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FCC PART 15B

ANALOGUE SCANNING RECEIVER

TEST REPORT

Applicant	YAESU MUSEN CO., LTD.
Address	TENNOZU PARKSIDE BUILDING 2-5-8 HIGASHI-SHINAGAWA, SHINAGAWA-KU, TOKYO, 140-0002 JAPAN
FCC ID:	K6620693X20
Model Number	FT-4VR
Product Description	FM TRANSCEIVER
Date Sample Received	1/24/2018
Final Test Date	1/30/2018
Tested By	Tim Royer
Approved By	Franklin Rose
Test Results	☒ PASS ☐ FAIL

Report Number	Version Number	Description	Issue Date
111AUT18TestReport	Rev1	Initial Issue	2/24/2018
	Rev2	Revised Report	3/8/2018

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669



Sr. EMC Engineer
EMC-003838-NE



Tested by:

Name and Title: Tim Royer, Project Manager/Testing Engineer

Date: 02/16/2018



Reviewed and approved by:

Name and Title: Franklin Rose, Project Manager/Testing Technician

Date: 02/16/2018

GENERAL INFORMATION

The test results relate only to the items tested.	
EUT Description	FM TRANSCEIVER
FCC ID	K6620693X20
Model Number	FT-4VR
Range	65 – 108 MHz, 136-174 MHz
Antenna Connector	SMA
EUT Power Source	☐ 110–120Vac/50– 60Hz
	☐ 12.6 VDC Nominal
	☒ Battery Operated Exclusively
Test Item	☐ Prototype
	☐ Pre-Production
	☒ Production
Modifications required for Testing	None
Test Site	Timco Engineering, Inc. 849 NW State Road 45 Newberry, FL 32669 USA Designation #: US1070

REPORT SUMMARY

Regulatory Standard	CFR Title 47 FCC Rule part 15B § 15.109, 15.111, & 15.121
Test Procedures	FCC Part 15.31, 15.33, 15.35 ANSI C63.4 – 2014
Operational Modes	Stopped at the Lowest, middle, and highest frequency of tuning range. In addition scanning all frequencies of tuning range
Test Frequencies	Low: 136.0MHz
	Middle: 154.0MHz
	High: 174.0MHz
	Scan: 136.0 – 174.0 MHz
Setup	For radiated test the ant terminal was connected to 50Ω non radiating load through a 50 Ω coaxial cable
	For conducted test the ant terminal was connected to a EMI receiver through 50 Ω coaxial cable
Environmental Condition in the laboratory	Temperature: 24-26°C Relative humidity: 50-65% Barometric Pressure: 1021 mb
Deviation from the standard / procedure	No deviation

RESULTS SUMMARY

Requirement	Limit	Pass / Fail
15.109 Radiated Spurious Emissions	15.109(a)	Pass
15.111 Receiver Conducted Power	15.111(a)	NA ⁽¹⁾
15.121 38 dB Rejection	38 dB	NA ⁽²⁾

Notes:

- 1) EUT is not intended for connection with AC Mains.
- 2) Manufacturer provided attestation letter, no test required.

RADIATED SPURIOUS EMISSIONS

Rule Part No.: FCC Part 15 Subpart B

Requirements: FCC Part 15.109(a) Radiated Emission Limit

Class B Field Strength Limits @ 3 Meters	
Frequency (MHz)	Level (dBuV / m)
30 – 88	40.0
80 – 216	43.5
216 – 960	46.0
Above 960	54.0

FCC Part 15.109(f) Radiated Emission Limit

For a receiver which employs terminals for the connection of an external receiving antenna, the receiver shall be tested to demonstrate compliance with the provisions of this section with an antenna connected to the antenna terminals unless the antenna conducted power is measured as specified in §15.111(a).

Procedure: FCC Part 15.33(b)(3) Frequency range of radiated measurements

FCC Part 15.35(a) Measurement detector functions and bandwidths

ANSI C63.4 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment 9 kHz to 40 GHz

§ 6.2 Operating conditions

§ 6.3 Arrangement of EUT

§ 8.3.1 Exploratory radiated emissions measurements

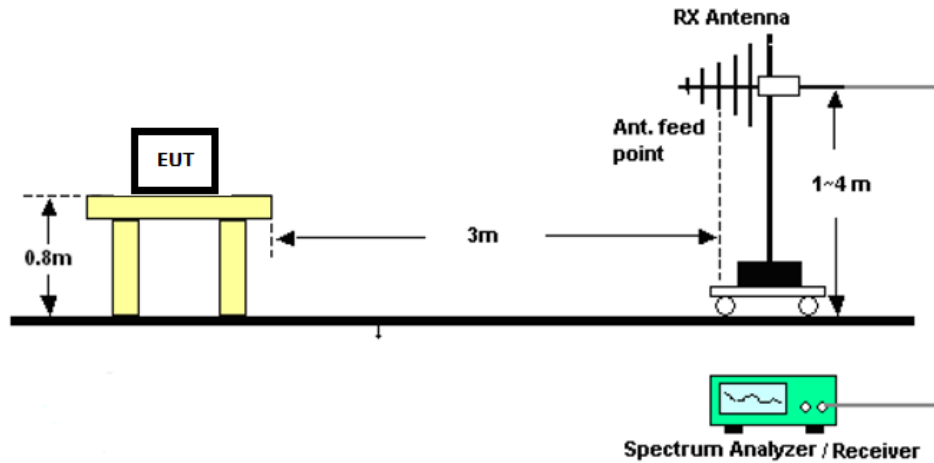
§ 8.3.2 Final radiated emission measurements

Configuration: The scanner receiver spurious emissions are to be measured when the receiver is in the scanning mode and repeated when the scanning is stopped, all while the antenna terminals are terminated into a non-radiating 50 Ω load.

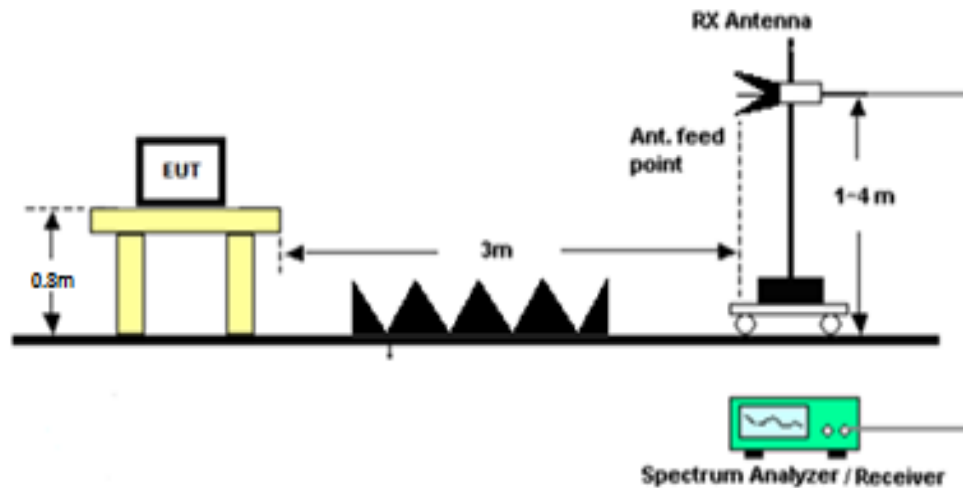
RADIATED SPURIOUS EMISSIONS

Setup:

Emissions 30 – 1000 MHz



Emissions above 1 GHz



RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 30 – 200 MHz Vertical Peak Plot Cont.

23.Feb 18 13:25

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	37.360000000 MHz	10.82	Quasi Peak	-29.18
1	41.520000000 MHz	10.62	Quasi Peak	-29.38
1	145.320000000 MHz	14.81	Quasi Peak	-28.69
1	155.040000000 MHz	16.17	Quasi Peak	-27.33

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Results Meets Requirements

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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 30 – 200 MHz Horizontal Peak Plot



23.Feb 18 13:22

Test Spec CISPR 22 Radiated Disturbances

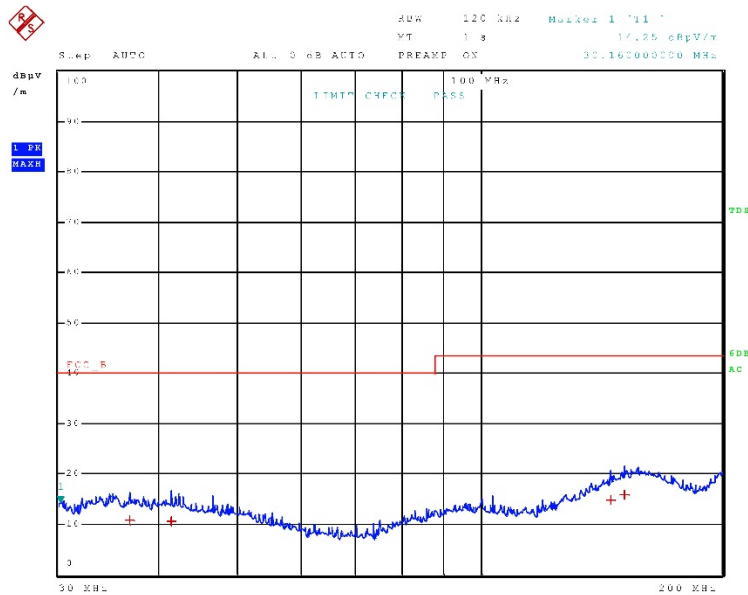
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

23.Feb 18 13:22

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	36.760000000 MHz	10.90	Quasi Peak	-29.10
1	41.400000000 MHz	10.54	Quasi Peak	-29.46
1	145.440000000 MHz	14.84	Quasi Peak	-28.66
1	151.200000000 MHz	15.82	Quasi Peak	-27.68

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 30 – 200 MHz Vertical Peak Plot



23.Feb 18 13:11

Test Spec CISPR 22 Radiated Disturbances

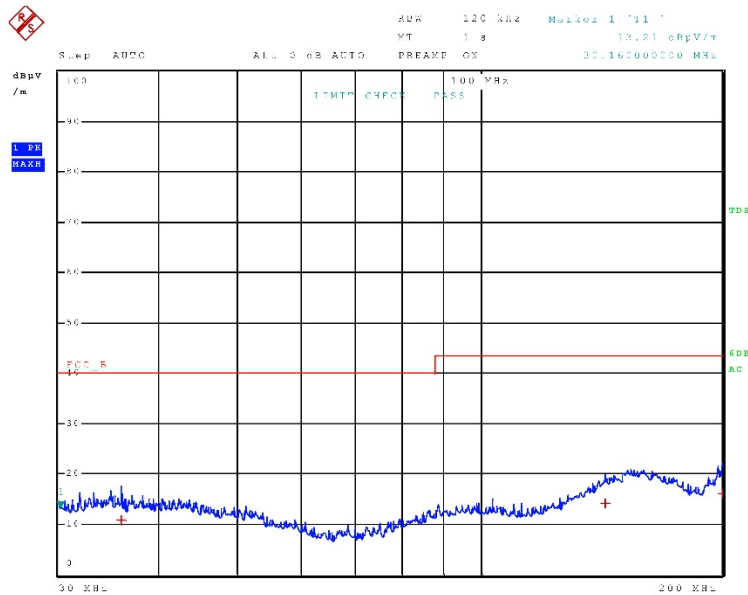
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 30 – 200 MHz Vertical Peak Plot Cont.

