

FCC Radio Test Report

FCC ID: TE7M5V32

This report concerns: Original Grant

Project No.	: 1907C037C
Equipment	: AC1300 Whole Home Mesh Wi-Fi System
Brand Name	: tp-link
Test Model	: Deco M5
Series Model	: NA
Applicant	: TP-Link Technologies Co., Ltd.
Address	: Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and
	Technology Park,Nanshan Shenzhen, 518057 China
Manufacturer	: TP-Link Technologies Co., Ltd.
Address	: Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and
	Technology Park,Nanshan Shenzhen, 518057 China
Date of Receipt	: Apr. 29, 2021
Date of Test	: Apr. 29, 2021 ~ May 26, 2021
Issued Date	: Jul. 28, 2021
Report Version	: R00
Test Sample	: Engineering Sample No.: DG2021051218 for conducted,
	DG2021042929 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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Declaration

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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 Version	Description	Issued Date
R00	 Compared with original report(BTL-FCCP-1-1907C037), 1) Updated the address information of applicant and manufacturer. 2) Changed the software version and hardware version. 3) Updated the standard to the latest. 4) Product changes are as follows: a. The original Bluetooth chip CSR8811 (package is QFN40) is replaced by AC6368A/B (package is SOP8); b. The crystal of the original chip is 26MHz, while the crystal of the new chip is 24MHz; c. The Bluetooth antenna will not be changed; d. The software functions remain unchanged, and they are all used as on-boarding. In the new chip, the new driver is used. e. Change the circuit of Bluetooth part of PCB 	Jul. 28, 2021

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 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, People's Republic of China. BTL's Test Firm 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	2.68

B. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
	CISPR	9kHz ~ 30MHz	-	3.02
		30MHz ~ 200MHz	V	4.26
DG-CB03		30MHz ~ 200MHz	H	3.38
		200MHz ~ 1,000MHz	V	3.98
		200MHz ~ 1,000MHz	H	3.94
		1GHz ~ 6GHz	-	3.96
		6GHz ~ 18GHz	-	5.24
		18GHz ~ 26.5GHz	-	3.62
		26.5GHz ~ 40GHz	-	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	53%	AC 120V/60Hz	Gerry Zhao
Radiated Emissions-9 kHz to 30 MHz	25°C	60%	AC 120V/60Hz	Kwok Guo
Radiated Emissions-30 MHz to 1000 MHz	26°C	52%	AC 120V/60Hz	Hayden Chen
Radiated Emissions-Above 1000 MHz	24°C	60%	AC 120V/60Hz	Kwok Guo
Bandwidth	25°C	52%	DC 12V	Jesse Wang
Maximum Output Power	25°C	52%	DC 12V	Jesse Wang
Conducted Spurious Emission	25°C	52%	DC 12V	Jesse Wang
Power Spectral Density	25°C	52%	DC 12V	Jesse Wang



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	AC1300 Whole Home Mesh Wi-Fi System
Brand Name	tp-link
Test Model	Deco M5
Series Model	N/A
Model Difference(s)	N/A
Software Version	V3.20
Hardware Version	V3.20
HVIN	Deco M5V32
Power Source	DC voltage supplied from AC adapter. Brand / Model: tp-link/T120120-2B4
	I/P: 100-240V~ 50/60Hz 0.4A
Power Rating	O/P: 12V 1.2A
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter 1Mbps	
Max. Output Power	1Mbps: 7.15 dBm (0.0052 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	TP-LINK °	N/A	Internal	N/A	1.40

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.

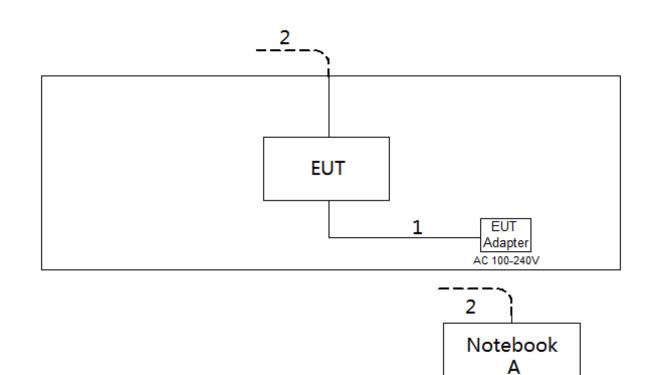
2.3 PARAMETERS OF TEST SOFTWARE

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	Software Version N/A		
Frequency (MHz)	2402	2440	2480



2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
А	Notebook	Dell	Inspiron 15-7559	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.5m
2	RJ45 Cable	NO	NO	10m



3. AC POWER LINE CONDUCTED EMISSIONS

3.1 LIMIT

Frequency 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.

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:

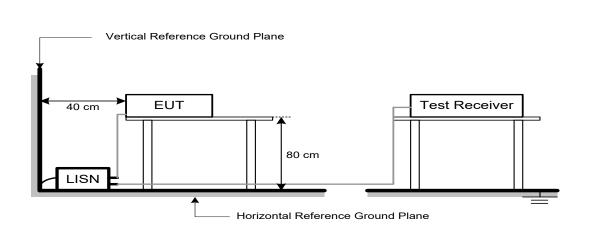
0		
Receiver Parameters	Setting	
Start Frequency	0.15 MHz	
Stop Frequency	30 MHz	
IF Bandwidth	9 kHz	

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)

Frequency (MHz)	(dBuV/m at 3 m)		
Frequency (Miriz)	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).

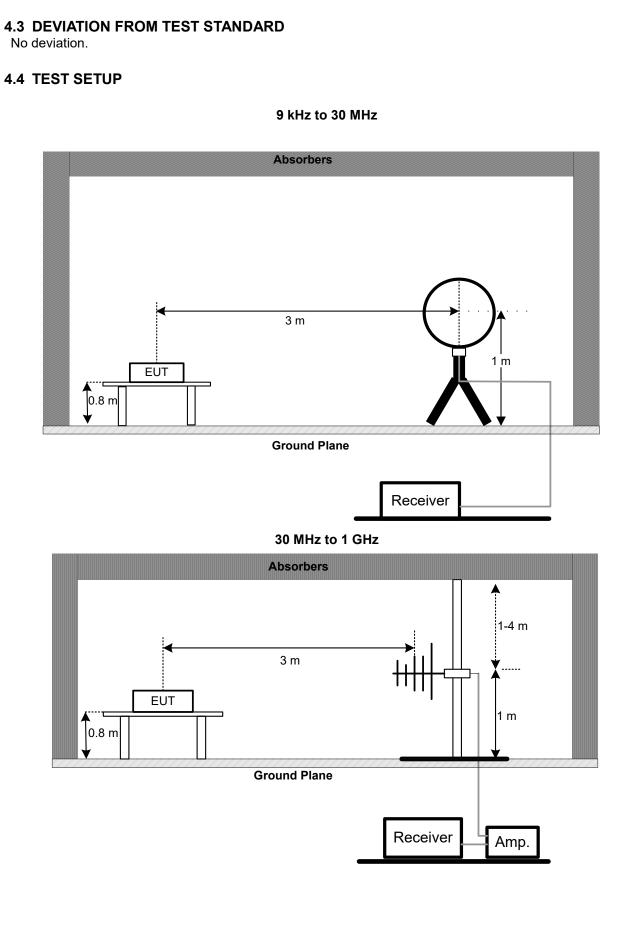
4.2 TEST PROCEDURE

- 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)
- 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.



