



TEST REPORT

Report Number : 14523758-E13V3

Applicant : APPLE, INC
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A2846

Brand : APPLE

FCC ID : BCG-E8427A

IC : 579C-E8435A

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 22H, 24E, AND 27L
ISED RSS-GEN ISSUE 5, RSS-132 ISSUE 4, RSS-133
ISSUE 6, AND RSS-139 ISSUE 4

Date Of Issue:
2023-07-19

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538, U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2023-07-06	Initial Review	
V2	2023-07-09	Addressed All TCB Questions section 1, 2 and 6	Mengistu Mekuria
V3	2023-07-19	Addressed TCB Questions section at Section 6.2	Mengistu Mekuria

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. SUMMARY OF TEST RESULTS	6
3. TEST METHODOLOGY	7
4. FACILITIES AND ACCREDITATION	7
5. DECISION RULES AND MEASUREMENT UNCERTAINTY	8
5.1. METROLOGICAL TRACEABILITY	8
5.2. DECISION RULES	8
5.3. MEASUREMENT UNCERTAINTY	8
5.4. SAMPLE CALCULATION	8
6. EQUIPMENT UNDER TEST	9
6.1. DESCRIPTION OF EUT	9
6.2. MAXIMUM OUTPUT POWER	9
6.3. SOFTWARE AND FIRMWARE	11
6.4. MAXIMUM ANTENNA GAIN	11
6.5. WORST-CASE CONFIGURATION AND MODE	11
6.6. DESCRIPTION OF TEST SETUP	12
7. TEST AND MEASUREMENT EQUIPMENT	14
8. RF OUTPUT POWER VERIFICATION (4 antennas)	16
8.1. GSM	16
8.1.1. GSM 850	17
8.1.2. GSM 1900	17
8.2. WCDMA	18
8.2.1. WCDMA BAND 5	21
8.2.2. WCDMA BAND 2	22
8.2.3. WCDMA BAND 4	23
9. CONDUCTED TEST RESULTS	24
9.1. OCCUPIED BANDWIDTH	24
9.1.1. GSM	26
9.1.2. WCDMA	27
9.2. BAND EDGE AND EMISSION MASK	28
9.2.1. GSM 850	30
9.2.2. GSM 1900	31
9.2.3. WCDMA BAND 5	32
9.2.4. WCDMA BAND 2	33
9.2.5. WCDMA BAND 4	34

9.3. *OUT OF BAND EMISSIONS* 35

9.3.1. GSM 850 36

9.3.2. GSM 1900 37

9.3.3. WCDMA BAND 5 38

9.3.4. WCDMA BAND 2 39

9.3.5. WCDMA BAND 4 40

9.4. *FREQUENCY STABILITY* 41

9.4.1. GSM 42

9.4.2. WCDMA 43

9.5. *PEAK-TO-AVERAGE POWER RATIO* 46

9.5.1. GSM 47

9.5.2. WCDMA 48

10. RADIATED TEST RESULTS **49**

10.1. *FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1* 52

10.1.1. GSM 850 53

10.1.2. GSM 1900 55

10.1.3. WCDMA BAND 5 57

10.1.4. WCDMA BAND 2 59

10.1.5. WCDMA BAND 4 61

10.2. *FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 2* 63

10.2.1. GSM 850 63

10.2.2. GSM 1900 65

10.2.3. WCDMA BAND 5 67

10.2.4. WCDMA BAND 2 69

10.2.5. WCDMA BAND 4 71

10.3. *FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 3* 73

10.3.1. GSM 1900 73

10.3.2. WCDMA BAND 2 75

10.3.3. WCDMA BAND 4 77

10.4. *FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 4* 79

10.4.1. GSM 1900 79

10.4.2. WCDMA BAND 2 81

10.4.3. WCDMA BAND 4 83

11. SETUP PHOTOS **85**



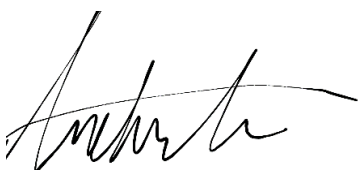
1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A2846
Brand	APPLE
FCC ID	BCG-E8427A
IC	579C-E8435A
EUT Description	SMARTPHONE
Serial Number	CWV1Q3XF6C, X97QWXF327, K7XQ993QJQ, HFPVFHTGH4 (CONDUCTED) HWG09GFXL2, VHP604XC17 (RADIATED)
Sample Receipt Date	2023-01-26
Date Tested	2023-01-27 TO 2023-06-27
Applicable Standards	FCC 47 CFR PART 22H, 24E, AND 27L ISED RSS-GEN ISSUE 5, RSS-132 ISSUE 4, RSS-133 ISSUE 6, AND RSS-139 ISSUE 4
Test Results	COMPLIES

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By:	Reviewed By:	Prepared By:
		
Dan Corona Operations Leader UL Verification Services Inc.	Eric Ting Senior Laboratory Engineer UL Verification Services Inc	Andrew Le Senior Laboratory Technician UL Verification Services Inc

2. SUMMARY OF TEST RESULTS

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.”

Below is a list of the data provided by the customer:

1. Antenna gain (see section 6.4)

Requirement Description	Requirement Clause Number (FCC)	Requirement Clause Number (ISED)	Result	Remarks
RF Conducted Output Power	2.1046	-	Complies	
Effective Radiated Power	22.913 (a)(5)	RSS132§5.4	Complies	
Equivalent Isotropic Radiated power	24.232 (c), 27.50 (d) (4)	RSS133§6.4 & SRSP-510, 5.1.2 RSS139§5.5	Complies	
Occupied Bandwidth	2.1049	RSS132 RSS133§2.3 RSS139 RSS-GEN§6.7	Complies	
Band Edge and Emission Mask	2.1051, 22.917 (a), 24.238 (a), 27.53 (h),	RSS132§5.5 RSS133§6.5 RSS139§5.6	Complies	
Out of Band Emissions	2.1051, 22.917 (a), 24.238 (a), 27.53 (h),	RSS132§5.5 RSS133§6.5 RSS139§5.6	Complies	
Frequency Stability	2.1055, 22.355, 24.235, 27.54	RSS132§5.3 RSS133§6.3 RSS139§5.4	Complies	
Peak-to-Average Ratio	22.913 (d), 24.232 (d), 27.50 (d) (5)	RSS132§5.4 RSS133§6.4 RSS139§5.5	Complies	
Field Strength of Spurious Radiation	2.1053, 22.917 (a), 24.238 (a), 27.53 (h),	RSS132§5.5 RSS133§6.5 RSS139§5.6	Complies	

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following:

- ANSI C63.26:2015
- FCC 47 CFR Part 2, Part 22, Part 24, Part 27.
- [FCC KDB 971168 D01 v03r01](#): Power Meas License Digital Systems
- [FCC KDB 971168 D02 v02r02](#): Misc Rev Approv License Devices
- [FCC KDB 412172 D01 v01r01](#). Determining ERP and EIRP
- ISED RSS-Gen Issue 5, RSS-132 Issue 4, RSS-133 Issue 6, RSS-139 Issue 4.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input checked="" type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
<input type="checkbox"/>	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
<input checked="" type="checkbox"/>	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U _{Lab}
Conducted Antenna Port Emission Measurement	1.940 db
Power Spectral Density	2.466 db
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	0.450 db Peak 1.300 db Ave.
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 db
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 db
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 db
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 db
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 db
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 db
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 db

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G NR1, 5G NR2, IEEE 802.11a/b/g/n/ac/ax, Bluetooth (BT), Ultra-Wideband (UWB), GPS, NFC, 802.15.4ab-NB and MSS technologies. The rechargeable battery is not user accessible.

6.2. MAXIMUM OUTPUT POWER

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

$$\text{ERP/EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

where: ERP/EIRP = effective or equivalent 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.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted and ERP/EIRP output powers as follows:

GSM MODES

RSS 132 850MHz Ant 1								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	ERP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
824.2-848.8	GPRS	33.00	-4.60	3.0	26.25	0.422	244.68	245KGXW
	EGPRS	27.50			20.75	0.119	243.26	243KG7W
Part 22 850MHz Ant 1								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	ERP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
824.2-848.8	GPRS	33.00	-4.60	3.0	26.25	0.422	244.68	245KGXW
	EGPRS	27.50			20.75	0.119	243.26	243KG7W
Part 24 / RSS 133 1900MHz Ant 3								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
1850.2-1909.8	GPRS	31.50	-0.90	2.0	30.60	1.148	243.54	244KGXW
	EGPRS	26.50			25.60	0.363	253.85	254KG7W

WCDMA MODE

RSS 132 Band 5 Ant 1								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	ERP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
826.4-846.6	REL 99	25.70	-4.60	3.0	18.95	0.079	4140	4M14F9W
	HSDPA	24.92			18.17	0.066	4138	4M14F9W
Part 22 Band 5 Ant 1								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	ERP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
826.4-846.6	REL 99	25.70	-4.60	3.0	18.95	0.079	4140	4M14F9W
	HSDPA	24.92			18.17	0.066	4138	4M14F9W
Part 24 / RSS 133 Band 2 Ant 3								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
1852.4-1907.6	REL 99	25.50	-0.90	2.0	24.60	0.288	4150	4M15F9W
	HSDPA	24.50			23.60	0.229	4152	4M15F9W
Part 27 / RSS 139 Band 4 Ant 1								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
1712.4-1752.6	REL 99	25.70	-1.10	1.0	24.60	0.288	4162	4M16F9W
	HSDPA	24.71			23.61	0.230	4154	4M15F9W

6.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 0.13.02.

6.4. MAXIMUM ANTENNA GAIN

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

Frequency Band	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	ANT 4 Antenna Gain (dBi)
GSM850 and WCDMA 5 824 – 849MHz	-4.6	-4.9		
GSM1900 and WCDMA 2 1850 – 1910 MHz	-2.1	-3.4	-0.9	-1.4
WCDMA 4 1710 – 1755 MHz	-1.1	-3.9	-2.0	-2.8

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X/Y/Z on all ANT 1, ANT2, ANT3 and ANT4 antennas to determine the worst-case orientation. The following table exhibits the worst-case orientation for different frequency bands. The full tests of the EUT have made upon the orientations that shown in the table below.

Frequency Bands	ANT1	ANT2	ANT3	ANT4
824 – 849 MHz	X	X	N/A	N/A
1710 – 1915 MHz	X	X	X	X

Based on average conducted output power measurement investigations. The worst-case is Ant1 with the highest power. Therefore, Ant 1 was used to perform all conducted tests.

The worst-case scenario for all measurements as followed:

- GSM GPRS
- GSM EGPRS
- WCDMA REL 99
- WCDMA HSDPA

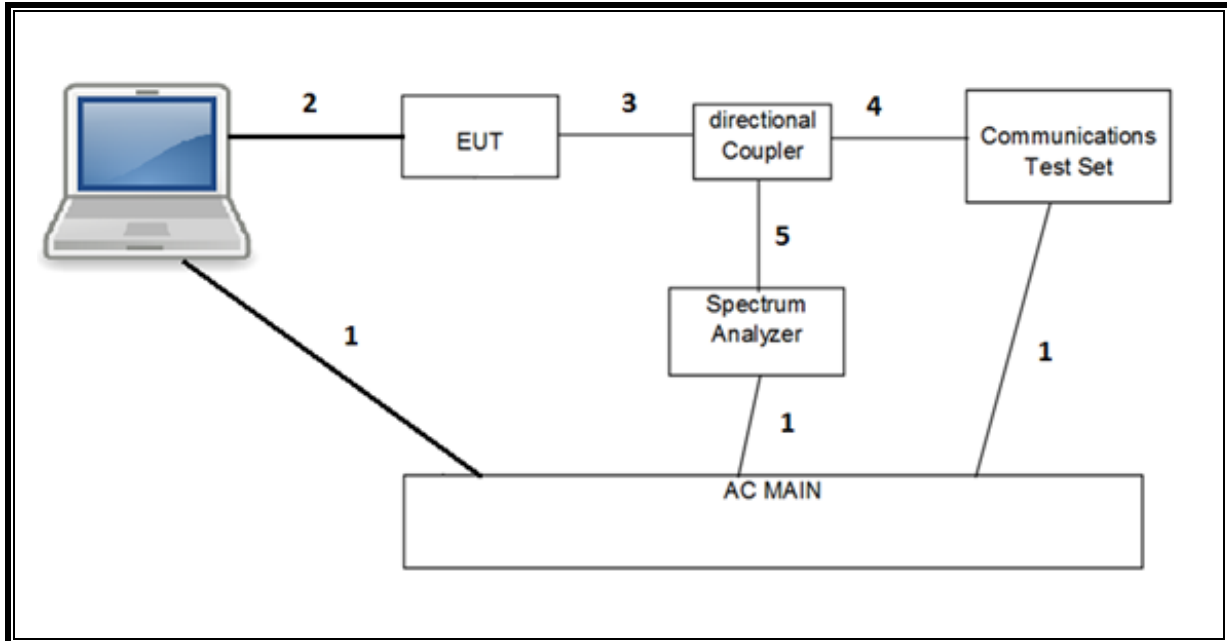
Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. There were no emissions found with less than 20dB of margin from 9kHz to 1GHz.

For simultaneous transmission of multiple channels in the 2.4GHz/5GH WLAN, UWB, and Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

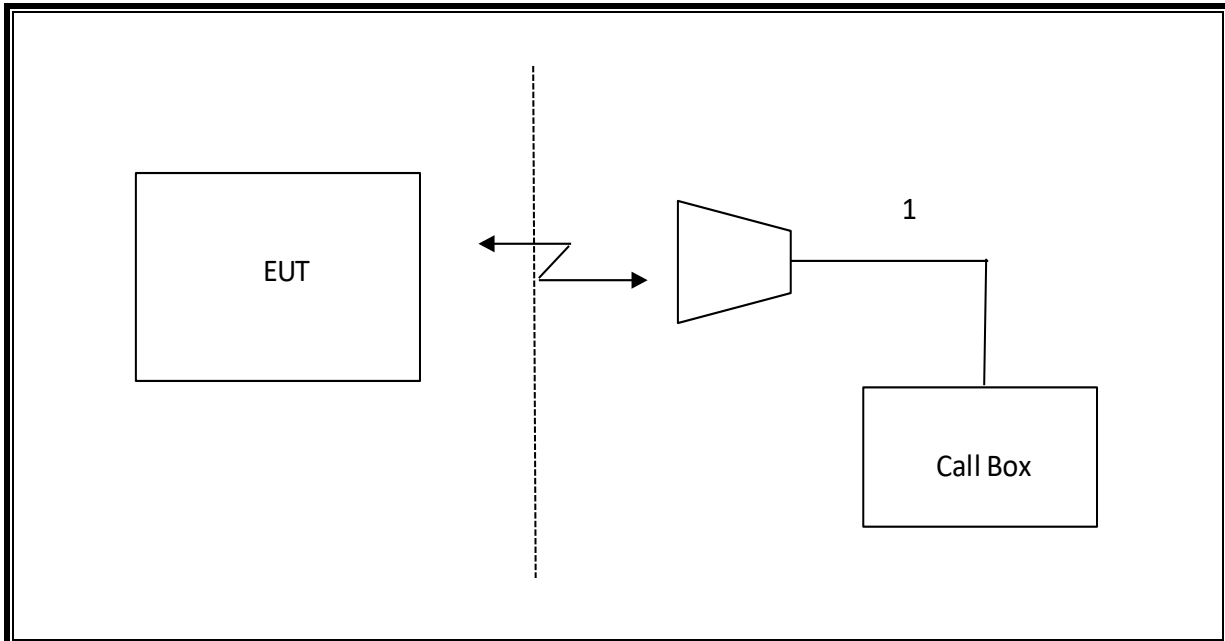
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Apple	MacBook Pro	HRP082673	BCGA1708		
AC/DC adapter	Apple	A1718	C4H64450HH3GN8RA6	--		
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	US 115V	Un-shielded	2.0	N/A
2	USB	1	DC	Un-shielded	1.0	N/A
3	RF In/Out	1	EUT	Un-shielded	0.6	N/A
4	RF In/Out	1	Communication Test Set	Un-shielded	1.2	N/A
5	RF In/Out	1	Barrel	N/A	N/A	N/A
I/O CABLES (RF RADIATED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF In/Out	1	Antenna	Un-shielded	5.0	N/A

CONDUCTED SETUP



RADIATED SETUP



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	79834	06/08/2023
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	85151	04/30/2024
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85313	02/29/2024
Spectrum Analyzer, PXA	Keysight	N9030B	222074	07/16/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85201	02/29/2024
Spectrum Analyzer, PXA	Keysight	N9030B	85214	07/18/2023
Spectrum Analyzer, PXA	Keysight	N9030B	222073	07/22/2023
PXA Signal Analyzer	Keysight	N9030B	222073	07/22/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	230548	02/29/2024
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201498	02/29/2024
Directional Coupler	KRYTAR	152610	198816	09/23/2023
Directional Coupler	KRYTAR	152610	198817	09/23/2023
Directional Coupler	KRYTAR	152610	135712	09/23/2023
Power Meter, P-series single channel	Keysight	N1912A	90630	01/24/2024
Power Meter, P-series single channel	Keysight	N1912A	90719	01/31/2024
Power Meter, P-series single channel	Agilent	N1911A	82174	01/31/2024
Power Sensor, P – series, 50MHz to 18GHz, Wideband	Keysight	N1921A	90389	01/31/2024
Filter, BRF 2495 – 2690 MHz	Micro-Tronics	155050	155055	12/28/2023
Filter, BRF 3.4 – 3.8GHz	Micro-Tronics	208398	208398	08/19/2023
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	222792	02/29/2024
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	230298	02/29/2024
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	230295	02/29/2024
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	22796	02/29/2024
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	230297	02/29/2024
*5G NR Communication Test Set, Call Box	Keysight	UXM	207269	01/31/2024
*5G NR Communication Test Set, Call Box	Keysight	UXM	199836	01/31/2024
*Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	82472	11/16/2023
*Amplifier, 218GHz to 26.5GHz	Ampical	AMP18G26.5-60	215705	02/26/2023
*Amplifier, 26.5GHz to 40GHz	Ampical	AMP26G40-65	172346	02/29/2024
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	172362	03/31/2024
Antenna, Horn 26.5GHz to 40GHz	ARA	MWH-2640/B	172365	03/31/2024
*Antenna, Active Loop 100KHz to 30MHz	ELECTRO-METRICS	EM-6872	219911	05/10/2023
*Antenna, Active Loop 30Hz to 1MHz	ELECTRO-METRICS	EM-6871	219909	05/10/2023
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	236360	Verified/Characterized before use
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	236285	Verified/Characterized before use
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	236355	Verified/Characterized before use
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 3.4, May 20, 2022	
Power Measurement Software	UL	UL RF	Ver 3.1.4, April 29, 2022	
Radiated test software	UL	UL RF	Ver 9.5, Jan 21, 2022	

NOTES:

1. * Testing is completed before equipment expiration date.
2. ** Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

8. RF OUTPUT POWER VERIFICATION (4 antennas)

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted output powers as follows:

8.1. GSM

Using CMW500 Communication Test Set

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press **Connection control** to choose the different menus

Press **RESET** > choose all to reset all settings

Connection	Press Signal Off to turn off the signal and change settings Network Support > GSM+GPRS or GSM+EGPRS Main Service > Packet Data Service selection > Test Mode A – Auto Slot Config. off
MS Signal	Press Slot Config bottom on the right twice to select and change the number of time slots and power setting > Slot configuration > Uplink/Gamma > 33 dBm for GPRS 850/900 > 27 dBm for EGPRS 850/900 > 30 dBm for GPRS1800/1900 > 26 dBm for EGPRS1800/1900
BS Signal	Enter the same channel number for TCH channel (test channel) and BCCH channel Frequency Offset > + 0 Hz Mode > BCCH and TCH BCCH Level > -85 dBm (May need to adjust if link is not stable) BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel] Channel Type > Off P0> 4 dB Slot Config > Unchanged (if already set under MS Signal) TCH > choose desired test channel Hopping > Off Main Timeslot > 3 (Default)
Network	Coding Scheme > CS 1 (GPRS) and MCS5 (EGPRS) Bit Stream > 2E9-1PSR Bit Pattern
AF/RF	Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection	Press Signal On to turn on the signal and change settings

RESULT

8.1.1. GSM 850

Test Engineer ID:	28498	Test Date:	2/8/2023
--------------------------	-------	-------------------	----------

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)	
					ANT 1	ANT 2
GPRS (GMSK)	CS1	1	128	824.2	32.94	32.46
			190	836.6	32.35	32.24
			251	848.8	33.00	32.50
		2	128	824.2	31.91	31.14
			190	836.6	31.87	31.50
			251	848.8	32.00	31.25
EGPRS (8PSK)	MCS5	1	128	824.2	26.83	26.73
			190	836.6	26.63	26.14
			251	848.8	27.50	27.00
		2	128	824.2	26.50	25.85
			190	836.6	26.20	25.33
			251	848.8	26.02	26.00

8.1.2. GSM 1900

Test Engineer ID:	28498	Test Date:	3/8/2023
--------------------------	-------	-------------------	----------

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)			
					ANT 1	ANT 2	ANT 3	ANT 4
GPRS (GMSK)	CS1	1	512	1850.2	31.91	29.50	31.50	28.66
			661	1880	31.69	29.19	31.26	28.36
			810	1909.8	32.00	28.87	31.21	29.00
		2	512	1850.2	30.83	28.35	30.26	27.54
			661	1880	31.00	28.22	30.50	28.00
			810	1909.8	30.86	28.50	30.25	27.63
EGPRS (8PSK)	MCS5	1	512	1850.2	26.89	23.81	26.49	24.00
			661	1880	26.76	23.95	26.40	23.25
			810	1909.8	27.00	24.00	26.50	23.89
		2	512	1850.2	25.86	22.86	25.39	22.57
			661	1880	26.00	23.00	25.47	23.00
			810	1909.8	25.85	22.93	25.50	22.84

8.2. WCDMA

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW \geq RBW \geq 26dB BW, typically 5MHz.
- Set a marker to point the corresponding peak value.

