

# FCC Radio Test Report

**FCC ID: 2AH4HMT4201** 

This report concerns: Original Grant

**Project No.** : 2104C020

**Equipment**: LTE Cat-M1 Tracker

Brand Name : Mobilogix
Test Model : MT4201E
Series Model : MT4201C
Applicant : Mobilogix, Inc.

Address : 5500 Trabuco Rd Suite 150 Irvine, CA, USA

**Manufacturer**: Mobilogix, Inc.

Address : 5500 Trabuco Rd Suite 150 Irvine, CA, USA Factory : Suga Electronics (Dongguan) Co., Ltd.

Address : No.8 Fulong Road, Qingxi Town, Dongguan City

Date of Receipt : Apr. 28, 2021

**Date of Test** : Apr. 29, 2021 ~ May 18, 2021

Issued Date : Jun. 07, 2021

Report Version : R00

Test Sample : Engineering Sample No.: DG2021042934 for radiated, DG2021042934

for conducted.

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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Steven Lu

Treen Chen

Approved by : Steven Lu

IAC-MRA ACCREDITED

Certificate #5123.02

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Tel: +86-769-8318-3000 Web: www.newbtl.com



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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 Version	Description	Issued Date
R00	Original Issue.	Jun. 07, 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 Item	Test Result	Judgment	Remark
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX A APPENDIX B APPENDIX C	PASS	
15.247(a)(2)	Bandwidth	APPENDIX D	PASS	
15.247(b)(3)	Maximum Output Power	APPENDIX E	PASS	
15.247(d)	Conducted Spurious Emission	APPENDIX F	PASS	
15.247(e)	Power Spectral Density	APPENDIX G	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 Road, Shixia, Dalang Town, Dongguan, Guangdong, 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. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)				
		9kHz ~ 30MHz	-	3.02				
		30MHz ~ 200MHz	V	4.26				
		30MHz ~ 200MHz	Н	3.38				
	DG-CB03 CISPR	CISPR	CISPR	B03 CISPR		200MHz ~ 1,000MHz	V	3.98
DG-CB03					200MHz ~ 1,000MHz	Τ	3.94	
		1GHz ~ 6GHz	ı	3.96				
		6GHz ~ 18GHz	ı	5.24				
		18GHz ~ 26.5GHz	1	3.62				
		26.5GHz ~ 40GHz	-	4.00				

### B. 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
Radiated Emissions-9 kHz to 30 MHz	25°C	60%	DC 48V	Grani Zhou
Radiated Emissions-30 MHz to 1000 MHz	26°C	52%	DC 48V	Grani Zhou
Radiated Emissions-Above 1000 MHz	26°C	52%	DC 48V	Grani Zhou
Bandwidth	21.9°C	52%	DC 48V	Jesse Wang
Maximum Output Power	21.9°C	52%	DC 48V	Jesse Wang
Conducted Spurious Emission	21.9°C	52%	DC 48V	Jesse Wang
Power Spectral Density	21.9°C	52%	DC 48V	Jesse Wang



### 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Cat-M1 Tracker
Brand Name	Mobilogix
Test Model	MT4201E
Series Model	MT4201C
Model Difference(s)	Only differ in model name and Harness.
Hardware Version	1.2
Software Version	1.5.0.1
Power Source	1# DC voltage supplied from external power supply.
Fower Source	2# Supplied from battery.
Power Rating	1# DC 48V
rower Rating	2# DC 3.7V
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps, 2Mbps
Max. Output Power	2Mbps: -0.07 dBm (0.0010 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	N/A	N/A	Chip	N/A	0.5

### 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_2Mbps Channel 00/19/39
Mode 3	TX Mode_2Mbps Channel 00

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

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

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

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

### Note:

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

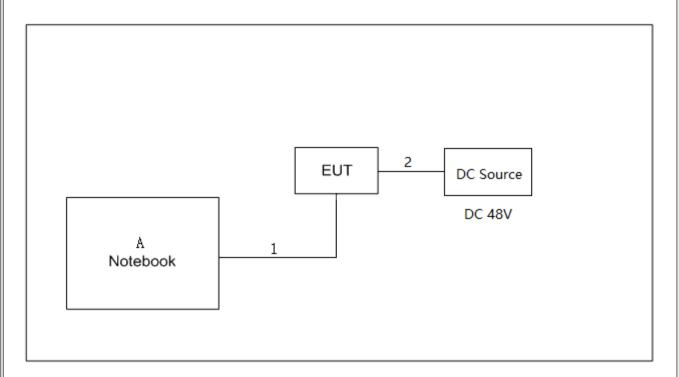
### 2.3 PARAMETERS OF TEST SOFTWARE

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		QCOM_V1.6	
Frequency (MHz)	2402	2440	2480
1Mbps	-5	-5	-5
2Mbps	-5	-5	-5



### 2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 2.5 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
Α	Notebook	HONOR	NBLK-WAX9X	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	0.1m
2	DC Cable	NO	NO	1.5m



### 3. RADIATED EMISSIONS

### **3.1 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 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).



### 3.2 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:

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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

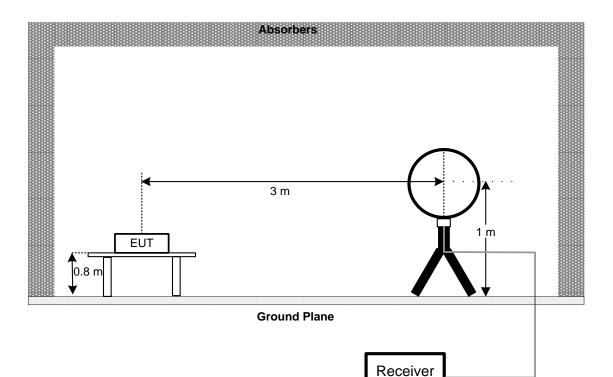


### 3.3 DEVIATION FROM TEST STANDARD

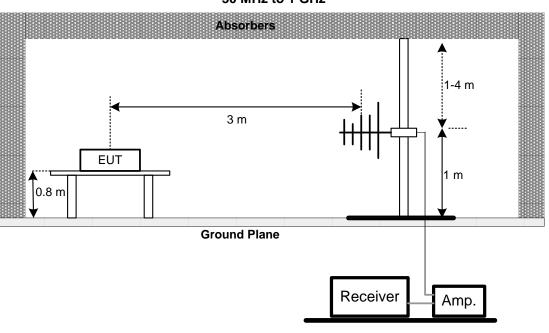
No deviation.

