EMC Test Report

Project Number: 3986695

Report Number: 3986695EMC07 **Revision Level:** 0

Client: Hi-P Electronics Pte. Ltd.

Equipment Under Test: iDEN Cellular Phone

Model: H375iS

FCC ID: 2ACUZ375iS

Applicable Standards: FCC Part 15, Subpart B

Report issued on: 15 July 2016

Test Result: Compliant

Tested by: Fabian Nica, Senior Technician

Reviewed by: Jeremy Pickens, Senior EMC Engineer

Remarks:
This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Summary of Test Results

Basic Standards	Test Result
FCC Part 15, Subpart B, Class B, 15.107 Radiated Emissions	Compliant
FCC Part 15, Subpart B, Class B, 15.109 Conducted Emissions	Compliant

1.1 *Modifications Required for Compliance*

None

2 General Information

2.1 *Client Information*

Name:	Hi-P Electronics Pte. Ltd.
Address:	12 ANG MO KIO STREET 64 #03-02, UE BIZHUB CENTRAL (BLK A)
City, State, Zip, Country:	SINGAPORE 569088

2.1 *Test Laboratory*

Name:	SGS North America, Inc.
Address:	620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country:	Suwanee, GA 30024, USA
Accrediting Body:	A2LA
Type of lab:	Testing Laboratory
Certificate Number:	3212.01

2.2 *General Information of EUT*

EUT:	iDEN Cellular Phone
Model Number:	H375iS
Serial Number:	364KSL01GQ
Rated Voltage:	9.0-32.0 Vdc
Tested Voltage:	12Vdc
Sample Received Date:	24 June 2016
Dates of testing:	28 June - 10 July 2016

2.3 *Operating Modes and Conditions*

During testing, the EUT was connected to a laptop. Automated recording/playback software was used to send constant commands to EUT which generated USB traffic between the laptop and EUT. Additionally, the EUT was playing music through the headphones.

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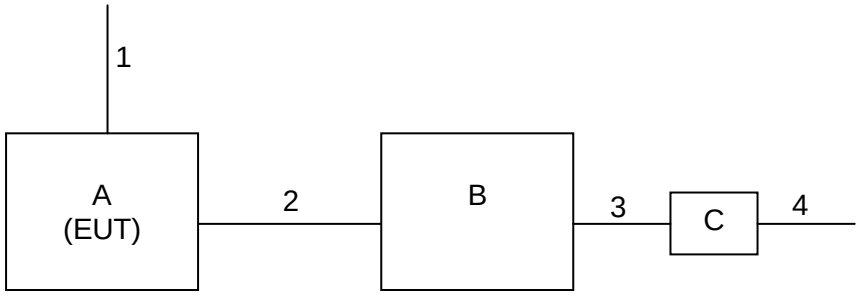
2.1 *EUT Connection Block Diagram*



2.2 *System Configurations*

Device reference	Manufacturer	Description	Model Number	Serial Number
A	Hi P Electronic PTE LTD	iDen Phone	H375iS	364KSL01GQ
B	Lenovo	Laptop	T500	Product ID 2241A94
C	Lenovo	Power Supply	92P1156	11S92P1156Z1ZBGF73S902

2.3 *Cable List*

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	Auxiliary	EUT	Headset	1.10	No	No
2	USB	EUT	Laptop	1.00	No	Yes
3	DC Power	Laptop	Power Supply	1.77	Yes	Yes
4	AC Power	AC Mains	Power Supply	1.00	No	No

2.4 *Radiated Emission*

2.5 *Test Result*

Test Description	Basic Standards	Test Result
Radiated Emission, Class B	FCC Part 15, Subpart B	Compliant

2.6 *Test Method*

Exploratory scans were performed over the frequency range as defined in Section 15.33 of the FCC rules using the max hold function and incorporating a Peak detector and using TILE! software. The final test data was measured using a Quasi-Peak detector below 1GHz and a Peak and Average detector above 1GHz. The receivers resolution bandwidth was set to 120 kHz for measurements taken in the 30MHz to 1GHz frequency range and 1MHz for measurements for 1GHz and higher. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency. The radiated measurements were recorded and compared to the limits indicated in the table below.

