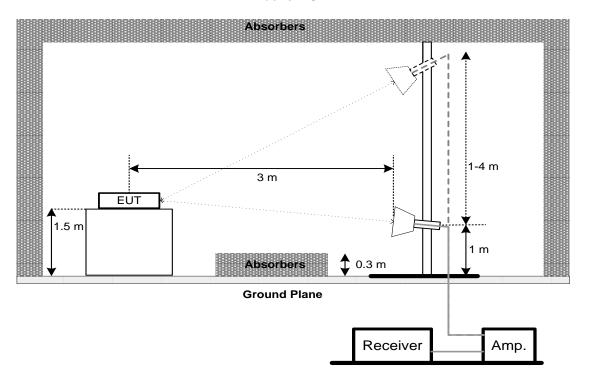


30 MHz to 1 GHz





Above 1 GHz



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 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.

4.7 TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

4.8 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.



5. BANDWIDTH

5.1 LIMIT

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

5.2 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:

Setting
> Measurement Bandwidth
100 kHz
300 kHz
Peak
Max Hold
Auto

For 99% Emission Bandwidth:

Of 33 /0 Liftission Dandwidth	1.	
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	

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.



6. MAXIMUM OUTPUT POWER

6.1 LIMIT

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

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:

Spectrum Parameters	Setting
Span Frequency	At least 1.5 times the OBW
RBW	1% to 5% of the OBW, not to exceed 1 MHz
VBW	≥ 3×RBW
Detector	RMS
Trace	Max Hold
Sweep Time	

Note: Where T is defined in 11.6 of ANSI C63.10-2013.

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 F.



7. CONDUCTED SPURIOUS EMISSION

7.1 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.

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
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
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 G.



8. POWER SPECTRAL DENSITY

8.1 LIMIT

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

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
Span Frequency	2 MHz (1 Mbps)
RBW	3 kHz
VBW	10 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 H.



9. 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	Jan. 22, 2023				
2	LISN	EMCO	3816/2	52765	Jan. 23, 2023				
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Jan. 23, 2023				
4	50Ω Terminator	SHX	TF5-3	15041305	N/A				
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				
6	Cable	N/A	RG223	RG223 12m Mar.					
7	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	MXE EMI Receiver	Keysight	N9038A	MY56400091	Jan. 22, 2023				
2*	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 23, 2024				
3	Cable	N/A	RG 213/U(9kHz~1GHz)	N/A	Jul. 09, 2022				
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				
5	966 Chamber Room	ETS	9*6*6	N/A	Jul. 17, 2022				

	Radiated Emissions - 30 MHz to 1 GHz								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 03, 2023				
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023				
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022				
4	Controller	CT	SC100	N/A	N/A				
5	Controller	MF	MF-7802	MF780208416	N/A				
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023				
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				
8	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022				

	Radiated Emissions - Above 1 GHz								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	Double Ridged Horn Antenna	ARA	DRG-118A	16554	Apr. 18, 2023				
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022				
3	Amplifier	Agilent	8449B	3008A02584	Jul. 10, 2022				
4	Controller	CT	SC100	N/A	N/A				
5	Controller	MF	MF-7802	MF780208416	N/A				
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023				
7	EXA Spectrum Analyzer	Keysight	N9010A	MY56480488	Jan. 22, 2023				
8	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330 -K	619413	Jul. 16, 2022				
9	Cable	Talent microwave A81-SMAMSMAM-12.5M		N/A	Oct. 15, 2022				
10	Cable	Talent microwave	A40-2.92M2.92M-2. 5M	N/A	Nov. 30, 2022				
11	Filter	STI	STI15-9912	N/A	Jul. 10, 2022				
12	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				
13	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022				



Bandwidth & Maximum Output Power & Power Spectral Density & Conducted Spurious Emission									
Item	Item Kind of Equipment Manufacturer Type No. Serial No. Calibrated unt								
1	1 Spectrum Analyzer R&S FSP40 100185 Jul. 10, 2022								
2	2 Attenuator WOKEN 6SM3502 VAS1214NL N/A								
3									
4	DC Block	Mini	N/A	N/A	N/A				

Remark: "N/A" denotes no model name, serial no. or calibration specified.

"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.



