# FCC Test Report

Product Name	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Model No	NTG5 HU
FCC ID.	T8G9099

Applicant	Harman Becker Automotive Systems GmbH
Address	Becker-Göring-Str. 16, 76307 Karlsbad, Germany

Date of Receipt	Mar, 11, 2013
Issue Date	Mar, 15, 2013
Report No.	133230R-RFUSP44V01
Report Version	V1.0



The test results relate only to the samples tested.

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# Test Report Certification

Issue Date: Mar, 15, 2013 Report No.: 133230R-RFUSP44V01



Product Name	Infotainment System with Headunit (with BT, WLAN, Kleer technology)		
Applicant	Harman Becker Automotive Systems GmbH		
Address	Becker-Göring-Str. 16, 76307 Karlsbad, Germany		
Manufacturer	Harman Becker Automotive Systems GmbH		
Model No.	NTG5 HU		
EUT Rated Voltage	DC 12V (Power by vehicle Battery)		
EUT Test Voltage	DC 12V (Power by vehicle Battery)		
Trade Name	Daimler		
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2012		
	ANSI C63.4: 2003, ANSI C63.10: 2009		
Test Result	Complied		

The test results relate only to the samples tested.

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Documented By :

Leven Huang

(Senior Adm. Specialist / Leven Huang )

Tested By

( Engineer / Jack Hsu )

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	Infotainment System with Headunit (with BT, WLAN, Kleer technology)		
Trade Name	Daimler		
Model No.	NTG5 HU		
FCC ID.	T8G9099		
Frequency Range	2403-2478MHz		
Channel Separation	5 MHz		
Channel Number	16		
Type of Modulation	MSK		
Antenna Type	Printed patch Antenna		
Antenna Gain	Refer to the table "Antenna List"		
Channel Control	Auto		
FCC equipment class	DTS		

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	WISI	AG200	Printed patch	1.5dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2403MHz	Channel 02:	2408MHz	Channel 03:	2413 MHz	Channel 04:	2418 MHz
Channel 05:	2423MHz	Channel 06:	2428MHz	Channel 07:	2433 MHz	Channel 08:	2438 MHz
Channel 09:	2443 MHz	Channel 10:	2448 MHz	Channel 11:	2453 MHz	Channel 12:	2458 MHz
Channel 13:	2463MHz	Channel 14:	2468 MHz	Channel 15:	2473 MHz	Channel 16:	2478 MHz

- 1. The EUT is an Infotainment System with Headunit (with BT, WLAN, Kleer technology) with a built-in WLAN 
  Sluetooth and Kleer transceiver, this report for Kleer.
- 2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 3. These tests are conducted on a sample for the purpose of demonstrating compliance of 2.4GHz transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices
- 4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit

#### **1.2.** Operational Description

The EUT "Infotainment System with Headunit (with BT, WLAN, Kleer technology)" is based on new low power Intel e-Module technology for a high performance infotainment system, This system will be installed in the new S-Class (W222) of Mercedes Benz and one year later in the new C-Class (W205). It contains features like navigation, different Tuner technologies, CD/DVD-Drive, HDD-Drive, RSC (Rear-Seat-Communication), Bluetooth, WLAN and Kleer wireless technology. It was designed for use within different car series for different target markets.

The Number of the channels is 16 in 2403~2478MHz, The device adapts the MSK modulation, The Antenna is Printed patch Antenna

The Fondunit has two Kleer Chips for connecting two Kleer Headphones to the FondUnit.

Each chip has one symmetric antenna. The antennas are connected over a Balun to the Kleer Chip.

