

RF Test Report

Applicant : Netgear Incorporated
Product Type : Netgear Mobile Hotspot
Trade Name : NETGEAR
Model Number : AC797S
Test Specification : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
ANSI/TIA-603-E 2016
Receive Date : Jul. 30, 2018
Test Period : Aug. 15 ~ Aug. 21, 2018
Issue Date : Aug. 24, 2018

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C)
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Aug. 24, 2018	Initial Issue	Nina Lin

Verification of Compliance

Issued Date: Aug. 24, 2018

Applicant : Netgear Incorporated

Product Type : Netgear Mobile Hotspot

Trade Name : NETGEAR

Model Number : AC797S

FCC ID : PY318300421

EUT Rated Voltage : DC 5.0 V, 1.0 A

Test Voltage : DC 3.5 V / DC 3.8 V / DC 4.35 V
AC 120 V, 60 Hz

Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
ANSI/TIA-603-E 2016

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C)
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu (Manager) (Fly Lu)

Reviewed By : Eric Ou Yang (Testing Engineer) (Eric Ou Yang)



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1 General Information

1.1. EUT Description

Applicant	Netgear Incorporated 350 East Plumeria Drive, San Jose, California, United States 95134			
Manufacturer	Netgear Inc. Suite 168 - 10760 Shellbridge Way, Richmond, BC Canada V6X 3H1			
Product Type	Netgear Mobile Hotspot			
Trade Name	NETGEAR			
Model Number	AC797S			
FCC ID	PY318300421			
IMEI No.	01525300000651			
Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
WCDMA(RMC12.2K)/ HSDPA/ HSUPA	II	1852.4 ~ 1907.6	1932.4 ~ 1987.6	QPSK
	V	826.4 ~ 846.6	871.4 ~ 891.6	QPSK
Channel Control	Auto			
Antenna information	Type	Max. Gain (dBi)		
	Internal IFA Antenna	WCDMA/ HSDPA/ HSUPA Band II	0.03	
		WCDMA/ HSDPA/ HSUPA Band V	-0.01	
Operate Temp. Range	0 ~ 55 °C			

Frequency Band	Max. RF Output Power (W)	E.R.P. /E.I.R.P. (W)	
WCDMA/ HSDPA/ HSUPA Band II	0.508	0.522	(E.I.R.P.)
WCDMA/ HSDPA/ HSUPA Band V	0.520	0.631	(E.R.P.)

Frequency Band	Occupied Bandwidth (MHz)	Emission Designator
WCDMA/ HSDPA/ HSUPA Band II	4.1667	4M17F9W
WCDMA/ HSDPA/ HSUPA Band V	4.1346	4M13F9W



1.2. Mode of Operation

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: WCDMA Band II Link Mode
Mode 2: WCDMA Band V Link Mode

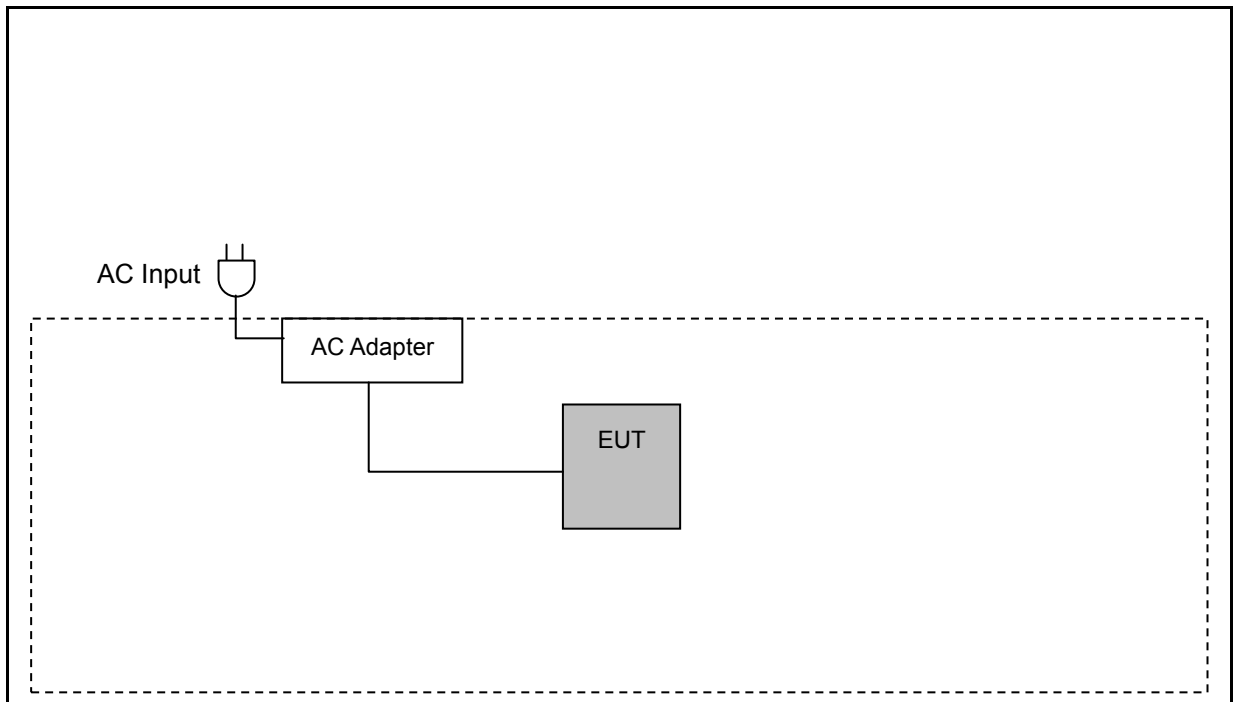
Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

1.3. EUT Test Step

1	Setup the EUT shown on "Configuration of Test System Details".
2	Turn on the power of all equipment.

1.4. Configuration of Test System Details



Devices Description					
	Product	Manufacturer	Model Number	Serial Number	Power Cord
(1)	---	---	---	---	---



1.5. Test Instruments

For Conducted

Test Period: Aug. 15, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/16/2018	1 year
Power Supply	KEITHLEY	2303	4045290	02/08/2018	1 year
Divider	Warison	WDIV-210.5-26.5S20	WR222AM2B1	02/27/2018	1 year
FSU26 SPECTRUM ANALYZER	R&S	FSU26	201118	11/15/2017	1 year
Universal Radio Communication Tester	R&S	CMU200	112387	03/08/2018	1 year

For Radiated Emissions

Test Period: Aug. 16 ~ Aug. 21, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/15/2018	1 year
Pre Amplifier (1~26.5 GHz)	Agilent	8449B	3008A02237	10/16/2017	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/10/2018	1 year
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	416	10/26/2017	1 year
Horn Antenna (1~18 GHz)	ETS-Lindgren	3117	00128055	09/27/2017	1 year
Horn Antenna (18~40 GHz)	ETS-Lindgren	3116	86467	09/19/2017	1 year



1.6. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

Test Setting Condition		
L.V.	Low Voltage	DC 3.5 V
N.V.	Normal Voltage	DC 3.8 V
H.V.	High Voltage	DC 4.35 V
L.T.	Low Temperature	0 °C
N.T.	Normal Temperature	+25 °C
H.T.	High Temperature	+55 °C

1.7. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Power	Pass
§22.913(a)(2)	Effective Radiated Power	Pass
§24.232(c)	Equivalent Isotropic Radiated Power	Pass
§24.232(d) §27.50 KDB 971168 D01 (5.7.1)	Peak to average ratio	Pass
§2.1049 §22.917(a) §24.238(a)	Emission Bandwidth & Occupied Bandwidth	Pass
§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	Pass
§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission	Pass
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Pass
§2.1055 §22.355 §24.235	Frequency Stability for Temperature & Voltage	Pass

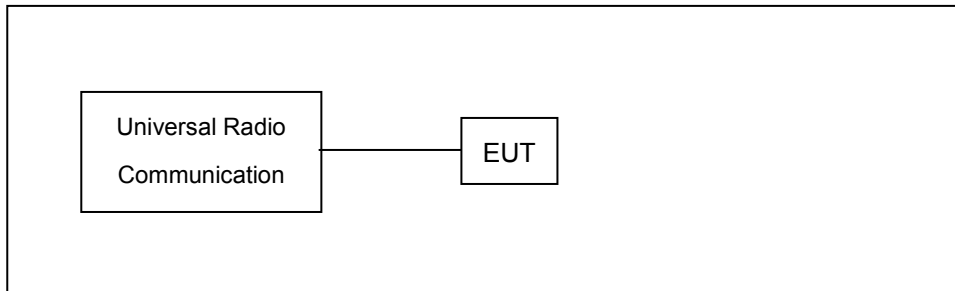
2 Measurement Procedure

2.1. RF Output Power Test

- **Limit**

N/A

- **Test Setup**



- **Test Procedure**

- The EUT was set up for the maximum power with with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

- **Uncertainty**

The measurement uncertainty is defined as for RF output power measurement is 1.2 dB.

2.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

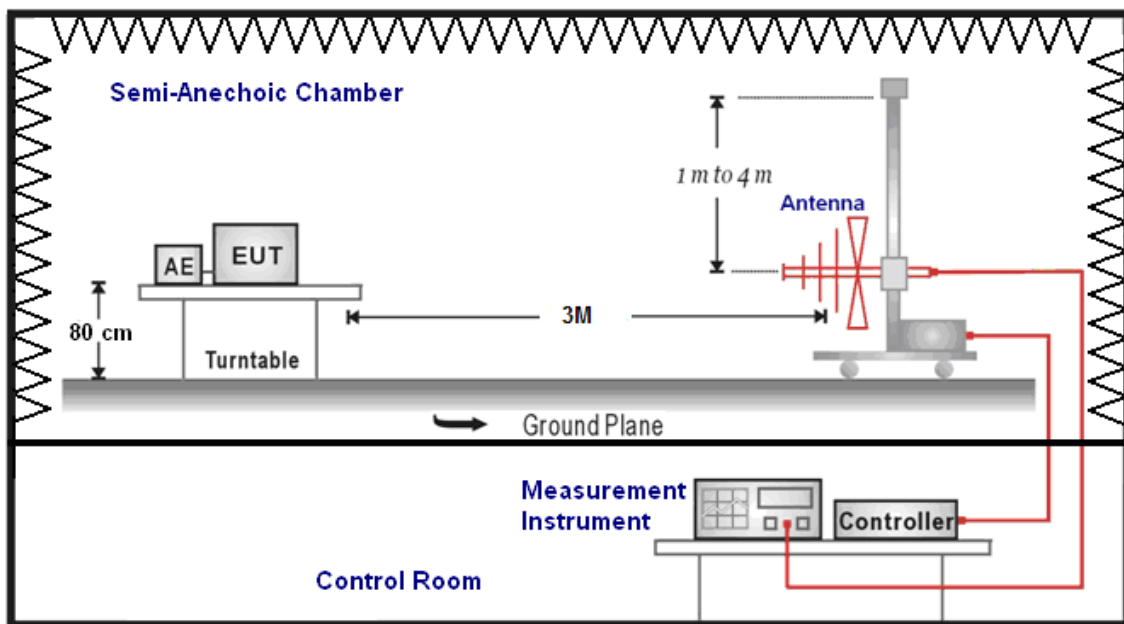
■ Limit

For FCC Part 22.913(a)(2): The E.R.P. of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