### 3.4 TEST SETUP

### 9 kHz to 30 MHz

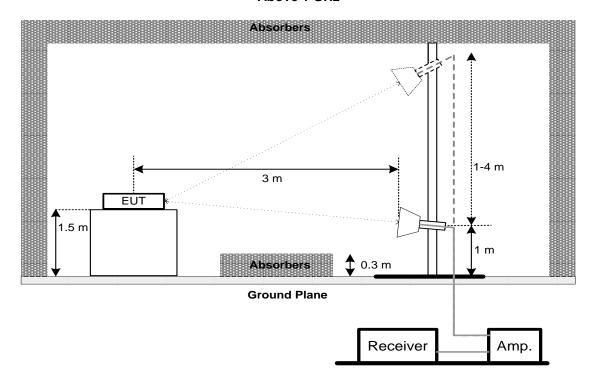


### 30 MHz to 1 GHz





### **Above 1 GHz**



### 3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 3.6 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX A.

### Remark:

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

### 3.7 TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX B.

### 3.8 TEST RESULT - ABOVE 1000 MHz

Please refer to the APPENDIX C.

### Remark:

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



### 4. BANDWIDTH

### 4.1 LIMIT

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

### **4.2 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

### 4.3 DEVIATION FROM STANDARD

No deviation.

### 4.4 TEST SETUP



### 4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 4.6 TEST RESULTS

Please refer to the APPENDIX D.



### **5. MAXIMUM OUTPUT POWER**

### **5.1 LIMIT**

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

### **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:

Spectrum Parameters	Setting			
Span Frequency	≥ 3×RBW			
RBW	3 MHz			
VBW	3 MHz			
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. CONDUCTED SPURIOUS EMISSION

### **6.1 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.

### **6.2 TEST PROCEDURE**

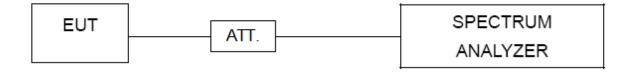
- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The following table is the setting of the spectrum analyzer:

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

### 6.3 DEVIATION FROM STANDARD

No deviation.

### 6.4 TEST SETUP



### **6.5 EUT OPERATION CONDITIONS**

The EUT was programmed to be in continuously transmitting mode.

### 6.6 TEST RESULTS

Please refer to the APPENDIX F.



### 7. POWER SPECTRAL DENSITY

### **7.1 LIMIT**

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

### 7.2 TEST PROCEDURE

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

Spectrum Parameters	Setting			
Span Frequency	2 MHz (1 Mbps) / 4 MHz (2 Mbps)			
RBW	3 kHz			
VBW	10 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. MEASUREMENT INSTRUMENTS LIST**

Radiated Emissions - 9 kHz to 30 MHz								
Item	Kind of Equipment	Calibrated until						
1	Loop Antenna	EM	EM-6876-1	230	Apr. 28, 2022			
2	Cable	N/A	RG 213/U	N/A	May 29, 2021			
3	EMI Test Receiver	er R&S ESCI		100895	Feb. 27, 2022			
4	Measurement	leasurement Fored		N/A	N/A			
4	Software	Farad	Ver.NB-03A1-01	IN/A	IN/A			
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 22, 2021				
5	Controller	CT	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	ent N9038A MY52130039		Jul. 25, 2021				
6	Controller	CT	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				



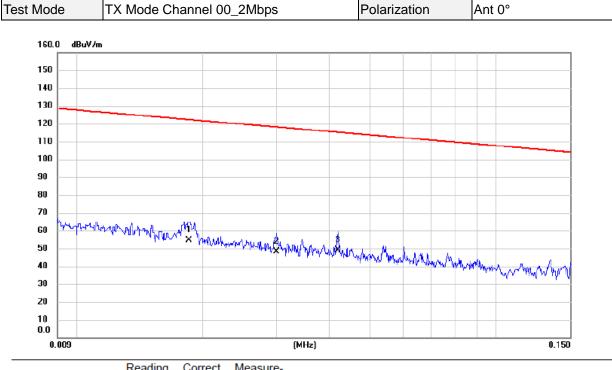
Bandwidth &  Maximum Output Power &  Power Spectral Density &  Conducted Spurious Emission									
Item	Nanufacturer Type No. Serial No. Calibrated until								
1	1 Spectrum Analyzer R&S FSP40 100185 Jul. 25, 2021								
2	2 Attenuator WOKEN 6SM3502 VAS1214NL Feb. 07, 2022								
3	· · · · · · · · · · · · · · · · · · ·								
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.



# **APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ**

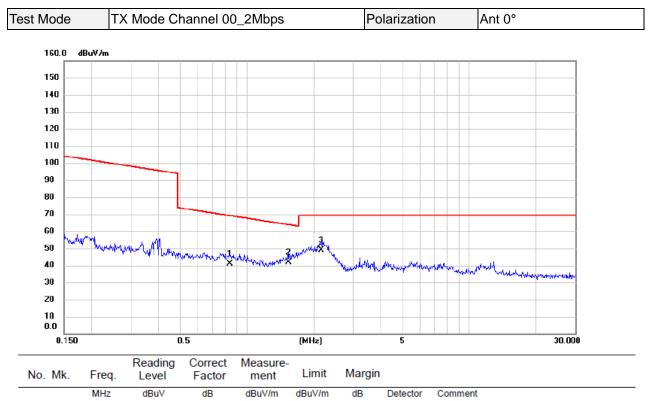




No. Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0185	40.88	13.68	54.56	122.26	-67.70	AVG	
2	0.0300	35.19	12.95	48.14	118.06	-69.92	AVG	
3 *	0.0420	36.24	12.63	48.87	115.14	-66.27	AVG	