# **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	Test Fixture	Harman Becker	N/A	N/A	N/A
2	Notebook PC	Lenovo	T400	L3AZW4N	N/A
3	DC 12V Battery	TRANE	12B50PE	N/A	N/A

Signal Cable Type		Signal cable Description
А	Signal Cable	Non-Shielded, 1.2m
В	USB Cable	Non-Shielded, 0.6m
С	Power Cable	Non-Shielded, 1m
D	Power Cable	Non-Shielded, 1m

# 1.4. Configuration of Tested System



#### **1.5.** EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4
- (2) Execute Software "Pkleer v1.0.0.7" on the notebook PC.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (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://tw.quietek.com/tw/emc/accreditations/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		
X	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 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.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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

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

#### 3.2. Test Setup

Conducted Measurement



#### 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 ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

#### 3.5. Uncertainty

 $\pm$  1.27 dB

# **3.6.** Test Result of Peak Power Output

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
01	2403	0.25	<30dBm	Pass
09	2443	-0.42	<30dBm	Pass
16	2478	-1.65	<30dBm	Pass

### 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	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	QTK	QTK-AMP-03 / 0003	May, 2012
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
	Х	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2013
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	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
	Х	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	uV/m @3m	dBuV/m@3m		
30-88	100	40		
88-216	150	43.5		
216-960	200	46		
Above 960	500	54		

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 ANSI C63.10: 2009 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 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

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

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement. The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

#### 4.5. Uncertainty

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

#### 4.6. Test Result of Radiated Emission

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (2403MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4806.000	3.328	38.500	41.829	-32.171	74.000
7209.000	10.188	37.430	47.617	-26.383	74.000
9612.000	13.669	37.520	51.189	-22.811	74.000
Average Detector:					
Vertical					
Peak Detector:					
4806.000	6.626	38.590	45.216	-28.784	74.000
7209.000	11.054	37.540	48.594	-25.406	74.000
9612.000	14.074	36.980	51.054	-22.946	74.000

# Average Detector:

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

Product :	Infotainment System with Headunit	(with BT, WLAN, Kleer technology)
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Test Item : Harmonic Radiated Emission Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit (2443MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4886.000	2.984	40.170	43.154	-30.846	74.000
7329.000	11.873	36.400	48.273	-25.727	74.000
9772.000	12.527	37.360	49.887	-24.113	74.000
Average Detector:					
Vertical					
Peak Detector:					
4886.000	5.665	38.410	44.075	-29.925	74.000
7329.000	12.778	36.550	49.328	-24.672	74.000
9772.000	12.979	38.450	51.429	-22.571	74.000

# Average Detector:

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

Product :	Infotainment Sys	stem with Headur	nit (with BT, WLAN,	Kleer technology	7)
Test Item :	Harmonic Radiat	ted Emission Dat	a		
Test Site :	No.3 OATS				
Test Mode :	Mode 1: Transm	it (2478MHz)			
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizonta	l				
Peak Detecto	or:				
4956.000	2.771	39.550	42.321	-31.679	74.000
7434.000	12.509	36.140	48.650	-25.350	74.000
9912.000	13.411	37.130	50.541	-23.459	74.000
Average Detec	etor:				
Vertical					
Peak Detecto	or:				
4956.000	5.553	39.970	45.524	-28.476	74.000
7434.000	13.416	35.490	48.907	-25.093	74.000
9912.000	13.964	36.760	50.725	-23.275	74.000

#### **Average Detector:** --

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

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
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Test Item : General Radiated Emission Data

Test Site : No.3 OATS

Test Mode:Mode 1: Transmit (2443Hz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
127.000	-10.017	48.868	38.851	-4.649	43.500
295.780	-3.655	44.512	40.857	-5.143	46.000
499.480	0.048	41.846	41.894	-4.106	46.000
648.860	2.038	41.616	43.654	-2.346	46.000
738.100	2.826	39.387	42.213	-3.787	46.000
792.420	5.209	37.691	42.900	-3.100	46.000
Vertical					
158.040	-6.191	43.731	37.540	-5.960	43.500
249.220	-7.634	43.239	35.605	-10.395	46.000
379.200	-1.505	41.231	39.725	-6.275	46.000
540.220	0.121	38.326	38.447	-7.553	46.000
695.420	1.878	38.166	40.044	-5.956	46.000
769.140	2.923	38.902	41.825	-4.175	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.

