RF TEST REPORT

Test item	:	AM/FM STEREO RADIO
Model No.	:	LSP2GTX
Order No.	:	1112-01656
Date of receipt	:	2011-12-01
Test duration	:	2011-12-12 ~ 2011-12-26
Date of issue	:	2011-12-28
Use of report	:	FCC & IC Original Grant

Applicant : LG Electronics USA.
1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Kyunggi-Do, 449-080, Korea

Test specification	:	FCC Part 15 Subpart C 247 ANSI C-63.4-2003, RSS-210 Issue 8, RSS-Gen Issue 3
Test environment	:	See appended test report
Test result	:	☒ Pass ☐ Fail

Tested by:	Witnessed by:	Reviewed by:
Engineer S.K. Ryu	N/A	Technical Director Harvey Sung

CONTENTS

1. Equipment information 3
1.1 Equipment description 3
1.2 Ancillary equipment 3
2. Information about test items 4
2.1 Test mode 4
2.2 Auxiliary equipment 4
2.3 Tested frequency 4
2.4 Tested environment 4
2.5 EMI Suppression Device(s)/Modifications 4
3. Test Report 5
3.1 Summary of tests 5
3.2 Transmitter requirements 6
3.2.1 6 dB Bandwidth 6
3.2.2 Peak Output Power 13
3.2.3 Out of Band Emissions / Band Edge 14
3.2.4 Out of band Emission – Radiated 24
3.2.5 Transmitter Power Spectral Density 28
3.2.6 AC Conducted Emissions 35
3.2.7 Antenna Requirements 36
3.2.8 Occupied Bandwidth (99%) 37
3.3 Receiver requirements 44
3.3.1 AC Conducted Emissions (Receiver Mode) 44
3.3.2 Out of Band Emissions – Radiated (Receiver Mode) 45
APPENDIX 49

1. Equipment information

1.1 Equipment description

FCC Equipment Class	Digital Transmission System (DTS)
FCC ID	BEJLSP2GTX
IC ID	2703H-LSP2GTX
Equipment type	AM/FM STEREO RADIO
Equipment model name	LSP2GTX
Equipment add model name	LSP2GTS, LSP2GTN, LSP2GTD, LSP2GTA
Equipment serial no.	Identical prototype
Frequency band	2412 ~ 2462 MHz
Modulation type	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g: OFDM(64QAM, QPSK, BPSK) 802.11n (HT20): OFDM(64QAM, 16QAM, QPSK, BPSK)
Channel Access Protocol	CSMA/CA
Channel Spacing	5.0 MHz
Antenna type	Internal Type: Chip Antenna (Max. Peak Gain:2.11 dBi)
Power Supply	DC 12 V

1.2 Ancillary equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
-	-	-	-	-
-	-	-	-	-

2. Information about test items

2.1 Test mode

1. This device was tested in below worst case data rate mode with maximum power.
   And the worst case data are reported.

Test Case 1	802.11b 11Mbps
Test Case 2	802.11g 6Mbps
Test Case 3	802.11n(HT20) MCS0

2.2 Auxiliary equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
-	-	-	-	-
-	-	-	-	-

2.3 Tested frequency

	TX Frequency (MHz)	RX Frequency (MHz)
Lowest Channel	2412	2412
Middle Channel	2437	2437
Highest Channel	2462	2462

2.4 Tested environment

Temperature	:	22 ~ 25 °C
Relative humidity content	:	32 ~ 41 % R.H.
Details of power supply	:	DC 12 V

2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing
→ None

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	RSS Section(s)	Parameter	Limit	Test Condition	Status Note 1
I. Transmitter Mode (TX)					
15.247(a)	RSS-Gen [4.6.2]	6 dB Bandwidth	> 500 kHz	Conducted	**C**
15.247(b)	RSS-210 [A8.4]	Transmitter Output Power	< 1Watt		**C**
15.247(c)	RSS-210 [A8.5]	Out of Band Emissions / Band Edge	20dBc in any 100kHz BW		**C**
15.247(d)	RSS-210 [A8.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz		**C**
15.205 15.209	RSS-210 [A8.5]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	< FCC 15.209 limits	Radiated	**C Note 2**
15.207	RSS-Gen [7.2.4]	AC Conducted Emissions	< FCC 15.207 limits	AC Line Conducted	**NA Note 3**
-	RSS Gen Issue 3	Occupied Bandwidth (99%)	RSS-Gen(4.6.1)	Conducted	**C**
15.203	RSS-Gen [7.1.2]	Antenna Requirements	FCC 15.203	-	**C**
II. Receiver Mode (RX)					
-	RSS-Gen [6]	AC Conducted Emissions	RSS-Gen(7.2.4 Table 4)	AC Line Conducted	**NA Note 3**
-	RSS-Gen [6]	Receiver Spurious Emissions	RSS-Gen(6 Table 2)	Radiated	**C Note 2**

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable

Note 2: This test item was performed in each axis. And the worst case data were reported.

Note 3: The product does not use the ac adaptor and TA. It is a vehicle mounting the product.

The sample was tested according to the following specification:
ANSI C-63.4-2003, RSS-210 Issue 8, RSS-Gen Issue 3

3.2 Transmitter requirements

3.2.1 6 dB Bandwidth

- Procedure:

The bandwidth at 6 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal at the highest, middle and the lowest available channels.
After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level.
The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:
Center frequency = the highest, middle and the lowest Frequencies
Span = 50 MHz (Greater than EBW)
RBW = 100 kHz
VBW = ≥ RBW
Trace = max hold
Sweep = auto
Detector function = peak

- Measurement Data: Comply

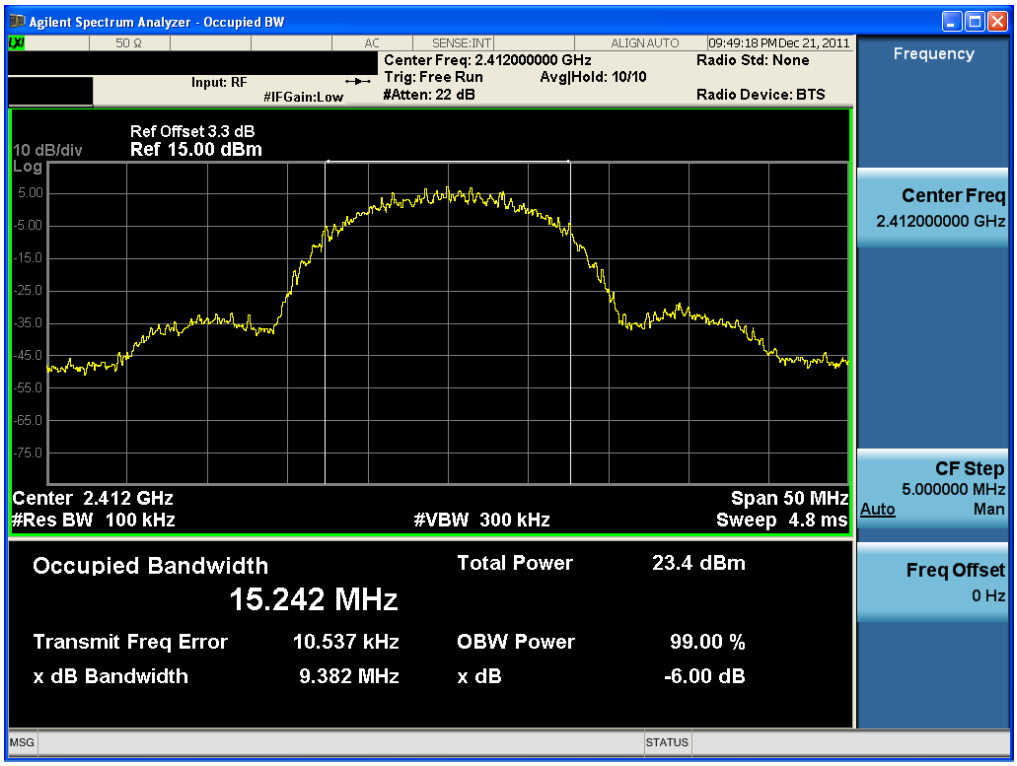
Test Mode	Frequency	Test Results (MHz)
Test Case 1	Lowest	9.382
	Middle	9.633
	Highest	9.630
Test Case 2	Lowest	16.410
	Middle	16.450
	Highest	16.460
Test Case 3	Lowest	17.360
	Middle	17.610
	Highest	17.580

Note 1: See next pages for actual measured spectrum plots.

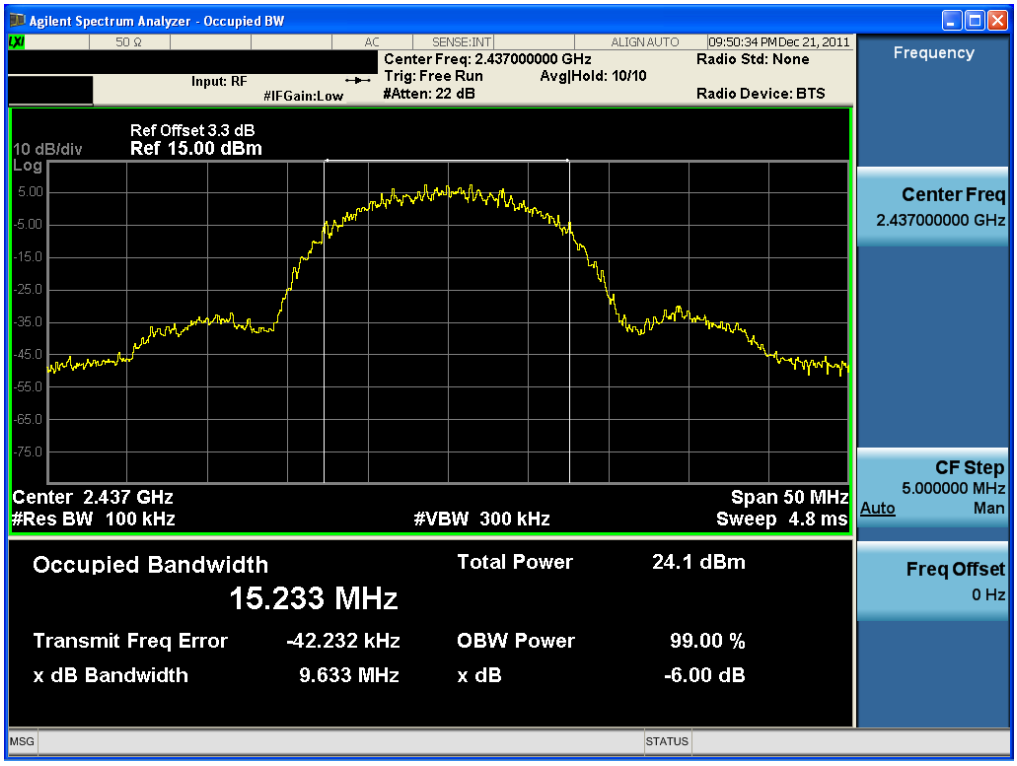
- Minimum Standard:

The minimum 6 dB bandwidth shall be at least 500 kHz

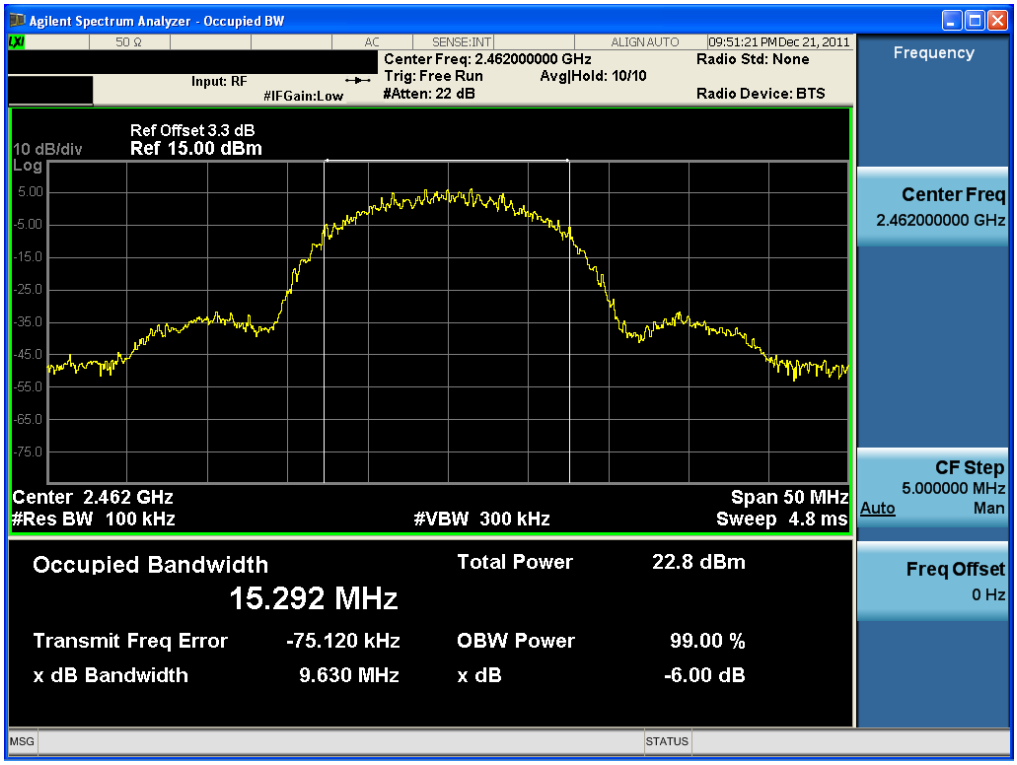
6 dB Bandwidth Lowest Frequency & Test Case 1



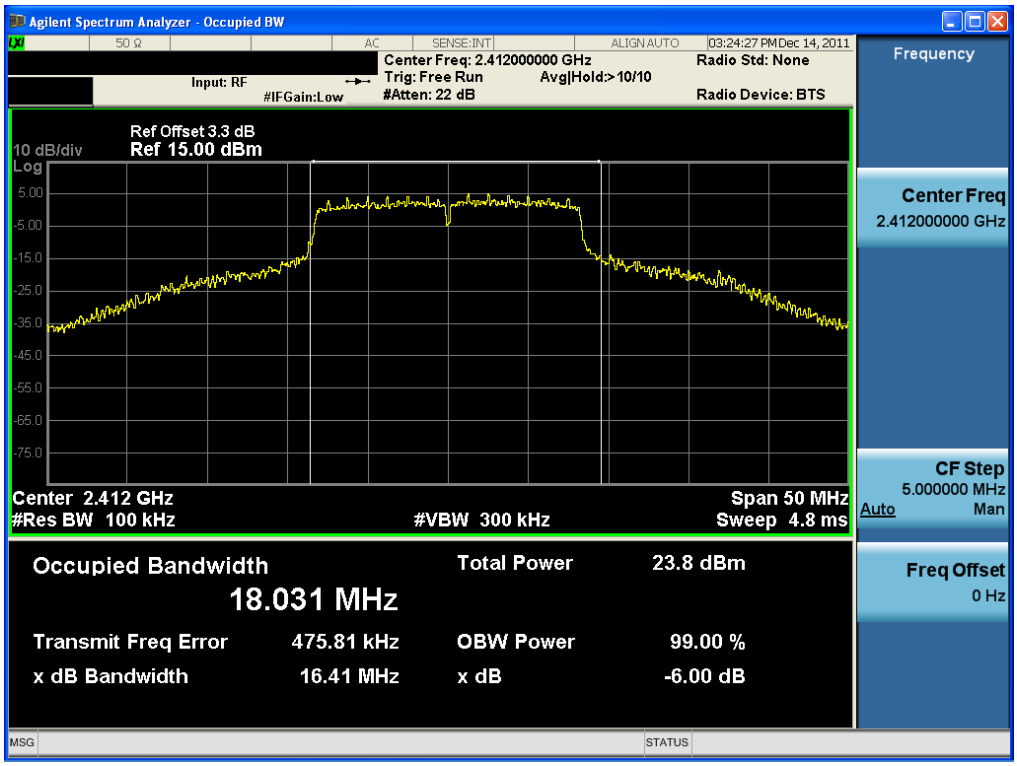
6 dB Bandwidth Middle Frequency & Test Case 1



