FCC Test Report

Product Name	Automotive Electronics Infotainment Head Unit
Model No	MAZDA_GEN_65_CMU
FCC ID	CB262932

Applicant	Johnson Controls Interiors L.L.C.
Address	915 E 32nd Street, Holland, MI, 49423, USA

Date of Receipt	Apr. 25, 2013
Issue Date	Jun. 20, 2013
Report No.	134484R-RFUSP42V01
Report Version	V1.0



The test results relate only to the samples tested.

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Test Report Certification

Issue Date: Jun. 20, 2013 Report No.: 134484R-RFUSP42V01



Product Name	Automotive Electronics Infotainment Head Unit		
Applicant	Johnson Controls Interiors L.L.C.		
Address	915 E 32nd Street, Holland, MI, 49423, USA		
Manufacturer	Johnson Controls Interiors L.L.C.		
Model No.	MAZDA_GEN_65_CMU		
FCC ID	CB262932		
EUT Rated Voltage	DC 10V~16V		
EUT Test Voltage	DC 12V		
Trade Name	Johnson Controls Inc		
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2012		
	ANSI C63.4: 2003, ANSI C63.10: 2009, KDB 558074		
Test Result	Complied		

The test results relate only to the samples tested.

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Documented By :

Rita Huang

(Senior Adm. Specialist / Rita Huang)

Tested By

Luo

(Engineer / Nowal Kuo)

Approved By

(Manager / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Automotive Electronics Infotainment Head Unit		
Trade Name	Johnson Controls Inc		
Model No.	MAZDA_GEN_65_CMU		
FCC ID	CB262932		
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW		
Number of Channels	802.11b/g/n-20MHz: 11		
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 72.2Mbps		
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK)		
802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)			
Antenna Type Integral (PCB)-Inverted F Antenna			
Antenna Gain	Refer to the table "Antenna List"		
Channel Control	Auto		

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Johnson Controls Inc	N/A	0.39 dBi for 2.4 GHz

Note:

1. The antenna of EUT is conform to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

- 1. The EUT is an Automotive Electronics Infotainment Head Unit with a built-in WLAN Bluetooth transceiver, this report for WLAN.
- 2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 802.11g is 6Mbps 802.11n(20M-BW) is 7.2Mbps and)
- 4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

1.2. Operational Description

The EUT is an Automotive Electronics Infotainment Head Unit, This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 7.2,14.4,21.7,28.9,43.3,57.8,65 and 72.2Mbps in 802.11n(20M-BW) mode, The IEEE 802.11n is Single In, Single Out" (SISO) technology and one antennas to support 1(Transmit) * 1(Receive) SISO technology.

This Automotive Electronics Infotainment Head Unit, compliant with IEEE 802.11b/g/n, is a high-efficiency Wireless LAN adapter. It is used to obtain Navi POI/Real Time Traffic function (Such as gas prices, weather, nearest restaurant). Operation in 2.4GHz Direst Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM) radio transmission, the Automotive Electronics Infotainment Head Unit Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b/g/n network.

This device does not support 802.11n(40M-BW) technology. This equipment includes WLAN and Bluetooth, which can not transmit signals simultaneously.

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	PPT	N/A	Non-Shielded, 0.8m
2	Test Fixture	Johnson Controls Inc	N/A	N/A	N/A
3	Power Supply	Agilent	E3646A	MY40005880	N/A
4	GPS Antenna	Johnson Controls Inc	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
Α	RS-232 Cable	Non-Shielded, 2.0m
В	Signal Cable	Non-Shielded, 0.5m
С	Power Cable	Non-Shielded, 1.2m
D	GPS Antenna Cable	Non-Shielded, 6.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute software "HyperTerminal V5.5" on the Notebook PC.
- (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	50-65
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>

Site Description:	File on						
	Federal Communications Commission						
	FCC Engineering Laboratory						
	7435 Oakland Mills Road						
	Columbia, MD 21046						
	Registration Number: 92195						
	Accreditation on NVLAP						
	NVLAP Lab Code: 200533-0						
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 : <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., 2012	
Х	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2013	Peripherals
Х	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2013	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2013	EUT
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2013	
	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	Limits						
MHz	QP	AVG					
0.15 - 0.50	66-56	56-46					
0.50-5.0	56	46					
5.0 - 30	60	50					

2.4. Test Procedure

The EUT and simulators 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 refers 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 of 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.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Owing to the EUT use Vehicular 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, 2013				
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2013				
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.

3.2. Test Setup



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Channal No.	Frequency	For d	Average ifferent Da	e Power ata Rate (N	Peak Power	Required	Decult	
	(MHz)	1	2	5.5	11	1	Limit	Kesult
			Measur	ement Lev	vel (dBm)			
01	2412	17.44				19.87	<30dBm	Pass
06	2437	16.94	16.93	16.83	16.82	19.58	<30dBm	Pass
11	2462	14.79				17.35	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product	:	Automotive Electronics Infotainment Head Unit

- Test Item : Peak Power Output Data
- Test Site : No.3 OATS

Test Mode : Mode 2: Transmit (802.11g 6Mbps)

			Average Power Peak						Peak			
Channel No	Frequency	6	۲ ٥	or diffe	erent Da	ata Rate	e (Mbps	5)	54	Power	Required	Result
	(MHZ)	0 9 12 18 24 36 48 54 6 Measurement Level (dBm)						Limit				
01	2412	16.22								22.27	<30dBm	Pass
06	2437	15.58	15.55	15.5	15.49	14.9	14.94	13.45	13.41	22.48	<30dBm	Pass
11	2462	15.20								22.44	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

- Product : Automotive Electronics Infotainment Head Unit
- Test Item : Peak Power Output Data
- Test Site : No.3 OATS
- Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Average Power Pe							Peak					
	Fraguanay		F	For diffe	erent Da	ata Rate	e (Mbps	5)		Power	Doquirad	
Channel No	(MHz)	7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2	Limit	Result
			Measurement Level (dBm)									
01	2412	15.28								22.20	<30dBm	Pass
06	2437	15.02	15.01	14.98	14.89	14.9	13.48	13.42	13.4	22.37	<30dBm	Pass
11	2462	14.59								22.06	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

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

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Х	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2012
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
	Х	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	Х	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2012
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
	Х	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Χ	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

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

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. 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(a) Limits							
Frequency MHz	Field strength	Measurement distance					
	(microvolts/meter)	(meter)					
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: E field strength $(dBuV/m) = 20 \log E$ field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 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 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: 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 bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The frequency range from 9KHz to 10th harminics is checked.

4.5. Uncertainty

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

4.6. Test Result of Radiated Emission

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	49.010	52.271	-21.729	74.000
7236.000	10.650	35.820	46.470	-27.530	74.000
9648.000	13.337	35.620	48.956	-25.044	74.000
Average Detector:					
Vertical					
Peak Detector:					
4824.000	6.421	49.450	55.871	-18.129	74.000
7236.000	11.495	35.780	47.275	-26.725	74.000
9648.000	13.807	36.240	50.046	-23.954	74.000
Average Detector:					
4824.000	6.421	46.690	53.111	-0.889	54.000

- 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	: Automotive Electronics Infotainment Head Unit							
Test Item	: Harmoni	: Harmonic Radiated Emission Data						
Test Site	: No.3 OA	: No.3 OATS						
Test Mode	: Mode 1:	Transmit (802.11	b 1Mbps) (2437 MH	z)				
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
4874.000	3.038	48.250	51.287	-22.713	74.000			
7311.000	11.795	36.700	48.494	-25.506	74.000			
9748.000	12.635	37.510	50.145	-23.855	74.000			
A D-44								
Average Detector:								
Vertical								
Peak Detector:								
4874.000	5.812	48.630	54.441	-19.559	74.000			
7311.000	12.630	36.580	49.209	-24.791	74.000			
9748.000	13.126	37.600	50.726	-23.274	74.000			
Average Detector:								
4874.000	5.812	45.880	51.691	-2.309	54.000			

- 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	: Automo	tive Electronics In	nfotainment Head Un	it				
Test Item	: Harmonic Radiated Emission Data							
Test Site	: No.3 OATS							
Test Mode	: Mode 1:	Transmit (802.11	b 1Mbps) (2462 MH	z)				
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
4924.000	2.858	50.760	53.617	-20.383	74.000			
7386.000	12.127	36.230	48.358	-25.642	74.000			
9848.000	12.852	37.430	50.283	-23.717	74.000			
Average Detector:								
Vertical								
Peak Detector:								
4924.000	5.521	50.370	55.890	-18.110	74.000			
7386.000	13.254	36.600	49.854	-24.146	74.000			
9848.000	13.367	37.530	50.897	-23.103	74.000			
Average Detector:								
4924.000	5.521	47.720	53.240	-0.760	54.000			

- 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	: Automo	tive Electronics In	nfotainment Head Un	it				
Test Item	em : Harmonic Radiated Emission Data							
Test Site	: No.3 OA	ATS						
Test Mode	: Mode 2:	: Mode 2: Transmit (802.11g 6Mbps) (2412MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
4824.000	3.261	45.650	48.911	-25.089	74.000			
7236.000	10.650	38.210	48.860	-25.140	74.000			
9648.000	13.337	37.420	50.756	-23.244	74.000			
Average Detector:								
Vertical								
Peak Detector:								
4824.000	6.421	46.630	53.051	-20.949	74.000			
7236.000	11.495	37.290	48.785	-25.215	74.000			
9648.000	13.807	37.750	51.556	-22.444	74.000			

- 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	Product : Automotive Electronics Infotainment Head Unit							
Test Item	: Harmon	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS							
Test Mode	: Mode 2:	Transmit (802.11	g 6Mbps) (2437 MH	z)				
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
4874.000	3.038	46.750	49.787	-24.213	74.000			
7311.000	11.795	36.530	48.324	-25.676	74.000			
9748.000	12.635	37.430	50.065	-23.935	74.000			
Average Detector:								
Peak Detector:								
4874.000	5.812	44.670	50.481	-23.519	74.000			
7311.000	12.630	35.890	48.519	-25.481	74.000			
9748.000	13.126	37.520	50.646	-23.354	74.000			

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- 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	duct : Automotive Electronics Infotainment Head Unit							
Test Item	: Harmon	: Harmonic Radiated Emission Data						
Test Site	: No.3 OA	ATS						
Test Mode	: Mode 2:	: Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
4924.000	2.858	48.640	51.497	-22.503	74.000			
7386.000	12.127	36.490	48.618	-25.382	74.000			
9848.000	12.852	36.830	49.683	-24.317	74.000			
Average Detector:								
Vertical								
Peak Detector:								
4924.000	5.521	48.150	53.670	-20.330	74.000			
7386.000	13.254	35.920	49.174	-24.826	74.000			
9848.000	13.367	37.330	50.697	-23.303	74.000			

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- 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	: Automotive Electronics Infotainment Head Unit						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OA	ATS					
Test Mode	: Mode 3:	Transmit (802.11	n MCS0 7.2Mbps 20	M-BW)(2412MH	Hz)		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
4824.000	3.261	44.370	47.631	-26.369	74.000		
7236.000	10.650	37.960	48.610	-25.390	74.000		
9648.000	13.337	37.680	51.016	-22.984	74.000		
Average Detector:							
Vertical							
Peak Detector:							
4824.000	6.421	45.710	52.131	-21.869	74.000		
7236.000	11.495	37.870	49.365	-24.635	74.000		
9648.000	13.807	36.930	50.736	-23.264	74.000		

- 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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	44.460	47.497	-26.503	74.000
7311.000	11.795	37.090	48.884	-25.116	74.000
9748.000	12.635	37.550	50.185	-23.815	74.000
Average Detector:					
Vertical					
Peak Detector:					
4874.000	5.812	43.710	49.521	-24.479	74.000
7311.000	12.630	36.050	48.679	-25.321	74.000
9748.000	13.126	37.470	50.596	-23.404	74.000

- 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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	46.530	49.387	-24.613	74.000
7386.000	12.127	34.820	46.948	-27.052	74.000
9848.000	12.852	35.560	48.413	-25.587	74.000
Average Detector:					
Vertical					
Peak Detector:					
4924.000	5.521	46.460	51.980	-22.020	74.000
7386.000	13.254	33.800	47.054	-26.946	74.000
9848.000	13.367	35.470	48.837	-25.163	74.000