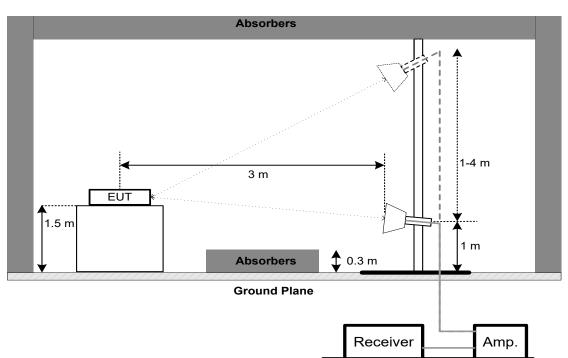
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz
Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW	1 MHz / 3 MHz 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





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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:

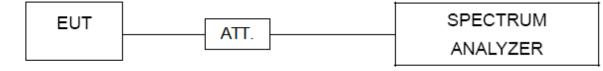
Spectrum Parameters	Setting	
Span Frequency	At least 1.5 times the OBW	
RBW	1% to 5% of the OBW, not to exceed 1 MHz	
VBW	≥ 3×RBW	
Detector	RMS	
Trace	Max Hold	
Sweep Time	\leqslant (number of points in sweep) × T (Note)	

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:

For Reference Level:

Spectrum Parameters	Setting		
Span Frequency	\geq 1.5 times the bandwidth.		
RBW	100 kHz		
VBW	300 kHz		
Detector	Peak		
Trace	Max Hold		
Sweep Time	Auto		

For Emission Level:

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	Feb. 28, 2022	
2	LISN	EMCO	3816/2	52765	Feb. 27, 2022	
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Feb. 27, 2022	
4	50Ω Terminator	SHX	TF5-3	15041305	Feb. 27, 2022	
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	
6	Cable	N/A	RG223	12m	Mar. 09, 2022	
7	643 Shield Room	ETS	6*4*3m	N/A	N/A	

	Radiated Emissions - 9 kHz to 30 MHz				
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EM	EM-6876-1	230	Apr. 28, 2022
2	Cable	N/A	RG 213/U	N/A	May 27, 2022
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 27, 2022
4	Measurement	Farad	EZ-EMC	N/A	N/A
4	Software		Ver.NB-03A1-01		
5	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

	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. 15, 2022
2	Amplifier	HP	8447D	2944A08742	Feb. 28, 2022
3	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 20, 2022
5	Controller	СТ	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

	Radiated Emissions - Above 1 GHz				
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	May 10, 2022
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jul. 07, 2021
3	Amplifier	Agilent	8449B	3008A02584	Jul. 25, 2021
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 28, 2022
5	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
6	Controller	СТ	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	N/A	EMC104-SM-SM-6 000	N/A	Oct. 16, 2021
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	Filter	STI	STI15-9912	N/A	Jul. 25, 2021
11	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021



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. 25, 2021
2	Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 07, 2022
3	RF Cable	Tongkaichuan	N/A	N/A	N/A
4	DC Block	Mini	N/A	N/A	N/A

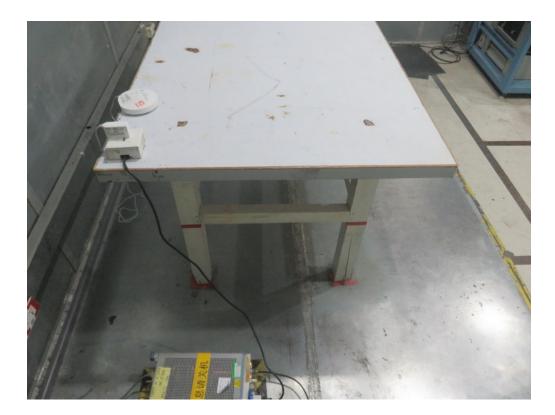
Remark: "N/A" denotes no model name, serial no. or calibration specified. All calibration period of equipment list is one year.