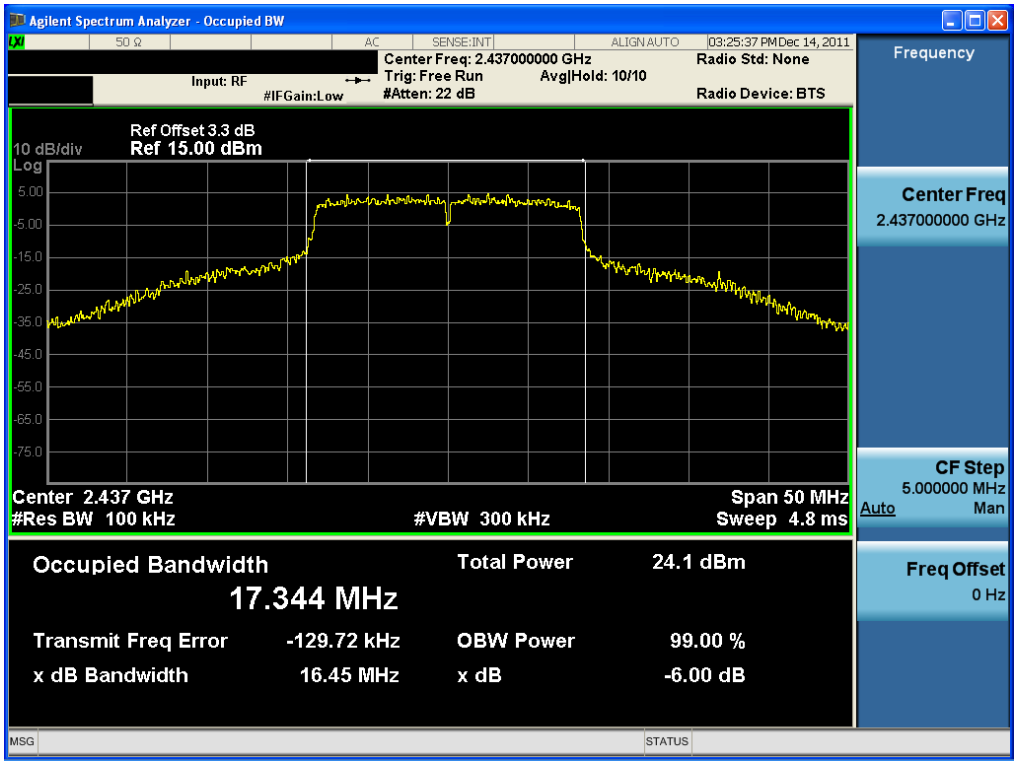
6 dB Bandwidth Highest Frequency & Test Case 1



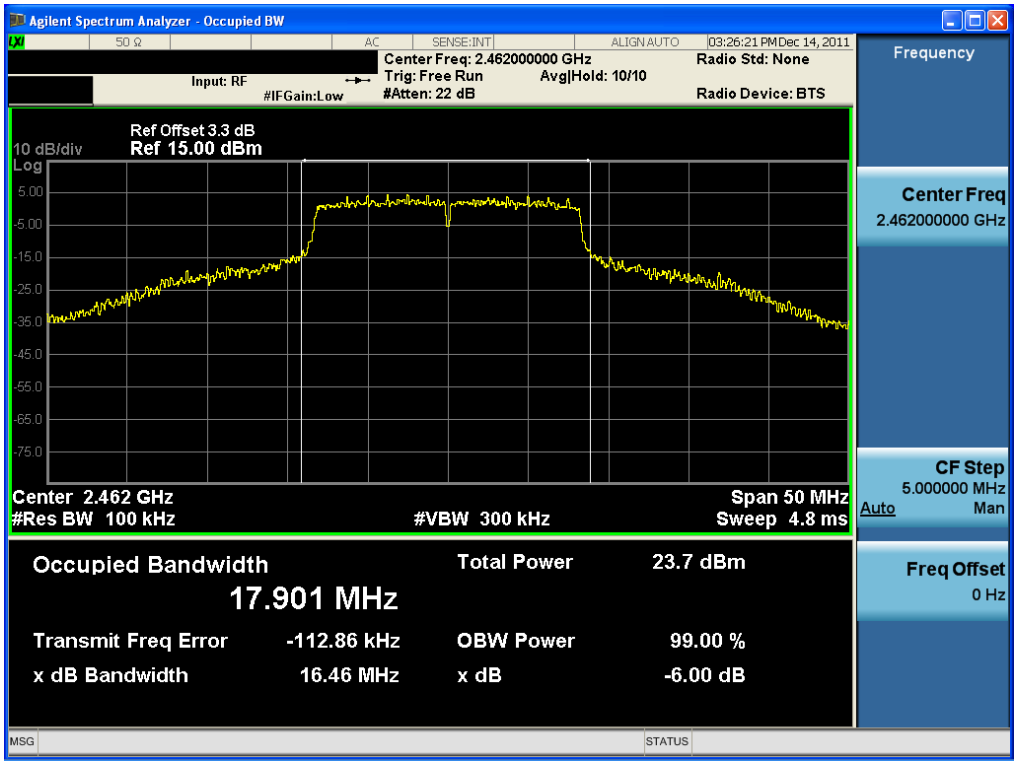
6 dB Bandwidth Lowest Frequency & Test Case 2



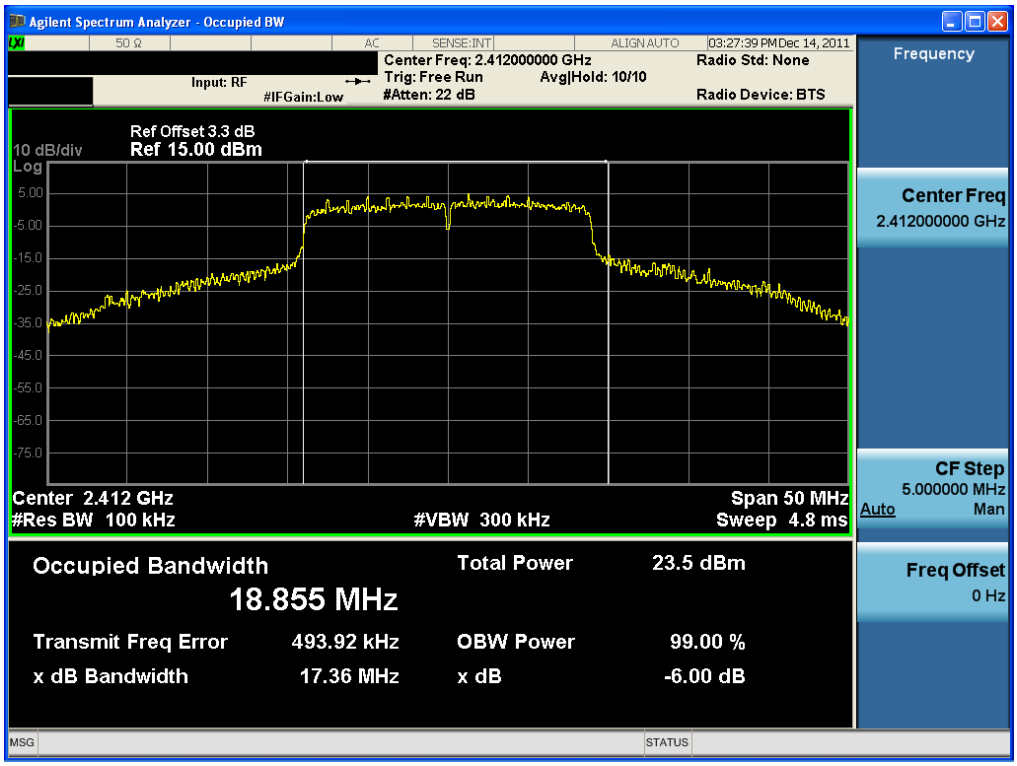
6 dB Bandwidth Middle Frequency & Test Case 2



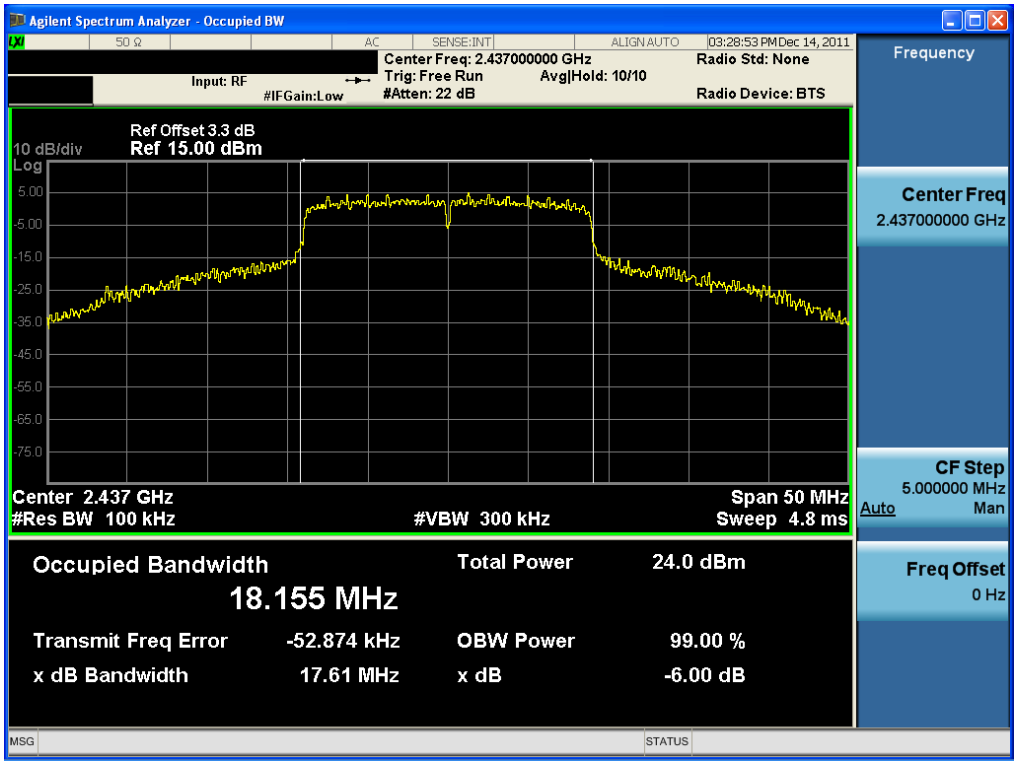
6 dB Bandwidth Highest Frequency & Test Case 2



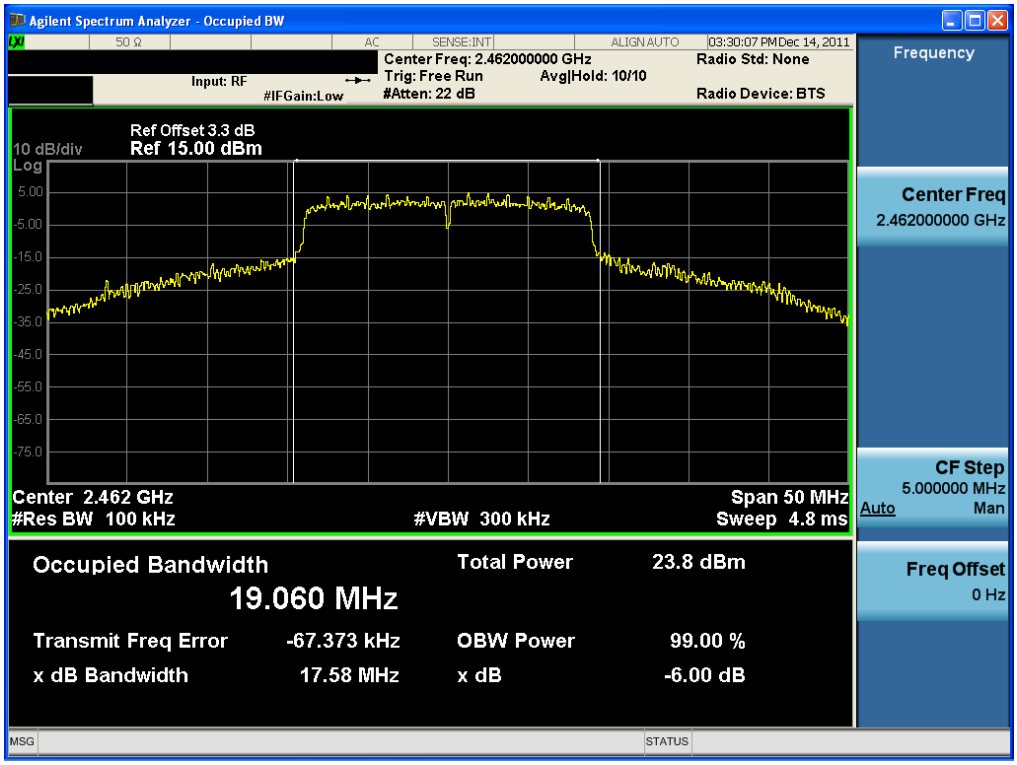
6 dB Bandwidth Lowest Frequency & Test Case 3



6 dB Bandwidth Middle Frequency & Test Case 3



6 dB Bandwidth Highest Frequency & Test Case 3



3.2.2 Peak Output Power

- Test Procedure and Spectrum Analyzer setting:
This is an RF conducted test. Use a direct connection between the antenna port of the transmitter and the Peak power meter, through suitable attenuation. Power Output Option 1 is a peak measurement. Power Output Option 2 is the same procedure used for UNII output power measurements. Either option can be used for DTS devices.

This test items were measured with Power Output Option 1.

- **Measurement Data: Comply**

Test Mode	Frequency	Test Results	
		dBm	W
Test Case 1	Lowest	17.66	0.058
	Middle	17.81	0.060
	Highest	16.88	0.049
Test Case 2	Lowest	21.06	0.128
	Middle	21.80	0.151
	Highest	20.94	0.124
Test Case 3	Lowest	21.12	0.129
	Middle	21.79	0.151
	Highest	20.76	0.119

Minimum Standard:	< 1W

3.2.3 Out of Band Emissions / Band Edge

- Procedure:

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.

