

Produkte
Products

Prüfbericht - Nr.: 19660245 001		Seite 1 von 49	
<i>Test Report No.:</i>		<i>Page 1 of 49</i>	
Auftraggeber: <i>Client:</i>	HANDHELD GROUP AB Kinnegatan 17 A 531 33 Lidköping Sweden Tel: +46 (0) 510-54 71 70		
Gegenstand der Prüfung: <i>Test item:</i>	Rugged 7" Tablet		
Bezeichnung: <i>Identification:</i>	118207	Serien-Nr.: <i>Serial No.</i>	Engineering Sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	1803156247	Eingangsdatum: <i>Date of receipt:</i>	20.07.2016
Prüfort: <i>Testing location:</i>	Refer Page 4 of 49 for test facilities		
Prüfgrundlage: <i>Test specification:</i>	FCC Part 2, Part 22H, Part 24E , Part 27 & RSS 132 Issue 3, RSS 133 Issue 6 & RSS 139 Issue 3, ANSI C63.10-2013 & TIA-603-D-2010		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test items passed the test specification(s).</i>		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India FCC Registration No.: 176555 & IC OATS Reg. Number.: 3466E		
geprüft / tested by:		kontrolliert / reviewed by:	
13.10.2016	Shrikanth S Naik Sr. Engineer	19.10.2016	Saibaba Siddapur Assistant Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			
			
Sonstiges / Other Aspects:		FCC ID: YY3-118207 & IC: 11695A-118207	
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>			

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Test Result Summary

Test Item	Clause		Result
	FCC	IC	
RF Output Power – Conducted Mode	FCC Part 2.1046	RSS 132 Issue 3 section 5.4, SRSP-503 section 5.1.3 & RSS 133 Issue 6 section 4.1/6.4, SRSP-510.5.1.2 & RSS 139 Issue 3 section 6.5	Pass
99% Occupied Bandwidth & 26dB Emission Bandwidth	FCC Part 2.1049	RSS-Gen Issue 4 section 6.6	Pass
Band Edge Compliance	FCC Part 2.1051, 22.917(a)(b), 24.238(a)(b), 27.53(h)	RSS 132 Issue 3 section 5.5(i)(ii), & RSS 133 Issue 6 section 6.5.1 (i)(ii) & RSS 139 Issue 3 section 6.6(i)(ii)	Pass
Conducted Spurious Emission	FCC Part 2.1051, 22.917(a)(b) 24.238(a)(b) ,27.53(h)	RSS 132 Issue 3 section 5.5 (i)(ii) & RSS 133 Issue 6 section 6.5.1 (i)(ii) & RSS 139 Issue 3 section 6.6(i)(ii)	Pass
Frequency Stability	FCC Part 2.1055(a)(1), 22.355, 24.235, 27.54	RSS 132 Issue 3 section 5.3 & RSS 133 Issue 6 section 6.3 & RSS Issue 3 section 6.4	Pass
RF Output Power (ERP/EIRP) – Radiated Mode	FCC Part 2.1046, 22.913(a)(2) 24.232(c),27.50(d)(4)	RSS 132 Issue 3 section 5.4, SRSP-503 section 5.1.3 & RSS 133 Issue 6 section 4.1/6.4, SRSP-510.5.1.2 & RSS 139 Issue 3 section 6.5	Pass
Field Strength of Spurious Radiation	FCC Part 2.1053(a), 22.917(a)(b), 24.238(a)(b), 27.53(h)	RSS 132 Issue 3 section 5.5 (i)(ii) & RSS 133 Issue 6 section 6.5.1 (i)(ii) & RSS 139 Issue 3 section 6.6(i)(ii)	Pass

Note: Testing Performed according to the procedure given in 971168 D01 Power Meas License Digital Systems v02r02.

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List of Test and Measurement Instruments

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	23.11.2016	Yearly	Spurious Radiated Emissions
Broadband Antenna	Frankonia	ALX-4000	ALX-4000-806	20.01.2017	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2016	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	14.03.2017	Yearly	
Double-Ridged Waveguide Horn Antenna	ETS Lindgren	116706	00107323	02.11.2016	Yearly	
Anechoic Chamber	Frankonia	-	-		-	
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	23.04.2017	Yearly	Antenna - Port Conducted Tests
Signal Analyzer	Rohde & Schwarz	FSV7	101644	07.12.2016	Yearly	
Environmental Chamber	Envisys	EM80-40H	ET/022/14-15	09.06.2017	Yearly	
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	158345	26.09.2017	Yearly	

Testing Facilities:

TUV Rheinland (India) Private Limited
 108 , Beside ISBR Business School,
 Electronic city Phase I
 Bangalore - 560 100.

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General Product Information

Product Function and Intended Use

The Algiz RT7 is a rugged tablet, designed for use by field personnel in demanding conditions. It integrates best-in-class connectivity with efficient computing and multimedia features. The tablet runs Android Lollipop (5.1.1) operating system, and comes pre-installed with many Google applications, including Google Play.

Ratings and System Details

Release Versions	Rel 99, Rel 5 & Rel 6.
Channel Spacing	200kHz
Number of Antenna	One
Antenna Gain and Antenna type	0dBi & Integrated Antenna
Supply Voltage to Product	Internal Battery Pack -> 3.7- 4.2 VDC & Adaptor 5VDC to EUT
Environmental	Storage Temperature -> -40°C to +70 °C Operating Temperature-> -20°C to 50°C in humidity up to 95% noncondensing.

Test Conditions:

Supply Voltage: 3.7- 4.2 VDC & Adaptor 5VDC to EUT

Environmental conditions:

Temperature: +24.6 °C RH: 56%

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Equipment used for testing as identified in below Table.

Equipment Used for	S/N Number	IMEI No.	Hardware Version	Software version
Conducted Measurement on Antenna Port	6G010057	911381250014927 & 911381250014935	Engineering Sample	Android 5.1.1, LMY47V'
Radiated Mode Test	6G010310	911381250019983 & 911381250019991	Engineering Sample	Android 5.1.1, LMY47V'

Summary of Measured Power & Emission Designator:

FDD Band	Maximum Power - Conducted Mode (PK)		Measured Output Power (dBm) Radiated Mode	Emission Designator
	dBm	Watt		
2	26.67	0.46451	22.89	4M18F9W
4	26.39	0.43551	21.62	4M19 F9W
5	25.76	0.37670	16.45	4M17 F9W

Note: Product Rugged 7" Tablet has multiple protocols. All the supported wireless protocols and their respective test report numbers are mentioned in the below table.

Radio Protocol	Report Number
NFC	19660243 001
Wi-Fi (IEEE 802.11bgn)	19660240 001
BLE	19660242 001
Bluetooth (BDR+EDR)	19660241 001
GSM	19660244 001
LTE	19660246 001

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Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with help of CMW500 on low, mid and high channel

Test Operation and Test Software

No Special Test software used for enabling the Transmission, SIM inserted in EUT to communicate with CMW500 simulator.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

A ferrite bead was used on the USB cable which is connected to the adaptor (accessory) closer to the DUT during testing. Refer appendix 1 for test setup photos.

Ferrite no. 742 711 12 & 742 717 33 (make: Würth Electronics).

Test Modes – Data Rates and Modulations

For Radiated spurious emissions, the tests were performed for all data rates and only worst case results are reported in this report.

W-CDMA - Frequency List of Low/Mid/High channel				
FDD Band	Channel/Frequency (MHz)	Low	Mid	High
2	Channel No.	9262	9400	9538
	Frequency	1852.4	1880	1907.6
4	Channel No.	1312	1412	1513
	Frequency	1712.4	1732.4	1752.6
5	Channel No.	4132	4183	4233
	Frequency	826.4	836.6	846.6

W-CDMA Frequency band details

FDD Band	Uplink Frequency (MHz)	Downlink Frequency (MHz)
2	1852.4 – 1907.6	1930 – 1990
4	1712.4 – 1752.6	2110 - 2155
5	826.4 – 846.6	869 -894

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Operational description

Whether you're collecting data, crunching numbers or viewing graphics, the Algiz RT7's powerful Qualcomm quad-core processor provides reliable, uninterrupted work performance.

And the Algiz RT7 doesn't just run Android flawlessly — its capacitive touchscreen also enhances the Android experience with five-point multi-touch capability, 600-nit high-brightness sunlight readability and chemically strengthened glass.

Yet the Algiz RT7 also meets stringent MIL-STD-810G military standards for withstanding extreme temperatures, drops and vibrations, and its IP65 rating means it's waterproof and fully protected against sand and dust.

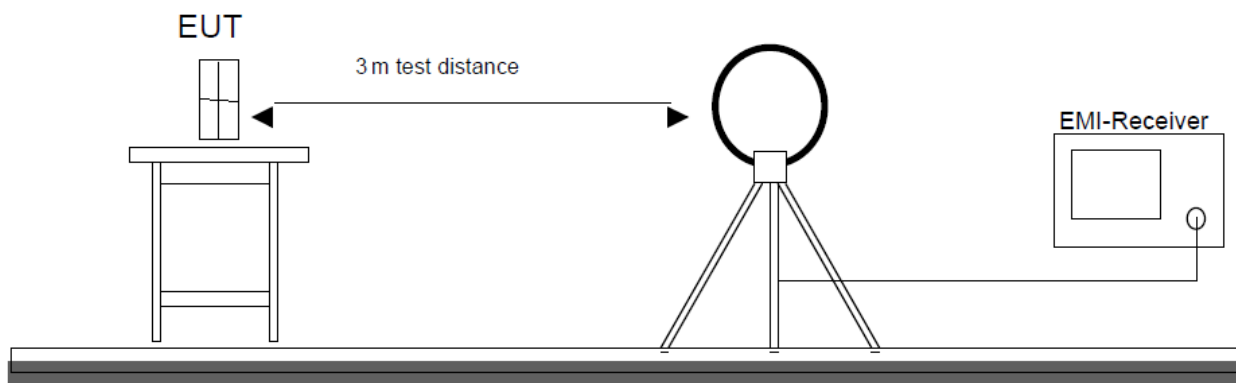
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Test Methodology

Frequency Range 9 kHz -30 MHz

Test performed as per ANSI C63.10-2013 section 6.4

The loop Antenna was placed at 1m above the ground plane & EUT is 3 meters far from the measuring antenna. With 3m measurement distance, correction data were applied to the measured results. The test arrangement, measuring antenna guidelines and operational configurations in 6.3.1 and 6.3.2, shall be followed. The measurement antenna shall be positioned with its plane perpendicular to the ground at the Specified distance, when perpendicular to the ground plane, the lowest height of the magnetic antenna shall be 1 m above the ground and shall be positioned at the specified distance from the EUT. EUT & its associates are placed on non-conducting table of 0.8m height which is placed on the turn table, For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list worst case emission results, for each of the parallel & perpendicular orientations.



Frequency Range 30MHz to 10th harmonics of the highest fundamental frequency

Test performed as per ANSI/TIA-603-D-2010 Clause 2.2.12/17

ERP/EIRP Radiated Power & Radiated spurious emission test are performed as below.

The equipment under test is placed on non-conductive table at 3m away from the receive antenna in accordance with above mentioned standard. Turn table is rotated through 360 degree, and receiver antenna height is varied in order to determine the level of maximum emission. The maximum emission level and position of the maximized emission is recorded with use of spectrum analyzer.

The EUT is substituted by a substitution antenna. The substitute antenna is connected to a signal generator. Adjust the output level of the signal generator to get the same power recorded in with EUT and record the power level of Signal Generator. The cable loss at the test frequency should be compensated

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The Power is calculated by the following formula

$$P_d \text{ (dBm)} = P_g \text{ (dBm)} - \text{Cable Loss (dB)} + \text{Antenna Gain (dB)}$$

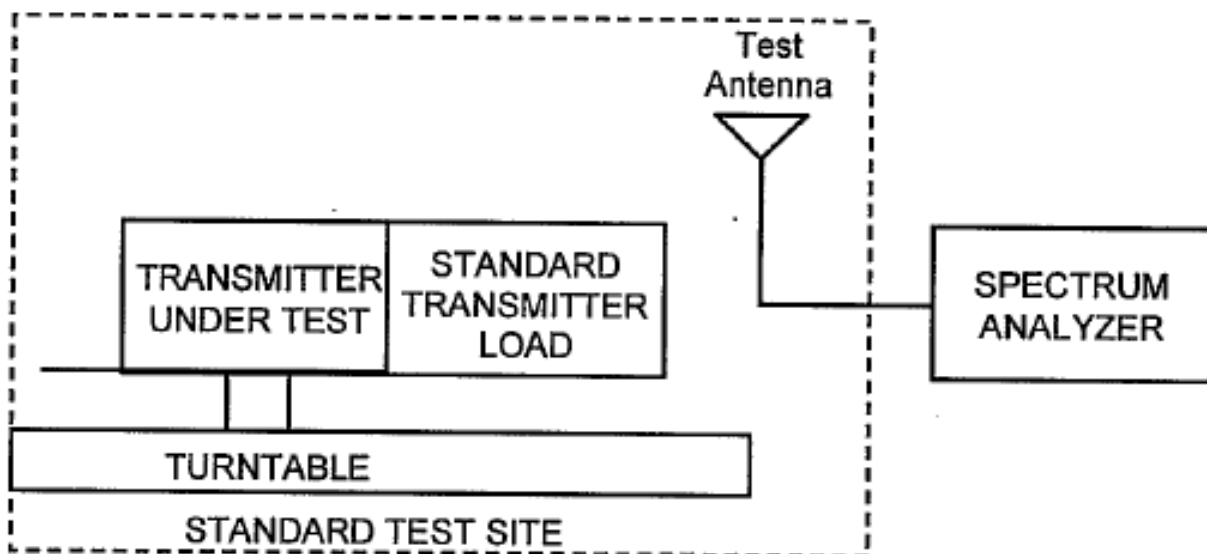
Where

P_d is the dipole equivalent power.

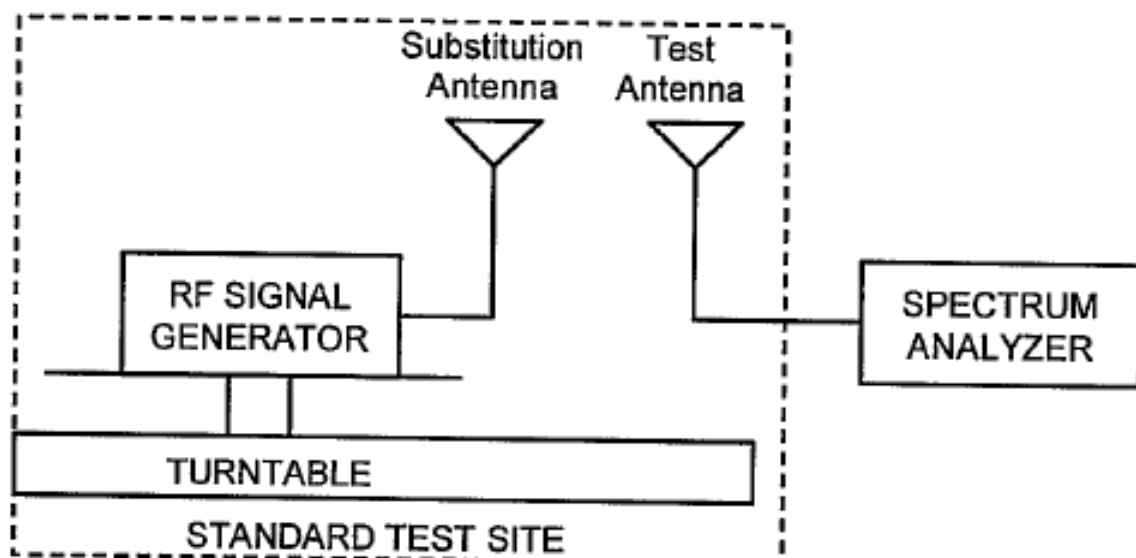
P_g is the generator output power into the substitution antenna

These steps are repeated with the receiving antenna in the both vertical & horizontal polarization

Measurement Method



Substitute measurement method



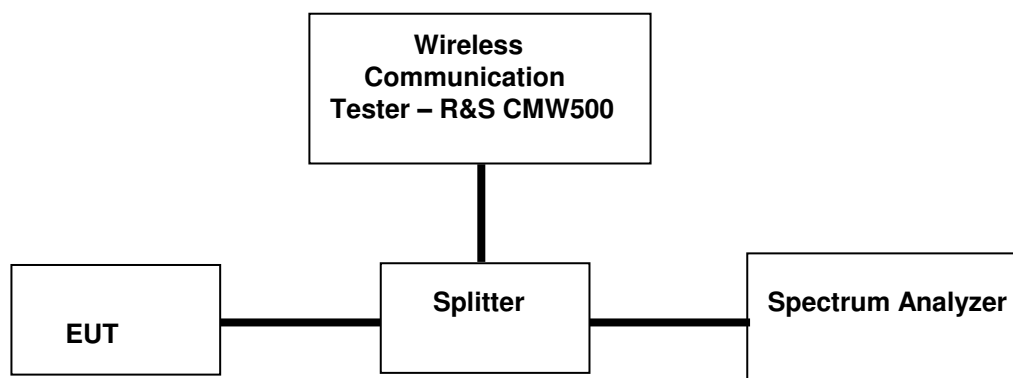
Test Results

RF Output Power – Conducted Mode Results

Pass

Specification FCC Part 2.1046 & RSS 132 Issue 3 section 5.4, SRSP-503 section 5.1.3 & RSS 133 Issue 6 section 4.1/6.4, SRSP-510.5.1.2 & RSS 139 Issue 3 section 6.5,
 Measurement Bandwidth (RBW) $\geq$ OBW
 Detector Function Peak/Average

Test Setup:



Note: For measurement of RF Output Power, section 5.1.1 in “971168 D01 Power Meas License Digital Systems v02r02” was used & Attenuator & Cable loss included in the test results

Note: Cable Loss (1.8dB) + Attenuator (10dB) are considered for Band 2
 Cable Loss (1.4dB) + Attenuator (10dB) are considered for Band 4
 Cable Loss (1.0dB) + Attenuator (10dB) are considered for Band 5

Test Results

Test Case : Release 99 12.2kbps RMC						
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	Measured Power (dBm) - Peak	Measured Power (dBm) - Average	PAPR (dB)	PAPR Limit (dB)
2	9262	1852.4	25.65	19.55	6.1	≤ 13
	9400	1880	25.98	20.62	5.77	≤ 13
	9538	1907.6	26.06	19.47	6.59	≤ 13
4	1312	1712.4	25.09	17.98	7.11	≤ 13
	1412	1732.4	25.34	18.49	6.85	≤ 13
	1513	1752.6	25.64	20.14	5.5	≤ 13
5	4132	826.4	25.58	19.19	6.39	≤ 13
	4183	836.6	25.18	19.09	6.09	≤ 13
	4233	846.6	25.39	20.57	4.82	≤ 13

Summary of the gain factor used for Rel 5 (HSDPA) Measurement

Summary of gain factor settings on the R&S® CMW500					
Subtest	β_c	β_d	ΔACK	$\Delta NACK$	ΔCQI
1	2	15	8	8	8
2	11	15	8	8	8
3	15	8	8	8	8
4	15	4	8	8	8