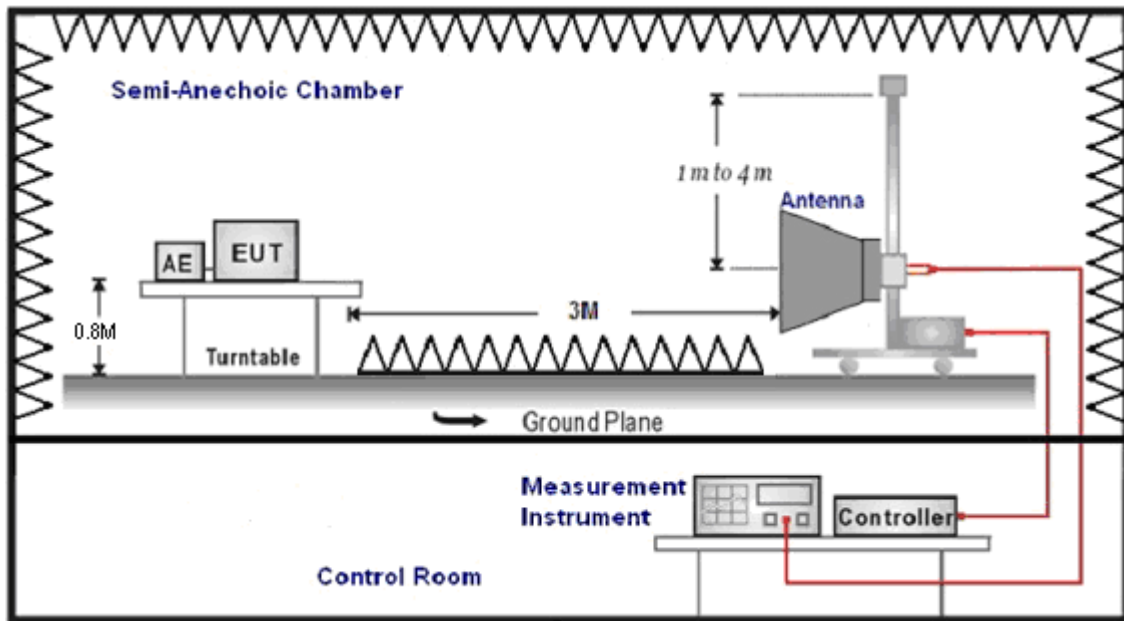
For FCC Part 24.232(c): The E.I.R.P. of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

■ Setup

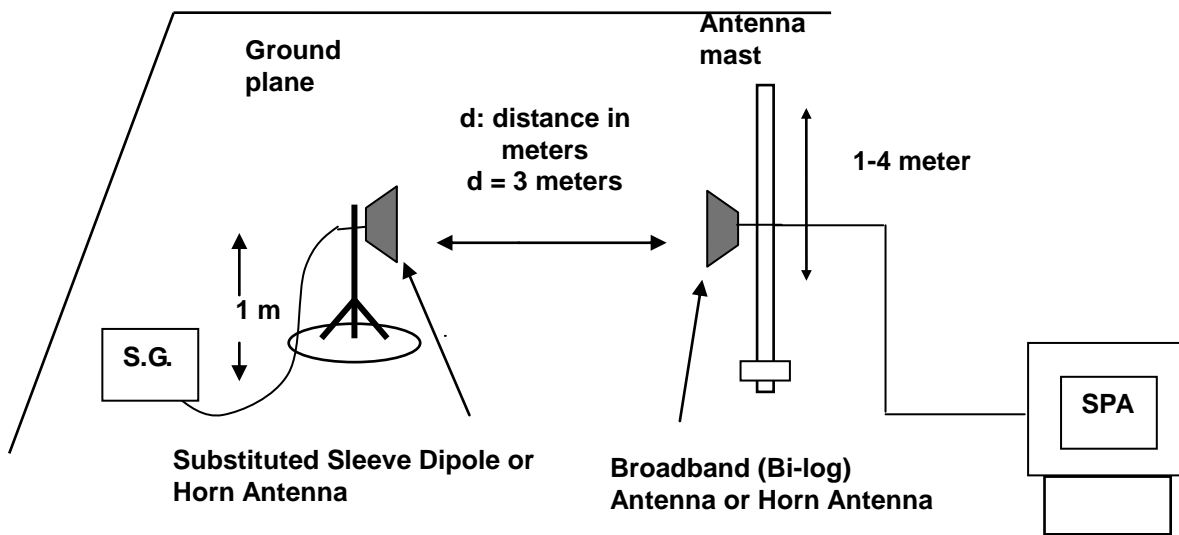
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP





■ Test Procedure

For FCC

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P.- 2.15 dB

Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna

2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

■ Uncertainty

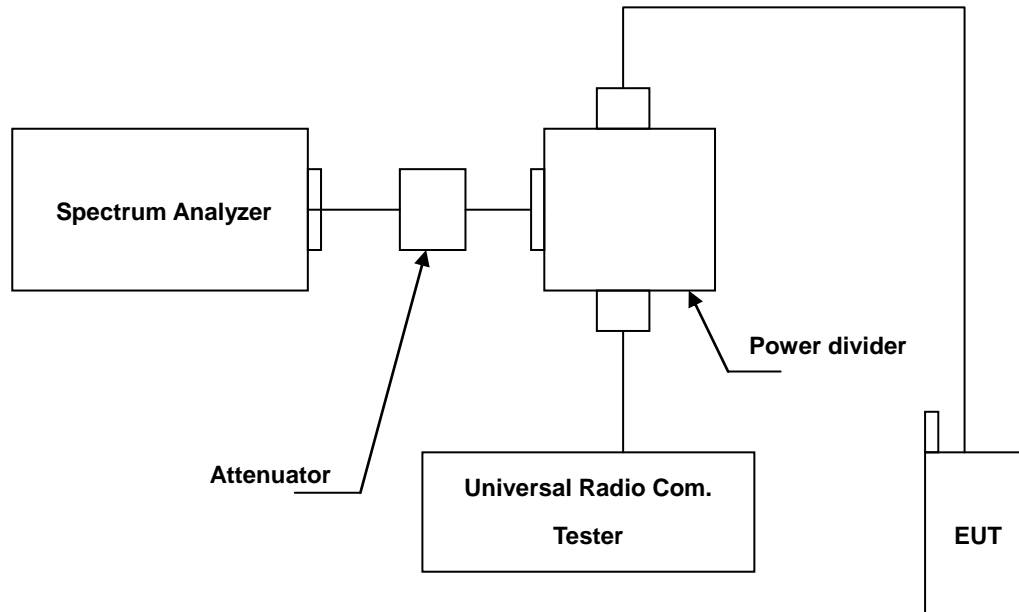
The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

2.3. Peak to Average Ratio Test

■ Limit

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

■ Setup



■ Test Procedure

- Set resolution/measurement bandwidth = signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1 %.

■ Uncertainty

The measurement uncertainty is defined as for Conducted Power measurement is 1.2 dB.

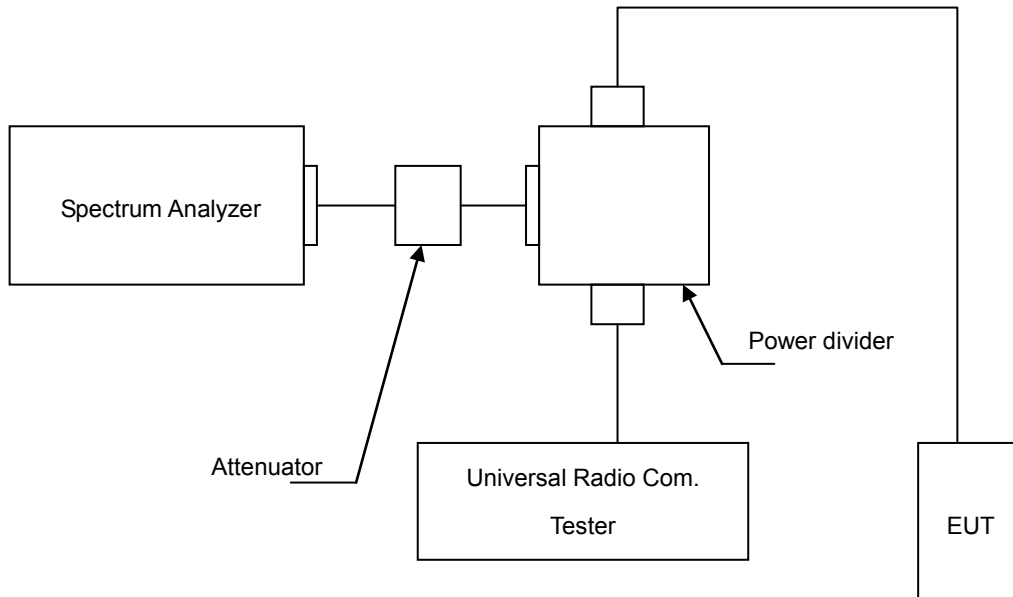
2.4. Emission Bandwidth & Occupied Bandwidth Test

■ Limit

The Occupied Bandwidth Limit:

N/A.

■ Setup



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The occupied bandwidth of middle channel for the highest and lowest RF powers was measured.

■ Uncertainty

The measurement uncertainty is defined as ± 10 Hz

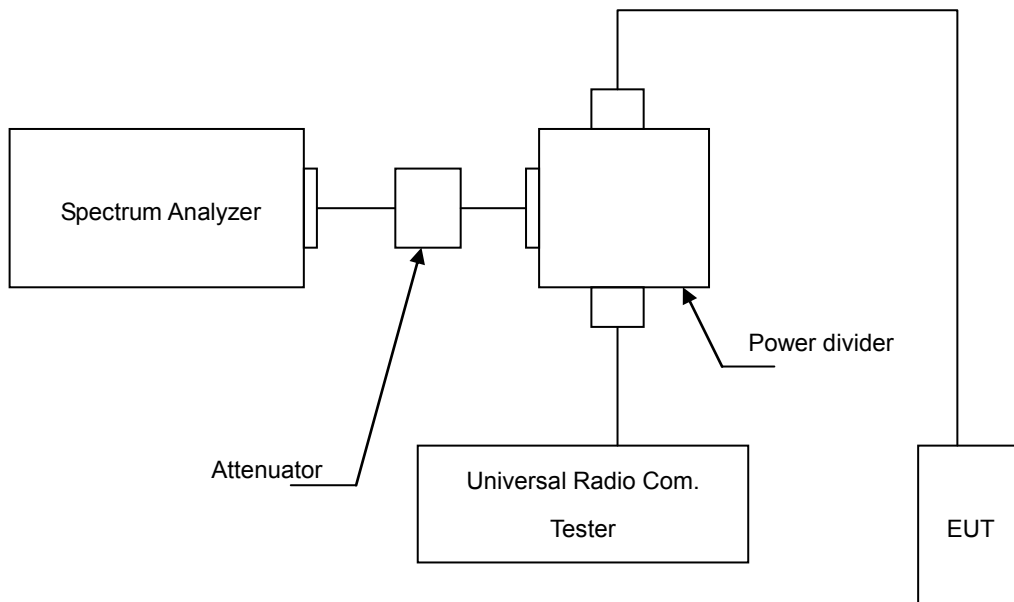
2.5. Band Edge Test

■ Limit

The Band Edge Limit:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

■ Setup



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The band edge of low and high channels for the highest RF powers within the transmitting frequency band were measured.

■ Uncertainty

The measurement uncertainty is defined as ± 10 Hz

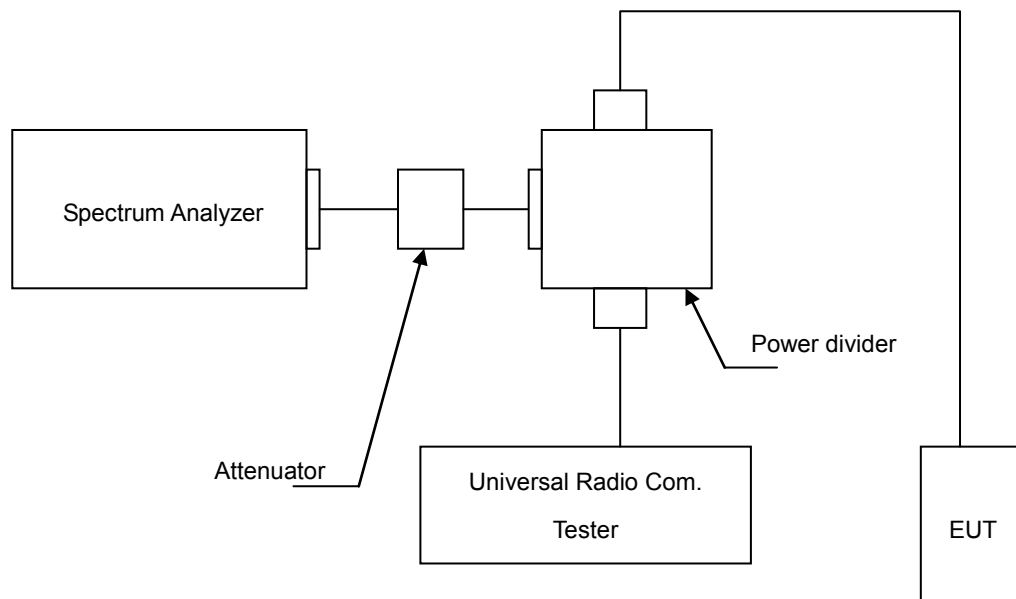
2.6. Conducted Spurious Emission Test

■ Limit

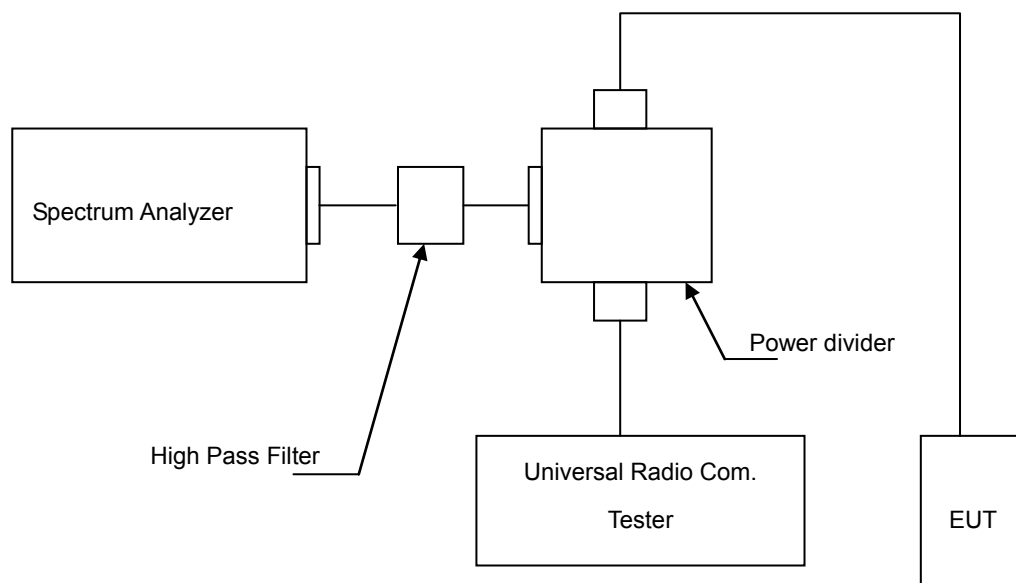
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

■ Setup

Below 2.8 GHz



Above 2.8 GHz





■ **Test Procedure**

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.
4. Test setting at WCDMA Band IV RB=1 MHz, VB=1 MHz.

■ **Uncertainty**

The measurement uncertainty is evaluated as ± 2.24 dB.

2.7. Field Strength of Spurious Radiation Test

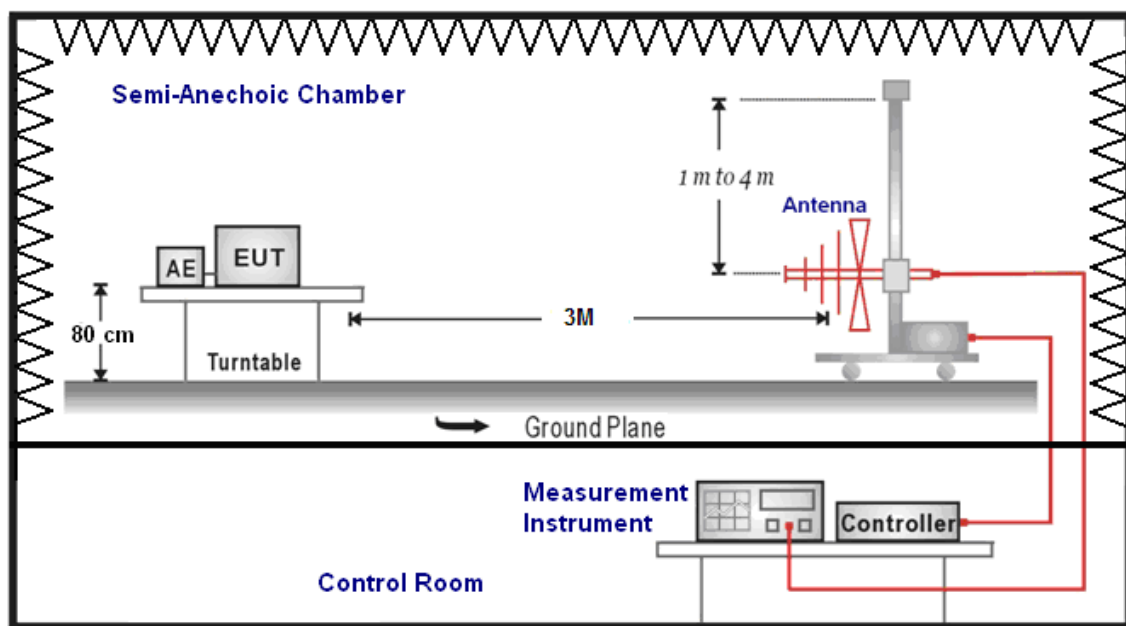
■ Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

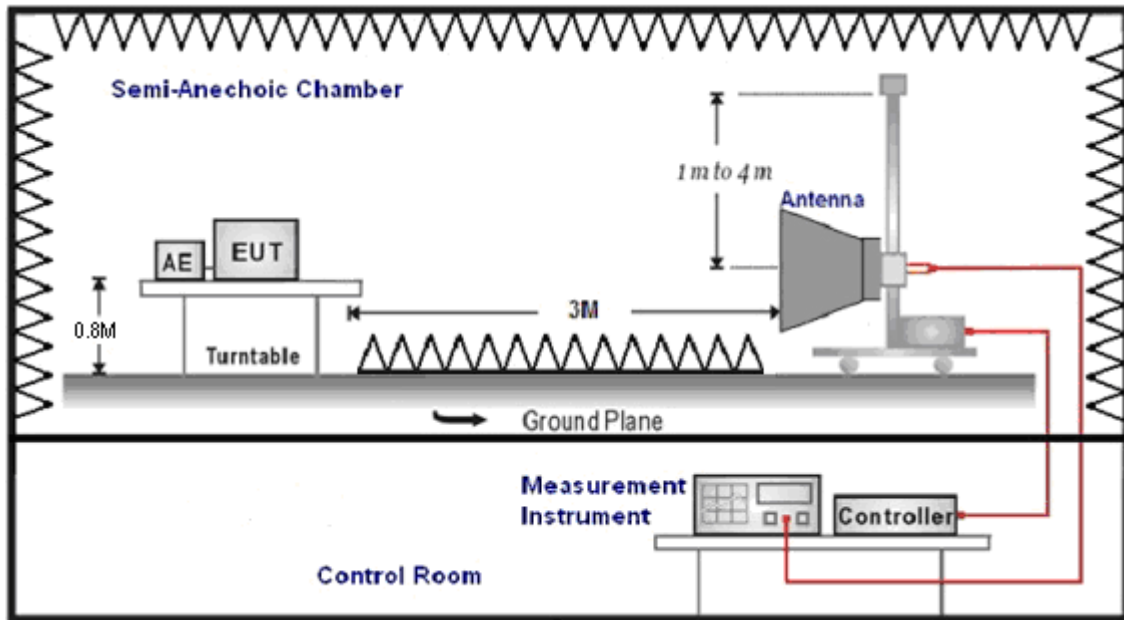
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

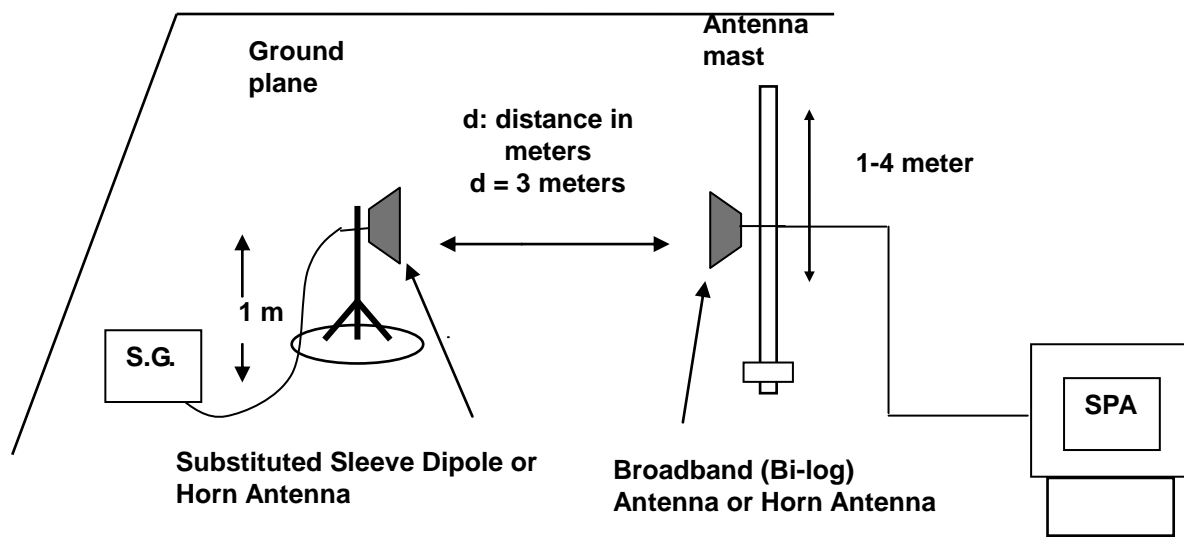
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP





■ Test Procedure

For FCC

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P.- 2.15 dB

Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna
2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

■ Uncertainty

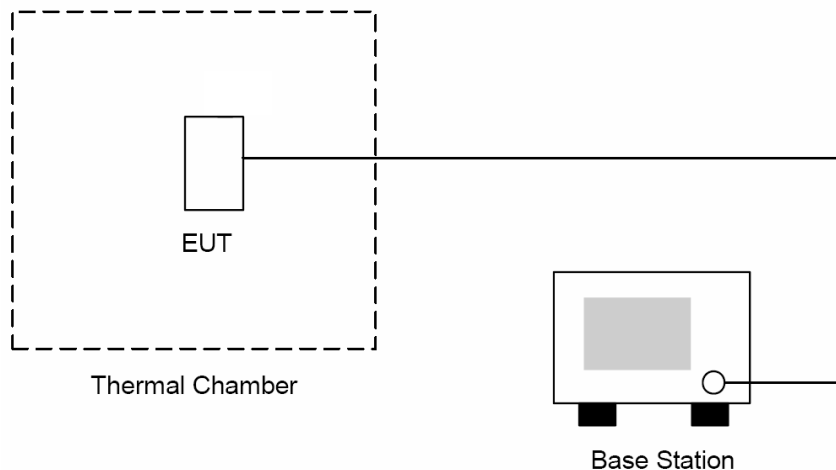
The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

2.8. Frequency Stability (Temperature & Voltage Variation) Test

■ Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

■ Setup



■ Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to $-30\text{ }^{\circ}\text{C}$ and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in $10\text{ }^{\circ}\text{C}$ steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at $25 \pm 5\text{ }^{\circ}\text{C}$ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115 % of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

■ Uncertainty

The measurement uncertainty is defined as for Frequency Stability (Temperature Variation) measurement is ± 10 Hz.



3 Test Results

Test Mode	Test Modes description
UMTS/TM1	WCDMA system,QPSK modulation
UMTS/TM2	HSDPA system,QPSK modulation
UMTS/TM3	HSUPA system,QPSK modulation



Appendix A: Conducted Output Power

Bands	Modulation Type	Sub-Test	Frequency (MHz)	Burst Average Power		Peak Power	
				(dBm)	(W)	(dBm)	(W)
WCDMA Band II	QPSK	----	1852.4	23.56	0.227	27.06	0.508
			1880.0	23.49	0.223	26.82	0.481
			1907.6	23.66	0.232	26.93	0.493
HSDPA Band II	QPSK	1	1852.4	22.71	0.187	26.21	0.418
			1880.0	22.63	0.183	25.95	0.394
			1907.6	22.85	0.193	26.12	0.409
		2	1852.4	22.18	0.165	25.67	0.369
			1880.0	22.09	0.162	25.43	0.349
			1907.6	22.32	0.171	25.59	0.362
		3	1852.4	22.15	0.164	25.65	0.367
			1880.0	22.06	0.161	25.39	0.346
			1907.6	22.27	0.169	25.54	0.358
		4	1852.4	22.56	0.180	26.06	0.404
			1880.0	22.48	0.177	25.80	0.380
			1907.6	22.71	0.187	25.97	0.395
HSUPA Band II	QPSK	1	1852.4	22.22	0.167	25.72	0.373
			1880.0	22.08	0.161	25.42	0.348
			1907.6	22.33	0.171	25.60	0.363
		2	1852.4	20.22	0.105	23.72	0.236
			1880.0	20.05	0.101	23.39	0.218
			1907.6	20.32	0.108	23.60	0.229
		3	1852.4	21.19	0.132	24.69	0.294
			1880.0	21.04	0.127	24.38	0.274
			1907.6	21.29	0.135	24.55	0.285
		4	1852.4	20.17	0.104	23.68	0.233
			1880.0	20.01	0.100	23.35	0.216
			1907.6	20.28	0.107	23.56	0.227
		5	1852.4	22.06	0.161	25.55	0.359
			1880.0	21.91	0.155	25.24	0.334
			1907.6	22.16	0.164	25.43	0.349

Note: The peak power testing result was used peak detector.



Bands	Modulation Type	Sub-Test	Frequency (MHz)	Burst Average Power		Peak Power	
				(dBm)	(W)	(dBm)	(W)
WCDMA Band V	QPSK	----	826.4	23.51	0.224	27.16	0.520
			836.6	23.43	0.220	27.05	0.507
			846.6	23.29	0.213	26.89	0.489
HSDPA Band V	QPSK	1	826.4	22.68	0.185	26.34	0.431
			836.6	22.57	0.181	26.19	0.416
			846.6	22.44	0.175	26.04	0.402
		2	826.4	22.16	0.164	25.81	0.381
			836.6	22.05	0.160	25.67	0.369
			846.6	21.91	0.155	25.51	0.356
		3	826.4	22.12	0.163	25.77	0.378
			836.6	22.02	0.159	25.64	0.366
			846.6	21.88	0.154	25.48	0.353
		4	826.4	22.52	0.179	26.18	0.415
			836.6	22.41	0.174	26.03	0.401
			846.6	22.27	0.169	25.87	0.386
HSUPA Band V	QPSK	1	826.4	22.16	0.164	25.82	0.382
			836.6	22.01	0.159	25.63	0.366
			846.6	21.88	0.154	25.48	0.353
		2	826.4	20.18	0.104	23.84	0.242
			836.6	20.03	0.101	23.66	0.232
			846.6	19.89	0.097	23.48	0.223
		3	826.4	21.15	0.130	24.79	0.301
			836.6	20.99	0.126	24.61	0.289
			846.6	20.88	0.122	24.47	0.280
		4	826.4	20.14	0.103	23.80	0.240
			836.6	19.99	0.100	23.61	0.230
			846.6	19.83	0.096	23.43	0.220
		5	826.4	22.05	0.160	25.70	0.372
			836.6	21.89	0.155	25.50	0.355
			846.6	21.79	0.151	25.39	0.346

Note: The peak power testing result was used peak detector.



Appendix B: Effective Radiated Power / Equivalent Isotropic Radiated Power Test

Band 2								
Band	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.I.R.P.		Limit (W)
						(dBm)	(W)	
WCDMA	QPSK	1852.4	H	16.63	8.42	25.05	0.320	≤2
			V	18.76	8.42	27.18	0.522	≤2
		1880.0	H	16.31	8.52	24.83	0.304	≤2
			V	18.43	8.52	26.95	0.495	≤2
		1907.6	H	16.15	8.63	24.78	0.301	≤2
			V	18.00	8.63	26.63	0.460	≤2

Band 5								
Band	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.R.P.		Limit (W)
						(dBm)	(W)	
WCDMA	QPSK	826.4	H	16.25	8.81	25.06	0.321	≤7
			V	19.19	8.81	28.00	0.631	≤7
		836.6	H	15.56	8.96	24.52	0.283	≤7
			V	17.19	8.95	26.14	0.411	≤7
		846.6	H	15.78	9.10	24.88	0.308	≤7
			V	17.19	9.09	26.28	0.425	≤7



Appendix C: Peak to Average Ratio

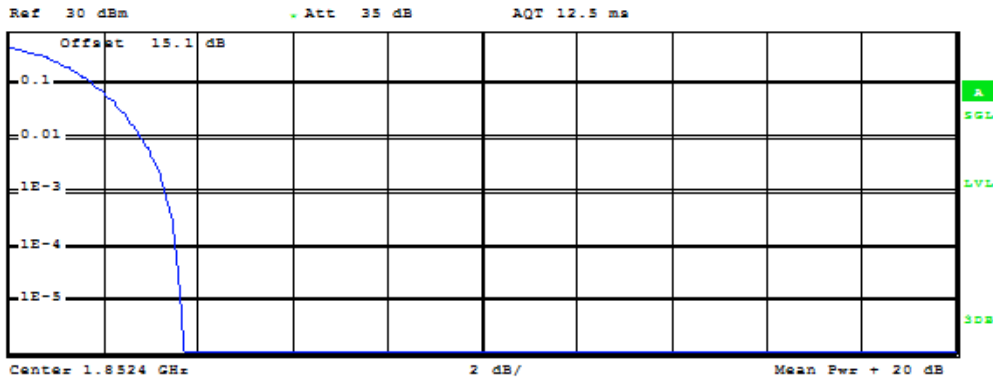
Test Band	Test Mode	Test Channel	Measured (db)	Limit (db)	Verdict
WCDMA1900	UMTS/TM1	LCH	3.33	13	PASS
		MCH	3.33	13	PASS
		HCH	3.21	13	PASS



- 1 For WCDMA
- 1.1 Test Band=WCDMA1900
- 1.1.1 Test Mode=UMTS/TM1
- 1.1.1.1 Test Channel=LCH



RBW 5 MHz



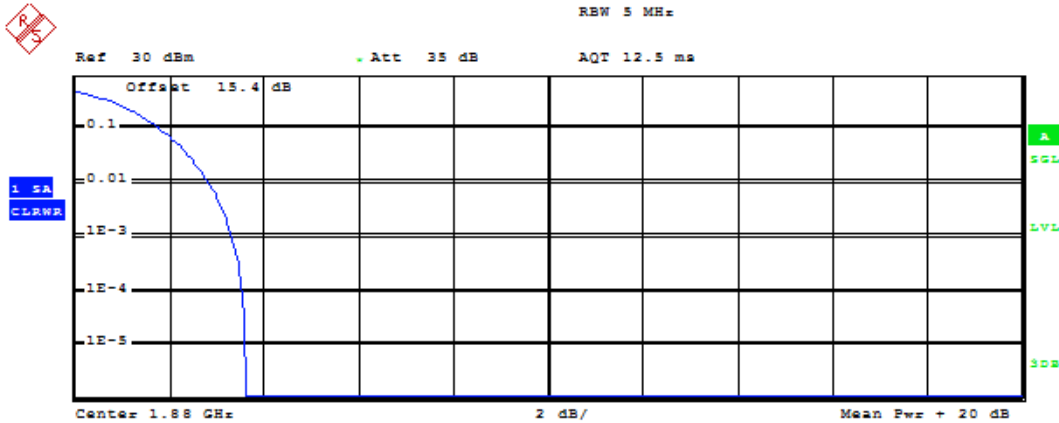
Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	23.57 dBm
Peak	27.26 dBm
Crest	3.69 dB
10 %	1.79 dB
1 %	2.82 dB
.1 %	3.33 dB
.01 %	3.53 dB

Date: 20.AUG.2018 12:21:14



1.1.1.2 Test Channel=MCH



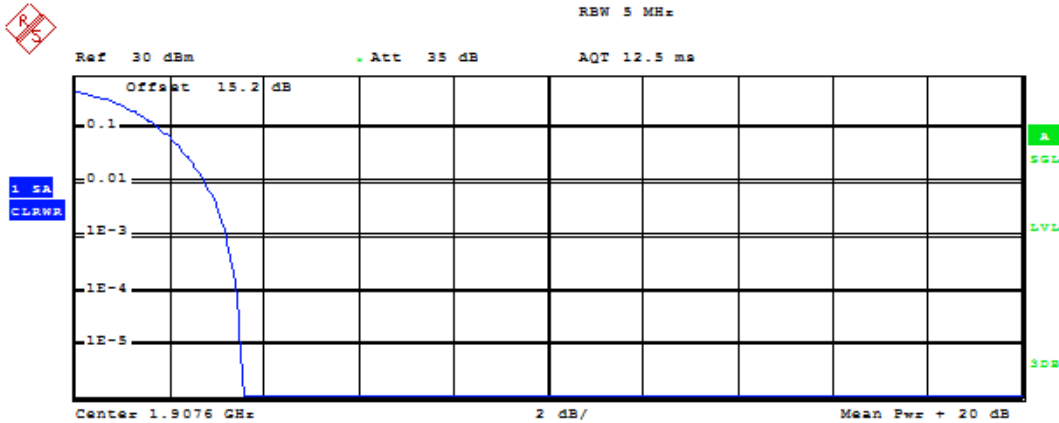
Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	23.50 dBm
Peak	27.12 dBm
Crest	3.61 dB
10 %	1.79 dB
1 %	2.82 dB
.1 %	3.33 dB
.01 %	3.56 dB

