LSR
Design. Create. Certify. Connect.
ACCREDITED
TESTING CERT #1255.01
W66 N220 Commerce Court ● Cedarburg, WI 53012
Phone: 262.375.4400 ● Fax: 262.375.4248
www.lsr.com

ENGINEERING TEST REPORT #: 315075
LSR Job #: C-2187

Compliance Testing of:

Bluetooth (BLE) Module

Test Date(s):

3/10/15	3/13/15	4/27/15
3/11/15	3/23/15	
3/12/15	3/24/15	

Prepared For:

Raman Mehta
BRK Brands Inc.
3901 Liberty Street Rd.
Aurora, IL 60504

Joe Zhou
Dicon Global Inc.
845 Intermodal Drive, Unit #1
Brampton, ON L6T 0C6

This Test Report is issued under the Authority of:
Michael Hintzke, EMC Engineer

Signature: Date: 5/6/15

Test Report Reviewed by:
Khairul A Zainal, Sr. EMC Engineer

Signature: Date:

Project Engineer:
Michael Hintzke, EMC Engineer

Signature: Date: 5/6/15

Table of Contents

LS Research, LLC in Review

As an EMC Testing Laboratory, our Accreditation and Assessments are recognized through the following:

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025: 2005 with Electrical (EMC) Scope of Accreditation
A2LA Certificate Number: 1255.01

Federal Communications Commission (FCC) – USA

Listing of 3 Meter Semi-Anechoic Chamber based on Title 47 CFR – Part 2.948
FCC Registration Number: 90756

Industrie Canada Industry Canada

Canada

Industry Canada

On file, 3 Meter Semi-Anechoic Chamber based on RSS-212 – Issue 1
File Number: IC 3088-A
On file, 3 and 10 Meter OATS based on RSS-212 – Issue 1
File Number: IC 3088

U. S. Conformity Assessment Body (CAB) Validation

Validated by the European Commission as a U. S. Competent Body operating under the U. S./EU, Mutual Recognition Agreement (MRA) operating under the European Union Electromagnetic Compatibility –Council Directive 2004/108/EC (formerly 89/336/EEC, Article 10.2).
Date of Validation: January 16, 2001

Validated by the European Commission as a U.S. Notified Body operating under the U.S. /EU, Mutual Recognition Agreement (MRA) operating under the European Union Telecommunication Equipment – Council Directive 99/5/EC, Annex V.
Date of Validation: November 20, 2002
Notified Body Identification Number: 1243

1.0 Summary of Test Report

In March 2015 and April 2015 the BRK Brands Inc. and Dicon Global Inc. Bluetooth (BLE) Module was tested and MEETS the following requirements:

FCC/IC Rule Part	Test Requirements	Compliance (Yes/No)
15.247 (a)(2) RSS 210 A8.2 (a)	6 dB Bandwidth of a Digital Modulation System	Yes
15.247(b) & 1.1310 RSS 210 A8.4 (4)	Maximum Output Power	Yes
15.247 (d) RSS 210 A8.2 (b)	Power Spectral Density of a Digital Modulation System	Yes
15.247(d) RSS 210 A8.5	RF Conducted Spurious Emissions at the Transmitter Antenna Terminal	Yes
15.247(c), 15.209, 15.205 RSS-210, RSS-Gen	Transmitter Radiated Emissions	Yes
15.207 RSS-210	Power Line Conducted Emissions Measurements	Yes
15.109 RSS-210, RSS-Gen	Receiver / Digital Device Radiated Emissions	Yes

2.0 Test Facilities

All testing was performed at:

LS Research, LLC
W66 N220 Commerce Court
Cedarburg, Wisconsin, 53012 USA

LS Research, LLC is accredited by A2LA (American Association for Laboratory Accreditation) to the requirements of ISO/IEC 17025, 2005 "General Requirements for the Competence of Calibration and Testing Laboratories".
LS Research, LLC's scope of accreditation includes all test methods listed herein, unless otherwise noted.

3.0 Client Information

Manufacturer Name:	BRK Brands Inc.
Address:	3901 Liberty Street, Aurora IL 60504
Contact Person:	Raman Mehta

Manufacturer Name:	Dicon Global Inc.
Address:	845 Intermodal Drive, Unit #1, Brampton ON L6T 0C6
Contact Person:	Joe Zhou

3.1 Equipment Under Test (EUT) Information

The following information has been supplied by the applicant.

Product Name:	Bluetooth (BLE) Module
Model Number:	BLEMOD1
Serial Number:	68C90B0FE70C: Radiated measurements 68C90B0F7D02: Conducted measurements
FCC ID	BT1IOT
IC Number:	BT1IOT

3.2 Product Description

The Jarden Mesh Module provides a Bluetooth Low Energy connection for smart home devices of the First Alert Brand. For example, it can be placed in a smoke detector, CO2 detector, or home safe. The module will be part of a home BLE mesh network and communicate status updates of the device it is installed in. This information is transmitted over the standard 2.4GHz frequency spectrum as defined by the Bluetooth Low Energy standard. Maximum transmit power is 5 dBm. The radio IC is the CC2640 SOC with an ARM Cortex 3 core. The module has an integrated trace antenna on board used for wireless communication.

3.3 Modifications Incorporated In the EUT for Compliance Purposes

None noted at time of test

3.4 Deviations & Exclusions from Test Specifications

None noted at time of test

3.5 Additional Information

EUT programmed for continuous transmit or receive on low (2402 MHz), middle (2440 MHz), and high (2480 MHz) via a programming board connected to pin-holes on the EUT and USB cable connected to laptop running the LSR TiWi Bluetooth Eval Tool version 4.0.0.0.

4.0 Conditions of Test

Environmental:

Temperature:	20-25º C
Relative Humidity:	30-60%
Atmospheric Pressure:	86-106 kPa

DC Power: 3.3VDC

5.0 Test Equipment

All test equipment is calibrated by a calibration laboratory accredited by A2LA to the requirements of ISO 17025. For a complete list of test equipment and calibration dates, see Appendix A. Unless otherwise noted, resolution bandwidth of measuring instrument used during testing for given frequency range, see below.

Frequency Range	Resolution Bandwidth
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz
30 MHz – 1000 MHz	120 kHz
Above 1000 MHz	1 MHz

6.0 Conformance Summary

The EUT was found to MEET the requirements as described within the specification of FCC Title 47, CFR Parts 15.247 and 15.109 and RSS 210 and RSS Gen.

If some emissions are seen to be within 3 dB of their respective limits:
As these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

LS Research, LLC certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specifications. The results in this Test Report apply only to the item(s) tested on the above-specified dates. Any modifications made to the EUT subsequent to the indicated test date(s) will invalidate the data herein, and void this certification.

Appendix A – Test Equipment

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 23-Mar-2015 Type Test : Radiated Emissions (109) Job # : C-2187

Prepared By: Mike Hintzke Customer : Jarden Quote #: 315075

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960088	8GHz MXE Spectrum Analyzer	Agilent	N9038A	MY51210138	1/9/2015	1/9/2016	Active Calibration
2	AA 960150	Biconical Antenna	ETS	3110B	0003-3346	1/22/2015	1/22/2016	Active Calibration
3	AA 960078	Log Periodic Antenna	EMCO	93146	9701-4855	1/19/2015	1/19/2016	Active Calibration
4	AA 960158	Double Ridge Horn Antenna	ETS Lindgren	3117	109300	6/20/2014	6/20/2015	Active Calibration
5	EE 960159	0.8 - 21GHz LNA	Mini-Circuits	ZVA-213X-S+	740411007	6/20/2014	6/20/2015	Active Calibration
6	AA 960153	2.4GHz High Pass Filter	KWM	HPF-L-14186	7272-04	4/15/2015	4/15/2016	Active Calibration
7	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	8/9/2014	8/9/2015	Active Calibration
8	EE 960146	Std. Gain Horn Ant. w/preamp	Adv. Micro / EMCO	WLA622-4 / 3160-09	123001	8/20/2014	8/20/2015	Active Calibration

Project Engineer: Quality Assurance:

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 23-Mar-2015 Type Test : Conducted Measurements Job # : C-2187

Prepared By: Mike Hintzke Customer : Jarden Quote #: 315075

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960157	3Hz-13.2GHz Spectrum Analyzer	Agilent	E4445A	MY48250225	8/19/2014	8/19/2015	Active Calibration
2	AA 960144	Phaseflex	Gore	EKD01D010720	5800373	Verification	Verification	System
3	EE 960088	8GHz MXE Spectrum Analyzer	Agilent	N9038A	MY51210138	1/9/2015	1/9/2016	Active Calibration
4	EE 960089	LISN - 15A	COM-POWER	LI-215A	191943	3/2/2015	3/2/2016	Active Calibration

Project Engineer: Quality Assurance:

Appendix B – Test Data
B.1 – RF Conducted Emissions

Manufacturer	BRK Brands Inc. Dicon Global Inc.
Test Location	LS Research, LLC
Rule Part	FCC Part 15.247; RSS-Gen
General Measurement Procedure	FCC KDB 558074 D01 DTS Meas Guidance v03r02 ANSI C63.10-2009 Section 6.7 RSS-Gen Section 8.8
General Description of Measurement	A direct measurement of the transmitted signal was performed at the antenna port of the EUT via a cable connection to a spectrum analyzer. An attenuator was placed in series with the cable to protect the spectrum analyzer. The loss from the cable and the attenuator were added on the analyzer as gain offset settings there by allowing direct measurements, without the need for any further corrections. The EUT was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source.

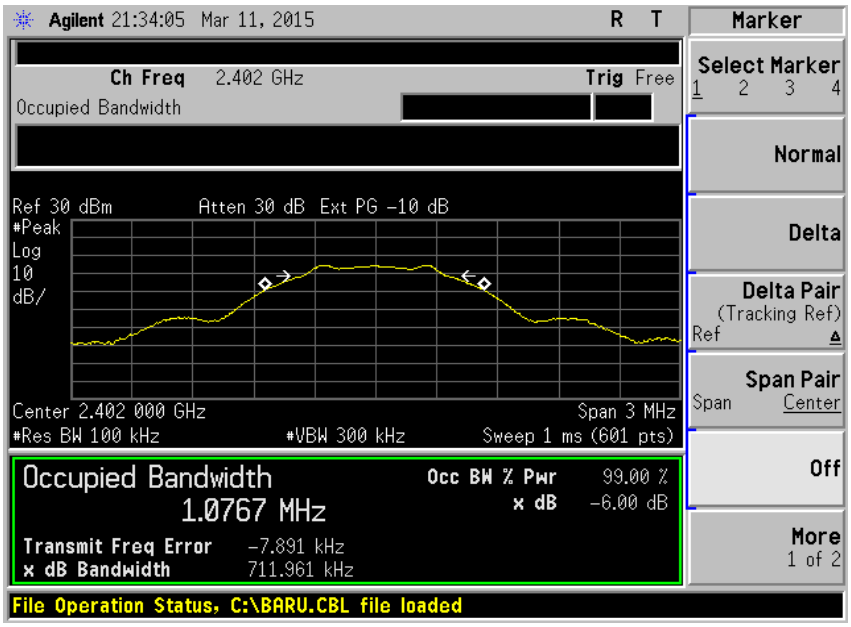
B.1.1 – RF Conducted – Fundamental Bandwidth

Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/10/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC Part 15.247 RSS-210 A8.2 (b)
Specific Measurement Procedure	FCC KDB 558074 Section 8.0 DTS bandwidth ANSI C63.10-2009 Section 6.9 RSS-210 Section 6.6
Additional Description of Measurement	Peak detector used
Additional Notes	Continuous transmit modulated used for this test.