10. EUT TEST PHOTO

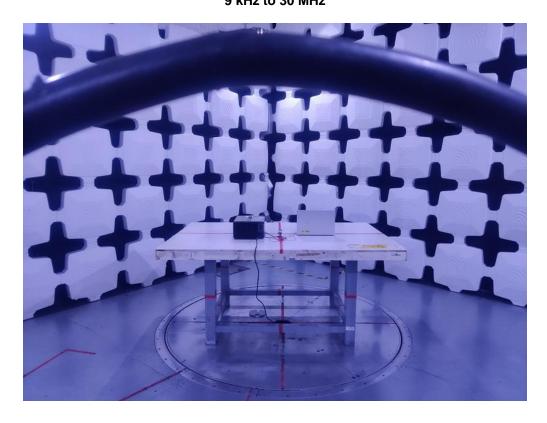








Radiated Emissions Test Photos 9 kHz to 30 MHz

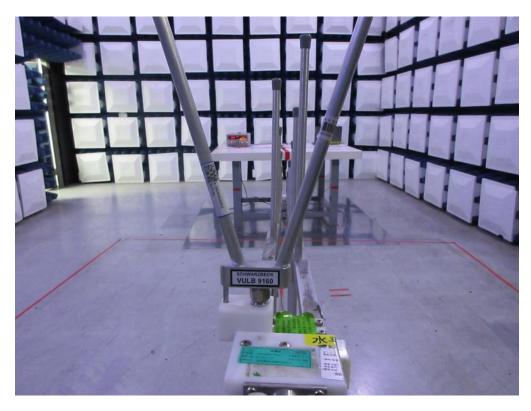


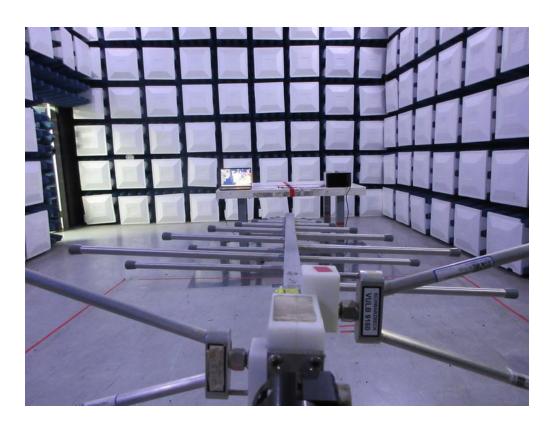




Radiated Emissions Test Photos

30 MHz to 1000 MHz

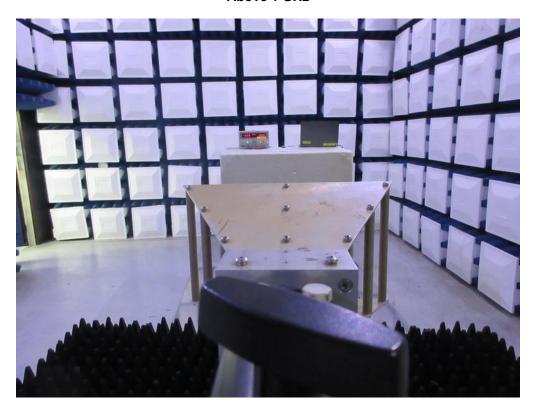


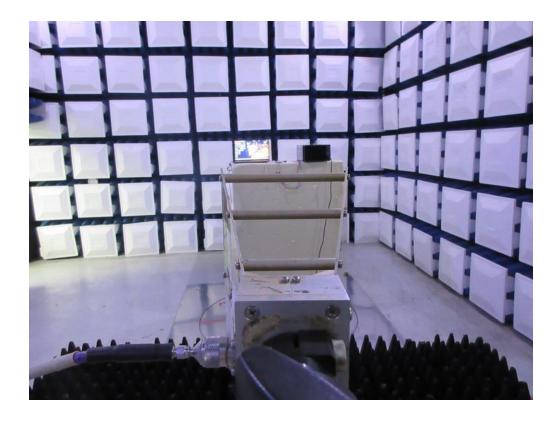