Radiated emissions limit below 1 GHz

Frequency Range	Limits (dBuV/m) Quasi-Peak		Equipment Classification
	3 m	10 m	
30 to 88 MHz	40.0	29.5	Class B
88 to 216MHz	43.5	33.0	
216 to 960 MHz	46.0	35.5	
960 to 1000MHz	54.0	43.5	

Frequency Range	Limits (dBuV/m) Quasi-Peak		Equipment Classification
	3 m	10 m	
30 to 88 MHz	49.6	39.1	Class A
88 to 216MHz	54.0	43.5	
216 to 960 MHz	56.9	46.4	
960 to 1000MHz	60.0	49.5	

Radiated emissions limit above 1 GHz (3 meter test distance)

Frequency Range	Class A Limits (dBuV/m)	Class B Limits (dBuV/m)
1 to 40 GHz	Avg 60 Pk 80	Avg 54 Pk 74

2.7 *Test Site*

10m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions

Temperature: 23.9 °C
Relative Humidity: 40.7 %

2.8 *Test Equipment*

Test End Date: 11-Jul-2016 Tester: JOP

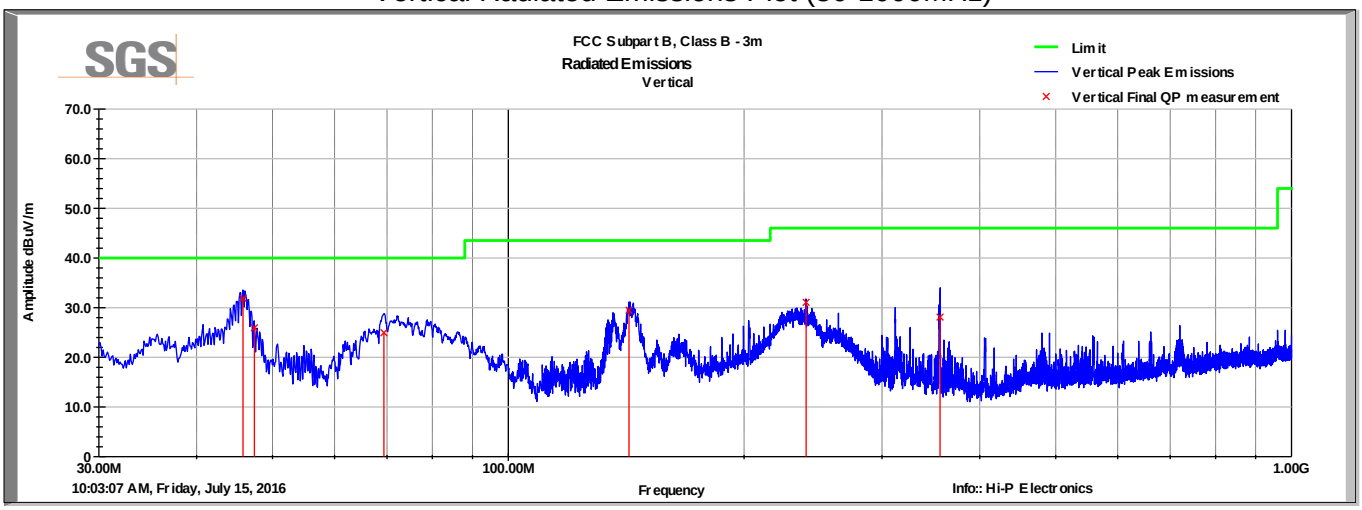
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	4-Aug-2016
ANTENNA, BILOG	JB6	SUNOL	B079690	21-Oct-2016
DRG HORN (MEDIUM)	3117	ETS-LINDGREN	B079699	26-Apr-2017
PREAMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	16-Feb-2017
RF CABLE	NMS-290-236.2-NMS	FLORIDA RF LABS	B095020	4-Aug-2016
RF CABLE	NFS-290-78.7-NFS	FLORIDA RF LABS	B095019	4-Aug-2016
RF CABLE - 7500MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079713	3-Aug-2016
RF CABLE - 7000MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079716	3-Aug-2016
COAXIAL CABLE	SUCOFLEX 100	HUBER&SUHNER	B108523	27-Oct-2016
RF CABLE	SF106	HUBER&SUHNER	B085892	3-Aug-2016
COAXIAL CABLE	1134	GORE	B094785	4-Aug-2016

Note: The calibration period equipment is 1 year.

