

CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Air RACER2.0

MODEL NUMBER: SC-2095, PL-1875, SC-2097, SC-2096, SC-0340, SC-0344, SC-0345

FCC ID: 2ASK3SC-2095R

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Prepared for

AMAX INDUSTRIAL GROUP CHINA CO.,LTD OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L TUNG CHOI STREET MONGKOK KOWLOON HONG KONG.

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	05/24/2019	Initial Issue	



	Summary of Test Results				
Clause	Test Items	FCC Rules	Test Results		
1	20dB Bandwidth and 99% Occupied Bandwidth	CFR 47 FCC 15.249(d)	Pass		
2	Radiated emission	CFR 47 FCC §15.249 (a)(d)(e) CFR 47 FCC §15.205 and §15.209	Pass		
3	Antenna Requirement	FCC Part 15.203	Pass		



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1. ATTESTATION OF TEST RESULTS

Applicant Information	
Company Name:	AMAX INDUSTRIAL GROUP CHINA CO.,LTD
Address:	OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L TUNG CHOI STREET MONGKOK KOWLOON HONG KONG
Manufacturer Information	
Company Name:	AMAX INDUSTRIAL GROUP CHINA CO.,LTD
Address:	OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L
	TUNG CHOI STREET MONGKOK KOWLOON HONG KONG
EUT Description	

EUI Description

EUT Name: Model: Series Models: Brand Name: Sample Status: Date of Tested:

Air RACER2.0 SC-2095 Please refer to page 8 clause 5.1 / Normal May 13, 2019 ~ May 24, 2019

APPLICABLE STANDARDS		
STANDARD	TEST RESULTS	
CFR 47 FCC PART 15 SUBPART C	PASS	

Prepared By:

Buch

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Approved By:

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Stephen Guo Laboratory Manager



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2014.

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. 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 to the Commission's Delcaration of Conformity (DoC) and Certification
Accreditation 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:

- 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
- 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.
- 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 OFS.



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 recognized 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	
Conduction emission	3.62dB	
Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.2dB	
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.00dB	
Radiation Emission test	5.78dB (1GHz-18Gz)	
(1GHz to 26GHz)(include Fundamental 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

EUT Name	Air RACER2.0		
EUT Description	The EUT is a wireless remote controlled toy drone.		
Model	SC-2095		
Series Model	PL-1875, SC-2097, SC-2096, SC-0340, SC-0344, SC-0345		
Model Difference	All the same except for the different colors.		
Product Description	Operation Frequency	2450 MHz ~ 2470 MHz	
Product Description	Modulation Type	GFSK	
Battery	DC 3.7V		

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit Chains (NTX)	Frequency (MHz)	Channel Number	Max Power (dBµV/m)
2450 ~ 2470	1	2460	11[21]	92.67

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2450	7	2456	13	2462	19	2468
2	2451	8	2457	14	2463	20	2469
3	2452	9	2458	15	2464	21	2470
4	2453	10	2459	16	2465		
5	2454	11	2460	17	2466		
6	2455	12	2461	18	2467		

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)	
1	1 2450 ~ 2470		0	

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



5.5. TEST CHANNEL CONFIGURATION

Test	Test Channel	Frequency
GFSK	CH 1, CH 11, CH 21	2450MHz, 2460MHz, 2470MHz

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2450 ~ 2470MHz Band					
Test Software /					
Modulation Type	Transmit Antenna	Test Channel			
	Number	CH 1	CH 11	CH 21	
GFSK	1	Default Default Default			

5.7. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests				
Relative Humidity	55 ~ 65%				
Atmospheric Pressure:	1025Pa				
Temperature	TN	22 ~ 28°C			
	VL	/			
Voltage :	VN	DC 3.7V			
	VH	/			

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	/	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	/	/	/	/	/

ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT have the engineering mode inside.

SETUP DIAGRAM FOR TEST



Note: New battery was used during all tests.



5.9. MEASURING INSTRUMENT AND SOFTWARE USED

	Radiated Emissions							
				strument	<u> </u>			
Used	Equipment	Manufacturer		del No.	Se	rial No.	Last Cal.	Next Cal.
\checkmark	MXE EMI Receiver	KESIGHT	N	9038A	MY5	6400036	Dec.10,2018	Dec.10,2019
V	Hybrid Log Periodic Antenna	TDK	HLF	P-3003C	1	30960	Sep.17,2018	Sep.17,2021
\checkmark	Preamplifier	HP	8	447D	294	4A09099	Dec.10,2018	Dec.10,2019
V	EMI Measurement Receiver	R&S	E	SR26	1	01377	Dec.10,2018	Dec.10,2019
\checkmark	Horn Antenna	TDK	HR	N-0118	1	30939	Sep.17,2018	Sep.17,2021
V	High Gain Horn Antenna	Schwarzbeck	BBł	HA-9170		691	Aug.18,2018	Aug.18,2021
V	Preamplifier	TDK	PA-	02-0118		S-305- 00066	Dec.10,2018	Dec.10,2019
V	Preamplifier	TDK	P	A-02-2		S-307- 00003	Dec.10,2018	Dec.10,2019
V	Loop antenna	Schwarzbeck	1	519B	C	8000	Jan.17, 2019	Jan.17,2022
			S	oftware				
Used	Descr			Manufact	turer Name			Version
V	Test Software disturl			Farac	k	EZ-EMC		Ver. UL-3A1
		C	ther	instrumer	nts			
Used	Equipment	Manufacturer	Мо	del No.	Se	rial No.	Last Cal.	Next Cal.
\checkmark	Spectrum Analyzer	Keysight	N	9030A	MY5	5410512	Dec.10,2018	Dec.10,2019
V	Band Reject Filter	Wainwright	235 24	RCJV8- 60-2400- 483.5- 3.5-40SS		4	Dec.10,2018	Dec.10,2019
V	High Pass Filter	Wi	270	HKX10- 00-3000- 00-40SS		23	Dec.10,2018	Dec.10,2019



6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

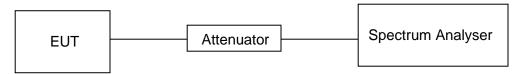
<u>LIMITS</u>

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)
GFSK	0.204	0.544	0.375	37.5	4.260

Note:

Duty Cycle Correction Factor=10log(1/x).