23.Feb 18 13:11

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 3

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.840000000 MHz	10.76	Quasi Peak	-29.24
1	143.160000000 MHz	14.18	Quasi Peak	-29.32
1	199.760000000 MHz	16.16	Quasi Peak	-27.34

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 30 – 200 MHz Horizontal Peak Plot



23.Feb 18 13:13

Test Spec CISPR 22 Radiated Disturbances

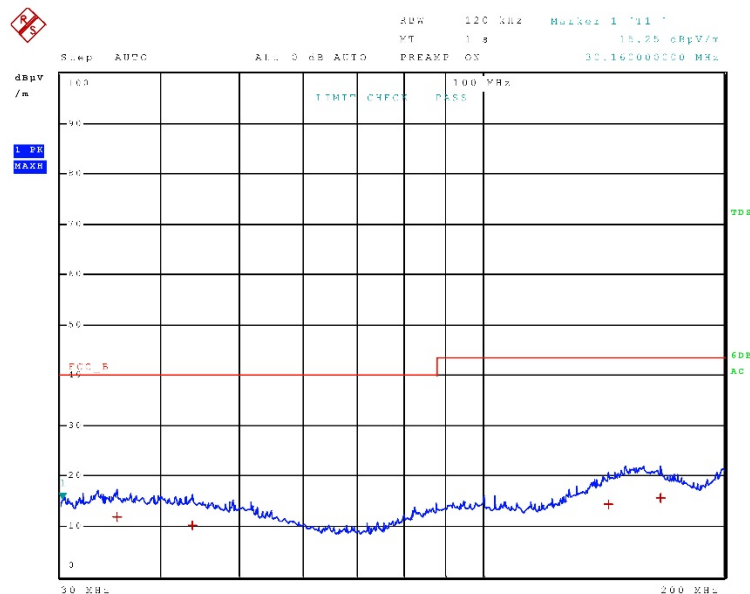
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

23.Feb 18 13:13

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.240000000 MHz	11.79	Quasi Peak	-28.21
1	43.640000000 MHz	10.23	Quasi Peak	-29.77
1	143.560000000 MHz	14.32	Quasi Peak	-29.18
1	166.520000000 MHz	15.59	Quasi Peak	-27.91

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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 30 – 200 MHz Vertical Peak Plot



23.Feb 18 13:07

Test Spec CISPR 22 Radiated Disturbances

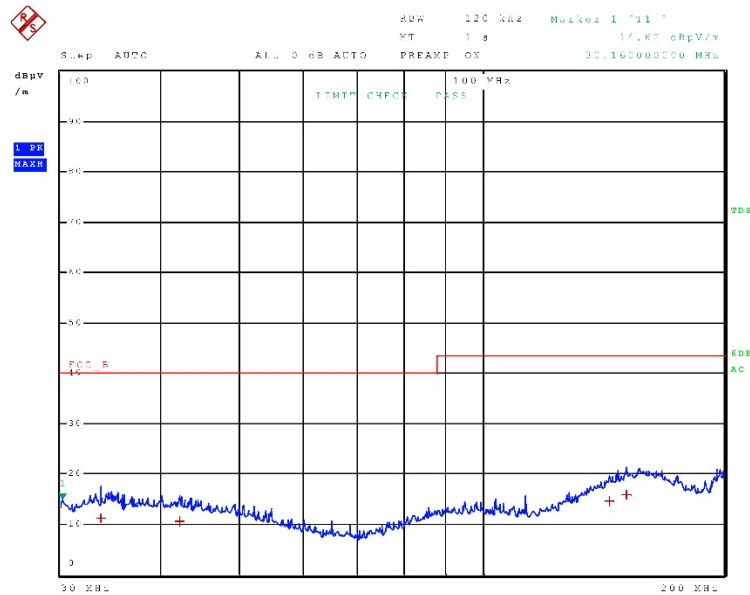
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 30 – 200 MHz Vertical Peak Plot Cont.

23.Feb 18 13:07

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	33.640000000 MHz	11.23	Quasi Peak	-28.77
1	42.080000000 MHz	10.65	Quasi Peak	-29.35
1	144.160000000 MHz	14.54	Quasi Peak	-28.96
1	151.000000000 MHz	15.85	Quasi Peak	-27.65

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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 30 – 200 MHz Horizontal Peak Plot



23.Feb 18 12:49

Test Spec CISPR 22 Radiated Disturbances

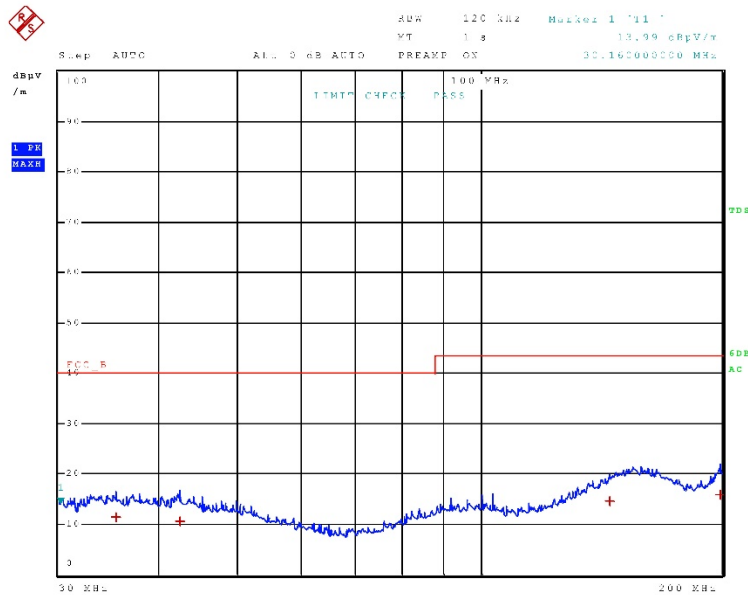
Polarity

Horizontal

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

23.Feb 18 12:49

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	35.280000000 MHz	11.36	Quasi Peak	-28.64
1	42.400000000 MHz	10.55	Quasi Peak	-29.45
1	144.720000000 MHz	14.62	Quasi Peak	-28.88
1	198.920000000 MHz	15.86	Quasi Peak	-27.64

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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 200 – 1000 MHz Vertical Peak Plot



21.Feb 18 16:29

Test Spec CISPR 22 Radiated Disturbances

Polarity

V

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

21.Feb 18 16:29

Test Spec CISPR 22 Radiated Disturbances
Polarity
V

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	759.950000000 MHz	24.15	Quasi Peak	-21.85
1	926.600000000 MHz	26.31	Quasi Peak	-19.69

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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 200 – 1000 MHz Horizontal Peak Plot



21.Feb 18 16:31

Test Spec CISPR 22 Radiated Disturbances

Polarity

H

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 200 – 1000MHz Horizontal Peak Plot Cont.

21.Feb 18 16:31

Test Spec CISPR 22 Radiated Disturbances
Polarity
H

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	763.310000000 MHz	24.06	Quasi Peak	-21.94
1	959.510000000 MHz	27.41	Quasi Peak	-18.59

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 200 – 1000 MHz Vertical Peak Plot



21.Feb 18 16:35

Test Spec CISPR 22 Radiated Disturbances

Polarity

V

Time Domain Scan (1 Range)

Scan Start: 200 MHz
Scan Stop: 1 GHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

21.Feb 18 16:35

Test Spec CISPR 22 Radiated Disturbances
Polarity
V

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	763.340000000 MHz	24.04	Quasi Peak	-21.96
1	930.740000000 MHz	26.01	Quasi Peak	-19.99

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 200 – 1000 MHz Horizontal Peak Plot



21.Feb 18 16:34

Test Spec CISPR 22 Radiated Disturbances

Polarity

H

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
 FCC ID: K6620693X20
 Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 200 – 1000 MHz Horizontal Peak Plot Cont.

21.Feb 18 16:34

Test Spec CISPR 22 Radiated Disturbances
Polarity
H

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	757.880000000 MHz	24.12	Quasi Peak	-21.88
1	956.450000000 MHz	27.04	Quasi Peak	-18.96

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 200 – 1000 MHz Vertical Peak Plot



21.Feb 18 17:04

Test Spec CISPR 22 Radiated Disturbances

Polarity

V

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

21.Feb 18 17:04

Test Spec CISPR 22 Radiated Disturbances
Polarity
V

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	756.350000000 MHz	24.19	Quasi Peak	-21.81
1	956.030000000 MHz	27.05	Quasi Peak	-18.95

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 200–1000MHz Horizontal Peak Plot Cont.

