FCC Test Report

Product Name	Infotainment System with Bluetooth	
Model No.	MIB GLOBAL STANDARD PLUS	
FCC ID.	T8GA480	

Applicant	Harman/Becker Automotive Systems GmbH
Address	Becker-Göring-Straße 16, 76307 Karlsbad, Germany

Date of Receipt	Dec. 24, 2014
Issued Date	Jan. 12, 2015
Report No.	14C0594R-RFUSP01V00
Report Version	V2.0
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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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The test report shall not be reproduced without the written approval of QuieTek Corporation.

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Issued Date: Jan. 12, 2015 Report No.: 14C0594R-RFUSP01V00

QuieTek

Product Name	Infotainment System with Bluetooth		
Applicant	Harman/Becker Automotive Systems GmbH		
Address	Becker-Göring-Straße 16, 76307 Karlsbad, Germany		
Manufacturer	Harman/Becker Automotive Systems GmbH		
Model No.	MIB GLOBAL STANDARD PLUS		
FCC ID.	T8GA480		
EUT Rated Voltage	DC 12V (Power by Battery)		
EUT Test Voltage	DC 12V (Power by Battery)		
Trade Name	VW		
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2013		
	ANSI C63.10: 2009, KDB 558074 D01 DTS Meas Guidance v03r02		
Test Result	Complied		

Documented By

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Leven Huang

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Tested By

Benjamin Pan

(Engineer / Benjamin Pan)

Approved By

(Director / Vincent Lin)

TABLE OF CONTENTS

De	escription	Page
1.	GENERAL INFORMATION	5
1.1.	EUT Description	5
1.2.	Operational Description	
1.3.	Tested System Details	
1.4.	Configuration of Tested System	
1.5.	EUT Exercise Software	
1.6.	Test Facility	
2.	CONDUCTED EMISSION	
2.1.	Test Equipment	
2.2.	Test Setup	
2.3.	Limits	
2.4.	Test Procedure	
2.5.	Uncertainty	
2.6.	Test Result of Conducted Emission	
3.	PEAK POWER OUTPUT	
3.1.	Test Equipment	
3.2.	Test Setup	
3.3.	Limit	13
3.4.	Test Procedure	
3.5.	Uncertainty	
3.6.	Test Result of Peak Power Output	
4.	RADIATED EMISSION	
4.1.	Test Equipment	
4.2.	Test Setup	
4.3.	Limits	
4.4.	Test Procedure	
4.5.	Uncertainty	
4.6.	Test Result of Radiated Emission	
5.	RF ANTENNA CONDUCTED TEST	
5.1.	Test Equipment	
5.2.	Test Setup	28
5.3.	Limits	
5.4.	Test Procedure	
5.5.	Uncertainty	
5.6.	Test Result of RF Antenna Conducted Test	29
6.	BAND EDGE	
6.1.	Test Equipment	
6.2.	Test Setup	36
6.3.	Limit	37
6.4.	Test Procedure	
6.5.	Uncertainty	
6.6.	Test Result of Band Edge	
7.	CHANNEL NUMBER	
7.1.	Test Equipment	
7.2.	Test Setup	
7.3.	Limit	
7.4.	Test Procedure	
7.5.	Uncertainty	
7.6.	Test Result of Channel Number	
8.	CHANNEL SEPARATION	
8 .1.	Test Equipment	
8.1. 8.2.	Test Setup	
8.2. 8.3.	Limit	
8.3. 8.4.	Test Procedure	
8.5.	Uncertainty	
8.6.	Test Result of Channel Separation	
9.0.	DWELL TIME	
9.1.	Test Equipment	
J.1.		

9.2.	Test Setup	62
9.3.	Limit	62
9.4.	Test Procedure	62
9.5.	Uncertainty	62
9.6.	Test Result of Dwell Time	
10.	OCCUPIED BANDWIDTH	67
10.1.	Test Equipment	67
10.2.	Test Setup	67
10.3.	Limits	67
10.4.	Test Procedure	67
10.5.	Uncertainty	67
10.6.	Test Result of Occupied Bandwidth	68
11.	EMI REDUCTION METHOD DURING COMPLIANCE TESTING	
A 1		

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Infotainment System with Bluetooth		
Trade Name	VW		
Model No.	MIB GLOBAL STANDARD PLUS		
FCC ID.	T8GA480		
Frequency Range	2402 – 2480MHz		
Channel Number	79		
Type of Modulation	alation GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)		
Antenna Type	Internal PCB antenna		
Channel Control	Auto		
Antenna Gain	Refer to the table "Antenna List"		
Power Cable	Non-Shielded, 1m		
Contain Module	ALPS/ UGZZA/C		

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	HARMAN	N/A	Internal PCB antenna	3.0 dBi for 2.4 GHz

Note: The antenna of EUT is conforming to FCC 15.203

Center Frequency of Each Channel:

Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		
	2402 MHz 2403 MHz 2404 MHz 2405 MHz 2406 MHz 2406 MHz 2407 MHz 2409 MHz 2409 MHz 2410 MHz 2411 MHz 2411 MHz 2413 MHz 2413 MHz 2415 MHz 2416 MHz 2416 MHz 2418 MHz 2419 MHz 2420 MHz	2402 MHz Channel 20: 2403 MHz Channel 21: 2403 MHz Channel 22: 2404 MHz Channel 23: 2405 MHz Channel 23: 2406 MHz Channel 24: 2407 MHz Channel 25: 2408 MHz Channel 26: 2409 MHz Channel 26: 2409 MHz Channel 27: 2410 MHz Channel 28: 2411 MHz Channel 29: 2412 MHz Channel 30: 2413 MHz Channel 31: 2414 MHz Channel 31: 2415 MHz Channel 33: 2416 MHz Channel 33: 2417 MHz Channel 35: 2418 MHz Channel 36: 2419 MHz Channel 37: 2420 MHz Channel 37:	2402 MHzChannel 20:2422 MHz2403 MHzChannel 21:2423 MHz2404 MHzChannel 22:2424 MHz2405 MHzChannel 23:2425 MHz2406 MHzChannel 24:2426 MHz2407 MHzChannel 25:2427 MHz2408 MHzChannel 26:2428 MHz2409 MHzChannel 27:2429 MHz2410 MHzChannel 28:2430 MHz2411 MHzChannel 29:2431 MHz2412 MHzChannel 30:2432 MHz2413 MHzChannel 31:2433 MHz2414 MHzChannel 31:2435 MHz2415 MHzChannel 33:2435 MHz2416 MHzChannel 34:2436 MHz2417 MHzChannel 35:2437 MHz2418 MHzChannel 36:2438 MHz2419 MHzChannel 37:2439 MHz2420 MHzChannel 37:2439 MHz2420 MHzChannel 37:2440 MHz	2402 MHzChannel 20:2422 MHzChannel 40:2403 MHzChannel 21:2423 MHzChannel 41:2404 MHzChannel 22:2424 MHzChannel 42:2405 MHzChannel 23:2425 MHzChannel 43:2406 MHzChannel 24:2426 MHzChannel 44:2407 MHzChannel 25:2427 MHzChannel 45:2408 MHzChannel 26:2428 MHzChannel 46:2409 MHzChannel 26:2428 MHzChannel 46:2409 MHzChannel 27:2429 MHzChannel 47:2410 MHzChannel 28:2430 MHzChannel 48:2411 MHzChannel 29:2431 MHzChannel 49:2412 MHzChannel 30:2432 MHzChannel 50:2413 MHzChannel 31:2433 MHzChannel 51:2414 MHzChannel 32:2435 MHzChannel 51:2416 MHzChannel 33:2435 MHzChannel 53:2416 MHzChannel 36:2437 MHzChannel 54:2417 MHzChannel 35:2437 MHzChannel 55:2418 MHzChannel 36:2438 MHzChannel 55:2419 MHzChannel 37:2439 MHzChannel 56:2419 MHzChannel 37:2439 MHzChannel 57:2420 MHzChannel 37:2439 MHzChannel 57:2420 MHzChannel 38:2440 MHzChannel 58:	2402 MHzChannel 20:2422 MHzChannel 40:2442 MHz2403 MHzChannel 21:2423 MHzChannel 41:2443 MHz2404 MHzChannel 22:2424 MHzChannel 41:2443 MHz2405 MHzChannel 23:2425 MHzChannel 42:2444 MHz2406 MHzChannel 24:2426 MHzChannel 43:2445 MHz2407 MHzChannel 25:2427 MHzChannel 44:2446 MHz2408 MHzChannel 26:2428 MHzChannel 45:2447 MHz2409 MHzChannel 26:2428 MHzChannel 46:2448 MHz2409 MHzChannel 27:2429 MHzChannel 47:2449 MHz2410 MHzChannel 28:2430 MHzChannel 48:2450 MHz2411 MHzChannel 29:2431 MHzChannel 49:2451 MHz2413 MHzChannel 30:2432 MHzChannel 50:2452 MHz2413 MHzChannel 31:2433 MHzChannel 51:2453 MHz2414 MHzChannel 31:2435 MHzChannel 51:2453 MHz2416 MHzChannel 33:2435 MHzChannel 53:2455 MHz2416 MHzChannel 34:2436 MHzChannel 54:2456 MHz2416 MHzChannel 35:2437 MHzChannel 55:2457 MHz2418 MHzChannel 36:2438 MHzChannel 55:2457 MHz2419 MHzChannel 36:2438 MHzChannel 56:2458 MHz2419 MHzChannel 36:2439 MHzChannel 57:2459 MHz2419 MHzChannel 37: </td <td>2402 MHzChannel 20:2422 MHzChannel 40:2442 MHzChannel 60:2403 MHzChannel 21:2423 MHzChannel 41:2443 MHzChannel 61:2404 MHzChannel 22:2424 MHzChannel 41:2443 MHzChannel 61:2404 MHzChannel 22:2424 MHzChannel 42:2444 MHzChannel 62:2405 MHzChannel 23:2425 MHzChannel 43:2445 MHzChannel 63:2406 MHzChannel 24:2426 MHzChannel 44:2446 MHzChannel 64:2407 MHzChannel 25:2427 MHzChannel 45:2447 MHzChannel 65:2408 MHzChannel 26:2428 MHzChannel 46:2448 MHzChannel 66:2409 MHzChannel 27:2429 MHzChannel 46:2448 MHzChannel 66:2409 MHzChannel 28:2430 MHzChannel 48:2450 MHzChannel 67:2410 MHzChannel 29:2431 MHzChannel 48:2450 MHzChannel 69:2411 MHzChannel 30:2432 MHzChannel 49:2451 MHzChannel 69:2413 MHzChannel 31:2433 MHzChannel 50:2452 MHzChannel 70:2413 MHzChannel 31:2433 MHzChannel 51:2453 MHzChannel 71:2414 MHzChannel 33:2435 MHzChannel 53:2455 MHzChannel 72:2415 MHzChannel 33:2435 MHzChannel 53:2456 MHzChannel 73:2416 MHzChannel 35:2436 MHzChannel 55:2457 MHzChannel 75:</td>	2402 MHzChannel 20:2422 MHzChannel 40:2442 MHzChannel 60:2403 MHzChannel 21:2423 MHzChannel 41:2443 MHzChannel 61:2404 MHzChannel 22:2424 MHzChannel 41:2443 MHzChannel 61:2404 MHzChannel 22:2424 MHzChannel 42:2444 MHzChannel 62:2405 MHzChannel 23:2425 MHzChannel 43:2445 MHzChannel 63:2406 MHzChannel 24:2426 MHzChannel 44:2446 MHzChannel 64:2407 MHzChannel 25:2427 MHzChannel 45:2447 MHzChannel 65:2408 MHzChannel 26:2428 MHzChannel 46:2448 MHzChannel 66:2409 MHzChannel 27:2429 MHzChannel 46:2448 MHzChannel 66:2409 MHzChannel 28:2430 MHzChannel 48:2450 MHzChannel 67:2410 MHzChannel 29:2431 MHzChannel 48:2450 MHzChannel 69:2411 MHzChannel 30:2432 MHzChannel 49:2451 MHzChannel 69:2413 MHzChannel 31:2433 MHzChannel 50:2452 MHzChannel 70:2413 MHzChannel 31:2433 MHzChannel 51:2453 MHzChannel 71:2414 MHzChannel 33:2435 MHzChannel 53:2455 MHzChannel 72:2415 MHzChannel 33:2435 MHzChannel 53:2456 MHzChannel 73:2416 MHzChannel 35:2436 MHzChannel 55:2457 MHzChannel 75:

- 1. This device is an Infotainment System with Bluetooth 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)

1.2. Operational Description

The EUT is an Infotainment System with Bluetooth with built-in 2.4GHz Bluetooth V2.1+EDR transceiver. The number of the channels is 79 in 2402-2480MHz. This device provides three kinds of transmitting speed and modulation, respectively GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps). The antenna is Internal pcb antenna and provides diversity function to improve the receiving function.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted.

The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

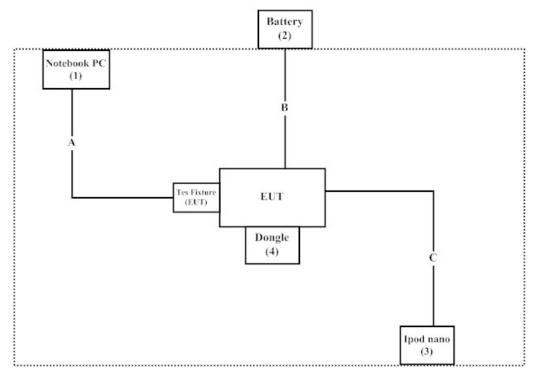
1.3. Tested System Details

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

Pro	duct	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
2	Battery (DC 12V)	TRANE	12B50PE	N/A	N/A
3	Ipod nano	Apple	A1236	7L822204Y0P	N/A
4	Dongle	Transcend	JetFlash110	155422-2931	N/A

	Signal Cable Type	Signal cable Description
А	USB Cable	Non-Shielded, 0.7m
В	Power Cable	Non-Shielded, 1m
С	Audio Cable	Non-Shielded, 1.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Execute the HCI Test 2 V0.99KX program on the EUT.
- (3) Setup the test mode, the test channel, and the data rate.
- (4) Press OK to start the transmission.
- (5) Verify that the EUT works correctly.

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/tw/ctg/cts/accreditations.htm</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: <u>http://www.quietek.com/</u>

City

Site Description:	File on				
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	FCC Engineering Laboratory				
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	E-Mail : <u>service@quietek.com</u>				

FCC Accreditation Number: TW1014

2. Conducted Emission

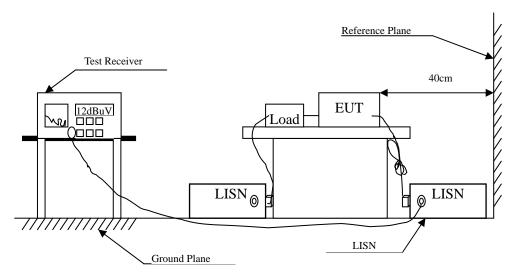
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark	
Х	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2014		
Х	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2014	Peripherals	
Х	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2014	EUT	
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2014	EUT	
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2014		
	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 (dBuV) Limit					
Frequency	Lir	nits			
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 C63.10: 2009 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 10, 2009; 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 EUT use vehicle battery supply voltage, this test item is not performed.

3. Peak Power Output

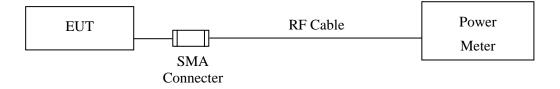
3.1. Test Equipment

_	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Х	Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2014

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 C63.10, 2009; 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	:	Infotainment System with Bluetooth	
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	-2.01	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-1.48	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-0.94	1 Watt= 30 dBm	Pass

Product	:	Infotainment System with Bluetooth	
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	-2.43	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-1.92	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-1.38	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	Equi	pment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Х	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2014
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2014
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2014
	Х	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	Х	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2014
	Х	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2014
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	Х	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2014
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

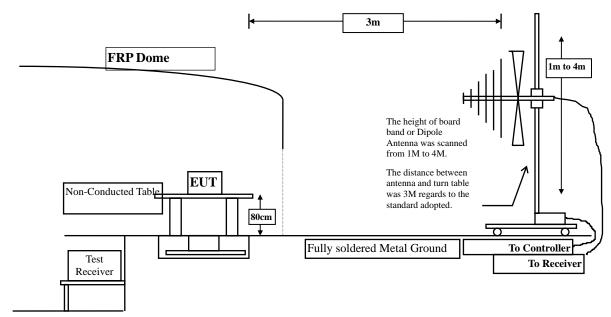
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
CB # 8	X Spectrum Analyzer		R&S	FSP40/ 100339	Oct, 2014
	Х	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2014
	Х	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2015
	Х	Horn Antenna	TRC	AH-0801/95051	Aug, 2014
	Х	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2015
	Х	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2014
	Х	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2014

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

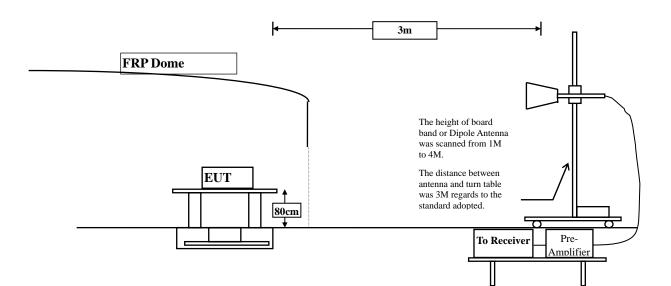
2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup

Below 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	dBuV/m@3m				
0.009-0.490	2400/F(kHz)	300				
0.490-1.705	24000/F(kHz)	30				
1.705-30	30	30				
30-88	100	3				
88-216	150	3				
216-960	200	3				
Above 960	500	3				

Remarks: 1. RF Voltage $(dBuV) = 20 \log RF$ 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, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 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 from 1 meter to 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 C63.10:2009 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 beamwidth of the antenna. The worst radiated emission is measured on the Final Measurement.

The frequency range from 9kHz to 10th harmonics is checked.

4.5. Uncertainty

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

Product Test Item Test Site Test Mode	 Infotainment System with Bluetooth Harmonic Radiated Emission No.3 OATS Mode 1: Transmit - 1Mbps (GFSK)(2402MHz) 				
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	2.511	41.730	44.240	-29.760	74.000
7206.000	9.511	40.140	49.651	-24.349	74.000
9608.000	10.394	39.730	50.124	-23.876	74.000
Average Detector:					
Peak Detector:					
4804.000	2.923	41.390	44.312	-29.688	74.000
7206.000	9.988	39.630	49.619	-24.381	74.000
9608.000	10.847	40.260	51.107	-22.893	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	:	Infotainment System with Bluetooth
Test Item	:	Harmonic 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	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.000	2.025	41.650	43.675	-30.325	74.000
7323.000	9.762	40.190	49.951	-24.049	74.000
9764.000	9.682	39.670	49.351	-24.649	74.000
Average Detector:					
Vertical					
Peak Detector:					
4882.000	2.488	41.330	43.818	-30.182	74.000
7323.000	10.375	39.660	50.034	-23.966	74.000
9764.000	10.315	40.210	50.525	-23.475	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	:	Infotainment System with Bluetooth
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	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	2.582	41.720	44.302	-29.698	74.000
7440.000	10.555	40.160	50.715	-23.285	74.000
9920.000	10.206	39.790	49.996	-24.004	74.000
Average Detector:					
Vertical					
Peak Detector:					
4960.000	3.398	41.360	44.759	-29.241	74.000
7440.000	11.214	39.590	50.804	-23.196	74.000
9920.000	11.245	40.280	51.525	-22.475	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	: Infotainment System with Bluetooth				
Test Item	: Harmonic Radiated Emission				
Test Site	: No.3 OA	ATS			
Test Mode	: Mode 2:	Transmit - 3Mbp	os (8DPSK)(2402MH	z)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	2.511	42.010	44.520	-29.480	74.000
7206.000	9.511	40.050	49.561	-24.439	74.000
9608.000	10.394	39.590	49.984	-24.016	74.000
Average Detector:					
Vertical					
Peak Detector:					
4804.000	2.923	43.190	46.112	-27.888	74.000
7206.000	9.988	39.700	49.689	-24.311	74.000
9608.000	10.847	39.870	50.717	-23.283	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	: Infotainment System with Bluetooth						
Test Item	: Harmonic Radiated Emission						
Test Site	: No.3 OA	: No.3 OATS					
Test Mode	: Mode 2:	Transmit - 3Mbp	os (8DPSK) (2441MH	[z)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
4882.000	2.025	42.120	44.145	-29.855	74.000		
7323.000	9.762	40.230	49.991	-24.009	74.000		
9764.000	9.682	39.630	49.311	-24.689	74.000		
Average Detector:							
Vertical							
Peak Detector:							
4882.000	2.488	43.260	45.748	-28.252	74.000		
7323.000	10.375	39.720	50.094	-23.906	74.000		
9764.000	10.315	39.920	50.235	-23.765	74.000		
Average Detector:							

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	:	Infotainment System with Bluetooth
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	2.582	42.250	44.832	-29.168	74.000
7440.000	10.555	40.180	50.735	-23.265	74.000
9920.000	10.206	39.640	49.846	-24.154	74.000
Average Detector:					
Vertical					
Peak Detector:					
4960.000	3.398	43.210	46.609	-27.391	74.000
7440.000	11.214	39.820	51.034	-22.966	74.000
9920.000	11.245	39.840	51.085	-22.915	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	:	Infotainment System with Bluetooth
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	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
192.960	-7.808	40.508	32.700	-10.800	43.500
311.300	-7.604	39.034	31.430	-14.570	46.000
456.800	-7.408	33.516	26.108	-19.892	46.000
600.360	-7.221	26.625	19.404	-26.596	46.000
718.700	-7.134	26.773	19.639	-26.361	46.000
809.880	-7.027	27.454	20.427	-25.573	46.000
Vertical					
167.740	-6.002	40.949	34.947	-8.553	43.500
239.520	-5.885	39.068	33.183	-12.817	46.000
359.800	-5.698	37.853	32.155	-13.845	46.000
456.800	-5.547	33.567	28.020	-17.980	46.000
720.640	-5.271	27.784	22.513	-23.487	46.000
840.920	-5.088	27.645	22.557	-23.443	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.

