



# **FCC Radio Test Report**

# FCC ID: QISBAH2-W19A

This report concerns: Original Grant

: Apr. 03, 2019
: Apr. 08, 2019 ~ Apr. 23, 2019
: Apr. 24, 2019
: BTL Inc.

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Certificate #5123.02



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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.



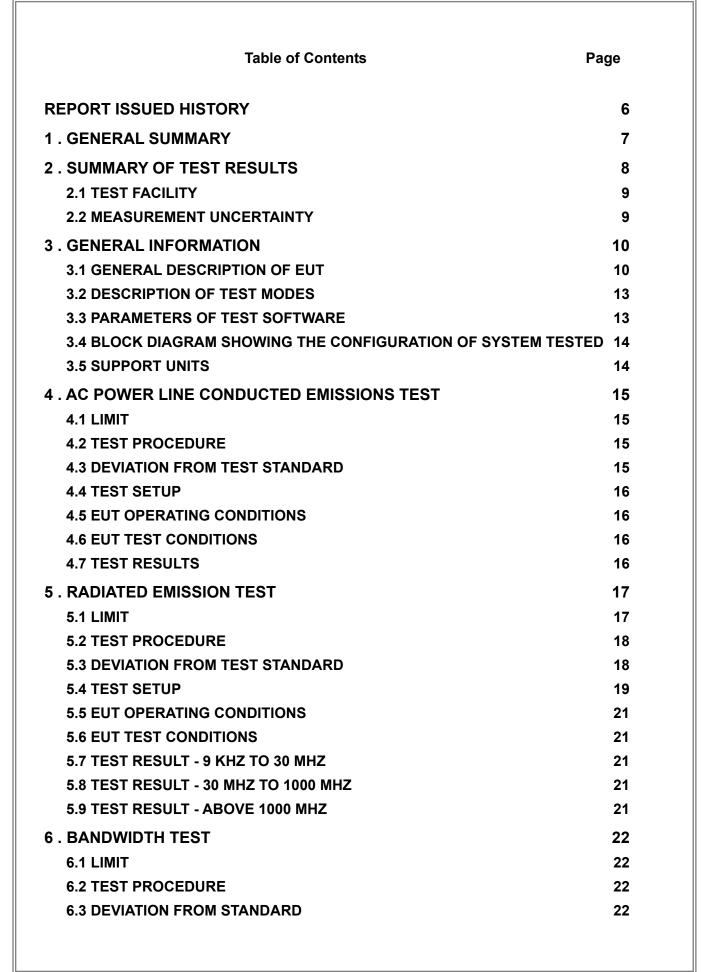








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## **REPORT ISSUED HISTORY**

Report Version	Description	Issued Date
R00	Original Issue.	Apr. 24, 2019



## **1. GENERAL SUMMARY**

Equipment :	Tablet
Brand Name :	HUAWEI
Test Model :	BAH2-W19
Series Model :	N/A
Applicant :	Huawei Technologies Co., Ltd.
Manufacturer :	Huawei Technologies Co., Ltd.
Address :	Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
	Bantian, Longgang District, Shenzhen, 518129, China
Date of Test :	Apr. 08, 2019 ~ Apr. 23, 2019
Test Sample :	Engineering Sample No.: D190403498
Standard(s) :	FCC Part15, Subpart C (15.247)
	ANSI C63.10-2013
	KDB 558074 D01 15.247 Meas Guidance

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

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1904C015) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report are only for the Bluetooth LE part.



## 2. SUMMARY OF TEST RESULTS

T f	
Test procedures according to the	e technical standard(s):

FCC Part15, Subpart C (15.247)				
Standard(s) Section	Standard(s) Section Test Item Tes		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:

- (1) "N/A" denotes test is not applicable to this device.
- (2) BAH2-W19 has two storage scenarios: 3GB+32GB and 4GB+64GB. All rest test items are conducted only for 4GB+64GB except RSE test. RSE test is done both for 4GB+64GB and 3GB+32GB. For the RSE of 3GB+32GB only the worst case is evalucated and recorded in the test report.



#### 2.1 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

#### 2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% 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	150 kHz ~ 30 MHz	2.32

### B. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
		9 KHz~30 MHz	V	3.79
		9 KHz~30 MHz	Н	3.57
		30 MHz~200 MHz	V	3.82
		30 MHz~200 MHz	H	3.78
DG-CB03 CIS	CISPR	200 MHz~1,000 MHz	V	4.10
	CIOFK	200 MHz~1,000 MHz	H	4.06
		1 GHz~18 GHz	V	3.12
		1 GHz~18 GHz	H	3.68
		18 GHz~40 GHz	V	4.15
		18 GHz~40 GHz	Н	4.14

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



## **3. GENERAL INFORMATION**

## 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Tablet
Brand Name	HUAWEI
Test Model	BAH2-W19
Series Model	N/A
Model Difference(s)	Please refer to note 2.
Software Version	BAH2-W19 8.0.0.135(C605)
Hardware Version	SH0BAH2LM
Power Source	1# DC voltage supplied from AC/DC adapter. 2# Supplied from battery. 3# Supplied from USB port.
Power Rating	1# I/P: 100-240V ~50/60Hz, 0.5A O/P: 5V === 2A OR 9V === 2A 2# DC 3.82V, 7350mAh 3# DC 5V
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Technology	GFSK
Bit Rate of Transmitter	1Mbps
Output Power (Max.)	9.69 dBm (0.0093 W)

Note:

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- BAH2-W19 has two storage scenarios, with different memory. EMCP Storage Capacity is 3GB+32GB, LPDDR3+EMMC separation Scheme storage capacity is 4GB+64GB.The two storage mode of peripheral circuit has slight change, but does not affect product performance. The differences about storage scenarios are showed in following table. Other parts of the Tablet are the same, including the appearance, the antenna, Chipset, Bluetooth mode, Wifi mode, Adapter, Battery, Mainboard, Software and so on.

Model	BAH2-W19		
Storage Scenarios	EMCP	LPDDR3+eMMC	
Storage Capacity	3GB+32GB	4GB+64GB	



## 3. Channel List:

Channel	Frequency	Channel	Frequency
Channel	(MHz)	Channel	(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

## 4. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	0





## 5. The EUT contains following accessory devices:

	The EUT contains following accessory devices:				
Items	Brand	Factory	Model Name	Description	
Adapter	HUAWEI	Salcomp (Shenzhen) Co., Ltd. HENZHEN HUNTKE Y ELECTRONICS C O., LTD. BYD ELECTRONIC CO.,LTD.	HW-090200UH0	I/P: 100-240∨ ~50/60Hz, 0.5A O/P: 5∨ ==== 2A OR 9∨ ==== 2A	
Li-ion Battery	HUAWEI	SCUD (Fujian) Electronics Co., Ltd. SUNWODA Electronic Co., Ltd	HB2994I8ECW	Rated capacity: 7350mAh Nominal Voltage: +3.82V Charging Voltage:	
		Huizhou Desay Battery Co., Ltd		<b></b> +4.40V	
		HUIZHOU DEHONG TECHNOLOGY CO.,LTD.	330-50507		
		NingBo Broad Telecommunication Co.,Ltd.	CUDU01B-HC295-EH		
USB Cable		HONGFUJIN PRECISION INDUSTRIAL(SHEN ZHEN).LTD	WA0020	Signal Cable 5V~12V/3A USB2.0 USB-A to USB-C Charge Data	
		Dongguan Mingji Electronics Technology Group Co.,Ltd	L99UC131-CS-H	Cable,1.0m,USB-C (24AWG+30AWG*2C+ 24AWG+2*28AWG Drain)*3.1mm,USB-A	
		Freeport Resources Enterprises (Jiangxi) Co.,Ltd	18-93C2CHO-001HF		
		LUXSHARE Precision Industry Co., Ltd.	203-1572-0		
HUAWEI					
Smart Dock for					
MediaPad	HUAWEI	-	C-Bach2-Cradle	DC 9V,2A max	
M5 lite					
(10.1-inch)					



## 3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description	
Mode 1	TX Mode	
Mode 2	TX Mode Channel 00	

Following mode(s) as (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 Channel 00			

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

Radiated emissions test - Above 1GHz		
Final Test Mode Description		
Mode 1	TX Mode	

Conducted test		
Final Test Mode Description		
Mode 1	TX Mode	

Note:

- (1) Radiated Emissions of middle channel is performed and Band edge of high and low channels are performed.
- (2) For radiated emission above 1 GHz test, 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.