Test Case : HSDPA Rel 5							
FDD Band	Subset	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	Measured Power (dBm) - Peak	Measured Power (dBm) - Average	PAPR (dB)	PAPR Limit (dB)
2	1	9262	1852.4	24.71	20.01	4.7	≤ 13
		9400	1880	24.97	20.47	4.5	≤ 13
		9538	1907.6	25.29	20.61	4.68	≤ 13
	2	9262	1852.4	25.71	19.08	6.63	≤ 13
		9400	1880	26.06	20.2	5.86	≤ 13
		9538	1907.6	25.96	20.32	5.64	≤ 13
	3	9262	1852.4	25.53	19.56	5.97	≤ 13
		9400	1880	25.98	20.14	5.84	≤ 13
		9538	1907.6	26.25	20.24	6.01	≤ 13
	4	9262	1852.4	25.59	19.52	6.07	≤ 13
		9400	1880	26.04	20.1	5.94	≤ 13
		9538	1907.6	26.67	20.25	6.42	≤ 13
4	1	1312	1712.4	24.16	19.59	4.57	≤ 13
		1412	1732.4	24.43	20.02	4.41	≤ 13
		1513	1752.6	24.37	19.72	4.65	≤ 13
	2	1312	1712.4	25.71	19.22	6.49	≤ 13
		1412	1732.4	25.58	19.61	5.97	≤ 13
		1513	1752.6	25.73	19.34	6.39	≤ 13
	3	1312	1712.4	25.5	19.17	6.33	≤ 13
		1412	1732.4	25.58	19.46	6.12	≤ 13
		1513	1752.6	25.66	19.32	6.34	≤ 13
	4	1312	1712.4	25.5	19.58	5.92	≤ 13
		1412	1732.4	25.46	19.46	6	≤ 13
		1513	1752.6	25.72	19.78	5.94	≤ 13
5	1	4132	826.4	24.56	19.8	4.76	≤ 13
		4183	836.6	24.85	19.76	5.09	≤ 13
		4233	846.6	24.28	19.6	4.68	≤ 13
	2	4132	826.4	25.36	19.45	5.91	≤ 13
		4183	836.6	25.94	19.35	6.59	≤ 13
		4233	846.6	25.15	19.15	6	≤ 13

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	3	4132	826.4	25.33	19.26	6.07	≤ 13
		4183	836.6	25.26	19.33	5.93	≤ 13
		4233	846.6	24.96	19.24	5.72	≤ 13
	4	4132	826.4	25.3	19.56	5.74	≤ 13
		4183	836.6	25.35	19.43	5.92	≤ 13
		4233	846.6	24.98	19.38	5.6	≤ 13

Summary of the gain factor used for Rel 6 (HSDPA & HSUPA) Measurement

Summary of gain factor settings on the R&S® CMW500								
Subtest	β_c	β_d	ΔACK	$\Delta NACK$	ΔCQI	$\Delta E-DPCCH$	AG Index	E-TFCI
1	10	15	8	8	8	6	20	75
2	6	15	8	8	8	8	12	67
3	15	9	8	8	8	8	15	92
4	2	15	8	8	8	5	17	71
5	15	1	0	0	0	0	12	67

Test Case : HSPA Rel 6 (HSDPA & HSUPA)

FDD Band	Subset	UARFCN Channel No.	UARFCN Channel Frequency	Measured Power (dBm) - Peak	Measured Power (dBm) - Average	PAPR (dB)	PAPR Limit (dB)
2	1	9262	1852.4	25.97	19.12	6.85	≤ 13
		9400	1880	25.54	19.41	6.13	≤ 13
		9538	1907.6	24.17	19.63	4.54	≤ 13
	2	9262	1852.4	25.77	18.44	7.33	≤ 13
		9400	1880	26.29	18.75	7.54	≤ 13
		9538	1907.6	26.31	19.25	7.06	≤ 13
	3	9262	1852.4	25.87	18.91	6.96	≤ 13
		9400	1880	25.87	19.28	6.59	≤ 13
		9538	1907.6	26.22	18.97	7.25	≤ 13
	4	9262	1852.4	26.03	18.95	7.08	≤ 13
		9400	1880	26.25	19.15	7.1	≤ 13
		9538	1907.6	26.46	19.59	6.87	≤ 13
4	1	9262	1852.4	26.28	19.57	6.71	≤ 13
		9400	1880	25.45	19.61	5.84	≤ 13
		9538	1907.6	25.71	19.44	6.27	≤ 13
	2	1312	1712.4	24.06	18.74	5.32	≤ 13
		1412	1732.4	23.39	18.87	4.52	≤ 13
		1513	1752.6	24.15	18.74	5.41	≤ 13
	3	1312	1712.4	26.11	18.23	7.88	≤ 13
		1412	1732.4	26.3	18.42	7.88	≤ 13
		1513	1752.6	26.15	18.24	7.91	≤ 13
	4	1312	1712.4	26.04	18.44	7.6	≤ 13
		1412	1732.4	25.8	18.79	7.01	≤ 13
		1513	1752.6	26.39	18.21	8.18	≤ 13
	4	1312	1712.4	25.9	18.69	7.21	≤ 13

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	5	1412	1732.4	26.1	18.89	7.21	≤ 13
		1513	1752.6	25.84	18.6	7.24	≤ 13
		1312	1712.4	25.07	18.37	6.7	≤ 13
		1412	1732.4	25.58	19.91	5.67	≤ 13
		1513	1752.6	24.97	18.26	6.71	≤ 13
5	1	4132	826.4	24.6	19.01	5.59	≤ 13
		4183	836.6	24.39	18.84	5.55	≤ 13
		4233	846.6	23.71	19.23	4.48	≤ 13
	2	4132	826.4	25.76	17.82	7.94	≤ 13
		4183	836.6	25.35	17.75	7.6	≤ 13
		4233	846.6	25.48	18.00	7.48	≤ 13
	3	4132	826.4	25.29	18.18	7.11	≤ 13
		4183	836.6	25.73	18.00	7.73	≤ 13
		4233	846.6	25.27	17.96	7.31	≤ 13
	4	4132	826.4	25.36	18.72	6.64	≤ 13
		4183	836.6	25.69	18.55	7.14	≤ 13
		4233	846.6	25.25	18.76	6.49	≤ 13
	5	4132	826.4	25.36	19.03	6.33	≤ 13
		4183	836.6	25.46	19.57	5.89	≤ 13
		4233	846.6	25.54	19.01	6.53	≤ 13

* PAPR – Peak to Average Power Ratio.

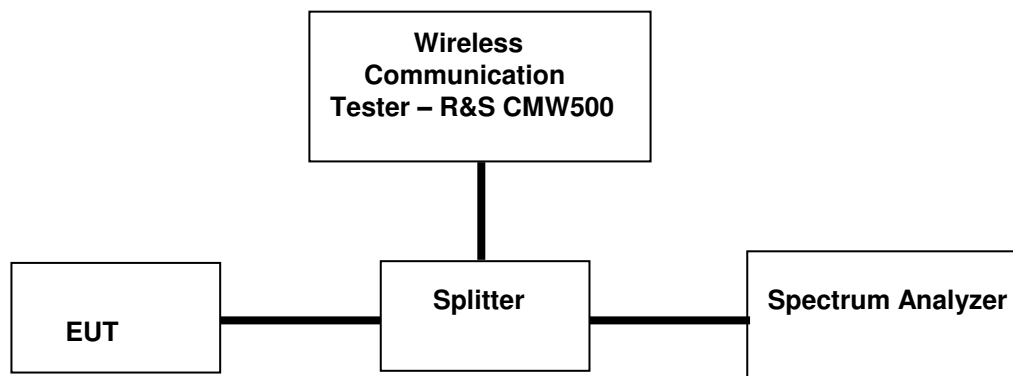
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**99% Occupied Bandwidth &
26dB Emission Bandwidth
Result**

Pass

Specification	FCC Part 2.1049 & RSS-Gen Issue 4 section 6.6
Measurement Bandwidth (RBW)	≥ 100KHz (1 to 5% of anticipated OBW)
Detector Function	Peak
Requirement	Reporting Only.

Test Setup:

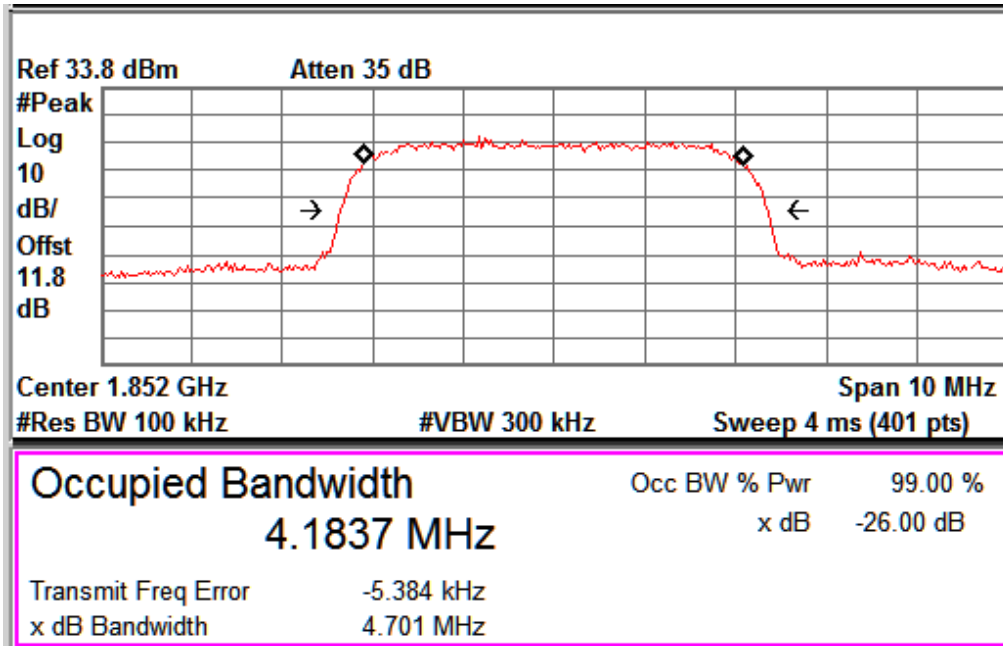


Note: For measurement of Occupied Bandwidth, section 4.2 in “971168 D01 Power Meas License Digital Systems v02r02” was used.

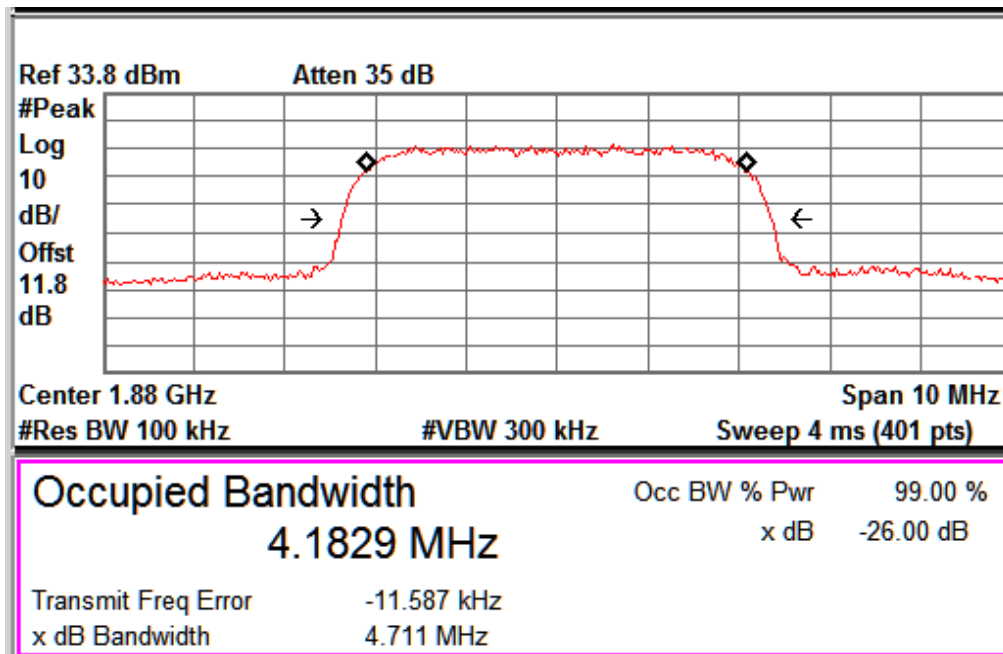
Test Results

Release 99 12.2kbps RMC				
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Emission Bandwidth (MHz)
2	9262	1852.4	4.18	4.70
	9400	1880	4.18	4.71
	9538	1907.6	4.18	4.71
4	1312	1712.4	4.19	4.69
	1412	1732.4	4.17	4.70
	1513	1752.6	4.19	4.69
5	4132	826.4	4.16	4.83
	4183	836.6	4.16	4.70
	4233	846.6	4.17	4.71

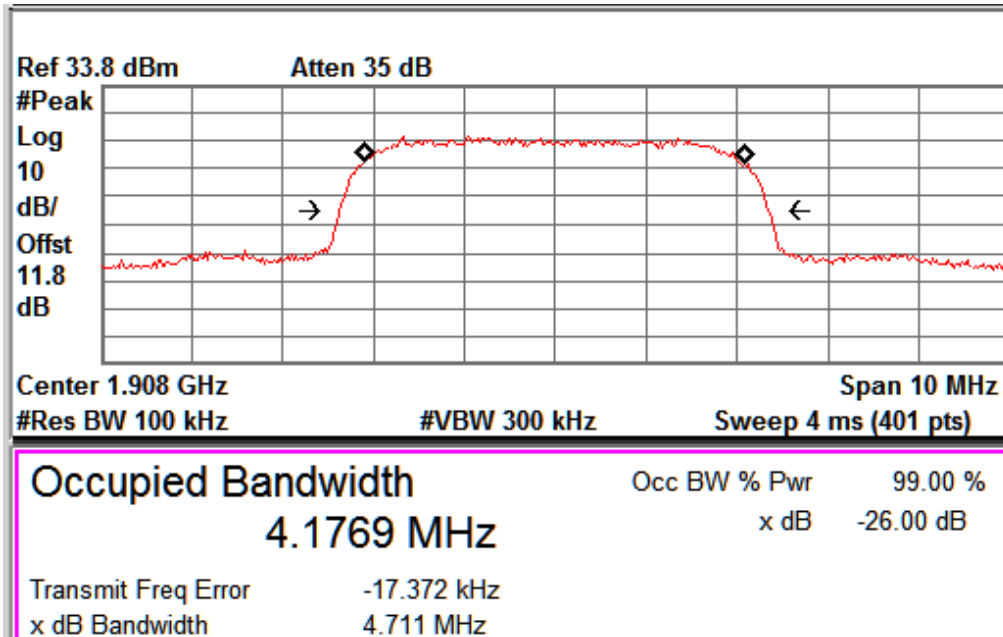
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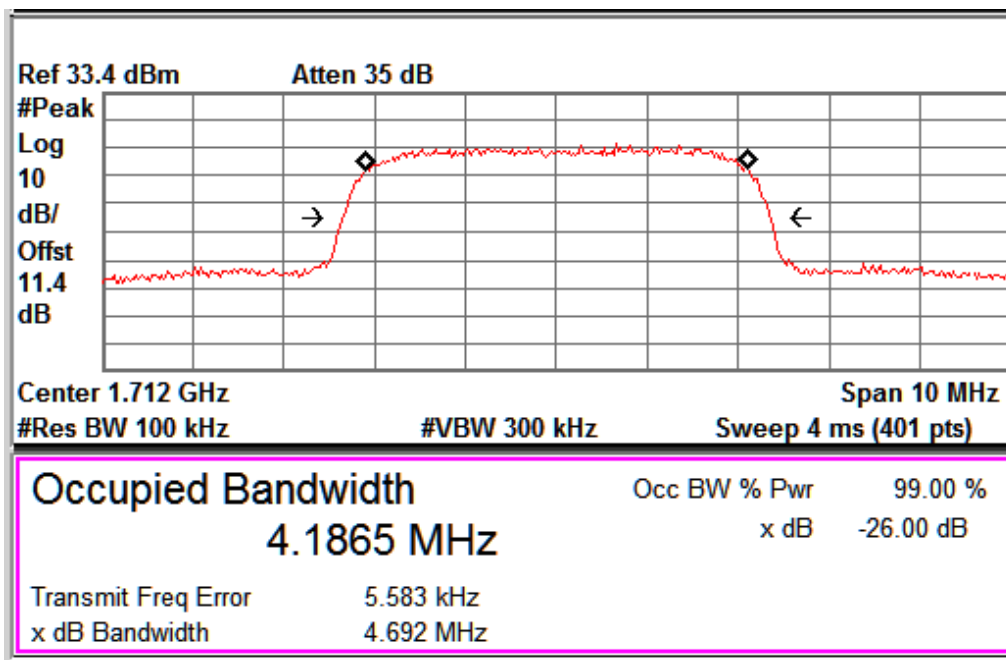
FDD Band 2 _ Channel No. 9262



