

FCC Part 15C

Measurement and Test Report

For

Cross Point b.v.

Waanderweg 12, Emmen, 7812 HZ, Netherlands

FCC ID: N9G-CP300MAXTRXA

FCC Rule(s):	<u>FCC Part 15.207&15.209</u>
Product Description:	<u>Electronic Article Surveillance(EAS) Pedestal</u>
Tested Model:	<u>MAXUS AM50 Mono Advertising</u>
Report No.:	<u>STR18078377I</u>
Sample Receipt Date:	<u>2018-07-30</u>
Tested Date:	<u>2018-07-31 to 2018-08-14</u>
Issued Date:	<u>2018-08-15</u>
Tested By:	<u>Long Tang/ Engineer</u> <i>Long Tang</i>
Reviewed By:	<u>Silin Chen / EMC Manager</u> <i>Silin chen</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.



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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Cross Point b.v.
Address of applicant: Waanderweg 12, Emmen, 7812 HZ, Netherlands

Manufacturer: Cross Point b.v.
Address of manufacturer: Waanderweg 12, Emmen, 7812 HZ, Netherlands

General Description of EUT	
Product Name:	Electronic Article Surveillance(EAS) Pedestal
Trade Name:	/
Model No.:	MAXUS AM50 Mono Advertising
Adding Model(s):	MAXUS AM50 Mono
Rated Voltage:	DC32.5V
Power Adapter Model:	Input: 230VAC 50-60Hz 500mA/ 115VAC 50-60Hz 1A Output: 32.5VDC 1.6A + synchronization signal
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model MAXUS AM50 Mono Advertising, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	58kHz
Antenna Type:	Integral Antenna
Radio Technology:	Acoustic Magnetic



1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.207: Conducted limits.

FCC Rules Part 15.209: Radiated emission limits; general requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013,

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	58kHz Working	Power On	AC 120V60Hz

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ± 3.74 dB
		0.15-30MHz ± 3.34 dB
Radiated Emissions	Radiated	30-200MHz ± 4.52 dB
		0.2-1GHz ± 5.56 dB
		1-6GHz ± 3.84 dB
		6-18GHz ± 3.92 dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2018-05-22	2019-05-21
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2018-05-22	2019-05-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2018-05-22	2019-05-21
Amplifier	Agilent	8447F	3113A06717	2018-05-22	2019-05-21
Amplifier	C&D	PAP-1G18	2002	2018-05-22	2019-05-21
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2020-06-07
Horn Antenna	ETS	3117	00086197	2017-06-08	2020-06-07
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2020-06-07
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2018-05-22	2019-05-21
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2018-05-22	2019-05-21
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2018-05-22	2019-05-21
RF Switcher	Top Precision	RCS03-A2	/	2018-05-22	2019-05-21
Cable	Zheng DI	ZT40-2.92J-2. 92J-6M	/	2018-03-19	2019-03-18
Cable	Zheng DI	ZT40-2.92J-2. 92J-2.5M	/	2018-03-19	2019-03-18
Cable	Zheng DI	2M0RFC	/	2018-03-19	2019-03-18
Cable	Zheng DI	1M0RFC	/	2018-03-19	2019-03-18
Cable	Zheng DI	1M0RFC	/	2018-03-19	2019-03-18



2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.203 Antenna Requirement	Compliant
§15.207 (a) Conducted Emission	Compliant
§15.209 Radiated Emission	Compliant
§ 15.215(c) Emission Bandwidth	Compliant

N/A: not applicable



3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 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.

3.2 Test Result

This product has two integral antennas, fulfill the requirement of this section.

