Shenzhen Huaxia Testing Technology Co., Ltd

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Report Template Version: V04
Report Template Revision Date: 2018-07-06

Test Report

Report No. :	CQASZ20200500350E-02
Applicant:	RuiXingHengFang Network (Shenzhen) Co., Ltd
Address of Applicant:	Room 601, Building 10, Software Park 2, Keji Mid 2nd Road, NanShan District, Shenzhen, Guangdong, China 518057
Equipment Under Test (EUT):	
Product:	LoRa Gateway
Model No.:	RHF2S208
Brand Name:	N/A
FCC ID:	2AJUZ-RHF2S208
Standards:	47 CFR Part 2, 47 CFR Part 24 subpart E
Date of Receipt:	2020-05-08
Date of Test:	2020-05-08 to 2020-06-05
Date of Issue:	2020-06-08
Test Result :	**PASS***

Tested By： Tom Chen.

(Tom Chen)

Reviewed By: Sheek . Luo

(Sheek Luo)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200500350E-02	Rev.01	Initial report	2020-06-08

2 Content

3 Test Summary

3.1 LTE Band2 (1850-1910 MHz paired with 1930-1990 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232	EIRP ≤ 2 W(33dBm)	Section 1 of Appendix A	PASS
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix A	PASS
Bandwidth	§2.1049	OBW: No limit EBW: No limit	Section 3 of Appendix A	PASS
Band Edge Compliance	§2.1051, §24.238	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 4 of Appendix A	PASS
Spurious emissions at antenna terminals	§2.1051, §24.238	≤ -13dBm/1MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix A	PASS
Field strength of spurious radiation	§2.1051, §24.238	≤ -13dBm	Section 6 of Appendix A	PASS
Frequency stability	§2.1055, §24.235	Within authorized frequency block	Section 7 of Appendix A	PASS

4 General Information

4.1 Client Information

Applicant:	RuiXingHengFang Network (Shenzhen) Co., Ltd
Address of Applicant:	Room 601, Building 10, Software Park 2, Keji Mid 2nd Road, NanShan District, Shenzhen, Guangdong, China 518057
Manufacturer:	RuiXingHengFang Network (Shenzhen) Co., Ltd
Address of Manufacturer:	Room 601, Building 10, Software Park 2, Keji Mid 2nd Road, NanShan District, Shenzhen, Guangdong, China 518057
Factory:	SHENZHEN EDADOC TECHNOLOGY CO.,LTD
Address of Factory:	NO.3 Bldg., Zhongyuntai industrial Park, Shiyan, Shenzhen, PRC

4.2 General Description of EUT

Product Name:	LoRa Gateway
Model No.:	RHF2S208
Trade Mark:	N/A
EUT Supports Radios application:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz LoRa: 902.3MHz~914.9MHz LTE Band2: 1850-1910 MHz
Hardware version:	RHF2S208_V3.0
Software version:	V_1.2.3
Power Supply:	lithium battery: DC 9.6V, 3200mAh, Charge by Adapter
Adapter:	Model: RCL-X190150C Input: 100~240V 50/60Hz 1A Output: DC 19V 1.5A

4.3 Product Specification subjective to this standard

Supported Frequency Range:	LTE BAND2	Transmission (TX): 1850 to 1910 MHz
		Receiving (RX): 1930 to 1990 MHz
Modulation Type:	QPSK, 16QAM	
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location	
Antenna Type:	External antenna with ipex connector	
Antenna Gain:	2dBi	

4.4 Technical Specification

Characteristics	Description	
Radio System Type	☐ GSM ☐ UMTS ☒ LTE	
Supported Frequency Range	LTE BAND2	Transmission (TX): 1850 to 1910 MHz
		Receiving (RX): 1930 to 1990 MHz
		Receiving (RX): 729 to 746 MHz
Target TX Output Power	LTE BAND2: 21.25dBm	
Supported Channel Bandwidth	LTE BAND2	☒ 1.4MHz☒ 3MHz☒ 5 MHz☒ 10 MHz ☒ 15 MHz☒ 20 MHz
Designation of Emissions (Note: the necessary bandwidth of which is the worst value from the measured occupied bandwidths for each type of channel bandwidth configuration.)	LTE BAND2:	1M10G7D (1.4 MHz QPSK modulation), 1M09W7D (1.4 MHz 16QAM modulation) 2M71G7D (3 MHz QPSK modulation), 2M72W7D (3 MHz 16QAM modulation) 4M48G7D (5 MHz QPSK modulation), 4M49W7D (5 MHz 16QAM modulation) 9M13G7D (10 MHz QPSK modulation), 9M07W7D (10 MHz 16QAM modulation) 13M5G7D (15 MHz QPSK modulation), 13M5W7D (15 MHz 16QAM modulation) 18M5G7D (20 MHz QPSK modulation), 18M4W7D (20 MHz 16QAM modulation)

4.5 Test Mode

Test Mode	Test Modes Description
LTE/TM1	LTE system, QPSK modulation
LTE/TM2	LTE system, 16QAM modulation

NOTE: The test mode(s) are selected according to relevant radio technology specifications.

4.6 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1009Pa	
Temperature	TN	25 °C
Voltage :	VL	8.64V
	VN	9.6V
	VH	10.56V

NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

4.7 Test Frequency

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
		1850.7 MHz	1880 MHz	1909.3 MHz
	RX	Channel 607	Channel 900	Channel 1193
		1930.7 MHz	1960 MHz	1989.3 MHz
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 3MHz	TX	Channel 18615	Channel 18900	Channel 19185
		1851.5 MHz	1880 MHz	1908.5 MHz
	RX	Channel 615	Channel 900	Channel 1185
		1931.5 MHz	1960 MHz	1988.5 MHz
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 5MHz	TX	Channel 18625	Channel 18900	Channel 19175
		1852.5 MHz	1880 MHz	1907.5 MHz
	RX	Channel 625	Channel 900	Channel 1175
		1932.5 MHz	1960 MHz	1987.5 MHz
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 10MHz	TX	Channel 18650	Channel 18900	Channel 19150
		1855 MHz	1880 MHz	1905 MHz
	RX	Channel 650	Channel 900	Channel 1150
		1935 MHz	1960 MHz	1985 MHz
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 15MHz	TX	Channel 18675	Channel 18900	Channel 19125
		1857.5 MHz	1880 MHz	1902.5 MHz
	RX	Channel 675	Channel 900	Channel 3375
		1937.5 MHz	1960 MHz	1982.5 MHz
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
LTE BAND 2 20MHz	TX	Channel 18700	Channel 18900	Channel 19100
		1860 MHz	1880 MHz	1900 MHz
	RX	Channel 700	Channel 900	Channel 1100
		1940 MHz	1960 MHz	1980 MHz

4.1 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10^{-8}	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8℃	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.2 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd,

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

4.3 Test Facility

• A2LA (Certificate No. 4742.01)
Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• FCC Registration No.: 522263
Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

4.4 Abnormalities from Standard Conditions

None.

4.5 Other Information Requested by the Customer

None.

5 Description of Tests

5.1 Conducted Output Power

Measurement Procedure:

The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

Note: Reference test setup 1

5.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure:

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 0.8m high table in the chamber. The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6). The output power into the substitution antenna was then measured.

7). Steps 5) and 6) were repeated with both antennas polarized.

8). Calculate power in dBm by the following formula:

ERP (dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

Where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1). Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber

2). Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

Where:

Pg is the generator output power into the substitution antenna.

3). Test the EUT in the lowest channel, the middle channel the Highest channel

4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

5). Repeat above procedures until all frequencies measured was complete.

Note: Reference test setup 2

5.3 Occupied Bandwidth

Measurement Procedure:

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel).The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

Note: Reference test setup 1

5.4 Band Edge at Antenna Terminals

Measurement Procedure:

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.

Note: Reference test setup 1

5.5 Spurious And Harmonic Emissions at Antenna Terminal

Measurement Procedure:

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Note: Reference test setup 1

5.6 Peak-Average Ratio

Measurement Procedure:

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

Note: Reference test setup 1

5.7 Field Strength of Spurious Radiation

Measurement Procedure:

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6). The output power into the substitution antenna was then measured.

7). Steps 5) and 6) were repeated with both antennas polarized.

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

Where:

Pd is the dipole equivalent power, Pg is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic

source (dBi). The substitute level is equal to Pg [dBm] – cable loss [dB]. The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log10(Power [Watts]).

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber
2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

Where:

Pg is the generator output power into the substitution antenna.

3. Test the EUT in the lowest channel, the middle channel the Highest channel
4. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
5. Repeat above procedures until all frequencies measured was complete

Note: Reference test setup 3

5.8 Frequency Stability / Temperature Variation

Measurement Procedure:

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E (2016). The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

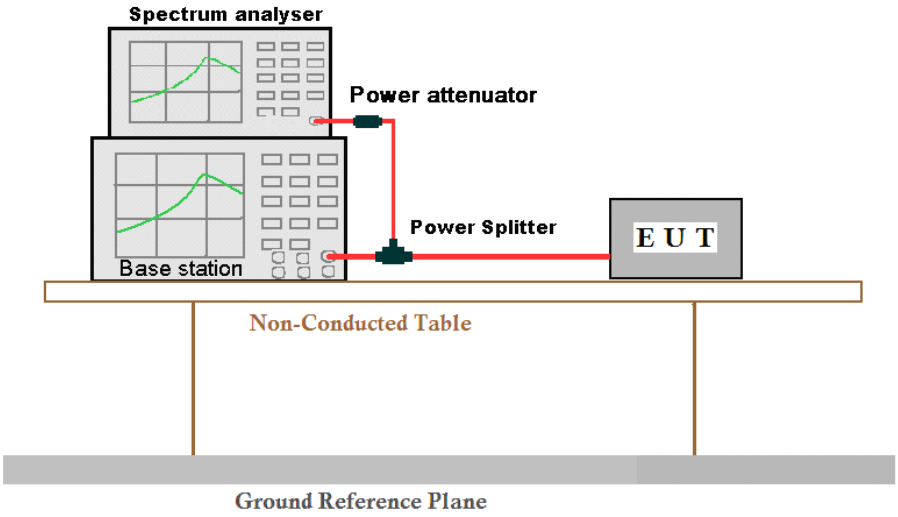
Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Note: Reference test setup 4

5.9 Test Setups

5.9.1 Test Setup 1



5.9.2 Test Setup 2

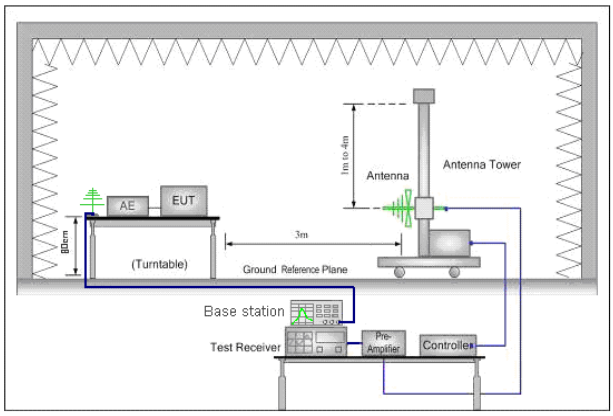


Figure 1. 30MHz to 1GHz

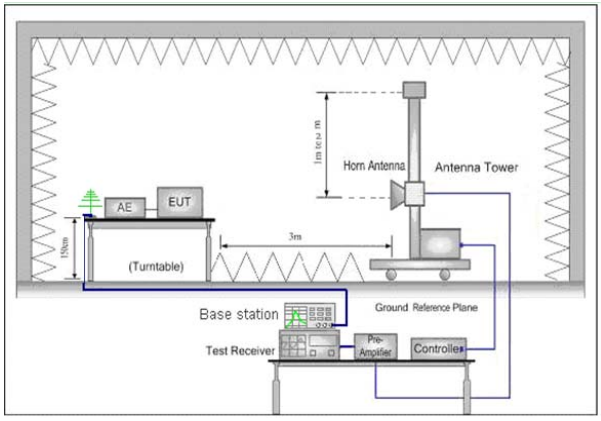


Figure 2. above 1GHz

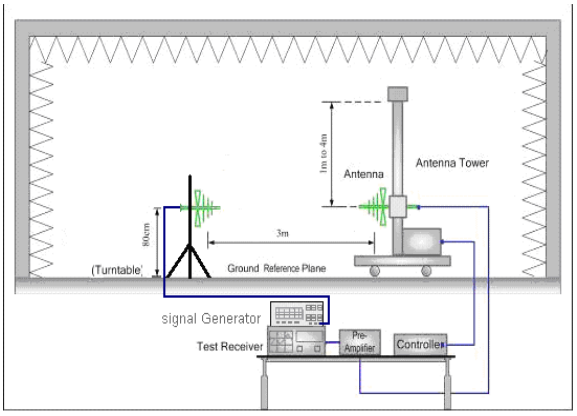


Figure 1. 30MHz to 1GHz

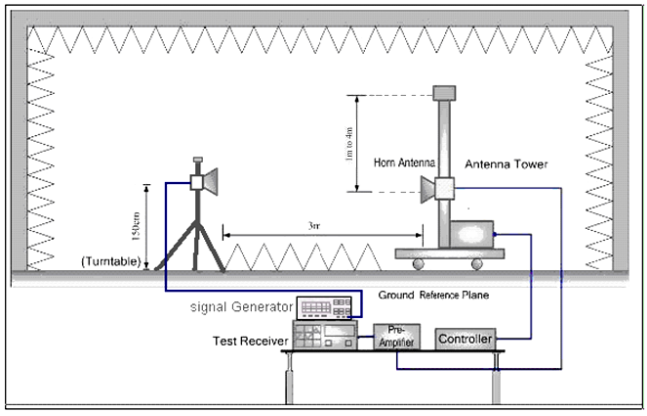


Figure 2. above 1GHz

5.9.3 Test Setup 3

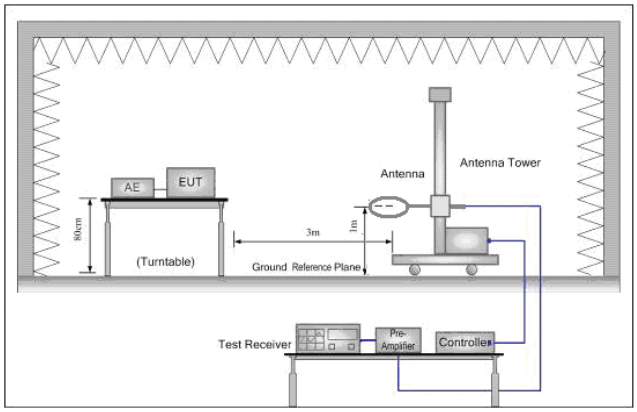


Figure 1. Below 30MHz

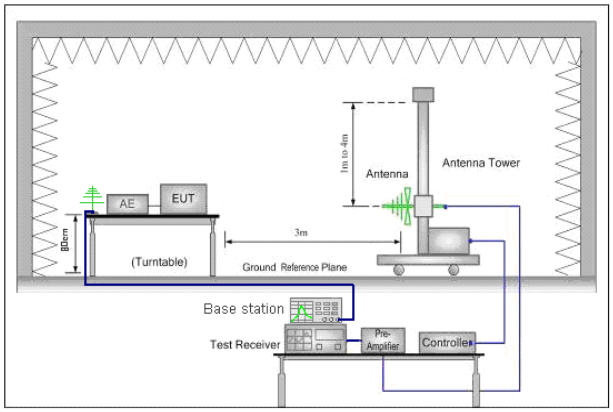


Figure 2. 30MHz to 1GHz

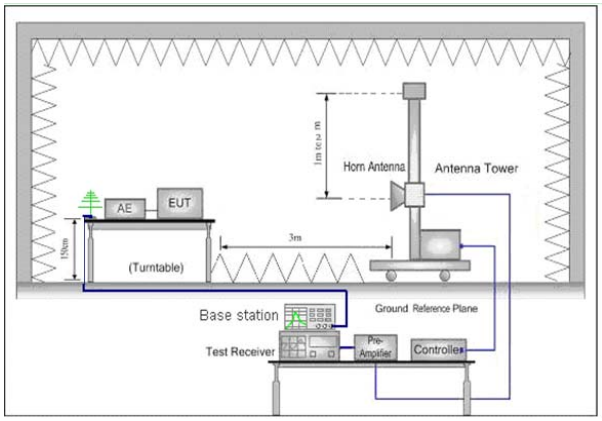


Figure 3. above 1GHz

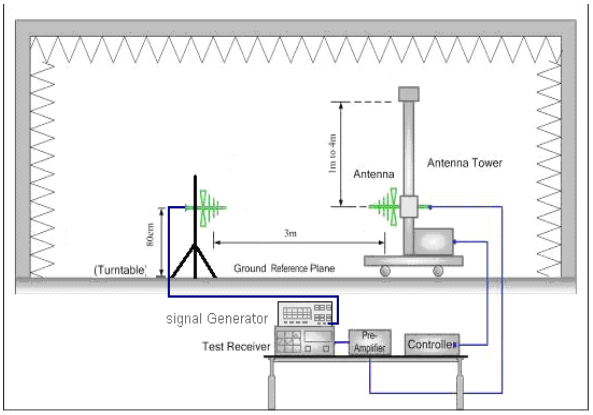


Figure 2. 30MHz to 1GHz

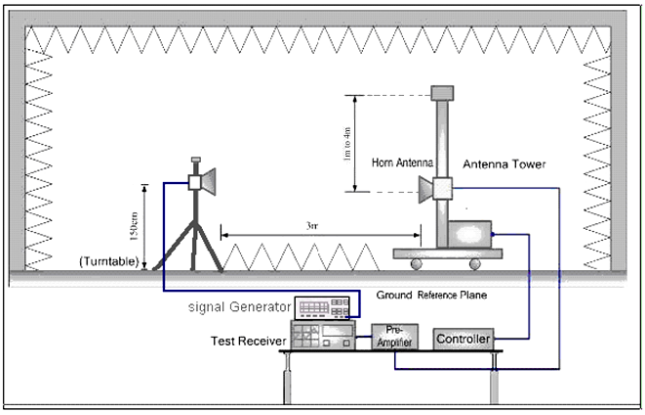
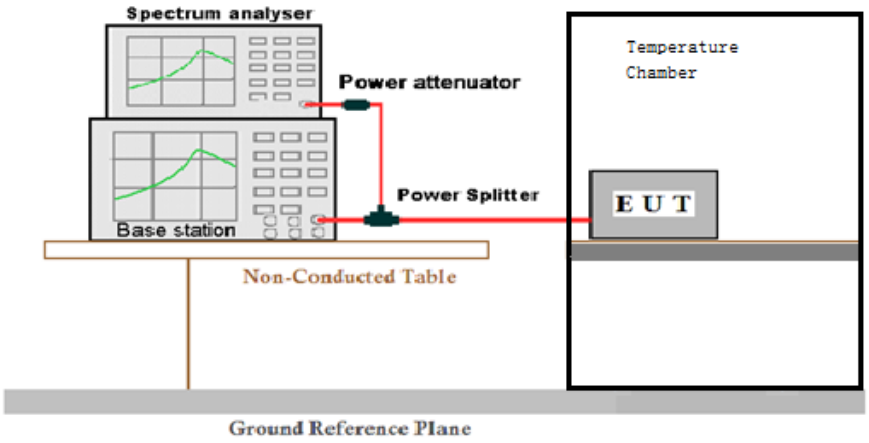


Figure 3. above 1GHz

5.9.4 Test Setup 4



5.10 Test Conditions

Test Case		Test Conditions	
Transmit Output Power Data	Average Power, Total	Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
	Average Power, Spectral Density (if required)	Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
Peak-to-Average Ratio (if required)		Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
Bandwidth	Occupied Bandwidth	Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
	Emission Bandwidth (if required)	Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
Band Edges Compliance		Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, H (L= low channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2
Spurious Emission at Antenna Terminals		Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 1
		RF Channels (TX)	L, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	LTE/TM1;LTE/TM2

Field Strength of Spurious Radiation	Test Environment	Ambient Climate & Rated Voltage
	Test Setup	Test Setup 2
	Test Mode	LTE/TM1;LTE/TM2 NOTE: If applicable, the EUT conf. that has maximum power density (based on the equivalent power level) is selected.
	RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Frequency Stability	Test Env.	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) VL, VN and VH of Rated Voltage at Ambient Climate.
	Test Setup	Test Setup 4
	RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
	Test Mode	LTE/TM1;LTE/TM2