Software:
“Radiated Emissions 30-1000 MHz ” TILE! profile dated 12 July 2013

2.9 *Test Data*

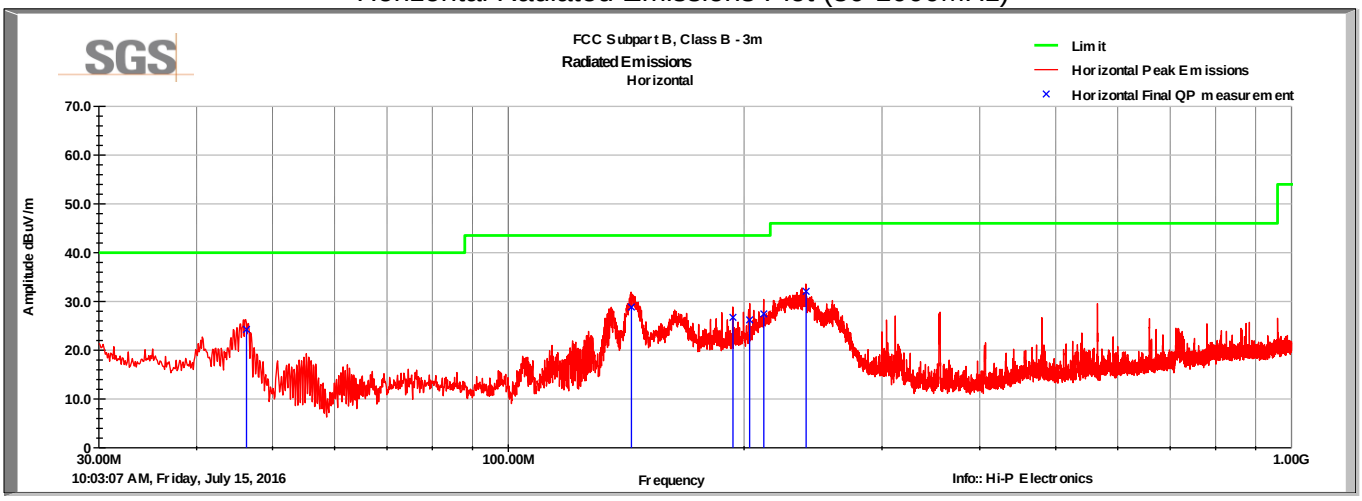
Vertical Radiated Emissions Plot (30-1000MHz)



Vertical Emissions Data

Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
45.84	54.0	V	154.0	100.0	10.7	0.6	33.4	31.9	40.0	-8.1
47.40	48.8	V	225.0	110.0	9.8	0.6	33.3	25.9	40.0	-14.1
69.36	49.4	V	248.0	110.0	8.2	0.7	33.4	25.0	40.0	-15.0
142.61	49.7	V	257.0	100.0	13.1	1.1	34.4	29.5	43.5	-14.0
240.00	51.4	V	33.0	131.0	12.2	1.4	33.9	31.0	46.0	-15.0
355.91	44.9	V	12.0	148.0	15.4	1.7	33.9	28.1	46.0	-17.9
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

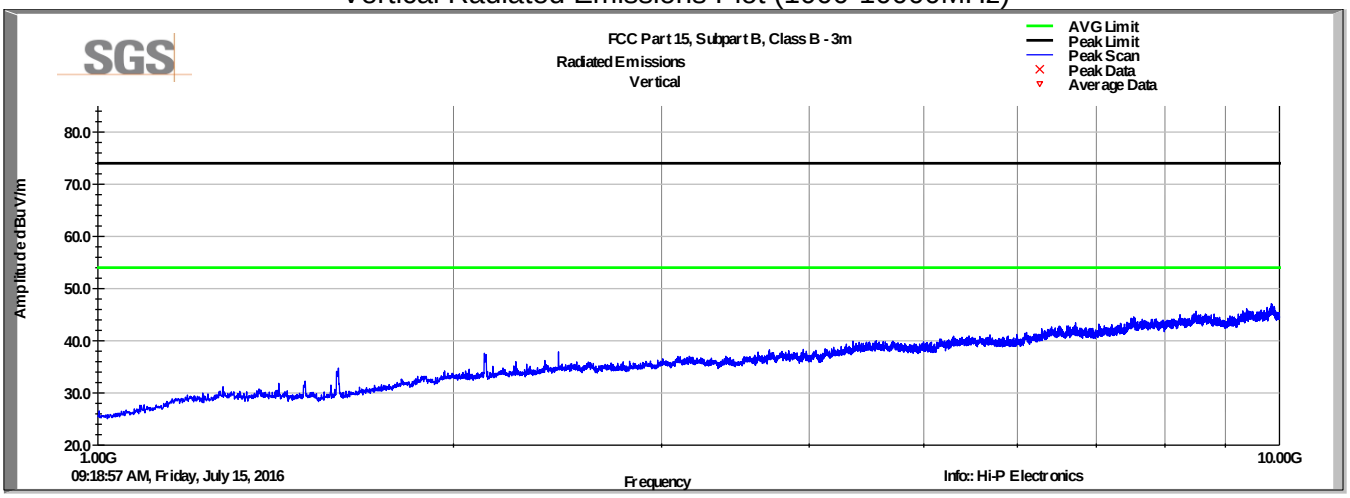
Horizontal Radiated Emissions Plot (30-1000MHz)