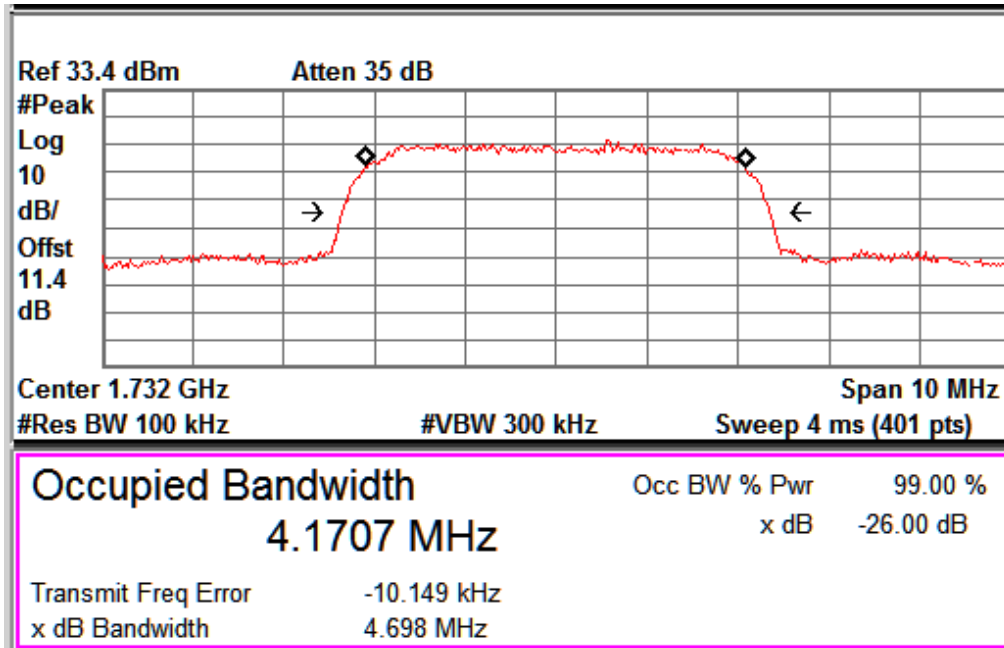
FDD Band 2 _ Channel No. 9400



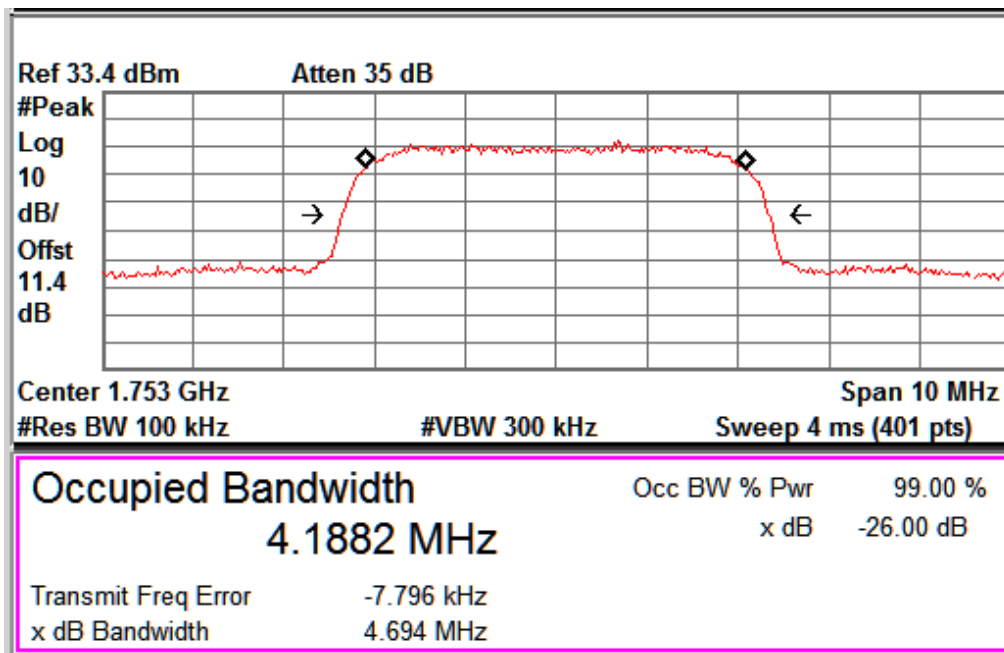
FDD Band 2 _ Channel No. 9538



FDD Band 4 _ Channel No. 1312

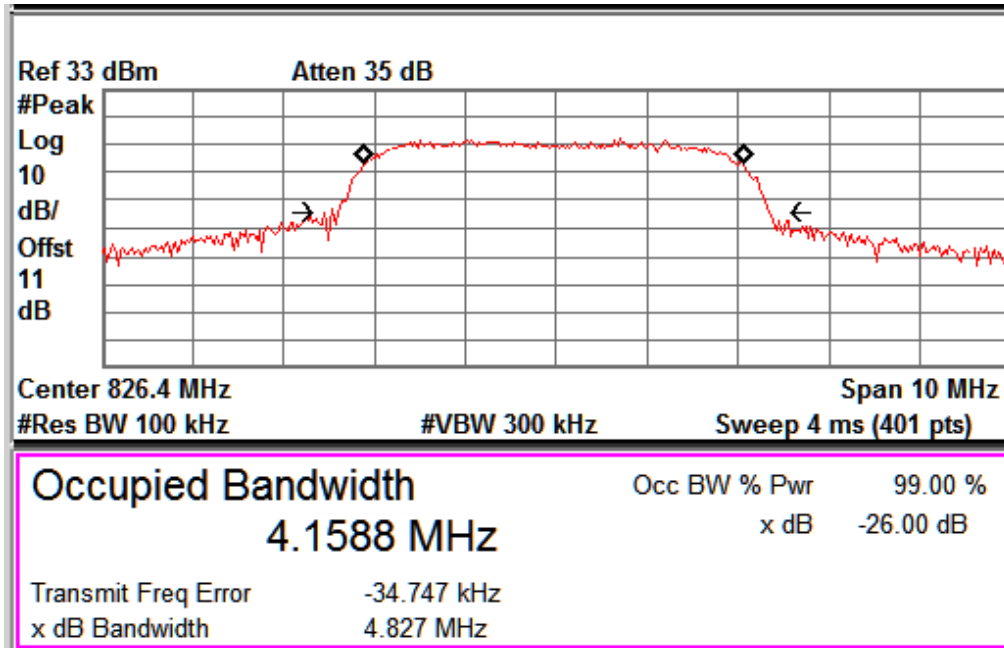


FDD Band 4 _ Channel No. 1412

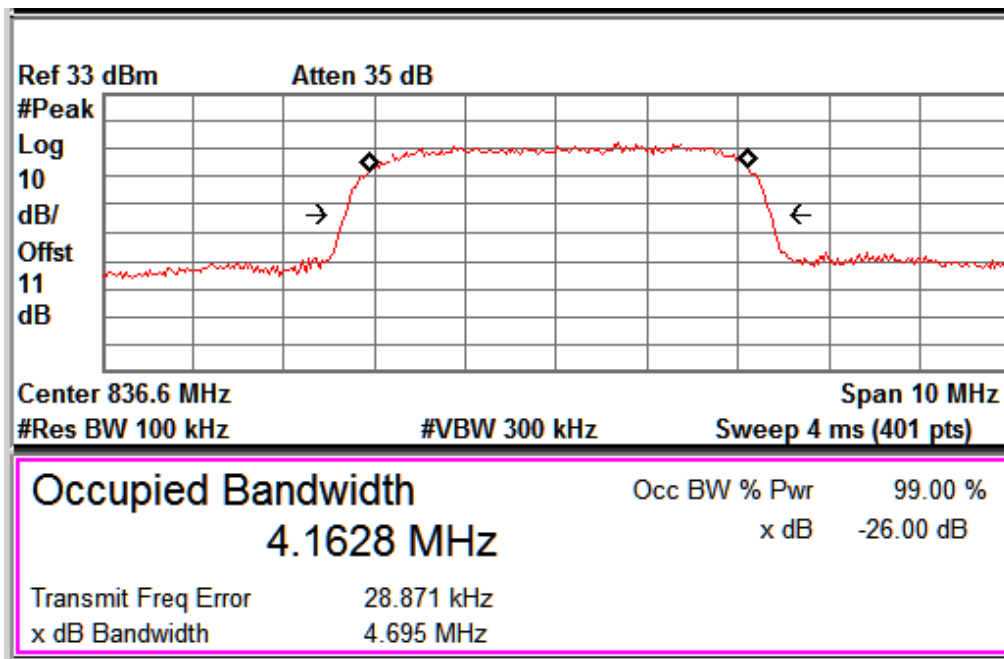


FDD Band 4 _ Channel No. 1513

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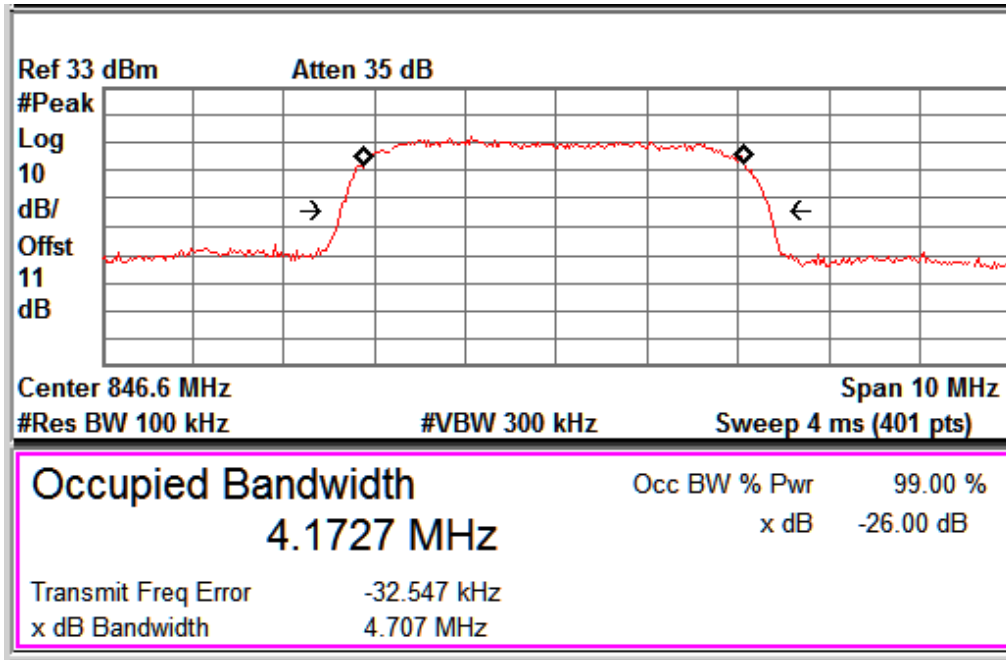


FDD Band 5 _ Channel No. 4132



FDD Band 5 _ Channel No. 4183

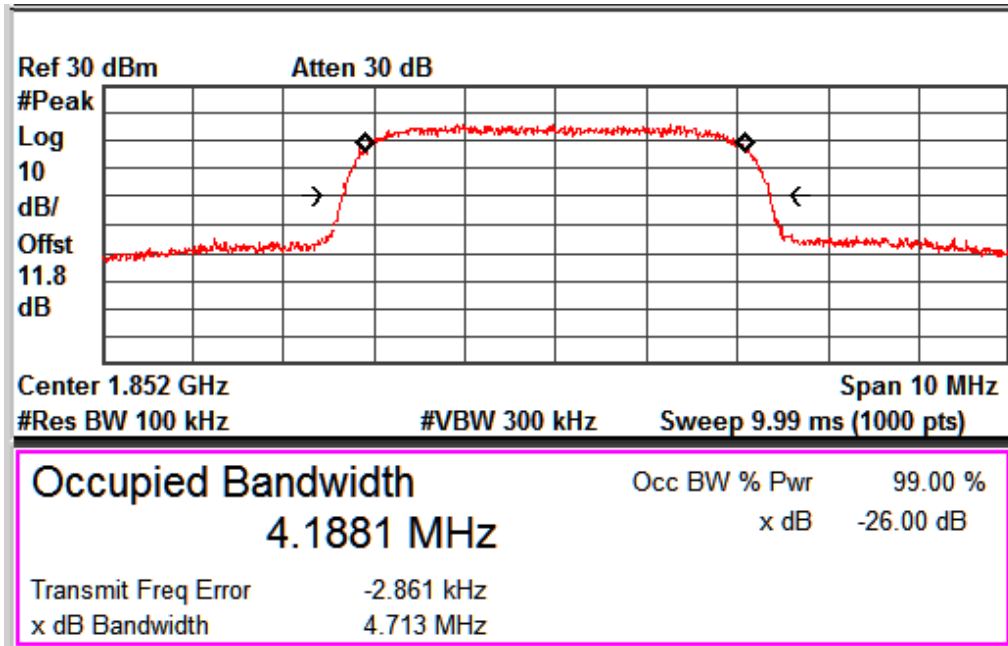
www.tuv.com



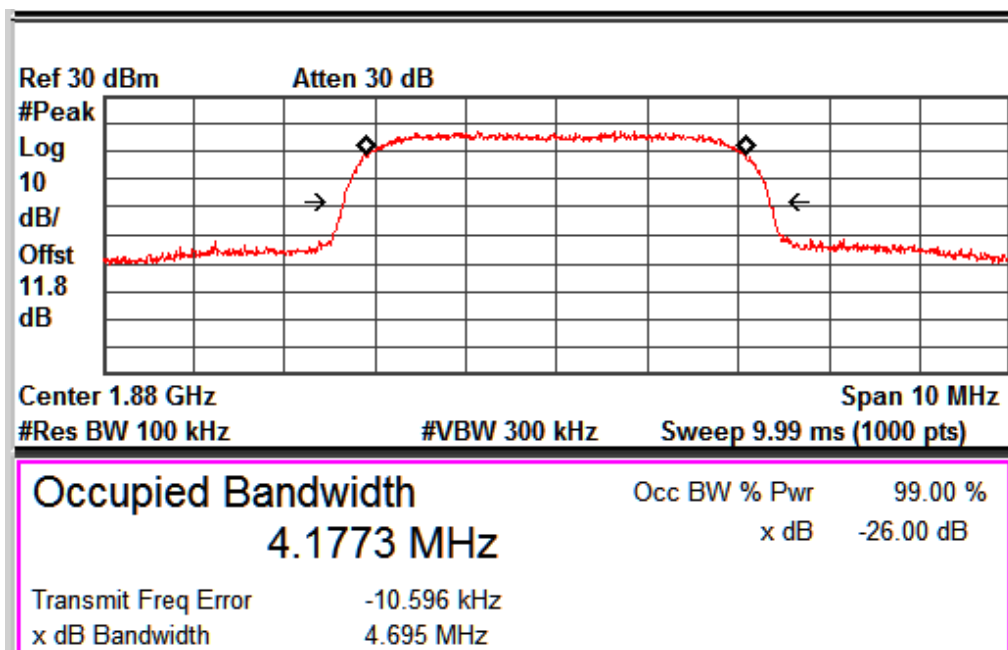
FDD Band 5 _ Channel No. 4233

Release 6 (HSDPA & HSUPA)				
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Emission Bandwidth (MHz)
2	9262	1852.4	4.18	4.71
	9400	1880	4.17	4.69
	9538	1907.6	4.18	4.70
4	1312	1712.4	4.18	4.68
	1412	1732.4	4.18	4.70
	1513	1752.6	4.16	4.67
5	4132	826.4	4.15	4.68
	4183	836.6	4.17	4.72
	4233	846.6	4.19	4.70

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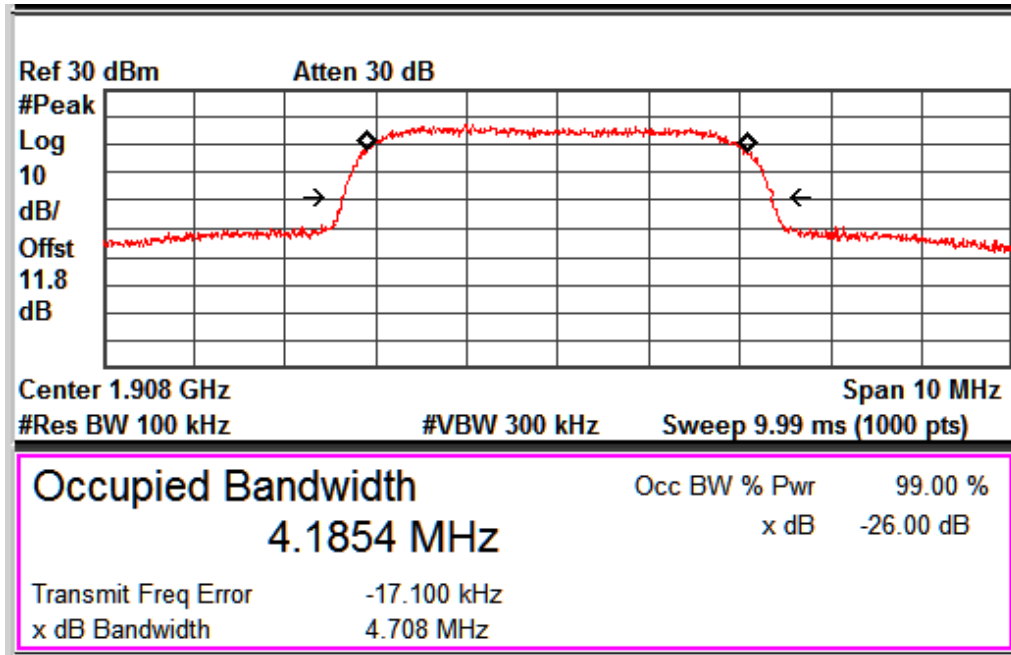