21.Feb 18 17:06

Test Spec CISPR 22 Radiated Disturbances
Polarity
H

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	764.600000000 MHz	24.13	Quasi Peak	-21.87
1	953.840000000 MHz	26.78	Quasi Peak	-19.22

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

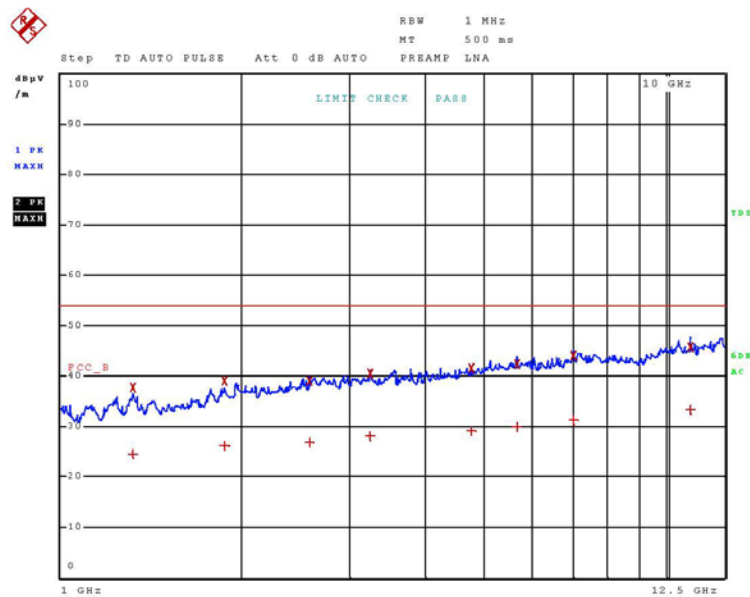
Test Data: Low End of Band (65MHz) 1 – 12.5 GHz Vertical Peak Plot

21.Feb 18 11:27

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

21.Feb 18 11:27

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.316000000 GHz	24.47	CISPR Averag	-29.53
2	1.316000000 GHz	37.66	Max Peak	
1	1.865750000 GHz	26.26	CISPR Averag	-27.74
2	1.865750000 GHz	39.07	Max Peak	
1	2.576250000 GHz	26.84	CISPR Averag	-27.16
2	2.576250000 GHz	38.98	Max Peak	
1	3.251500000 GHz	28.01	CISPR Averag	-25.99
2	3.251500000 GHz	40.54	Max Peak	
1	4.769000000 GHz	29.09	CISPR Averag	-24.91
2	4.769000000 GHz	41.41	Max Peak	
1	5.666500000 GHz	30.02	CISPR Averag	-23.98
2	5.666500000 GHz	42.39	Max Peak	
1	7.031250000 GHz	31.27	CISPR Averag	-22.73
2	7.031250000 GHz	44.00	Max Peak	
1	10.966750000 GHz	33.33	CISPR Averag	-20.67
2	10.966750000 GHz	45.62	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

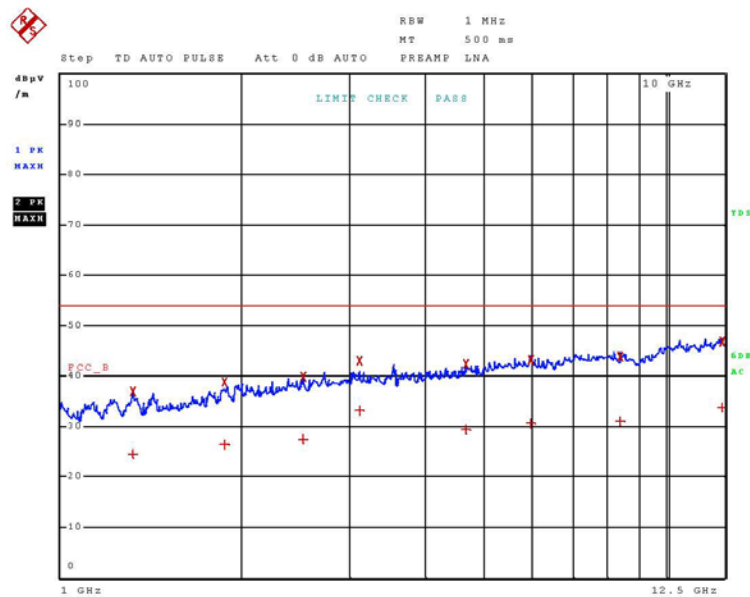
Test Data: Low End of Band (65MHz) 1 – 12.5 GHz Horizontal Peak Plot

21.Feb 18 11:26

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (65MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

21.Feb 18 11:26

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.315750000 GHz	24.49	CISPR Averag	-29.51
2	1.315750000 GHz	36.92	Max Peak	
1	1.865500000 GHz	26.29	CISPR Averag	-27.71
2	1.865500000 GHz	38.81	Max Peak	
1	2.516000000 GHz	27.36	CISPR Averag	-26.64
2	2.516000000 GHz	39.78	Max Peak	
1	3.114000000 GHz	33.07	CISPR Averag	-20.93
2	3.114000000 GHz	42.96	Max Peak	
1	4.675250000 GHz	29.29	CISPR Averag	-24.71
2	4.675250000 GHz	42.24	Max Peak	
1	5.991250000 GHz	30.57	CISPR Averag	-23.43
2	5.991250000 GHz	43.11	Max Peak	
1	8.390500000 GHz	31.02	CISPR Averag	-22.98
2	8.390500000 GHz	43.90	Max Peak	
1	12.419000000 GHz	33.70	CISPR Averag	-20.30
2	12.419000000 GHz	46.77	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

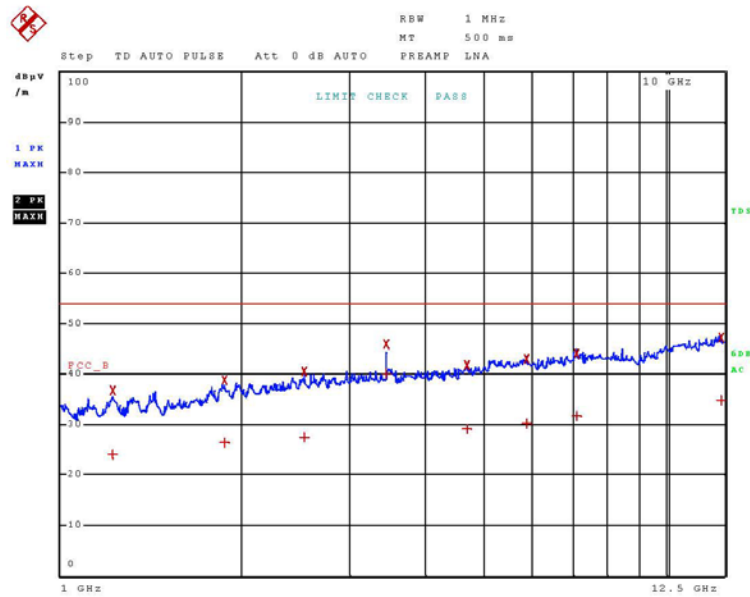
Test Data: Middle of Band (86.5MHz) 1 – 12.5 GHz Vertical Peak Plot

21.Feb 18 11:21

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

21.Feb 18 11:21

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.220750000 GHz	24.05	CISPR Averag	-29.95
2	1.220750000 GHz	36.57	Max Peak	
1	1.865250000 GHz	26.32	CISPR Averag	-27.68
2	1.865250000 GHz	38.68	Max Peak	
1	2.522250000 GHz	27.45	CISPR Averag	-26.55
2	2.522250000 GHz	40.36	Max Peak	
1	3.455000000 GHz	40.03	CISPR Averag	-13.97
2	3.455000000 GHz	45.89	Max Peak	
1	4.688500000 GHz	29.16	CISPR Averag	-24.84
2	4.688500000 GHz	41.79	Max Peak	
1	5.877250000 GHz	30.04	CISPR Averag	-23.96
2	5.877250000 GHz	42.96	Max Peak	
1	7.122000000 GHz	31.66	CISPR Averag	-22.34
2	7.122000000 GHz	44.04	Max Peak	
1	12.365250000 GHz	34.69	CISPR Averag	-19.31
2	12.365250000 GHz	47.21	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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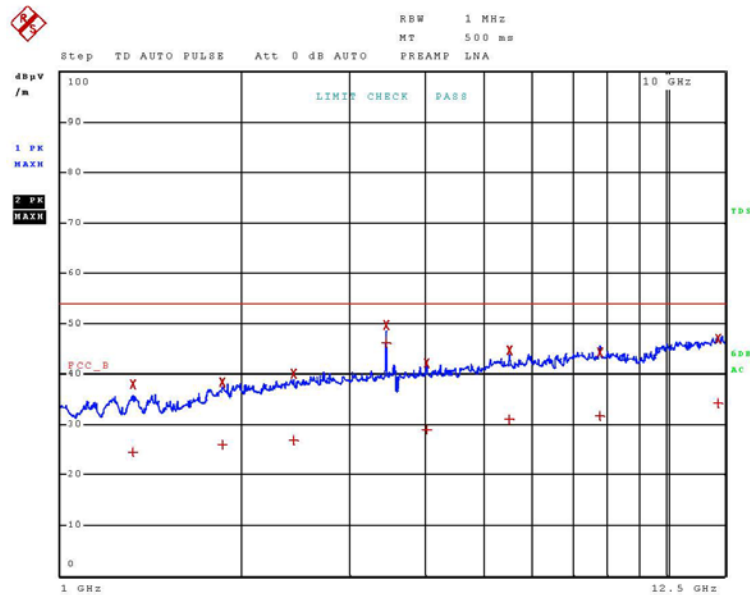
Test Data: Middle of Band (86.5MHz) 1 – 12.5 GHz Horizontal Peak Plot

21.Feb 18 11:23

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (86.5MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

21.Feb 18 11:23

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.316000000 GHz	24.50	CISPR Averag	-29.50
2	1.316000000 GHz	37.91	Max Peak	
1	1.851500000 GHz	25.89	CISPR Averag	-28.11
2	1.851500000 GHz	38.25	Max Peak	
1	2.428250000 GHz	26.79	CISPR Averag	-27.21
2	2.428250000 GHz	40.00	Max Peak	
1	3.455000000 GHz	46.06	CISPR Averag	-7.94
2	3.455000000 GHz	49.60	Max Peak	
1	4.031000000 GHz	28.87	CISPR Averag	-25.13
2	4.031000000 GHz	42.09	Max Peak	
1	5.520000000 GHz	30.96	CISPR Averag	-23.04
2	5.520000000 GHz	44.56	Max Peak	
1	7.785500000 GHz	31.66	CISPR Averag	-22.34
2	7.785500000 GHz	44.23	Max Peak	
1	12.187250000 GHz	34.11	CISPR Averag	-19.89
2	12.187250000 GHz	47.01	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

