

FCC Test Report

Product Name	Handheld Barcode Scanner	
Model No.	AI-68XX Scanner (X can be 0-9, A-Z, or blank)	
FCC ID.	NBF-AI-68XX	

Applicant	Argox Information Co.,Ltd.	
Address	7F., No.126, Ln. 235, Baociao Rd., Sindian Dist.,	
	New Taipei City 231, Taiwan (R.O.C.)	

Date of Receipt	Nov. 06, 2015		
Issued Date	Apr. 29, 2016		
Report No.	15B0214R-RFUSP01V00		
Report Version	V1.0		
TESTING TAF			

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: Apr. 29, 2016 Report No.: 15B0214R-RFUSP01V00



Product Name	Handheld Barcode Scanner		
Applicant	Argox Information Co.,Ltd.		
Address	7F., No.126, Ln. 235, Baociao Rd., Sindian Dist., New Taipei City 231,		
	Taiwan (R.O.C.)		
Manufacturer	Argox Information Co.,Ltd.		
Model No.	AI-68XX Scanner (X can be 0-9, A-Z, or blank)		
FCC ID.	NBF-AI-68XX		
EUT Rated Voltage	DC 3.7V by Battery		
EUT Test Voltage	DC 3.7V by Battery		
Trade Name	ARGOX		
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2014		
ANSI C63.4: 2014, ANSI C63.10: 2013			
Test Result	Complied		

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Tested By

Nick

(Assistant Engineer / Nick Chen)

Approved By :

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Handheld Barcode Scanner		
Trade Name	ARGOX		
Model No.	AI-68XX Scanner (X can be 0-9, A-Z, or blank)		
FCC ID.	NBF-AI-68XX		
Frequency Range	2402 – 2480MHz		
Channel Number	79		
Type of Modulation	FHSS: GFSK(1Mbps) / π/4DQPSK(2Mbps) / 8DPSK(3Mbps)		
Antenna Type	Monopole Antenna		
Channel Control	Auto		
Antenna Gain	Refer to the table "Antenna List"		

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Walsin	RFCBA000008NN3B801	Monopole	3.44dBi for 2.4 GHz
			Antenna	

Note:

1. The antenna of EUT conforms to FCC 15.203.

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

- 1. The EUT is a Handheld Barcode Scanner with a built-in Bluetooth transceiver.
- 2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
- 3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 4. Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found, through pre-testing, to produce emissions similar to those for 3Mb/s.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK)
	Mode 2: Transmit - 3Mbps (8DPSK)



1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	Non-Shielded, 0.8m
2	Test Fixture	ARGOX	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
А	Signal Cable	Non-Shielded, 0.3m
В	USB Cable	Non-Shielded, 0.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- 1. Setup the EUT as shown in Section 1.4.
- 2. Execute software "CSR Blue Test 3 V2.5" on the EUT.
- 3. Configure the test mode, the test channel, and the data rate.
- 4. Press "OK" to start the continuous Transmit.
- 5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded

from QuieTek Corporation's Web Site: <u>http://www.quietek.com/chinese/about/certificates.aspx?bval=5</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: <u>http://www.quietek.com/</u>

Site Description:	File on Federal Communications Commission FCC Engineering Laboratory			
	7435 Oakland Mills Road			
	Columbia, MD 21046			
	Registration Number: 92195			
Site Name:	Quietek Corporation			
Site Address:	No.5-22, Ruishukeng,			
	Linkou Dist. New Taipei City 24451,			
	Taiwan, R.O.C.			
	TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789			
	E-Mail : service@quietek.com			

FCC Accreditation Number: TW1014

2. Conducted Emission

2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
Х	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
Х	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar., 2016	EUT
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	No.1 Shielded Room				

Note:

- 1. All equipments are calibrated every one year.
- 2. The test instruments marked by "X" are used to measure the final test results.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit					
Frequency	Limits				
MHz	QP	AV			
0.15 - 0.50	66-56	56-46			
0.50-5.0	56	46			
5.0 - 30	60	50			

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.5. Uncertainty

± 2.26 dB



2.6. Test Result of Conducted Emission

Owing to the DC operation of EUT, this test item is not performed.

3. Peak Power Output

3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Х	Power Meter	Anritsu	ML2495A/6K00003357	May, 2015
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2015

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product	:	Handheld Barcode Scanner	
Test Item	:	Peak Power Output	
Test Site	:	No.3 OATS	
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)	

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	5.11	1 Watt= 30 dBm	Pass
Channel 39	2441.00	4.46	1 Watt= 30 dBm	Pass
Channel 78	2480.00	3.66	1 Watt= 30 dBm	Pass



Product	:	Handheld Barcode Scanner
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	5.03	1 Watt= 30 dBm	Pass
Channel 39	2441.00	4.43	1 Watt= 30 dBm	Pass
Channel 78	2480.00	3.53	1 Watt= 30 dBm	Pass



4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Х	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep, 2015
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun., 2015
	Х	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun., 2015
	Х	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun., 2015
	Х	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun., 2015

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
CB # 8	Х	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	Х	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2016
	Х	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	Х	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	Х	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	Х	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	Х	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

sBelow 1GHz





Above 1GHz



4.3. Limits

General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits					
Frequency MHz	uV/m @3m	dBµV/m@3m			
30-88	100	40			
88-216	150	43.5			
216-960	200	46			
Above 960	500	54			

Remarks: 1. RF Voltage $(dB\mu V) = 20 \log RF$ Voltage (uV)

- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.249 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

Product Test Item Test Site Test Mode	 Handheld Barcode Scanner Harmonic Radiated Emission No.3 OATS Mode 1: Transmit - 1Mbps (GFSK)(2402MHz) 				
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
4804.000	3.327	36.620	39.947	-34.053	74.000
7206.000	10.136	31.310	41.446	-32.554	74.000
9608.000	13.706	31.460	45.166	-28.834	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4804.000	6.638	39.010	45.647	-28.353	74.000
7206.000	11.005	31.040	42.045	-31.955	74.000
9608.000	14.103	31.630	45.733	-28.267	74.000
Average					
Detector:					

4.6. Test Result of Radiated Emission

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: Handheld Barcode Scanner						
Test Item	: Harmonic Radiated Emission						
Test Site	: No.3 OATS						
Test Mode	Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	dBµV/m	dB	dBµV/m		
Horizontal							
Peak Detector:							
4882.000	3.001	33.910	36.911	-37.089	74.000		
7323.000	11.846	31.600	43.447	-30.553	74.000		
9764.000	12.563	31.880	44.443	-29.557	74.000		
Average							
Detector:							
Vertical							
Peak Detector:							
4882.000	5.713	35.330	41.044	-32.956	74.000		
7323.000	12.727	31.620	44.348	-29.652	74.000		
9764.000	13.028	31.350	44.378	-29.622	74.000		
Average							

Detector:

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Handheld Barcode Scanner
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
4960.000	2.760	37.020	39.780	-34.220	74.000
7440.000	12.567	32.710	45.276	-28.724	74.000
9920.000	13.456	33.300	46.756	-27.244	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4960.000	5.557	37.400	42.957	-31.043	74.000
7440.000	13.426	32.990	46.415	-27.585	74.000
9920.000	13.958	32.310	46.268	-27.732	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Test Item Test Site Test Mode	 Handheld Barcode Scanner Harmonic Radiated Emission No.3 OATS Made 2: Transmit. 2004pps (20020011-) 				
Test Widde	. Wide 2. 11	unshint - Striops ((0D1 51()(2+021(112)		
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
4804.000	3.327	38.740	42.067	-31.933	74.000
7206.000	10.136	31.440	41.576	-32.424	74.000
9608.000	13.706	32.270	45.976	-28.024	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4804.000	6.638	42.470	49.107	-24.893	74.000
7206.000	11.005	31.770	42.775	-31.225	74.000
9608.000	14.103	31.900	46.003	-27.997	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: Handheld Barcode Scanner						
Test Item	: Harmonic Radiated Emission						
Test Site	: No.3 OATS						
Test Mode	: Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)						
				,			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	dBµV/m	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4882.000	3.001	34.090	37.091	-36.909	74.000		
7323.000	11.846	32.180	44.027	-29.973	74.000		
9764.000	12.563	31.850	44.413	-29.587	74.000		
Average							
Detector:							
Vertical							
Peak Detector:							
4882.000	5.713	36.960	42.674	-31.326	74.000		
7323.000	12.727	31.740	44.468	-29.532	74.000		
9764.000	13.028	31.810	44.838	-29.162	74.000		
Average							
Detector:							

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: Handheld Barcode Scanner						
Test Item	: Harmonic Radiated Emission						
Test Site	: No.3 OATS						
Test Mode	: Mode 2:	: Transmit - 3Mbp	os (8DPSK) (2480MH	[z)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	dBµV/m	dB	dBµV/m		
Horizontal							
Peak Detector:							
4960.000	2.760	36.550	39.310	-34.690	74.000		
7440.000	12.567	32.800	45.366	-28.634	74.000		
9920.000	13.456	33.030	46.486	-27.514	74.000		
Average							
Detector:							
Vertical							
Peak Detector:							
4960.000	5.557	38.790	44.347	-29.653	74.000		
7440.000	13.426	32.830	46.255	-27.745	74.000		
9920.000	13.958	32.760	46.718	-27.282	74.000		
Average							
Detector:							

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Handheld Barcode Scanner
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	$dB\mu V/m$
Horizontal					
42.652	-4.168	40.005	35.837	-4.163	40.000
207.130	-11.127	40.611	29.484	-14.016	43.500
388.478	-1.647	28.422	26.775	-19.225	46.000
597.942	3.999	30.952	34.951	-11.049	46.000
832.710	5.750	31.227	36.978	-9.022	46.000
943.768	6.494	27.002	33.496	-12.504	46.000
Vertical					
41.246	-1.570	35.552	33.982	-6.018	40.000
226.812	-8.558	45.098	36.540	-9.460	46.000
381.449	-1.656	31.943	30.287	-15.713	46.000
541.710	-0.172	24.288	24.116	-21.884	46.000
770.855	3.106	25.510	28.616	-17.384	46.000
926.899	5.943	27.247	33.190	-12.810	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Handheld Barcode Scanner
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
39.841	-3.633	36.239	32.605	-7.395	40.000
207.130	-11.127	42.406	31.279	-12.221	43.500
346.304	-2.215	36.508	34.293	-11.707	46.000
597.942	3.999	30.952	34.951	-11.049	46.000
745.551	3.310	26.154	29.465	-16.535	46.000
894.565	5.079	23.779	28.859	-17.141	46.000
Vertical					
46.870	-5.281	42.678	37.397	-2.603	40.000
193.072	-9.846	41.029	31.183	-12.317	43.500
419.406	-8.645	34.280	25.635	-20.365	46.000
597.942	-3.006	30.952	27.947	-18.053	46.000
745.551	1.763	26.154	27.918	-18.082	46.000
839.739	2.760	29.688	32.448	-13.552	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.

5. **RF Antenna Conducted Test**

5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note: 1. All equipments are calibrated every one year.

2. The test instruments Marked "X" are used to measure the final test results.

5.2. Test Setup



5.3. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

5.5. Uncertainty

± 150Hz



5.6. Test Result of RF Antenna Conducted Test

Product	:	Handheld Barcode Scanner
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)



Figure Channel 39:



Figure Channel 78:



Note: The above test pattern is synthesized by multiple of the frequency range.



Product	:	Handheld Barcode Scanner
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)



Figure Channel 39:





Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Equipment

RF Radiated Measurement:

The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
⊠CB # 8	Х	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	Х	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2016
	Х	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	Х	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	Х	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	Х	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	Х	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:

Above 1GHz



6.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

6.5. Uncertainty

- ± 3.9 dB above 1GHz
- ± 3.8 dB below 1GHz



6.6. **Test Result of Band Edge**

Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

RF Radiated Measurement (Horizontal):

Channel No	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2368.261	31.425	28.811	60.235	74.00	54.00	Pass
00 (Peak)	2390.000	31.509	25.511	57.020	74.00	54.00	Pass
00 (Peak)	2400.000	31.561	27.176	58.737			
00 (Peak)	2402.174	31.574	54.081	85.656			
00 (Average)	2378.261	31.463	13.558	45.022	74.00	54.00	Pass
00 (Average)	2390.000	31.509	13.388	44.897	74.00	54.00	Pass
00 (Average)	2400.000	31.561	13.868	45.429			
00 (Average)	2402.029	31.573	45.960	77.534			





Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2.
- 3.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

RF Radiated Measurement (VERTICAL):

Channal Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2381.449	30.955	26.814	57.769	74.00	54.00	Pass
00 (Peak)	2390.000	30.915	26.501	57.416	74.00	54.00	Pass
00 (Peak)	2400.000	30.912	27.110	58.022			
00 (Peak)	2402.174	30.917	50.833	81.751			
00 (Average)	2380.725	30.958	13.441	44.399	74.00	54.00	Pass
00 (Average)	2390.000	30.915	13.362	44.277	74.00	54.00	Pass
00 (Average)	2400.000	30.912	13.598	44.510			
00 (Average)	2402.029	30.917	42.468	73.385			

Figure Channel 00:

VERTICAL (Peak)



Figure Channel 00:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- 5.
- Measurement Level = Reading Level + Correction Factor. The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

RF Radiated Measurement (Horizontal):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2479.732	32.154	57.950	90.104			
78 (Peak)	2483.500	32.182	26.069	58.251	74.00	54.00	Pass
78 (Peak)	2483.645	32.183	28.399	60.582	74.00	54.00	Pass
78 (Average)	2480.022	32.156	49.306	81.462			
78 (Average)	2483.500	32.182	13.993	46.175	74.00	54.00	Pass
78 (Average)	2509.007	32.253	15.249	47.503	74.00	54.00	Pass

Figure Channel 78:

Horizontal (Peak)



Figure Channel 78:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1. 2. 3. 4.

- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2479.877	31.411	53.625	85.036			
78 (Peak)	2483.500	31.435	26.286	57.721	74.00	54.00	Pass
78 (Peak)	2486.254	31.454	27.413	58.867	74.00	54.00	Pass
78 (Average)	2480.022	31.412	45.000	76.412			
78 (Average)	2483.500	31.435	13.896	45.331	74.00	54.00	Pass
78 (Average)	2509.152	31.546	15.329	46.874	74.00	54.00	Pass

Figure Channel 78:

VERTICAL (Peak)



Figure Channel 78:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 1. 2. 3. 4.

- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Result
	(MHZ)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	
00 (Peak)	2378.986	31.466	28.641	60.107	74.00	54.00	Pass
00 (Peak)	2390.000	31.509	27.180	58.689	74.00	54.00	Pass
00 (Peak)	2400.000	31.561	34.344	65.905			
00 (Peak)	2402.029	31.573	58.927	90.501			
00 (Average)	2379.855	31.470	13.557	45.027	74.00	54.00	Pass
00 (Average)	2390.000	31.509	13.484	44.993	74.00	54.00	Pass
00 (Average)	2400.000	31.561	17.769	49.330			
00 (Average)	2402.029	31.573	47.145	78.719			



Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Result
Chamiler No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2388.841	30.921	27.917	58.838	74.00	54.00	Pass
00 (Peak)	2390.000	30.915	26.435	57.350	74.00	54.00	Pass
00 (Peak)	2400.000	30.912	30.073	60.985			
00 (Peak)	2401.884	30.917	54.002	84.919			
00 (Average)	2380.725	30.958	13.466	44.424	74.00	54.00	Pass
00 (Average)	2390.000	30.915	13.448	44.363	74.00	54.00	Pass
00 (Average)	2400.000	30.912	15.477	46.389			
00 (Average)	2402.029	30.917	43.376	74.293			

Figure Channel 00:

VERTICAL (Peak)



Figure Channel 00:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



:	Handheld Barcode Scanner
:	Band Edge
:	No.3 OATS
:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)
	: : :

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2479.877	32.155	61.439	93.594			
78 (Peak)	2483.500	32.182	28.220	60.402	74.00	54.00	Pass
78 (Peak)	2489.732	32.229	28.643	60.872	74.00	54.00	Pass
78 (Average)	2480.022	32.156	48.288	80.444			
78 (Average)	2483.500	32.182	14.694	46.876	74.00	54.00	Pass
78 (Average)	2508.862	32.254	15.154	47.408	74.00	54.00	Pass

Figure Channel 00:

Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 1. 2. 3. 4.

- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2479.877	31.411	58.076	89.487			
78 (Peak)	2483.500	31.435	27.334	58.769	74.00	54.00	Pass
78 (Peak)	2487.848	31.465	29.242	60.707	74.00	54.00	Pass
78 (Average)	2480.022	31.412	46.472	77.884			
78 (Average)	2483.500	31.435	14.258	45.693	74.00	54.00	Pass
78 (Average)	2509.007	31.544	15.299	46.844	74.00	54.00	Pass

Figure Channel 78:

VERTICAL (Peak)



Figure Channel 78:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1. 2. 3. 4.

- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz) (Hopping)

RF Radiated Measurement (Horizontal):

Channal Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2387.391	31.499	27.797	59.296	74.00	54.00	Pass
00 (Peak)	2390.000	31.509	26.557	58.066	74.00	54.00	Pass
00 (Peak)	2400.000	31.561	32.384	63.945			
00 (Peak)	2439.855	31.851	56.620	88.471			
00 (Average)	2390.000	31.509	15.638	47.147	74.00	54.00	Pass
00 (Average)	2400.000	31.561	25.297	56.858			
00 (Average)	2440.000	31.852	46.719	78.571			

Figure Channel 00:

Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 1. 2. 3. 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz) (Hopping)

RF Radiated Measurement (VERTICAL):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2387.101	30.929	28.326	59.255	74.00	54.00	Pass
00 (Peak)	2390.000	30.915	26.835	57.750	74.00	54.00	Pass
00 (Peak)	2400.000	30.912	33.025	63.937			
00 (Peak)	2439.855	31.138	53.016	84.154			
00 (Average)	2383.478	30.945	16.357	47.302	74.00	54.00	Pass
00 (Average)	2390.000	30.915	15.680	46.595	74.00	54.00	Pass
00 (Average)	2400.000	30.912	23.998	54.910			
00 (Average)	2440.000	31.139	44.958	76.097			

Figure Channel 00:

VERTICAL (Peak)





VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1. 2. 3.

- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz) (Hopping)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2477.848	32.139	61.758	93.897			
78 (Peak)	2483.500	32.182	27.442	59.624	74.00	54.00	Pass
78 (Peak)	2517.558	32.226	29.622	61.848	74.00	54.00	Pass
78 (Average)	2480.022	32.156	54.095	86.251			
78 (Average)	2483.500	32.182	17.063	49.245	74.00	54.00	Pass
78 (Average)	2504.949	32.261	18.058	50.319	74.00	54.00	Pass

Figure Channel 78:

Horizontal (Peak)



Figure Channel 78:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level 1.
- 2. 3. 4. 5.

- "*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz) (Hopping)

RF Radiated Measurement (VERTICAL):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2478.862	31.404	56.631	88.035			
78 (Peak)	2483.500	31.435	26.982	58.417	74.00	54.00	Pass
78 (Peak)	2494.370	31.509	28.965	60.474	74.00	54.00	Pass
78 (Average)	2479.007	31.405	47.222	78.627			
78 (Average)	2483.500	31.435	16.360	47.795	74.00	54.00	Pass
78 (Average)	2509.007	31.544	18.250	49.795	74.00	54.00	Pass

Figure Channel 78:

VERTICAL (Peak)





VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 1. 2. 3. 4.

- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz) (Hopping)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Decult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2377.681	31.462	28.582	60.043	74.00	54.00	Pass
00 (Peak)	2390.000	31.509	26.764	58.273	74.00	54.00	Pass
00 (Peak)	2400.000	31.561	33.301	64.862			
00 (Peak)	2440.000	31.852	60.459	92.311			
00 (Average)	2388.551	31.504	17.424	48.928	74.00	54.00	Pass
00 (Average)	2390.000	31.509	15.589	47.098	74.00	54.00	Pass
00 (Average)	2400.000	31.561	21.183	52.744			
00 (Average)	2440.000	31.852	48.175	80.027			

Figure Channel 00:

Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- 1.
- 2.
- 3.
- 4.
- 5.
- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. The average measurement was not performed when the peak measured data is under the limit of average detection 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz) (Hopping)

RF Radiated Measurement (VERTICAL):

Channel No	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Result
Chamber 100.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	(dBµV/m)	neosun
00 (Peak)	2387.246	30.928	27.715	58.643	74.00	54.00	Pass
00 (Peak)	2390.000	30.915	26.670	57.585	74.00	54.00	Pass
00 (Peak)	2400.000	30.912	27.346	58.258			
00 (Peak)	2439.855	31.138	54.378	85.516			
00 (Average)	2389.130	30.919	16.345	47.264	74.00	54.00	Pass
00 (Average)	2390.000	30.915	15.592	46.507	74.00	54.00	Pass
00 (Average)	2400.000	30.912	18.060	48.972			
00 (Average)	2440.000	31.139	46.15	77.289			

Figure Channel 00:

VERTICAL (Peak)



Figure Channel 00:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz) (Hopping)

RF Radiated Measurement (Horizontal):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	$(dB\mu V/m)$	Result
78 (Peak)	2478.862	32.147	61.608	93.755			
78 (Peak)	2483.500	32.182	27.843	60.025	74.00	54.00	Pass
78 (Peak)	2505.674	32.260	28.686	60.946	74.00	54.00	Pass
78 (Average)	2479.007	32.148	50.347	82.495			
78 (Average)	2483.500	32.182	16.528	48.710	74.00	54.00	Pass
78 (Average)	2488.862	32.223	17.714	49.937	74.00	54.00	Pass

Figure Channel 00:

Horizontal (Peak)



Figure Channel 00:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 1. 2. 3. 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	Handheld Barcode Scanner
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz) (Hopping)

RF Radiated Measurement (VERTICAL):

Channal Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2479.007	31.405	58.150	89.555			
78 (Peak)	2483.500	31.435	27.884	59.319	74.00	54.00	Pass
78 (Peak)	2485.094	31.446	28.584	60.030	74.00	54.00	Pass
78 (Average)	2479.152	31.406	47.455	78.861			
78 (Average)	2483.500	31.435	16.261	47.696	74.00	54.00	Pass
78 (Average)	2509.152	31.546	18.451	49.996	74.00	54.00	Pass

Figure Channel 78:

VERTICAL (Peak)



Figure Channel 78:

VERTICAL (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- Measurement Level = Reading Level + Correction Factor. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.