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





0.8350

1.5355

2.1552

### **REMARKS:**

1 2

3

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

28.98

30.24

37.65

11.87

11.53

11.23

40.85

41.77

48.88

69.17

63.88

69.54

-28.32

-22.11

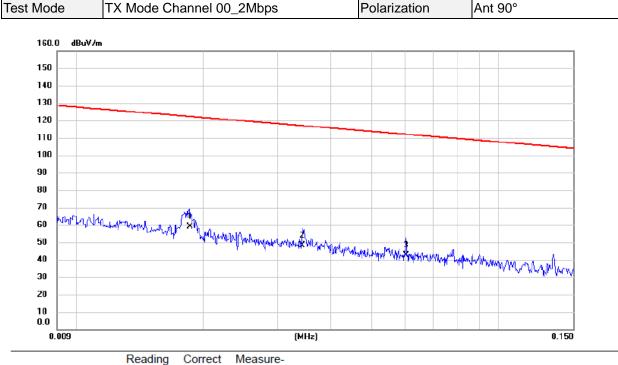
-20.66

QP

QP

QP

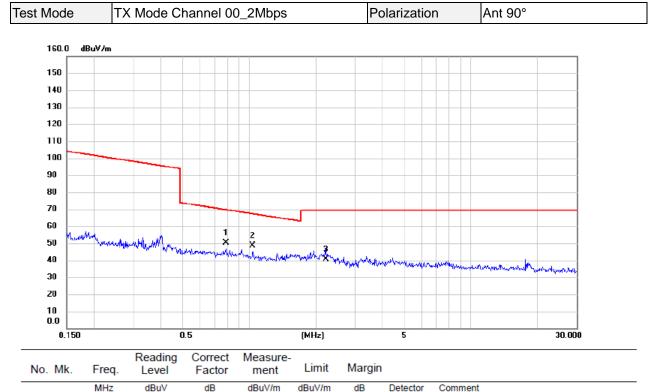




No. Mk.	Freq.	Reading Level		Measure ment	- Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	0.0186	45.18	13.65	58.83	122.21	-63.38	AVG	
2	0.0343	35.27	12.84	48.11	116.90	-68.79	AVG	
3	0.0603	30.06	12.48	42.54	112.00	-69.46	AVG	

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





QP

QP

QP

-19.39

-18.77

-29.09

50.29

48.52

40.45

69.68

67.29

69.54

## REMARKS:

2

3

0.7876

1.0374

2.2250

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

11.88

11.78

11.20

(2) Margin Level = Measurement Value - Limit Value.

38.41

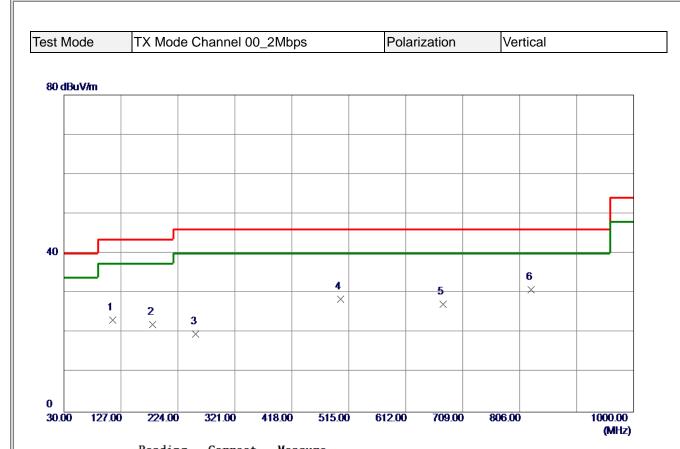
36.74

29.25



APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

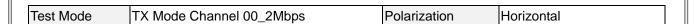


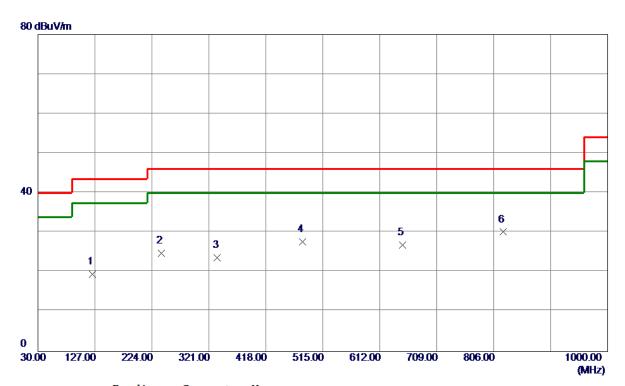


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	112. 4500	38. 02	-14. 82	23. 20	43. 50	-20. 30	Peak	
2	181. 3200	35. 87	-13. 81	22. 06	43. 50	-21. 44	Peak	
3	254. 0700	32. 45	-12. 78	19.67	46.00	-26. 33	Peak	
4	500. 4500	35. 06	<b>-6.54</b>	28. 52	46.00	-17. 48	Peak	
5	675. 0500	30. 63	-3. 40	27. 23	46.00	-18. 77	Peak	
6 *	825. 4000	31. 48	-0. 66	30. 82	46.00	-15. 18	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	123. 1200	33. 49	-13. 92	19. 57	43. 50	-23.93	Peak	
2	240. 4900	38. 10	-13. 36	24. 74	46.00	-21. 26	Peak	
3	335. 5500	33. 98	-10. 23	23. 75	46.00	-22. 25	Peak	
4	480. 0800	34. 62	-6. 89	27. 73	46.00	-18. 27	Peak	
5	650. 8000	30. 58	-3. 72	26. 86	46.00	-19. 14	Peak	
6 *	822. 4900	30. 82	-0. 66	30. 16	46. 00	-15. 84	Peak	

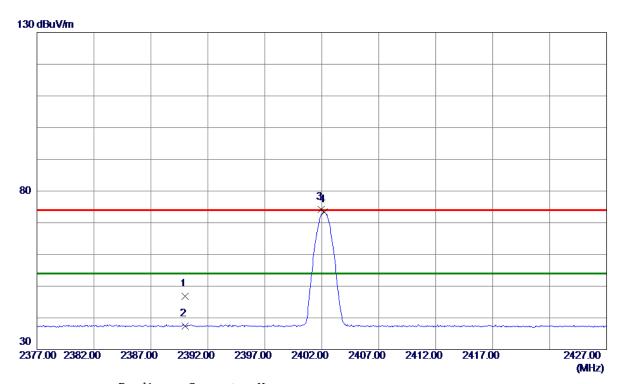
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - ABOVE 1000 MHZ







