

FCC /ISED Test Report

Product Name : Module
Trade Name : AirPrime
Model No. : WP7610
FCC ID. : N7NWP7610
IC ID. : 2417C-WP7610

Applicant : SIERRA WIRELESS HONG KONG LIMITED
Address : 6/F Enterprise Place, No.5 Science Park West Avenue, Hong Kong Science Park, Shatin, New Territories, Hong Kong

Date of Receipt : Dec. 03, 2018
Issued Date : Jan. 03, 2019
Report No. : 18C0023R-HPUSP28V00
Report Version : V1.0



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Test Report Certification


Issued Date: Jan. 03, 2019

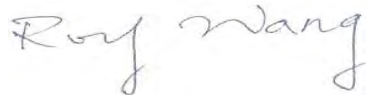
Report No.: 18C0023R-HPUSP28V00



Product Name : Module
 Applicant : SIERRA WIRELESS HONG KONG LIMITED
 Address : 6/F Enterprise Place, No.5 Science Park West Avenue, Hong Kong Science Park, Shatin, New Territories, Hong Kong
 Manufacturer : SIERRA WIRELESS HONG KONG LIMITED
 Address : 6/F Enterprise Place, No.5 Science Park West Avenue, Hong Kong Science Park, Shatin, New Territories, Hong Kong
 Trade Name : AirPrime
 Model No. : WP7610
 FCC ID. : N7NWP7610
 IC ID. : 2417C-WP7610
 EUT Voltage : DC 3.7V
 Testing Voltage : DC 3.7V
 Applicable Standard : FCC CFR Title 47 Part 22 Subpart H
 FCC CFR Title 47 Part 24 Subpart E
 FCC CFR Title 47 Part 27 Subpart M
 Industry Canada RSS-GEN Issue 5
 Industry Canada RSS-132 Issue 3
 Industry Canada RSS-133 Issue 6
 Industry Canada RSS-139 Issue 3
 ANSI/TIA-603-D-2010
 Test Lab : Hsin Chu Laboratory
 Test Result : Complied

Documented By : 
 (Carol Tsai / Senior Engineering Adm. Specialist)

Tested By : 
 (Andy Tsai / Senior Engineer)

Approved By : 
 (Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
18C0023R-HPUSP28V00	V1.0	Initial issue of report	Jan. 03, 2019

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1. General Information

1.1. EUT Description

Product Name	Module
Trade Name	AirPrime
Model No.	WP7610
Tx Frequency Range/ Channel number	WCDMA Band 2: 1852.4-1907.6 MHz WCDMA Band 4: 1712.4-1752.6 MHz WCDMA Band 5: 826.4-846.6 MHz
Rx Frequency Range/ Channel number	WCDMA Band 2: 1932.4-1987.6 MHz WCDMA Band 4: 2112.4-2152.6 MHz WCDMA Band 5: 871.4-891.6 MHz
Type of Modulation	WCDMA: QPSK (Uplink); HSDPA: QPSK (Uplink); HSUPA: QPSK (Uplink)
HW Version	1.0
FW Version	through ATI9
IMEI No.	015250000002000

Antenna Information	
MFR. / Model.	Pulse Electronics, Inc. / SPDA24700/2700
Antenna Type	Dipole Antenna
Antenna Gain	2 dBi

Accessories Information	
Antenna	1set

Note:

1. This Module support WCDMA Band 2/4/5 and LTE Band 2/4/5/12/13/14/17/66.

1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

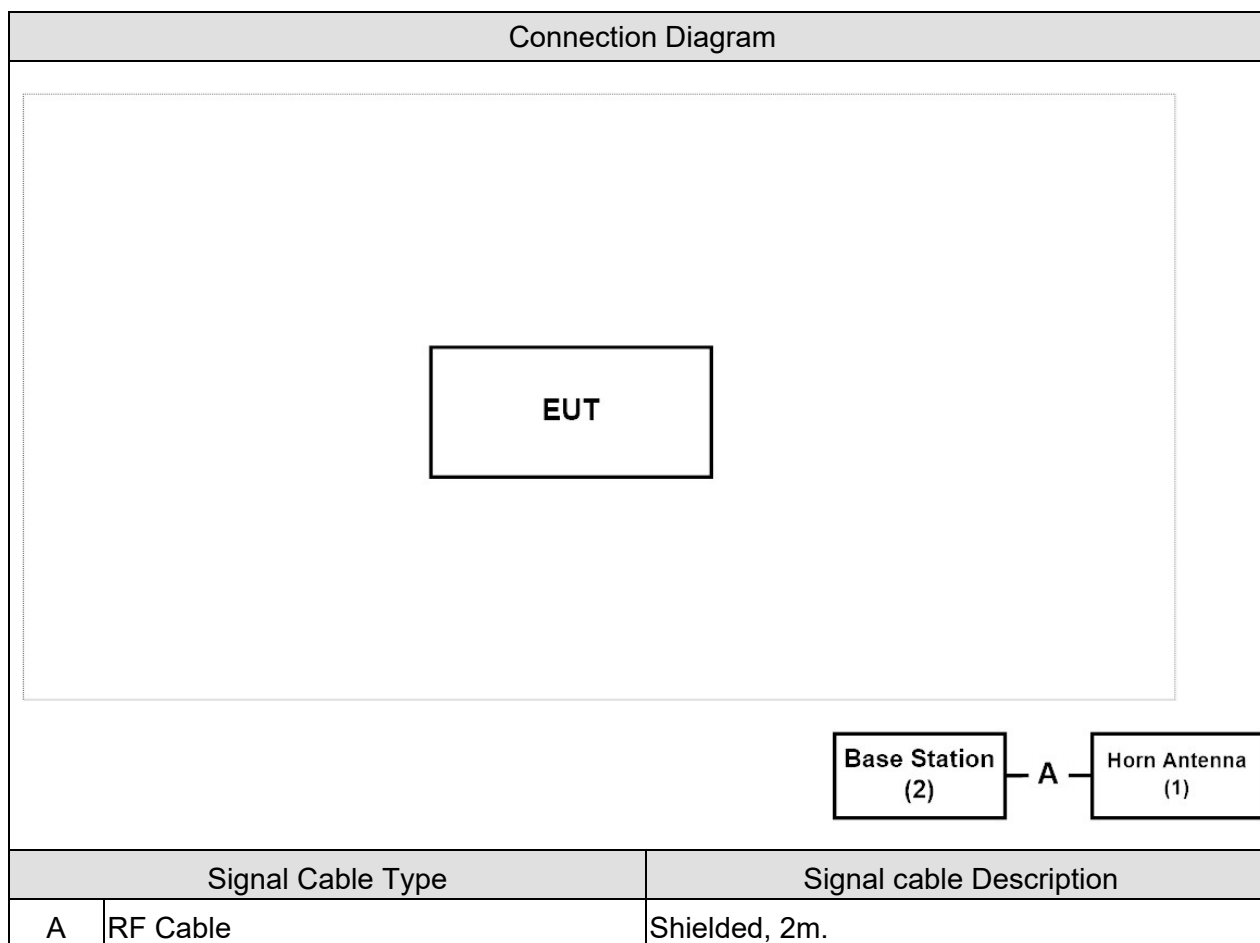
Test Mode
Mode 1: WCDMA Band 2
Mode 2: WCDMA Band 4
Mode 3: WCDMA Band 5

1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Horn Antenna	ELECTRO METRICS	EM-6961	103326	DoC	--
2 Base Station	R&S	CMW500	106071	DoC	Non-Shielded, 1.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment. Horn link with base station.
3	The EUT link with base station and it will continue receive the signal.
4	Repeat the above procedure.

2. Technical Test

2.1. Summary of Test Result

- No deviations from the test standards
- Deviations from the test standards as below description:

For WCDMA Band 2

(FCC Part 24 Subpart E, Industry Canada RSS-133, Issue 6, Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
RF Output Power	§2.1033 §2.1046 §24.232	§6.4	< 2 Watts	Pass
Occupied Bandwidth	§2.1049	RSS-GEN §4.2	N/A	Pass
Peak To Average Ratio	§24.232(d)	§6.4	≤ 13dB	Pass
Conducted Band Edge	§27.238	§6.5	< -13dBm	Pass
Spurious Emission	§2.1053 §24.238	§6.5	< -13dBm	Pass
Frequency Stability	§2.1055 §24.235	§6.3	< 2.5 ppm	Pass

For WCDMA Band 4**(FCC Part 27 Subpart M, Industry Canada RSS-139, Issue 3, Industry Canada RSS-GEN)**

Performed Item	FCC Rule	IC Rule	Limit	Result
RF Output Power	§2.1046 § 27.50(h)(2)	§6.5	< 1 Watts EIRP	Pass
Occupied Bandwidth	§ 2.1049 § 27.53(l)(6)	RSS - Gen §6.6	N/A	Pass
Peak To Average Ratio	§27.50(b)	§6.5	≤ 13dB	Pass
Conducted Band Edge	§ 2.1051 §27.53(l)(4)(6)	§6.6	< -13 dBm	Pass
Spurious Emission	§ 2.1051 §27.53(l)(4)(6)	§6.6	< -25 dBm	Pass
Frequency Stability	§2.1055(a)(l) § 27.54	§6.4	< 2.5 ppm	Pass

For WCDMA Band 5**(FCC Part 22 Subpart H, Industry Canada RSS-132, Issue 3, Industry Canada RSS-GEN)**

Performed Item	FCC Rule	IC Rule	Limit	Result
RF Output Power	§2.1033 §2.1046 §22.913	§5.4	< 7 Watts	Pass
Occupied Bandwidth	§2.1049	RSS-GEN §4.2	N/A	Pass
Peak To Average Ratio	§22.913(d)	§5.4	≤ 13dB	Pass
Conducted Band Edge	§22.917	§5.5	< -13dBm	Pass
Spurious Emission	§2.1053 §22.917	§5.5	< -13dBm	Pass
Frequency Stability	§2.1055 §22.335	§5.3	< 2.5 ppm	Pass

2.2. Test Environment

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	RF Output Power	15-35	23	3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	
Temperature (°C)	Occupied Bandwidth	15-35	23	3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	
Temperature (°C)	Peak To Average Ratio	15-35	23	3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	
Temperature (°C)	Conducted Band Edge	15-35	23	3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	
Temperature (°C)	Spurious Emission	15-35	23	2/3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	
Temperature (°C)	Frequency Stability	15-35	23	3
Humidity (%RH)		25-75	52	
Barometric pressure (mbar)		860-1060	950-1000	

Note: Test Site information refers to Laboratory Information.

Laboratory Information

USA : **FCC Registration Number: TW3024**

Canada : **IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

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2.3. List of Test Equipment

RF Output Power / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/01/02	2019/01/01
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Directional Coupler	Agilent	778D	20402	2018/09/07	2019/09/06

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Directional Coupler	Agilent	778D	20402	2018/09/07	2019/09/06

Peak To Average Ratio / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Directional Coupler	Agilent	778D	20402	2018/09/07	2019/09/06

Conducted Band Edge / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Directional Coupler	Agilent	778D	20402	2018/09/07	2019/09/06

Conducted Spurious Emissions / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Directional Coupler	Agilent	778D	20402	2018/09/07	2019/09/06

Radiated Spurious Emissions / CB2-H, CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04
Bilog Antenna	Teseq	CBL6112D	23191	2018/06/26	2019/06/25
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2018/06/01	2019/05/31
Horn Antenna	Schwarzbeck	BBHA 9170	202	2018/01/31	2019/01/30
Pre-Amplifier	DEKRA.	AP-025C	201801235	2018/03/12	2019/03/11
Pre-Amplifier	EMCI	EMCI 1830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	Dekra	AP-400C	201801231	2018/12/05	2019/12/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28

Frequency Stability / SR10-H

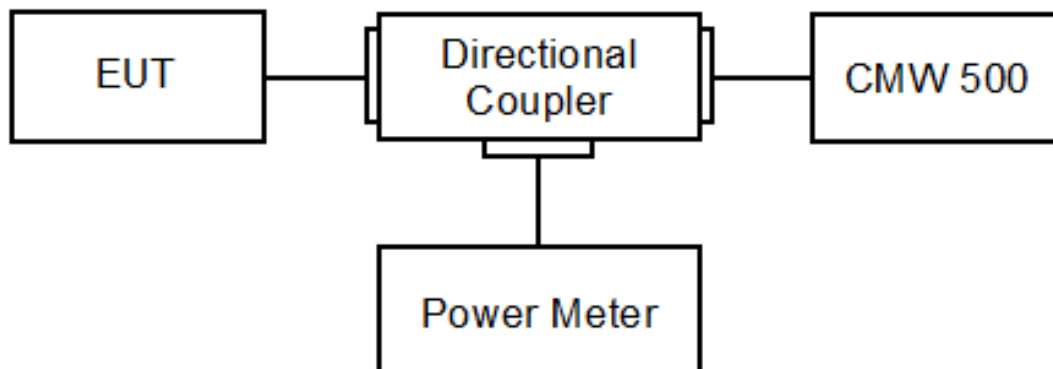
Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Wideband Radio Communication Tester	R&S	CMW500	106071	2018/01/29	2019/01/28
Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2018/01/23	2019/01/22

2.4. Measurement Uncertainty

Test Item	Uncertainty
RF Output Power	± 1.27 dB
Occupied Bandwidth	± 10 Hz
Peak To Average Ratio	In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13dB.
Conducted Band Edge	± 1.2 dB
Spurious Emissions	The measurement uncertainty is defined as ± 1.27 dB for Conducted Measurement. The measurement uncertainty is defined as ± 3.2 dB for Radiated Measurement.
Frequency Stability	± 10 Hz

3. RF Output Power

3.1. Test Setup



3.2. Test Procedure

- a) The RF output of the transmitter was connected to base station simulator.
- b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- c) Set EUT at maximum average power by base station simulator.
- d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi)

Effective Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi) - 2.15dB

3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.2.4

ANSI C63.26-2015 Sub-clause 5.2.4.2

3.4. Test Result

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 1: WCDMA Band 2 Mode 2: WCDMA Band 4 Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

Band	Channel	Lower Limit (dBm)	Upper Limit (dBm)	Actual Result (dBm)	Uncertainty (dB)
2	Low	20.50	23.50	23.24	± 1.27
	Middle	20.50	23.50	23.05	± 1.27
	High	20.50	23.50	22.82	± 1.27
4	Low	21.00	23.50	23.04	± 1.27
	Middle	21.00	23.50	23.07	± 1.27
	High	21.00	23.50	22.72	± 1.27
5	Low	21.50	24.00	23.62	± 1.27
	Middle	21.50	24.00	23.46	± 1.27
	High	21.50	24.00	23.37	± 1.27

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level		Limit (W) EIRP
				(dBm)	(W)	
RMC	1852.4	23.24	2	25.240	0.334	2
	1880.0	22.18	2	24.180	0.262	2
	1907.6	21.67	2	23.670	0.233	2
HSUPA	1852.4	23.05	2	25.050	0.320	2
	1880.0	21.84	2	23.840	0.242	2
	1907.6	21.09	2	23.090	0.204	2
HSDPA	1852.4	22.82	2	24.820	0.303	2
	1880.0	21.82	2	23.820	0.241	2
	1907.6	20.81	2	22.810	0.191	2

Note: Measure Level (EIRP) = Reading Level (dBm) + Antenna Gain (dBi)

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level		Limit (W) EIRP
				(dBm)	(W)	
RMC	1712.4	23.04	2	25.040	0.319	1
	1732.6	21.86	2	23.860	0.243	1
	1752.6	21.34	2	23.340	0.216	1
HSUPA	1712.4	23.07	2	25.070	0.321	1
	1732.6	21.88	2	23.880	0.244	1
	1752.6	21.36	2	23.360	0.217	1
HSDPA	1712.4	22.72	2	24.720	0.296	1
	1732.6	21.44	2	23.440	0.221	1
	1752.6	21.01	2	23.010	0.200	1

Note: Measure Level (EIRP) = Reading Level (dBm) + Antenna Gain (dBi)

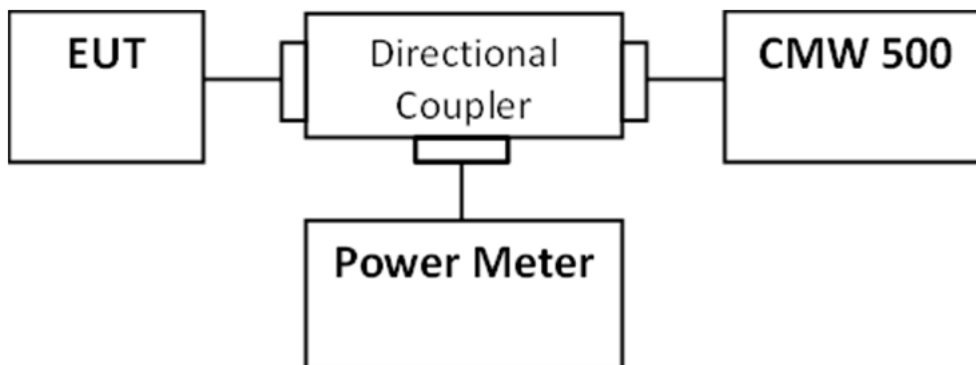
Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level		Limit (W) ERP
				(dBm)	(W)	
RMC	826.4	23.62	2	23.470	0.222	7
	836.6	22.89	2	22.740	0.188	7
	846.6	21.83	2	21.680	0.147	7
HSUPA	826.4	23.46	2	23.310	0.214	7
	836.6	22.72	2	22.570	0.181	7
	846.6	22.18	2	22.030	0.160	7
HSDPA	826.4	23.37	2	23.220	0.210	7
	836.6	22.71	2	22.560	0.180	7
	846.6	22.30	2	22.150	0.164	7

Note: Measure Level (ERP) = Reading Level (dBm) + Antenna Gain (dBi) -2.15

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

4.3. Test Method

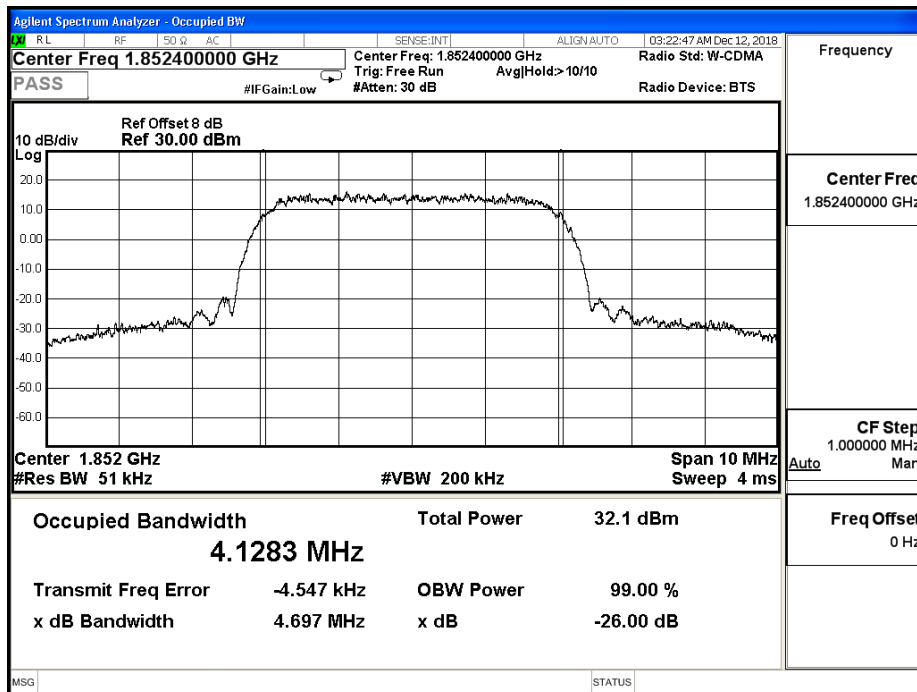
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 4.2 & 4.3
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

4.4. Test Result

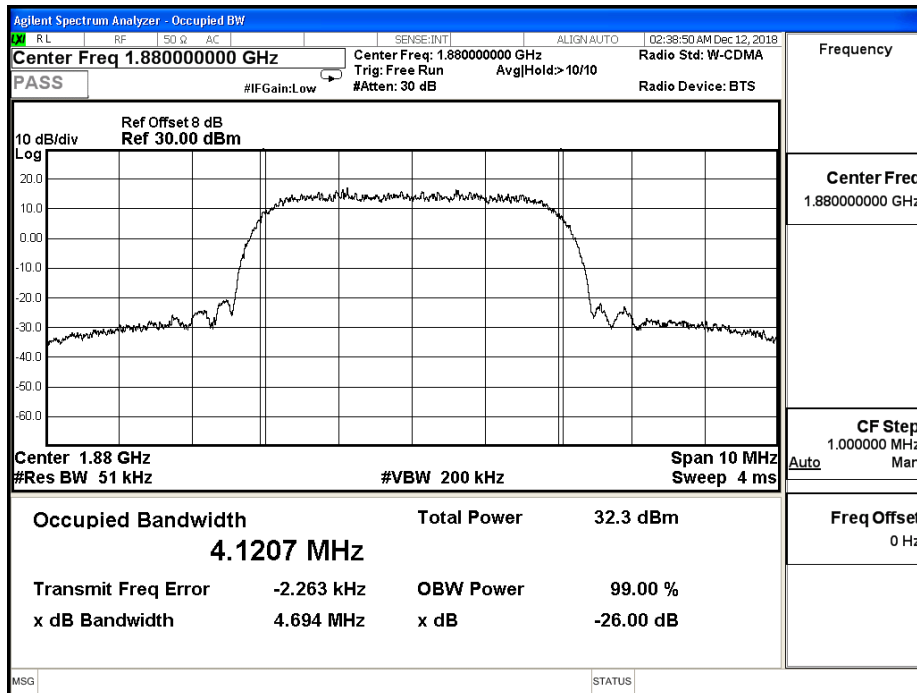
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	9262	1852.4	4.697	4.128	N/A
	9400	1880.0	4.694	4.121	N/A
	9538	1907.6	4.686	4.134	N/A

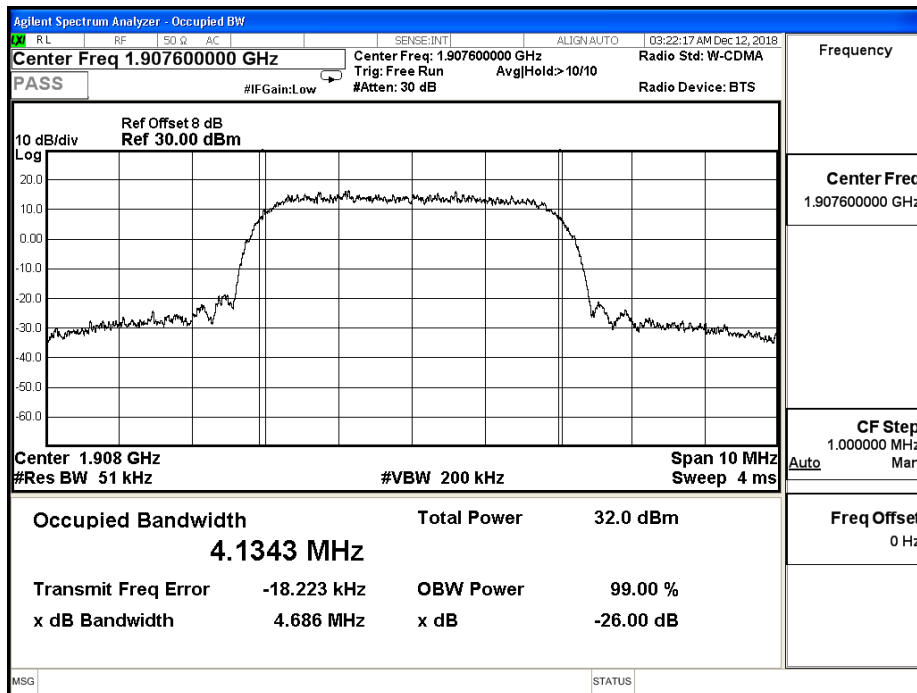
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WCDMA_Band 2_RMC_1880.0MHz

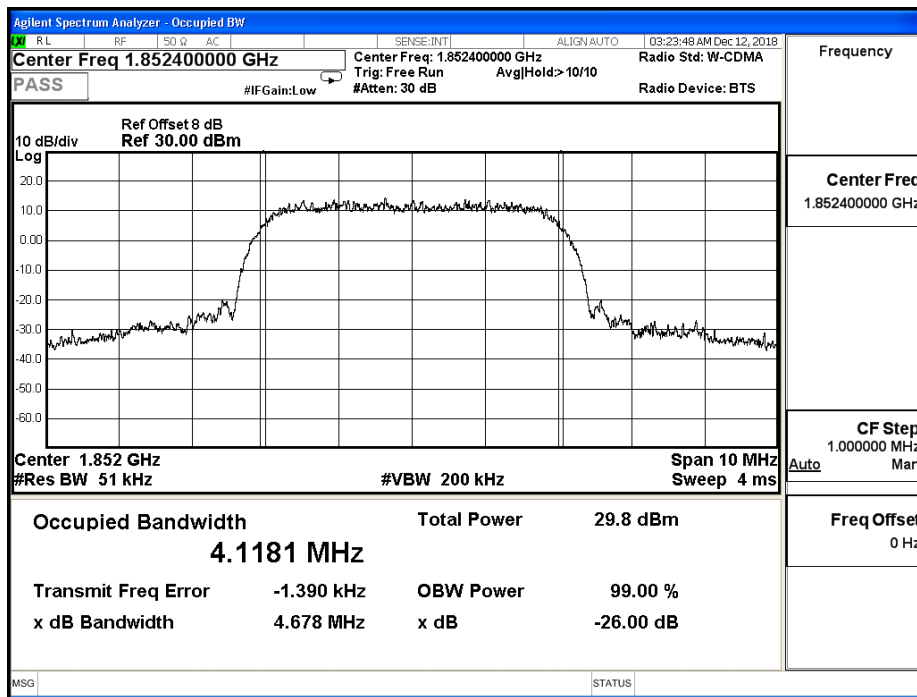


WCDMA_Band 2_RMC_1907.6MHz

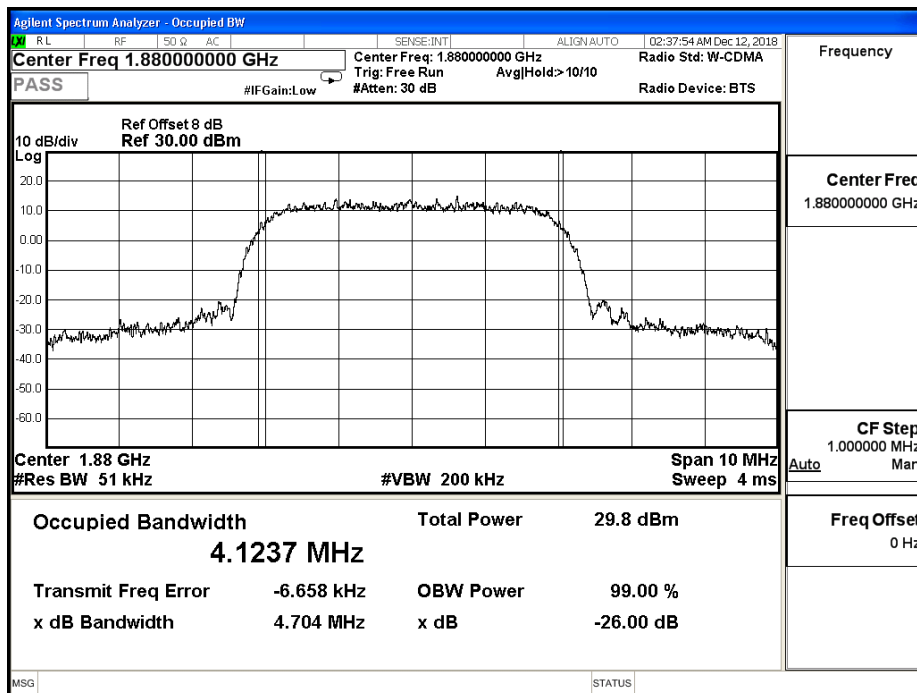


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSDPA	9262	1852.4	4.678	4.118	N/A
	9400	1880.0	4.704	4.124	N/A
	9538	1907.6	4.679	4.125	N/A

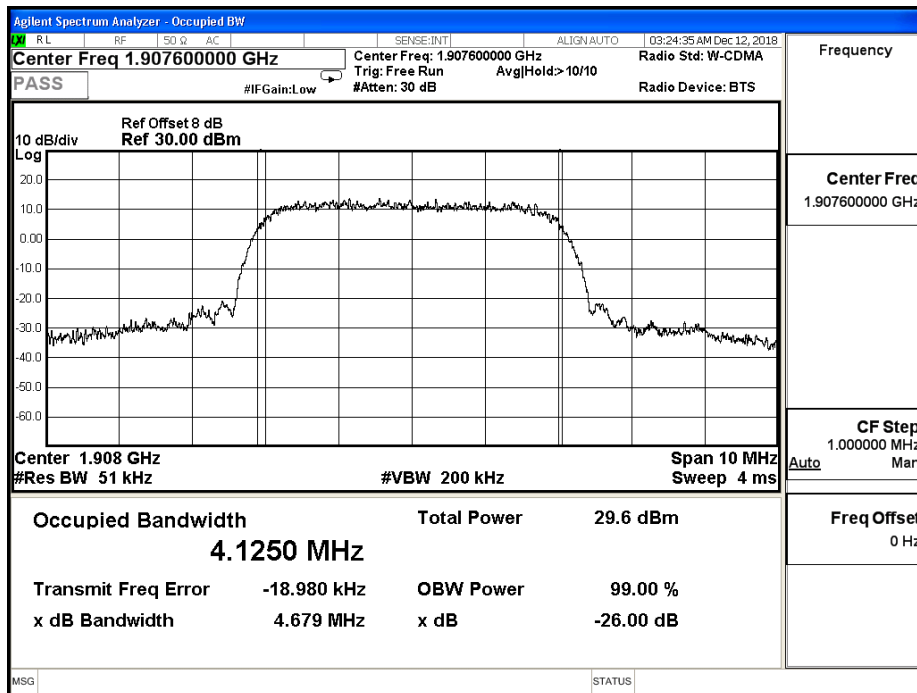
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WCDMA_Band 2_HSDPA_1880.0MHz

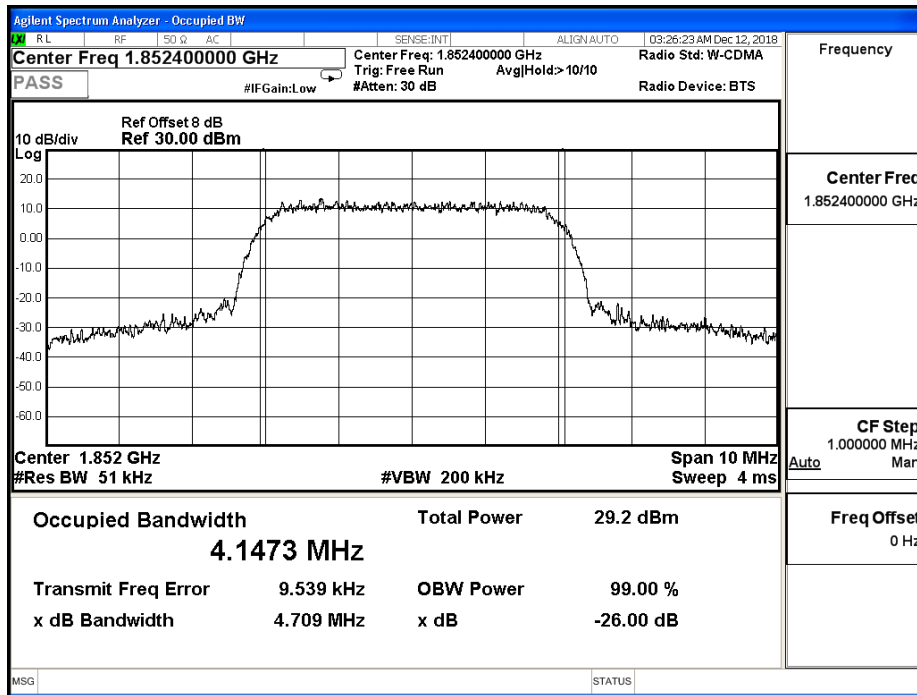


WCDMA_Band 2_HSDPA_1907.6MHz

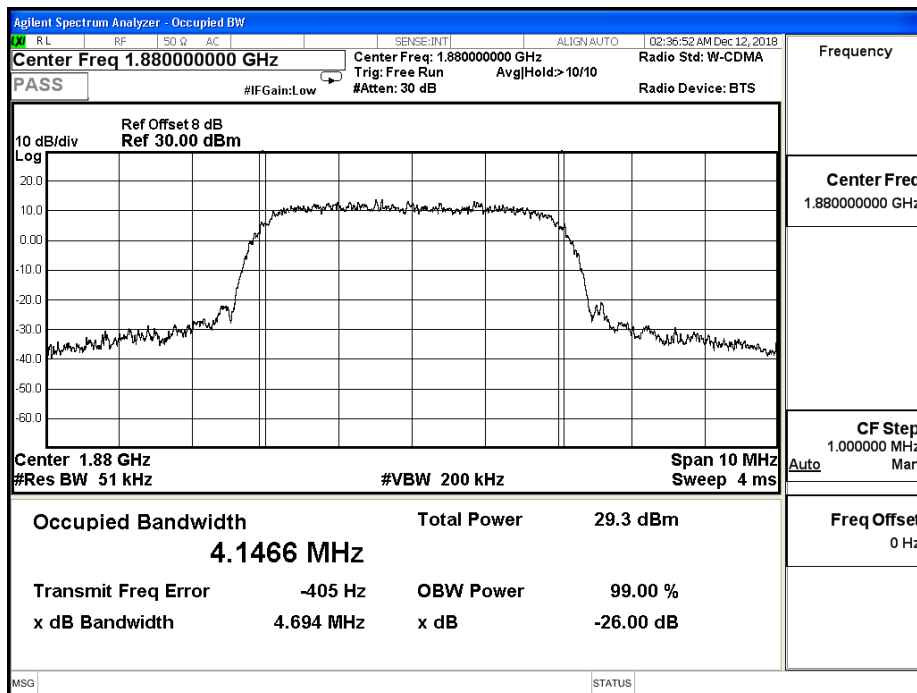


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSUPA	9262	1852.4	4.709	4.147	N/A
	9400	1880.0	4.694	4.147	N/A
	9538	1907.6	4.680	4.136	N/A

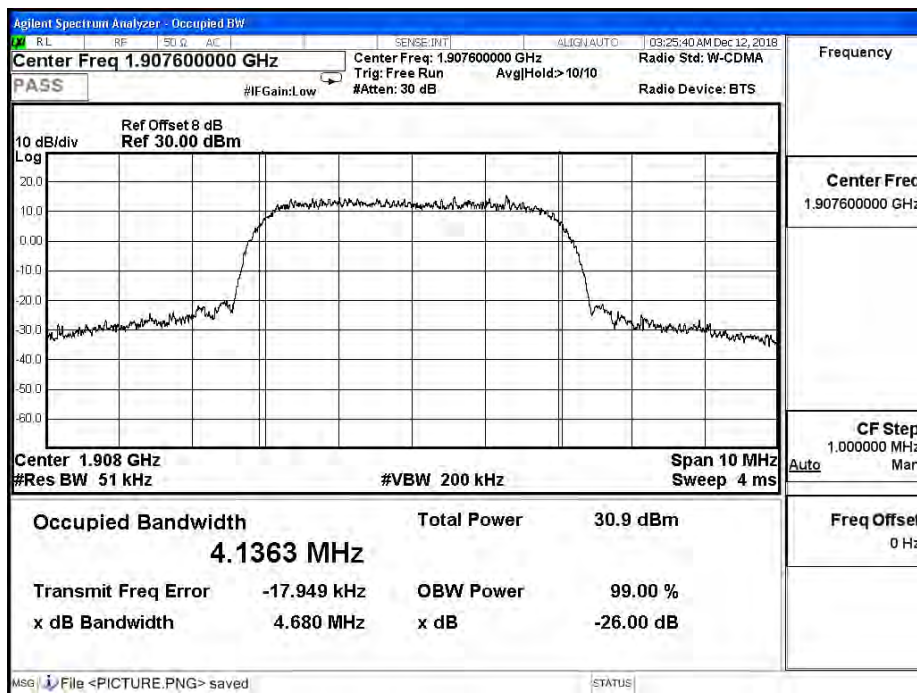
WCDMA_Band 2_HSUPA_1852.4MHz



WCDMA_Band 2_HSUPA_1880.0MHz



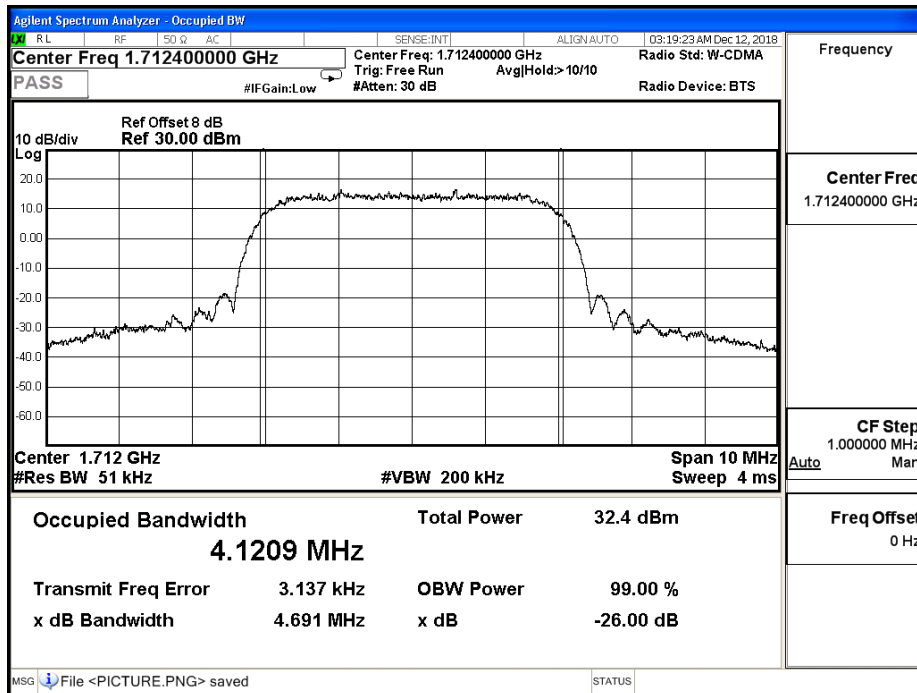
WCDMA_Band 2_HSUPA_1907.6MHz



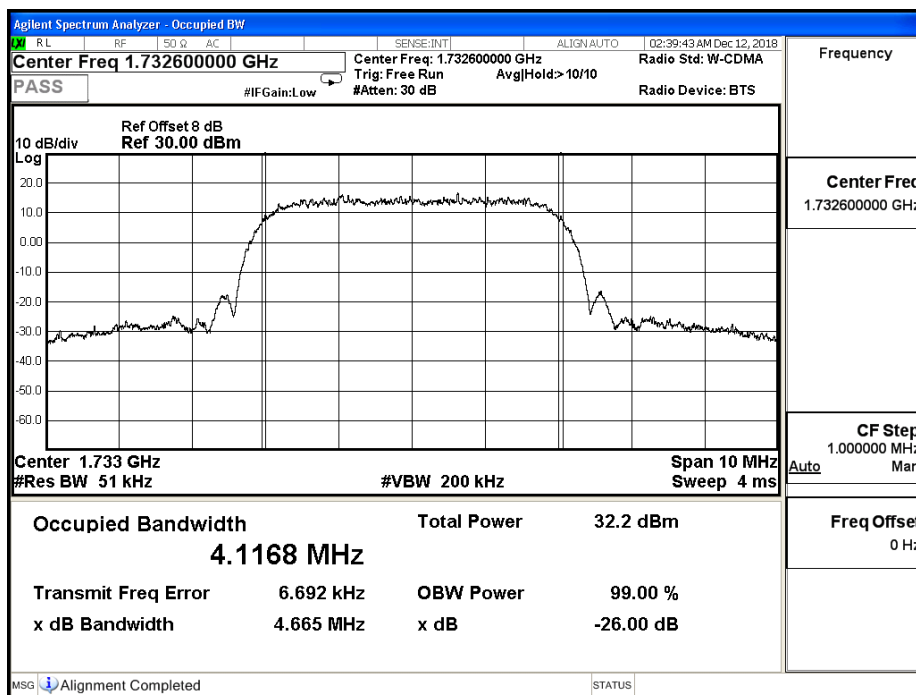
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	1312	1712.4	4.691	4.121	N/A
	1413	1732.6	4.665	4.117	N/A
	1513	1752.6	4.662	4.134	N/A

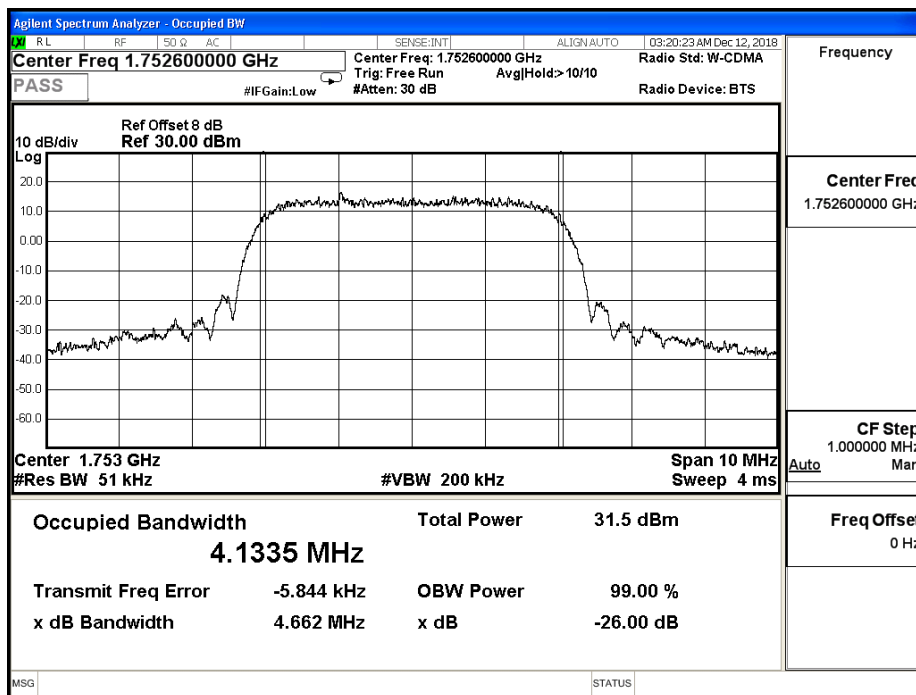
WCDMA_Band 4_RMC_1712.4MHz



WCDMA_Band 4_RMC_1732.6MHz

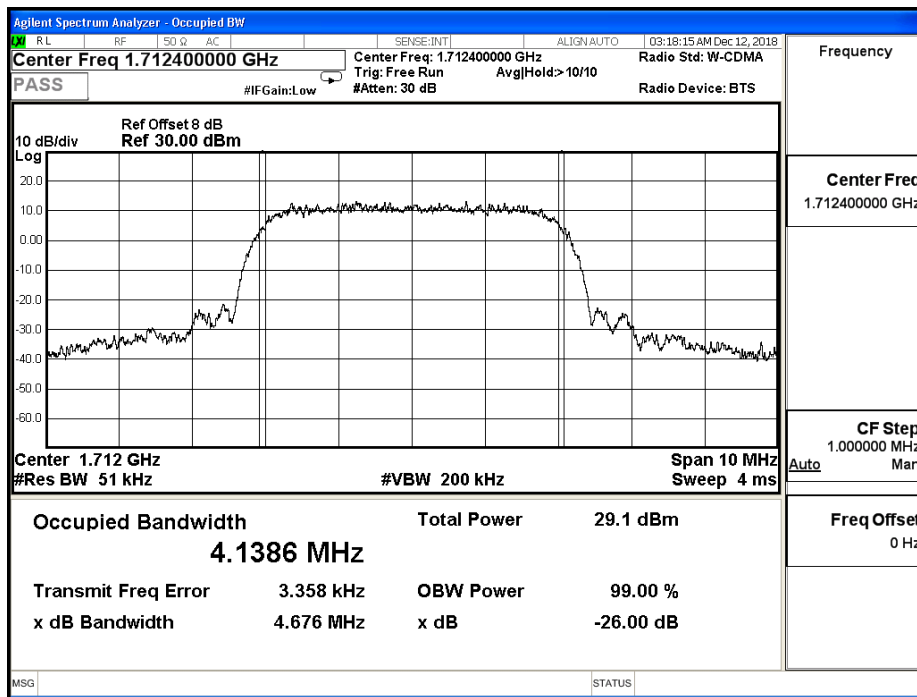


WCDMA_Band 4_RMC_1752.6MHz

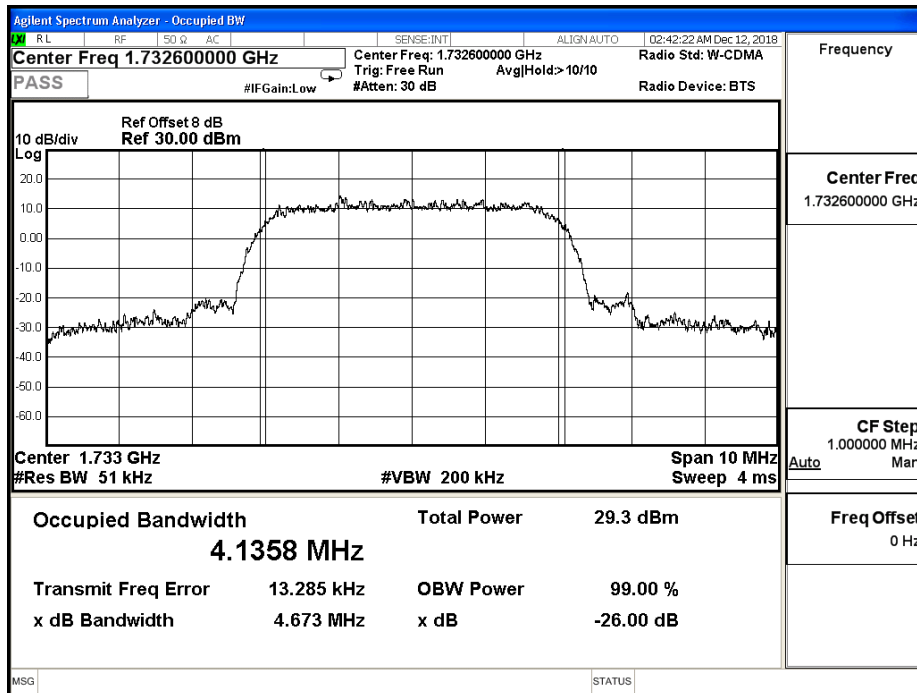


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSDPA	1312	1712.4	4.676	4.139	N/A
	1413	1732.6	4.673	4.136	N/A
	1513	1752.6	4.658	4.152	N/A

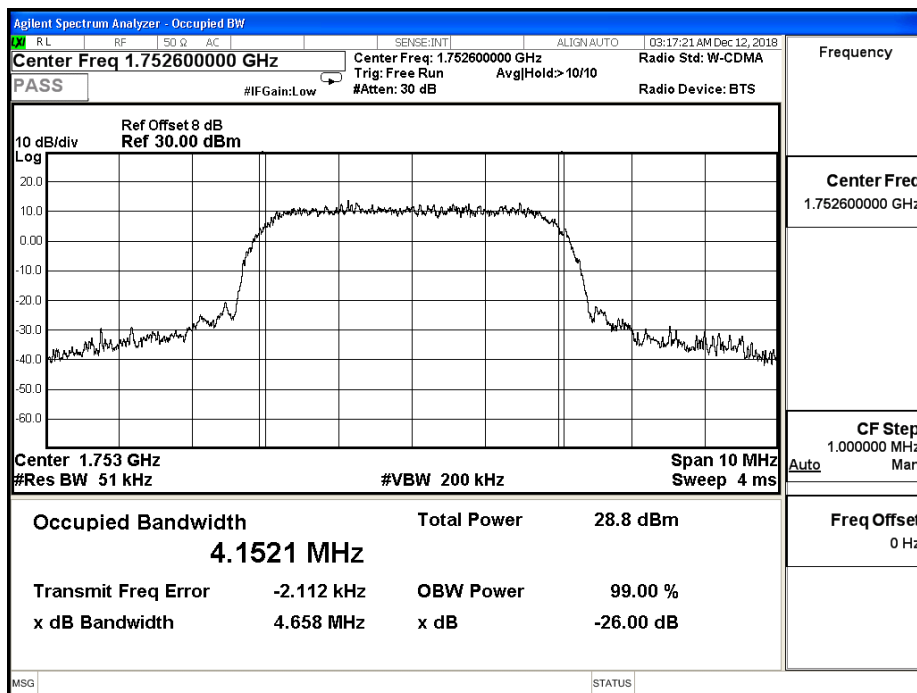
WCDMA_Band 4_HSDPA_1712.4MHz



WCDMA_Band 4_HSDPA_1732.6MHz

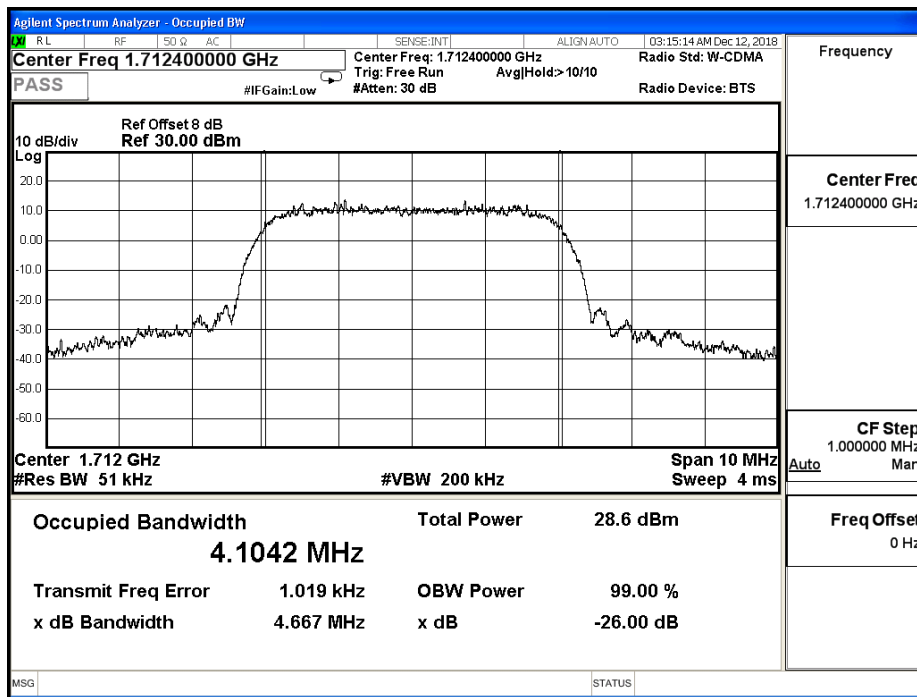


WCDMA_Band 4_HSDPA_1752.6MHz

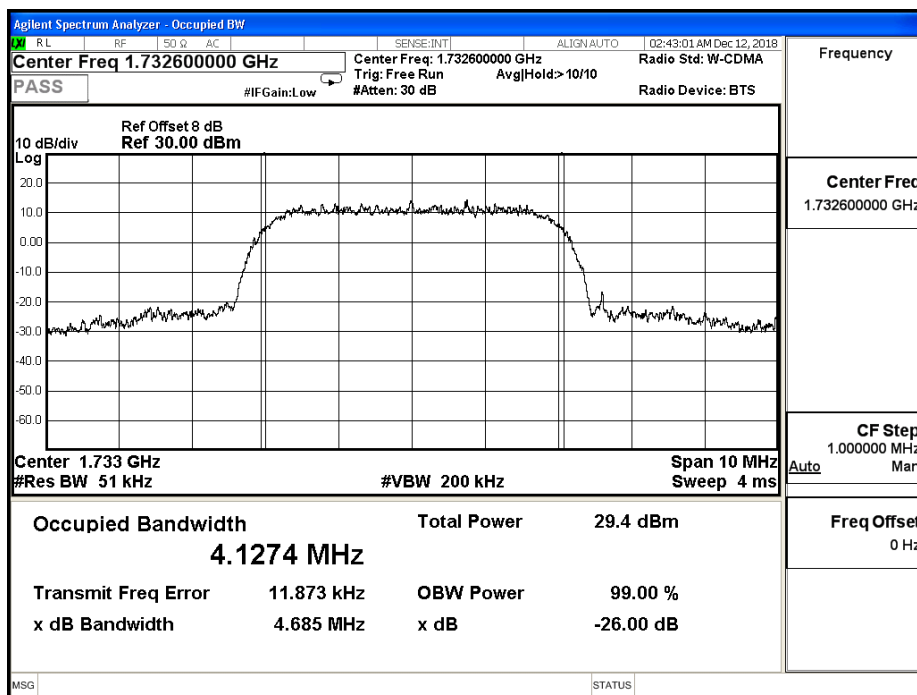


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSUPA	1312	1712.4	4.667	4.104	N/A
	1413	1732.6	4.685	4.127	N/A
	1513	1752.6	4.676	4.133	N/A

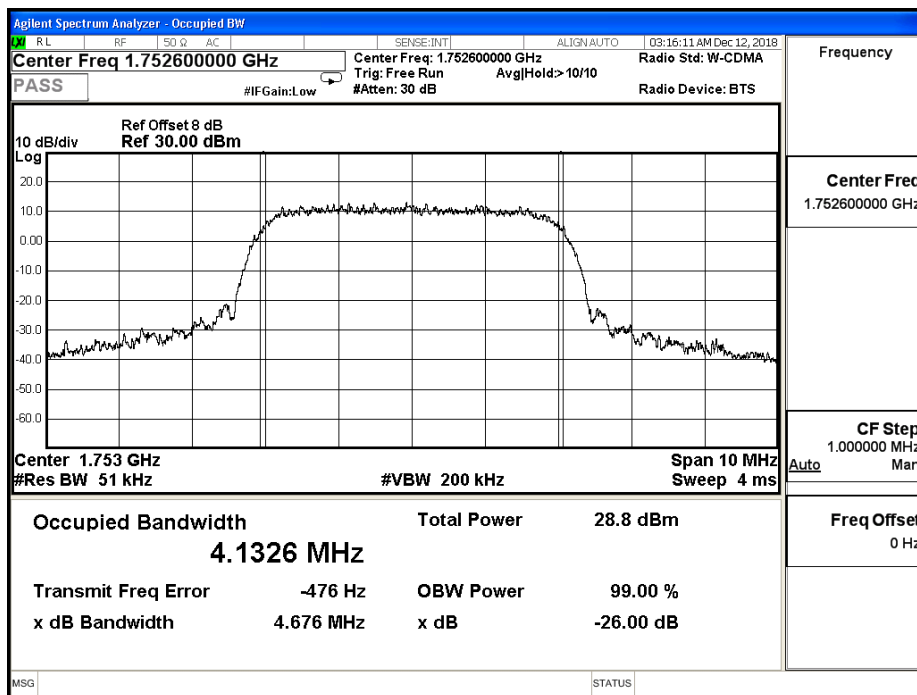
WCDMA_Band 4_HSUPA_1712.4MHz



WCDMA_Band 4_HSUPA_1732.6MHz



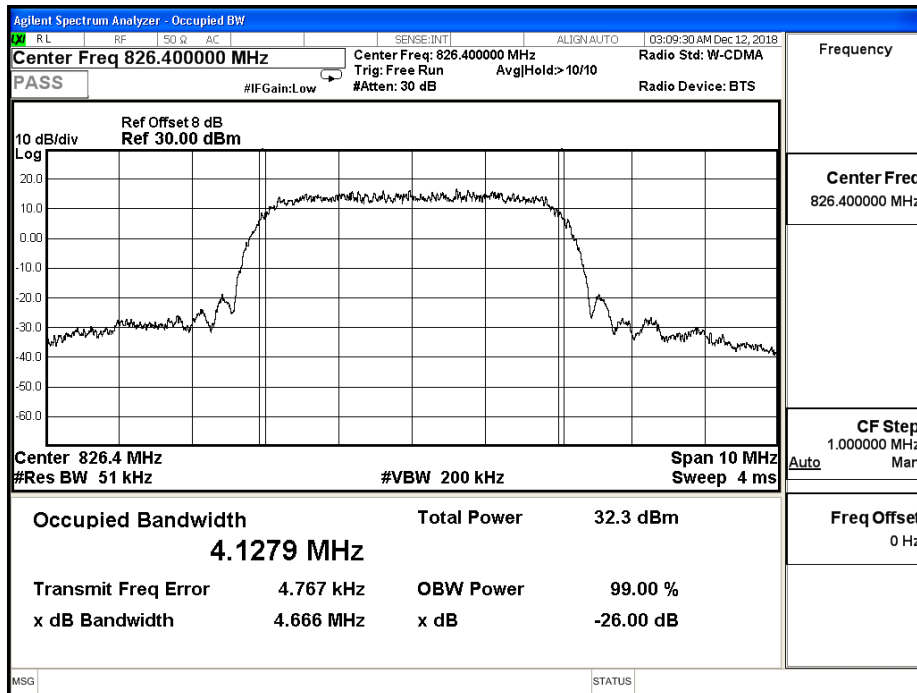
WCDMA_Band 4_HSUPA_1752.6MHz



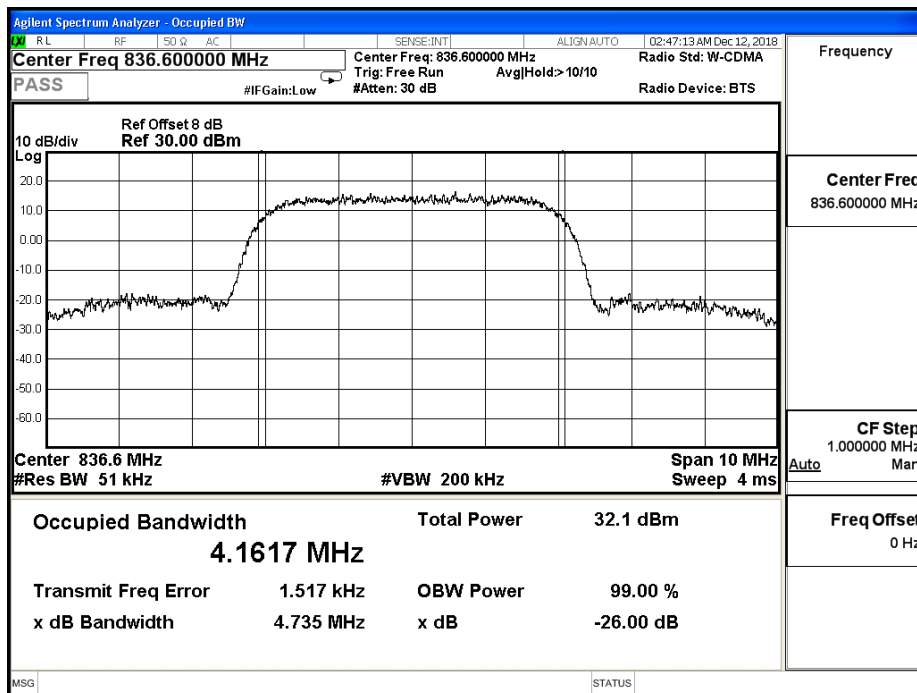
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	4132	826.4	4.666	4.128	N/A
	4183	836.6	4.735	4.162	N/A
	4233	846.6	4.726	4.147	N/A

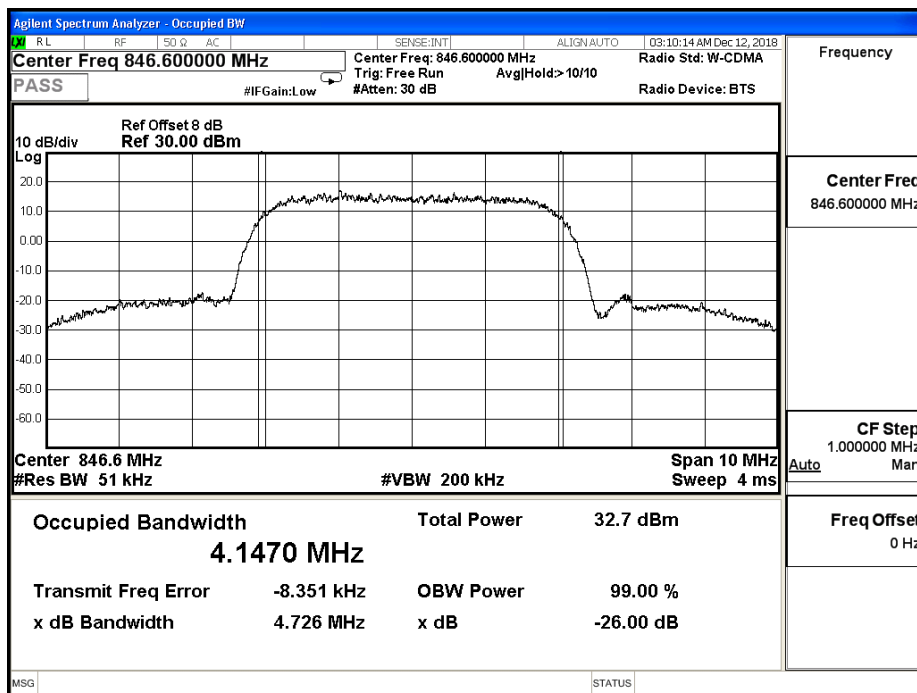
WCDMA_Band 5_RMC_826.4MHz



WCDMA_Band 5_RMC_836.6MHz

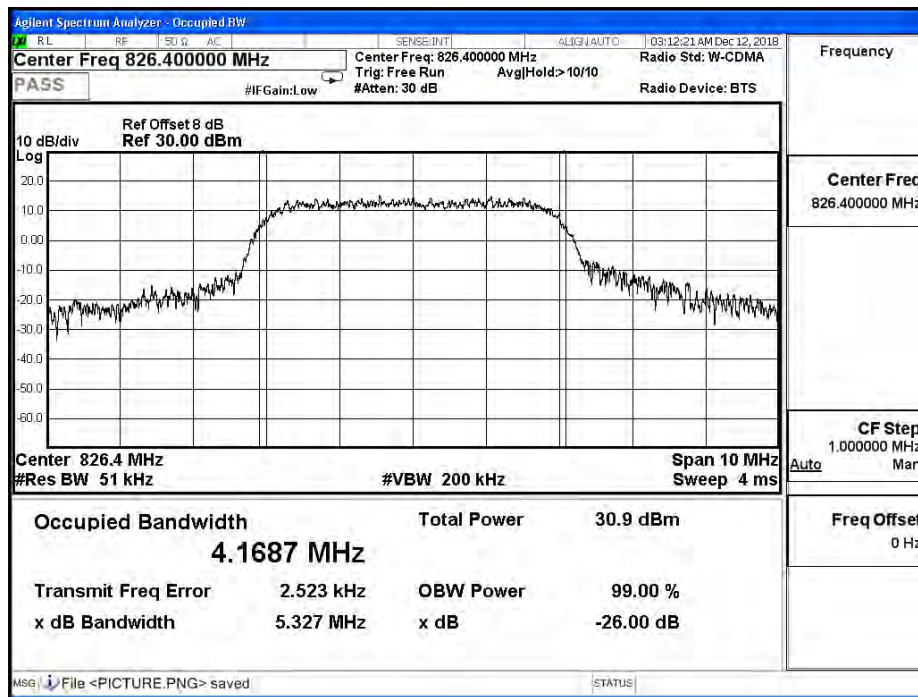


WCDMA_Band 5_RMC_846.6MHz

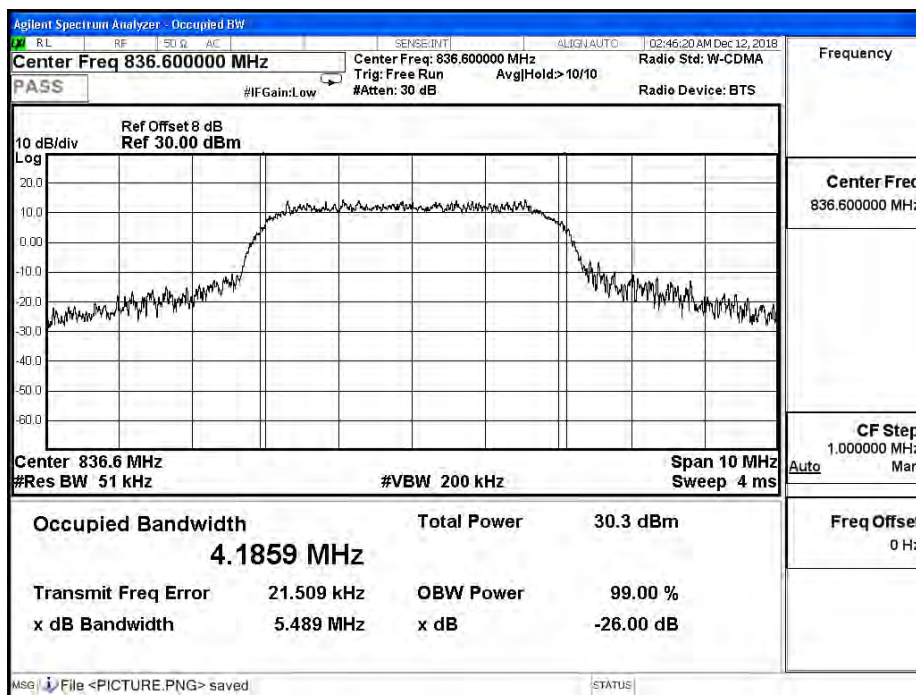


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSDPA	4132	826.4	5.327	4.169	N/A
	4183	836.6	5.489	4.186	N/A
	4233	846.6	5.206	4.145	N/A

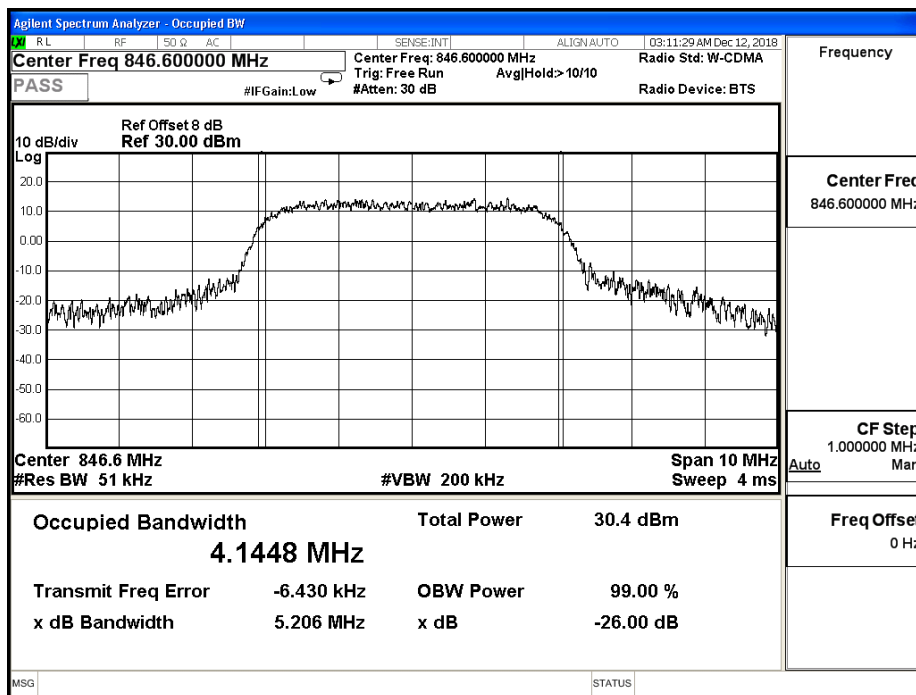
WCDMA_Band 5_HSDPA_826.4MHz



WCDMA_Band 5_HSDPA_836.6MHz

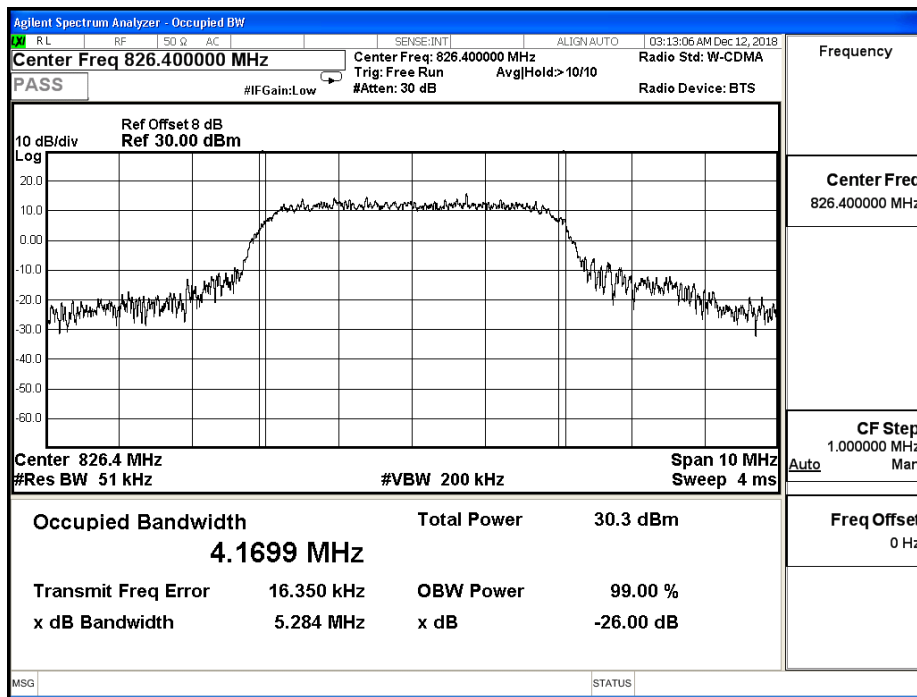


WCDMA_Band 5_HSDPA_846.6MHz

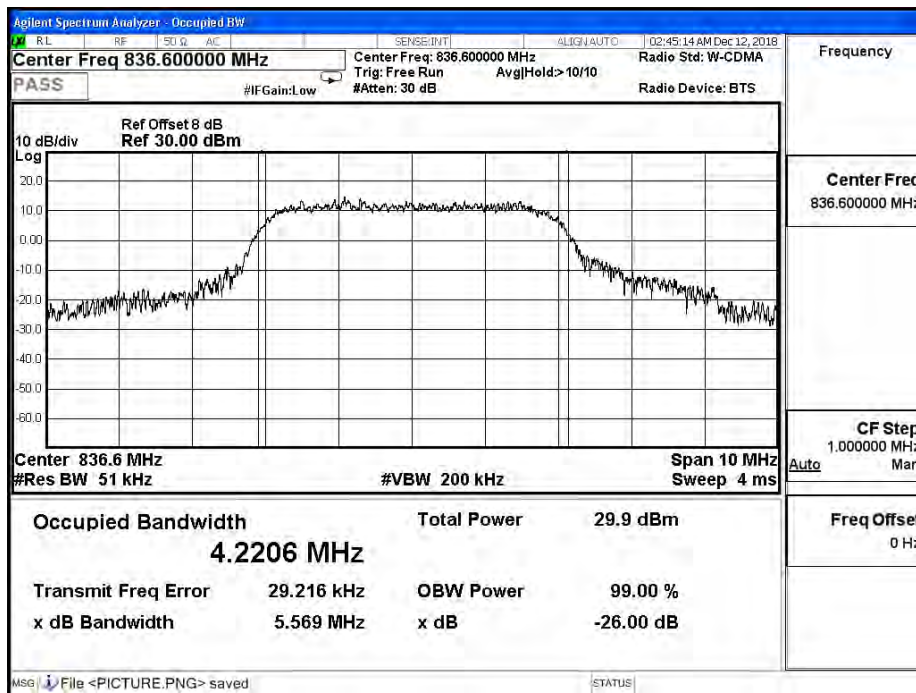


Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
HSUPA	4132	826.4	5.284	4.170	N/A
	4183	836.6	5.569	4.221	N/A
	4233	846.6	5.324	4.160	N/A

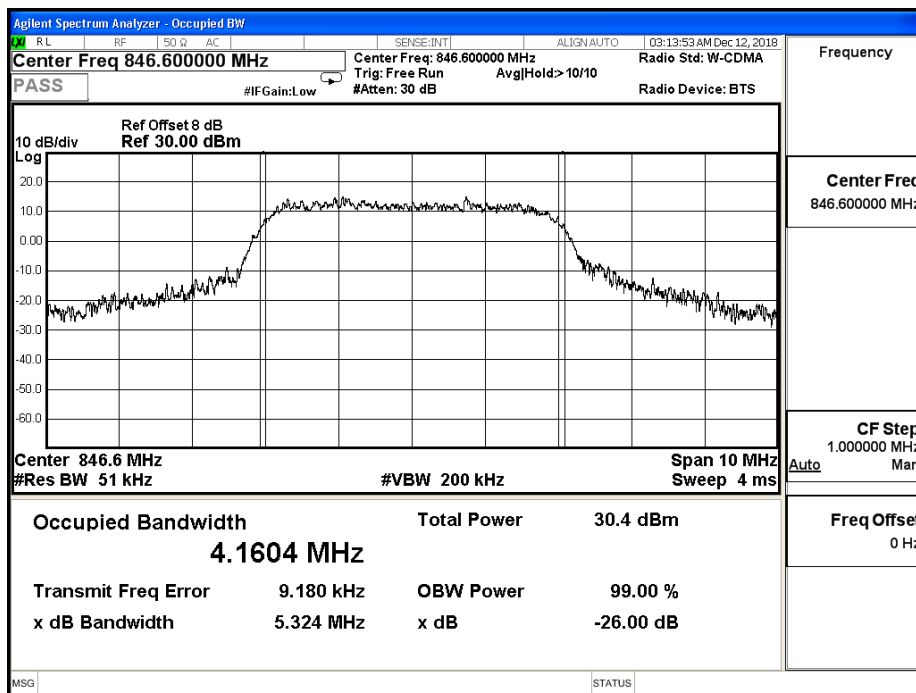
WCDMA_Band 5_HSUPA_826.4MHz



WCDMA_Band 5_HSUPA_836.6MHz

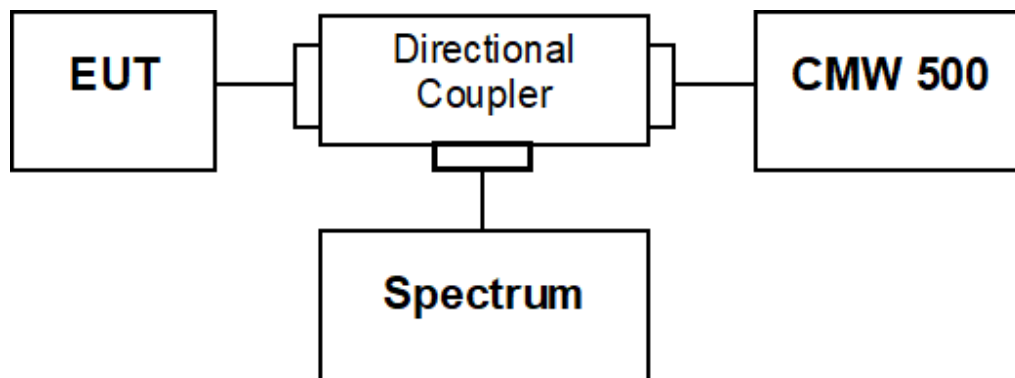


WCDMA_Band 5_HSUPA_846.6MHz



5. Peak To Average Ratio

5.1. Test Setup



5.2. Test Procedure

1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1 %.

5.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.7.2
ANSI C63.26-2015 Sub-clause 5.2.3.4

5.4. Test Result

Product	Module		
Test Item	Peak To Average Ratio		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 2_RMC_1852.4MHz



Date: 12.DEC.2018 03:09:27

WCDMA_Band 2_RMC_1880.0MHz



Date: 12.DEC.2018 03:25:11

WCDMA_Band 2_RMC_1907.6MHz



Date: 12.DEC.2018 03:28:48

WCDMA_Band 2_HSDPA_1852.4MHz



Date: 12.DEC.2018 03:57:33

WCDMA_Band 2_HSDPA_1880.0MHz



Date: 12.DEC.2018 03:59:52

WCDMA_Band 2_HSDPA_1907.6MHz



Date: 12.DEC.2018 04:05:35

WCDMA_Band 2_HSUPA_1852.4MHz



Date: 12.DEC.2018 04:13:47

WCDMA_Band 2_HSUPA_1880.0MHz



Date: 12.DEC.2018 04:10:36

WCDMA_Band 2_HSUPA_1907.6MHz



Date: 12.DEC.2018 04:09:09

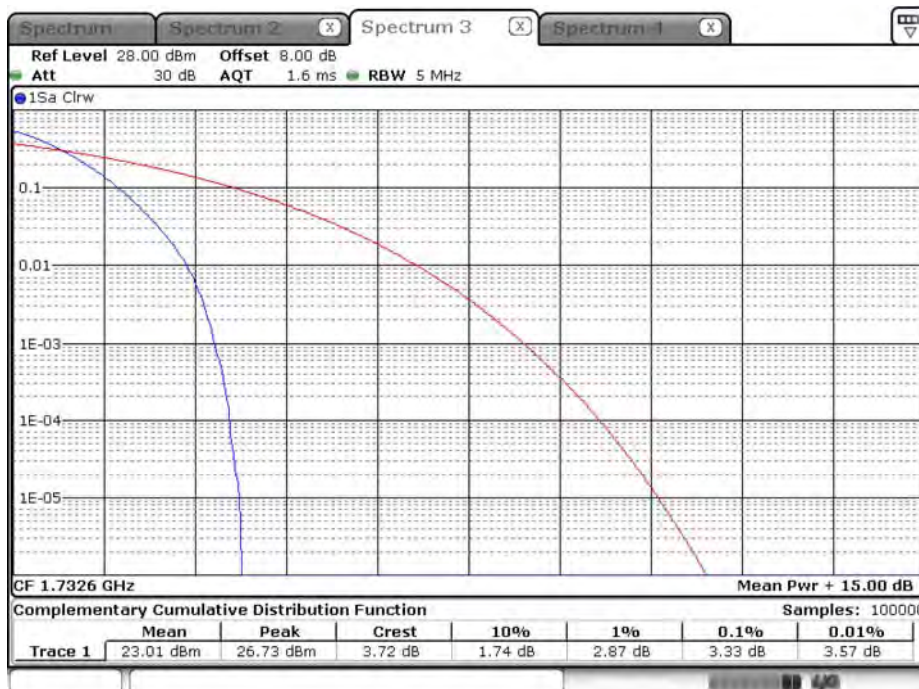
Product	Module		
Test Item	Peak To Average Ratio		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 4_RMC_1712.4MHz



Date: 12.DEC.2018 04:19:35

WCDMA_Band 4_RMC_1732.6MHz



Date: 12.DEC.2018 04:24:17

WCDMA_Band 4_RMC_1752.6MHz



Date: 12.DEC.2018 04:24:50

WCDMA_Band 4_HSDPA_1712.4MHz



Date: 12.DEC.2018 04:34:09

WCDMA_Band 4_HSDPA_1732.6MHz



Date: 12.DEC.2018 04:33:17

WCDMA_Band 4_HSDPA_1752.6MHz



Date: 12.DEC.2018 04:30:12

WCDMA_Band 4_HSUPA_1712.4MHz



Date: 12.DEC.2018 04:37:56

WCDMA_Band 4_HSUPA_1732.6MHz



Date: 12.DEC.2018 04:43:56

WCDMA_Band 4_HSUPA_1752.6MHz



Date: 12.DEC.2018 04:45:44

Product	Module		
Test Item	Peak To Average Ratio		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 5_RMC_826.4MHz



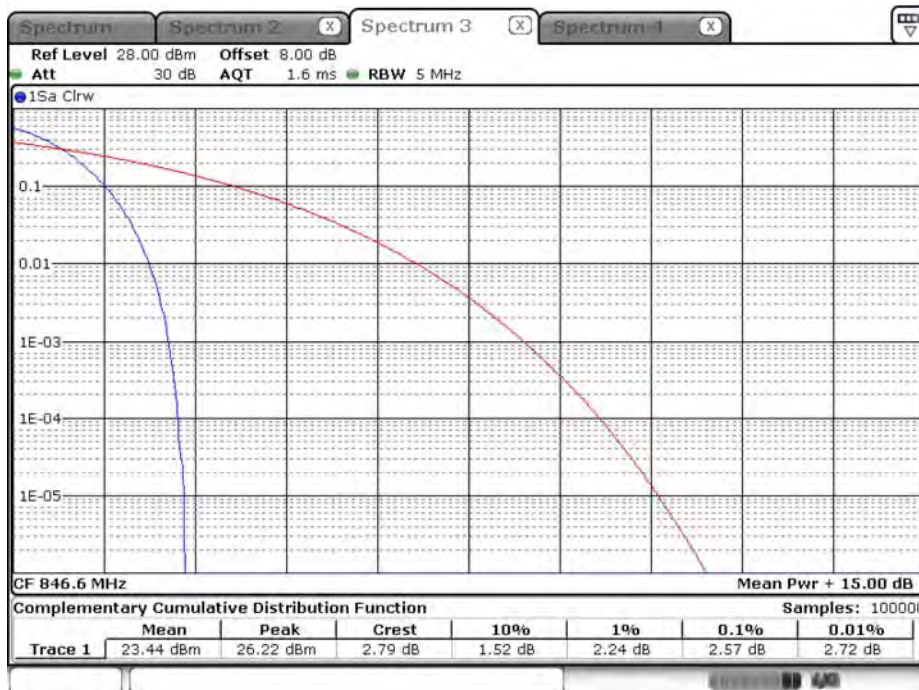
Date: 12.DEC.2018 05:04:39

WCDMA_Band 5_RMC_836.6MHz



Date: 12.DEC.2018 05:08:34

WCDMA_Band 5_RMC_846.6MHz



Date: 12.DEC.2018 05:09:04

WCDMA_Band 5_HSDPA_826.4MHz



Date: 12.DEC.2018 06:01:36

WCDMA_Band 5_HSDPA_836.6MHz



Date: 12.DEC.2018 06:01:09

WCDMA_Band 5_HSDPA_846.6MHz



Date: 12.DEC.2018 05:13:53

WCDMA_Band 5_HSUPA_826.4MHz



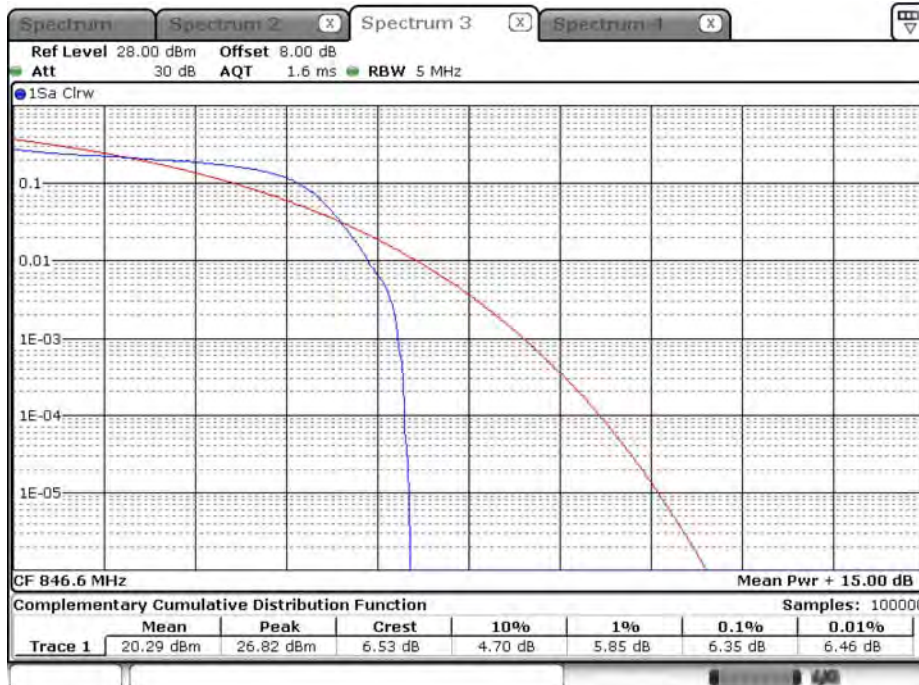
Date: 12.DEC.2018 06:08:56

WCDMA_Band 5_HSUPA_836.6MHz



Date: 12.DEC.2018 06:13:59

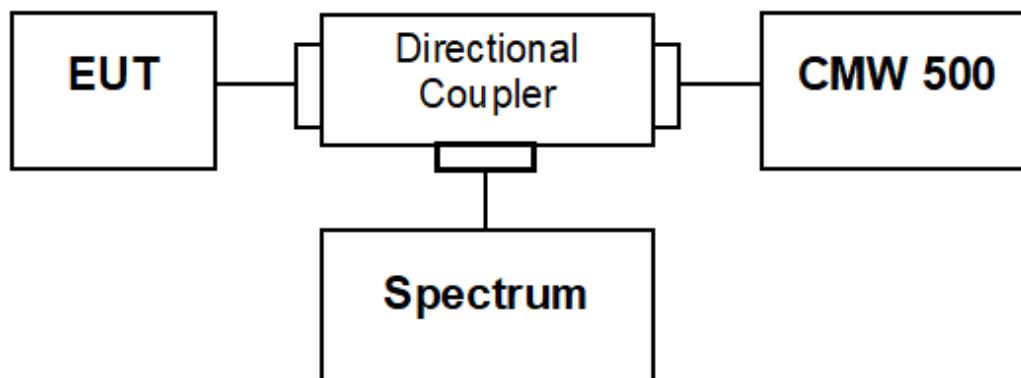
WCDMA_Band 5_HSUPA_846.6MHz



Date: 12.DEC.2018 06:14:23

6. Conducted Band Edge

6.1. Test Setup



6.2. Test Procedure

1. The EUT was connected to spectrum analyzer and System Simulator via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The conducted spurious emission for the whole frequency range was taken.
4. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

6.3. Test Method

Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 6.1

ANSI C63.26: 2015 Sub-clause 5.7

Radiated Spurious Measurement:

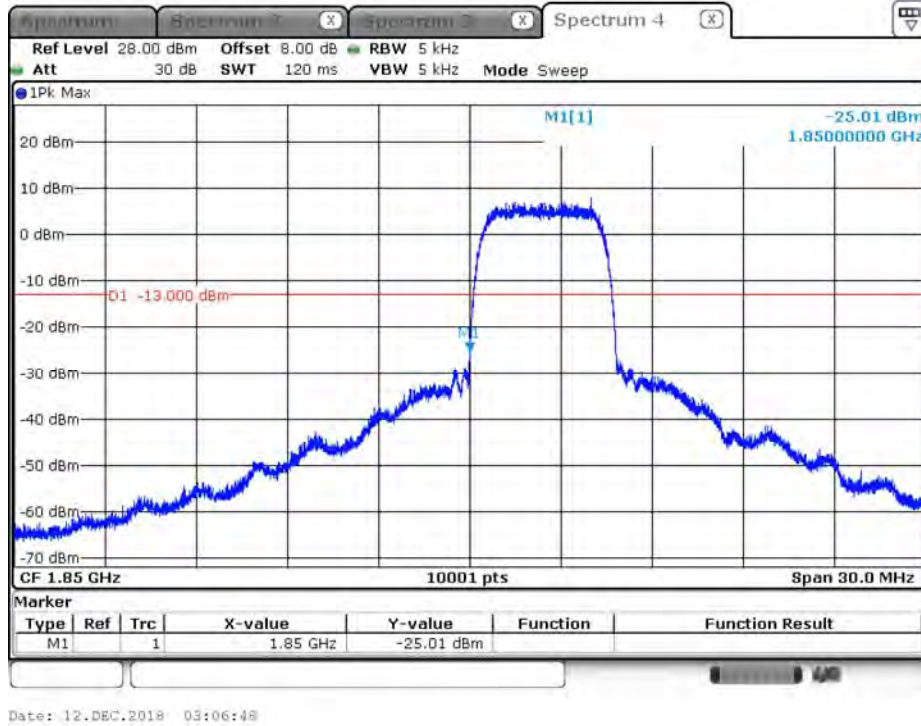
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.8

ANSI C63.26: 2015 Sub-clause 5.5.3.2

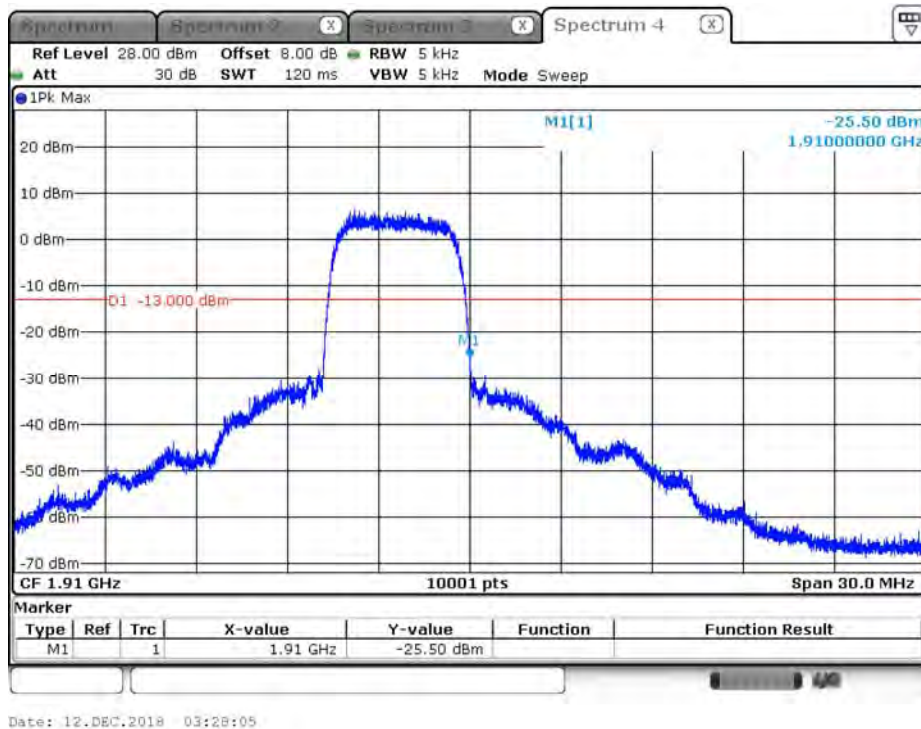
6.4. Test Result

Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

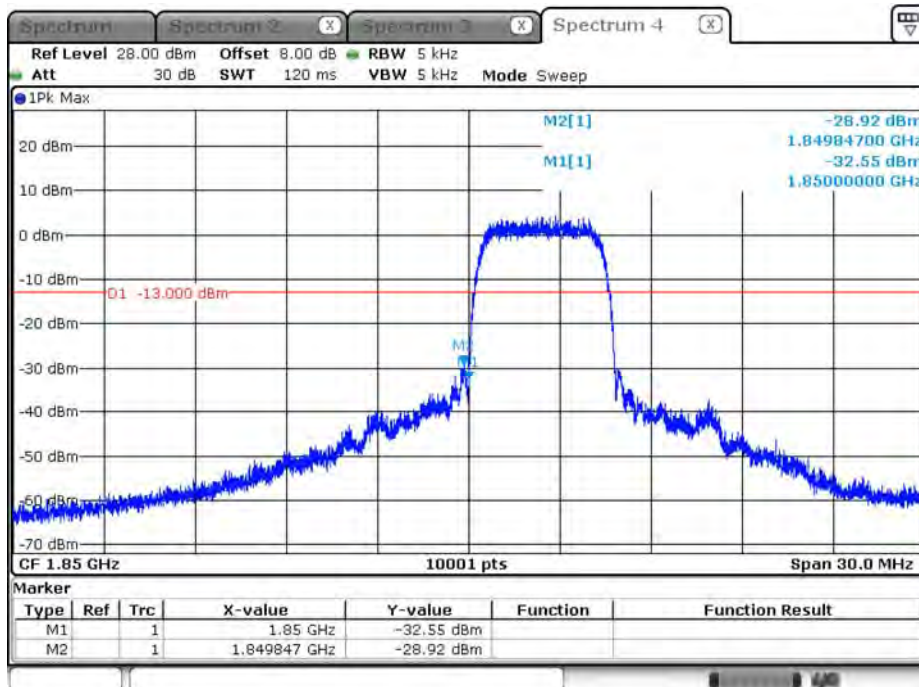
WCDMA_Band2_RMC_1852.4



WCDMA_Band2_RMC_1907.6

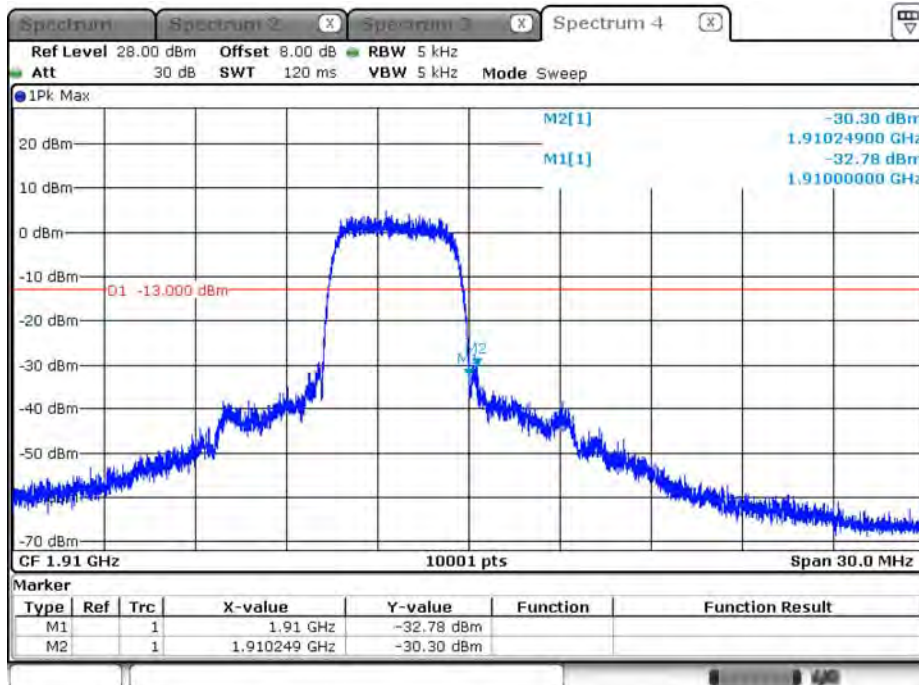


WCDMA_Band2_HSDPA_1852.4



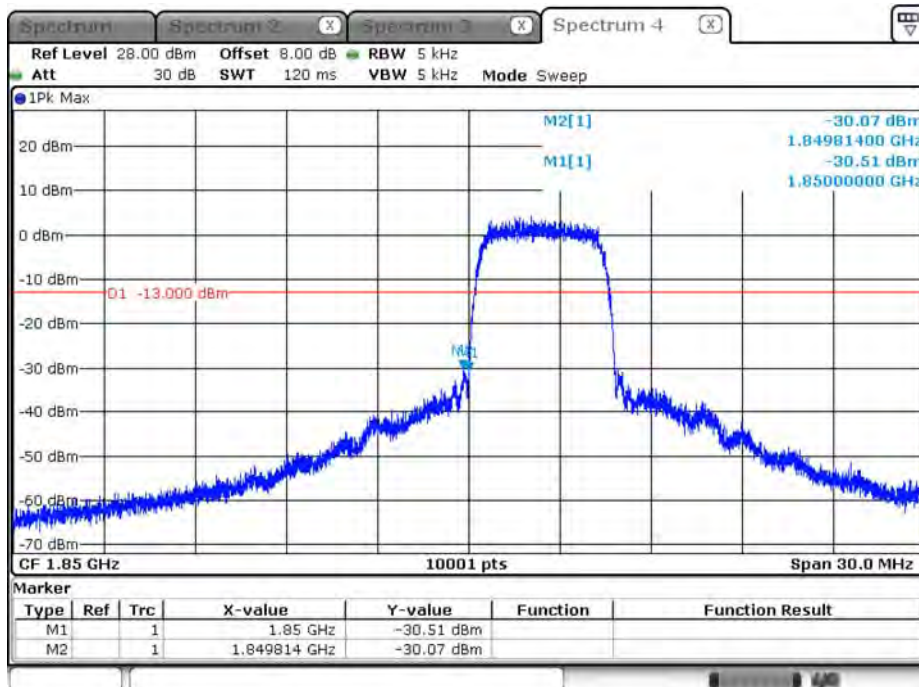
Date: 12.DEC.2018 03:56:20

WCDMA_Band2_HSDPA_1907.6



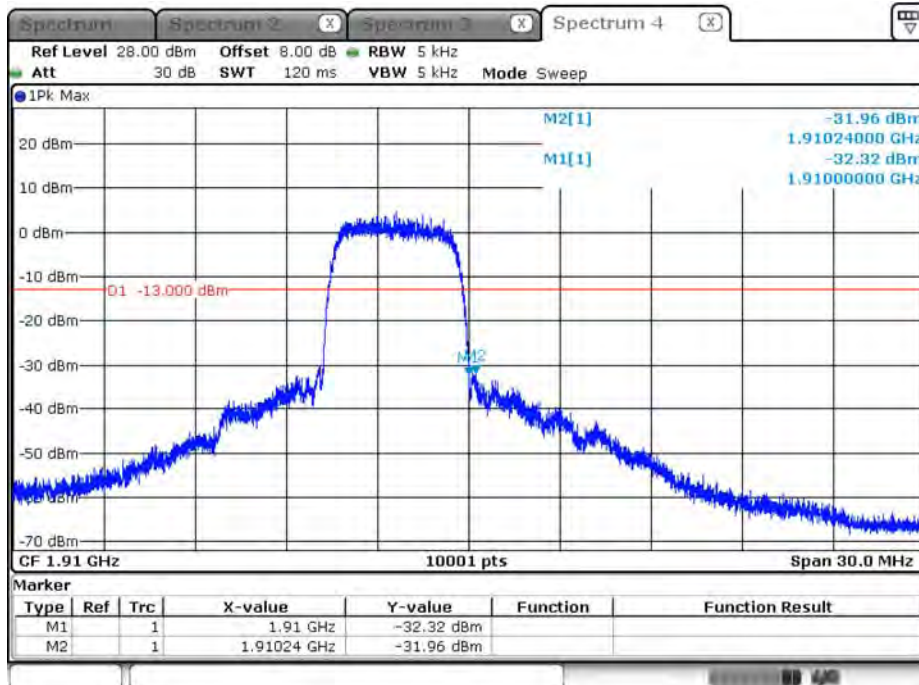
Date: 12.DEC.2018 04:04:50

WCDMA_Band2_HSUPA_1852.4



Date: 12.DEC.2018 04:15:43

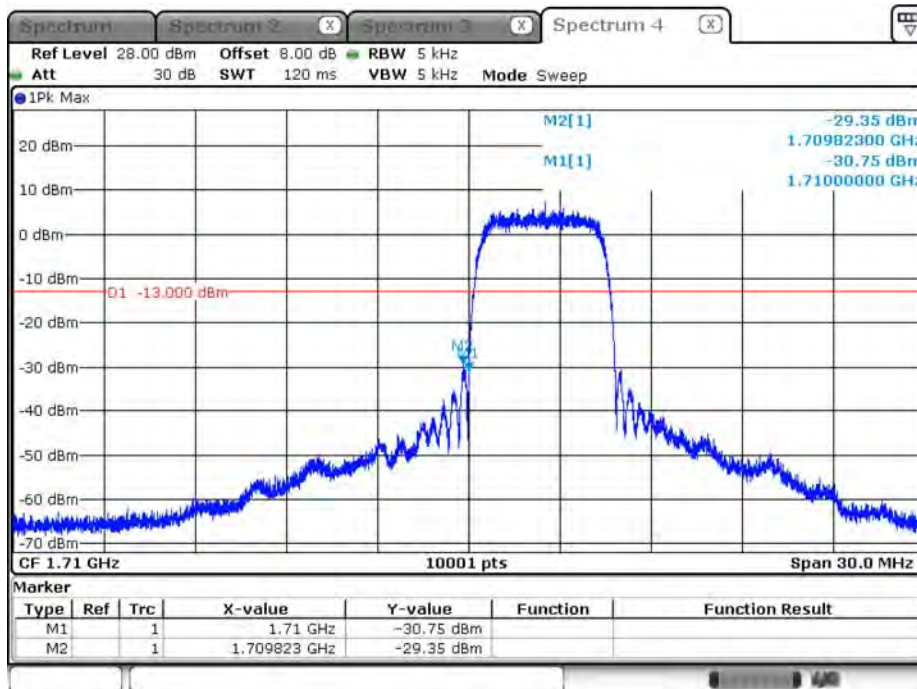
WCDMA_Band2_HSUPA_1907.6



Date: 12.DEC.2018 04:08:39

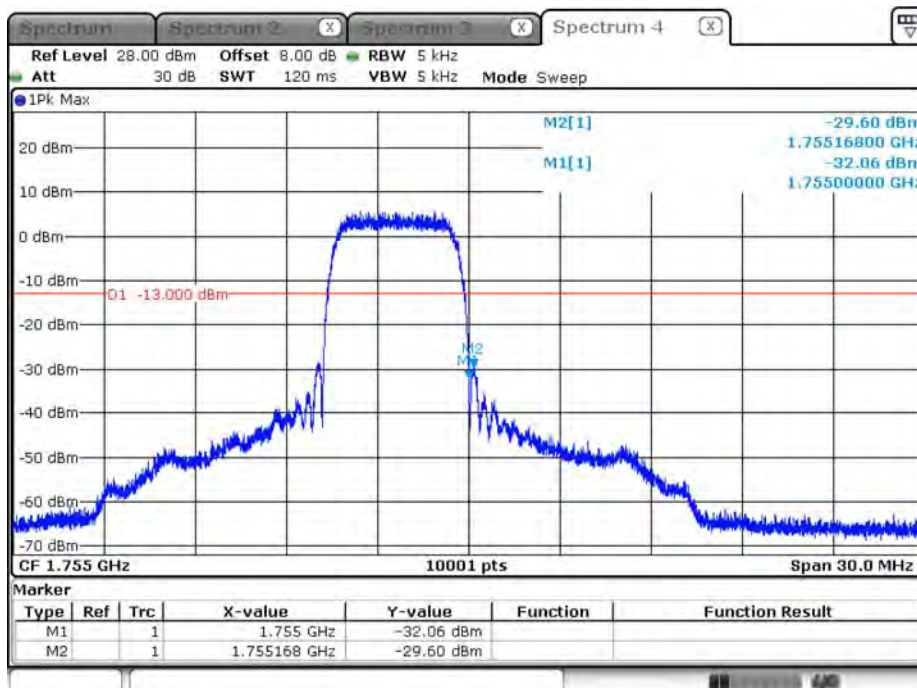
Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band4_RMC_1712.4



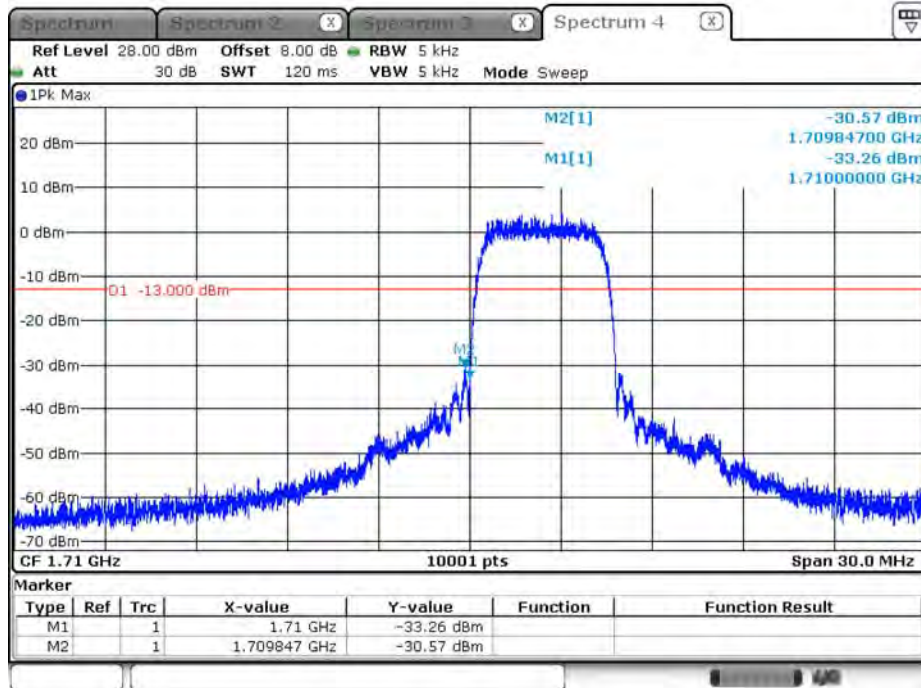
Date: 12.DEC.2018 04:18:15

WCDMA_Band4_RMC_1752.6



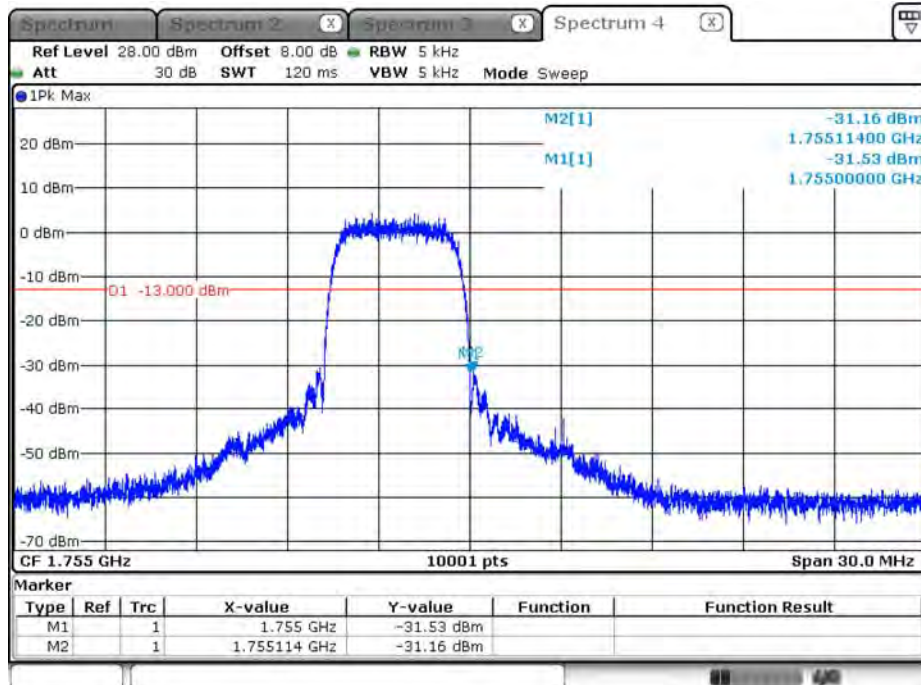
Date: 12.DEC.2018 04:28:01

WCDMA_Band4_HSDPA_1712.6



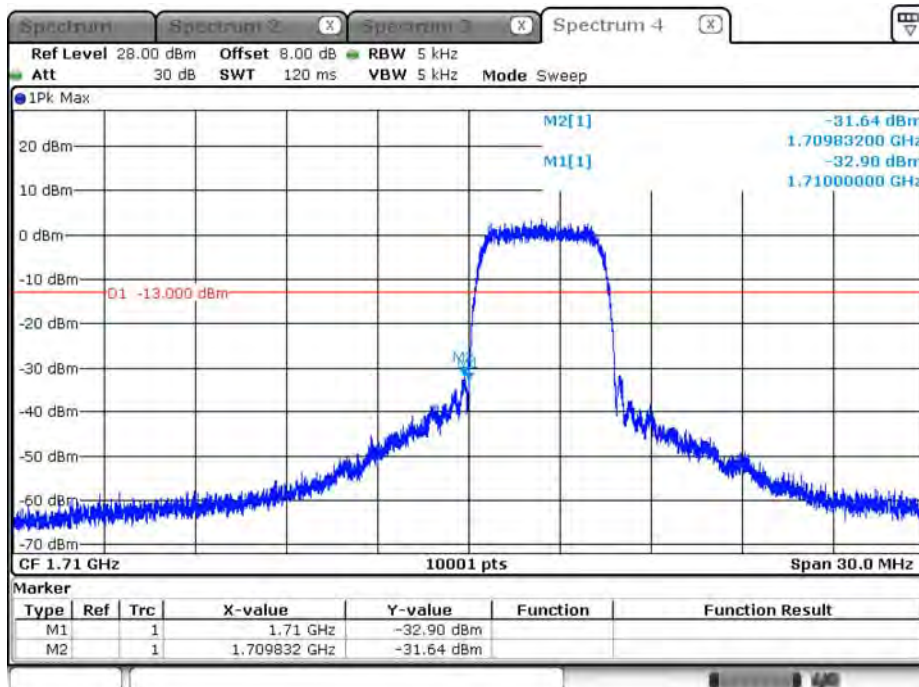
Date: 12.DEC.2018 04:36:07

WCDMA_Band4_HSDPA_1752.6



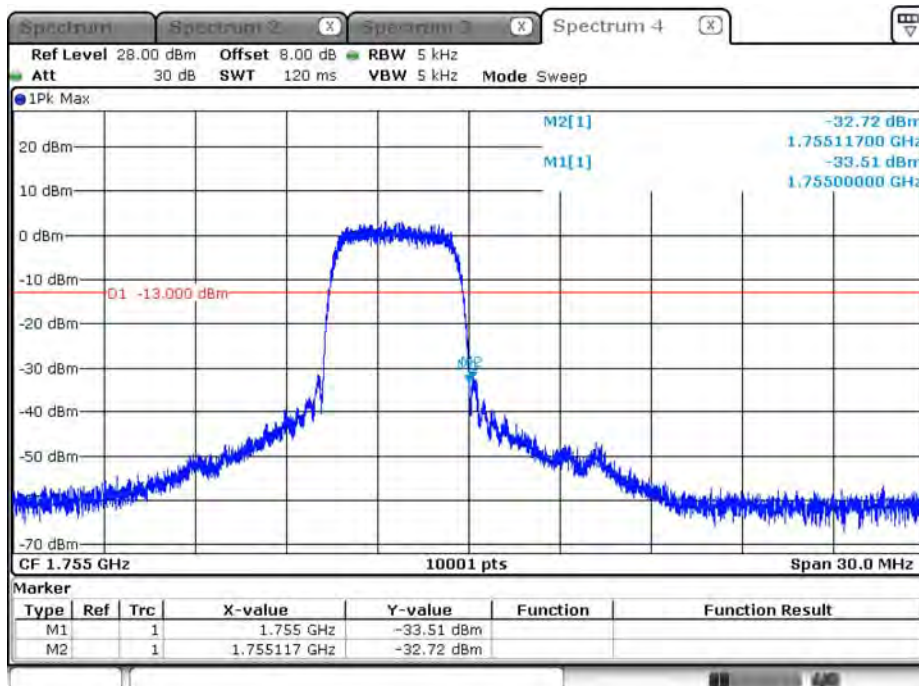
Date: 12.DEC.2018 04:29:41

WCDMA_Band4_HSUPA_1712.4



Date: 12.DEC.2018 04:37:33

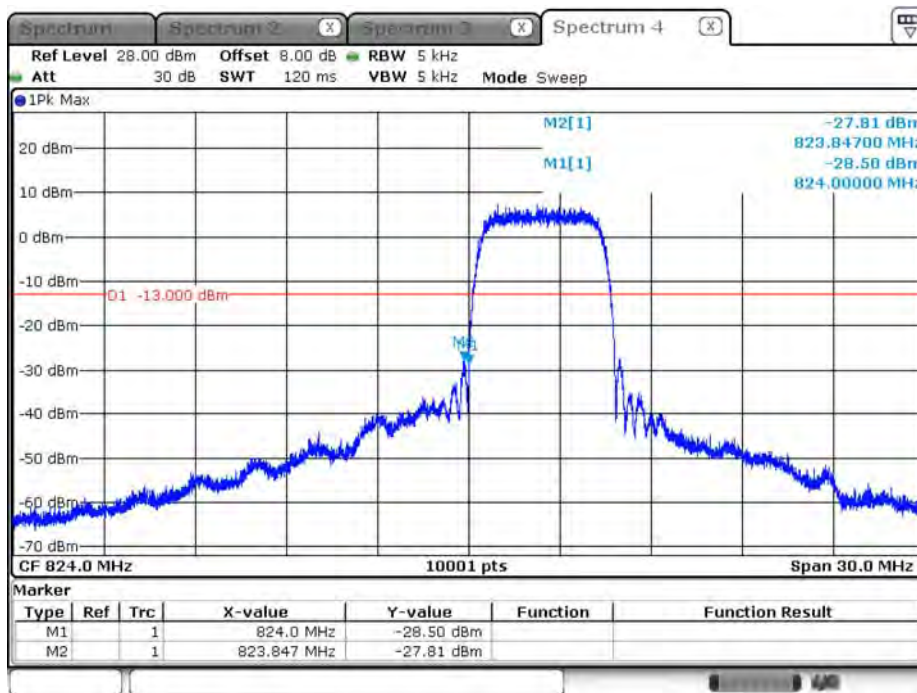
WCDMA_Band4_HSUPA_1752.6



Date: 12.DEC.2018 04:49:31

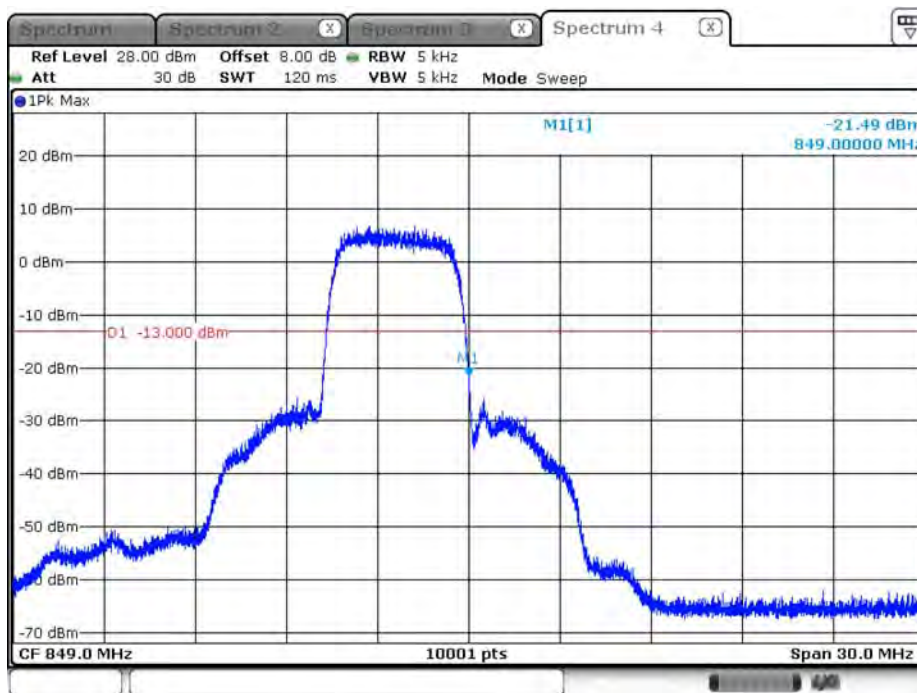
Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band5_RMC_826.4



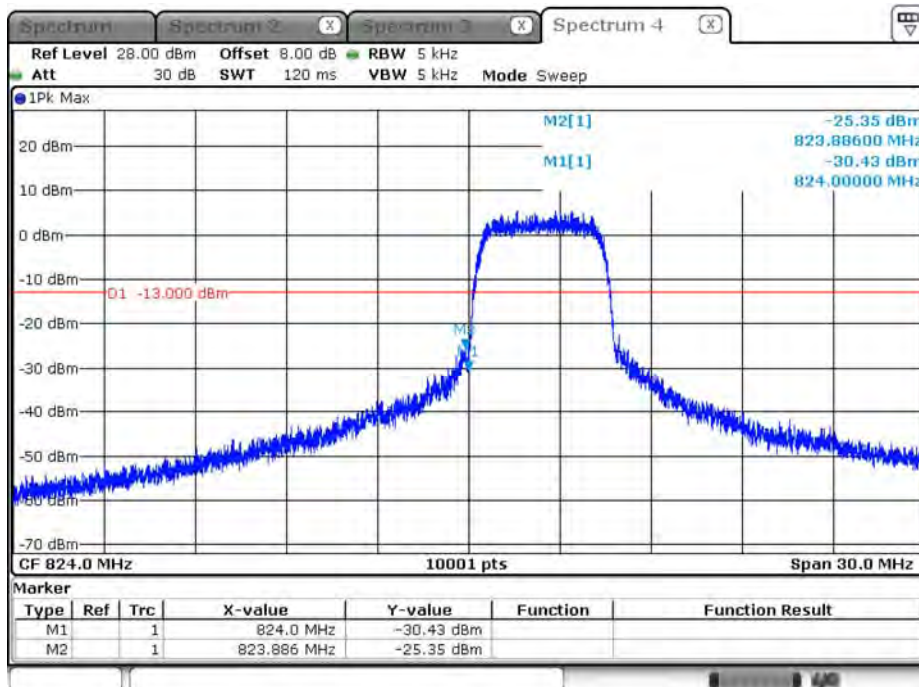
Date: 12.DEC.2018 05:04:10

WCDMA_Band5_RMC_846.6



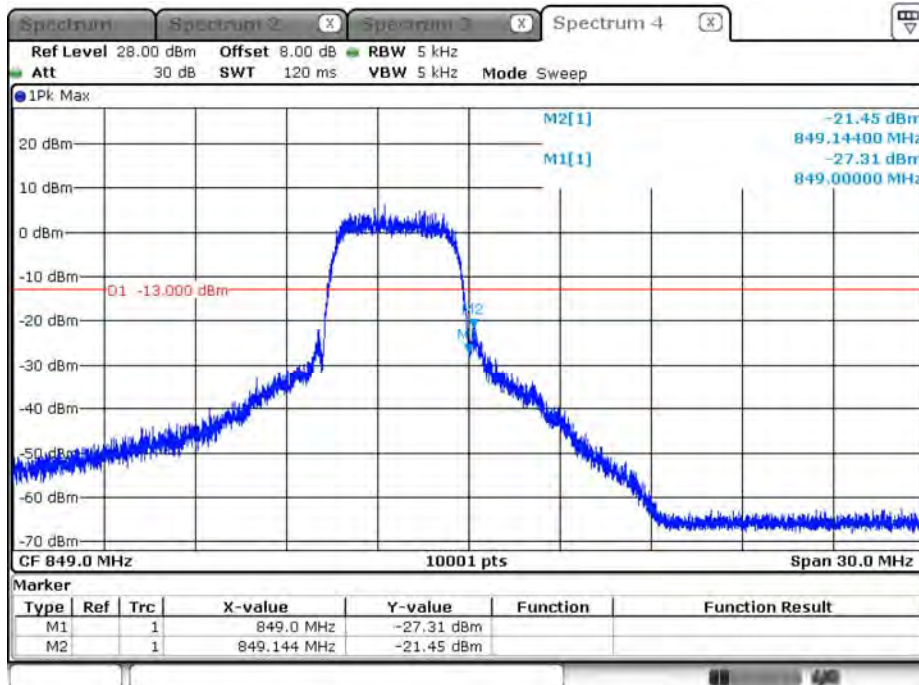
Date: 12.DEC.2018 05:11:39

WCDMA_Band5_HSDPA_826.4



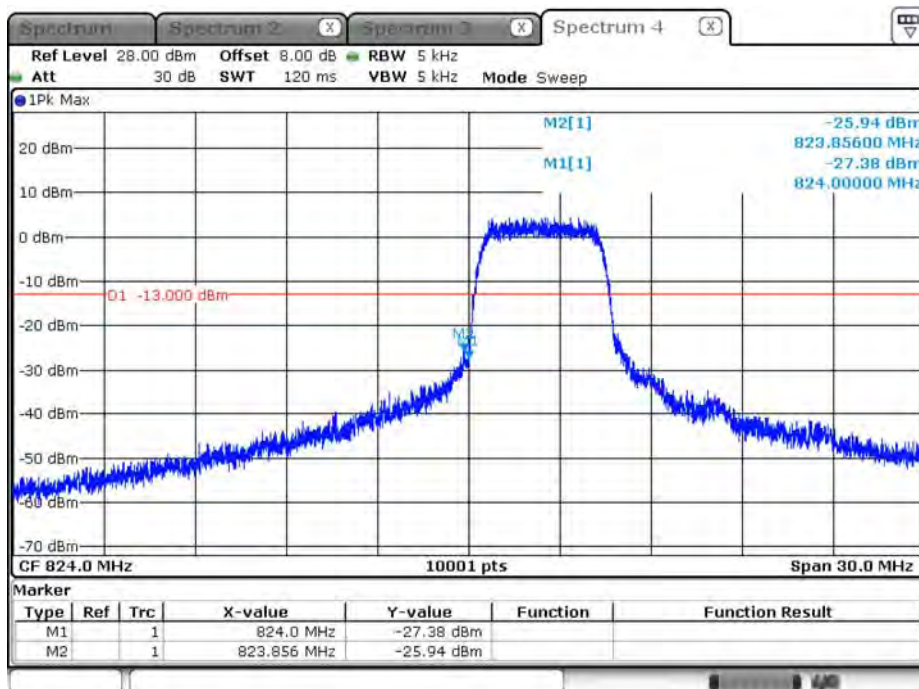
Date: 12.DEC.2018 06:06:18

WCDMA_Band5_HSDPA_846.6



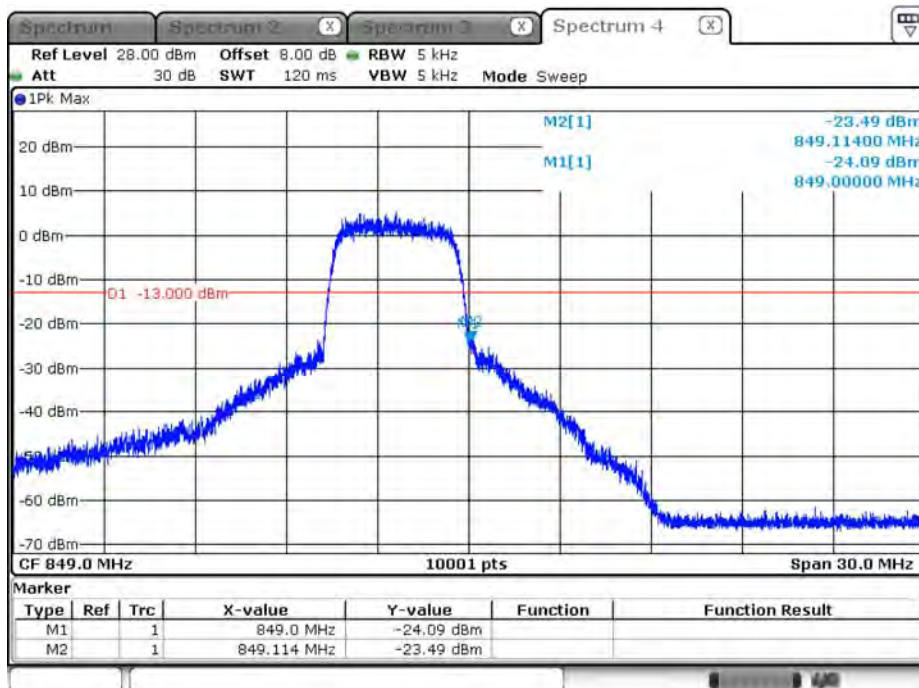
Date: 12.DEC.2018 05:13:14

WCDMA_Band5_HSUPA_826.4



Date: 12.DEC.2018 06:08:34

WCDMA_Band5_HSUPA_846.6

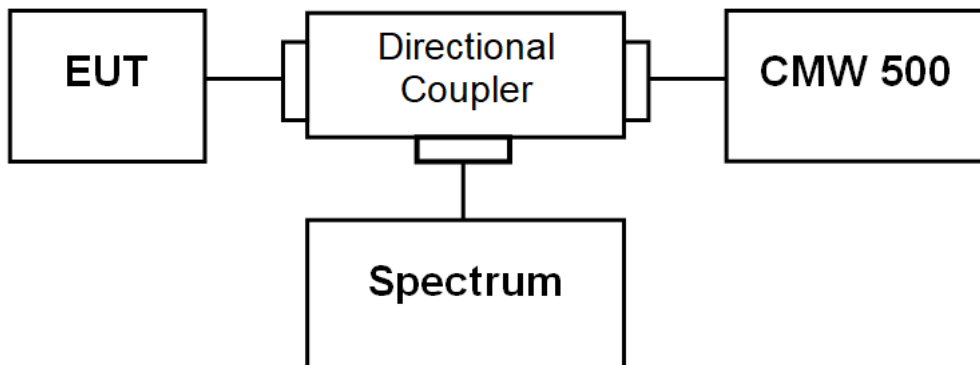


Date: 12.DEC.2018 06:21:45

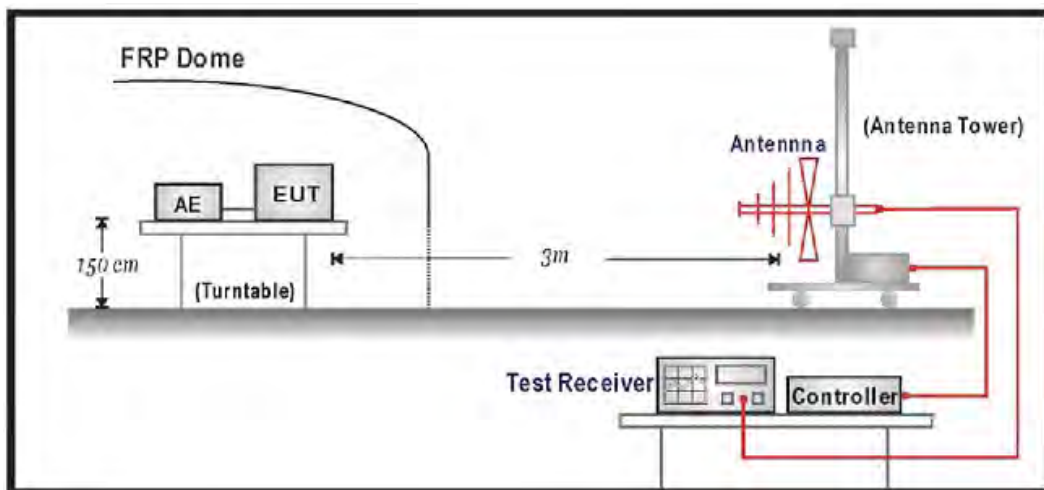
7. Spurious Emission

7.1. Test Setup

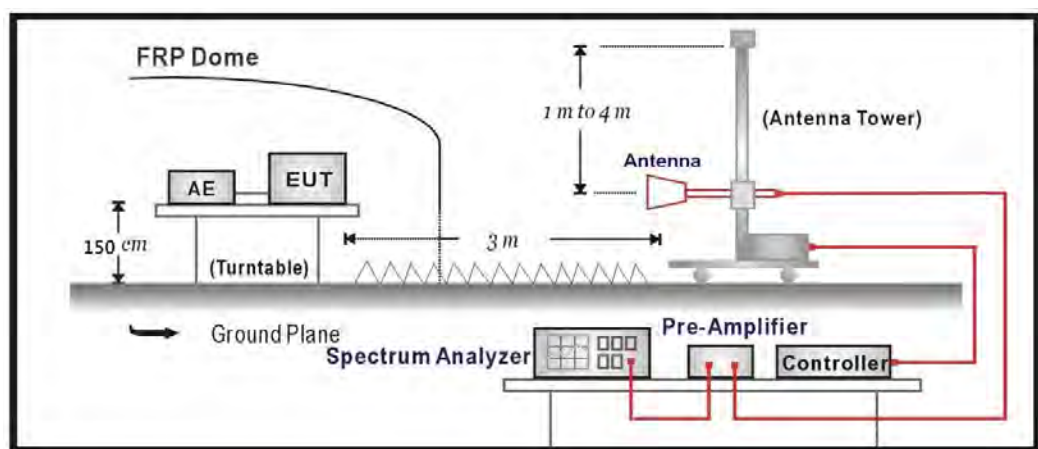
Conducted Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (above 1GHz)



7.2. Test Procedure

Conducted Spurious Measurement:

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- c) EUT Communicate with CMW500, then selects a channel for testing.
- d) Add a correction factor to the display of spectrum, and then test.
- e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

- a) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
- b) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- c) The table was rotated 360 degrees to determine the position of the highest spurious emission.
- d) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- e) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
- f) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- g) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- h) Taking the record of output power at antenna port
- i) Repeat step 7 to step 8 for another polarization.
- j) $EIRP = SG - \text{Cable loss} + \text{Antenna Gain}$

7.3. Test Method

Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 6.1
ANSI C63.26-2015 Sub-clause 5.7

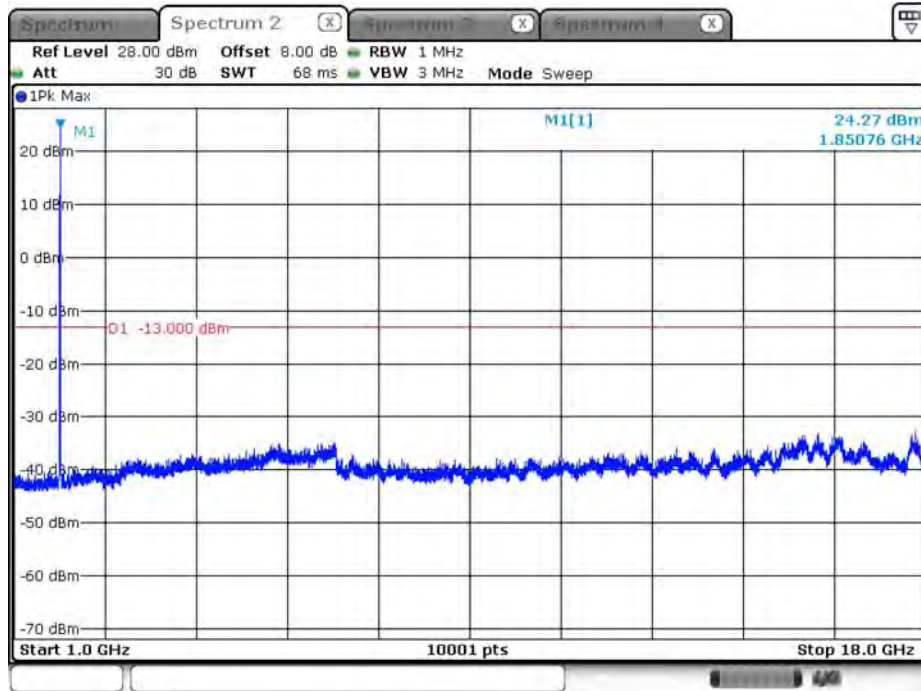
Radiated Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.8
ANSI C63.26-2015 Sub-clause 5.5.3.2

7.4. Test Result

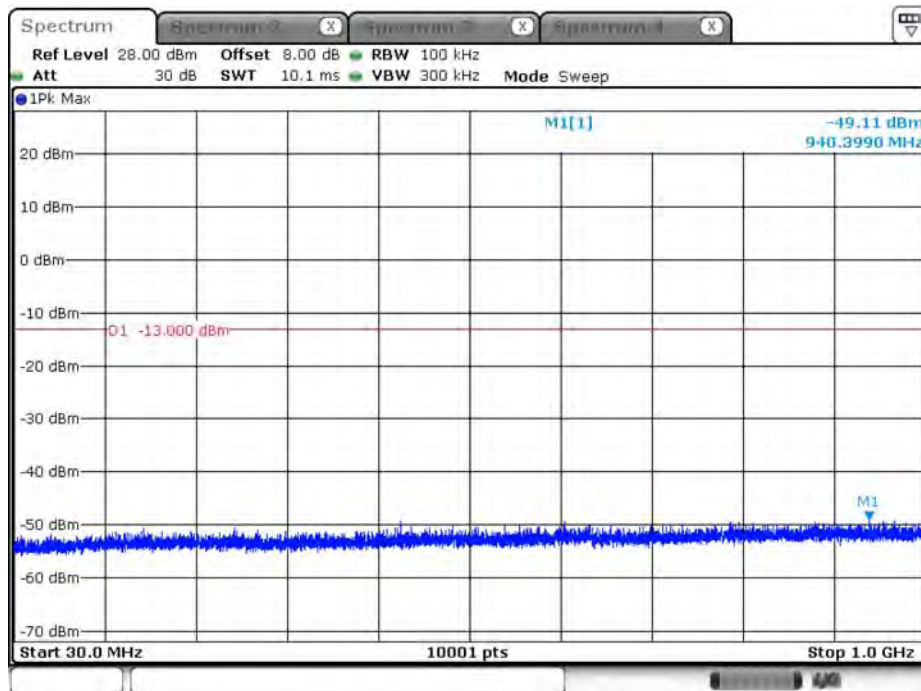
Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 2_RMC_1852.4MHz_above 1G



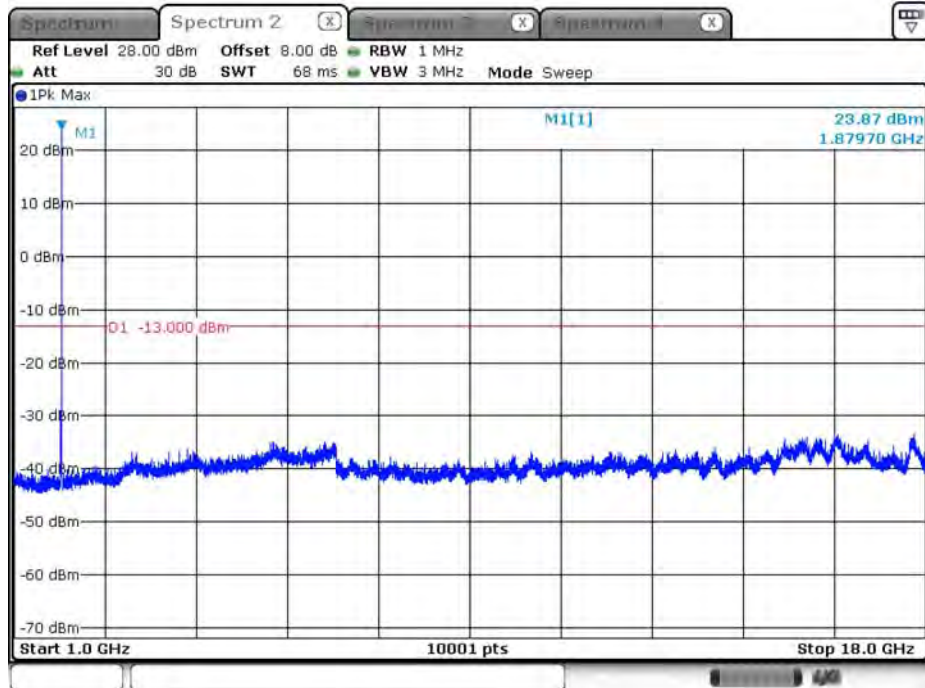
Date: 12.DEC.2018 03:10:18

WCDMA_Band 2_RMC_1852.4MHz_under 1G



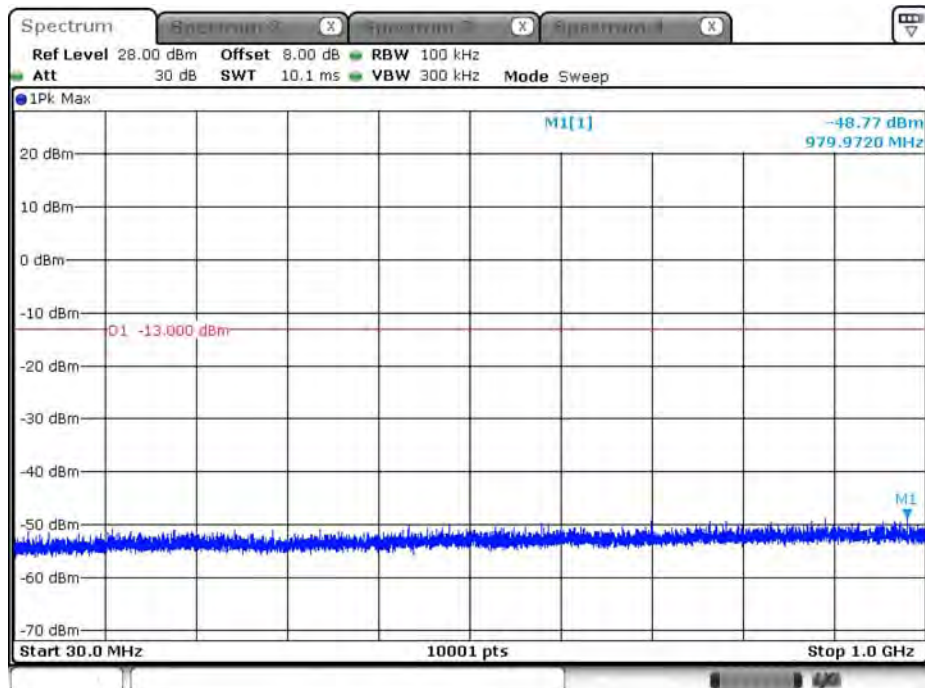
Date: 12.DEC.2018 03:15:21

WCDMA_Band 2_RMC_1880.0MHz_above 1G



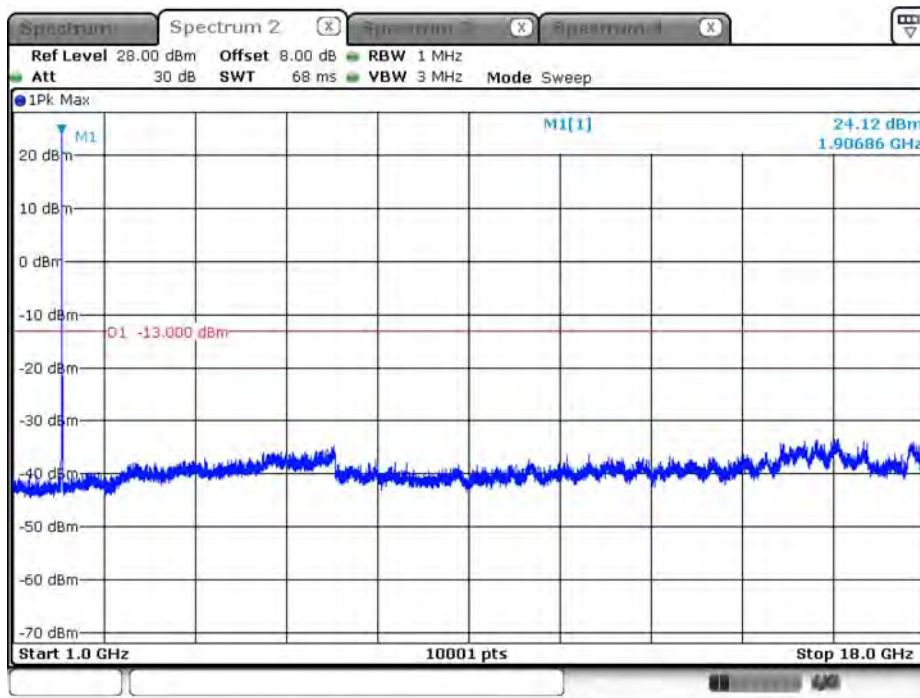
Date: 12.DEC.2018 03:25:42

WCDMA_Band 2_RMC_1880.0MHz_under 1G



Date: 12.DEC.2018 03:26:17

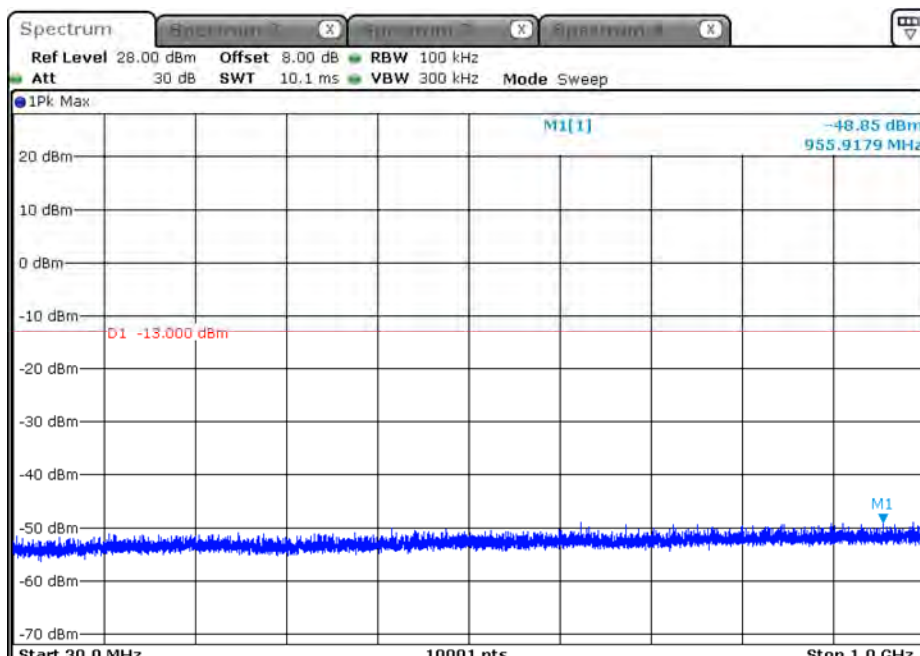
WCDMA_Band 2_RMC_1907.6MHz_above 1G



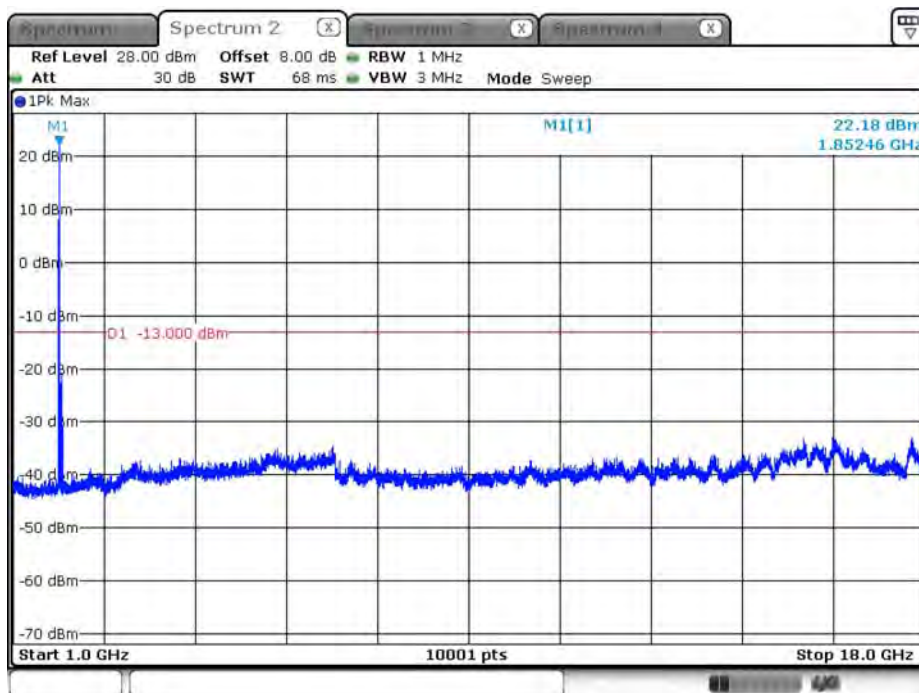
Date: 12.DEC.2018 03:29:37

WCDMA_Band 2_RMC_1907.6MHz_under

1

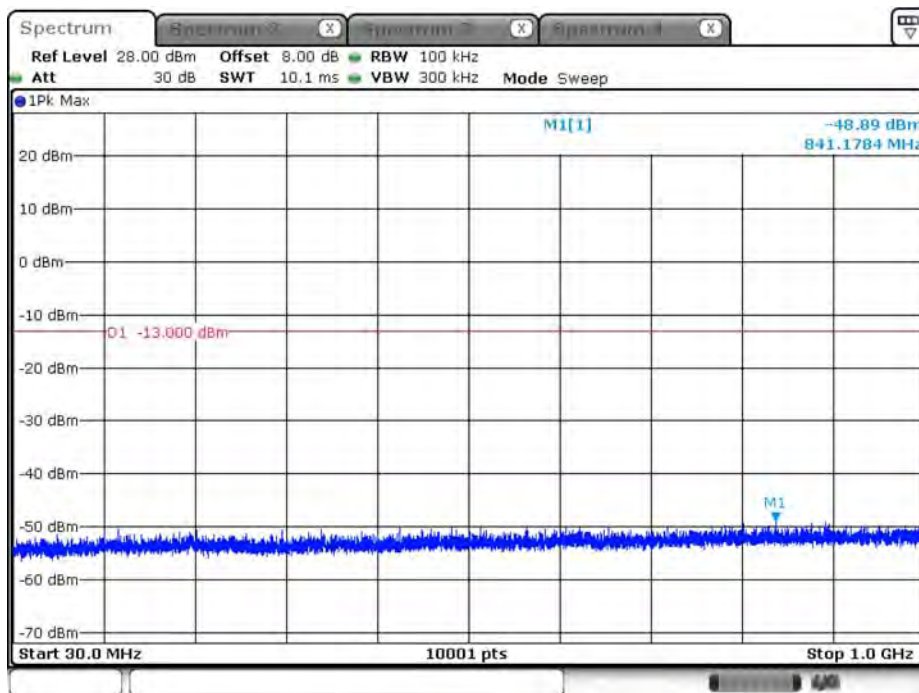


WCDMA_Band 2_HSDPA_1852.4MHz_above 1G



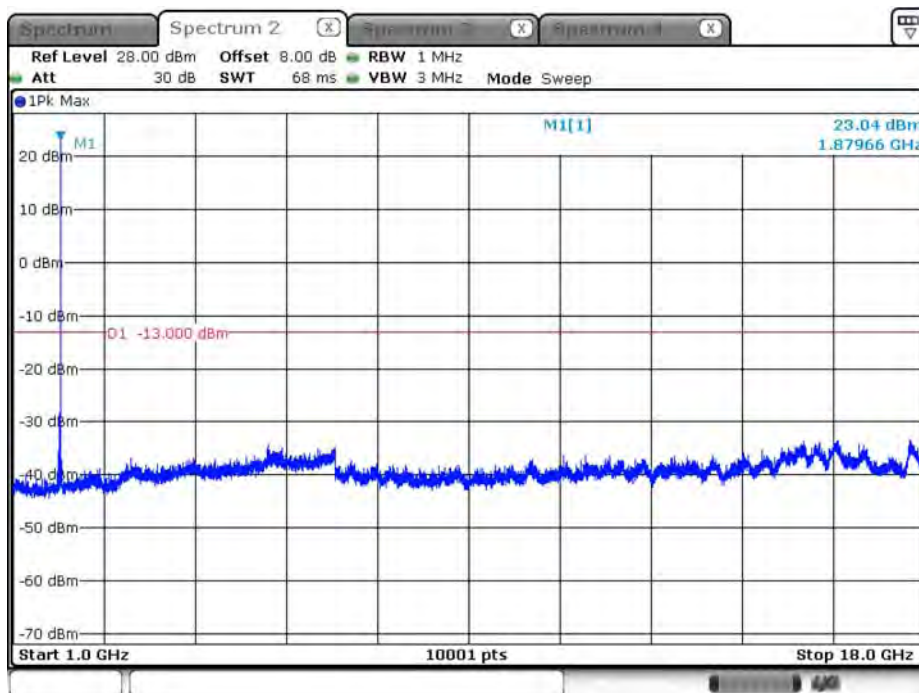
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WCDMA_Band 2_HSDPA_1852.4MHz_under 1G



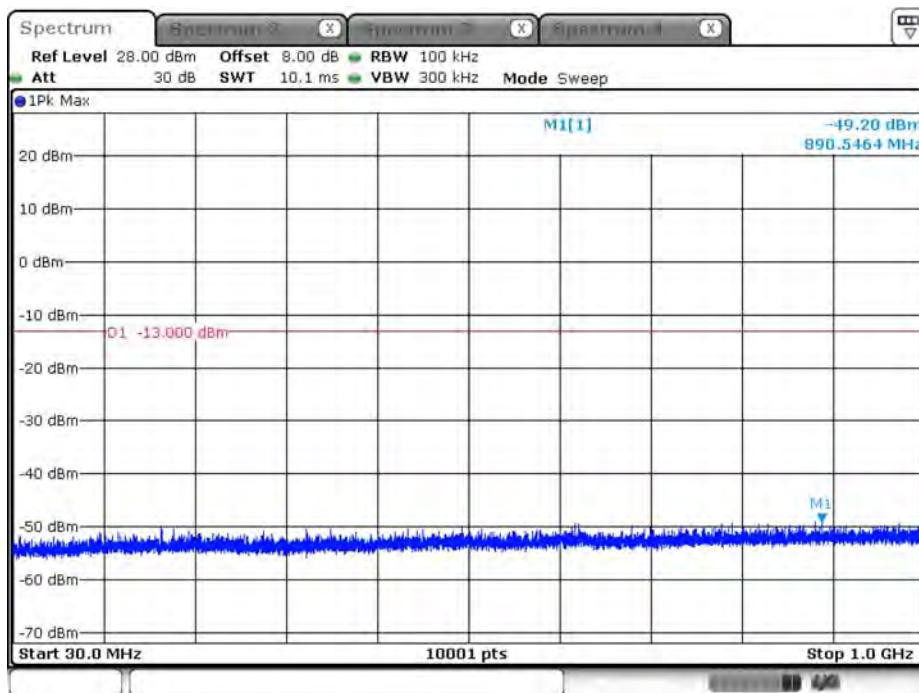
Date: 12.DEC.2018 03:58:55

WCDMA_Band 2_HSDPA_1880.0MHz_above 1G



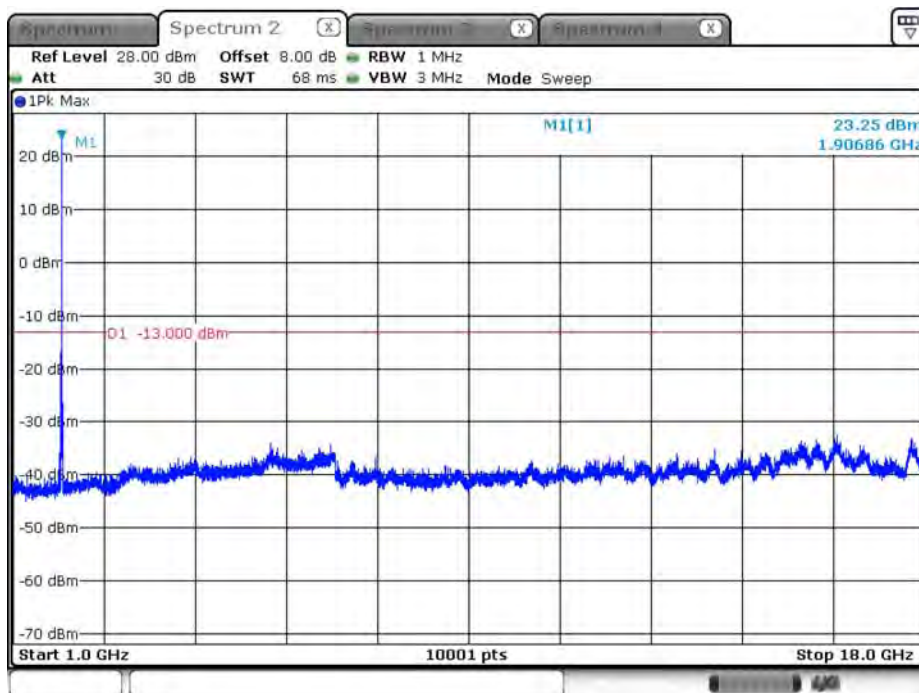
Date: 12.DEC.2018 04:00:30

WCDMA_Band 2_HSDPA_1880.0MHz_under 1G



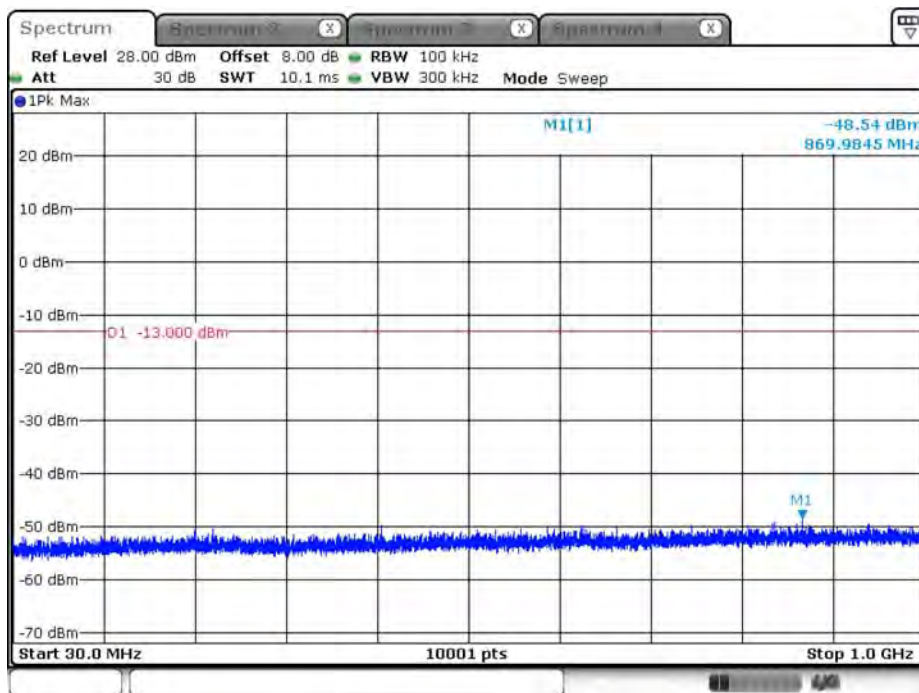
Date: 12.DEC.2018 04:01:11

WCDMA_Band 2_HSDPA_1907.6MHz_above 1G



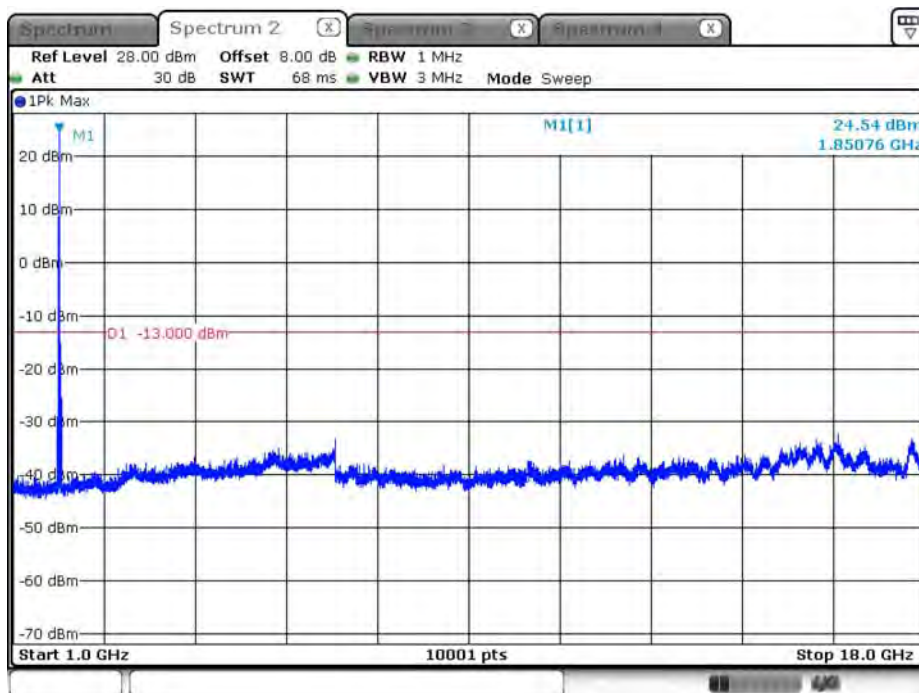
Date: 12.DEC.2018 04:06:18

WCDMA_Band 2_HSDPA_1907.6MHz_under 1G



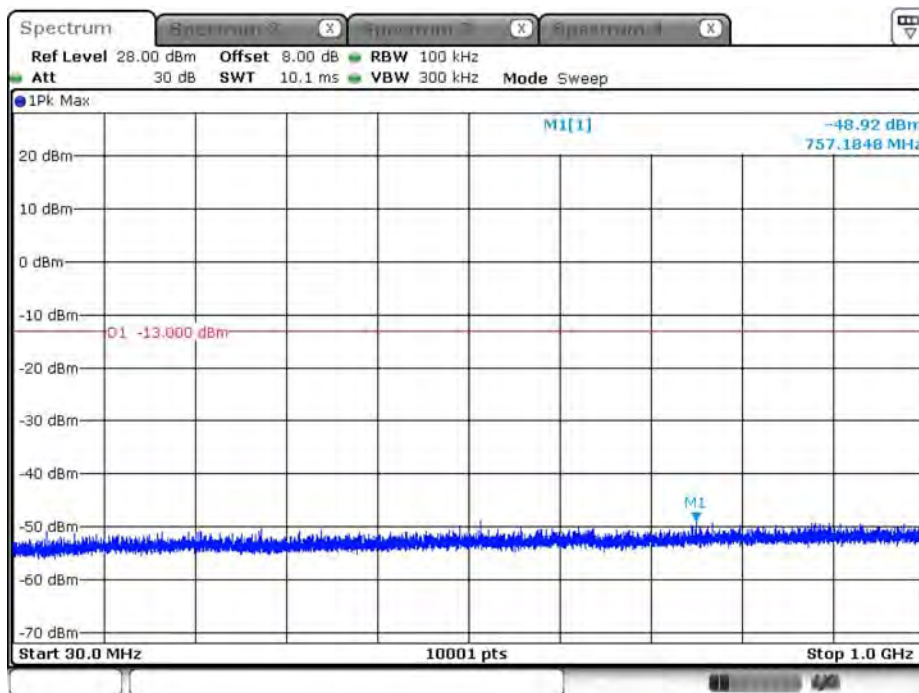
Date: 12.DEC.2018 04:06:45

WCDMA_Band 2_HSUPA_1852.4MHz_above 1G



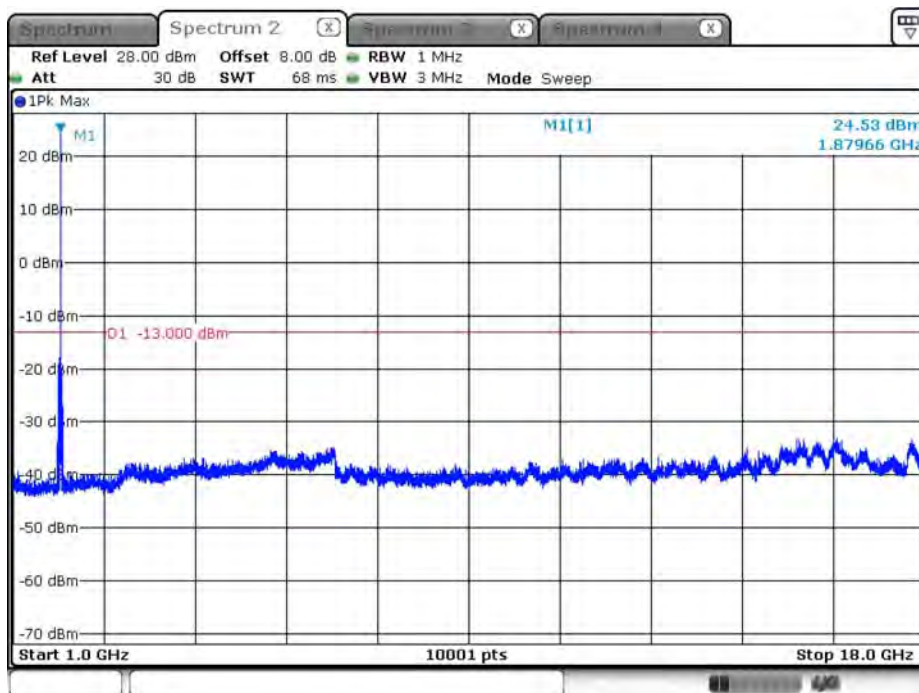
Date: 12.DEC.2018 04:13:18

WCDMA_Band 2_HSUPA_1852.4MHz_under 1G



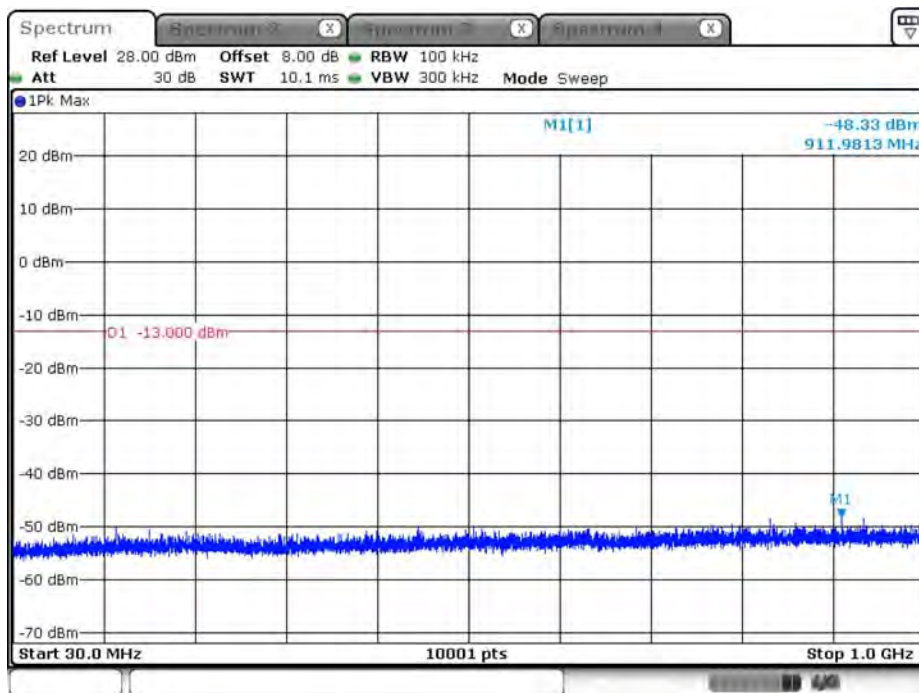
Date: 12.DEC.2018 04:12:50

WCDMA_Band 2_HSUPA_1880.0MHz_above 1G



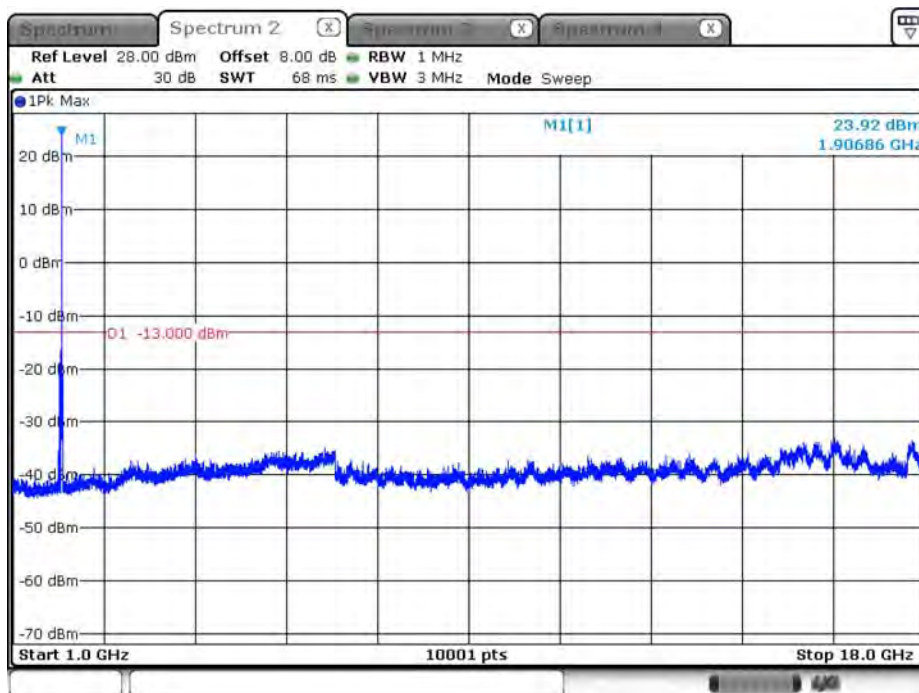
Date: 12.DEC.2018 04:11:51

WCDMA_Band 2_HSUPA_1880.0MHz_under 1G



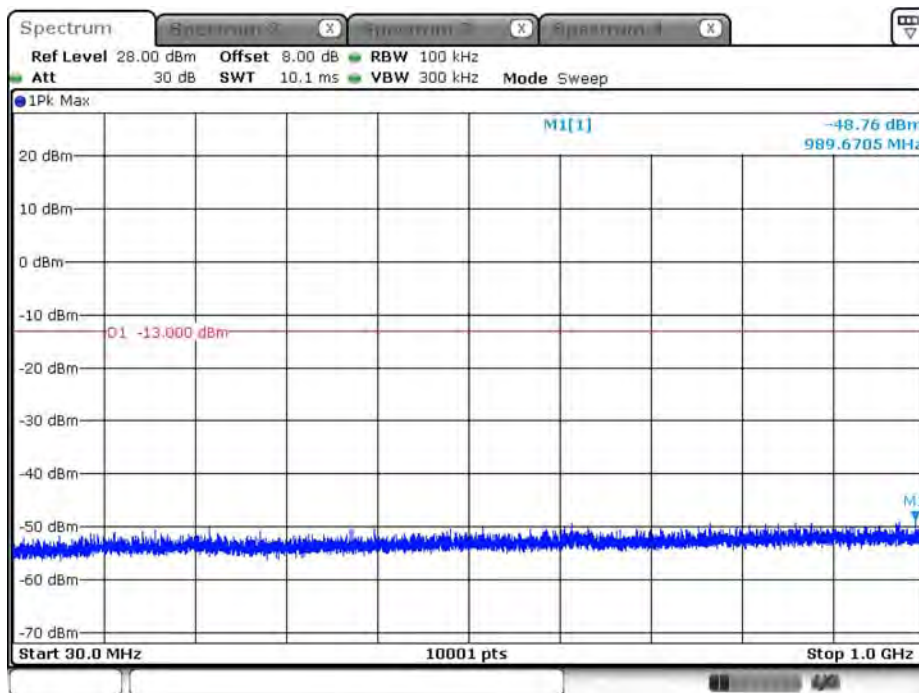
Date: 12.DEC.2018 04:11:57

WCDMA_Band 2_HSUPA_1907.6MHz_above 1G



Date: 12.DEC.2018 04:09:40

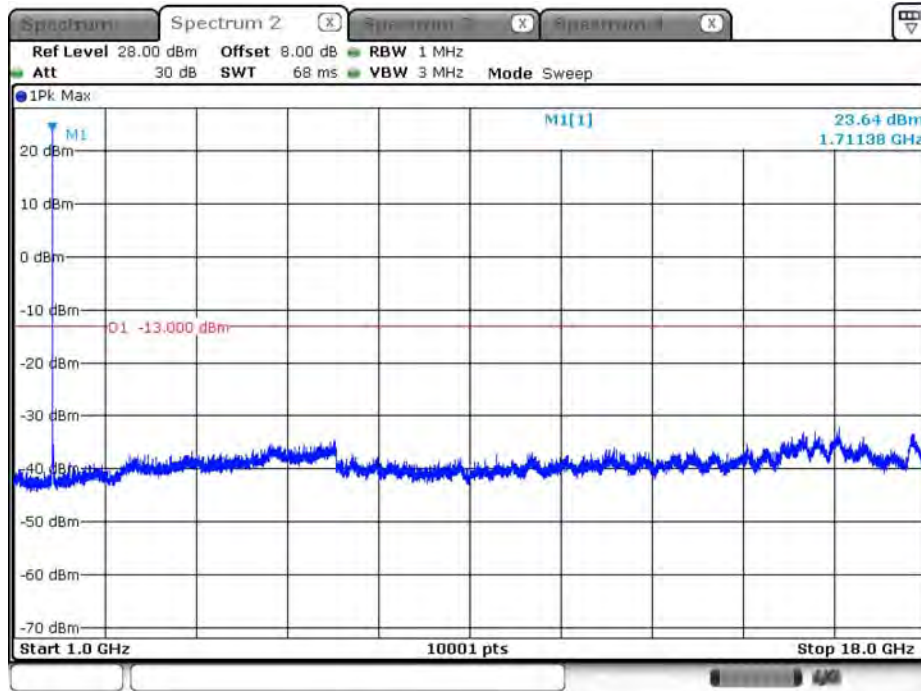
WCDMA_Band 2_HSUPA_1907.6MHz_under 1G



Date: 12.DEC.2018 04:10:07

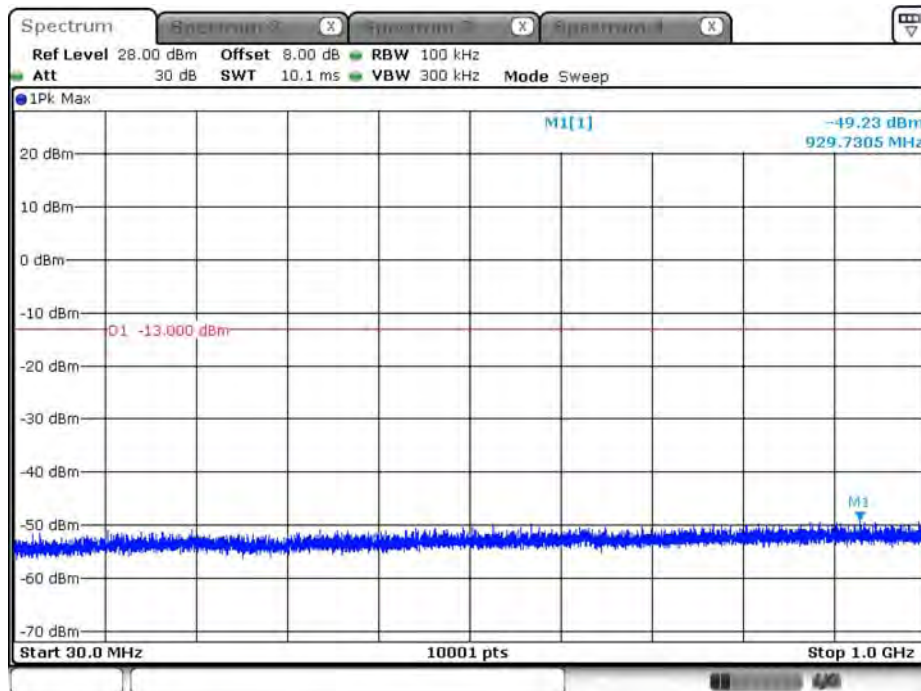
Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 4_RMC_1712.4MHz_above 1G



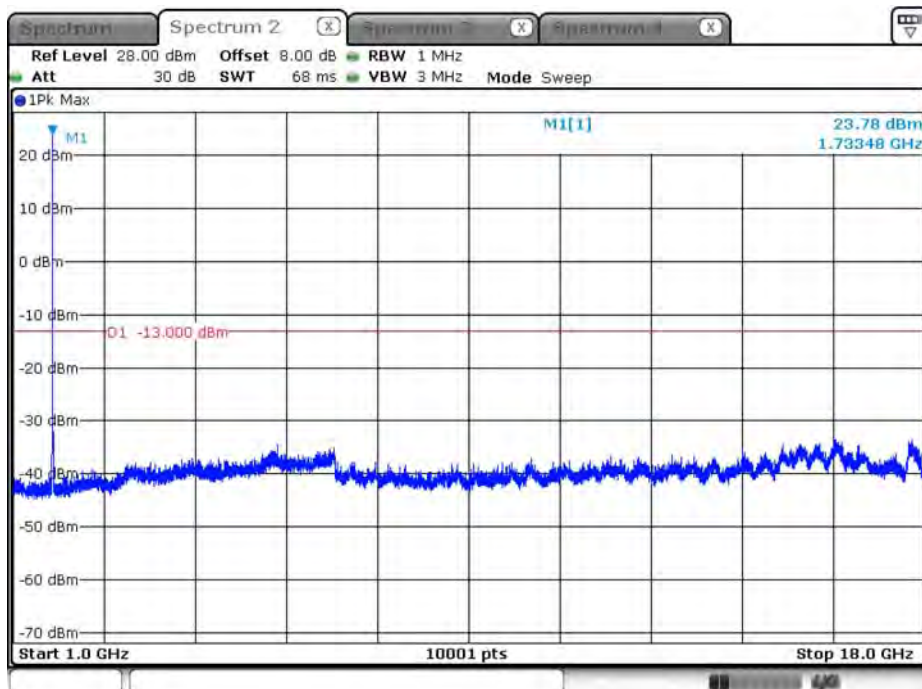
Date: 12.DEC.2018 04:20:16

WCDMA_Band 4_RMC_1712.4MHz_under 1G



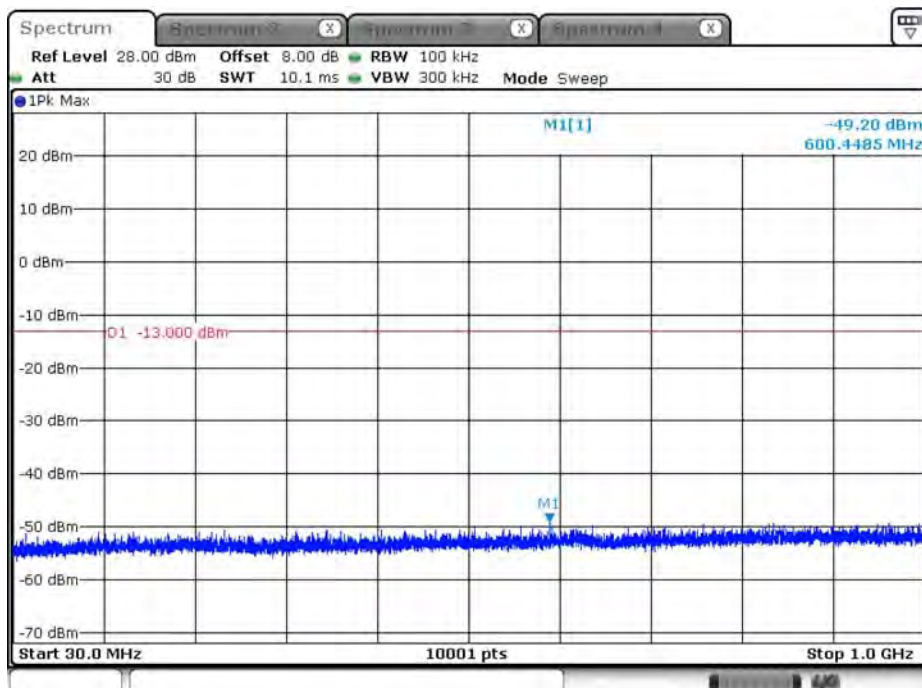
Date: 12.DEC.2018 04:20:54

WCDMA_Band 4_RMC_1732.6MHz_above 1G



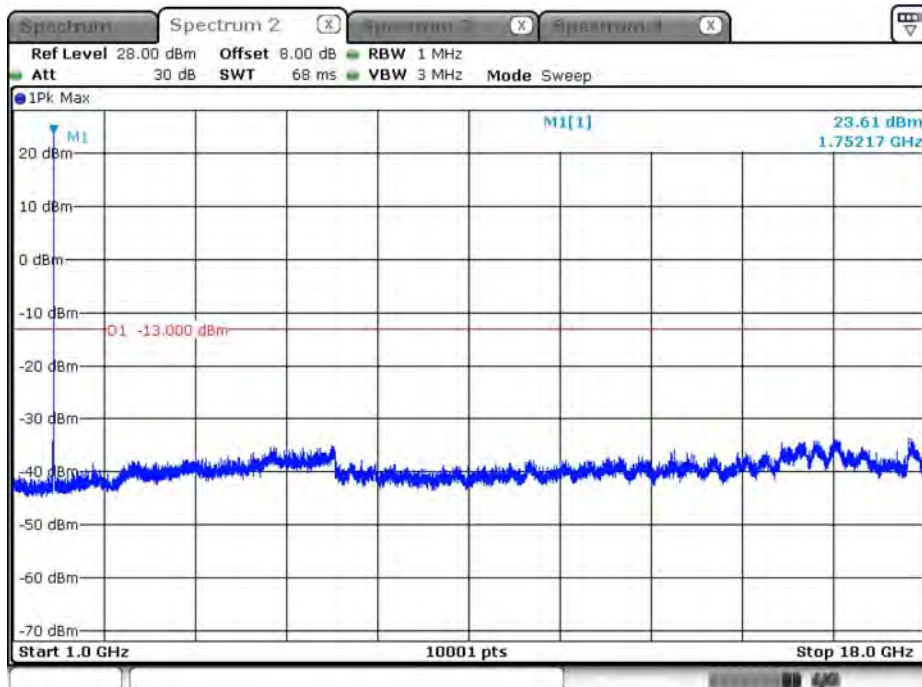
Date: 12.DEC.2018 04:23:55

WCDMA_Band 4_RMC_1732.6MHz_under 1G



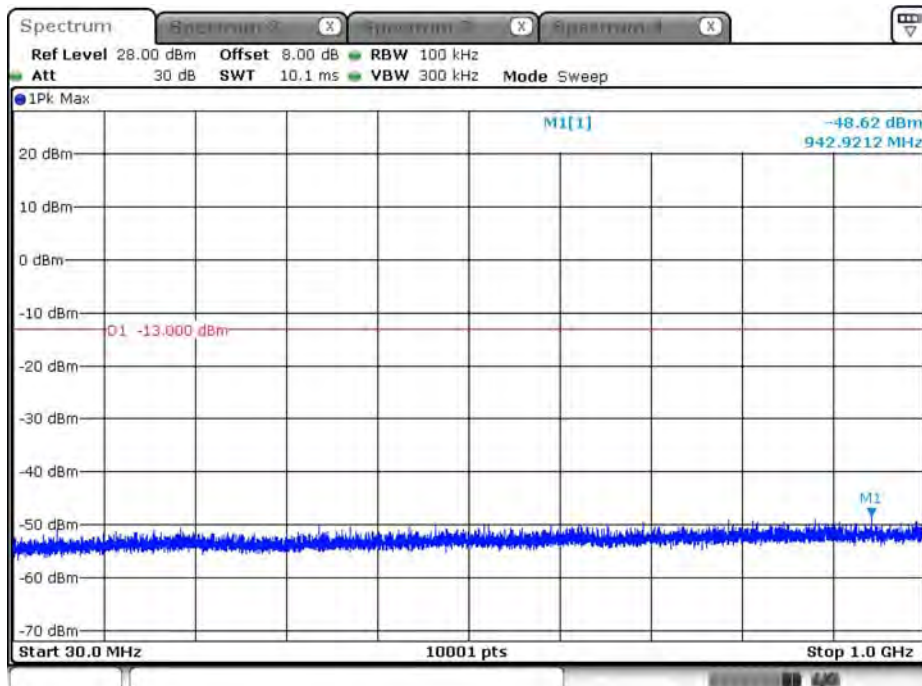
Date: 12.DEC.2018 04:23:29

WCDMA_Band 4_RMC_1752.6MHz_above 1G



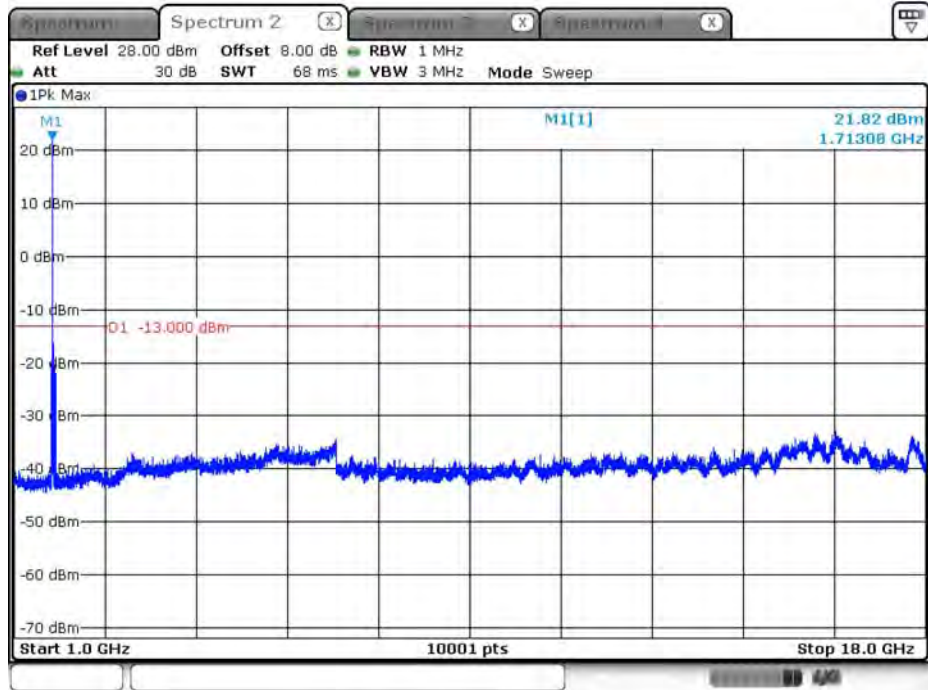
Date: 12.DEC.2018 04:25:18

WCDMA_Band 4_RMC_1752.6MHz_under 1G



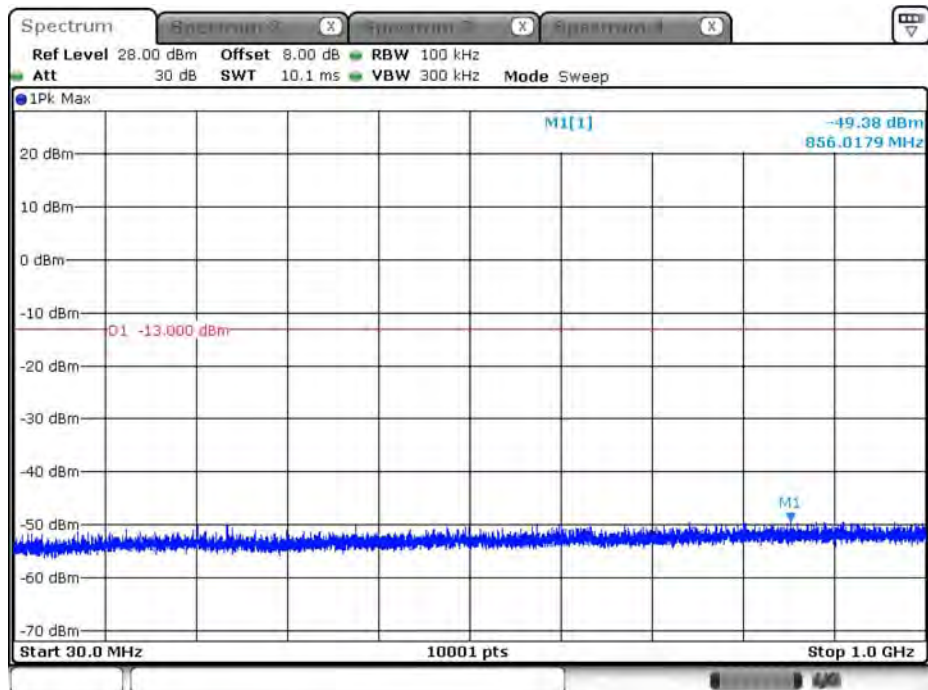
Date: 12.DEC.2018 04:25:58

WCDMA_Band 4_HSDPA_1712.4MHz_above 1G



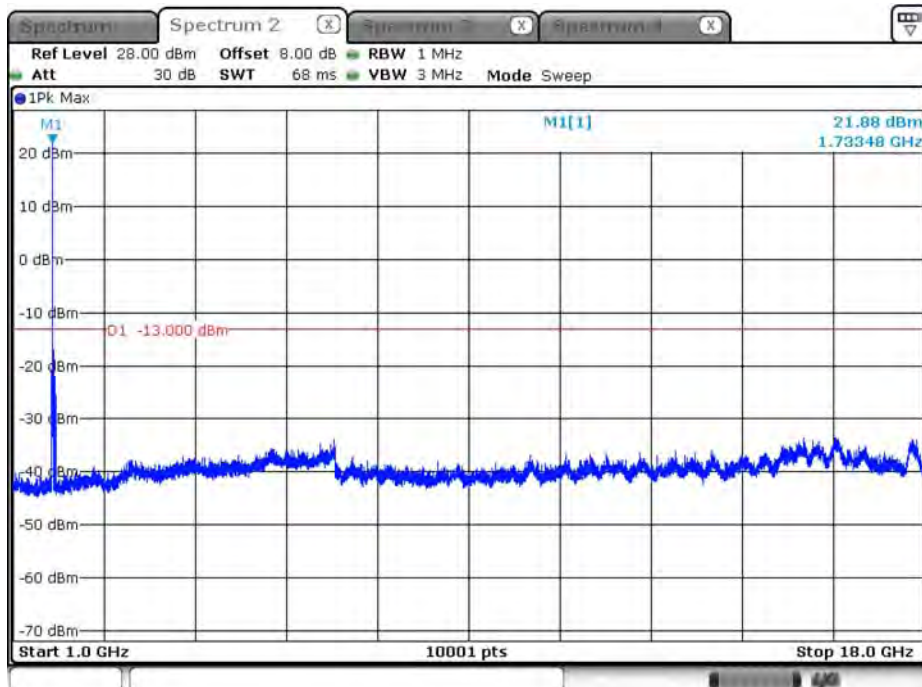
Date: 12.DEC.2018 04:34:42

WCDMA_Band 4_HSDPA_1712.4MHz_under 1G



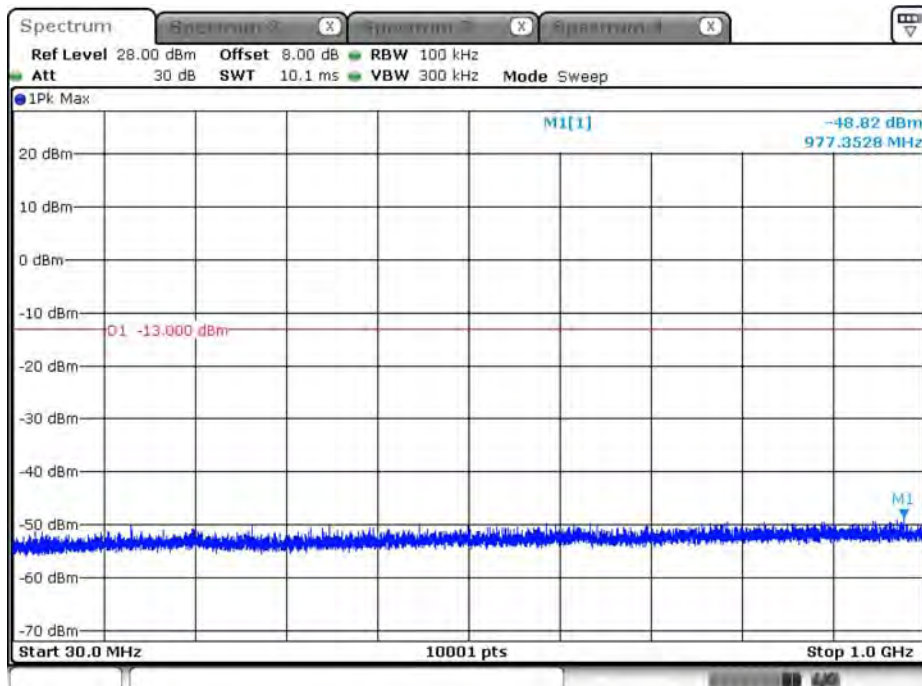
Date: 12.DEC.2018 04:35:17

WCDMA_Band 4_HSDPA_1732.6MHz_above 1G



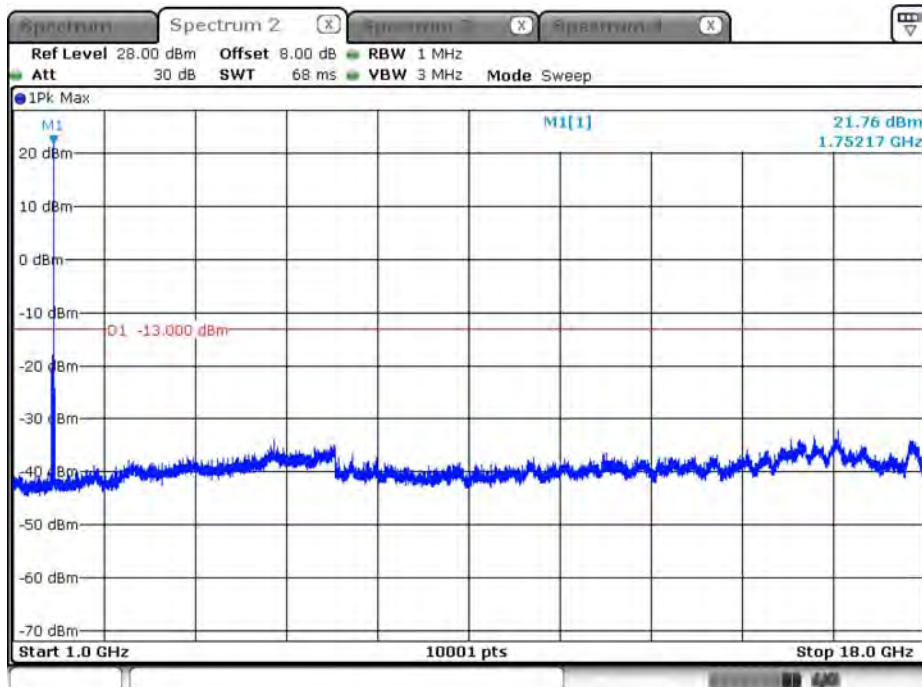
Date: 12.DEC.2018 04:32:00

WCDMA_Band 4_HSDPA_1732.6MHz_under 1G



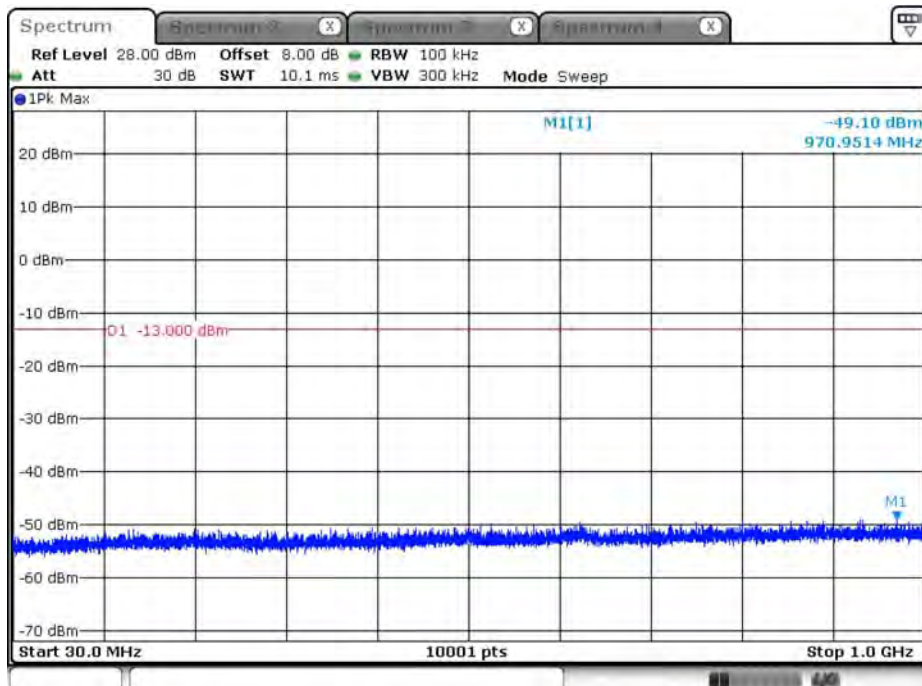
Date: 12.DEC.2018 04:32:41

WCDMA_Band 4_HSDPA_1752.6MHz_above 1G



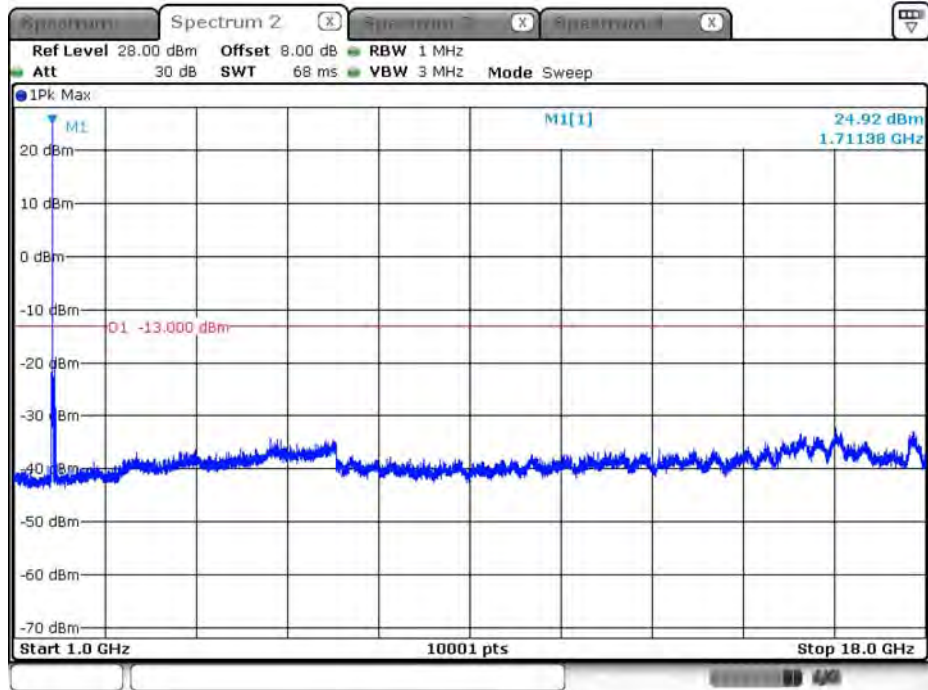
Date: 12.DEC.2018 04:30:41

WCDMA_Band 4_HSDPA_1752.6MHz_under 1G



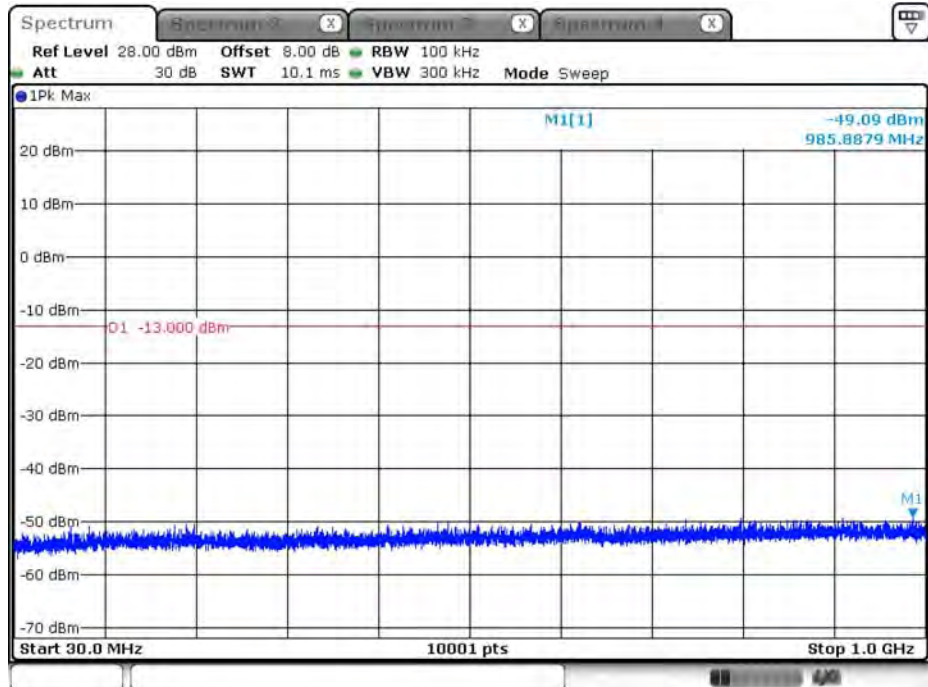
Date: 12.DEC.2018 04:31:19

WCDMA_Band 4_HSUPA_1712.4MHz_above 1G



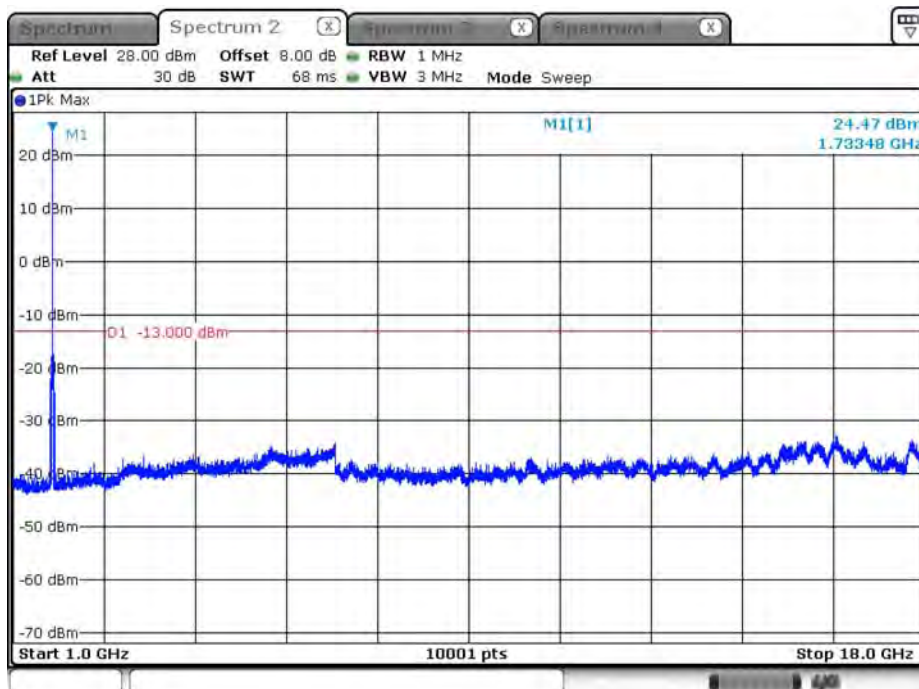
Date: 12.DEC.2018 04:39:01

WCDMA_Band 4_HSUPA_1712.4MHz_under 1G



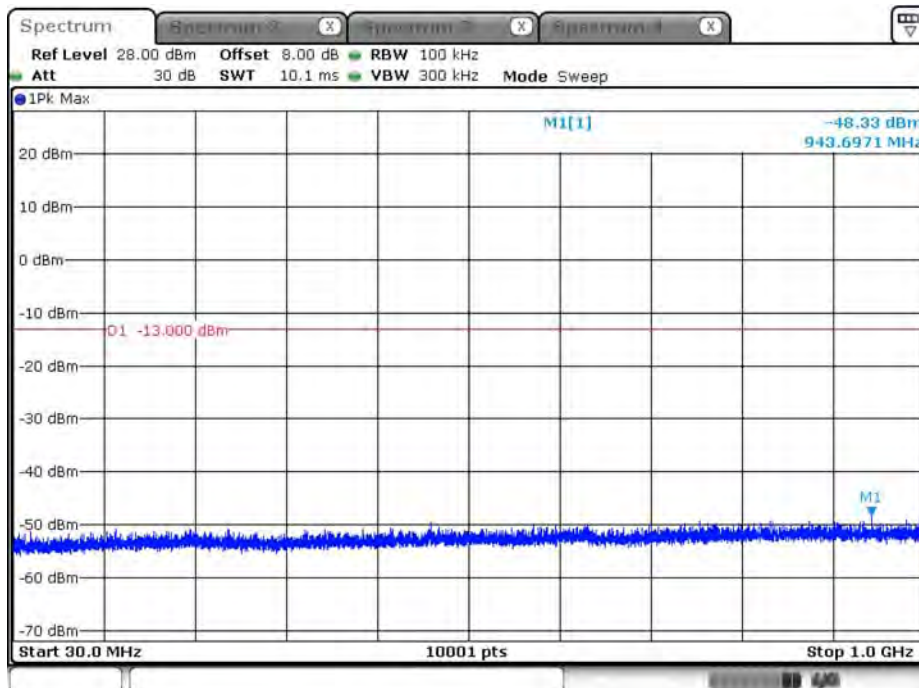
Date: 12.DEC.2018 04:39:33

WCDMA_Band 4_HSUPA_1732.6MHz_above 1G



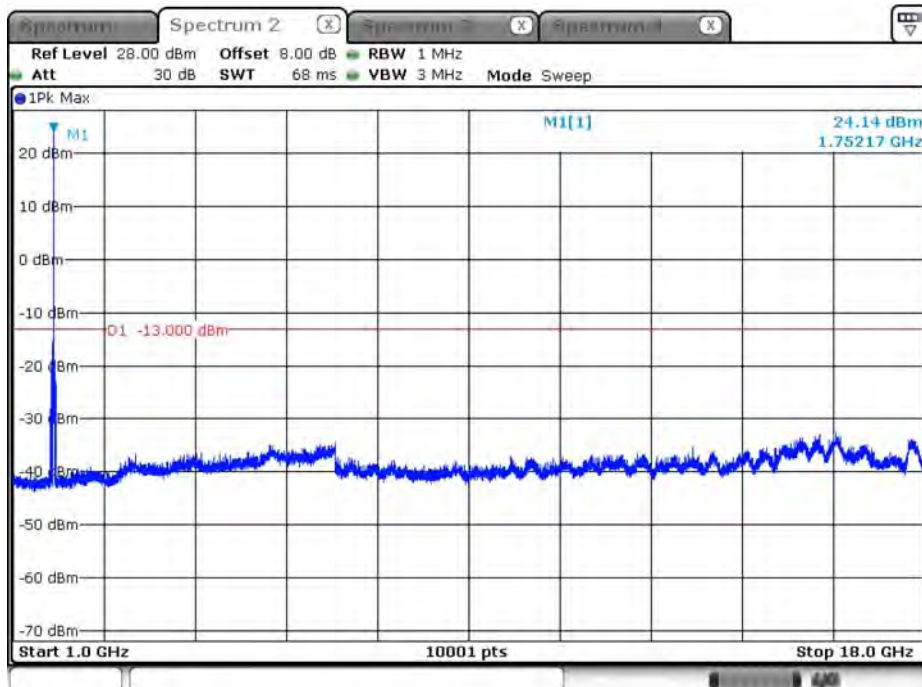
Date: 12.DEC.2018 04:42:04

WCDMA_Band 4_HSUPA_1732.6MHz_under 1G



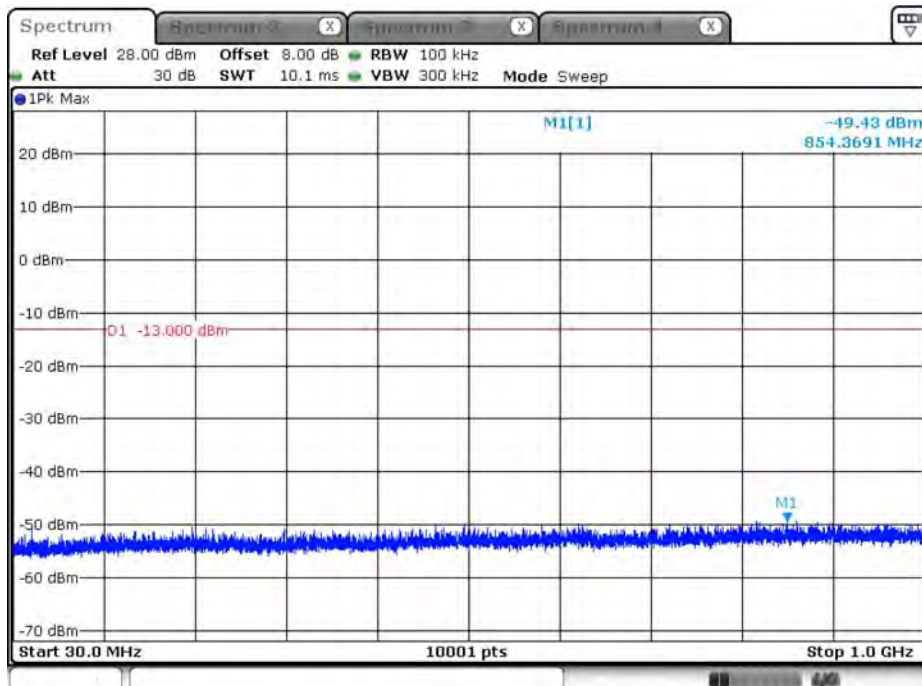
Date: 12.DEC.2018 04:41:07

WCDMA_Band 4_HSUPA_1752.6MHz_above 1G



Date: 12.DEC.2018 04:46:54

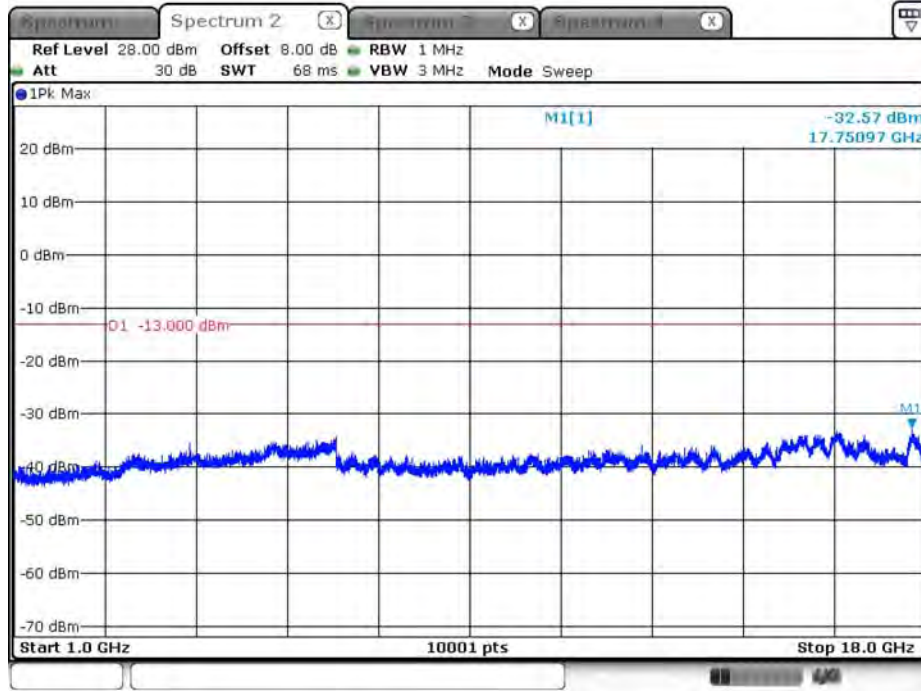
WCDMA_Band 4_HSUPA_1752.6MHz_under 1G



Date: 12.DEC.2018 04:47:22

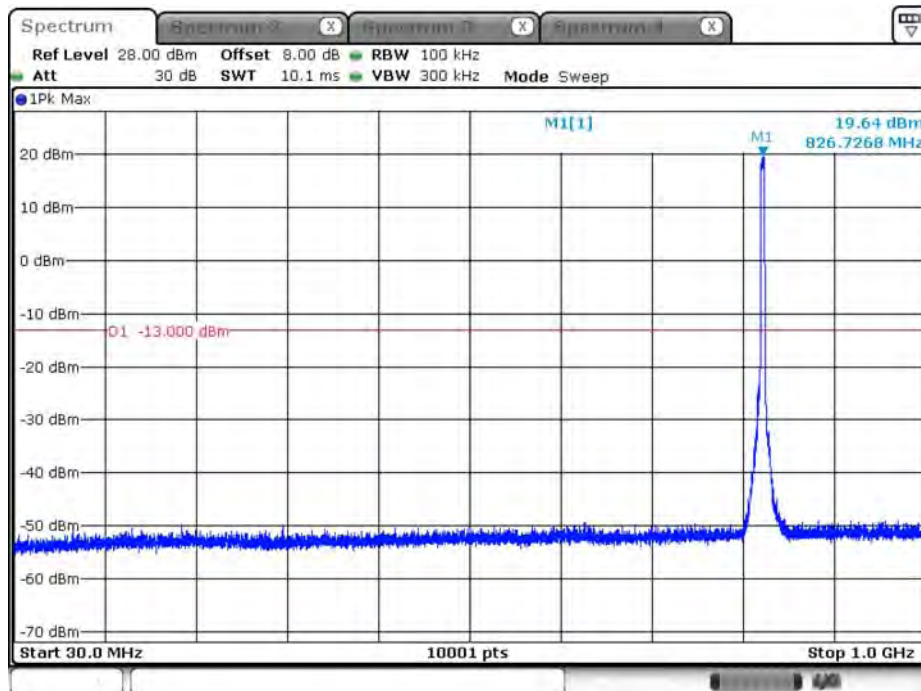
Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 5_RMC_826.4MHz_above 1G



