FCC/ISED Test Report

Product Name	:	Module
Trade Name	:	AirPrime
Model No.	:	MC7411
FCC ID	:	N7NMC74B
IC	:	2417C-MC74B

Applicant	:	SIERRA WIRELESS, INC.
Address	:	13811 Wireless Way, Richmond, BC, Canada V6V 3A4 Canada

Date of Receipt	:	Dec. 18, 2020
Issued Date	:	Jan. 14, 2021
Report No.	:	20C0725R-E3042110011
Report Version	:	V1.0

Testing Laboratory
3024

Test Report Certification

Issued Date: Jan. 14, 2021
Report No.: 20C0725R-E3042110011

Product Name	:	Module
Applicant	:	SIERRA WIRELESS, INC.
Address	:	13811 Wireless Way, Richmond, BC, Canada V6V 3A4 Canada
Manufacturer	:	SIERRA WIRELESS, INC.
Trade Name	:	AirPrime
Model No.	:	MC7411
FCC ID	:	N7NMC74B
IC	:	2417C-MC74B
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 ISED RSS-GEN Issue 5, ISED RSS-132 Issue 3 ISED RSS-133 Issue 6, ISED RSS-139 Issue 3, ANSI/TIA-603-E-2016
Test Lab	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By :

(Demi Chang / Senior Engineering Adm. Specialist)

Tested By :

(Max Chang / Senior Engineer)

Approved By :

(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jan. 14, 2021

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1. General Information

1.1. EUT Description

Product Name	Module
Trade Name	AirPrime
Model No.	MC7411
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	1.1
SW Version	SWI9X50C_01.14.03.00 b06bd3
IMEI No.	352418420000200

Antenna Information	
Trade Name	PANORAMA ANTENNAS
Model No.	PWB-7-60
Antenna Type	Dipole Antenna
Antenna Gain	698-960MHz / 2.4-2.7GHz: 2dBi 1710-2170MHz: 4dBi

Note:

1. This MC7411 supports WCDMA Band 2/4/5, LTE Band 2/4/5/7/12/13/14/25/26/41/66/71 and CA Band 5B, 7C, 41C.
2. The EUT description is from the customer declaration.
3. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in RMC mode and show the worst case in the test report.

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

The MC7411 is a variant of FCC ID: N7NEM74B and IC: 2417C-EM74B (Model: EM7411).
The major difference between these two models is EM7411 has a PCI Express M.2 with MHF4 connectors and the MC7411 has PCI Express with UFL connectors. The technical construction of the main parts all same as EM7411 including software design, RF circuit design, and PCB layout. According to the above described and evaluate, only upgraded report for RF Output Power. Other items come from the original report.

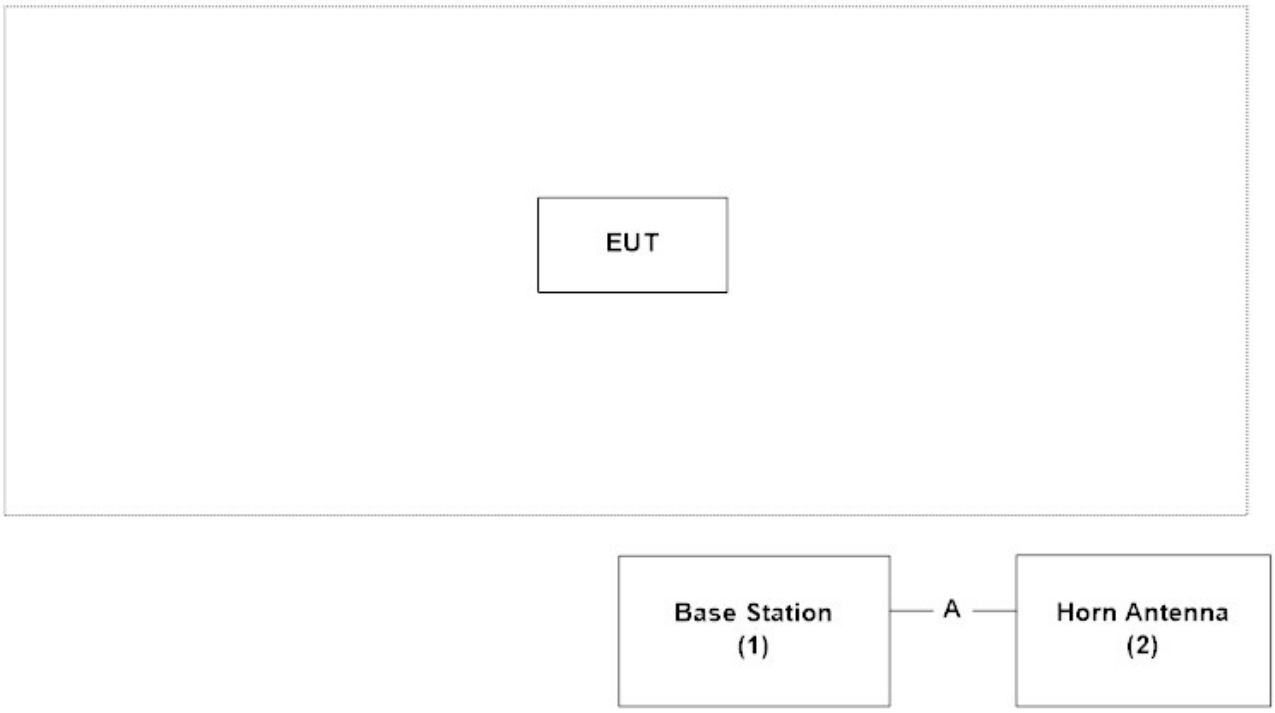
1.3. Tested System Details

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	Base Station	R&S	CMW500	157118	DoC	Non-Shielded, 2m
2	Horn Antenna	Schwarzbeck	BBHA 9120D	1640	DoC	--

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	RF Cable	Shielded, 6m.

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on.
2	Turn on the power of all equipment.
3	The EUT will continue transmit the signal from WCDMA function.
4	Repeat the above procedure.

1.6. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

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 EIRP	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

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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 ERP	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

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.2. Test Environment

Items	Test Item	Required	Test Site
Temperature (°C)	RF Output Power	15-35	1
Humidity (%RH)		25-75	
Temperature (°C)	Occupied Bandwidth	15-35	1
Humidity (%RH)		25-75	
Temperature (°C)	Peak To Average Ratio	15-35	1
Humidity (%RH)		25-75	
Temperature (°C)	Conducted Band Edge	15-35	1
Humidity (%RH)		25-75	
Temperature (°C)	Spurious Emission	15-35	1
Humidity (%RH)		25-75	
Temperature (°C)	Frequency Stability	15-35	1
Humidity (%RH)		25-75	

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

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

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
E mail address	info.tw@dekra.com
Website	http://www.dekra.com.tw

2.3. List of Test Equipment

RF Output Power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

Occupied Bandwidth / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

Peak To Average Ratio / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

Conducted Band Edge / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

Conducted Spurious Emissions / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

Radiated Spurious Emissions / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2020/10/12	2021/10/11
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Bilog Antenna	Teseq	CBL6112D	23191	2020/06/12	2021/06/11
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2020/12/16	2021/12/15
Pre-Amplifier	DEKRA	AP-025C	12183122	2020/09/03	2021/09/02
Pre-Amplifier	EMCI	EMC11830I	980366	2020/11/30	2021/11/29
Pre-Amplifier	DEKRA	AP-400C	201801231	2020/11/16	2021/11/15
Horn Antenna	Schwarzbeck	BBHA 9120D	01656	2020/10/14	2021/10/13
Signal Analyzer	R&S	FSV40	101435	2020/06/24	2021/06/23
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Band Reject Filter	Micro-Tronics	BRM50716	G089	2020/03/18	2021/03/17
Band Reject Filter	Micro-Tronics	BRM50716	G068	2020/03/09	2021/03/08
Coaxial Cable(13m)	Huber+Suhner	SF104	CB2-H	2020/07/25	2021/07/24
DEKRA Testing System	DEKRA	Version 1.2	CB2-H	NA	NA

Frequency Stability / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

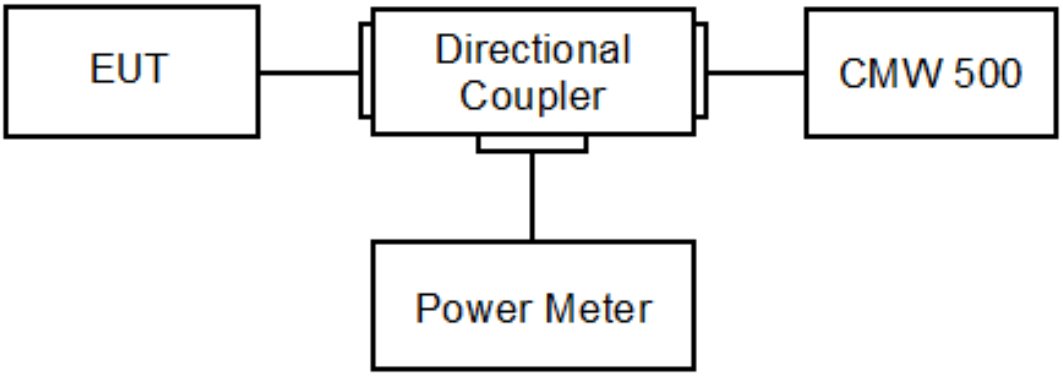
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

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 13 dB.
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
The conversion of dBm to watts is given by the formula:

$$P_{(W)} = 1W \times \frac{10^{\left(\frac{P_{(dBm)}}{10}\right)}}{1000} = 10^{((P_{(dBm)}-30)/10)}$$

3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.2.4
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		
Date of Test	2020/12/30	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level (dBm)	Measure Level (W)	Limit (EIRP) (W)
RMC	1852.4	22.22	4	26.220	0.419	2
	1880	22.40	4	26.400	0.437	2
	1907.6	22.18	4	26.180	0.415	2
HSUPA Subtest 1	1852.4	20.75	4	24.750	0.299	2
	1880	20.87	4	24.870	0.307	2
	1907.6	20.69	4	24.690	0.294	2
HSUPA Subtest 2	1852.4	20.71	4	24.710	0.296	2
	1880	20.90	4	24.900	0.309	2
	1907.6	20.66	4	24.660	0.292	2
HSUPA Subtest 3	1852.4	20.69	4	24.690	0.294	2
	1880	20.76	4	24.760	0.299	2
	1907.6	20.62	4	24.620	0.290	2
HSUPA Subtest 4	1852.4	20.78	4	24.780	0.301	2
	1880	20.92	4	24.920	0.310	2
	1907.6	20.65	4	24.650	0.292	2
HSUPA Subtest 5	1852.4	20.72	4	24.720	0.296	2
	1880	20.86	4	24.860	0.306	2
	1907.6	20.61	4	24.610	0.289	2
HSDPA Subtest 1	1852.4	20.73	4	24.730	0.297	2
	1880	20.87	4	24.870	0.307	2
	1907.6	20.69	4	24.690	0.294	2
HSDPA Subtest 2	1852.4	20.79	4	24.790	0.301	2
	1880	20.93	4	24.930	0.311	2
	1907.6	20.68	4	24.680	0.294	2
HSDPA Subtest 3	1852.4	20.80	4	24.800	0.302	2
	1880	20.92	4	24.920	0.310	2
	1907.6	20.71	4	24.710	0.296	2
HSDPA Subtest 4	1852.4	20.76	4	24.760	0.299	2
	1880	20.90	4	24.900	0.309	2
	1907.6	20.71	4	24.710	0.296	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	2020/12/30	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level (dBm)	Measure Level (W)	Limit (EIRP) (W)
RMC	1712.4	22.28	4	26.280	0.425	1
	1732.6	22.29	4	26.290	0.426	1
	1752.6	22.21	4	26.210	0.418	1
HSUPA Subtest 1	1712.4	20.84	4	24.840	0.305	1
	1732.6	20.93	4	24.930	0.311	1
	1752.6	20.76	4	24.760	0.299	1
HSUPA Subtest 2	1712.4	20.86	4	24.860	0.306	1
	1732.6	20.93	4	24.930	0.311	1
	1752.6	20.77	4	24.770	0.300	1
HSUPA Subtest 3	1712.4	20.85	4	24.850	0.305	1
	1732.6	20.95	4	24.950	0.313	1
	1752.6	20.73	4	24.730	0.297	1
HSUPA Subtest 4	1712.4	20.84	4	24.840	0.305	1
	1732.6	20.94	4	24.940	0.312	1
	1752.6	20.75	4	24.750	0.299	1
HSUPA Subtest 5	1712.4	20.80	4	24.800	0.302	1
	1732.6	20.91	4	24.910	0.310	1
	1752.6	20.54	4	24.540	0.284	1
HSDPA Subtest 1	1712.4	20.83	4	24.830	0.304	1
	1732.6	20.94	4	24.940	0.312	1
	1752.6	20.74	4	24.740	0.298	1
HSDPA Subtest 2	1712.4	20.84	4	24.840	0.305	1
	1732.6	20.93	4	24.930	0.311	1
	1752.6	20.75	4	24.750	0.299	1
HSDPA Subtest 3	1712.4	20.85	4	24.850	0.305	1
	1732.6	20.94	4	24.940	0.312	1
	1752.6	20.78	4	24.780	0.301	1
HSDPA Subtest 4	1712.4	20.86	4	24.860	0.306	1
	1732.6	20.93	4	24.930	0.311	1
	1752.6	20.81	4	24.810	0.303	1

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

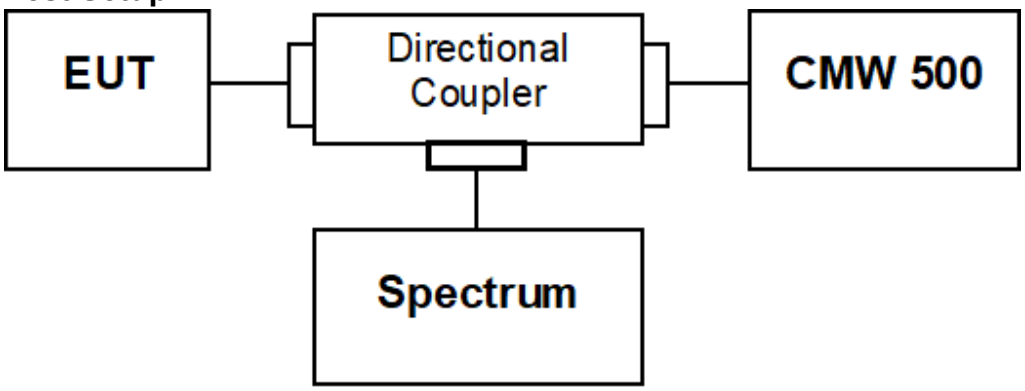
Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/12/30	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level (dBm)	Measure Level (W)	Limit (ERP) (W)
RMC	826.4	22.63	2	22.480	0.177	7
	836.6	22.68	2	22.530	0.179	7
	846.6	22.61	2	22.460	0.176	7
HSUPA Subtest 1	826.4	21.14	2	20.990	0.126	7
	836.6	21.17	2	21.020	0.126	7
	846.6	21.15	2	21.000	0.126	7
HSUPA Subtest 2	826.4	21.14	2	20.990	0.126	7
	836.6	21.17	2	21.020	0.126	7
	846.6	21.09	2	20.940	0.124	7
HSUPA Subtest 3	826.4	21.11	2	20.960	0.125	7
	836.6	21.16	2	21.010	0.126	7
	846.6	21.14	2	20.990	0.126	7
HSUPA Subtest 4	826.4	21.12	2	20.970	0.125	7
	836.6	21.15	2	21.000	0.126	7
	846.6	21.08	2	20.930	0.124	7
HSUPA Subtest 5	826.4	21.13	2	20.980	0.125	7
	836.6	21.15	2	21.000	0.126	7
	846.6	21.05	2	20.900	0.123	7
HSDPA Subtest 1	826.4	21.17	2	21.020	0.126	7
	836.6	21.21	2	21.060	0.128	7
	846.6	21.16	2	21.010	0.126	7
HSDPA Subtest 2	826.4	21.17	2	21.020	0.126	7
	836.6	21.26	2	21.110	0.129	7
	846.6	21.15	2	21.000	0.126	7
HSDPA Subtest 3	826.4	21.20	2	21.050	0.127	7
	836.6	21.25	2	21.100	0.129	7
	846.6	21.18	2	21.030	0.127	7
HSDPA Subtest 4	826.4	21.24	2	21.090	0.129	7
	836.6	21.29	2	21.140	0.130	7
	846.6	21.19	2	21.040	0.127	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

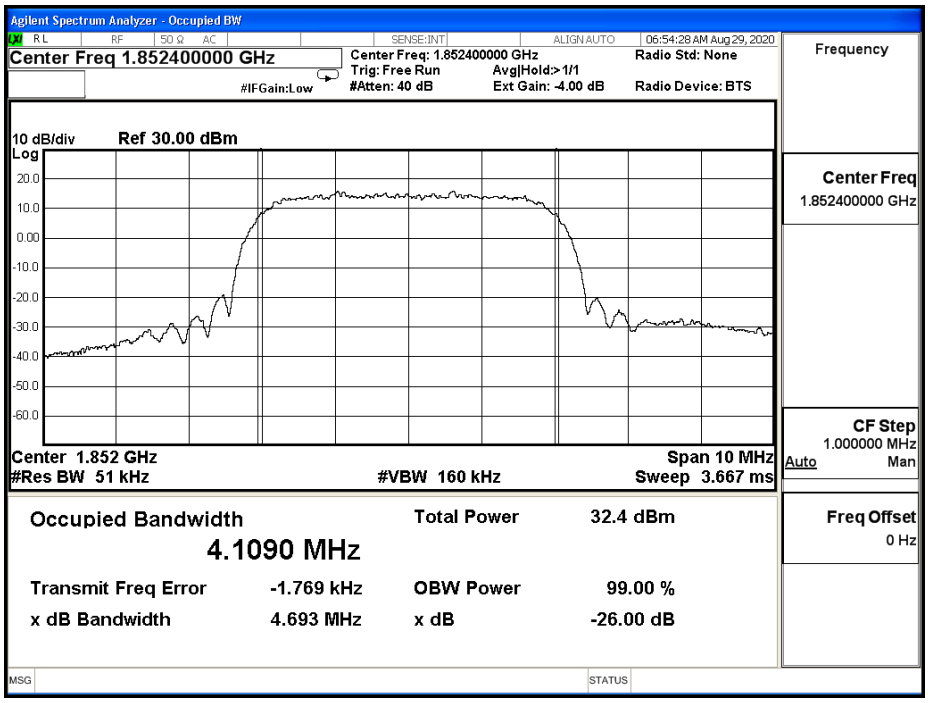
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

4.4. Test Result

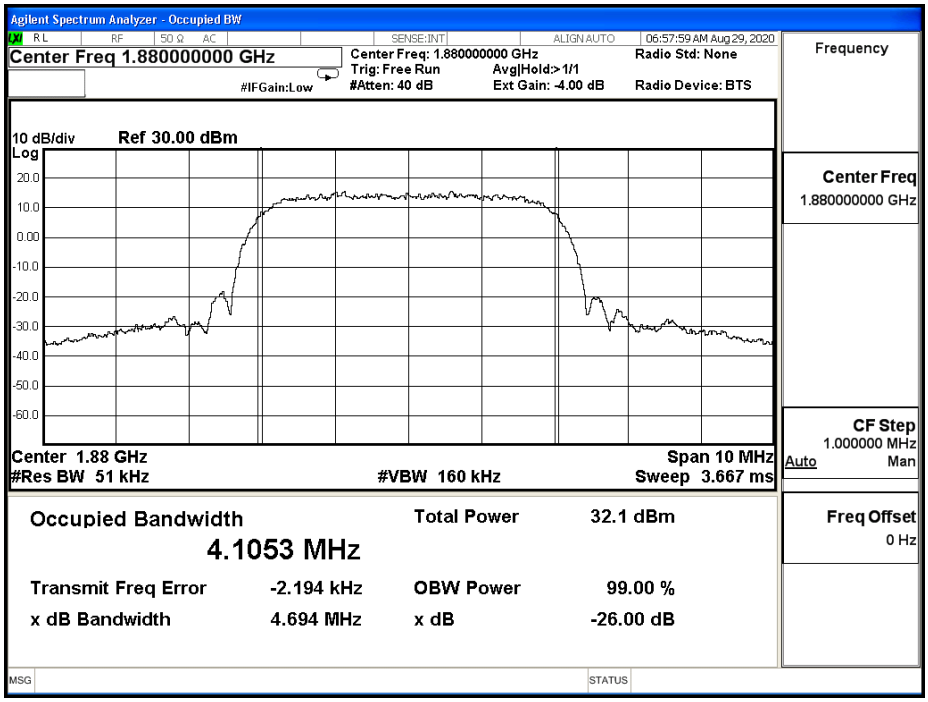
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	9262	1852.4	4.693	4.109	N/A
	9400	1880	4.694	4.1053	N/A
	9538	1907.6	4.687	4.1127	N/A

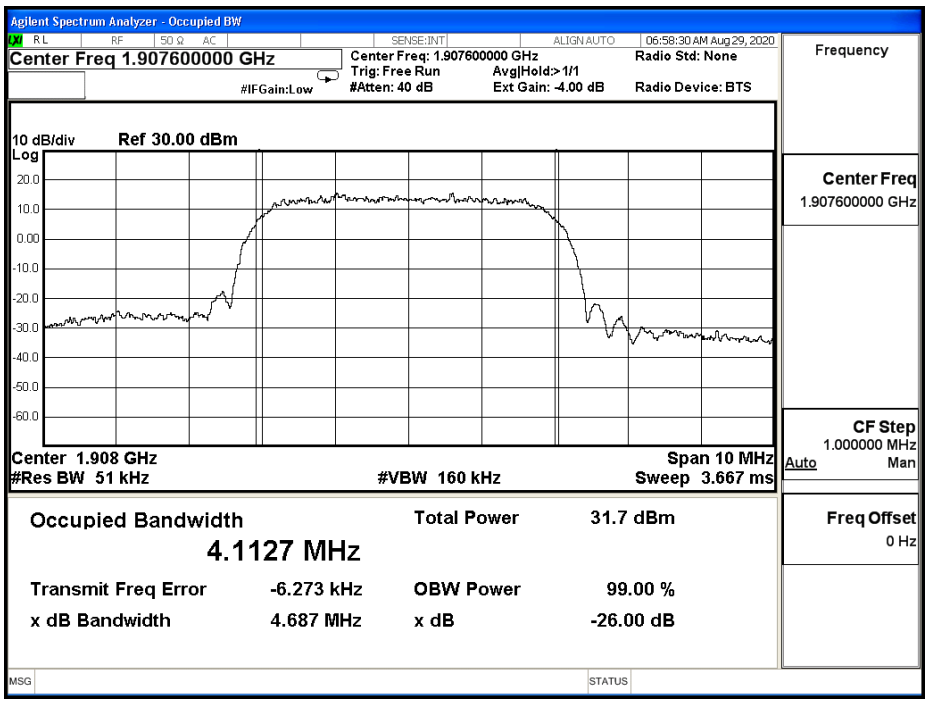
WCDMA_Band 2_RMC_1852.4MHz_26dB BW



WCDMA_Band 2_RMC_1880.0MHz_26dB BW



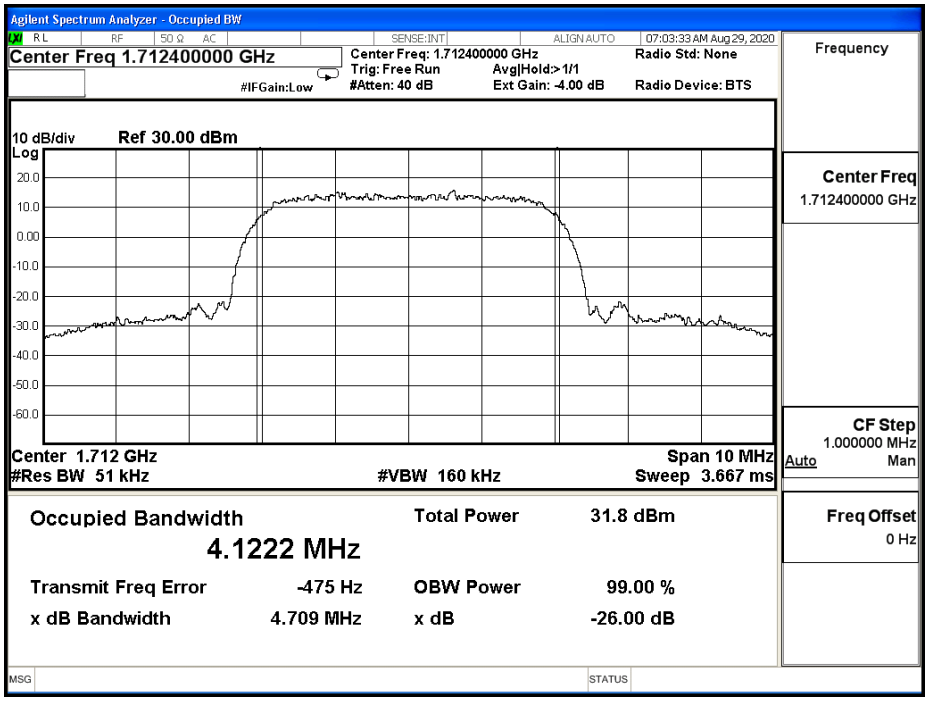
WCDMA_Band 2_RMC_1907.6MHz_26dB BW



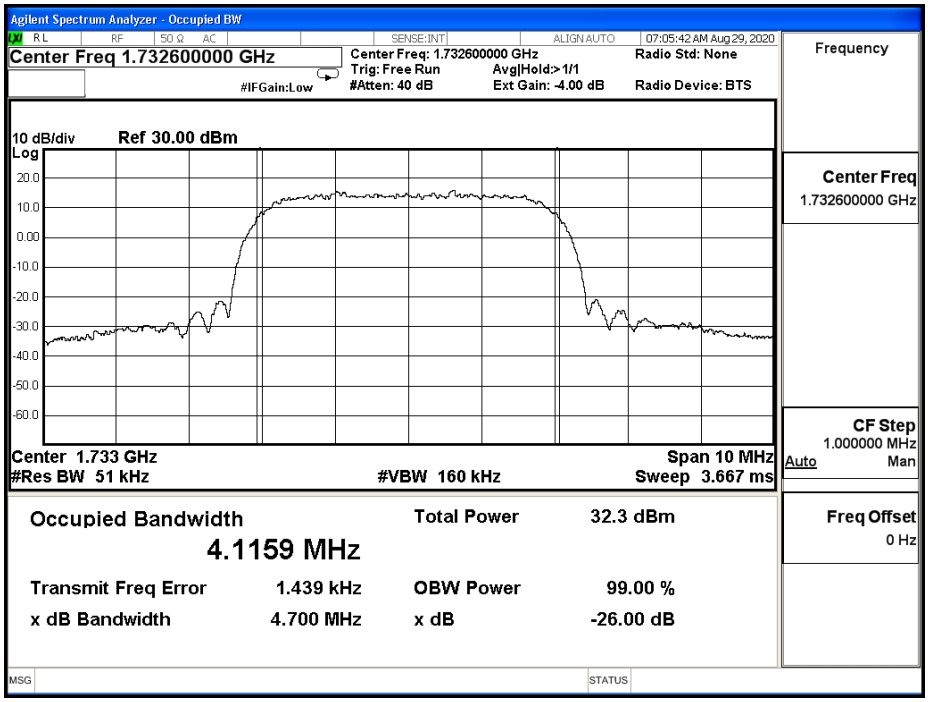
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	1312	1712.4	4.709	4.1222	N/A
	1413	1732.6	4.7	4.1159	N/A
	1513	1752.6	4.695	4.1124	N/A

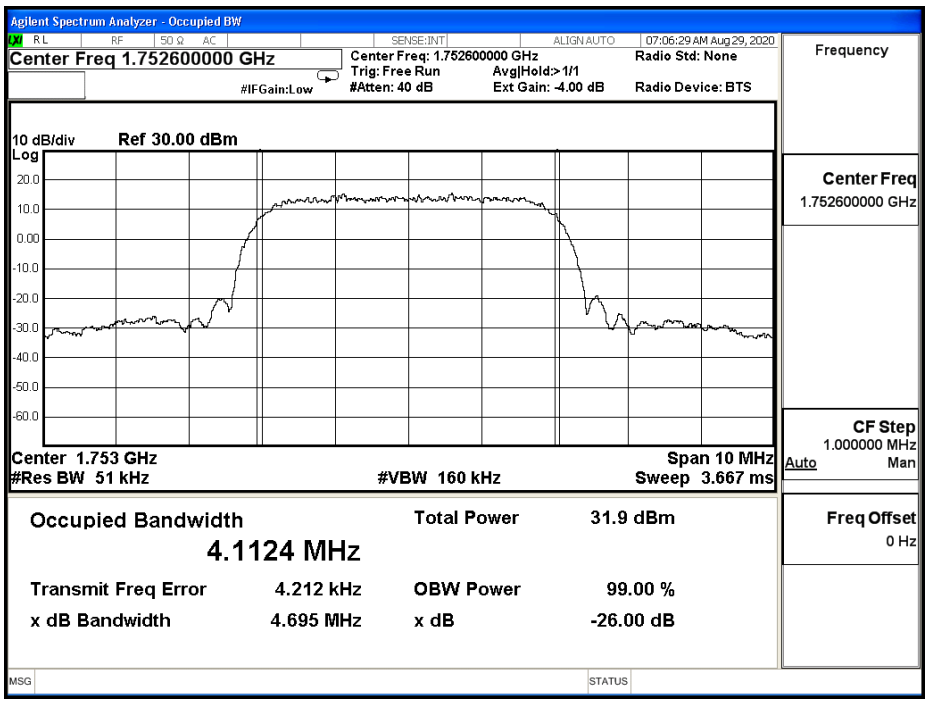
WCDMA_Band 4_RMC_1712.4MHz_26dB BW



WCDMA_Band 4_RMC_1732.6MHz_26dB BW



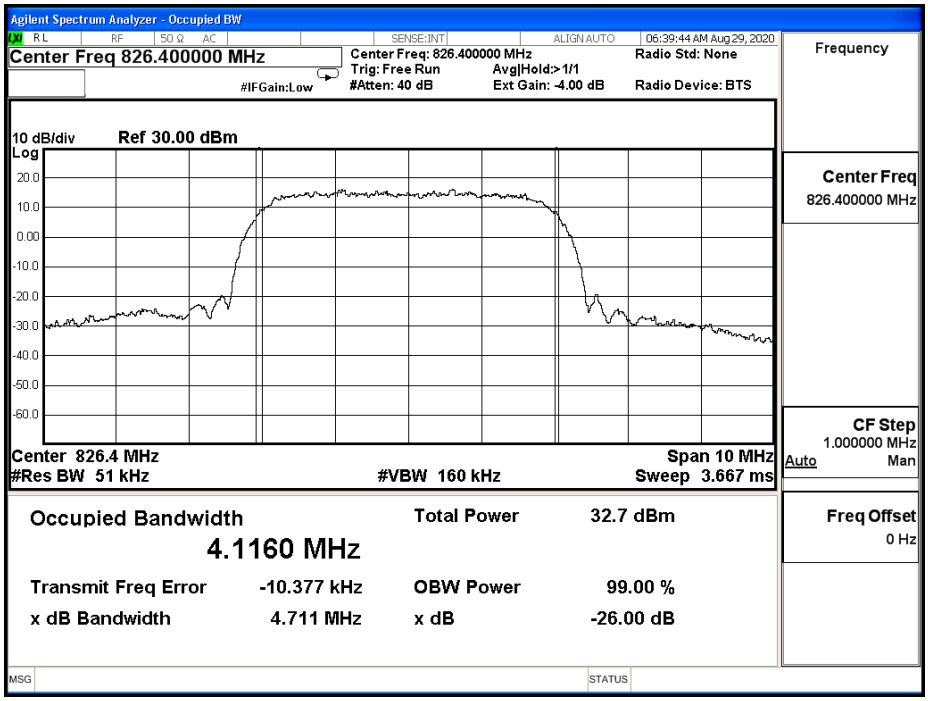
WCDMA_Band 4_RMC_1752.6MHz_26dB BW



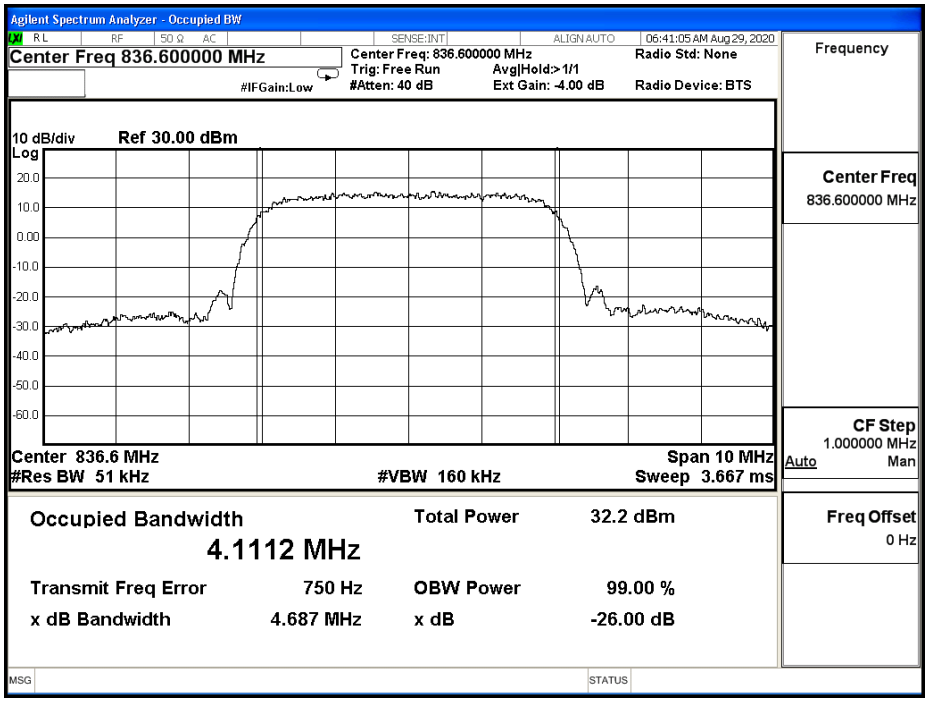
Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Modulation	Channel	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	4132	826.4	4.711	4.116	N/A
	4183	836.6	4.687	4.1112	N/A
	4233	846.6	4.668	4.1105	N/A

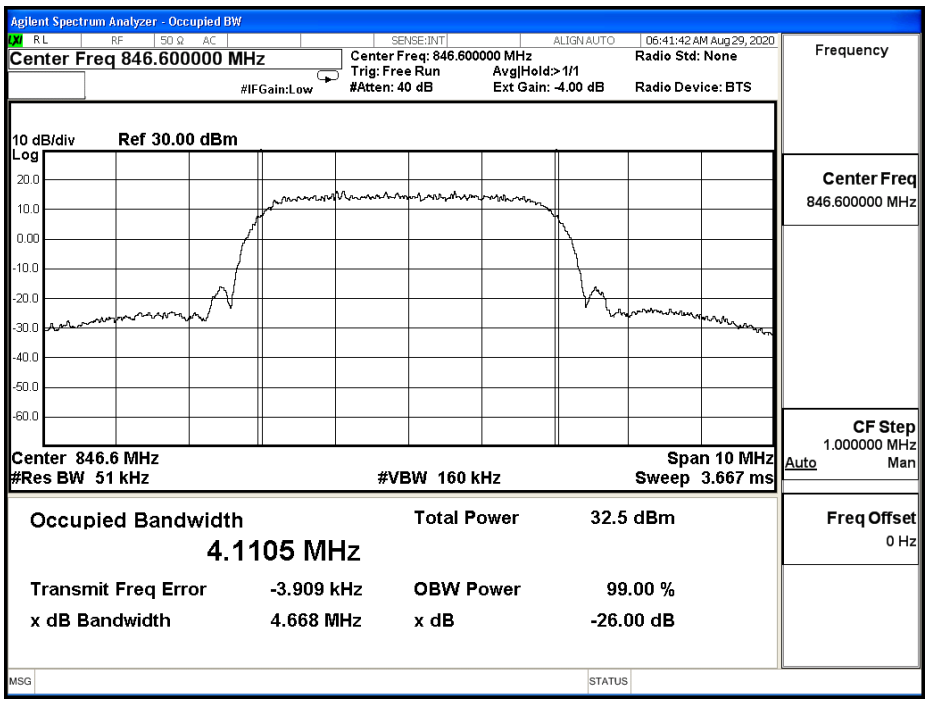
WCDMA_Band 5_RMC_826.4MHz_26dB BW



WCDMA_Band 5_RMC_836.6MHz_26dB BW

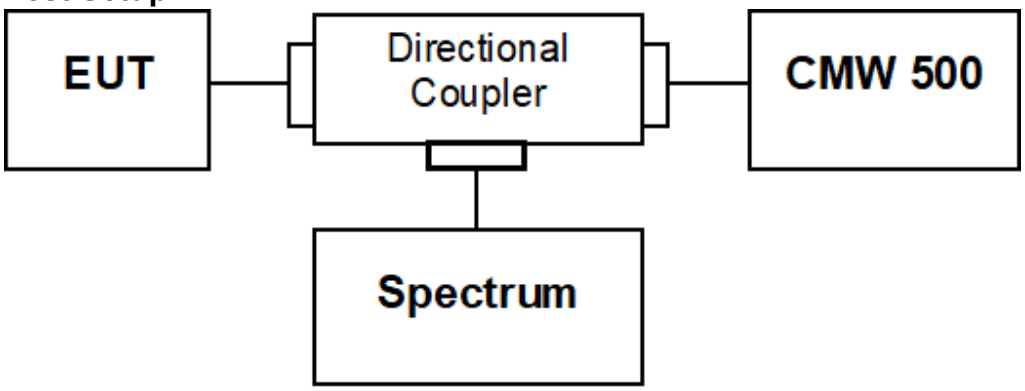


WCDMA_Band 5_RMC_846.6MHz_26dB BW



5. Peak To Average Ratio

5.1. Test Setup



5.2. Test Procedure

1. Set resolution/measurement bandwidth ≥ 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	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
9262	1852.4	RMC	24.86	21.43	3.09
9400	1880		25.04	21.50	3.17
9538	1907.6		24.78	21.36	3.09

WCDMA_Band 2_RMC_1852.4MHz

WCDMA_Band 2_RMC_1880.0MHz

Date: 1.SEP.2020 00:11:12

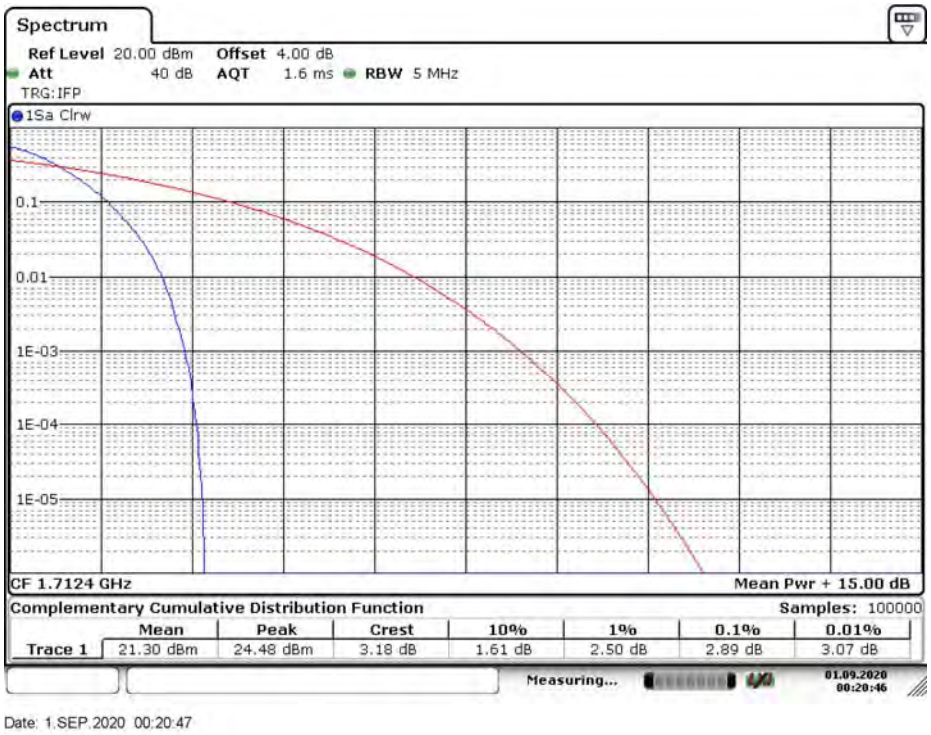
WCDMA_Band 2_RMC_1907.6MHz

Date: 1.SEP.2020 00:14:26

Product	Module		
Test Item	Peak To Average Ratio		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
1312	1712.4	RMC	24.48	21.30	2.89
1413	1732.6		24.71	21.38	3.04
1513	1752.6		24.82	21.30	3.20

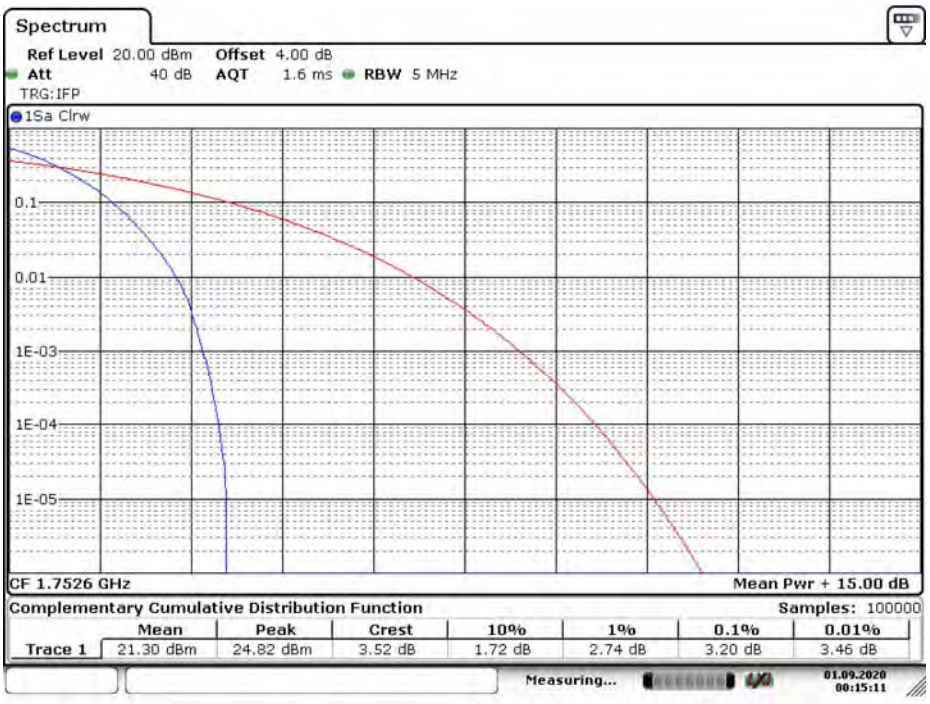
WCDMA_Band 4_RMC_1712.4MHz



WCDMA_Band 4_RMC_1732.6MHz

Date: 1.SEP.2020 00:15:49

WCDMA_Band 4_RMC_1752.6MHz

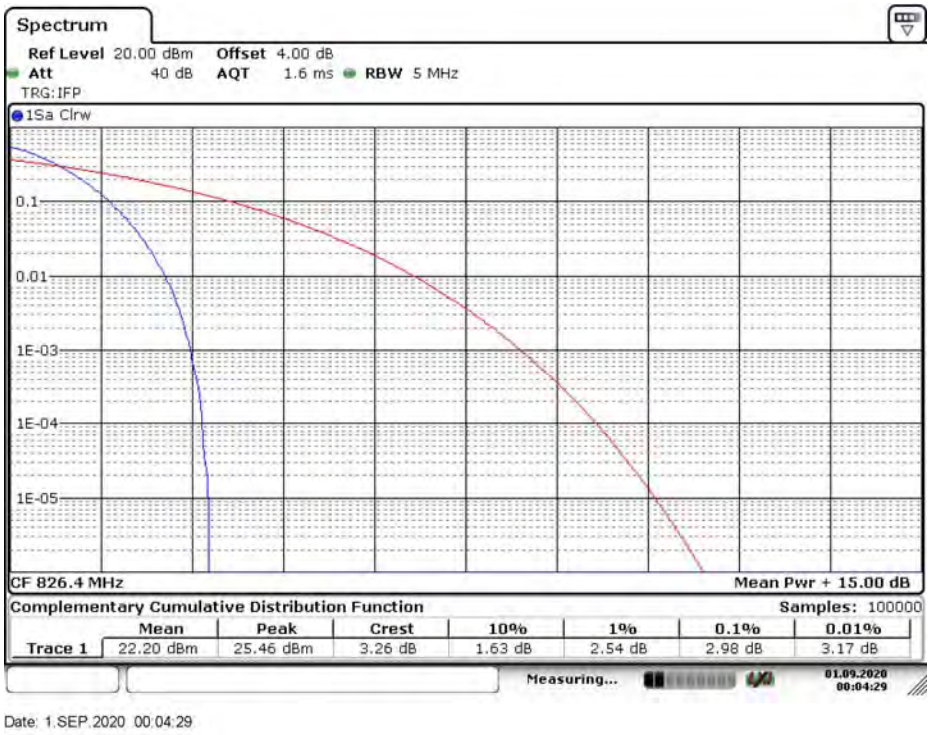


Date: 1.SEP.2020 00:15:11

Product	Module		
Test Item	Peak To Average Ratio		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
4132	826.4	RMC	25.46	22.20	2.98
4183	836.6		25.90	22.21	3.30
4233	846.6		26.09	22.27	3.46

WCDMA_Band 5_RMC_826.4MHz



WCDMA_Band 5_RMC_836.6MHz

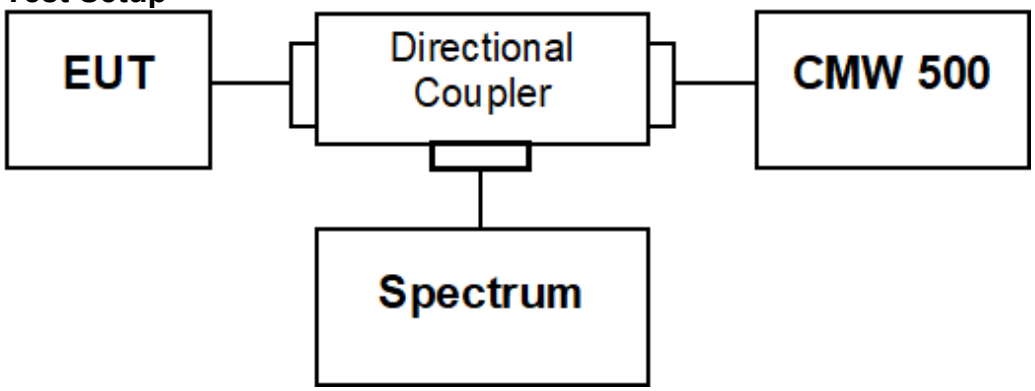
Date: 1.SEP.2020 00:05:32

WCDMA_Band 5_RMC_846.6MHz

Date: 1.SEP.2020 00:07:29

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:

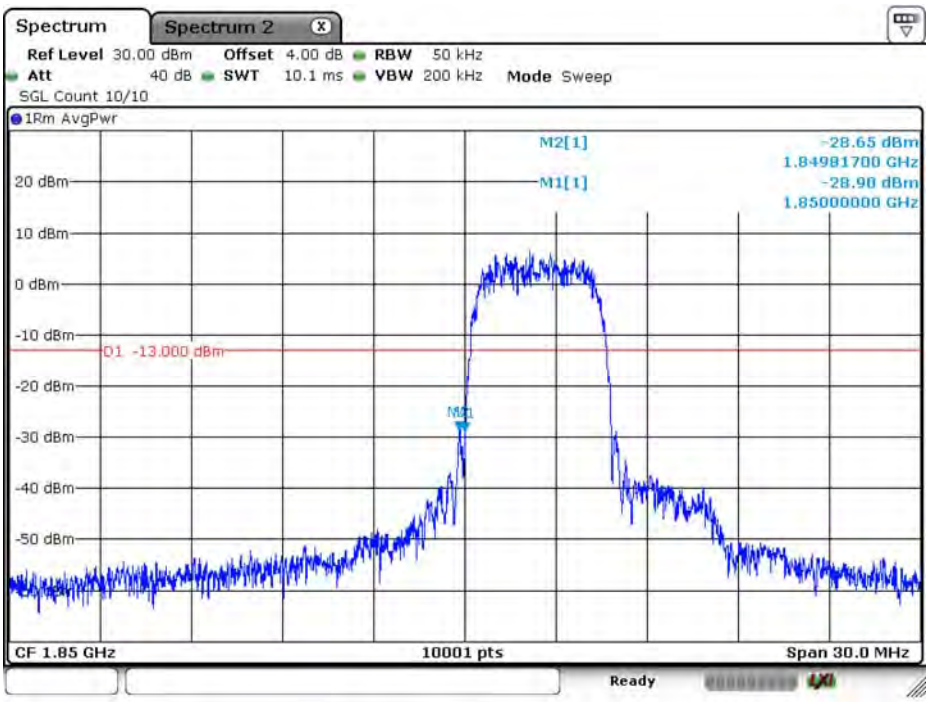
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.8

ANSI C63.26: 2015 Sub-clause 5.5.3.2

6.4. Test Result

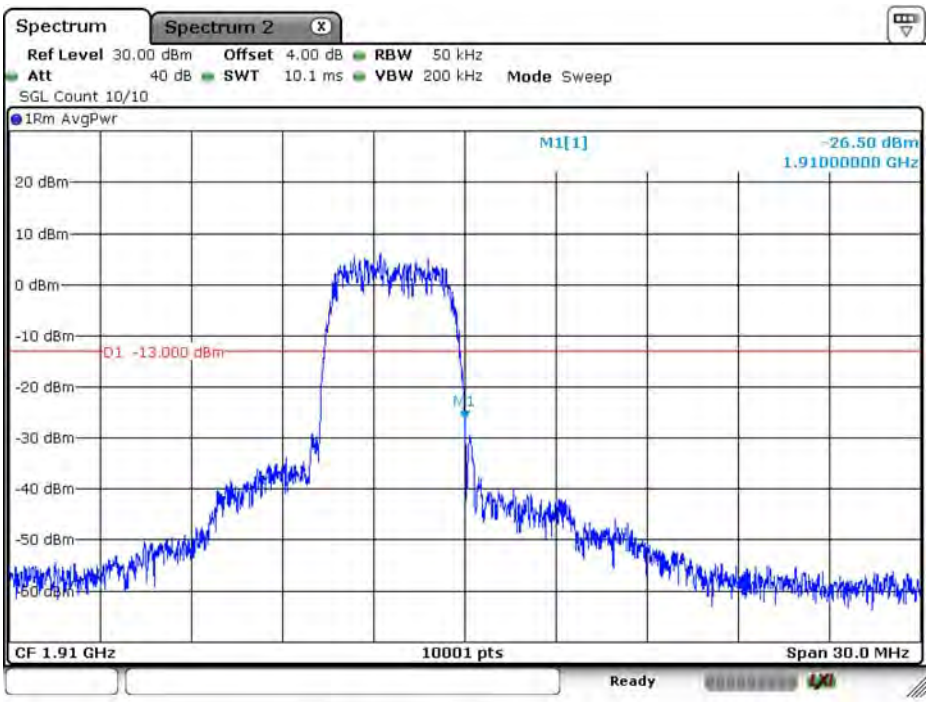
Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

WCDMA_Band 2_RMC_1852.4



Date: 1.SEP.2020 02:14:14

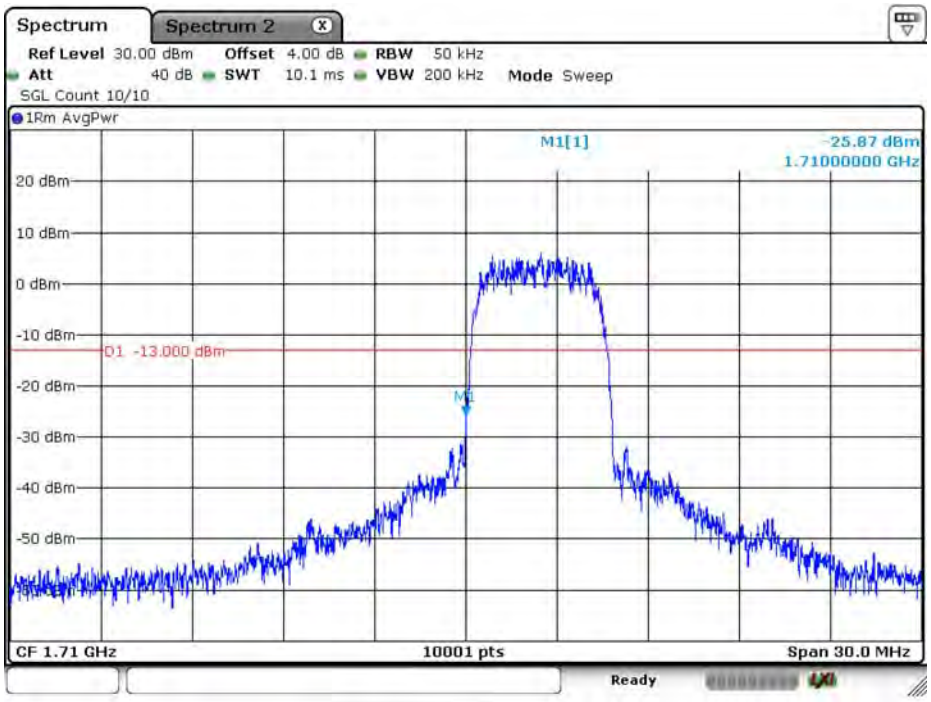
WCDMA_Band 2_ RMC_1907.6



Date: 1.SEP.2020 02:15:28

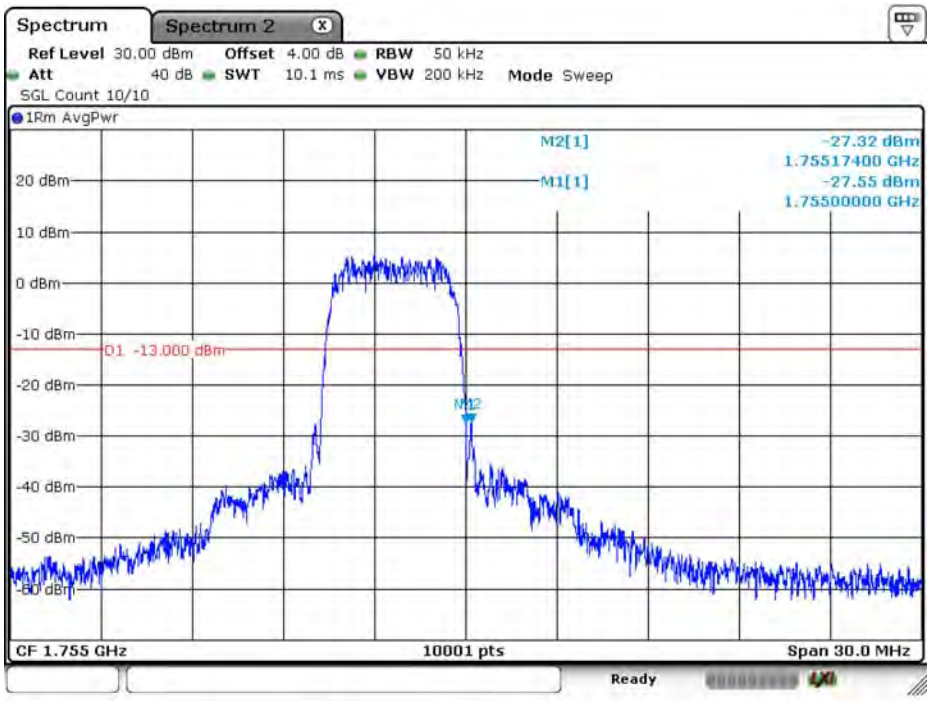
Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

WCDMA_Band 4_RMC_1712.4



Date: 1.SEP.2020 02:12:27

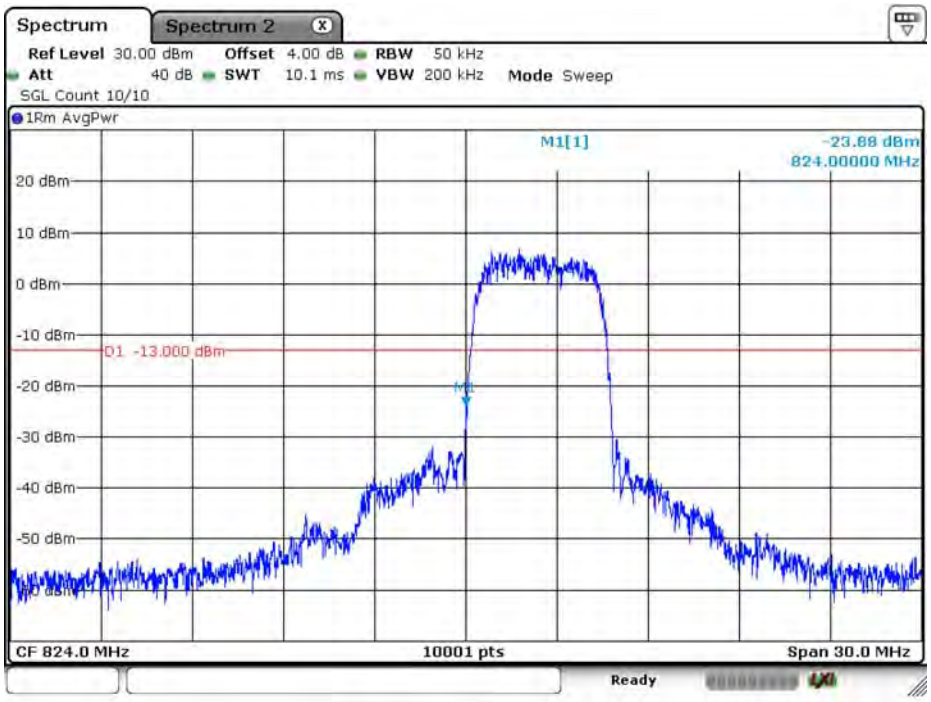
WCDMA_Band 4_RMC_1752.6



Date: 1.SEP.2020 02:10:34

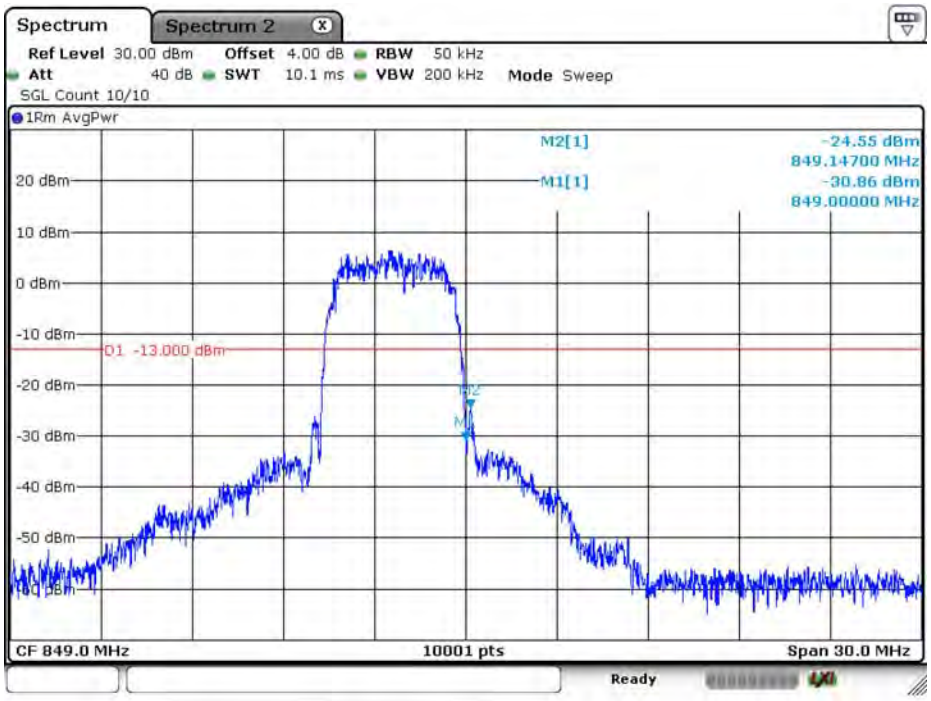
Product	Module		
Test Item	Conducted Band Edge		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

WCDMA_Band 5_RMC_826.4



Date: 1.SEP.2020 02:08:40

WCDMA_Band 5_RMC_846.6

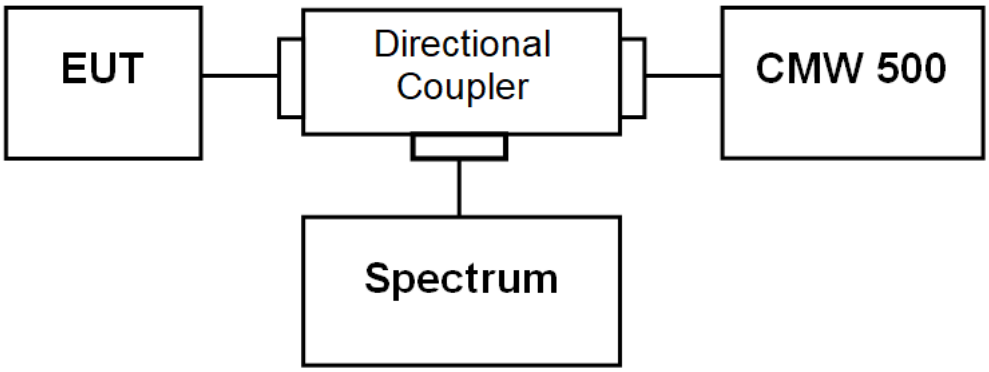


Date: 1.SEP.2020 02:03:56

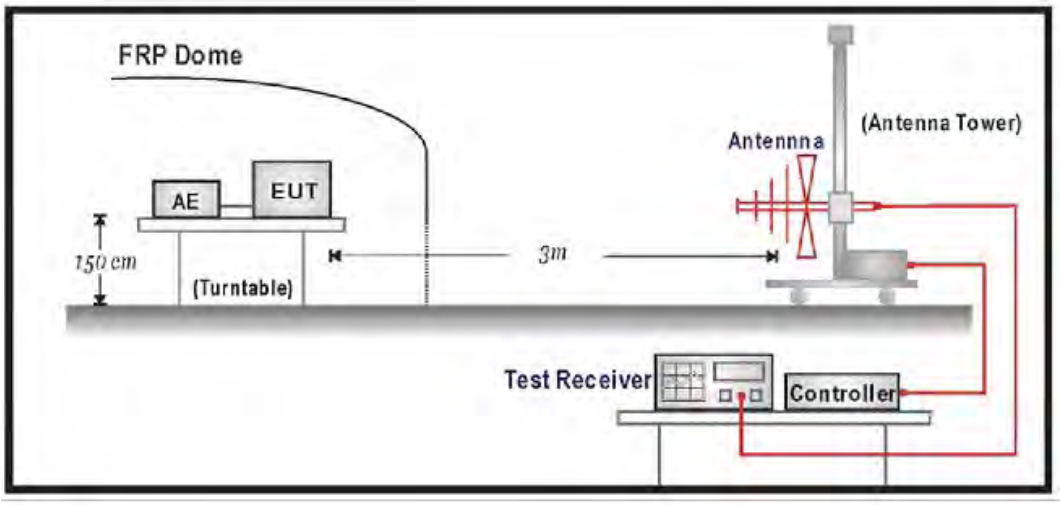
7. Spurious Emission

7.1. Test Setup

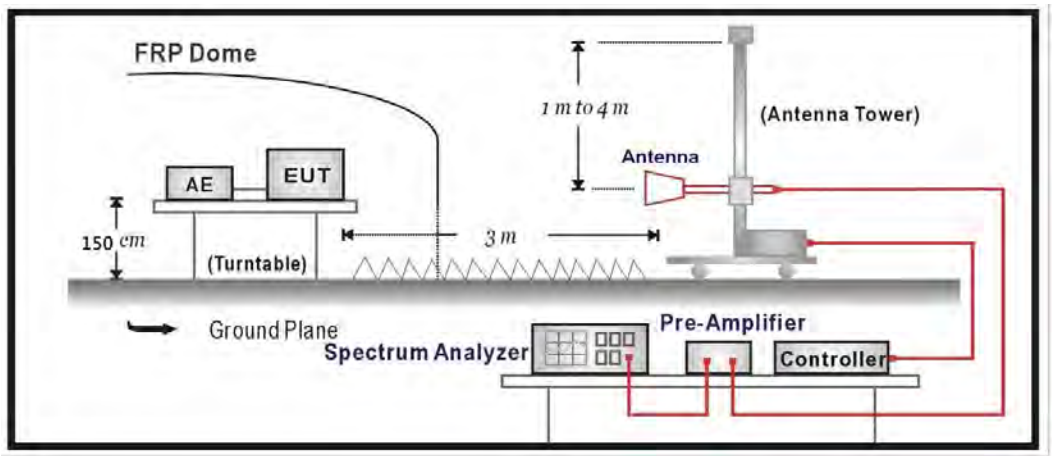
Conducted Spurious Measurement (below 1GHz)



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 - Cable loss + 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

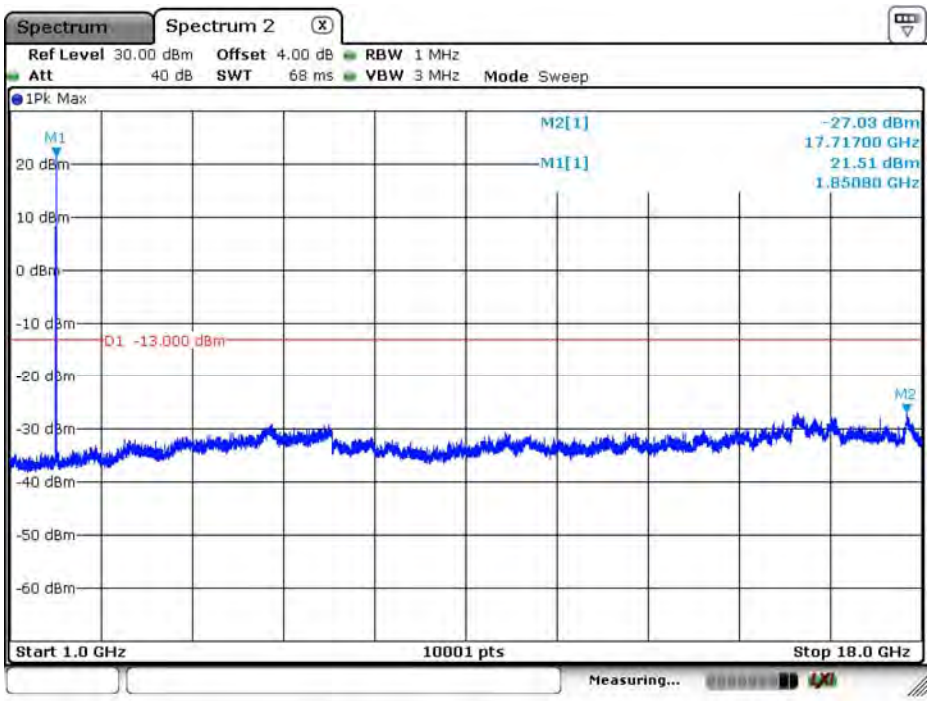
Radiated Spurious Measurement:

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

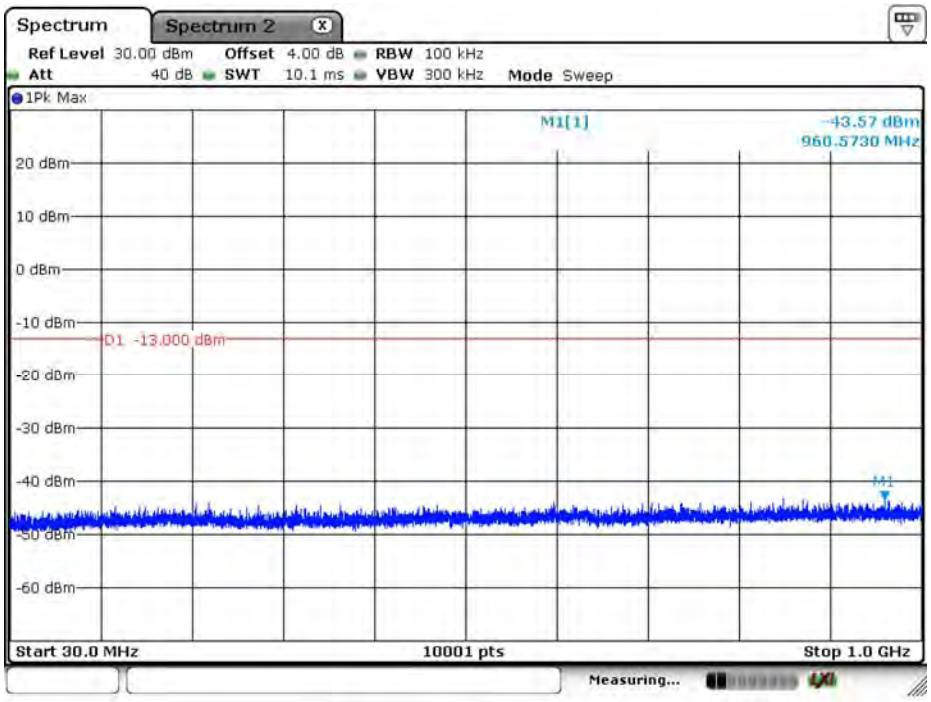
Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

WCDMA_B2_CH9262_RMC_above 1G



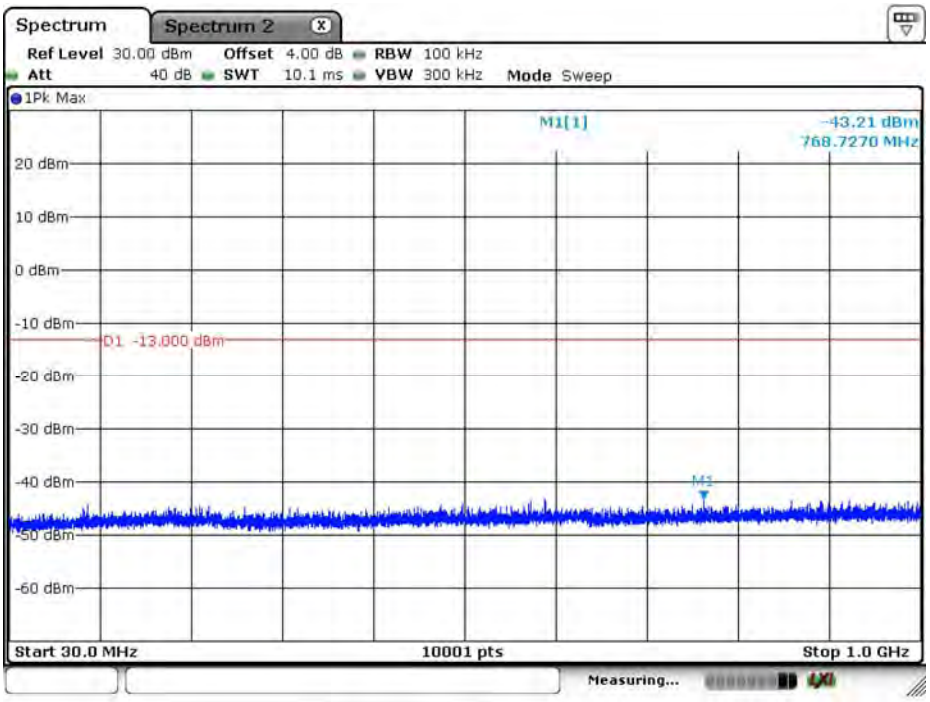
Date: 1.SEP.2020 01:40:41

WCDMA_B2_CH9262_RMC_under 1G

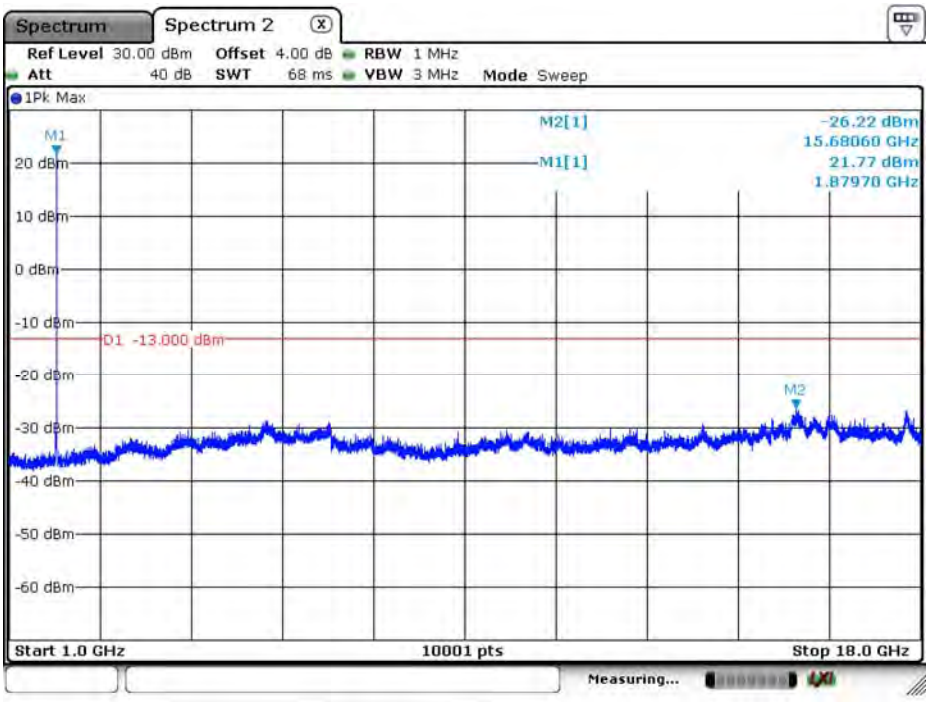


Date: 1.SEP.2020 01:33:55

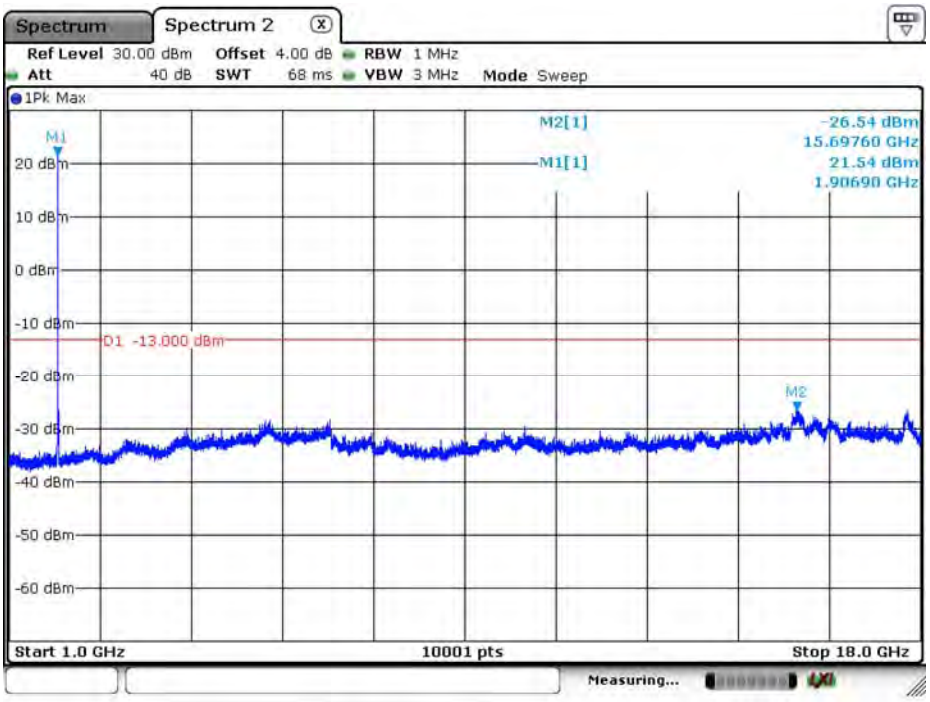
WCDMA_B2_CH9400_RMC_above 1G



WCDMA_B2_CH9400_RMC_under 1G



WCDMA_B2_CH9538_RMC_above 1G



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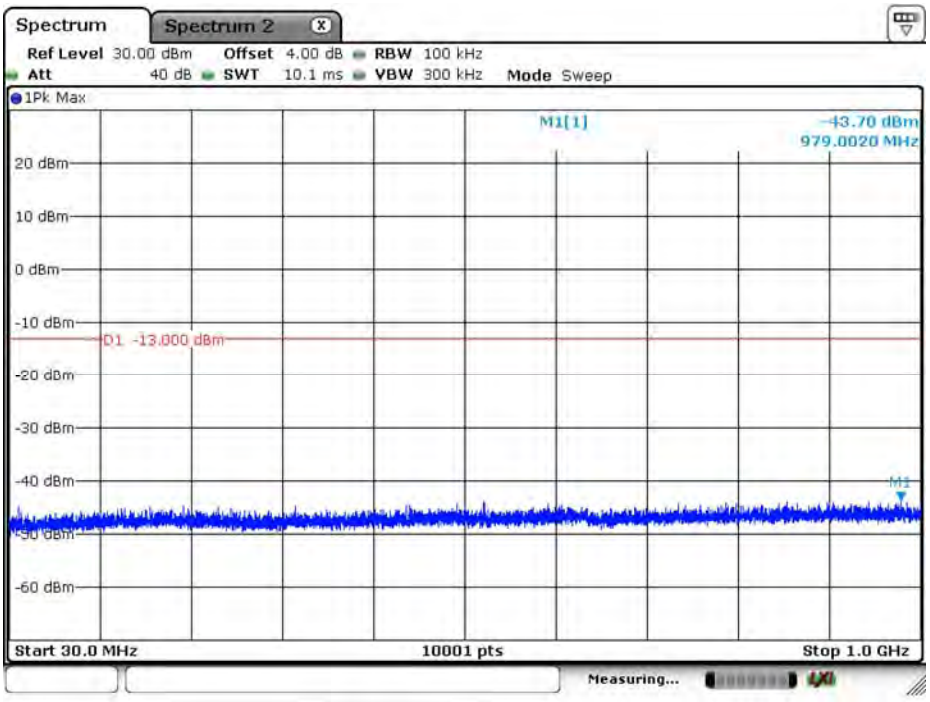
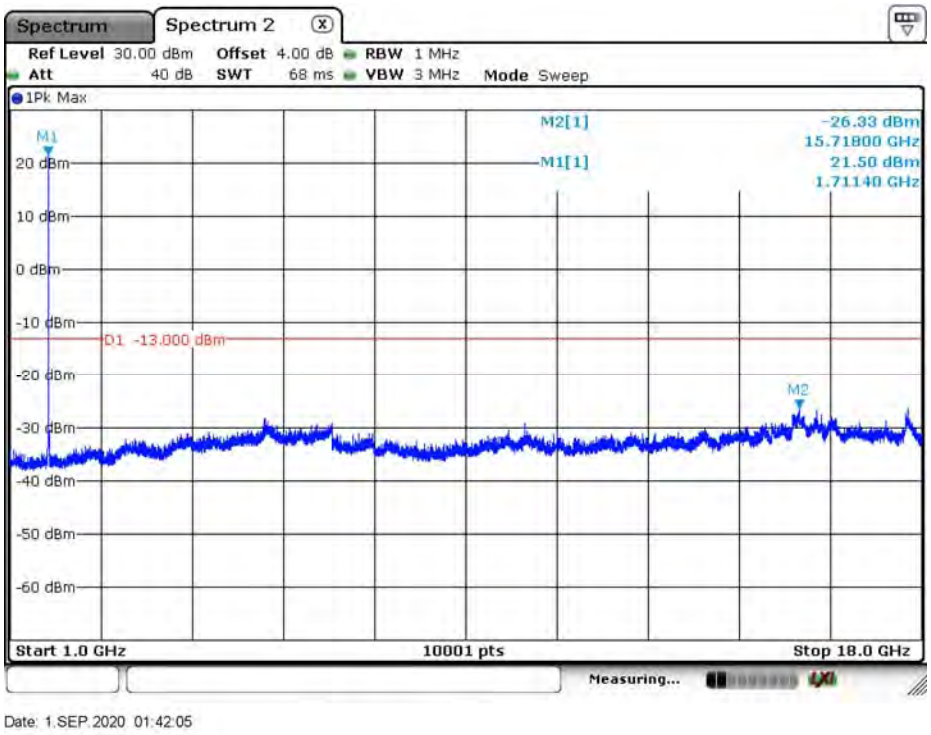
WCDMA_B2_CH9538_RMC_under 1G



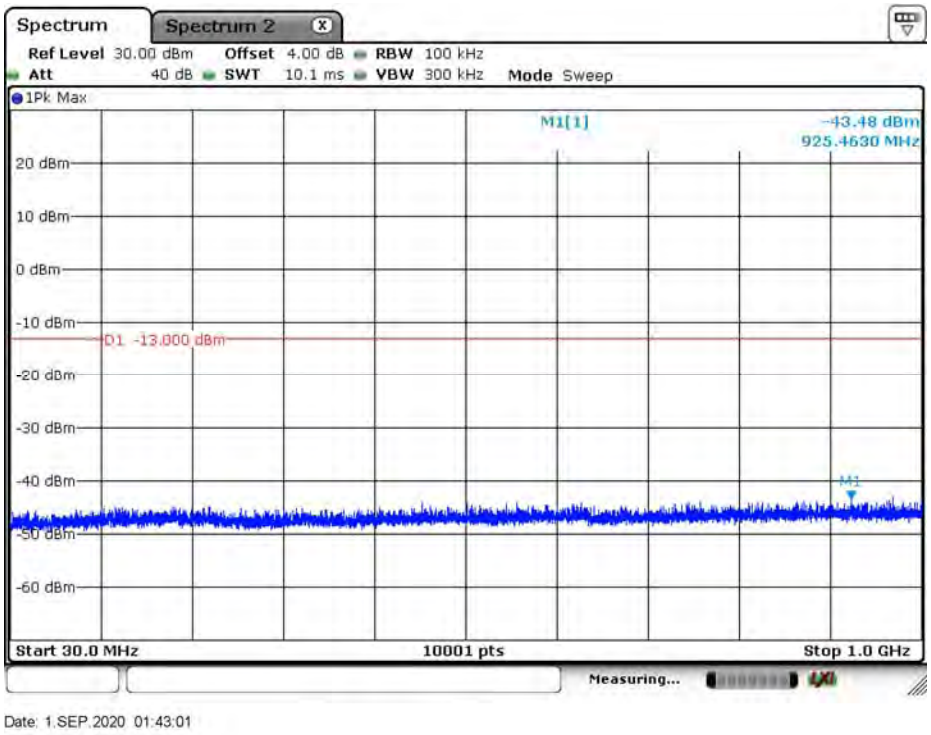
Date: 1.SEP.2020 01:36:55

Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

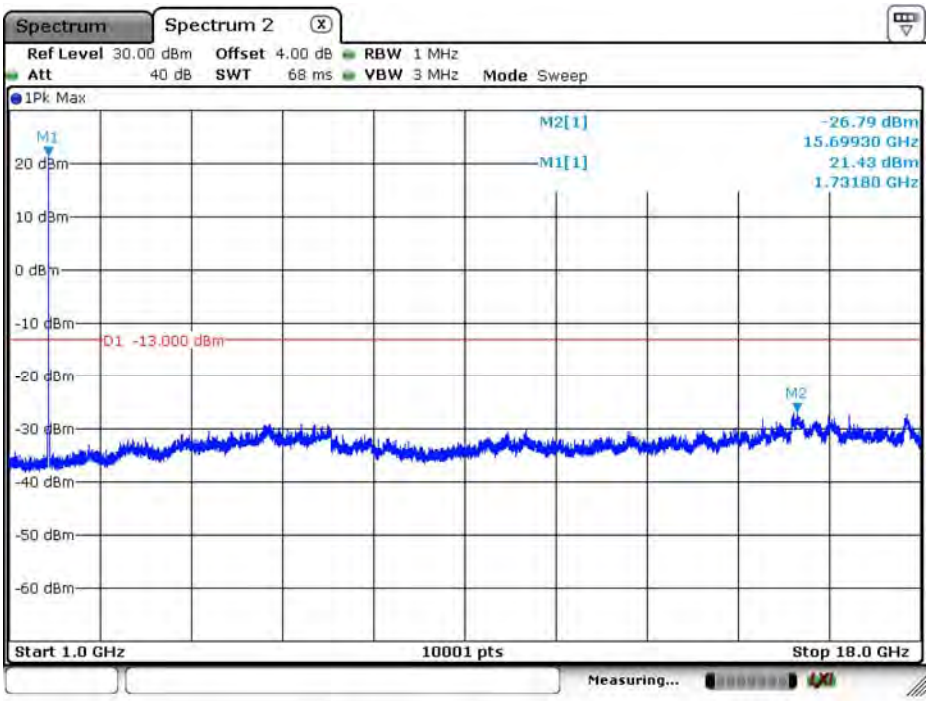
WCDMA_B4_CH1312_RMC_above 1G



WCDMA_B4_CH1312_RMC_under 1G

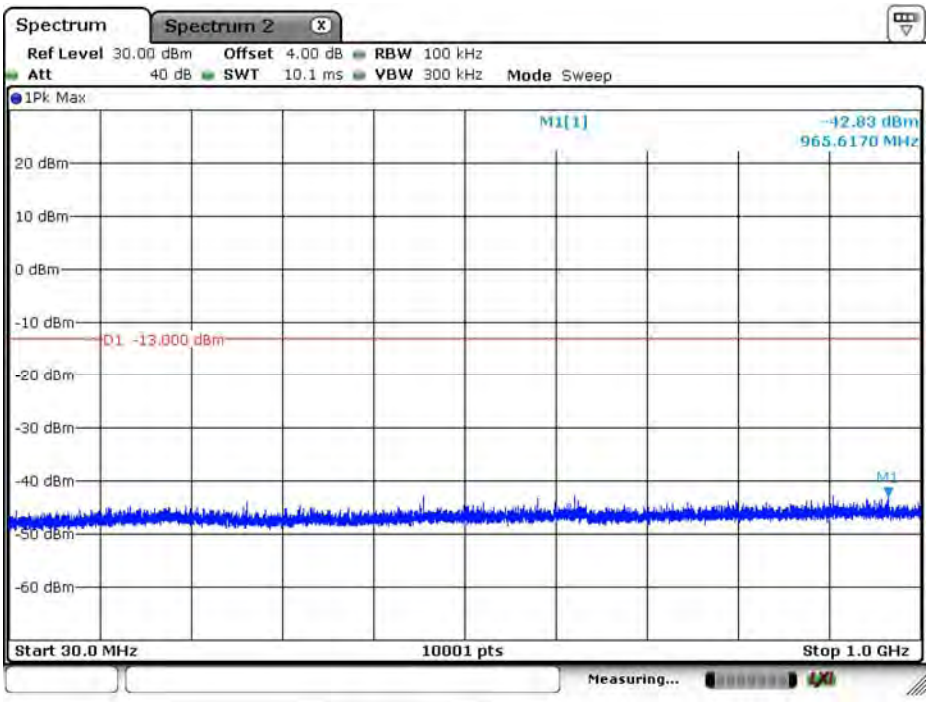


WCDMA_B4_CH1413_RMC_above 1G



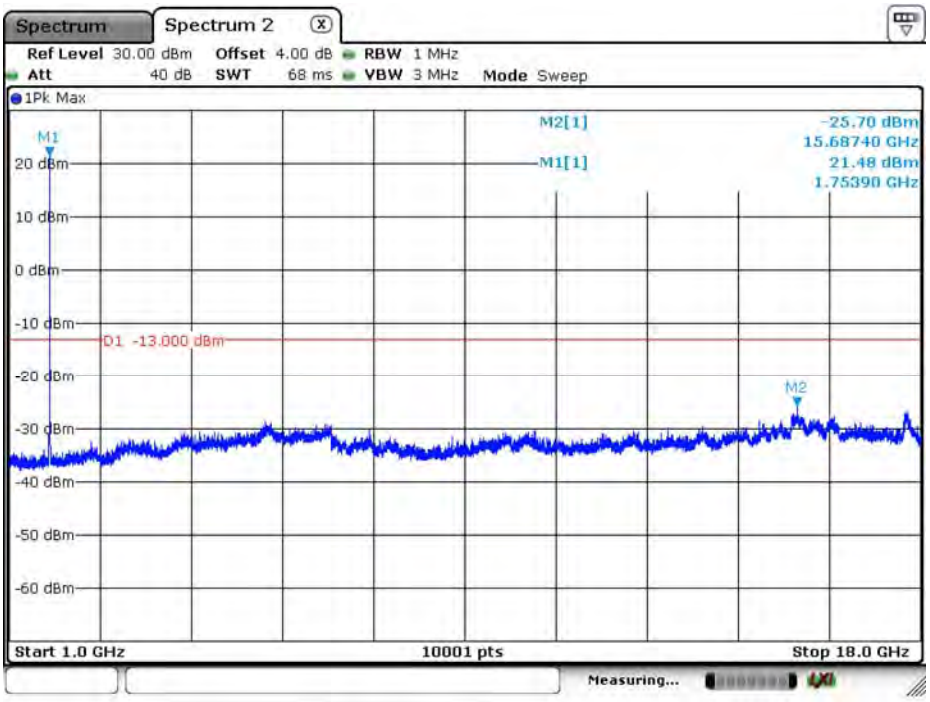
Date: 1.SEP.2020 01:54:13

WCDMA_B4_CH1413_RMC_under 1G



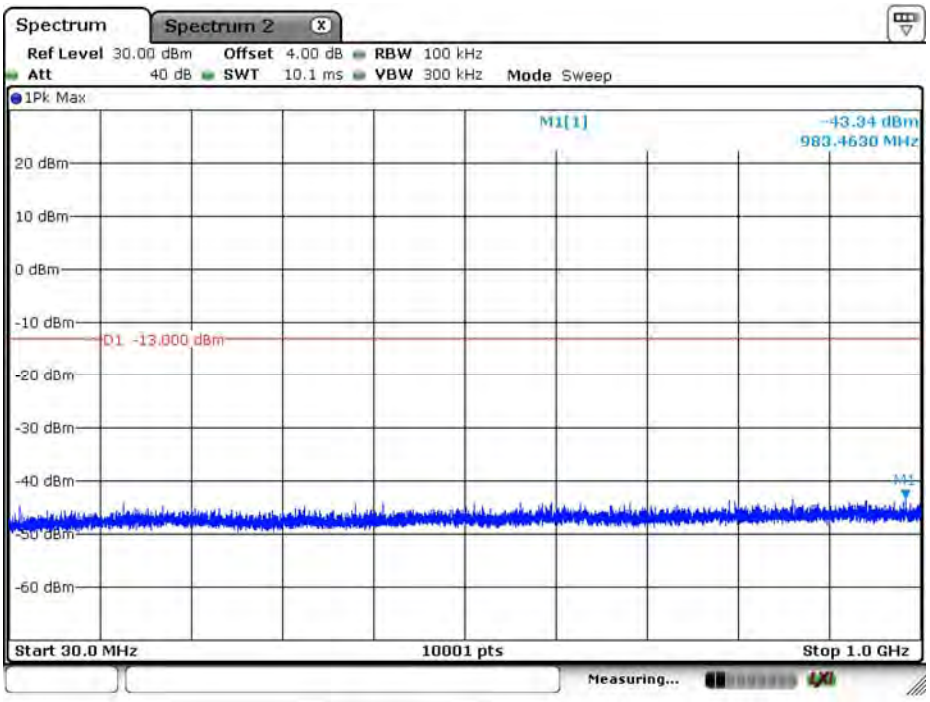
Date: 1.SEP.2020 01:53:18

WCDMA_B4_CH1513_RMC_above 1G



Date: 1.SEP.2020 01:55:43

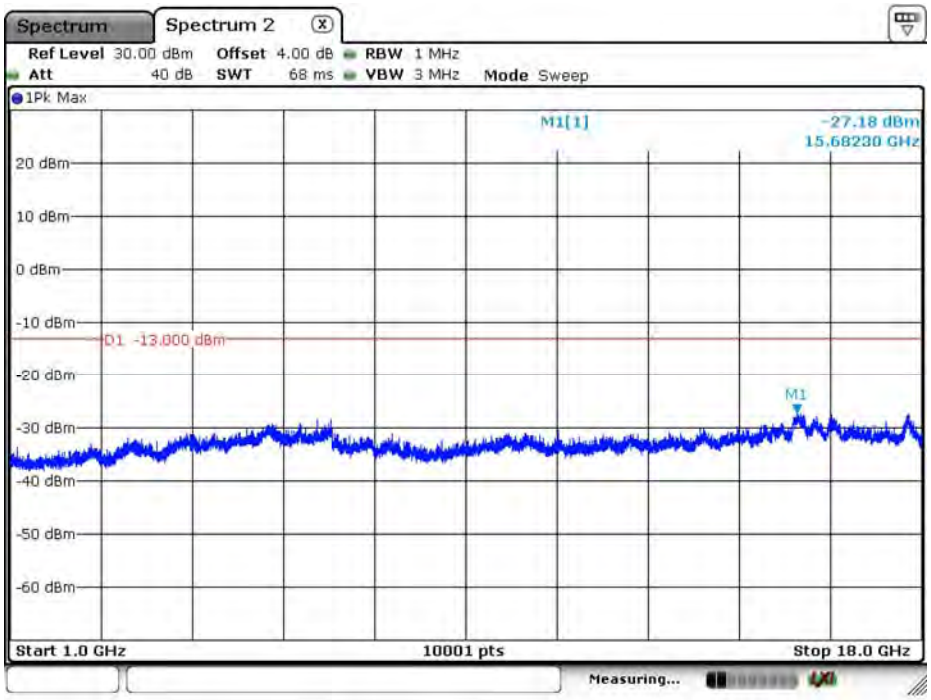
WCDMA_B4_CH1513_RMC_under 1G



Date: 1.SEP.2020 01:56:13

Product	Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	69

WCDMA__B5_CH4132_RMC_above 1G



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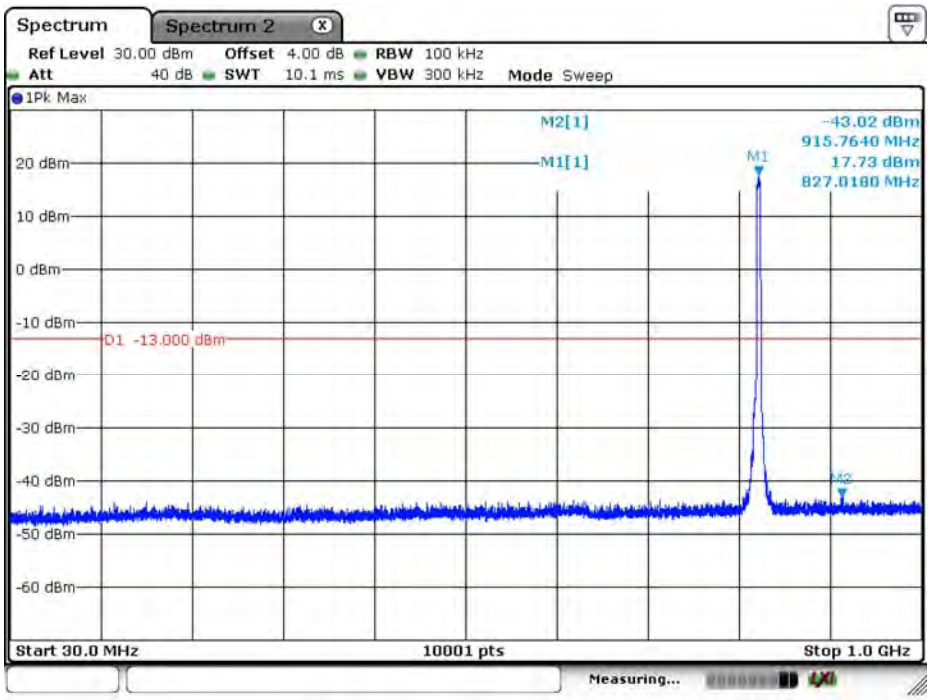

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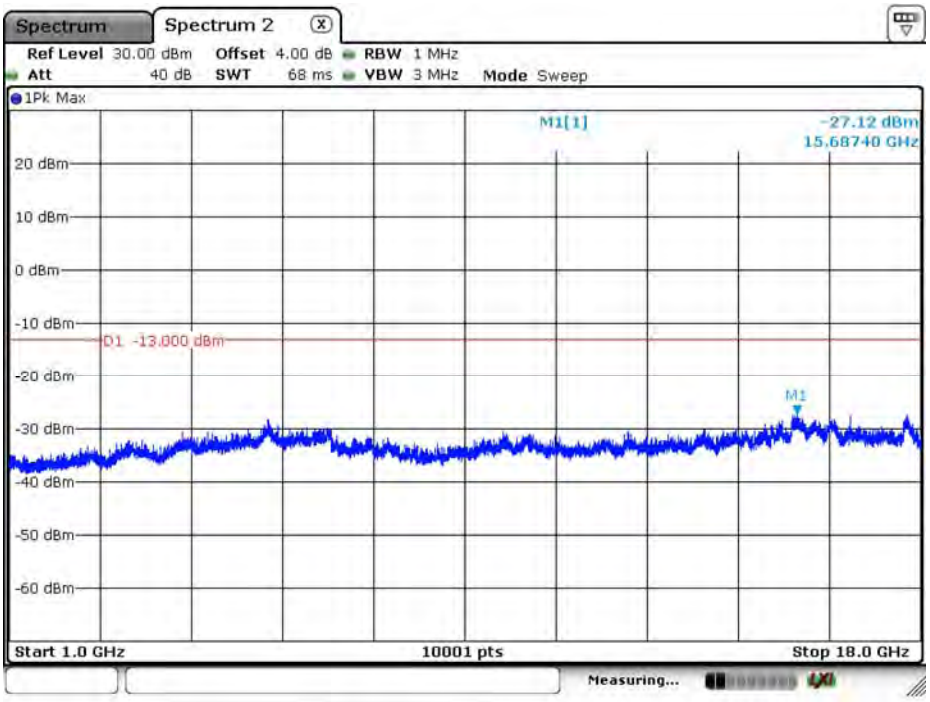

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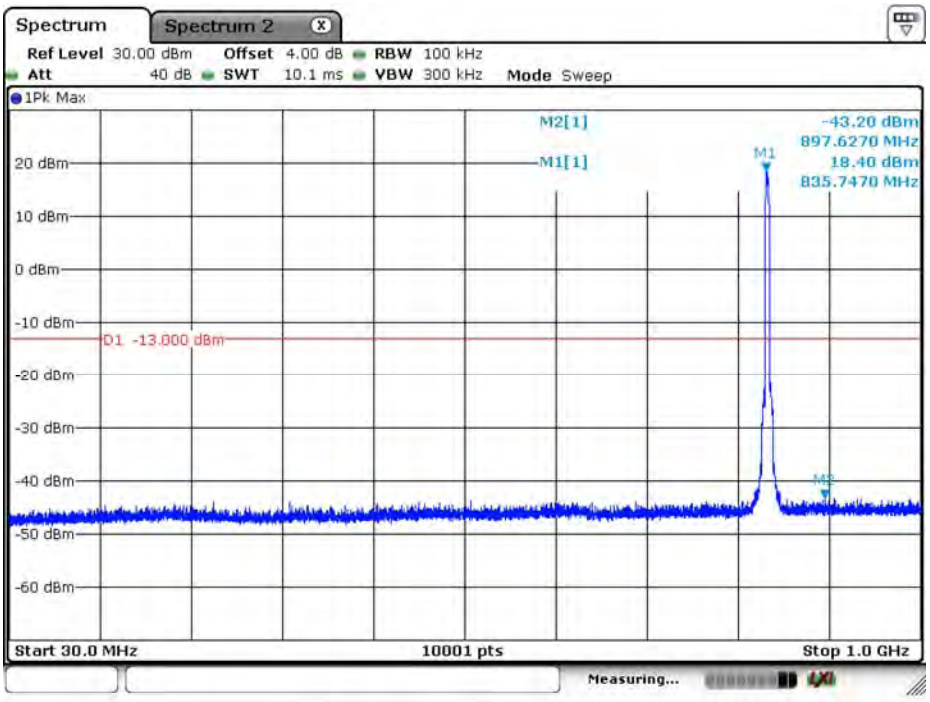

