

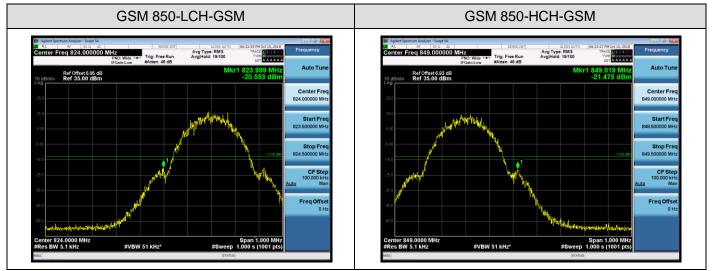
## **8.3 MEASUREMENT RESULT**

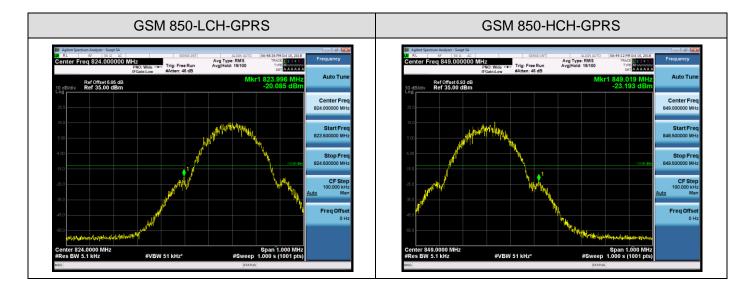
#### Test Results

## For GSM

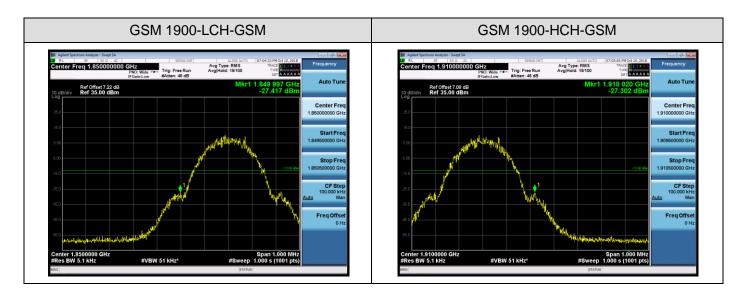
## Test Band=GSM850/GSM1900

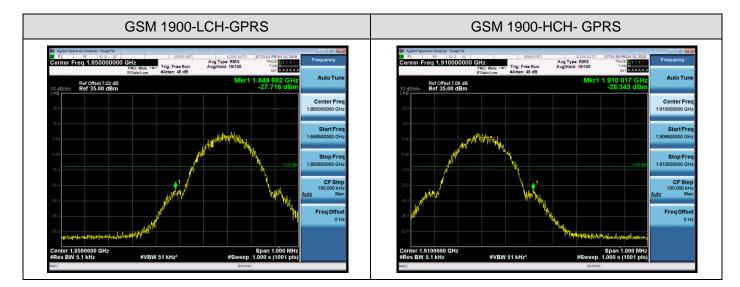
## Test Mode=GSM/GPRS









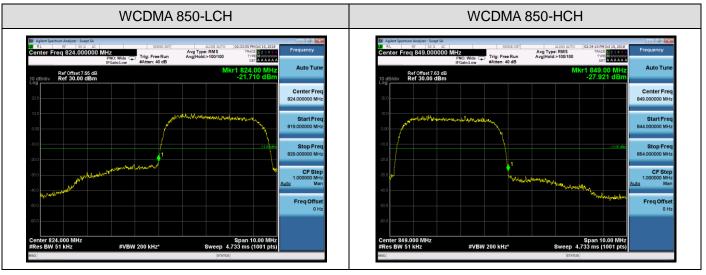


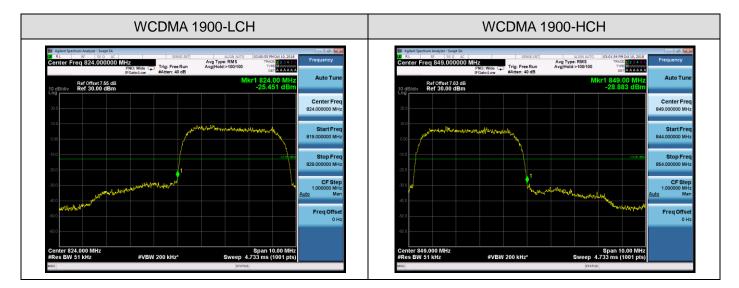


## For WCDMA

## Test Band=WCDMA850/WCDMA1900

### Test Mode=UMTS







## 9. SPURIOUS EMISSION

## 9.1 CONDUCTED SPURIOUS EMISSION

## 9.1.1MEASUREMENT METHOD

The following steps outline the procedure used to measure the conducted emissions from the EUT. 1. The level of the carrier and the various conducted spurious and harmonic frequency is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the approximate frequencies. All data rates were investigated to determine the worst case configuration.

2. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM850, data taken from 30 MHz to 9 GHz.

3. Determine EUT transmit frequencies: the following typical channelswere chosen to conducted emissions testing.



Typical Channels for testing of GSM 850			
Channel	Frequency (MHz)		
128	824.2		
190	836.6		
251	848.8		

Typical Channels for testing of PCS 1900			
Channel	Frequency (MHz)		
512	1850.2		
661	1880.0		
810	1909.8		

Typical Channels for testing of UMTS band II			
Channel	Frequency (MHz)		
9262	1852.4		
9400	1880		
9538	1907.6		

Typical Channels for testing of UMTS band V			
Channel	Frequency (MHz)		
4132	826.4		
4182	836.4		
4233	846.6		



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## 9.1.2 PROVISIONS APPLICABLE

