



FCC Radio Test Report

Equipment : Wireless for HDMI 60 GHz
Brand Name : Acer
Model No. : MWIT1
FCC ID : HLZMWIT1
Standard : 47 CFR FCC Part 15.255
Applicant : Acer Inc.
8F, 88, Sec 1, Hsin Tai Wu Rd Hsichih, Taipei
Hsien, 221 Taiwan
Manufacturer : Abocom Systems, Inc.
No.77, Yu-Yih Rd., Chu-Nan, Miao-Lih County
35059, Taiwan R.O.C.

The product sample received on Sep. 18, 2014 and completely tested on Dec. 29, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009, 47 CFR FCC Part 15.255, KDB200443 D02 RF Detector Method v01, Millimeter Wave Test Procedures and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.


Sam Chen
SPORTON INTERNATIONAL INC.





TABLE OF CONTENTS

TABLE OF CONTENTS	2
SUMMARY OF TEST RESULT	3
REVISION HISTORY	4
1 GENERAL DESCRIPTION	5
1.1 Information	5
1.2 Additional Information Provided by the Submitter	7
1.3 Accessories	7
1.4 Support Equipment	8
1.5 EUT Operation during Test	8
1.6 Test Setup Diagram	9
1.7 Testing Applied Standards	12
1.8 Testing Location	12
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	13
2.1 Test Channel Frequencies	13
2.2 Conformance Tests and Related Test Frequencies	13
3 TRANSMITTER TEST RESULT	14
3.1 AC Power Conducted Emissions	14
3.2 Occupied Bandwidth	18
3.3 EIRP Power and Power Density	30
3.4 Peak Conducted Power	32
3.5 Transmitter Spurious Emissions	35
3.6 Frequency Stability	44
3.7 Publicly-accessible Coordination Channel	47
3.8 Operation Restriction and Group Installation	49
4 TEST EQUIPMENT AND CALIBRATION DATA	50
5 MEASUREMENT UNCERTAINTY	52
APPENDIX A. TEST PHOTOS	A1 ~ A4
APPENDIX B. MAXIMUM PERMISSIBLE EXPOSURE	B1 ~ B3

SUMMARY OF TEST RESULT

Standard Requirements and Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Result	Remark
3.1	FCC 15.207	AC Power Conducted Emissions	Complied	-
3.2	FCC 15.255(e)	Occupied Bandwidth	Complied	-
3.3	FCC 15.255(b)(1)	EIRP Power and Power Density	Complied	-
3.4	FCC 15.255(e)	Peak Conducted Power	Complied	-
3.5	FCC 15.255(c)	Transmitter Spurious Emissions	Complied	-
3.6	FCC 15.255(f)	Frequency Stability	Complied	-
3.7	FCC 15.255(d)	Publicly-accessible Coordination Channel	Complied	-
3.8	FCC 15.255(a),(h)	Operation Restriction and Group Installation	Complied	-



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
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FCC ID: HLZMWIT1

1 General Description

1.1 Information

1.1.1 The Channel Plan(s)

The Channel Plan(s)	
Low-rate PHY (LRP) Band	Channel 2 LRP: 60.16-60.80 GHz Channel 3 LRP: 62.32-62.96 GHz
LRP Channel List	Channel 2 LRP: 60.16-60.80 GHz: 60.16 + n x 0.16 (n=0, 1, 2, 3, 4) GHz Channel 3 LRP: 62.32-62.96 GHz: 62.32 + n x 0.16 (n=0, 1, 2, 3, 4) GHz
Middle-rate PHY (MRP) Band	Channel 2 MRP: 60.48 GHz Channel 3 MRP: 62.64 GHz
High-rate PHY (HRP) Band	Channel 2 HRP: 60.48 GHz Channel 3 HRP: 62.64 GHz

1.1.2 Transmit Operating Modes

The Different Transmit Operating Modes	
☒	Operating mode 1: Smart Antenna Systems - with beam forming
☐	Operating mode 2: Smart Antenna Systems - without beam forming
☐	Operating mode 3: Single Antenna Equipment

1.1.3 Antenna Information

Antenna Information						
☐ Equipment placed on the market without antennas						
☒ Integral antenna						
Integral antenna gain	16	dBi for LRP	18	dBi for MRP	18	dBi for HRP
	☐ Temporary RF connector provided					
	☒ No temporary RF connector provided					
☐ External antenna (dedicated antennas)						
	☐ Single power level with corresponding antenna(s)					
	☐ Multiple power settings and corresponding antenna(s)					

**1.1.4 Power Levels**

Worst Power Levels for LRP				
Applicable power levels	☐ Conducted ☒ EIRP			
Antenna gain	16 dBi			
Frequency (GHz)	Highest setting (P_{high}): (dBm)			
	Modulation	Data Rate (Mb/s)	AV Power	Peak Power
60.16	BPSK	20.337	18.32	32.31

Worst Power Levels for MRP				
Applicable power levels	☐ Conducted ☒ EIRP			
Antenna gain	18 dBi			
Frequency (GHz)	Highest setting (P_{high}): (dBm)			
	Modulation	Data Rate (Gb/s)	AV Power	Peak Power
60.48	QPSK	0.476	24.30	27.35

Worst Power Levels for HRP				
Applicable power levels	☐ Conducted ☒ EIRP			
Integral antenna gain	18 dBi			
Frequency (GHz)	Highest setting (P_{high}): (dBm)			
	Modulation	Data Rate (Gb/s)	AV Power	Peak Power
60.48	QPSK	0.952	26.94	30.78

1.1.5 Extreme Operating

The Extreme Operating Temperature Range that Apply to the Equipment				
☒ -20 °C to +50 °C				
☐ 0 °C to +40 °C				
☐ Other:				
EUT Power Type	From Adapter			
Supply Voltage	☒ AC	State AC voltage	120	V
Supply Voltage	☐ DC	State DC voltage		V

1.1.6 Equipment Use Condition

Equipment Use Condition	
☐ Fixed field disturbance sensors at 61-61.5GHz	
☐ Except fixed field disturbance sensors at 61-61.5GHz	
☒ Except fixed field disturbance sensors	

1.2 Additional Information Provided by the Submitter

1.2.1 Modulation

Modulation	
The LRP modulation is BPSK / data rate is 20.337 Mb/s.	
The MRP modulation is QPSK / data rate is 0.476, 0.952, 0.714 or 1.190 Gb/s.	
The HRP modulation is QPSK or 16-QAM / data rate is QPSK at 0.952 Gb/s (Quarter Rate), QPSK at 1.904 Gb/s (Half Rate) and 16-QAM at 3.807 Gb/s (Full Rate).	
Can the transmitter operate un-modulated:	☒ Yes ☐ No

1.2.2 Duty Cycle

Duty Cycle			Duty Cycle Factor
The transmitter is intended for	LRP	26.47 %	5.77
	MRP	98.95 %	0.05
	HRP	98.96 %	0.05

1.3 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	DVE	DSA-12CA-05 050200	INPUT: 100-240V, 50/60Hz 0.3A OUTPUT: 5V, 2A
Others			
Plug*1			
HDMI to HDMI cable*1, shielded 1.2m			
HDMI to Micro USB cable*1, shielded 1.2m			

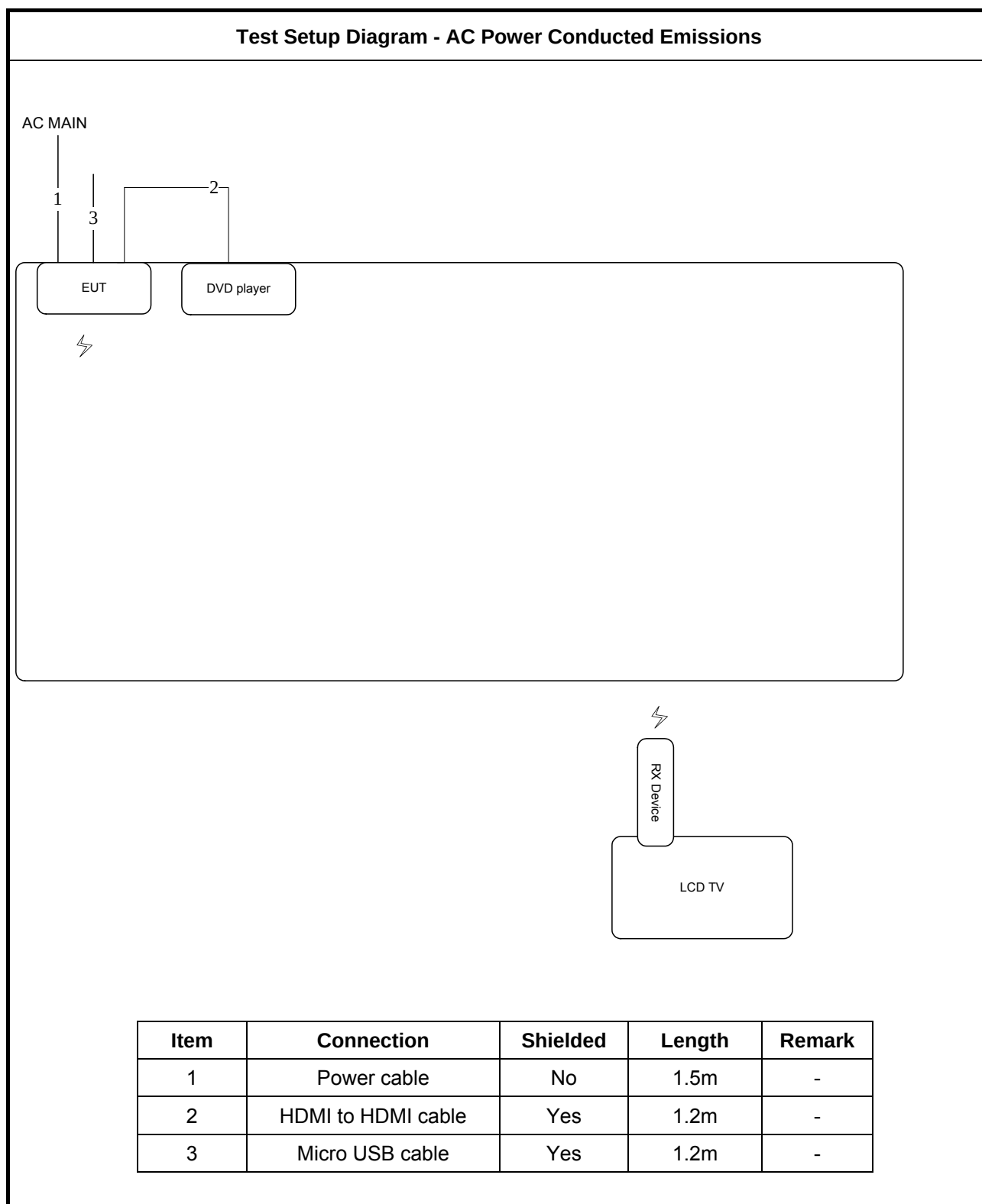
1.4 Support Equipment

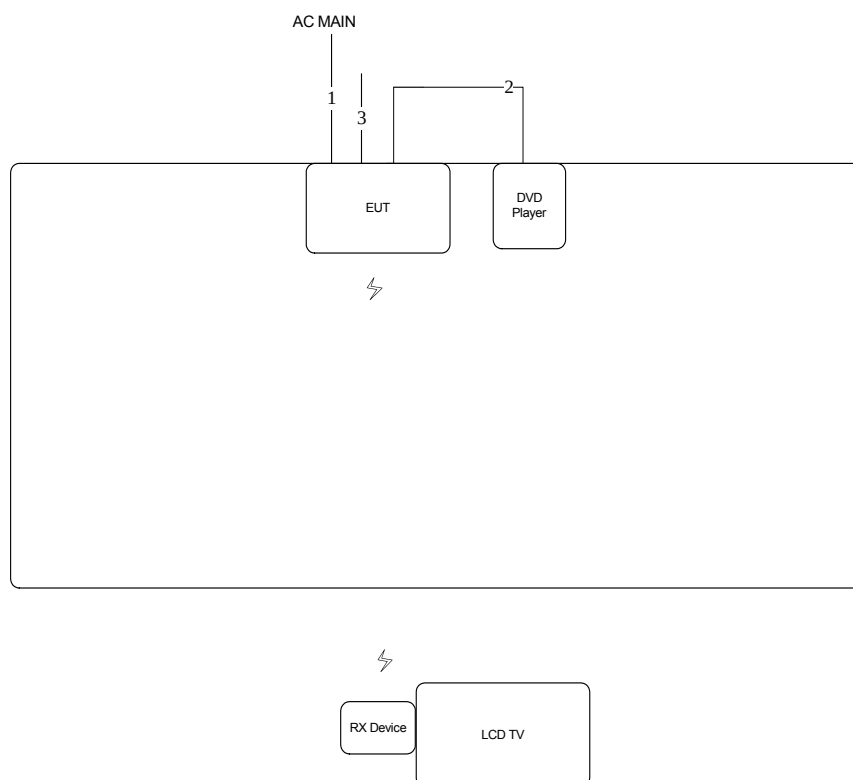
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Wireless for HDMI 60GHz (RX Device)	Acer	MWIR1	HLZMWIR1
2	LCD TV	BENQ	EW-2740-B	DoC
3	DVD Player	SONY	BX1	DoC

1.5 EUT Operation during Test

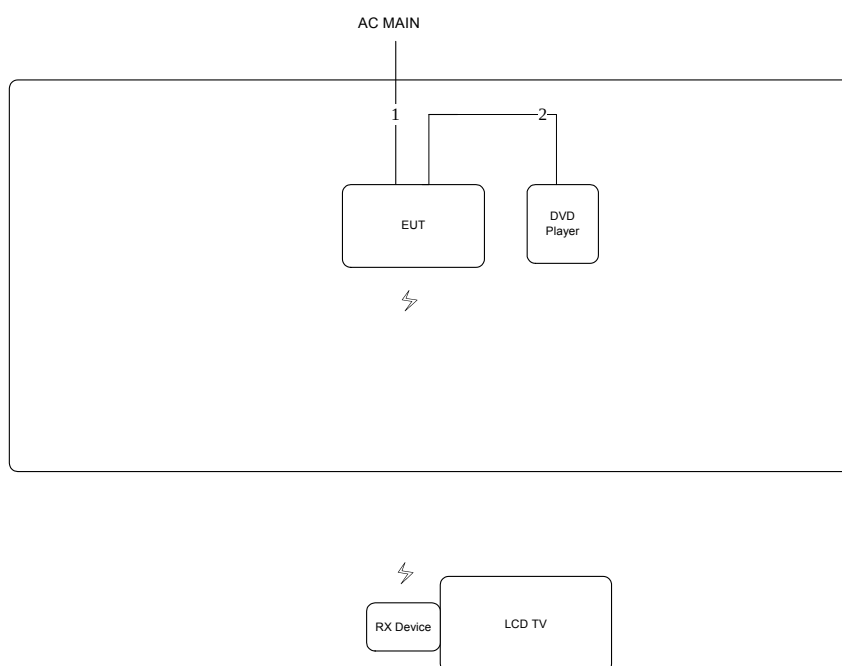
High Definition Audio / Video in the 1080p format was sent from the TX device to the receiver via the wireless link. A Blu-Ray player furnished HD A/V to the TX device. The receiver furnished HD A/V to the television. The television was placed outside the chamber. A laptop computer with test software was utilized to vary the radio configuration and antenna beam orientation for testing purposes. This computer was not connected during measurements. For Extreme environmental tests, an external Variable DC power supply was utilized in place of the AC/DC adapter to furnish power to the EUT.