FDD Band 2 _ Channel No. 9262

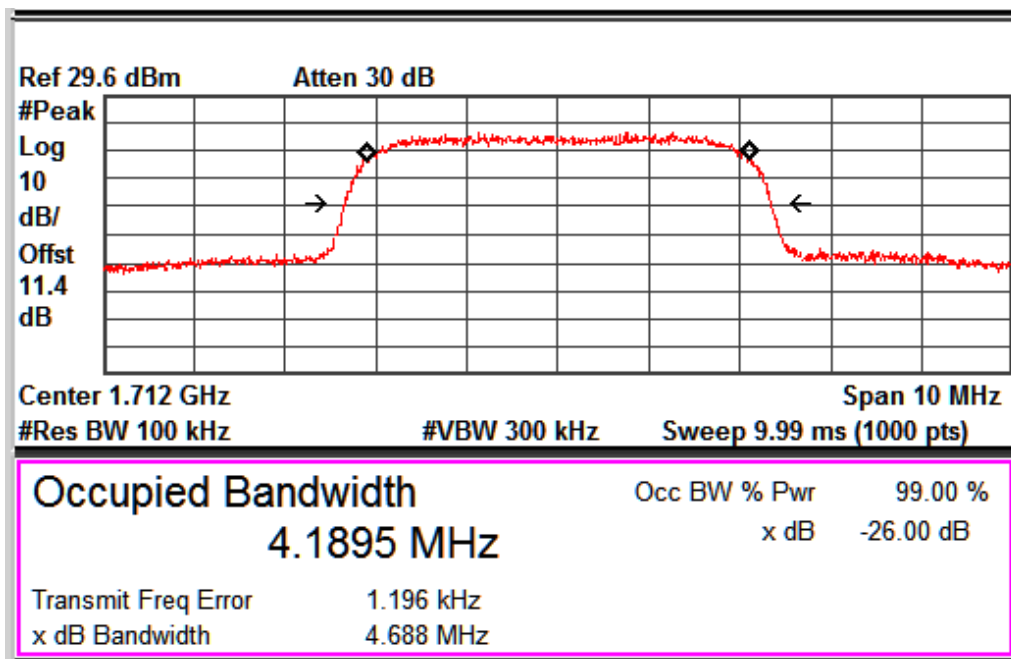


FDD Band 2 _ Channel No. 9400

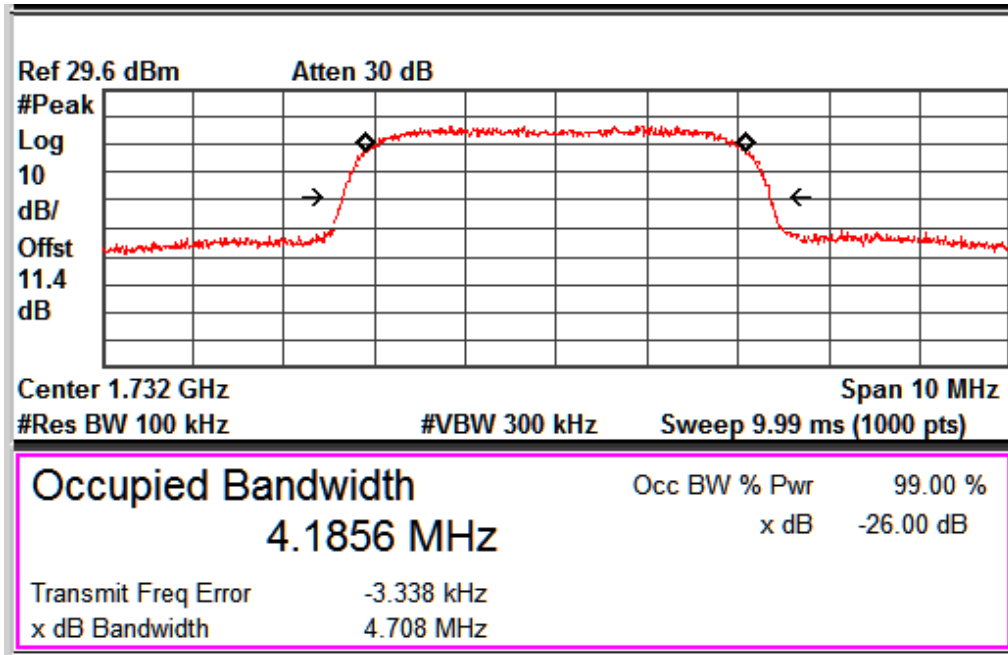
www.tuv.com



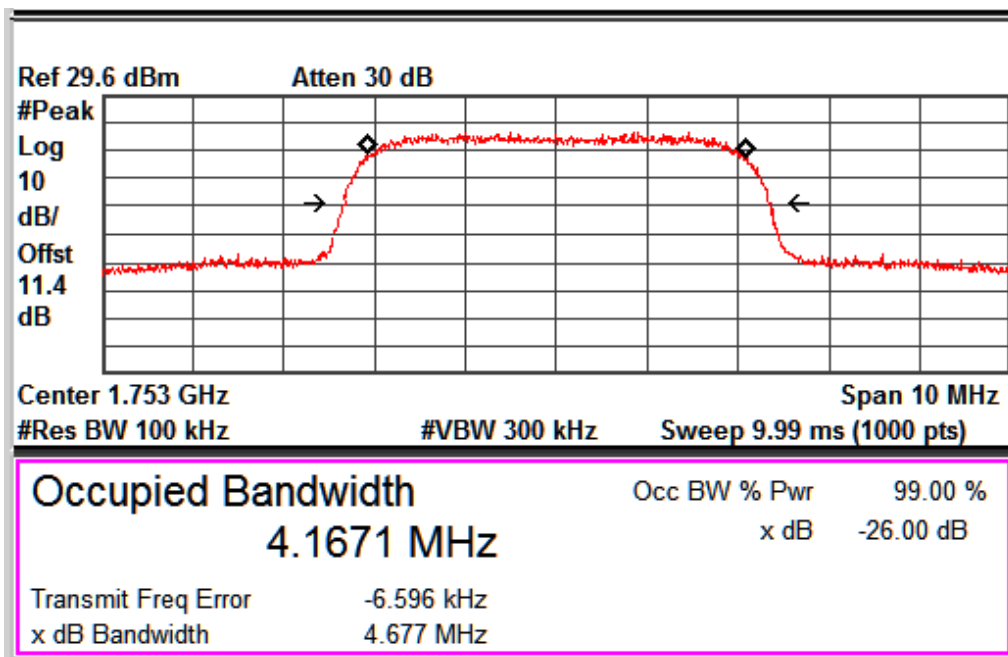
FDD Band 2 _ Channel No. 9538



FDD Band 4 _ Channel No. 1312

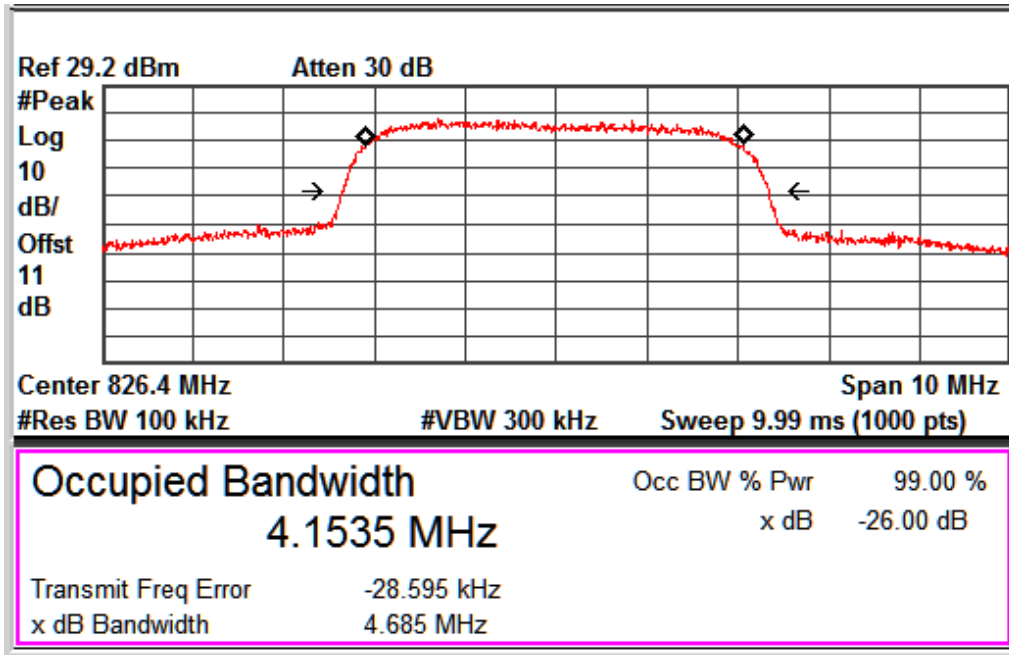


FDD Band 4 _ Channel No. 1412

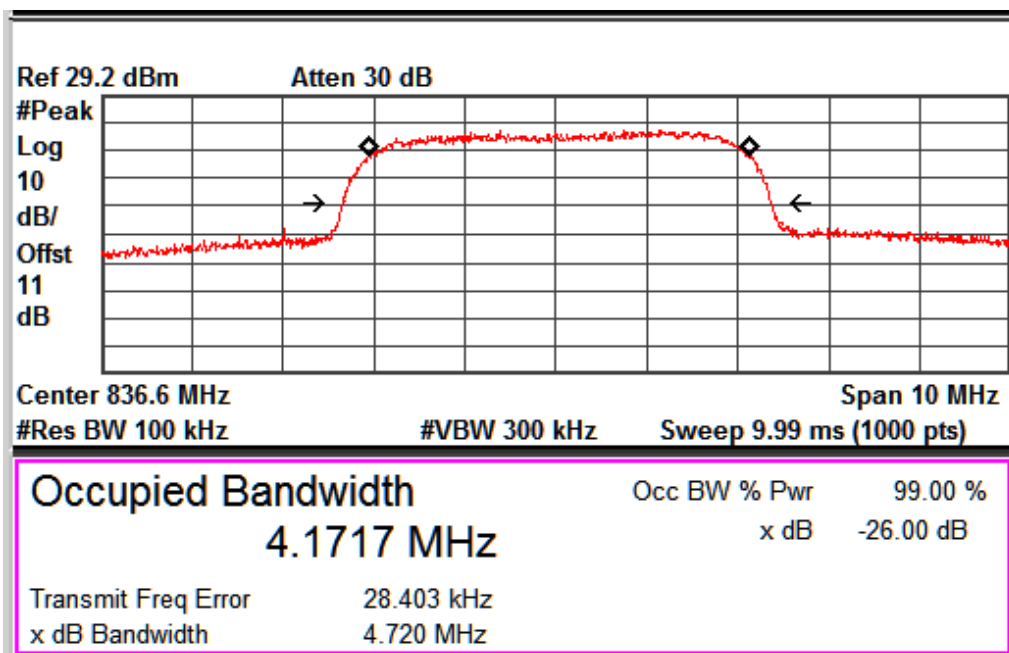


FDD Band 4 _ Channel No. 1513

www.tuv.com

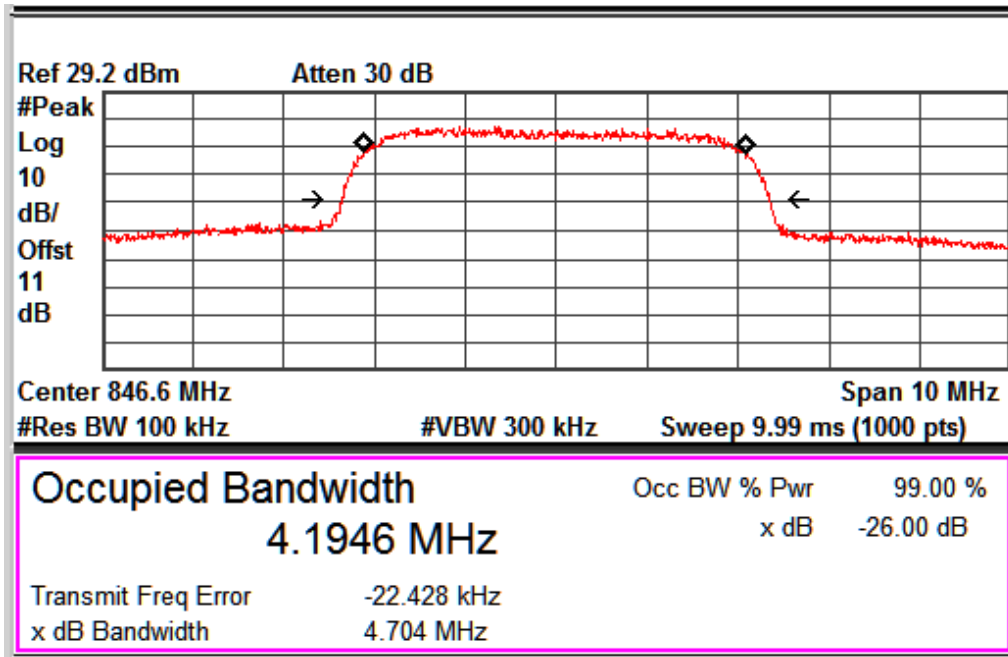


FDD Band 5 _ Channel No. 4132



FDD Band 5 _ Channel No. 4183

www.tuv.com



FDD Band 5 _ Channel No. 4233

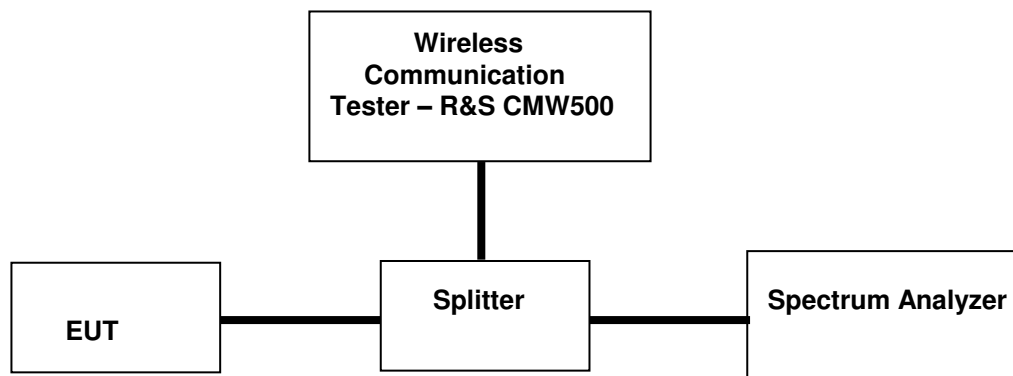
www.tuv.com

Band Edge Measurement Result

Pass

Specification	FCC Part 2.1051, 2.1057, 22.917(a)(b), 24.238(a)(b), 27.53(h) & RSS 132 Issue 3 section 5.5, RSS 133 Issue 6 section 6.5 (i)(ii), RSS 139 Issue 3 section 6.6(i)(ii)
Measurement Bandwidth (RBW)	100 kHz
Detector Function	Average
Requirement	Shall be attenuated below the transmitter power (P in watt) by at least $43 + 10\log(P)$ dBm,

Test Setup:

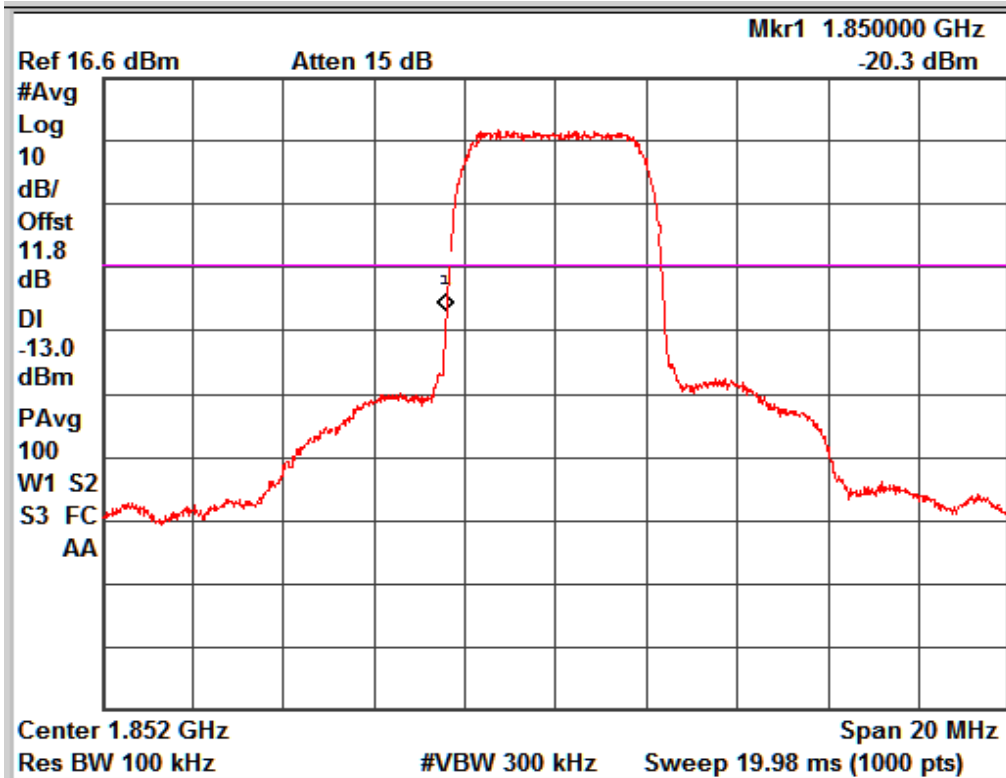


Note: For measurement of Band Edge Measurement, section 6.0 in “971168 D01 Power Meas License Digital Systems v02r02” was used, Attenuator & Cable loss included in the test results

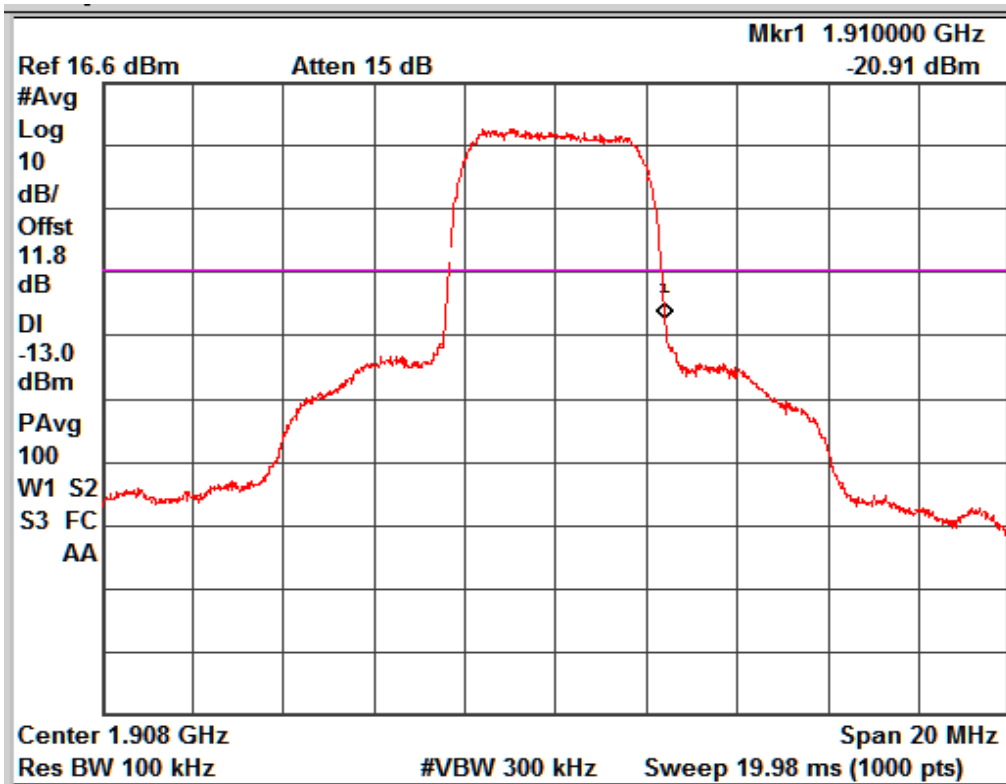
Note: Cable Loss (1.8dB) + Attenuator (10dB) are considered for Band 2
 Cable Loss (1.4dB) + Attenuator (10dB) are considered for Band 4
 Cable Loss (1.0dB) + Attenuator (10dB) are considered for Band 5

Release 99 12.2kbps RMC					
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	Band edge Frequency Range (MHz)	Band Edge Value (dBm)	Limit (dBm)
2	9262	1852.4	1849 – 1850	-20.3	-13
	9538	1907.6	1910 – 1911	-20.91	-13
4	1312	1712.4	1709 – 1710	-20.85	-13
	1513	1752.6	1755 – 1756	-23.93	-13
5	4132	826.4	823 - 824	-21.88	-13
	4233	846.6	849 - 850	-26.34	-13

