Segway

Report of FCC and Industry Canada Intentional Radiator Testing

Prepared For:	***Stephen Phillips***
Company	***Segway Inc.*** ***14 Technology Drive*** ***Bedford, NH 03110***
Applicable Models	***Ninebot Remote Key***
Test Laboratory	***Core Compliance Testing Services, LLC*** ***79 River Road*** ***Hudson, NH 03051***
Test Dates	**February 16 – February 17, 2016**
Tested & Reviewed By	***Ken MacGrath, Manager*** ***Ed Ramshaw, Test Engineer*** ***George Correia, Test Engineer***
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1.0 GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (EUT): Ninebot Remote Key

Manufacturer:	Segway
Applicable Models:	Ninebot Remote Key
Model Number:	NEB-YK010.V2
Power Supply:	9VDC from three 3-volt metal coin lithium batteries (CR2016)

EUT Technical Specifications:

A) Channels, Operating Frequency and Modulation

Tested Channel	Operating Frequency (MHz)	Modulation Type
1	433.92MHz	ASK

B) Rated output power: 0.003mW (-25dBm) based on measurements given in section 6.2 (field strength of 69.7dBµV/m at 3 meter distance).

C) Antenna Designation: PCB trace antenna, non-user replaceable (fixed), 0.0dBi (1.0 numerical gain).

D) This report documents the results for the Segway, Model Ninebot Remote Key which is a key for the Ninebot E Model personal transporter.

E) FCC ID: T2Z-RK01
IC ID: 6395A-RK01

1.2 Applicable Documents and Standards

This test report is based on the following standards.

Intentional Radiators:

- FCC CFR 47, Part 15, Subpart C, Section 15.231
- Industry Canada RSS-210, Issue 8, December 2010, Annex A1, Momentarily Operated Devices and Remote Control
- RSS-GEN, Issue 4, November, 2014
- ANSI C63.10: 2013

Unintentional Radiators:

- FCC CFR47, Part 15, Subpart B, Digital Devices, Class B
- RSS-GEN, Issue 4, November, 2014
- ICES-003, Issue 6, January 2016, Information Technology Equipment, Class B
- ANSI C63.4: 2014

1.3 Test Dates

February 16 – 17, 2016

1.4 Test Methodology

Testing was done according to the standards listed in section 1.2. Radiated testing was performed at an antenna-to-EUT distance of 3-meters.

1.5 Test Facility

The Open Area Test Site (OATS) and ferrite lined shielded chamber used to collect the radiated data is located at Core Compliance Testing Services, 79 River Road, Hudson, NH. The OATS is constructed and calibrated to meet the FCC requirements of ANSI C63.4: 2003, MP5, and OST-55. The test facility is ISO 17025 accredited by A2LA (2778.01).

1.6 Test Equipment List

All equipment used in the testing process has up to date calibrations traceable to the National Institute of Standards and Technology (NIST). Refer to the Table 1 on the following page for a complete list of equipment used during the test.

Table 1: Test Equipment

Asset #	Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
3	Preamplifier 8447F OPT H64	Agilent/HP	8447F-H64	3113A07400	02/12/16	02/12/18
17	Antenna	Chase	CBL6112B	2602	12/16/14	12/16/16
19	Pre amplifier	HP/Agilent	08449B	3008A01322	04/07/14	04/07/16
20	8-meter Low Loss Cable	Andrew	ETS1-50T	0081108339	12/09/15	12/09/16
21	25-meter Low Loss Cable	Andrew	ETS1-50T	00A1108341	12/09/15	12/09/16
30	Semi-Anechoic chamber	Keene Ray Proof	N/A	8298	08/25/15	08/25/16
51,52	Receiver	Rohde & Schwarz	ESMI	845364/009	12/08/15	12/08/16
103	Magnetic Loop Antenna	A.H. Systems	SAS-200/562B	216	03/18/15	03/18/16
109	Alternative Open Area Test Site	Strongwell	10 Meter	None	12/15/14	12/15/17
123	Spectrum Analyzer	HP	E4405B	US39440317	12/08/15	12/08/17
126	Horn Antenna	A.H.Systems	SAS-571	782	03/20/14	03/20/16

All equipment used for testing has been calibrated according to methods and procedures defined by the National Institute of Standards and Technology (NIST).

1.7 Measurement Uncertainty

The measurement uncertainty of radiated emissions data is 4.06 dB based on the test equipment used and the OATS site attenuation data.

1.8 Equipment Modifications

Not applicable.

