

**CFR 47 FCC PART 15 SUBPART C
ISED RSS-247 ISSUE 3**

CERTIFICATION TEST REPORT

For

Notion Chime Bridge

MODEL NUMBER: N102CU

FCC ID: 2AB2Q-N102CU

IC: 10256A-N102CU

REPORT NUMBER: 4790489019-1-RF-1

ISSUE DATE: December 27, 2023

Prepared for

LEEDARSON LIGHTING CO., LTD.

Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China

Tel: +86 769 22038881

Fax: +86 769 33244054

Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	December 27, 2023	Initial Issue	



Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	6dB Bandwidth and 99% Occupied Bandwidth	FCC Part 15.247 (a) (2) RSS-247 Clause 5.2 (a) ISED RSS-Gen Clause 6.7	Pass
2	Peak Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	Pass
3	Power Spectral Density	FCC Part 15.247 (e) RSS-247 Clause 5.2 (b)	Pass
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d) RSS-247 Clause 5.5	Pass
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
6	AC Power Line Conducted Emission	FCC Part 15.207 RSS-GEN Clause 8.8	Pass
7	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 6.8	Pass
Note: 1.This test report is only published to and used by the applicant, and it is not for evidence purpose in China. 2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >< ISED RSS-247 > when <Accuracy Method> decision rule is applied.			



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. CALIBRATION AND UNCERTAINTY	8
4.1. MEASURING INSTRUMENT CALIBRATION	8
4.2. MEASUREMENT UNCERTAINTY	8
5. EQUIPMENT UNDER TEST	9
5.1. DESCRIPTION OF EUT	9
5.2. CHANNEL LIST	9
5.3. MAXIMUM PEAK OUTPUT POWER	9
5.4. TEST CHANNEL CONFIGURATION	9
5.5. THE WORSE CASE POWER SETTING PARAMETER	9
5.6. DESCRIPTION OF AVAILABLE ANTENNAS	10
5.7. DESCRIPTION OF TEST SETUP	11
6. MEASURING INSTRUMENT AND SOFTWARE USED	12
7. ANTENNA PORT TEST RESULTS	14
7.1. ON TIME AND DUTY CYCLE	14
7.2. 6 dB DTS BANDWIDTH AND 99 % OCCUPIED BANDWIDTH	15
7.3. CONDUCTED OUTPUT POWER	17
7.4. POWER SPECTRAL DENSITY	18
7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS	20
8. RADIATED TEST RESULTS	22
8.1. SPURIOUS EMISSIONS (1 GHz ~ 10 GHz)	28
8.1.1. OQPSK MODE	28
8.2. SPURIOUS EMISSIONS (30 MHz ~ 1 GHz)	34
8.2.1. OQPSK MODE	34
8.3. SPURIOUS EMISSIONS BELOW 30 MHz	36
8.3.1. OQPSK MODE	36
9. AC POWER LINE CONDUCTED EMISSION	39
10. ANTENNA REQUIREMENTS	43
11. Appendix	44
11.1. Appendix A: DTS Bandwidth	44
11.1.1. Test Result	44



11.1.2.	Test Graphs	44
11.2.	<i>Appendix B: Occupied Channel Bandwidth</i>	46
11.2.1.	Test Result	46
11.2.1.	Test Graphs	46
11.3.	<i>Appendix C: Maximum PEAK conducted output power</i>	48
11.3.1.	Test Result	48
11.4.	<i>Appendix D: Maximum power spectral density</i>	49
11.4.1.	Test Result	49
11.4.1.	Test Graphs	49
	<i>Appendix E: Conducted Spurious Emission</i>	51
11.4.2.	Test Result	51
11.4.3.	Test Graphs	52
11.5.	<i>Appendix F: Duty Cycle</i>	56
11.5.1.	Test Result	56
11.5.2.	Test Graphs	56



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: LEEDARSON LIGHTING CO., LTD.
Address: Xingda Road, Xingtai Industrial Zone, Changtai County,
Zhangzhou, Fujian, China

Manufacturer Information

Company Name: LEEDARSON LIGHTING CO., LTD.
Address: Xingda Road, Xingtai Industrial Zone, Changtai County,
Zhangzhou, Fujian, China

EUT Information

EUT Name: Notion Chime Bridge
Model: N102CU
Sample Received Date: September 26, 2023
Sample Status: Normal
Sample ID: 6588357
Date of Tested: September 26, 2023 to December 27, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS
ISED RSS-247 Issue 3	PASS
ISED RSS-GEN Issue 5	PASS

Prepared By:

Fanny Huang

Engineer Project Associate

Checked By:

Denny Huang

Senior Project Engineer

Approved By:

Stephen Guo

Operations Manager



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 3 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>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.</p> <p>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 Declaration of Conformity (DoC) and Certification rules</p> <p>ISED (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 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202) 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-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155</p>
---------------------------	--

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 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz 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 recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

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

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
DTS and 99% Occupied Bandwidth	±0.0196%
Maximum Conducted Output Power	±0.686 dB
Maximum Power Spectral Density Level	±0.743 dB
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
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	Notion Chime Bridge
Model	N102CU
Battery	AC 120 V, 60 Hz
Transmit Frequency Range	904 MHz ~ 926 MHz
Modulation	OQPSK
Bit Rate	100 kbps

5.2. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	904	7	916
2	906	8	918
3	908	9	920
4	910	10	922
5	912	11	924
6	914	12	926

5.3. MAXIMUM PEAK OUTPUT POWER

Test Mode	Frequency (MHz)	Channel Number	Maximum Peak Output Power (dBm)	Maximum EIRP (dBm)
OQPSK	904 - 926	12	16.56	15.07

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
OQPSK	CH 1(Low Channel), CH 7(Mid Channel) CH 12(High Channel)	904 MHz, 916 MHz, 926 MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter				
Test Software Version		sscom5.13.1		
Test Mode	Transmit Antenna Number	Test Software Setting Value		
		CH 1	CH 7	CH 12
OQPSK	1	17	17	17

Note: raw is the test software setting description provide by customer.



5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	904 - 926	IFA Antenna	-1.49

Test Mode	Transmit and Receive Mode	Description
OQPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

Note: 1. The value of the antenna gain was declared by customer.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	Lenovo	E42-80	R303U5AG
2	UART	/	/	/
3	Socket	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1.0	/

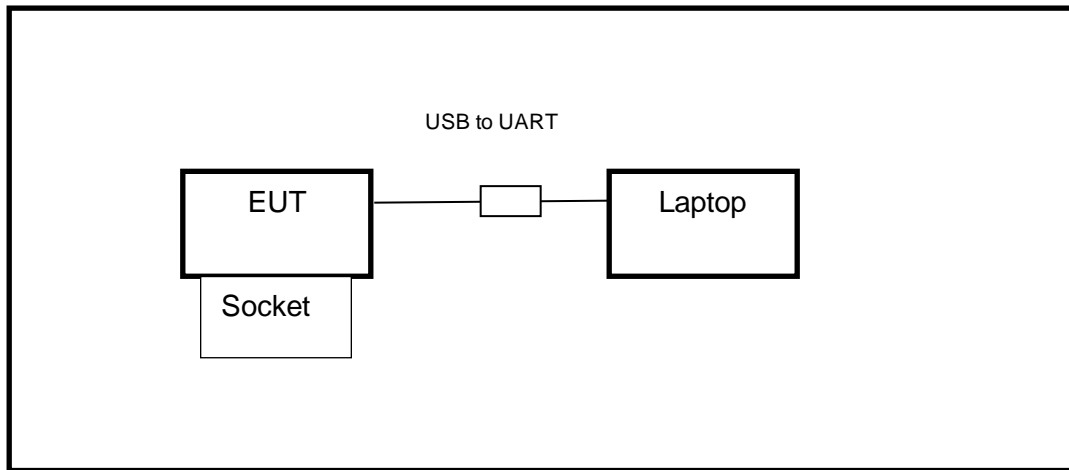
ACCESSORIES

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

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



**6. MEASURING INSTRUMENT AND SOFTWARE USED**

Conducted Emissions						
Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Due. Date
EMI Test Receiver	R&S	ESR3	101961	Oct.17, 2022	Oct.13, 2023	Oct.12, 2024
Two-Line V-Network	R&S	ENV216	101983	Oct.17, 2022	Oct.13, 2023	Oct.12, 2024
Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Oct.17, 2022	Oct.13, 2023	Oct.12, 2024
Software						
Description			Manufacturer	Name	Version	
Test Software for Conducted Emissions			Farad	EZ-EMC	Ver. UL-3A1	

Radiated Emissions						
Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Due. Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	/	Aug.02, 2021	Aug.01, 2024
Preamplifier	HP	8447D	2944A09099	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
EMI Measurement Receiver	R&S	ESR26	101377	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Horn Antenna	TDK	HRN-0118	130940	/	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Horn Antenna	Schwarzbeck	BBHA9170	697	/	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Preamplifier	TDK	PA-02-3	TRS-308-00002	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Loop antenna	Schwarzbeck	1519B	00008	/	Dec.14, 2021	Dec.13, 2024
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01202035	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Software						
Description			Manufacturer	Name	Version	
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1	



Other Instrument						
Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Due. Date
Temperature humidity probe	OMEGA	ITHX-SD-5	18470007	Oct.22, 2022	Oct.19, 2023	Oct.18, 2024
Barometer	Yiyi	Baro	N/A	Oct.24, 2022	Oct.19, 2023	Oct.18, 2024
Attenuator	Agilent	8495B	2814a12853	Oct.18, 2022	Oct.12, 2023	Oct.11, 2024
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Signal Analyzer	R&S	FSV40	101118	Oct.17, 2022	Oct.12, 2023	Oct.11, 2024
Power Sensor	Keysight	USB Wideband Power Sensor	MY5100022	Oct.30, 2021	Oct.12, 2023	Oct.11, 2024

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

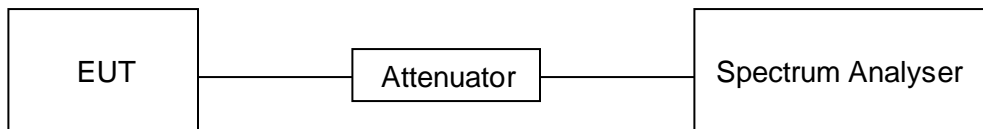
LIMITS

None; for reporting purposes only.

PROCEDURE

Refer to ANSI C63.10-2013 clause 11.6 Zero – Span Spectrum Analyzer method.

TEST SETUP



TEST ENVIRONMENT

Temperature	24.7 °C	Relative Humidity	61 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

Please refer to appendix F.



7.2. 6 dB DTS BANDWIDTH AND 99 % OCCUPIED BANDWIDTH

LIMITS

CFR 47FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6 dB Bandwidth	≥ 500 kHz	902-928
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	None; for reporting purposes only.	902-928

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.8 for DTS bandwidth and clause 6.9 for Occupied Bandwidth.

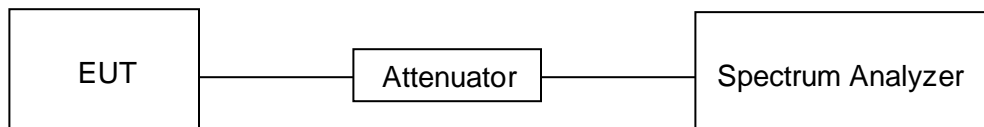
Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Frequency Span	For 6 dB Bandwidth: Enough to capture all products of the modulation carrier emission For 99 % Occupied Bandwidth: Between 1.5 times and 5.0 times the OBW
Detector	Peak
RBW	For 6 dB Bandwidth: 100 kHz For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth
VBW	For 6 dB Bandwidth: $\geq 3 \times$ RBW For 99 % Occupied Bandwidth: $\geq 3 \times$ RBW
Trace	Max hold
Sweep	Auto couple

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

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

TEST SETUP



**TEST ENVIRONMENT**

Temperature	24.7 °C	Relative Humidity	61 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

Please refer to appendix A & B.