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- 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	: Automotive Electronics Infotainment Head Unit					
	Test Item	: General	Radiated Emissio	n Data			
	Test Site	: No.3 OA	ATS				
	Test Mode	: Mode 1:	Transmit (802.11	b 1Mbps)(2437 MHz	:)		
	Frequency	Correct	Reading	Measurement	Margin	Limit	
		Factor	Level	Level			
_	MHz	MHz dB		dBuV/m	dB	dBuV/m	
	Horizontal						
	70.740	-12.921	47.902	34.981	-5.019	40.000	
	256.980	-5.073	43.943	38.870	-7.130	46.000	
	344.280	-2.591	41.424	38.834	-7.166 -7.704	46.000 46.000	
	507.240	0.759	37.537	38.296			
	710.940	3.596	31.134	34.730	-11.270	46.000	
	881.660	6.307	27.994	34.301	-11.699	46.000	
	Vertical						
	99.840	-0.021	38.025	38.004	-5.496	43.500	
	330.700	-4.912	46.122	41.210	-4.790	46.000	
	499.480	-0.852	34.957	34.105	-11.895	46.000	
	664.380	-1.918	37.166	35.248	-10.752	46.000	
	800.180	2.801	28.858	31.659	-14.341	46.000	
	922.400	5.534	28.942	34.476	-11.524	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 Test Item	: Automo	otive Electronics In Redicted Emissio	nfotainment Head Un	it	
Test film	· General		ni Data		
Test Sile	: No.5 0/	AIS	$\sim (Mh_{\rm max})(2427 \rm MH_{\odot})$		
lest Mode	: Mode 2	: Transmit (802.11	g 6Mbps)(2437 MHz	.)	
Frequency	Correct	Reading	Measurement	Margin	Limit
1	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
86.260	-9.948	44.729	34.781	-5.219	40.000
220.120	-10.520	52.086	41.566	-4.434	46.000
357.860	-2.084	43.023	40.939	-5.061	46.000
546.040	3.570	32.336	35.905	-10.095	46.000
747.800	3.296	34.323	37.619	-8.381	46.000
922.400	6.334	28.942	35.276	-10.724	46.000
Vertical					
99.840	-0.021	38.025	38.004	-5.496	43.500
295.780	-7.455	46.753	39.298	-6.702	46.000
462.620	-3.838	38.367	34.529	-11.471	46.000
664.380	-1.918	37.166	35.248	-10.752	46.000
854.500	0.506	35.924	36.430	-9.570	46.000
961.200	7.260	29.184	36.444	-17.556	54.000

- 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	: Automo	otive Electronics In	nfotainment Head Un	it	
Test Item	: General	Radiated Emissio	on Data		
Test Site	: No.3 O	ATS			
Test Mode	: Mode 3	: Transmit (802.11	n MCS0 7.2Mbps 20	M-BW)(2437 M	Hz)
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
165.800	-11.079	44.322	33.243	-10.257	43.500
328.760	-4.609	41.895	37.286	-8.714	46.000
439.340	-2.009	42.077	40.068	-5.932	46.000
600.360	3.977	34.533	38.510	-7.490	46.000
749.740	3.320	33.345	36.665	-9.335	46.000
881.660	6.307	33.637	39.944	-6.056	46.000
Vertical					
136.700	-5.143	40.622	35.479	-8.021	43.500
299.660	-6.855	44.320	37.465	-8.535	46.000
462.620	-3.838	38.367	34.529	-11.471	46.000
664.380	-1.918	37.166	35.248	-10.752	46.000
854.500	0.506	35.924	36.430	-9.570	46.000
961.200	7.260	29.184	36.444	-17.556	54.000

- 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, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2013

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.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

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)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

5.5. Uncertainty

The measurement uncertainty Conducted is defined as ± 1.27 dB

5.6. Test Result of RF antenna conducted test

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Channel 01 (2412MHz)

rum Analyzer - Swept SA													
RF 50 Ω AC SENSE (INT) ALIGNAUTO req 515.000000 MHz Avg Type: Log-Pwr Avg Type: Log-Pwr	03:08:57 PM May 10, 2013 TRACE 1 2 3 4 5 6	Frequency											
PNO: Fast 🖵 Trig: Free Run IFGain:Low #Atten: 30 dB	DET P N N N N N	T.8.57											
Mkr Ref 20.00 dBm	1 808.522 MHz -58.89 dBm	Auto Tune											
		Center Free											
		515.000000 MHz											
	-13.46 dBm												
		Start Freq											
		30.000000 MH2											
	1	Stop Fred											
		1.000000000 GHz											
0 MHz 100 kHz #VBW 1.0 MHz Sweep 90	Stop 1.0000 GHz).0 ms (10001 pts)	CF Step											
RC SCL Y FUNCTION WIDTH	FUNCTION VALUE	Auto Man											
F 808.522 MHz -56.89 dBm													
	-	Freq Offset 0 Hz											
Frequency Auto Tune Center Freq 6.500000000 GHz Start Freq 1.00000000 GHz						SENSE(JNT)		it SA	zer - Swep	n Ana	ctrun	t Spe	illen
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Frequency	May 10, 2013	03:08:22 Pf TRAC	ALIGNAUTO	Ava Tvp	ISE:INT	SEN	7		50 Q	RF	Fre	ter	RI
Auto Tune	TPNNNNN	TYP	-		Run dB	Trig: Free #Atten: 30	C: Fast 😱 ain:Low	PN	50000	y u	110		CII
Frequency Auto Tune Center Freq 6.500000000 GHz Start Freq 1.00000000 GHz CF Step 1.100000000 GHz CF Step Auto Mar Freq Offset 0 Hz	3 5 GHz 54 dBm	r1 2.413 6.5	Mk					Зm	20.00 d	Ref	, 1	3/div) dE
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	-13.46 dBm									-		-	0.0
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							and a second second						0.0 0.0
CF Ste	Stop 12.000 GHz Sweep 1.02 s (10001 pts)				1.0 MHz	#VBW		Hz	GH: 00 k	000 W 1	t 1.0 s B\	tar Re:	
Auto Ma	IN VALUE	FUNCTIO	NCTION WIDTH	CTION FU	FUN	Y		x		SCL	TRC	MODE	KR I
1	-				3m	6.54 dE	GHz	2.413		f	1	N	2
Frequency Auto Tune Center Freq 6.50000000 GHz Start Freq 1.00000000 GHz Stop Freq 12.00000000 GHz Auto Man Freq Offset 0 Hz					-								3
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Frequency	PM May 10, 2013	03:09:31 F	ALIGNAUTO		SE:INT	SEN		AC	50 Ω	RF	L
requercy	CE 1 2 3 4 5 6 PE MWWWWW	TRA TY	: Log-Pwr	Avg Type	Run	Trig: Free	Hz	00000 G	8.5000	Freq 1	ter
Auto Tune	ET P N N N N N	D	- 55	-	dB	#Atten: 30	ain:Low	IFG		-	
	Mkr1 24.625 6 GHz 10 dB/div Ref 20.00 dBm47.26 dBm47.26 dBm										
Contor From	1		1			1	2000	1	1.1.1.1		11
18 50000000 GHz	1 2						1.7.11				1
	-13.46 dBm						_			_	-
Start Fred	1		-			-					
12.00000000 GHz	.1										11 1
					-						
Stop Freq								and the second second	-	-	-
25.00000000 GHz		-		-	-						
CF Step	5.000 GHz	Stop 25	Sween			1.0 MHz	#\/B\M		Hz /Hz	000 G	t 12
1.30000000 GHz	iooon proj	1.20 5 (1	Sweep		EUM		#VDVV				
Auto Man	UN VALUE	FUNCT	CHON WIDTH		3m	-47.26 dE	5 GHz	24.625 6		1 f	N
Freq Offsel			-								-
0 Hz											
								_			
		-									
											Ĩ
			STATUS								



Channel 06 (2437MHz)