2.0 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing was based on the requirements as given in the applicable standards and was operated in a manner which intends to maximize its emissions characteristics in a continuous transmit application. Note that this could only be achieved by Segway personnel releasing the lock button and then depressing it and holding it using a nylon cable clamp and a tie wrap. The transmitter would then time out after 10 seconds and this process had to be continually repeated throughout all of the testing. Testing was done with new batteries installed in the EUT.

2.2 EUT Exercise

The EUT has been tested under operating conditions and was tested in continuous transmitting mode by repeatedly depressing the lock button. The transmitter would time out after 10 seconds therefore Segway personnel had to repeatedly release the lock button and then depress and hold it using a nylon cable clamp and tie wrap for all of the testing.

The EUT was operated as follows:

Transmit Channel	Transmit Freq. (MHz)	Transmit Power Setting	Test Mode	Modulation
1	433.92MHz	N/A	*continuous transmit	ON, ASK

*with operator intervention as described in 2.1 and 2.2.

3.0 SUMMARY OF TEST RESULTS

Table 2, Test Results Summary

Rules	Description Of Test	Test Report Section	Result
FCC 15.231(a) and IC RSS-210, A1.1	Requirements for periodic operation	5.0	*Pass*
FCC 15.231(b) and IC RSS-210, A1.1	Field Strength of Fundamental (10996.7 microvolts/meter)	6.0	*Pass*
FCC 15.231(b) IC RSS-210, A1.1, Table A	Unintentional/Spurious Emissions	7.0	*Pass*
FCC 15.231(c) and IC RSS-210, A1.1.3	20dB (99% Power) Bandwidth Measurement	8.0	*Pass*
FCC 15.231(d) and IC RSS-210, A1.1.4	Frequency tolerance for devices operating from 40.66-40.70MHz		*N/A*
FCC 15.231(e) and IC RSS-210, A1.1.5	Requirements and limits for devices operating outside the requirements of 15.231(a) and RSS-210, A1.1.1		*N/A*

4.0 REQUIREMENTS AND LIMITS APPLICABLE TO THE EUT

4.1 Requirements of 15.231 (a) and IC RSS-210 A1.1

- For the frequency bands of 40.66-40.70MHz and above 70MHz, only periodic operation is permitted.
- A manually operated transmitter must be deactivated within not more than 5 seconds when the switch is released.
- Transmitters that can be activated automatically shall cease transmission within 5 seconds after activation.
- Periodic transmission at regular intervals are not permitted.
- Special provisions of transmitters used for emergencies to signal an alarm.
- Special provisions for transmitters used in security systems.

4.2 Limits of Radiated Emission Measurements

Field Strength of Fundamental and Harmonics per CFR 47, Part 15.231 (b) and IC RSS-210, A1.1.

The field strength of emissions for intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	FCC: 2,250 IC Ref: RSS-210, A2.7	FCC: 225 IC Ref: RSS-210, A2.7
70 - 130	1,250	125
130 - 174	[1]1,250 -3,750	[1]125 - 375
174 – 260	3,750	375
260 - 470	[1]3,750 – 12,500	[1]375 – 1,250
Above 470	12,500	1,250

[1]Linear interpolations

(1) Above limits are based on a 3-meter test distance. Tighter limits apply at the band edges.

(2) An average detector shall be used. Alternatively, a quasi-peak detector may be used.

(3) Spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. These limits or the limits given in Part 15.209, whichever permits the higher field strength, shall be used.

4.3 20dB (99% Power) Bandwidth of the Fundamental Emission

The 20dB (99% Power) bandwidth of the emission is given in Part 15.231 (c) and IC RSS-210, A1.1.3.

The 20dB (99% Power) bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. For devices operating above 900MHz, the 20dB (99% Power) bandwidth shall be no wider than 0.5% of the center frequency.

5.0 REQUIREMENTS FOR PERIODIC OPERATION OF THE EUT

Ref: 15.231 (a) and IC RSS-210 A1.1
For the frequency bands of 40.66-40.70MHz and above 70MHz, only periodic operation is permitted.

The EUT transmitter only operates when a key is depressed. As soon as the key is released, the transmission ceases. This was verified on the EUT by observing the fundamental emission on a spectrum analyzer when pressing and releasing the EUT key. The transmission stopped in much less than 1 second after releasing the key.

The EUT cannot be activated automatically. It requires a key to be manually depressed for the transmitter to turn on. The EUT does not transmit at periodic intervals. It only transmits when a key is manually depressed.

The EUT meets these requirements for periodic operation.