7. Channel Number

7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

N/A

7.6. Test Result of Channel Number

Product	:	Handheld Barcode Scanner
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range	Measurement	Required Limit	Pagult	
(MHz)	(Hopping Channel)	(Hopping Channel)	Kesun	
2402 ~ 2480	79	>75	Pass	

2402-2421MHz

2422-2441MHz

🗱 Keysight Spectrum Analyzer - Swept SA		0.4	BK Keysight Spectrum Analyzer - Swept SA	1		012
Center Freq 2.411000000 GHz Avg Type: Log-Pwr	04:14:13 PH Apr 06, 2016 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency	Ref Level 23.50 dBm	SENSE: INT	Aug Type: Log-Pwr TRACE 1 TYPE M	06, 2016 2 3 4 5 6 Amplitude
IFGain:Low #Atten: 30 dB	DET P NNNNN	Auto Tune		FGain:Low #Atten: 50 dB	DET	RefLevel
Ref Offset 0.5 dB Mkr2 2. 10 dB/div Ref 20.50 dBm	.421 000 GHz 19.63 dBm	Auto Tune	Ref Offset 0.5 dB 10 dB/div Ref 23.50 dBm		Mkr2 2.441 00 19.51	GHZ 23.50 dBm
	WWV ¹ 2	Center Freq 2.411000000 GHz	1 135 A1	www	www	Attenuation [50 dB]
-195 // 295		Start Freq 2.400500000 GHz	-16.5 			Scale/Div 10 dB
-85		Stop Freq 2.421500000 GHz	-46.5 -66.5 -66.5			Scale Type
Start 2.40050 GHz St #Res BW 100 kHz #VBW 100 kHz Sweep 2.53	top 2.42150 GHz 33 ms (1001 pts)	CF Step 2.100000 MHz Auto Man	Start 2.42150 GHz #Res BW 100 kHz	#VBW 100 kHz	Stop 2.4415 Sweep 2.467 ms (100	0 GHz 1 pts) Presel Center
IDD IDD <td>100000000</td> <td>Freq Offset 0 Hz</td> <td>$\begin{array}{c ccccccccccccccccccccccccccccccccccc$</td> <td>00 GHz 19.58 dBm 00 GHz 19.51 dBm</td> <td></td> <td>Presel Adjust 0 Hz</td>	100000000	Freq Offset 0 Hz	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	00 GHz 19.58 dBm 00 GHz 19.51 dBm		Presel Adjust 0 Hz
			7 8 9 9 10 11			More 1 of 2
MSG STATUS			MSG DAlignment Completed		STATUS	

2442-2461MHz

2462-2480MHz

🗱 Keysight Spectrum Analyzer - Swept SA		0 0 0	🗱 Keysight Spectrum Analyzer - Swept SA	0.0
RL RF S0 (2) AC SERVICE SMT Start Freq 2.441500000 GHz To Service SMT Ave	ALIGN AUTO 04:18:05 PM Apr 06, 2016 Vg Type: Log-Pwr TRACE 1 2 3 4 5 6	Frequency	RL RF SD D AC SENSE::INT ALICH AUTO 04/19/16 FM Agr06, 2016 Start Freq 2.461500000 GHz Avg Type: Log-Pwr TRACE 12.3.4.5.6	Frequency
PRO: Fast Ing: Free Kun IFGainLow #Atten: 50 dB Ref Offset 0.5 dB 10 dB/div Ref 23 50 dBm	Mkr2 2.461 00 GHz 19.40 dBm	Auto Tune	PRC Fait Ing. Pres Kin 	Auto Tune
		Center Freq 2.451500000 GHz		Center Freq 2.471500000 GHz
365		Start Freq 2.441500000 GHz		Start Freq 2.461500000 GHz
46.5		Stop Freq 2.461500000 GHz	465	Stop Freq 2.481500000 GHz
Start 2.44150 GHz #Res BW 100 kHz #VBW 100 kHz	Stop 2.46150 GHz Sweep 2.467 ms (1001 pts)	CF Step 2.000000 MHz Auto Man	Start 2.46150 GHz Stop 2.48150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 2.467 ms (1001 pts)	CF Step 2.000000 MHz Auto Man
Line 1 N 1 f 2.442 00 GHz 19.24 dBm 2 N 1 f 2.461 00 GHz 19.40 dBm 3 4 5 5 5	FUNCTION WIGHT	Freq Offset 0 Hz	UNC EXECUTE ECC X Y FUNCTION F	Freq Offset 0 Hz
6			5	
Meg .	stans		et i i i i i i i i i i i i i i i i i i i	



Product	:	Handheld Barcode Scanner
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Frequency Range	Measurement	Required Limit	Result	
(MHz)	(Hopping Channel)	(Hopping Channel)	Kesult	
$2402\sim 2480$	79	>75	Pass	

2402-2421MHz

2422-2441MHz



2442-2461MHz

2462-2480MHz

M Keysight Spectrum Analyzer - Swept SA	04	🗱 Keysight Spectrum Analyzer - Swept SA
RL RF 59 0 AC SENSEDIT ALDON ANTO 0450 AS FM A2106, Start Freq 2.441500000 GHz Tric: Free Run Tric: Free Run Tric: Run Tric: Run Tric: Run Tric: Run Tric: Run Run Tric: Run	Frequency	RL RF ISO AC SENSE SMT ALION AUTO 045235 FM Agrob, 2016 Frequency Start Freq 2.461500000 GHz Trig: Free Run Avg Type: Log-Pwr TRACE[12:3:4:5:6 Frequency
If Galaction #Atten: 10 dB Set[P MM Galaction Mkr2 2,461 00 G 0 10 dB/dtv Ref 0f5s0 dB -24.30 df	Hz Auto Tune	Ref Offset 0.5 dB Mkr2 2.480 00 GHz Auto Tun 10 dB/div Ref 0.50 dBm -24.49 dBm Auto Tun
	Center Freq 2.451500000 GHz	Log Center Fre 950 1 125 1 2471500000 GH
.95 -05 -05	Start Freq 2.441500000 GHz	395 495 495
65	Stop Freq 2.461500000 GHz	
Start 2.44150 GHz Stop 2.46150 G #Res BW 100 kHz #VBW 100 kHz Sweep 2.467 ms (1001	GHz CF Step 2.000000 MHz Auto Man	Start 2.46150 GHz Stop 2.48150 GHz CF Ste RRes BW 100 kHz #VBW 100 kHz Sweep 2.467 ms (100 101 ms) 2000000 Million CVC Workshop Auto Mail Mail Mail
N f 2.442 00 GHz -24.41 dBm N ↑ 7 2.461 00 GHz -24.30 dBm 3 ↓ ↑ 2.461 00 GHz -24.30 dBm 4 ↓ ↓ ↓ ↓ 5 ↓ ↓ ↓	Freq Offset 0 Hz	I N I I 2.452.00 GHz -24.28 dBm Image: Comparison of the comparison
0 -		9 9 10 11
e status		+ +



8. Channel Separation

8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note: 1. All equipments are calibrated every one year.