For Band-edge testing the spectrum analyzer is set to:

Tested frequency = the highest and the lowest Frequencies
Center frequency = 2400MHz, 2483.5MHz
Span = 100MHz Detector function = peak
RBW = 100 kHz VBW ≥ RBW
Trace = max hold Sweep = auto

For spurious testing the spectrum analyzer is set to:

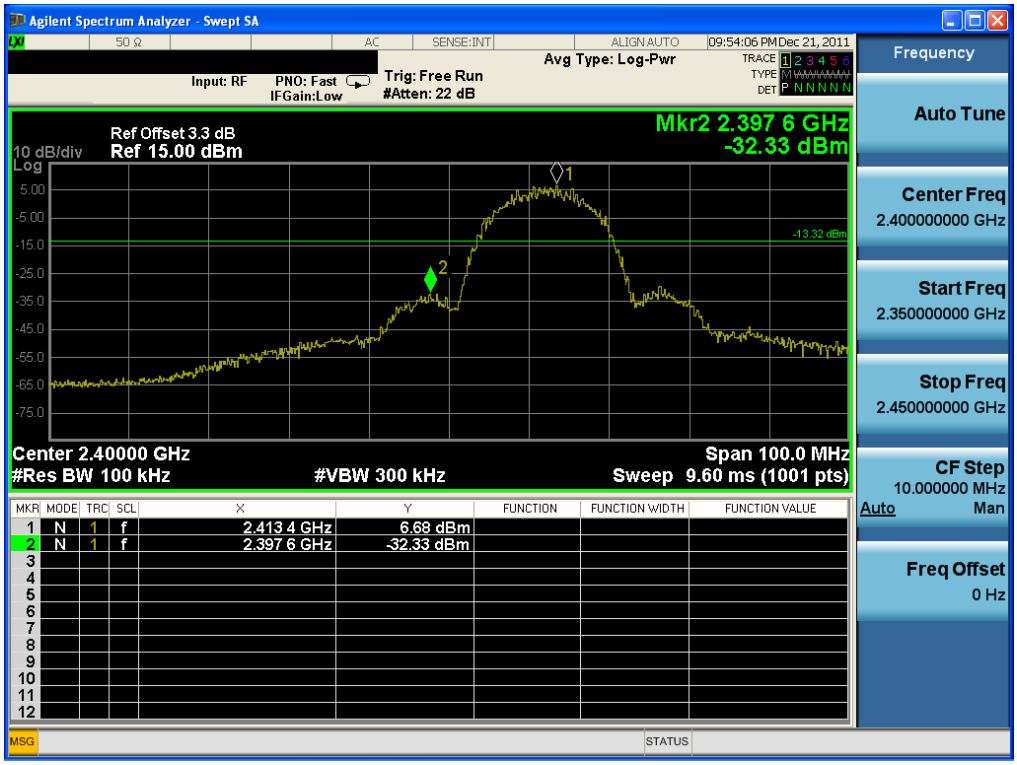
Tested frequency = the highest, middle and the lowest Frequencies
RBW = 100 kHz VBW = 100 kHz
Detector function = peak Sweep = auto
Trace = max hold

- Measurement Data: Comply

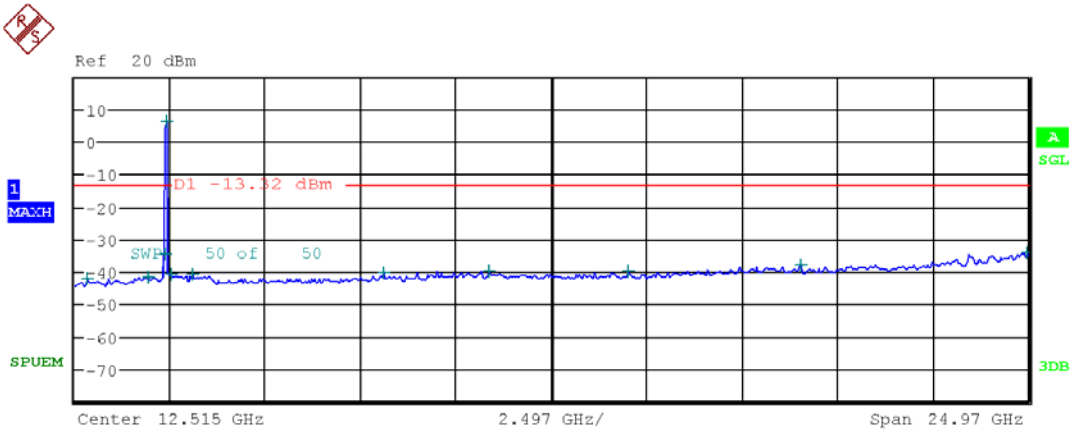
Note 1: See next pages for actual measured spectrum plots.

Minimum Standard:	> 30 dBc

Low Band-edge at 20 dB blow Lowest Frequency & Test case 1

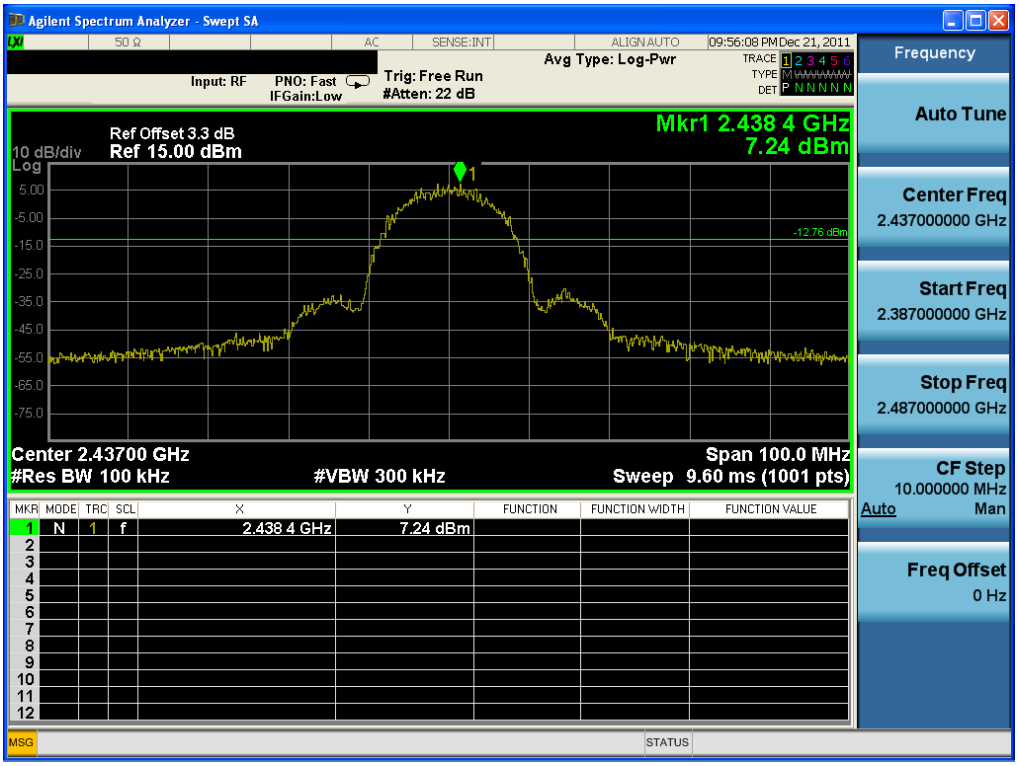


Conducted Spurious Emissions Lowest Frequency & Test case 1

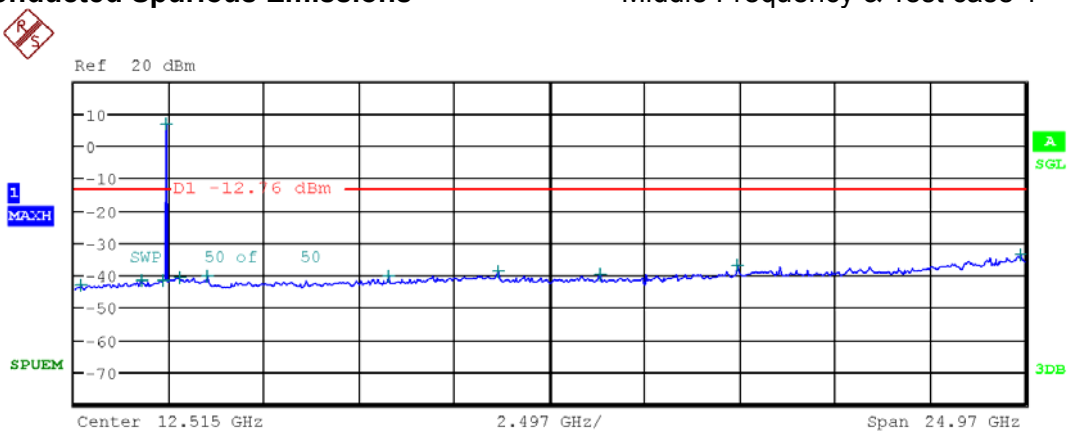


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	100.00 k	344.280000 M	-42.37	-200.00
1.000 G	2.000 G	100.00 k	1.947000 G	-41.68	-200.00
2.000 G	2.400 G	100.00 k	2.396800 G	-34.71	-200.00
2.400 G	2.483 G	100.00 k	2.411961 G	6.25	-200.00
2.483 G	3.000 G	100.00 k	2.546255 G	-40.70	-200.00
3.000 G	6.000 G	100.00 k	3.108667 G	-40.87	-200.00
6.000 G	9.000 G	100.00 k	8.109333 G	-40.39	-200.00
9.000 G	12.000 G	100.00 k	10.893667 G	-39.79	-200.00
12.000 G	15.000 G	100.00 k	14.531333 G	-39.87	-200.00
15.000 G	20.000 G	100.00 k	19.040556 G	-38.10	-200.00
20.000 G	25.000 G	100.00 k	24.962222 G	-34.01	-200.00

Reference for limit Middle Frequency & Test case 1

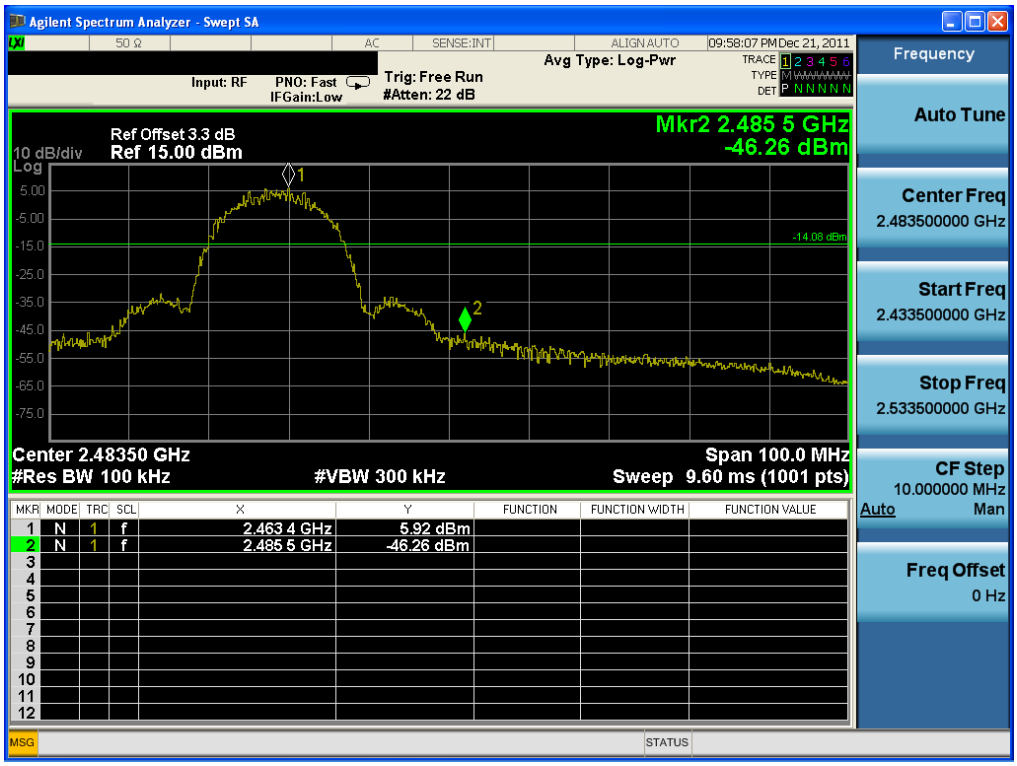


Conducted Spurious Emissions Middle Frequency & Test case 1

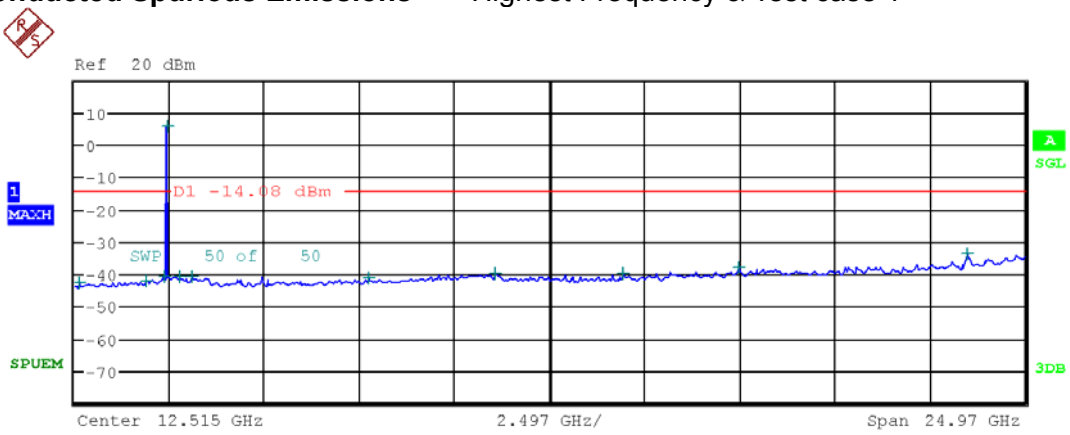


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	206.540000 M	-43.03	-200.00
1.000 G	2.000 G	100.00 k	1.803000 G	-41.81	-200.00
2.000 G	2.400 G	100.00 k	2.333760 G	-41.58	-200.00
2.400 G	2.483 G	100.00 k	2.437742 G	6.76	-200.00
2.483 G	3.000 G	100.00 k	2.809360 G	-40.82	-200.00
3.000 G	6.000 G	100.00 k	3.516000 G	-40.55	-200.00
6.000 G	9.000 G	100.00 k	8.275000 G	-40.54	-200.00
9.000 G	12.000 G	100.00 k	11.145333 G	-38.69	-200.00
12.000 G	15.000 G	100.00 k	13.839000 G	-39.84	-200.00
15.000 G	20.000 G	100.00 k	17.441111 G	-36.99	-200.00
20.000 G	25.000 G	100.00 k	24.873889 G	-33.70	-200.00

High Band-edge at 20 dB blow Highest Frequency & Test case 1



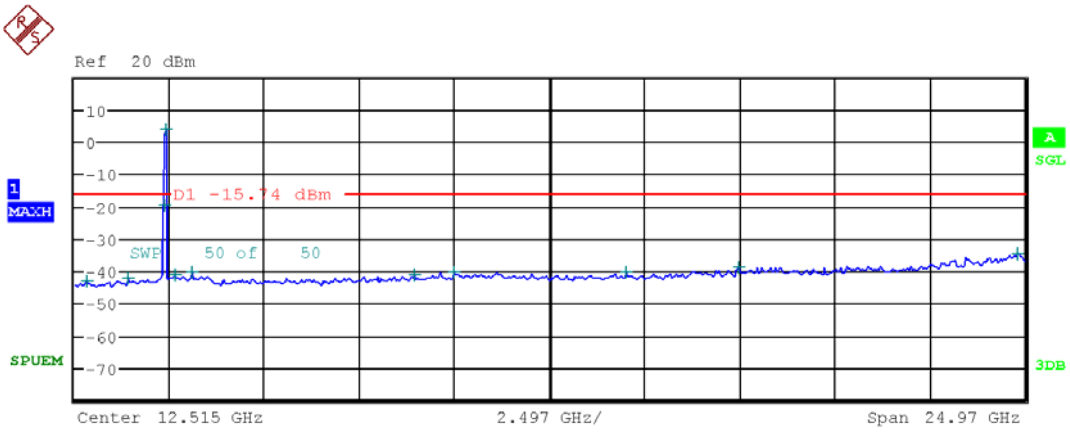
Conducted Spurious Emissions Highest Frequency & Test case 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	168.710000 M	-42.45	-200.00
1.000 G	2.000 G	100.00 k	1.903000 G	-42.12	-200.00
2.000 G	2.400 G	100.00 k	2.390280 G	-40.81	-200.00
2.400 G	2.483 G	100.00 k	2.463397 G	5.81	-200.00
2.483 G	3.000 G	100.00 k	2.799185 G	-40.65	-200.00
3.000 G	6.000 G	100.00 k	3.095000 G	-40.84	-200.00
6.000 G	9.000 G	100.00 k	7.743333 G	-41.49	-200.00
9.000 G	12.000 G	100.00 k	11.074000 G	-39.67	-200.00
12.000 G	15.000 G	100.00 k	14.445667 G	-39.93	-200.00
15.000 G	20.000 G	100.00 k	17.491667 G	-38.10	-200.00
20.000 G	25.000 G	100.00 k	23.481111 G	-33.79	-200.00