#### 3.3 PARAMETERS OF TEST SOFTWARE

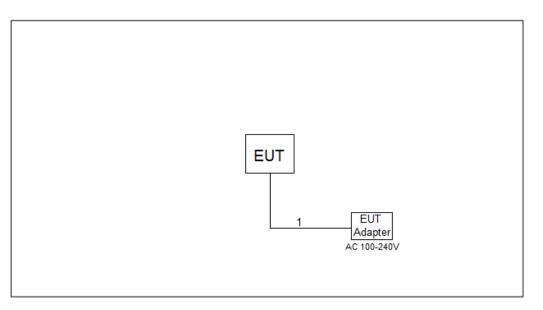
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of BT LE

Test Software	BT RF Auth1.0		
Frequency (MHz)	2402	2440	2480
Parameters	N/A	N/A	N/A





## 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 3.5 SUPPORT UNITS

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1m	DC Cable



## 4. AC POWER LINE CONDUCTED EMISSIONS TEST

#### 4.1 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.

#### The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

#### 4.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

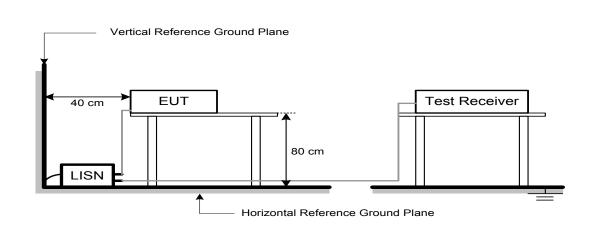
#### 4.3 DEVIATION FROM TEST STANDARD

No deviation





## 4.4 TEST SETUP



#### 4.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

#### 4.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

#### 4.7 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.



## 5. RADIATED EMISSION TEST

#### 5.1 LIMIT

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

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

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	Band edge/ Harmonic at 3m (dBµV/m)		Harmonic at 1	.5m (dBµV/m)
	Peak	Average	Peak	Average
Above 1000	74	54	80 (Note 5)	60 (Note 5)

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following: Measurement Value = Reading Level + Correct Factor Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use) Margin Level = Measurement Value - Limit Value

(5)

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

20log d limit/d measure=20log 3/1.5=6 dB.





Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW	RBW 1 MHz VBW 3 MHz peak detector for Pk value
(Emission in restricted band)	RMS detector for AV value

Receiver Parameter	Setting
Attenuation	Auto
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

#### 5.2 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m or 1.5m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

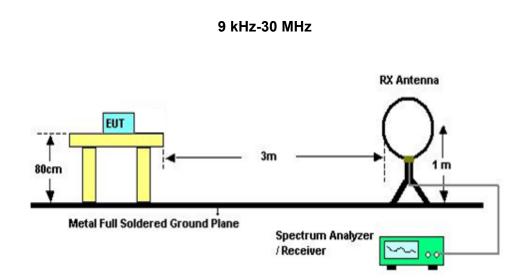
#### 5.3 DEVIATION FROM TEST STANDARD

No deviation

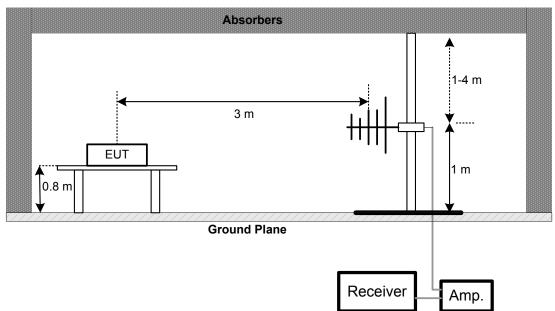




## 5.4 TEST SETUP



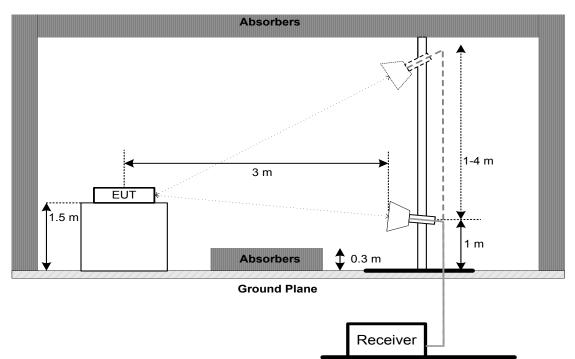
#### 30 MHz to 1 GHz



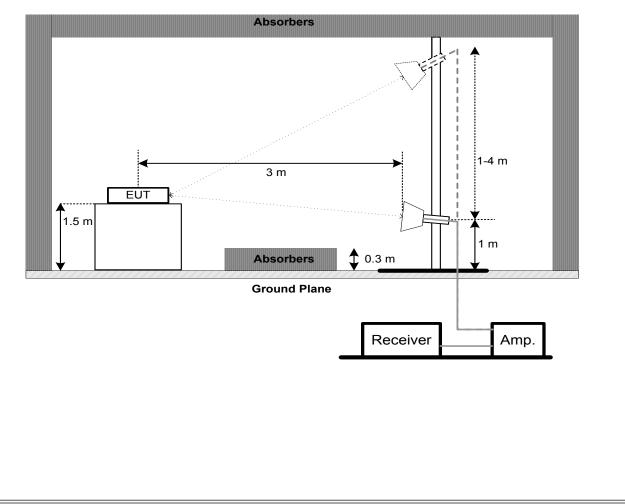




## Band edge



## Harmonic(1 GHz to 18 GHz)

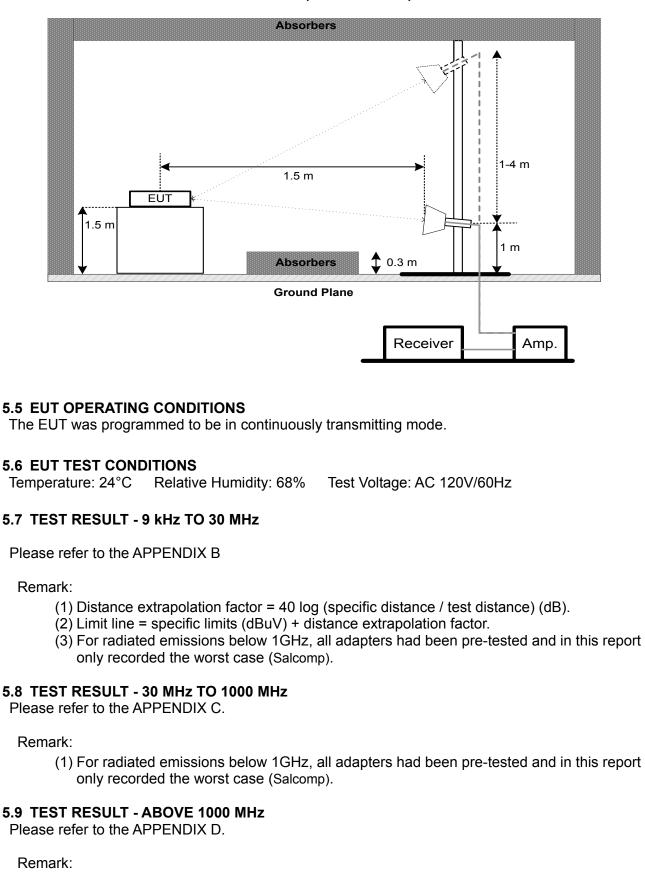


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### Harmonic(Above 18 GHz)





## 6. BANDWIDTH TEST

#### 6.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section	Test Item	Limit
15.247(a)(2)	Bandwidth	>= 500 kHz
		(6 dB bandwidth)

#### 6.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting : RBW= 100 kHz, VBW=300 kHz, Sweep time = 2.5 ms.

#### 6.3 DEVIATION FROM STANDARD

No deviation.

#### 6.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

#### 6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 6.6 EUT TEST CONDITIONS

Temperature: 25.9°C Relative Humidity: 57.4% Test Voltage: AC 120V/60Hz

#### 6.7 TEST RESULTS

Please refer to the APPENDIX E.





## 7. MAXIMUM OUTPUT POWER TEST

#### 7.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section Test Item Limit		
15.247(b)(3)	Maximum Output Power	1 watt or 30 dBm

#### 7.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. The maximum conducted output power was performed in accordance with method 11.9.1.1 (for peak power) or 11.9.2.2 (for AVG power) of ANSI C63.10-2013.

#### 7.3 DEVIATION FROM STANDARD

No deviation.

#### 7.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

#### 7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 7.6 EUT TEST CONDITIONS

Temperature: 25.9°C Relative Humidity: 57.4% Test Voltage: AC 120V/60Hz

#### 7.7 TEST RESULTS

Please refer to the APPENDIX F.



## 8. CONDUCTED SPURIOUS EMISSION

#### **8.1 LIMIT**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

#### 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. Spectrum Setting : RBW= 100 kHz, VBW=300 kHz, Sweep time = 10 ms.

#### 8.3 DEVIATION FROM STANDARD

No deviation.

#### 8.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

#### 8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 8.6 EUT OPERATION CONDITIONS

Temperature: 25.9°C Relative Humidity: 57.4% Test Voltage: AC 120V/60Hz

#### 8.7 TEST RESULTS

Please refer to the APPENDIX G.





## 9. POWER SPECTRAL DENSITY TEST

#### 9.1 LIMIT

FCC Part15, Subpart C (15.247)		
Section Test Item Limit		
15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

#### 9.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

b. Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = auto.

#### 9.3 DEVIATION FROM STANDARD

No deviation.

#### 9.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

#### 9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 9.6 EUT TEST CONDITIONS

Temperature: 25.9°C Relative Humidity: 57.4% Test Voltage: AC 120V/60Hz

#### 9.7 TEST RESULTS

Please refer to the APPENDIX H.