1.6 Test Setup Diagram



Test Setup Diagram - Transmitter Spurious Emissions below 1 GHz


Item	Connection	Shielded	Length	Remark
1	Power cable	No	1.5m	-
2	HDMI to HDMI cable	Yes	1.2m	-
3	Micro USB cable	Yes	1.2m	-

Test Setup Diagram - Transmitter Spurious Emissions above 1 GHz


Item	Connection	Shielded	Length	Remark
1	Power cable	No	1.5m	-
2	HDMI to HDMI cable	Yes	1.2m	-

1.7 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15.255
- ♦ ANSI C63.10-2009
- ♦ KDB200443 D02 RF Detector Method v01
- ♦ Millimeter Wave Test Procedures

1.8 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085
Test Site No.		
CO01-CB	03CH01-CB	TH01-CB

2 Test Configuration of Equipment under Test

2.1 Test Channel Frequencies

Nominal Channel Bandwidth			
Channel Plan (GHz)	Low Channel (GHz)	Middle Channel (GHz)	High Channel (GHz)
Channel 2 LRP: 60.16-60.80	60.16	60.48	60.80
Channel 2 MRP: 60.48	-	60.48	-
Channel 2 HRP: 60.48	-	60.48	-
Channel 3 LRP: 62.32-62.96	62.32	62.64	62.96
Channel 3 MRP: 62.64	-	62.64	-
Channel 3 HRP: 62.64	-	62.64	-

2.2 Conformance Tests and Related Test Frequencies

Test Item	Test Frequencies (GHz)		
	Channel Plan 2&3		
	LRP	MRP	HRP
AC Power Conducted Emissions	Normal Link (see Note 1)		
Occupied Bandwidth	60.16, 60.48, 60.80 & 62.32, 62.64, 62.96	60.48 & 62.64	60.48 & 62.64
EIRP Power and Power Density	60.16, 60.48, 60.80 & 62.32, 62.64, 62.96	60.48 & 62.64	60.48 & 62.64
Peak Conducted Power	60.16, 60.48, 60.80 & 62.32, 62.64, 62.96	60.48 & 62.64	60.48 & 62.64
Transmitter Spurious Emissions (below 1 GHz)	Normal Link (see Note 1)		
Transmitter Spurious Emissions (1 GHz-40 GHz)	Normal Link (see Note 1)		
Transmitter Spurious Emissions (above 40 GHz)	60.48 & 62.64	60.48 & 62.64	60.48 & 62.64
Frequency Stability	Un-Modulation		

Note 1:

Mode 1. EUT + HDMI to HDMI cable + DVD Player + Adapter

Mode 2. EUT + HDMI to Micro USB cable + Cell Phone + Adapter

Mode 1 is the worst case, so it was selected to record in this test report.

3 Transmitter Test Result

3.1 AC Power Conducted Emissions

3.1.1 Limit of AC Power Conducted Emissions

AC Power Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note: * Decreases with the logarithm of the frequency.

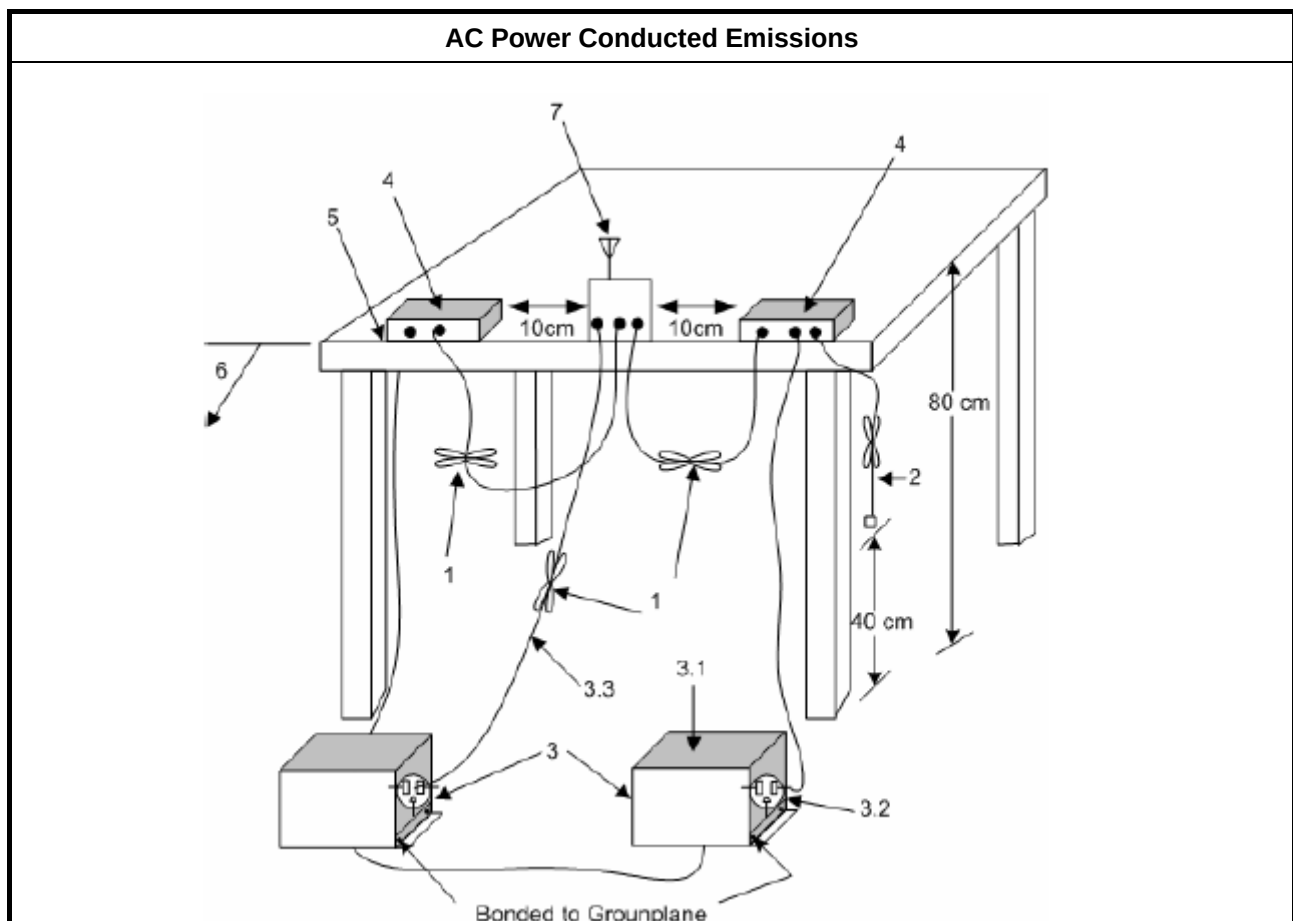
3.1.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.1.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clause 6.2.

3.1.4 Test Setup



AC Power Conducted Emissions

1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long (see ANSI C63.10, clause 6.2.3.1).
2. I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m (see ANSI C63.10, clause 6.2.2).
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 ohm loads. LISN can be placed on top of, or immediately beneath, reference ground plane (see ANSI C63.10, clauses 6.2.2 and 6.2.3).
 - 3.1. All other equipment powered from additional LISN(s).
 - 3.2. A multiple-outlet strip can be used for multiple power cords of non-EUT equipment.
 - 3.3. LISN at least 80 cm from nearest part of EUT chassis.
4. Non-EUT components of EUT system being tested.
5. Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop (see ANSI C63.10, clause 6.2.3.1).
6. Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane (see ANSI C63.10, clause 6.2.2 for options).
7. Antenna may be integral or detachable. If detachable, the antenna shall be attached for this test.

3.1.5 Test Result of AC Power Conducted Emissions

Test Conditions see ANSI C63.10, clause 5.11

Test Setup see ANSI C63.10, clause 6.2.3

NOTE 1: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes. If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing.

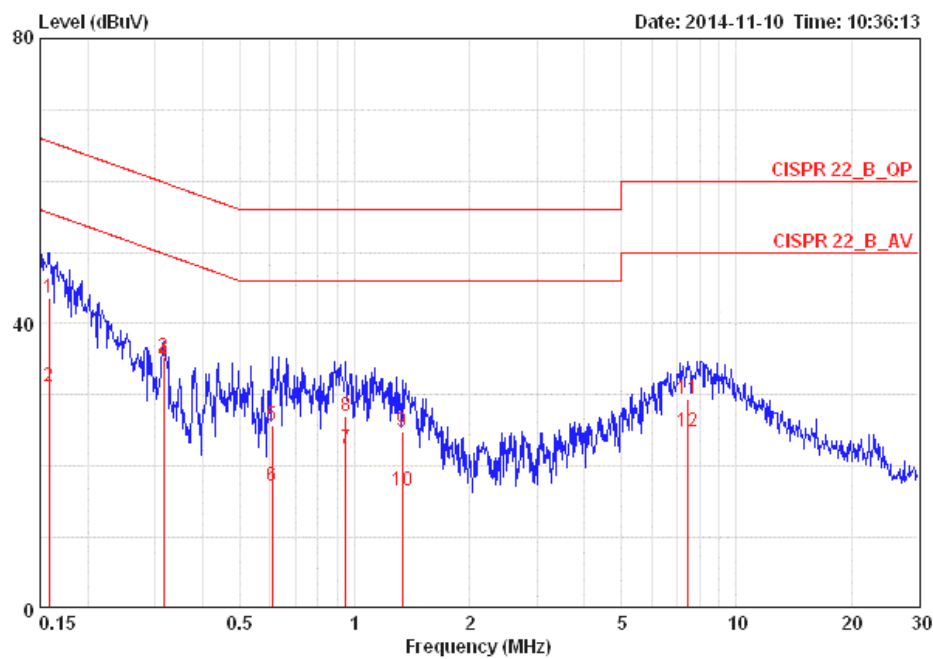
NOTE 2: ">20dB" means the tables in this clause should only list values of spurious emissions that exceed the level of 20 dB below the applicable limit, see ANSI C63.4, clause 10.1.8.1.



FCC Radio Test Report

Report No. : FR491859

Temp	23°C	Humidity	53%
Test Engineer	Edison Lin	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



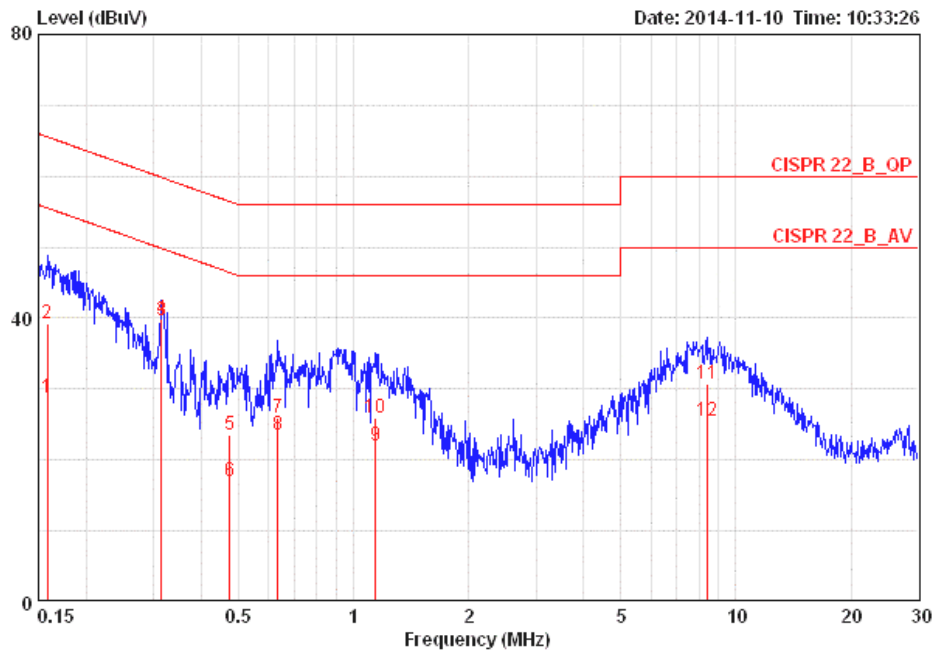
	Freq	Level	Over	Limit	Read	LISN	Cable		
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark	Pol/Phase
			dB	dBuV	dBuV	dB	dB		
1	0.15816	43.56	-22.00	65.56	33.44	9.96	0.16	QP	LINE
2	0.15816	31.17	-24.39	55.56	21.05	9.96	0.16	AVERAGE	LINE
3	0.31662	35.40	-24.40	59.80	25.27	9.95	0.18	QP	LINE
4 @	0.31662	34.71	-15.09	49.80	24.58	9.95	0.18	AVERAGE	LINE
5	0.60752	25.74	-30.26	56.00	15.58	9.97	0.19	QP	LINE
6	0.60752	17.17	-28.83	46.00	7.01	9.97	0.19	AVERAGE	LINE
7	0.94809	22.49	-23.51	46.00	12.29	10.00	0.20	AVERAGE	LINE
8	0.94809	27.00	-29.00	56.00	16.80	10.00	0.20	QP	LINE
9	1.331	24.77	-31.23	56.00	14.54	10.01	0.22	QP	LINE
10	1.331	16.53	-29.47	46.00	6.30	10.01	0.22	AVERAGE	LINE
11	7.486	29.49	-30.51	60.00	18.96	10.17	0.36	QP	LINE
12	7.486	24.92	-25.08	50.00	14.39	10.17	0.36	AVERAGE	LINE