Where: x is Duty Cycle(Linear)

Where: T is On Time (transmit duration)

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

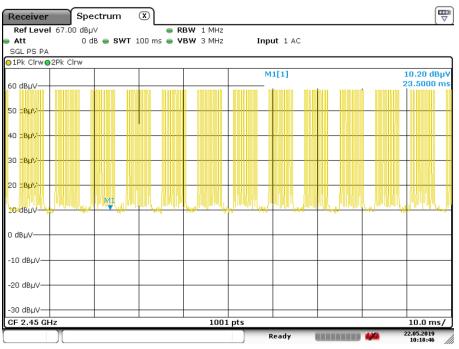


ON TIME AND DUTY CYCLE PLOT-1



Date: 22.MAY.2019 10:21:53

ON TIME AND DUTY CYCLE PLOT-2



Date: 22.MAY.2019 10:18:45



6.2. 20 dB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.249), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	
CFR 47 FCC 15.249(d)	20dB Bandwidth	for reporting purposes only	2400-2483.5	

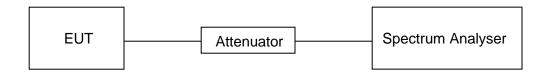
TEST PROCEDURE

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1% to 5% of the occupied bandwidth
VBW	approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

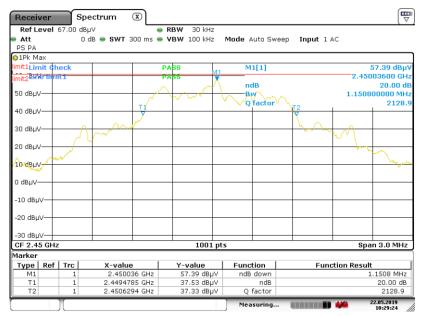
Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP

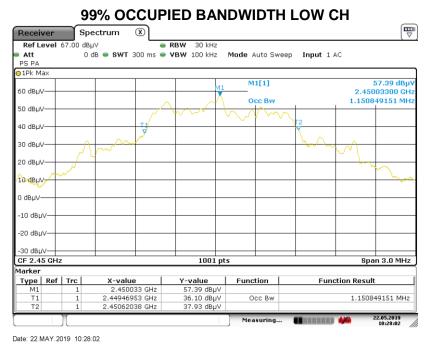


Frequency	20dB bandwidth	99% bandwidth	Result
(MHz)	(MHz)	(MHz)	
2450	1.1508	1.1508	PASS

20 dB OCCUPIED BANDWIDTH LOW CH



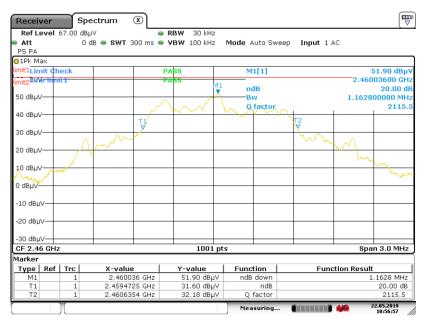
Date: 22.MAY.2019 10:29:24



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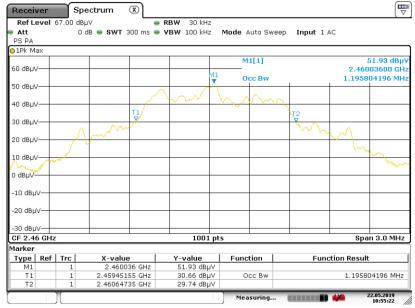
Frequency	20dB bandwidth	99% bandwidth	Result
(MHz)	(MHz)	(MHz)	
2460	1.1628	1.1958	PASS

20 dB OCCUPIED BANDWIDTH MID CH



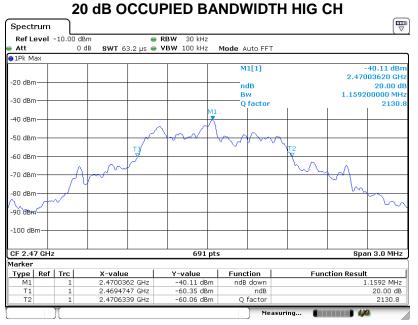
Date: 22.MAY.2019 10:56:58

99% OCCUPIED BANDWIDTH MID CH



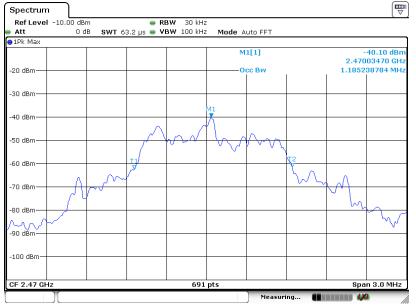
Date: 22.MAY.2019 10:55:22

Frequency	20dB bandwidth	99% bandwidth	Result
(MHz)	(MHz)	(MHz)	
2470	1.1592	1.1852	PASS



Date:22MAY.2019 11:15:14





Date:22 MAY 2019 11:16:07



7. RADIATED TEST RESULTS 7.1. LIMITS AND PROCEDURE

LIMITS

CFR 47 FCC §15.205 and §15.209

CFR 47 FCC §15.249 (a)(d)(e)

The field strength of emissions from intentional radiators operated within these frequency bands							
Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)				
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3				
2400 – 2483.5	400 – 2483.5 50 mV/m (94dBuV/m)		3				
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3				

Emissions radiated outside of the specified frequency bands above 30MHz							
Frequency Range	Field Strength Limit	Field Strength Limit					
(MHz)	(uV/m) at 3 m	(dBuV/m	n) at 3 m				
(Quasi-Peak					
30 - 88	100	40					
88 - 216	150	43.5					
216 - 960	200	46					
Above 960	500	5	4				
Above 1000	500	Peak	Average				
	500	74	54				

Emissions radiated outside of the specified frequency bands below 30MHz							
Frequency (MHz) Field strength (microvolts/meter) Measurement distance (meters)							
0.009-0.490	2400/F(kHz)	300					
0.490-1.705	24000/F(kHz)	30					
1.705-30.0	30	30					

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FCC Restricted bands of operation:

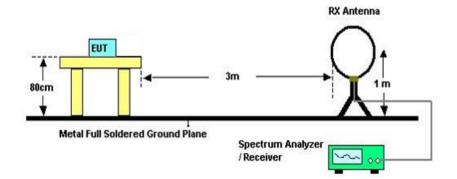
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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	(²)
13.36-13.41			

Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ²Above 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
Detector	Peak/QP/ Average
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 80cm meter 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.