7.3. CONDUCTED OUTPUT POWER

LIMITS

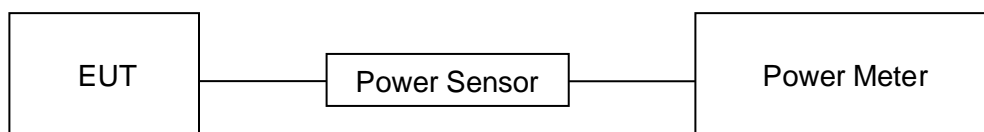
CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED RSS-247 5.4 (d)	Peak Conducted Output Power	1 watt or 30 dBm	902-928

TEST PROCEDURE

Connect the EUT to a low loss RF cable from the antenna port to the power sensor (video bandwidth is greater than the occupied bandwidth).

Measure peak emission level, the indicated level is the peak output power, after any corrections for external attenuators and cables.

TEST SETUP



TEST ENVIRONMENT

Temperature	24.9 °C	Relative Humidity	55 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

Please refer to appendix C.



7.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e) ISED RSS-247 5.2 (b)	Power Spectral Density	Shall not be greater than 8 dBm in any 3 kHz band	902-928

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.10.

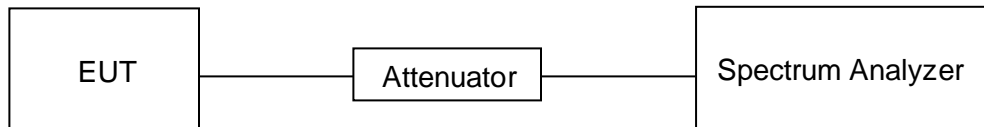
Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple

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

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

TEST SETUP



**TEST ENVIRONMENT**

Temperature	24.9 °C	Relative Humidity	55 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

Please refer to appendix D.



7.5. CONDUCTED BANDEGE AND SPURIOUS EMISSIONS

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d) ISED RSS-247 5.5	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.11 and 11.13.

Connect the EUT to the spectrum analyser and use the following settings for reference level measurement:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

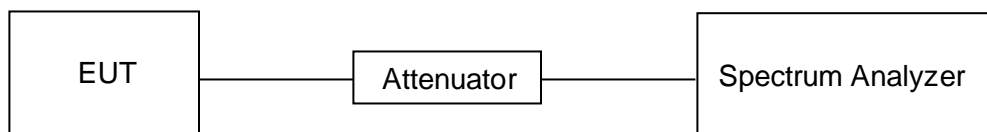
Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level.

Change the settings for emission level measurement:

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100 kHz
VBW	$\geq 3 \times \text{RBW}$
measurement points	$\geq \text{span}/\text{RBW}$
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11.

TEST SETUP

**TEST ENVIRONMENT**

Temperature	24.9 °C	Relative Humidity	55 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

Please refer to appendix E.



8. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

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

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		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

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
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

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	Magnetic field strength (H-Field) (μA/m)	Measurement distance (m)
9 - 490 kHz ^{Note 1}	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.



ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

Table 7 – Restricted frequency bands ^{Note 1}		
MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	158.52475 - 158.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

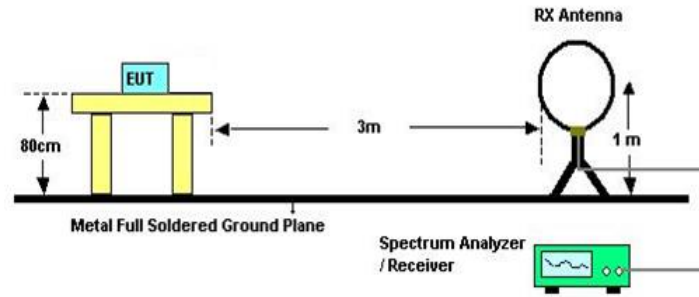
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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 30 MHz

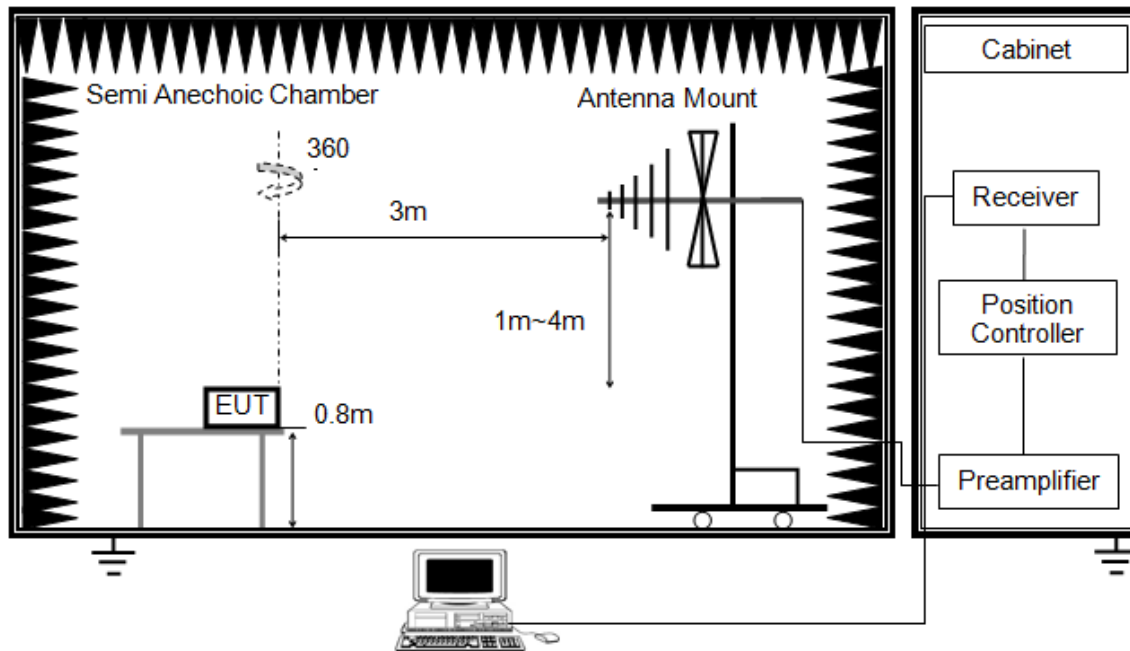


The setting of the spectrum analyser

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

- The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
- 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, Face-on and Face-off polarizations of the antenna are set to make the measurement.
- The EUT was placed on a turntable with 80 cm above ground.
- The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.
- 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.
- For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode 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 and average detector and reported.
- 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 site based on KDB 414788.
- The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to $Y - 51.5 = Z$ dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz

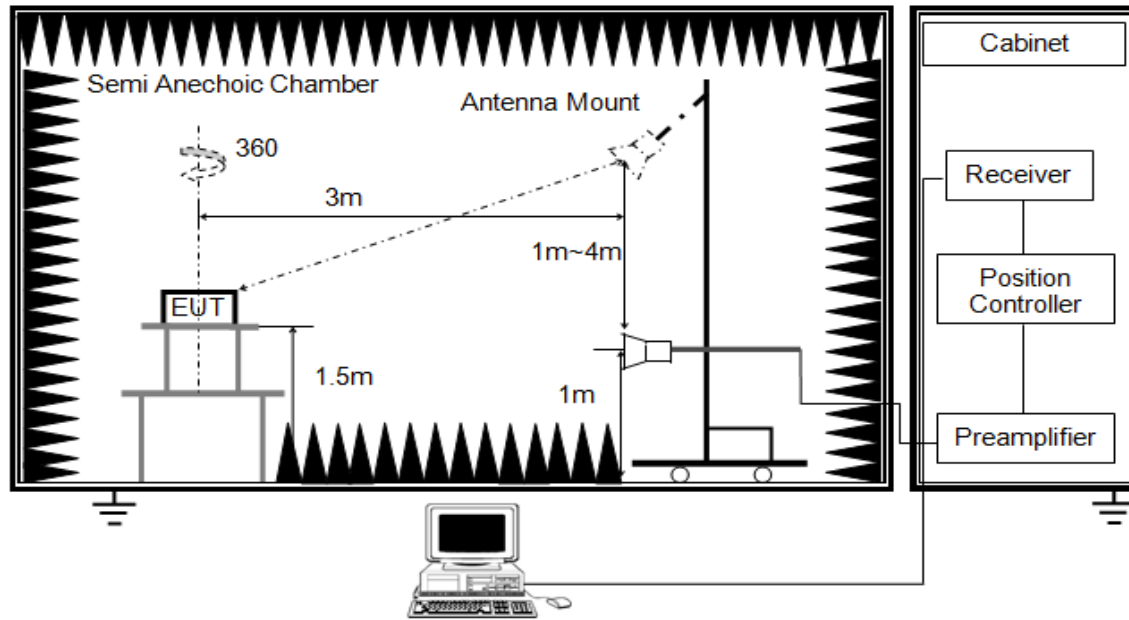


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
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 80 cm 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 1 GHz, 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 1GHz

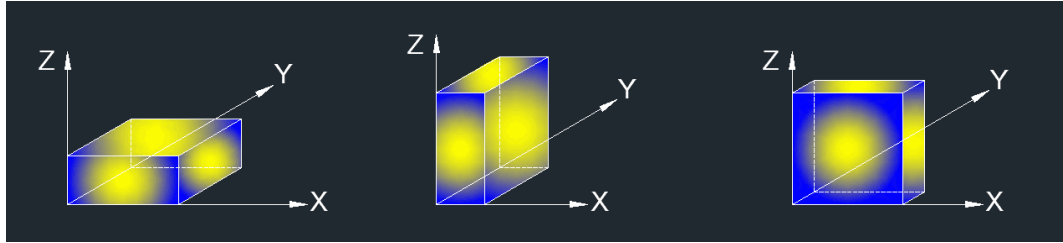


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.
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 1.5 m 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 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

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: For the radiated restricted bandedge, a pre-scan was performed, and the result was 20 dB lower than the limit line, the test data was not shown in the report.

