CFR 47 FCC PART 22 H
CFR 47 FCC PART 24 E
CFR 47 FCC PART 27
RSS-132, RSS-133, RSS-139

TEST REPORT

For

Smart Mini Payment Terminal

MODEL NUMBER: A77

FCC ID: V5PA77GT

IC: 11689A-A77GT

REPORT NUMBER: 4790087823-7

ISSUE DATE: March 22, 2022

Prepared for

PAX Technology Limited
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Prepared by

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	03/22/2022	Initial Issue	

Note:
1.This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 22 H >< CFR 47 FCC PART 24 E>< CFR 47 FCC PART 27 >< RSS-132, RSS-133, RSS-139>when <Accuracy Method> decision rule is applied.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	PAX Technology Limited
Address:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong

Manufacturer Information

Company Name:	PAX Computer Technology (Shenzhen) C).,Ltd.
Address:	4/F,No.3 Building, Software Park, Second Central Science-TechRoad, High-Tech Industrial Park, Shenzhen, Guangdong, P.R.C.

EUT Information

EUT Name:	Smart Mini Payment Terminal
Model:	A77
Brand:	PAX
Sample Received Date:	Jan 17, 2022
Sample Status:	Normal
Sample ID:	4562698
Date of Tested:	January 26 ~ February 17, 2022

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 22 H	PASS
CFR 47 FCC PART 24 E	PASS
CFR 47 FCC PART 27	PASS
RSS-132, RSS-133, RSS-139	PASS

Prepared By:

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Project Engineer

Checked By:

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Approved By:

Stephen Guo
Laboratory Manager

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26-2015, 971168 D01 Power Meas License Digital Systems v03r01, 971168 D02 Misc Rev Approv License Devices v02r01, 412172 D01 v01r01 Determining ERP and EIRP, CFR 47 FCC Part 2, Part 22 H, Part 24 E, Part 27, RSS-132, RSS-133, RSS-139

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 40 GHz)	5.78 dB (1 GHz-18 GHz)
	5.23dB (18 GHz-26 GHz)
	5.64 dB (26 GHz-40 GHz)
Bandwidth	1.1 %
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.	

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Smart Mini Payment Terminal
Model	A77
Rated Input	DC 5 V, 2 A
Battery	3.8 Vdc, 5150 mAh

Item	Accessory	Brand Name	Model Name	Description
1	Type-C Cable	N/A	N/A	Length: 1.0 m No Ferrite Core shield

5.2. TEST CHANNEL CONFIGURATION

Band	Mode	Low	Middle	High
WCDMA Band 2	HSDPA/HSUPA	9262	9400	9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
WCDMA Band 4	HSDPA/HSUPA	1312	1413	1513
		1712.4 MHz	1732.6 MHz	1752.6 MHz
WCDMA Band 5	HSDPA/HSUPA	4132	4182	4233
		826.4 MHz	836.4 MHz	846.6 MHz

5.3. MAXIMUM AVERAGE OUTPUT POWER

WCDMA Band2

Part 24/RSS-133						
EIRP Limit(W)	2					
Antenna Gain (dBi)	1.69					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	9262	1852.4	23.06	0.30	4.132	4M13F9W
HSDPA	9262	1852.4	22.07	0.24	4.142	4M14F9W
HSUPA	9262	1852.4	21.92	0.23	4.132	4M13F9W

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WCDMA Band4

Part 27/RSS-139						
EIRP Limit(W)	1					
Antenna Gain (dBi)	0.75					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	1312	1712.4	23.19	0.25	4.128	4M13F9W
HSDPA	1312	1712.4	22.20	0.20	4.135	4M14F9W
HSUPA	1312	1712.4	22.10	0.19	4.131	4M13F9W

WCDMA Band5

Part 22						
ERP Limit(W)	7.0					
Antenna Gain (dBi)	0.82					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	ERP (W)	99% OBW (MHz)	Emission Designator
Rel99	4233	846.6	23.92	0.18	4.121	4M12F9W
HSDPA	4233	846.6	22.94	0.15	4.141	4M14F9W
HSUPA	4233	846.6	22.80	0.14	4.160	4M16F9W

RSS-132						
EIRP Limit(W)	11.5					
Antenna Gain (dBi)	0.82					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	4233	846.6	23.92	0.30	4.121	4M12F9W
HSDPA	4233	846.6	22.94	0.24	4.141	4M14F9W
HSUPA	4233	846.6	22.80	0.23	4.160	4M16F9W

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5.4. WORST-CASE CONFIGURATION AND MODE

The radiated spurious emissions measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that X orientation was the worst-case orientation.

Radiated spurious emissions were investigated below 30 MHz, 30 MHz - 1 GHz and above 1 GHz. There were no emissions found on below 1GHz and above 18 GHz, the emissions between 1 GHz – 18 GHz were tested the highest transmitting power channel and the worse configuration.

For WCDMA, HSDPA worst results are shown in test report.

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5.5. DESCRIPTION OF AVAILABLE ANTENNAS

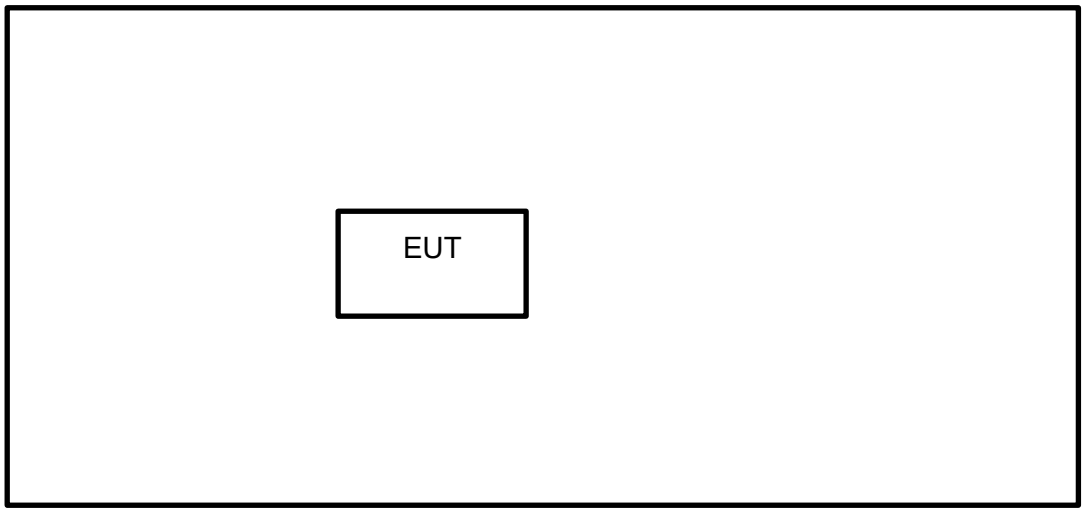
Antenna	Band	Antenna Type	MAX Antenna Gain (dBi)
1	WCDMA Band 2	PIFA	1.69
1	WCDMA Band 4	PIFA	0.75
1	WCDMA Band 5	PIFA	0.82

Band	Transmit and Receive Mode	Description
WCDMA Band 2	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 4	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 5	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

Note: The value of the antenna gain was declared by customer.

5.6. DESCRIPTION OF TEST SETUP

SETUP DIAGRAM FOR TESTS



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6. MEASURING INSTRUMENT AND SOFTWARE USED

Antenna Terminal Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	R&S	FSW40	S421035420	Oct.30, 2021	Oct.29, 2022
☑	Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.30, 2021	Oct.29, 2022
☑	DC Power Supply	Array	3662A	A1512015	Oct.30, 2021	Oct.29, 2022
Software						
Used	Description		Manufacturer	Name		Version
☑	Tonsend Cellular Test System		Tonsend	JS1120 RF Auto Test System		2.6.9.0826
Radiated Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.30, 2021	Oct.29, 2022
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug.02, 2021	Aug.01, 2024
☑	Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022
☑	EMI Measurement Receiver	R&S	ESR26	101377	Oct.30, 2021	Oct.29, 2022
☑	Horn Antenna	TDK	HRN-0118	130939	July 20, 2021	July 19, 2024
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	July 20, 2021	July 19, 2024
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Oct.31, 2021	Oct.30, 2022
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.31, 2021	Oct.30, 2022
☑	Loop antenna	Schwarzbeck	1519B	00008	Jan.17,2022	Jan.17,2025
☑	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.31, 2021	Oct.30, 2022
Software						
Used	Description		Manufacturer	Name		Version
☑	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1

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7. ANTENNA TERMINAL TEST RESULTS

7.1. EFFECTIVE (ISOTROPIC) RADIATED POWER OF TRANSMITTER

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50
RSS-132, RSS-133, RSS-139

LIMITS

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.
27.50(c) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
27.50(d) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watts EIRP.
27.50(h) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

RSS-132
The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-133
The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits 2W.
In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-139
The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt.
In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

TEST PROCEDURE

Refer to ANSI C63.26:2015 and KDB 971168 D01 Section 5.6
ERP/ EIRP = PMeas + GT − LC
where:

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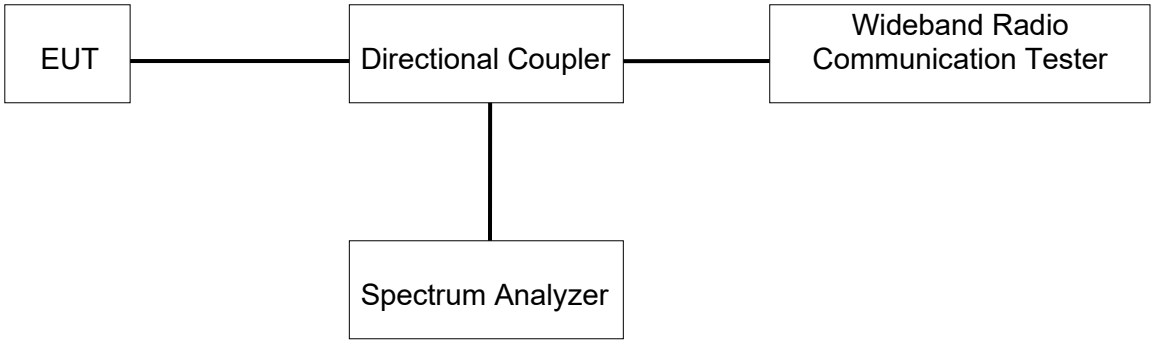
ERP or EIRP = effective or equivalent isotropically radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);
PMeas = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB

The transmitter has a maximum radiated ERP / EIRP output powers as follows:

TEST SETUP



TEST ENVIRONMENT

Temperature	22.1°C	Relative Humidity	54.6%
Atmosphere Pressure	101kPa	Test Voltage	

RESULTS

WCDMA Band2

UMTS 1900MHz (Band II)		Average Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	Rel 99 RMC 12.2kbps	**23.06**	22.93	23.05
HSDPA	Subtest 1	**22.07**	21.91	21.87
	Subtest 2	21.53	21.48	21.48
	Subtest 3	21.55	21.48	21.40
	Subtest 4	21.46	21.28	21.43
HSUPA	Subtest 1	**21.92**	21.83	21.89
	Subtest 2	20.74	20.46	20.48
	Subtest 3	20.49	20.26	20.09
	Subtest 4	20.16	19.96	20.02
	Subtest 5	20.54	20.29	19.67

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WCDMA Band4

UMTS 1700MHz (Band IV)		Average Power (dBm)		
		1312CH	1413CH	1513CH
WCDMA	Rel 99 RMC 12.2kbps	**23.19**	22.88	22.90
HSDPA	Subtest 1	**22.20**	21.92	21.97
	Subtest 2	21.90	21.53	21.65
	Subtest 3	21.67	21.42	21.55
	Subtest 4	21.70	21.48	21.56
HSUPA	Subtest 1	**22.10**	21.75	21.84
	Subtest 2	21.96	21.73	21.82
	Subtest 3	20.54	20.15	20.17
	Subtest 4	20.25	19.93	20.01
	Subtest 5	20.77	20.97	20.56

WCDMA Band5

UMTS 850MHz (Band V)		Average Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	Rel 99 RMC 12.2kbps	23.77	23.90	**23.92**
HSDPA	Subtest 1	22.52	22.92	**22.94**
	Subtest 2	22.44	22.47	22.48
	Subtest 3	22.30	22.43	22.45
	Subtest 4	22.30	22.44	22.46
HSUPA	Subtest 1	22.54	22.63	**22.80**
	Subtest 2	21.37	21.53	21.56
	Subtest 3	21.37	21.09	21.21
	Subtest 4	20.88	21.09	20.99
	Subtest 5	20.63	21.03	20.87

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7.2. PEAK TO AVERAGE RADIO

LIMITS

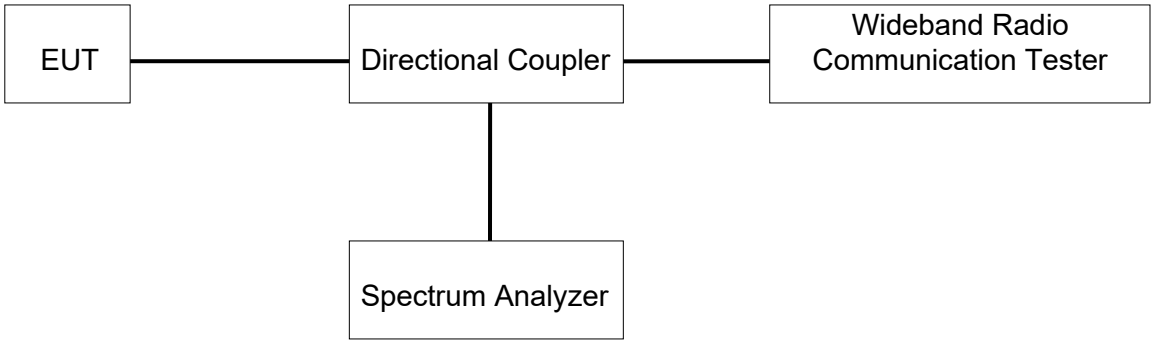
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The PAR was measured on the Spectrum Analyzer.

TEST SETUP



TEST ENVIRONMENT

Temperature	22.2°C	Relative Humidity	55.3%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

WCDMA

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	3.28	13	PASS
Band2	9400	3.5	13	PASS
Band2	9538	3.34	13	PASS
Band4	1312	3.32	13	PASS
Band4	1413	3.32	13	PASS
Band4	1513	3.34	13	PASS
Band5	4132	3.4	13	PASS
Band5	4182	3.62	13	PASS
Band5	4233	3.58	13	PASS

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HSDPA

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	3.86	13	PASS
Band2	9400	4.00	13	PASS
Band2	9538	3.96	13	PASS
Band4	1312	3.92	13	PASS
Band4	1413	3.90	13	PASS
Band4	1513	3.94	13	PASS
Band5	4132	3.90	13	PASS
Band5	4182	3.96	13	PASS
Band5	4233	3.94	13	PASS

HSUPA

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	4.34	13	PASS
Band2	9400	4.82	13	PASS
Band2	9538	4.66	13	PASS
Band4	1312	4.72	13	PASS
Band4	1413	4.70	13	PASS
Band4	1513	4.72	13	PASS
Band5	4132	4.62	13	PASS
Band5	4182	4.88	13	PASS
Band5	4233	4.46	13	PASS

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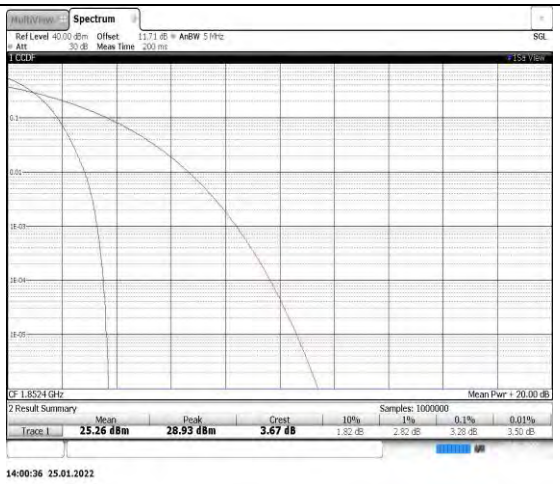
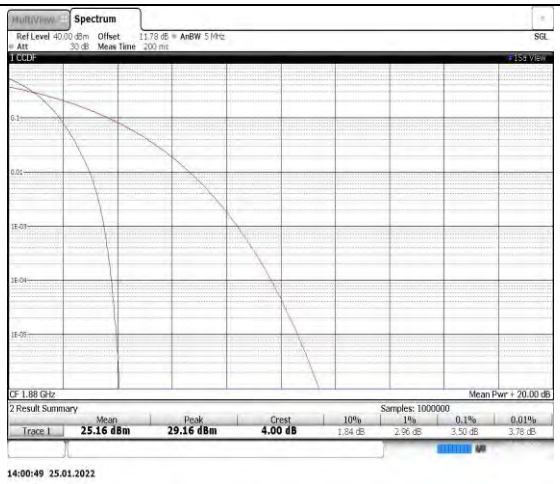
Test Graphs