Radiated Emissions Test Photos

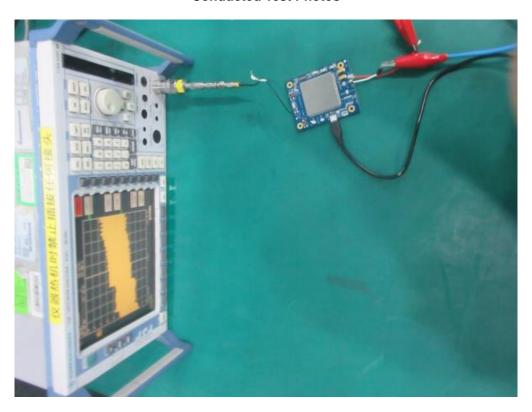
Above 1 GHz

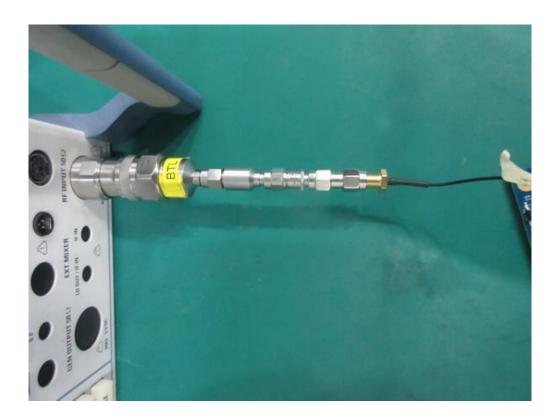






Conducted Test Photos

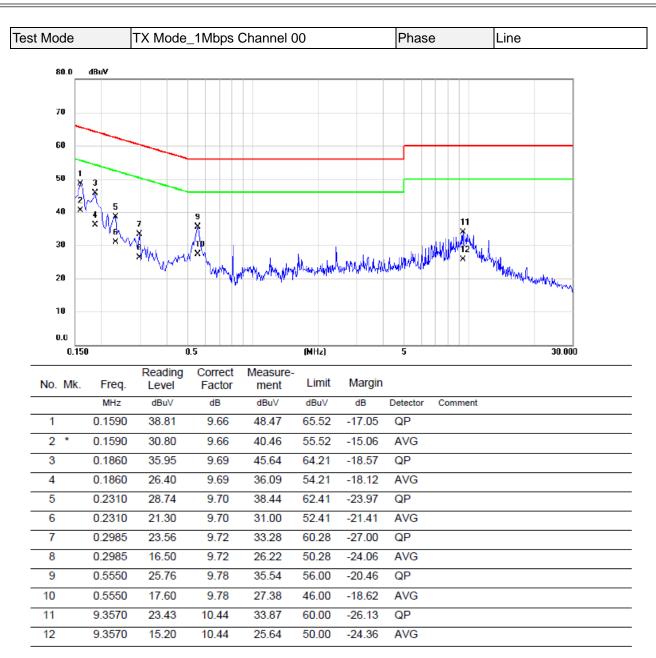






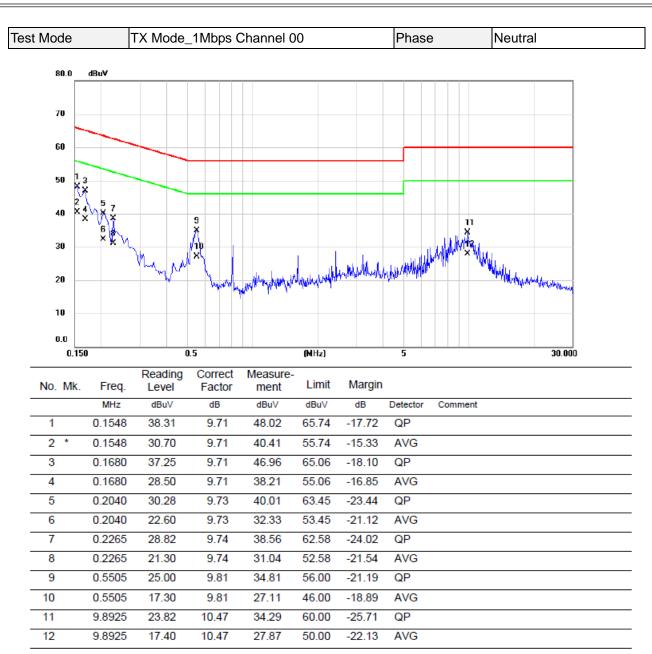
	APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS
L	