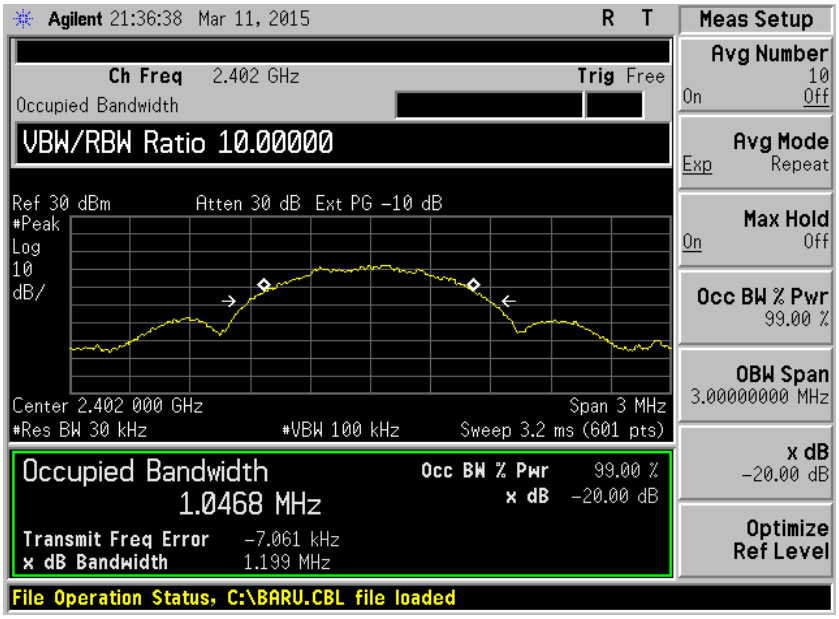
Table

Frequency (MHz)	6 dB DTS BW (kHz)	99 % oBW (MHz)	-20 dB OBW (MHz)
2402	712	1.0468	1.199
2440	709	1.0551	1.201
2480	723	1.0525	1.206

Low Channel – 2402 MHz

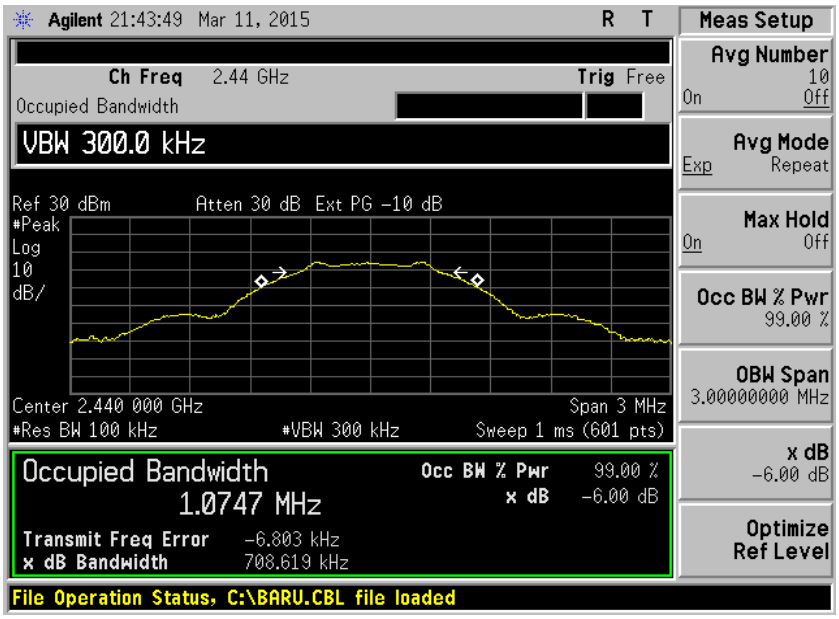


-6 dB DTS BW

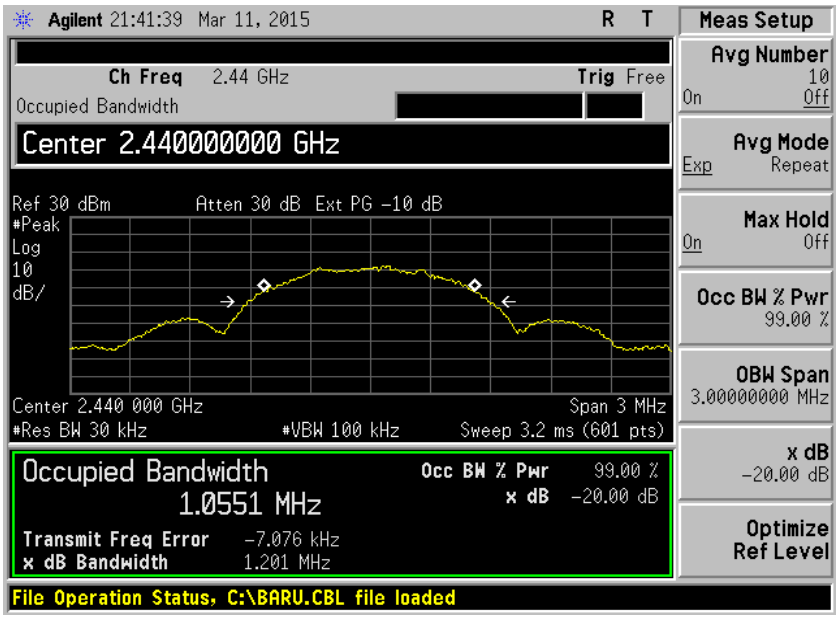


-20 dB BW & 99% BW

Mid Channel – 2440 MHz

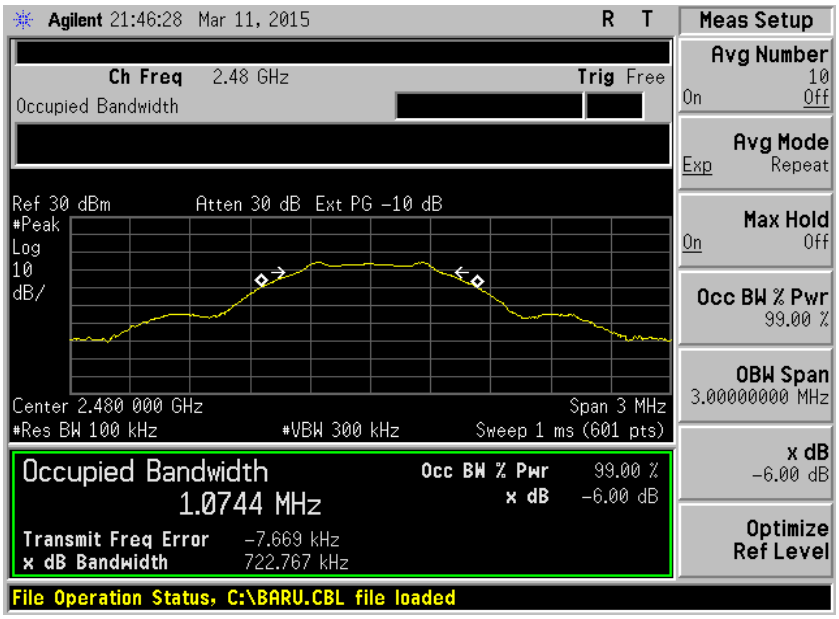


-6 dB DTS BW

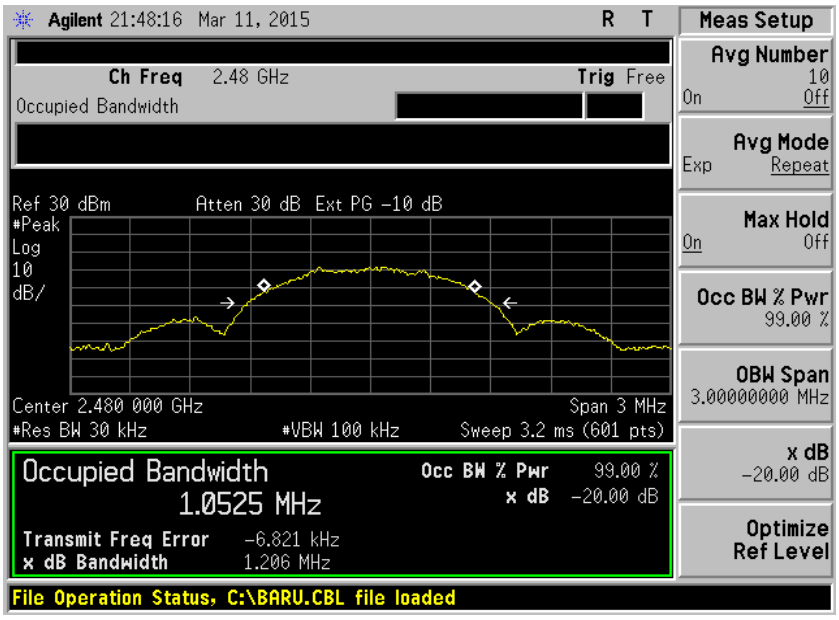


-20 dB BW & 99% BW

High Channel – 2480 MHz



-6 dB DTS BW



-20 dB BW & 99% BW

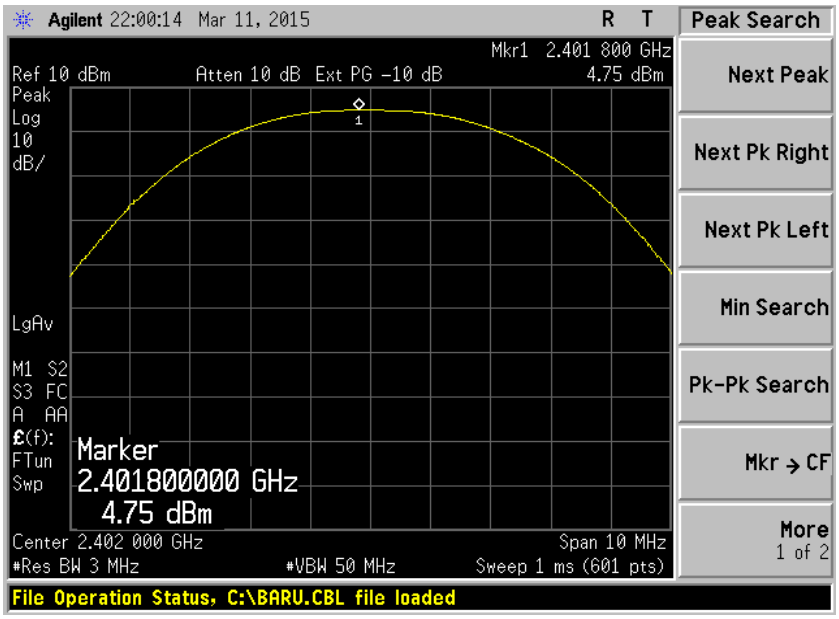
B.1.2 – RF Conducted – Fundamental Power and Spectral Density

Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/10/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.247 ; RSS-210
Specific Measurement Procedure	FCC KDB 558074 Section 9.1.1 – Maximum peak conducted output power FCC KDB 558074 Section 10.2 – Peak PSD RSS-Gen Section 8.8
Additional Description of Measurement	10 kHz resolution bandwidth used for Peak Power Spectral Density measurement
Additional Notes	Sample Calculation: Margin (dB) = Limit – Measured level Continuous transmit modulated used for this test.

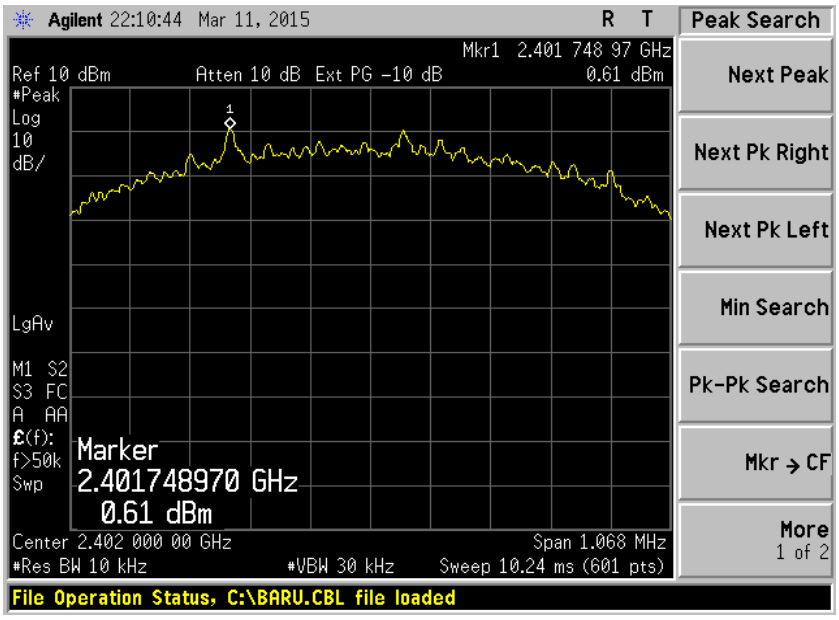
Table

Frequency (MHz)	Power (dBm)	PKPSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
2402	4.75	0.61	8	7.39
2440	4.63	0.50	8	7.50
2480	4.49	0.41	8	7.59