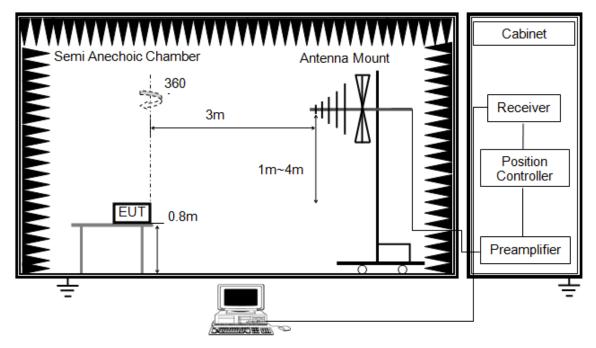
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

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 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.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field 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



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.

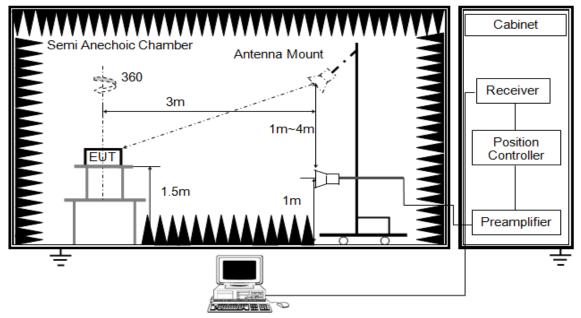
3. The EUT was placed on a turntable with 80cm above ground.

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.



Above 1G



The setting of the spectrum analyser

RBW	1M
IV BWV	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 80cm above ground.

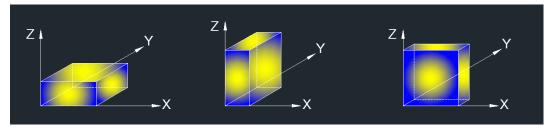
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

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 average power measurement, set the detector to AVG, while maintaining all of the other instrument settings, if the duty cycle of the EUT is less than 98%, the Duty Cycle Correction Factor shall be added to the measured emission levels. For the Duty Cycle and Correction Factor please refer to clause 6.1.ON TIME AND DUTY CYCLE.

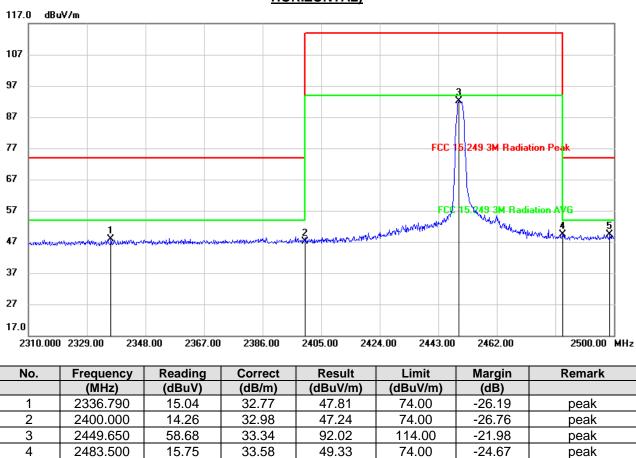


X axis, Y axis, Z axis positions:



Note 1: 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.

7.2. RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS



RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, HORIZONTAL)

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

15.64

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

49.33

74.00

-24.67

peak

3. Peak: Peak detector.

2498.670

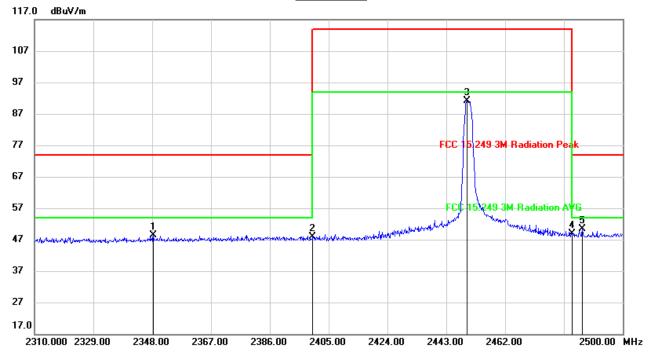
5

4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

33.69



RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, VERTICAL)



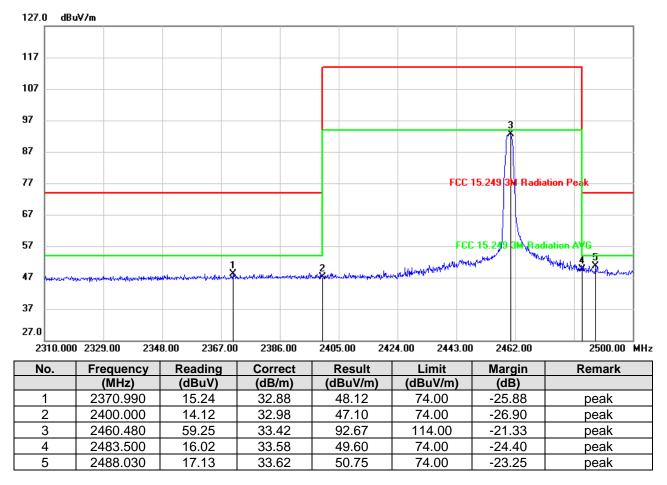
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2348.380	15.64	32.81	48.45	74.00	-25.55	peak
2	2400.000	14.79	32.98	47.77	74.00	-26.23	peak
3	2449.650	57.72	33.34	91.06	114.00	-22.94	peak
4	2483.500	15.20	33.58	48.78	74.00	-25.22	peak
5	2486.890	16.89	33.61	50.50	74.00	-23.50	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.