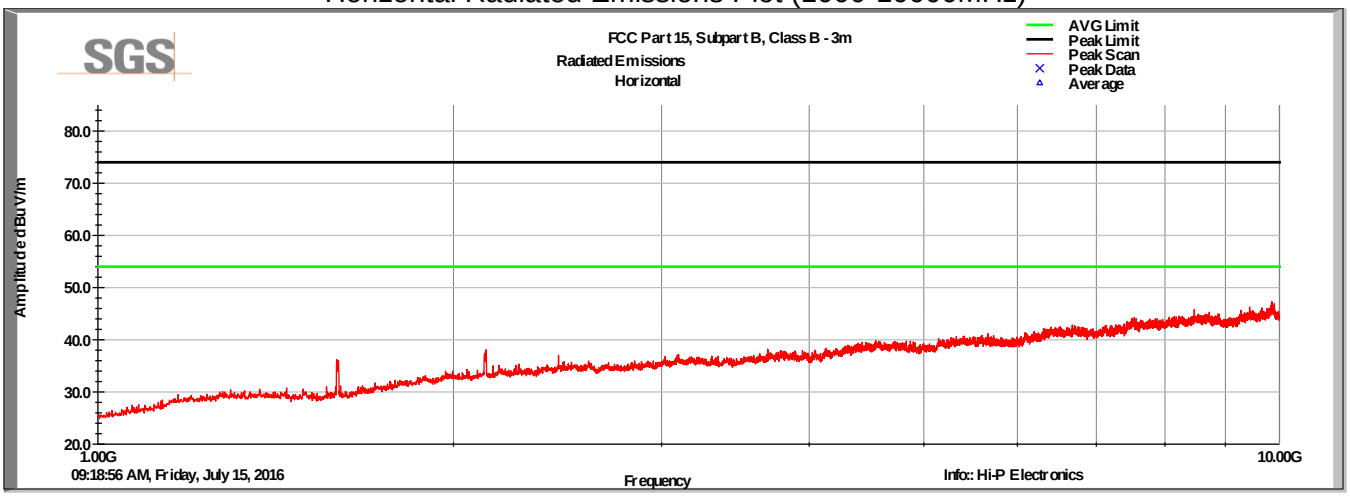
Horizontal Emissions Data

Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
46.31	46.6	H	186.0	400.0	10.4	0.6	33.4	24.3	40.0	-15.7
143.61	49.1	H	339.0	196.0	13.0	1.1	34.3	28.8	43.5	-14.7
193.54	47.6	H	116.0	130.0	11.9	1.2	34.0	26.7	43.5	-16.8
203.32	46.7	H	125.0	158.0	12.3	1.3	34.0	26.2	43.5	-17.3
211.97	48.9	H	313.0	166.0	11.2	1.3	34.0	27.5	43.5	-16.0
240.00	52.4	H	297.0	100.0	12.2	1.4	33.9	32.1	46.0	-13.9
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

Vertical Radiated Emissions Plot (1000-10000MHz)



Horizontal Radiated Emissions Plot (1000-10000MHz)



3 AC Power Line Conducted Emissions

3.1 *Test Result*

Test Description	Basic Standards	Test Result
Conducted Emissions, Class B	FCC Part 15, Subpart B ANSI C63.4:2014	Compliant

3.2 *Test Method*

With the receivers resolution bandwidth was set to 9 kHz exploratory scans were performed over the measuring frequency range (0.15MHz to 30MHz) using a max hold mode incorporating a Peak detector and Average detector and using the TILE! software. The final test data was measured using a Quasi-Peak detector and Average detector and compared against the limits indicated in the table below.