#### 5. **RF** antenna conducted test

#### 5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2012

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 ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

# 5.5. Uncertainty

The measurement uncertainty Conducted is defined as  $\pm 1.27$ dB

# 5.6. Test Result of RF antenna conducted test

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS

Test Mode : Mode 1: Transmit

#### Channel 01(2403Hz)

Agilent Spectr	um Analyzer - Sv	wept SA								
DU RL	RF 50 :	Ω AC		SE	VSE:INT		ALIGNAUTO	0 10:16:10	PM Mar 13, 2013	Frequency
Center F	req 515.00	0000 MH	z	Tuin For	Due	Avg Type	: Log-Pwr	TR/	ACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref 20.00 dBm		PNO: Fast 🖵		) dB		IV	1kr1 73. -57	747 MHz .54 dBm	Auto Tune
10.0				-						Center Freq 515.000000 MHz
0.00										Start Freq 30.000000 MHz
-20.0									-26.51 dBm	Stop Freq 1.000000000 GHz
-40.0										<b>CF Step</b> 97.000000 MHz <u>Auto</u> Man
-60.0		ti da ministra de la comitación de la comit	dir. Androwie	telleharmender Argente generation		(jest Attendist attendenses)	u tea dan da	angular Cassar ( ) ya		Freq Offset 0 Hz
-70.0 Start 30.0 #Res BW	MHz 100 kHz		#VBW	1.0 MHz			Sweep	Stop 1, 90.0 ms (	.0000 GHz 10001 pts)	
MSG							STAT	us		

Agilent Spect	rum Analyzer - Swept SA	L						
Conton F	RF 50 Ω AC		SENSE:INT	Δυσ Τι	ALIGNAUTO	10:15:36 I	M Mar 13, 2013	Frequency
10 dB/div	Ref 20.00 dBm	PNO: Fast C IFGain:Low	┘ Trig: Free Run #Atten: 30 dB	01811	Mk		3 6 GHz 50 dBm	Auto Tune
10.0								Center Freq 6.50000000 GHz
0.00 -10.0	• <sup>1</sup>							Start Freq 1.000000000 GHz
-20.0							-26.51 dBm	Stop Freq 12.000000000 GHz
-40.0								<b>CF Step</b> 1.100000000 GHz <u>Auto</u> Man
-60.0		ter and the second s						Freq Offset 0 Hz
-70.0 Start 1.00 #Res BW	00 GHz 100 kHz	#VBW	1.0 MHz		Sweep	Stop 12 1.02 s (1	.000 GHz 0001 pts)	
MSG	PARTICIPATION OF				STATUS			

KIRL RE 50 Q AG		SENSEANT	1.1	ALIGNAUTO	10:16:43 PM Mar 13, 2013	
Center Freq 18.500000	000 GHz PNO: Fast 😱	Trig: Free Run	Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WAAAAAAA	Frequency
10 dB/div Ref 20.00 dBn	IFGain:Low	#Atten: 30 dB		Mkr	1 23.865 1 GHz -47.38 dBm	Auto Tune
						Center Fre
10.0						18.500000000 GH:
0.00						
-10.0	<u>E ( ) E (</u>					Start Fred 12.000000000 GH:
-20.0						Stop Free
-30,0				_	-26.51 dBm	25.000000000 GH
-40.0						CF Step
-50.0						Auto Mar
	An established by the second stability	and the statement of the second state of the		detropolition in the	An and a second s	
-60.0						Freq Offse 0 Ha
-70.0						
Start 12.000 GHz	<i>#1</i> 0111	4.0.000			Stop 25.000 GHz	
HRES DW TUU KHZ	#VBVV	1.0 101712		sweep	1.20 S (10001 pts)	

r <del></del>			1			ım Analyzer - Swept SA	gilent Spect	
Frequency	26:56 PM Mar 13, 2013 TRACE 1 2 3 4 5 6	AUTO Pwr	Avg Type: Log-P	SENSE:INT	MHz	RF 50 Ω AC	Center F	
Auto Tun	Mkr1 122.926 MHz -56.99 dBm		N	'rig: Free Run Atten: 30 dB	PNO: Fast 😱 IFGain:Low	PNO: Fas IFGain:Lo Ref 20.00 dBm		
Center Fre 515.000000 MH							10.0	
Start Fre 30.000000 MH							-10.00	
Stop Fre 1.000000000 GH	-26.93 dBm						-20.0	
CF Ste 97.000000 MH <u>Auto</u> Ma							-40.0	
Freq Offse 0 H	ing a group of the second s		a da maj jerni katilina di si ili nasili Patri si angeni angeni di tangga di tangga di ta	Sight have been platered as here	a parti da parte da de la parte		-60.0	
	p 1.0000 GHz			0.8442	#1/0141	MHz	Start 30.0	
	na (10001 pts)	STATUS	SWEE		#VBW		ISG	