Low Channel – 2402 MHz

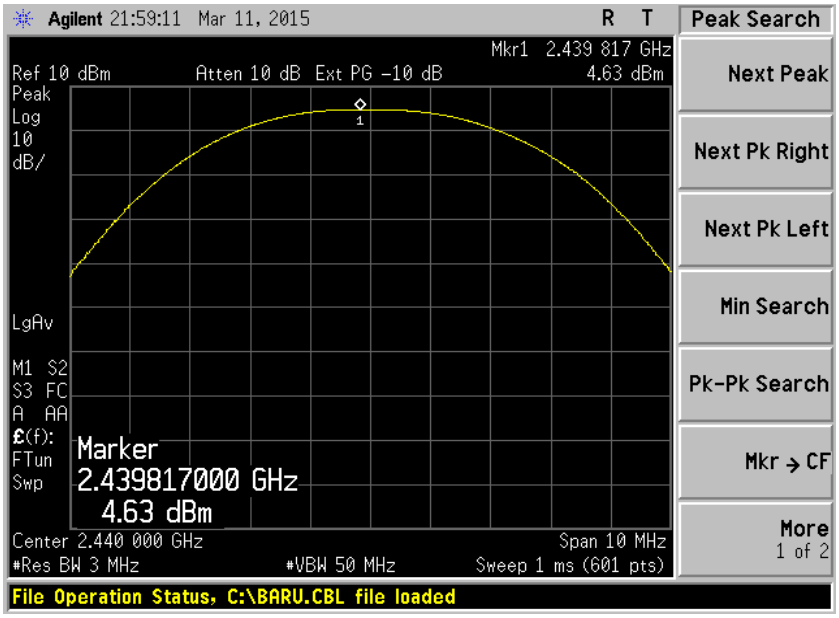


Peak Output Power

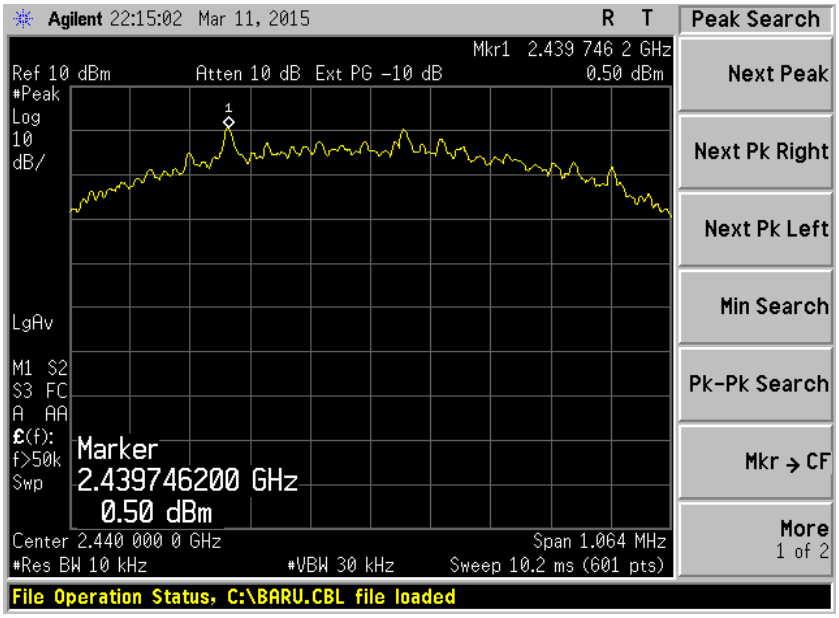


Peak Power Spectral Density

Mid Channel – 2440 MHz

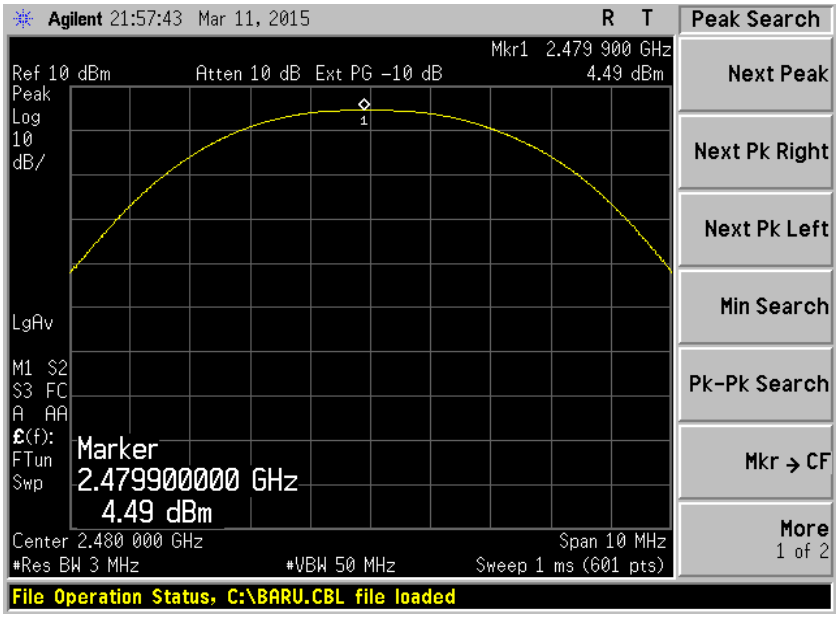


Peak Output Power

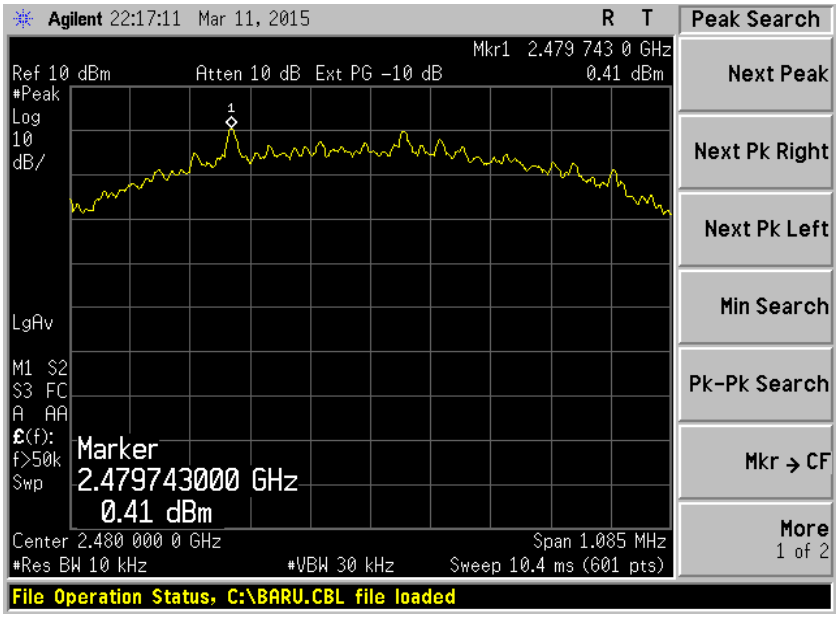


Peak Power Spectral Density

High Channel – 2480 MHz



Peak Output Power



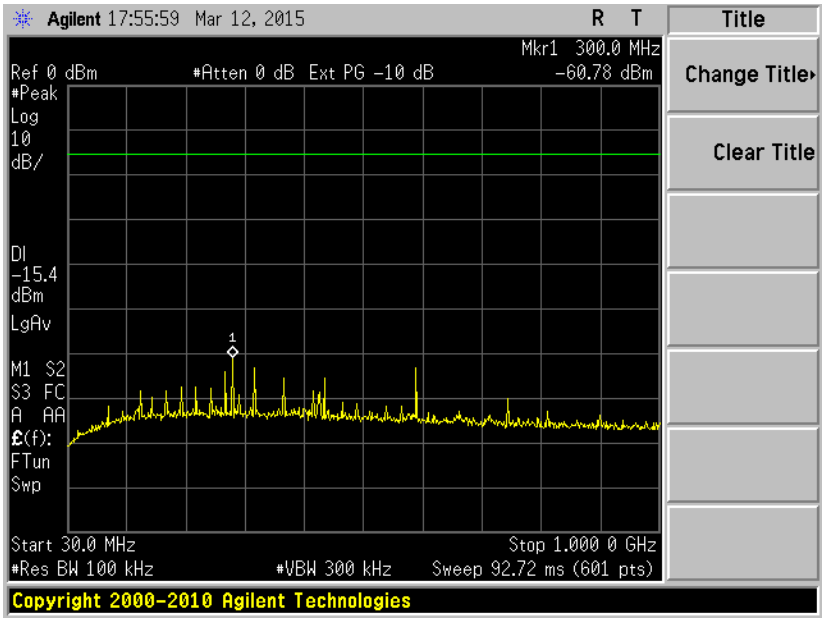
Peak Power Spectral Density

B.1.3 – RF Conducted – Spurious Emissions

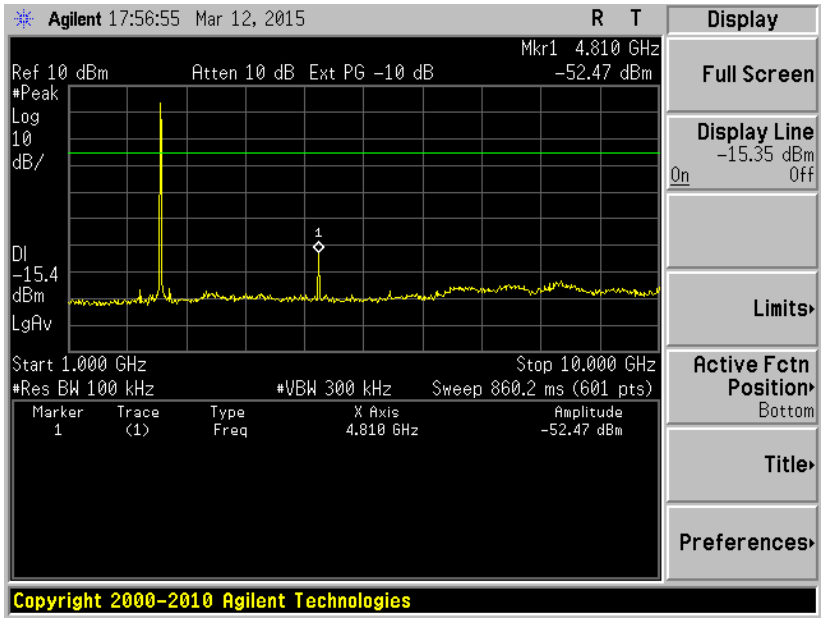
Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/10/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.247; RSS-210
Specific Measurement Procedure	FCC KDB 558074 Section 11.0 – Emissions in non-restricted frequency bands RSS-Gen
Additional Description of Measurement	RF Conducted Measurement
Additional Notes	No Emissions found to be within 15 dB of limit Continuous transmit modulated used for this test.

Plots start next page

Low Channel – 2402 MHz

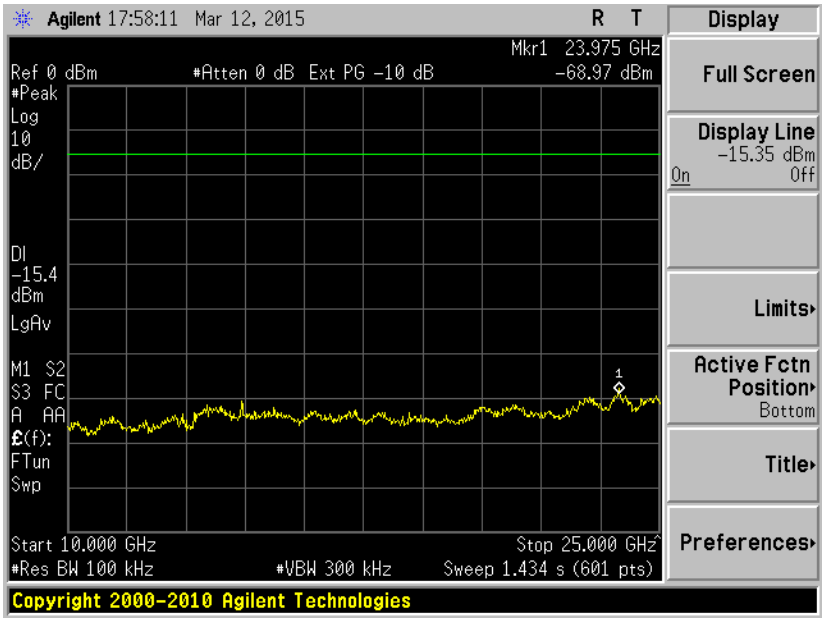


30 MHz – 1 GHz

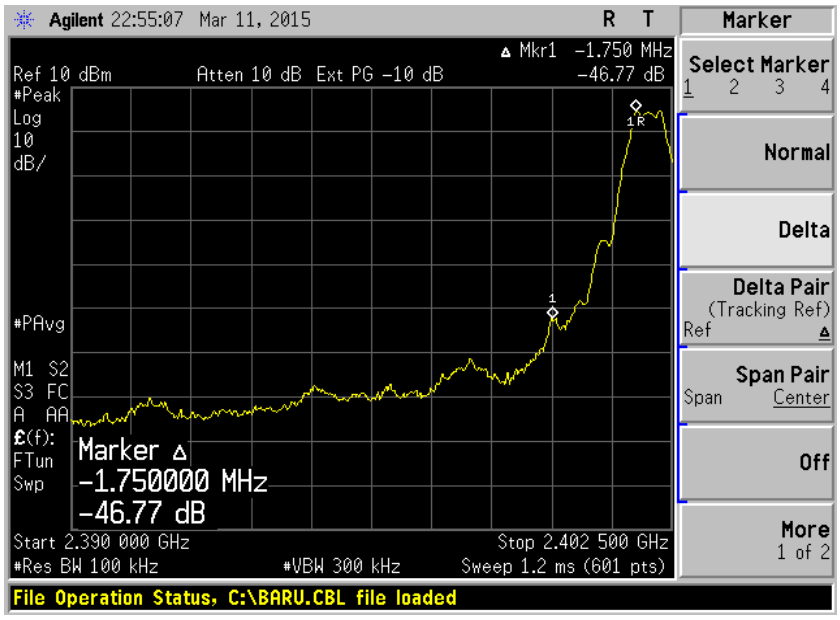


1 GHz – 10 GHz

Note: The display line on the plots above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.