FIELD STRENGTH OF INTENTIONAL EMISSIONS (MIDDLE CHANNEL, HORIZONTAL)



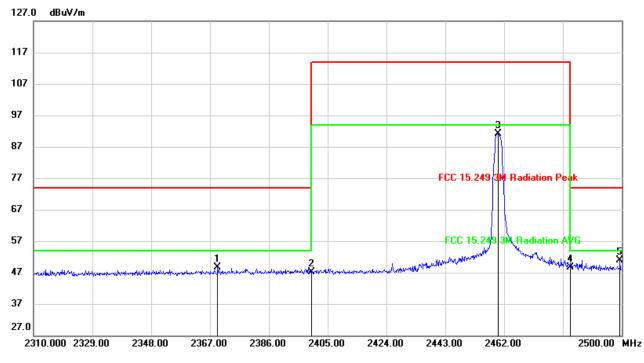
Note: 1. Measurement = Reading Level + Correct Factor.

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

3. Peak: Peak detector.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2369.470	15.69	32.87	48.56	74.00	-25.44	peak
2	2400.000	14.20	32.98	47.18	74.00	-26.82	peak
3	2460.100	57.63	33.41	91.04	114.00	-22.96	peak
4	2483.500	15.00	33.58	48.58	74.00	-25.42	peak
5	2499.430	17.14	33.70	50.84	74.00	-23.16	peak

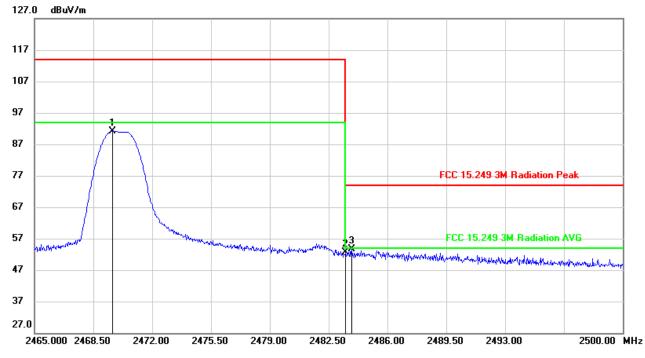
Note: 1. Measurement = Reading Level + Correct Factor.

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

3. Peak: Peak detector.



RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, HORIZONTAL)



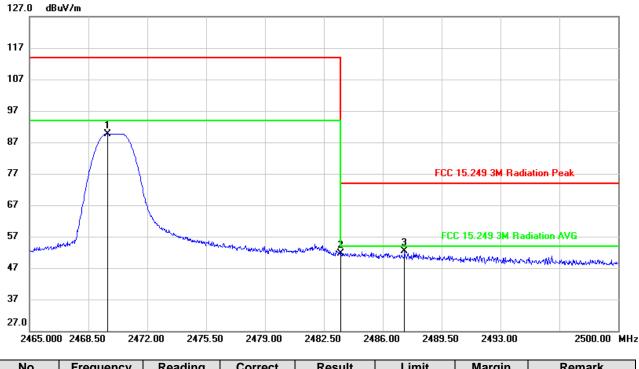
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2469.620	57.63	33.49	91.12	114.00	-22.88	peak
2	2483.500	18.99	33.58	52.57	74.00	-21.43	peak
3	2483.865	19.93	33.58	53.51	74.00	-20.49	peak

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.





RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2469.655	56.26	33.49	89.75	114.00	-24.25	peak
2	2483.500	17.94	33.58	51.52	74.00	-22.48	peak
3	2487.295	18.81	33.61	52.42	74.00	-21.58	peak

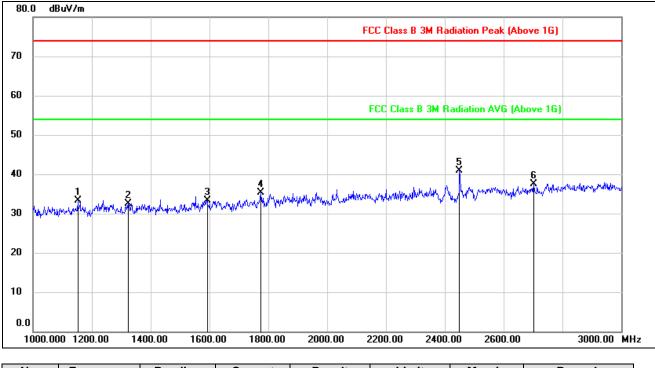
Note: 1. Measurement = Reading Level + Correct Factor.

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

3. Peak: Peak detector.



7.3. 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	1152.000	45.89	-12.66	33.23	74.00	-40.77	peak
2	1324.000	44.42	-11.87	32.55	74.00	-41.45	peak
3	1592.000	44.30	-10.90	33.40	74.00	-40.60	peak
4	1774.000	45.16	-9.88	35.28	74.00	-38.72	peak
5	2450.000	47.57	-6.58	40.99	74.00	-33.01	peak
6	2702.000	43.55	-5.96	37.59	74.00	-36.41	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

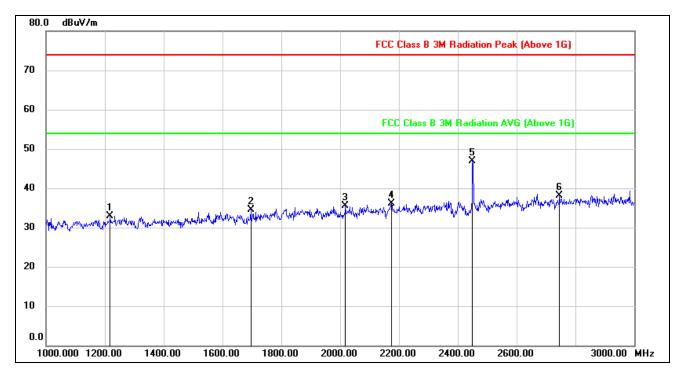
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.