REL 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 2
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

HSDPA REL 5

The following 4 Sub-tests were completed according to Release 5 procedures in table C.10.1.4 of 3GPP TS 34.121-1 A summary of these settings are illustrated below:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

HSPA REL 6 (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in table C.11.1.3 of 3GPP TS 34.121-1. A summary of these settings are illustrated below:

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

DUAL CARRIER HSDPA (DC-HSDPA (REL 8, CAT 24))

The following 4 Sub-tests for DC-HSDPA were completed according to Release 8 procedures in table C08.1.12 of 3GPP TS 34.121-1. A summary of subtest settings are illustrated below:

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
<p>Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.</p> <p>Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.</p>		

HSPA+ REL 7

The following 1 Sub-test was completed according to Release 7 procedures in table C.11.1.4 of 3GPP TS34.121. A summary of these settings are illustrated below:

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

RESULT

8.2.1. WCDMA BAND 5

Test Engineer ID:	28567	Test Date:	3/9/2023
-------------------	-------	------------	----------

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)		
						ANT 1	ANT 2	
W-CDMA Band 5 (850MHz)	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	25.70	24.70	
			4183	836.6	N/A	25.66	24.63	
			4233	846.6	N/A	25.64	24.65	
	HSDPA	Subtest 1	4132	826.4	0	24.71	23.69	
			4183	836.6	0	24.65	23.63	
			4233	846.6	0	24.60	23.61	
		Subtest 2	4132	826.4	0	24.67	23.74	
			4183	836.6	0	24.28	23.64	
			4233	846.6	0	24.92	23.64	
		Subtest 3	4132	826.4	0.5	24.25	23.21	
			4183	836.6	0.5	24.57	23.12	
			4233	846.6	0.5	24.13	23.14	
			Subtest 4	4132	826.4	0.5	24.22	23.19
				4183	836.6	0.5	24.15	23.13
				4233	846.6	0.5	24.57	23.13
		HSPA (HSDPA & HSUPA)	Subtest 1	4132	826.4	0	24.71	23.70
				4183	836.6	0	24.67	23.65
				4233	846.6	0	24.67	23.70
	Subtest 2		4132	826.4	2	22.72	21.72	
			4183	836.6	2	22.66	21.68	
			4233	846.6	2	22.62	21.69	
	Subtest 3		4132	826.4	1	23.74	22.71	
			4183	836.6	1	23.68	22.64	
			4233	846.6	1	23.66	22.69	
	Subtest 4		4132	826.4	2	22.76	21.75	
			4183	836.6	2	22.68	21.65	
			4233	846.6	2	22.66	21.67	
	Subtest 5		4132	826.4	0	24.30	23.27	
			4183	836.6	0	24.27	23.22	
			4233	846.6	0	24.24	23.26	
	DC-HSDPA	Subtest 1	4132	826.4	0	24.72	23.70	
			4183	836.6	0	24.69	23.62	
			4233	846.6	0	24.62	23.62	
		Subtest 2	4132	826.4	0	24.68	23.71	
			4183	836.6	0	24.65	23.64	
			4233	846.6	0	24.63	23.62	
		Subtest 3	4132	826.4	0.5	24.23	23.17	
			4183	836.6	0.5	24.18	23.13	
			4233	846.6	0.5	24.14	23.12	
		Subtest 4	4132	826.4	0.5	24.20	23.23	
			4183	836.6	0.5	24.15	23.15	
			4233	846.6	0.5	24.11	23.12	

8.2.2. WCDMA BAND 2

Test Engineer ID:	28567	Test Date:	3/9/2023
-------------------	-------	------------	----------

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)				
						ANT 1	ANT2	ANT3	ANT 4	
W-CDMA Band 2 (1900MHz)	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	25.70	23.40	25.50	22.90	
			9400	1880.0	N/A	25.66	23.30	25.39	22.63	
			9538	1907.6	N/A	25.57	23.23	25.24	22.61	
	HSDPA	Subtest 1	9262	1852.4	0	24.71	22.40	24.50	21.87	
			9400	1880.0	0	24.66	22.30	24.35	21.68	
			9538	1907.6	0	24.57	22.22	24.23	21.65	
		Subtest 2	9262	1852.4	0	24.72	22.40	24.49	21.86	
			9400	1880.0	0	24.69	22.28	24.32	21.68	
			9538	1907.6	0	24.58	22.24	24.18	21.65	
		Subtest 3	9262	1852.4	0.5	24.21	21.93	24.02	21.40	
			9400	1880.0	0.5	24.18	21.80	23.82	21.16	
			9538	1907.6	0.5	24.10	21.76	23.68	21.14	
		Subtest 4	9262	1852.4	0.5	24.20	21.89	24.00	21.39	
			9400	1880.0	0.5	24.14	21.79	23.81	21.17	
			9538	1907.6	0.5	24.08	21.73	23.69	21.13	
		HSPA (HSDPA & HSUPA)	Subtest 1	9262	1852.4	0	24.72	22.37	24.47	21.87
				9400	1880.0	0	24.66	22.31	24.33	21.70
				9538	1907.6	0	24.62	22.28	24.20	21.66
	Subtest 2		9262	1852.4	2	22.71	20.39	22.49	19.88	
			9400	1880.0	2	22.67	20.29	22.35	19.72	
			9538	1907.6	2	22.58	20.24	22.22	19.72	
	Subtest 3		9262	1852.4	1	23.72	21.37	23.51	20.87	
			9400	1880.0	1	23.66	21.29	23.34	20.73	
			9538	1907.6	1	23.64	21.23	23.20	20.71	
	Subtest 4		9262	1852.4	2	22.70	20.41	22.48	19.88	
			9400	1880.0	2	22.67	20.28	22.33	19.72	
			9538	1907.6	2	22.60	20.24	22.23	19.74	
	Subtest 5		9262	1852.4	0	24.30	21.94	24.10	21.46	
			9400	1880.0	0	24.31	21.86	23.94	21.30	
			9538	1907.6	0	24.20	21.79	23.81	21.28	
	DC-HSDPA	Subtest 1	9262	1852.4	0	24.70	22.43	24.50	21.91	
			9400	1880.0	0	24.68	22.32	24.38	21.70	
			9538	1907.6	0	24.59	22.25	24.21	21.66	
		Subtest 2	9262	1852.4	0	24.68	22.42	24.48	21.86	
			9400	1880.0	0	24.68	22.30	24.31	21.68	
			9538	1907.6	0	24.60	22.21	24.16	21.64	
		Subtest 3	9262	1852.4	0.5	24.20	21.91	24.01	21.39	
			9400	1880.0	0.5	24.16	21.82	23.80	21.17	
			9538	1907.6	0.5	24.07	21.74	23.66	21.13	
		Subtest 4	9262	1852.4	0.5	24.17	21.93	23.99	21.36	
			9400	1880.0	0.5	24.15	21.82	23.83	21.16	
			9538	1907.6	0.5	24.07	21.67	23.70	21.13	

8.2.3. WCDMA BAND 4

Test Engineer ID:	28567	Test Date:	3/9/2023
-------------------	-------	------------	----------

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)				
						ANT 1	ANT2	ANT3	ANT4	
W-CDMA Band 4 (1700MHz)	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	25.70	23.40	25.40	22.90	
			1413	1732.6	N/A	25.65	23.40	25.50	22.76	
			1513	1752.6	N/A	25.56	23.33	25.44	22.69	
	HSDPA	Subtest 1	1312	1712.4	0	24.70	22.41	24.36	21.92	
			1413	1732.6	0	24.65	22.37	24.47	21.74	
			1513	1752.6	0	24.56	22.32	24.44	21.70	
		Subtest 2	1312	1712.4	0	24.71	22.36	24.33	21.85	
			1413	1732.6	0	24.68	22.36	24.47	21.72	
			1513	1752.6	0	24.57	22.29	24.43	21.67	
		Subtest 3	1312	1712.4	0.5	24.20	21.86	23.85	21.37	
			1413	1732.6	0.5	24.17	21.81	23.98	21.24	
			1513	1752.6	0.5	24.09	21.82	23.90	21.20	
		Subtest 4	1312	1712.4	0.5	24.19	21.85	23.83	21.35	
			1413	1732.6	0.5	24.13	21.86	23.95	21.22	
			1513	1752.6	0.5	24.07	21.81	23.92	21.19	
		HSPA (HSDPA & HSUPA)	Subtest 1	1312	1712.4	0	24.71	22.36	24.34	21.89
				1413	1732.6	0	24.65	22.40	24.48	21.79
				1513	1752.6	0	24.61	22.35	24.47	21.74
			Subtest 2	1312	1712.4	2	22.70	20.38	22.35	19.91
				1413	1732.6	2	22.66	20.42	22.51	19.80
				1513	1752.6	2	22.57	20.36	22.53	19.76
	Subtest 3		1312	1712.4	1	23.71	21.37	23.35	20.87	
			1413	1732.6	1	23.65	21.41	23.54	20.82	
			1513	1752.6	1	23.63	21.39	23.50	20.76	
	Subtest 4		1312	1712.4	2	22.69	20.41	22.38	19.87	
			1413	1732.6	2	22.66	20.40	22.51	19.79	
			1513	1752.6	2	22.59	20.36	22.49	19.73	
	Subtest 5		1312	1712.4	0	24.29	21.94	23.96	21.46	
			1413	1732.6	0	24.30	22.01	24.08	21.36	
			1513	1752.6	0	24.19	21.94	24.04	21.33	
	DC-HSDPA	Subtest 1	1312	1712.4	0	24.69	22.41	24.40	21.94	
			1413	1732.6	0	24.67	22.40	24.47	21.79	
			1513	1752.6	0	24.58	22.31	24.45	21.71	
		Subtest 2	1312	1712.4	0	24.67	22.38	24.35	21.89	
			1413	1732.6	0	24.67	22.36	24.44	21.73	
			1513	1752.6	0	24.59	22.28	24.40	21.66	
		Subtest 3	1312	1712.4	0.5	24.19	21.84	23.81	21.39	
			1413	1732.6	0.5	24.15	21.85	23.97	21.23	
			1513	1752.6	0.5	24.06	21.81	23.92	21.17	
		Subtest 4	1312	1712.4	0.5	24.16	21.87	23.86	21.35	
			1413	1732.6	0.5	24.14	21.85	23.95	21.22	
			1513	1752.6	0.5	24.06	21.79	23.91	21.15	

9. CONDUCTED TEST RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
ISED: RSS132; RSS133§2.3; RSS139

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 middle channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

RESULTS

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested.

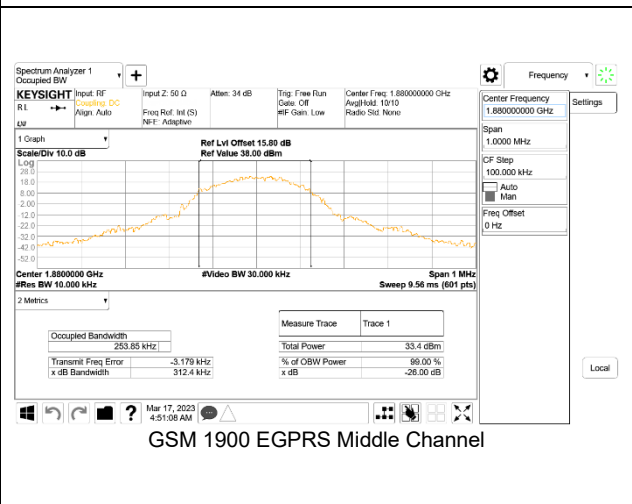
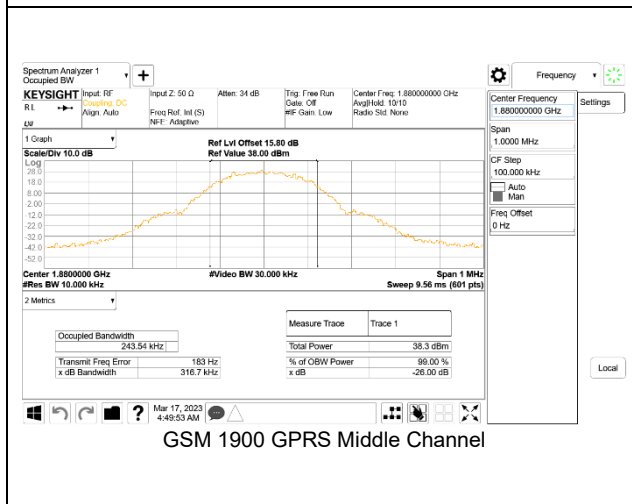
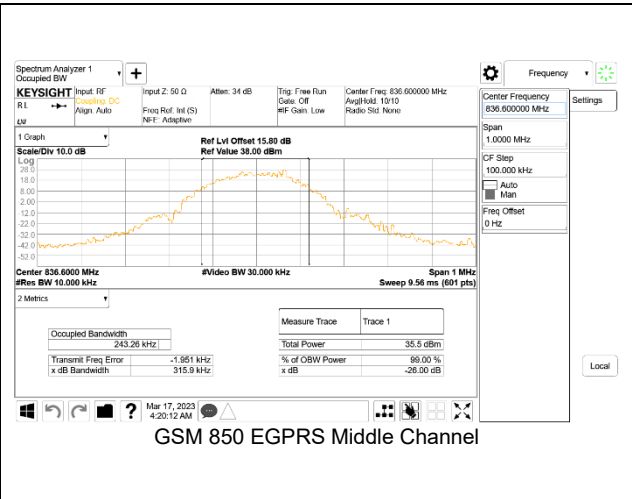
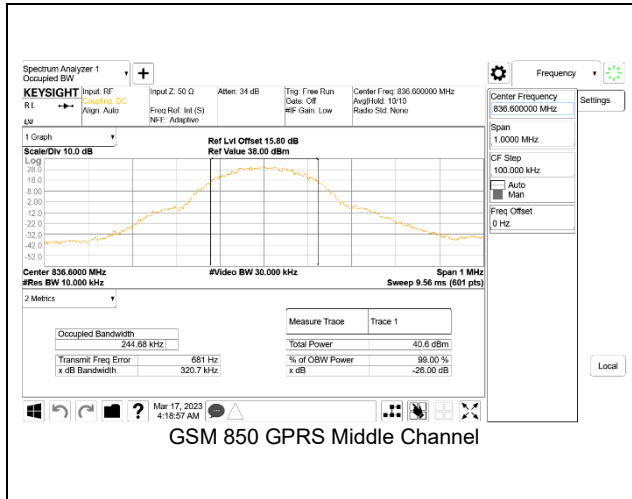
GSM

Band	Modulation	Channel	f(MHz)	99% BW (kHz)	-26dB BW (kHz)
850	GPRS	190	836.6	244.68	320.70
	EGPRS			243.26	315.90
1900	GPRS	661	1880.0	243.54	316.70
	EGPRS			253.85	312.40

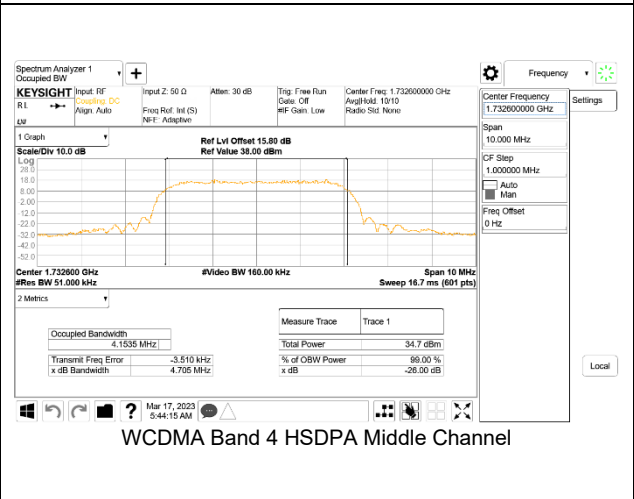
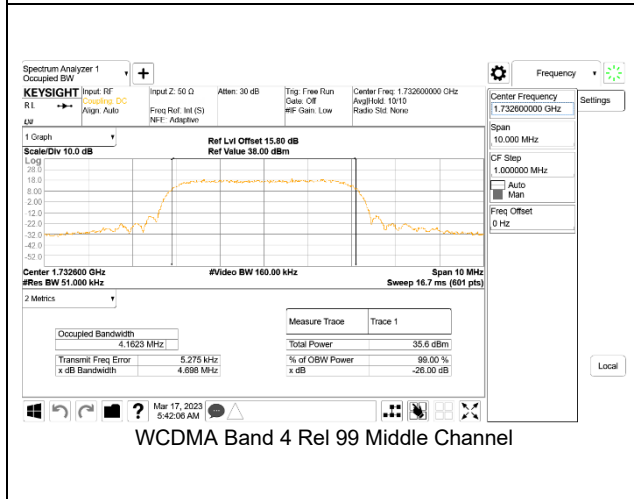
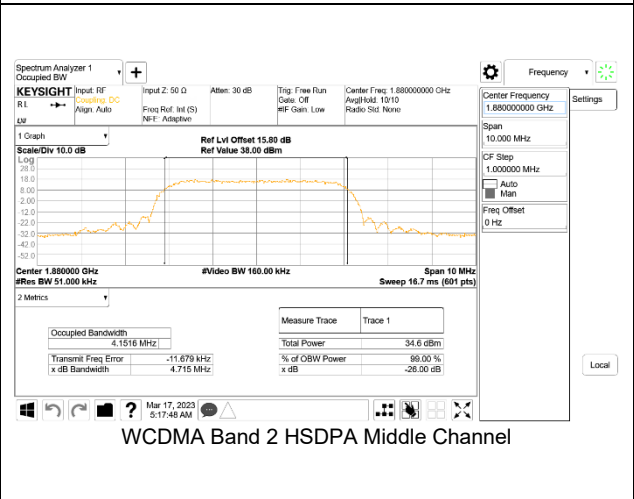
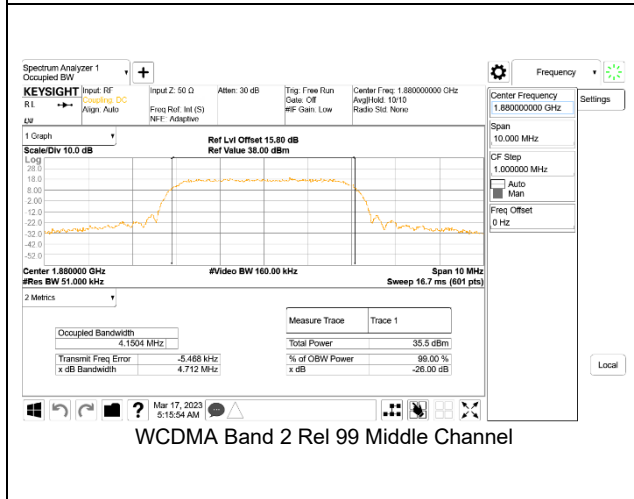
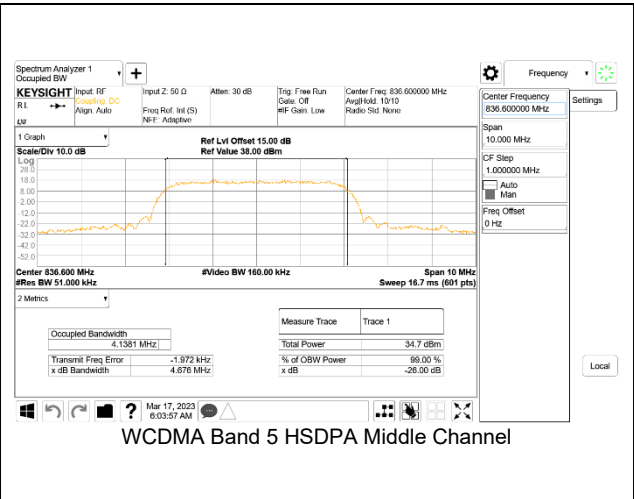
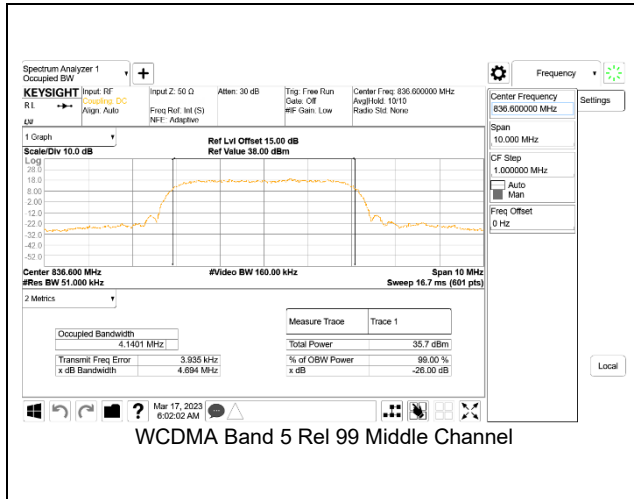
WCDMA

Band	Modulation	Channel	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
BAND 5	REL 99	4408	836.6	4.140	4.694
	HSDPA			4.138	4.676
BAND 2	REL 99	9800	1880.0	4.150	4.712
	HSDPA			4.152	4.715
BAND 4	REL 99	1638	1732.6	4.162	4.698
	HSDPA			4.154	4.705

9.1.1. GSM



9.1.2. WCDMA



9.2. BAND EDGE AND EMISSION MASK

LIMITS

FCC: §22.917(a), §24.238, §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.

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or $50 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

RSS132§5.5

Equipment shall meet the unwanted emission limits specified 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 below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB.
- (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 below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

p is the output power specified in watts.

RSS133§6.5.1

Equipment shall comply with the limits in (i) and (ii) below.

- (iii) 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 $43 + 10 \log_{10}(p(\text{watts}))$.
- (iv) 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 $43 + 10 \log_{10}(p(\text{watts}))$. If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 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 $43 + 10 \log_{10} p(\text{watts})$ 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 $43 + 10 \log_{10} p(\text{watts})$ dB.