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



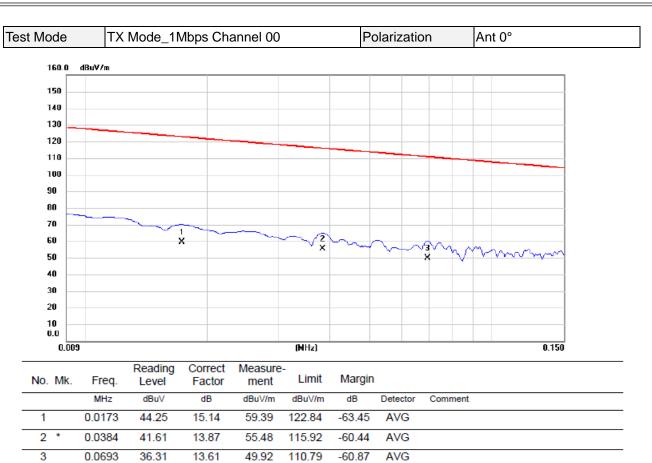


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

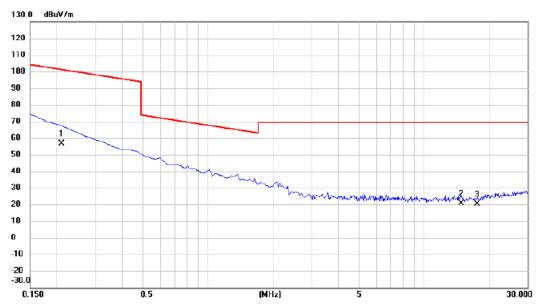




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



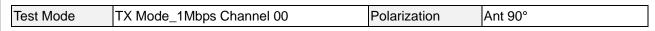


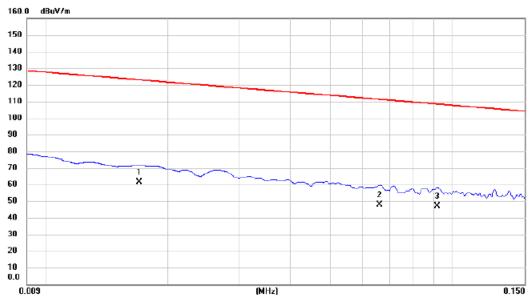


No.	Mk.	Freq.			Measure- ment		Margin		
		MHz	dBu∀	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.2097	42.61	13.87	56.48	101.17	-44.69	AVG	
2		14.8064	8.32	12.17	20.49	69.54	-49.05	QP	
3		17.5823	7.51	12.65	20.16	69.54	-49.38	QP	

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



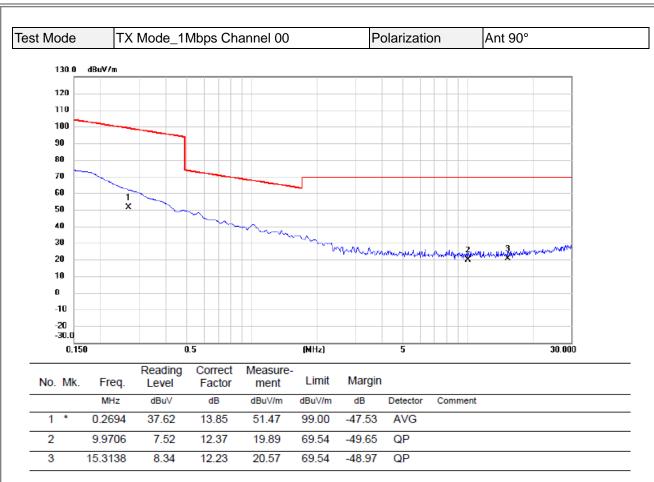




No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBu∨	dB	dBuV/m	dBu∀/m	dB	Detector	Comment
1	0.0170	46.36	15.23	61.59	123.00	-61.41	AVG	
2	0.0661	34.25	13.61	47.86	111.20	-63.34	AVG	
3 *	0.0916	33.26	13.72	46.98	108.37	-61.39	AVG	