## **10. MEASUREMENT INSTRUMENTS LIST**

	AC Power Line Conducted Emissions												
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until								
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 10, 2020								
2	LISN	EMCO	3816/2	52765	Mar. 10, 2020								
3	50ohm Teminator	SHX	TF5-3	15041305	Mar. 10, 2020								
4	Artificial-Mains Network	SCHWARZBEC K	NSLK 8127	8127685	Mar. 10, 2020								
5	TRANSIENT LIMITER	EM	EM-7600	772	Mar. 10, 2020								
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A								
7	Cable	N/A	RG223	12m	Mar. 12, 2020								

	Radiated Emissions - 9 kHz to 30 MHz											
Item	Kind of Equipment	Manufacturer	Manufacturer Type No. S		Calibrated until							
1	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020							
2	Cable	N/A	RG 213/U	C-102	Jun. 01, 2019							
3	EMI Test Receiver	R&S	ESCI	100895	Mar. 10, 2020							
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A							

	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. 09, 2020							
2	Amplifier	HP	8447D	2944A09673	Aug. 11, 2019							
3	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019							
4	Cable	emci	LMR-400(30MHz- 1GHz)(8m+5m)	N/A	May 25, 2019							
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							

	Radiated Emissions - Above 1 GHz											
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until							
1	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020							
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2019							
3	Amplifier	Agilent	8449B	3008A02333	Mar. 10, 2020							
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020							
5	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019							
6	Controller	СТ	SC100	N/A	N/A							
7	Controller	MF	MF-7802	MF780208416	N/A							
8	Cable	mitron	B10-01-01-12M	18072744	Jul. 30, 2019							
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A							





Item Kind of Equipment Manufacturer Type No. Serial No.	
	Calibrated until
1 Spectrum Analyzer R&S FSP40 100185	Aug. 11, 2019

	Maximum Output Power										
Item Kind of Equipment Manufacturer Type No			Type No.	Serial No.	Calibrated until						
	1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019					

	Antenna Conducted Spurious Emissions										
Item	Item Kind of Equipment Manufacturer Type No. Serial No. Calibra										
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019						

	Power Spectral Density											
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until							
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019							

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

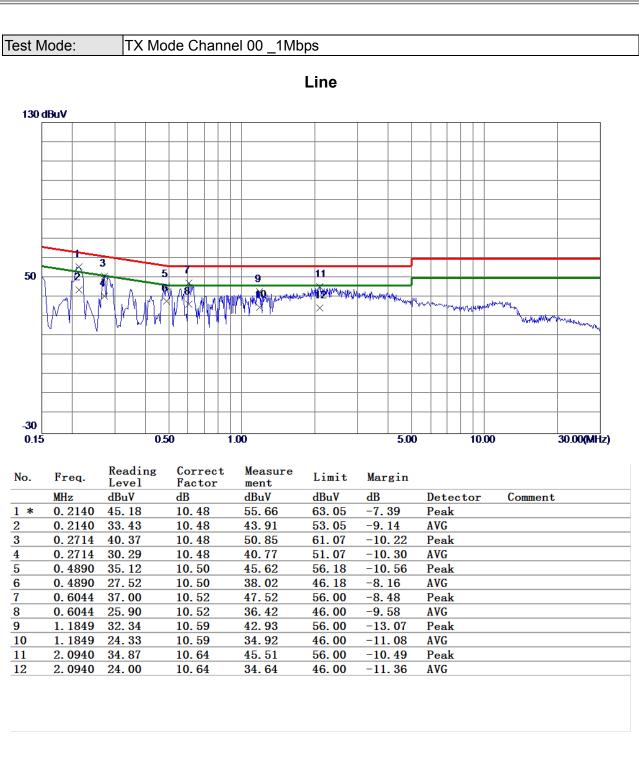




## **APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS**



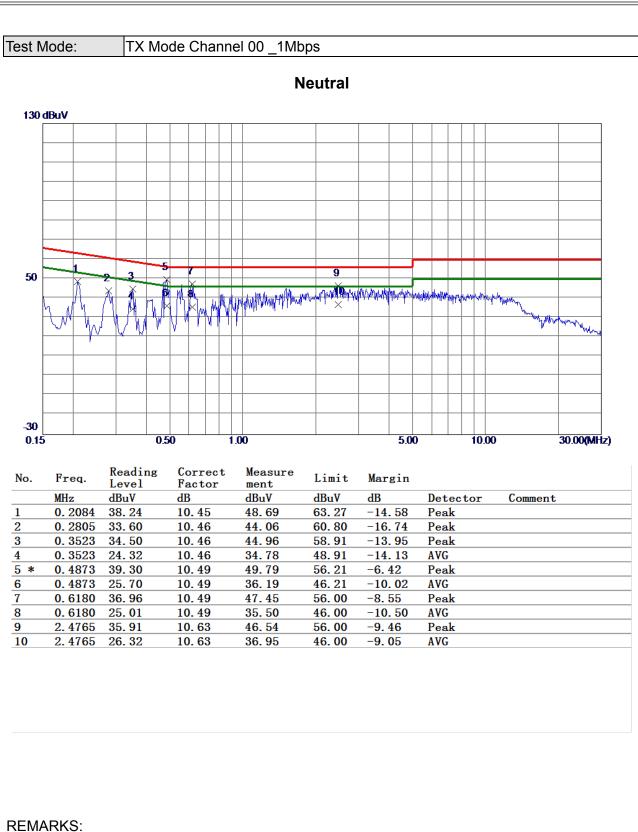




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







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

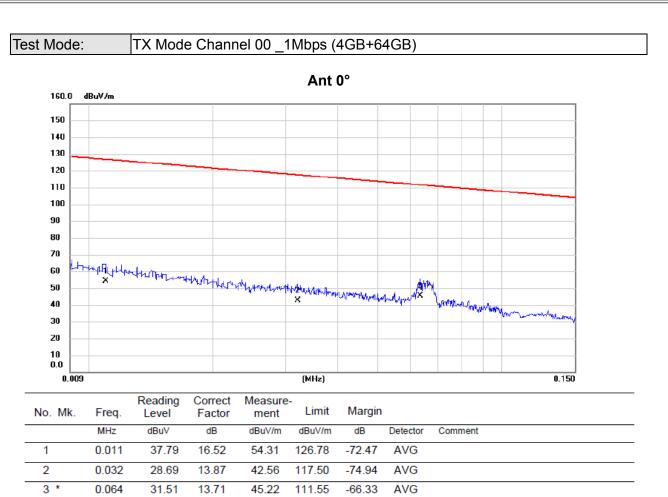




## **APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ**



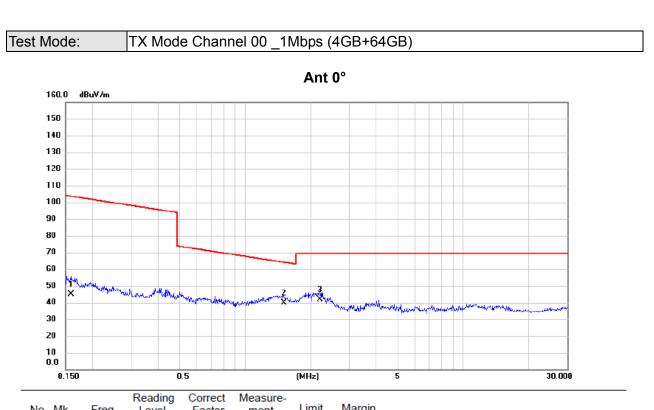




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





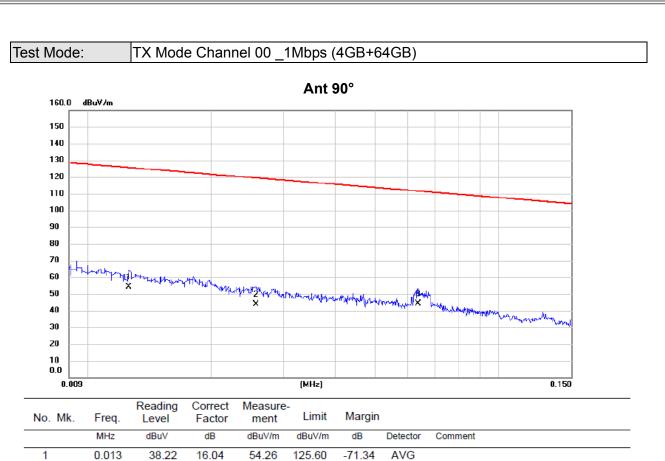


	No. Mk.	Freq.			ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
-	1	0.159	31.63	13.57	45.20	103.58	-58.38	AVG	
	2 *	1.503	27.78	12.16	39.94	64.06	-24.12	QP	
	3	2.213	30.24	11.69	41.93	69.54	-27.61	QP	