FCC Radio Test Report

Report No. : FR491859

Temp	23°C	Humidity	53%
Test Engineer	Edison Lin	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15816	28.84	-26.72	55.56	18.73	9.95	0.16	AVERAGE	NEUTRAL
2	0.15816	39.23	-26.33	65.56	29.12	9.95	0.16	QP	NEUTRAL
3	0.31495	39.58	-10.26	49.84	29.46	9.94	0.17	AVERAGE	NEUTRAL
4	0.31495	39.92	-19.92	59.84	29.80	9.94	0.17	QP	NEUTRAL
5	0.47360	23.58	-32.87	56.45	13.45	9.95	0.18	QP	NEUTRAL
6	0.47360	17.05	-29.40	46.45	6.92	9.95	0.18	AVERAGE	NEUTRAL
7	0.63383	25.87	-30.13	56.00	15.72	9.96	0.19	QP	NEUTRAL
8	0.63383	23.63	-22.37	46.00	13.48	9.96	0.19	AVERAGE	NEUTRAL
9	1.141	21.91	-24.09	46.00	11.71	9.99	0.21	AVERAGE	NEUTRAL
10	1.141	25.86	-30.14	56.00	15.66	9.99	0.21	QP	NEUTRAL
11	8.412	30.71	-29.29	60.00	20.17	10.17	0.37	QP	NEUTRAL
12	8.412	25.43	-24.57	50.00	14.89	10.17	0.37	AVERAGE	NEUTRAL

3.2 Occupied Bandwidth

3.2.1 Limit of Occupied Bandwidth

6dBc Bandwidth (see Note 1)	None
26dBc Bandwidth	None
99% Occupied Bandwidth (see Note 2)	None

NOTE 1: The 6dBc bandwidth is the frequency bandwidth of the signal power at the -6 dBc points when measured with a 100 kHz resolution bandwidth. These measurements shall also be performed at normal test conditions.

NOTE 2: The 99% occupied bandwidth is the frequency bandwidth of the signal power at the 99% channel power of occupied bandwidth when resolution bandwidth should be approximately 1 % to 5 % of the occupied bandwidth (OBW). These measurements shall also be performed at normal test conditions.

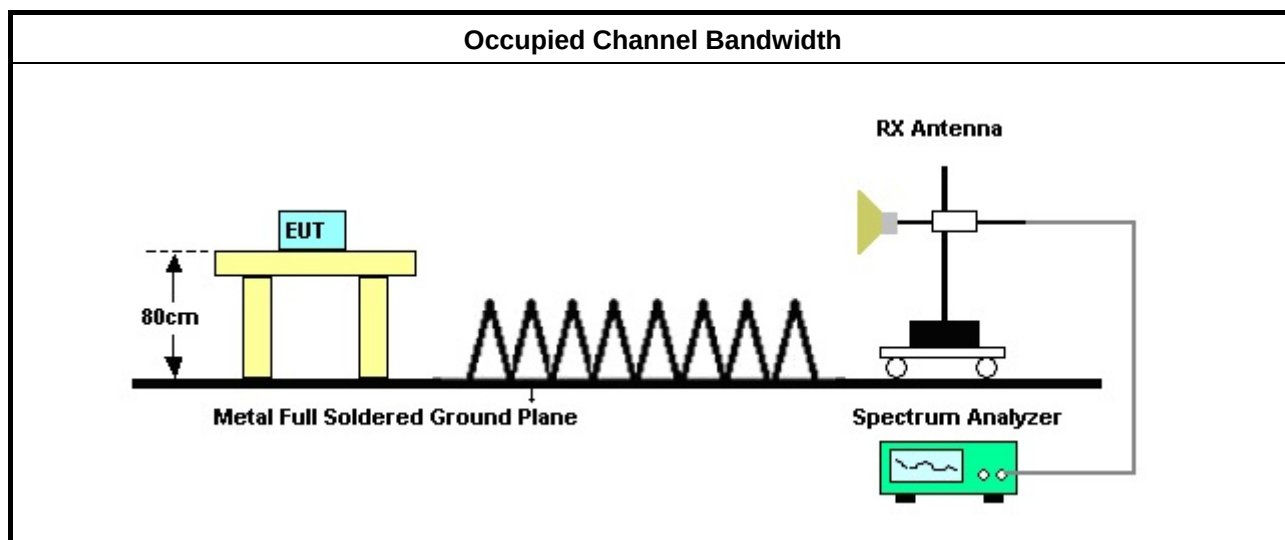
3.2.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.2.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clauses 6.9.1 and 7.8.5.

3.2.4 Test Setup



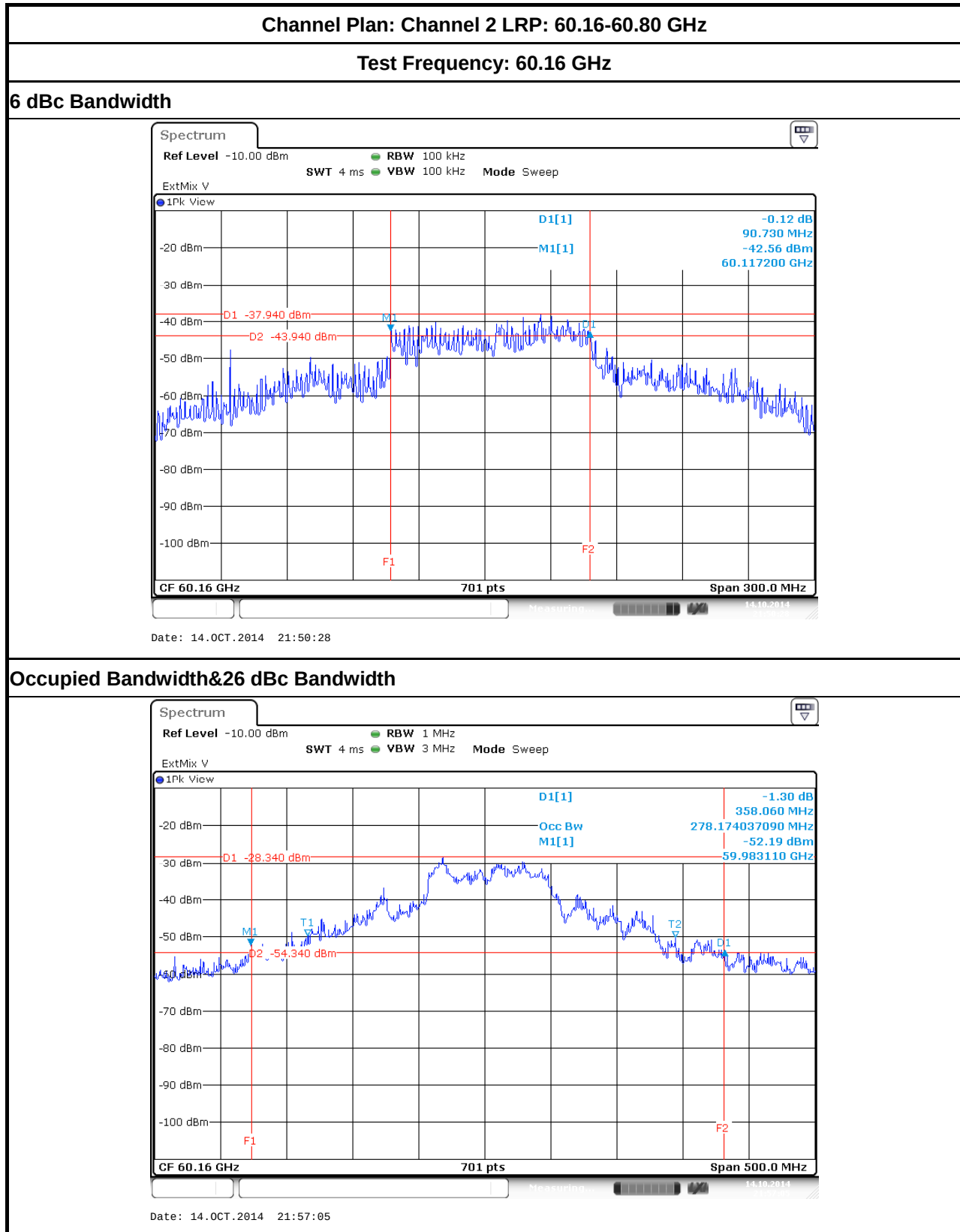
**3.2.5 Test Result of Occupied Bandwidth**

Test Conditions	see ANSI C63.10, clause 5.12
Test Setup	see ANSI C63.10, clause 7.8.5
NOTE: If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing. Refer as ANSI C63.10, clause 6.9.1, observe and record with plotted graphs or photographs the worst-case (i.e., widest) occupied bandwidth produced by these different modulation sources.	

Temp	23℃		Humidity	61%		
Test Engineer	Serway Li					
Test Results						
Channel Plan (GHz)	Test Freq. (GHz)	6 dBc Bandwidth (MHz)	Occupied Bandwidth (MHz)	26 dBc Bandwidth (MHz)	Limit (MHz)	Margin (MHz)
Channel 2 LRP: 60.16-60.80	60.16	90.73	278.17	358.06	N/A	N/A
	60.48	90.30	215.41	299.83	N/A	N/A
	60.80	89.97	219.69	317.40	N/A	N/A
Channel 2 MRP: 60.48	60.48	868.30	950.80	1328.50	N/A	N/A
Channel 2 HRP: 60.48	60.48	1754.60	1883.02	3088.40	N/A	N/A
Channel 3 LRP: 62.32-62.96	62.32	91.31	225.76	320.55	N/A	N/A
	62.64	89.44	209.12	268.28	N/A	N/A
	62.96	90.74	235.17	337.19	N/A	N/A
Channel 3 MRP: 62.64	62.64	857.30	1082.74	2089.90	N/A	N/A
Channel 3 HRP: 62.64	62.64	1740.40	1968.62	3388.00	N/A	N/A



