

# FCC 47 CFR PART 15 SUBPART C CERTIFICATION TEST REPORT

For

**Keypad** 

**MODEL NUMBER: 7AKPZBA0** 

FCC ID: 2AB2Q7AKPZBA0

REPORT NUMBER: 4788549837.1-1

**ISSUE DATE: July 16, 2018** 

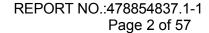
Prepared for

LEEDARSON LIGHTING CO., LTD.
Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou City, Fujian
Province, P.R.China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch Room 101, Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

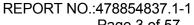
> Tel: +86 769 33817100 Fax: +86 769 33244054 Website: www.ul.com





**Revision History** 

Rev.	Issue Date	Revisions	Revised By
	7/16/2018	Initial Issue	





Page 3 of 57

Clause Test Items  1 6db DTS Bandwidth Fe	FCC Rules CCC 15.247 (a) (2)	Test Results PASS
1 6db DTS Bandwidth Fe	CC 15.247 (a) (2)	PASS
2 Peak Conducted Power Fo	CC 15.247 (b) (3)	PASS
3 Power Spectral Density	FCC 15.247 (e)	PASS
Conducted Band edge And Spurious emission	FCC 15.247 (d)	PASS
5 Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205	PASS
6 Conducted Emission Test For AC Power Port	FCC 15.207	Not applicable (Note1)
7 Antenna Requirement	FCC 15.203	PASS

Note1: This test item only Applies to EUT with AC power supply.



# **TABLE OF CONTENTS**

1. AT	TTESTATION OF TEST RESULTS	5
2. TE	ST METHODOLOGY	6
3. FA	ACILITIES AND ACCREDITATION	6
4. CA	ALIBRATION AND UNCERTAINTY	7
4.1.	MEASURING INSTRUMENT CALIBRATION	7
4.2.	MEASUREMENT UNCERTAINTY	7
5. EG	QUIPMENT UNDER TEST	8
5.1.	DESCRIPTION OF EUT	
5.2.	MAXIMUM OUTPUT POWER	8
5.3.	CHANNEL LIST	8
5.4.	TEST CHANNEL CONFIGURATION	g
5.5.	THE WORSE CASE POWER SETTING PARAMETER	<u>G</u>
5.6.	DESCRIPTION OF AVAILABLE ANTENNAS	<u></u>
5.7.	TEST ENVIRONMENT	g
5.8.	DESCRIPTION OF TEST SETUP	10
5.9.	MEASURING INSTRUMENT AND SOFTWARE USED	11
6. ME	EASUREMENT METHODS	12
7. AN	NTENNA PORT TEST RESULTS	13
7.1.	ON TIME AND DUTY CYCLE	13
7.2.	6 dB DTS BANDWIDTH	14
7.3.	PEAK CONDUCTED OUTPUT POWER	17
7.4.	POWER SPECTRAL DENSITY	18
7.5.	CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS	21
8. R <i>A</i>	ADIATED TEST RESULTS	25
8.1.	RESTRICTED BANDEDGE	31
8.2.	SPURIOUS EMISSIONS (1~3GHz)	37
8.3.	SPURIOUS EMISSIONS (3~18GHz)	43
8.4.	SPURIOUS EMISSIONS 18G ~ 26GHz	49
8.5.	SPURIOUS EMISSIONS 30M ~ 1 GHz	51
8.6.	SPURIOUS EMISSIONS BELOW 30M	53
9. AN	NTENNA REQUIREMENTS	57



# 1. ATTESTATION OF TEST RESULTS

#### **Applicant Information**

Company Name: LEEDARSON LIGHTING CO., LTD.

Address: Xingda Road, Xingtai Industrial Zone, Changtai County,

Zhangzhou City, Fujian Province, P.R.China

**Manufacturer Information** 

Company Name: LEEDARSON LIGHTING CO., LTD.

Address: Xingda Road, Xingtai Industrial Zone, Changtai County,

Zhangzhou City, Fujian Province, P.R.China

**EUT Description** 

Product Name: Keypad
Model Name: 7AKPZBA0
Sample Status: Normal

Date Tested: July 2~13, 2018

#### **APPLICABLE STANDARDS**

STANDARD TEST RESULTS

CFR 47 Part 15 Subpart C

**PASS** 

Tested By: Checked By:

Kebo Zhang Engineer

kelo. zhang

Approved By:

Shawn Wen Laboratory Leader

Shemy les

Stephen Guo

Laboratory Manager

Aephenous



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 DTS Meas Guidance v04, KDB 414788 D01 Radiated Test Site v01, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

	A2LA (Certificate No.: 4102.01)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has been assessed and proved to be in compliance with A2LA.
	IAS (Lab Code: TL-702)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has demonstrated compliance with ISO/IEC Standard 17025:2005,
	General requirements for the competence of testing and calibration
	laboratories
	FCC (FCC Designation No.: CN1187)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	Has been recognized to perform compliance testing on equipment subject
Accreditation	to the Commission's Delcaration of Conformity (DoC) and Certification
Certificate	rules
	IC(Company No.: 21320)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has been registered and fully described in a report filed with ISED. The
	Company Number is 21320.
	VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has been assessed and proved to be in compliance with VCCI, the
	Membership No. is 3793.
	Facility Name:
	Chamber D, the VCCI registration No. is G-20019 and R-20004
	Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OATS.



# 4. CALIBRATION AND UNCERTAINTY

# 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

# 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.90dB
Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.2dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB
Uncertainty for Radiation Emission test	5.04dB(1-6GHz)
(1GHz to 26GHz)( include Fundamental	5.30dB (6GHz-18Gz)
emission)	5.23dB (18GHz-26Gz)

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



# 5. EQUIPMENT UNDER TEST

# 5.1. DESCRIPTION OF EUT

Equipment	Keypad		
Model Name	7AKPZBA0		
	Operation Frequency	2405 MHz ~ 2480 MHz	
Product Description	Modulation Type		Data Rate
	O-QPSK		250kbs
Power supply	DC 3V		

# 5.2. MAXIMUM OUTPUT POWER

Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)
ZigBee	2405-2480	11-26 [16]	6.502

# 5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	15	2425	19	2445	23	2465
12	2410	16	2430	20	2450	24	2470
13	2415	17	2435	21	2455	25	2475
14	2420	18	2440	22	2460	26	2480



5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
ZigBee	CH 11, CH 19, CH 26	2405MHz, 2445MHz, 2480MHz

#### 5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		UartAssis		
Modulation Type	Transmit Antenna	Test Channel		
Wodulation Type	Number	CH 11	CH 19	CH 26
O-QPSK	1	7	7	5

# 5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2405-2480	Internal Antenna	3.15

Test Mode	Transmit and Receive Mode	Description
ZigBee	⊠1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

# 5.7. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests		
Relative Humidity	55 ~ 65%		
Atmospheric Pressure:	1025Pa		
Temperature	TN	23 ~ 28°C	
	VL	N/A	
Voltage :	VN	DC 3V	
	VH	N/A	

Note: VL= Lower Extreme Test Voltage

VN= Nominal Voltage

VH= Upper Extreme Test Voltage

TN= Normal Temperature



# 5.8. DESCRIPTION OF TEST SETUP

#### **SUPPORT EQUIPMENT**

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	T460S	SL10K24796 JS
2	USB TO RS232	N/A	N/A	N/A

#### **I/O CABLES**

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	N/A	N/A	0.2	N/A

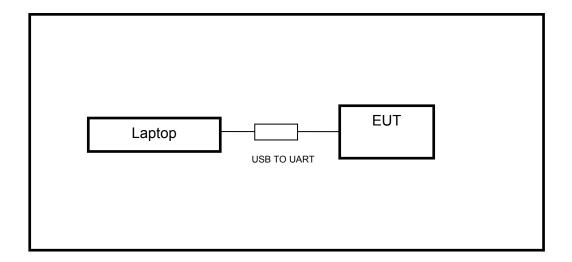
#### **ACCESSORY**

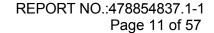
Item	Accessory	Brand Name	Model Name	Description
1	NA	N/A	NA	N/A

#### **TEST SETUP**

The EUT can work in an engineer mode with a software through a Laptop.

