



FCC TEST REPORT

FCC ID: SY4-B01016

On Behalf of

Shanghai Huace Navigation Technology Ltd.

GNSS Data Collector

Model No.: LT60, LT60H

Prepared for : Shanghai Huace Navigation Technology Ltd.
Address : 577 Songying Road, Qingpu District, 201706 Shanghai, China

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

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TEST REPORT DECLARATION

Applicant : Shanghai Huace Navigation Technology Ltd.
Address : 577 Songying Road, Qingpu District, 201706 Shanghai, China
Manufacturer : Shanghai Huace Navigation Technology Ltd.
Address : 577 Songying Road, Qingpu District, 201706 Shanghai, China
EUT Description : GNSS Data Collector
(A) Model No. : LT60, LT60H
(B) Trademark : 

Measurement Standard Used:

FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 27

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:

Lucas Pang
Project Engineer



Approved by (name + signature).....:

Jack Xu
Project Manager



Date of issue.....:

August 17, 2022

Revision History

Revision	Issue Date	Revisions	Revised By
V0	August 17, 2022	Initial released Issue	Lucas Pang

1 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Peak-to-Average Ratio	Part 2.1046 Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Note: 1. Pass: The EUT complies with the essential requirements in the standard.

2. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

2 General Information

2.1 General Description of EUT

Description/PMN	: GNSS Data Collector
Model Number/HVIN(s)	: LT60, LT60H
Diff	: All models have the same software and circuit, but GNSS modules are different. All tests are made with the LT60H model.
Trademark	: 
Test Voltage	: DC 5V/9V from adapter with AC 120V/60Hz, DC 3.8V from battery
Support Networks	: GSM, GPRS, EGPRS, WCDMA
Support Bands	: GSM850, PCS1900, WCDMA Band V, WCDMA Band IV, WCDMA Band II
TX Frequency	: GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz WCDMA Band V: 826.40MHz -846.60MHz WCDMA Band II: 1852.40MHz -1907.60MHz WCDMA Band IV: 1710MHz -1755MHz
GPRS Class	: 12
EGPRS Class	: 12
Modulation type	: GSM/GPRS: GMSK EGPRS: GMSK/8PSK WCDMA Band II/IV/V: QPSK
Antenna type	: Internal antenna
Antenna gain	: Maximum Gain is -0.9dBi for GSM 850 Maximum Gain is 1.8dBi for PCS1900 Maximum Gain is -0.9dBi for WCDMA Band V Maximum Gain is 1.1dBi for WCDMA Band IV Maximum Gain is 1.8dBi for WCDMA Band II Antenna information is provided by applicant. There is WWAN diversity antenna inside the product, which is only for receiving function.
Software version	: LT60_V1.0
Hardware version/FVIN	: V2.0.0

Remark: 1. The worst-case simultaneous transmission configuration was evaluated with no non-compliance found. Results in this report are only for 2G and 3G function, and there is no other transmitter involved.

2. The product contains two SIM card slots, both of which have been tested and only reflect the data of SIM card slot 1.

Operation Frequency List:

GSM 850		PCS1900		WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	4132	826.40	9262	1852.40
129	824.40	513	1850.40	4133	826.60	9263	1852.60
· ∴	· ∴	· ∴	· ∴	· ∴	· ∴	· ∴	· ∴
189	836.40	660	1879.80	4181	836.20	9399	1879.80
190	836.60	661	1880.00	4182	836.40	9400	1880.00
191	836.80	662	1880.20	4183	836.60	9401	1880.20
· ∴	· ∴	· ∴	· ∴	· ∴	· ∴	· ∴	· ∴
250	848.60	809	1909.60	4232	846.40	9537	1907.40
251	848.80	810	1909.80	4233	846.60	9538	1907.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Final test channel:

GSM 850		PCS1900		WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	4132	826.40	9262	1852.40
190	836.60	661	1880.00	4183	836.60	9400	1880.00
251	848.80	810	1909.80	4233	846.60	9538	1907.60
WCDMA Band IV							
Channel		Frequency (MHz)					
1312		1712.4					
1450		1740.0					
1513		1752.6					

2.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

2.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

2.4 Test Facility

Shenzhen Alpha Product Testing Co., Ltd
Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission
Registration Number: 293961

July 25, 2017 Certificated by IC
Registration Number: CN0085

3 Test Instruments list

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	N/A	2020.09.02	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2021.08.25	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2021.08.25	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-102082-Wa	2021.08.25	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2021.08.25	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	N/A	VULB 9168#627	2021.08.30	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	N/A	2106	2021.08.30	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	N/A	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	N/A	RE1	2021.08.25	1Year
RF Cable	Resenberger	Cable 2	N/A	RE2	2021.08.25	1Year
RF Cable	Resenberger	Cable 3	N/A	CE1	2021.08.25	1Year
Pre-amplifier	HP	HP8347A	N/A	2834A00455	2021.08.25	1Year
Pre-amplifier	Agilent	8449B	N/A	3008A02664	2021.08.25	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	N/A	8126-466	2021.08.25	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	N/A	101043	2021.08.25	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	N/A	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840-50	N/A	SK2018101801	2021.08.25	1 Year
Power Meter	Agilent	E9300A	N/A	MY41496628	2021.08.25	1 Year
Power Sensor	DARE	RPR3006W	N/A	15100041SNO91	2021.08.25	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000-40-880	N/A	100631	2022.04.22	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	N/A	20140927-6	2021.08.25	1 Year
Adjustable attenuator	MWRFTtest	N/A	N/A	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	N/A	N/A	N/A	N/A

Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	EZ	Alpha-3A1
CE	EZ-EMC	EZ	Alpha-3A1
RF-CE	MTS 8310	MW	V2.0.0.0

4 System test configuration

4.1 Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test modes		
Band	Radiated	Conducted
GSM 850	■ GSM link ■ GPRS 1 link ■ EPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
PCS 1900	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
WCDMA II	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link
WCDMA Band IV	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link
WCDMA Band V	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link

Note: The maximum power levels are GSM mode for GMSK link, GPRS multi-slot class 8 mode for GMSK link, EGPRS multi-slot class 8 mode for 8PSK link, RMC12.2Kbps mode for WCDMA Band V/II. only these modes were used for all tests.

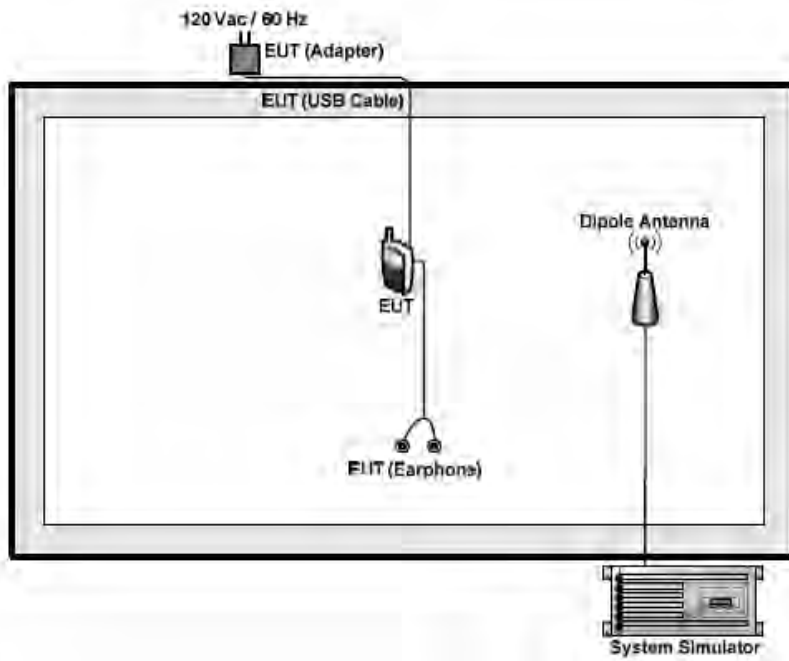
The conducted power tables are as follows:

Conducted Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM (GMSK, 1 TX slot)	34.43	35.34	35.44	31.29	30.19	30.18
GPRS (GMSK, 1 TX slot)	33.48	33.52	33.64	29.60	30.07	30.47
GPRS (GMSK, 2 TX slot)	32.09	32.71	33.45	29.92	29.52	29.48
GPRS (GMSK, 3 TX slot)	33.11	33.49	33.07	29.64	30.10	30.25
GPRS (GMSK, 4 TX slot)	34.40	35.14	34.55	30.23	30.95	30.26
EGPRS (8PSK, 1 TX slot)	33.32	33.80	33.61	29.55	28.64	28.34
EGPRS (8PSK, 2 TX slot)	31.88	32.57	33.58	30.21	29.71	28.84
EGPRS (8PSK, 3 TX slot)	33.18	33.18	32.57	29.52	30.00	29.78
EGPRS (8PSK, 4 TX slot)	32.79	33.08	33.30	28.99	28.88	29.33

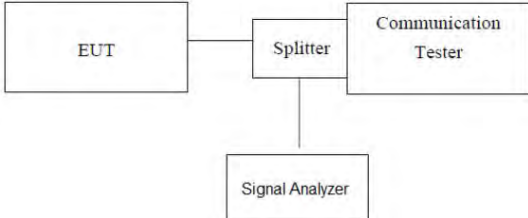
Conducted Power (dBm)						
Band	WCDMA Band II			WCDMA Band V		
Channel	9262	9400	9538	4132	4183	4233
Frequency	1852.4	1880.0	1907.6	826.4	836.6	846.6
RMC 12.2Kbps	25.23	25.30	25.67	25.61	25.23	25.68
HSDPA Subtest-1	25.23	25.23	24.53	25.17	24.71	24.97
HSDPA Subtest-2	24.13	23.89	23.26	25.17	24.68	24.55
HSDPA Subtest-3	24.16	24.29	24.22	25.38	24.29	24.90
HSDPA Subtest-4	25.01	24.19	24.60	24.12	24.49	23.73
HSUPA Subtest-1	24.02	24.30	24.30	24.66	25.23	24.33
HSUPA Subtest-2	24.12	25.11	24.09	24.69	25.16	24.17
HSUPA Subtest-3	25.09	25.06	24.10	24.67	23.88	24.45
HSUPA Subtest-4	24.87	24.39	23.41	25.10	24.73	24.96
HSUPA Subtest-5	23.63	24.61	23.95	24.84	25.03	25.18