Frequency Range	Class A Limits (dBuV)	Class B Limits (dBuV)
0.15 to 0.5 MHz	Avg 66 QP 79	Avg 56 to 46 QP 66 to 56
0.5 to 5 MHz	Avg 60 QP 73	Avg 46 Pk 56
5 to 30 MHz	Avg 60 QP 73	Avg 50 Pk 60

3.3 *Test Site*

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions
Temperature: 23.4°C
Relative Humidity: 51.6%

3.4 *Test Equipment*

Test End Date: 1-Jul-2016 Tester: JOP

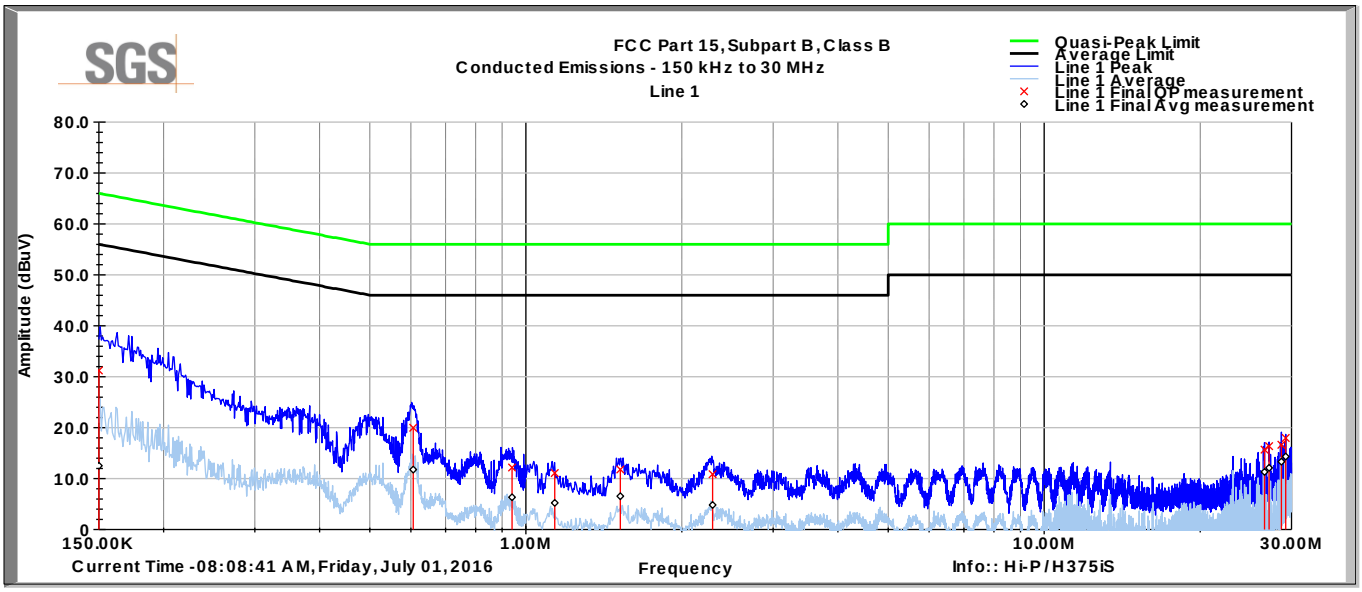
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	9-Jul-2016
COAXIAL CABLE	CBL-25FT-NMNM	MINI-CIRCUIT	B094941	4-Aug-2016
TWO-LINE V-NETWORK	NNB 51	TESEQ	B087573	12-Nov-2016

Note: The equipment calibration period is 1 year.

