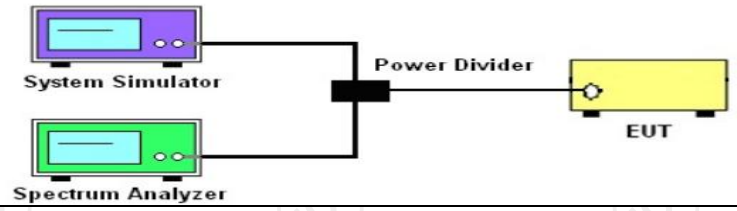
6.4. Band Edge and Conducted Spurious Emission Measurement

6.4.1. Test Specification

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Operation mode:	Refer to item 4.1
Limit:	-13dBm
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 6.0. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The band edges of low and high channels for the highest RF powers were measured. 5. The conducted spurious emission for the whole frequency range was taken. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
Test Result:	PASS

6.4.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-02	N/A	Sep. 27, 2018

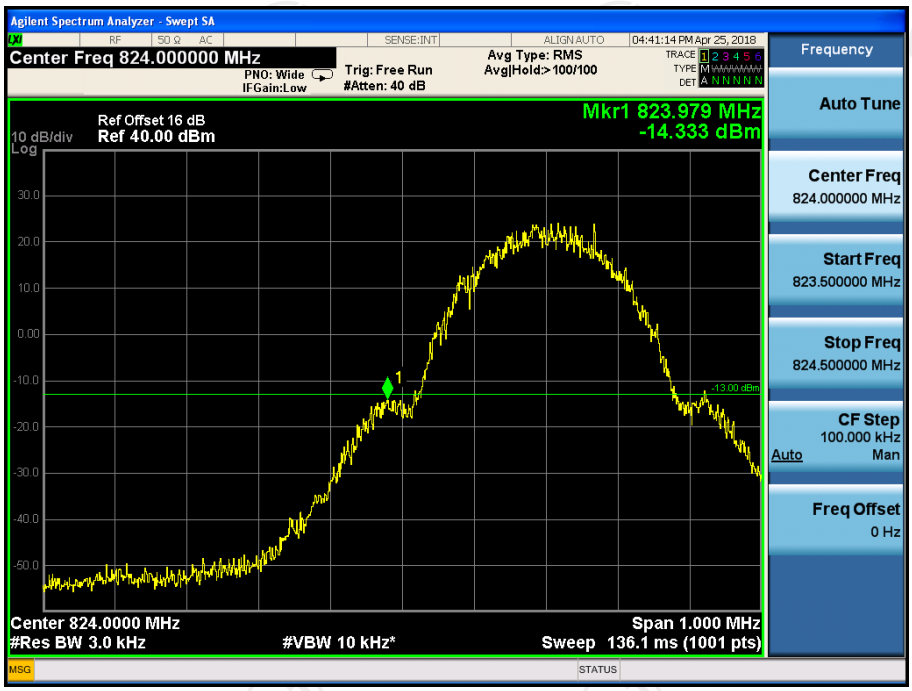
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.4.3. Test data

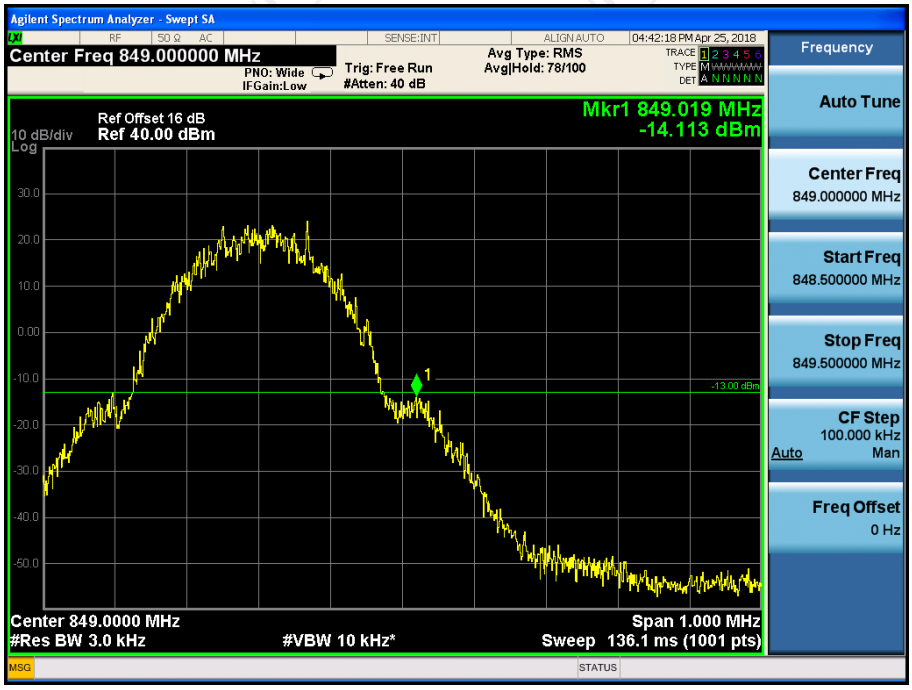
Test plots as follows:

Band:	GSM 850	Test Mode:	GSM Link (GMSK)

Lower Band Edge Plot on Channel 128

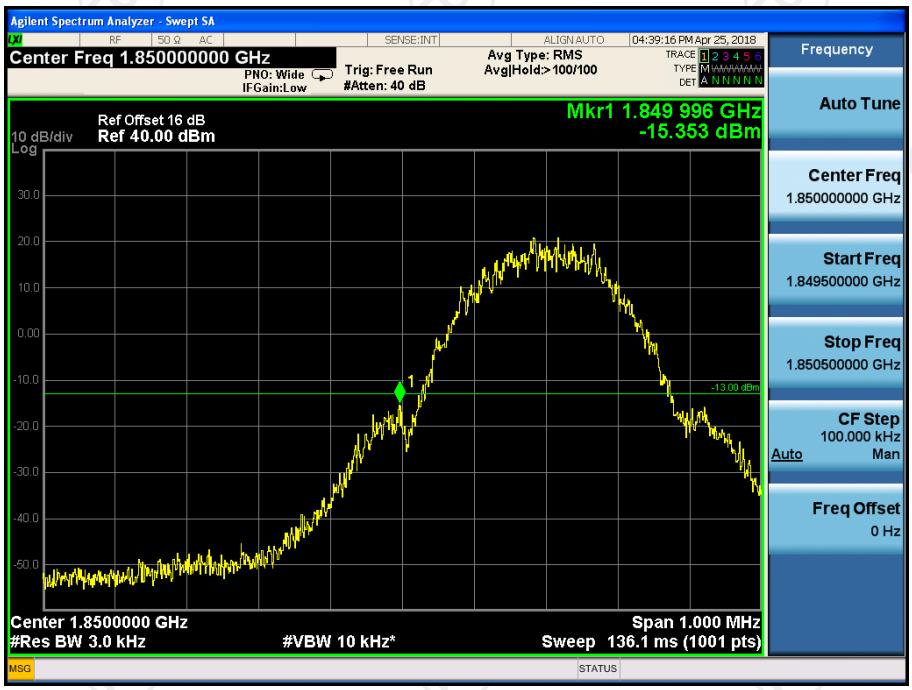


Higher Band Edge Plot on Channel 251



Band:	GSM 1900	Test Mode:	GSM Link (GMSK)

