

FCC Radio Test Report

FCC ID: ZMOSQ806W

This report concerns: Original Grant

Project No.	:	2203C006
Equipment	:	WiFi Smart Module
Brand Name	:	Fibocom
Test Model	:	SQ806-W
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	:	Mar. 08, 2022
Date of Test	:	Mar. 09, 2022 ~ Mar. 25, 2022
Issued Date	:	Mar. 31, 2022
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG2022030911 for conducted,
		DG202203098 for radiated.
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.

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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).

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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-2-2203C006	R00	Original Report	Mar. 31, 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 (3m)	CISPR	30MHz ~ 200MHz	V	4.36
		30MHz ~ 200MHz	Н	3.32
		200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	Н	3.96

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

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03	CISPR	18 ~ 26.5 GHz	3.62
(1m)		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	23°C	54%	AC 120V/60Hz	Rod Tang
Radiated Emissions-9 kHz to 30 MHz	24°C	63%	DC 3.8V	Torocat Yuan
Radiated Emissions-30 MHz to 1000 MHz	24°C	52%	DC 3.8V	Jakyri Wen
Radiated Emissions-Above 1000 MHz	24°C	56%	DC 3.8V	Jakyri Wen
Bandwidth	23°C	44%	DC 3.8V	Nicole Chen
Maximum Output Power	23°C	44%	DC 3.8V	Nicole Chen
Conducted Spurious Emission	23°C	44%	DC 3.8V	Nicole Chen
Power Spectral Density	23°C	44%	DC 3.8V	Nicole Chen



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	WiFi Smart Module
Brand Name	Fibocom
Test Model	SQ806-W
Series Model	N/A
Model Difference(s)	N/A
Power Source	DC voltage supplied from external power supply.
Power Rating	DC 3.8V
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps
Max. Output Power	1Mbps: 0.77 dBm (0.0012 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:

Ar	nt.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	1	shenzhen bogesi communication technology co.,Itd	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 39		

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 39			

Radiated emissions test - Below 1GHz			
Final Test Mode Description			
Mode 2 TX Mode_1Mbps Channel 39			

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 39 is found to be the worst case and recorded.

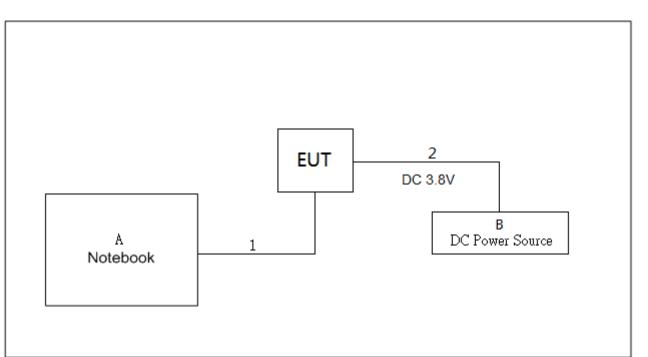
2.3 PARAMETERS OF TEST SOFTWARE

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	QRCT3.0.265.0			
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.
А	Notebook	HONOR	NBLK-WAX9X	N/A
В	DC Power Source	TRUE-POWER	GPC30300N	N/A

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



3. AC POWER LINE CONDUCTED EMISSIONS

3.1 LIMIT

Frequency of Emission (MHz)	Limit (d	BμV)
	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.

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:

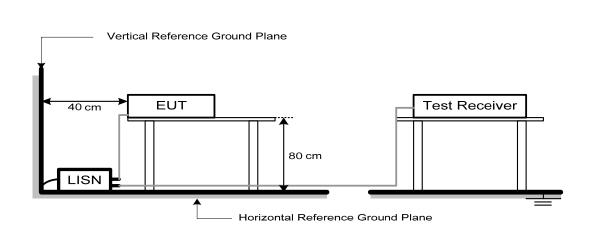
Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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 [Note]. 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)

	(dBuV/m 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

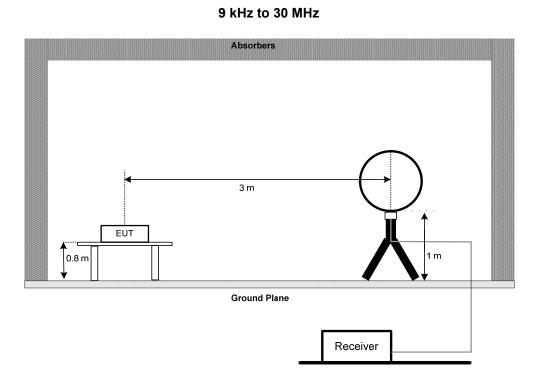
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector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

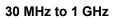


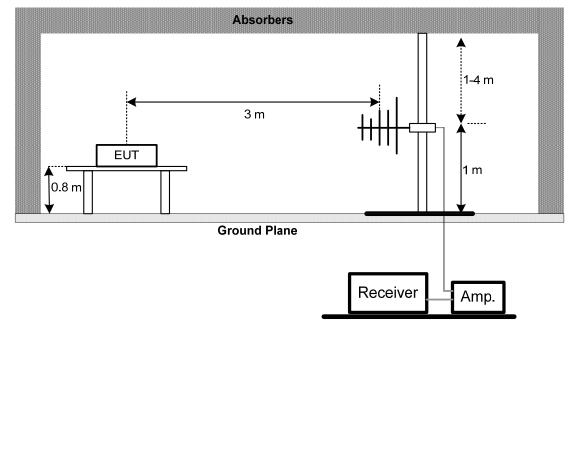
4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP

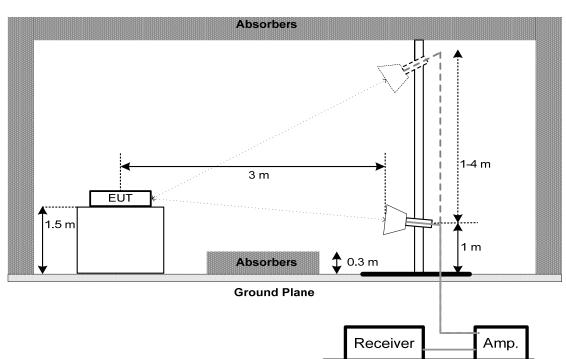








Above 1 GHz



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:

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:

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:

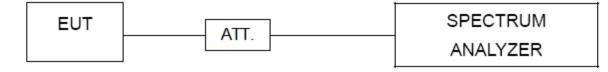
Spectrum Parameters	Setting	
Span Frequency	At least 1.5 times the OBW	
RBW	1% to 5% of the OBW, not to exceed 1 MHz	
VBW	≥ 3×RBW	
Detector	RMS	
Trace	Max Hold	
Sweep Time	\leq (number of points in sweep) × T (Note)	

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.

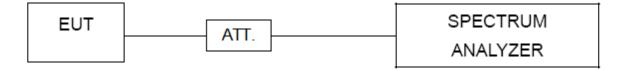
b. The following table is the setting of the spectrum analyzer:

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	12m	Mar. 08, 2023							
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	May 27, 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	Trilog-Broadband Antenna	Schwarzbeck VULB9168		586	Feb. 11, 2023							
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023							
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022							
4	Controller	СТ	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. 21, 2022						
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	N/A	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	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until						
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 10, 2022						
2	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A						
3	3 RF Cable Tongkaichuan N/A N/A N/A										
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





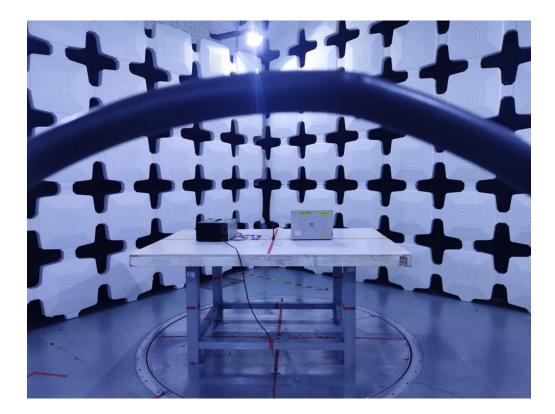
AC Power Line Conducted Emissions Test Photos