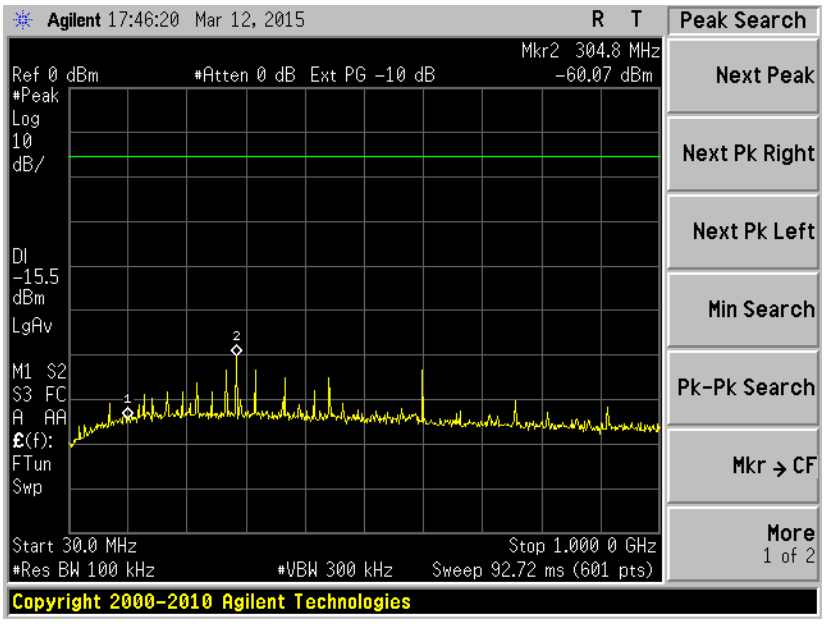
10 GHz – 25 GHz



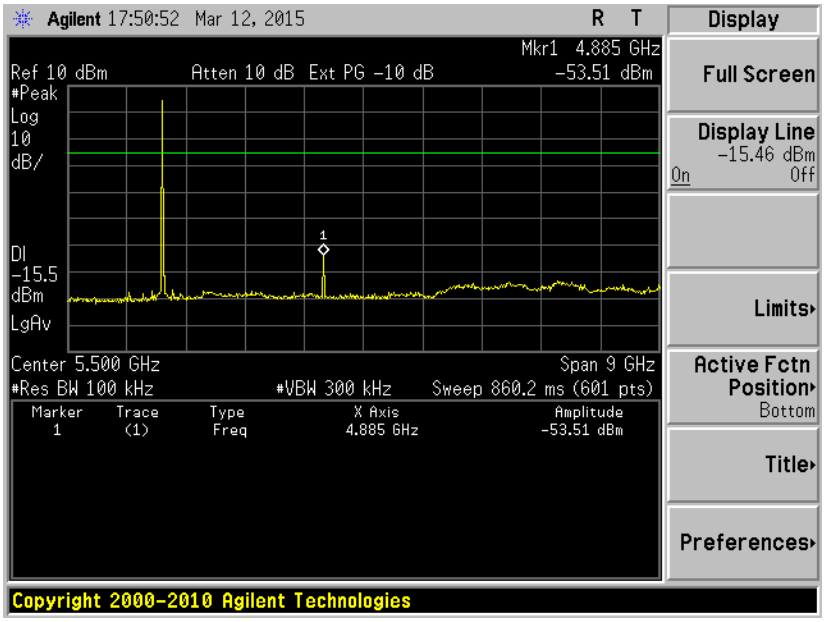
Band-Edge

Note: The display line on the plot above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.

Mid Channel – 2440 MHz

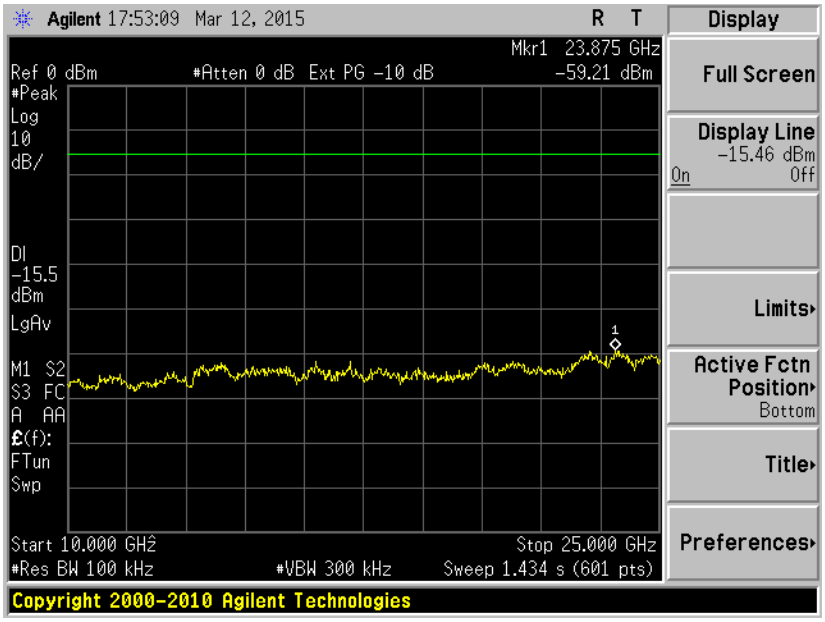


30 MHz – 1 GHz

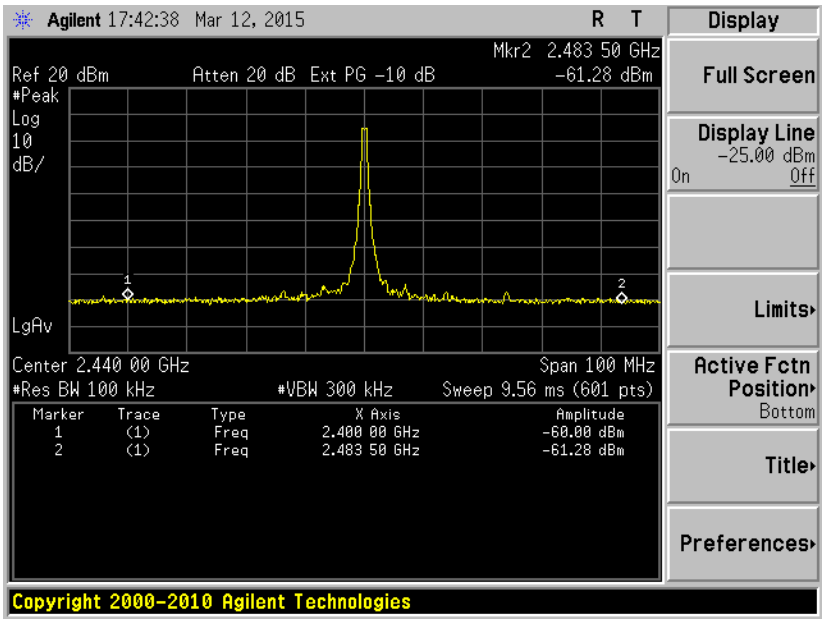


1 GHz – 10 GHz

Note: The display line on the plots above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.



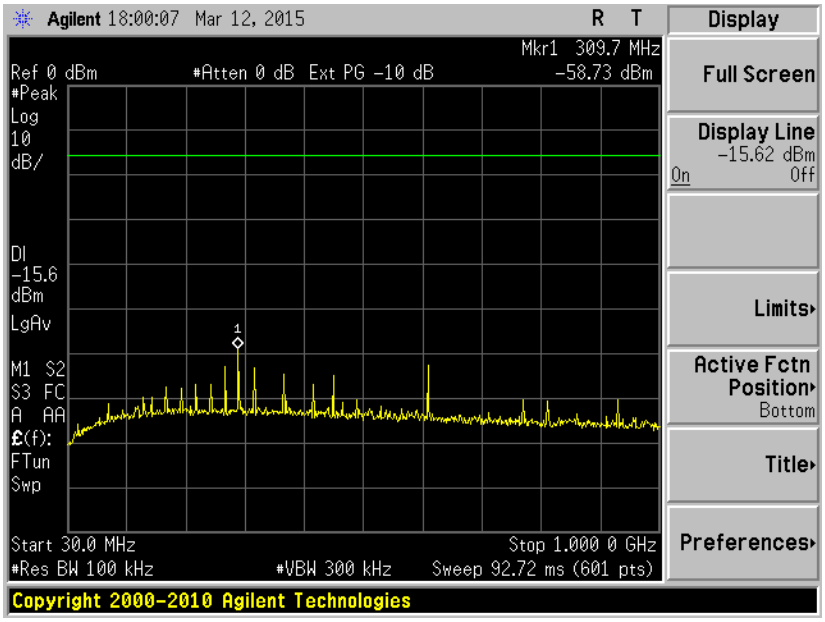
10 GHz – 25 GHz



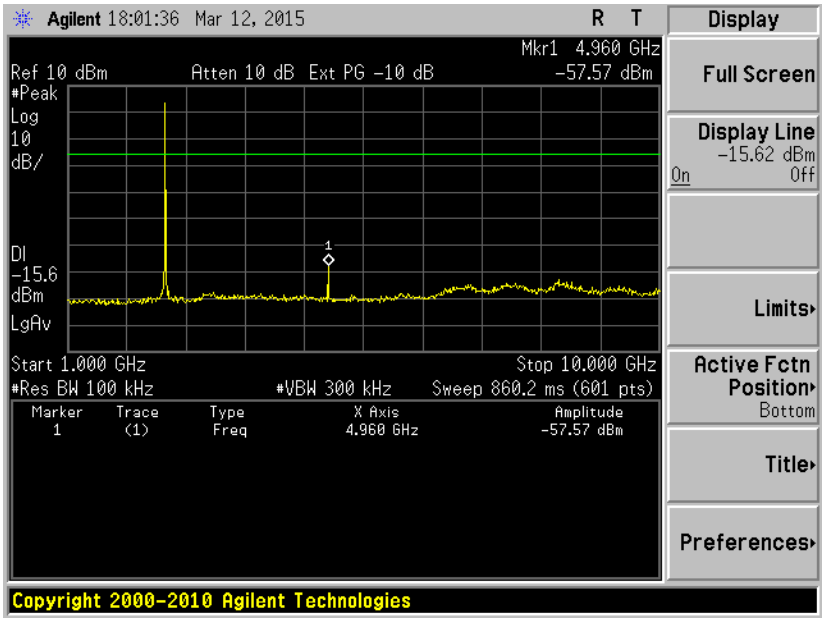
Band-Edge

Note: The display line on the plot above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.

High Channel – 2480 MHz

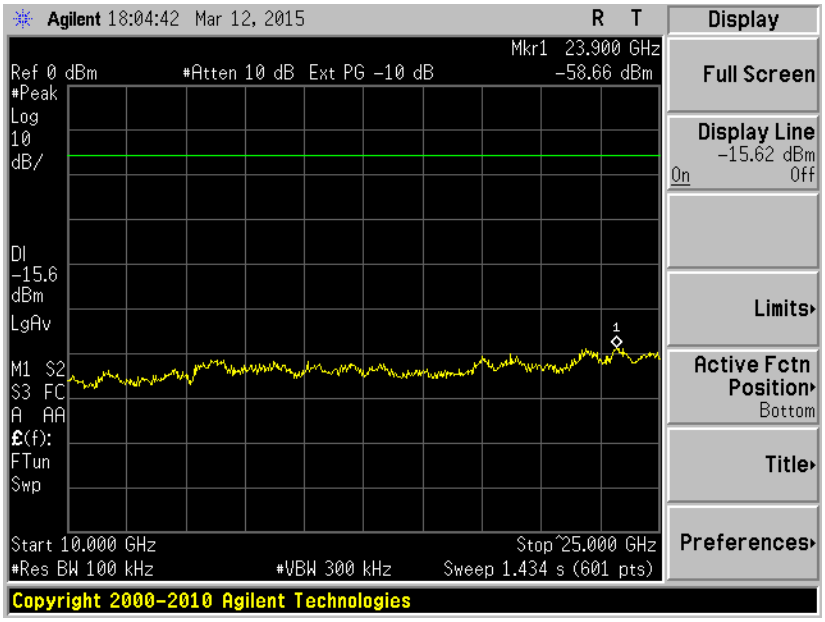


30 MHz – 1 GHz

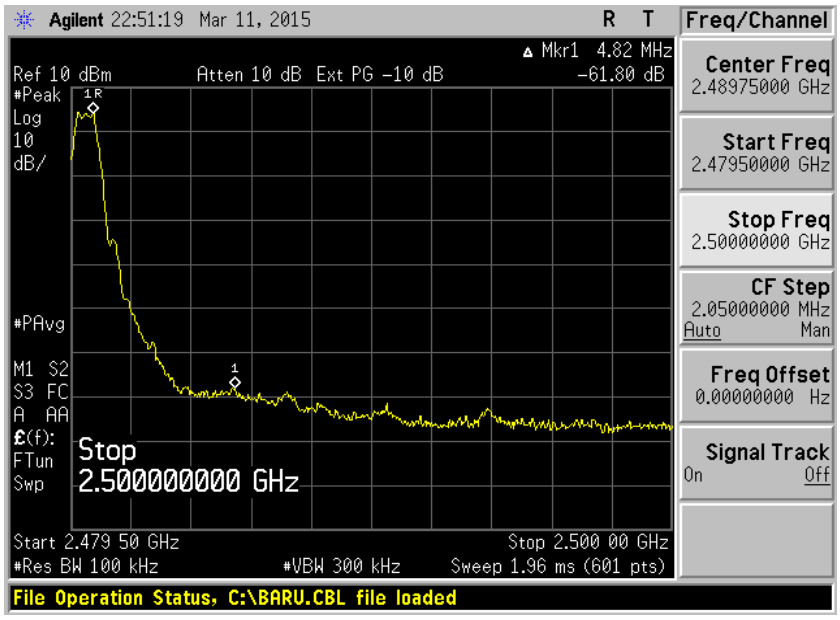


1 GHz – 10 GHz

Note: The display line on the plots above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.



10 GHz – 25 GHz



Band-Edge

Note: The display line on the plot above depicts a worst case limit based on the peak PSD measured with a lower resolution bandwidth.