TEST ENVIRONMENT

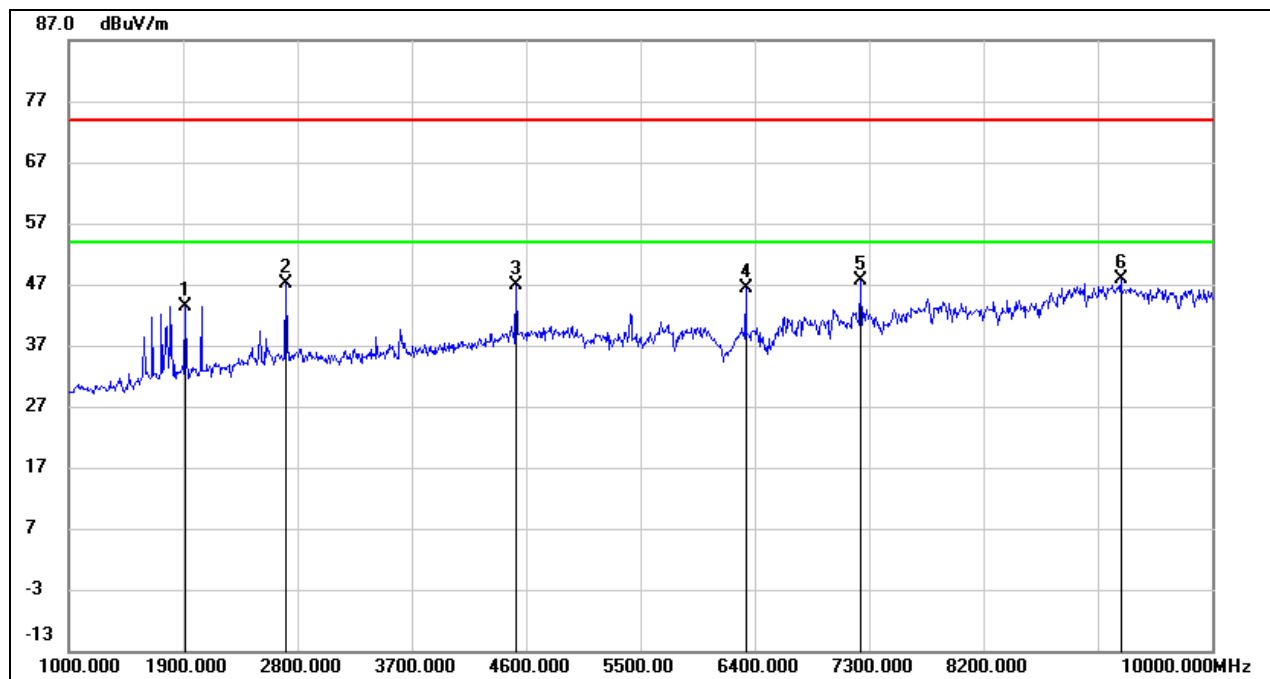
Temperature	24.3 °C	Relative Humidity	61 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V, 60 HZ

RESULTS

8.1. SPURIOUS EMISSIONS (1 GHz ~ 10 GHz)

8.1.1. OQPSK MODE

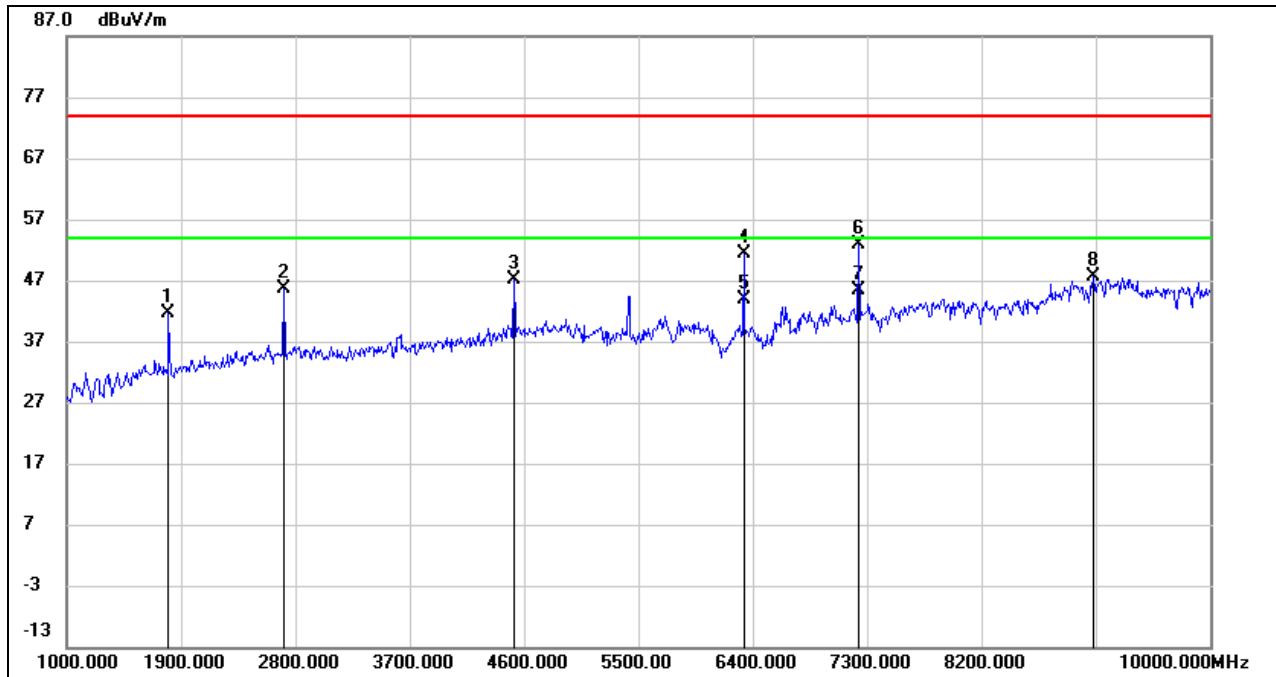
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1918.000	54.82	-11.33	43.49	74.00	-30.51	peak
2	2710.000	55.00	-7.85	47.15	74.00	-26.85	peak
3	4519.000	48.86	-2.06	46.80	74.00	-27.20	peak
4	6328.000	43.29	3.08	46.37	74.00	-27.63	peak
5	7228.000	41.56	5.97	47.53	74.00	-26.47	peak
6	9280.000	37.99	9.85	47.84	74.00	-26.16	peak

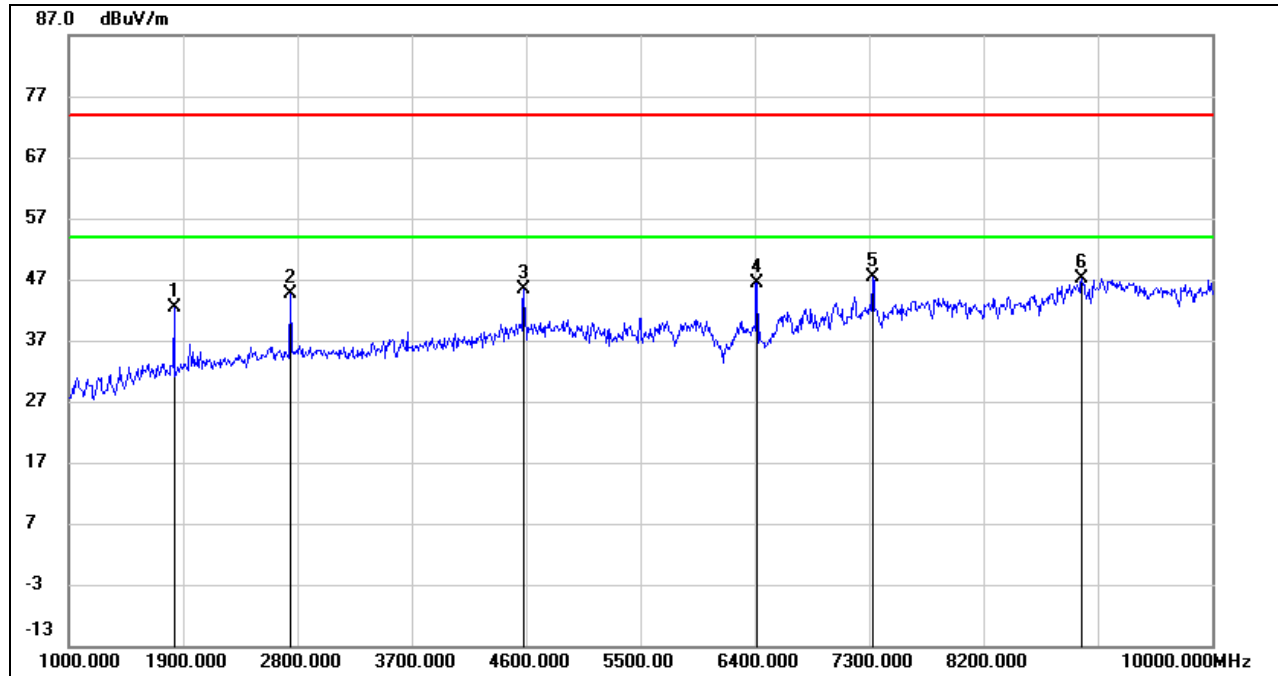
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit duration, please refer to clause 7.1.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

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	1801.000	53.41	-11.72	41.69	74.00	-32.31	peak
2	2710.000	53.58	-7.85	45.73	74.00	-28.27	peak
3	4519.000	49.12	-2.06	47.06	74.00	-26.94	peak
4	6328.000	48.30	3.08	51.38	74.00	-22.62	peak
5	6328.000	40.87	3.08	43.95	54.00	-10.05	AVG
6	7228.000	46.82	5.97	52.79	74.00	-21.21	peak
7	7228.000	39.39	5.97	45.36	54.00	-8.64	AVG
8	9082.000	37.78	9.77	47.55	74.00	-26.45	peak

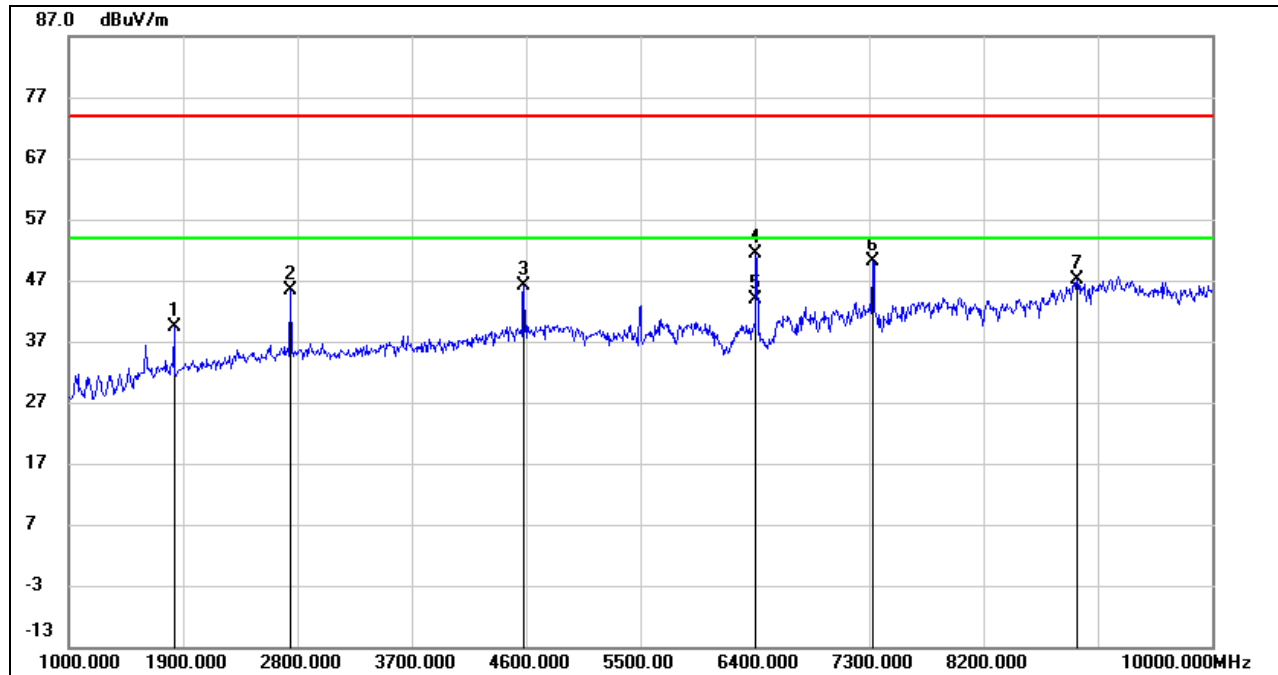
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit duration, please refer to clause 7.1.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

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

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1828.000	53.97	-11.62	42.35	74.00	-31.65	peak
2	2746.000	52.37	-7.75	44.62	74.00	-29.38	peak
3	4582.000	47.29	-1.82	45.47	74.00	-28.53	peak
4	6418.000	42.97	3.41	46.38	74.00	-27.62	peak
5	7327.000	41.39	5.87	47.26	74.00	-26.74	peak
6	8974.000	37.68	9.56	47.24	74.00	-26.76	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.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1828.000	51.09	-11.62	39.47	74.00	-34.53	peak
2	2746.000	53.25	-7.75	45.50	74.00	-28.50	peak
3	4582.000	48.01	-1.82	46.19	74.00	-27.81	peak
4	6409.000	47.90	3.39	51.29	74.00	-22.71	peak
5	6409.000	40.47	3.39	43.86	54.00	-10.14	AVG
6	7327.000	44.15	5.87	50.02	74.00	-23.98	peak
7	8938.000	37.82	9.31	47.13	74.00	-26.87	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.