On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

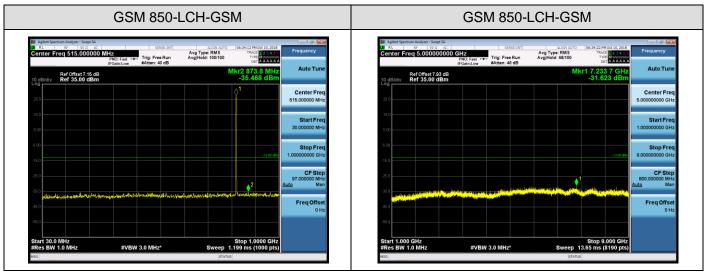


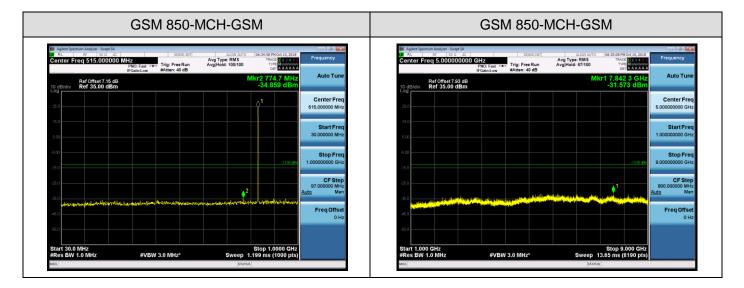
## 9.1.3MEASUREMENT RESULT

#### **Test Results**

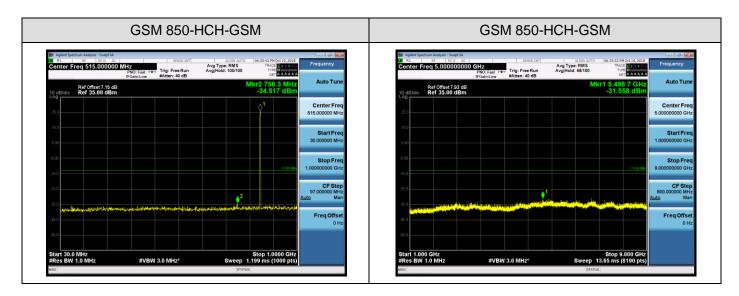
## Test Band=GSM850/GSM1900

## Test Mode=GSM/GPRS

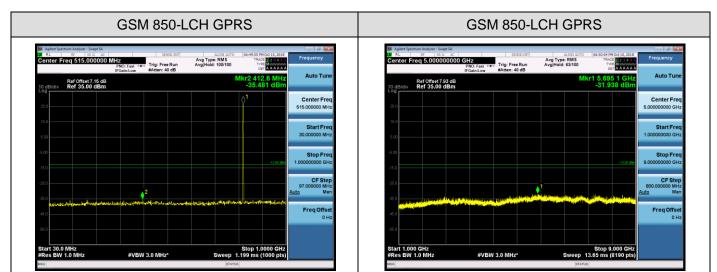


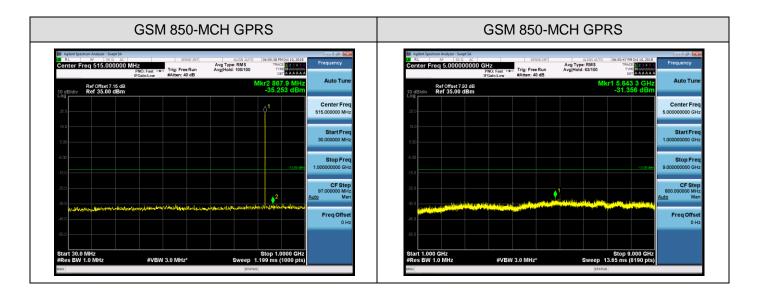




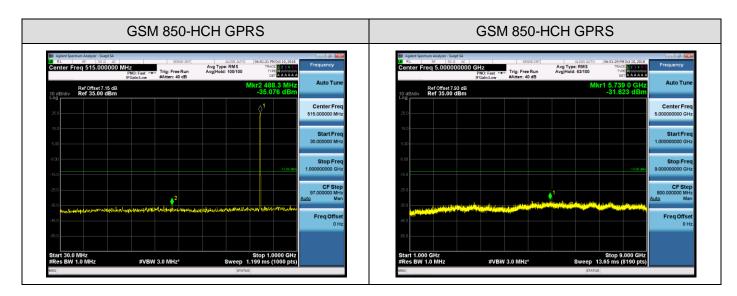


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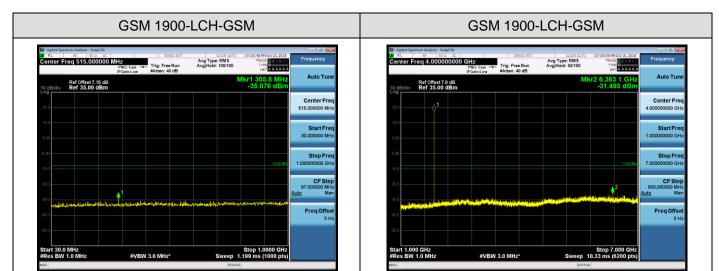