#### **SETUP DIAGRAM FOR TEST**







5.9. MEASURING INSTRUMENT AND SOFTWARE USED

	5.9. WEASURING INSTRUMENT AND SUFTWARE USED								
	Conducted Emissions								
		<u> </u>	Ir	nstru	ument	<u> </u>			
Used	Equipment	Manufacturer	Model N	۱о.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.	
$\checkmark$	EMI Test Receiver	R&S	ESR3	3	101961	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	Two-Line V-Network	R&S	ENV21	6	101983	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	Artificial Mains Networks	Schwarzbeck	NSLK 8	126	8126465	Feb.10, 2017	Dec.12, 2017	Dec.11, 2018	
			;	Soft	ware				
Used	Des	scription			Manufacturer	Name	Ver	sion	
<b>V</b>	Test Software for	Conducted distu	ırbance		Farad	EZ-EMC	Ver. U	IL-3A1	
	Radiated Emissions								
	Instrument								
Used	Equipment	Manufacturer	Model N	Ю.	Serial No.	Last Cal.	Last Cal.	Next Cal.	
	MXE EMI Receiver	KESIGHT	N9038	Α	MY56400036	Feb. 24, 2017	Dec.12, 2017	Dec.11, 2018	
	Hybrid Log Periodic Antenna	TDK	HLP-300	)3C	130960	Jan.09, 2016	Jan.09, 2016	Jan.09, 2019	
$\checkmark$	Preamplifier	HP	84470	)	2944A09099	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	EMI Measurement Receiver	R&S	ESR2	6	101377	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018	
$\checkmark$	Horn Antenna	TDK	HRN-01	18	130939	Jan. 09, 2016	Jan. 09, 2016	Jan. 09, 2019	
<b>V</b>	High Gain Horn Antenna	Schwarzbeck	BBHA-9	170	691	Jan.06, 2016	Jan.06, 2016	Jan.06, 2019	
	Preamplifier	TDK	PA-02-0	118	TRS-305- 00066	Jan. 14, 2017	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	Preamplifier	TDK	PA-02-	-2	TRS-307- 00003	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018	
$\overline{\checkmark}$	Loop antenna	Schwarzbeck	1519E	3	80000	Mar. 26, 2016	Mar. 26, 2016	Mar. 26, 2019	
			;	Soft	ware		_		
Used	Desci	ription		М	anufacturer	Name	Ver	sion	
<b>V</b>	Test Software for R	adiated disturbance Farad		Farad	EZ-EMC Ver. UL-3A1		IL-3A1		
			Othe	r ins	struments				
Used	Equipment	Manufacturer	Model N	No.	Serial No.	Last Cal.	Last Cal.	Next Cal.	
<b>V</b>	Spectrum Analyzer	Keysight	N9030	A	MY55410512	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	Power Meter	Keysight	N9031	A	MY55416024	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018	
<b>V</b>	Power Sensor	Keysight	N9323	Α	MY55440013	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018	



**6. MEASUREMENT METHODS** 

No.	Test Item	KDB Name	Section
1	6 dB Bandwidth	KDB 558074 D01 DTS Meas Guidance v04	8.0
2	Peak Output Power	KDB 558074 D01 DTS Meas Guidance v04	9.1.3
3	Power Spectral Density	KDB 558074 D01 DTS Meas Guidance v04	10.2
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 DTS Meas Guidance v04	11.0
5	Out-of-band emissions in restricted bands	KDB 558074 D01 DTS Meas Guidance v04	12.1
6	Band-edge	KDB 558074 D01 DTS Meas Guidance v04	13.3.2
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2



# 7. ANTENNA PORT TEST RESULTS

#### 7.1. ON TIME AND DUTY CYCLE

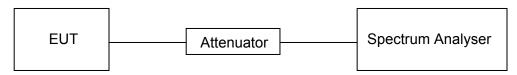
#### **LIMITS**

None; for reporting purposes only

#### **PROCEDURE**

KDB 558074 Zero-Span Spectrum Analyzer Method

#### **TEST SETUP**



#### **RESULTS**

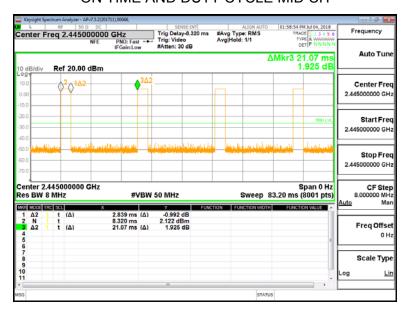
Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)
ZigBee	2.839	21.07	0.135	13.5	8.70	0.352

Note: Duty Cycle Correction Factor= $10\log(1/x)$ .

Where: x is Duty Cycle(Linear)

Where: T is On Time (transmit duration)

#### ON TIME AND DUTY CYCLE MID CH





#### 7.2. 6 dB DTS BANDWIDTH

# **LIMITS**

FCC Part15 (15.247) Subpart C					
Section Test Item Limit Frequency Range (MHz)					
FCC 15.247(a)(2)	6dB Bandwidth	>= 500KHz	2400-2483.5		

#### **TEST PROCEDURE**

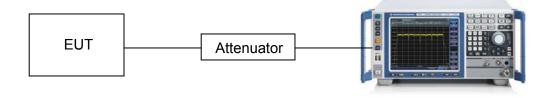
KDB 558074D01 Section 8.1 test method.

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

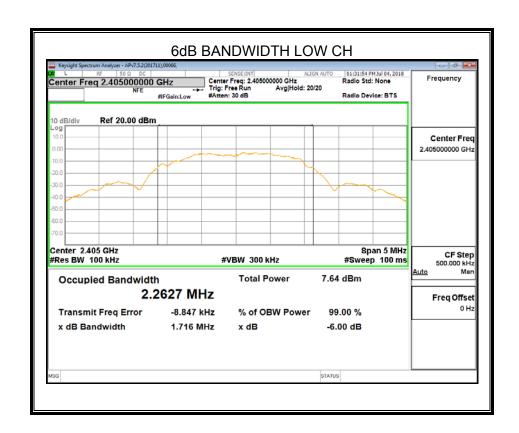
#### **TEST SETUP**



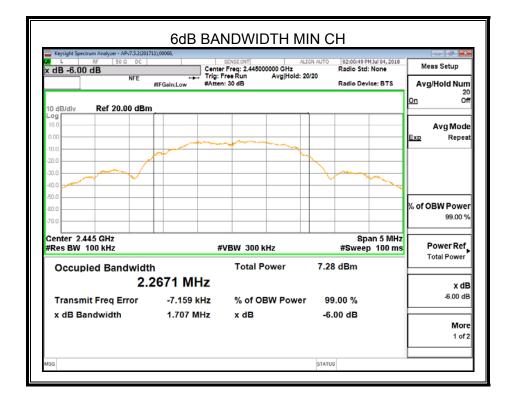


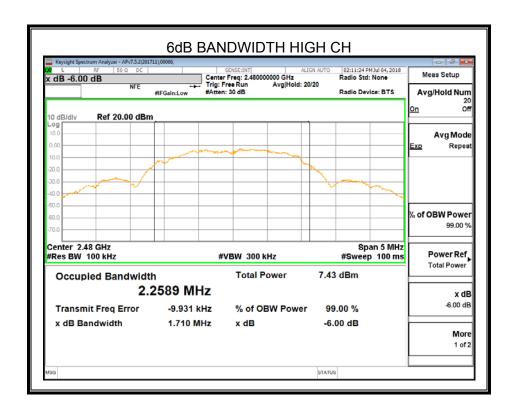
#### **RESULTS**

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2405	1.716	500	Pass
Middle	2445	1.707	500	Pass
High	2480	1.710	500	Pass











#### 7.3. PEAK CONDUCTED OUTPUT POWER

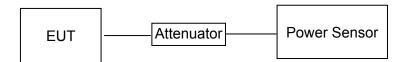
#### **LIMITS**

FCC Part15 (15.247) Subpart C					
Section Test Item Limit Frequency Range (MHz)					
FCC 15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5		

#### **TEST PROCEDURE**

KDB558074D01 section 9.1.3 for peak measurement and 9.2.3 for average measurement. Connect the EUT to the a broadband peak RF power meter, the power meter shall have a video bandwidth that is greater than or equal to the bandwidth and shall utilize a fast-responding diode detector.