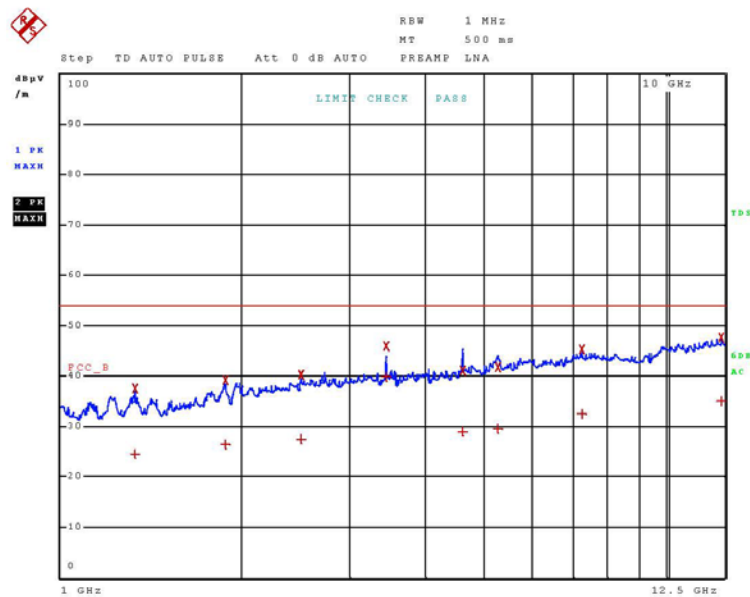
Test Data: High End of Band (108MHz) 1 – 12.5 GHz Vertical Peak Plot

21.Feb 18 11:18

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

21.Feb 18 11:18

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.326500000 GHz	24.44	CISPR Averag	-29.56
2	1.326500000 GHz	37.44	Max Peak	
1	1.869250000 GHz	26.29	CISPR Averag	-27.71
2	1.869250000 GHz	39.26	Max Peak	
1	2.498250000 GHz	27.34	CISPR Averag	-26.66
2	2.498250000 GHz	40.25	Max Peak	
1	3.452000000 GHz	39.78	CISPR Averag	-14.22
2	3.452000000 GHz	45.86	Max Peak	
1	4.618750000 GHz	28.81	CISPR Averag	-25.19
2	4.618750000 GHz	41.06	Max Peak	
1	5.276250000 GHz	29.47	CISPR Averag	-24.53
2	5.276250000 GHz	41.78	Max Peak	
1	7.253250000 GHz	32.45	CISPR Averag	-21.55
2	7.253250000 GHz	45.37	Max Peak	
1	12.335750000 GHz	34.91	CISPR Averag	-19.09
2	12.335750000 GHz	47.57	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

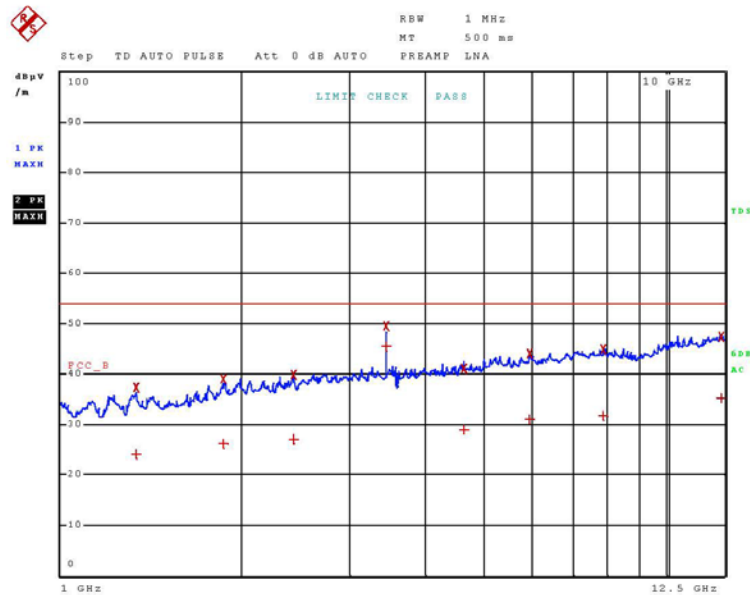
Test Data: High End of Band (108MHz) 1 – 12.5 GHz Horizontal Peak Plot

21.Feb 18 11:16

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (108MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

21.Feb 18 11:16

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.334250000 GHz	24.11	CISPR Averag	-29.89
2	1.334250000 GHz	37.19	Max Peak	
1	1.854750000 GHz	26.26	CISPR Averag	-27.74
2	1.854750000 GHz	38.92	Max Peak	
1	2.426000000 GHz	26.99	CISPR Averag	-27.01
2	2.426000000 GHz	39.74	Max Peak	
1	3.452000000 GHz	45.53	CISPR Averag	-8.47
2	3.452000000 GHz	49.39	Max Peak	
1	4.643250000 GHz	28.99	CISPR Averag	-25.01
2	4.643250000 GHz	41.04	Max Peak	
1	5.959000000 GHz	30.97	CISPR Averag	-23.03
2	5.959000000 GHz	43.95	Max Peak	
1	7.877250000 GHz	31.58	CISPR Averag	-22.42
2	7.877250000 GHz	44.76	Max Peak	
1	12.344500000 GHz	35.13	CISPR Averag	-18.87
2	12.344500000 GHz	47.43	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS 136 to 174 MHz Band

Test Data: Low End of Band (136MHz) 30 – 200 MHz Vertical Peak Plot



09.Feb 18 08:02

Test Spec CISPR 22 Radiated Disturbances

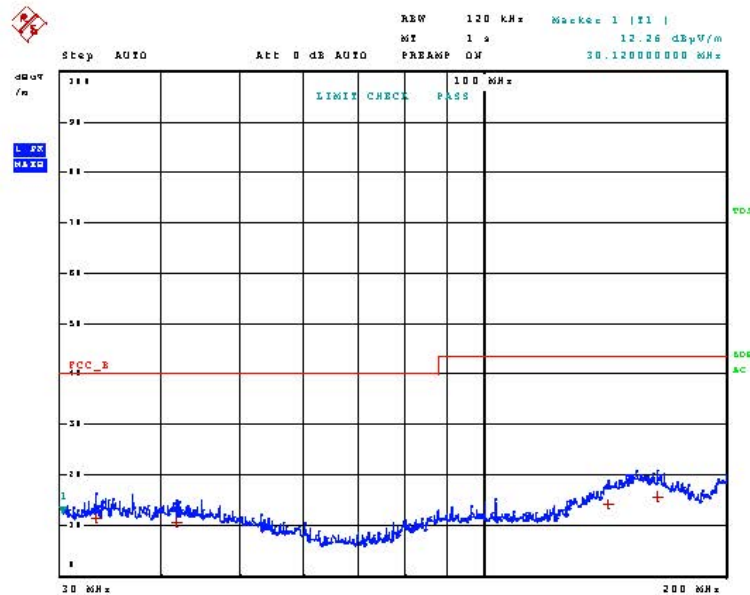
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 30 – 200 MHz Vertical Peak Plot Cont.

09.Feb 18 08:02

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	33.160000000 MHz	11.35	Quasi Peak	-28.65
1	41.800000000 MHz	10.67	Quasi Peak	-29.33
1	143.120000000 MHz	14.09	Quasi Peak	-29.41
1	164.600000000 MHz	15.75	Quasi Peak	-27.75

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 30 – 200 MHz Horizontal Peak Plot



09.Feb 18 08:01

Test Spec CISPR 22 Radiated Disturbances

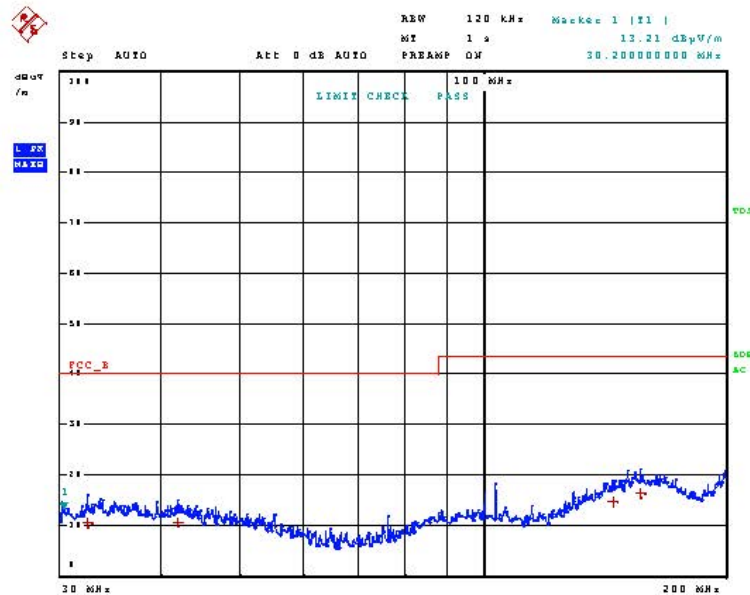
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

09.Feb 18 08:01

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	32.32000000 MHz	10.50	Quasi Peak	-29.50
1	41.92000000 MHz	10.66	Quasi Peak	-29.34
1	144.92000000 MHz	14.65	Quasi Peak	-28.85
1	156.68000000 MHz	16.31	Quasi Peak	-27.19

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 30 – 200 MHz Vertical Peak Plot



09.Feb 18 08:04

Test Spec CISPR 22 Radiated Disturbances

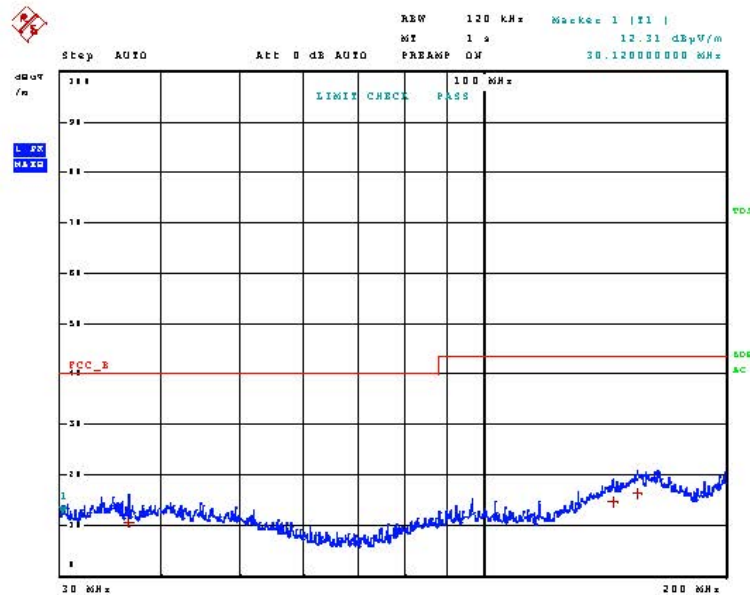
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 30 – 200 MHz Vertical Peak Plot Cont.

