



**FCC 47 CFR PART 15 SUBPART C  
ISED RSS-210 ISSUE 9**

**CERTIFICATION TEST REPORT**

*For*

**Z-Wave Smart Plug**

**MODEL NUMBER: 6A-PL-VAB-A0**

**FCC ID: 2AB2Q6APLVABA0**

**IC: 10256A-6APLVABA0**

**REPORT NUMBER: 4788549880.1-1**

**ISSUE DATE: August 15, 2018**

*Prepared for*

**LEEDARSON LIGHTING CO., LTD.  
Xingtai Industrial Zone, Economic Development Zone, Changtai County,  
Zhangzhou City, Fujian Province, P.R.China**

*Prepared by*

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	08/15/2018	Initial Issue	

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# 1. ATTESTATION OF TEST RESULTS

## Applicant Information

Company Name: LEEDARSON LIGHTING CO., LTD.  
 Address: Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R.China

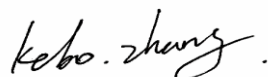
## Manufacturer Information

Company Name: LEEDARSON LIGHTING CO., LTD.  
 Address: Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R.China

**EUT Name:** Z-Wave Smart Plug  
**Brand:** LEEDARSON  
**Model:** 6A-PL-VAB-A0  
**Serial Number** HA-ZW-5PAB  
**Model Difference** HA-ZW-5PAB and 6A-PL-VAB-A0 have the same circuit, PCB layout, electrical parts except for the model name.  
**Date of Tested:** June 20~August 15, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS
ISED RSS-210 Issue 9	PASS
ISED RSS-GEN Issue 5	PASS

Tested By:



Kebo Zhang  
 Engineer  
 Approved By:



Stephen Guo  
 Laboratory Manager

Checked By:



Shawn Wen  
 Laboratory Leader

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, ISED RSS-210 Issue 9 and RSS-GEN Issue 5

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 4102.01)</b>                  UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>IAS (Lab Code: TL-702)</b>                  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</p> <p><b>FCC (FCC Designation No.: CN1187)</b>                  UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>IC(Company No.: 21320)</b>                  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.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b>                  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</p>
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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 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
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 (1GHz to 26GHz)( include Fundamental emission)	5.04dB(1-6GHz)
	5.30dB (6GHz-18Gz)
	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	Z-Wave Smart Plug	
Model Name	6A-PL-VAB-A0	
Data Rates	908.4 MHz:40kbps	
	908.42 MHz:9.6kbps	
	916.0 MHz:100kbps	
Transmit Channel Tested:	Channel ID	Channel Frequency(MHz)
	1	908.40
	2	908.42
	3	916.00
Power Supply	AC120V, 60Hz	
Main test Relay	RTD34012_076140120141105	
Alternative test Relay	HF115F(JQX-115F)_cn	
Note: The equipment has two relays, one of them will be used in the end product and the others are exactly the same.		

### 5.2. MAXIMUM EMISSIONS FIELD STRENGTH

Frequency Range (MHz)	Number of Transmit Chains (NTX)	Frequency (MHz)	Channel Number	Max. Emissions Field Strength (dB $\mu$ V/m)
902-928	1	908.4~916	1-3[3]	92.81

**5.3. THE WORSE CASE POWER SETTING PARAMETER**

The Worse Case Power Setting Parameter under 2402 ~ 2483.5MHz Band			
Test Software	UartAssis		
Transmit Antenna Number	Test Channel		
	CH 1	CH 2	CH 3
1	17	17	17

**5.4. TEST ENVIRONMENT**

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	23 ~ 28°C
Voltage :	VL	N/A
	VN	AC120V,60Hz
	VH	N/A

Note: VL= Lower Extreme Test Voltage  
 VN= Nominal Voltage  
 VH= Upper Extreme Test Voltage  
 TN= Normal Temperature



## 5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	908.4~916	IFA Antenna	-2

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name
1	Laptop	ThinkPad	T460S
2	USB to Serial Conversion board	N/A	N/A

### I/O CABLES

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

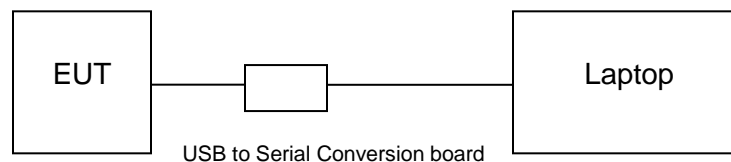
### ACCESSORY

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

### TEST SETUP

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

### SETUP DIAGRAM FOR TESTS



**5.7. MEASURING INSTRUMENT AND SOFTWARE USED**

<b>Conducted Emissions</b>						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESR3	101961	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	101983	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Dec.12,2017	Dec.11,2018
Software						
Used	Description	Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Conducted disturbance	Farad	EZ-EMC	Ver. UL-3A1		
<b>Radiated Emissions</b>						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2019
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019
<input checked="" type="checkbox"/>	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2019
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 25, 2019
Software						
Used	Description	Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance	Farad	EZ-EMC	Ver. UL-3A1		
<b>Other instruments</b>						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Power Meter	Keysight	N1911A	MY55416024	Dec.12,2017	Dec.11,2018
<input checked="" type="checkbox"/>	Power Sensor	Keysight	N1921A	MY51100041	Dec.12,2017	Dec.11,2018

## 6. SUMMARY OF TEST RESULTS

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	20dB Bandwidth	FCC Part 2.1049	Pass
2	99%dB Bandwidth	RSS-Gen Clause 6.7	Pass
3	TX Spurious Emission	FCC 15.249 (a)(d)(e) FCC 15.209 FCC 15.205 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Pass
4	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Pass

## 7. ANTENNA PORT TEST RESULTS

### 7.1. ON TIME AND DUTY CYCLE

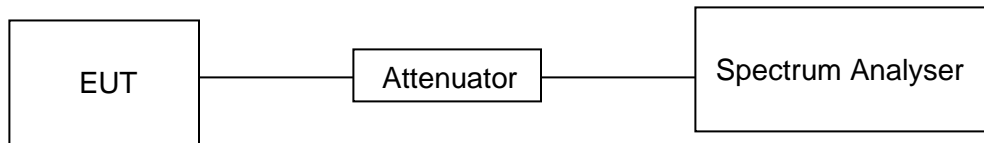
#### LIMITS

None; for reporting purposes only

#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

#### TEST SETUP

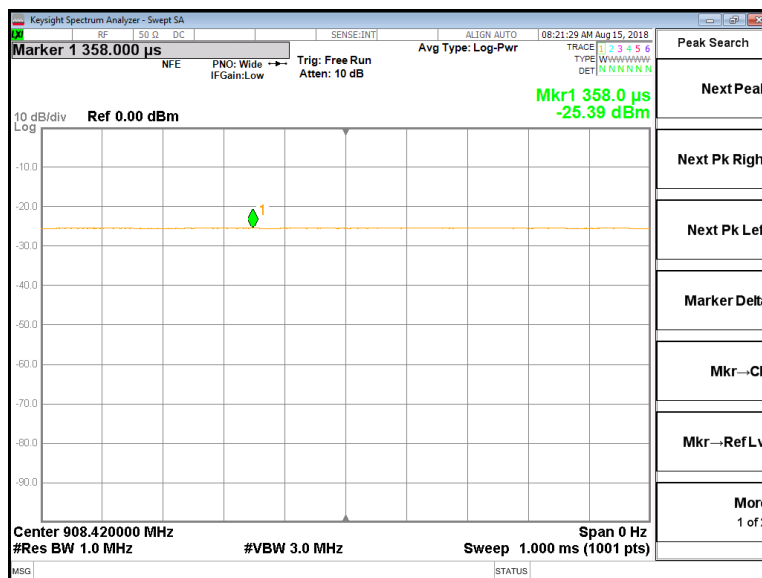


#### RESULTS

Test Channel	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	minimum VBW 1/T (KHz)
HIGH	1	1	1	100%	0	0.01

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



## 7.2. 20 dB AND 99% BANDWIDTH

### LIMITS

FCC Part15 (15.249) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.249(d)	Bandwidth	for reporting purposes only	902-928 MHz
RSS-Gen Clause 6.6	99% Bandwidth	N/A	902-928MHz

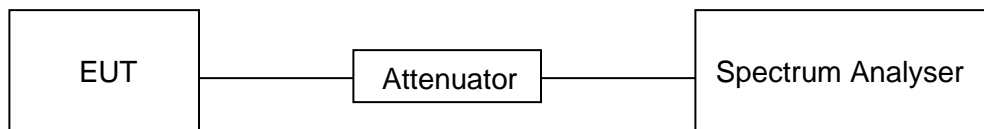
### TEST PROCEDURE

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 3xRBW
Trace	Max hold
Sweep	Auto couple

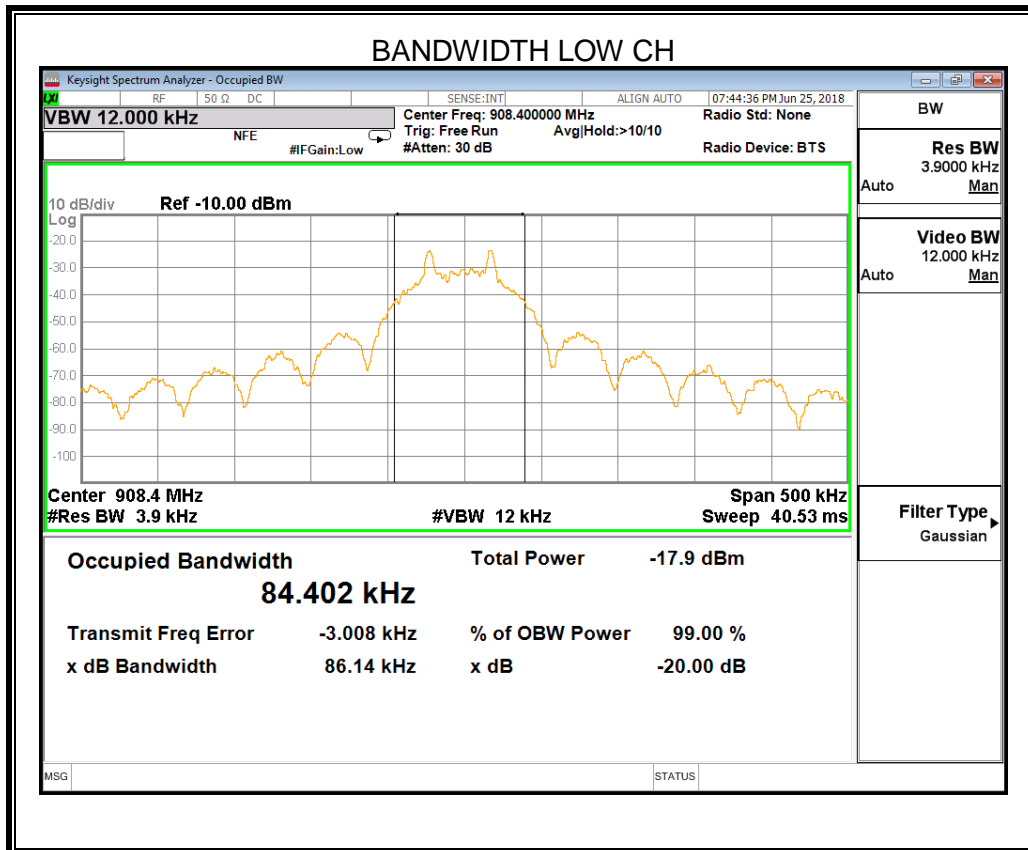
Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

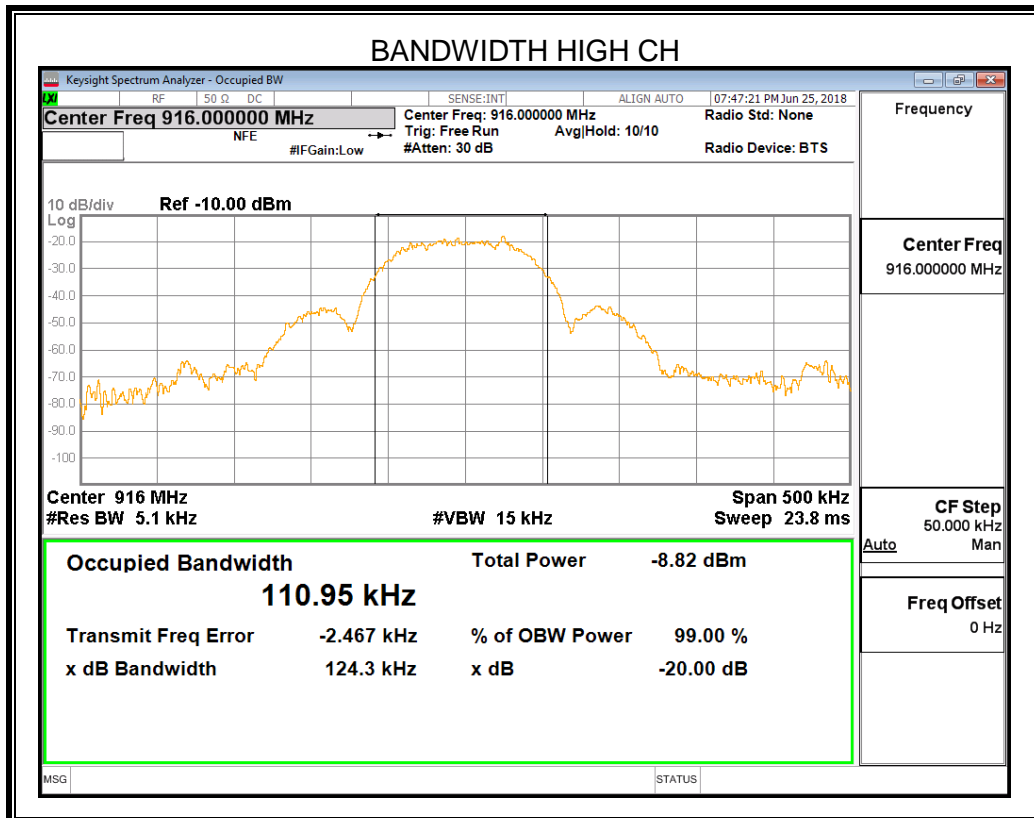
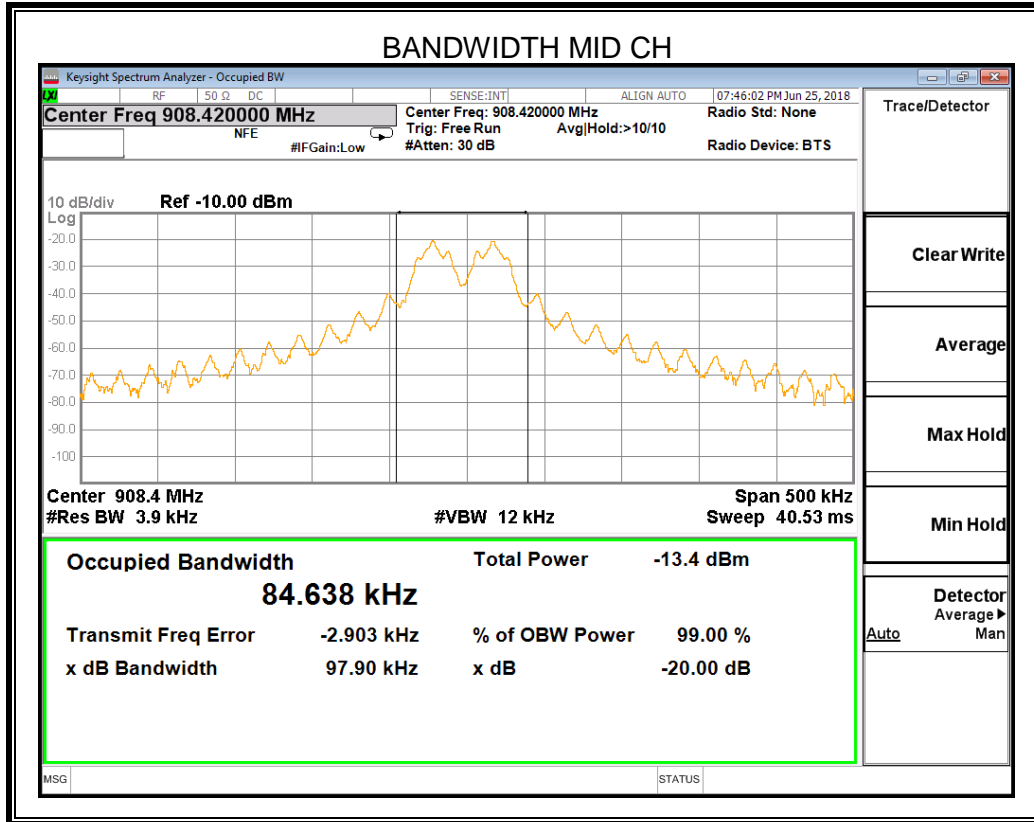
### TEST SETUP



**RESULTS**

Channel	20dB bandwidth (KHz)	99% bandwidth (KHz)	Result
Low	86.14	84.402	Pass
Middle	97.90	84.638	Pass
High	124.30	110.95	Pass





## 8. RADIATED TEST RESULTS

### 8.1. LIMITS AND PROCEDURE

#### LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to FCC §15.249 (a)(d)(e)

RSS-210 Issue 9 Clause Annex B B.10

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	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

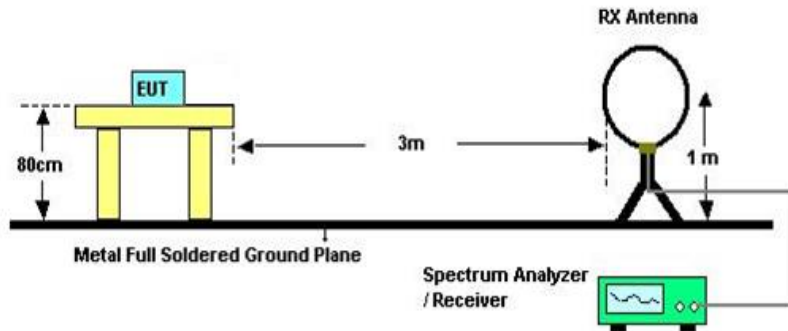
Emissions radiated outside of the specified frequency bands			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
30 - 88	100	Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