Channel 09 (2443MHz)



Agilent Spectrur	n Analyzer - Swept S	A						
	RF 50 Ω A	000 GHz	SEN		Avg Typ	ALIGNAUTO e: Log-Pwr	10:27:30 PM Mar 13, 201 TRACE 1 2 3 4 5 TYPE MIAMAAAAA	Frequency
10 dB/div	Ref 20.00 dBr	PNO: Fast 🦕 IFGain:Low	#Atten: 30	) dB		Mkr	1 21.266 4 GH -47.86 dBn	Auto Tune
10.0								Center Freq 18.500000000 GHz
-10.0								Start Freq 12.000000000 GHz
-20.0							26.93 dBr	Stop Freq 25.00000000 GHz
-40.0								CF Step 1.300000000 GHz <u>Auto</u> Man
-60.0	and the second							Freq Offset 0 Hz
-70.0 Start 12.00	0 GHz					_	Stop 25.000 GHz	
#Res BW 1	00 kHz	#VBW	1.0 MHz	£		Sweep	1.20 s (10001 pts	)
MSG						STATUS	8	



ALTENIAUTO 10:41:46 PM Mar 13: 2013	ALIGNALITO	SENSE INT	RE 50.0 80	RIP
Log-Pwr TRACE 1 2 3 4 5 6 Frequency	Avg Type: Log-Pwr	SENSEAN	eg 515 000000 MHz	enter Freg
Mkr1 73.747 MHz -55.37 dBm	Mł	┘ Trig: Free Run #Atten: 30 dB	Ref 20.00 dBm	0 dB/div Re
Center F 515.00000	-			10.0
Start F 30.000000				0.00
-27.83 dBm 1.000000000				30.0
CF S 97.000000 <u>Auto</u>				40.0 50.0 <b>1</b>
Freq Of	ng C <sup>h</sup> annan processes Di ad antara kata da binda Maria antara processa da binda	New York and a start of the sta	179 January 1890 (1996) (1997)	60.0
				70.0
Stop 1.0000 GHz Sweep 90.0 ms (10001 pts)	Sweep 9	1.0 MHz	MHz 100 kHz #VBW	Res BW 100
STATUS	STATUS	at the second second	NA MARKA	SG

#### Channel 16 (2478MHz)

Agilent Spect	rum Analyzer - Swept SA								
RL	RF 50 Ω AC	011	SEN	ISE:INT	Aug Tur	ALIGNAUTO	10:41:12	PM Mar 13, 2013	Frequency
10 dB/div	Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free #Atten: 30	Run dB	OVY IV	Mk	r1 2.47 -7.	7 3 GHz 83 dBm	Auto Tune
10.0				-					Center Fred 6.500000000 GHz
-10.0	<b>♦</b> <sup>1</sup>								Start Free 1.000000000 GH;
-20.0								-27.83 dBm	Stop Fred 12.000000000 GH;
-40.0	1								CF Step 1.100000000 GH: <u>Auto</u> Mar
-60.0			with weath the w	a filtente en d an el transporte	all an		an a		Freq Offse 0 H;
Start 1.00	00 GHz 100 kHz	#VBW	1.0 MHz			Sweep	Stop 12 1.02 s (1	2.000 GHz 0001 pts)	