RL R	F 50Ω AC	[SENSE:INT	ALIGNA	ОТО 03::	14:38 PM May 10, 2	013 Frequency			
enter Freq	515.000000	PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-	Pwr	TRACE 1 2 3 4 TYPE MWWWW DET P N N N	NN			
dB/div Re	ef 20.00 dBm				Mkr1 82 -5	26.564 MI 8.725 dB	Hz Auto Tun m			
9 10			5 2 -			C-112-4	Conton Fra			
00							515 000000 Mb			
0.0					_	14.00	515.00000 Mil			
20.0					11 11	-14.63	abni			
30.0						_	Start Fre			
10.0							30.000000 Mi			
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70.0	Jun la Constantina de					the particular	1.00000000 GH			
tart 30.0 MH	7	-			Hz					
Res BW 100	kHz	#VB	W 1.0 MHz	Swee	Sweep 90.0 ms (10001 pts)					
IKR MODE TRC SC	u x		Y	FUNCTION FUNCTION	VIDTH I	UNCTION VALUE	Auto Ma			
1 N 1 f	8:	26.564 MHz	-58.725 dBm							
3							Freg Offs			
5							01			
6										
8							ОН			
9										
10										
3 0 11 12 36 s6 s6	nalyzer Sweet SA			S	TATUS					
gilent Spectrum An RL RL Rt Freq	nalyzer - Swept SA F 50 Ω AC 6.50000000	0 GHz	SENSEJINT	ALIGN/ Avg Type: Log-	TATUS UTO (D3:: Pwr	14:04 PM May 10, 2 TRACE 1, 2, 3, 4	013 56 Frequency			
g g g g g g g g g g g g g g	nalyzer - Swept SA F 50 Ω AC 6.500000000	0 GHz PN0: Fast (IFGain:Low	SENSE:INT ↓ Trig: Free Run #Atten: 30 dB	ALIGNA Avg Type: Log-	iuto da: Pwr	14:04 PM May 10, 2 TRACE [1 2 3 4 TYPE M WWWW DET P N N N	D13 56 NN NN Auto Tur			
glient Spectrum Ar RL RL enter Freq 0 dB/div Re	nalyzer - Swept SA F 50 Q AC 6.500000000	0 GHz PNO: Fast C IFGain:Low	SENGE:INT	ALIGNA Avg Type: Log-	UTO D3:: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE M WWW DET P N N N 437 7 GI 5.31 dB	NI3 56 NN Auto Tur m			
odB/div Re	nalyzer - Swept SA = 50 2 AC 6.500000000 ef 20.00 dBm 1	0 GHz PNO: Fast (IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGNA Avg Type: Log-	TATUS UTO D3:: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE/MWWW DET /P NNN .437 7 GH 5.31 dB	Trequency			
9 9 00 11 12 12 13 12 14 12 15 12 16 12 17 12 18 12 19 12 10 12 10 12 10 12 10 12 10 <td< td=""><td>nalyzer - Swept SA F 50 Ω AC 6.500000000 ef 20.00 dBm ∮1</td><td>0 GHz PNO: Fast C IFGain:Low</td><td>SENSE:INT</td><td>ALIGNA Avg Type: Log-</td><td>TATUS DIG D3:: Pwr Mkr1 2</td><td>14:04 PM May 10, 2 TRACE 1: 2: 3 4 TYPE M WWWW DET P NNN .437 7 GI 5.31 dB</td><td>Trequency</td></td<>	nalyzer - Swept SA F 50 Ω AC 6.500000000 ef 20.00 dBm ∮1	0 GHz PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-	TATUS DIG D3:: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1: 2: 3 4 TYPE M WWWW DET P NNN .437 7 GI 5.31 dB	Trequency			
9 9 00 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 13 12 14 RL 15 12 16 10	nalyzer - Swept SA = 50 & AC 6.5000000000 ef 20.00 dBm	0 GHz PN0: Fast C IFGain:Low	SENSE:INT	ALIGN/ Avg Type: Log-	UTO D3: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1: 2:3 4 TYPE M WWW DET P N N N 2.437 7 GI 5.31 dB	Trequency NN Auto Tun M Center Fre 6.500000000 GH			
9 9 00 11 11 12 12 12 13 12 10 12 10 12 10 12	nalyzer - Swept SA F 50 & AC 6.500000000	0 GHz PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-	INTO D3: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1: 2:3 4 TYPE M WWW DET P N N N 2.437 7 GH 5.31 dB	Center Fre 6.50000000 GF			
g g 11 1 12 1 12 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 3 1 3 1	nalyzer - Swept SA F 50 & AC 6.500000000	0 GHz PNO: Fast (IFGain:Low	SENSEJINT	ALIGNA Avg Type: Log-	TATUS DTO D3: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1, 2 3 4 TYPE MWWW DET P N N N 2.437 7 GH 5.31 dB	Center Fre 6.50000000 GF			
9 9 0 11 12 12 12 12 S6 8 RL R center Freq 0 00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	nalyzer - Swept SA F 50 & AC 6.500000000 ef 20.00 dBm	0 GHz PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-	UTO b3: Pwr Mkr1 2	14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE M MANA DET P N N N 2.437 7 GH 5.31 dB	Center Fre 6.50000000 GF 1.00000000 GF			
9 9 00 11 12 12 100 100 100 100 100 100 100 100	nalyzer - Swept SA ► 50 Ω AC 6.500000000 ef 20.00 dBm 1	0 GHz PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-		14:04 PM May 10, 2 TRACE 1 2 3 4 DYPE MWWW DET P NNN 2.437 7 GH 5.31 dB	013 5 6 Frequency NN Auto Turn Iz Center Fre 6.500000000 GF dtm 1.000000000 GF			
9 9 00 11 12 12 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1	nalyzer - Swept SA F 50 Q AC 6.500000000	O GHz PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-		14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE MWWW DET P NNN 2.437 7 GH 5.31 dB 	NN NN Center Fre 6.50000000 GF 1.00000000 GF			
9 9 00 11 12 12 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 0 10.0 <td>nalyzer - Swept SA F SO AC 6.500000000 ef 20.00 dBm 1</td> <td>O GHZ PNO: Fast C IFGain:Low</td> <td>SENSE:INT</td> <td>ALIGNA Avg Type: Log-</td> <td></td> <td>14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE MWAAA DET P N N N 2.437 7 GH 5.31 dB</td> <td>O13 5 6 Frequency NN Auto Tun Hz Center Fre 6.50000000 GF Start Fre 1.00000000 GF Stop Fre 12.00000000 GF Stop Fre</td>	nalyzer - Swept SA F SO AC 6.500000000 ef 20.00 dBm 1	O GHZ PNO: Fast C IFGain:Low	SENSE:INT	ALIGNA Avg Type: Log-		14:04 PM May 10, 2 TRACE 1 2 3 4 TYPE MWAAA DET P N N N 2.437 7 GH 5.31 dB	O13 5 6 Frequency NN Auto Tun Hz Center Fre 6.50000000 GF Start Fre 1.00000000 GF Stop Fre 12.00000000 GF Stop Fre			
9 9 0 11 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nalyzer - Swept SA F SO & AC 6.500000000 ef 20.00 dBm 1 1 Hz KHz	0 GHz PNO: Fast (IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGNA Avg Type: Log-	Mkr1 2	14:04 PM May 10,2 TRACE 1 2 3 4 TYPE MWWW DET P N NN .437 7 GH 5.31 dB .14891 .1481	013 5 6 Frequency NN Auto Tur Hz Center Fre 6.500000000 GF Start Fre 1.000000000 GF 12.00000000 GF Hz CF Ste ts) 1.000000000 GF			
g g g 11 12 12 22 23 23 RL RI RI center Freq 100 100 0.00 100	nalyzer - Swept SA = 50 2 AC 6.500000000 ef 20.00 dBm 1 1 Hz kHz 4 X	#VB	SENSE:INT		Mkr1 2 Mkr1 2 Sto eep 1.02	14:04 PM May 10, 2 TRACE 1: 2: 3 4 TYPE M WWW DET P N N .437 7 GF 5.31 dB -14.89 -14.89 p 12:000 G s (10001 p UNETION VALUE	D13 5 6 Frequency 5 7 Auto Tur MN Auto Tur MI Center Fre 6.500000000 GF Start Fre 1.000000000 GF 12.00000000 GF 12.00000000 GF 12.00000000 GF Lts) CF Ste 1.100000000 GF Auto			
gilent Spectrum Ar I1 I2 I2 I3 RL RI center Freq 0 I3 00 I3 00 I3 00 I3 00 I3 00 I3 00 I3	halyzer - Swept SA = 50 Ω AC 6.500000000 ef 20.00 dBm ↓ 1 ↓ Hz kHz ↓ KHz ↓ 2	0 GHz PNO: Fast C IFGain:Low #VB	SENSE:INT		Mkr1 2 Mkr1 2 Stoeep 1.02	14:04 PM May 10, 2 TRACE 1.2 3 4 TYPE M MWW DET P N N N .437 7 GF 5.31 dB -14.89	013 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF 12.00000000 GF 12.00000000 GF 12.00000000 GF L100000000 GF L100000000 GF Auto Mato			
gilent Spectrum Ar I1 I2 I2 I3 RL RI center Freq 0 I3 0 I3 0 I3 0 I3	halyzer - Swept SA = 50 Ω AC 6.500000000 ef 20.00 dBm ↓ 1 ↓ Hz kHz ↓ KHz ↓ 2	#VB	SENSE:INT		Mkr1 2 Mkr1 2 Stoeep 1.02	14:04 PM May 10, 2 TRACE 1.2.3 4 TYPE M WWW DET P N NN .437 7 GH 5.31 dB -14.89	013 5 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF Stop Fre 12.00000000 GF 1.100000000 GF Auto Mato Auto Mato Freq Offs Freq Offs			
9 9 9 0 11 12 12 36 RL RI center Freq 0 0 0.00 0.00	halyzer - Swept SA = 50 Ω AC 6.500000000 ef 20.00 dBm ↓ 1 ↓ Hz kHz ↓ KHz	#VB	SENSE:INT		Mkr1 2 Mkr1 2 Stoeep 1.02	14:04 PM May 10, 2 TRACE 1: 2: 3: 4 TYPE M MWW DET P N N N .437 7 GH 5.31 dB -14.89 -14.	013 56 Frequency WN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF Stop Fre 12.00000000 GF 1.100000000 GF Auto Mato Freq Offs 0 F			
9 9 0 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 18 Control 100 100 000 000 <td>nalyzer - Swept SA = 50 Ω AC 6.500000000 ef 20.00 dBm ↓ 1 ↓ Hz kHz ↓ KHz</td> <td>#VB</td> <td>SENSE:INT</td> <td></td> <td>Mkr1 2 Mkr1 2 Stoeep 1.02 WDTH T</td> <td>14:04 PM May 10, 2 TRACE 1: 2: 3: 4 TYPE M WWW DET P N N N .437 7 GH 5.31 dB -14.89 -14</td> <td>013 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF 1.00000000 GF Stop Fre 1.100000000 GF Auto Mato Freq Offs 0 F</td>	nalyzer - Swept SA = 50 Ω AC 6.500000000 ef 20.00 dBm ↓ 1 ↓ Hz kHz ↓ KHz	#VB	SENSE:INT		Mkr1 2 Mkr1 2 Stoeep 1.02 WDTH T	14:04 PM May 10, 2 TRACE 1: 2: 3: 4 TYPE M WWW DET P N N N .437 7 GH 5.31 dB -14.89 -14	013 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF 1.00000000 GF Stop Fre 1.100000000 GF Auto Mato Freq Offs 0 F			
9 9 9 0 11 12 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 center Spectrum Ar Re center Freq 100 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000	nalyzer - Swept SA F S0	0 GHz PNO: Fast C IFGain:Low #VB	SENSE:INT			14:04 PM May 10, 2 TRACE 1: 2:3 4 TYPE MWWW DET P N NN .437 7 GH 5.31 dB 	013 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF Start Fre 1.000000000 GF Stop Fre 12.00000000 GF Stop Fre 1.100000000 GF Auto Auto Mato Freq Offs. 0 F			
9 9 9 0 11 12 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 center Spectrum An Re center Freq 100 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000	nalyzer - Swept SA F S0 Q AC 6.500000000 ef 20.00 dBm ↑ 1 Hz KHz V KHz	PNO: Fast C IFGain:Low #VB	SENSE:INT → Trig: Free Run #Atten: 30 dB W 1.0 MHz 5.31 dBm			14:04 PM May 10, 2 TRACE 1: 2:3 4 TYPE MWWW DET P N NN .437 7 GH 5.31 dB -14.89	013 Frequency NN Auto Tur M Auto Tur M Center Fre 6.500000000 GF 1.00000000 GF M Start Fre 1.000000000 GF 1.100000000 GF Auto Mato Freq Offss 0 F			



							zer - Swept SA	n Anal	Spectru	gilent	
Fraguanay	M May 10, 2013	03:15:13 P	ALIGN AUTO		SENSE:IN		50 Q AC	RF		RL	
Frequency	CE 123456 PE MWWWWW ET P NNNNN	TRAC TYP DI	vpe: Log-Pwr	Avg 1	Trig: Free Run #Atten: 30 dB	IO GHZ PNO: Fast 😱 IFGain:Low	8.50000000	eq 1	er Fre	ent	
Frequency Auto Tune Center Freq 18.50000000 GHz Start Freq 12.00000000 GHz Stop Freq 25.00000000 GHz 1.30000000 GHz Auto Mark	Mkr1 23.113 7 GHz طB/div Ref 20.00 dBm -47.91 dBm										
Center Freq 18.50000000 GHz										og 10.0 3.00	
1	-14.69 dBm		_							10.0	
Start Freq 12.00000000 GHz		1							_	20.0 30.0 40.0	
Stop Freq 25.00000000 GHz				New Property and						50.0 - 50.0 - 70.0 -	
CF Step	.000 GHz 0001 pts)	Stop 25 1.20 s (1	Sweep		1.0 MHz	#VBW	z Iz	0 GH 00 k	12.00 BW 1	tart Res	
Auto Man	ON VALUE	FUNCTIO	FUNCTION WIDTH	FUNCTION	-47 91 dBm	113 7 GHz	× 23	SCL f			
Freq Offset 0 Hz										2 3 4 5 6 7 8 9 0 1	
			STATUS							8 9 10 11 12	

Agilent S	pectrum	Analyze	er - Swe	pt SA								13 Frequency N Auto Tune N Center Freq 515.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.000000000 MHz Stop Freq 2 CF Step 97.000000 MHz Man Freq Offset Freq Offset
	r Fre	RF a 515	50 Q	AC OOO MH	17	SEN	ISE:INT	Avg	ALIGNAUTO Type: Log-Pwr	03:21:23 P TRAC	M May 10, 2013	Frequency Auto Tune Center Freq 515.000000 MHz
ounce		9010	1000	1	PNO: Fast C FGain:Low	Trig: Free #Atten: 30	Run dB			TYP		Auto Tune Center Freq 515.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.000000000 GHz CF Step 97.000000 MHz
10 dB/d	div l	Ref 20	.00 d	Bm					Mkr	1 797.2 -59.	70 MHz 17 dBm	
10.0					1	C 1				1	1.000	
0.00	_	-				1		-			1	
-10.0											-15.73 dBm	1.2.000.004.04
-20.0			- 1						-			Start Free
-30.0											1	30.000000 MH
-50.0 -						1.				1		
-60.0	and the second	e defense	//u routine d	and the second second		and in the second second	and the second second	a la pala		distanting and the h	and the second second	Stop Free
-70.0								-				1.00000000 GH:
Start : #Res	30.0 N BW 1	1Hz D0 kHz	z		#VB	W 1.0 MHz			Sweep 9	Stop 1.0 0.0 ms (1	0000 GHz 0001 pts)	Center Fre 515.00000 MH Start Fre 30.000000 MH Stop Fre 1.000000000 GH CF Ste 97.000000 MH Auto Ma
MKR MO	DE TRC	SCU f		×	70 MHz	9 -59 17 dE	FL Sm	NCTION	FUNCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Ma
2 3				101.2			2011					
4									4			Freq Offse
6							-					011
8							-					1.100
10												
12												
MSG									STATUS			

Channel 11 (2462MHz)