B.2 – Radiated Emissions

Rule Part(s)	FCC: 15.247 / 15.205 / 15.209 RSS-Gen			
Measurement Procedure	ANSI C63.4 - 2009 ANSI C63.10 – 2009 FCC KDB 558074 D01 DTS Meas Guidance v03r02 RSS-Gen			
Test Location	LS Research, LLC - FCC Listed 3 meter Semi-Anechoic Chamber			
Test Distance	See data section			
EUT Placement	80 cm height non-conductive table above reference ground plane			
Frequency Range of Measurement	Biconical: 30-200 MHz	Log Periodic Dipole Array: 200-1000 MHz	Double-Ridged Waveguide Horn: 1-18 GHz	Standard Gain Horn: 18-25 GHz
Measurement Detectors	30-1000MHz RBW: 120 kHz VBW: At least 300 kHz		1 - 40 GHz: RBW : 1MHz VBW: At least 3 (MHz) Peak 10 Hz Average	
Description of Measurement	1) The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are preformed. The data is gathered and reported as the corrected values. 2) The EUT is placed on a non-conductive pedestal centered on a turn-table in the test location with the antenna at the test distance from the EUT 3) Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.			
Example Calculations	Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)			

FCC Part 15.209 Limits:

Frequency (MHz)	3 m Limit (µV/m)	3 m Limit (dBµV/m)	Type
30-88	100	40.0	Quasi-Peak
88-216	150	43.5	Quasi-Peak
216-960	200	46.0	Quasi-Peak
Above 960	500	54.0	Average (>1 GHz)

B.2.1 – Radiated Band-Edge Restricted Bands

Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/11/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.247/ 15.205 / 15.209 RSS-Gen
Measurement Procedure	ANSI C63.4 - 2009 ANSI C63.10 - 2009 FCC KDB 558074 RSS-Gen Section 8.10
Test Distance	3 meter (1-4 GHz)
EUT Placement	80 cm height non-conductive table centered on turn-table
Detectors	Peak; RBW 1MHz VBW 3 MHz (10Hz VBW for average measurements)
Additional Notes	1) Tested in the worst case of continuous transmit modulated mode with EUT maximized in three orientations at maximum power. 2) EUT maximized in azimuth and antenna height with maximum results reported.

Example Calculation:

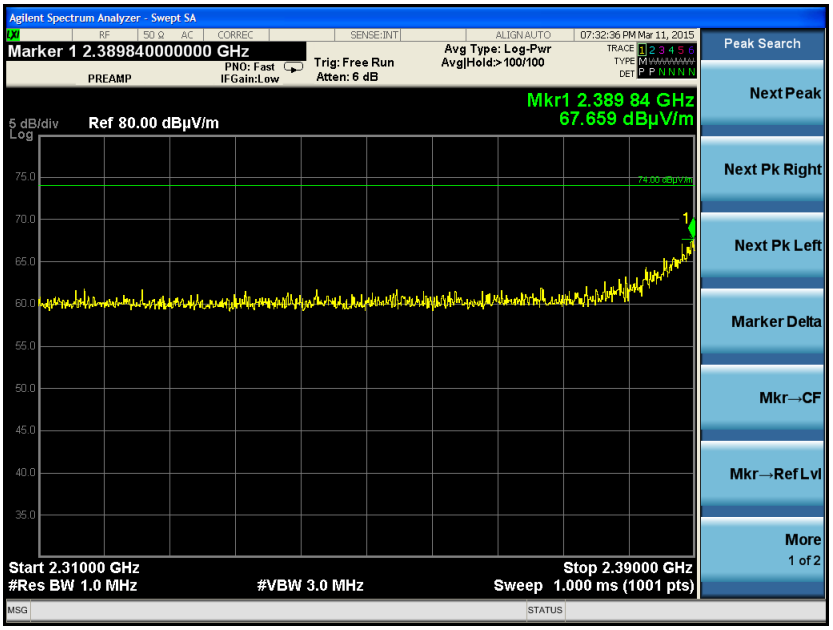
FCC 15.209 Peak Limit @ 3 meter (dBµV/m) – Peak Reading (dBµV/m) = Peak Margin

FCC 15.209 Average Limit @ 3 meter (dBµV/m) –Average Reading (dBµV/m) = Average Margin

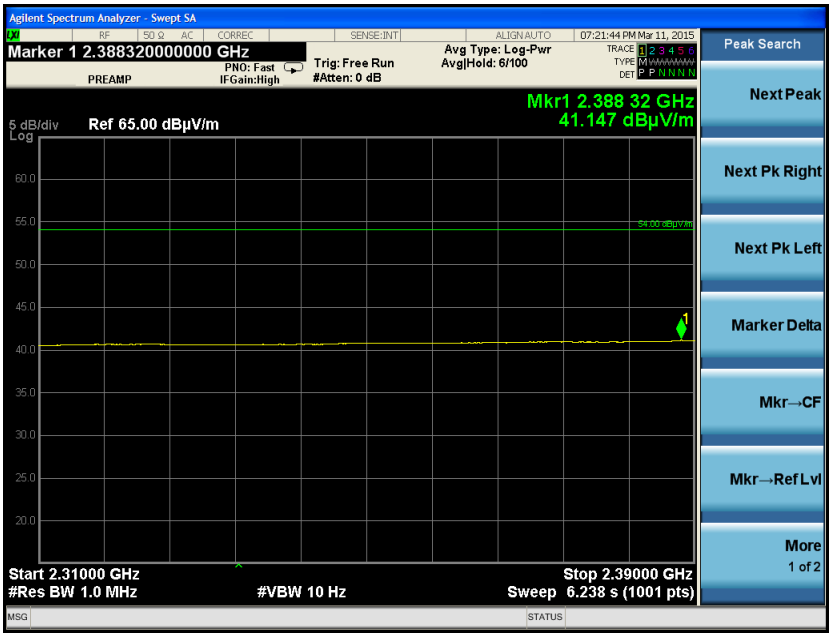
Data Table

Transmit Channel	Frequency (MHz)	EUT orientation	Antenna Polarity	Height (cm)	Azimuth (degree)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	Avg Limit (dBµV/m)	Avg Margin (dB)
Low	2402	Flat	Horizontal	2.00	252	67.66	41.15	74	6.34	54	12.85
High	2480	Side	Horizontal	1.08	338	63.25	42.07		10.75		11.93

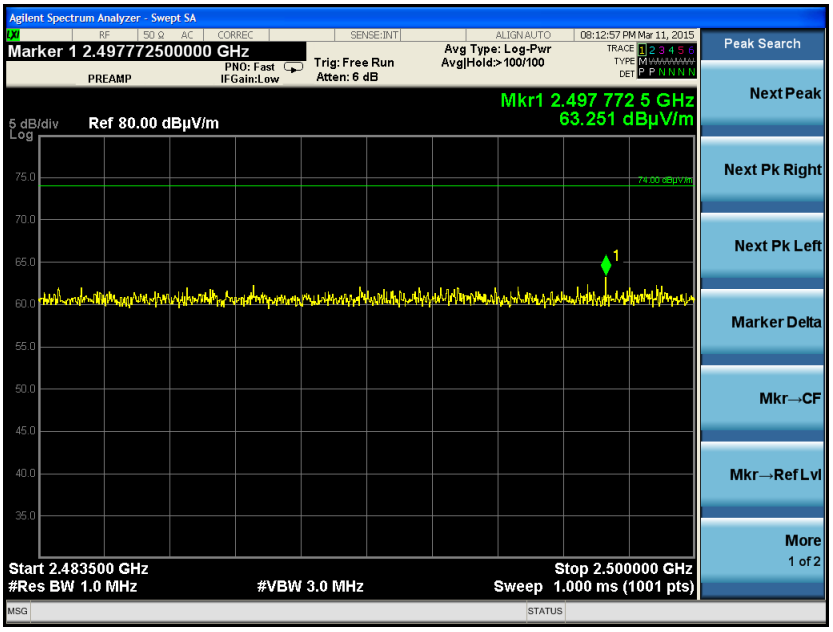
Plots



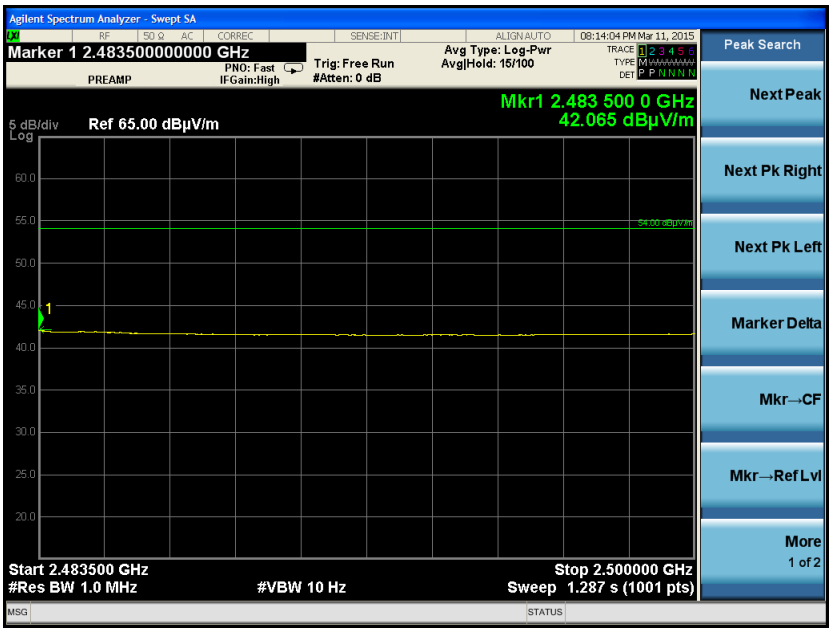
Low Channel – Lower Band-Edge Peak



Low Channel – Lower Band-Edge Average



High Channel – Upper Band-Edge Peak



High Channel – Upper Band-Edge Average

B.2.2 – Radiated Transmitter Emissions in Restricted and Non-Restricted Bands

Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/4/15, 3/12/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.247/ 15.205 / 15.209
Measurement Procedure	ANSI C63.4 - 2009 ANSI C63.10 - 2009
Test Distance	3 meter 4-25 GHz
EUT Placement	80 cm height non-conductive table centered on turn-table
Detectors	Peak; RBW 1 MHz, 3 MHz VBW
Additional Notes	1) Tested in continuous transmit modulated mode with EUT in three orientations at maximum power.

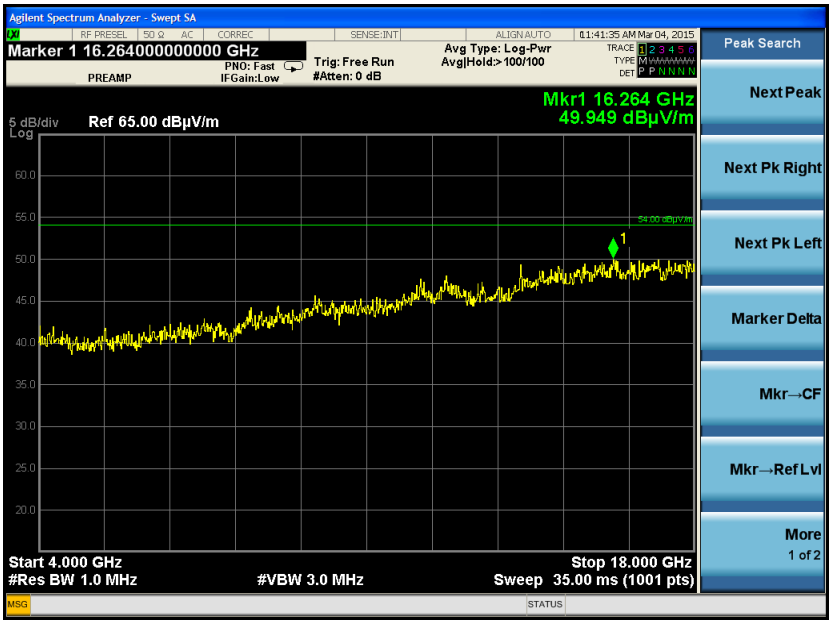
Example Calculation:

FCC 15.209 Peak Limit (dBµV/m) – Peak Reading (dBµV/m) = Margin
Peak Reading (dBµV/m) – Duty Cycle Correction (dB) = Calculated Average (dBµV/m)
FCC 15.209 Average Limit (dBµV/m) – Calculated Average (dBµV/m) = Margin

Data Table

Frequency (MHz)	EUT Orientation	Antenna Polarity	Height (cm)	Azimuth (degree)	Peak Reading (dBµV/m)	Average Reading (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)	Avg Limit (dBµV/m)	Avg Margin (dB)
(4804) Low Channel	Vertical	Horizontal	1.00	179	45.51	33.91	74	28.49	54	20.09
		Vertical	1.00	153	46.13	34.55		27.87		19.45
	Side	Horizontal	1.00	152	44.62	32.17		29.38		21.83
		Vertical	1.26	181	46.14	33.44		27.86		20.56
	Flat	Horizontal	1.00	95	44.38	30.96		29.62		23.04
		Vertical	1.00	102	43.78	31.32		30.22		22.68
(4880) Mid Channel	Vertical	Horizontal	1.11	76	45.39	34.16	74	28.61	54	19.84
		Vertical	1.07	123	43.26	34.47		30.74		19.53
	Side	Horizontal	2.46	165	43.98	30.98		30.02		23.02
		Vertical	1.69	79	43.78	31.48		30.22		22.52
	Flat	Horizontal	2.33	211	44.55	31.72		29.45		22.28
		Vertical	2.55	129	43.53	32.66		30.47		21.34
(4960) High Channel	Vertical	Horizontal	1.00	38	44.21	32.32	74	29.79	54	21.68
		Vertical	1.57	204	44.54	31.22		29.46		22.78
	Side	Horizontal	1.00	170	43.94	31.69		30.06		22.31
		Vertical	1.40	162	44.56	32.22		29.44		21.78
	Flat	Horizontal	1.00	79	44.31	31.9		29.69		22.10
		Vertical	1.00	129	43.08	30.82		30.92		23.18

