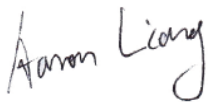
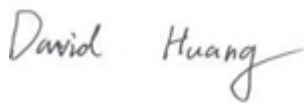


RF TEST REPORT



Report No.: 17071218-FCC-R1

Supersede Report No.: N/A

Applicant	Telepower Communication Co., Ltd	
Product Name	Smart POS Terminal	
Model No.	TPS900	
Serial No.	N/A	
Test Standard	FCC Part 22(H):2017 ;FCC Part 24(E):2017; ANSI/TIA-603-D: 2010	
Test Date	November 09, 2017 to January 29, 2018	
Issue Date	January 30, 2018	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
		
Aaron Liang Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
17071218-FCC-R1	NONE	Original	January 30, 2018

2. Customer information

Applicant Name	Telepower Communication Co., Ltd
Applicant Add	5 Bld, Zone A, Hantian Technology Town, No.17 ShenHai RD, Nanhai District Foshan, China
Manufacturer	Telepower Communication Co., Ltd
Manufacturer Add	5 Bld, Zone A, Hantian Technology Town, No.17 ShenHai RD, Nanhai District Foshan, China

3. Test site information

Test Lab A:

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

Test Lab B:

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMG(ver.lcp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.

4. Equipment under Test (EUT) Information

Description of EUT:	Smart POS Terminal
Main Model:	TPS900
Serial Model:	N/A
Date EUT received:	November 09, 2017
Test Date(s):	November 09, 2017 to January 29, 2018
Equipment Category :	PCT
Antenna Gain:	GSM850: -4dBi PCS1900: 0dBi UMTS-FDD Band V: -4dBi UMTS-FDD Band II: 0dBi LTE Band II: 0dBi LTE Band IV: 1dBi LTE Band V: -4dBi WIFI: 2.7dBi Bluetooth/BLE: 2.7dBi GPS: 1.6dBi
Antenna Type:	PIFA antenna
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK, 8PSK UMTS-FDD: QPSK LTE Band: QPSK, 16QAM 802.11b/g/n: DSSS, OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK GPS: BPSK

	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz
	PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz
	UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz
	UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz;
	RX: 1932.4 ~ 1987.6 MHz
RF Operating Frequency (ies):	LTE Band II TX: 1850.7 ~ 1909.3MHz; RX : 1930.7 ~ 1989.3 MHz
	LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX : 2110.7~ 2154.3 MHz
	LTE Band V TX: 824.7~ 848.3 MHz; RX : 869.7 ~ 893.3MHz
	WIFI: 802.11b/g/n(20M): 2412-2462 MHz
	WIFI: 802.11n(40M): 2422-2452 MHz
	Bluetooth& BLE: 2402-2480 MHz
	GPS: 1575.42 MHz
	GSM Voice:GSM850: 32.28dBm
	PCS1900: 29.65 dBm
	GPRS:GSM850: 32.24dBm
	PCS1900: 29.71dBm
	EGPRS(MCS5):GSM850: 26.49dBm
Maximum Conducted	PCS1900: 26.01dBm
AV Power to Antenna:	RMC:UMTS-FDD Band V: 23.54 dBm
	UMTS-FDD Band II: 23.26 dBm
	HSUPA:UMTS-FDD Band V: 22.95dBm
	UMTS-FDD Band II: 22.67dBm
	HSDPA:UMTS-FDD Band V: 22.96dBm
	UMTS-FDD Band II: 22.65 dBm
	GSM Voice:GSM850: 30.63dBm / ERP
	PCS1900: 30.45dBm / EIRP
	GPRS:GSM850: 30.59dBm / ERP
	PCS1900: 30.51 dBm / EIRP
	EGPRS(MCS5):GSM850: 24.84dBm / ERP
ERP/EIRP:	PCS1900: 26.81 dBm / EIRP
	RMC:UMTS-FDD Band V: 21.89dBm / ERP
	UMTS-FDD Band II: 24.06 dBm / EIRP
	HSDPA:UMTS-FDD Band V: 21.24 dBm / ERP
	UMTS-FDD Band II: 23.29 dBm / EIRP
	HSUPA:UMTS-FDD Band V:21.29 dBm / ERP
	UMTS-FDD Band II: 23.36dBm / EIRP

Number of Channels:	GSM 850: 124CH
	PCS1900: 299CH
	UMTS-FDD Band V: 102CH
	UMTS-FDD Band II: 277CH
	WIFI :802.11b/g/n(20M): 11CH
	WIFI :802.11n(40M): 7CH
	Bluetooth: 79CH
	BLE: 40CH
Port:	GPS:1CH
	Please refer to user manual
	Adapter:
	Model: SC/10WA050200US
	Input: AC100-240V~50/60Hz,0.5A
	Output: DC 5.0V,2A
Input Power:	Battery
	Model: 325987P
	Spec: 7.4V/2200mAh,16.28Wh
	Charging limited voltage: 8.4V
Trade Name :	N/A
GPRS/ EGPRS Multi-slot class	8/10/11/12
FCC ID:	2AJ2B-TPS900

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§ 1.1307; § 2.1093	RF Exposure (SAR)	Compliance
§2.1046; § 22.913(a); § 24.232(c); § 27.50(c.10) ;	RF Output Power	Compliance
§ 24.232 (d) ;	Peak-Average Ratio	Compliance
§ 2.1049; § 22.905; § 22.917; § 24.238;	99% & -26 dB Occupied Bandwidth	Compliance
§ 2.1051; § 22.917(a); § 24.238(a);	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917(a); § 24.238(a);	Field Strength of Spurious Radiation	Compliance
§ 22.917(a); § 24.238(a);	Out of band emission, Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235;	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 RF Exposure (SAR)

Test Result: Pass

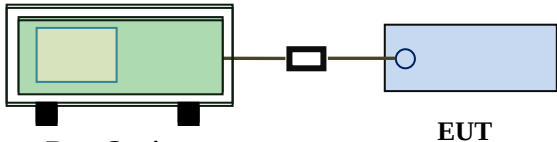
The EUT is a portable device, thus requires SAR evaluation;
Please refer to RF Exposure Evaluation Report: 17071218-FCC-H.

6.2 RF Output Power

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.913 (a)	a)	ERP:38.45dBm	☒
§24.232 (c)	b)	EIRP:33dBm	☒

Test Setup	 Base Station EUT
------------	--

Test Procedure	For Conducted Power: - The transmitter output port was connected to base station. - Set EUT at maximum power through base station. - Select lowest, middle, and highest channels for each band and different test mode. For ERP/EIRP: According with KDB 971168 v02r02 - The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. - The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. - The frequency range up to tenth harmonic of the fundamental frequency was investigated.
----------------	---

	- Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. - Spurious emissions in dB = $10 \log (\text{TX power in Watts}/0.001)$ – the absolute level - Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$.
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A
 Test Plot ☐ Yes (See below) ☒ N/A

Conducted Power

GSM Mode:

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink),GMSK	32.28	32.24	32.16	32±1	29.65	29.34	29.39	30±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	32.24	32.21	32.16	32±1	29.71	29.35	29.40	30±1
GPRS Multi-Slot Class 10 (2 uplink),GMSK	32.07	32.07	32.05	32±1	29.59	29.28	29.32	29±1
GPRS Multi-Slot Class 11 (3 uplink) GMSK	30.58	30.60	30.50	30±1	29.45	29.15	29.17	29±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	29.51	29.40	29.41	29±1	29.31	28.94	29.02	29±1
EGPRS Multi-Slot Class 8 (1 uplink) GMSK MCS1	32.20	32.19	32.13	32±1	29.68	29.35	29.39	29±1
EGPRS Multi-Slot Class 10 (2 uplink) GMSK MCS1	32.06	32.02	32.00	32±1	29.58	29.27	29.30	29±1
EGPRS Multi-Slot Class 11 (3 uplink) GMSK MCS1	30.58	30.48	30.41	30±1	29.48	29.14	29.16	29±1
EGPRS Multi-Slot Class 12 (4 uplink) GMSK MCS1	29.40	29.36	29.3	29±1	29.25	29.01	29.04	29±1
EGPRS Multi-Slot Class 8 (1 uplink) GMSK MCS5	26.49	26.37	26.27	26±1	26.01	25.85	25.82	26±1

EGPRS Multi-Slot Class 10 (2 uplink) GMSK MCS5	26.35	26.26	26.16	26±1	25.85	25.75	25.71	25±1
EGPRS Multi-Slot Class 11 (3 uplink) GMSK MCS5	26.30	26.27	26.20	26±1	25.70	25.65	25.54	25±1
EGPRS Multi-Slot Class 12 (4 uplink) GMSK MCS5	26.16	26.11	26.02	26±1	25.54	25.45	25.35	25±1

Remark :

GPRS, CS1 coding scheme.

EGPRS, MCS1 coding scheme.

EGPRS, MCS5 coding scheme.

Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link

Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 11 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link

UMTS Mode:

UMTS-FDD Band V

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
RMC 12.2kbps	4132	826.4	23.49	23±1
	4175	835	23.54	23±1
	4233	846.6	23.49	23±1
HSDPA Subtest1	4132	826.4	22.89	22±1
	4175	835	22.74	22±1
	4233	846.6	22.77	22±1
HSDPA Subtest2	4132	826.4	22.95	22±1
	4175	835	22.87	22±1
	4233	846.6	22.80	22±1
HSDPA Subtest3	4132	826.4	22.81	22±1
	4175	835	22.90	22±1
	4233	846.6	22.86	22±1
HSDPA Subtest4	4132	826.4	22.79	22±1
	4175	835	22.87	22±1
	4233	846.6	22.83	22±1
HSUPA Subtest1	4132	826.4	22.83	22±1
	4175	835	22.94	22±1
	4233	846.6	22.76	22±1
HSUPA Subtest2	4132	826.4	22.82	22±1
	4175	835	22.89	22±1
	4233	846.6	22.59	22±1
HSUPA Subtest3	4132	826.4	22.86	22±1
	4175	835	22.83	22±1
	4233	846.6	22.76	22±1
HSUPA Subtest4	4132	826.4	22.53	22±1
	4175	835	22.70	22±1
	4233	846.6	22.57	22±1
HSUPA Subtest5	4132	826.4	22.91	22±1
	4175	835	22.90	22±1
	4233	846.6	22.96	22±1

UMTS-FDD Band II

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
RMC 12.2kbps	9262	1852.4	23.22	23±1
	9400	1880	23.16	23±1
	9538	1907.6	23.26	23±1
HSDPA Subtest1	9262	1852.4	22.45	22±1
	9400	1880	22.36	22±1
	9538	1907.6	22.49	22±1
HSDPA Subtest2	9262	1852.4	22.52	22±1
	9400	1880	22.47	22±1
	9538	1907.6	22.57	22±1
HSDPA Subtest3	9262	1852.4	22.53	22±1
	9400	1880	22.37	22±1
	9538	1907.6	22.66	22±1
HSDPA Subtest4	9262	1852.4	22.61	22±1
	9400	1880	22.51	22±1
	9538	1907.6	22.67	22±1
HSUPA Subtest1	9262	1852.4	22.42	21±1
	9400	1880	22.40	22±1
	9538	1907.6	22.56	22±1
HSUPA Subtest2	9262	1852.4	22.38	21±1
	9400	1880	22.21	22±1
	9538	1907.6	22.36	22±1
HSUPA Subtest3	9262	1852.4	22.50	22±1
	9400	1880	22.53	22±1
	9538	1907.6	22.51	22±1
HSUPA Subtest4	9262	1852.4	22.50	21±1
	9400	1880	22.25	22±1
	9538	1907.6	22.42	22±1
HSUPA Subtest5	9262	1852.4	22.65	21±1
	9400	1880	22.42	22±1
	9538	1907.6	22.52	22±1

ERP & EIRP

GSM Voice

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	25.06	V	6.1	0.53	30.63	38.45
824.2	23.89	H	6.1	0.53	29.46	38.45
836.6	24.92	V	6.2	0.53	30.59	38.45
836.6	24.01	H	6.2	0.53	29.68	38.45
848.8	24.84	V	6.2	0.53	30.51	38.45
848.8	23.51	H	6.2	0.53	29.18	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	23.29	V	7.88	0.72	30.45	33
1850.2	22.37	H	7.88	0.72	29.53	33
1880	22.98	V	7.88	0.72	30.14	33
1880	21.42	H	7.88	0.72	28.58	33
1909.8	23.05	V	7.86	0.72	30.19	33
1909.8	21.07	H	7.86	0.72	28.21	33

GPRS:

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	25.02	V	6.1	0.53	30.59	38.45
824.2	24.06	H	6.1	0.53	29.63	38.45
836.6	24.89	V	6.2	0.53	30.56	38.45
836.6	23.93	H	6.2	0.53	29.60	38.45
848.8	24.84	V	6.2	0.53	30.51	38.45
848.8	23.46	H	6.2	0.53	29.13	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	23.35	V	7.88	0.72	30.51	33
1850.2	21.54	H	7.88	0.72	28.70	33
1880	22.99	V	7.88	0.72	30.15	33
1880	21.63	H	7.88	0.72	28.79	33
1909.8	23.06	V	7.86	0.72	30.20	33
1909.8	22.04	H	7.86	0.72	29.18	33

EGPRS (MCS5):

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	19.27	V	6.1	0.53	24.84	38.45
824.2	18.01	H	6.1	0.53	23.58	38.45
836.6	19.05	V	6.2	0.53	24.72	38.45
836.6	17.92	H	6.2	0.53	23.59	38.45
848.8	18.95	V	6.2	0.53	24.62	38.45
848.8	17.9	H	6.2	0.53	23.57	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	19.65	V	7.88	0.72	26.81	33
1850.2	18.29	H	7.88	0.72	25.45	33
1880	19.49	V	7.88	0.72	26.65	33
1880	17.54	H	7.88	0.72	24.70	33
1909.8	19.48	V	7.86	0.72	26.62	33
1909.8	18.57	H	7.86	0.72	25.71	33

RMC

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	16.27	V	6.1	0.53	21.84	38.45
826.4	14.8	H	6.1	0.53	20.37	38.45
835	16.22	V	6.2	0.53	21.89	38.45
835	15.14	H	6.2	0.53	20.81	38.45
846.6	16.17	V	6.2	0.53	21.84	38.45
846.6	14.75	H	6.2	0.53	20.42	38.45

EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	16.86	V	7.88	0.72	24.02	33
1852.4	14.99	H	7.88	0.72	22.15	33
1880	16.8	V	7.88	0.72	23.96	33
1880	15.98	H	7.88	0.72	23.14	33
1907.6	16.92	V	7.86	0.72	24.06	33
1907.6	15.96	H	7.86	0.72	23.10	33

HSDPA

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	15.67	V	6.1	0.53	21.24	38.45
826.4	14.96	H	6.1	0.53	20.53	38.45
835	15.42	V	6.2	0.53	21.09	38.45
835	14.51	H	6.2	0.53	20.18	38.45
846.6	15.45	V	6.2	0.53	21.12	38.45
846.6	13.46	H	6.2	0.53	19.13	38.45

EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	16.09	V	7.88	0.72	23.25	33
1852.4	14.13	H	7.88	0.72	21.29	33
1880	16	V	7.88	0.72	23.16	33
1880	15.08	H	7.88	0.72	22.24	33
1907.6	16.15	V	7.86	0.72	23.29	33
1907.6	14.31	H	7.86	0.72	21.45	33

HSUPA

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	15.61	V	6.1	0.53	21.18	38.45
826.4	14	H	6.1	0.53	19.57	38.45
835	15.62	V	6.2	0.53	21.29	38.45
835	14.02	H	6.2	0.53	19.69	38.45
846.6	15.44	V	6.2	0.53	21.11	38.45
846.6	14.43	H	6.2	0.53	20.10	38.45

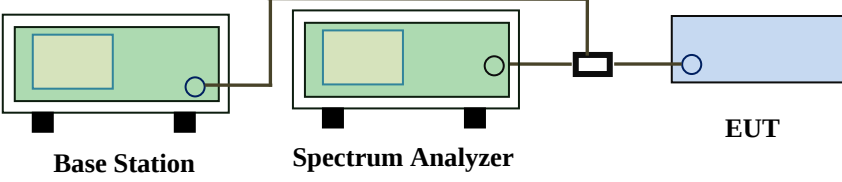
EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	16.06	V	7.88	0.72	23.22	33
1852.4	15.08	H	7.88	0.72	22.24	33
1880	16.04	V	7.88	0.72	23.20	33
1880	14.36	H	7.88	0.72	21.52	33
1907.6	16.22	V	7.86	0.72	23.36	33
1907.6	15.33	H	7.86	0.72	22.47	33

6.3 Peak-Average Ratio

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§24.232(d)	a)	The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.	☒
Test Setup	 Base Station Spectrum Analyzer EUT		
Test Procedure	According with KDB 971168 v02r02 5.7.2 Alternate procedure for PAPR 5.1.2 Peak power measurements with a peak power meter The total peak output power may be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector. 5.2.3 Average power measurement with average power meter As an alternative to the use of a spectrum/signal analyzer or EMI receiver to perform a measurement of the total in-band average output power, a wideband RF average power meter with a thermocouple detector or equivalent can be used under certain conditions If the EUT can be configured to transmit continuously (i.e., the burst duty cycle $\geq 98\%$) and at all times the EUT is transmitting at its maximum output		

	power level, then a conventional wide-band RF power meter can be used. If the EUT cannot be configured to transmit continuously (i.e., the burst duty cycle < 98%), then there are two options for the use of an average power meter. First, a gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only over active transmission bursts at maximum output power levels. A conventional average power meter can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to $10\log(1/\text{duty cycle})$
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A
 Test Plot ☐ Yes (See below) ☒ N/A

GSM : GSM 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.66	29.65	1.01
1880	30.42	29.34	1.08
1909.8	30.41	29.39	1.02

GPRS 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.77	29.71	1.06
1880	30.34	29.35	0.99
1909.8	30.44	29.4	1.04

EGPRS (MSC5) 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	26.89	26.01	0.88
1880	26.87	25.85	1.02
1909.8	26.72	25.82	0.9

RMC : UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	24.18	23.22	0.96
1880	24.13	23.16	0.97
1907.6	24.16	23.26	0.9

HSDPA : UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	23.36	22.42	0.94
1880	23.43	22.4	1.03
1907.6	23.46	22.56	0.9

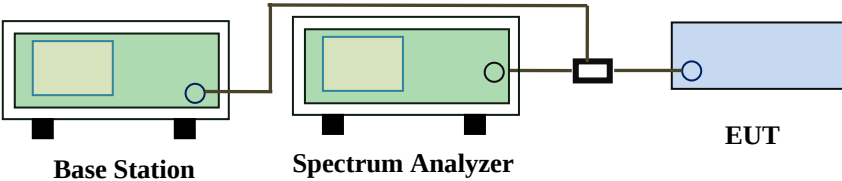
HSUPA : UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	23.43	22.45	0.98
1880	23.35	22.36	0.99
1907.6	23.39	22.49	0.9

6.4 Occupied Bandwidth

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1049, §22.917, §22.905 §24.238	a)	99% Occupied Bandwidth(kHz)	☒
	b)	26 dB Bandwidth(kHz)	☒
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.		
Remark			
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

GSM Voice:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.60	316.6
190	836.6	248.75	318.1
251	848.8	249.62	318.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850	248.70	315.1
661	1880	248.29	311.0
810	1910	243.65	304.9

GPRS:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.21	317.7
190	836.6	251.23	318.6
251	848.8	246.65	315.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850	248.26	314.7
661	1880	246.40	310.1
810	1910	243.66	306.7

EGPRS (MCS 5):

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.54	317.7
190	836.6	250.22	318.1
251	848.8	246.78	315.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	248.57	315.1
661	1880.0	247.78	308.9
810	1909.8	244.45	304.9

RMC:

UMTS-FDD Band V (Part 22H)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.0922	4.641
4175	835.0	4.0937	4.637
4233	846.4	4.0608	4.654

UMTS-FDD Band II (Part 24E)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.1159	4.659
9400	1880	4.0941	4.644
9538	1907	4.1054	4.670

HSDPA:

UMTS-FDD Band V (Part 22H)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.1013	4.633
4175	835.0	4.0934	4.646
4233	846.4	4.0622	4.640

UMTS-FDD Band II (Part 24E)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.1037	4.666
9400	1880	4.1051	4.632
9538	1907	4.0974	4.673

HSUPA:

UMTS-FDD Band V (Part 22H)

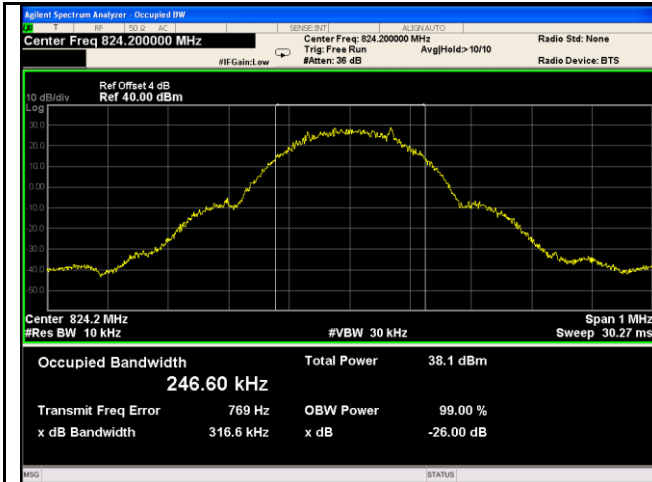
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.0963	4.635
4175	835.0	4.0957	4.643
4233	846.4	4.0656	4.645

UMTS-FDD Band II (Part 24E)

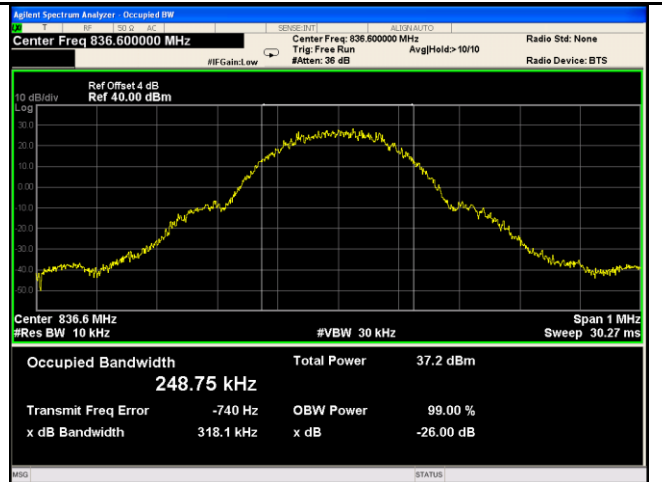
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.0992	4.664
9400	1880	4.0959	4.644
9538	1907	4.0963	4.674

Test Plots

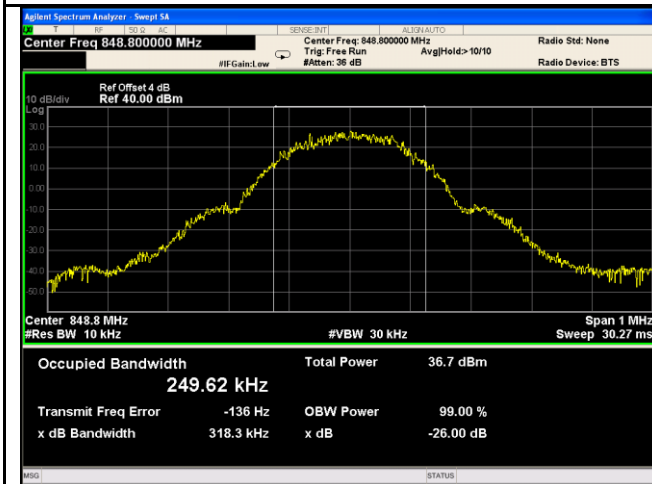
GSM Voice:



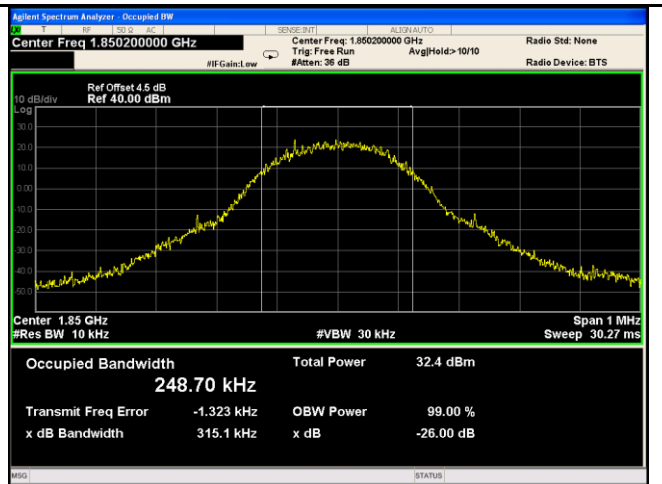
GSM 850 BW - Low CH 824.2MHz



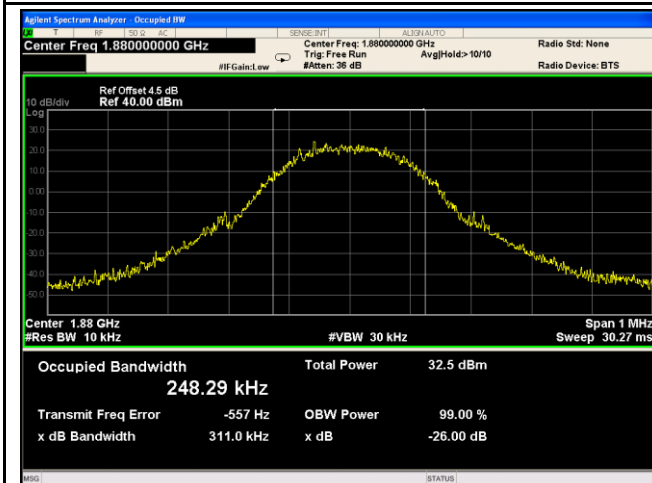
GSM 850 BW - Mid CH 836.6MHz



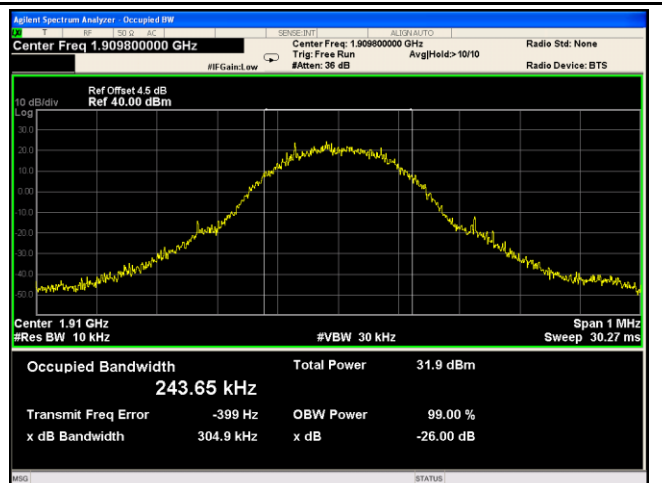
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

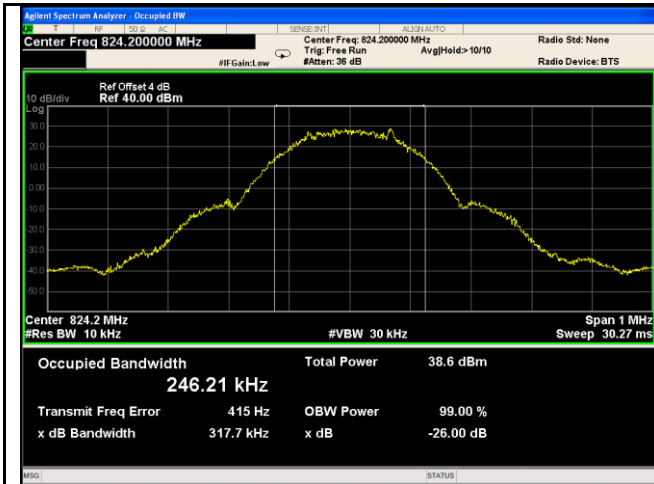


PCS 1900 BW - Mid CH 1880MHz

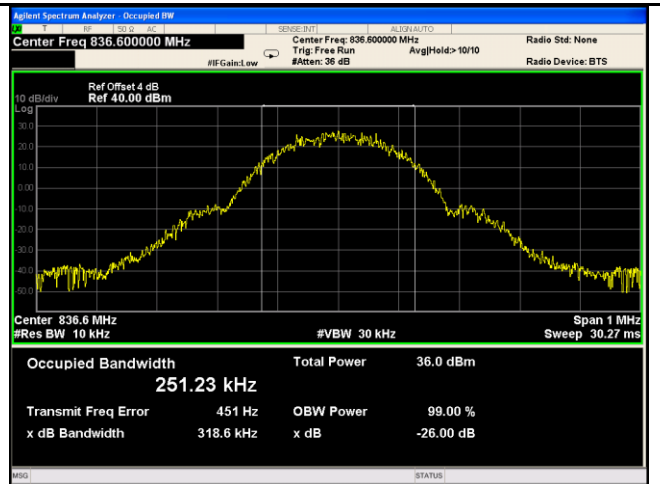


PCS 1900 BW - High CH 1910MHz

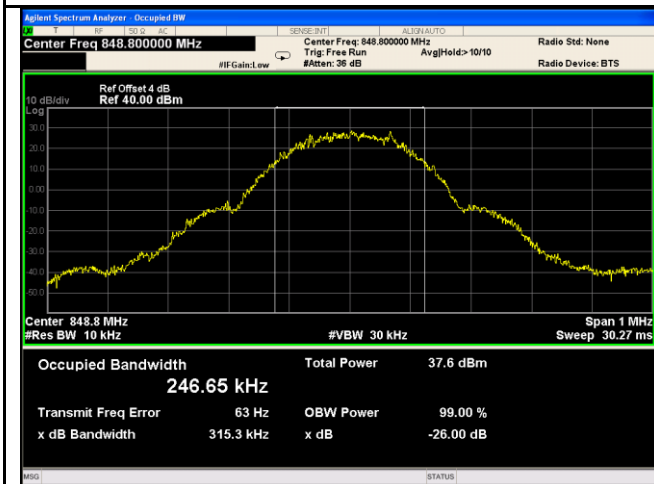
GPRS:



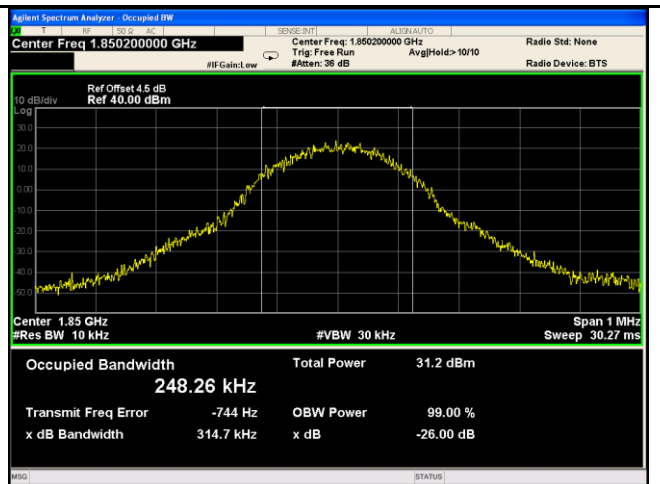
GSM 850 BW - Low CH 824.2MHz



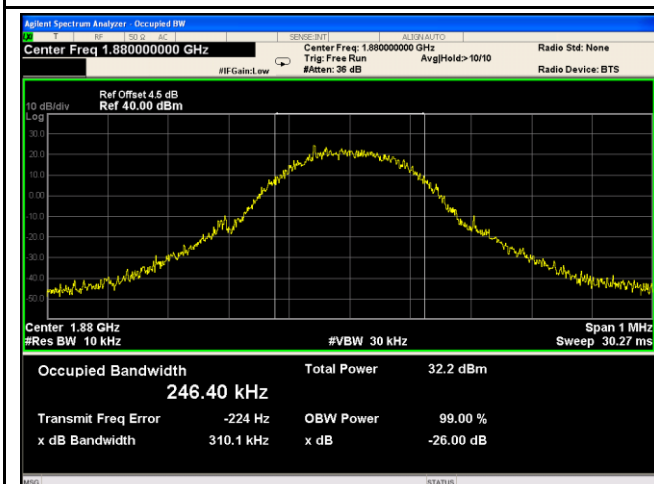
GSM 850 BW - Mid CH 836.6MHz



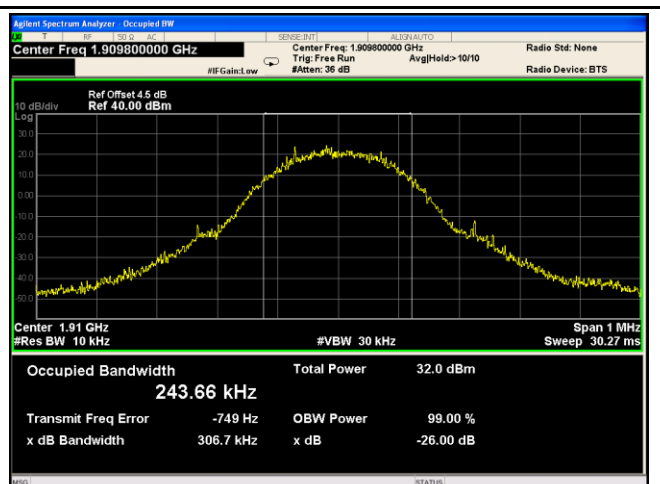
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

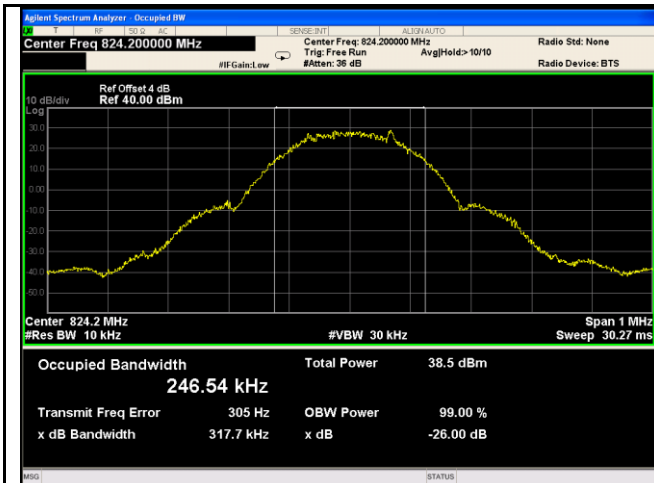


PCS 1900 BW - Mid CH 1880MHz

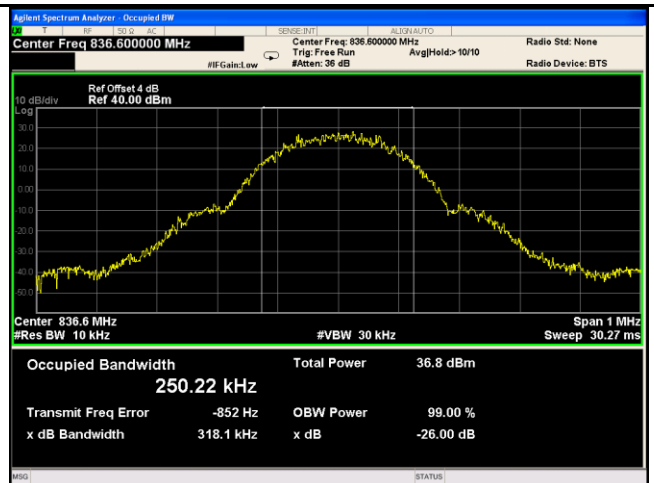


PCS 1900 BW - High CH 1910MHz

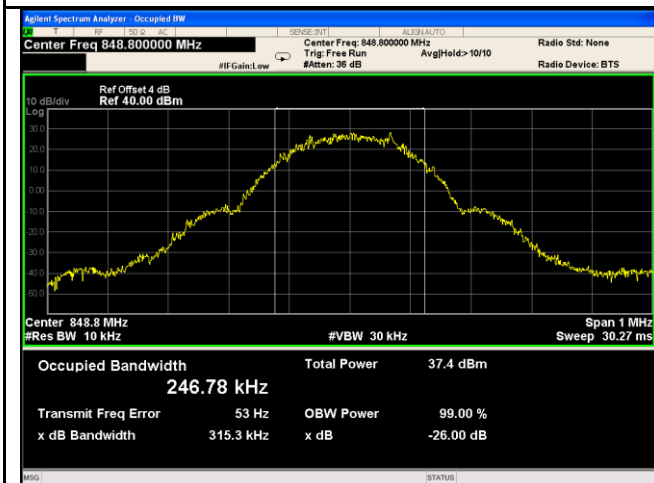
EGPRS:



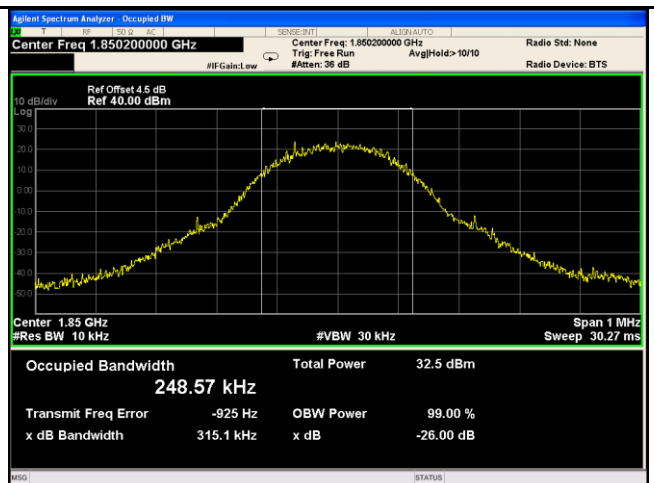
GSM 850 BW - Low CH 824.2MHz



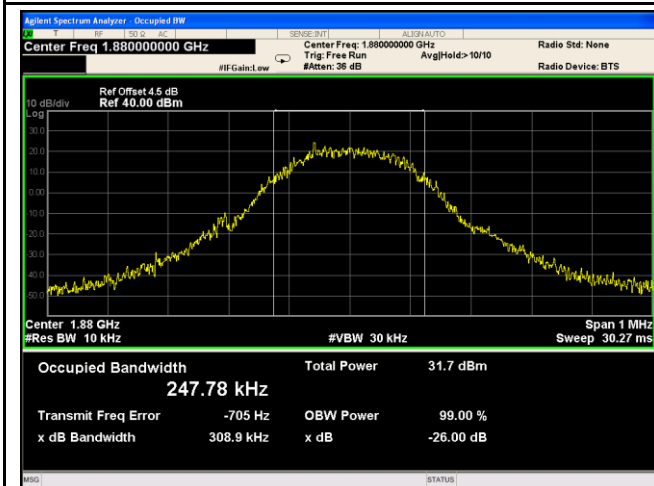
GSM 850 BW - Mid CH 836.6MHz



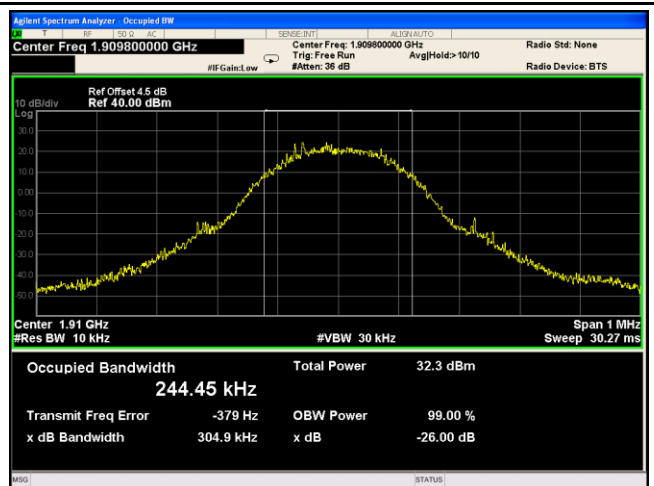
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850.2MHz

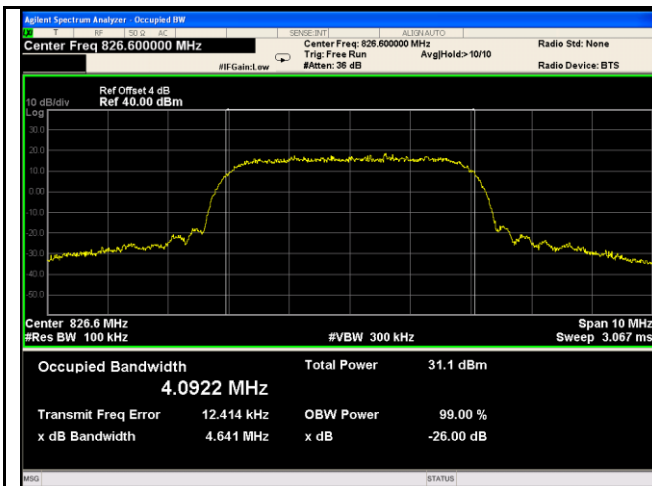


PCS 1900 BW - Mid CH 1880MHz

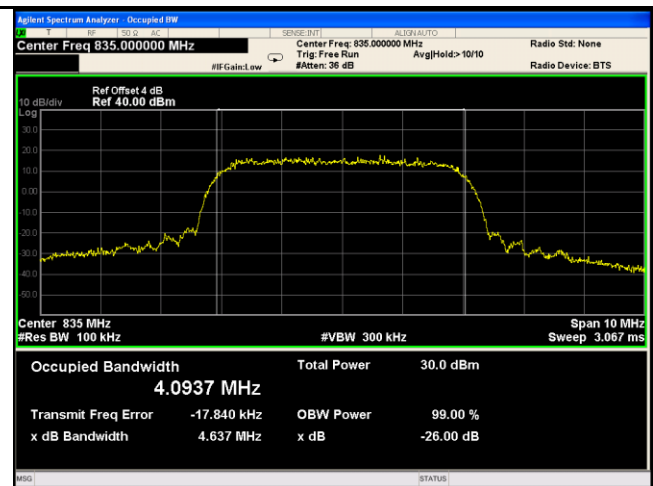


PCS 1900 BW - High CH 1910MHz

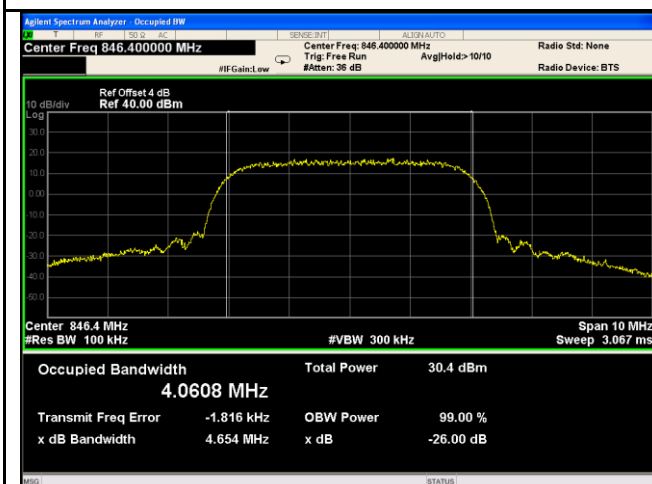
RMC:



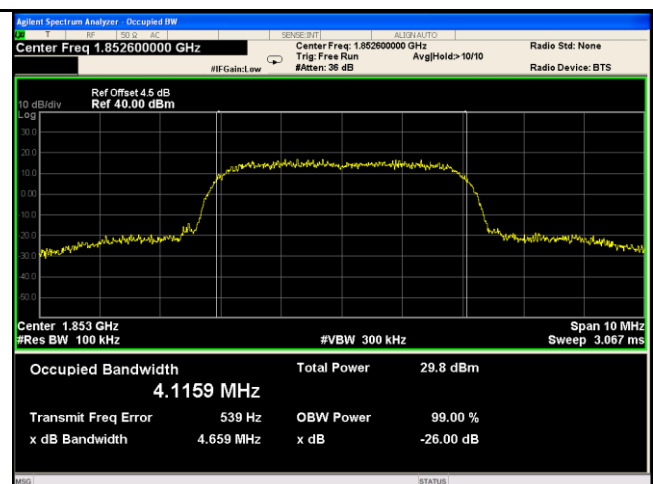
Band V BW - Low CH 826.6 MHz



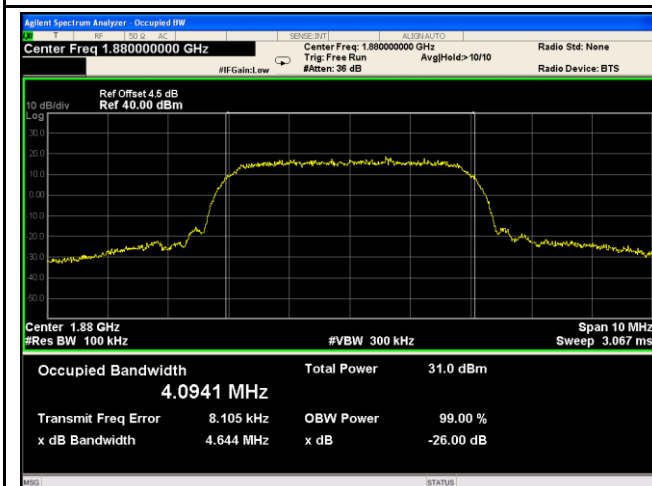
Band V BW - Mid CH 835.0 MHz



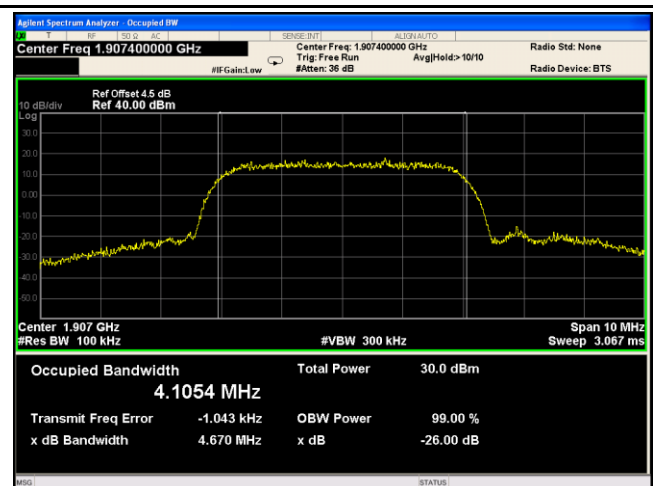
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz

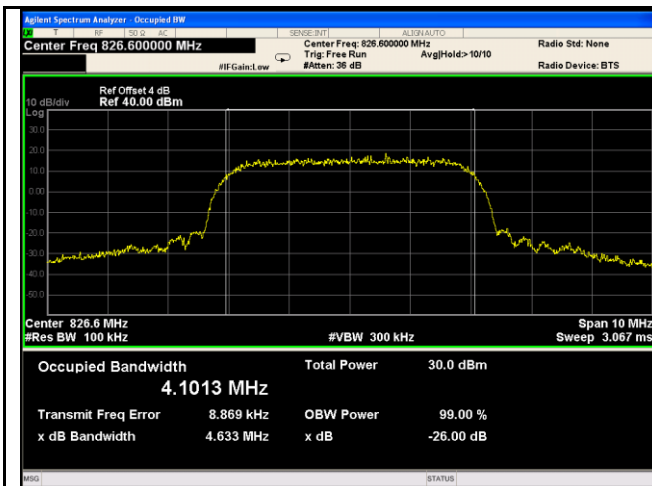


Band II BW - Mid CH 1880MHz

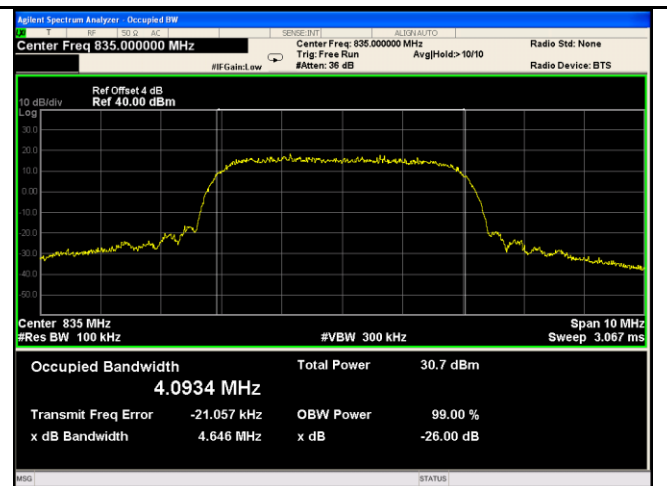


Band II BW - High CH 1907MHz

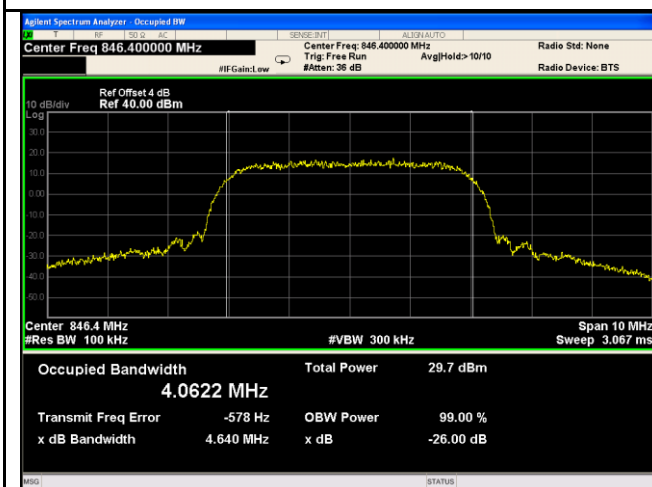
HSDPA:



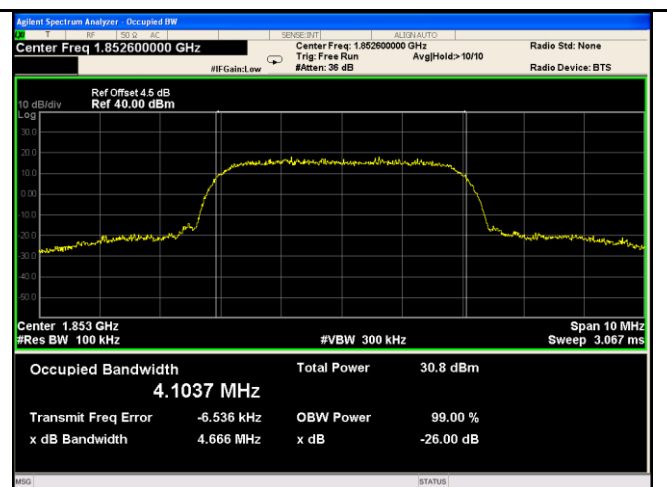
Band V BW - Low CH 826.6 MHz



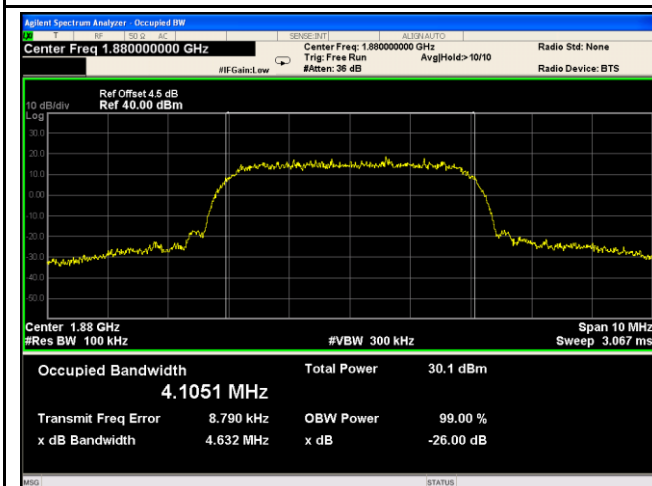
Band V BW - Mid CH 835.0 MHz



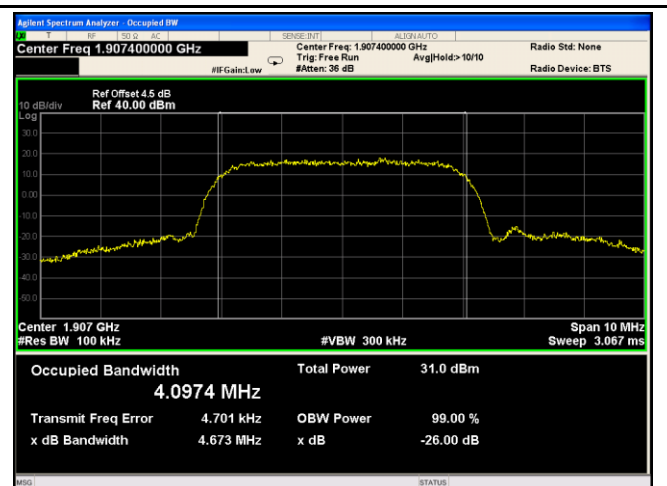
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz

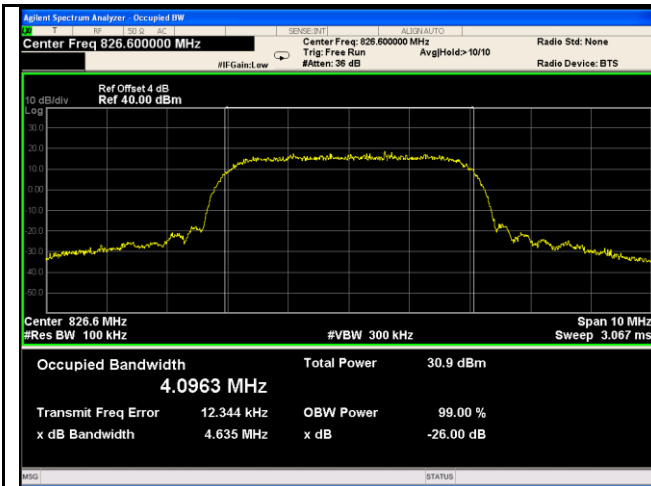


Band II BW - Mid CH 1880MHz

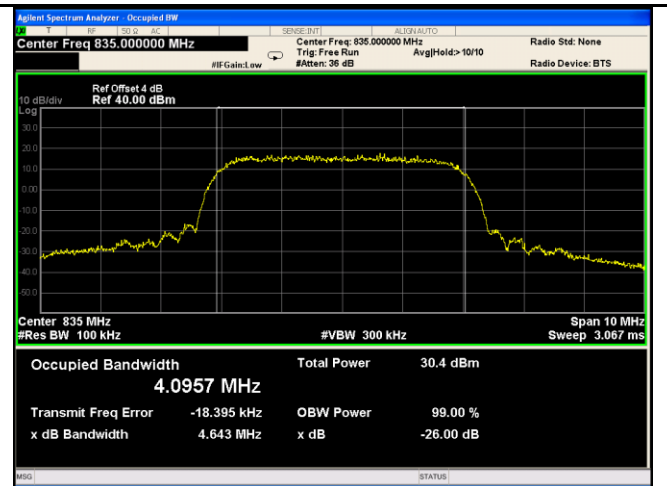


Band II BW - High CH 1907MHz

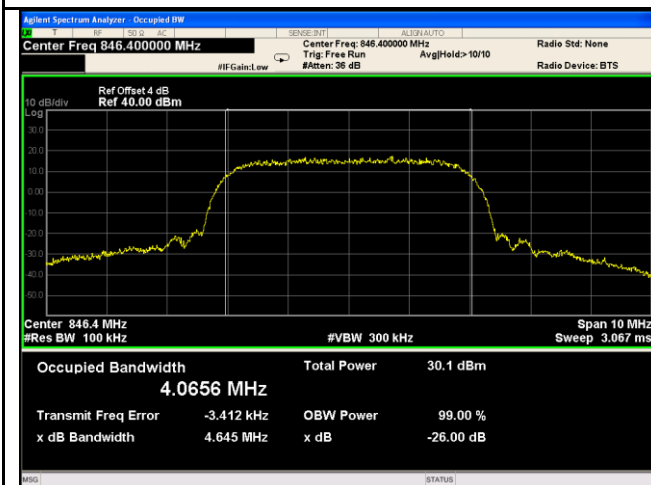
HSUPA:



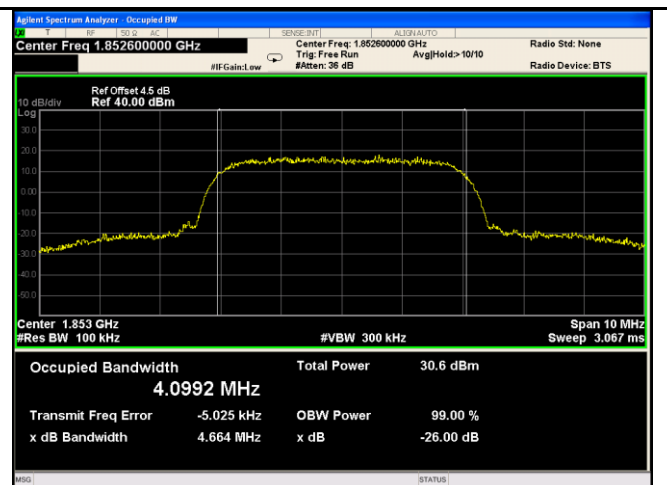
Band V BW - Low CH 826.6 MHz



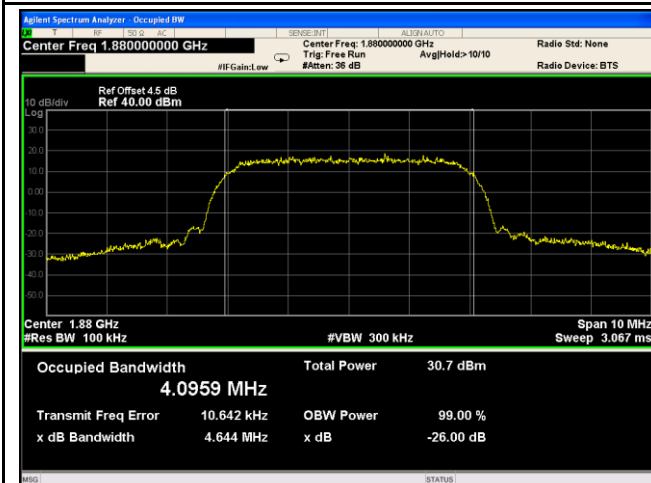
Band V BW - Mid CH 835.0 MHz



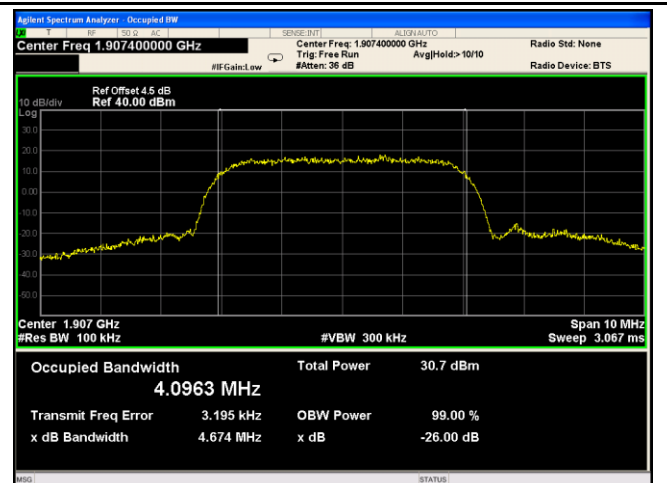
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz



Band II BW - Mid CH 1880MHz

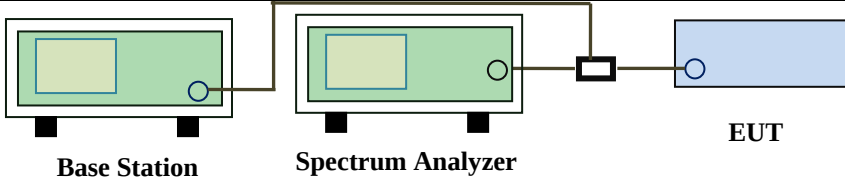


Band II BW - High CH 1907MHz

6.5 Spurious Emissions at Antenna Terminals

Temperature	26°C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

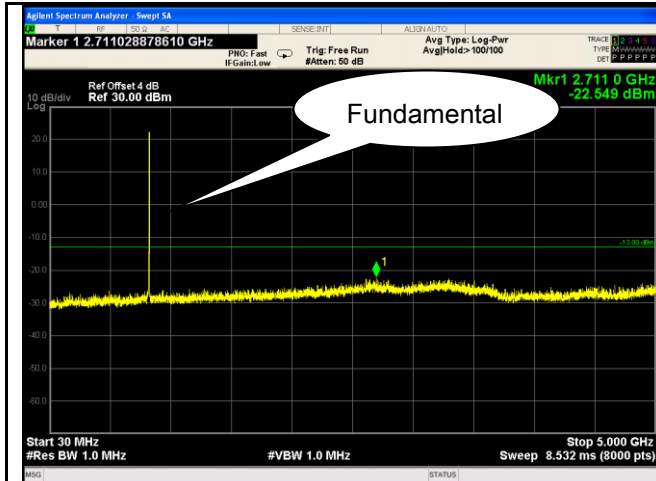
Spec	Item	Requirement	Applicable
§2.1051, §22.917(a)& §24.238(a)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB	☒
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. - Setting RBW as roughly BW/100.		
Remark			
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A
 Test Plot ☒ Yes (See below) ☐ N/A

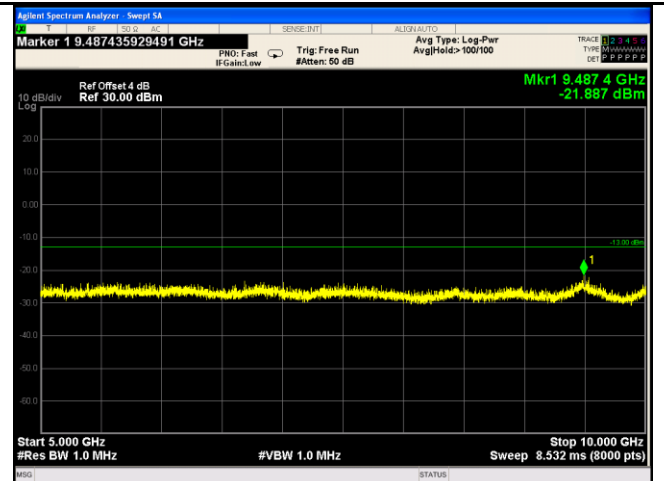
Test Plots

GSM Voice:

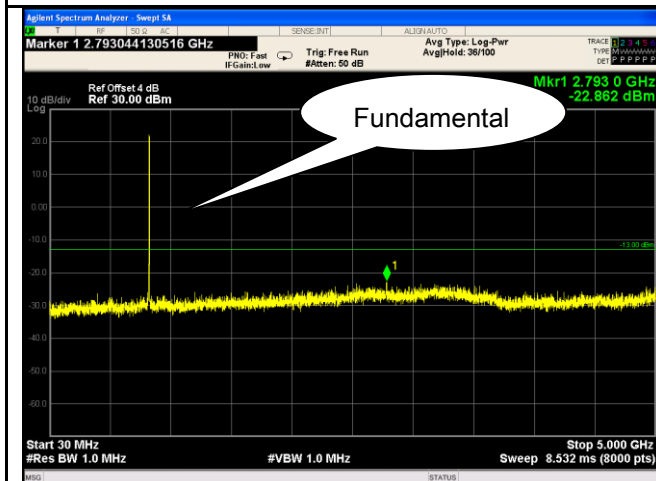
Cellular Band (Part 22H) result



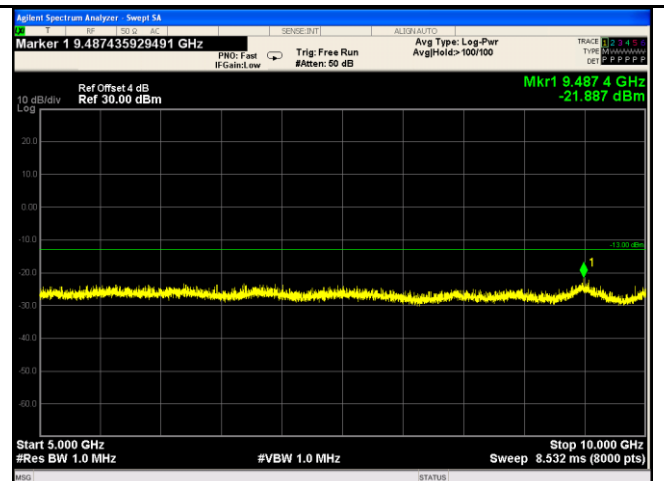
GSM 850 - Low Channel-1



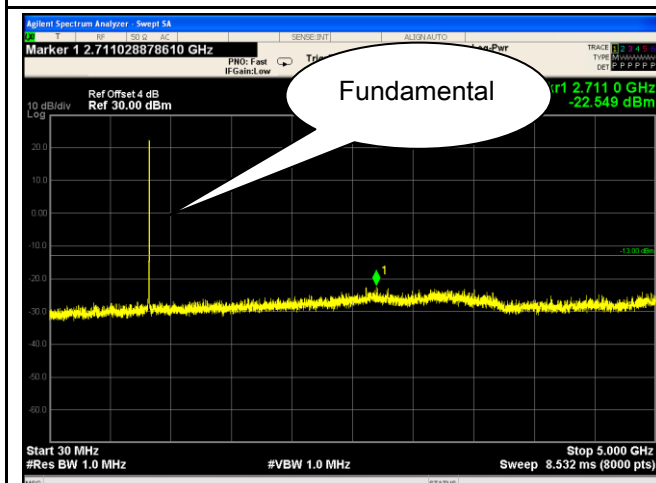
GSM 850 - Low Channel-2



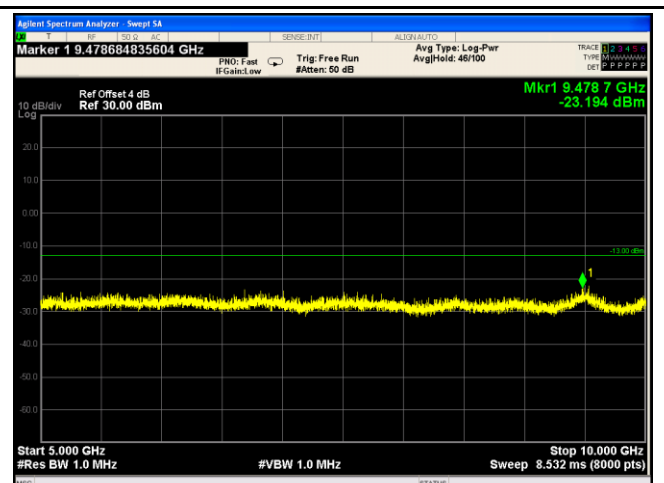
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

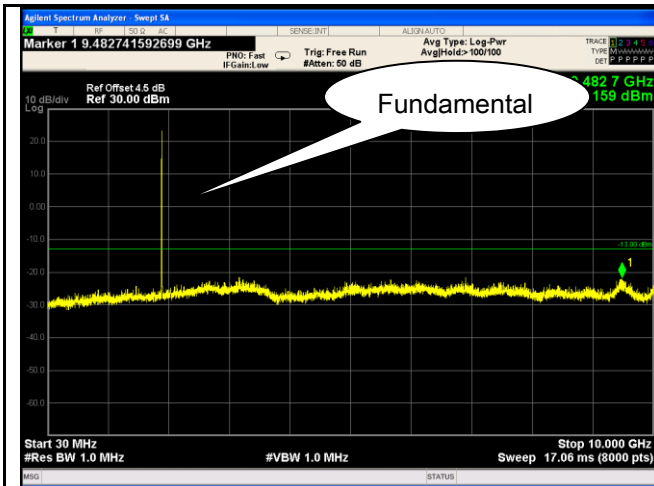


GSM 850 - High Channel-1

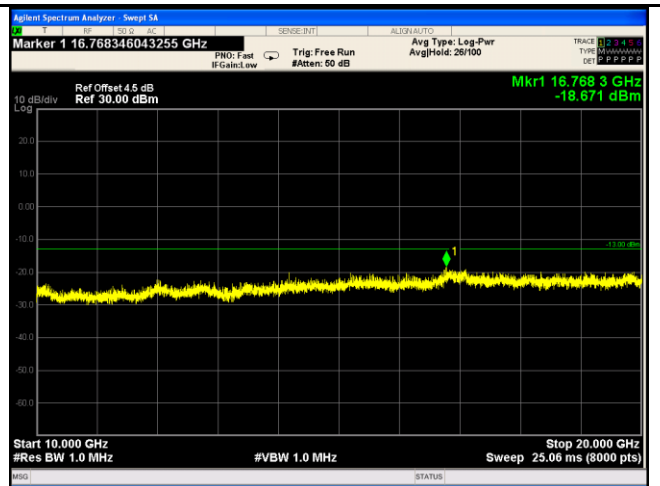


GSM 850 - High Channel-2

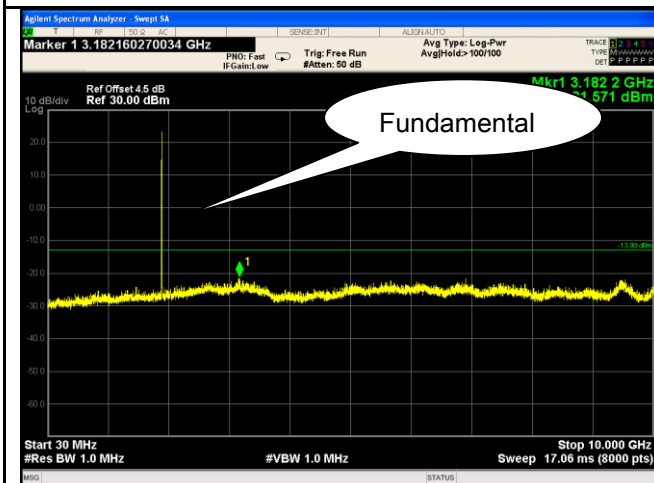
PCS Band (Part24E) result



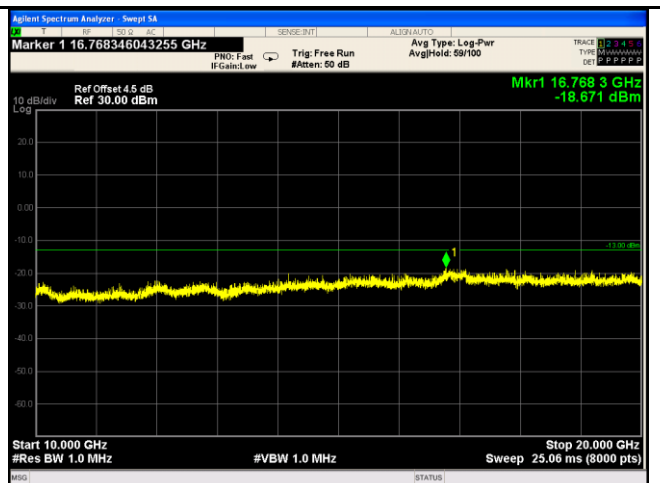
PCS1900 - Low Channel-1



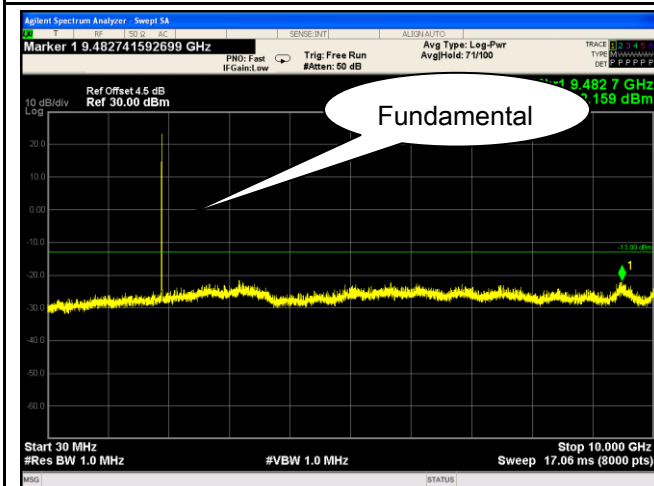
PCS 1900 - Low Channel-2



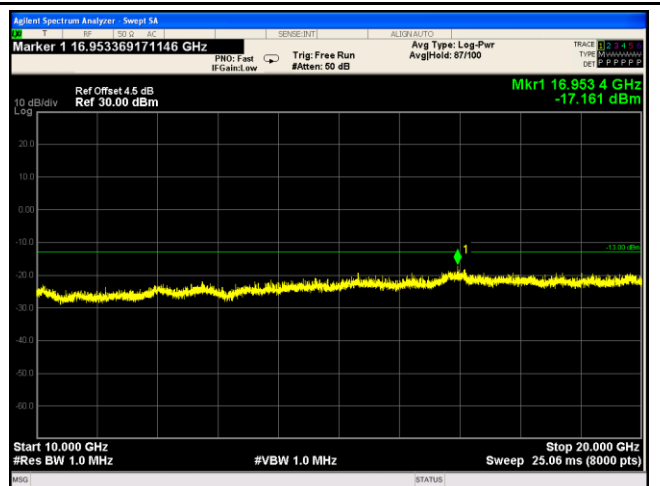
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



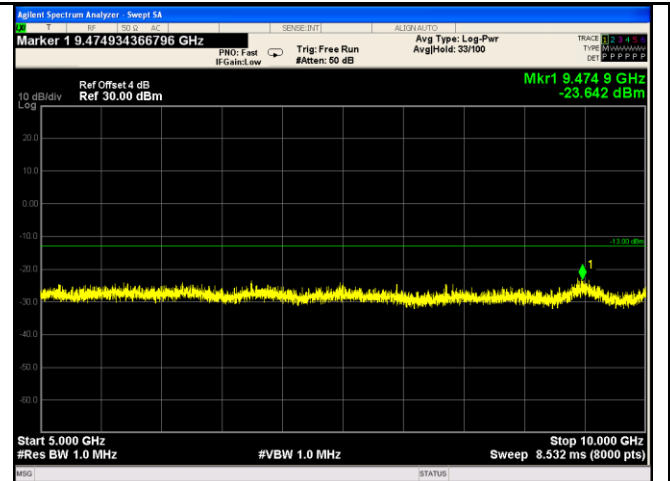
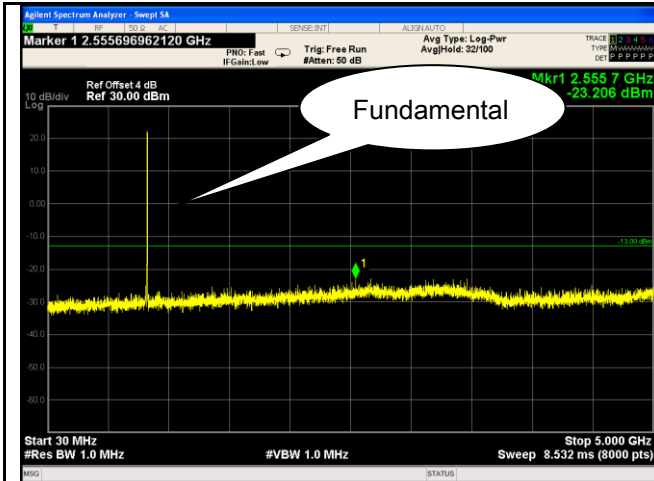
PCS1900 - High Channel-1



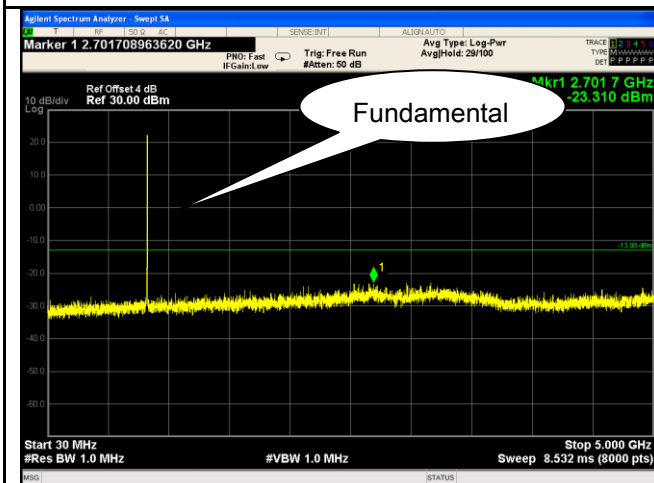
PCS 1900 - High Channel-2

GPRS:

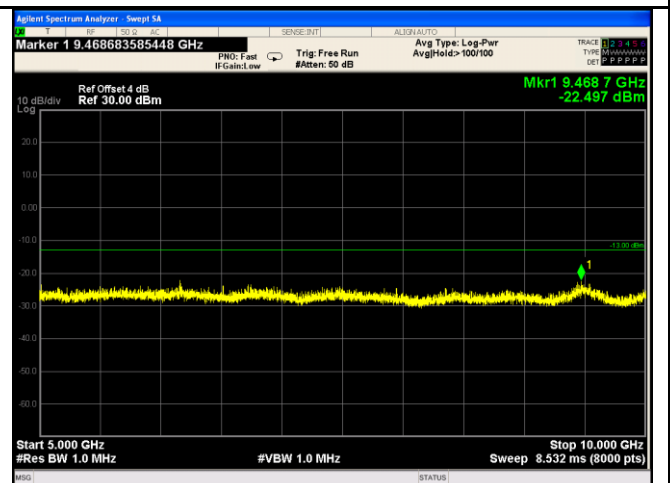
Cellular Band (Part 22H) result



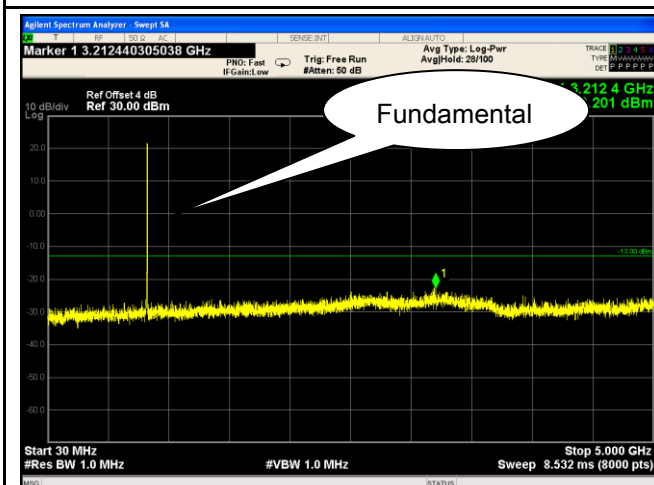
GSM 850 - Low Channel-1



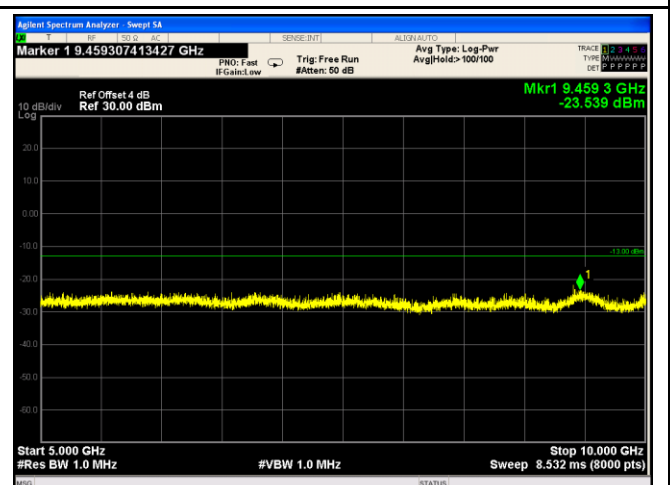
GSM 850 - Low Channel-2



GSM 850 Middle Channel-1



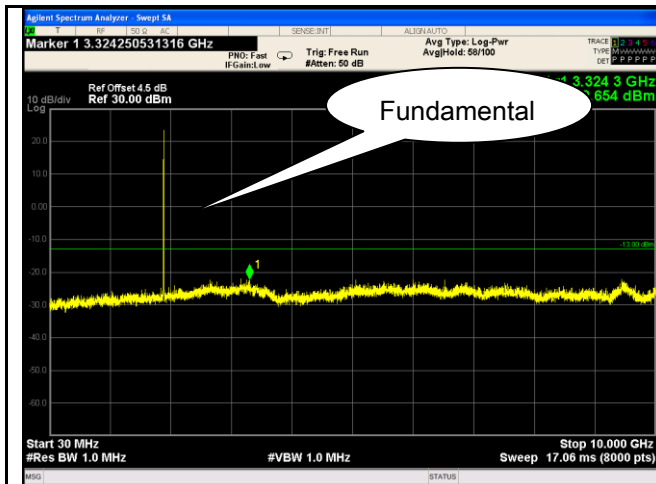
GSM 850 Middle Channel-2



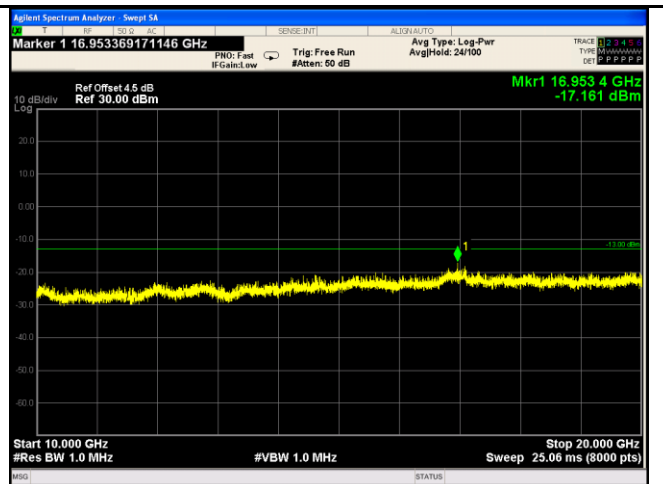
GSM 850 - High Channel-1

GSM 850 - High Channel-2

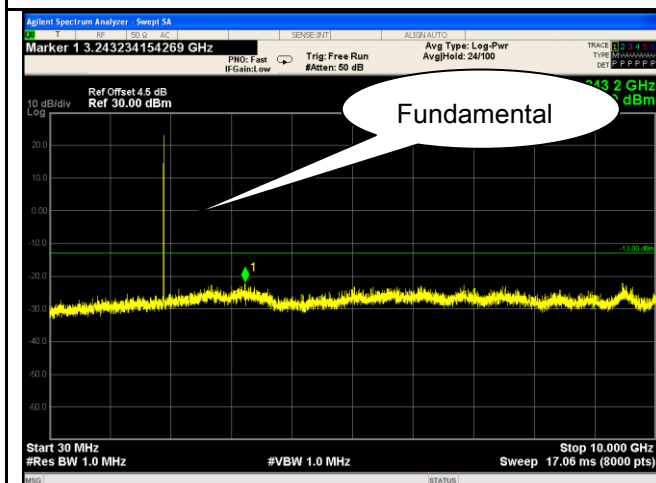
PCS Band (Part24E) result



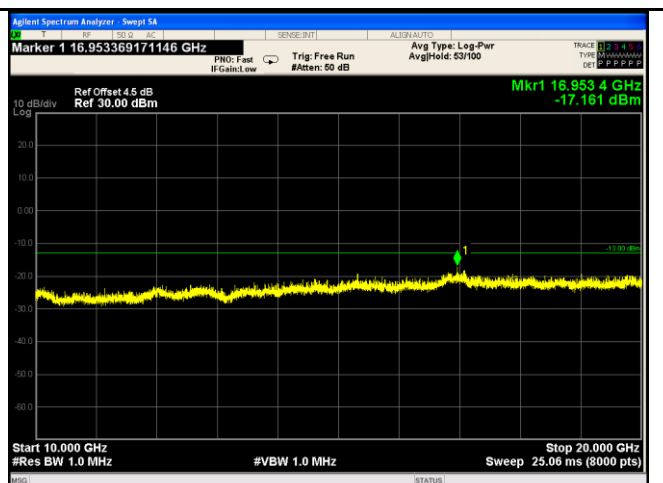
PCS1900 - Low Channel-1



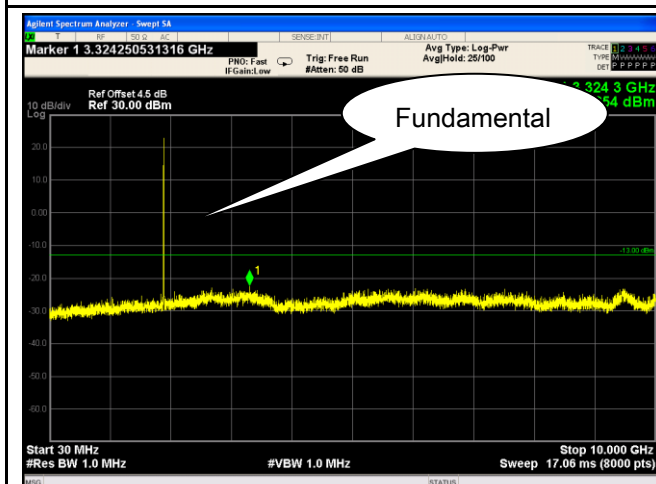
PCS 1900 - Low Channel-2



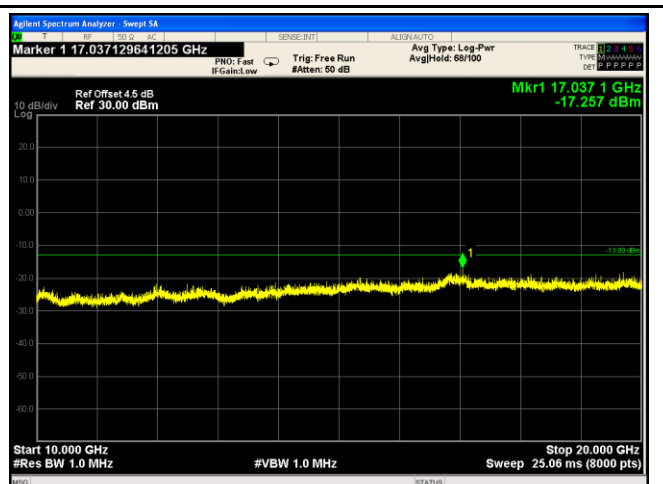
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2

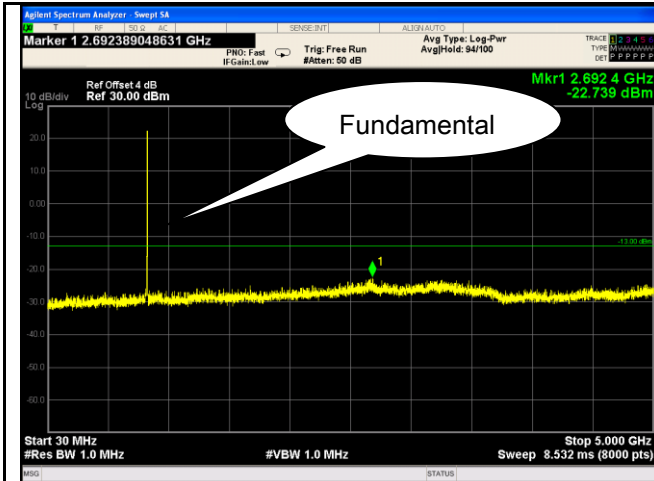


PCS1900 - High Channel-1

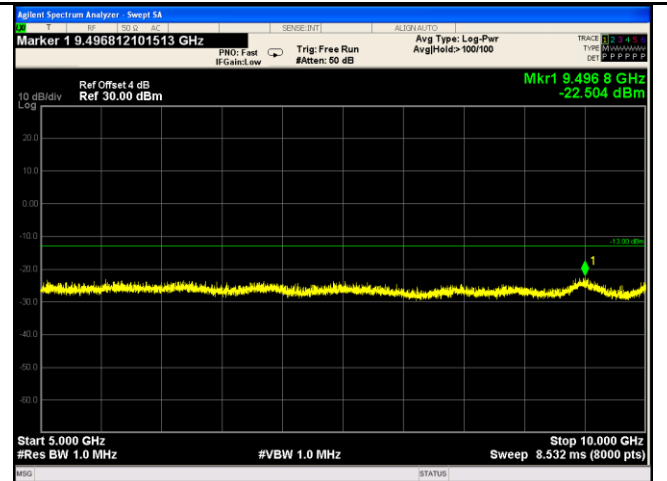


PCS 1900 - High Channel-2

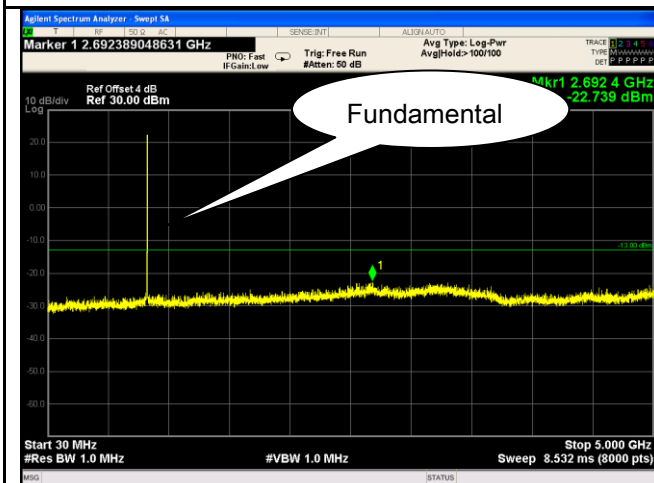
EGPRS (MCS 5): Cellular Band (Part 22H) result



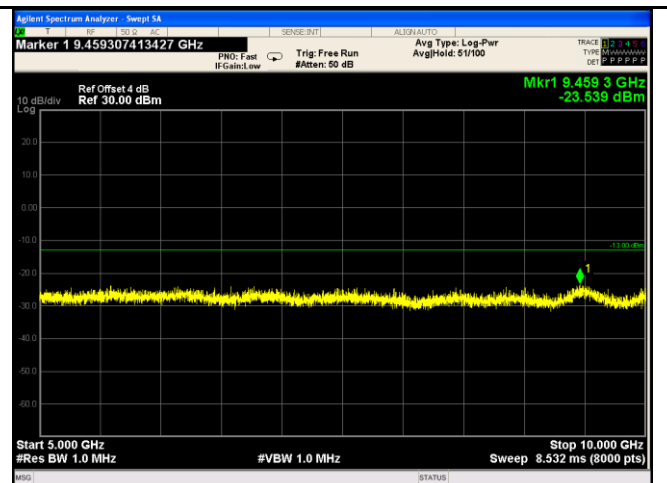
GSM 850 - Low Channel-1



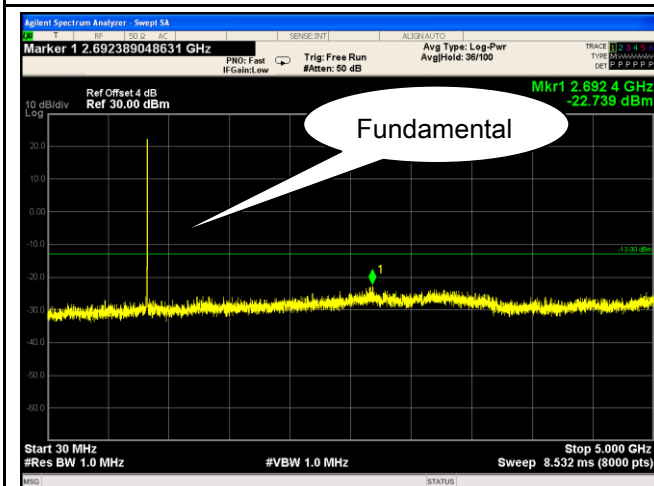
GSM 850 - Low Channel-2



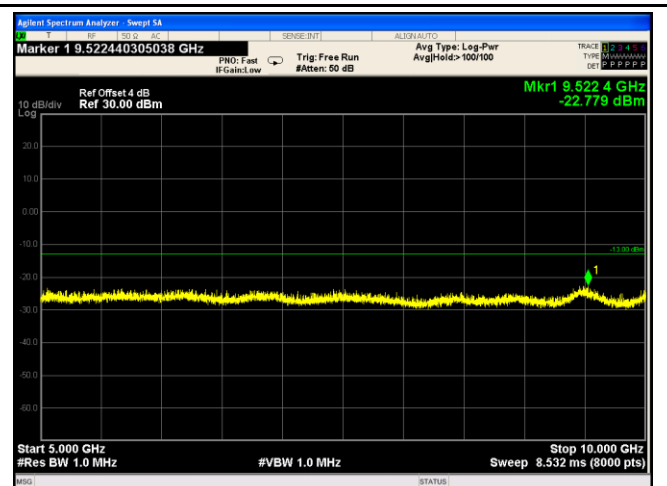
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

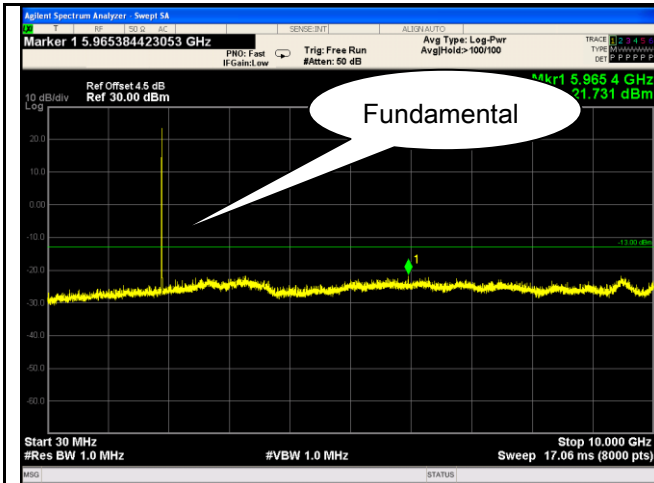


GSM 850 - High Channel-1

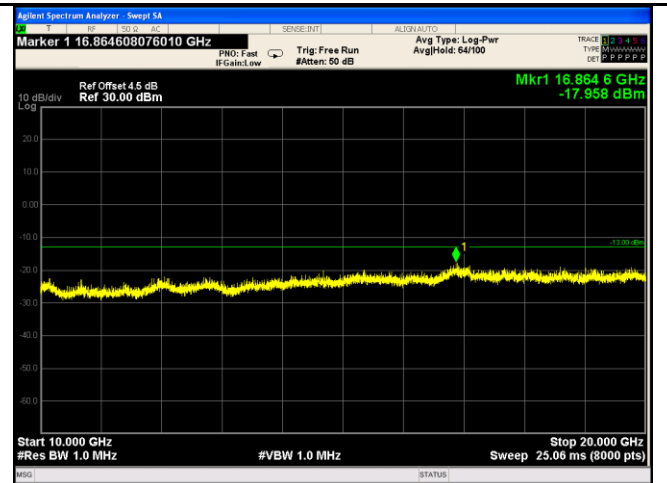


GSM 850 - High Channel-2

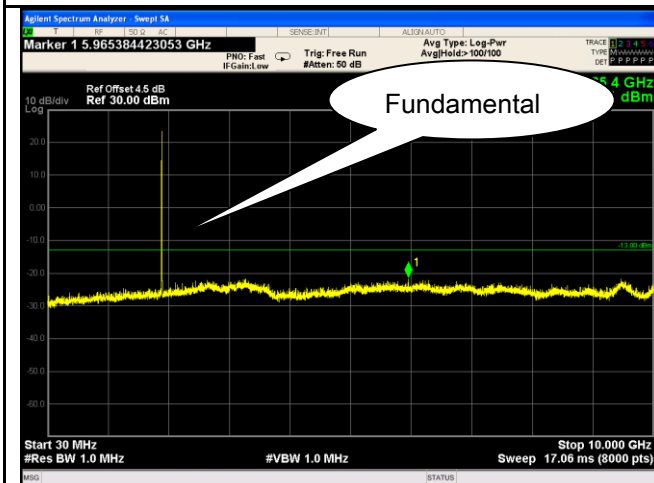
PCS Band (Part24E) result



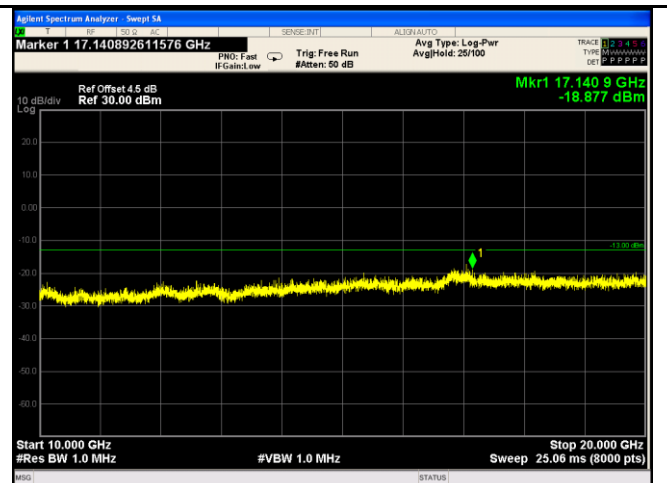
PCS1900 - Low Channel-1



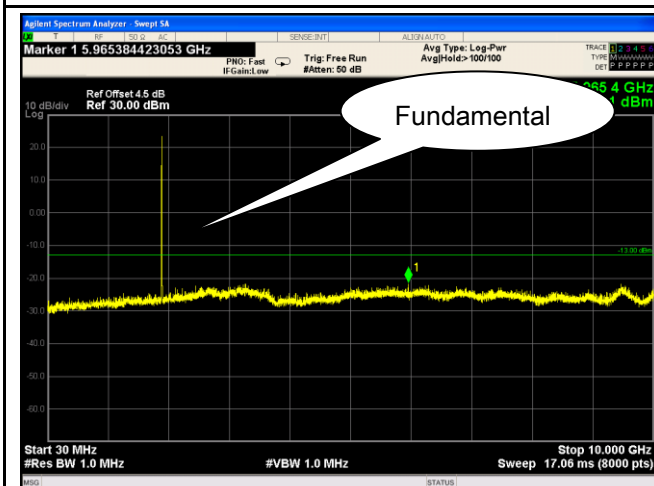
PCS 1900 - Low Channel-2



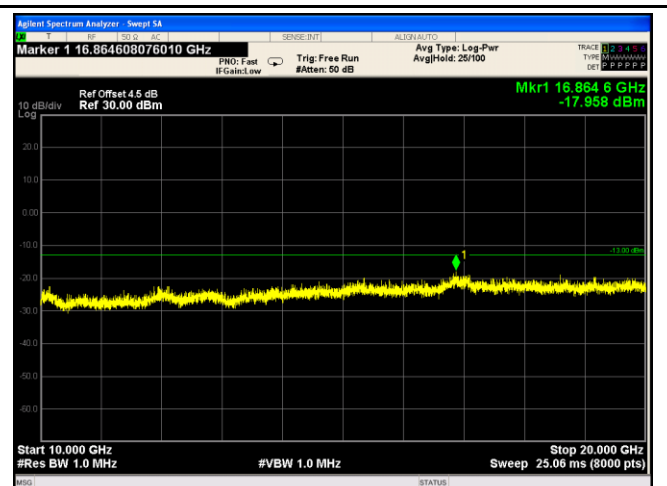
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



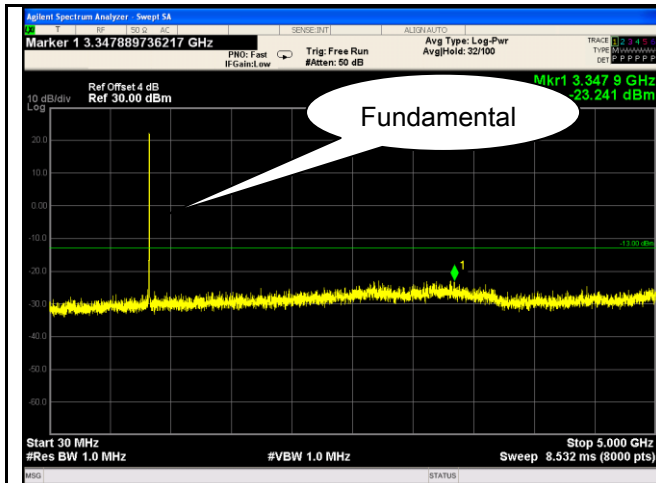
PCS1900 - High Channel-1



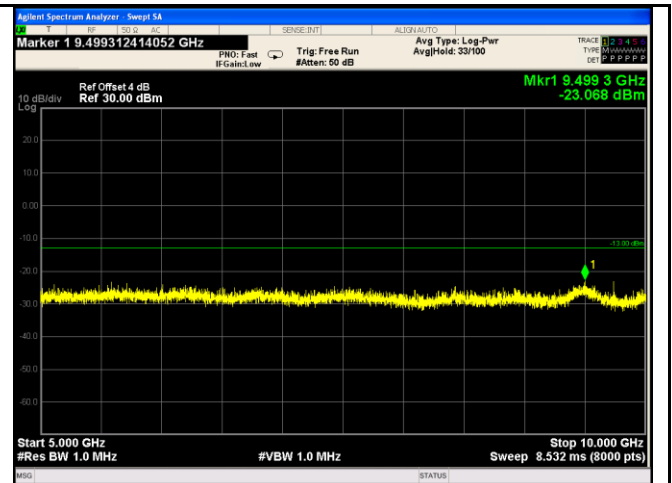
PCS 1900 - High Channel-2

RMC

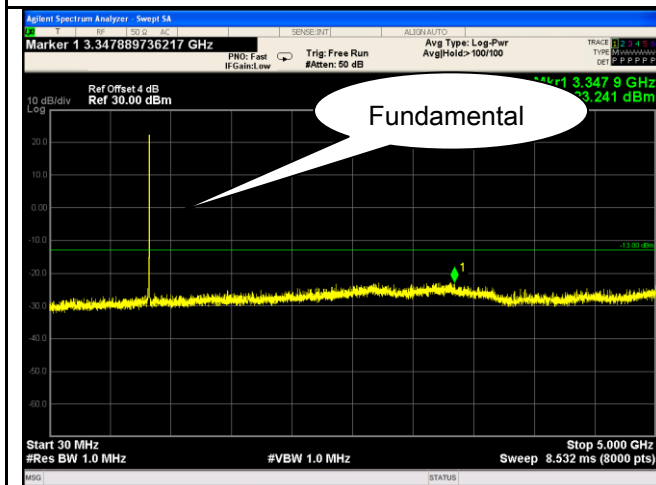
UMTS-FDD Band V (Part 22H)



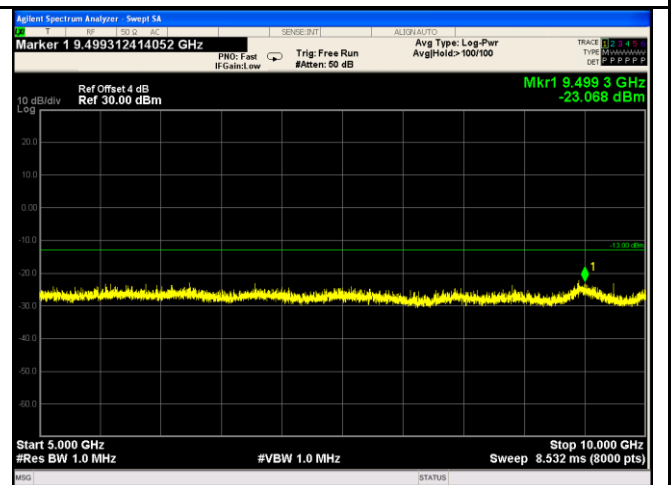
Band V - Low Channel-1



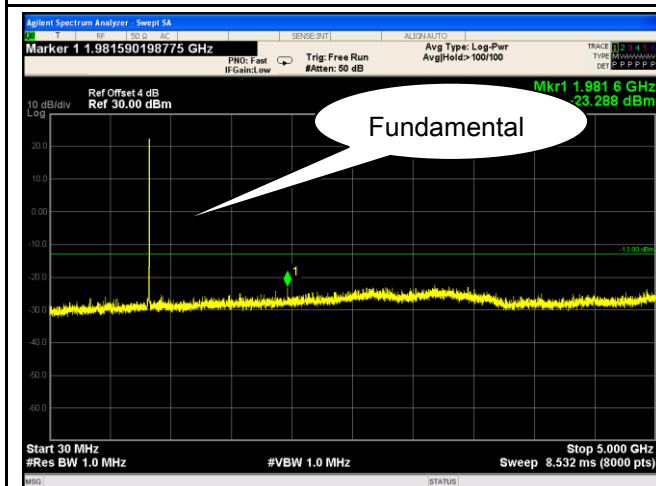
Band V - Low Channel-2



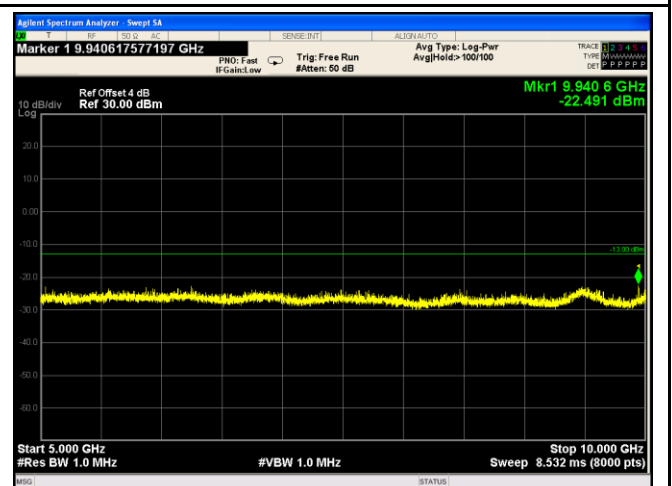
Band V - Middle Channel-1



Band V - Middle Channel-2



Band V - High Channel-1



Band V - High Channel-2