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	39. 58	7. 26	46. 84	74.00	-27. 16	Peak	
2	2390. 0000	30. 12	7. 26	37. 38	54.00	-16. 62	AVG	
3	2401. 9500	67. 02	7. 26	74. 28	74. 00	0. 28	Peak	No Limit
4 *	2402. 2000	66. 10	7. 26	73. 36	54.00	19. 36	AVG	No Limit

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



Test Mode	TX 2402 MHz _CH00_1Mbj	ps Polarization	Vertical

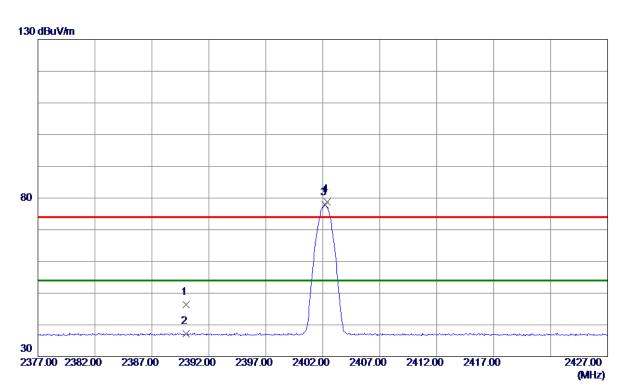


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4803. 6850	27. 66	4. 40	32. 06	54.00	-21. 94	AVG	
2	4804. 3900	38. 99	4. 40	43. 39	74. 00	-30. 61	Peak	

- (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	2390. 0000	39. 17	7. 26	46. 43	74.00	-27. 57	Peak	
2	2390. 0000	29. 92	7. 26	37. 18	54.00	-16.82	AVG	
3 *	2402. 2000	70. 56	7. 26	77. 82	54.00	23.82	AVG	No Limit
4	2402. 4000	71. 55	7. 26	78. 81	74.00	4. 81	Peak	No Limit

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



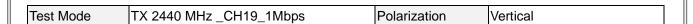
Test Mode	TX 2402 MHz _CH00_1Mbps	s Polarization	Horizontal

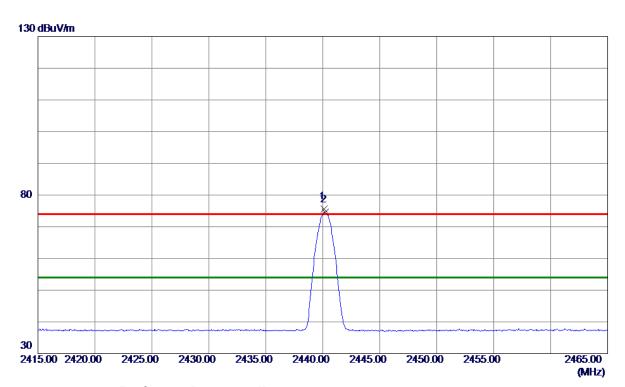


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4803. 6530	27. 65	4. 40	32. 05	54.00	-21. 95	AVG	
2	4804. 5950	39. 12	4. 40	43. 52	74. 00	-30. 48	Peak	

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



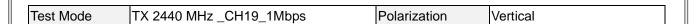




No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2440. 1000	68. 27	7. 25	75. 52	74.00	1. 52	Peak	No Limit
2 *	2440. 2000	67. 36	7. 25	74. 61	54. 00	20.61	AVG	No Limit

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



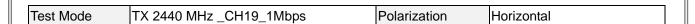


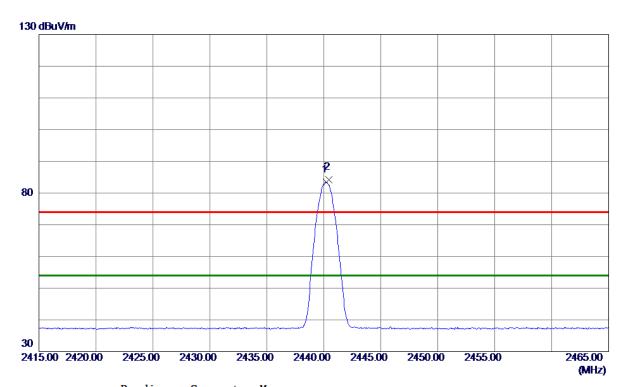


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4879. 4650	39. 42	4. 60	<b>44. 0</b> 2	74.00	-29. 98	Peak	
2 *	4880. 3310	27. 70	4. 60	32. 30	54. 00	-21. 70	AVG	

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





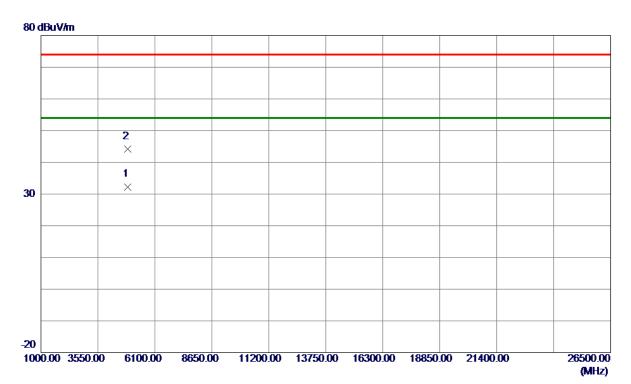


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2440. 2000	76. 19	7. 25	83. 44	54.00	29. 44	AVG	No Limit
2	2440. 4500	77. 00	7. 25	84. 25	74.00	10. 25	Peak	No Limit

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



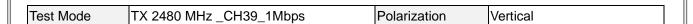
Test Mode	TX 2440 MHz _CH19_1Mbp	os Polarization	Horizontal

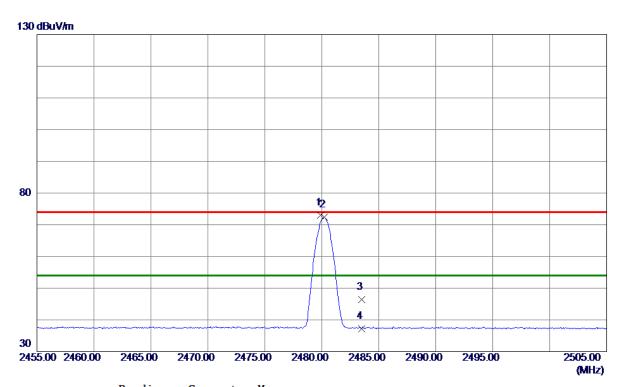


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4880. 2719	27. 70	4. 60	32. 30	54.00	-21. 70	AVG	
2	4880 3290	39 57	4 60	44 17	74 00	-29 83	Peak	