6.0 FIELD STRENGTH OF FUNDAMENTAL (10996.7 microvolts/meter)

Ref: 15.231 (b) and IC RSS-210 A1.1

The limit was calculated based on the frequency of the fundamental being 433.92MHz. Linear interpolation was used to calculate the maximum field strength of the fundamental based on the frequency being between 260 and 470MHz and the field strength limit being between 3,750 and 12,500 µV/m. The limit for 433.92MHz was calculated to be 10,964 µV/m which is 80.8 dBµV/m. This limit is based on the use of an average detector.

6.1 Test Setup and Procedure

Place the EUT on the 80 cm high polystyrene table. Set the EUT into constant transmitting mode with modulation by depressing the Lock key on the EUT. This was done as described in sections 2.1 and 2.2.

Utilizing the radiated emissions method, the EUT was set up on a three meter OATS. The field strength was maximized by rotating the turntable and adjusting the antenna height between 1 and 4 meters. Measurements were further optimized for vertical and horizontal polarization of the receive antenna.

6.2 Field Strength of Fundamental Test Results

3-Meter Radiated Emissions Results

Date: 2/17/2016
Test Engineer: GC

Customer: Segway
Product: Ninebot Remote Key
Configuration: Constant transmit
EUT Voltage: 9VDC battery (3, 3-Volt batteries)

Temperature (°C): 17
Relative Humidity (%): 40

Test Distance: **3 meters**
Frequency Range: **30-1000MHz**
Antenna Asset #: **17**

Ortho. Position	Ant. Ht. (m)	Ant. Polarity	Frequency (MHz)	Reading (dBµV)	3m Antenna Factor (dB)	25m Cable Factor (dB)	Net (dBµV/m)	FCC 15.231 AV Limit (dBµV/m)	FCC 15.231 AV Margin (dBµV/m)
X_{AV}	1.0	H	433.9	49.9	17.4	2.4	69.7	80.8	**-11.1**
Y_{AV}	1.2	H	433.9	44.6	17.4	2.4	64.4	80.8	**-16.4**
Z_{AV}	1.3	H	433.9	43.9	17.4	2.4	63.7	80.8	**-17.1**

NOTES:
RBW=120kHz
Scanned 30-1000 MHz
EUT Height above reference ground plane = 80cm (on polystyrene table)
Azimuth column indicates the orientation of the EUT. X = laying flat, Y = standing straight up, Z = standing on its side.
The EUT was rotated 360° on the turntable and the maximum emissions was recorded for each orientation of the EUT.

6.3 Field Strength of Fundamental Conclusion

The EUT meets the fundamental field strength requirements of FCC Part 15.231 (b) and RSS-210 A1.1. The EUT had a worst case margin to the limit of -11.1dB.

Additionally, the maximum power output was calculated. To convert field strength at 3 meters to power in Watts, the following formula was used:

$$P = (E \times d)^2 / (30 \times G)$$

where:
P = Power in Watts
E = Field strength in V/m
d = Measurement distance in meters
G = Numerical Gain of Antenna

The calculated power output based on the worst case field strength reading of 69.7 dBµV/m is 0.003mW (-25dBm).

7.0 UNINTENTIONAL/SPURIOUS EMISSIONS

Preliminary testing was done in a ferrite lined shielded enclosure for frequency identification from the EUT. All final measurements were done on the OATS.

7.1 Prescan Test Setup and Procedure

The lowest frequency generated or used by the EUT is 13.56MHz, therefore emissions testing began at 10MHz. Prescans from 10MHz to 1GHz were done in the ferrite-lined shielded chamber for EUT frequency identification. These scans are exploratory emission tests only that are voluntarily submitted.