Conducted Power (dBm)			
Band	WCDMA Band IV		
Channel	1312	1450	1513
Frequency	1712.4	1740.0	1752.6
RMC 12.2Kbps	26.22	25.89	26.60
HSDPA Subtest-1	25.43	26.64	25.86
HSDPA Subtest-2	24.75	26.64	25.52
HSDPA Subtest-3	25.79	26.28	25.30
HSDPA Subtest-4	25.88	26.45	25.69
HSUPA Subtest-1	26.09	26.69	25.25
HSUPA Subtest-2	26.32	26.00	25.82
HSUPA Subtest-3	25.53	26.46	25.39
HSUPA Subtest-4	25.33	25.94	25.41
HSUPA Subtest-5	26.22	26.09	26.35

4.2 Configuration of Tested System



4.3 Conducted AV Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b), FCC part 27.50 (d)(4)
Test Method:	FCC part2.1046
Limit:	GSM850, WCDMA Band V: 7W(38.45dbm) PCS1900, WCDMA Band II: 2W(33.01dbm) WCDMA Band IV: 1W(30.00dbm)
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the Signal Analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

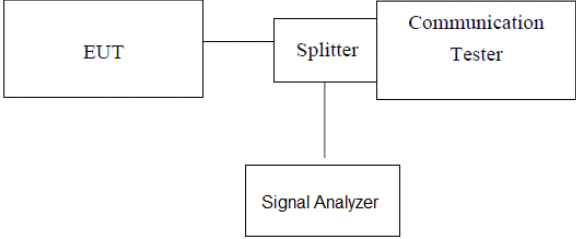
Measurement Data

Conducted Burst Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM (GMSK, 1 TX slot)	33.15	33.39	33.94	29.41	28.92	29.13
GPRS (GMSK, 1 TX slot)	32.07	32.41	32.61	28.47	28.63	28.56
GPRS (GMSK, 2 TX slot)	30.69	31.53	31.54	28.06	28.49	27.66
GPRS (GMSK, 3 TX slot)	31.27	31.75	31.83	28.21	28.19	28.29
GPRS (GMSK, 4 TX slot)	32.70	33.58	33.47	28.94	29.40	28.86
EGPRS (8PSK, 1 TX slot)	31.64	31.90	31.76	28.05	27.57	27.18
EGPRS (8PSK, 2 TX slot)	30.71	31.44	31.87	28.22	28.16	27.14
EGPRS (8PSK, 3 TX slot)	31.44	31.50	31.16	27.75	28.39	28.36
EGPRS (8PSK, 4 TX slot)	31.29	31.20	31.69	27.26	27.51	27.81

Burst Average Power (dBm)						
Band	WCDMA Band II			WCDMA Band V		
Channel	9262	9400	9538	4132	4183	4233
Frequency	1852.4	1880.0	1907.6	826.4	836.6	846.6
RMC 12.2Kbps	23.93	23.62	23.76	23.94	23.85	23.92
HSDPA Subtest-1	23.34	23.52	22.55	23.47	23.45	22.98
HSDPA Subtest-2	23.12	22.83	22.17	23.49	23.11	23.00
HSDPA Subtest-3	22.49	22.77	22.32	23.59	23.21	22.97
HSDPA Subtest-4	23.29	23.11	22.75	23.06	23.12	22.67
HSUPA Subtest-1	22.43	22.77	22.85	23.28	23.55	23.13
HSUPA Subtest-2	22.74	23.46	22.44	23.62	23.78	22.77
HSUPA Subtest-3	23.13	23.07	22.22	23.05	22.87	23.16
HSUPA Subtest-4	23.15	22.79	22.18	23.78	23.49	23.25
HSUPA Subtest-5	22.44	22.73	22.15	23.70	23.22	23.28

Burst Average Power (dBm)			
Band	WCDMA Band IV		
Channel	1312	1450	1513
Frequency	1712.4	1740.0	1752.6
RMC 12.2Kbps	24.92	24.67	24.85
HSDPA Subtest-1	24.13	24.80	24.01
HSDPA Subtest-2	23.68	24.96	24.09
HSDPA Subtest-3	24.09	24.31	23.93
HSDPA Subtest-4	24.05	24.63	23.93
HSUPA Subtest-1	24.31	24.85	24.14
HSUPA Subtest-2	24.43	24.49	23.91
HSUPA Subtest-3	23.72	24.69	24.33
HSUPA Subtest-4	23.92	24.54	23.89
HSUPA Subtest-5	24.26	24.74	24.41

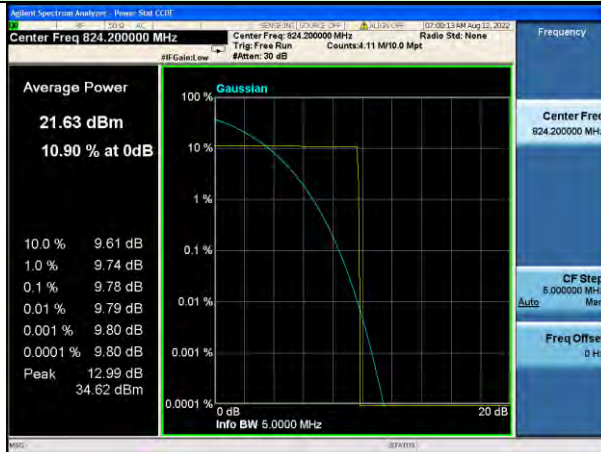
4.4 Peak-to-Average Ratio

Test Requirement:	FCC part24.232(d)
Test Method:	FCC part2.1046
Limit:	13db
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the Signal Analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power. 6. Record the maximum peak-to-average ratio value.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

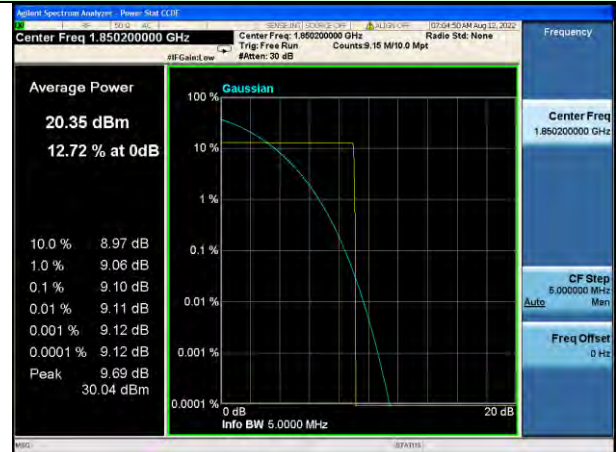
Measurement data

Test mode	Peak to Average Ratio (dB)			Limit (dB)	Result
	Low Ch.	Middle Ch.	High Ch.		
GSM/TM1/GSM850	9.78	9.23	9.55	13	PASS
GSM/TM1/GSM1900	9.10	9.06	9.10	13	PASS
WCDMA Band II	2.94	3.06	3.07	13	PASS
WCDMA Band IV	2.84	3.01	3.06	13	PASS
WCDMA Band V	2.67	3.29	3.13	13	PASS

Test Mode: GSM/TM1/GSM850
Low Ch.



Test Mode: GSM/TM1/GSM1900
Low Ch.



Middle Ch.



Middle Ch.



High Ch.



High Ch.



Test Mode: WCDMA Band II Low Ch.



Test Mode: WCDMA Band IV Low Ch.



Middle Ch.



Middle Ch.



High Ch.



High Ch.



Test Mode: WCDMA Band V Low Ch.



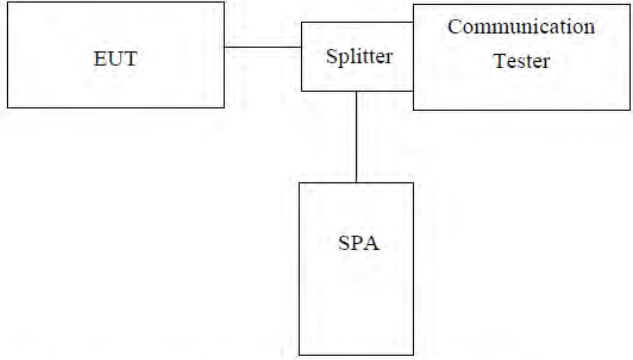
Middle Ch.



High Ch.



4.5 Occupy Bandwidth

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GSM link)	128	824.20	245.49	315.4
	190	836.60	247.27	312.4
	251	848.80	248.03	317.3
GSM 850 (GPRS 1 link)	128	824.20	242.14	301.7
	190	836.60	240.85	315.8
	251	848.80	243.65	312.2
GSM 850 (EGPRS 1 link)	128	824.20	250.63	318.4
	190	836.60	238.84	308.8
	251	848.80	236.53	314.6
PCS 1900 (GSM link)	512	1850.20	245.32	319.9
	661	1880.00	244.43	315.5
	810	1909.80	248.05	324.1
PCS 1900 (GPRS 1 link)	512	1850.20	240.35	305.4
	661	1880.00	238.64	313.5
	810	1909.80	240.33	316.4
PCS 1900 (EGPRS 1 link)	512	1850.20	240.91	323.6
	661	1880.00	237.79	301.9
	810	1909.80	238.14	311.9
WCDMA Band V (RMC 12.2Kbps link)	4132	826.40	4126.5	4733.0
	4183	836.60	4116.9	4716.0
	4233	846.60	4148.6	4748.0
WCDMA Band II (RMC 12.2Kbps link)	9262	1852.4	4124.4	4708.0
	9400	1880.0	4109.9	4690.0
	9538	1907.6	4113.7	4701.0
WCDMA Band IV (RMC 12.2Kbps link)	1312	1712.4	4124.9	4709.0
	1450	1740.0	4122.3	4702.0
	1513	1752.6	4126.3	4694.0

Test plot as follows:

GSM 850 (GSM link)



Lowest channel



Middle channel



Highest channel

GSM 850 (GPRS 1 link)



Lowest channel



Middle channel



Highest channel

GSM 850 (EGPRS 1 link)



Lowest channel



Middle channel



Highest channel

PCS 1900 (GSM link)