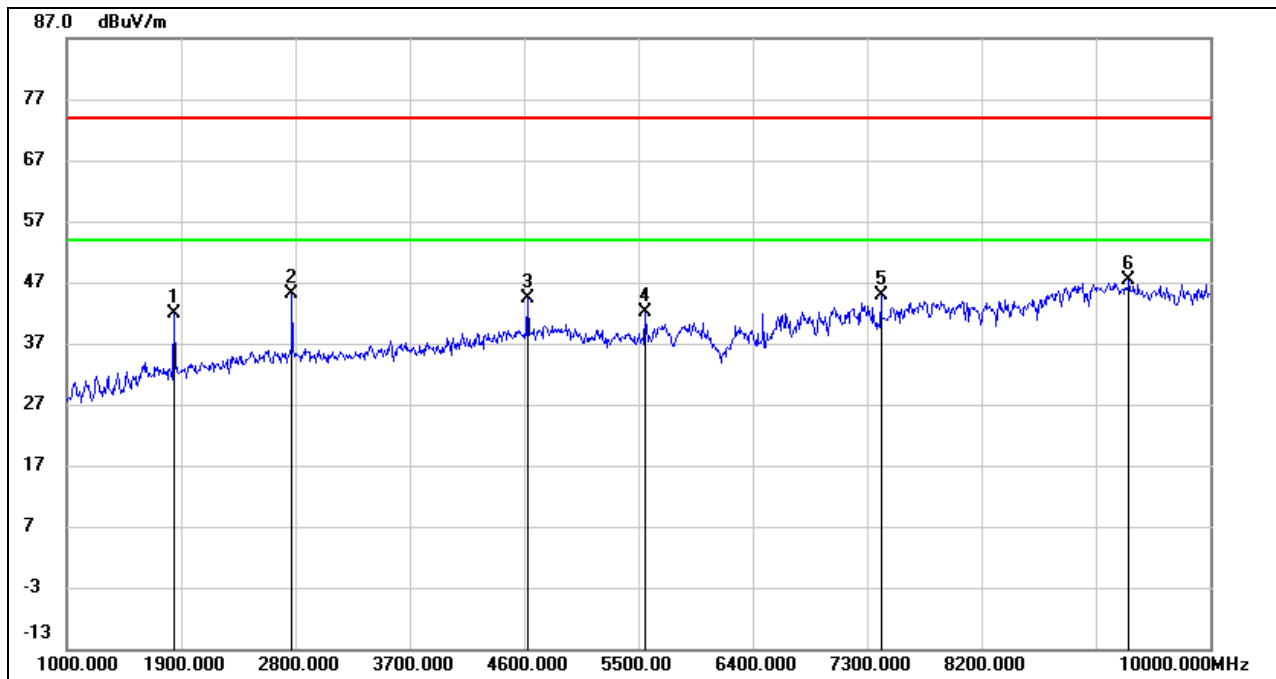
3. Peak: Peak detector.

4. AVG: VBW=1/Ton where: ton is transmit duration.

5. For transmit duration, please refer to clause 7.1.

6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7. *-indicates frequency is out of the restricted bands and the limit is referring to 15.247 (d) and RSS-247 clause 5.5. We had already performed the conducted non-restricted bands test, please refer to clause 7.5.

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

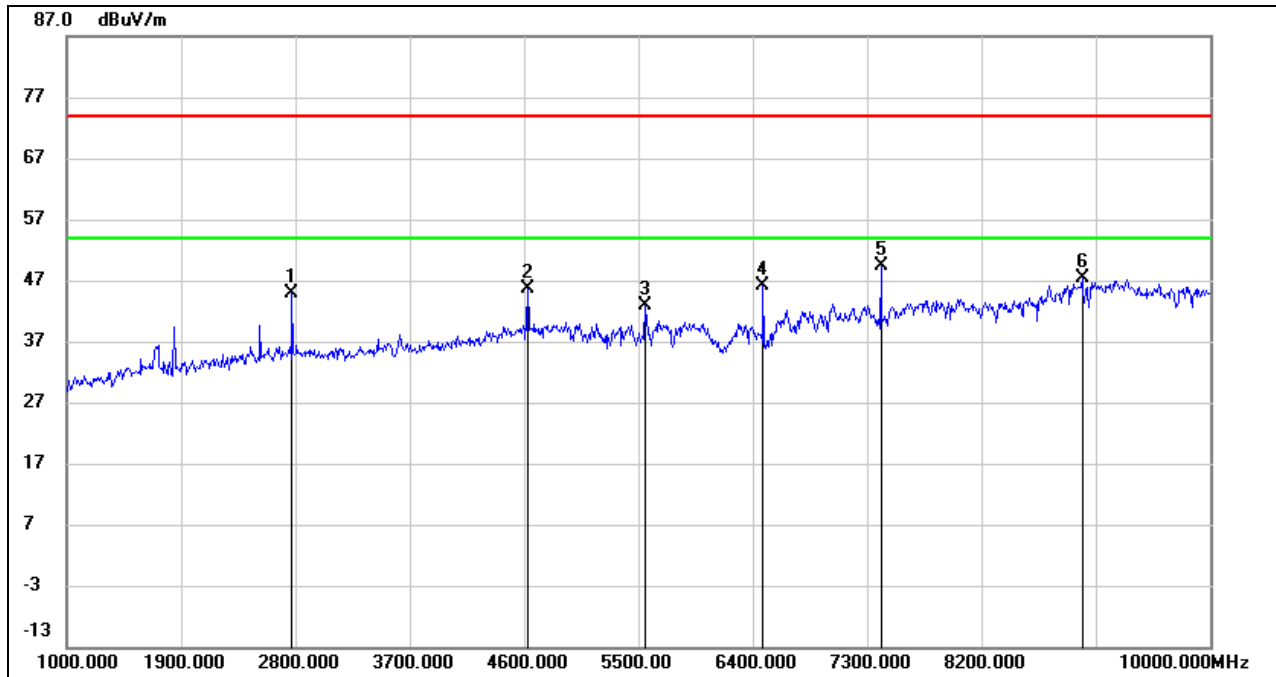
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1846.000	53.40	-11.57	41.83	74.00	-32.17	peak
2	2773.000	52.90	-7.67	45.23	74.00	-28.77	peak
3	4627.000	46.07	-1.63	44.44	74.00	-29.56	peak
4	5554.000	41.68	0.57	42.25	74.00	-31.75	peak
5	7408.000	39.08	5.78	44.86	74.00	-29.14	peak
6	9361.000	37.40	9.89	47.29	74.00	-26.71	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.

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

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

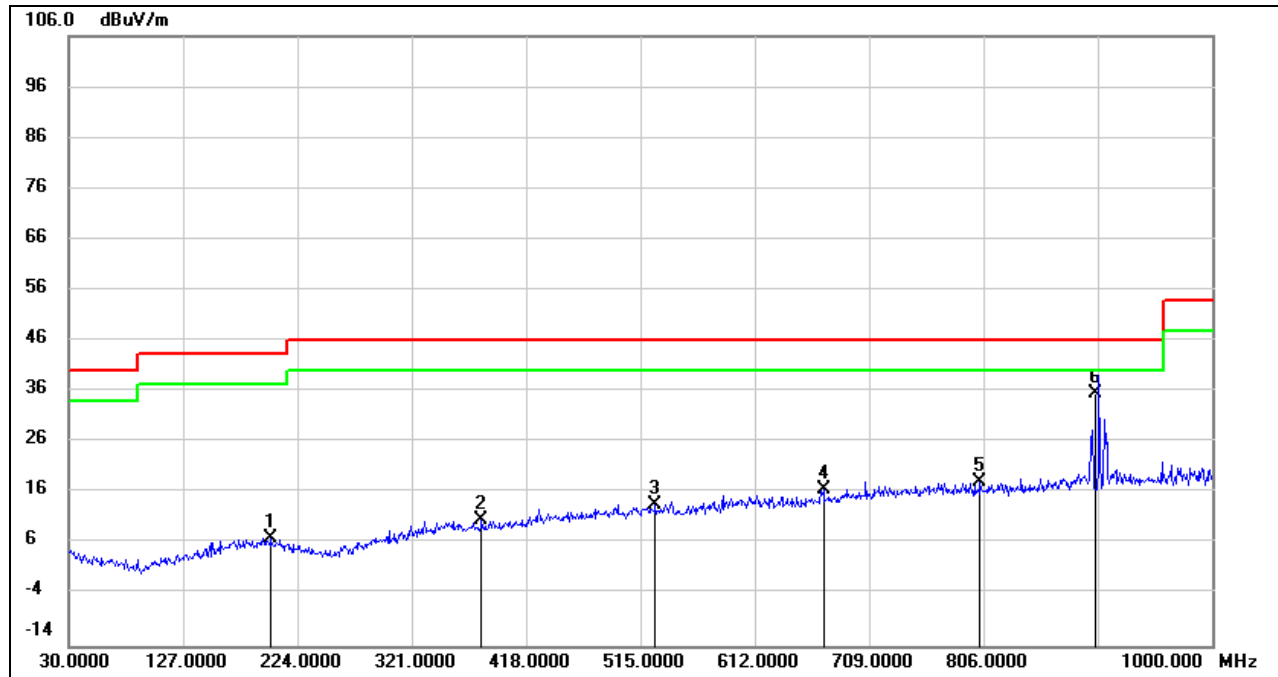
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2773.000	52.62	-7.67	44.95	74.00	-29.05	peak
2	4627.000	47.20	-1.63	45.57	74.00	-28.43	peak
3	5554.000	42.25	0.57	42.82	74.00	-31.18	peak
4	6481.000	42.42	3.65	46.07	74.00	-27.93	peak
5	7408.000	43.51	5.78	49.29	74.00	-24.71	peak
6	8992.000	37.64	9.68	47.32	74.00	-26.68	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.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

8.2. SPURIOUS EMISSIONS (30 MHz ~ 1 GHz)

8.2.1. OQPSK MODE

SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	201.6900	23.76	-16.65	7.11	43.50	-36.39	QP
2	380.1700	23.52	-12.86	10.66	46.00	-35.34	QP
3	527.6100	24.40	-10.55	13.85	46.00	-32.15	QP
4	670.2000	25.42	-8.80	16.62	46.00	-29.38	QP
5	803.0900	24.95	-6.62	18.33	46.00	-27.67	QP
6	902.0000	40.46	-4.79	35.67	/	/	fundamental