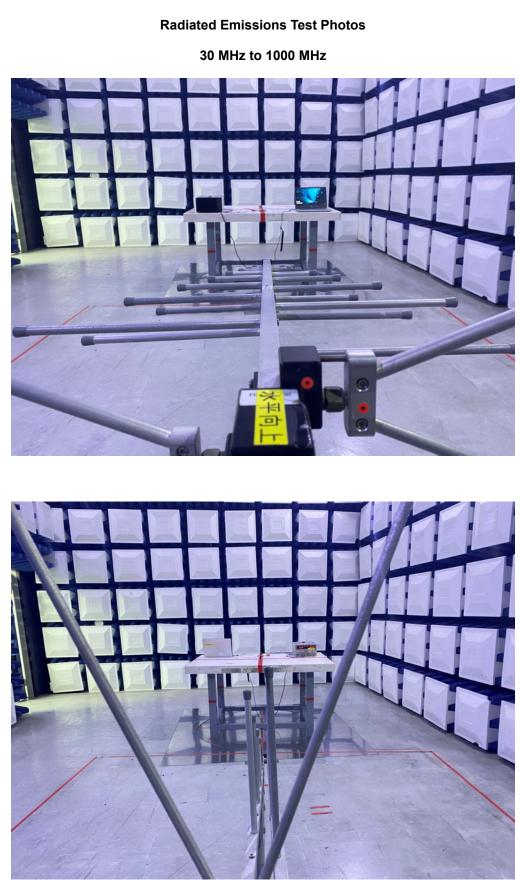
Radiated Emissions Test Photos

9 kHz to 30 MHz



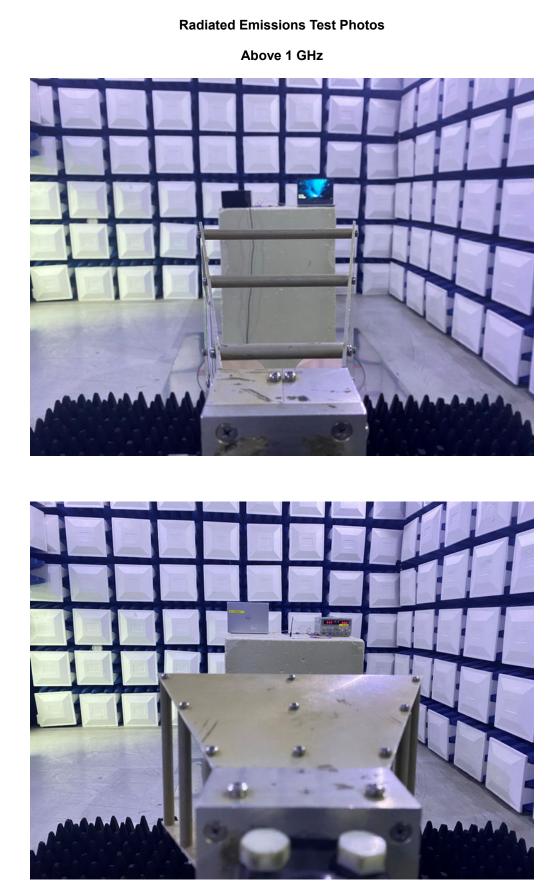






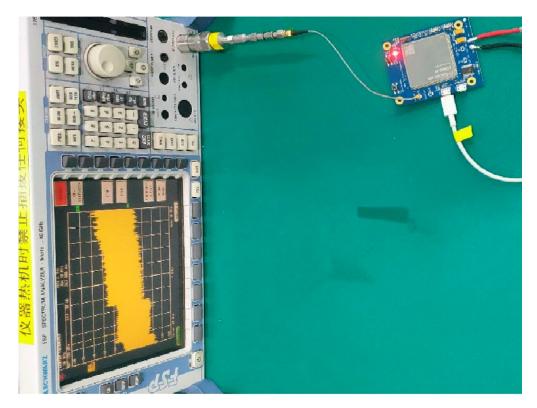


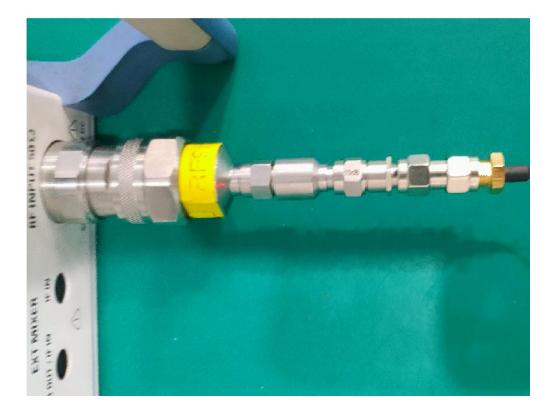






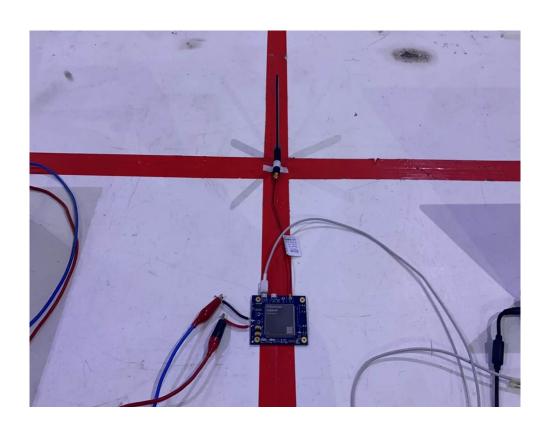
Conducted Test Photos







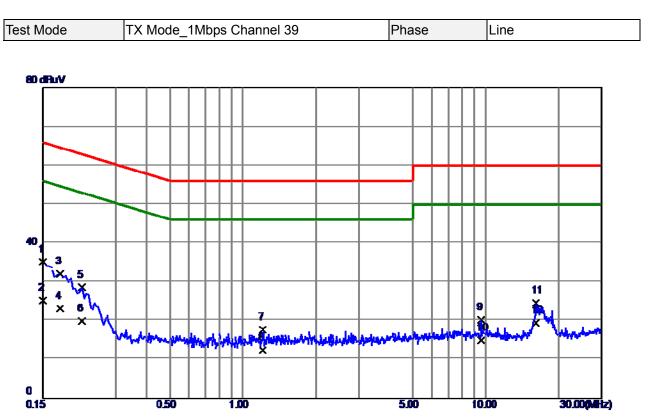






APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS



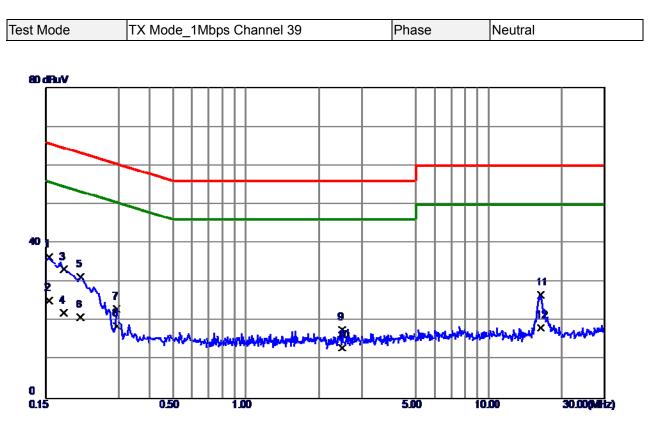


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1500	25.58	9.65	35.23	66.00	-30.77	QP	
2	0.1500	15. 61	9.65	25.26	56. 00	-30. 74	AVG	
3	0.1770	22.54	9.68	32.22	64.63	-32. 41	QP	
4	0.1770	13. 49	9.68	23.17	54.63	-31. 46	AVG	
5	0.2175	18. 98	9.70	28.68	62.91	-34. 23	QP	
6	0. 2175	10. 29	9.70	19.99	52. 91	-32. 92	AVG	
7	1.2030	7.94	9.84	17.78	56. 00	-38. 22	QP	
8	1.2030	2.60	9.84	12.44	46.00	-33. 56	AVG	
9	9. 5505	9.86	10.45	20.31	60.00	-39.69	QP	
10	9. 5505	4.60	10.45	15.05	50.00	-34. 95	AVG	
11	16.1070	13.95	10.64	24.59	60.00	-35. 41	QP	
12 *	16.1070	8. 90	10.64	19.54	50. 00	-30. 46	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 *	0.1545	26.74	9.71	36.45	65.75	-29. 30	QP	
2	0.1545	15.60	9.71	25.31	55.75	-30. 44	AVG	
3	0.1777	23. 53	9.72	33.25	64.59	-31. 34	QP	
4	0.1777	12. 39	9.72	22.11	54.59	-32. 48	AVG	
5	0.2085	21.60	9.73	31.33	63.26	-31. 93	QP	
6	0.2085	11. 20	9.73	20.93	53.26	-32. 33	AVG	
7	0. 2940	13.34	9.75	23.09	60.41	-37. 32	QP	
8	0. 2940	8. 90	9.75	18.65	50.41	-31.76	AVG	
9	2. 4900	7.84	9, 96	17.80	56.00	-38. 20	QP	
10	2. 4900	3. 10	9.96	13.06	46.00	-32. 94	AVG	
11	16.3590	16.05	10.69	26.74	60.00	-33. 26	QP	
12	16.3590	7. 49	10.69	18.18	50.00	-31.82	AVG	