Software:
“Conducted Emissions” TILE! profile dated Mar 2016

3.5 *Test Data*

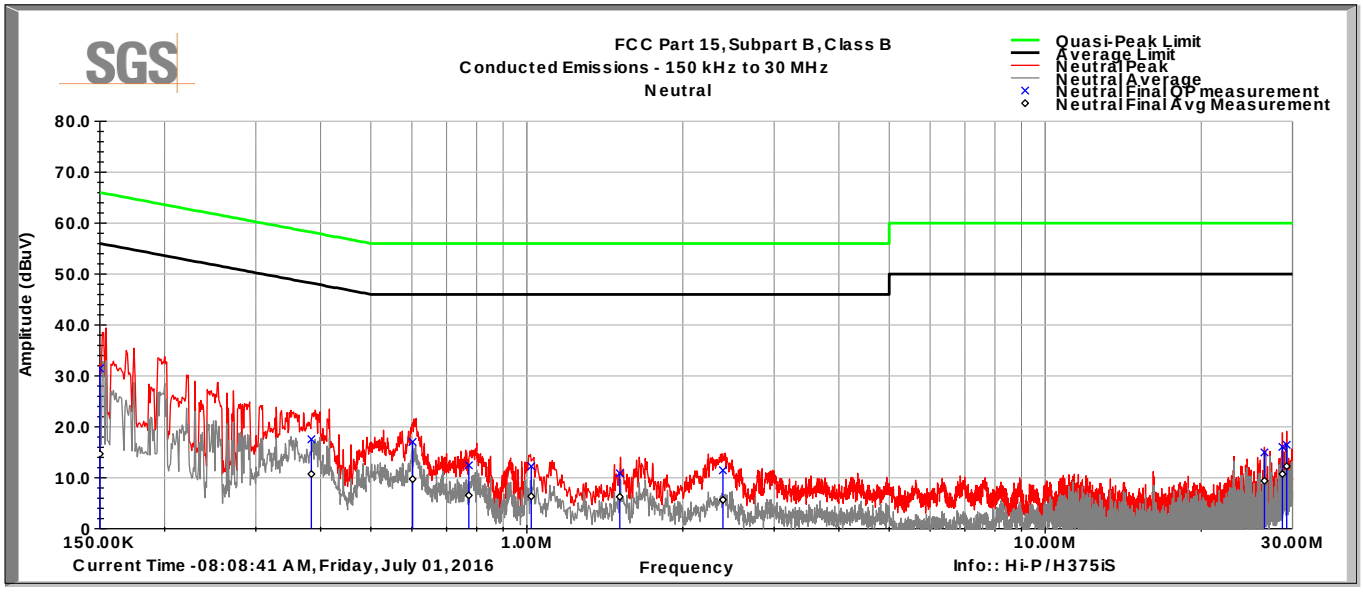
Conducted Emissions Plot 150-30MHz
Line 1



Conducted Emissions Data 150-30MHz
Line 1

Frequency MHz	QP Value dBuV	QP Limit dBuV	QP Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.150	31.2	66.0	-34.8	12.5	56.0	-43.5
0.606	20.0	56.0	-36.0	11.8	46.0	-34.2
0.940	12.2	56.0	-43.8	6.3	46.0	-39.7
1.137	11.1	56.0	-44.9	5.2	46.0	-40.8
1.522	11.8	56.0	-44.2	6.5	46.0	-39.5
2.293	10.8	56.0	-45.2	4.8	46.0	-41.2
26.610	15.7	60.0	-44.3	11.3	50.0	-38.7
27.160	16.4	60.0	-43.6	12.1	50.0	-37.9
28.685	16.6	60.0	-43.4	13.3	50.0	-36.7
29.235	18.0	60.0	-42.0	14.3	50.0	-35.7

Conducted Emissions Plot 150-30MHz
Neutral



Conducted Emissions Data 150-30MHz
Neutral

Frequency MHz	QP Value dBuV	QP Limit dBuV	QP Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.150	31.5	66.0	-34.5	14.7	56.0	-41.3
0.384	17.6	58.2	-40.7	10.7	48.2	-37.5
0.602	17.0	56.0	-39.0	9.7	46.0	-36.3
0.773	12.4	56.0	-43.6	6.5	46.0	-39.5
1.020	12.2	56.0	-43.8	6.3	46.0	-39.7
1.511	10.9	56.0	-45.1	6.3	46.0	-39.7
2.389	11.5	56.0	-44.5	5.7	46.0	-40.3
26.489	15.0	60.0	-45.0	9.4	50.0	-40.6
28.689	16.0	60.0	-44.0	10.7	50.0	-39.3
29.235	16.5	60.0	-43.5	12.3	50.0	-37.7

4 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	15 July 2016