Agilent Sp	ectru	m Ana	lyzer - Sw	vept SA								D13 5 6 Frequency	
XI RL		RF	50 \$	2 AC		SE	NSE:INT		ALIGNAUTO	03:20:49 F	M May 10, 2013	3 Frequency N Auto Tune	
Center	r Fre	eq 6	.5000	00000 G		Trig: Free	e Run	Avg Typ	e: Log-Pwr	TY	E MWWWWW	6 Frequency N Auto Tune	
				IF	Gain:Low	#Atten: 30) dB			D	ETPNNNNN		
10 dB/di	iv	Ref	20.00	dBm				-	Mk	0 8 GHz 27 dBm	Auto Tune Center Freq 6.50000000 GHz		
Log	-		A1	1 - T	· · · · · ·	G	-		-	A summer	Provide State	Auto Tune	
10.0			•			-					1		
0.00		-										Center Frec 6.50000000 GH;	
-10.0		-		-							-15.73 dBm	1	
-20.0		-		-								Otant Fra	
-30.0		-	_			_				-		Iz Auto Tune Iz Center Freq 6.500000000 GHz Iz Start Freq 1.000000000 GHz Iz Stop Freq 12.000000000 GHz Iz CF Step	
-40.0	_	-											
-50.0		-						_					
20.0	_	-	-				and the second	and the second		and the second s		and the state of the	Auto Tune Center Freq 6.50000000 GHz Start Freq 1.00000000 GHz Stop Freq 12.00000000 GHz CF Step 1.100000000 GHz Auto
70.0		-			and the second s		10.000				6.50000000 GHz Start Freq 1.00000000 GHz Stop Freq 12.00000000 GHz		
70.0											1 1	12.000000000000000000000000000000000000	
start 1	.000	GH	Hz					-	-	Stop 12	.000 GHz	CE Ste	
Res	WV 1	100 6	HZ		#VBI	AV 1.0 IVINZ	-		Sweep	1.02 \$ (1	0001 pts)	1.100000000 GH	
MKR MODI	E TRC	SCL		×		Y	FU	NCTION FL	INCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Ma	
1 N	1	f		2.460	8 GHz	4.27 d	Bm		-	-			
3												Freq Offse	
4	-	+ +					-	24.45				01	
6										· · · · · · · · · · · · · · · · · · ·			
7	-					-	-	1 1 1.4 1				1	
9	-										1		
10	_												
12	1									-			
ASG									STATUS				



Agilent Sp	ectru	n Ana	yzer - Sw	ept SA									
Center	r Fre	RF eq 1	50 Ω 8.5000	AC) GHz		SEN	ISE:INT	Avg T	ALIGNAUTO	03:21:57 F TRA	M May 10, 2013 CE 1 2 3 4 5 6	Frequency
1		-			PNO: Fast IFGain:Low	9	#Atten: 30	dB	-	-	D	ETPNNNNN	Frequency Auto Tune Center Freq 18.500000000 GHz Start Freq 12.000000000 GHz Stop Freq 25.000000000 GHz
10 dB/di	iv	Ref	20.00	dBm						Mkr	5 0 GHz 29 dBm	2013 45.6 Frequency MNN Auto Tune Bm Center Frec 18.50000000 GHz 73 dbn Start Frec 12.000000000 GHz V Stop Frec 25.00000000 GHz GHz pts) CF Step 1.30000000 GHz	
10.0			10.2		1 2 -	-		-			-		Start Frequency N Auto Tune Center Freq 18.50000000 GH; Start Freq 12.00000000 GH; Stop Freq 25.00000000 GH; 1.30000000 GH; Auto Mar Freq Offset 0
0.00 —													18.500000000 GHz
-10.0		-									-	-15.73 dBm	
-20.0													Start Freq 12.000000000 GHz
-50.0	- Market	-	e ite anite		Weise Company and the second	-		- Income		-			Stop Freq
-70.0	_				-		-				-		25.000000000 GHz
Start 1 #Res B	2.00 SW 1	0 GI 00 k	iz Hz		#VI	BW 1	1.0 MHz			Sweep	Stop 25 1.20 s (1	5.000 GHz 0001 pts)	CF Step
MKR MOD	E TRO	SCL f	-	× 24.6	75 0 GHz		-48.29 dE	m	NCTION	FUNCTION WIDTH	FUNCT	ON VALUE	Auto Man
2 3					× ** *								Freg Offset
4 5 6			-		-	-		-	-				0 Hz
7					-			-					1
9											-		
11 12	-					-		-					
MSG										STATU	6		

- Test Item : RF Antenna Conducted Spurious
- Test Site : No.3 OATS
- Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel 01 (2412MHz)

Agilent Spe	ctrum An	alyzer - Sw	ept SA							
Center	Freq :	50 Q	AC 0000 MH	Z	SENSE(JN	T Avg	ALIGNAUTO Type: Log-Pwr	07:13:26 PM TRACE TYPE	May 10, 2013 1 2 3 4 5 6 M	Auto Tune
	_		IF	NU: Fast 🕞 Gain:Low	#Atten: 30 dB		Mkr	DET 1 995.24	7 MHz	Auto Tune Center Frec 515.000000 MHz Start Frec 30.000000 MHz
10 dB/div	Ref	20.00	dBm					-59.1	1 dBm	
10,0 0,00										
-10.0		1 2							-17.71 dBm	
-30.0										Start Free 30.000000 MH
-50.0	in her television			an - U ditar a sine terbi ka	Unerstand American State			and an analysis of the second s	1	Stop Free 1.000000000 GH
Start 30 #Res Bl	0.0 MH: W 100	z kHz		#VBW	(1.0 MHz		Sweep 9	000 GHz 001 pts)	CF Ste	
MKR MODE	TRC SCL		X DOE 24		FO 44 dDm	FUNCTION	FUNCTION WIDTH	FUNCTION	VALUE	Auto Mai
2 3 4 5			995.24		-09.11 GBM					Freq Offse 0 H
7 8 9 10										
11							ł.			
ASG							STATUS			

Frequency	M May 10, 2013	07:12:53 P	ALIGNAUTO		E:INT	SENSE		AC	50 Ω	RF		1
Center Freq 6.50000000 GHz	E 1 2 3 4 5 6	TRAC	e: Log-Pwr	Avg Ty	200	Trig: Free B	z	0000 GH	50000	eq 6	Fre	ter
	PNNNN	D		1.1	IB	#Atten: 30 d	U: Fast 😱 ain:Low	IFG		-		
	57 GHz 29 dBm	r1 2.41 2.1	Mk					IBm	20.00 c	Ref	v	3/div
	1.2.5.1	1					5	d = d	1		-	
	1		1						1			-
	-17.71 dBm				-					-	-	-
Start Fre									1			
1.000000000 GH	1								1			11
		_			_					-		
Start Freq 1.00000000 GHz Stop Fred 12.00000000 GHz	and the second second	- Andrew A			No.		- Part of		-	-	nuomini distanti	
12.00000000 GF	1.42.5											
CF Ste	.000 GHz 0001 pts)	Stop 12 1.02 s (1	Sweep			1.0 MHz	#VBW	#VBW			000 W 1	t 1.0 s Bl
Auto Ma	IN VALUE	FUNCTIO	NCTION WIDTH	CTION	FUI	Y 2.20 dBm		X		SCL	TRC	MODE
		_			n	2.29 001	GHZ	2.415		-		IN
Frequency Auto Tune Center Free 6.500000000 GH; Start Free 1.000000000 GH; Stop Free 12.00000000 GH; CF Step 1.100000000 GH; CF Step 1.100000000 GH; Stop Free 1.100000000 GH; Freq Offse 0 H;				14								
UF												
					1							
		-			-							

optor Frog 19 5000		SENSE:INT	ALIGNAUT	0 07:14:00 PM May 10, 2013	Frequency						
enter rieg 10.5000	PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB			Auto Tune						
Mkr1 24.054 9 GHz dB/div Ref 20.00 dBm -48.11 dBm											
0,0 1,00					Center Free 18.500000000 GH						
0.0				-17.71 dBm							
0.0				11	Start Free 12.000000000 GH						
0.0	eau ann a tha an tha an tha tha stairt				Stop Fre 25.000000000 GH						
tart 12.000 GHz Res BW 100 kHz	#VB\	N 1.0 MHz	Swee	Stop 25.000 GHz p 1.20 s (10001 pts)	CF Ste						
KR MODE TRC SCL	× 24.054 9 GHz	-48.11 dBm	UNCTION FUNCTION WID	TH FUNCTION VALUE	Auto Ma						
2 3 4 5 6					Freq Offse 0 H						
7 8 9 0											



Channel 06 (2437MHz)

l.						ent Spectrum Analyzer - Swept SA RL RF 50 Ω AC									
May 10, 2013 CE 1 2 3 4 5 6 Frequency	D7:18:03 PM TRACE	pe: Log-Pwr	Avg	ENSE(INT)		z	AC 000 MH	15.000	eq 5	er Fr	ent				
PE M WWWWWW ET P N N N N N	DET			e Run 0 dB	#Atten: 3	NO: Fast 🕞 Gain:Low	P								
15 dBm	1 960.90 -59.1	Mkr					iBm	20.00	Ref	div	dB				
Center Er	-				$1 - \ell$	5					9 1.0				
515.000000 M	_				_					-	00				
-19.51 dBm											1.0				
Start Fr						1				20	1.0				
30.000000 M	_		_	-						_	1.0				
1- Oton Er			-		_			_		_	1.0				
1.000000000 G					- Contractor		(II		-		1.0				
0000 GHz 10001 pts) CF Str	Stop 1.0	Sweep 90			1.0 MHz	#VBV	Hz	MHz	30.0 BW 1	art tes					
	FUNCTION	UNCTION WIDTH	UNCTION		Y		×		SCL	DDE TRO	R M				
			-	Bm	-59.15 d	9 MHZ	960.90		T		2				
Freq Offs	_			-		-					1				
											5				
											3				
	_									1	2				

								r - Swept SA	m Analyze	nt Spectr							
Frequency	M May 10, 2013 E 1 2 3 4 5 6 E M WWWWWW	07:17:30 P TRAC TYP	alignauto e: Log-Pwr	Avg Ty	e Run	Trig: Free	iHz PNO: Fast 🕞	nter Freq 6.50000000 GHz PNO: Fast									
Auto Tune	9 9 GHz 49 dBm	r1 2.439 0.4	Mk		0 dB	#Atten: 3	FGain:Low	.00 dBm	Ref 20	B/div							
Center Free 6.50000000 GH:									• ¹								
Start Free 1.000000000 GH:	-19.51 dBm																
Stop Free 12.000000000 GH	فيستعيب	e dun a da a g	~~	-	legez de la companya			which we wanted									
CF Step 1.100000000 GH	.000 GHz 0001 pts)	Stop 12 1.02 s (1	Sweep			1.0 MHz	#VBW) GHz 100 kHz	rt 1.00 s BW							
<u>Auto</u> Mar	IN VALUE	FUNCTIO	NCTION WIDTH		Bm	0.49 d	9 9 GHz	× 2.43	f	NODE TR							
Freq Offse 0 H:																	
			STATUS														



Agilent Spectrum Analyzer - Swept SA				
Center Freq 18 500000000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	07:18:37 PM May 10, 2013 TRACE 1 2 3 4 5 6	Frequency
PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB		DET P N N N N	T.S.S.
10 dB/div Ref 20.00 dBm		Mkr	1 23.221 6 GHz -47.73 dBm	Auto Tune
10.0 0.00				Center Freq 18.50000000 GHz
-10.0			-19.51 dĐm	Start Freq
-40.0			1	Stop Freq
Start 12.000 GHz #Res BW 100 kHz #VBV	v 1.0 MHz	Sweep	Stop 25.000 GHz 1.20 s (10001 pts)	CF Step 1.30000000 GHz
MKB MODE TRD SOL X 1 N 1 f 23.221 6 GHz	47.73 dBm	UNCTION IN FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 3 4 5 5 7				Freq Offset 0 Hz
9 9 10 11				
12		STATU	s	



Channel 11 (2462MHz)