Low Band-edge at 20 dB blow Lowest Frequency & Test case 2

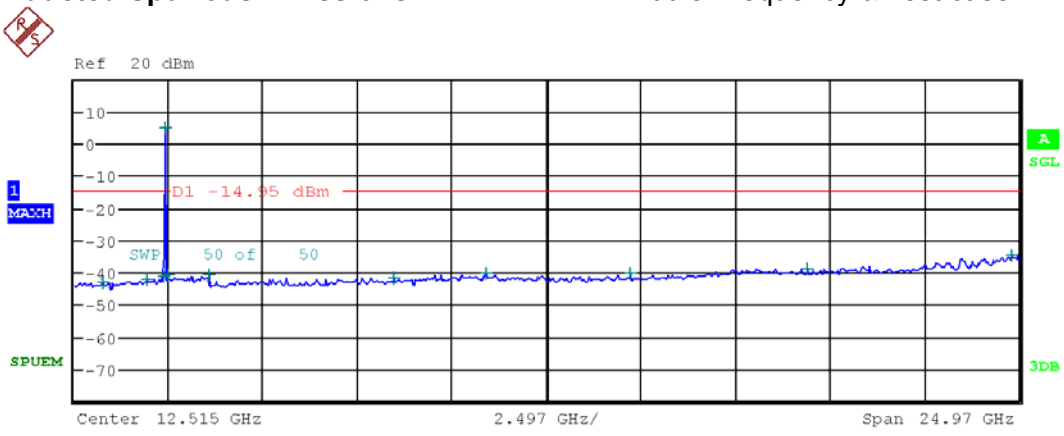
Conducted Spurious Emissions Lowest Frequency & Test case 2



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	343.310000 M	-43.12	-200.00
1.000 G	2.000 G	100.00 k	1.434000 G	-42.33	-200.00
2.000 G	2.400 G	100.00 k	2.397640 G	-19.72	-200.00
2.400 G	2.483 G	100.00 k	2.419476 G	3.77	-200.00
2.483 G	3.000 G	100.00 k	2.672591 G	-41.39	-200.00
3.000 G	6.000 G	100.00 k	3.107333 G	-40.43	-200.00
6.000 G	9.000 G	100.00 k	8.939000 G	-41.24	-200.00
9.000 G	12.000 G	100.00 k	9.985000 G	-40.17	-200.00
12.000 G	15.000 G	100.00 k	14.531667 G	-40.53	-200.00
15.000 G	20.000 G	100.00 k	17.492222 G	-38.79	-200.00
20.000 G	25.000 G	100.00 k	24.797222 G	-34.64	-200.00

Reference for limit Middle Frequency & Test case 2

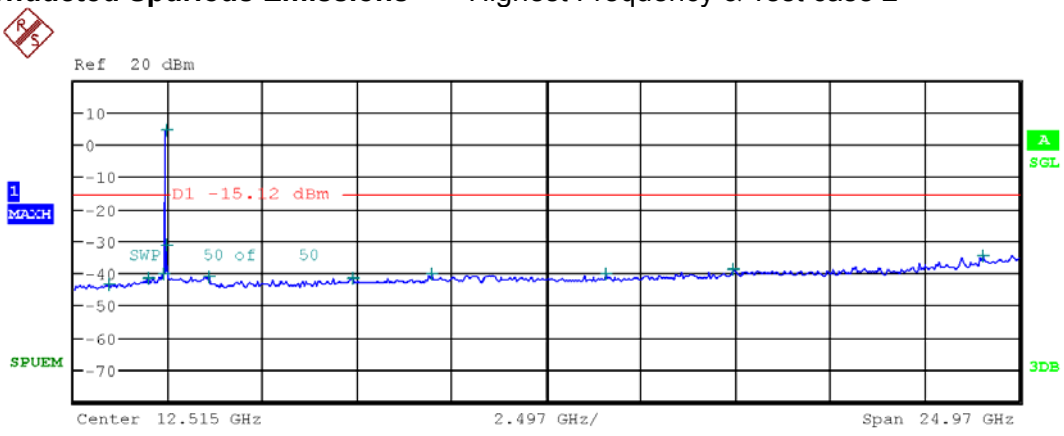
Conducted Spurious Emissions Middle Frequency & Test case 2



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	100.00 k	802.120000 M	-43.02	-200.00
1.000 G	2.000 G	100.00 k	1.956000 G	-42.37	-200.00
2.000 G	2.400 G	100.00 k	2.398280 G	-41.24	-200.00
2.400 G	2.483 G	100.00 k	2.433275 G	4.85	-200.00
2.483 G	3.000 G	100.00 k	2.524252 G	-40.90	-200.00
3.000 G	6.000 G	100.00 k	3.584333 G	-40.97	-200.00
6.000 G	9.000 G	100.00 k	8.460667 G	-41.53	-200.00
9.000 G	12.000 G	100.00 k	10.915667 G	-40.56	-200.00
12.000 G	15.000 G	100.00 k	14.696667 G	-40.48	-200.00
15.000 G	20.000 G	100.00 k	19.406667 G	-38.86	-200.00
20.000 G	25.000 G	100.00 k	24.803889 G	-34.68	-200.00

High Band-edge at 20 dB blow Highest Frequency & Test case 2

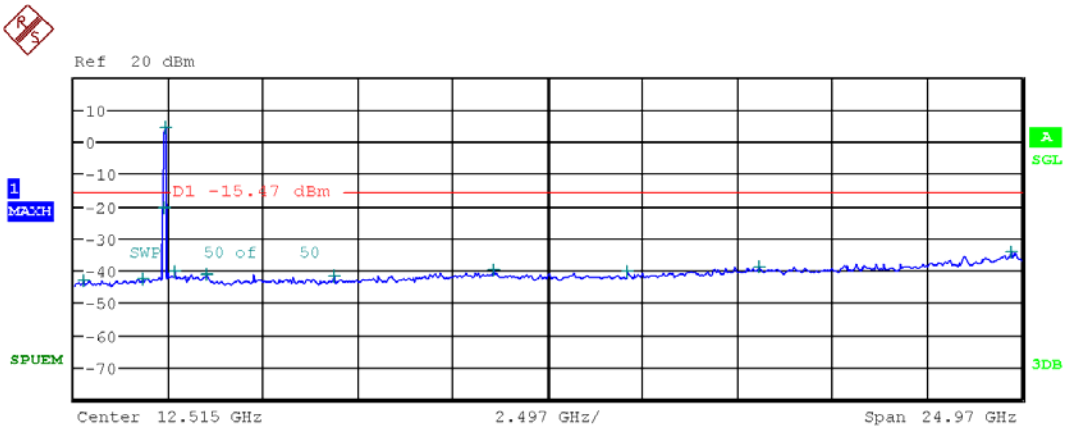
Conducted Spurious Emissions Highest Frequency & Test case 2



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	935.980000 M	-43.47	-200.00
1.000 G	2.000 G	100.00 k	1.996000 G	-41.81	-200.00
2.000 G	2.400 G	100.00 k	2.384400 G	-40.47	-200.00
2.400 G	2.483 G	100.00 k	2.466988 G	4.37	-200.00
2.483 G	3.000 G	100.00 k	2.483603 G	-31.28	-200.00
3.000 G	6.000 G	100.00 k	3.589000 G	-41.09	-200.00
6.000 G	9.000 G	100.00 k	7.398333 G	-41.62	-200.00
9.000 G	12.000 G	100.00 k	9.492667 G	-40.52	-200.00
12.000 G	15.000 G	100.00 k	14.095000 G	-40.14	-200.00
15.000 G	20.000 G	100.00 k	17.446111 G	-39.12	-200.00
20.000 G	25.000 G	100.00 k	24.031667 G	-34.79	-200.00

Low Band-edge at 20 dB blow Lowest Frequency & Test case 3

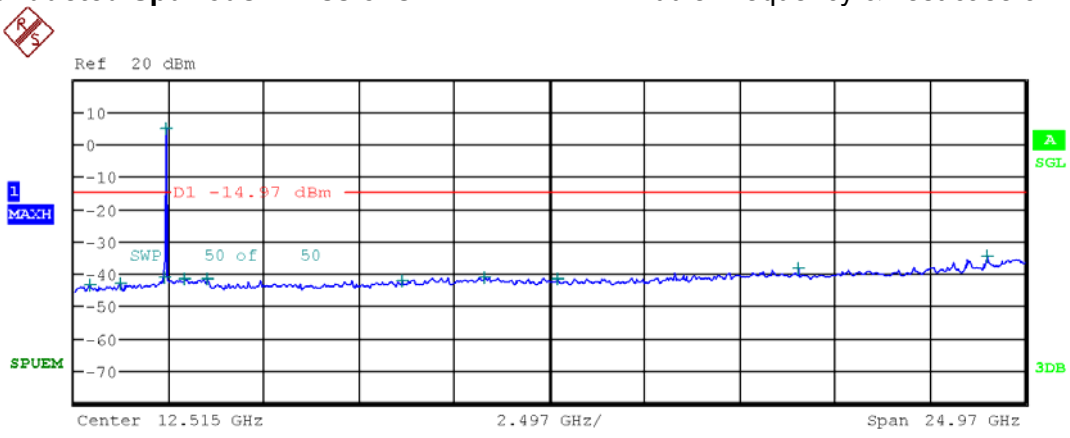
Conducted Spurious Emissions Lowest Frequency & Test case 3



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	264.740000 M	-43.20	-200.00
1.000 G	2.000 G	100.00 k	1.816000 G	-42.57	-200.00
2.000 G	2.400 G	100.00 k	2.398000 G	-20.62	-200.00
2.400 G	2.483 G	100.00 k	2.419497 G	4.10	-200.00
2.483 G	3.000 G	100.00 k	2.657870 G	-40.14	-200.00
3.000 G	6.000 G	100.00 k	3.527333 G	-41.34	-200.00
6.000 G	9.000 G	100.00 k	6.880333 G	-41.60	-200.00
9.000 G	12.000 G	100.00 k	11.090333 G	-39.99	-200.00
12.000 G	15.000 G	100.00 k	14.601333 G	-40.43	-200.00
15.000 G	20.000 G	100.00 k	18.068333 G	-38.76	-200.00
20.000 G	25.000 G	100.00 k	24.713889 G	-34.29	-200.00

Reference for limit Middle Frequency & Test case 3

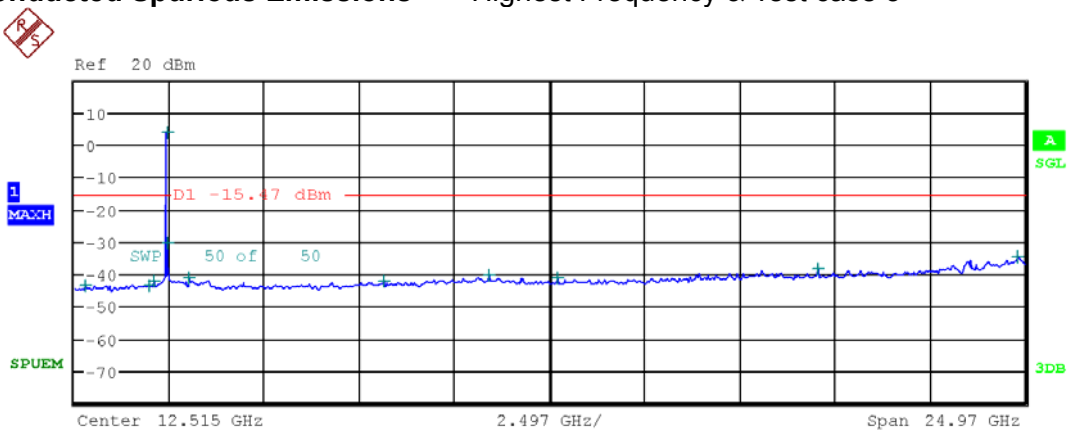
Conducted Spurious Emissions Middle Frequency & Test case 3



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	100.00 k	441.280000 M	-43.47	-200.00
1.000 G	2.000 G	100.00 k	1.238000 G	-43.22	-200.00
2.000 G	2.400 G	100.00 k	2.389760 G	-41.43	-200.00
2.400 G	2.483 G	100.00 k	2.435738 G	4.79	-200.00
2.483 G	3.000 G	100.00 k	2.901555 G	-41.64	-200.00
3.000 G	6.000 G	100.00 k	3.498667 G	-41.76	-200.00
6.000 G	9.000 G	100.00 k	8.651667 G	-42.05	-200.00
9.000 G	12.000 G	100.00 k	10.797667 G	-41.06	-200.00
12.000 G	15.000 G	100.00 k	12.718000 G	-41.52	-200.00
15.000 G	20.000 G	100.00 k	19.022778 G	-38.68	-200.00
20.000 G	25.000 G	100.00 k	23.995000 G	-34.86	-200.00

High Band-edge at 20 dB blow Highest Frequency & Test case 3

Conducted Spurious Emissions Highest Frequency & Test case 3



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	310.330000 M	-43.58	-200.00
1.000 G	2.000 G	100.00 k	1.988000 G	-43.53	-200.00
2.000 G	2.400 G	100.00 k	2.120680 G	-42.18	-200.00
2.400 G	2.483 G	100.00 k	2.466988 G	3.67	-200.00
2.483 G	3.000 G	100.00 k	2.484120 G	-30.46	-200.00
3.000 G	6.000 G	100.00 k	3.026000 G	-41.50	-200.00
6.000 G	9.000 G	100.00 k	8.159333 G	-42.39	-200.00
9.000 G	12.000 G	100.00 k	10.895667 G	-40.55	-200.00
12.000 G	15.000 G	100.00 k	12.703333 G	-41.37	-200.00
15.000 G	20.000 G	100.00 k	19.563889 G	-38.29	-200.00
20.000 G	25.000 G	100.00 k	24.810000 G	-34.85	-200.00

3.2.4 Out of band Emission – Radiated

- Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:
Tested frequency = Low, Middle, High Frequencies
Frequency Range = 30 MHz ~ 10th harmonic.
RBW and VBW = 1. Frequency range: 30MHz ~ 1GHz
RBW = 120KHz / VBW = ≥ RBW
2. Frequency range: 1GHz ~ 10th harmonics
Peak mode: RBW = 1MHz / VBW = ≥ RBW
Average mode: RBW = 1MHz / VBW = 10Hz
Detector function = Peak Sweep = auto
Trace = max hold

- Measurement Data: Comply

Note 1: See next pages for actual measured spectrum plots and data.