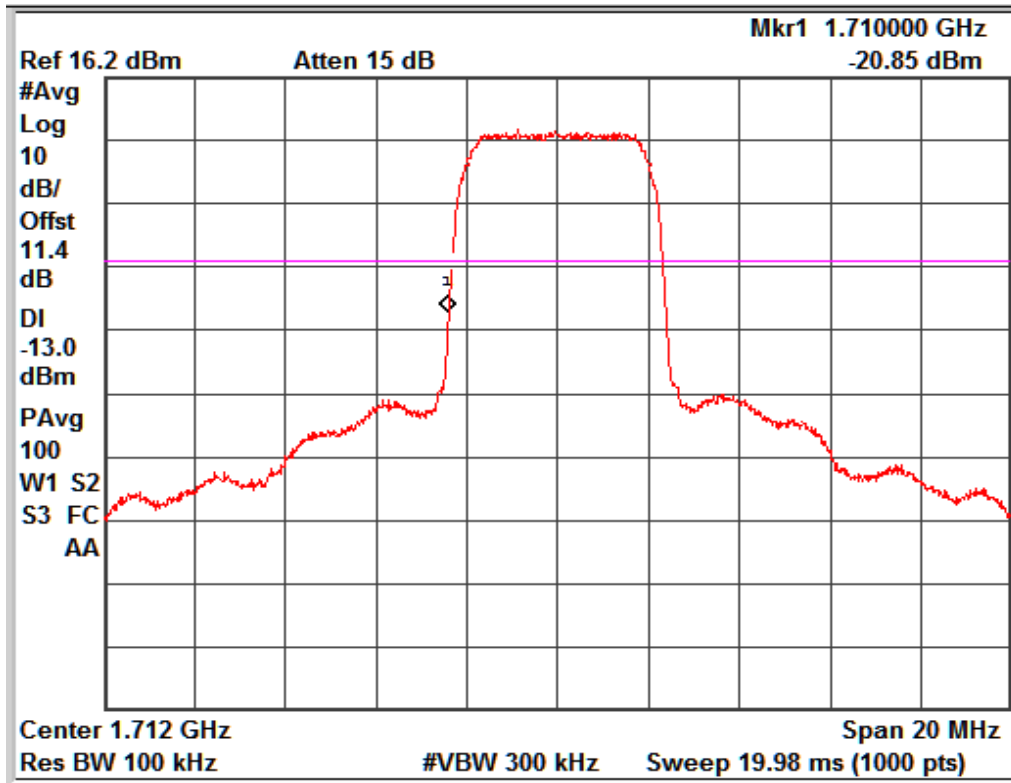
www.tuv.com



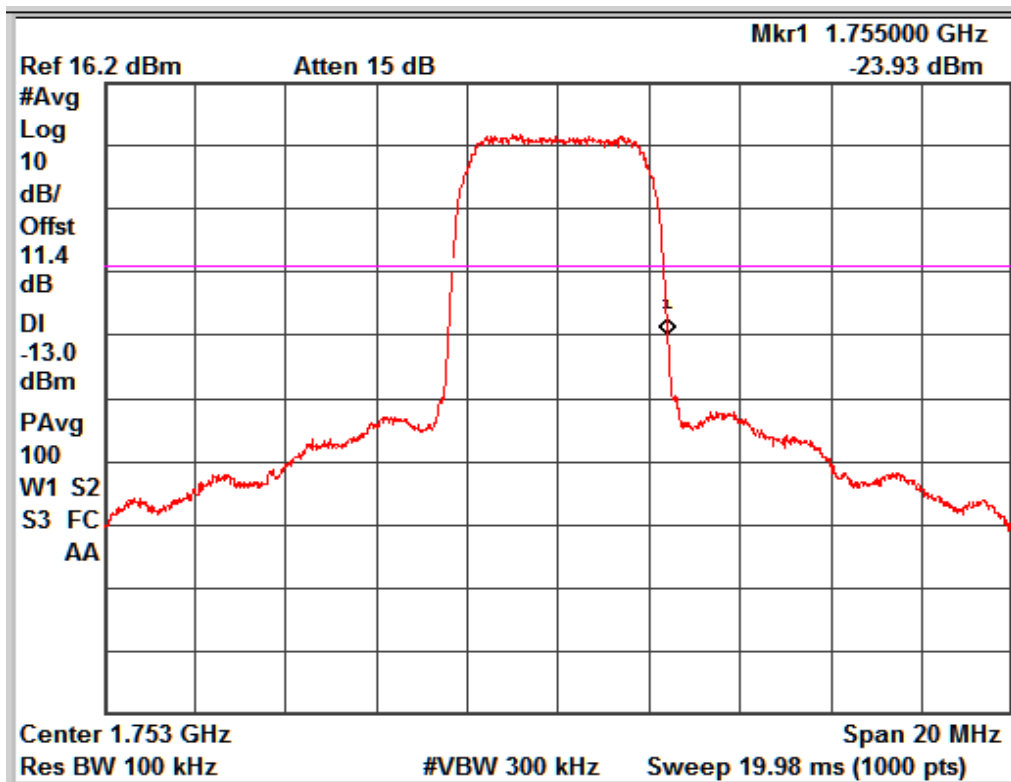
FDD Band 2 _ Channel No. 9262



FDD Band 2 _ Channel No. 9538

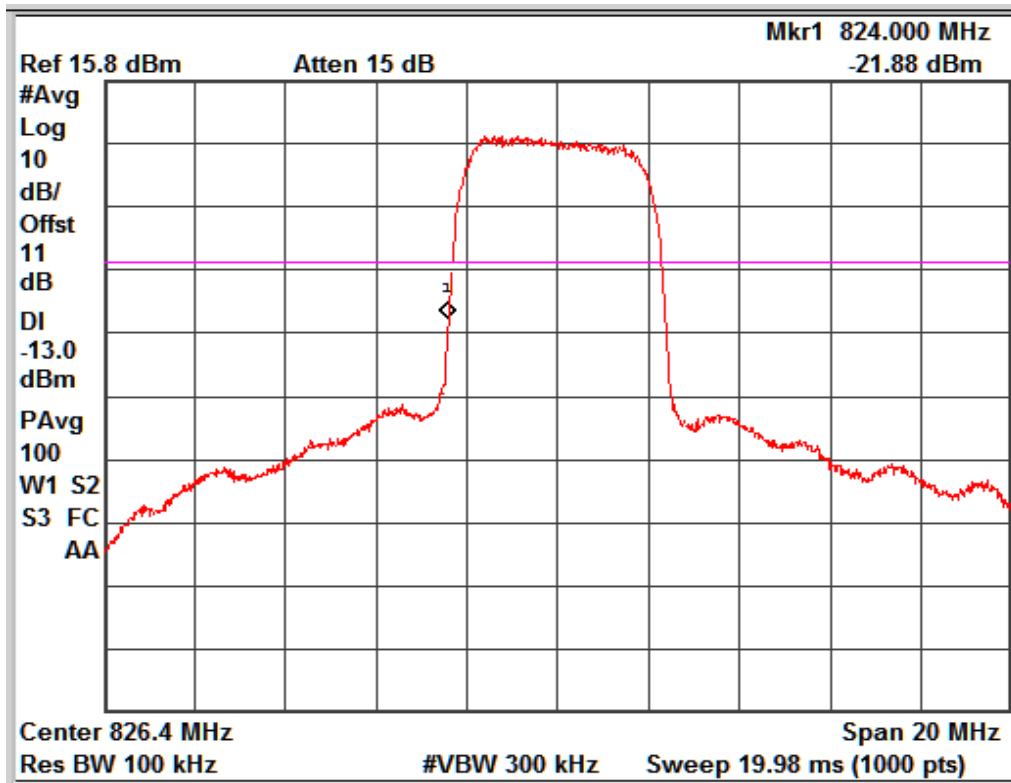


FDD Band 4 _ Channel No. 1312

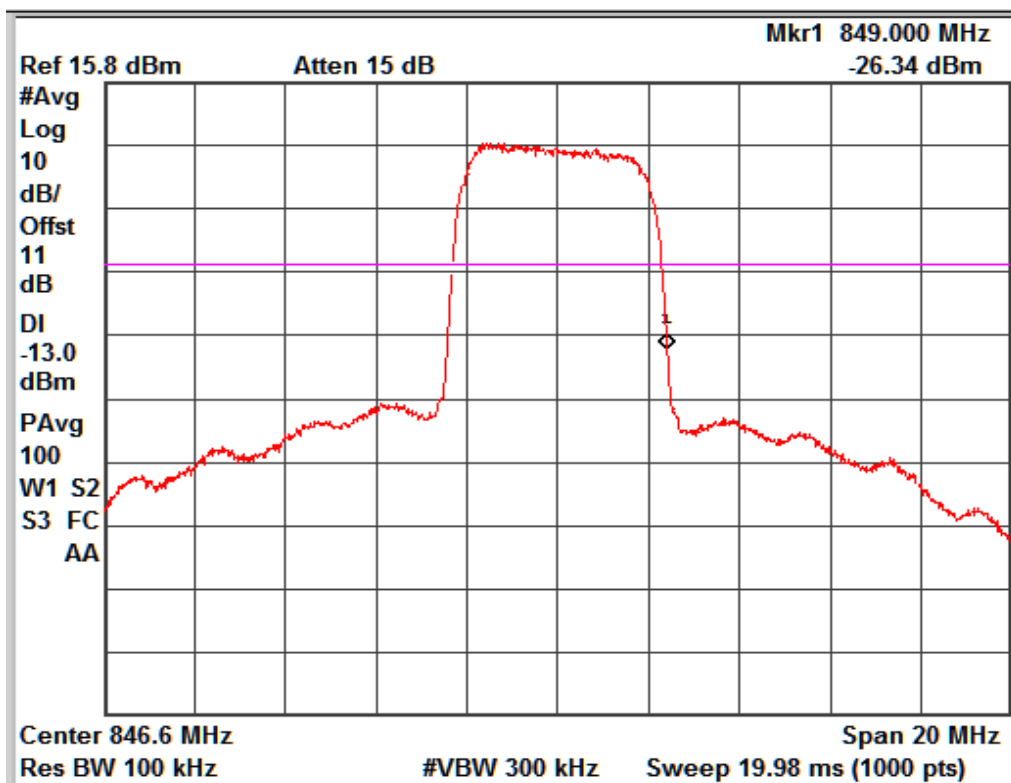


FDD Band 4 _ Channel No. 1513

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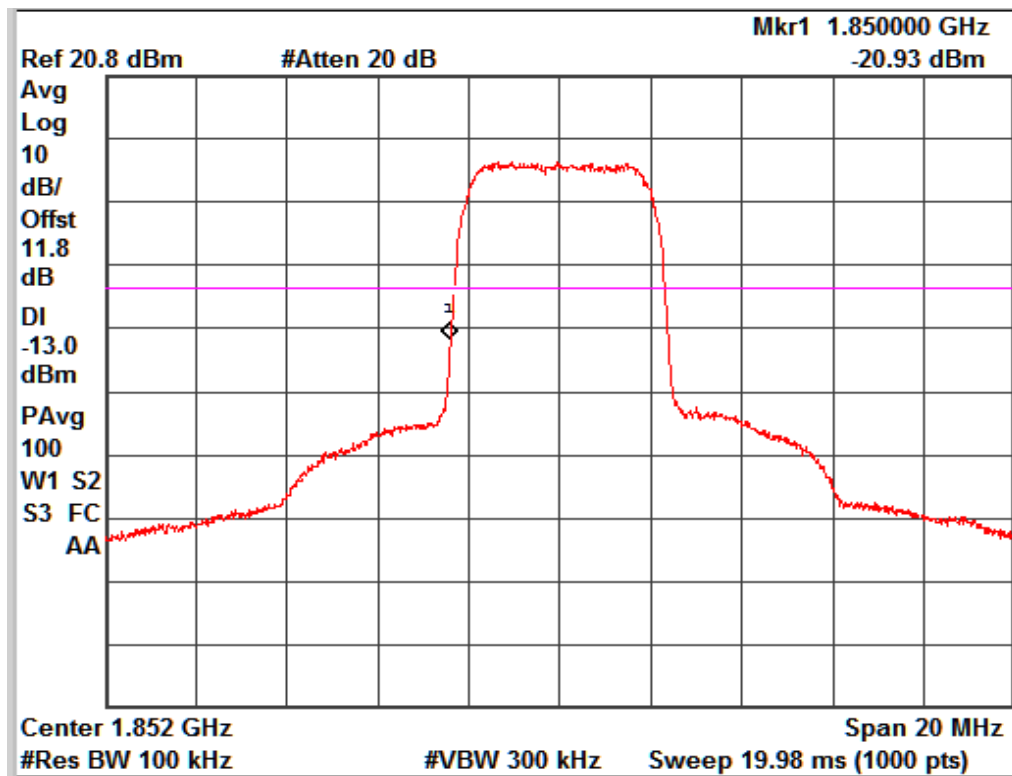


FDD Band 5 _ Channel No. 4132



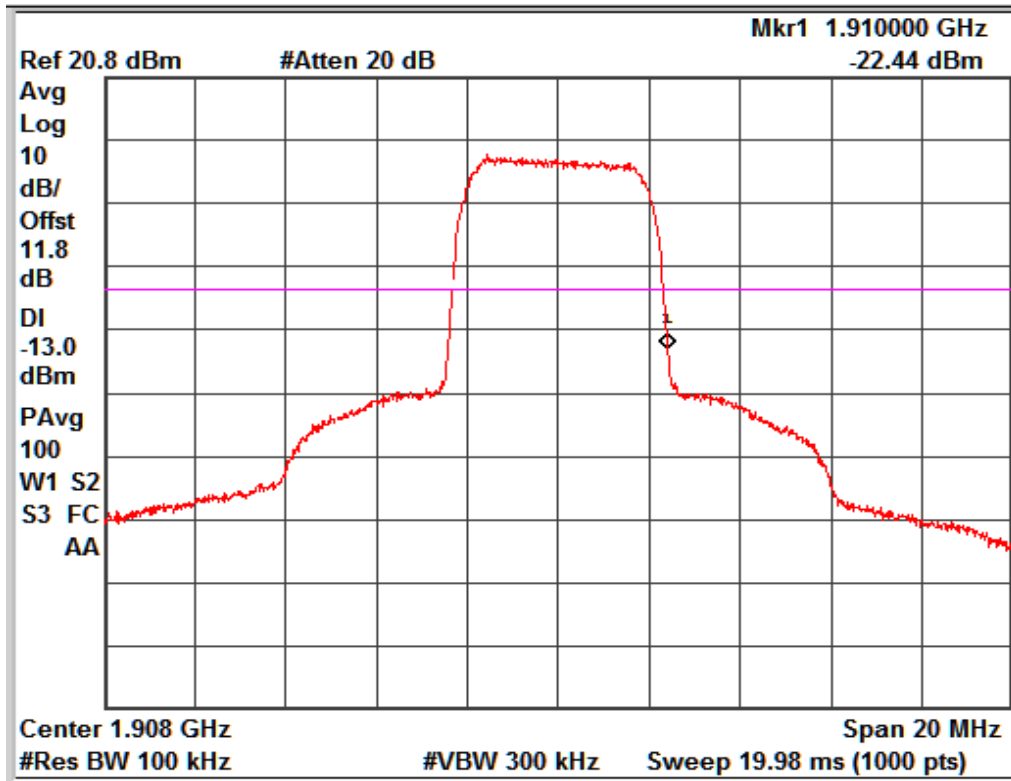
FDD Band 5 _ Channel No. 4233

Release 6 (HSDPA & HSUPA)					
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency (MHz)	Band edge Frequency Range (MHz)	Band Edge Value (dBm)	Limit (dBm)
2	9262	1852.4	1849 – 1850	-20.93	-13
	9538	1907.6	1910 – 1911	-22.44	-13
4	1312	1712.4	1709 – 1710	-22.01	-13
	1513	1752.6	1755 – 1756	-24.50	-13
5	4132	826.4	823 - 824	-20.30	-13
	4233	846.6	849 - 850	-24.14	-13

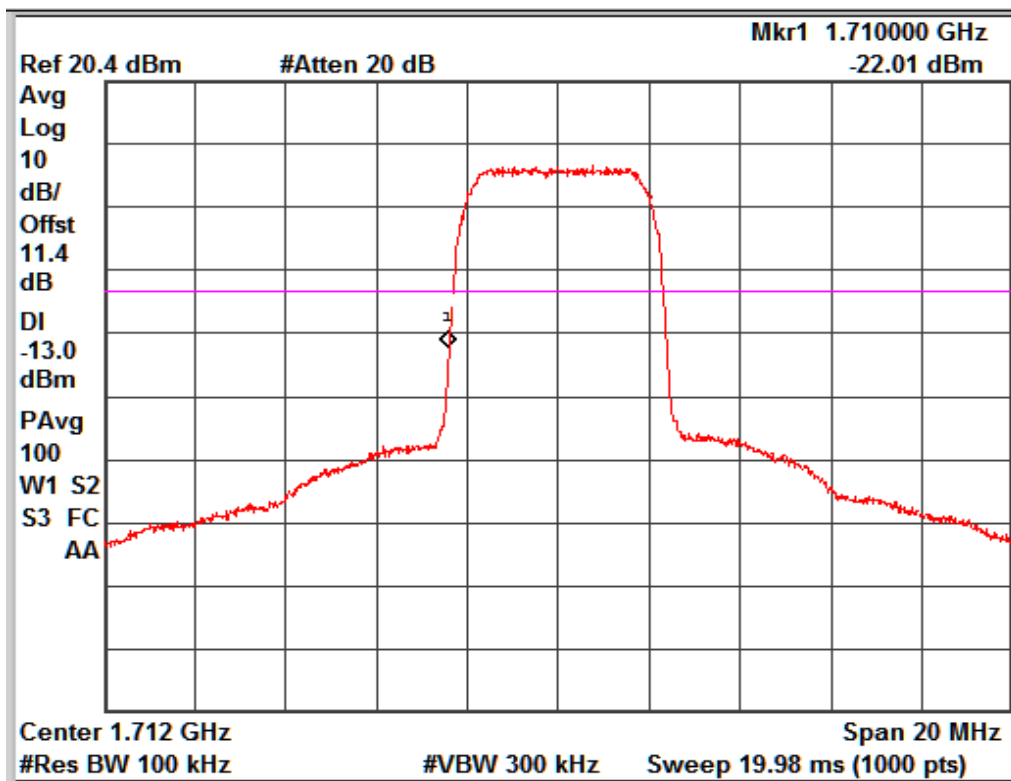


FDD Band 2 _ Channel No. 9262

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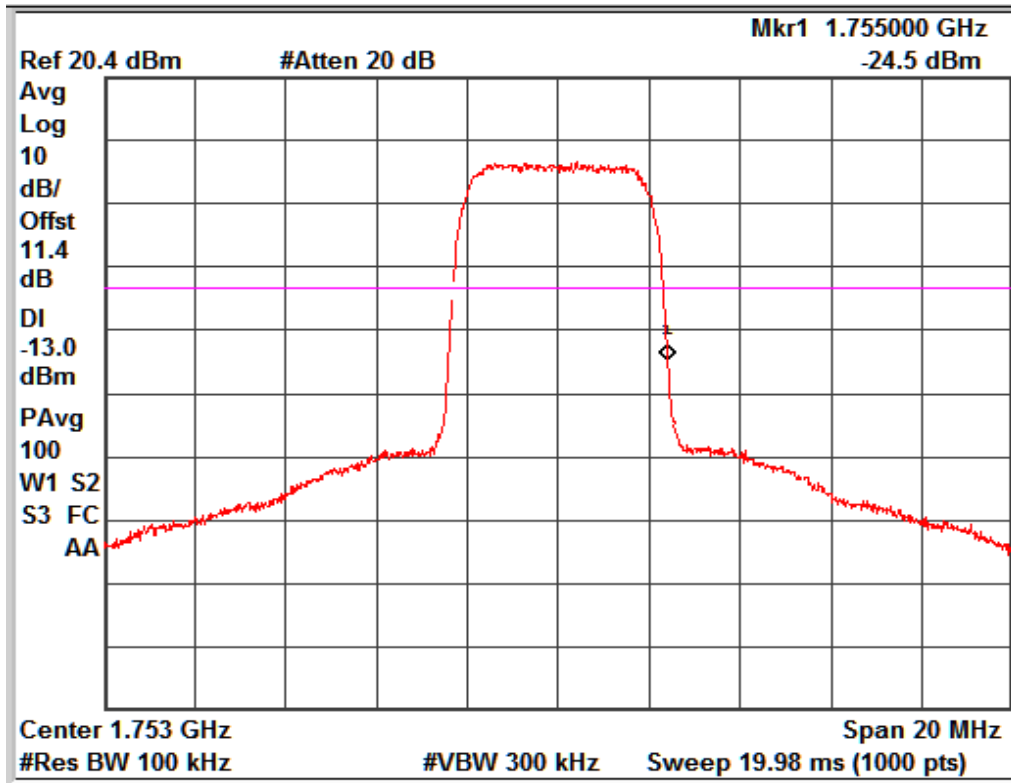