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

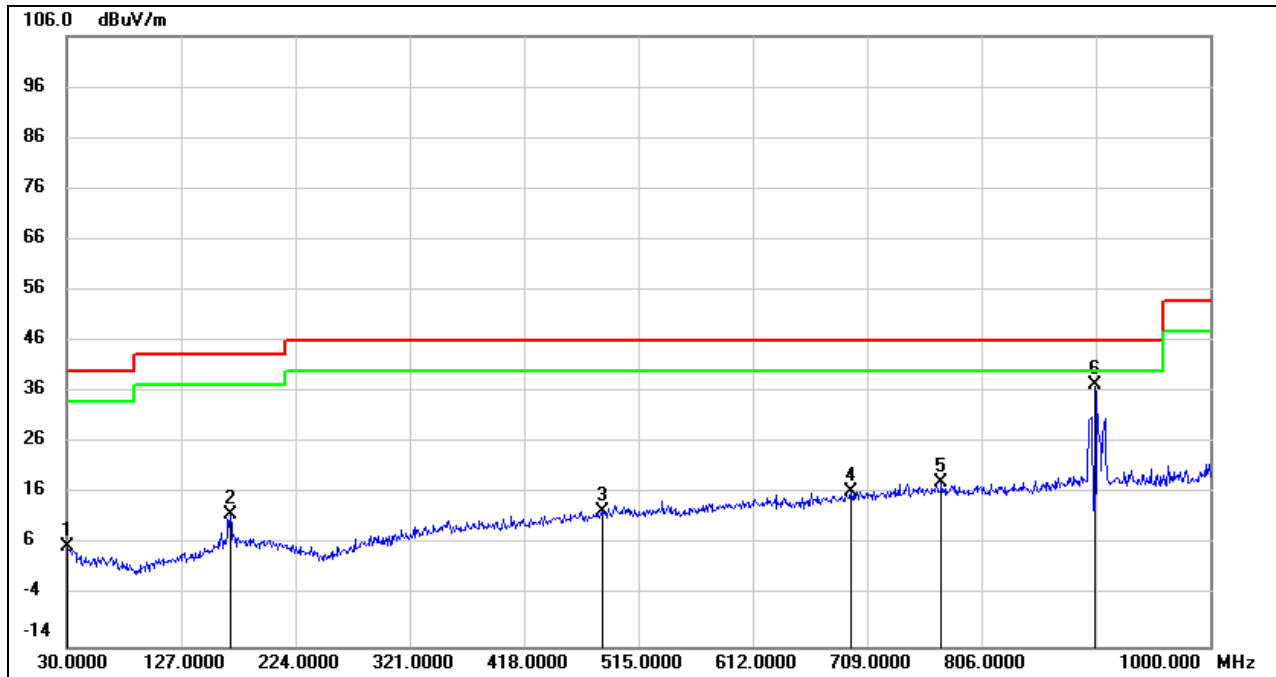
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

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

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

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

SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	23.95	-18.24	5.71	40.00	-34.29	QP
2	168.7100	28.86	-17.00	11.86	43.50	-31.64	QP
3	483.9600	23.57	-11.00	12.57	46.00	-33.43	QP
4	695.4200	24.59	-8.01	16.58	46.00	-29.42	QP
5	772.0500	25.23	-6.84	18.39	46.00	-27.61	QP
6	902.0000	42.33	-4.79	37.54	/	/	fundamental

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

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

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

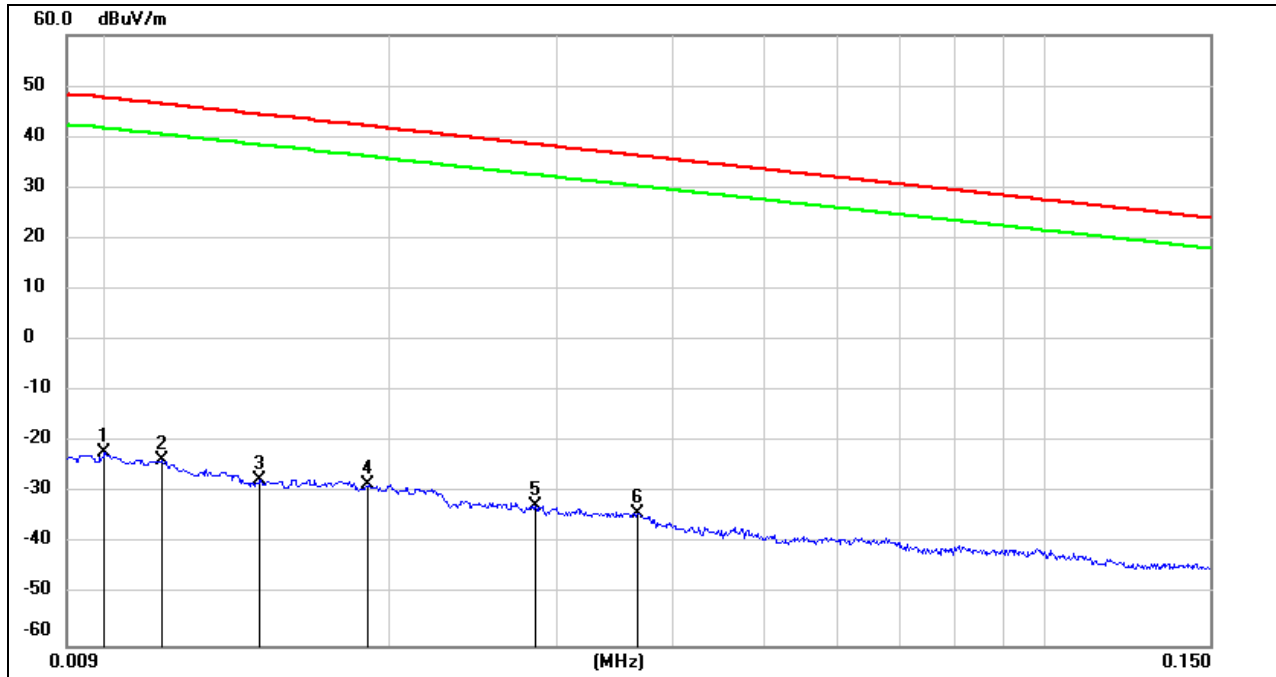
Note: All the modes and channels have been tested, only the worst data was recorded in the report.

8.3. SPURIOUS EMISSIONS BELOW 30 MHz

8.3.1. OQPSK MODE

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

9 kHz~ 150 kHz

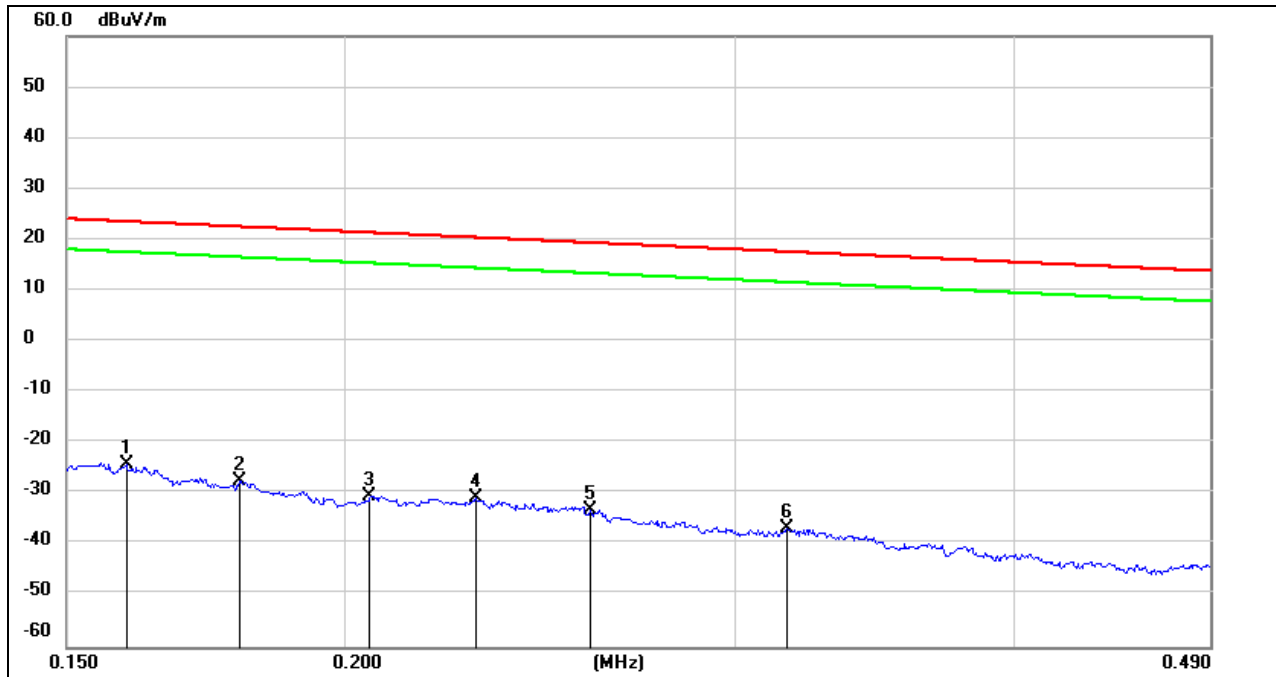


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.0100	79.22	-101.40	-22.18	47.60	-73.68	-3.90	-69.78	peak
2	0.0114	77.88	-101.40	-23.52	46.46	-75.02	-5.04	-69.98	peak
3	0.0145	74.05	-101.38	-27.33	44.37	-78.83	-7.13	-71.70	peak
4	0.0189	72.87	-101.35	-28.48	42.07	-79.98	-9.43	-70.55	peak
5	0.0285	68.86	-101.38	-32.52	38.51	-84.02	-12.99	-71.03	peak
6	0.0366	67.37	-101.42	-34.05	36.33	-85.55	-15.17	-70.38	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

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.

150 kHz ~ 490 kHz

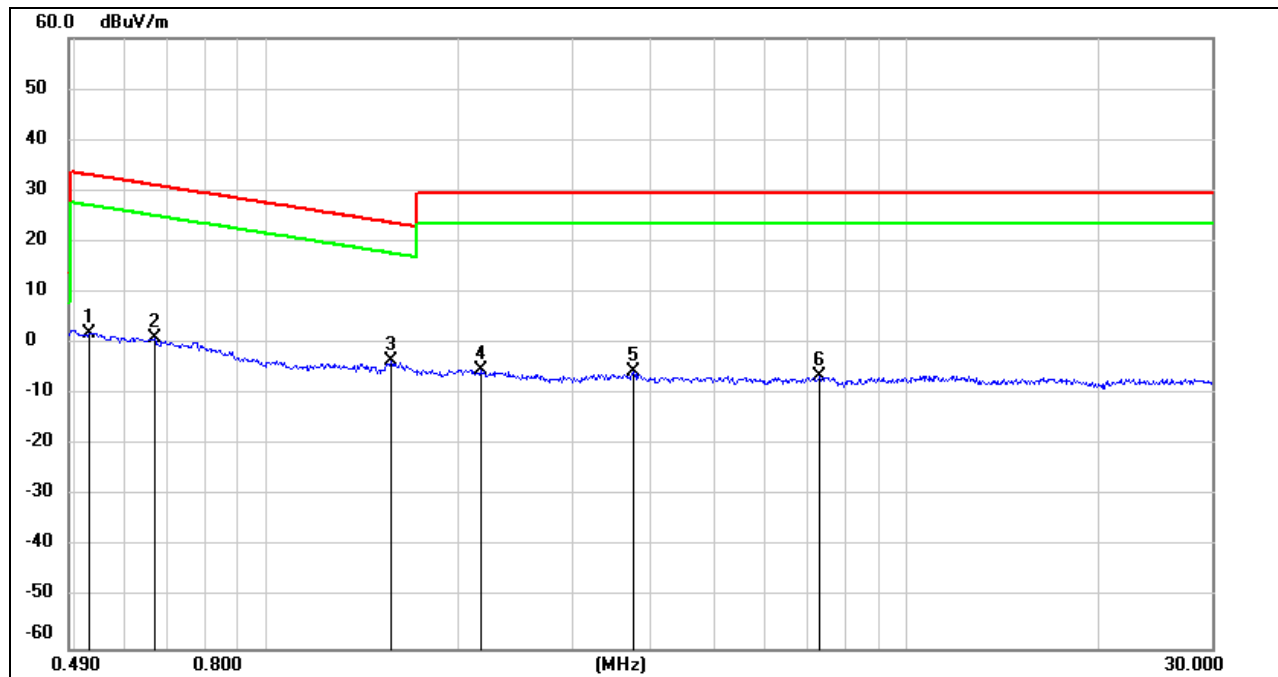
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.1595	77.36	-101.65	-24.29	23.55	-75.79	-27.95	-47.84	peak
2	0.1794	74.27	-101.68	-27.41	22.53	-78.91	-28.97	-49.94	peak
3	0.2053	71.29	-101.73	-30.44	21.35	-81.94	-30.15	-51.79	peak
4	0.2290	70.99	-101.77	-30.78	20.40	-82.28	-31.10	-51.18	peak
5	0.2580	68.67	-101.81	-33.14	19.37	-84.64	-32.13	-52.51	peak
6	0.3163	65.20	-101.87	-36.67	17.60	-88.17	-33.90	-54.27	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120 π] = dBuV/m- 51.5).