Product	:	Infotainment System with Bluetooth
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	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
167.740	-7.863	41.443	33.580	-9.920	43.500
311.300	-7.604	38.490	30.886	-15.114	46.000
456.800	-7.408	32.888	25.480	-20.520	46.000
716.760	-7.136	28.680	21.544	-24.456	46.000
809.880	-7.027	26.295	19.268	-26.732	46.000
935.980	-6.893	27.040	20.147	-25.853	46.000
Vertical					
239.520	-5.885	39.820	33.935	-12.065	46.000
303.540	-5.750	39.439	33.689	-12.311	46.000
431.580	-5.585	33.742	28.157	-17.843	46.000
540.220	-5.453	32.537	27.084	-18.916	46.000
623.640	-5.366	29.706	24.340	-21.660	46.000
809.880	-5.166	26.968	21.802	-24.198	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

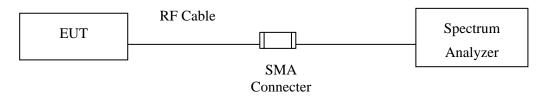
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2014

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 C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

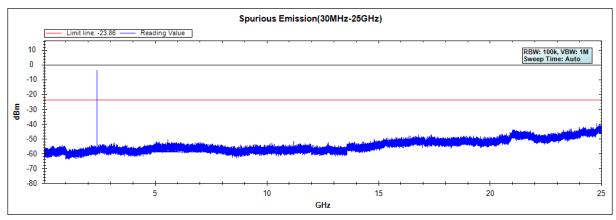
5.5. Uncertainty

± 150Hz

5.6. Test Result of RF Antenna Conducted Test

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

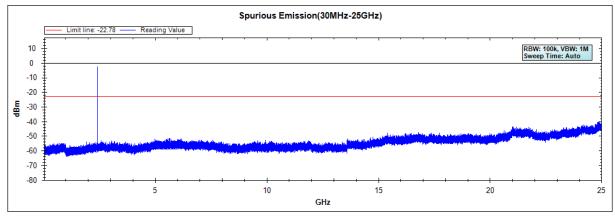
Figure Channel 00: 30MHz-25GHz



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

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

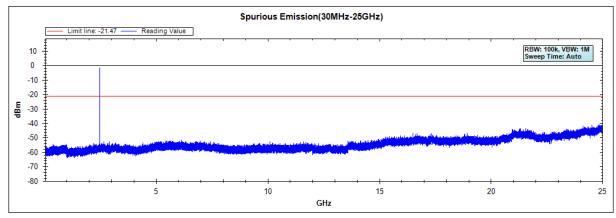
Figure Channel 39: 30MHz-25GHz



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

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

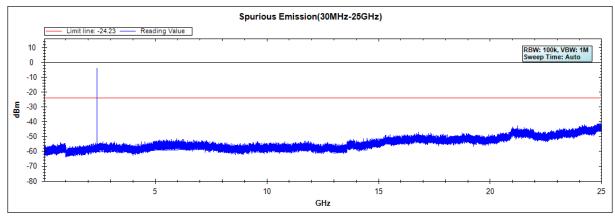
Figure Channel 78: 30MHz-25GHz



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

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

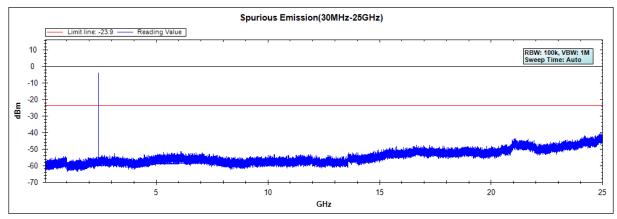
Figure Channel 00: 30MHz-25GHz



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

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

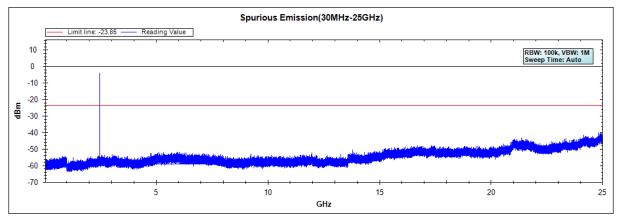
Figure Channel 39: 30MHz-25GHz



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

Product	:	Infotainment System with Bluetooth
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 78: 30MHz-25GHz



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

6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

RF Radiated Measurement:

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

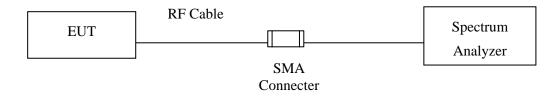
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
\boxtimes Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2014
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2014
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2014
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2014
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2014
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

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

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

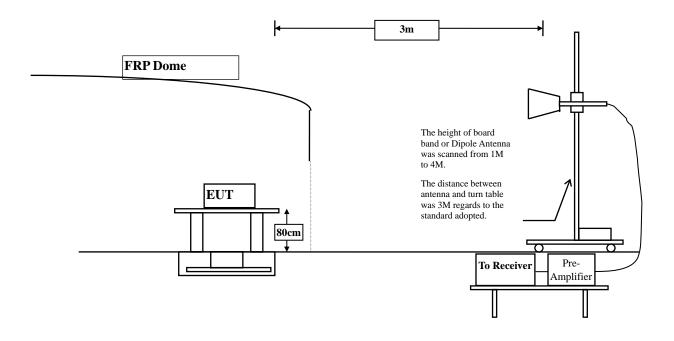
6.2. Test Setup

RF Conducted Measurement



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 and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 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 C63.10:2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

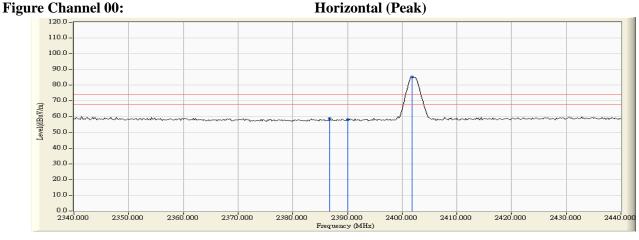
6.5. Uncertainty

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

6.6. Test Result of Band Edge

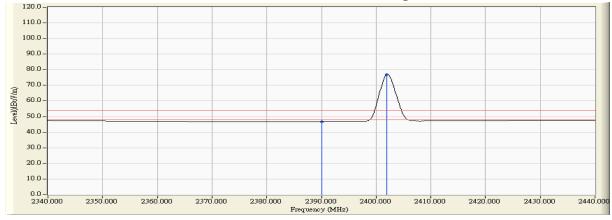
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
00 (Peak)	2386.800	33.736	25.113	58.849	74.000	54.000	Pass
00 (Peak)	2390.000	33.739	24.474	58.213	74.000	54.000	Pass
00 (Peak)	2401.800	33.754	51.377	85.131			
00 (Average)	2390.000	33.739	13.069	46.808	74.000	54.000	Pass
00 (Average)	2402.000	33.755	43.132	76.886			





Horizontal (Average)



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

Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2383.400	32.313	23.945	56.258	74.000	54.000	Pass
00 (Peak)	2390.000	32.267	22.234	54.501	74.000	54.000	Pass
00 (Peak)	2401.800	32.241	56.496	88.737			
00 (Average)	2390.000	32.267	13.041	45.308	74.000	54.000	Pass
00 (Average)	2402.000	32.241	47.466	79.707			

Figure Channel 00:

Vertical (Peak)

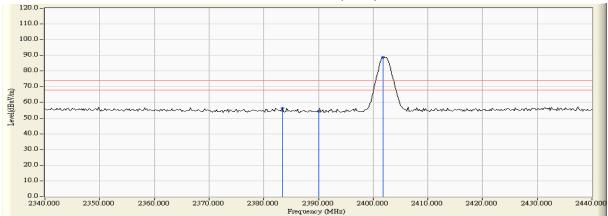
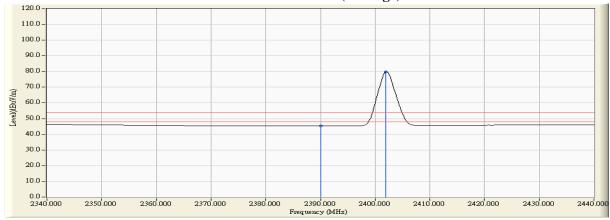


Figure Channel 00:

Vertical (Average)



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



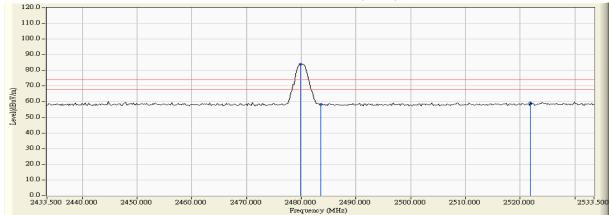
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