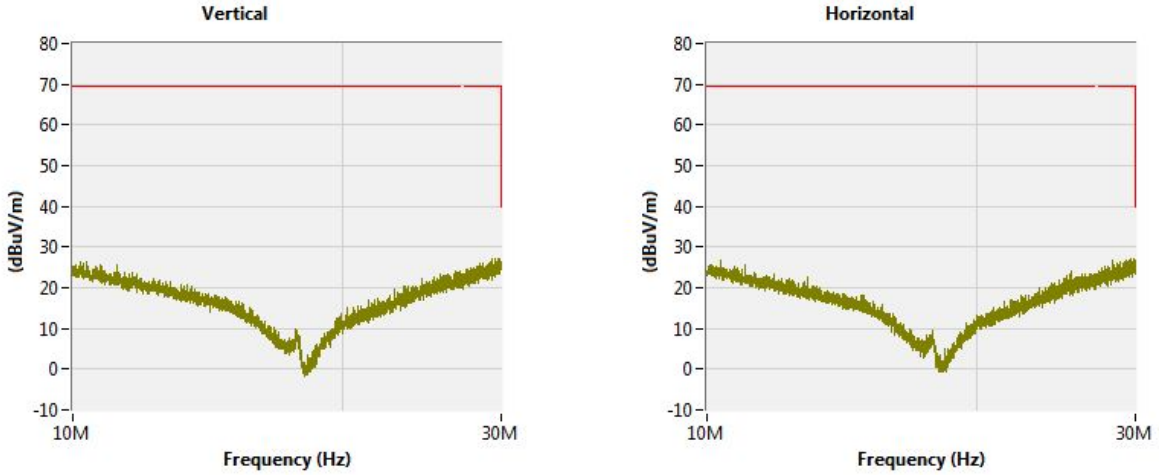
Emissions were measured with the EUT transmitting at 433.92MHz as detailed in sections 2.1 and 2.2 of this report.

7.2 Prescan Measurement Data

The following plots show a summary of the prescan data that was collected.

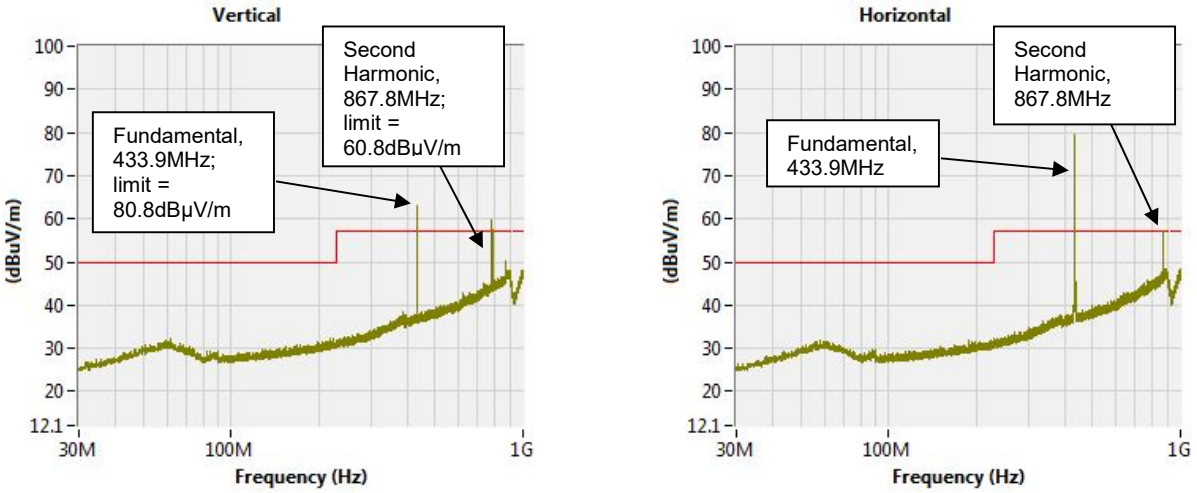
Summary of Prescan Data

10MHz – 30MHz



Scan shows only ambient noise floor from 10 to 30MHz.

30MHz – 1000MHz



NOTE: Above graphs show peak data with quasi-peak limit.

7.3 Radiated Unintentional/Spurious Emissions Test Setup and Procedure

The radiated emissions tests were performed on the 3 meter open area test site, in accordance with ANSI C63.4: 2014.

Place the EUT on the 80 cm high polystyrene table for testing between 10MHz and 1000MHz. For testing above 1000MHz, place the EUT on the 1.5m polystyrene stand. Set the EUT into transmitting mode with modulation as described in sections 2.1 and 2.2 of this report.

Utilizing the radiated emissions method, the EUT was set up on a three meter OATS. The field strength was maximized by rotating the turntable and adjusting the antenna height between 1 and 4 meters. Measurements were further optimized for vertical and horizontal polarization of the receive antenna. The magnetic loop antenna was used from 10 – 30MHz and was set at a fixed height with the center of the loop 1-meter above the reference ground plane.

Emissions were measured with the EUT transmitting at 433.92MHz as detailed in sections 2.1 and 2.2 of this report.

Per FCC 15.231, the limit of spurious emissions was calculated to be 60.8 dBµV/m. This is the limit for spurious emissions per the table in section 4.2 of this report. For a fundamental transmit frequency of 433.92MHz, the limit is calculated to be 1,096 µV/m which is 60.8 dBµV/m.