6 Main Test Equipment

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2019/10/25	2020/10/24
Spectrum analyzer	R&S	FSU26	CQA-038	2019/10/25	2020/10/24
Universal Radio Communication Tester	R&S	CMW500	CQA-022	2019/9/25	2020/9/24
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2019/10/25	2020/10/24
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2019/10/21	2020/10/20
Bilog Antenna	R&S	HL562	CQA-011	2019/9/26	2020/9/25
Horn Antenna	R&S	HF906	CQA-012	2019/9/26	2020/9/25
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2019/9/25	2020/9/24
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2019/9/26	2020/9/25
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2019/9/26	2020/9/25
Antenna Connector	CQA	RFC-01	CQA-080	2019/9/26	2020/9/25
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2019/9/26	2020/9/25
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2019/9/26	2020/9/25
LISN	R&S	ENV216	CQA-003	2019/10/23	2020/10/22
Coaxial cable	CQA	N/A	CQA-C009	2019/9/26	2020/9/25
DC power	KEYSIGHT	E3631A	CQA-028	2019/9/26	2020/9/25

Appendix A Test Data

Conducted Output Power and Effective (Isotropic) Radiated Power

Note:

1. EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

   EIRP=ERP+2.15dB

2. Antenna Gain: FDD-LTE Band 2: 2.0dBi,

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	20.7	22.7	PASS
		1	3	20.74	22.74	PASS
		1	5	20.71	22.71	PASS
		3	0	20.37	22.37	PASS
		3	2	20.38	22.38	PASS
		3	3	20.38	22.38	PASS
		6	0	19.65	21.65	PASS
	MCH	1	0	21.01	23.01	PASS
		1	3	21.07	23.07	PASS
		1	5	21	23	PASS
		3	0	20.41	22.41	PASS
		3	2	20.41	22.41	PASS
		3	3	20.41	22.41	PASS
		6	0	19.98	21.98	PASS
	HCH	1	0	21.13	23.13	PASS
		1	3	21.09	23.09	PASS
		1	5	21.13	23.13	PASS
		3	0	20.36	22.36	PASS
		3	2	20.36	22.36	PASS
		3	3	20.39	22.39	PASS
		6	0	20.1	22.1	PASS
16QAM	LCH	1	0	19.78	21.78	PASS
		1	3	19.77	21.77	PASS
		1	5	19.73	21.73	PASS
		3	0	19.4	21.4	PASS

		3	2	19.37	21.37	PASS
		3	3	19.35	21.35	PASS
		6	0	18.69	20.69	PASS
	MCH	1	0	20.23	22.23	PASS
		1	3	20.16	22.16	PASS
		1	5	20.14	22.14	PASS
		3	0	19.89	21.89	PASS
		3	2	19.89	21.89	PASS
		3	3	19.8	21.8	PASS
		6	0	19.06	21.06	PASS
	HCH	1	0	20.21	22.21	PASS
		1	3	20.14	22.14	PASS
		1	5	20.12	22.12	PASS
		3	0	19.9	21.9	PASS
		3	2	19.9	21.9	PASS
		3	3	19.81	21.81	PASS
		6	0	19.03	21.03	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	20.61	22.61	PASS
		1	7	20.72	22.72	PASS
		1	14	20.58	22.58	PASS
		8	0	19.62	21.62	PASS
		8	4	19.63	21.63	PASS
		8	7	19.7	21.7	PASS
		15	0	19.67	21.67	PASS
	MCH	1	0	21.1	23.1	PASS
		1	7	21.06	23.06	PASS
		1	14	20.92	22.92	PASS
		8	0	20.11	22.11	PASS
		8	4	20.16	22.16	PASS
		8	7	20.08	22.08	PASS
		15	0	20.04	22.04	PASS
	HCH	1	0	21.11	23.11	PASS
		1	7	21.12	23.12	PASS

		1	14	21.09	23.09	PASS
		8	0	20.09	22.09	PASS
		8	4	20.06	22.06	PASS
		8	7	20.08	22.08	PASS
		15	0	20.08	22.08	PASS
16QAM	LCH	1	0	20.21	22.21	PASS
		1	7	20.19	22.19	PASS
		1	14	20.14	22.14	PASS
		8	0	19.48	21.48	PASS
		8	4	19.49	21.49	PASS
		8	7	19.44	21.44	PASS
		15	0	18.69	20.69	PASS
	MCH	1	0	20.17	22.17	PASS
		1	7	20.12	22.12	PASS
		1	14	20.11	22.11	PASS
		8	0	19.45	21.45	PASS
		8	4	19.49	21.49	PASS
		8	7	19.5	21.5	PASS
		15	0	19	21	PASS
	HCH	1	0	20.27	22.27	PASS
		1	7	20.21	22.21	PASS
		1	14	20.19	22.19	PASS
		8	0	19.52	21.52	PASS
		8	4	19.54	21.54	PASS
		8	7	19.45	21.45	PASS
		15	0	19.46	21.46	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	20.71	22.71	PASS
		1	12	20.69	22.69	PASS
		1	24	20.61	22.61	PASS
		12	0	19.69	21.69	PASS
		12	6	19.68	21.68	PASS
		12	13	19.65	21.65	PASS
		25	0	19.63	21.63	PASS
	MCH	1	0	21.14	23.14	PASS

		1	12	21.1	23.1	PASS
		1	24	21.11	23.11	PASS
		12	0	20.07	22.07	PASS
		12	6	20.12	22.12	PASS
		12	13	20.04	22.04	PASS
		25	0	20.02	22.02	PASS
	HCH	1	0	21.25	23.25	PASS
		1	12	21.22	23.22	PASS
		1	24	21.22	23.22	PASS
		12	0	20.16	22.16	PASS
		12	6	20.14	22.14	PASS
		12	13	20.12	22.12	PASS
		25	0	20.11	22.11	PASS
16QAM	LCH	1	0	19.95	21.95	PASS
		1	12	19.91	21.91	PASS
		1	24	19.97	21.97	PASS
		12	0	19.46	21.46	PASS
		12	6	19.48	21.48	PASS
		12	13	19.39	21.39	PASS
		25	0	18.79	20.79	PASS
	MCH	1	0	20.47	22.47	PASS
		1	12	20.45	22.45	PASS
		1	24	20.36	22.36	PASS
		12	0	19.5	21.5	PASS
		12	6	19.52	21.52	PASS
		12	13	19.48	21.48	PASS
		25	0	18.98	20.98	PASS
	HCH	1	0	20.31	22.31	PASS
		1	12	20.25	22.25	PASS
		1	24	20.18	22.18	PASS
		12	0	19.52	21.52	PASS
		12	6	19.52	21.52	PASS
		12	13	19.45	21.45	PASS
		25	0	19.35	21.35	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			

QPSK	LCH	1	0	20.73	22.73	PASS
		1	24	20.66	22.66	PASS
		1	49	20.55	22.55	PASS
		25	0	19.7	21.7	PASS
		25	12	19.7	21.7	PASS
		25	25	19.71	21.71	PASS
		50	0	19.76	21.76	PASS
	MCH	1	0	21.16	23.16	PASS
		1	24	21.16	23.16	PASS
		1	49	21.08	23.08	PASS
		25	0	20.05	22.05	PASS
		25	12	20	22	PASS
		25	25	20.07	22.07	PASS
		50	0	20.11	22.11	PASS
	HCH	1	0	21.24	23.24	PASS
		1	24	21.23	23.23	PASS
		1	49	21.15	23.15	PASS
		25	0	20.06	22.06	PASS
		25	12	20.09	22.09	PASS
		25	25	20.14	22.14	PASS
		50	0	20.09	22.09	PASS
16QAM	LCH	1	0	20.29	22.29	PASS
		1	24	20.31	22.31	PASS
		1	49	20.21	22.21	PASS
		25	0	19.47	21.47	PASS
		25	12	19.47	21.47	PASS
		25	25	19.52	21.52	PASS
		50	0	18.79	20.79	PASS
	MCH	1	0	20.17	22.17	PASS
		1	24	20.13	22.13	PASS
		1	49	20.09	22.09	PASS
		25	0	19.52	21.52	PASS
		25	12	19.5	21.5	PASS
		25	25	19.42	21.42	PASS
		50	0	19.13	21.13	PASS
	HCH	1	0	20.37	22.37	PASS
		1	24	20.35	22.35	PASS

		1	49	20.28	22.28	PASS
		25	0	19.47	21.47	PASS
		25	12	19.5	21.5	PASS
		25	25	19.47	21.47	PASS
		50	0	19.45	21.45	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	20.74	22.74	PASS
		1	37	20.7	22.7	PASS
		1	74	20.56	22.56	PASS
		37	0	19.82	21.82	PASS
		37	18	19.93	21.93	PASS
		37	38	19.85	21.85	PASS
		75	0	19.85	21.85	PASS
	MCH	1	0	21.16	23.16	PASS
		1	37	21.18	23.18	PASS
		1	74	21.08	23.08	PASS
		37	0	20.07	22.07	PASS
		37	18	20.16	22.16	PASS
		37	38	20.13	22.13	PASS
		75	0	20.17	22.17	PASS
	HCH	1	0	21.24	23.24	PASS
		1	37	21.22	23.22	PASS
		1	74	21.18	23.18	PASS
		37	0	20.22	22.22	PASS
		37	18	20.25	22.25	PASS
		37	38	20.29	22.29	PASS
		75	0	20.23	22.23	PASS
16QAM	LCH	1	0	20.39	22.39	PASS
		1	37	20.38	22.38	PASS
		1	74	20.28	22.28	PASS
		37	0	19.47	21.47	PASS
		37	18	19.51	21.51	PASS
		37	38	19.53	21.53	PASS

		75	0	18.83	20.83	PASS
	MCH	1	0	20.18	22.18	PASS
		1	37	20.14	22.14	PASS
		1	74	20.22	22.22	PASS
		37	0	19.43	21.43	PASS
		37	18	19.46	21.46	PASS
		37	38	19.43	21.43	PASS
		75	0	19.09	21.09	PASS
	HCH	1	0	20.47	22.47	PASS
		1	37	20.5	22.5	PASS
		1	74	20.52	22.52	PASS
		37	0	19.36	21.36	PASS
		37	18	19.49	21.49	PASS
		37	38	19.47	21.47	PASS
		75	0	19.19	21.19	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	E.i.r.p [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	21.17	23.17	PASS
		1	49	20.8	22.8	PASS
		1	99	20.69	22.69	PASS
		50	0	20.18	22.18	PASS
		50	25	20.13	22.13	PASS
		50	50	19.83	21.83	PASS
		100	0	19.84	21.84	PASS
	MCH	1	0	21.28	23.28	PASS
		1	49	21.17	23.17	PASS
		1	99	21.13	23.13	PASS
		50	0	20.45	22.45	PASS
		50	25	20.1	22.1	PASS
		50	50	20.07	22.07	PASS
		100	0	20.27	22.27	PASS
	HCH	1	0	21.23	23.23	PASS
		1	49	21.21	23.21	PASS
		1	99	21.1	23.1	PASS
		50	0	20.16	22.16	PASS

		50	25	20.11	22.11	PASS
		50	50	20.11	22.11	PASS
		100	0	20.15	22.15	PASS
16QAM	LCH	1	0	20.15	22.15	PASS
		1	49	20.22	22.22	PASS
		1	99	20.1	22.1	PASS
		50	0	19.5	21.5	PASS
		50	25	19.51	21.51	PASS
		50	50	19.41	21.41	PASS
		100	0	18.88	20.88	PASS
	MCH	1	0	20.31	22.31	PASS
		1	49	20.29	22.29	PASS
		1	99	20.18	22.18	PASS
		50	0	19.47	21.47	PASS
		50	25	19.45	21.45	PASS
		50	50	19.48	21.48	PASS
		100	0	19.1	21.1	PASS
	HCH	1	0	20.49	22.49	PASS
		1	49	20.47	22.47	PASS
		1	99	20.48	22.48	PASS
		50	0	19.52	21.52	PASS
		50	25	19.48	21.48	PASS
		50	50	19.45	21.45	PASS
		100	0	19.4	21.4	PASS

Peak-Average Ratio

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.33	<13	PASS
		1	3	5.33	<13	PASS
		1	5	5.45	<13	PASS
		3	0	5.41	<13	PASS
		3	2	5.39	<13	PASS
		3	3	5.38	<13	PASS
		6	0	5.87	<13	PASS
	MCH	1	0	5.1	<13	PASS
		1	3	5.19	<13	PASS
		1	5	5.26	<13	PASS
		3	0	5.18	<13	PASS
		3	2	5.17	<13	PASS
		3	3	5.21	<13	PASS
		6	0	5.69	<13	PASS
	HCH	1	0	5.02	<13	PASS
		1	3	4.85	<13	PASS
		1	5	4.93	<13	PASS
		3	0	4.87	<13	PASS
		3	2	4.91	<13	PASS
		3	3	4.87	<13	PASS
		6	0	5.41	<13	PASS
16QAM	LCH	1	0	6.32	<13	PASS
		1	3	6.13	<13	PASS
		1	5	6.32	<13	PASS
		3	0	5.42	<13	PASS
		3	2	5.45	<13	PASS
		3	3	5.3	<13	PASS
		6	0	6.59	<13	PASS
	MCH	1	0	6.19	<13	PASS
		1	3	6.2	<13	PASS
		1	5	6.01	<13	PASS

		3	0	5.17	<13	PASS
		3	2	5.2	<13	PASS
		3	3	5.27	<13	PASS
		6	0	6.62	<13	PASS
	HCH	1	0	5.97	<13	PASS
		1	3	5.72	<13	PASS
		1	5	5.89	<13	PASS
		3	0	4.9	<13	PASS
		3	2	4.87	<13	PASS
		3	3	4.86	<13	PASS
		6	0	6.4	<13	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.17	<13	PASS
		1	7	5.18	<13	PASS
		1	14	5.3	<13	PASS
		8	0	5.92	<13	PASS
		8	4	5.88	<13	PASS
		8	7	5.83	<13	PASS
		15	0	5.81	<13	PASS
	MCH	1	0	5.15	<13	PASS
		1	7	5	<13	PASS
		1	14	5.1	<13	PASS
		8	0	5.79	<13	PASS
		8	4	5.77	<13	PASS
		8	7	5.8	<13	PASS
		15	0	5.78	<13	PASS
	HCH	1	0	4.95	<13	PASS
		1	7	4.77	<13	PASS
		1	14	4.63	<13	PASS
		8	0	5.57	<13	PASS
		8	4	5.61	<13	PASS
		8	7	5.59	<13	PASS
		15	0	5.6	<13	PASS
16QAM	LCH	1	0	5.95	<13	PASS

		1	7	6.14	<13	PASS
		1	14	6.05	<13	PASS
		8	0	5.84	<13	PASS
		8	4	5.88	<13	PASS
		8	7	5.96	<13	PASS
		15	0	6.71	<13	PASS
	MCH	1	0	5.96	<13	PASS
		1	7	5.86	<13	PASS
		1	14	5.96	<13	PASS
		8	0	5.76	<13	PASS
		8	4	5.76	<13	PASS
		8	7	5.77	<13	PASS
		15	0	6.47	<13	PASS
	HCH	1	0	5.85	<13	PASS
		1	7	5.79	<13	PASS
		1	14	5.56	<13	PASS
		8	0	5.57	<13	PASS
		8	4	5.57	<13	PASS
		8	7	5.55	<13	PASS
		15	0	6.47	<13	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.6	<13	PASS
		1	12	5.57	<13	PASS
		1	24	5.65	<13	PASS
		12	0	5.93	<13	PASS
		12	6	5.98	<13	PASS
		12	13	5.98	<13	PASS
		25	0	6.15	<13	PASS
	MCH	1	0	5.4	<13	PASS
		1	12	5.21	<13	PASS
		1	24	5.43	<13	PASS
		12	0	5.79	<13	PASS
		12	6	5.77	<13	PASS
		12	13	5.82	<13	PASS
		25	0	6.09	<13	PASS

	HCH	1	0	5.5	<13	PASS
		1	12	5.15	<13	PASS
		1	24	4.95	<13	PASS
		12	0	5.79	<13	PASS
		12	6	5.74	<13	PASS
		12	13	5.61	<13	PASS
		25	0	5.89	<13	PASS
16QAM	LCH	1	0	6.08	<13	PASS
		1	12	6.13	<13	PASS
		1	24	6.18	<13	PASS
		12	0	5.99	<13	PASS
		12	6	6.03	<13	PASS
		12	13	6.03	<13	PASS
		25	0	6.84	<13	PASS
	MCH	1	0	5.93	<13	PASS
		1	12	5.89	<13	PASS
		1	24	6.05	<13	PASS
		12	0	5.84	<13	PASS
		12	6	5.82	<13	PASS
		12	13	5.76	<13	PASS
		25	0	6.69	<13	PASS
	HCH	1	0	6.16	<13	PASS
		1	12	5.76	<13	PASS
		1	24	5.68	<13	PASS
		12	0	5.78	<13	PASS
		12	6	5.79	<13	PASS
		12	13	5.57	<13	PASS
		25	0	6.62	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.44	<13	PASS
		1	24	5.36	<13	PASS
		1	49	5.52	<13	PASS
		25	0	5.82	<13	PASS
		25	12	5.82	<13	PASS

		25	25	5.73	<13	PASS
		50	0	5.84	<13	PASS
	MCH	1	0	5.25	<13	PASS
		1	24	5.09	<13	PASS
		1	49	5.54	<13	PASS
		25	0	5.6	<13	PASS
		25	12	5.65	<13	PASS
		25	25	5.7	<13	PASS
		50	0	5.7	<13	PASS
	HCH	1	0	5.41	<13	PASS
		1	24	5.16	<13	PASS
		1	49	4.98	<13	PASS
		25	0	5.76	<13	PASS
		25	12	5.67	<13	PASS
		25	25	5.48	<13	PASS
		50	0	5.74	<13	PASS
16QAM	LCH	1	0	6.34	<13	PASS
		1	24	6.37	<13	PASS
		1	49	6.55	<13	PASS
		25	0	5.84	<13	PASS
		25	12	5.82	<13	PASS
		25	25	5.81	<13	PASS
		50	0	6.87	<13	PASS
	MCH	1	0	6.03	<13	PASS
		1	24	5.85	<13	PASS
		1	49	6.4	<13	PASS
		25	0	5.64	<13	PASS
		25	12	5.6	<13	PASS
		25	25	5.66	<13	PASS
		50	0	6.76	<13	PASS
	HCH	1	0	6.28	<13	PASS
		1	24	5.88	<13	PASS
		1	49	5.85	<13	PASS
		25	0	5.65	<13	PASS
		25	12	5.69	<13	PASS
		25	25	5.47	<13	PASS
		50	0	6.72	<13	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	6.2	<13	PASS
		1	37	5.49	<13	PASS
		1	74	7.58	<13	PASS
		37	0	6.14	<13	PASS
		37	18	6.1	<13	PASS
		37	38	6.1	<13	PASS
		75	0	6.15	<13	PASS
	MCH	1	0	6.13	<13	PASS
		1	37	5.05	<13	PASS
		1	74	7.77	<13	PASS
		37	0	6.11	<13	PASS
		37	18	6.07	<13	PASS
		37	38	6.05	<13	PASS
		75	0	6.06	<13	PASS
	HCH	1	0	6.29	<13	PASS
		1	37	5.36	<13	PASS
		1	74	8.32	<13	PASS
		37	0	5.98	<13	PASS
		37	18	5.96	<13	PASS
		37	38	5.97	<13	PASS
		75	0	5.97	<13	PASS
16QAM	LCH	1	0	7.21	<13	PASS
		1	37	6.64	<13	PASS
		1	74	8.15	<13	PASS
		37	0	6.1	<13	PASS
		37	18	6.12	<13	PASS
		37	38	6.09	<13	PASS
		75	0	7.25	<13	PASS
	MCH	1	0	7.02	<13	PASS
		1	37	6.02	<13	PASS
		1	74	8.07	<13	PASS
		37	0	6.04	<13	PASS
		37	18	6.14	<13	PASS

		37	38	6.12	<13	PASS
		75	0	7.32	<13	PASS
	HCH	1	0	7.43	<13	PASS
		1	37	6.08	<13	PASS
		1	74	7.77	<13	PASS
		37	0	5.99	<13	PASS
		37	18	6.03	<13	PASS
		37	38	5.99	<13	PASS
		75	0	7.21	<13	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	8.24	<13	PASS
		1	49	4.56	<13	PASS
		1	99	8.32	<13	PASS
		50	0	5.8	<13	PASS
		50	25	5.75	<13	PASS
		50	50	6.1	<13	PASS
		100	0	5.9	<13	PASS
	MCH	1	0	8.32	<13	PASS
		1	49	4.23	<13	PASS
		1	99	8.25	<13	PASS
		50	0	5.72	<13	PASS
		50	25	5.75	<13	PASS
		50	50	6.14	<13	PASS
		100	0	5.95	<13	PASS
	HCH	1	0	8.47	<13	PASS
		1	49	4.47	<13	PASS
		1	99	8.55	<13	PASS
		50	0	5.75	<13	PASS
		50	25	5.75	<13	PASS
		50	50	6.06	<13	PASS
		100	0	5.86	<13	PASS
16QAM	LCH	1	0	8.32	<13	PASS
		1	49	5.1	<13	PASS
		1	99	8.24	<13	PASS