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	1218.000	45.12	-12.14	32.98	74.00	-41.02	peak
2	1696.000	45.16	-10.61	34.55	74.00	-39.45	peak
3	2018.000	44.74	-9.28	35.46	74.00	-38.54	peak
4	2174.000	44.30	-8.22	36.08	74.00	-37.92	peak
5	2450.000	53.51	-6.58	46.93	74.00	-27.07	peak
6	2746.000	43.80	-5.66	38.14	74.00	-35.86	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

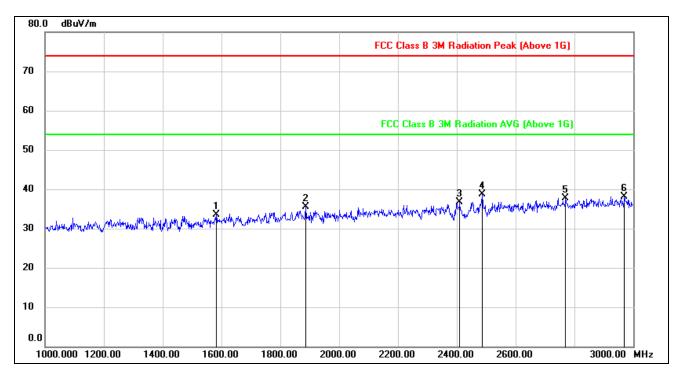
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1582.000	44.42	-11.00	33.42	74.00	-40.58	peak
2	1886.000	44.87	-9.39	35.48	74.00	-38.52	peak
3	2410.000	43.68	-6.92	36.76	74.00	-37.24	peak
4	2486.000	45.03	-6.29	38.74	74.00	-35.26	peak
5	2770.000	43.29	-5.50	37.79	74.00	-36.21	peak
6	2970.000	42.59	-4.45	38.14	74.00	-35.86	peak

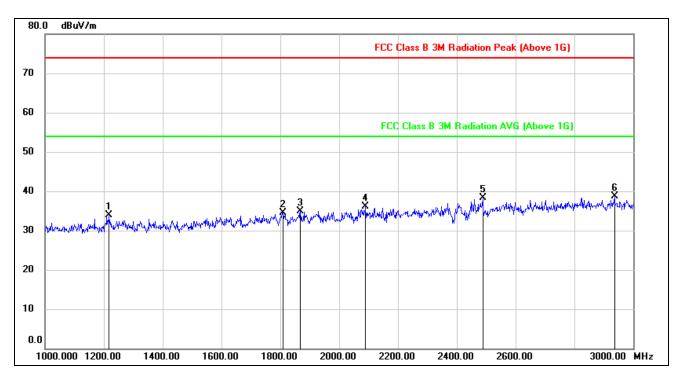
Note: 1. Peak Result = Reading Level + Correct Factor.

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

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.





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	1218.000	45.97	-12.14	33.83	74.00	-40.17	peak
2	1810.000	44.07	-9.59	34.48	74.00	-39.52	peak
3	1868.000	44.27	-9.44	34.83	74.00	-39.17	peak
4	2090.000	44.69	-8.67	36.02	74.00	-37.98	peak
5	2488.000	44.54	-6.26	38.28	74.00	-35.72	peak
6	2936.000	43.26	-4.59	38.67	74.00	-35.33	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

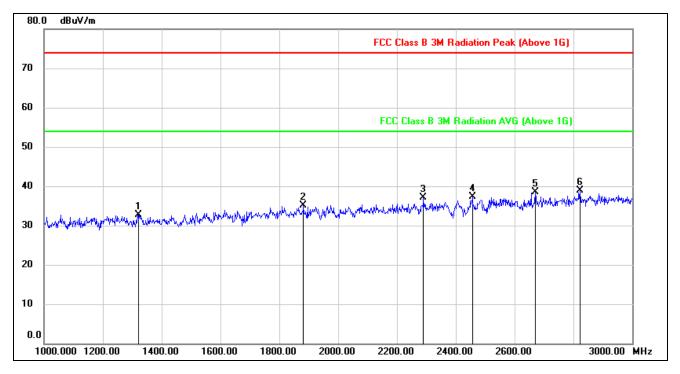
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.



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	1320.000	44.58	-11.86	32.72	74.00	-41.28	peak
2	1882.000	44.44	-9.40	35.04	74.00	-38.96	peak
3	2290.000	44.61	-7.54	37.07	74.00	-36.93	peak
4	2456.000	43.75	-6.54	37.21	74.00	-36.79	peak
5	2670.000	44.65	-6.16	38.49	74.00	-35.51	peak
6	2822.000	44.08	-5.17	38.91	74.00	-35.09	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

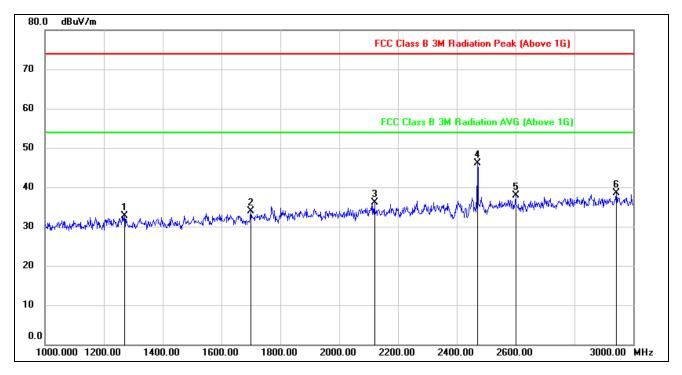
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.



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	1270.000	44.62	-11.95	32.67	74.00	-41.33	peak
2	1700.000	44.42	-10.60	33.82	74.00	-40.18	peak
3	2120.000	44.65	-8.48	36.17	74.00	-37.83	peak
4	2470.000	52.61	-6.42	46.19	74.00	-27.81	peak
5	2600.000	44.54	-6.58	37.96	74.00	-36.04	peak
6	2942.000	43.10	-4.56	38.54	74.00	-35.46	peak

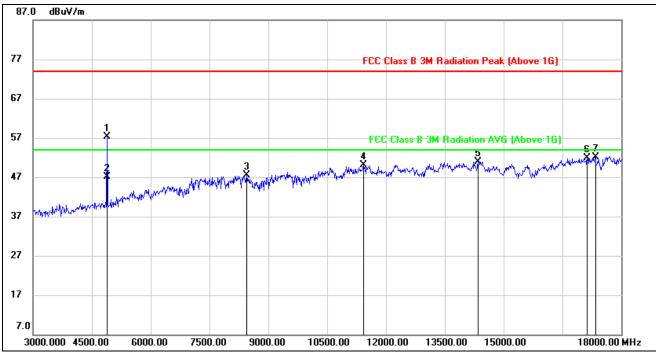
Note: 1. Peak Result = Reading Level + Correct Factor.