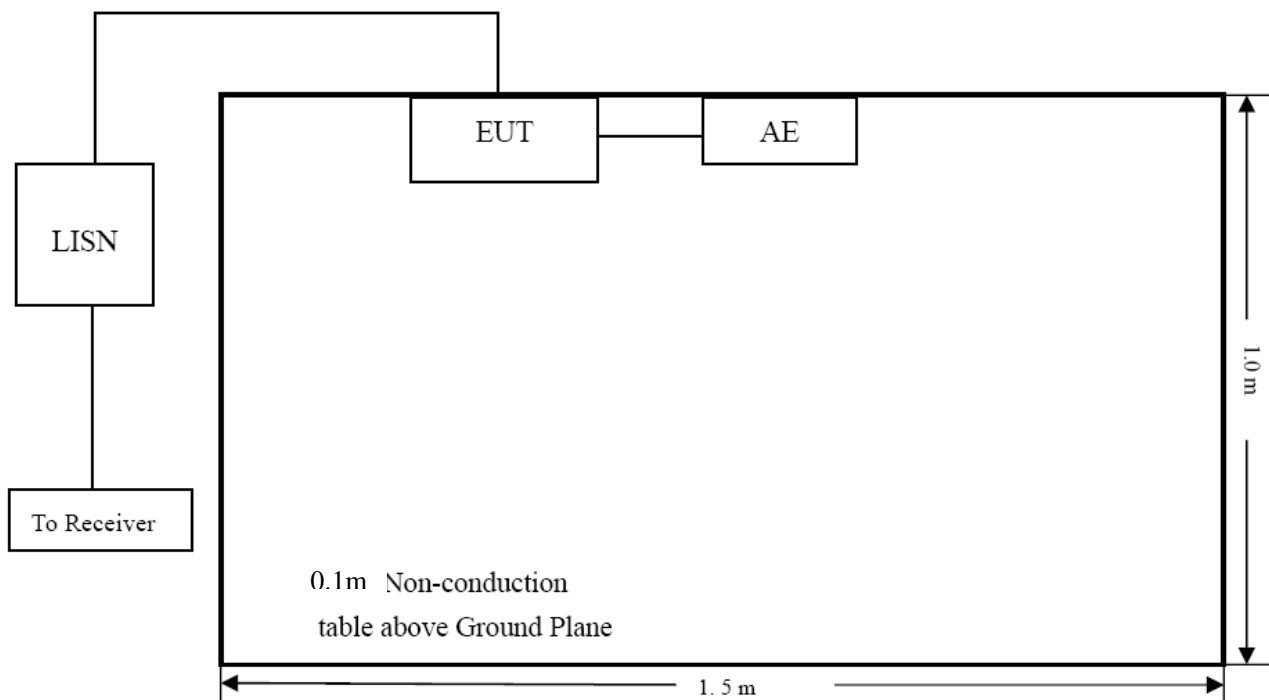
4. Conducted Emissions

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

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.