		50	0	5.82	<13	PASS
		50	25	5.79	<13	PASS
		50	50	6.13	<13	PASS
		100	0	7.05	<13	PASS
	MCH	1	0	8.32	<13	PASS
		1	49	4.9	<13	PASS
		1	99	8.18	<13	PASS
		50	0	5.76	<13	PASS
		50	25	5.79	<13	PASS
		50	50	6.11	<13	PASS
		100	0	6.91	<13	PASS
	HCH	1	0	8.46	<13	PASS
		1	49	4.89	<13	PASS
		1	99	8.28	<13	PASS
		50	0	5.74	<13	PASS
		50	25	5.76	<13	PASS
		50	50	6.06	<13	PASS
		100	0	6.92	<13	PASS

Occupied Bandwidth

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	6	0	1.097	1.267	PASS
	MCH	6	0	1.091	1.281	PASS
	HCH	6	0	1.091	1.264	PASS
16QAM	LCH	6	0	1.083	1.267	PASS
	MCH	6	0	1.091	1.281	PASS
	HCH	6	0	1.094	1.281	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	15	0	2.697	2.955	PASS
	MCH	15	0	2.703	2.943	PASS
	HCH	15	0	2.709	2.961	PASS
16QAM	LCH	15	0	2.721	2.907	PASS
	MCH	15	0	2.721	2.919	PASS
	HCH	15	0	2.715	2.943	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	25	0	4.476	4.865	PASS
	MCH	25	0	4.466	4.835	PASS
	HCH	25	0	4.466	4.845	PASS
16QAM	LCH	25	0	4.476	4.865	PASS
	MCH	25	0	4.456	4.795	PASS
	HCH	25	0	4.486	4.815	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	50	0	9.131	9.830	PASS
	MCH	50	0	9.051	9.870	PASS
	HCH	50	0	9.011	9.730	PASS
16QAM	LCH	50	0	9.071	9.670	PASS
	MCH	50	0	9.051	9.830	PASS
	HCH	50	0	9.011	9.670	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	75	0	13.516	14.266	PASS
	MCH	75	0	13.457	14.416	PASS
	HCH	75	0	13.457	14.176	PASS
16QAM	LCH	75	0	13.516	14.416	PASS
	MCH	75	0	13.457	14.476	PASS
	HCH	75	0	13.487	14.356	PASS

Channel Bandwidth: 20 MHz

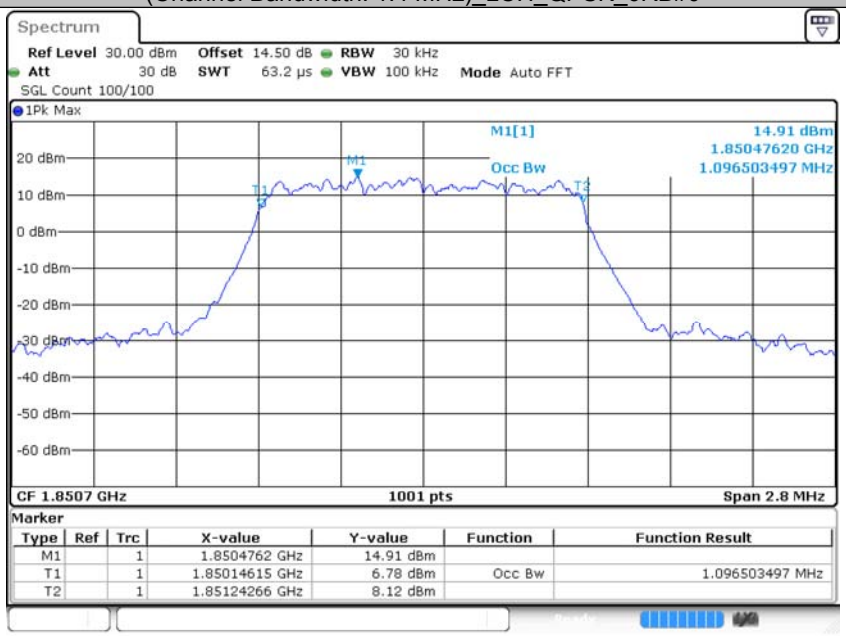
Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	100	0	18.382	20.220	PASS
	MCH	100	0	18.462	20.340	PASS
	HCH	100	0	18.342	20.260	PASS
16QAM	LCH	100	0	18.342	20.260	PASS
	MCH	100	0	18.422	20.220	PASS
	HCH	100	0	18.382	20.340	PASS

Test Graphs:

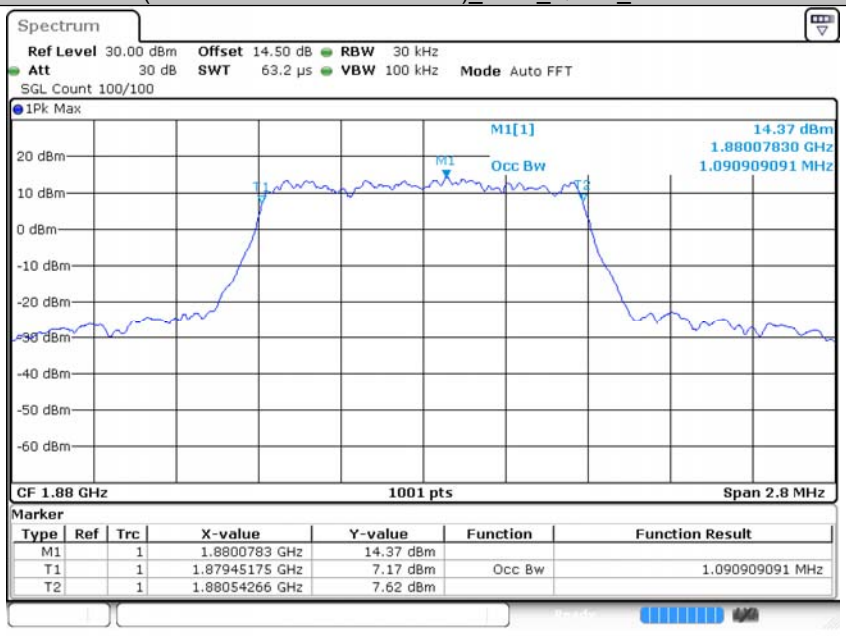
99% Occupied Bandwidth

Channel Bandwidth: 1.4 MHz

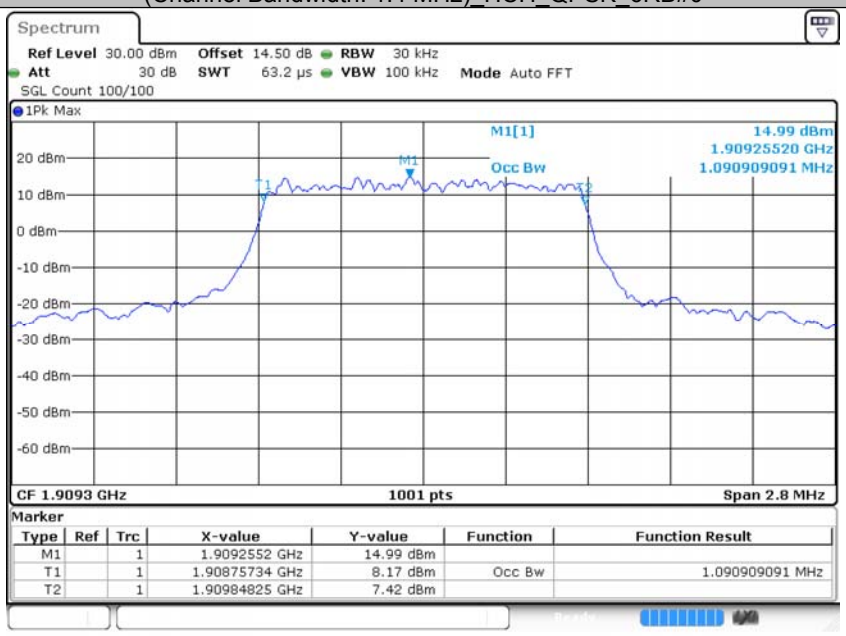
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_6RB#0



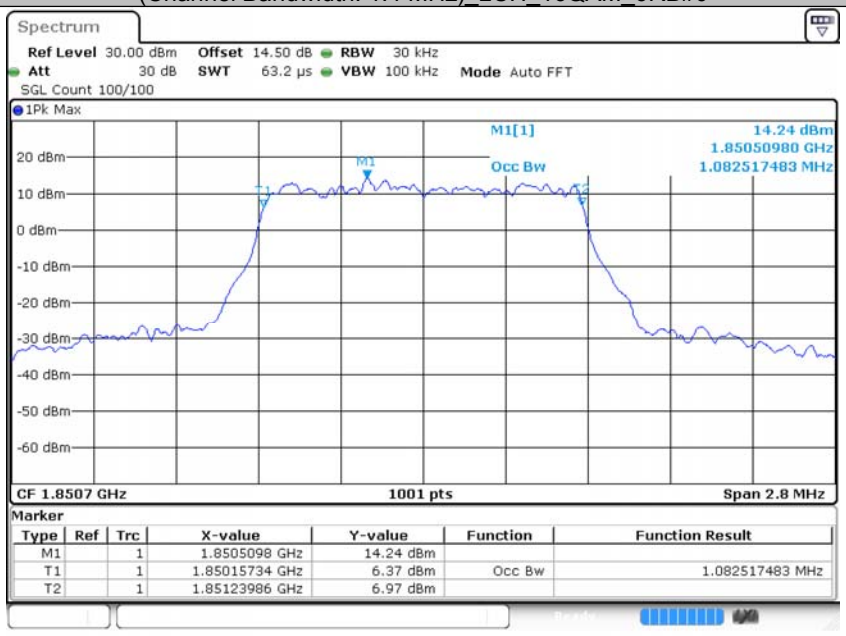
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_6RB#0



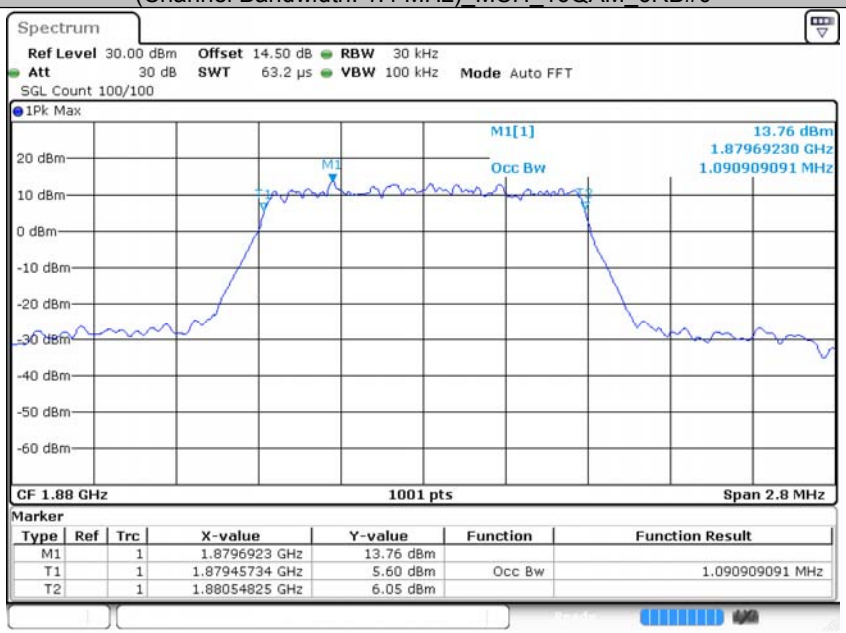
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_6RB#0



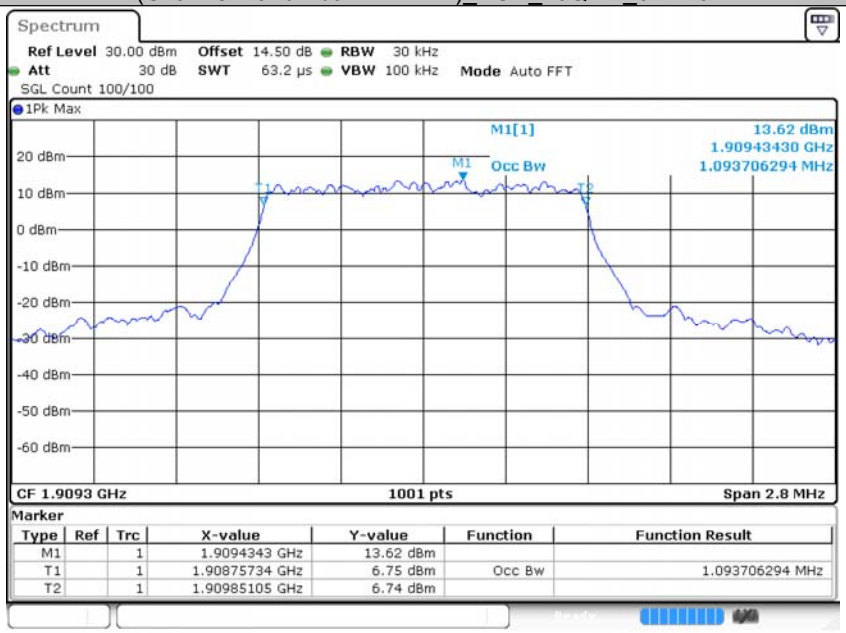
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0



(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_6RB#0

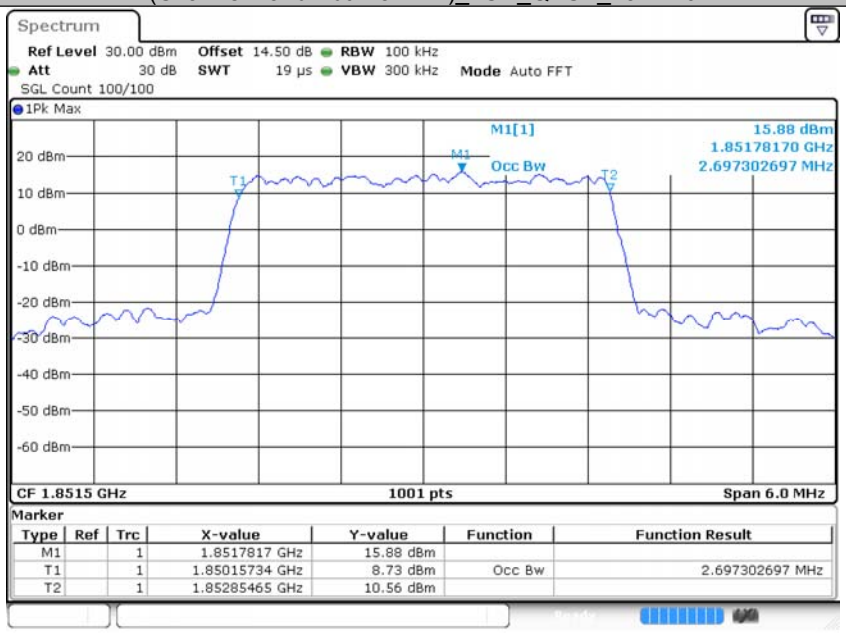


(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_6RB#0

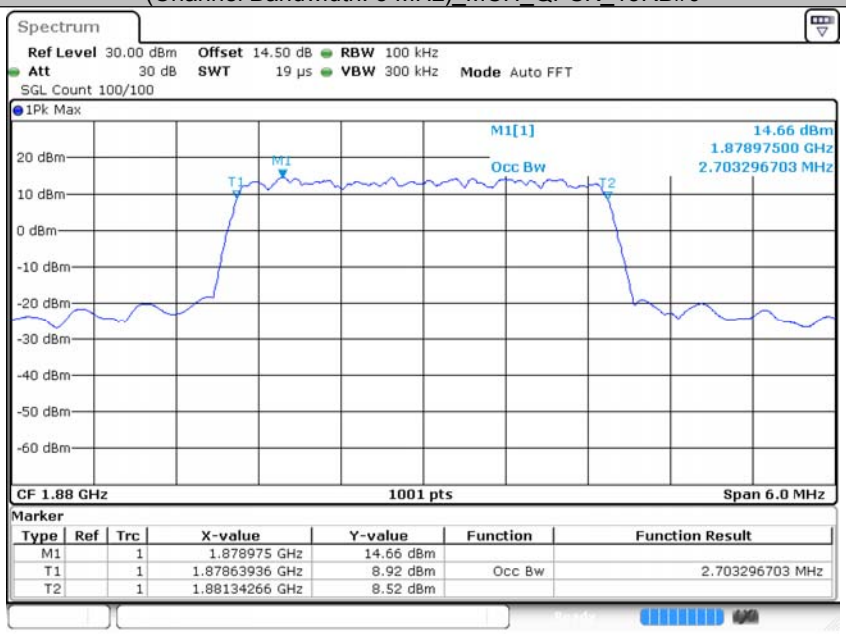


Channel Bandwidth: 3 MHz

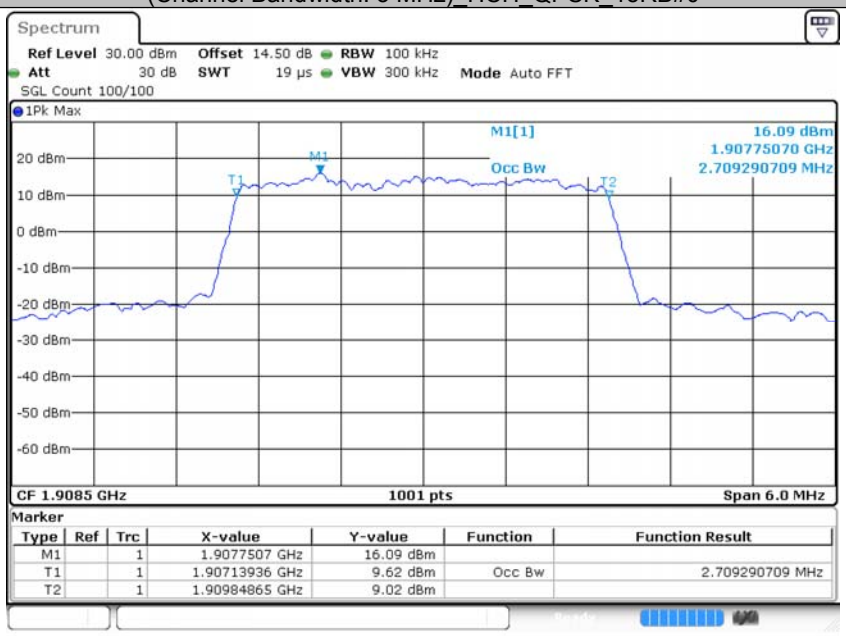
(Channel Bandwidth: 3 MHz)_LCH_QPSK_15RB#0



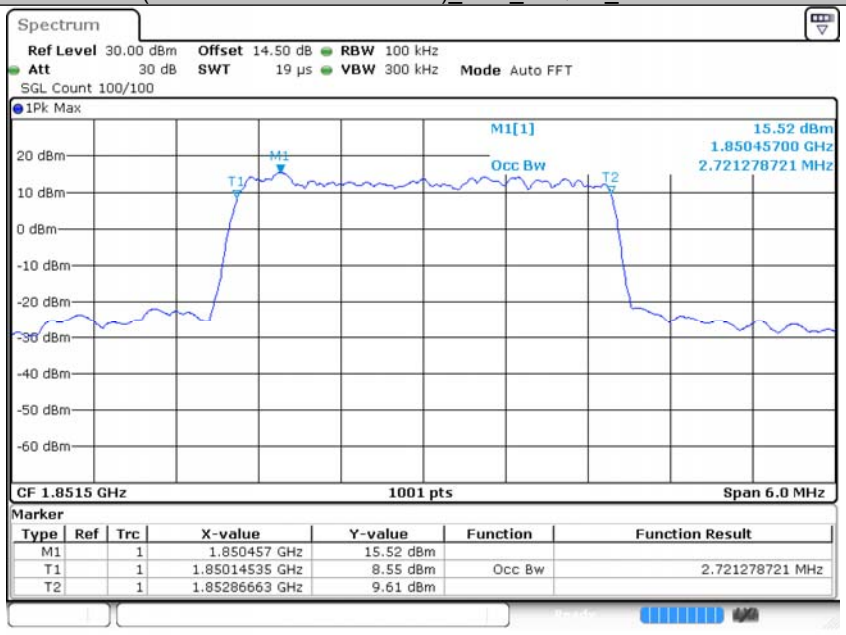
(Channel Bandwidth: 3 MHz)_MCH_QPSK_15RB#0