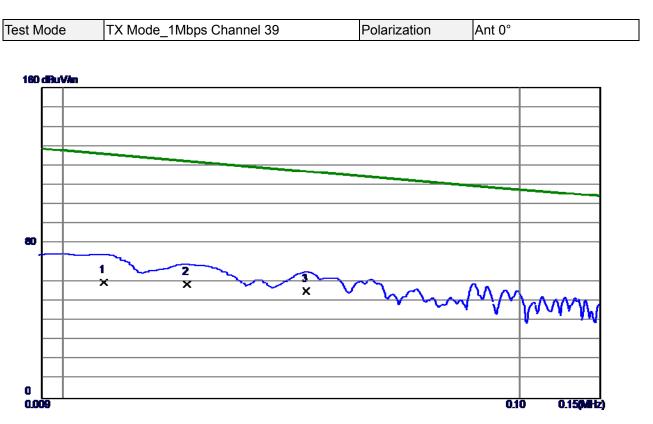
REMARKS:

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ



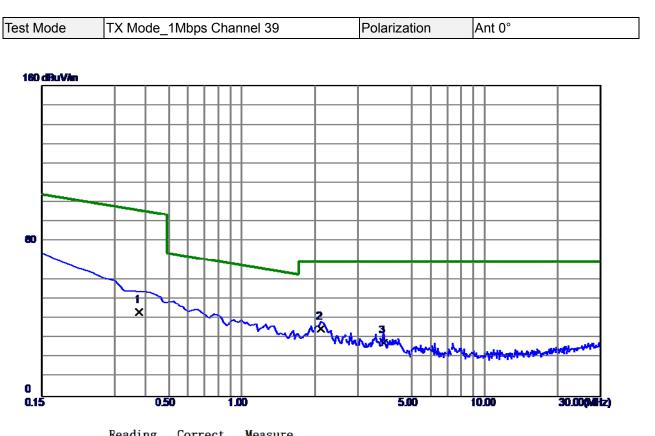


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0123	43. 22	16.69	59.9 1	125.72	-65. 81	AVG	
2	0.0187	44.25	14.70	58.95	122. 10	-63. 15	AVG	
3 *	0.0341	41.36	13.97	55.33	116.90	-61. 57	ΛVG	

REMARKS:

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.



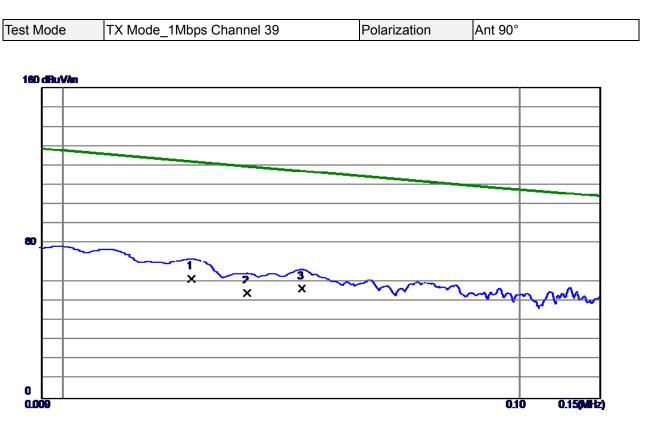


No.	Freq.	Reading Level	Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.3771	30.12	13.48	43.60	96.07	-52.47	AVG	
2 *	2. 1052	22.81	12.05	34.86	69.54	-34. 68	QP	
3	3.8215	16.23	11.71	27.94	69.54	-41. 60	QP	

REMARKS:

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.

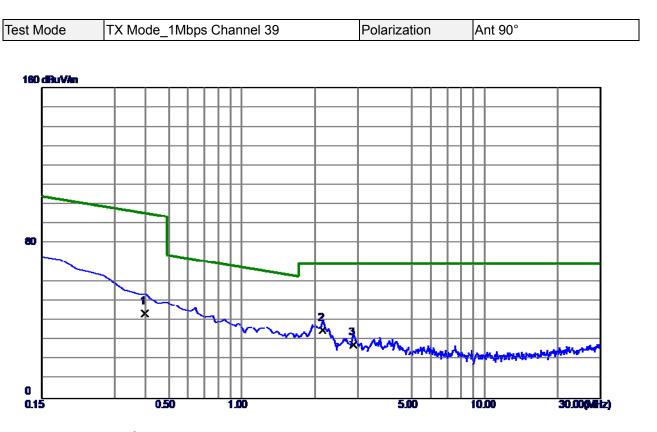




No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	0.0191	47.23	14.57	61.80	121. 92	-60. 12	AVG	
2	0. 0253	40.11	14.17	54.28	119.48	-65. 20	AVG	
3	0. 0333	42.66	13.98	56.64	117.11	-60. 47	ΛVG	

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.