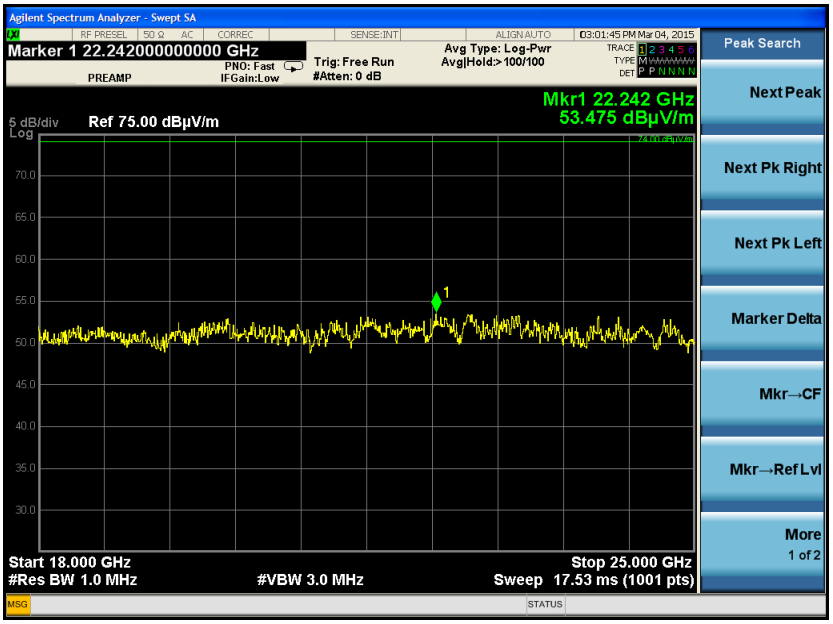
Plots



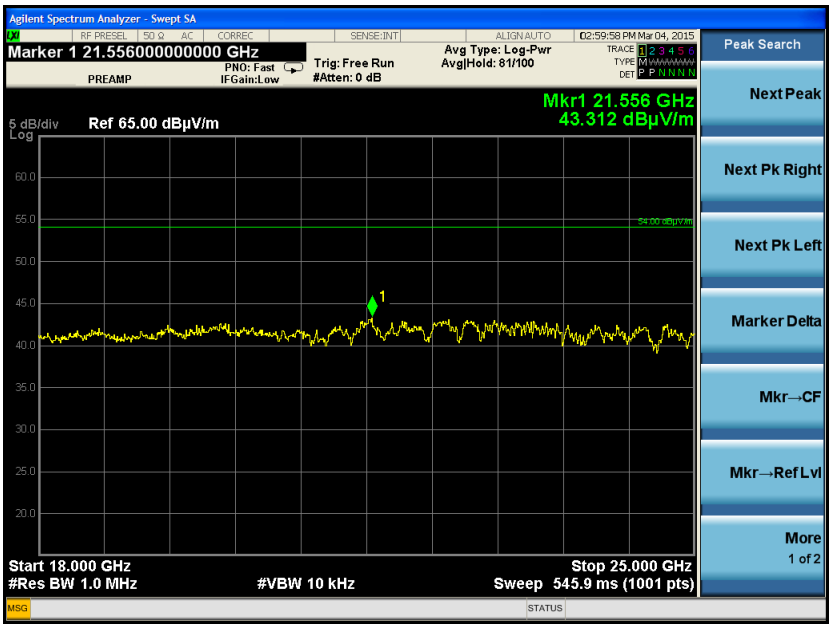
Low Channel 4 GHz – 18 GHz Peak

Note: The limit depicted by the display line above represents the average limit.

Low Channel 4 GHz – 18 GHz (Reduced VBW)

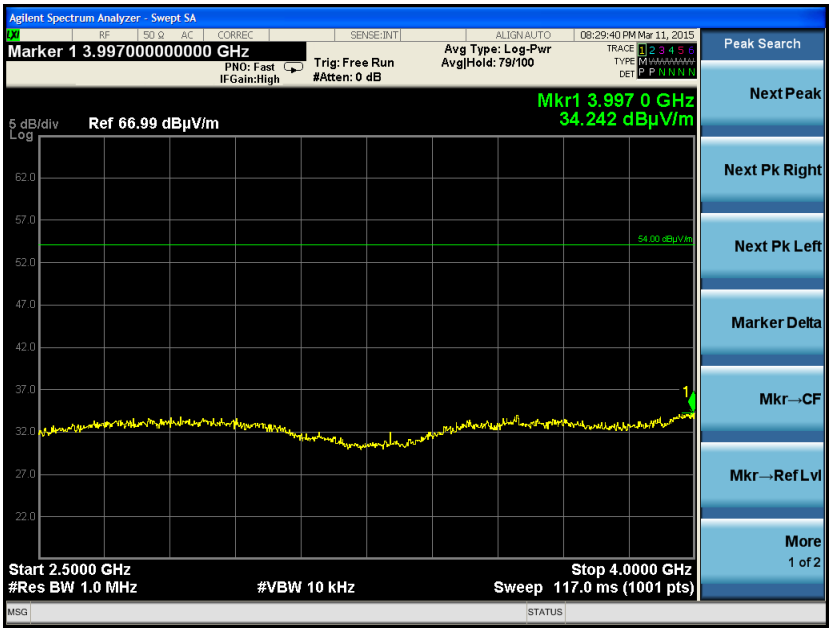


Low Channel 18 GHz – 25 GHz Peak

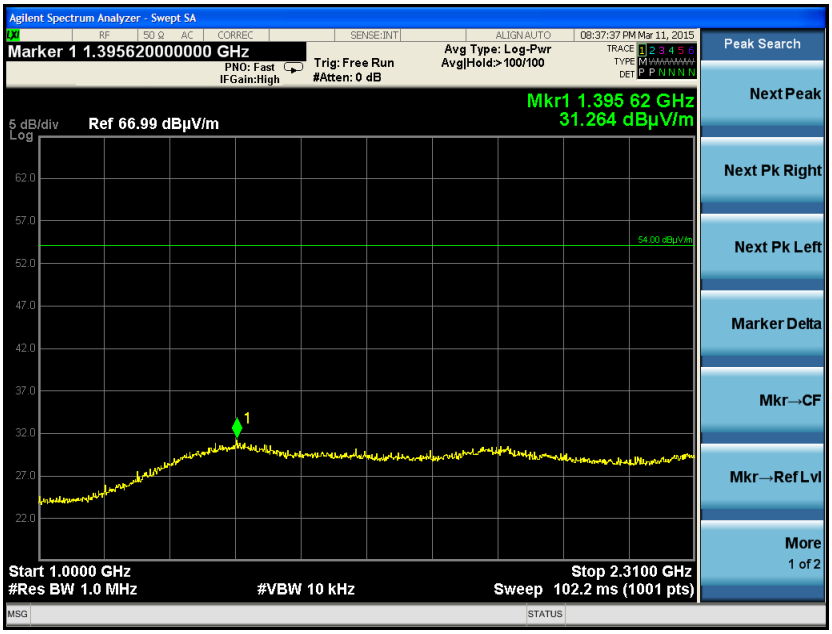


Low Channel 18 GHz – 25 GHz (Reduced VBW)

Note: Plots for 18 GHz – 25 GHz are representative of all channels tested.

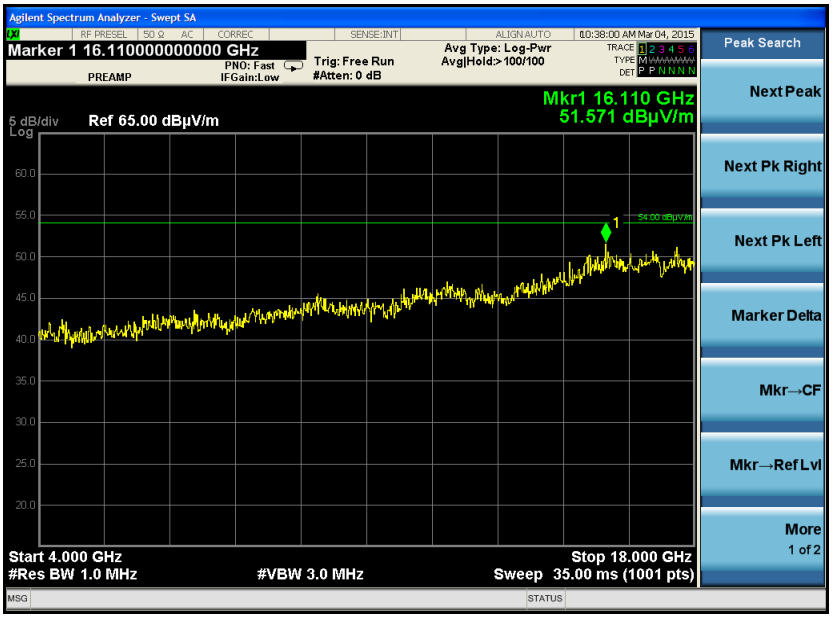


Low Channel 2.5 GHz – 4 GHz (Reduced VBW)



Low Channel 1 GHz – 2.31 GHz (Reduced FBW

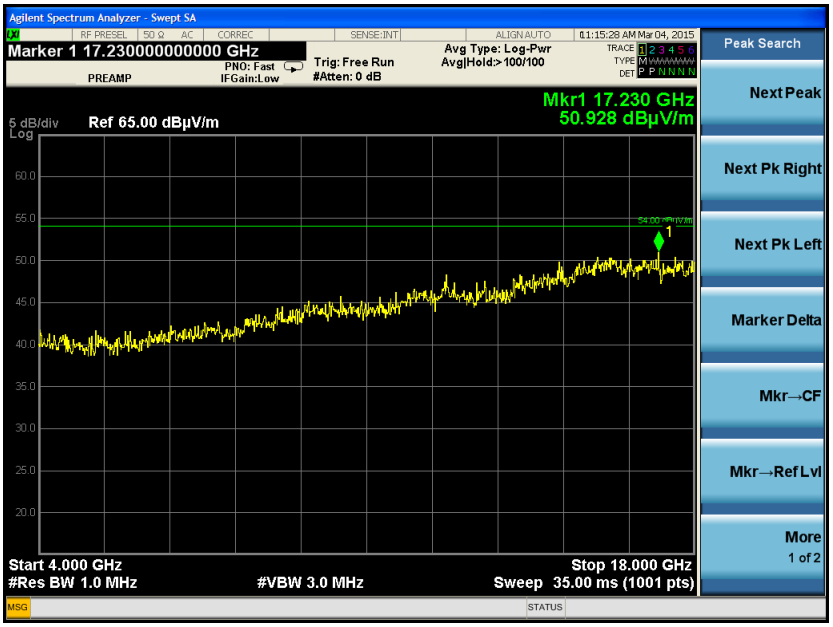
Note: The frequency range of 2390 MHz to 2400 MHz is in a non-restricted band, therefore, compliance has been demonstrated through the peak conducted spurious measurement using a 100 kHz bandwidth.



Middle Channel 4 GHz – 18 GHz Peak

Note: The limit depicted by the display line above represents the average limit.

Middle Channel 4 GHz – 18 GHz (Reduced VBW)

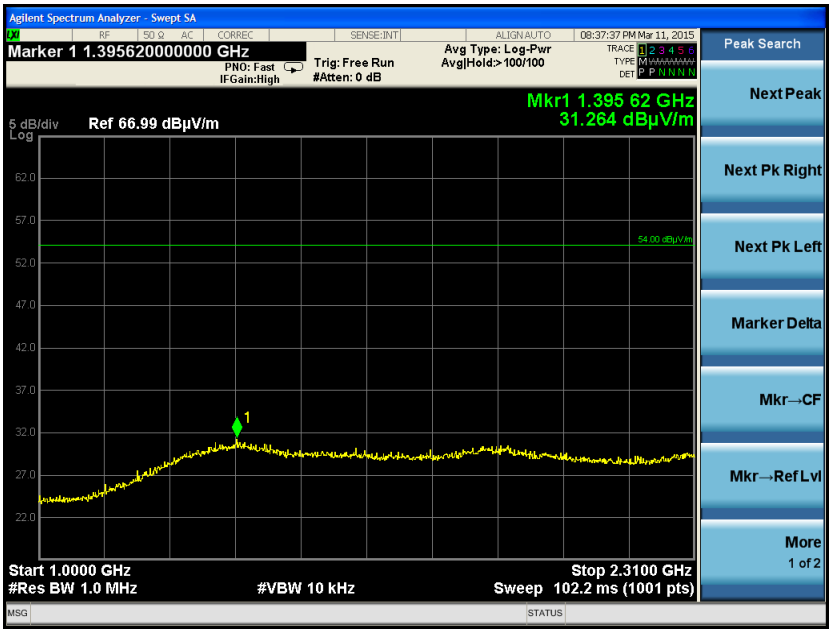


High Channel 4 GHz – 18 GHz Peak

Note: The limit depicted by the display line above represents the average limit.