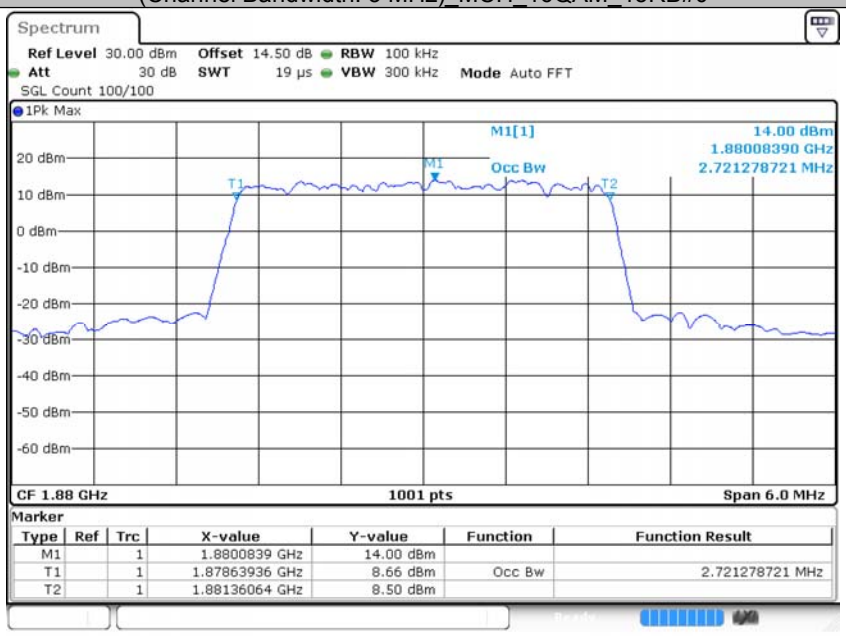
(Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0



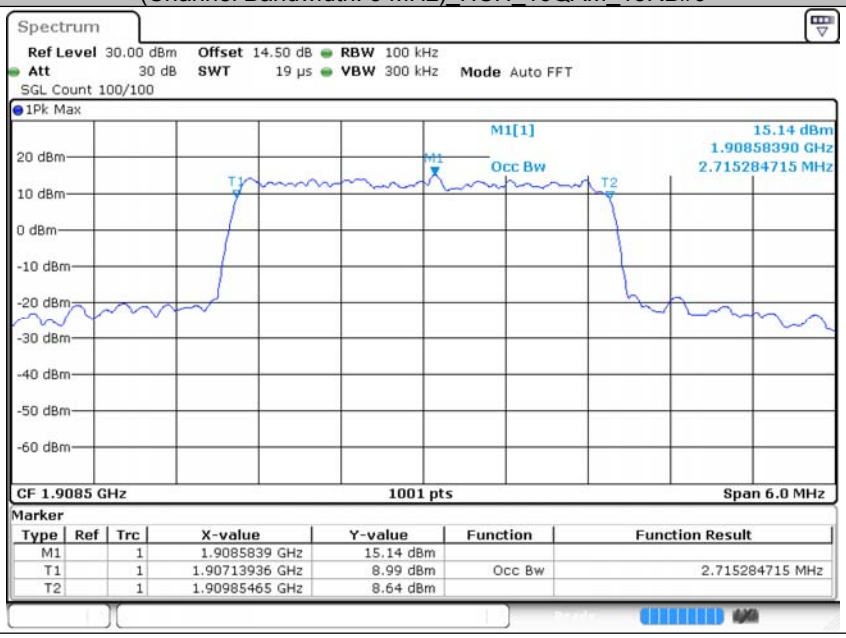
(Channel Bandwidth: 3 MHz)_LCH_16QAM_15RB#0



(Channel Bandwidth: 3 MHz)_MCH_16QAM_15RB#0

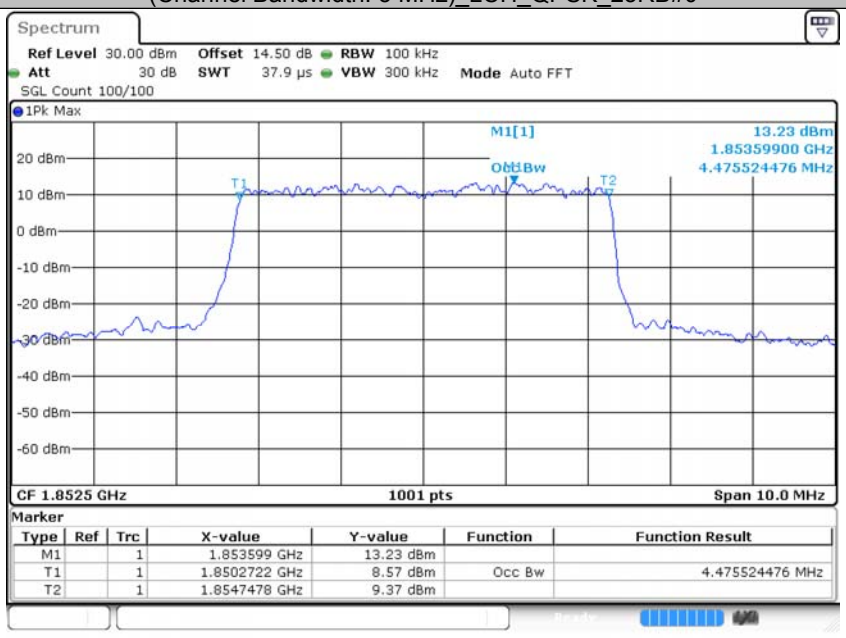


(Channel Bandwidth: 3 MHz)_HCH_16QAM_15RB#0

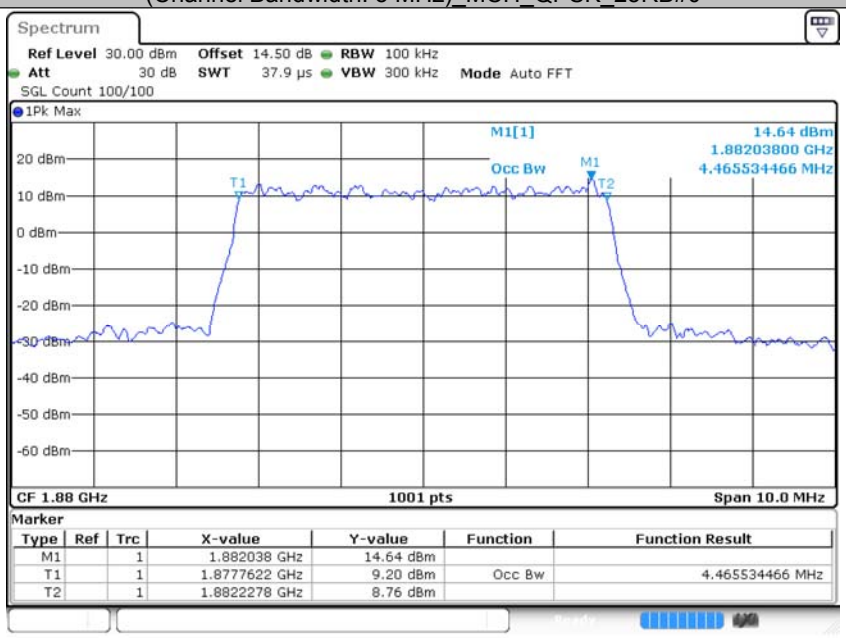


Channel Bandwidth: 5 MHz

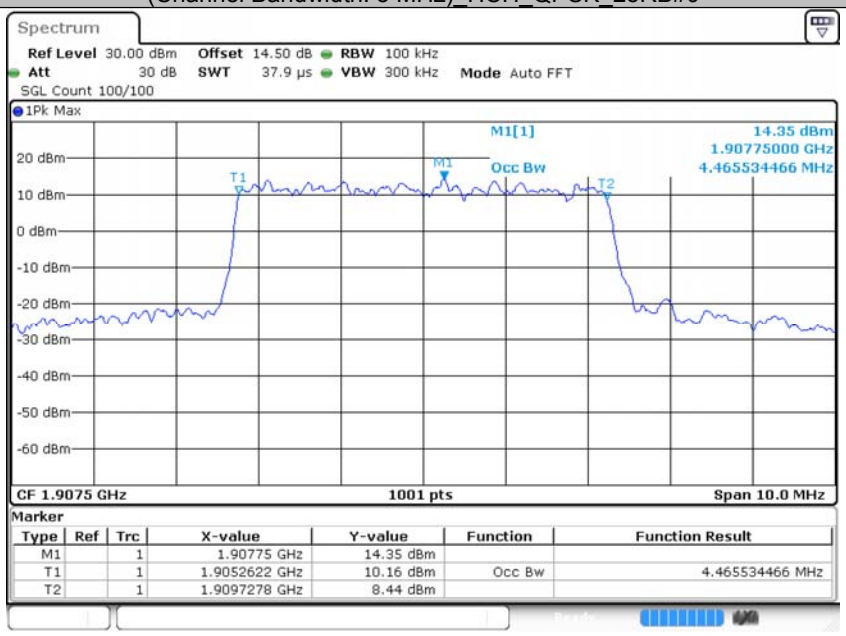
(Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0



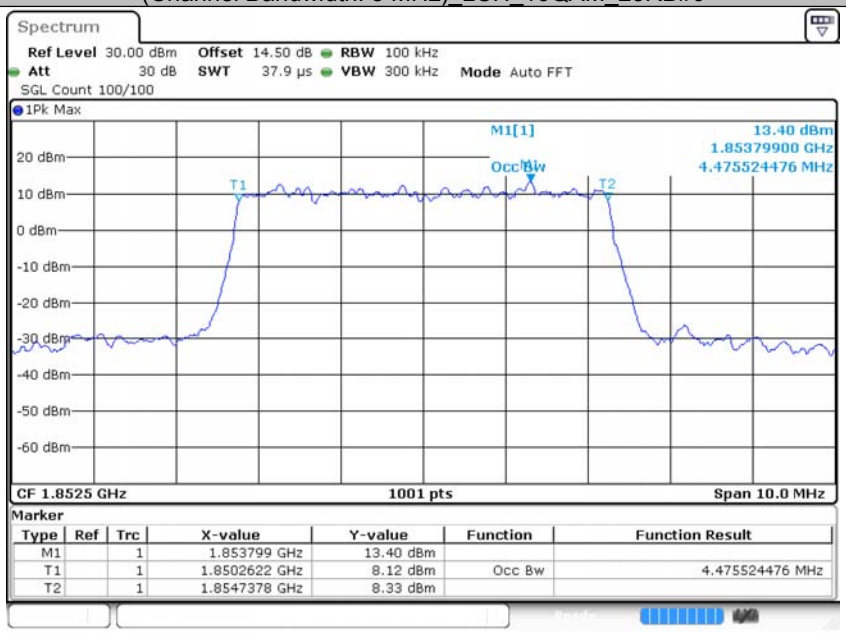
(Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0



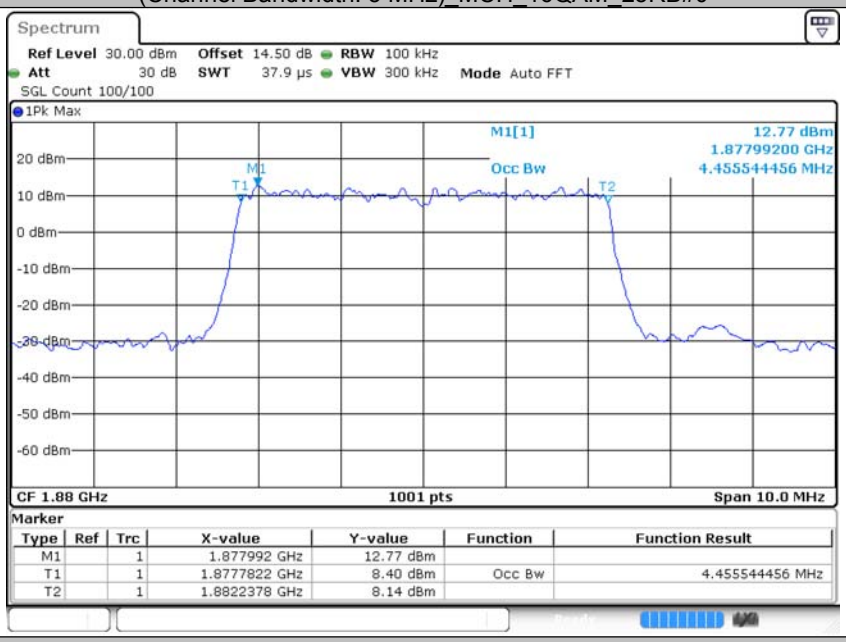
(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0



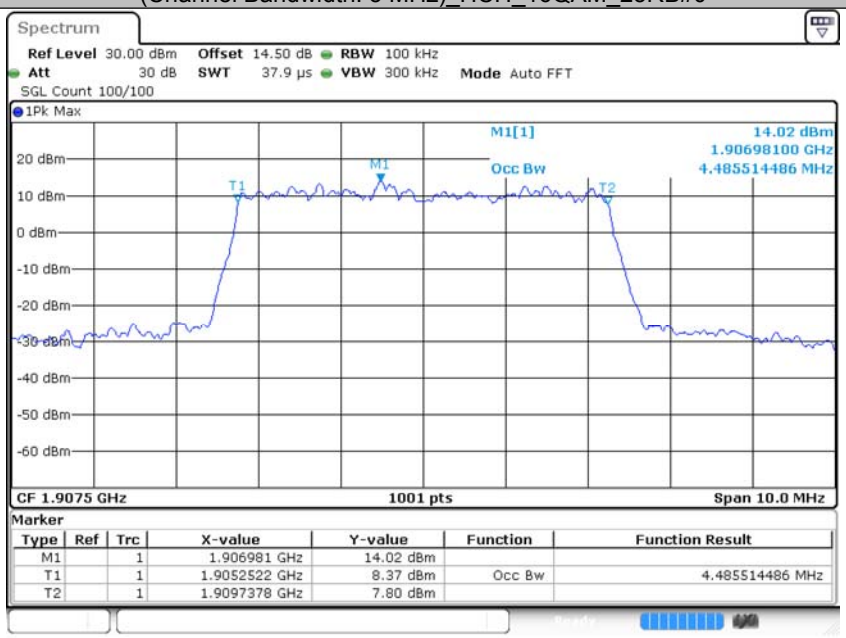
(Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0



(Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0

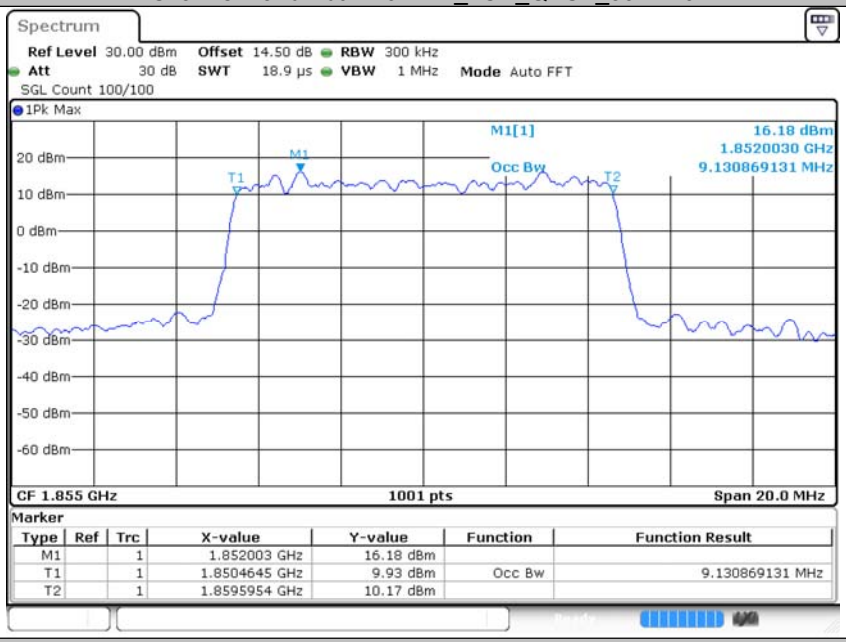


(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

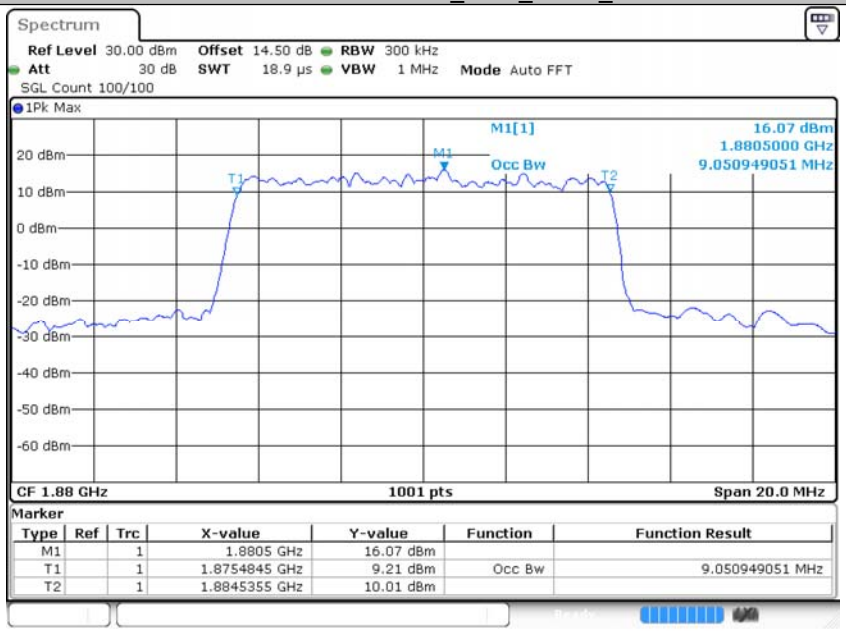


Channel Bandwidth: 10 MHz

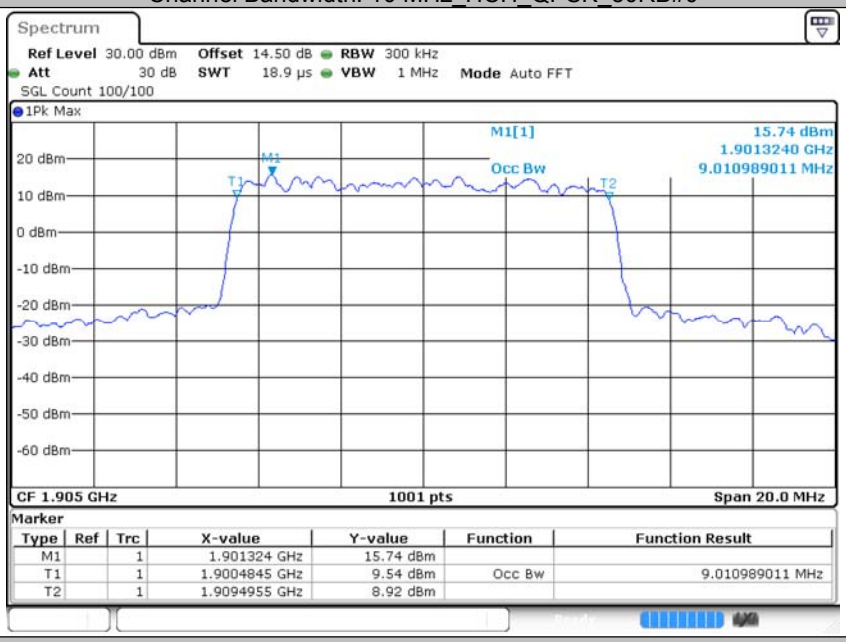
Channel Bandwidth: 10 MHz_LCH_QPSK_50RB#0