Lowest channel



Middle channel



Highest channel

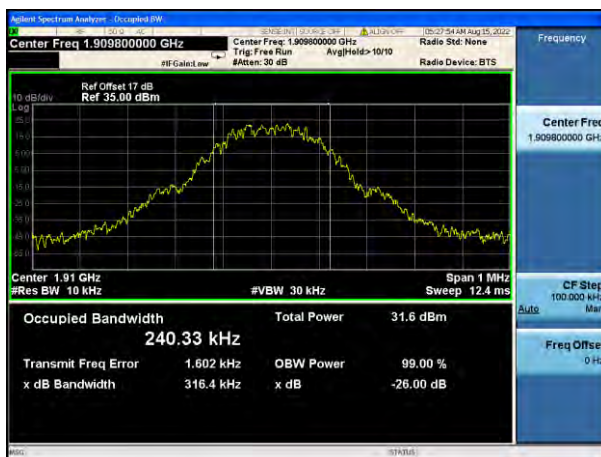
PCS 1900 (GPRS 1 link)



Lowest channel



Middle channel



Highest channel

PCS 1900 (EGPRS 1 link)



Lowest channel



Middle channel



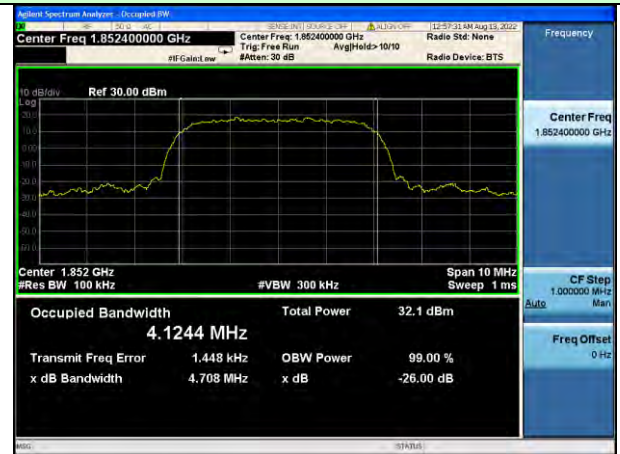
Highest channel

WCDMA Band V (RMC 12.2Kbps link)

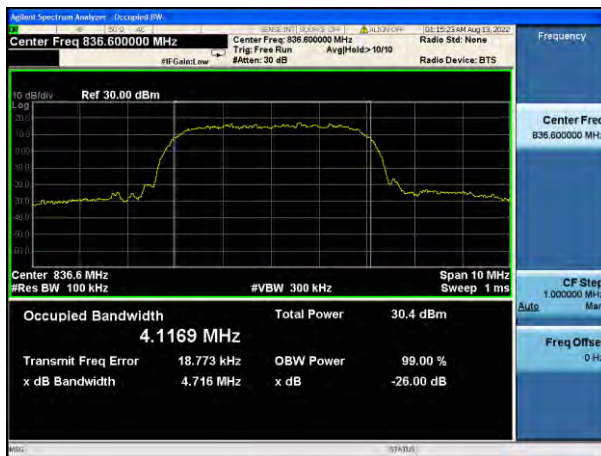


Lowest channel

WCDMA Band II (RMC 12.2Kbps link)



Lowest channel



Middle channel



Middle channel



Highest channel

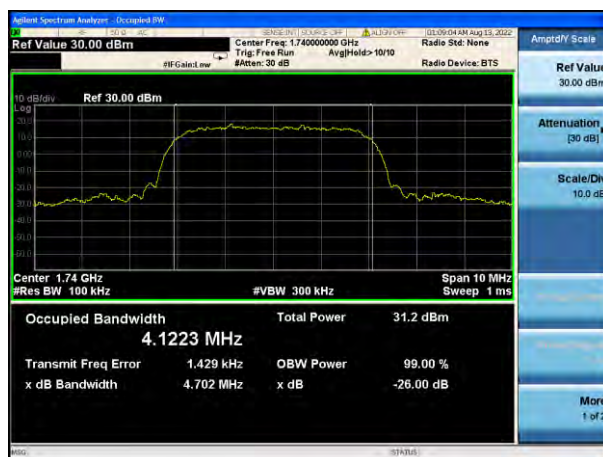


Highest channel

WCDMA Band IV (RMC 12.2Kbps link)



Lowest channel



Middle channel

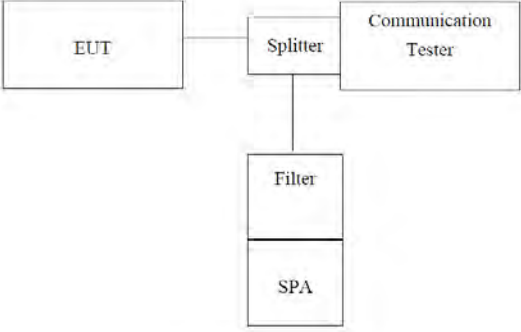


Highest channel

4.6 MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

4.7 Out of band emission at antenna terminals

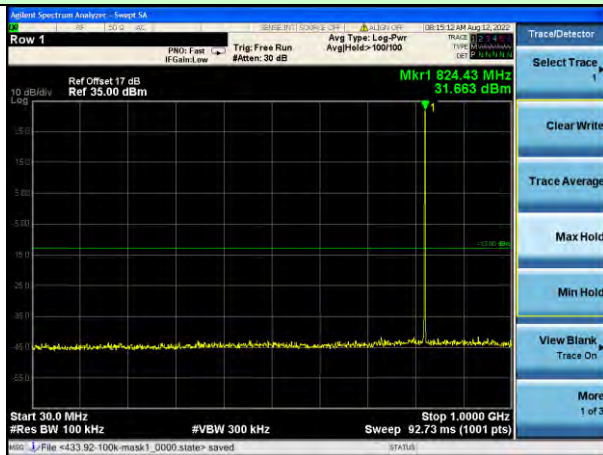
Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Test plot as follows:

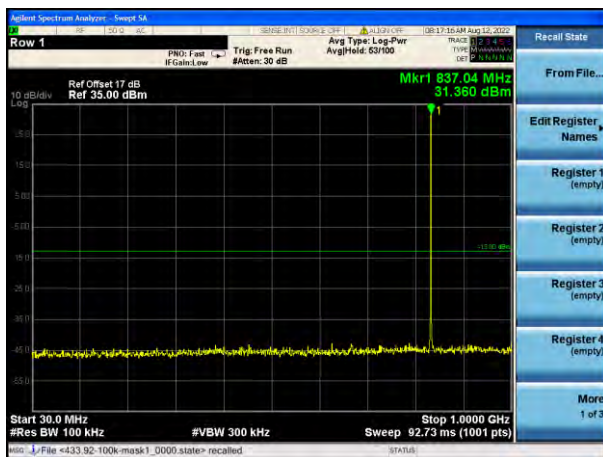
Note: During the conducted spurious emission test, a band filter was used. The information of the filter is reported at section 6.0 (refer to item 24, 25).

Test Mode: Traffic mode

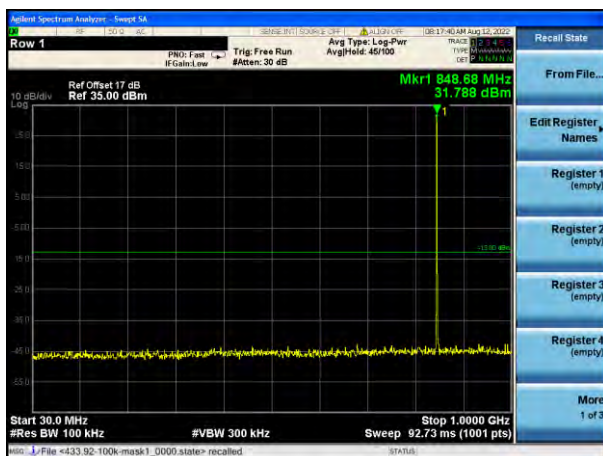
GSM 850 (GSM link)



Lowest channel



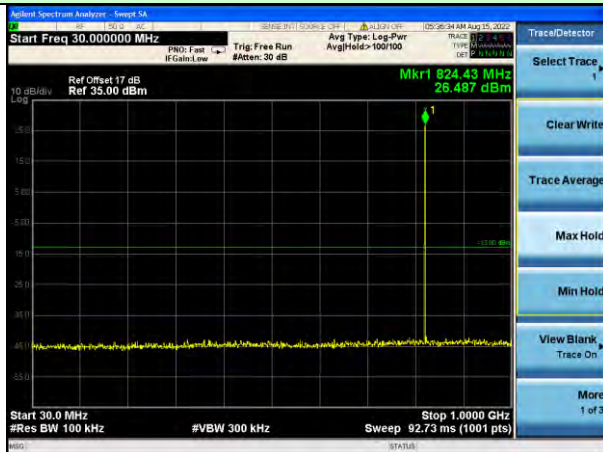
Middle channel



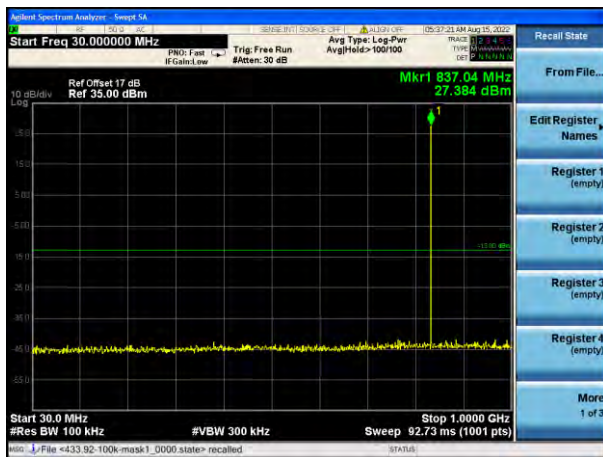
Highest channel

Test Mode: Traffic mode

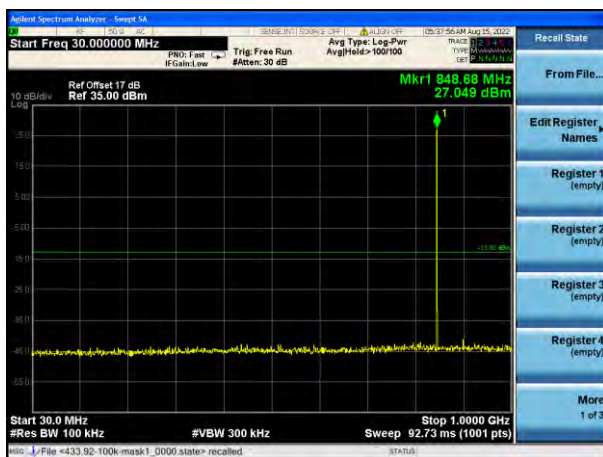
GSM 850 (GPRS 1 link)