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





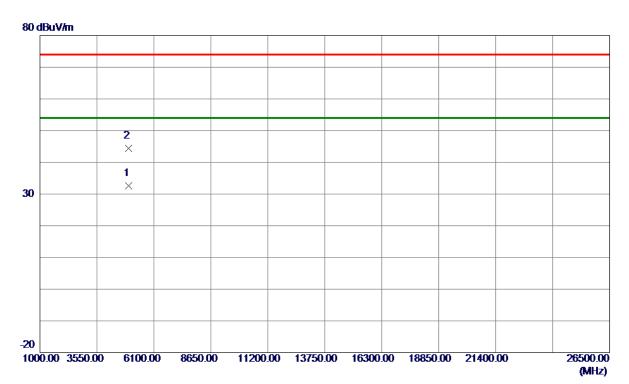


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479. 9000	65. 82	7. 25	73. 07	74.00	-0. 93	Peak	No Limit
2 *	2480. 2000	65. 08	7. 25	72. 33	54.00	18. 33	AVG	No Limit
3	2483. 5000	39. 23	7. 25	46. 48	74.00	-27. 52	Peak	
4	2483. 5000	30. 03	7. 25	37. 28	54.00	-16. 72	AVG	

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



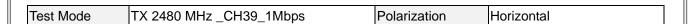
Test Mode	TX 2480 MHz _CH39_1Mb <sub>l</sub>	ps Polarization	Vertical

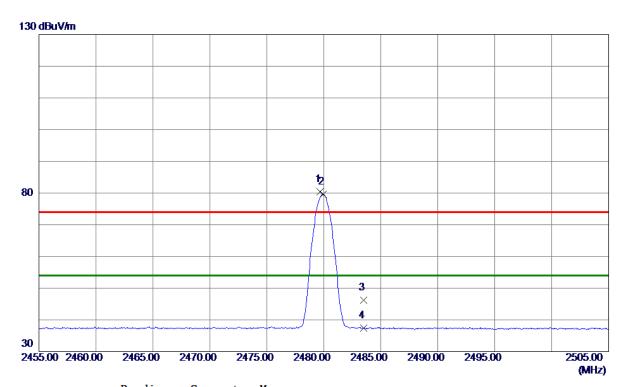


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4960. 2230	27. 77	4. 81	32. 58	54. 00	-21. 42	AVG	
2	4960 9460	39 54	4 82	44 36	74 00	-29 64	Peak	

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



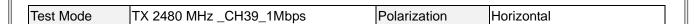


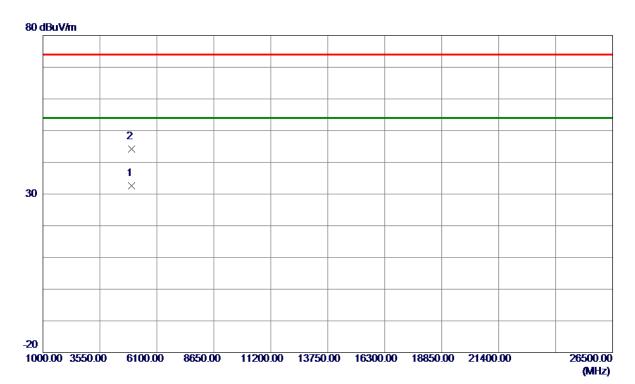


N	o.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2479.6500	73. 21	7. 25	80. 46	74.00	6. 46	Peak	No Limit
2	*	2479.9500	72. 40	7. 25	79. 65	54.00	25. 65	AVG	No Limit
3		2483. 5000	38. 88	7. 25	46. 13	74.00	-27. 87	Peak	
4		2483. 5000	30. 17	7. 25	37. 42	54. 00	-16. 58	AVG	

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





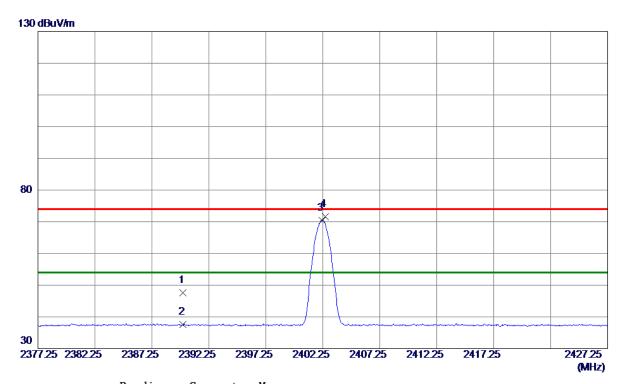


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4959. 6349	27. 84	4. 81	32. 65	54.00	-21. 35	AVG	
2	4960. 4440	39. 40	4. 81	44. 21	74. 00	-29. 79	Peak	

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





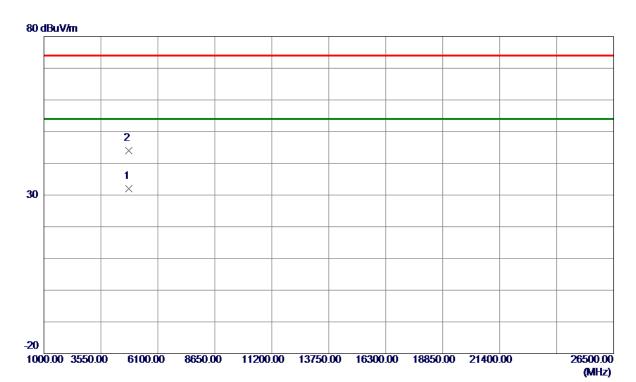


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	40. 33	7. 26	47. 59	74.00	-26. 41	Peak	
2	2390. 0000	30. 27	7. 26	37. 53	54.00	-16. 47	AVG	
3 *	2402. 2000	63. 22	7. 26	70. 48	54.00	16. 48	AVG	No Limit
4	2402. 4500	64. 36	7. 26	71. 62	74.00	-2. 38	Peak	No Limit