FDD Band 2 _ Channel No. 9538

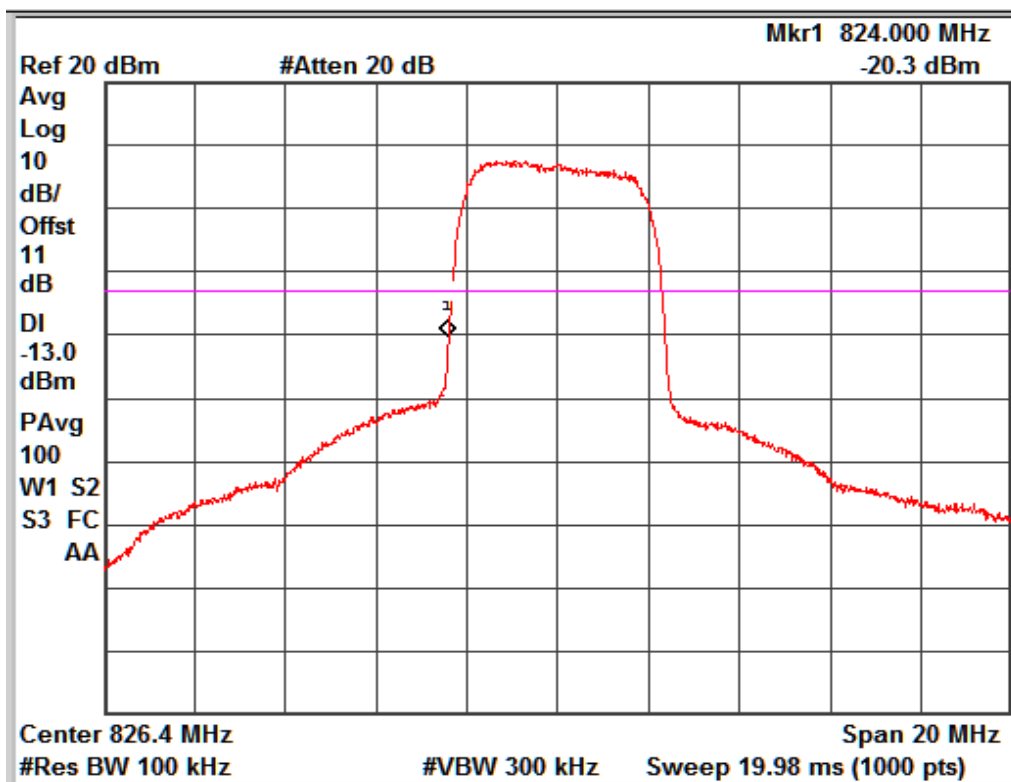


FDD Band 4 _ Channel No. 1312

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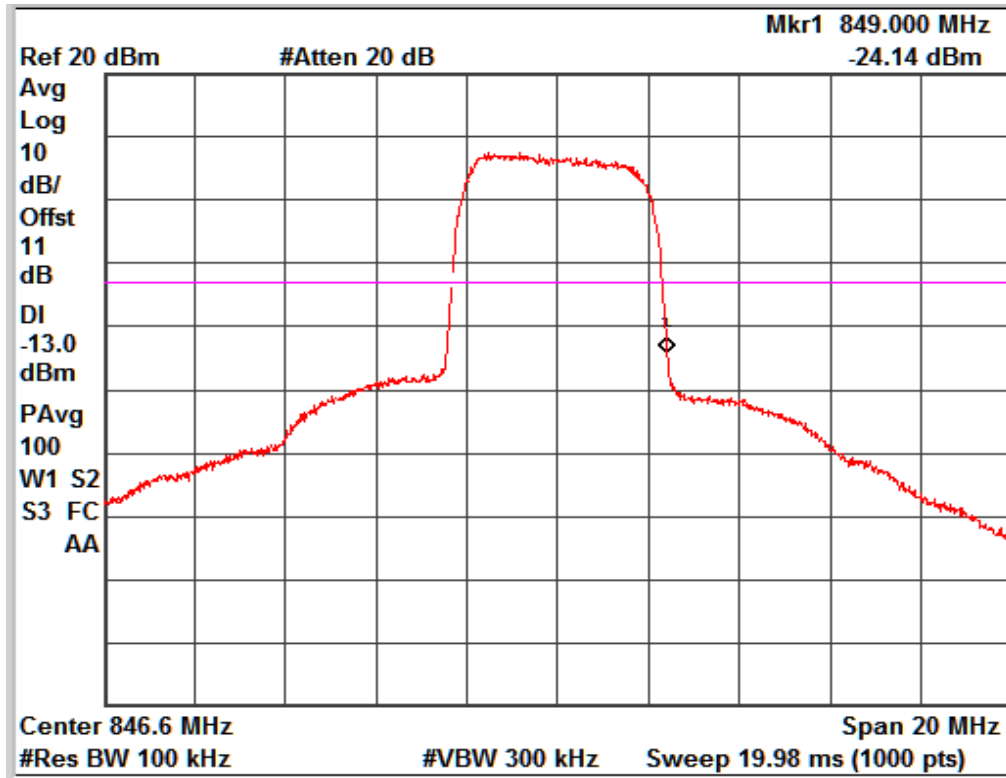


FDD Band 4 _ Channel No. 1513



FDD Band 5 _ Channel No. 4132

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FDD Band 5 _ Channel No. 4233

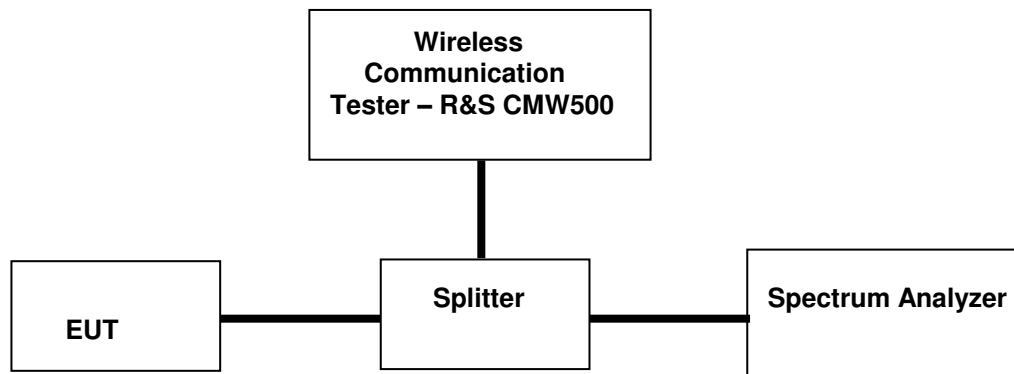
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**Conducted Spurious Emission
Result**

Pass

Specification	FCC Part 2.1051, 2.1057, 22.917(a)(b), 24.238(a)(b), 27.53(h) & RSS 132 Issue 3 section 5.5, RSS 133 Issue 6 section 6.5 (i)(ii), RSS 139 Issue 3 section 6.6(i)(ii)
Measurement Bandwidth (RBW)	100KHz/1MHz
Detector Function	Peak
Requirement	Shall be attenuated below the transmitter power (P in watt) by at least $43+10\log(P)$ dBm,

Test Setup:

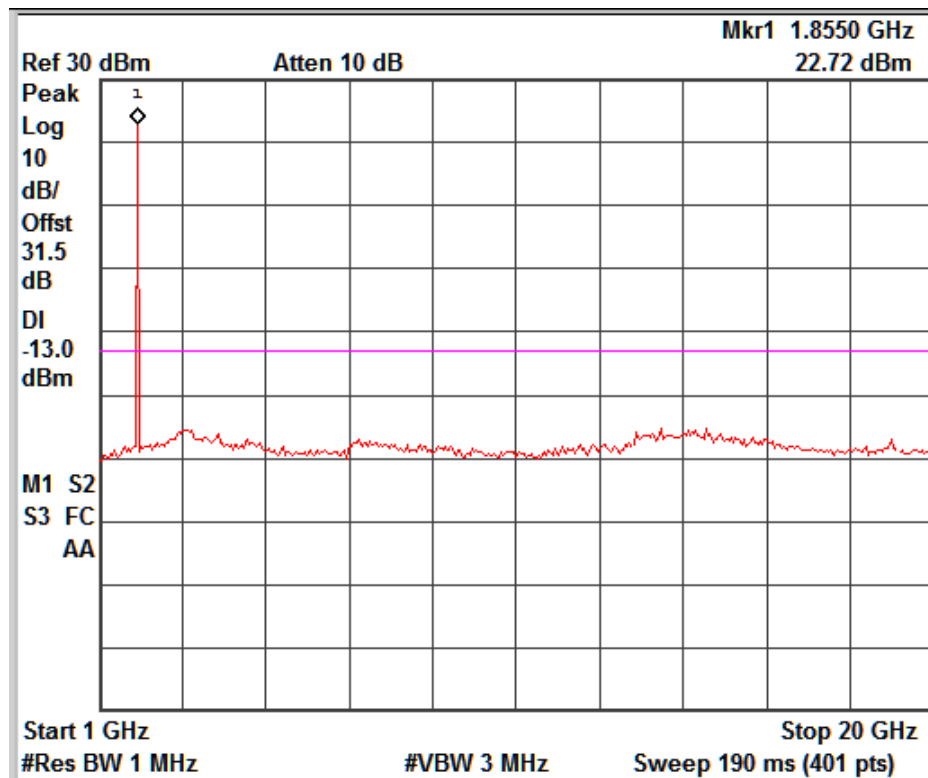
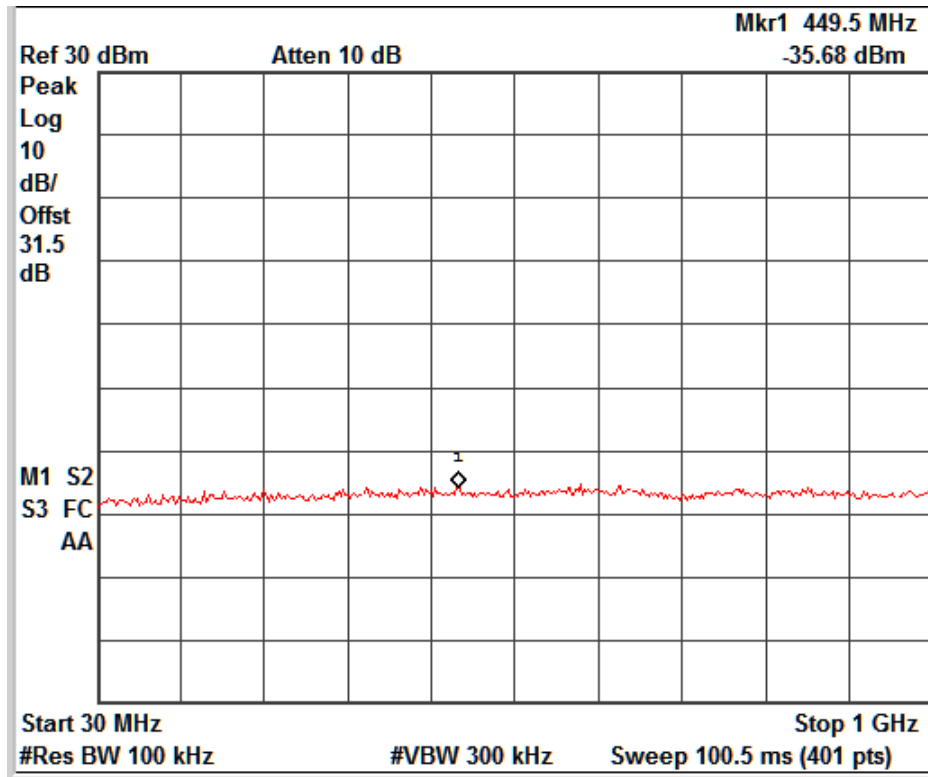


Note: For measurement of Conducted Spurious Emission, section 6.0 in "971168 D01 Power Meas License Digital Systems v02r02" was used.

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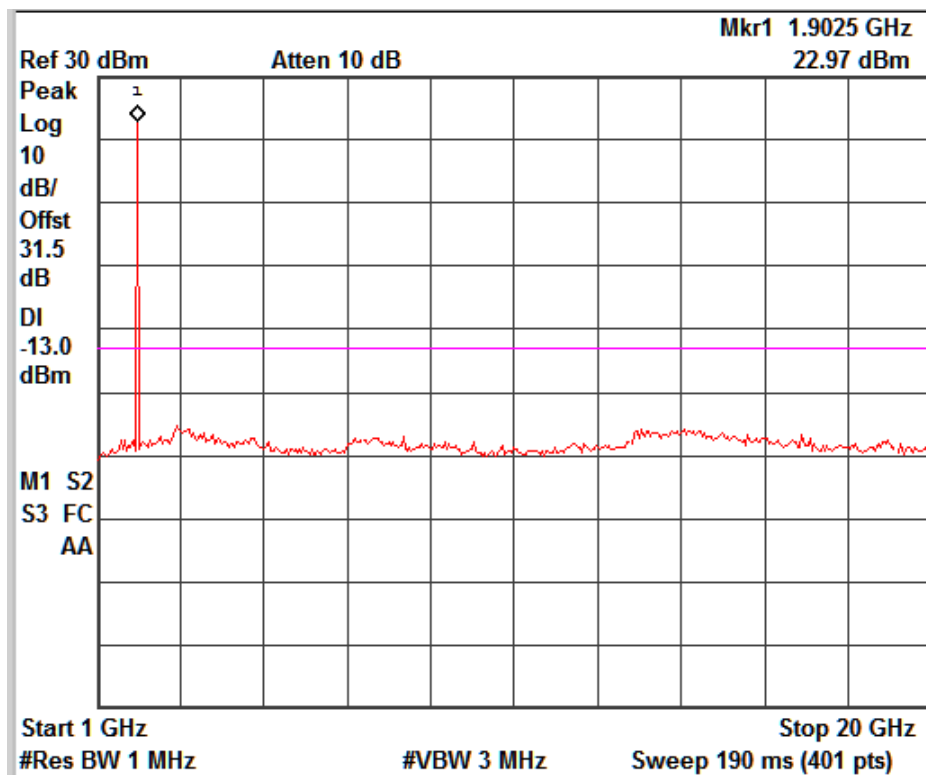
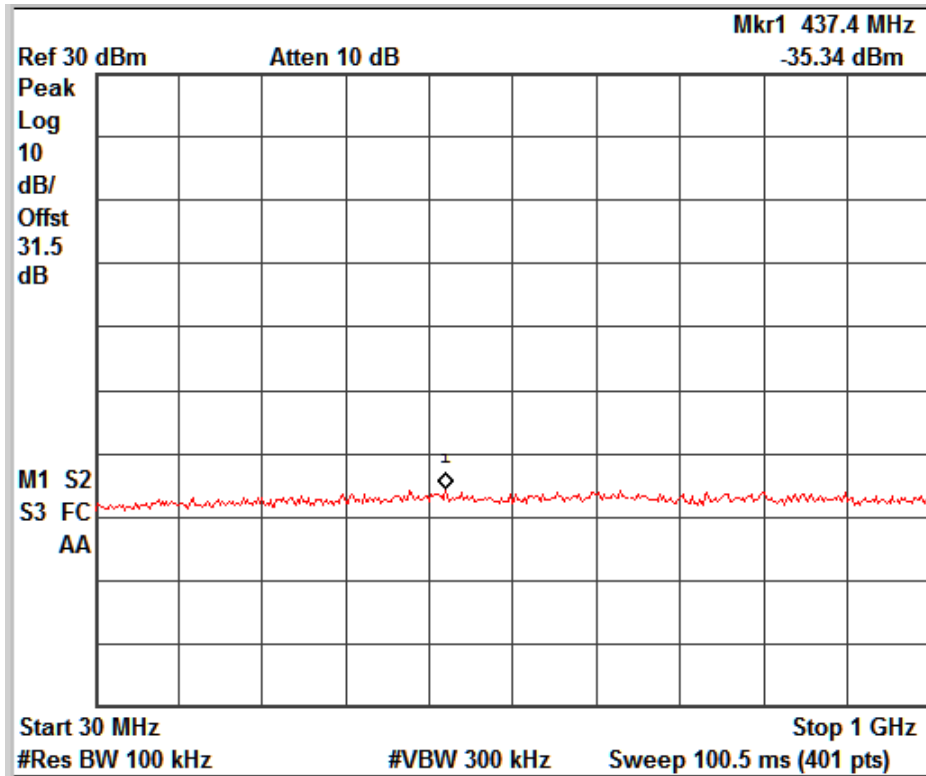
Test Results

Remark: Limit for antenna port conducted spurious emission test is -13dBm



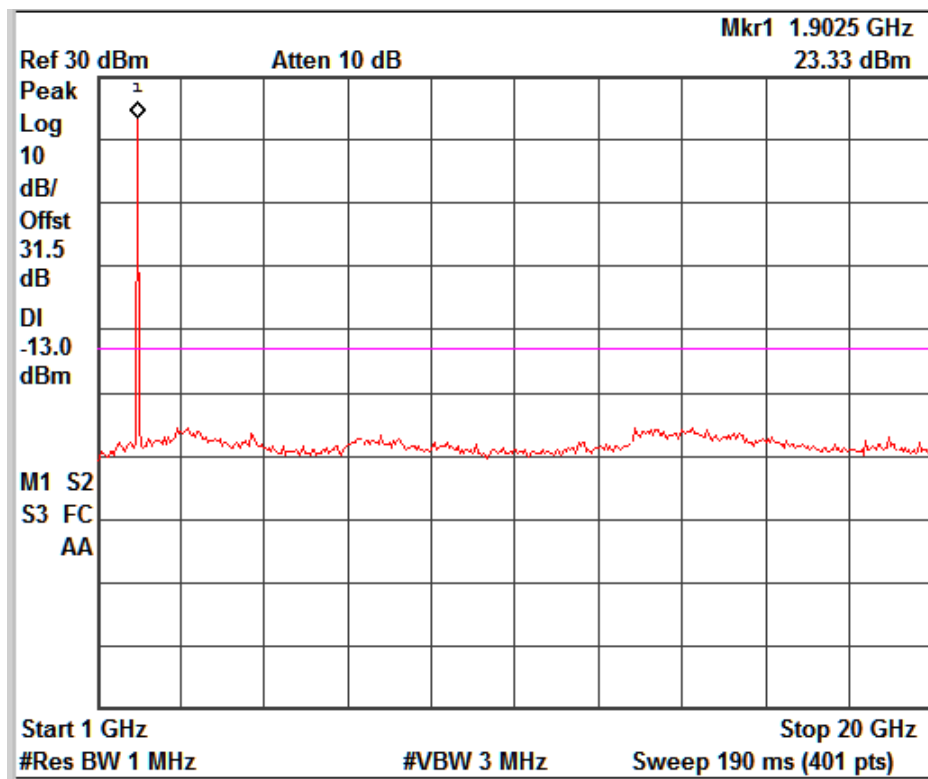
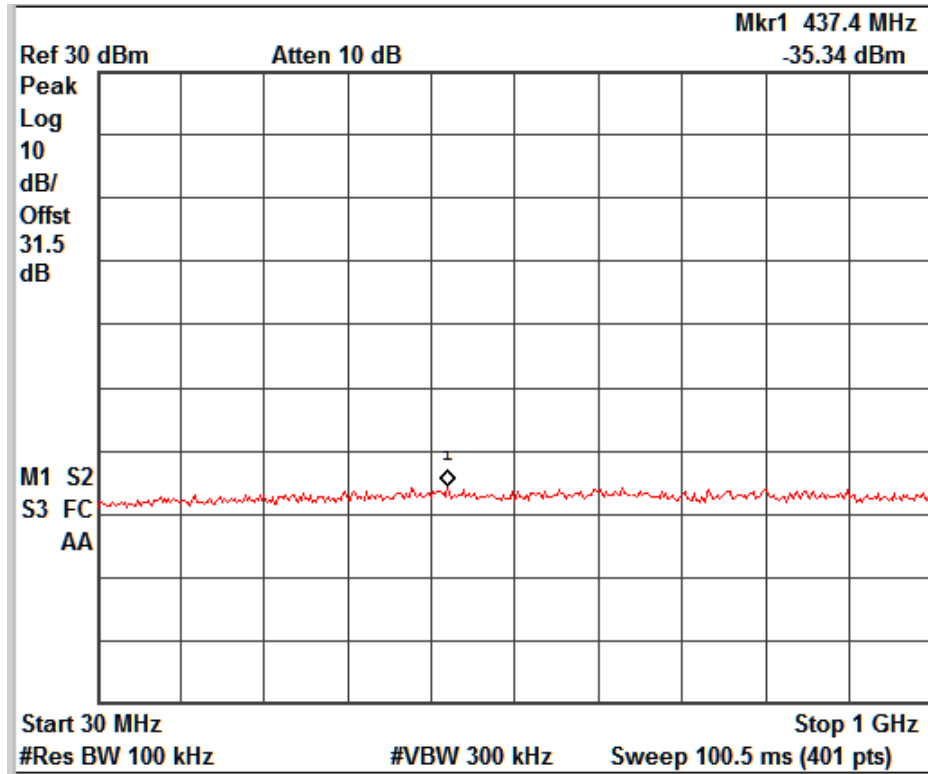
FDD Band 2 _ Channel No. 9262