About Restricted bands of operation please refer to RSS-Gen section 8.10 and FCC §15.205 (a)



**TEST SETUP AND PROCEDURE**

Below 30MHz

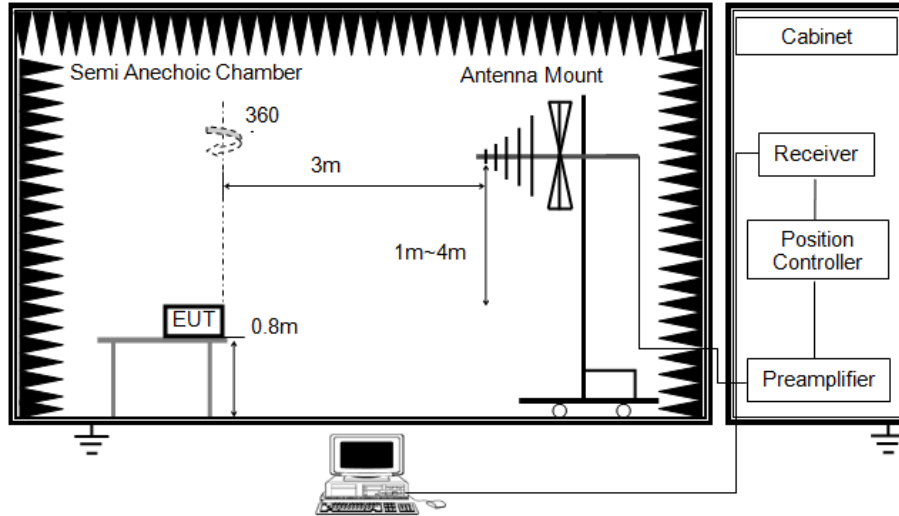


The setting of the spectrum analyser

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 0.8 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. Measurement = Reading Level + Correct Factor
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. 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

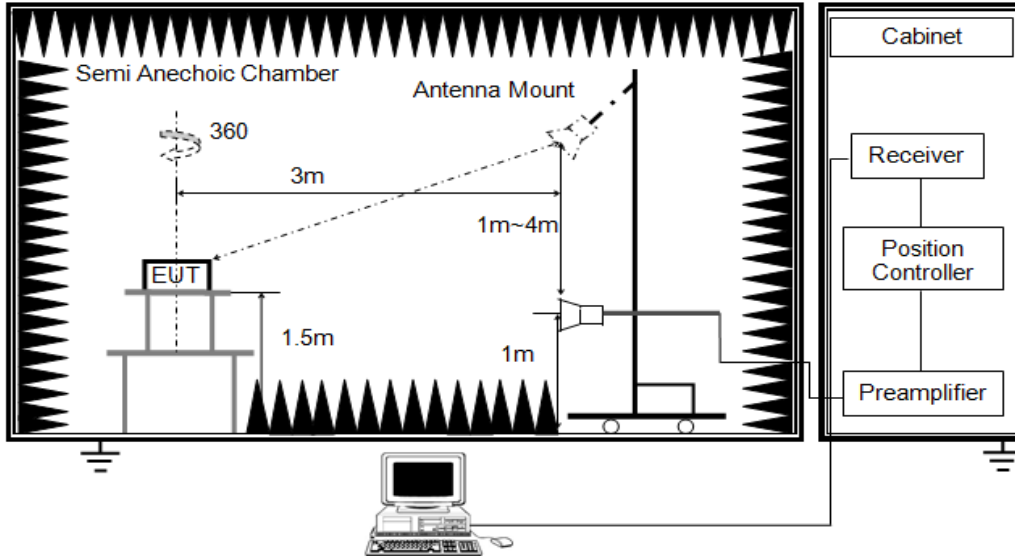


The setting of the spectrum analyser

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 0.8 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. Measurement = Reading Level + Correct Factor
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. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G

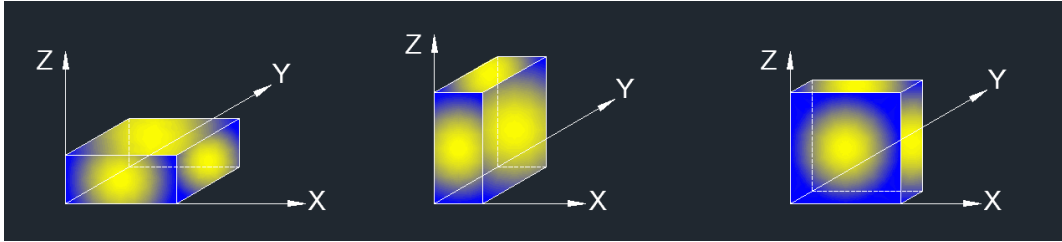


The setting of the spectrum analyser

RBW	1M MHz
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 (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 1.5m 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 7.1.ON TIME AND DUTY CYCLE.
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:



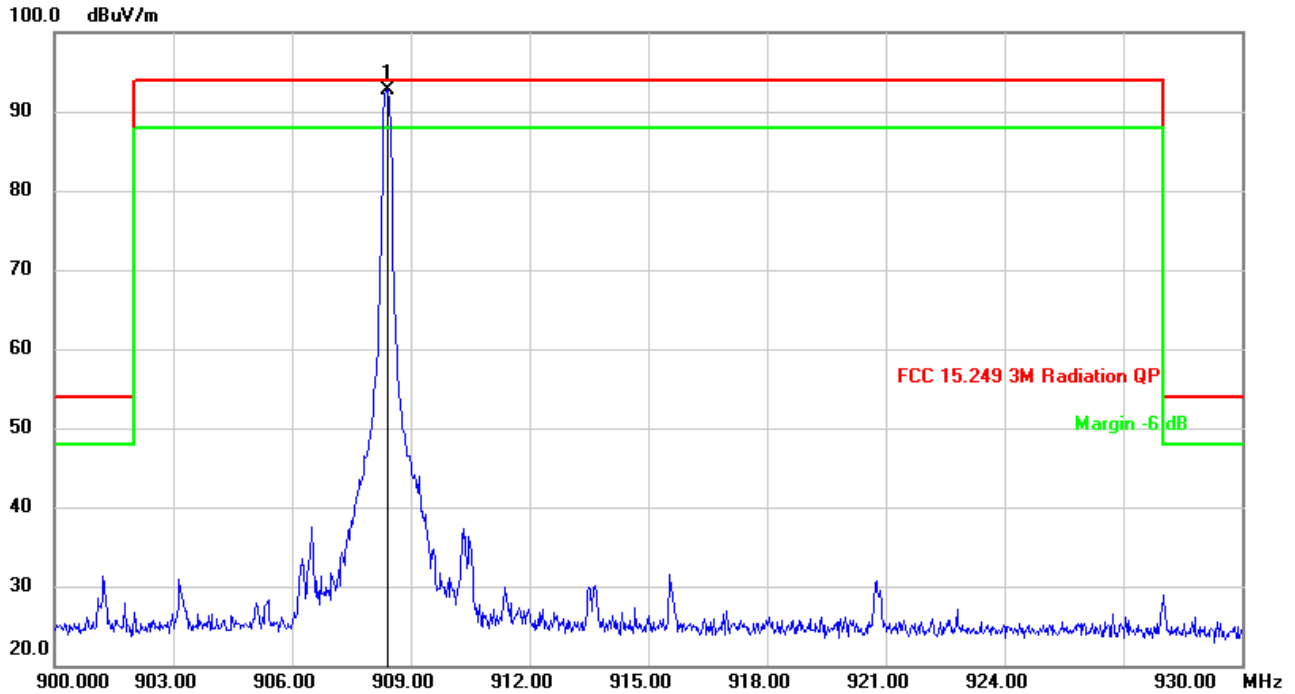
Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: All the EUT's emissions had been evaluated for simultaneous transmission with the other transmitter and there were no any additional or worse emissions found.

## 8.2. FIELD STRENGTH OF INTENTIONAL EMISSIONS

### Main Relay

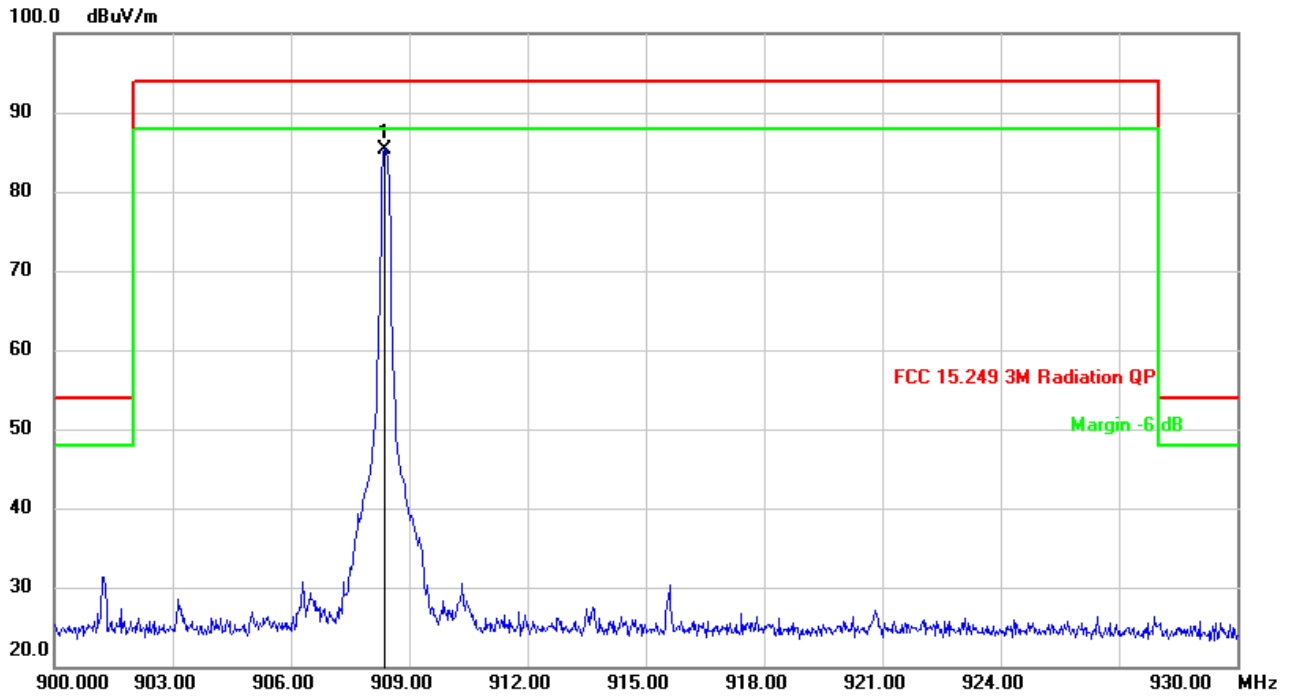
#### FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	908.4300	98.03	-5.25	92.78	94.00	-1.22	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

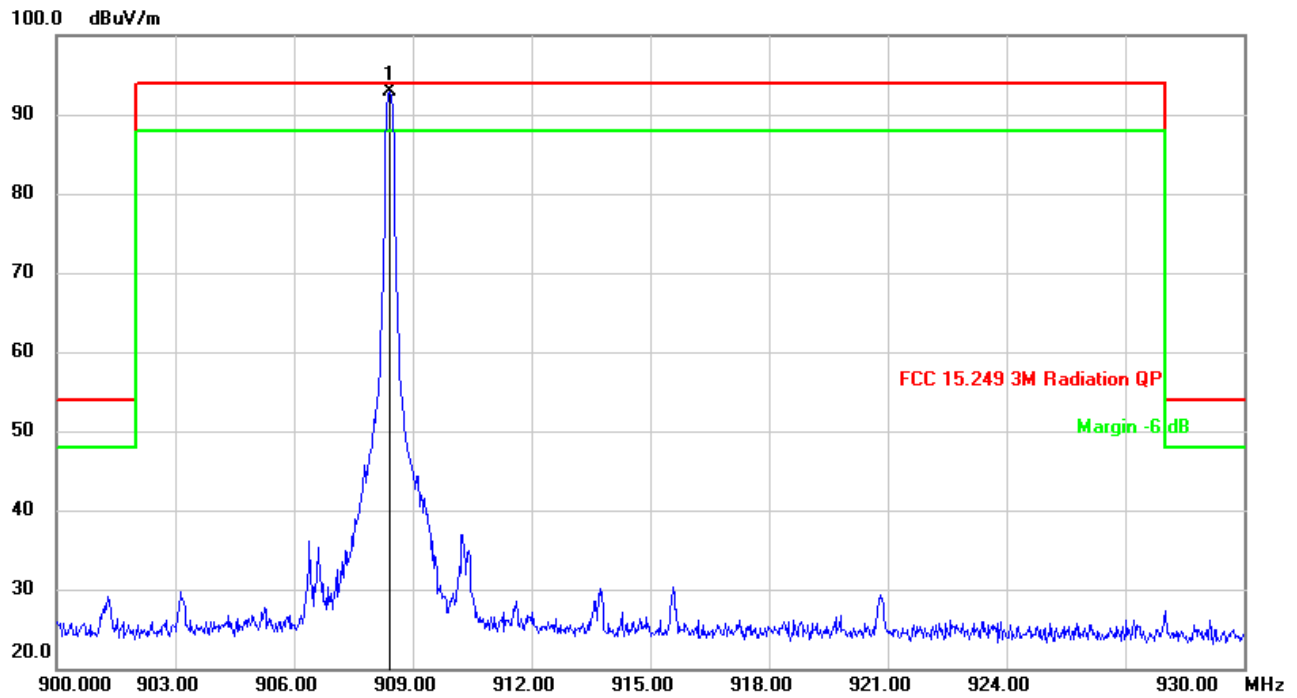
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	908.3700	90.65	-5.25	85.40	94.00	-8.60	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

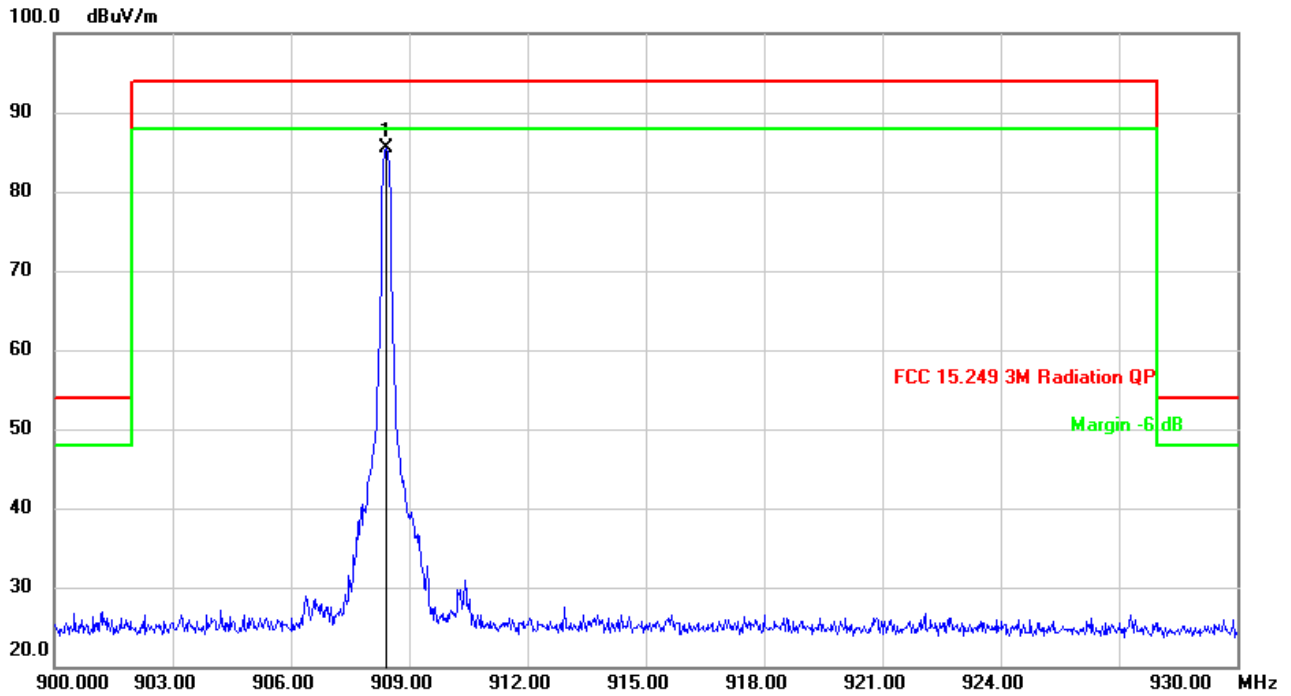
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (MIDDLE CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	908.4000	98.06	-5.25	92.81	94.00	-1.19	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

**FIELD STRENGTH OF INTENTIONAL EMISSIONS (MIDDLE CHANNEL, VERTICAL)**

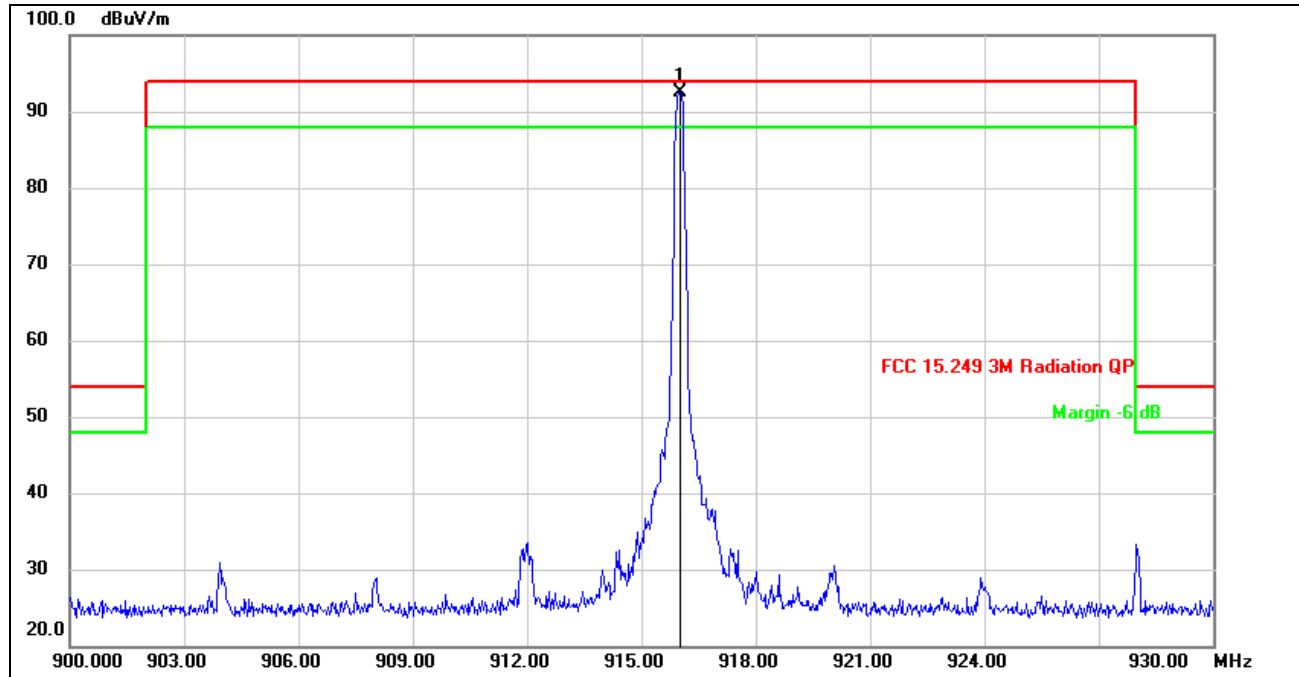


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	908.4300	90.72	-5.25	85.47	94.00	-8.53	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.