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.

490 kHz ~ 30 MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.5272	64.04	-62.07	1.97	33.16	-49.53	-18.34	-31.19	peak
2	0.6671	63.25	-62.10	1.15	31.12	-50.35	-20.38	-29.97	peak
3	1.5625	58.46	-62.02	-3.56	23.73	-55.06	-27.77	-27.29	peak
4	2.1551	56.49	-61.78	-5.29	29.54	-56.79	-21.96	-34.83	peak
5	3.7406	55.80	-61.40	-5.60	29.54	-57.10	-21.96	-35.14	peak
6	7.3361	54.58	-61.17	-6.59	29.54	-58.09	-21.96	-36.13	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

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 the modes and channels have been tested, only the worst data was recorded in the report.

9. AC POWER LINE CONDUCTED EMISSION

LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8

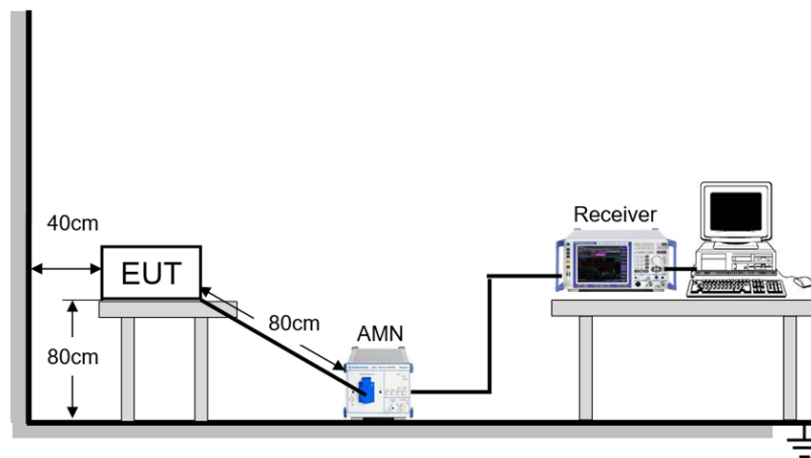
FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST PROCEDURE

The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm 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 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

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 SETUP



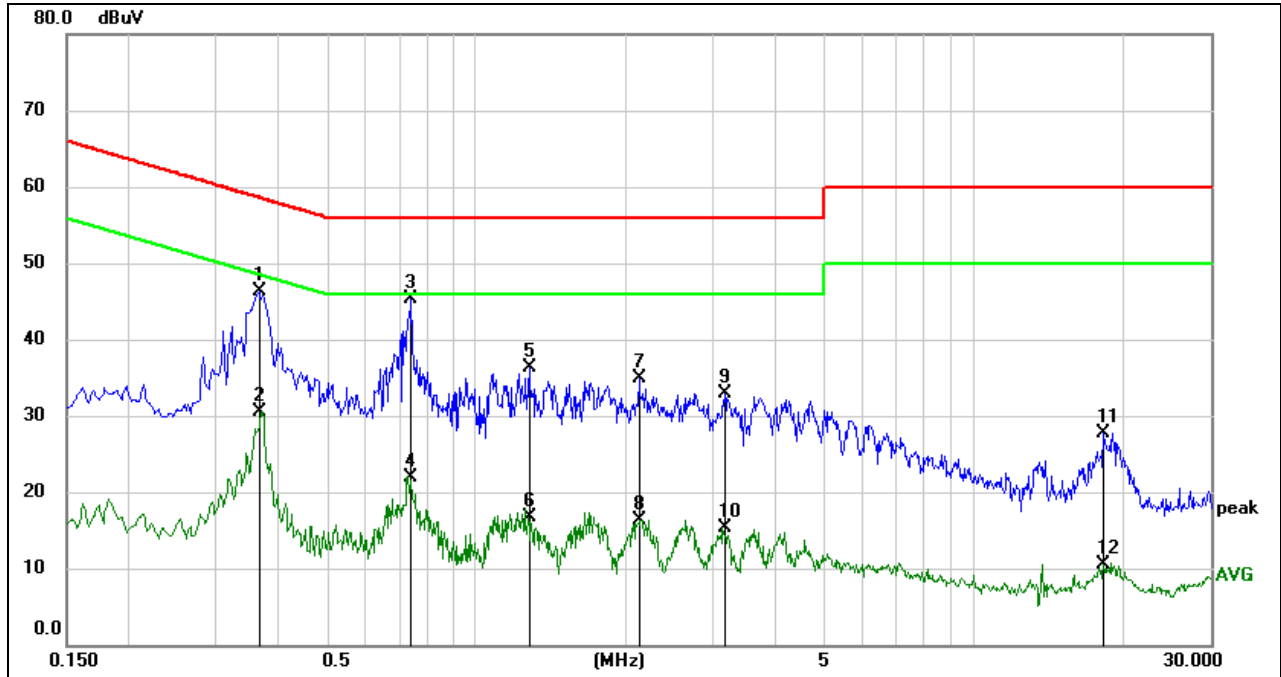


TEST ENVIRONMENT

Temperature	24.2°C	Relative Humidity	63%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V, 60 Hz

TEST RESULTS

Test Mode:	OQPSK	Channel:	Low
Line:	Line	Test Voltage:	AC 120 V, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3660	36.69	9.59	46.28	58.59	-12.31	QP
2	0.3660	21.00	9.59	30.59	48.59	-18.00	AVG
3	0.7420	35.62	9.60	45.22	56.00	-10.78	QP
4	0.7420	12.40	9.60	22.00	46.00	-24.00	AVG
5	1.2820	26.77	9.61	36.38	56.00	-19.62	QP
6	1.2820	7.11	9.61	16.72	46.00	-29.28	AVG
7	2.1260	25.33	9.64	34.97	56.00	-21.03	QP
8	2.1260	6.74	9.64	16.38	46.00	-29.62	AVG
9	3.1660	23.14	9.67	32.81	56.00	-23.19	QP
10	3.1660	5.56	9.67	15.23	46.00	-30.77	AVG
11	18.2419	17.94	9.81	27.75	60.00	-32.25	QP
12	18.2419	0.78	9.81	10.59	50.00	-39.41	AVG

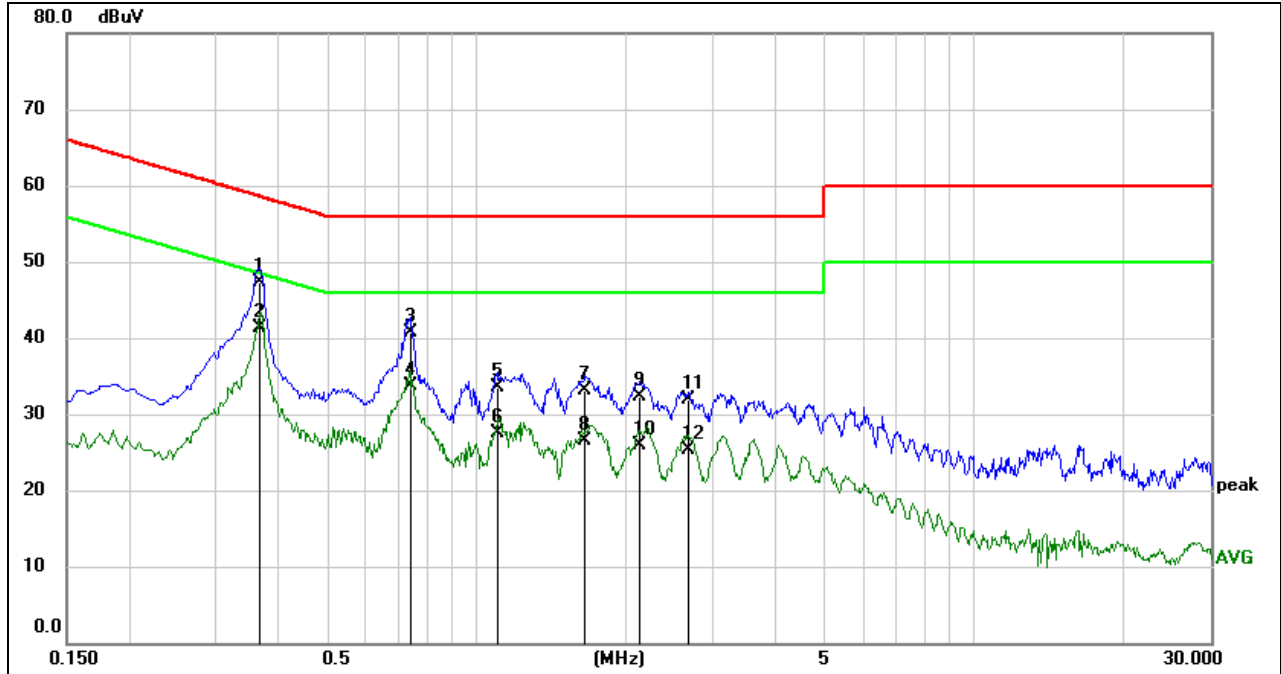
Note:

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: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes have been tested, only the worst data was recorded in the report.



Test Mode:	OQPSK	Channel:	Low
Line:	Neutral	Test Voltage:	AC 120 V, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3660	37.77	9.53	47.30	58.59	-11.29	QP
2	0.3660	31.84	9.53	41.37	48.59	-7.22	AVG
3	0.7380	31.24	9.50	40.74	56.00	-15.26	QP
4	0.7380	24.11	9.50	33.61	46.00	-12.39	AVG
5	1.1019	23.96	9.52	33.48	56.00	-22.52	QP
6	1.1019	18.01	9.52	27.53	46.00	-18.47	AVG
7	1.6580	23.50	9.59	33.09	56.00	-22.91	QP
8	1.6580	16.95	9.59	26.54	46.00	-19.46	AVG
9	2.1380	22.59	9.63	32.22	56.00	-23.78	QP
10	2.1380	16.20	9.63	25.83	46.00	-20.17	AVG
11	2.6740	22.31	9.62	31.93	56.00	-24.07	QP
12	2.6740	15.63	9.62	25.25	46.00	-20.75	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: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes have been tested, only the worst data was 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.

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.

