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EMI TEST REPORT

On Model Name: Enterprise Router&Wireless Access Point Manager

Model Number: GWN7000

Brand Name: Grandstream

Prepared for Grandstream Networks, Inc.

FCC ID : YZZ-GWN7000

Classification: Part 15 Class B Computing Device Peripheral(JBP)

According to FCC 47 CFR Part 15, Subpart B

Test Report #: SHE-1702-11644-FCC

Prepared by: Nancy _____ *ECMG*
Nancy Han /Assistant *Company Name*

Reviewed by: _____ *ECMG*
Jawen Yin/ Senior Engineer *Company Name*

QC Manager: Swall Zhang _____ *ECMG*
Swall Zhang/QC Manager *Company Name*

Test Report Released by: Swall Zhang _____ *February 27th, 2017*
Swall Zhang *Date*

Verdict

Test Result :	*Pass**

**:In the configuration, the EUT complied with the standard specified above.*

Revision History

Rev.	*Issue date*	*Revision*	*Revised by*
01	*02/27/2017*	*Initial review*	*Jawen Yin*
/	*/*	*/*	*/*

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location: *Shenzhen NTEK Testing Technology Co., Ltd.*

1/F, Building E, Fenda Science Park Sanwei Community, Xixiang Street, Baoan District.

Tel: *(86)-755- 61156556*

Fax: *(86)-755- 61156599*

Test Facility

The test facility was recognized, certified, or accredited by the following organizations:

- ***CNAL- LAB Code: L5516***

NTEK EMC Laboratory has been assessed and in compliance with CNAL/ AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- ***FCC-Registration No.: 238937***

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List Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	YZZ-GWN7000 _Test Report.pdf
Operation Description	Technical Description	YZZ-GWN7000 _Operation description.pdf
External Photos	External Photos	YZZ-GWN7000 _External Photos
Internal Photos	Internal Photos	YZZ-GWN7000 _Internal Photos
Block Diagram	Block Diagram	YZZ-GWN7000 _Block Diagram.pdf
Schematics	Circuit Diagram	YZZ-GWN7000 _Schematics.pdf
ID Label/Location	Label and Location	YZZ-GWN7000 _Label & Location.pdf
User Manual	User Manual	YZZ-GWN7000 _User Manual.pdf
Test setup photos	Test set-up photos	YZZ-GWN7000 _Test Set-up Photos

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT).Without the permission of ECMG Electronic Technical Testing Corp (Shenzhen) Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample	*: Enterprise Router&Wireless Access Point Manager*
Model Numbers	*: GWN7000*
Model Tested	*: GWN7000*
Date of Receipt	*: February 24th, 2017*
Date Tested	*: February 27th , 2017*
Applicant	*: Grandstream Networks, Inc.*
Address	*126 Brookline Ave, 3rd Floor Boston, MA 02215, USA*
Telephone	*: +1 (617) 566-9300*
Fax	*: +1 (617) 249-1987*
Manufacturer	*: Grandstream Networks, Inc.*
Address	*126 Brookline Ave, 3rd Floor Boston, MA 02215, USA*
Telephone	*: +1 (617) 566-9300*
Fax	*: +1 (617) 249-1987*
Factory	*: Grandstream Networks, Inc.*
Address	*126 Brookline Ave, 3rd Floor Boston, MA 02215, USA*
Telephone	*: +1 (617) 566-9300*
Fax	*: +1 (617) 249-1987*

EUT Description

Grandstream Networks, Inc. Model Tested GWN7000 (referred to as the EUT in this report) is an Enterprise Router & Wireless Access Point Manager. Technical specifications are as belows:

Parameter		***Ranges***
Basic parameters	*Rated voltage*	*12.0V*
	Rated Current	*1.5A*
I/O Ports	*WAN Ports*	*2 x autosensing 10/100/1000 Base-T WAN Ports*
	NET &LAN port	*1 x auto-sensing 10/100/1000 Base-T configurable NET Port； 4 x auto-sensing 10/100/1000 Base-T LAN Ports*
	DC Power Jack	*Power port to connect to power adaptor*
	RESET	*1 x Reset Pinhole*
	USB	*2 x USB 2.0 ports*
Power Adapter	*Input*	*AC 100–240 V 50/60 Hz 0.6A*
	Output	*DC 12V, 2.0A*
	Model	*NBS24J120200HU*
	Brand name	*Mass power*
	Input	*100-240VAC 50/60Hz 1.0A*
	Output	*DC 12V, 2.0A*
	Model	*F24US1200200A*
	Brand name	*SUNLIGHT*
	Input	*100-240VAC 50/60Hz 0.8A*
	Output	*DC 12V, 1.5A*
	Model	*H18US1200150A*
	Brand name	*SUNLIGHT*
	Input	*100-240VAC 50/60Hz 0.6A*
	Output	*DC 12V, 1.5A*
	Model	*F18W8-120150SPAUY*
	Brand name	*Switching Mode Power*

For other informations &features please refer to user's manual of EUT.

Frequency Range Of Radiated Measurements

(b) For unintentional radiators:

(1) Except as otherwise indicated in paragraphs (b)(2) or (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	***Upper frequency of measurement range (MHz)***
Below 1.705	*30.*
1.705-108	*1000.*
108-500	*2000.*
500-1000	*5000.*
Above 1000	*5th harmonic of the highest frequency or 40 GHz, whichever is lower.*

Note: Since the highest frequency operated of the EUT is 368MHz, so upper frequency of radiated emission test is up to 2GHz as per §15.33(b)(1).

Test Summary

The Electromagnetic Compatibility requirements on model GWN7000 for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

Emission Tests				
Specifications	***Description***	***Test Results***	***Test Point***	***Remark***
FCC Part 15.107 ANSI C63.4 -2014	*Conducted Emission*	*Passed*	*AC Input Port*	*Attachment 1*
FCC Part 15.109 ANSI C63.4 -2014	*Radiated Emission*	*Passed*	*Enclosure*	*Attachment 2*

Test Mode Justification

Pre-Scan has been conducted to determine the worst-case from all possible combination between available operation mode .Following mode(s) was (were) selected for the final test as listed below:

Pre-Test Mode	
EMI Test Mode	*Mode 1: Communication with PC& Enterprise Router & Wireless Access Point Manager + Mass Power*
	Mode 2: Communication with PC& Enterprise Router & Wireless Access Point Manager + Sunlight Power #1
	Mode 3: Communication with PC& Enterprise Router & Wireless Access Point Manager + Sunlight Power #2
	Mode 4: Communication with PC& Enterprise Router & Wireless Access Point Manager + Switching Mode Power
	Mode 5: PoE Mode
Final Test Mode	
EMI Test Mode	*Mode 1: Communication with PC& Enterprise Router & Wireless Access Point Manager + Mass Power*
	Mode 2: Communication with PC& Enterprise Router & Wireless Access Point Manager + Sunlight Power #1
	Mode 3: Communication with PC& Enterprise Router & Wireless Access Point Manager + Sunlight Power #2
	Mode 4: Communication with PC& Enterprise Router & Wireless Access Point Manager + Switching Mode Power
	Mode 5: PoE Mode

EUT Exercise Software

No test software support this test.

Equipment Modification

Any modifications installed previous to testing by Grandstream Networks, Inc. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen).