Lower Band Edge Plot on Channel 512

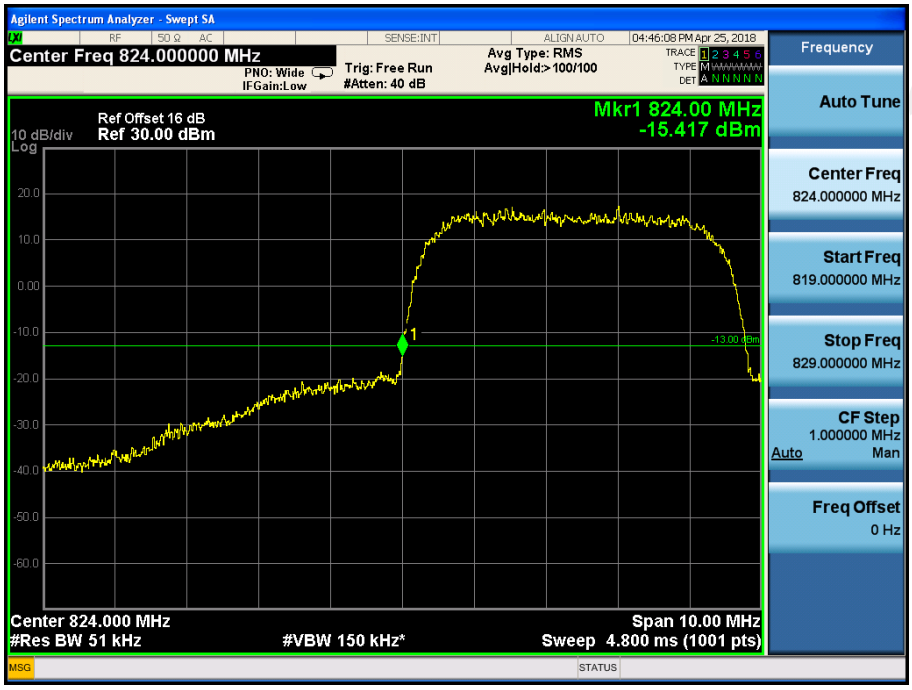


Higher Band Edge Plot on Channel 810

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Band:	WCDMA Band V	Test Mode:	RMC 12.2Kbps Link (QPSK)

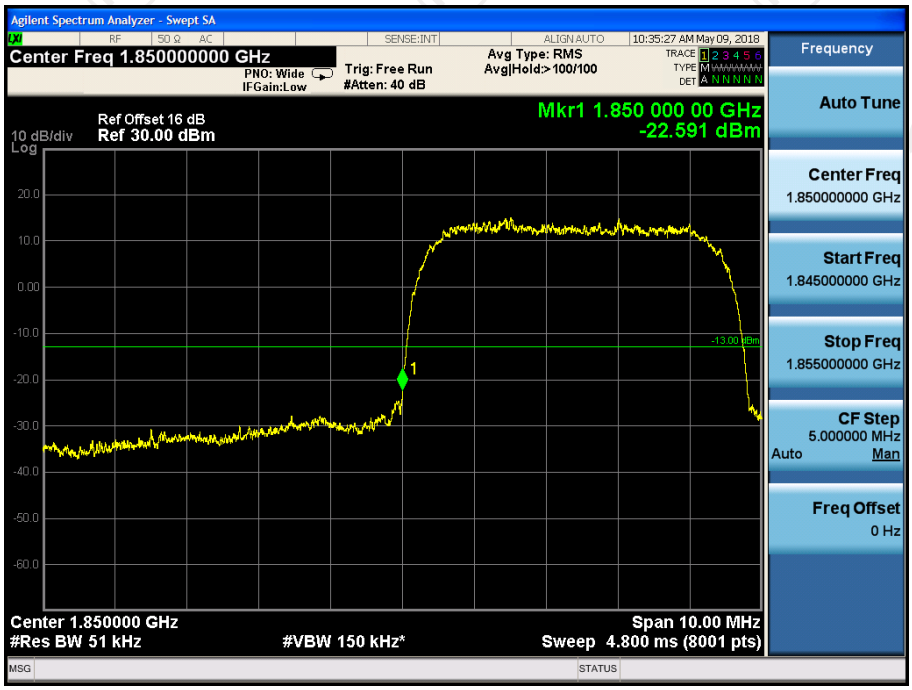
Lower Band Edge Plot on Channel 4132



Higher Band Edge Plot on Channel 4233

Band:	WCDMA Band II	Test Mode:	RMC 12.2Kbps Link (QPSK)