7.4 Radiated Unintentional/Spurious Emissions Test Results

The data tables on the following page show the Radiated Emissions test results.

7.4 Radiated Unintentional/Spurious Emissions Test Results (continued)

10 – 30MHz, EUT transmitting at 433.92MHz

3-Meter Magnetic Loop Radiated Emissions Results

Date: 3/3/2016
Test Engineer: KM

Customer: Segway
Product: Ninebot Remote Key
Configuration: Constant transmit
EUT Voltage: 9VDC battery (3, 3-Volt batteries)

Temperature (°C): 14.8
Relative Humidity (%): 31

Test Distance: **3 meters**
Frequency Range: **9kHz-30MHz**
Antenna Asset #: **103**
Detector used: **Quasi-peak (QP) for all except as follows: Average (AVG) 9-90kHz and 110-490kHz**
Antenna Polarity: **V=plane of loop perpendicular to EUT face; H=plane of loop parallel to EUT face**

Azimuth (deg)	Ant. Ht. (m)	Ant. Polarity	Frequency (MHz)	Detector (QP or AV)	Reading (dBµV)	Mag Loop E Factor (dB)	25m Cable Factor (dB)	Net (dBµV/m)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dBµV/m)
180.0	1.0	V	0.100	QP	14.9	68.1	0.0	83.0	107.6	-24.6
202.5	1.0	V	0.495	QP	4.2	54.7	0.1	58.9	73.7	-14.8
202.5	1.0	V	1.100	QP	2.5	48.2	0.1	50.8	66.8	-16.0
112.5	1.0	V	5.000	QP	19.5	33.9	0.2	53.6	69.5	-15.9
112.5	1.0	V	13.560	QP	32.5	18.5	0.4	51.3	69.5	-18.2
112.5	1.0	V	27.120	QP	6.6	23.3	0.5	30.5	69.5	-39.0

NOTES:
Use the detector shown based on the frequency.

7.4 Radiated Unintentional/Spurious Emissions Test Results (continued)

30 – 1000MHz, EUT transmitting at 433.92MHz

3-Meter Radiated Emissions Results

Date: 2/17/2016
Test Engineer: GC

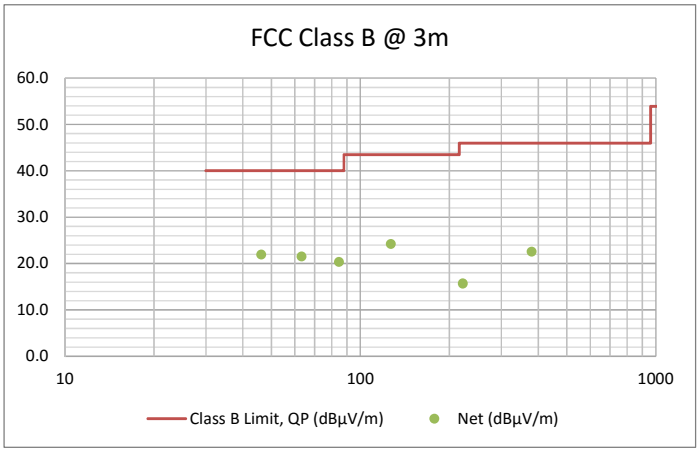
Customer: Segway
Product: Ninebot Remote Key
Configuration: Constant transmit
EUT Voltage: 9VDC battery (3, 3-Volt batteries)

Temperature (°C): 15.4
Relative Humidity (%): 40

Test Distance: **3 meters**
Frequency Range: **30-1000MHz**
Antenna Asset #: **17**

Azimuth (deg)	Ant. Ht. (m)	Ant. Polarity	Frequency (MHz)	QP Reading (dBµV)	3m Antenna Factor (dB)	25m Cable Factor (dB)	Net (dBµV/m)	FCC Class B QP Limit (dBµV/m)	FCC Class B QP Margin (dBµV/m)
0.0	1.0	V	46.2	10.4	10.8	0.7	21.9	40.0	-18.1
0.0	1.2	V	63.2	14.5	6.2	0.9	21.6	40.0	-18.4
0.0	1.0	V	84.5	11.1	8.3	1.0	20.3	40.0	-19.7
0.0	1.0	V	126.8	10.4	12.6	1.2	24.2	43.5	-19.3
0.0	1.0	V	222.1	3.4	10.7	1.6	15.7	46.0	-30.3
0.0	1.0	V	380.0	4.5	15.9	2.2	22.6	46.0	-23.4