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







2

3 \*

0.026

0.064

30.07

30.52

13.84

13.71

43.91

44.23

119.41

111.52

-75.50

-67.29

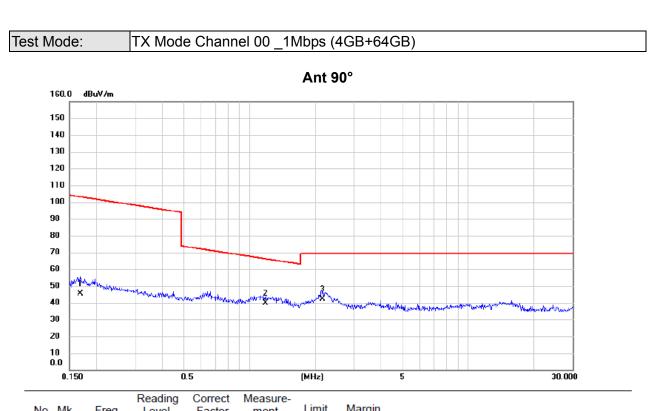
AVG

AVG

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





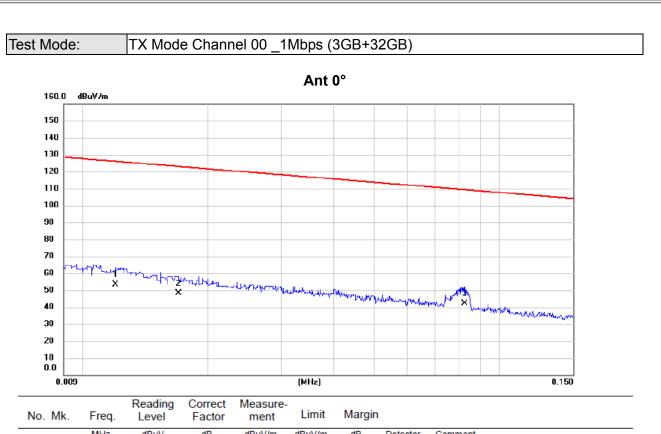


No. Mk.	Freq.	Level		ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.169	31.82	13.58	45.40	103.07	-57.67	AVG	
2 *	1.184	27.29	12.37	39.66	66.14	-26.48	QP	
3	2.167	30.47	11.72	42.19	69.54	-27.35	QP	

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





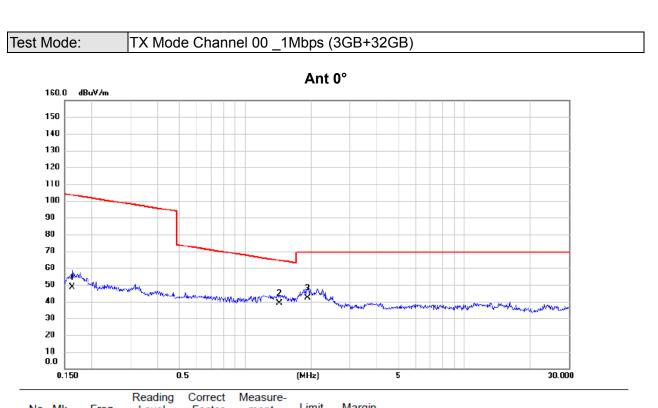


No. Mk.	Freq.	Level	Factor	ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.012	37.01	16.22	53.23	126.02	-72.79	AVG	
2	0.017	33.61	14.72	48.33	123.00	-74.67	AVG	
3 *	0.083	28.79	13.54	42.33	109.27	-66.94	AVG	

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





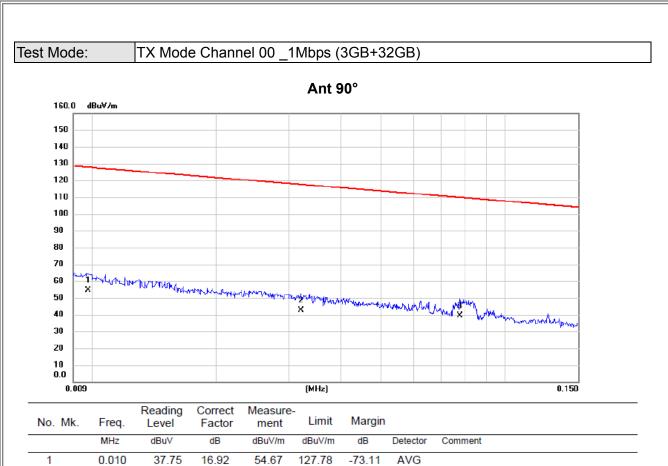


No. Mk.	Freq.	Level		ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.163	34.94	13.57	48.51	103.35	-54.84	AVG	
2 *	1.433	26.85	12.21	39.06	64.48	-25.42	QP	
3	1.928	30.24	11.86	42.10	69.54	-27.44	QP	

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







2

3 \*

0.032

0.078

28.62

26.01

13.87

13.54

42.49

39.55

117.47

109.81

-74.98

-70.26

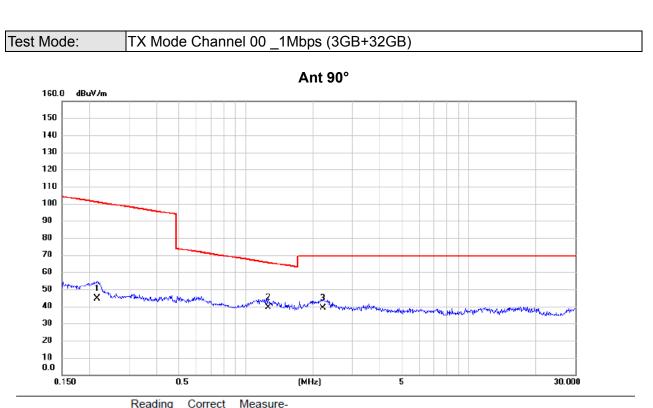
AVG

AVG

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







No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.216	30.92	13.63	44.55	100.91	-56.36	AVG	
2 *	1.262	27.09	12.32	39.41	65.58	-26.17	QP	
3	2.225	27.43	11.68	39.11	69.54	-30.43	QP	