Agilent Spectrum	Analyzer - Swept SA							
Center Fre	RF 50 Ω AC q 18.5000000	000 GHz	SEN	ISE:INT	Avg Typ	ALIGNAUTO e: Log-Pwr	10:42:20 PM Mar 13, 2013 TRACE 1 2 3 4 5 6	Frequency
10 dB/div <b>I</b>	Ref 20.00 dBm	PNO: Fast 🌩 IFGain:Low	#Atten: 30	dB		Mkr	1 23.836 5 GHz -47.86 dBm	Auto Tune
10.0				-				Center Freq 18.50000000 GHz
-10,0								Start Freq 12.000000000 GHz
-20.0							-27.83 dBm	<b>Stop Freq</b> 25.000000000 GHz
-40.0							<b>∳</b> <sup>1</sup>	CF Step 1.300000000 GHz <u>Auto</u> Man
-60.0								Freq Offset 0 Hz
Start 12.000 #Res BW 10	) GHz 00 kHz	#VBW	1.0 MHz			Sweep	Stop 25.000 GHz 1.20 s (10001 pts)	
MSG						STATUS	1	

#### 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, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2013
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
		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
	Х	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



#### 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. QUIETEK

# 6.4. Test Procedure

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

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 6.6. Test Result of Band Edge

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit

### Fundamental Filed Strength

Antenna	Frequency	<b>Correction Factor</b>	<b>Reading Level</b>	Emission Level	Detector
Pole	[MHz]	[dB/m]	[dBuV]	[dBuV/m]	
Horizontal	2403	31.581	60.49	92.07	Peak
Horizontal	2403	31.581	57.46	89.04	Average
Vertical	2403	30.921	54.32	85.24	Peak
Vertical	2403	30.921	51.73	82.65	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

# Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ ( <b>dB</b> )	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2390	92.07	47.9	44.17	74.000	Peak
Horizontal	2390	89.04	57.48	31.56	54.000	Average
Vertical	2390	85.24	47.9	37.34	74.000	Peak
Vertical	2390	82.65	57.48	25.17	54.000	Average

Note:

The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength =  $F - \Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = Conducted Band Edge Delta (Peak or Average)

Agile	nt Spe	ectru	m An	alyzer	- Swe	pt SA											
	RL.		RF	2 20	50 Q	AC		115		SE	NSE:INT	Ava	Type	ALIGNAUTO	10:15:0: TR	PM Mar 13, 2013	Frequency
Ce	nter	Fr	eq	2.39	000	000	P	HZ PNO: Fas	t 😱	Trig: Fre	e Run	~¥9	Type	. Log-r wi	Т	YPE MWWWAAWAA	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
10	in (4):		Bo	F 20	00.4	Dm	UF	Gain:Lo	W	#Atten: 3				Mk	r2 2.39	0 0 GHz	Auto Tune
Log	Bian	v	Re	20.	00 a	вш		T	- 11		1	1	-		40		
10. 0.0		-										Q1					Center Freq 2.390000000 GHz
-10.		_	-		_												
-30.												A	1				Start Freq 2.340000000 GHz
-40.	) and the	Sec. and	- 78-		-	do man	narrado	anne	-	-	2		-	have stated			
-60.) -70.)																	Stop Freq 2.440000000 GHz
Cei #R	nter es B	2.3 W 1	900	0 GH VIHz	łz	-		#\	/BW	1.0 MHz		_	4	#Sweep	Span 500 ms	100.0 MHz (1001 pts)	CF Step
MKR	MODE	TRC	SCL			×	<	-		Y		UNCTION	FUN	ICTION WIDTH	FUNC	ION VALUE	Auto Man
1	N	1	f	103			2.402	3 GHz	103	-2.02 d	Bm				-		
3456	- 13						2.030	10 0112		-43.32 U							Freq Offset 0 Hz
7 8 9		_															
10 11 12																-	
MSG														STATUS			