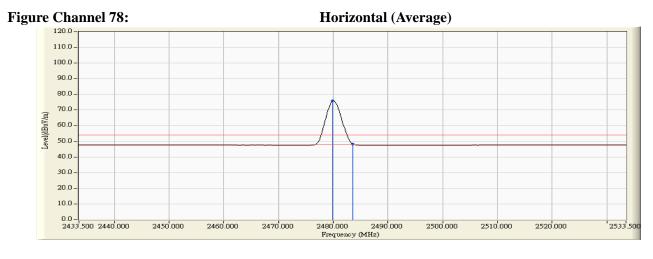
RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
78 (Peak)	2479.900	32.411	50.097	84.037			
78 (Peak)	2483.500	32.417	24.310	58.260	74.000	54.000	Pass
78 (Peak)	2521.900	33.833	25.453	59.286	74.000	54.000	Pass
78 (Average)	2479.900	33.941	42.115	76.055			
78 (Average)	2483.500	33.951	14.425	48.375	74.000	54.000	Pass

Figure Channel 78:

Horizontal (Peak)





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

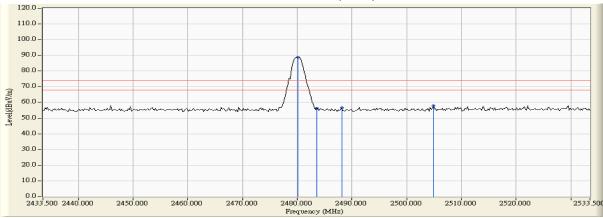
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2480.100	32.569	56.236	88.804			
78 (Peak)	2483.500	32.586	23.593	56.178	74.000	54.000	Pass
78 (Peak)	2488.100	32.607	24.162	56.769	74.000	54.000	Pass
78 (Peak)	2504.900	32.689	25.169	57.858	74.000	54.000	Pass
78 (Average)	2480.100	32.569	47.104	79.672			
78 (Average)	2483.500	32.586	16.669	49.254	74.000	54.000	Pass

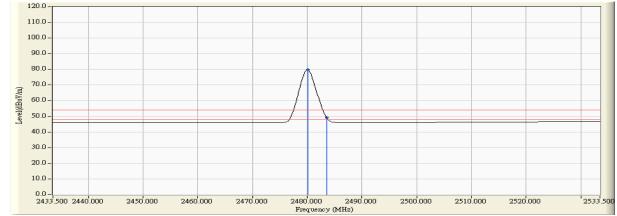


Vertical (Peak)





Vertical (Average)



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



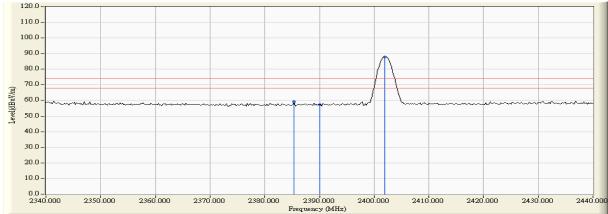
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Kesuit
00 (Peak)	2385.400	33.735	25.420	59.155	74.000	54.000	Pass
00 (Peak)	2390.000	33.739	23.430	57.169	74.000	54.000	Pass
00 (Peak)	2402.000	33.755	54.041	87.795			
00 (Average)	2390.000	33.739	13.040	46.779	74.000	54.000	Pass
00 (Average)	2402.000	33.755	42.798	76.552			

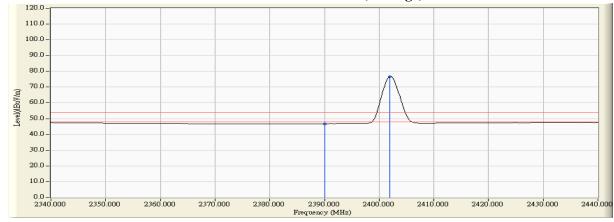
Figure Channel 00:

Horizontal (Peak)





Horizontal (Average)



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



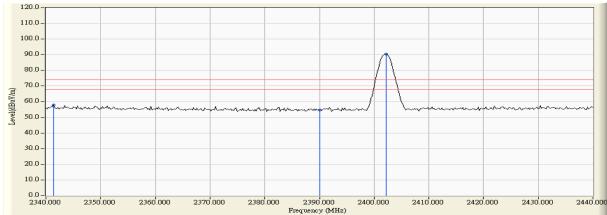
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

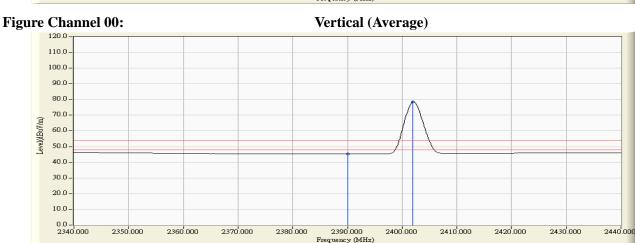
RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
00 (Peak)	2341.400	32.644	25.262	57.906	74.000	54.000	Pass
00 (Peak)	2390.000	32.267	22.361	54.628	74.000	54.000	Pass
00 (Peak)	2402.200	32.241	58.058	90.299			
00 (Average)	2390.000	32.267	13.057	45.324	74.000	54.000	Pass
00 (Average)	2402.000	32.241	46.188	78.429			

Figure Channel 00:

Vertical (Peak)





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



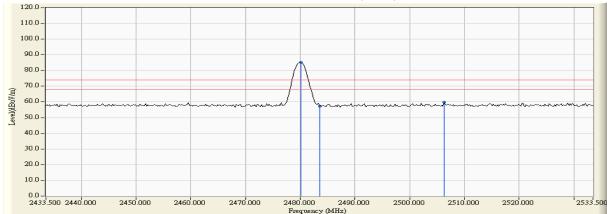
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

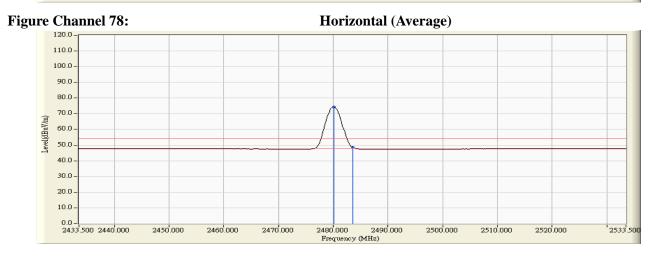
RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2480.100	33.941	51.307	85.248			
78 (Peak)	2483.500	33.951	23.320	57.270	74.000	54.000	Pass
78 (Peak)	2506.300	33.931	26.055	59.986	74.000	54.000	Pass
78 (Average)	2480.100	33.941	40.484	74.425			
78 (Average)	2483.500	33.951	14.498	48.448	74.000	54.000	Pass

Figure Channel 78:

Horizontal (Peak)





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

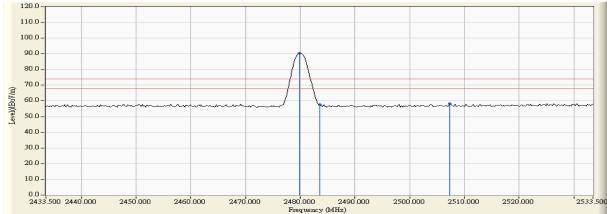
Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

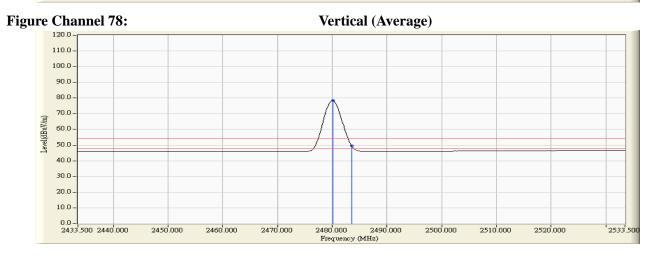
RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2479.900	32.568	57.882	90.449			
78 (Peak)	2483.500	32.586	25.160	57.745	74.000	54.000	Pass
78 (Peak)	2507.300	32.700	25.583	58.283	74.000	54.000	Pass
78 (Average)	2480.100	32.569	45.858	78.426			
78 (Average)	2483.500	32.586	16.975	49.560	74.000	54.000	Pass

Figure Channel 78:

Vertical (Peak)





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

Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Test Frequency	Measurement Level	Limit	Result
(MHz)	Δ (dB)	Δ (dB)	
2402	49.38	>20	PASS

Examples	07:03:35 PMDec 31, 2014	ALIGNAUTO		SENSE:INT			50 Ω AC	RF			R
Frequency	TRACE 123456 TYPE MWMMMW	e: Log-Pwr	Avg T	Free Run	Tria: F	0 GHz	0000000	2.34	req	rt F	Star
A	IFGain:Low Atten: 30 dB										
Auto Tur		Mkr2 2.400 0 GHz 0 dB/div Ref 20.00 dBm -52.377 dBm									
	and the story of	1 mar 1 1	1.00	1	S						og
Center Fre			1					-			10.0
2.39000000 GH			IY								0.00
											10.0
Start Fre	-23.00 dDm									-	-20.0
2.34000000 GH			11	_						1	-30.0
			2								40.0
		mineral march	wer human	manne	and the second		was have a	-	natura de la	1 mil	-50.0
Stop Fre											-60.0
2.440000000 GH		1	1								-70.0
CE Cta	op 2.44000 GHz		_			1.00		00 GH			
CF Ste 10.000000 MH	7 ms (1001 pts)	Sweep 9.3		IHz	W 1.0 M	#VE	z	00 kH	3W 1	s B	#Re
Auto Ma	FUNCTION VALUE	INCTION WIDTH	JNCTION		Y	×			E TRC		
				5 dBm	-2.995	2.402 2 GHz 2.400 0 GHz		f	1	N	1
Freq Offs										2	3
01											4
\$P.									_		6
										-	8
										-	9
									1	_	
									-	_	11

Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Test Frequency	Measurement Level	Limit	Result
(MHz)	Δ (dB)	$\Delta (dB)$	
2480	52.91	>20	PASS

Frequency	PMDec 31, 2014		ALIGNAUTO		ENSE:INT					RF		RL
Frequency	YPE MWWWWW	TY	: Log-Pwr	Avg Ty	ee Run	Trig: Fr	·	0000 GH	.43350	q 2.	t Fre	tar
	DET PNNNNN	C		_		Atten:	Gain:Low	IF				-
Auto Tur	0 0 GHz 78 dBm		Mki					dBm	f 20.00	Ref	3/div	0 dE
-		1		1		-	1			110		og
Center Fre				-	1							10.0
2.483500000 GH												0.00
						-				-		10.0
	-21.68.dBm									_		20.0
Start Fre		-		-			-			_	-	30.0
2.433500000 GH					1							40.0
					12					-		50.0
Stop Fre	and the second s	neurophanelura and and and and and and and and and an	himburg		Collect Bull for the second	manas"	(LANP HAND HAND YOR	All bear to bear the		web-shown	thread	50.0
2.533500000 GH	1							12	-			70.0
												10.0
CF Ste	3350 GHz			-		C & M.1				3350		
10.000000 MH	(1001 pts)	0.27 ms	Sweep 9		Z	1.0 MH	#VBV		KHZ	100	s BW	Res
Auto Ma	ION VALUE	FUNCT	NCTION WIDTH	NCTION		Y		X		RC SCL		
						-1.678	0 GHz 5 GHz			f	N	
Freq Offs												3
01				14	-				-	-		4
												6
									1	-		7
												9
												10
										-		10

Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Test Frequency	Measurement Level	Limit	Result
(MHz)	Δ (dB)	$\Delta(dB)$	
2402	48.20	>20	PASS

English	5:06 PMDec 31, 2014			SENSE:INT			50 Ω AC		RF		RL
Frequency	TRACE 123456 TYPE MUMANANA	e: Log-Pwr	Avg Ty	Free Run	Tria		000000	.3400	q 2.	Free	tar
1.85.25	DET P N N N N N			n: 30 dB		IFGain:Low				-	-
Auto Tur	.402 1 GHz -3.11 dBm	Mkr1 2.402 1 GHz 10 dB/div Ref 20.00 dBm -3.11 dBm									
1		1		-	1	110		. 2010	11.01		og
Center Fre			A1								10.0
2.39000000 GH			1							-	0.00
											0.0
Start Fre	-23.11 dBm			-	-	-		_	-	-	20.0
2.340000000 GH			11						-		30.0
			12					-	-	-	10.0
	montelementer handling in	mennen van en		mm Almada mar will an	and man work	and an and the second states	Jan Jania I	Burney Mar	1.0.1		<u>60.0</u>
Stop Fre			C. Year	and the second read	Care Sub- Black		and a set of the set of the set of the	and the second second		Cons Il'an and	50.0
2.440000000 GH			-		-				-	-	0.0
	2.44000 GHz	Sto	_					GHz	000	2.34	tari
CF Ste 10.000000 MH	ms (1001 pts)	Sweep 9.27		ЛНz	W 1.0 N	#VB		kHz	100	BW	Res
Auto Ma	UNCTION VALUE	INCTION WIDTH	UNCTION		Y		×		IC SCL	ODE TR	KB M
				11 dBm 31 dBm		402 1 GHz			f	N 1 N 1	
Freq Offs						400 0 3112	۷.			N 1	3
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									-		
	1										1

Product	:	Infotainment System with Bluetooth
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Test Frequency	Measurement Level	Result	
(MHz)	Δ (dB)	$\Delta (dB)$	
2480	52.12	>20	PASS

Frequencia	PMDec 31, 2014		ALIGNAUTO		ENSE:INT		-			50 \$	RF		RL
Frequency	TRACE 1 2 3 4 5 6 TYPE MWWWWWW		Avg Type: Log-Pwr		e Run	Hz Trig: Free Run		0000 GH	43350	1 2.4	Frec	art	
1.5.5.25	ETPNNNNN	IFGain:Low Atten: 30 dB											
Auto Tun		Mkr1 2.480 0 GHz 10 dB/div Ref 20.00 dBm -1.575 dBm											
		1	0	1			10	10.0		20.00	Nei		gL
Center Fre				-		A 1			-			-	0.0
2.483500000 GH				-		-7	-		-		-	-	00 -
1.5% (A. 1997)						1	-		-		-	-	1.0
	-21.58 dBm					- 11							1.0
Start Fre 2.433500000 GH								_				_	1.0
	1					14							
		_		_	∆ 2	1							10
Stop Fre	where we want the second	Control on the States	the support	distribution of the second	1 min	ed i	Newmen	m worker	- Martin - Start - Start	atur Weller Strate	delaut	- Andrews	1.0
2.533500000 GH				-			1						1.0
Second Second	1			1							_		
CF Ste	3350 GHz					5 M.S	A					2.433	
10.000000 MH	(1001 pts)).27 ms (Sweep 9			0 MH	BW 1	#VE		kHz	100 H	BW 1	les
Auto Ma	ON VALUE	FUNCTIO	NCTION WIDTH]	NCTION		Y			×			DE TRO	
						1.575		80 0 GHz 83 5 GHz			f		
Freq Offs						0.002		00000112	2.40				3
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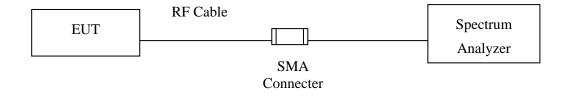
7. Channel Number

7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

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 C63.10, 2009; 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	:	Infotainment System with Bluetooth
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range	Measurement	Result		
(MHz)	(Hopping Channel)	(Hopping Channel)	Kesuit	
2402 ~ 2480	79	>75	Pass	

2402-2421MHz

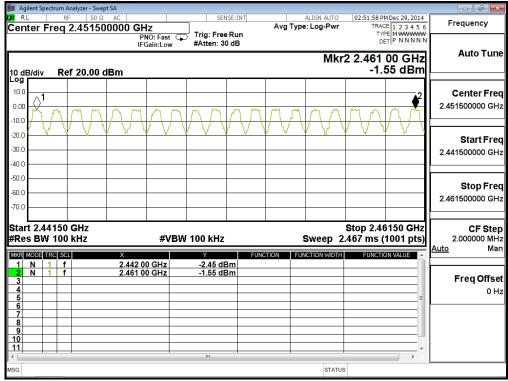
📁 Agilent Spectrum Analyzer - Swept SA				
RL RF 50 Ω AC Center Freq 2.411500000 GHz Image: Context of the second	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:50:23 PM Dec 29, 2014 TRACE 1 2 3 4 5 6	Frequency
PNO: Fast IFGain:Low 10 dB/div Ref 20.00 dBm	Trig: Free Run #Atten: 30 dB	Mkr	2 2.421 00 GHz -2.44 dBm	Auto Tune
		mmm		Center Fred 2.411500000 GHz
-20.0				Start Fred 2.401500000 GH:
-50.0				Stop Fred 2.421500000 GH:
Start 2.40150 GHz #Res BW 100 kHz #VBW ·	100 kHz		Stop 2.42150 GHz 467 ms (1001 pts)	CF Step 2.000000 MH: Auto Mar
1 N 1 f 2.402 00 GHz 2 N 1 f 2.421 00 GHz 3 3 4 4 4 5 6 6 4 4	-2.67 dBm -2.44 dBm			Freq Offset 0 Hz
7 8 9 10 11 11	m			
MSG		STATUS	· · · · · · · · · · · · · · · · · · ·	L



🊺 Agi	lent Spe	ectrum /	Analyzer - Swep	it SA								
Cent	ter F	req	F 50 Ω 2.43150	AC 0000 GH	lz	_	NSE:INT		ALIGN AUTO e: Log-Pwr	TRAC	M Dec 29, 2014 DE 1 2 3 4 5 6 DE M WWWWW	Frequency
	PNO: Fast Trig: Free Run Trig: Free Run IFGain:Low #Atten: 30 dB DET P NNNN Mkr2 2.441 00 GHz 10 dB/div Ref 20.00 dBm -2.61 dBm										Auto Tune	
10 dE 10.0 0.00 -10.0			<u> </u>		m m	ለ ቤ	ΜŇ	ΛΛ	ΜΛ	-2.		Center Freq 2.431500000 GHz
-20.0 -30.0 -40.0		/ \										Start Freq 2.421500000 GHz
-50.0 -60.0 -70.0												Stop Freq 2.441500000 GHz
#Res	sΒW			×	#VBN	100 kHz	EUNC			.467 ms (1150 GHz 1001 pts)	CF Step 2.000000 MHz <u>Auto</u> Man
1		1 f		2.422 0 2.441 0		-3.16 dl -2.61 dl	3m				E	Freq Offset 0 Hz
7 9 10 11 11						m			STATUS	3		

2422-2441MHz

2442-2461MHz





6 4 3 4 6							0MHz				
		alyzer - Swep									
RL enter	RF Frea 2	50 Ω 2.47150	AC 0000 GH	łz		NSE:INT	Avg Typ	ALIGN AUTO e: Log-Pwr	TRAC	Dec 29, 2014	Frequency
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	6150 (Stop 2.48		CF Ste
	N 100 I	KHZ		#VBN	100 kHz			Sweep 2		<u> </u>	2.000000 M Auto M
	TRC SCL		× 2.462 0	0.647	Y -1.76 di		CTION FU	NCTION WIDTH	FUNCTIC	N VALUE	
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2 N	1 f		2.480 0		-1.10 u						Eron Offe
2 N 3 4	1 f		2.480 0		-1.10 01						
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2 N 3 4 5 6 7	1 f		2.480 0		-1.10 u					=	
2 N 3 4 5 6 7 8 9	1 f		2.480 0		-1.10 u					=E	Freq Offs 01
2 N 3 4 5 6 7 8 9 0	1 f		2.480 0		-1.10 ut					E	
2 N 3 4 5 6 7 8	1 f		2.480 0							E	

2462-2480MHz

Product	:	Infotainment System with Bluetooth
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)	Result	
2402 ~ 2480	79	>75	Pass	

🎉 Agilent Spectrum Analyzer - Swept SA 03:39:55 PM Dec 29, 2014 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N N SENSE:INT RI ALIGN AUTO Frequency Center Freq 2.411500000 GHz Avg Type: Log-Pwr PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB Mkr2 2.421 00 GHz -2.40 dBm Auto Tune 10 dB/div Log Ref 20.00 dBm Center Freq 10.0 ¢ 2.411500000 GHz 0.00 mm Mar mon Manha -10.0 -20.0 Start Freq -30.0 2.401500000 GHz -40.C -50.0 Stop Freq -60.0 2.421500000 GHz -70.0 Start 2.40150 GHz #Res BW 100 kHz Stop 2.42150 GHz Sweep 2.467 ms (1001 pts) CF Step 2.000000 MHz Man #VBW 100 kHz Auto MKR MODE TRC SCL 1 N 1 f 2 N 1 f FUNCTION FUNCTION WIDTH FUNCTION VALUE -2.57 dBm -2.40 dBm 2.402 00 GHz 2.421 00 GHz Freq Offset 3 0 Hz 9 10 11 Ш STATUS SG