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

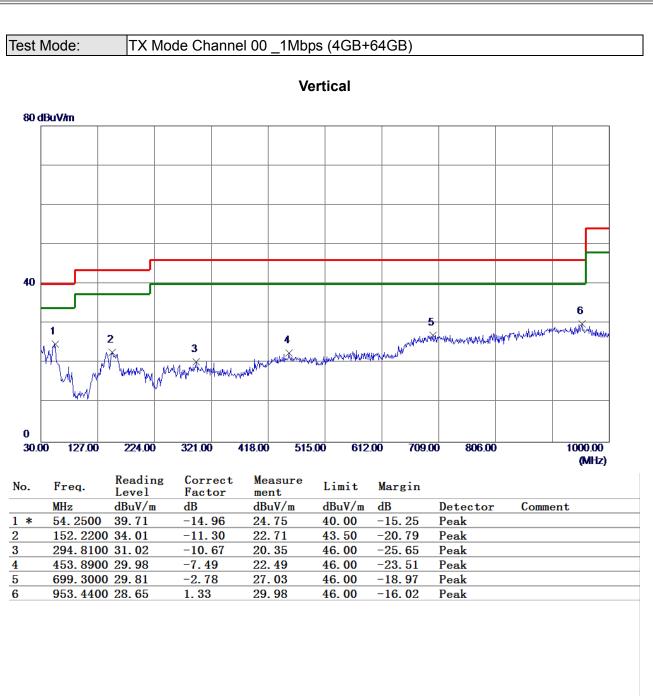




### APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ



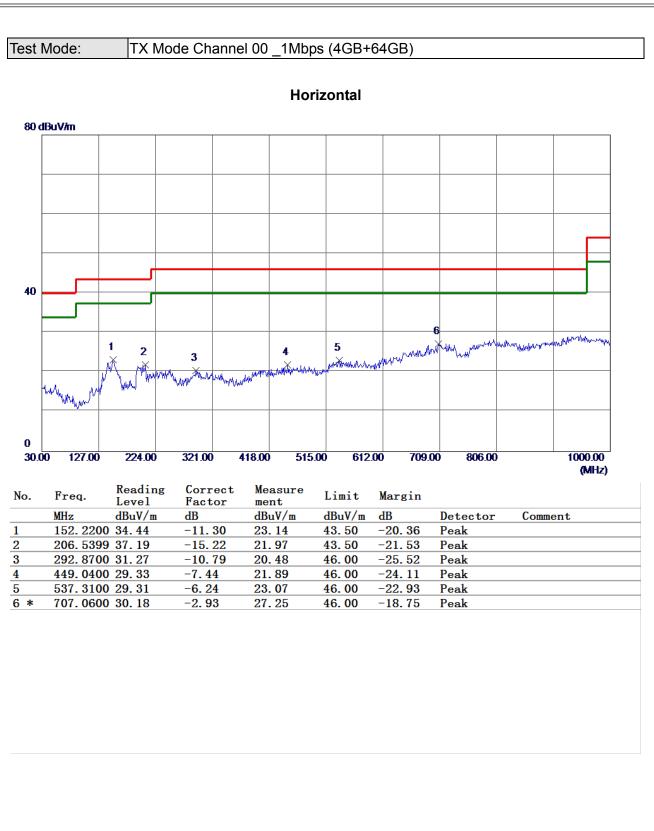




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



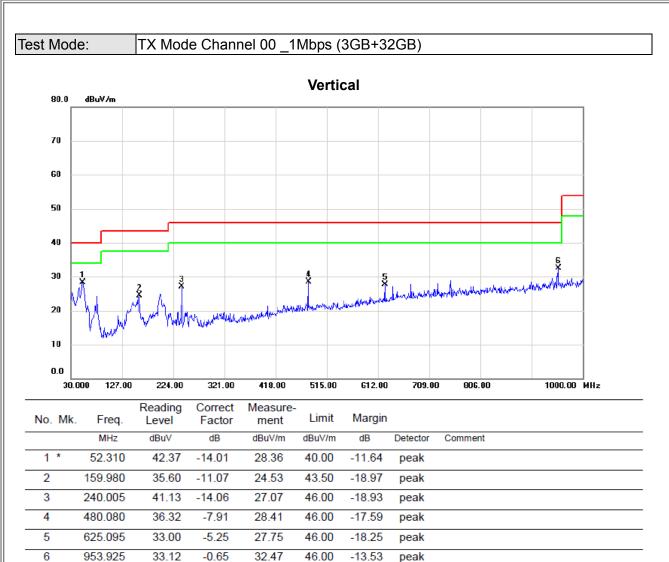




- REMARKS:
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



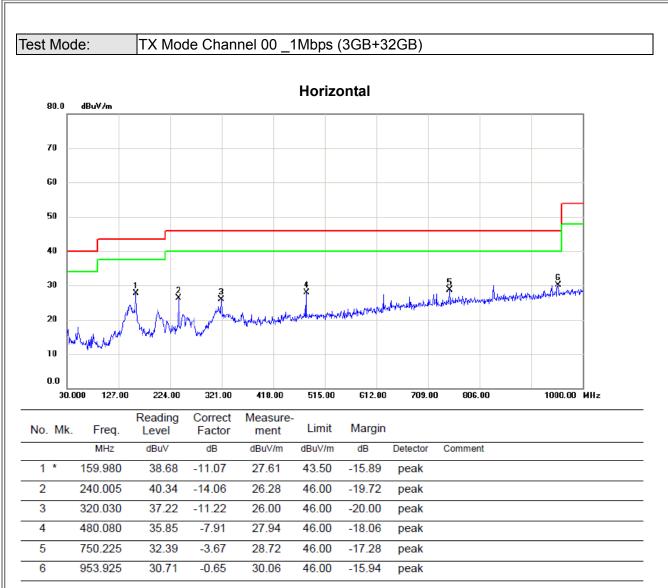




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







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

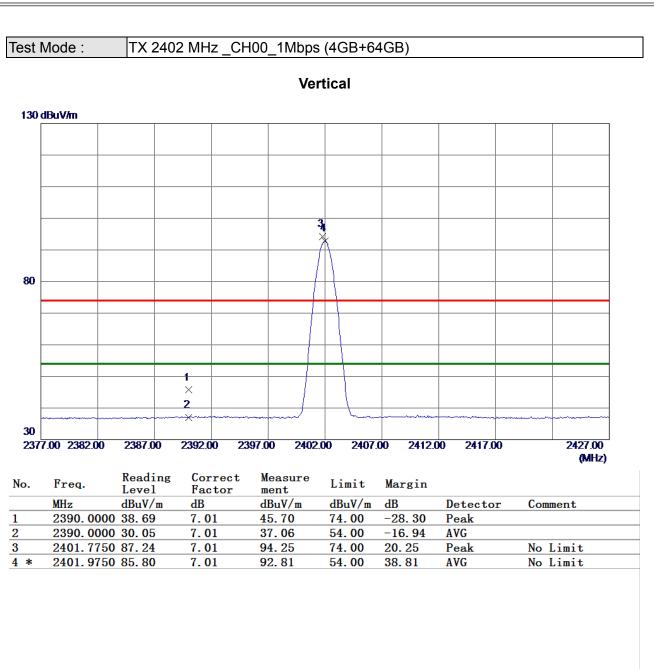




# **APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ**



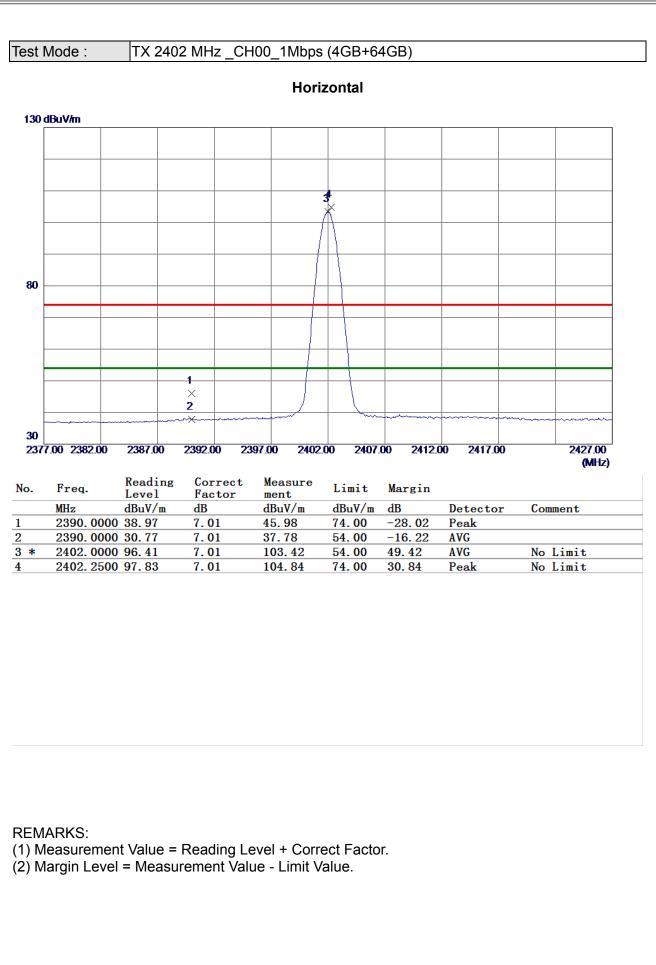




REMARKS: (1) Measurement Value = Reading Level + Correct Factor. (2) Margin Level = Measurement Value - Limit Value.