09.Feb 18 08:04

Test Spec CISPR 22 Radiated Disturbances
Polarity
Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 3

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	36.360000000 MHz	10.69	Quasi Peak	-29.31
1	144.880000000 MHz	14.65	Quasi Peak	-28.85
1	155.560000000 MHz	16.21	Quasi Peak	-27.29

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 30 – 200 MHz Horizontal Peak Plot



09.Feb 18 08:04

Test Spec CISPR 22 Radiated Disturbances

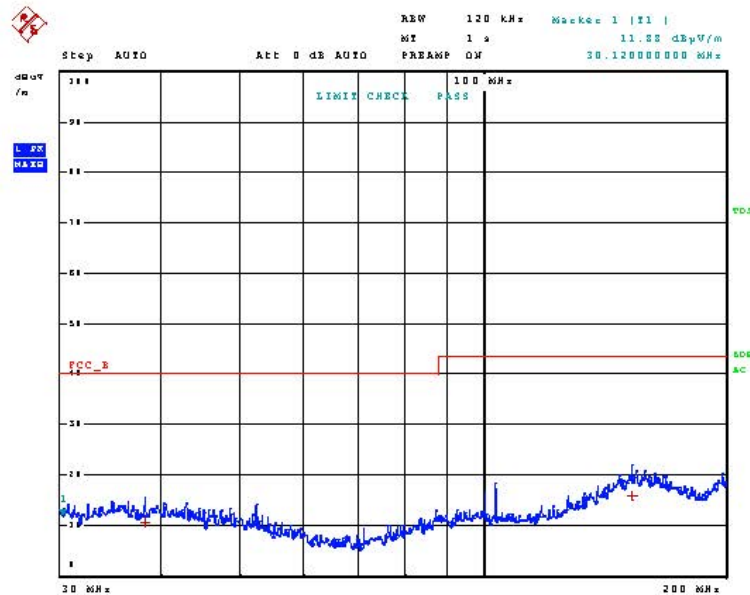
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

09.Feb 18 08:04

Test Spec CISPR 22 Radiated Disturbances
Polarity
Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	38.120000000 MHz	10.57	Quasi Peak	-29.43
1	152.880000000 MHz	15.85	Quasi Peak	-27.65

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 30 – 200 MHz Vertical Peak Plot



09.Feb 18 08:06

Test Spec CISPR 22 Radiated Disturbances

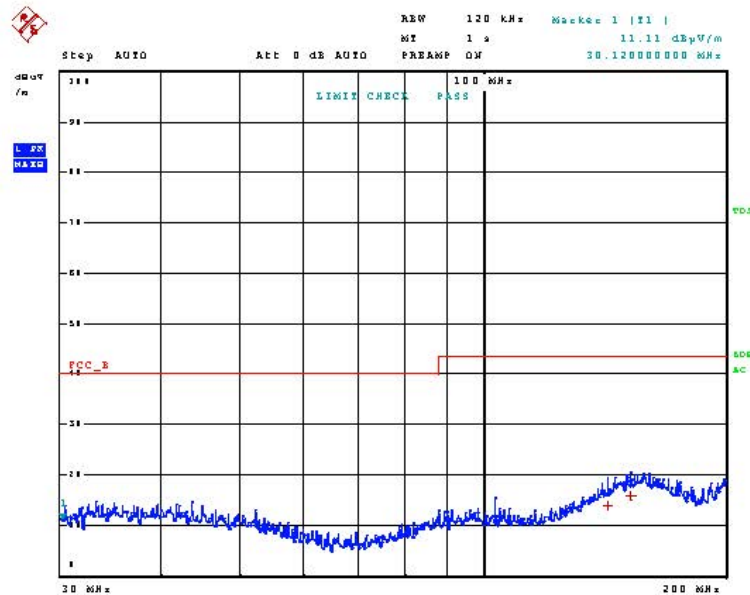
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 30 – 200 MHz Vertical Peak Plot Cont.

09.Feb 18 08:06

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s

Margin: 25 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	142.800000000 MHz	14.06	Quasi Peak	-29.44
1	152.400000000 MHz	15.76	Quasi Peak	-27.74

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 30 – 200 MHz Horizontal Peak Plot



09.Feb 18 08:05

Test Spec CISPR 22 Radiated Disturbances

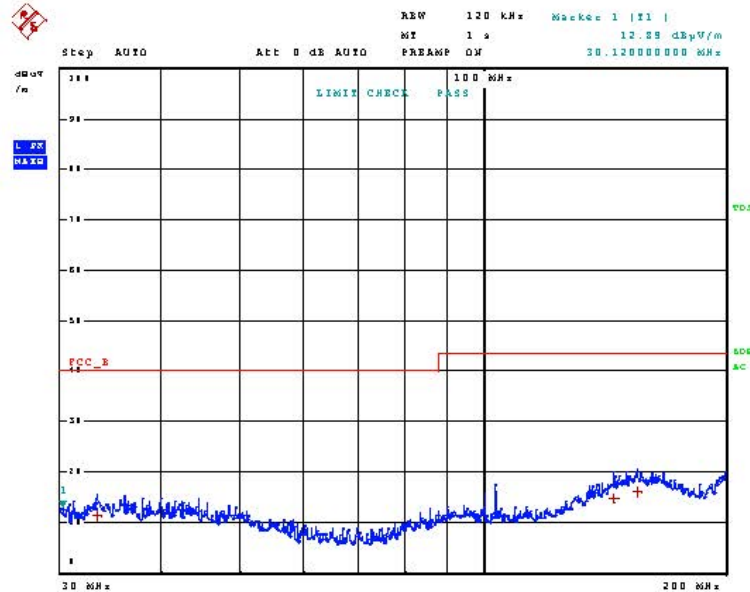
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 30 – 200 MHz Horizontal Peak Plot Cont.

09.Feb 18 08:05

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 3

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	33.24000000 MHz	11.31	Quasi Peak	-28.69
1	145.12000000 MHz	14.75	Quasi Peak	-28.75
1	155.52000000 MHz	16.17	Quasi Peak	-27.33

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 200 – 1000 MHz Vertical Peak Plot



09.Feb 18 07:51

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

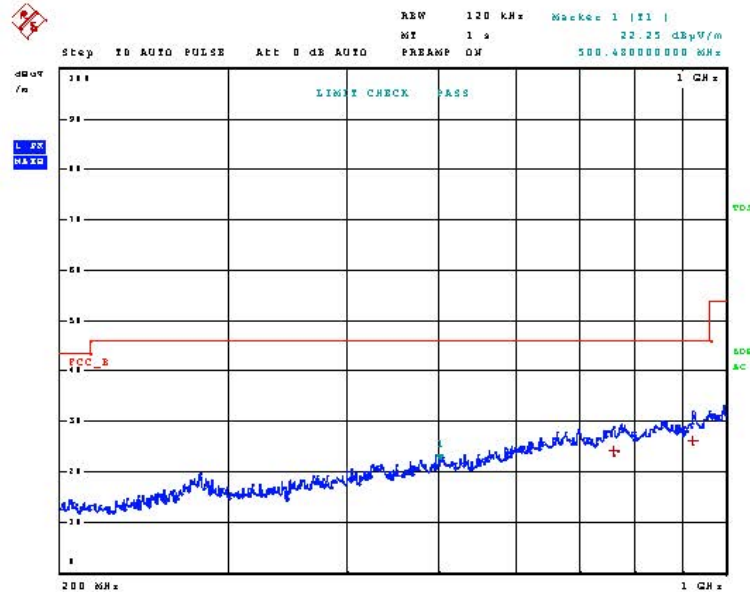
Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

09.Feb 18 07:51

Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	761.870000000 MHz	24.10	Quasi Peak	-21.90
1	922.340000000 MHz	26.09	Quasi Peak	-19.91

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 200 – 1000 MHz Horizontal Peak Plot



09.Feb 18 08:01

Test Spec CISPR 22 Radiated Disturbances

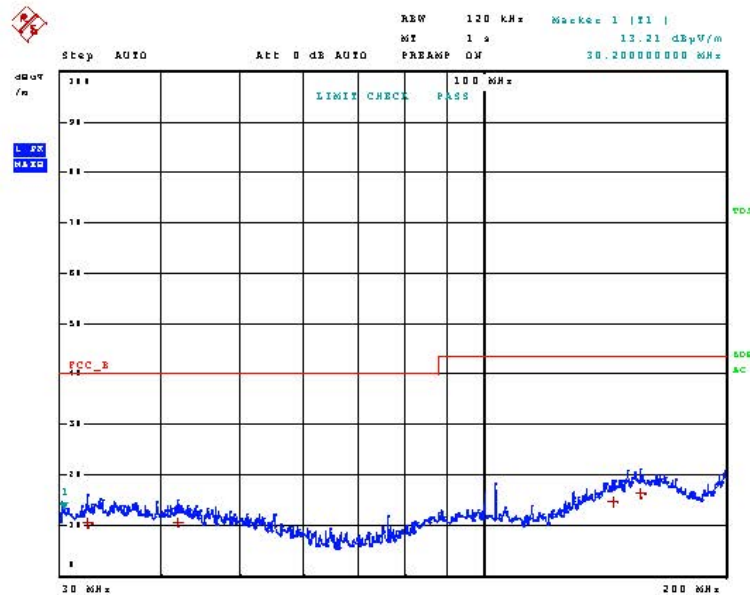
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 200 – 1000MHz Horizontal Peak Plot Cont.