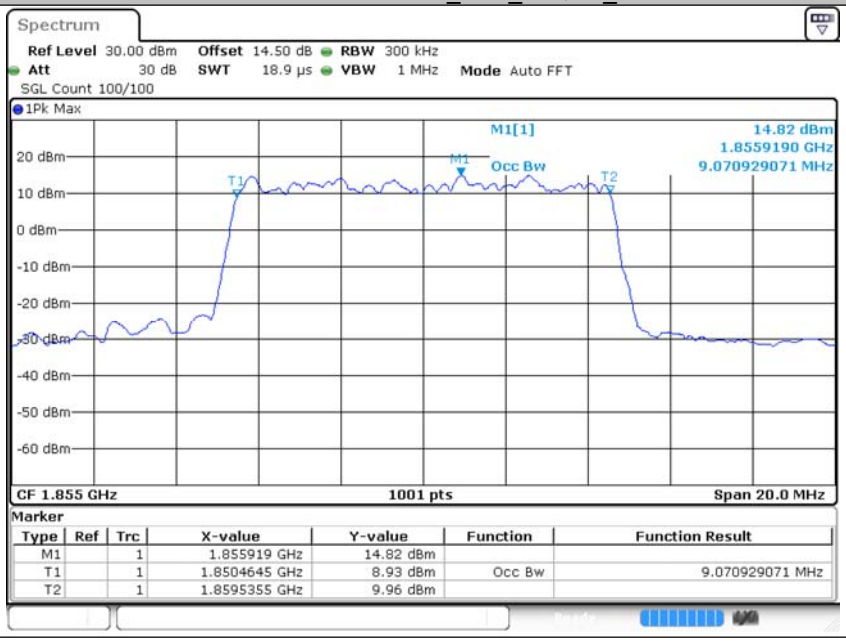
Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0



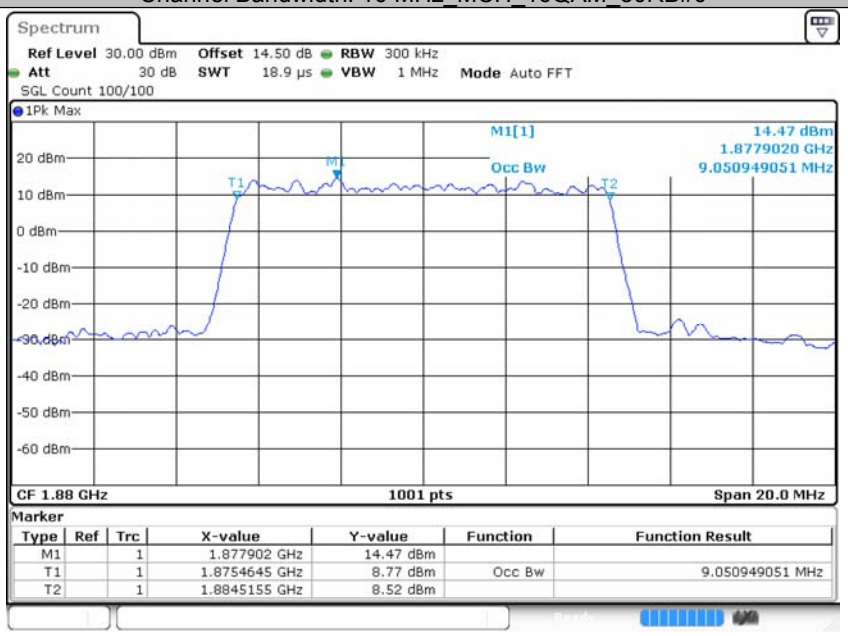
Channel Bandwidth: 10 MHz_HCH_QPSK_50RB#0



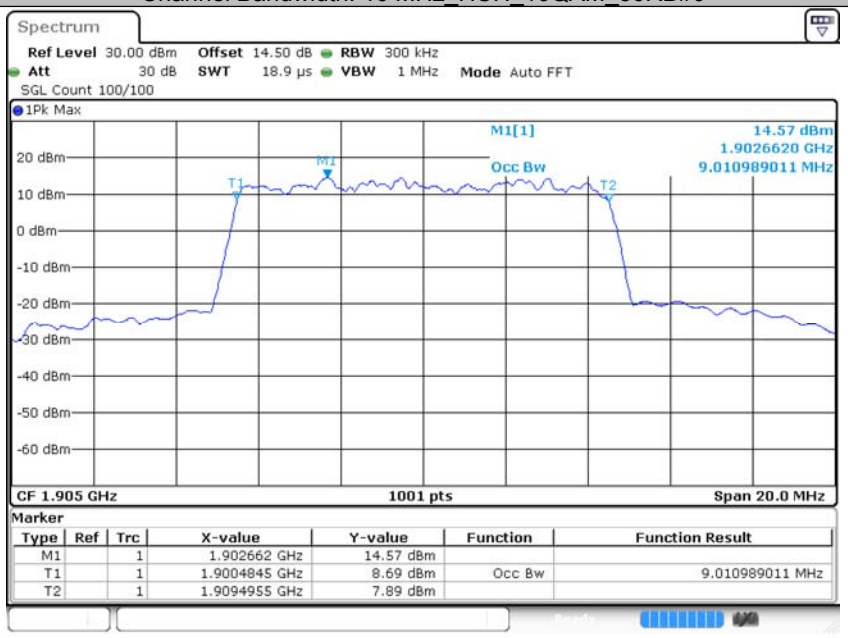
Channel Bandwidth: 10 MHz_LCH_16QAM_50RB#0



Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0

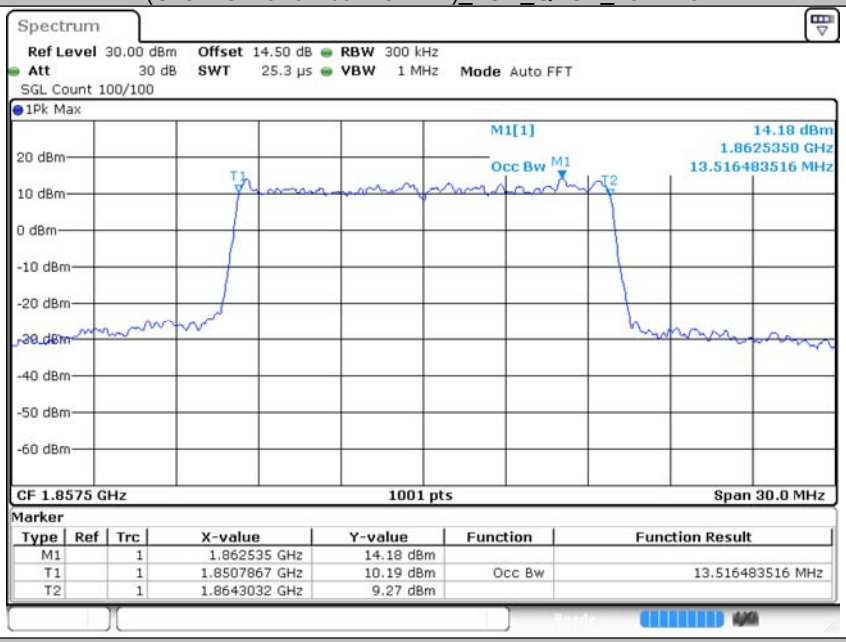


Channel Bandwidth: 10 MHz_HCH_16QAM_50RB#0

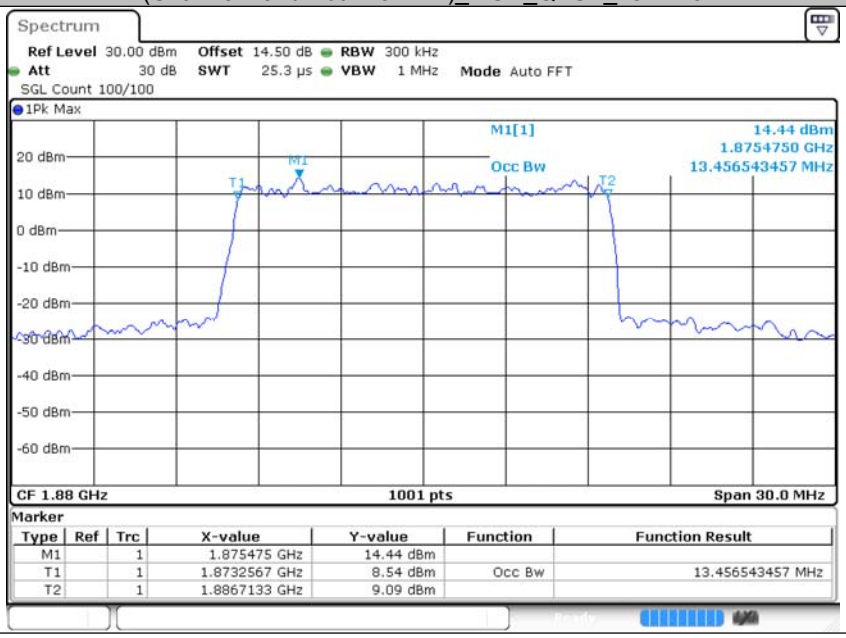


Channel Bandwidth: 15 MHz

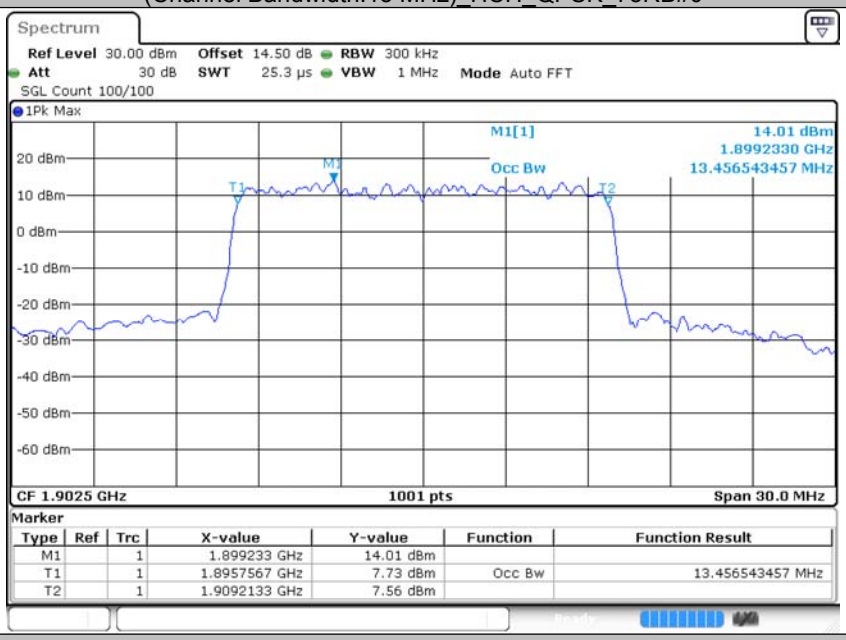
(Channel Bandwidth:15 MHz)_LCH_QPSK_75RB#0



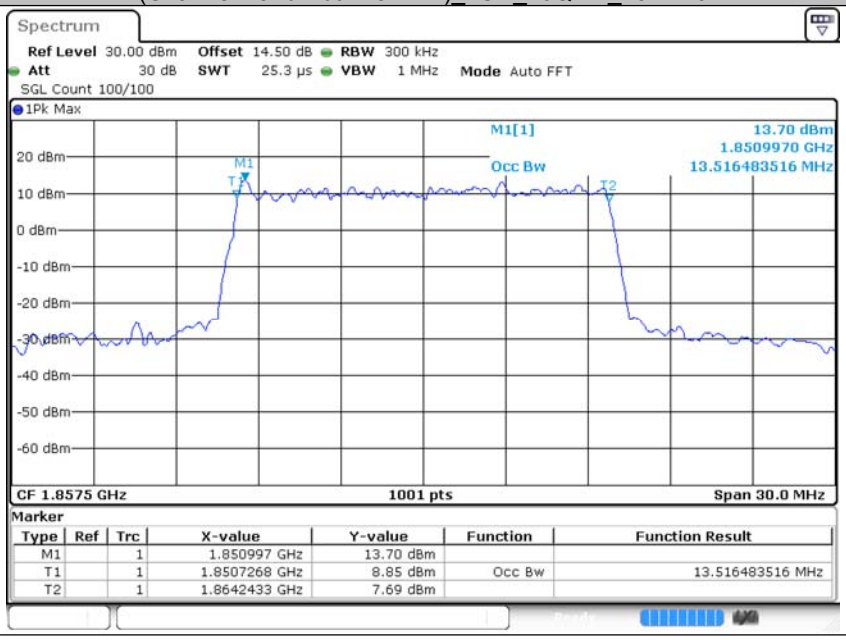
(Channel Bandwidth:15 MHz)_MCH_QPSK_75RB#0



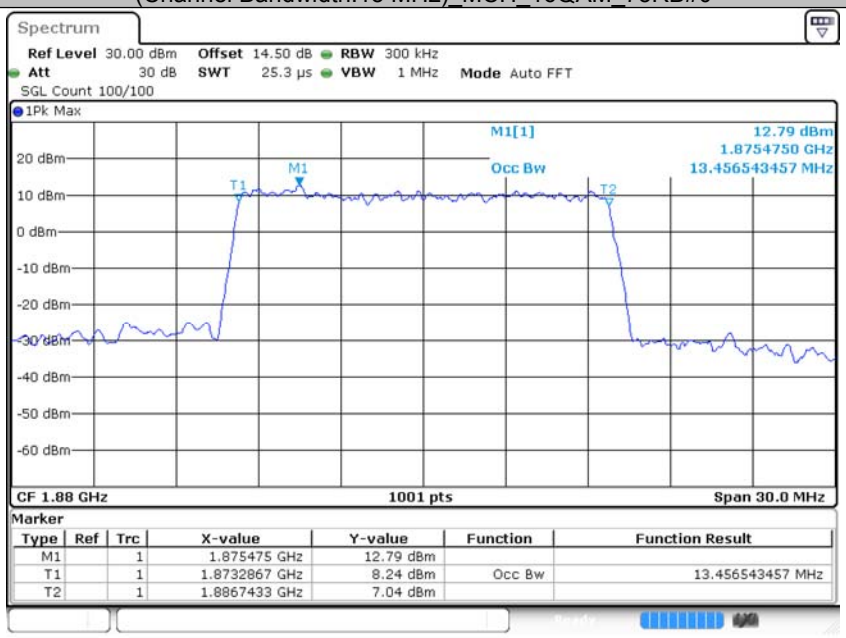
(Channel Bandwidth:15 MHz)_HCH_QPSK_75RB#0



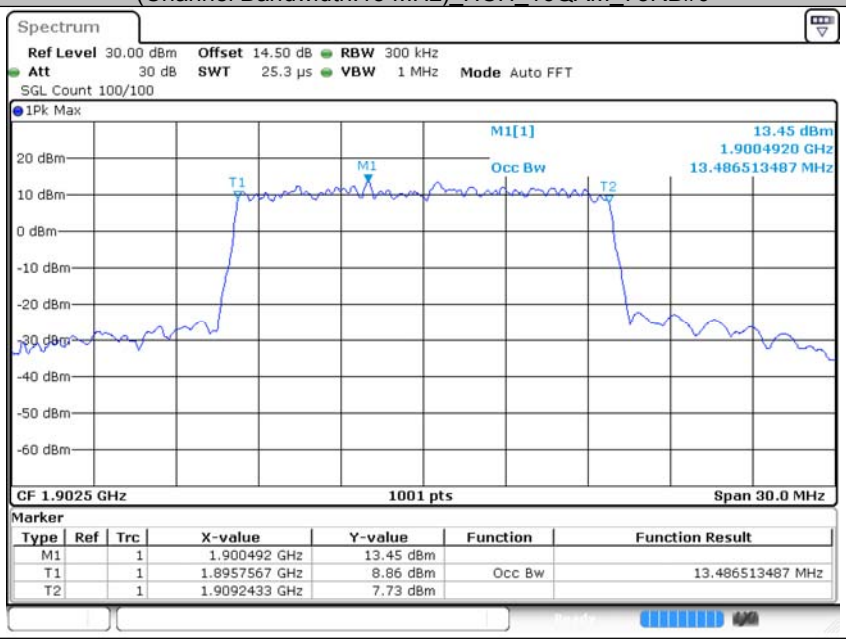
(Channel Bandwidth:15 MHz)_LCH_16QAM_75RB#0



(Channel Bandwidth:15 MHz)_MCH_16QAM_75RB#0

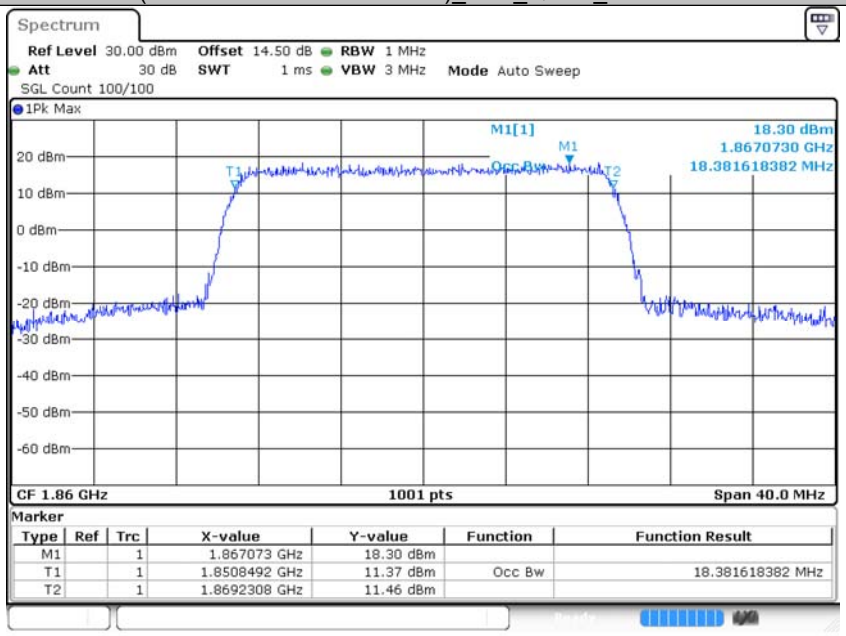


(Channel Bandwidth:15 MHz)_HCH_16QAM_75RB#0

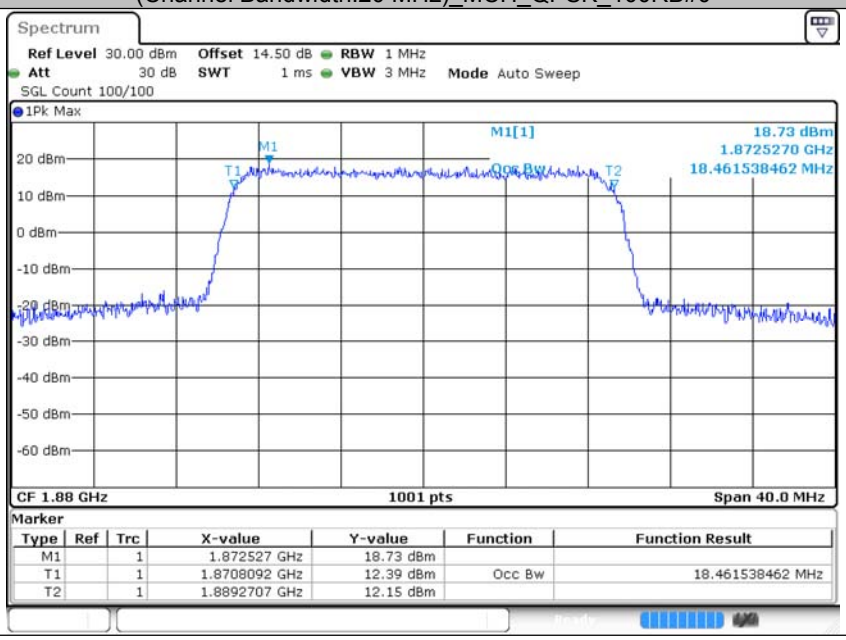


Channel Bandwidth: 20 MHz

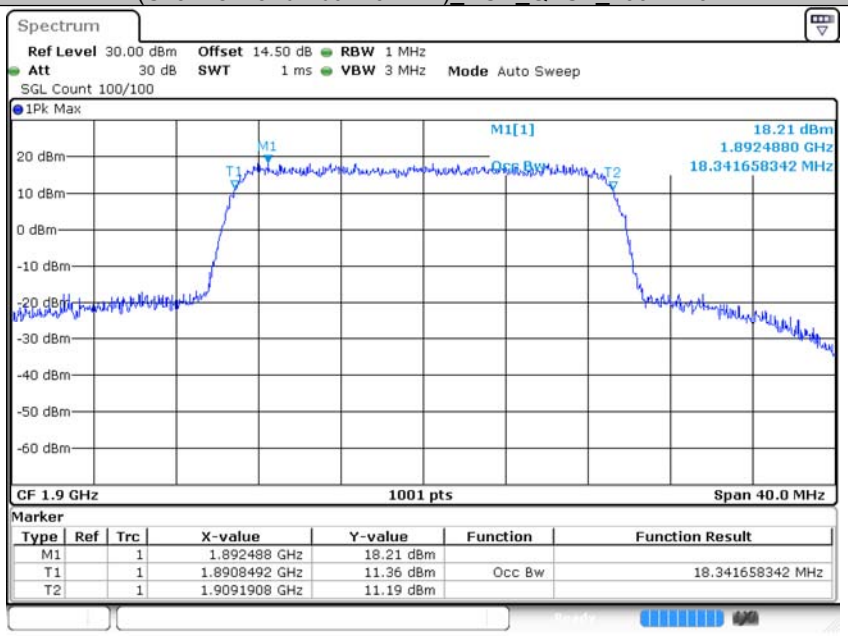
(Channel Bandwidth:20 MHz)_LCH_QPSK_100RB#0