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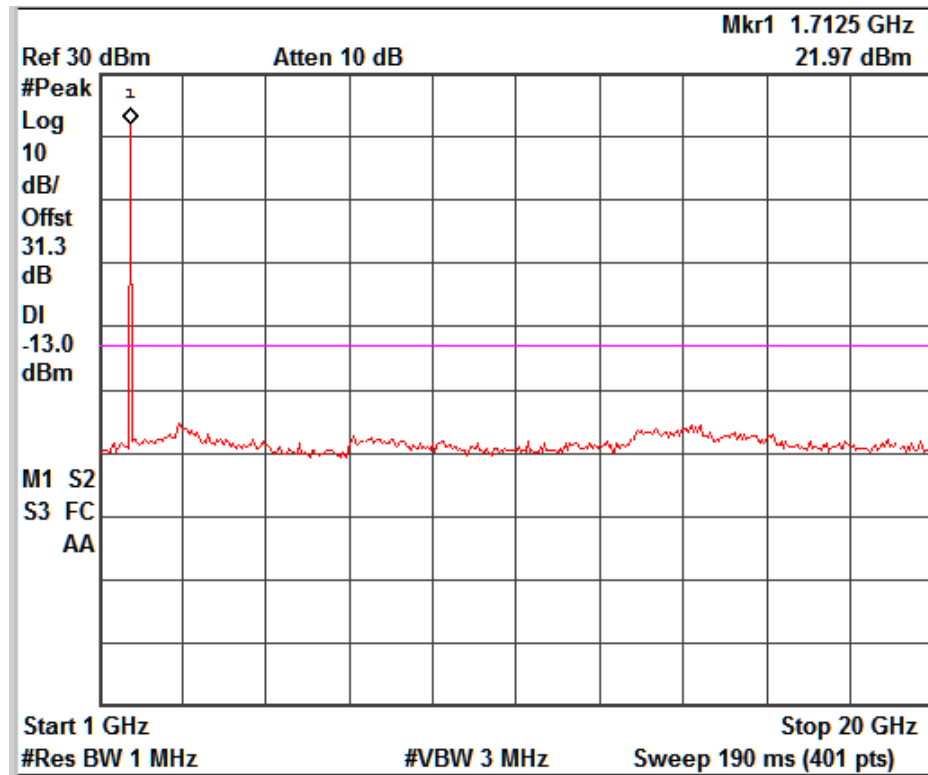
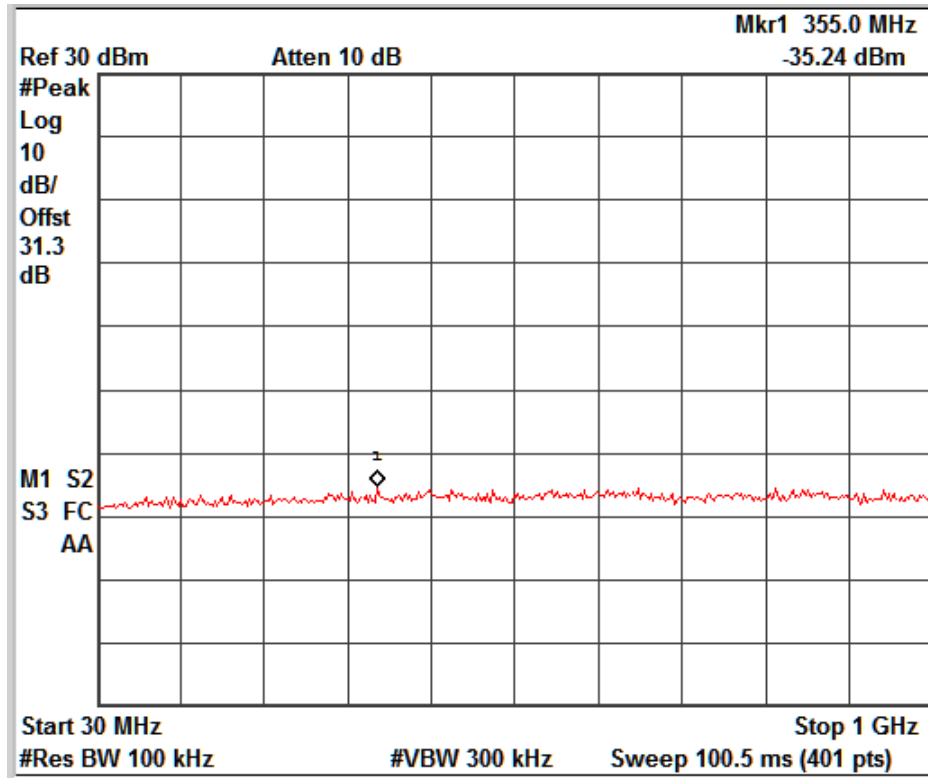
FDD Band 2 _ Channel No. 9400

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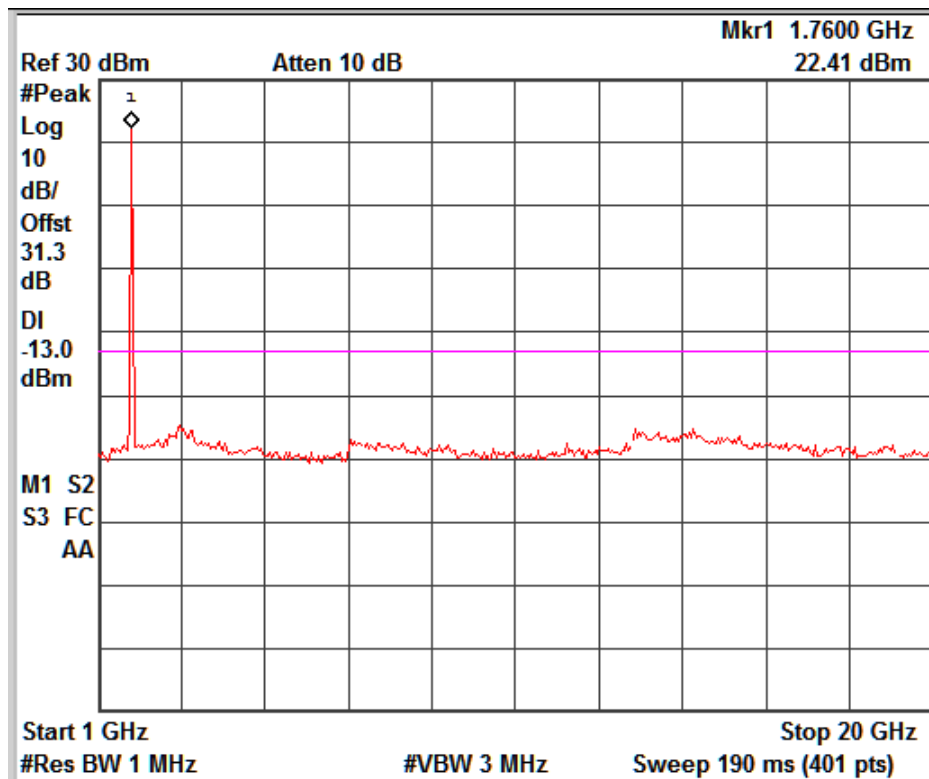
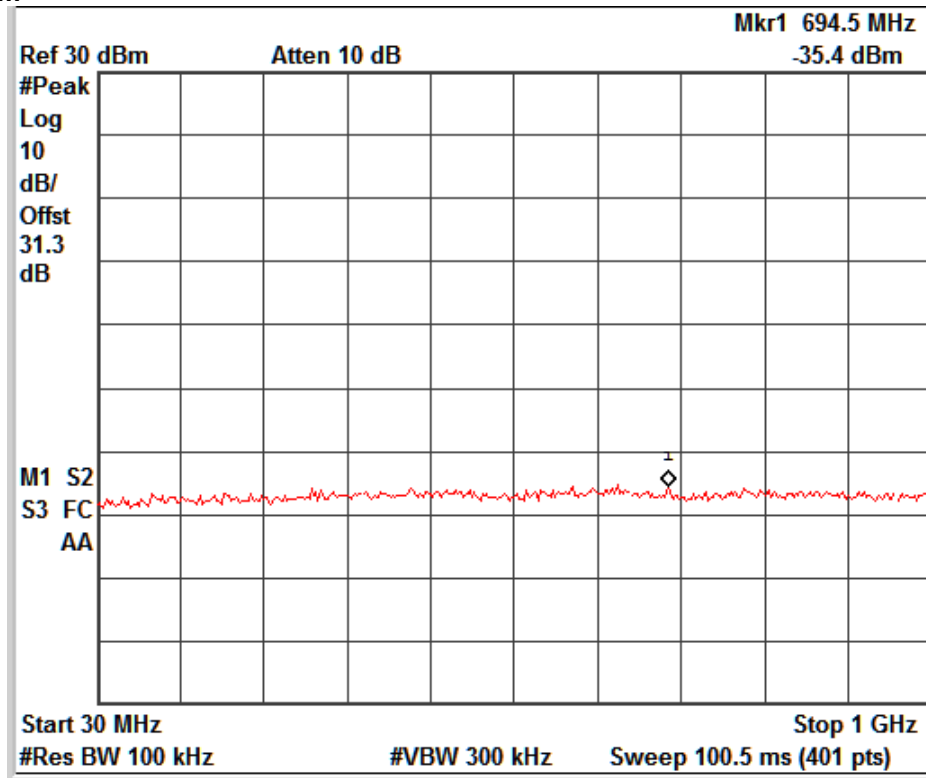
FDD Band 2 _ Channel No. 9538

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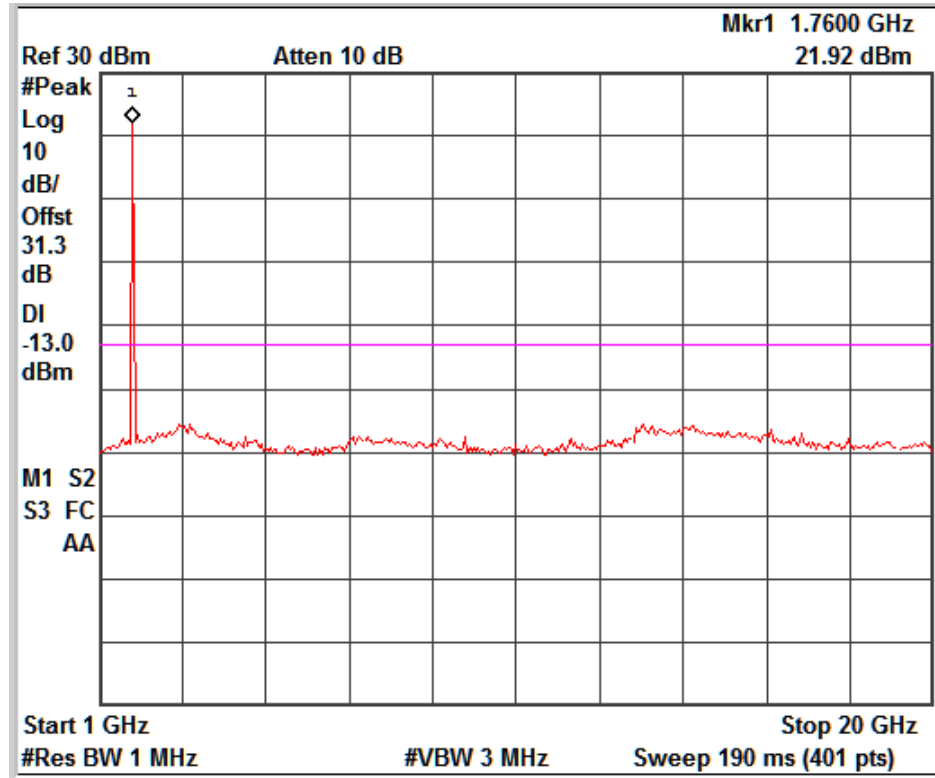
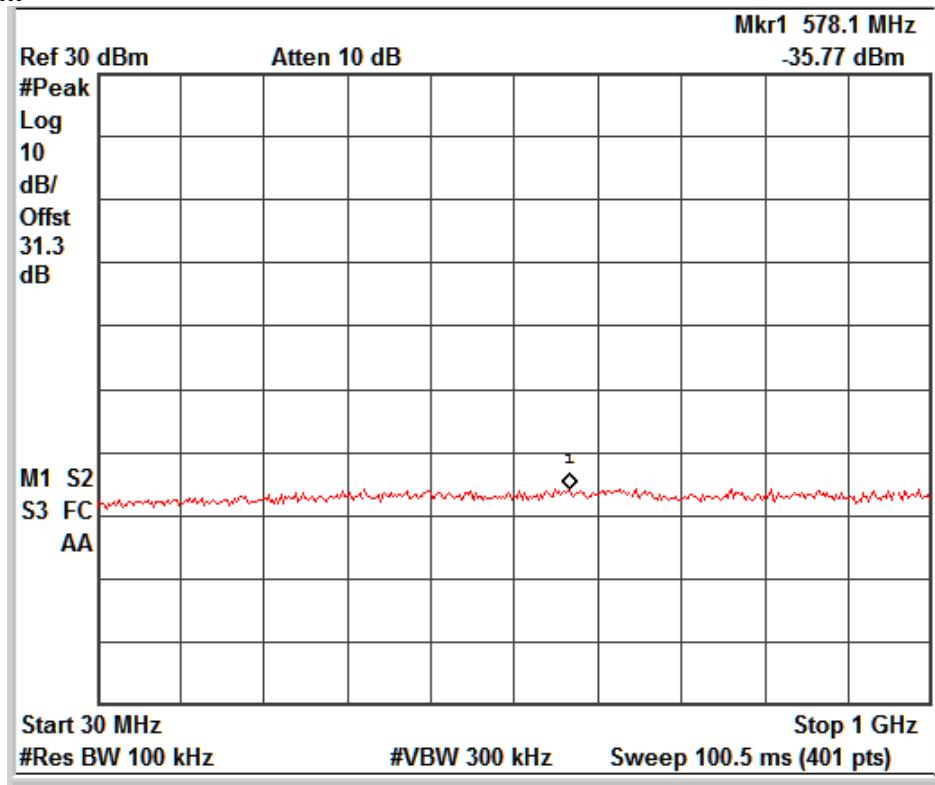
FDD Band 4 _ Channel No. 1312

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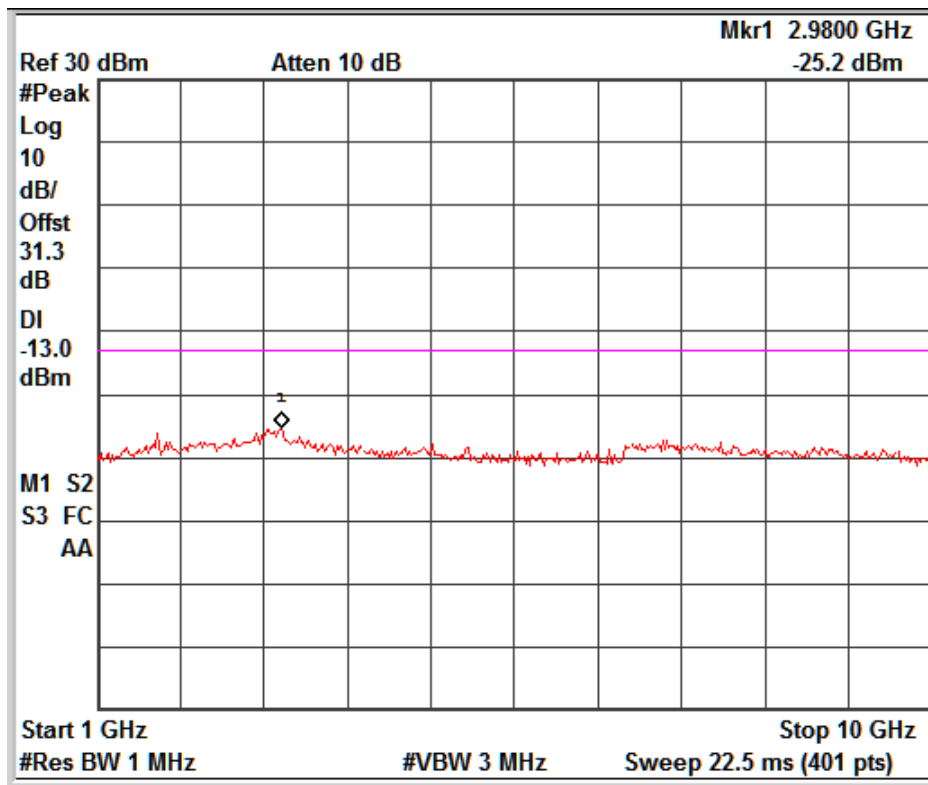
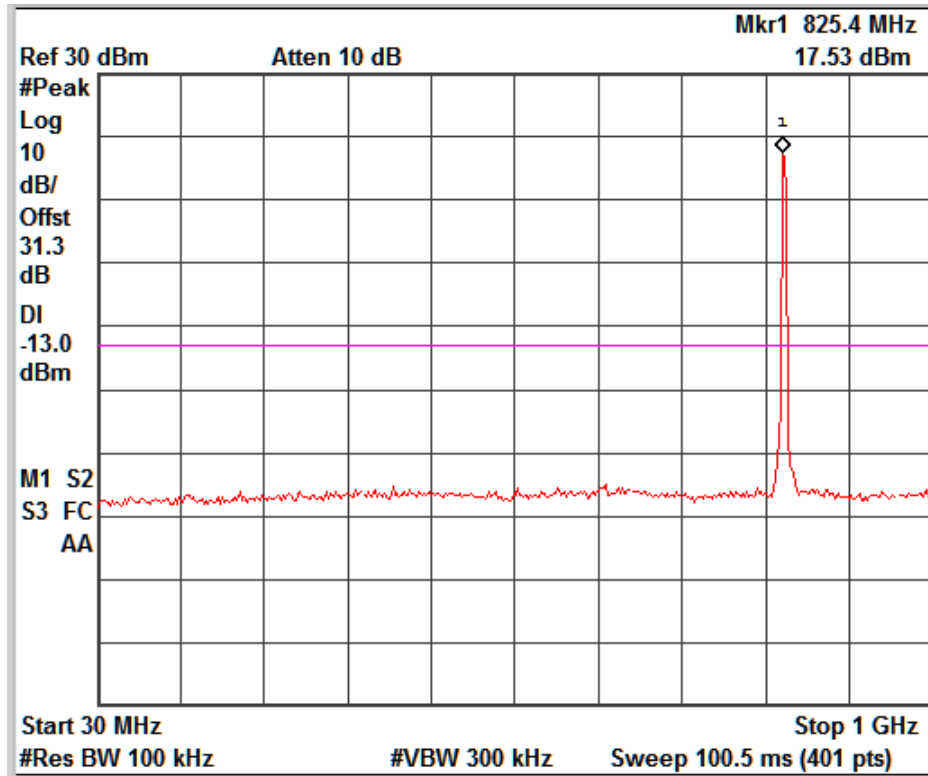
FDD Band 4 _ Channel No. 1412