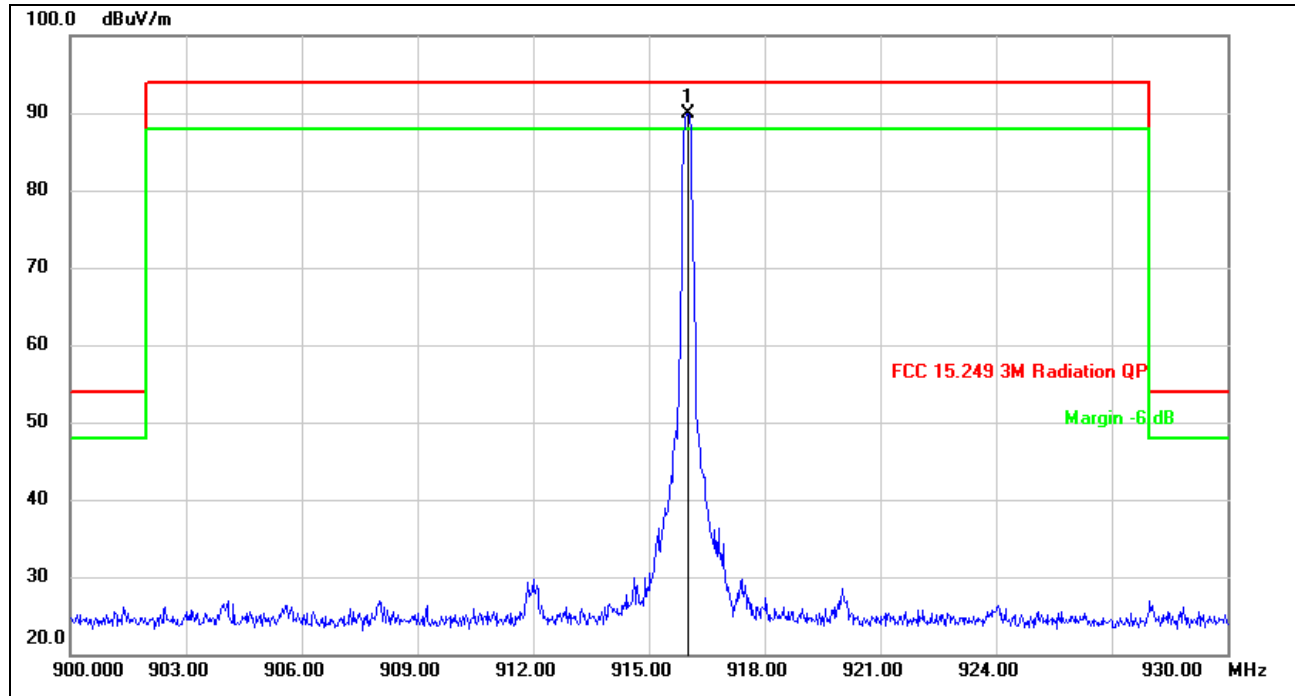
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	916.0200	97.74	-5.20	92.54	94.00	-1.46	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

**FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, VERTICAL)**

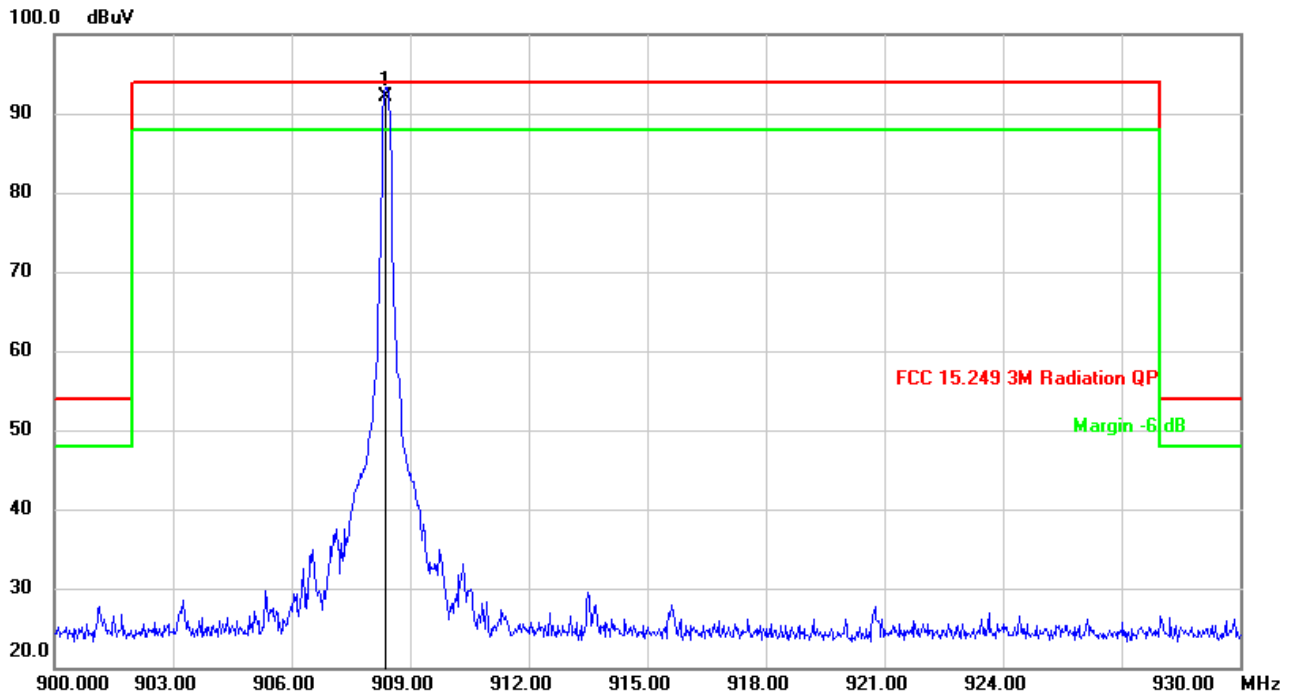


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	916.0200	95.16	-5.20	89.96	94.00	-4.04	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

**Alternative Relay**

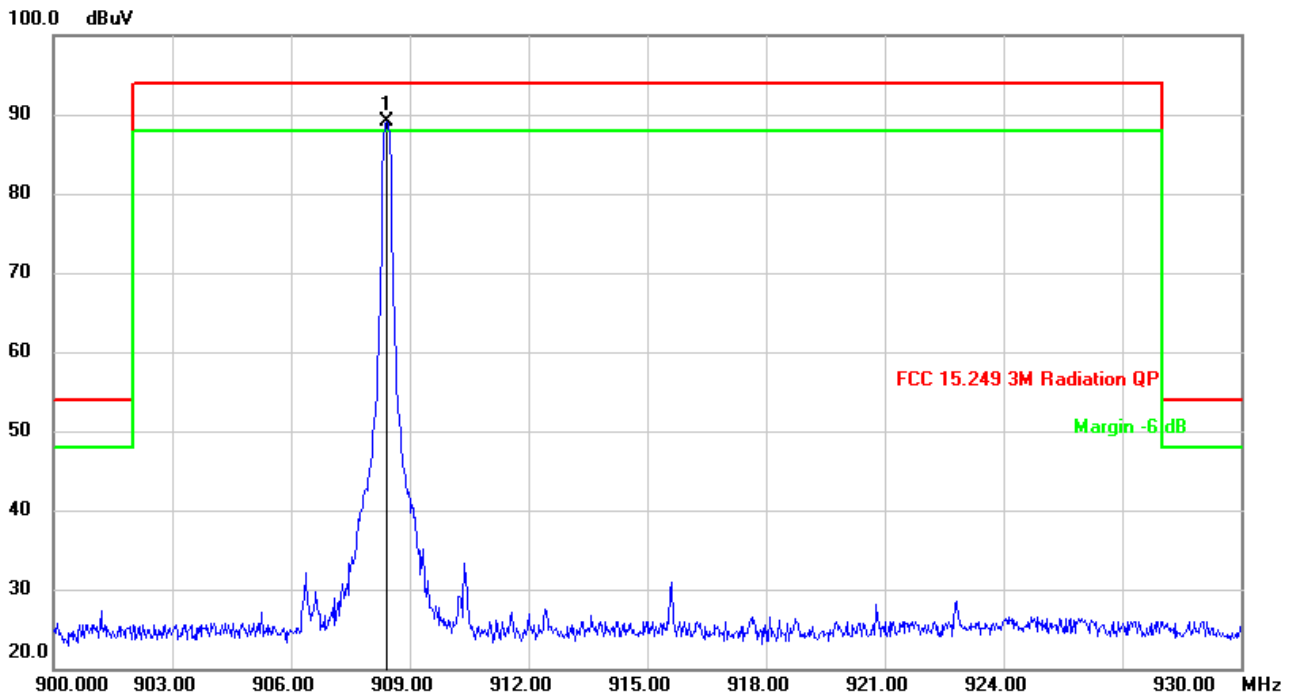
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	908.3700	97.25	-5.21	92.04	94.00	-1.96	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

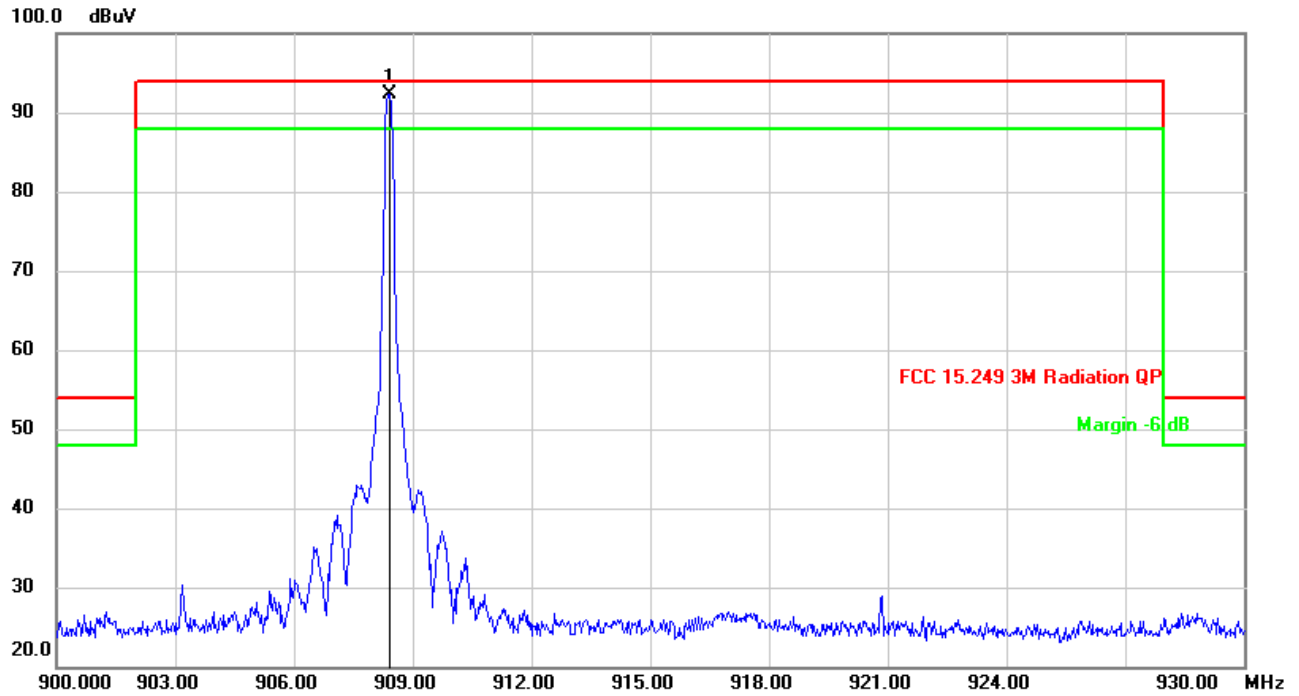
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOW CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	908.4300	94.21	-5.20	89.01	94.00	-4.99	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

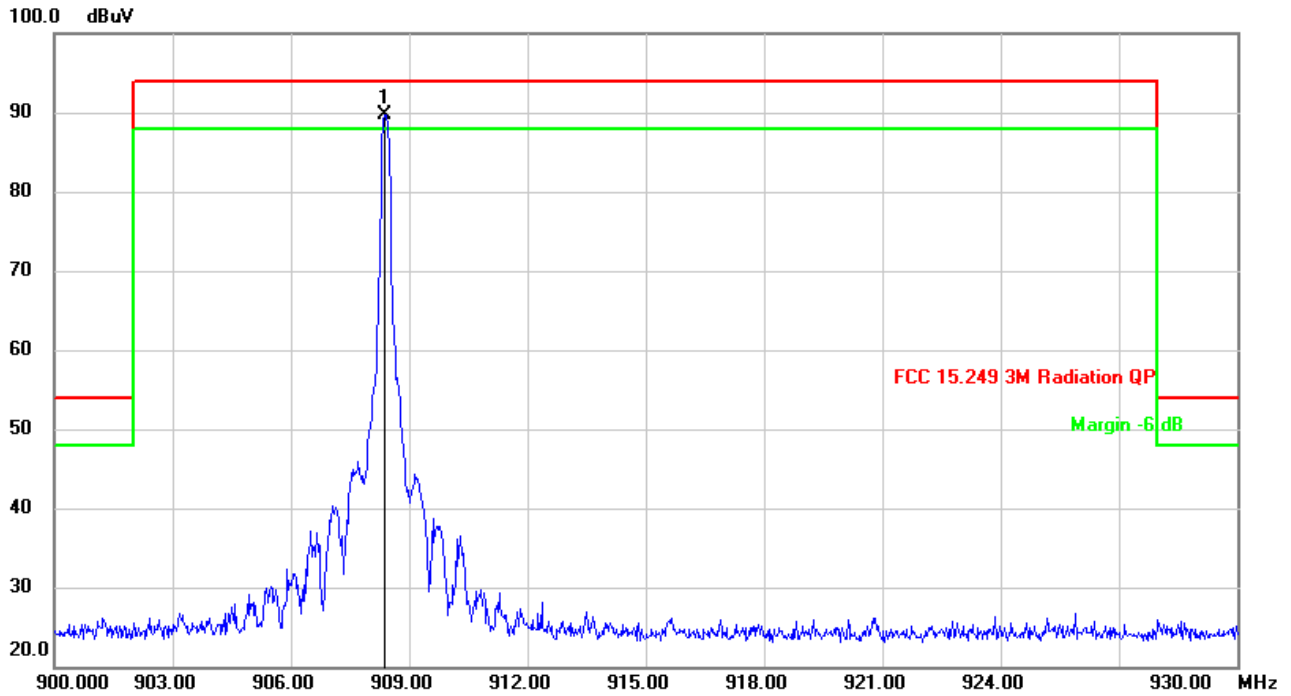
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (MIDDLE CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	908.4300	97.41	-5.20	92.21	94.00	-1.79	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

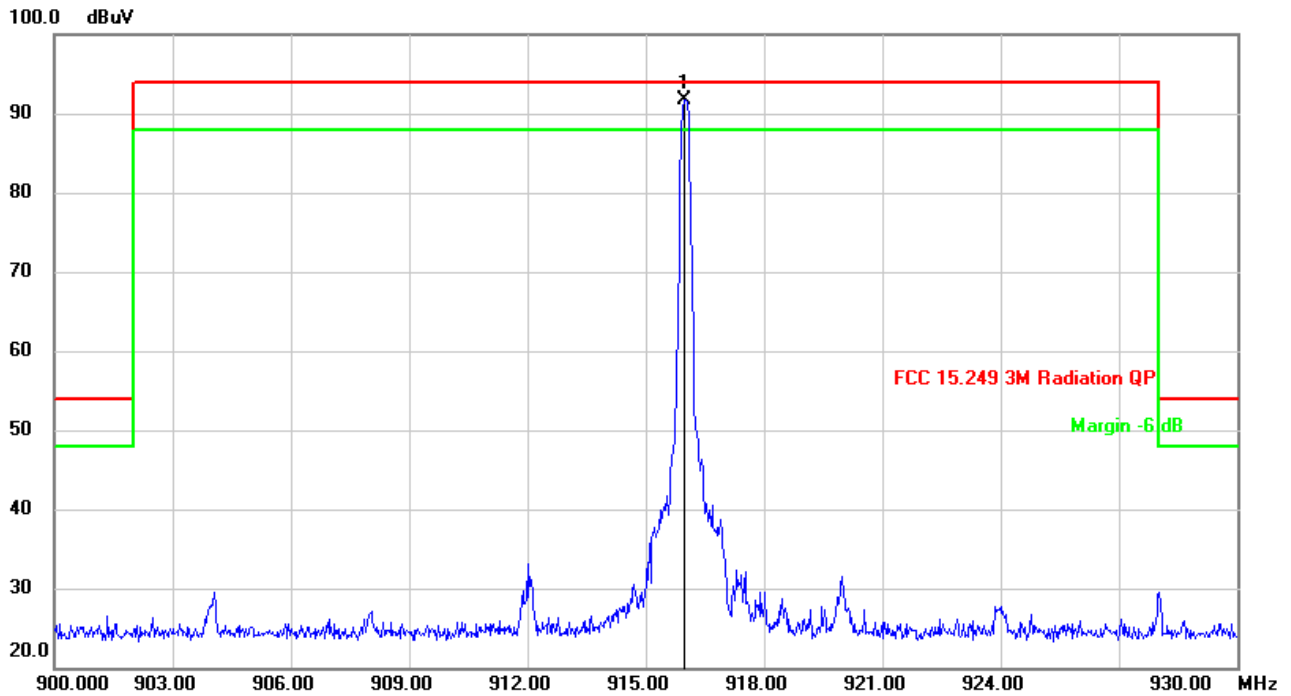
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (MIDDLE CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	908.3700	94.97	-5.20	89.77	94.00	-4.23	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