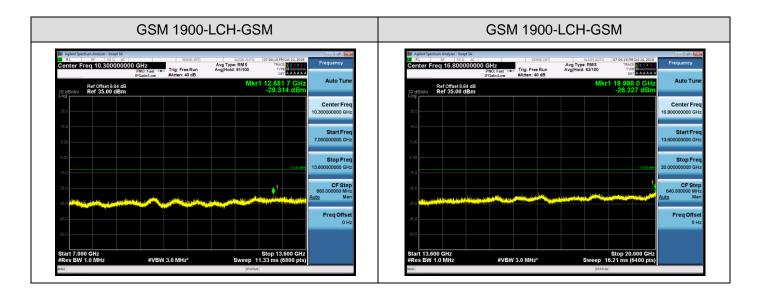




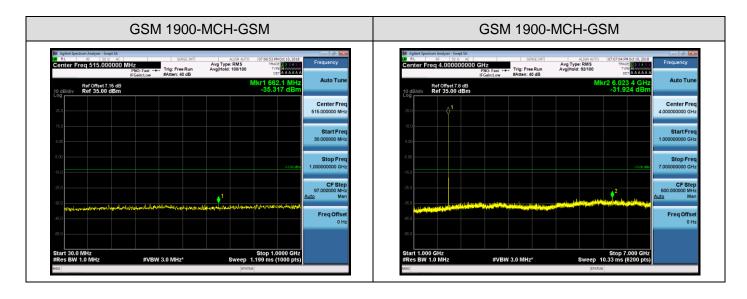


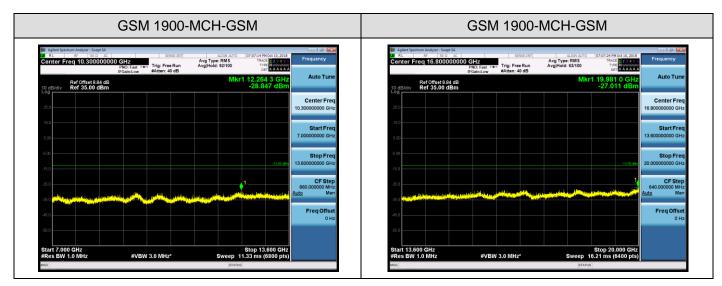
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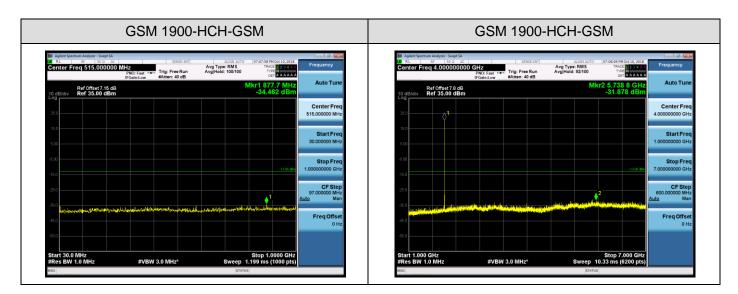








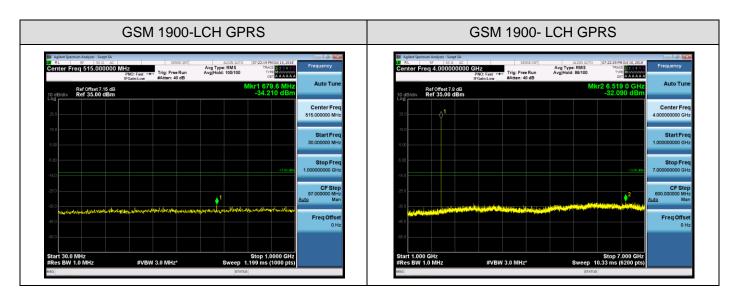




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GSM 1900-HCH-GSM	GSM 1900-HCH-GSM
Image: Experime Analysis: - Separation of the second of the sec	R  B  Status  Frequency  Frequency  Frequency  Frequency  Status  Status  Status  Status  Status  Status  Frequency  Frequency  Status  Status <th< th=""></th<>
Log 250 15.0 500 400 Center Freq 10.30000000 GHz 7.00000000 GHz 400 Stop Freq	Log Center Freq 25 0 16 80000000 GHz 15 0 13 80000000 GHz 35 0 13 80000000 GHz 35 0 500 500 500 500 500 500 500 500 500
13.000000000000000000000000000000000000	
Start 7.000 GHz  \$top 13.600 GHz    #Res BW 1.0 MHz  #VBW 3.0 MHz*  Sweep 11.33 ms (6800 pts)	Start 13.600 GHz  #VBW 3.0 MHz*  Stop 20.000 GHz    #Res BW 1.0 MHz  #VBW 3.0 MHz*  Sweep 16.21 ms (6400 pts)

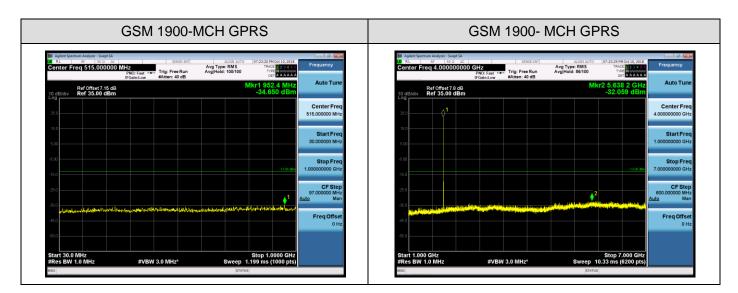




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Center Freq 10.300000		ALIGN AUTO 07:22:38 PM Oct 10, 2018 Avg Type: RMS TRACE 23 4 C Avg Hold: 85/100 TYPE Det A A A A A	Frequency	Center Freq 16.80000000 G PN IFG	SENSE:INT HZ An N: Fast →→ Trig: Free Run Av sain:Low #Atten: 40 dB	ALIGN AUTO 07:22:46 PM Oct 10, 2018 rg Type: RMS TRACE 23:44 0 g Hold: 59/100 TVPE	Frequency
Ref Offset 8.84 d 10 dB/div Ref 35.00 dBr	iB m	Mkr1 13.315 6 GHz -29.710 dBm	Auto Tune	Ref Offset 8.84 dB 10 dB/div Ref 35.00 dBm		Mkr1 19.991 0 GHz -27.462 dBm	Auto Tur
25.0			Center Freq 10.300000000 GHz	25.0			Center Fre 16.80000000 GF
5.00			Start Freq 7.000000000 GHz	5.00			Start Fre 13.60000000 GF
-5.00		-13.00 dBrt	Stop Freq 13.600000000 GHz	-5.00		-13.00 dBm	Stop Fre 20.000000000 GH
-25 0 -35 0 <b>1939</b> bis and the bis state	میں پینائی ریانی میں انداز اور	1- Saul daga sa kasar da si mina sa sa si sa si sa si sa	CF Step 660.000000 MHz Auto Man	-25.0 -35.0	and the second states and second states	1- National Contraction of the state of the	CF Ste 640.000000 MH <u>Auto</u> Ma
-45.0			Freq Offset 0 Hz	-45.0			Freq Offs 0 H