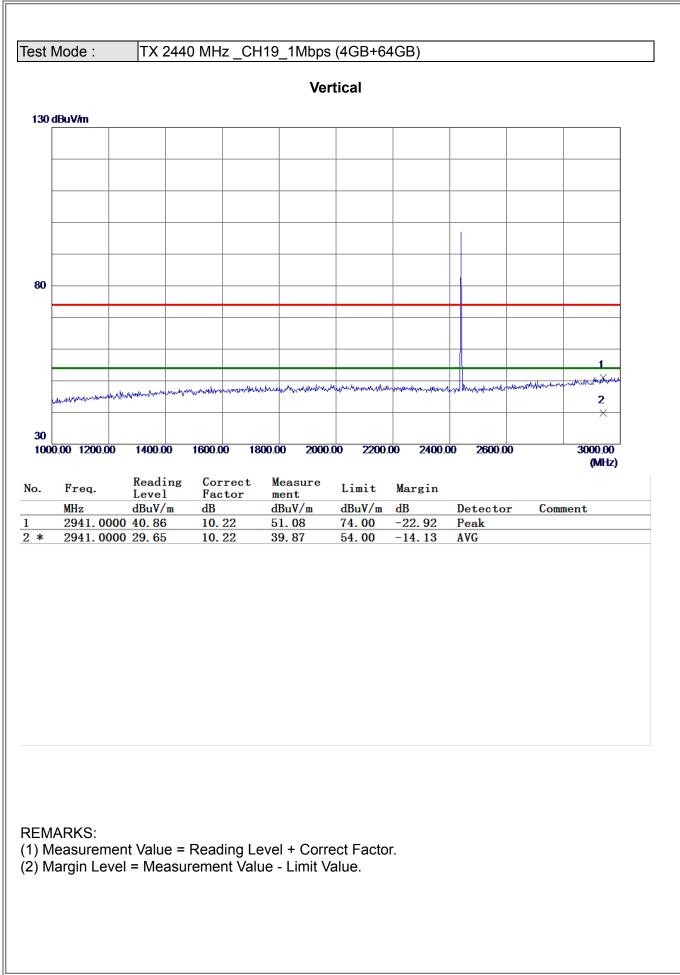






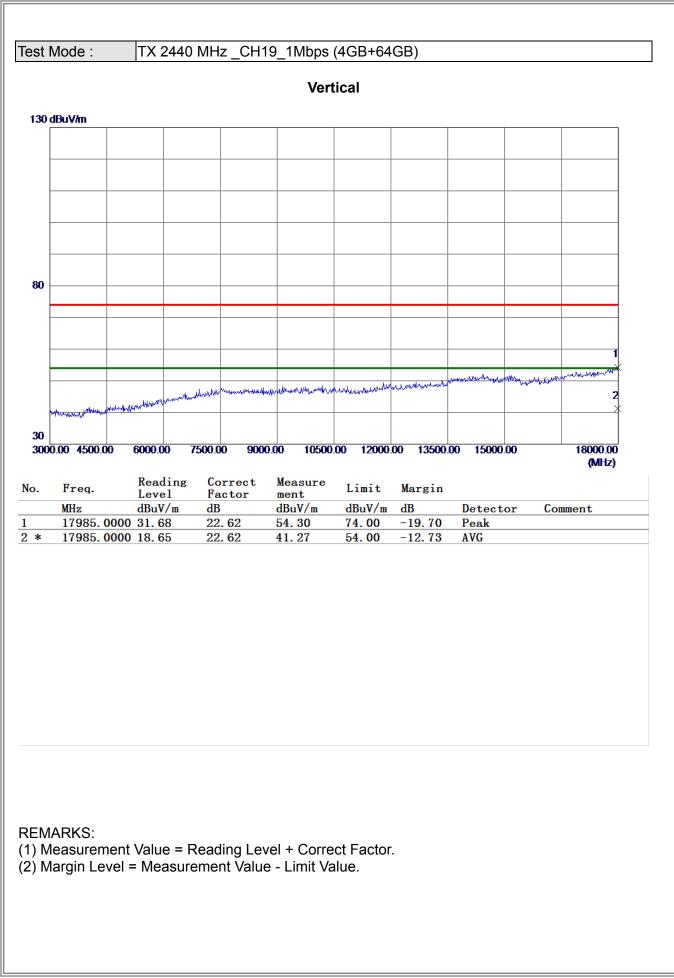






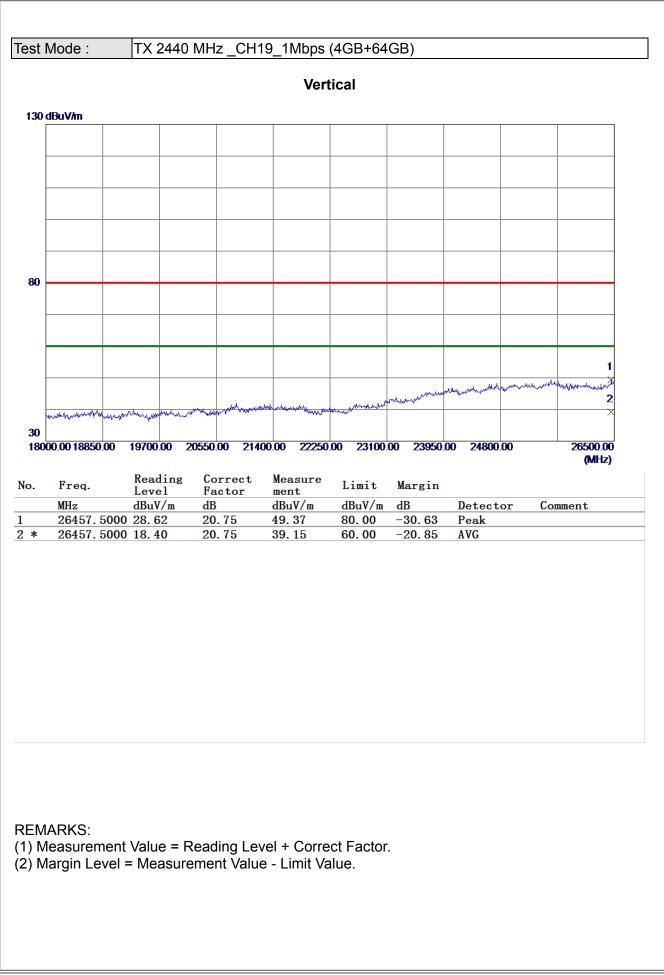






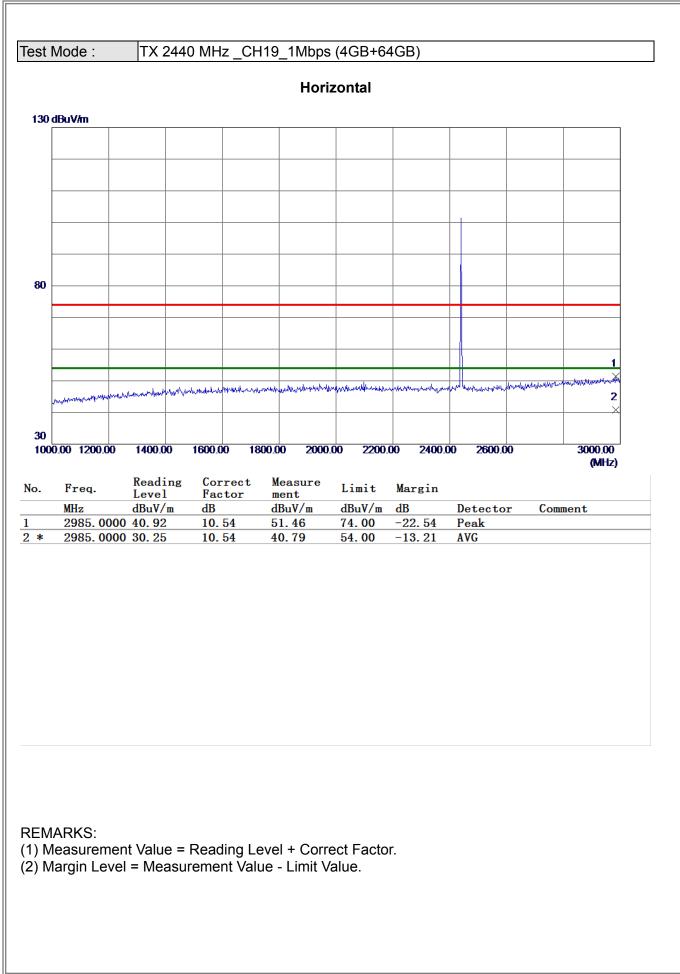






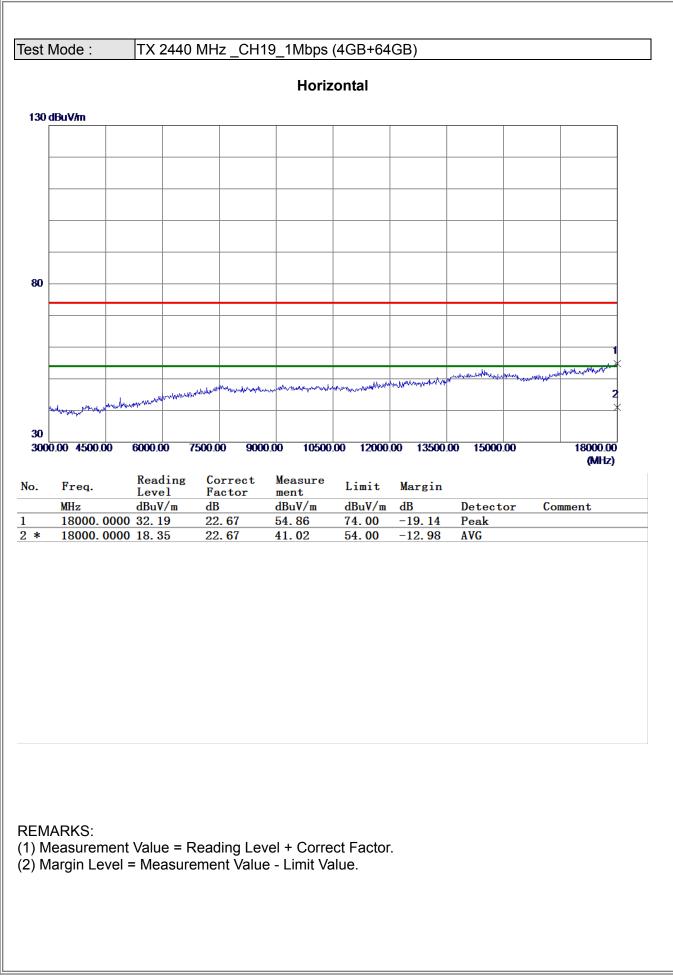






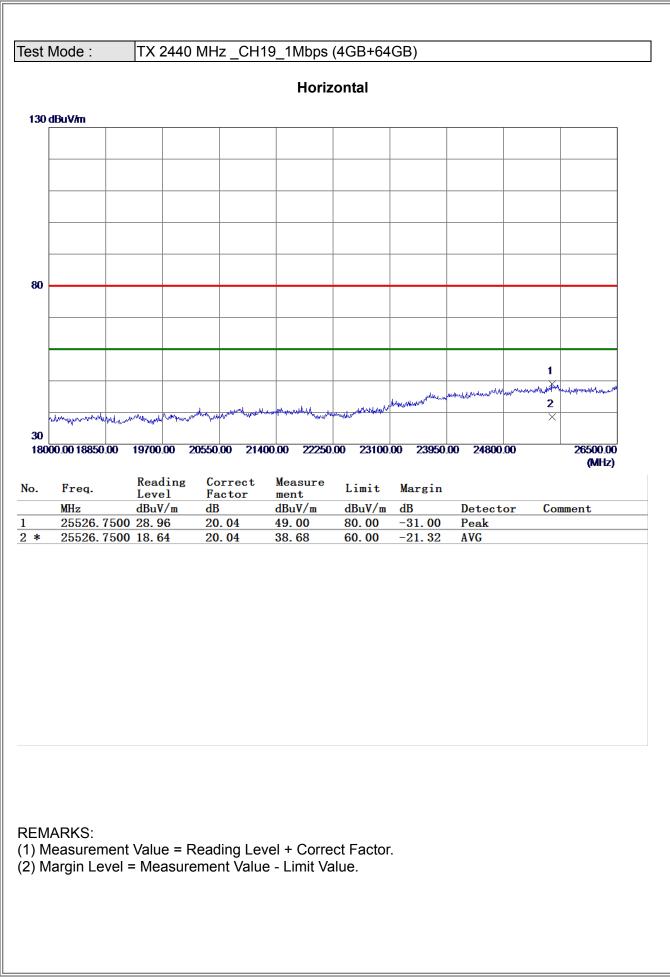






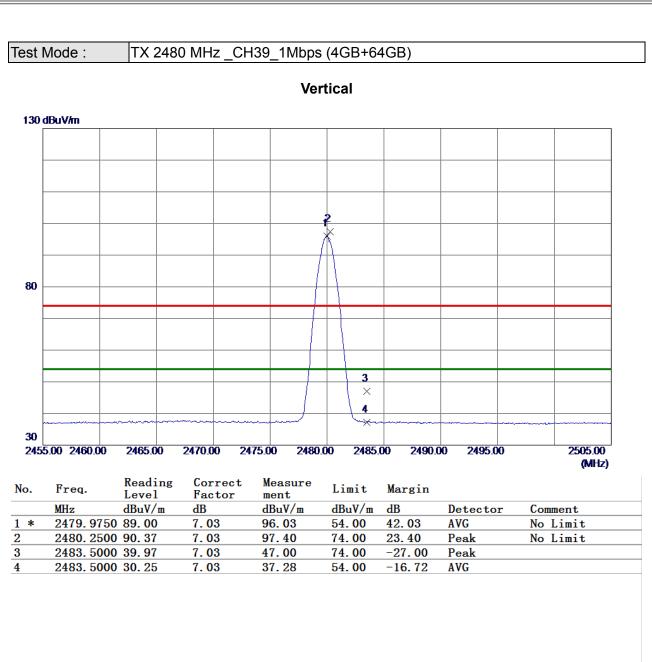








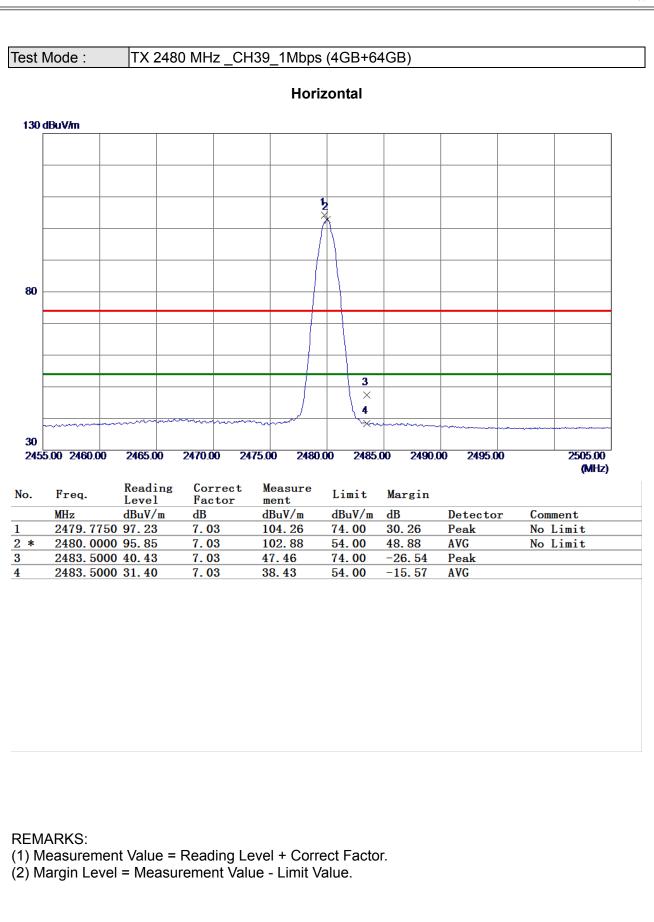




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