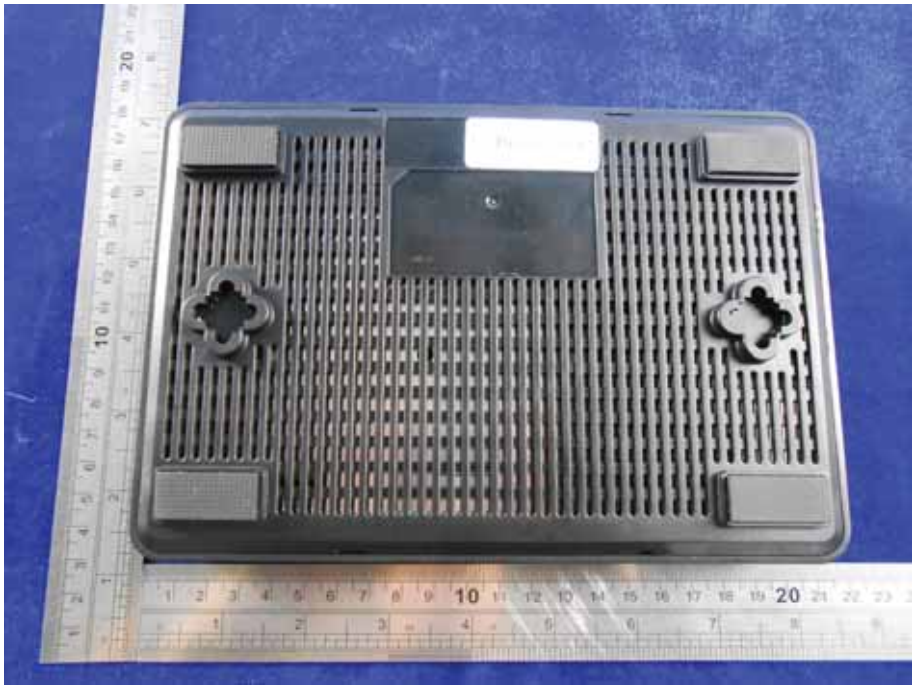
EUT Sample Photos

EUT Model: GWN7000

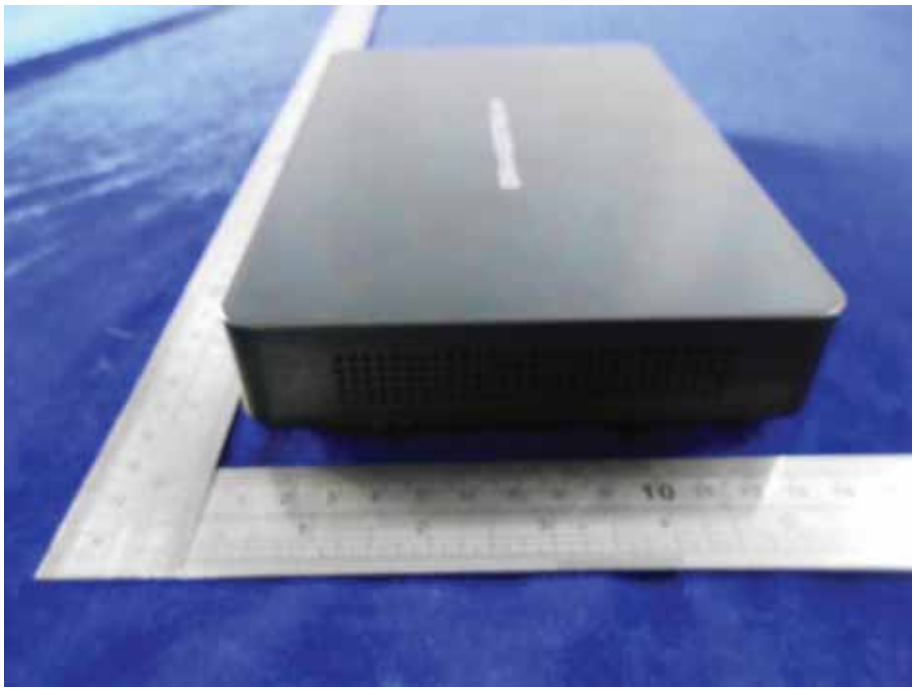
EUT- Front View

EUT- Rear View

EUT- Top View



EUT- Bottom View



EUT- Left Side View

EUT- Right Side View

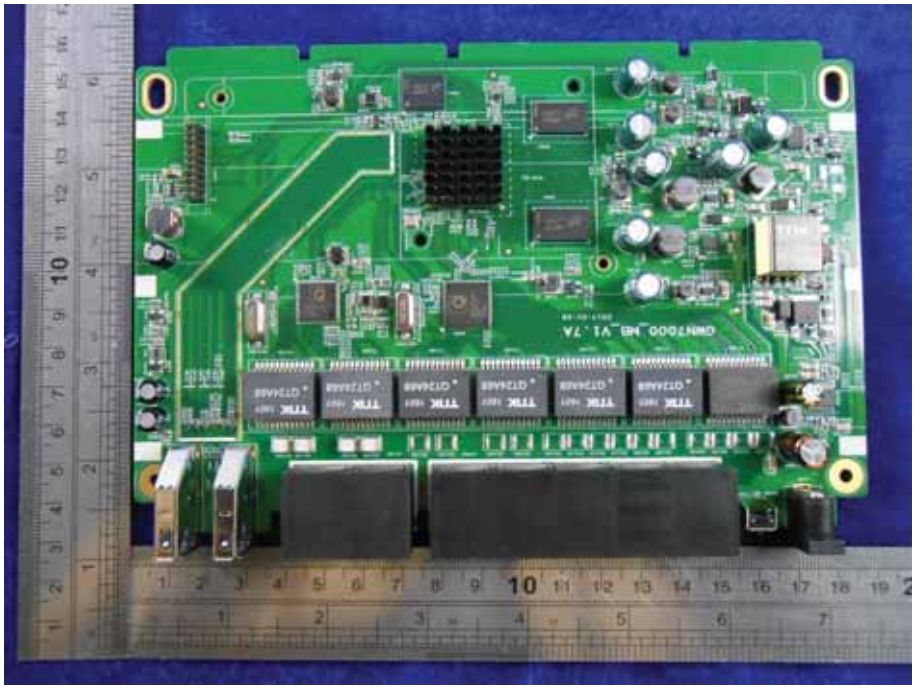
Power Adapter View(Manufacturer: Mass power)

Power Adapter View(Manufacturer: Sunlight #1)

Power Adapter View(Manufacturer: Sunlight #2)

Power Adapter View(Manufacturer: Switching Mode)

EUT-Uncovered View



Mainboard-Top view

Mainboard-Bottom view

Test System Details

EUT	
Model Number:	GWN7000
Description:	Enterprise Router & Wireless Access Point Manager
Manufacturer:	Grandstream Networks, Inc.
Input Voltage:	DC 12V

Support Equipment

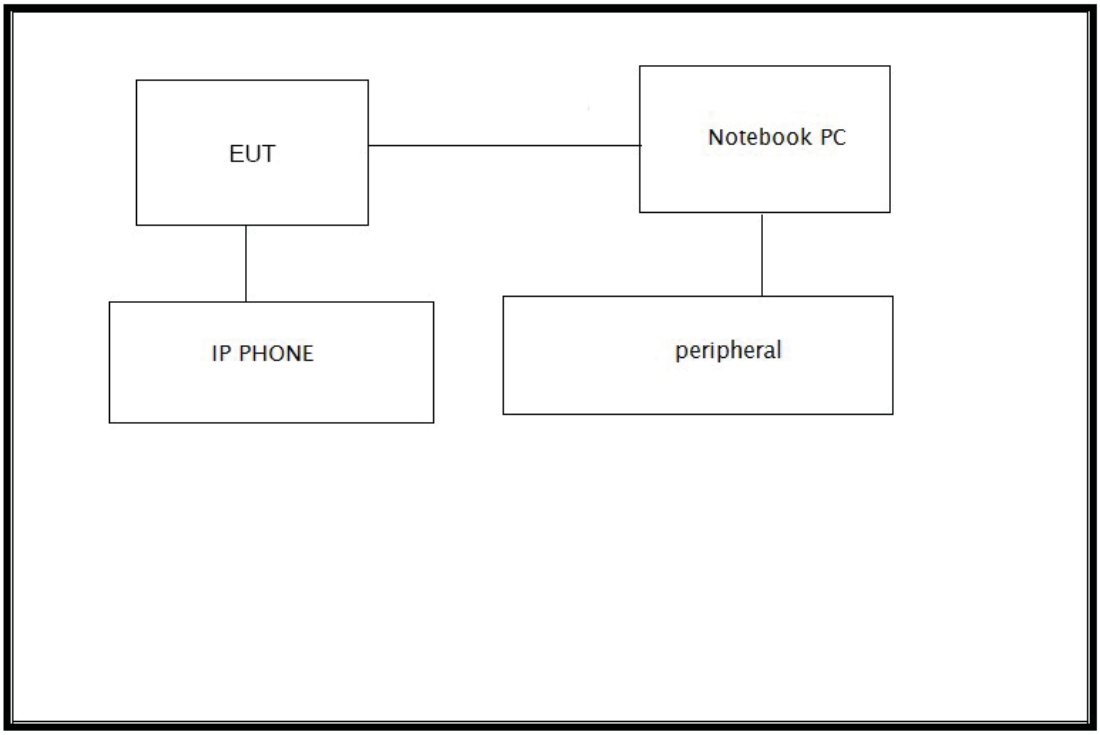
Description	Model Number	Serial Number	Certificate	Manufacturer
PC	FV39JY1	345316771097	DoC	HP
Monitor	KDL-24EX520	6450750	DoC	Sony
Printer	L11121E	/	Doc	Cannon
Mouse	N889	/	DoC	DELL
IP Phone x2pcs	E129	49126	FCC ID:TYM-E129	AVAYA

Cable Description

Cable No.	Type of Cable	From	To	Length (Meters)	Shielded (Y/N)	Ferrite (Y/N)
1	VGA Cable	PC	Monitor	1.2	Y	Y
2	Mouse cable	PC	Mouse	1.2	N	Y
3	Printer Cable	PC	Printer	1.2	N	Y
4	RJ-45 Cable	EUT	PC	1.5	N	N
5	RJ-45 Cable x 2pcs	EUT	IP Phone	2.0	N	N
6	Power Adapter Cable	EUT	AC Plug	1.5	N	N

Note: *The EUT has been tested as an independent unit together with other necessary accessories or support units.the above support units or accessories were used to form a representative test configuration during the test tests.*

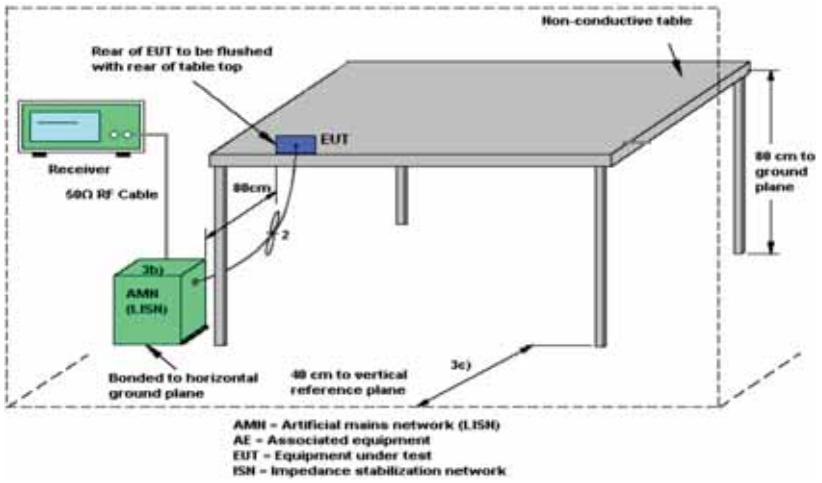
Configuration of Tested System



ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

CLIENT:	Grandstream Networks, Inc.	**TEST STANDERD:**	Section 15.107
MODEL NUMBERS:	GWN7000	**PRODUCT:**	Enterprise Router & Wireless Access Point Manager
MODEL TESTED:	GWN7000	**EUT DESIGNATION:**	Home or Office
TEMPERATURE:	22°C	**HUMIDITY:**	48%
ATM PRESSURE:	103kPa	**GROUNDING:**	None
TESTED BY:	Alex Yu	**DATE OF TEST:**	February 27th, 2017
TEST REFERENCE:	ANSI C63.4- 2014		
TEST PROCEDURE:	The EUT was set up according to the guidelines of ANSI C63.4: 2014 for conducted emissions. The measurement was using a AMN on each line and an EMI receiver peak scan was made at the frequency measurement range. The six highest significant peaks were then marked, and these signals were then quasi-peaked and averaged.The frequency range investigated was from 150KHz to 30MHz. Corrected Amplitude & Margin Calculation. The basic equation as follow: VC = VR + AC + VDF; Herein, VC: corrected voltage amplitude VR: reading voltage amplitude AC: attenuation caused by cable loss VDF: voltage division factor of AMN or ISN. The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows: Margin = Limit - Corrected Amplitude.		
TEST MODE:	Mode 1,Mode 2,Mode3,Mode 4		
TESTED RANGE:	150kHz to 30MHz		
TEST VOLTAGE:	AC 120V/60Hz		
RESULTS:	The EUT meets the requirements of test reference for Conducted Emissions. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp(Shenzhen) test personnel.		
M. UNCERTAINTY:	The maximum measurement uncertainty is evaluated as: 150KHz~30MHz: 3.2dB. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.		

Continue on to next page…

TEST SET UP:	

EMI Receiver Set-up:

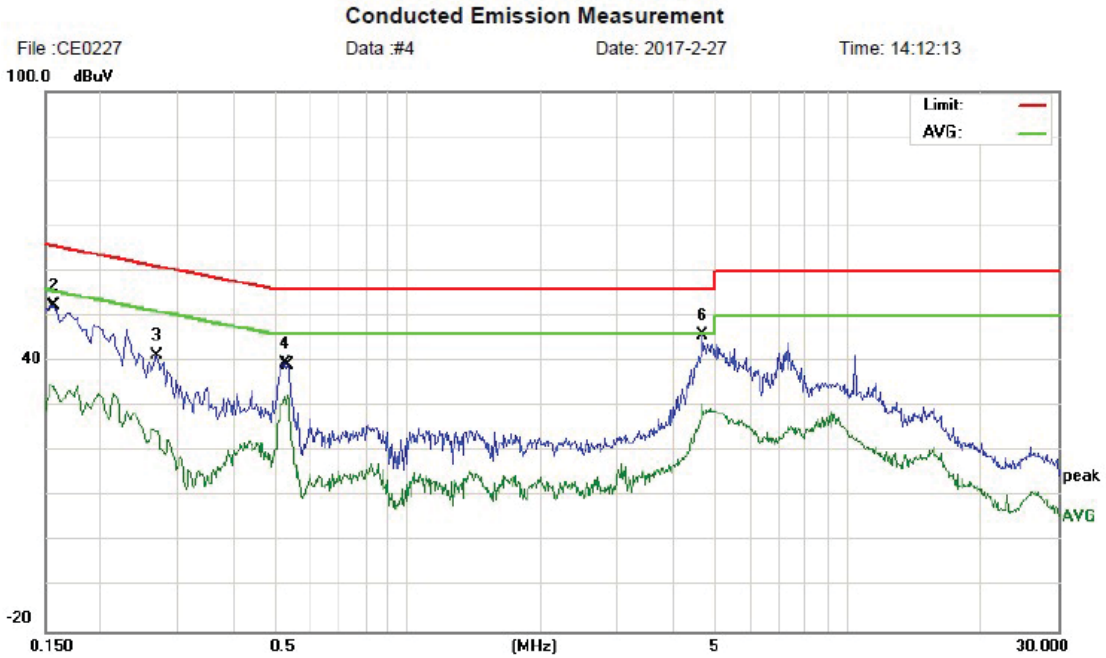
Frequency [MHz]	*IF B/W*
0.15 - 30	*9KHz*

Conducted Emission Limit:

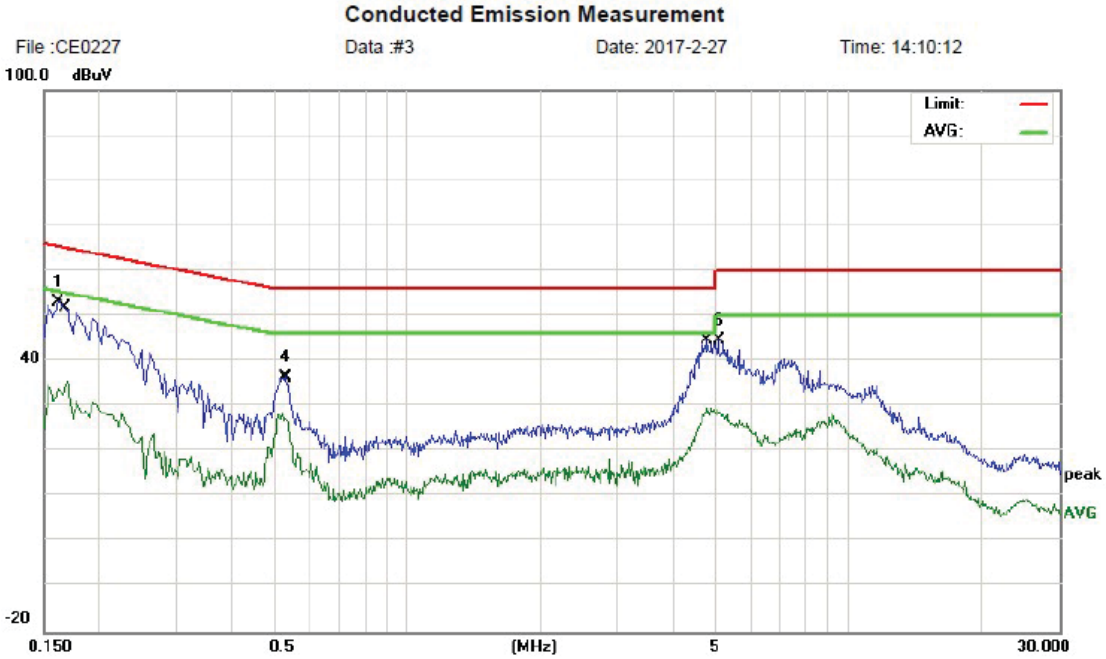
Frequency [MHz]	*Field strength [dBuV]*	
	Ouasi-peak	*Average*
0.15-0.5	*66 to 56**	*56 to 46**
0.5-5	*56*	*46*
5-30	*60*	*50*

**Decreases with the logatithm of the frequency.*

Mode 1: (Mass Power)

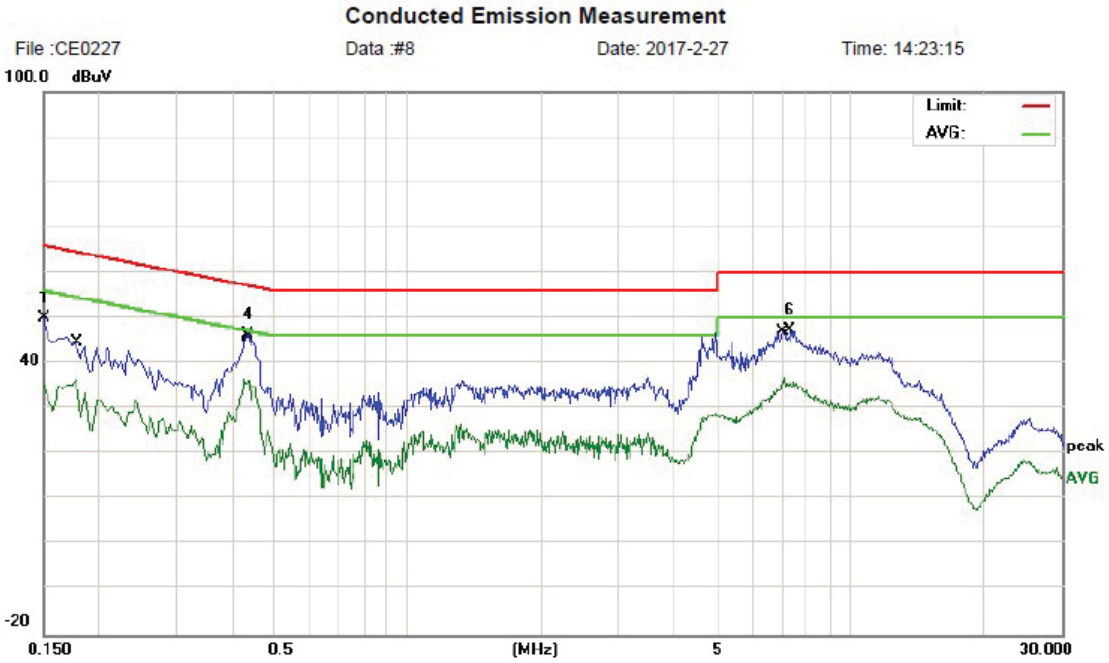


Line L Conducted Emission Graph

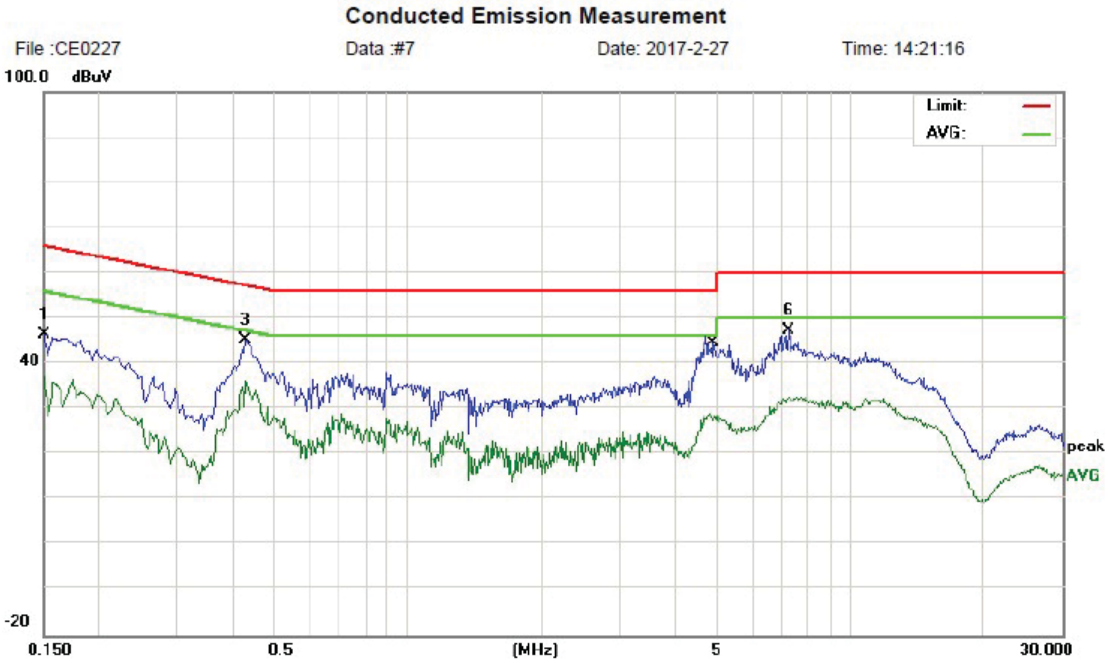


Line N Conducted Emission Graph

Mode 2:(Sunlight Power #1)

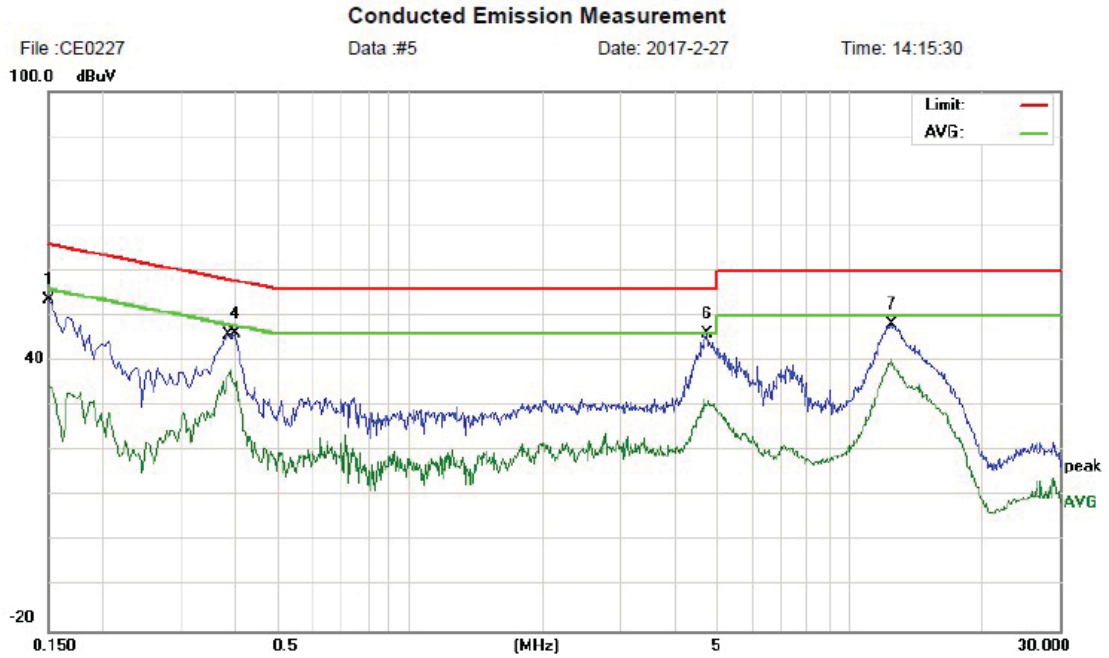


Line L Conducted Emission Graph

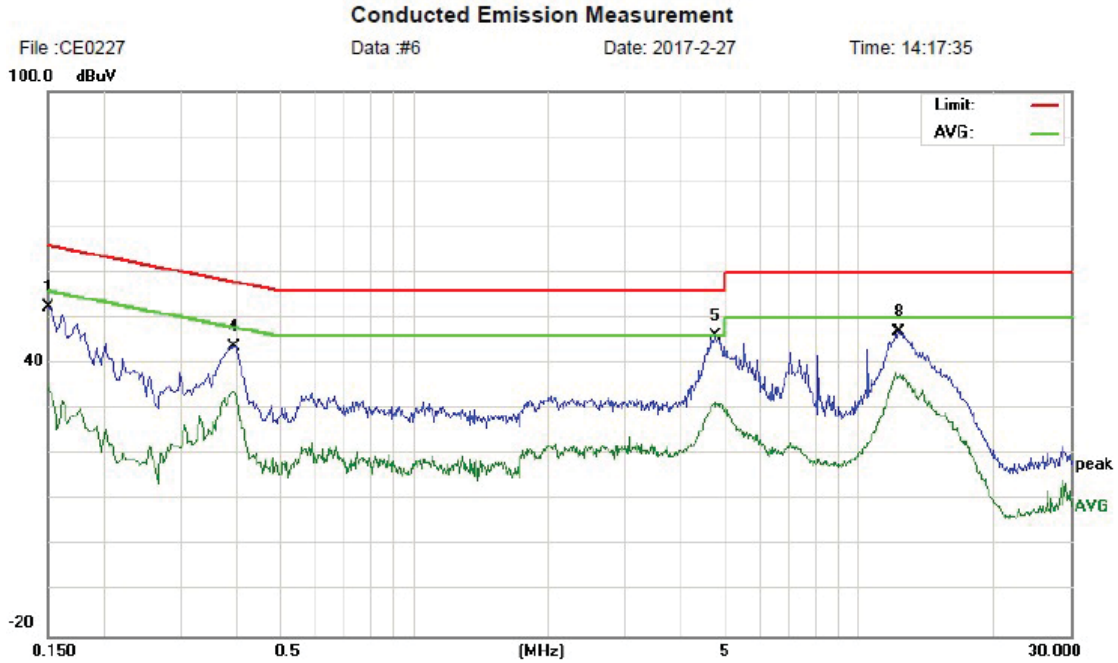


Line N Conducted Emission Graph

Mode 3:(Sunlight Power #2)