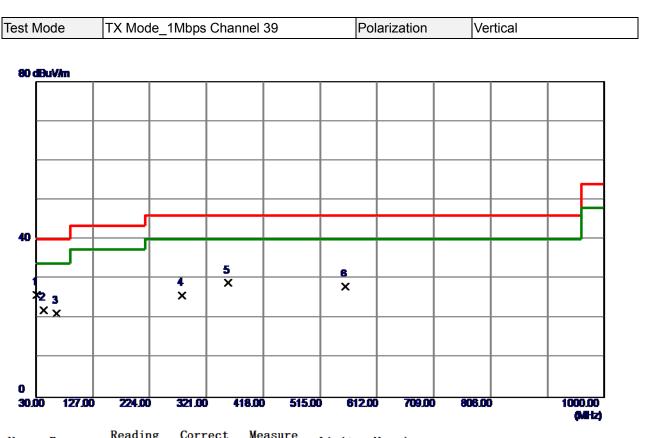
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.3997	30.36	13.45	43.81	95.57	-51.76	AVG	
2 *	2.1500	23.12	12.03	35.15	69.54	-34. 39	QP	
3	2.8813	16.22	11.76	27.98	69.54	-41. 56	QP	

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

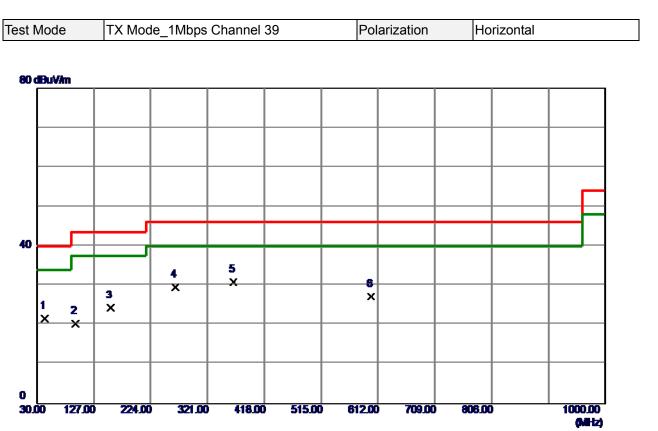




No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	31. 4550	40.45	-1 4. 5 2	25.93	40.00	-14.07	Peak	
2	42.6100	35.29	-1 3. 25	22.04	40.00	-17.96	Peak	
3	65. 4050	34.76	-13. 43	21.33	40.00	-18.67	Peak	
4	278.8050	37.64	-11. 89	25.75	46.00	-20. 25	Peak	
5	357. 3750	39.08	-1 0. 17	28. 91	46.00	-17.09	Peak	
6	558. 1650	34. 31	-6.29	28.02	46.00	-17. 98	Peak	

- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.





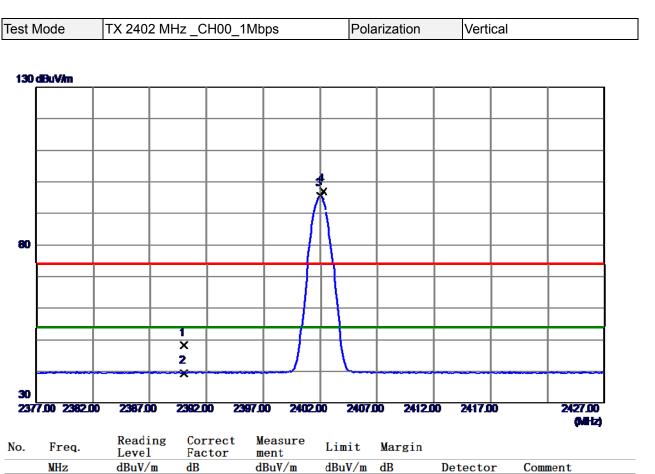
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	42. 6100	34.86	1 3. 25	21.6 1	40.00	18.39	Peak	
2	95. 9600	37.84	-17. 56	20.28	43. 50	-23.22	Peak	
3	156. 1000	37.20	-12.82	24. 38	43. 50	-19.12	Peak	
4	265.7100	42.30	-12.68	29.62	46.00	-16. 38	Peak	
5 *	365. 6200	40.81	-9.97	30.84	46.00	-15.16	Peak	
6	599.8750	32.62	-5. 46	27.16	46.00	-18.84	Peak	

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



APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ

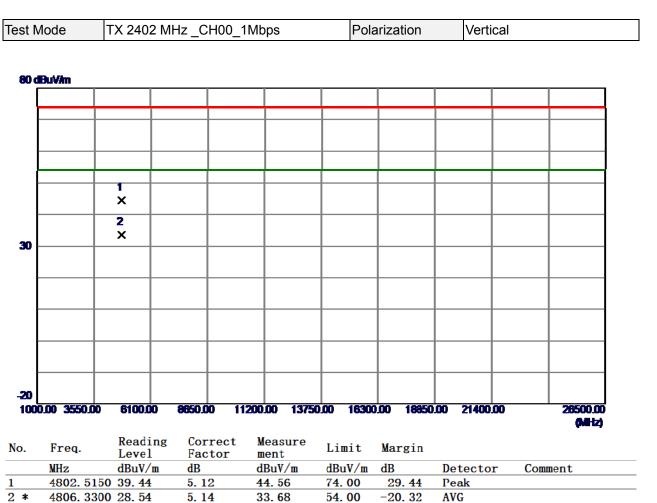




		BOTOL	1 40 001	mone				
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	39.97	8.31	48.28	74.00	25.72	Peak	
2	2390.0000	31.09	8.31	39.40	5 4. 00	-14.60	AVG	
3 *	2402.0000	87.28	8.32	95.60	54.00	41.60	AVG	No Limit
4	2402. 2500	88.66	8.32	96. 98	74.00	22.98	Peak	No Limit