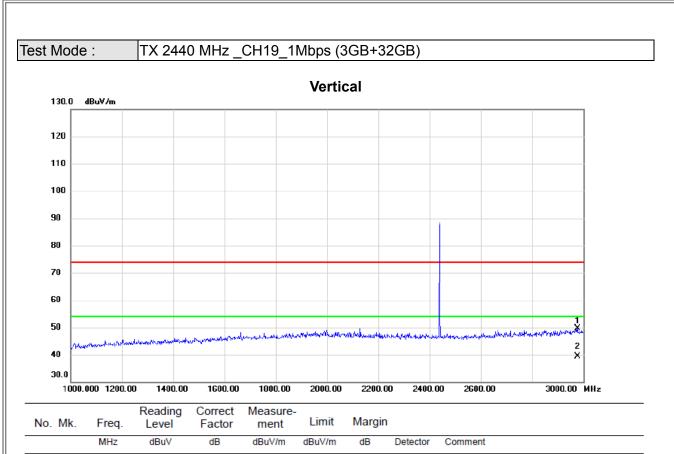












1

2 \*

2976.000

2976.000

40.62

30.33

8.93

8.93

49.55

39.26

74.00

54.00

-24.45

-14.74

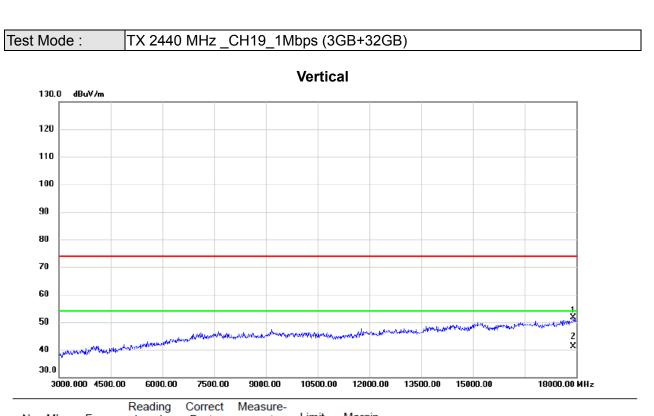
peak

AVG

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





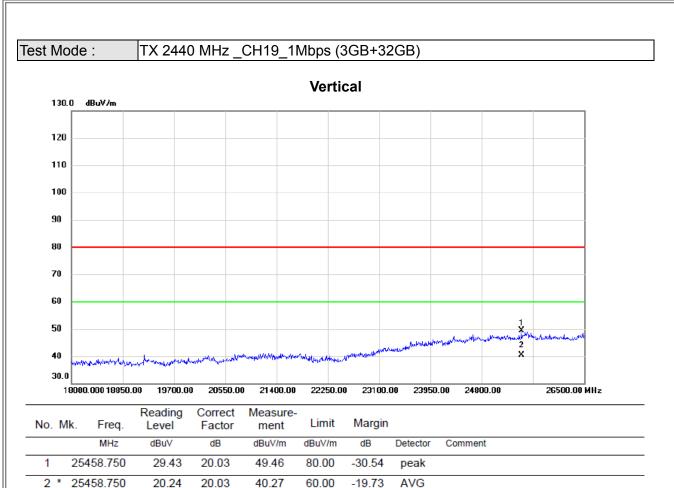


No.	Mk.	Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	179	917.500	32.41	19.15	51.56	74.00	-22.44	peak	
2	* 179	917.500	22.10	19.15	41.25	54.00	-12.75	AVG	