NOTES:
RBW=120kHz
Scanned 30-1000 MHz
Azimuth column indicates the orientation of the EUT. X = laying flat, Y = standing straight up, Z = standing on its side
EUT Height above reference ground plane = 80cm (on polystyrene table)



7.4 Radiated Unintentional/Spurious Emissions Test Results (continued)

867.8MHz, second harmonic results

3-Meter Radiated Emissions Results

Date: 2/17/2016
Test Engineer: GC

Customer: Segway
Product: Ninebot Remote Key
Configuration: Constant transmit
EUT Voltage: 9VDC battery (3, 3-Volt batteries)

Temperature (°C): 15.4
Relative Humidity (%): 40

Test Distance: **3 meters**
Frequency Range: **30-1000MHz**
Antenna Asset #: **17**

Azimuth (deg)	Ant. Ht. (m)	Ant. Polarity	Frequency (MHz)	AV Reading (dBµV)	3m Antenna Factor (dB)	25m Cable Factor (dB)	Net (dBµV/m)	FCC 15.231 AV Limit (dBµV/m)	FCC 15.231 AV Margin (dBµV/m)
X	1.0	H	867.8	29.0	21.5	3.4	53.9	60.8	**-6.9**
Y	1.0	H	867.8	27.5	21.5	3.4	52.4	60.8	**-8.4**
Z	1.0	H	867.8	20.7	21.5	3.4	45.6	60.8	**-15.2**

NOTES:
RBW=120kHz
Scanned 30-1000 MHz
Azimuth column indicates the orientation of the EUT. X = laying flat, Y = standing straight up, Z = standing on its side
EUT Height above reference ground plane = 80cm (on polystyrene table)

7.4 Radiated Unintentional/Spurious Emissions Test Results (continued)

1 – 5GHz, EUT transmitting at 433.92MHz

3-Meter Radiated Emissions Results Above 1GHz

Date: 2/16/2016
Test Engineer: ETR

Customer: Segway
Product: Ninebot Remote Key
Configuration: Constant transmit
EUT Voltage: 9VDC battery (3, 3-Volt batteries)

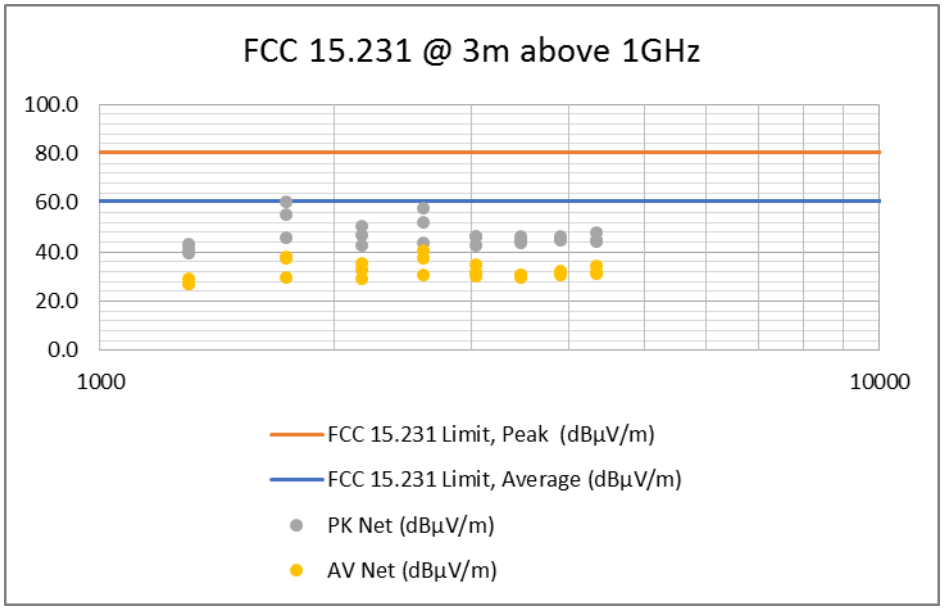
Temperature (°C): 18.4
Relative Humidity (%): 33

Test Distance: **3 meters**
Frequency Range: **>1.0 GHz**
Antenna Asset #: **126**