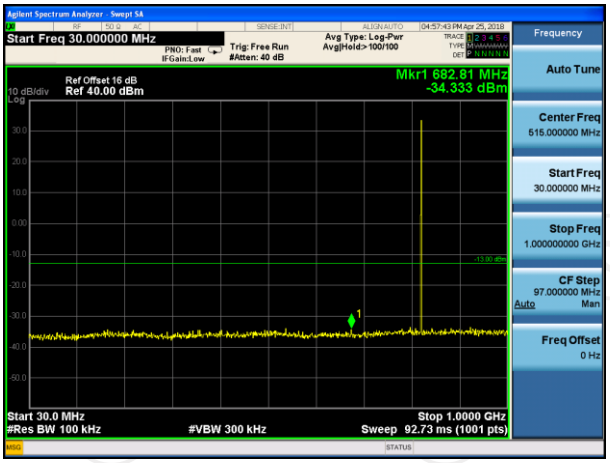
Lower Band Edge Plot on Channel 9262

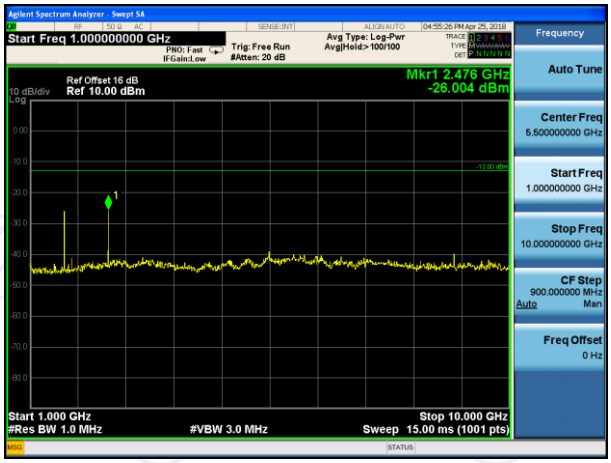


Higher Band Edge Plot on Channel 9538

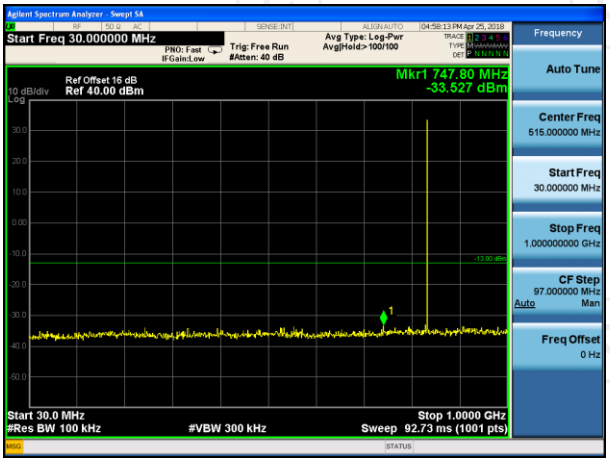
Band:	GSM 850	Test Mode:	GSM Link (GMSK)

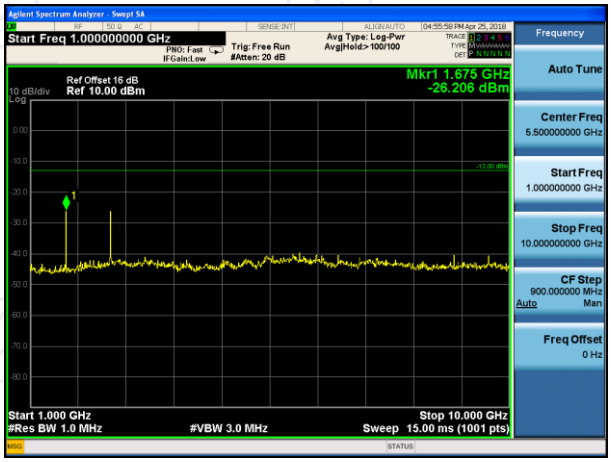
Conducted Spurious Emission on Channel 128



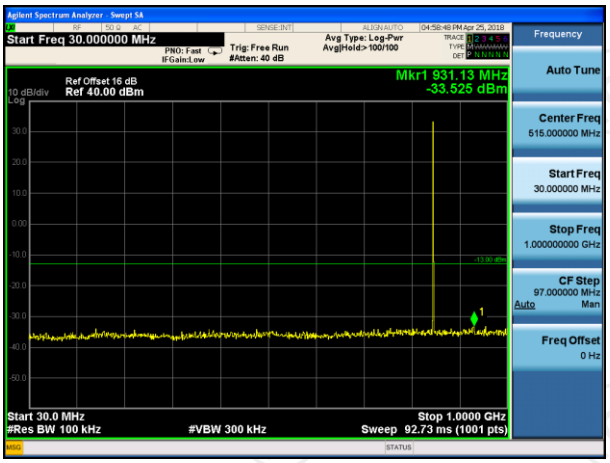


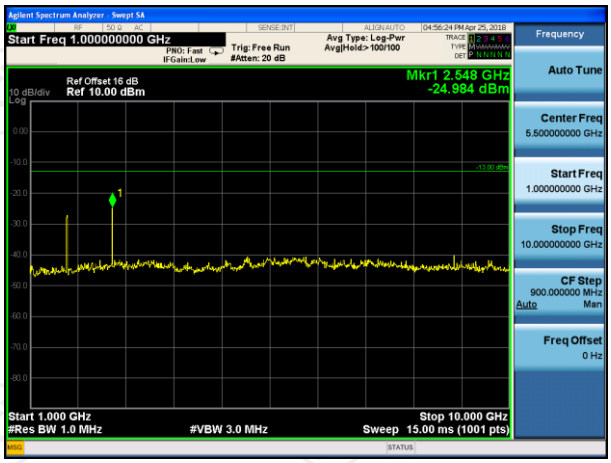
Conducted Spurious Emission on Channel 189





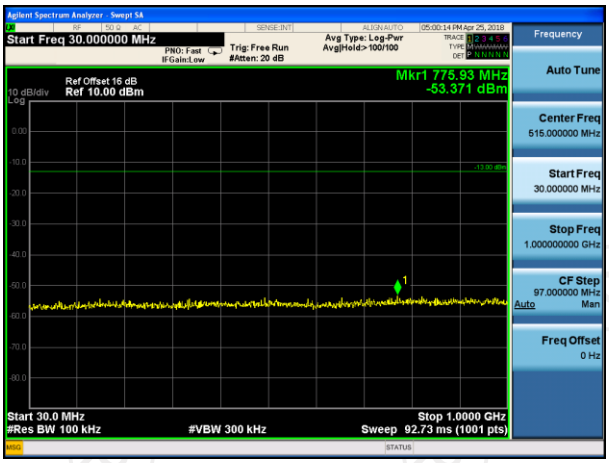
Conducted Spurious Emission on Channel 251



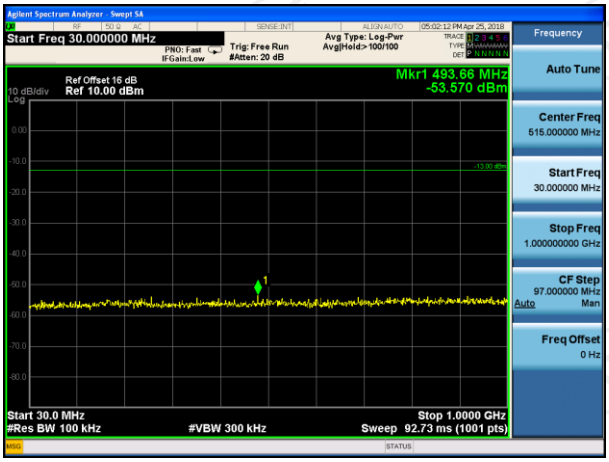


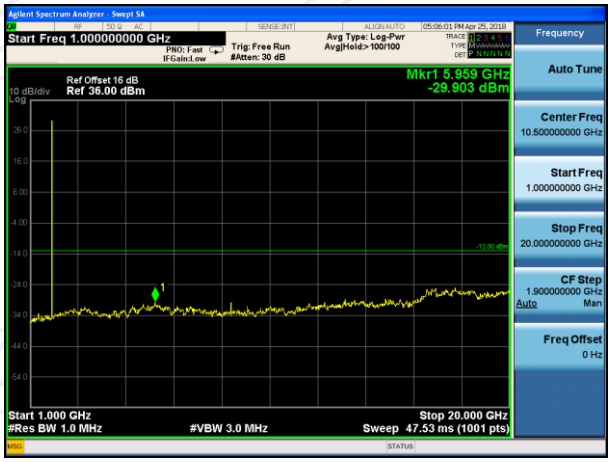
Band:	GSM 1900	Test Mode:	GSM Link (GMSK)