4.2 Basic Test Setup Block Diagram

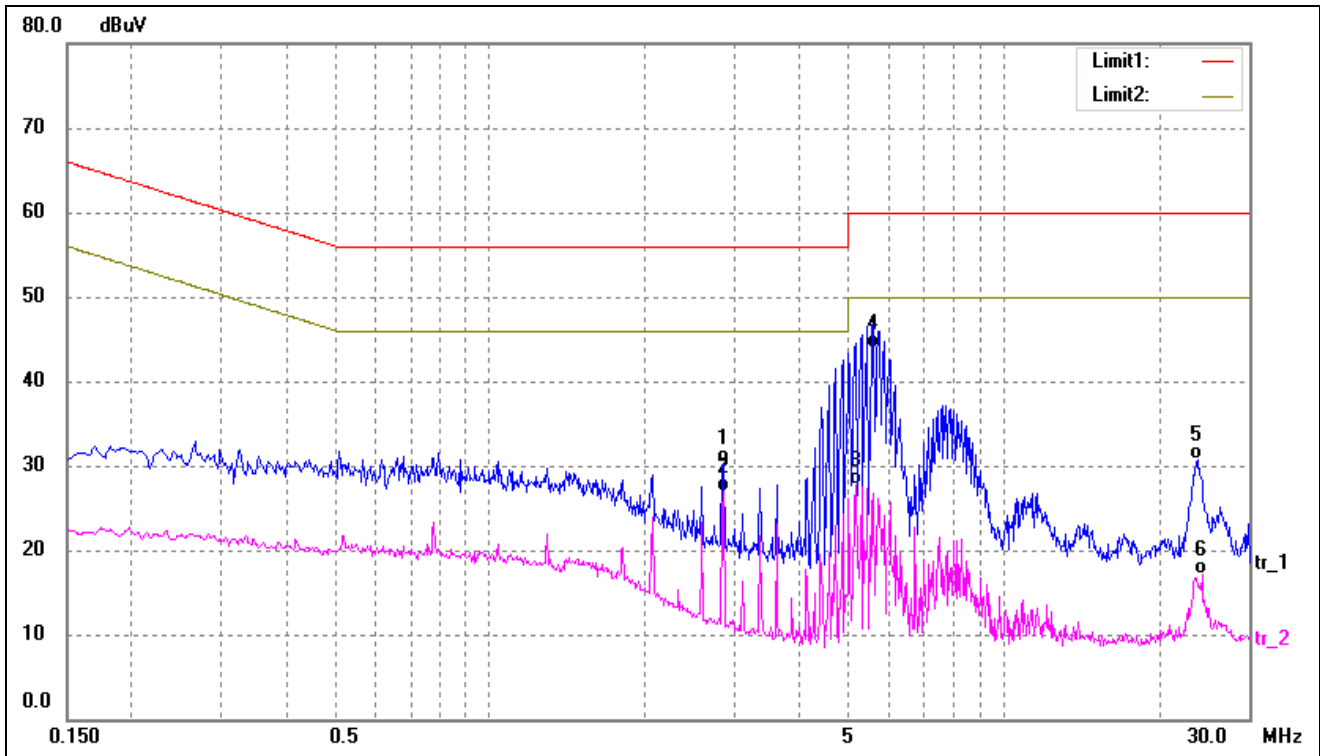


4.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

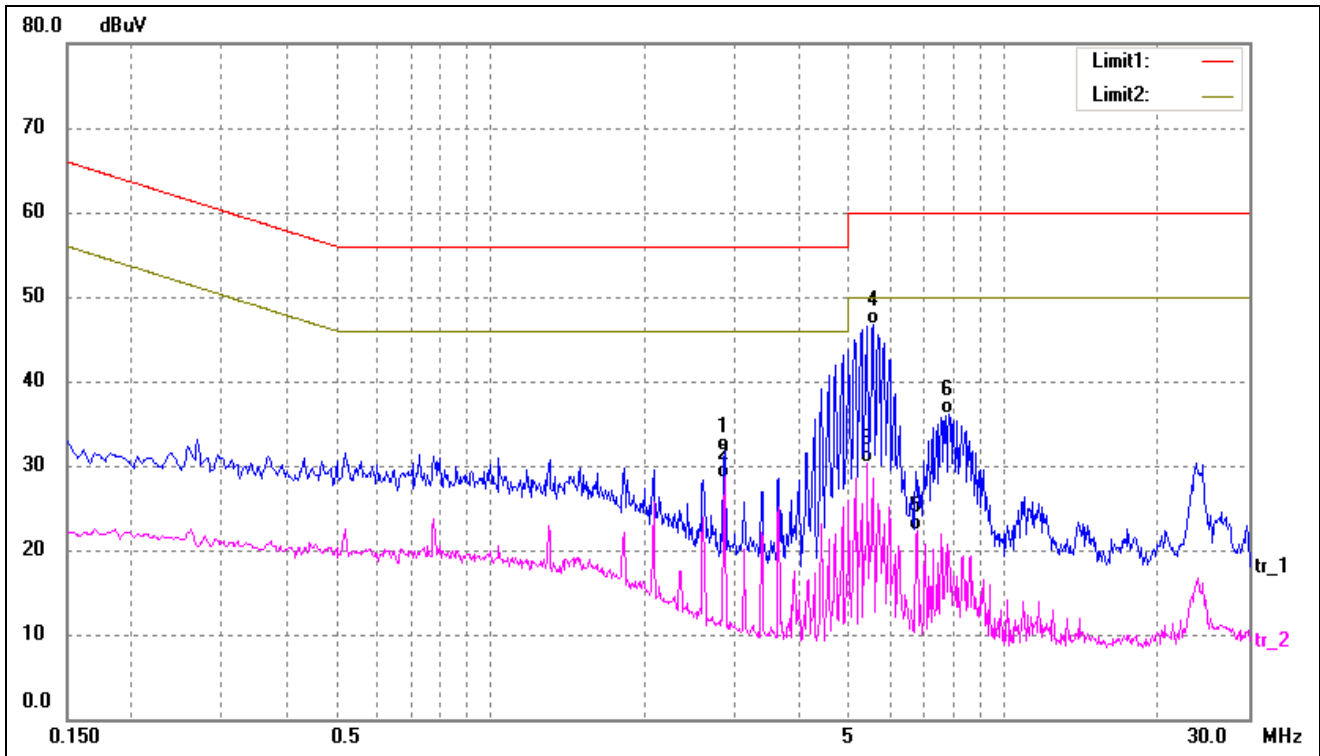
4.4 Summary of Test Results/Plots

Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	2.8420	19.63	10.67	30.30	56.00	-25.70	QP
2	2.8420	16.33	10.67	27.00	46.00	-19.00	AVG
3	5.1420	16.97	10.77	27.74	50.00	-22.26	AVG
4*	5.5660	33.06	10.78	43.84	60.00	-16.16	QP
5	23.9980	19.43	11.21	30.64	60.00	-29.36	QP