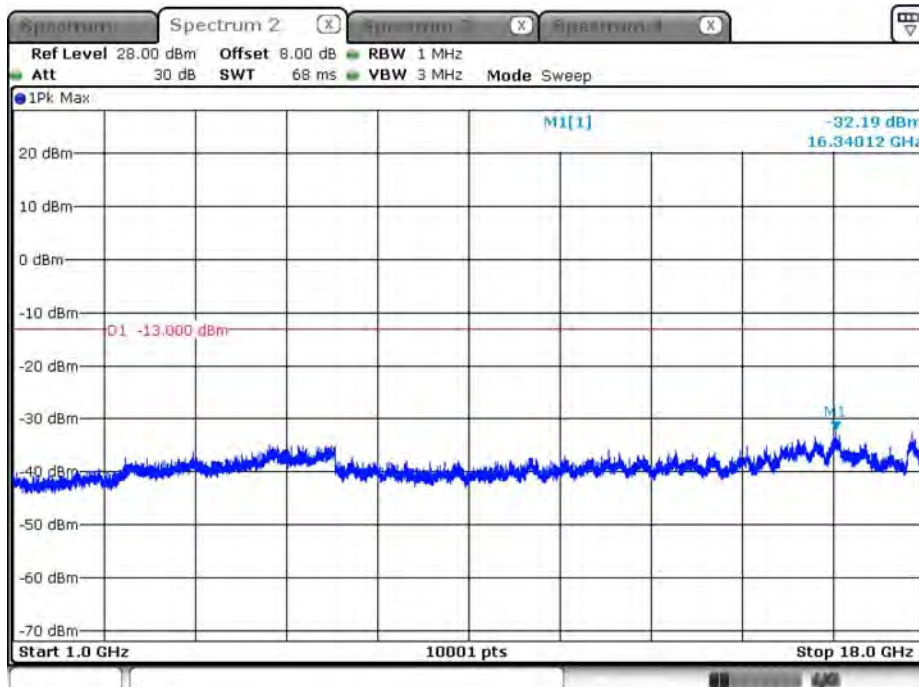
Date: 12.DEC.2018 05:05:41

WCDMA_Band 5_RMC_826.4MHz_under 1G



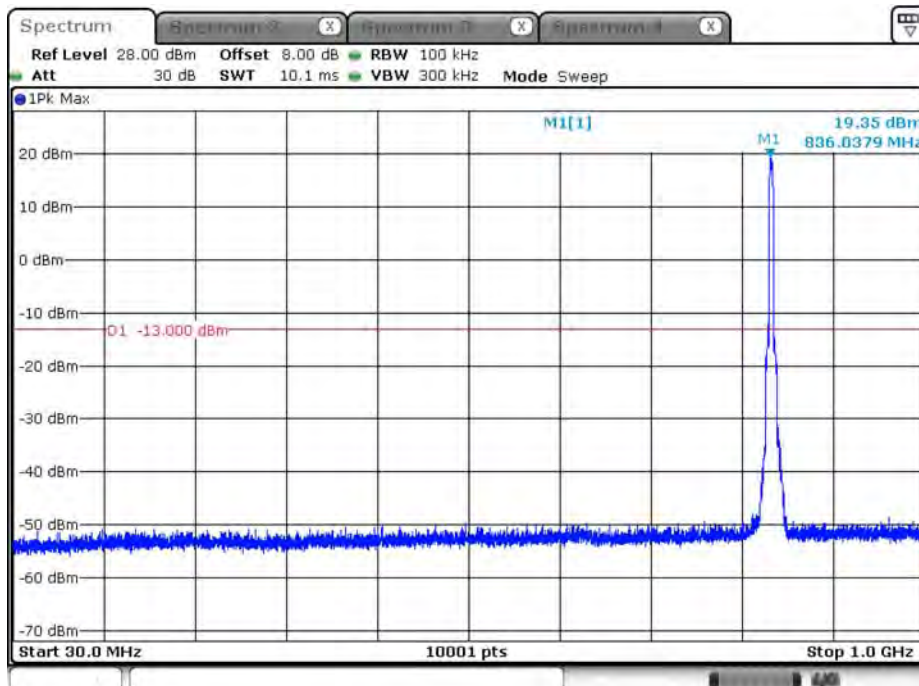
Date: 12.DEC.2018 05:06:32

WCDMA_Band 5_RMC_836.6MHz_above 1G



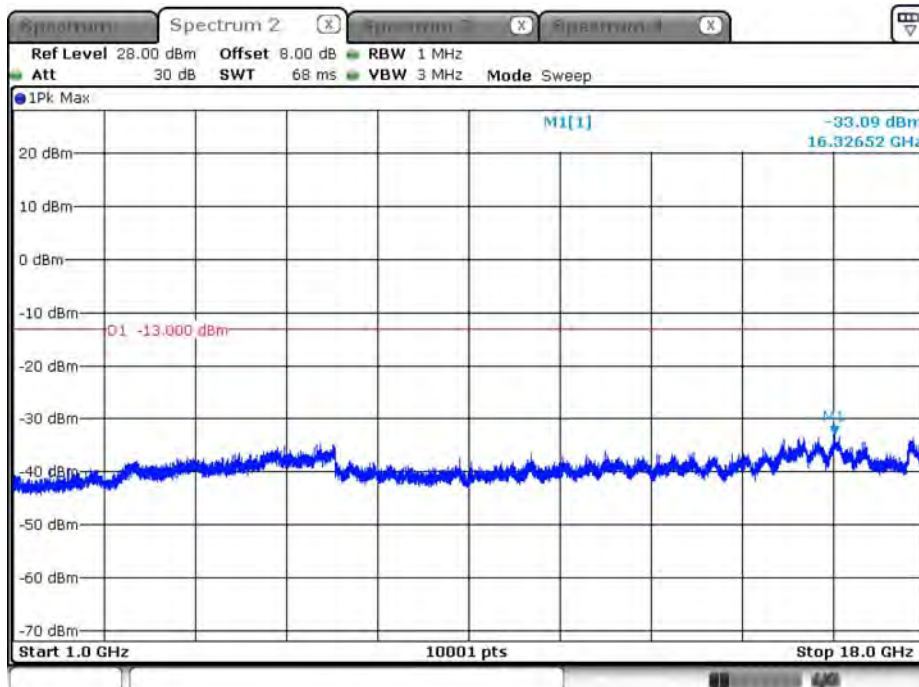
Date: 12.DEC.2018 05:08:05

WCDMA_Band 5_RMC_836.6MHz_under 1G



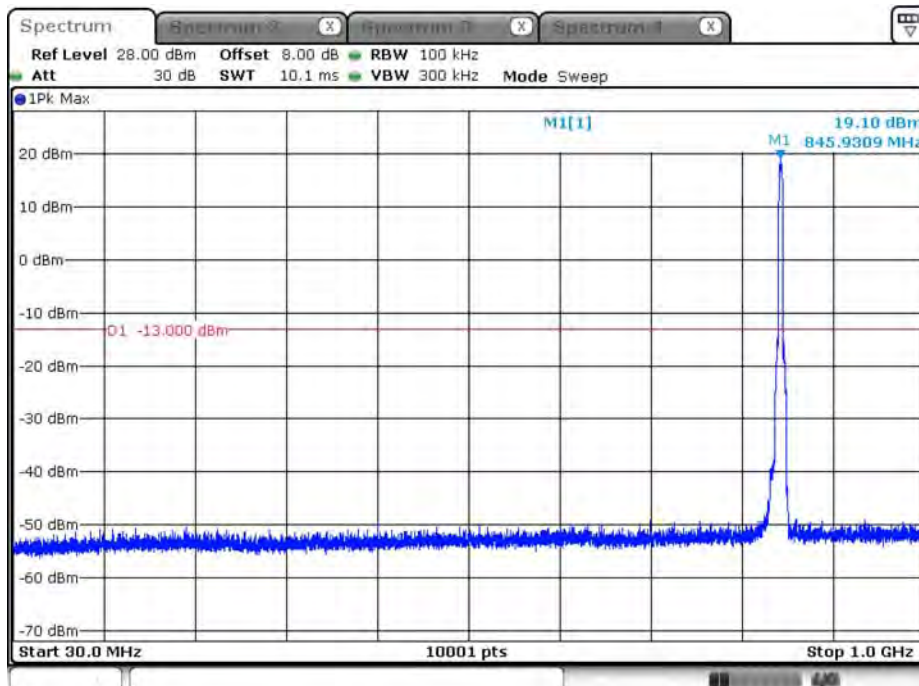
Date: 12.DEC.2018 05:07:27

WCDMA_Band 5_RMC_846.6MHz_above 1G



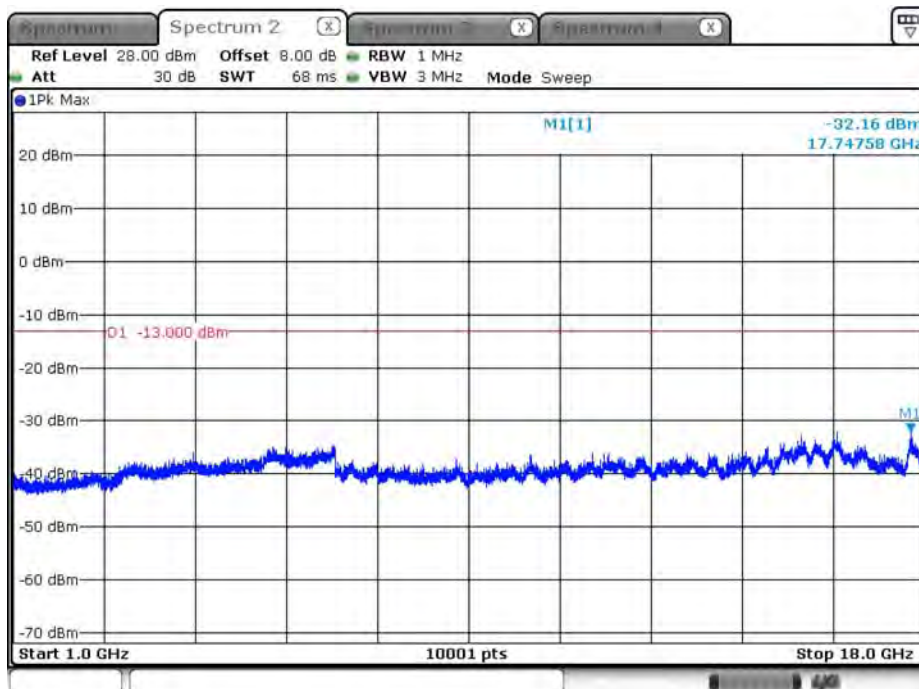
Date: 12.DEC.2018 05:09:36

WCDMA_Band 5_RMC_846.6MHz_under 1G



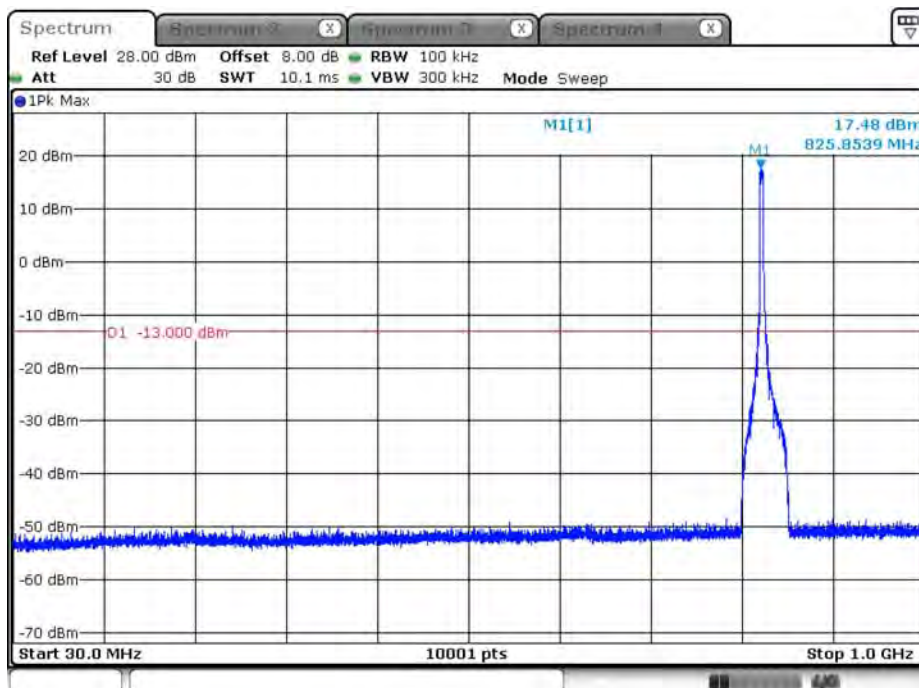
Date: 12.DEC.2018 05:10:06

WCDMA_Band 5_HSDPA_826.4MHz_above 1G



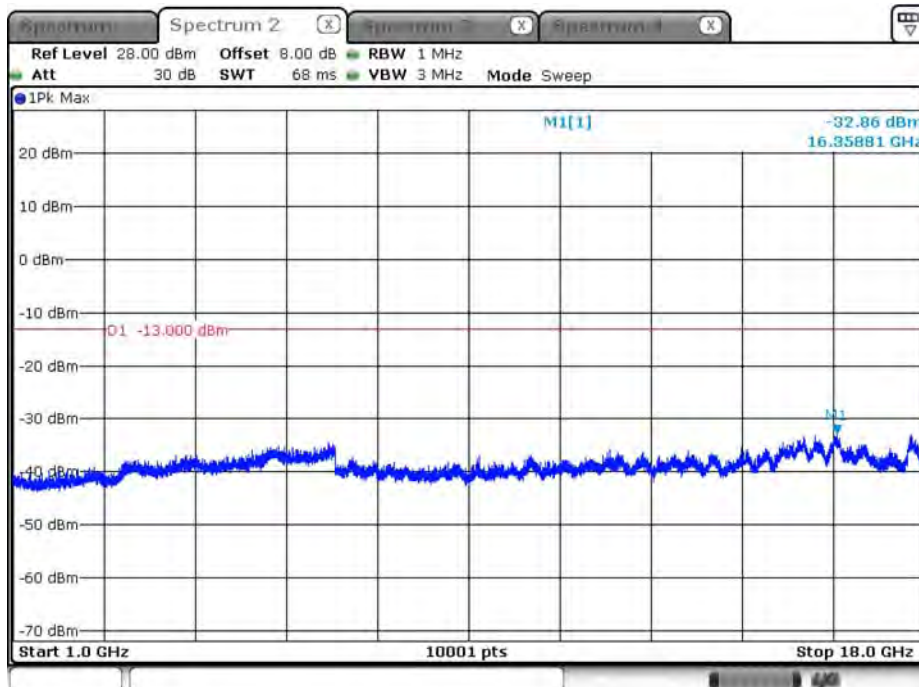
Date: 12.DEC.2018 06:02:31

WCDMA_Band 5_HSDPA_826.4MHz_under 1G



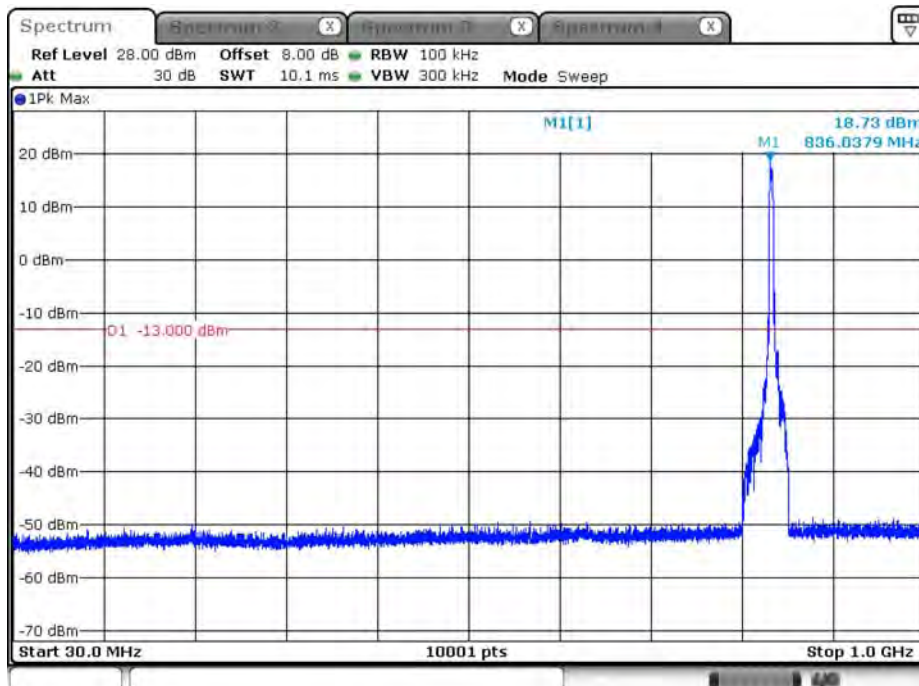
Date: 12.DEC.2018 06:04:24

WCDMA_Band 5_HSDPA_836.6MHz_above 1G



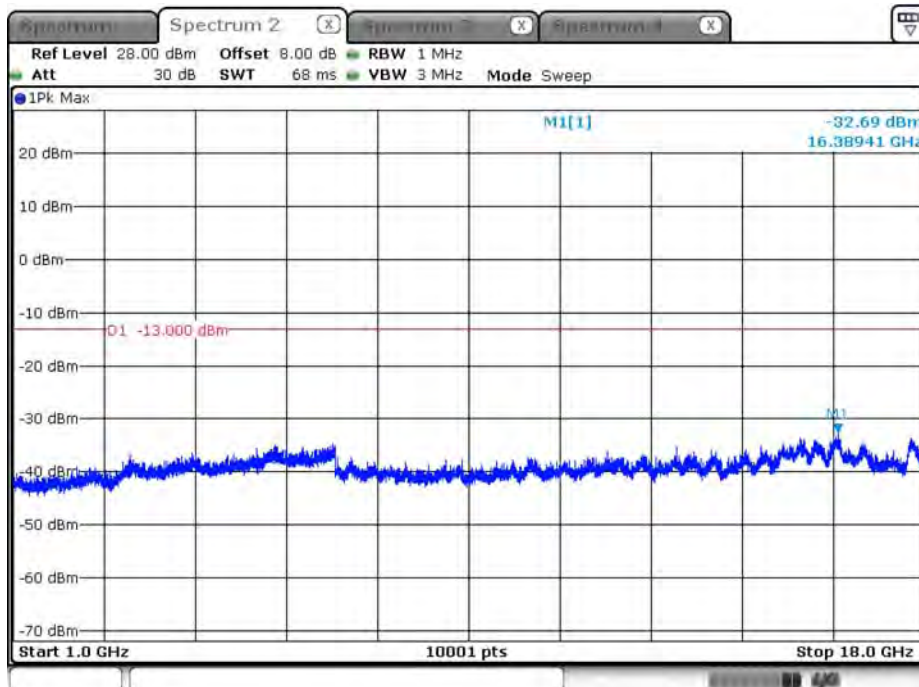
Date: 12.DEC.2018 05:59:29

WCDMA_Band 5_HSDPA_836.6MHz_under 1G



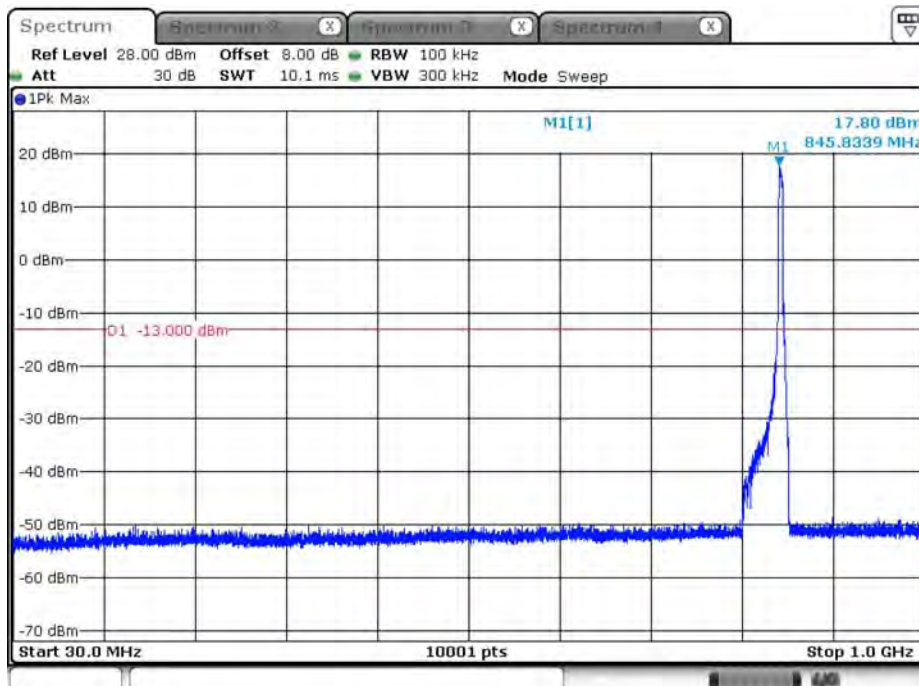
Date: 12.DEC.2018 06:00:25

WCDMA_Band 5_HSDPA_846.6MHz_above 1G



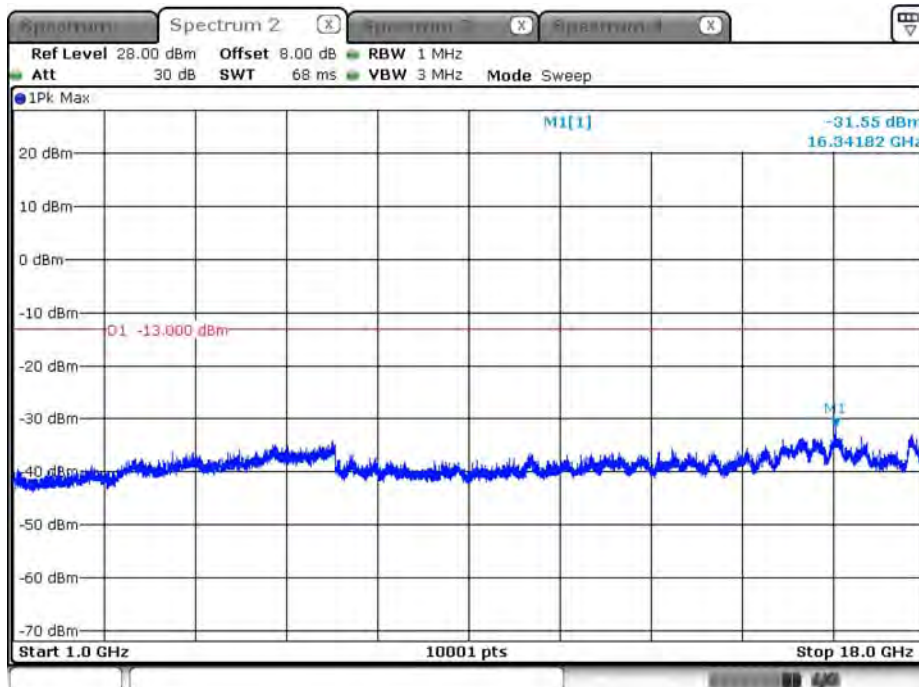
Date: 12.DEC.2018 05:14:31

WCDMA_Band 5_HSDPA_846.6MHz_under 1G



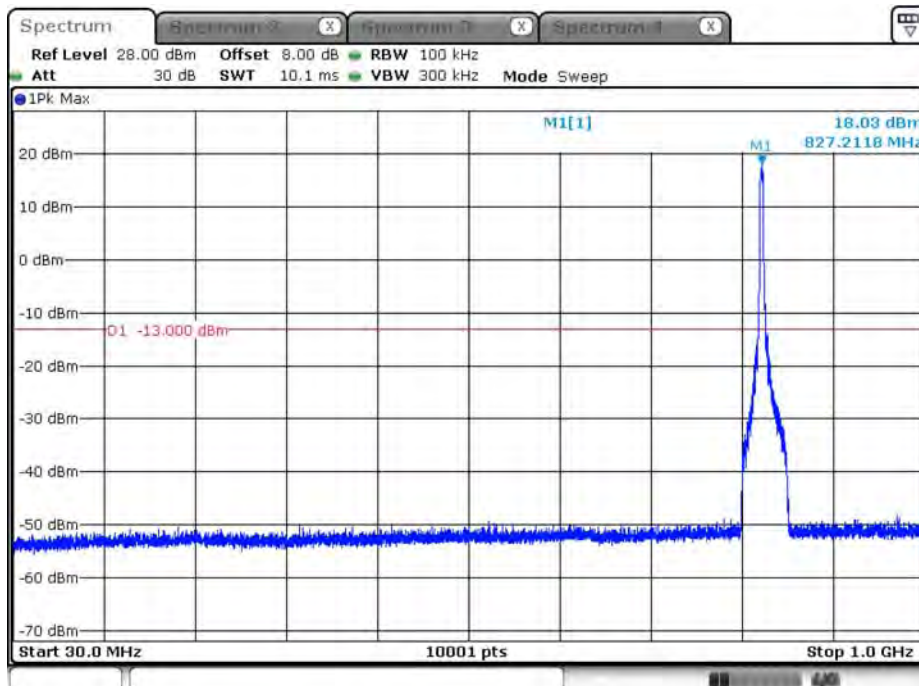
Date: 12.DEC.2018 05:58:20

WCDMA_Band 5_HSUPA_826.4MHz_above 1G



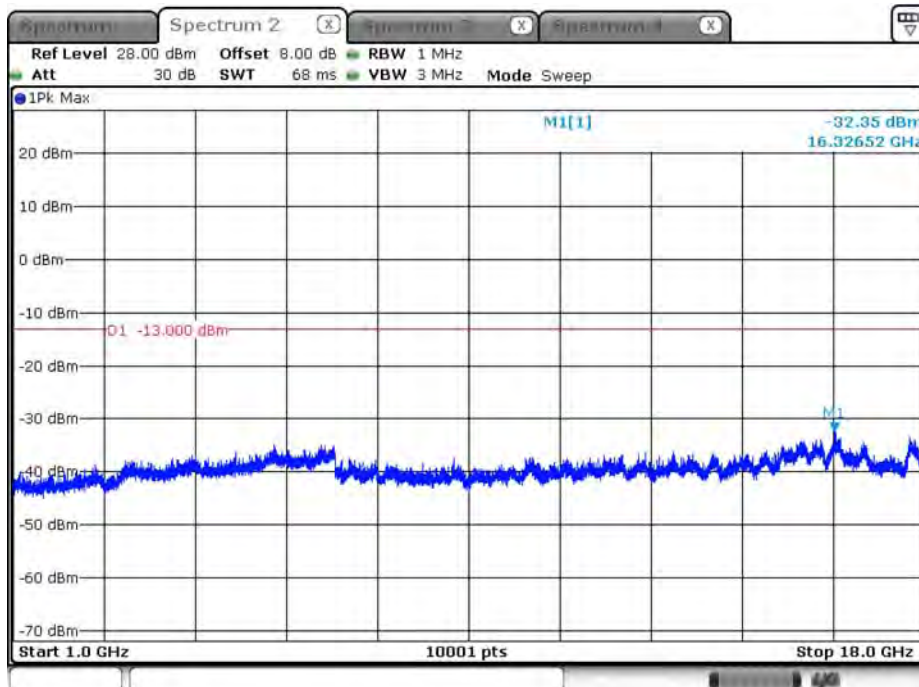
Date: 12.DEC.2018 06:10:08

WCDMA_Band 5_HSUPA_826.4MHz_under 1G



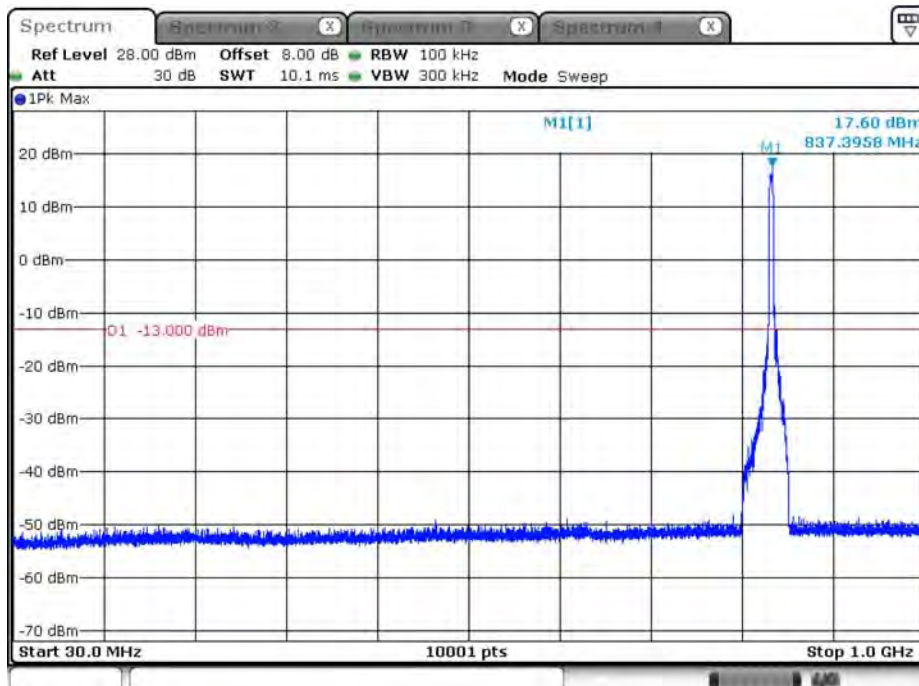
Date: 12.DEC.2018 06:11:13

WCDMA_Band 5_HSUPA_836.6MHz_above 1G



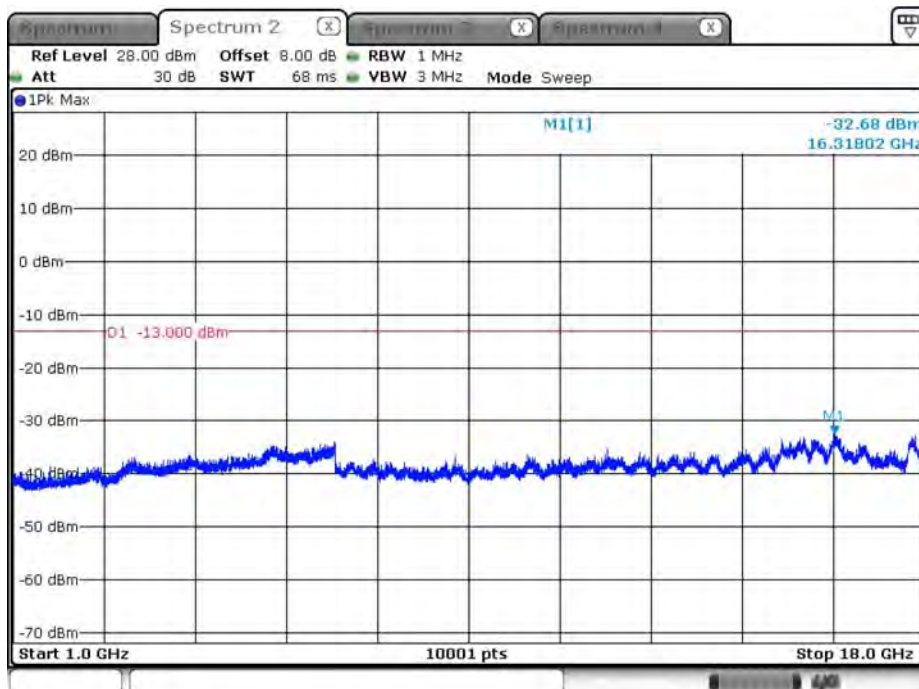
Date: 12.DEC.2018 06:11:50

WCDMA_Band 5_HSUPA_836.6MHz_under 1G



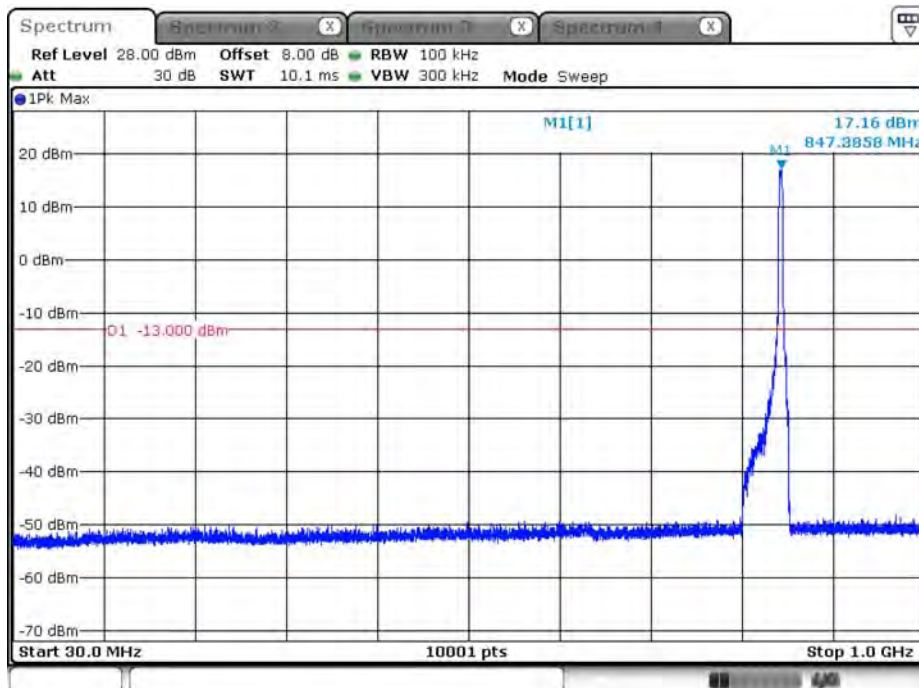
Date: 12.DEC.2018 06:13:37

WCDMA_Band 5_HSUPA_846.6MHz_above 1G



Date: 12.DEC.2018 06:16:29

WCDMA_Band 5_HSUPA_846.6MHz_under 1G



Date: 12.DEC.2018 06:18:52

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	CB4-H

WCDMA_Band 2_RMC_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 9262 (1852.4MHz)								
3704.80	-56.650	H	-57.304	4.287	11.931	-49.660	-13	-36.660
5557.20	-58.340	H	-55.657	5.203	12.900	-47.960	-13	-34.960
3704.80	-52.870	V	-53.384	4.287	11.931	-45.740	-13	-32.740
5557.20	-53.520	V	-50.667	5.203	12.900	-42.970	-13	-29.970
Middle Channel 9400 (1880MHz)								
3760.00	-59.670	H	-60.187	4.335	11.832	-52.690	-13	-39.690
5640.00	-60.820	H	-58.165	5.235	12.900	-50.500	-13	-37.500
3760.00	-57.460	V	-57.837	4.335	11.832	-50.340	-13	-37.340
5640.00	-54.500	V	-51.675	5.235	12.900	-44.010	-13	-31.010
High Channel 9538 (1907.6MHz)								
3815.20	-57.640	H	-58.011	4.382	11.733	-50.660	-13	-37.660
5722.80	-59.120	H	-56.493	5.267	12.900	-48.860	-13	-35.860
3815.20	-54.000	V	-54.221	4.382	11.733	-46.870	-13	-33.870
5722.80	-49.020	V	-46.213	5.267	12.900	-38.580	-13	-25.580