Conducted Spurious Emission on Channel 512

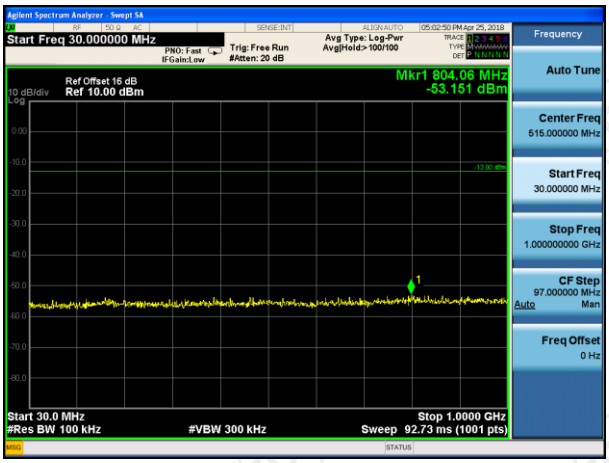


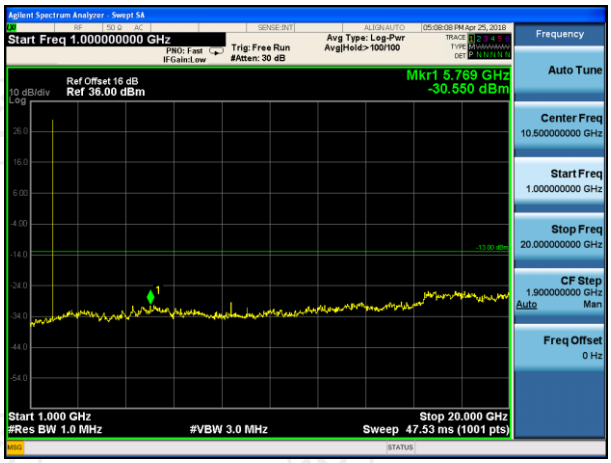
Conducted Spurious Emission on Channel 661





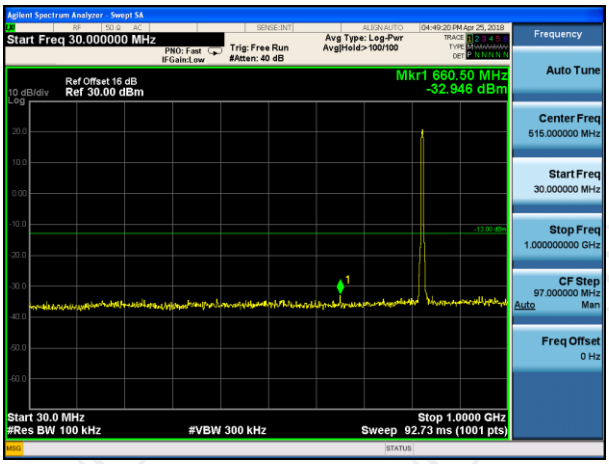
Conducted Spurious Emission on Channel 810

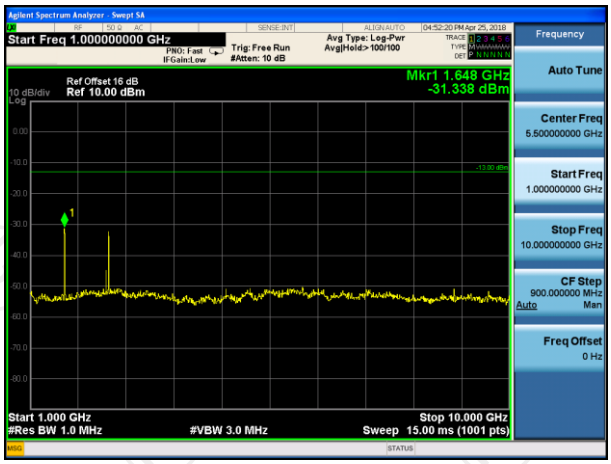




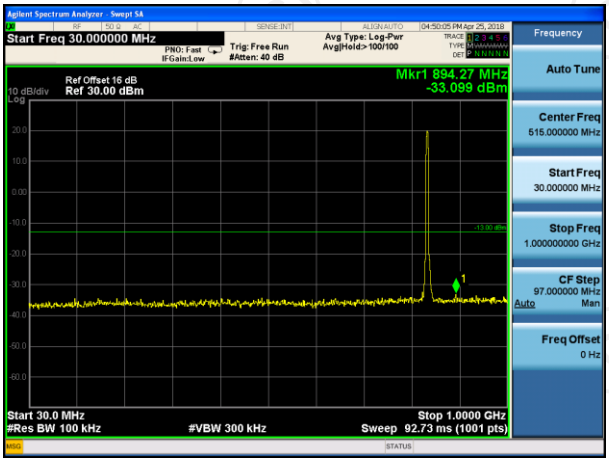
Band:	WCDMA Band V	Test Mode:	RMC 12.2Kbps Link (QPSK)

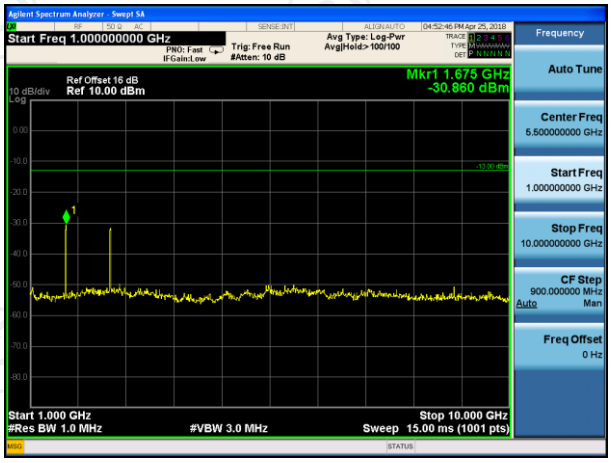
Conducted Spurious Emission on Channel 4132