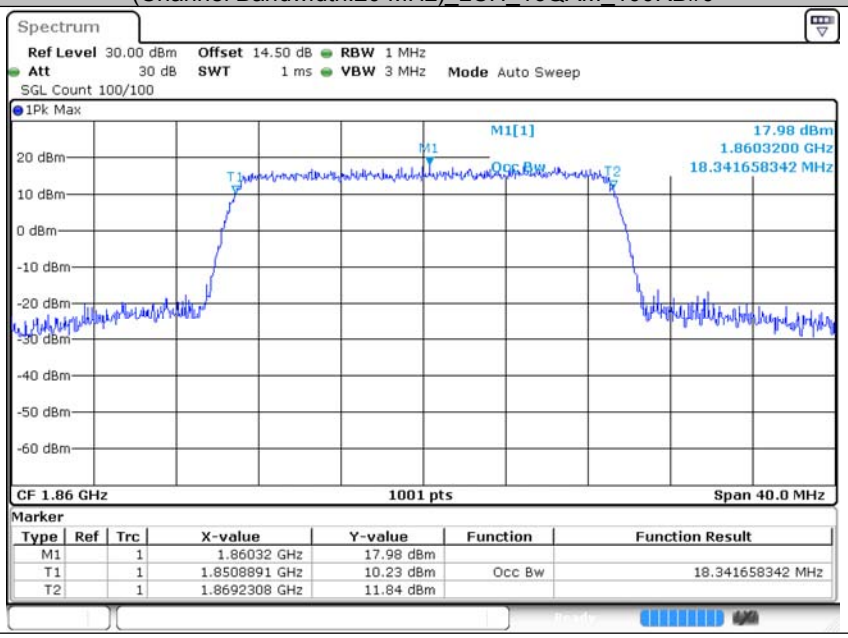
(Channel Bandwidth:20 MHz)_MCH_QPSK_100RB#0



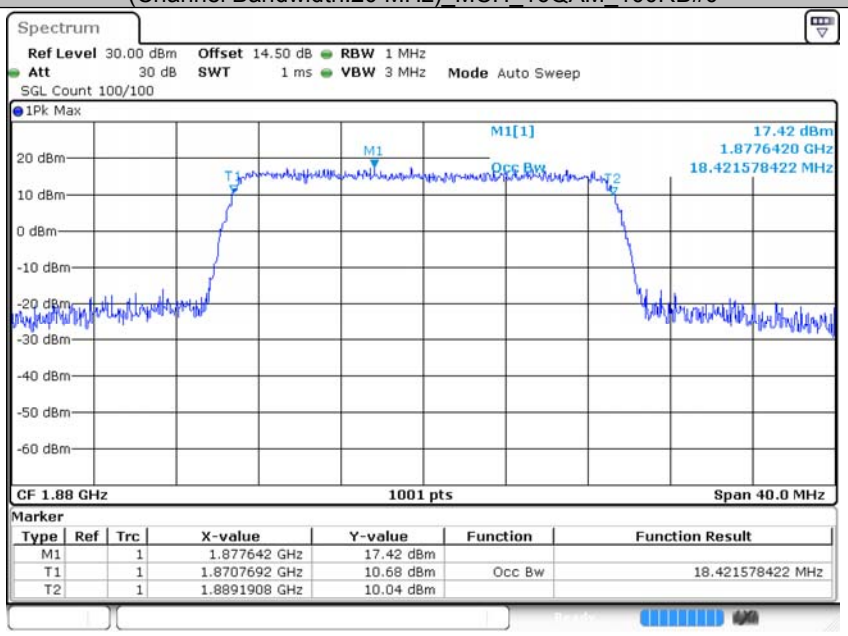
(Channel Bandwidth:20 MHz)_HCH_QPSK_100RB#0



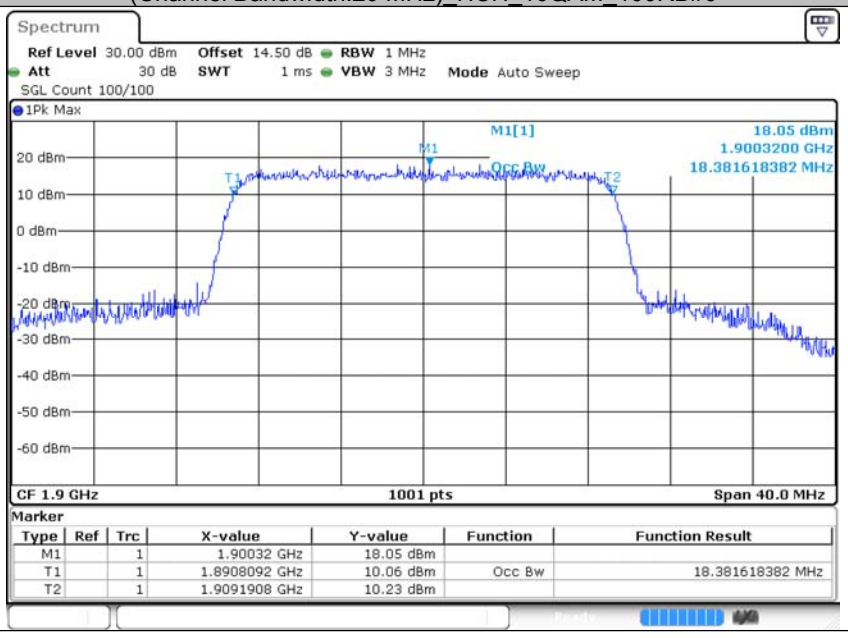
(Channel Bandwidth:20 MHz)_LCH_16QAM_100RB#0



(Channel Bandwidth:20 MHz)_MCH_16QAM_100RB#0



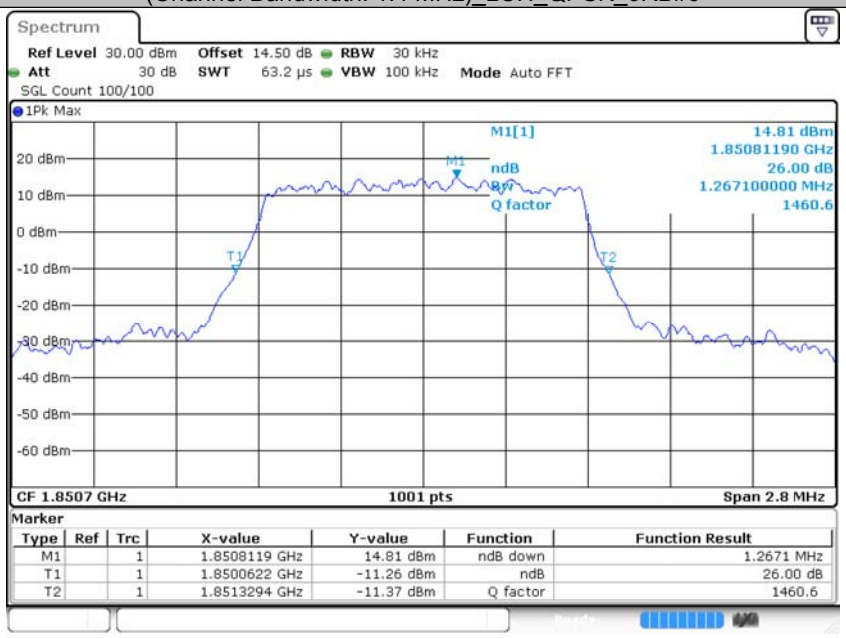
(Channel Bandwidth:20 MHz)_HCH_16QAM_100RB#0



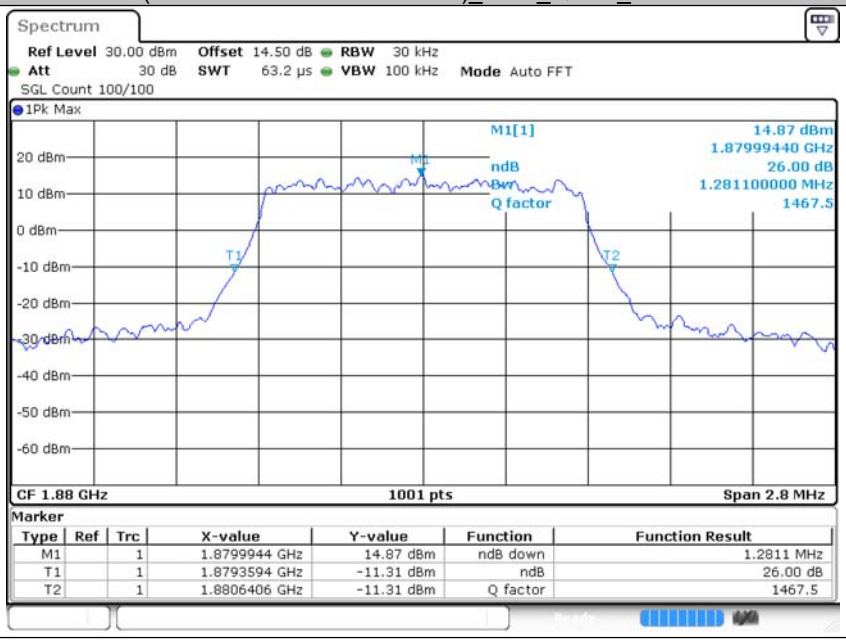
26dB Bandwidth

Channel Bandwidth: 1.4 MHz

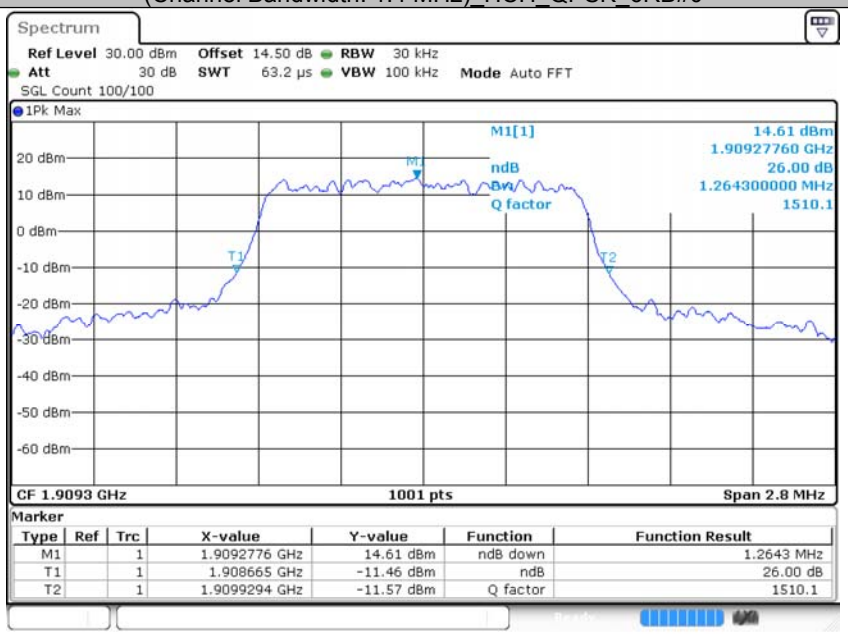
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_6RB#0



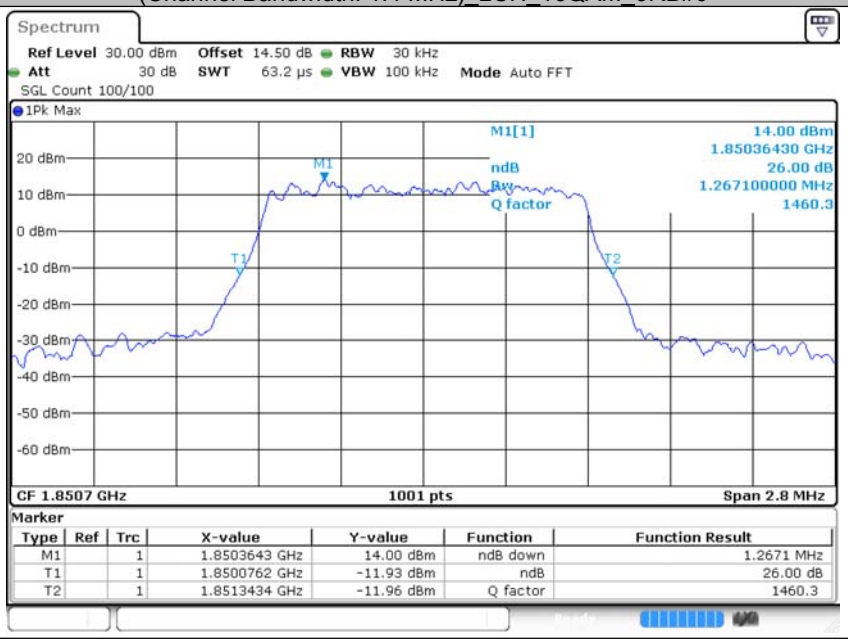
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_6RB#0



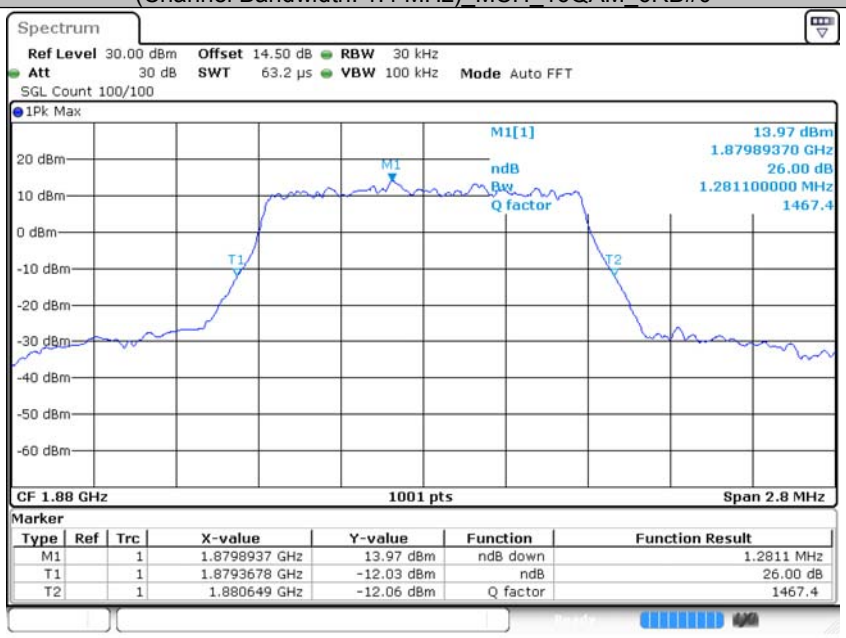
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_6RB#0



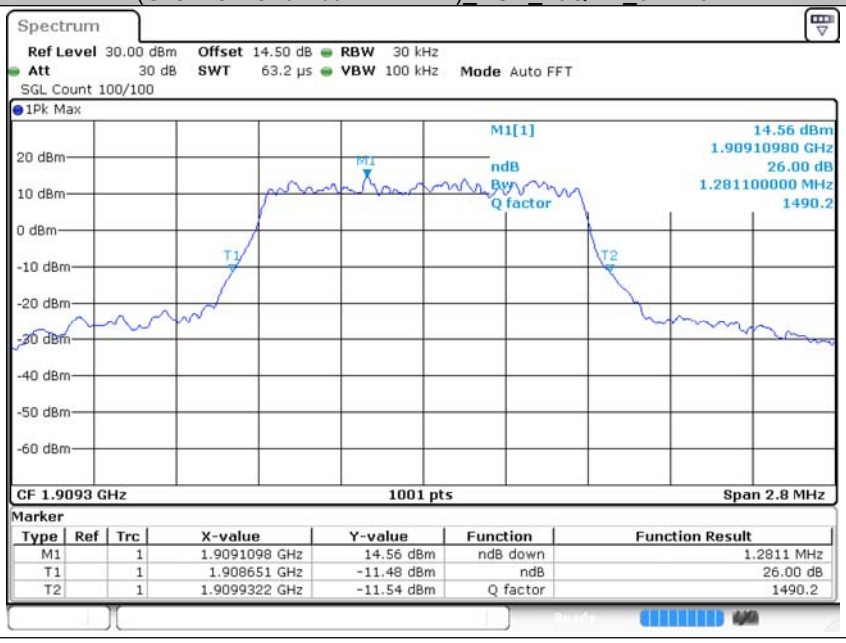
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0



(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_6RB#0

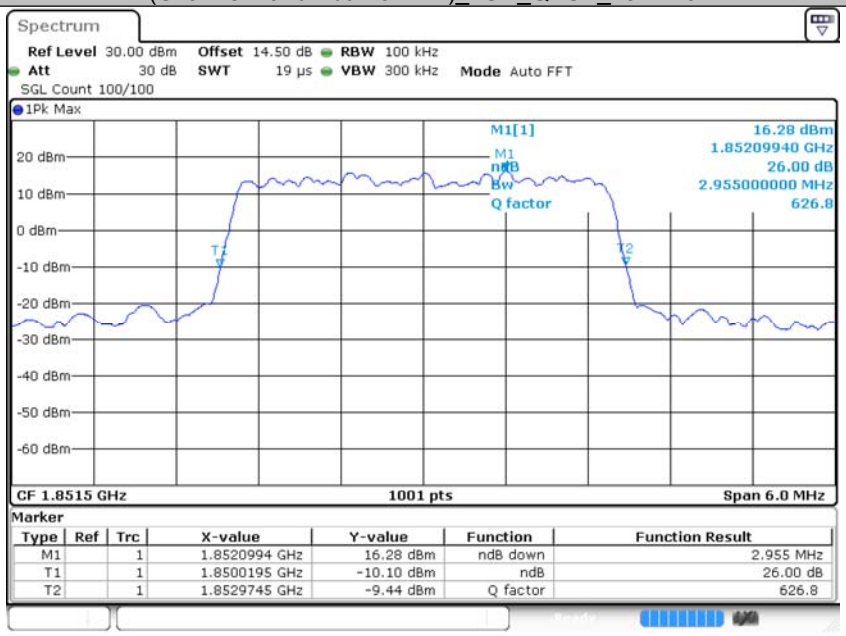


(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_6RB#0

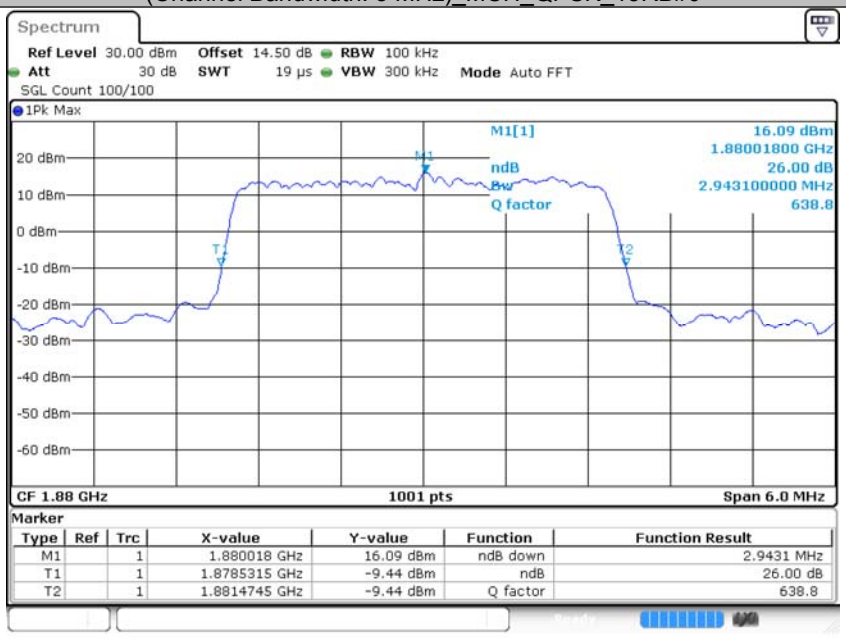


Channel Bandwidth: 3 MHz

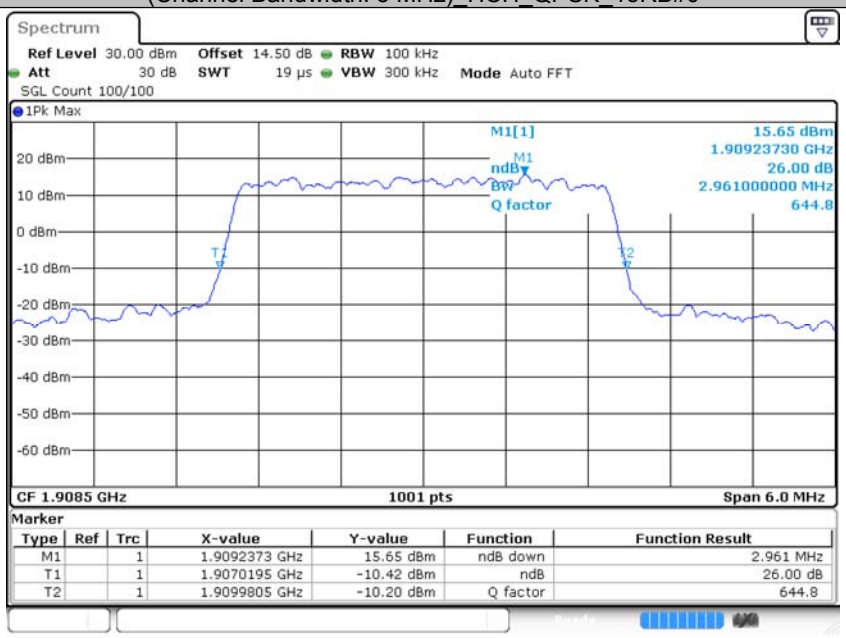
(Channel Bandwidth: 3 MHz)_LCH_QPSK_15RB#0