	MMw 10, 2012	07/24/00 0	ALTCALALITO		NICCUM	er	Т	ept SA	yzer - Sw	m Ana	Spectru	ilent
Frequency	E 1 2 3 4 5 6	U7:24:00 F TRAV	e: Log-Pwr	Avg Ty	e Dun	Tria: Free	z	0000 MH	15.000	eq 5	er Fr	ent
Auto Tupo	PNNNNN	D			0 dB	#Atten: 3	NO: Fast 🕞 Gain:Low	0		-		
Auto Tune	84 MHz 54 dBm	Mkr1 919.684 MH: 3/div Ref 20.00 dBm -59.454 dBn) dB		
Center Free	-	in share	1			1	2000		100			0.0
515.000000 MH											-	.00
	-19.75 dBm				-		-					0.0
Start Free												0.0
30.000000 MH:				_	_				-		_	0.0
Oton From	1 − 1		-									0.0
1.000000000 GH:									-1 dirite	len (lett	ette dite	0.0
CF Step	0000 GHz 0001 pts)	Stop 1. .0 ms (1	Sweep 90	-		1.0 MHz	#VBW		Hz	MHz 100 k	30.0 BW 1	L tart Res
Auto Mar	IN VALUE	FUNCTI	NCTION WIDTH	NCTION		Y		X		SCL	DE TRO	KR M
					Bm	-59.454 d	34 MHZ	919.6			. 1	2
Freq Offse											Ť.	4
UN.				- 1						-		6
				-								8
												0
												2

				-				rept SA	lyzer - Sw	rum Ana	it Spec	Agiler
Frequency	M May 10, 2013 E 1 2 3 4 5 6 E M MANAMAN	07:23:26 PI TRAC TYP	Log-Pwr	Avg Typ	e Run] Trig: Free	Hz NO: Fast 😱	00000 G	50 Ω 5.50000	req 6	ter l	Cen
Auto Tune	3 0 GHz 25 dBm	r1 2.463 0.2	Mk		30 dB	#Atten: 3	Gain:Low	dBm	20.00	Ref	B/div	10 d
Center Fred 6.500000000 GH:									•1			Log 10.0 0.00
Start Free 1.00000000 GH:	-19.75 dBm											-10.0 -20.0 -30.0 -40.0
Stop Free 12.000000000 GH:		and the second second	~~			and an and the second state			- Annother		-	-50.0 -60.0 -70.0
CF Step 1.100000000 GH	.000 GHz 0001 pts)	Stop 12 1.02 s (1	Sweep		z	1.0 MHz	#VBW		z KHz	00 GH	t 1.0 s BV	Star #Re
<u>Auto</u> Mar	IN VALUE	FUNCTIO	ICTION WIDTH	ICTION	dBm	0.25 d	0 GHz	2.463		RC SCL	N	MKR 1
Freq Offse 0 H:												3456
												7 8 9 10 11 12
P			STATUS	4						-		MSG



M RL RF 50.2 AC SENSE:INT ALIGNAUTO D7:24:33 PM May 10, 2013 Frequency Center Freq 18.500000000 GHz Trig:Free Run Avg Type: Log-Pwr TRACE [1 2 3 4 5 6 Frequency PN0: Fast #Atten: 30 dB Mkr1 21.266 4 GHz Auto T Drive: Auto T Auto T 10 dB/div Ref 20.00 dBm -47.74 dBm -47.74 dBm Auto T 10.0 0.00 -40.00 -40.00 18.500000000										ept SA	alyzer - Sw	m Ana	ectrur	nt Spe	Agilen
PN0: Fast Ing: Free Run Det [P NNNNN IFGain:Low #Atten: 30 dB Mkr1 21.266 4 GHz Auto 1 10 dB/div Ref 20.00 dBm -47.74 dBm Center I 10.0	:y	Frequenc	M May 10, 2013	07:24:33 Pf TRAC	ALIGNAUTO e: Log-Pwr	Avg Ty	SE:INT	SENS	SHz	AC 000000 G	50 Ω 18.500	RF	Fre	L Iter	Cen
Mkr1 21.266 4 GHz 10 dB/div Ref 20.00 dBm 10.0	Tuno	Auto		DE			dB	#Atten: 30 d	NO: Fast 😱 Gain:Low	PI IF(-			
Log 10.0 0.00 -10.0	Tune	Auto	34 GHz 74 dBm	-47.7	Mkr1					dBm	20.00	Ref	v	B/div	10 di
-10.0	Freq 0 GHz	Center 18.50000000													Log 10.0 0.00
-20.0			-19.75 dBm												-10.0
-30.0 -40.0	Freq 0 GHz	Start 12.000000000			1								_	1	-30.0 -40.0
-50.0 -60.0 -70.0	Freq 0 GHz	Stop 25.00000000	-									-		-	-50.0 -60.0 -70.0
Start 12.000 GHz Stop 25.000 GHz #Res BW 100 kHz #VBW 1.0 MHz Sweep 1.20 s (10001 pts)	Step	CF	.000 GHz 0001 pts)	Stop 25 1.20 s (1	Sweep			1.0 MHz	#VBW		Hz kHz	0 G 00 I	2.00 W 1	t 12 s Bl	Star #Re
MKR MODE TRE SCIENCE Auto 1 N 1 f 21.266 4 GHz -47.74 dBm Auto	Man	Auto	IN VALUE	FUNCTIO	NCTION WIDTH	ICTION	Em FL	v -47.74 dBn	4 GHz	× 21.266		f	TRC 1	MODE	MKR 1
2 Freq Oi	offset 0 Hz	Freq C													23456
7 8 9 10															7 8 9 10
	_				CTATIO										11 12

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	RF Antenna Conducted Spurious

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel 01 (2412MHz)

Agilent Spe	ctrum Analy	zer - Swe	pt SA								
Center	Freq 5'	50 Ω 15.000	AC 000 MH: P	Z NO: Fast C	Trig: Free I	Run	Avg Typ	ALIGNAUTO	07:43:41 P TRAC TYI	M May 10, 2013 E 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div	Ref	20.00 d	IFGain:Low #Atten: 30 dB Mkr1 955.5 Bm -59.5						74 MHz 55 dBm	Auto Tune	
10.0 0.00			=								Center Free 515.000000 MH
-10.0 -20.0 -30.0 -40.0										-19.34 dBm	Start Free 30.000000 MH
-50.0 -60.0 -70.0	and the second second	de positivo	1999 (10 0. 1	An I designed the						1-	Stop Free 1.000000000 GH
Start 30 #Res B\	L				V 1.0 MHz			Sweep 9	0000 GHz 0001 pts)	CF Ste 97.000000 MH	
MKR MODE	TRC SCL		× 955.57	4 MHz	-59.55 dB	n	INCTION	UNCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Ma
2 3 4 5 6											Freq Offse 0 H
7 8 9 10 11											
/SG								STATUS			



Agilent Spec	trum /	Analy	zer - Sv	wept S	A.									
XI RL	1	RF	50	Ω AI	c	-	-	SE	NSE:INT		ALIGN AUTO	07:43:07 F	M May 10, 2013	Frequency
Center I	Frec	16.	5000	000	00 G	Hz 'NO: Fas Gain:Lo	st 🖵 w	Trig: Free #Atten: 30	e Run 0 dB	Avg Ty	pe: Log-Pwr	TRA TY D	CE 123456 PE MWWWWW ET P NNNNN	Frequency
10 dB/div	R	ef 2	20.00	dBr	n		Mkr1 2.413 5 GHz Au 0.66 dBm		Auto Tune					
10.0 0.00			1-											Center Freq 6.50000000 GHz
-10.0													-19.34 dBm	
-30.0	_													Start Freq 1.000000000 GHz
-50.0 -60.0 -70.0		-		-			a la sere			-		and a firme for		Stop Freq 12.000000000 GHz
Start 1.0 #Res BV	00 G V 10	SHz O ki	۰z			#\	VBW	1.0 MHz			Sweep	Stop 12 1.02 s (1	.000 GHz 0001 pts)	CF Step
MKR MODE	TRC S	F			× 2.413	5 GHz		y 0.66 d	Bm	ICTION	FUNCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Man
2 3 4 5 6 7													_	Freq Offset 0 Hz
8 9 10 11 12														
MSG	-										STATU	s		E

Miket RF SOX AC Serveral Aldination (Interpreted) Difference Frequence Center Freq 18.500000000 GHz IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Type: Log-Pwr Mkr1 23.714 3 GHz -47.99 dBm Frequence 10 dB/div Ref 20.00 dBm -47.99 dBm Auto Auto 10.0 0.00 -47.99 dBm -47.99 dBm -47.99 dBm Start 10.0 0.00 -19.34 dBm -19.34 dBm 12.00000000 Start 12.00000000 -40.0 -1 -1 55.00000000 55.000	Agilent Spect	rum Analyzer - S	wept SA				1				le -
Inc. rest #Atten: 30 dB Der [P NNNNN Auto 10 dB/div Ref 20.00 dBm -47.99 dBm -47.99 dBm -47.99 dBm 10 dB/div Ref 20.00 dBm -47.99 dBm -47.99 dBm -47.99 dBm -47.99 dBm 10 dB/div Ref 20.00 dBm -47.99 dBm -4	Center F	req 18.500	0000000 GH	Iz] Tria: Free	Run	Avg Type	LIGNAUTO	07:44:15 P TRAC TY	M May 10, 2013 2 1 2 3 4 5 6 PE M WWWWWW	Frequency
10 dB/div Ref 20.00 dBm -47.99 dBm 100 47.99 dBm 47.99 dBm 100		-	IFGai	in:Low	#Atten: 30	dB	1.5	Mkr	DE 1 23.714	T P NNNN	Auto Tune
Log Center 10.0 Image: Center 0.00 Image: Center 10.0 Image: Center 11.0 Image: Center 12.00000000 Image: Center 10.0 Image: Center 10.0 Image: Center 11.0 Image: Center 12.00000000 Image: Center 11.0 Image: Center	10 dB/div	Ref 20.00	dBm	n47.99 dBm							
10.0 -20.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70	10.0					-	-			1	Center Free
Start Start -200	-10.0										18.500000000 GHz
-30.0 -40.0 -50.0 -60.0 -7	-20.0									-19.34 dBm	ALL DECK
-50.0 -60.0	-30.0									1	Start Fred 12.000000000 GHz
	-50.0	and the second second	و العالية ال	Junior Ma			Street, or other party	-			Stop Free
-70.0 25.00000000	-70.0							1			25.00000000 GH
Start 12.000 GHz Stop 25.000 GHz #Res BW 100 kHz #VBW 1.0 MHz Sweep 1.20 s (10001 pts)	Start 12.0 #Res BW	000 GHz 100 kHz		#VBW	1.0 MHz			Sweep	Stop 25 1.20 s (1	.000 GHz 0001 pts)	CF Step 1 30000000 GH
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE Auto	MKR MODE T	RC SCL	X 23.714.31	CHA	47.99 dB	FUN	CTION FUI	NCTION WIDTH	FUNCTIO	ON VALUE	<u>Auto</u> Mar
2 4/.99 dbm 3 Freq 0	2 3		23.714.31	GHZ	-47.99 06	m					Freq Offse
<u>4</u> <u>5</u> <u>6</u>	4 5 6			-		-					0 Hz
7 8	7 8		_				1. 				2
9 0 10 1 11 0	9 10 11										
	12							STATUS	-		



Channel 06 (2437MHz)

XX RL RF 50 Ω AC SENSE:INT ALIGNAUTO 07:47:35 PM May 10, 2013	
Center Freq 515.000000 MHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6	Frequency
PNO: Fast Tig: Free Run IVE MWWWWW IFGain:Low #Atten: 30 dB DET P N N N N	S. Salar
Mkr1 802.702 MHz 10 dB/div Ref 20.00 dBm -59.20 dBm	Auto Tune
	Center Fred
0.00	515.000000 MHz
-10.0	
-200	Start Freq
-40.0	30.000000 MHz
-60.0	Stop Fred
-50.0	.000000000 GHz
Start 30.0 MHz Stop 1.0000 GHz #Res BW 100 kHz #VBW 1.0 MHz Sweep 90.0 ms (10001 pts)	CF Step
MKR MODE TRC SCL X	1000000 MH2
2	Terrices.
	Freq Offsel
	6.5
8 9 9	
10 11	

							т	- Swept SA	m Analyz	t Spectr	gilen					
Frequency	May 10, 2013 E 1 2 3 4 5 6 E M	D7:47:02 PM TRAC TYP	Log-Pwr	Avg Type	e Run	Trig: Free	nter Freq 6.50000000 GHz									
Auto Tune	0 GHz 33 dBm	r1 2.441 -0.3	Mk		0 dB	#Atten: 30	Gain:Low	n 00 dBm	Ref 20	B/div	10 di					
Center Fred 6.50000000 GH									•		10.0 0.00					
Start Free 1.000000000 GH:	20.33 dBm										-10.0 -20.0 -30.0 -40.0					
Stop Free 12.000000000 GH:		- Margaratar	~			1	and the second second			-	-50.0 -60.0 -70.0					
CF Step 1.100000000 GH	.000 GHz 0001 pts)	Stop 12 1.02 s (1	Sweep			1.0 MHz	#VBW) GHz 100 kH	t 1.00 s BW	Star #Re					
<u>Auto</u> Mar	N VALUE	FUNCTIO	ICTION WIDTH	ICTION FU	E FL	-0.33 di	0 GHz	× 2.44	f	MODE TR	MKR I					
Freq Offse 0 H											23456					
											7 8 9 10 11 12					
			STATUS								ASG					