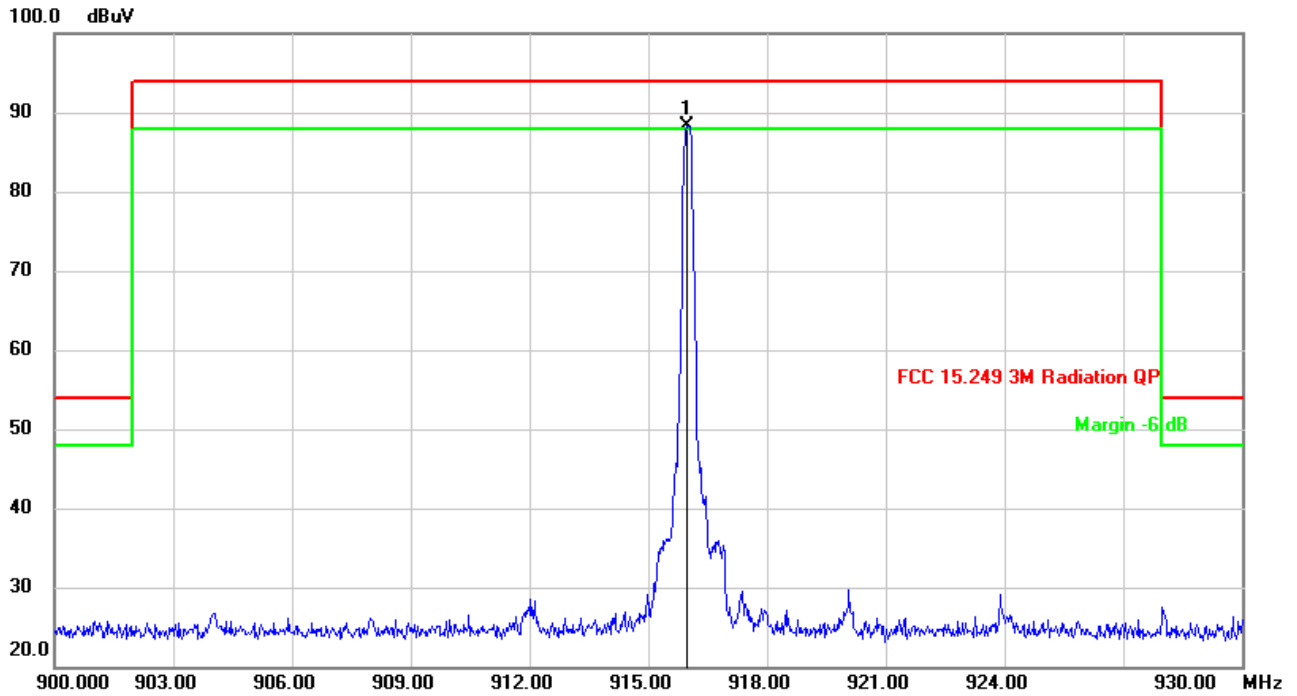
**FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	915.9600	96.92	-5.20	91.72	94.00	-2.28	QP

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.

**FIELD STRENGTH OF INTENTIONAL EMISSIONS (HIGH CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	915.9600	93.56	-5.20	88.36	94.00	-5.64	QP

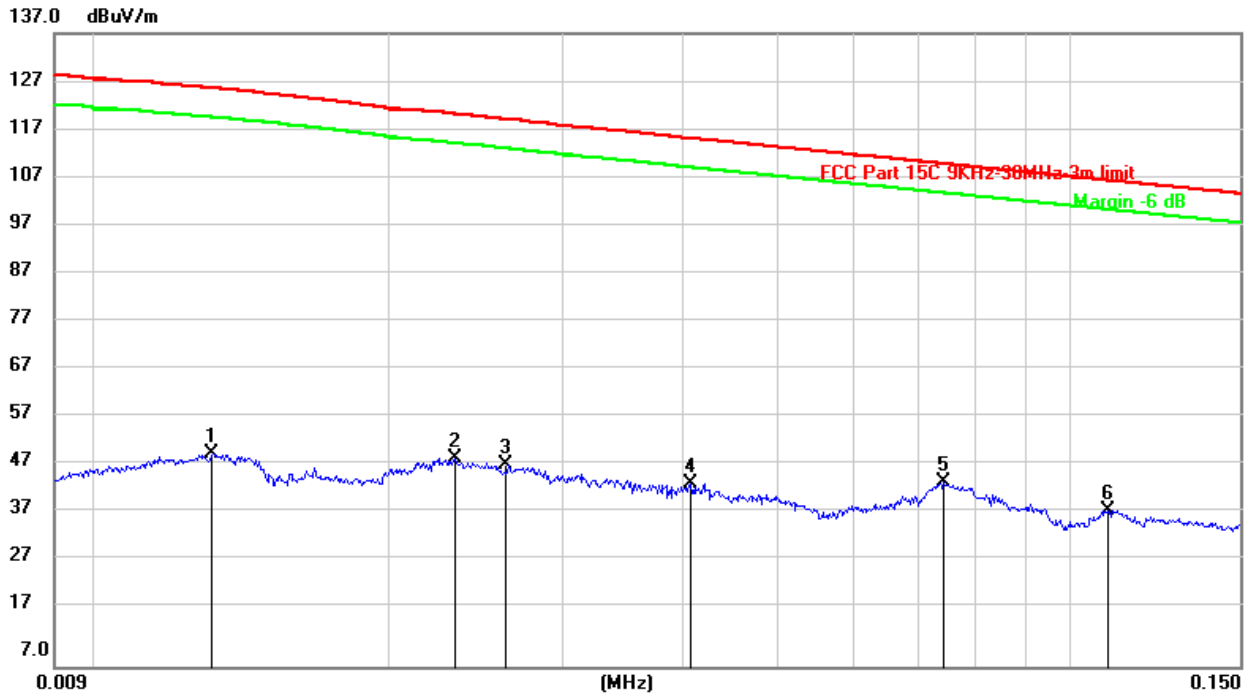
Note: 1. Measurement = Reading Level + Correct Factor.  
 2. QP detector.



### 8.3. SPURIOUS EMISSIONS BELOW 30M

#### Main Relay

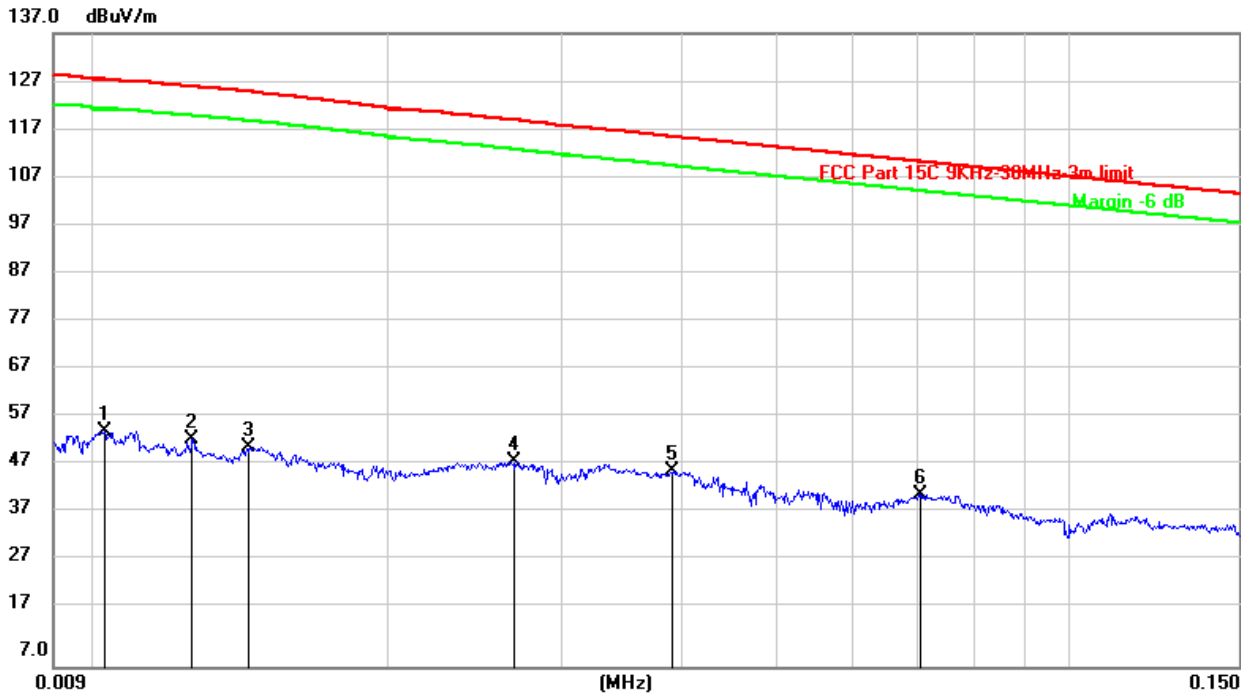
#### SPURIOUS EMISSIONS BELOW 150KHz (WORST-CASE LOW CHANNEL, HORIZONTAL)



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0131	30.42	20.24	50.66	125.73	-75.07	peak
2	0.0233	29.35	20.31	49.66	120.42	-70.76	peak
3	0.0263	28.25	20.31	48.56	119.36	-70.80	peak
4	0.0408	24.14	20.31	44.45	115.40	-70.95	peak
5	0.0742	24.67	20.31	44.98	110.21	-65.23	peak
6	0.1097	18.84	20.26	39.10	106.80	-67.70	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. Peak: Peak detector.

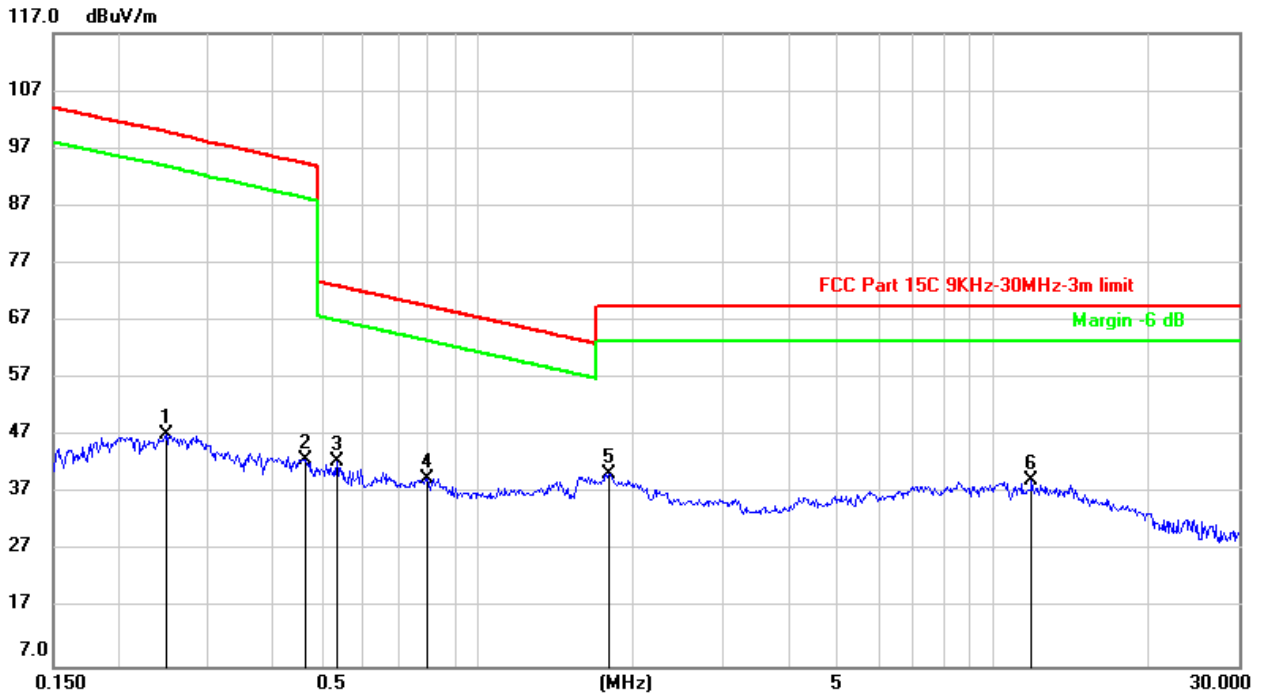
**SPURIOUS EMISSIONS BELOW 150KHz (WORST-CASE LOW CHANNEL, VERTICAL)**



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0102	35.15	20.21	55.36	127.48	-72.12	peak
2	0.0125	33.41	20.23	53.64	126.09	-72.45	peak
3	0.0143	31.69	20.25	51.94	125.01	-73.07	peak
4	0.0269	28.64	20.31	48.95	119.15	-70.20	peak
5	0.0391	26.76	20.31	47.07	115.78	-68.71	peak
6	0.0704	21.86	20.31	42.17	110.65	-68.48	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. Peak: Peak detector.

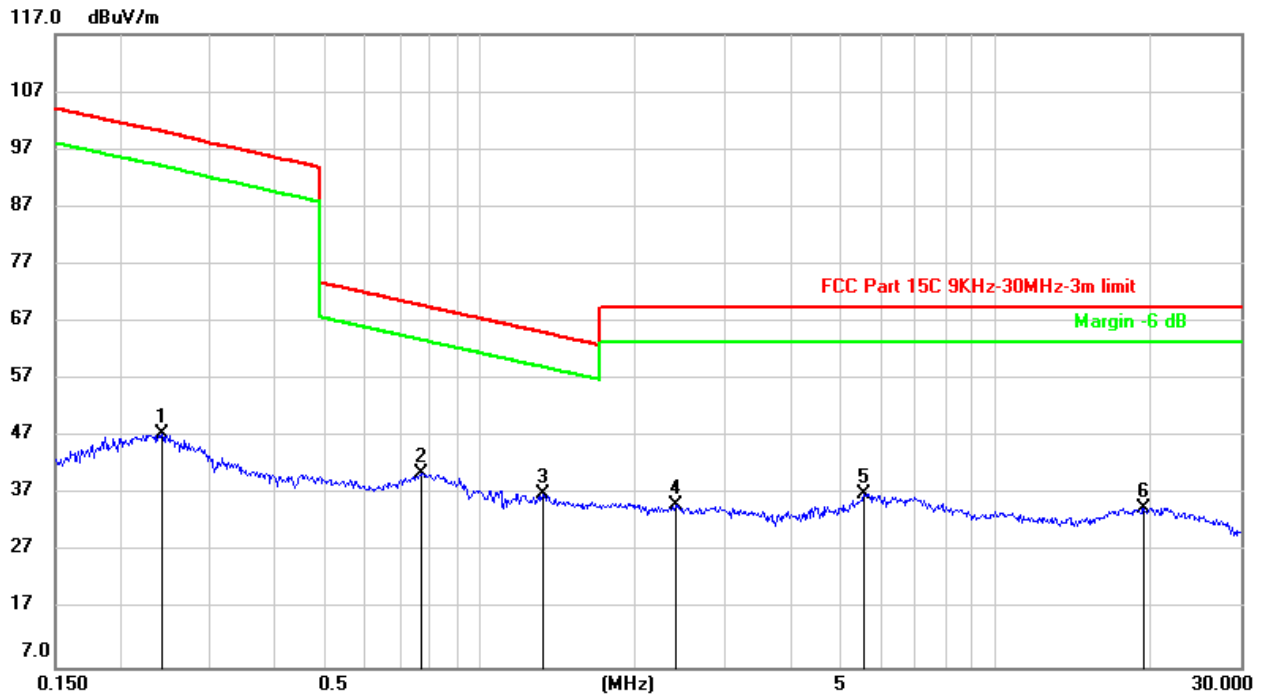
**SPURIOUS EMISSIONS BELOW 30MHz (WORST-CASE LOW CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2479	26.91	20.32	47.23	99.89	-52.66	peak
2	0.4637	22.77	20.25	43.02	94.31	-51.29	peak
3	0.5322	22.25	20.25	42.50	73.12	-30.62	peak
4	0.7960	19.25	20.36	39.61	69.59	-29.98	peak
5	1.8000	19.80	20.66	40.46	69.54	-29.08	peak
6	11.8696	18.18	21.01	39.19	69.54	-30.35	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. Peak: Peak detector.