10. EUT TEST PHOTO

AC Power Line Conducted Emissions Test Photos



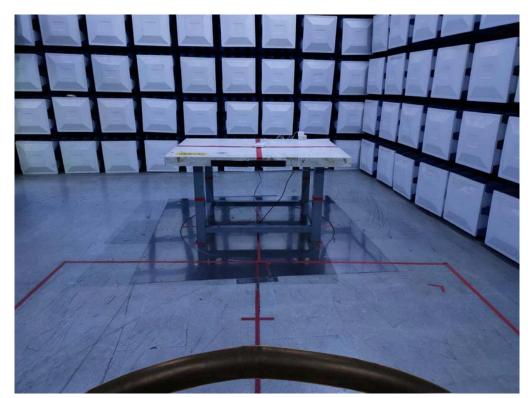


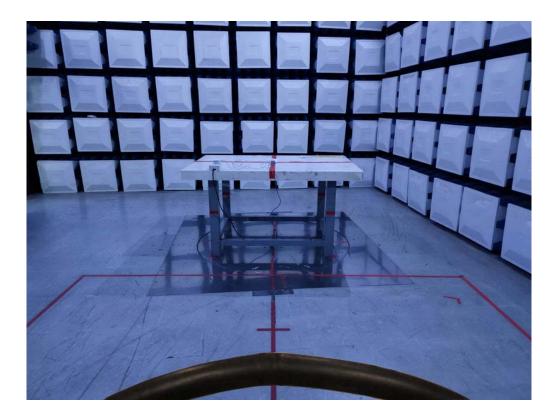




Radiated Emissions Test Photos

9 kHz to 30 MHz

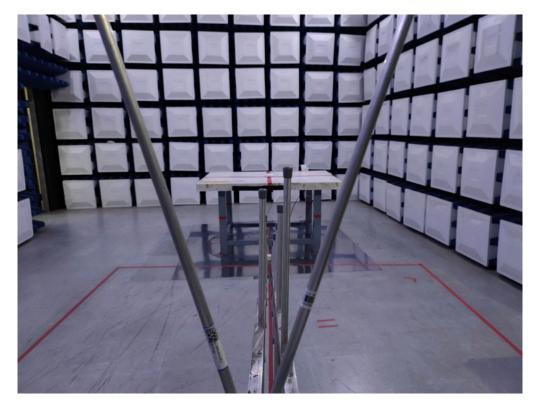


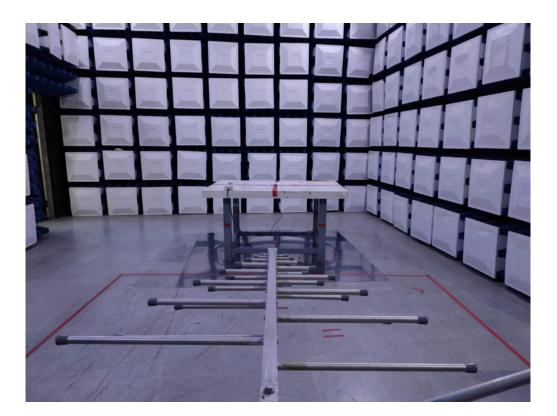




Radiated Emissions Test Photos

30 MHz to 1000 MHz



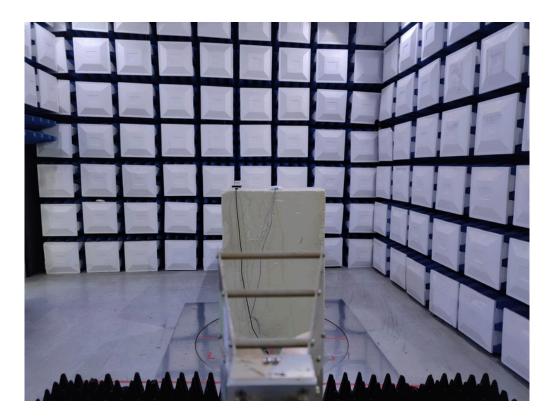




Radiated Emissions Test Photos

Above 1 GHz

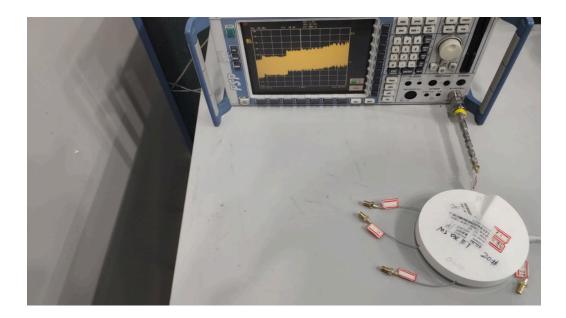








Conducted Test Photos

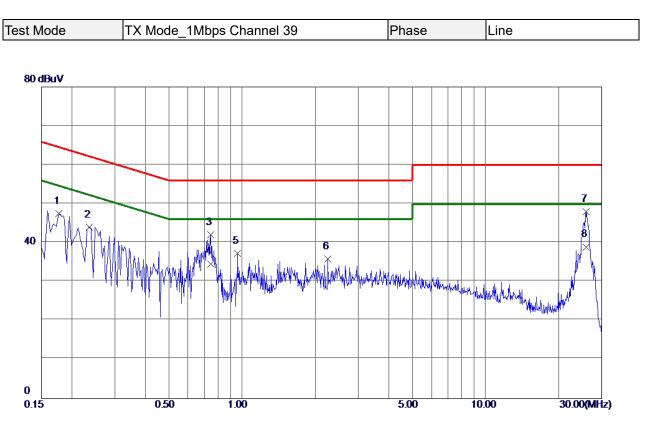






APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

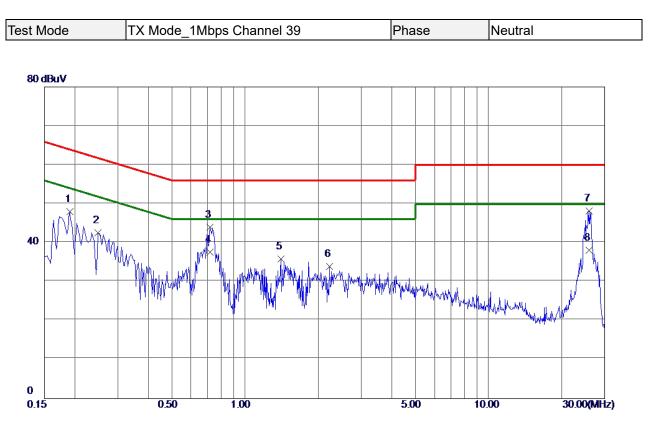




MHz dBuV dB dBuV dBuV dB Detector Comm 1 0.1770 37.69 9.84 47.53 64.63 -17.10 Peak 2 0.2355 34.10 9.88 43.98 62.25 -18.27 Peak	ient
2 0 2355 34 10 9 88 43 98 62 25 -18 27 Peak	
2 0.2000 01.10 0.00 10.00 02.20 10.21 1 Cuk	
3 0.7440 32.15 9.90 42.05 56.00 -13.95 Peak	
4 0. 7440 24. 59 9. 90 34. 49 46. 00 -11. 51 AVG	
5 0.9600 27.28 9.98 37.26 56.00 -18.74 Peak	
6 2. 2470 25. 81 10. 07 35. 88 56. 00 -20. 12 Peak	
7 25. 8990 36. 88 11. 07 47. 95 60. 00 -12. 05 Peak	
8 * 25.8990 27.89 11.07 38.96 50.00 -11.04 AVG	

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





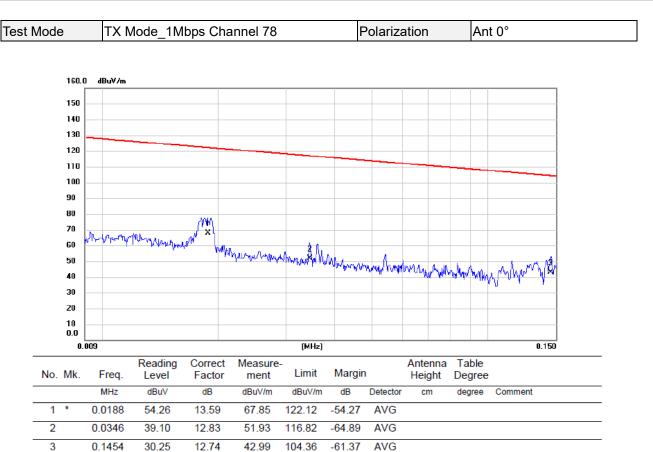
MHz dBuV dB dBuV dBuV dB	Detector Comment
1 0. 1905 38. 02 9. 97 47. 99 64. 01 -16. 02	2 Peak
2 0. 2490 32. 61 9. 97 42. 58 61. 79 -19. 2	1 Peak
3 0.7170 33.94 10.11 44.05 56.00 -11.9	5 Peak
4 * 0.7170 27.50 10.11 37.61 46.00 -8.39	AVG
5 1.4010 25.55 10.32 35.87 56.00 -20.13	3 Peak
6 2. 2244 23. 50 10. 40 33. 90 56. 00 -22. 10	0 Peak
7 25. 9619 36. 82 11. 39 48. 21 60. 00 -11. 7	9 Peak
8 25.9619 26.71 11.39 38.10 50.00 -11.9	0 AVG