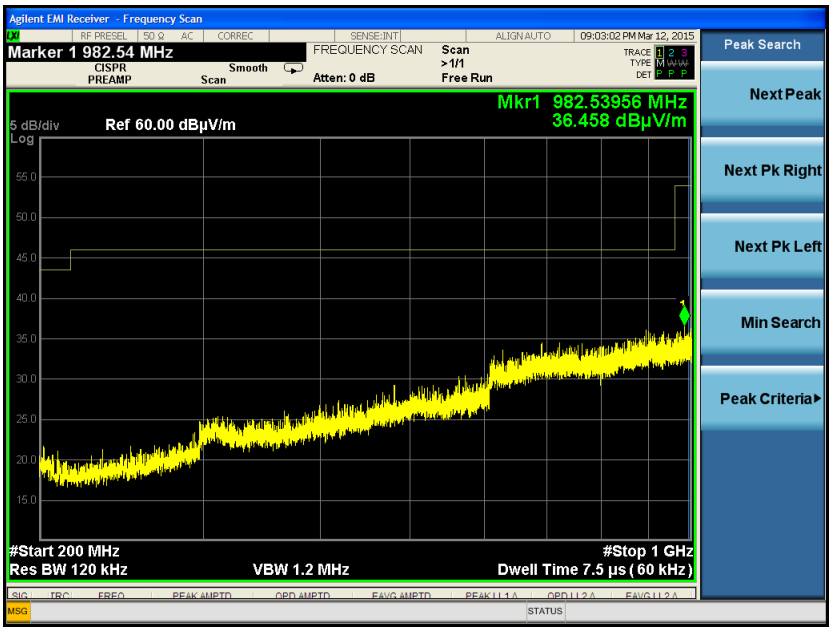
High Channel 4 GHz – 18 GHz (Reduced VBW)

High Channel 2.5 GHz – 4 GHz (Reduced VBW)

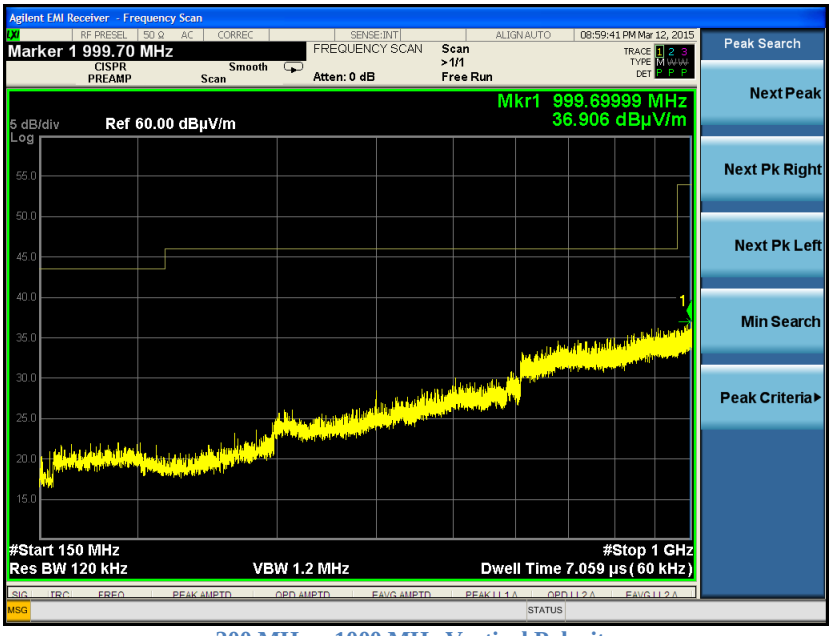


High Channel 1 GHz – 2.31 GHz (Reduced VBW)

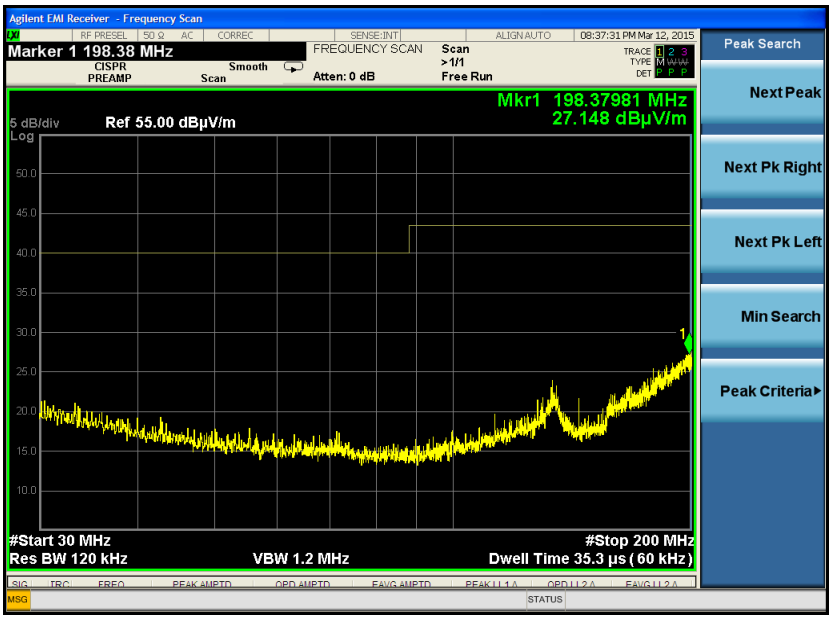
Note: The frequency range of 2390 MHz to 2400 MHz is in a non-restricted band, therefore, compliance has been demonstrated through the peak conducted spurious measurement using a 100 kHz bandwidth.



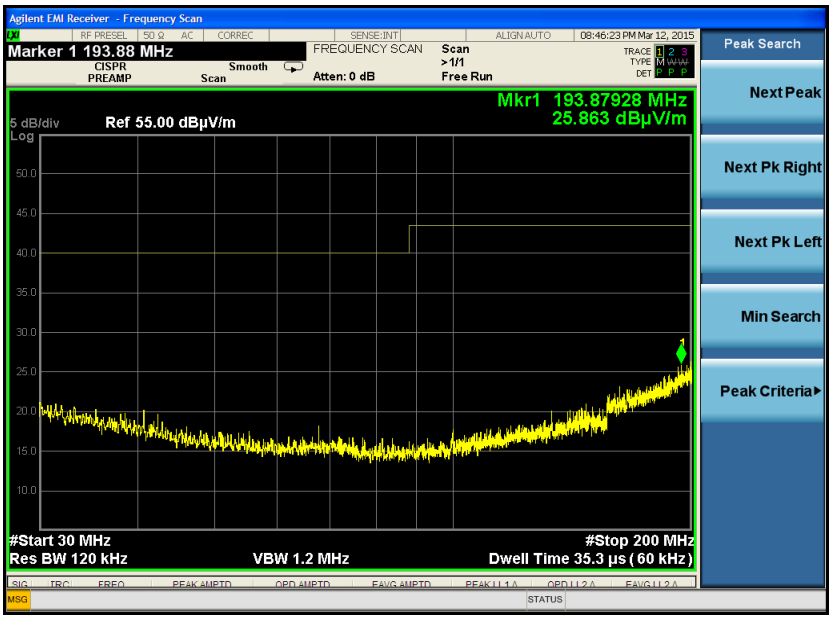
200 MHz – 1000 MHz Horizontal Polarity



200 MHz – 1000 MHz Vertical Polarity



30 MHz – 200 MHz Horizontal Polarity



30 MHz – 200 MHz Vertical Polarity

B.2.3 – Radiated Emissions Receive Mode

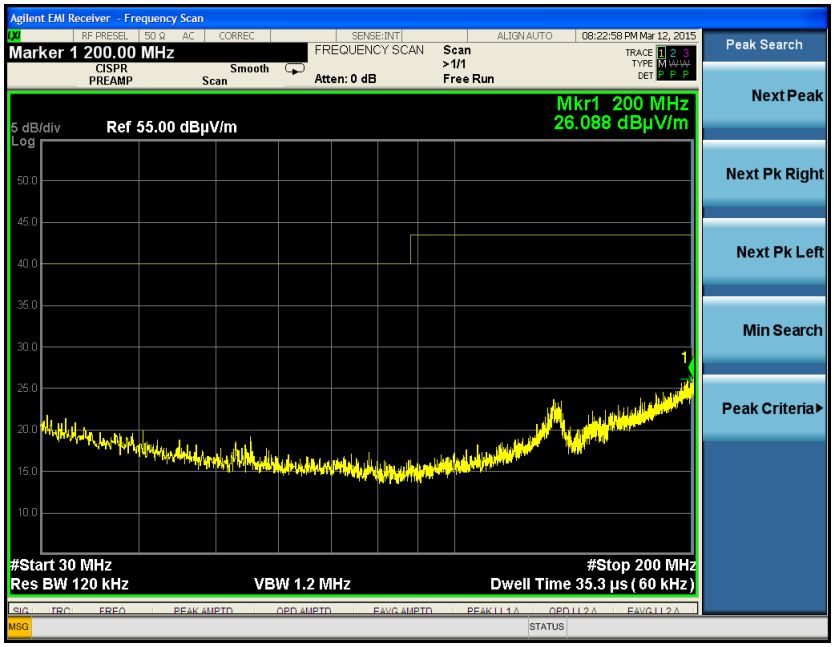
Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	3/12/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.109 RSS-Gen
Measurement Procedure	ANSI C63.4 - 2009 ANSI C63.10 - 2009 RSS-Gen
Test Distance	3 meter 30-25000 MHz
EUT Placement	80 cm height non-conductive table centered on turn-table
Detectors	Peak; RBW 1 MHz (Average 10 Hz VBW) > 1 GHz < Quasi-Peak; RBW 120 kHz
Additional Notes	1) Tested in continuous receive mode with EUT in three orientations on three channels 2) Maximum results reported

Example Calculation:
Limit (dBµV/m) – Reading (dBµV/m) = Margin

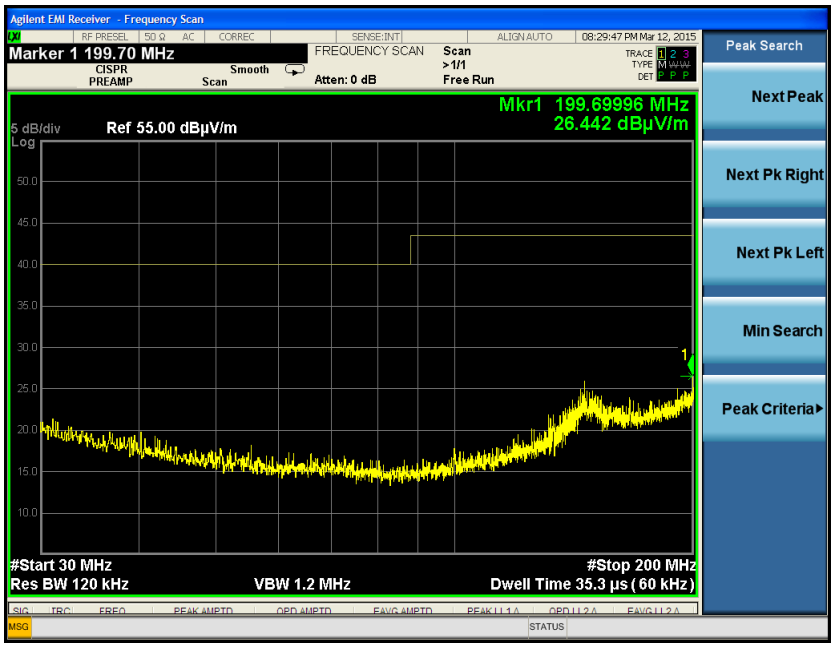
Table - Receive Mode

Frequency (MHz)	Height (m)	Azimuth (degree)	Peak Reading (dBµV/m)	Average Reading (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)	Antenna Polarity	EUT orientation	EUT Channel
4878	1.17	181	43.47	32.33	54.0	21.7	H	V	low
4878	1.38	96	43.36	31.49	54.0	22.5	V	V	low
4878	1.76	156	43.39	32.11	54.0	21.9	V	S	low
4878	1.00	177	43.51	32.46	54.0	21.5	H	S	low
4878	1.00	82	43.33	32.69	54.0	21.3	V	S	low
4878	1.37	90	42.71	30.74	54.0	23.3	V	F	low
4878	1.02	82	43.37	32.86	54.0	21.1	H	F	low
4958	1.00	180	44.40	35.22	54.0	18.8	V	V	high
4958	1.00	56	44.48	34.41	54.0	19.6	H	V	high
4958	1.00	330	43.33	33.03	54.0	21.0	H	S	high
4958	1.00	208	43.39	33.35	54.0	20.7	V	S	high
4958	1.00	221	43.29	32.7	54.0	21.3	V	F	high
4958	1.67	61	43.74	33.38	54.0	20.6	H	F	high

