



HCT CO., LTD.

CERTIFICATION DIVISION
105-1, JANGAM-RI, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, KOREA
TEL : +82 31 645 6300 FAX : +82 31 645 6401 www.hct.co.kr

CERTIFICATE OF COMPLIANCE
FCC PART 24 Certification

Applicant Name: SAMSUNG Electronics Co., Ltd. 19 Chapin Rd., Building D Pine Brook, NJ 07058	Date of Issue: October 19,2012 Test Site/Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Gyeonggi-Do, Korea Test Report No.: HCTR1209FR14-2
--	--

FCC ID	:	A3LSMM-BMR004
APPLICANT	:	SAMSUNG Electronics Co., Ltd.

EUT Type : Remote Radio Head
 Manufacturer : SAMSUNG Electronics Co., Ltd
 Model name : SMM-BMR004
 Frequency of Operation : 1 930 MHz ~ 1 995 MHz
 TX Output Power : 160W (40 W * 4)
 FCC Rule Part(s) : FCC Part 24 Subpart E
 Emission Designator : 1M25F9W(BPSK/QPSK), 1M25F9W(16QAM),
 4M47G7W(QPSK), 4M49D7W(16QAM/64QAM),
 8M96G7W(QPSK),8M98D7W(16QAM/64QAM)
 Test Procedure(s) : ANSI/TIA-603C-2004
 Application Type : Original Equipment
 Data of issue : September 25, 2012

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of FCC Part 24 of the FCC Rules under normal use and maintenance.

Report prepared by
:Chang Seok Choi
Test engineer of RF Team

Approved by
: Sang Jun Lee
Manager of RF Team

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 1 of 176

Revision

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1209FR14	September 25, 2012	First Approval Report
HCTR1209FR14-1	September 28, 2012	Revise the Emission Designator on page 1, page 5
HCTR1209FR14-2	October 19, 2012	Modify tx power table

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 2 of 176

CONTENTS

1. GENERAL INFORMATION	5
1.1. CLIENT INFORMATION	5
1.2. PRODUCT INFORMATION	5
1.3. INTRODUCTION OF EUT	6
2. TEST SUMMARY	8
2.1. STANDARDS	8
2.2. MODE OF OPERATION DURING THE TEST	8
3. STANDARDS ENVIRONMENTAL TEST CONDITIONS	9
4. TEST EQUIPMENT	9
5. CONDUCTED OUTPUT POWER	10
5.1. Applicable Standard	10
5.2. Test Equipment List and Details	10
5.3. Test Procedure	10
5.4. Test Result	11
6. OCCUPIED BANDWIDTH	50
6.1. Applicable Standard	50
6.2. Test Equipment List and Details	50
6.3. Test Procedure	51
6.4. Test Result	51
7. SPURIOUS EMISSION AT ANTENNA TERMINAL	80
7.1. Applicable Standard	80
7.2. Test Equipment List and Details	80
7.3. Test Procedure	80
7.4. Test Result	80
8. RADIATED SPURIOUS EMISSION	168
8.1 Applicable Standard	168
8.2 Test Equipment List and Details	168
8.3 Test Procedure	168
8.3.1 Radiated Spurious Emissions Test Setup	169
8.4 Test Result	169
9. FREQUENCY STABILITY	171
9.1 Applicable Standard	171
9.2 Test Equipment List and Details	171

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 3 of 176

9.3 Test Procedure.....	171
9.4. Test Result	171
10. RF EXPOSURE STATEMENT.....	175

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 4 of 176

1. GENERAL INFORMATION

1.1. CLIENT INFORMATION

Company	Samsung Electronics Co., Ltd.
Contact Point	19 Chapin Rd., Building D Pine Brook, NJ 07058
Contact person	Name: Hwan-Chul Ryu / Principal Research Engineer E-mail : ryu0022@samsung.com Tel: +82-31-279-1023 Fax: +82-31-279-7676

1.2. PRODUCT INFORMATION

EUT TYPE	Remote Radio Head
EMISSION DESIGNATOR	1M25F9W(BPSK/QPSK), 1M25F9W(16QAM), 4M47G7W(QPSK), 4M49D7W(16QAM/64QAM), 8M96G7W(QPSK),8M98D7W(16QAM/64QAM)
OPERATING FREQUENCY	1 930 MHz ~ 1 995 MHz
TX OUTPUT POWER	160W (40 W * 4 Ports)
CHANNEL BANDWIDTH	CDMA :1.25 MHz LTE : 5 MHz / 10 MHz
MODULATION TYPE	CDMA : BPSK, QPSK, 16QAM LTE : QPSK, 16QAM, 64QAM
MAXIMUM NUMBER OF CARRIERS/SECTORS	CDMA 1X / EVDO : Max 8Carrier/3Sector(2Br) Max 6Carrier/3Sector(4Br) LTE (FDD) : Max 5Carrier/3Sector
SYSTEM INPUT VOLTAGE	DC - 48 V

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 5 of 176

1.3. INTRODUCTION OF EUT

Smart MBS is the Basestation of Samsung Multi-Modal System. It is managed by packet core (either BSC or EPC), and makes call to terminal to create CDMA/LTE links.

Smart MBS interfaces with UE via either CDMA(3GPP2 CDMA2000 1X Advanced and 1xEV-DO Rev.0/Rev.A),or LTE(3GPP LTE Rel.8/9). It provides broadband high speed data service and multimedia services.

In order to implement this, Smart MBS can perform Modulation/Demodulation (for voice or packet traffic), assign Scheduling and Wireless Bandwidth (for efficient use of RF resources and to guarantee QoS), handle ARQ(Automatic Repeat request), perform ranging feature, provide connection control feature (for sending Smart MBS information and enable/maintain/disable the call), Synchronize BSC/ EPC, provides Power Control, and executes system operation management.

By Fast Ethernet/Gigabit Ethernet backhaul, Smart MBS synchronize the control station to transceive reliable control signal and traffic signal.

Smart MBS is separated into UADU(Universal Platform Digital Unit, an indoor DU) and the RRH(Remote Radio Head, a combined RF unit). UADU is mounted in the outdoor DU cabinet(along with the rectifier) to support outdoor environment.

UADU is a digital component for 19" shelf. It can be mounted onto either indoor or outdoor 19 inch commercial rack, and one UADU can provide the following maximum capacity. Based on operator's setup, it can be operated as omni type or sector type.

- CDMA 1X / EVDO : Max 8Carrier/3Sector(2Br)
Max 6Carrier/3Sector(4Br)
- LTE (FDD) : Max 5Carrier/3Sector

RRH is RF component that is built into a single module. It can be mounted onto Walls, Poles, or Stands in outdoor environments.

Depending on Frequency bandwidth and duplexing type, RRH can be classified into following types.

- RRH-P4 : 1.9GHz PCS band, 4Tx/4Rx RF path

Smart MBS has other features provided as below.

Common Platform DU/RRH

Digital boards of each wireless technology, to be mounted in Smart MBS, share the common DU platform.

Therefore, different boards(for multiple technology) may be mounted in a single DU, and operator can mount up to 4 DU in outdoor DU cabinet to implement various configuration.

RRH of Smart MBS can simultaneously support multiple technologies in the same duplexing type with the same bandwidth.

RRH(Remote Radio Head) separated from DU(Digital Unit)

In order to provide ease of installation and various network structure, Smart MBS has separated RRH from DU.

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 6 of 176

Between RRH and DU, a fiber optic 'Baseband I/Q and C&M' interface, based on CPRI(Common Public Radio Interface), is used to send/receive "data traffic signal" and "OAM data". DU and RRH gets -48VDC from rectifier inside the outdoor DU cabinet.

Provide Easy Installation

RRH integrates optic-sync component and RF signal processor, and is a small & light weight single module. RRH can be mounted onto Walls, Poles, or Stands. In addition, distance between RRH and Antenna is minimized that RF signal loss(cause by Feeder Line) is decreased. Therefore, it can provide improved RF performance when compared to Basestation that has Digital Unit and RF Unit altogether.

Natural Cooling Mechanism

RRH(Remote Radio Head) may be installed in outdoor environment, and its thermal-dynamic design efficiently dissipates heat without requirement of additional cooling mechanism. Also, no maintenance cost is required for RRH cooling.

Feature for Loop-Back Test of the line between DU and RRH

In order to check functionality of the "Base-band I/Q and OAM interface" between DU and RRH, Smart MBS provides Loop-back Test.

Provides Remote Firmware Downloading

RRH may be replaced with firmware to enhance service and upgrade new features. At this time, Site visit is not required as firmware can be downloaded from basestation operation server (such as BSM/WSM/LSM-R). Therefore, operator can minimize the site visit, reduce the maintenance cost, and easily operate the system.

Provides Monitoring Port.

Through debug port of RRH, operator can monitor the information about the unit.

Support for Smooth Migration

Smart MBS can provide migration from CDMA to 4G(LTE)wireless telecommunication by either adding "traffic processor card and channel card" or "software upgrade".

In case of RRH, in the same frequency band, simple Software upgrade would allow conversion into 4G wireless telecommunication. Also, simultaneous operation of 3G and 4G is possible.

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 7 of 176

2. TEST SUMMARY

2.1. STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 24 Subpart E

SECTION	TEST ITEMS	RESULTS
2.1046, 24.232	Conducted Output Power	Compliant
2.1049	Occupied Bandwidth	Compliant
2.1051, 2.1057, 24.238	Spurious Emissions at Antenna Terminals	Compliant
2.1055, 24.235	Frequency Stability over Temperature variation	Compliant
2.1055, 24.235	Frequency stability over Voltage variation	Compliant

2.2. MODE OF OPERATION DURING THE TEST

The EUT was operated in a manner representative of the typical usage of the equipment.

During all testing, system components were manipulated within the confines of typical usage to maximize each emission. All Modulation (BPSK, QPSK, 16QAM and 64QAM) modes were tested.

The device does not supply antenna(s) with the system, so the dummy loads were connected to the RF output ports for radiated spurious emission testing.

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 8 of 176

3. STANDARDS ENVIRONMENTAL TEST CONDITIONS

Temperature :	+ 15 °C to + 35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1060 mbar

4. TEST EQUIPMENT

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Schwarzbeck	BBHA 9120D / Double Ridged Horn Antenna	937	10/17/2013
Schwarzbeck	BBHA 9120D / Double Ridged Horn Antenna	147	05/15/2014
Schwarzbeck	VULB 9168 / TRILOG Antenna	9168-200	02/19/2013
HD	MA240 / Antenna Position Tower	556	N/A
EMCO	1050 / Turn Table	114	N/A
HD GmbH	HD 100 / Controller	13	N/A
HD GmbH	KMS 560 / SlideBar	12	N/A
MITEQ	AMF-6B-180265-35-10P / POWER AMP	667624	04/16/2013
EMCO	6502/Loop Antenna	9009-2536	01/11/2014
Agilent	N9020A /Signal Analyzer	US46220219	05/02/2013
Agilent	6674A / DC Power Supply	3501A00901	05/02/2013
WEINSCHHEL	67-30-33 / Attenuator	BU5347	11/07/2012
WEINSCHHEL	67-30-33 / Attenuator	BR0530	11/07/2012
WEINSCHHEL	AF9003-69-31 / Attenuator	11787	11/07/2012
WEINSCHHEL	AF9003-69-31 / Attenuator	5701	11/07/2012

5. CONDUCTED OUTPUT POWER

5.1. Applicable Standard

According to FCC §2.1046 & 24.232

(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.

5.2. Test Equipment List and Details

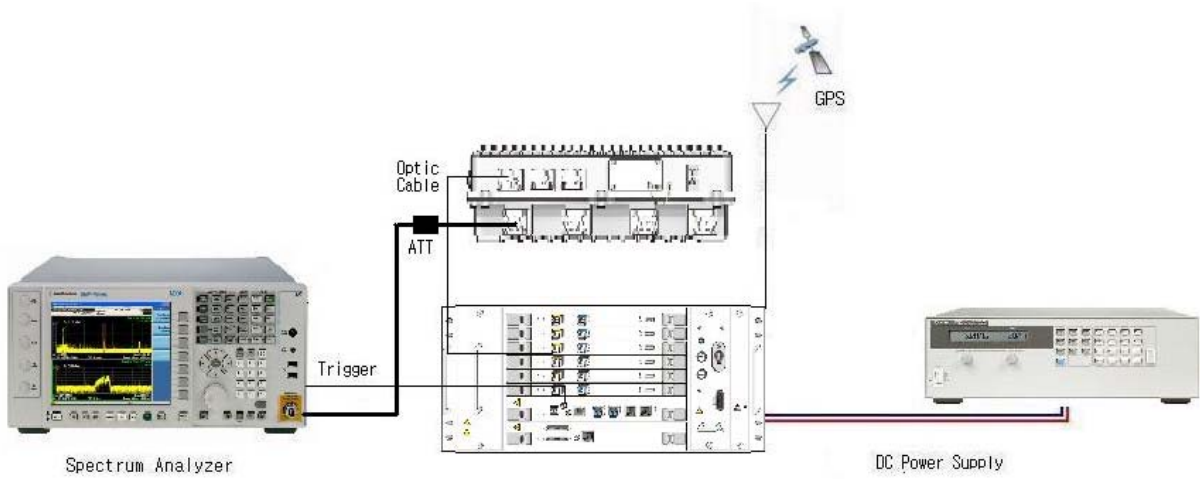
Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	N9020A /Signal Analyzer	US46220219	05/02/2013
Agilent	6674A / DC Power Supply	3501A00901	05/02/2013
WEINSCHHEL	67-30-33 / Attenuator	BU5347	11/07/2012
WEINSCHHEL	67-30-33 / Attenuator	BR0530	11/07/2012
WEINSCHHEL	AF9003-69-31 / Attenuator	11787	11/07/2012
WEINSCHHEL	AF9003-69-31 / Attenuator	5701	11/07/2012

5.3. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. According to FCC §2.1046 (a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

- 1) The radio frequency load attached to the EUT antenna terminal was 50 Ohm. The loss of the cables the test system is calibrated to correct the reading.
- 2) The spectrum analyzer was set to RMS Detector function and Average mode.
- 3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.
- 4) The conducted emission level is measured at each antenna port and then summed mathematically to determine the total emission level from the device. ($160\text{ W} = 40\text{ W} * 4\text{ Ports}$)

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 10 of 176



5.4. Test Result

: PASS

FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 11 of 176

[CDMA : 1T mode - 1 Carrier / 1 Port]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	42.95	19.7242
	Middle	1962.50	42.94	19.6789
	High	1993.75	42.80	19.0546
QPSK	Low	1931.25	42.96	19.7697
	Middle	1962.50	43.05	20.1837
	High	1993.75	42.93	19.6336
16QAM	Low	1931.25	42.75	18.8365
	Middle	1962.50	42.90	19.4985
	High	1993.75	42.85	19.2753

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	42.55	17.9887
	Middle	1962.50	42.64	18.3654
	High	1993.75	42.61	18.2390
QPSK	Low	1931.25	42.53	17.9061
	Middle	1962.50	42.64	18.3654
	High	1993.75	42.71	18.6638
16QAM	Low	1931.25	42.63	18.3231
	Middle	1962.50	42.54	17.9473
	High	1993.75	42.65	18.4077

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	42.50	17.7828
	Middle	1962.50	42.67	18.4927
	High	1993.75	42.52	17.8649
QPSK	Low	1931.25	42.62	18.2810
	Middle	1962.50	42.77	18.9234
	High	1993.75	42.53	17.9061
16QAM	Low	1931.25	42.50	17.7828
	Middle	1962.50	42.61	18.2390
	High	1993.75	42.50	17.7828

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	42.84	19.2309
	Middle	1962.50	42.92	19.5885
	High	1993.75	42.78	18.9671
QPSK	Low	1931.25	42.87	19.3642
	Middle	1962.50	43.07	20.2768
	High	1993.75	42.89	19.4536
16QAM	Low	1931.25	42.77	18.9234
	Middle	1962.50	42.88	19.4089
	High	1993.75	42.81	19.0985

[CDMA : 1T mode - 2 Carriers / 1 Port]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.875	45.57	36.0579
	Middle	1963.125	45.64	36.6438
	High	1993.125	45.92	39.0841
QPSK	Low	1931.875	45.60	36.3078
	Middle	1963.125	45.75	37.5837
	High	1993.125	45.55	35.8922
16QAM	Low	1931.875	45.61	36.3915
	Middle	1963.125	45.71	37.2392
	High	1993.125	45.57	36.0579

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.875	45.59	36.2243
	Middle	1963.125	45.53	35.7273
	High	1993.125	45.55	35.8922
QPSK	Low	1931.875	45.55	35.8922
	Middle	1963.125	45.63	36.5595
	High	1993.125	45.60	36.3078
16QAM	Low	1931.875	45.49	35.3997
	Middle	1963.125	45.59	36.2243
	High	1993.125	45.56	35.9749

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.875	45.54	35.8096
	Middle	1963.125	45.56	35.9749
	High	1993.125	45.47	35.2371
QPSK	Low	1931.875	45.67	36.8978
	Middle	1963.125	45.65	36.7282
	High	1993.125	45.51	35.5631
16QAM	Low	1931.875	45.70	37.1535
	Middle	1963.125	45.64	36.6438
	High	1993.125	45.50	35.4813

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.875	45.46	35.1560
	Middle	1963.125	45.36	34.3558
	High	1993.125	45.34	34.1979
QPSK	Low	1931.875	45.51	35.5631
	Middle	1963.125	45.59	36.2243
	High	1993.125	45.36	34.3558
16QAM	Low	1931.875	45.52	35.6451
	Middle	1963.125	45.58	36.1410
	High	1993.125	45.37	34.4350

[CDMA : 2T Mode – 1 Carrier / 2 Ports]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	39.76	9.4624
	Middle	1962.50	39.86	9.6828
	High	1993.75	39.84	9.6383
QPSK	Low	1931.25	39.87	9.7051
	Middle	1962.50	39.94	9.8628
	High	1993.75	39.87	9.7051
16QAM	Low	1931.25	39.73	9.3972
	Middle	1962.50	39.91	9.7949
	High	1993.75	39.86	9.6828

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	39.12	8.1658
	Middle	1962.50	39.50	8.9125
	High	1993.75	39.45	8.8105
QPSK	Low	1931.25	39.19	8.2985
	Middle	1962.50	39.58	9.0782
	High	1993.75	39.55	9.0157
16QAM	Low	1931.25	39.76	9.4624
	Middle	1962.50	39.85	9.6605
	High	1993.75	40.11	10.2565

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	39.43	8.7700
	Middle	1962.50	39.53	8.9743
	High	1993.75	39.44	8.7902
QPSK	Low	1931.25	39.42	8.7498
	Middle	1962.50	39.60	9.1201
	High	1993.75	39.37	8.6497
16QAM	Low	1931.25	40.03	10.0693
	Middle	1962.50	40.09	10.2094
	High	1993.75	39.91	9.7949

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1931.25	39.62	9.1622
	Middle	1962.50	39.62	9.1622
	High	1993.75	39.32	8.5507
QPSK	Low	1931.25	39.52	8.9537
	Middle	1962.50	39.68	9.2897
	High	1993.75	39.54	8.9950
16QAM	Low	1931.25	39.99	9.9770
	Middle	1962.50	40.19	10.4472
	High	1993.75	39.92	9.8175

[CDMA : 2 Tx Mode – 4 Carriers / 2 Ports]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1933.125	45.62	36.4754
	Middle	1963.125	45.96	39.4457
	High	1991.875	45.84	38.3707
QPSK	Low	1933.125	45.79	37.9315
	Middle	1963.125	45.87	38.6367
	High	1991.875	45.88	38.7258
16QAM	Low	1933.125	45.80	38.0189
	Middle	1963.125	45.85	38.4592
	High	1991.875	45.87	38.6367

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1933.125	45.72	37.3250
	Middle	1963.125	45.74	37.4973
	High	1991.875	45.87	38.6367
QPSK	Low	1933.125	45.86	38.5478
	Middle	1963.125	45.83	38.2825
	High	1991.875	45.80	38.0189
16QAM	Low	1933.125	45.78	37.8443
	Middle	1963.125	45.98	39.6278
	High	1991.875	45.82	38.1944

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1933.125	45.64	36.6438
	Middle	1963.125	45.77	37.7572
	High	1991.875	45.61	36.3915
QPSK	Low	1933.125	45.75	37.5837
	Middle	1963.125	45.72	37.3250
	High	1991.875	45.63	36.5595
16QAM	Low	1933.125	45.81	38.1066
	Middle	1963.125	45.73	37.4111
	High	1991.875	45.66	36.8129

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
BPSK	Low	1933.125	45.82	38.1944
	Middle	1963.125	45.88	38.7258
	High	1991.875	45.66	36.8129
QPSK	Low	1933.125	45.92	39.0841
	Middle	1963.125	45.90	38.9045
	High	1991.875	45.68	36.9828
16QAM	Low	1933.125	45.76	37.6704
	Middle	1963.125	45.84	38.3707
	High	1991.875	45.65	36.7282

[LTE 5 MHz : 1 Carrier / 1 Port]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1932.5	40.21	10.4954
	Middle	1962.5	40.22	10.5196
	High	1992.5	40.30	10.7152
16QAM	Low	1932.5	40.21	10.4954
	Middle	1962.5	40.29	10.6906
	High	1992.5	40.17	10.3992
64QAM	Low	1932.5	40.21	10.4954
	Middle	1962.5	40.34	10.8143
	High	1992.5	40.23	10.5439

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1932.5	40.22	10.5196
	Middle	1962.5	40.20	10.4713
	High	1992.5	40.05	10.1158
16QAM	Low	1932.5	40.28	10.6660
	Middle	1962.5	40.16	10.3753
	High	1992.5	40.08	10.1859
64QAM	Low	1932.5	40.24	10.5682
	Middle	1962.5	40.17	10.3992
	High	1992.5	40.09	10.2094

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1932.5	40.10	10.2329
	Middle	1962.5	40.08	10.1859
	High	1992.5	39.96	9.9083
16QAM	Low	1932.5	40.12	10.2802
	Middle	1962.5	40.09	10.2094
	High	1992.5	39.93	9.8401
64QAM	Low	1932.5	40.15	10.3514
	Middle	1962.5	40.08	10.1859
	High	1992.5	39.94	9.8628

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1932.5	39.91	9.7949
	Middle	1962.5	40.05	10.1158
	High	1992.5	39.92	9.8175
16QAM	Low	1932.5	40.07	10.1625
	Middle	1962.5	40.11	10.2565
	High	1992.5	39.99	9.9770
64QAM	Low	1932.5	40.12	10.2802
	Middle	1962.5	40.08	10.1859
	High	1992.5	39.94	9.8628

[LTE 5 MHz : 4 Carriers / 1 Port]

. Test Data at each port

Port	Modulation	Measured Output Power	
		dBm	W
0	QPSK	46.03	40.08
	16QAM	45.98	39.62
	64QAM	46.00	39.81
1	QPSK	46.03	40.08
	16QAM	45.97	39.53
	64QAM	46.00	39.81
2	QPSK	45.75	37.58
	16QAM	45.63	36.55
	64QAM	45.74	37.49
3	QPSK	45.71	37.23
	16QAM	45.61	36.39
	64QAM	45.76	37.67

[LTE 10 MHz : 1 Carrier / 1 Port]

. Test Data at Output Port 0

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1935	43.29	21.3305
	Middle	1962.5	43.13	20.5589
	High	1990	43.12	20.5116
16QAM	Low	1935	43.22	20.9894
	Middle	1962.5	43.13	20.5589
	High	1990	43.14	20.6063
64QAM	Low	1935	43.17	20.7491
	Middle	1962.5	43.14	20.6063
	High	1990	43.13	20.5589

. Test Data at Output Port 1

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1935	43.20	20.8930
	Middle	1962.5	42.98	19.8610
	High	1990	43.07	20.2768
16QAM	Low	1935	43.28	21.2814
	Middle	1962.5	42.93	19.6336
	High	1990	43.07	20.2768
64QAM	Low	1935	43.30	21.3796
	Middle	1962.5	42.88	19.4089
	High	1990	43.05	20.1837

. Test Data at Output Port 2

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1935	43.19	20.8449
	Middle	1962.5	42.89	19.4536
	High	1990	43.05	20.1837
16QAM	Low	1935	43.22	20.9894
	Middle	1962.5	43.04	20.1372
	High	1990	43.08	20.3236
64QAM	Low	1935	43.17	20.7491
	Middle	1962.5	43.07	20.2768
	High	1990	43.10	20.7174

. Test Data at Output Port 3

Modulation	Channel	Frequency	Measured Output Power	
			dBm	W
QPSK	Low	1935	43.24	21.0863
	Middle	1962.5	43.35	21.6272
	High	1990	43.39	21.8273
16QAM	Low	1935	43.22	20.9894
	Middle	1962.5	43.37	21.7270
	High	1990	43.23	21.0378
64QAM	Low	1935	43.25	21.1349
	Middle	1962.5	43.36	21.6770
	High	1990	43.23	21.0378

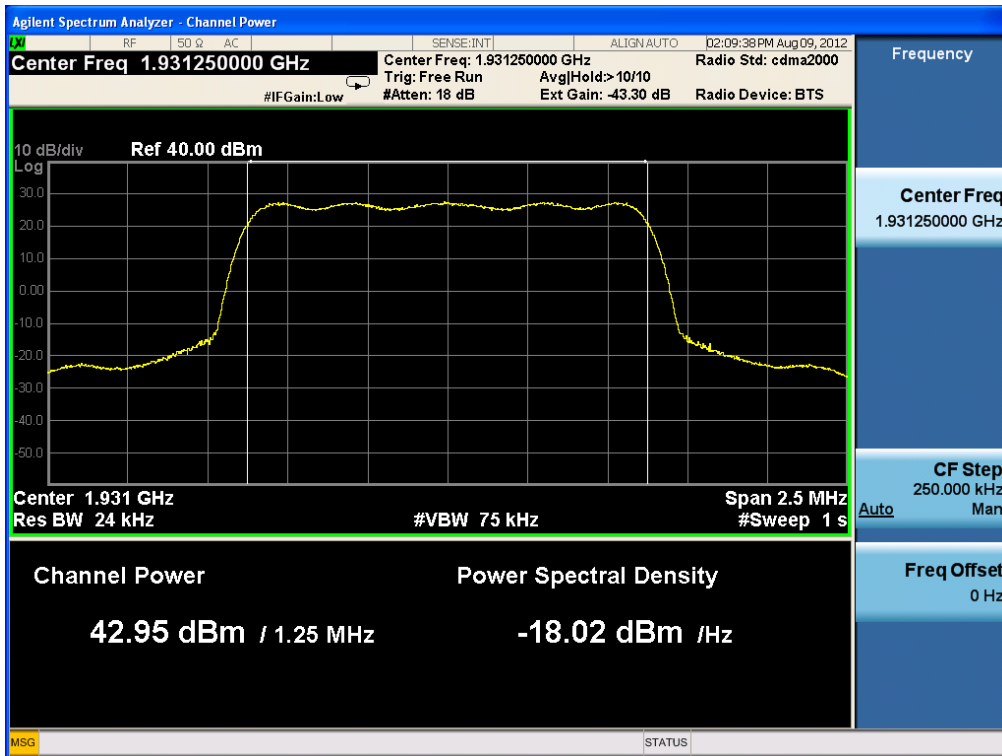
[LTE 10 MHz : 2 Carriers / 1 Port]

. Test Data at each port

Port	Modulation	Measured Output Power	
		dBm	W
0	QPSK	45.84	38.37
	16QAM	46.03	40.08
	64QAM	45.98	39.62
1	QPSK	45.89	38.81
	16QAM	45.86	38.54
	64QAM	45.96	39.44
2	QPSK	45.93	39.17
	16QAM	46.10	40.73
	64QAM	46.07	40.45
3	QPSK	46.10	40.73
	16QAM	46.05	40.27
	64QAM	46.04	40.17

. Plot Data for CDMA 1 T mode – 1 Carrier , Output Port 0

(BPSK Low Channel)

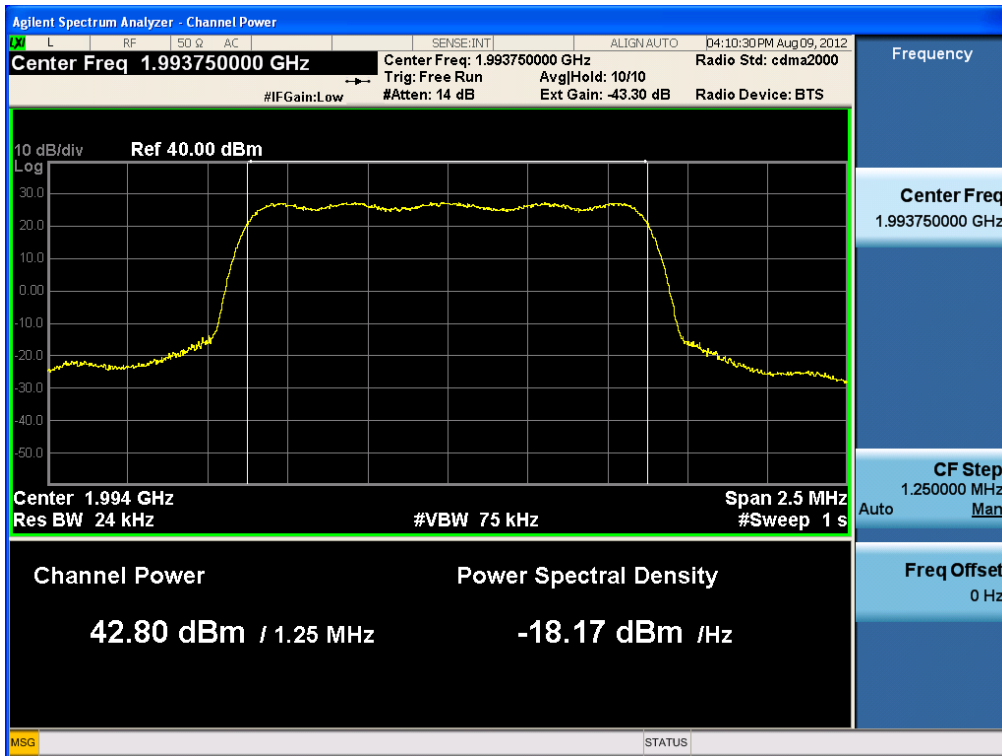


(BPSK Middle Channel)

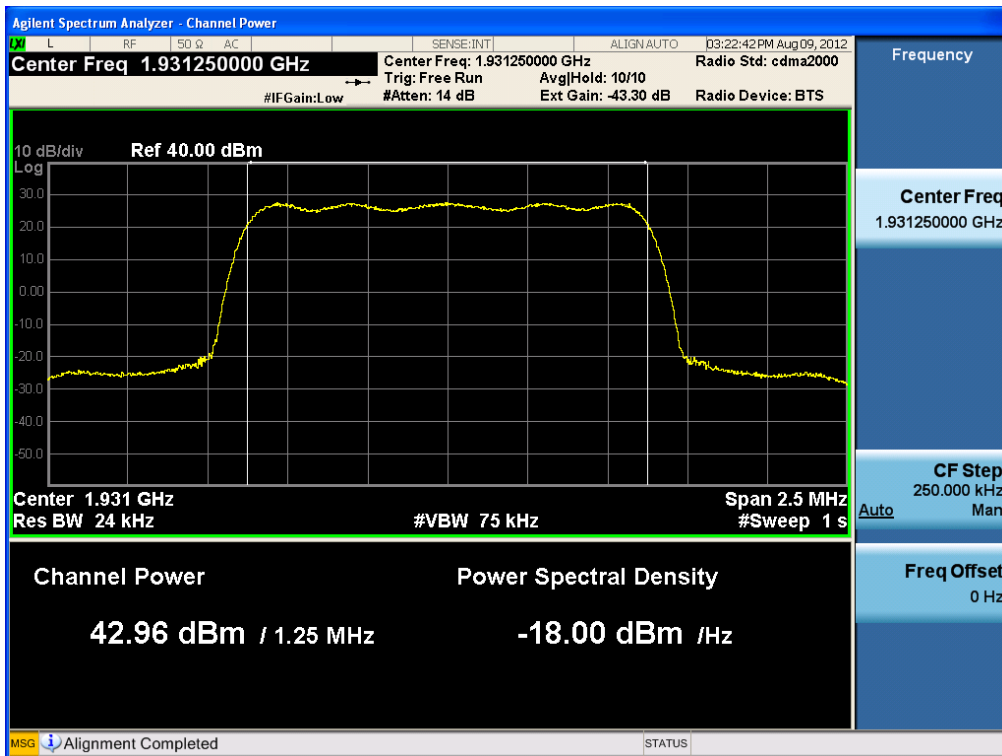


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 26 of 176

(BPSK High Channel)

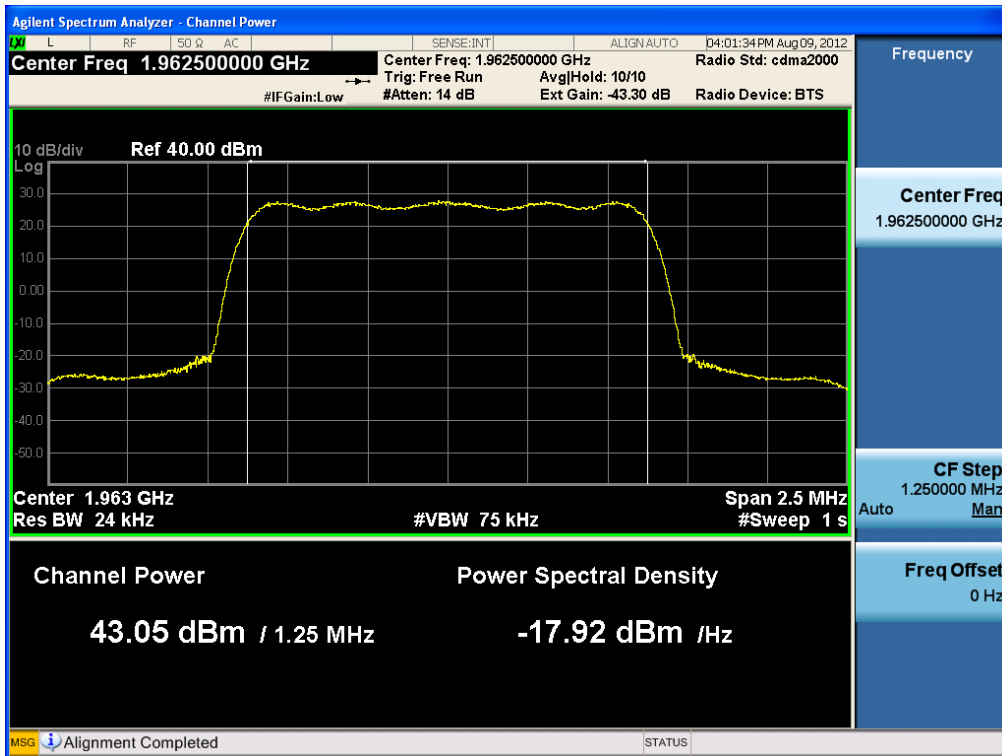


(QPSK Low Channel)

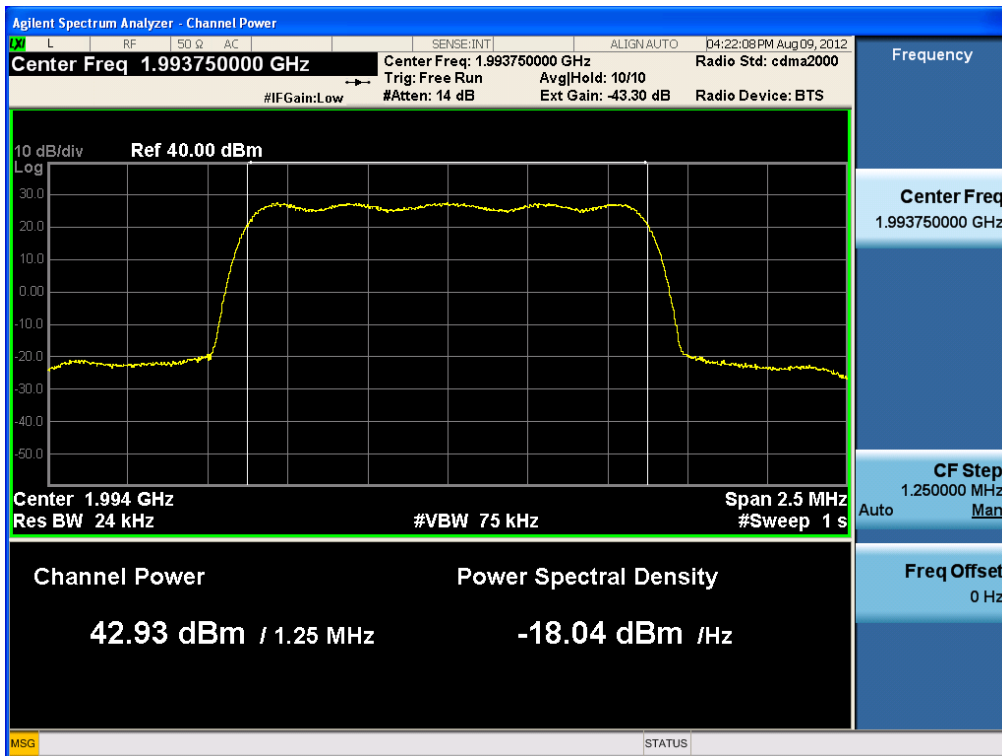


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 27 of 176

(QPSK Middle Channel)

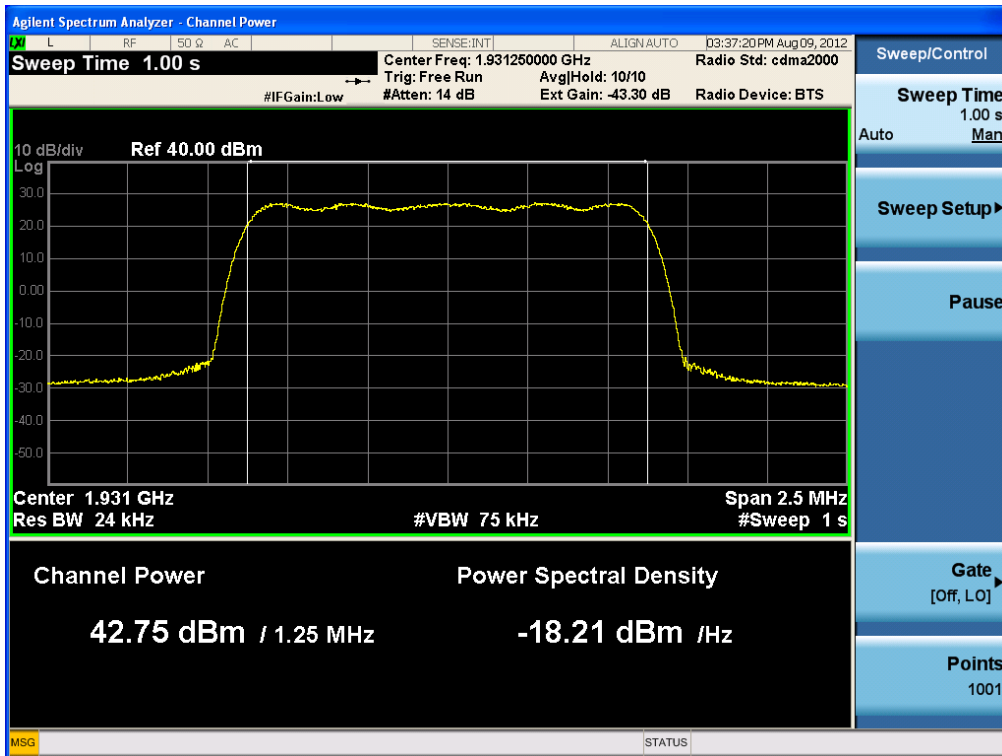


(QPSK High Channel)

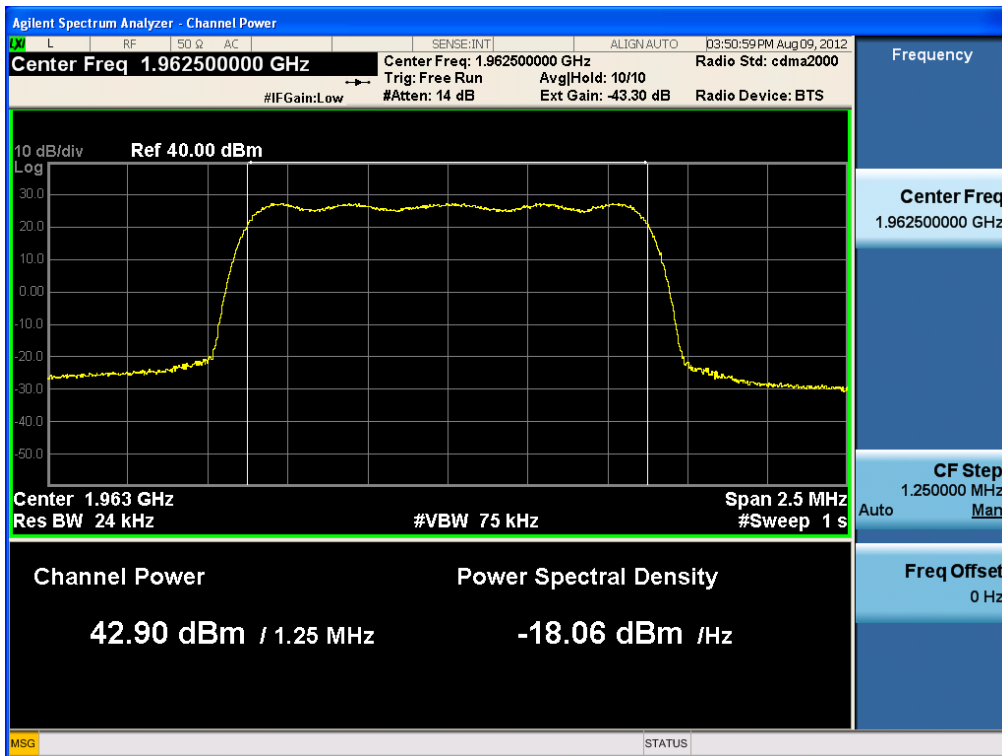


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 28 of 176

(16QAM Low Channel)

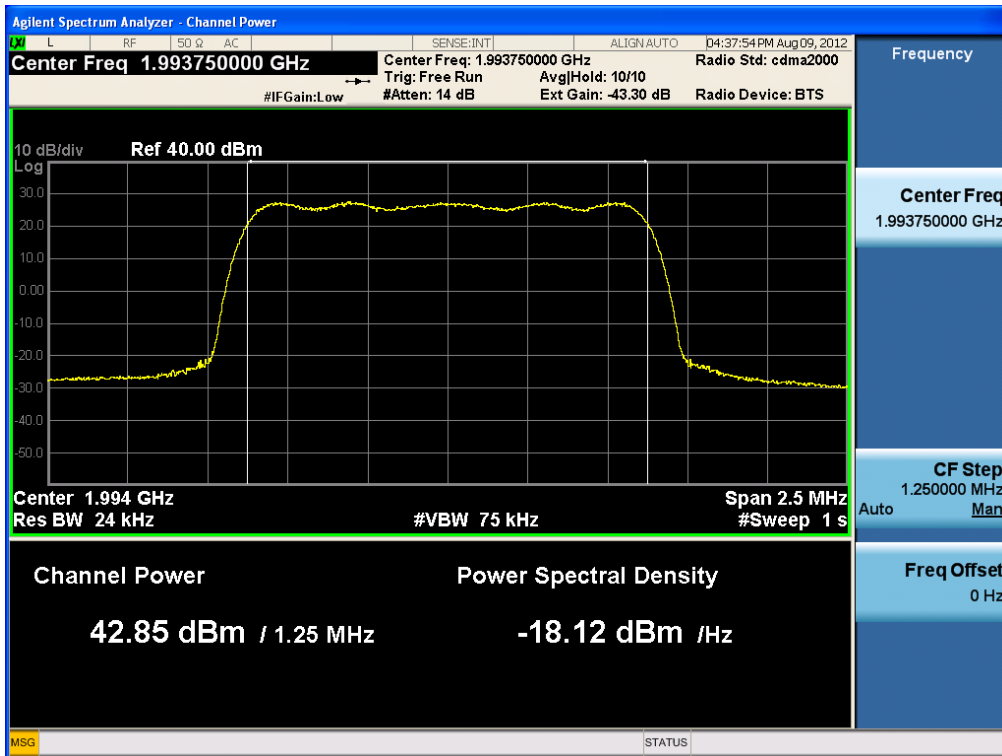


(16QAM Middle Channel)



FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 29 of 176

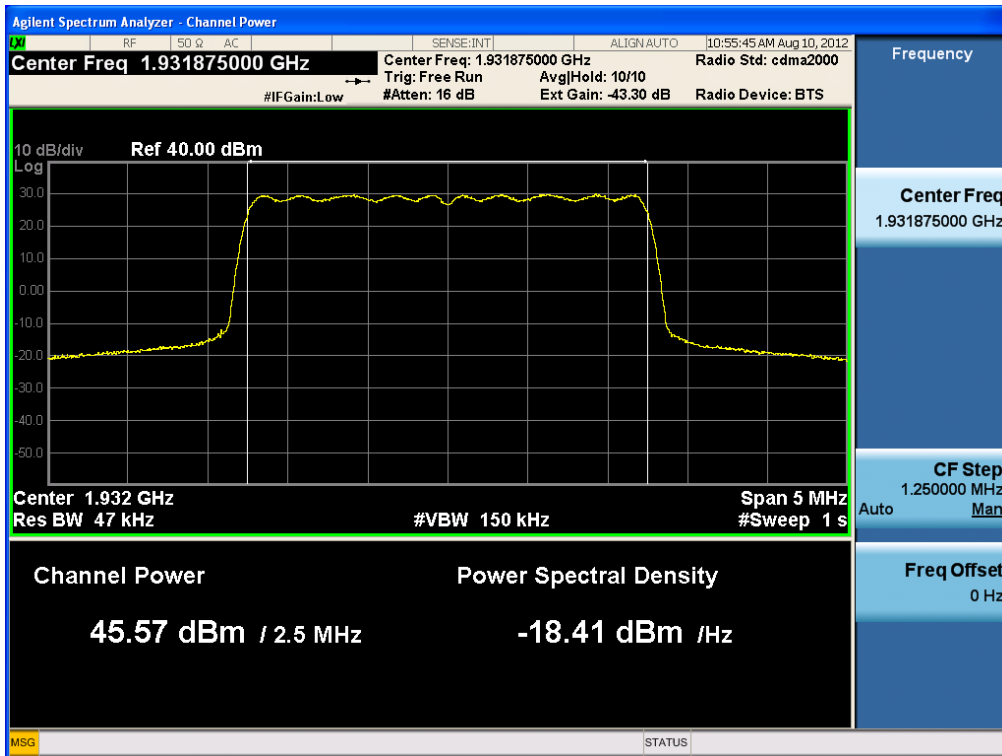
(16QAM High Channel)



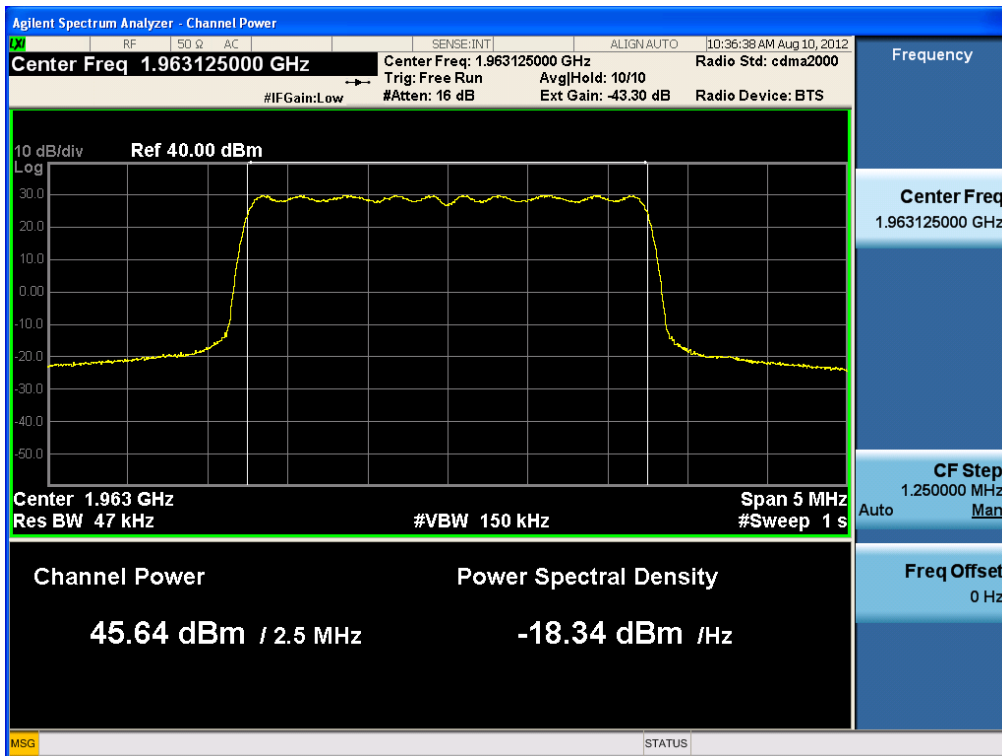
FCC PT.24 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 30 of 176

. Plot Data for CDMA 1 Tx mode – 2 Carriers, Output Port 0

(BPSK Low Channel)

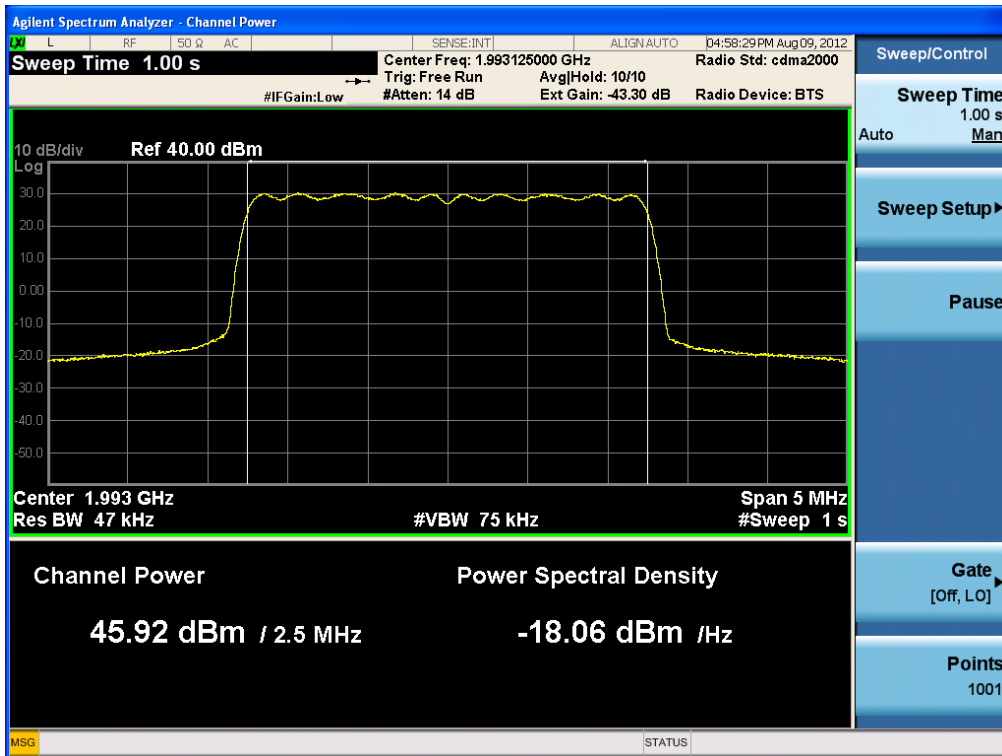


(BPSK Middle Channel)

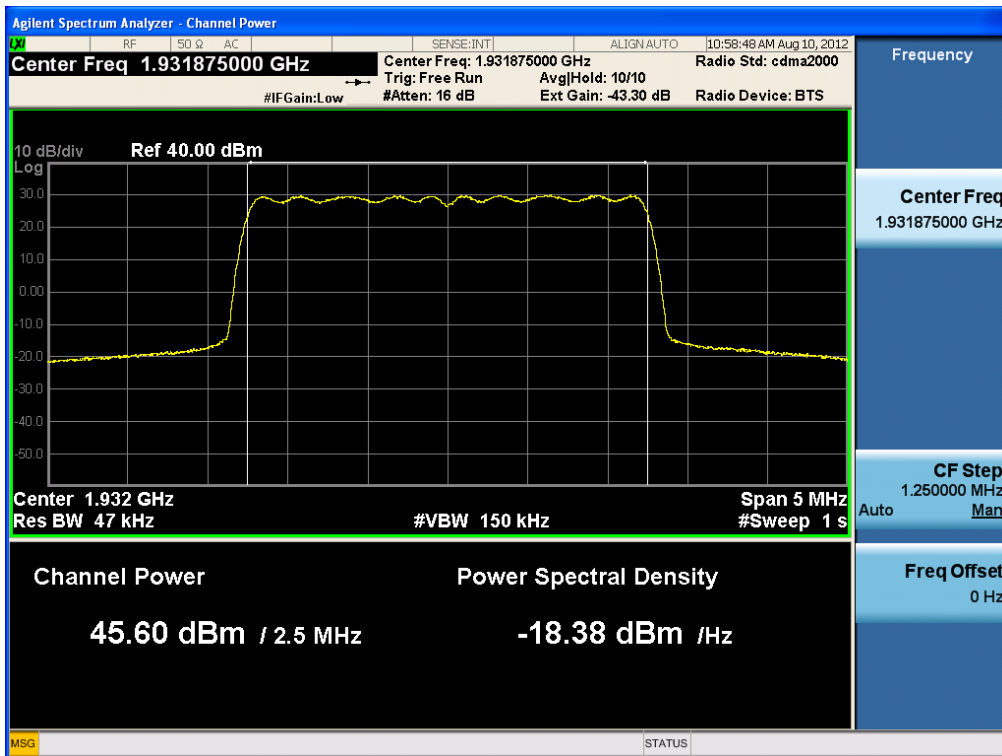


FCC PT.24 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 31 of 176

(BPSK High Channel)

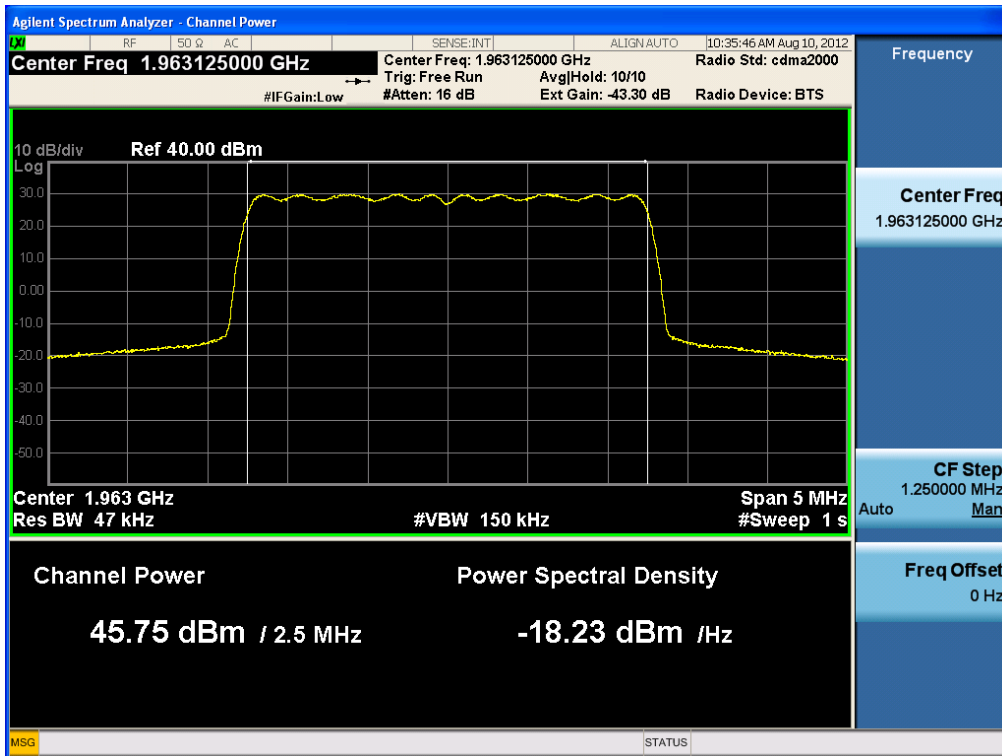


(QPSK Low Channel)



FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 32 of 176

(QPSK Middle Channel)