Azimuth (deg)	Ant. Ht. (m)	Ant. Polarity	Frequency (MHz)	PK Reading (dBµV)	AV Reading (dBµV)	3m Antenna Factor (dB)	25m Cable Factor (dB)	8m Cable Factor (dB)	HP8449B Factor (dB)	PK Net (dBµV/m)	AV Net (dBµV/m)	FCC 15.231 PK Limit ($dB_{\mu}V/m$)	FCC 15.231 PK Margin (dBµV/m)	FCC 15.231 AV Limit ($dB_{\mu}V/m$)	FCC 15.231 AV Margin (dBµV/m)
X	1.0	H	1301.6	46.6	34.4	24.7	4.2	1.7	37.7	39.5	27.3	80.8	-41.3	60.8	-33.5
X	2.0	H	1735.1	60.0	42.1	25.9	4.9	2.0	37.4	55.3	37.4	80.8	-25.5	60.8	-23.4
X	2.5	H	2169.5	48.8	34.2	27.8	5.5	2.2	37.2	47.2	32.6	80.8	-33.6	60.8	-28.2
X	1.9	H	2603.4	51.1	36.5	29.5	6.2	2.4	37.1	52.1	37.5	80.8	-28.7	60.8	-23.3
X	1.9	H	3032.7	43.7	29.3	30.5	6.7	2.6	37.1	46.4	32.0	80.8	-34.4	60.8	-28.8
X	1.6	H	3471.2	40.1	27.2	30.3	7.1	2.8	36.8	43.5	30.6	80.8	-37.3	60.8	-30.2
X	1.0	V	3905.1	39.5	25.5	31.6	7.6	3.1	36.5	45.3	31.3	80.8	-35.5	60.8	-29.5
X	1.0	V	4338.9	38.5	27.9	31.6	8.1	3.3	36.4	45.0	34.4	80.8	-35.8	60.8	-26.4
						#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	80.8	#N/A	60.8	#N/A
Y	1.0	V	1301.6	48.2	33.9	24.7	4.2	1.7	37.7	41.1	26.8	80.8	-39.7	60.8	-34.0
Y	1.5	V	1735.1	50.6	34.3	25.9	4.9	2.0	37.4	45.9	29.6	80.8	-34.9	60.8	-31.2
Y	1.4	V	2169.5	44.6	30.7	27.8	5.5	2.2	37.2	42.9	29.0	80.8	-37.9	60.8	-31.8
Y	1.0	V	2603.4	42.7	29.7	29.5	6.2	2.4	37.1	43.7	30.7	80.8	-37.1	60.8	-30.1
Y	1.0	V	3032.7	40.2	27.6	30.5	6.7	2.6	37.1	42.9	30.3	80.8	-37.9	60.8	-30.5
Y	1.0	V	3471.2	41.4	26.3	30.3	7.1	2.8	36.8	44.9	29.8	80.8	-35.9	60.8	-31.0
Y	1.9	V	3905.1	39.1	24.8	31.6	7.6	3.1	36.5	44.9	30.6	80.8	-35.9	60.8	-30.2
Y	1.9	V	4338.9	37.9	24.6	31.6	8.1	3.3	36.4	44.4	31.1	80.8	-36.4	60.8	-29.7
						#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	80.8	#N/A	60.8	#N/A
Z	1.3	V	1301.6	50.3	36.4	24.7	4.2	1.7	37.7	43.2	29.3	80.8	-37.6	60.8	-31.5
Z	1.0	H	1735.5	65.3	42.5	25.9	4.9	2.0	37.4	60.6	37.8	80.8	-20.2	60.8	-23.0
Z	1.7	H	2169.9	52.1	37.3	27.8	5.5	2.2	37.2	50.5	35.7	80.8	-30.3	60.8	-25.1
Z	2.0	H	2603.3	57.1	39.6	29.5	6.2	2.4	37.1	58.1	40.6	80.8	-22.7	60.8	-20.2
Z	1.3	H	3032.7	43.9	32.3	30.5	6.7	2.6	37.1	46.6	35.0	80.8	-34.2	60.8	-25.8
Z	1.4	H	3471.2	43.1	27.3	30.3	7.1	2.8	36.8	46.5	30.7	80.8	-34.3	60.8	-30.1
Z	1.0	V	3905.1	40.7	26.2	31.6	7.6	3.1	36.5	46.5	32.0	80.8	-34.3	60.8	-28.8
Z	1.0	V	4338.9	41.2	25.2	31.6	8.1	3.3	36.4	47.7	31.7	80.8	-33.1	60.8	-29.1

NOTES:
RBW = 120kHz for ≤ 1000MHz; RBW = 1MHz for >1000MHz
Azimuth column indicates the orientation of the EUT. X = laying flat, Y = standing straight up, Z = standing on its side
Note: Must test three orthogonal positions of the loop antenna.
EUT Height above reference ground plane = 1.5cm (on polystyrene stand)
Scanned 1-5 GHz

7.4 Radiated Unintentional/Spurious Emissions Test Results (continued)



7.5 Radiated Unintentional/Spurious Emissions Conclusion

The EUT meets the radiated unintentional/spurious emissions requirements of FCC Part 15.231 (b) and IC RSS-210, A1.1, Table A. The EUT had a worst case margin to the limit of -6.9dB at 867.8MHz.