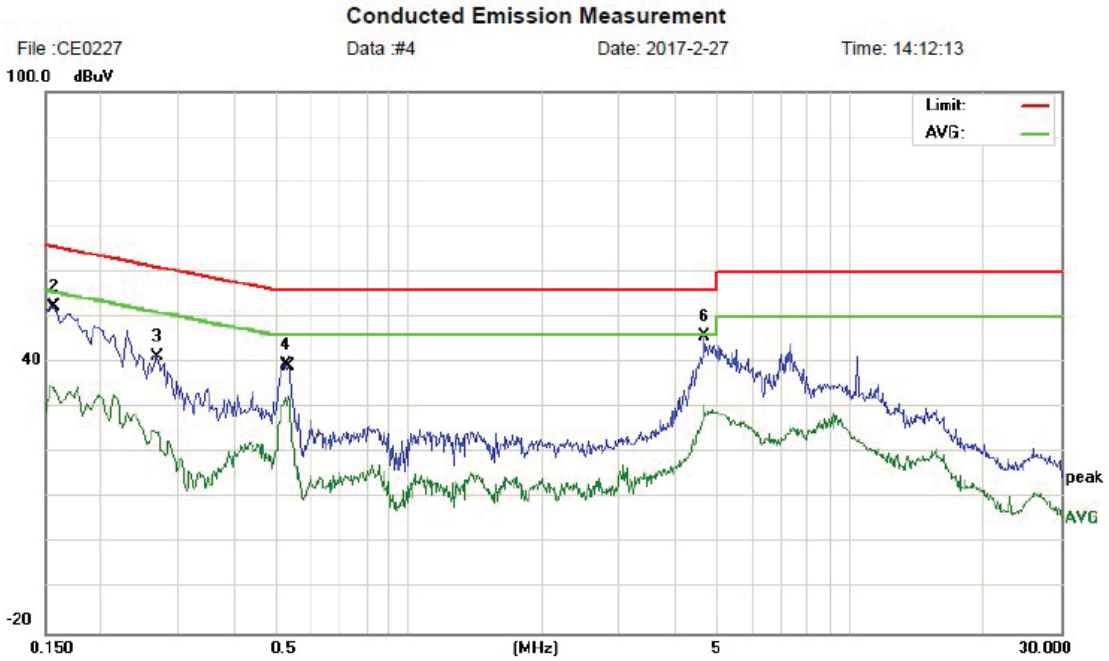


Line L Conducted Emission Graph

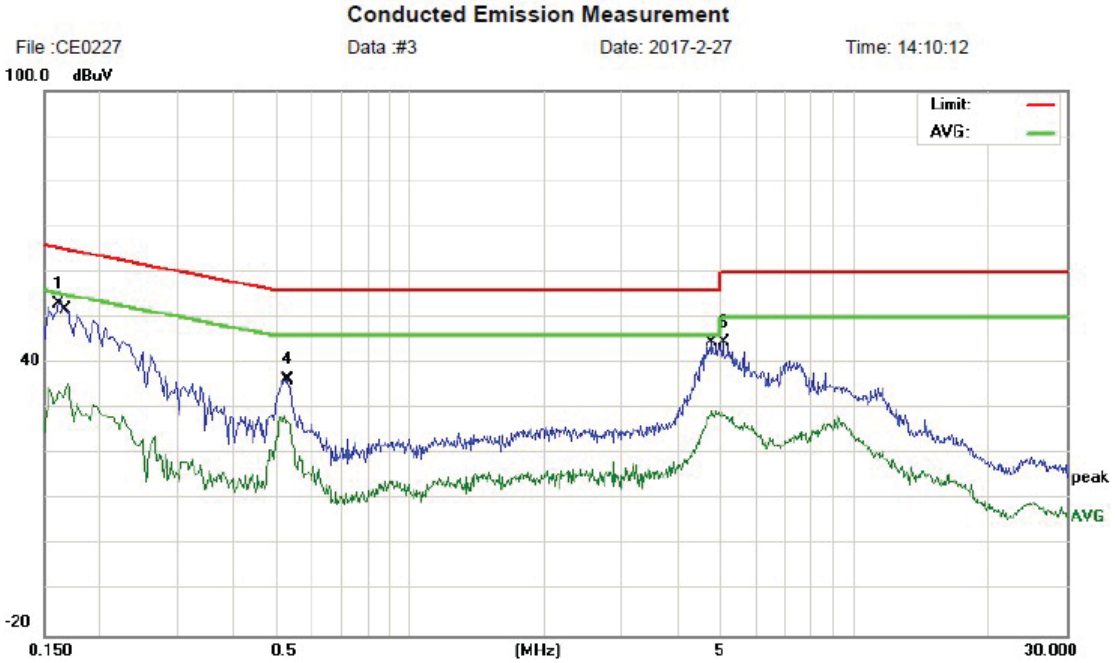


Line N Conducted Emission Graph

Mode 4:(Switching Mode Power)



Line L Conducted Emission Graph



Line N Conducted Emission Graph

Test Data:

Mode 1(Mass power):

Lines	*Frequency (MHz)*	*Corrected QP Level (dBuV)*	*Limits QP (dBuV)*	*Over Limit QP (dB)*	*Frequency (MHz)*	*Corrected AVE Level (dBuV)*	*Limits AVE (dBuV)*	*Over Limit AVE (dB)*
L	*0.158*	*52.42*	*65.56*	*-13.14*	*0.154*	*35.00*	*55.78*	*-20.78*
L	*0.270*	*41.29*	*61.12*	*-19.83*	*0.534*	*32.77*	*46.00*	*-13.23*
L	*0.526*	*39.45*	*56.00*	*-16.55*	*4.686*	*30.69*	*46.00*	*-15.31*
N	*0.162*	*53.16*	*65.36*	*-12.20*	*0.170*	*35.57*	*54.96*	*-19.39*
N	*0.530*	*36.53*	*56.00*	*-19.47*	*0.522*	*28.55*	*46.00*	*-17.45*
N	*5.07*	*44.72*	*60.00*	*-15.28*	*4.778*	*29.66*	*46.00*	*-16.34*

Note:

1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not used.

2) Other emission levels are too low against official limit that are not reported.

Mode 2(Sunlight Power #1):

Lines	*Frequency (MHz)*	*Corrected QP Level (dBuV)*	*Limits QP (dBuV)*	*Over Limit QP (dB)*	*Frequency (MHz)*	*Corrected AVE Level (dBuV)*	*Limits AVE (dBuV)*	*Over LImit AVE (dB)*
L	*0.150*	*50.15*	*65.99*	*-15.84*	*0.178*	*36.63*	*54.57*	*-17.94*
L	*0.434*	*46.36*	*57.18*	*-10.82*	*0.426*	*36.65*	*47.33*	*-10.68*
L	*7.318*	*47.47*	*60.00*	*-12.53*	*7.082*	*36.73*	*50.00*	*-13.27*
N	*0.150*	*46.50*	*65.99*	*-19.49*	*0.150*	*37.01*	*55.99*	*-18.98*
N	*0.430*	*45.28*	*57.25*	*-11.97*	*0.430*	*36.11*	*47.25*	*-11.14*
N	*7.242*	*47.26*	*60.00*	*-12.74*	*4.814*	*29.04*	*46.00*	*-16.96*

Note:

1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not used.

2) Other emission levels are too low against official limit that are not reported.

Mode 3(Sunlight Power #2):

Lines	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Over Limit QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Over LImit AVE (dB)
L	0.150	53.70	65.99	-12.29	0.150	34.40	55.99	-21.59
L	0.398	46.04	57.89	-11.85	0.390	38.13	48.06	-9.93
L	4.734	46.28	56.00	-9.72	4.690	31.49	46.00	-14.51
N	0.150	52.59	65.99	-13.40	0.150	34.71	55.99	-21.28
N	0.394	43.83	57.98	-14.15	0.390	33.99	48.06	-14.07
N	4.758	46.21	56.00	-9.79	4.758	31.48	46.00	-14.52

Note:
1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not used.
2) Other emission levels are too low against official limit that are not reported.

Mode 4(Switching Mode Power):

Lines	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Over Limit QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Over LImit AVE (dB)
L	0.150	50.61	65.99	-15.38	0.274	37.30	50.99	-13.69
L	0.278	41.38	60.88	-19.50	4.842	28.60	46.00	-17.40
L	5.026	42.27	60.00	-17.73	/	/	/	/
N	0.150	48.42	65.99	-17.57	0.278	37.00	50.88	-13.88
N	0.258	41.32	61.49	-20.17	0.650	26.64	46.00	-19.36
N	4.794	42.66	56.00	-13.34	5.022	28.48	50.00	-21.52

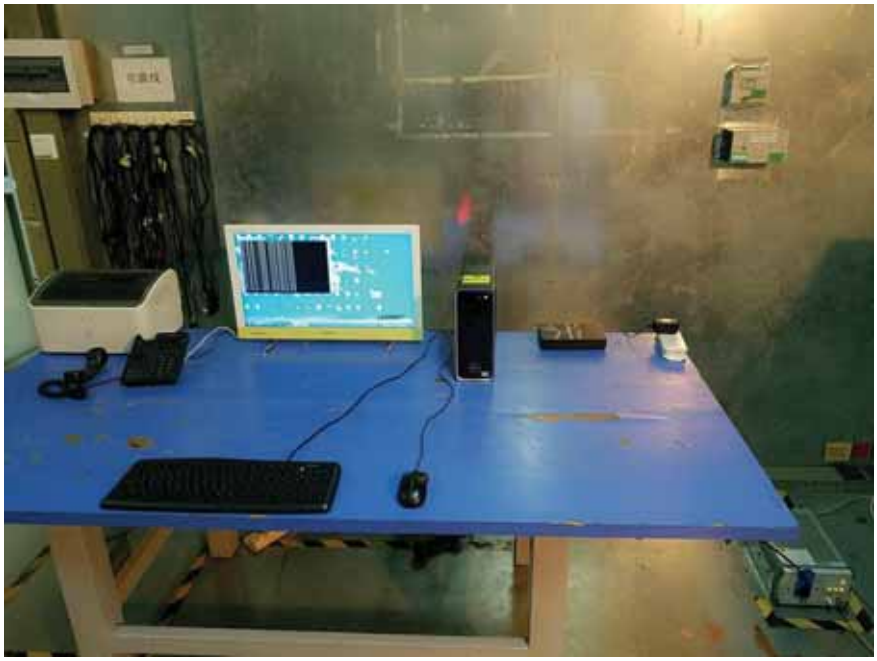
Note:
1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not used.
2) Other emission levels are too low against official limit that are not reported.