6	24.2860	5.84	11.22	17.06	50.00	-32.94	AVG

Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	2.8660	20.99	10.67	31.66	56.00	-24.34	QP
2	2.8660	17.93	10.67	28.60	46.00	-17.40	AVG
3	5.4260	19.47	10.78	30.25	50.00	-19.75	AVG
4*	5.5660	35.96	10.78	46.74	60.00	-13.26	QP
5	6.7700	11.42	10.83	22.25	50.00	-27.75	AVG
6	7.8140	25.13	10.88	36.01	60.00	-23.99	QP

5. RADIATED EMISSION

5.1 Standard Applicable

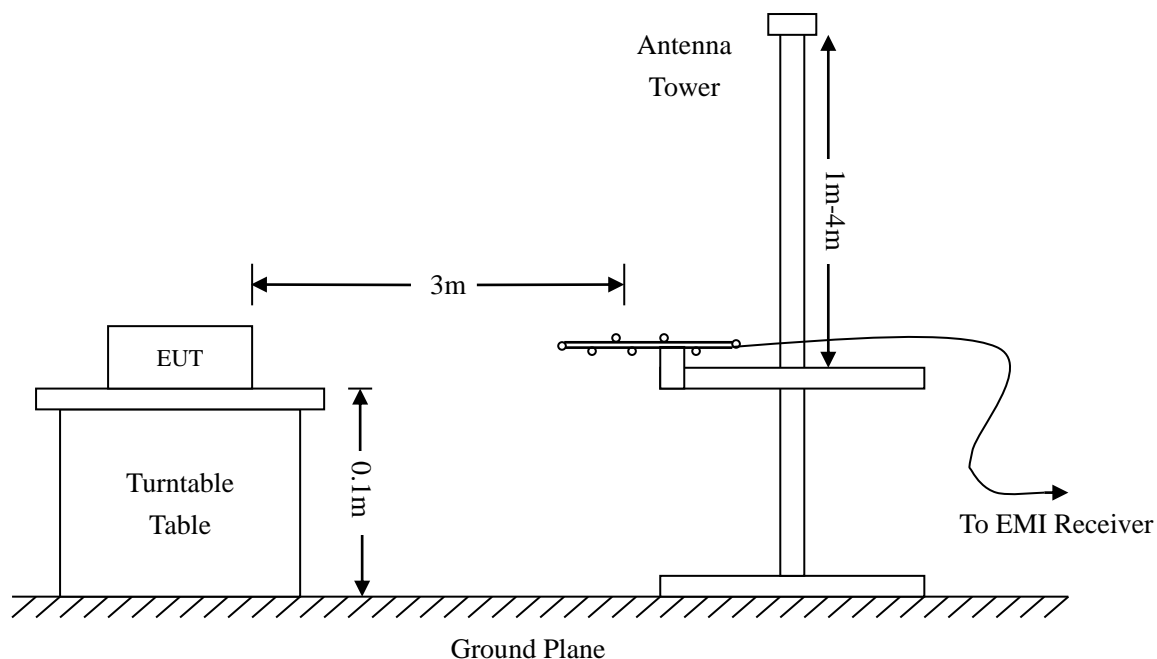
According to 15.209(a) Radiated emission limits; general requirements.