09.Feb 18 08:01

Test Spec CISPR 22 Radiated Disturbances

Polarity

Vertical

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 4

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	32.32000000 MHz	10.50	Quasi Peak	-29.50
1	41.92000000 MHz	10.66	Quasi Peak	-29.34
1	144.92000000 MHz	14.65	Quasi Peak	-28.85
1	156.68000000 MHz	16.31	Quasi Peak	-27.19

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 200 – 1000 MHz Vertical Peak Plot



09.Feb 18 07:48

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

09.Feb 18 07:48

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s

Margin: 20 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	758.900000000 MHz	24.09	Quasi Peak	-21.91
1	958.460000000 MHz	27.22	Quasi Peak	-18.78

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 200 – 1000 MHz Horizontal Peak Plot



09.Feb 18 07:48

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
 FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 200 – 1000 MHz Horizontal Peak Plot Cont.

09.Feb 18 07:48

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s

Margin: 20 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	761.930000000 MHz	24.11	Quasi Peak	-21.89
1	958.880000000 MHz	27.32	Quasi Peak	-18.68

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 200 – 1000 MHz Vertical Peak Plot



09.Feb 18 07:47

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 200 – 1000 MHz Vertical Peak Plot Cont.

09.Feb 18 07:51

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s

Margin: 20 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	676.640000000 MHz	23.42	Quasi Peak	-22.58
1	956.780000000 MHz	27.13	Quasi Peak	-18.87

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 200–1000MHz Horizontal Peak Plot Cont.

09.Feb 18 07:49

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s

Margin: 20 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	764.180000000 MHz	24.08	Quasi Peak	-21.92
1	930.380000000 MHz	26.12	Quasi Peak	-19.88

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

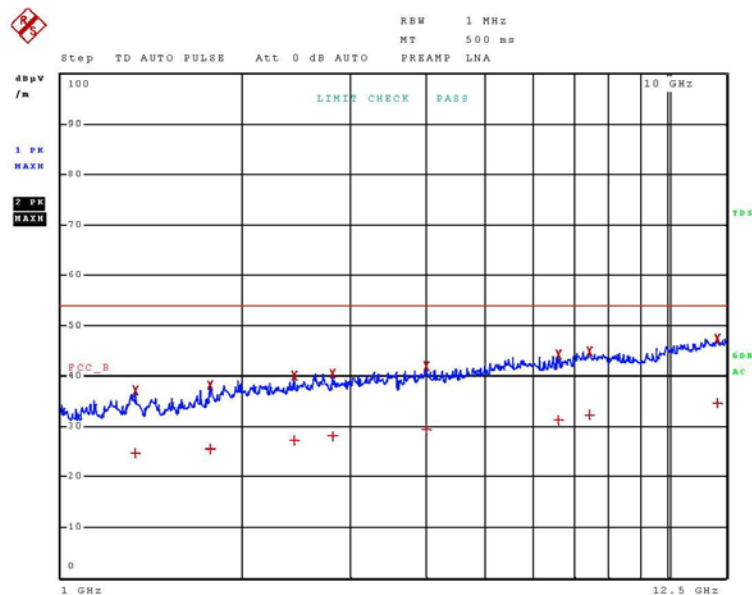
Test Data: Low End of Band (136MHz) 1 – 12.5 GHz Vertical Peak Plot

27.Jan 18 14:27

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

27.Jan 18 14:27

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.328250000 GHz	24.60	CISPR Averag	-29.40
2	1.328250000 GHz	37.09	Max Peak	
1	1.760750000 GHz	25.57	CISPR Averag	-28.43
2	1.760750000 GHz	38.23	Max Peak	
1	2.422750000 GHz	27.25	CISPR Averag	-26.75
2	2.422750000 GHz	40.03	Max Peak	
1	2.811250000 GHz	28.01	CISPR Averag	-25.99
2	2.811250000 GHz	40.40	Max Peak	
1	4.014250000 GHz	29.26	CISPR Averag	-24.74
2	4.014250000 GHz	41.91	Max Peak	
1	6.613750000 GHz	31.29	CISPR Averag	-22.71
2	6.613750000 GHz	44.22	Max Peak	
1	7.460000000 GHz	32.35	CISPR Averag	-21.65
2	7.460000000 GHz	44.89	Max Peak	
1	12.104750000 GHz	34.62	CISPR Averag	-19.38
2	12.104750000 GHz	47.29	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

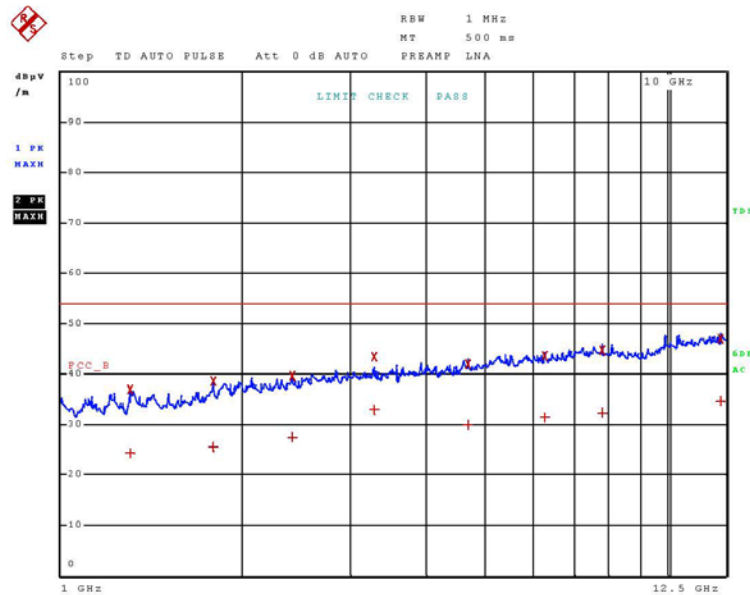
Test Data: Low End of Band (136MHz) 1 – 12.5 GHz Horizontal Peak Plot

27.Jan 18 14:25

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

Test Data: Low End of Band (136MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

27.Jan 18 14:25

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.303250000 GHz	24.28	CISPR Averag	-29.72
2	1.303250000 GHz	36.90	Max Peak	
1	1.781500000 GHz	25.63	CISPR Averag	-28.37
2	1.781500000 GHz	38.62	Max Peak	
1	2.408750000 GHz	27.34	CISPR Averag	-26.66
2	2.408750000 GHz	39.63	Max Peak	
1	3.281000000 GHz	32.78	CISPR Averag	-21.22
2	3.281000000 GHz	43.36	Max Peak	
1	4.695250000 GHz	29.87	CISPR Averag	-24.13
2	4.695250000 GHz	41.95	Max Peak	
1	6.277500000 GHz	31.49	CISPR Averag	-22.51
2	6.277500000 GHz	43.59	Max Peak	
1	7.808000000 GHz	32.28	CISPR Averag	-21.72
2	7.808000000 GHz	44.62	Max Peak	
1	12.243250000 GHz	34.56	CISPR Averag	-19.44
2	12.243250000 GHz	47.03	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

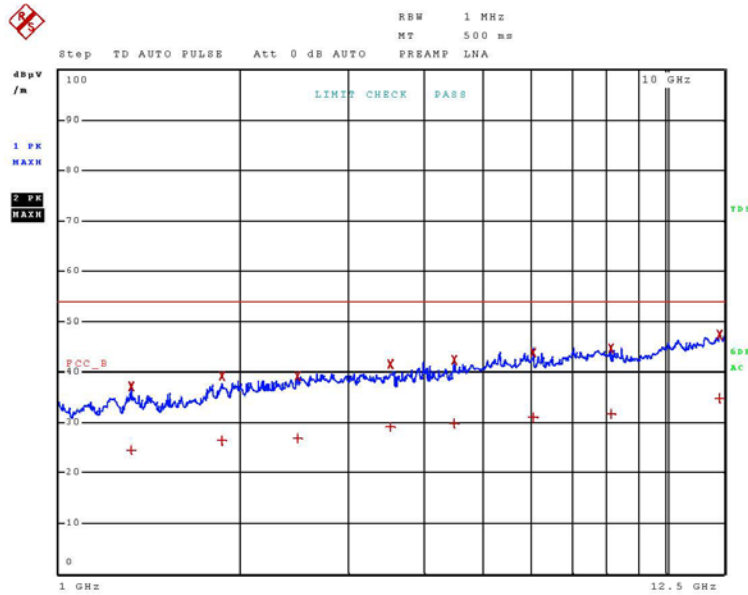
Test Data: Middle of Band (150MHz) 1 – 12.5 GHz Vertical Peak Plot

27.Jan 18 14:33

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

27.Jan 18 14:33

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.315000000 GHz	24.54	CISPR Averag	-29.46
2	1.315000000 GHz	37.09	Max Peak	
1	1.858000000 GHz	26.36	CISPR Averag	-27.64
2	1.858000000 GHz	39.09	Max Peak	
1	2.474250000 GHz	26.71	CISPR Averag	-27.29
2	2.474250000 GHz	39.17	Max Peak	
1	3.525250000 GHz	29.14	CISPR Averag	-24.86
2	3.525250000 GHz	41.56	Max Peak	
1	4.483500000 GHz	29.65	CISPR Averag	-24.35
2	4.483500000 GHz	42.35	Max Peak	
1	6.049000000 GHz	31.04	CISPR Averag	-22.96
2	6.049000000 GHz	43.80	Max Peak	
1	8.134750000 GHz	31.52	CISPR Averag	-22.48
2	8.134750000 GHz	44.55	Max Peak	
1	12.323250000 GHz	34.80	CISPR Averag	-19.20
2	12.323250000 GHz	47.45	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