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



Test Mode	TX 2402 MHz _CH00_2Mb	ps Polarization	Vertical	

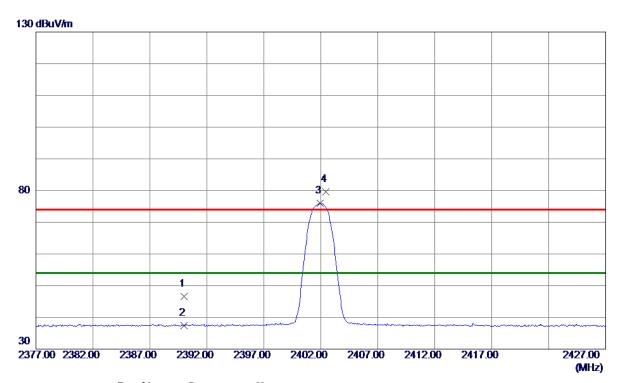


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4804. 1820	27. 67	4. 40	32. 07	54.00	-21. 93	AVG	
2	4804 6920	39 51	4 40	43 91	74 00	-30 09	Peak	

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





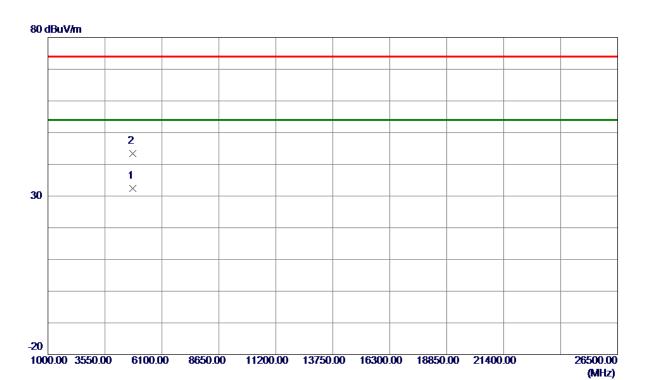


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	39. 25	7. 26	46. 51	74.00	-27. 49	Peak	
2	2390. 0000	30. 14	7. 26	37. 40	54.00	-16. 60	AVG	
3 *	2401. 9500	68. 68	7. 26	75. 94	54.00	21. 94	AVG	No Limit
4	2402. 4500	72. 27	7. 26	79. 53	74.00	5. 53	Peak	No Limit

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



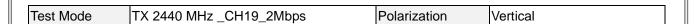
Test Mode TX 2402 MHz _CH00_2Mbps	Polarization	Horizontal
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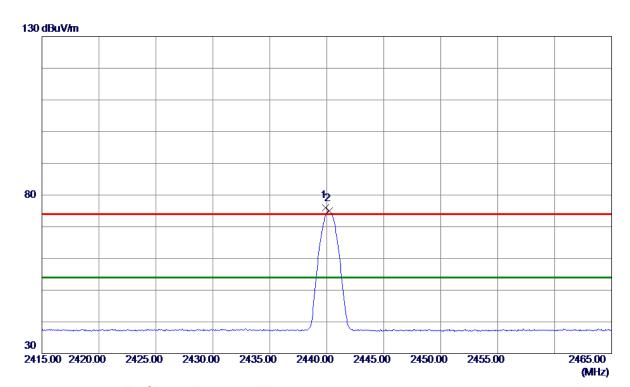


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4804. 3270	27. 92	4. 40	32. 32	54.00	-21. 68	AVG	
2	4804. 8929	39. 01	4. 40	43. 41	74. 00	-30. 59	Peak	

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





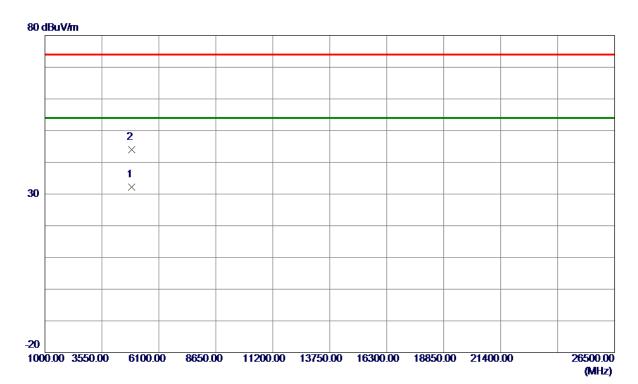


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2439. 9000	68. 74	7. 25	75. 99	74.00	1. 99	Peak	No Limit
2 *	2440. 2000	67. 76	7. 25	75. 01	54. 00	21. 01	AVG	No Limit

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



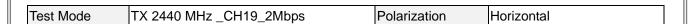
Test Mode	TX 2440 MHz _CH19_2Mbp	os Polarization	Vertical	

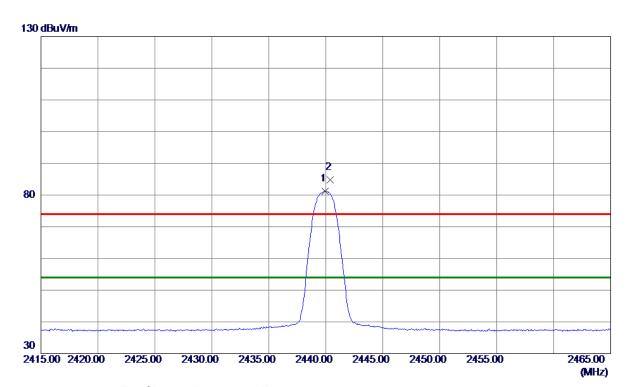


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4879. 3480	27. 62	4. 60	32. 22	54.00	-21. 78	AVG	
2	4880. 8260	39. 45	4. 60	44. 05	74. 00	-29. 95	Peak	

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





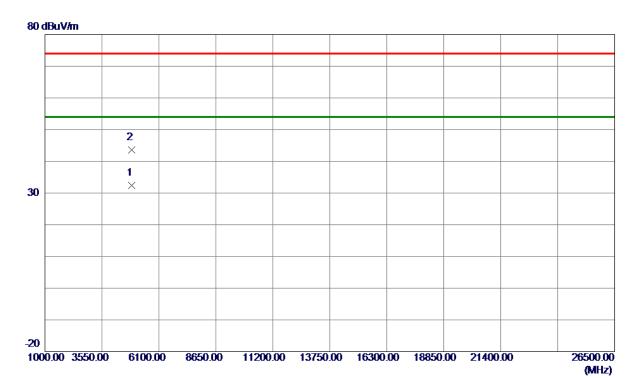


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2439. 9500	73. 94	7. 25	81. 19	54.00	27. 19	AVG	No Limit
2	2440. 4000	77. 58	7. 25	84. 83	74. 00	10.83	Peak	No Limit