Agilen	t Spec	etrur	n Ana	lyzer - Sv	vept SA									
Cen	ter	Fre	RF	50 s	2 AC) GHz		SEN	NSE:INT	Avg T	ALIGNAUTO	07:48:09 P TRAC	M May 10, 2013	Frequency
			-			PNO: Fast IFGain:Lov	t Ģ w	#Atten: 30	dB	-		D	PNNNNN	Auto Tupe
10 dE	3/div		Ref	20.00	dBm						Mkr	1 24.62 -47.	30 GHz 98 dBm	Auto Tulle
10.0			-			1							1	Center Freq
0.00														18.50000000 GHz
-20.0	-			-						-		· · · · · ·	-20.33 dBm	OtantErran
-30.0 -40.0	1												1	Start Freq 12.000000000 GHz
-50.0		116	a contraction of the	مربان	مناطعي			11.11.11.11.11		-				Ston Fren
-70.0								-						25.000000000 GHz
Star #Re:	t 12 s BV	.00 N 1	0 G 00 I	Hz (Hz	l.	#\	/BW	1.0 MHz			Sweep	Stop 25 1.20 s (1	.000 GHz 0001 pts)	CF Step
MKR	MODE	TRC	SCL		×	23.0 GHz		-47 98 dE	Sm FL	INCTION	FUNCTION WIDTH	FUNCTI	IN VALUE	Auto Man
234														Freq Offset
5	_											·		0 Hz
8						_			-			-		
10														
MSG						_					STATUS	1		

Agilent S	pectrun	1 Analyz	er - Swi	ept SA								
Cente	r Fre	RF	50 Ω	AC	Hz	s	ENSE:INT	ALIGNAUTO Avg Type: Log-Pwr		07:53:10 PM May 10, 2013 TRACE 1 2 3 4 5 6		Frequency
					PNO: Fast (IFGain:Low	Trig: Fre #Atten: 3	e Run 30 dB				DET P N N N N N	1 20.00
10 dB/c	liv	Ref 2	0.00 (dBm					Mkr	1 852.7 -58.	754 MHz .85 dBm	Auto Tune
10.00												Center Fred 515.000000 MH:
-10.0								-			-20.23 dBm	Start Fred
-30.0 -								-				30.000000 MHz
-60.0		. di wite					and the second second	er (•		Stop Fred 1.000000000 GH:
Start 3 #Res I	30.0 M BW 1	AHz 00 kH	Iz		#VE	W 1.0 MH	z		Sweep 9	Stop 1. 0.0 ms ('	.0000 GHz 10001 pts)	CF Step
MKR MOD	DE TRC	SOL f		× 852.	754 MHz	Y -58.85 c	IBm	INCTION	FUNCTION WIDTH	FUNCT	ION VALUE	<u>Auto</u> Mar
2 3 4 5 6 7												Freq Offse 0 Ha
8 9 10 11												
MSG									STATUS			

Channel 11 (2462MHz)

- Horaco and a	M May 10, 2013	07:52:36 P	ALIGNAUTO		ISE:INT	SEN		AC	50 Ω	RF	L
Frequency	TRACE 1 2 3 4 5 6		Avg Type: Log-Pwr		Av:		z	0000 GH	.50000	req 6	ter F
	PNNNNN	DE			dB	#Atten: 30	NO: Fast 🕞 Gain:Low	P IFC			
Auto Tune	3 0 GHz 23 dBm	r1 2.463 -0.1	Mk					Bm	20.00 d	Ref	3/div
Center Fred	12.000					1.11	1	1 - 1 - 1	*1	-	1
6.500000000 GHz					_	-			<u>•</u>		-
1	00 02 dBm	_							-	-	
Start Freq	-20.23 ubm										Ì.
1.00000000 GHz									100		11
					_					-	
Stop Freq	San Share and	and the state of t	- Martin	diama and	and the second second	Information and the			- Standard	-	Manual Mark
12.00000000 GHz	1									-	1
CF Step	.000 GHz 0001 pts)	Stop 12 1.02 s (1	Sweep			1.0 MHz	#VBW		z (Hz	00 GH	t 1.0 s BW
Auto Man	IN VALUE	FUNCTIO	ICTION WIDTH	TION	FUNC	Y		X		RC SCL	MODE
					sm	-0.23 dE	UGHZ	2.463		T	N
Freq Offset 0 Hz		-			-						
2											
		_	_		-						
					_						



Agilent Spectrum Analyzer - Swept SA				
Center Freq 18.500000000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	07:53:45 PM May 10, 2013 TRACE 1 2 3 4 5 6	Frequency
PNO: Fast 😱 IFGain:Low	⁴ Trig: Free Run #Atten: 30 dB	*****	DET P N N N N N	
10 dB/div Ref 20.00 dBm		Mkr	1 21.181 9 GHz -47.92 dBm	Auto i une
10.0 0.00				Center Freq 18.500000000 GHz
-10.0			-20.23 dBm	
-30.0		1		Start Freq 12.000000000 GHz
-50.0	a Manuala Alexandra Alexandra Alexandra			Stop Freq 25.000000000 GHz
Start 12.000 GHz #Res BW 100 kHz #VBW	1.0 MHz	Sweep	Stop 25.000 GHz 1.20 s (10001 pts)	CF Step
MKR MODE TRC SCL X	47.92 dBm	CTION CON FUNCTION WIDTH	FUNCTION VALUE	Auto Man
2 3 4 5 6				Freq Offset 0 Hz
7 8 9 10 11				
12 MSG		STATUS		

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, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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.

RF Radiated Measurement:

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

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Bilog Antenna		Schaffner Chase	CBL6112B/2673	Sep., 2012
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X Pre-Amplifier		Agilent	8447D/2944A09549	Sep., 2012
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

1. All instruments 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:



6.3. 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.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 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.

6.5. Uncertainty

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

6.6. Test Result of Band Edge

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
$(01 (D_{a}al_{a}))$	(10112)	(uD) 21.406	(uDuv)	(uDu V/III)	(uDu V/III)	(uDu V/III)	Deee
01 (Peak)	2380.000	31.490	26.919	58.415	/4.000	54.000	Pass
01 (Peak)	2390.000	31.509	25.756	57.265	74.000	54.000	Pass
01 (Peak)	2413.000	31.646	73.677	105.323			
01 (Average)	2386.600	31.496	16.872	48.368	74.000	54.000	Pass
01 (Average)	2390.000	31.509	14.260	45.769	74.000	54.000	Pass
01 (Average)	2412.800	31.645	69.861	101.505			



Horizontal (Peak)



Figure Channel 01:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
01 (Peak)	2387.200	30.928	26.475	57.403	74.000	54.000	Pass
01 (Peak)	2390.000	30.915	24.017	54.932	74.000	54.000	Pass
01 (Peak)	2413.000	30.956	69.846	100.802			
01 (Average)	2387.200	30.928	15.353	46.281	74.000	54.000	Pass
01 (Average)	2390.000	30.915	13.310	44.225	74.000	54.000	Pass
01 (Average)	2412.800	30.955	66.111	97.066			

Figure Channel 01:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2460.900	32.011	71.222	103.233			
11 (Peak)	2483.500	32.182	26.776	58.958	74.000	54.000	Pass
11 (Peak)	2488.700	32.222	27.630	59.851	74.000	54.000	Pass
11 (Average)	2461.300	32.014	67.666	99.680			
11 (Average)	2483.500	32.182	16.978	49.160	74.000	54.000	Pass
11 (Average)	2488.700	32.222	15.968	48.189	74.000	54.000	Pass

Figure Channel 11:

Horizontal (Peak)



Figure Channel 11:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2460.900	31.283	68.780	100.063			
11 (Peak)	2483.500	31.435	25.184	56.619	74.000	54.000	Pass
11 (Peak)	2487.900	31.465	25.841	57.306	74.000	54.000	Pass
11 (Average)	2461.100	31.285	65.152	96.436			
11 (Average)	2483.500	31.435	14.191	45.626	74.000	54.000	Pass
11 (Average)	2487.900	31.465	13.784	45.249	74.000	54.000	Pass

Figure Channel 11:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
01 (Peak)	2390.000	31.509	39.140	70.649	74.000	54.000	Pass
01 (Peak)	2415.000	31.661	72.954	104.615			
01 (Average)	2390.000	31.509	21.017	52.526	74.000	54.000	Pass
01 (Average)	2415.000	31.661	61.937	93.598			

Figure Channel 01:

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 etection.

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
01 (Peak)	2389.400	30.918	36.500	67.418	74.000	54.000	Pass
01 (Peak)	2390.000	30.915	36.095	67.010	74.000	54.000	Pass
01 (Peak)	2415.000	30.970	70.792	101.762			
01 (Average)	2389.200	30.919	18.236	49.155	74.000	54.000	Pass
01 (Average)	2390.000	30.915	18.879	49.794	74.000	54.000	Pass
01 (Average)	2414.600	30.967	60.022	90.989			

Figure Channel 01:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2459.700	32.002	70.707	102.709			
11 (Peak)	2483.500	32.182	35.719	67.901	74.000	54.000	Pass
11 (Peak)	2483.700	32.183	37.579	69.763	74.000	54.000	Pass
11 (Average)	2459.300	31.999	60.097	92.096			
11 (Average)	2483.500	32.182	20.676	52.858	74.000	54.000	Pass
11 (Average)	2483.700	32.183	20.433	52.617	74.000	54.000	Pass

Figure Channel 11:

Horizontal (Peak)





Note:

All readings above 1GHz are performed with peak and/or average measurements as necessary. 1.

2480,000

Frequency (MHz)

2490.000

2500,000

2510.000

2520,000

2533,500

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. 3.

2470,000

"*", means this data is the worst emission level. 4.

2450.000

Measurement Level = Reading Level + Correct Factor. 5.

2460.000

6. The average measurement was not performed when the peak measured data under the limit of average etection.

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Decult
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2460.500	31.280	68.697	99.977			
11 (Peak)	2483.500	31.435	31.760	63.195	74.000	54.000	Pass
11 (Average)	2458.900	31.270	58.080	89.349			
11 (Average)	2483.500	31.435	16.296	47.731	74.000	54.000	Pass

Figure Channel 11:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
01 (Peak)	2390.000	31.509	37.228	68.737	74.000	54.000	Pass
01 (Peak)	2414.000	31.654	69.482	101.135			
01 (Average)	2390.000	31.509	18.143	49.652	74.000	54.000	Pass
01 (Average)	2414.800	31.660	58.733	90.393			

Figure Channel 01:

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 etection.

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
01 (Peak)	2389.200	30.919	34.079	64.998	74.000	54.000	Pass
01 (Peak)	2390.000	30.915	33.698	64.613	74.000	54.000	Pass
01 (Peak)	2414.200	30.964	68.003	98.967			
01 (Average)	2389.200	30.919	16.241	47.160	74.000	54.000	Pass
01 (Average)	2390.000	30.915	16.851	47.766	74.000	54.000	Pass
01 (Average)	2414.800	30.968	57.652	88.620			

Figure Channel 01:

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	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

RF Radiated Measurement (Horizontal):

Channal No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Docult
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2459.300	31.999	69.559	101.558			
11 (Peak)	2483.500	32.182	35.076	67.258	74.000	54.000	Pass
11 (Peak)	2483.900	32.185	36.766	68.951	74.000	54.000	Pass
11 (Average)	2459.700	32.002	59.226	91.228			
11 (Average)	2483.500	32.182	19.967	52.149	74.000	54.000	Pass
11 (Average)	2483.900	32.185	19.672	51.857	74.000	54.000	Pass

Figure Channel 11:

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 etection.