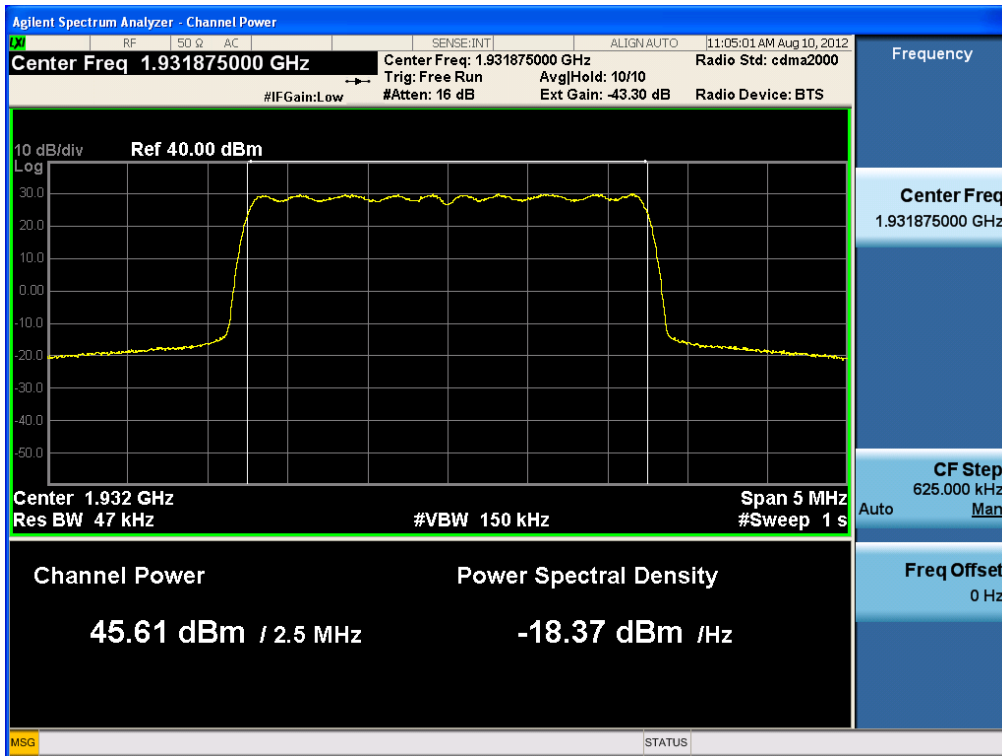


(QPSK High Channel)

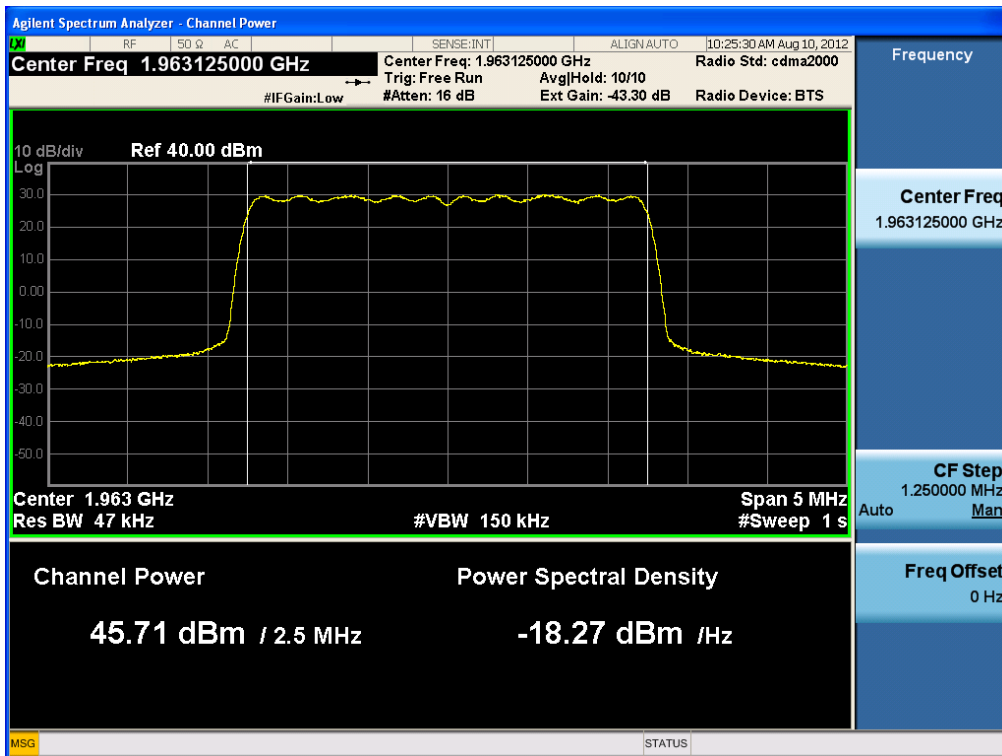


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 33 of 176

(16QAM Low Channel)

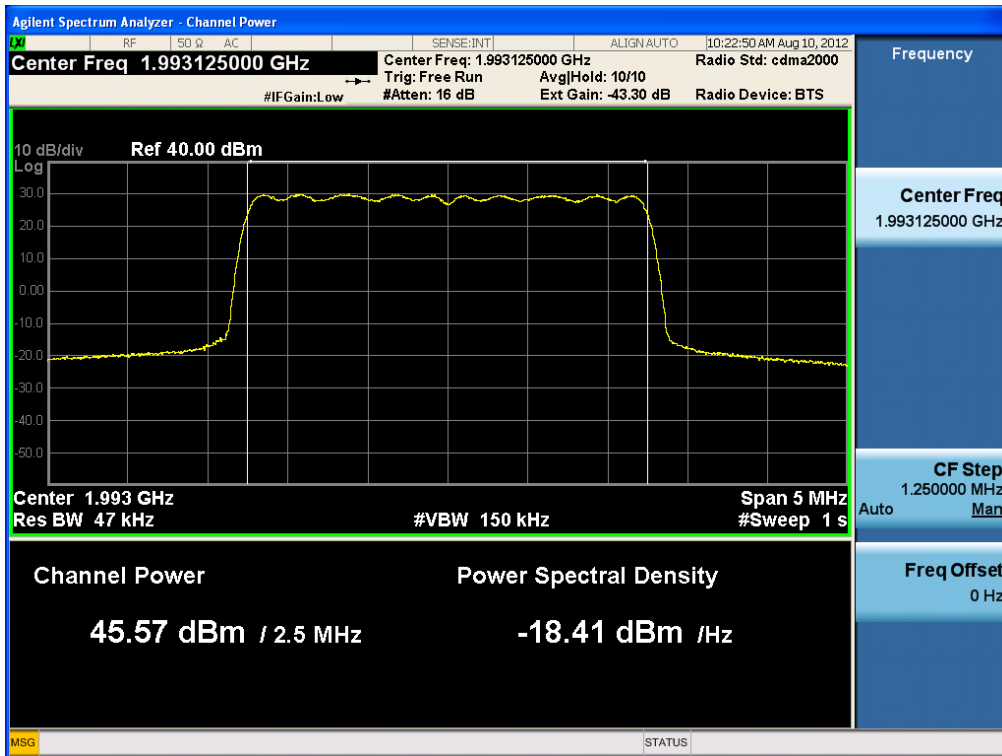


(16QAM Middle Channel)



FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 34 of 176

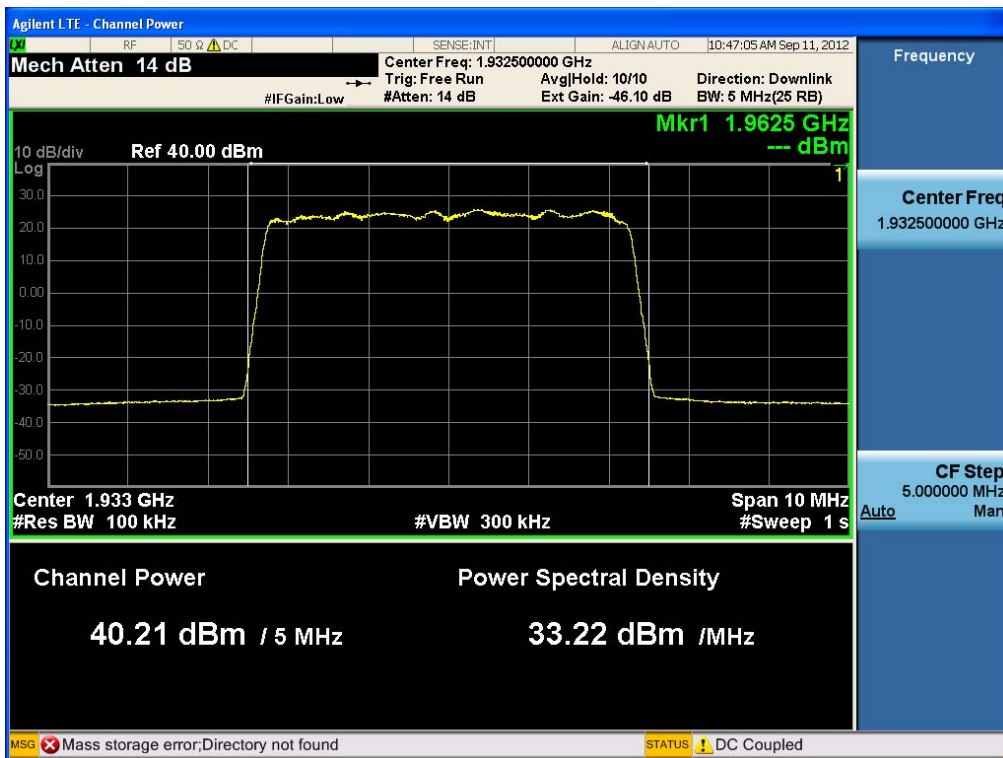
(16QAM High Channel)



FCC PT.24 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 35 of 176

. Plot Data for LTE 5 MHz – 1 Carrier , Output Port 0

(QPSK Low Channel)