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



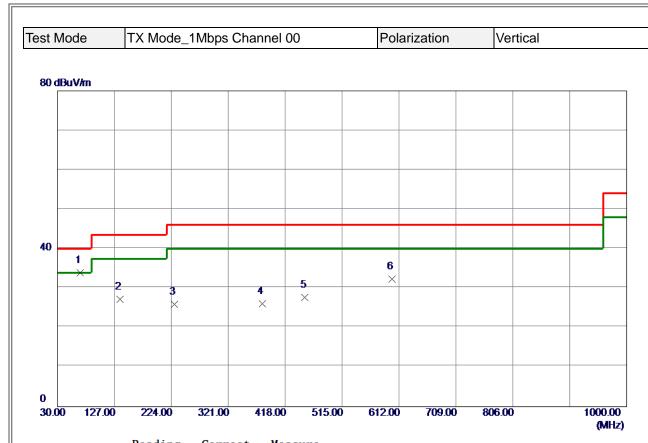


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000	0 MHZ



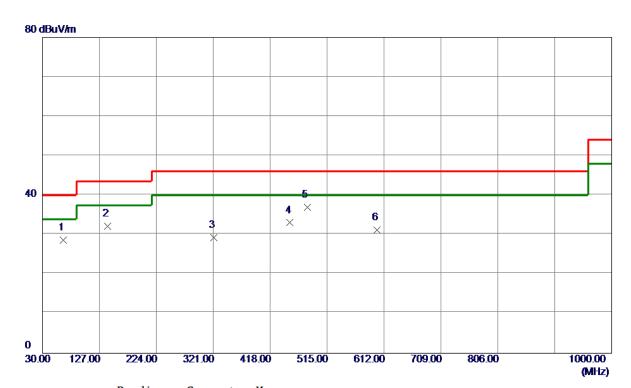


No.	Freq.	Reading Level	Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	68. 8000	49.88	-15. 97	33. 91	40.00	-6. 09	Peak	
2	136. 7000	40. 26	-13. 05	27. 21	43. 50	-16. 29	Peak	
3	229.8200	39. 87	-13. 95	25. 92	46.00	-20. 08	Peak	
4	379. 2000	35. 36	-9. 27	26. 09	46.00	-19. 91	Peak	
5	451. 9500	35. 04	-7. 37	27. 67	46.00	-18. 33	Peak	
6	600. 3600	36. 91	-4. 54	32. 37	46. 00	-13. 63	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	65. 8900	44. 02	-15. 39	28. 63	40.00	-11. 37	Peak	
2	140. 5800	45. 07	-12. 87	32. 20	43. 50	-11. 30	Peak	
3	321. 9700	39. 80	−10. 48	29. 32	46.00	-16. 68	Peak	
4	451. 9500	40. 41	-7. 37	33. 04	46.00	-12. 96	Peak	
5 *	481. 0500	43. 89	-6. 87	37. 02	46.00	-8. 98	Peak	
6	600. 3600	35. 78	-4. 54	31. 24	46.00	-14. 76	Peak	

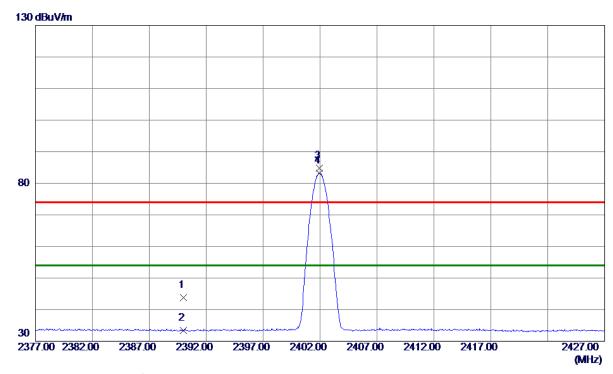
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



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	2390. 0000	38. 50	5. 37	43. 87	74.00	-30. 13	Peak	
2	2390. 0000	28. 05	5. 37	33. 42	54.00	-20. 58	AVG	
3	2401. 9500	79. 47	5. 40	84. 87	74.00	10.87	Peak	No Limit
4 *	2401. 9500	77. 81	5. 40	83. 21	54.00	29. 21	AVG	No Limit

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





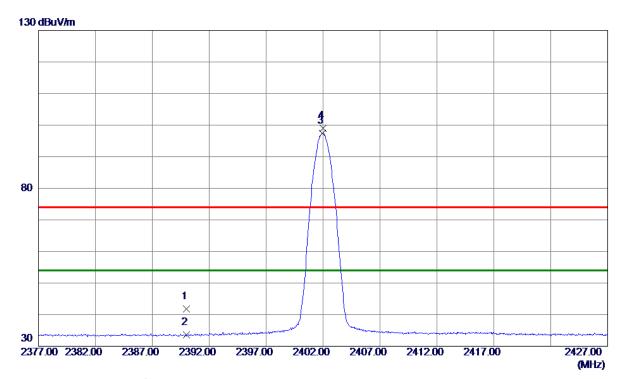


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4804. 2050	36. 81	2. 14	38. 95	74.00	-35. 05	Peak	
2 *	4804. 8050	28. 83	2. 14	30. 97	54.00	-23. 03	AVG	

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



Test Mo	ode	TX 2402 MHz	CH00_1Mbps	Polarization	Horizontal

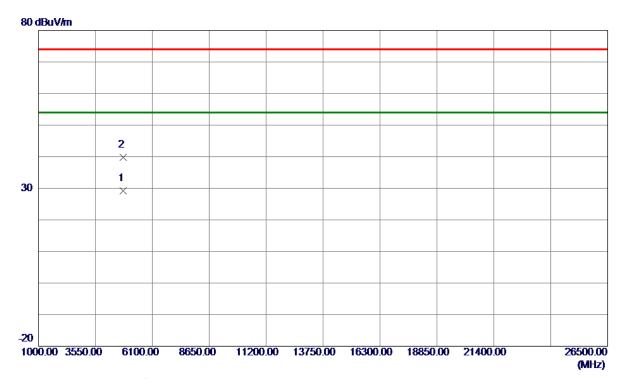


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	36. 46	5. 37	41.83	74.00	-32. 17	Peak	
2	2390. 0000	28. 15	5. 37	33. 52	54.00	-20. 48	AVG	
3 *	2401. 9500	92. 05	5. 40	97. 45	54.00	43. 45	AVG	No Limit
4	2401. 9750	93. 70	5. 40	99. 10	74.00	25. 10	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	Horizontal