Lowest channel



Middle channel



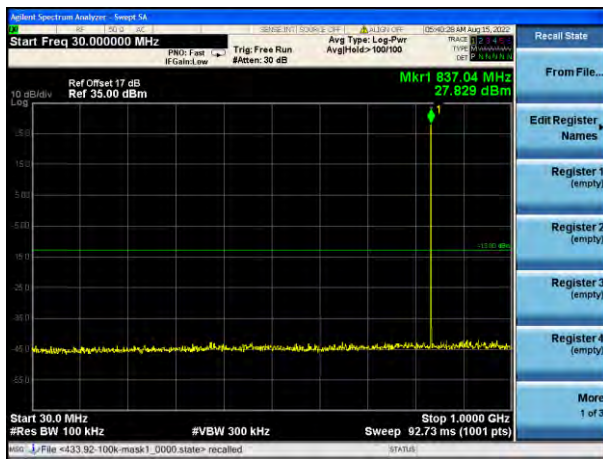
Highest channel

Test Mode: Traffic mode

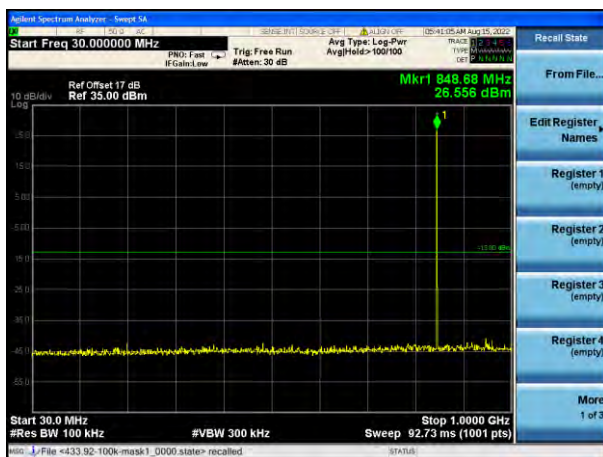
GSM 850 (EGPRS 1 link)



Lowest channel



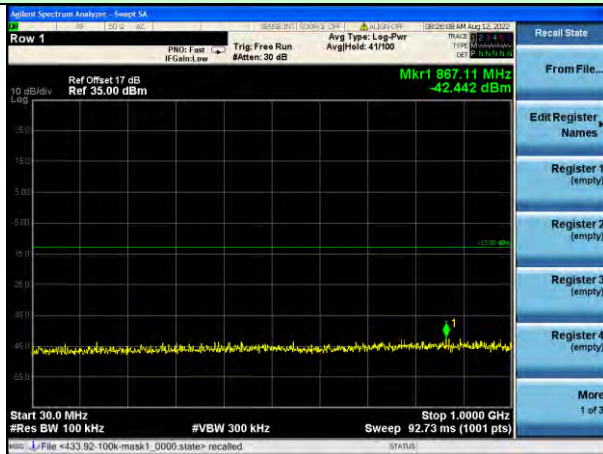
Middle channel



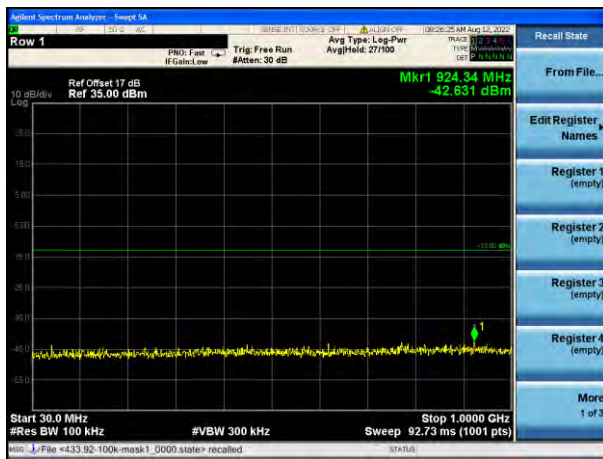
Highest channel

Test Mode: Traffic mode

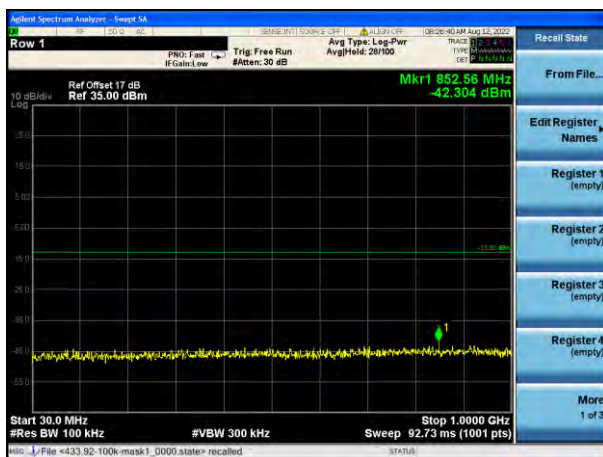
PCS1900 (GSM link)



Lowest channel



Middle channel



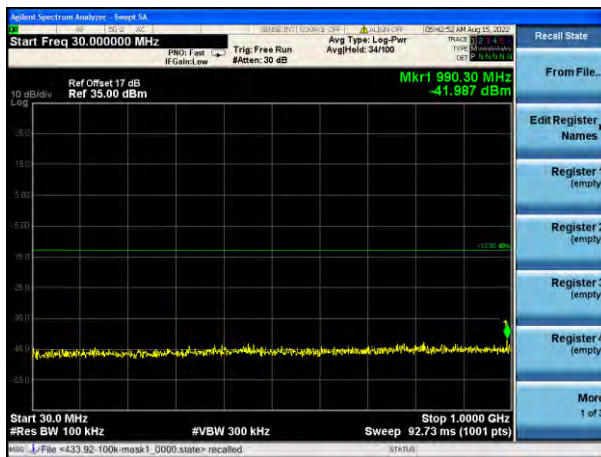
Highest channel

Test Mode: Traffic mode

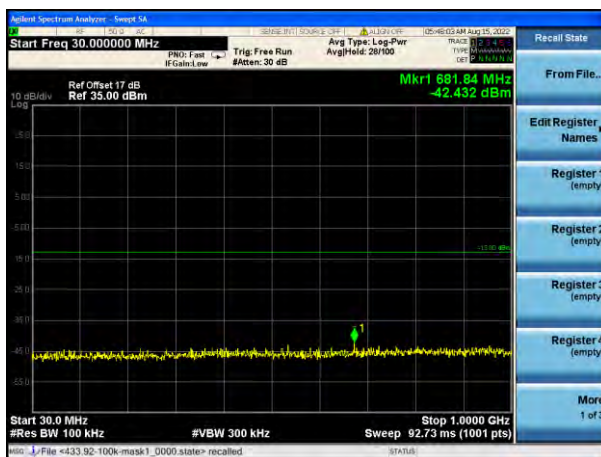
PCS1900 (GPRS 1 link)



Lowest channel



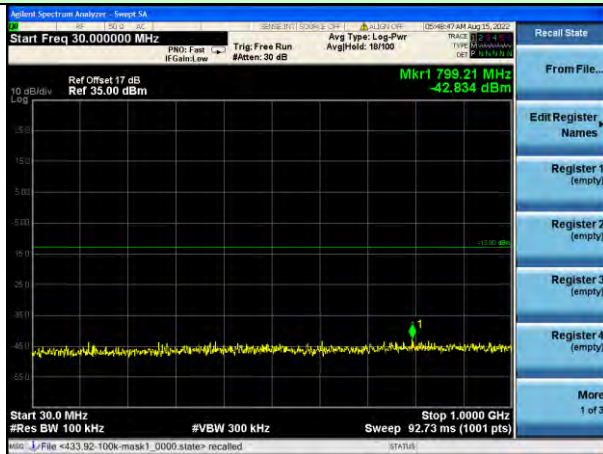
Middle channel



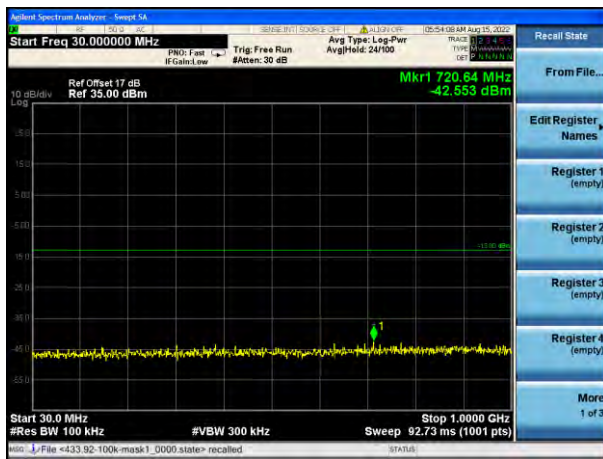
Highest channel

Test Mode: Traffic mode

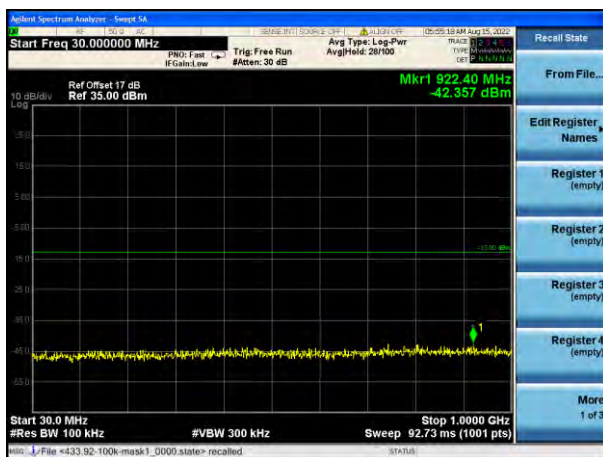
PCS1900 (EGPRS 1 link)