#### Peak Detector of conducted Band Edge Delta

#### Average Detector of conducted Band Edge Delta

Executioner	M Mar 13, 2013	10:14:29 P	ALIGN AUTO		INT	SENSE	_	AC	50 Q		RF		L	R
Frequency	E 1 2 3 4 5 6 E M <del>WWWW</del>	TRAC	: Log-Pwr	Avg Type	un	Trig: Free R	-	000 GHz PNO: Fast	0000	2.39	eq 2	Fre	ter	en
Auto Tun	TPNNNNN	DE	-	1.1	3	#Atten: 30 di	v	IFGain:Low		-				
Auto Tun	0 GHz 95 dBm	2 2.390 -61.9	Mki					3m	00 dE	20.0	Ref	,	B/div	0 dl
Center Fre					1		_							10.0
2.390000000 GH	1			$\bigcirc^1$										0.00
				Ă-	-						_			10.0
				$\langle \rangle$	-		-		_				-	20.0
2 34000000 GH		-			-		-		-		-		-	30.0
2.540000000 611		-		1	-/		-		-		-		-	40.0
1.1.1.2.1.						2				-				50.0
Stop Fre		~			-	-	-		-	_		_	-	60.0
2.44000000 GH													100	70.0
CF Step	00.0 MHz 1001 pts)	Span 1 7.80 s (	Sweep			10 Hz	вw	#V	lz	0 GH /Hz	900 0 N	2.39 W 1	ter : s B\	en Re
Auto Ma	IN VALUE	FUNCTIO	ICTION WIDTH	TION   FU	FUNC	Y		X			SCL	TRC	MODE	4KB
						-4.48 dBm -61.95 dBm	(Δ)	2.403 0 GHz 2.390 0 GHz		(Δ)	f	1	N	1
Freq Offse					-		1			- Anna			1.4	3
0 H					-									5
					1									7
		_									-		_	9
		-												10
					1									12

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit

# Fundamental Filed Strength

Antenna	Frequency	<b>Correction Factor</b>	<b>Reading Level</b>	Emission Level	Detector
Pole	[MHz]	[dB/m]	[dBuV]	[dB(uV/m)]	
Horizontal	2478	32.14	59.36	91.5	Peak
Horizontal	2478	32.14	56.72	88.86	Average
Vertical	2478	31.397	54.33	85.728	Peak
Vertical	2478	31.397	51.71	83.108	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

## Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ ( <b>dB</b> )	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	91.5	34.45	57.05	74.000	Peak
Horizontal	2483.5	88.86	42.55	46.31	54.000	Average
Vertical	2483.5	85.728	34.45	51.278	74.000	Peak
Vertical	2483.5	83.108	42.55	40.558	54.000	Average

Note:

The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength =  $F - \Delta$ 

F = Fundamental field Strength (Peak or Average)

 $\Delta$  = Conducted Band Edge Delta (Peak or Average)

Agilent Spectrum Analyzer - Swept SA				
KL RF 50 Ω AC     Center Freq 2.483500000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:40:38 PM Mar 13, 2013 TRACE 1 2 3 4 5 6	Frequency
PNO: Fast G IFGain:Low	#Atten: 30 dB		DET P NNNNN	Auto Tupe
10 dB/div Ref 20.00 dBm		Mk	r2 2.483 5 GHz -38.38 dBm	Auto Tune
10.0			2	Center Freq
0.00				2.483500000 GHz
-20.0	$  \rangle  $			1.1 2.1.2.2.1
-30.0	2			Start Freq 2,433500000 GHz
-40.0				
-60.0				Stop Freq
-70.0			Landa La serie	2.533500000 GHz
Center 2.48350 GHz #Res BW 1.0 MHz #VBW	/ 1.0 MHz	#Sweep	Span 100.0 MHz 500 ms (1001 pts)	CF Step
MKR MODE TRC SCL	Y		FUNCTION VALUE	Auto Man
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-3.93 dBm -38.38 dBm			
<u> </u>				Freq Offset
6 7			1	
8 9				
10				
MSG		STATUS		