2402-2421MHz



🍺 Agi	ilent S	pectru	ım Ar	nalyzer - Swe	ot SA								
LXI RI	_		RF				SE	NSE:INT		ALIGN AUTO		M Dec 29, 2014	Frequency
Cen	ter	Fre	q 2	2.43150)0000 GF	z		_	Avg Typ	e: Log-Pwr		CE 1 2 3 4 5 6	Frequency
						VO: Fast	Trig: Fre #Atten: 3				IY D		
					IFO	Gain:Low	#Atten: 3				-		Auto Tune
										Mkr	2 2.441	00 GHz	Auto Tune
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Log													
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0.00	~	1										₩	2.431500000 GHz
	SA.		٩.	mar	mon	mark	An Ma	men nor	mar Myr My	Man	m. M.	an on	2.431500000 GH2
-10.0		WIT.	V4J	r vur v	an warry	n and t	and the state of	Var. W	10 VI V	V VV V	Print of Control Of	ar sor s	
-20.0													
													Start Freq
-30.0			-										2.421500000 GHz
-40.0													
-50.0													Stop Freq
-60.0			_										
-70.0													2.441500000 GHz
-70.0													
Star		404	50	<u></u>	1						O tom 0.4	450 00-	
						-40 (B)				.		150 GHz	CF Step
#Re:	S BI	W 1	UU	KHZ		#VBV	V 100 kHz			Sweep 2	.407 ms (1001 pts)	2.000000 MHz Auto Man
MKR	MODE	TRC	SCL		Х		Y	FUI	CTION FU	NCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Man
1	Ν	1	f		2.422 0	0 GHz	-6.56 d	Bm					
2	Ν	1	f		2.441 0	0 GHz	-1.81 d	Bm					Ener Offerst
3													Freq Offset
4													0 Hz
6													
7													
8													
9								_					
10													
			_	-			m						
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MSG			_							STATUS	>		

2422-2441MHz

2442-2461MHz

	nt Spectru	m Anal	lyzer - Swep	t SA								
LXI RL		RF	50 Ω	AC		SE	NSE:INT		ALIGN AUTO		M Dec 29, 2014	Frequency
Cente	er Fre	q 2.	45150	0000 G	IZ	Trig: Fre	Run	Avg Typ	e: Log-Pwr		CE 1 2 3 4 5 6 PE M WWWW	linequeiney
				P IF	NO:Fast 🗔 Gain:Low	#Atten: 3				C	ET P N N N N N	
									Mlar	0.0.461	00 GHz	Auto Tune
				_				IVIKE				
10 dB/c Log	div	Ref	20.00 d	Bm	1	1			1	-1.	48 dBm	
10.0												Contor From
1	∆1										▲ ²	Center Free
0.00	X	2 -1	howing	mm	man	m m	man	M. M	www.	M	mon	2.451500000 GH
-10.0	**\/#*	- Maria	. MA: M		y war -	1. v	1 V V	Ψ· Ψ· V	an an	· · · · · ·	V	
-20.0												
												Start Free
-30.0 —												2.441500000 GH
-40.0												1
-50.0												
-60.0												Stop Free
												2.461500000 GH
-70.0												
ᄂ										2 4 0 4	0450 011	
Start 2 #Res I					-#VDV	400 141-					6150 GHz (1001 pts)	CF Step 2.000000 MH
#Res l	DAA J	00 K	ΠZ		#VDV	V 100 kHz			Sweep Z	.407 ms	(1001 pts)	Auto Mar
MKR MO		SCL		Х		Y		CTION FU	NCTION WIDTH	FUNCT	ION VALUE	
1 N 2 N		f		2.442 0		<u>-1.84 d</u> -1.48 d						
2 N 3		- T		2.401 0	UGHZ	-1.48 0	5m					Freq Offse
4												он
5 6											=	
7												
8												
9												
10	+										<u> </u>	
•						III	1				- + [*]	
MSG									STATUS			<u>I</u>



2402-2480IVIHZ													
🔰 Agilent Spectrum Analyzer - Swept SA													
X RL RF 50 Ω AC SENSE:INT Center Freq 2.471500000 GHz PNO: East Trig: Free Run	ALIGN AUTO 03:43:19 PM Dec 29, 2014 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency											
PNO: Fast 🖵 Trig: Free Run IFGain:Low #Atten: 30 dB	DET P NNNN	Auto Tune											
10 dB/div Ref 20.00 dBm	Mkr2 2.480 00 GHz -1.50 dBm												
		Center Freq											
0.00 A when the second	un Munhor Manuty	2.471500000 GHz											
-10.0		Ctort Eror											
-30.0		Start Free 2.461500000 GH:											
-40.0	ښمهر												
-60.0		Stop Free 2.481500000 GH											
-70.0													
Start 2.46150 GHz #Res BW 100 kHz #VBW 100 kHz	Stop 2.48150 GHz Sweep 2.467 ms (1001 pts)	CF Step 2.000000 MH											
MKR MODE TRC SCI. X Y FI 1 N 1 f 2,462 00 GHz -1,46 dBm	INCTION FUNCTION WIDTH FUNCTION VALUE	<u>Auto</u> Mar											
2 N 1 f 2.480 00 GHz -1.50 dBm 3		Freq Offse											
4 5 0	E	0 H											
6 7 8 8													
9 10													
11													
MSG	STATUS	<u> </u>											

2462-2480MHz

8. Channel Separation

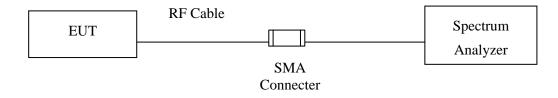
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

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 C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

± 150Hz

8.6. Test Result of Channel Separation

Product	:	Infotainment System with Bluetooth
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

	E	Measurement	Limit	Limit of (2/3)*20dB	
Channel No.	Frequency	Level	(1-11-)		Result
	(MHz)	(kHz)	(kHz)	Bandwidth (kHz)	
00	2402	1000	>25 kHz	760.0	Pass
39	2441	1000	>25 kHz	760.0	Pass
78	2480	1000	>25 kHz	760.0	Pass

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

📕 Agilent S	Spectru	um Ar	nalyzer - Swept	: SA								
<mark>u</mark> rl		RF		AC		SE	NSE:INT		ALIGN AUTO		M Dec 29, 2014	Frequency
Center	Fre	ed 2	2.40200	0000 GH	lz NO:Wide ⊂s	Trig: Fre	e Run	Avg Ty	/pe: Log-Pwr	TRAC TY	E 1 2 3 4 5 6	Trequency
					Gain:Low	#Atten: 3				D	ET P NNNNN	
									Mkr	2 2.403	00 GHz	Auto Tun
I0 dB/di	v	Ref	f 20.00 d	Bm							81 dBm	1
°g 🗌												
10.0							1	2				Center Fre
0.00						(- m				2.402000000 GH
10.0							$ \downarrow $					
20.0								- Y				Start Fre
30.0								X				
												2.397000000 GH
40.0					1	\checkmark			V			
50.0					and a start				formand and			Stop Fre
50.0 🚧	an a	-abole	-al-washership Mr	ab destrictions						aller and the second states	hand the second second second	2.407000000 GH
70.0												2.407000000 GF
			00 GHz								0.00 MHz	CF Ste
Res B	W 1	00	KHZ		#VBV	/ 100 kHz			#Sweep 5	00.0 ms (1001 pts)	1.000000 MH Auto Ma
KR MODE				Х		Y		NCTION	FUNCTION WIDTH	FUNCT	DN VALUE	<u>Auto</u> III.
1 N 2 N	1	f		2.402 0		-2.68 d -2.81 d						
3		-		2.403 0	0 GHZ	-2.01 u	5111					Freq Offs
4												0 H
5 6							-				=	
7												
8												
9												
11											-	
						III					- F	
G									STATU	Б		

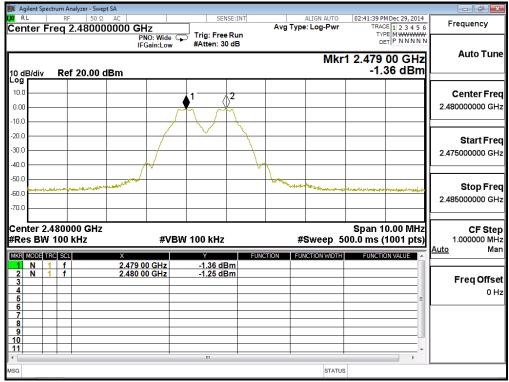
Channel 00 2402MHz



							0	••••							
		pectru		nalyzer - Swep											
lxi R			RF		AC		SE	NSE:INT			ALIGN AUTO		M Dec 29, 2014		Frequency
Cen	ter	Fre	q j	2.44100	0000 GH		Trig: Fre	- D	Avg	Туре	e: Log-Pwr	TYP	E 1 2 3 4 5 (5	riequency
						NO:Wide (Gain:Low	#Atten: 3						PNNNN		
					IFC	Jain:Low	#Atten. v						,		Auto Tune
											Mkr	2 2.442	00 GHz		Auto Tune
10 d	Didiu		Dof	f 20.00 c	IBm							-2.3	31 dBm	IL	
Log	Biuliv		Rei	20.00 0		1		1			1				
10.0															Center Freq
10.0								∦1	2					П	•
0.00			-				~	\mathbf{k}	n					11	2.441000000 GHz
-10.0							1	$\langle \rangle$	$\langle \rangle$					∎⊢	
10.0							1	\sum	\land					Iŀ	
-20.0			-					×		(11	Start Freq
-30.0							1			1				П	
00.0														П	2.436000000 GHz
-40.0							71			<u>_</u>				łŀ	
-50.0							/				1			Ir	
					manuphalad	A CONTRACTOR OF THE OWNER					the second	manutana	والمتحدث والمتحاط	ш	Stop Freq
-60.0														11	2.446000000 GHz
-70.0															2.440000000 0112
Can	tor	2 1/	110	00 GHz								Snan 1	0.00 MHz	1	CF Step
#Re						#\/D	W 100 kHz			-#1	Sweep 5				1.000000 MHz
#RC	3 D1	N I	00	KIIZ		#10		-		#	Sweeh 1	00.0 1115 (1001 pts,		Auto Man
MKR	MODE	TRC	SCL		Х		Y		FUNCTION	FUN	ICTION WIDTH	FUNCTIO	DN VALUE	ĨĽ	Auto Mari
1	Ν	1	f		2.441 0		-1.98 d								
2	Ν	1	f		2.442 0	0 GHz	-2.31 d	Bm							
3															Freq Offset
4								_							0 Hz
6														I I-	
7															
8															
9															
10								_							
11										-					
•							III					1			
MSG											STATUS				
	_		_												

Channel 39 2441MHz

Channel 78 2480 MHz



Product	:	Infotainment System with Bluetooth
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