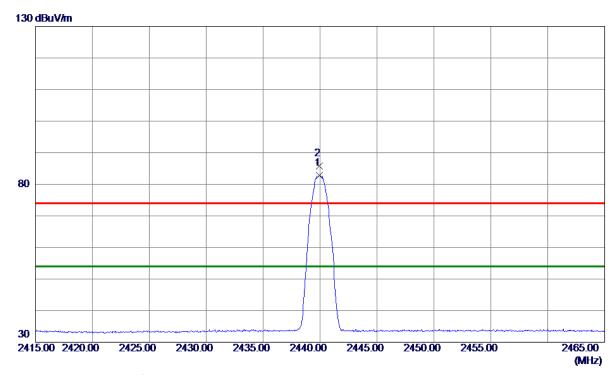


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4804. 6850	27. 04	2. 14	29. 18	54.00	-24. 82	AVG	
2	4804, 8500	37. 72	2. 14	39. 86	74. 00	-34. 14	Peak	

- (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 *	2439. 9500	77. 31	5. 49	82. 80	54.00	28. 80	AVG	No Limit
2	2439, 9700	80. 31	5. 49	85, 80	74. 00	11. 80	Peak	No Limit

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





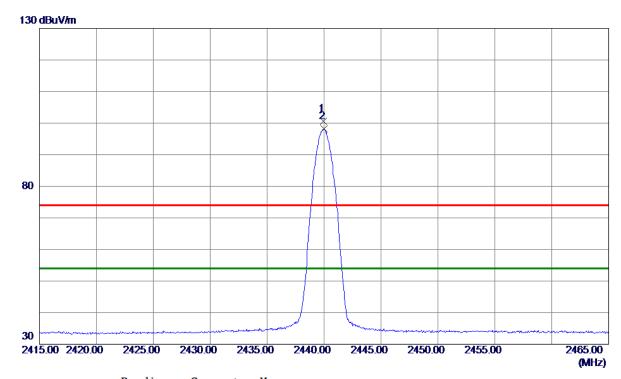


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3249. 1450	29. 12	-2. 51	26. 61	54.00	-27. 39	AVG	
2	3257, 8100	40. 56	-2. 49	38. 07	74.00	-35, 93	Peak	

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





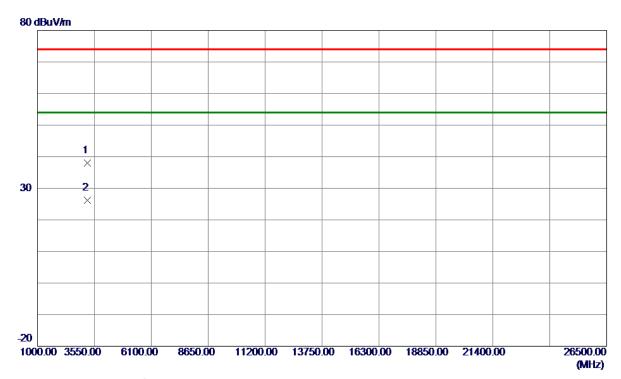


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2439. 9250	95. 20	5. 49	100. 69	74.00	26. 69	Peak	No Limit
2 *	2439. 9750	92. 64	5. 49	98. 13	54.00	44. 13	AVG	No Limit

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



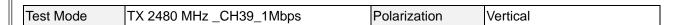


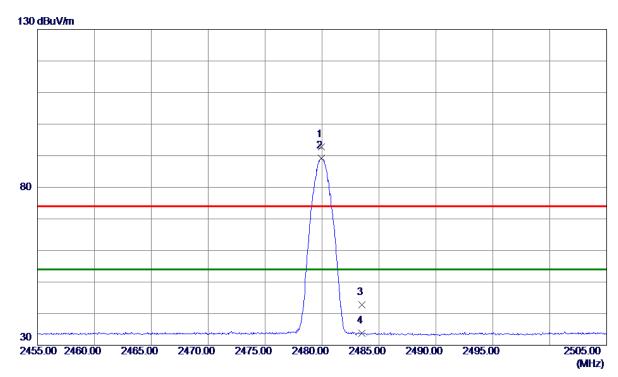


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	3248. 4000	40. 60	-2. 51	38. 09	74.00	-35. 91	Peak	
2 *	3249. 9450	28. 69	-2. 51	26. 18	54.00	-27. 82	AVG	