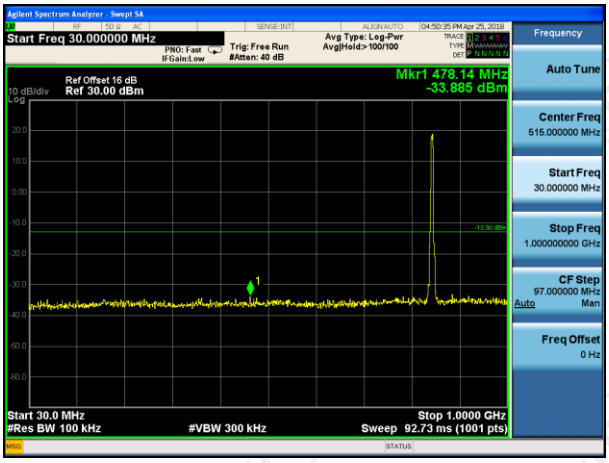


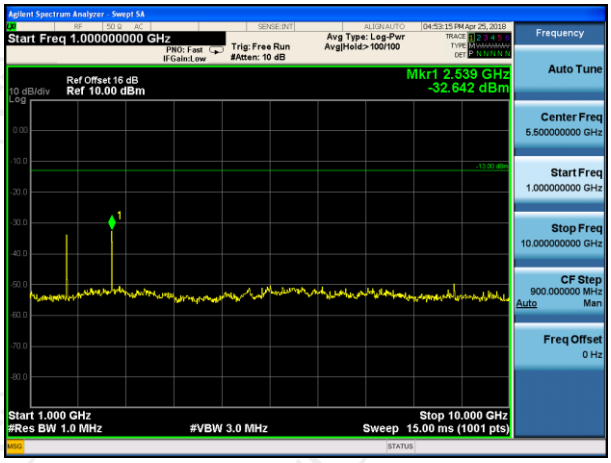
Conducted Spurious Emission on Channel 4183





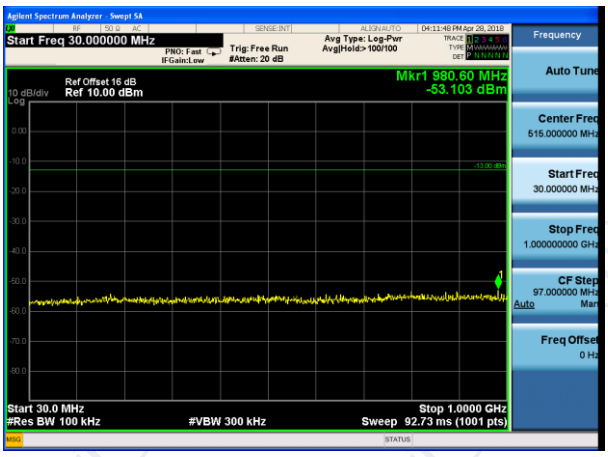
Conducted Spurious Emission on Channel 4233



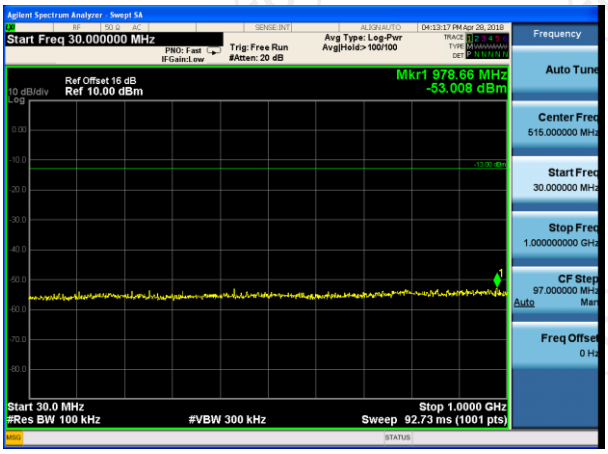


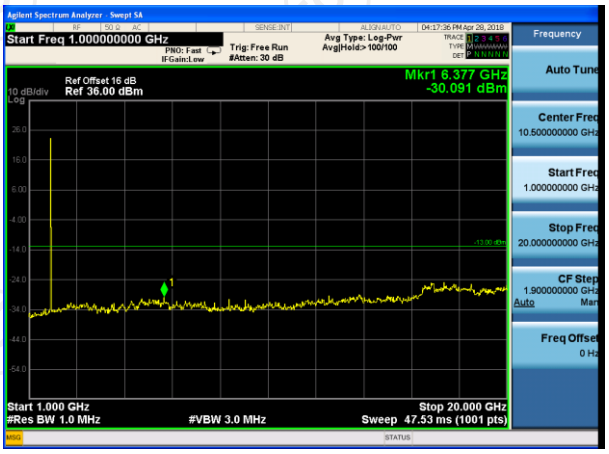
Band:	WCDMA Band II	Test Mode:	RMC 12.2Kbps Link (QPSK)

Conducted Spurious Emission on Channel 9262

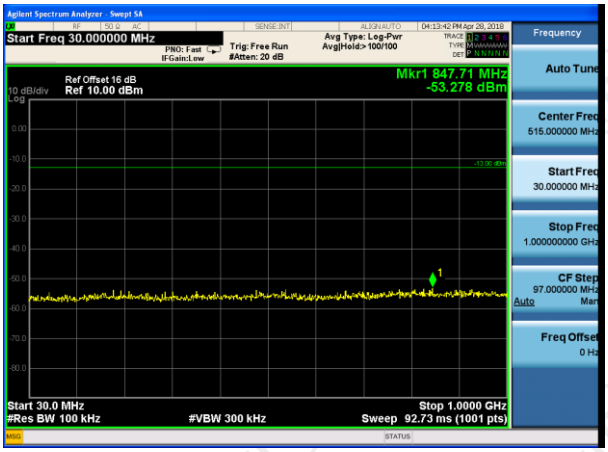


Conducted Spurious Emission on Channel 9400





Conducted Spurious Emission on Channel 9538



6.5. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

6.5.1. Test Specification

Test Requirement: FCC part 22.913(a) and FCC part 24.232(b)

Test Method: FCC part 2.1046

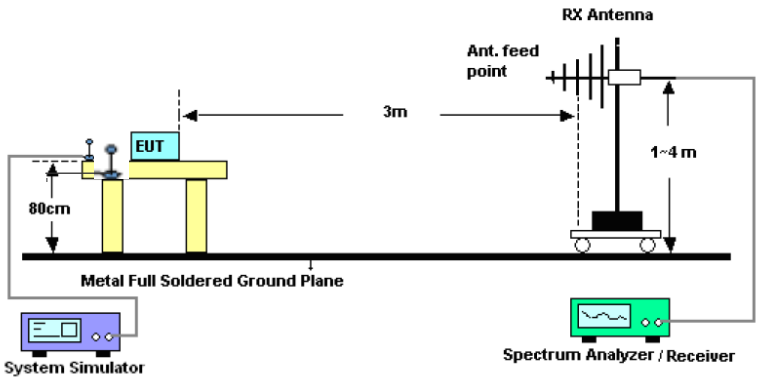
Receiver Setup:

	GSM/GPRS/EDGE	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

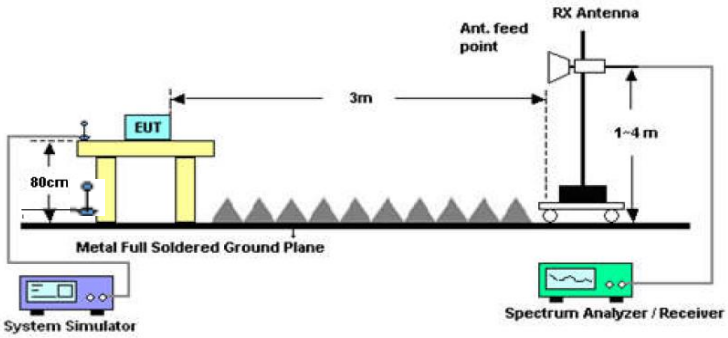
Limit:
GSM850 7W ERP
PCS1900 2W EIRP
WCDMA Band V: 7W ERP
WCDMA Band II: 2W EIRP

Test Setup:

From 30MHz to 1GHz



Above 1GHz



Test Procedure:
1. The testing follows FCC KDB 971168 D01v03 Section 5.8. and ANSI / TIA-603-D-2010 Section

	2.2.17. 2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01v03. 3. Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. 4. Replace the transmitter under test with a substitution antenna. The center of the antenna should be at the same location as the center of the antenna under test. 5. Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. LOSS = Generator Output Power (dBm) – Analyzer reading (dBm) 6. Determine the effective radiated output power at each angular position from the readings in steps 3) and 5) using the following equation: ERP (dBm) = LVL (dBm) + LOSS (dB) 7. The maximum ERP is the maximum value determined in the preceding step. 8. Calculating ERP: ERP (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBd) Antenna Gain (dBd) = Antenna Gain (dBi) - 2.15 EIRP = ERP – 2.15
Test results:	PASS

6.5.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	R&S	FSQ	Sep. 27, 2018
Signal Generator	HP	83623B	3614A00396	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	412	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	1201	Mar. 05, 2018
Dipole Antenna	TCT	TCT-RF	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Sep. 27, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5.3. Test Data

Test Result of ERP

GSM850 (GSM) Radiated Power ERP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.20	H	11.85	21.66	31.03	1.27
836.60	H	12.23	21.54	31.22	1.32
848.80	H	12.12	21.46	30.68	1.17
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.20	H	11.08	21.66	30.59	1.15
836.60	H	11.24	21.54	30.63	1.16
848.80	H	11.15	21.46	30.46	1.11

GPRS 850 (1-solt) Radiated Power ERP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.20	H	10.82	21.66	30.33	1.08
836.60	H	10.98	21.54	30.37	1.09
848.80	H	10.76	21.46	30.07	1.02
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.20	H	10.15	21.66	29.66	0.92
836.60	H	10.28	21.54	29.67	0.93
848.80	H	10.07	21.46	29.38	0.87

***Note**: All GPRS slot have been tested, but only the worst GPRS 1-slot show in this test item.*
** ERP = LVL (dBm) + Correction Factor (dB) – 2.15*
Correction Factor= S.G. Power - Cable loss + Antenna Gain- SPA. Reading

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
826.40	H	2.15	21.62	21.62	0.15
836.60	H	2.43	21.57	21.85	0.15
846.60	H	2.27	21.44	21.56	0.14
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
826.40	H	1.82	21.62	21.29	0.13
836.60	H	1.91	21.57	21.33	0.14
846.60	H	1.76	21.44	21.05	0.13

** ERP = LVL (dBm) + Correction Factor (dB) – 2.15*
Correction Factor= S.G. Power - Cable loss + Antenna Gain- SPA. Reading

Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1850.20	H	7.42	21.66	29.08	0.81
1880.00	H	7.73	21.54	29.27	0.85
1909.80	H	7.57	21.46	29.03	0.80
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1850.20	H	6.62	21.66	28.28	0.67
1880.00	H	6.82	21.54	28.36	0.69
1909.80	H	6.57	21.46	28.03	0.64

GPRS1900 (1-solt) Radiated Power EIRP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1850.20	H	7.68	21.66	29.34	0.86
1880.00	H	7.35	21.54	28.89	0.77
1909.80	H	7.51	21.46	28.97	0.79
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1850.20	H	6.68	21.66	28.34	0.68
1880.00	H	6.45	21.54	27.99	0.63
1909.80	H	6.27	21.46	27.73	0.59

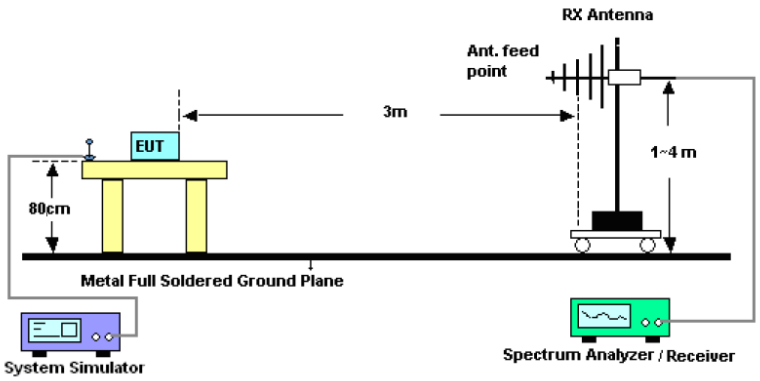
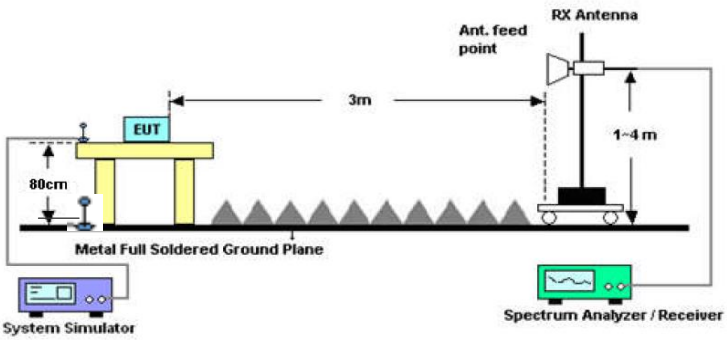
***Note**: All GPRS slot have been tested, but only the worst GPRS 1-slot show in this test item.*

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1852.40	H	-10.41	31.78	21.37	0.14
1880.00	H	-10.76	31.63	20.87	0.12
1907.60	H	-10.28	31.75	21.47	0.14
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
1852.40	H	-12.85	31.85	18.93	0.08
1880.00	H	-13.28	31.39	18.35	0.07
1907.60	H	-12.55	31.67	19.20	0.08

** EIRP = LVL (dBm) + Correction Factor (dB)*
Correction Factor= S.G. Power - Cable loss + Substitution Antenna Gain- SPA. Reading

6.6. Field Strength of Spurious Radiation Measurement

6.6.1. Test Specification

Test Requirement:	FCC part 22.917(a) and FCC part 24.238(a)
Test Method:	FCC part 2.1053
Operation mode:	Refer to item 4.1
Limit:	-13dBm
Test setup:	For 30MHz~1GHz  Above 1GHz 
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12. 2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower. 4. The table was rotated 360 degrees to determine the position of the highest spurious emission. 5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations. 6. Make the measurement with the spectrum analyzer's

	RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission. 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission. 9. Taking the record of output power at antenna port. 10. Repeat step 7 to step 8 for another polarization. 11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain 12. ERP (dBm) = EIRP - 2.15 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
Test results:	PASS
Remark:	All modulations have been tested, but only the worst modulation show in this test item.