2. The test instruments mark by "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

 \pm 150Hz

8.6. Test Result of Channel Separation

:	Handheld Barcode Scanner
:	Channel Separation
:	No.3 OATS
:	Mode 1: Transmit - 1Mbps (GFSK)
	:

	Fraguanau	Measurement	Limit	Limit of (2/3)*20dB		
Channel No.	(MHz)	Level	$(l_{2}\mathbf{U}_{2})$	Dondwidth (kUz)	Result	
	(MHZ)	(kHz)	(кпz)	Bandwidun (KHZ)		
00	2402	1000	>25 kHz	626.0	Pass	
39	2441	1000	>25 kHz	626.0	Pass	
78	2480	1000	>25 kHz	628.0	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

🊺 Ke	ysight S	Spectru	um Ai	nalyzer - Swe	ept SA											×
K KCen	ter	Fre	RF q 2	50 Ω .40200	AC 0000 G	iHz	_	SEN	NSE:INT	Avg Ty	ALIGN AU	uto Pwr	03:44:59 PI TRAC	Apr 06, 2016	Frequency	У
						PNO: Wide FGain:Lov	v v	#Atten: 3	0 dB			110	DE		Auto T	Гune
10 d	B/div	F	Ref (Ref	Offset 0.5 20.50 c	dB IBm						IV		2.403 6.1	00 GHZ 13 dBm		
Log 10.5 0.500										2					Center 2.402000000	Freq) GHz
-9.50 -19.5 -29.5 -39.5							\sim								Start 2.397000000	Freq) GHz
-49.5 -59.5 -69.5	hologoga 	Marris	~									· - · ·	and west	Winner	Stop 2.407000000	Freq) GHz
Cen #Re	ter 2 s BV	2.40 N 10	200 00 k	00 GHz (Hz		#V	вw	100 kHz	5.0		#Swee	p 50	Span 1 0.0 ms (0.00 MHz 1001 pts)	CF \$ 1.000000 Auto	Step MHz Man
1 2 3 4 5	N N	1 1	f		2.402 2.403	00 GHz 00 GHz		6.11 dE 6.13 dE	3m 3m		ONCTION W		FUNCTION		Freq O	ffset 0 Hz
7 8 9 10 11																
I I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII								III			s	TATUS		ł.		

Channel 00 (2402MHz)



No.									(
Key	ysight	Spect	rum A	Analyzer - Swe	pt SA			NOTATI			02-51-54.0	1 4	
Con	tor	Ere		2 44400		17	SE	NSE:INT	Ava T	vpe: Log-Pwr	U3:51:54 P	E 1 2 3 4 5 6	Frequency
Cell	lei	FIG	y 2	2.44100	PN	IZ IO: Wide G	Trig: Fre	e Run		,,	TY	PE M WWWW	
					IFO	Gain:Low	#Atten: 3	0 dB			DI		
										Mkr	2 2 442	00 GHz	Auto Tune
			Ref	Offset 0.5	dB						5	56 dBm	
Loa	Biaiv	/	Rei	20.50 0	DIII	1	1	1			v .		
10.5								<u> </u>	2				Contor From
10.0							-	k_{γ}	~~~				Center Freq
0.500													2.441000000 GHz
-9.50													
19.5									$\langle \rangle$				
-15.5							1		Ì				Start Freq
-29.5			-				$\overline{\mathbf{N}}$			\Box			2.436000000 GHz
-39.5						n Am				\rightarrow	A		
40 E	whether	Alexan	m.		now	11.84				And And	Ser Com	hopen and	
-45.0				and the second sec								and the second s	Stop Freg
-59.5													2 446000000 CH7
-69.5													2.440000000 0112
Cen	ter :	2.44	110	00 GHz							Span 1	0.00 MHz	CF Step
#Re	s Bl	N 1	00	kHz		#VB\	V 100 kHz			#Sweep 5	00.0 ms (1001 pts)	1.000000 MHz
										-			<u>Auto</u> Man
MKR	MODE	TRC	SCL		X		Y	FL	INCTION	FUNCTION WIDTH	FUNCTION	ON VALUE	
2	N	1	T f		2.441 0		<u>5.5/ d</u>	Bm Bm					
3		-	-		2.442 0	0 0112	0.00 u	5111					Freq Offset
4													0 Hz
5								_					
7													
8													
9													
10													
•													
MSG										CTATIL	e .		
Mag										STATU	3		

Channel 39 (2441MHz)

Channel 78 (2480MHz)





Product	:	Handheld Barcode Scanner
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Eroquerey	Measurement	Limit	Limit of (2/3)*20dB	
	(MHz)	Level	(HII-)	Dondwidth (1-11-)	Result
	(MHZ)	(kHz)	(кпz)	Bandwidtii (KHZ)	
00	2402	1000	>25 kHz	842.0	Pass
39	2441	1000	>25 kHz	842.0	Pass
78	2480	1000	>25 kHz	842.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

🎽 К	eysight	Spect	rum A	Analyzer - Swe	pt SA										
Cei	nter	Fre	RF Pq 2	50 Ω 2.40200	AC 0000 GH	łz		SENS	E:INT	Avg	/ Type	LIGN AUTO	04:31:45 PI TRAC	M Apr 06, 2016	Frequency
10 (dB/div	v	Ref Ref	Offset 0.5 5 20.50 d	dB IBm	NO: Wide Gain:Low	₩A	ig: Free F .tten: 30	dB			Mkr	2 2.403 8.3	00 GHz 85 dBm	Auto Tune
Log 10.: 0.500 -9.50								~~~	1 Land	2					Center Freq 2.402000000 GHz
-19.(-29.(-39.(5 — 5 —										6	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·//~	·~~~,	Start Freq 2.397000000 GHz
-49.(-59.(-69.(5 5	-andrail.o	3 80/1	A Constant of the second of th											Stop Freq 2.407000000 GHz
Cei #Re	nter es B	2.40 W 1	020 00	00 GHz kHz		#VE	SW 100) kHz			#\$	Sweep 5	Span 1 00.0 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz Auto Man
MKR 1 2 3 4 5 6 7 8 9 10 11 11 <	MOD: N				X 2.402 0 2.403 0	0 GHz 0 GHz		Y <u>8.86 dBr</u> 8.85 dBr	n n n	NCTION			FUNCTIO		Freq Offset 0 Hz
MSG												STATUS	3		

Channel 00 (2402MHz)



_					0		(- · · ·)			
🊺 Keysight S	Spectrum	Analyzer - Sw	ept SA								
LXI RL	RF	50 Ω	AC	-	SEN	ISE:INT		ALIGN AUTO	04:37:38 F	M Apr 06, 2016	Frequency
Center	Freq	2.44100	00000 GH	z		Dun	Avg I	ype: Log-Pwr	TY	DE 1 2 3 4 5 6	Trequency
			PI	NO:Wide 🕞	#Atten: 3	dB				ETPNNNN	
				Jam.LOw							Auto Tune
	Ref	Offset 0.	5 dB					MK	r2 2.44 <u>2</u>	00 GHz	/
10 dB/div	Re	f 20.50 (dBm						7.	15 dBm	
Log						1	2				
10.5											Center Freq
0.500						41	1VV				2.441000000 GHz
0.50							$\langle \rangle$				
-9.50					1						
-19.5											Start From
-29.5				<u> </u>	~			han			
									n n		2.436000000 GHZ
-39.5			hand	- All and a second				¥	the second	ma	
-49.5	Autor an		prv.							- Sour	
59 F											Stop Freq
-35.5											2.446000000 GHz
-69.5									-		
Center 2	2.4410	00 GHz							Span 1	0.00 MHz	CF Step
#Res B	N 100	KHZ		#VBV	V 100 KHZ			#Sweep :	500.0 ms ((1001 pts)	1.000000 MHz
MKR MODE	TRC SCI		х		Y	FL	INCTION	FUNCTION WIDTH	FUNCT	ON VALUE	<u>Auto</u> Man
1 N	1 f		2.441 0	0 GHz	7.17 dE	3m					
2 N	1 f		2.442 0	0 GHz	7.15 dE	3m					Erog Offort
3						_					Frequised
4						-					0 Hz
6											
7		<u> </u>									
8											
10											
11										-	
•					III					- F	
MSG								STATU	JS		
									1		