Date: 20.AUG.2018 12:28:22



1.1.1.3 Test Channel=HCH



Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	23.69 dBm
Peak	27.26 dBm
Crest	3.57 dB
10 %	1.79 dB
1 %	2.76 dB
.1 %	3.21 dB
.01 %	3.40 dB

Date: 20.AUG.2018 12:40:49

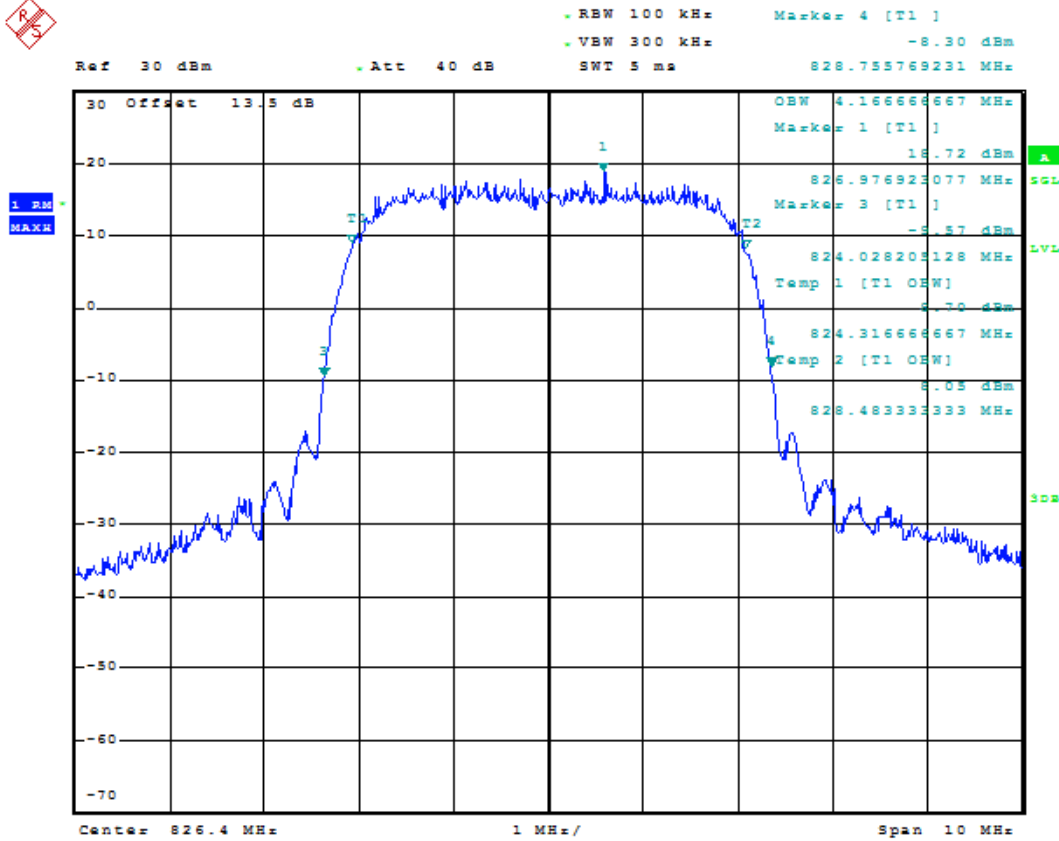
**Appendix D: Emission Bandwidth & Occupied Bandwidth**

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA850	UMTS/TM1	LCH	4166.7	4728	PASS
		MCH	4134.6	4696	PASS
		HCH	4150.6	4728	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA1900	UMTS/TM1	LCH	4134.6	4728	PASS
		MCH	4134.6	4728	PASS
		HCH	4134.6	4760	PASS



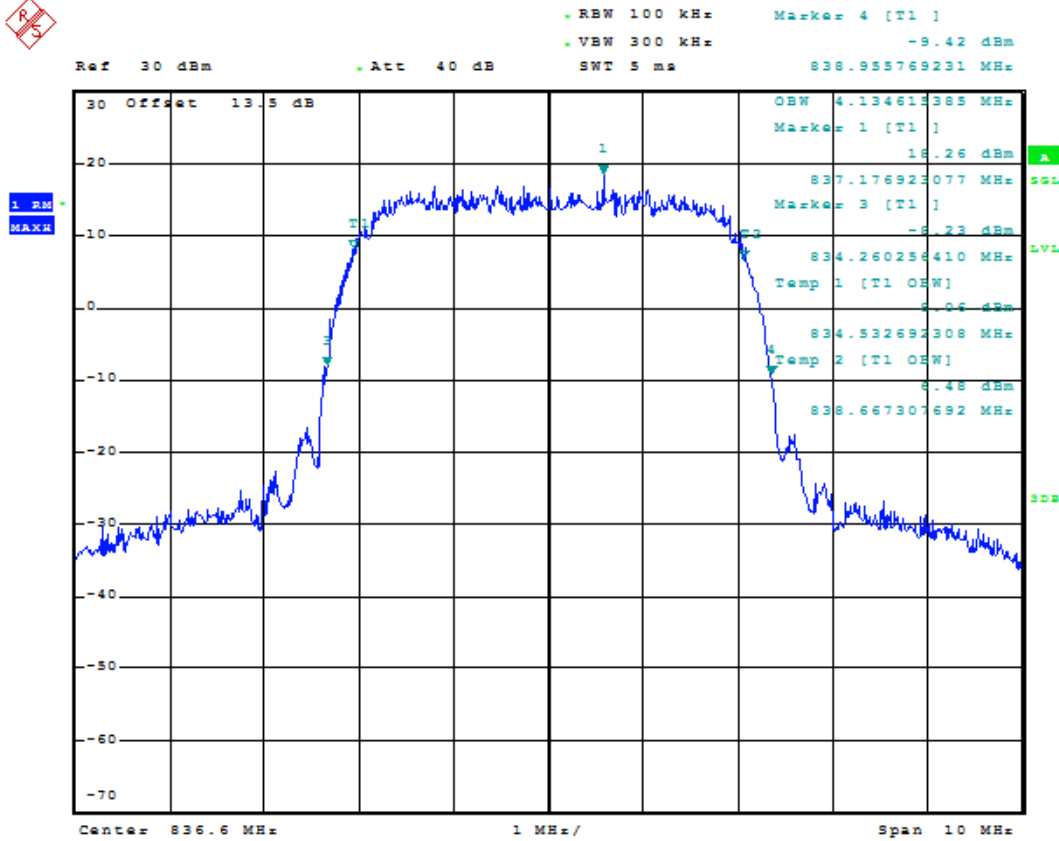
- 2 For WCDMA
- 2.1 Test Band=WCDMA850
- 2.1.1 Test Mode=UMTS/TM1
- 2.1.1.1 Test Channel=LCH