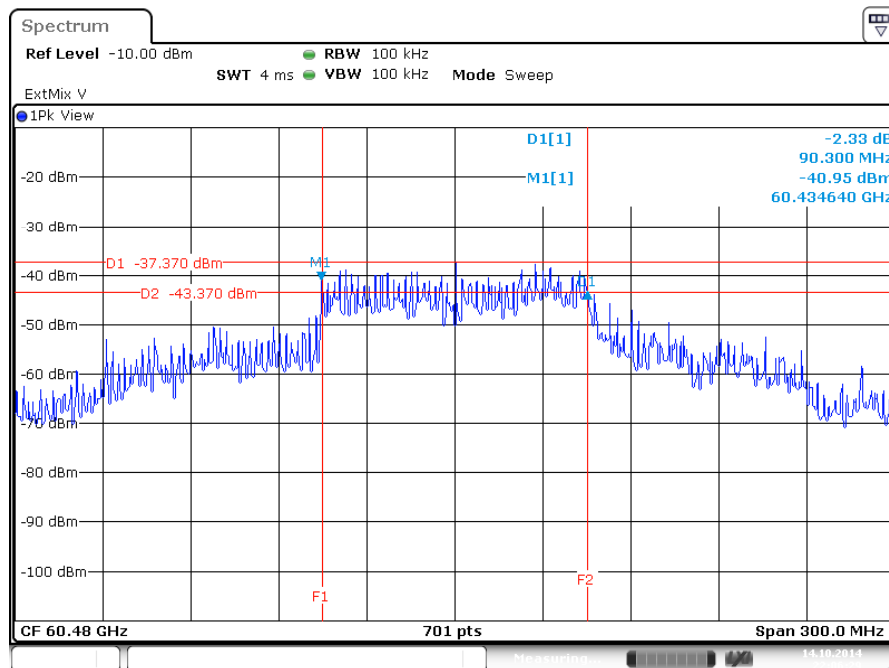
3.2.5.1 Bandwidth Plots





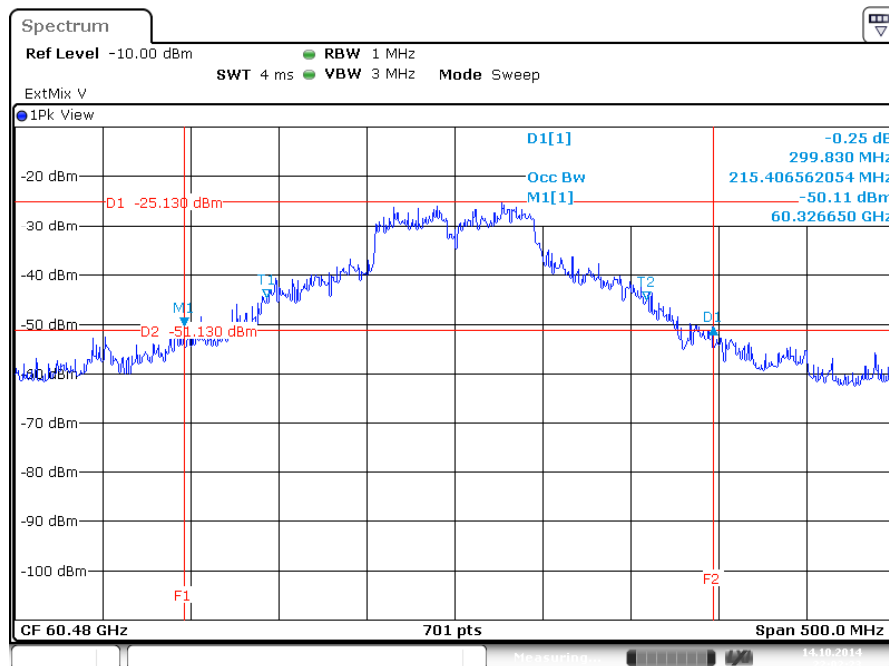
Test Frequency: 60.48 GHz

6 dBc Bandwidth



Date: 14.OCT.2014 22:06:28

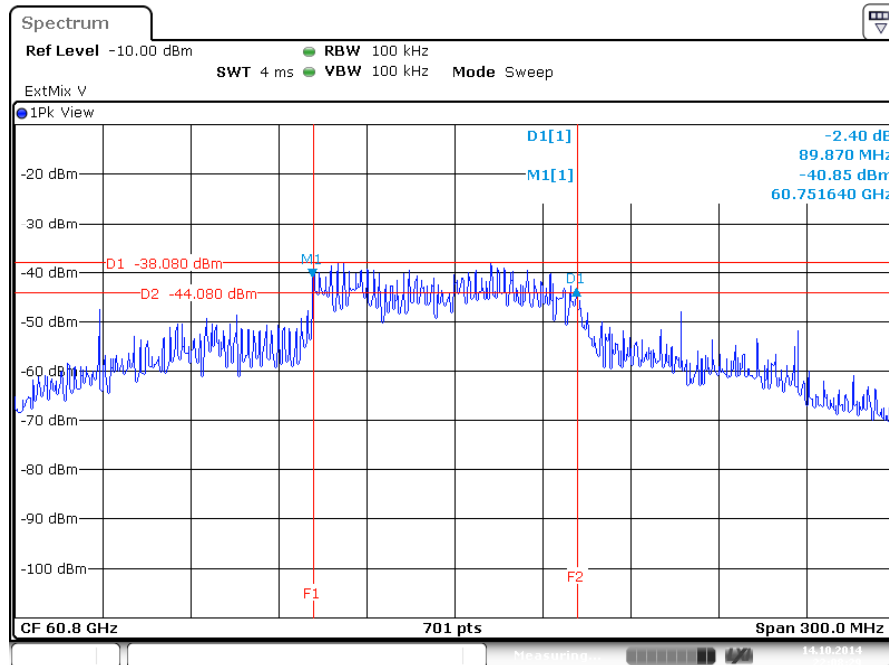
Occupied Bandwidth&26 dBc Bandwidth



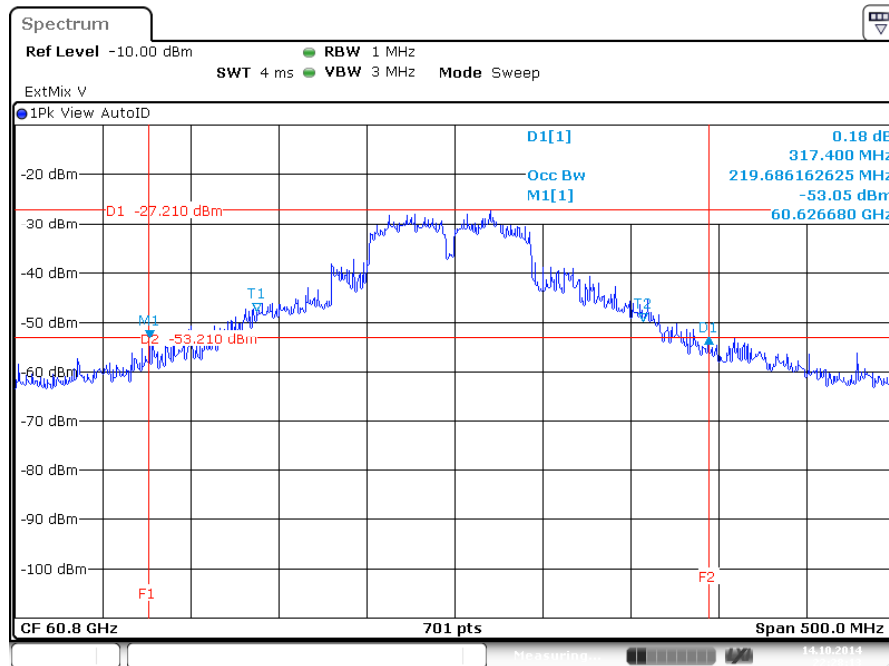
Date: 14.OCT.2014 22:02:23

Test Frequency: 60.80 GHz

6 dBc Bandwidth



Occupied Bandwidth&26 dBc Bandwidth

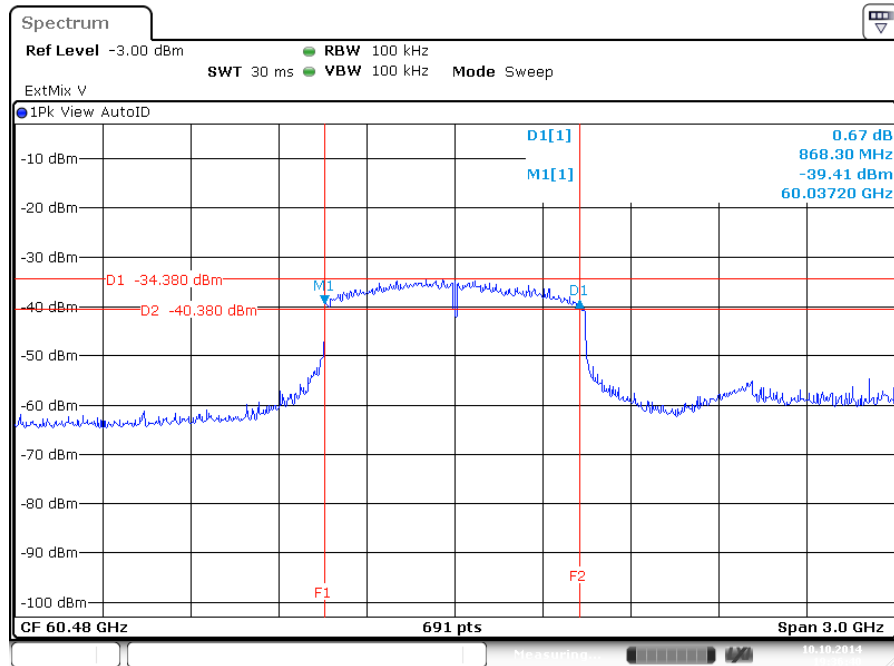




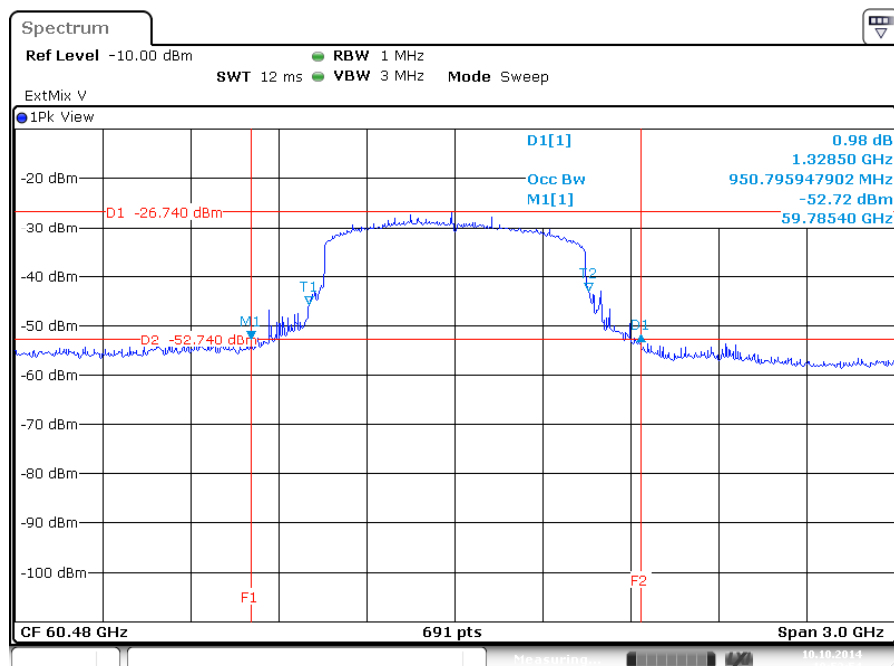
Channel Plan: Channel 2 MRP: 60.48 GHz

Test Frequency: 60.48 GHz

6 dBc Bandwidth



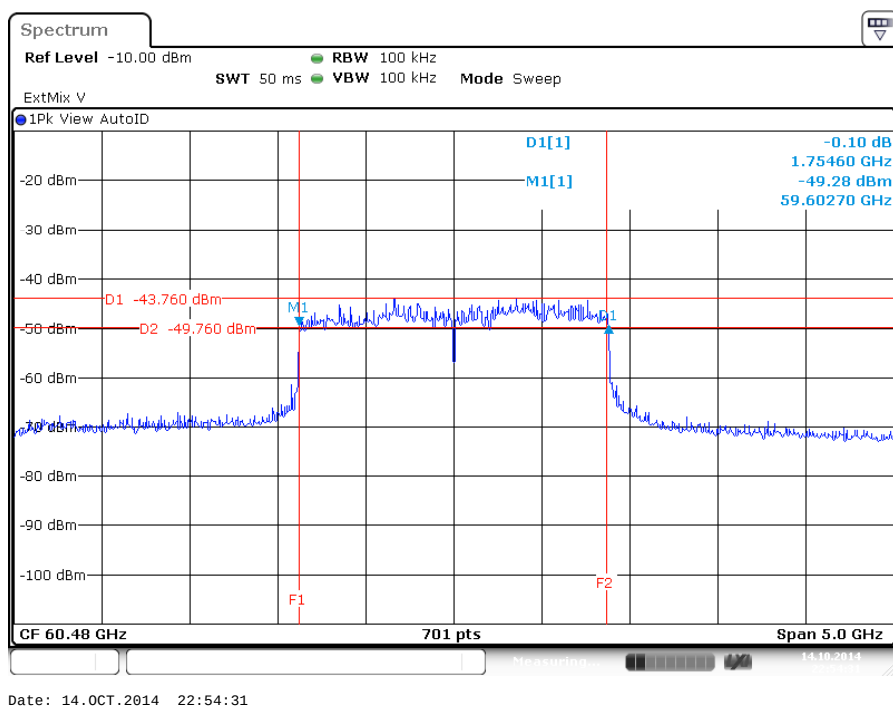
Occupied Bandwidth&26 dBc Bandwidth



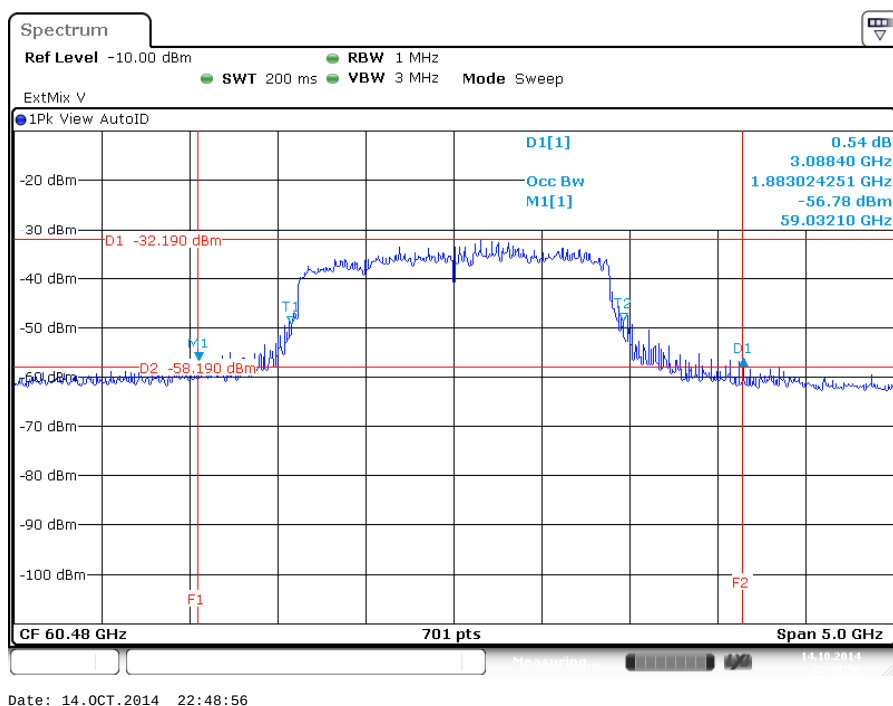
Channel Plan: Channel 2 HRP: 60.48 GHz

Test Frequency: 60.48 GHz

6 dBc Bandwidth



Occupied Bandwidth&26 dBc Bandwidth

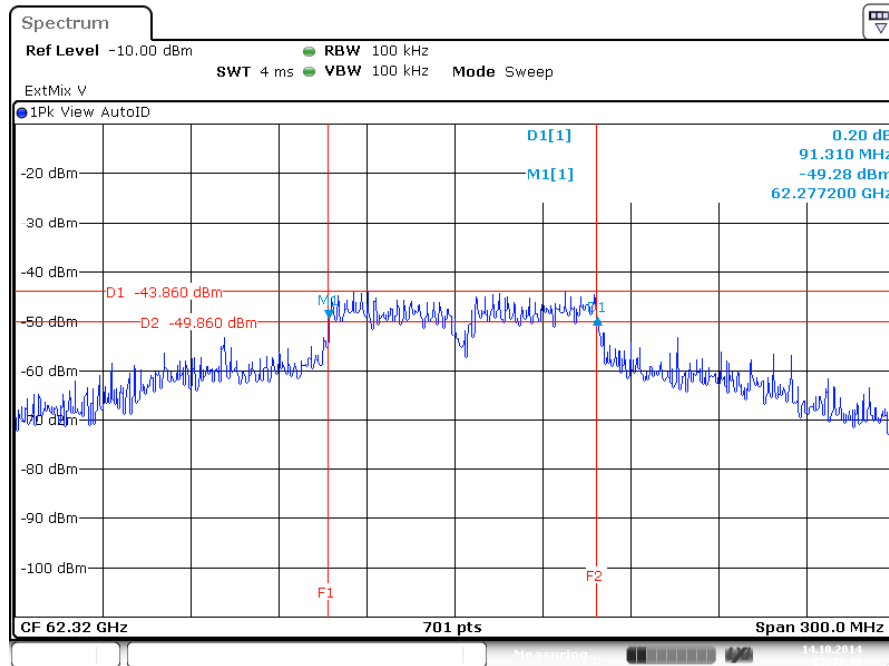




Channel Plan: Channel 3 LRP: 62.32-62.96 GHz

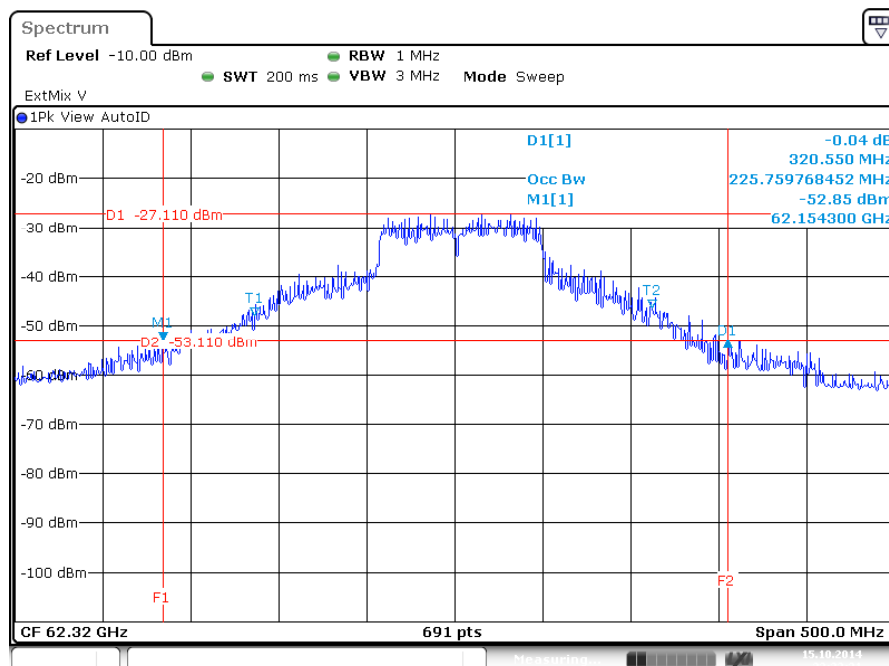
Test Frequency: 62.32 GHz

6 dBc Bandwidth



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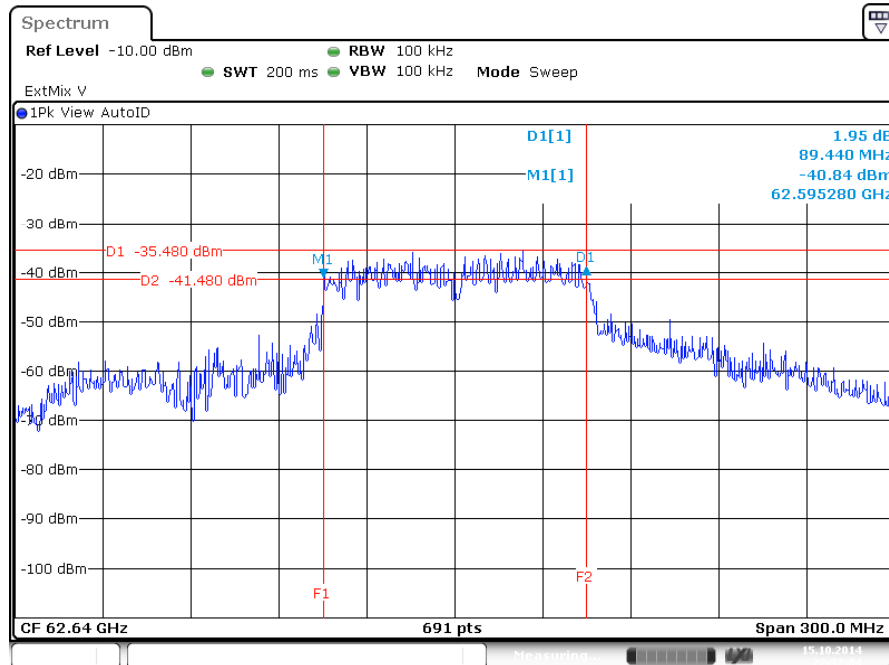
Occupied Bandwidth&26 dBc Bandwidth