Test Equipment List:

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ESCI	R&S	101160	2016.06.26	2017.06.25
Low frequency cable	C-01	N/A	N/A	2016.06.26	2017.06.25
50Ω Switch	MP59B	Anritsu	620098370	2016.06.26	2017.06.25
LISN	ENV216	R&S	101313	2015.10.19	2017.10.18
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

TESTED BY:  **REVIEWED BY:** 

ENGINEER **SENIOR ENGINEER**



Conducted Emission Test Set-up –Front view

Conducted Emission Test Set-up –Rear view

ATTACHMENT 2 – RADIATED EMISSION MEASUREMENT

CLIENT:	Grandstream Networks, Inc.	**TEST STANDERD:**	Section 15.109
MODEL NUMBERS:	GWN7000	**PRODUCT:**	Enterprise Router & Wireless Access Point Manager
EUT MODEL:	GWN7000	**EUT DESIGNATION:**	Home or Office
TEMPERATURE:	22°C	**HUMIDITY:**	47%RH
ATM PRESSURE:	103.0kPa	**GROUNDING:**	None
TESTED BY:	Alex Yu	**DATE OF TEST:**	February 27th, 2017
TEST REFERENCE:	ANSI C63.4: 2014		
TEST PROCEDURE:	The EUT was set up according to the guidelines of ANSI C63.4: 2014 for radiated emissions. An EMI receiver peak scan was made at the frequency measurement range (pre-scan) in an Anechoic chamber.signal discrimination was then performed and the significant peaks marked.these peaks were then quasi-peaked in the frequency range of 30 MHz to 1GHz and average and peak in the frequency range of 1GHz to 2GHz at an anechoic chamber. The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain		
TEST MODE:	Mode 1,Mode 2,Mode 3,Mode 4,Mode 5		
TESTED RANGE:	30 to 2000MHz		
TEST VOLTAGE:	AC 120V/60Hz		
RESULTS:	The EUT meet the requirements of test reference for radiated emissions.The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen). Test personnel.		
M. UNCERTAINTY:	The maximum measurement uncertainty is evaluated as : 30~1000MHz: 4.7dB;1~2GHz: 4.5dB. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.		

Continue on to next page...

EMI Receiver Set-up:

Frequency [MHz]	RBW	VBW	Detector
0.009-0.015	200Hz	1KHz	Quasi-peak
0.015-30	9KHz	30kHz	Quasi-peak
30-1000	120KHz	300KHz	Quasi-peak
Above 1GHz	1MHz	3MHz	Peak
	1MHz	10Hz	PK detector is for AV

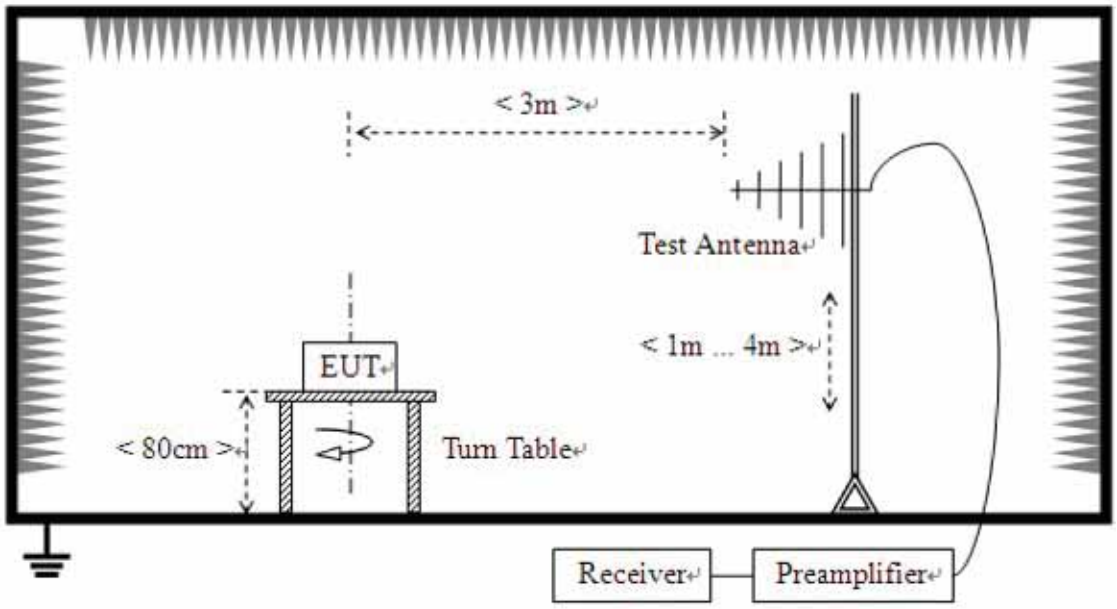
Note 1: In the emission table above, the tighter limit applies at the band edges.
Note 2: (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Radiated Emission Limit:

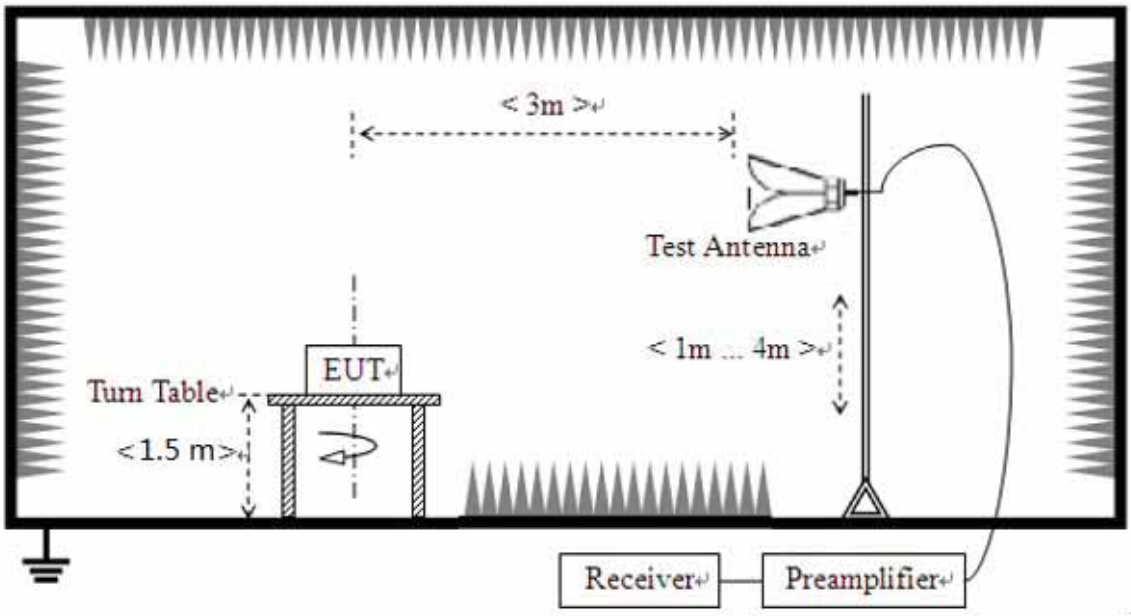
FCC Part 15 Subpart B&C Paragraph 15.109&15.209			
Frequency [MHz]	Field strength [uV/m]	Limit@3m (dBuV/m)	Distance [Meters]
0.009-0.490	2400/F(KHz)	128.5~93.8	300
0.490-1.705	24000/F(KHz)	73.8~63.0	30
1.705-30	30	69.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Note 1: The lower limit shall apply at the transition frequency.
Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
Note 3: E field strength (dBμV/m) = 20 log E field strength (uV/m)

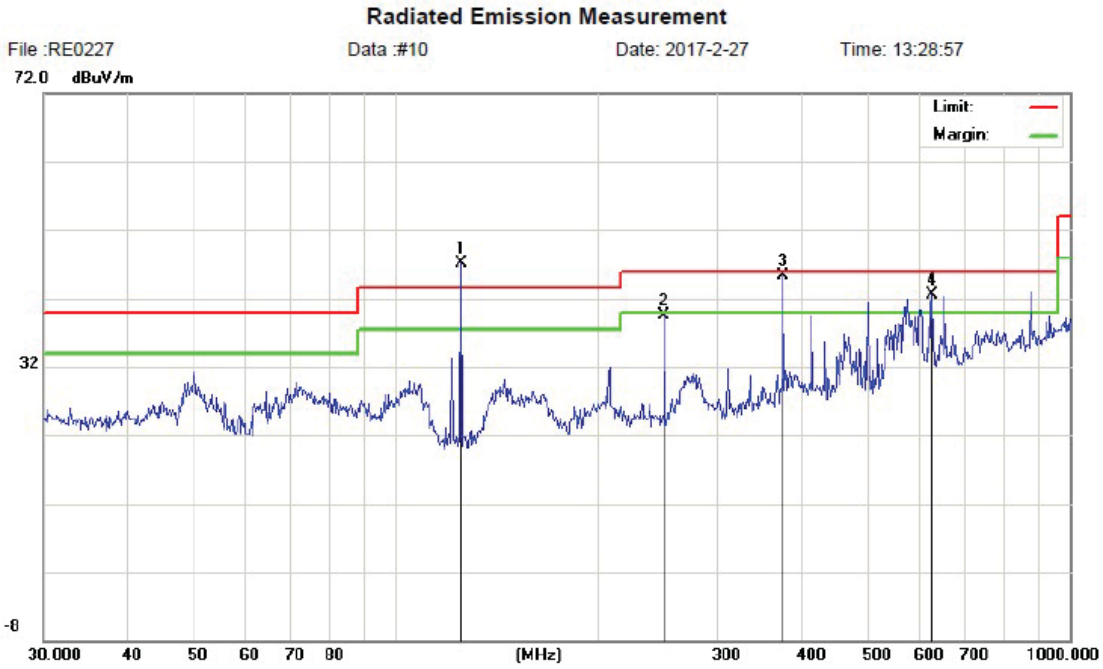
Frequency measured at 30MHz to 1000MHz:



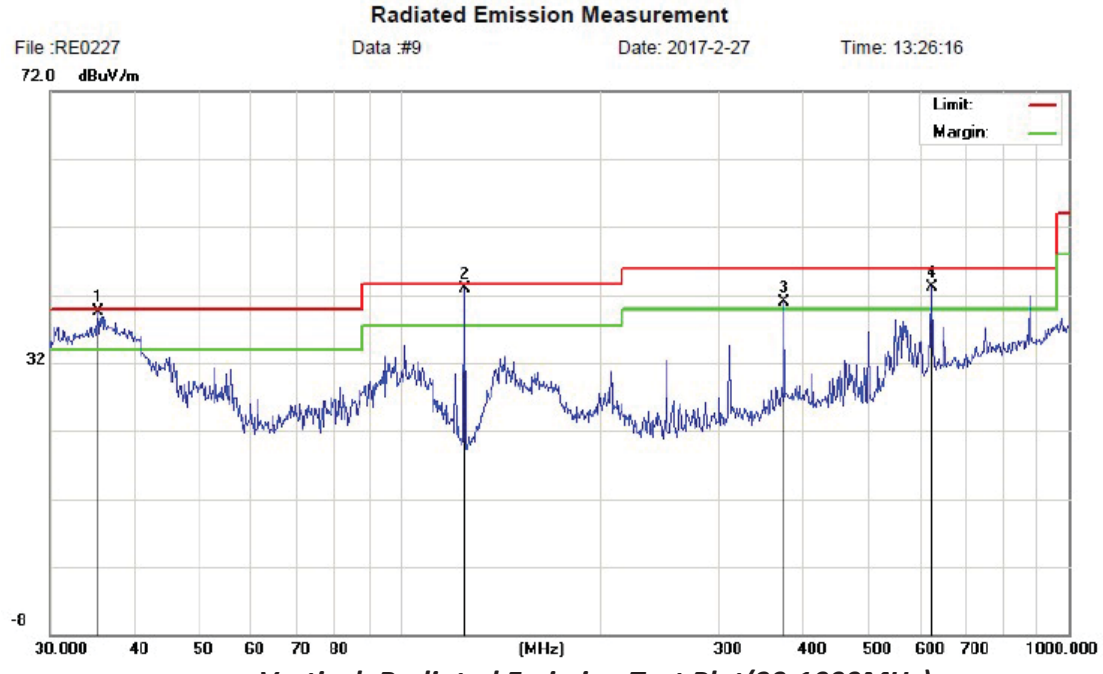
Frequency measured at Above 1GHz:



Mode 1(Mass Power):

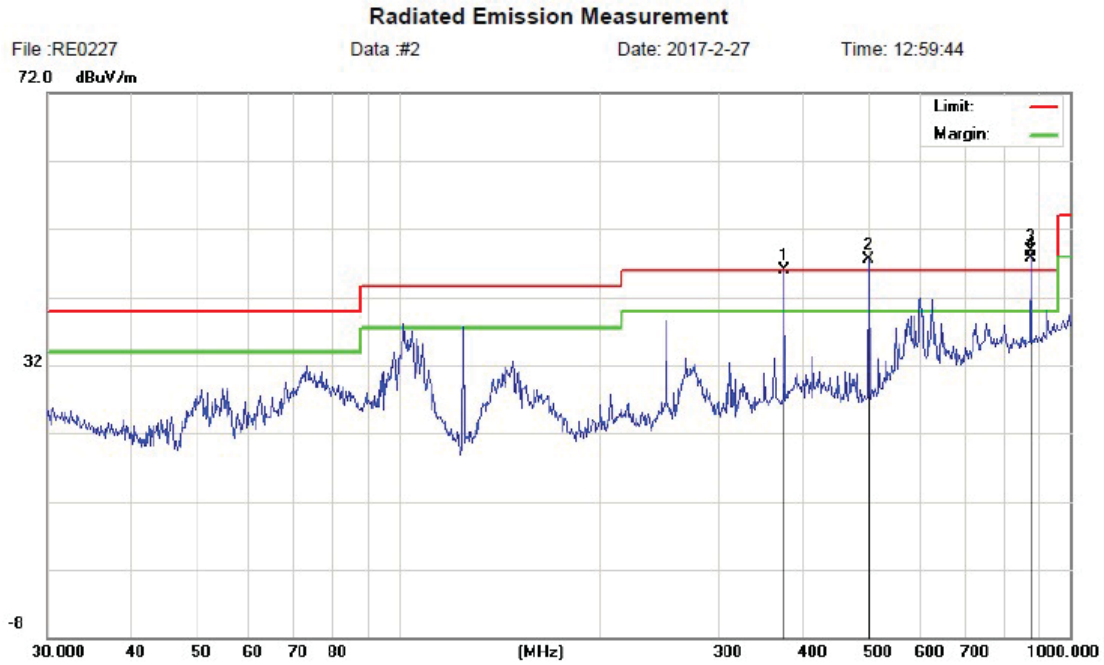


Horizontal: Radiated Emission Test Plot(30-1000MHz)

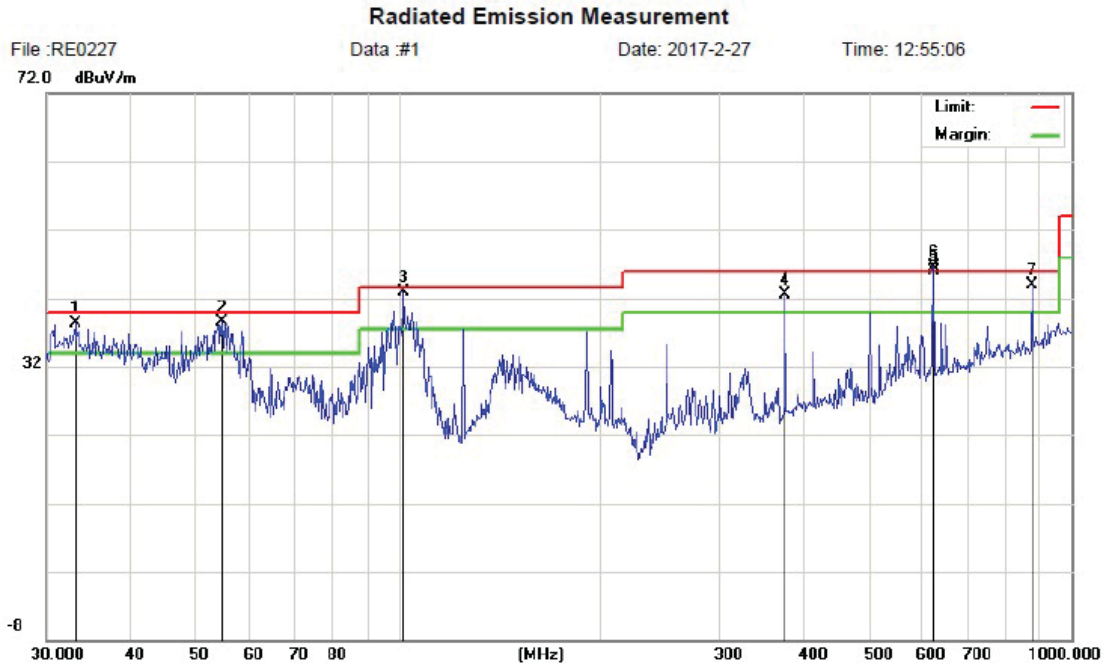


Vertical: Radiated Emission Test Plot(30-1000MHz)

Mode 2(Sunlight Power #1):

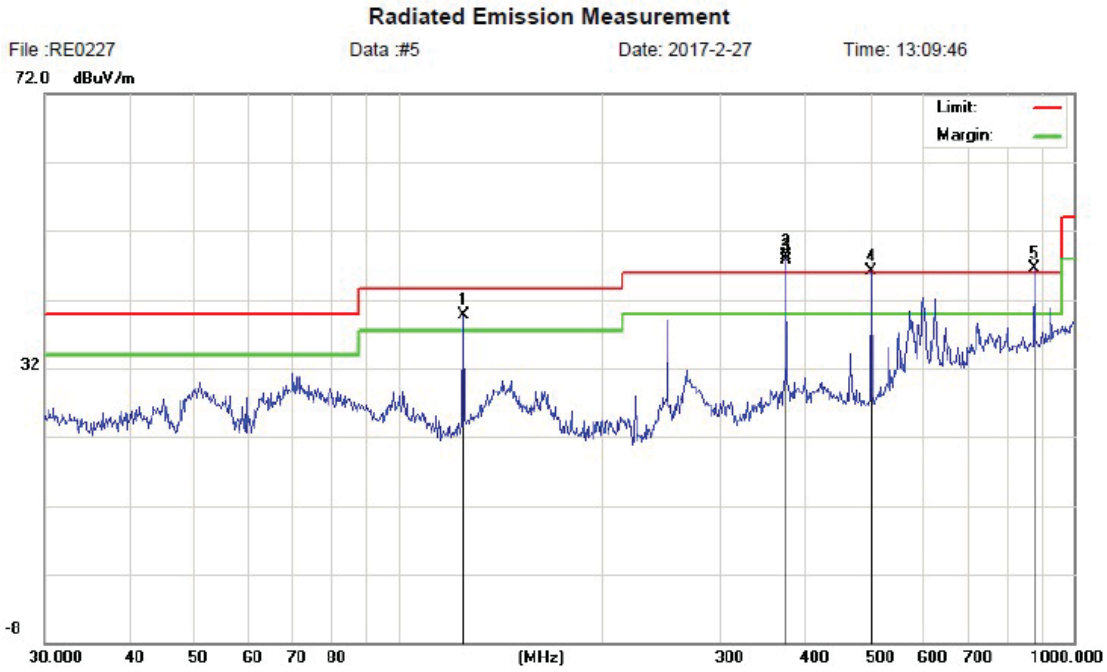


Horizontal: Radiated Emission Test Plot-(30-1000MHz)

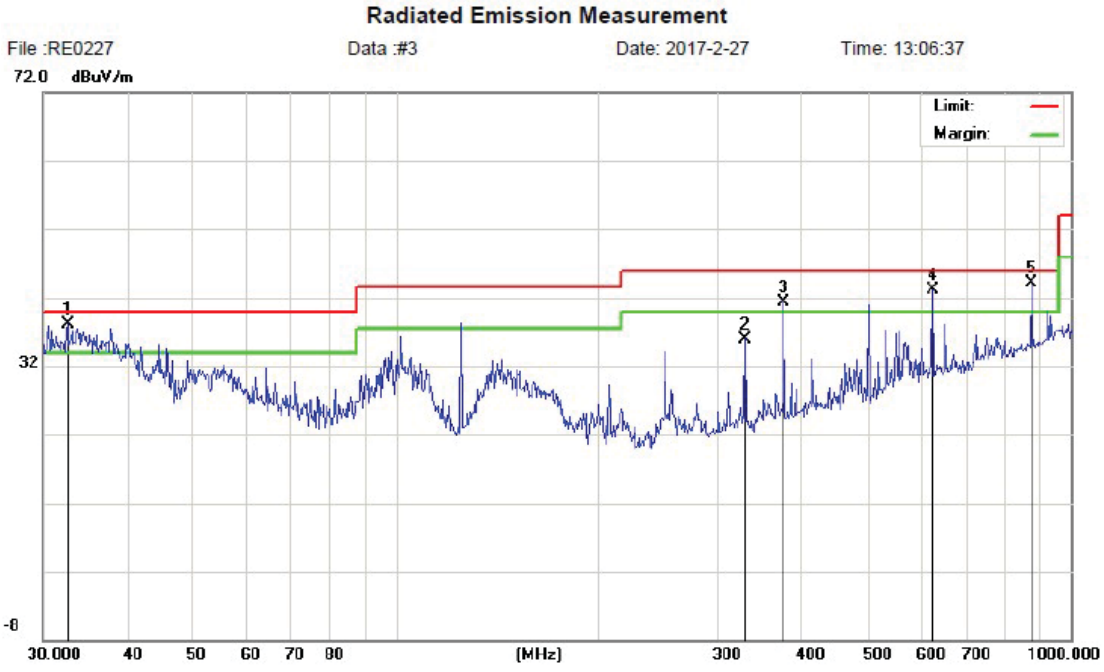


Vertical: Radiated Emission Test Plot (30-1000MHz)

Mode 3(Sunlight Power #2):

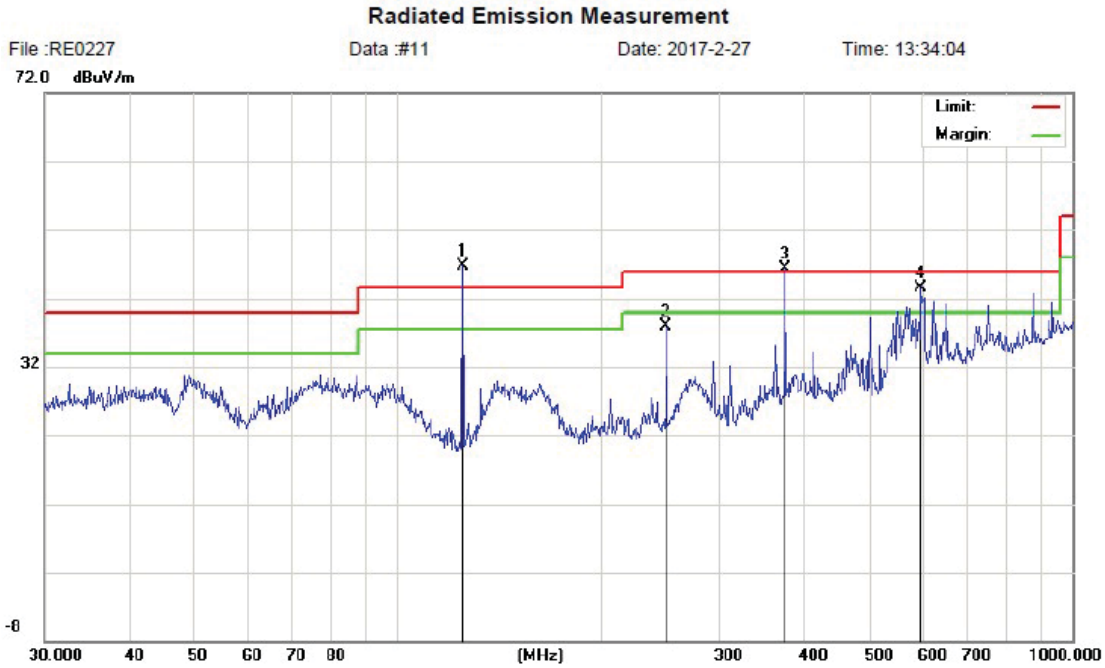


Horizontal: Radiated Emission Test Plot-(30-1000MHz)