RESULTS

Complies

11. Appendix

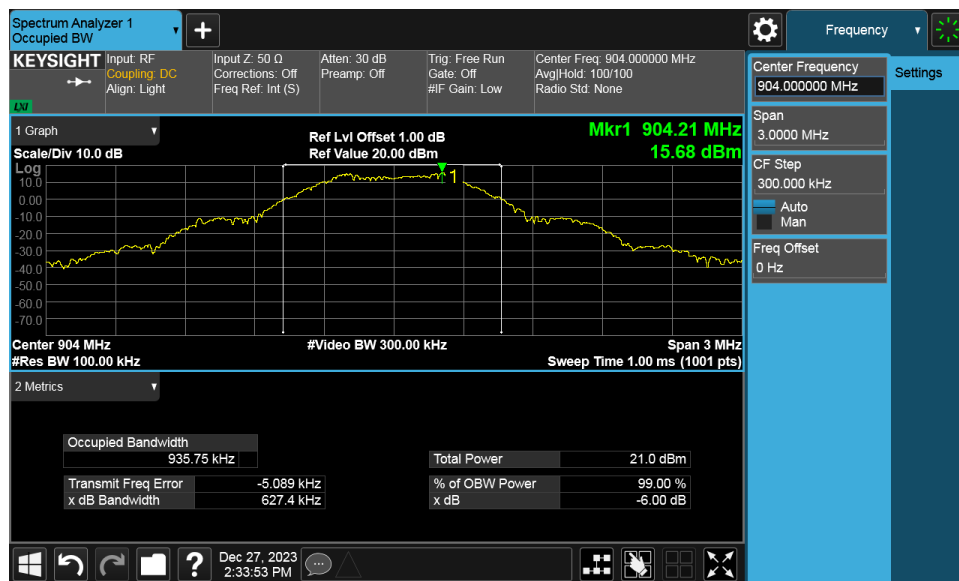
11.1. Appendix A: DTS Bandwidth

11.1.1. Test Result

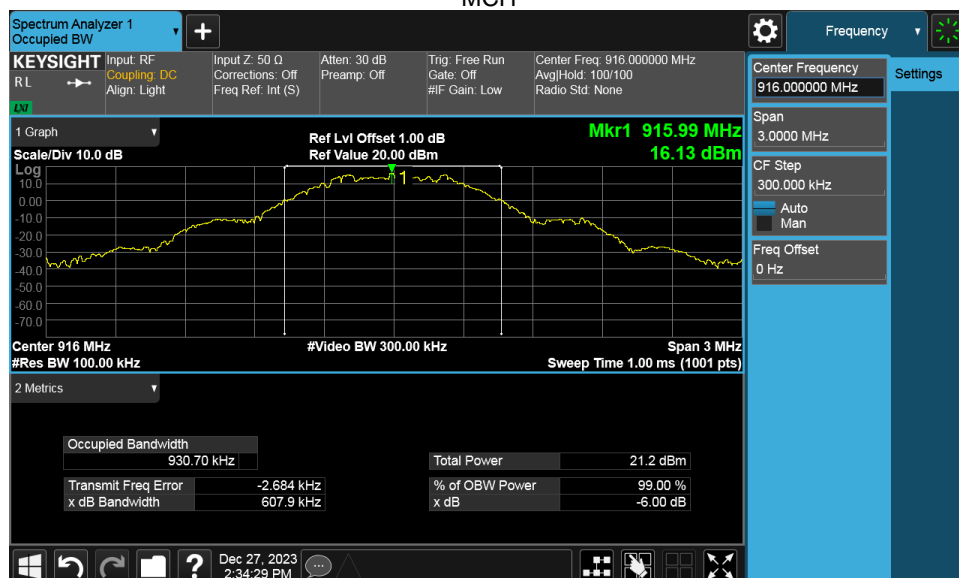
Test Mode	Antenna	Channel	DTS BW [MHz]	Limit[MHz]	Verdict
OQPSK	Ant1	Low	0.6274	≥ 0.5	PASS
		Mid	0.6079	≥ 0.5	PASS
		High	0.5849	≥ 0.5	PASS

11.1.2. Test Graphs

LCH

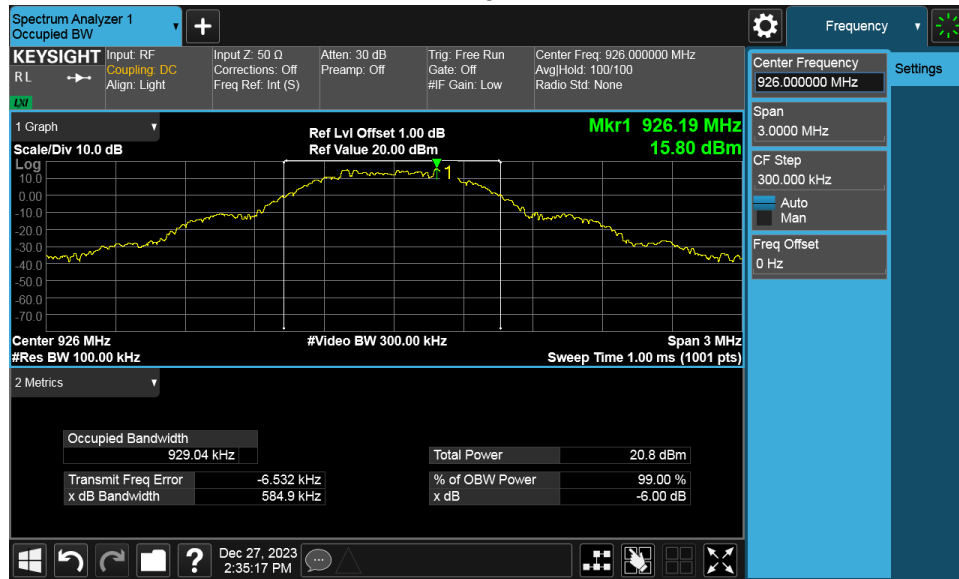


MCH





HCH

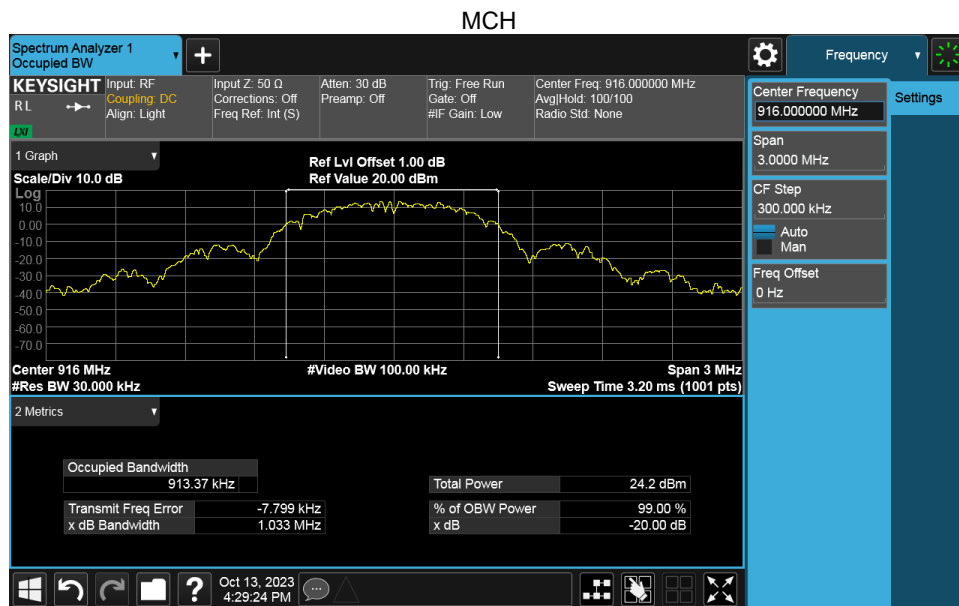


11.2. Appendix B: Occupied Channel Bandwidth

11.2.1. Test Result

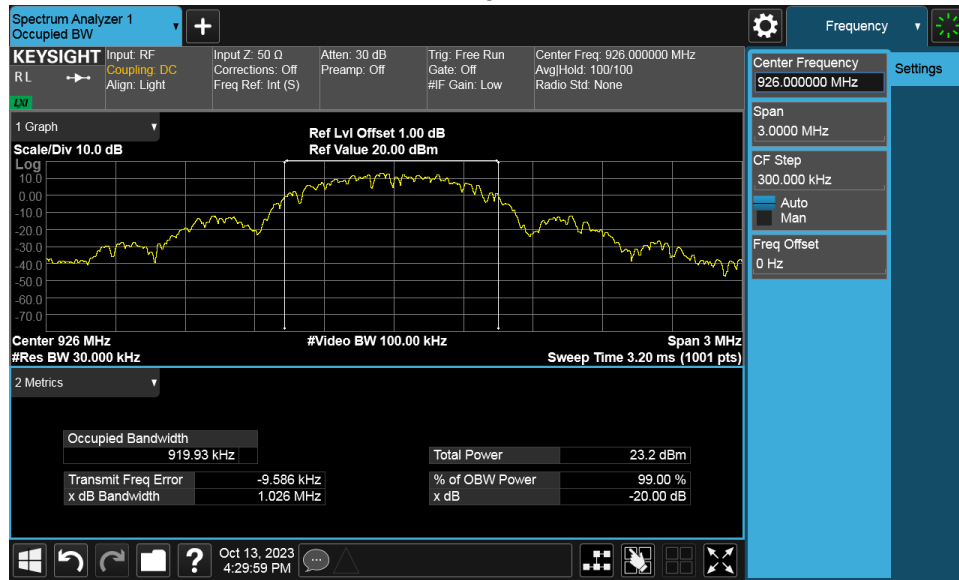
Test Mode	Antenna	Channel	OCB [MHz]	Verdict
OQPSK	Ant1	Low	0.90729	PASS
		Mid	0.91337	PASS
		High	0.91993	PASS

11.2.1. Test Graphs





HCH





11.3. Appendix C: Maximum PEAK conducted output power

11.3.1. Test Result

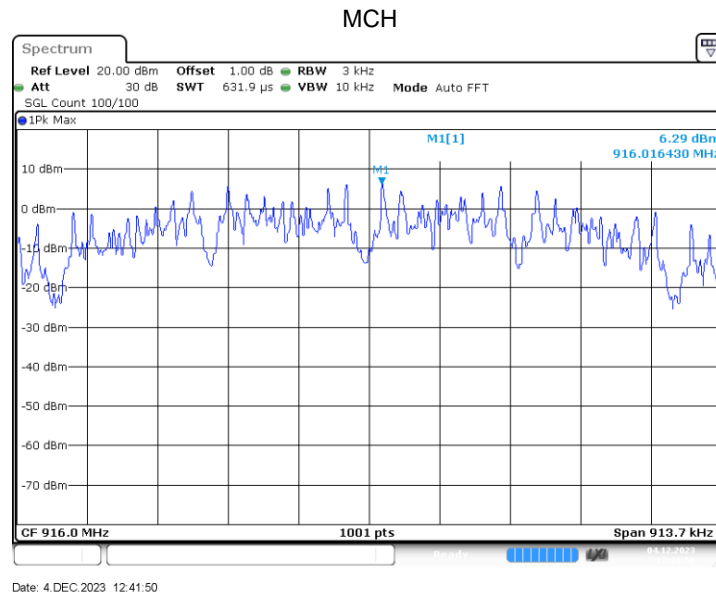
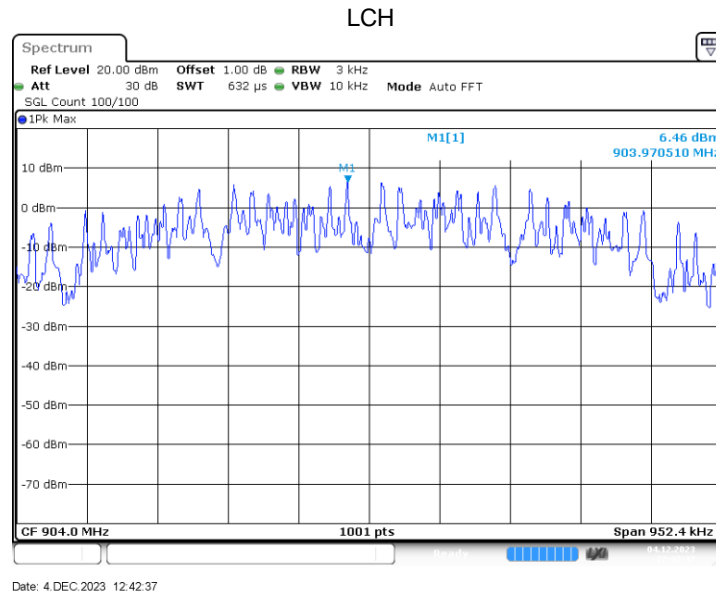
Test Mode	Antenna	Channel	Result [dBm]	Limit[dBm]	Verdict
OQPSK	Ant1	Low	16.56	≤ 30	PASS
		Mid	16.46	≤ 30	PASS
		High	16.40	≤ 30	PASS