6.6.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	R&S	FSQ	Sep. 27, 2018
Signal Generator	HP	83623B	3614A00396	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	412	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	1201	Mar. 05, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Dipole Antenna	TCT	TCT-RF	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Sep. 27, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.6.3. Test Data

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
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Note: *1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor*

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

Band	GSM 850		Test channel:	Lowest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-42.70	-13.00	PASS
2472.60	V	-39.41		
3296.80	V	-50.87		
1648.40	Horizontal	-42.61		
2472.60	H	-38.50		
3296.80	H	-52.18		
Band	GSM 850		Test channel:	Middle
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-42.21	-13.00	PASS
2509.80	V	-44.78		
3346.40	V	-52.59		
1673.20	Horizontal	-42.66		
2509.80	H	-39.35		
3346.40	H	-52.82		
Band	GSM 850		Test channel:	Highest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-39.75	-13.00	PASS
2546.40	V	-41.65		
3395.20	V	-52.29		
1697.60	Horizontal	-41.11		
2546.40	H	-46.01		
3395.20	H	-52.55		

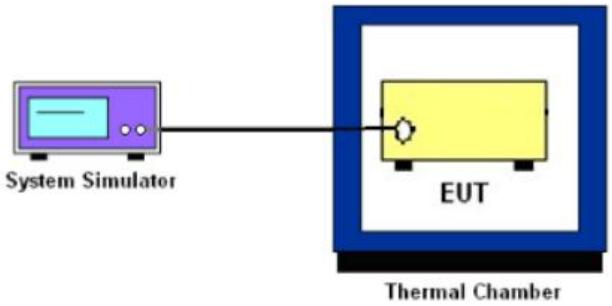
Band	PCS 1900		Test channel:	Lowest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-48.60	-13.00	PASS
5550.60	V	-45.39		
7400.80	V	-52.98		
3700.40	Horizontal	-46.21		
5550.60	H	-50.73		
7400.80	H	-49.50		
Test mode:	PCS 1900		Test channel:	Middle
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-49.10	-13.00	PASS
5640.00	V	-51.05		
7520.00	V	-44.10		
3760.00	Horizontal	-45.87		
5640.00	H	-53.35		
7520.00	H	-52.96		
Test mode:	PCS 1900		Test channel:	Highest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-46.13	-13.00	PASS
5729.40	V	-52.85		
7639.20	V	-50.41		
3819.60	Horizontal	-48.22		
5729.40	H	-52.78		
7639.20	H	-54.08		

Band	WCDMA Band V		Test channel:	Lowest
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1652.80	Vertical	-52.22	-13.00	PASS
2479.20	V	-51.78		
3305.60	V	-52.10		
1652.80	Horizontal	-49.62		
2479.20	H	-48.43		
3305.60	H	-52.61		
Test mode:	WCDMA Band V		Test channel:	Middle
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-53.06	-13.00	PASS
2509.80	V	-51.74		
3346.40	V	-52.98		
1673.20	Horizontal	-54.78		
2509.80	H	-49.66		
3346.40	H	-53.01		
Test mode:	WCDMA Band V		Test channel:	Highest
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1693.20	Vertical	-55.04	-13.00	PASS
2539.80	V	-52.39		
3386.40	V	-50.87		
1693.20	Horizontal	-52.75		
2539.80	H	-50.58		
3386.40	H	-54.19		

Band	WCDMA Band II		Test channel:	Lowest
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-49.86	-13.00	PASS
5557.20	V	-52.06		
7409.60	V	-52.25		
3704.80	Horizontal	-48.32		
5557.20	H	-51.76		
7409.60	H	-50.47		
Test mode:	WCDMA Band II		Test channel:	Middle
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-53.57	-13.00	PASS
5640.00	V	-52.20		
7520.00	V	-51.48		
3760.00	Horizontal	-51.79		
5640.00	H	-50.15		
7520.00	H	-49.55		
Test mode:	WCDMA Band II		Test channel:	Highest
Test mode:	RMC 12.2Kbps Link (QPSK)		Temperature :	25°C
			Relative Humidity:	56%
Note:	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.			
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-53.11	-13.00	PASS
5722.80	V	-52.28		
7630.40	V	-48.56		
3815.20	Horizontal	-52.75		
5722.80	H	-51.67		
7630.40	H	-50.88		

6.7. Frequency Stability Measurement

6.7.1. Test Specification

Test Requirement:	FCC Part 2.1055 ; FCC Part 22.355 ; FCC Part 24.235
Test Method:	FCC Part 2.1055(a)(1)(b)
Operation mode:	Refer to item 4.1
Limit:	±2.5 ppm
Test Setup:	
Test Procedure:	**Test Procedures for Temperature Variation** 1. The testing follows FCC KDB 971168 D01v03 Section 9.0. 2. The EUT was set up in the thermal chamber and connected with the system simulator. 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute. 4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute. **Test Procedures for Voltage Variation** 1. The testing follows FCC KDB 971168 v02r02 Section 9.0. 2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator. 3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT. 4. The variation in frequency was measured for the worst case.
Test Result:	PASS
Remark:	All three channels of all modulations have been tested, but only the worst channel show in this test item.

6.7.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Programable tempratuce and humidity chamber	JQ	JQ-2000	N/A	Sep. 27, 2018
DC power supply	Kingrang	KR3005K 30V/5A	N/A	Sep. 27, 2018
RF cable (9kHz-40GHz)	TCT	RE-04	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.7.3. Test Data

Test Result of Temperature Variation

Band :	GSM 850	Channel:	190
Limit (ppm) :	2.5	Frequency:	836.6MHz
Temperature (°C)	Deviation (ppm)	Result	
50	0.010	PASS	
40	0.008		
30	0.011		
20	0.007		
10	0.019		
0	0.012		
-10	0.009		
-20	0.013		
-30	0.014		

Band :	GPRS 850	Channel:	190
Limit (ppm) :	2.5	Frequency:	836.6MHz
Temperature (°C)	Deviation (ppm)	Result	
50	0.012	PASS	
40	0.017		
30	0.005		
20	0.010		
10	0.021		
0	0.004		
-10	0.018		
-20	0.016		
-30	0.011		

Band :	GSM 1900	Channel:	661
Limit (ppm) :	*Note*	Frequency:	1880MHz
Temperature (°C)	Deviation (ppm)		Result
50	0.020		PASS
40	0.022		
30	0.018		
20	0.017		
10	0.023		
0	0.018		
-10	0.014		
-20	0.019		
-30	0.018		