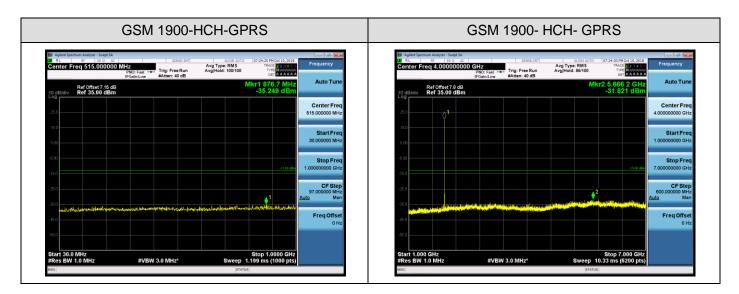




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	NO: Fast the Trig: Free Run	ALIGN AUTO 07:23:38 PM Oct 10 Avg Type: RMS TRACE vg[Hold: 85/100 Type Det AUTO	2018 Frequency	M Agilent Spectrum Analyzer - Swept SA M RL RF 50 Q AC Center Freq 16.80000000	PNO: Fast +++ Trig: Free Run	ALIGN AUTO 07:23:47 PM Oct 10, 2018 Avg Type: RMS TRACE 23:40 Avg Hold: 59/100 TVPI	Frequency
Ref Offset 8.84 dB 10 dB/div Ref 35.00 dBm	Gain:Low #Atten: 40 dB	Mkr1 12.162 3 0 -29.676 d	Auto Tune	Ref Offset 8.84 dB 10 dB/div Ref 35.00 dBm	IFGain:Low #Atten: 40 dB	Mkr1 19.943 0 GHz -27.692 dBm	Auto Tun
25.0			Center Freq 10.30000000 GHz	25.0			Center Free 16.800000000 GH;
5.00			Start Freq 7.00000000 GHz	15.D 5.00			Start Free 13.600000000 GH:
-15.0			Stop Freq 13.60000000 GHz	-5.00		-13.00 abr	Stop Free 20.000000000 GH
-25.0 -35.0	يتبال المنافق ا	1-	CF Step 660.000000 MHz Auto Man	-25.0			CF Step 640.000000 MH: <u>Auto</u> Mar
-450			Freq Offset 0 Hz	-45.0			Freq Offse 0 Hi
Start 7.000 GHz		Stop 13.600		Start 13.600 GHz		Stop 20.000 GHz	



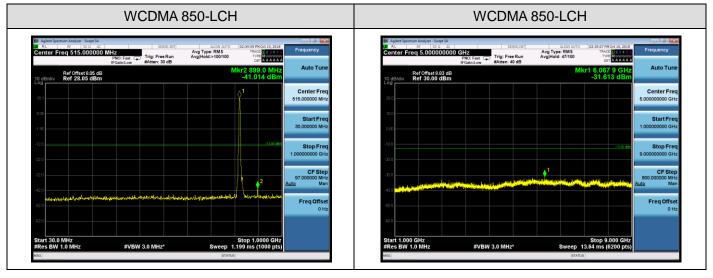


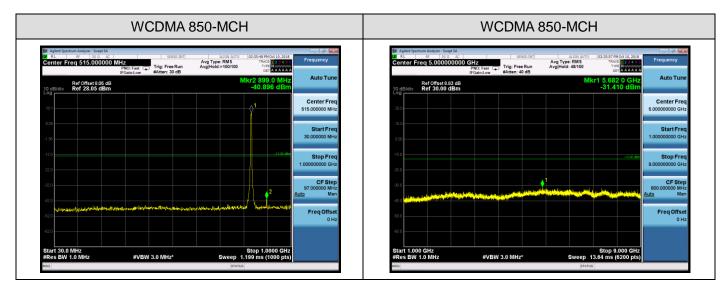
GSM 1900- HCH-GPRS	GSM 1900- HCH- GPRS
B Agent Spectra Andrez: Spectra Andrez: Spectra Spectra Andrez: Spectra Spectra Spectra Andrez: Spectra	Bit Agene Spectra Analyser - barg 55  Stotel 100  ALION 18/10  (972+47) FM G10, 2018  Frequency    Center Freq 16.8000000000 GHz Braint.ow  Trig: Free Run Addim: 40 dB  Avg Type: RMS Avg Type: RMS Avg Type: RMS  Tric: Freq 40:00  Frequency    Ref Offset 8.84 dB  Mkr1 19.059 0 GHz -27.870 dBm  Auto Tune
Statt  Statt  Statt  Freq    500  7.00000000 GHz  7.00000000 GHz	200 Center Freq 15 8000000 GHz 15 0 Start Freq 13 8000000 GHz 13 8000000 GHz 13 8000000 GHz 13 8000000 GHz
500	3.00
Start 7.000 CHz  Stop 13.600 GHz    #Res BW 1.0 MHz  #VBW 3.0 MHz*	200  Freq Offset    400  Freq Offset    400  Freq Offset    81art 13.600 GHz  Stop 20.000 GHz    #Res BW 1.0 MHz  #VBW 3.0 MHz*  Sweep 16.21 ms (6400 pts)
#Kes BW 1.0 MH2 #VBW 3.0 MH2" Sweep 11.30 HIS (8800 pts)	#Kts  BWT  #VBW 3.0 WIT2"  SWeep 16.21 IIIs (6400 pts)    Mtsc  [status]