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





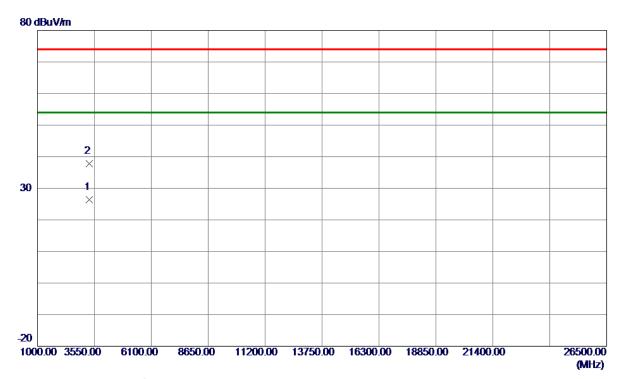


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479. 9500	87. 14	5. 59	92. 73	74.00	18. 73	Peak	No Limit
2 *	2479. 9500	83. 53	5. 59	89. 12	54.00	35. 12	AVG	No Limit
3	2483. 5000	37. 12	5. 60	42. 72	74.00	-31. 28	Peak	
4	2483. 5000	28. 27	5. 60	33. 87	54.00	-20. 13	AVG	

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





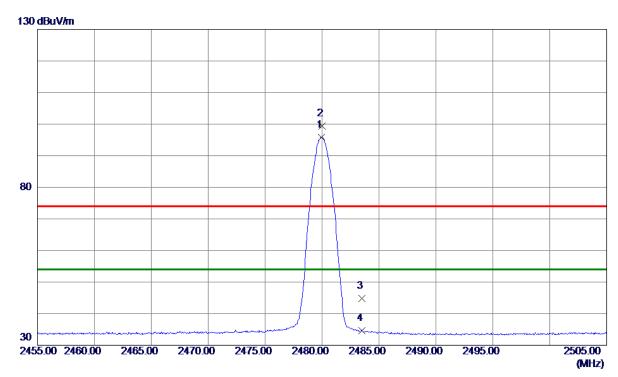


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3312. 9300	28. 88	-2. 40	26. 48	54.00	-27. 52	AVG	
2	3314. 1900	40. 14	-2. 40	37. 74	74. 00	-36. 26	Peak	

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



Test Mode	TX 2480 MHz _CH39_1Mbps	Polarization	Horizontal

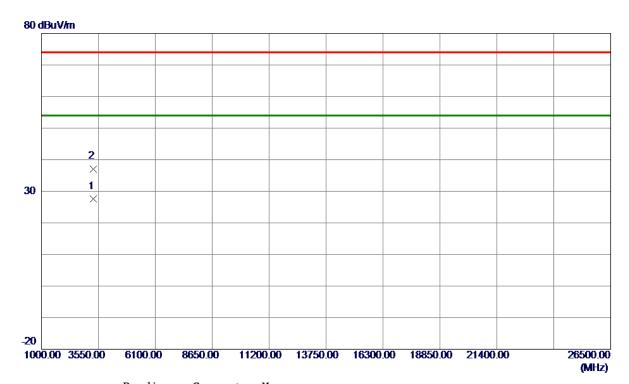


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2479. 9250	90. 25	5. 59	95. 84	54.00	41.84	AVG	No Limit
2	2479. 9750	93. 90	5. 59	99. 49	74.00	25. 49	Peak	No Limit
3	2483. 5000	39. 12	5. 60	44. 72	74. 00	-29. 28	Peak	
4	2483. 5000	28. 91	5. 60	34. 51	54. 00	-19. 49	AVG	

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



Test Mode	TX 2480 MHz _CH39_1Mbps	Polarization	Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	3312. 3700	30. 05	-2. 40	27. 65	54.00	-26. 35	AVG	
2	3312. 9000	39. 50	-2. 40	37. 10	74.00	-36. 90	Peak	