TEST PROCEDURE

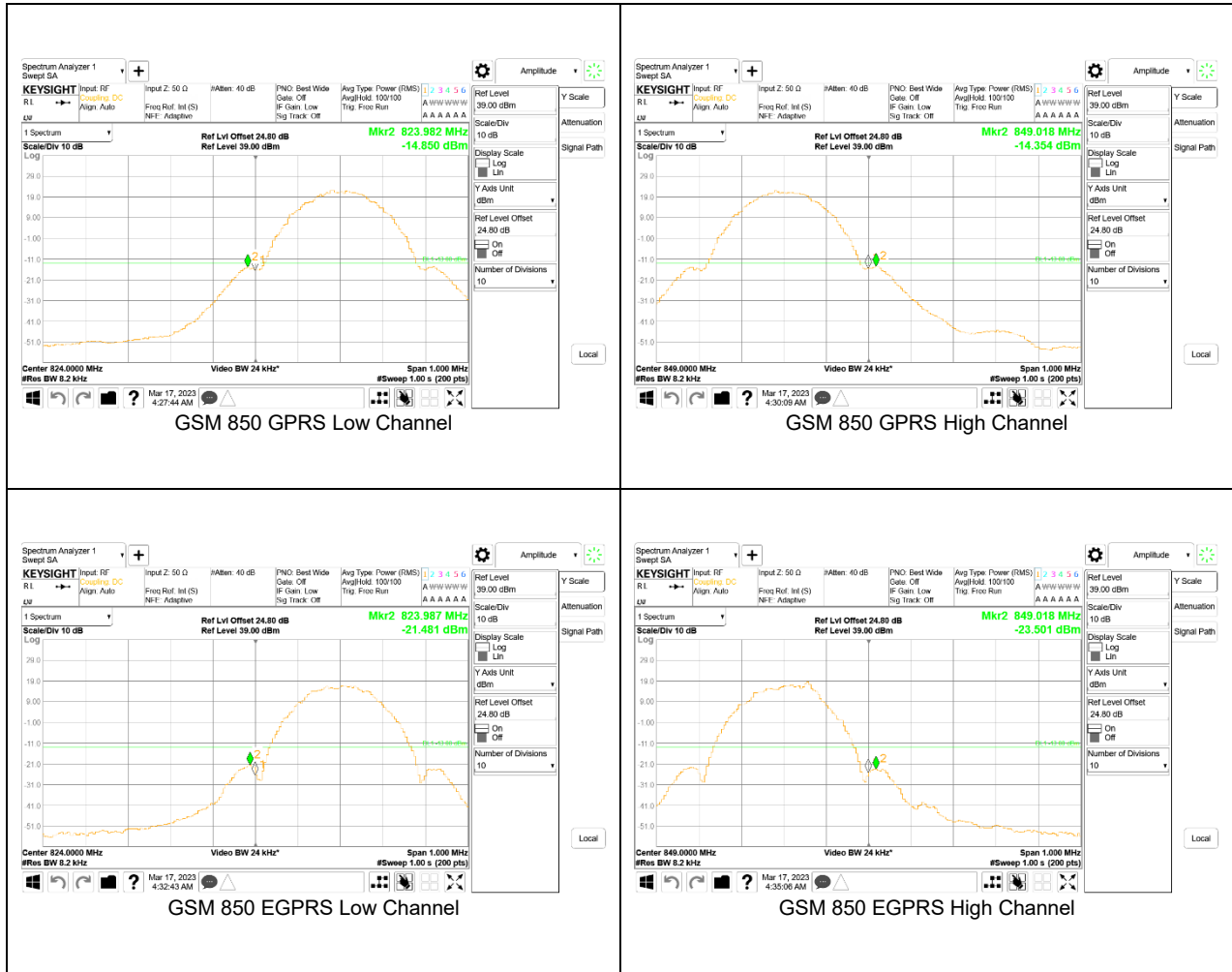
The transmitter output was connected to a R&S CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

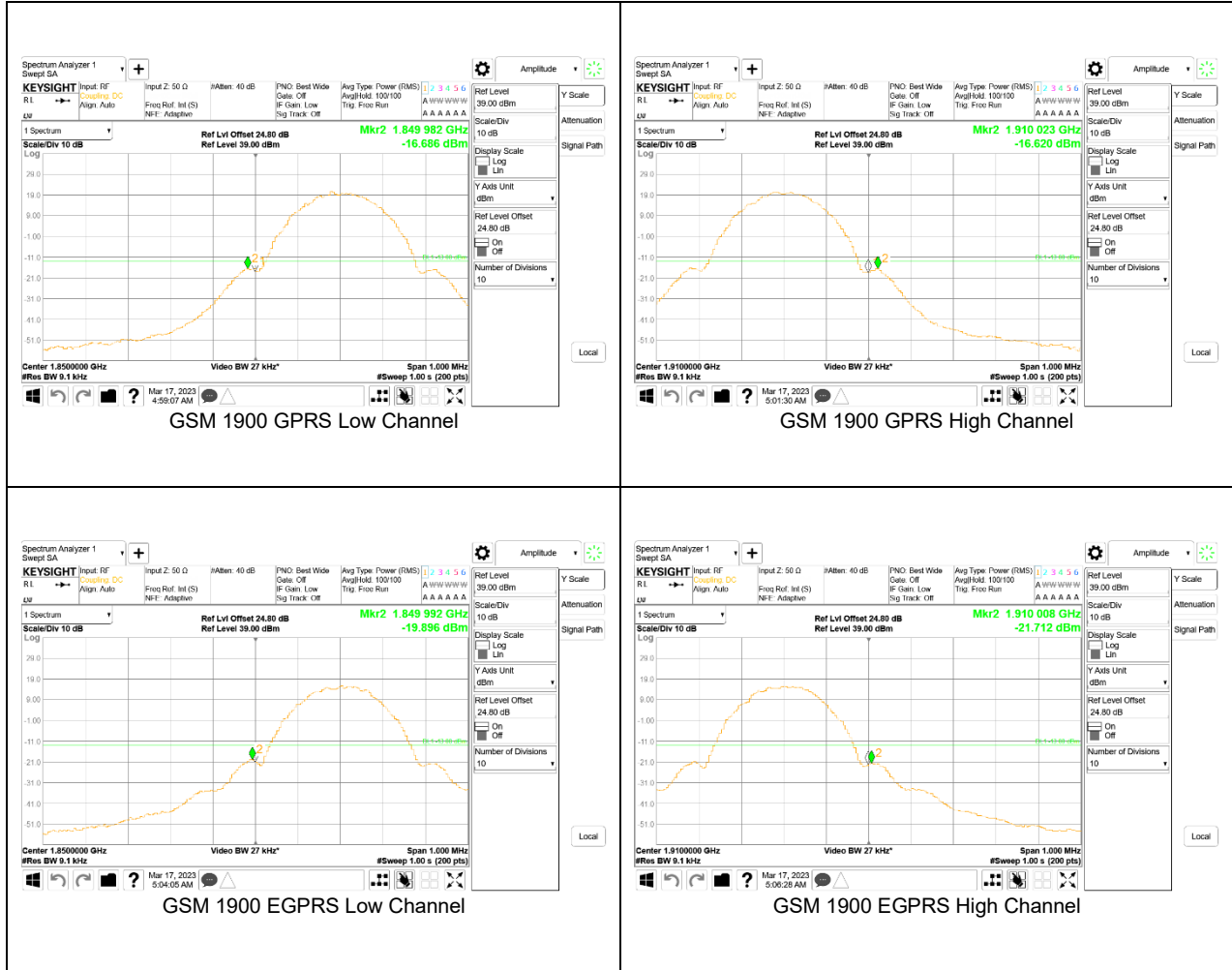
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

RESULTS

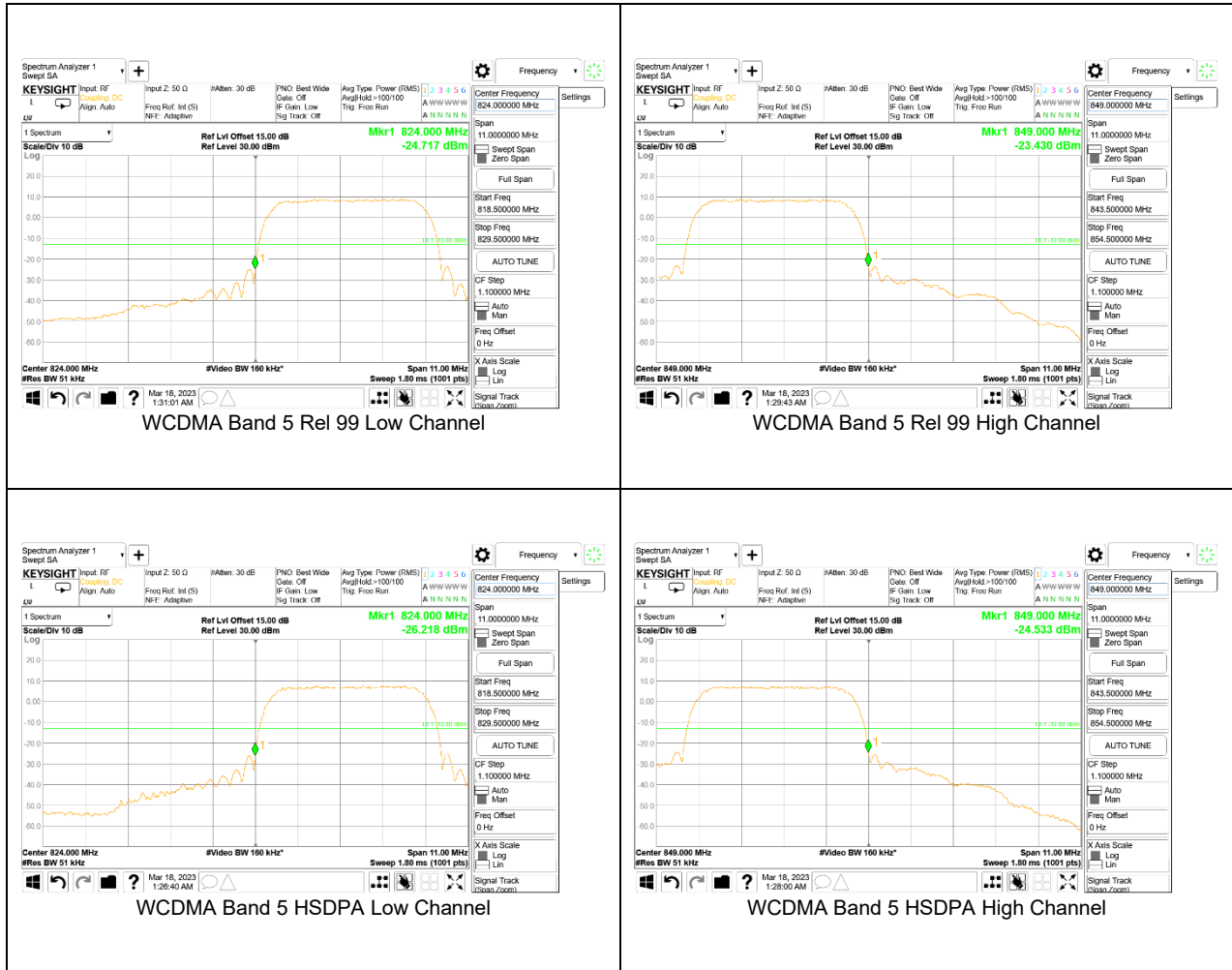
9.2.1. GSM 850



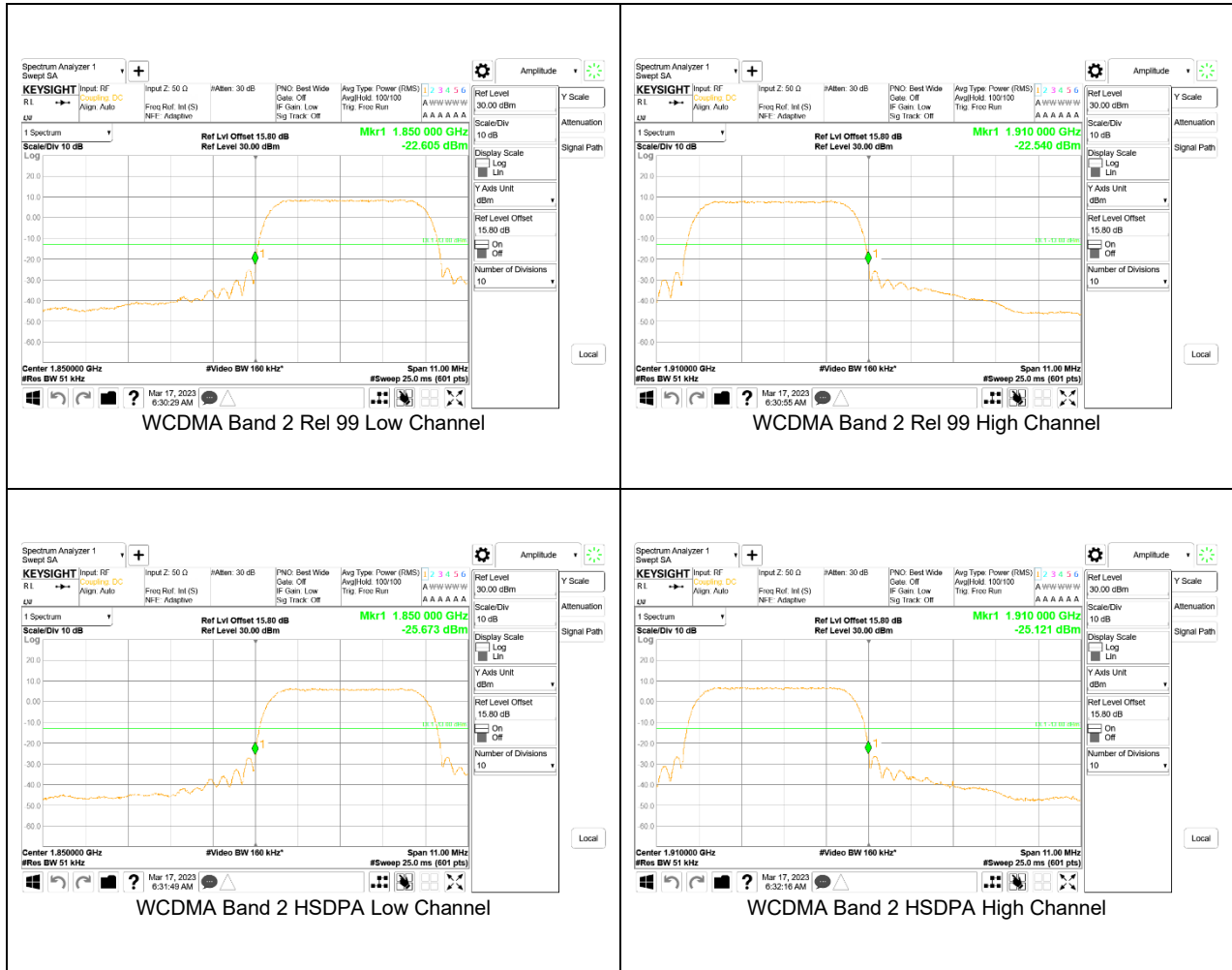
9.2.2. GSM 1900



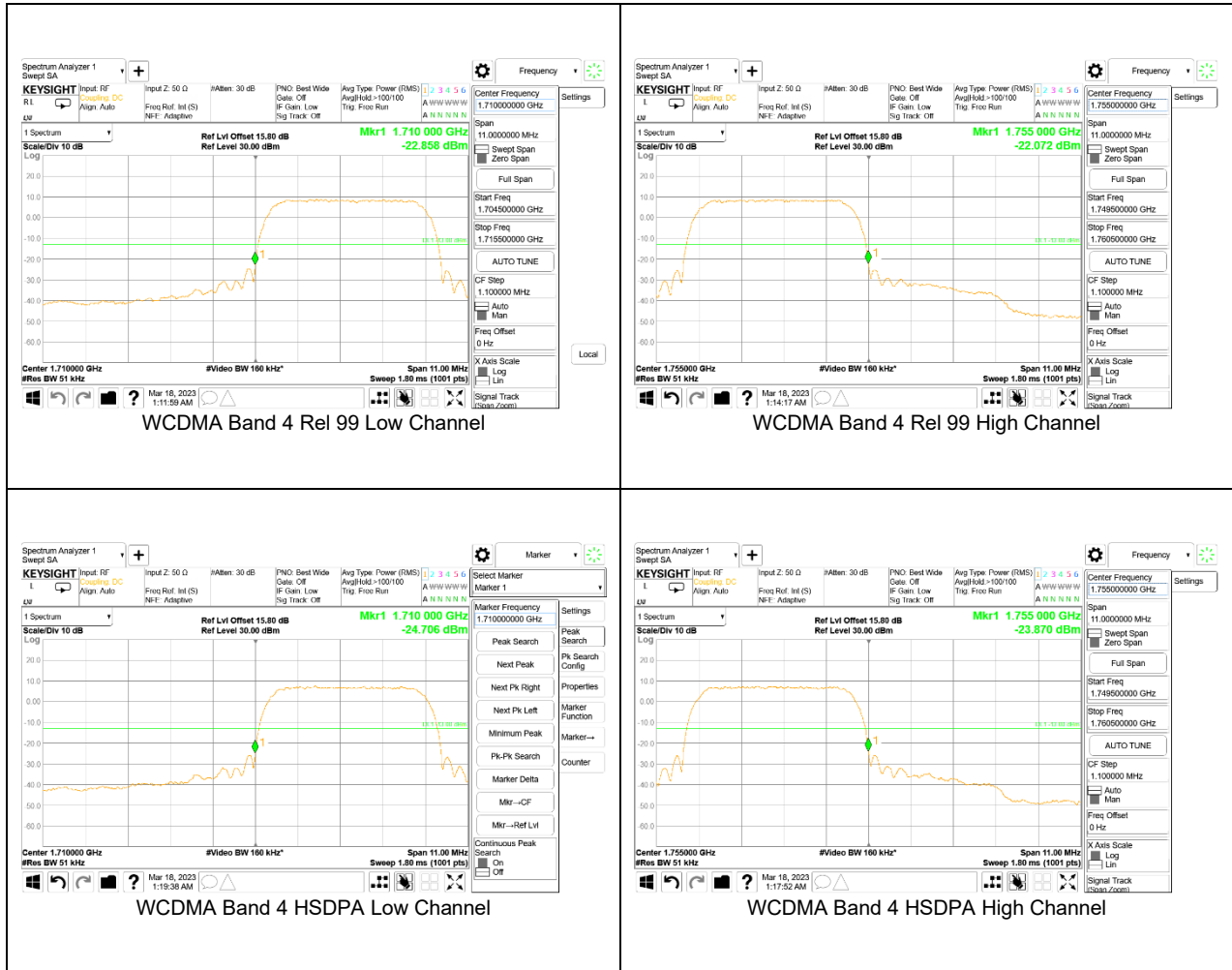
9.2.3. WCDMA BAND 5



9.2.4. WCDMA BAND 2



9.2.5. WCDMA BAND 4



9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, and §27.53
ISED: RSS132§5.5; and RSS133§6.5 and RSS139§5.6

LIMITS

FCC: §22.917(a), §24.238, and §27.53 (h)

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

RSS132§5.5, and RSS133§6.5.1, RSS139§6.6

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

TEST PROCEDURE

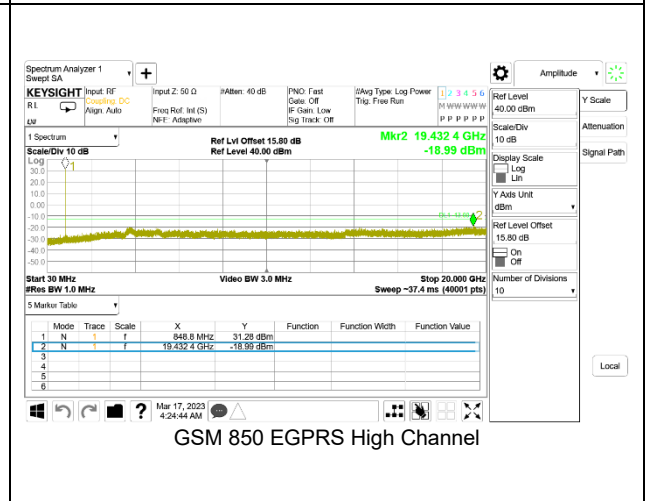
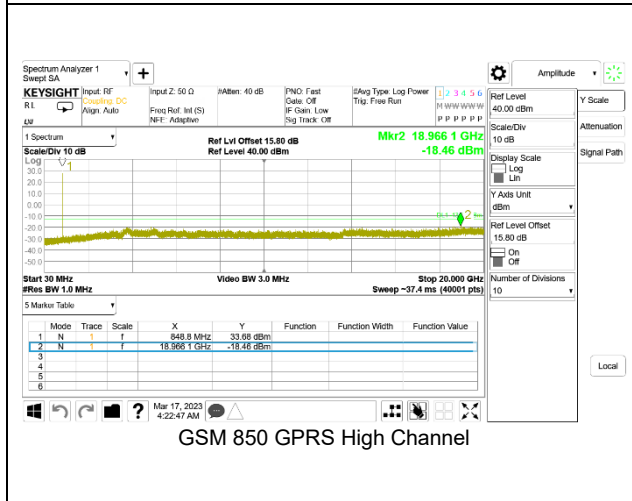
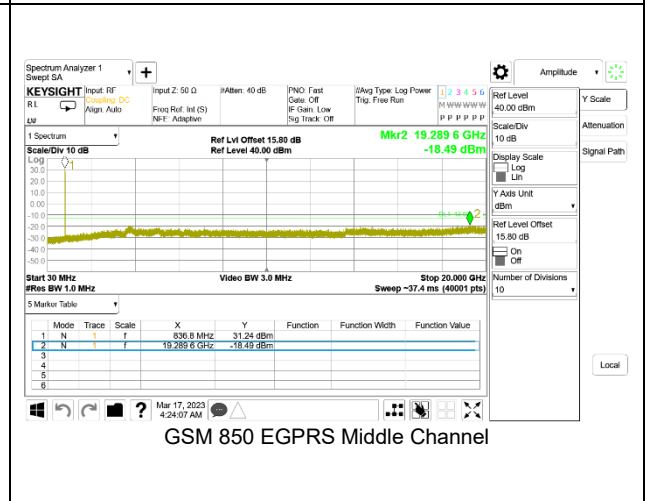
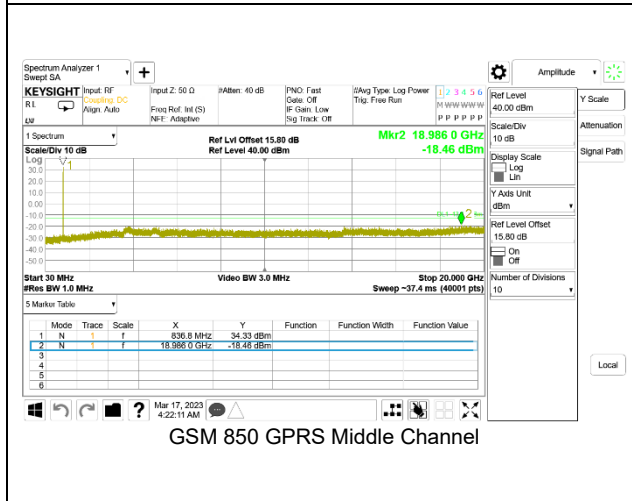
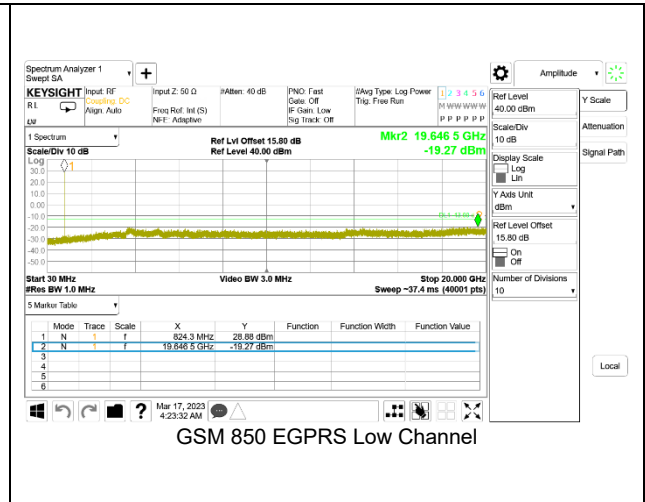
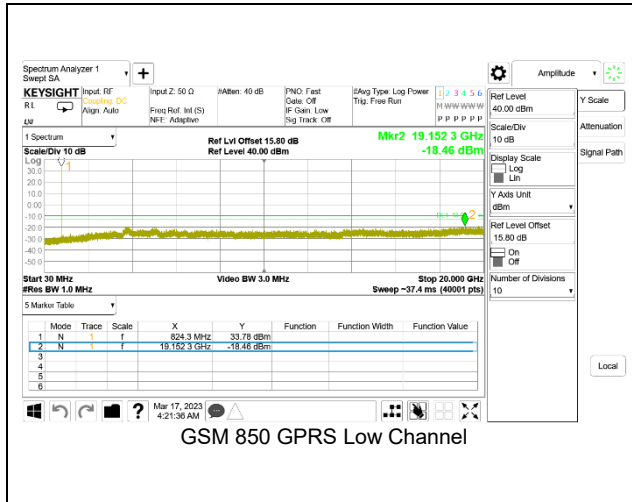
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case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

For each out of band emissions measurement:

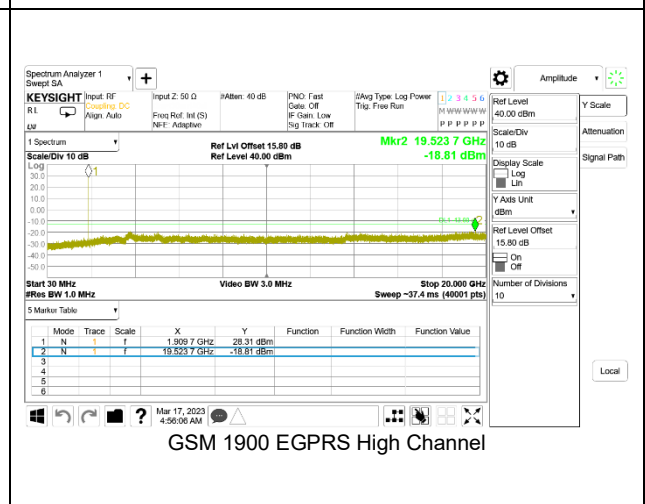
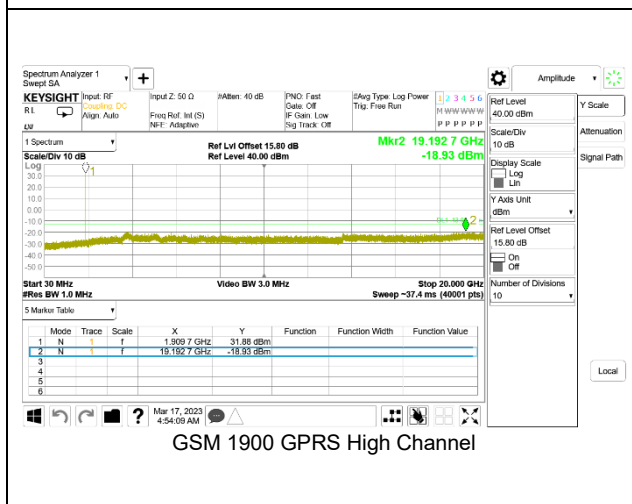
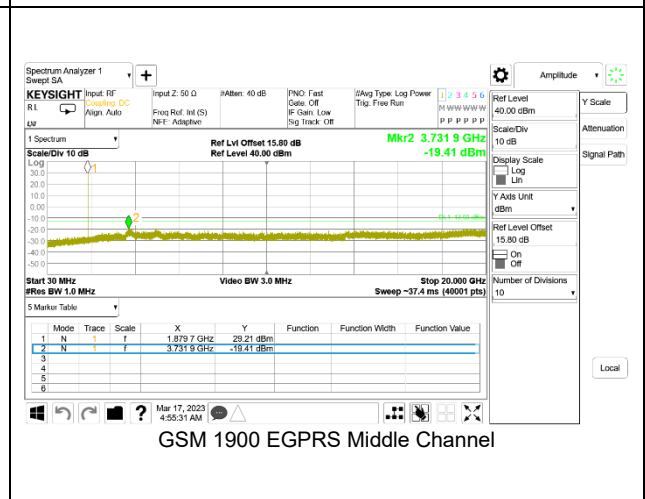
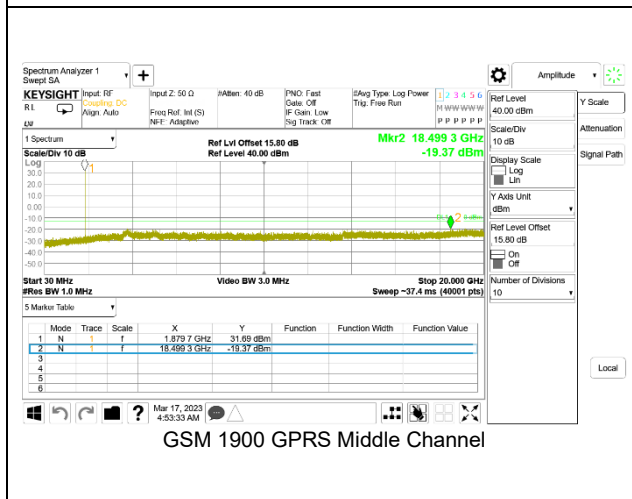
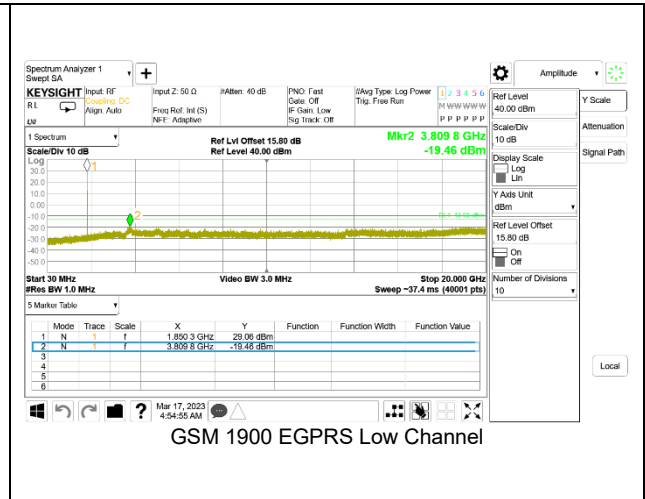
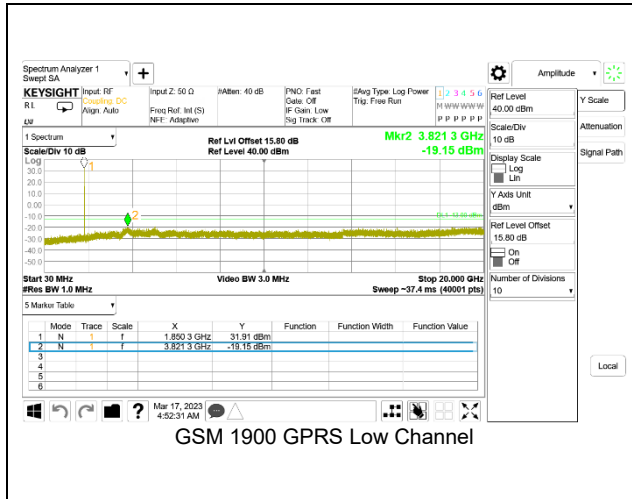
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

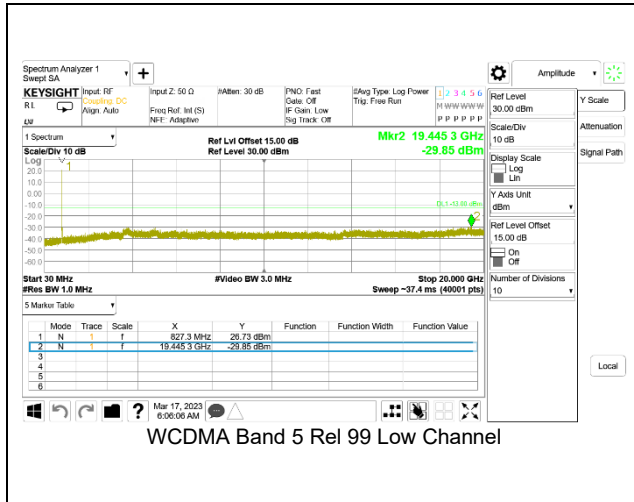
9.3.1. GSM 850



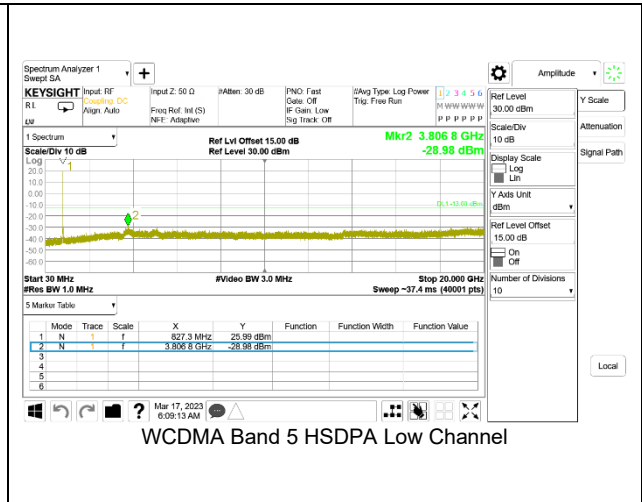
9.3.2. GSM 1900



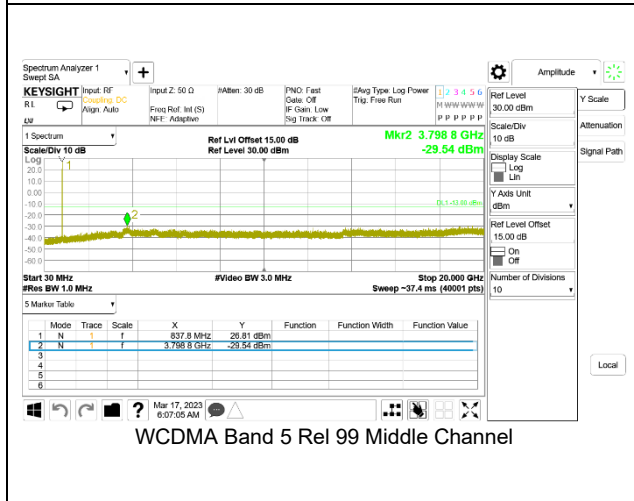
9.3.3. WCDMA BAND 5



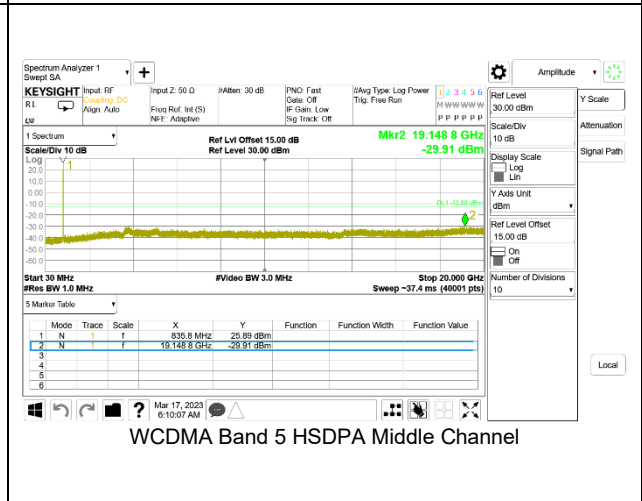
WCDMA Band 5 Rel 99 Low Channel



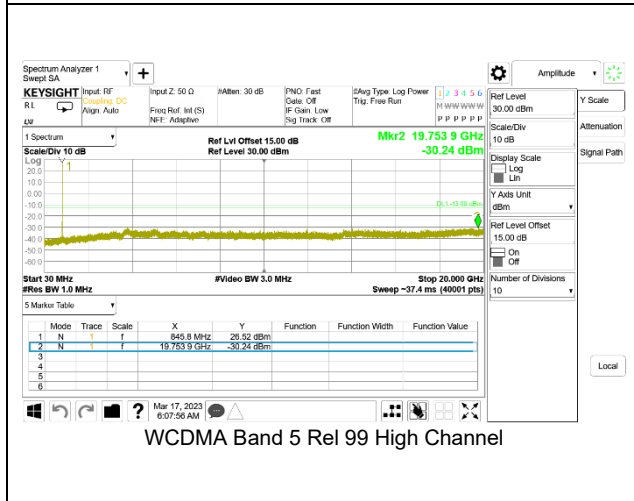
WCDMA Band 5 HSDPA Low Channel



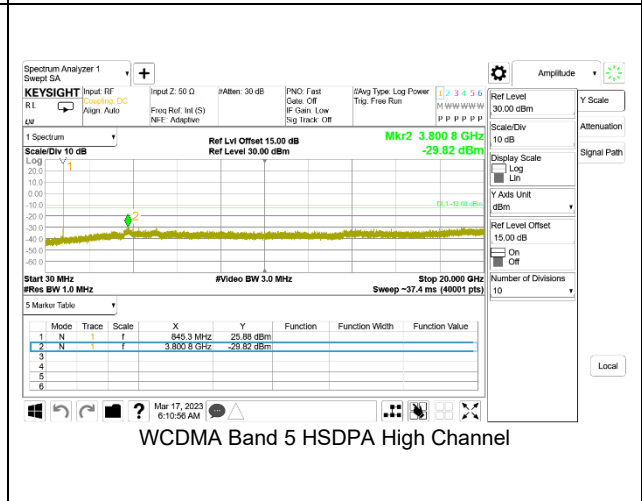
WCDMA Band 5 Rel 99 Middle Channel



WCDMA Band 5 HSDPA Middle Channel

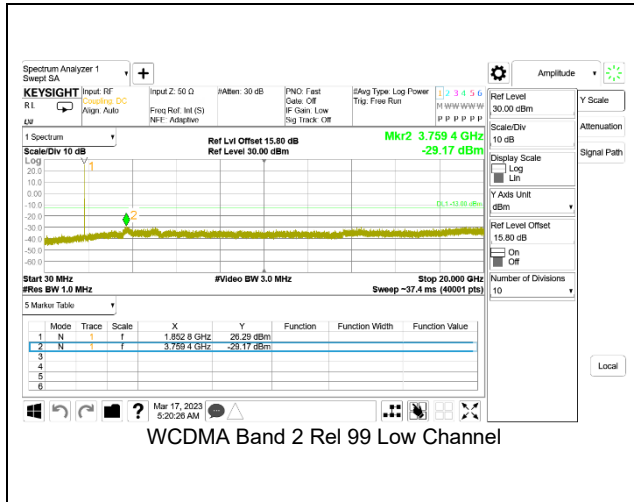


WCDMA Band 5 Rel 99 High Channel

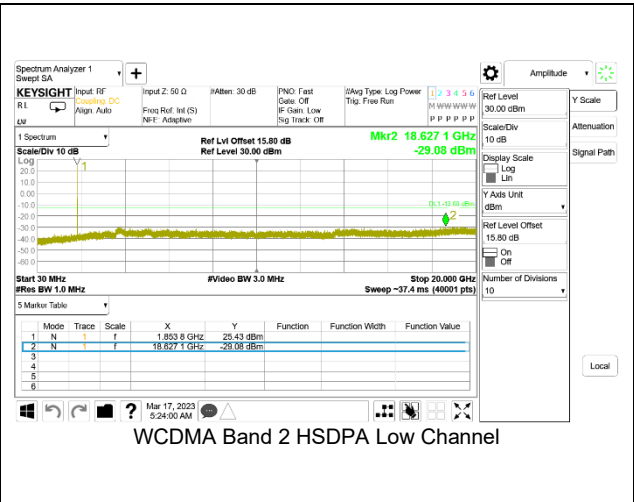


WCDMA Band 5 HSDPA High Channel

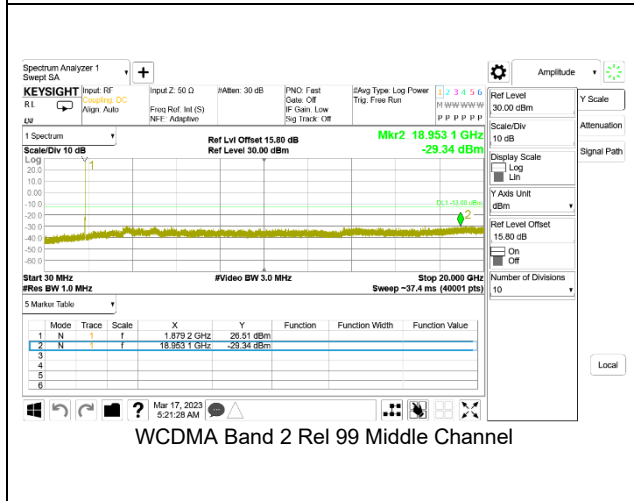
9.3.4. WCDMA BAND 2



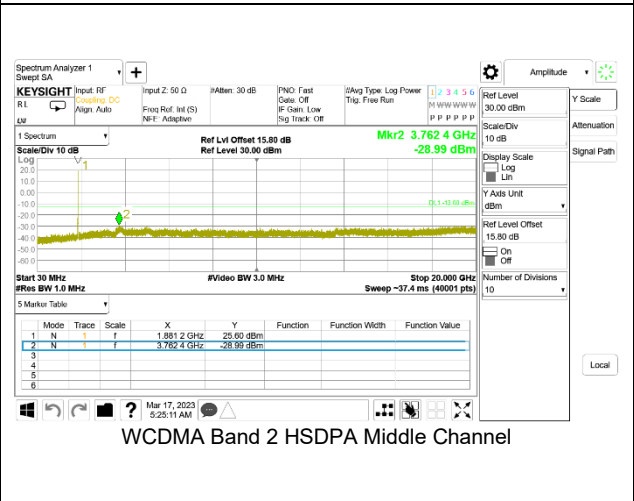
WCDMA Band 2 Rel 99 Low Channel



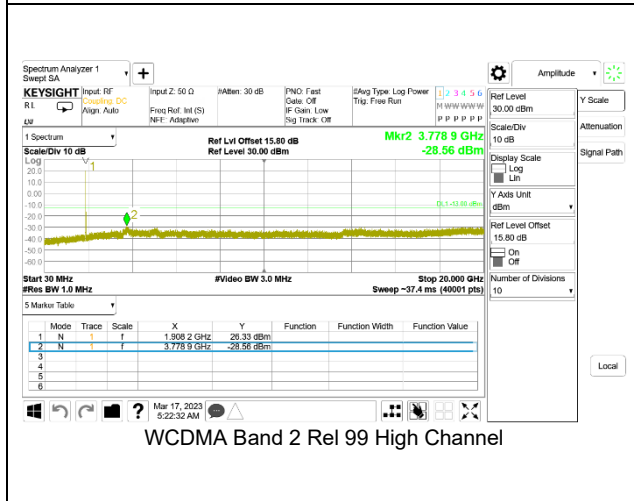
WCDMA Band 2 HSDPA Low Channel



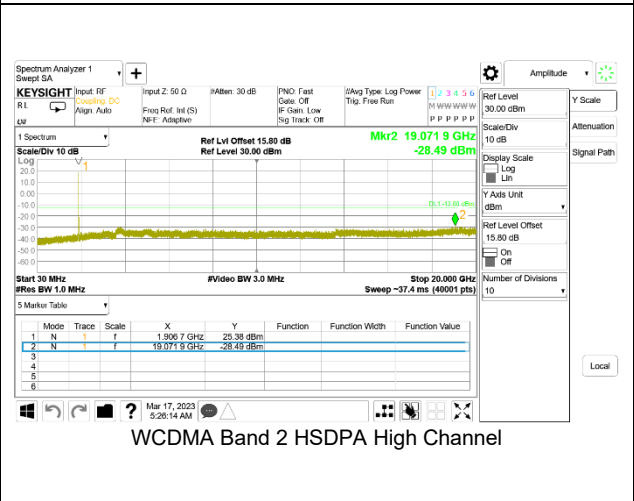
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel

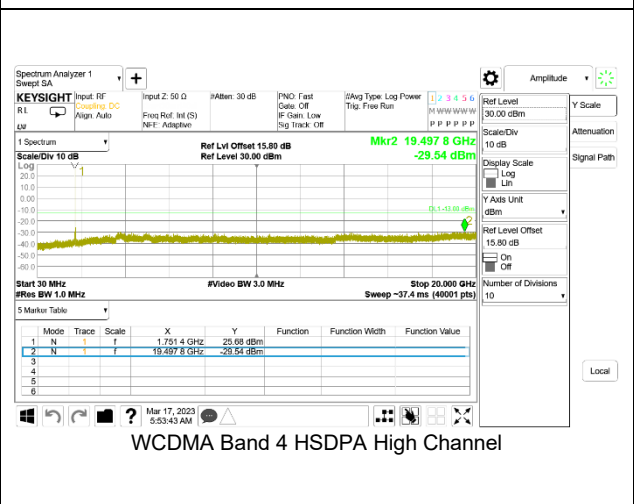
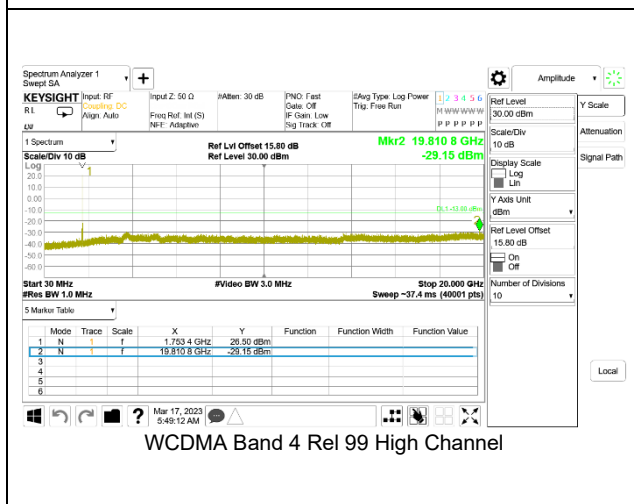
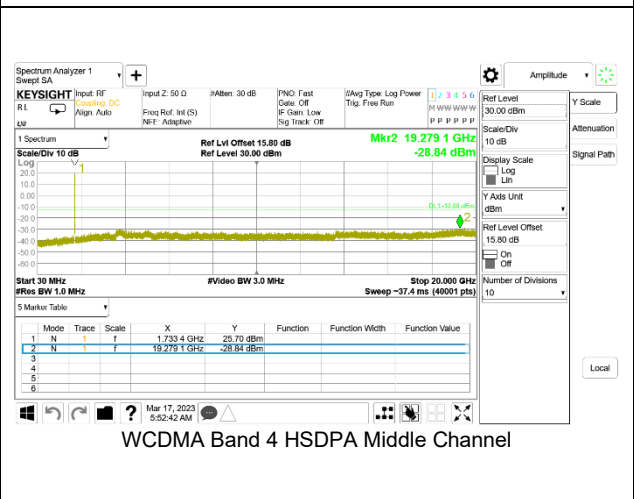
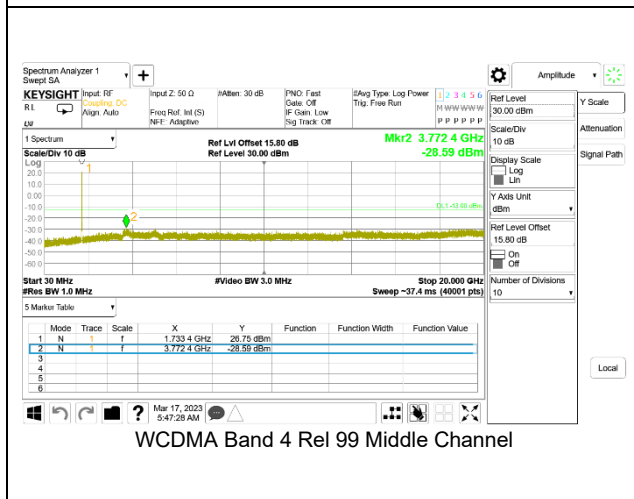
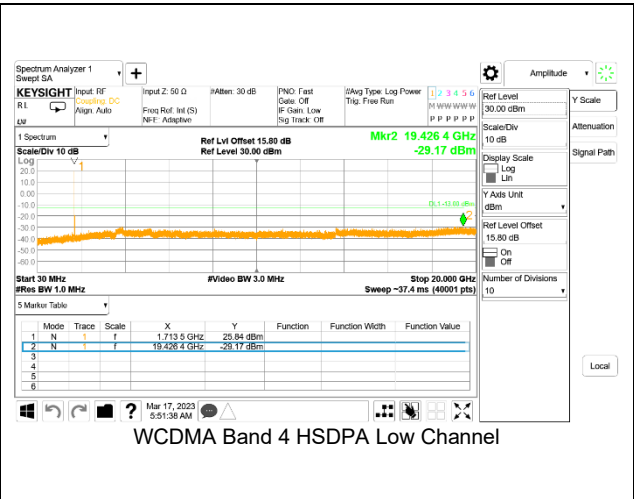
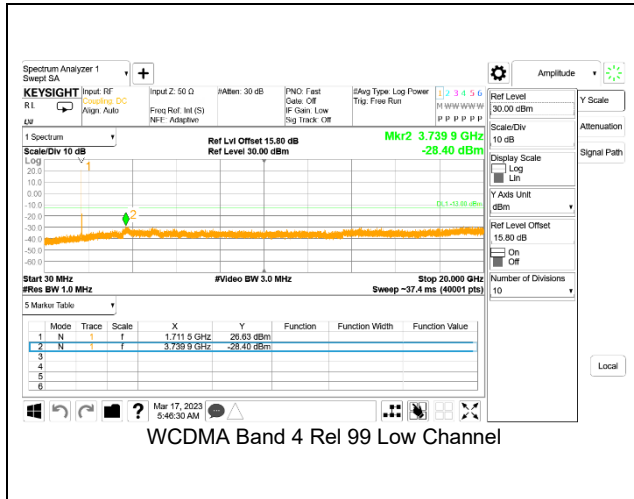


WCDMA Band 2 Rel 99 High Channel



WCDMA Band 2 HSDPA High Channel

9.3.5. WCDMA BAND 4



9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, and §27.54.
ISED: RSS132§5.3; RSS133§6.3 and RSS139§6.4

LIMITS

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

FCC §24.235 & §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

RSS132§5.3
The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 SRSP 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.