#### Peak Detector of conducted Band Edge Delta

#### Average Detector of conducted Band Edge Delta

Agilent S	Spec	etr ur	n An	alyzer	Swep	t SA								-		1877.00		Tr
Cente	er	Fre	RF q	2.483	50 Ω 3500	AC	GH	Z 0: Fast	Ģ	Trig	: Free	Run	Avç	ј Туре	Log-Pwr	10:40:	06 PM Mar 13, 2013 RACE 1 2 3 4 5 1 TYPE MWWWWWW	Frequency
10 dB/	div		Rei	f 20.0	)0 dl	Bm	IFG	ain:Lov	v	#Att	en: 30	dB			Mk	r2 2.4 -4	83 5 GHz 8.98 dBm	Auto Tune
10.0 -									11		,1							Center Free 2.483500000 GH
-10.0 - -20.0 - -30.0 -										J	ł	2						Start Free 2.433500000 GH
-50.0					_				/			1		~		-	_	Stop Free 2.533500000 GH
L Cente #Res	er 2 BV	2.48 N 1	335 .0 I	0 GH VIHz	z			#V	вw	10 H	z				Sweep	Spai 7.80	n 100.0 MHz s (1001 pts)	CF Step 10.000000 MH
MKR MC	IDE V	TRC 1	SCL f			× 2.4	478 C	) GHz		-6	43 dE	3m	UNCTION	FU	ICTION WIDTH	FUN	CTION VALUE	Auto Mar
2 N 3 4 5 6	N N	1	f	(Δ)		2.4	483 5	5 GHz	<u>(Δ)</u>	-48.	98 dE	3m						Freq Offse 0 H
7 8 9 10 11																		
12 MSG	-	-			_	_		_	-		_				STATUS	-		

#### 7. Occupied Bandwidth

#### 7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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

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

#### 7.2. Test Setup



## 7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

#### 7.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009; tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 1-5% of the emission bandwidth, VBW≥3\*RBW

#### 7.5. Uncertainty

 $\pm$  150Hz

# 7.6. Test Result of Occupied Bandwidth

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (2403MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2403.00	1620	>500	Pass

# Figure Channel 01:

Agilent Spectrum Analyzer - Swept SA				
	SENSE:INT	ALIGNAUTO Ava Type: Loa-Pwr	11:56:36 AM Mar 15, 2013 TRACE 1 2 3 4 5 6	Frequency
PNO: Fast Pred 2:403000000 GHz PNO: Fast Field Processor	☐ Trig:Free Run Atten: 10 dB	AvgiHoid≫1007100 Mki	1 2.402 98 GHz -5.732 dBm	Auto Tune
-10.0	Jour 1	.00 dB 62 MHz		Center Freq 2.403000000 GHz
-20.0				Start Freq 2.393000000 GHz
-40.0		1 mayor		Stop Freq 2.413000000 GHz
-60.0			have hydroling working	CF Step 2.000000 MHz <u>Auto</u> Man
-80.0				Freq Offsel 0 Hz
Center 2.40300 GHz #Res BW 30 kHz #VBV	V 100 kHz	Sweep	Span 20.00 MHz 21.1 ms (1001 pts)	
MSG		STATU	S	

- Product : Infotainment System with Headunit (with BT, WLAN, Kleer technology)
- Test Item : Occupied Bandwidth Data
- Test Site : No.3 OATS
- Test Mode : Mode 1: Transmit (2443MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
09	2443.00	1690	>500	Pass

#### Figure Channel 09:

Agricult Spectrum Analyzer - Swept -			1		11:57:50 /	M Mar 15, 2012	
Center Freq 2.4430000	00 GHz	Takas Face Dam	Avg Type:	Log-Pwr	TRAC	E 123456	Frequency
10 dB/div Ref 0.00 dBm	PNO: Fast 😱 IFGain:Low	Atten: 10 dB	Avginoid.2	Mkr	1 2.443 -7.6	10 GHz 82 dBm	Auto Tune
-10.0			.00 dB .69 MHz				Center Free 2.443000000 GH
-20.0			, ru				Start Free 2.433000000 GH
-50.0	Jun 1		Vm	and the second	*	1	Stop Fre 2.453000000 GH
60.0				v	They are a series	How have the how	CF Ste 2.000000 MH Auto Ma
80.0							Freq Offs 0 H
Center 2.44300 GHz	#VBW *	100 kHz		Sween	Span 2	0.00 MHz	
-80.0 -90.0 Center 2.44300 GHz #Res BW 30 kHz	#VBW *	100 kHz		Sweep statu:	Span 2 21.1 ms (	0.00 MHz (1001 pts)	Frec

Product : Infotainment System with Headunit (with BT, WLAN, Kleer technology)

Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit (2478MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
16	2478.00	1660	>500	Pass

#### **Figure Channel 16:**



#### 8. Power Density

#### 8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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

2. The test instruments marked by "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 C63.10: 2009; tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements. Set RBW= 100 kHz, VBW $\geq$ 300KHz, SPAN to 5-30 % greater than the EBW, Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).