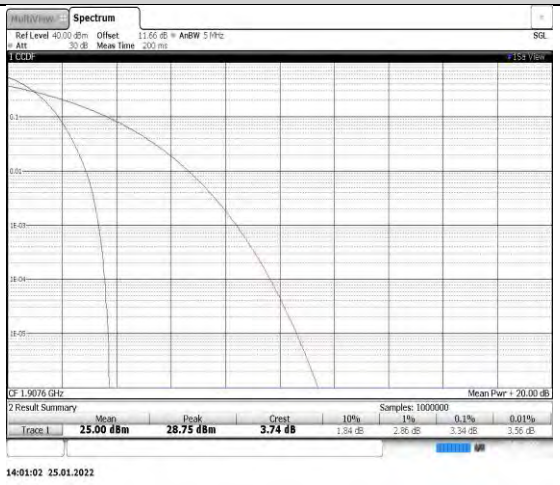
WCDMA



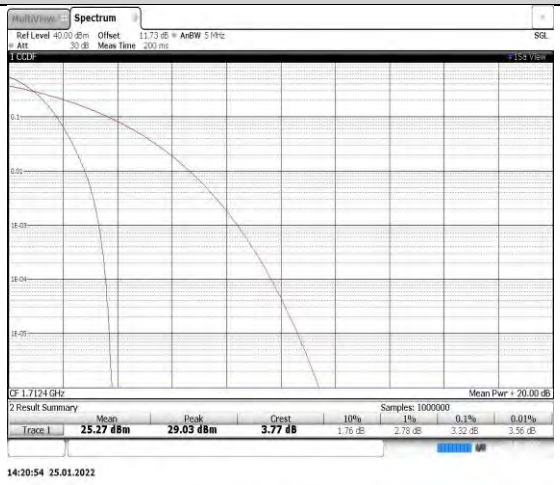
Band2-9262



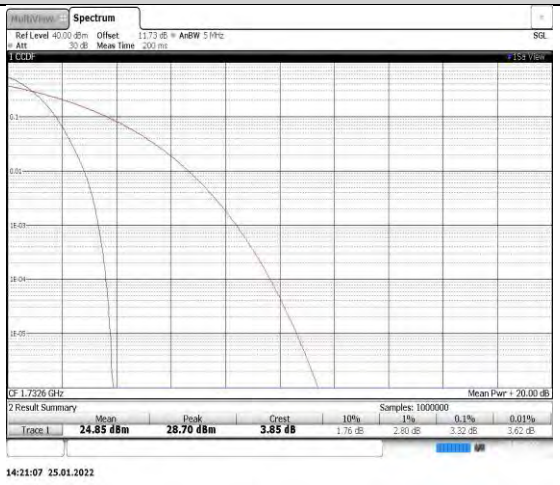
Band2-9400



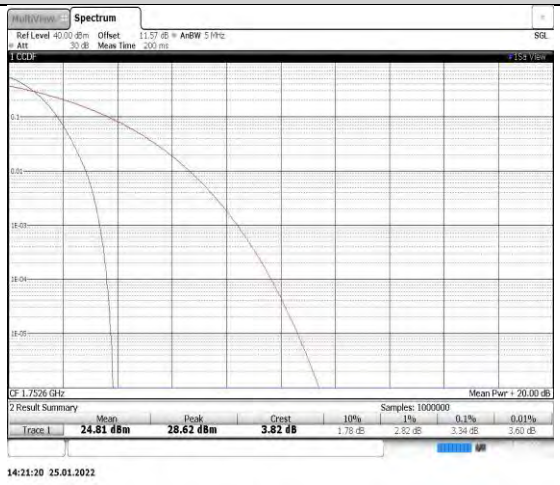
Band2-9538



Band4-1312



Band4-1413



Band4-1513

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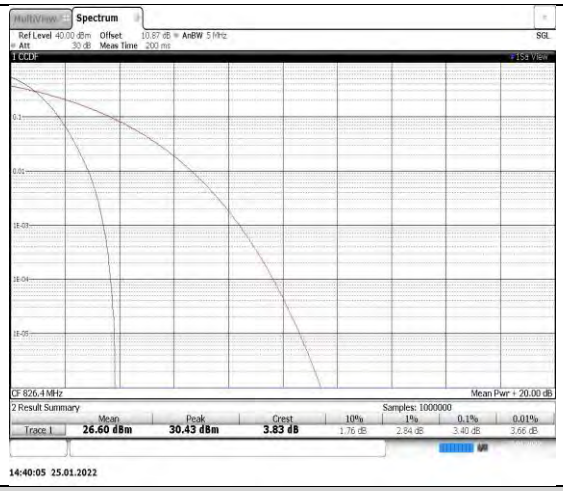
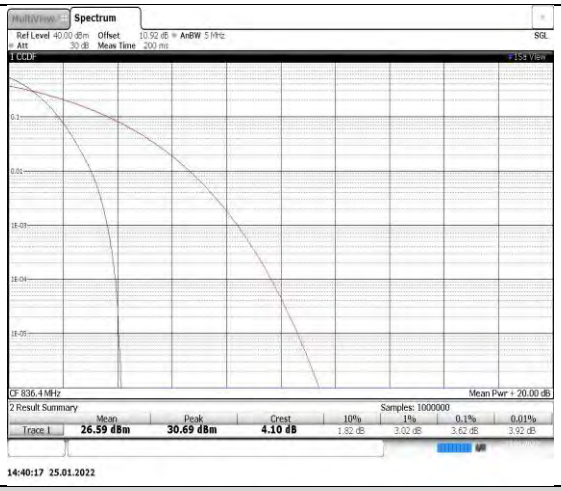
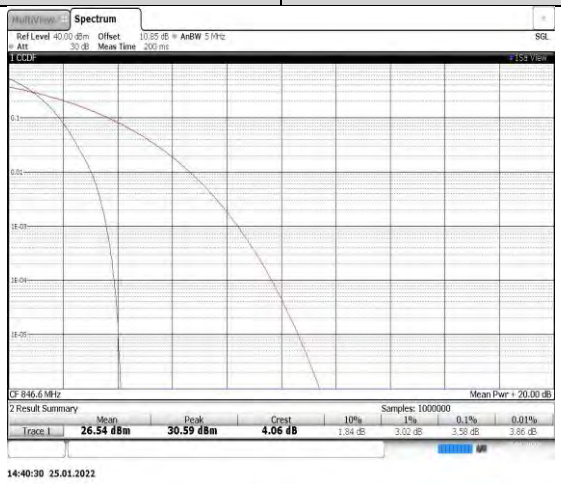


Band5-4132



Band5-4182



Band5-4233

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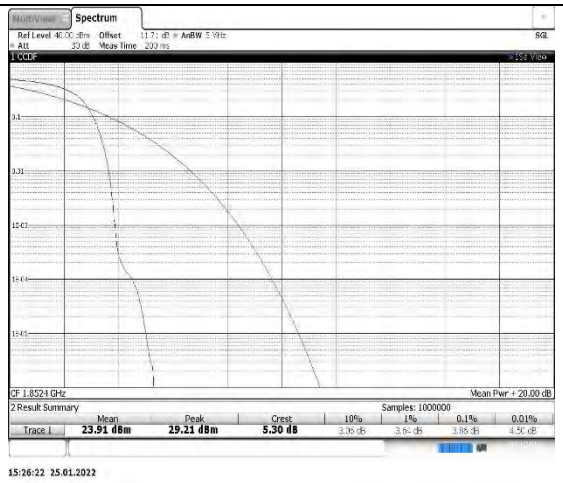
HSDPA



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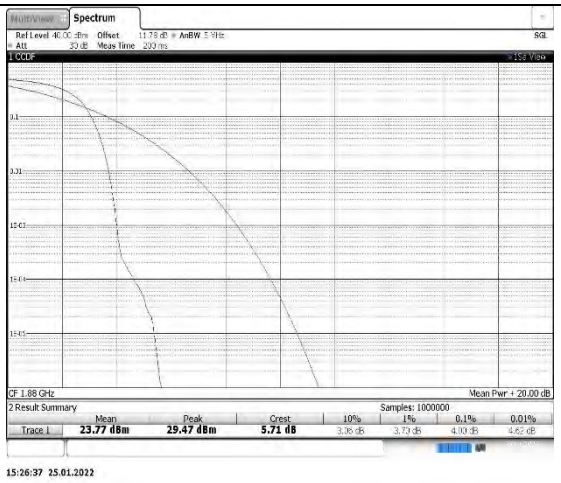
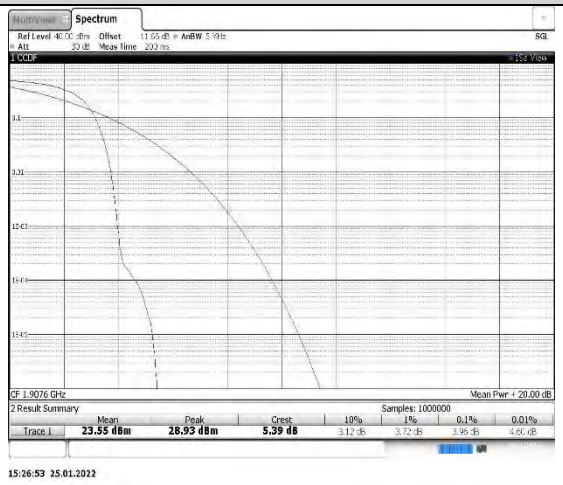
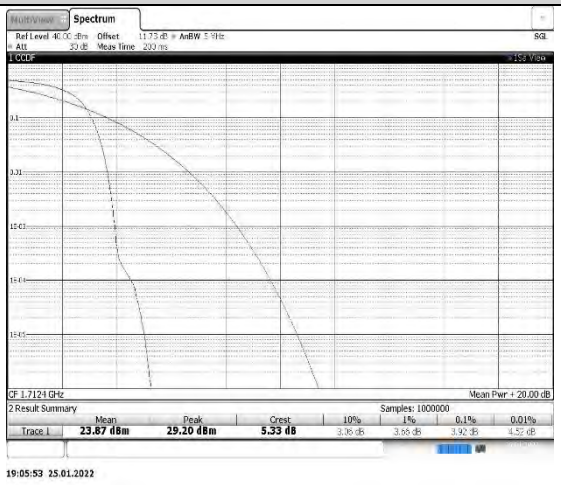


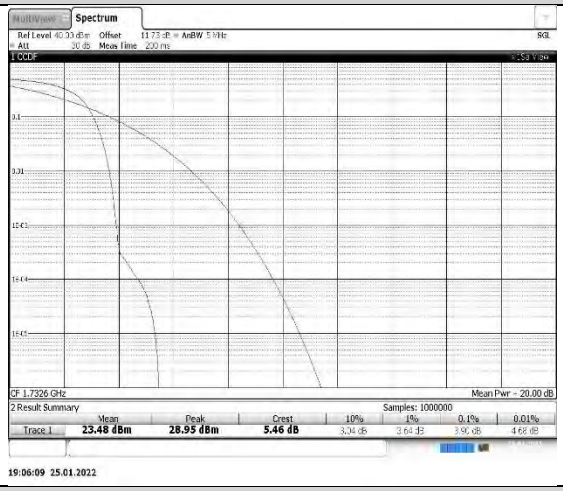
Band2-9400



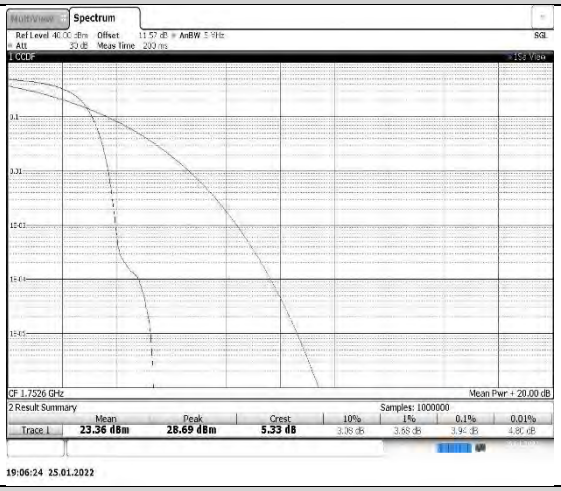
Band2-9538



Band4-1312



Band4-1413



Band4-1513

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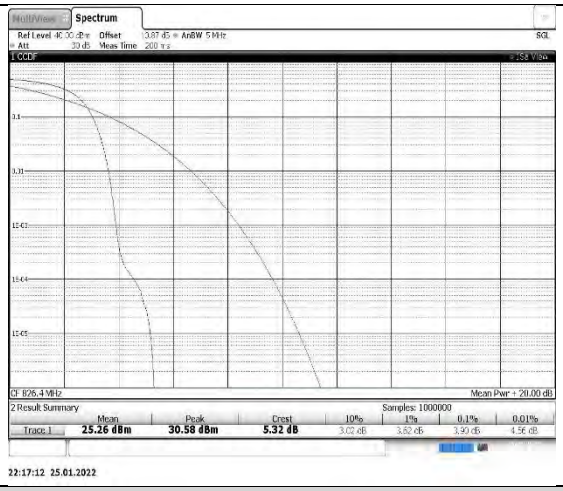

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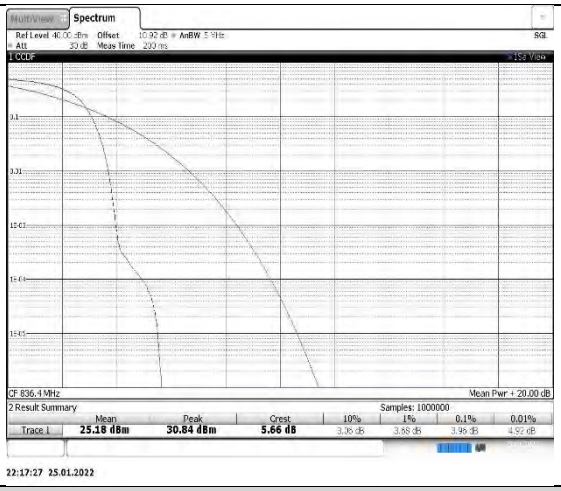

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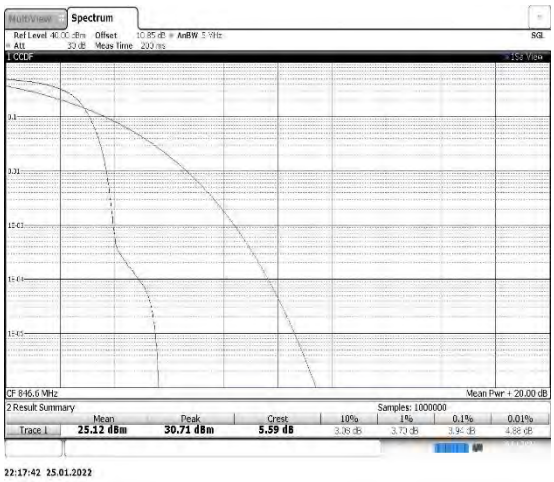

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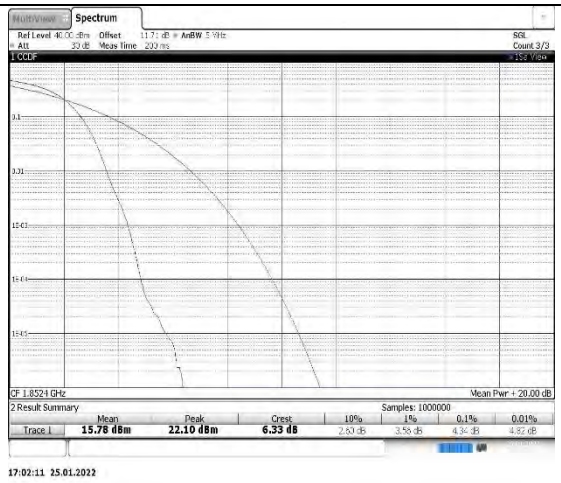
HSUPA



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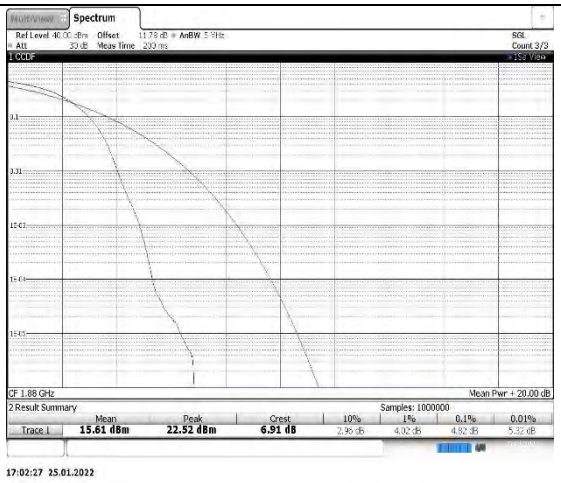
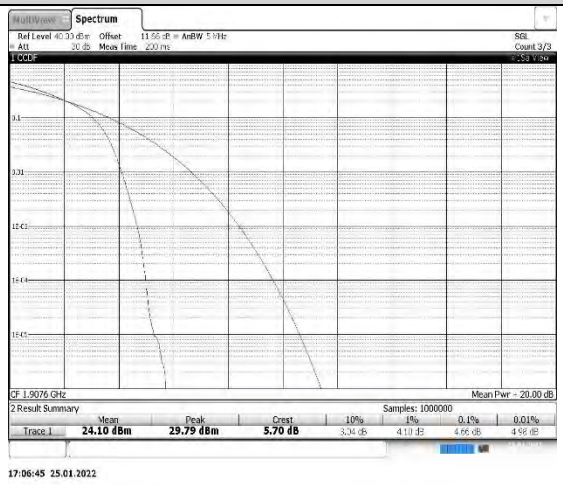
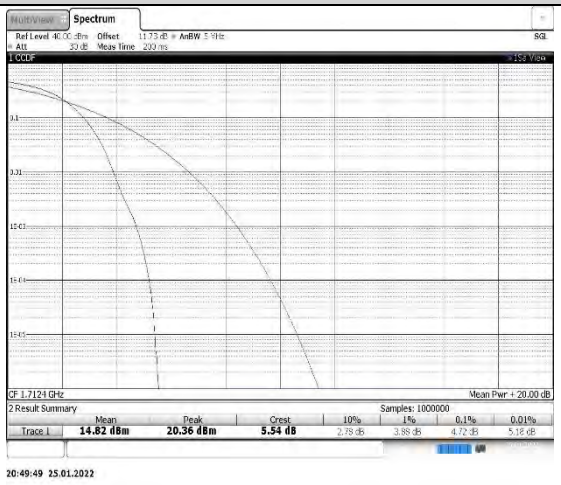


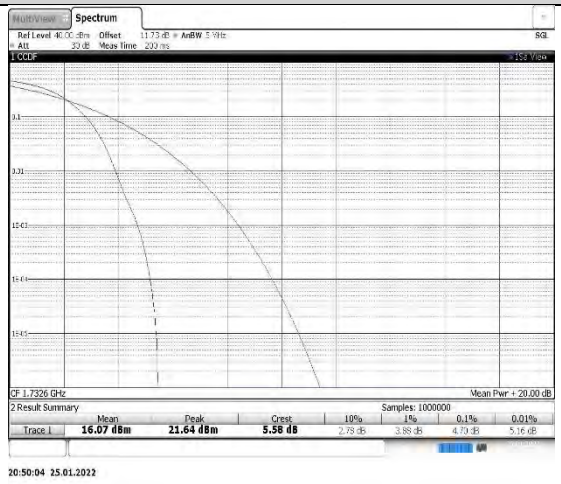
Band2-9400



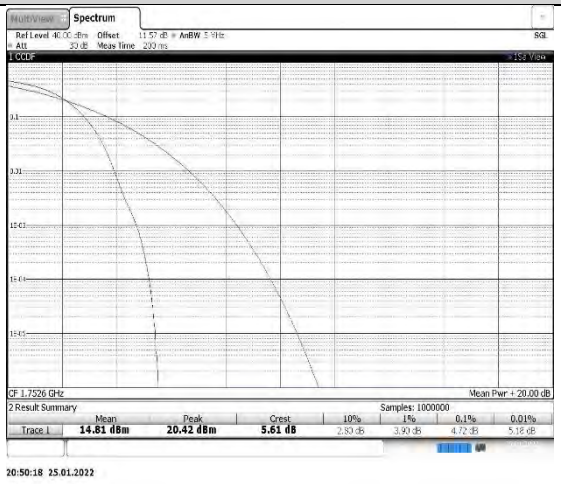
Band2-9538



Band4-1312



Band4-1413



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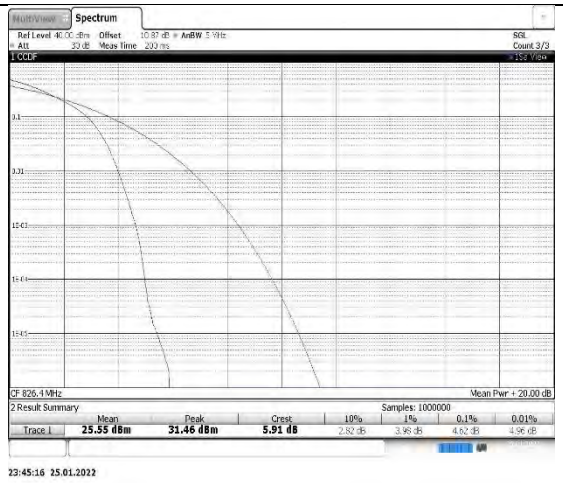
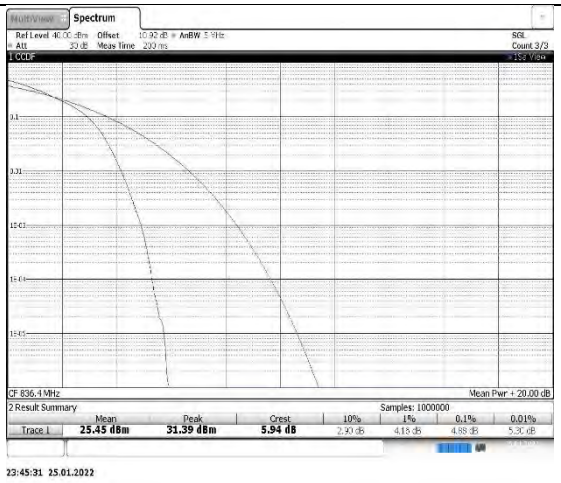
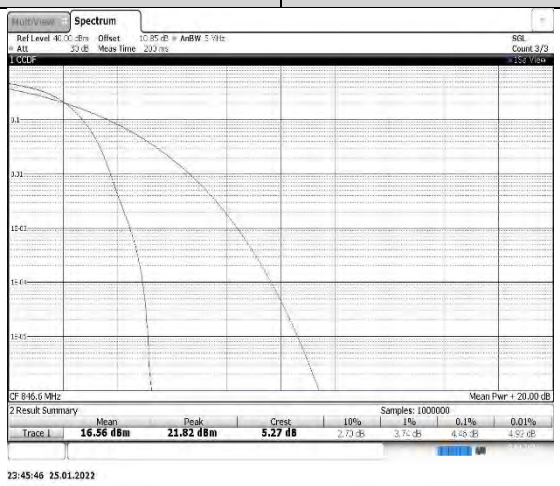