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

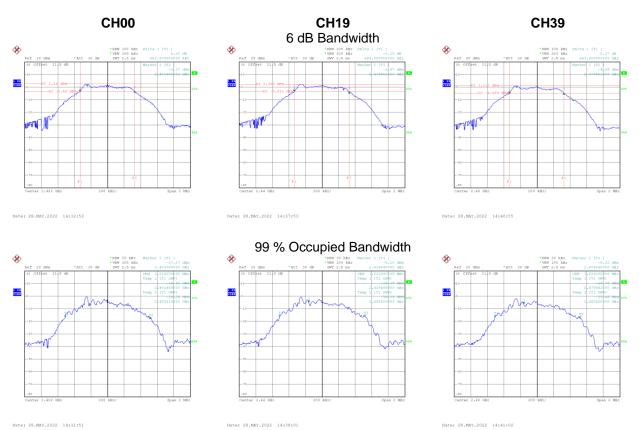


APPENDIX E - BANDWIDTH					



	Test Mode	TX Mode _1Mbr	os.
ı	1000111000	174 111000 _ 111101	

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result
00	2402	0.662	1.024	0.5	Pass
19	2440	0.664	1.032	0.5	Pass
39	2480	0.664	1.028	0.5	Pass

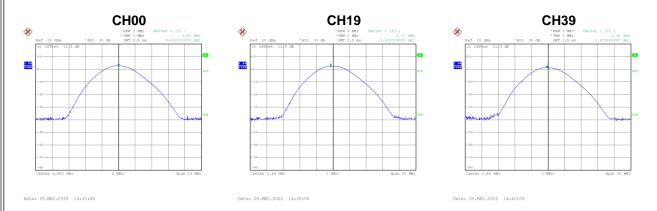




APPENDIX F - MAXIMUM OUTPUT POWER



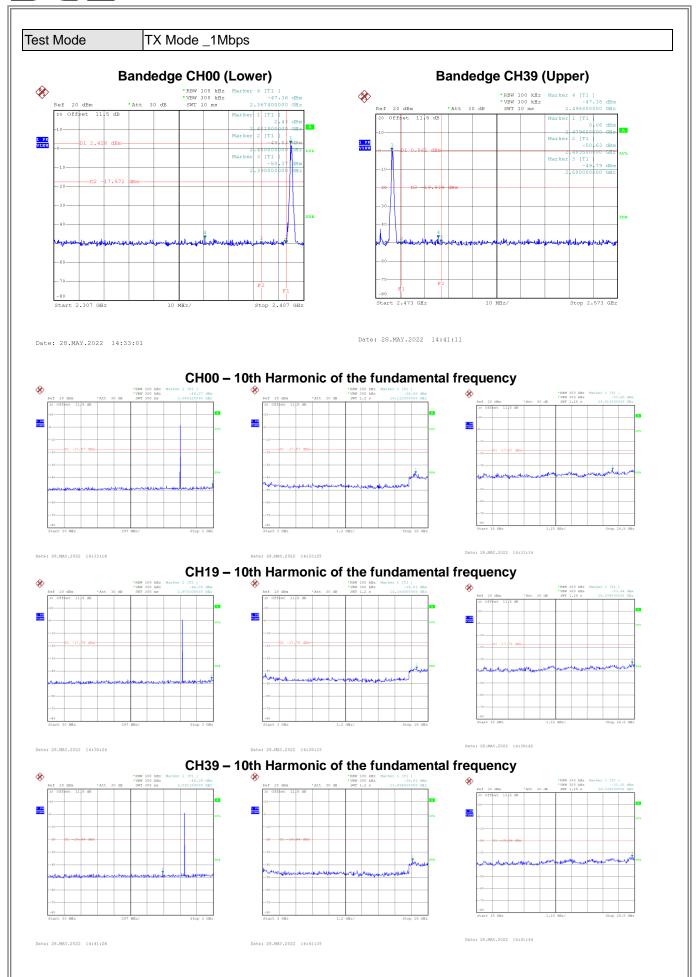
Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	2.62	0.0018	30.00	1.0000	Pass
2440	2.37	0.0017	30.00	1.0000	Pass
2480	1.16	0.0013	30.00	1.0000	Pass





APPENDIX G - CONDUCTED SPURIOUS EMISSION





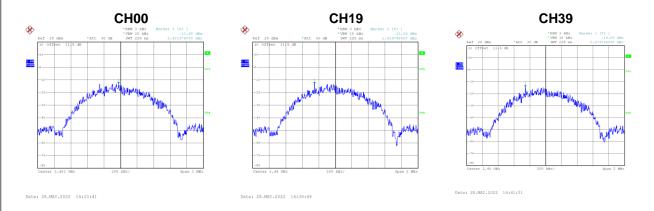


APPENDIX H - POWER SPECTRAL DENSITY



Test Mode	TX Mode _1Mbr	าร
163t Mode	LIV MODE TIME	JS

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-13.08	8.00	Pass
19	2440	-13.24	8.00	Pass
39	2480	-14.59	8.00	Pass



End of Test Report