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



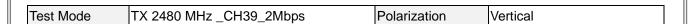
st Mode TX 2440 MHz _CH19_2Mbps	Polarization	Horizontal
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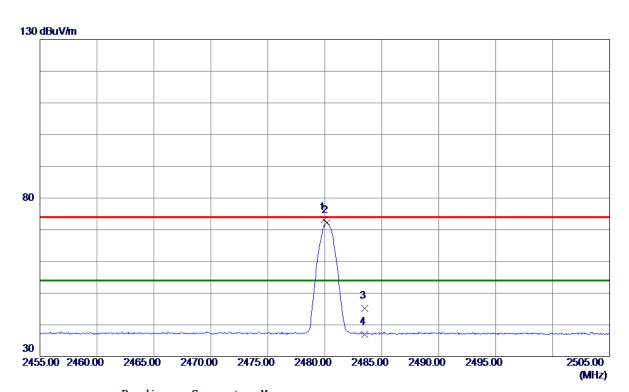


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4879. 3470	27. 84	4. 60	32. 44	54.00	-21. 56	AVG	
2	4879. 6240	39. 01	4. 60	43.61	74. 00	-30. 39	Peak	

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





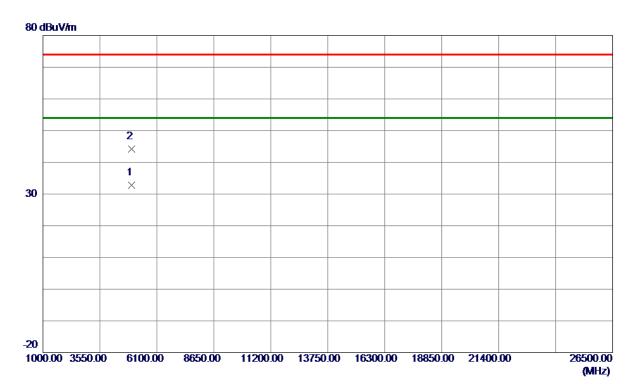


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.9500	65. 92	7. 25	73. 17	74.00	-0.83	Peak	No Limit
2 *	2480. 1500	64. 89	7. 25	72. 14	54.00	18. 14	AVG	No Limit
3	2483. 5000	38. 02	7. 25	45. 27	74.00	-28. 73	Peak	
4	2483. 5000	29. 83	7. 25	37. 08	54.00	-16. 92	AVG	

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



Test Mode	TX 2480 MHz _CH39_2Mb	ps Polarization	Vertical	

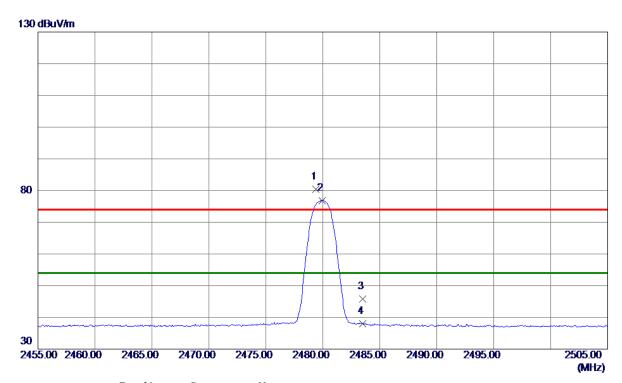


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4959. 5400	28. 01	4. 81	32. 82	54.00	-21. 18	AVG	
2	4959. 7080	39. 32	4. 81	44. 13	74. 00	-29. 87	Peak	

- (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	2479. 4000	73. 22	7. 25	80. 47	74.00	6. 47	Peak	No Limit
2 *	2479. 9500	69. 60	7. 25	76. 85	54.00	22.85	AVG	No Limit
3	2483. 5000	38. 64	7. 25	45. 89	74.00	-28. 11	Peak	
4	2483. 5000	30. 84	7. 25	38. 09	54.00	-15. 91	AVG	

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



Test Mode	TX 2480 MHz _CH39_2Mbps	Polarization	Horizontal
	· · · · = · · · · · · = _ · · · · · · = · · · · · ·		



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4959. 6660	27. 82	4. 81	32. 63	54.00	-21. 37	AVG	
2	4959. 9800	39. 27	4. 81	44. 08	74.00	-29. 92	Peak	

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

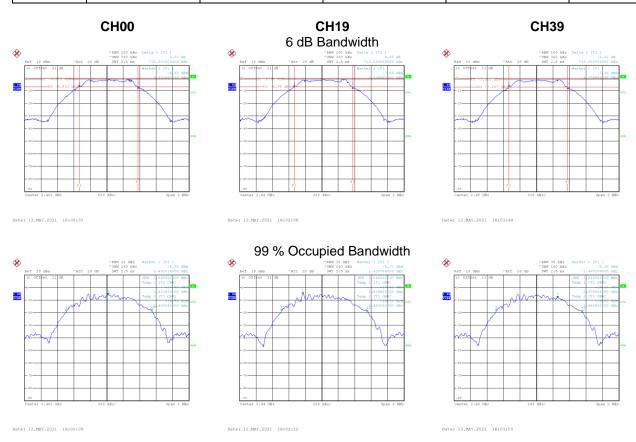


АР	PENDIX D - BANDWIDTH



Test Mode	TX Mode	1Mbps

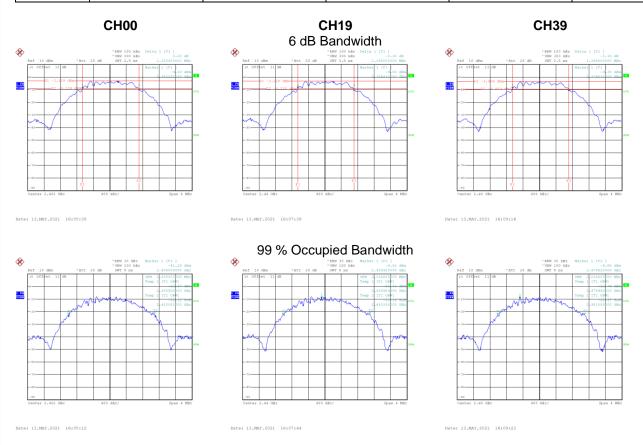
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result
00	2402	0.714	1.040	0.5	Pass
19	2440	0.712	1.044	0.5	Pass
39	2480	0.718	1.044	0.5	Pass