Band5-4132



Band5-4182



Band5-4233

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7.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049, RSS-132, RSS-133, RSS-139

LIMITS

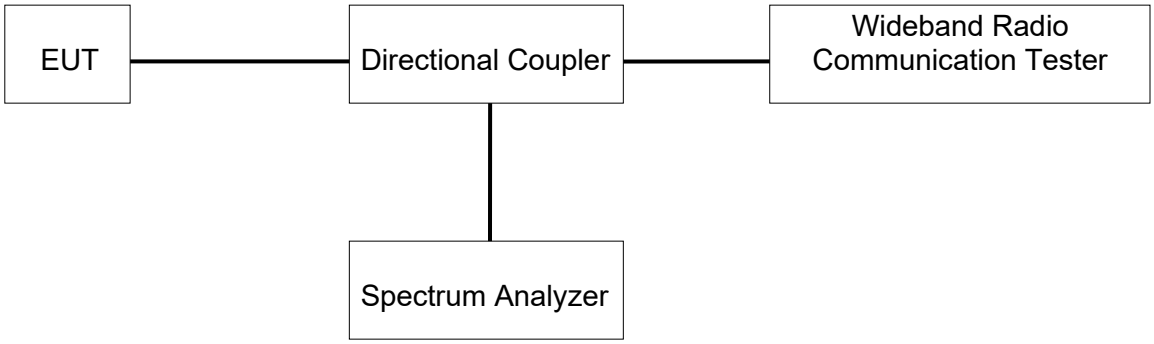
For reporting purposes only.

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01)

TEST SETUP



TEST ENVIRONMENT

Temperature	22.9°C	Relative Humidity	56.3%
Atmosphere Pressure	101kPa	Test Voltage	/

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RESULTS

WCDMA

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
Band2	9262	4.132	4.710	---	PASS
Band2	9400	4.132	4.700	---	PASS
Band2	9538	4.134	4.690	---	PASS
Band4	1312	4.128	4.720	---	PASS
Band4	1413	4.131	4.720	---	PASS
Band4	1513	4.126	4.720	---	PASS
Band5	4132	4.121	4.720	---	PASS
Band5	4182	4.126	4.710	---	PASS
Band5	4233	4.121	4.700	---	PASS

HSDPA

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
Band2	9262	4.142	4.720	---	PASS
Band2	9400	4.143	4.740	---	PASS
Band2	9538	4.153	4.750	---	PASS
Band4	1312	4.135	4.730	---	PASS
Band4	1413	4.130	4.730	---	PASS
Band4	1513	4.135	4.750	---	PASS
Band5	4132	4.120	4.720	---	PASS
Band5	4182	4.141	4.740	---	PASS
Band5	4233	4.141	4.730	---	PASS

HSUPA

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
Band2	9262	4.132	4.740	---	PASS
Band2	9400	4.135	4.730	---	PASS
Band2	9538	4.141	4.740	---	PASS
Band4	1312	4.131	4.710	---	PASS
Band4	1413	4.126	4.720	---	PASS
Band4	1513	4.136	4.750	---	PASS
Band5	4132	4.132	4.730	---	PASS
Band5	4182	4.135	4.740	---	PASS
Band5	4233	4.160	4.740	---	PASS

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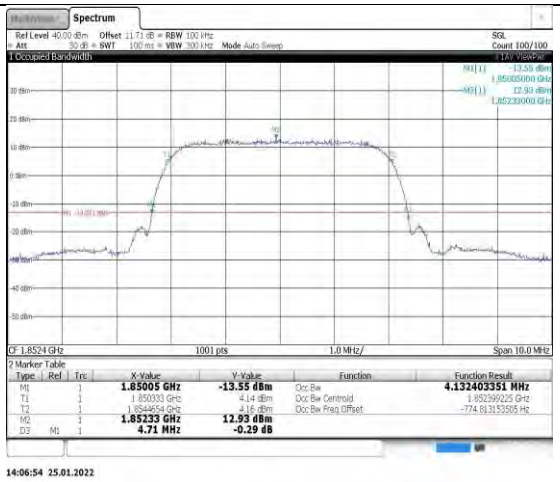
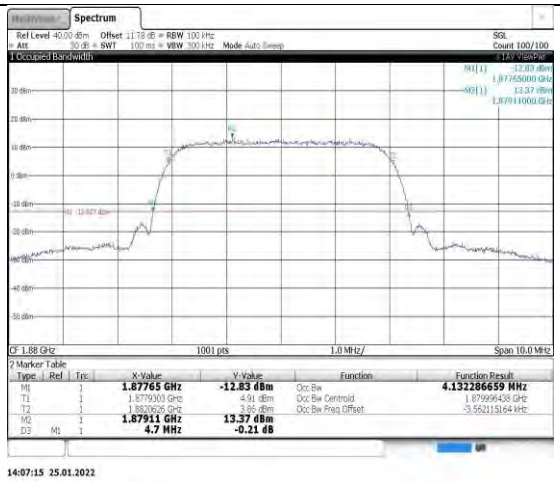
Test Graphs

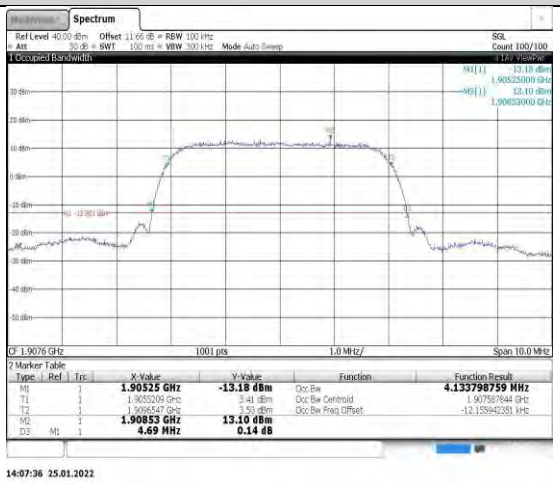
WCDMA



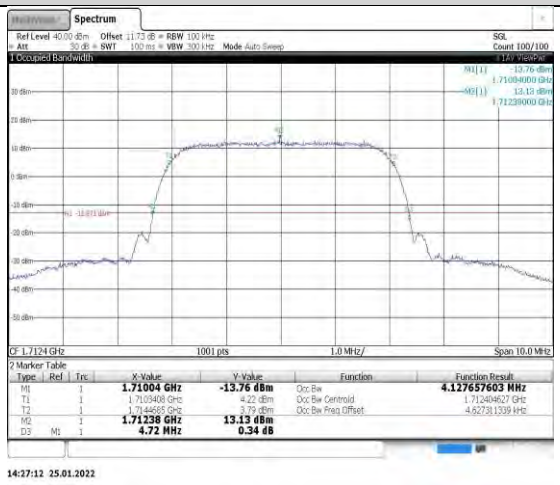
Band2-9262-4.710



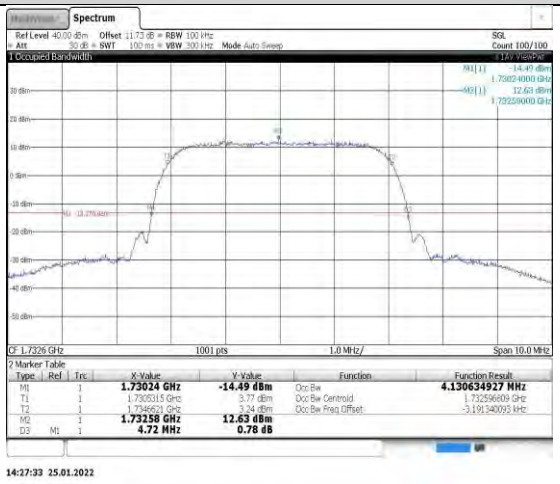
Band2-9400-4.700



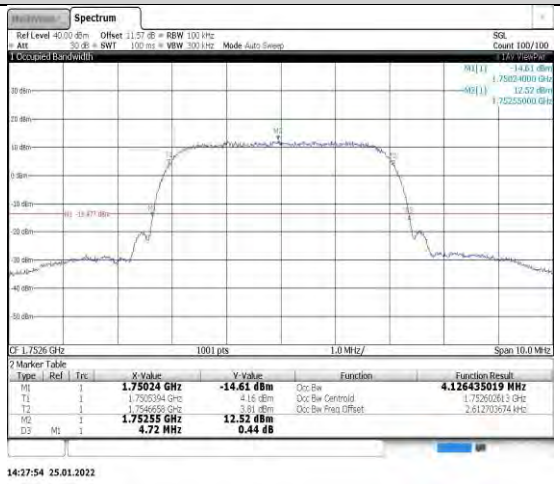
Band2-9538-4.690



Band4-1312-4.720



Band4-1413-4.720



Band4-1513-4.720

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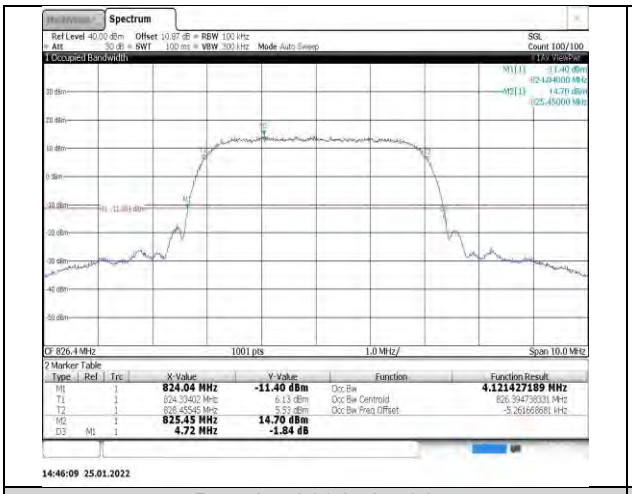
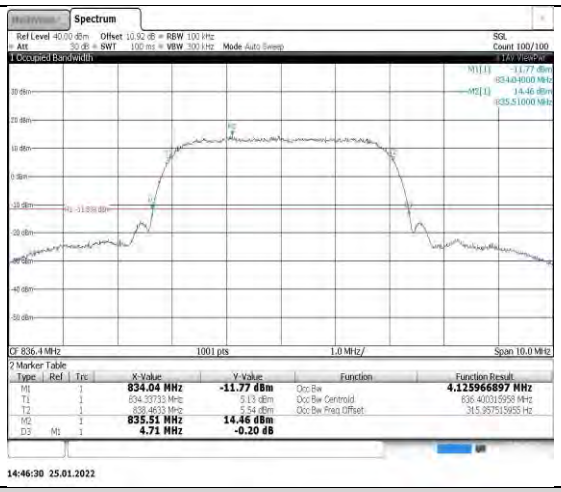
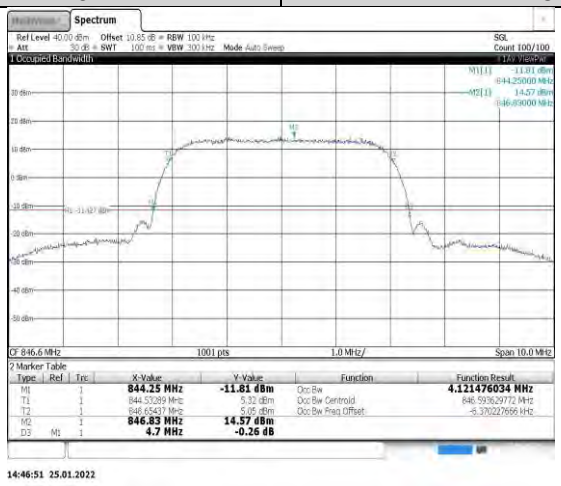


Band5-4132-4.720



Band5-4182-4.710



Band5-4233-4.700

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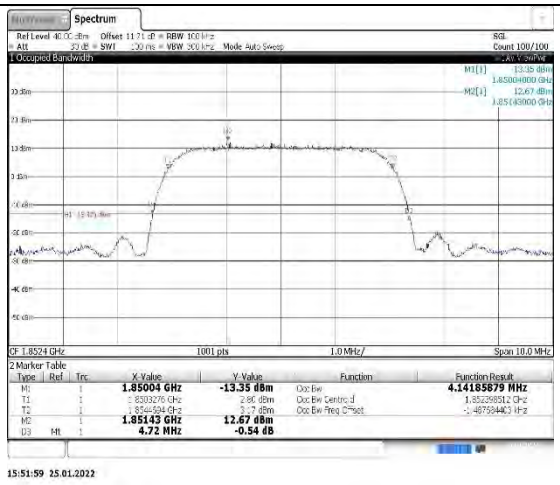
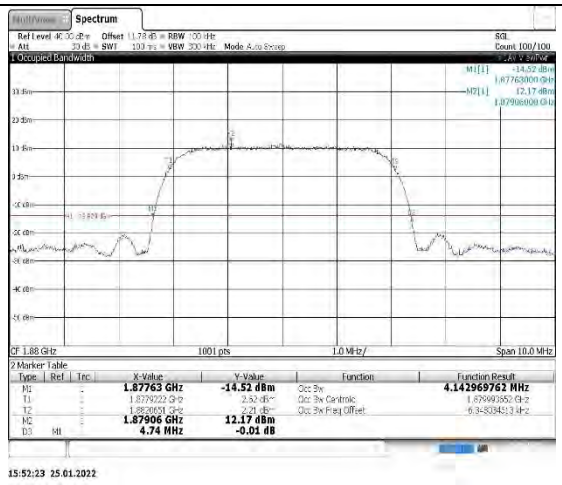
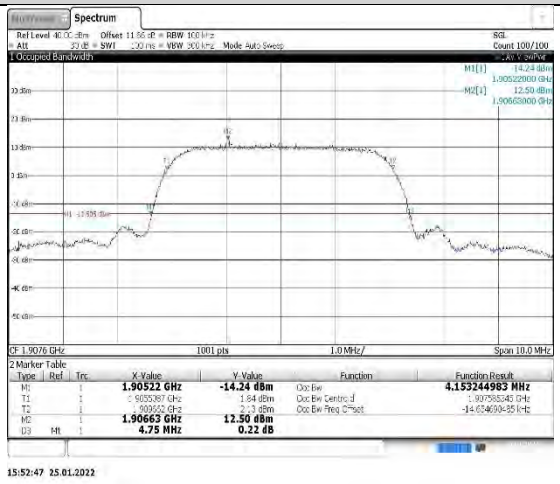
HSDPA



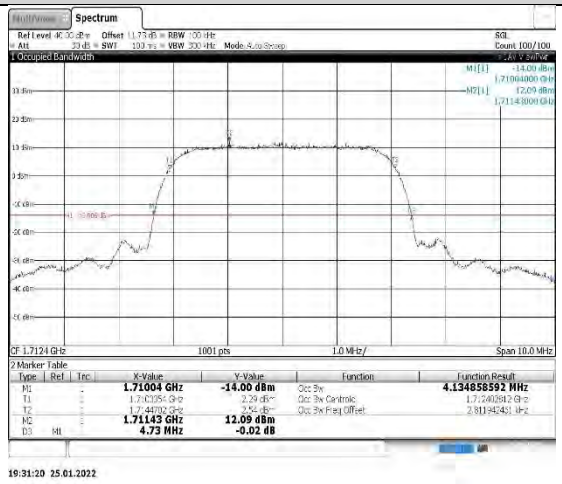
Band2-9262



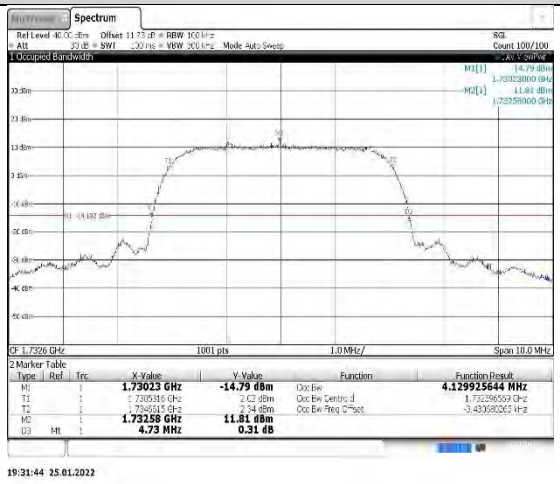
Band2-9400



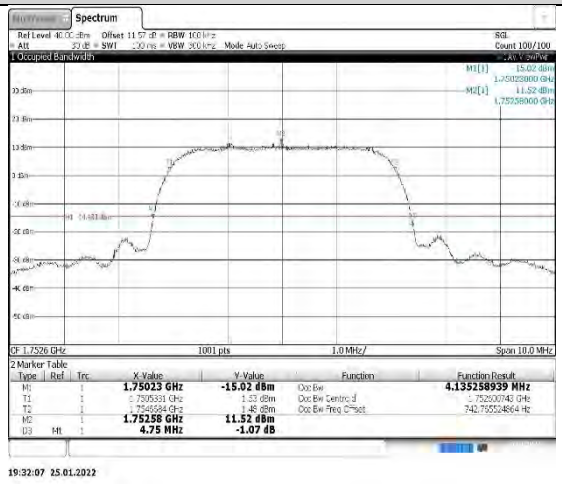
Band2-9538



Band4-1312



Band4-1413



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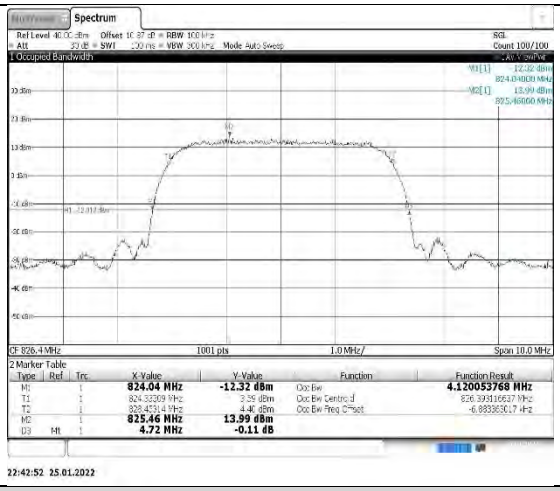
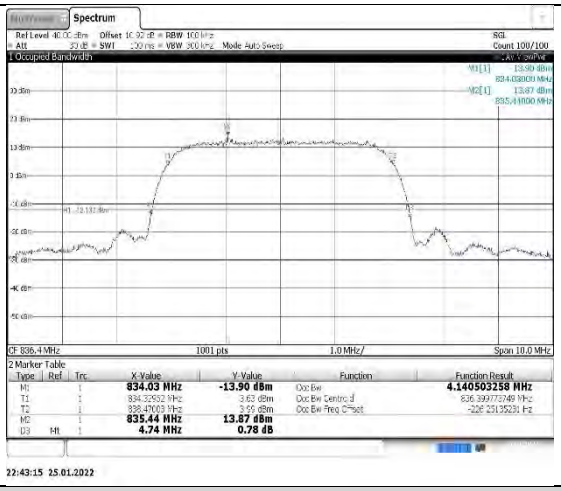