	F actorial states and the states of the sta	Measurement	Limit	Limit of (2/3)*20dB	
Channel No.	Frequency	Level	(1-11-)		Result
	(MHz)	(kHz)	(kHz)	Bandwidth (kHz)	
00	2402	1000	>25 kHz	940.0	Pass
39	2441	1000	>25 kHz	940.0	Pass
78	2480	1000	>25 kHz	940.0	Pass

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

	ent Spe			yzer - Swe																		
Cento	er F		RF 2.	50 Ω 40200		0 GH	Z IO: Wide		Trie	SEN	Run		Av	у Тур	ALIGN		03	TRA T)	CE 1 2	29, 201 2 3 4 5 WWW	6	Frequency
10 dB/	/div		ef 2	20.00	dBm	IFG	iO: Wide Gain:Lov	/ /		tten: 3						Mkr	22.	ء 403	ет Р I 00	NNNN	z	Auto Tune
Log - 10.0 - -10.0 -										- A	1	v. wall	2									Center Fred 2.402000000 GHz
-20.0 - -20.0 - -30.0 -]						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							Start Fred 2.397000000 GHz
-50.0 - -60.0 ≌ -70.0 -	anada.	ld-L-att		ana ang dalama	ense.	الريعيدين ا	\sim	~~~								5	n, r	hunderen		reylderaa	-	Stop Fred 2.407000000 GHz
Cente #Res	BW	10	0 kl	0 GHz Hz	×		#V	BW	100	kHz		EUN	CTION		Swe	<u> </u>	00.0	Dan 1 ms	(100	<u> </u>	5)	CF Step 1.000000 MHz <u>Auto</u> Mar
1 2 3 4 5	N	1	f		2	.402 00 .403 00	0 GHz 0 GHz			2.93 dE 2.73 dE										_		Freq Offset 0 Hz
6 7 8 9 10 11																					•	
⊀ MSG	_		-					_		III	-					STATUS	s			F		

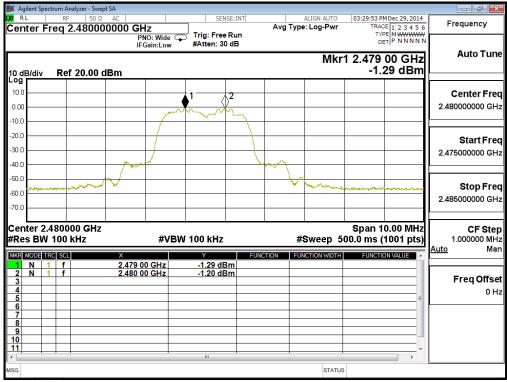
Channel 00 2402MHz



λa	ilent S	inecto		nalyzer - Swep	4 S A											
LXI RI		pecu	RF		AC			CE	NSE:INT			ALIGN AUTO	02-12-12.0	M Dec 29, 20	14	
		Ere			0000 G	47		36	NOE.INT	Ava		: Log-Pwr		CE 1 2 3 4		Frequency
Cen		110	<u>, h</u>	2.44100	P	NO: Wide Gain:Low	Ģ	Trig: Fre #Atten: 3			.,,,,,,		TY		ww	A
10 di	B/div		Rei	f 20.00 d	dBm							Mkr	2 2.442 -1.	00 GH 99 dB		Auto Tune
Log 10.0 0.00 -10.0								م مراسم مر	1 Mn	2					_	Center Freq 2.441000000 GHz
-20.0 -30.0 -40.0											ſ					Start Freq 2.436000000 GHz
-50.0 -60.0 -70.0		Andreas	a nna	an a))allowed								Leinen	gelektersevel.		Stop Freq 2.446000000 GHz
#Re	s B	W 1	00			#VI	BW	100 kHz				<u> </u>	Span 1 00.0 ms (ts)	CF Step 1.000000 MHz <u>Auto</u> Man
MKR 1 2 3 4 5 6	Mode N N	1 1	f			00 GHz 00 GHz		Y -2.78 dl -1.99 dl	Bm Bm	FUNCTION	FUN	ICTION WIDTH	FUNCTI	ON VALUE	* 	Freq Offset 0 Hz
7 8 9 10 11 <								III				STATUS		Þ	*	

Channel 39 2441MHz

Channel 78 2480 MHz



9. Dwell Time

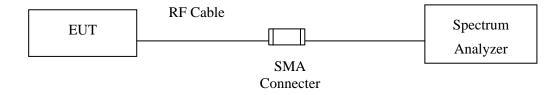
9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

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 C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

± 25msec

9.6. Test Result of Dwell Time

Product	:	Infotainment System with Bluetooth
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

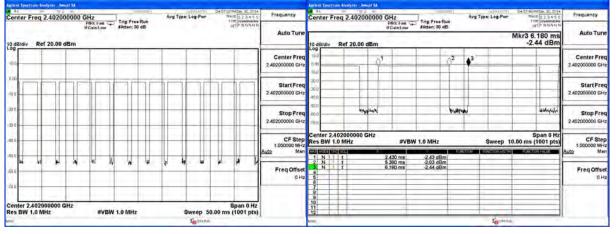
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.950	13	50	0.77	0.307	0.4	Pass
2441	2.950	14	50	0.83	0.330	0.4	Pass
2480	2.950	13	50	0.77	0.307	0.4	Pass

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



CH39 Time Interval between hops

CH 39Transmission Time

-81		q 2.441	12 . AL	0 GH	Z	Trip:			7	vg Typ	et Log f	Рит	D450-4	478 1 2 3 4 178 1 2 3 4 178 1 2 3 4	2014					410000	00 GH		Trip Free		Avg Ti	pe: Log-Pu	TO DAT	SUBRIDE 30,20 MAR 12345 THE WAARAN	Frequency
		-		PM	OC Fast San alecianor	#Acte	Free R n; 30 d	iB.						CET P DITIE	inch	Auto Tune	-		-		PM	k Fast in	#Atten; 30	dB	_				
0 dB	/div I	Ref 20.0	0 dBm												-	- Carlo Carlo	10 dB	Udiv 1	tef 20	0.00 dBr	n						MKI	3 3.810 m -1.53 dBn	
0.0				-		-	-		1		1		_	-		Center Freq 441000000 GHz	10.00	1				2		_	-				Center Fr 2.441000000 G
100	7	tir	T	1	T	T	1	-	t	1	h			П		Start Freq 441000000 GHz	10.0		-	-									Start Fro 2 441000000 G
00.			+							+					6-11 C	Stop Freq 441000000 GHz	700		-	+		sindda		_		VAULAN			Stop Fri 2.441000000 G
10				+						+					Au	CF Step 1.000000 MHz				000 GHz		#VBW	1.0 MHz	1.5	No. No.			Span 0 H ms (1001 pts	CF Str 1 000000 M
20 Q -	μ	U	4	h	a	V	4	1	W	V	4			4 .		Freq Offset © Hz	1 2 1	N 1	1		3.01	0 us 0 ms 0 ms	-1.52 dB -1.47 dB -1.53 dB	m					FreqOffs
	er 2.44 BW 1.0	1000000	GHZ		#VBW	1101		_	1		Cupa	0.50	00 mc	Span 0 (1001 p	Hz		7 8 9 10 11												
10		COLUMN STATE										tartin		(00	_	-							Loot	na.		41

CH 78 Time Interval between hops

CH	78	Transmission	Time
	10	ransmission	THIC

alen frec Ri Center I		-	1912	41.1	GHz	-	Trig	Free R	lun	Âv	g Type	Log-Pur	174-15	MARKEN DE 20,2014 MARKE 2,2,3,4,5,6 THE WAARANAN MITP MURININ	Frequency	Center			000000 0	Hz PNO: Fast 1.	Trig: Free Ru	A	vg Type: Log	ето р Рит	MARE 12 2 3 4 5 6 THE WARRANG	Frequency
0 dB/div		ef 20	00.4		FGale:	and the	#Atten	n: 30 d	8					self-manna	Auto Tune	10 dB/div	De	7 20 00	-	FGaleti me	#Atten: 30 dB		-		kr3 4.550 ms -1.85 dBm	and the second second
og obraiv				Dill	-		-			-				1	Center Freq 2.48000000 GHz	10 000	01	1 20.00	o dBm	9	∮ ³	-				Center Free 2.48000000 GH
00	1			T	1	71	1	1		I.	1			11	Start Freq 2 48000000 GHz	200		_				-	-		_	Start Fre 2.48000000 GH
6.(). D.D.	+				ľ					ľ					Stop Freq 2.49000000 GHz	800 800	hum		-	k	rletype	-	-	normali		Stop Fre 2.48000000 GH
10	+														CF Step 3.000000 MHz Auto Man	Center : Res BW	1.0 N	IHz		#VBV	/ 1.0 MHz				Span 0 Hz 0 ms (1001 pts)	CF Ste 1,000000 Mi- Auto Mi
50	W		Ú.	N	4	- 14	M	1	*	4	V	4	N	W W	Freq Offset 0 Hz	2 N 3 N			3	750 ms 550 ms	-1.00 dBm -1.85 dBm					Freq Offse
Center 2			00 G	Hz	1	#VBW	1.0 M	Hz	-	-		weep	50.00	Span 0 Hz ms (1001 pts)		7 8 9 10 11										
N												Lostar		and the others	U	NOV.		-					Ľ.	ptania		

Note:

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

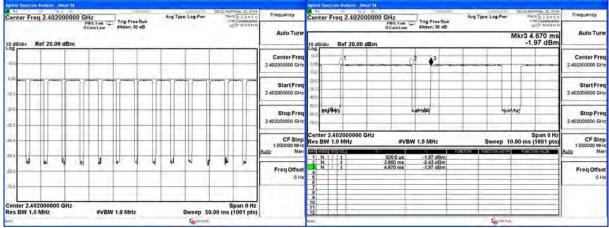
Product	:	Infotainment System with Bluetooth
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.740	14	50	0.77	0.307	0.4	Pass
2441	2.730	13	50	0.71	0.284	0.4	Pass
2480	2.940	13	50	0.76	0.306	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