# **TEST SETUP**



#### **RESULTS**

Test Channel	Frequency	Maximum Conducted Output Power(PK)	LIMIT
rest onamici	(MHz)	(dBm)	dBm
Low	2405	6.312	30
Middle	2445	6.502	30
High	2480	5.101	30



# 7.4. POWER SPECTRAL DENSITY

#### **LIMITS**

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC §15.247 (e)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

#### **TEST PROCEDURE**

KDB 558074D01 section 10.2 test method.

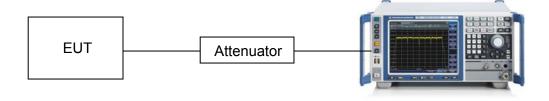
Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤ 100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

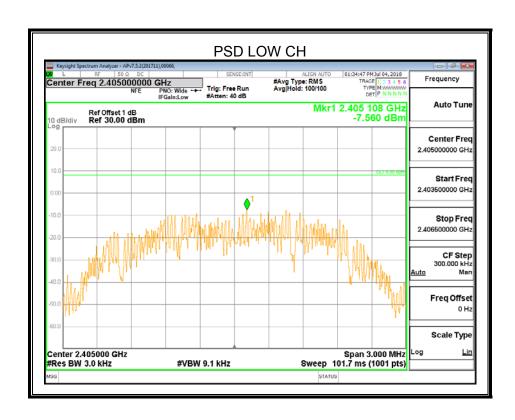
#### **TEST SETUP**



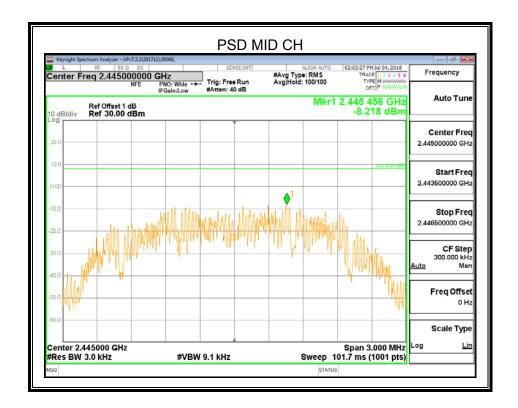


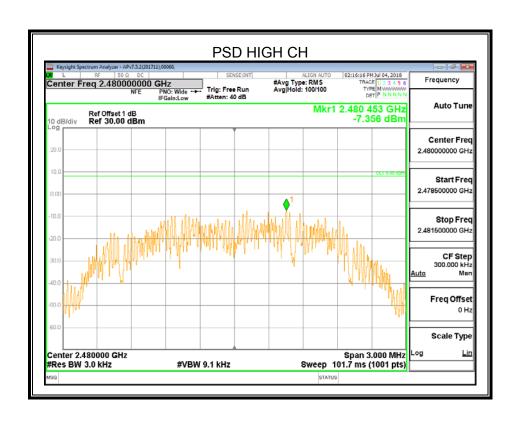
#### **RESULTS**

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2405 MHz	-7.560	8	PASS
2445 MHz	-8.218	8	PASS
2480 MHz	-7.356	8	PASS











# 7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

#### **LIMITS**

FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

#### **TEST PROCEDURE**

KDB 558074D01 section 11 test method.

Connect the UUT to the spectrum analyser and use the following settings:

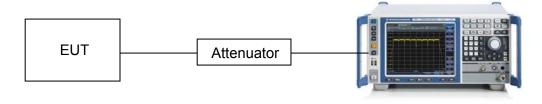
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum PSD level.

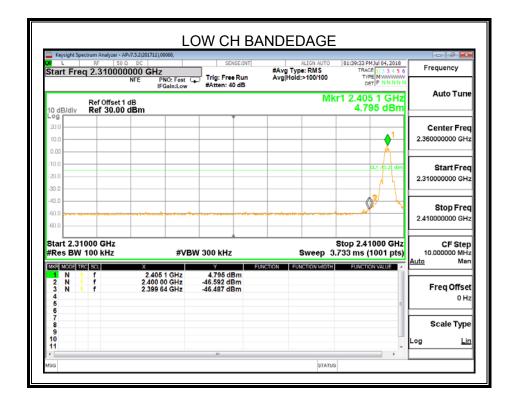
Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

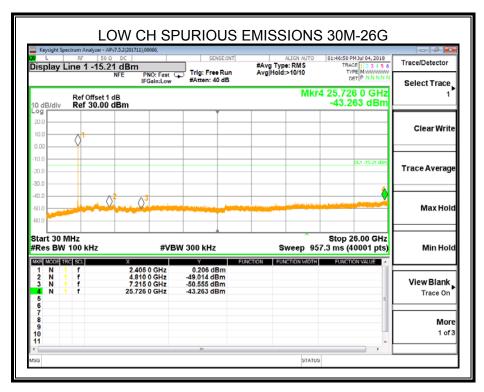
Use the peak marker function to determine the maximum amplitude level.