Band5-4132



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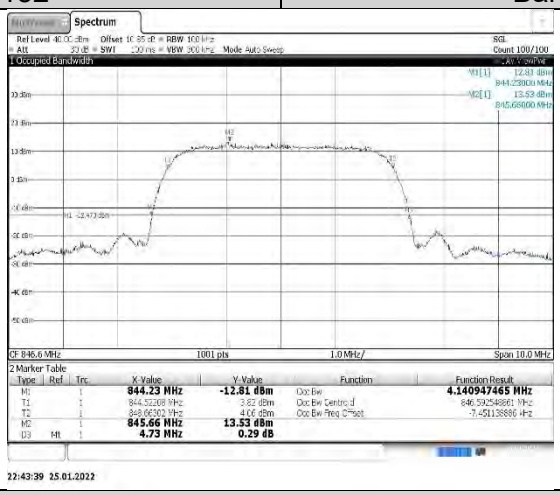

Band5-4233

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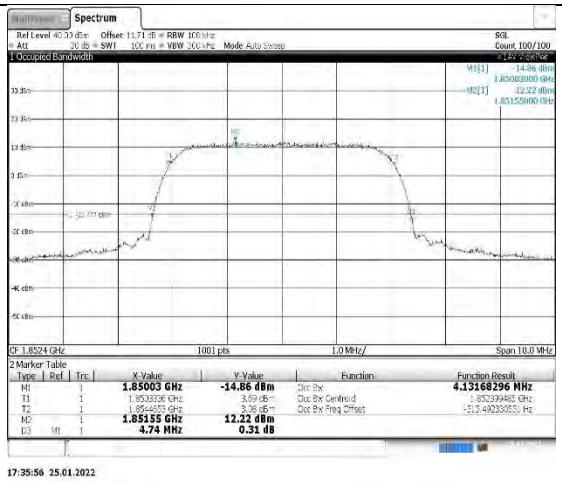
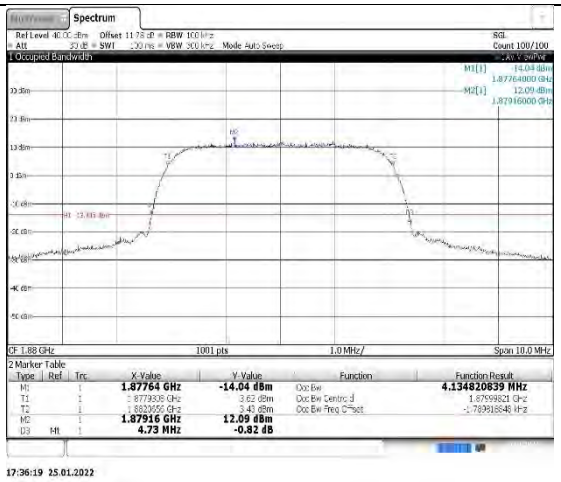
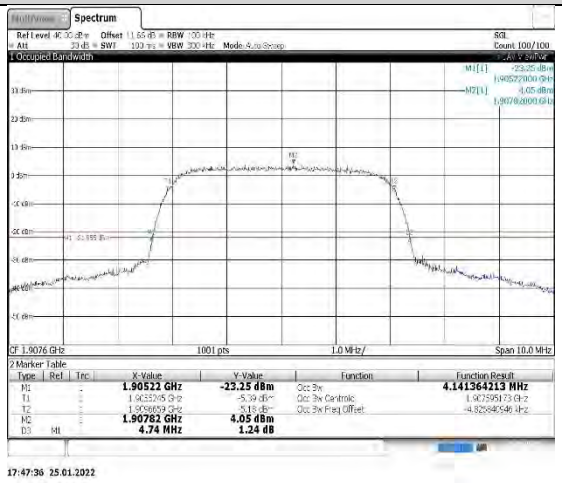
HSUPA



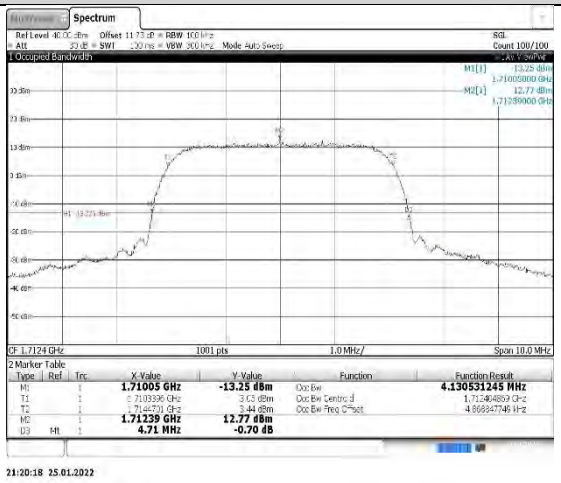
Band2-9262



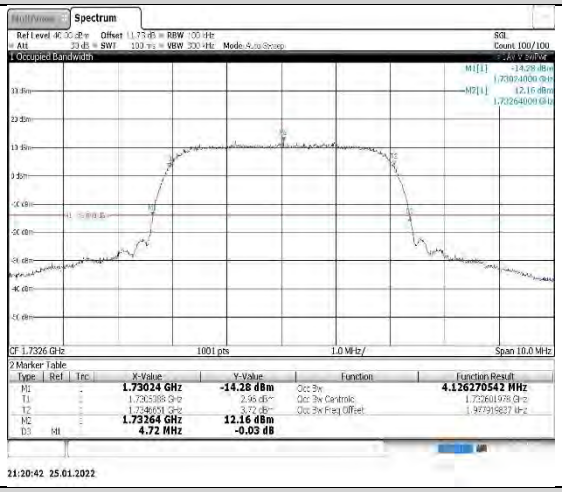
Band2-9400



Band2-9538



Band4-1312



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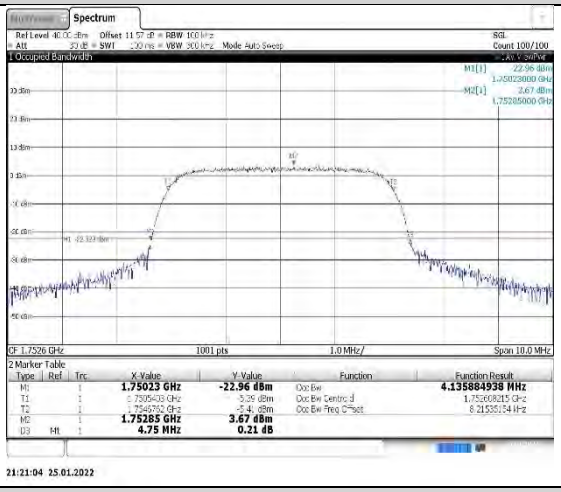

Band4-1513

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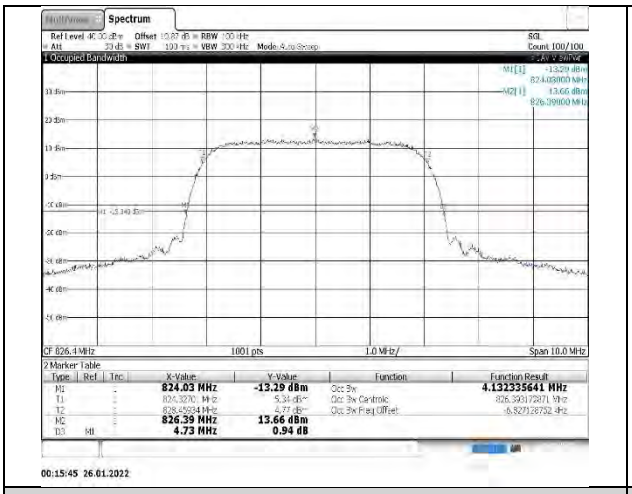
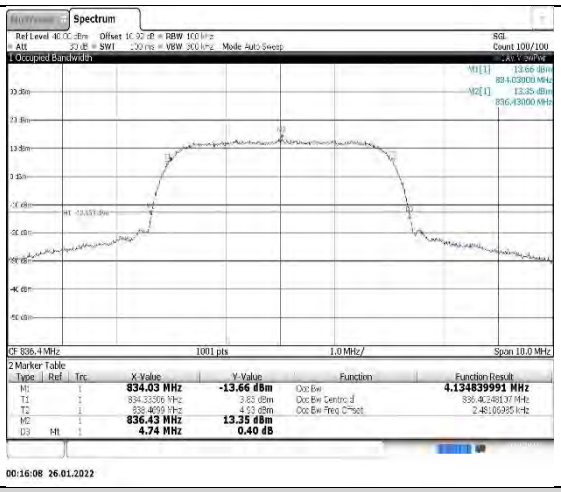
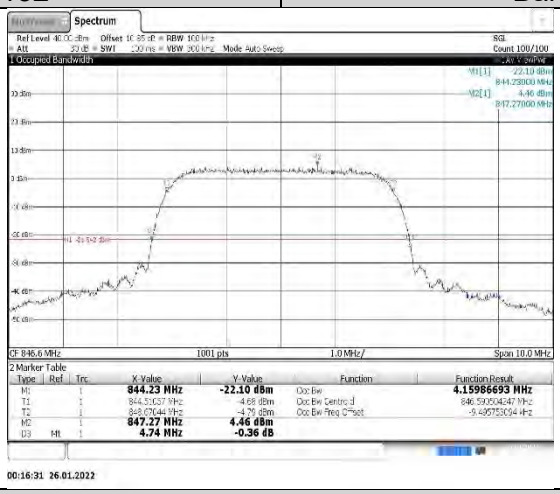


Band5-4132



Band5-4182



Band5-4233

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7.4. BAND EDGE EMISSIONS

RULE PART(S)

FCC §2.1051, §22.917, §24.238, §27.53
RSS-132, RSS-133,RSS-139

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01
The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

a) Set the RBW = 1 ~ 1.5 % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 1.5 times the OBW;
d) Sweep time = Auto;
e) Detector = RMS;
f) Ensure that the number of measurement points ≥ 2*Span/RBW;
g) Trace mode = Average (100);

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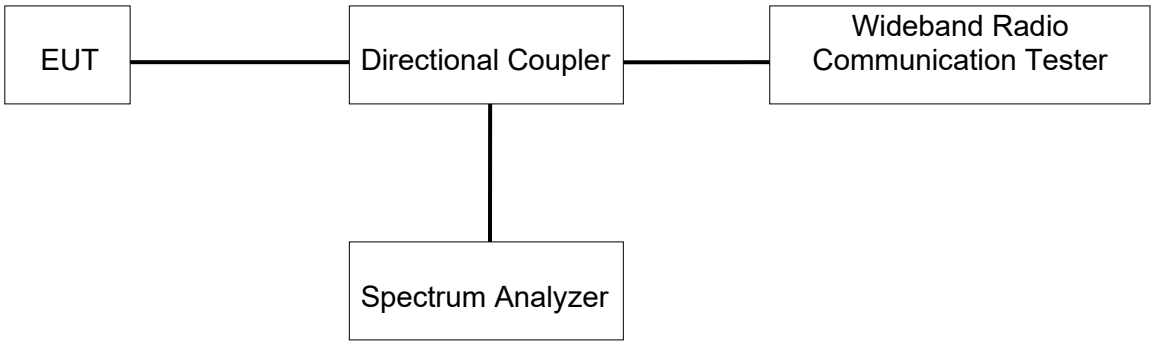
TEST SETUP



TEST ENVIRONMENT

Temperature	22.4°C	Relative Humidity	58.3%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

WCDMA

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849.85	-20.19	-13	PASS
Band2	9538	1910.14	-19.81	-13	PASS
Band4	1312	1709.85	-21.55	-13	PASS
Band4	1513	1755.13	-21.36	-13	PASS
Band5	4132	823.85	-19.69	-13	PASS
Band5	4233	849.19	-16.93	-13	PASS

HSDPA

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849.99	-22.95	-13	PASS
Band2	9538	1910.00	-19.41	-13	PASS
Band4	1312	1709.86	-23.68	-13	PASS
Band4	1513	1755.14	-23.25	-13	PASS
Band5	4132	824.00	-22.52	-13	PASS
Band5	4233	849.48	-20.03	-13	PASS

HSUPA

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1850.00	-23.35	-13	PASS
Band2	9538	1910.01	-30.37	-13	PASS
Band4	1312	1709.85	-24.38	-13	PASS
Band4	1513	1755.18	-29.14	-13	PASS
Band5	4132	824.00	-22.17	-13	PASS
Band5	4233	849.00	-31.60	-13	PASS

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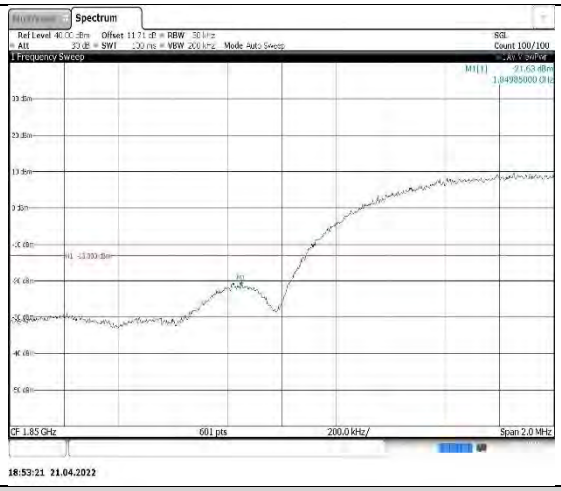
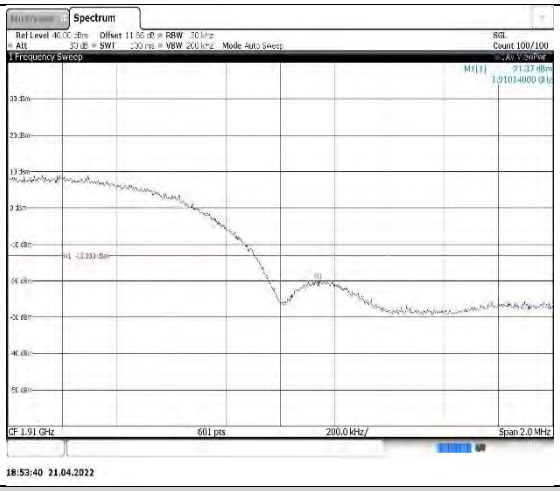
Test Graphs