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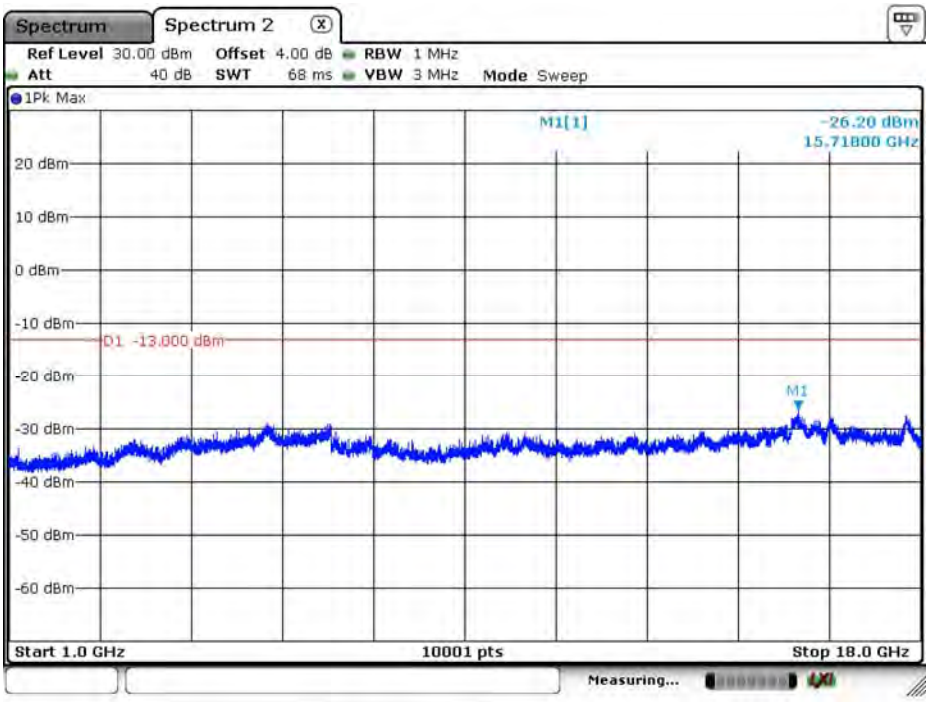

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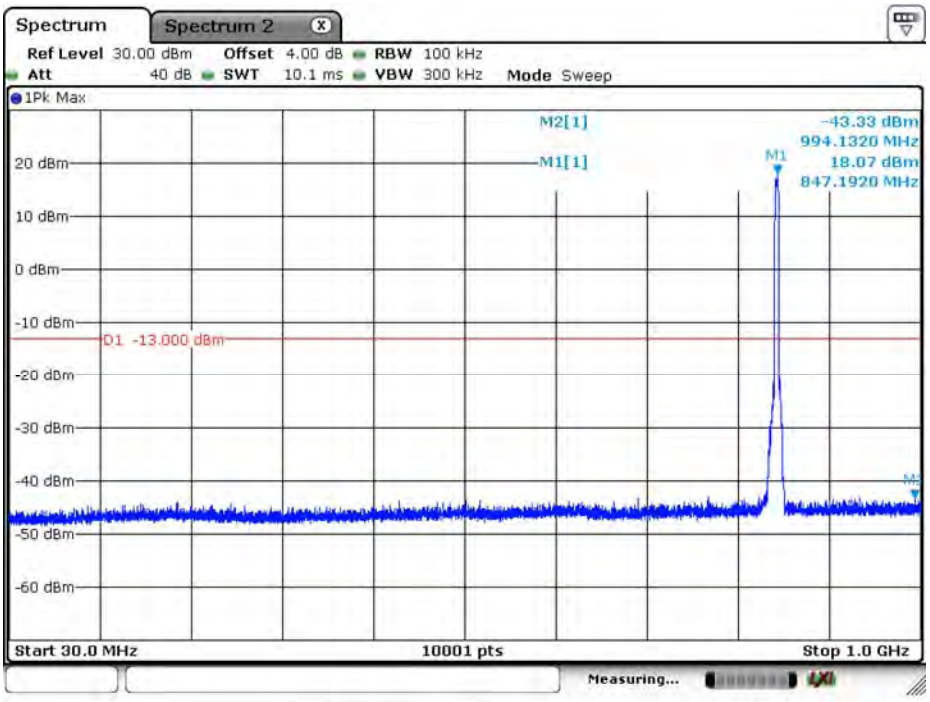


Date: 1.SEP.2020 01:30:48

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2020/09/01	Test Site	CB2-H
Temperature(°C)	25	Humidity (%RH)	56

RMC_CH 9262_WCDMA_Band 2

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3704.800	-42.49	-13	-29.49	-50.58	12.61	4.51
	5557.200	-43.10	-13	-30.10	-50.55	13.12	5.67
	7409.600	-40.05	-13	-27.05	-44.76	11.31	6.60
V	3704.800	-41.68	-13	-28.68	-49.77	12.61	4.51
	5557.200	-38.19	-13	-25.19	-45.64	13.12	5.67
	7409.600	-37.05	-13	-24.05	-41.76	11.31	6.60

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

RMC_CH 9400_WCDMA_Band 2

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3760.000	-46.25	-13	-33.25	-54.32	12.60	4.54
	5640.000	-48.06	-13	-35.06	-55.46	13.10	5.70
	7520.000	-40.09	-13	-27.09	-44.71	11.24	6.61
V	3760.000	-37.69	-13	-24.69	-45.76	12.60	4.54
	5640.000	-48.05	-13	-35.05	-55.45	13.10	5.70
	7520.000	-36.49	-13	-23.49	-41.11	11.24	6.61

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

RMC_CH 9538_WCDMA_Band 2

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3815.200	-46.44	-13	-33.44	-54.48	12.60	4.57
	5722.800	-44.59	-13	-31.59	-51.94	13.08	5.73
	7630.400	-36.49	-13	-23.49	-41.13	11.24	6.60
V	3815.200	-37.59	-13	-24.59	-45.63	12.60	4.57
	5722.800	-41.48	-13	-28.48	-48.83	13.08	5.73
	7630.400	-32.51	-13	-19.51	-37.15	11.24	6.60

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	CB2-H
Temperature(°C)	25	Humidity (%RH)	56

RMC_CH 1312_WCDMA_Band 4

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3424.800	-44.31	-13	-31.31	-52.40	12.45	4.36
	5137.200	-42.02	-13	-29.02	-49.41	12.78	5.39
	6849.600	-42.14	-13	-29.14	-47.60	11.83	6.37
V	3424.800	-38.77	-13	-25.77	-46.86	12.45	4.36
	5137.200	-32.57	-13	-19.57	-39.96	12.78	5.39
	6849.600	-40.56	-13	-27.56	-46.02	11.83	6.37

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

RMC_CH 1413_WCDMA_Band 4

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3465.200	-47.56	-13	-34.56	-55.71	12.53	4.38
	5197.800	-36.41	-13	-23.41	-43.82	12.84	5.43
	6930.400	-43.75	-13	-30.75	-49.02	11.73	6.46
V	3465.200	-41.56	-13	-28.56	-49.71	12.53	4.38
	5197.800	-25.14	-13	-12.14	-32.55	12.84	5.43
	6930.400	-42.16	-13	-29.16	-47.43	11.73	6.46

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

RMC_CH 1513_WCDMA_Band 4

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3505.200	-45.26	-13	-32.26	-53.46	12.61	4.41
	5257.800	-38.15	-13	-25.15	-45.58	12.90	5.48
	7010.400	-43.32	-13	-30.32	-48.42	11.64	6.54
V	3505.200	-43.02	-13	-30.02	-51.22	12.61	4.41
	5257.800	-27.01	-13	-14.01	-34.44	12.90	5.48
	7010.400	-41.63	-13	-28.63	-46.73	11.64	6.54

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	CB2-H
Temperature(°C)	25	Humidity (%RH)	56

RMC_CH 4132_WCDMA_Band 5

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1652.800	-43.69	-13	-30.69	-50.00	9.30	2.99
	2479.200	-46.21	-13	-33.21	-53.11	10.59	3.69
	3305.600	-51.35	-13	-38.35	-59.27	12.19	4.27
V	1652.800	-29.74	-13	-16.74	-36.05	9.30	2.99
	2479.200	-41.02	-13	-28.02	-47.92	10.59	3.69
	3305.600	-50.69	-13	-37.69	-58.61	12.19	4.27

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

RMC_CH 4183_WCDMA_Band 5

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1673.200	-43.62	-13	-30.62	-49.97	9.36	3.01
	2509.800	-45.42	-13	-32.42	-52.33	10.62	3.71
	3346.400	-50.65	-13	-37.65	-58.63	12.28	4.30
V	1673.200	-29.02	-13	-16.02	-35.37	9.36	3.01
	2509.800	-40.79	-13	-27.79	-47.70	10.62	3.71
	3346.400	-50.49	-13	-37.49	-58.47	12.28	4.30

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

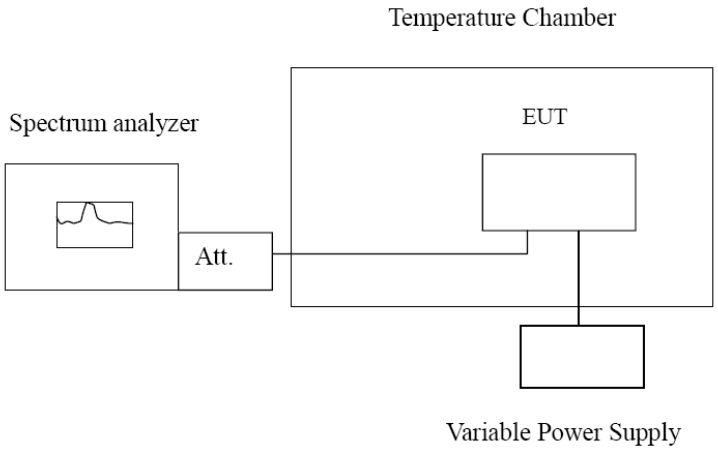
RMC_CH 4233_WCDMA_Band 5

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1693.200	-39.02	-13	-26.02	-45.41	9.42	3.03
	2539.800	-41.53	-13	-28.53	-48.47	10.67	3.73
	3386.400	-51.32	-13	-38.32	-59.36	12.36	4.33
V	1693.200	-25.41	-13	-12.41	-31.80	9.42	3.03
	2539.800	-36.28	-13	-23.28	-43.22	10.67	3.73
	3386.400	-48.56	-13	-35.56	-56.60	12.36	4.33

Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

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℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20℃. 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 (±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	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	56

WCDMA Band 2 – 1852.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	3.22	-0.0017
3.7	5.53	-0.0030
3.33	2.48	-0.0013

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	4.03	-0.0022
-20	6.93	-0.0037
-10	7.95	-0.0043
0	7.56	-0.0041
10	3.93	-0.0021
20	6.59	-0.0036
30	6.46	-0.0035
40	6.27	-0.0034
50	3.54	-0.0019
60	9.98	-0.0054
70	9.31	-0.0050

WCDMA Band 2 – 1880MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	6.48	-0.0035
3.7	2.35	-0.0013
3.33	7.94	-0.0043

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	3.28	-0.0018
-20	5.32	-0.0029
-10	5.92	-0.0032
0	5.08	-0.0027
10	3.54	-0.0019
20	4.90	-0.0026
30	8.66	-0.0047
40	9.87	-0.0053
50	6.51	-0.0035
60	5.46	-0.0029
70	9.27	-0.0050

WCDMA Band 2 – 1907.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	6.84	-0.0036
3.7	6.59	-0.0035
3.33	4.17	-0.0022

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	8.11	-0.0043
-20	3.52	-0.0018
-10	9.53	-0.0050
0	4.87	-0.0026
10	7.33	-0.0038
20	2.84	-0.0015
30	9.87	-0.0052
40	4.12	-0.0022
50	7.56	-0.0040
60	6.83	-0.0036
70	2.60	-0.0014

Product	Module		
Test Item	Frequency Stability		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	56

WCDMA Band 4 – 1712.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	9.48	-0.0055
3.7	4.10	-0.0024
3.33	7.65	-0.0045

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	5.57	-0.0033
-20	5.37	-0.0031
-10	5.19	-0.0030
0	6.58	-0.0038
10	7.46	-0.0044
20	4.35	-0.0025
30	7.67	-0.0045
40	9.78	-0.0057
50	6.26	-0.0037
60	6.42	-0.0037
70	2.30	-0.0013

WCDMA Band 4 – 1732.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	4.54	-0.0026
3.7	9.17	-0.0053
3.33	9.96	-0.0057

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.47	-0.0014
-20	8.60	-0.0050
-10	9.27	-0.0054
0	2.28	-0.0013
10	4.99	-0.0029
20	7.65	-0.0044
30	2.83	-0.0016
40	4.17	-0.0024
50	4.41	-0.0025
60	8.98	-0.0052
70	6.32	-0.0036

WCDMA_Band 4_1752.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	6.92	-0.0039
3.7	6.94	-0.0040
3.33	5.99	-0.0034

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	7.97	-0.0045
-20	6.33	-0.0036
-10	8.05	-0.0046
0	6.18	-0.0035
10	2.73	-0.0016
20	2.30	-0.0013
30	6.02	-0.0034
40	9.39	-0.0054
50	6.52	-0.0037
60	7.16	-0.0041
70	2.54	-0.0014

Product	Module		
Test Item	Frequency Stability		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2020/09/01	Test Site	SR12-H
Temperature(°C)	23	Humidity (%RH)	56

WCDMA_Band 5_826.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.07	8.40	-0.0029
3.7	8.96	-0.0025
3.33	5.72	-0.0026

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	7.17	-0.0027
-20	3.89	-0.0025
-10	7.01	-0.0028
0	7.47	-0.0030
10	2.18	-0.0027
20	2.47	-0.0030
30	9.07	-0.0029
40	5.71	-0.0031
50	3.53	-0.0024
60	9.04	-0.0033
70	3.48	-0.0033

WCDMA_Band 5_836.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.4	6.14	0.0004
3.7	3.56	0.0007
3.135	9.93	-0.0002

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	6.38	0.0005
-20	2.68	0.0004
-10	6.01	0.0003
0	3.09	0.0004
10	4.35	0.0002
20	7.03	0.0008
30	5.27	0.0001
40	9.08	0.0005
50	4.82	0.0003
60	7.81	0.0003
70	4.55	0.0007

WCDMA_Band 5_846.6MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
4.4	4.97	0.0014
3.7	4.33	0.0012
3.135	7.77	0.0012

Temperature

Temperature	Frequency Error (Hz)	Frequency Error (ppm)
-30	9.82	0.0011
-20	8.26	0.0011
-10	8.64	0.0014
0	5.07	0.0004
10	8.21	0.0008
20	6.75	0.0012
30	9.29	0.0009
40	3.45	0.0003
50	3.59	0.0009
60	8.51	0.0014
70	8.07	0.0013