- Minimum Standard:

▪ FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	3600 ~ 4400	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	4.5 ~ 5.15	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	5.35 ~ 5.46	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	7.25 ~ 7.75	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	8.025 ~ 8.5	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.0 ~ 9.2	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	9.3 ~ 9.5	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	10.6 ~ 12.7	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900	13.25 ~ 13.4	
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240			
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ FCC Part 15.205(b): The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 1)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.748	H	X axis	QP	36.20	0.80	37.00	46.00	9.00
2386.720	H	Z axis	PK	69.50	-3.75	65.75	74.00	8.25
2387.280	H	Z axis	AV	40.92	-3.75	37.17	54.00	16.83
4820.660	H	X axis	PK	45.30	5.89	51.19	74.00	22.81
4832.380	H	X axis	AV	32.10	5.89	37.99	54.00	16.01

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.759	H	X axis	QP	36.20	0.80	37.00	46.00	9.00
4872.770	H	X axis	PK	44.79	4.86	49.65	74.00	24.35
4873.930	H	X axis	AV	32.34	4.86	37.20	54.00	16.80

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.744	H	X axis	QP	35.80	0.80	36.60	46.00	9.40
2483.781	V	Z axis	PK	66.20	-3.75	62.45	74.00	11.55
2483.715	V	Z axis	AV	38.95	-3.75	35.20	54.00	18.80
4926.250	H	X axis	PK	44.05	6.34	50.39	74.00	23.61
4924.510	H	X axis	AV	32.13	6.34	38.47	54.00	15.53

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 2)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.752	H	X axis	QP	35.80	0.80	36.60	46.00	9.40
2387.680	V	X axis	PK	60.64	-3.75	56.89	74.00	17.11
2390.000	V	X axis	AV	41.26	-3.75	37.51	54.00	16.49
4824.330	H	X axis	PK	44.82	5.89	50.71	74.00	23.29
4827.180	H	X axis	AV	31.80	5.89	37.69	54.00	16.31

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.758	H	X axis	QP	36.10	0.80	36.90	46.00	9.10
4875.790	H	X axis	PK	45.07	4.86	49.93	74.00	24.07
4876.480	H	X axis	AV	32.15	4.86	37.01	54.00	16.99

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.759	H	X axis	QP	35.70	0.80	36.50	46.00	9.50
2483.698	H	Z axis	PK	58.53	-3.75	54.78	74.00	19.22
2483.533	H	Z axis	AV	41.25	-3.75	37.50	54.00	16.50
4924.630	H	X axis	PK	43.32	6.34	49.66	74.00	24.34
4925.380	H	X axis	AV	31.91	6.34	38.25	54.00	15.75

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 3)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.764	H	X axis	QP	35.80	0.80	36.60	46.00	9.40
2389.520	V	Z axis	PK	64.69	-3.75	60.94	74.00	13.06
2390.000	V	Z axis	AV	42.37	-3.75	38.62	54.00	15.38
4823.350	H	X axis	PK	45.04	5.89	50.93	74.00	23.07
4825.310	H	X axis	AV	31.84	5.89	37.73	54.00	16.27

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.748	H	X axis	QP	35.70	0.80	36.50	46.00	9.50
4874.920	H	X axis	PK	44.59	4.86	49.45	74.00	24.55
4875.350	H	X axis	AV	35.22	4.86	40.08	54.00	13.92

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.751	H	X axis	QP	36.30	0.80	37.10	46.00	8.90
2484.490	V	Z axis	PK	60.13	-3.75	56.38	74.00	17.62
2483.500	V	Z axis	AV	41.28	-3.75	37.53	54.00	16.47
4924.120	H	X axis	PK	44.14	6.34	50.48	74.00	23.52
4923.410	H	X axis	AV	31.97	6.34	38.31	54.00	15.69

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

3.2.5 Transmitter Power Spectral Density

- Procedure:

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used. Use PSD Option 1 if Power output Option 1 was used. Use PSD Option 2 if power output Option 2 was used.

This test item was measured with PSD Option 1.

The spectrum analyzer is set to:
Center frequency = the highest, middle and the lowest Frequencies
Span = 900KHz
RBW = 3KHz
VBW = ≥ RBW
Sweep = 300s
Trace = max hold

- Measurement Data: Comply

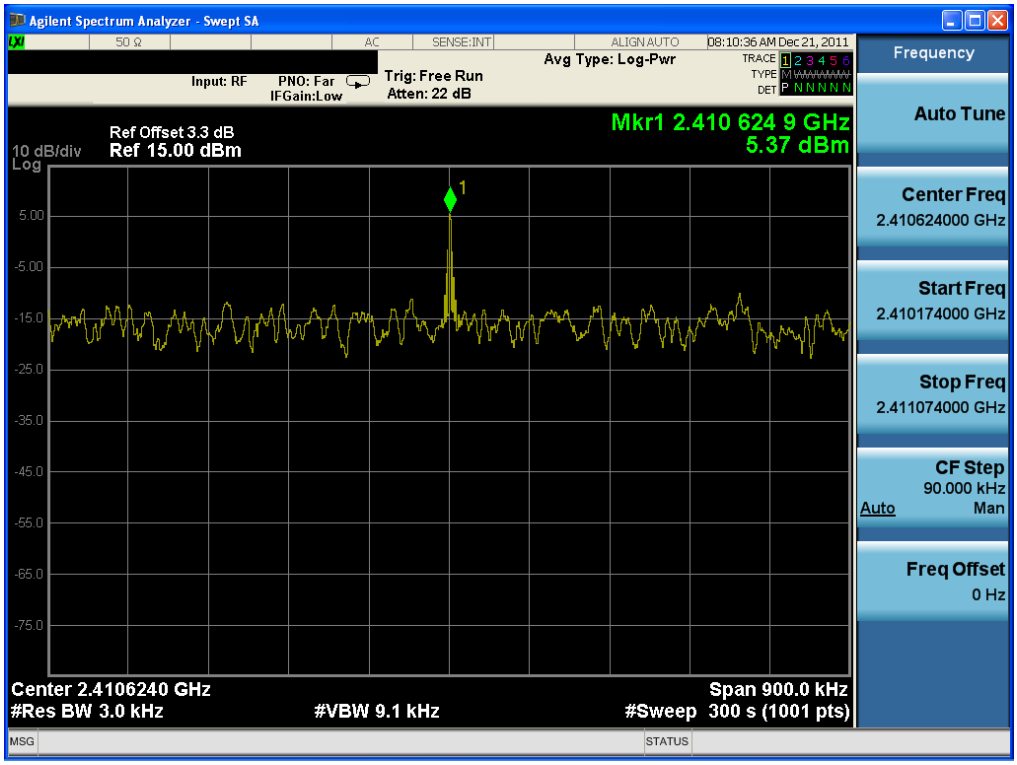
Test Mode	Frequency	Test Results (dBm)
Test case 1	Lowest	5.37
	Middle	5.28
	Highest	4.42
Test case 2	Lowest	-11.05
	Middle	-10.10
	Highest	-10.84
Test case 3	Lowest	-9.90
	Middle	-9.78
	Highest	-10.16

Note 1: See next pages for actual measured spectrum plots.

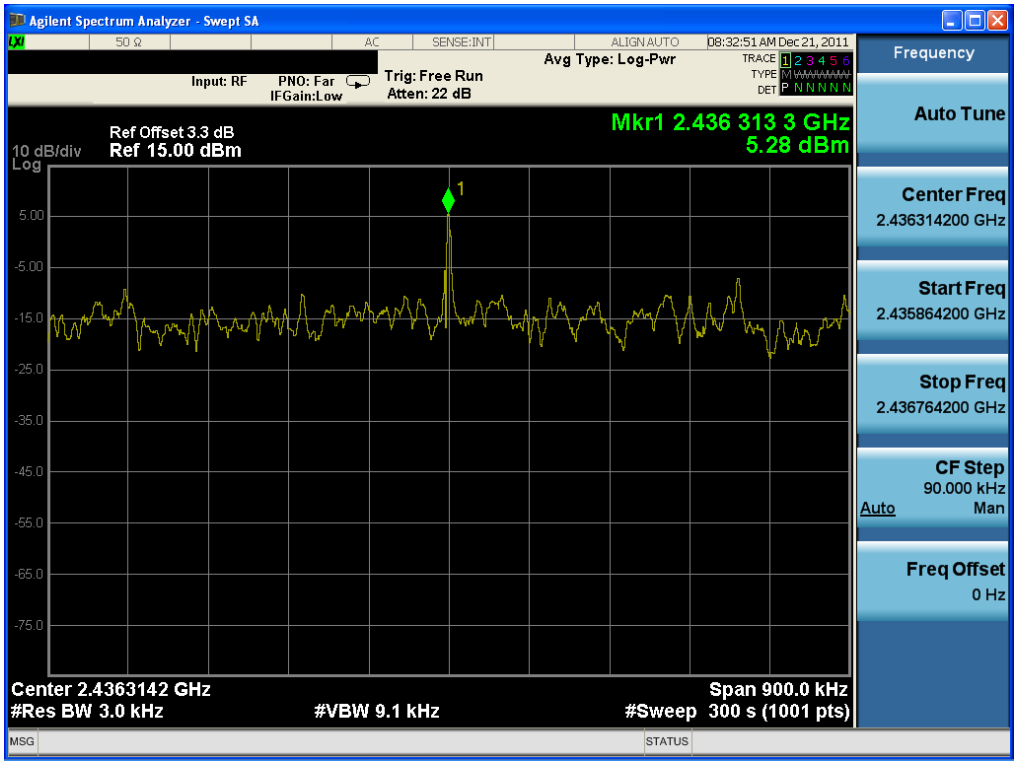
- Minimum Standard:

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3kHz BW.

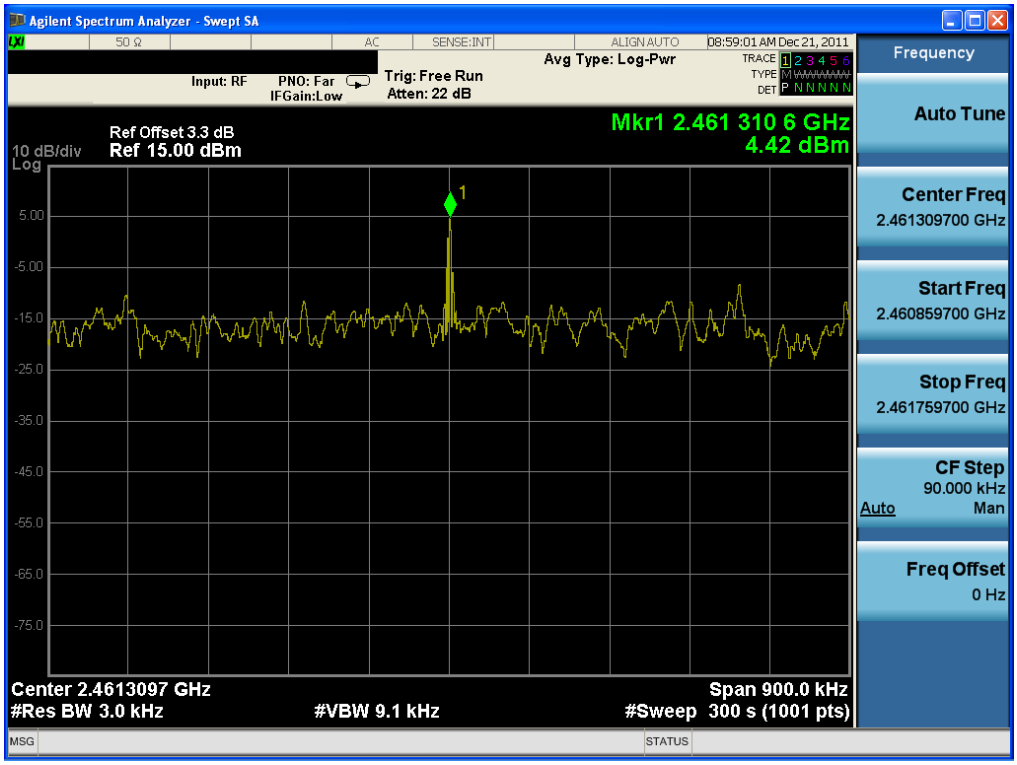
Transmitter Power Spectral Density Lowest Frequency & Test Case 1



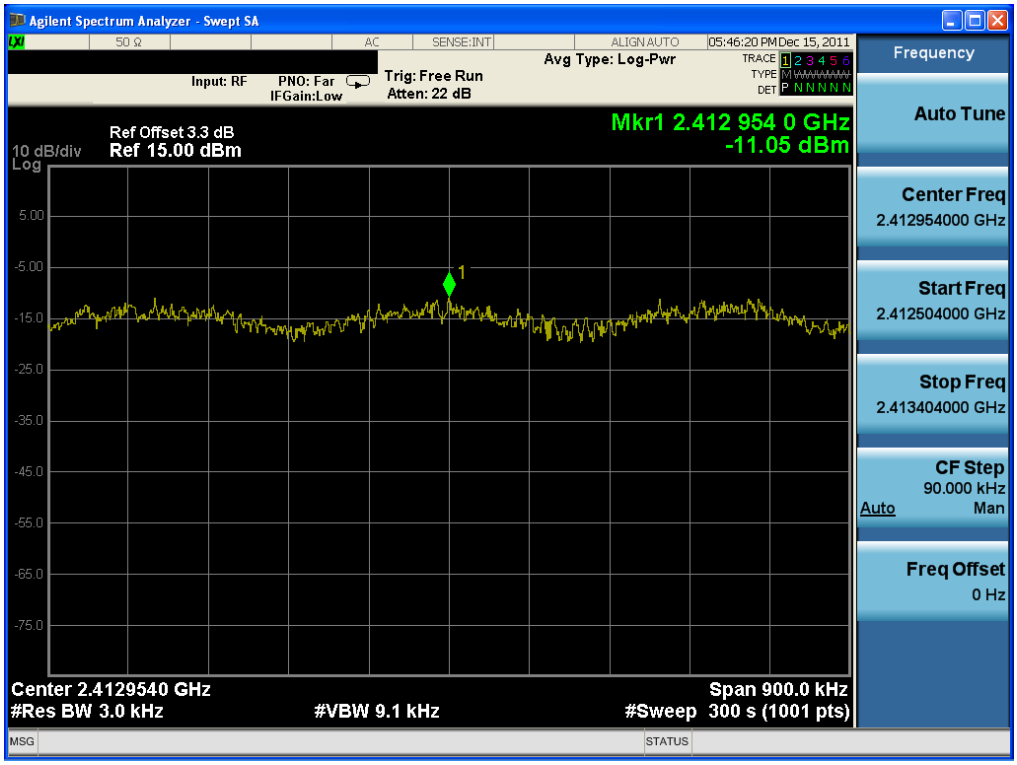
Transmitter Power Spectral Density Middle Frequency & Test Case 1



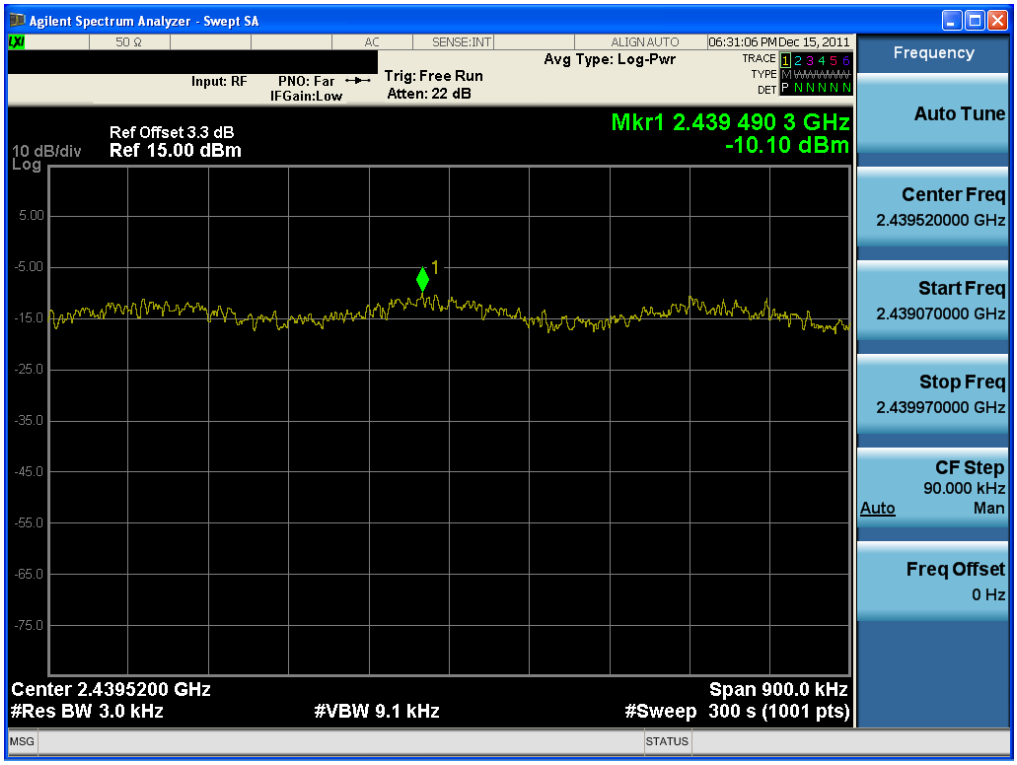
Transmitter Power Spectral Density Highest Frequency & Test Case 1