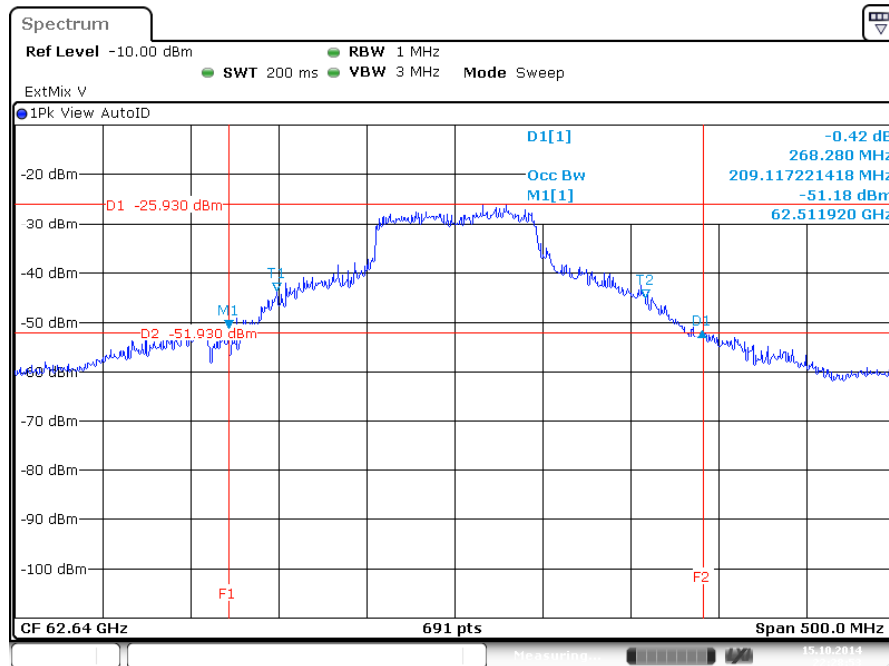
Date: 15.OCT.2014 22:22:31

Test Frequency: 62.64 GHz

6 dBc Bandwidth

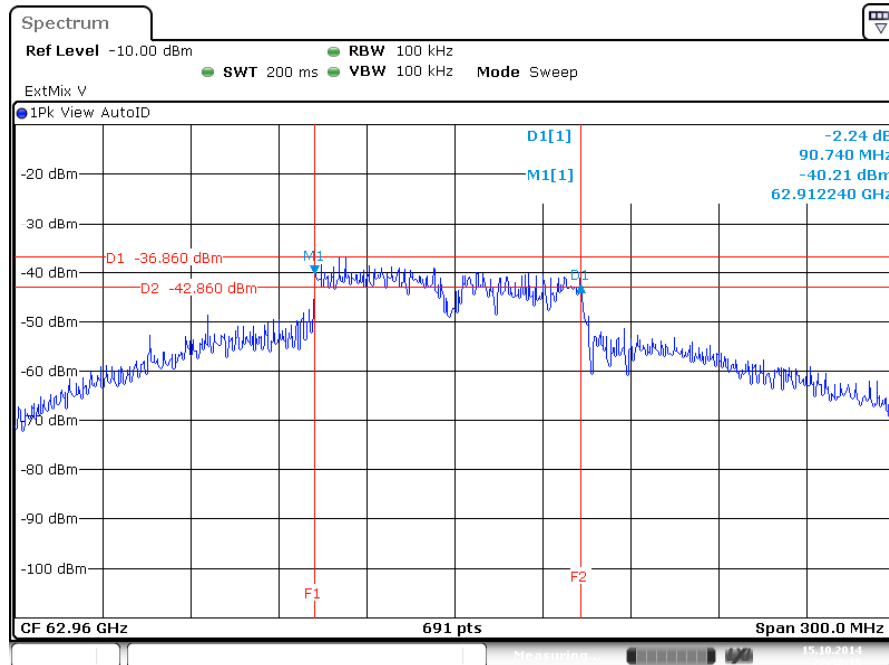


Occupied Bandwidth&26 dBc Bandwidth

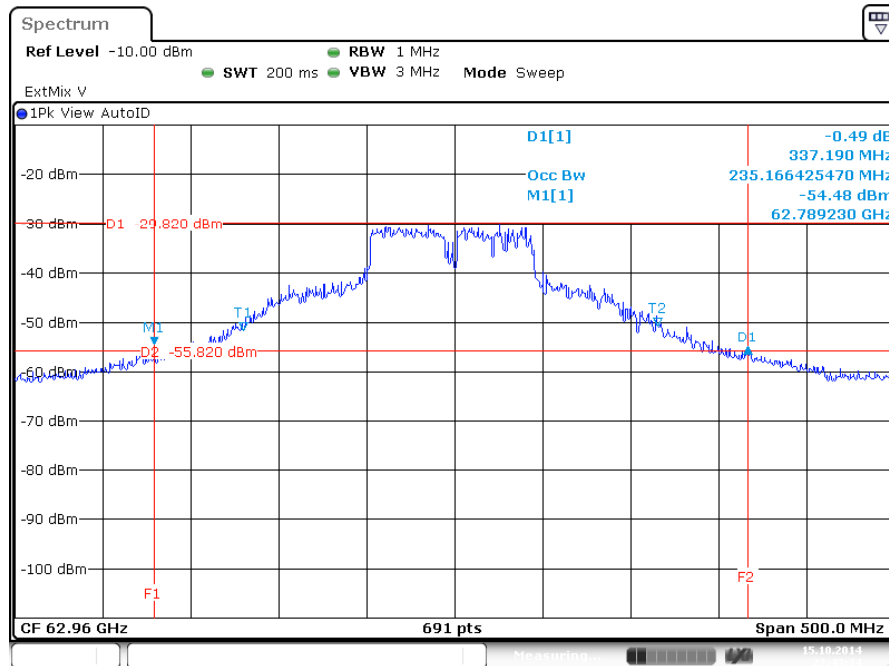


Test Frequency: 62.96 GHz

6 dBc Bandwidth



Occupied Bandwidth&26 dBc Bandwidth

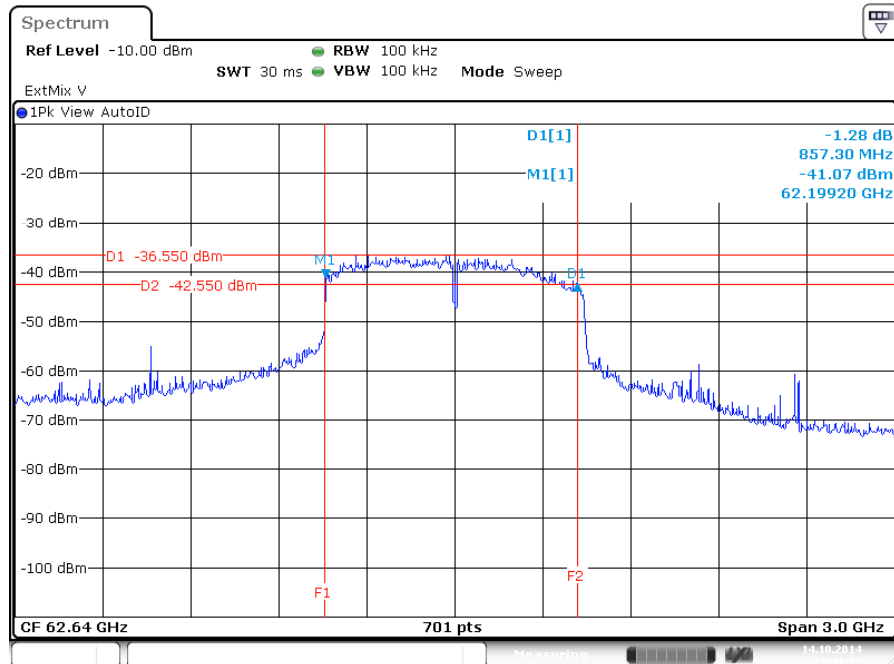




Channel Plan: Channel 3 MRP: 62.64 GHz

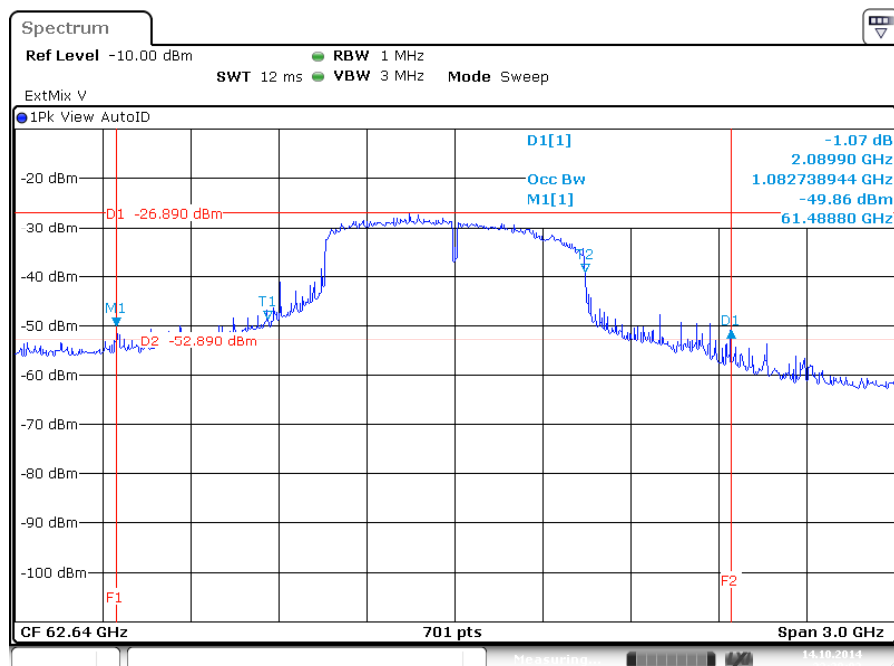
Test Frequency: 62.64 GHz

6 dBc Bandwidth



Date: 14.OCT.2014 23:41:12

Occupied Bandwidth&26 dBc Bandwidth

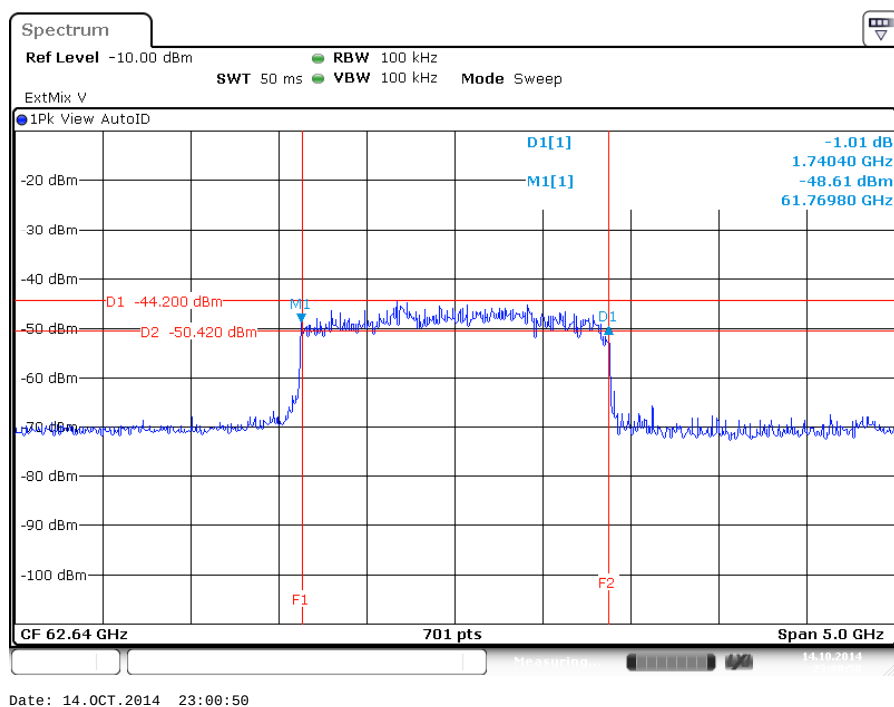


Date: 14.OCT.2014 23:39:03

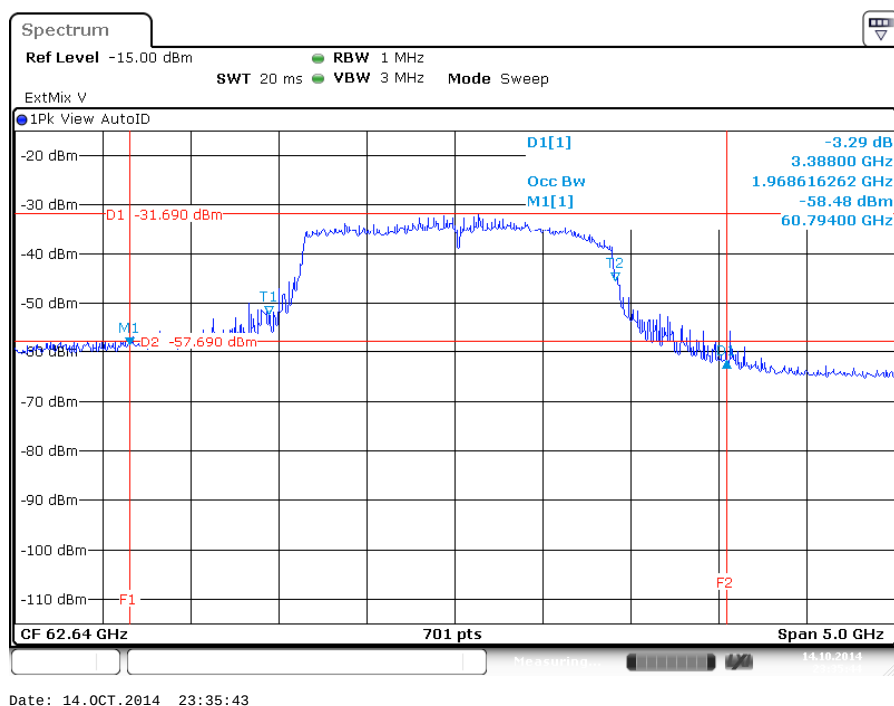
Channel Plan: Channel 3 HRP: 62.64 GHz

Test Frequency: 62.64 GHz

6 dBc Bandwidth



Occupied Bandwidth&26 dBc Bandwidth



3.3 EIRP Power and Power Density

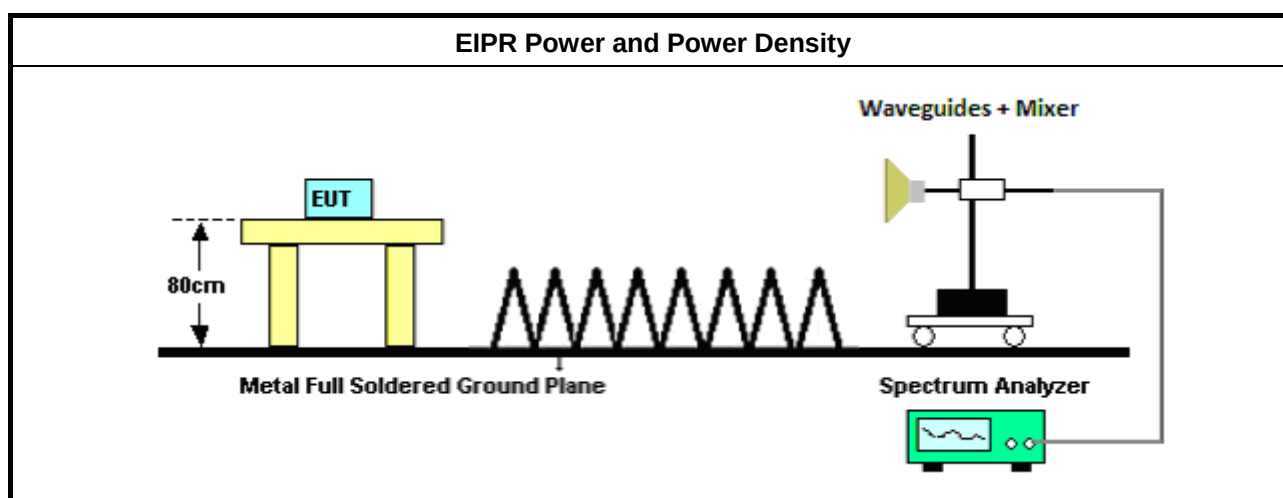
3.3.1 Measuring Instruments

Refer a measuring instruments list in this test report.

3.3.2 Test Procedures

Method of measurement: Refer as KDB200443 D02 RF Detector Method v01 clause 4.

3.3.3 Test Setup



3.3.4 Test Result of EIRP Power

Test Conditions	see ANSI C63.10, clause 5.11 and KDB200443 D02 RF Detector Method v01 clauses 4
Test Setup	see ANSI C63.10, clause 7.8.6
NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing.	



3.3.4.1 Test Result of EIRP Power

Temp	23°C			Humidity		61%			
Test Engineer	Serway Li			Test Distance		1.5 m			
Test Results									
Channel Plan (GHz)	Test Freq. (GHz)	Measured Power (dBm)		EIRP (dBm)		EIRP Limit (dBm) (note 1)		Margin (dB)	
		AV	Peak	AV	Peak	AV	Peak	AV	Peak
Channel 2 LRP: 60.16-60.80	60.16	-30.20	-16.21	18.32	32.31	40.08	43.08	21.76	10.77
	60.48	-31.33	-17.42	17.23	31.14	40.08	43.08	22.85	11.94
	60.80	-30.93	-18.89	17.68	29.72	40.08	43.08	22.40	13.36
Channel 2 MRP: 60.48	60.48	-24.26	-21.21	24.30	27.35	40.08	43.08	15.78	15.73
Channel 2 HRP: 60.48	60.48	-21.62	-17.79	26.94	30.78	40.08	43.08	13.14	12.30
Channel 3 LRP: 62.32-62.96	62.32	-32.11	-16.68	16.71	32.14	40.08	43.08	23.37	10.94
	62.64	-31.96	-17.33	16.91	31.54	40.08	43.08	23.17	11.54
	62.96	-31.87	-18.28	17.04	30.63	40.08	43.08	23.04	12.45
Channel 3 MRP: 62.64	62.64	-24.87	-21.72	24.00	27.15	40.08	43.08	16.08	15.93
Channel 3 HRP: 62.64	62.64	-22.11	-18.35	26.76	30.52	40.08	43.08	13.32	12.56
The measured power level is converted to EIRP using the Friis equation: For radiated emissions, calculate the field strength (F.S) in dBμV/meter. F.S.= P + 107 + AF where: F.S. is field strength in dBμV/meter P is power in dBm AF is antenna factor of test antenna For radiated emissions, calculate the EIRP (dBm). If the measurement was performed in the far field, calculate the EIRP. EIRP = F.S. - 104.8 + 20log(d) where: d = measurement distance NOTE 1: For the applicable limit, see FCC 15.255 (b)									