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



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

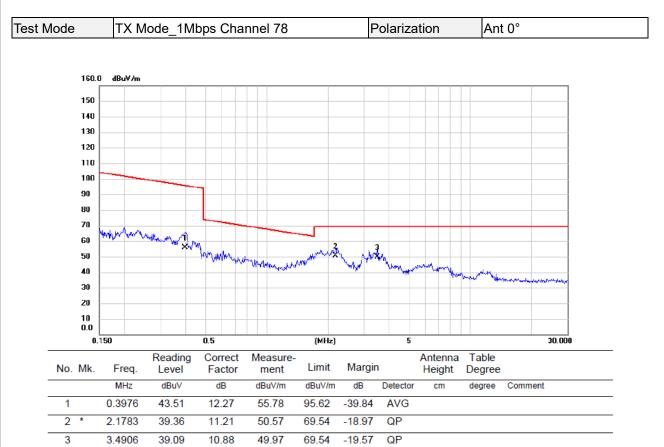




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

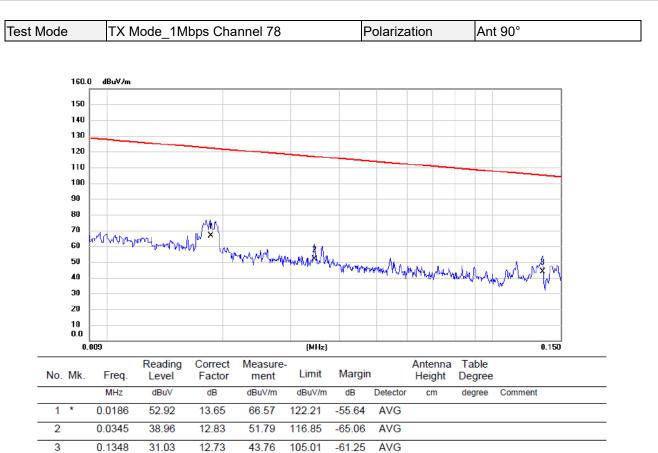






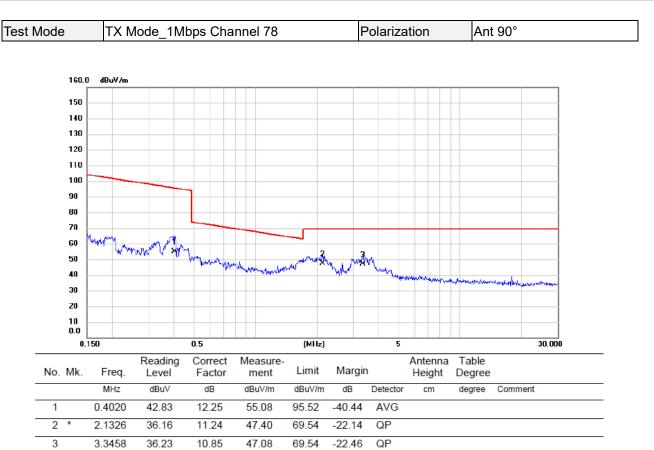
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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



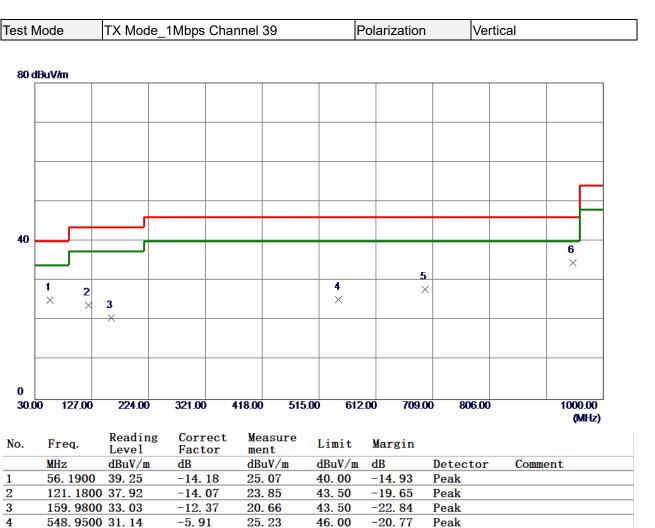


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ





46.00

46.00

-18.14

-11. 51

Peak

Peak

REMARKS:

5

6 *

696. 3900 30. 98

948. 5900 32. 73

(1) Measurement Value = Reading Level + Correct Factor.