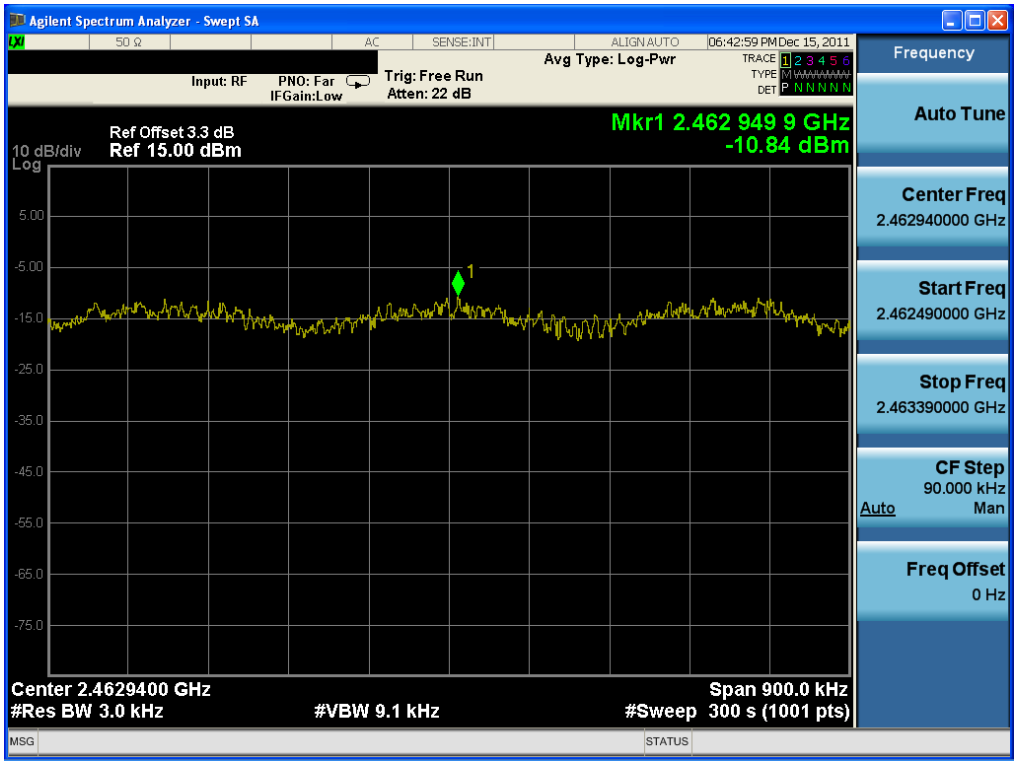
Transmitter Power Spectral Density Lowest Frequency & Test Case 2



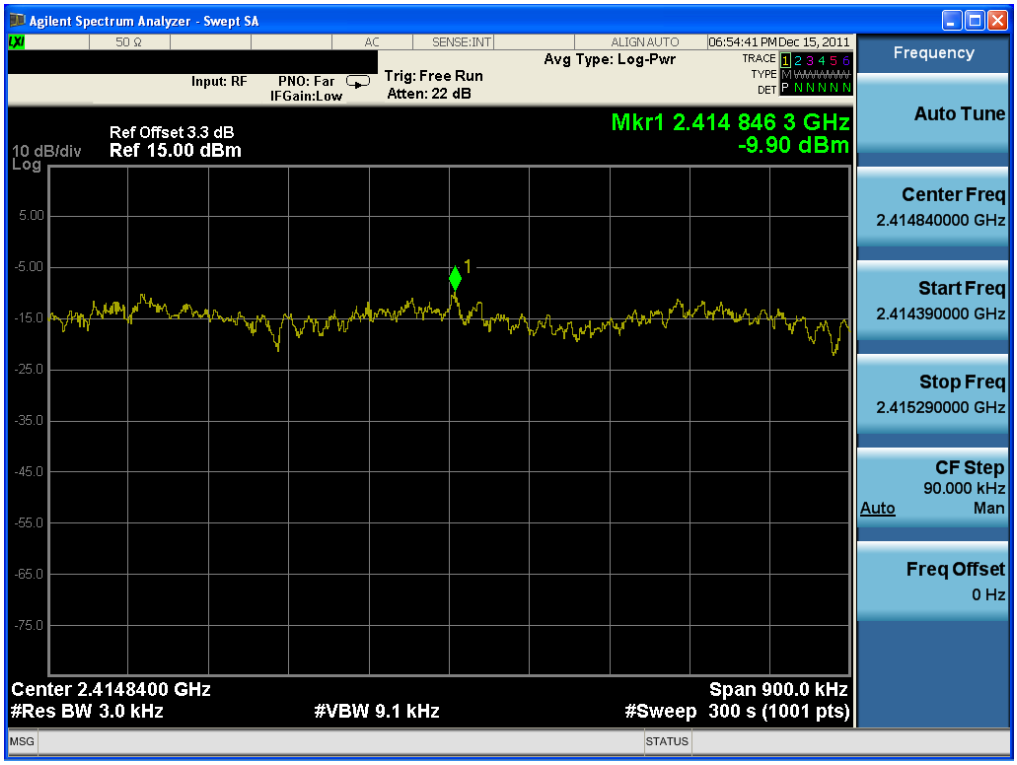
Transmitter Power Spectral Density Middle Frequency & Test Case 2



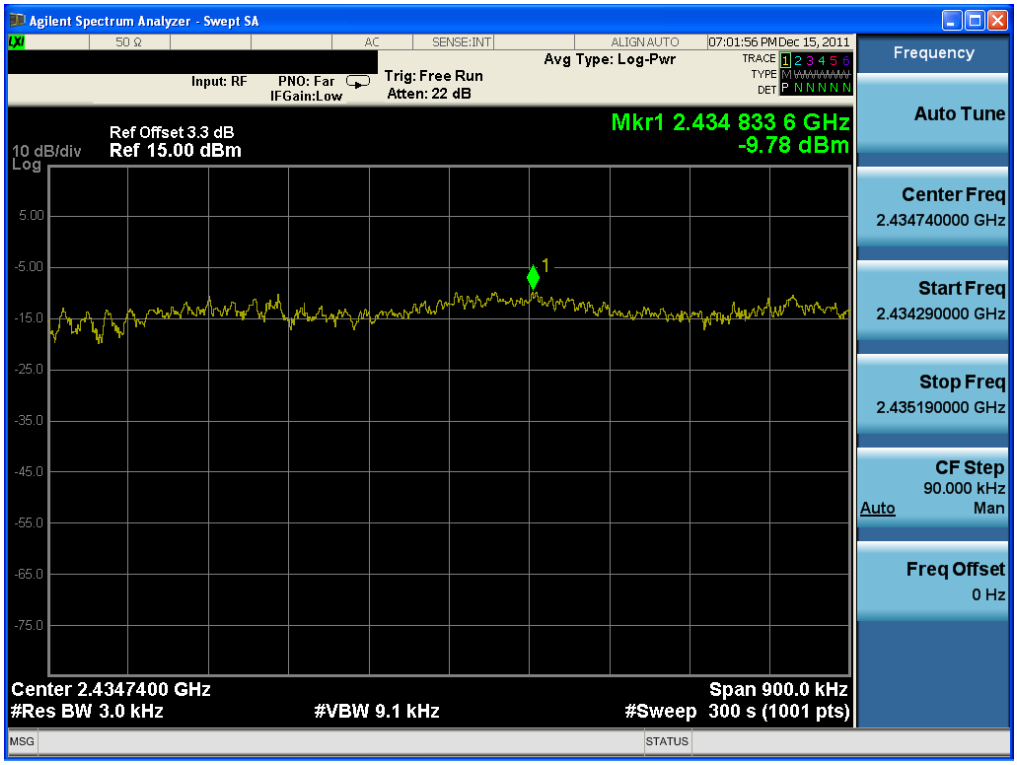
Transmitter Power Spectral Density Highest Frequency & Test Case 2



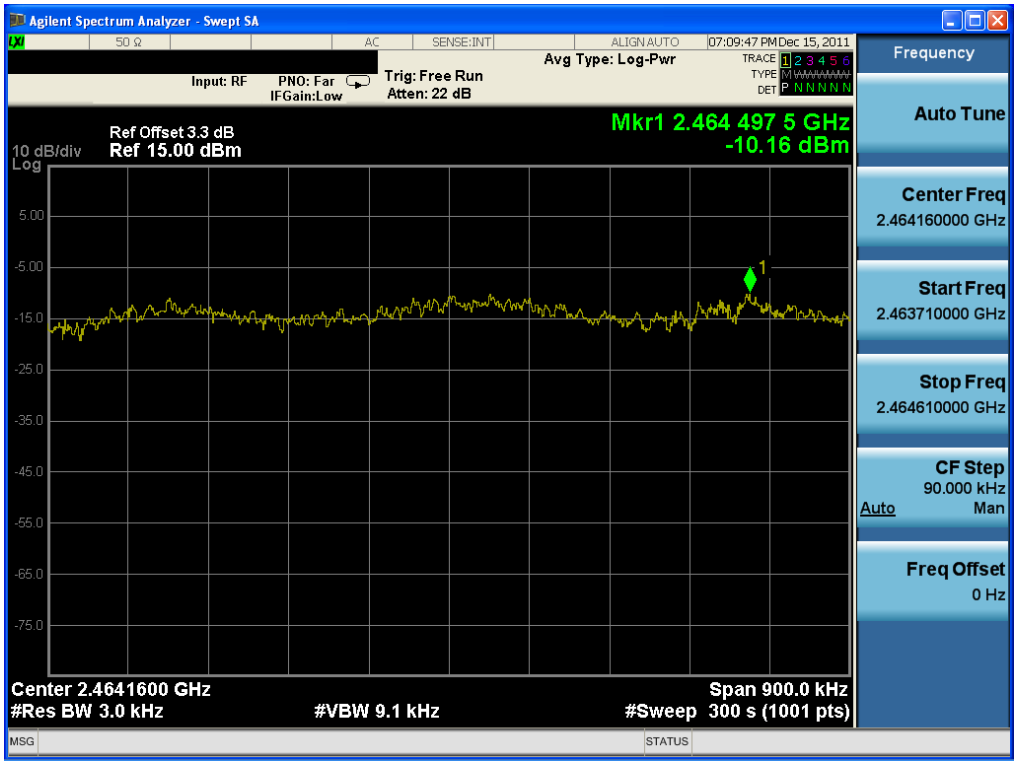
Transmitter Power Spectral Density Lowest Frequency & Test Case 3



Transmitter Power Spectral Density Middle Frequency & Test Case 3



Transmitter Power Spectral Density Highest Frequency & Test Case 3



3.2.6 AC Conducted Emissions

- Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

- Measurement Data: N/A

Note 3: The product does not use the ac adaptor and TA. It is a vehicle mounting the product.

- Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

3.2.7 Antenna Requirements

- Procedure:

Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

- Conclusion: Comply

→ The antenna type is a SMD antenna. The antenna is attached permanently using soldering.
(Refer to External photo file.)

- Minimum Standard:

> An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions.

3.2.8 Occupied Bandwidth (99%)

- Procedure: (RSS-Gen Issue 3)
- The 99% power bandwidth was measured with a calibrated spectrum analyzer.
- Spectrum analyzer plots are included on the following pages.

- Measurement Data: Comply

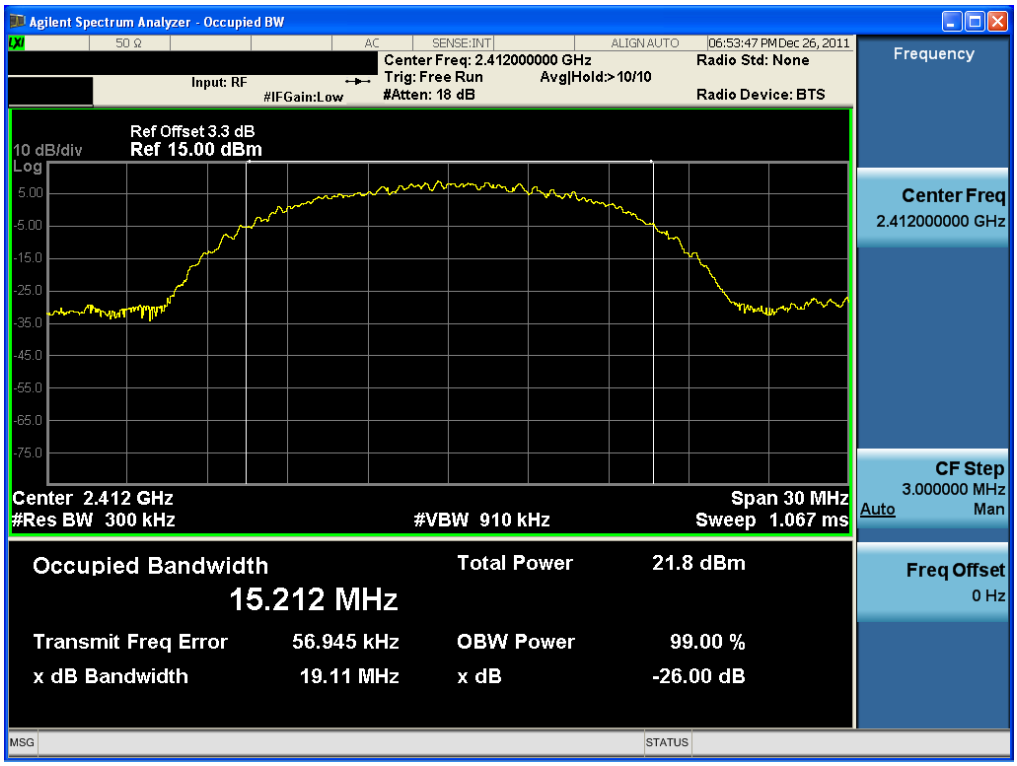
Test Mode	Tested Channel	Test Results (MHz)
Test Case 1	Lowest	15.212
	Middle	15.168
	Highest	15.258
Test Case 2	Lowest	16.815
	Middle	16.753
	Highest	16.811
Test Case 3	Lowest	17.654
	Middle	17.602
	Highest	17.652

Note 1: See next pages for actual measured spectrum plots.