Date: 20.AUG.2018 12:02:57



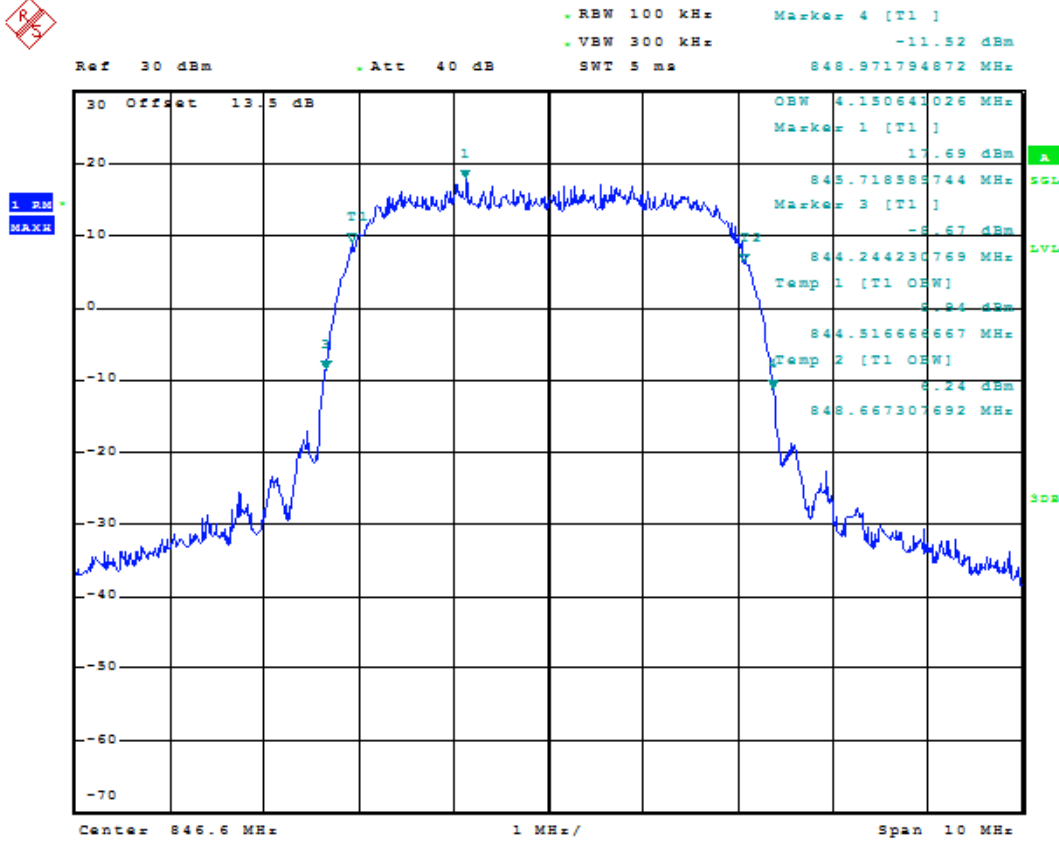
2.1.1.2 Test Channel=MCH



Date: 20.AUG.2018 12:03:20



2.1.1.3 Test Channel=HCH



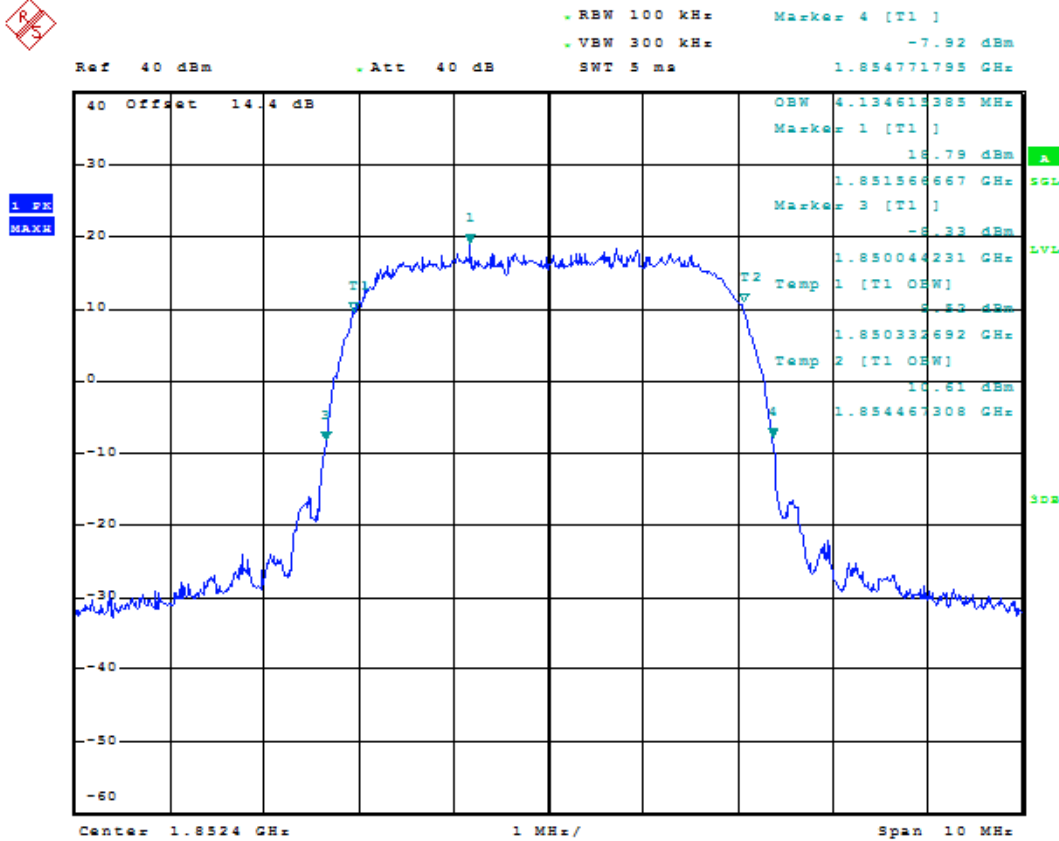
Date: 20.AUG.2018 12:03:42



2.2 Test Band=WCDMA1900

2.2.1 Test Mode=UMTS/TM1

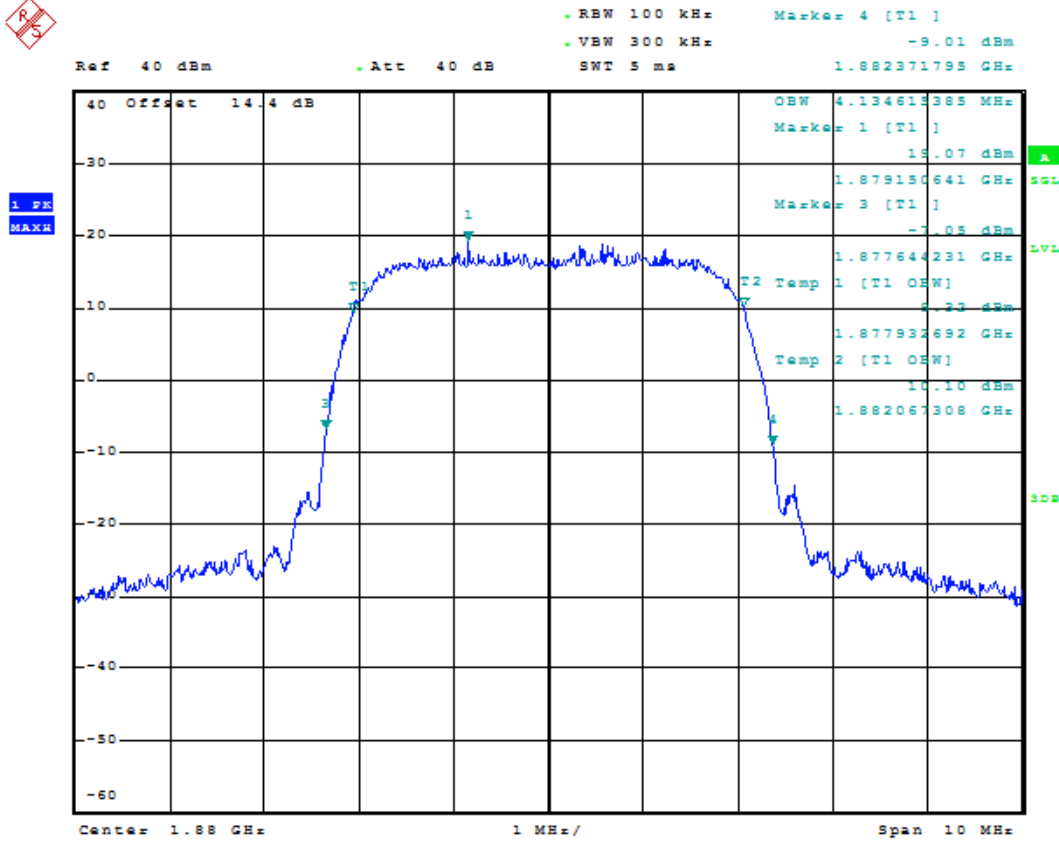
2.2.1.1 Test Channel=LCH



Date: 20.AUG.2018 08:44:40



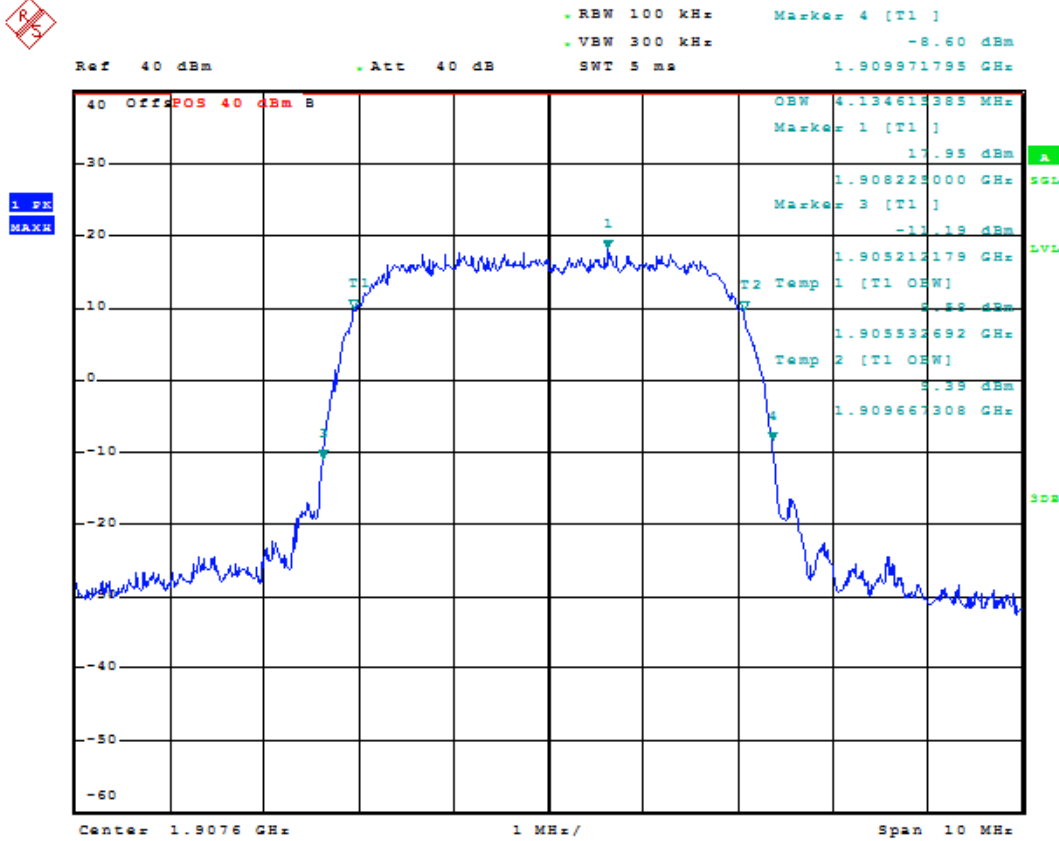
2.2.1.2 Test Channel=MCH



Date: 20.AUG.2018 08:45:03



2.2.1.3 Test Channel=HCH

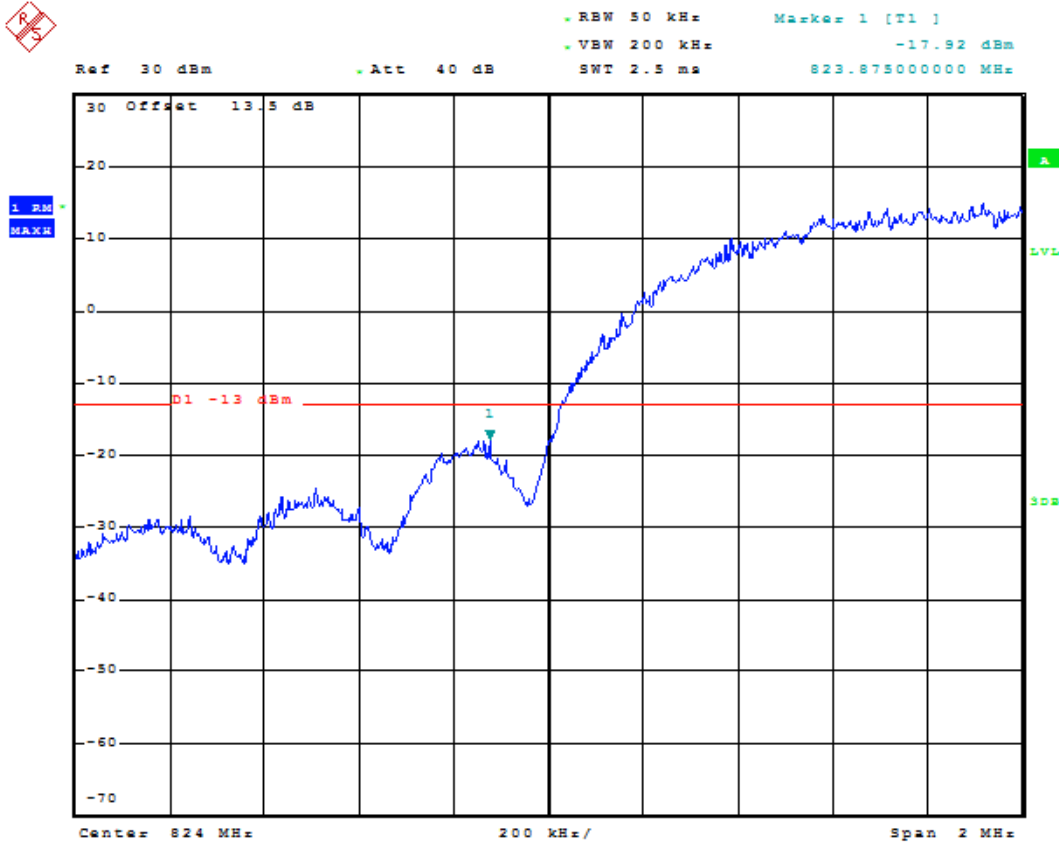


Date: 20.AUG.2018 08:45:26



Appendix E: Band Edge Measurement

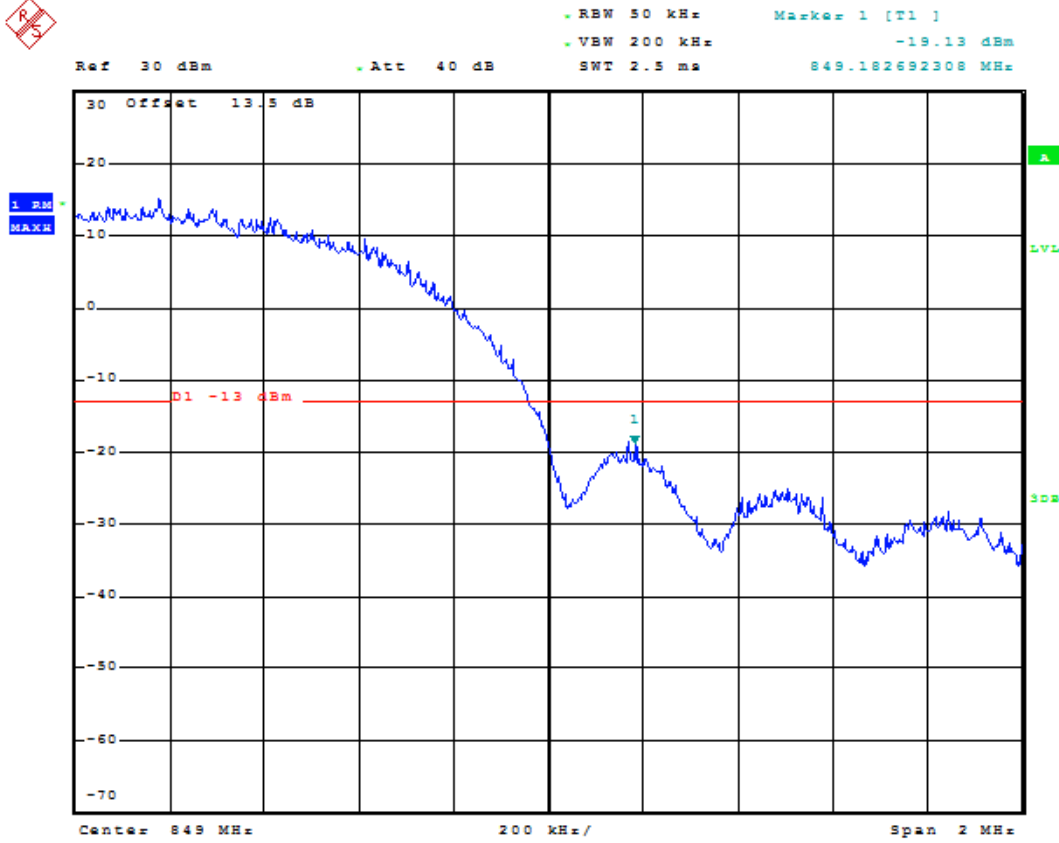