3.4 Peak Conducted Power

3.4.1 Limit of Peak Conducted Power

Peak Conducted Power Limit	
6dBc Bandwidth	Peak Conducted Power (note 1)
> 100MHz	500mW
≤ 100MHz	500mW x (BW/100) (see note 2)

NOTE 1: For the applicable limit, see FCC 15.255(e)
 NOTE 2: BW= 6dB bandwidth (measured at RBW 100kHz)

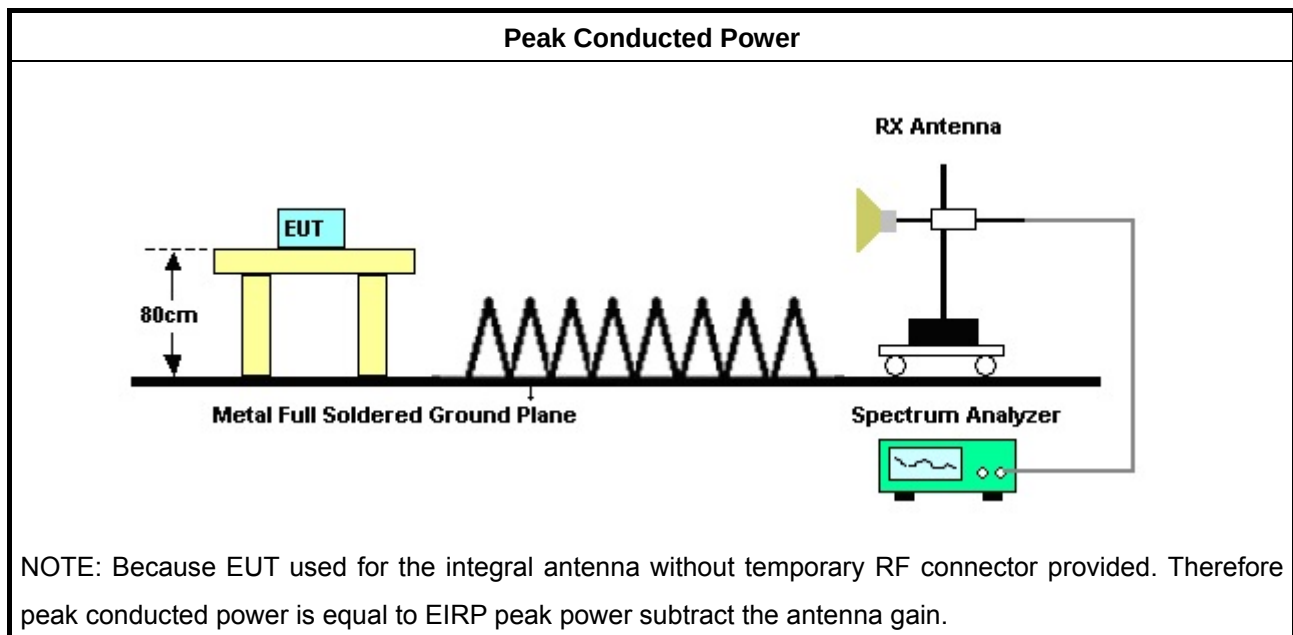
3.4.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.4.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clauses 7.8.3 and 7.8.6 and KDB200443 D02 RF Detector Method v01 clause 4.

3.4.4 Test Setup





3.4.5 Test Result of Peak Conducted Power

Test Conditions	see ANSI C63.10, clause 5.11 and KDB200443 D02 RF Detector Method v01 clause 4.
Test Setup	see ANSI C63.10, clause 7.8.6
NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing.	

3.4.5.1 Peak Conducted Power

Temp	23℃			Humidity	61%			
Test Engineer	Serway Li			Test Distance	1.5 m			
Test Date	Oct. 10, 2014 ~ Oct. 18, 2014							
Test Results								
Channel Plan (GHz)	Test Freq. (GHz)	EIRP (dBm)	Max. Ant. Gain	Peak Power (dBm) (note1)	Peak Power (mW)	6dBc BW (MHz) (note2)	Peak Power Limit (mW) (note3)	Margin (mW)
Channel 2 LRP: 60.16-60.80	60.16	32.31	16	16.31	42.736	90.73	453.65	410.914
	60.48	31.14	16	15.14	32.689	90.30	451.50	418.811
	60.80	29.72	16	13.72	23.550	89.97	449.85	426.300
Channel 2 MRP: 60.48	60.48	27.35	18	9.35	8.610	868.30	500.00	491.390
Channel 2 HRP: 60.48	60.48	30.78	18	12.78	18.959	1754.60	500.00	481.041
Channel 3 LRP: 62.32-62.96	62.32	32.14	16	16.14	41.156	91.31	456.55	415.394
	62.64	31.54	16	15.54	35.800	89.44	447.20	411.400
	62.96	30.63	16	14.63	29.061	90.74	453.70	424.639
Channel 3 MRP: 62.64	62.64	27.15	18	9.15	8.215	857.30	500.00	491.785
Channel 3 HRP: 62.64	62.64	30.52	18	12.52	17.858	1740.40	500.00	482.142
NOTE 1: Because EUT used for the integral antenna without temporary RF connector provided. Therefore peak conducted power is equal to EIRP power subtract the antenna gain.								
NOTE 2: For the 6dBc bandwidth, see test report clause 3.2.5.								
NOTE 3: For the applicable limit, see FCC 15.255(e)								
NOTE 4: Determine the 6 dB bandwidth of the signal. If the bandwidth is less than 100 MHz, calculate the peak power limit from equation.								
$P_{Limit} = \left(\frac{BW}{100} \right) * 500mW$								
NOTE 5: For radiated emission measurements, calculate conducted transmitter output power P(cond)(dBm)								
P(cond) = EIRP - G(dBi)								
where:								
G(dBi) is gain of EUT antenna.								