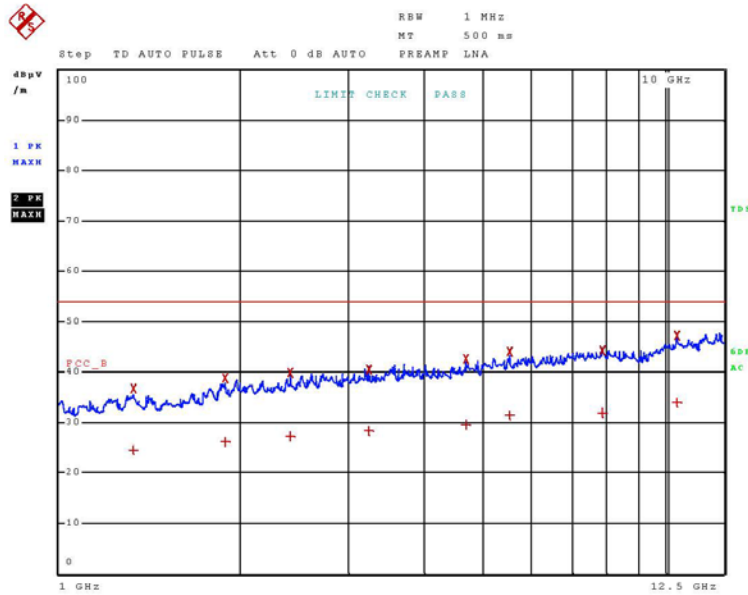
Test Data: Middle of Band (150MHz) 1 – 12.5 GHz Horizontal Peak Plot

27.Jan 18 14:32

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

Test Data: Middle of Band (150MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

27.Jan 18 14:32

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.328000000 GHz	24.46	CISPR Averag	-29.54
2	1.328000000 GHz	36.75	Max Peak	
1	1.880250000 GHz	26.19	CISPR Averag	-27.81
2	1.880250000 GHz	38.78	Max Peak	
1	2.409000000 GHz	27.11	CISPR Averag	-26.89
2	2.409000000 GHz	39.85	Max Peak	
1	3.252750000 GHz	28.31	CISPR Averag	-25.69
2	3.252750000 GHz	40.50	Max Peak	
1	4.685250000 GHz	29.49	CISPR Averag	-24.51
2	4.685250000 GHz	42.64	Max Peak	
1	5.540250000 GHz	31.42	CISPR Averag	-22.58
2	5.540250000 GHz	43.92	Max Peak	
1	7.871500000 GHz	31.74	CISPR Averag	-22.26
2	7.871500000 GHz	44.25	Max Peak	
1	10.439750000 GHz	33.93	CISPR Averag	-20.07
2	10.439750000 GHz	47.19	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

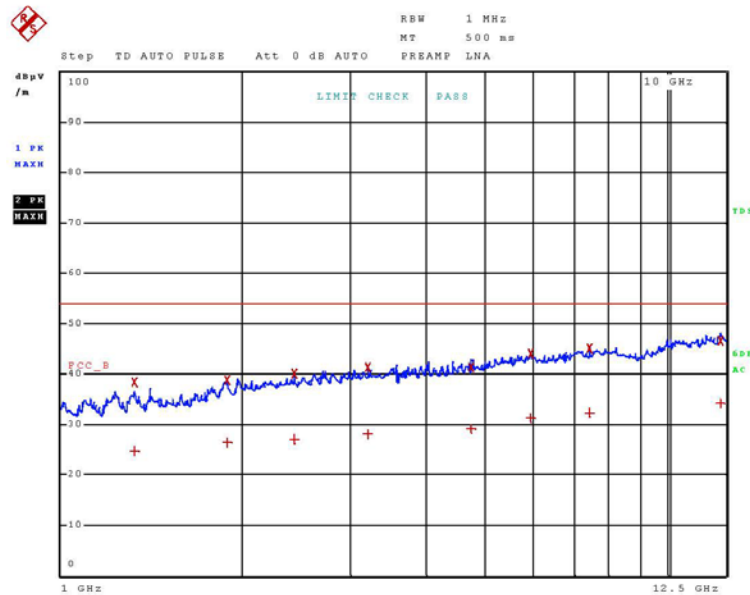
Test Data: High End of Band (174MHz) 1 – 12.5 GHz Vertical Peak Plot

27.Jan 18 14:28

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 1 – 12.5 GHz Vertical Peak Plot Cont.

27.Jan 18 14:28

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.321000000 GHz	24.59	CISPR Averag	-29.41
2	1.321000000 GHz	38.26	Max Peak	
1	1.879250000 GHz	26.33	CISPR Averag	-27.67
2	1.879250000 GHz	38.75	Max Peak	
1	2.430500000 GHz	27.02	CISPR Averag	-26.98
2	2.430500000 GHz	39.96	Max Peak	
1	3.207500000 GHz	28.05	CISPR Averag	-25.95
2	3.207500000 GHz	41.33	Max Peak	
1	4.751750000 GHz	29.05	CISPR Averag	-24.95
2	4.751750000 GHz	41.34	Max Peak	
1	5.968750000 GHz	31.30	CISPR Averag	-22.70
2	5.968750000 GHz	44.12	Max Peak	
1	7.458000000 GHz	32.18	CISPR Averag	-21.82
2	7.458000000 GHz	45.10	Max Peak	
1	12.263500000 GHz	34.21	CISPR Averag	-19.79
2	12.263500000 GHz	46.48	Max Peak	

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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
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RADIATED SPURIOUS EMISSIONS

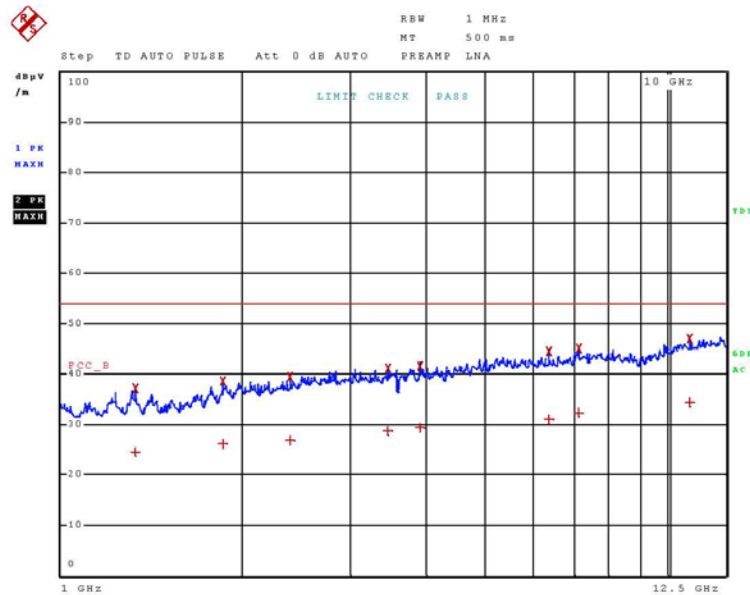
Test Data: High End of Band (174MHz) 1 – 12.5 GHz Horizontal Peak Plot

27.Jan 18 14:30

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.
FCC ID: K6620693X20
Report: 111AUT18TestReport_Rev2

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RADIATED SPURIOUS EMISSIONS

Test Data: High End of Band (174MHz) 1 – 12.5 GHz Horizontal Peak Plot Cont.

27.Jan 18 14:30

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.325750000 GHz	24.57	CISPR Averag	-29.43
2	1.325750000 GHz	37.11	Max Peak	
1	1.852000000 GHz	26.20	CISPR Averag	-27.80
2	1.852000000 GHz	38.48	Max Peak	
1	2.384500000 GHz	26.75	CISPR Averag	-27.25
2	2.384500000 GHz	39.32	Max Peak	
1	3.465750000 GHz	28.63	CISPR Averag	-25.37
2	3.465750000 GHz	41.06	Max Peak	
1	3.918500000 GHz	29.22	CISPR Averag	-24.78
2	3.918500000 GHz	41.39	Max Peak	
1	6.376250000 GHz	30.94	CISPR Averag	-23.06
2	6.376250000 GHz	44.51	Max Peak	
1	7.135750000 GHz	32.23	CISPR Averag	-21.77
2	7.135750000 GHz	44.97	Max Peak	
1	10.889750000 GHz	34.38	CISPR Averag	-19.62
2	10.889750000 GHz	46.87	Max Peak	

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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 30 – 200 MHz Horizontal Peak Plot



09.Feb 18 07:58

Test Spec CISPR 22 Radiated Disturbances

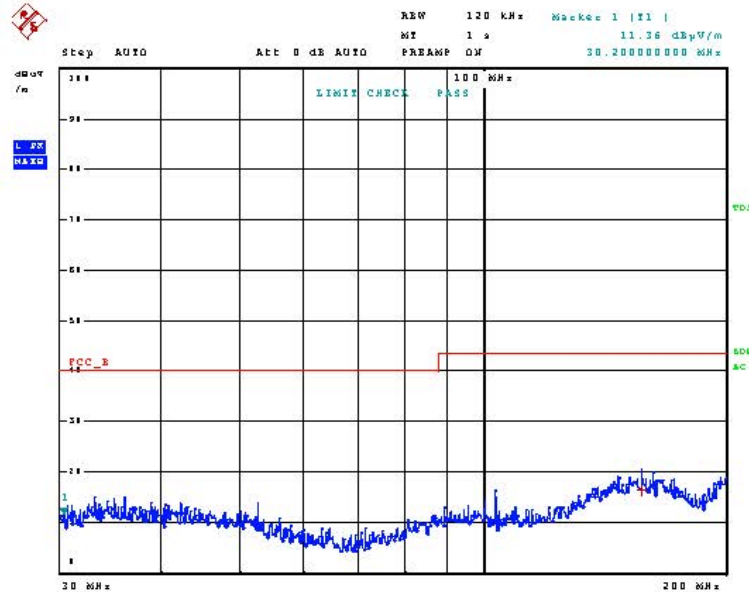
Polarity

Vertical

Stepped Scan (1 Range)

Scan Start: 30 MHz
Scan Stop: 200 MHz
Detector: Trace 1: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
30.000000 MHz	200.000000 MHz	40.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 1

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	157.12000000 MHz	16.28	Quasi Peak	-27.22

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Results Meets Requirements

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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 200 – 1000 MHz Vertical Peak Plot Cont.