11.4. Appendix D: Maximum power spectral density

11.4.1. Test Result

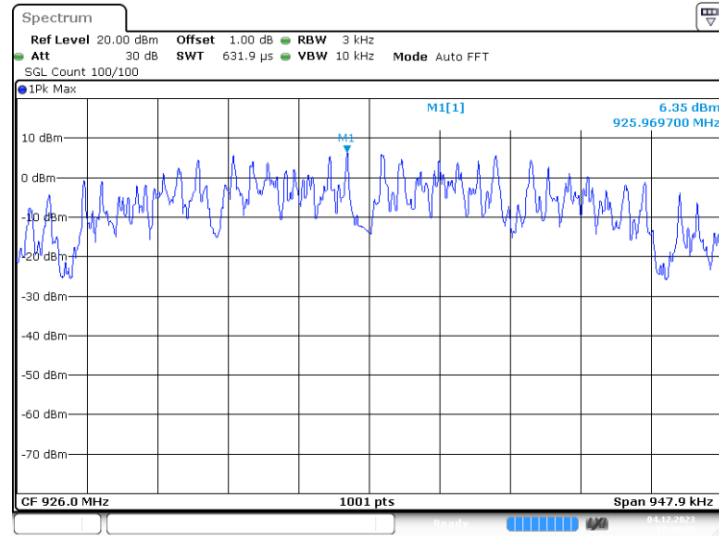
Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
OQPSK	Ant1	Low	6.46	<=8	PASS
		Mid	6.29	<=8	PASS
		High	6.35	<=8	PASS

11.4.1. Test Graphs





HCH



Date: 4 DEC 2023 12:40:35



Appendix E: Conducted Spurious Emission

11.4.2. Test Result

Test Mode	Antenna	Channel	Result[dBm]	Verdict
OQPSK	Ant1	Low	See the below graphs	PASS
		Mid		PASS
		High		PASS

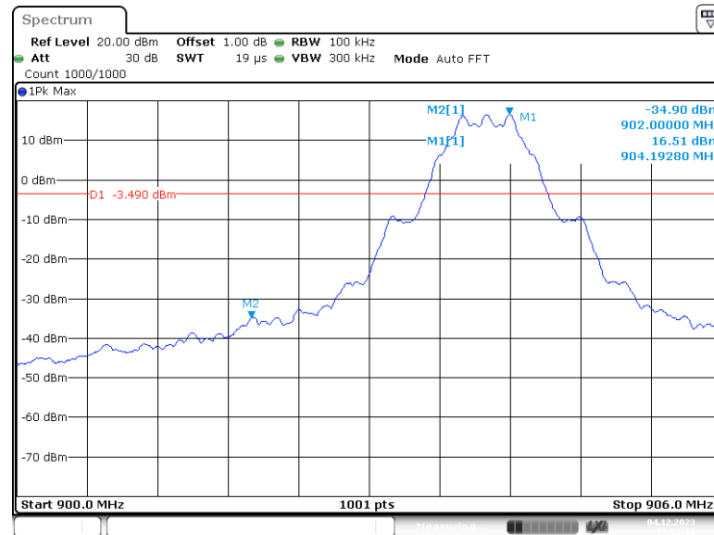
11.4.3. Test Graphs

Low CH, Reference



Date: 4 DEC.2023 13:17:58

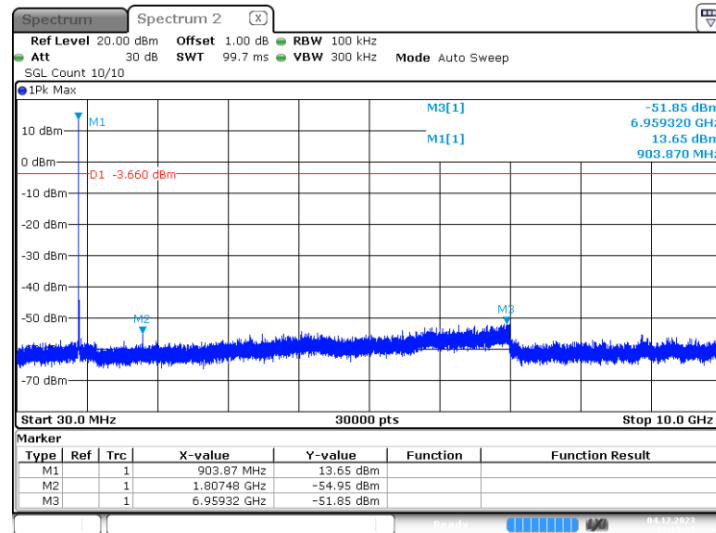
Low CH, Bandedge



Date: 4 DEC.2023 12:57:11



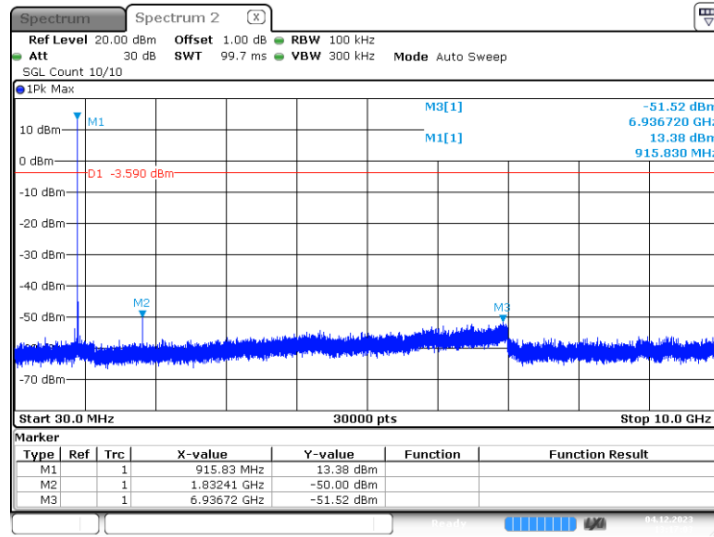
Low CH, Spurious



Mid CH, Reference

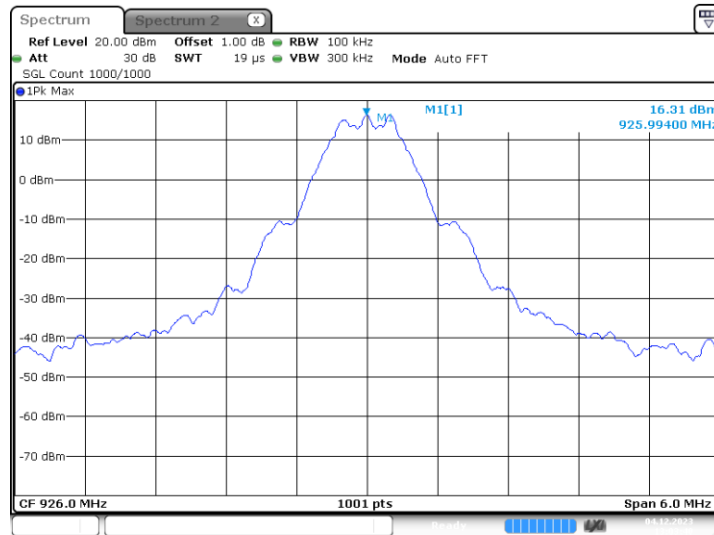


Mid CH, Spurious



Date: 4 DEC 2023 13:17:03

High CH, Reference



Date: 4 DEC 2023 13:03:40

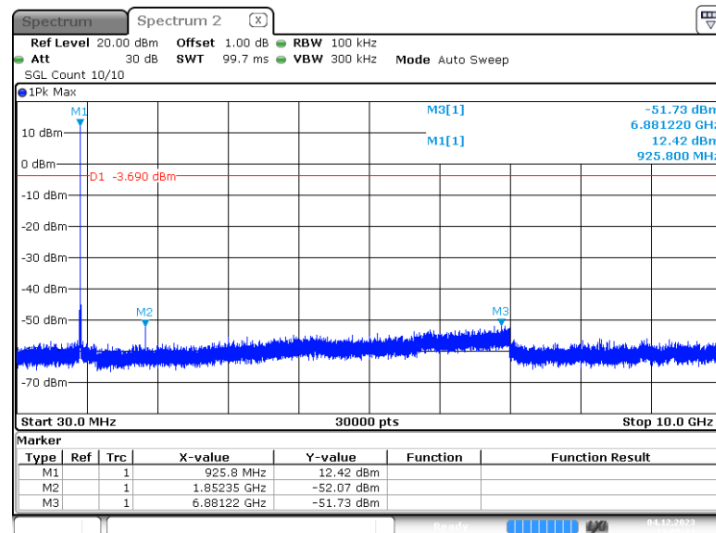


High CH, Bandedge



Date: 4 DEC.2023 12:58:40

High CH, Spurious



Date: 4 DEC.2023 13:05:31

11.5. Appendix F: Duty Cycle

11.5.1. Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
OQPSK	1.875	12.05	0.1556	15.56	8.08	0.53	1

Note:

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

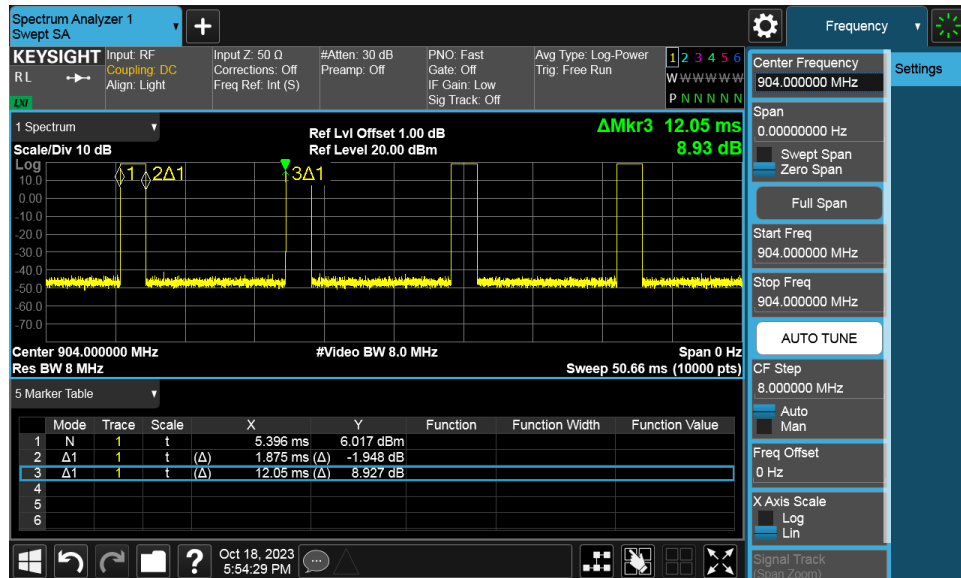
Where: x is Duty Cycle (Linear)

Where: T is On Time

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

11.5.2. Test Graphs

LCH



END OF REPORT