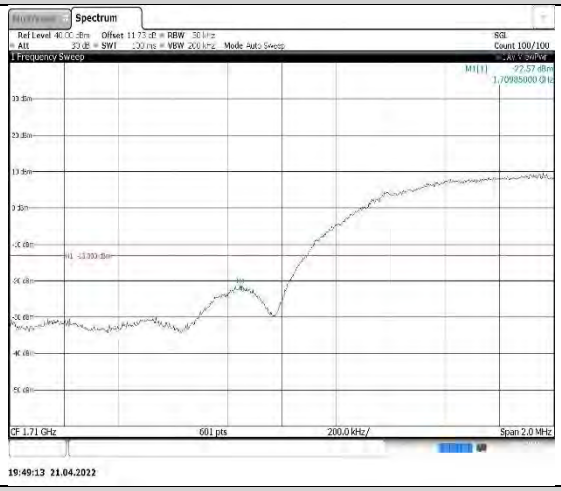
WCDMA



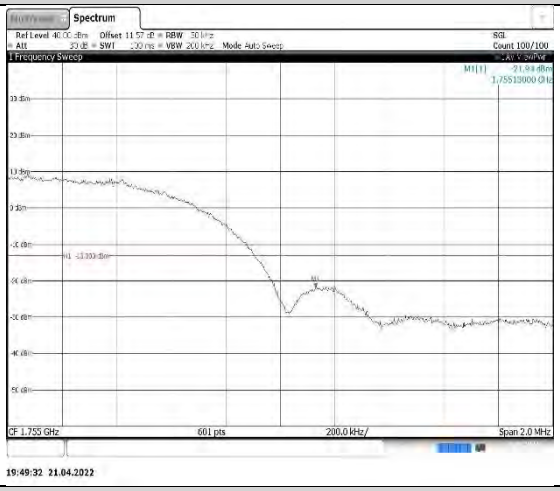
Band2-9262



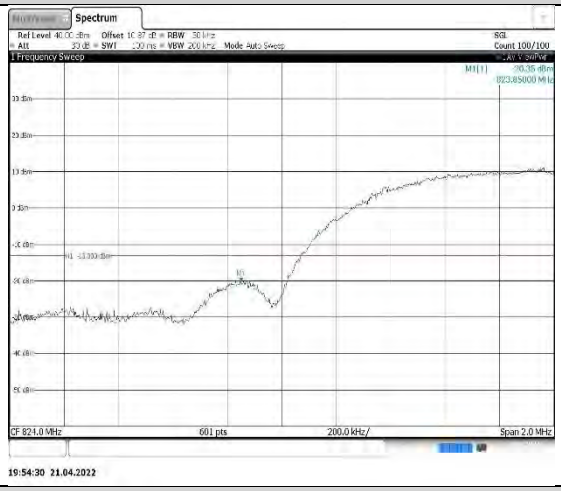
Band2-9538



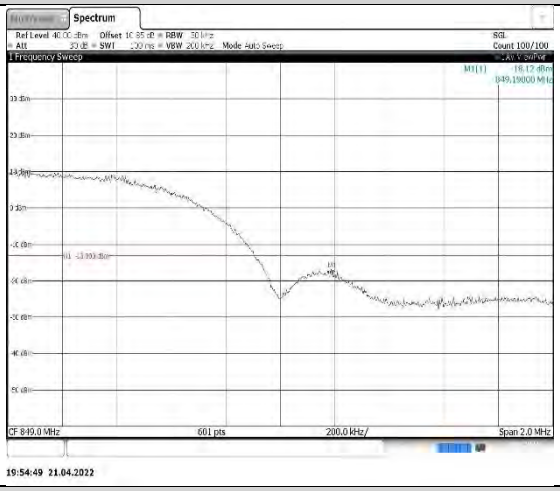
Band4-1312



Band4-1513



Band5-4132



Band5-4233

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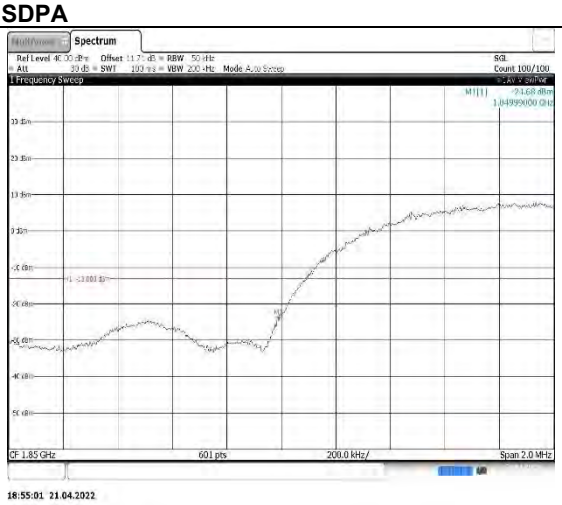
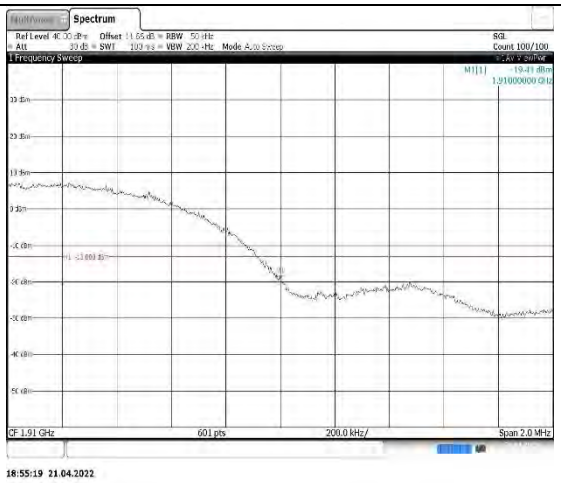
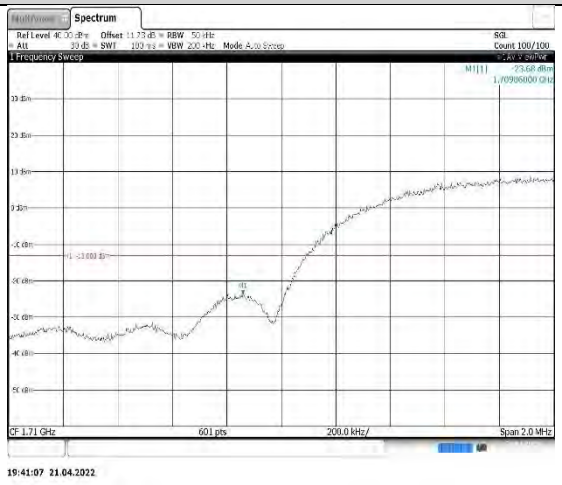
HSDPA



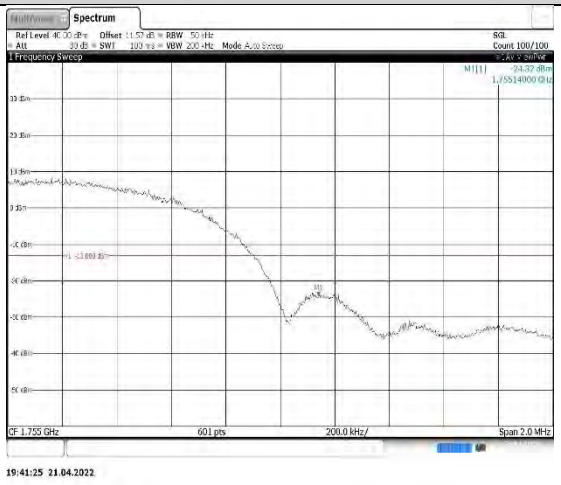
Band2-9262



Band2-9538

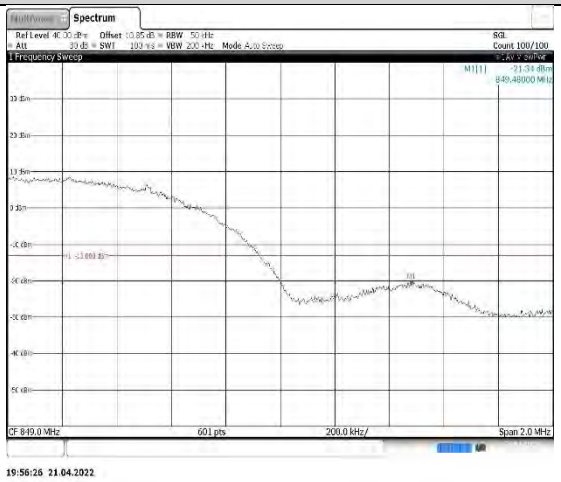


Band4-1312



Band4-1513

Band5-4132



Band5-4233

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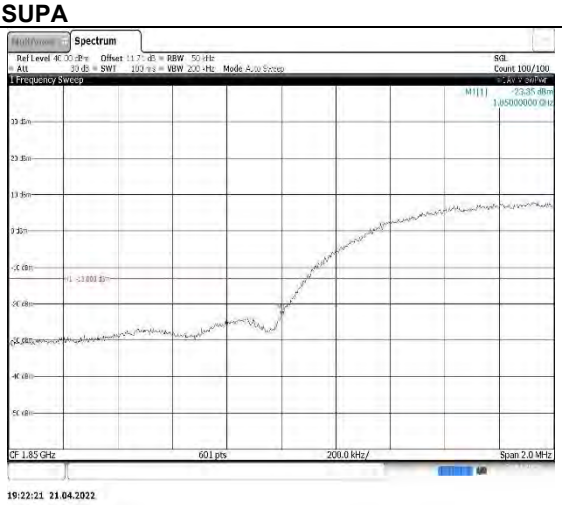
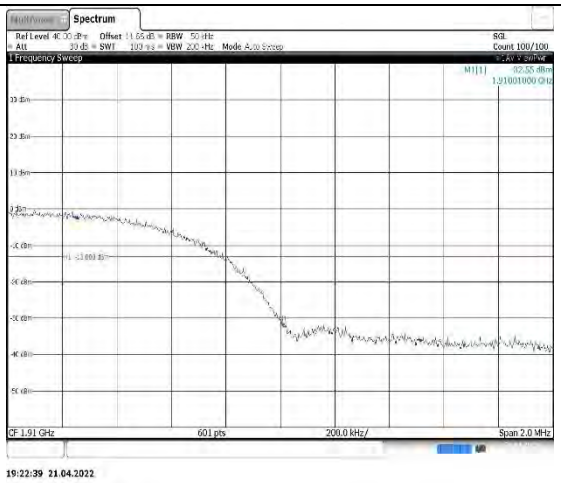
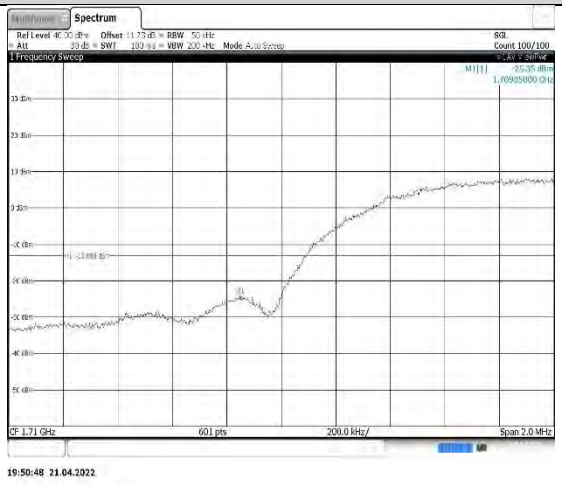
HSUPA



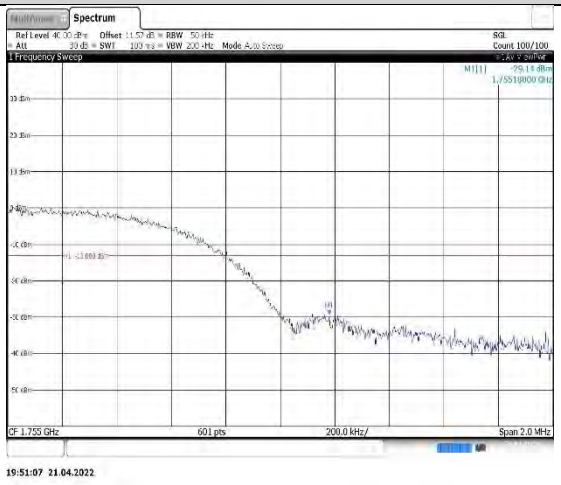
Band2-9262



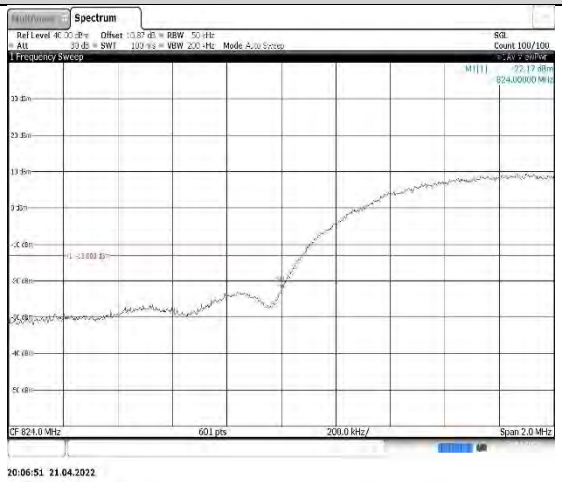
Band2-9538



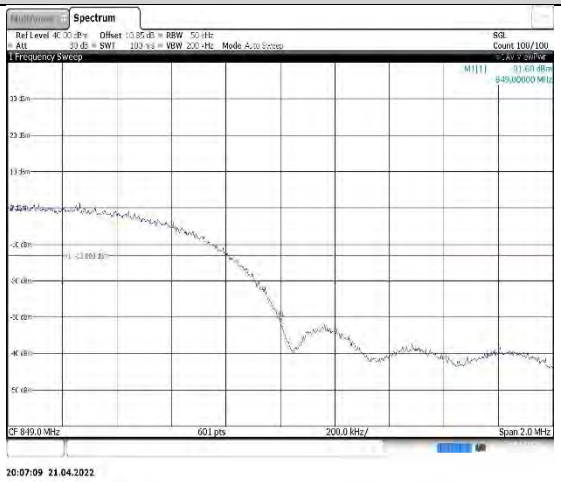
Band4-1312



Band4-1513



Band5-4132



Band5-4233

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7.5. SPURIOUS EMISSION AT ANTENNA TERMINAL

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, §90,
RSS-132, RSS-133,RSS-139

LIMITS

FCC: §22.901, §22.917, §24.238
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

RSS-132 section 5.5
Mobile and base station equipment shall comply with the limits in (i) and (ii) below.
(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).
(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS-133 section 6.5.1
Equipment shall comply with the limits in (i) and (ii) below.
(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts).
(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-139 section 6.6
(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.
(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

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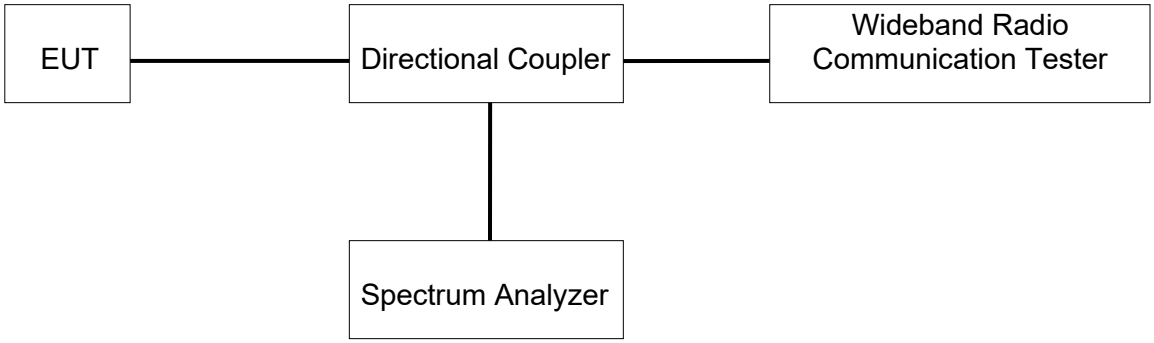
TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

a) Set the RBW = 100 kHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1 MHz [Worst case], to sweep 1 time for all frequency range)
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 1.5 times the OBW;
d) Sweep time = auto couple;
e) Detector = rms;
f) Ensure that the number of measurement points = Max (40001);
g) Trace mode = average (LTE 5), Maxhold (LTE Band7);

Note: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

TEST SETUP



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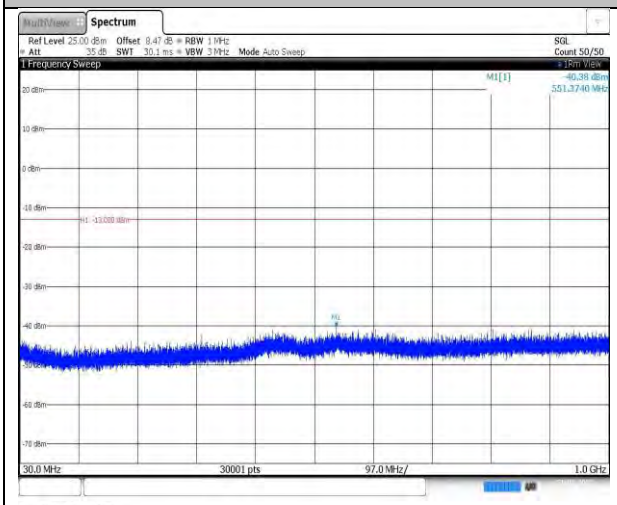
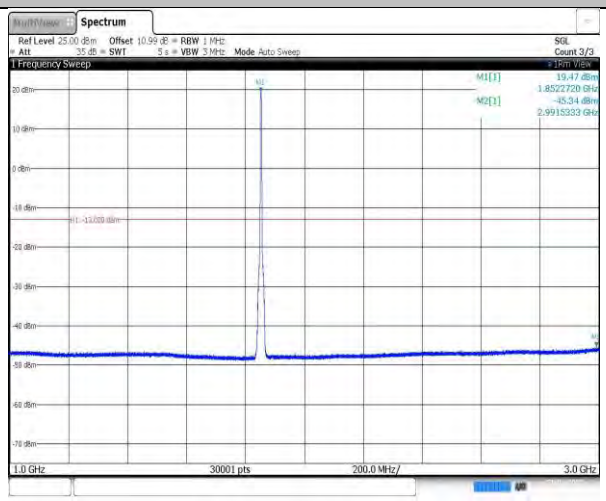
TEST ENVIRONMENT

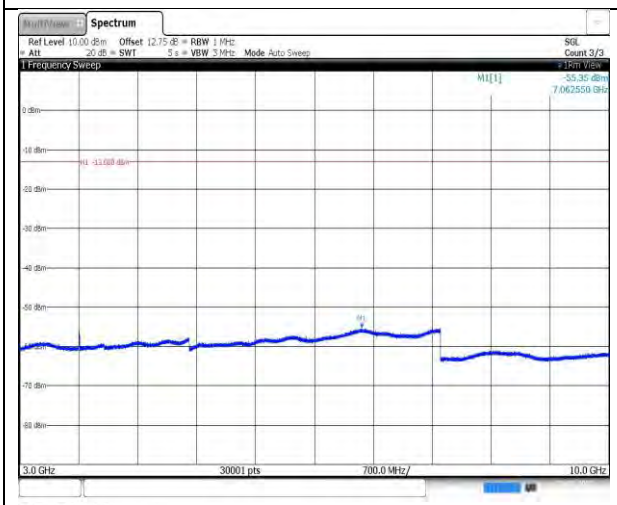
Temperature	22.4°C	Relative Humidity	56.8%
Atmosphere Pressure	101kPa	Test Voltage	/