**SPURIOUS EMISSIONS BELOW 30MHz (WORST-CASE LOW CHANNEL, VERTICAL)**



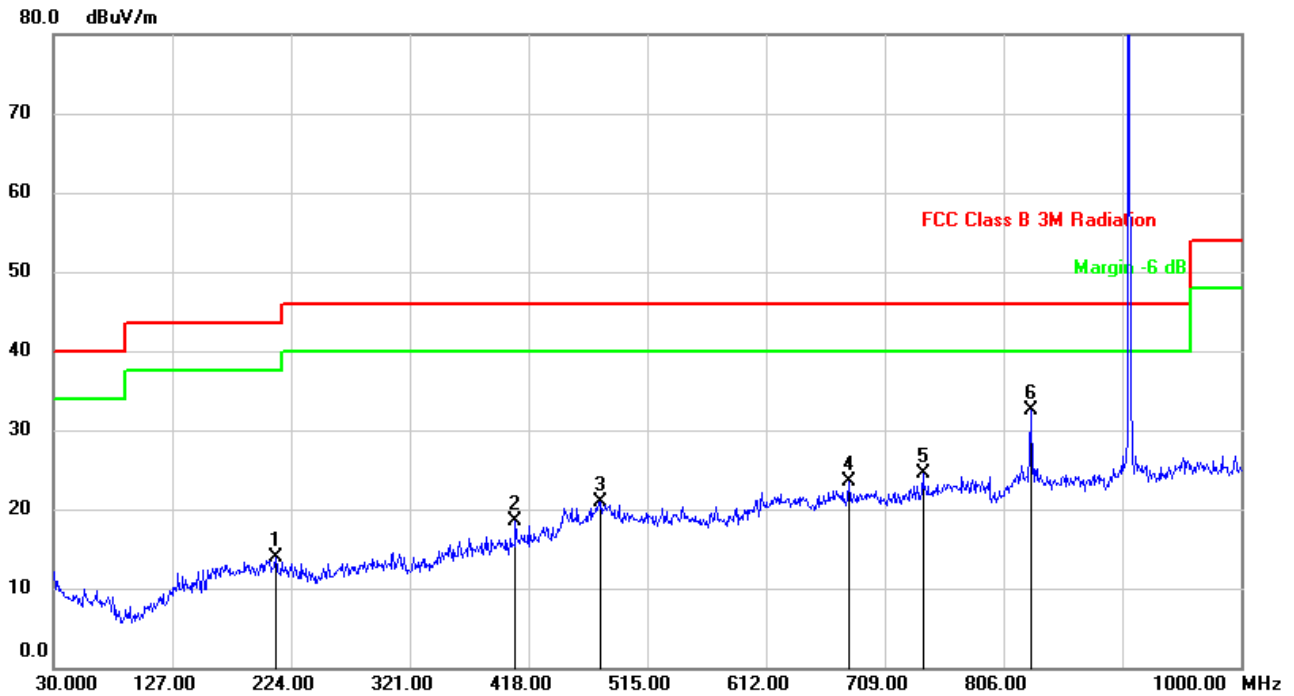
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2416	27.32	20.33	47.65	100.12	-52.47	peak
2	0.7669	20.34	20.36	40.70	69.92	-29.22	peak
3	1.3238	16.52	20.49	37.01	65.18	-28.17	peak
4	2.3961	14.41	20.80	35.21	69.54	-34.33	peak
5	5.5640	16.28	20.85	37.13	69.54	-32.41	peak
6	19.4283	13.71	21.03	34.74	69.54	-34.80	peak

Note: 1. Measurement = Reading Level + Correct Factor.  
 2. Peak: Peak detector.

### 8.4. SPURIOUS EMISSIONS BELOW 1 GHz

#### Main Relay

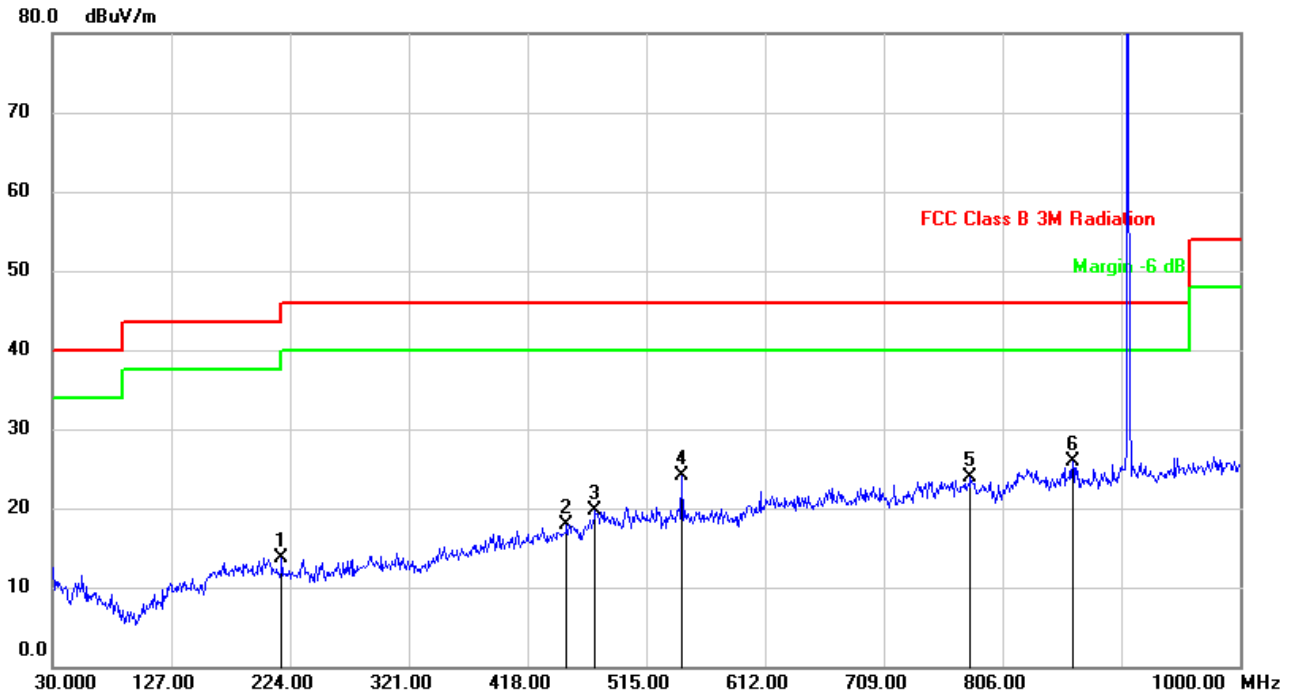
#### SPURIOUS EMISSIONS BELOW 1GHz (WORST-CASE LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	211.3900	30.53	-16.72	13.81	43.50	-29.69	QP
2	407.3299	31.67	-13.26	18.41	46.00	-27.59	QP
3	477.1700	32.50	-11.69	20.81	46.00	-25.19	QP
4	679.9000	32.63	-9.15	23.48	46.00	-22.52	QP
5	740.0400	32.64	-8.12	24.52	46.00	-21.48	QP
6	828.3100	38.36	-5.77	32.59	46.00	-13.41	QP

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.  
 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 BELOW 1GHz (WORST-CASE LOW CHANNEL, VERTICAL)**

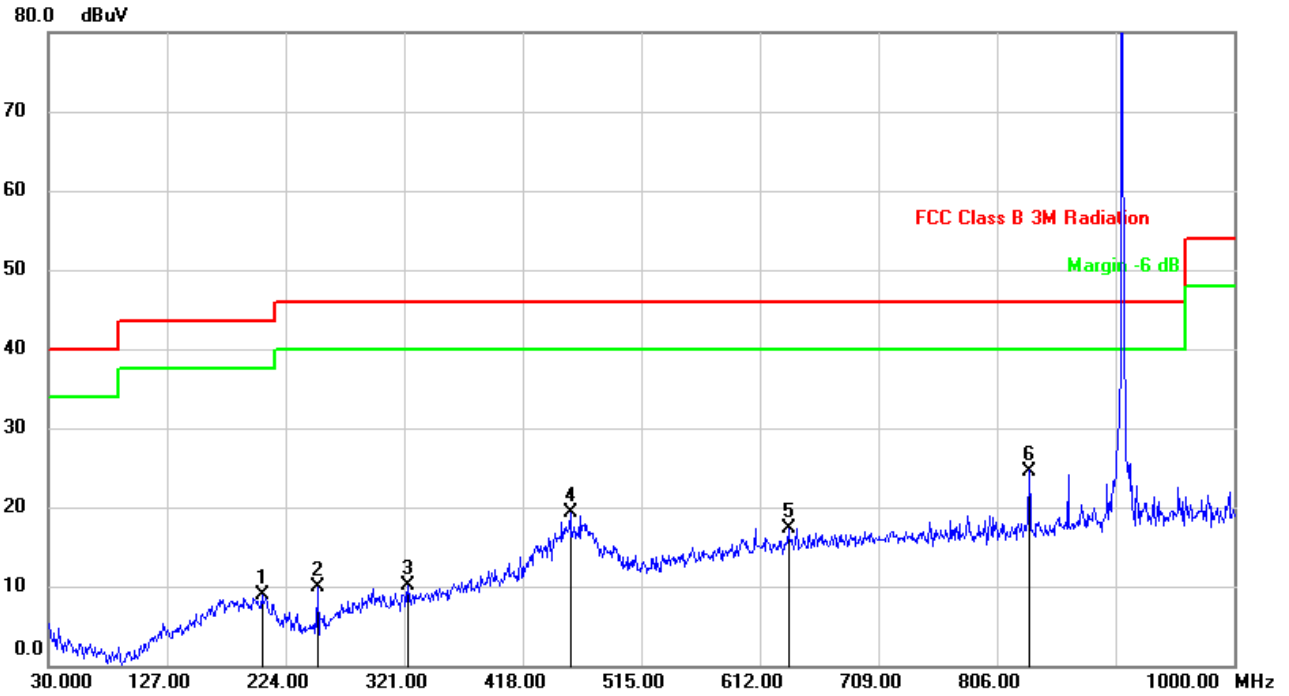


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	217.2100	30.63	-16.92	13.71	46.00	-32.29	QP
2	450.0100	30.76	-12.81	17.95	46.00	-28.05	QP
3	473.2900	31.75	-12.02	19.73	46.00	-26.27	QP
4	544.1000	34.49	-10.33	24.16	46.00	-21.84	QP
5	779.8100	31.19	-7.24	23.95	46.00	-22.05	QP
6	863.2300	32.04	-6.14	25.90	46.00	-20.10	QP

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.  
 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

**Alternative Relay**

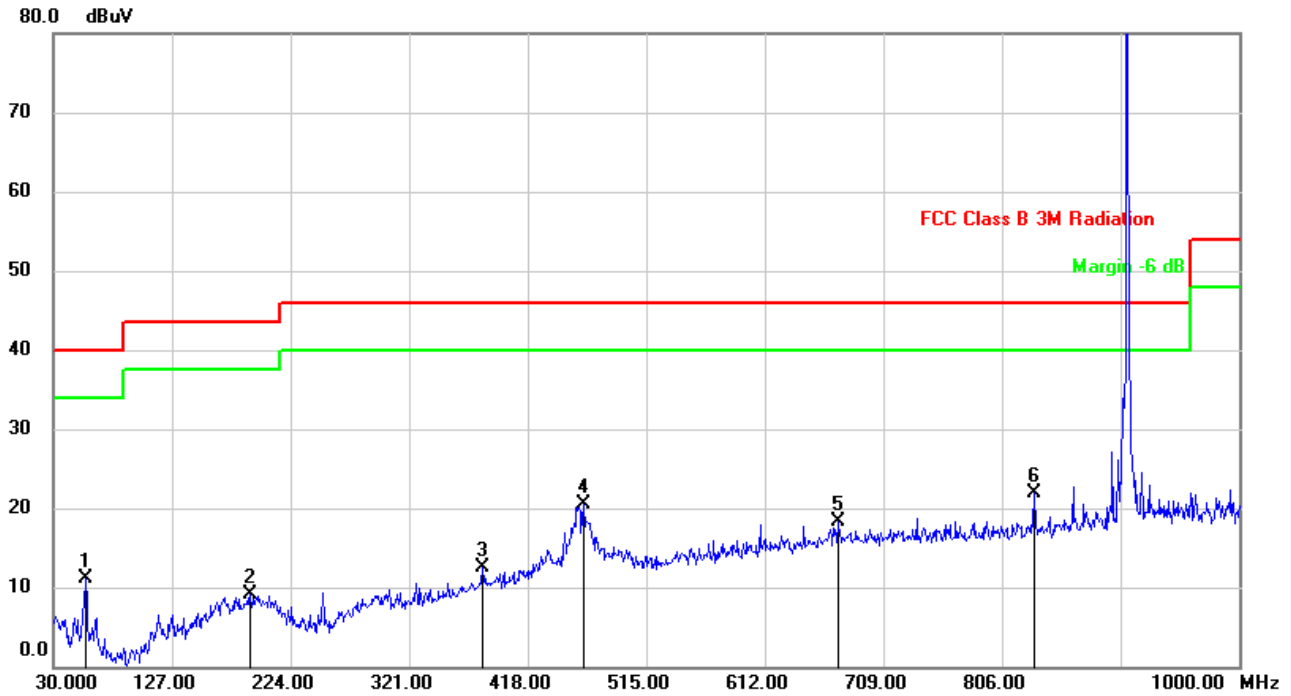
**SPURIOUS EMISSIONS BELOW 1GHZ (WORST-CASE LOW CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	204.6000	24.17	-15.28	8.89	43.50	-34.61	QP
2	250.1900	27.51	-17.70	9.81	46.00	-36.19	QP
3	323.9100	24.51	-14.47	10.04	46.00	-35.96	QP
4	456.8000	31.00	-11.71	19.29	46.00	-26.71	QP
5	635.2800	26.05	-8.70	17.35	46.00	-28.65	QP
6	832.1900	31.08	-6.48	24.60	46.00	-21.40	QP

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.  
 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 BELOW 1GHz (WORST-CASE LOW CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	56.1900	32.01	-20.89	11.12	40.00	-28.88	QP
2	191.0200	24.04	-14.98	9.06	43.50	-34.44	QP
3	381.1400	25.31	-12.90	12.41	46.00	-33.59	QP
4	463.5900	32.05	-11.61	20.44	46.00	-25.56	QP
5	672.1400	26.55	-8.24	18.31	46.00	-27.69	QP
6	832.1900	28.41	-6.48	21.93	46.00	-24.07	QP

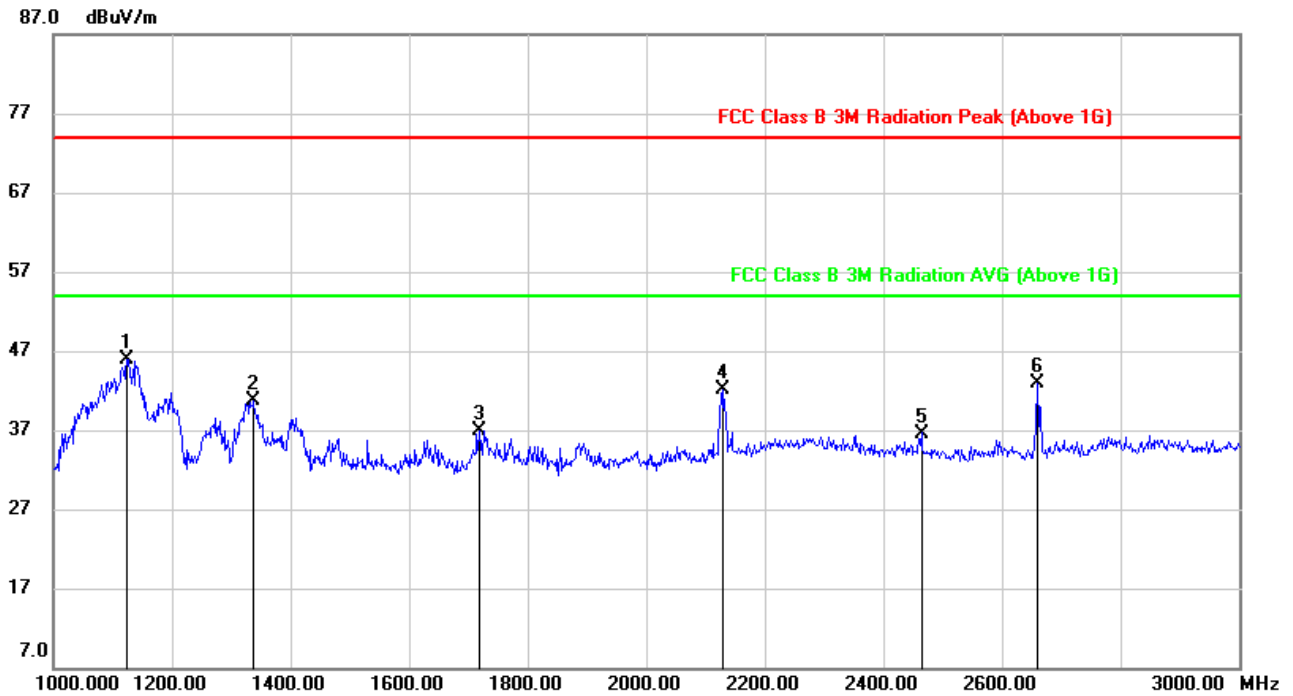
- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.  
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.  
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto



### 8.5. SPURIOUS EMISSIONS 1 ~ 3GHz

#### Main Relay

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



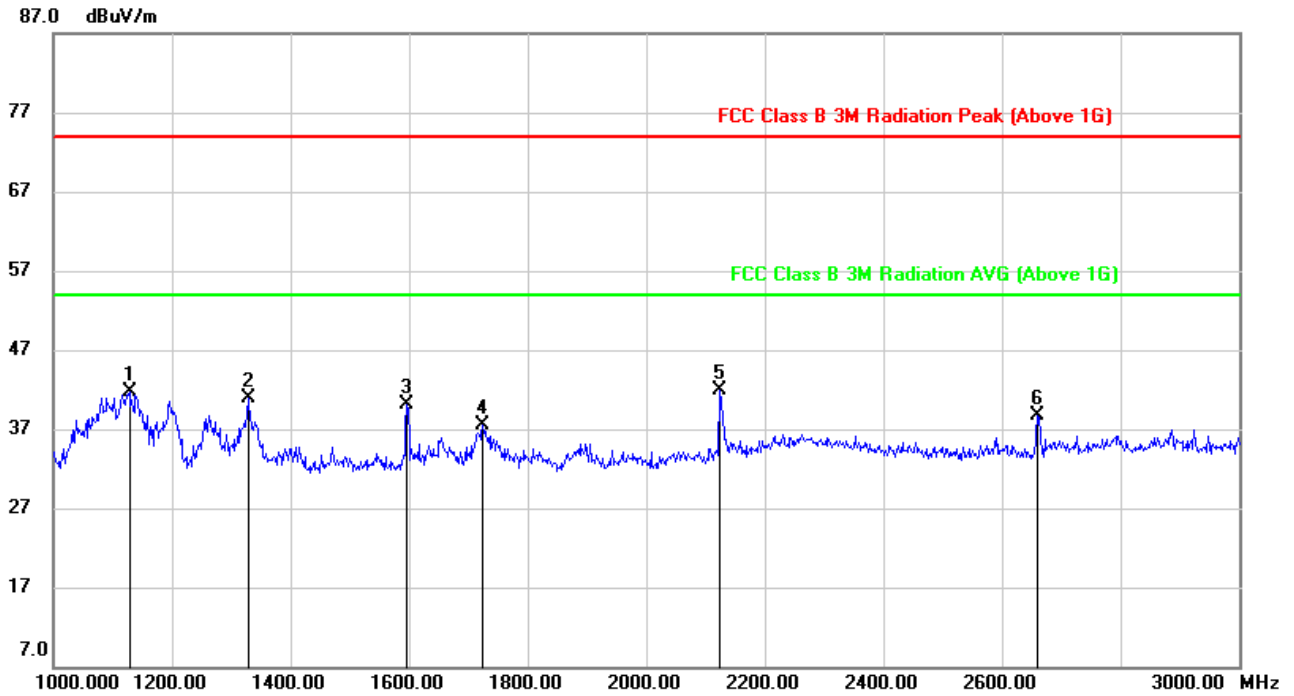
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1124.000	59.77	-13.79	45.98	74.00	-28.02	peak
2	1338.000	53.36	-12.73	40.63	74.00	-33.37	peak
3	1718.000	48.93	-12.05	36.88	74.00	-37.12	peak
4	2128.000	51.92	-9.84	42.08	74.00	-31.92	peak
5	2464.000	45.87	-9.27	36.60	74.00	-37.40	peak
6	2660.000	51.45	-8.52	42.93	74.00	-31.07	peak

Note: 1. Result = Reading + Correct Factor.