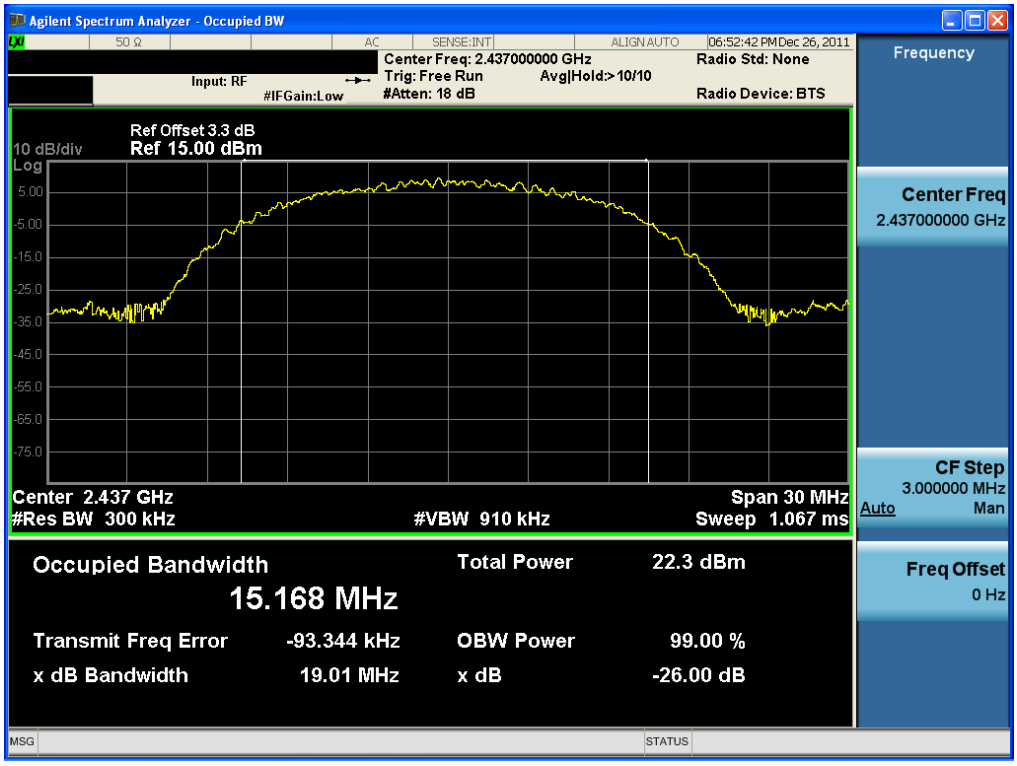
- **Minimum Standard:**

N/A

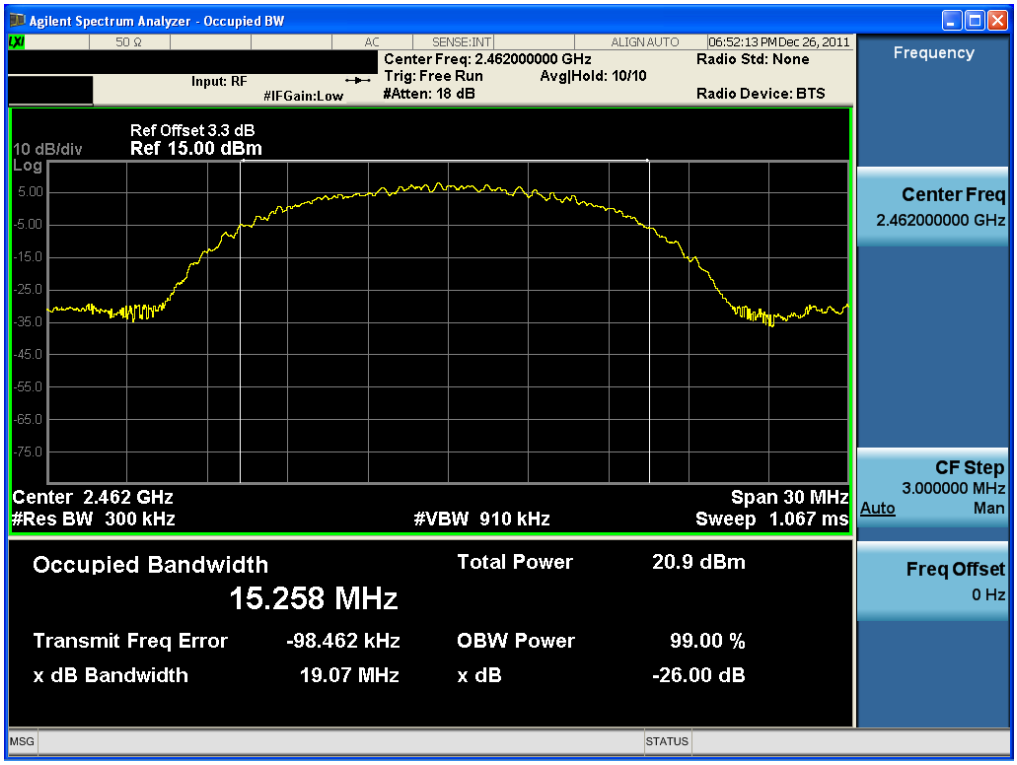
Occupied Bandwidth (99%) Lowest Frequency & Test Case 1



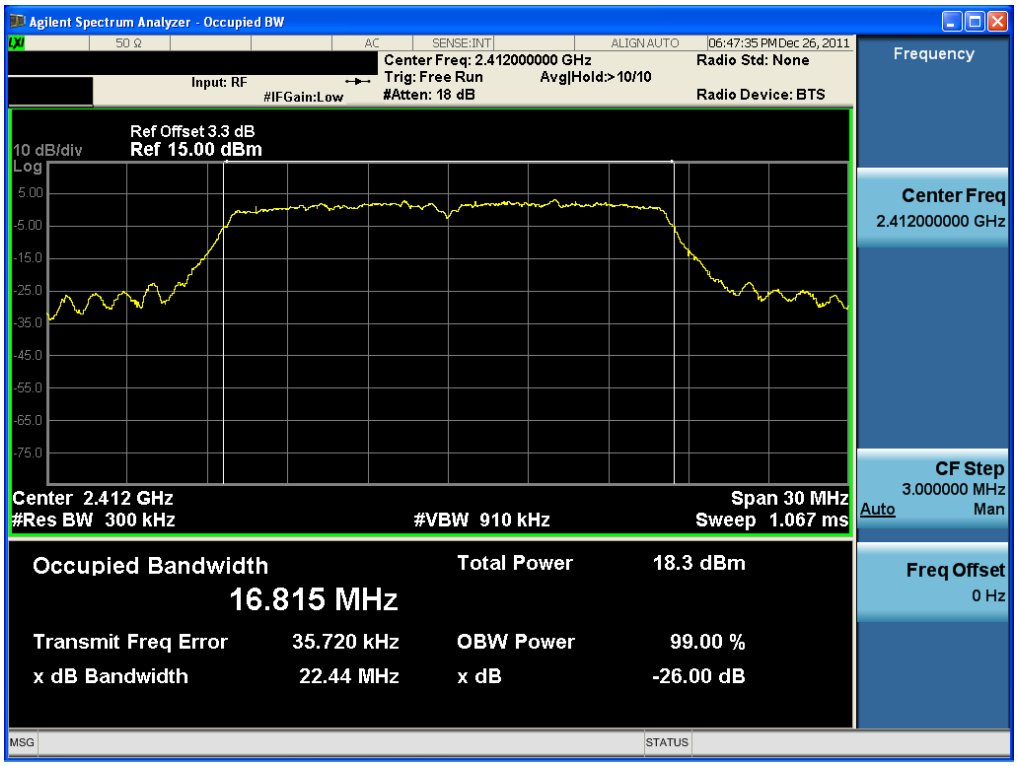
Occupied Bandwidth (99%) Middle Frequency & Test Case 1



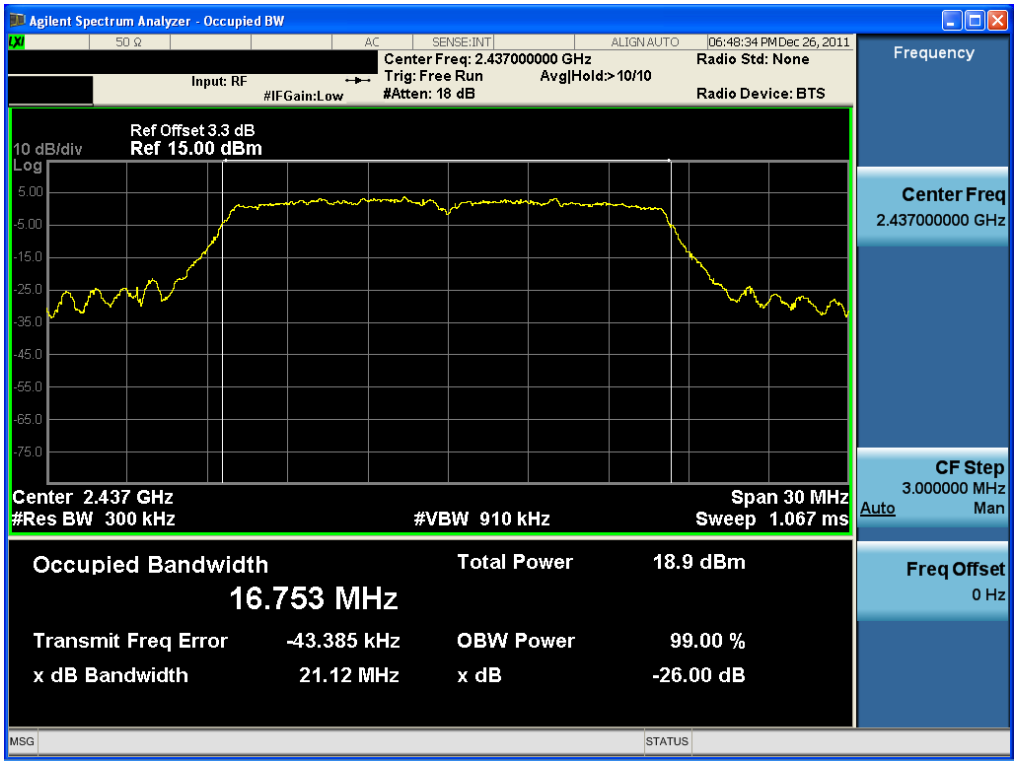
Occupied Bandwidth (99%) Highest Frequency & Test Case 1



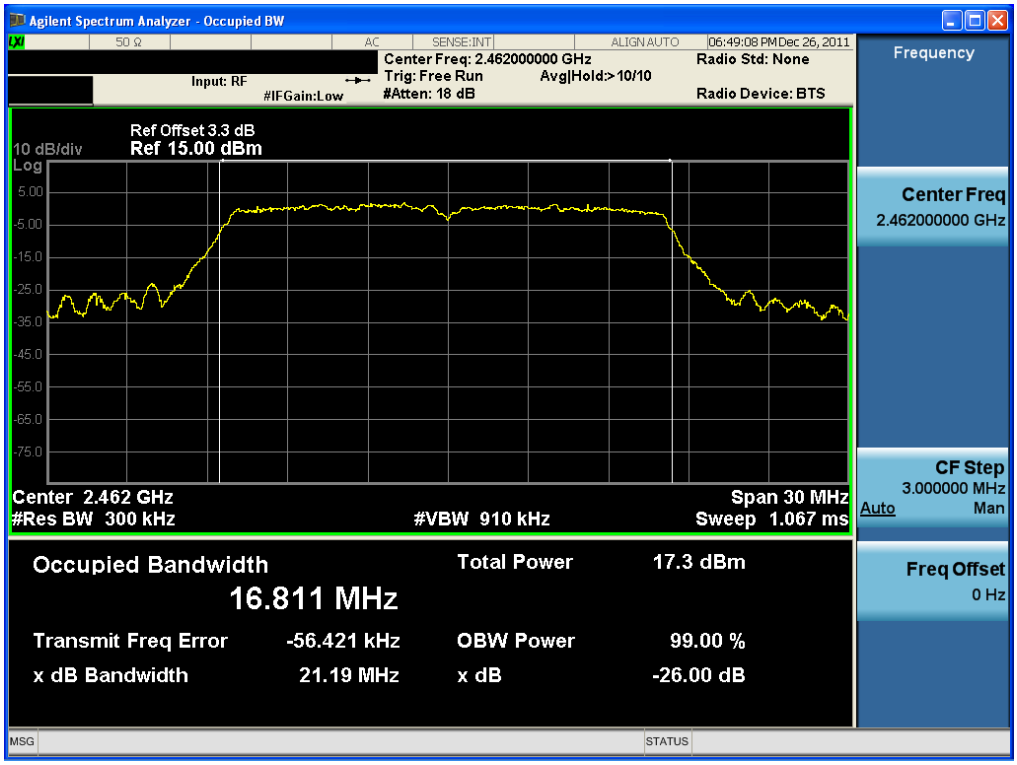
Occupied Bandwidth (99%) Lowest Frequency & Test Case 2



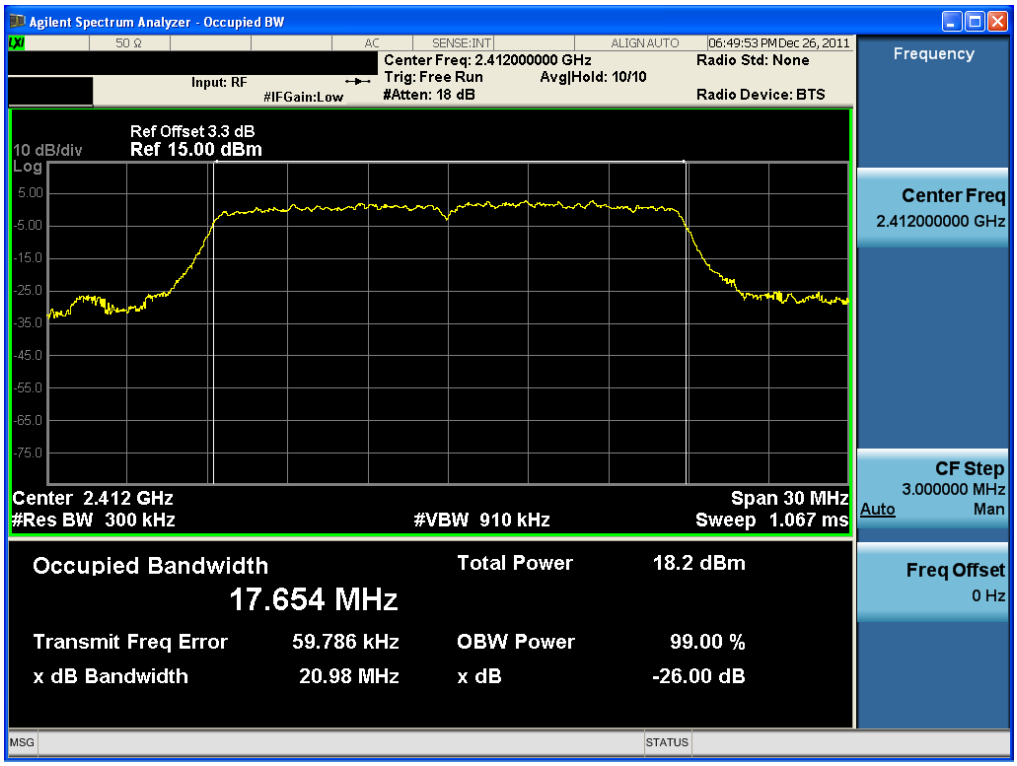
Occupied Bandwidth (99%) Middle Frequency & Test Case 2



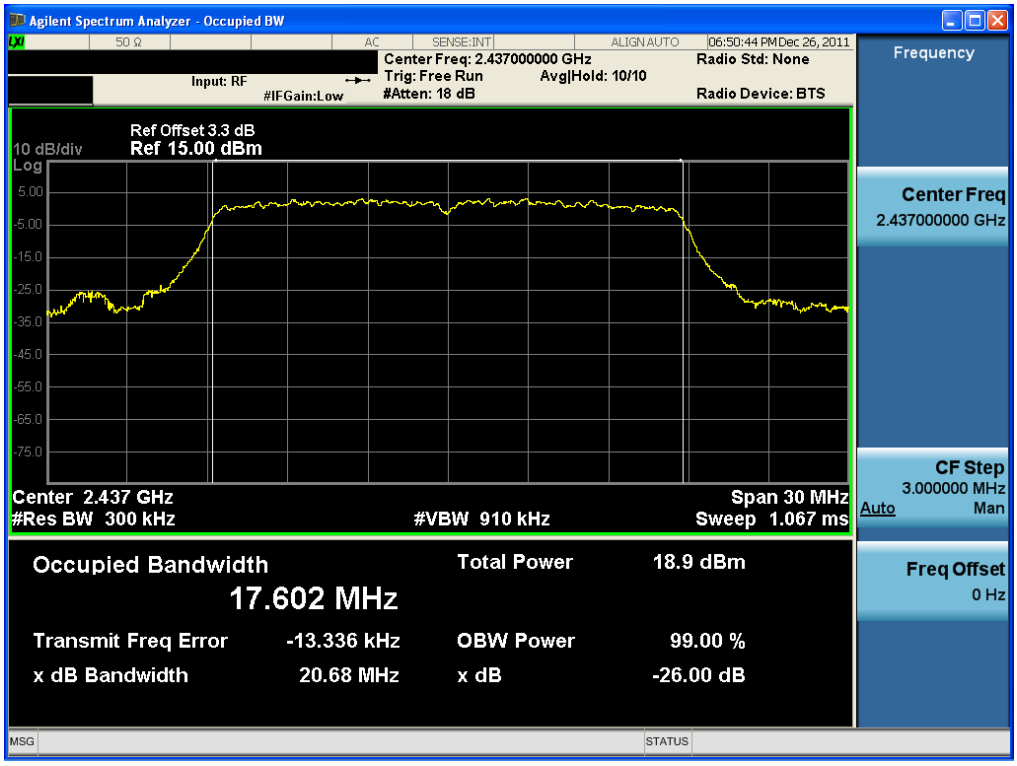
Occupied Bandwidth (99%) Highest Frequency & Test Case 2