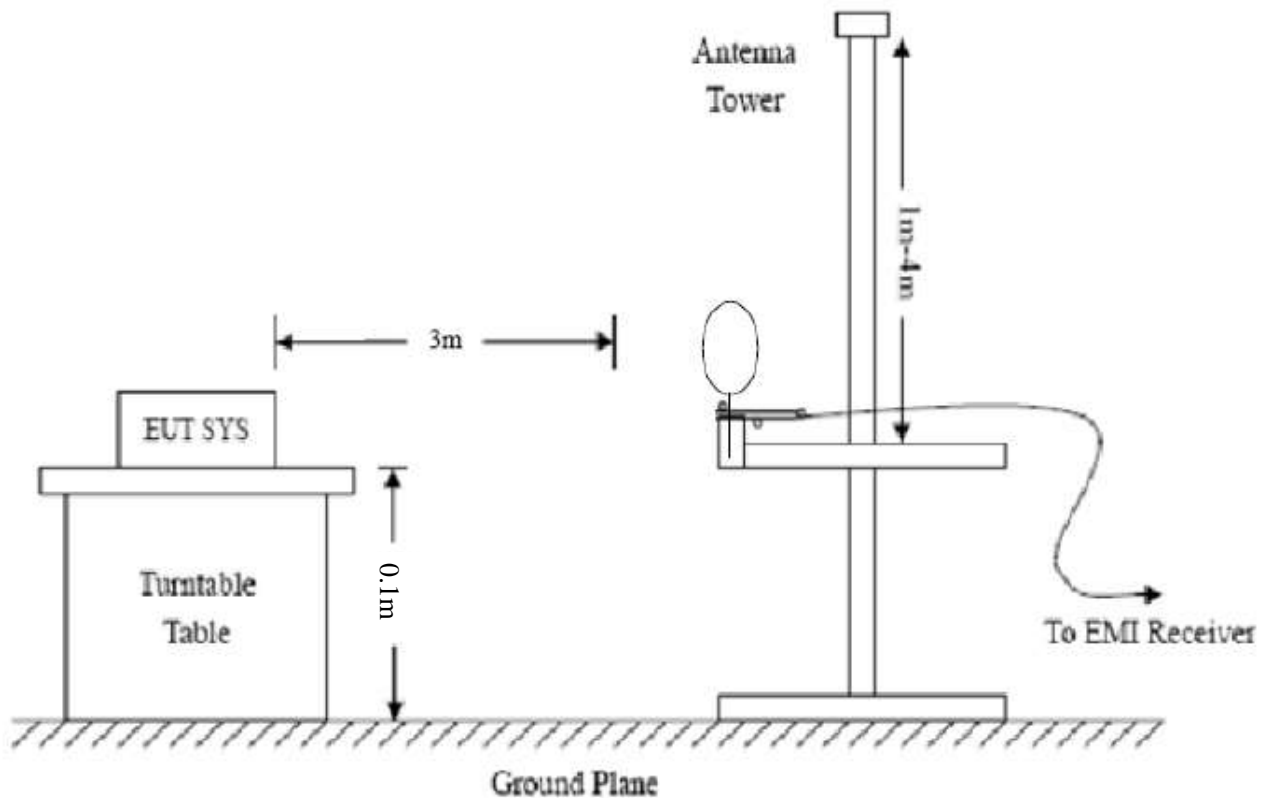
Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

5.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.209 Limit.

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.





5.3 Test Receiver Setup

Frequency :9kHz-30MHz
 RBW=10kHz,
 VBW =30kHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak

Frequency :30MHz-1GHz
 RBW=120kHz,
 VBW=300kHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, QP

Frequency :Above 1GHz
 RBW=1MHz,
 VBW=3MHz(Peak), 10Hz(AV)
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, AV