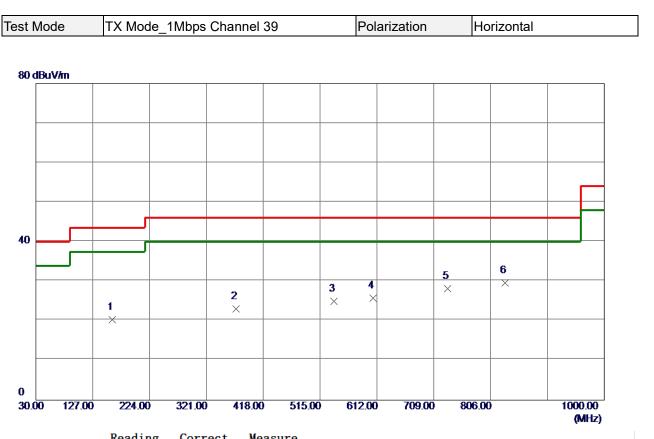
-3.12

1.76

27.86

34.49





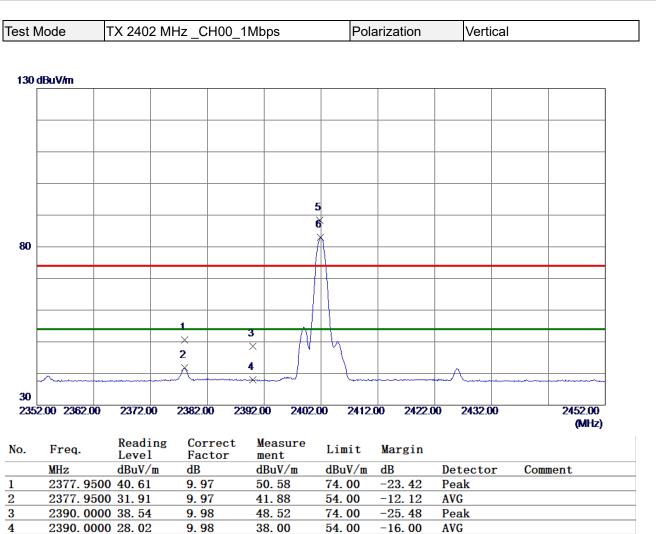
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	159. 9800	32.63	-12.37	20.26	43. 50	-23. 24	Peak	
2	371. 4400	32. 54	-9.45	23. 09	46.00	-22. 91	Peak	
3	538. 2800	31.00	-6.05	24.95	46.00	-21. 0 5	Peak	
4	605. 2100	30. 23	-4. 46	25.77	46.00	-20. 23	Peak	
5	732. 2800	30. 57	-2.34	28.23	46.00	-17.77	Peak	
6 *	831.2199	30. 19	-0.66	29. 53	46.00	-16.47	Peak	

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



APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ





5

6 *

2401.7500 78.51

2401. 9000 73. 05

(1) Measurement Value = Reading Level + Correct Factor.

9.98

9.98

88.49

83.03

74.00

54.00

14.49

29.03

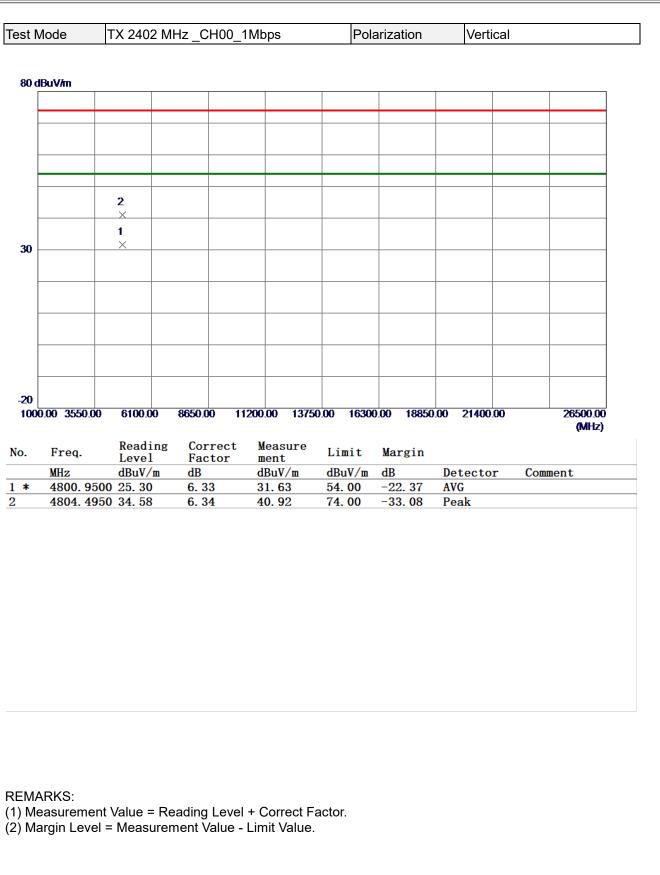
Peak

AVG

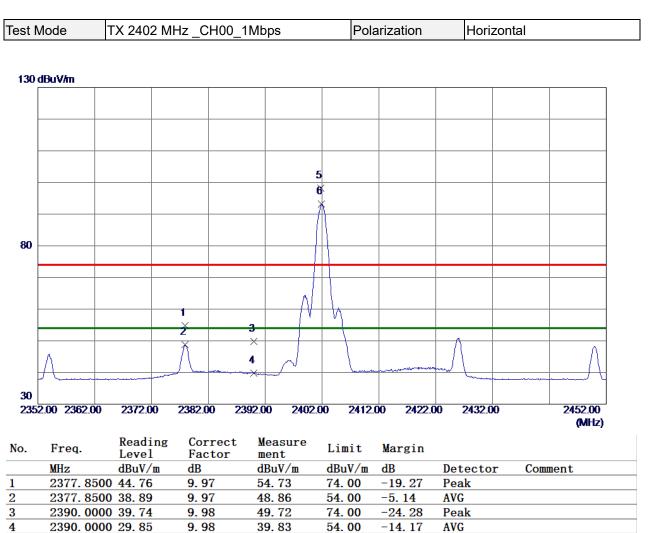
No Limit

No Limit









74.00

54.00

24.27

39.17

Peak

AVG

No Limit

No Limit

REMARKS:

5

6 *

2401.7500 88.29

2401. 9000 83. 19

(1) Measurement Value = Reading Level + Correct Factor.