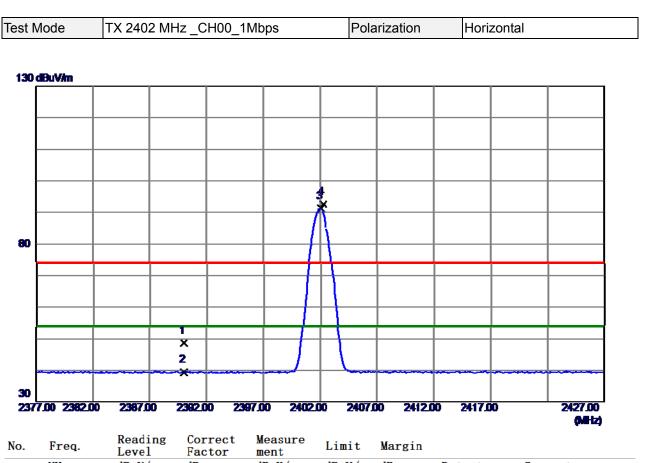
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
2390. 0000	40. 29	8.31	48.60	74.00	25. 40	Peak	
2390. 0000	31.09	8.31	39.40	54.00	-14.60	AVG	
2402.0500	82.85	8.32	91.17	54.00	37.17	AVG	No Limit
2402. 2500	84.37	8.32	92.69	74.00	18.69	Peak	No Limit
	2390. 0000 2390. 0000 2402. 0500	M12 UBUV/III 2390.0000 40.29 2390.0000 31.09 2402.0500 82.85 2402.2500 84.37	2390. 0000 40. 29 8. 31 2390. 0000 31. 09 8. 31 2402. 0500 82. 85 8. 32	2390. 0000 40. 29 8. 31 48. 60 2390. 0000 31. 09 8. 31 39. 40 2402. 0500 82. 85 8. 32 91. 17	2390. 0000 40. 298. 3148. 6074. 002390. 0000 31. 098. 3139. 4054. 002402. 0500 82. 858. 3291. 1754. 00	2390. 0000 40. 29 8. 31 48. 60 74. 00 25. 40 2390. 0000 31. 09 8. 31 39. 40 54. 00 -14. 60 2402. 0500 82. 85 8. 32 91. 17 54. 00 37. 17	2390. 0000 40. 29 8. 31 48. 60 74. 00 25. 40 Peak 2390. 0000 31. 09 8. 31 39. 40 54. 00 -14. 60 AVG 2402. 0500 82. 85 8. 32 91. 17 54. 00 37. 17 AVG

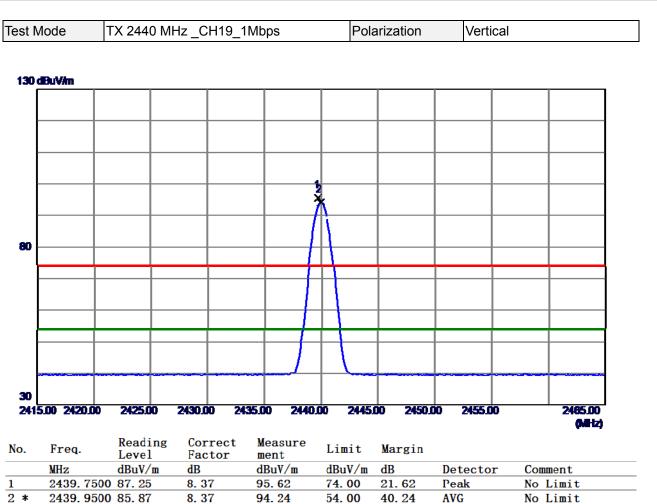
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



Fest M	lode	TX 2402 MI	Hz_CH00_1	Mbps	Pol	arization	Horizont	al
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30								
				_				
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-20 1000	0.00 3550.00	6100.00	8650.00 11	200.00 13750).00 1630	0.00 18850	.00 21400.00	26500.00
								(MHz)
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 * 2	4804.251		5.13	33.61	54.00	20.39	AVG Peak	
•	4805.670	0 39.44	5.13	44. 57	74.00	-29.43	геак	

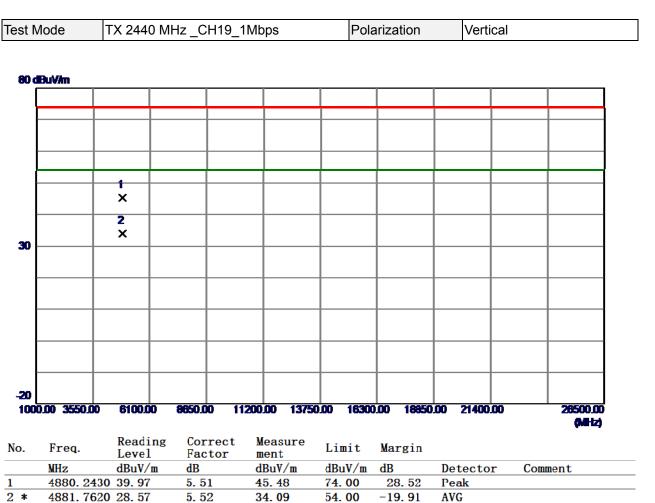
- Measurement Value = Reading Level + Correct Factor.
 Margin Level = Measurement Value Limit Value.





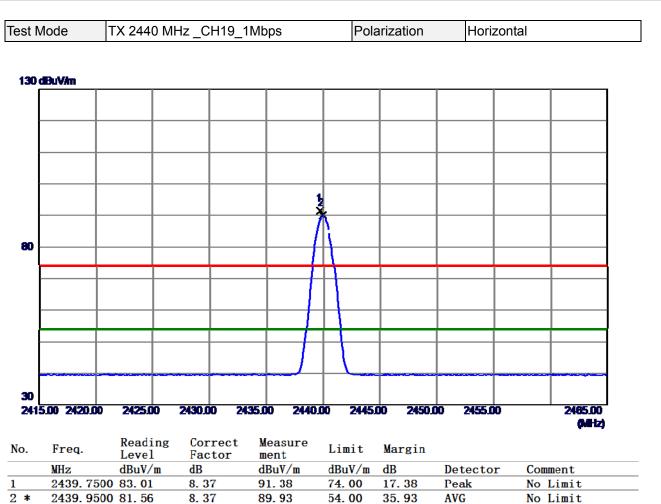
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