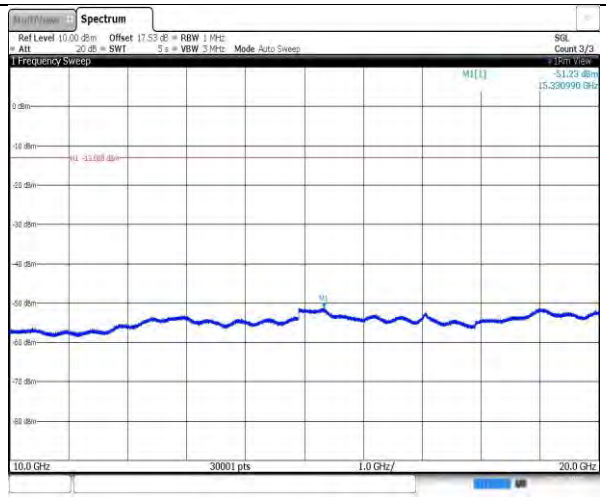
RESULTS

Band2-9262-Low channel









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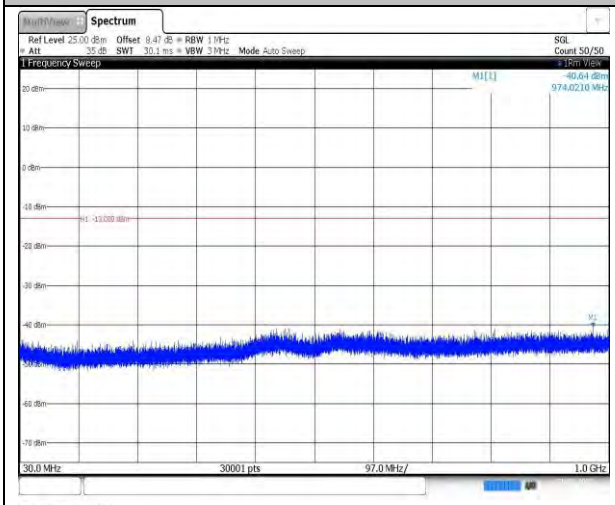
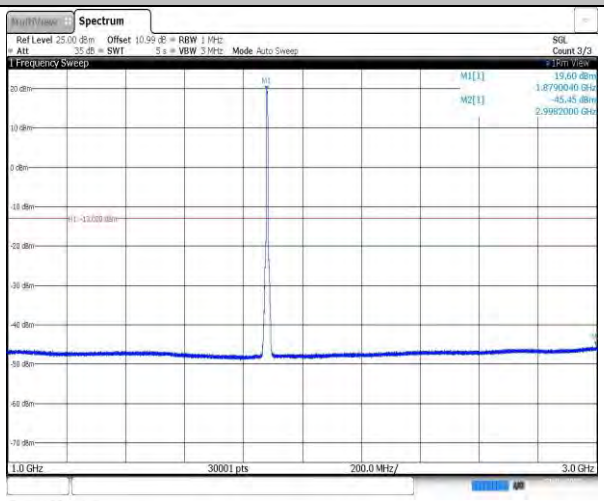
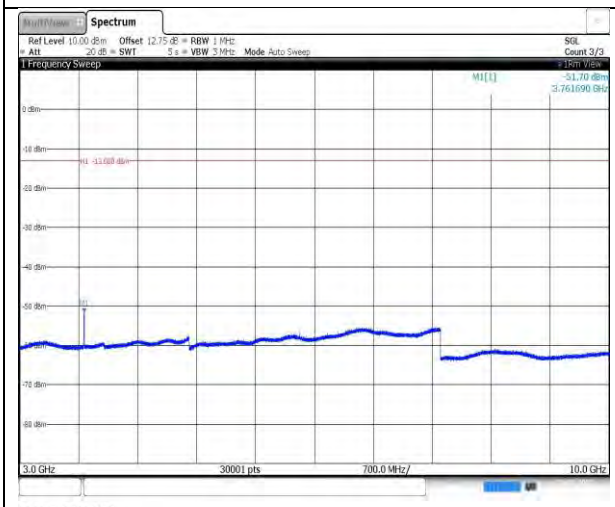
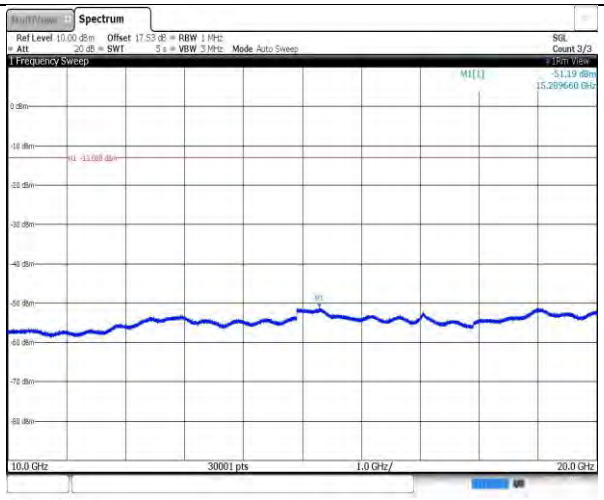
Band2-9400-middle channel









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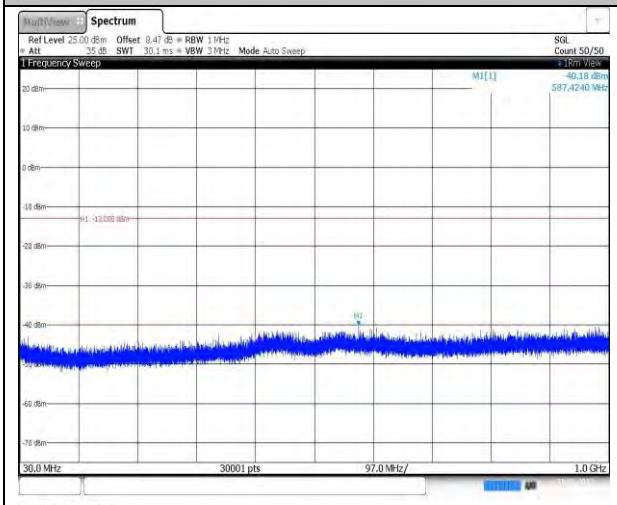
Band2-9538-High channel



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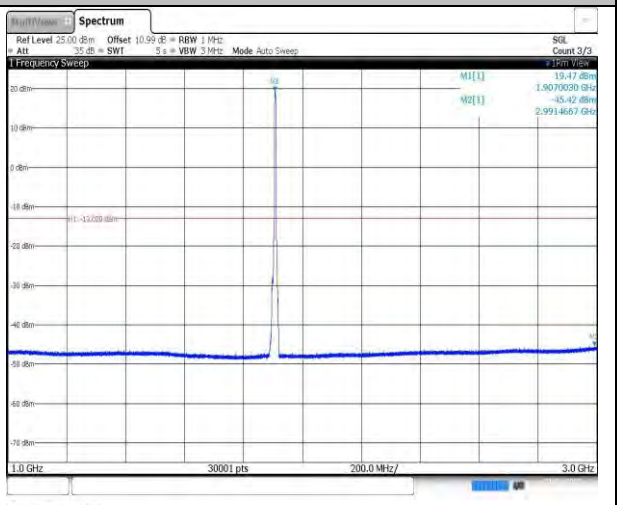

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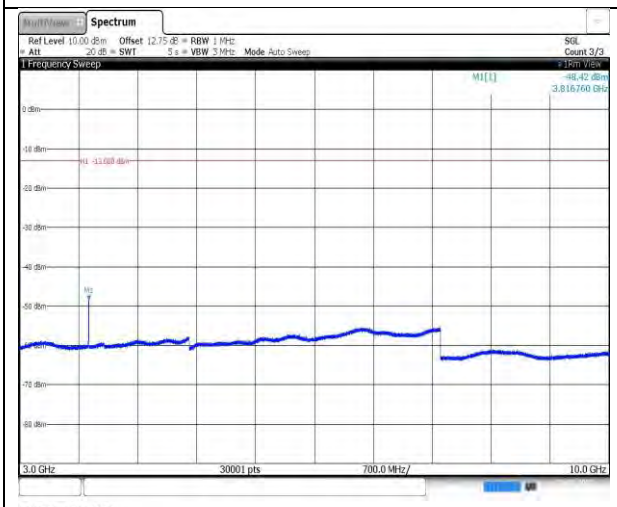

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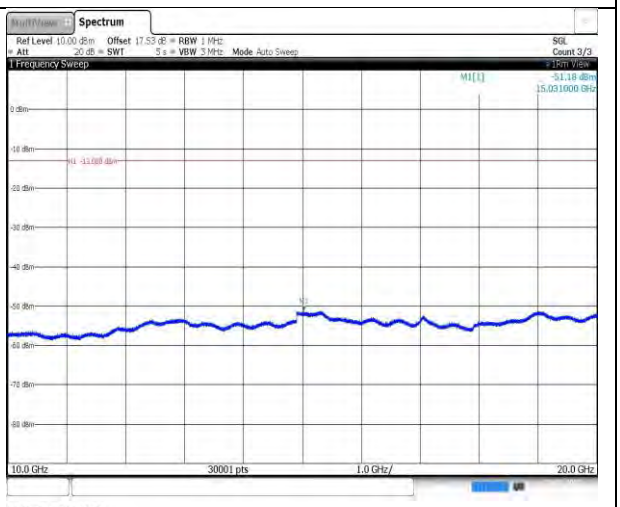

14:13:58 25.01.2022

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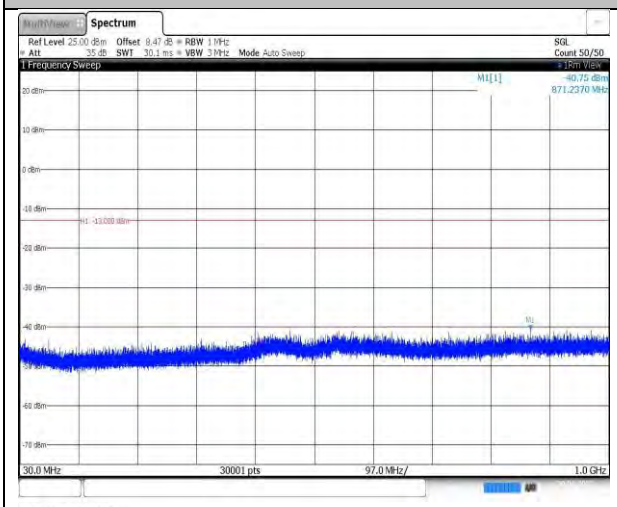
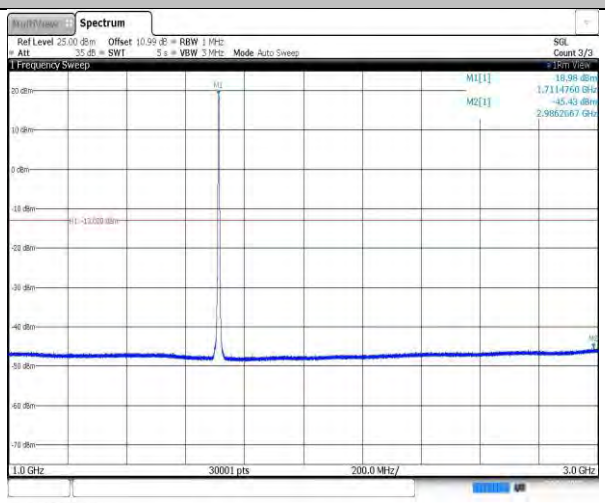
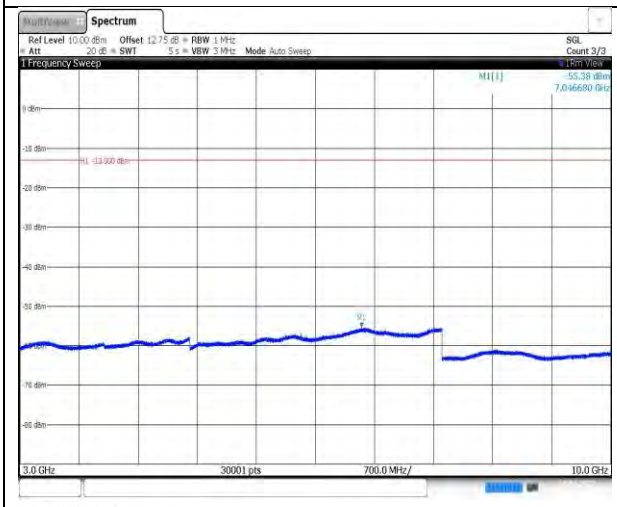
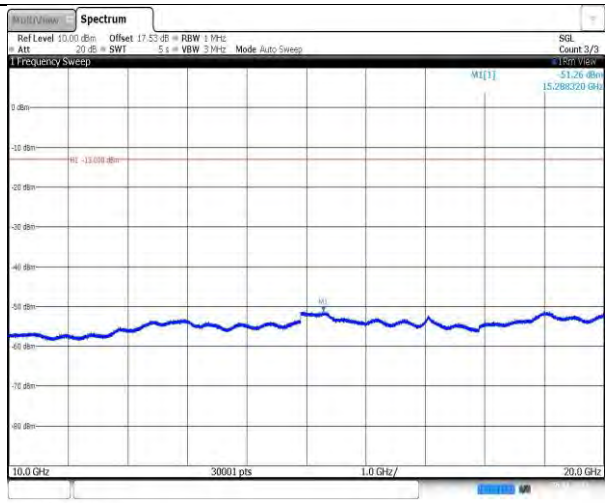
HSDPA-Band 4

Band 4-1312-Low channel	
	
	

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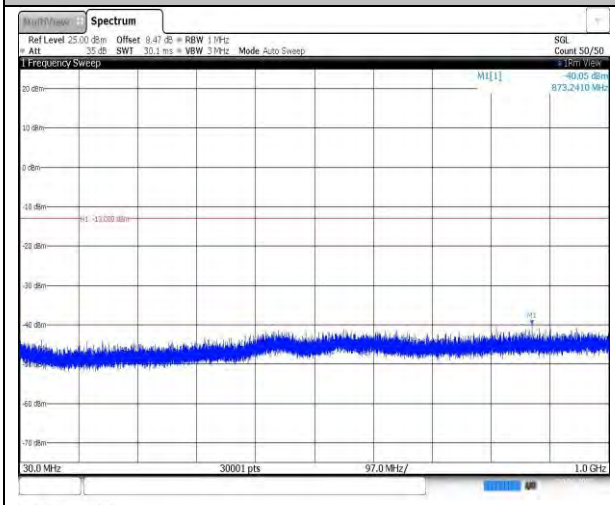
Band 4-1413-Middle Channel



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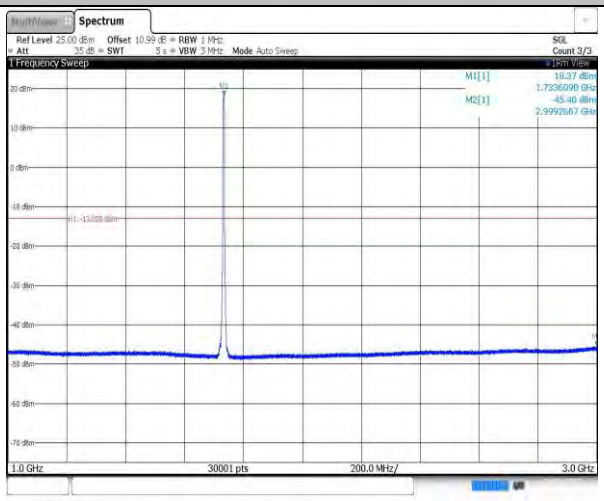

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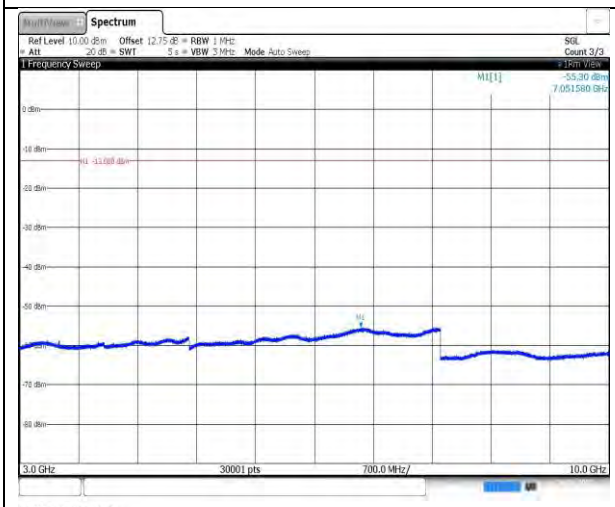

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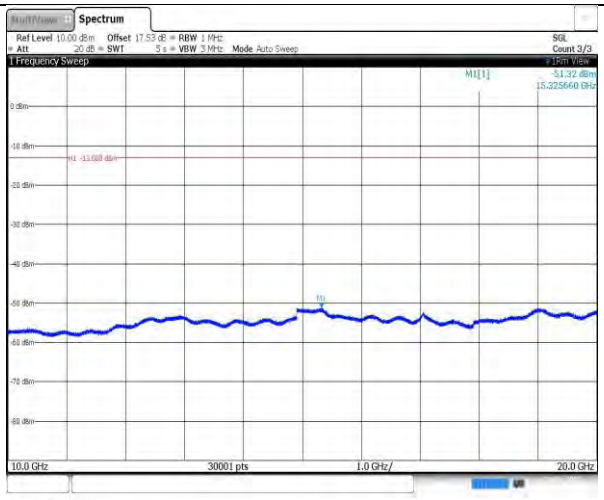

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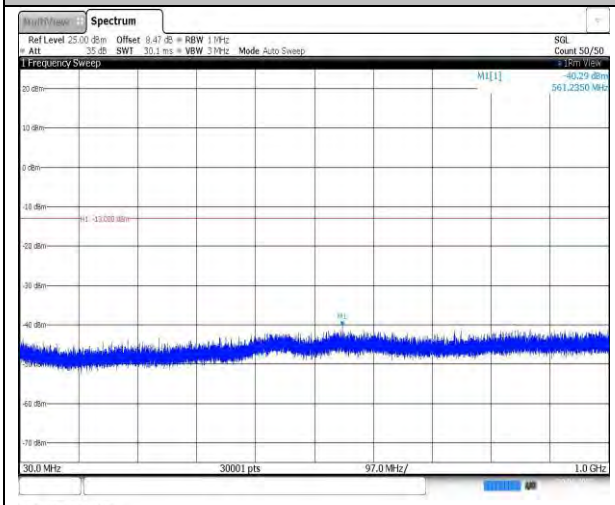
Band 4-1513-High Channel



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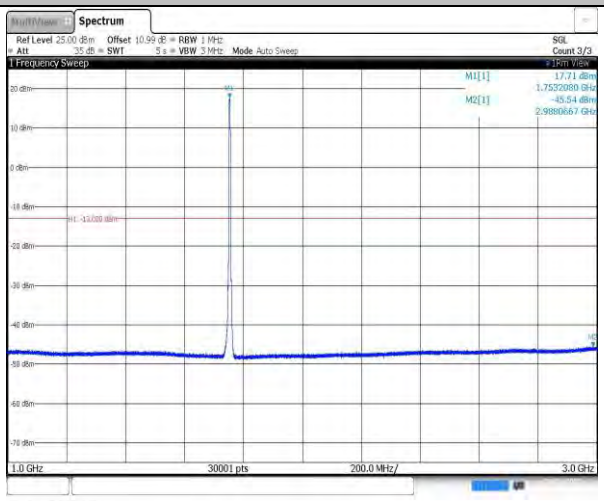

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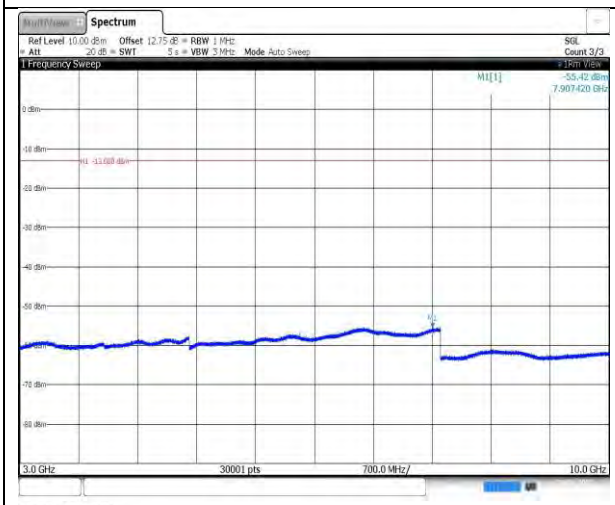

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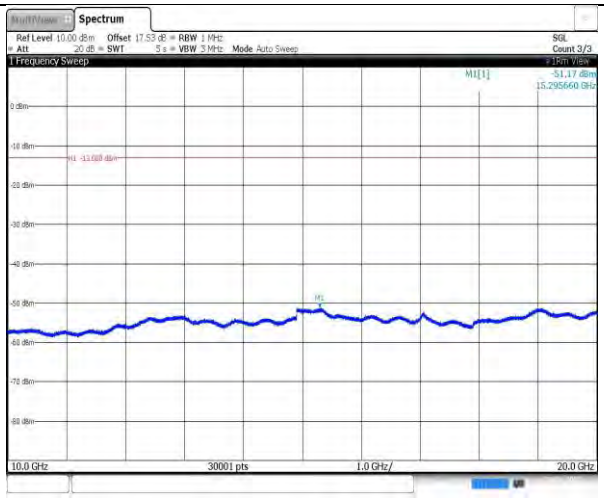