Channel 39 (2441MHz)

Channel 78 (2480MHz)



9. Dwell Time

9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

9.2. Test Setup



9.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

 \pm 25msec



9.6. Test Result of Dwell Time

Product	:	Handheld Barcode Scanner
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.897	13	50	0.75	0.301	0.4	Pass
2441	2.897	13	50	0.75	0.301	0.4	Pass
2480	2.897	13	50	0.75	0.301	0.4	Pass

Duty cycle = ((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) * (79*0.4)

CH 00 Time Interval between hops

CH 00 Transmission Time

Keysight Spectrum Analyzer - Swept SA		0 0 0	📕 🗱 Keysight Spectrum Analyzer - Swept SA	0.0
Center Freq 2.402000000 GHz Avg Type: Log	AUTO 03:45:40 PH Apr 06, 2016 -Pwr TRACE 1 2 3 4 5 6 Trace 1 2 3 4 5 6	Frequency	Mar RL RF 39.0 Ac SERVEE:NT1 ALION AUTO 99.45.54 FM Apr 06, 2016 Center Freq 2.402000000 GHz Tris: Video Avg Type: Log-Pwr TmacE[1: 2:34:5 Tris: Video	Frequency
IFGainLow Atten: 30 dB	DETPNNNNN	Auto Tune	IFGainLow Atten: 30 dB DET NNNNN	Auto Tune
Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm		Auto Tune	Ref Offset 0.5 dB Mkr3 6.713 ms 10 dB/div Ref 20.50 dBm 6.06 dBm	Auto Tune
		Center Freq 2.402000000 GHz		Center Freq 402000000 GHz
8 500		Start Freq 2.402000000 GHz	9 30 q 195 2 25 3 35 3 35	Start Freq 402000000 GHz
-195	280_94	Stop Freq 2.402000000 GHz	a 485 00000000000000000000000000000000000	Stop Freq 402000000 GHz
39.5		CF Step 1.000000 MHz Auto Man	P Center 2.402000000 GHz Span 0 Hz 12 Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (1001 pts) 14 Concentrating Excit and a state of the	CF Step 1.000000 MHz o Man
	· · · · ·	Freq Offset 0 Hz	- 1 N 1 1 2967ma 5980Bm 2 N 1 1 3,816ma 6.160Bm t 3 N 1 t 6,713ma 6.060Bm 12 4 5 6	Freq Offset 0 Hz
005 Center 2.402000000 GHz Res BW 1.0 MHz #VBW 1.0 MHz Swe	Span 0 Hz ep 50.00 ms (1001 pts)			
MSG	STATUS		MSG STATUS	

CH39 Time Interval between hops

CH 39Transmission Time

BE Keysight Sp	ectrum.	Analyzer -	Swept SA										0.0	BE Key	rsight Spectr	um že	inalyzer - Swept SJ	A						0.0
Center Freq 2.441000000 GHz Tric: Video						5 PH Apr 06, 201 RACE 1 2 3 4 5	6 Frequency	Cen	ter Fre	q 2	2.4410000	00 GHz	SENSE	Avg	Туре	Log-Pwr	04:07:19 PM Apr 06, 2016 TRACE 1 2 3 4 5 6	Frequency						
	- 22			PN0 IFGa	Fast Control of the second	Atten	: 30 dB	3				DET P NNNN	n Auto Tuno	PNO: Fest Tiffe Video Detrip						DET P NNNNN	Auto Tuno			
Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm									Auto Tune	10 dE	B/div	Ref	Offset 0.5 dB 20.50 dBr	3 m					Mkr3 6.713 ms 5.37 dBm	Auto Tune				
10.5													Center Freq	10.5					¢2		♦3	-		Center Freq
	П	٦Ľ	10	٦È		hr	-11	Ē		hr	10			-9.50		+				1	-			
.9.60													Start Freq 2.441000000 GHz	-19.5 -29.5	_	-						-	580 LVL	Start Freq 2.441000000 GHz
-19.5													Stop Free	-39.5 -49.5		-		-therein			Ne	MEL		Stop Fred
-29.5												780.5	2.441000000 GHz	-69.5 -69.5		+				_				2.441000000 GHz
-39.5								_					CF Step 1.000000 MHz	Cen	ter 2.44 BW 1.0	100 MH	00000 GHz Hz	: #VI	BW 1.0 MHz		5	weep	Span 0 Hz 10.00 ms (1001 pts)	CF Step 1.000000 MHz
-49.5	14	4	-	ų	A				4		4	N #	<u>Auto</u> Man	1	N 1			2.967 ms	5.27 dBm	FUNCTION	FUN	CHON WIGHT	FUNCTION VALUE	<u>Auto</u> Man
-59.5	_			+			-						Freq Offset 0 Hz	2 3 4 5	N 1 N 1	1		3.816 ms 6.713 ms	5.48 dBm 5.37 dBm					Freq Offset 0 Hz
-69.5	-		+	-	-	-	-		-		-		-	6 7 8			-			-		_		
Center 2. Res BW	4410 1.0 N	00000 1Hz	GHz		#VBW	/ 1.0 M	Hz			Sweep	50.00 m	Span 0 H	z	9 10 11										
MSG										STATU	5			MSG								STAT	8	



CH 78 Time Interval between hops

CH 78 Transmission Time

BR Keysight Spec	ctrum Analyze	r - Snept SA										0.0	Keysight Spectrum Analyzer - S	Swept SA				0.0
Center Fr	eq 2.48	0000000) GHz	-	Tein	SENSE: INT		Avg Type	Log-Pwr	04:11:42 TR	PH Apr 06, 2014	6 Frequency	Center Freq 2.4800	000000 GHz	SENSE: 2NT	Avg Type: Log-Pwr	04:11:56 PH Apr 06, 2016 TRACE 1 2 3 4 5 6	Frequency
	20		PNO: IFGain	Low	Atten	30 dB					DET P NNNN	N Auto Tune		PNO: Fast L IFGain:Low	Atten: 30 dB		DETPNNNNN	Auto Tune
Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm											Auto Tune	10 dB/div Ref 20.50	Mkr3 6.713 ms 5.05 dBm	Auto Tune				
10.5												Center Freq 2.480000000 GHz	10.5 0.500		2	3		Center Freq 2.480000000 GHz
.9.50												Start Freq 2.480000000 GHz	-19.5 -29.5 -39.5				2807.47	Start Freq 2.480000000 GHz
-19.5			1								790. 2	Stop Freq 2.48000000 GHz	49.5	aug northe		united by the second seco		Stop Freq 2.480000000 GHz
-39.5												CF Step 1.000000 MHz Auto Man	Center 2.480000000 Res BW 1.0 MHz	GHz #VB\	V 1.0 MHz	Sweep 1	Span 0 Hz 0.00 ms (1001 pts)	CF Step 1.000000 MHz Auto Man
-59.5	-	r	-	r	r		-					Freq Offset 0 Hz	1 N 1 t 2 N 1 1 3 N 1 t 4 5	2.967 ms 3.816 ms 6.713 ms	4.94 dBm 5.20 dBm 5.05 dBm			Freq Offset 0 Hz
Center 2.4	8000000	00 GHz		-	10.00						Span 0 H	z	7 8 9 10 11					
MSG	.o mhz			#VDW	1.0 M	12			statu	i.oo ms	(1001 pts	2	MSG			STATUS	•	