- 1 For WCDMA
- 1.1 Test Band=WCDMA850
- 1.1.1 Test Mode=UMTS/TM1
- 1.1.1.1 Test Channel=LCH



Date: 20.AUG.2018 12:04:12



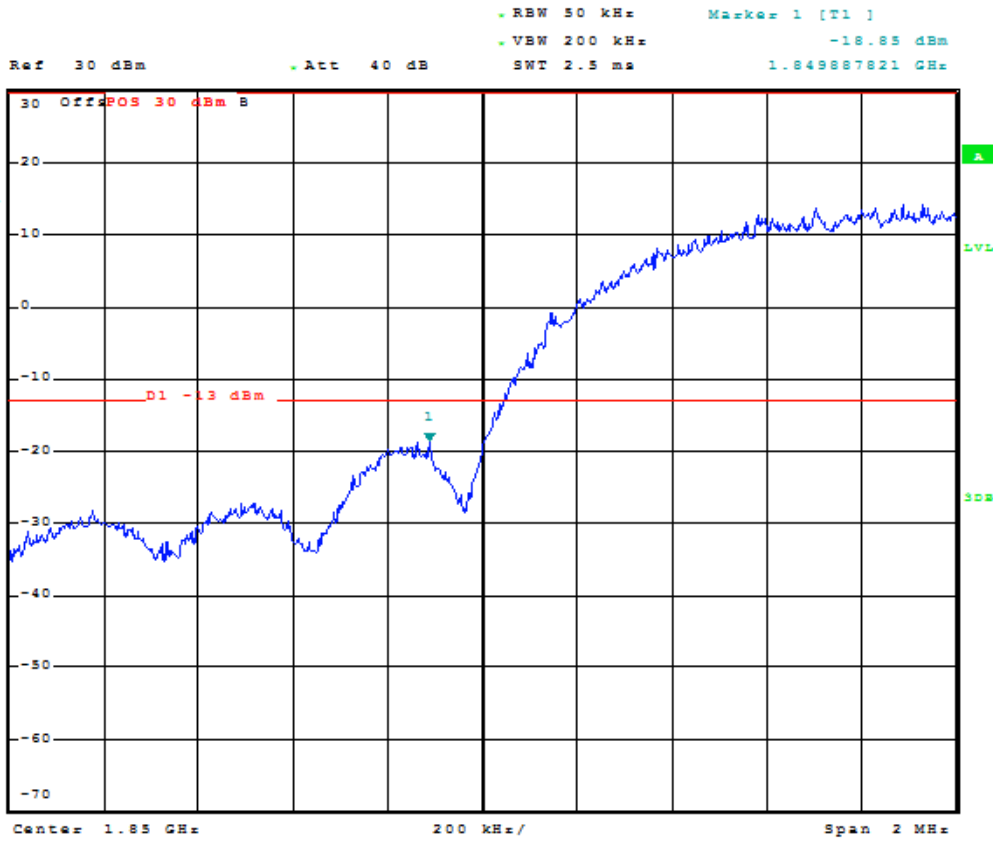
1.1.1.2 Test Channel=HCH



Date: 20.AUG.2018 12:04:27



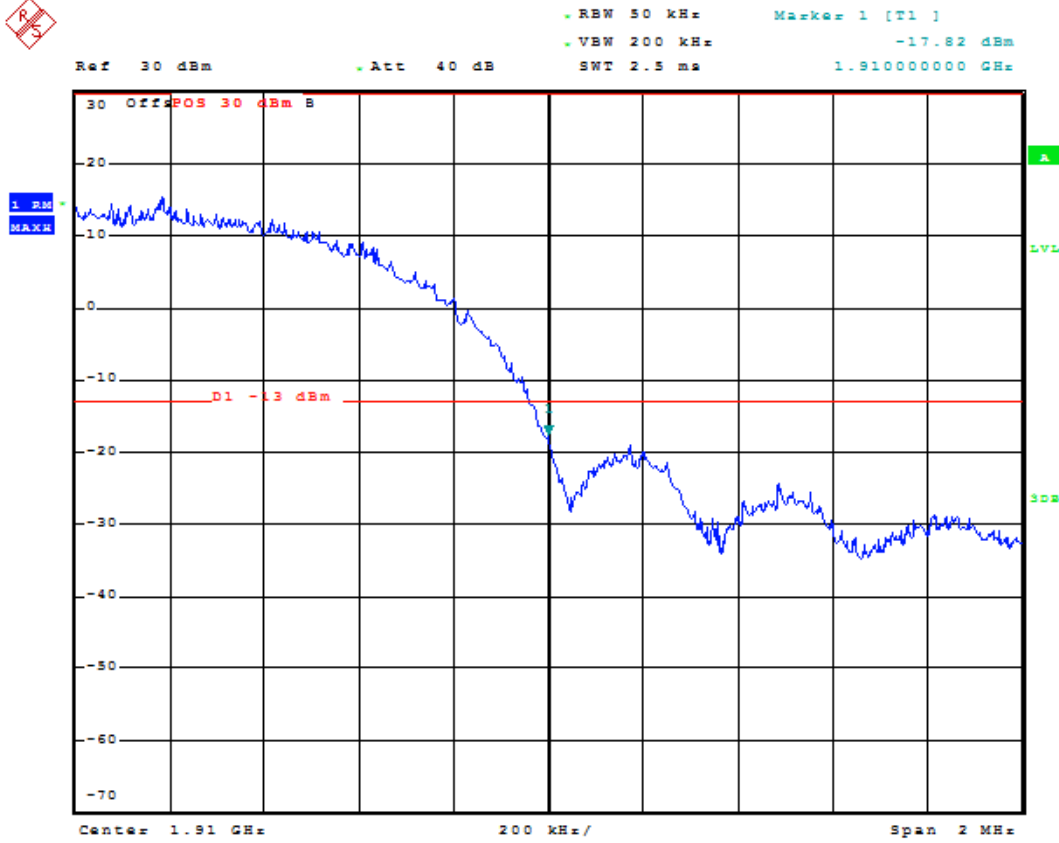
1.2 Test Band=WCDMA1900
1.2.1 Test Mode=UMTSTM1
1.2.1.1 Test Channel=LCH



Date: 20.AUG.2018 08:45:55



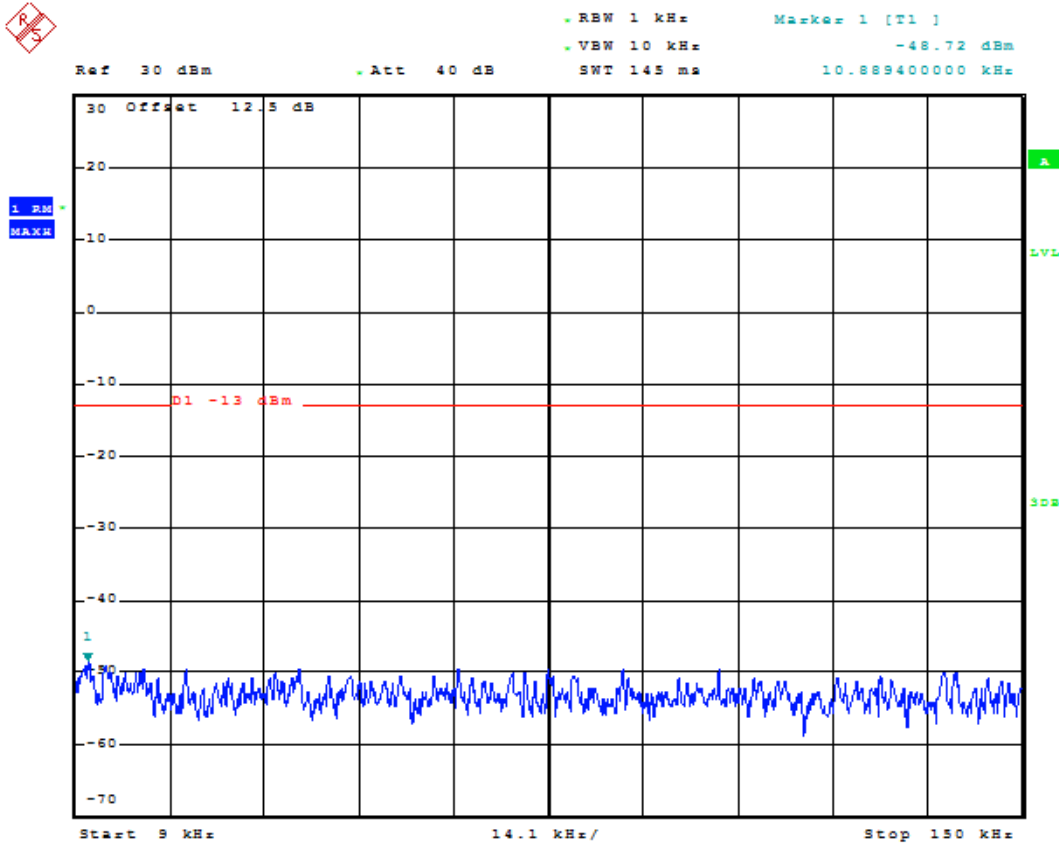
1.2.1.2 Test Channel=HCH



Date: 20.AUG.2018 08:46:10

Appendix F: Spurious Emission at Antenna Terminal

- 1 For WCDMA
- 1.1 Test Band=WCDMA850
- 1.1.1 Test Mode=UMTS/TM1
- 1.1.1.1 Test Channel=LCH