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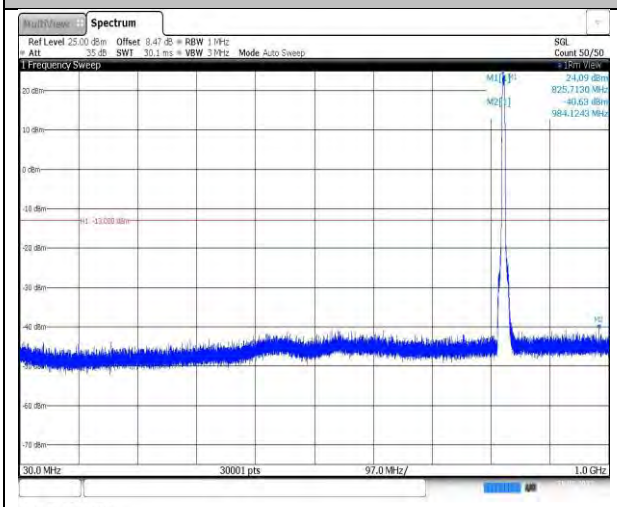
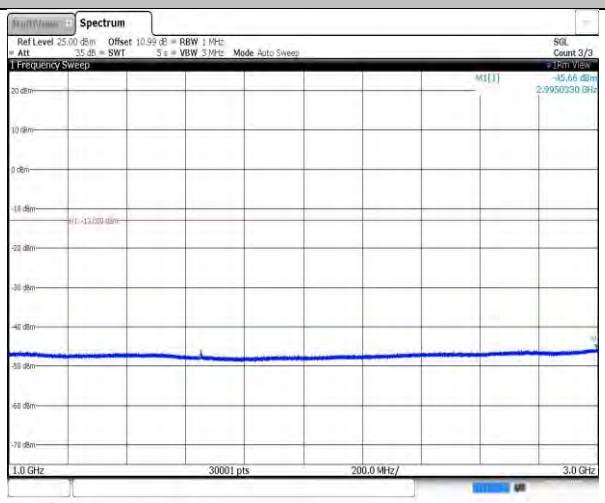
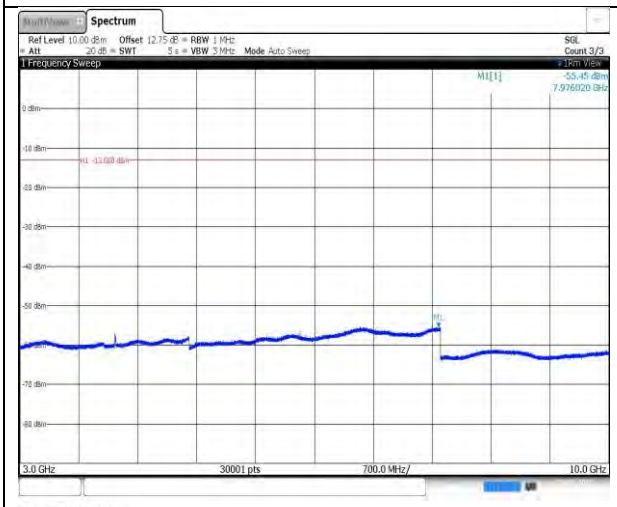
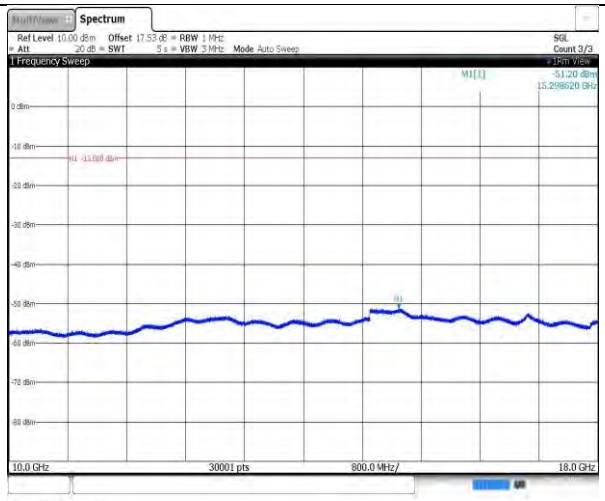
HSDPA Band 5

Band 5-4132-Low Channel	
	
	

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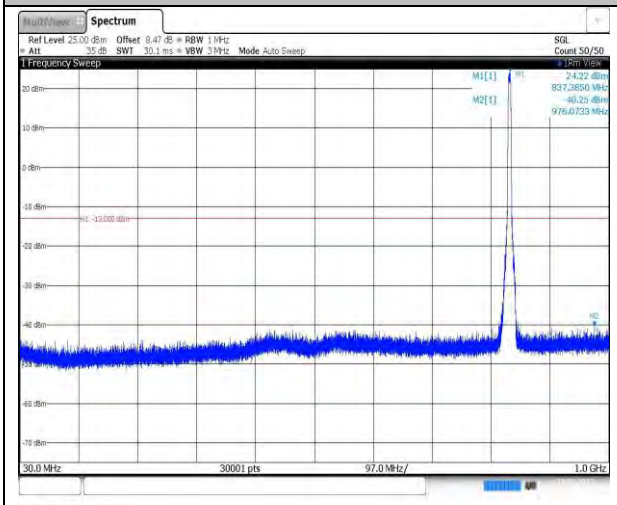
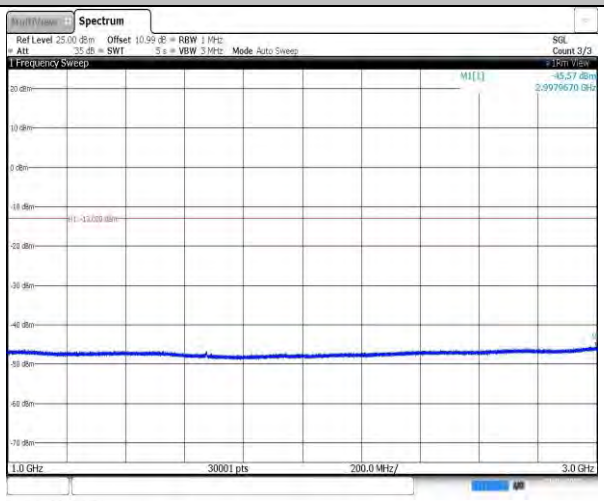
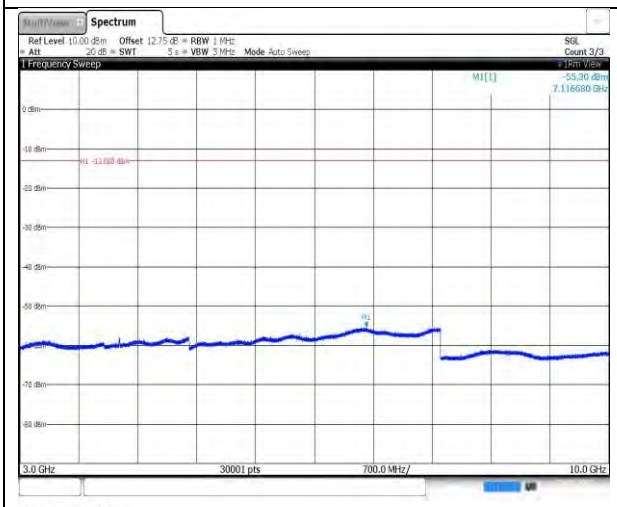
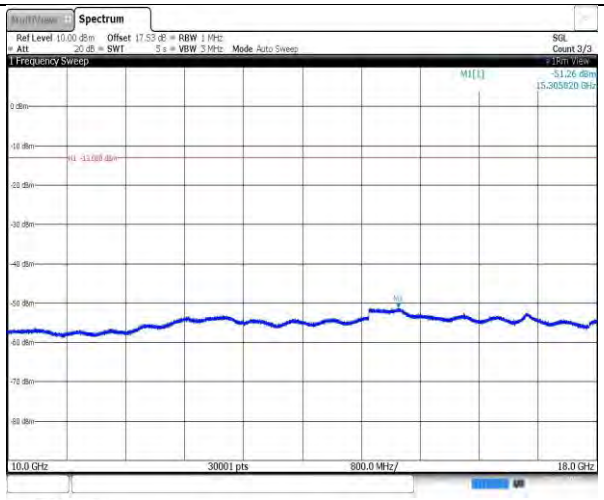
Band 5-4182-Middle Channel









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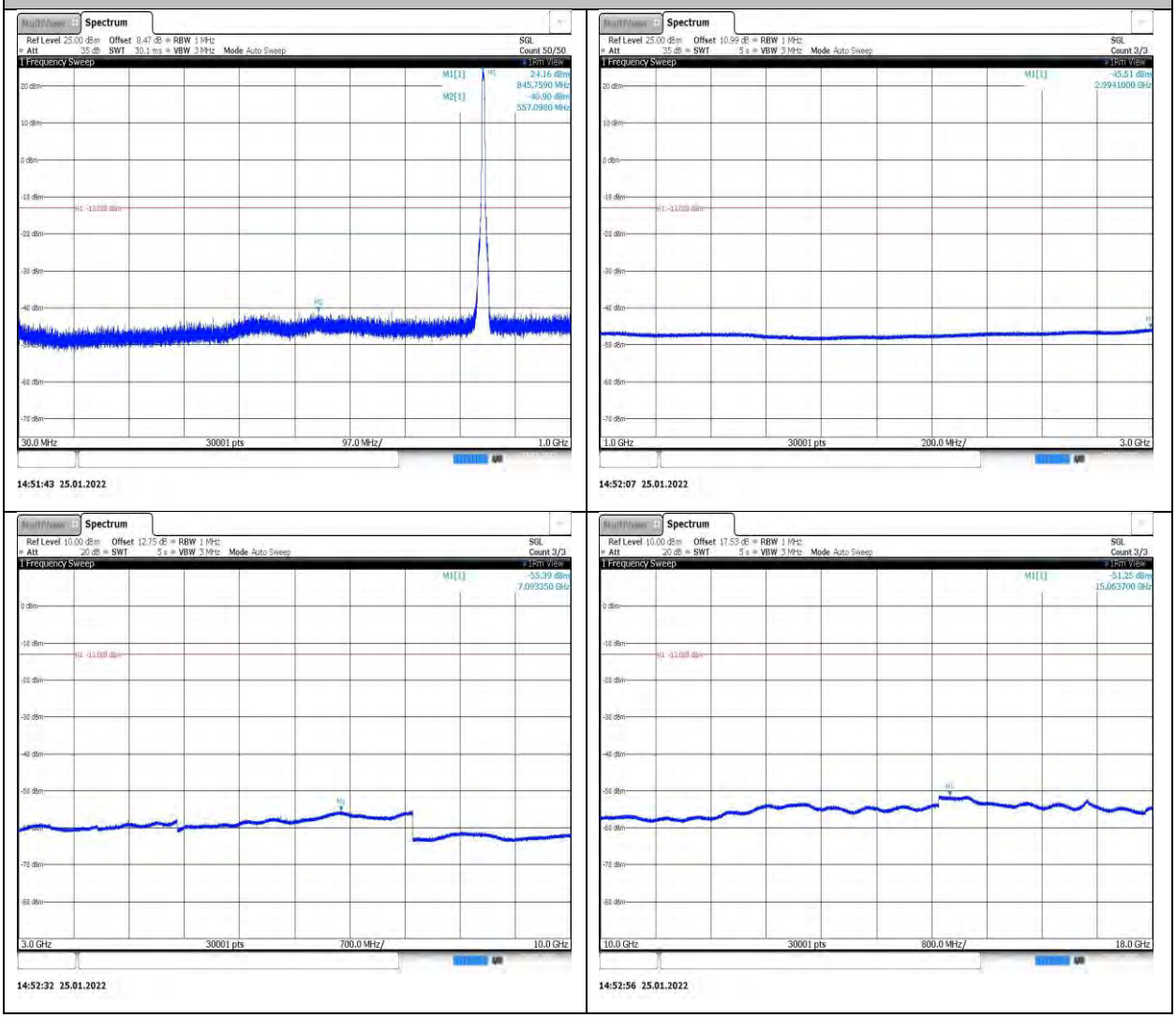
Band 5-4233-High Channel



Remark: All the modulation WCDMA,HSDPA,HSUPA have been tested at low,middle,high channels, only the worst modulation show in the test report.

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7.6. FREQUENCY STABILITY

Rule Part:
FCC: §2.1055, §22.355, §24.235, §27.54, §90,
RSS-132, RSS-133,RSS-139

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§24.235 and §27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

RSS-132 section 5.3
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-133 section 6.3
The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-139 section 6.4
The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

	Normal Test Conditions	Extreme Test Conditions
Relative Humidity	45 % - 75 %	/
Atmospheric Pressure	100 kPa ~102 kPa	/
Temperature	T_N (Normal Temperature): 24.7 °C	T_L (Low Temperature): 0 °C
		T_H (High Temperature): 50 °C
Supply Voltage	V_N (Normal Voltage): DC 3.8 V	V_L (Low Voltage): DC 3.42 V
		V_H (High Voltage): DC 4.18 V

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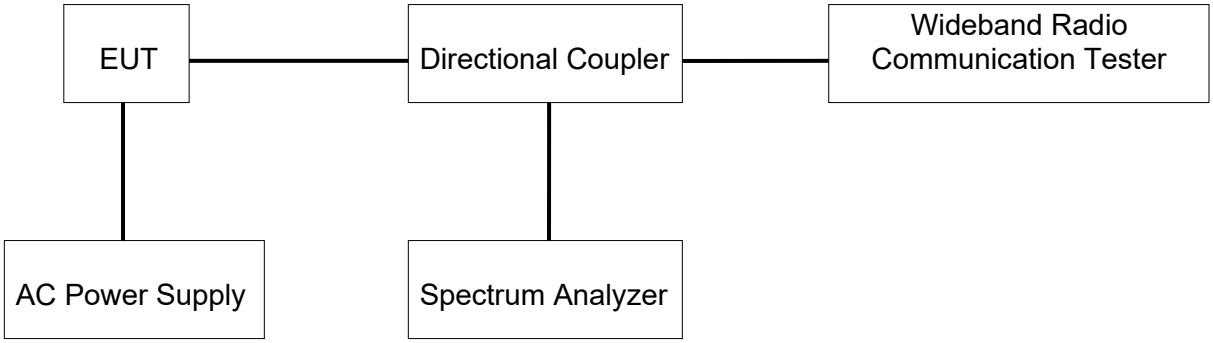
TEST SETUP



TEST ENVIRONMENT

Temperature	21.4°C	Relative Humidity	56.6%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

HSDPA Band 2

Limit		1850	1910	Delta(Hz)	Frequency Stability (ppm)
Condition		F low@ -13dBm(MHz)	F High@ -13dBm(MHz)		
Temperature	Voltage				
Normal (20℃)	Normal	1850.05	1909.94		
Extreme (50℃)		1850.05	1909.94	-0.55	-0.000293
Extreme (40℃)		1850.05	1909.94	-0.99	-0.000527
Extreme (30℃)		1850.05	1909.94	-0.68	-0.000362
Extreme (10℃)		1850.05	1909.94	-0.37	-0.000197
Extreme (0℃)		1850.05	1909.94	-0.35	-0.000186
Extreme (-10℃)		1850.05	1909.94	-0.69	-0.000367
Extreme (-20℃)		1850.05	1909.94	-0.52	-0.000277
Extreme (-30℃)		1850.05	1909.94	-0.09	-0.000048
20℃	15%	1850.05	1909.94	-1.02	-0.000543
	-15%	1850.05	1909.94	-0.79	-0.000420
	End Point	1850.05	1909.94	-1.79	-0.000952

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HSDPA Band 4

Limit		1710	1755	Delta(Hz)	Frequency Stability (ppm)
Condition		F low@ -13dBm(MHz)	F High@ -13dBm(MHz)		
Temperature	Voltage				
Normal (20℃)	Normal	1710.12	1754.90		
Extreme (50℃)		1710.12	1754.90	-0.20	-0.000115
Extreme (40℃)		1710.12	1754.90	-0.62	-0.000358
Extreme (30℃)		1710.12	1754.90	-0.26	-0.000150
Extreme (10℃)		1710.12	1754.90	-0.53	-0.000306
Extreme (0℃)		1710.12	1754.90	-0.36	-0.000208
Extreme (-10℃)		1710.12	1754.90	-0.29	-0.000167
Extreme (-20℃)		1710.12	1754.90	-0.57	-0.000329
Extreme (-30℃)		1710.12	1754.90	-0.31	-0.000179
20℃	15%	1710.12	1754.90	-0.47	-0.000271
	-15%	1710.12	1754.90	-0.54	-0.000312
	End Point	1710.12	1754.90	-1.12	-0.000646

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HSDPA Band 5

Limit		824	849	Delta(Hz)	Frequency Stability (ppm)
Condition		F low@ -13dBm(MHz)	F High@ -13dBm(MHz)		
Temperature	Voltage				
Normal (20℃)	Normal	824.10	848.90		
Extreme (50℃)		824.10	848.90	0.06	0.000072
Extreme (40℃)		824.10	848.90	-0.11	-0.000132
Extreme (30℃)		824.10	848.90	-0.20	-0.000239
Extreme (10℃)		824.10	848.90	0.04	0.000048
Extreme (0℃)		824.10	848.90	0.06	0.000072
Extreme (-10℃)		824.10	848.90	0.13	0.000155
Extreme (-20℃)		824.10	848.90	0.09	0.000108
Extreme (-30℃)		824.10	848.90	0.06	0.000072
20℃	15%	824.10	848.90	0.09	0.000108
	-15%	824.10	848.90	0.19	0.000227
	End Point	824.10	848.90	0.46	0.000550

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8. RADIATED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53, §90,
RSS-132, RSS-133,RSS-139

LIMIT

Part §22.917(a), §24.238(a), §27.53(h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

RSS-132 section 5.5
Mobile and base station equipment shall comply with the limits in (i) and (ii) below.
(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).
(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS-133 section 6.5.1
Equipment shall comply with the limits in (i) and (ii) below.
(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts).
(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-139 section 6.6
(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.
(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

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TEST PROCEDURE

According to the C 63.26-2015 section 5.5.2.2.3

Below 1GHz test procedure as below:

For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

Above 1GHz test procedure as below:
For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5 m above the ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The height scan of the measurement antenna shall be varied from 1 m to 4 m in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When using the direct field strength method and the EUT is manipulated through three different orientations, then the scan height range of the measurement antenna is limited to 2.5 m, or 0.5 m above the top of the EUT, whichever is higher.

Radiated Power Measurement Calculation According to ANSI C63.26-2015

a) E (dBμV/m) = Measured amplitude level (dBμV) + Cable Loss (dB) + Antenna Factor (dB/m).
b) E (dBμV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

c) E (dBμV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

d) EIRP (dBm) = E (dBμV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m.