#### **TEST SETUP**

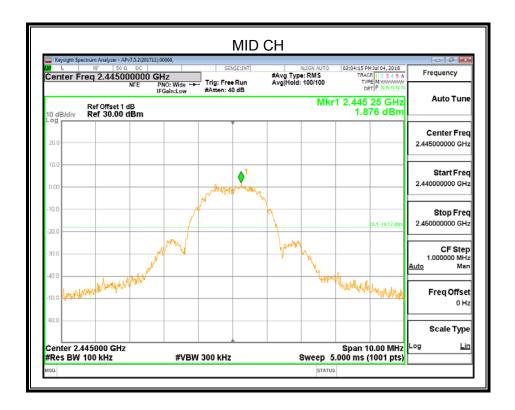


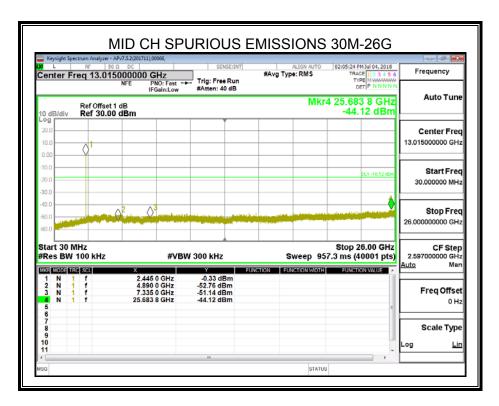




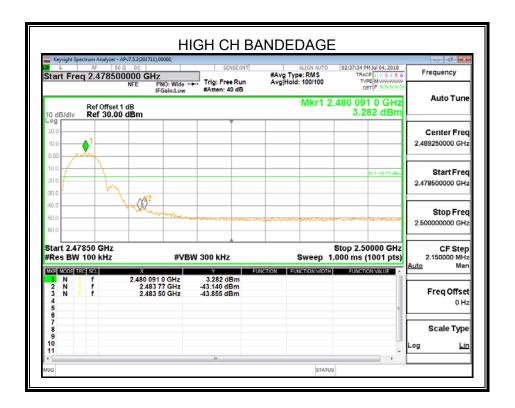


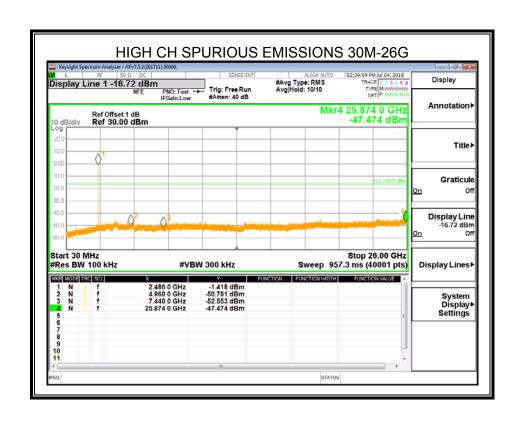














#### 8. RADIATED TEST RESULTS

#### **LIMITS**

Please refer to FCC §15.205 and §15.209

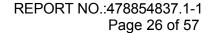
Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

		-/
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
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites.





Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
Frequency (Miriz)	Peak	Average
Above 1000	74	54

# Restricted bands of operation

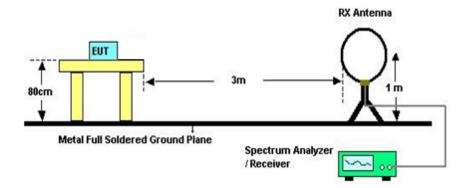
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			

Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. <sup>2</sup>Above 38.6c



#### **TEST SETUP AND PROCEDURE**

Below 30MHz



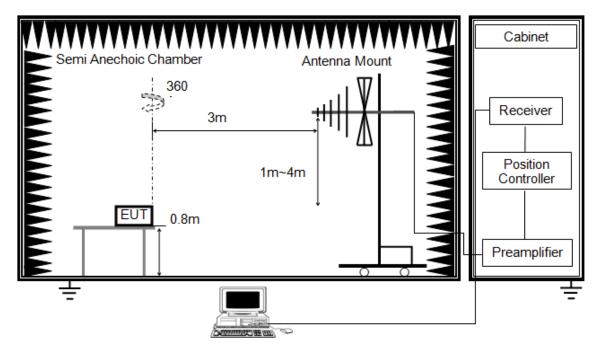
#### The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Trace	Max hold

- 1. The testing follows the guidelines in ANSI C63.10-2013
- 2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3. The EUT was placed on a turntable with 0.8m above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
- 6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode remeasured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.
- 7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)
- 8. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



Below 1G and above 30MHz

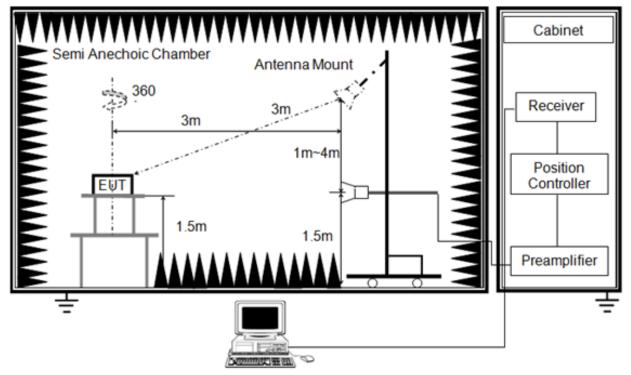


The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

- 1. The testing follows the guidelines in ANSI C63.10-2013.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3. The EUT was placed on a turntable with 0.8m above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- 6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

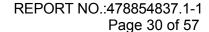




#### The setting of the spectrum analyser

RBW	1M
VBW	PEAK: 3M AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

- 1. The testing follows the guidelines in ANSI C63.10-2013.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3. The EUT was placed on a turntable with 0.8m above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.





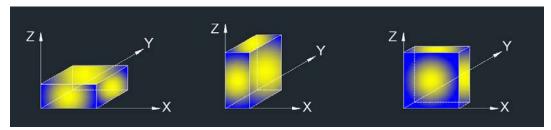
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T ≤ video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

If that calculated VBW is not available on the analyzer then the next higher value should be used.

In this case 500Hz should be used.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

X axis, Y axis, Z axis positions:

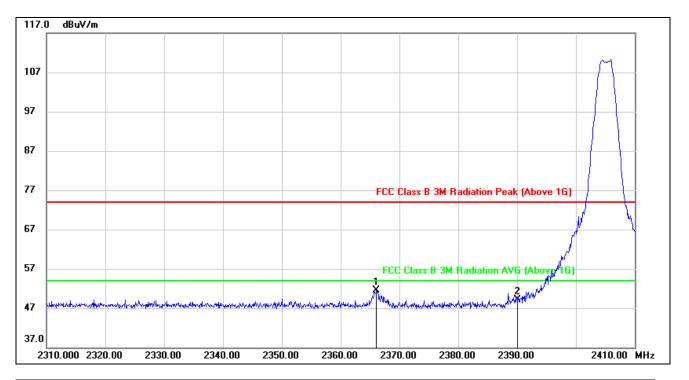


Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.



# **8.1. RESTRICTED BANDEDGE**

# RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL) PEAK



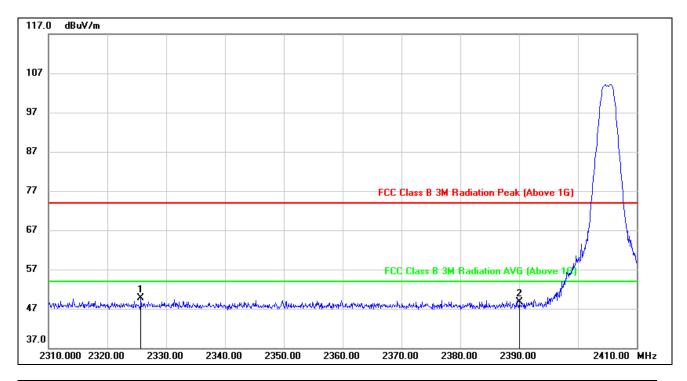
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2366.100	18.13	33.31	51.44	74.00	-22.56	peak
2	2390.000	15.92	33.14	49.06	74.00	-24.94	peak

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



#### RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

#### **PEAK**

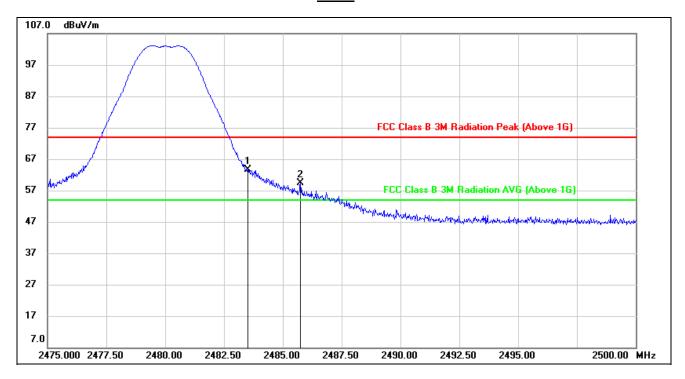


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2325.700	15.90	33.75	49.65	74.00	-24.35	peak
2	2390.000	15.39	33.24	48.63	74.00	-25.37	peak

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



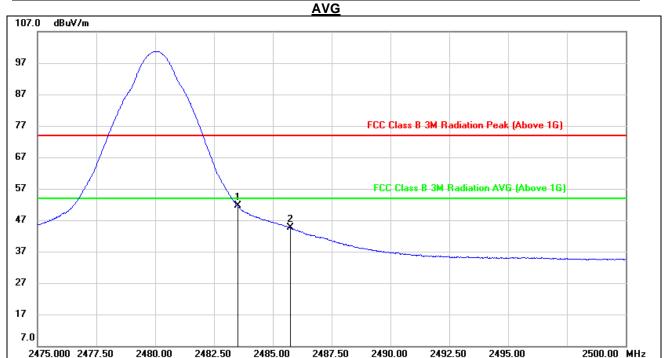
# RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL) PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	30.88	32.78	63.66	74.00	-10.34	peak
2	2485.750	26.55	32.79	59.34	74.00	-14.66	peak

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



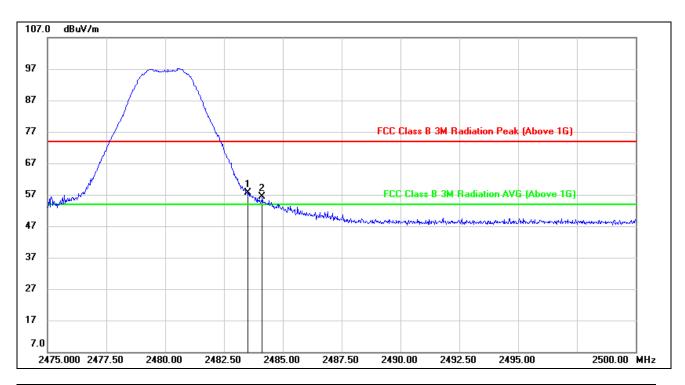


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	18.73	32.78	51.51	54.00	-2.49	AVG
2	2485.750	11.74	32.79	44.53	54.00	-9.47	AVG

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. AVG: VBW=1/Ton where: ton is transmit duration.
- 4. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.
- 5. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)
PEAK

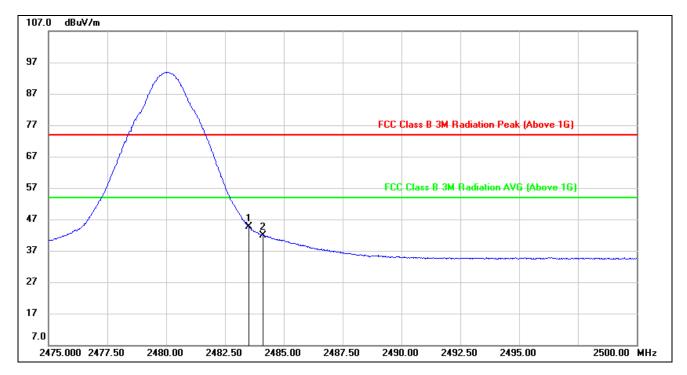


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	24.83	32.88	57.71	74.00	-16.29	peak
2	2484.125	23.43	32.88	56.31	74.00	-17.69	peak

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



#### **AVG**



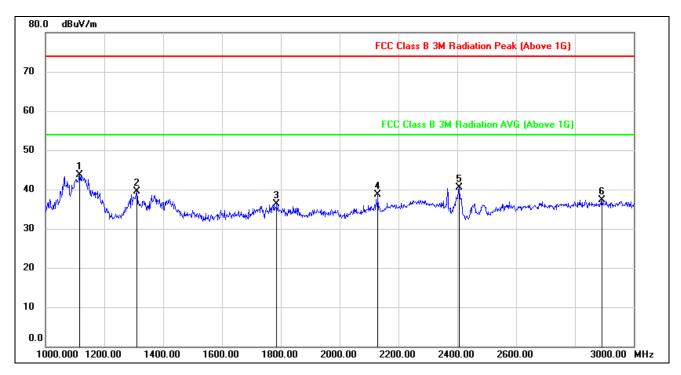
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	11.67	32.88	44.55	54.00	-9.45	AVG
2	2484.124	9.00	32.88	41.88	54.00	-12.12	AVG

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. AVG: VBW=1/Ton where: ton is transmit duration.
- 4. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.
- 5. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.



## 8.2. SPURIOUS EMISSIONS (1~3GHz)

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



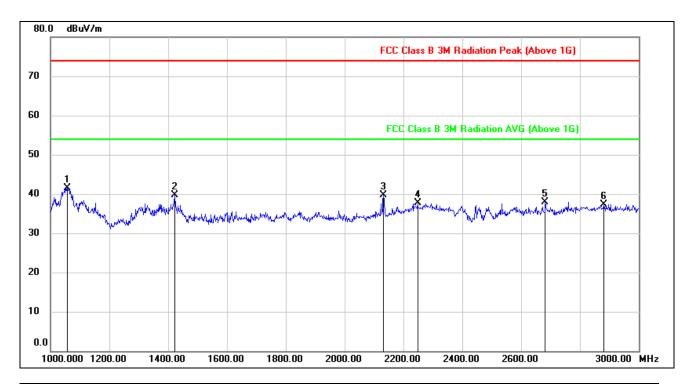
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1116.000	57.26	-13.50	43.76	74.00	-30.24	peak
2	1310.000	51.90	-12.39	39.51	74.00	-34.49	peak
3	1786.000	47.47	-11.17	36.30	74.00	-37.70	peak
4	2130.000	47.90	-9.18	38.72	74.00	-35.28	peak
5	2406.000	48.68	-8.14	40.54	74.00	-33.46	peak
6	2892.000	43.85	-6.55	37.30	74.00	-36.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



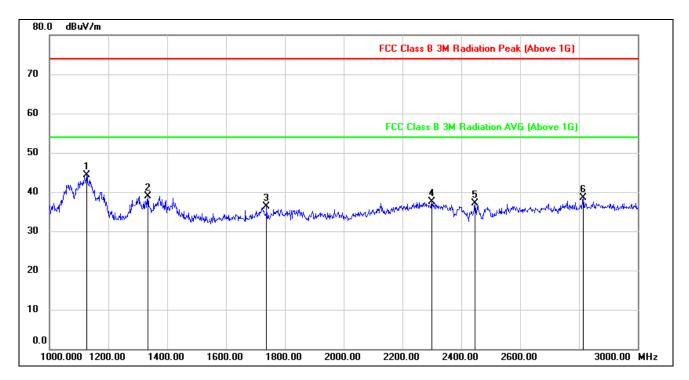
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1058.000	55.41	-13.92	41.49	74.00	-32.51	peak
2	1422.000	52.09	-12.38	39.71	74.00	-34.29	peak
3	2132.000	48.90	-9.26	39.64	74.00	-34.36	peak
4	2248.000	45.27	-7.63	37.64	74.00	-36.36	peak
5	2682.000	45.59	-7.73	37.86	74.00	-36.14	peak
6	2880.000	43.90	-6.60	37.30	74.00	-36.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



## HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



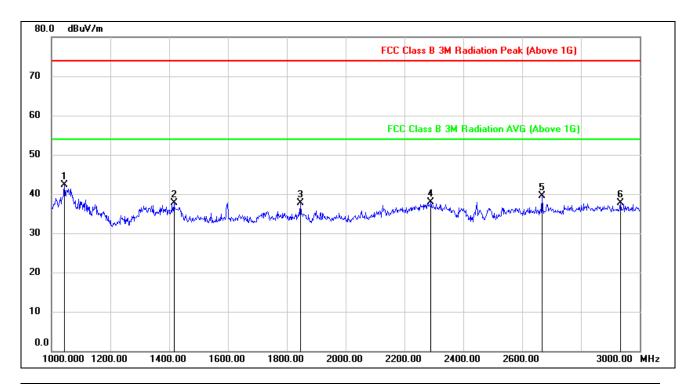
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1126.000	57.78	-13.46	44.32	74.00	-29.68	peak
2	1334.000	51.31	-12.38	38.93	74.00	-35.07	peak
3	1738.000	47.54	-11.33	36.21	74.00	-37.79	peak
4	2300.000	44.98	-7.40	37.58	74.00	-36.42	peak
5	2446.000	45.54	-8.34	37.20	74.00	-36.80	peak
6	2814.000	45.43	-6.88	38.55	74.00	-35.45	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



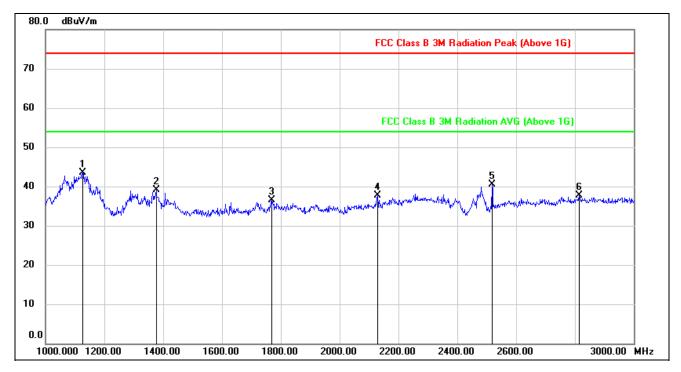
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1044.000	56.26	-13.94	42.32	74.00	-31.68	peak
2	1416.000	50.20	-12.40	37.80	74.00	-36.20	peak
3	1846.000	48.67	-10.90	37.77	74.00	-36.23	peak
4	2290.000	45.22	-7.27	37.95	74.00	-36.05	peak
5	2668.000	47.43	-7.83	39.60	74.00	-34.40	peak
6	2934.000	44.19	-6.55	37.64	74.00	-36.36	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



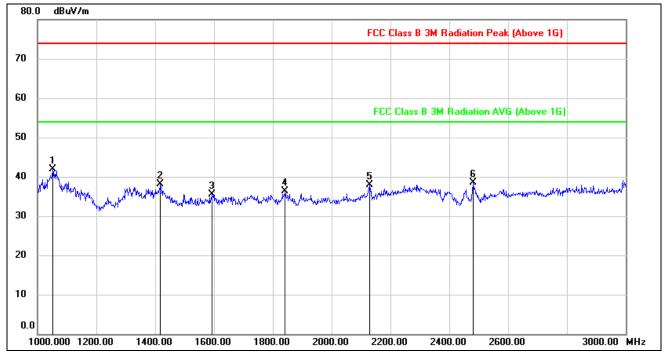
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1126.000	56.97	-13.46	43.51	74.00	-30.49	peak
2	1376.000	51.33	-12.22	39.11	74.00	-34.89	peak
3	1768.000	47.75	-11.22	36.53	74.00	-37.47	peak
4	2130.000	46.94	-9.18	37.76	74.00	-36.24	peak
5	2518.000	48.86	-8.38	40.48	74.00	-33.52	peak
6	2814.000	44.54	-6.88	37.66	74.00	-36.34	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



## **HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1052.000	55.80	-13.94	41.86	74.00	-32.14	peak
2	1418.000	50.52	-12.39	38.13	74.00	-35.87	peak
3	1594.000	47.62	-12.08	35.54	74.00	-38.46	peak
4	1842.000	47.25	-10.92	36.33	74.00	-37.67	peak
5	2128.000	47.30	-9.31	37.99	74.00	-36.01	peak
6	2482.000	46.86	-8.28	38.58	74.00	-35.42	peak

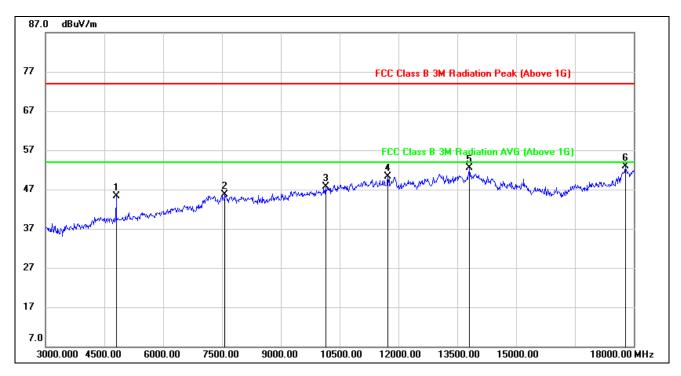
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



# 8.3. SPURIOUS EMISSIONS (3~18GHz)

## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



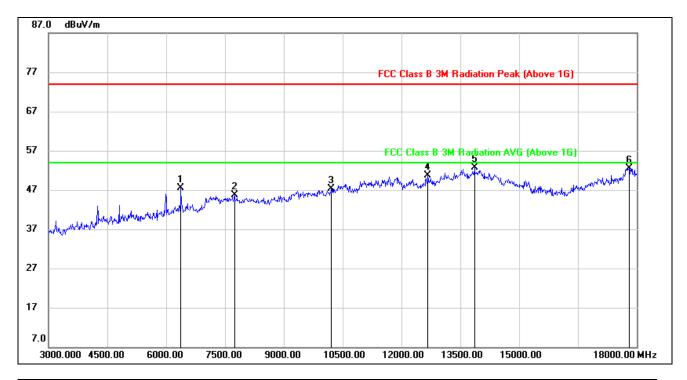
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4800.000	45.89	-0.56	45.33	74.00	-28.67	peak
2	7575.000	37.58	8.17	45.75	74.00	-28.25	peak
3	10140.000	35.24	12.44	47.68	74.00	-26.32	peak
4	11730.000	34.10	16.28	50.38	74.00	-23.62	peak
5	13815.000	31.84	20.71	52.55	74.00	-21.45	peak
6	17790.000	26.53	26.36	52.89	74.00	-21.11	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



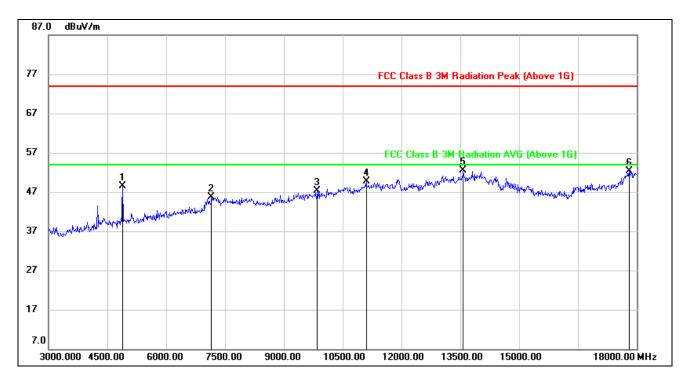
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	6375.000	42.87	4.70	47.57	74.00	-26.43	peak
2	7740.000	37.56	8.19	45.75	74.00	-28.25	peak
3	10215.000	34.53	12.72	47.25	74.00	-26.75	peak
4	12675.000	33.40	17.37	50.77	74.00	-23.23	peak
5	13860.000	31.69	20.92	52.61	74.00	-21.39	peak
6	17805.000	25.79	26.80	52.59	74.00	-21.41	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



## HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



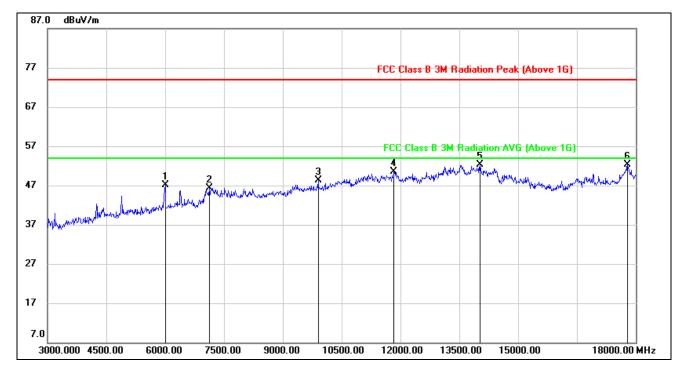
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4890.000	47.85	0.57	48.42	74.00	-25.58	peak
2	7155.000	38.09	7.70	45.79	74.00	-28.21	peak
3	9855.000	35.42	11.85	47.27	74.00	-26.73	peak
4	11100.000	34.62	14.99	49.61	74.00	-24.39	peak
5	13575.000	31.98	20.43	52.41	74.00	-21.59	peak
6	17805.000	25.74	26.48	52.22	74.00	-21.78	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



## HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



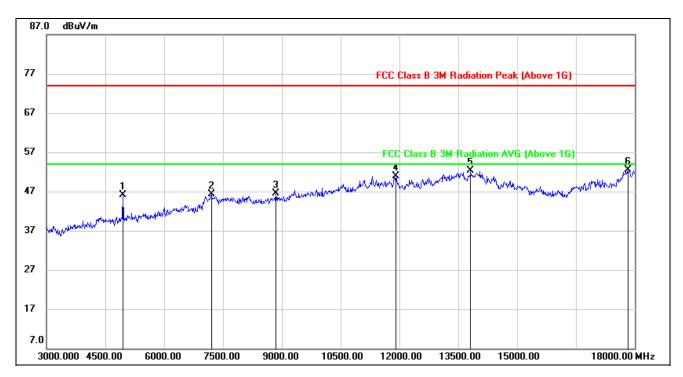
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	6000.000	43.74	3.32	47.06	74.00	-26.94	peak
2	7125.000	38.76	7.62	46.38	74.00	-27.62	peak
3	9900.000	36.32	12.03	48.35	74.00	-25.65	peak
4	11835.000	33.83	16.61	50.44	74.00	-23.56	peak
5	14025.000	31.63	20.62	52.25	74.00	-21.75	peak
6	17790.000	25.49	26.76	52.25	74.00	-21.75	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



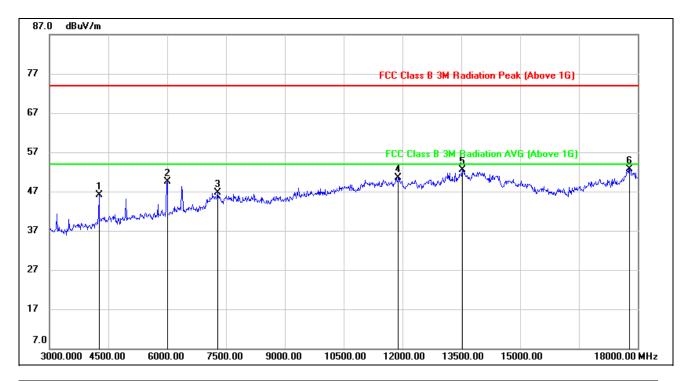
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4950.000	45.60	0.59	46.19	74.00	-27.81	peak
2	7200.000	38.59	7.75	46.34	74.00	-27.66	peak
3	8850.000	37.19	9.39	46.58	74.00	-27.42	peak
4	11910.000	33.99	16.98	50.97	74.00	-23.03	peak
5	13815.000	31.59	20.71	52.30	74.00	-21.70	peak
6	17820.000	25.93	26.48	52.41	74.00	-21.59	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4260.000	47.92	-1.80	46.12	74.00	-27.88	peak
2	6000.000	46.23	3.32	49.55	74.00	-24.45	peak
3	7290.000	38.88	7.84	46.72	74.00	-27.28	peak
4	11895.000	33.96	16.64	50.60	74.00	-23.40	peak
5	13530.000	31.74	20.78	52.52	74.00	-21.48	peak
6	17790.000	25.99	26.76	52.75	74.00	-21.25	peak

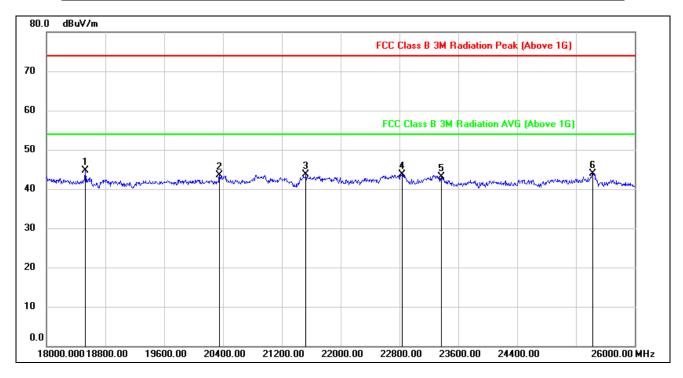
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.



## 8.4. SPURIOUS EMISSIONS 18G ~ 26GHz

## SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



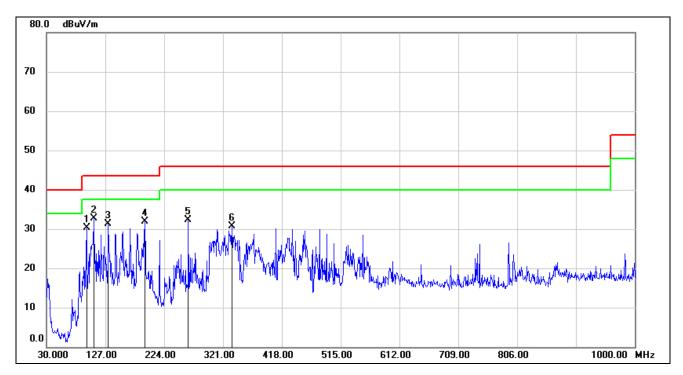
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18528.000	49.91	-5.26	44.65	74.00	-29.35	peak
2	20352.000	49.01	-5.50	43.51	74.00	-30.49	peak
3	21528.000	48.28	-4.65	43.63	74.00	-30.37	peak
4	22840.000	47.26	-3.60	43.66	74.00	-30.34	peak
5	23368.000	46.45	-3.26	43.19	74.00	-30.81	peak
6	25432.000	45.71	-1.75	43.96	74.00	-30.04	peak

Note: 1. Measurement = Reading Level + Correct Factor.

- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.



## SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	95.9600	52.85	-22.46	30.39	43.50	-13.11	QP
2	107.6000	54.12	-21.36	32.76	43.50	-10.74	QP
3	131.8500	50.44	-19.10	31.34	43.50	-12.16	QP
4	191.9900	47.59	-15.59	32.00	43.50	-11.50	QP
5	263.7700	49.94	-17.67	32.27	46.00	-13.73	QP
6	335.5500	45.82	-15.11	30.71	46.00	-15.29	QP

Note: 1. Measurement = Reading Level + Correct Factor.

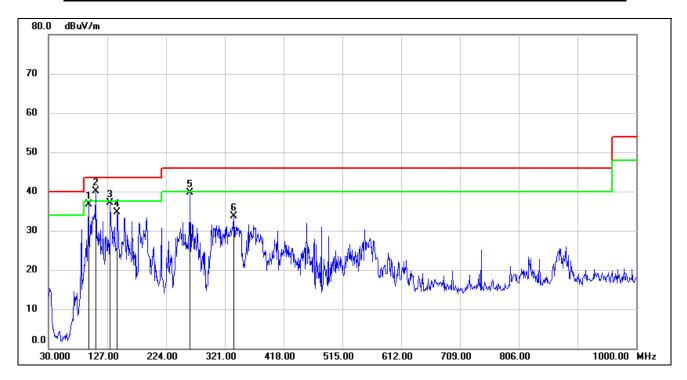
- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.

Note: All the modes had been tested, but only the worst data were recorded in the report.