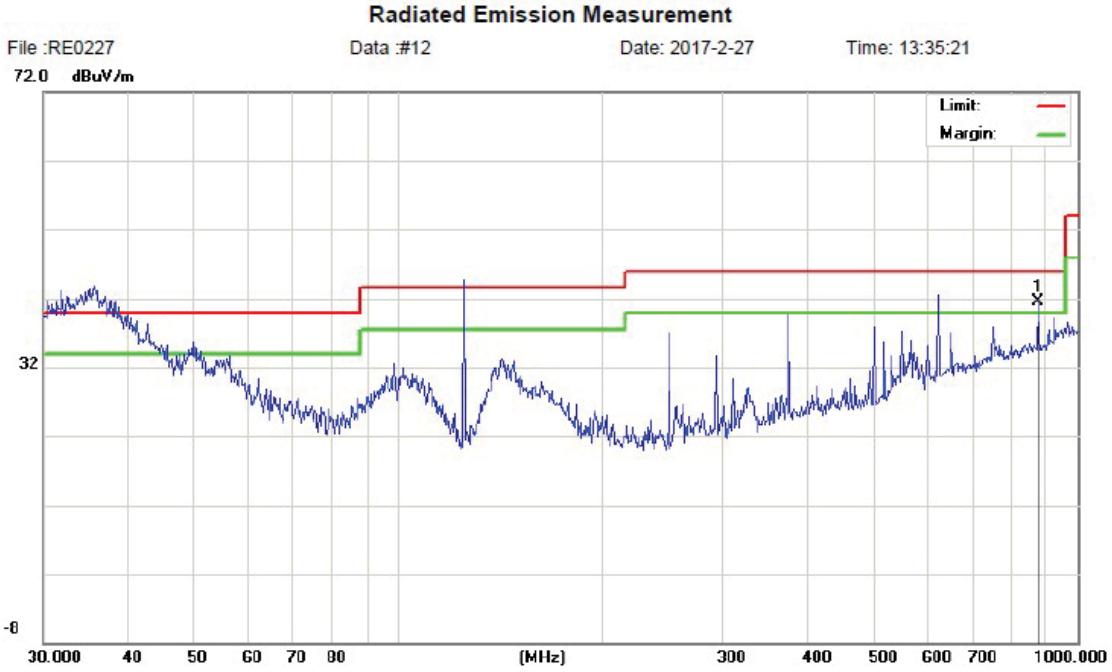


Vertical: Radiated Emission Test Plot(30-1000MHz)

Mode 4(Switching Mode Power):

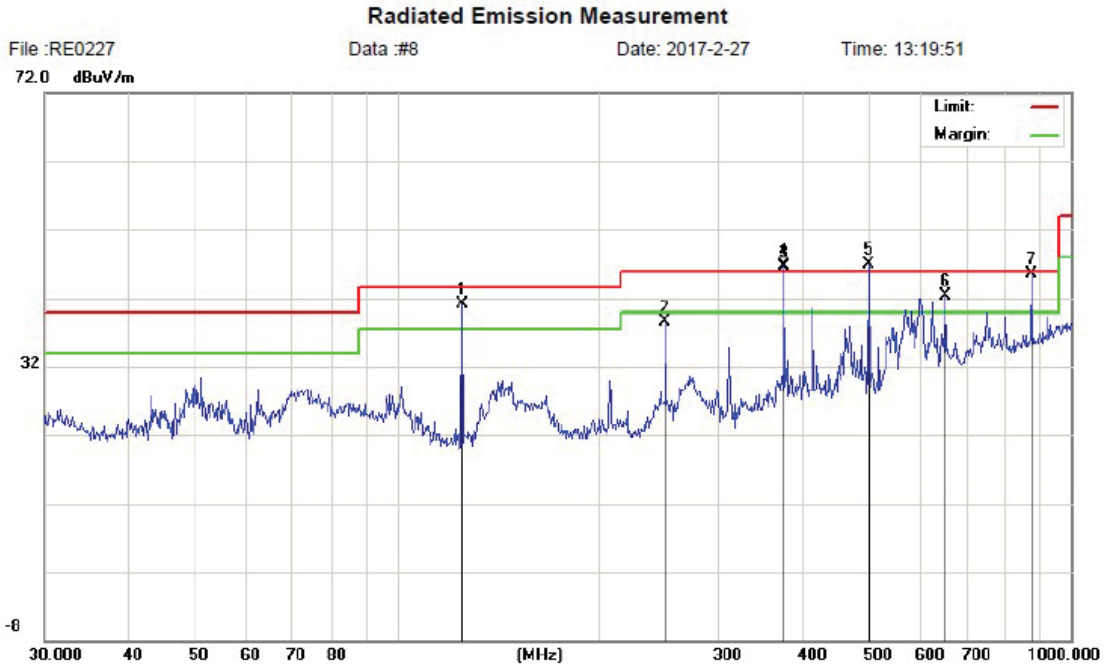


Horizontal: Radiated Emission Test Plot(30-1000MHz)

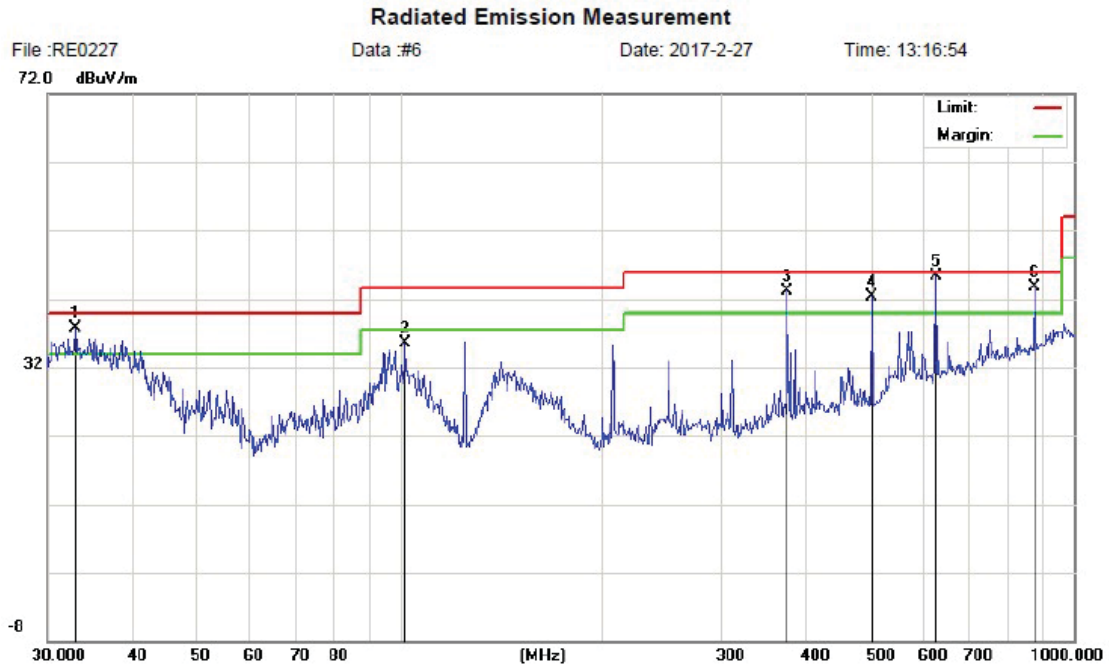


Vertical: Radiated Emission Test Plot(30-1000MHz)

Mode 5(PoE Mode):



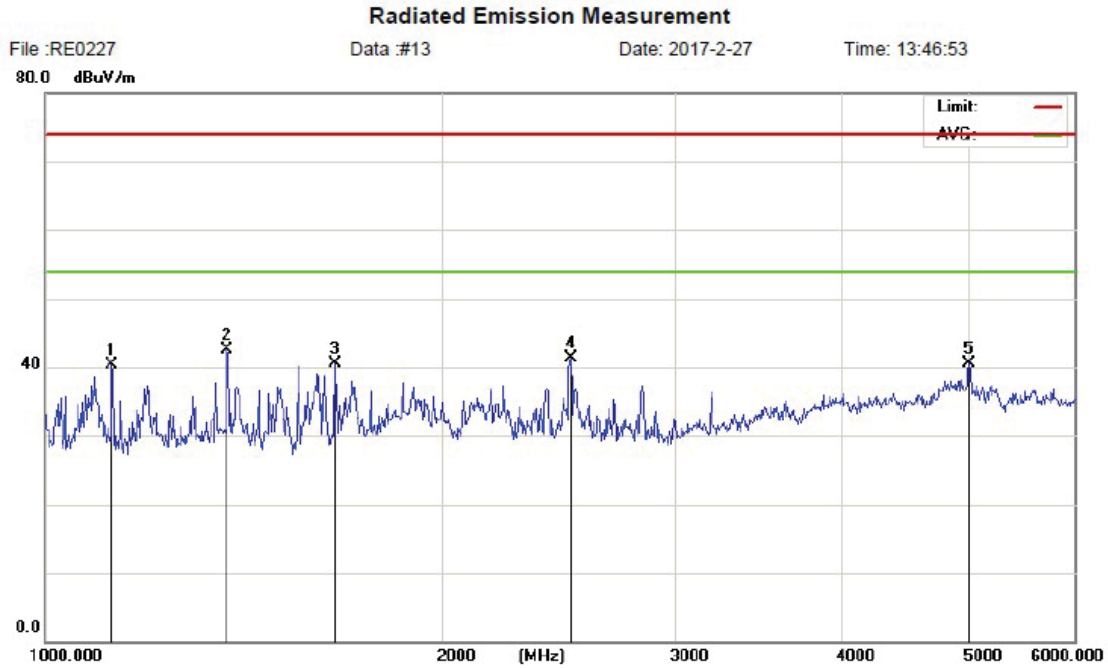
Horizontal: Radiated Emission Test Plot-(30-1000MHz)



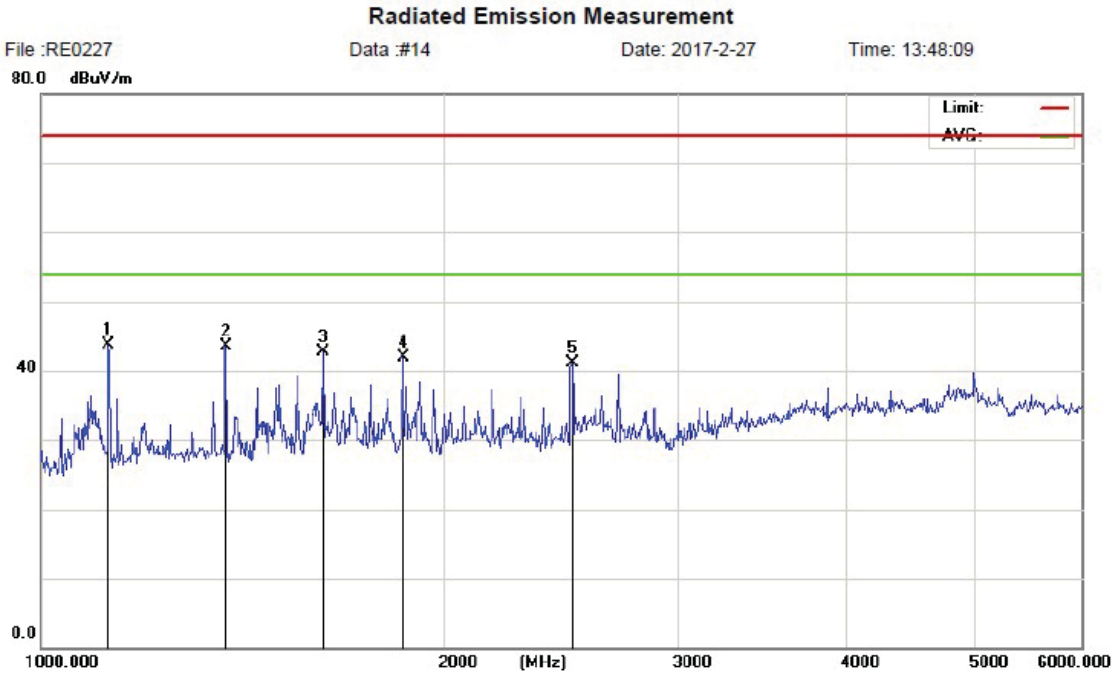
Vertical: Radiated Emission Test Plot(30-1000MHz)

The only mode 1 was worse case at above 1GHz.