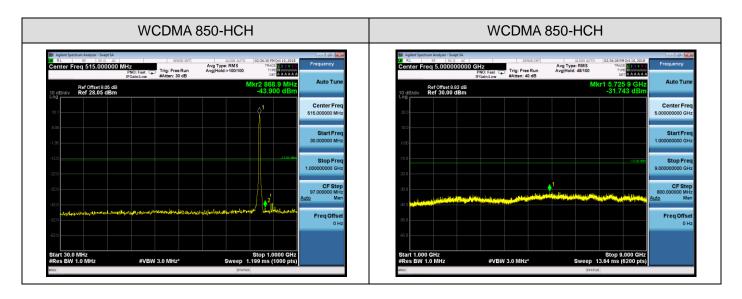


## Test Band=WCDMA850/WCDMA1900

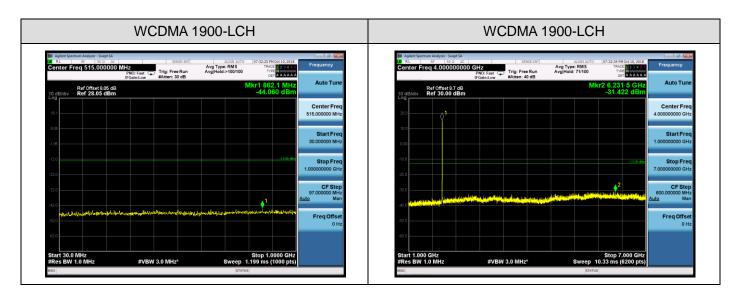
#### Test Mode=UMTS





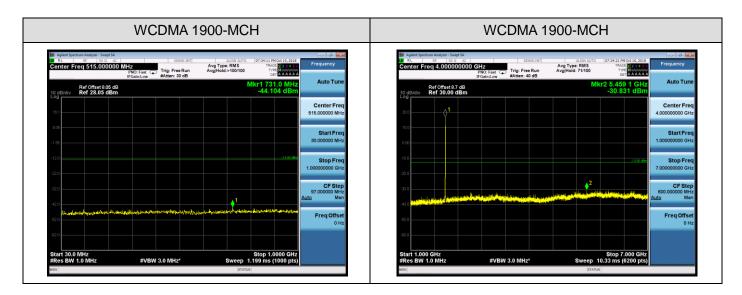






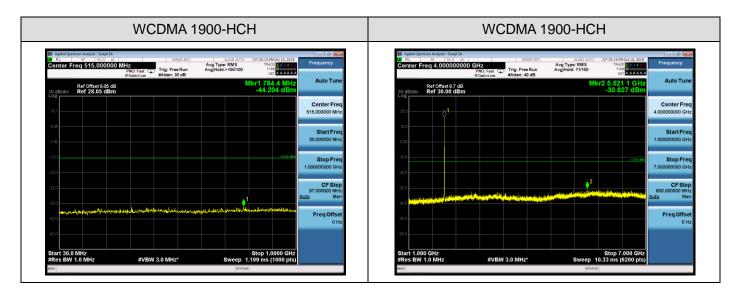
WCDMA 190	00-LCH	WCDMA 1900-LCH		
Aplier Spectrum Analyzer - Swept SA  Statuct. INT    All All INT Freq OutDOUDDOUDOUDOUDOUDOUDOUDOUDOUDOUDOUDOUDOU	Auto Tune -38.392 G GHz	Agient Speetson Andrew Source SA At a Part Source Source SA Center Freq 16.800000000 GHz Freq 1600 Ref 7541 S74 GB 10.00 Ref 75274 dBm	SINCE INT 2010 60702 51 9100 10,011 50100 10,011000 10,01000 10,010000000000	
971	Center Freq 10.30000000 GHz Start Freq 7.00000000 GHz	19.7 9.74	Center Freq 16.80000000 GHz Start Freq 13.60000000 GHz	
0.35 -163 -003	13.60000000 GH2 13.60000000 GH2	-10.3	13000000000442 230000 2000000000000000	
	FreqOffset		CF Step 640.0000 MHz Auto Man Freq Offset	
0:3 Start 7,000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz*	Stop 13.600 GHz Sweep 11.33 ms (6800 pts)	© 3 Start 13.600 GHz #Res BW 1.0 MHz #VBW 3.0	0 Hz Stop 20.000 GHz 0 MHz* Sweep 16.21 ms (6400 pts)	
мза		MSG	STATUS	

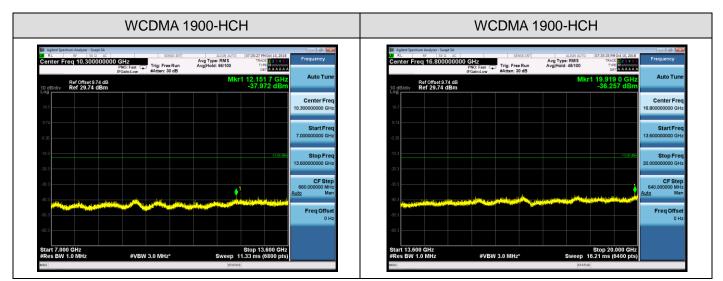




WCDMA 1900-	МСН	WCDMA 1900-MCH		
Agine Spectrum Anagurar Genet SA W Arter Freq 10.300000000 CHz Conter Freq 10.300000000 CHz FRO Fee Run FGalation Ref Others 7:4 dBm 10 dBGV Ref 20,74 dBm	In ano control frequency RMS Treater Serio Treater Mkr19.264 0 GHz -39.011 dBm	Ref Offset \$74 dB	State BM Avg Type RMs Avg Type RMs Avg Type RMs Avg Type RMs Avg Type RMs Avg Type RMs Mkr1 19.966 0 GHz -36.736 dBm	
927 924 026 	Center Freq 10.30000000 GHz 35art Freq 7.00000000 GHz 3500Freq 13.50000000 GHz	97	Center Freq 16.80000000 GHz Start Freq 13.60000000 GHz 20.0000 GHz 20.00000 GHz 20.00000 GHz	
303 303 403 403	CF Step 660.000000 MHz <u>Auto</u> Man	233 -0.3 -	CF Step 540,00000 Hi CF Step 540,00000 Hi Auto Man Freq Offset 0 Hz	
403 Start 7,000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* € Mis	Stop 13.600 CHz weep 11.33 ms (6800 pts)	6033 Start 13.600 CHz ≢Res BW 1.0 MHz ≢VEW 3.0 tito	Stop 20.000 CHz 9 MHz* Sweep 16.21 ms (6400 pts) istruti	







Note: 1. Below 30MHZ no Spurious found and Above is the worst mode data.