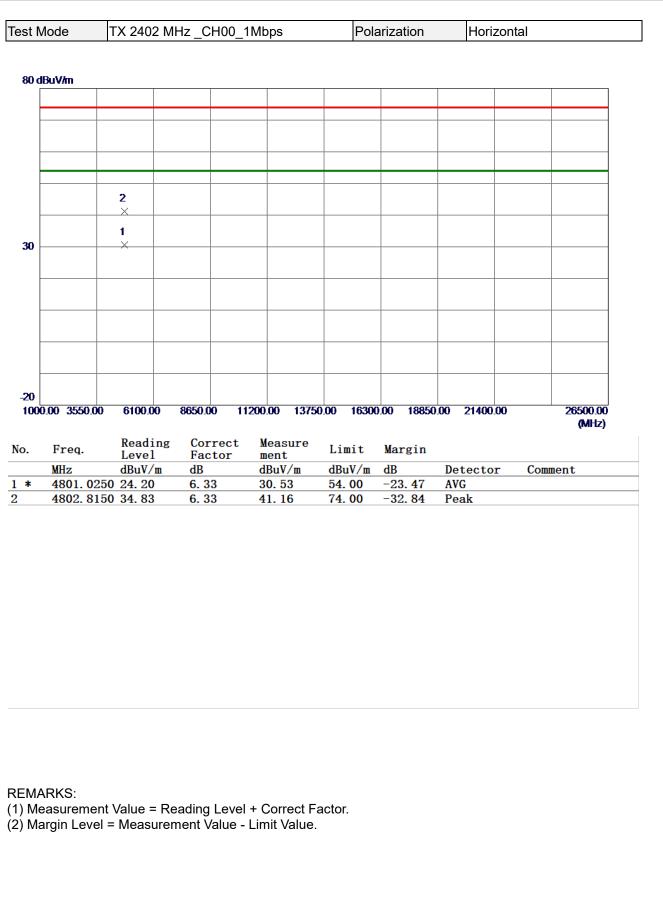
9.98

9.98

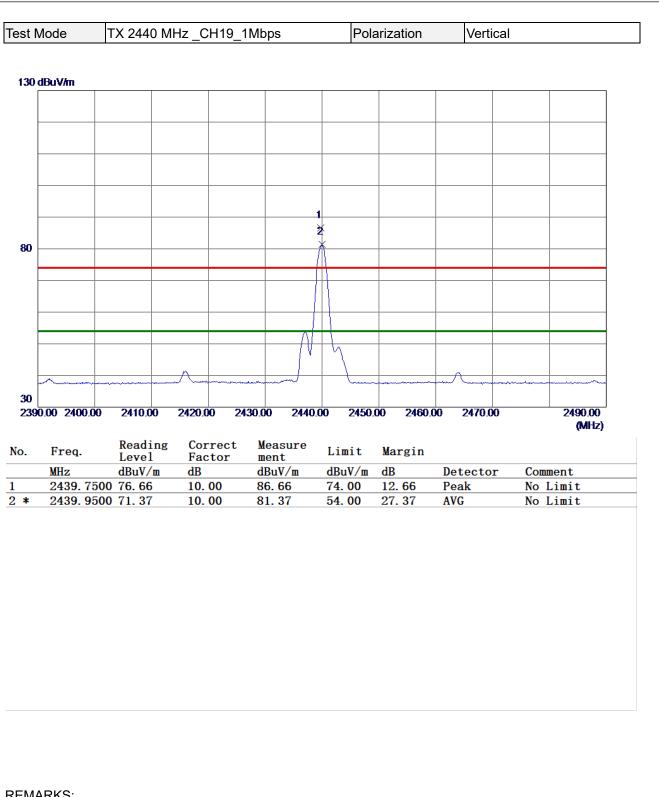
98.27

93.17



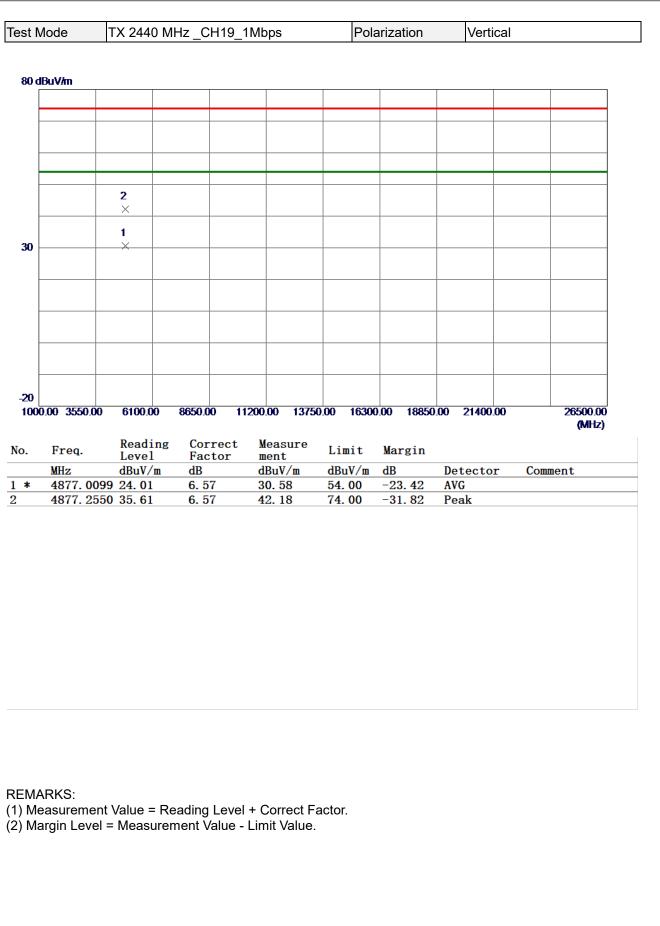




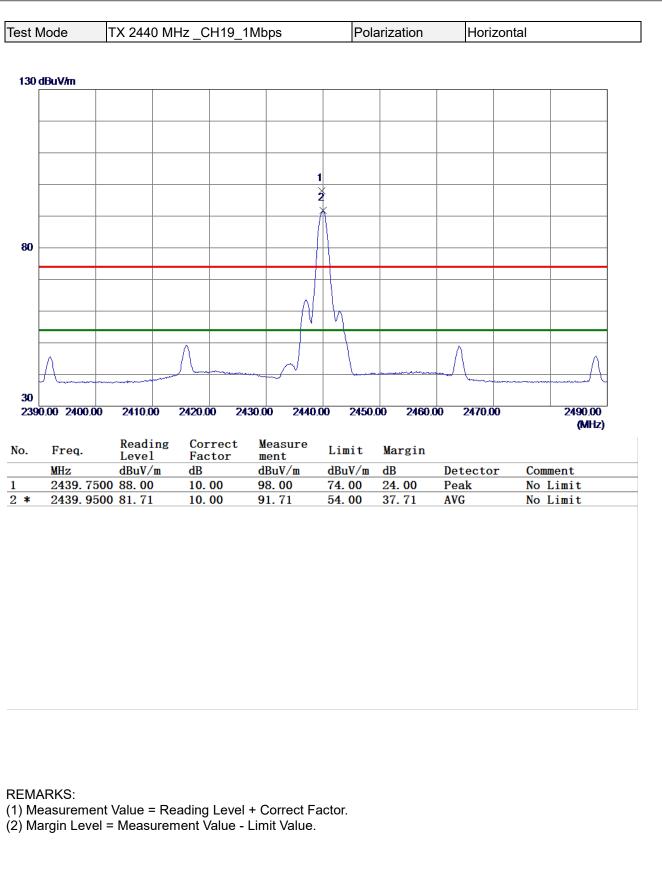