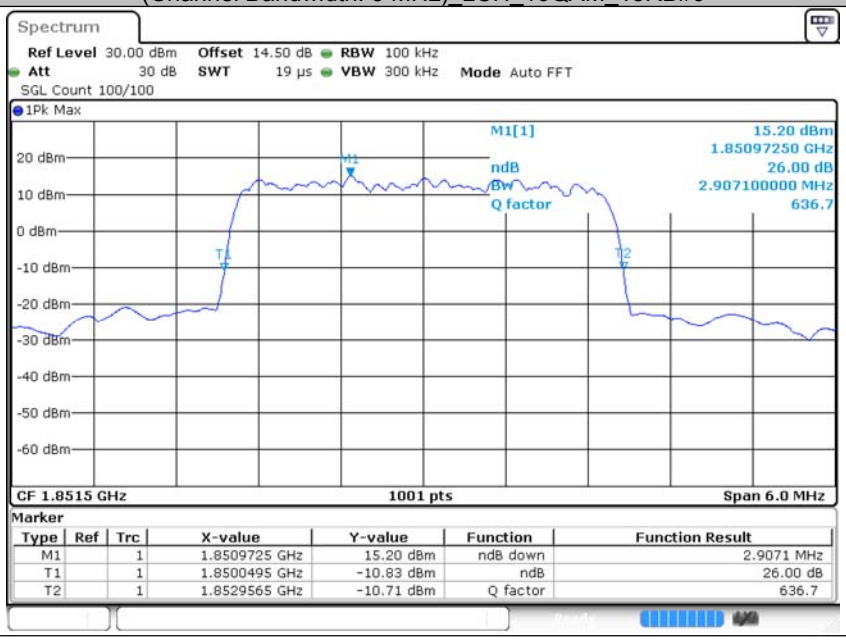
(Channel Bandwidth: 3 MHz)_MCH_QPSK_15RB#0



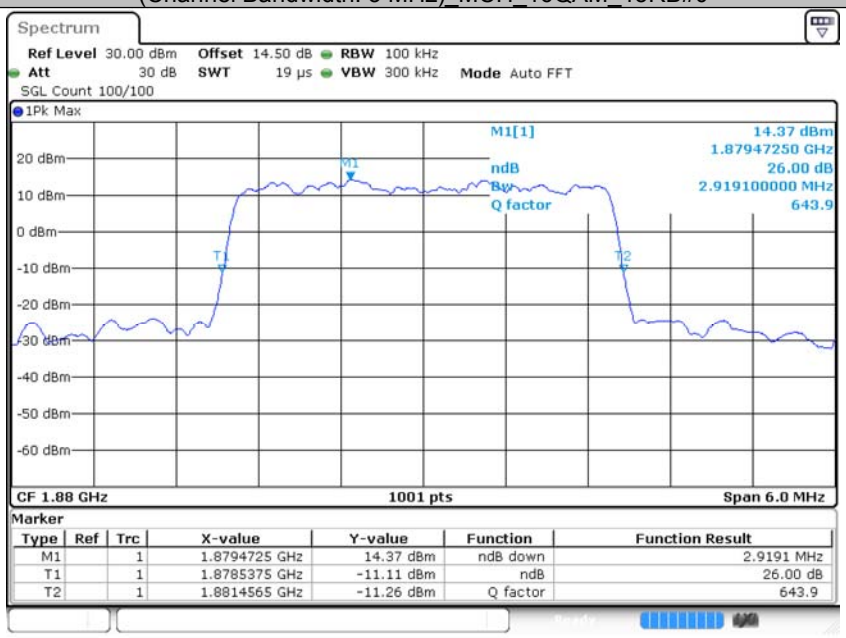
(Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0



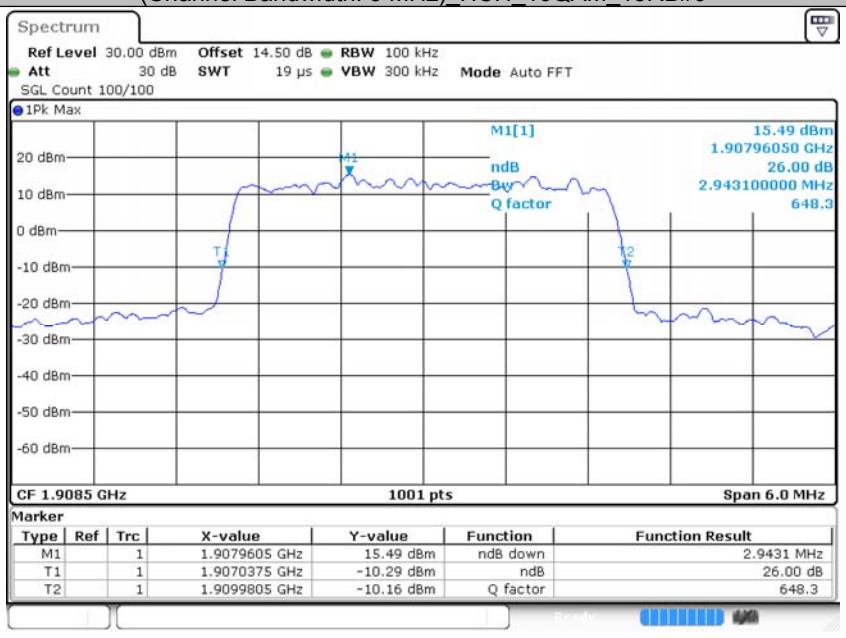
(Channel Bandwidth: 3 MHz)_LCH_16QAM_15RB#0



(Channel Bandwidth: 3 MHz)_MCH_16QAM_15RB#0

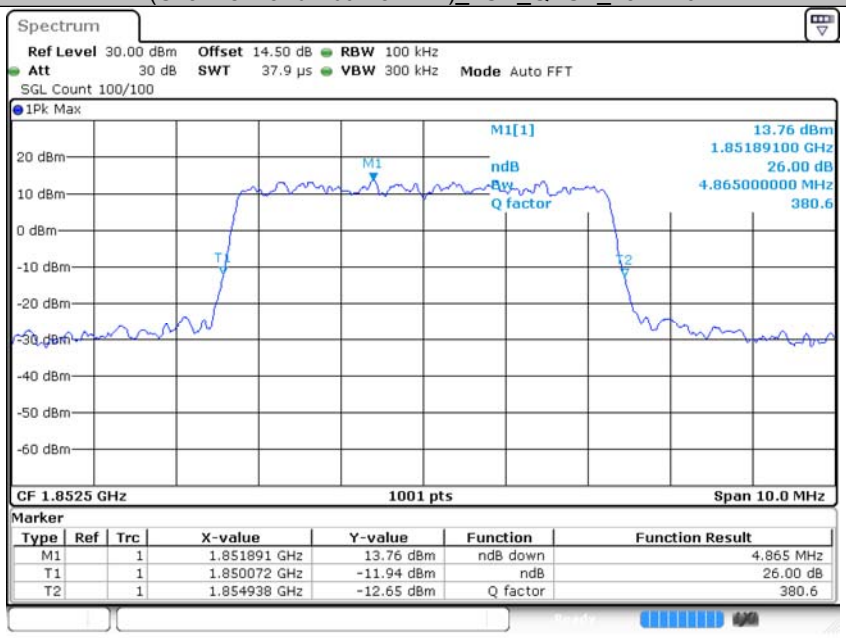


(Channel Bandwidth: 3 MHz)_HCH_16QAM_15RB#0

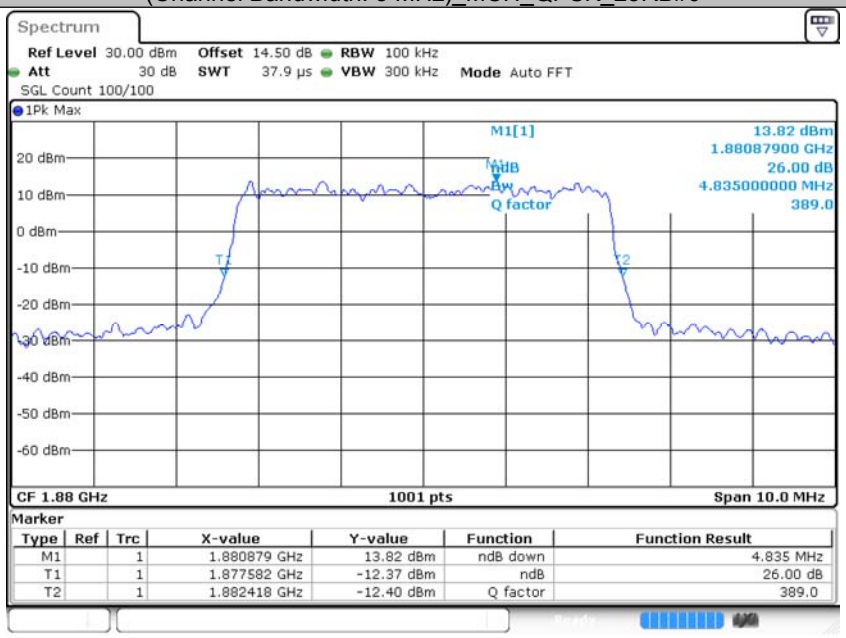


Channel Bandwidth: 5 MHz

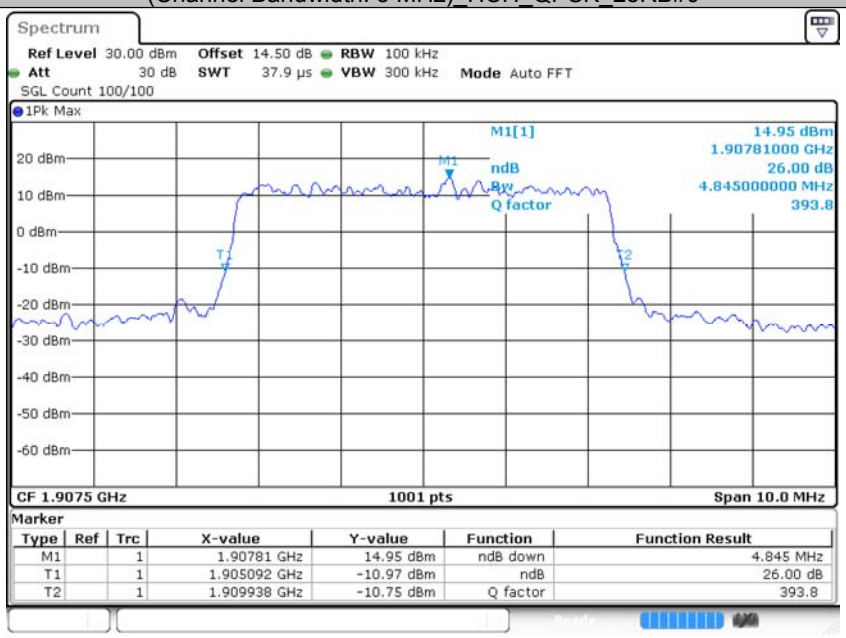
(Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0



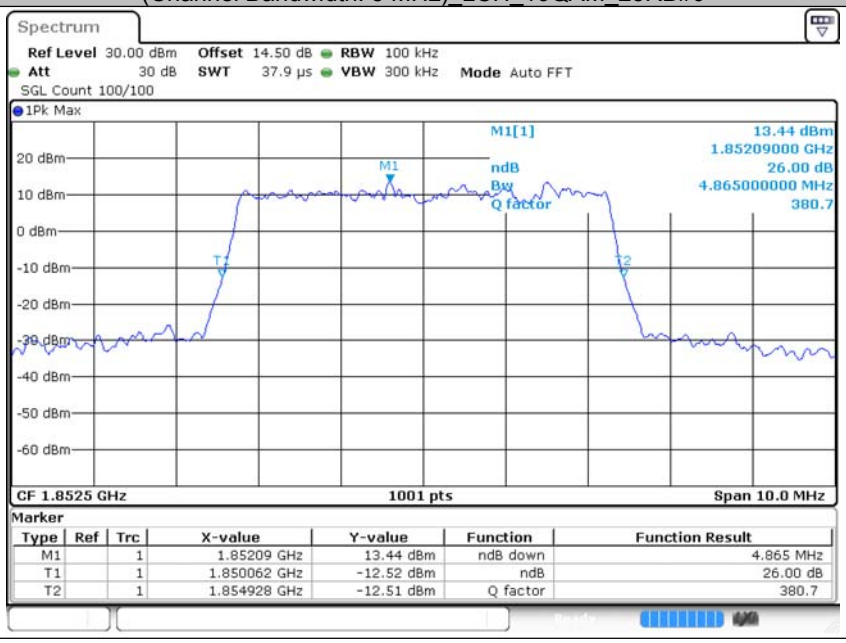
(Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0



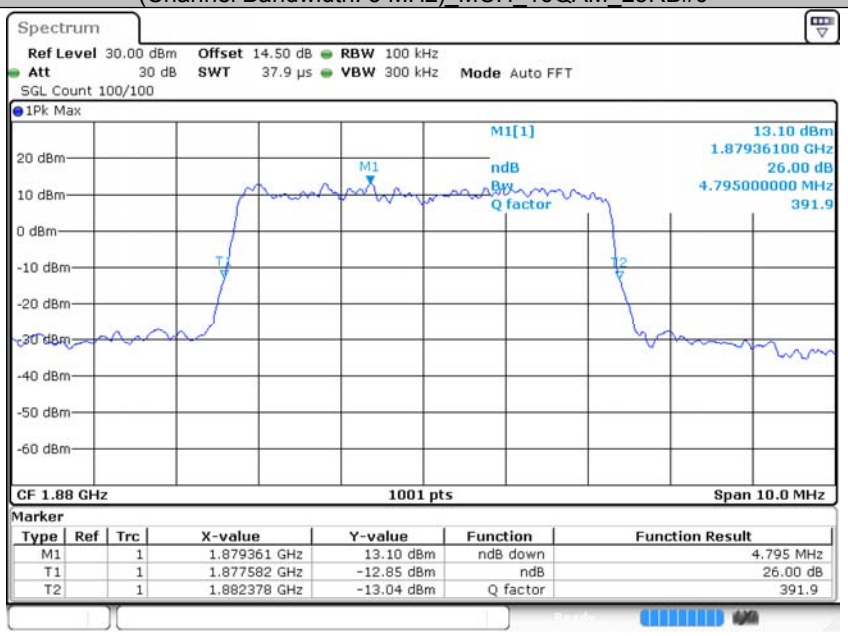
(Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0



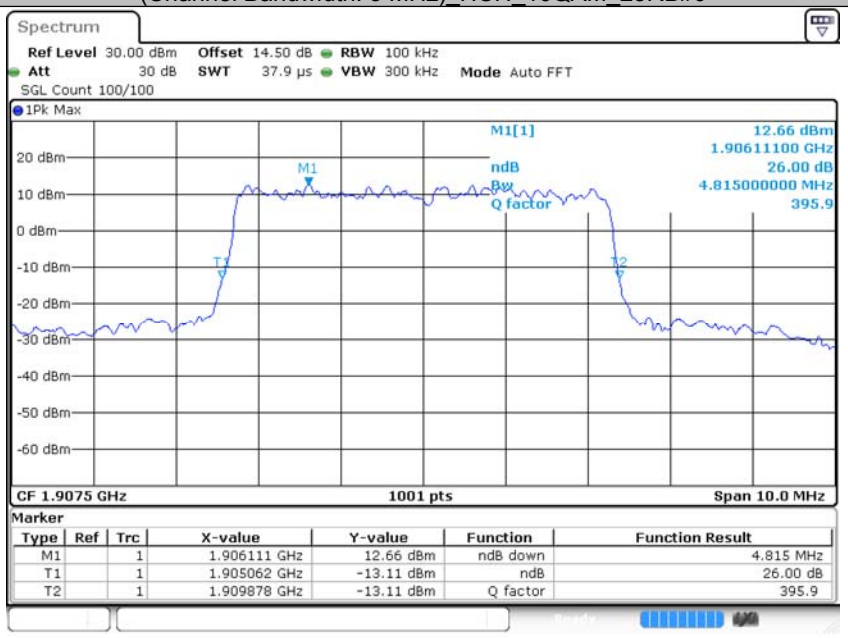
(Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0



(Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0

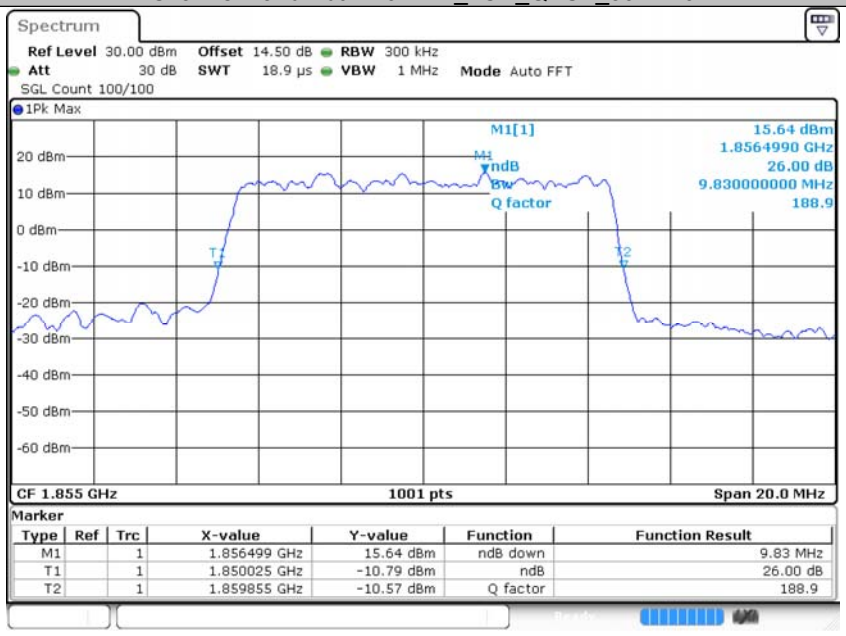


(Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

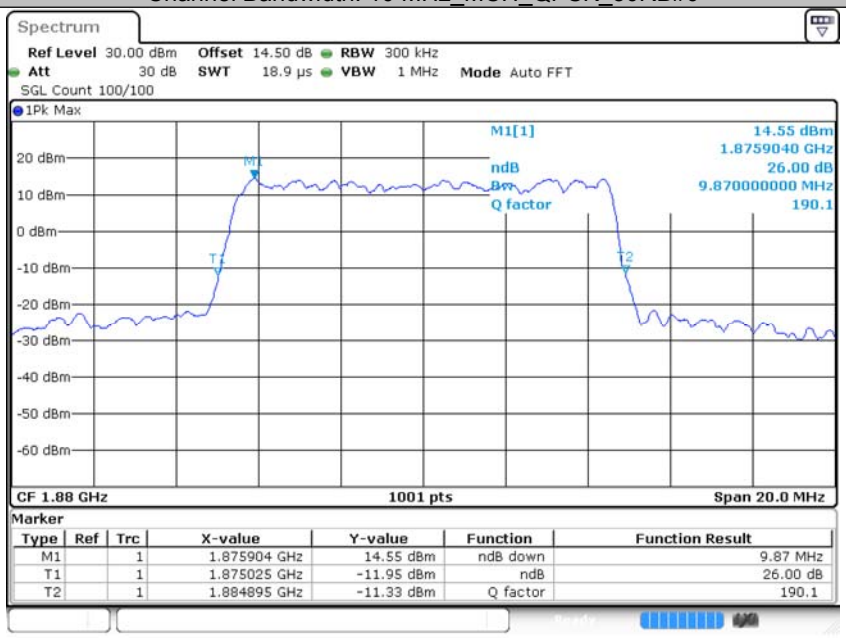


Channel Bandwidth: 10 MHz

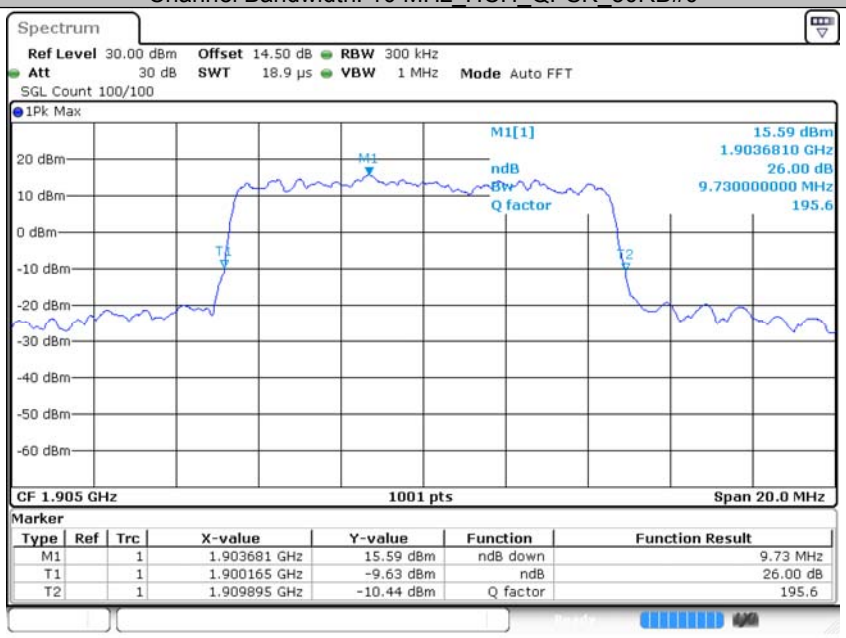
Channel Bandwidth: 10 MHz_LCH_QPSK_50RB#0