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

3. Peak: Peak detector.

4. The Band Reject filter loss factor already add into the correct factor.

7.4. SPURIOUS EMISSIONS (3~18GHz)



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

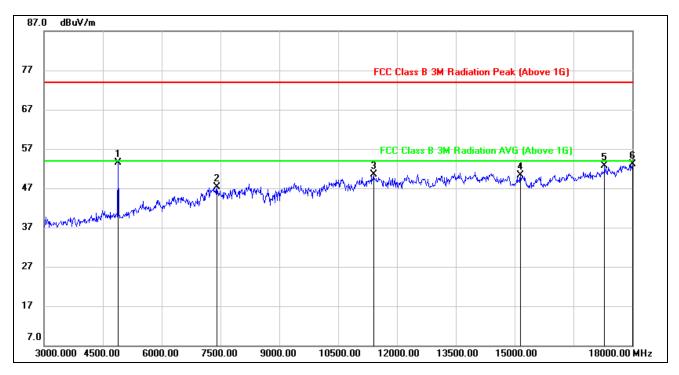
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4899.920	57.30	-0.09	57.21	74.00	-16.79	peak
2	4899.920	47.29	-0.09	47.20	54.00	-6.80	AVG
3	8445.000	38.76	8.65	47.41	74.00	-26.59	peak
4	11430.000	36.48	13.57	50.05	74.00	-23.95	peak
5	14340.000	34.64	16.36	51.00	74.00	-23.00	peak
6	17130.000	31.05	20.84	51.89	74.00	-22.11	peak
7	17340.000	30.40	21.73	52.13	74.00	-21.87	peak

Note: 1. Peak Result = 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.
- 4. AVG: Average value = AVG (Detector) Reading + Correct (included DCCF).
- 5. For transmit duration, please refer to clause 6.1.
- 6. The High Pass filter loss factor already add into the correct factor.
- 7. Proper operation of the transmitter prior to adding the filter to the measurement chain.



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	4900.000	53.65	-0.09	53.56	74.00	-20.44	peak
2	7410.000	39.78	7.47	47.25	74.00	-26.75	peak
3	11400.000	37.12	13.36	50.48	74.00	-23.52	peak
4	15150.000	34.81	15.52	50.33	74.00	-23.67	peak
5	17295.000	30.84	21.86	52.70	74.00	-21.30	peak
6	18000.000	29.78	23.27	53.05	74.00	-20.95	peak

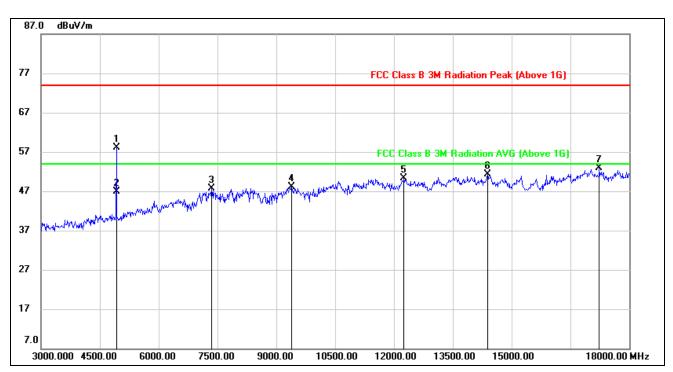
Note: 1. Peak Result = Reading Level + Correct Factor.

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

3. Peak: Peak detector.

4. The High Pass filter loss factor already add into the correct factor.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

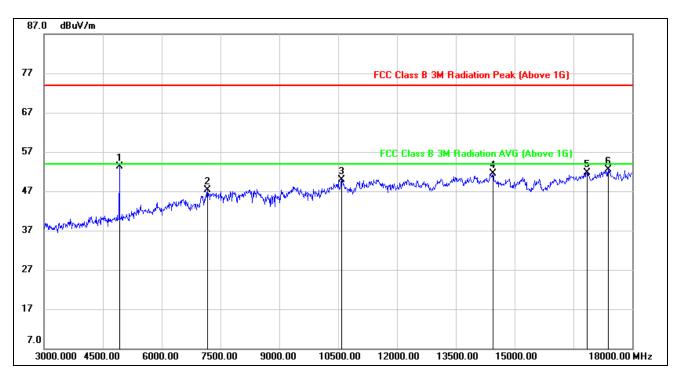
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4920.000	58.13	0.02	58.15	74.00	-15.85	peak
2	4920.000	46.97	0.02	46.99	54.00	-7.01	AVG
3	7350.000	40.46	7.31	47.77	74.00	-26.23	peak
4	9390.000	37.89	10.24	48.13	74.00	-25.87	peak
5	12255.000	36.00	14.32	50.32	74.00	-23.68	peak
6	14385.000	34.89	16.41	51.30	74.00	-22.70	peak
7	17235.000	31.61	21.32	52.93	74.00	-21.07	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

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

- 4. AVG: Average value = AVG (Detector) Reading + Correct (included DCCF).
- 5. For transmit duration, please refer to clause 6.1.
- 6. The High Pass filter loss factor already add into the correct factor.
- 7. Proper operation of the transmitter prior to adding the filter to the measurement chain.





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	4920.000	53.21	0.02	53.23	74.00	-20.77	peak
2	7170.000	40.38	6.87	47.25	74.00	-26.75	peak
3	10590.000	37.26	12.68	49.94	74.00	-24.06	peak
4	14445.000	35.04	16.37	51.41	74.00	-22.59	peak
5	16845.000	31.77	19.92	51.69	74.00	-22.31	peak
6	17385.000	31.04	21.53	52.57	74.00	-21.43	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

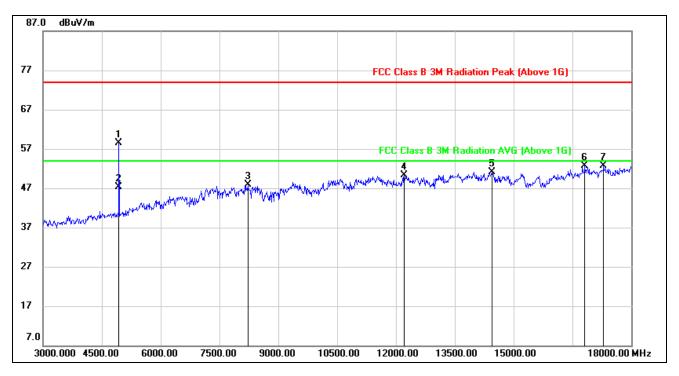
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The High Pass filter loss factor already add into the correct factor.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



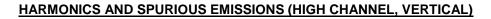


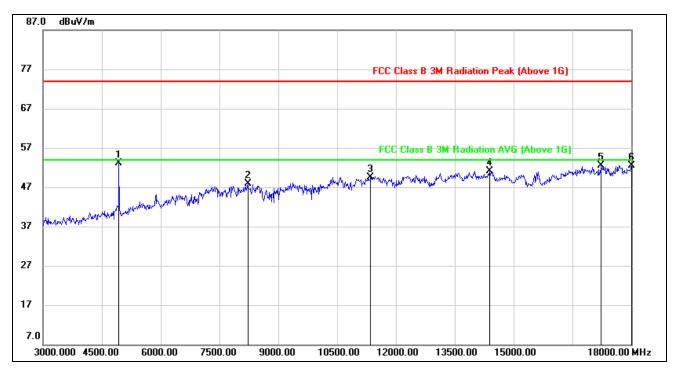
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4939.656	58.32	0.14	58.46	74.00	-15.54	peak
2	4939.656	47.11	0.14	47.25	54.00	-6.75	AVG
3	8220.000	38.50	9.40	47.90	74.00	-26.10	peak
4	12210.000	36.06	14.25	50.31	74.00	-23.69	peak
5	14445.000	34.76	16.37	51.13	74.00	-22.87	peak
6	16815.000	32.83	19.92	52.75	74.00	-21.25	peak
7	17295.000	30.87	21.86	52.73	74.00	-21.27	peak

Note: 1. Peak Result = 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.
- 4. AVG: Average value = AVG (Detector) Reading + Correct (included DCCF).
- 5. For transmit duration, please refer to clause 6.1.
- 6. The High Pass filter loss factor already add into the correct factor.
- 7. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4940.000	53.05	0.15	53.20	74.00	-20.80	peak
2	8220.000	38.58	9.40	47.98	74.00	-26.02	peak
3	11355.000	36.39	13.15	49.54	74.00	-24.46	peak
4	14385.000	34.74	16.41	51.15	74.00	-22.85	peak
5	17235.000	31.16	21.32	52.48	74.00	-21.52	peak
6	18000.000	29.28	23.27	52.55	74.00	-21.45	peak

Note: 1. Peak Result = 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.

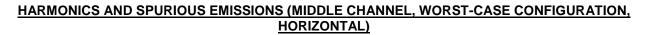
4. AVG: Average value = AVG (Detector) Reading + Correct (included DCCF).

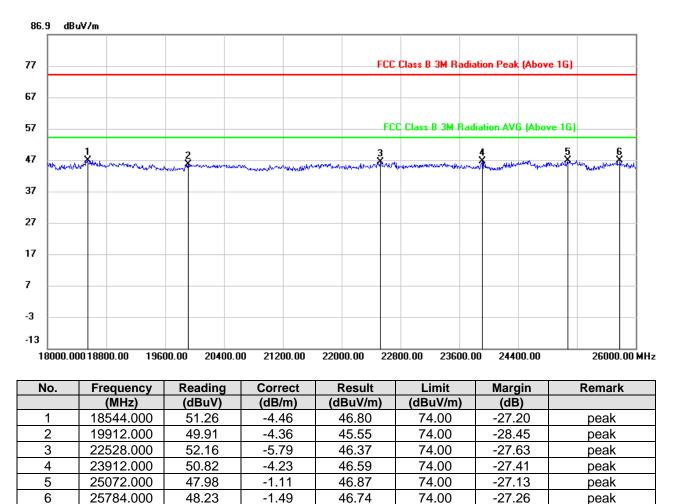
5. For transmit duration, please refer to clause 6.1.

6. The High Pass filter loss factor already add into the correct factor.

7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

7.5. SPURIOUS EMISSIONS (18~26GHz)



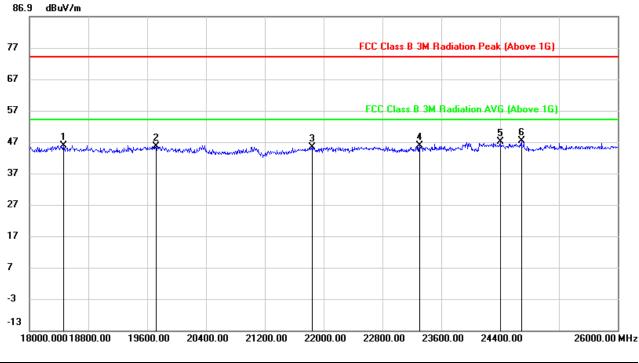


Note: 1. Measurement = Reading Level + Correct Factor.

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

3. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (MIDDLE CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18464.000	50.20	-4.39	45.81	74.00	-28.19	peak
2	19720.000	50.00	-4.39	45.61	74.00	-28.39	peak
3	21848.000	51.26	-5.95	45.31	74.00	-28.69	peak
4	23304.000	50.87	-5.16	45.71	74.00	-28.29	peak
5	24400.000	50.14	-2.99	47.15	74.00	-26.85	peak
6	24688.000	49.39	-2.11	47.28	74.00	-26.72	peak

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

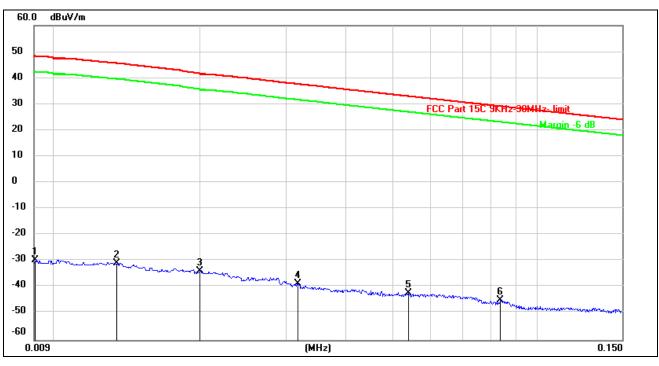
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
Peak: Peak detector.

Note: All test mode has been tested, only the worst data record in the report.