2. As no emission found in standby or receive mode, no recording in this report.



## 9.2 RADIATED SPURIOUS EMISSION

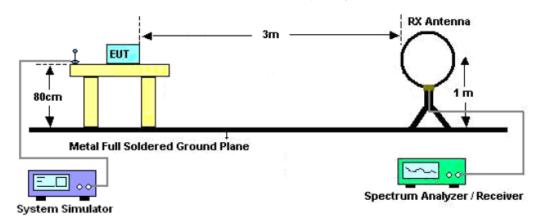
## 9.2.1MEASUREMENT METHOD

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



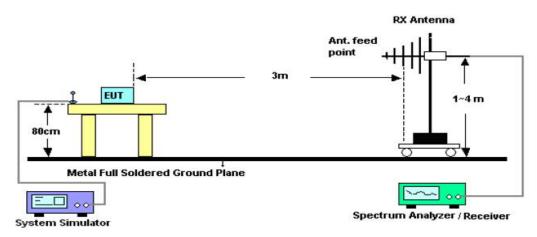
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## 9.2.2 TEST SETUP

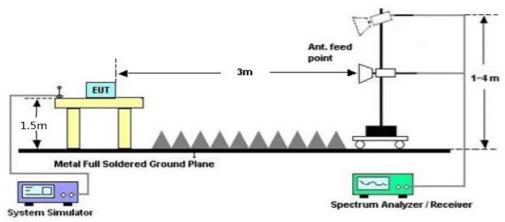


Radiated Emission Test-Setup Frequency Below 30MHz

#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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## 9.2.3 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out. **Note:** only result the worst condition of each test mode:



## 9.2.4 MEASUREMENT RESULT

# GSM 850:

The Worst Test Results for Channel 251/848.8 MHz						
Frequency	Emission Level	Limits	Margin	Comment		
(MHz)	(dBm)	(dBm)	(dB)	Comment		
1967.60	-48.44	-13.00	-35.44	Horizontal		
3256.14	-32.23	-13.00	-19.23	Horizontal		
6816.49	-45.49	-13.00	-32.49	Horizontal		
1967.60	-32.13	-13.00	-19.13	Vertical		
3425.19	-49.61	-13.00	-36.61	Vertical		
6798.55	-32.25	-13.00	-19.25	Vertical		

# GSM 850(GPRS):

The Worst Test Results for Channel 251/848.8 MHz					
Frequency	Emission Level	Limits	Margin	Comment	
(MHz)	(dBm)	(dBm)	(dB)	Comment	
1967.60	-51.74	-13.00	-38.74	Horizontal	
3317.43	-38.33	-13.00	-25.33	Horizontal	
6697.11	-48.19	-13.00	-35.19	Horizontal	
1967.60	-32.26	-13.00	-19.26	Vertical	
3315.87	-50.13	-13.00	-37.13	Vertical	
6732.53	-31.22	-13.00	-18.22	Vertical	



## PCS 1900:

	The Worst Test Results for Channel 810/1909.8MHz										
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
1346.44	-48.79	-13.00	-35.79	Horizontal							
3819.60	-30.55	-13.00	-17.55	Horizontal							
7010.15.	-47.42	-13.00	-34.42	Horizontal							
1345.38	-32.88	-13.00	-19.88	Vertical							
3819.60	-47.39	-13.00	-34.39	Vertical							
7101.44	-32.74	-13.00	-19.74	Vertical							

# PCS 1900(GPRS):

	The Worst Test Results for Channel 810/1909.8MHz										
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
1312.47	-51.44	-13.00	-38.44	Horizontal							
3819.60	-32.63	-13.00	-19.63	Horizontal							
7420.25	-49.47	-13.00	-36.47	Horizontal							
1397.42	-30.23	-13.00	-17.23	Vertical							
3819.60	-47.16	-13.00	-34.16	Vertical							
7126.44	-31.42	-13.00	-18.42	Vertical							



## HSPA band II:

	The Worst Test	Results for Channel	9538/1907.6MHz	
Frequency	Emission Level	Limits	Margin	Comment
(MHz)	(dBm)	(dBm)	(dB)	Comment
1698.44	-48.69	-13.00	-35.69	Horizontal
3815.20	-33.12	-13.00	-20.12	Horizontal
7813.42	-50.69	-13.00	-37.69	Horizontal
1723.54	-32.04	-13.00	-19.04	Vertical
3815.20	-46.36	-13.00	-33.36	Vertical
7843.59	-32.11	-13.00	-19.11	Vertical

## HSPA band V:

	The Worst Test	Results for Channel	4233/846.6MHz	
Frequency	Emission Level	Limits	Margin	Comment
(MHz)	(dBm)	(dBm)	(dB)	Comment
1693.20	-51.97	-13.00	-38.97	Horizontal
3803.22	-31.15	-13.00	-18.15	Horizontal
7655.49	-48.30	-13.00	-35.30	Horizontal
1693.20	-32.42	-13.00	-19.42	Vertical
3812.96	-43.12	-13.00	-30.12	Vertical
7569.44	-32.33	-13.00	-19.33	Vertical

# RESULT: PASS

Note:

- 1. Margin = Emission Level -Limit
- 2. Below 30MHZ no Spurious found and Above is the worst mode data.



## 10. FREQUENCY STABILITY

## **10.1 MEASUREMENT METHOD**

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

- 1 Measure the carrier frequency at room temperature.
- 2 Subject the EUT to overnight soak at  $-10^{\circ}$ C.

3 With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 for PCS 1900 band, channel 190 for GSM 850 band, channel 9400 for UMTS band II and channel 4175 for UMTS band V measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

4 Repeat the above measurements at  $10^{\circ}$ C increments from  $-10^{\circ}$ C to  $+50^{\circ}$ C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

5 Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

6 Subject the EUT to overnight soak at +50℃.

7 With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

8 Repeat the above measurements at  $10^{\circ}$ C increments from  $+50^{\circ}$ C to  $-10^{\circ}$ C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

9 At all temperature levels hold the temperature to  $\pm -0.5^{\circ}$  during the measurement procedure.



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### **10.2 PROVISIONS APPLICABLE**

## **10.2.1 FOR HAND CARRIED BATTERY POWERED EQUIPMENT**

According to the ANSI/TIA-603-E-2016, the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.4VDC and 4.2VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

### **10.2.2 FOR EQUIPMENT POWERED BY PRIMARY SUPPLY VOLTAGE**

According to the ANSI/TIA-603-E-2016, the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment, the normal environment temperature is 20°C.