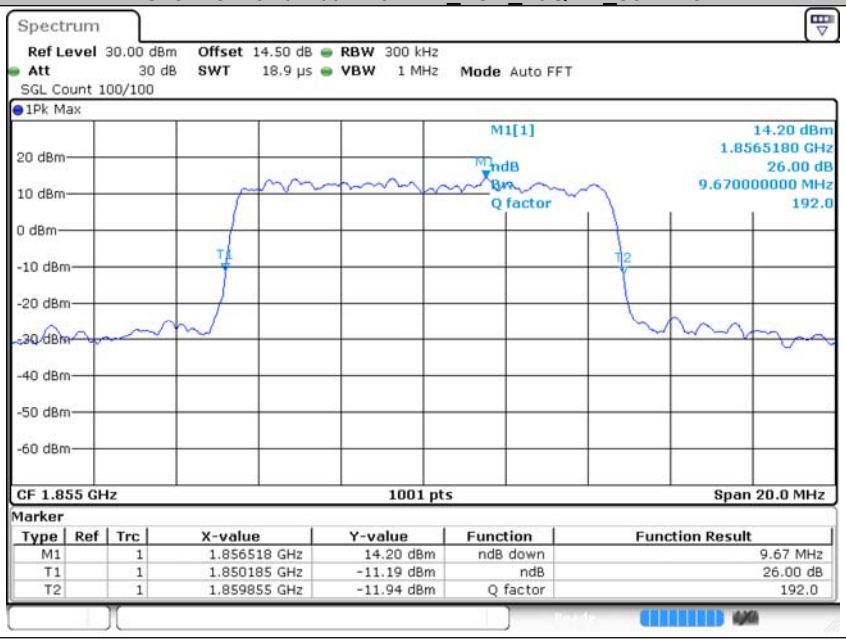
Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0



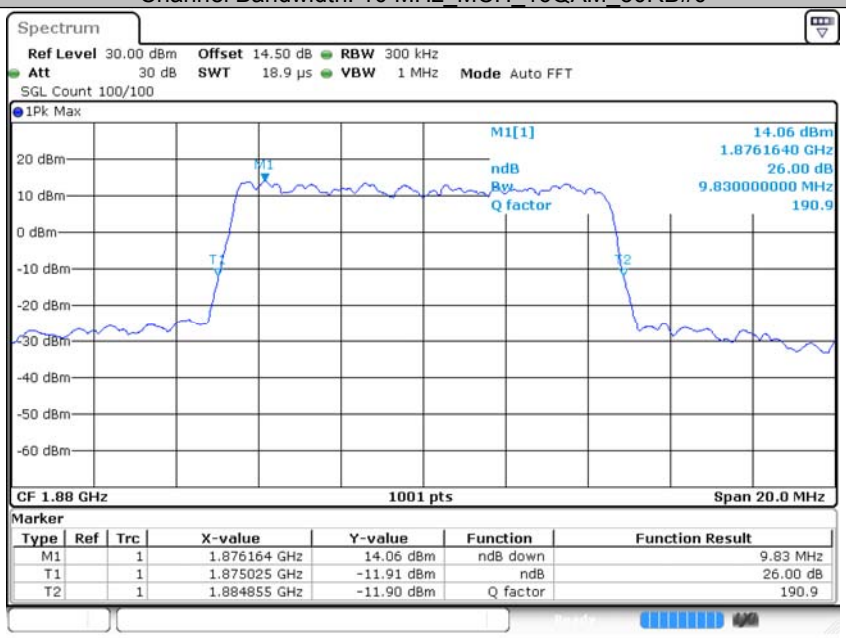
Channel Bandwidth: 10 MHz_HCH_QPSK_50RB#0



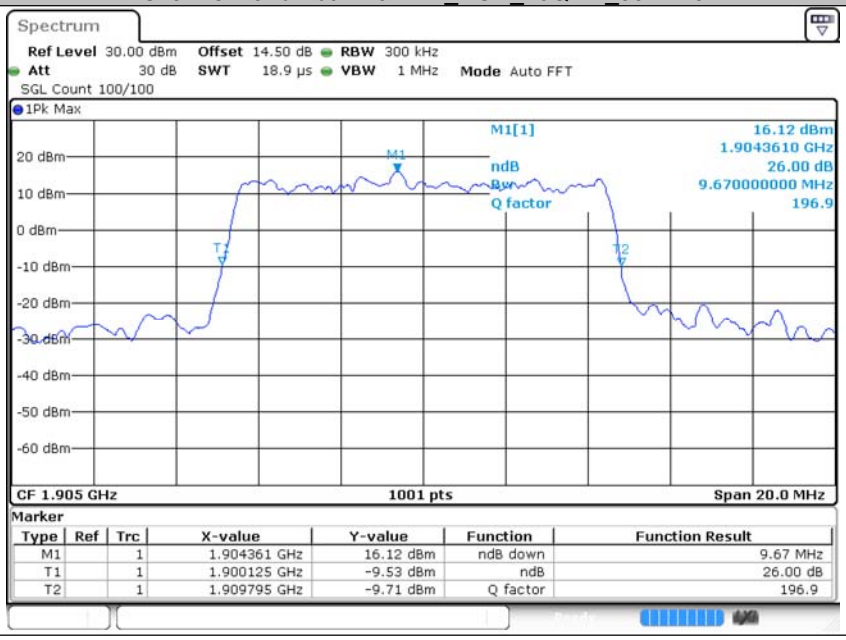
Channel Bandwidth: 10 MHz_LCH_16QAM_50RB#0



Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0

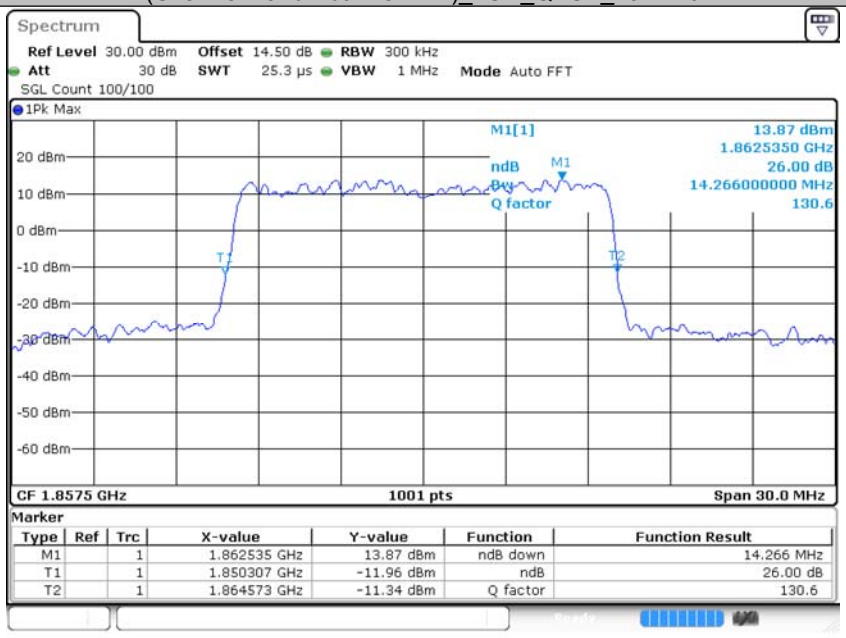


Channel Bandwidth: 10 MHz_HCH_16QAM_50RB#0

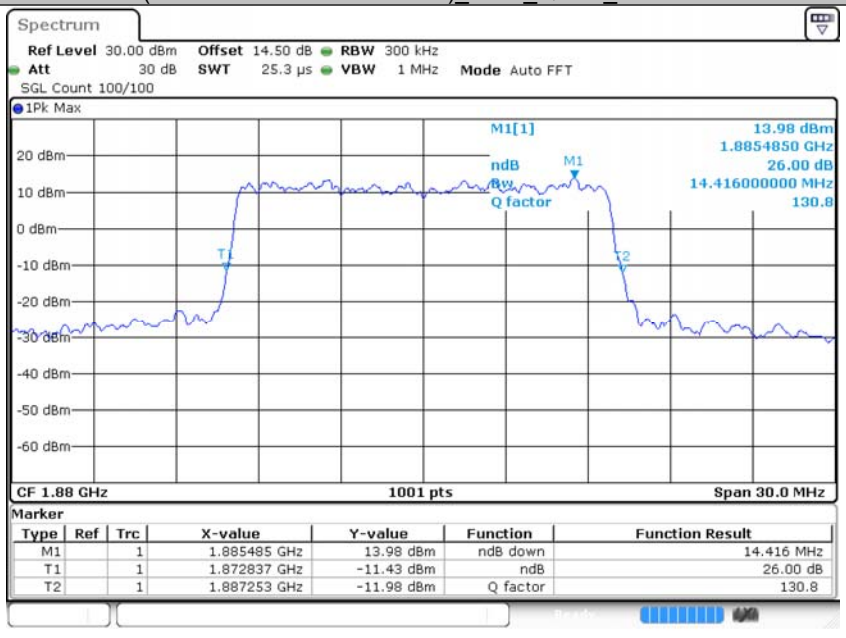


Channel Bandwidth: 15 MHz

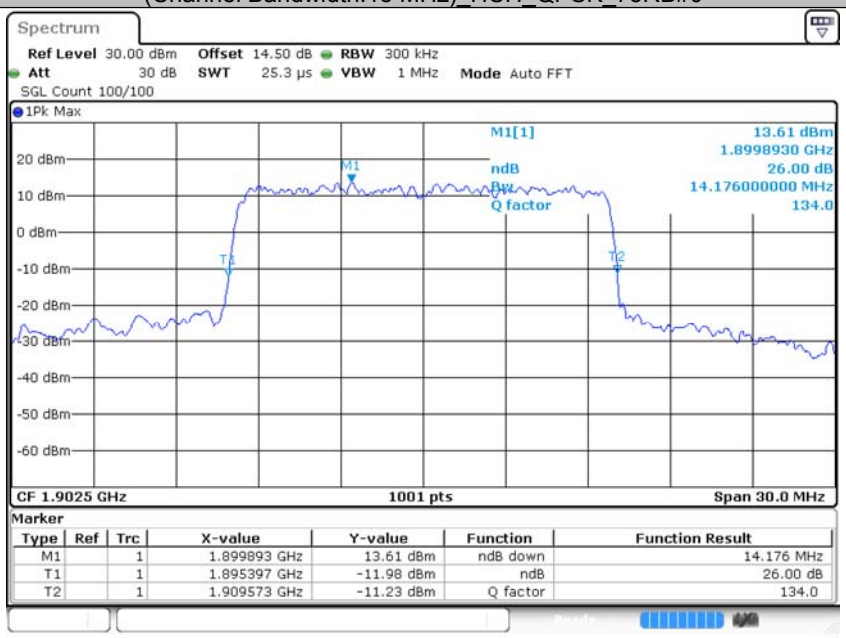
(Channel Bandwidth:15 MHz)_LCH_QPSK_75RB#0



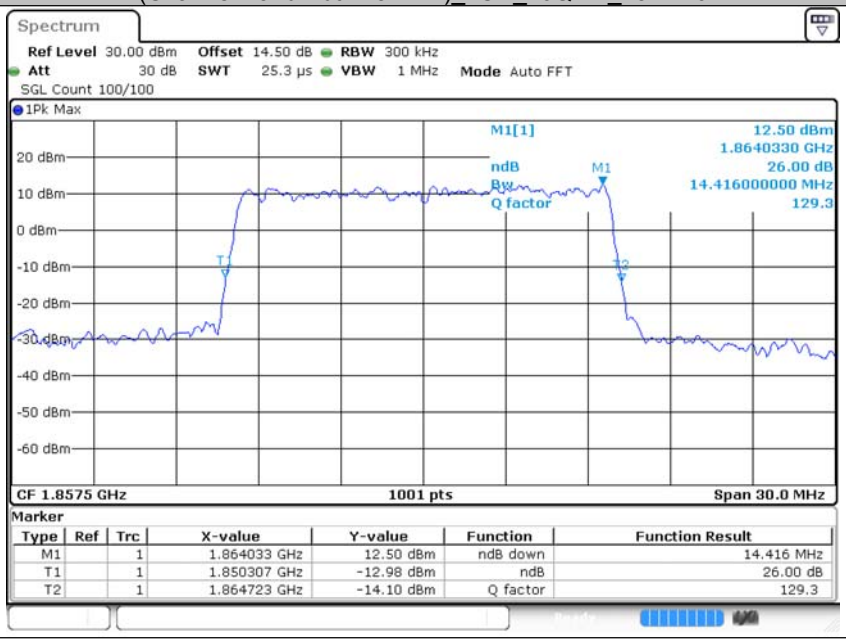
(Channel Bandwidth:15 MHz)_MCH_QPSK_75RB#0



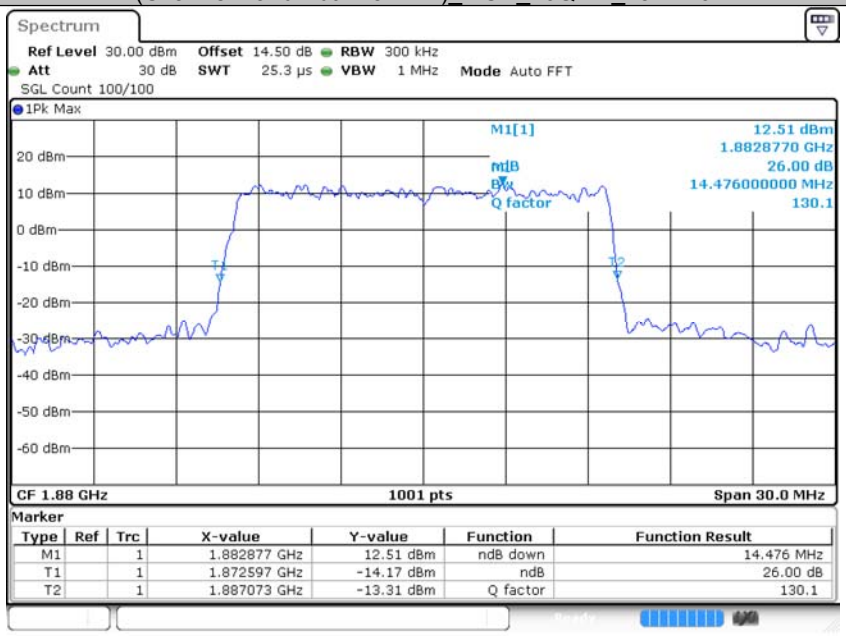
(Channel Bandwidth:15 MHz)_HCH_QPSK_75RB#0



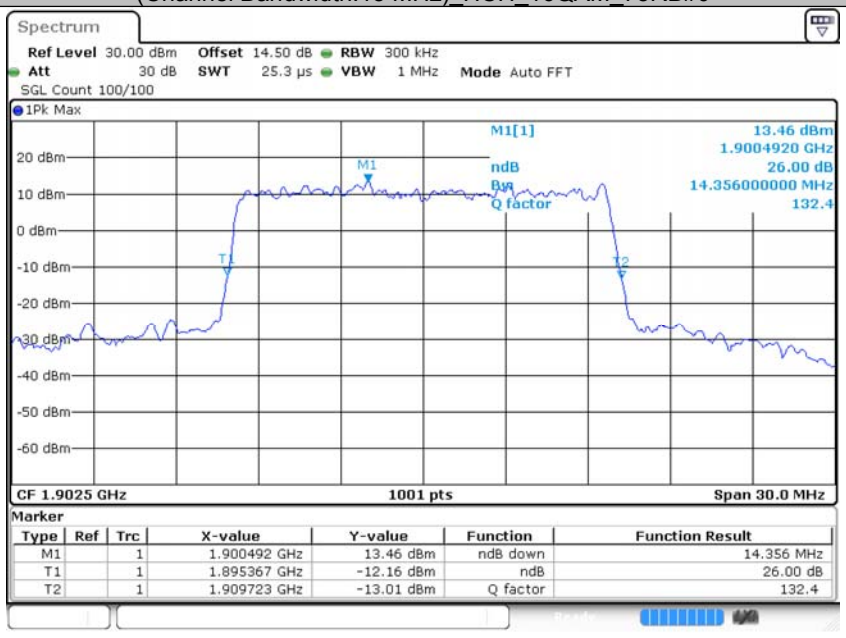
(Channel Bandwidth:15 MHz)_LCH_16QAM_75RB#0



(Channel Bandwidth:15 MHz)_MCH_16QAM_75RB#0

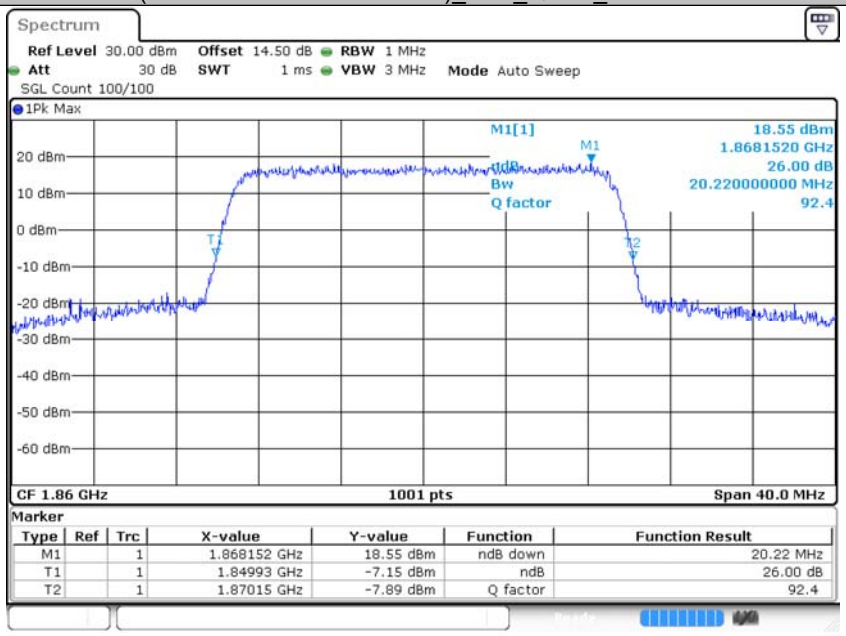


(Channel Bandwidth:15 MHz)_HCH_16QAM_75RB#0



Channel Bandwidth: 20 MHz

(Channel Bandwidth:20 MHz)_LCH_QPSK_100RB#0



(Channel Bandwidth:20 MHz)_MCH_QPSK_100RB#0