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Chamier No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
11 (Peak)	2458.900	31.270	67.664	98.933			
11 (Peak)	2483.500	31.435	30.801	62.236	74.000	54.000	Pass
11 (Peak)	2485.500	31.449	30.877	62.326	74.000	54.000	Pass
11 (Average)	2459.100	31.271	57.507	88.778			
11 (Average)	2483.500	31.435	15.840	47.275	74.000	54.000	Pass
11 (Average)	2485.500	31.449	14.393	45.842	74.000	54.000	Pass

Figure Channel 11:

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.

7. Occupied Bandwidth

7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2003; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

 \pm 150Hz

7.6. Test Result of Occupied Bandwidth

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency	Measurement Level	hent Level Required Limit				
	(MHz)	(kHz)	Hz) (kHz)				
1	2412	9250	>500	Pass			

Figure Channel 1:

								ept SA	alyzer - Sw	trum An	nt Spec	giler
Frequency	M May 10, 2013 CE 1 2 3 4 5 6	01:53:30 P	ALIGNAUTO	Avg Ty	ENSE:INT	SE	17	AC 00000 GH	50 Ω 2.41200	Frea	ter	l R
1	PE MWWWWWW ET P N N N N N	PNO: Fast Trig: Free Run Tyre MWWWWW IFGain:Low #Atten: 30 dB Det PNNNN										
Auto Tu	40 GHz 06 dBm	Mkr2 2.407 40 GHz dB/div Ref 20.00 dBm 2.06 dBm										
Center Fr	2.24 dBm			3	A1	2						. og 10.0
2.412000000 G				May	1		NAN NA					1.00 10.0
Start Fr		pol potra	annass	N.			1º	Now we	ANT TO			0.0 10.0
2.007000000 0.	han war	-	hu					and part	Mar W	man	whay	0.0 0.0
Stop Fr 2.437000000 G).0).0
CF Ste	50.00 MHz (1001 pts)	Span 5 1.00 ms (Sweep 1			1.0 MHz	#VBV		0 GHz kHz	2.4120 V 300	ter 2 s BV	en Re
Auto M	ON VALUE	FUNCTIO	NCTION WIDTH	JNCTION	Bm	¥ 8 24 d	0 GHz	× 2.412.5		TRC SCL	MODE	B 1
Freq Offs 0					IBm IBm	2.06 d 1.99 d	0 GHz 5 GHz	2.407 4 2.416 6		1 f 1 f	N N	345
												5 7 8 9
			-									1
<u>UR</u>			STATUS									G

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	9250	>500	Pass

Figure Channel 6:

Agile	nt Spe	ectru	m Ana	lyzer - Sw	vept SA	2														
Center Freq 2.437000000 GHz		_	SENSE:INT ALIGN AUT Avg Type: Log-Pw				r	03:11:55 PM May 10, 2013 TRACE 1 2 3 4 5 6 TVPE MANAGANA			Frequency									
	IFGain:Low #Atten: 30 dB Det PNNNN Mkr2 2.432 40 GHz												Auto Tune							
10 d	B/di	v	Ref	20.00	dBm	r			_							1.	.33 (lBm	1	
10.0									2	In	min	3				1.55			Center Free	
-10.0	-		-				, m	NV		_		White	τ.					1.1	2.437000000 GH:	
-20.0 -30.0 -40.0				wwalle	NAGONO	w	1 st						2 J	and states	phane	m	4		Start Fred 2.412000000 GH:	
-50.0 -60.0 -70.0	in.	tom	Nº.			4										_	North	AUGU ANA	Stop Fred 2.462000000 GH:	
Cer #Re	nter es B	2.4: W 3	370 100) GHz (Hz	k'		#VI	BW	1.0 MHz	-				Sweep	0 1.0	Span :)0 ms	50.00 (100 ⁻	MHz 1 pts)	CF Step	
MKR 1	MODE	TRC	SCL f		2	2.437 5	0 GHz		Y 7.55 d	Bm	FUN	CTION	FUI	NCTION WID	WIDTH FUNCTION VALUE			UE	<u>Auto</u> Mar	
3456	N	1	f		2	2.441 6	5 GHz		1.33 d 1.20 d	Bm Bm									Freq Offset 0 Hz	
7 8 9 10 11																				
12 MSG	_				_		_	-		_		-		STAT	TUS	_		_		

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	9250	>500	Pass

Figure Channel 11:

	1 May 10, 2012	02-19-05 DA	ALIGNALITO	-	NEE-INT			pt SA	vzer - Swe	m Anal	etrun	nt Spe	igiler R
Frequency	123456 MWWWWW	TRACE	: Log-Pwr	Avg Typ	e Run	Trig: Fre	HZ NO: Fast G	0000 GI	46200	eq 2.	Fre	ter	en
Auto Tune	40 GHz 21 dBm	2.457 - -1.2	Mkr2		0 dB	#Atten: 3	Gain:Low	IF	20.00 d	Ref	,	B/div	10 d
Center Fre 2.462000000 GH	-0.94 dBm			3	min	2 Anorman							.og 10.0 0.00
Start Fre 2.437000000 GH		M Dia	,JVNW	1000 y			and a start	WWW					10.0 20.0 30.0
Stop Fre 2.487000000 GH	Transport	- Contra						2		and the second	up	er 1	10.0 50.0 50.0 70.0
CF Ste	0.00 MHz 1001 pts)	Span 50 .00 ms (1	Sweep 1			1.0 MHz	#VBV	-	GHz Hz	6200 100 k	2.40 W 3	ter : s Bi	en Re
Auto Man	N VALUE	FUNCTIO	NCTION WIDTH	NCTION FL	Bm	5.06 d	0 GHz	× 2.462 5		f	TRC 1	MODE	KR 1
FreqOffse 0 ⊢					Bm Bm	-1.21 d -1.31 d	5 GHz	2.466 6		f	1	N	4 3 4 5 6
													7 8 9
												-	12
Product	:	Automotive Electronics Infotainment Head Unit											
-----------	---	---											
Test Item	:	Occupied Bandwidth Data											
Test Site	:	No.3 OATS											
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)											

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	16100	>500	Pass

Igilent Spe	ctrum Analyz	er - Swept SA								
RL	RF	50 Ω AC	_	SENSE:INT		ALIGNAUTO	07:11:02 PM	May 10, 2013	Frequency	
enter Freq 2.412000000 GHz PNO: Fast IFGain:Low				Trig: Free Run #Atten: 30 dB	Avg Typ	Avg Type: Log-Pwr TRACE 1 TYPE N DET P		123456 MWWWWW PNNNNN	1.0.57	
Mkr2 2.404 05 GHz 0 dB/div Ref 20.00 dBm 1.71 dBm										
.og 10.0			\$ ²	man la	3			1.87 dBm	Center Fred	
10.0		N.C.S.	1		1	St. market			2.412000000 GHz	
20.0 30.0 model 40.0	and the second states	aughter and automatic				C. C. S. C.	and the second	at Alertran and	Start Fred 2.387000000 GHz	
50.0 50.0 70.0									Stop Fred 2.437000000 GH2	
enter 2 Res B	2.41200 C N 300 kH	SHz z	#VBW	1.0 MHz		Sweep	Span 50 1.00 ms (1	.00 MHz 001 pts)	CF Step	
KR MODE	TRC SCL	X		Y	FUNCTION FI	JNCTION WIDTH	FUNCTION	VALUE	Auto Mar	
1 N 2 N	1 f 1 f	2.413 65	GHz GHz	7.87 dBm 1.71 dBm						
3 N 4 5 6	1 f	2.420 15	GHZ	1.40 dBm					Freq Offsel 0 Hz	
7 8 9				-						
10 11 12										
ISG						STATUS				

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	16100	>500	Pass

Agilent S	pectrum	n Analy	zer - Swep	it SA								
Cente	r Fre	RF	^{50 Ω}	AC 000 GH	1Z	Trig: Free	Run	Avg Typ	e: Log-Pwr	07:16:15 TRA TY	PM May 10, 2013 CE 1 2 3 4 5 6 PE M WWWWWW	Frequency
				IFC	io: Fast C. Sain:Low	#Atten: 30	dB	-	Mkr	2 2.429	00 GHz	Auto Tune
10 dB/d	iv	Ref 2	0.00 di	8m						0.	37 dBm	
10.0					¢2		0 ¹	may 3			0.71 dBm	Center Free 2 437000000 GH:
-10.0	_	-			and the second			3		-		2.407000000 011
-20.0	-2-part	Lawrence 1	yalah Parsu	Jun and all the					and contraction of	an ren flammer	s What when and the state	Start Fred 2.412000000 GH?
-50.0												Stop Free 2.462000000 GH
Center #Res E	r 2.4: 3W 3	3700 00 ki	GHz Iz		#VBV	V 1.0 MHz			Sweep	Span : 1.00 ms	50.00 MHz (1001 pts)	CF Ster
MKR MOD	E TRC	SCL		x	-	Y	FU	INCTION COL	INCTION WIDTH	FUNCT	ION VALUE	Auto Mar
1 N 2 N 3 N 4 5	1 1	f f f		2.438 5 2.429 0 2.445 1	0 GHz 0 GHz 0 GHz	6.71 dE 0.37 dE 0.65 dE	Sm Sm Sm					Freq Offse 0 H
7 8 9 10												
12 MSG									STATUS			

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	16100	>500	Pass

gilent Spe	etrum	Analyzer - S	owept SA							
enter	Fred	2.4620	Ω AC	Z 0: Fast (Trig: Free Run	Avg T	vpe: Log-Pwr	07:21:33 P TRAC TYI	M May 10, 2013 2E 1 2 3 4 5 6 PE M W M M M M	Frequency
0 dB/di	IFGain:Low #Atten: 30 dB DET/P NNNN Mkr2 2.454 05 GHz dB/div Ref 20.00 dBm -0.05 dBm									
		20.00		2 au	and	21	3		0.29 dBm	Center Free 2.462000000 GH
0.0 20.0	-unforder	and the put	ward filler and a free and beef	1			West Viewon	and the state of the	The delay - some of	Start Free 2.437000000 GH
1.0 1.0 1.0 1.0										Stop Free 2.487000000 GH
enter Res B	2.462 W 30	200 GHz 0 kHz	8	#VBN	(1.0 MHz		Sweep	Span 5 1.00 ms (0.00 MHz 1001 pts)	CF Ste
KR MODE		f	× 2.464 25	GHz	6.29 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto Ma
2 N 3 N 4 5 6	1	r	2.454 05	GHZ	-0.05 dBm -0.04 dBm				_	Freq Offse 0 H
7 8 9 0										
12							STATUS			

:	Automotive Electronics Infotainment Head Unit
:	Occupied Bandwidth Data
:	No.3 OATS
:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
	: : :

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	17300	>500	Pass

Agilent Spe	ectrum A	nalyzer - Swe	pt SA								
Center Freq 2.412000000 GHz		SENSE:	INT	Aug Type: Log-Pwr		07:29:03 P TRAC TYI	M May 10, 2013 E 1 2 3 4 5 6 E M MANAMA	Frequency			
			IFG	ioin:Low	#Atten: 30 dE	1	1	Mkr	DI 2 2.403	45 GHz	Auto Tune
10 dB/di	Re	f 20.00 d	IBm		1		-		0.	14 dBm	
10.0				2	min	Am	mand 3			0.49 dBm	Center Free
-10.0	_		للسمانات	el			1	myp E.			
-20.0 -30.0	1017-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Bullhand and and and	N)rwather beau					A PANAL CONTRACT	approximation and an	Pri-daphanga-	Start Fred 2.387000000 GH:
-50.0											Stop Free 2.437000000 GH:
Center #Res B	2.4120 W 300	00 GHz kHz		#VBN	1.0 MHz			Sweep	Span 5 1.00 ms (0.00 MHz 1001 pts)	CF Step
MKR MODE	TRC SC	3	×		Y	FUNCT	ION FU	NCTION WIDTH	FUNCTIO	IN VALUE	Auto Mai
1 N 2 N 3 N 4 5	1 f 1 f		2.414 8 2.403 4 2.420 7	5 GHz 5 GHz 5 GHz	6.49 dBm 0.14 dBm 0.11 dBm						Freq Offse 0 H
6 7 8 9											
11 12											
ASG								STATUS			