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

Product	:	Handheld Barcode Scanner
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.917	13	50	0.76	0.303	0.4	Pass
2441	2.917	13	50	0.76	0.303	0.4	Pass
2480	2.906	13	50	0.76	0.302	0.4	Pass

Duty cycle =((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) * (79*0.4)

CH 00 Time Interval between hops

terverife Spectrum Respective State Stat 09 PH Agr 06, 2016 TRACE 1 2 3 4 5 0 TYPE WWWWWW ALIGN AUTO Avg Type: Log-Pwr Frequency CE 1 2 3 4 Avg Type: Log-Pw Frequency DET P NN Auto Tur 4kr3 6.643 ms 6.80 dBm Auto Tu Ref Offset 0.5 dB Ref 20.50 dBm Ref Offset 0.5 dB Ref 20.50 dBm ∂^2 Center Fre Center Fre 2.402000000 G 2.402000000 G Start Fre Start Fre 2000000 G 000000 G yes, Stop Fre Stop Fre 24 CF Step 1.000000 ML CF Step 1.000000 MH enter 2.402000000 GH: es BW 1.0 MHz Span 0 H Sweep 10.00 ms (1001 pts #VBW 1.0 MHz Ma м 1 N 2 N 3 N 2.897 ms 3.726 ms 6.643 ms 6.04 dBm 5.81 dBm 6.80 dBm 1 Freq Offse Freq Offse OH 0 H Span 0 Hz Sweep 50.00 ms (1001 pts 2.40200000 GHz #VBW 1.0 MHz

CH39 Time Interval between hops

CH 39Transmission Time

CH 00 Transmission Time

誕 Key	ight Spe	ctrum An	alyzer - S	mept SA		17	7						- 331	Ourses.				0 0 0	🗱 Keysigt	Ht Spectrum	m Anah	yzer - Swept !	SA .	10		100 March 1	5.655	- 74	322	birth				0 0 0
Cent	er Fr	eq 2.	.4410	0000	0 GH	łz	_	Trie	SIN Vide	ISE:2NT		Avg T)	JU3 ype: L	og-Pwr	04:38	TRACE	pr06, 2016	Frequency	Center	r Freq	2.4	41000	000 G	Hz	_	SENSE	E:2NT]	Avg	ALS: Type: Lo	og-Pwr	04:38:1	AACE 1 2 3	2016	Frequency
10 dB	/div	Ref C	ffset 0 20.50	.5 dB dBm	IF	NU: Par Gain:Lo	w	Att	en: 30	dB						DET	NNNN	Auto Tune	10 dB/d	Re Siv R	ef Off	fset 0.5 d 0.50 dB	B	'NO: Fast Gain:Lov	<u>.</u> ~	Atten: 30 d	в		1.00		Mkr3	6.643 I 6.33 di	ms Bm	Auto Tune
10.5			1 [~			2	~~1			~			سميا له		~		Center Freq 2.441000000 GHz	10.5 0.500		-	~~~~		1					3	-	a alatan araa	-		Center Freq 2.441000000 GHz
0.500 -9.50																		Start Freq 2.441000000 GHz	-19.5 -19.5 -29.5		-									ļ		199	OLVE	Start Freq 2.441000000 GHz
-19.5																	-	Stop Freq 2.441000000 GHz	-49.5 -69.5		-			*****	-				My Chan	4		-		Stop Freq 2.441000000 GHz
-39.5	-				-		Ĥ				1			+				CF Step 1.000000 MHz Auto Man	Center Res B	r 2.441 W 1.0 P	000 MHz	000 GH	z	#V	/BW	1.0 MHz			Sw	eep 1	0.00 m	Span 0 s (1001 p) Hz pts)	CF Step 1.000000 MHz Auto Man
-49.5 -59.5	4	+	W	14	۲		4	*	3	*#	H	-+	+	*	4	+	¥	Freq Offset 0 Hz	1 N 2 N 3 N 4 5				2. 3. 6.	897 ms 726 ms 643 ms		5.54 dBn 6.28 dBn 6.33 dBn	n n n							Freq Offset 0 Hz
-69.5 Cent	er 2.4	4100	0000	GHz									+			Spi	an 0 Ha	7	6 7 8 9 10		+													
Res	BW 1.	0 MH	z			#	VBW	1.0	MHz				Sv	reep :	50.00 n	ns (10	01 pts	5)	*	1 1	-					14	÷	-			-	_	7	
MSG														STATU	6				MSG											STATU	6			



CH 78 Time Interval between hops

CH 78 Transmission Time

Keysight S	Spec	rum Ana	skyzer - Si	nept SA		- 77				and the second								0.0		Keysig	ght Spectr	rum Ani	alyzer - Sw	ept SA			- 12	10.000	22	- 13			and the second se	Service of	000
Center	Fre	eq 2.	4800	00000	GH	2		Televille	SENSE	:1NT	A	vg Typ	ALION	auto 3-Pwr	04:43:	25 PH AP	1 2 3 4 5	6 Frequency	Ce	nte	er Fre	q 2.	48000	00000	GHz		Trin Fr	ENSE IN	<u>۳</u>]	Avg Typ	e: Log-Pwr	06:57:	TRACE	123456	Frequency
	_	0.40		6.40	PNC IFG	D: Fast sin:Low	÷	Atten:	30 dl	в		_	_	_		DET	NNNN	Auto Tu	ne	_	-	D. (C			PNO: Fi IFGain:L	.ow	#Atten:	30 dB				Mkr3	DET	30 ms	Auto Tune
10 dB/div		Ref 2	20.50	dBm															10	dB/c	div	Ref 2	20.50 (dBm									6.51	dBm	
10.5							-	_	_		_		F			+		Center Fr 2.480000000 G	eq 10 Hz 0.50	15		+		<u> </u>				0 ²	♦ ³			-	+	-	Center Freq 2.48000000 GHz
0.500 wana 19.50				1				T		-	-	1		-				Start Fr 2.480000000 G	eq -19 Hz -29	5				ſ											Start Freq 2.48000000 GHz
-19.5		-							+		t	+				#	+	Stop Fr 2.480000000 G	eq -49 ;Hz -59	5	_	4	p Ma Ma					yun	w				iuncla	*	Stop Freq 2.48000000 GHz
-39.5				ľ	1			t			F	Ŧ	Ħ	-	F	Ŧ	TRO VL	CF St 1.000000 M Auto N	ep Ce Hz Re Ian	interes B	er 2.48 3W 1.0	3000 MH	0000 G	GHz	,	#VBW	1.0 MH	z	FUNCT	ION FU	Sweep 1	0.00 m	Spa is (10	an 0 Hz 101 pts)	CF Step 1.000000 MHz Auto Mar
-49.5	M		*	r	-	- 25		-	4		4		-		m	*		Freq Offs	Jet 3 Hz 4	N		1			1.984 m 4.890 m 5.730 m	15	6.52 5.37 6.51	dBm dBm dBm						_	Freq Offse 0 H
-69.5 Center 2	2.4	30000	0000	GHz												Sp	an 0 Hz	z	6 7 8 9 10				_												
Res BW	1.	MH	z			#V	BW 1	.0 MH	Ηz				Swe	ep 5	0.00 m	ns (10	01 pts	J	100	-		· · ·					1.7.1	,						1	· · · · · · · · · · · · · · · · · · ·
MSG														STATUF	1				MSG	6											STATU	8			

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



10. Occupied Bandwidth

10.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

10.2. Test Setup



10.3. Limits

N/A

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.5. Uncertainty

± 150Hz

10.6. Test Result of Occupied Bandwidth

Product	:	Handheld Barcode Scanner
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	939		NA
39	2441	939		NA
78	2480	942		NA

Figure Channel 00:

🊺 Key	ysight Sp	ectrum	Analyzer - Swe	ept SA								
Cen	L Iter F	RF req	50 Ω 2.40200	AC 0000 GH	łz	SEN	SE:INT	Avg Typ	ALIGN AUTO e: Log-Pwr	03:47:31 P TRAC	M Apr 06, 2016	Frequency
10 di	B/div	Re' Re	f Offset 0.5	odB JBm	NO:Wide G Gain:Low	#Atten: 30	dB		Mkr2	2.401 5 -14.	32 GHz 18 dBm	Auto Tune
Log 10.5 0.500					2		1	3				Center Freq 2.402000000 GHz
-19.5 -29.5 -39.5		- 0									-13.88 dbm	Start Freq 2.400500000 GHz
-49.5 -59.5 -69.5											Maran and	Stop Freq 2.403500000 GHz
Cen #Re	ter 2. s BW	4020 30	000 GHz (Hz		#VBV	V 100 kHz			Sweep 3	Span 3 .200 ms (.000 MHz 1001 pts)	CF Step 300.000 kHz Auto Man
1 2 3 4 5 6 7 8 9 10 11 <		RC SC 1 f 1 f 1 f		X 2.401 99 2.401 53 2.402 47	1 GHz 2 GHz 1 GHz	Y 6.12 dE -14.18 dB -14.03 dB	m m m		NCTION WIDTH	FUNCTI	ON VALUE	Freq Offset 0 Hz
MSG									STATU	5		



						-						
🊺 Keysi	ght Spect	rum A	analyzer - Swe	ept SA								
LXI RL		RF	50 Ω	AC		SEN	ISE:INT		ALIGN AUTO	04:00:27 P	M Apr 06, 2016	Frequency
Cente	er Fre	eq 2	2.44100	0000 GH	z	T		Avg Typ	e: Log-Pwr	TRAC	CE 1 2 3 4 5 6	ricqueriey
				PI	IO: Wide 🔾	Trig: Free	n de			D		
				IFG	Jain:Low	#Atten: 5	, ab				,	Auto Tupe
		Dof		AD.					Mkr2	2.440 5	532 GHz	Autorune
10 dB(div	Ref	20 50 6	iBm						-14.	56 dBm	
Log	un		20.00 0							1		
10.5						1	1					Center Fred
												GenterFreq
0.500 -					•	~~~~	\sim					2.441000000 GHz
-9.50					4 2	~	~					
											-14.54 dBm	
-19.5 —				C	J -			~~~				Start Fred
-29.5				~								0.420500000.00
			m	2					Low	~~~		2.439500000 GHZ
-39.5		2	Jan							- Martin		
-49.5	~~~~	Ť								```	man	
												Stop Freq
-59.5 —									-			2 442500000 GHz
-69.5												2.44200000 0112
Conto	ar 2 //	110								Snan 3	000 MHz	CE Stop
#Doc	DW 3	0 2			#\/D\/	100 kHz			Cwoon 3	200 me /	1001 ntc)	300,000 kHz
#RCS	DVV J	U K	ΠZ		#10	V 100 KHZ			Sweep 3	.200 ms (1001 pts)	Auto Man
MKR MC	DDE TRC	SCL		Х		Y	FUN	CTION FL	INCTION WIDTH	FUNCTI	ON VALUE	Auto Man
1 1	1	f		2.440 99	4 GHz	5.46 dE	3m					
2 N	1	f		2.440 53	2 GHz	-14.56 dE	Bm					Eren Offent
3 N	1	f		2.441 47	1 GHz	-14.76 dE	Bm					Frequise
4	_											0 Hz
6	-											
7												
8												
9												
10												
11												
						III				1	•	
MSG									STATU	5		
										1		

Figure Channel 39:

Figure Channel 78:





Product	:	Handheld Barcode Scanner
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1263		NA
39	2441	1263		NA
78	2480	1263		NA

Figure Channel 00:

🊺 Ke	ysight Sp	pectrum	Analyzer - Sw	ept SA								
<mark>⊯</mark> R Cen	L Iter F	req	F 50 Ω 2.40200	AC 0000 GH	łz	SEN	ISE:INT	Avg Type	ALIGN AUTO e: Log-Pwr	04:34:00 P TRAC	M Apr 06, 2016	Frequency
		Re	f Offset 0.	PI IF	NO:Wide ⊆ Gain:Low	#Atten: 3	0 dB		Mkr2	2.401 3	43 GHz	Auto Tune
10 d Log 10.5	B/div	Re	ef 20.50 (dBm			1			-12.	52 dBm	Center Freq
-9.50 -19.5					2			m	3		-12.51 dDm	
-29.5	~~~~	~	\sim							~~~~	~~~~	Start Freq 2.400500000 GHz
-49.5 -59.5												Stop Freq 2.403500000 GHz
-69.5 Cen #Re	ter 2 s BW	.4020 / 30	000 GHz kHz		#VBW	/ 100 kHz			Sweep 3	Span 3 .200 ms (.000 MHz 1001 pts)	CF Step 300.000 kHz
MKR 1 2	MODE I N N	IRC SC		× 2.401 99 2 401 34	4 GHz 3 GHz	7.49 dE -12 52 dE	FUN Bm Bm		NCTION WIDTH	FUNCTION	DN VALUE	Auto Mari
3 4 5 6	Ň	1 f		2.402 60	6 GHz	-12.70 dE	3m				=	Freq Offset 0 Hz
7 8 9		_										
11 <						m			STATIS		• •	



💓 Keys	ight Spec	trum A	Analyzer - Swe	ept SA		-						
Cent	er Fro	RF eq 2	50 Ω 2.44100	AC 00000 G	Hz	SEI	SE:INT	Avg	ALIGN AUTO	04:39:02 P	M Apr 06, 2016 CE 1 2 3 4 5 6	Frequency
				F	PNO: Wide ⊂ FGain:Low	#Atten: 3	odB		Mkr2	2 440 3		Auto Tune
10 dB	/div	Ref Ref	Offset 0.5 5 20.50 (dB dBm						-13.	11 dBm	
10.5		_					1					Center Freq
0.500 -					2,	~~~~		m	3			2.441000000 GHz
-19.50				/							-12.93 dBm	Ctort Erog
-29.5 -		~								m .	0	2.439500000 GHz
-39.5	~~~		V.								v La	
-49.5 -												Stop Freq
-69.5 -		_										2.442500000 GHz
Cente Cente	er 2.4	410	00 GHz		#\(D)	N 400 KH-			Crucon (Span 3	000 MHz	CF Step
#Res		U K	ΠZ	×	#VD	N 100 KH2	EUN	ICTION	Sweep 3	EUNGTI		Auto Man
1	N 1 N 1	f		2.440 9	91 GHz 43 GHz	7.07 dl -13.11 d	3m 3m					
3	N 1	f		2.441 6	06 GHz	-13.21 dE	Bm					Freq Offset 0 Hz
<u>5</u> 6											E	
8							_					
10 11												
≺ É			•			III			STATU	s	•	
									• • • • •	-		

Figure Channel 39:

Figure Channel 78:





11. EMI Reduction Method During Compliance Testing

No modification was made during testing.



Attachment 1: EUT Test Photographs



Attachment 2: EUT Detailed Photographs