## **10.3 MEASUREMENT RESULT**

# Test Results

Frequency Error vs. Voltage:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Temp.	Volt.(V)	(Hz)	(ppm)	(ppm)	Verdict
			TN	VL	7.04	0.01	±2.5	PASS
		LCH	TN	VN	6.33	0.01	±2.5	PASS
			TN	VH	7.04	0.01	±2.5	PASS
		И МСН	TN	VL	8.98	0.01	±2.5	PASS
GSM850	GSM		TN	VN	7.23	0.01	±2.5	PASS
			TN	VH	6.59	0.01	±2.5	PASS
			TN	VL	8.46	0.01	±2.5	PASS
		НСН	TN	VN	10.46	0.01	±2.5	PASS
			TN	VH	6.97	0.01	±2.5	PASS

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vardiat
Band	Mode	Channel	Temp.	Volt.(V)	(Hz)	(ppm)	(ppm)	Verdict
			TN	VL	9.94	0.01	±2.5	PASS
		LCH	TN	VN	11.56	0.01	±2.5	PASS
			TN	VH	9.43	0.01	±2.5	PASS
		МСН	TN	VL	5.42	0.01	±2.5	PASS
GSM850	GPRS		TN	VN	5.55	0.01	±2.5	PASS
			TN	VH	4.46	0.01	±2.5	PASS
			TN	VL	11.11	0.01	±2.5	PASS
		НСН	TN	VN	10.78	0.01	±2.5	PASS
			TN	VH	8.01	0.01	±2.5	PASS



Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Temp.	Volt. (V)	(Hz)	(ppm)	(ppm)	
			ΤN	VL	22.41	0.01	±2.5	PASS
		LCH	ΤN	VN	18.85	0.01	±2.5	PASS
			ΤN	VH	21.05	0.01	±2.5	PASS
PCS		GSM MCH	ΤN	VL	21.76	0.01	±2.5	PASS
1900	GSM		ΤN	VN	22.28	0.01	±2.5	PASS
1900			ΤN	VH	20.53	0.01	±2.5	PASS
			TN	VL	19.37	0.01	±2.5	PASS
		НСН	TN	VN	20.15	0.01	±2.5	PASS
			TN	VH	17.43	0.01	±2.5	PASS

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Temp.	Volt. (V)	(Hz)	(ppm)	(ppm)	
			ΤN	VL	20.15	0.01	±2.5	PASS
		LCH	ΤN	VN	19.95	0.01	±2.5	PASS
			ΤN	VH	22.21	0.01	±2.5	PASS
PCS		RS MCH	ΤN	VL	14.85	0.01	±2.5	PASS
1900	GPRS		ΤN	VN	17.50	0.01	±2.5	PASS
1900			ΤN	VH	18.98	0.01	±2.5	PASS
	ŀ		ΤN	VL	18.27	0.01	±2.5	PASS
		HCH	TN	VN	16.08	0.01	±2.5	PASS
			TN	VH	17.43	0.01	±2.5	PASS



# Frequency Error vs. Temperature:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vordiat
Band	Mode	Channel	Volt.	<b>Tem. (°</b> ℃)	(Hz)	(ppm)	(ppm)	Verdict
			VN	-10	7.88	0.01	±2.5	PASS
			VN	0	7.30	0.01	±2.5	PASS
			VN	10	7.75	0.01	±2.5	PASS
GSM850	GSM	LCH	VN	20	8.27	0.01	±2.5	PASS
			VN	30	9.56	0.01	±2.5	PASS
			VN	40	9.04	0.01	±2.5	PASS
			VN	50	7.10	0.01	±2.5	PASS
			VN	-10	8.59	0.01	±2.5	PASS
		МСН	VN	0	7.62	0.01	±2.5	PASS
			VN	10	8.98	0.01	±2.5	PASS
GSM850	GSM		VN	20	6.20	0.01	±2.5	PASS
			VN	30	10.91	0.01	±2.5	PASS
			VN	40	6.78	0.01	±2.5	PASS
			VN	50	6.72	0.01	±2.5	PASS
			VN	-10	8.98	0.01	±2.5	PASS
			VN	0	11.17	0.01	±2.5	PASS
			VN	10	6.46	0.01	±2.5	PASS
GSM850	GSM	HCH	VN	20	8.07	0.01	±2.5	PASS
			VN	30	11.24	0.01	±2.5	PASS
			VN	40	11.75	0.01	±2.5	PASS
			VN	50	8.91	0.01	±2.5	PASS



Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vordiat
Band	Mode	Channel	Volt.	<b>Tem. (</b> ℃)	(Hz)	(ppm)	(ppm)	Verdict
			VN	-10	7.55	0.01	±2.5	PASS
			VN	0	7.94	0.01	±2.5	PASS
			VN	10	2.26	0.00	±2.5	PASS
GSM850	GPRS	LCH	VN	20	4.65	0.01	±2.5	PASS
			VN	30	5.94	0.01	±2.5	PASS
			VN	40	7.36	0.01	±2.5	PASS
			VN	50	7.36	0.01	±2.5	PASS
		МСН	VN	-10	2.39	0.00	±2.5	PASS
			VN	0	7.62	0.01	±2.5	PASS
			VN	10	6.46	0.01	±2.5	PASS
GSM850	GPRS		VN	20	5.94	0.01	±2.5	PASS
			VN	30	10.01	0.01	±2.5	PASS
			VN	40	10.59	0.01	±2.5	PASS
			VN	50	4.33	0.01	±2.5	PASS
			VN	-10	4.20	0.00	±2.5	PASS
			VN	0	9.36	0.01	±2.5	PASS
			VN	10	5.17	0.01	±2.5	PASS
GSM850	GPRS	S HCH	VN	20	8.20	0.01	±2.5	PASS
			VN	30	7.43	0.01	±2.5	PASS
			VN	40	6.46	0.01	±2.5	PASS
			VN	50	1.36	0.00	±2.5	PASS



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Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vordiat
Band	Mode	Channel	Volt.	<b>Tem. (</b> ℃)	(Hz)	(ppm)	(ppm)	Verdict
			VN	-10	26.09	0.01	±2.5	PASS
			VN	0	21.24	0.01	±2.5	PASS
PCS			VN	10	20.08	0.01	±2.5	PASS
1900	GSM	LCH	VN	20	25.57	0.01	±2.5	PASS
1900			VN	30	23.83	0.01	±2.5	PASS
			VN	40	24.28	0.01	±2.5	PASS
			VN	50	22.86	0.01	±2.5	PASS
			VN	-10	22.99	0.01	±2.5	PASS
		И МСН	VN	0	22.08	0.01	±2.5	PASS
PCS			VN	10	21.18	0.01	±2.5	PASS
1900	GSM		VN	20	24.15	0.01	±2.5	PASS
1900			VN	30	25.57	0.01	±2.5	PASS
			VN	40	21.76	0.01	±2.5	PASS
			VN	50	21.83	0.01	±2.5	PASS
			VN	-10	15.24	0.01	±2.5	PASS
			VN	0	18.85	0.01	±2.5	PASS
DCC			VN	10	20.21	0.01	±2.5	PASS
PCS 1900	GSM	НСН	VN	20	19.37	0.01	±2.5	PASS
1900			VN	30	21.76	0.01	±2.5	PASS
			VN	40	14.72	0.01	±2.5	PASS
			VN	50	18.79	0.01	±2.5	PASS