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

WCDMA_Band 2_HSUPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 9262 (1852.4MHz)								
3704.80	-56.120	H	-56.774	4.287	11.931	-49.130	-13	-36.130
5557.20	-57.070	H	-54.387	5.203	12.900	-46.690	-13	-33.690
3704.80	-52.370	V	-52.884	4.287	11.931	-45.240	-13	-32.240
5557.20	-51.410	V	-48.557	5.203	12.900	-40.860	-13	-27.860
Middle Channel 9400 (1880MHz)								
3760.00	-59.000	H	-59.517	4.335	11.832	-52.020	-13	-39.020
5640.00	-60.500	H	-57.845	5.235	12.900	-50.180	-13	-37.180
3760.00	-57.750	V	-58.127	4.335	11.832	-50.630	-13	-37.630
5640.00	-53.740	V	-50.915	5.235	12.900	-43.250	-13	-30.250
High Channel 9538 (1907.6MHz)								
3815.20	-56.410	H	-56.781	4.382	11.733	-49.430	-13	-36.430
5722.80	-56.280	H	-53.653	5.267	12.900	-46.020	-13	-33.020
3815.20	-52.710	V	-52.931	4.382	11.733	-45.580	-13	-32.580
5722.80	-46.140	V	-43.333	5.267	12.900	-35.700	-13	-22.700

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

WCDMA_Band 2_HSDPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 9262 (1852.4MHz)								
3704.80	-55.630	H	-56.284	4.287	11.931	-48.640	-13	-35.640
5557.20	-60.010	H	-57.327	5.203	12.900	-49.630	-13	-36.630
3704.80	-53.240	V	-53.754	4.287	11.931	-46.110	-13	-33.110
5557.20	-54.490	V	-51.637	5.203	12.900	-43.940	-13	-30.940
Middle Channel 9400 (1880MHz)								
3760.00	-60.280	H	-60.797	4.335	11.832	-53.300	-13	-40.300
5640.00	-62.790	H	-60.135	5.235	12.900	-52.470	-13	-39.470
3760.00	-58.480	V	-58.857	4.335	11.832	-51.360	-13	-38.360
5640.00	-57.010	V	-54.185	5.235	12.900	-46.520	-13	-33.520
High Channel 9538 (1907.6MHz)								
3815.20	-56.950	H	-57.321	4.382	11.733	-49.970	-13	-36.970
5722.80	-60.030	H	-57.403	5.267	12.900	-49.770	-13	-36.770
3815.20	-55.550	V	-55.771	4.382	11.733	-48.420	-13	-35.420
5722.80	-50.140	V	-47.333	5.267	12.900	-39.700	-13	-26.700

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	CB4-H

WCDMA_Band 4_RMC_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 1312 (1712.4MHz)								
3424.80	-54.680	H	-55.958	4.066	12.104	-47.920	-13	-34.920
5137.20	-66.240	H	-63.920	5.077	12.247	-56.750	-13	-43.750
3424.80	-57.820	V	-58.928	4.066	12.104	-50.890	-13	-37.890
5137.20	-63.990	V	-61.510	5.077	12.247	-54.340	-13	-41.340
Middle Channel 1413 (1732.6MHz)								
3465.20	-52.170	H	-53.399	4.090	12.210	-45.280	-13	-32.280
5197.80	-62.240	H	-59.852	5.094	12.356	-52.590	-13	-39.590
3465.20	-54.340	V	-55.439	4.090	12.210	-47.320	-13	-34.320
5197.80	-59.080	V	-56.532	5.094	12.356	-49.270	-13	-36.270
High Channel 1513 (1752.6MHz)								
3505.20	-57.230	H	-58.405	4.115	12.291	-50.230	-13	-37.230
5257.80	-65.330	H	-62.893	5.111	12.464	-55.540	-13	-42.540
3505.20	-57.700	V	-58.775	4.115	12.291	-50.600	-13	-37.600
5257.80	-60.260	V	-57.653	5.111	12.464	-50.300	-13	-37.300

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

WCDMA_Band 4_HSUPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 1312 (1712.4MHz)								
3424.80	-55.620	H	-56.898	4.066	12.104	-48.860	-13	-35.860
5137.20	-66.360	H	-64.040	5.077	12.247	-56.870	-13	-43.870
3424.80	-57.240	V	-58.348	4.066	12.104	-50.310	-13	-37.310
5137.20	-63.700	V	-61.220	5.077	12.247	-54.050	-13	-41.050
Middle Channel 1413 (1732.6MHz)								
3465.20	-53.220	H	-54.449	4.090	12.210	-46.330	-13	-33.330
5197.80	-63.150	H	-60.762	5.094	12.356	-53.500	-13	-40.500
3465.20	-54.750	V	-55.849	4.090	12.210	-47.730	-13	-34.730
5197.80	-59.740	V	-57.192	5.094	12.356	-49.930	-13	-36.930
High Channel 1513 (1752.6MHz)								
3505.20	-56.380	H	-57.555	4.115	12.291	-49.380	-13	-36.380
5257.80	-64.320	H	-61.883	5.111	12.464	-54.530	-13	-41.530
3505.20	-57.720	V	-58.795	4.115	12.291	-50.620	-13	-37.620
5257.80	-61.550	V	-58.943	5.111	12.464	-51.590	-13	-38.590

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

WCDMA_Band 4_HSDPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 1312 (1712.4MHz)								
3424.80	-55.600	H	-56.878	4.066	12.104	-48.840	-13	-35.840
5137.20	-67.080	H	-64.760	5.077	12.247	-57.590	-13	-44.590
3424.80	-58.770	V	-59.878	4.066	12.104	-51.840	-13	-38.840
5137.20	-66.320	V	-63.840	5.077	12.247	-56.670	-13	-43.670
Middle Channel 1413 (1732.6MHz)								
3465.20	-53.580	H	-54.809	4.090	12.210	-46.690	-13	-33.690
5197.80	-63.910	H	-61.522	5.094	12.356	-54.260	-13	-41.260
3465.20	-55.770	V	-56.869	4.090	12.210	-48.750	-13	-35.750
5197.80	-59.790	V	-57.242	5.094	12.356	-49.980	-13	-36.980
High Channel 1513 (1752.6MHz)								
3505.20	-57.990	H	-59.165	4.115	12.291	-50.990	-13	-37.990
5257.80	-67.030	H	-64.593	5.111	12.464	-57.240	-13	-44.240
3505.20	-58.280	V	-59.355	4.115	12.291	-51.180	-13	-38.180
5257.80	-62.870	V	-60.263	5.111	12.464	-52.910	-13	-39.910

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	CB4-H

WCDMA_Band 5_RMC_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.4MHz)								
1651.04	-58.320	H	-61.011	2.792	8.753	-55.050	-13	-42.050
2479.20	-68.800	H	-70.855	3.442	10.567	-63.730	-13	-50.730
1652.80	-56.670	V	-59.504	2.794	8.758	-53.540	-13	-40.540
2479.20	-69.210	V	-70.935	3.442	10.567	-63.810	-13	-50.810
Middle Channel 4183 (836.6MHz)								
1673.20	-60.570	H	-63.267	2.813	8.820	-57.260	-13	-44.260
2509.80	-68.930	H	-70.935	3.463	10.608	-63.790	-13	-50.790
1673.20	-58.850	V	-61.687	2.813	8.820	-55.680	-13	-42.680
2509.80	-68.870	V	-70.535	3.463	10.608	-63.390	-13	-50.390
High Channel 4233 (846.6MHz)								
1693.20	-59.780	H	-62.489	2.831	8.880	-56.440	-13	-43.440
2539.80	-67.840	H	-69.827	3.484	10.632	-62.680	-13	-49.680
1693.20	-58.230	V	-61.079	2.831	8.880	-55.030	-13	-42.030
2539.80	-69.080	V	-70.707	3.484	10.632	-63.560	-13	-50.560

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

WCDMA_Band 5_HSUPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.4MHz)								
1652.80	-59.050	H	-61.744	2.794	8.758	-55.780	-13	-42.780
2479.20	-68.840	H	-70.895	3.442	10.567	-63.770	-13	-50.770
1652.80	-56.600	V	-59.434	2.794	8.758	-53.470	-13	-40.470
2479.20	-68.520	V	-70.245	3.442	10.567	-63.120	-13	-50.120
Middle Channel 4183 (836.6MHz)								
1673.20	-61.240	H	-63.937	2.813	8.820	-57.930	-13	-44.930
2509.80	-69.420	H	-71.425	3.463	10.608	-64.280	-13	-51.280
1673.20	-57.620	V	-60.457	2.813	8.820	-54.450	-13	-41.450
2509.80	-69.290	V	-70.955	3.463	10.608	-63.810	-13	-50.810
High Channel 4233 (846.6MHz)								
1693.20	-60.150	H	-62.859	2.831	8.880	-56.810	-13	-43.810
2539.80	-68.810	H	-70.797	3.484	10.632	-63.650	-13	-50.650
1693.20	-56.720	V	-59.569	2.831	8.880	-53.520	-13	-40.520
2539.80	-69.600	V	-71.227	3.484	10.632	-64.080	-13	-51.080

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

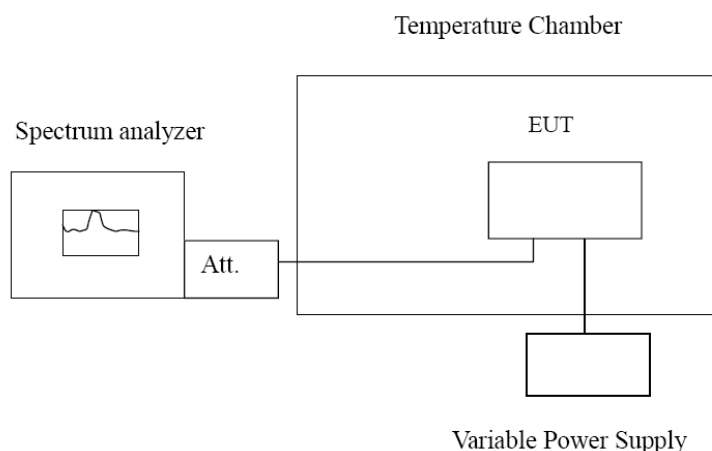
WCDMA_Band 5_HSDPA_Link

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.4MHz)								
1652.80	-60.700	H	-63.394	2.794	8.758	-57.430	-13	-44.430
2479.20	-67.650	H	-69.705	3.442	10.567	-62.580	-13	-49.580
1652.80	-58.860	V	-61.694	2.794	8.758	-55.730	-13	-42.730
2479.20	-69.320	V	-71.045	3.442	10.567	-63.920	-13	-50.920
Middle Channel 4183 (836.6MHz)								
1673.20	-62.240	H	-64.937	2.813	8.820	-58.930	-13	-45.930
2509.80	-68.790	H	-70.795	3.463	10.608	-63.650	-13	-50.650
1673.20	-60.150	V	-62.987	2.813	8.820	-56.980	-13	-43.980
2509.80	-69.510	V	-71.175	3.463	10.608	-64.030	-13	-51.030
High Channel 4233 (846.6MHz)								
1693.20	-61.570	H	-64.279	2.831	8.880	-58.230	-13	-45.230
2539.80	-69.770	H	-71.757	3.484	10.632	-64.610	-13	-51.610
1693.20	-59.490	V	-62.339	2.831	8.880	-56.290	-13	-43.290
2539.80	-69.870	V	-71.497	3.484	10.632	-64.350	-13	-51.350

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

8. Frequency Stability

8.1. Test Setup



8.2. Test Procedure

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9
ANSI C63.26-2015 Sub-clause 5.6

8.4. Test Result

Product	Module		
Test Item	Frequency Stability		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA Band 2 – 1852.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.79	-0.0010
3.7	1.54	-0.0008
3.145	2.33	-0.0013

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	1.57	-0.0008
-20	2.58	-0.0014
-10	3.33	-0.0018
0	2.57	-0.0014
10	2.62	-0.0014
20	3.58	-0.0019
30	0.28	-0.0002
40	0.29	-0.0002
50	0.33	-0.0002

WCDMA Band 2 – 1880MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.84	-0.0010
3.7	1.59	-0.0008
3.145	2.63	-0.0014

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	1.77	-0.0009
-20	2.21	-0.0012
-10	2.56	-0.0014
0	2.57	-0.0014
10	2.94	-0.0016
20	3.37	-0.0018
30	0.56	-0.0003
40	0.37	-0.0002
50	1.65	-0.0009

WCDMA Band 2 – 1907.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.64	-0.0009
3.7	2.57	-0.0013
3.145	2.88	-0.0015

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.57	-0.0013
-20	2.39	-0.0013
-10	3.65	-0.0019
0	2.84	-0.0015
10	0.74	-0.0004
20	0.53	-0.0003
30	0.62	-0.0003
40	1.03	-0.0005
50	1.22	-0.0006

Product	Module		
Test Item	Frequency Stability		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA Band 4 – 1712.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.62	-0.0009
3.7	2.77	-0.0015
3.145	3.01	-0.0016

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.33	-0.0013
-20	2.56	-0.0014
-10	2.32	-0.0013
0	2.88	-0.0016
10	3.01	-0.0016
20	0.77	-0.0004
30	0.96	-0.0005
40	0.54	-0.0003
50	0.33	-0.0002

WCDMA Band 4 – 1732.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.85	-0.0010
3.7	1.94	-0.0010
3.145	2.44	-0.0013

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.65	-0.0014
-20	2.57	-0.0014
-10	2.11	-0.0011
0	0.95	-0.0005
10	0.64	-0.0003
20	1.09	-0.0006
30	1.99	-0.0011
40	1.85	-0.0010
50	2.01	-0.0011

WCDMA_Band 4_1752.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.85	-0.0010
3.7	1.76	-0.0009
3.145	0.85	-0.0004

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.19	-0.0011
-20	2.37	-0.0012
-10	2.19	-0.0011
0	2.88	-0.0015
10	0.77	-0.0004
20	0.96	-0.0005
30	0.40	-0.0002
40	0.85	-0.0004
50	0.36	-0.0002

Product	Module		
Test Item	Frequency Stability		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2018/12/12	Test Site	SR10-H

WCDMA_Band 5_826.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	1.88	-0.0023
3.7	1.70	-0.0021
3.145	0.66	-0.0008

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.96	-0.0036
-20	0.85	-0.0010
-10	1.96	-0.0024
0	1.85	-0.0022
10	1.84	-0.0022
20	2.61	-0.0032
30	2.77	-0.0034
40	3.03	-0.0037
50	2.52	-0.0030

WCDMA_Band 5_836.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	2.85	-0.0034
3.7	2.06	-0.0025
3.145	1.65	-0.0020

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.64	-0.0032
-20	2.82	-0.0034
-10	2.99	-0.0036
0	3.06	-0.0037
10	0.57	-0.0007
20	0.96	-0.0011
30	1.55	-0.0019
40	1.23	-0.0015
50	1.42	-0.0017

WCDMA_Band 5_846.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.255	2.69	-0.0032
3.7	2.33	-0.0028
3.145	1.08	-0.0013

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.54	-0.0030
-20	2.96	-0.0035
-10	2.31	-0.0028
0	2.54	-0.0030
10	0.63	-0.0008
20	0.54	-0.0006
30	0.85	-0.0010
40	0.35	-0.0004
50	0.77	-0.0009

Attachment 1

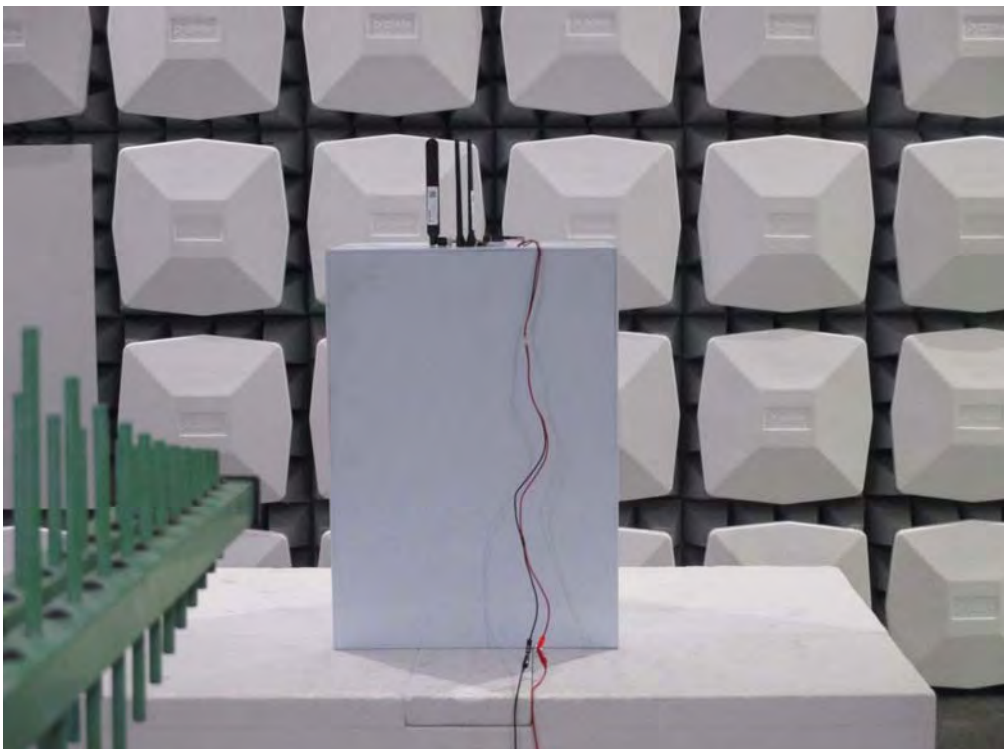
➤ Test Setup Photograph

<Radiated Emission>

Description: Front View of Radiated Spurious Emission Test Setup



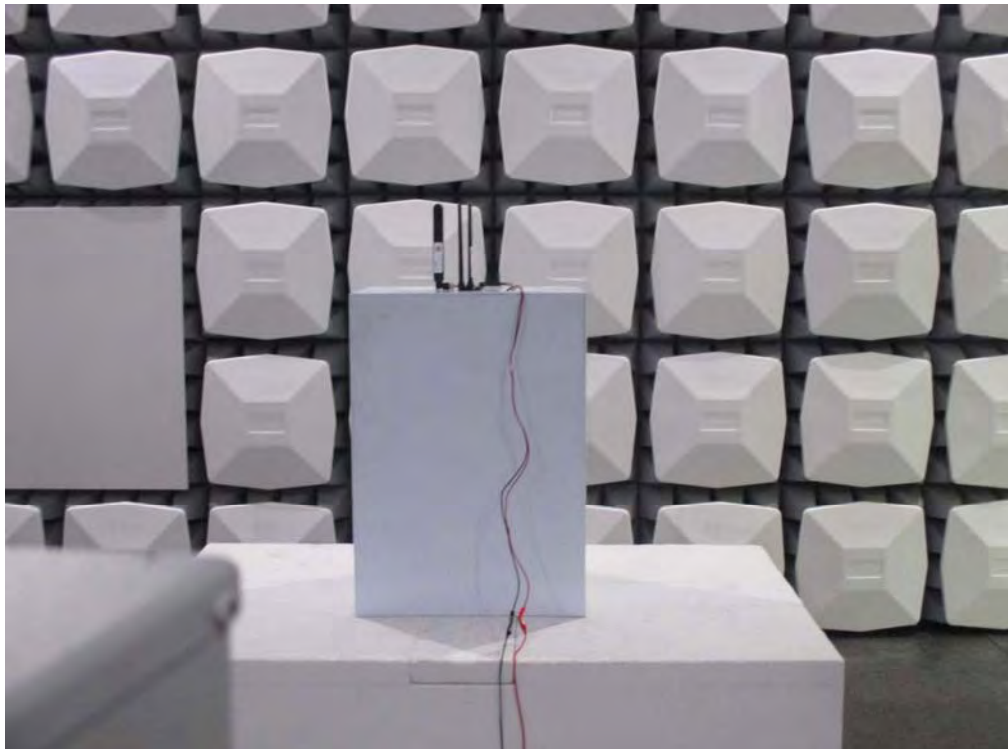
Description: Back View of Radiated Spurious Emission Test Setup



Description: Front View of Radiated Spurious Emission Test Setup (Horn)



Description: Back View of Radiated Spurious Emission Test Setup (Horn)



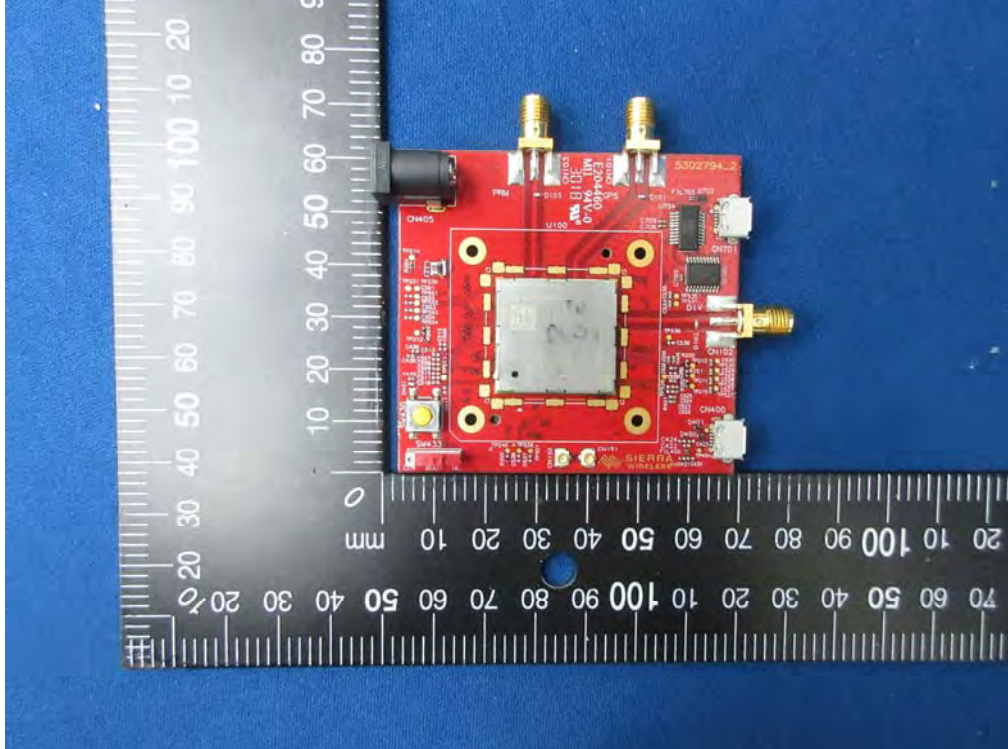
Description: Detailed View of Radiated emission Test Setup



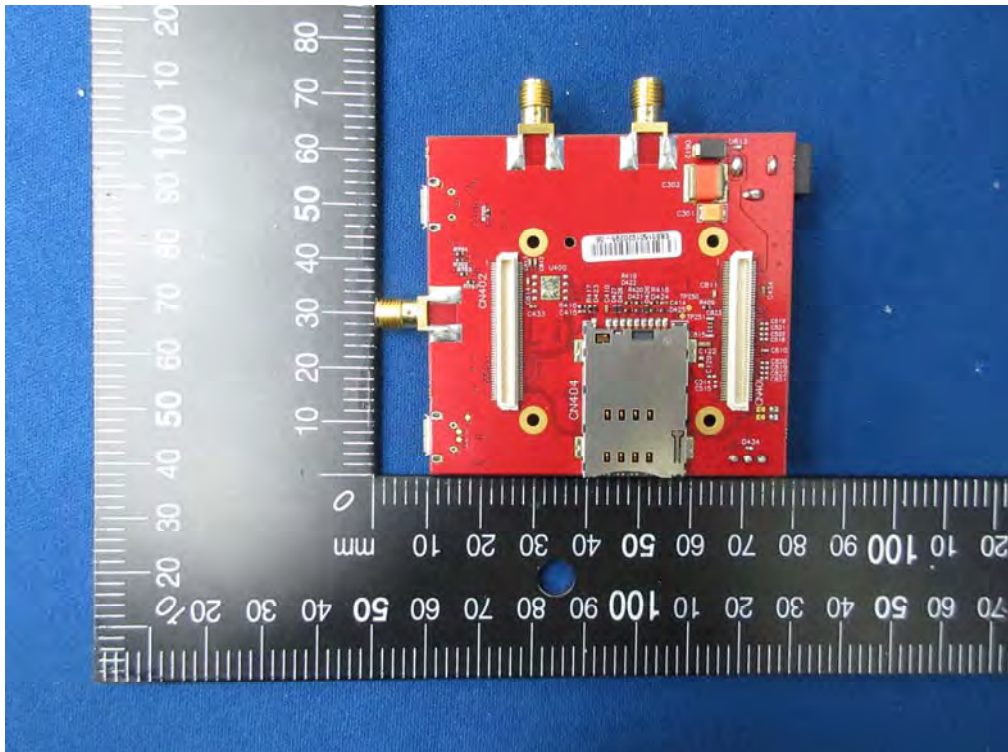
Attachment 2

➤ EUT External Photograph

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo (Antenna)



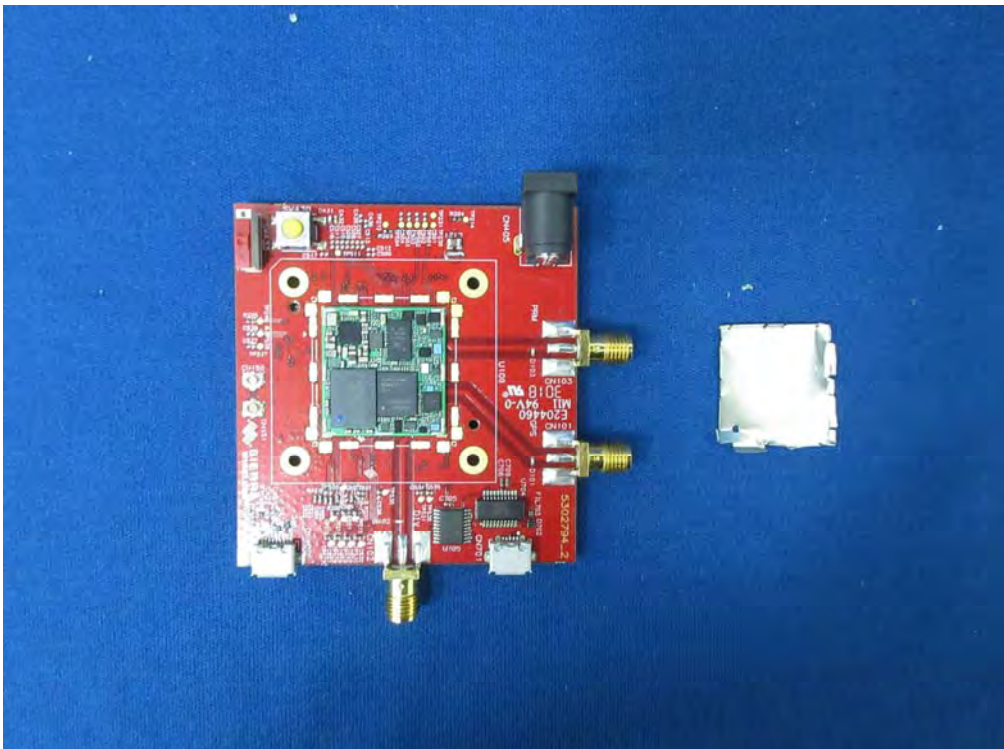
Attachment 3

➤ EUT Internal Photograph

(1) EUT Photo



(2) EUT Photo



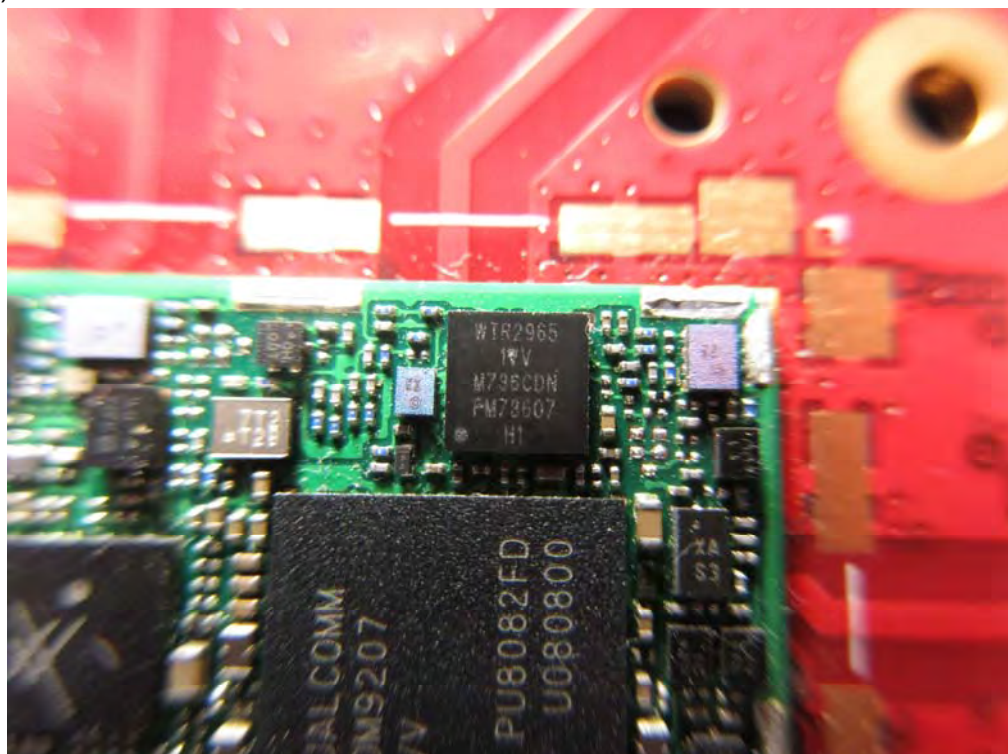
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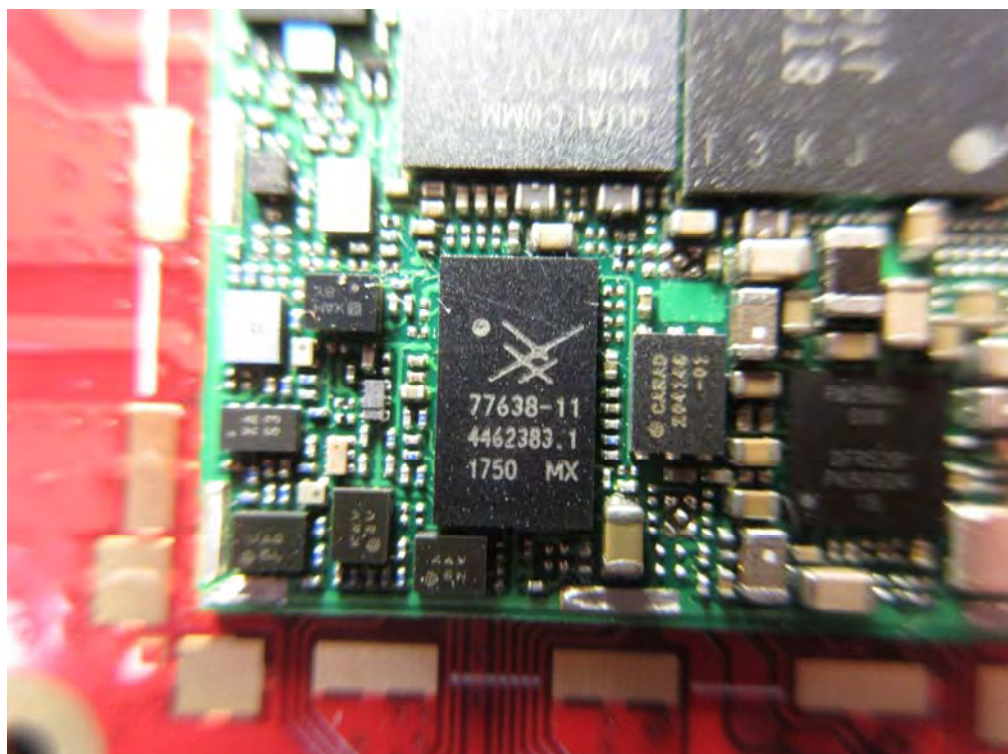
(4) EUT Photo



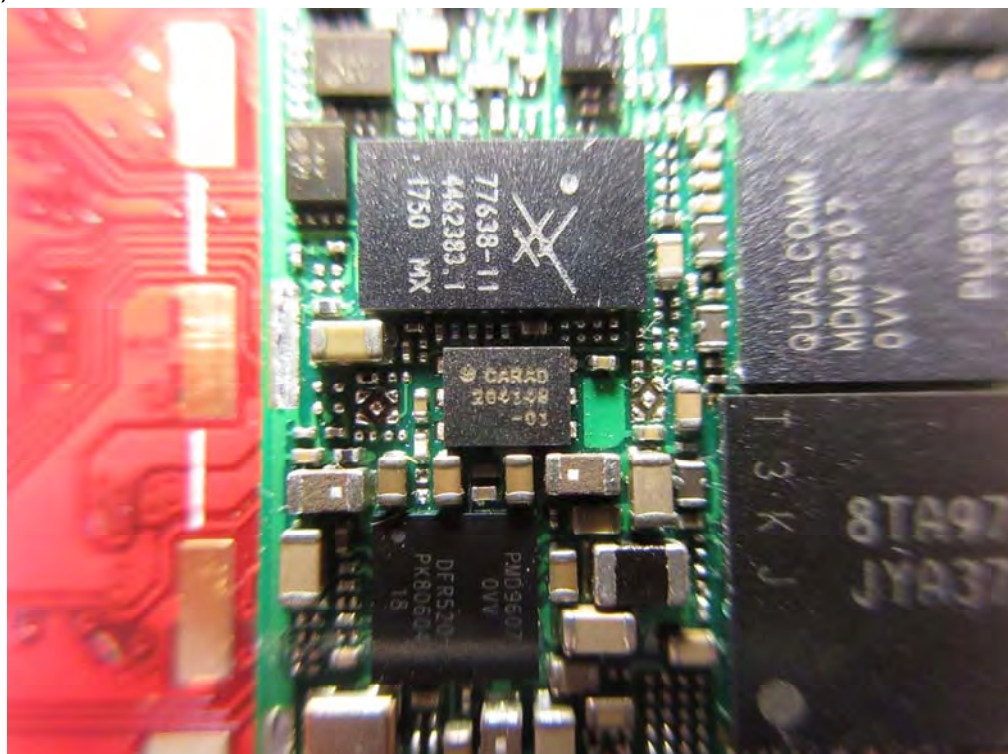
(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



(8) EUT Photo