Mode 1(Mass Power):



Horizontal: Radiated Emission Test Plot-(1-6GHz)



Vertical: Radiated Emission Test Plot-(1-6GHz)

Test Data:

Mode 1&Below 1GHz:

Frequency (MHz)	*Polarization (H/V)*	*Factor (dB)*	*Reading Level QP (dBuV/m)*	*Emission Level QP (dBuV/m)*	*Limit (dBuV/m)*	*Over Limt (dB)*
250.301	*H*	*15.34*	*24.17*	*39.51*	*46*	*-6.49*
375.939	*H*	*19.06*	*24.22*	*43.28*	*46*	*-2.72*
625.078	*H*	*25.02*	*17.53*	*42.55*	*46*	*-3.45*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
125.007	*V*	*13.62*	*27.23*	*40.85*	*43.50*	*-2.65*
375.938	*V*	*19.06*	*21.93*	*40.99*	*46*	*-5.01*
625.078	*V*	*25.02*	*18.12*	*43.14*	*46*	*-2.86*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*

Note:

1. *All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.*
2. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Mode 2&Below 1GHz:

Frequency (MHz)	*Polarization (H/V)*	*Factor (dB)*	*Reading Level QP (dBuV/m)*	*Emission Level QP (dBuV/m)*	*Limit (dBuV/m)*	*Over Limt (dB)*
375.938	*H*	*16.06*	*26.83*	*42.89*	*46*	*-3.11*
501.179	*H*	*17.45*	*26.09*	*43.54*	*46*	*-2.46*
875.247	*H*	*25.19*	*18.52*	*43.71*	*46*	*-2.29*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
33.095	*V*	*18.23*	*20.12*	*38.35*	*40*	*-1.65*
54.643	*V*	*7.21*	*31.22*	*38.43*	*40*	*-1.57*
375.938	*V*	*19.06*	*23.48*	*42.54*	*46*	*-3.46*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*

Note:

1. *All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.*
2. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Mode 3&Below 1GHz:

Frequency (MHz)	Polarization (H/V)	Factor (dB)	Reading Level QP (dBuV/m)	Emission Level QP (dBuV/m)	Limit (dBuV/m)	Over Limt (dB)
125.007	H	13.62	26.11	39.73	43.50	-3.77
375.938	H	15.06	27.63	42.69	46	-3.31
501.179	H	18.45	23.72	42.17	46	-3.83
/	/	/	/	/	/	/
/	/	/	/	/	/	/
/	/	/	/	/	/	/
375.938	V	19.06	22.16	41.22	46	-4.78
625.078	V	25.02	18.10	43.12	46	-2.88
875.247	V	29.19	15.01	44.20	46	-1.80
/	/	/	/	/	/	/
/	/	/	/	/	/	/
/	/	/	/	/	/	/

Note:

1. *All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.*
2. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Mode 4&Below 1GHz:

Frequency (MHz)	*Factor (dB)*	*Reading Level (dBuV/m)*	*Emission Level (dBuV/m)*	*Limit (dBuV/m)*	*Margin (dB)*	*Antenna Polarization (H/V)*
250.301	*15.34*	*22.50*	*37.84*	*46*	*-8.16*	*H*
375.938	*19.06*	*24.31*	*43.37*	*46*	*-2.63*	*H*
597.223	*24.57*	*18.93*	*43.50*	*46*	*-2.50*	*H*
/	*/*	*/*	*/*	*/*	*/*	*/*
875.247	*29.19*	*12.33*	*41.52*	*46*	*-4.48*	*V*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*

Note:

1. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
2. *The limits shown are based on Peak value and Average value detector above 1GHz,the bandwidth of Test Receiver was set at 1MHz above 1GHz.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Mode 5&Below 1GHz:

Frequency (MHz)	*Polarization (H/V)*	*Factor (dB)*	*Reading Level QP (dBuV/m)*	*Emission Level QP (dBuV/m)*	*Limit (dBuV/m)*	*Over Limt (dB)*
250.301	*H*	*15.34*	*23.08*	*38.42*	*46*	*-7.58*
651.942	*H*	*25.49*	*16.74*	*42.23*	*46*	*-3.77*
875.247	*H*	*27.19*	*16.36*	*43.55*	*46*	*-2.45*
/	*H*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
32.979	*V*	*18.29*	*19.32*	*37.61*	*40*	*-2.39*
102.001	*V*	*12.02*	*23.45*	*35.47*	*43.50*	*-8.03*
375.938	*V*	*19.06*	*24.00*	*43.06*	*46*	*-2.94*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*

Note:

1. *All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.*
2. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Above 1GHz

Mode 1:

Frequency (MHz)	*Factor (dB)*	*Reading Level (dBuV/m)*	*Emission Level (dBuV/m)*	*Limit (dBuV/m)*	*Over Limit (dB)*	*Antenna Polarization (H/V)*
1123.517	*-14.75*	*55.10*	*40.35*	*74*	*-33.65*	*H*
1373.197	*-12.90*	*55.47*	*42.57*	*74*	*-31.43*	*H*
1657.443	*-12.19*	*52.77*	*40.58*	*74*	*-33.42*	*H*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*
1123.517	*-14.75*	*58.39*	*43.64*	*74*	*-30.36*	*V*
1375.659	*-12.92*	*56.33*	*43.41*	*74*	*-30.59*	*V*
1625.096	*-12.46*	*55.25*	*42.79*	*74*	*-31.21*	*V*
/	*/*	*/*	*/*	*/*	*/*	*/*
/	*/*	*/*	*/*	*/*	*/*	*/*

Note:

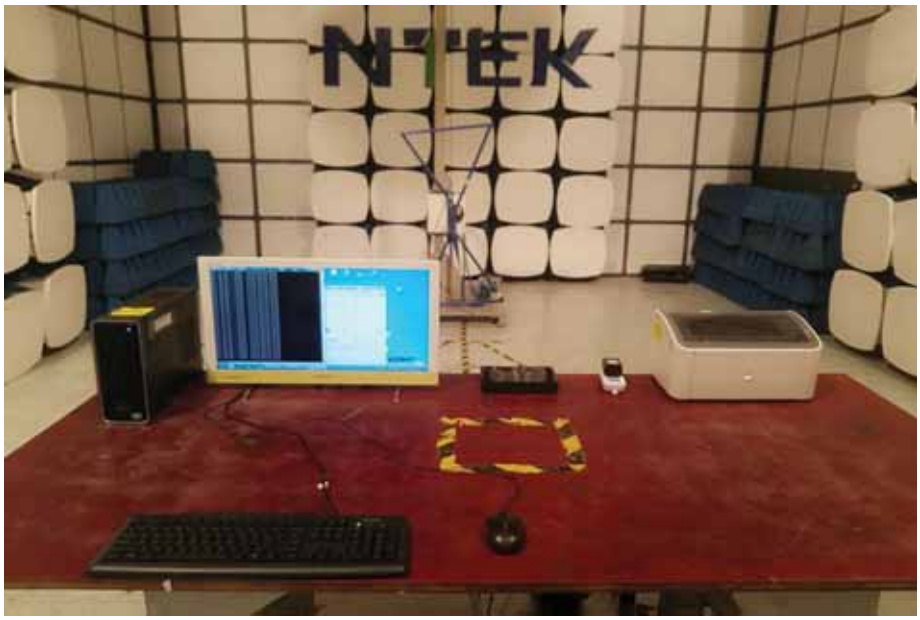
1. *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*
2. *The limits shown are based on Peak value and Average value detector above 1GHz,the bandwidth of Test Receiver was set at 1MHz above 1GHz.*
3. *The other emission levels are 20dB below the official limits that are not reported.*

Test Equipment List:

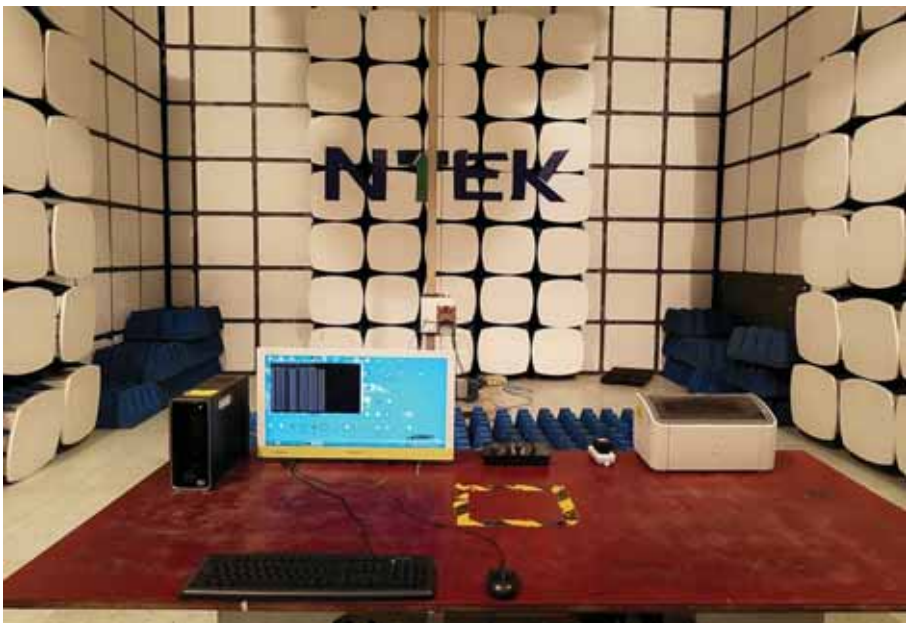
Test Equipment	*Manufacturer*	*Model*	*Cal. Interval*	*Serial No.*	*Cal. Due Date*
EMI Test Receiver	*R&S*	*ESCI7*	*1 year*	*100967*	*2018.01.04*
Bilog Antenna	*Schwarzbeck*	*CBL6141A*	*1 year*	*4180*	*2018.01.07*
Horn Antenna	*Schwarzbeck*	*BBHA 9120D*	*1 year*	*647*	*2018.01.04*
Low Noise Pre-Amplifier	*HP*	*8447D*	*1 year*	*1937A03050*	*2018.01.04*
Low Noise Pre-Amplifier	*EMCI*	*EMC051835*	*1 year*	*980075*	*2018.01.04*

TESTED BY: _____ ***REVIEWED BY:*** _____

ENGINEER ***SENIOR ENGINEER***



Radiated Emission Test Set-up(30-1000MHz)



Radiated Emission Test Set-up(Above 1GHz)

※※※ End Of Report ※※※