09.Feb 18 07:51

Test Spec CISPR 22 Radiated Disturbances
Polarity
Horizontal

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	761.870000000 MHz	24.10	Quasi Peak	-21.90
1	922.340000000 MHz	26.09	Quasi Peak	-19.91

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Results Meets Requirements

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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 200 – 1000 MHz Horizontal Peak Plot



09.Feb 18 07:52

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Time Domain Scan (1 Range)

Scan Start: 200 MHz

Scan Stop: 1 GHz

Detector: Trace 1: MAX PEAK

Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
200.000000 MHz	1.000000 GHz	30.00 kHz	120.00 kHz	50 μ s	Auto	20 dB	INPUT1



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Results Meets Requirements

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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 200 – 1000 MHz Horizontal Peak Plot Cont.

09.Feb 18 07:52

Test Spec CISPR 22 Radiated Disturbances

Polarity

Horizontal

Final Measurement

Meas Time: 1 s

Margin: 20 dB

Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	757.100000000 MHz	24.17	Quasi Peak	-21.83
1	959.780000000 MHz	27.45	Quasi Peak	-18.55

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RADIATED SPURIOUS EMISSIONS

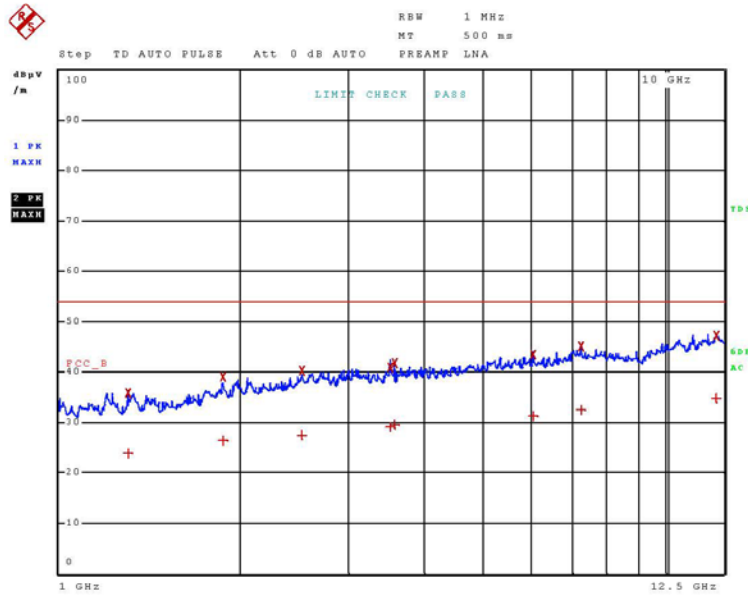
Test Data: Scanning 1 – 12.5 GHz Vertical Peak Plot

27.Jan 18 14:36

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 1 – 12.5 GHz Vertical Peak Plot Cont.

27.Jan 18 14:36

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.302000000 GHz	23.85	CISPR Averag	-30.15
2	1.302000000 GHz	35.87	Max Peak	
1	1.866750000 GHz	26.43	CISPR Averag	-27.57
2	1.866750000 GHz	38.96	Max Peak	
1	2.516250000 GHz	27.46	CISPR Averag	-26.54
2	2.516250000 GHz	40.31	Max Peak	
1	3.527000000 GHz	29.02	CISPR Averag	-24.98
2	3.527000000 GHz	40.80	Max Peak	
1	3.584500000 GHz	29.46	CISPR Averag	-24.54
2	3.584500000 GHz	41.74	Max Peak	
1	6.054750000 GHz	31.18	CISPR Averag	-22.82
2	6.054750000 GHz	43.36	Max Peak	
1	7.264500000 GHz	32.36	CISPR Averag	-21.64
2	7.264500000 GHz	45.04	Max Peak	
1	12.162000000 GHz	34.77	CISPR Averag	-19.23
2	12.162000000 GHz	47.21	Max Peak	

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Results Meets Requirements

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RADIATED SPURIOUS EMISSIONS

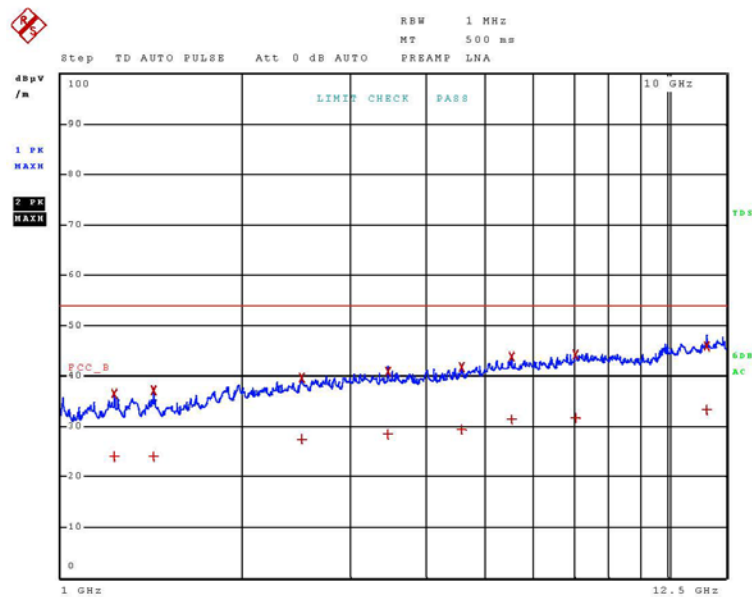
Test Data: Scanning 1 – 12.5 GHz Horizontal Peak Plot

27.Jan 18 14:35

Time Domain Scan (1 Range)

Scan Start: 1 GHz
Scan Stop: 12.5 GHz
Detector: Trace 1: MAX PEAK Trace 2: MAX PEAK
Transducer: TDS_01

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
1.000000 GHz	12.500000 GHz	250.00 kHz	1.00 MHz	100 μ s	Auto	35 dB	INPUT1



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RADIATED SPURIOUS EMISSIONS

Test Data: Scanning 1 – 12.5 GHz Horizontal Peak Plot Cont.

27.Jan 18 14:35

Final Measurement

Meas Time: 500 ms
Margin: 40 dB
Subranges: 16

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	1.224500000 GHz	24.00	CISPR Averag	-30.00
2	1.224500000 GHz	36.54	Max Peak	
1	1.421250000 GHz	24.02	CISPR Averag	-29.98
2	1.421250000 GHz	37.04	Max Peak	
1	2.500500000 GHz	27.45	CISPR Averag	-26.55
2	2.500500000 GHz	39.52	Max Peak	
1	3.470500000 GHz	28.55	CISPR Averag	-25.45
2	3.470500000 GHz	40.96	Max Peak	
1	4.583250000 GHz	29.39	CISPR Averag	-24.61
2	4.583250000 GHz	41.64	Max Peak	
1	5.543750000 GHz	31.31	CISPR Averag	-22.69
2	5.543750000 GHz	43.91	Max Peak	
1	7.067000000 GHz	31.58	CISPR Averag	-22.42
2	7.067000000 GHz	44.15	Max Peak	
1	11.633250000 GHz	33.39	CISPR Averag	-20.61
2	11.633250000 GHz	45.99	Max Peak	

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Results Meets Requirements

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ANTENNA CONDUCTED POWER

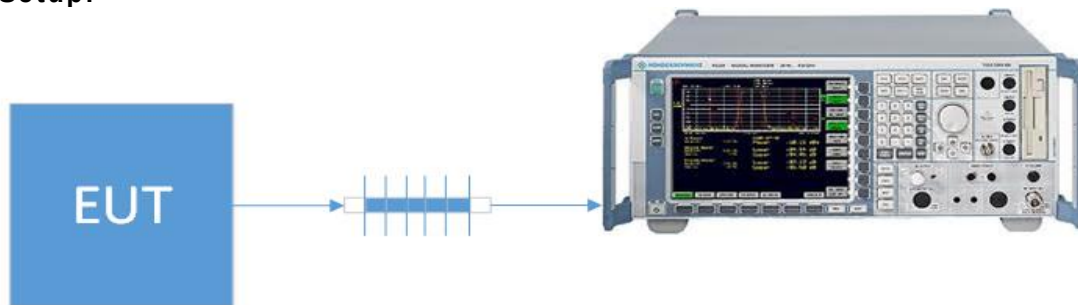
Rule Part No.: FCC Part 15 Subpart B

Requirements: FCC Part 15.111(a) Antenna power conduction limits for receivers
In addition to the radiated emission limits. Receivers that operate (tune) in the frequency range 30 to 960 MHz and CB receivers that provide terminals for the connection of an external receiving antenna may be tested to demonstrate compliance with the provisions of §15.109 with the antenna terminals shielded and terminated with a resistive termination equal to the impedance specified for the antenna. Provided these receivers also comply with the following: With the receiver antenna terminal connected to a resistive termination equal to the impedance specified or employed for the antenna, the power at the antenna terminal at any frequency within the range of measurements specified in §15.33 shall not exceed 2.0 nanowatts.

Procedure: FCC Part 15.33(b)(3) Frequency range of radiated measurements
FCC Part 15.35(a) Measurement detector functions and bandwidths
ANSI C63.4 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment 9 kHz to 40 GHz
§ 12.2.2 Operating conditions
§ 12.2.6 Antenna-conducted power measurements

Configuration: The scanner receiver spurious emissions are to be measured when the receiver is in the scanning mode and repeated when the scanning is stopped, all while the antenna terminals are connected to a EMI receiver through a 50 Ω coaxial cable.

Setup:



Results: N/A. EUT is not intended for connection with AC Mains.

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1057	Eaton	94455-1	1057	12/13/17	12/13/19
Antenna: Log-Periodic 1122	Electro-Metrics	LPA-25	1122	07/26/17	07/26/19
Coaxial Cable - Chamber 3 cable set (backup)	Micro-Coax	Chamber 3 cable set (backup)	KMKM-0244- 02 ; KMKM- 0670-01; KFKF-0197- 00	N/A	N/A
CHAMBER	Panashield	3M	N/A	04/25/16	4/25/18
Antenna: Double- Ridged Horn/ETS Horn 1	ETS-Lindgren	3117	00035923	01/30/17	01/30/19
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A

*EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

END OF TEST REPORT