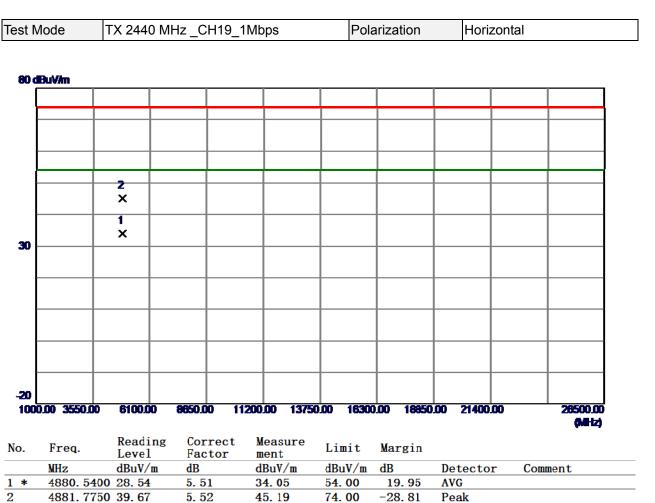
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





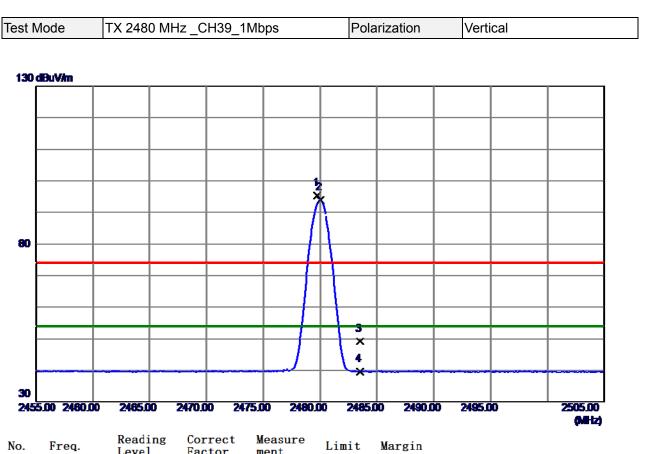
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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

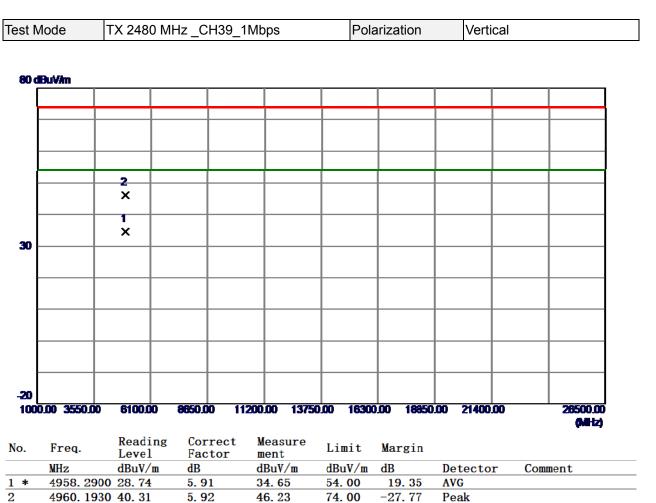




NO.	rieq.	Level	Factor	ment	LIMIU	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.7500	87.00	8.42	95.42	7 4. 00	21.42	Peak	No Limit
2 *	2480. 0000	85.52	8.42	93.94	5 4. 00	39.94	AVG	No Limit
3	2483. 5000	40.73	8.42	49. 15	74.00	-24.85	Peak	
4	2483. 5000	31.27	8.42	39.69	5 4. 00	-14. 31	AVG	

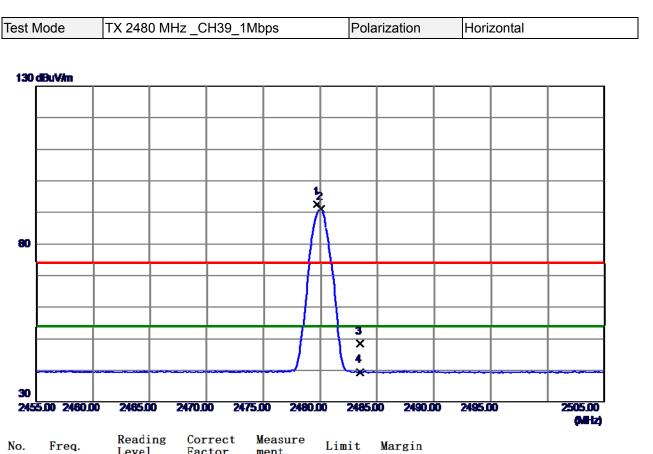
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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

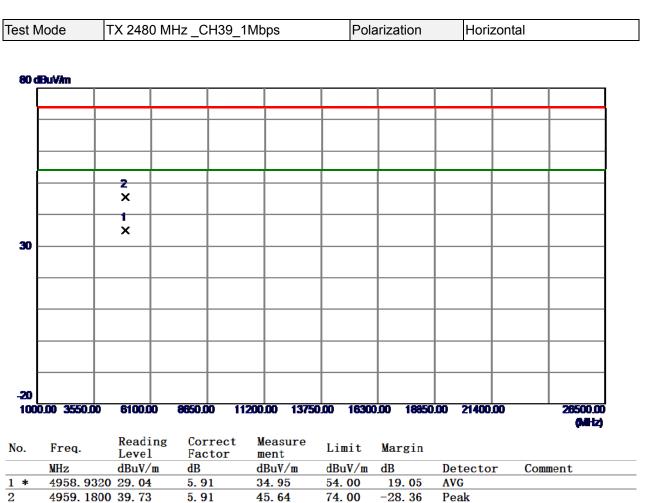




NO.	rieq.	Level	Factor	ment	LIMIC	Maigin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479. 7500	84.11	8. 42	92. 53	74.00	18.53	Peak	No Limit
2 *	2480. 0500	82. 55	8.42	90.97	5 4. 00	36.97	AVG	No Limit
3	2483. 5000	39.91	8.42	48.33	74.00	-25.67	Peak	
4	2483. 5000	30.91	8.42	39. 33	5 4. 00	-1 4. 6 7	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.