#### 8.5. Uncertainty

± 1.27 dB

# 8.6. Test Result of Power Density

Product	:	Infotainment System with Headunit (with BT, WLAN, Kleer technology)
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit(2403MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2403.00	-17.382	< 8dBm	Pass

# Figure Channel 01:

Agilent Spec	trum Analyzer - Sv	wept SA								
Center I	req 2.4030	Ω AC	Ηz	SEN	ISE:INT	Avg Typ	ALIGNAUTO	03:47:35 TRA	PM Mar 14, 2013 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset - Ref 4.80 c	Pi IF: 15.2 dB <b>IBm</b>	10: Wide 🦕 Gain:Low	Atten: 30	dB	Avgiriola	Mkr	1 2.403 -17.3	57 GHz 882 dBm	Auto Tune
-5.20										Center Freq 2.403000000 GHz
-15.2			/	hora	- the	Ny .				Start Freq 2.398000000 GHz
-35.2						h	may	AN/4_		Stop Freq 2.408000000 GHz
-55.2		V					h		horm	CF Step 1.000000 MH2 <u>Auto</u> Mar
-75.2					-					Freq Offset 0 Hz
Center 2 #Res BW	.403000 GHz / 100 kHz	2	#VBW	300 kHz			Sweep	Span ′ 1.00 ms	10.00 MHz (1001 pts)	
MSG							STATUS			

Product	:	Infotainment System with	Headunit (with BT,	WLAN,	Kleer technology)
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- Test Item : Power Density Data
- Test Site : No.3OATS

Test Mode : Mode 1: Transmit (2443MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
09	2443.00	-18.325	< 8dBm	Pass

# Figure Channel 09:

SENSERINTI ALIGNAUTU US:40.30 PM Ma	ar 14, 2013
Avg Type: Log-Pwr TRACE 1 Trig: Free Run Avg Hold:> 100/100 TYPE M	23456 Frequency
Atten: 30 dB Det P Mkr1 2.443 56 -18.325	GHz Auto Tune
	Center Free 2.443000000 GH:
	2.438000000 GH;
	Stop Free 2.448000000 GH;
	CF Step ۲.000000 MH: <u>Auto</u> Mar
	Freq Offset 0 Hz
Span 10.0 300 kHz Sweep 1.00 ms (10)	00 MHz
GHZ PNO: Wide C IFGain:Low	GHz     PN0: Wide     Trig: Free Run     Avg Type: Log-Pwr     Trig: Tree Type: M       Avg Hold>100/100     Tree Run     Mkr1 2.443 56       -18.325

Product : Infotainment System with Headunit (with BT, WLAN, Kleer technology)

Test Item : Power Density Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit (2478MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
16	2478.00	-19.210	< 8dBm	Pass

#### Figure Channel 16:

RF 50 Q AC		SENSE:INT		ALIGN AUTO	03:51:21 PM Mar 14, 2013	3
enter Freq 2.478000000 G	Hz NO: Mide Con Trig: Fr	ee Run	Avg Type Avg[Hold:	: Log-Pwr >100/100	TRACE 123450 TYPE MWWWWW	Frequency
Ref Offset -15.2 dB dB/div Ref 4.80 dBm	Gain:Low Atten:	30 dB		Mkr1	2.477 92 GHz -19.210 dBm	Auto Tune
20						Center Fred 2.478000000 GH:
.2	- mar	Amur h				Start Free 2.473000000 GH:
5.2 5.2		_		~		Stop Free 2.483000000 GH
1.2 mm				he	and the second	CF Step 1.000000 MH <u>Auto</u> Mar
.2						Freq Offse
enter 2.478000 GHz Res BW 100 kHz	#VBW 300 kH	Iz		Sweep 1	Span 10.00 MHz .00 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