

FCC PART 15B, CLASS B TEST REPORT

For

Grandstream Networks, Inc.

126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

FCC ID: YZZ-GXW42XX

Report Type: Original Report	Product Type: Analog IP Gateway
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Analog IP Gateway
Tested Models	GXW4232, GXW4224
Voltage Range	DC 12.0V by adapter
Measure	440 mm (L) * 185 mm (W) * 44 mm (H)
Highest operating frequency	400 MHz
Date of Test	2019/01/23~2019/03/18
Sample serial number	181225009A & 181225009B
Received date	2018/12/25
Sample/EUT Status	Good condition
Adapter information	Model: NBS65A120500M3 Input: AC 100-240V, 50/60Hz, 1.5A Output: DC 12.0V, 5.0A

Notes: Model GXW4232 was selected for fully testing, the detailed information about the difference between model GXW4224 and GXW4232 can be referred to the declaration which was stated and guaranteed by the applicant.

Objective

This test report is prepared on behalf of *Grandstream Networks, Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		uncertainty
Conducted Emissions		±1.95dB
Radiated Emissions	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT operation mode: Full Load

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
ASKPCB	FXS test tool	E239218	Unknown
Sagem	Router	F@ST 1704N	3c81d839027c

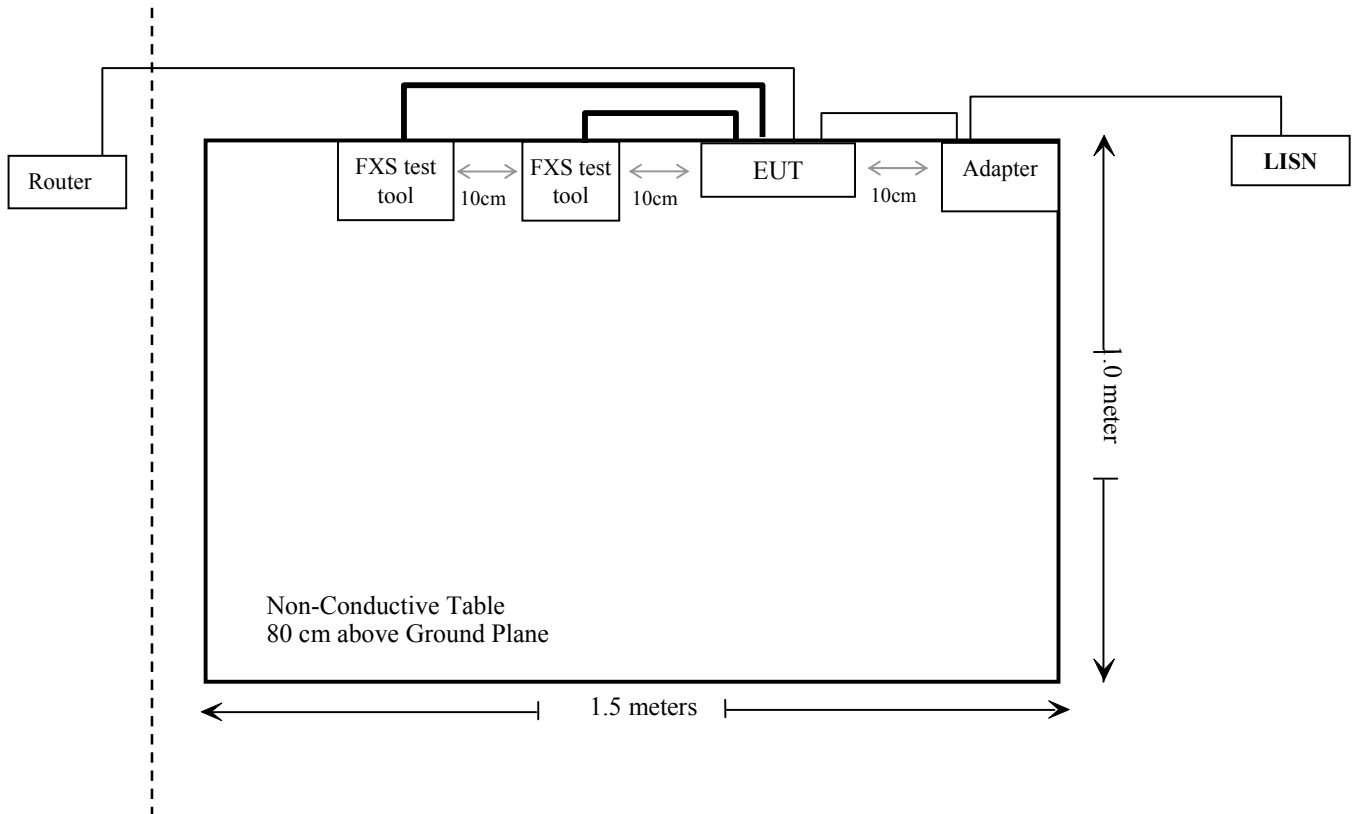
External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable AC Cable	1.0	Adapter	LISN
Unshielded Un-Detachable DC Cable	0.95	Adapter	EUT
Unshielded Detachable RJ45 Cable	10.0	EUT	Router
Unshielded Detachable RJ11 Cable	0.75	EUT	FXS test tool

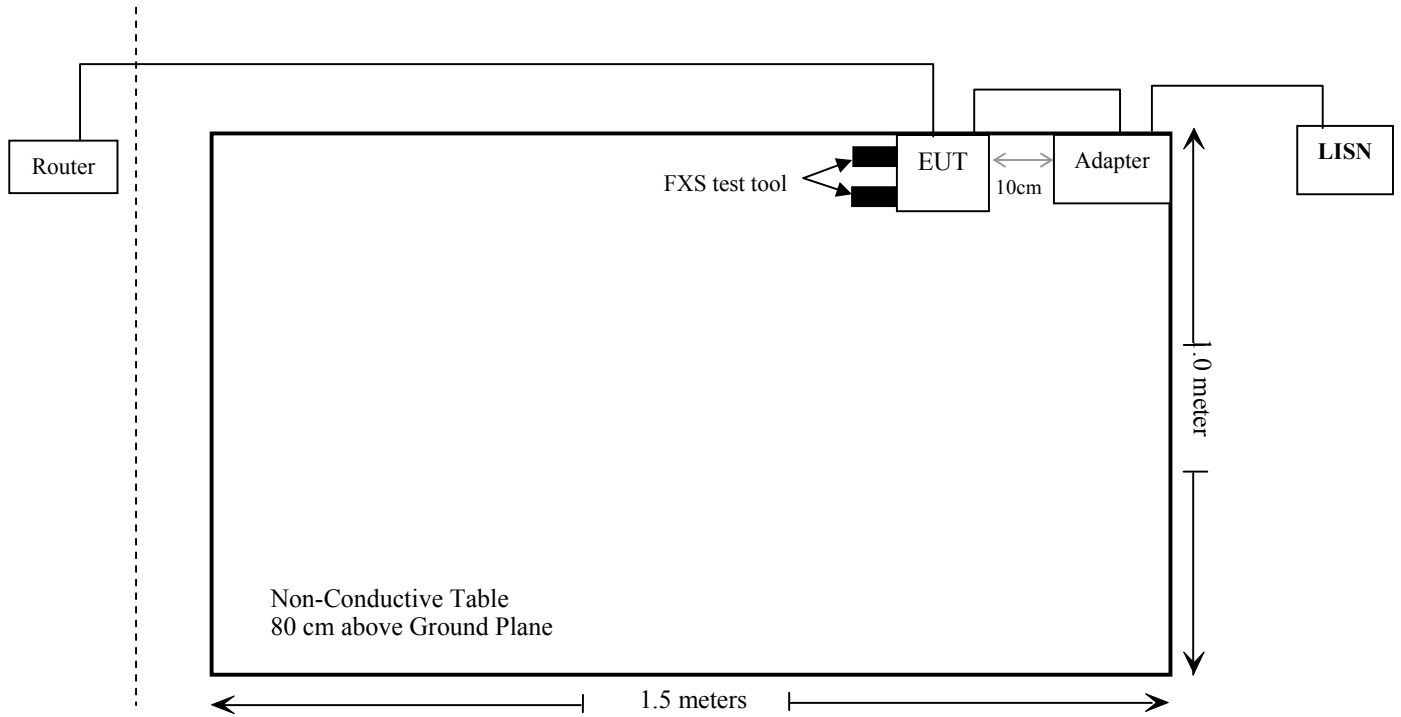
Block Diagram of Test Setup

For conducted emission:

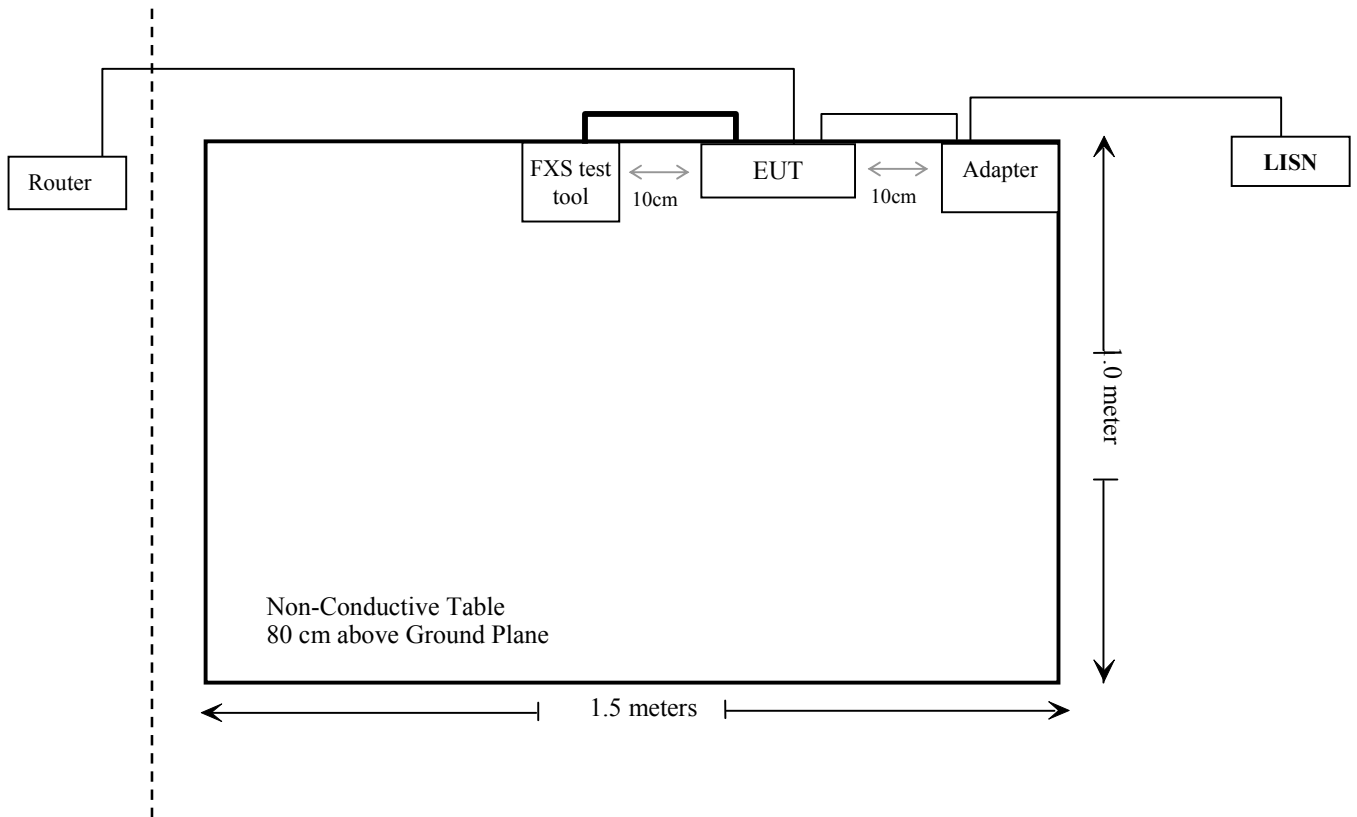
Model GXW4232 (RJ11):



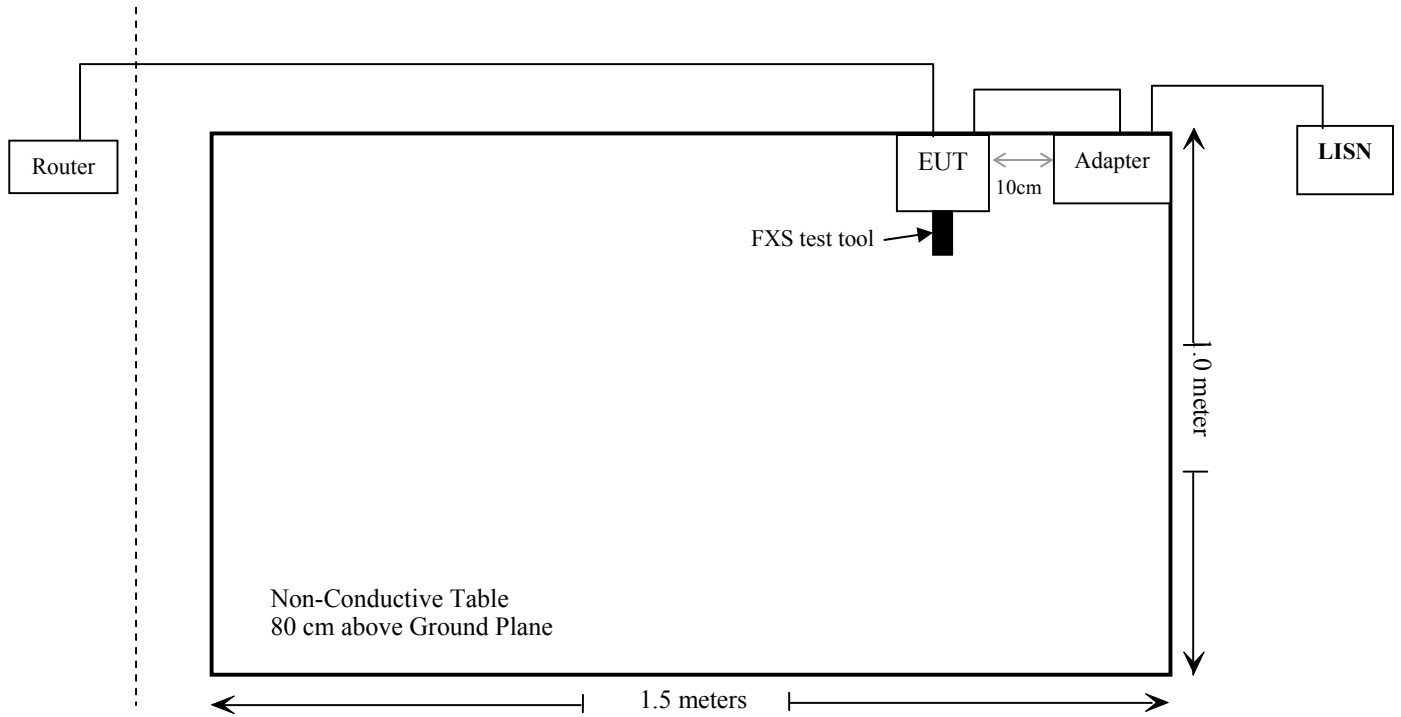
Model GXW4232 (50-pin Telco connectors):



Model GXW4224 (RJ11):



Model GXW4224 (50-pin Telco connectors):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2018-07-11	2019-07-11
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2018-12-21	2019-12-21
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2018-11-12	2019-05-12
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Unknown	Conducted Emission Cable	78652	UF A210B-1-0720-504504	2018-11-12	2019-05-12
Radiated Emission Test					
A.H. System	Horn Antenna	SAS-200/571	135	2018-09-01	2021-08-31
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Rohde & Schwarz	Signal Analyzer	FSV40	101473	2019-01-09	2020-01-08
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-11-12	2019-05-12
Sonoma instrument	Amplifier	310N	186238	2018-11-12	2019-05-12
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2019-01-11	2020-01-11
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-07-11	2021-07-10
Ducommun technologies	RF Cable	104PEA	218124002	2018-11-12	2019-05-12
Ducommun technologies	RF Cable	RG-214	1	2018-11-12	2019-05-12
Ducommun technologies	RF Cable	RG-214	2	2018-11-12	2019-05-12
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR

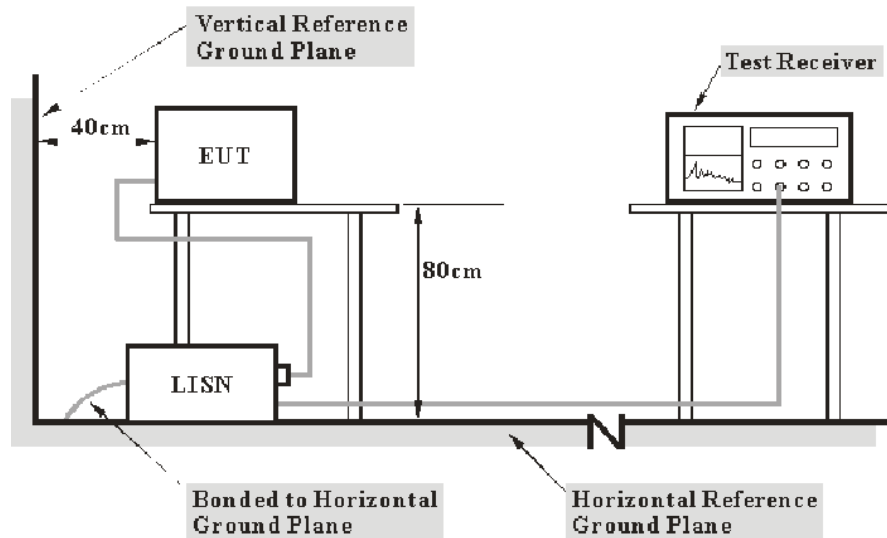
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2014. The related limit was specified in FCC Part 15.107, Class B.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the host PC was connected to the first LISN and the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(L_m)} \leq L_{\text{lim}} + U_{\text{cispr}}$$

In BACL., $U_{(L_m)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

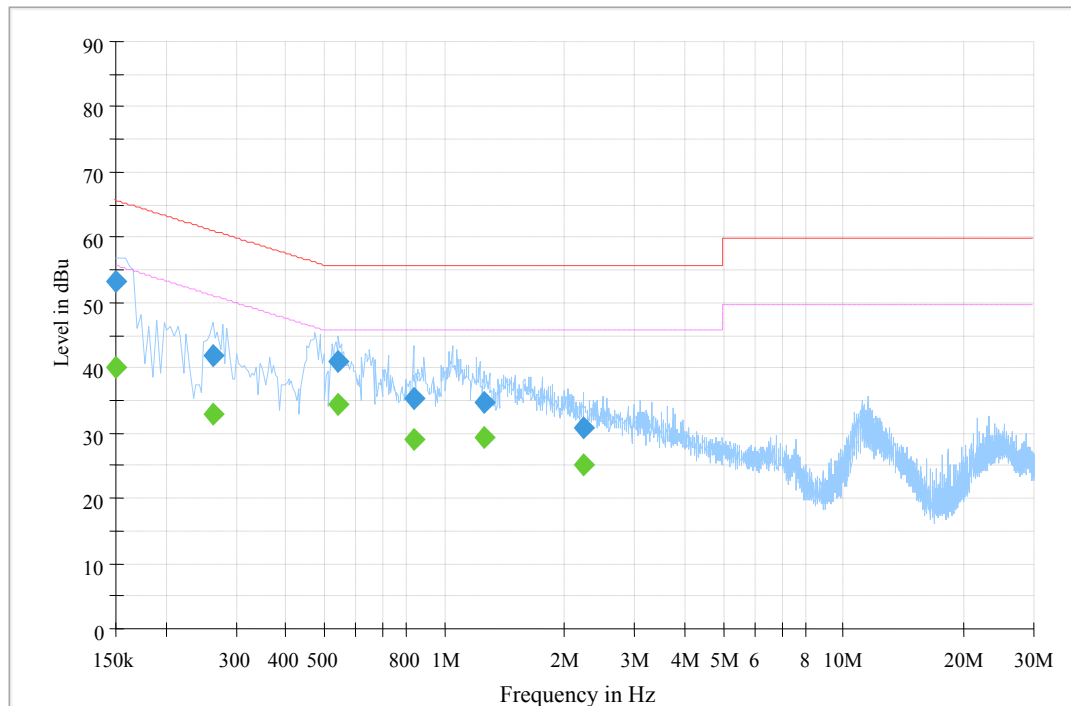
Test Data

Environmental Conditions

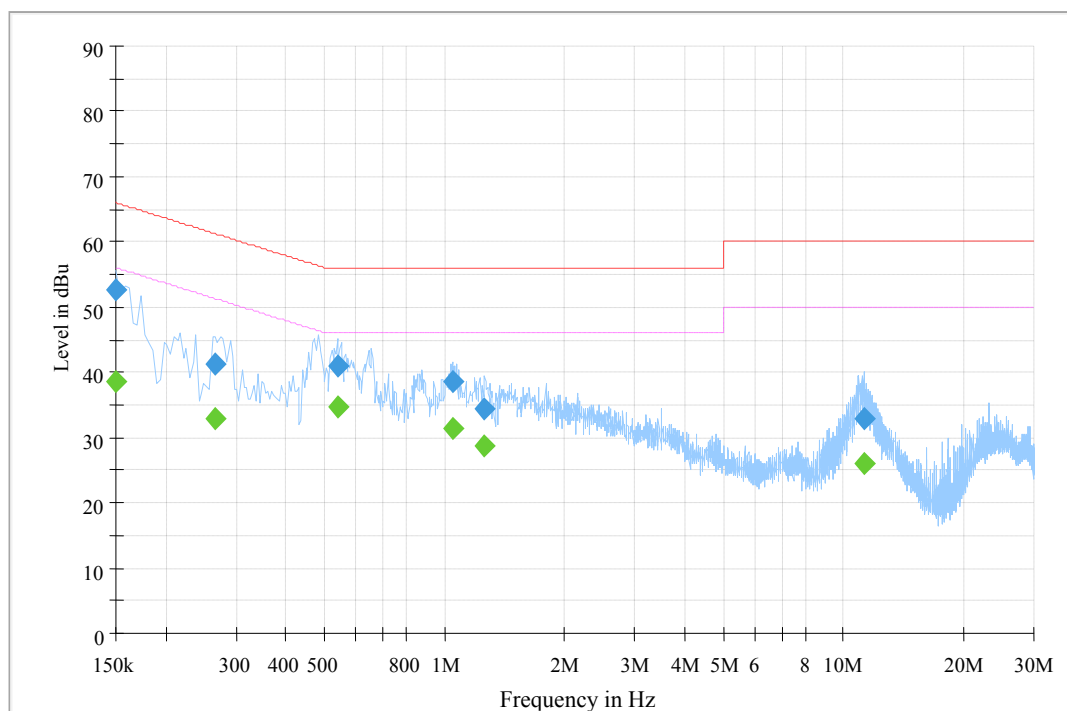
Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson Xiao on 2019-02-15 and 2019-03-18

EUT Operation Mode: Full Load

Model GXW4232 (RJ11):**AC 120V/60 Hz, Line**

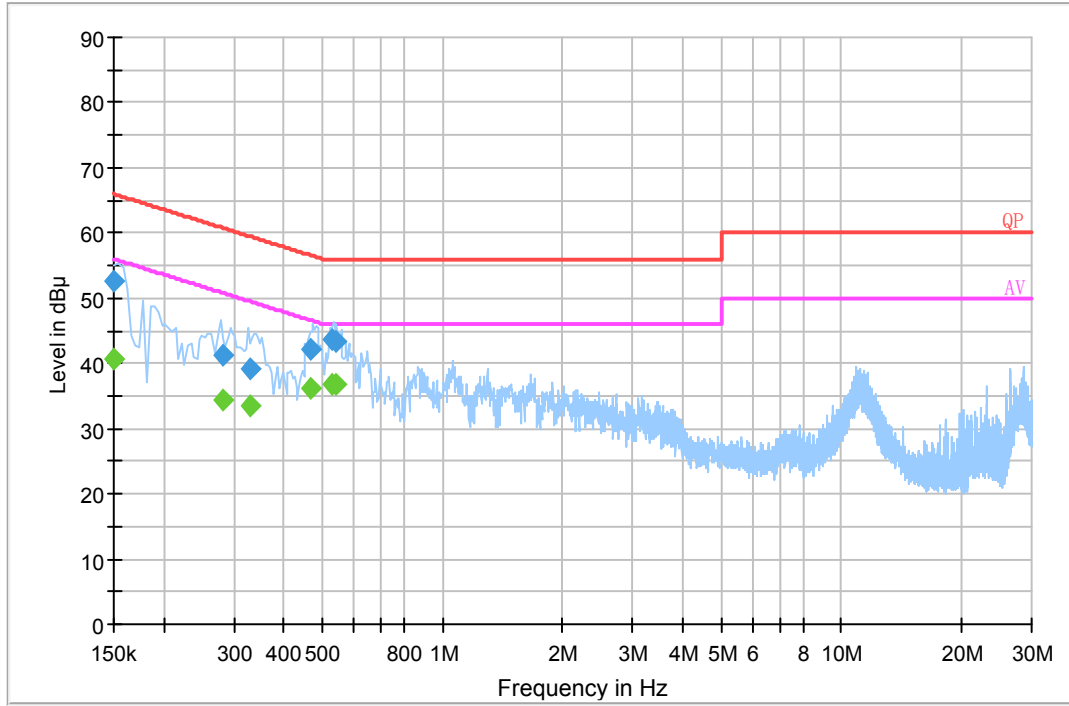
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	53.2	19.8	66.0	12.8	QP
0.262000	41.9	19.7	61.4	19.5	QP
0.542000	40.9	19.7	56.0	15.1	QP
0.834000	35.2	19.8	56.0	20.8	QP
1.258000	34.6	19.8	56.0	21.4	QP
2.226000	30.9	19.9	56.0	25.1	QP
0.150000	40.1	19.8	56.0	15.9	Ave.
0.262000	33.0	19.7	51.4	18.4	Ave.
0.542000	34.5	19.7	46.0	11.5	Ave.
0.834000	29.1	19.8	46.0	16.9	Ave.
1.258000	29.2	19.8	46.0	16.8	Ave.
2.226000	25.3	19.9	46.0	20.7	Ave.

AC 120V/60 Hz, Neutral

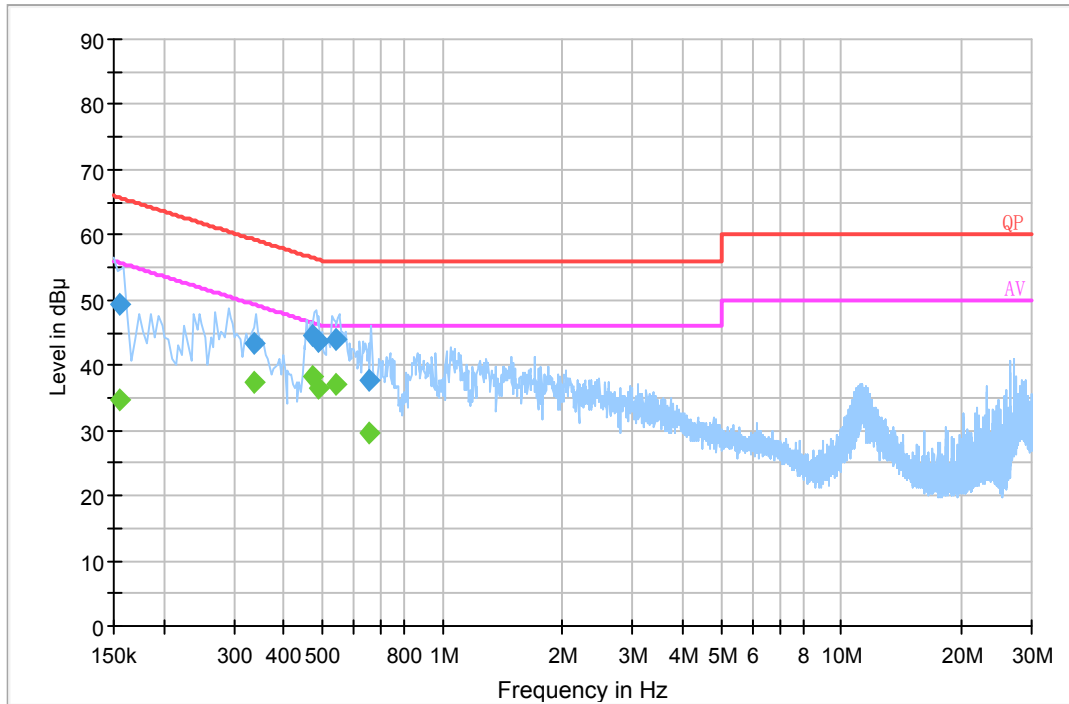
Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	52.7	19.8	66.0	13.3	QP
0.266000	41.3	19.7	61.2	19.9	QP
0.538000	41.1	19.8	56.0	14.9	QP
1.046000	38.5	19.8	56.0	17.5	QP
1.262000	34.3	19.8	56.0	21.7	QP
11.218000	32.9	20.2	60.0	27.1	QP
0.150000	38.7	19.8	56.0	17.3	Ave.
0.266000	32.8	19.7	51.2	18.4	Ave.
0.538000	34.6	19.8	46.0	11.4	Ave.
1.046000	31.3	19.8	46.0	14.7	Ave.
1.262000	28.6	19.8	46.0	17.4	Ave.
11.218000	26.1	20.2	50.0	23.9	Ave.

Model GXW4232 (50-pin Telco connectors):

AC 120V/60 Hz, Line



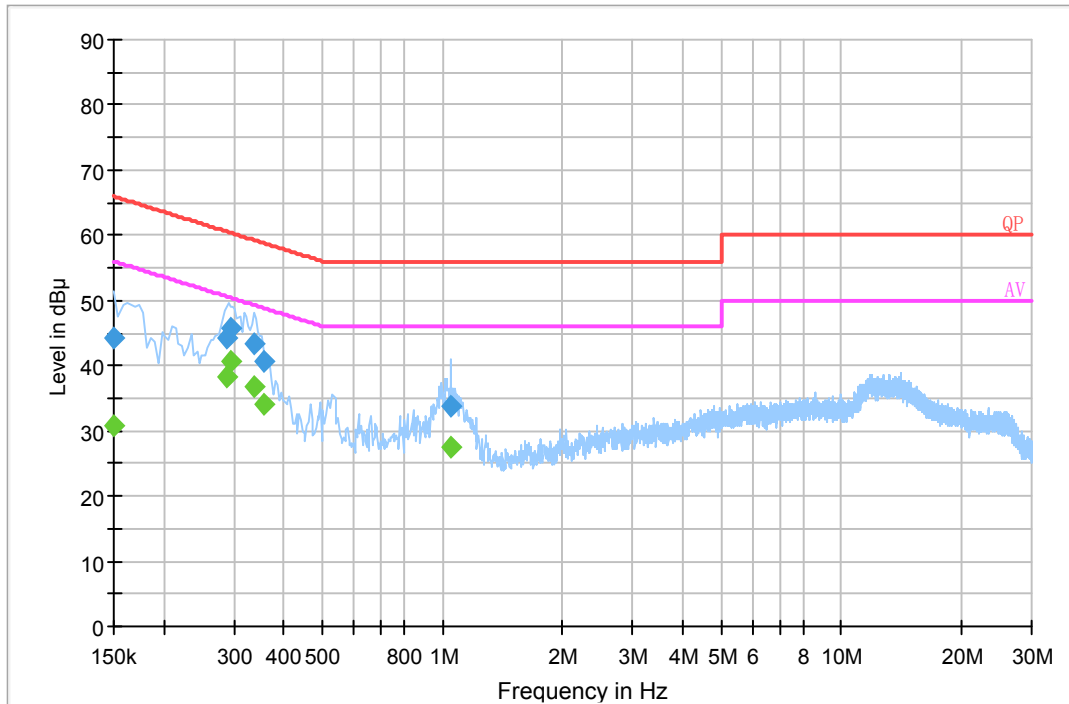
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	52.5	19.8	66.0	13.5	QP
0.281500	41.3	19.8	60.8	19.5	QP
0.329110	39.3	19.7	59.5	20.2	QP
0.466890	42.3	19.7	56.6	14.3	QP
0.529990	43.6	19.8	56.0	12.4	QP
0.541870	43.4	19.7	56.0	12.6	QP
0.150000	40.7	19.8	56.0	15.3	Ave.
0.281500	34.4	19.8	50.8	16.4	Ave.
0.329110	33.6	19.7	49.5	15.9	Ave.
0.466890	36.3	19.7	46.6	10.3	Ave.
0.529990	36.8	19.8	46.0	9.2	Ave.
0.541870	36.8	19.7	46.0	9.2	Ave.

AC 120V/60 Hz, Neutral

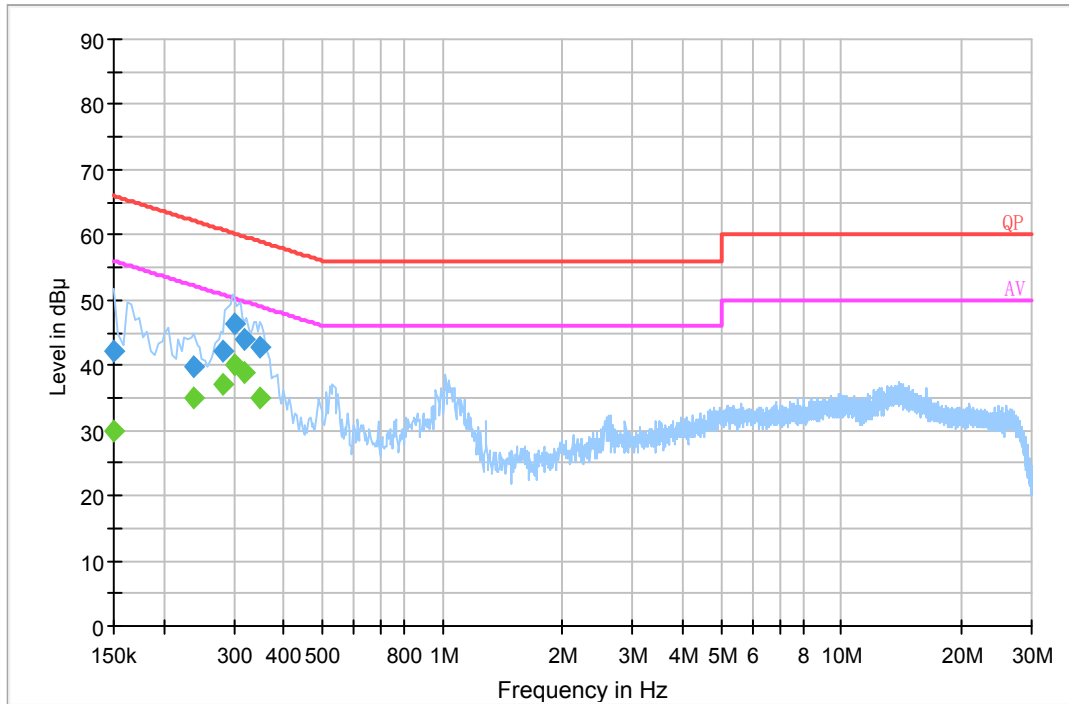
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.154500	49.2	19.8	65.8	16.6	QP
0.336870	43.3	19.7	59.3	16.0	QP
0.470830	44.4	19.8	56.5	12.1	QP
0.486770	43.5	19.8	56.2	12.7	QP
0.541750	44.1	19.7	56.0	11.9	QP
0.656070	37.7	19.7	56.0	18.3	QP
0.154500	34.7	19.8	55.8	21.1	Ave.
0.336870	37.4	19.7	49.3	11.9	Ave.
0.470830	38.3	19.8	46.5	8.2	Ave.
0.486770	36.4	19.8	46.2	9.8	Ave.
0.541750	37.2	19.7	46.0	8.8	Ave.
0.656070	29.8	19.7	46.0	16.2	Ave.

Model GXW4224 (RJ11):

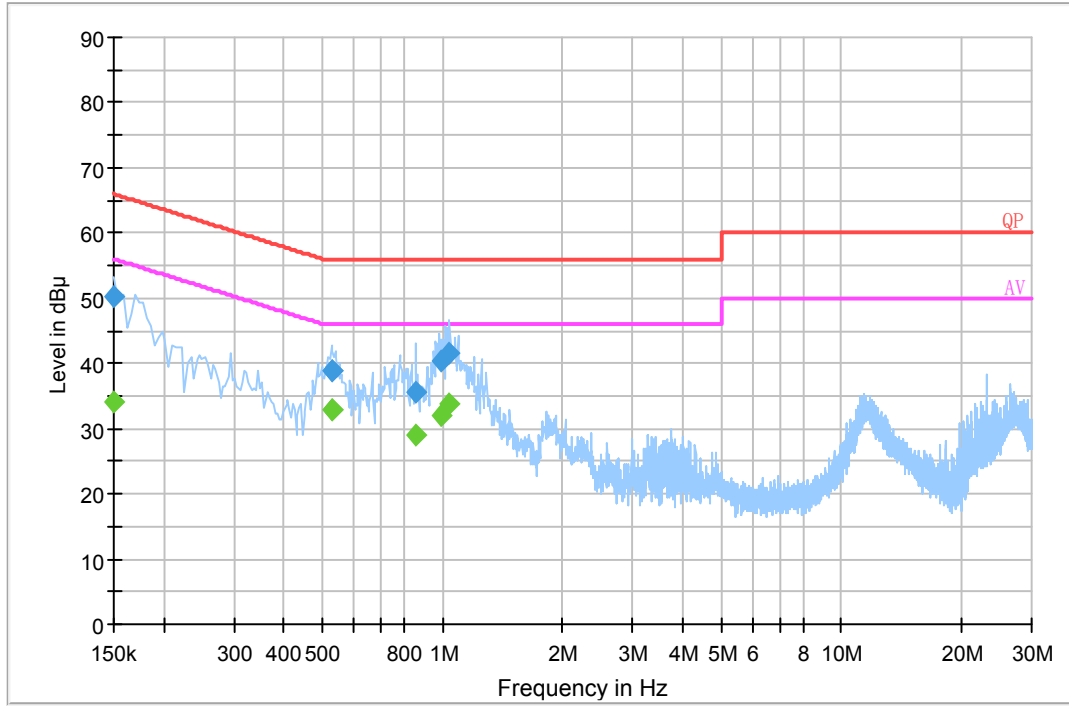
AC 120V/60 Hz, Line



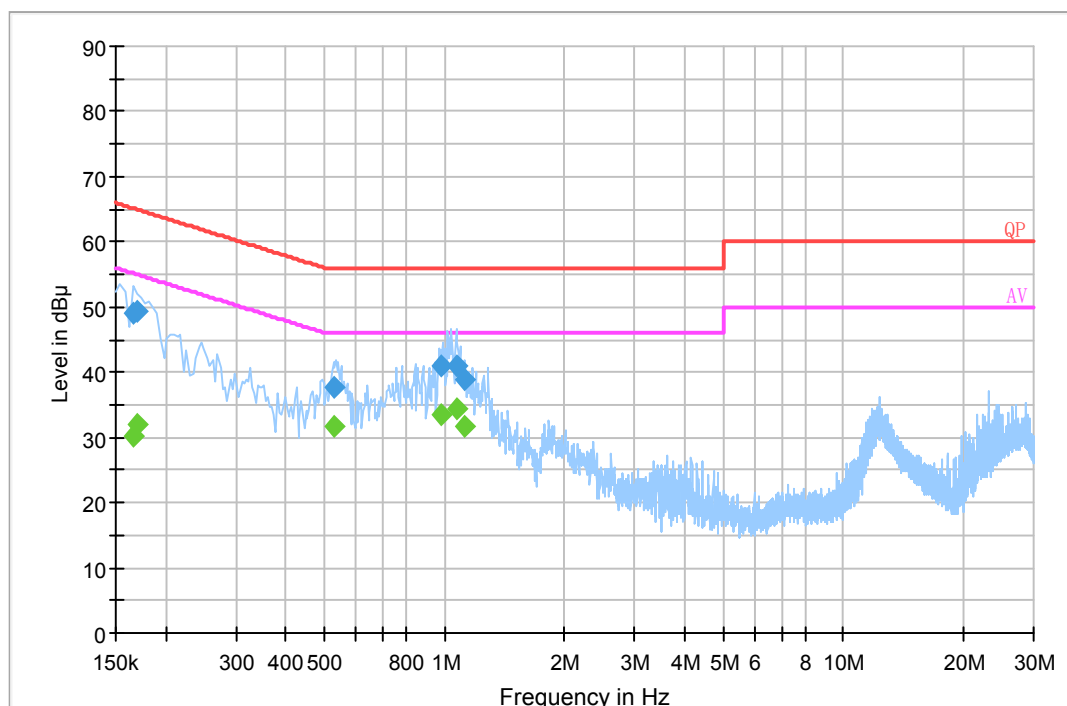
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	44.2	20.0	66.0	21.8	QP
0.286500	44.2	20.1	60.6	16.4	QP
0.294500	45.7	20.1	60.4	14.7	QP
0.336930	43.3	20.0	59.3	16.0	QP
0.356690	40.5	20.0	58.8	18.3	QP
1.050250	33.8	20.1	56.0	22.2	QP
0.150000	30.9	20.0	56.0	25.1	Ave.
0.286500	38.3	20.1	50.6	12.3	Ave.
0.294500	40.5	20.1	50.4	9.9	Ave.
0.336930	36.9	20.0	49.3	12.4	Ave.
0.356690	34.1	20.0	48.8	14.7	Ave.
1.050250	27.6	20.1	46.0	18.4	Ave.

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	42.2	20.0	66.0	23.8	QP
0.237500	39.8	20.0	62.2	22.4	QP
0.281500	42.1	20.1	60.8	18.7	QP
0.302500	46.2	20.1	60.2	14.0	QP
0.317170	44.1	20.1	59.8	15.7	QP
0.348690	42.8	20.0	59.0	16.2	QP
0.150000	29.8	20.0	56.0	25.2	Ave.
0.237500	34.9	20.0	52.2	17.3	Ave.
0.281500	37.0	20.1	50.8	13.8	Ave.
0.302500	40.2	20.1	50.2	10.0	Ave.
0.317170	39.0	20.1	49.8	10.8	Ave.
0.348690	34.9	20.0	49.0	14.1	Ave.

Model GXW4224 (50-pin Telco connectors):**AC 120V/60 Hz, Line**

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	50.4	20.0	66.0	15.6	QP
0.529930	38.9	20.1	56.0	17.1	QP
0.530110	39.0	20.1	56.0	17.0	QP
0.861130	35.6	20.0	56.0	20.4	QP
0.991270	40.5	20.1	56.0	15.5	QP
1.042370	41.5	20.1	56.0	14.5	QP
0.150000	34.2	20.0	56.0	21.8	Ave.
0.529930	33.0	20.1	46.0	13.0	Ave.
0.530110	32.8	20.1	46.0	13.2	Ave.
0.861130	29.0	20.0	46.0	17.0	Ave.
0.991270	32.1	20.1	46.0	13.9	Ave.
1.042370	33.7	20.1	46.0	12.3	Ave.

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.165500	49.0	20.0	65.2	16.2	QP
0.169500	49.2	20.0	65.0	15.8	QP
0.525990	37.7	20.1	56.0	18.3	QP
0.983150	41.0	20.1	56.0	15.0	QP
1.069950	41.1	20.1	56.0	14.9	QP
1.125110	38.8	20.0	56.0	17.2	QP
0.165500	30.3	20.0	55.2	24.9	Ave.
0.169500	32.1	20.0	55.0	22.9	Ave.
0.525990	31.8	20.1	46.0	14.2	Ave.
0.983150	33.5	20.1	46.0	12.5	Ave.
1.069950	34.3	20.1	46.0	11.7	Ave.
1.125110	31.8	20.0	46.0	14.2	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

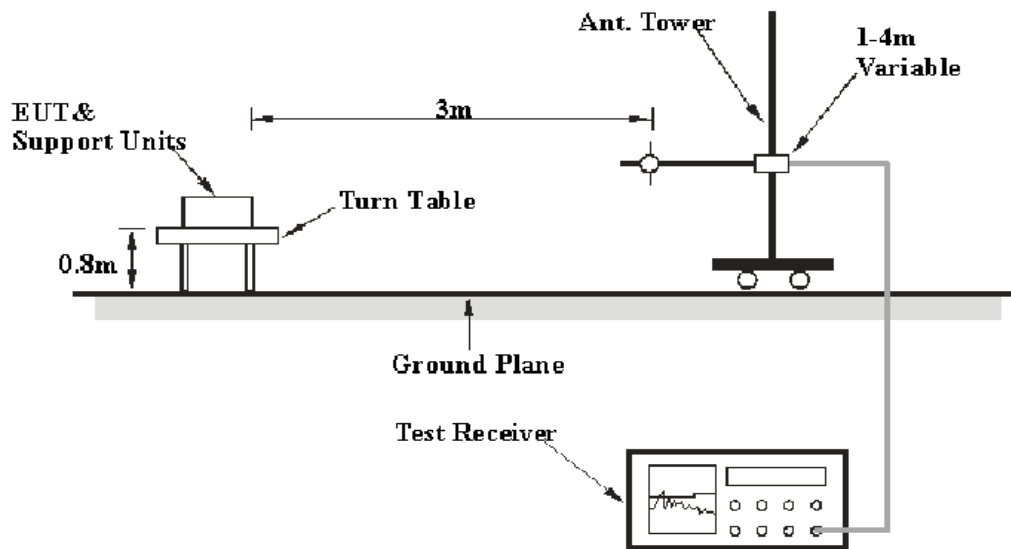
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

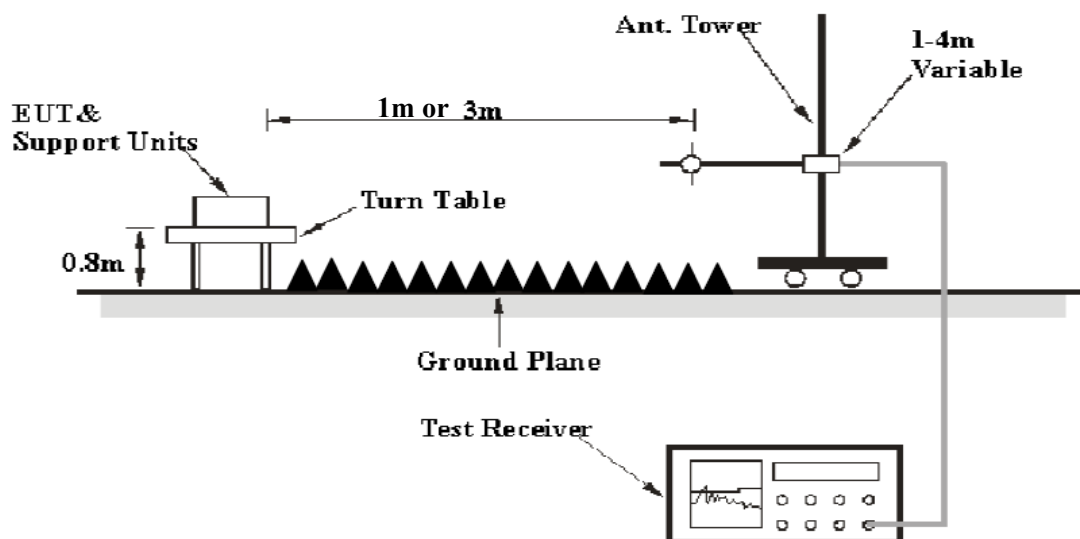
FCC §15.109

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurment
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data**Environmental Conditions**

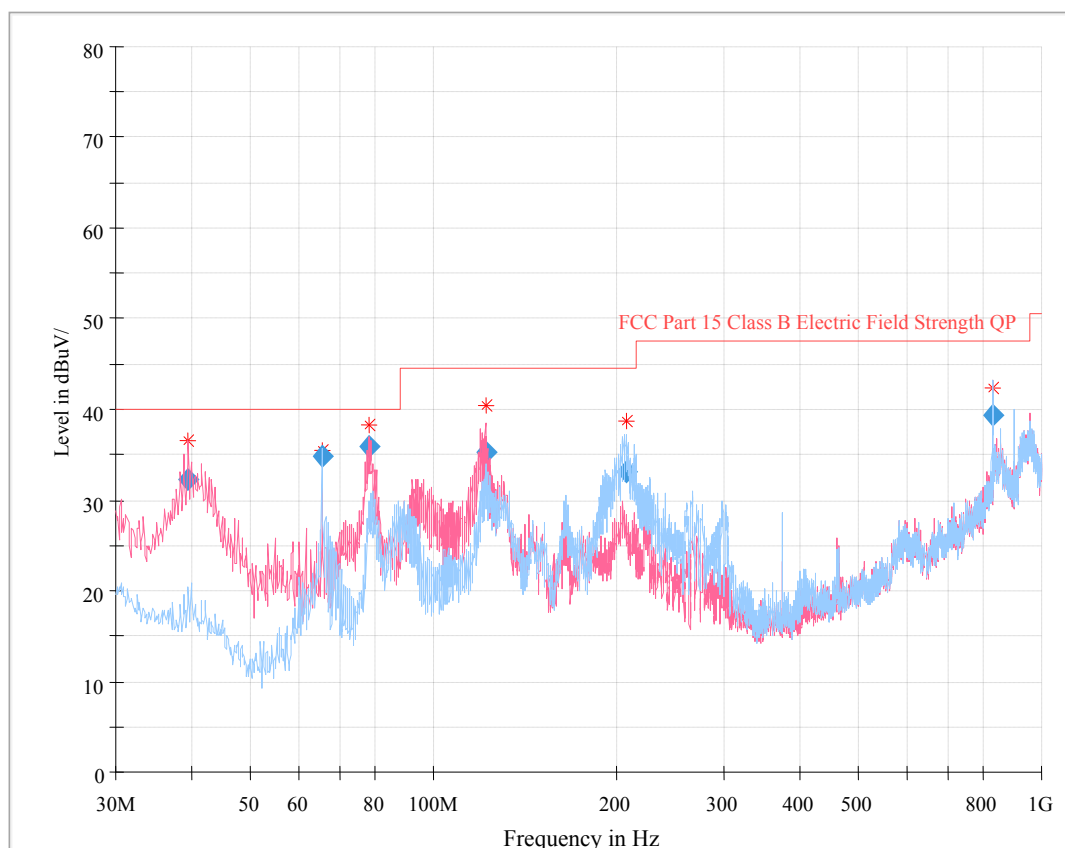
Temperature:	25~26 °C
Relative Humidity:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu and Yecar Lu from 2019-01-23 to 2019-03-18.

EUT Operation Mode: Full Load

Model GXW4232 (RJ11):

30 MHz~1 GHz:



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
39.429375	32.31	107.0	V	353.0	-13.4	40.00	7.69
65.547875	34.93	338.0	H	201.0	-20.4	40.00	5.07
78.300250	35.91	149.0	V	153.0	-20.1	40.00	4.09
121.593750	35.24	100.0	V	257.0	-14.2	43.50	8.26
207.196375	33.10	169.0	H	260.0	-13.9	43.50	10.40
829.854000	39.33	390.0	H	19.0	4.9	46.00	6.67

1 GHz – 2 GHz:

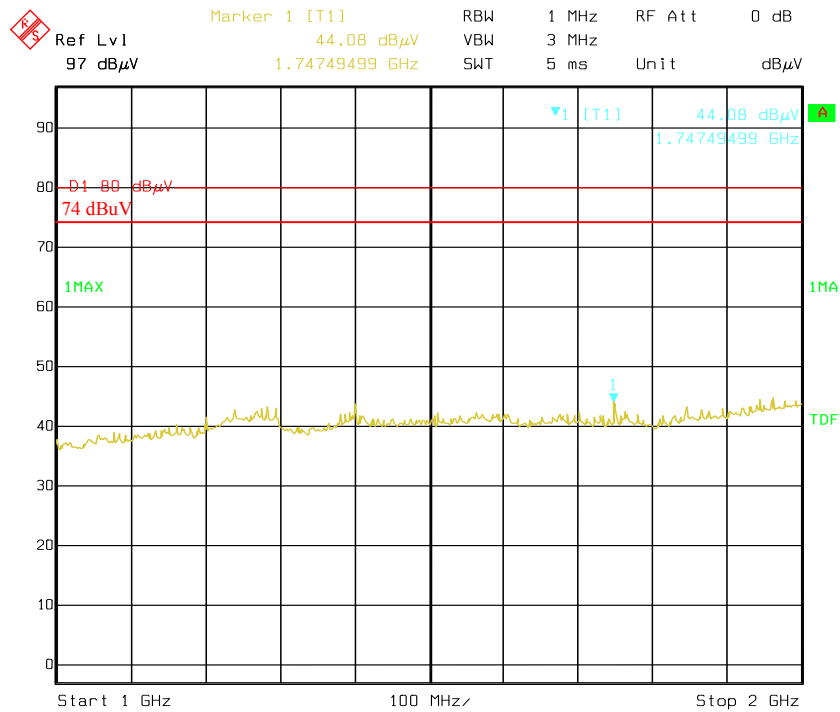
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1263.52	44.37	PK	109	2.0	H	-3.18	41.19	74	32.81
1263.52	29.42	Ave.	109	2.0	H	-3.18	26.24	54	27.76
1263.52	43.51	PK	177	1.5	V	-3.18	40.33	74	33.67
1263.52	28.42	Ave.	177	1.5	V	-3.18	25.24	54	28.76
1747.49	46.82	PK	48	1.5	H	-1.77	45.05	74	28.95
1747.49	30.24	Ave.	48	1.5	H	-1.77	28.47	54	25.53
1747.49	45.24	PK	249	1.6	V	-1.77	43.47	74	30.53
1747.49	29.31	Ave.	249	1.6	V	-1.77	27.54	54	26.46

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

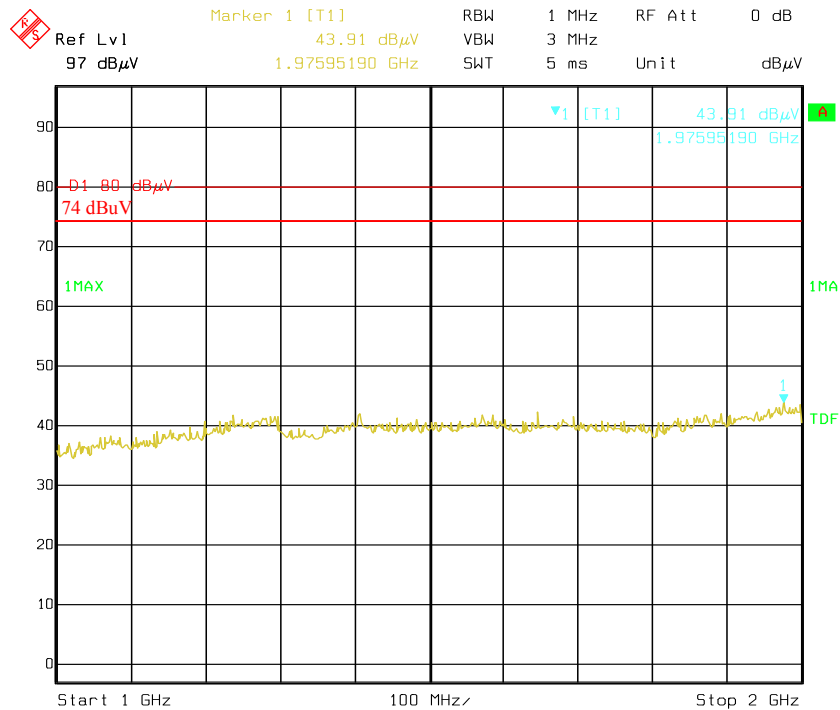
Pre-scan for peak

Horizontal – Peak



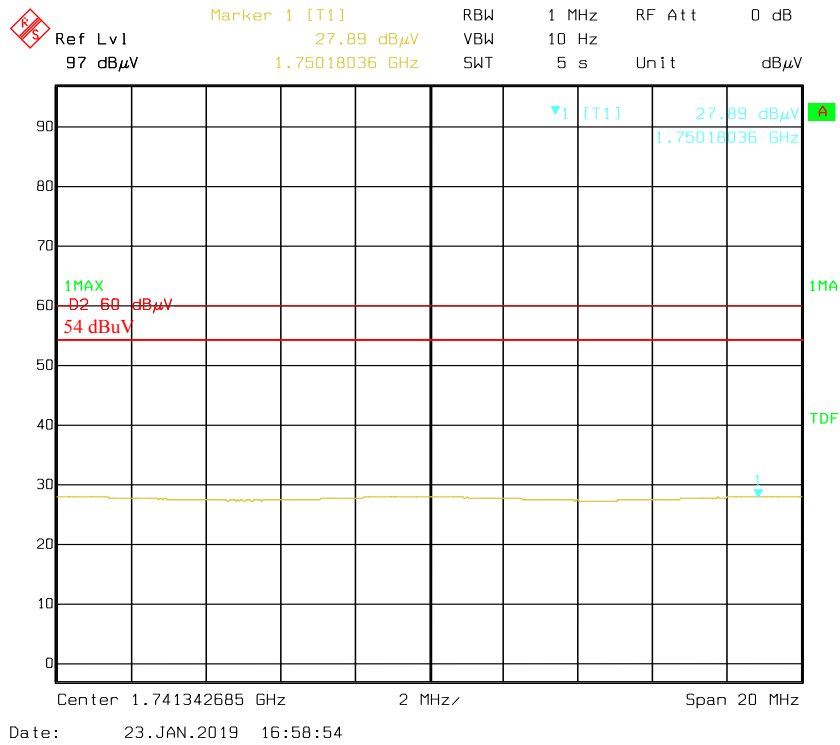
Date: 23.JAN.2019 16:57:07

Vertical - Peak

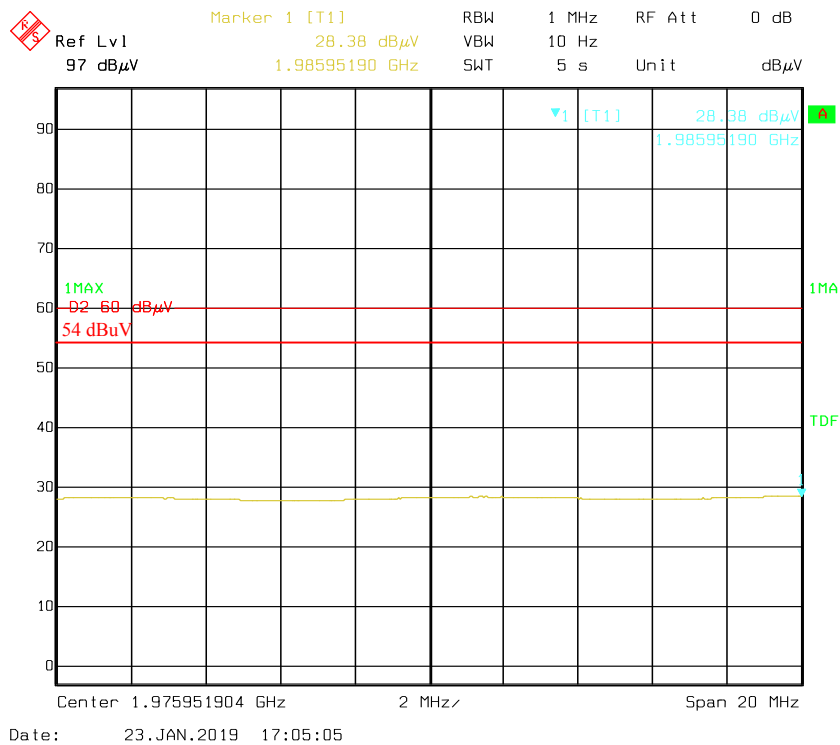


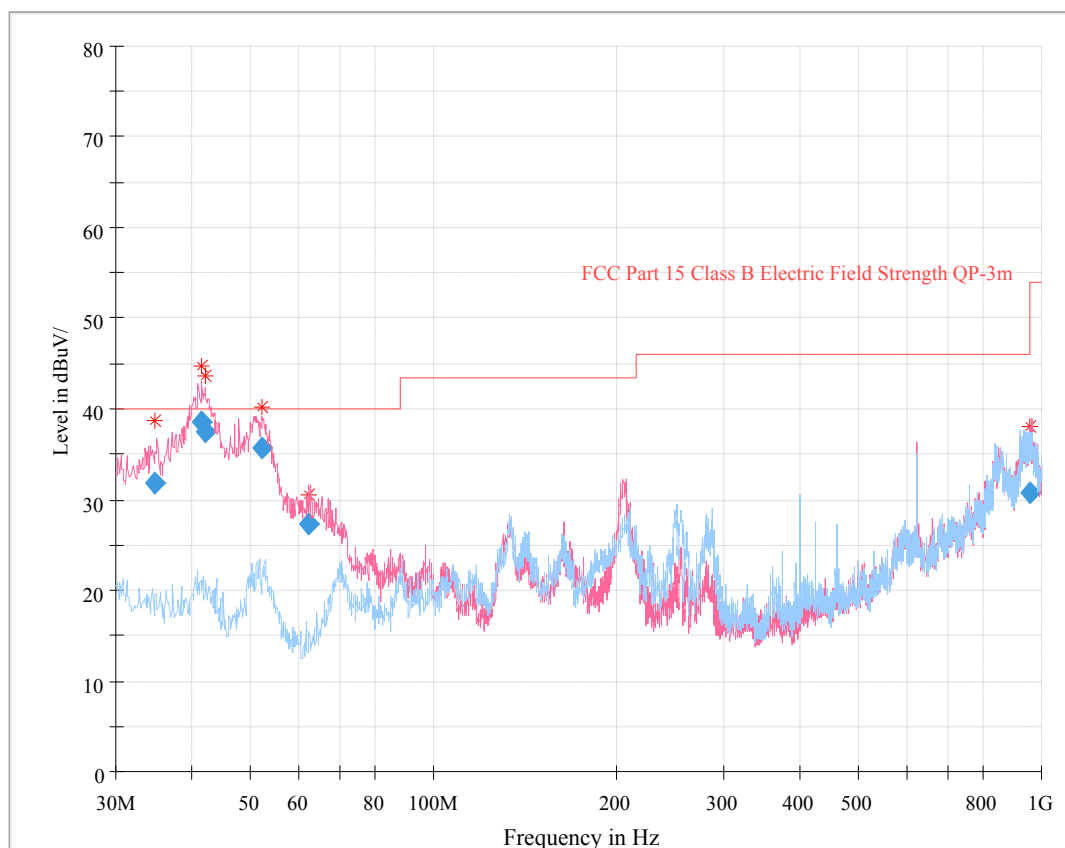
Date: 23.JAN.2019 17:01:43

Horizontal – Average



Vertical - Average



Model GXW4232 (50-pin Telco connectors):**30 MHz~1 GHz:**

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
34.691750	31.92	113.0	V	99.0	-10.3	40.00	8.08
41.642125	38.55	107.0	V	190.0	-14.9	40.00	1.45
42.193125	37.51	113.0	V	0.0	-15.3	40.00	2.49
52.372750	35.76	109.0	V	354.0	-19.8	40.00	4.24
62.513375	27.33	113.0	V	210.0	-20.3	40.00	12.67
959.860375	30.75	168.0	V	306.0	9.2	46.00	15.25

1 GHz – 2 GHz:

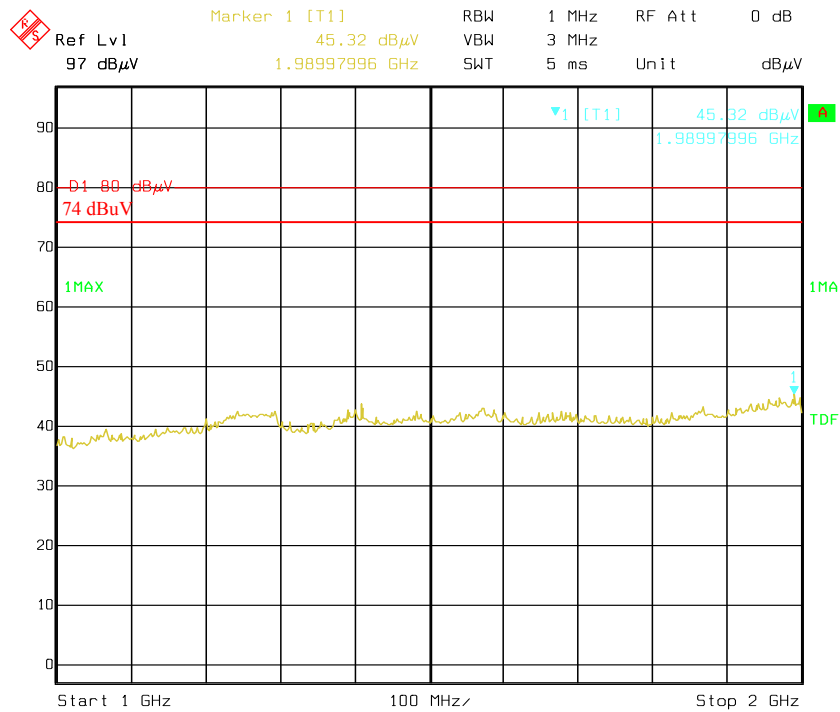
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1384.26	44.61	PK	214	2.1	H	-2.16	42.45	74	31.55
1384.26	29.31	Ave.	214	2.1	H	-2.16	27.15	54	26.85
1384.26	43.64	PK	257	1.4	V	-2.16	41.48	74	32.52
1384.26	28.40	Ave.	257	1.4	V	-2.16	26.24	54	27.76
1989.98	47.26	PK	343	1.2	H	-1.50	45.76	74	28.24
1989.98	30.52	Ave.	343	1.2	H	-1.50	28.53	54	25.47
1989.98	45.86	PK	4	1.4	V	-1.50	44.36	74	29.64
1989.98	29.32	Ave.	4	1.4	V	-1.50	27.82	54	26.18

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

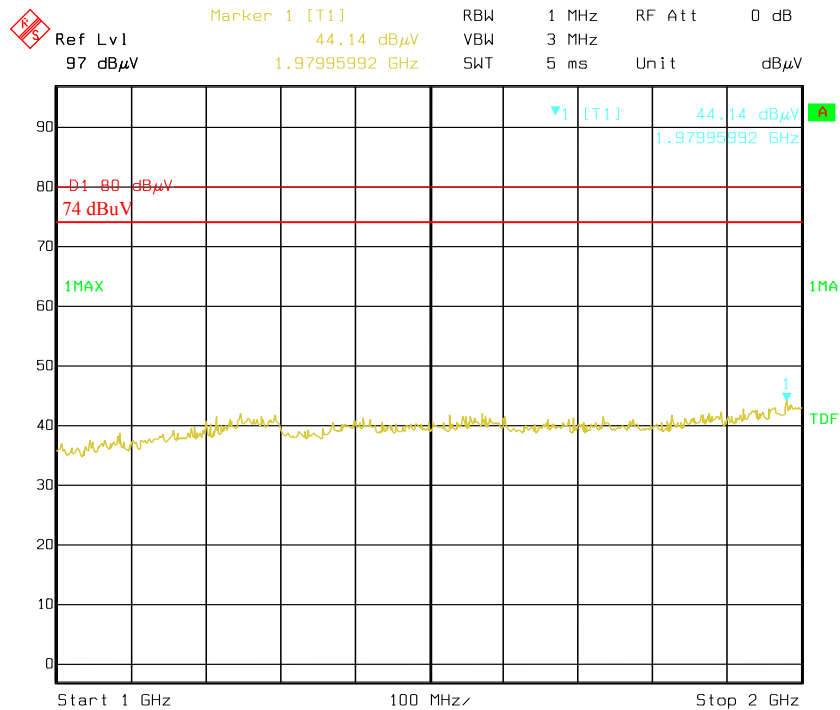
Pre-scan for peak

Horizontal – Peak



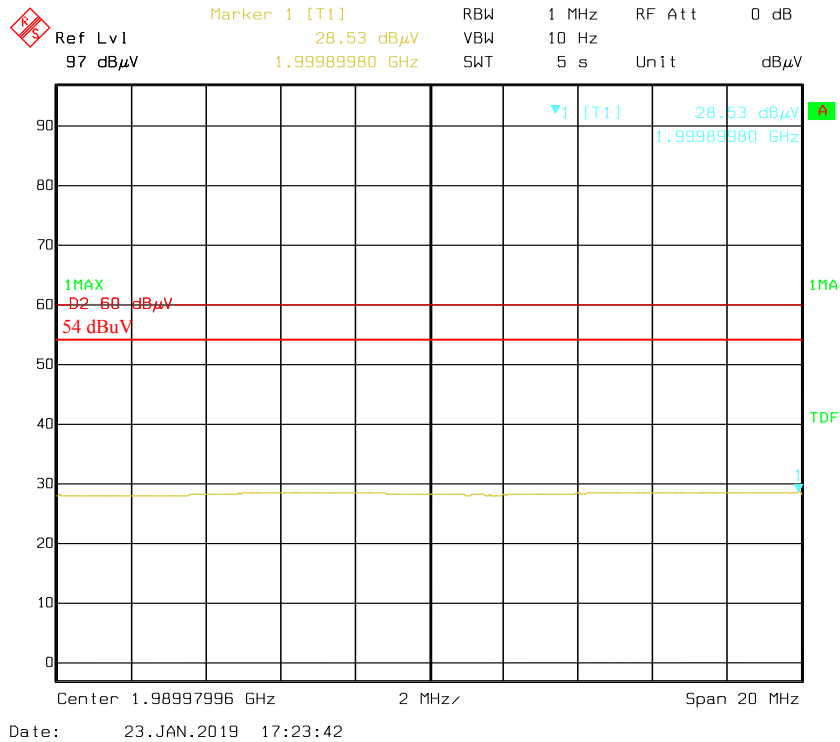
Date: 23.JAN.2019 17:20:27

Vertical - Peak

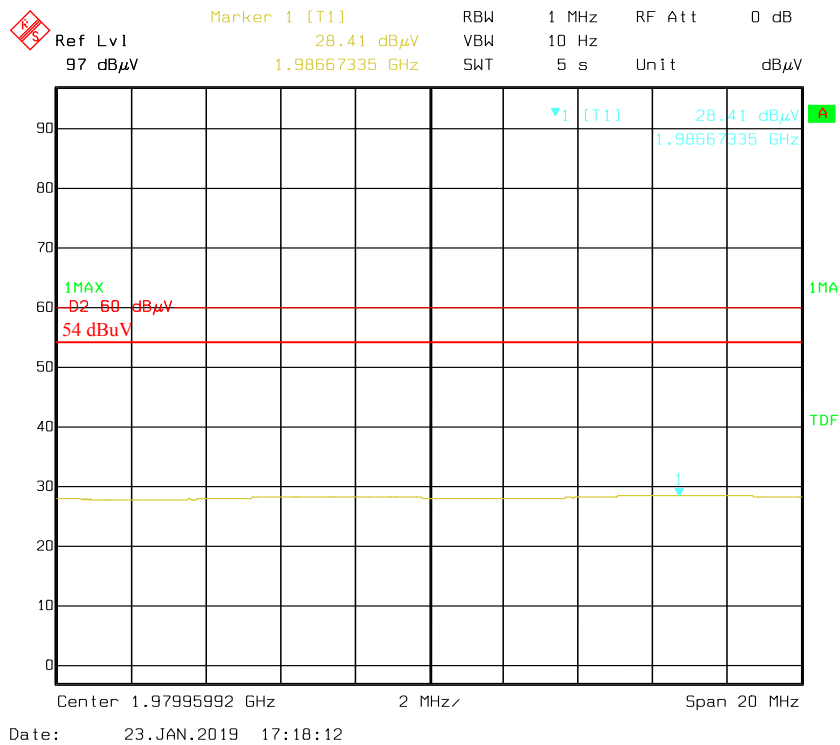


Date: 23.JAN.2019 17:16:35

Horizontal – Average

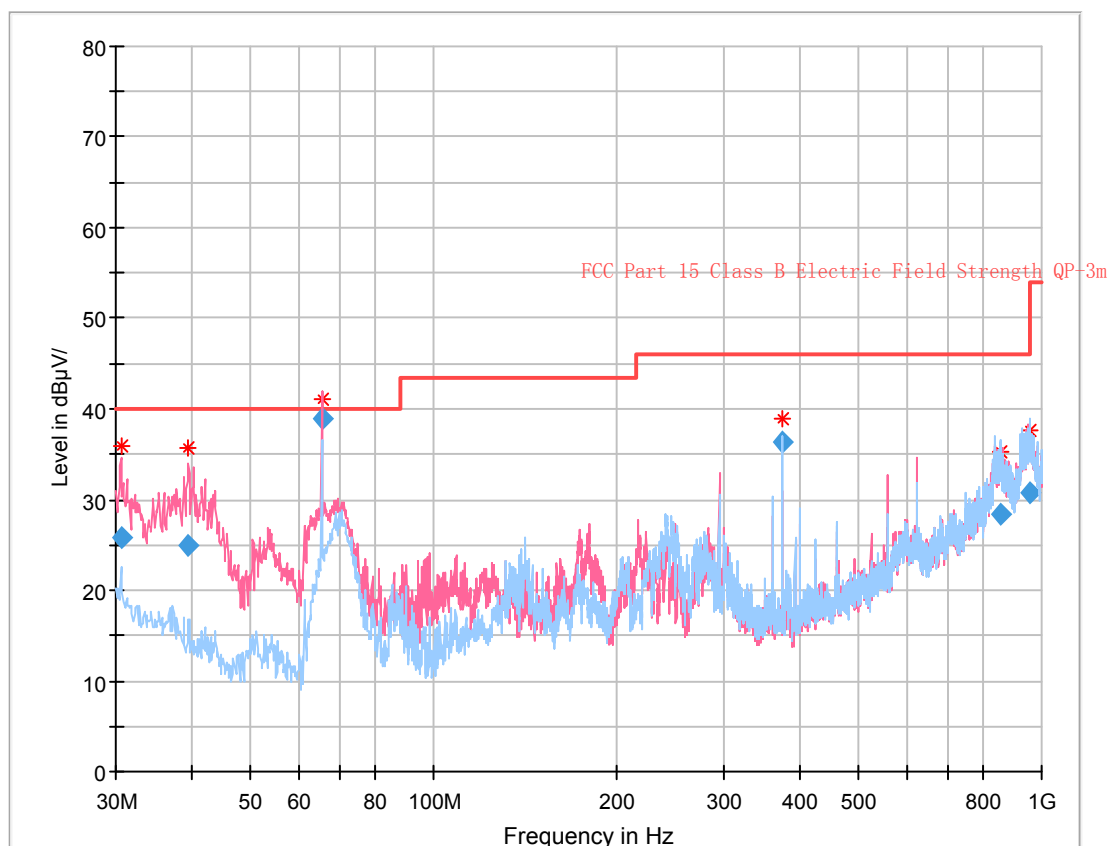


Vertical - Average



Model GXW4224 (RJ11):

30 MHz~1 GHz:



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
30.623750	25.83	100.0	V	235.0	-8.0	40.00	14.17
39.475750	25.02	107.0	V	345.0	-13.4	40.00	14.98
65.528000	38.82	231.0	V	242.0	-20.4	40.00	1.18
375.007750	36.30	108.0	H	55.0	-10.6	46.00	9.70
854.617125	28.32	311.0	H	28.0	6.7	46.00	17.68
957.795625	30.80	203.0	H	0.0	9.4	46.00	15.20

1 GHz – 2 GHz:

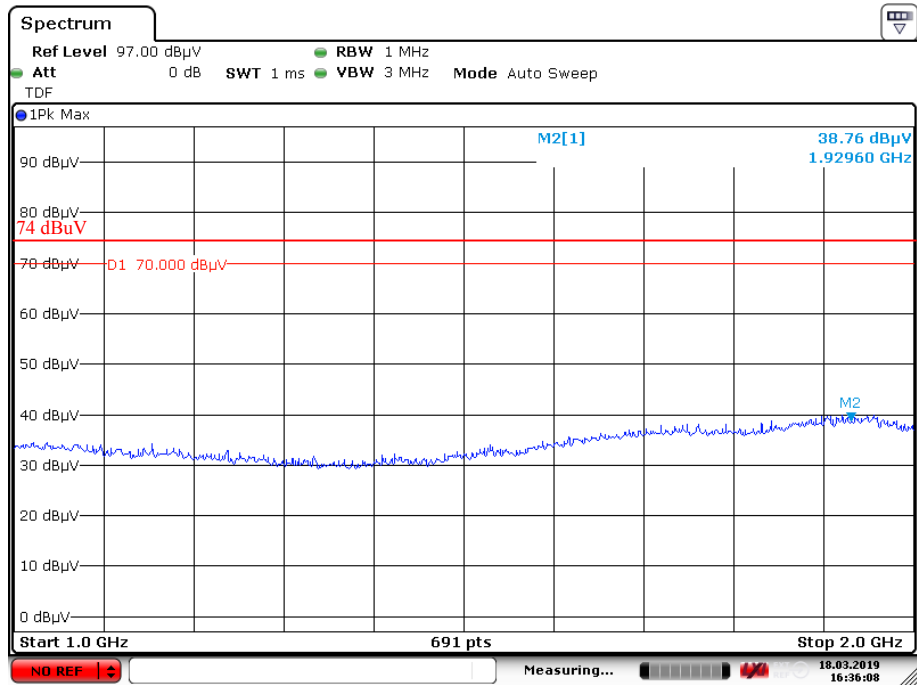
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1929.60	38.76	PK	307	2.3	H	-1.58	37.18	74	36.82
1929.60	28.43	Ave.	307	2.3	H	-1.58	26.85	54	27.15
1921.10	39.65	PK	7	1.7	V	-1.58	38.07	74	35.93
1921.10	28.40	Ave.	7	1.7	V	-1.58	26.82	54	27.18

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

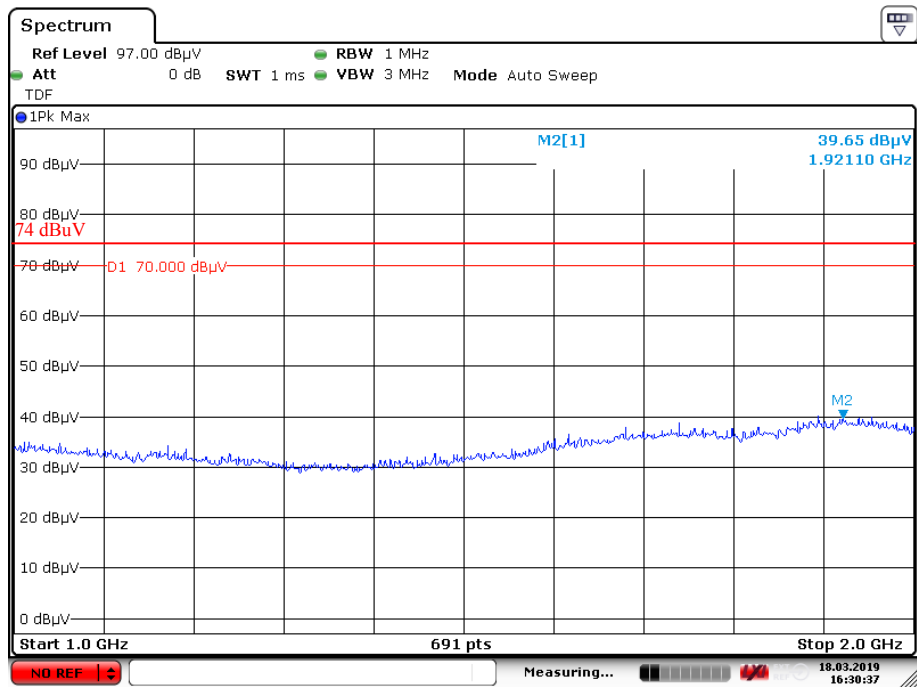
Pre-scan for peak

Horizontal – Peak



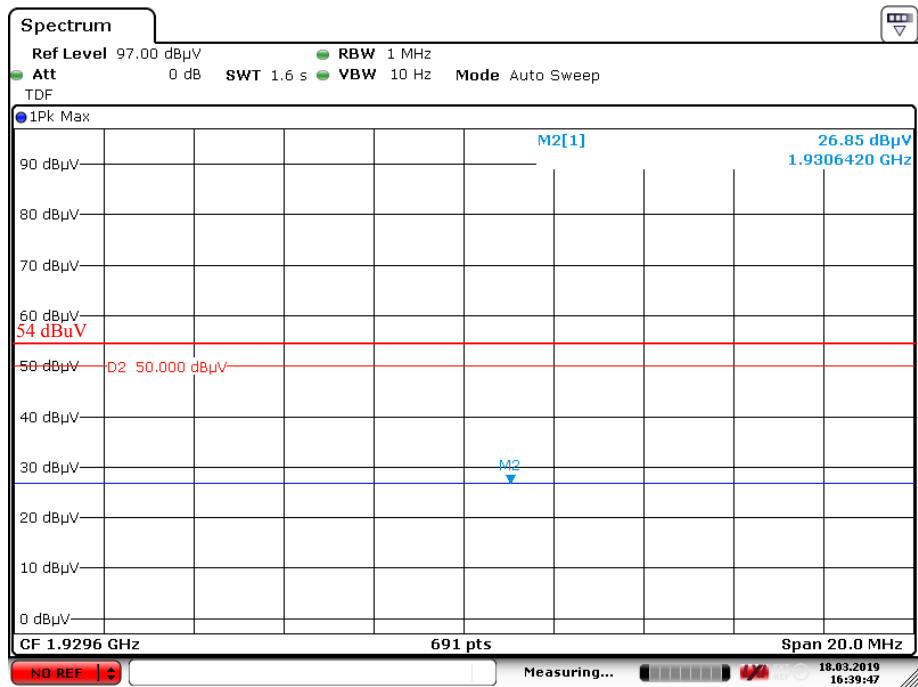
Date: 18.MAR.2019 16:36:08

Vertical - Peak



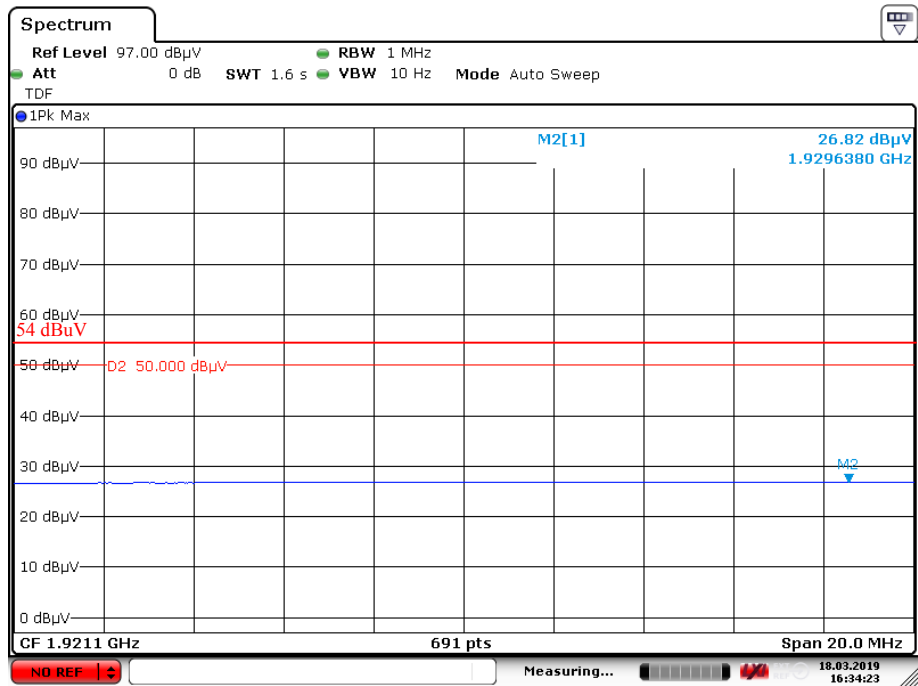
Date: 18.MAR.2019 16:30:38

Horizontal – Average



Date: 18.MAR.2019 16:39:47

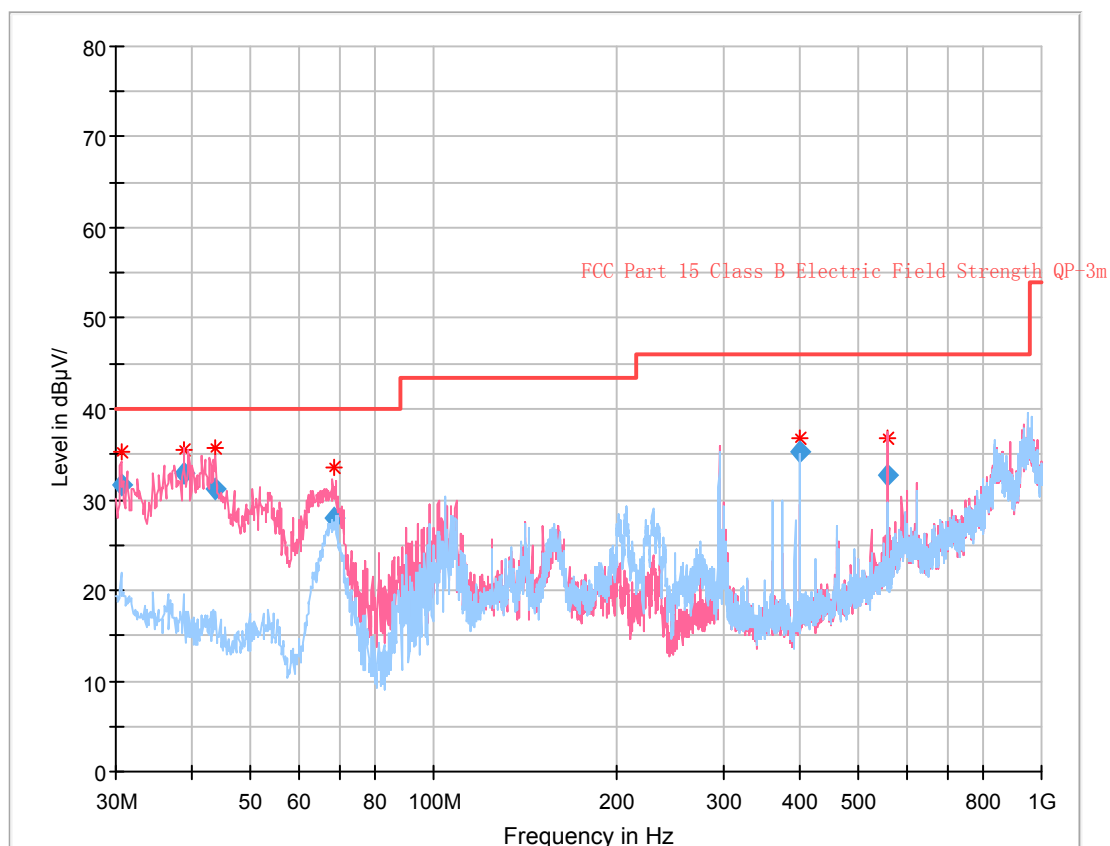
Vertical - Average



Date: 18.MAR.2019 16:34:24

Model GXW4224 (50-pin Telco connectors):

30 MHz~1 GHz:



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
30.606000	31.62	107.0	V	71.0	-8.0	40.00	8.38
38.970000	32.87	100.0	V	148.0	-13.1	40.00	7.13
43.779625	31.23	128.0	V	138.0	-16.4	40.00	8.77
68.465625	27.91	123.0	V	204.0	-20.6	40.00	12.09
400.005250	35.17	110.0	H	47.0	-10.3	46.00	10.83
557.221500	32.75	107.0	V	0.0	-4.9	46.00	13.25

1 GHz – 2 GHz:

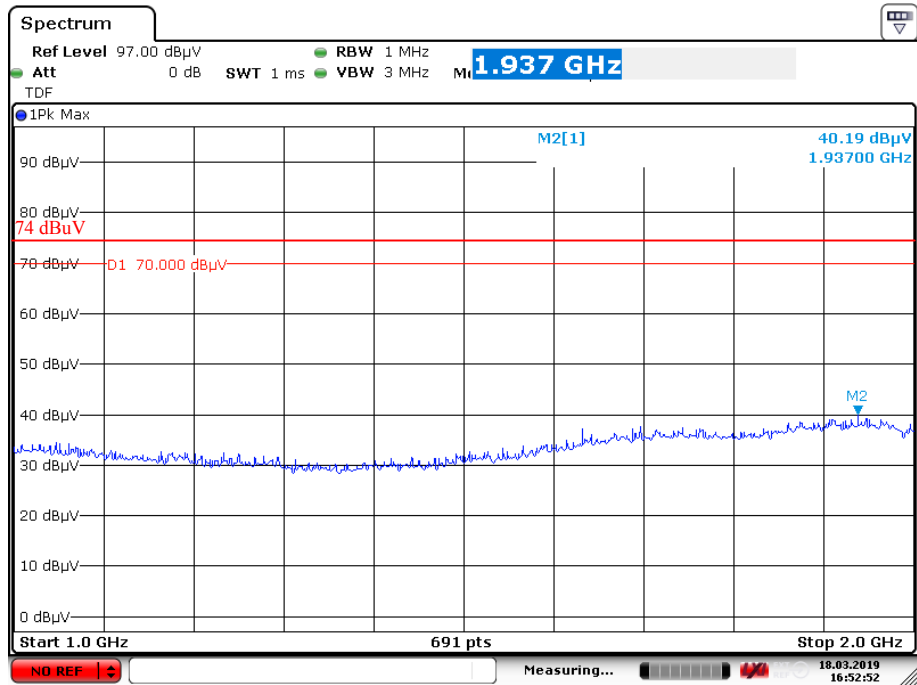
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1937.00	40.19	PK	306	2.2	H	-1.58	38.61	74	35.39
1937.00	28.40	Ave.	306	2.2	H	-1.58	26.82	54	27.18
1936.50	38.62	PK	76	2.1	V	-1.58	37.04	74	36.96
1936.50	26.78	Ave.	76	2.1	V	-1.58	25.20	54	28.80

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

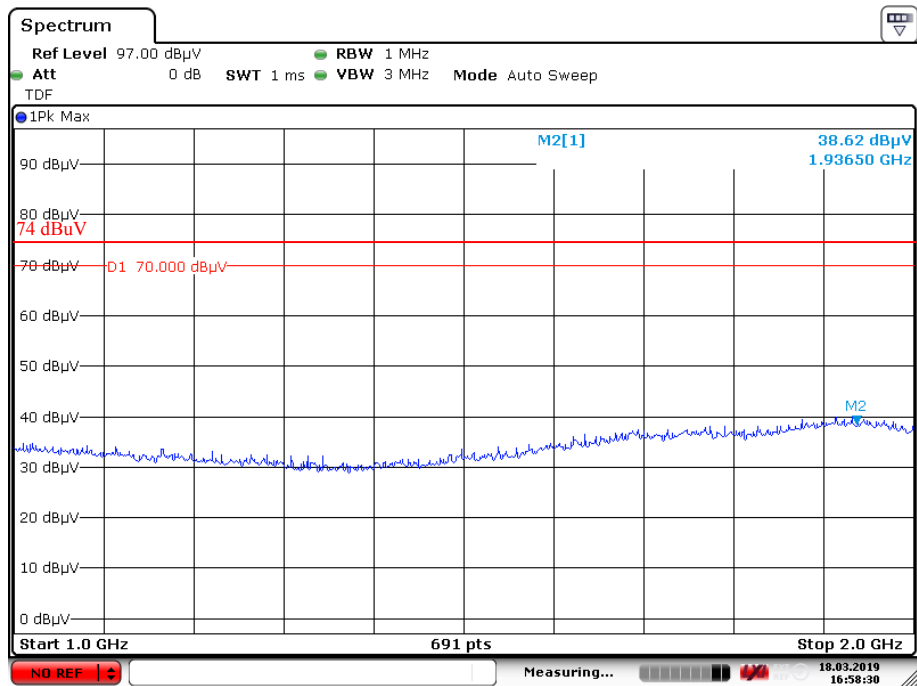
Pre-scan for peak

Horizontal – Peak



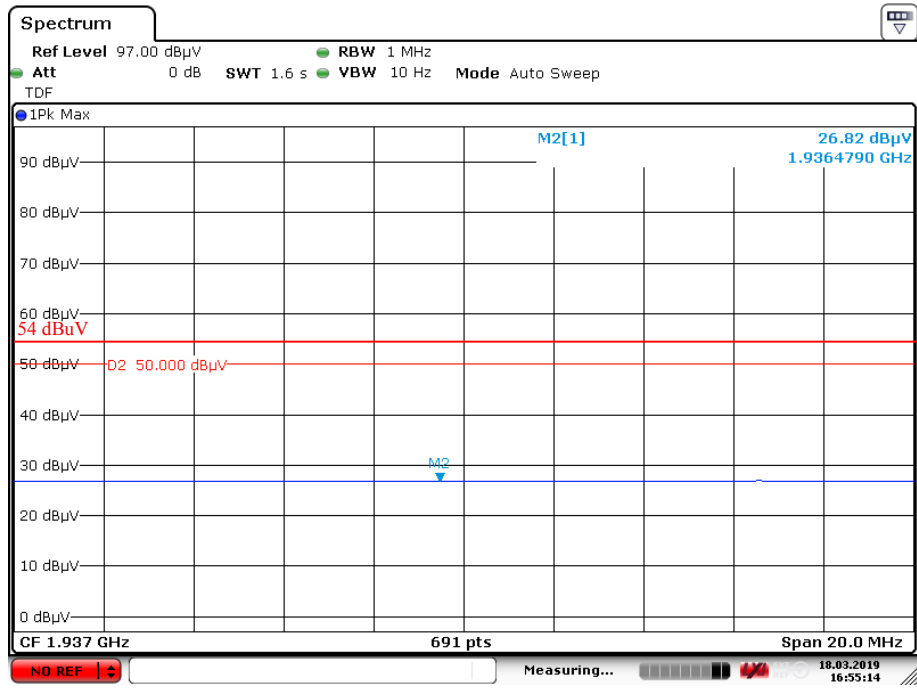
Date: 18.MAR.2019 16:52:52

Vertical - Peak



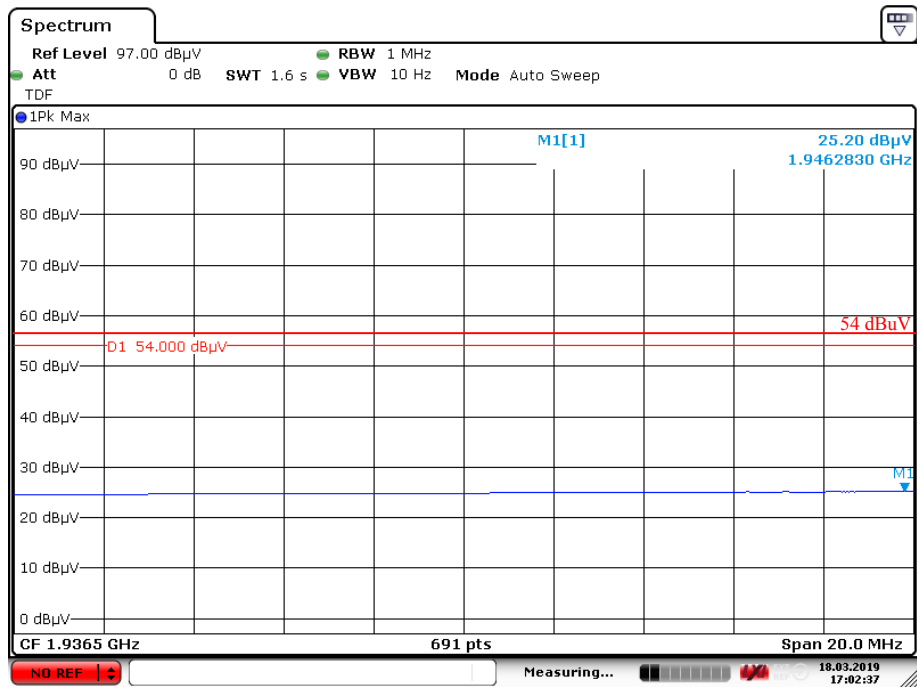
Date: 18.MAR.2019 16:58:31

Horizontal – Average



Date: 18.MAR.2019 16:55:14

Vertical - Average



Date: 18.MAR.2019 17:02:37

***** END OF REPORT *****