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

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

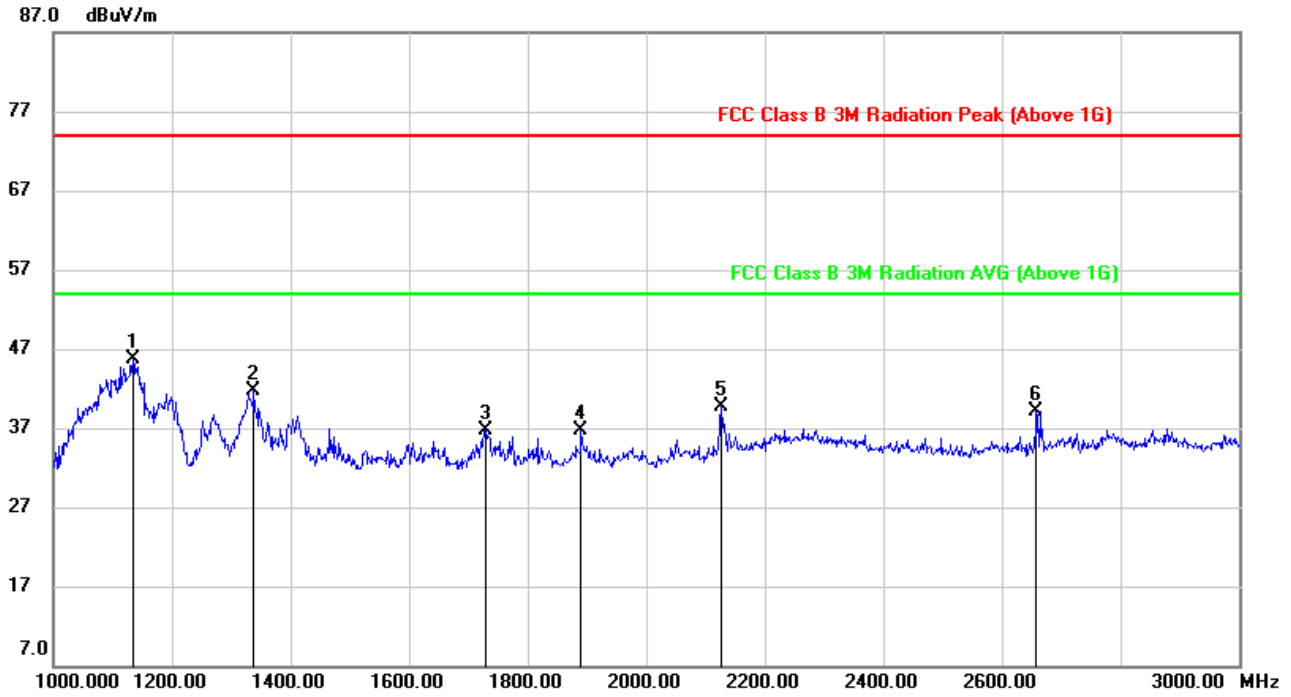
**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1128.000	55.67	-14.03	41.64	74.00	-32.36	peak
2	1328.000	53.73	-12.84	40.89	74.00	-33.11	peak
3	1596.000	52.84	-12.66	40.18	74.00	-33.82	peak
4	1724.000	49.54	-12.01	37.53	74.00	-36.47	peak
5	2124.000	51.82	-10.00	41.82	74.00	-32.18	peak
6	2660.000	47.36	-8.60	38.76	74.00	-35.24	peak

- Note: 1. Result = Reading + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

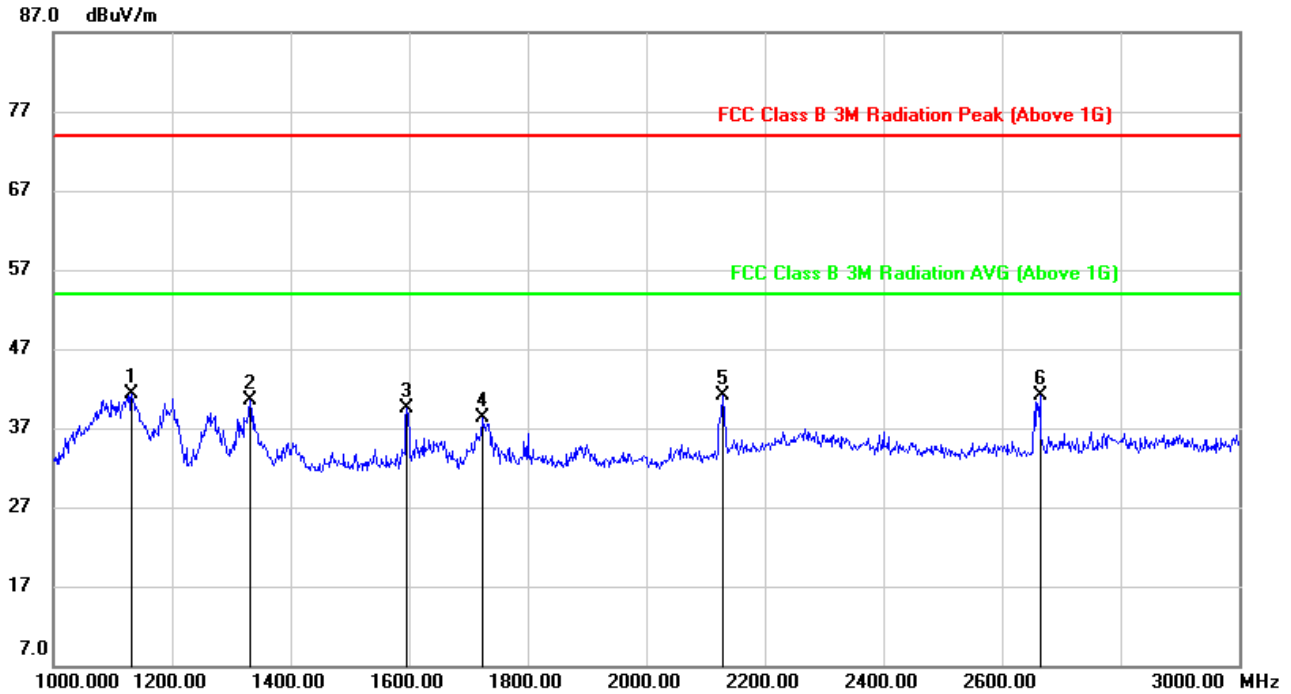
**HARMONICS AND SPURIOUS EMISSIONS (MIDDLE CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1134.000	59.43	-13.76	45.67	74.00	-28.33	peak
2	1338.000	54.37	-12.73	41.64	74.00	-32.36	peak
3	1730.000	48.68	-11.99	36.69	74.00	-37.31	peak
4	1890.000	48.25	-11.47	36.78	74.00	-37.22	peak
5	2126.000	49.51	-9.88	39.63	74.00	-34.37	peak
6	2658.000	47.73	-8.53	39.20	74.00	-34.80	peak

- Note: 1. Result = Reading + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

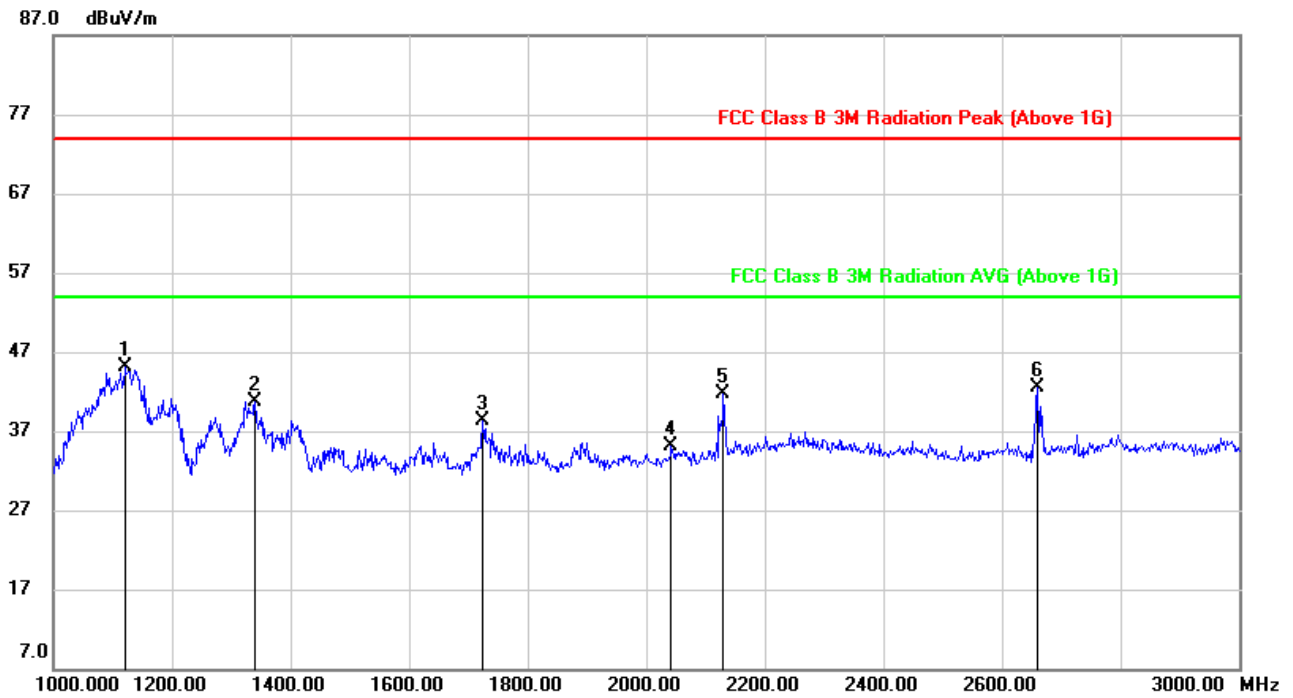
**HARMONICS AND SPURIOUS EMISSIONS (MIDDLE CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1132.000	55.36	-14.00	41.36	74.00	-32.64	peak
2	1332.000	53.40	-12.82	40.58	74.00	-33.42	peak
3	1596.000	52.11	-12.66	39.45	74.00	-34.55	peak
4	1724.000	50.27	-12.01	38.26	74.00	-35.74	peak
5	2128.000	51.07	-9.94	41.13	74.00	-32.87	peak
6	2664.000	49.72	-8.58	41.14	74.00	-32.86	peak

- Note: 1. Result = Reading + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

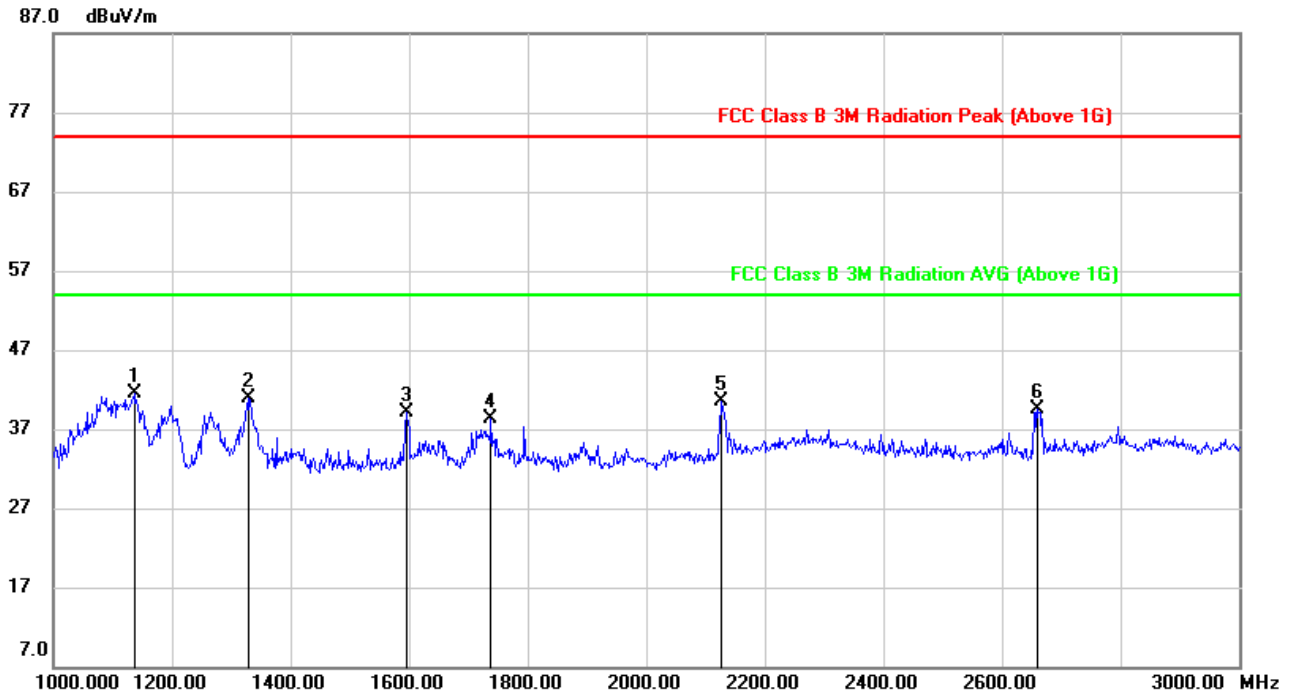
**HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1120.000	58.85	-13.81	45.04	74.00	-28.96	peak
2	1340.000	53.53	-12.73	40.80	74.00	-33.20	peak
3	1724.000	50.29	-12.01	38.28	74.00	-35.72	peak
4	2042.000	45.92	-10.88	35.04	74.00	-38.96	peak
5	2130.000	51.43	-9.81	41.62	74.00	-32.38	peak
6	2660.000	51.00	-8.52	42.48	74.00	-31.52	peak

- Note: 1. Result = Reading + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1136.000	55.48	-13.98	41.50	74.00	-32.50	peak
2	1328.000	53.69	-12.84	40.85	74.00	-33.15	peak
3	1596.000	51.86	-12.66	39.20	74.00	-34.80	peak
4	1738.000	50.17	-11.95	38.22	74.00	-35.78	peak
5	2126.000	50.39	-9.98	40.41	74.00	-33.59	peak
6	2660.000	48.12	-8.60	39.52	74.00	-34.48	peak

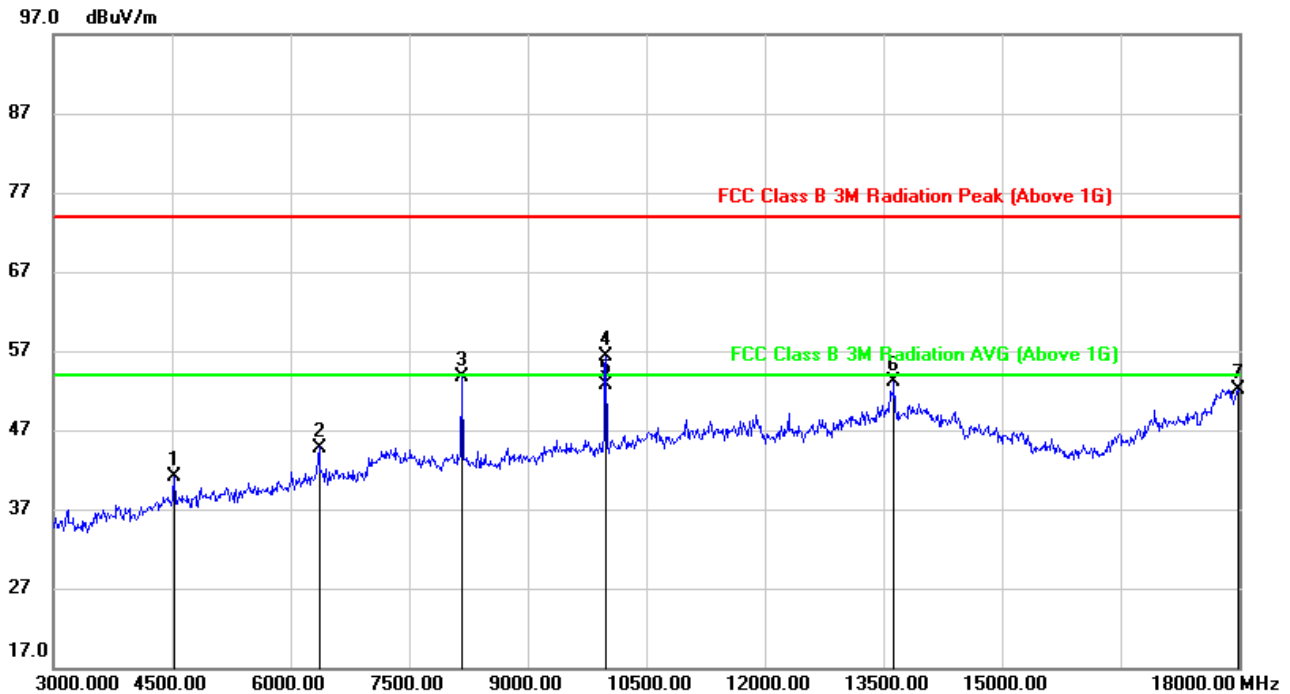
- Note: 1. Result = Reading + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