So, from d)
The measuring distance is usually at 3m, then 20*Log(3)=9.5424

Then, EIRP (dBm) = E (dBμV/m) + 9.5424 − 104.8 = E (dBμV/m) – 95.2576

The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.

EIRP[dBm] =E[dBμV/m] − 95.2
E[dBμV/m]= 95.2+ EIRP[dBm]
E[dBμV/m]= 82.20

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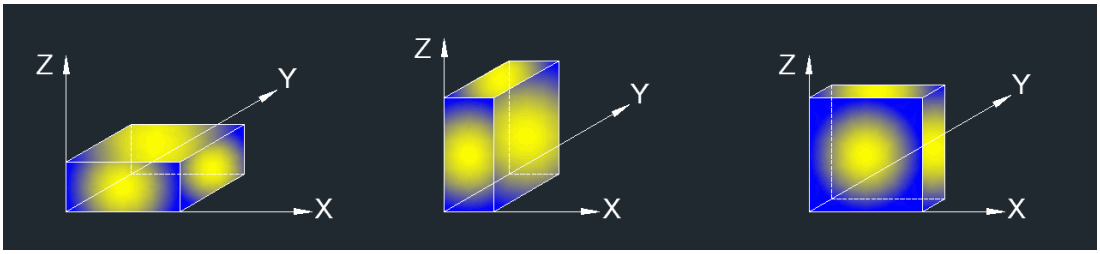
The EUT shall be set up in its typical configuration and arrangement and operated in its various modes of operation.
X axis, Y axis, Z axis positions:

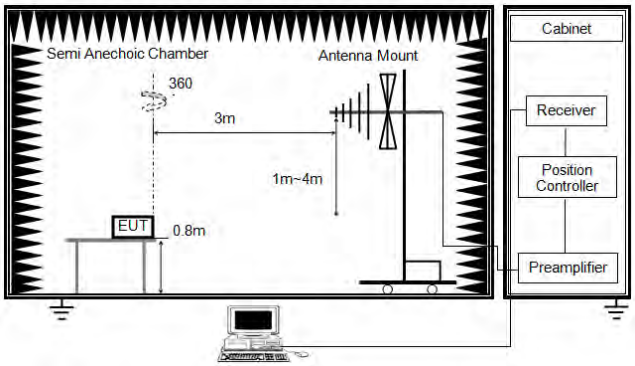


Remark 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

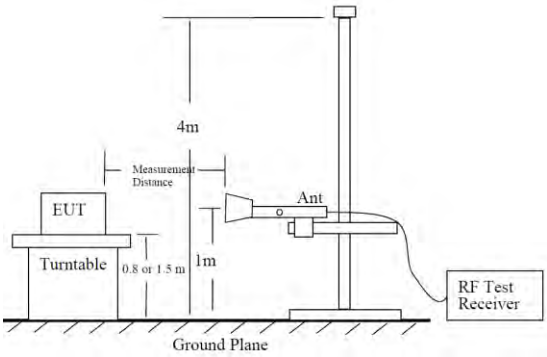
NOTE
1: Radiated spurious emissions were investigated below 30 MHz, 30 MHz – 1 GHz and above 1 GHz. There were no emissions found on below 30 MHz and 30 MHz – 1 GHz.
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

TEST SETUP

Test Setup for Below 1 GHz



Test Setup for Above 1 GHz



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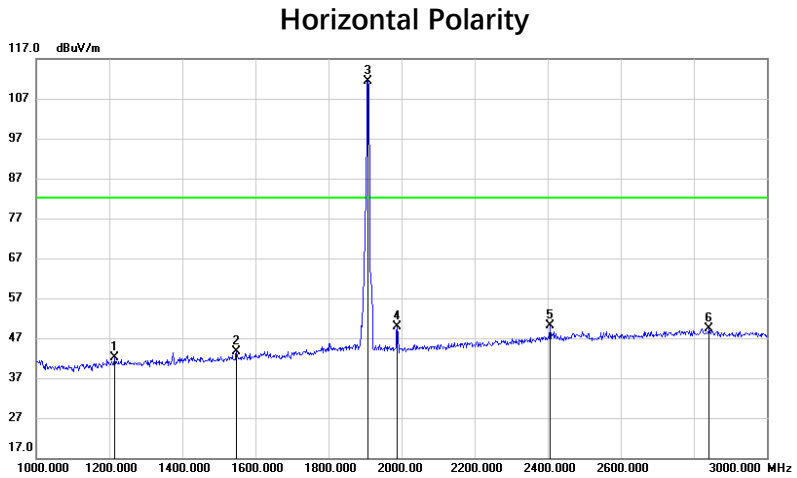
TEST ENVIRONMENT

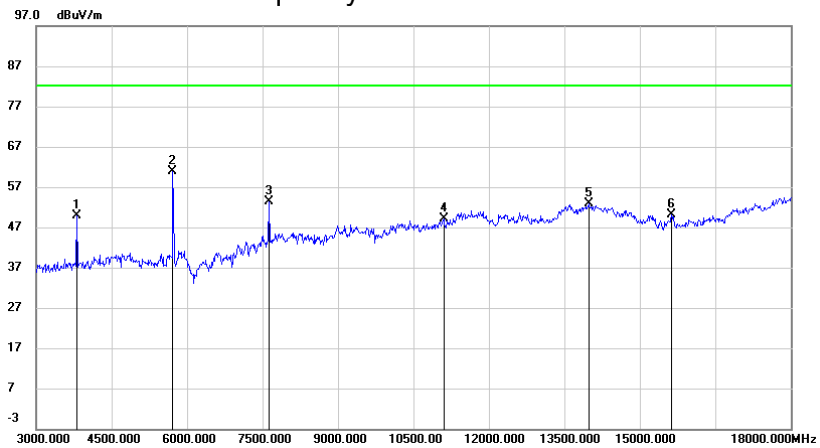
Temperature	22.9°C	Relative Humidity	58.3%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

Example plot



Note: Mark 3 is the fundamental frequency



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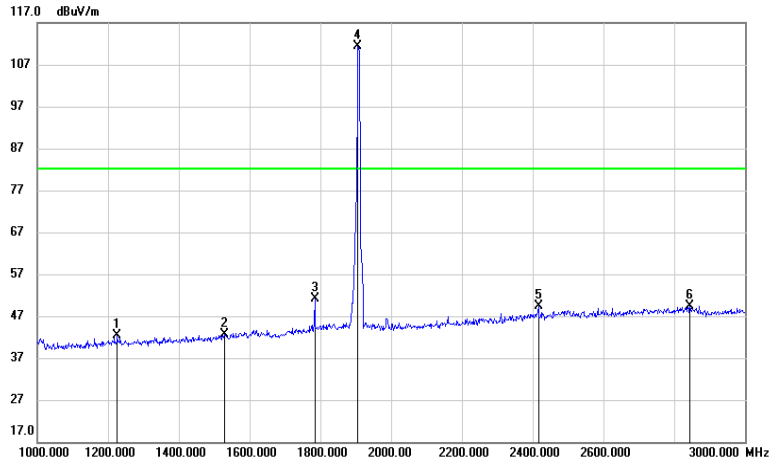
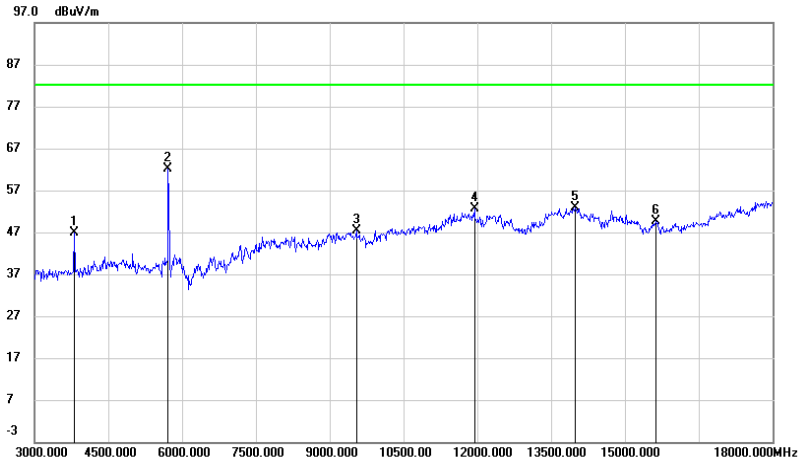
Vertical Polarity



Note: Mark 4 is the fundamental frequency



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WCDMA Band 2

HSDPA- Low Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
3690.000	48.43	-4.03	44.40	-50.8	82.20	-13	-37.80	peak
5550.000	55.22	1.43	56.65	-38.55	82.20	-13	-25.55	peak
7410.000	51.67	6.08	57.75	-37.45	82.20	-13	-24.45	peak
9375.000	37.70	10.17	47.87	-47.33	82.20	-13	-34.33	peak
11370.000	36.25	15.46	51.71	-43.49	82.20	-13	-30.49	peak
13980.000	32.42	21.41	53.83	-41.37	82.20	-13	-28.37	peak

HSDPA- Low Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
5550.000	56.91	1.43	58.34	-36.86	82.20	-13	-23.86	peak
7395.000	44.79	5.99	50.78	-44.42	82.20	-13	-31.42	peak
9255.000	41.81	9.38	51.19	-44.01	82.20	-13	-31.01	peak
11700.000	35.85	16.87	52.72	-42.48	82.20	-13	-29.48	peak
13800.000	31.81	21.15	52.96	-42.24	82.20	-13	-29.24	peak
15645.000	34.12	16.42	50.54	-44.66	82.20	-13	-31.66	peak

HSDPA- Mid Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1222.000	13.07	28.23	41.30	-53.9	82.20	-13	-40.90	peak
1374.000	14.34	28.64	42.98	-52.22	82.20	-13	-39.22	peak
3750.000	52.18	-3.79	48.39	-46.81	82.20	-13	-33.81	peak
5625.000	55.28	1.24	56.52	-38.68	82.20	-13	-25.68	peak
7515.000	43.65	6.35	50.00	-45.2	82.20	-13	-32.20	peak
11835.000	35.98	16.98	52.96	-42.24	82.20	-13	-29.24	peak

HSDPA- Mid Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1176.000	13.69	27.94	41.63	-53.57	82.20	-13	-40.57	peak
1512.000	13.10	29.12	42.22	-52.98	82.20	-13	-39.98	peak
2828.000	16.39	33.49	49.88	-45.32	82.20	-13	-32.32	peak
3750.000	47.03	-3.79	43.24	-51.96	82.20	-13	-38.96	peak
5625.000	56.64	1.24	57.88	-37.32	82.20	-13	-24.32	peak
9390.000	38.83	10.27	49.10	-46.1	82.20	-13	-33.10	peak

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HSDPA- High Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1214.000	13.86	28.23	42.09	-53.11	82.20	-13	-40.11	peak
1548.000	14.18	29.33	43.51	-51.69	82.20	-13	-38.69	peak
2406.000	17.38	32.78	50.16	-45.04	82.20	-13	-32.04	peak
3810.000	53.58	-3.62	49.96	-45.24	82.20	-13	-32.24	peak
5715.000	59.63	1.34	60.97	-34.23	82.20	-13	-21.23	peak
7620.000	47.26	6.01	53.27	-41.93	82.20	-13	-28.93	peak

HSDPA- High Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1528.000	13.43	29.21	42.64	-52.56	82.20	-13	-39.56	peak
1784.000	20.51	30.57	51.08	-44.12	82.20	-13	-31.12	peak
3810.000	50.51	-3.62	46.89	-48.31	82.20	-13	-35.31	peak
5715.000	60.68	1.34	62.02	-33.18	82.20	-13	-20.18	peak
9540.000	37.06	10.28	47.34	-47.86	82.20	-13	-34.86	peak
11940.000	35.40	17.27	52.67	-42.53	82.20	-13	-29.53	peak

WCDMA Band 4

HSDPA- Low Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1208.000	13.19	28.22	41.41	-53.79	82.20	-13	-40.79	peak
2114.000	16.64	31.17	47.81	-47.39	82.20	-13	-34.39	peak
2846.000	15.68	33.51	49.19	-46.01	82.20	-13	-33.01	peak
3420.000	52.18	-5.07	47.11	-48.09	82.20	-13	-35.09	peak
5130.000	58.64	0.20	58.84	-36.36	82.20	-13	-23.36	peak
6840.000	41.58	4.43	46.01	-49.19	82.20	-13	-36.19	peak

HSDPA- Low Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1374.000	14.12	28.64	42.76	-52.44	82.20	-13	-39.44	peak
2414.000	17.75	32.81	50.56	-44.64	82.20	-13	-31.64	peak
2836.000	15.59	33.49	49.08	-46.12	82.20	-13	-33.12	peak
3420.000	52.46	-5.07	47.39	-47.81	82.20	-13	-34.81	peak
5130.000	51.61	0.20	51.81	-43.39	82.20	-13	-30.39	peak
7500.000	36.42	6.42	42.84	-52.36	82.20	-13	-39.36	peak

HSDPA- Mid Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1374.000	14.20	28.64	42.84	-52.36	82.20	-13	-39.36	peak
2414.000	16.33	32.81	49.14	-46.06	82.20	-13	-33.06	peak
2744.000	16.39	33.30	49.69	-45.51	82.20	-13	-32.51	peak
3465.000	49.79	-4.98	44.81	-50.39	82.20	-13	-37.39	peak
5190.000	57.98	0.83	58.81	-36.39	82.20	-13	-23.39	peak

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9450.000	37.36	10.18	47.54	-47.66	82.20	-13	-34.66	peak

HSDPA- Mid Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1500.000	14.62	29.05	43.67	-51.53	82.20	-13	-38.53	peak
1778.000	26.11	30.51	56.62	-38.58	82.20	-13	-25.58	peak
2248.000	15.78	31.78	47.56	-47.64	82.20	-13	-34.64	peak
4170.000	43.17	-2.60	40.57	-54.63	82.20	-13	-41.63	peak
5190.000	49.72	0.83	50.55	-44.65	82.20	-13	-31.65	peak
8085.000	38.72	7.71	46.43	-48.77	82.20	-13	-35.77	peak

HSDPA- High Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1374.000	13.91	28.64	42.55	-52.65	82.20	-13	-39.65	peak
2152.000	17.13	31.40	48.53	-46.67	82.20	-13	-33.67	peak
2764.000	16.11	33.36	49.47	-45.73	82.20	-13	-32.73	peak
3495.000	54.63	-4.91	49.72	-45.48	82.20	-13	-32.48	peak
5250.000	60.83	0.65	61.48	-33.72	82.20	-13	-20.72	peak
7005.000	41.37	5.80	47.17	-48.03	82.20	-13	-35.03	peak

HSDPA- High Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1502.000	13.64	29.06	42.70	-52.5	82.20	-13	-39.50	peak
2838.000	15.43	33.50	48.93	-46.27	82.20	-13	-33.27	peak
3495.000	44.78	-4.91	39.87	-55.33	82.20	-13	-42.33	peak
5250.000	54.34	0.65	54.99	-40.21	82.20	-13	-27.21	peak
8235.000	37.79	7.67	45.46	-49.74	82.20	-13	-36.74	peak
11355.000	34.63	15.27	49.90	-45.3	82.20	-13	-32.30	peak

WCDMA Band 5

HSDPA- Low Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1648.000	54.70	-11.54	43.16	-52.04	82.20	-13	-39.04	peak
3619.000	43.02	-5.19	37.83	-57.37	82.20	-13	-44.37	peak
4861.000	41.39	-1.13	40.26	-54.94	82.20	-13	-41.94	peak
5932.000	39.45	1.12	40.57	-54.63	82.20	-13	-41.63	peak
7660.000	39.20	5.63	44.83	-50.37	82.20	-13	-37.37	peak
9397.000	37.53	9.67	47.20	-48.00	82.20	-13	-35.00	peak

HSDPA- Low Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1648.000	49.26	-11.54	37.72	-57.48	82.20	-13	-44.48	peak
2332.000	46.67	-9.21	37.46	-57.74	82.20	-13	-44.74	peak
3889.000	42.79	-4.48	38.31	-56.89	82.20	-13	-43.89	peak
4996.000	42.85	-1.12	41.73	-53.47	82.20	-13	-40.47	peak
7714.000	38.43	5.81	44.24	-50.96	82.20	-13	-37.96	peak
9352.000	37.15	9.37	46.52	-48.68	82.20	-13	-35.68	peak

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HSDPA- Mid Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1369.000	52.37	-13.17	39.20	-56.00	82.20	-13	-43.00	peak
1675.000	54.36	-11.37	42.99	-52.21	82.20	-13	-39.21	peak
3628.000	43.04	-5.14	37.90	-57.3	82.20	-13	-44.30	peak
5023.000	42.09	-0.97	41.12	-54.08	82.20	-13	-41.08	peak
7192.000	37.41	5.07	42.48	-52.72	82.20	-13	-39.72	peak
9082.000	37.97	9.07	47.04	-48.16	82.20	-13	-35.16	peak

HSDPA- Mid Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1675.000	50.46	-11.37	39.09	-56.11	82.20	-13	-43.11	peak
3331.000	43.68	-6.40	37.28	-57.92	82.20	-13	-44.92	peak
4996.000	42.57	-1.12	41.45	-53.75	82.20	-13	-40.75	peak
6652.000	37.77	3.70	41.47	-53.73	82.20	-13	-40.73	peak
7723.000	39.29	5.83	45.12	-50.08	82.20	-13	-37.08	peak
9397.000	37.14	9.67	46.81	-48.39	82.20	-13	-35.39	peak

HSDPA- High Channel- Horizontal

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1369.000	51.73	-13.17	38.56	-56.64	82.20	-13	-43.64	peak
1693.000	53.86	-11.26	42.60	-52.6	82.20	-13	-39.60	peak
2494.000	46.67	-8.73	37.94	-57.26	82.20	-13	-44.26	peak
5077.000	40.38	-0.61	39.77	-55.43	82.20	-13	-42.43	peak
6652.000	37.84	3.70	41.54	-53.66	82.20	-13	-40.66	peak
9442.000	37.08	9.79	46.87	-48.33	82.20	-13	-35.33	peak

HSDPA- High Channel- Vertical

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result dBm	Limit (dBuV/m)	Limit dBm	Margin (dB)	Remark
1684.000	49.55	-11.32	38.23	-56.97	82.20	-13	-43.97	peak
2539.000	46.44	-8.66	37.78	-57.42	82.20	-13	-44.42	peak
4213.000	41.87	-2.83	39.04	-56.16	82.20	-13	-43.16	peak
4996.000	42.01	-1.12	40.89	-54.31	82.20	-13	-41.31	peak
7633.000	39.75	5.55	45.30	-49.9	82.20	-13	-36.90	peak
9604.000	36.73	10.12	46.85	-48.35	82.20	-13	-35.35	peak

Remark:

1;Correct(dB/m)=Antenna Factor+Cable loss-Amplifier

2;All the modulation WCDMA,HSDPA,HSUPA have been tested at low,middle,high channels, only the worst modulation show in the test report.

END OF REPORT

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