## Frequency Error vs. Voltage:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Vordiat
Band	Mode	Channel	Temp.	Volt.(V)	(Hz)	(ppm)	(ppm)	Verdict
			ΤN	VL	-1.36	0.00	±2.5	PASS
		LCH	TN	VN	-2.11	0.00	±2.5	PASS
			TN	VH	2.43	0.00	±2.5	PASS
		МСН	TN	VL	-0.32	0.00	±2.5	PASS
WCDMA850	UMTS		TN	VN	0.43	0.00	±2.5	PASS
			TN	VH	-2.67	0.00	±2.5	PASS
			ΤN	VL	5.00	0.01	±2.5	PASS
			TN	VN	2.58	0.00	±2.5	PASS
			TN	VH	0.12	0.00	±2.5	PASS

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Temp.	Volt.(V)	(Hz)	(ppm)	(ppm)	
WCDMA1900	UMTS	LCH	ΤN	VL	30.50	0.02	±2.5	PASS
			ΤN	VN	30.49	0.02	±2.5	PASS
			ΤN	VH	35.58	0.02	±2.5	PASS
		МСН	ΤN	VL	34.53	0.02	±2.5	PASS
			ΤN	VN	24.93	0.01	±2.5	PASS
			ΤN	VH	31.95	0.02	±2.5	PASS
		НСН	ΤN	VL	38.93	1.72	±2.5	PASS
			ΤN	VN	46.47	2.15	±2.5	PASS
			ΤN	VH	13.79	0.72	±2.5	PASS



# Frequency Error vs. Temperature:

Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	Verdict
Band	Mode	Channel	Volt.	<b>Tem. (℃)</b>	(Hz)	(ppm)	(ppm)	verdict
WCDMA850	UMTS	LCH	VN	-10	-1.42	0.00	±2.5	PASS
			VN	0	-2.91	0.00	±2.5	PASS
			VN	10	1.37	0.00	±2.5	PASS
			VN	20	-1.51	0.00	±2.5	PASS
			VN	30	-0.15	0.00	±2.5	PASS
			VN	40	1.80	0.00	±2.5	PASS
			VN	50	-0.03	0.00	±2.5	PASS
WCDMA850	UMTS	MCH	VN	-10	0.14	0.00	±2.5	PASS
			VN	0	-5.02	-0.01	±2.5	PASS
			VN	10	3.66	0.00	±2.5	PASS
			VN	20	2.62	0.00	±2.5	PASS
			VN	30	-1.14	0.00	±2.5	PASS
			VN	40	1.05	0.00	±2.5	PASS
			VN	50	-1.43	0.00	±2.5	PASS
WCDMA850	UMTS	нсн	VN	-10	0.24	0.00	±2.5	PASS
			VN	0	5.54	0.01	±2.5	PASS
			VN	10	2.96	0.00	±2.5	PASS
			VN	20	4.18	0.00	±2.5	PASS
			VN	30	5.83	0.01	±2.5	PASS
			VN	40	10.31	0.01	±2.5	PASS
			VN	50	0.09	0.00	±2.5	PASS

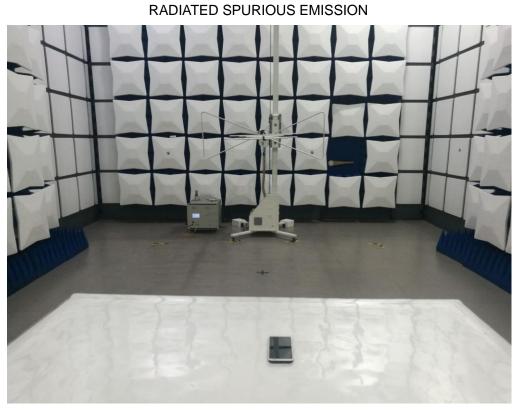


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Test	Test	Test	Test	Test	Freq.Error	Freq.vs.rated	Limit	) (and ist
Band	Mode	Channel	Volt.	<b>Tem. (°</b> C)	(Hz)	(ppm)	(ppm)	Verdict
WCDMA1900	UMTS	LCH	VN	-10	33.23	0.02	±2.5	PASS
			VN	0	28.69	0.02	±2.5	PASS
			VN	10	32.46	0.02	±2.5	PASS
			VN	20	27.69	0.01	±2.5	PASS
			VN	30	23.68	0.01	±2.5	PASS
			VN	40	33.72	0.02	±2.5	PASS
			VN	50	143.97	0.08	±2.5	PASS
	UMTS	MCH	VN	-10	30.49	0.02	±2.5	PASS
			VN	0	27.80	0.01	±2.5	PASS
			VN	10	26.96	0.01	±2.5	PASS
WCDMA1900			VN	20	28.95	0.02	±2.5	PASS
			VN	30	26.60	0.01	±2.5	PASS
			VN	40	30.62	0.02	±2.5	PASS
			VN	50	27.51	0.01	±2.5	PASS
WCDMA1900	UMTS	нсн	VN	-10	4692.29	2.46	±2.5	PASS
			VN	0	3319.57	1.74	±2.5	PASS
			VN	10	1512.60	0.79	±2.5	PASS
			VN	20	1792.21	0.94	±2.5	PASS
			VN	30	2767.23	1.45	±2.5	PASS
			VN	40	2687.00	1.41	±2.5	PASS
			VN	50	2999.68	1.57	±2.5	PASS



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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED SPURIOUS ABOVE 1G EMISSION



# ----END OF REPORT----