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

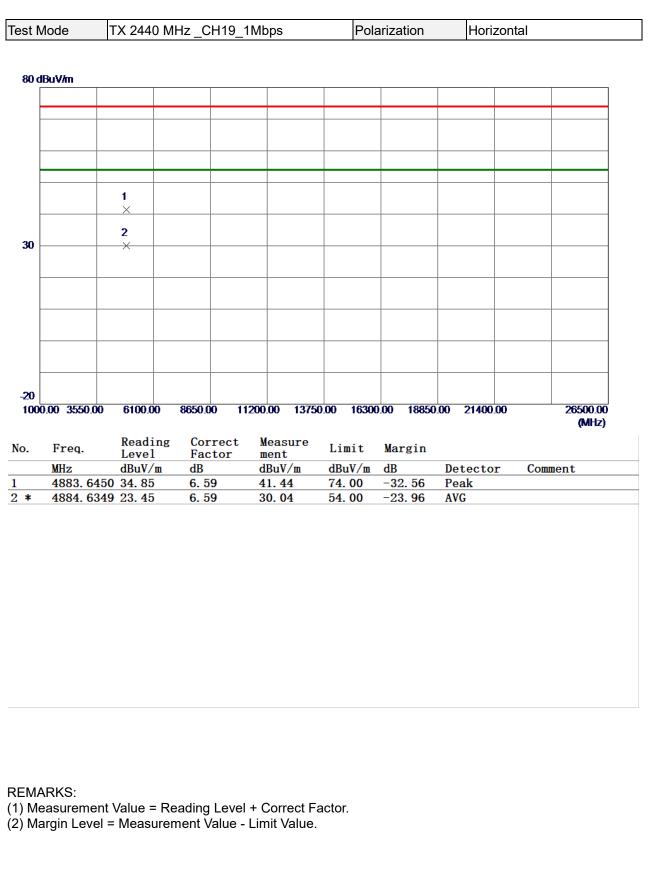




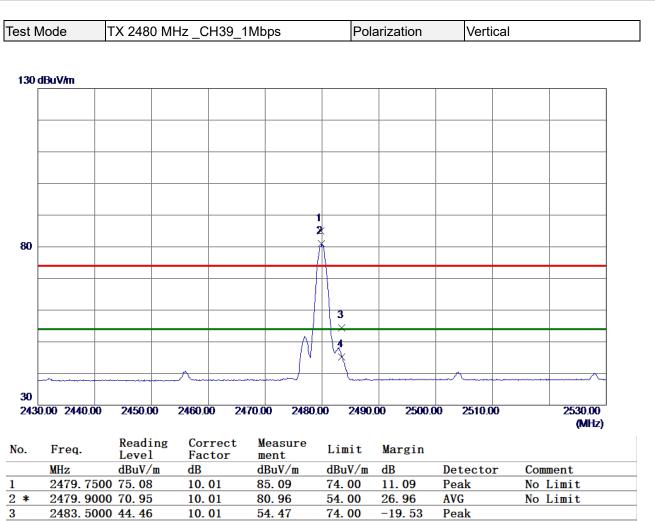












4

2483. 5000 35. 14

(1) Measurement Value = Reading Level + Correct Factor.