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



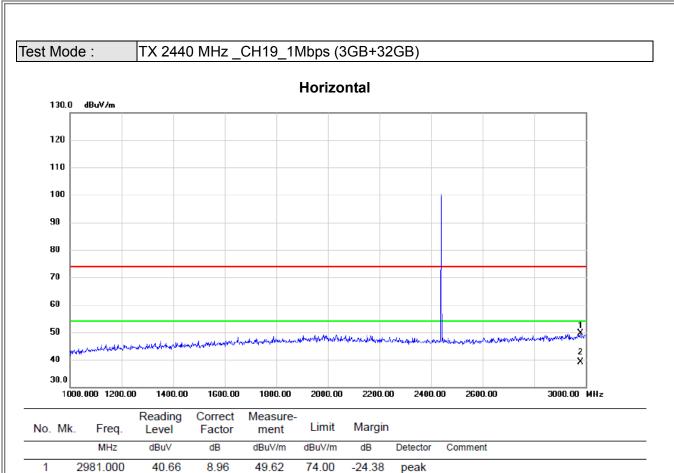




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







2 \*

2981.000

30.25

8.96

39.21

54.00

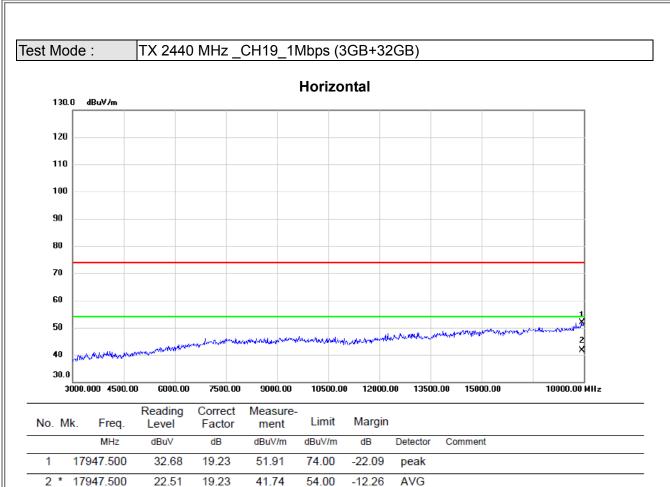
-14.79

AVG

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



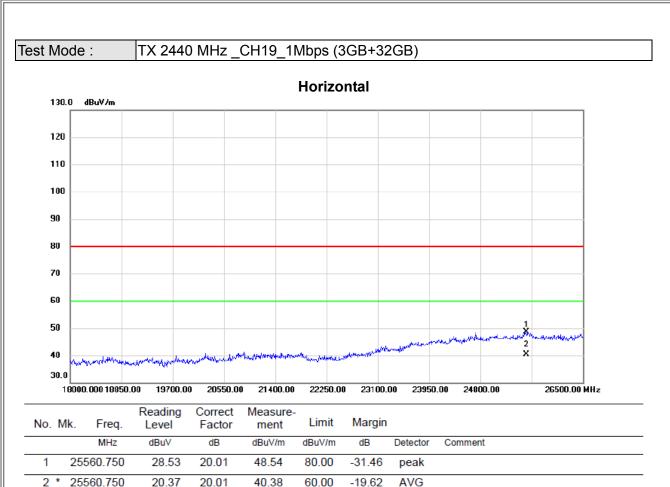




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



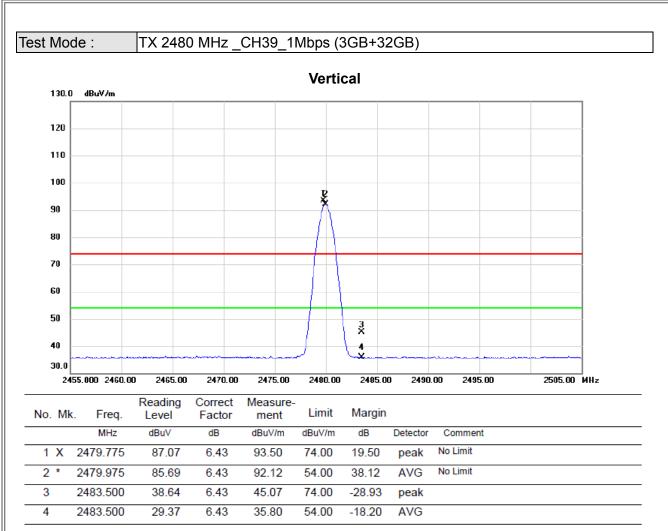




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



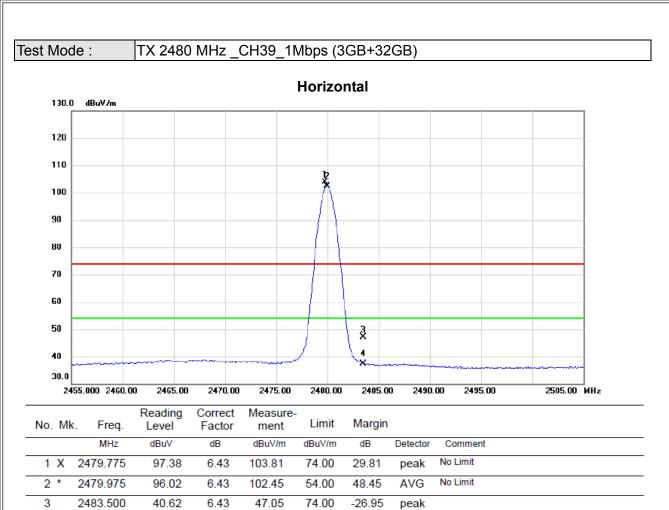




- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.







2483.500

4

31.07

6.43

37.50

54.00

-16.50

AVG

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



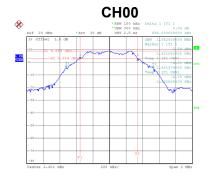


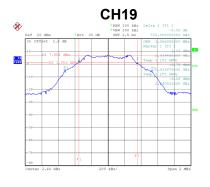
### **APPENDIX E - BANDWIDTH**

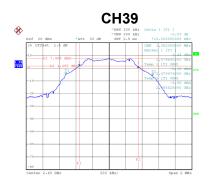




Test Mode: CH00, CH19 , CH39 - 1Mbps							
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Emission Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Test Result		
00	2402	0.698	1.052	500	Pass		
19	2440	0.702	1.056	500	Pass		
39	2480	0.710	1.052	500	Pass		







Date: 16.APR.2019 16:56:01

Date: 16.APR.2019 16:58:15

Date: 16.APR.2019 17:00:14





#### **APPENDIX F - MAXIMUM OUTPUT POWER**





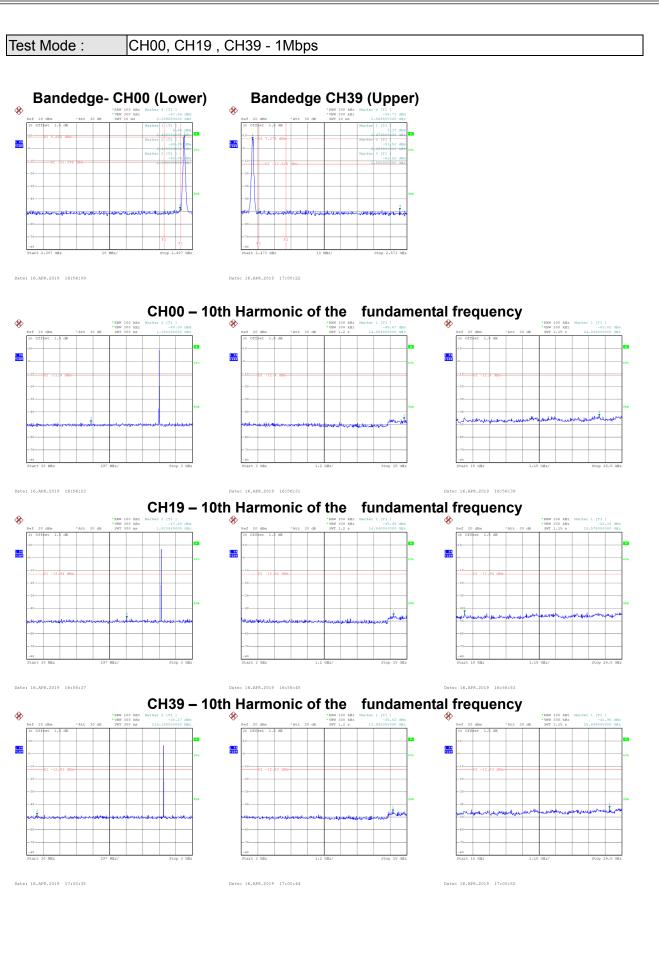
Test	Mode :	CH00, CH19 , 0	CH39 - 1Mbps					
F	requency	Output Power	Output Power	Max. Limit	Max. Limit	Test Desult		
	(MHz)	(dBm)	(W)	(dBm)	(W)	Test Result		
	2402	9.69	0.0093	30.00	1.00	Pass		
	2440	9.26	0.0084	30.00	1.00	Pass		
	2480	8.44	0.0070	30.00	1.00	Pass		





# **APPENDIX G - CONDUCTED SPURIOUS EMISSION**









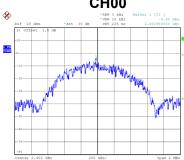


# **APPENDIX H - POWER SPECTRAL DENSITY**

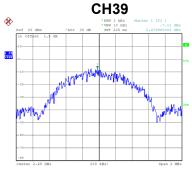




Test I	Mode:	CH00, CH19 , CH39 - 1Mbps					
		Frequency	Power Spectral Density	Max. Limit	Test Result		
	Channel	(MHz)	(dBm/3 kHz)	(dBm/3 kHz)			
	00 2402		-5.980	8.00	Pass		
	19 2440		-7.510	8.00	Pass		
	39	2480	-7.110	8.00	Pass		
Ref 20	* R3 * V1	1000 BD 3 Mit Machae 1 [71] BM 10 Mit	CH19 ************************************	> rf 20 ddm *Att 30 dd   [00 0fflex 1.5 dd ]	CH39 •BW 3 ME Marker 1 [7].] •WW 10 ME - 7.11 dbs •WT 225 ms 2.419940000 dBz		
-10 -0 -10		9/////////////////////////////////////		-10	utunna an		







Date: 16.APR.2019 17:00:58

Date: 16.APR.2019 16:57:29

Date: 16.APR.2019 16:58:59

**End of Test Report**