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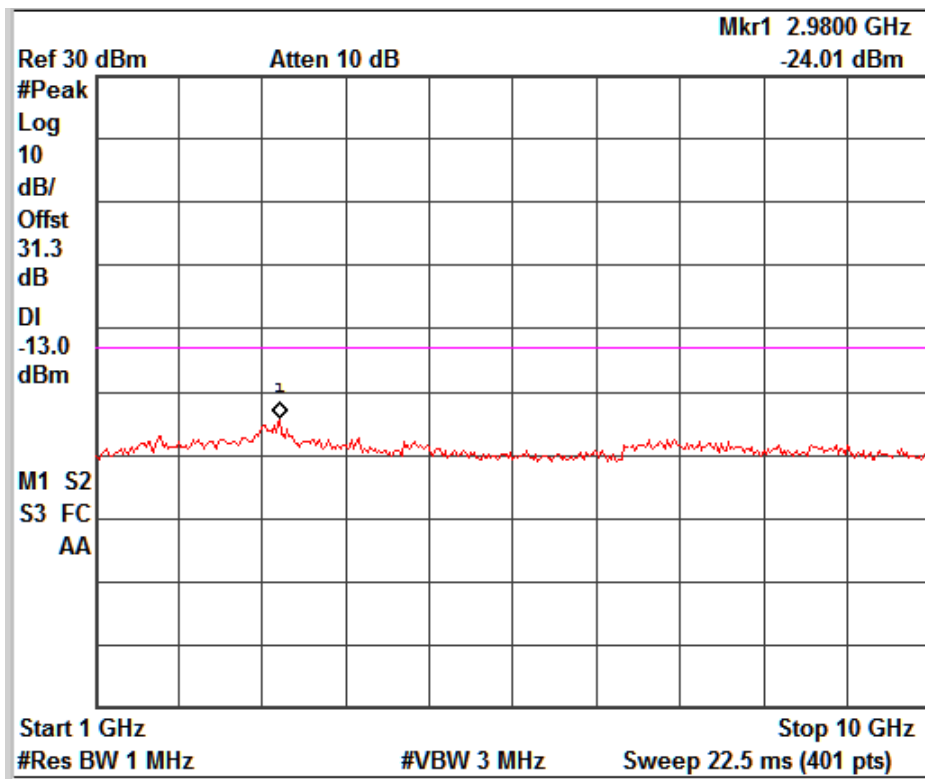
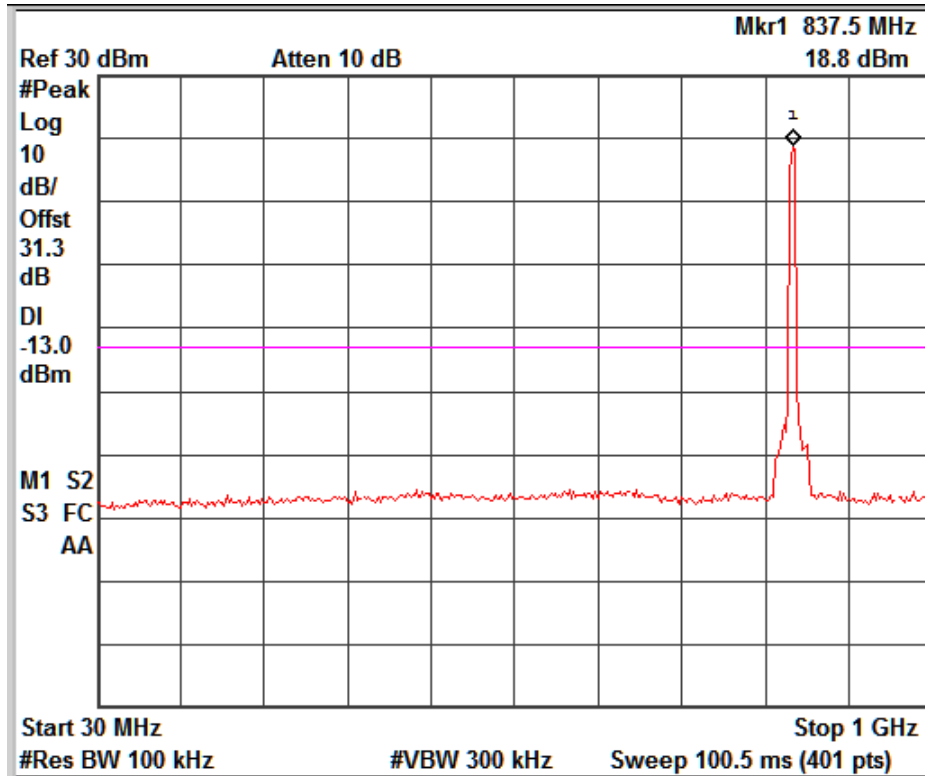
FDD Band 4 _ Channel No. 1513

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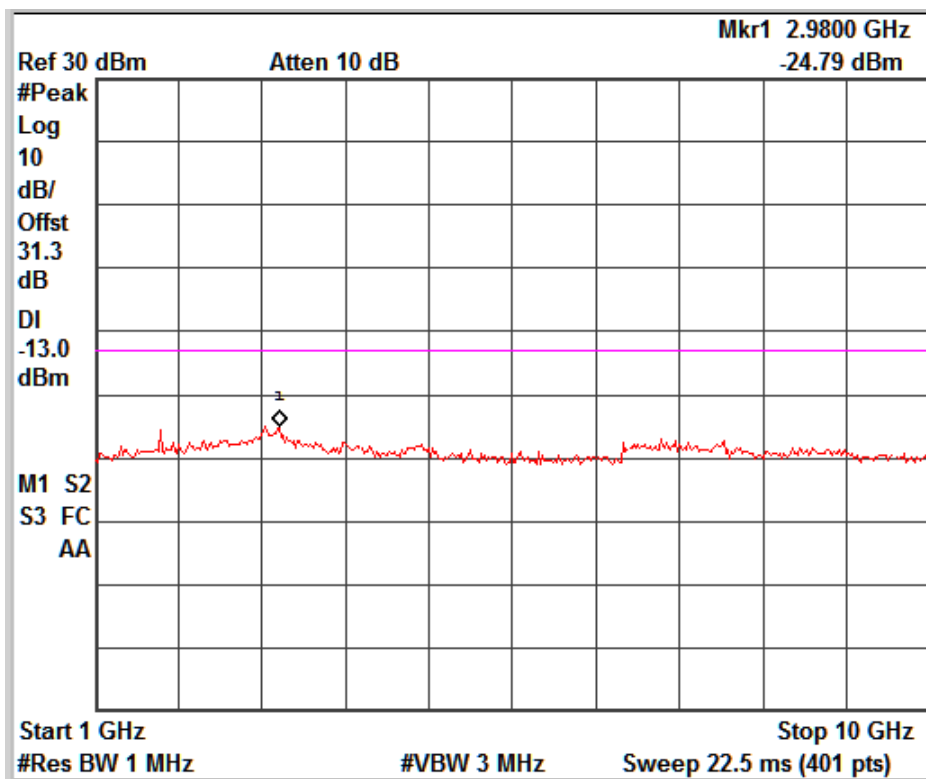
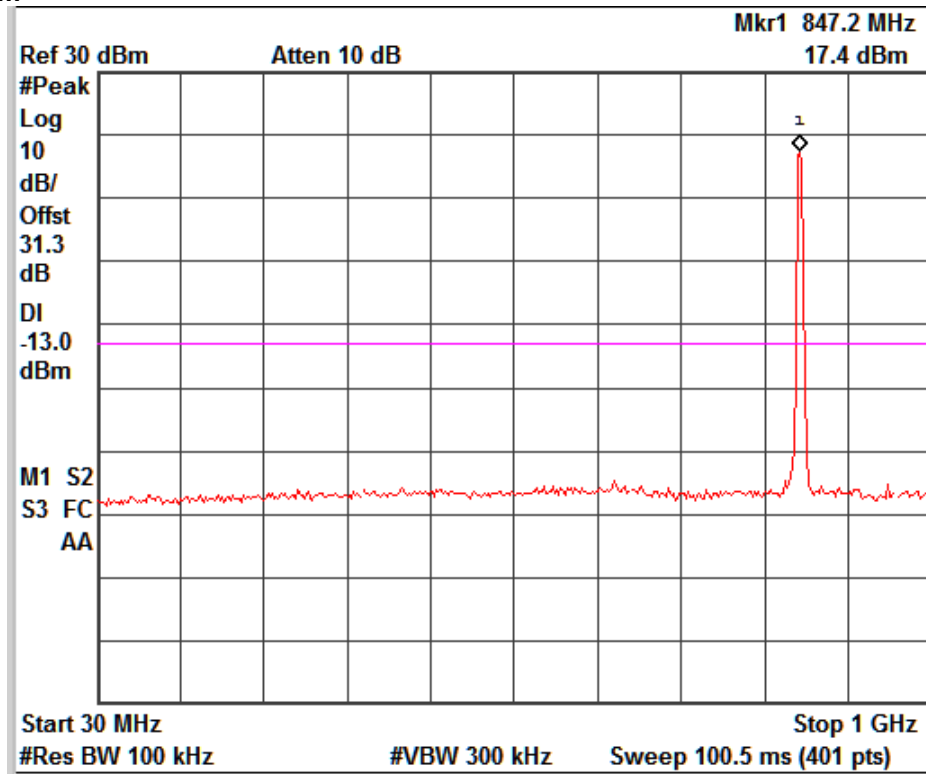
FDD Band 5 _ Channel No. 4132

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FDD Band 5 _ Channel No. 4183

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FDD Band 5 _ Channel No. 4233

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Frequency Stability Result

Pass

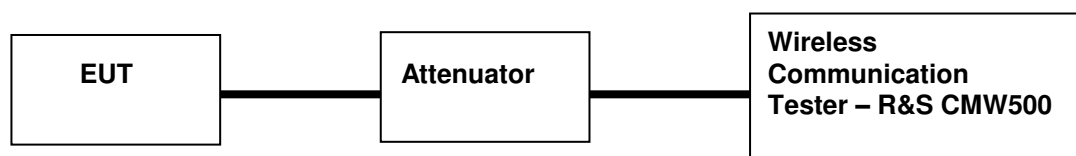
Specification

FCC Part 2.1055(a) (2), 22.355, , 24.235, 27.54 & RSS 132 Issue 3 section 5.3 ,
RSS 133 Issue 6 section 6.3, RSS Issue 3 section 6.4

Requirement

Frequency Stability shall be sufficient to ensure that the fundamental
emission stay within the authorised frequency blok.

Test Setup:



Note: For measurement of Frequency Stability, section 9.0 in “971168 D01 Power Meas License Digital Systems v02r02” was used.

Test Results:

Frequency Stability on Voltage variation

FDD Band 2 - Channel No: 9400 ; Temperature: 22°C				
Voltage (V)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
3.7	1880	-2.93	-0.0016	±2.5
3.8	1880	-3.83	-0.0020	±2.5
3.9	1880	-2.83	-0.0015	±2.5
4.0	1880	2.20	0.0012	±2.5
4.1	1880	-2.07	-0.0011	±2.5
4.2	1880	-1.47	-0.0008	±2.5

FDD Band 4 - Channel No: 1412 ; Temperature: 22°C				
Voltage (V)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
3.7	1732.4	3.55	0.0020	±2.5
3.8	1732.4	3.18	0.0018	±2.5
3.9	1732.4	4.61	0.0027	±2.5
4.0	1732.4	4.09	0.0024	±2.5
4.1	1732.4	2.56	0.0015	±2.5
4.2	1732.4	3.35	0.0019	±2.5

FDD Band 5 - Channel No: 4183 ; Temperature: 22°C				
Voltage (V)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
3.7	836.6	-1.53	-0.0018	±2.5
3.8	836.6	2.50	0.0030	±2.5
3.9	836.6	-1.94	-0.0023	±2.5
4.0	836.6	-1.75	-0.0021	±2.5
4.1	836.6	-1.19	-0.0014	±2.5
4.2	836.6	-2.70	-0.0032	±2.5

Frequency Stability on Temperature variation at constant nominal power supply

FDD Band 2- Channel No: 9400 ; Voltage: 3.9VDC				
Temperature (°C)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	1880	-4.99	-0.0027	±2.5
-20	1880	-4.69	-0.0025	±2.5
-10	1880	4.97	0.0026	±2.5
0	1880	4.82	0.0026	±2.5
10	1880	4.71	0.0025	±2.5
20	1880	-2.29	-0.0012	±2.5
30	1880	4.53	0.0024	±2.5
40	1880	-4.03	-0.0021	±2.5
50	1880	4.02	0.0021	±2.5

FDD Band 4- Channel No: 1412 ; Voltage: 3.9VDC				
Temperature (°C)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	1732.4	-4.51	-0.0026	±2.5
-20	1732.4	-4.32	-0.0025	±2.5
-10	1732.4	-3.71	-0.0021	±2.5
0	1732.4	-4.32	-0.0025	±2.5
10	1732.4	-4.61	-0.0027	±2.5
20	1732.4	-3.96	-0.0023	±2.5
30	1732.4	6.41	0.0037	±2.5
40	1732.4	-4.90	-0.0028	±2.5
50	1732.4	7.02	0.0041	±2.5

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FDD Band 5- Channel No: 4183 ; Voltage: 3.9VDC				
Temperature (°C)	Channel Frequency (Hz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	836.6	2.34	0.0028	±2.5
-20	836.6	1.98	0.0024	±2.5
-10	836.6	2.21	0.0026	±2.5
0	836.6	2.13	0.0025	±2.5
10	836.6	2.63	0.0031	±2.5
20	836.6	1.51	0.0018	±2.5
30	836.6	2.12	0.0025	±2.5
40	836.6	-1.60	-0.0019	±2.5
50	836.6	1.47	0.0018	±2.5

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**RF Power (ERP/EIRP) – Radiated Mode
Result**

Pass

Specification	FCC Part 2.1046(a), 22.913(a) (2) 24.232(c), 27.50(d) (4) & RSS 132 Issue 3 section 5.4, SRSP-503 section 5.1.3 & RSS 133 Issue 6 section 4.1/6.4, SRSP-510.5.1.2 & RSS 139 Issue 3 section 6.5
Measurement Bandwidth (RBW)	100KHz/1MHz
Detector Function	Peak
Requirement	≤ FDD Band 2 : 2 Watts (33 dBm) FDD Band 4 : 1 Watts (30 dBm) FDD Band 5 : 7 Watts (38.4dBm) for FCC & 11.5 Watts (40.60dBm) for IC

Test Setup:

Note: For measurement of RF Output Power, Test performed as per ANSI/TIA-603-D-2010 Clause 2.2.17.

Test Results

Test Case : Release 99 12.2kbps RMC					
FDD Band	UARFCN Channel No.	UARFCN Channel Frequency	Polarization	Measured Output Power	Limit (dBm)
2	9262	1852.4	V	19.20	33
			H	21.77	33
	9400	1880	V	20.87	33
			H	22.89	33
	9538	1907.6	V	19.49	33
			H	22.35	33
4	1312	1712.4	V	19.97	30
			H	19.16	30
	1412	1732.4	V	21.46	30
			H	21.55	30
	1513	1752.6	V	21.37	30
			H	21.62	30
5	4132	826.4	V	16.06	38.4
			H	13.72	38.4
	4183	836.6	V	16.30	38.4
			H	13.69	38.4
	4233	846.6	V	16.45	38.4
			H	14.00	38.4
			H	16.06	38.4

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Field Strength of Spurious Radiation Result

Pass

Specification	FCC Part 2.1053(a), 22.917(a)(b), 24.238(a)(b) 27.53(h) & RSS 132 Issue 3 section 5.5, RSS 133 Issue 6 section 6.5 (i)(ii), RSS 139 Issue 3 section 6.6(i)(ii)
Measurement Bandwidth (RBW)	100KHz/1MHz
Detector Function	Peak
Requirement	Shall be attenuated below the transmitter power (P) by at least $43+10\log(P)$ dBm,

Note: For measurement of RF Output Power, Test performed as per ANSI/TIA-603-D-2010 Clause 2.2.12.

Test Results

Test results for frequency below 1 GHz.

Worst case test results are reported for 1GB RAM Variant.

Polarization	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
Vertical	98.38	-57.05	-13	-44.05
	210.71	-58.68	-13	-45.68
Horizontal	97.6	-58.72	-13	-45.72
	213.03	-55.78	-13	-42.78

Worst case test results are reported for 2GB RAM Variant.

Polarization	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
Vertical	100.91	-56.84	-13	-43.84
	211.64	-57.28	-13	-44.28
Horizontal	99.27	-55.29	-13	-42.29
	210.15	-56.29	-13	-43.29

Test results for frequency above 1GHz

WCDMA Band	Channel	Channel Frequency (MHz)	Polarization	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
2	Low	1852.4	Vertical	No Emissions Found			
			Horizontal	No Emissions Found			
	Mid	1880.0	Vertical	No Emissions Found			
			Horizontal	No Emissions Found			
	High	1907.6	Vertical	No Emissions Found			
			Horizontal	No Emissions Found			
4	Low	1712.4	Vertical	3410.5	-51.39	-13	-38.39
			Horizontal	3426.3	-49.63	-13	-36.63
	Mid	1732.4	Vertical	3462.1	-48.83	-13	-35.83
			Horizontal	3459	-50.33	-13	-37.33
	High	1752.6	Vertical	3500.3	-49.54	-13	-36.54
			Horizontal	3505.6	-50.79	-13	-37.79
5	Low	826.4	Vertical	1654.3	-39.22	-13	-26.22
			Horizontal	1654.2	-38.51	-13	-25.51
			Vertical	2500	-48.63	-13	-35.63
			Horizontal	2500.1	-51.71	-13	-38.71
			Vertical	3302.6	-50.31	-13	-37.31
			Horizontal	3302.5	-48.74	-13	-35.74
	Mid	836.6	Vertical	1674.7	-36.98	-13	-23.98
			Horizontal	1674.6	-36.41	-13	-23.41
			Vertical	2500.1	-47.89	-13	-34.89
			Horizontal	2500.2	-51.84	-13	-38.84
			Vertical	3341.8	-50.37	-13	-37.37
			Horizontal	3343.3	-48.17	-13	-35.17
	High	846.6	Vertical	1690.8	-35.1	-13	-22.1
			Horizontal	1690.9	-36.22	-13	-23.22
			Vertical	2550.1	-53.16	-13	-40.16
			Horizontal	2549.9	-54.1	-13	-41.1
			Vertical	3383.7	-50.9	-13	-37.9
			Horizontal	3389.4	-48.42	-13	-35.42

END OF TEST REPORT