RSS133§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.

RSS139§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

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30°C to $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)
Low voltage, 3.23VDC, Normal, 3.80VDC and High voltage, 4.37VDC.
End Voltage, 2.95VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

9.4.1. GSM

Test Engineer ID:	27342	Test Date:	3/20/2023
-------------------	-------	------------	-----------

GPRS 850

Band	850	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)			
Normal (20°C)	Normal	824.0230	848.9720			
Extreme (50°C)		824.0230	848.9720	17.3	0.021	Yes
Extreme (40°C)		824.0230	848.9720	14.5	0.017	Yes
Extreme (30°C)		824.0230	848.9720	17.9	0.021	Yes
Extreme (10°C)		824.0230	848.9720	16.7	0.020	Yes
Extreme (0°C)		824.0230	848.9720	15.1	0.018	Yes
Extreme (-10°C)		824.0230	848.9720	19.2	0.023	Yes
Extreme (-20°C)		824.0230	848.9720	17.1	0.020	Yes
Extreme (-30°C)		824.0230	848.9720	21.5	0.026	Yes
20°C		15%	824.0230	848.9720	14.1	0.017
	-15%	824.0230	848.9720	13.1	0.016	Yes
	End Point Voltage	824.0230	848.9720	13.4	0.016	Yes

GPRS 1900

Band	1900	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1910		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)			
Normal (20°C)	Normal	1850.0320	1909.9640			
Extreme (50°C)		1850.0320	1909.9640	16.7	0.009	Yes
Extreme (40°C)		1850.0320	1909.9640	21.0	0.011	Yes
Extreme (30°C)		1850.0320	1909.9640	12.6	0.007	Yes
Extreme (10°C)		1850.0320	1909.9640	17.9	0.010	Yes
Extreme (0°C)		1850.0320	1909.9640	28.3	0.015	Yes
Extreme (-10°C)		1850.0320	1909.9640	20.1	0.011	Yes
Extreme (-20°C)		1850.0320	1909.9640	22.2	0.012	Yes
Extreme (-30°C)		1850.0320	1909.9640	16.1	0.009	Yes
20°C		15%	1850.0320	1909.9640	4.2	0.002
	-15%	1850.0320	1909.9640	5.3	0.003	Yes
	End Point Voltage	1850.0320	1909.9640	9.2	0.005	Yes

9.4.2. WCDMA

Test Engineer ID:	27342	Test Date:	3/20/2023
--------------------------	-------	-------------------	-----------

WCDMA REL 99 BAND 5

Band	5	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		2.5	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	
Normal (20°C)	Normal	824.0880	848.9010			
Extreme (50°C)		824.0880	848.9010	-0.7	-0.001	Yes
Extreme (40°C)		824.0880	848.9010	0.1	0.000	Yes
Extreme (30°C)		824.0880	848.9010	0.9	0.001	Yes
Extreme (10°C)		824.0880	848.9010	-1.2	-0.001	Yes
Extreme (0°C)		824.0880	848.9010	-2.6	-0.003	Yes
Extreme (-10°C)		824.0880	848.9010	0.7	0.001	Yes
Extreme (-20°C)		824.0880	848.9010	-0.3	0.000	Yes
Extreme (-30°C)		824.0880	848.9010	0.7	0.001	Yes
20°C		15%	824.0880	848.9010	-1.6	-0.002
	-15%	824.0880	848.9010	-1.6	-0.002	Yes
	End Point Voltage	824.0880	848.9010	-0.9	-0.001	Yes

WCDMA REL 99 BAND 2

Band	2	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1910		2.5	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)	Frequency Stability (ppm)		
Normal (20°C)	Normal	1850.0990	1909.9010			
Extreme (50°C)		1850.0990	1909.9010	1.5	0.001	Yes
Extreme (40°C)		1850.0990	1909.9010	-0.1	0.000	Yes
Extreme (30°C)		1850.0990	1909.9010	0.5	0.000	Yes
Extreme (10°C)		1850.0990	1909.9010	-0.1	0.000	Yes
Extreme (0°C)		1850.0990	1909.9010	3.1	0.002	Yes
Extreme (-10°C)		1850.0990	1909.9010	2.6	0.001	Yes
Extreme (-20°C)		1850.0990	1909.9010	3.5	0.002	Yes
Extreme (-30°C)		1850.0990	1909.9010	5.6	0.003	Yes
20°C	15%	1850.0990	1909.9010	4.1	0.002	Yes
	-15%	1850.0990	1909.9010	2.8	0.001	Yes
	End Point Voltage	1850.0990	1909.9010	1.7	0.001	Yes

WCDMA REL 99 BAND 4

Band		4		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1755	Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)					
Normal (20°C)	Normal	1710.0990	1754.9010					
Extreme (50°C)		1710.0990	1754.9010	11.0	0.006	Yes		
Extreme (40°C)		1710.0990	1754.9010	-1.8	-0.001	Yes		
Extreme (30°C)		1710.0990	1754.9010	-2.2	-0.001	Yes		
Extreme (10°C)		1710.0990	1754.9010	-2.7	-0.002	Yes		
Extreme (0°C)		1710.0990	1754.9010	-3.6	-0.002	Yes		
Extreme (-10°C)		1710.0990	1754.9010	-0.2	0.000	Yes		
Extreme (-20°C)		1710.0990	1754.9010	-6.0	-0.003	Yes		
Extreme (-30°C)		1710.0990	1754.9010	0.1	0.000	Yes		
20°C		15%	1710.0990	1754.9010	6.6	0.004	Yes	
	-15%	1710.0990	1754.9010	7.3	0.004	Yes		
	End Point Voltage	1710.0990	1754.9010	12.2	0.007	Yes		

9.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

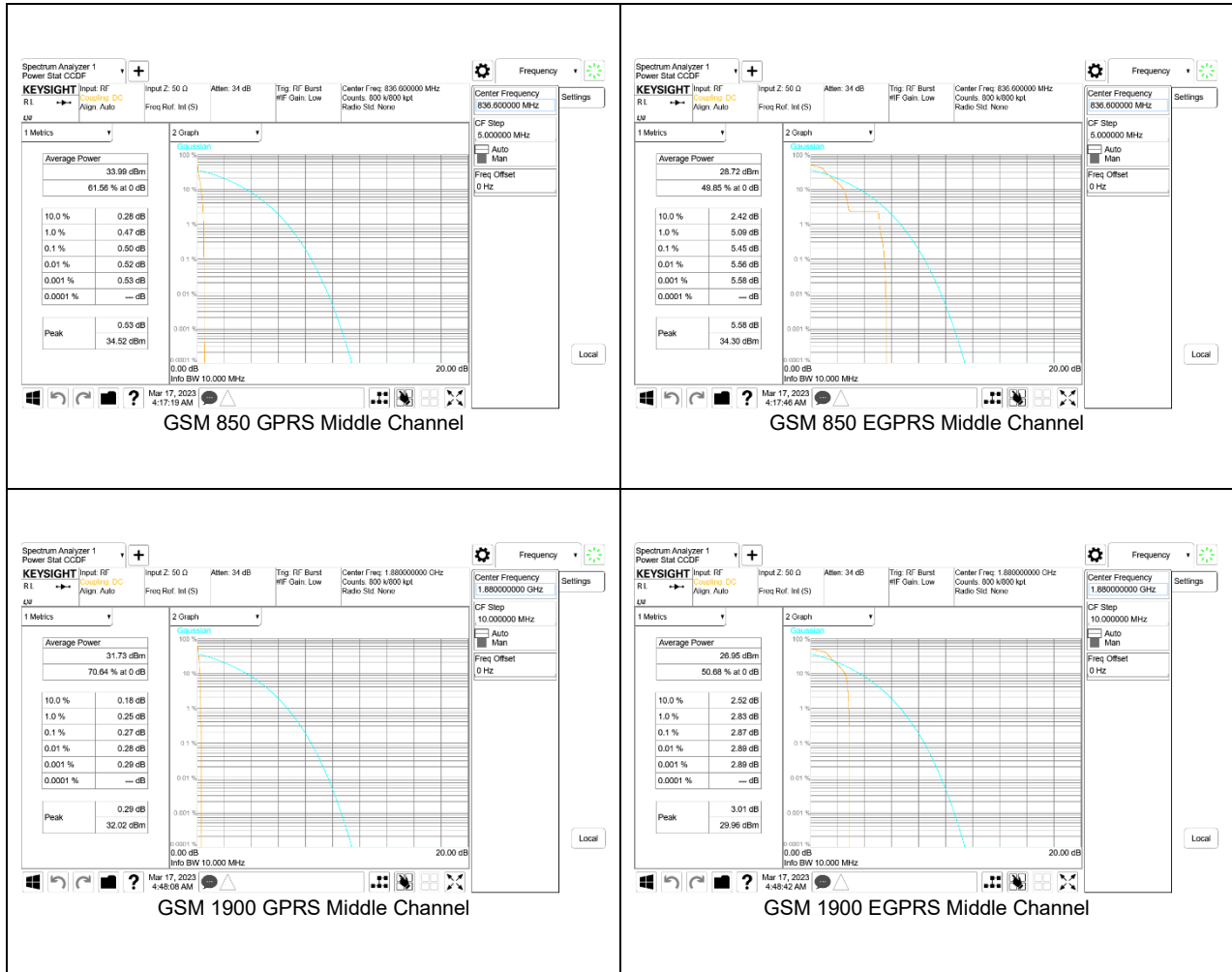
In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

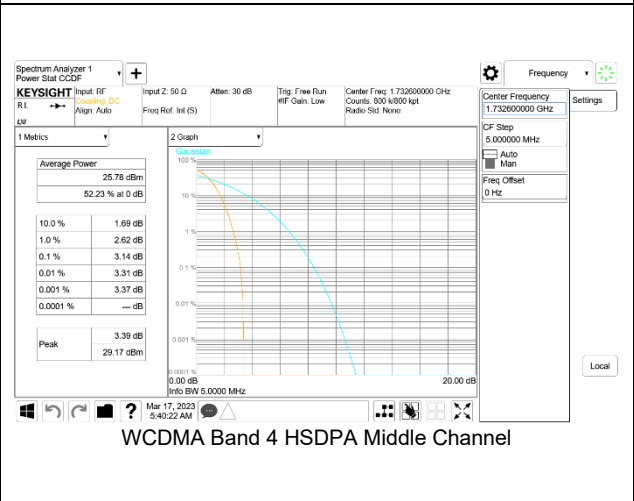
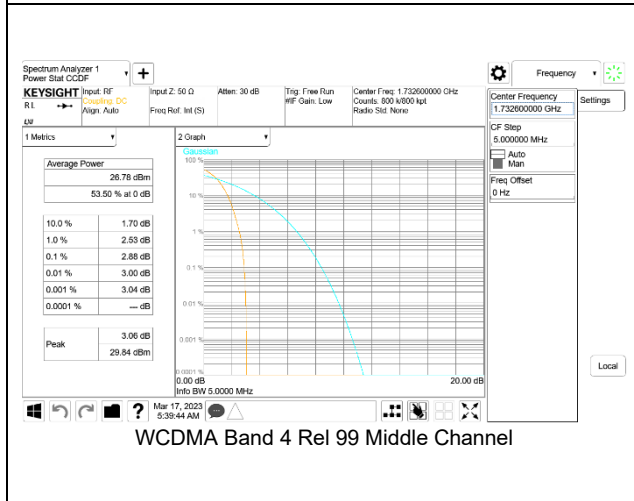
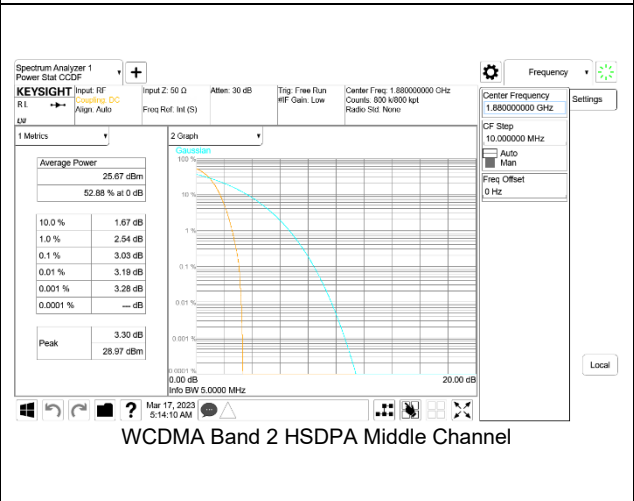
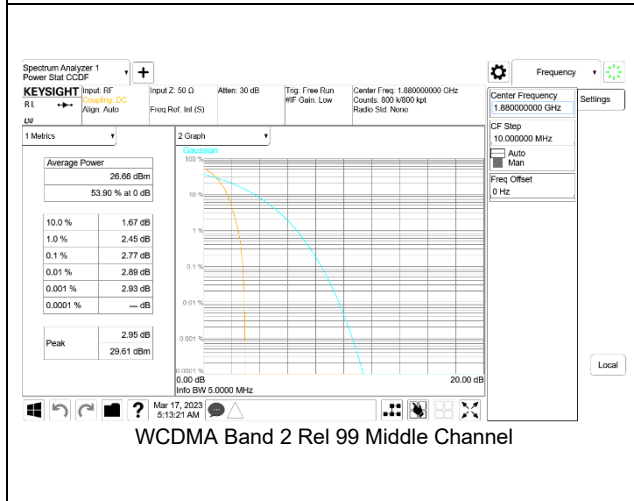
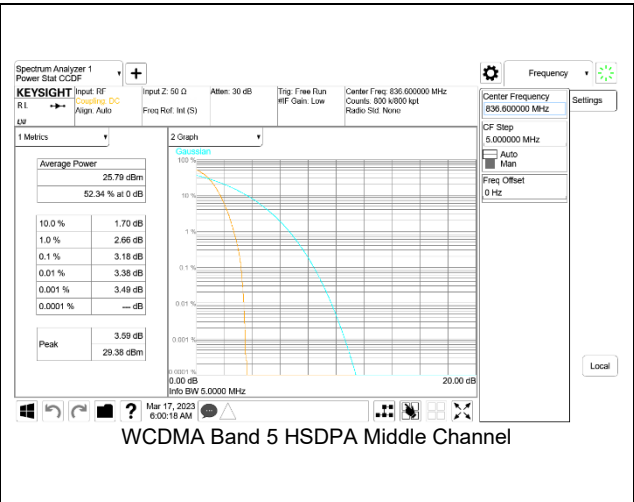
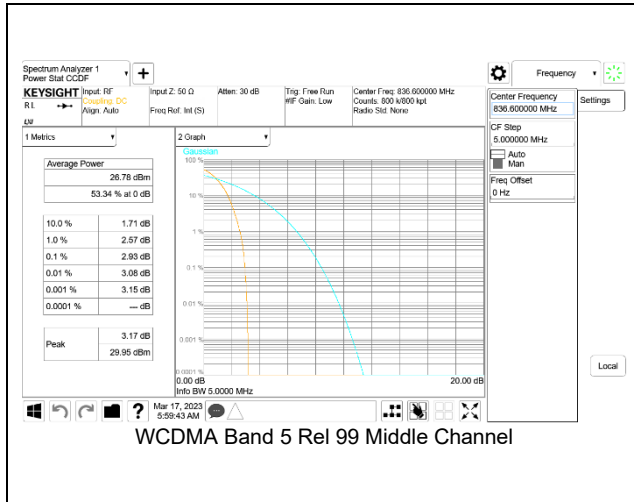
Ant 1 was used to measure as the worst case. The results from all CCDF plots are passed with 13dB peak-to-average power ratio criteria.

Test Engineer ID:	39004	Test Date:	3/20/2023
--------------------------	-------	-------------------	-----------

9.5.1. GSM



9.5.2. WCDMA



10. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement method.

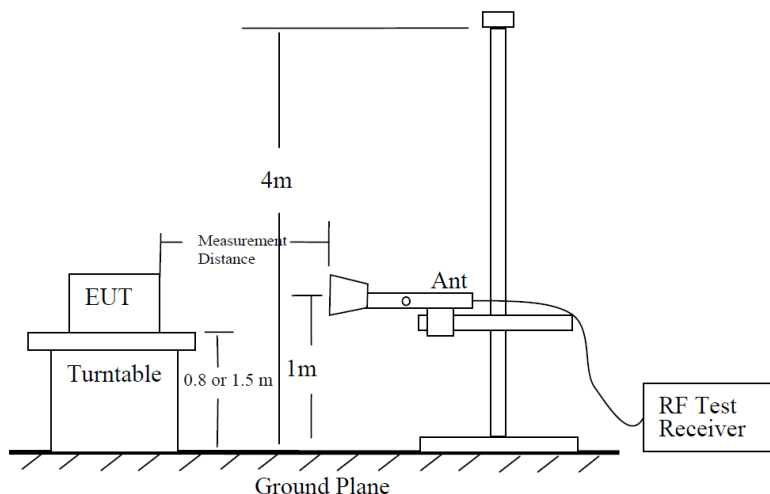


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

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

- a) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$.
- b) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$.
- c) $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$; where D is the measurement distance (in the far field region) in m.
- d) $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

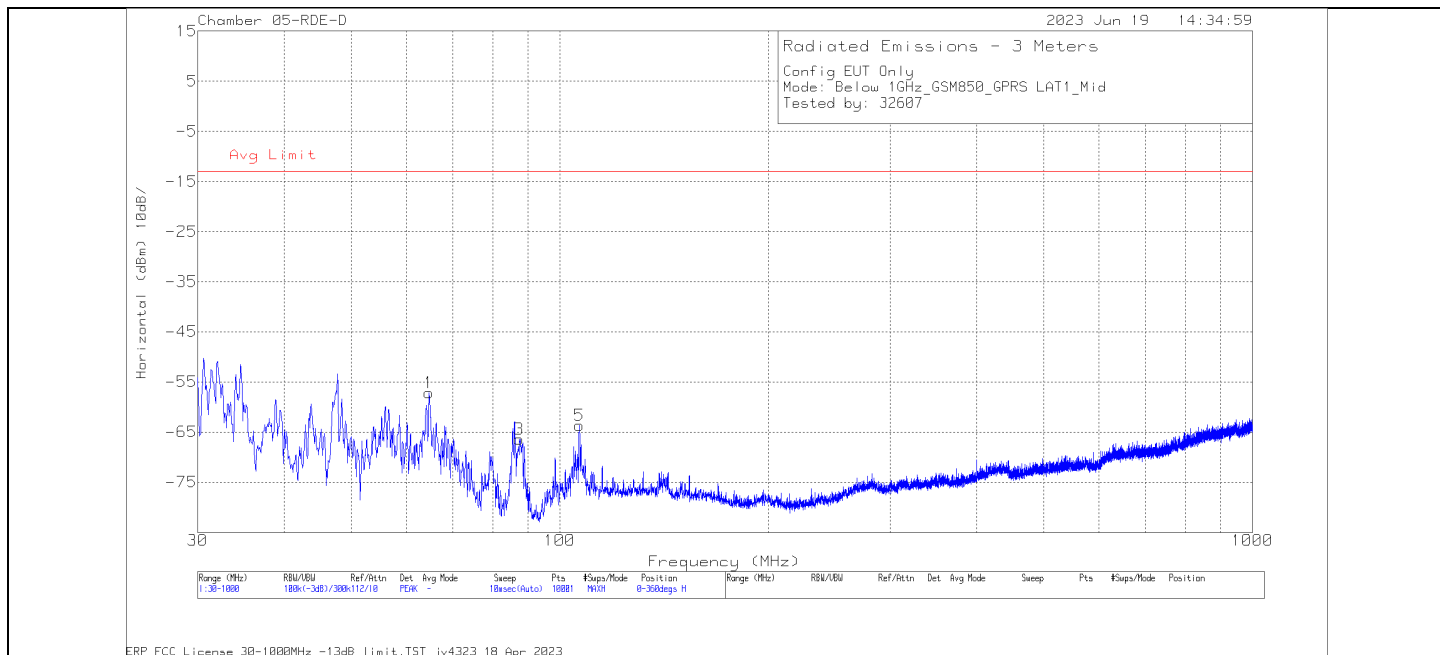
So, from d)

The measuring distance is usually at 3m, then $20 \cdot \log(3) = 9.5424$

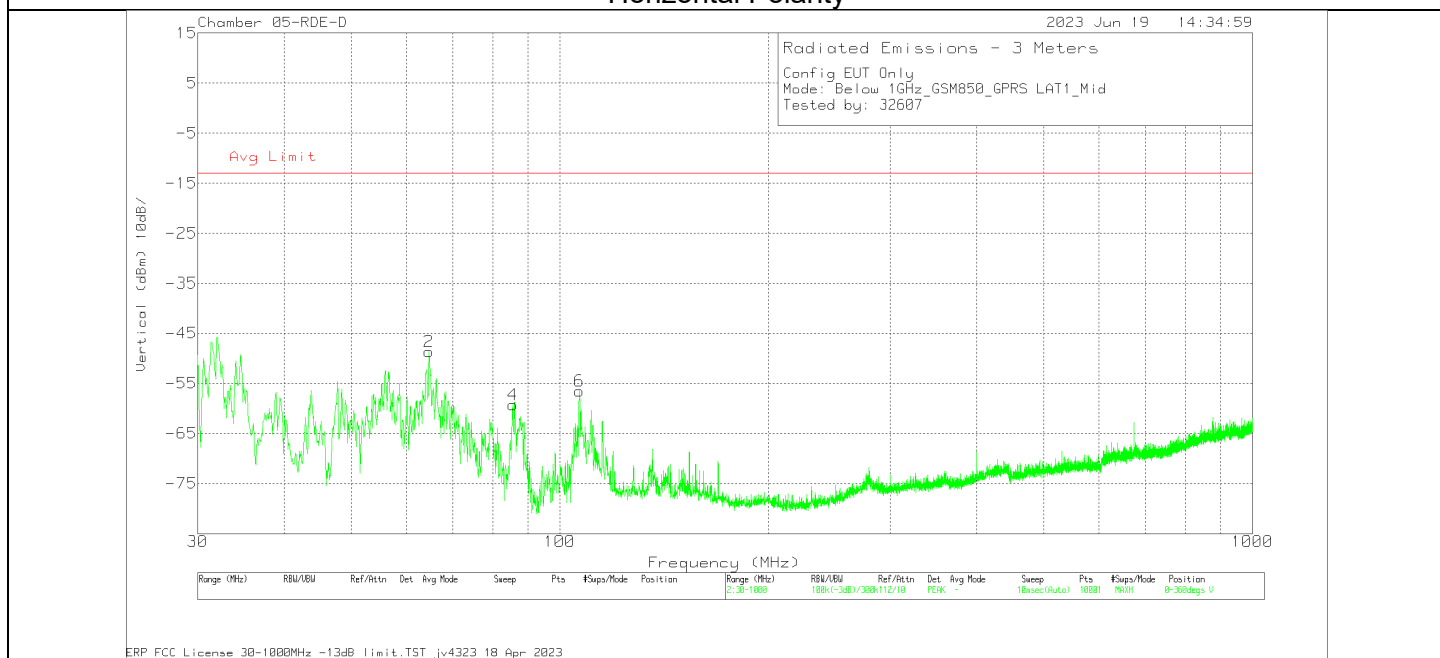
Then, $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

Example Plot Below 1GHz



Horizontal Polarity



Vertical Polarity

Trace Markers

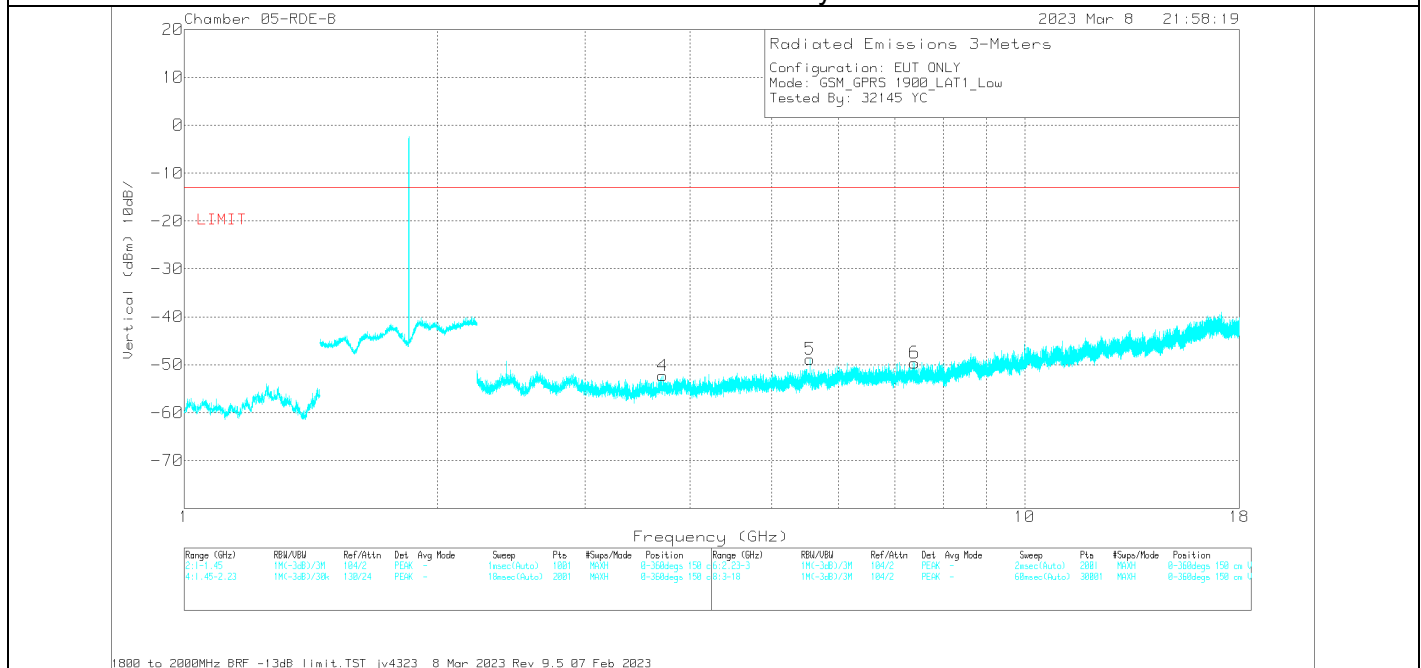
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	224379 ACF (dB) 10mH	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Avg Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	64.726	55.89	Pk	13.9	-31.8	-95.2	-57.21	-13	-44.21	0-360	299	H
2	64.726	64.4	Pk	13.9	-31.8	-95.2	-48.7	-13	-35.7	0-360	100	V
4	85.484	54.14	Pk	13.4	-31.6	-95.2	-59.26	-13	-46.26	0-360	100	V
3	87.424	46.77	Pk	13.6	-31.6	-95.2	-66.43	-13	-53.43	0-360	399	H
5	106.63	44.92	Pk	18.1	-31.5	-95.2	-63.68	-13	-50.68	0-360	299	H
6	106.727	52.04	Pk	18.1	-31.5	-95.2	-56.56	-13	-43.56	0-360	100	V

Pk - Peak detector

Example Plot Above 1GHz



Horizontal Polarity



Vertical Polarity

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	EIRP CF	Gain/Loss(dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4	3.709	55.35	Pk	33.6	-95.2	-46.05	-52.30	-13	-39.30	V
1	3.724	55.13	Pk	33.7	-95.2	-46.12	-52.49	-13	-39.49	H
2	5.5295	55.72	Pk	35.2	-95.2	-46.09	-50.37	-13	-37.37	H
5	5.5505	57.24	Pk	35.3	-95.2	-46.16	-48.82	-13	-35.82	V
3	7.3865	54.81	Pk	36	-95.2	-45.86	-50.25	-13	-37.25	H
6	7.3955	55.49	Pk	36	-95.2	-45.91	-49.62	-13	-36.62	V

Pk - Peak detector

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53-
ISED: RSS132§5.5; RSS133§6.5 and RSS139§6.6

LIMIT

FCC: §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.

RSS132§5.5

Equipment shall meet the unwanted emission limits specified 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 below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB.
- (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 below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

p is the output power specified in watts.

RSS133§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 $43 + 10 \log_{10}(p(\text{watts}))$.
- (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 $43 + 10 \log_{10}(p(\text{watts}))$. If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote2 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 $43 + 10 \log_{10}(p(\text{watts}))$ 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 $43 + 10 \log_{10}(p(\text{watts}))$ dB.

TEST PROCEDURE

KDB 971168 D01

RESULTS

10.1.1. GSM 850

GPRS MODE

Project #:	14523758
Date:	3/08/2023 / 05/05/2023
Test Engineer:	32145 / 25196
Configuration:	EUT Only
Mode:	GPRS 850
Chamber #:	01-RDE-B / 05-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
1.648450	62.48	Pk	29.3	-95.2	-47.78	-51.20	-13	-38.20	H
1.648000	70.45	Pk	29.3	-95.2	-47.78	-43.23	-13	-30.23	V
2.472850	62.44	Pk	32.6	-95.2	-47.59	-47.75	-13	-34.75	H
2.472400	65.95	Pk	32.6	-95.2	-47.6	-44.25	-13	-31.25	V
3.29635	54.79	Pk	33.1	-95.2	-45.89	-53.20	-13	-40.20	H
3.29095	54.35	Pk	33.1	-95.2	-45.89	-53.64	-13	-40.64	V
Mid Channel, 836.6 MHz									
1.67275	60.9	Pk	29.4	-95.2	-47.83	-52.73	-13	-39.73	H
1.672975	72.53	Pk	29.4	-95.2	-47.82	-41.09	-13	-28.09	V
2.509750	61.03	Pk	32.6	-95.2	-47.24	-48.81	-13	-35.81	H
2.509750	60.61	Pk	32.6	-95.2	-47.24	-49.23	-13	-36.23	V
3.340900	54.67	Pk	33	-95.2	-45.43	-52.96	-13	-39.96	H
3.325150	54.74	Pk	33	-95.2	-45.63	-53.09	-13	-40.09	V
High Channel, 848.8 MHz									
1.697500	60.92	Pk	29.6	-95.2	-47.66	-52.34	-13	-39.34	H
1.697500	63.19	Pk	29.6	-95.2	-47.66	-50.07	-13	-37.07	V
2.546200	62.46	Pk	32.7	-95.2	-47.72	-47.76	-13	-34.76	H
2.546200	56.01	Pk	32.7	-95.2	-47.72	-54.21	-13	-41.21	V
3.400300	54.07	Pk	32.9	-95.2	-45.07	-53.30	-13	-40.30	H
3.387250	54.48	Pk	32.8	-95.2	-45.12	-53.04	-13	-40.04	V

EGPRS MODE

Project #:	14523758
Date:	03/08/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	EGPRS 850
Chamber #:	05-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
1.662400	57.56	Pk	29.3	-95.2	-47.81	-56.15	-13	-43.15	H
1.648343	68.34	Pk	29.3	-95.2	-47.78	-45.34	-13	-32.34	V
2.472400	57.84	Pk	32.6	-95.2	-47.6	-52.36	-13	-39.36	H
2.414608	61.03	Pk	32.3	-95.2	-48.44	-50.31	-13	-37.31	V
3.273850	55.9	Pk	33.1	-95.2	-45.88	-52.08	-13	-39.08	H
3.269350	54.17	Pk	33.2	-95.2	-45.92	-53.75	-13	-40.75	V
Mid Channel, 836.6 MHz									
1.673200	58.73	Pk	29.4	-95.2	-47.81	-54.88	-13	-41.88	H
1.673256	72.97	Pk	29.4	-95.2	-47.81	-40.64	-13	-27.64	V
2.509750	57.49	Pk	32.6	-95.2	-47.24	-52.35	-13	-39.35	H
2.509750	58.05	Pk	32.6	-95.2	-47.24	-51.79	-13	-38.79	V
3.341350	54.68	Pk	33	-95.2	-45.43	-52.95	-13	-39.95	H
3.347650	54.52	Pk	32.9	-95.2	-45.42	-53.20	-13	-40.20	V
High Channel, 848.8 MHz									
1.688500	56.88	Pk	29.5	-95.2	-47.70	-56.52	-13	-43.52	H
1.696515	58.69	Pk	29.5	-95.2	-47.61	-54.62	-13	-41.62	V
2.546650	55.91	Pk	32.7	-95.2	-47.73	-54.32	-13	-41.32	H
2.557450	55.42	Pk	32.7	-95.2	-47.91	-54.99	-13	-41.99	V
3.389500	54.18	Pk	32.8	-95.2	-45.06	-53.28	-13	-40.28	H
3.388600	54.00	Pk	32.8	-95.2	-45.07	-53.47	-13	-40.47	V

10.1.2. GSM 1900

GPRS MODE

Project #:	14523758
Date:	3/08/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	GPRS 1900
Chamber #:	05-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2 MHz									
3.709000	55.35	Pk	33.6	-95.2	-46.05	-52.30	-13	-39.30	H
3.724000	55.13	Pk	33.7	-95.2	-46.12	-52.49	-13	-39.49	V
5.550500	57.24	Pk	35.3	-95.2	-46.16	-48.82	-13	-35.82	H
5.529500	55.72	Pk	35.2	-95.2	-46.09	-50.37	-13	-37.37	V
7.395500	55.49	Pk	36.0	-95.2	-45.91	-49.62	-13	-36.62	H
7.386500	54.81	Pk	36.0	-95.2	-45.86	-50.25	-13	-37.25	V
Mid Channel, 1880 MHz									
3.749500	55.28	Pk	33.7	-95.2	-45.79	-52.01	-13	-39.01	H
3.749500	54.62	Pk	33.7	-95.2	-45.79	-52.67	-13	-39.67	V
5.643500	55.72	Pk	35.2	-95.2	-46.46	-50.74	-13	-37.74	H
5.640500	55.40	Pk	35.2	-95.2	-46.46	-51.06	-13	-38.06	V
7.519000	54.02	Pk	36.0	-95.2	-45.65	-50.83	-13	-37.83	H
7.516500	53.97	Pk	36.0	-95.2	-45.61	-50.84	-13	-37.84	V
High Channel, 1909.8 MHz									
3.826500	53.70	Pk	33.8	-95.2	-45.37	-53.07	-13	-40.07	H
3.819500	53.80	Pk	33.8	-95.2	-45.32	-52.92	-13	-39.92	V
5.722500	54.87	Pk	35.2	-95.2	-45.65	-50.78	-13	-37.78	H
5.701500	54.88	Pk	35.2	-95.2	-45.94	-51.06	-13	-38.06	V
7.662500	54.48	Pk	36.0	-95.2	-45.40	-50.12	-13	-37.12	H
7.665500	53.35	Pk	36.1	-95.2	-45.44	-51.19	-13	-38.19	V

EGPRS MODE

Project #:	14523758
Date:	3/8/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	EGPRS 1900
Chamber #:	05-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2 MHz									
3.712000	55.01	Pk	33.7	-95.2	-46.10	-52.59	-13	-39.59	H
3.713000	55.72	Pk	33.7	-95.2	-46.15	-51.93	-13	-38.93	V
5.540000	54.84	Pk	35.2	-95.2	-46.06	-51.22	-13	-38.22	H
5.508000	55.69	Pk	35.2	-95.2	-45.96	-50.27	-13	-37.27	V
7.413000	54.55	Pk	36.0	-95.2	-45.89	-50.54	-13	-37.54	H
7.410000	54.22	Pk	36.0	-95.2	-45.90	-50.88	-13	-37.88	V
Mid Channel, 1880 MHz									
3.749500	54.03	Pk	33.7	-95.2	-45.79	-53.26	-13	-40.26	H
3.756000	54.28	Pk	33.6	-95.2	-45.83	-53.15	-13	-40.15	V
5.659000	54.08	Pk	35.2	-95.2	-46.27	-52.19	-13	-39.19	H
5.673500	54.23	Pk	35.2	-95.2	-46.22	-51.99	-13	-38.99	V
7.532500	53.56	Pk	36.0	-95.2	-45.59	-51.23	-13	-38.23	H
7.521000	53.82	Pk	36.0	-95.2	-45.62	-51.00	-13	-38.00	V
High Channel, 1909.8 MHz									
3.817000	53.75	Pk	33.8	-95.2	-45.46	-53.11	-13	-40.11	H
3.819000	53.63	Pk	33.8	-95.2	-45.35	-53.12	-13	-40.12	V
5.739000	54.36	Pk	35.2	-95.2	-45.66	-51.30	-13	-38.30	H
5.738000	54.65	Pk	35.2	-95.2	-45.67	-51.02	-13	-38.02	V
7.636500	54.46	Pk	36.1	-95.2	-45.30	-49.94	-13	-36.94	H
7.611000	54.36	Pk	36.0	-95.2	-45.28	-50.12	-13	-37.12	V

10.1.3. WCDMA BAND 5

REL 99 MODE

Project #:	14523758
Date:	03/21/2032
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 5
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.4MHz									
1.660600	57.55	Pk	28.7	-95.2	-48.70	-57.65	-13	-44.65	H
1.654300	57.08	Pk	28.6	-95.2	-48.73	-58.25	-13	-45.25	V
2.493550	58.44	Pk	32.1	-95.2	-49.31	-53.97	-13	-40.97	H
2.498950	58.33	Pk	32.1	-95.2	-49.32	-54.09	-13	-41.09	V
3.313450	55.15	Pk	32.9	-95.2	-46.45	-53.60	-13	-40.60	H
3.327400	55.29	Pk	32.8	-95.2	-46.37	-53.48	-13	-40.48	V
Mid Channel, 836.6 MHz									
1.676800	58.23	Pk	28.9	-95.2	-48.79	-56.86	-13	-43.86	H
1.672300	57.12	Pk	28.9	-95.2	-48.69	-57.87	-13	-44.87	V
2.515600	59.44	Pk	32.1	-95.2	-49.05	-52.71	-13	-39.71	H
2.501200	58.58	Pk	32.1	-95.2	-49.18	-53.70	-13	-40.70	V
3.345850	54.57	Pk	32.8	-95.2	-46.18	-54.01	-13	-41.01	H
3.360250	53.99	Pk	32.8	-95.2	-46.00	-54.41	-13	-41.41	V
High Channel, 848.6 MHz									
1.695694	66.03	Pk	29.2	-95.2	-48.83	-48.80	-13	-35.80	H
1.705150	56.67	Pk	29.3	-95.2	-48.8	-58.03	-13	-45.03	V
2.542600	58.19	Pk	32.2	-95.2	-48.86	-53.67	-13	-40.67	H
2.552500	57.65	Pk	32.2	-95.2	-48.9	-54.25	-13	-41.25	V
3.375550	53.79	Pk	32.8	-95.2	-46.03	-54.64	-13	-41.64	H
3.402100	54.53	Pk	32.8	-95.2	-46.38	-54.25	-13	-41.25	V

HSDPA MODE

Project #:	14523758
Date:	3/21/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 5
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.4MHz									
1.642600	57.32	Pk	28.5	-95.2	-48.74	-58.12	-13	-45.12	H
1.643500	57.23	Pk	28.5	-95.2	-48.77	-58.24	-13	-45.24	V
2.476000	58.26	Pk	32.0	-95.2	-49.54	-54.48	-13	-41.48	H
2.466550	57.86	Pk	32.0	-95.2	-49.50	-54.84	-13	-41.84	V
3.301300	55.04	Pk	32.9	-95.2	-46.54	-53.80	-13	-40.80	H
3.306250	55.22	Pk	32.9	-95.2	-46.52	-53.60	-13	-40.60	V
Mid Channel, 836.6 MHz									
1.679050	57.51	Pk	29.0	-95.2	-48.76	-57.45	-13	-44.45	H
1.675000	57.14	Pk	28.9	-95.2	-48.85	-58.01	-13	-45.01	V
2.512900	59.13	Pk	32.1	-95.2	-49.15	-53.12	-13	-40.12	H
2.517400	58.83	Pk	32.1	-95.2	-49.02	-53.29	-13	-40.29	V
3.357100	55.26	Pk	32.8	-95.2	-46.22	-53.36	-13	-40.36	H
3.363850	54.89	Pk	32.8	-95.2	-46.20	-53.71	-13	-40.71	V
High Channel, 848.6 MHz									
1.695783	62.85	Pk	29.2	-95.2	-48.83	-51.98	-13	-38.98	H
1.701100	58.05	Pk	29.3	-95.2	-48.79	-56.64	-13	-43.64	V
2.537200	59.07	Pk	32.1	-95.2	-48.90	-52.93	-13	-39.93	H
2.541700	57.03	Pk	32.2	-95.2	-48.82	-54.79	-13	-41.79	V
3.379600	54.24	Pk	32.8	-95.2	-46.28	-54.44	-13	-41.44	H
3.371950	53.47	Pk	32.8	-95.2	-46.05	-54.98	-13	-41.98	V

10.1.4. WCDMA BAND 2

REL 99 MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.686000	53.29	Pk	33.1	-95.2	-45.77	-54.58	-13	-41.58	H
3.688500	53.41	Pk	33.1	-95.2	-45.59	-54.28	-13	-41.28	V
5.531500	55.79	Pk	34.4	-95.2	-47.00	-52.01	-13	-39.01	H
5.522000	55.40	Pk	34.4	-95.2	-47.12	-52.52	-13	-39.52	V
7.431000	54.64	Pk	35.7	-95.2	-46.11	-50.97	-13	-37.97	H
7.471500	53.73	Pk	35.7	-95.2	-45.99	-51.76	-13	-38.76	V
Mid Channel, 1880MHz									
3.776500	54.54	Pk	33.2	-95.2	-45.66	-53.12	-13	-40.12	H
3.774500	53.28	Pk	33.2	-95.2	-45.57	-54.29	-13	-41.29	V
5.630000	55.79	Pk	34.4	-95.2	-46.65	-51.66	-13	-38.66	H
5.635500	56.08	Pk	34.5	-95.2	-46.66	-51.28	-13	-38.28	V
7.536000	54.03	Pk	35.6	-95.2	-46.17	-51.74	-13	-38.74	H
7.549000	54.56	Pk	35.6	-95.2	-46.16	-51.20	-13	-38.20	V
High Channel, 1907.6MHz									
3.837500	54.62	Pk	33.3	-95.2	-46.00	-53.28	-13	-40.28	H
3.826500	53.70	Pk	33.3	-95.2	-46.05	-54.25	-13	-41.25	V
5.707500	55.24	Pk	34.5	-95.2	-46.44	-51.90	-13	-38.90	H
5.698500	55.05	Pk	34.5	-95.2	-46.56	-52.21	-13	-39.21	V
7.629500	55.06	Pk	35.7	-95.2	-46.02	-50.46	-13	-37.46	H
7.632500	54.87	Pk	35.7	-95.2	-45.97	-50.60	-13	-37.60	V

HSDPA MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.686000	53.29	Pk	33.1	-95.2	-45.77	-54.58	-13	-41.58	H
3.688500	53.41	Pk	33.1	-95.2	-45.59	-54.28	-13	-41.28	V
5.531500	55.79	Pk	34.4	-95.2	-47.00	-52.01	-13	-39.01	H
5.522000	55.40	Pk	34.4	-95.2	-47.12	-52.52	-13	-39.52	V
7.431000	54.64	Pk	35.7	-95.2	-46.11	-50.97	-13	-37.97	H
7.471500	53.73	Pk	35.7	-95.2	-45.99	-51.76	-13	-38.76	V
Mid Channel, 1880MHz									
3.776500	54.54	Pk	33.2	-95.2	-45.66	-53.12	-13	-40.12	H
3.774500	53.28	Pk	33.2	-95.2	-45.57	-54.29	-13	-41.29	V
5.630000	55.79	Pk	34.4	-95.2	-46.65	-51.66	-13	-38.66	H
5.635500	56.08	Pk	34.5	-95.2	-46.66	-51.28	-13	-38.28	V
7.536000	54.03	Pk	35.6	-95.2	-46.17	-51.74	-13	-38.74	H
7.549000	54.56	Pk	35.6	-95.2	-46.16	-51.20	-13	-38.20	V
High Channel, 1907.6MHz									
3.837500	54.62	Pk	33.3	-95.2	-46.00	-53.28	-13	-40.28	H
3.826500	53.70	Pk	33.3	-95.2	-46.05	-54.25	-13	-41.25	V
5.698500	55.05	Pk	34.5	-95.2	-46.56	-52.21	-13	-39.21	H
5.707500	55.24	Pk	34.5	-95.2	-46.44	-51.90	-13	-38.90	V
7.629500	55.06	Pk	35.7	-95.2	-46.02	-50.46	-13	-37.46	H
7.632500	54.87	Pk	35.7	-95.2	-45.97	-50.60	-13	-37.60	V

10.1.5. WCDMA BAND 4

REL 99 MODE

Project #:	14523758
Date:	6/23/2023
Test Engineer:	32981
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.424000	53.21	Pk	32.8	-95.2	-46.23	-55.42	-13	-42.42	H
3.425500	54.68	Pk	32.8	-95.2	-46.16	-53.88	-13	-40.88	V
5.136000	53.42	Pk	34.2	-95.2	-46.3	-53.88	-13	-40.88	H
5.137000	53.12	Pk	34.2	-95.2	-46.31	-54.19	-13	-41.19	V
6.850500	51.8	Pk	35.5	-95.2	-43.92	-51.82	-13	-38.82	H
6.851000	51.82	Pk	35.5	-95.2	-43.9	-51.78	-13	-38.78	V
Mid Channel, 1732.6MHz									
3.468500	54.06	Pk	32.9	-95.2	-46.08	-54.32	-13	-41.32	H
3.467500	53.88	Pk	32.9	-95.2	-46.07	-54.49	-13	-41.49	V
5.197500	52.61	Pk	34.2	-95.2	-46.12	-54.51	-13	-41.51	H
5.198000	53.7	Pk	34.2	-95.2	-46.09	-53.39	-13	-40.39	V
6.929500	53.03	Pk	35.5	-95.2	-44.78	-51.45	-13	-38.45	H
6.931500	53.04	Pk	35.5	-95.2	-44.76	-51.42	-13	-38.42	V
High Channel, 1752.6MHz									
3.504500	53.5	Pk	32.9	-95.2	-46.12	-54.92	-13	-41.92	H
3.501500	53.16	Pk	32.9	-95.2	-46.07	-55.21	-13	-42.21	V
5.257000	52.85	Pk	34.1	-95.2	-46.17	-54.42	-13	-41.42	H
5.257000	54.13	Pk	34.1	-95.2	-46.17	-53.14	-13	-40.14	V
7.010000	51.75	Pk	35.5	-95.2	-44.79	-52.74	-13	-39.74	H
7.010000	52.18	Pk	35.5	-95.2	-44.79	-52.31	-13	-39.31	V

HSDPA MODE

Project #:	14523758
Date:	03/21/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.417500	53.61	Pk	32.8	-95.2	-45.76	-54.55	-13	-41.55	H
3.420500	54.06	Pk	32.8	-95.2	-46.02	-54.36	-13	-41.36	V
5.134000	56.29	Pk	34.0	-95.2	-47.87	-52.78	-13	-39.78	H
5.125500	56.29	Pk	34.0	-95.2	-47.86	-52.77	-13	-39.77	V
6.877500	53.52	Pk	35.5	-95.2	-45.03	-51.21	-13	-38.21	H
6.855500	53.29	Pk	35.5	-95.2	-45.13	-51.54	-13	-38.54	V
Mid Channel, 1732.6MHz									
3.468000	53.93	Pk	32.8	-95.2	-46.02	-54.49	-13	-41.49	H
3.477500	53.67	Pk	32.8	-95.2	-46.01	-54.74	-13	-41.74	V
5.187500	56.69	Pk	34.1	-95.2	-47.89	-52.30	-13	-39.30	H
5.179500	55.74	Pk	34.1	-95.2	-47.81	-53.17	-13	-40.17	V
6.909000	54.20	Pk	35.5	-95.2	-44.86	-50.36	-13	-37.36	H
6.936000	53.17	Pk	35.5	-95.2	-45.05	-51.58	-13	-38.58	V
High Channel, 1752.6MHz									
3.524500	55.4	Pk	32.8	-95.2	-46.23	-53.23	-13	-40.23	H
3.530500	54.43	Pk	32.9	-95.2	-46.10	-53.97	-13	-40.97	V
5.284500	57.19	Pk	34.3	-95.2	-47.69	-51.40	-13	-38.40	H
5.290500	55.70	Pk	34.3	-95.2	-47.72	-52.92	-13	-39.92	V
6.997500	53.16	Pk	35.6	-95.2	-44.96	-51.40	-13	-38.40	H
6.999000	52.23	Pk	35.6	-95.2	-44.95	-52.32	-13	-39.32	V

10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 2

RESULTS

10.2.1. GSM 850

GPRS MODE

Project #:	14523758
Date:	03/17/2023 / 05/05/2023
Test Engineer:	31300 / 25196
Configuration:	EUT Only
Mode:	GPRS 850
Chamber #:	05-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
1.648365	73.83	Pk	28.0	-95.2	-49.67	-43.04	-13	-30.04	H
1.648177	77.63	Pk	28.0	-95.2	-49.67	-39.24	-13	-26.24	V
2.472717	64.89	Pk	32.4	-95.2	-49.66	-47.57	-13	-34.57	H
2.472627	63.38	Pk	32.4	-95.2	-49.66	-49.08	-13	-36.08	V
3.296513	58.71	Pk	32.9	-95.2	-47.16	-50.75	-13	-37.75	H
3.274012	57.97	Pk	32.9	-95.2	-47.29	-51.62	-13	-38.62	V
Mid Channel, 836.6 MHz									
1.673090	70.37	Pk	28.4	-95.2	-49.6	-46.03	-13	-33.03	H
1.673361	76.98	Pk	28.4	-95.2	-49.59	-39.41	-13	-26.41	V
2.509737	66.10	Pk	32.6	-95.2	-49.57	-46.07	-13	-33.07	H
2.512703	61.26	Pk	32.6	-95.2	-49.51	-50.85	-13	-37.85	V
3.346245	59.77	Pk	32.9	-95.2	-47.07	-49.60	-13	-36.60	H
3.328923	58.17	Pk	32.9	-95.2	-47.17	-51.30	-13	-38.30	V
High Channel, 848.8 MHz									
1.697482	71.53	Pk	28.8	-95.2	-49.44	-44.31	-13	-31.31	H
1.697394	77.16	Pk	28.8	-95.2	-49.44	-38.68	-13	-25.68	V
2.546523	64.15	Pk	32.4	-95.2	-49.43	-48.08	-13	-35.08	H
2.546217	65.15	Pk	32.4	-95.2	-49.44	-47.09	-13	-34.09	V
3.419172	58.03	Pk	32.8	-95.2	-47.44	-51.81	-13	-38.81	H
3.400051	58.45	Pk	32.8	-95.2	-47.4	-51.35	-13	-38.35	V

EGPRS MODE

Project #:	14523758
Date:	03/18/2023
Test Engineer:	31300
Configuration:	EUT Only
Mode:	EGPRS 850
Chamber #:	05-RDE-D

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
1.648304	69.71	Pk	28.0	-95.2	-49.67	-47.16	-13	-34.16	H
1.648306	78.35	Pk	28.0	-95.2	-49.67	-38.52	-13	-25.52	V
2.468647	61.39	Pk	32.4	-95.2	-49.68	-51.09	-13	-38.09	H
2.472950	65.59	Pk	32.4	-95.2	-49.66	-46.87	-13	-33.87	V
3.293094	58.87	Pk	32.9	-95.2	-47.09	-50.52	-13	-37.52	H
3.290720	58.31	Pk	32.9	-95.2	-47.14	-51.13	-13	-38.13	V
Mid Channel, 836.6 MHz									
1.673346	75.40	Pk	28.4	-95.2	-49.59	-40.99	-13	-27.99	H
1.673326	78.08	Pk	28.4	-95.2	-49.59	-38.31	-13	-25.31	V
2.509968	64.36	Pk	32.6	-95.2	-49.56	-47.8	-13	-34.80	H
2.510000	64.70	Pk	32.6	-95.2	-49.56	-47.46	-13	-34.46	V
3.345992	58.12	Pk	32.9	-95.2	-47.08	-51.26	-13	-38.26	H
3.356594	57.81	Pk	32.9	-95.2	-47.15	-51.64	-13	-38.64	V
High Channel, 848.8 MHz									
1.696760	61.15	Pk	28.8	-95.2	-49.46	-54.71	-13	-41.71	H
1.697640	69.86	Pk	28.8	-95.2	-49.43	-45.97	-13	-32.97	V
2.545960	60.41	Pk	32.4	-95.2	-49.44	-51.83	-13	-38.83	H
2.540680	57.62	Pk	32.5	-95.2	-49.37	-54.45	-13	-41.45	V
3.396040	55.01	Pk	32.8	-95.2	-47.36	-54.75	-13	-41.75	H
3.395600	55.50	Pk	32.8	-95.2	-47.35	-54.25	-13	-41.25	V

10.2.2. GSM 1900

GPRS MODE

Project #:	14523758
Date:	05/05/2023
Test Engineer:	19226 / 25196
Configuration:	EUT Only
Mode:	GPRS 1900
Chamber #:	05-RDE-D / 01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2 MHz									
3.681842	58.11	Pk	33.1	-95.2	-47.67	-51.66	-13	-38.66	H
3.681920	57.84	Pk	33.1	-95.2	-47.67	-51.93	-13	-38.93	V
5.502821	57.40	Pk	34.7	-95.2	-48.03	-51.13	-13	-38.13	H
5.499425	57.37	Pk	34.7	-95.2	-47.99	-51.12	-13	-38.12	V
7.399643	56.72	Pk	35.8	-95.2	-47.10	-49.78	-13	-36.78	H
7.398830	56.12	Pk	35.8	-95.2	-47.13	-50.41	-13	-37.41	V
Mid Channel, 1880 MHz									
3.759985	59.26	Pk	33.4	-95.2	-47.75	-50.29	-13	-37.29	H
3.759752	58.01	Pk	33.4	-95.2	-47.75	-51.54	-13	-38.54	V
5.640360	57.56	Pk	34.8	-95.2	-47.80	-50.64	-13	-37.64	H
5.638508	57.11	Pk	34.8	-95.2	-47.79	-51.08	-13	-38.08	V
7.522233	55.85	Pk	35.8	-95.2	-46.98	-50.53	-13	-37.53	H
7.520597	56.83	Pk	35.8	-95.2	-47.02	-49.59	-13	-36.59	V
High Channel, 1909.8 MHz									
3.818725	56.99	Pk	33.5	-95.2	-47.65	-52.36	-13	-39.36	H
3.821388	57.99	Pk	33.5	-95.2	-47.64	-51.35	-13	-38.35	V
5.731089	56.55	Pk	34.8	-95.2	-47.19	-51.04	-13	-38.04	H
5.731146	57.14	Pk	34.8	-95.2	-47.18	-50.44	-13	-37.44	V
7.639843	56.37	Pk	35.7	-95.2	-46.87	-50.00	-13	-37.00	H
7.638962	56.59	Pk	35.7	-95.2	-46.93	-49.84	-13	-36.84	V

EGPRS MODE

Project #:	14523758
Date:	03/20/2023
Test Engineer:	19226
Configuration:	EUT Only
Mode:	EGPRS 1900
Chamber #:	05-RDE-D

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2 MHz									
3.700263	60.91	Pk	33.3	-95.2	-47.82	-48.81	-13	-35.81	H
3.700365	60.45	Pk	33.3	-95.2	-47.83	-49.28	-13	-36.28	V
5.548572	57.53	Pk	34.7	-95.2	-47.94	-50.91	-13	-37.91	H
5.550508	58.00	Pk	34.7	-95.2	-47.93	-50.43	-13	-37.43	V
7.401500	57.52	Pk	35.8	-95.2	-47.1	-48.98	-13	-35.98	H
7.397059	57.11	Pk	35.8	-95.2	-47.07	-49.36	-13	-36.36	V
Mid Channel, 1880 MHz									
3.759818	58.15	Pk	33.4	-95.2	-47.75	-51.40	-13	-38.40	H
3.758898	57.53	Pk	33.4	-95.2	-47.76	-52.03	-13	-39.03	V
5.639378	58.49	Pk	34.8	-95.2	-47.79	-49.70	-13	-36.70	H
5.640655	56.83	Pk	34.8	-95.2	-47.8	-51.37	-13	-38.37	V
7.519287	56.27	Pk	35.8	-95.2	-47.01	-50.14	-13	-37.14	H
7.520735	56.29	Pk	35.8	-95.2	-47.02	-50.13	-13	-37.13	V
High Channel, 1909.8 MHz									
3.822028	57.24	Pk	33.5	-95.2	-47.63	-52.09	-13	-39.09	H
3.821487	57.14	Pk	33.5	-95.2	-47.64	-52.20	-13	-39.20	V
5.729360	56.85	Pk	34.8	-95.2	-47.17	-50.72	-13	-37.72	H
5.731602	57.41	Pk	34.8	-95.2	-47.16	-50.15	-13	-37.15	V
7.640569	56.36	Pk	35.7	-95.2	-46.85	-49.99	-13	-36.99	H
7.640791	56.69	Pk	35.7	-95.2	-46.84	-49.65	-13	-36.65	V

10.2.3. WCDMA BAND 5

REL 99 MODE

Project #:	14523758
Date:	03/21/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 5
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.4MHz									
1.669150	57.25	Pk	28.8	-95.2	-48.69	-57.84	-13	-44.84	H
1.676800	58.47	Pk	28.9	-95.2	-48.79	-56.62	-13	-43.62	V
2.490400	58.32	Pk	32.1	-95.2	-49.46	-54.24	-13	-41.24	H
2.492200	58.17	Pk	32.1	-95.2	-49.38	-54.31	-13	-41.31	V
3.305350	54.83	Pk	32.9	-95.2	-46.6	-54.07	-13	-41.07	H
3.294100	54.46	Pk	32.9	-95.2	-46.57	-54.41	-13	-41.41	V
Mid Channel, 836.6 MHz									
1.684450	59.39	Pk	29.0	-95.2	-48.86	-55.67	-13	-42.67	H
1.679050	57.18	Pk	29.0	-95.2	-48.76	-57.78	-13	-44.78	V
2.503450	58.73	Pk	32.1	-95.2	-49.23	-53.60	-13	-40.60	H
2.513800	59.34	Pk	32.1	-95.2	-49.16	-52.92	-13	-39.92	V
3.330550	55.35	Pk	32.8	-95.2	-46.24	-53.29	-13	-40.29	H
3.332350	54.68	Pk	32.8	-95.2	-46.39	-54.11	-13	-41.11	V
High Channel, 848.6 MHz									
1.695633	63.59	Pk	29.2	-95.2	-48.83	-51.24	-13	-38.24	H
1.702450	56.52	Pk	29.3	-95.2	-48.75	-58.13	-13	-45.13	V
2.554300	57.23	Pk	32.2	-95.2	-48.78	-54.55	-13	-41.55	H
2.555650	57.69	Pk	32.2	-95.2	-48.81	-54.12	-13	-41.12	V
3.369250	54.19	Pk	32.8	-95.2	-45.94	-54.15	-13	-41.15	H
3.371050	53.88	Pk	32.8	-95.2	-46.01	-54.53	-13	-41.53	V

HSDPA MODE

Project #:	14523758
Date:	3/14/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 5
Chamber #:	Chamber 5-D

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.4MHz									
1.669150	57.03	Pk	28.8	-95.2	-48.69	-58.06	-13	-45.06	H
1.668700	57.08	Pk	28.8	-95.2	-48.72	-58.04	-13	-45.04	V
2.493100	57.97	Pk	32.1	-95.2	-49.33	-54.46	-13	-41.46	H
2.489050	58.15	Pk	32.1	-95.2	-49.43	-54.38	-13	-41.38	V
3.303100	55.18	Pk	32.9	-95.2	-46.69	-53.81	-13	-40.81	H
3.299950	54.55	Pk	32.9	-95.2	-46.51	-54.26	-13	-41.26	V
Mid Channel, 836.6 MHz									
1.660150	57.92	Pk	28.7	-95.2	-48.72	-57.30	-13	-44.30	H
1.664200	56.60	Pk	28.8	-95.2	-48.69	-58.49	-13	-45.49	V
2.513350	59.00	Pk	32.1	-95.2	-49.15	-53.25	-13	-40.25	H
2.521450	58.04	Pk	32.1	-95.2	-49.09	-54.15	-13	-41.15	V
3.352150	55.54	Pk	32.8	-95.2	-46.18	-53.04	-13	-40.04	H
3.361150	55.06	Pk	32.8	-95.2	-45.99	-53.33	-13	-40.33	V
High Channel, 848.6 MHz									
1.695700	60.40	Pk	29.2	-95.2	-48.83	-54.43	-13	-41.43	H
1.702900	56.78	Pk	29.3	-95.2	-48.76	-57.88	-13	-44.88	V
2.560600	57.92	Pk	32.2	-95.2	-48.81	-53.89	-13	-40.89	H
2.554750	57.85	Pk	32.2	-95.2	-48.79	-53.94	-13	-40.94	V
3.398950	54.03	Pk	32.8	-95.2	-46.18	-54.55	-13	-41.55	H
3.411550	54.10	Pk	32.8	-95.2	-46.33	-54.63	-13	-41.63	V

10.2.4. WCDMA BAND 2

REL 99 MODE

Project #:	14523758
Date:	03/21/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.731500	53.56	Pk	33.1	-95.2	-45.60	-54.14	-13	-41.14	H
3.720000	54.15	Pk	33.1	-95.2	-45.72	-53.67	-13	-40.67	V
5.557000	56.29	Pk	34.4	-95.2	-46.84	-51.35	-13	-38.35	H
5.537000	55.60	Pk	34.4	-95.2	-47.02	-52.22	-13	-39.22	V
7.428000	55.75	Pk	35.7	-95.2	-45.96	-49.71	-13	-36.71	H
7.449000	53.88	Pk	35.7	-95.2	-46.29	-51.91	-13	-38.91	V
Mid Channel, 1880MHz									
3.787000	53.77	Pk	33.2	-95.2	-45.89	-54.12	-13	-41.12	H
3.789000	53.32	Pk	33.2	-95.2	-45.57	-54.25	-13	-41.25	V
5.635000	55.85	Pk	34.5	-95.2	-46.70	-51.55	-13	-38.55	H
5.627500	55.21	Pk	34.4	-95.2	-46.73	-52.32	-13	-39.32	V
7.529000	54.52	Pk	35.6	-95.2	-46.10	-51.18	-13	-38.18	H
7.545500	55.13	Pk	35.6	-95.2	-46.19	-50.66	-13	-37.66	V
High Channel, 1907.6MHz									
3.794500	54.27	Pk	33.3	-95.2	-45.89	-53.52	-13	-40.52	H
3.790500	53.96	Pk	33.3	-95.2	-45.62	-53.56	-13	-40.56	V
5.707000	54.84	Pk	34.5	-95.2	-46.41	-52.27	-13	-39.27	H
5.682500	54.68	Pk	34.5	-95.2	-46.55	-52.57	-13	-39.57	V
7.663000	53.91	Pk	35.7	-95.2	-46.08	-51.67	-13	-38.67	H
7.682500	54.49	Pk	35.7	-95.2	-46.21	-51.22	-13	-38.22	V

HSDPA MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	25019
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.704854	54.58	Pk	33.1	-95.2	-45.55	-53.07	-13	-40.07	H
3.706179	54.91	Pk	33.1	-95.2	-45.63	-52.82	-13	-39.82	V
5.558221	56.58	Pk	34.4	-95.2	-46.85	-51.07	-13	-38.07	H
5.557734	56.76	Pk	34.4	-95.2	-46.85	-50.89	-13	-37.89	V
7.409806	55.61	Pk	35.7	-95.2	-46.22	-50.11	-13	-37.11	H
7.411442	55.17	Pk	35.7	-95.2	-46.19	-50.52	-13	-37.52	V
Mid Channel, 1880MHz									
3.760474	55.25	Pk	33.2	-95.2	-45.61	-52.36	-13	-39.36	H
3.760139	54.84	Pk	33.2	-95.2	-45.56	-52.72	-13	-39.72	V
5.639732	56.29	Pk	34.5	-95.2	-46.54	-50.95	-13	-37.95	H
5.64194	56.69	Pk	34.5	-95.2	-46.61	-50.62	-13	-37.62	V
7.521788	55.85	Pk	35.6	-95.2	-46.19	-49.94	-13	-36.94	H
7.521840	56.27	Pk	35.6	-95.2	-46.19	-49.52	-13	-36.52	V
High Channel, 1907.6MHz									
3.814282	55.01	Pk	33.3	-95.2	-46.05	-52.94	-13	-39.94	H
3.816812	55.44	Pk	33.3	-95.2	-46.04	-52.50	-13	-39.50	V
5.723301	55.65	Pk	34.5	-95.2	-46.43	-51.48	-13	-38.48	H
5.724200	55.25	Pk	34.5	-95.2	-46.49	-51.94	-13	-38.94	V
7.629272	56.06	Pk	35.7	-95.2	-46.01	-49.45	-13	-36.45	H
7.629606	55.58	Pk	35.7	-95.2	-46.02	-49.94	-13	-36.94	V

10.2.5. WCDMA BAND 4

REL 99 MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.41400	54.75	Pk	32.8	-95.2	-45.81	-53.46	-13	-40.46	H
3.42400	53.5	Pk	32.8	-95.2	-45.74	-54.64	-13	-41.64	V
5.139500	55.89	Pk	34.1	-95.2	-47.68	-52.89	-13	-39.89	H
5.134000	56.59	Pk	34.0	-95.2	-47.87	-52.48	-13	-39.48	V
6.837000	52.79	Pk	35.5	-95.2	-44.98	-51.89	-13	-38.89	H
6.841500	54.24	Pk	35.5	-95.2	-45.01	-50.47	-13	-37.47	V
Mid Channel, 1732.6MHz									
3.474500	54.22	Pk	32.8	-95.2	-46.07	-54.25	-13	-41.25	H
3.477500	54.32	Pk	32.8	-95.2	-46.01	-54.09	-13	-41.09	V
5.174000	56.04	Pk	34.1	-95.2	-47.87	-52.93	-13	-39.93	H
5.159000	55.35	Pk	34.1	-95.2	-47.84	-53.59	-13	-40.59	V
6.917500	53.69	Pk	35.5	-95.2	-45.04	-51.05	-13	-38.05	H
6.942500	52.86	Pk	35.5	-95.2	-44.97	-51.81	-13	-38.81	V
High Channel, 1752.6MHz									
3.533000	54.44	Pk	32.9	-95.2	-46.23	-54.09	-13	-41.09	H
3.529500	54.39	Pk	32.9	-95.2	-46.15	-54.06	-13	-41.06	V
5.239500	56.14	Pk	34.2	-95.2	-47.79	-52.65	-13	-39.65	H
5.228500	55.88	Pk	34.2	-95.2	-47.67	-52.79	-13	-39.79	V
7.033000	54.22	Pk	35.6	-95.2	-45.1	-50.48	-13	-37.48	H
7.036000	53.23	Pk	35.6	-95.2	-45.14	-51.51	-13	-38.51	V

HSDPA MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.407500	54.24	Pk	32.8	-95.2	-46.06	-54.22	-13	-41.22	H
3.408000	53.79	Pk	32.8	-95.2	-46.02	-54.63	-13	-41.63	V
5.137500	56.49	Pk	34.0	-95.2	-47.7	-52.41	-13	-39.41	H
5.129500	56.73	Pk	34.0	-95.2	-47.89	-52.36	-13	-39.36	V
6.845000	53.03	Pk	35.5	-95.2	-44.98	-51.65	-13	-38.65	V
6.859500	53.74	Pk	35.5	-95.2	-44.98	-50.94	-13	-37.94	H
Mid Channel, 1732.6MHz									
3.475000	54.02	Pk	32.8	-95.2	-46.07	-54.45	-13	-41.45	H
3.466500	54.65	Pk	32.8	-95.2	-46.16	-53.91	-13	-40.91	V
5.200500	56.72	Pk	34.1	-95.2	-47.68	-52.06	-13	-39.06	H
5.200000	55.49	Pk	34.1	-95.2	-47.61	-53.22	-13	-40.22	V
6.937500	53.73	Pk	35.5	-95.2	-44.94	-50.91	-13	-37.91	H
6.957000	52.77	Pk	35.5	-95.2	-45.00	-51.93	-13	-38.93	V
High Channel, 1752.6MHz									
3.492500	55.08	Pk	32.8	-95.2	-45.98	-53.30	-13	-40.30	H
3.485000	54.54	Pk	32.8	-95.2	-45.83	-53.69	-13	-40.69	V
5.279500	56.70	Pk	34.2	-95.2	-47.83	-52.13	-13	-39.13	H
5.282500	55.37	Pk	34.3	-95.2	-47.69	-53.22	-13	-40.22	V
7.019500	53.33	Pk	35.6	-95.2	-44.89	-51.16	-13	-38.16	H
7.016000	52.81	Pk	35.6	-95.2	-45.00	-51.79	-13	-38.79	V

10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 3

RESULTS

10.3.1. GSM 1900

GPRS MODE

Project #:	14523758
Date:	3/14/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	GPRS 1900
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.694000	53.70	Pk	33.1	-95.2	-45.72	-54.12	-13	-41.12	H
3.704500	53.87	Pk	33.1	-95.2	-45.59	-53.82	-13	-40.82	V
5.544500	55.67	Pk	34.4	-95.2	-46.99	-52.12	-13	-39.12	H
5.521500	55.49	Pk	34.4	-95.2	-47.09	-52.40	-13	-39.40	V
7.422500	55.12	Pk	35.7	-95.2	-46.19	-50.57	-13	-37.57	H
7.417000	54.61	Pk	35.7	-95.2	-46.24	-51.13	-13	-38.13	V
Mid Channel, 1880MHz									
3.759000	53.56	Pk	33.2	-95.2	-45.54	-53.98	-13	-40.98	H
3.744000	53.63	Pk	33.1	-95.2	-45.57	-54.04	-13	-41.04	V
5.644500	55.44	Pk	34.5	-95.2	-46.53	-51.79	-13	-38.79	H
5.639000	55.16	Pk	34.5	-95.2	-46.60	-52.14	-13	-39.14	V
7.533500	54.47	Pk	35.6	-95.2	-46.14	-51.27	-13	-38.27	H
7.534500	54.52	Pk	35.6	-95.2	-46.15	-51.23	-13	-38.23	V
High Channel, 1909.8MHz									
3.830000	55.06	Pk	33.3	-95.2	-46.06	-52.9	-13	-39.9	H
3.836500	54.34	Pk	33.3	-95.2	-45.89	-53.45	-13	-40.45	V
5.701000	54.79	Pk	34.5	-95.2	-46.47	-52.38	-13	-39.38	H
5.693500	54.33	Pk	34.5	-95.2	-46.45	-52.82	-13	-39.82	V
7.628500	54.44	Pk	35.7	-95.2	-45.98	-51.04	-13	-38.04	H
7.644500	54.01	Pk	35.7	-95.2	-46.16	-51.65	-13	-38.65	V

EGPRS MODE

Project #:	14523758
Date:	3/14/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	EGPRS 1900
Chamber #:	04 – RDE - P

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
3.700263	60.91	Pk	33.3	-95.2	-47.82	-48.81	-13	-35.81	H
3.700365	60.45	Pk	33.3	-95.2	-47.83	-49.28	-13	-36.28	V
5.548572	57.53	Pk	34.7	-95.2	-47.94	-50.91	-13	-37.91	H
5.550508	58.00	Pk	34.7	-95.2	-47.93	-50.43	-13	-37.43	V
7.401500	57.52	Pk	35.8	-95.2	-47.10	-48.98	-13	-35.98	H
7.397059	57.11	Pk	35.8	-95.2	-47.07	-49.36	-13	-36.36	V
Mid Channel, 836.6 MHz									
3.759818	58.15	Pk	33.4	-95.2	-47.75	-51.40	-13	-38.40	H
3.758898	57.53	Pk	33.4	-95.2	-47.76	-52.03	-13	-39.03	V
5.639378	58.49	Pk	34.8	-95.2	-47.79	-49.70	-13	-36.70	H
5.640655	56.83	Pk	34.8	-95.2	-47.80	-51.37	-13	-38.37	V
7.519287	56.27	Pk	35.8	-95.2	-47.01	-50.14	-13	-37.14	H
7.520735	56.29	Pk	35.8	-95.2	-47.02	-50.13	-13	-37.13	V
High Channel, 848.8 MHz									
3.822028	57.24	Pk	33.5	-95.2	-47.63	-52.09	-13	-39.09	H
3.821487	57.14	Pk	33.5	-95.2	-47.64	-52.20	-13	-39.2	V
5.729360	56.85	Pk	34.8	-95.2	-47.17	-50.72	-13	-37.72	H
5.731602	57.41	Pk	34.8	-95.2	-47.16	-50.15	-13	-37.15	V
7.640569	56.36	Pk	35.7	-95.2	-46.85	-49.99	-13	-36.99	H
7.640791	56.69	Pk	35.7	-95.2	-46.84	-49.65	-13	-36.65	V

10.3.2. WCDMA BAND 2

REL 99 MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.678500	53.73	Pk	33.0	-95.2	-45.78	-54.25	-13	-41.25	H
3.680500	53.84	Pk	33.0	-95.2	-45.70	-54.06	-13	-41.06	V
5.569000	55.98	Pk	34.4	-95.2	-46.98	-51.8	-13	-38.80	H
5.556000	55.28	Pk	34.4	-95.2	-46.89	-52.41	-13	-39.41	V
7.420000	54.20	Pk	35.7	-95.2	-46.27	-51.57	-13	-38.57	H
7.447000	54.54	Pk	35.7	-95.2	-46.31	-51.27	-13	-38.27	V
Mid Channel, 1880MHz									
3.738500	53.74	Pk	33.1	-95.2	-45.67	-54.03	-13	-41.03	H
3.722000	53.94	Pk	33.1	-95.2	-45.78	-53.94	-13	-40.94	V
5.624000	55.15	Pk	34.4	-95.2	-46.64	-52.29	-13	-39.29	H
5.618000	55.14	Pk	34.4	-95.2	-46.45	-52.11	-13	-39.11	V
7.532000	54.57	Pk	35.6	-95.2	-46.14	-51.17	-13	-38.17	H
7.519500	54.30	Pk	35.6	-95.2	-46.09	-51.39	-13	-38.39	V
High Channel, 1907.6MHz									
3.796000	55.36	Pk	33.3	-95.2	-45.87	-52.41	-13	-39.41	H
3.811000	54.91	Pk	33.3	-95.2	-46.02	-53.01	-13	-40.01	V
5.730500	54.70	Pk	34.5	-95.2	-46.40	-52.4	-13	-39.40	H
5.748000	53.66	Pk	34.6	-95.2	-46.22	-53.16	-13	-40.16	V
7.645500	54.50	Pk	35.7	-95.2	-46.17	-51.17	-13	-38.17	H
7.650000	54.74	Pk	35.7	-95.2	-46.15	-50.91	-13	-37.91	V

HSDPA MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	25019
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.706499	54.72	Pk	33.1	-95.2	-45.66	-53.04	-13	-40.04	H
3.703237	54.44	Pk	33.1	-95.2	-45.65	-53.31	-13	-40.31	V
5.557887	56.38	Pk	34.4	-95.2	-46.85	-51.27	-13	-38.27	H
5.558118	56.92	Pk	34.4	-95.2	-46.85	-50.73	-13	-37.73	V
7.406348	55.37	Pk	35.7	-95.2	-46.17	-50.30	-13	-37.30	H
7.403840	55.44	Pk	35.7	-95.2	-46.15	-50.21	-13	-37.21	V
Mid Channel, 1880MHz									
3.760765	55.07	Pk	33.2	-95.2	-45.65	-52.58	-13	-39.58	H
3.760299	55.06	Pk	33.2	-95.2	-45.58	-52.52	-13	-39.52	V
5.640054	56.33	Pk	34.5	-95.2	-46.52	-50.89	-13	-37.89	H
5.639523	55.95	Pk	34.5	-95.2	-46.56	-51.31	-13	-38.31	V
7.522003	55.13	Pk	35.6	-95.2	-46.20	-50.67	-13	-37.67	H
7.518731	56.05	Pk	35.6	-95.2	-46.05	-49.60	-13	-36.60	V
High Channel, 1907.6MHz									
3.813688	55.67	Pk	33.3	-95.2	-46.03	-52.26	-13	-39.26	H
3.814213	55.36	Pk	33.3	-95.2	-46.04	-52.58	-13	-39.58	V
5.721945	56.45	Pk	34.5	-95.2	-46.50	-50.75	-13	-37.75	H
5.724023	56.17	Pk	34.5	-95.2	-46.47	-51.00	-13	-38.00	V
7.631229	55.88	Pk	35.7	-95.2	-46.00	-49.62	-13	-36.62	H
7.630000	55.93	Pk	35.7	-95.2	-46.02	-49.59	-13	-36.59	V

10.3.3. WCDMA BAND 4

REL 99 MODE

Project #:	14523758
Date:	03/30/2023
Test Engineer:	27661
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.417000	54.31	Pk	32.8	-95.2	-45.74	-53.83	-13	-40.83	H
3.420000	54.26	Pk	32.8	-95.2	-45.98	-54.12	-13	-41.12	V
5.139000	55.82	Pk	34.1	-95.2	-47.66	-52.94	-13	-39.94	H
5.139500	57.08	Pk	34.1	-95.2	-47.68	-51.70	-13	-38.7	V
6.849500	53.62	Pk	35.5	-95.2	-44.99	-51.07	-13	-38.07	H
6.869000	53.12	Pk	35.5	-95.2	-44.97	-51.55	-13	-38.55	V
Mid Channel, 1732.6MHz									
3.487000	55.33	Pk	32.8	-95.2	-45.91	-52.98	-13	-39.98	H
3.484000	54.46	Pk	32.8	-95.2	-45.85	-53.79	-13	-40.79	V
5.197000	55.59	Pk	34.1	-95.2	-47.72	-53.23	-13	-40.23	H
5.194000	56.14	Pk	34.1	-95.2	-47.69	-52.65	-13	-39.65	V
6.958500	53.74	Pk	35.5	-95.2	-44.97	-50.93	-13	-37.93	H
6.930500	53.36	Pk	35.5	-95.2	-45.12	-51.46	-13	-38.46	V
High Channel, 1752.6MHz									
3.527500	54.26	Pk	32.9	-95.2	-46.27	-54.31	-13	-41.31	H
3.540000	54.11	Pk	32.9	-95.2	-46.2	-54.39	-13	-41.39	V
5.245000	56.08	Pk	34.2	-95.2	-47.81	-52.73	-13	-39.73	H
5.254345	60.77	Pk	34.2	-95.2	-47.80	-48.03	-13	-35.03	V
7.018000	53.35	Pk	35.6	-95.2	-44.92	-51.17	-13	-38.17	H
7.012000	53.50	Pk	35.6	-95.2	-44.91	-51.01	-13	-38.01	V

HSDPA MODE

Project #:	14523758
Date:	03/22/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.452344	35.50	Pk	32.5	-95.2	-25.52	-52.72	-13	-39.72	H
3.451406	36.73	Pk	32.5	-95.2	-25.54	-51.51	-13	-38.51	V
5.019844	38.12	Pk	34.2	-95.2	-22.11	-44.99	-13	-31.99	H
5.039531	35.28	Pk	34.3	-95.2	-21.95	-47.57	-13	-34.57	V
6.838594	33.63	Pk	35.5	-95.2	-19.8	-45.87	-13	-32.87	H
6.824063	33.66	Pk	35.4	-95.2	-19.68	-45.82	-13	-32.82	V
Mid Channel, 1732.6MHz									
3.470625	35.32	Pk	32.5	-95.2	-25.19	-52.57	-13	-39.57	H
3.463125	36.49	Pk	32.5	-95.2	-25.32	-51.53	-13	-38.53	V
5.193750	35.47	Pk	34.5	-95.2	-23.03	-48.26	-13	-35.26	H
5.200313	36.00	Pk	34.5	-95.2	-22.97	-47.67	-13	-34.67	V
6.913594	33.85	Pk	35.5	-95.2	-19.78	-45.63	-13	-32.63	H
6.883125	33.60	Pk	35.4	-95.2	-19.95	-46.15	-13	-33.15	V
High Channel, 1752.6MHz									
3.495938	35.18	Pk	32.6	-95.2	-24.55	-51.97	-13	-38.97	H
3.489844	37.40	Pk	32.5	-95.2	-24.61	-49.91	-13	-36.91	V
5.235000	35.83	Pk	34.5	-95.2	-22.57	-47.44	-13	-34.44	H
5.257031	34.40	Pk	34.6	-95.2	-22.37	-48.57	-13	-35.57	V
7.030313	34.14	Pk	35.5	-95.2	-18.62	-44.18	-13	-31.18	H
7.072969	34.58	Pk	35.5	-95.2	-18.74	-43.86	-13	-30.86	V

10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz Ant 4

RESULTS

10.4.1. GSM 1900

GPRS MODE

Project #:	14523758
Date:	3/20/2023
Test Engineer:	25019
Configuration:	EUT Only
Mode:	GPRS 1900
Chamber #:	04-RDE_P

Frequency (GHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.697772	57.76	Pk	33.3	-95.2	-47.73	-51.87	-13	-38.87	V
3.698974	57.52	Pk	33.3	-95.2	-47.79	-52.17	-13	-39.17	V
3.700382	59.49	Pk	33.3	-95.2	-47.83	-50.24	-13	-37.24	H
5.498647	57.54	Pk	34.7	-95.2	-47.99	-50.95	-13	-37.95	H
7.399287	58.04	Pk	35.8	-95.2	-47.12	-48.48	-13	-35.48	V
7.402831	57.02	Pk	35.8	-95.2	-47.13	-49.51	-13	-36.51	H
Mid Channel, 1880MHz									
3.799690	55.32	Pk	33.3	-95.2	-45.88	-52.46	-13	-39.46	H
3.800046	54.78	Pk	33.3	-95.2	-45.86	-52.98	-13	-39.98	V
5.700689	55.86	Pk	34.5	-95.2	-46.47	-51.31	-13	-38.31	H
5.698537	56.65	Pk	34.5	-95.2	-46.56	-50.61	-13	-37.61	V
7.599705	55.32	Pk	35.6	-95.2	-46.08	-50.36	-13	-37.36	H
7.600547	55.61	Pk	35.6	-95.2	-46.03	-50.02	-13	-37.02	V
High Channel, 1909.8MHz									
3.818890	54.84	Pk	33.3	-95.2	-45.80	-52.86	-13	-39.86	H
3.819855	54.61	Pk	33.3	-95.2	-45.79	-53.08	-13	-40.08	V
5.727103	55.98	Pk	34.5	-95.2	-46.55	-51.27	-13	-38.27	H
5.728761	55.68	Pk	34.5	-95.2	-46.55	-51.57	-13	-38.57	V
7.640860	56.02	Pk	35.7	-95.2	-46.19	-49.67	-13	-36.67	H
7.640636	56.05	Pk	35.7	-95.2	-46.18	-49.63	-13	-36.63	V

EGPRS MODE

Project #:	14523758
Date:	3/14/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	EGPRS 1900
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2 MHz									
3.682500	54.24	Pk	33.1	-95.2	-45.63	-53.49	-13	-40.49	H
3.680000	53.69	Pk	33.0	-95.2	-45.71	-54.22	-13	-41.22	V
5.523500	55.07	Pk	34.4	-95.2	-47.11	-52.84	-13	-39.84	H
5.508500	55.41	Pk	34.4	-95.2	-47.19	-52.58	-13	-39.58	V
7.400000	54.34	Pk	35.7	-95.2	-46.06	-51.22	-13	-38.22	H
7.413500	54.74	Pk	35.7	-95.2	-46.18	-50.94	-13	-37.94	V
Mid Channel, 836.6 MHz									
3.756000	54.43	Pk	33.2	-95.2	-45.85	-53.42	-13	-40.42	H
3.749000	53.6	Pk	33.2	-95.2	-45.65	-54.05	-13	-41.05	V
5.616500	56.48	Pk	34.4	-95.2	-46.44	-50.76	-13	-37.76	H
5.614500	56.11	Pk	34.4	-95.2	-46.55	-51.24	-13	-38.24	V
7.530000	54.85	Pk	35.6	-95.2	-46.14	-50.89	-13	-37.89	H
7.526500	54.30	Pk	35.6	-95.2	-46.22	-51.52	-13	-38.52	V
High Channel, 848.8 MHz									
3.819500	54.09	Pk	33.3	-95.2	-45.79	-53.6	-13	-40.60	H
3.823500	54.17	Pk	33.3	-95.2	-46.03	-53.76	-13	-40.76	V
5.718000	55.22	Pk	34.5	-95.2	-46.59	-52.07	-13	-39.07	H
5.710500	54.48	Pk	34.5	-95.2	-46.57	-52.79	-13	-39.79	V
7.647500	55.02	Pk	35.7	-95.2	-46.13	-50.61	-13	-37.61	H
7.655500	54.69	Pk	35.7	-95.2	-46.20	-51.01	-13	-38.01	V

10.4.2. WCDMA BAND 2

REL 99 MODE

Project #:	14523758
Date:	3/23/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.437000	54.18	Pk	32.8	-95.2	-45.86	-54.08	-13	-41.08	H
3.431000	53.67	Pk	32.8	-95.2	-45.7	-54.43	-13	-41.43	V
5.133000	55.76	Pk	34.0	-95.2	-47.84	-53.28	-13	-40.28	H
5.132500	55.60	Pk	34.0	-95.2	-47.81	-53.41	-13	-40.41	V
6.871500	54.65	Pk	35.5	-95.2	-45.08	-50.13	-13	-37.13	H
6.868000	53.10	Pk	35.5	-95.2	-44.93	-51.53	-13	-38.53	V
Mid Channel, 1880MHz									
3.771500	55.48	Pk	33.2	-95.2	-45.91	-52.43	-13	-39.43	H
3.770500	53.66	Pk	33.2	-95.2	-45.97	-54.31	-13	-41.31	V
5.615000	55.31	Pk	34.4	-95.2	-46.56	-52.05	-13	-39.05	H
5.611000	56.11	Pk	34.4	-95.2	-46.63	-51.32	-13	-38.32	V
7.529000	55.03	Pk	35.6	-95.2	-46.1	-50.67	-13	-37.67	H
7.547000	54.47	Pk	35.6	-95.2	-46.14	-51.27	-13	-38.27	V
High Channel, 1907.6MHz									
3.839000	54.67	Pk	33.3	-95.2	-46.13	-53.36	-13	-40.36	H
3.828000	54.59	Pk	33.3	-95.2	-46.08	-53.39	-13	-40.39	V
5.706500	54.60	Pk	34.5	-95.2	-46.44	-52.54	-13	-39.54	H
5.691500	54.96	Pk	34.5	-95.2	-46.44	-52.18	-13	-39.18	V
7.641500	55.01	Pk	35.7	-95.2	-46.17	-50.66	-13	-37.66	H
7.649500	54.69	Pk	35.7	-95.2	-46.15	-50.96	-13	-37.96	V

HSDPA MODE

Project #:	14523758
Date:	3/23/2023
Test Engineer:	25019
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.706223	54.36	Pk	33.1	-95.2	-45.63	-53.37	-13	-40.37	H
3.703216	54.57	Pk	33.1	-95.2	-45.65	-53.18	-13	-40.18	V
5.557806	56.61	Pk	34.4	-95.2	-46.85	-51.04	-13	-38.04	H
5.557103	56.06	Pk	34.4	-95.2	-46.84	-51.58	-13	-38.58	V
7.408411	55.44	Pk	35.7	-95.2	-46.21	-50.27	-13	-37.27	H
7.409657	55.25	Pk	35.7	-95.2	-46.22	-50.47	-13	-37.47	V
Mid Channel, 1880MHz									
3.759338	54.40	Pk	33.2	-95.2	-45.54	-53.14	-13	-40.14	H
3.758904	55.10	Pk	33.2	-95.2	-45.54	-52.44	-13	-39.44	V
5.640871	56.28	Pk	34.5	-95.2	-46.58	-51.00	-13	-38.00	H
5.641410	55.71	Pk	34.5	-95.2	-46.60	-51.59	-13	-38.59	V
7.522321	55.68	Pk	35.6	-95.2	-46.21	-50.13	-13	-37.13	H
7.520597	55.80	Pk	35.6	-95.2	-46.14	-49.94	-13	-36.94	V
High Channel, 1907.6MHz									
3.814893	54.97	Pk	33.3	-95.2	-46.06	-52.99	-13	-39.99	H
3.816227	55.38	Pk	33.3	-95.2	-46.05	-52.57	-13	-39.57	V
5.723485	56.20	Pk	34.5	-95.2	-46.44	-50.94	-13	-37.94	H
5.721159	55.43	Pk	34.5	-95.2	-46.53	-51.80	-13	-38.80	V
7.631880	55.29	Pk	35.7	-95.2	-45.98	-50.19	-13	-37.19	H
7.629349	55.78	Pk	35.7	-95.2	-46.01	-49.73	-13	-36.73	V

10.4.3. WCDMA BAND 4

REL 99 MODE

Project #:	14523758
Date:	3/23/2023
Test Engineer:	32145
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	200786 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.430500	53.95	Pk	32.8	-95.2	-45.71	-54.16	-13	-41.16	H
3.435000	54.23	Pk	32.8	-95.2	-45.97	-54.14	-13	-41.14	V
5.114500	55.60	Pk	34.0	-95.2	-47.94	-53.54	-13	-40.54	H
5.132500	55.55	Pk	34.0	-95.2	-47.81	-53.46	-13	-40.46	V
6.829000	53.57	Pk	35.5	-95.2	-44.88	-51.01	-13	-38.01	H
6.821500	52.78	Pk	35.5	-95.2	-44.77	-51.69	-13	-38.69	V
Mid Channel, 1732.6MHz									
3.450500	54.21	Pk	32.8	-95.2	-46.05	-54.24	-13	-41.24	H
3.461000	53.90	Pk	32.8	-95.2	-45.95	-54.45	-13	-41.45	V
5.179500	56.23	Pk	34.1	-95.2	-47.81	-52.68	-13	-39.68	H
5.171500	55.59	Pk	34.1	-95.2	-47.78	-53.29	-13	-40.29	V
6.925000	54.12	Pk	35.5	-95.2	-45.1	-50.68	-13	-37.68	H
6.921500	52.53	Pk	35.5	-95.2	-44.92	-52.09	-13	-39.09	V
High Channel, 1752.6MHz									
3.503500	54.34	Pk	32.8	-95.2	-46.01	-54.07	-13	-41.07	H
3.511000	53.69	Pk	32.8	-95.2	-46.22	-54.93	-13	-41.93	V
5.273000	56.16	Pk	34.2	-95.2	-47.84	-52.68	-13	-39.68	H
5.268000	55.91	Pk	34.2	-95.2	-47.73	-52.82	-13	-39.82	V
7.039000	53.70	Pk	35.6	-95.2	-45.18	-51.08	-13	-38.08	H
7.014000	53.74	Pk	35.6	-95.2	-44.91	-50.77	-13	-37.77	V

HSDPA MODE

Project #:	14523758
Date:	3/23/2023
Test Engineer:	25019
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	04-RDE-P

Frequency (GHz)	Meter Reading (dBuV)	Det	200786 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.426673	55.58	Pk	32.8	-95.2	-45.68	-52.50	-13	-39.50	H
3.425697	55.51	Pk	32.8	-95.2	-45.66	-52.55	-13	-39.55	V
5.135401	57.21	Pk	34.0	-95.2	-47.93	-51.92	-13	-38.92	H
5.137316	57.19	Pk	34.0	-95.2	-47.71	-51.72	-13	-38.72	V
6.847053	54.22	Pk	35.5	-95.2	-44.95	-50.43	-13	-37.43	H
6.847759	54.38	Pk	35.5	-95.2	-44.97	-50.29	-13	-37.29	V
Mid Channel, 1732.6MHz									
3.466956	55.06	Pk	32.8	-95.2	-46.12	-53.46	-13	-40.46	H
3.466816	54.97	Pk	32.8	-95.2	-46.13	-53.56	-13	-40.56	V
5.199252	57.26	Pk	34.1	-95.2	-47.6	-51.44	-13	-38.44	H
5.199352	56.45	Pk	34.1	-95.2	-47.6	-52.25	-13	-39.25	V
6.930973	54.80	Pk	35.5	-95.2	-45.11	-50.01	-13	-37.01	H
6.931180	54.48	Pk	35.5	-95.2	-45.11	-50.33	-13	-37.33	V
High Channel, 1752.6MHz									
3.503014	54.98	Pk	32.8	-95.2	-45.98	-53.4	-13	-40.4	H
3.505703	55.21	Pk	32.8	-95.2	-46.04	-53.23	-13	-40.23	V
5.257473	57.91	Pk	34.2	-95.2	-47.86	-50.95	-13	-37.95	H
5.258905	57.56	Pk	34.2	-95.2	-47.76	-51.20	-13	-38.20	V
7.011406	53.99	Pk	35.6	-95.2	-44.87	-50.48	-13	-37.48	H
7.008628	54.30	Pk	35.6	-95.2	-44.90	-50.20	-13	-37.20	V

11. SETUP PHOTOS

Please refer to 14523758-EP1V1 Setup Photo Report for setup photos

END OF REPORT