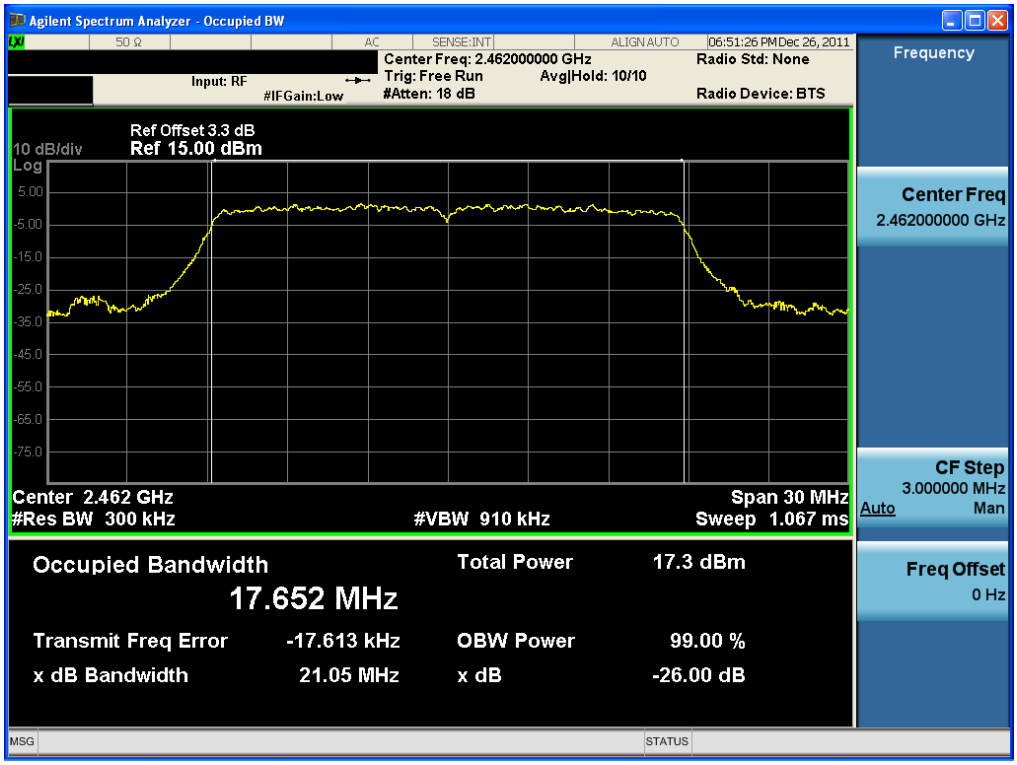
Occupied Bandwidth (99%) Lowest Frequency & Test Case 3



Occupied Bandwidth (99%) Middle Frequency & Test Case 3



Occupied Bandwidth (99%) Highest Frequency & Test Case 3



3.3 Receiver requirements

3.3.1 AC Conducted Emissions (Receiver Mode)

- Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its receiving function. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

- Measurement Data: N/A

Note 3: The product does not use the ac adaptor and TA. It is a vehicle mounting the product.

- Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

3.3.2 Out of Band Emissions – Radiated (Receiver Mode)

- Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in a OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10th harmonic.

RBW = 120 kHz (30MHz ~ 1 GHz)
= 1 MHz (1 GHz ~ 10th harmonic)

VBW = 10Hz (Average), VBW ≥ RBW (Peak)

Trace = max hold

Detector function = peak

Sweep = auto

- Measurement Data: Comply (Refer to the Next page)

Note 1: This test item was performed at Ant 1 and at Ant 2. And the worst case data were reported.

Note 2: See next pages for measured data.

- Minimum Standard: FCC Part 15.109(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 1)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.752	H	X axis	QP	35.50	0.80	36.30	46.00	9.70
1350.000	V	X axis	PK	51.20	-11.60	39.60	74.00	34.40
1361.250	V	X axis	AV	47.70	-11.60	36.10	54.00	17.90

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.771	H	X axis	QP	35.60	0.80	36.40	46.00	9.60
1362.500	V	X axis	PK	50.90	-11.60	39.30	74.00	34.70
1361.300	V	X axis	AV	45.50	-11.60	33.90	54.00	20.10

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.754	H	X axis	QP	36.10	0.80	36.90	46.00	9.10
1350.000	V	X axis	PK	51.30	-11.60	39.70	74.00	34.30
1361.250	V	X axis	AV	47.60	-11.60	36.00	54.00	18.00

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 2)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.760	H	X axis	QP	35.80	0.80	36.60	46.00	9.40
1350.000	V	X axis	PK	51.00	-11.60	39.40	74.00	34.60
1361.138	V	X axis	AV	46.20	-11.60	34.60	54.00	19.40

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.746	H	X axis	QP	35.30	0.80	36.10	46.00	9.90
1350.000	V	X axis	PK	50.80	-11.60	39.20	74.00	34.80
1361.250	V	X axis	AV	47.40	-11.60	35.80	54.00	18.20

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.758	H	X axis	QP	35.90	0.80	36.70	46.00	9.30
1350.000	V	X axis	PK	51.20	-11.60	39.60	74.00	34.40
1361.075	V	X axis	AV	47.20	-11.60	35.60	54.00	18.40

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

30MHz ~ 25GHz Radiated Spurious Emissions (Test Case 3)

▪ Lowest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.752	H	X axis	QP	35.60	0.80	36.40	46.00	9.60
1350.000	V	X axis	PK	50.90	-11.60	39.30	74.00	34.70
1361.400	V	X axis	AV	45.80	-11.60	34.20	54.00	19.80

▪ Middle Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.764	H	X axis	QP	35.90	0.80	36.70	46.00	9.30
1350.000	V	X axis	PK	50.60	-11.60	39.00	74.00	35.00
1361.425	V	X axis	AV	47.50	-11.60	35.90	54.00	18.10

▪ Highest Channel

Freq. (MHz)	ANT Pol	The worst case EUT Position	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
783.754	H	X axis	QP	35.40	0.80	36.20	46.00	9.80
1362.500	V	X axis	PK	51.10	-11.60	39.50	74.00	34.50
1361.135	V	X axis	AV	47.60	-11.60	36.00	54.00	18.00

Note.

1. No other spurious and harmonic emissions were reported greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

APPENDIX

TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
☐	Spectrum Analyzer	Agilent	E4440A	11/09/30	12/09/30	MY45304199
☒	Spectrum Analyzer	Rohde Schwarz	FSQ26	11/01/11	12/01/11	200445
☐	Spectrum analyzer	Agilent	E4404B	11/03/08	12/03/08	US41061134
☐	Spectrum Analyzer(RE)	H.P	8563E	11/10/04	12/10/04	3551A04634
☒	MXA Signal Analyzer	Agilent Technologies, Inc	N9020A	11/01/07	12/01/07	MY49100833
☐	Power Meter	H.P	EPM-442A	11/07/01	12/07/01	GB37170413
☐	Power Sensor	H.P	8481A	11/07/01	12/07/01	3318A96332
☒	Wideband Power Sensor	Rohde Schwarz	NRP-Z81	11/06/04/	12/06/04	1137.9009.02-101001
☒	Virtual Power Meter(S/W)	Rohde Schwarz	R&S Power Viewer Plus	-	-	V 4.1.0
☐	Power Divider	Agilent	11636B	11/09/30	12/09/30	56471
☐	4-Way Power Divider	ET Industries	D-0526-4	11/12/01	12/12/01	210195001
☐	Power Splitter	Anritsu	K241B	11/09/30	12/09/30	020611
☐	Power Splitter	Anritsu	K241B	11/07/01	12/07/01	017060
☐	Power Splitters & Dividers	Aeroflex/Weinschel	1594	11/02/21	12/02/21	1177
☐	Frequency Counter	H.P	5342A	11/07/01	12/07/01	2119A04450
☐	TEMP & HUMIDITY Chamber	JISCO	KR-100/J-RHC2	11/09/30	12/09/30	30604493/021031
☒	Digital Multimeter	H.P	34401A	11/03/07	12/03/07	3146A13475, US36122178
☐	Multifunction Synthesizer	HP	8904A	11/10/06	12/10/06	3633A08404
☒	Signal Generator	Rohde Schwarz	SMR20	11/03/08	12/03/08	101251
☐	Signal Generator	H.P	ESG-3000A	11/07/01	12/07/01	US37230529
☐	Vector Signal Generator	Rohde Schwarz	SMJ100A	11/01/11	12/01/11	100148
☒	Vector Signal Generator	Rohde Schwarz	SMBV100A	11/01/11	12/01/11	255571
☐	Audio Analyzer	H.P	8903B	11/07/02	12/07/02	3011A09448
☐	Modulation Analyzer	H.P	8901B	11/07/01	12/07/01	3028A03029
☐	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	11/03/07	12/03/07	GB43461134
☐	Universal Radio communication Tester	Rohde Schwarz	CMU200	11/03/07	12/03/07	106760
☐	Bluetooth Tester	TESCOM	TC-3000B	11/07/01	12/07/01	3000B000268
☐	Thermo hygrometer	BODYCOM	BJ5478	11/01/13	12/01/13	090205-3
☒	Thermo hygrometer	BODYCOM	BJ5478	11/01/13	12/01/13	090205-2
☐	Thermo hygrometer	BODYCOM	BJ5478	11/01/13	12/01/13	090205-4
☐	AC Power supply	DAEKWANG	5KVA	11/03/08	12/03/08	20060321-1
☐	DC Power Supply	HP	6622A	11/03/07	12/03/07	3448A03760
☒	DC Power Supply	HP	6633A	11/03/07	12/03/07	3524A06634
☐	DC Power Supply	Protek	PWS-3010D	11/09/30	12/09/30	4072702
☐	DC Power Supply	SM techno	SDP30-5D	11/05/20	12/05/20	305DKA013
☐	BAND Reject Filter	Microwave Circuits	N0308372	11/09/30	12/09/30	3125-01DC0352
☐	BAND Reject Filter	Wainwright	WRCG1750	11/09/30	12/09/30	2
☐	High-Pass Filter	ANRITSU	MP526D	11/09/30	12/09/30	M27756

	Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
☐	High-pass filter	Wainwright	WHNX2.1	11/09/30	12/09/30	1
☒	High-pass filter	Wainwright	WHNX3.0	11/09/30	12/09/30	9
☐	High-pass filter	Wainwright	WHNX5.0	11/09/19	12/09/19	8
☐	High-Pass Filter	Wainwright	WHKX8.5	11/09/19	12/09/19	1
☐	High-Pass Filter	Wainwright	WHKX1.0	11/09/30	12/09/30	9
☐	Tunable Notch Filter	Wainwright	WRCT800.0 /960.0-0.2/40-8SSK	N/A	N/A	32
☐	Tunable Notch Filter	Wainwright	WRCD1700.0 /2000.0-0.2/40-10SSK	N/A	N/A	53
☐	Tunable Notch Filter	Wainwright	WRCT1900.0/ 2200.0-5/40-10SSK	N/A	N/A	30
☐	HORN ANT	ETS	3115	11/09/06	12/09/06	21097
☒	HORN ANT	ETS	3115	11/03/22	12/03/22	6419
☒	HORN ANT	A.H.Systems	SAS-574	11/03/25	13/03/25	154
☐	HORN ANT	A.H.Systems	SAS-574	11/03/25	13/03/25	155
☐	HORN ANT	SCHWARZBECK	BBHA9120A	10/04/13	12/04/13	322
☐	Dipole Antenna	Schwarzbeck	VHA9103	11/11/22	12/11/22	2116
☐	Dipole Antenna	Schwarzbeck	VHA9103	11/11/22	12/11/22	2117
☐	Dipole Antenna	Schwarzbeck	UHA9105	11/11/22	12/11/22	2261
☐	Dipole Antenna	Schwarzbeck	UHA9105	11/11/22	12/11/22	2262
☐	LOOP Antenna	ETS	6502	10/10/29	12/10/29	3471
☐	Coaxial Fixed Attenuators	Agilent	8491B	11/07/02	12/07/02	MY39260700
☐	Attenuator (3dB)	WEINSCHEL	56-3	11/09/30	12/09/30	Y2342
☐	Attenuator (3dB)	WEINSCHEL	56-3	11/09/30	12/09/30	Y2370
☐	Attenuator (10dB)	WEINSCHEL	23-10-34	11/09/30	12/09/30	BP4386
☐	Attenuator (10dB)	WEINSCHEL	23-10-34	11/01/11	12/01/11	BP4387
☐	Attenuator (10dB)	WEINSCHEL	86-10-11	11/09/30	12/09/30	446
☐	Attenuator (10dB)	WEINSCHEL	86-10-11	11/09/30	12/09/30	408
☐	Attenuator (20dB)	WEINSCHEL	86-20-11	11/09/30	12/09/30	432
☐	Attenuator (30dB)	JFW	50FH-030-300	11/03/07	12/03/07	060320-1
☐	Attenuator (40dB)	WEINSCHEL	57-40-33	11/09/30	12/09/30	NN837
☐	Termination	H.P	HP-909D	11/07/02	12/07/02	02750
☐	Termination	H.P	HP-909D	11/07/02	12/07/02	02702
☐	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0088CAN	11/07/01	12/07/01	788
☐	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0185CAN	11/07/01	12/07/01	790
☐	Amplifier (30dB)	Agilent	8449B	11/03/07	12/03/07	3008A01590
☒	Amplifier (30dB)	H.P	8449B	11/03/07	12/03/07	3008A00370
☐	Amplifier	EMPOWER	BBS3Q7ELU	11/09/30	12/09/30	1020
☐	RF Power Amplifier	OPHIRRF	5069F	11/07/01	12/07/01	1006
☒	EMI TEST RECEIVER	R&S	ESU	11/01/20	12/01/20	100014

	Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
☒	BILOG ANTENNA	SCHAFFNER	CBL6112B	10/07/14	12/07/14	2737
☒	Amplifier (22dB)	H.P	8447E	11/01/11	12/01/11	2945A02865
☐	EMI TEST RECEIVER	R&S	ESCI	11/03/08	12/03/08	100364
☐	BICONICAL ANT.	Schwarzbeck	VHA 9103	10/11/29	12/11/29	91032789
☐	LOG-PERIODIC ANT.	Schwarzbeck	UHALP9108A1	10/11/29	12/11/29	1098
☐	BICONICAL ANT.	Schwarzbeck	VHA 9103	10/12/21	12/12/21	91031946
☐	LOG-PERIODIC ANT.	Schwarzbeck	UHALP9108A1	10/07/07	12/07/07	0590
☐	Low Noise Pre Amplifier	TSJ	MLA-100K01-B01-2	11/03/07	12/03/07	1252741
☐	Low Noise Pre Amplifier	TSJ	MLA-00108-B02-36	11/01/11	12/01/11	1518831
☐	Amplifier (25dB)	Agilent	8447D	11/03/07	12/03/07	2944A10144
☐	Amplifier (25dB)	Agilent	8447D	11/07/01	12/07/01	2648A04922
☐	Spectrum Analyzer(CE)	H.P	8591E	11/03/07	12/03/07	3649A05889
☐	LISN	Kyoritsu	KNW-407	11/01/11	12/01/11	8-317-8
☐	LISN	Kyoritsu	KNW-242	11/07/02	12/07/02	8-654-15
☐	CVCF	NF Electronic	4420	11/03/08	12/03/08	304935/337980
☐	50 ohm Terminator	HME	CT-01	11/01/11	12/01/11	N/A
☐	RFI/FIELD Intensity Meter	Kyoritsu	KNM-2402	11/07/02	12/07/02	4N-170-3
☐	Wideband Radio Communication Tester	R&S	CMW500	11/09/30	12/09/30	100989