Test Mode	TX Mode	2Mbps

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Test Result
00	2402	1.384	2.088	0.5	Pass
19	2440	1.368	2.104	0.5	Pass
39	2480	1.368	2.104	0.5	Pass





# **APPENDIX E - MAXIMUM OUTPUT POWER**



	Test Mode	TX Mode	1Mhnc
ı	rest iviode	I X IVIOGE	1Mbps

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	-0.08	0.0010	30.00	1.0000	Pass
2440	-0.25	0.0009	30.00	1.0000	Pass
2480	-0.50	0.0009	30.00	1.0000	Pass



Test Mode	TX Mode 2Mbps
	_ '

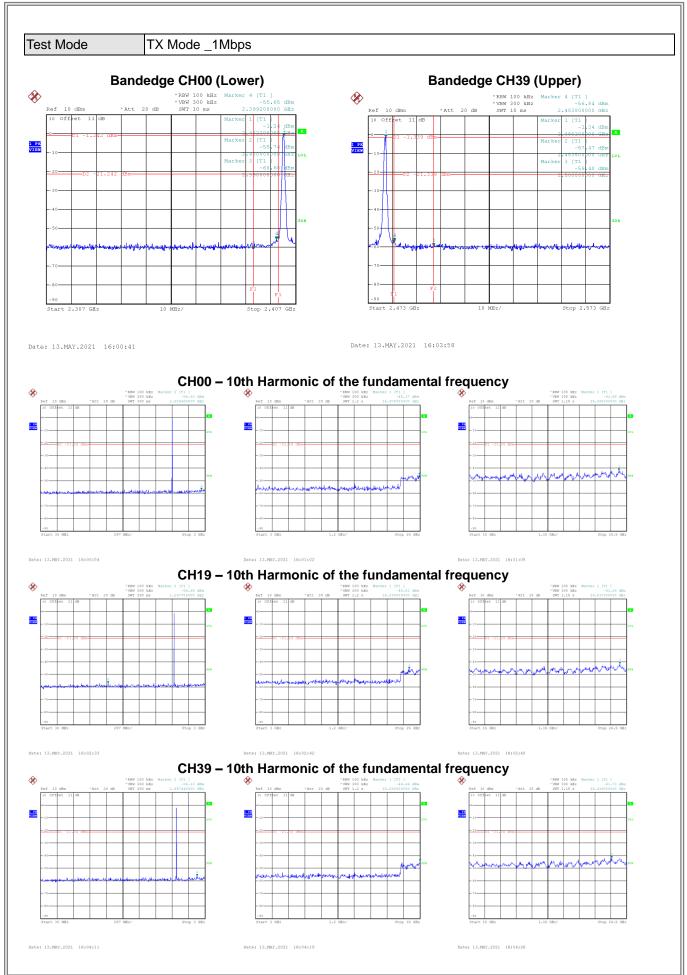
Freque (MH	,	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
240	)2	-0.07	0.0010	30.00	1.0000	Pass
244	10	-0.19	0.0009	30.00	1.0000	Pass
248	80	-0.45	0.0009	30.00	1.0000	Pass



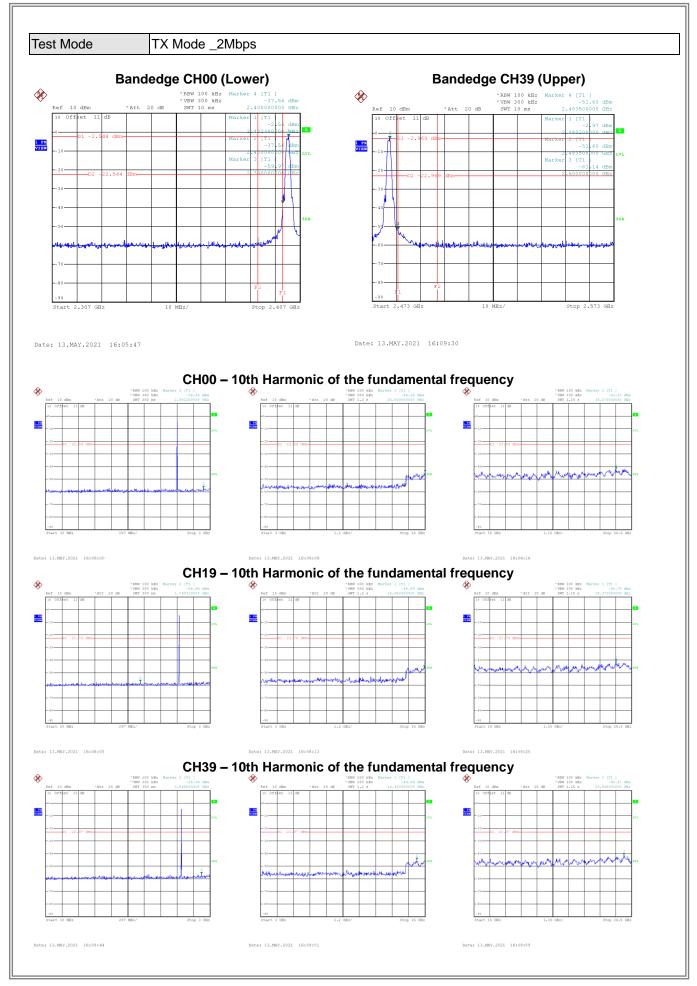


# **APPENDIX F - CONDUCTED SPURIOUS EMISSION**











# **APPENDIX G - 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	-16.59	8.00	Pass
19	2440	-16.65	8.00	Pass
39	2480	-16.94	8.00	Pass



Test Mode	TX Mode	2Mhna	
rest wode	I I A IVIOUE	ZIVIDDS	

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	2402	-19.96	8.00	Pass
19	2440	-20.26	8.00	Pass
39	2480	-20.31	8.00	Pass



**End of Test Report**