5.4 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.209(a) Limit}$$

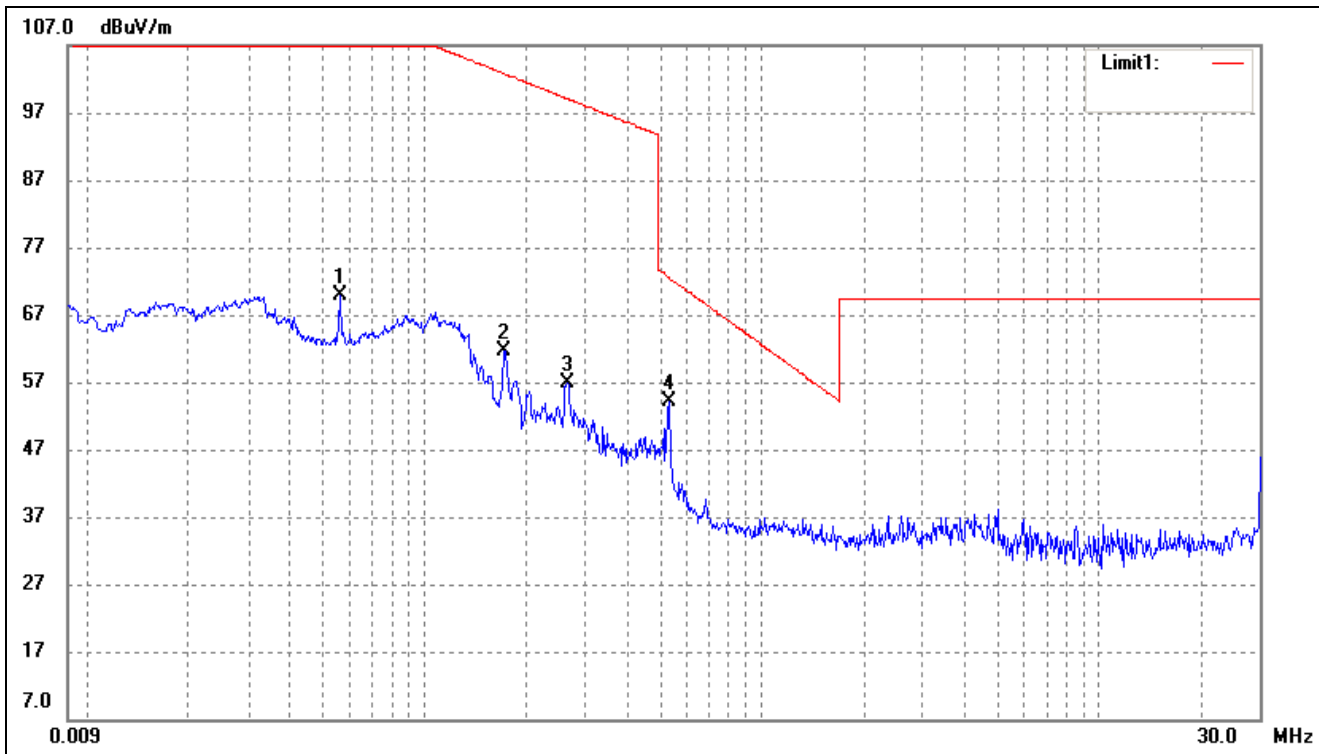
5.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