10.01

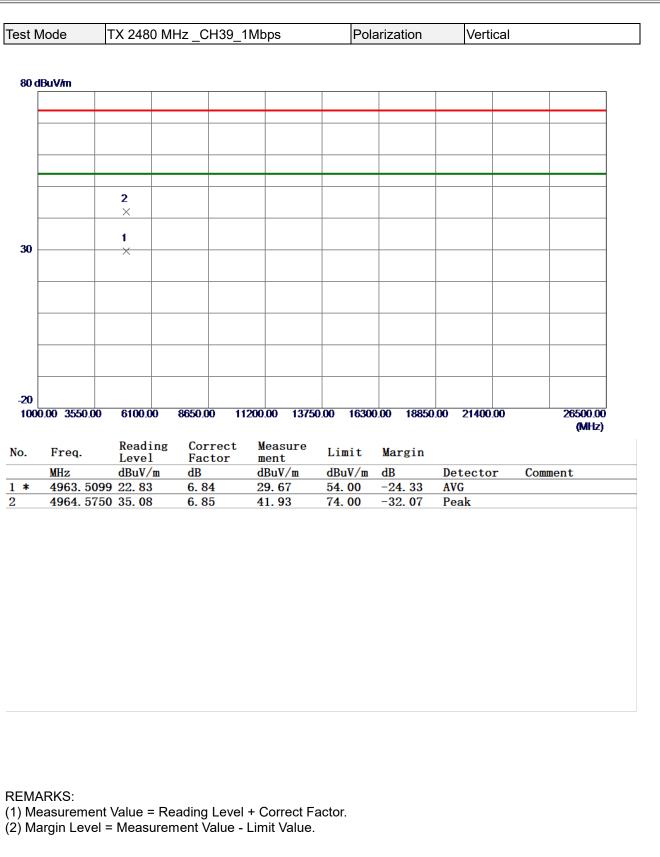
45.15

54.00

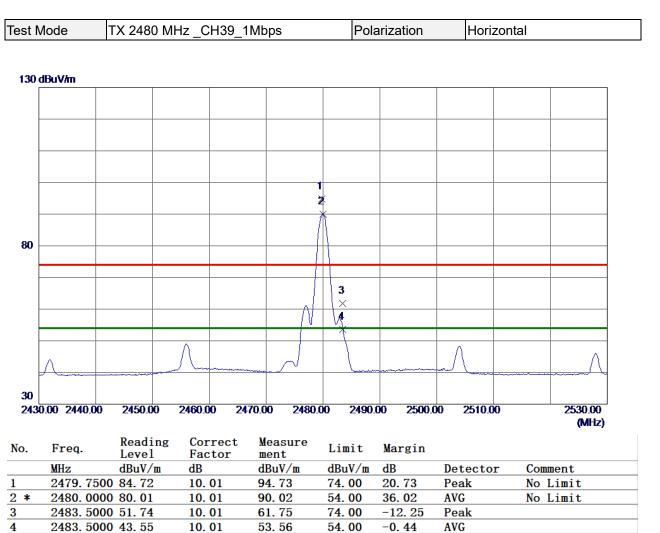
-8.85

AVG



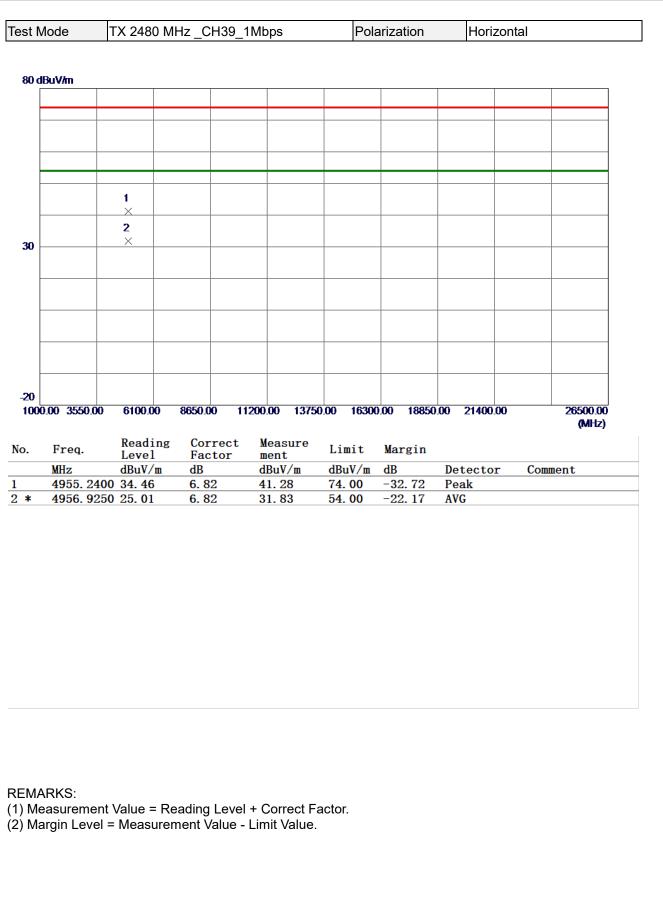






- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





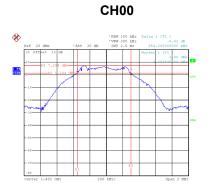


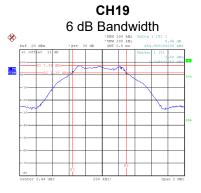


APPENDIX E - BANDWIDTH

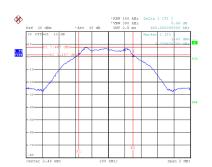


Т	Test Mode TX Mode _1Mbps								
	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result			
	00	2402	0.654	1.032	0.5	Pass			
	19	2440	0.655	1.032	0.5	Pass			
	39	2480	0.660	1.032	0.5	Pass			

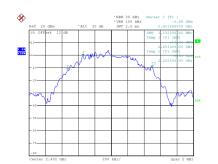




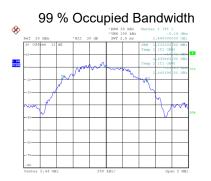
CH39



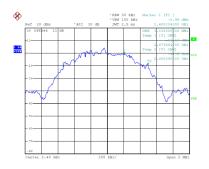
Date: 13.MAY.2021 18:55:04



Date: 13.MAY.2021 18:57:19



Date: 13.MAY.2021 18:59:33



Date: 13.MAY.2021 18:54:39

Date: 13.MAY.2021 18:57:25

Date: 13.MAY.2021 18:59:39

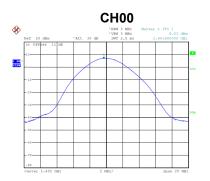


APPENDIX F - MAXIMUM OUTPUT POWER

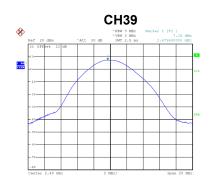


Test Mode TX Mode _1Mbps

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	6.83	0.0048	30.00	1.0000	Pass
2440	7.02	0.0050	30.00	1.0000	Pass
2480	7.15	0.0052	30.00	1.0000	Pass







Date: 13.MAY.2021 19:08:42

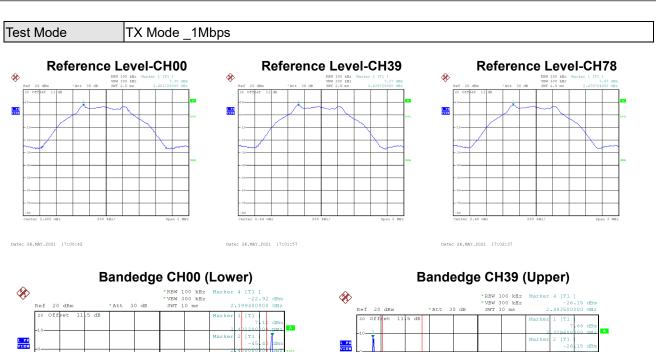
Date: 13.MAY.2021 19:08:20

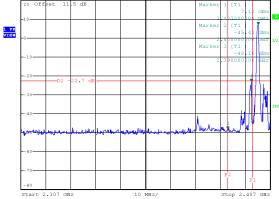
Date: 13.MAY.2021 19:08:00



APPENDIX G - CONDUCTED SPURIOUS EMISSION







Date: 26.MAY.2021 17:16:46

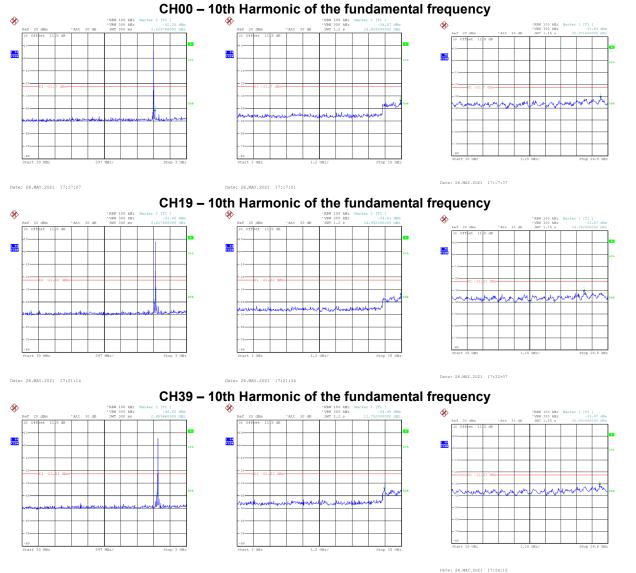
Date: 26.MAY.2021 17:23:13

2.473 GH:

A

10 MHz/

Stop 2.573



Date: 26.MAY.2021 17:23:40

Date: 26.MAY.2021 17:23:57

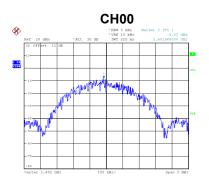


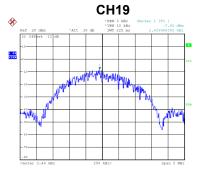
APPENDIX H - POWER SPECTRAL DENSITY



Test Mode TX Mode _1Mbps

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-8.02	8.00	Pass
19	2440	-7.93	8.00	Pass
39	2480	-7.88	8.00	Pass







Date: 13.MAY.2021 18:56:38

Date: 13.MAY.2021 18:58:50

Date: 13.MAY.2021 19:01:02

End of Test Report