8.0 20DB (99% Power) BANDWIDTH MEASUREMENT

8.1 Test Setup and Procedure

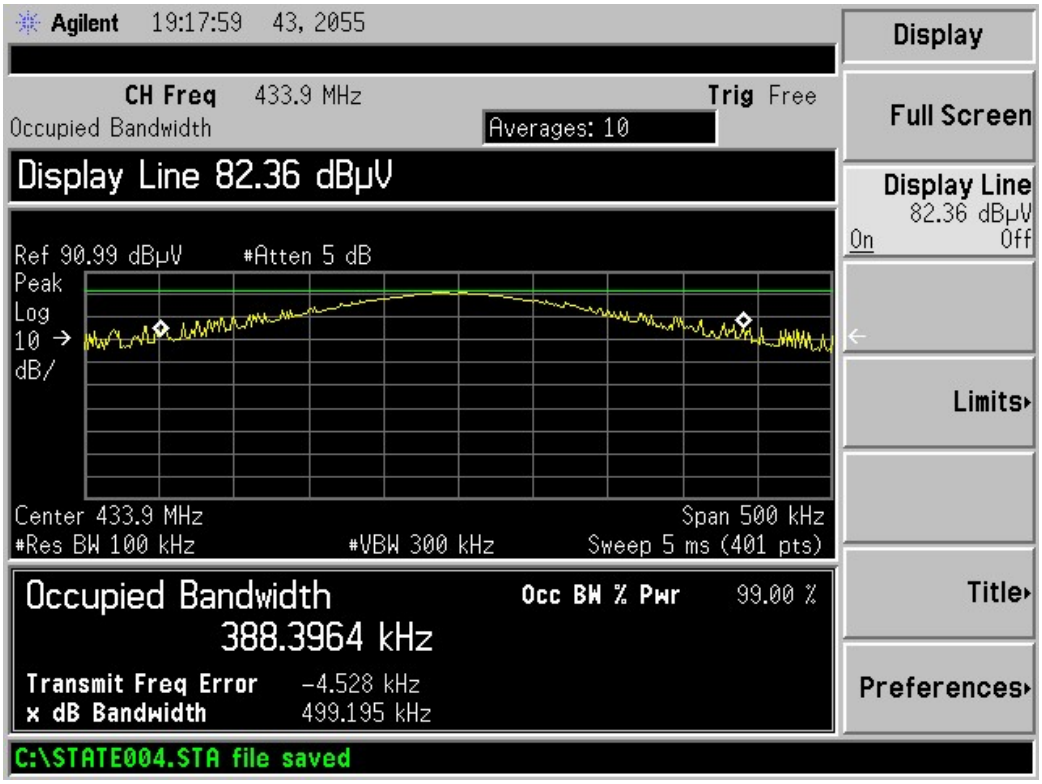
Place the EUT on the 80 cm high polystyrene table. Set the EUT into transmitting mode with modulation as shown in sections 2.1 and 2.2 of this report.

Utilizing the radiated emissions method, the EUT was set up on a three meter OATS. The field strength was maximized by rotating the turntable and adjusting the antenna height between 1 and 4 meters. Measurements were further optimized for vertical and horizontal polarization of the receive antenna.

For the EUT, the 20dB (99% power) bandwidth of the emission shall be no wider than 0.25% of the center frequency of 433.92MHz. Therefore, 0.25% X 433.92MHz equals a maximum 20dB (99% power) bandwidth of 1.08MHz.

8.2 20dB (99% Power) Bandwidth Measurement Test Results

EUT Transmitting at 433.92MHz



8.3 20dB (99% Power) Bandwidth Measurement Conclusion

The EUT meets the 20dB bandwidth requirements of FCC Part 15.231 (c) and met the 99% power bandwidth of IC RSS-210, A1.1.3. The 20dB (99% power) bandwidth of the EUT was 388.4 kHz which is well within the 1.08MHz limit based on the transmit frequency of this EUT.

9.0 PHOTOGRAPHS

Ninebot Remote Key

Additional Photographs can be found in separate documents:

Ninebot Remote Key Tsup.pdf
Ninebot Remote Key Intpho.pdf
Ninebot Remote Key Extpho.pdf.

END OF TEST REPORT