CH39 Time Interval between hops

CH 39Transmission Time

CH 00 Transmission Time



CH 78 Time Interval between hops

	CH	78	Transmission	Time
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athini Spectrum Kindprin - Smoot SA				_	Authors Spectrum Analyzie : Smapl SA			
Center Freq 2.480000000	SHz tak Saus Puis	Avg Type: Log Put	105:07:11:04(0e:30, 20)4 TRACE 12:34:5:0 THE WWWWWWW GTP N SNRP	Frequency	Center Freq 2.480000000 GHz	Fam Las Trig Free Run	Avg Type: Log-Put mail 1234	5-6 Frequency
	Folicitation Trig Free Run Folicitation Batten: 30 dB		serie nationen	Auto Tune	PN0; IFGalz		NOT P NTER	Auto Maria
0 dB/div Ref 20.00 dBm				Auto rune	10 dB/div Ref 20.00 dBm		Mkr3 7.250 r -1.00 dB	151
10.0				Center Freq 2.480000000 GHz	10.0 10.0	9	Q ² •	Center Fre 2.480000000 GH
au				Start Freq 2.48000000 GHz				Start Fre- 2.48000000 GH
20 A				Stop Freq 2.48000000 GHz		w	eleviele	Stop Fre 2.45000000 GH
410						#VBW 1.0 MHz	Span 0 Sweep 10.00 ms (1001 p	(S) CF Ster 1,000000 MH
		4 4 4	4 4	Auto Man	1 N 1 1 3500 2 N 1 6440	ms -1.36 dBm	NOTION CONCTINUES IN PLACEDURY WORL	Auto Ma
£0.0				Freq Offset 0 Hz	3 N 1 1 7250	ms -1.00 dBm		FreqOffse
710				1.	7 8 9 10			
Center 2.480000000 GHz Res BW 1.0 MHz	#VBW 1.0 MHz	Sweep 50	Span 0 Hz 0.00 ms (1001 pts)				Louine	

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

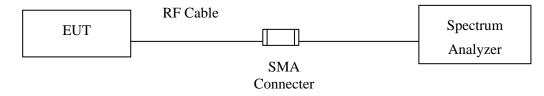
10.1. Test Equipment

_	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

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 C63.10, 2009; 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	:	Infotainment System with Bluetooth
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1140		NA

Figure Channel 00:

Agilent Spectrum Analyzer - Swep	it SA				
Center Freq 2.40200	AC 0000 GHz	SENSE:INT	ALIGN Avg Type: Log		5 6 Frequency
10 dB/div Ref 20.00 c	PNO: Wide GIFGain:Low	#Atten: 30 dB		Mkr2 2.401 42 GF -23.18 dB	Auto Tune
10.0 0.00					Center Freq 2.402000000 GHz
-20.0		¢2	3	-22.46 ¢	Bin Start Freq 2.397000000 GHz
-50.0 -60.0	man		- Winner	umphanne Mahan	Stop Freq 2.407000000 GHz
Center 2.402000 GHz #Res BW 100 kHz	#VBW	100 kHz		Span 10.00 Mi ep 1.267 ms (1001 pt worth eunction value	Hz CF Step ts) 1.000000 MHz Auto Mar
1 N 1 f 2 N 1 f 3 N 1 f 4 5 6	2.402 00 GHz 2.401 42 GHz 2.402 56 GHz	-2.46 dBm -23.18 dBm -23.17 dBm			Freq Offset
7 8 9 10 11 11					
MSG		III		STATUS	

NA

QuieTek

Product Test Item Test Site Test Mode	: : :	Infotainment System with Bluetooth Occupied Bandwidth Data No.3 OATS Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)						
Channel No.		Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)				
39		2441	1140					

Figure Channel 39:

🊺 Agil	lent Sp	pectru	m Ar	alyzer -	Swept	SA																				d X
(X) RL Cent		Fre	RF q 2		⁵⁰ Ω	AC			Vide G		rig: Fi	SENSE			Av		ALIGN A		02:		CE 1	29,20 234 ₩₩₩	56		Frequer	ncy
	IFGain:Low #Atten: 30 dB Mkr2 2.440 42 GHz dB/div Ref 20.00 dBm -22.32 dBm													Auto	Tune											
Log 10.0 0.00											/	, Q												2.4	Cente 410000	
-20.0 : -30.0 -											¢ ²		4	3							-	21.70 d	Bm	2.4	Sta i 360000	r t Freq 00 GHz
-50.0 -60.0 -70.0	<i>.</i> ,	~~~~~	~~~~	~~~^	m	nn.	~~~~~	~~~	~~~~d							^V wvv	••		~~~	~~~~	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~	2.4	Sto 460000	p Freq 00 GHz
L Cent #Res	s BV	N 10	00	kHz	Hz				#VBV	N/ 10	00 kH	łz		FUNC	TION		Swee	<u> </u>	267)an ' ms	(100	1 pt		Auto	C 1.0000	F Step 00 MHz Man
1	N N N	1 1 1	f f			2	2.441 0 2.440 4 2.441 5	2 GI	lz	-	<u>-1.70</u> 22.32 22.40	dBn	n n	Pone									E		Freq	Offset 0 Hz
10 11 • MSG											III						s	STATUS				Þ	*			

NA

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QuieTek

Product : Test Item : Test Site : Test Mode :	Occupied Ban No.3 OATS	System with Bluetooth dwidth Data smit - 1Mbps (GFSK)(24	80MHz)
Channel No.	Frequency	Measurement Level	Required Limit
	(MHz)	(kHz)	(kHz)

78 2480 1140

Figure Channel 78:

鱦 Agilent Spectrum Analyzer - Swep					
⊠ RL RF 50Ω Center Freq 2.48000		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:34:40 PM Dec 29, 2014 TRACE 1 2 3 4 5 6 TYPE M WWWW	Frequency
10 dB/div Ref 20.00 d	IFGain:Low	#Atten: 30 dB	Mkr	2 2.479 42 GHz -21.80 dBm	Auto Tune
10.0 0.00					Center Freq 2.480000000 GHz
-20.0 -30.0 -40.0				-20.99 dBm	Start Freq 2.475000000 GHz
-50.0 -60.0 -70.0	man			han the second sec	Stop Freq 2.485000000 GHz
Center 2.480000 GHz #Res BW 100 kHz MKR MODE TRO SCL	#VBW	100 kHz	Sweep 1	Span 10.00 MHz I.267 ms (1001 pts)	CF Step 1.000000 MHz <u>Auto</u> Man
N 1 f 2 N 1 f 3 N 1 f 4 - - - 6 - - - 7 - - - 8 - - - 9 - - -	2.480 00 GHz 2.479 42 GHz 2.480 56 GHz	-0.99 dBm -21.80 dBm -21.74 dBm			Freq Offset 0 Hz
10 11 •			STATU	* s	

NA

QuieTek

Product Test Item Test Site Test Mode	: : :	Infotainment System with Bluetooth Occupied Bandwidth Data No.3 OATS Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)					
Channel No.		Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)			
00	00 2402		1410				

Figure Channel 00:

🔰 Agilent Spectrum Analyzer - Swep					
RL RF 50 Ω Center Freq 2.40200	AC 0000 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:54:05 PM Dec 29, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 c	PNO: Wide G	#Atten: 30 dB	Mkı	2 2.401 29 GHz -23.39 dBm	Auto Tune
10.0 0.00		1			Center Freq 2.402000000 GHz
-20.0		◆ ²	3	-22:51 dBm	Start Fred 2.397000000 GHz
-50.0 -60.0				mannan	Stop Fred 2.407000000 GHz
Center 2.402000 GHz #Res BW 100 kHz	#VBW	100 kHz	Sweep 1	Span 10.00 MHz I.267 ms (1001 pts)	CF Step 1.000000 MH <u>Auto</u> Mar
1 N 1 f 2 N 1 f 3 N 1 f 4 5 6 7	2.402 00 GHz 2.401 29 GHz 2.402 70 GHz	-2.51 dBm -23.39 dBm -23.22 dBm			Freq Offse 0 Hz
7 8 9 9 10 11 4 11					
MSG			STATU	s	

NA

QuieTek

Product Test Item Test Site Test Mode	: : :	Infotainment System with Bluetooth Occupied Bandwidth Data No.3 OATS Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)					
Channel No.		Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)			
39	39 2441		1410				

Figure Channel 39:

🃁 Agilent Spectrum Analyzer - Swep					
RL RF 50 Ω Center Freq 2.44100	AC 0000 GHz PNO: Wide C	SENSE:INT	ALIGN AUT Avg Type: Log-Pv	Vr TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 d	IFGain:Low	#Atten: 30 dB	М	bet ₽ NNNNN kr2 2.440 29 GHz -22.34 dBm	Auto Tune
10.0 0.00		1			Center Fred 2.441000000 GH:
-20.0		2	3	21.75 dBm	Start Fred 2.436000000 GHz
-50.0 -60.0 -70.0	mm V		- Vimmin	- Margaren war with	Stop Free 2.446000000 GH
Center 2.441000 GHz #Res BW 100 kHz	#VBW	100 kHz		Span 10.00 MHz 1.267 ms (1001 pts)	CF Stej 1.000000 MH <u>Auto</u> Ma
1 N 1 f 2 N 1 f 3 N 1 f 4	2.441 00 GHz 2.440 29 GHz 2.441 70 GHz	-1.75 dBm -22.34 dBm -22.35 dBm			Freq Offse 0 H:
9 0 10 1 11 0 4 5 MSG		m	ST/		

NA

QuieTek

Product Test Item Test Site Test Mode	: : :	Infotainment System with Bluetooth Occupied Bandwidth Data No.3 OATS Mode 2: Transmit - 3Mbps (8DPSK)(2480MHz)					
Channel No.		Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)			
78		2480	1410				

Figure Channel 78:

🍺 Agilent Spectrum Analyzer - Swep	t SA				
🗱 RL RF 50 Ω Center Freq 2.48000	AC 0000 GHz PNO: Wide	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	03:16:29 PM Dec 29, 2014 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
10 dB/div Ref 20.00 d	IFGain:Low	#Atten: 30 dB	Mkı	сет <u>Р NNNNN</u> 12 2.479 29 GHz -21.69 dBm	Auto Tune
10.0 0.00 -10.0					Center Freq 2.480000000 GHz
-20.0				-21.05 dBm	Start Freq 2.475000000 GHz
-50.0 -60.0 -70.0	mm			lyder fran an a	Stop Freq 2.485000000 GHz
Center 2.480000 GHz #Res BW 100 kHz	#VBW	100 kHz		Span 10.00 MHz 1.267 ms (1001 pts)	CF Step 1.000000 MHz <u>Auto</u> Man
1 N 1 f 2 N 1 f 3 N 1 f 4	2,480 00 GHz 2,479 29 GHz 2,480 70 GHz	-1.05 dBm -21.69 dBm -21.69 dBm			Freq Offset 0 Hz
8 9 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			STATL	+	

11. EMI Reduction Method During Compliance Testing

No modification was made during testing.