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

## 8.6. SPURIOUS EMISSIONS 3G~ 18GHz

### Main Relay

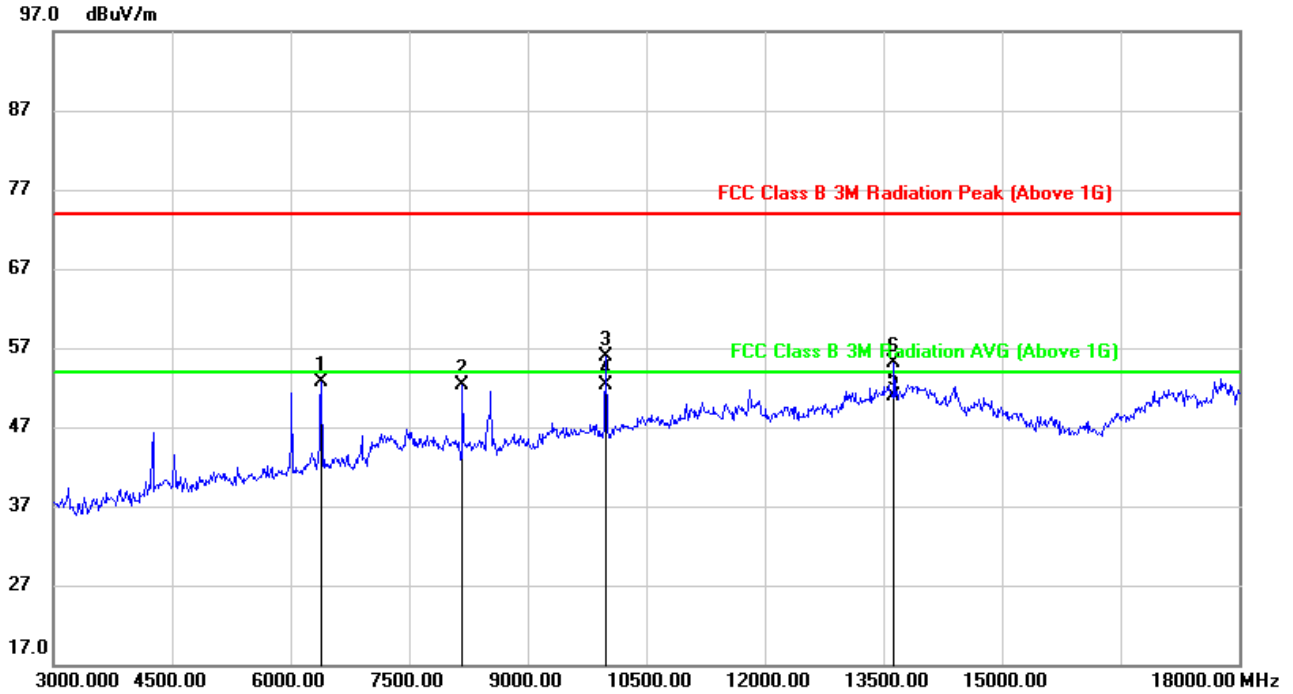
#### SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4530.000	43.36	-2.20	41.16	74.00	-32.84	peak
2	6360.000	41.55	3.25	44.80	74.00	-29.20	peak
3	8160.000	46.76	7.02	53.78	74.00	-20.22	peak
4	9990.000	45.98	10.39	56.37	74.00	-17.63	peak
5	9990.000	42.39	10.39	52.78	54.00	-1.22	AVG
6	13635.000	34.75	18.42	53.17	74.00	-20.83	peak
7	17985.000	27.35	24.81	52.16	74.00	-21.84	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.

**SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)**

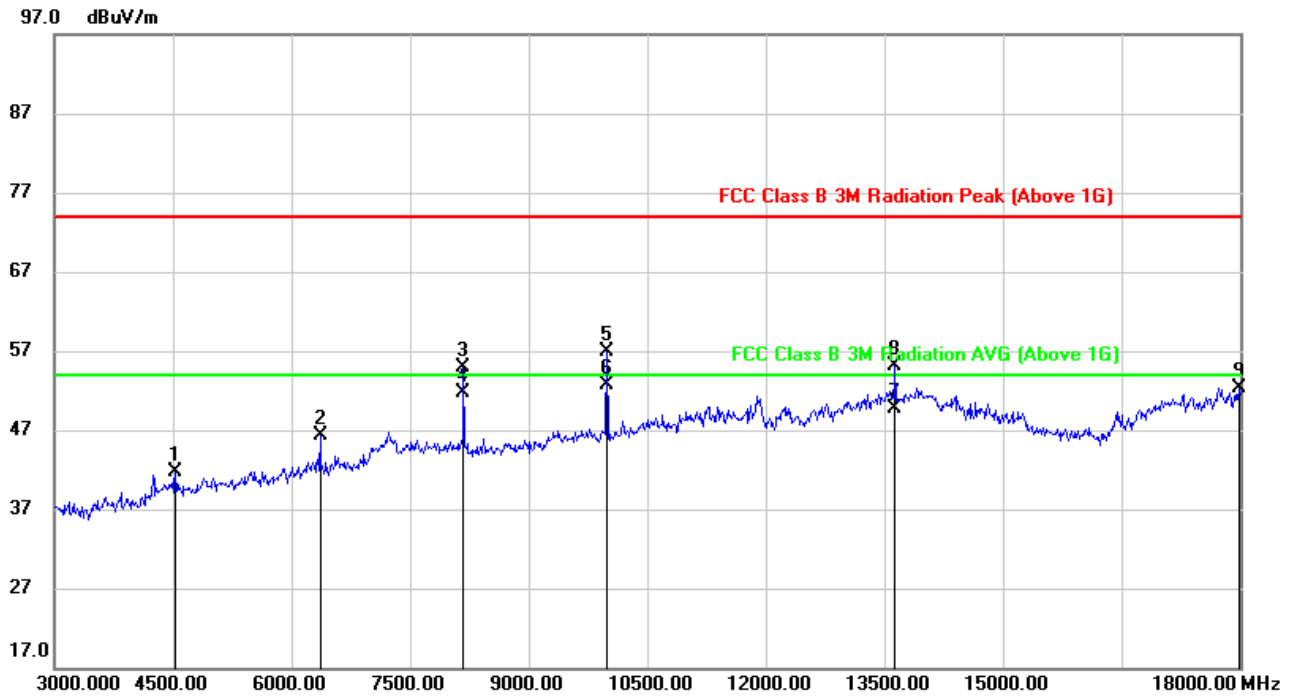


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6390.000	48.01	4.73	52.74	74.00	-21.26	peak
2	8175.000	43.64	8.75	52.39	74.00	-21.61	peak
3	9990.000	43.82	12.15	55.97	74.00	-18.03	peak
4	9992.258	40.11	12.15	52.26	54.00	-1.74	AVG
5	13625.989	30.43	20.56	50.99	54.00	-3.01	AVG
6	13635.000	34.49	20.61	55.10	74.00	-18.90	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.



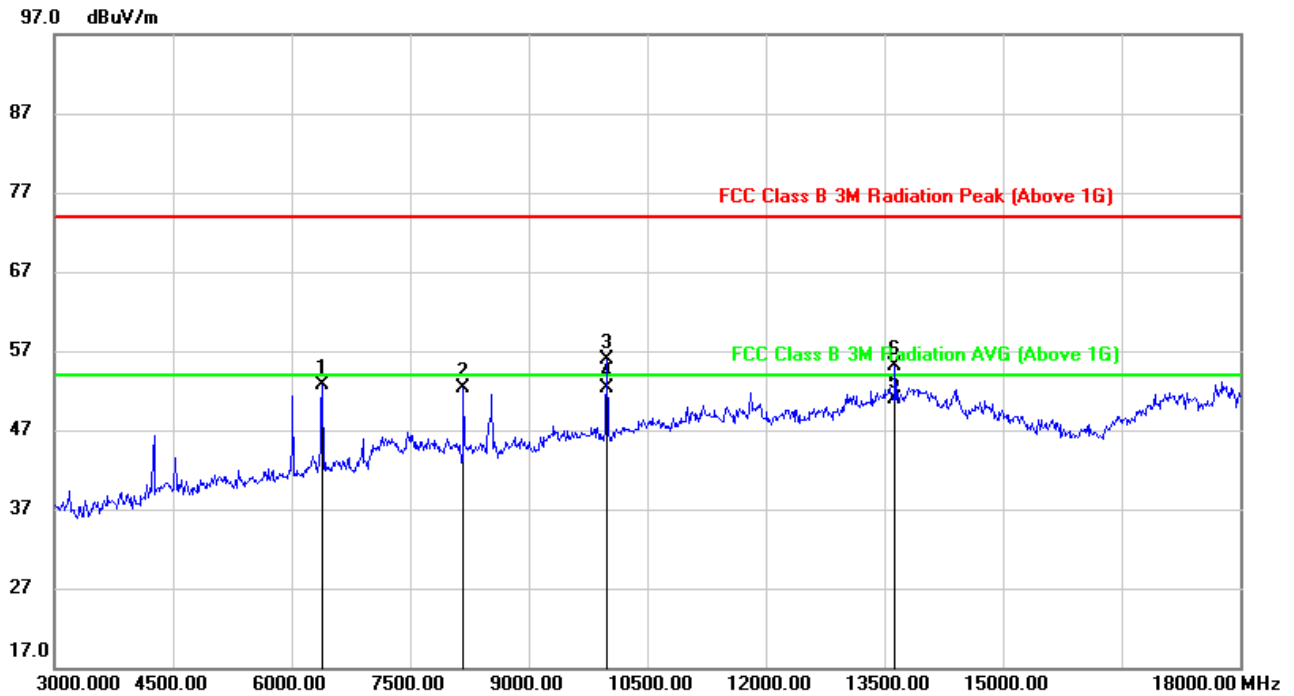
**SPURIOUS EMISSIONS (MIDDLE CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4530.000	42.57	-0.80	41.77	74.00	-32.23	peak
2	6360.000	41.65	4.64	46.29	74.00	-27.71	peak
3	8175.000	46.13	8.75	54.88	74.00	-19.12	peak
4	8175.759	42.88	8.76	51.64	54.00	-2.36	AVG
5	9990.000	44.91	12.03	56.94	74.00	-17.06	peak
6	9992.597	40.69	12.03	52.72	54.00	-1.28	AVG
7	13626.288	29.31	20.49	49.80	54.00	-4.20	AVG
8	13635.000	34.65	20.46	55.11	74.00	-18.89	peak
9	17985.000	25.26	27.05	52.31	74.00	-21.69	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.

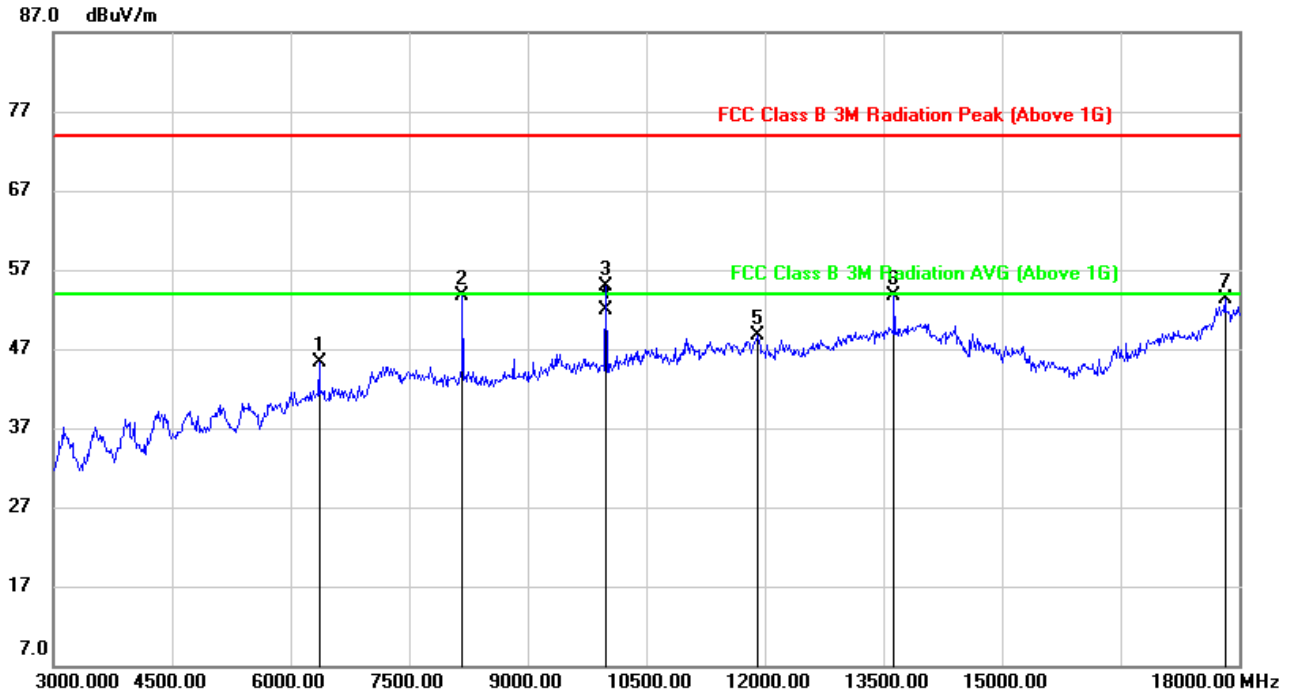
**SPURIOUS EMISSIONS (MIDDLE CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6390.000	48.01	4.73	52.74	74.00	-21.26	peak
2	8175.000	43.64	8.75	52.39	74.00	-21.61	peak
3	9990.000	43.82	12.15	55.97	74.00	-18.03	peak
4	9992.258	40.11	12.15	52.26	54.00	-1.74	AVG
5	13625.989	30.43	20.56	50.99	54.00	-3.01	AVG
6	13635.000	34.49	20.61	55.10	74.00	-18.90	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.

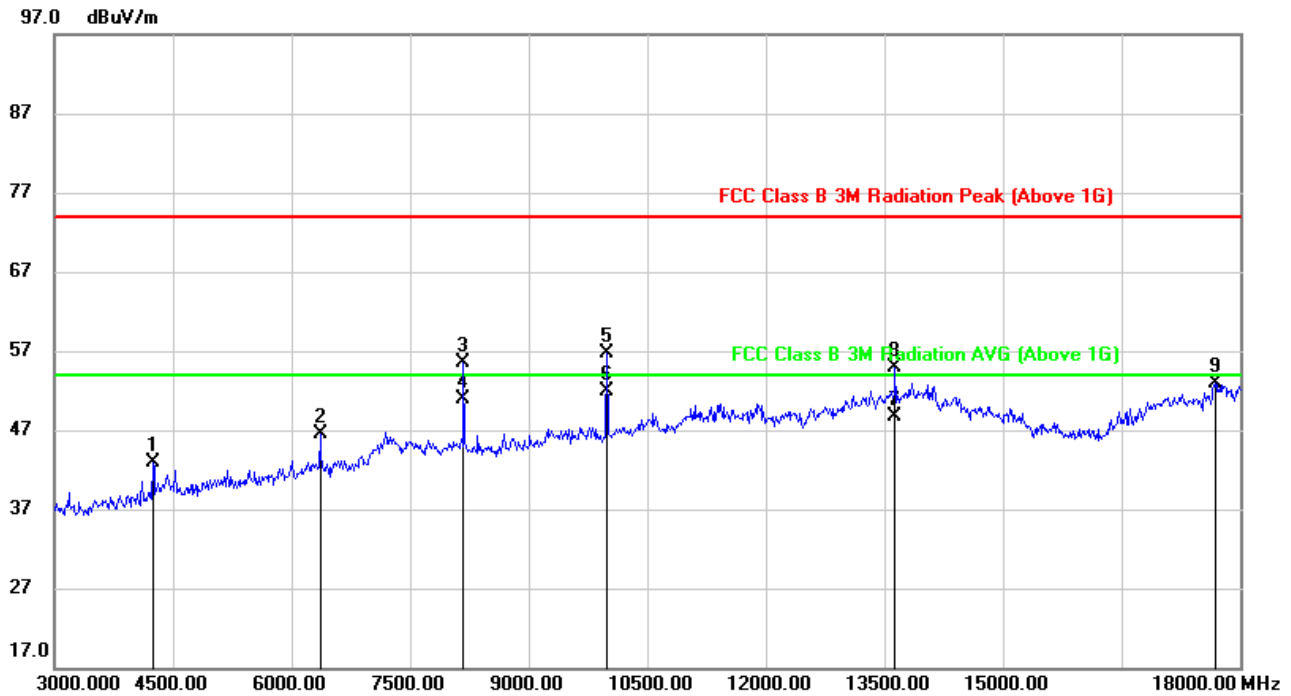
**SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6360.000	42.07	3.25	45.32	74.00	-28.68	peak
2	8175.000	46.52	7.10	53.62	74.00	-20.38	peak
3	9990.000	44.55	10.39	54.94	74.00	-19.06	peak
4	9992.358	41.60	10.39	51.99	54.00	-2.01	AVG
5	11910.000	33.64	15.09	48.73	74.00	-25.27	peak
6	13635.000	35.21	18.42	53.63	74.00	-20.37	peak
7	17820.000	28.96	24.25	53.21	74.00	-20.79	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.

**SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4245.000	44.90	-2.02	42.88	74.00	-31.12	peak
2	6360.000	41.77	4.64	46.41	74.00	-27.59	peak
3	8175.000	46.74	8.75	55.49	74.00	-18.51	peak
4	8175.620	42.18	8.76	50.94	54.00	-3.06	AVG
5	9990.000	44.69	12.03	56.72	74.00	-17.28	peak
6	9992.298	39.96	12.03	51.99	54.00	-2.01	AVG
7	13625.969	28.14	20.50	48.64	54.00	-5.36	AVG
8	13635.000	34.52	20.46	54.98	74.00	-19.02	peak
9	17685.000	27.60	25.38	52.98	74.00	-21.02	peak

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.  
 4. AVG: VBW=1/Ton where: ton is transmit duration.  
 5. For transmit duration, please refer to clause 7.1.