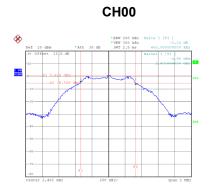


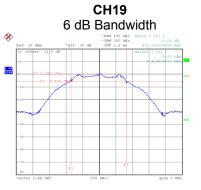


APPENDIX E - BANDWIDTH

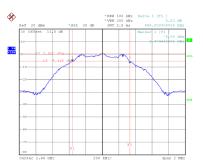


Te	Test Mode TX Mode 1Mbps									
	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result				
	00	2402	0.664	1.060	0.5	Pass				
	19	2440	0.670	1.068	0.5	Pass				
	39	2480	0.690	1.068	0.5	Pass				

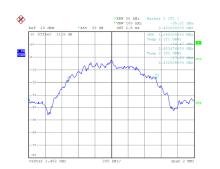




CH39



Date: 18.MAR.2022 16:42:44

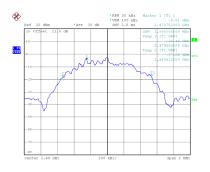








Date: 18.MAR.2022 16:46:50



Date: 18.MAR.2022 16:41:53

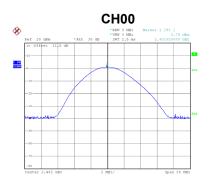
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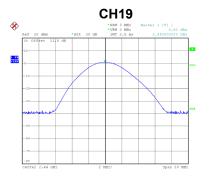


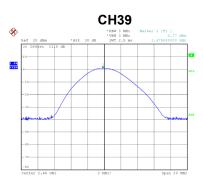
APPENDIX F - MAXIMUM OUTPUT POWER



Test Mode TX Mode _1Mbps Frequency **Output Power Output Power** Max. Limit Max. Limit Test Result (MHz) (dBm) (W) (dBm) (W) 2402 0.75 0.0012 30.00 1.0000 Pass 2440 0.62 0.0012 30.00 1.0000 Pass 2480 0.77 0.0012 30.00 1.0000 Pass







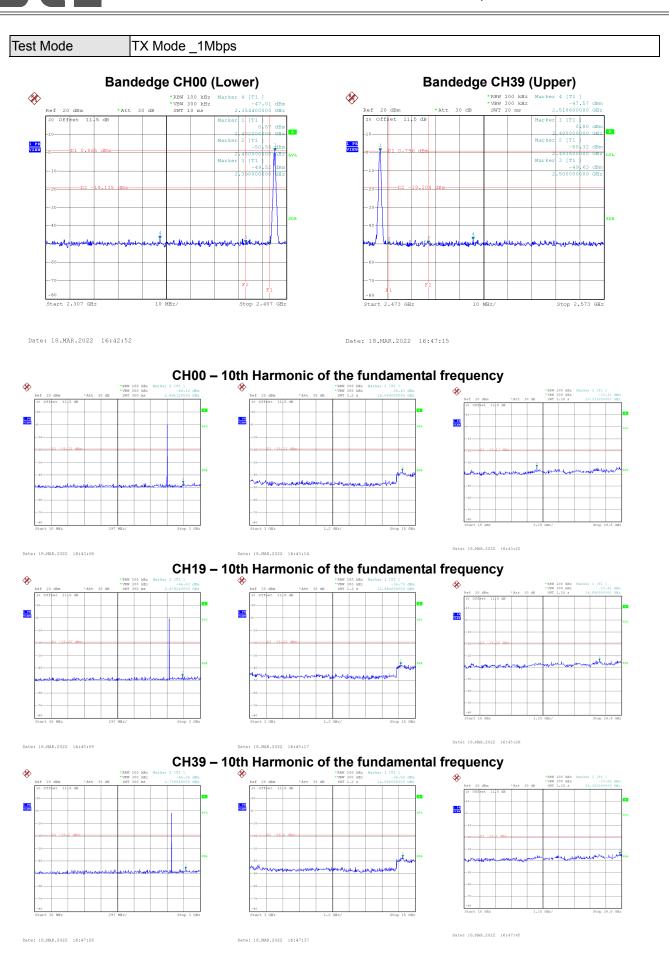
Date: 18.MAR.2022 16:43:35

Date: 18.MAR.2022 16:45:38

Date: 18.MAR.2022 16:47:58



APPENDIX G - CONDUCTED SPURIOUS EMISSION



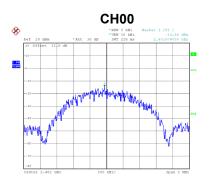


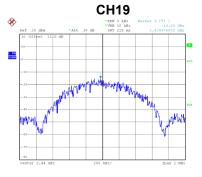
APPENDIX H - POWER SPECTRAL DENSITY



Test Mode TX Mode _1Mbps

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-14.56	8.00	Pass
19	2440	-14.69	8.00	Pass
39	2480	-14.92	8.00	Pass







Date: 18.MAR.2022 16:43:29

Date: 18.MAR.2022 16:45:32

Date: 18.MAR.2022 16:47:51

End of Test Report