3.5 Transmitter Spurious Emissions

3.5.1 Limit of Transmitter Spurious Emissions

Frequency Range	Limit
Radiated emissions below 40 GHz	FCC 15.209
Radiated emissions above 40 GHz – 200GHz	90 pW/cm ² @ 3 m (Equivalent EIRP 102 μW, -9.91dBm)
NOTE: Spurious emissions shall not exceed the level of the fundamental emission.	

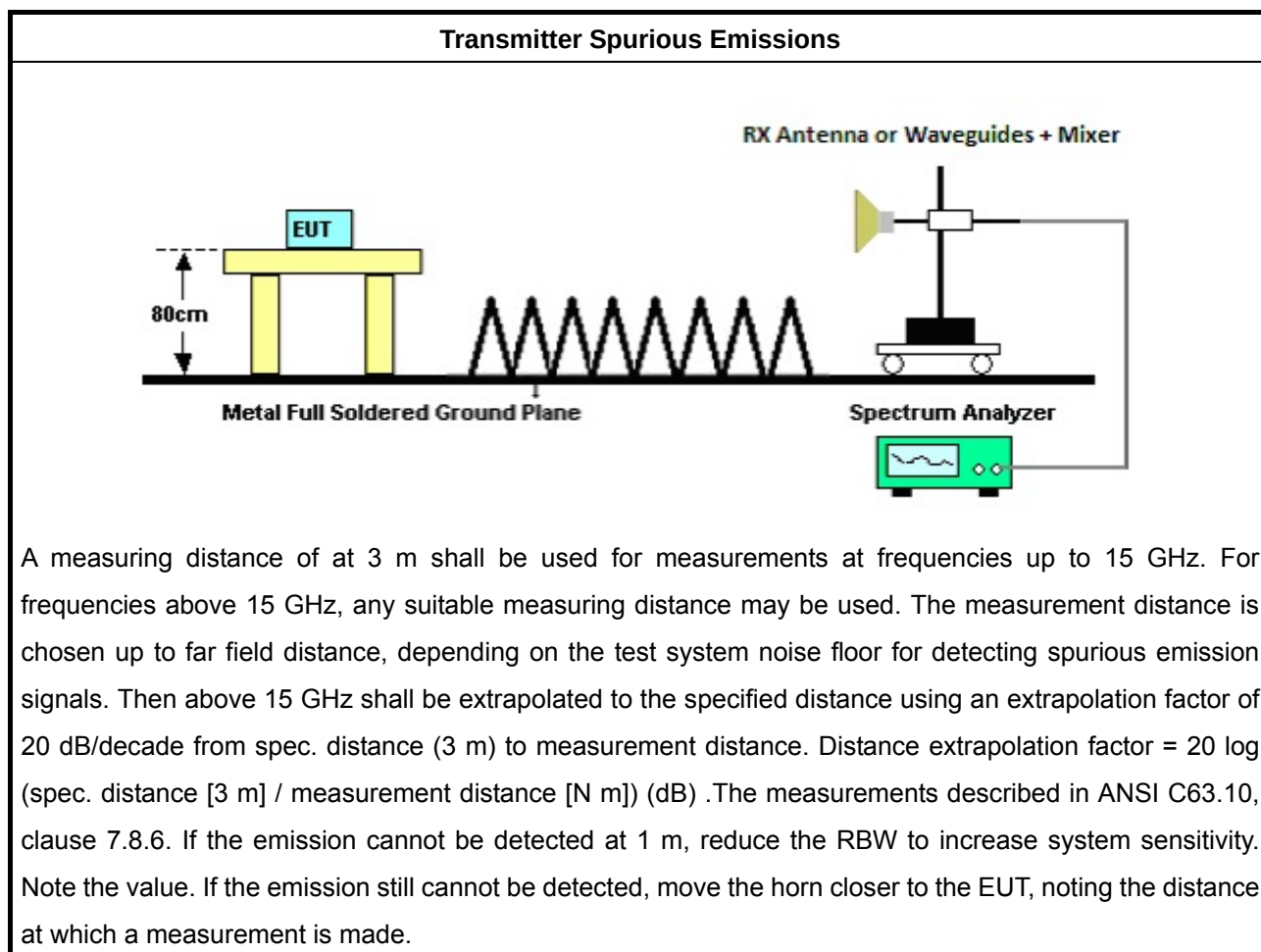
3.5.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.5.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clauses 6.3, 6.4, 6.5, 6.6 and 7.8.6 and KDB200443 D02 RF Detector Method v01 clause 5.

3.5.4 Test Setup





3.5.5 Test Result of Transmitter Spurious Emissions

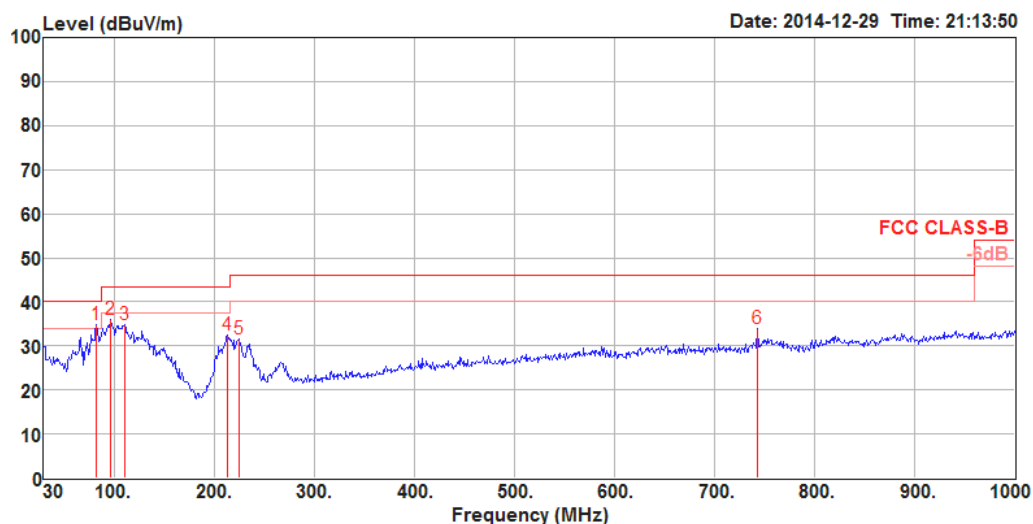
Test Conditions	see ANSI C63.10, clause 5.11 and KDB200443 D02 RF Detector Method v01 clause 5.
Test Setup	see ANSI C63.10, clauses 6.3, 6.4, 6.5, 6.6 and 7.8.6
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	



3.5.5.1 Test Result of Transmitter Spurious Emissions

Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Distance	3 m
Test Range	30 MHz – 1000 MHz	Test Configuration	Normal Link
Test Mode	Mode 1		

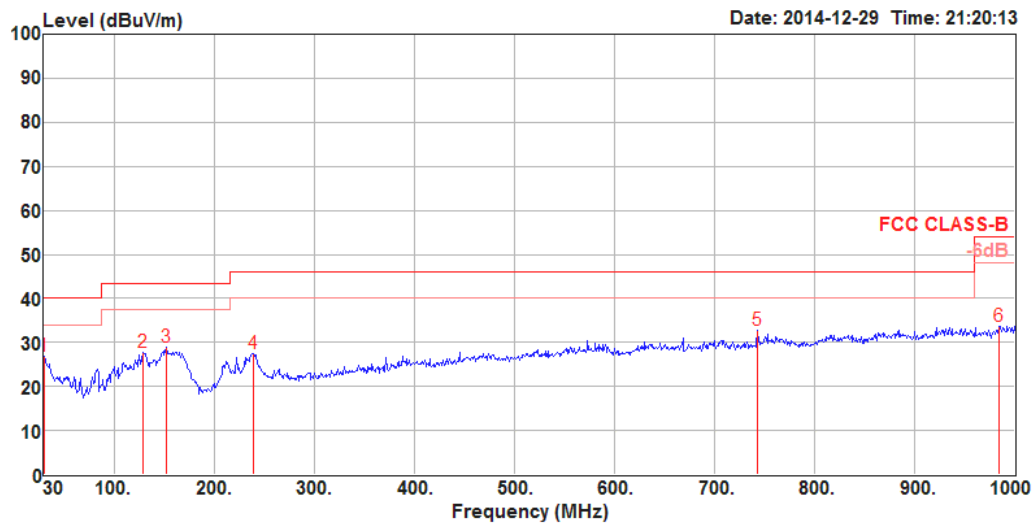
Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp		A/Pos	T/Pos	
	MHz	dBuV/m	dBuV/m	Limit	Level	Loss	Factor	Factor	Remark	cm	deg	Pol/Phase
1	82.38	34.72	40.00	-5.28	58.13	0.79	8.00	32.20	Peak	100	278	VERTICAL
2	96.93	36.11	43.50	-7.39	56.92	0.85	10.54	32.20	Peak	100	89	VERTICAL
3	110.51	34.79	43.50	-8.71	53.81	0.91	12.33	32.26	Peak	100	3	VERTICAL
4	213.33	32.52	43.50	-10.98	52.53	1.27	10.77	32.05	Peak	125	5	VERTICAL
5	224.97	31.68	46.00	-14.32	51.42	1.31	11.00	32.05	Peak	100	360	VERTICAL
6	742.95	34.05	46.00	-11.95	43.44	2.37	20.30	32.06	Peak	100	215	VERTICAL



Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	30.00	26.78	40.00	-13.22	38.49	0.43	20.10	32.24	Peak	150	36	HORIZONTAL
2	128.94	27.69	43.50	-15.81	46.22	0.99	12.71	32.23	Peak	100	211	HORIZONTAL
3	152.22	28.78	43.50	-14.72	48.74	1.08	11.12	32.16	Peak	125	6	HORIZONTAL
4	238.55	27.48	46.00	-18.52	46.17	1.35	12.11	32.15	Peak	150	98	HORIZONTAL
5	742.95	32.85	46.00	-13.15	42.24	2.37	20.30	32.06	Peak	150	62	HORIZONTAL
6	983.51	33.74	54.00	-20.26	39.45	2.72	22.20	30.63	Peak	200	269	HORIZONTAL



Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Distance	3 m
Test Range	1 GHz – 18 GHz	Test Configuration	Normal Link
Test Mode	Mode 1	Test Date	Nov. 20, 2014

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	1038.29	56.66	74.00	-17.34	64.21	2.62	24.16	34.33	Peak	143	196	VERTICAL
2	1038.46	46.44	54.00	-7.56	53.99	2.62	24.16	34.33	Average	143	196	VERTICAL
3	1483.39	50.95	74.00	-23.05	57.13	3.14	25.55	34.87	Peak	149	181	VERTICAL
4	1483.52	42.47	54.00	-11.53	48.65	3.14	25.55	34.87	Average	149	181	VERTICAL
5	1780.27	32.22	54.00	-21.78	37.17	3.52	26.43	34.90	Average	140	194	VERTICAL
6	1780.55	47.15	74.00	-26.85	52.10	3.52	26.43	34.90	Peak	140	194	VERTICAL
7	2076.60	54.40	74.00	-19.60	58.16	3.85	27.31	34.92	Peak	100	188	VERTICAL
8	2076.80	34.86	54.00	-19.14	38.62	3.85	27.31	34.92	Average	100	188	VERTICAL
9	2225.19	56.43	74.00	-17.57	59.77	3.97	27.64	34.95	Peak	100	180	VERTICAL
10	2225.29	38.80	54.00	-15.20	42.14	3.97	27.64	34.95	Average	100	180	VERTICAL
11	11990.25	42.46	54.00	-11.54	28.80	9.35	39.31	35.00	Average	100	164	VERTICAL
12	11991.42	47.07	74.00	-26.93	33.41	9.35	39.31	35.00	Peak	100	164	VERTICAL

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	1038.52	49.53	54.00	-4.47	57.08	2.62	24.16	34.33	Average	100	44	HORIZONTAL
2	1038.69	59.60	74.00	-14.40	67.15	2.62	24.16	34.33	Peak	100	44	HORIZONTAL
3	1483.27	48.73	74.00	-25.27	54.91	3.14	25.55	34.87	Peak	100	223	HORIZONTAL
4	1483.53	39.62	54.00	-14.38	45.80	3.14	25.55	34.87	Average	100	223	HORIZONTAL
5	1780.21	30.84	54.00	-23.16	35.79	3.52	26.43	34.90	Average	100	150	HORIZONTAL
6	1780.23	46.39	74.00	-27.61	51.34	3.52	26.43	34.90	Peak	100	150	HORIZONTAL
7	2076.96	33.65	54.00	-20.35	37.41	3.85	27.31	34.92	Average	100	159	HORIZONTAL
8	2077.07	53.35	74.00	-20.65	57.11	3.85	27.31	34.92	Peak	100	159	HORIZONTAL
9	2224.63	54.93	74.00	-19.07	58.27	3.97	27.64	34.95	Peak	102	151	HORIZONTAL
10	2225.39	35.38	54.00	-18.62	38.72	3.97	27.64	34.95	Average	102	151	HORIZONTAL
11	11990.58	40.99	54.00	-13.01	27.33	9.35	39.31	35.00	Average	100	152	HORIZONTAL
12	12004.74	45.50	74.00	-28.50	31.85	9.35	39.30	35.00	Peak	100	152	HORIZONTAL



Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Distance	1 m
Test Range	18 GHz – 26.5 GHz	Test Configuration	Normal Link
Test Mode	Mode 1	Test Date	Nov. 21, 2014

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	24005.29	69.14	83.54	-14.40	49.53	15.81	38.90	35.10	Peak	100	175	VERTICAL
2	24007.53	54.60	63.54	-8.94	34.99	15.81	38.90	35.10	Average	100	175	VERTICAL

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	23998.40	68.25	83.54	-15.29	48.64	15.81	38.90	35.10	Peak	100	280	HORIZONTAL
2	24009.62	54.61	63.54	-8.93	35.00	15.81	38.90	35.10	Average	100	280	HORIZONTAL



Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Distance	1 m
Test Range	26.5 GHz – 40 GHz	Test Configuration	Normal Link
Test Mode	Mode 1	Test Date	Nov. 21, 2014

Vertical

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp		A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	Remark	cm	deg	
1	36005.76	57.79	63.54	-5.75	36.08	19.78	42.10	40.17	Average	100	189	VERTICAL
2	36008.52	70.94	83.54	-12.60	49.23	19.78	42.10	40.17	Peak	100	189	VERTICAL

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp		A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	Remark	cm	deg	
1	36003.76	71.70	83.54	-11.84	49.99	19.78	42.10	40.17	Peak	100	216	HORIZONTAL
2	36007.08	57.86	63.54	-5.68	36.15	19.78	42.10	40.17	Average	100	216	HORIZONTAL



Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Date	Oct. 10, 2014 ~ Oct. 18, 2014
Test Range	40GHz – 200GHz		

Test Plan: Channel 2 LRP: 60.16-60.80

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
60.48	23	0.5	40.09	-59.44
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m²)	Limit (pW/cm²)	Test Result
-23.96	3	35.5371	90.00	Complied

Test Plan: Channel 2 MRP: 60.48

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
60.48	23	0.5	40.29	-56.49
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m²)	Limit (pW/cm²)	Test Result
-20.96	3	70.8102	90.00	Complied

Test Plan: Channel 2 HRP: 60.48

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
60.48	23	0.5	40.15	-56.57
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m²)	Limit (pW/cm²)	Test Result
-21.07	3	69.0348	90.00	Complied

**Test Plan: Channel 3 LRP: 62.32-62.96**

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
62.64	23	0.5	41.54	-58.24
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m ²)	Limit (pW/cm ²)	Test Result
-22.45	3	50.3068	90.00	Complied

Test Plan: Channel 3 MRP: 62.64

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
62.64	23	0.5	41.77	-56.67
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m ²)	Limit (pW/cm ²)	Test Result
-20.83	3	73.0042	90.00	Complied

Test Plan: Channel 3 HRP: 62.64

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
62.64	23	0.5	41.45	-55.99
EIRP (dBm)	Specification Distance (m)	Power Density (pW/m ²)	Limit (pW/cm ²)	Test Result
-20.22	3	84.0654	90.00	Complied

3.6 Frequency Stability

3.6.1 Limit of Frequency Stability

Frequency Stability	Limit
Refer as FCC 15.255(f) and KDB200443 D02 RF Detector Method v01 clauses 6	within the frequency bands
Note: These measurements shall also be performed at normal and extreme test conditions.	

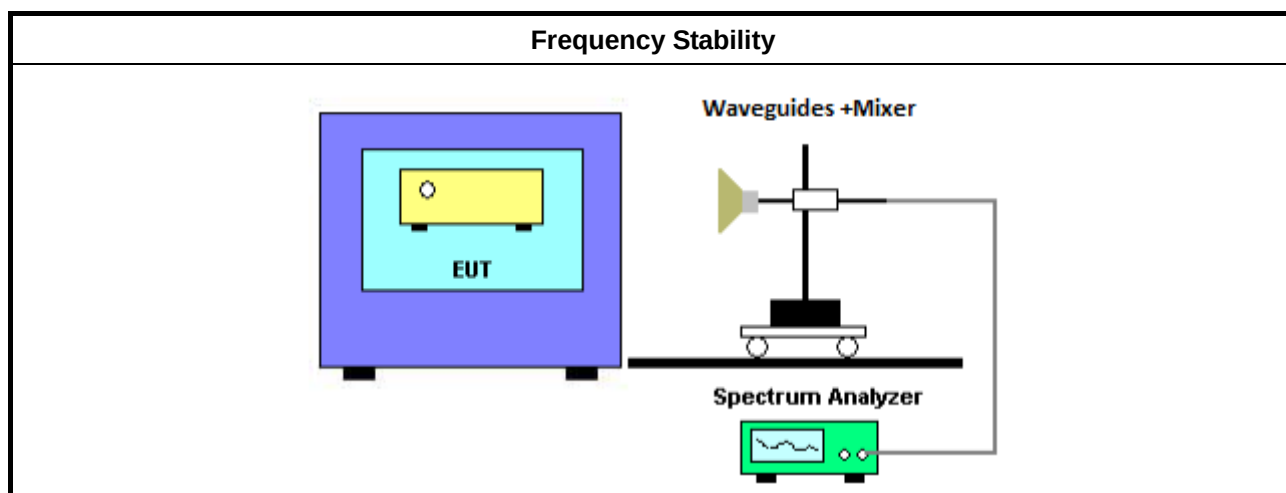
3.6.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.6.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clauses 6.8 and 7.8.7.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Test Conditions	see ANSI C63.10, clause 5.11 and KDB200443 D02 RF Detector Method v01 clauses 6
Test Setup	see ANSI C63.10, clauses 6.8 and 7.8.7
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

3.6.5.1 Frequency Stability with Respect to Ambient Temperature

Frequency Stability with Respect to Ambient Temperature			
Temp	23°C	Humidity	61%
Test Engineer	Serway Li	Test Date	Oct. 10, 2014 ~ Oct. 18, 2014
Test Results			
Test Temperature (°C)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
-20	60.47999	0	within band
-10	60.48000	0	within band
0	60.47999	0	within band
10	60.47999	0	within band
20	60.47999	Reference	within band
30	60.47999	0.00521	within band
40	60.48000	0.00955	within band
50	60.47999	0.00651	within band
NOTE:			
1. For the applicable limit, see FCC 15.255(f).			
2. The EUT is intended for indoor use only with a manufacturer's specified temperature range of 0 to °C.			

3.6.5.2 Frequency Stability When Varying Supply Voltage

Frequency Stability When Varying Supply Voltage			
Temp	23℃	Humidity	61%
Test Engineer	Serway Li	Test Date	Oct. 10, 2014 ~ Oct. 18, 2014
Test Results			
Test Voltage: (Vdc)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
4.25	60.48000	0	within band
5	60.47999	Reference	within band
5.75	60.47999	0.00608	within band
NOTE: For the applicable limit, see FCC 15.255(f).			

3.7 Publicly-accessible Coordination Channel

3.7.1 Limit of Publicly-accessible Coordination Channel

Frequency Range	Limit
57 GHz-57.05 GHz	No emissions appear in the range 57-57.05 GHz
NOTE: For the applicable limit, see FCC 15.255(d)	

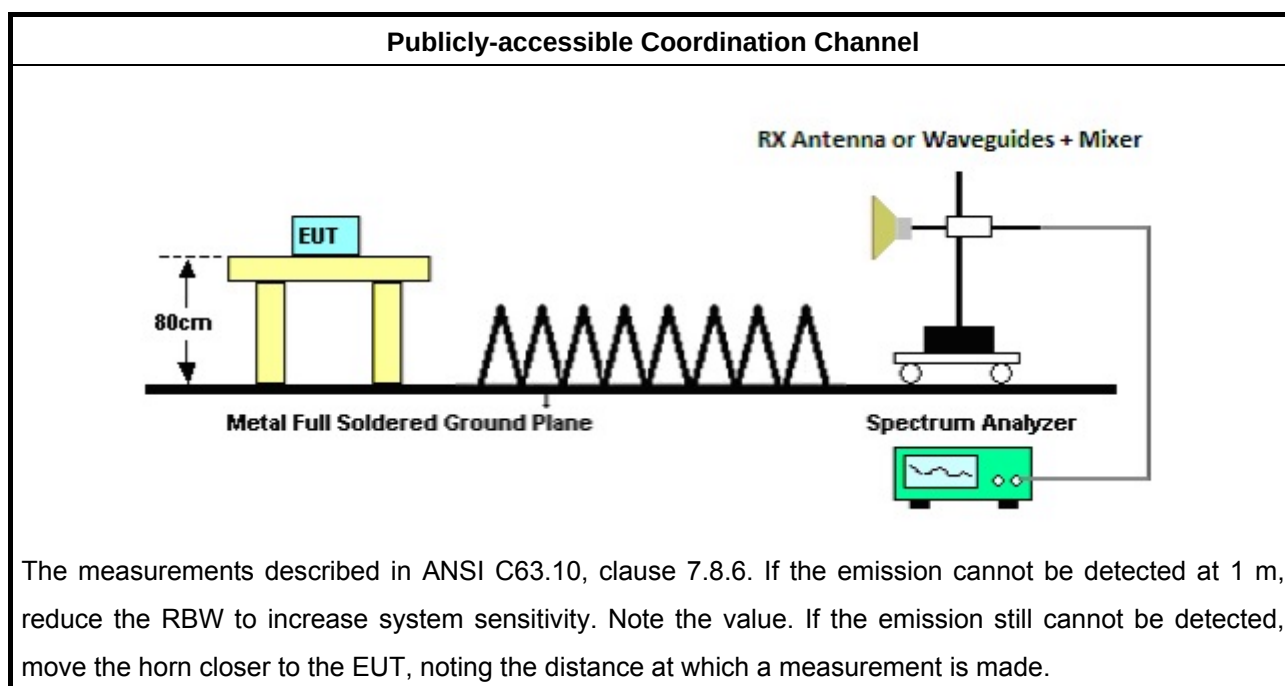
3.7.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.7.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2009, clauses 6.3, 6.4, 6.5, 6.6 and 7.8.6 and KDB200443 D02 RF Detector Method v01 clauses 5.

3.7.4 Test Setup



3.7.5 Test Result of Publicly-accessible Coordination Channel

Test Conditions	see ANSI C63.10, clause 5.11 and KDB200443 D02 RF Detector Method v01 clauses 5
Test Setup	see ANSI C63.10, clauses 6.3, 6.4, 6.5, 6.6 and 7.8.6
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

**3.7.5.1.1 Radiated Testing**

Temp	23°C		Humidity	61%	
Test Engineer	Serway Li		Test Distance	1.5 m	
Test Range	57 GHz - 57.05 GHz		Test Date	Oct. 10, 2014 ~ Oct. 18, 2014	
Test Results					
Test Range	Emission Frequency (MHz)	Emission Observed (dBm)	Limit (dBm)	Margin (dB)	Remark
57 GHz - 57.05 GHz	57.05	-21.28	-9.91	-11.37	-

3.8 Operation Restriction and Group Installation

3.8.1 Limit of Operation Restriction and Group Installation

Item	Limit
Operation Restriction	Operation is not permitted for the following products: • Equipment used on aircraft or satellites. (Refer as FCC 15.255 (a)) • Field disturbance sensors, including vehicle radar systems, unless the field disturbance sensors are employed for fixed operation. (Refer as FCC 15.255 (a))
Group Installation	Operation is not permitted for the following products: • External phase-locking (Refer as FCC 15.255 (h))

3.8.2 Result of Operation Restriction

Manufacturer declares that EUT will not been used on aircraft or satellites. Then user manual will include a statement to caution EUT is not permitted for used on aircraft or satellites. EUT is a wireless video area network (WVAN) for the connection of consumer electronic (CE) audio and video devices.

3.8.3 Result of Group Installation

The frequency, amplitude and phase of the transmit signal are set within the EUT. There are no external phase-locking inputs or any other means of combining two or more units together to realize a beam-forming array.



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 23, 2014	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Nov. 23, 2013	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Nov. 23, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 04, 2013	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02009	1GHz ~ 26.5GHz	Dec. 17, 2014	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	--	26GHz ~ 40GHz	Feb. 17, 2014	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100080	9kHz ~ 40GHz	Oct. 15, 2014	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR26	101289	9kHz~26GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Mixer	OML	M19HW/A	U91113-1	40 ~ 60 GHz	Dec. 17, 2013*	Radiation (03CH01-CB)
Mixer	OML	M15HW/A	V91113-1	50 ~ 75 GHz	Dec. 17, 2013*	Radiation (03CH01-CB)
Diplexer	OML	DPL313B	N/A	40~200GHz	N.C.R.	Radiation (03CH01-CB)
Mixer	OML	M12HW/A	E91113-1	60 ~ 90 GHz	Dec. 17, 2013*	Radiation (03CH01-CB)
Mixer	OML	M08HW/A	F91113-1	90 ~ 140 GHz	Dec. 17, 2013*	Radiation (03CH01-CB)
Mixer	OML	M05HW/A	G91113-1	140 ~ 220 GHz	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO19R	U91113-A	40 ~ 60 GHz	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO15R	V91113-A	50 ~ 75 GHz	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO12R	E91113-A	60 ~ 90 GHz	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO08R	F91113-A	90 ~ 140 GHz	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	HO05R	G91113-A	140 ~ 220 GHz	N.C.R.	Radiation (03CH01-CB)
Pico Scope	Pico	Pico Scope 6402C	CX372/002	-	Nov. 15, 2013*	Radiation (03CH01-CB)
RF Detector	millitech	DET-15-RPFW0	38	50 ~ 75 GHz	Aug. 14, 2013*	Radiation (03CH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2014	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

“*” Calibration Interval of instruments listed above is two years.

NCR means Non-Calibration required.

5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Radiated Emission (40GHz ~ 220GHz)	4.7 dB	Confidence levels of 95%
Temperature	0.7°C	Confidence levels of 95%