7.6. SPURIOUS EMISSIONS BELOW 30M

SPURIOUS EMISSIONS (MIDDLE CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)



<u>9kHz~ 150kHz</u>

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0091	71.79	-101.33	-29.54	48.29	-77.83	peak
2	0.0134	70.73	-101.39	-30.66	45.55	-76.21	peak
3	0.0200	67.68	-101.34	-33.66	41.58	-75.24	peak
4	0.0318	62.84	-101.40	-38.56	37.61	-76.17	peak
5	0.0539	59.26	-101.50	-42.24	33.00	-75.24	peak
6	0.0839	56.76	-101.67	-44.91	29.14	-74.05	peak

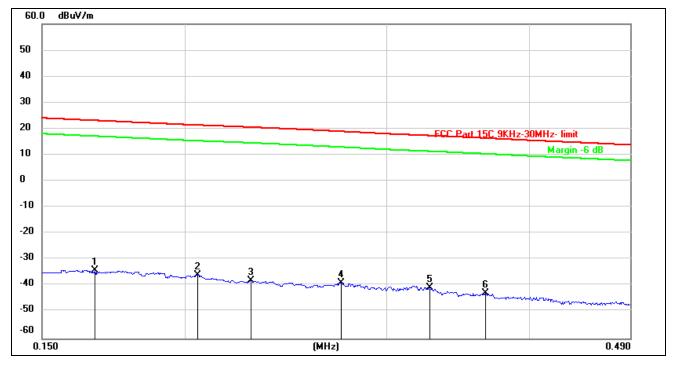
Note: 1. Measurement = Reading Level + Correct Factor.

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

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



<u>150kHz ~ 490kHz</u>



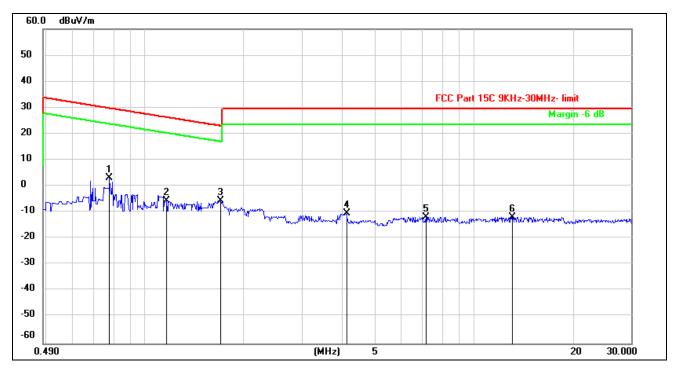
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.1669	67.65	-101.66	-34.01	23.16	-57.17	peak
2	0.2051	65.81	-101.73	-35.92	21.40	-57.32	peak
3	0.2285	63.90	-101.77	-37.87	20.58	-58.45	peak
4	0.2736	63.08	-101.83	-38.75	18.99	-57.74	peak
5	0.3274	61.14	-101.88	-40.74	17.37	-58.11	peak
6	0.3662	59.08	-101.93	-42.85	16.40	-59.25	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.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

<u>490kHz ~ 30MHz</u>



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.7799	65.40	-62.13	3.27	29.77	-26.50	peak
2	1.1627	56.55	-62.20	-5.65	26.30	-31.95	peak
3	1.6995	56.27	-61.96	-5.69	23.00	-28.69	peak
4	4.0948	50.96	-61.35	-10.39	29.54	-39.93	peak
5	7.1592	49.36	-61.19	-11.83	29.54	-41.37	peak
6	13.0907	49.13	-60.93	-11.80	29.54	-41.34	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.

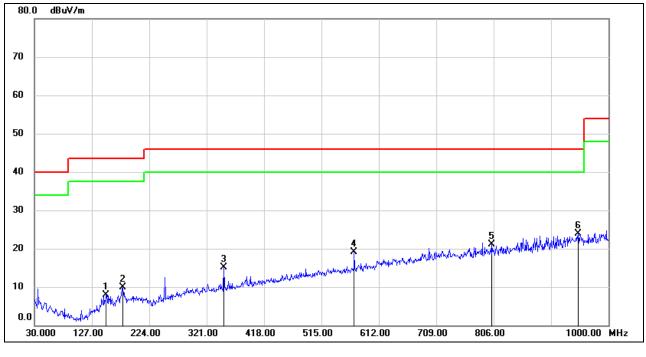
3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All test mode has been tested, only the worst data record in the report.



7.7. SPURIOUS EMISSIONS BELOW 1 GHz





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	151.2500	26.17	-18.20	7.97	43.50	-35.53	QP
2	179.3800	26.85	-16.91	9.94	43.50	-33.56	QP
3	350.1000	28.29	-13.16	15.13	46.00	-30.87	QP
4	570.2900	28.19	-8.99	19.20	46.00	-26.80	QP
5	803.0900	26.36	-5.25	21.11	46.00	-24.89	QP
6	948.5900	27.31	-3.38	23.93	46.00	-22.07	QP

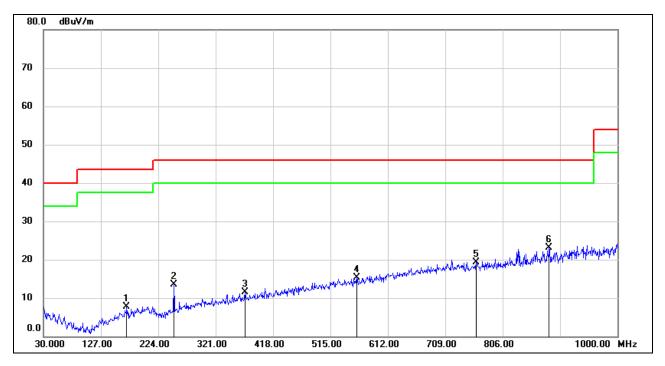
Note: 1. Result Level = Read Level + Correct Factor.

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	170.6500	24.62	-16.86	7.76	43.50	-35.74	QP
2	250.1900	29.53	-16.12	13.41	46.00	-32.59	QP
3	370.4700	24.26	-12.79	11.47	46.00	-34.53	QP
4	559.6200	24.58	-9.32	15.26	46.00	-30.74	QP
5	761.3800	25.06	-5.73	19.33	46.00	-26.67	QP
6	884.5700	27.33	-4.21	23.12	46.00	-22.88	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 test mode has been tested, only the worst data record in the report.



8. 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.

<u>RESULTS</u>

Complies

END OF REPORT