## 8.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

#### SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



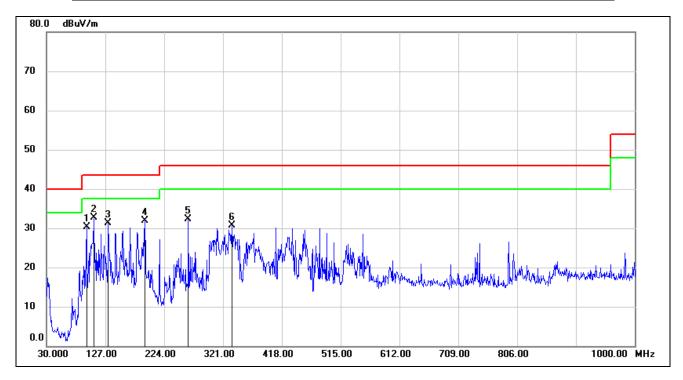
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	95.9600	59.24	-22.46	36.78	43.50	-6.72	QP
2	107.6000	61.53	-21.36	40.17	43.50	-3.33	QP
3	131.8500	56.30	-19.10	37.20	43.50	-6.30	QP
4	143.4900	53.24	-18.51	34.73	43.50	-8.77	QP
5	263.7700	57.32	-17.67	39.65	46.00	-6.35	QP
6	335.5500	48.84	-15.11	33.73	46.00	-12.27	QP

Note: 1. Result Level = Read Level + Correct Factor.

- 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
- 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



## SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	95.9600	52.85	-22.46	30.39	43.50	-13.11	QP
2	107.6000	54.12	-21.36	32.76	43.50	-10.74	QP
3	131.8500	50.44	-19.10	31.34	43.50	-12.16	QP
4	191.9900	47.59	-15.59	32.00	43.50	-11.50	QP
5	263.7700	49.94	-17.67	32.27	46.00	-13.73	QP
6	335.5500	45.82	-15.11	30.71	46.00	-15.29	QP

Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

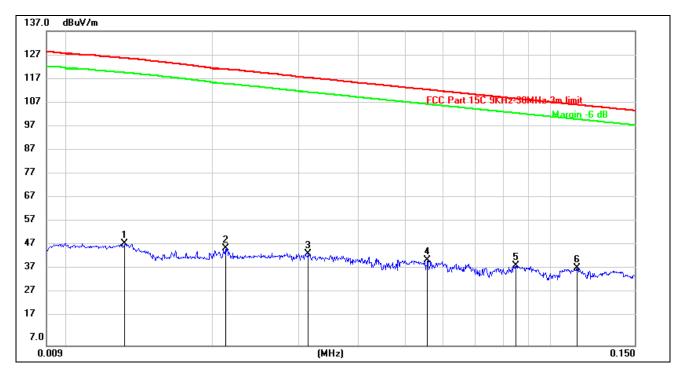
Note: All the modes had been tested, but only the worst data were recorded in the report.



## 8.6. SPURIOUS EMISSIONS BELOW 30M

## SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)

## 9KHz~ 150KHz

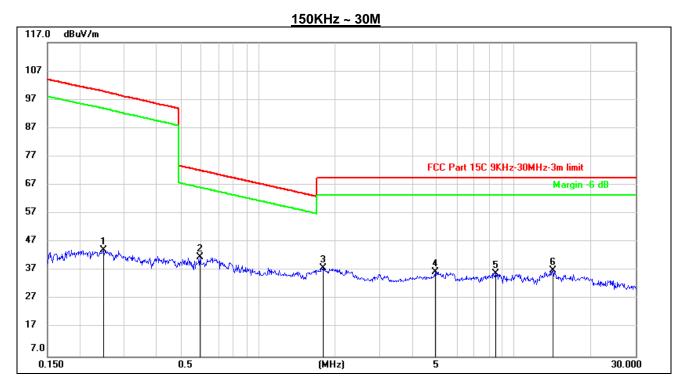


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0131	28.92	20.24	49.16	125.73	-76.57	peak
2	0.0212	26.93	20.31	47.24	121.16	-73.92	peak
3	0.0314	24.53	20.31	44.84	117.71	-72.87	peak
4	0.0555	21.89	20.31	42.20	112.75	-70.55	peak
5	0.0850	19.56	20.27	39.83	109.03	-69.20	peak
6	0.1139	18.58	20.28	38.86	106.48	-67.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.





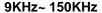
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.2479	23.91	20.32	44.23	99.89	-55.66	peak
2	0.5916	21.40	20.29	41.69	72.17	-30.48	peak
3	1.8000	17.30	20.66	37.96	69.54	-31.58	peak
4	4.9256	15.74	20.84	36.58	69.54	-32.96	peak
5	8.5007	15.01	20.99	36.00	69.54	-33.54	peak
6	14.2126	16.05	20.95	37.00	69.54	-32.54	peak

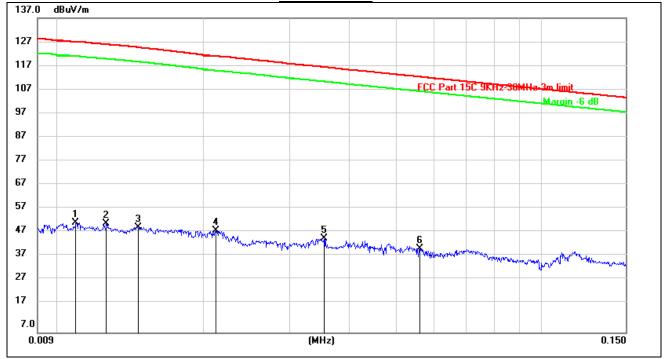
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.



## SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



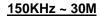


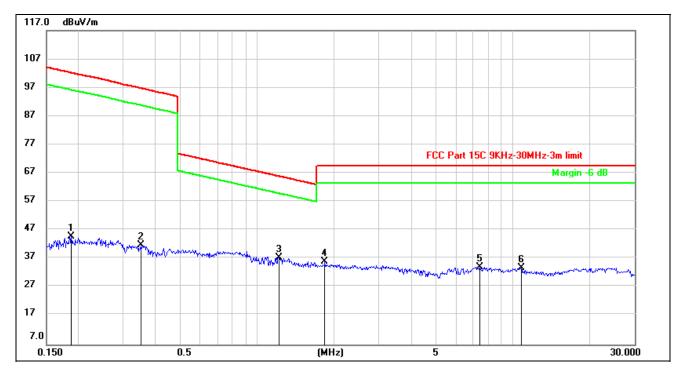
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0108	32.08	20.22	52.30	127.12	-74.82	peak
2	0.0125	31.91	20.23	52.14	126.09	-73.95	peak
3	0.0146	30.10	20.26	50.36	124.83	-74.47	peak
4	0.0211	28.79	20.31	49.10	121.19	-72.09	peak
5	0.0354	25.47	20.31	45.78	116.71	-70.93	peak
6	0.0560	21.25	20.31	41.56	112.67	-71.11	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.1874	24.54	20.38	44.92	102.15	-57.23	peak
2	0.3502	21.48	20.29	41.77	96.81	-55.04	peak
3	1.2157	17.02	20.44	37.46	65.91	-28.45	peak
4	1.8386	15.28	20.67	35.95	69.54	-33.59	peak
5	7.4070	13.13	20.94	34.07	69.54	-35.47	peak
6	10.7900	12.80	21.04	33.84	69.54	-35.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

Note: All the modes had been tested, but only the worst data were recorded in the report.



## 9. ANTENNA REQUIREMENTS

#### **Applicable requirements**

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **Antenna Connector**

EUT has an internal antenna without antenna connector.

## **Antenna Gain**

The antenna gain of EUT is less than 6 dBi.

## **END OF REPORT**