Lowest channel



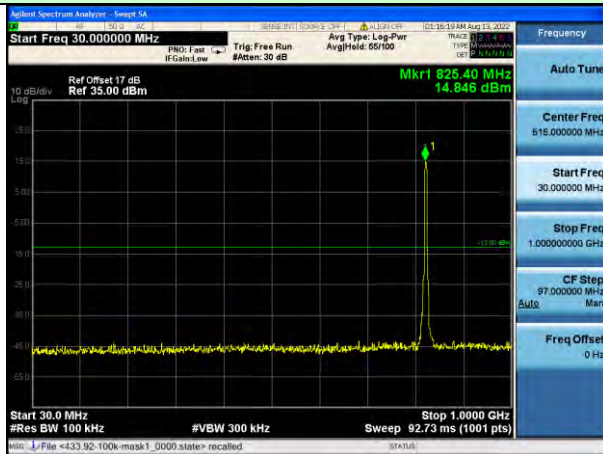
Middle channel



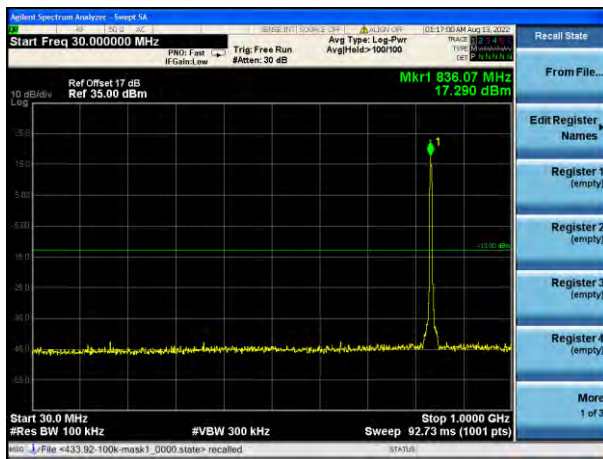
Highest channel

Test Mode: Traffic mode

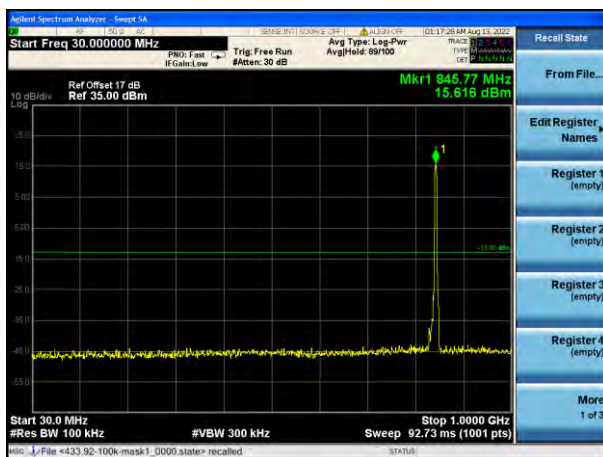
WCDMA Band V (RMC 12.2Kbps link)



Lowest channel



Middle channel



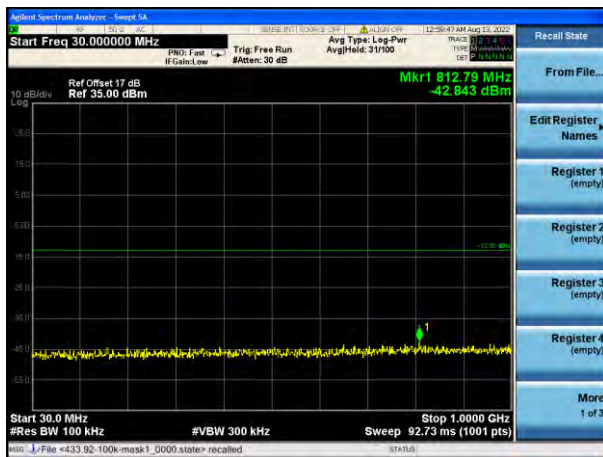
Highest channel

Test Mode: Traffic mode

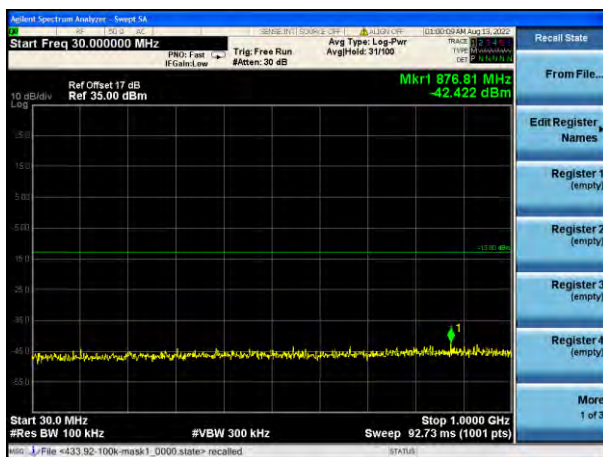
WCDMA Band II (RMC 12.2Kbps link)



Lowest channel



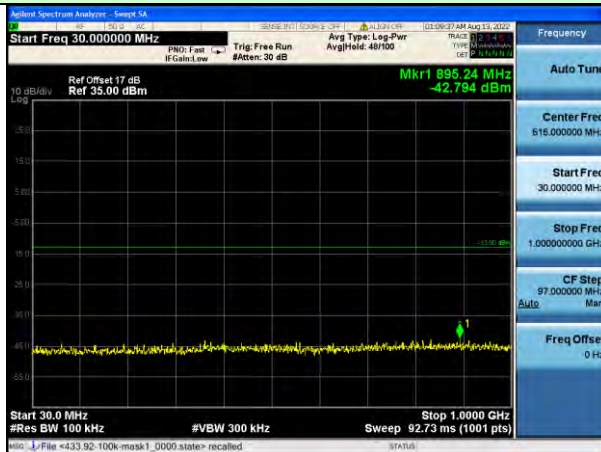
Middle channel



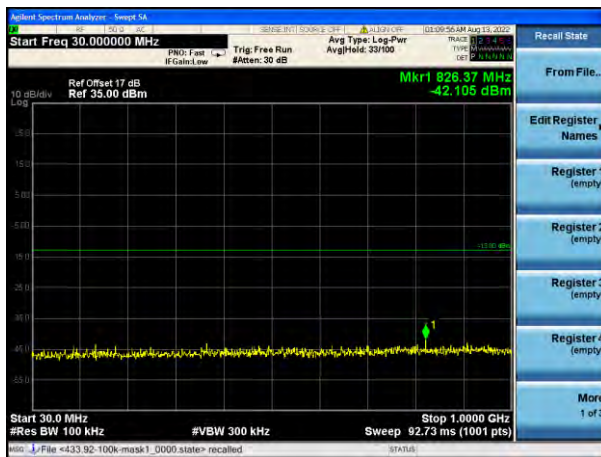
Highest channel

Test Mode: Traffic mode

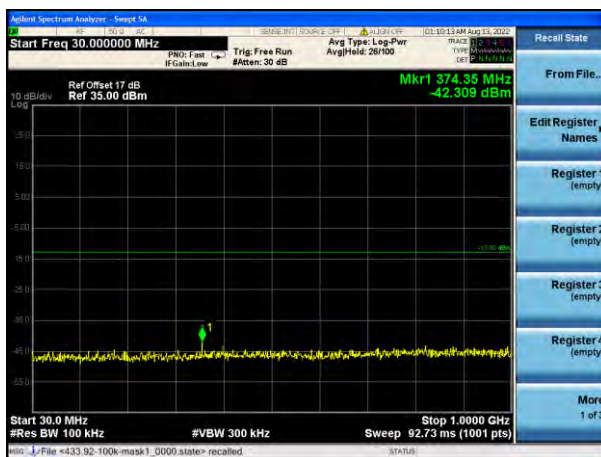
WCDMA Band IV (RMC 12.2Kbps link)



Lowest channel



Middle channel

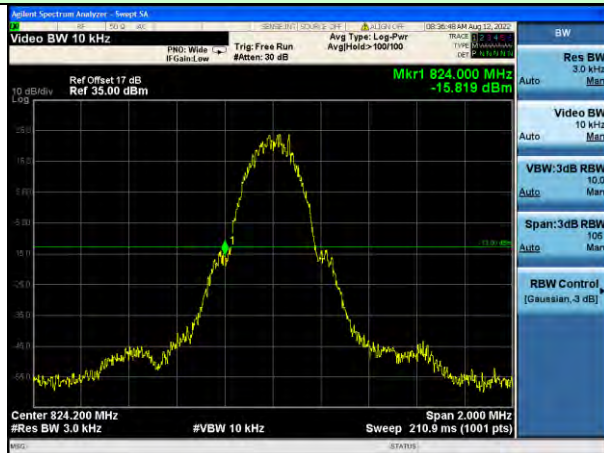


Highest channel

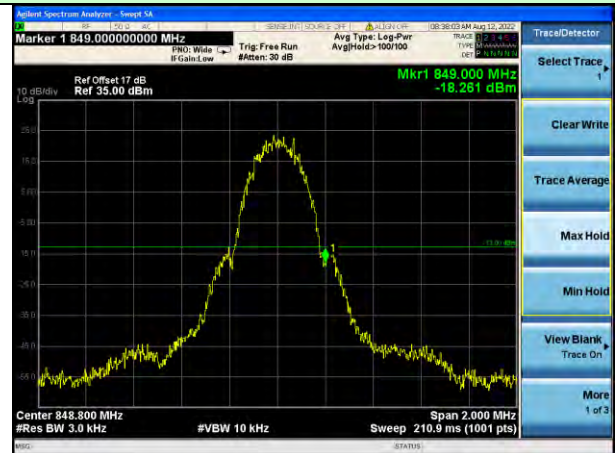
Band Edge:

Test Mode: Traffic mode

GSM850 (GSM link)



Lowest channel



Highest channel

Test Mode: Traffic mode

GSM850 (GPRS 1 link)