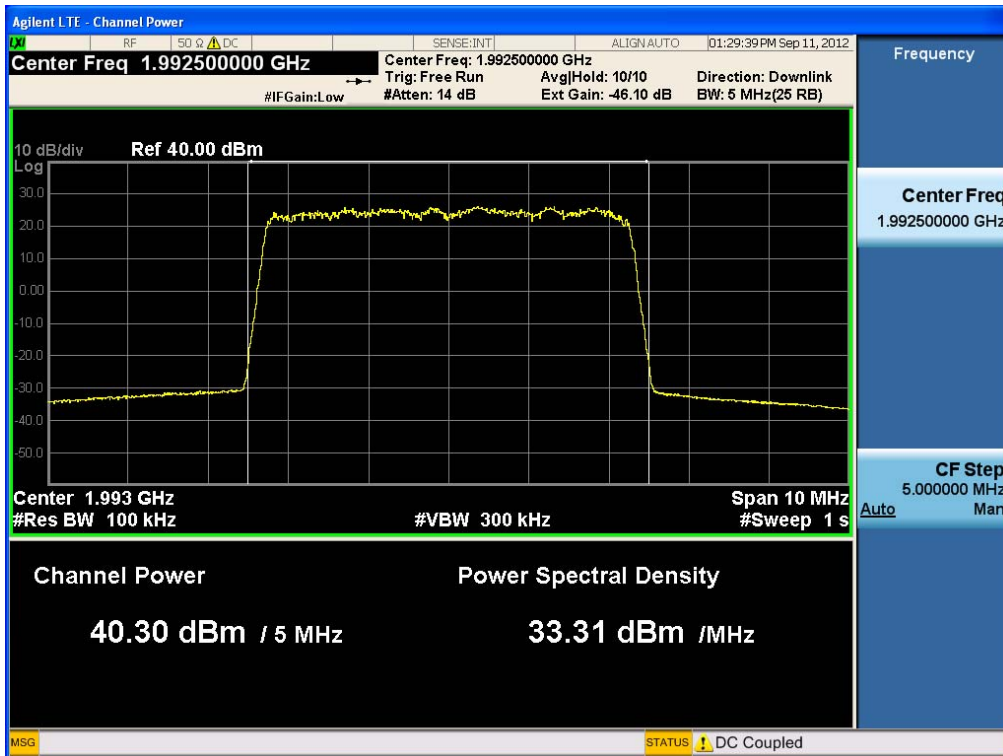


(QPSK Middle Channel)

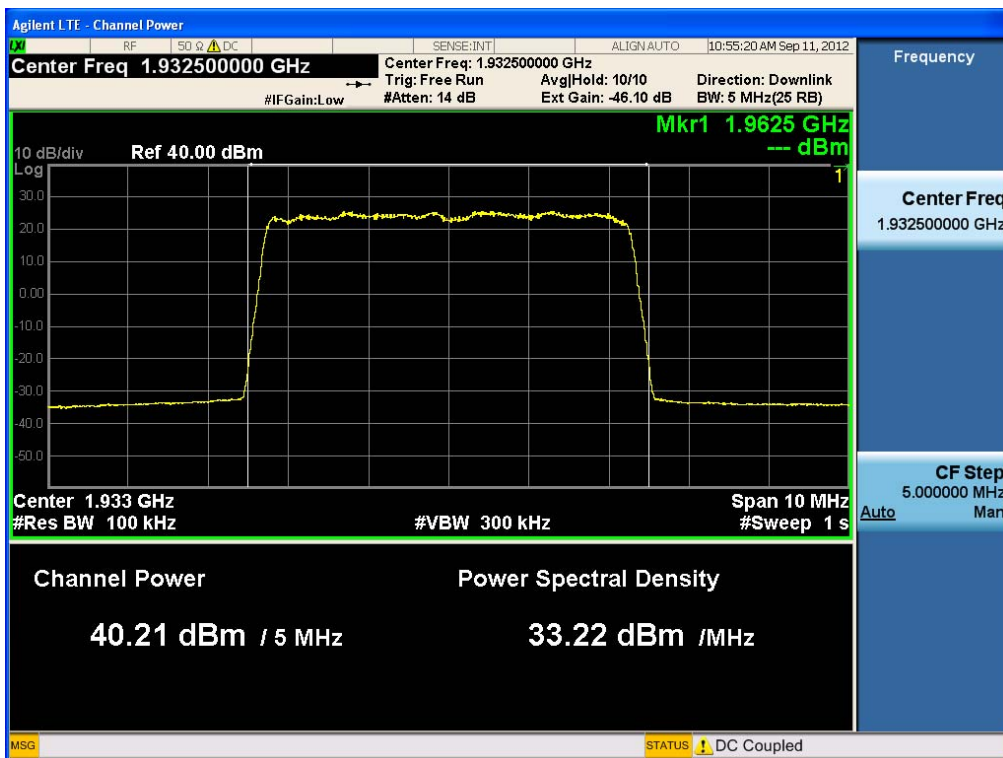


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 36 of 176

(QPSK High Channel)



(16QAM Low Channel)



FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 37 of 176

(16QAM Middle Channel)

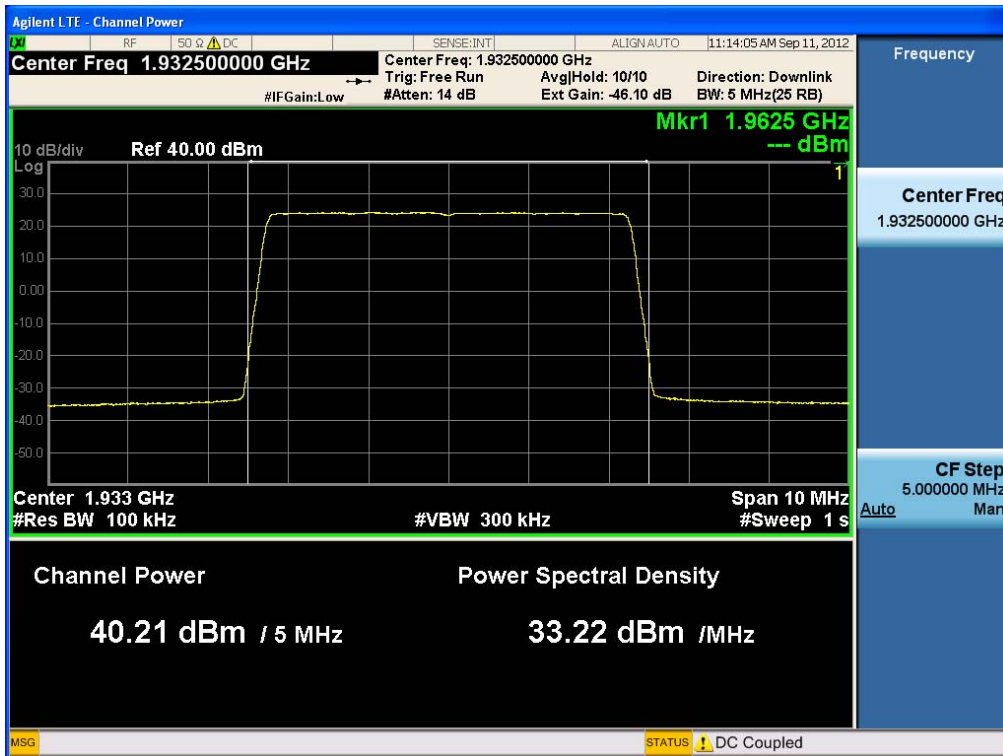


(16QAM High Channel)

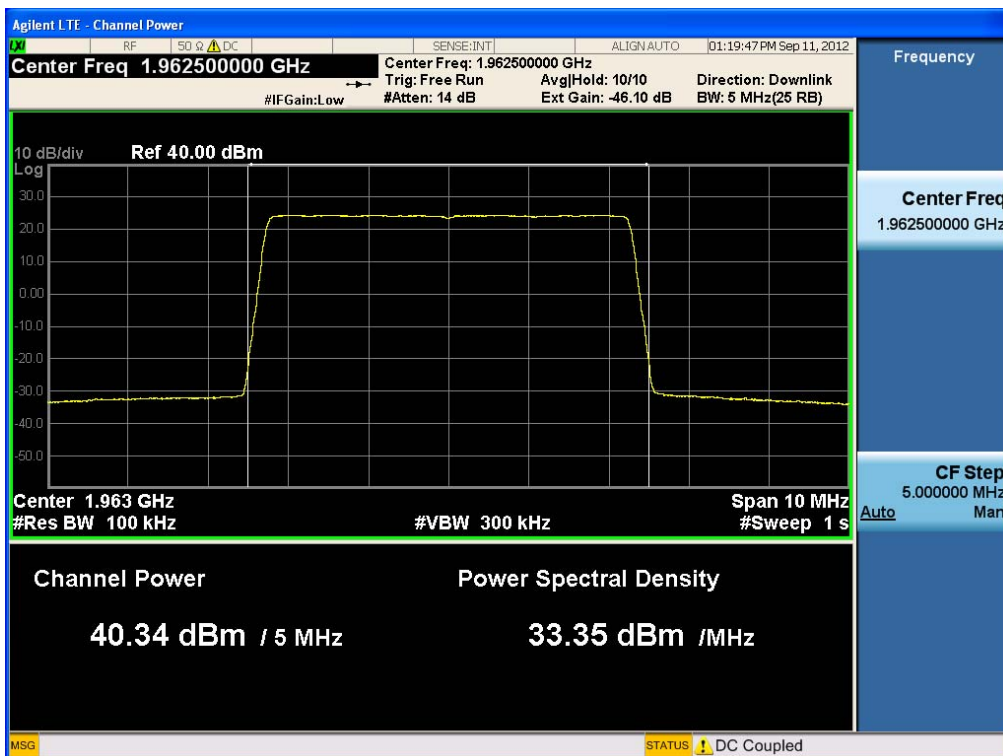


FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 38 of 176

(64QAM Low Channel)



(64QAM Middle Channel)



FCC PT.24 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 39 of 176

(64QAM High Channel)



FCC PT.24 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1209FR14-2	Date of Issue: October 19,2012	EUT Type: Remote Radio Head	FCC ID: A3LSMM-BMR004	Page 40 of 176