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	17300	>500	Pass

Agilent Sp	ectru	m Ana	lyzer - Swer	pt SA	-	_						
Center	Fre	eq 2	.43700	AC 0000 GH	IZ	Trig: Free	SE:INT	Avg Type	ALIGNAUTO	07:46:23 F TRAI TY	M May 10, 2013 CE 1 2 3 4 5 6 PE M WWWWWW	Frequency
IFGain:Low #Atten: 30 dB DET P NNNN Mkr2 2.428 45 GHz							Auto Tune					
10 dB/di	iv	Ref	20.00 d	Bm						-0.	34 dBm	
10.0		_			\$ ²	Interior manager		3			-0.12 dBm	Center Free 2.437000000 GH
-10.0	_	+		- M	/		_	1	a.			ACC
-20.0	o-Ne or	mein kor	francis and	W/WILLIS					in history	and the itig and the	Million Marine Sorave	Start Free 2.412000000 GH
50.0 60.0		-										Stop Fre
Center	2.4	3700	GHz		#\/B\				Curran	Span 5	0.00 MHz	CF Ste
Akes D	ivv a	100 N	HZ		#VDV	V 1.U IVINZ			Sweep	1.00 ms (1001 pts)	5.000000 MH
	1	f		2.439 9	5 GHz	5.88 dB	m	CTION	NCTION WIDTH	FUNCT	JN VALUE	<u>Auto</u> ivia
3 N 4 5 6	1	f		2.445 7	5 GHz	-0.39 dB	,m					Freq Offse 0 H
7 8 9												
11 12												
ASG									STATUS			

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	17300	>500	Pass

gilent Spec	trum Analy	zer - Swept SA						
enter	Freq 2.	50 Ω AC 462000000 GHz PNO: East	SENSE:INT	Avg Type	ALIGNAUTO	07:50:56 P TRAC TYP	M May 10, 2013 E 1 2 3 4 5 6 E M WWWWWW	Frequency
0 dB/div	Ref	IFGain:Low	#Atten: 30 dB		Mkr	2 2.453 -0.1	45 GHz 78 dBm	Auto Tune
.og 10.0 0.00		2 ²		~~~~{ ³			-0.45 dBm	Center Free 2.462000000 GH
10.0 20.0 30.0 40.0	Hymon Terry dalls to	- de a der se al formande			Marganese	deligiting the second sec	atterestations	Start Fre 2.437000000 GH
50.0 60.0 70.0								Stop Fre 2.487000000 GH
enter 2 Res BV	2.46200 V 300 ki	GHz Iz #VI	BW 1.0 MHz		Sweep	Span 5 1.00 ms (0.00 MHz 1001 pts)	CF Ste
AKE MODE		× 2.461 05 GHz 2.453 45 GHz	5.55 dBm	FUNCTION FU	NCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Ma
3 N 4 5 6 7 8	1 f	2.470 75 GHz	-0.70 dBm					Freq Offse 0 H
9 10 11 12								
SG					STATUS			

8. Power Density

8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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.

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

 \pm 1.27 dB

8.6. Test Result of Power Density

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	-7.039	< 8dBm	Pass

SENSE:INT	ALIGNAUTO D3 Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
t 🆵 Trig: Free Run w #Atten: 30 dB	Mkr1 2	412 50 GHz -7.039 dBm	Auto Tune
maring harry	MAN.		Center Freq 2.412000000 GHz
	M	n	Start Freq 2.402000000 GHz
		N.	Stop Freq 2.422000000 GHz
			CF Step 2.000000 MHz <u>Auto</u> Mar
			Freq Offsel 0 Hz
/BW 300 kHz	S Sweep 1.93	pan 20.00 MHz I ms (1001 pts)	
	SENSEJINT Trig: Free Run #Atten: 30 dB MMMMM MMMMM MMMMM MMMM MMMMM MMMM MMMMM MMMM MMMM MMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMM MMMMMM	SENSE:INT AUGNAUTO DO Avg Type: Log-Pwr Avg Hold>100/100 Mkr1 2 MMr1 2	SENSE:INT AUGNAUTO D3:10:03 PMMay 10, 2013 structure Trig: Free Run #Atten: 30 dB Avg Type: Leg-Pwr Avg Hold>100/100 Trig: Free Run Der P NNNN Mkr1 2.412 50 GHz -7.039 dBm Multiple: 1 Multiple: 0 Multiple: 0 Mkr1 2.412 50 GHz -7.039 dBm Multiple: 0 Multiple:

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437	-7.703	< 8dBm	Pass

RL RF 50 Q AC	SENSE:INT	ALIGNAUTO	03:15:44 PM May 10, 2013	
enter Freq 2.437000000 GHz PNO:	Fast 😱 Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWWW	Frequency
IFGain Ref Offset -15.2 dB O dB/div Ref 4.80 dBm	:Low #Atten: 30 dB	Mkr	1 2.436 50 GHz -7.703 dBm	Auto Tune
5.20	man Mar	All a		Center Fred 2.437000000 GH:
5.2 AM		W	MAY	Start Free 2.427000000 GH
15.2 M			- N	Stop Free 2.447000000 GH
6.2				CF Stej 2.000000 MH <u>Auto</u> Ma
6.2				Freq Offse 0 H
enter 2.43700 GHz	#VBW 300 kHz	Sween	Span 20.00 MHz	

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462	-10.176	< 8dBm	Pass

SENSEIINT	ALIGNAUTO	03:22:29 PM May 10, 2013	Frequency
Trig: Free Run	Avg Hold:>100/100	TYPE MWWWWWW DET P N N N N N	· · · · · · · · · · · · · · · · · · ·
#Atten: 30 db	Mkr	1 2.461 50 GHz -10.176 dBm	Auto Tune
			Center Freq 2.462000000 GHz
	Marian	MA	Start Freq 2.452000000 GH2
		M	Stop Freq 2.472000000 GHz
			CF Step 2.000000 MHz <u>Auto</u> Mar
			Freq Offset 0 Hz
300 kHz	Sween	Span 20.00 MHz 1 93 ms (1001 pts)	
	SENSE:INT	SENSE:INT ALIGNAUTO Avg Type: Log-Pwr Avg Hold>100/100 Mkr	SENSEINT Aug Type: Log-Pur Avg Type: Log-Pur #Atten: 30 dB Trig: Free Run #Atten: 30 dB Mkr1 2.461 50 GHz -10.176 dBm

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	-9.933	< 8dBm	Pass

RL RF 50.0 AC	SENSE:INT	ALIGNAUTO	07:14:32 PM May 10, 2013	I The second second second
enter Freq 2.412000000 GHz	Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWWW	Frequency
Ref Offset -15.2 dB dB/div Ref 4.80 dBm	#Atten: 30 dB	Mkr	1 2.413 22 GHz -9.933 dBm	Auto Tune
20	1	1		Center Fred 2.412000000 GH:
5.2 Antrachardenand	man brand man m	when the stand of the second the second	momental	Start Free 2.402000000 GH:
5.2 Auroll 1				Stop Free 2.422000000 GH
5.2				CF Stej 2.000000 MH <u>Auto</u> Ma
5.2				Freq Offse 0 H
enter 2.41200 GHz	W 200 kHz	Swaan	Span 20.00 MHz	

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437	-10.845	< 8dBm	Pass

M RL	RE 50 Q AC		SENSEIINT	ALIGNAUTO	07:19:09 PM May 10, 2013	
Center F	req 2.43700000	GHz] Trig: Free Run	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWWW	Frequency
10 dB/div	Ref Offset -15.2 dB Ref 4.80 dBm	IFGain:Low	#Atten: 30 dB	Mkr	^{Det P NNNNN} 1 2.438 26 GHz -10.845 dBm	Auto Tune
-5.20						Center Fred 2.437000000 GH:
-15.2	Manhowal	www.do-southad	Milman Annalle	and manufarme	Munuling	Start Free 2.427000000 GH:
-35.2 100 100	<u>v</u>				"holder	Stop Free 2.447000000 GH
65.2						CF Stej 2.000000 MH <u>Auto</u> Ma
.85.2						Freq Offse 0 H
Center 2.4 #Res BW	13700 GHz 100 kHz	#VBW	300 kHz	Sweep	Span 20.00 MHz 1.93 ms (1001 pts)	
Center 2.4 #Res BW	13700 GHz 100 kHz	#VBW	300 kHz	Sweep	Span 20.00 MHz 1.93 ms (1001 pts)	

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462	-11.502	< 8dBm	Pass

AutoNAUTO D72505 PM May 10, 2013 Frequency Avg Type: Log-Pwr TRACE [1 2 3 4 5 6 Frequency Avg Hold>100/100 TYPE MWWWWWW TYPE MWWWWWW Mkr1 2.463 26 GHz Auto Tun -11.502 dBm Center Fre 2.452000000 GH Center Fre
AvglHold>100/100 TVE Multiple Auto Tun Mkr1 2.463 26 GHz -11.502 dBm Auto Tun Center Fre 2.462000000 GH
Center Fre 2.462000000 GH
Start Fre 2.45200000 GH
Stop Fre 2.47200000 GH
CF Ste 2.000000 MH <u>Auto</u> Ma
Freq Offse 0 H
Span 20.00 MHz Sweep 1.93 ms (1001 pts)

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	-10.772	< 8dBm	Pass

Agilent Spectrum Analyzer - Swept SA					
Center Freq 2.412000000) GHz	SENSEIINT	ALIGNAUTO Avg Type: Log-Pwr	07:44:46 PM May 10, 2013 TRACE 1 2 3 4 5 6	Frequency
Ref Offset -15.2 dB 10 dB/div Ref 4.80 dBm	PNO: Fast 🦕 IFGain:Low	³ Trig: Free Run #Atten: 30 dB	Avg Hold⇒100/100 Mkr	1 2.413 26 GHz -10.772 dBm	Auto Tune
-5.20		• • • • • • •			Center Freq 2.412000000 GHz
-15.2 -25.2	mbatharanta	malanny providen	aplanthant	- montentration	Start Freq 2.402000000 GHz
-35.2 all all all all all all all all all al					Stop Freq 2.422000000 GHz
-65.2					CF Step 2.000000 MHz Auto Mar
.75.2					Freq Offse 0 H
Center 2.41200 GHz #Res BW 100 kHz	#VBW	300 kHz	Sweep	Span 20.00 MHz 1.93 ms (1001 pts)	
MSG			STATUS	S	

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)

Channel No.	Frequency (MHz)	Frequency Measurement Level (MHz) (dBm)		Result
6	2437	-11.440	< 8dBm	Pass

RL RF 50Ω AC		SENSE:INT	ALIGNAUTO	07:48:41 PM May 10, 2013	
Center Freq 2.437000000	GHz	Trig: Free Run	Avg Type: Log-Pwr Avg Hold>100/100	TRACE 123456 TYPE MWWWWW	Frequency
Ref Offset -15.2 dB 0 dB/div Ref 4.80 dBm	IFGain:Low	#Atten: 30 dB	Mkr	_{Det} ∣P NNNN 1 2.439 50 GHz -11.440 dBm	Auto Tune
5.20			→ ¹		Center Fred 2.437000000 GH:
15.2 25.2 minutementer	and any marked and and	and a contraction of the	wheel war som the set	mumhany	Start Fred 2.427000000 GH2
35.2 perf ^{ert}				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Stop Free 2.447000000 GH:
66.2				-	CF Stej 2.000000 MH Auto Ma
75.2					Freq Offse 0 H
Center 2.43700 GHz	#\/D\\	200 kHz	Swaan	Span 20.00 MHz	

Product	:	Automotive Electronics Infotainment Head Unit
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462	-12.020	< 8dBm	Pass

KE RF 50Ω AC		SENSE:INT		ALIGN AUTO	07:54:16 PM May 10, 2013	
nter Freq 2.462000000 GI		Tria: Free Run	Avg Type AvglHold:	: Log-Pwr >100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
Ref Offset -15.2 dB B/div Ref 4.80 dBm	Gain:Low	#Atten: 30 dB		Mkr1	2.463 26 GHz -12.020 dBm	Auto Tuno
			1		-	Center Fre 2.462000000 GH
2 minhour have	alton and more	warsten forwards	montana	www.	minhang	Start Fre 2.452000000 GH
2 V ^{A^A}					- Long	Stop Fre 2.472000000 GH
2						CF Ste 2.000000 MH Auto Ma
2						Freq Offse 0 H
nter 2.46200 GHz	#VBW	300 kHz	4	Sweep 1	Span 20.00 MHz .93 ms (1001 pts)	

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs