



TEST REPORT

Report Number: 14040867-E7V2

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

Model : A2649

Brand : APPLE

FCC ID : BCG-E8138A

IC : 579C-E8138A

EUT Description : SMARTPHONE

Test Standard(s) : FCC CFR47 PART 22H, 24E, and 27L
ISED RSS-GEN ISSUE 5, RSS-132 ISSUE 3, RSS-133 ISSUE 6,
AND RSS-139 ISSUE 3

Date Of Issue:
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Revision History




<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	6/23/2022	Initial Review	Eric Ting
V2	7/19/2022	Address TCB feedback section 5.4 and 6	Eric Ting

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A	
Model	A2649	
Brand	APPLE	
FCC ID	BCG-E8138A	
IC	579C-E8138A	
EUT Description	SMARTPHONE	
Serial Number	C07210600PX1J1C4 (CONDUCTED), V2V9KHF5W9, GFCR6GX7F3 (RADIATED)	
Sample Receipt Date	JANUARY 02, 2022	
Date Tested	JANUARY 02, 2022 to MAY 31, 2022	
Applicable Standards	FCC CFR 47 Part 2, Part 22, Part 24, and Part 27 ISED RSS-GEN ISSUE 5, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3.	
Test Results	COMPLIES	
<p>UL LLC 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.</p> <p>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.</p> <p>This document may not be altered or revised in any way unless done so by UL LLC 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.</p>		
Approved & Released By:	Reviewed By:	Prepared By:
		
Dan Corona Operations Leader UL LLC	Eric Ting Project Engineer UL LLC	Tony Li Test Engineer UL LLC

2. SUMMARY OF TEST RESULTS

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

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)	-	Complies	
Equivalent Isotropic Radiated power	24.232 (c), 27.50 (d) (4)	RSS132§5.4 RSS133§6.4 & SRSP-510, 5.1.2 RSS139§6.5	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§6.6	Complies	
Out of Band Emissions	2.1051, 22.917 (a), 24.238 (a), 27.53 (h),	RSS132§5.5 RSS133§6.5 RSS139§6.6	Complies	
Frequency Stability	2.1055, 22.355, 24.235, 27.54	RSS132§5.3 RSS133§6.3 RSS139§6.4	Complies	
Peak-to-Average Ratio	22.913 (d), 24.232 (d), 27.50 (d) (5)	RSS132§5.4 RSS133§6.4 RSS139§6.5	Complies	
Field Strength of Spurious Radiation	2.1053, 22.917 (a), 24.238 (a), 27.53 (h),	RSS132§5.5 RSS133§6.5 RSS139§6.6	Complies	

3. TEST METHODOLOGY

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

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, and Part 27.
- [FCC KDB 971168 D01 v03r01](#): Power Meas License Digital Systems
- [FCC KDB 971168 D02 v02r01](#): Misc Rev Approv License Devices
- [FCC KDB 412172 D01 v01r01](#): Determining ERP and EIRP
- ISED RSS-GEN Issue 5, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3

4. FACILITIES AND ACCREDITATION

UL LLC 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 checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
<input type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

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}
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.84 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
Occupied Channel Bandwidth	±1.22 %
Temperature	±2.26%
Supply voltages	±0.57 %
Time	±3.39 %

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 multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G FR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC, and MSS. All models except reference model support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

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 (Ant1)								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
824.2-848.8	GPRS	33.50	-4.60	11.5	28.90	0.776	243.05	243KGXW
	EGPRS	28.00			23.40	0.219	237.1	237KG7W
Part 22 850MHz (Ant1)								
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	33.50	-4.60	7.0	26.75	0.473	243.05	243KGXW
	EGPRS	28.00			21.25	0.133	237.1	237KG7W
Part 24 / RSS 133 1900MHz (Ant3)								
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	30.40	2.10	2.0	32.50	1.778	242.07	242KGXW
	EGPRS	26.50			28.60	0.724	242.37	242KG7W

WCDMA MODE

RSS 132 Band 5 (Ant 1)								
Frequency range (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
826.4-846.6	REL 99	25.70	-4.60	11.5	21.10	0.129	4145	4M15F9W
	HSDPA	24.70			20.10	0.102	4142	4M14F9W
Part 22 Band 5 (Ant1)								
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	7.0	18.95	0.079	4145	4M14F9W
	HSDPA	24.70			17.95	0.062	4142	4M14F9W
Part 24 / RSS 133 Band 2 (Ant 1)								
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	25.70	2.10	2.0	27.80	0.603	4155	4M16F9W
	HSDPA	24.67			26.77	0.475	4152	4M15F9W
Part 27 / RSS 139 Band 4 (Ant 3)								
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	25.20	0.00	1.0	25.20	0.331	4146	4M15F9W
	HSDPA	24.18			24.18	0.262	4146	4M15F9W

6.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version: 0.15.02

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	-5.8		
GSM1900 and WCDMA 2 1850 – 1910 MHz	-2.6	-2.1	2.1	-1.7
WCDMA 4 1710 – 1755 MHz	-1.4	-3.9	0.0	-2.4

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X/Y/Z on ANT 1,ANT 2, ANT 3 and ANT 4 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	Z	Z	N/A	N/A
1710 – 1915 MHz	Y	X	Y	Y

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

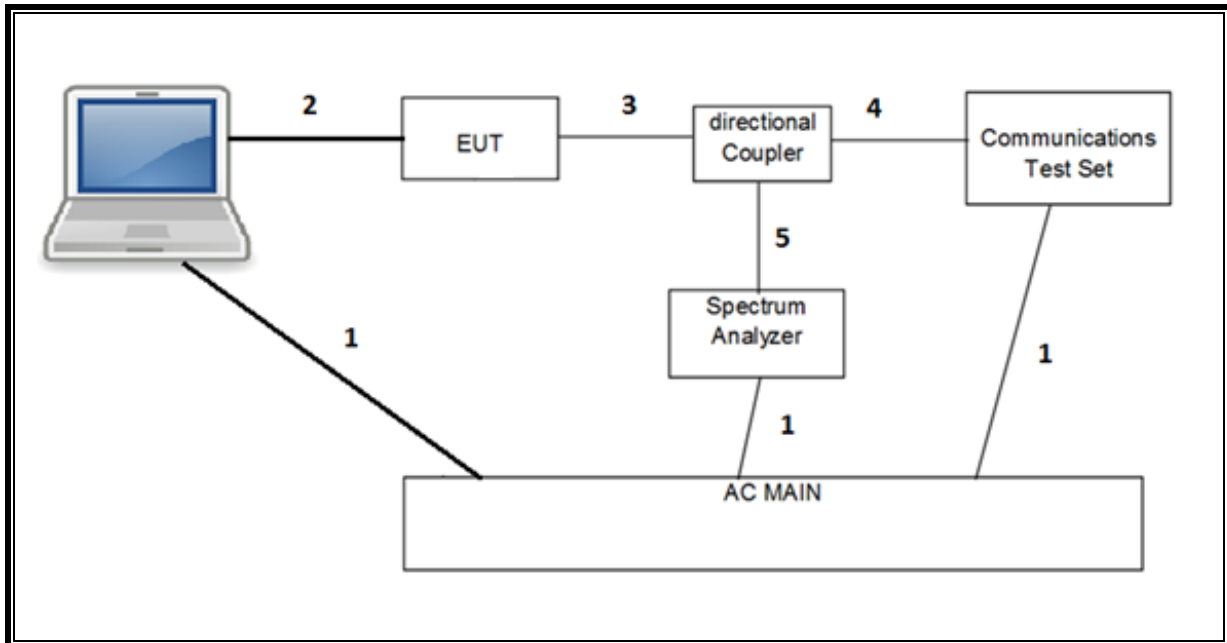
Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 18GHz. There were no emissions found with less than 20dB of margin from 9kHz to 1GHz.

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.

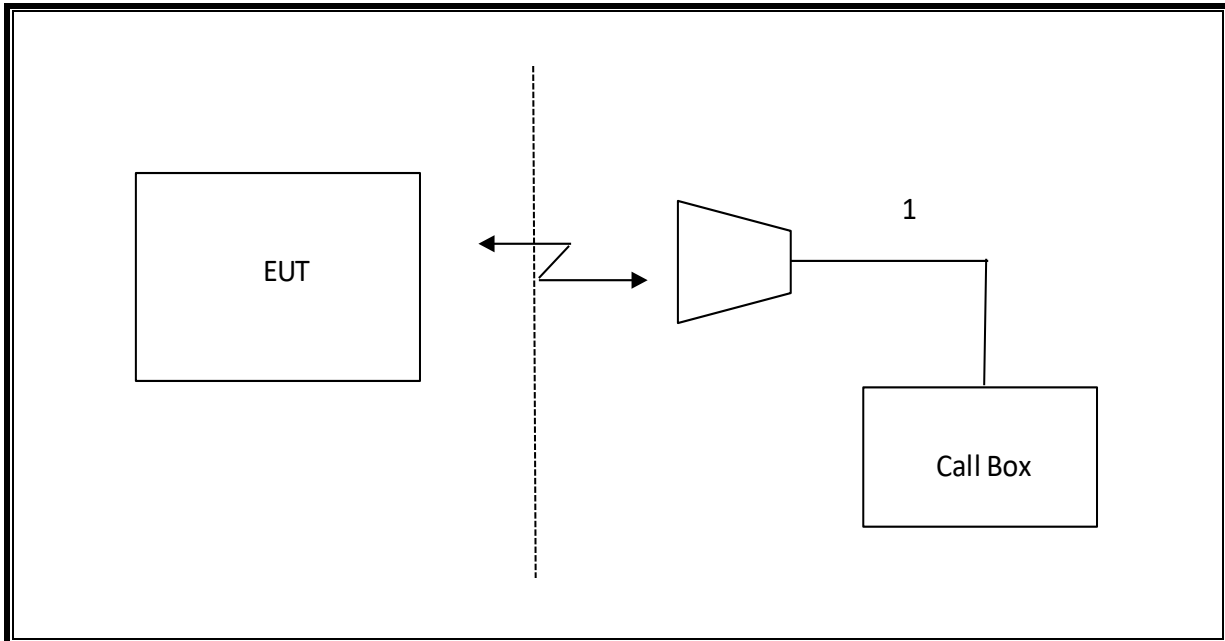
6.6. DESCRIPTION OF TEST SETUP

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	80402	6/14/2022
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	85151	3/21/2023
*RF Amplifier, 1-18GHz	T1165	AFS42-00101800-25-S-42	T1165	6/12/2022
*Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	6/12/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85212	1/30/2023
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	85827	connection purpose only
Antenna, Horn 1-18GHz	ETS Lindgren	3117	80403	5/26/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	125178	1/24/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	80105	connection purpose only
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	203089	1/31/2023
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170649	7/07/2022
Directional Coupler	KRYTAR	152613	T1536	9/23/2022
Directional Coupler	KRYTAR	152613	T1537	9/23/2022
Power Meter, P-series single channel	Keysight	N1911A	82174	1/24/2023
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight	N1921A	90388	1/24/2023
Filter, HPF 1.2GHz	Micro-Tronics	152043	152043	7/29/2022
Filter, BRF 1850 – 1910 MHz	Micro-Tronics	155055	155055	12/20/2022
Filter, BRF 2495 – 2690 MHz	Micro-Tronics	155050	155055	7/30/2022
Filter, BRF 3.4 – 3.8GHz	Micro-Tronics	208398	208398	7/30/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	80397	2/1/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85201	2/1/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85214	2/2/2023
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight	N9030A	80400	2/1/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85806	2/22/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85943	2/20/2023
Wireless Test Platform, UXM 5G	Keysight	E7515B	207269	1/24/2023
*Environmental Chamber	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	82472	6/15/2022
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 3.7.6, Match 1, 2022	
Power Measurement Software	UL	UL RF	Ver 3.4.9, April 29, 2022	
Radiated test software	UL	UL RF	Ver 9.5 June 15, 2022	

NOTES:

- * Testing is completed before equipment expiration date.
- ** 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

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:	38602	Test Date:	2/2/2022
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Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)	
					ANT 1	ANT 2
GPRS (GMSK)	CS1	1	128	824.2	32.58	32.36
			190	836.6	33.50	32.50
			251	848.8	32.97	32.48
		2	128	824.2	31.45	31.28
			190	836.6	32.50	31.44
			251	848.8	31.86	31.50
EGPRS (8PSK)	MCS5	1	128	824.2	27.81	27.00
			190	836.6	28.00	26.92
			251	848.8	27.91	26.90
		2	128	824.2	26.83	26.00
			190	836.6	27.00	25.93
			251	848.8	26.91	25.90

8.1.2. GSM 1900

Test Engineer ID:	38602	Test Date:	2/2/2022
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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	31.67	29.25	30.38	28.71
			661	1880	32.00	29.47	30.40	29.00
			810	1909.8	31.97	29.50	30.36	28.92
		2	512	1850.2	30.64	28.18	30.39	27.60
			661	1880	31.00	28.44	30.40	28.00
			810	1909.8	30.98	28.50	30.37	27.91
EGPRS (8PSK)	MCS5	1	512	1850.2	26.71	24.33	26.34	23.72
			661	1880	26.99	24.42	26.50	24.00
			810	1909.8	27.00	24.50	26.26	23.90
		2	512	1849.33	25.72	23.36	25.28	22.90
			661	1879.13	25.99	23.50	25.50	23.00
			810	1908.93	26.00	23.52	25.45	22.80

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:	38602	Test Date:	2/3/2022
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Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)			
					ANT 1	ANT 2	ANT 3	ANT 4
Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	25.70	24.70		
		4183	836.6	N/A	25.67	24.65		
		4233	846.6	N/A	25.64	24.63		
HSDPA	Subtest 1	4132	826.4	0	24.68	23.70		
		4183	836.6	0	24.66	23.63		
		4233	846.6	0	24.63	23.60		
	Subtest 2	4132	826.4	0	24.70	23.74		
		4183	836.6	0	24.68	23.67		
		4233	846.6	0	24.64	23.63		
	Subtest 3	4132	826.4	0.5	24.21	23.23		
		4183	836.6	0.5	24.18	23.16		
		4233	846.6	0.5	24.17	23.13		
	Subtest 4	4132	826.4	0.5	24.19	23.23		
		4183	836.6	0.5	24.17	23.14		
		4233	846.6	0.5	24.16	23.14		
HSPA (HSDPA & HSUPA)	Subtest 1	4132	826.4	0	24.69	23.73		
		4183	836.6	0	24.68	23.68		
		4233	846.6	0	24.67	23.68		
	Subtest 2	4132	826.4	2	22.70	21.74		
		4183	836.6	2	22.68	21.67		
		4233	846.6	2	22.66	21.67		
	Subtest 3	4132	826.4	1	23.72	22.74		
		4183	836.6	1	23.69	22.70		
		4233	846.6	1	23.69	22.64		
	Subtest 4	4132	826.4	2	22.73	21.75		
		4183	836.6	2	22.70	21.68		
		4233	846.6	2	22.67	21.67		
	Subtest 5	4132	826.4	0	24.32	23.28		
		4183	836.6	0	24.26	23.27		
		4233	846.6	0	24.26	23.26		
DC-HSDPA	Subtest 1	4132	826.4	0	24.69	23.71		
		4183	836.6	0	24.68	23.67		
		4233	846.6	0	24.63	23.63		
	Subtest 2	4132	826.4	0	24.70	23.75		
		4183	836.6	0	24.68	23.67		
		4233	846.6	0	24.65	23.64		
	Subtest 3	4132	826.4	0.5	24.23	23.27		
		4183	836.6	0.5	24.19	23.20		
		4233	846.6	0.5	24.17	23.15		
	Subtest 4	4132	826.4	0.5	24.20	23.23		
		4183	836.6	0.5	24.17	23.16		
		4233	846.6	0.5	24.15	23.14		

8.2.2. WCDMA BAND 2

Test Engineer ID:	38602	Test Date:	2/2/2022
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Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)			
						ANT 1	ANT 2	ANT 3	ANT 4
W-CDMA Band 2 (1900MHz)	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	25.65	23.40	25.03	22.37
			9400	1880.0	N/A	25.70	23.28	25.20	22.60
			9538	1907.6	N/A	25.68	23.35	25.11	22.52
	HSDPA	Subtest 1	9262	1852.4	0	24.62	22.42	24.03	21.37
			9400	1880.0	0	24.67	22.28	24.16	21.57
			9538	1907.6	0	24.67	22.35	24.10	21.50
		Subtest 2	9262	1852.4	0	24.66	22.42	24.03	21.38
			9400	1880.0	0	24.68	22.29	24.16	21.57
			9538	1907.6	0	24.68	22.35	24.09	21.50
		Subtest 3	9262	1852.4	0.5	24.14	21.91	23.54	20.87
			9400	1880.0	0.5	24.17	21.81	23.65	21.06
			9538	1907.6	0.5	24.18	21.87	23.62	21.00
		Subtest 4	9262	1852.4	0.5	24.10	21.94	23.55	20.89
			9400	1880.0	0.5	24.18	21.80	23.68	21.07
			9538	1907.6	0.5	24.12	21.86	23.61	21.00
	HSPA (HSDPA & HSUPA)	Subtest 1	9262	1852.4	0	24.66	22.43	24.01	21.35
			9400	1880.0	0	24.68	22.32	24.21	21.61
			9538	1907.6	0	24.68	22.39	24.13	21.54
		Subtest 2	9262	1852.4	2	22.66	20.45	22.05	19.41
			9400	1880.0	2	22.64	20.30	22.16	19.58
			9538	1907.6	2	22.62	20.34	22.10	19.47
		Subtest 3	9262	1852.4	1	23.65	21.41	23.06	20.37
			9400	1880.0	1	23.66	21.27	23.17	20.60
			9538	1907.6	1	23.65	21.34	23.10	20.54
		Subtest 4	9262	1852.4	2	22.69	20.43	22.06	19.42
			9400	1880.0	2	22.67	20.30	22.19	19.57
			9538	1907.6	2	22.66	20.37	22.10	19.49
		Subtest 5	9262	1852.4	0	24.24	21.98	23.64	20.97
			9400	1880.0	0	24.29	21.89	23.77	21.12
			9538	1907.6	0	24.31	21.97	23.71	21.06
	DC-HSDPA	Subtest 1	9262	1852.4	0	24.68	22.42	24.08	21.38
			9400	1880.0	0	24.70	22.30	24.23	21.59
			9538	1907.6	0	24.68	22.36	24.13	21.52
		Subtest 2	9262	1852.4	0	24.69	22.44	24.05	21.40
			9400	1880.0	0	24.67	22.33	24.21	21.59
			9538	1907.6	0	24.69	22.37	24.12	21.49
		Subtest 3	9262	1852.4	0.5	24.16	21.92	23.57	20.87
			9400	1880.0	0.5	24.22	21.82	23.68	21.08
			9538	1907.6	0.5	24.20	21.86	23.64	21.00
		Subtest 4	9262	1852.4	0.5	24.21	21.93	23.60	20.91
			9400	1880.0	0.5	24.22	21.81	23.73	21.09
			9538	1907.6	0.5	24.69	21.88	23.64	21.00

8.2.3. WCDMA BAND 4

Test Engineer ID:	38602	Test Date:	2/2/2022
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Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)			
						ANT 1	ANT 2	ANT 3	ANT 4
W-CDMA Band 4 (1700MHz)	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	25.70	23.40	25.19	22.55
			1413	1732.6	N/A	25.60	23.37	25.20	22.60
			1513	1752.6	N/A	25.67	23.32	25.13	22.46
	HSDPA	Subtest 1	1312	1712.4	0	24.67	22.39	24.16	21.56
			1413	1732.6	0	24.59	22.38	24.18	21.58
			1513	1752.6	0	24.65	22.31	24.10	21.46
		Subtest 2	1312	1712.4	0	24.67	22.39	24.15	21.57
			1413	1732.6	0	24.61	22.34	24.19	21.53
			1513	1752.6	0	24.64	22.28	24.11	21.46
		Subtest 3	1312	1712.4	0.5	24.16	21.90	23.66	21.11
			1413	1732.6	0.5	24.10	21.84	23.68	21.07
			1513	1752.6	0.5	24.15	21.80	23.61	20.97
		Subtest 4	1312	1712.4	0.5	24.15	21.88	23.70	20.15
			1413	1732.6	0.5	24.07	21.85	23.70	20.26
			1513	1752.6	0.5	24.13	21.78	23.62	20.01
	HSPA (HSDPA & HSUPA)	Subtest 1	1312	1712.4	0	24.66	22.40	24.18	22.45
			1413	1732.6	0	24.57	22.37	24.15	22.51
			1513	1752.6	0	24.66	22.28	24.07	22.39
		Subtest 2	1312	1712.4	2	22.66	20.36	22.11	20.45
			1413	1732.6	2	22.58	20.35	22.13	20.50
			1513	1752.6	2	22.61	20.24	22.08	20.40
		Subtest 3	1312	1712.4	1	23.68	21.37	23.13	21.48
			1413	1732.6	1	23.58	21.36	23.15	21.50
			1513	1752.6	1	23.62	21.23	23.07	21.38
		Subtest 4	1312	1712.4	2	22.66	20.42	22.11	20.48
			1413	1732.6	2	22.58	20.38	22.16	20.51
			1513	1752.6	2	22.65	20.28	22.05	20.41
	Subtest 5	1312	1712.4	0	24.26	21.98	23.71	22.03	
		1413	1732.6	0	24.18	21.94	23.73	22.06	
		1513	1752.6	0	24.24	21.87	23.72	21.93	
	DC-HSDPA	Subtest 1	1312	1712.4	0	24.68	22.44	24.14	22.46
			1413	1732.6	0	24.57	22.38	24.19	22.49
			1513	1752.6	0	24.63	22.27	24.09	22.38
		Subtest 2	1312	1712.4	0	24.66	22.44	24.14	22.47
			1413	1732.6	0	24.56	22.36	24.15	22.48
			1513	1752.6	0	24.62	22.23	24.07	22.34
Subtest 3		1312	1712.4	0.5	24.14	21.93	23.66	22.00	
		1413	1732.6	0.5	24.08	21.88	23.65	21.99	
		1513	1752.6	0.5	24.12	21.76	23.59	21.87	
Subtest 4		1312	1712.4	0.5	24.13	21.92	23.67	21.98	
		1413	1732.6	0.5	24.05	21.85	23.67	21.99	
		1513	1752.6	0.5	24.11	21.75	23.57	22.25	

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.

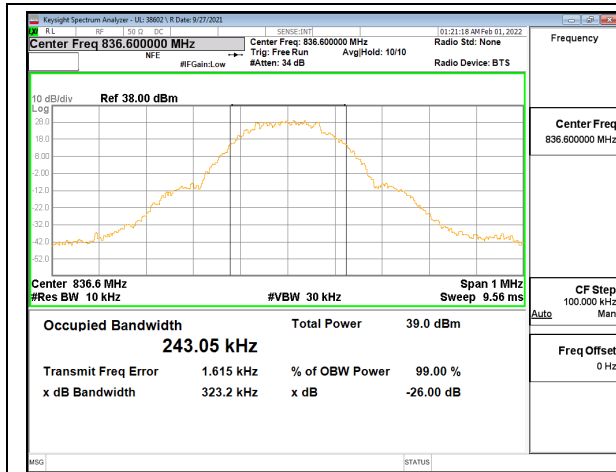
GSM

Band	Modulation	Channel	f(MHz)	99% BW (KHz)	-26dB BW (KHz)
850	GPRS	190	836.6	243.05	323.2
	EGPRS			237.10	293.8
1900	GPRS	661	1880.0	242.07	315.9
	EGPRS			242.37	325.0

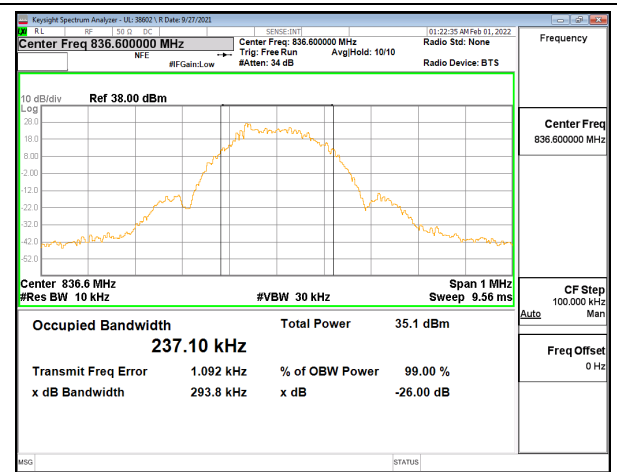
WCDMA

Band	Modulation	Channel	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
BAND 5	REL 99	4408	836.6	4.1447	4.696
	HSDPA			4.1416	4.690
BAND 2	REL 99	9800	1880.0	4.1551	4.720
	HSDPA			4.1521	4.670
BAND 4	REL 99	1638	1732.6	4.1414	4.698
	HSDPA			4.1456	4.705

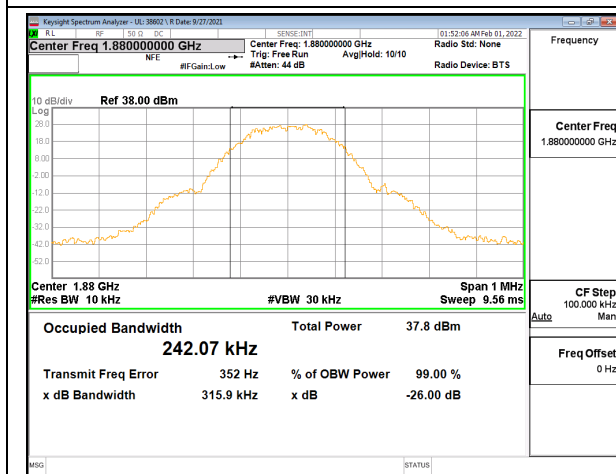
9.1.1. GSM



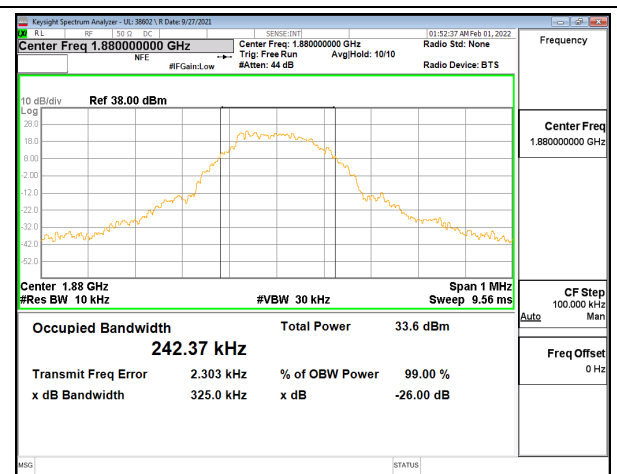
GSM 850 GPRS Middle Channel



GSM 850 EGPRS Middle Channel

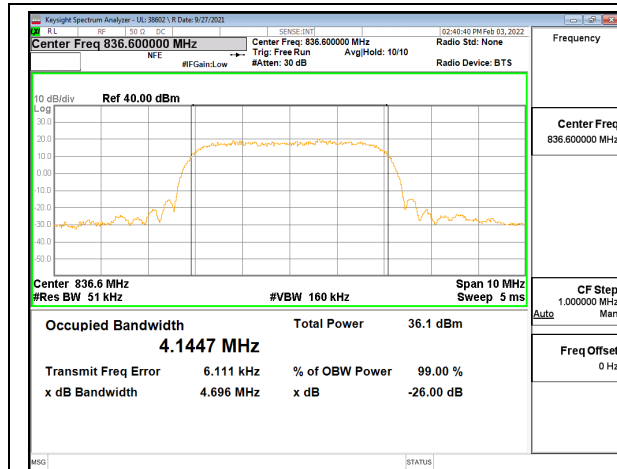


GSM 1900 GPRS Middle Channel

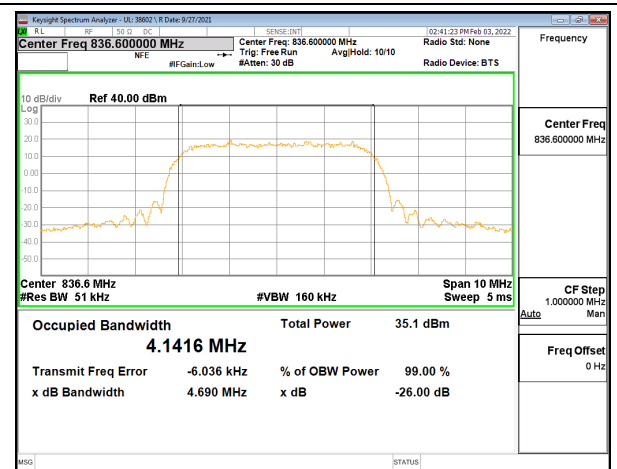


GSM 1900 EGPRS Middle Channel

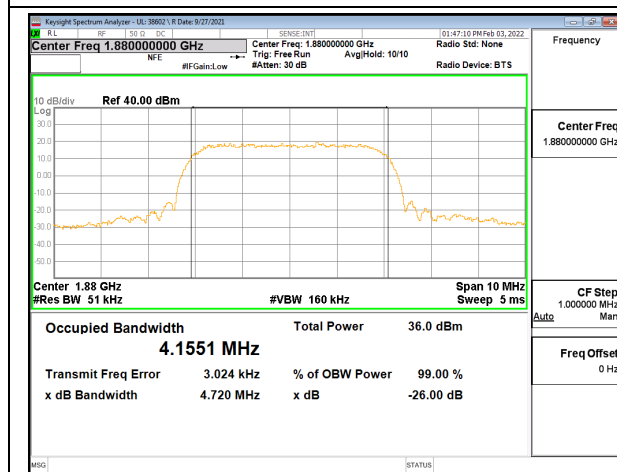
9.1.2. WCDMA



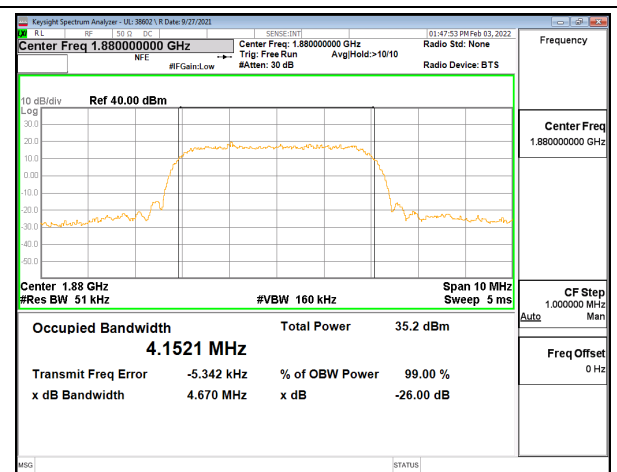
WCDMA Band 5 Rel 99 Middle Channel



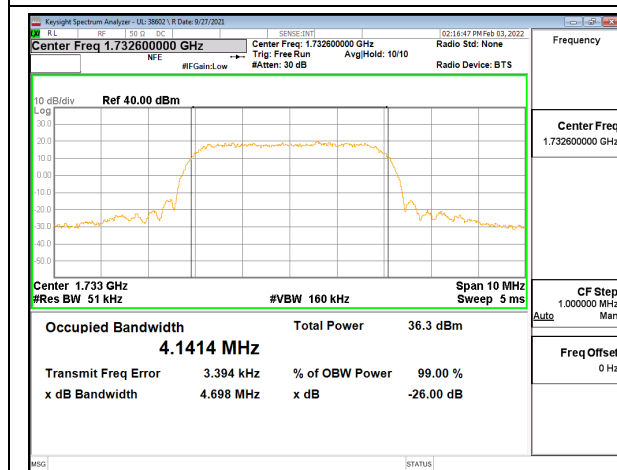
WCDMA Band 5 HSDPA Middle Channel



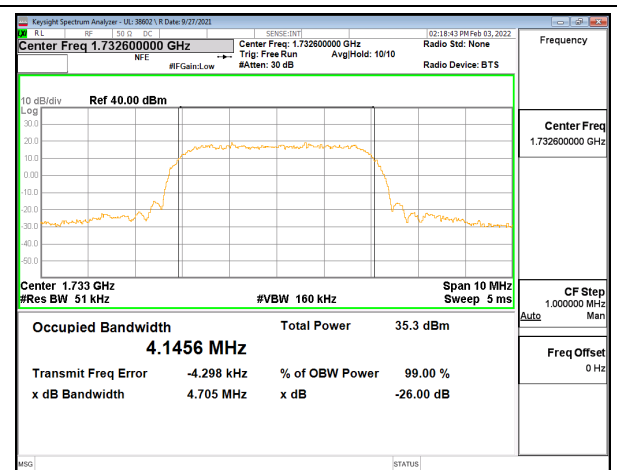
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel



WCDMA Band 4 Rel 99 Middle Channel



WCDMA Band 4 HSDPA Middle Channel

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.

NOTE: According to 971168 D02 Misc Rev Approv License Devices v02r01, Section VIII (c):

For Section 90.691(a) compliance testing, use RBW = 300 Hz for offsets less than 37.5 kHz from a channel edge; RBW = 100 kHz for offsets greater than 37.5 kHz is allowed.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (watts) dB.

TEST PROCEDURE

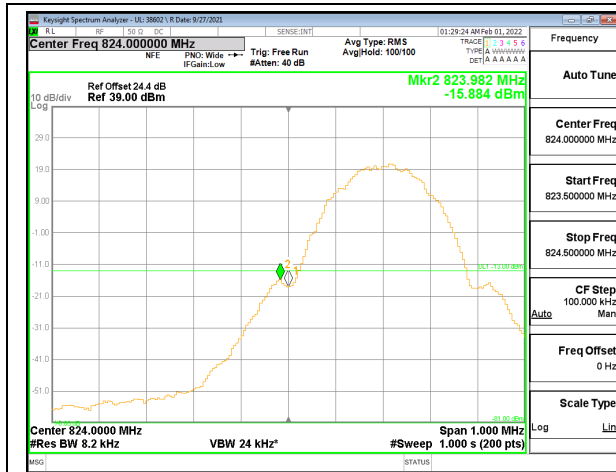
The transmitter output was connected to a R&S CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

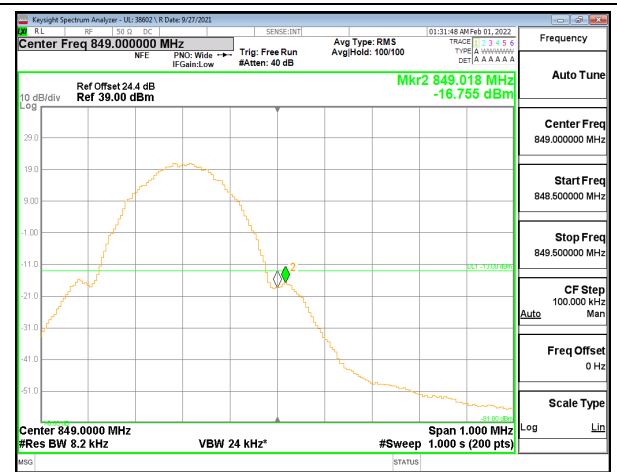
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

RESULTS

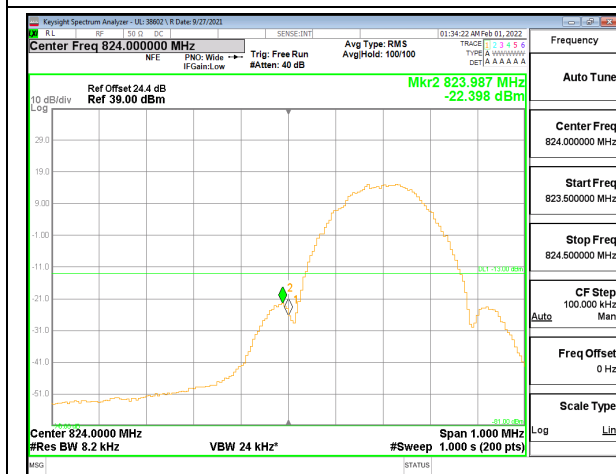
9.2.1. GSM 850



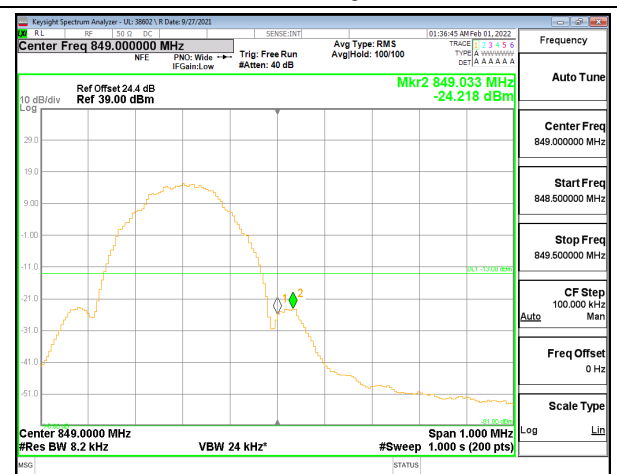
GSM 850 GPRS Low Channel



GSM 850 GPRS High Channel

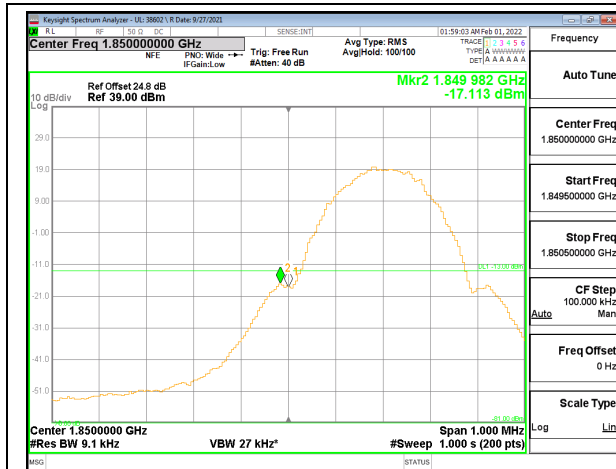


GSM 850 EGPRS Low Channel

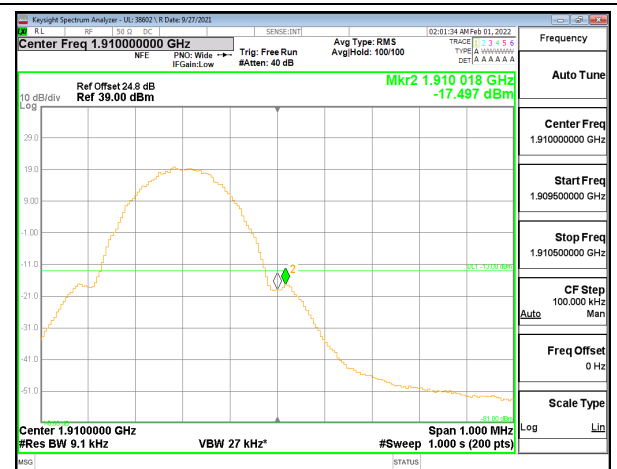


GSM 850 EGPRS High Channel

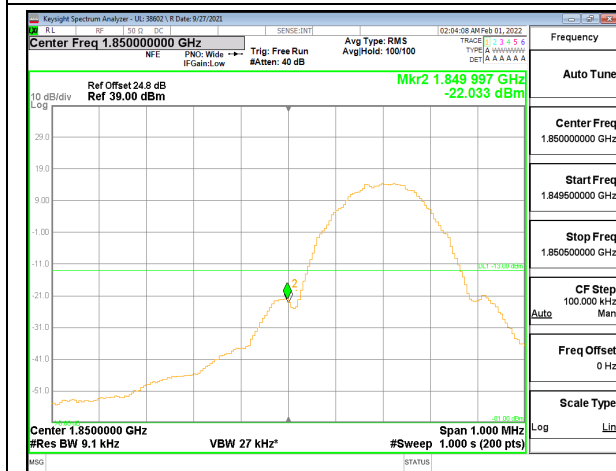
9.2.2. GSM 1900



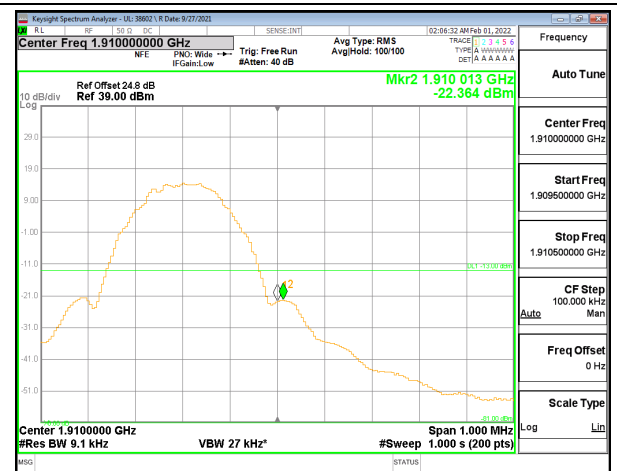
GSM 1900 GPRS Low Channel



GSM 1900 GPRS High Channel

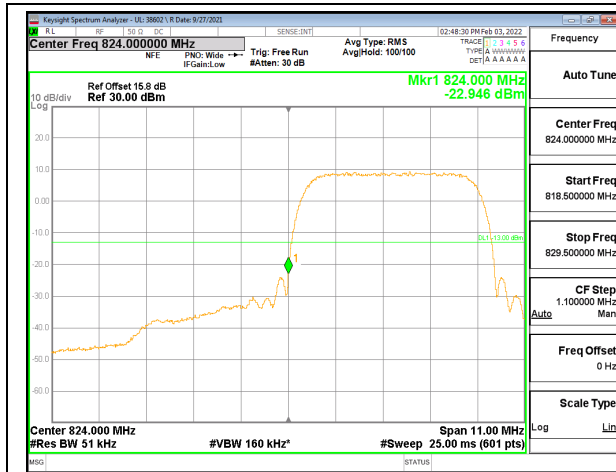


GSM 1900 EGPRS Low Channel

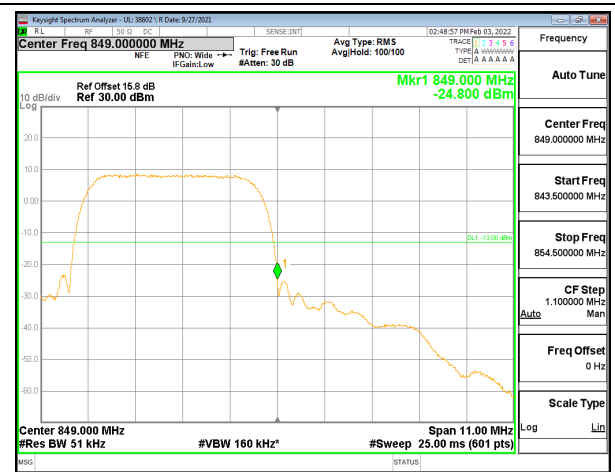


GSM 1900 EGPRS High Channel

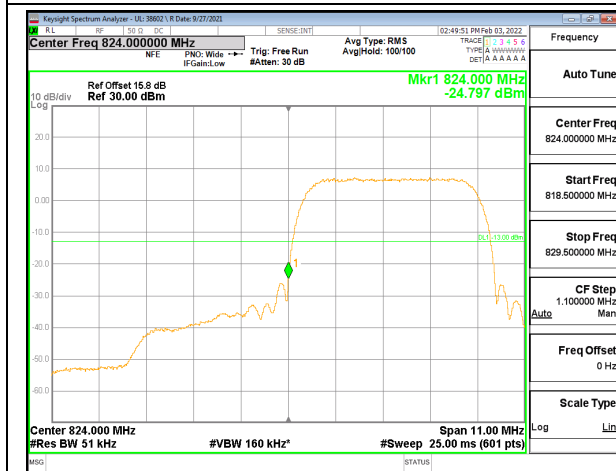
9.2.3. WCDMA BAND 5



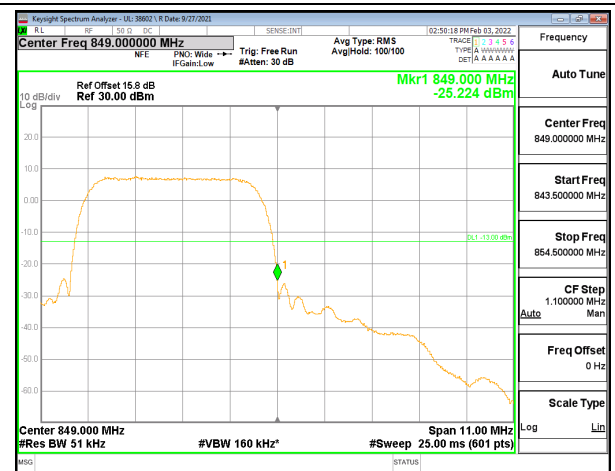
WCDMA Band 5 Rel 99 Low Channel



WCDMA Band 5 Rel 99 High Channel

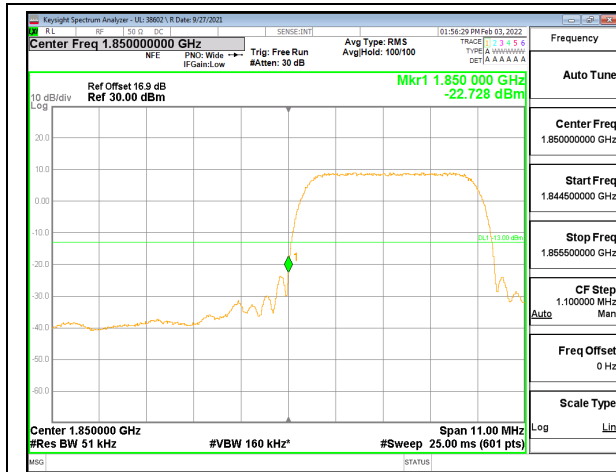


WCDMA Band 5 HSDPA Low Channel

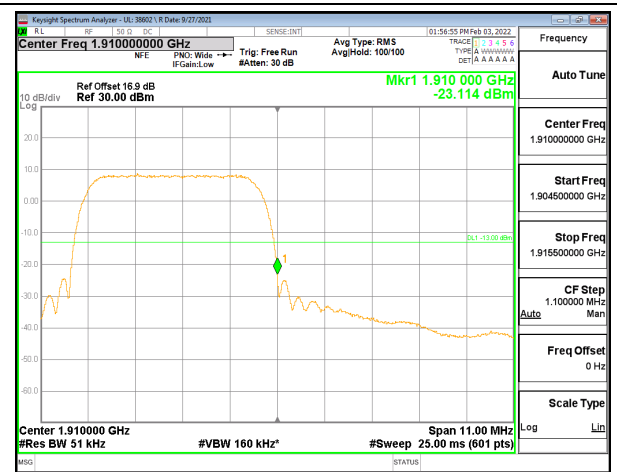


WCDMA Band 5 HSDPA High Channel

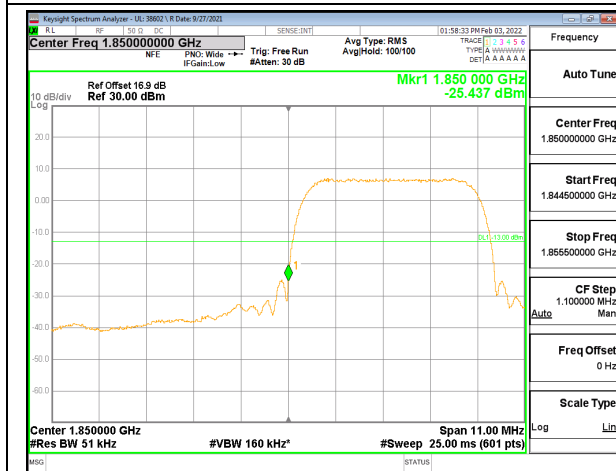
9.2.4. WCDMA BAND 2



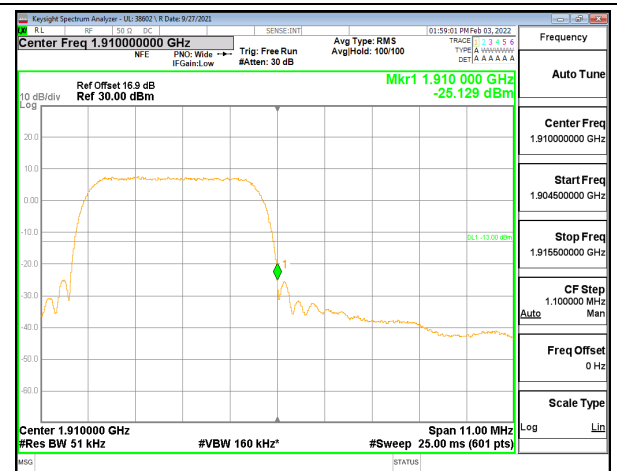
WCDMA Band 2 Rel 99 Low Channel



WCDMA Band 2 Rel 99 High Channel

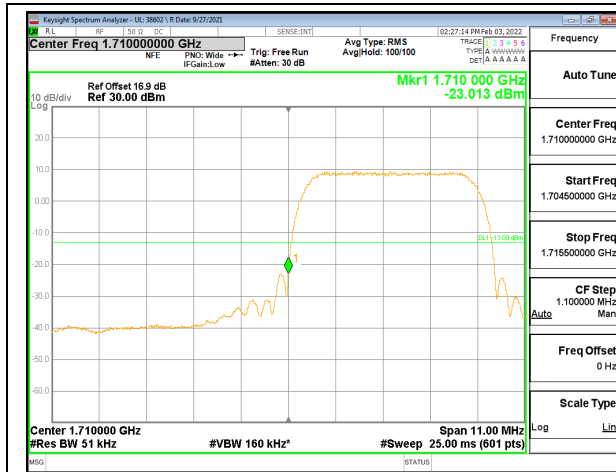


WCDMA Band 2 HSDPA Low Channel

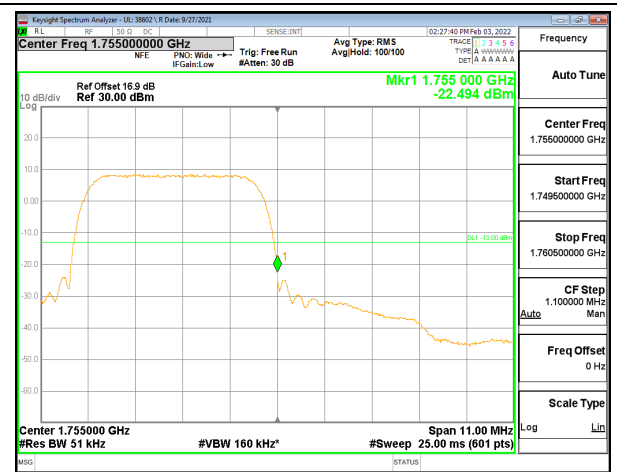


WCDMA Band 2 HSDPA High Channel

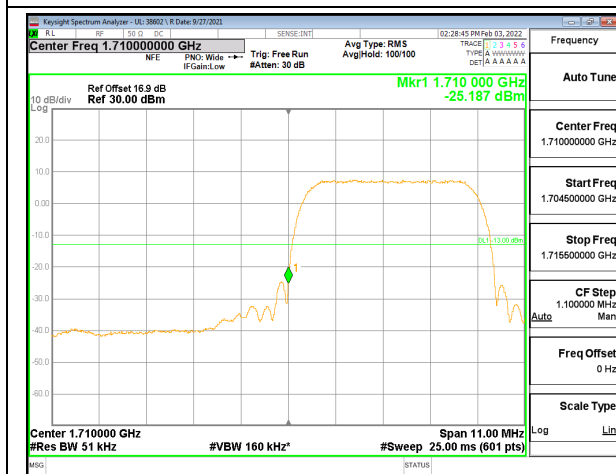
9.2.5. WCDMA BAND 4



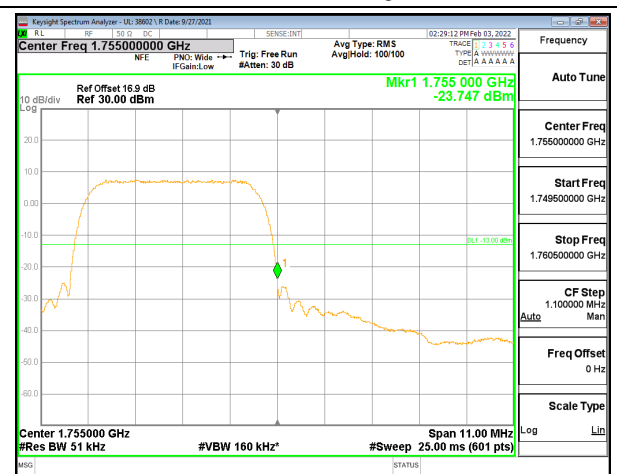
WCDMA Band 4 Rel 99 Low Channel



WCDMA Band 4 Rel 99 High Channel



WCDMA Band 4 HSDPA Low Channel



WCDMA Band 4 HSDPA High Channel

9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, and §27.53
ISED: RSS132§5.5; RSS133§6.5 and RSS139§6.6

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, 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

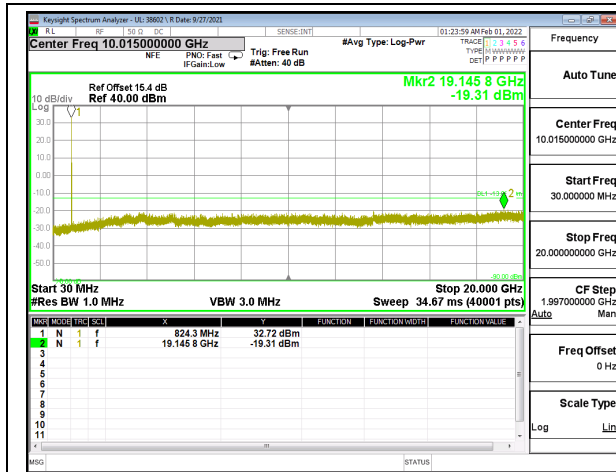
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case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

For each out of band emissions measurement:

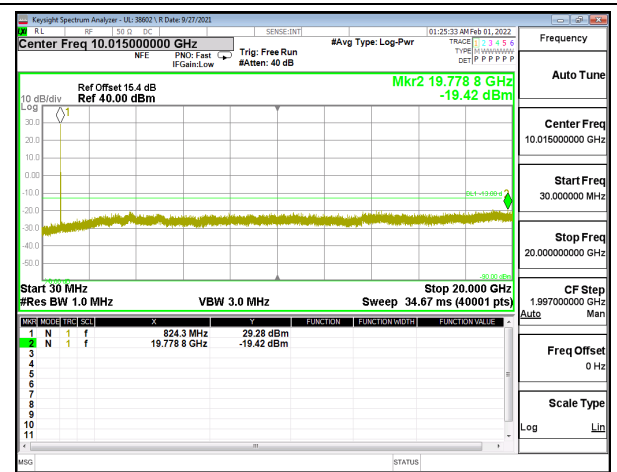
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

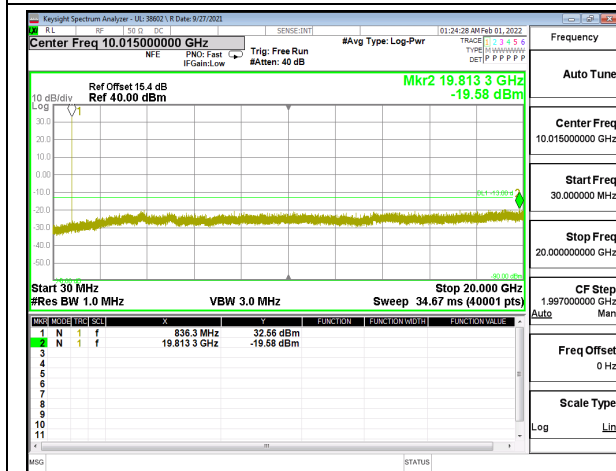
9.3.1. GSM 850



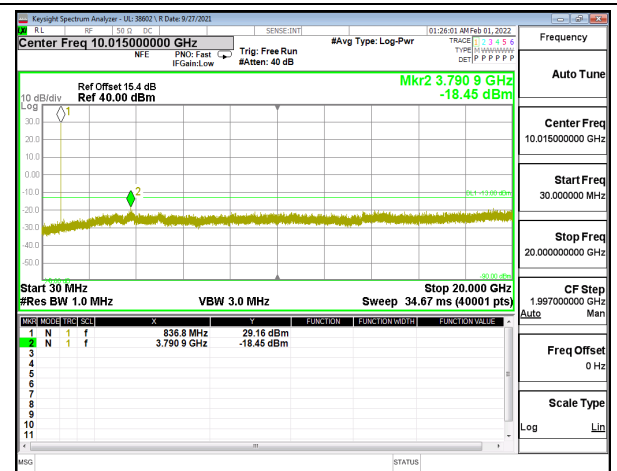
GSM 850 GPRS Low Channel



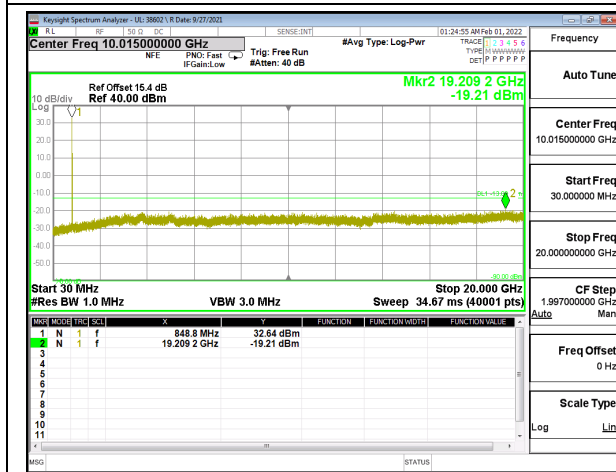
GSM 850 EGPRS Low Channel



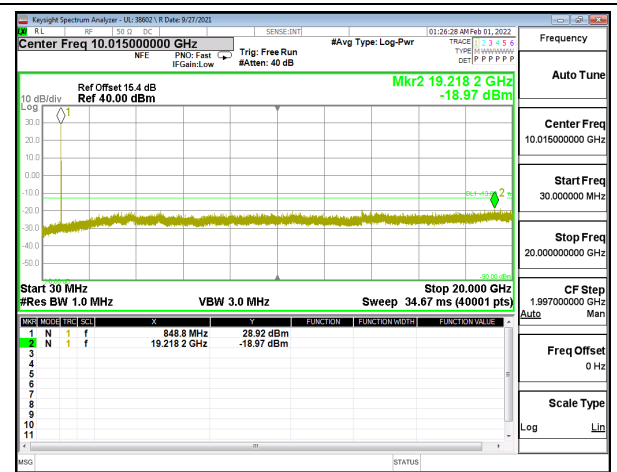
GSM 850 GPRS Middle Channel



GSM 850 EGPRS Middle Channel

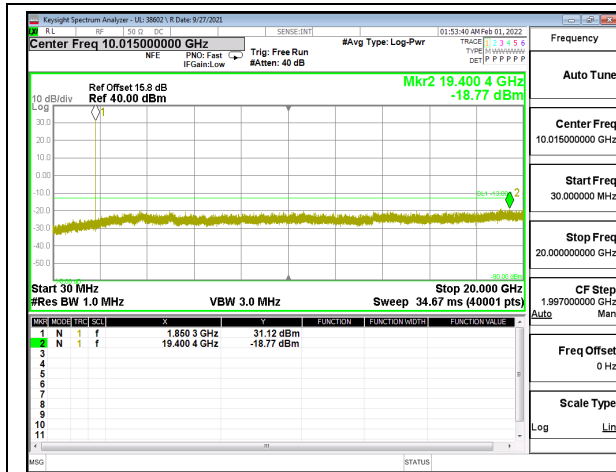


GSM 850 GPRS High Channel



GSM 850 EGPRS High Channel

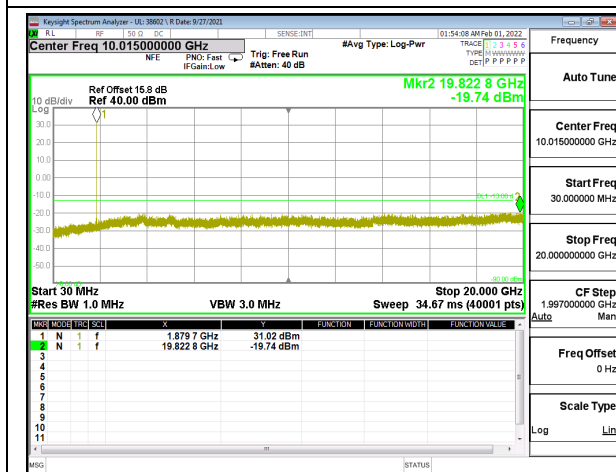
9.3.2. GSM 1900



GSM 1900 GPRS Low Channel



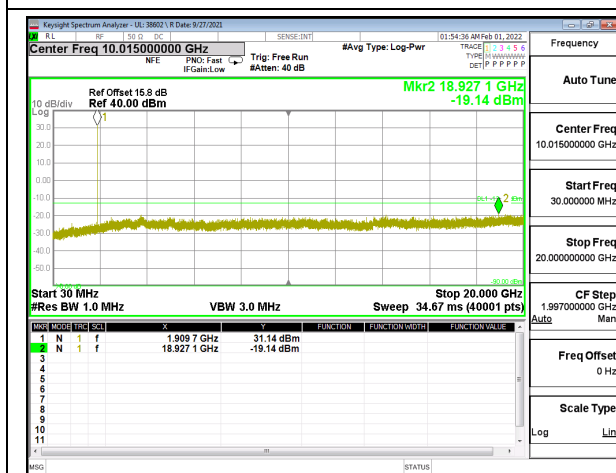
GSM 1900 EGPRS Low Channel



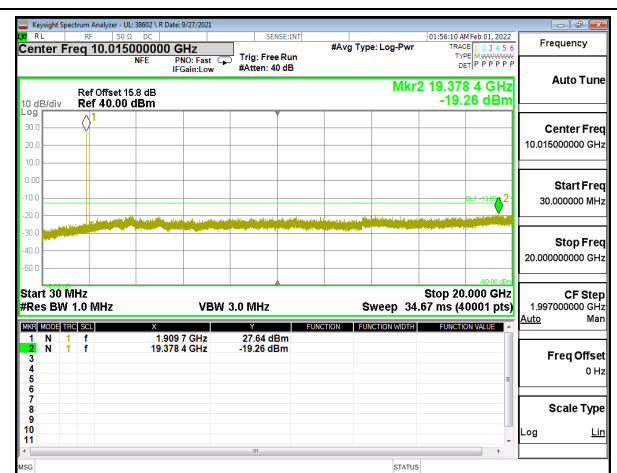
GSM 1900 GPRS Middle Channel



GSM 1900 EGPRS Middle Channel

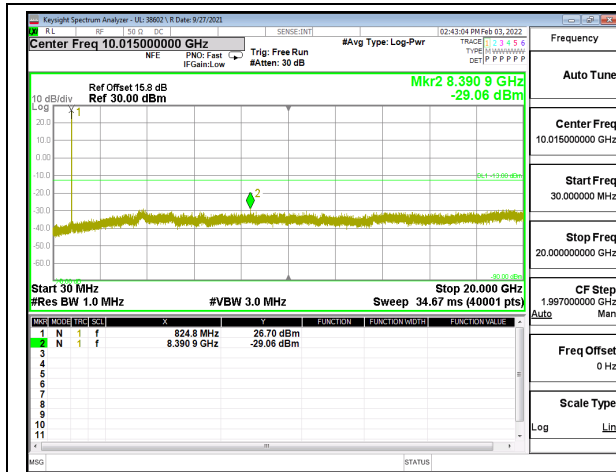


GSM 1900 GPRS High Channel

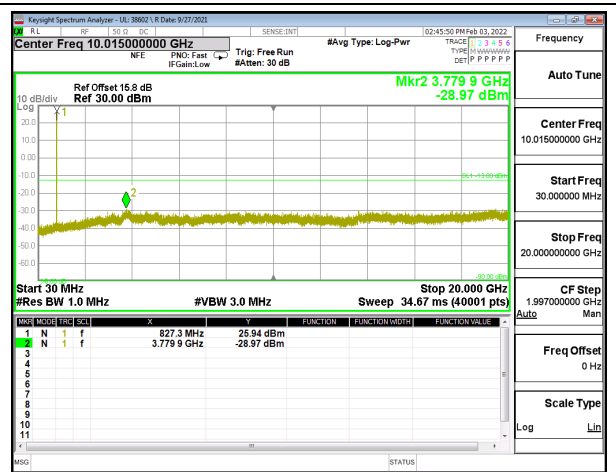


GSM 1900 EGPRS High Channel

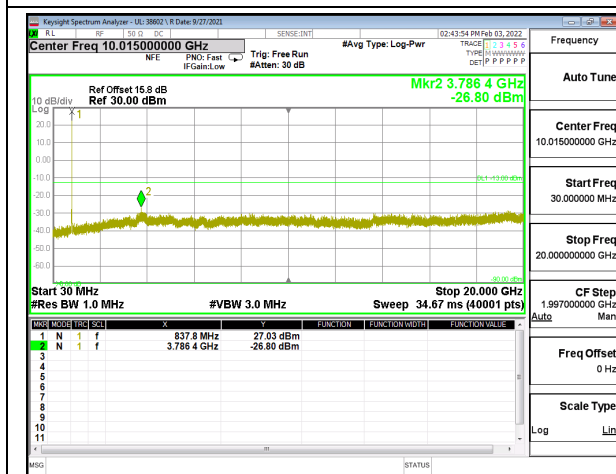
9.3.3. WCDMA BAND 5



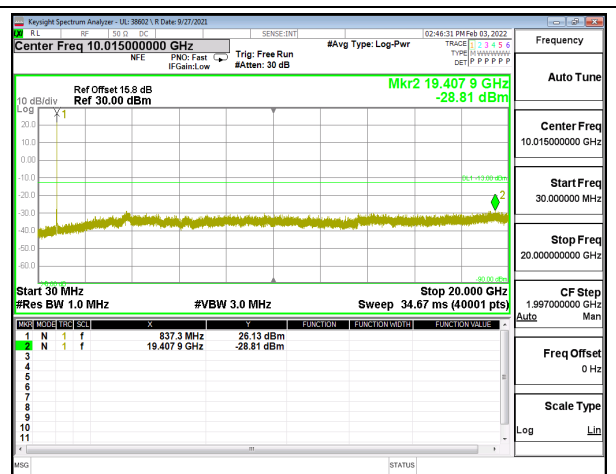
WCDMA Band 5 Rel 99 Low Channel



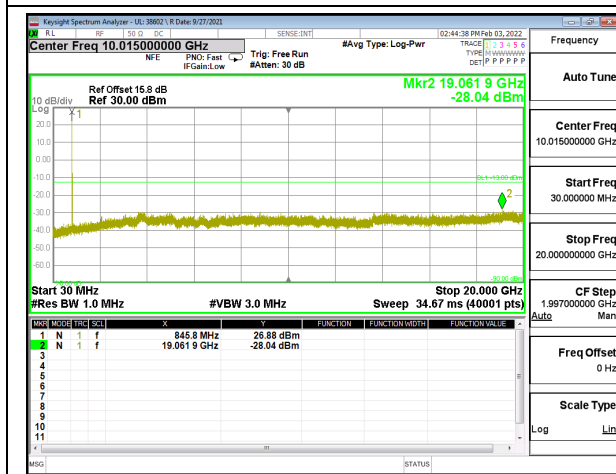
WCDMA Band 5 HSDPA Low Channel



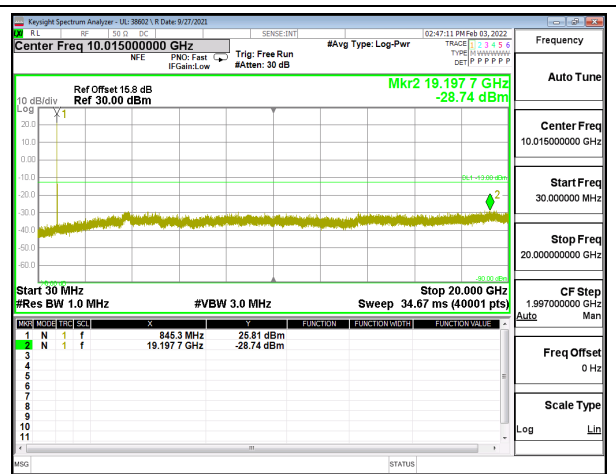
WCDMA Band 5 Rel 99 Middle Channel



WCDMA Band 5 HSDPA Middle Channel

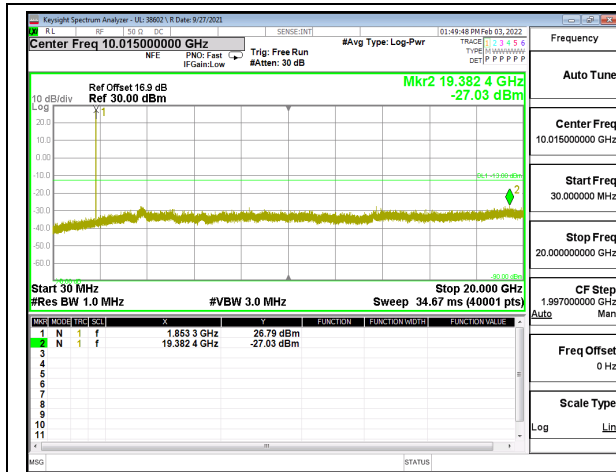


WCDMA Band 5 Rel 99 High Channel

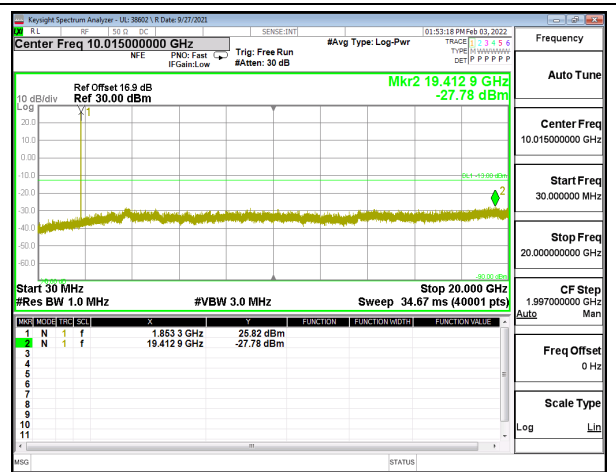


WCDMA Band 5 HSDPA High Channel

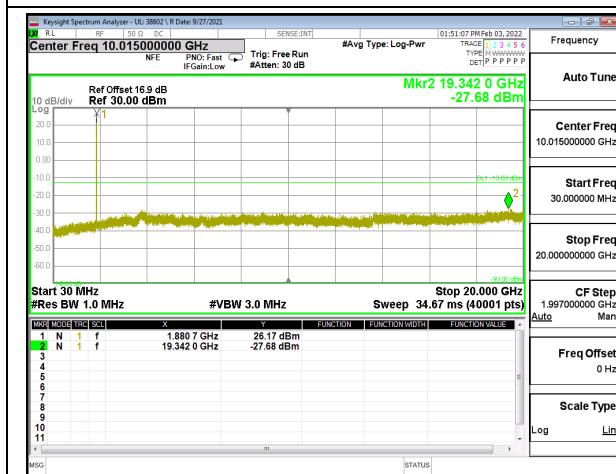
9.3.4. WCDMA BAND 2



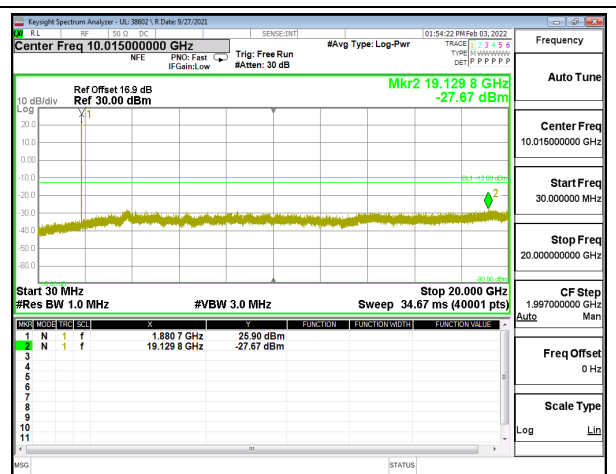
WCDMA Band 2 Rel 99 Low Channel



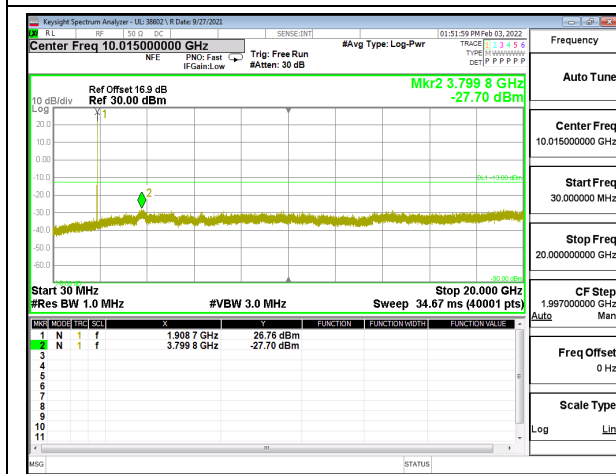
WCDMA Band 2 HSDPA Low Channel



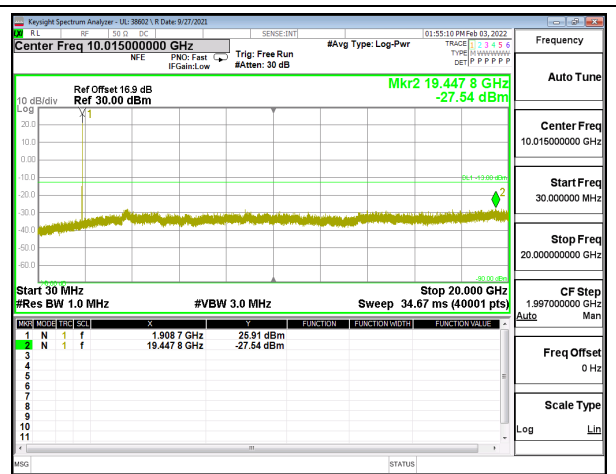
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel

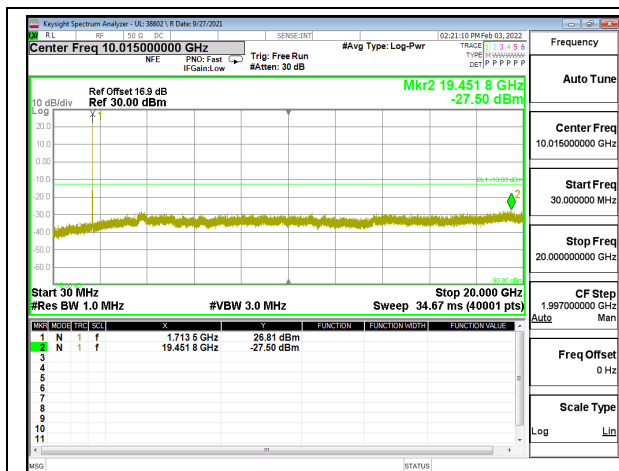


WCDMA Band 2 Rel 99 High Channel

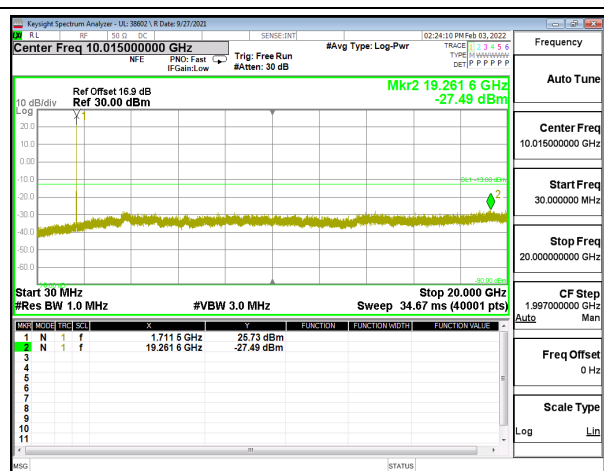


WCDMA Band 2 HSDPA High Channel

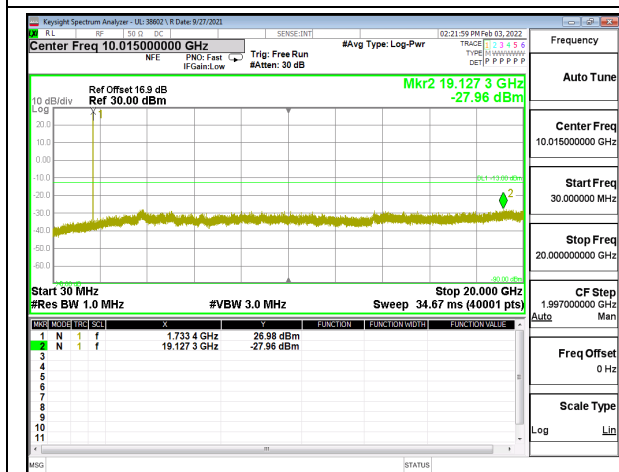
9.3.5. WCDMA BAND 4



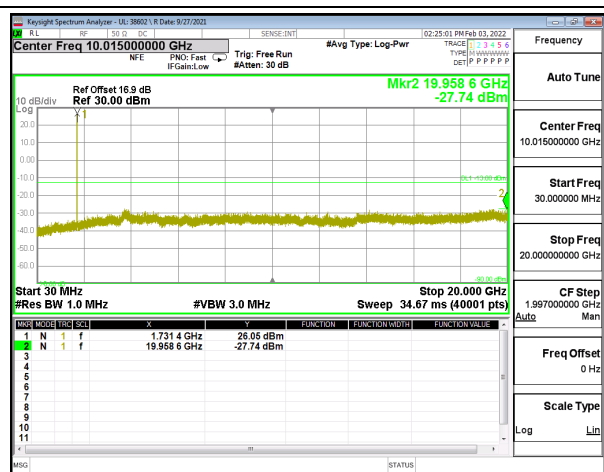
WCDMA Band 4 Rel 99 Low Channel



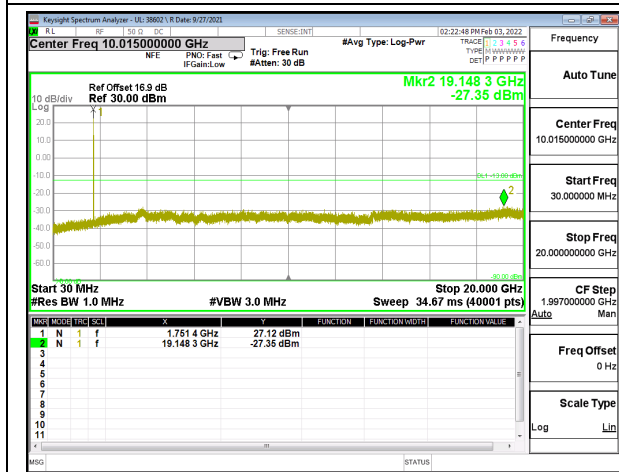
WCDMA Band 4 HSDPA Low Channel



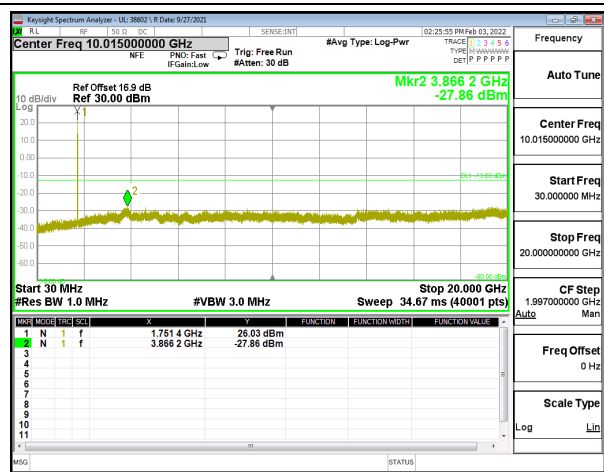
WCDMA Band 4 Rel 99 Middle Channel



WCDMA Band 4 HSDPA Middle Channel



WCDMA Band 4 Rel 99 High Channel



WCDMA Band 4 HSDPA High Channel

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, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

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:	38602	Test Date:	3/4/2022
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GPRS 850

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)					
Normal (20°C)	Normal	824.0256	848.9742					
Extreme (50°C)		824.0256	848.9742	21.1	0.025	Yes		
Extreme (40°C)		824.0256	848.9742	19.3	0.023	Yes		
Extreme (30°C)		824.0256	848.9742	23.2	0.028	Yes		
Extreme (10°C)		824.0256	848.9742	25.5	0.030	Yes		
Extreme (0°C)		824.0256	848.9742	26.9	0.032	Yes		
Extreme (-10°C)		824.0256	848.9742	21.0	0.025	Yes		
Extreme (-20°C)		824.0256	848.9742	20.7	0.025	Yes		
Extreme (-30°C)		824.0256	848.9742	20.5	0.025	Yes		
20°C		15%	824.0256	848.9742	22.3	0.027	Yes	
	-15%	824.0256	848.9742	16.7	0.020	Yes		
	End Point Voltage	824.0256	848.9742	20.2	0.024	Yes		

GPRS 1900

Band	2	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1910		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	1850.0277	1909.9714			
Extreme (50°C)		1850.0277	1909.9714	21.1	0.011	Yes
Extreme (40°C)		1850.0277	1909.9714	29.2	0.016	Yes
Extreme (30°C)		1850.0277	1909.9714	26.6	0.014	Yes
Extreme (10°C)		1850.0277	1909.9714	28.7	0.015	Yes
Extreme (0°C)		1850.0277	1909.9714	25.3	0.013	Yes
Extreme (-10°C)		1850.0277	1909.9714	30.1	0.016	Yes
Extreme (-20°C)		1850.0277	1909.9714	28.7	0.015	Yes
Extreme (-30°C)		1850.0277	1909.9714	32.3	0.017	Yes
20°C	15%	1850.0277	1909.9714	25.7	0.014	Yes
	-15%	1850.0277	1909.9714	23.1	0.012	Yes
	End Point Voltage	1850.0277	1909.9714	30.5	0.016	Yes

9.4.2. WCDMA

Test Engineer ID:	38602	Test Date:	3/4/2022
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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)					
Normal (20°C)	Normal	824.0844	848.9005	0.2	0.000	Yes		
Extreme (50°C)		824.0844	848.9005	-0.2	0.000	Yes		
Extreme (40°C)		824.0844	848.9005	-0.3	0.000	Yes		
Extreme (30°C)		824.0844	848.9005	0.1	0.000	Yes		
Extreme (10°C)		824.0844	848.9005	0.3	0.000	Yes		
Extreme (0°C)		824.0844	848.9005	0.5	0.001	Yes		
Extreme (-10°C)		824.0844	848.9005	0.7	0.001	Yes		
Extreme (-20°C)		824.0844	848.9005	0.7	0.001	Yes		
Extreme (-30°C)		824.0844	848.9005					
20°C		15%	824.0844	848.9005	0.3	0.000	Yes	
	-15%	824.0844	848.9005	-0.2	0.000	Yes		
	End Point Voltage	824.0844	848.9005	0.6	0.001	Yes		

WCDMA REL 99 BAND 2

Band		2		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1910	2.5				
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)	Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)			
Normal (20°C)	Normal	1850.0971	1909.9622					
Extreme (50°C)		1850.0971	1909.9622	2.9	0.002	Yes		
Extreme (40°C)		1850.0971	1909.9622	2.1	0.001	Yes		
Extreme (30°C)		1850.0971	1909.9622	1.4	0.001	Yes		
Extreme (10°C)		1850.0971	1909.9622	1.7	0.001	Yes		
Extreme (0°C)		1850.0971	1909.9622	5.1	0.003	Yes		
Extreme (-10°C)		1850.0971	1909.9622	8.4	0.004	Yes		
Extreme (-20°C)		1850.0971	1909.9622	9.6	0.005	Yes		
Extreme (-30°C)		1850.0971	1909.9622	10.5	0.006	Yes		
20°C	15%	1850.0971	1909.9622	1.3	0.001	Yes		
	-15%	1850.0971	1909.9622	1.9	0.001	Yes		
	End Point Voltage	1850.0971	1909.9622	10.8	0.006	Yes		

WCDMA REL 99 BAND 4

Band		4		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1755	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage							
Normal (20°C)	Normal	1710.0955	1754.9107					
Extreme (50°C)		1710.0955	1754.9107	-2.1	-0.001	Yes		
Extreme (40°C)		1710.0955	1754.9107	-3.3	-0.002	Yes		
Extreme (30°C)		1710.0955	1754.9107	-2.7	-0.002	Yes		
Extreme (10°C)		1710.0955	1754.9107	-2.2	-0.001	Yes		
Extreme (0°C)		1710.0955	1754.9107	-1.7	-0.001	Yes		
Extreme (-10°C)		1710.0955	1754.9107	-1.3	-0.001	Yes		
Extreme (-20°C)		1710.0955	1754.9107	-0.7	0.000	Yes		
Extreme (-30°C)		1710.0955	1754.9107	-0.9	-0.001	Yes		
20°C		15%	1710.0955	1754.9107	-2.6	-0.002	Yes	
	-15%	1710.0955	1754.9107	-2.2	-0.001	Yes		
	End Point Voltage	1710.0955	1754.9107	-1.4	-0.001	Yes		

9.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

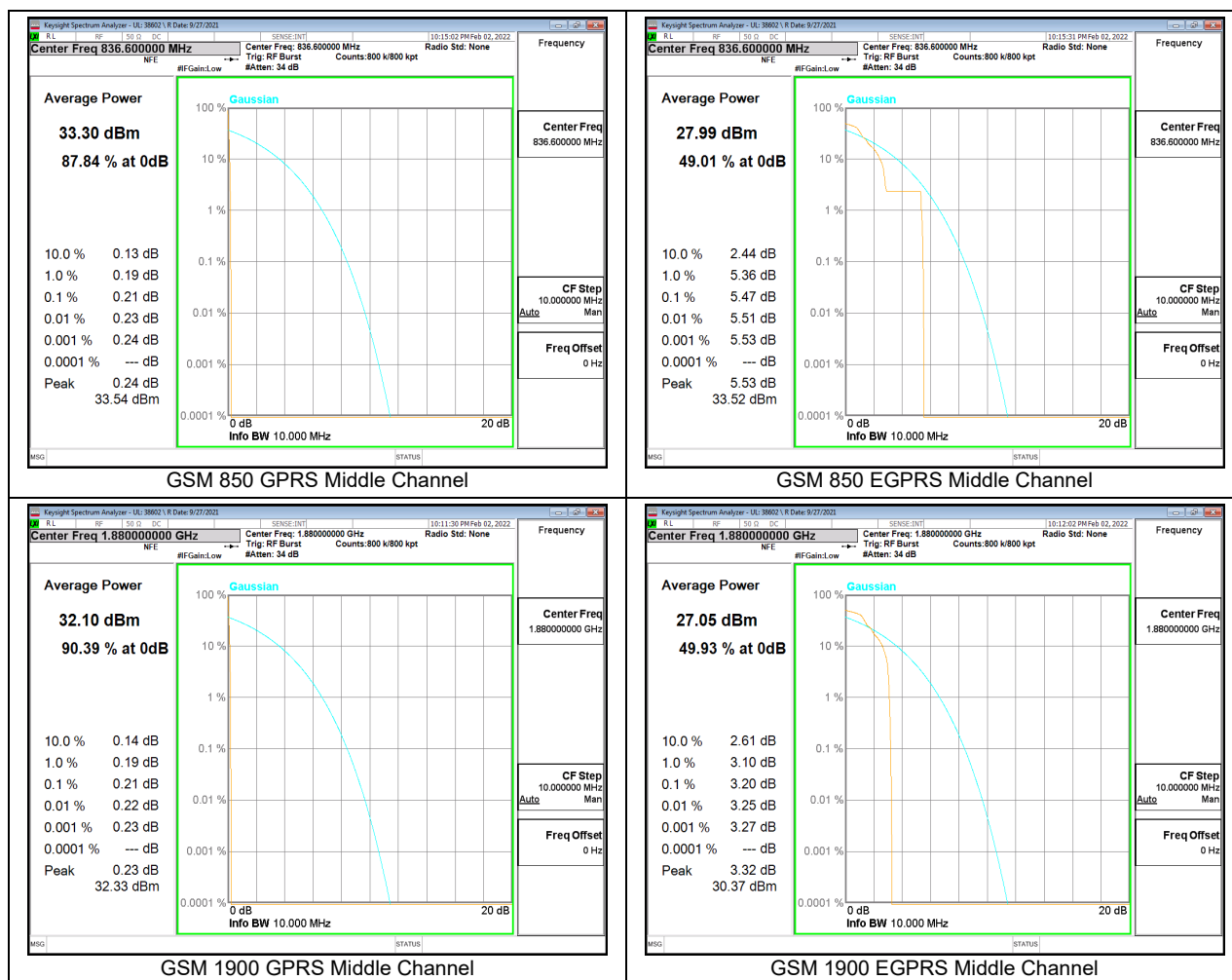
In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

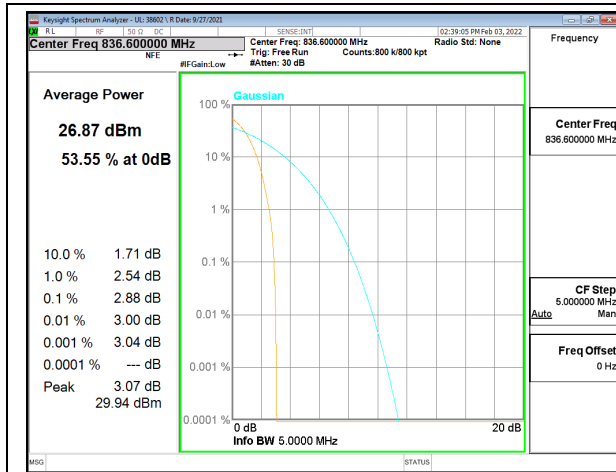
Ant 1 was used to measure as the worst case. The results from all CCDF plots are passed with 13dB peak-to-average power ratio criteria.

Test Engineer ID:	38602	Test Date:	2/2/2022
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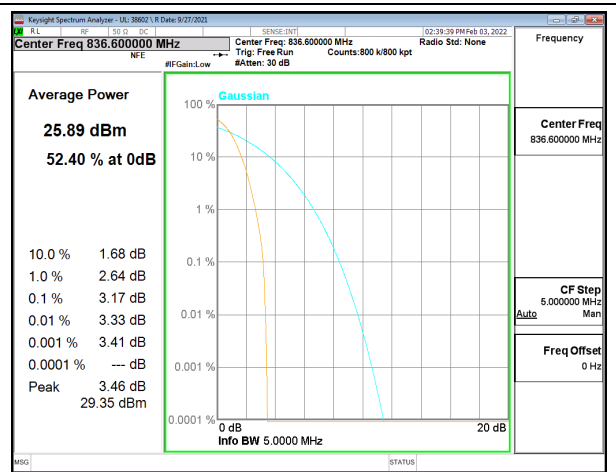
9.5.1. GSM



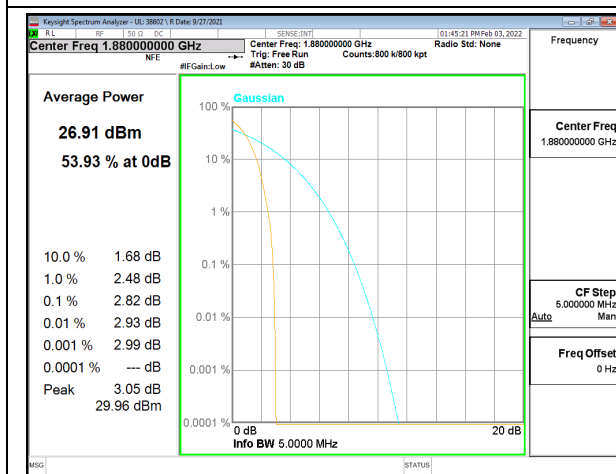
9.5.2. WCDMA



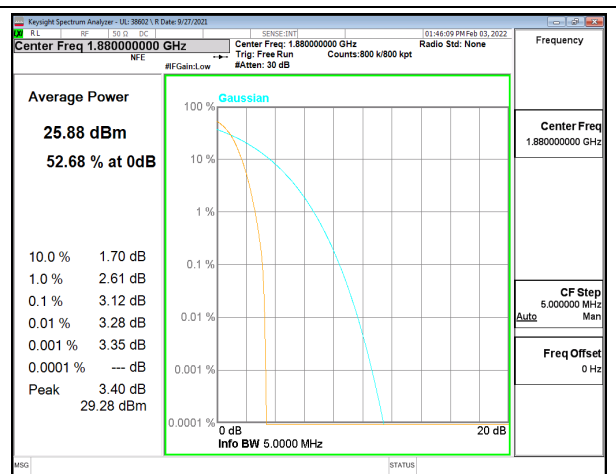
WCDMA Band 5 Rel 99 Middle Channel



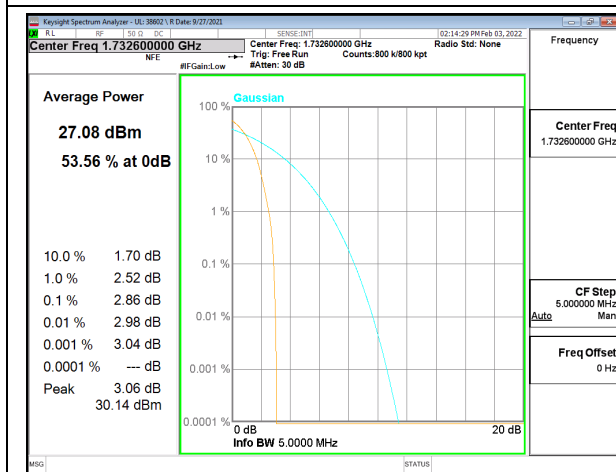
WCDMA Band 5 HSDPA Middle Channel



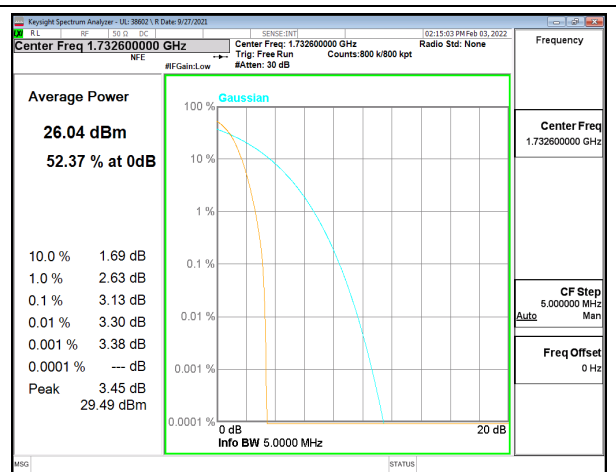
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel



WCDMA Band 4 Rel 99 Middle Channel



WCDMA Band 4 HSDPA Middle Channel

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.

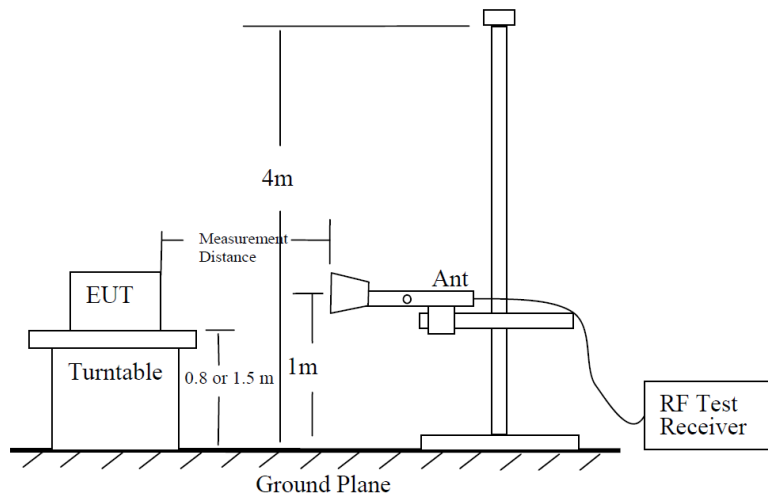


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

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.

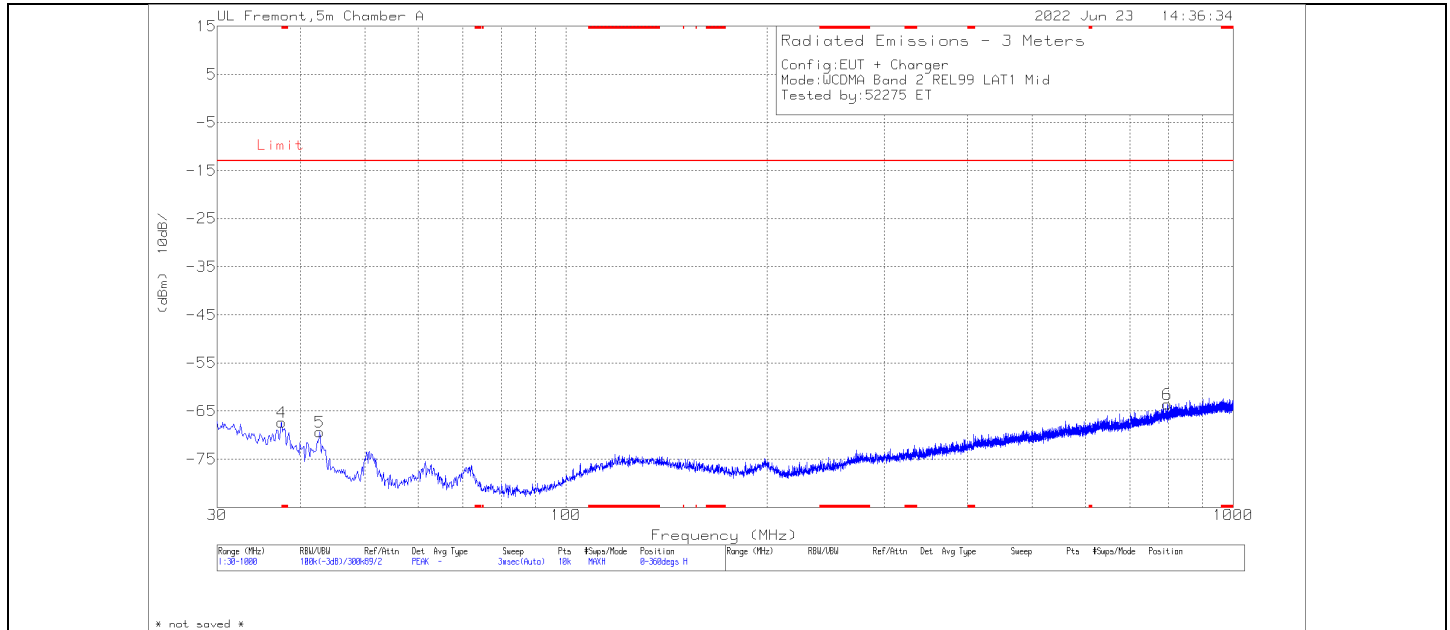
So, from d)

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

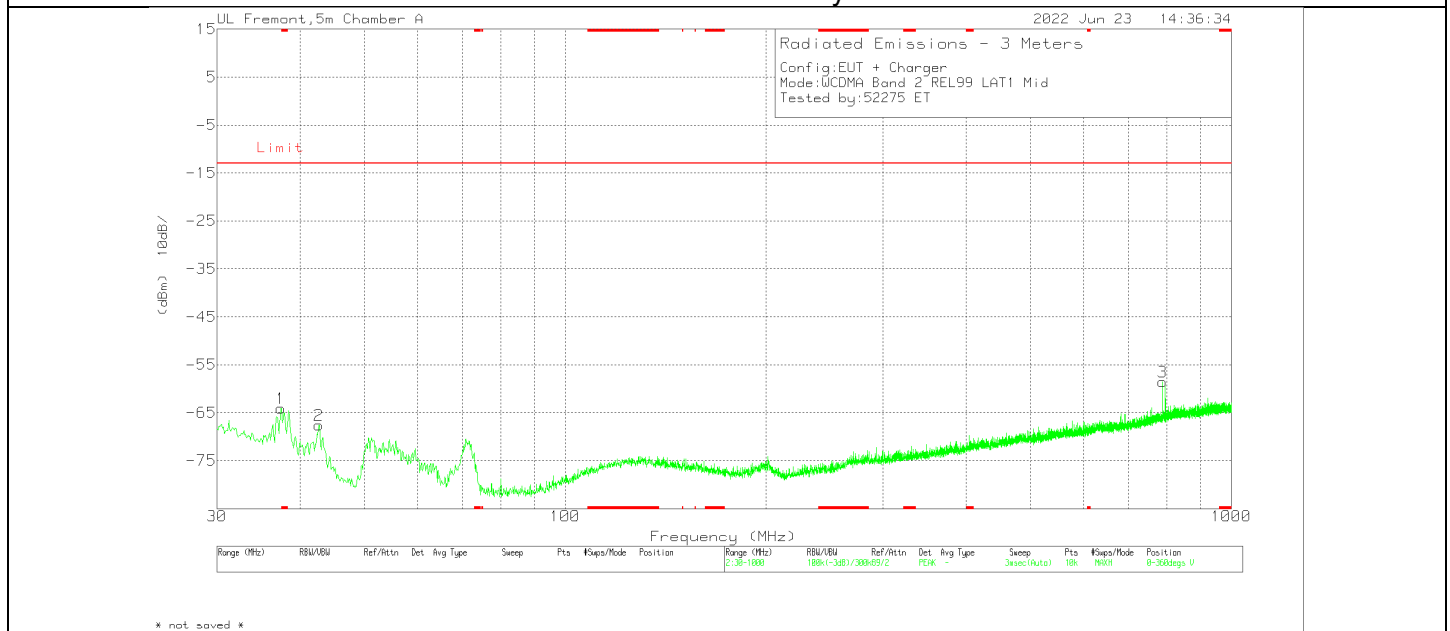
Then, $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

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 1G



Horizontal Polarity

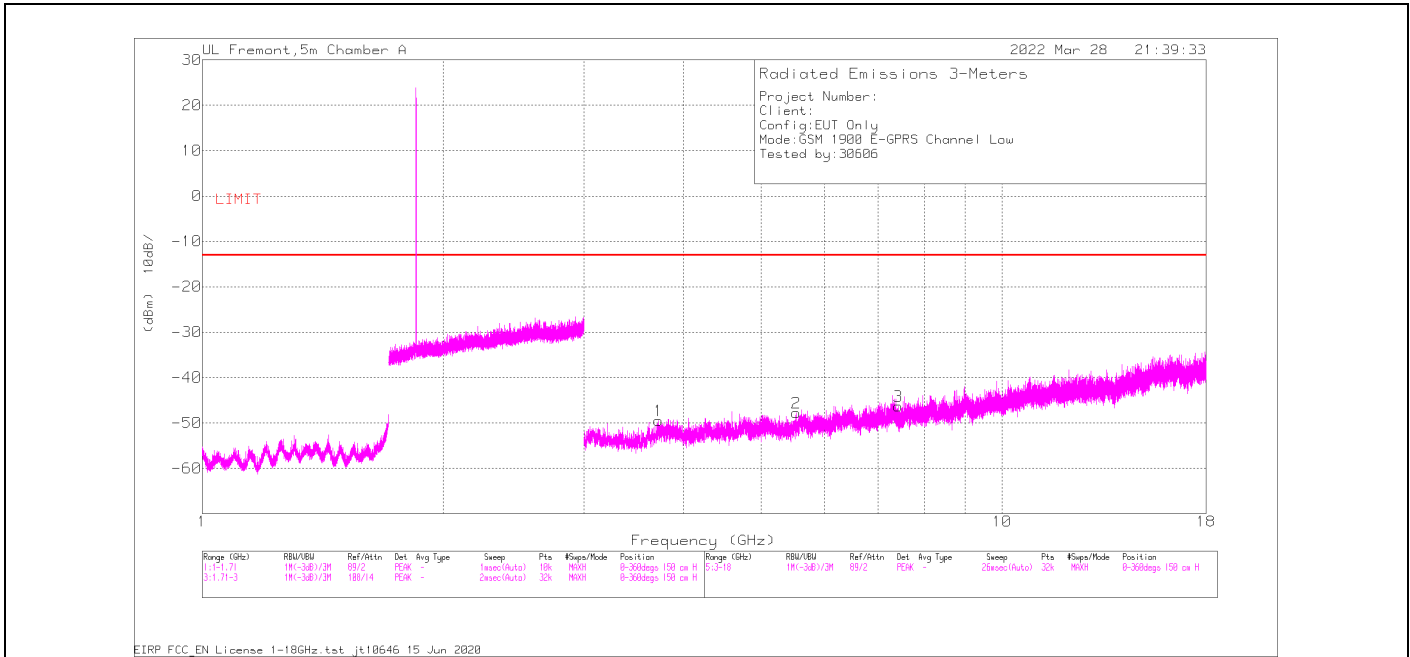


Vertical Polarity

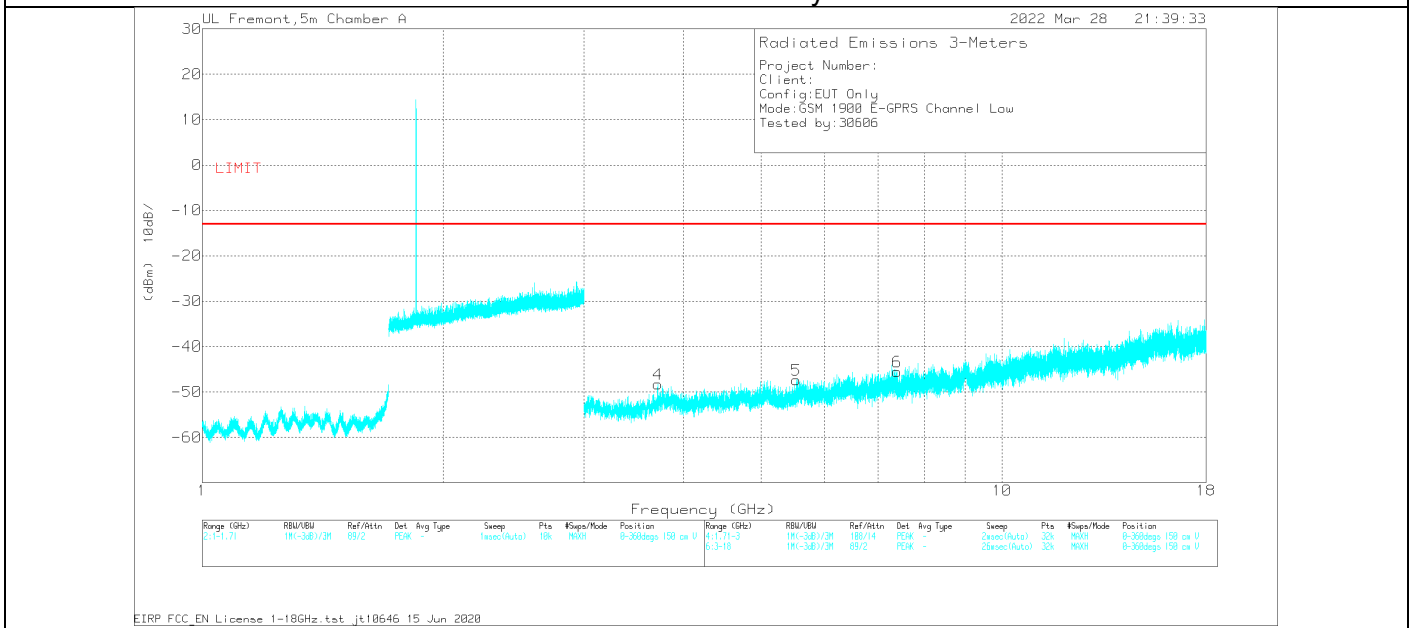
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	85151 ACF (dB)_3m	Amp/Cbl (dB/m)	EIRP CF	Corrected Reading (dBm)	Limit	Margin (dB)	Polarity
1	37.372	35.53	Pk	22.8	-27.2	-95.2	-64.07	-13	-51.07	V
4	37.469	32.25	PK	22.8	-27.2	-95.2	-67.35	-13	-54.35	H
2	42.61	35.61	Pk	19.1	-27.1	-95.2	-67.59	-13	-54.59	V
5	42.707	33.89	Pk	19	-27.1	-95.2	-69.41	-13	-56.41	H
3	788.734	32.37	Pk	27.7	-23.4	-95.2	-58.53	-13	-45.53	V
6	796.882	27.38	Pk	27.7	-23.5	-95.2	-63.62	-13	-50.62	H

Example Plot Above 1GHz



Horizontal Polarity



Vertical Polarity

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4	3.710625	38.52	Pk	33.4	-25	-95.2	-48.28	-13	-35.28	V
1	3.720938	37.23	Pk	33.4	-24.9	-95.2	-49.47	-13	-36.47	H
5	5.533594	35.64	Pk	34.7	-22.5	-95.2	-47.36	-13	-34.36	V
2	5.534063	35.3	Pk	34.7	-22.5	-95.2	-47.7	-13	-34.7	H
6	7.396875	33.68	Pk	35.6	-19.6	-95.2	-45.52	-13	-32.52	V
3	7.413281	33.18	Pk	35.5	-19.8	-95.2	-46.32	-13	-33.32	H

Pk - Peak detector

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, Antenna 1

RULE PART(S)

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

LIMIT

FCC: §22.917(a), §24.238(a), and §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

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (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 $43 + 10 \log_{10} p$ (watts) dB.

TEST PROCEDURE

KDB 971168 D01

RESULTS

10.1.1. GSM 850

GPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	GPRS 850
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2MHz										
1.648305	45.47	Pk	28.4	-34.9	0.7	-95.2	-55.53	-13	-42.53	H
1.648428	46.11	Pk	28.4	-34.9	0.7	-95.2	-54.89	-13	-41.89	V
2.473067	43.78	Pk	32.6	-34.8	0.5	-95.2	-53.12	-13	-40.12	H
2.473556	42.99	Pk	32.6	-34.8	0.5	-95.2	-53.91	-13	-40.91	V
3.295867	39.26	Pk	32.7	-33.9	0.5	-95.2	-56.64	-13	-43.64	H
3.295867	38.13	Pk	32.7	-33.9	0.5	-95.2	-57.77	-13	-44.77	V
Mid Channel, 836.6MHz										
1.672756	43.74	Pk	28.4	-34.9	0.7	-95.2	-57.26	-13	-44.26	H
1.673245	42.16	Pk	28.4	-34.9	0.7	-95.2	-58.84	-13	-45.84	V
2.509734	43.62	Pk	32.7	-34.7	0.5	-95.2	-53.08	-13	-40.08	H
2.509734	43.94	Pk	32.7	-34.7	0.5	-95.2	-52.76	-13	-39.76	V
3.343778	41.38	Pk	32.5	-33.7	0.4	-95.2	-54.62	-13	-41.62	H
3.346223	40.79	Pk	32.5	-33.7	0.4	-95.2	-55.21	-13	-42.21	V
High Channel, 848.4MHz										
1.697689	42.79	Pk	28.9	-34.9	0.6	-95.2	-57.81	-13	-44.81	H
1.697689	43.22	Pk	28.9	-34.9	0.6	-95.2	-57.38	-13	-44.38	V
2.5464	43.46	Pk	32.5	-34.7	0.7	-95.2	-53.24	-13	-40.24	H
2.5464	43.78	Pk	32.5	-34.7	0.7	-95.2	-52.92	-13	-39.92	V
3.394134	37.75	Pk	32.6	-33.5	0.5	-95.2	-57.85	-13	-44.85	V
3.395112	38.92	Pk	32.5	-33.5	0.5	-95.2	-56.78	-13	-43.78	H

EGPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	EGPRS 850
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2MHz										
1.648311	43.62	Pk	28.4	-34.9	0.7	-95.2	-57.38	-13	-44.38	H
1.648311	42.31	Pk	28.4	-34.9	0.7	-95.2	-58.69	-13	-45.69	V
2.472578	44.71	Pk	32.6	-34.8	0.5	-95.2	-52.19	-13	-39.19	H
2.473067	43.57	Pk	32.6	-34.8	0.5	-95.2	-53.33	-13	-40.33	V
3.295867	40.01	Pk	32.7	-33.9	0.5	-95.2	-55.89	-13	-42.89	H
3.295867	38.64	Pk	32.7	-33.9	0.5	-95.2	-57.26	-13	-44.26	V
Mid Channel, 836.6MHz										
1.673589	43.9	Pk	28.4	-34.9	0.7	-95.2	-57.1	-13	-44.1	H
1.673733	42.33	Pk	28.4	-34.9	0.7	-95.2	-58.67	-13	-45.67	V
2.509734	42.06	Pk	32.7	-34.7	0.5	-95.2	-54.64	-13	-41.64	V
2.510102	42.87	Pk	32.7	-34.7	0.5	-95.2	-53.83	-13	-40.83	H
3.346712	39.91	Pk	32.5	-33.7	0.4	-95.2	-56.09	-13	-43.09	H
3.346712	38.6	Pk	32.5	-33.7	0.4	-95.2	-57.4	-13	-44.4	V
High Channel, 848.4MHz										
1.697561	55.06	Pk	28.9	-34.9	0.6	-95.2	-45.54	-13	-32.54	H
1.697697	54.7	Pk	28.9	-34.9	0.6	-95.2	-45.9	-13	-32.9	V
2.546213	47.7	Pk	32.5	-34.7	0.7	-95.2	-49	-13	-36	H
2.5467	45.63	Pk	32.5	-34.7	0.7	-95.2	-51.07	-13	-38.07	V
3.395112	38.05	Pk	32.5	-33.5	0.5	-95.2	-57.65	-13	-44.65	H
3.395112	39.49	Pk	32.5	-33.5	0.5	-95.2	-56.21	-13	-43.21	V

10.1.2. GSM 1900

GPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	GPRS1900
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700313	40.32	Pk	33.2	-32.3	-95.2	-53.98	-13	-40.98	H
3.700313	39.93	Pk	33.2	-32.3	-95.2	-54.37	-13	-41.37	V
5.54978	39.19	Pk	34.9	-29.7	-95.2	-50.81	-13	-37.81	H
5.551325	39.67	Pk	34.9	-29.7	-95.2	-50.33	-13	-37.33	V
7.400625	32.55	Pk	35.7	-26.3	-95.2	-53.25	-13	-40.25	H
7.400625	31.84	Pk	35.7	-26.3	-95.2	-53.96	-13	-40.96	V
Mid Channel, 1880MHz									
3.760313	38.07	Pk	33.6	-32.1	-95.2	-55.63	-13	-42.63	H
3.760313	39.18	Pk	33.6	-32.1	-95.2	-54.52	-13	-41.52	V
5.640068	48.29	Pk	35	-30.1	-95.2	-42.01	-13	-29.01	V
5.641415	40.28	Pk	35	-30.1	-95.2	-50.02	-13	-37.02	H
7.520156	32.85	Pk	35.7	-26.1	-95.2	-52.75	-13	-39.75	H
7.520156	33.87	Pk	35.7	-26.1	-95.2	-51.73	-13	-38.73	V
High Channel, 1909.8MHz									
3.818906	39.17	Pk	33.7	-31.8	-95.2	-54.13	-13	-41.13	H
3.818906	38.52	Pk	33.7	-31.8	-95.2	-54.78	-13	-41.78	V
5.729531	36.03	Pk	34.8	-29	-95.2	-53.37	-13	-40.37	H
5.729531	35.13	Pk	34.8	-29	-95.2	-54.27	-13	-41.27	V
7.639219	32.74	Pk	35.9	-26.5	-95.2	-53.06	-13	-40.06	H
7.639219	31.86	Pk	35.9	-26.5	-95.2	-53.94	-13	-40.94	V

EGPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	GPRS1900
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.704063	38.53	Pk	33.2	-32.3	-95.2	-55.77	-13	-42.77	H
3.704063	38.74	Pk	33.2	-32.3	-95.2	-55.56	-13	-42.56	V
5.548649	39.78	Pk	34.9	-29.7	-95.2	-50.22	-13	-37.22	V
5.55102	40.37	Pk	34.9	-29.7	-95.2	-49.63	-13	-36.63	H
7.401094	34.85	Pk	35.7	-26.3	-95.2	-50.95	-13	-37.95	H
7.401094	32.45	Pk	35.7	-26.3	-95.2	-53.35	-13	-40.35	V
Mid Channel, 1880MHz									
3.760313	38.94	Pk	33.6	-32.1	-95.2	-54.76	-13	-41.76	H
3.760313	38.66	Pk	33.6	-32.1	-95.2	-55.04	-13	-42.04	V
5.640256	49.94	Pk	35	-30.1	-95.2	-40.36	-13	-27.36	H
5.640288	40.25	Pk	35	-30.1	-95.2	-50.05	-13	-37.05	V
7.520156	34.07	Pk	35.7	-26.1	-95.2	-51.53	-13	-38.53	H
7.520156	32.56	Pk	35.7	-26.1	-95.2	-53.04	-13	-40.04	V
High Channel, 1909.8MHz									
3.818906	38.66	Pk	33.7	-31.8	-95.2	-54.64	-13	-41.64	V
3.819844	40.93	Pk	33.7	-31.8	-95.2	-52.37	-13	-39.37	H
5.729539	40.68	Pk	34.8	-29	-95.2	-48.72	-13	-35.72	V
5.729552	47.01	Pk	34.8	-29	-95.2	-42.39	-13	-29.39	H
7.639219	34.33	Pk	35.9	-26.5	-95.2	-51.47	-13	-38.47	H
7.639219	32.83	Pk	35.9	-26.5	-95.2	-52.97	-13	-39.97	V

10.1.3. WCDMA BAND 5

REL 99 MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	REL 99 Band 5
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.40MHz										
1.651473	55.21	Pk	28.4	-34.9	0.7	-95.2	-45.79	-13	-32.79	H
1.651513	48.95	Pk	28.4	-34.9	0.7	-95.2	-52.05	-13	-39.05	V
2.481825	44.19	Pk	32.6	-34.8	0.5	-95.2	-52.71	-13	-39.71	H
2.487245	43.25	Pk	32.7	-34.8	0.5	-95.2	-53.55	-13	-40.55	V
3.305645	38.99	Pk	32.6	-33.8	0.5	-95.2	-56.91	-13	-43.91	H
3.305645	39.36	Pk	32.6	-33.8	0.5	-95.2	-56.54	-13	-43.54	V
Mid Channel, 836.60MHz										
1.670746	49.63	Pk	28.4	-34.9	0.7	-95.2	-51.37	-13	-38.37	V
1.674762	51.8	Pk	28.4	-34.9	0.7	-95.2	-49.2	-13	-36.2	H
2.509734	41.67	Pk	32.7	-34.7	0.5	-95.2	-55.03	-13	-42.03	H
2.509734	40.42	Pk	32.7	-34.7	0.5	-95.2	-56.28	-13	-43.28	V
3.346223	38.58	Pk	32.5	-33.7	0.4	-95.2	-57.42	-13	-44.42	V
3.346712	39.74	Pk	32.5	-33.7	0.4	-95.2	-56.26	-13	-43.26	H
High Channel, 846.60MHz										
1.694565	47.59	Pk	28.8	-34.9	0.6	-95.2	-53.11	-13	-40.11	V
1.695196	43.38	Pk	28.8	-34.9	0.6	-95.2	-57.32	-13	-44.32	H
2.540045	41.77	Pk	32.6	-34.7	0.6	-95.2	-54.93	-13	-41.93	H
2.540045	40.59	Pk	32.6	-34.7	0.6	-95.2	-56.11	-13	-43.11	V
3.386312	39.3	Pk	32.5	-33.5	0.5	-95.2	-56.4	-13	-43.4	H
3.386312	39.93	Pk	32.5	-33.5	0.5	-95.2	-55.77	-13	-42.77	V

HSDPA MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	HSDPA Band 5
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.40MHz										
1.650892	51.8	Pk	28.4	-34.9	0.7	-95.2	-49.2	-13	-36.2	V
1.654664	56.37	Pk	28.3	-34.9	0.7	-95.2	-44.73	-13	-31.73	H
2.479423	39.46	Pk	32.6	-34.8	0.5	-95.2	-57.44	-13	-44.44	H
2.479423	40.6	Pk	32.6	-34.8	0.5	-95.2	-56.3	-13	-43.3	V
3.305645	38.95	Pk	32.6	-33.8	0.5	-95.2	-56.95	-13	-43.95	H
3.305645	39.32	Pk	32.6	-33.8	0.5	-95.2	-56.58	-13	-43.58	V
Mid Channel, 836.60MHz										
1.671337	52.47	Pk	28.4	-34.9	0.7	-95.2	-48.53	-13	-35.53	H
1.674679	45.8	Pk	28.4	-34.9	0.7	-95.2	-55.2	-13	-42.2	V
2.509734	40.61	Pk	32.7	-34.7	0.5	-95.2	-56.09	-13	-43.09	H
2.509734	40.55	Pk	32.7	-34.7	0.5	-95.2	-56.15	-13	-43.15	V
3.346223	38.29	Pk	32.5	-33.7	0.4	-95.2	-57.71	-13	-44.71	V
3.346712	40.09	Pk	32.5	-33.7	0.4	-95.2	-55.91	-13	-42.91	H
High Channel, 846.60MHz										
1.691105H	50.03	Pk	28.8	-34.9	0.6	-95.2	-50.67	-13	-37.67	H
1.693778	42.43	Pk	28.8	-34.9	0.6	-95.2	-58.27	-13	-45.27	V
2.540045	42.16	Pk	32.6	-34.7	0.6	-95.2	-54.54	-13	-41.54	H
2.540045	41.53	Pk	32.6	-34.7	0.6	-95.2	-55.17	-13	-42.17	V
3.386312	39.57	Pk	32.5	-33.5	0.5	-95.2	-56.13	-13	-43.13	H
3.386312	39.83	Pk	32.5	-33.5	0.5	-95.2	-55.87	-13	-42.87	V

10.1.4. WCDMA BAND 2

REL 99 MODE

Project #:	14040867
Date:	3/30/2022
Test Engineer:	30606
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.701791	37.84	Pk	33.3	-25.2	-95.2	-49.26	-13	-36.26	V
3.705636	37.91	Pk	33.3	-25.1	-95.2	-49.09	-13	-36.09	H
5.558374	38.9	Pk	34.7	-22.6	-95.2	-44.2	-13	-31.2	V
5.561144	38.16	Pk	34.7	-22.6	-95.2	-44.94	-13	-31.94	H
7.391041	32.55	Pk	35.6	-19.6	-95.2	-46.65	-13	-33.65	H
7.392725	35.23	Pk	35.6	-19.6	-95.2	-43.97	-13	-30.97	V
Mid Channel, 1880MHz									
3.754511	37.22	Pk	33.4	-25	-95.2	-49.58	-13	-36.58	H
3.76286	37.48	Pk	33.4	-24.8	-95.2	-49.12	-13	-36.12	V
5.637378	37.15	Pk	34.8	-22	-95.2	-45.25	-13	-32.25	H
5.642386	39.18	Pk	34.8	-22	-95.2	-43.22	-13	-30.22	V
7.525749	32.78	Pk	35.6	-19.6	-95.2	-46.42	-13	-33.42	H
7.532933	32.91	Pk	35.6	-19.5	-95.2	-46.19	-13	-33.19	V
High Channel, 1907.6MHz									
3.77726	38.23	Pk	33.4	-24.8	-95.2	-48.37	-13	-35.37	V
3.791708	37.64	Pk	33.3	-25.2	-95.2	-49.46	-13	-36.46	H
5.726373	38.52	Pk	34.9	-23.2	-95.2	-44.98	-13	-31.98	H
5.740294	35.59	Pk	34.9	-23.4	-95.2	-48.11	-13	-35.11	V
7.61966	32.21	Pk	35.7	-18.5	-95.2	-45.79	-13	-32.79	V
7.622151	32.44	Pk	35.7	-18.5	-95.2	-45.56	-13	-32.56	H

HSDPA MODE

Project #:	14040867
Date:	4/13/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.40MHz									
3.706406	34.15	Pk	33.4	-25.1	-95.2	-52.75	-13	-39.75	H
3.706406	37.29	Pk	33.4	-25.1	-95.2	-49.61	-13	-36.61	V
5.558438	33.24	Pk	34.7	-22.6	-95.2	-49.86	-13	-36.86	H
5.558438	32.56	Pk	34.7	-22.6	-95.2	-50.54	-13	-37.54	V
7.410469	31.01	Pk	35.5	-19.7	-95.2	-48.39	-13	-35.39	H
7.410469	29.26	Pk	35.5	-19.7	-95.2	-50.14	-13	-37.14	V
Mid Channel, 1880MHz									
5.639305	37.33	Pk	34.8	-22	-95.2	-45.07	-13	-32.07	H
3.760313	35.02	Pk	33.4	-24.9	-95.2	-51.68	-13	-38.68	V
5.640469	35.91	Pk	34.8	-22	-95.2	-46.49	-13	-33.49	H
5.640469	30.78	Pk	34.8	-22	-95.2	-51.62	-13	-38.62	V
7.520625	29.44	Pk	35.6	-19.6	-95.2	-49.76	-13	-36.76	H
7.520625	30.73	Pk	35.6	-19.6	-95.2	-48.47	-13	-35.47	V
High Channel, 1907.60MHz									
3.815156	34.37	Pk	33.3	-25.2	-95.2	-52.73	-13	-39.73	H
3.815156	33.2	Pk	33.3	-25.2	-95.2	-53.9	-13	-40.9	V
5.722031	31.69	Pk	34.9	-23.1	-95.2	-51.71	-13	-38.71	H
5.722031	33.03	Pk	34.9	-23.1	-95.2	-50.37	-13	-37.37	V
7.630313	28.68	Pk	35.7	-18.4	-95.2	-49.22	-13	-36.22	H
7.630313	30.99	Pk	35.7	-18.4	-95.2	-46.91	-13	-33.91	V

10.1.5. WCDMA BAND 4

REL 99 MODE

Project #:	14040867
Date:	3/30/2022
Test Engineer:	30606
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.405596	37.69	Pk	32.8	-25.9	-95.2	-50.61	-13	-37.61	H
3.417328	38.03	Pk	32.7	-26.1	-95.2	-50.57	-13	-37.57	V
5.136974	37.37	Pk	34.4	-23.3	-95.2	-46.73	-13	-33.73	H
5.140584	38.1	Pk	34.3	-23.3	-95.2	-46.1	-13	-33.1	V
6.864268	33.58	Pk	35.5	-20.9	-95.2	-47.02	-13	-34.02	H
6.872161	33.53	Pk	35.5	-20.8	-95.2	-46.97	-13	-33.97	V
Mid Channel, 1732.6MHz									
3.446051	37.84	Pk	32.7	-26.1	-95.2	-50.76	-13	-37.76	V
3.452721	38.29	Pk	32.7	-26.1	-95.2	-50.31	-13	-37.31	H
5.189166	37.13	Pk	34.4	-24	-95.2	-47.67	-13	-34.67	V
5.197499	36.78	Pk	34.4	-23.9	-95.2	-47.92	-13	-34.92	H
6.933324	33.98	Pk	35.4	-20.7	-95.2	-46.52	-13	-33.52	H
6.953961	34.59	Pk	35.5	-20.4	-95.2	-45.51	-13	-32.51	V
High Channel, 1752.61MHz									
3.49943	37.74	Pk	32.7	-25.5	-95.2	-50.26	-13	-37.26	V
3.510581	36.66	Pk	32.8	-25.5	-95.2	-51.24	-13	-38.24	H
5.254263	38.83	Pk	34.4	-23.4	-95.2	-45.37	-13	-32.37	H
5.25552	38.16	Pk	34.4	-23.4	-95.2	-46.04	-13	-33.04	V
7.004126	33.21	Pk	35.5	-19.6	-95.2	-46.09	-13	-33.09	V
7.008528	33.7	Pk	35.5	-19.6	-95.2	-45.6	-13	-32.6	H

HSDPA MODE

Project #:	14040867
Date:	4/12/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.40MHz									
3.425625	36.63	PK	32.7	-26.1	-95.2	-51.97	-13	-38.97	H
3.425625	33.36	PK	32.7	-26.1	-95.2	-55.24	-13	-42.24	V
5.137031	34.94	PK	34.4	-23.3	-95.2	-49.16	-13	-36.16	H
5.137031	32.87	PK	34.4	-23.3	-95.2	-51.23	-13	-38.23	V
6.849844	32.63	PK	35.5	-20.8	-95.2	-47.87	-13	-34.87	H
6.849844	32.27	PK	35.5	-20.8	-95.2	-48.23	-13	-35.23	V
Mid Channel, 1732.60MHz									
3.465469	34.26	PK	32.6	-26.1	-95.2	-54.44	-13	-41.44	H
3.465469	34.58	PK	32.6	-26.1	-95.2	-54.12	-13	-41.12	V
5.198438	31.45	PK	34.4	-23.9	-95.2	-53.25	-13	-40.25	H
5.198438	33.52	PK	34.4	-23.9	-95.2	-51.18	-13	-38.18	V
6.930469	31.27	PK	35.4	-20.7	-95.2	-49.23	-13	-36.23	H
6.930469	31.71	PK	35.4	-20.7	-95.2	-48.79	-13	-35.79	V
High Channel, 1752.6MHz									
3.505313	32.28	PK	32.7	-25.5	-95.2	-55.72	-13	-42.72	H
3.505313	34.67	PK	32.7	-25.5	-95.2	-53.33	-13	-40.33	V
5.258438	33.81	PK	34.4	-23.5	-95.2	-50.49	-13	-37.49	H
5.258438	31.55	PK	34.4	-23.5	-95.2	-52.75	-13	-39.75	V
7.009688	31.52	PK	35.5	-19.6	-95.2	-47.78	-13	-34.78	H
7.011076	35.96	PK	35.5	-19.6	-95.2	-43.34	-13	-30.34	V

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

10.2.1. GSM 850

GPRS MODE

Project #:	14040867
Date:	4/25/2022
Test Engineer:	26120
Configuration;	EUT Only
Mode:	GPRS 850
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2MHz										
1.648311	39.61	Pk	28.4	-34.9	0.7	-95.2	-61.39	-13	-48.39	H
1.648311	40.38	Pk	28.4	-34.9	0.7	-95.2	-60.62	-13	-47.62	V
2.472796	47.39	Pk	32.6	-34.8	0.5	-95.2	-49.51	-13	-36.51	H
2.473556	41.16	Pk	32.6	-34.8	0.5	-95.2	-55.74	-13	-42.74	V
3.296845	38.41	Pk	32.7	-33.9	0.5	-95.2	-57.49	-13	-44.49	H
3.296845	39.71	Pk	32.7	-33.9	0.5	-95.2	-56.19	-13	-43.19	V
Mid Channel, 836.6MHz										
1.673245	41.77	Pk	28.4	-34.9	0.7	-95.2	-59.23	-13	-46.23	H
1.673245	40.86	Pk	28.4	-34.9	0.7	-95.2	-60.14	-13	-47.14	V
2.509734	43.25	Pk	32.7	-34.7	0.5	-95.2	-53.45	-13	-40.45	H
2.509734	42.35	Pk	32.7	-34.7	0.5	-95.2	-54.35	-13	-41.35	V
3.346223	39.29	Pk	32.5	-33.7	0.4	-95.2	-56.71	-13	-43.71	H
3.346223	39.1	Pk	32.5	-33.7	0.4	-95.2	-56.9	-13	-43.9	V
High Channel, 848.4MHz										
1.697689	41.07	Pk	28.9	-34.9	0.6	-95.2	-59.53	-13	-46.53	H
1.697689	38.5	Pk	28.9	-34.9	0.6	-95.2	-62.1	-13	-49.1	V
2.546544	45.51	Pk	32.5	-34.7	0.7	-95.2	-51.19	-13	-38.19	V
2.546648	48.49	Pk	32.5	-34.7	0.7	-95.2	-48.21	-13	-35.21	H
3.395112	38.14	Pk	32.5	-33.5	0.5	-95.2	-57.56	-13	-44.56	H
3.395112	38.4	Pk	32.5	-33.5	0.5	-95.2	-57.3	-13	-44.3	V

EGPRS MODE

Project #:	14040867
Date:	4/25/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	EGPRS 850
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 824.2MHz										
1.648311	40.13	Pk	28.4	-34.9	0.7	-95.2	-60.87	-13	-47.87	H
1.648311	40.54	Pk	28.4	-34.9	0.7	-95.2	-60.46	-13	-47.46	V
2.472578	42.43	Pk	32.6	-34.8	0.5	-95.2	-54.47	-13	-41.47	H
2.472578	42.79	Pk	32.6	-34.8	0.5	-95.2	-54.11	-13	-41.11	V
3.296845	40.77	Pk	32.7	-33.9	0.5	-95.2	-55.13	-13	-42.13	H
3.296845	39.73	Pk	32.7	-33.9	0.5	-95.2	-56.17	-13	-43.17	V
Mid Channel, 836.6MHz										
1.672756	43.92	Pk	28.4	-34.9	0.7	-95.2	-57.08	-13	-44.08	H
1.673733	40.03	Pk	28.4	-34.9	0.7	-95.2	-60.97	-13	-47.97	V
2.509245	43.18	Pk	32.7	-34.7	0.5	-95.2	-53.52	-13	-40.52	H
2.509734	42.81	Pk	32.7	-34.7	0.5	-95.2	-53.89	-13	-40.89	V
3.346712	38.23	Pk	32.5	-33.7	0.4	-95.2	-57.77	-13	-44.77	H
3.346712	38.34	Pk	32.5	-33.7	0.4	-95.2	-57.66	-13	-44.66	V
High Channel, 848.4MHz										
1.697689	41.15	Pk	28.9	-34.9	0.6	-95.2	-59.45	-13	-46.45	H
1.697689	39.26	Pk	28.9	-34.9	0.6	-95.2	-61.34	-13	-48.34	V
2.546561	46.81	Pk	32.5	-34.7	0.7	-95.2	-49.89	-13	-36.89	H
2.546889	40.96	Pk	32.5	-34.7	0.7	-95.2	-55.74	-13	-42.74	V
3.395112	37.58	Pk	32.5	-33.5	0.5	-95.2	-58.12	-13	-45.12	H
3.395112	39.19	Pk	32.5	-33.5	0.5	-95.2	-56.51	-13	-43.51	V

10.2.2. GSM 1900

GPRS MODE

Project #:	14040867
Date:	4/25/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	GPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700313	34.19	Pk	33.3	-25.3	-95.2	-53.01	-13	-40.01	H
3.700313	35.56	Pk	33.3	-25.3	-95.2	-51.64	-13	-38.64	V
5.550469	34.5	Pk	34.8	-22.5	-95.2	-48.4	-13	-35.4	H
5.550469	31.86	Pk	34.8	-22.5	-95.2	-51.04	-13	-38.04	V
7.400156	28.82	Pk	35.5	-19.6	-95.2	-50.48	-13	-37.48	H
7.400156	30	Pk	35.5	-19.6	-95.2	-49.3	-13	-36.3	V
Mid Channel, 1880MHz									
3.760781	33.72	Pk	33.4	-24.9	-95.2	-52.98	-13	-39.98	H
3.760781	34.71	Pk	33.4	-24.9	-95.2	-51.99	-13	-38.99	V
5.640469	31.64	Pk	34.8	-22	-95.2	-50.76	-13	-37.76	H
5.640469	31.95	Pk	34.8	-22	-95.2	-50.45	-13	-37.45	V
7.520625	30.86	Pk	35.6	-19.6	-95.2	-48.34	-13	-35.34	H
7.520625	29.17	Pk	35.6	-19.6	-95.2	-50.03	-13	-37.03	V
High Channel, 1909.8MHz									
3.820781	35.35	Pk	33.3	-25.2	-95.2	-51.75	-13	-38.75	H
3.820781	36.5	Pk	33.3	-25.2	-95.2	-50.6	-13	-37.6	V
5.73	32	Pk	35	-23.3	-95.2	-51.5	-13	-38.5	H
5.73	32.53	Pk	35	-23.3	-95.2	-50.97	-13	-37.97	V
7.640156	32.86	Pk	35.7	-18.4	-95.2	-45.04	-13	-32.04	H
7.640156	30.09	Pk	35.7	-18.4	-95.2	-47.81	-13	-34.81	V

EGPRS MODE

Project #:	14040867
Date:	4/25/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	EGPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700781	36.83	Pk	33.3	-25.3	-95.2	-50.37	-13	-37.37	H
3.700781	34.76	Pk	33.3	-25.3	-95.2	-52.44	-13	-39.44	V
5.550469	33.05	Pk	34.8	-22.5	-95.2	-49.85	-13	-36.85	H
5.550469	32.02	Pk	34.8	-22.5	-95.2	-50.88	-13	-37.88	V
7.400625	29.35	Pk	35.5	-19.6	-95.2	-49.95	-13	-36.95	H
7.400625	30.61	Pk	35.5	-19.6	-95.2	-48.69	-13	-35.69	V
Mid Channel, 1880MHz									
3.760313	33.97	Pk	33.4	-24.9	-95.2	-52.73	-13	-39.73	H
3.760313	35.11	Pk	33.4	-24.9	-95.2	-51.59	-13	-38.59	V
5.64	31.87	Pk	34.8	-22	-95.2	-50.53	-13	-37.53	H
5.64	32.65	Pk	34.8	-22	-95.2	-49.75	-13	-36.75	V
7.520156	30.11	Pk	35.6	-19.6	-95.2	-49.09	-13	-36.09	H
7.520156	30.24	Pk	35.6	-19.6	-95.2	-48.96	-13	-35.96	V
High Channel, 1909.8MHz									
3.820313	34.7	Pk	33.3	-25.2	-95.2	-52.4	-13	-39.4	H
3.820313	35.5	Pk	33.3	-25.2	-95.2	-51.6	-13	-38.6	V
5.729063	32.42	Pk	35	-23.2	-95.2	-50.98	-13	-37.98	H
5.729063	32.22	Pk	35	-23.2	-95.2	-51.18	-13	-38.18	V
7.639688	31.51	Pk	35.7	-18.4	-95.2	-46.39	-13	-33.39	H
7.639688	28.03	Pk	35.7	-18.4	-95.2	-49.87	-13	-36.87	V

10.2.3. WCDMA BAND 5

REL 99 MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	REL 99 Band 5
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 826.40MHz										
1.650893	51.2	Pk	28.4	-34.9	0.7	-95.2	-49.8	-13	-36.8	H
1.651245	42.09	Pk	28.4	-34.9	0.7	-95.2	-58.91	-13	-45.91	V
2.479423	40.42	Pk	32.6	-34.8	0.5	-95.2	-56.48	-13	-43.48	H
2.479423	41.43	Pk	32.6	-34.8	0.5	-95.2	-55.47	-13	-42.47	V
3.305645	39.35	Pk	32.6	-33.8	0.5	-95.2	-56.55	-13	-43.55	H
3.305645	39.02	Pk	32.6	-33.8	0.5	-95.2	-56.88	-13	-43.88	V
Mid Channel, 836.60MHz										
1.670053	43.14	Pk	28.3	-34.9	0.7	-95.2	-57.96	-13	-44.96	H
1.6708	43.69	Pk	28.4	-34.9	0.7	-95.2	-57.31	-13	-44.31	V
2.509734	40.22	Pk	32.7	-34.7	0.5	-95.2	-56.48	-13	-43.48	H
2.509734	40.03	Pk	32.7	-34.7	0.5	-95.2	-56.67	-13	-43.67	V
3.346223	39.35	Pk	32.5	-33.7	0.4	-95.2	-56.65	-13	-43.65	H
3.346223	38.3	Pk	32.5	-33.7	0.4	-95.2	-57.7	-13	-44.7	V
High Channel, 846.60MHz										
1.690817	46.81	Pk	28.8	-34.9	0.6	-95.2	-53.89	-13	-40.89	H
1.694267	42.52	Pk	28.8	-34.9	0.6	-95.2	-58.18	-13	-45.18	V
2.540045	40.55	Pk	32.6	-34.7	0.6	-95.2	-56.15	-13	-43.15	H
2.540045	41.41	Pk	32.6	-34.7	0.6	-95.2	-55.29	-13	-42.29	V
3.386312	40.16	Pk	32.5	-33.5	0.5	-95.2	-55.54	-13	-42.54	H
3.386312	38.34	Pk	32.5	-33.5	0.5	-95.2	-57.36	-13	-44.36	V

HSDPA MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	HSDPA Band 5
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl (dB)	172654 HPF (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 826.40MHz										
1.650756	42.23	Pk	28.4	-34.9	0.7	-95.2	-58.77	-13	-45.77	V
1.654667	44.18	Pk	28.3	-34.9	0.7	-95.2	-56.92	-13	-43.92	H
2.479423	42.12	Pk	32.6	-34.8	0.5	-95.2	-54.78	-13	-41.78	H
2.479423	42.22	Pk	32.6	-34.8	0.5	-95.2	-54.68	-13	-41.68	V
3.305645	38.69	Pk	32.6	-33.8	0.5	-95.2	-57.21	-13	-44.21	H
3.306134	39.55	Pk	32.6	-33.8	0.5	-95.2	-56.35	-13	-43.35	V
Mid Channel, 836.60MHz										
1.673245	40.93	Pk	28.4	-34.9	0.7	-95.2	-60.07	-13	-47.07	H
1.673245	40.59	Pk	28.4	-34.9	0.7	-95.2	-60.41	-13	-47.41	V
2.509734	40.39	Pk	32.7	-34.7	0.5	-95.2	-56.31	-13	-43.31	H
2.509734	42.52	Pk	32.7	-34.7	0.5	-95.2	-54.18	-13	-41.18	V
3.346223	39.78	Pk	32.5	-33.7	0.4	-95.2	-56.22	-13	-43.22	V
3.346712	40.19	Pk	32.5	-33.7	0.4	-95.2	-55.81	-13	-42.81	H
High Channel, 846.60MHz										
1.693289	41.17	Pk	28.8	-34.9	0.6	-95.2	-59.53	-13	-46.53	H
1.693289	40.33	Pk	28.8	-34.9	0.6	-95.2	-60.37	-13	-47.37	V
2.540045	41.95	Pk	32.6	-34.7	0.6	-95.2	-54.75	-13	-41.75	H
2.540045	40.57	Pk	32.6	-34.7	0.6	-95.2	-56.13	-13	-43.13	V
3.386312	41.3	Pk	32.5	-33.5	0.5	-95.2	-54.4	-13	-41.4	H
3.386312	39.77	Pk	32.5	-33.5	0.5	-95.2	-55.93	-13	-42.93	V

10.2.4. WCDMA BAND 2

REL 99 MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.705469	33.65	Pk	33.3	-25.1	-95.2	-53.35	-13	-40.35	H
3.705469	35.36	Pk	33.3	-25.1	-95.2	-51.64	-13	-38.64	V
5.5575	32.31	Pk	34.7	-22.6	-95.2	-50.79	-13	-37.79	H
5.5575	30.02	Pk	34.7	-22.6	-95.2	-53.08	-13	-40.08	V
7.409531	30.67	Pk	35.5	-19.7	-95.2	-48.73	-13	-35.73	H
7.409531	28.36	Pk	35.5	-19.7	-95.2	-51.04	-13	-38.04	V
Mid Channel, 1880MHz									
3.760781	35.03	Pk	33.4	-24.9	-95.2	-51.67	-13	-38.67	H
3.760781	33.39	Pk	33.4	-24.9	-95.2	-53.31	-13	-40.31	V
5.640938	33.21	Pk	34.8	-22	-95.2	-49.19	-13	-36.19	H
5.640938	31.84	Pk	34.8	-22	-95.2	-50.56	-13	-37.56	V
7.521094	32.54	Pk	35.6	-19.6	-95.2	-46.66	-13	-33.66	H
7.521094	28.06	Pk	35.6	-19.6	-95.2	-51.14	-13	-38.14	V
High Channel, 1907.6MHz									
3.815156	33.32	Pk	33.3	-25.2	-95.2	-53.78	-13	-40.78	H
3.815156	35.89	Pk	33.3	-25.2	-95.2	-51.21	-13	-38.21	V
5.722969	31.92	Pk	34.9	-23.1	-95.2	-51.48	-13	-38.48	H
5.722969	31.2	Pk	34.9	-23.1	-95.2	-52.2	-13	-39.2	V
7.630313	31.23	Pk	35.7	-18.4	-95.2	-46.67	-13	-33.67	H
7.630313	30.34	Pk	35.7	-18.4	-95.2	-47.56	-13	-34.56	V

HSDPA MODE

Project #:	14040867
Date:	4/13/2022 – 4/14/2022
Test Engineer:	45258 , 26120
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	Chamber A, Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.705469	35.16	Pk	33.3	-25.1	-95.2	-51.84	-13	-38.84	H
3.705469	34.1	Pk	33.3	-25.1	-95.2	-52.9	-13	-39.9	V
5.557969	36.08	Pk	34.7	-22.6	-95.2	-47.02	-13	-34.02	H
5.557969	34.77	Pk	34.7	-22.6	-95.2	-48.33	-13	-35.33	V
7.410938	29.91	Pk	35.5	-19.7	-95.2	-49.49	-13	-36.49	H
7.410938	32.6	Pk	35.5	-19.7	-95.2	-46.8	-13	-33.8	V
Mid Channel, 1880MHz									
3.760781	35.7	Pk	33.4	-24.9	-95.2	-51	-13	-38	H
3.760781	33.7	Pk	33.4	-24.9	-95.2	-53	-13	-40	V
5.640469	33.07	Pk	34.8	-22	-95.2	-49.33	-13	-36.33	H
5.640469	32.5	Pk	34.8	-22	-95.2	-49.9	-13	-36.9	V
7.522031	29.83	Pk	35.6	-19.6	-95.2	-49.37	-13	-36.37	H
7.522031	32.42	Pk	35.6	-19.6	-95.2	-46.78	-13	-33.78	V
High Channel, 1907.6MHz									
3.815156	37.43	Pk	33.7	-31.8	-95.2	-55.87	-13	-42.87	H
3.815156	39.35	Pk	33.7	-31.8	-95.2	-53.95	-13	-40.95	V
5.722969	36.06	Pk	34.8	-29.1	-95.2	-53.44	-13	-40.44	H
5.722969	35.6	Pk	34.8	-29.1	-95.2	-53.9	-13	-40.9	V
7.630313	33.67	Pk	35.8	-26.5	-95.2	-52.23	-13	-39.23	H
7.630313	33.89	Pk	35.8	-26.5	-95.2	-52.01	-13	-39.01	V

10.2.5. WCDMA BAND 4

REL 99 MODE

Project #:	14040867
Date:	3/30/2022, 4/11/2022
Test Engineer:	30606, 45258
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.438193	37.3	Pk	32.7	-26.1	-95.2	-51.3	-13	-38.3	V
3.443696	38.58	Pk	32.7	-26.1	-95.2	-50.02	-13	-37.02	H
5.136284	36.55	Pk	34.4	-23.3	-95.2	-47.55	-13	-34.55	H
5.139511	35.97	Pk	34.3	-23.3	-95.2	-48.23	-13	-35.23	V
6.857521	34.06	Pk	35.5	-20.8	-95.2	-46.44	-13	-33.44	V
6.863588	34.39	Pk	35.5	-20.9	-95.2	-46.21	-13	-33.21	H
Mid Channel, 1732.6MHz									
3.448824	37.83	Pk	32.7	-26.1	-95.2	-50.77	-13	-37.77	V
3.464901	37.64	Pk	32.6	-26.1	-95.2	-51.06	-13	-38.06	H
5.156558	36.46	Pk	34.3	-23.6	-95.2	-48.04	-13	-35.04	V
5.17423	36.29	Pk	34.4	-24	-95.2	-48.51	-13	-35.51	H
6.932955	33.15	Pk	35.5	-20.7	-95.2	-47.25	-13	-34.25	V
6.936745	34.26	Pk	35.5	-20.6	-95.2	-46.04	-13	-33.04	H
High Channel, 1752.61MHz									
3.505781	34.99	Pk	32.7	-25.5	-95.2	-53.01	-13	-40.01	H
3.505781	34.87	Pk	32.7	-25.5	-95.2	-53.13	-13	-40.13	V
5.207813	33.13	Pk	34.4	-23.9	-95.2	-51.57	-13	-38.57	H
5.207813	35.04	Pk	34.4	-23.9	-95.2	-49.66	-13	-36.66	V
7.010156	30.67	Pk	35.5	-19.6	-95.2	-48.63	-13	-35.63	H
7.010156	29.68	Pk	35.5	-19.6	-95.2	-49.62	-13	-36.62	V

HSDPA MODE

Project #:	14040867
Date:	4/12/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.426094	33.81	Pk	32.7	-26.1	-95.2	-54.79	-13	-41.79	H
3.426094	36.73	Pk	32.7	-26.1	-95.2	-51.87	-13	-38.87	V
5.1375	34.23	Pk	34.3	-23.3	-95.2	-49.97	-13	-36.97	H
5.1375	31.82	Pk	34.3	-23.3	-95.2	-52.38	-13	-39.38	V
6.848438	33.56	Pk	35.5	-20.8	-95.2	-46.94	-13	-33.94	H
6.848438	32.53	Pk	35.5	-20.8	-95.2	-47.97	-13	-34.97	V
Mid Channel, 1732.6MHz									
3.465469	32.76	Pk	32.6	-26.1	-95.2	-55.94	-13	-42.94	H
3.465469	34	Pk	32.6	-26.1	-95.2	-54.7	-13	-41.7	V
5.198438	32.22	Pk	34.4	-23.9	-95.2	-52.48	-13	-39.48	H
5.198438	34.03	Pk	34.4	-23.9	-95.2	-50.67	-13	-37.67	V
6.930938	31.31	Pk	35.5	-20.7	-95.2	-49.09	-13	-36.09	H
6.930938	32.32	Pk	35.5	-20.7	-95.2	-48.08	-13	-35.08	V
High Channel, 1752.61MHz									
3.505781	35.11	Pk	32.7	-25.5	-95.2	-52.89	-13	-39.89	H
3.505781	33.6	Pk	32.7	-25.5	-95.2	-54.4	-13	-41.4	V
5.258906	33.51	Pk	34.4	-23.4	-95.2	-50.69	-13	-37.69	H
5.258906	29.97	Pk	34.4	-23.4	-95.2	-54.23	-13	-41.23	V
7.010625	31.48	Pk	35.5	-19.6	-95.2	-47.82	-13	-34.82	H
7.010625	29.11	Pk	35.5	-19.6	-95.2	-50.19	-13	-37.19	V

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

10.3.1. GSM 1900

GPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	GPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700313	33.93	Pk	33.3	-25.3	-95.2	-53.27	-13	-40.27	H
3.700313	37.03	Pk	33.3	-25.3	-95.2	-50.17	-13	-37.17	V
5.550469	34.94	Pk	34.8	-22.5	-95.2	-47.96	-13	-34.96	H
5.550481	45.09	Pk	34.8	-22.5	-95.2	-37.81	-13	-24.81	V
7.400625	29.31	Pk	35.5	-19.6	-95.2	-49.99	-13	-36.99	H
7.400625	30.75	Pk	35.5	-19.6	-95.2	-48.55	-13	-35.55	V
Mid Channel, 1880MHz									
3.760313	33.09	Pk	33.4	-24.9	-95.2	-53.61	-13	-40.61	H
3.760313	34.48	Pk	33.4	-24.9	-95.2	-52.22	-13	-39.22	V
5.639847	45.07	Pk	34.8	-22	-95.2	-37.33	-13	-24.33	V
5.64	33.98	Pk	34.8	-22	-95.2	-48.42	-13	-35.42	H
7.520156	29.28	Pk	35.6	-19.6	-95.2	-49.92	-13	-36.92	H
7.520156	29.86	Pk	35.6	-19.6	-95.2	-49.34	-13	-36.34	V
High Channel, 1909.8MHz									
3.819375	35.58	Pk	33.3	-25.2	-95.2	-51.52	-13	-38.52	H
3.819375	34.31	Pk	33.3	-25.2	-95.2	-52.79	-13	-39.79	V
5.729063	34.71	Pk	35	-23.2	-95.2	-48.69	-13	-35.69	H
5.729303	44.7	Pk	35	-23.2	-95.2	-38.7	-13	-25.7	V
7.639219	29.34	Pk	35.7	-18.4	-95.2	-48.56	-13	-35.56	H
7.639219	31.36	Pk	35.7	-18.4	-95.2	-46.54	-13	-33.54	V

EGPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	EGPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700313	36.38	Pk	33.3	-25.3	-95.2	-50.82	-13	-37.82	H
3.700313	33.96	Pk	33.3	-25.3	-95.2	-53.24	-13	-40.24	V
5.550469	35.69	Pk	34.8	-22.5	-95.2	-47.21	-13	-34.21	H
5.551406	36.25	Pk	34.8	-22.5	-95.2	-46.65	-13	-33.65	V
7.400625	29.61	Pk	35.5	-19.6	-95.2	-49.69	-13	-36.69	H
7.400625	29.78	Pk	35.5	-19.6	-95.2	-49.52	-13	-36.52	V
Mid Channel, 1880MHz									
3.820781	36.94	Pk	33.3	-25.2	-95.2	-50.16	-13	-37.16	H
3.820781	34.71	Pk	33.3	-25.2	-95.2	-52.39	-13	-39.39	V
5.73	31.25	Pk	35	-23.3	-95.2	-52.25	-13	-39.25	H
5.73	31.61	Pk	35	-23.3	-95.2	-51.89	-13	-38.89	V
7.640156	31.33	Pk	35.7	-18.4	-95.2	-46.57	-13	-33.57	H
7.640156	29.58	Pk	35.7	-18.4	-95.2	-48.32	-13	-35.32	V
High Channel, 1909.8MHz									
3.820313	36.29	Pk	33.3	-25.2	-95.2	-50.81	-13	-37.81	H
3.820313	35.22	Pk	33.3	-25.2	-95.2	-51.88	-13	-38.88	V
5.729531	29.96	Pk	35	-23.2	-95.2	-53.44	-13	-40.44	H
5.729531	35.51	Pk	35	-23.2	-95.2	-47.89	-13	-34.89	V
7.640156	32.83	Pk	35.7	-18.4	-95.2	-45.07	-13	-32.07	H
7.640156	27.83	Pk	35.7	-18.4	-95.2	-50.07	-13	-37.07	V

10.3.2. WCDMA BAND 2

REL 99 MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.705	33.65	Pk	33.3	-25.1	-95.2	-53.35	-13	-40.35	H
3.705	34.5	Pk	33.3	-25.1	-95.2	-52.5	-13	-39.5	V
5.5575	33.16	Pk	34.7	-22.6	-95.2	-49.94	-13	-36.94	H
5.5575	33.05	Pk	34.7	-22.6	-95.2	-50.05	-13	-37.05	V
7.396875	28.65	Pk	35.6	-19.6	-95.2	-50.55	-13	-37.55	V
7.410469	28.55	Pk	35.5	-19.7	-95.2	-50.85	-13	-37.85	H
Mid Channel, 1880MHz									
3.760781	34.21	Pk	33.4	-24.9	-95.2	-52.49	-13	-39.49	H
3.760781	34.56	Pk	33.4	-24.9	-95.2	-52.14	-13	-39.14	V
5.636146	40.59	Pk	34.8	-22.1	-95.2	-41.91	-13	-28.91	V
5.642826	39.2	Pk	34.8	-21.9	-95.2	-43.1	-13	-30.1	H
7.520156	29.29	Pk	35.6	-19.6	-95.2	-49.91	-13	-36.91	H
7.520156	33.02	Pk	35.6	-19.6	-95.2	-46.18	-13	-33.18	V
High Channel, 1907.6MHz									
3.814688	35.56	Pk	33.3	-25.2	-95.2	-51.54	-13	-38.54	H
3.814688	35.17	Pk	33.3	-25.2	-95.2	-51.93	-13	-38.93	V
5.71875	31.11	Pk	34.9	-23.1	-95.2	-52.29	-13	-39.29	V
5.720302	36.26	Pk	34.9	-23.1	-95.2	-47.14	-13	-34.14	H
7.630313	31.22	Pk	35.7	-18.4	-95.2	-46.68	-13	-33.68	H
7.630313	30.34	Pk	35.7	-18.4	-95.2	-47.56	-13	-34.56	V

HSDPA MODE

Project #:	14040867
Date:	4/15/2022
Test Engineer:	26120
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.705	38.41	Pk	33.2	-32.3	-95.2	-55.89	-13	-42.89	H
3.705	36.79	Pk	33.2	-32.3	-95.2	-57.51	-13	-44.51	V
5.557031	35.58	Pk	34.9	-29.6	-95.2	-54.32	-13	-41.32	H
5.557031	36.74	Pk	34.9	-29.6	-95.2	-53.16	-13	-40.16	V
7.409531	32.28	Pk	35.7	-26.3	-95.2	-53.52	-13	-40.52	H
7.409531	31.76	Pk	35.7	-26.3	-95.2	-54.04	-13	-41.04	V
Mid Channel, 1880MHz									
3.759844	38.55	Pk	33.5	-32.1	-95.2	-55.25	-13	-42.25	H
3.759844	37.41	Pk	33.5	-32.1	-95.2	-56.39	-13	-43.39	V
5.64	37.59	Pk	35	-30.1	-95.2	-52.71	-13	-39.71	H
5.64	36.4	Pk	35	-30.1	-95.2	-53.9	-13	-40.9	V
7.520156	33.29	Pk	35.7	-26.1	-95.2	-52.31	-13	-39.31	H
7.520156	32	Pk	35.7	-26.1	-95.2	-53.6	-13	-40.6	V
High Channel, 1907.6MHz									
3.815156	36.98	Pk	33.7	-31.8	-95.2	-56.32	-13	-43.32	H
3.815156	37.78	Pk	33.7	-31.8	-95.2	-55.52	-13	-42.52	V
5.722969	37.18	Pk	34.8	-29.1	-95.2	-52.32	-13	-39.32	H
5.722969	35.79	Pk	34.8	-29.1	-95.2	-53.71	-13	-40.71	V
7.630313	32.87	Pk	35.8	-26.5	-95.2	-53.03	-13	-40.03	H
7.630313	31.36	Pk	35.8	-26.5	-95.2	-54.54	-13	-41.54	V

10.3.3. WCDMA BAND 4

REL 99 MODE

Project #:	14040867
Date:	4/11/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.425156	35.12	Pk	32.7	-26.1	-95.2	-53.48	-13	-40.48	H
3.425156	37.24	Pk	32.7	-26.1	-95.2	-51.36	-13	-38.36	V
5.137969	36.11	Pk	34.3	-23.3	-95.2	-48.09	-13	-35.09	H
5.137969	32.52	Pk	34.3	-23.3	-95.2	-51.68	-13	-38.68	V
6.850781	31.13	Pk	35.5	-20.8	-95.2	-49.37	-13	-36.37	H
6.850781	32.13	Pk	35.5	-20.8	-95.2	-48.37	-13	-35.37	V
Mid Channel, 1732.6MHz									
3.463594	35.71	Pk	32.6	-26.1	-95.2	-52.99	-13	-39.99	H
3.463594	34.45	Pk	32.6	-26.1	-95.2	-54.25	-13	-41.25	V
5.198438	33.36	Pk	34.4	-23.9	-95.2	-51.34	-13	-38.34	H
5.198438	34.96	Pk	34.4	-23.9	-95.2	-49.74	-13	-36.74	V
6.930938	31.75	Pk	35.5	-20.7	-95.2	-48.65	-13	-35.65	H
6.930938	29.99	Pk	35.5	-20.7	-95.2	-50.41	-13	-37.41	V
High Channel, 1752.61MHz									
3.50625	36.09	Pk	32.7	-25.5	-95.2	-51.91	-13	-38.91	H
3.50625	33.53	Pk	32.7	-25.5	-95.2	-54.47	-13	-41.47	V
5.259844	32.72	Pk	34.4	-23.4	-95.2	-51.48	-13	-38.48	H
5.259844	33.73	Pk	34.4	-23.4	-95.2	-50.47	-13	-37.47	V
7.009688	29.69	Pk	35.5	-19.6	-95.2	-49.61	-13	-36.61	H
7.009688	31.17	Pk	35.5	-19.6	-95.2	-48.13	-13	-35.13	V

HSDPA MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.426094	32.86	Pk	32.7	-26.1	-95.2	-55.74	-13	-42.74	H
3.426094	33.93	Pk	32.7	-26.1	-95.2	-54.67	-13	-41.67	V
5.1375	33.6	Pk	34.3	-23.3	-95.2	-50.6	-13	-37.6	H
5.1375	32.16	Pk	34.3	-23.3	-95.2	-52.04	-13	-39.04	V
6.850781	30.76	Pk	35.5	-20.8	-95.2	-49.74	-13	-36.74	H
6.850781	31.54	Pk	35.5	-20.8	-95.2	-48.96	-13	-35.96	V
Mid Channel, 1732.6MHz									
3.465938	35.28	Pk	32.6	-26.1	-95.2	-53.42	-13	-40.42	H
3.465938	34.37	Pk	32.6	-26.1	-95.2	-54.33	-13	-41.33	V
5.199375	34.56	Pk	34.4	-23.9	-95.2	-50.14	-13	-37.14	H
5.199375	35.88	Pk	34.4	-23.9	-95.2	-48.82	-13	-35.82	V
6.930469	31.3	Pk	35.4	-20.7	-95.2	-49.2	-13	-36.2	H
6.930469	30.84	Pk	35.4	-20.7	-95.2	-49.66	-13	-36.66	V
High Channel, 1752.61MHz									
3.505313	32.47	Pk	32.7	-25.5	-95.2	-55.53	-13	-42.53	H
3.505313	35.38	Pk	32.7	-25.5	-95.2	-52.62	-13	-39.62	V
5.258438	33.3	Pk	34.4	-23.5	-95.2	-51	-13	-38	H
5.258438	32.46	Pk	34.4	-23.5	-95.2	-51.84	-13	-38.84	V
7.010625	31.88	Pk	35.5	-19.6	-95.2	-47.42	-13	-34.42	H
7.010625	30.17	Pk	35.5	-19.6	-95.2	-49.13	-13	-36.13	V

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

10.4.1. GSM 1900

GPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	GPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700781	35.2	Pk	33.3	-25.3	-95.2	-52	-13	-39	H
3.700781	34.75	Pk	33.3	-25.3	-95.2	-52.45	-13	-39.45	V
5.550469	32.04	Pk	34.8	-22.5	-95.2	-50.86	-13	-37.86	H
5.550469	31.61	Pk	34.8	-22.5	-95.2	-51.29	-13	-38.29	V
7.400625	30.39	Pk	35.5	-19.6	-95.2	-48.91	-13	-35.91	H
7.400625	28.5	Pk	35.5	-19.6	-95.2	-50.8	-13	-37.8	V
Mid Channel, 1880MHz									
3.760781	33.83	Pk	33.4	-24.9	-95.2	-52.87	-13	-39.87	H
3.760781	36.61	Pk	33.4	-24.9	-95.2	-50.09	-13	-37.09	V
5.64	32.49	Pk	34.8	-22	-95.2	-49.91	-13	-36.91	H
5.64	30.97	Pk	34.8	-22	-95.2	-51.43	-13	-38.43	V
7.520156	29.68	Pk	35.6	-19.6	-95.2	-49.52	-13	-36.52	H
7.520156	29.4	Pk	35.6	-19.6	-95.2	-49.8	-13	-36.8	V
High Channel, 1909.8MHz									
3.820313	36.02	Pk	33.3	-25.2	-95.2	-51.08	-13	-38.08	H
3.820313	33.55	Pk	33.3	-25.2	-95.2	-53.55	-13	-40.55	V
5.73	33.07	Pk	35	-23.3	-95.2	-50.43	-13	-37.43	H
5.73	34.23	Pk	35	-23.3	-95.2	-49.27	-13	-36.27	V
7.640156	31.46	Pk	35.7	-18.4	-95.2	-46.44	-13	-33.44	H
7.640156	28.85	Pk	35.7	-18.4	-95.2	-49.05	-13	-36.05	V

EGPRS MODE

Project #:	14040867
Date:	4/22/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	EGPRS1900
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1850.2MHz									
3.700313	34.01	Pk	33.3	-25.3	-95.2	-53.19	-13	-40.19	H
3.700313	35.13	Pk	33.3	-25.3	-95.2	-52.07	-13	-39.07	V
5.550938	32.53	Pk	34.8	-22.5	-95.2	-50.37	-13	-37.37	H
5.550938	32.91	Pk	34.8	-22.5	-95.2	-49.99	-13	-36.99	V
7.400625	28.65	Pk	35.5	-19.6	-95.2	-50.65	-13	-37.65	H
7.400625	32.17	Pk	35.5	-19.6	-95.2	-47.13	-13	-34.13	V
Mid Channel, 1880MHz									
3.760313	35.49	Pk	33.4	-24.9	-95.2	-51.21	-13	-38.21	H
3.760313	33.83	Pk	33.4	-24.9	-95.2	-52.87	-13	-39.87	V
5.640469	33.16	Pk	34.8	-22	-95.2	-49.24	-13	-36.24	H
5.640469	32.63	Pk	34.8	-22	-95.2	-49.77	-13	-36.77	V
7.520156	31.02	Pk	35.6	-19.6	-95.2	-48.18	-13	-35.18	H
7.520156	31.78	Pk	35.6	-19.6	-95.2	-47.42	-13	-34.42	V
High Channel, 1909.8MHz									
3.819844	34.52	Pk	33.3	-25.2	-95.2	-52.58	-13	-39.58	H
3.819844	35.49	Pk	33.3	-25.2	-95.2	-51.61	-13	-38.61	V
5.73	30.81	Pk	35	-23.3	-95.2	-52.69	-13	-39.69	H
5.73	34.47	Pk	35	-23.3	-95.2	-49.03	-13	-36.03	V
7.639688	30.45	Pk	35.7	-18.4	-95.2	-47.45	-13	-34.45	H
7.639688	29.21	Pk	35.7	-18.4	-95.2	-48.69	-13	-35.69	V

10.4.2. WCDMA BAND 2

REL 99 MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	REL 99 Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.704531	37.02	Pk	33.3	-25.1	-95.2	-49.98	-13	-36.98	H
3.704531	33.66	Pk	33.3	-25.1	-95.2	-53.34	-13	-40.34	V
5.558906	33.59	Pk	34.7	-22.6	-95.2	-49.51	-13	-36.51	H
5.558906	31.32	Pk	34.7	-22.6	-95.2	-51.78	-13	-38.78	V
7.41	31.24	Pk	35.5	-19.7	-95.2	-48.16	-13	-35.16	H
7.41	30.9	Pk	35.5	-19.7	-95.2	-48.5	-13	-35.5	V
Mid Channel, 1880MHz									
3.760313	33.92	Pk	33.4	-24.9	-95.2	-52.78	-13	-39.78	H
3.760313	36.23	Pk	33.4	-24.9	-95.2	-50.47	-13	-37.47	V
5.640469	33.01	Pk	34.8	-22	-95.2	-49.39	-13	-36.39	H
5.640469	34.31	Pk	34.8	-22	-95.2	-48.09	-13	-35.09	V
7.520625	30.98	Pk	35.6	-19.6	-95.2	-48.22	-13	-35.22	H
7.520625	31.25	Pk	35.6	-19.6	-95.2	-47.95	-13	-34.95	V
High Channel, 1907.6MHz									
3.814219	35.26	Pk	33.3	-25.2	-95.2	-51.84	-13	-38.84	H
3.814219	36.47	Pk	33.3	-25.2	-95.2	-50.63	-13	-37.63	V
5.723906	33.59	Pk	34.9	-23.2	-95.2	-49.91	-13	-36.91	H
5.723906	31.92	Pk	34.9	-23.2	-95.2	-51.58	-13	-38.58	V
7.630313	29.87	Pk	35.7	-18.4	-95.2	-48.03	-13	-35.03	H
7.630313	29.72	Pk	35.7	-18.4	-95.2	-48.18	-13	-35.18	V

HSDPA MODE

Project #:	14040867
Date:	4/14/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 2
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402(dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1852.4MHz									
3.706406	33.27	Pk	33.4	-25.1	-95.2	-53.63	-13	-40.63	H
3.706406	36.32	Pk	33.4	-25.1	-95.2	-50.58	-13	-37.58	V
5.557031	32.6	Pk	34.7	-22.6	-95.2	-50.5	-13	-37.5	H
5.557031	30.99	Pk	34.7	-22.6	-95.2	-52.11	-13	-39.11	V
7.409531	30.08	Pk	35.5	-19.7	-95.2	-49.32	-13	-36.32	H
7.409531	30.74	Pk	35.5	-19.7	-95.2	-48.66	-13	-35.66	V
Mid Channel, 1880MHz									
3.76125	35.79	Pk	33.4	-24.9	-95.2	-50.91	-13	-37.91	H
3.76125	36.02	Pk	33.4	-24.9	-95.2	-50.68	-13	-37.68	V
5.64	35.11	Pk	34.8	-22	-95.2	-47.29	-13	-34.29	H
5.64	32.81	Pk	34.8	-22	-95.2	-49.59	-13	-36.59	V
7.520625	30.88	Pk	35.6	-19.6	-95.2	-48.32	-13	-35.32	H
7.520625	30.88	Pk	35.6	-19.6	-95.2	-48.32	-13	-35.32	V
High Channel, 1907.6MHz									
3.815625	35.92	Pk	33.3	-25.2	-95.2	-51.18	-13	-38.18	H
3.815625	33.31	Pk	33.3	-25.2	-95.2	-53.79	-13	-40.79	V
5.722969	31.66	Pk	34.9	-23.1	-95.2	-51.74	-13	-38.74	H
5.722969	33.5	Pk	34.9	-23.1	-95.2	-49.9	-13	-36.9	V
7.631719	28.7	Pk	35.7	-18.4	-95.2	-49.2	-13	-36.2	V
7.632188	33.45	Pk	35.7	-18.4	-95.2	-44.45	-13	-31.45	H

10.4.3. WCDMA BAND 4

REL 99 MODE

Project #:	14040867
Date:	4/11/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	REL 99 Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.425156	32.79	Pk	32.7	-26.1	-95.2	-55.81	-13	-42.81	H
3.425156	33.77	Pk	32.7	-26.1	-95.2	-54.83	-13	-41.83	V
5.137031	34.17	Pk	34.4	-23.3	-95.2	-49.93	-13	-36.93	H
5.137031	33.35	Pk	34.4	-23.3	-95.2	-50.75	-13	-37.75	V
6.848906	32.27	Pk	35.5	-20.8	-95.2	-48.23	-13	-35.23	H
6.848906	29.99	Pk	35.5	-20.8	-95.2	-50.51	-13	-37.51	V
Mid Channel, 1732.6MHz									
3.465469	35.63	Pk	32.6	-26.1	-95.2	-53.07	-13	-40.07	H
3.465469	33.56	Pk	32.6	-26.1	-95.2	-55.14	-13	-42.14	V
5.197969	33.67	Pk	34.4	-23.9	-95.2	-51.03	-13	-38.03	H
5.197969	32.59	Pk	34.4	-23.9	-95.2	-52.11	-13	-39.11	V
6.93	32.21	Pk	35.4	-20.7	-95.2	-48.29	-13	-35.29	H
6.93	32.03	Pk	35.4	-20.7	-95.2	-48.47	-13	-35.47	V
High Channel, 1752.61MHz									
3.505781	37.27	Pk	32.7	-25.5	-95.2	-50.73	-13	-37.73	H
3.505781	34.79	Pk	32.7	-25.5	-95.2	-53.21	-13	-40.21	V
5.254378	43.37	Pk	34.4	-23.4	-95.2	-40.83	-13	-27.83	V
5.258438	36.8	Pk	34.4	-23.5	-95.2	-47.5	-13	-34.5	H
7.010625	31.14	Pk	35.5	-19.6	-95.2	-48.16	-13	-35.16	H
7.010625	28.63	Pk	35.5	-19.6	-95.2	-50.67	-13	-37.67	V

HSDPA MODE

Project #:	14040867
Date:	4/13/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode:	HSDPA Band 4
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1712.4MHz									
3.425625	34.61	Pk	32.7	-26.1	-95.2	-53.99	-13	-40.99	H
3.425625	33.27	Pk	32.7	-26.1	-95.2	-55.33	-13	-42.33	V
5.137031	31.55	Pk	34.4	-23.3	-95.2	-52.55	-13	-39.55	H
5.137031	33.49	Pk	34.4	-23.3	-95.2	-50.61	-13	-37.61	V
6.849844	31.35	Pk	35.5	-20.8	-95.2	-49.15	-13	-36.15	H
6.849844	28.91	Pk	35.5	-20.8	-95.2	-51.59	-13	-38.59	V
Mid Channel, 1732.6MHz									
3.465	35.18	Pk	32.6	-26.1	-95.2	-53.52	-13	-40.52	H
3.465	33.09	Pk	32.6	-26.1	-95.2	-55.61	-13	-42.61	V
5.197969	32.13	Pk	34.4	-23.9	-95.2	-52.57	-13	-39.57	H
5.197969	34.36	Pk	34.4	-23.9	-95.2	-50.34	-13	-37.34	V
6.930469	31.89	Pk	35.4	-20.7	-95.2	-48.61	-13	-35.61	H
6.930469	29.49	Pk	35.4	-20.7	-95.2	-51.01	-13	-38.01	V
High Channel, 1752.61MHz									
3.505313	32.84	Pk	32.7	-25.5	-95.2	-55.16	-13	-42.16	H
3.505313	32.54	Pk	32.7	-25.5	-95.2	-55.46	-13	-42.46	V
5.258906	31.9	Pk	34.4	-23.4	-95.2	-52.3	-13	-39.3	H
5.258906	34.83	Pk	34.4	-23.4	-95.2	-49.37	-13	-36.37	V
7.010156	28.5	Pk	35.5	-19.6	-95.2	-50.8	-13	-37.8	H
7.010156	30.5	Pk	35.5	-19.6	-95.2	-48.8	-13	-35.8	V

11. SETUP PHOTOS

Please refer to 14040867-EP1V1 for setup photos.

END OF REPORT