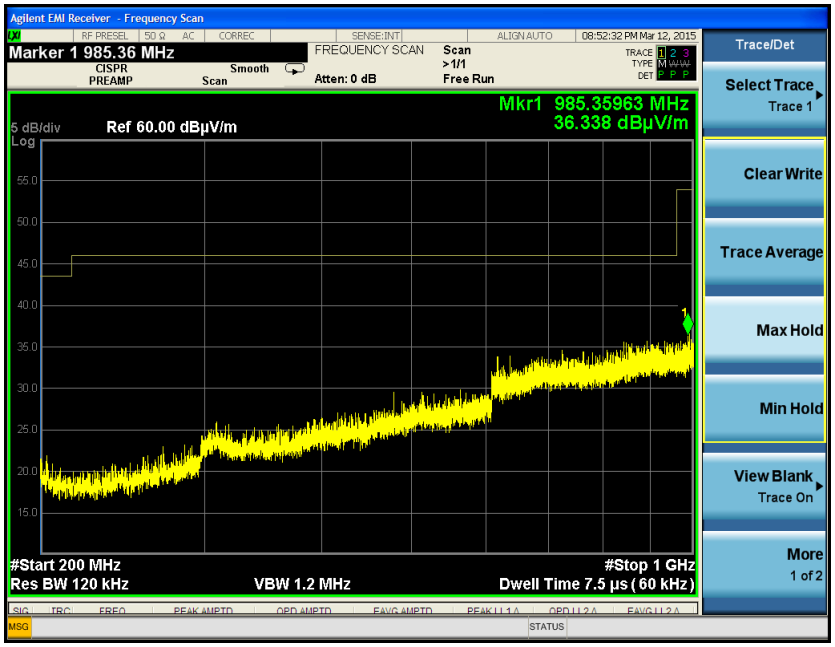
Plots - Receive Mode



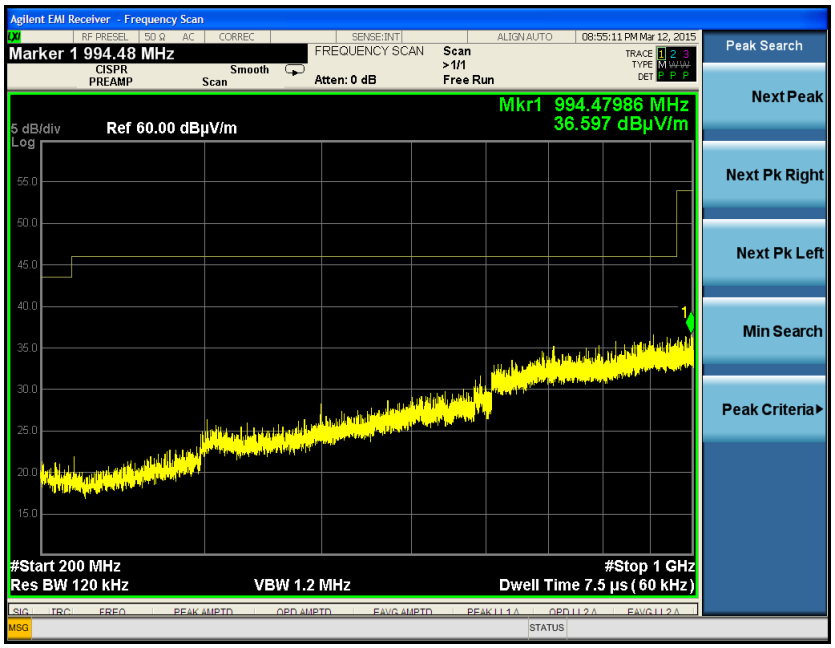
30 MHz – 200 MHz Horizontal Polarity



30 MHz – 200 MHz Vertical Polarity



200 MHz – 1000 MHz Horizontal Polarity



200 MHz – 1000 MHz

1 GHz – 4 GHz (Reduced VBW)

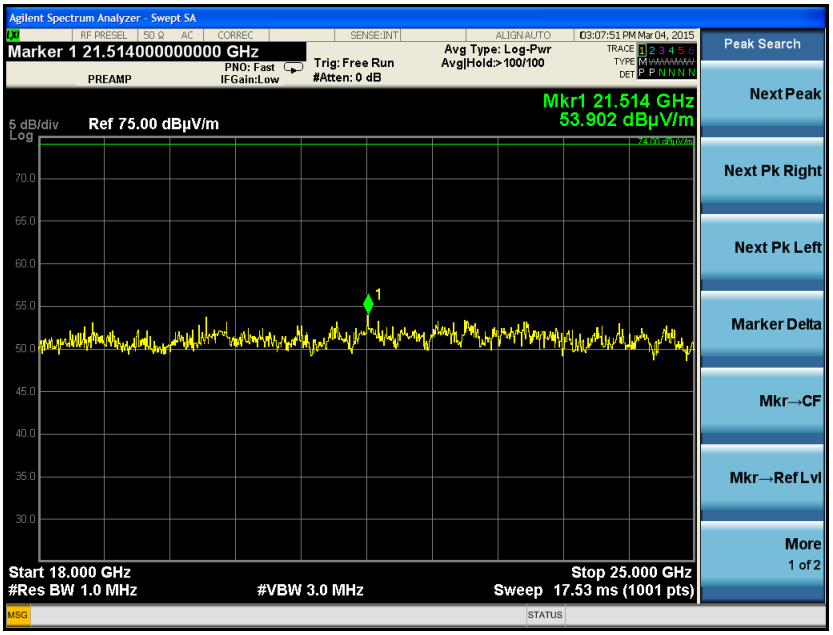
Note: The limit depicted by the display line above represents the average limit.

1 GHz – 4 GHz (Reduced VBW)

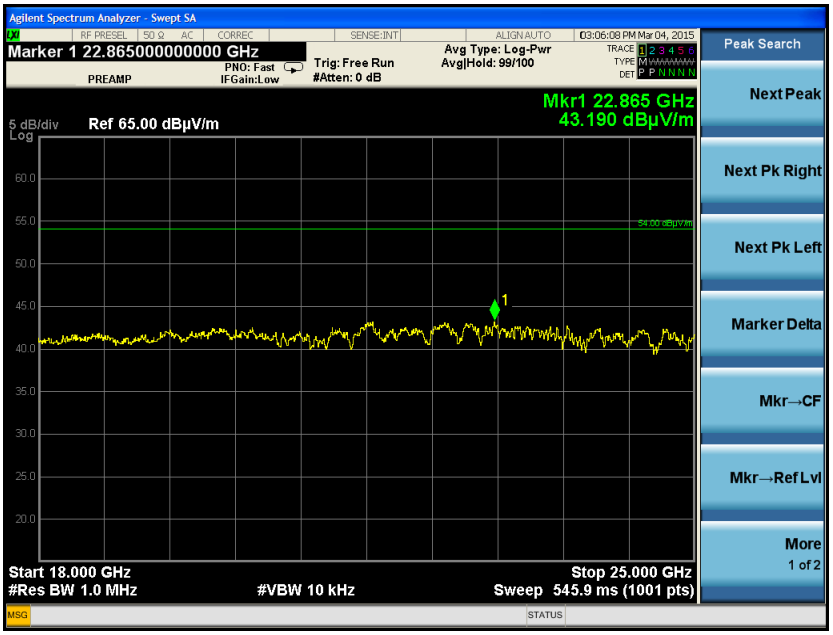
4 GHz – 18 GHz Peak

Note: The limit depicted by the display line above represents the average limit.

4 GHz – 18 GHz (Reduced VBW)



18 GHz – 25 GHz Peak



18 GHz – 25 GHz (Reduced VBW)

B3 – AC Mains Conducted Emissions

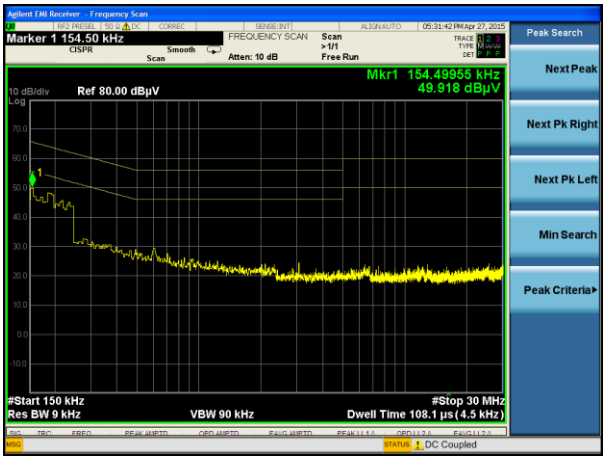
Manufacturer	BRK Brands Inc. Dicon Global Inc.
Date	4/27/15
Operator	Mike Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.207, 15.107 RSS-Gen
Measurement Procedure	ANSI C63.4 - 2009 ANSI C63.10 - 2009 RSS-Gen
EUT Placement	80 cm height non-conductive table with 40 cm separation from the vertical ground reference plane.
Detectors	Peak; RBW 9kHz
Additional Notes	1) Tested in both continuous transmit and receive modes. Maximum results reported

Frequency (MHz)	Line	Q-Peak Reading (dBµV)	Q-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average Reading (dBµV)	Average Limit (dBµV)	Average Margin (dB)
0.155	1	43.2	65.7	22.5	32.4	55.7	23.3
0.180	1	41.9	64.5	22.6	31.0	54.5	23.5
0.226	1	40.0	62.6	22.6	29.4	52.6	23.2
0.203	2	37.3	63.5	26.2	21.3	53.5	32.2
0.162	2	39.3	65.4	26.1	22.8	55.4	32.6
0.195	2	39.3	63.8	24.5	21.5	53.8	32.3

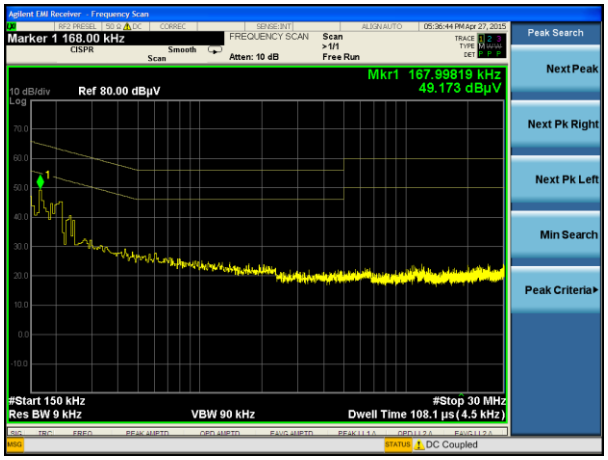
FCC 15.107 Measurements

Frequency (MHz)	Line	Q-Peak Reading (dBµV)	Q-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average Reading (dBµV)	Average Limit (dBµV)	Average Margin (dB)
0.172	1	42.0	64.9	22.9	31.4	54.9	23.5
0.199	1	41.2	63.7	22.5	30.2	53.7	23.5
0.226	1	40.6	62.6	22.0	29.5	52.6	23.1
0.244	1	39.9	62.0	22.1	29.2	52.0	22.8
0.163	2	38.4	65.3	26.9	22.8	55.3	32.5
0.181	2	39.1	64.4	25.3	22.0	54.4	32.4
0.221	2	36.9	62.8	25.9	20.8	52.8	32.0

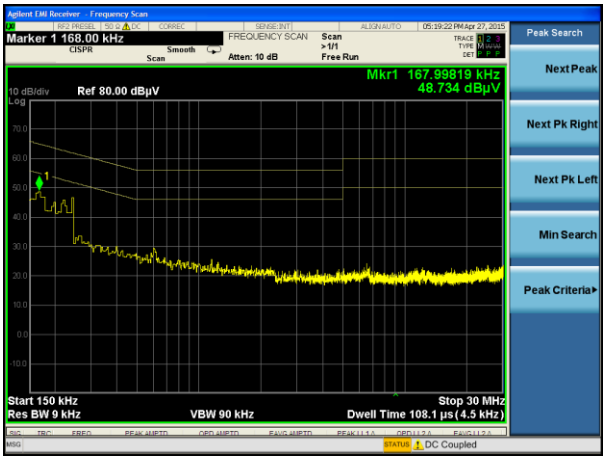
FCC 15.207 Measurements



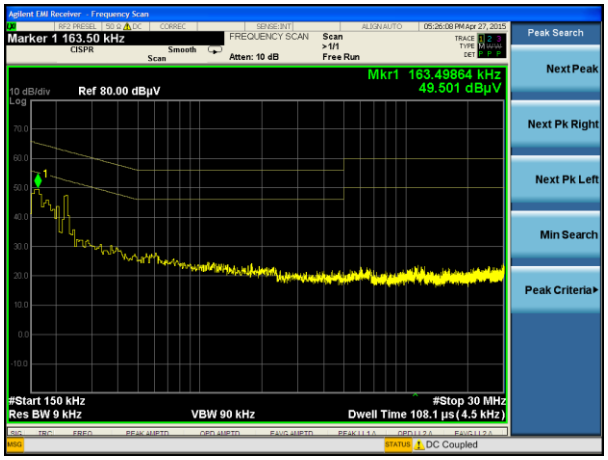
FCC 15.107, Line 1



FCC 15.107, Line 2



FCC 15.207, Line 1



FCC 15.207, Line 2

Appendix C - Uncertainty Summary

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k=2.

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

Measurement Type	Particular Configuration	Uncertainty Values
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.82 dB
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.88 dB
Radiated Emissions	3-Meter Chamber, Horn Antenna	4.85 dB
Absolute Conducted Emissions	Agilent PSA/ESA Series	1.38 dB
AC Line Conducted Emissions	Shielded Room/EMCO LISN	3.20 dB
Temperature/Humidity	Thermo-hygrometer	0.64° / 2.88 %RH

Appendix D - References

Publication	Year	Title
FCC CFR Parts 0-15	2014	Code of Federal Regulations – Telecommunications
ANSI C63.4	2009	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.
ANSI C63.10	2009	American National Standard for Testing Unlicensed Wireless Devices
FCC KDB 558074 D01 DTS Meas Guidance v03r02	2014	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
RSS-210	2010	Licence-exempt Radio Apparatus (All Frequency Bands): Category 1 Equipment
RSS-Gen	2014	General Requirements for Compliance of Radio Apparatus

END OF REPORT

Date	Version	Comments	Person
5/4/15	V0	Initial Draft Release	M.Hintzke
5/6/15	V1	Final Release	M.Hintzke