5.6 Summary of Test Results/Plots

➤ Below 30MHz

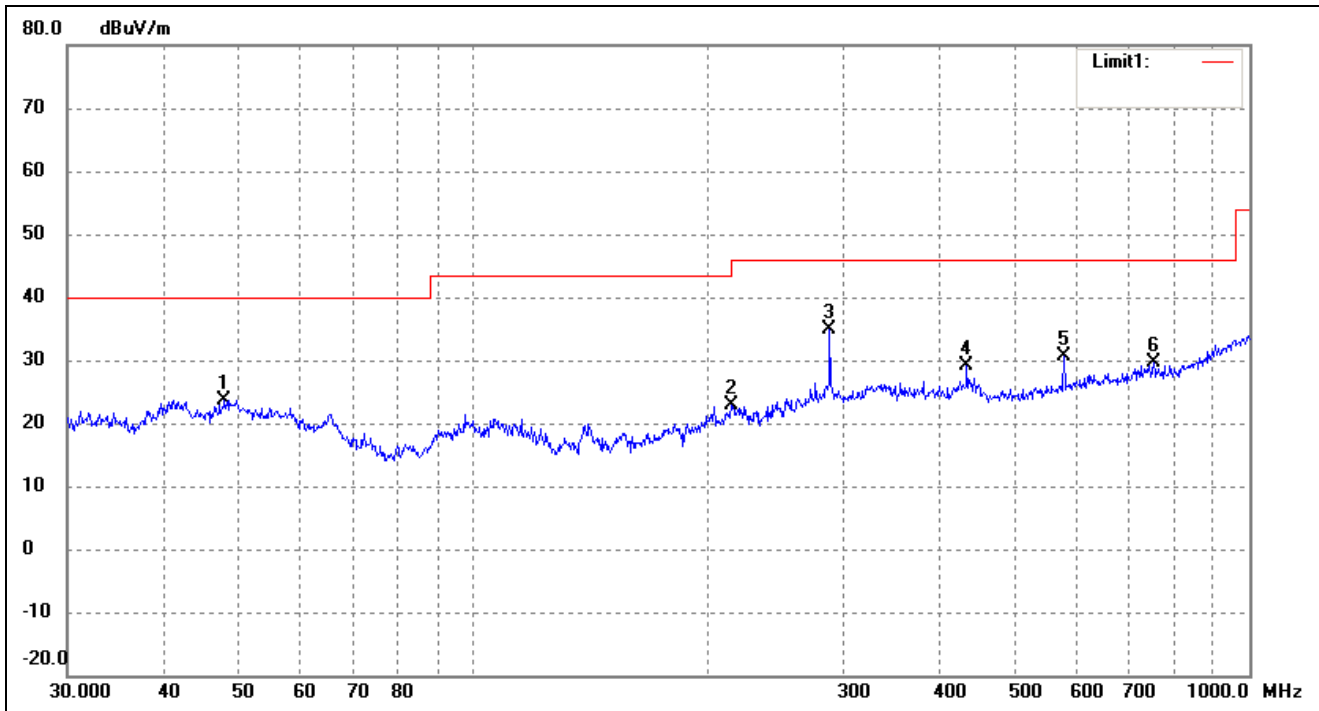
Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	0.0580	62.22	7.56	69.78	112.34	-42.56	84	100	AV
2	0.1720	55.29	6.43	61.72	102.84	-41.12	167	100	AV
3	0.2644	65.48	-8.59	56.89	99.13	-42.24	149	100	AV
4	0.5292	63.83	-9.64	54.19	72.58	-18.39	142	100	QP

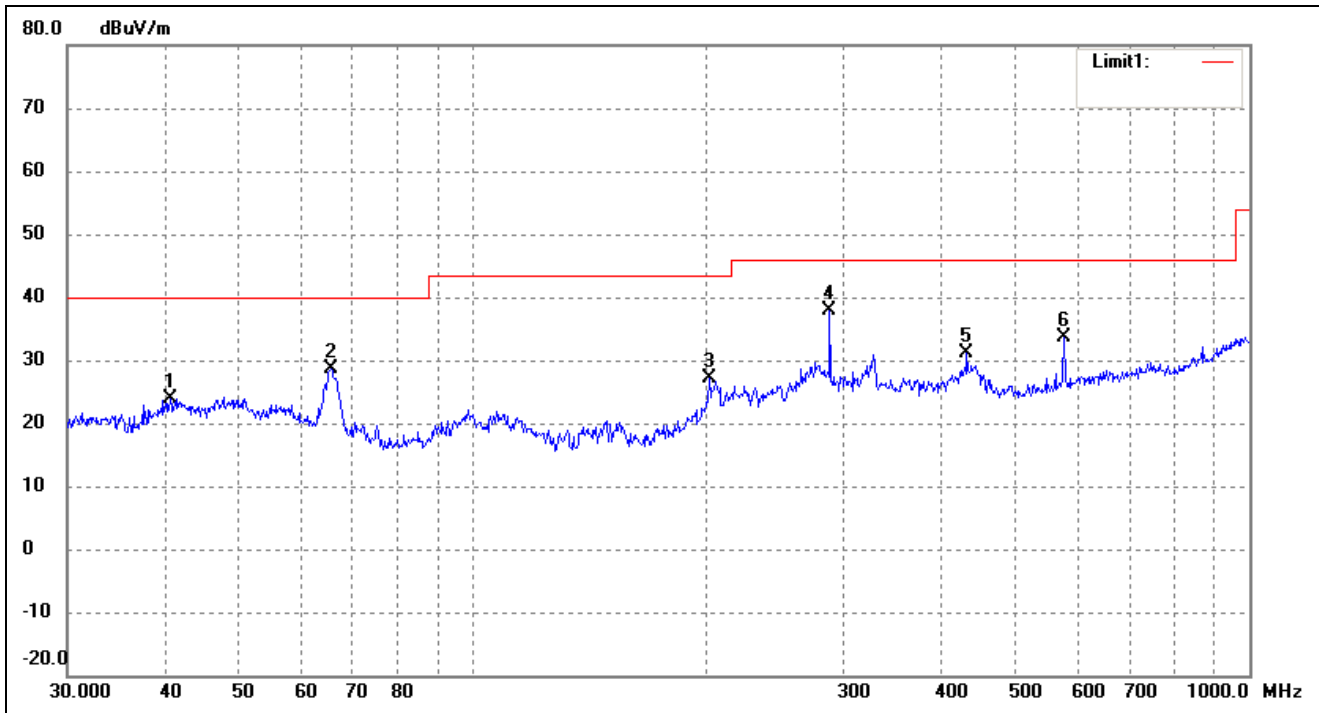
➤ Transmitting:

Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	47.8260	36.53	-12.79	23.74	40.00	-16.26	164	100	QP
2	215.2678	34.70	-11.80	22.90	43.50	-20.60	285	100	QP
3	287.9904	43.01	-8.08	34.93	46.00	-11.07	76	100	QP
4	432.5457	35.40	-6.33	29.07	46.00	-16.93	103	100	QP
5	576.6443	35.13	-4.51	30.62	46.00	-15.38	56	100	QP
6	752.7432	31.22	-1.71	29.51	46.00	-16.49	201	100	QP

Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	40.7016	37.65	-13.76	23.89	40.00	-16.11	234	100	QP
2	65.5727	44.17	-15.45	28.72	40.00	-11.28	125	100	QP
3	201.3930	39.36	-12.15	27.21	43.50	-16.29	91	100	QP
4	287.9904	45.85	-8.08	37.77	46.00	-8.23	212	100	QP
5	432.5457	37.46	-6.33	31.13	46.00	-14.87	114	100	QP
6	576.6443	38.25	-4.51	33.74	46.00	-12.26	172	100	QP

6. EMISSION BANDWIDTH

6.1 Applicable Standard

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.2 Test Procedure

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

Set span = 60kHz, centered on a transmitting channel

RBW \geq 1% 20dB Bandwidth, VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

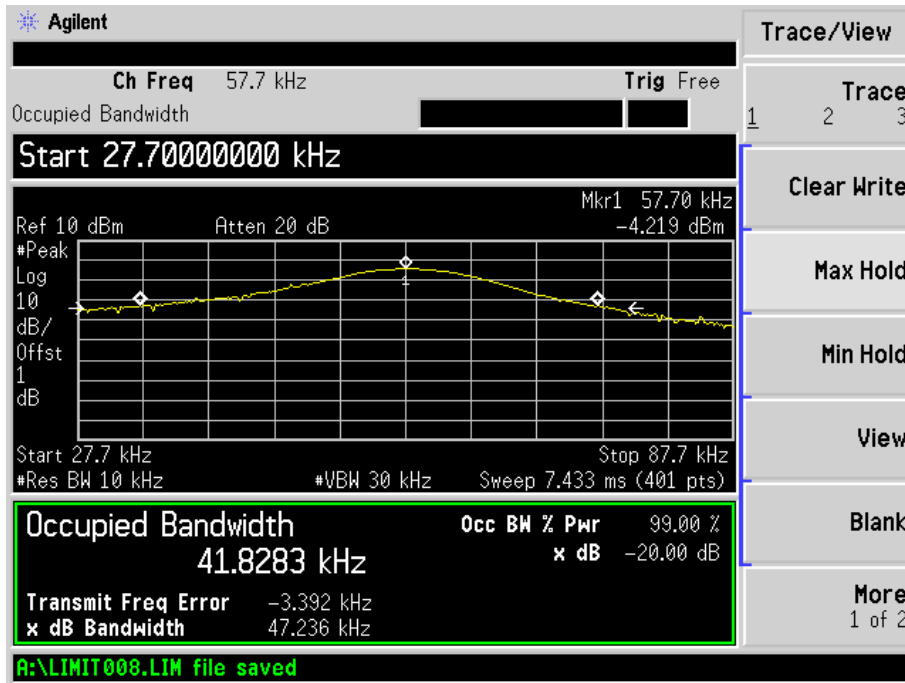
All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down of the emission.

6.3 Summary of Test Results/Plots

Tx Frequency	20dB Emission bandwidth(kHz)
58kHz	47.236



Please refer to the test plots as below:



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