Band :	GPRS1900	Channel:	661
Limit (ppm) :	*Note*	Frequency:	1880MHz
Temperature (°C)	Deviation (ppm)		Result
50	0.012		PASS
40	0.020		
30	0.017		
20	0.015		
10	0.022		
0	0.012		
-10	0.014		
-20	0.020		
-30	0.018		

Note: *The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.*

Band :	WCDMA Band V	Channel:	4183
Limit (ppm) :	2.5ppm	Frequency:	836.6MHz

Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
50	0.015	PASS
40	0.012	
30	0.002	
20	0.005	
10	0.018	
0	0.010	
-10	0.011	
-20	0.017	
-30	0.010	

Band :	WCDMA Band II	Channel:	9400
Limit (ppm) :	*Note*	Frequency:	1880MHz

Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
50	0.018	PASS
40	0.011	
30	0.010	
20	0.013	
10	0.017	
0	0.021	
-10	0.009	
-20	0.018	
-30	0.019	

Note: *The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.*

Test Result of Voltage Variation

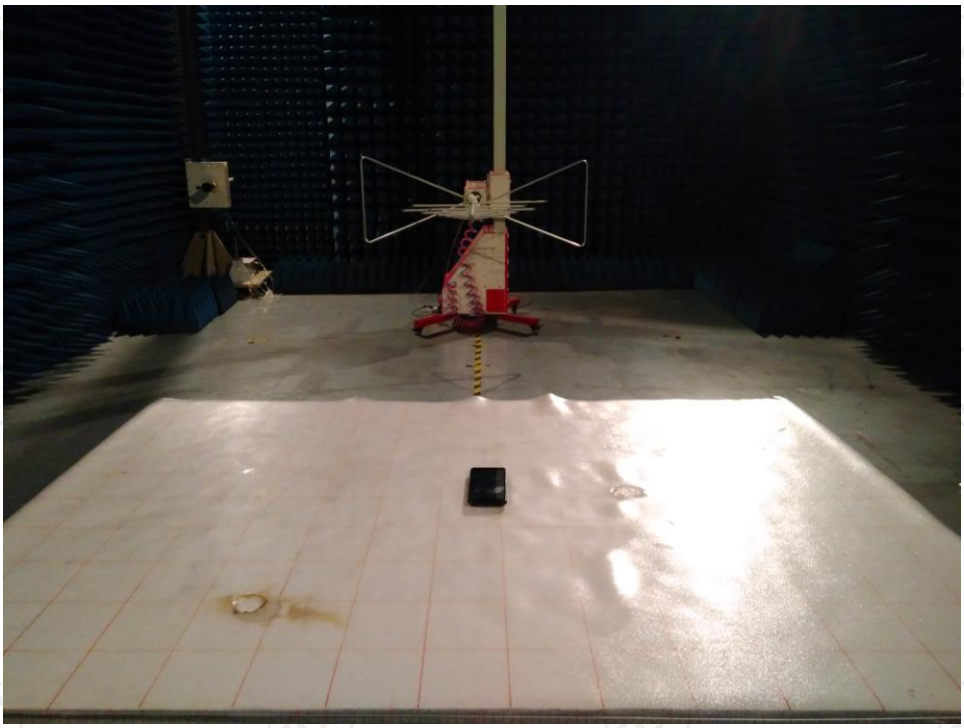
Band & Channel	Mode	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH190	GSM	4.2	+0.017	2.5	PASS
		3.8	+0.010		
		BEP	+0.011		
GPRS 850 CH190	GPRS	4.2	+0.015		
		3.8	+0.010		
		BEP	+0.020		
GSM 1900 CH661	GSM	4.2	+0.022		
		3.8	+0.026		
		BEP	+0.018		
GPRS 1900 CH661	GPRS	4.2	+0.012		
		3.8	+0.016		
		BEP	+0.016		
WCDMA Band V CH4182	RMC 12.2Kbps	4.2	-0.021		
		3.7	-0.014		
		BEP	-0.019		
WCDMA Band II CH9400	RMC 12.2Kbps	4.2	-0.013		
		3.7	-0.011		
		BEP	-0.018		

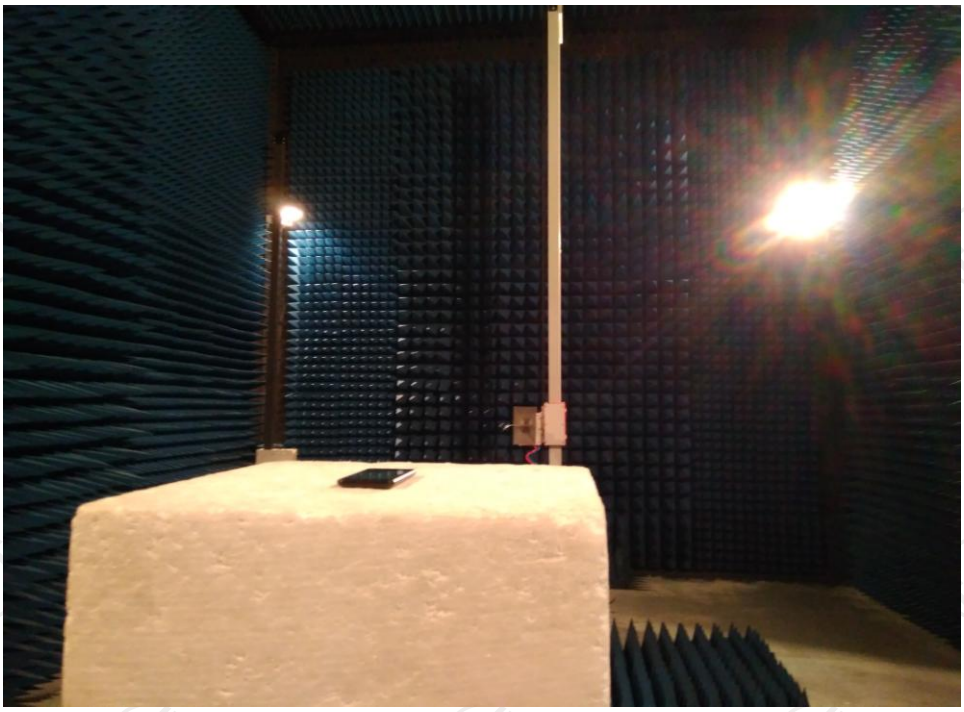
Note:

1. *Normal Voltage = 3.7V.*
2. *Battery End Point (BEP) = 3.40 V.*
3. *The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.*

Appendix A: Photographs of Test Setup

Product: Mobile phone
Model: Max13
Radiated Emission





Appendix B: Photographs of EUT

Refer to test report TCT180420E017

********END OF REPORT********