Lowest channel



Highest channel

Test Mode: Traffic mode

GSM850 (EGPRS 1 link)



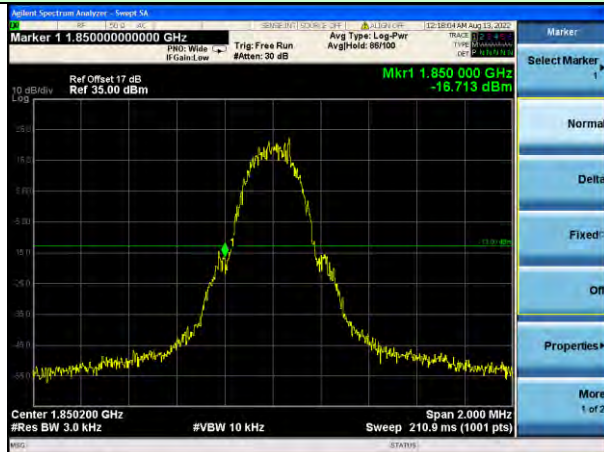
Lowest channel



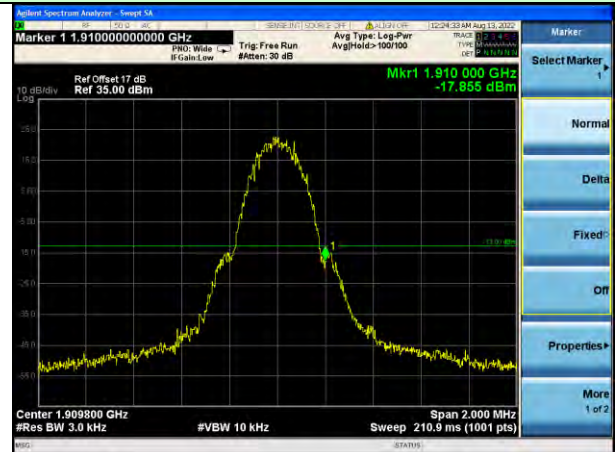
Highest channel

Test Mode: Traffic mode

PCS1900 (GSM link)



Lowest channel



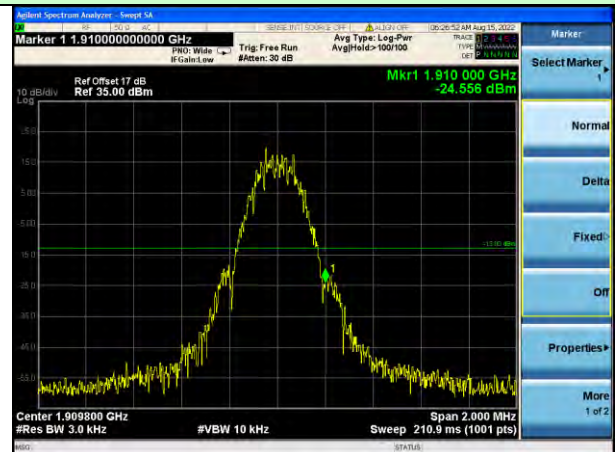
Highest channel

Test Mode: Traffic mode

PCS1900 (GPRS 1 link)



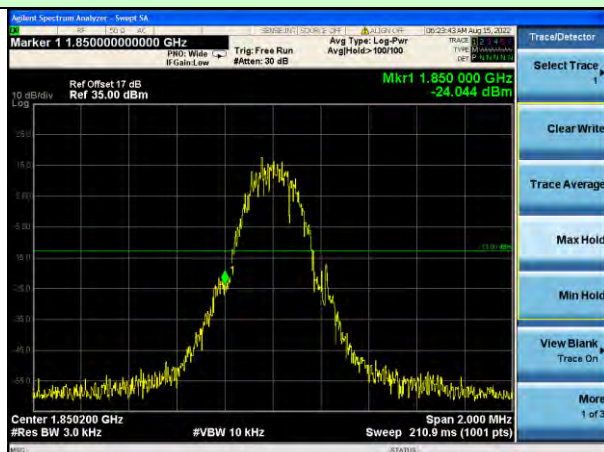
Lowest channel



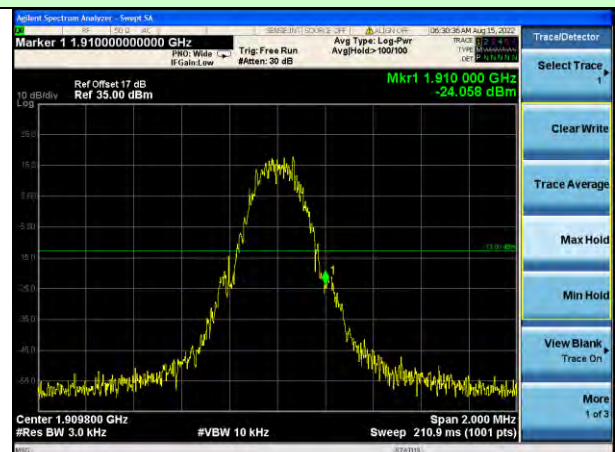
Highest channel

Test Mode: Traffic mode

PCS1900 (EGPRS 1 link)



Lowest channel



Highest channel

Test Mode: Traffic mode

WCDMA Band V (RMC 12.2Kbps link)



Lowest channel



Highest channel

Test Mode: Traffic mode

WCDMA Band II (RMC 12.2Kbps link)



Lowest channel



Highest channel

Test Mode: Traffic mode

WCDMA Band IV (RMC 12.2Kbps link)

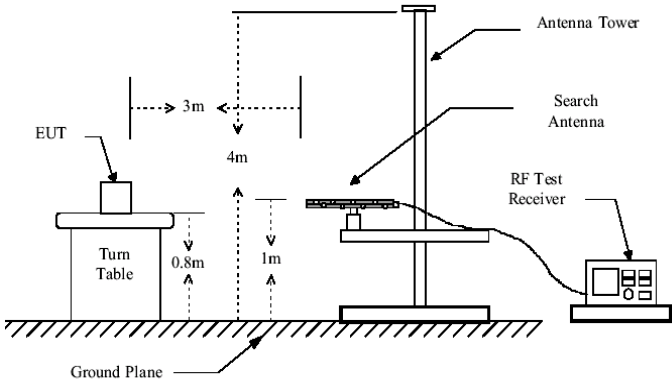
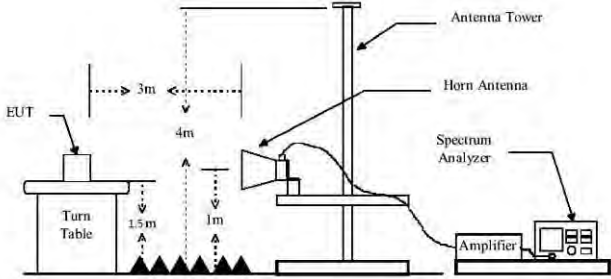
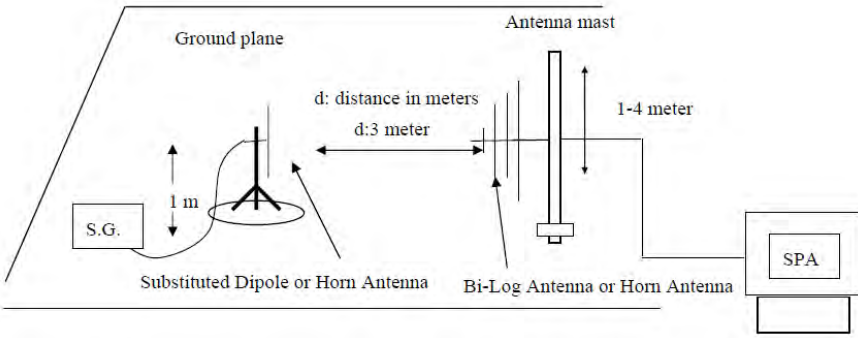


Lowest channel



Highest channel

4.8 ERP, EIRP Measurement

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850, WCDMA Band V: 7W PCS1900, WCDMA Band II: 2W WCDMA Band IV: 1W
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (GSM link)	Lowest	H	V	32.67	38.45	Pass
			H	30.86		
		E1	V	32.33		
			H	30.04		
		E2	V	32.26		
			H	30.08		
	Middle	H	V	32.73	38.45	Pass
			H	30.76		
		E1	V	32.50		
			H	30.34		
		E2	V	32.43		
			H	30.39		
	Highest	H	V	32.48	38.45	Pass
			H	30.36		
		E1	V	32.54		
			H	29.92		
		E2	V	32.11		
			H	30.82		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (GPRS 1 link)	Lowest	H	V	32.02	38.45	Pass
			H	30.25		
		E1	V	32.61		
			H	30.23		
		E2	V	32.17		
			H	30.60		
	Middle	H	V	32.33	38.45	Pass
			H	30.33		
		E1	V	32.63		
			H	30.44		
		E2	V	32.23		
			H	30.26		
	Highest	H	V	32.47	38.45	Pass
			H	30.60		
		E1	V	32.46		
			H	29.90		
		E2	V	32.76		
			H	30.40		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (EGPRS 1 link)	Lowest	H	V	32.49	38.45	Pass
			H	30.04		
		E1	V	32.22		
			H	30.23		
		E2	V	32.14		
			H	30.53		
	Middle	H	V	32.06	38.45	Pass
			H	30.29		
		E1	V	32.04		
			H	30.41		
		E2	V	31.87		
			H	30.77		
	Highest	H	V	32.74	38.45	Pass
			H	30.22		
		E1	V	32.69		
			H	30.53		
		E2	V	32.74		
			H	30.00		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (GSM link)	Lowest	H	V	31.11	33.01	Pass
			H	27.85		
		E1	V	30.90		
			H	28.44		
		E2	V	30.68		
			H	28.44		
	Middle	H	V	31.28	33.01	Pass
			H	27.91		
		E1	V	31.26		
			H	28.29		
		E2	V	31.28		
			H	28.14		
	Highest	H	V	30.59	33.01	Pass
			H	28.22		
		E1	V	31.26		
			H	27.97		
		E2	V	31.11		
			H	27.85		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (GPRS 1 link)	Lowest	H	V	31.08	33.01	Pass
			H	27.93		
		E1	V	31.17		
			H	27.98		
		E2	V	30.76		
			H	27.70		
	Middle	H	V	31.13	33.01	Pass
			H	27.80		
		E1	V	31.24		
			H	27.72		
		E2	V	30.62		
			H	28.45		
	Highest	H	V	31.10	33.01	Pass
			H	27.92		
		E1	V	31.09		
			H	28.08		
		E2	V	31.26		
			H	28.04		

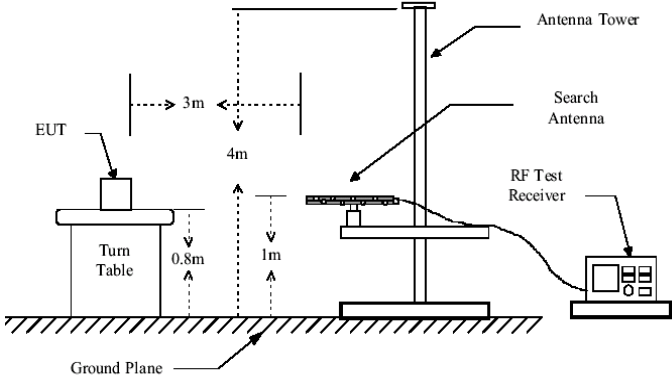
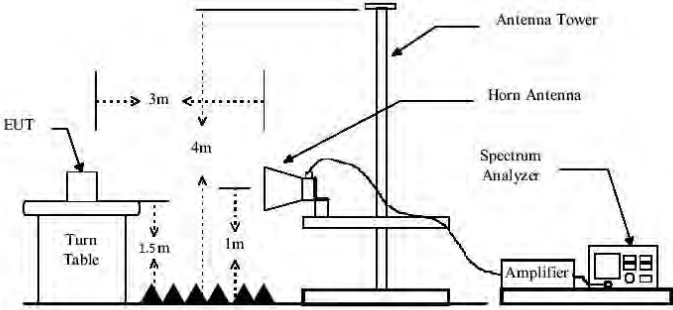
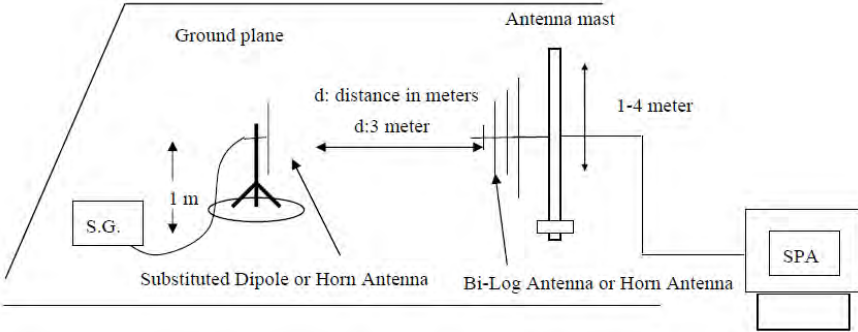
EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (EGPRS 1 link)	Lowest	H	V	30.04	33.01	Pass
			H	28.30		
		E1	V	29.95		
			H	28.62		
		E2	V	30.12		
			H	28.35		
	Middle	H	V	30.46	33.01	Pass
			H	28.52		
		E1	V	30.24		
			H	28.64		
		E2	V	30.26		
			H	27.89		
	Highest	H	V	29.64	33.01	Pass
			H	28.22		
		E1	V	30.07		
			H	28.63		
		E2	V	29.53		
			H	28.21		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
WCDMA Band V	Lowest	H	V	23.39	38.45	Pass
			H	23.29		
		E1	V	23.22		
			H	23.07		
		E2	V	23.37		
			H	23.05		
	Middle	H	V	23.59	38.45	Pass
			H	22.79		
		E1	V	23.82		
			H	23.27		
		E2	V	23.71		
			H	22.81		
	Highest	H	V	23.06	38.45	Pass
			H	22.42		
		E1	V	23.56		
			H	22.85		
		E2	V	23.65		
			H	22.50		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
WCDMA Band II	Lowest	H	V	24.64	33.01	Pass
			H	23.88		
		E1	V	23.83		
			H	23.46		
		E2	V	24.31		
			H	23.45		
	Middle	H	V	24.62	33.01	Pass
			H	23.97		
		E1	V	24.68		
			H	23.72		
		E2	V	23.80		
			H	23.53		
	Highest	H	V	24.48	33.01	Pass
			H	23.98		
		E1	V	24.05		
			H	23.79		
		E2	V	23.90		
			H	23.68		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
WCDMA Band IV	Lowest	H	V	24.78	33.01	Pass
			H	22.81		
		E1	V	24.71		
			H	23.71		
		E2	V	24.40		
			H	23.42		
	Middle	H	V	24.64	33.01	Pass
			H	23.00		
		E1	V	24.59		
			H	23.46		
		E2	V	24.75		
			H	23.61		
	Highest	H	V	24.23	33.01	Pass
			H	23.18		
		E1	V	24.38		
			H	23.40		
		E2	V	24.46		
			H	23.43		

4.9 Field strength of spurious radiation measurement

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1053
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

Test mode:	GSM850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-36.51	-13.00	Pass
2472.60	V	-39.89		
3296.80	V	-38.15		
4121.00	V	-43.23		
4945.20	V	---		
1648.40	Horizontal	-39.06	-13.00	Pass
2472.60	H	-43.03		
3296.80	H	-45.10		
4121.00	H	-46.37		
4945.20	H	---		
Test mode:	GSM850		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-36.64	-13.00	Pass
2509.80	V	-39.76		
3346.40	V	-38.35		
4183.00	V	-43.52		
5019.60	V	---		
1673.20	Horizontal	-39.00	-13.00	Pass
2509.80	H	-42.43		
3346.40	H	-44.61		
4183.00	H	-45.98		
5019.60	H	---		
Test mode:	GSM850		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-36.35	-13.00	Pass
2546.40	V	-39.61		
3395.20	V	-38.25		
4244.00	V	-43.47		
5092.80	V	---		
1697.60	Horizontal	-38.77	-13.00	Pass
2546.40	H	-42.44		
3395.20	H	-45.29		
4244.00	H	-46.44		
5092.80	H	---		

Remark :

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	PCS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-37.09	-13.00	Pass
5550.60	V	-39.24		
7400.80	V	-37.90		
9251.00	V	-43.07		
11101.20	V	---		
3700.40	Horizontal	-38.85	-13.00	Pass
5550.60	H	-42.97		
7400.80	H	-45.01		
9251.00	H	-45.92		
11101.20	H	---		
Test mode:	PCS1900		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-37.30	-13.00	Pass
5640.00	V	-39.07		
7520.00	V	-38.35		
9400.00	V	-43.48		
11280.00	V	---		
3760.00	Horizontal	-39.35	-13.00	Pass
5640.00	H	-42.72		
7520.00	H	-45.26		
9400.00	H	-46.26		
11280.00	H	---		
Test mode:	PCS1900		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-36.92	-13.00	Pass
5729.40	V	-39.83		
7639.20	V	-38.03		
9549.00	V	-43.78		
11458.80	V	---		
3819.60	Horizontal	-38.78	-13.00	Pass
5729.40	H	-42.60		
7639.20	H	-45.10		
9549.00	H	-45.69		
11458.80	H	---		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band V		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1652.80	Vertical	-36.49	-13.00	Pass
2479.20	V	-39.28		
3305.60	V	-37.95		
4132.00	V	-43.03		
4958.40	V	---		
1652.80	Horizontal	-38.90	-13.00	Pass
2479.20	H	-42.32		
3305.60	H	-44.49		
4132.00	H	-46.31		
4958.40	H	---		
Test mode:	WCDMA Band V		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1672.80	Vertical	-36.91	-13.00	Pass
2509.20	V	-39.79		
3345.60	V	-38.17		
4182.00	V	-43.45		
5018.40	V	---		
1672.80	Horizontal	-39.18	-13.00	Pass
2509.20	H	-42.45		
3345.60	H	-44.85		
4182.00	H	-46.30		
5018.40	H	---		
Test mode:	WCDMA Band V		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1693.20	Vertical	-36.70	-13.00	Pass
2539.80	V	-39.73		
3386.40	V	-37.80		
4233.00	V	-43.09		
5079.60	V	---		
1693.20	Horizontal	-39.00	-13.00	Pass
2539.80	H	-42.81		
3386.40	H	-44.54		
4233.00	H	-46.04		
5079.60	H	---		

Remark :

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band II		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-39.41	-13.00	Pass
5557.20	V	-38.44		
7409.60	V	-43.44		
9262.00	V	---		
11114.40	V	-39.15		
3704.80	Horizontal	-42.33	-13.00	Pass
5557.20	H	-44.59		
7409.60	H	-46.23		
9262.00	H	-39.41		
11114.40	H	---		
Test mode:	WCDMA Band II		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-36.46	-13.00	Pass
5640.00	V	-39.13		
7520.00	V	-38.35		
9400.00	V	-43.06		
11280.00	V	---		
3760.00	Horizontal	-38.95	-13.00	Pass
5640.00	H	-42.08		
7520.00	H	-44.80		
9400.00	H	-46.19		
11280.00	H	---		
Test mode:	WCDMA Band II		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-36.80	-13.00	Pass
5722.80	V	-39.31		
7630.40	V	-38.32		
9538.00	V	-43.75		
11445.60	V	---		
3815.20	Horizontal	-39.12	-13.00	Pass
5722.80	H	-42.25		
7630.40	H	-44.90		
9538.00	H	-46.47		
11445.60	H	---		

Remark:

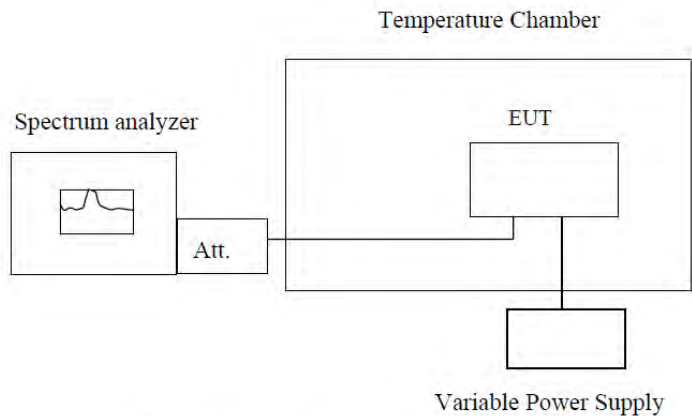
1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band IV		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3424.8	Vertical	-36.73	-13.00	Pass
5137.2	V	-39.92		
10274.4	V	-38.05		
15411.6	V	-42.92		
30823.2	V	---		
3424.8	Horizontal	-38.94	-13.00	Pass
5137.2	H	-42.96		
10274.4	H	-44.63		
15411.6	H	-45.63		
30823.2	H	---		
Test mode:	WCDMA Band IV		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3480	Vertical	-36.73	-13.00	Pass
5220	V	-39.92		
10440	V	-38.05		
15660	V	-42.92		
31320	V	---		
3480	Horizontal	-38.94	-13.00	Pass
5220	H	-42.96		
10440	H	-44.63		
15660	H	-45.63		
31320	H	---		
Test mode:	WCDMA Band IV		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3505.2	Vertical	-36.55	-13.00	Pass
5257.8	V	-39.60		
10515.6	V	-38.15		
15773.4	V	-43.72		
31546.8	V	---		
3505.2	Horizontal	-38.92	-13.00	Pass
5257.8	H	-42.58		
10515.6	H	-44.64		
15773.4	H	-46.04		
31546.8	H	---		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

4.10 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –20°C . After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	22	0.0259	2.5	Pass
	-10	23	0.0275		
	0	20	0.0239		
	10	-24	-0.0283		
	20	19	0.0227		
	30	14	0.0163		
	40	0	-0.0004		
	50	10	0.0120		
	60	13	0.0159		
Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	18	0.0213	2.5	Pass
	-10	23	0.0275		
	0	20	0.0240		
	10	-24	-0.0293		
	20	20	0.0243		
	30	16	0.0189		
	40	-3	-0.0037		
	50	8	0.0100		
	60	12	0.0139		
Reference Frequency: GSM850 (EGPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	20	0.0240	2.5	Pass
	-10	23	0.0275		
	0	23	0.0279		
	10	-24	-0.0288		
	20	18	0.0211		
	30	17	0.0199		
	40	-4	-0.0049		
	50	11	0.0131		
	60	13	0.0158		

Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error			Result
		Hz	ppm		
3.8	-20	21	0.0114	2.5	Pass
	-10	23	0.0122		
	0	21	0.0113		
	10	-25	-0.0133		
	20	20	0.0104		
	30	13	0.0067		
	40	-1	-0.0007		
	50	10	0.0054		
	60	17	0.0089		
Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error			Result
		Hz	ppm		
3.8	-20	18	0.0096	2.5	Pass
	-10	23	0.0122		
	0	22	0.0116		
	10	-23	-0.0124		
	20	19	0.0103		
	30	16	0.0087		
	40	-2	-0.0012		
	50	7	0.0040		
	60	17	0.0088		
Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error			Result
		Hz	ppm		
3.8	-20	18	0.0095	2.5	Pass
	-10	23	0.0122		
	0	19	0.0102		
	10	-27	-0.0142		
	20	21	0.0110		
	30	13	0.0070		
	40	-4	-0.0019		
	50	6	0.0033		
	60	14	0.0077		

Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	20	0.0234	2.5	Pass
	-10	23	0.0275		
	0	21	0.0252		
	10	-26	-0.0315		
	20	20	0.0235		
	30	14	0.0163		
	40	0	0.0000		
	50	9	0.0102		
	60	15	0.0182		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	21	0.0111	2.5	Pass
	-10	23	0.0122		
	0	25	0.0131		
	10	-28	-0.0148		
	20	21	0.0111		
	30	14	0.0077		
	40	-3	-0.0017		
	50	7	0.0039		
	60	12	0.0062		
Reference Frequency: WCDMA Band IV Middle channel=1450 channel=1740.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20	19	0.0109	2.5	Pass
	-10	23	0.0132		
	0	22	0.0126		
	10	-24	-0.0140		
	20	20	0.0115		
	30	16	0.0093		
	40	-4	-0.0021		
	50	12	0.0067		
	60	15	0.0087		

4.11 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	Note : Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25°C . Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data

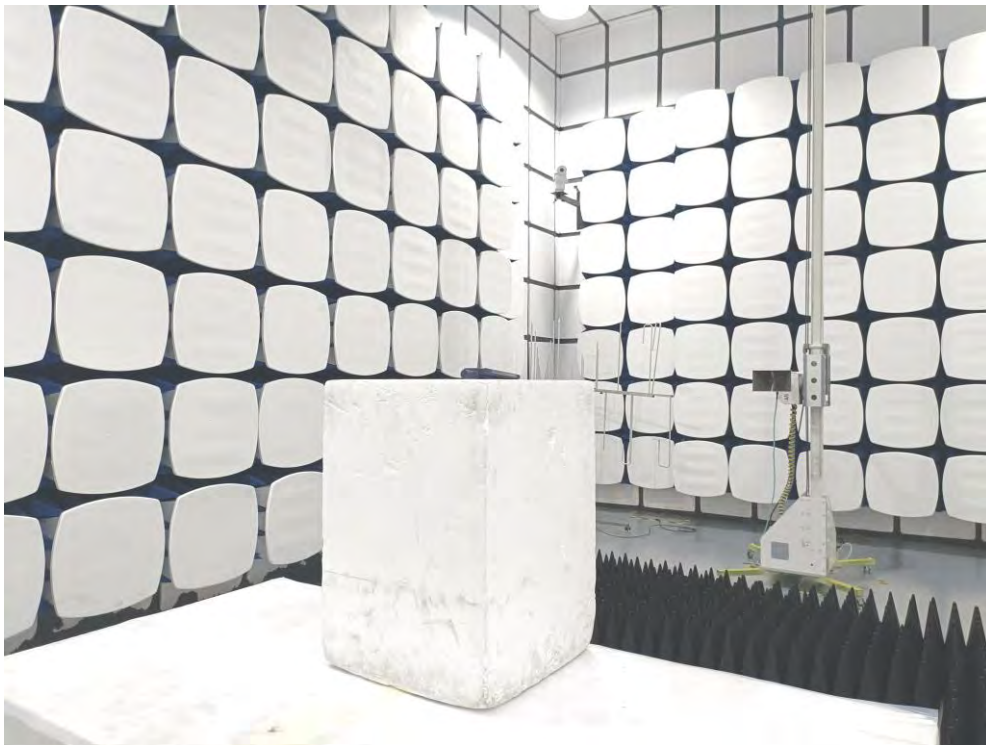
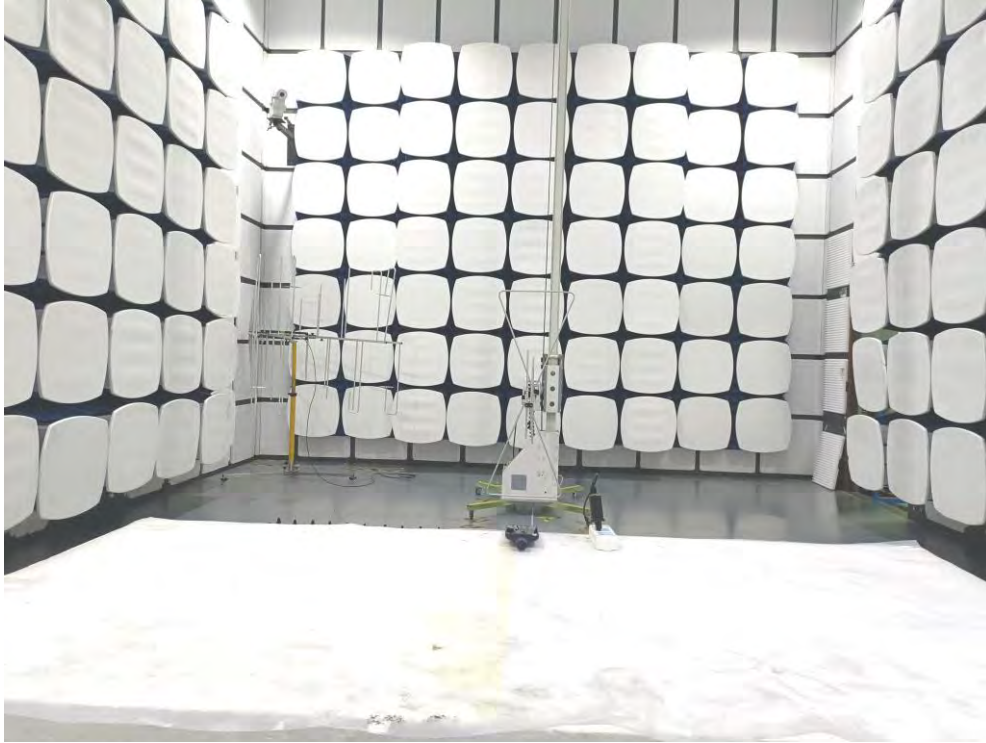
Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	18	0.0220	2.5	Pass
	3.80	23	0.0275		
	3.61	19	0.0231		
Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	22	0.0260	2.5	Pass
	3.80	17	0.0206		
	3.61	-2	-0.0027		
Reference Frequency: GSM850 (EGPRS 1 link) Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	8	0.0095	2.5	Pass
	3.80	14	0.0166		
	3.61	20	0.0245		

Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	21	0.0113	2.5	Pass
	3.80	-25	-0.0131		
	3.61	17	0.0091		
Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	-3	-0.0018	2.5	Pass
	3.80	10	0.0051		
	3.61	17	0.0089		
Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	17	0.0088	2.5	Pass
	3.80	23	0.0122		
	3.61	19	0.0102		

Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	15	0.0179	2.5	Pass
	3.80	23	0.0269		
	3.61	22	0.0258		
Reference Frequency: WCDMA Band II Middle channel=940 channel=1880.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	19	0.0100	2.5	Pass
	3.80	23	0.0122		
	3.61	20	0.0106		
Reference Frequency: WCDMA Band IV Middle channel=1450 channel=1740.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	18	0.0105	2.5	Pass
	3.80	23	0.0132		
	3.61	22	0.0127		

5 Test Setup Photo

Radiated Emission



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