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

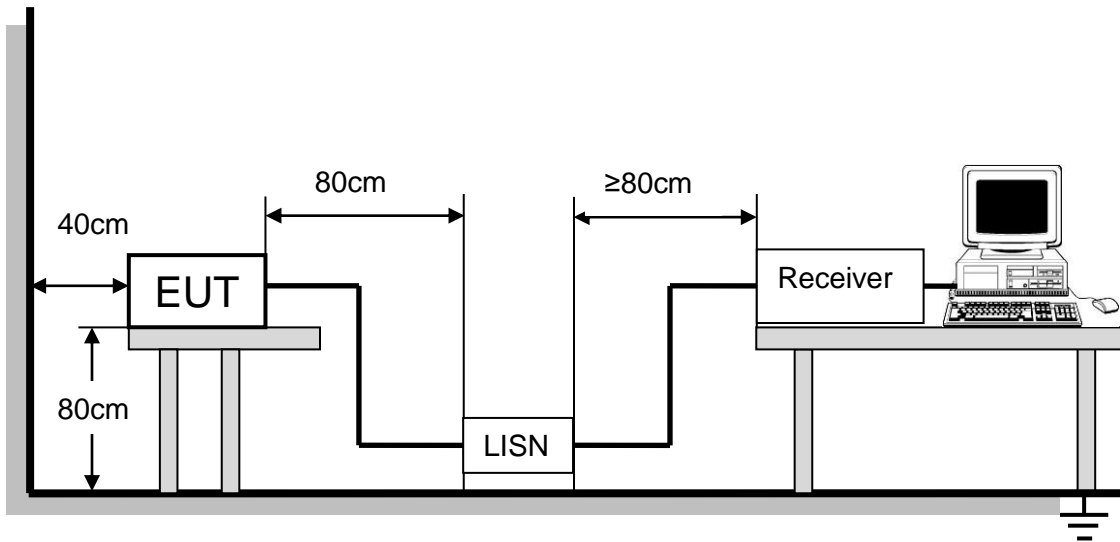
## 9. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

Please refer to FCC §15.207 (a) and RSS-Gen Clause 8.8.

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

### TEST SETUP AND PROCEDURE



The EUT is put on a table of non-conducting material that is 80mm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

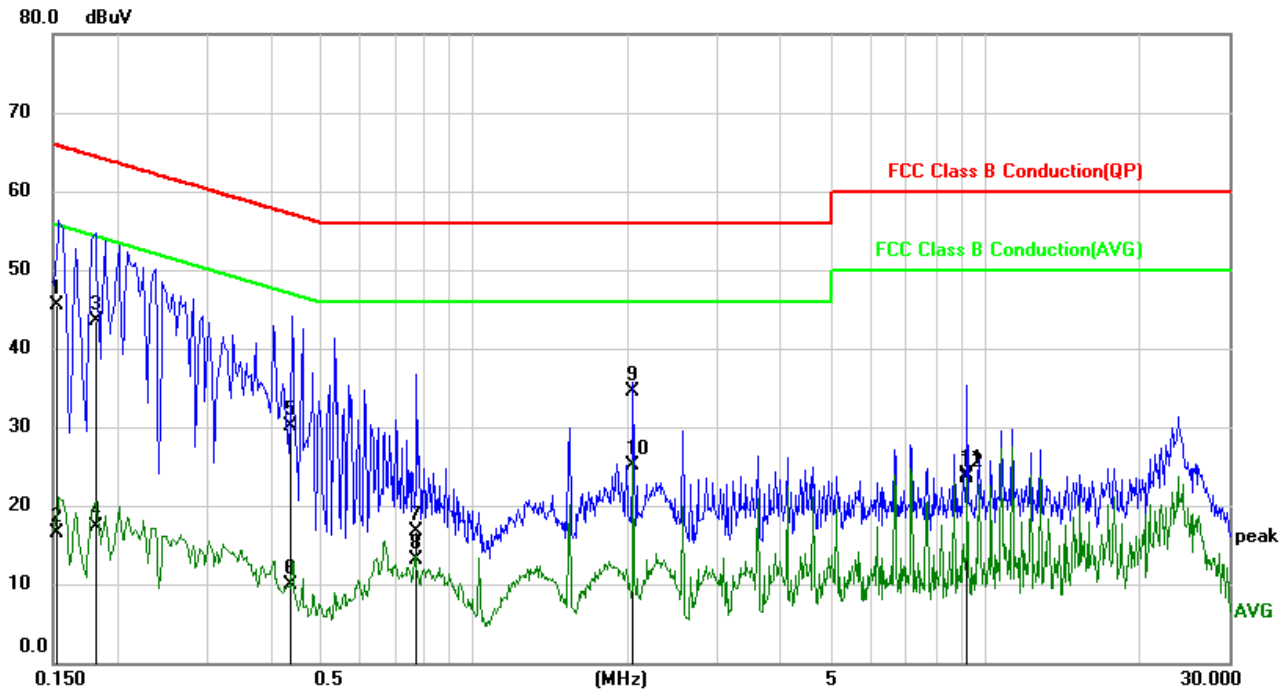
### TEST ENVIRONMENT

Temperature	24.5°C	Relative Humidity	52%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

**Main Relay**

**TEST RESULTS (MID CHANNEL, WORST-CASE CONFIGURATION)**

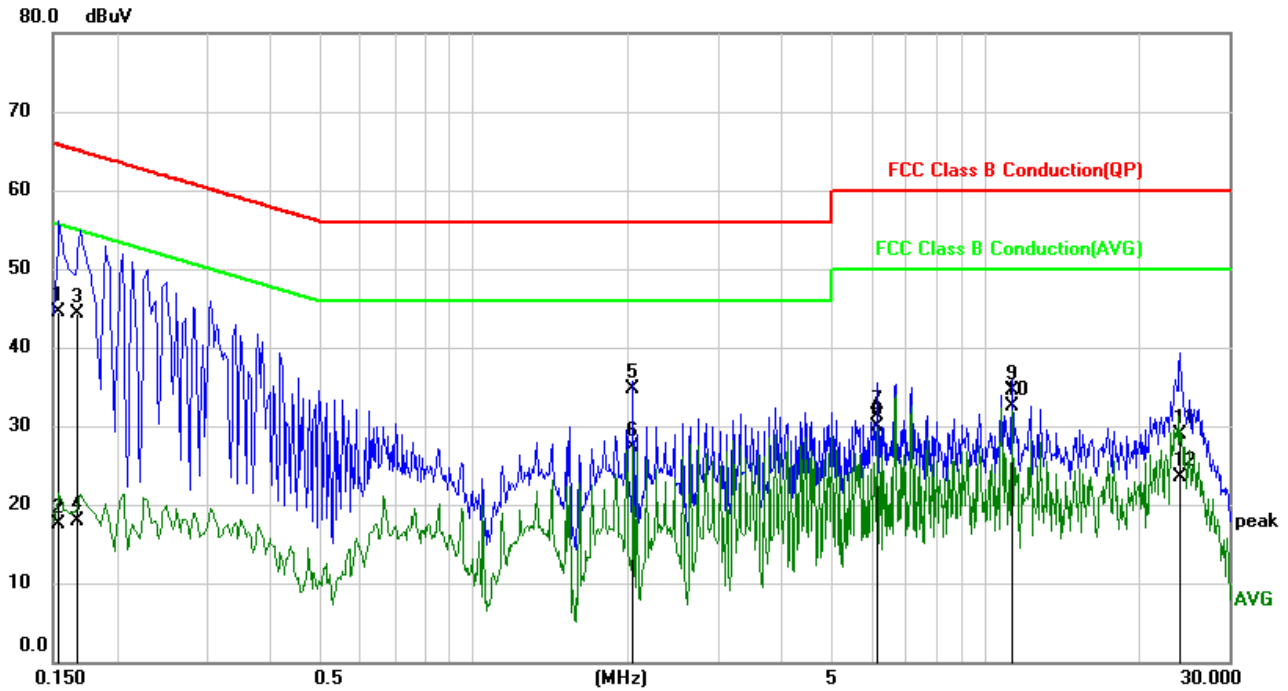
**LINE N RESULTS**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1517	35.96	9.62	45.58	65.91	-20.33	QP
2	0.1517	6.94	9.62	16.56	55.91	-39.35	AVG
3	0.1819	33.84	9.62	43.46	64.40	-20.94	QP
4	0.1819	7.69	9.62	17.31	54.40	-37.09	AVG
5	0.4371	20.39	9.63	30.02	57.12	-27.10	QP
6	0.4371	0.30	9.63	9.93	47.12	-37.19	AVG
7	0.7710	7.13	9.63	16.76	56.00	-39.24	QP
8	0.7710	3.38	9.63	13.01	46.00	-32.99	AVG
9	2.0499	24.76	9.65	34.41	56.00	-21.59	QP
10	2.0499	15.47	9.65	25.12	46.00	-20.88	AVG
11	9.2245	13.95	10.04	23.99	60.00	-36.01	QP
12	9.2245	13.44	10.04	23.48	50.00	-26.52	AVG

- Note: 1. Result = Reading +Correct Factor.  
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).  
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

**LINE L RESULTS**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1539	34.81	9.64	44.45	65.79	-21.34	QP
2	0.1539	7.81	9.64	17.45	55.79	-38.34	AVG
3	0.1669	34.63	9.63	44.26	65.11	-20.85	QP
4	0.1669	8.21	9.63	17.84	55.11	-37.27	AVG
5	2.0503	24.95	9.66	34.61	56.00	-21.39	QP
6	2.0503	17.55	9.66	27.21	46.00	-18.79	AVG
7	6.1512	21.49	9.76	31.25	60.00	-28.75	QP
8	6.1512	20.10	9.76	29.86	50.00	-20.14	AVG
9	11.2771	24.46	10.04	34.50	60.00	-25.50	QP
10	11.2771	22.50	10.04	32.54	50.00	-17.46	AVG
11	23.9995	19.05	9.90	28.95	60.00	-31.05	QP
12	23.9995	13.58	9.90	23.48	50.00	-26.52	AVG

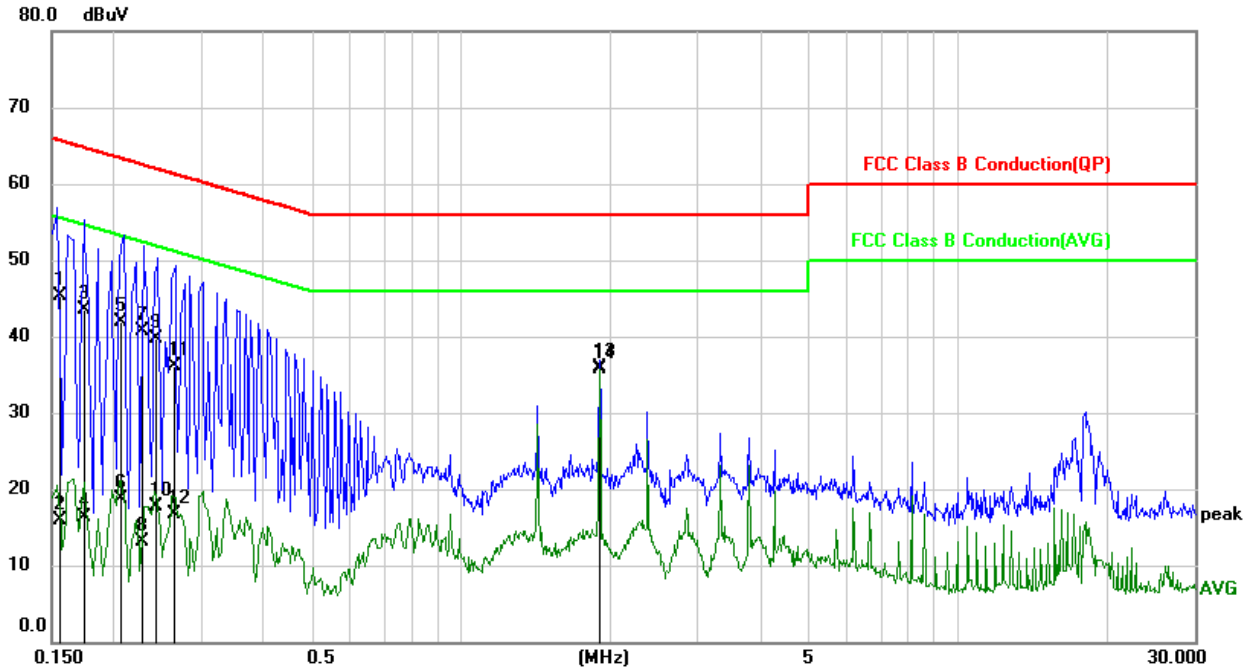
- Note: 1. Result = Reading +Correct Factor.  
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).  
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

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

**Alternative Relay**

**TEST RESULTS (MID CHANNEL, WORST-CASE CONFIGURATION)**

**LINE N RESULTS**

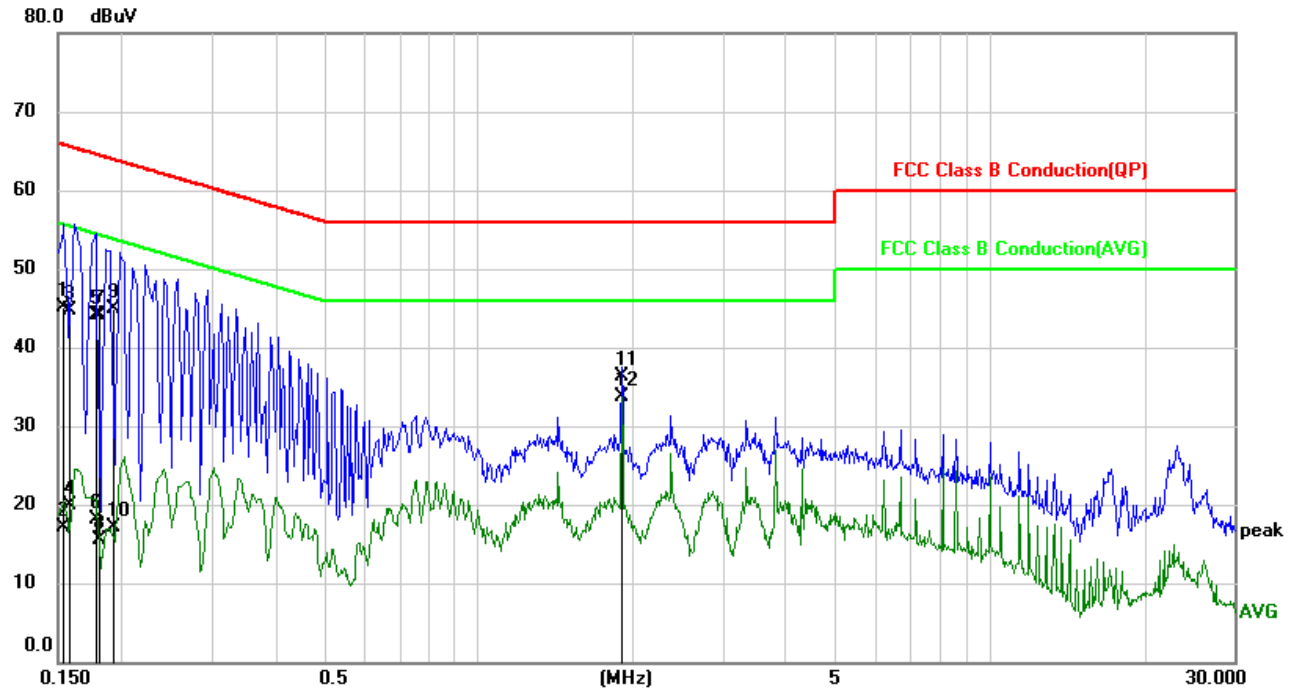


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1559	35.61	9.62	45.23	65.68	-20.45	QP
2	0.1559	6.24	9.62	15.86	55.68	-39.82	AVG
3	0.1737	33.96	9.62	43.58	64.78	-21.20	QP
4	0.1737	6.74	9.62	16.36	54.78	-38.42	AVG
5	0.2065	32.24	9.62	41.86	63.34	-21.48	QP
6	0.2065	9.08	9.62	18.70	53.34	-34.64	AVG
7	0.2269	31.14	9.63	40.77	62.56	-21.79	QP
8	0.2269	3.40	9.63	13.03	52.56	-39.53	AVG
9	0.2421	30.14	9.63	39.77	62.02	-22.25	QP
10	0.2421	8.05	9.63	17.68	52.02	-34.34	AVG
11	0.2631	26.52	9.63	36.15	61.33	-25.18	QP
12	0.2631	7.15	9.63	16.78	51.33	-34.55	AVG
13	1.9047	26.25	9.65	35.90	56.00	-20.10	QP
14	1.9047	26.01	9.65	35.66	46.00	-10.34	AVG

- Note: 1. Result = Reading +Correct Factor.  
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).  
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.



**LINE L RESULTS**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1539	35.45	9.64	45.09	65.79	-20.70	QP
2	0.1539	7.44	9.64	17.08	55.79	-38.71	AVG
3	0.1582	35.00	9.64	44.64	65.56	-20.92	QP
4	0.1582	10.22	9.64	19.86	55.56	-35.70	AVG
5	0.1775	34.49	9.63	44.12	64.60	-20.48	QP
6	0.1775	8.55	9.63	18.18	54.60	-36.42	AVG
7	0.1818	34.50	9.63	44.13	64.40	-20.27	QP
8	0.1818	5.91	9.63	15.54	54.40	-38.86	AVG
9	0.1932	35.32	9.63	44.95	63.90	-18.95	QP
10	0.1932	7.47	9.63	17.10	53.90	-36.80	AVG
11	1.9062	26.57	9.66	36.23	56.00	-19.77	QP
12	1.9062	24.09	9.66	33.75	46.00	-12.25	AVG

- Note: 1. Result = Reading +Correct Factor.  
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).  
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

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

## **10. 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.

### **ANTENNA CONNECTOR**

EUT has a IFA antenna without antenna connector.

### **ANTENNA GAIN**

The antenna gain of EUT is less than 6 dBi.

**END OF REPORT**