Date: 20.AUG.2018 12:04:54

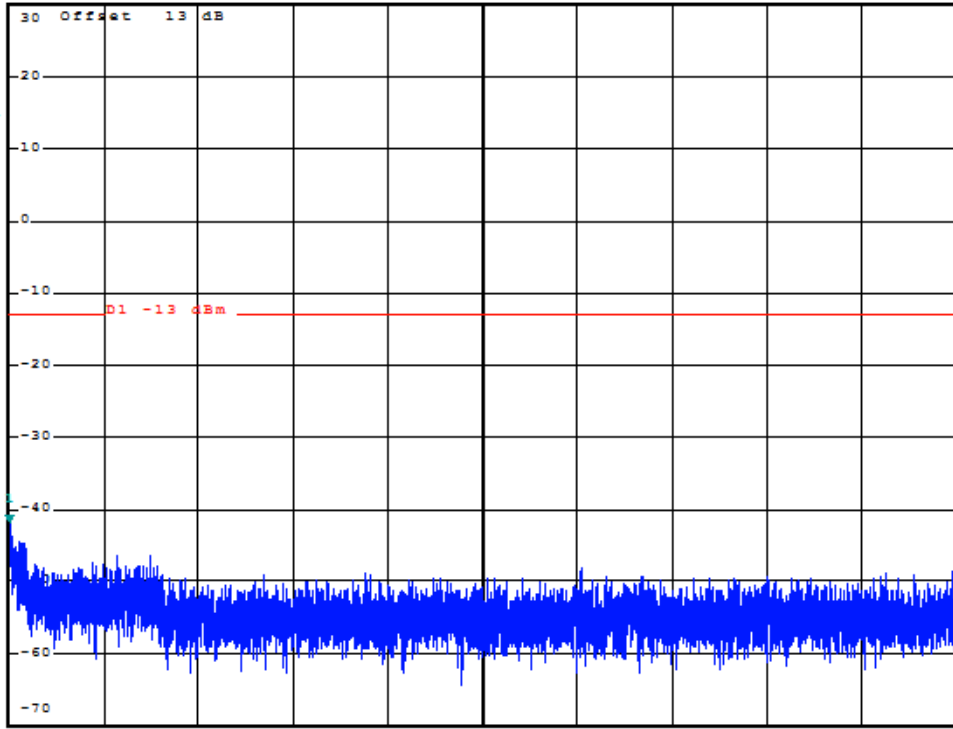


RBW 10 kHz Marker 1 [T1]
VBW 30 kHz -42.19 dBm
SWT 300 ms 160.945000000 kHz

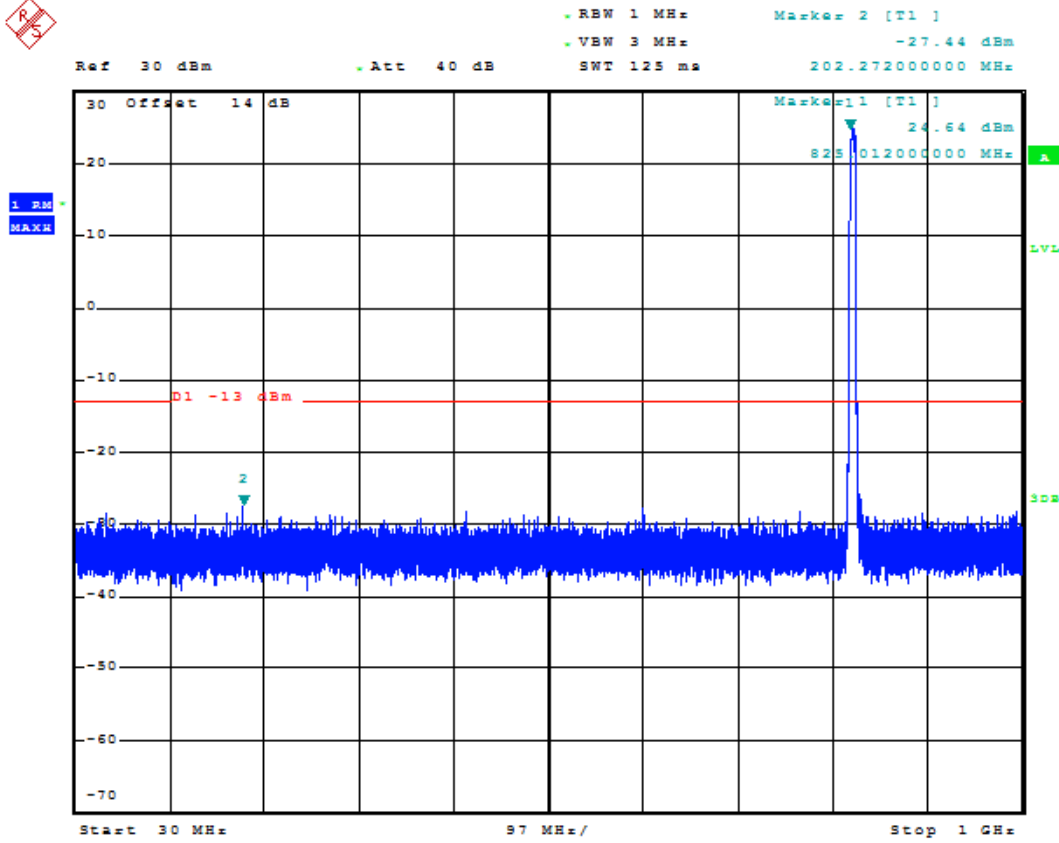
Ref 30 dBm

Att 40 dB

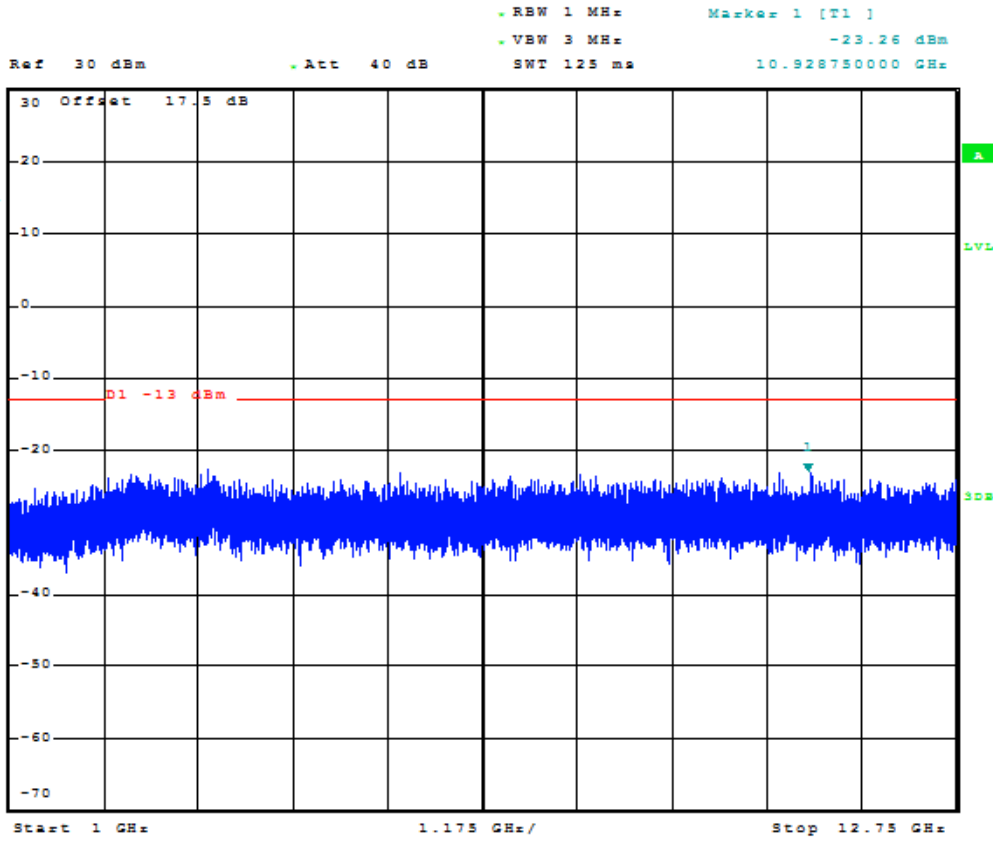
1. RBW
MAXH



Date: 20.AUG.2018 12:05:02



Date: 20.AUG.2018 12:05:12



Date: 20.AUG.2018 12:05:21



1.1.1.2 Test Channel=MCH

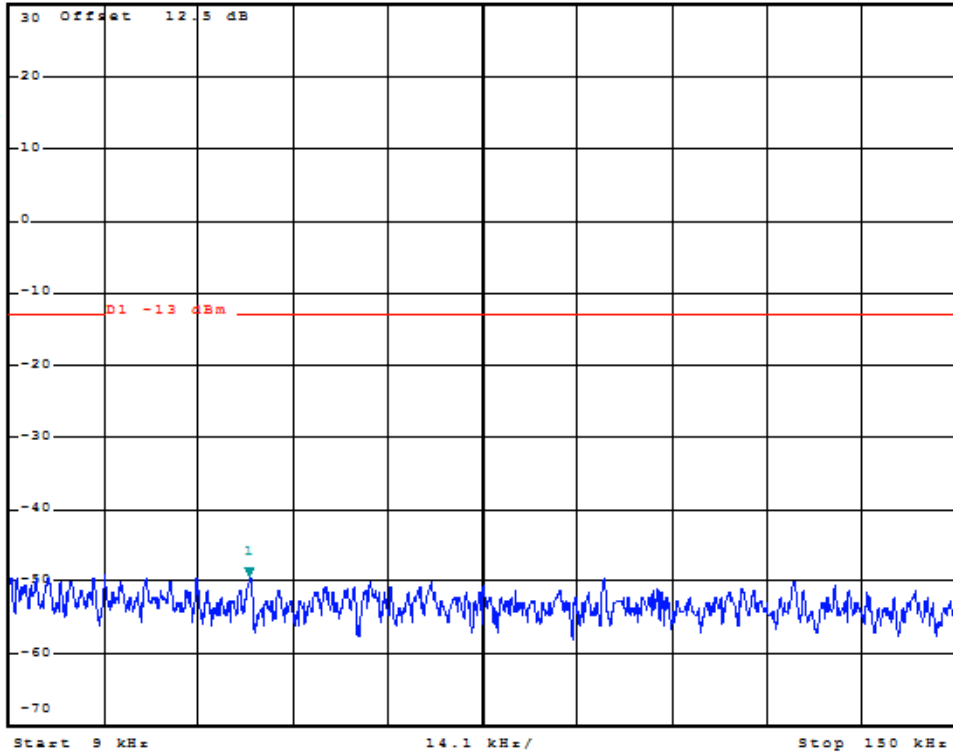


RBW 1 kHz Marker 1 [T1]
VBW 10 kHz -49.47 dBm
SWT 145 ms 44.785800000 kHz

Ref 30 dBm

Att 40 dB

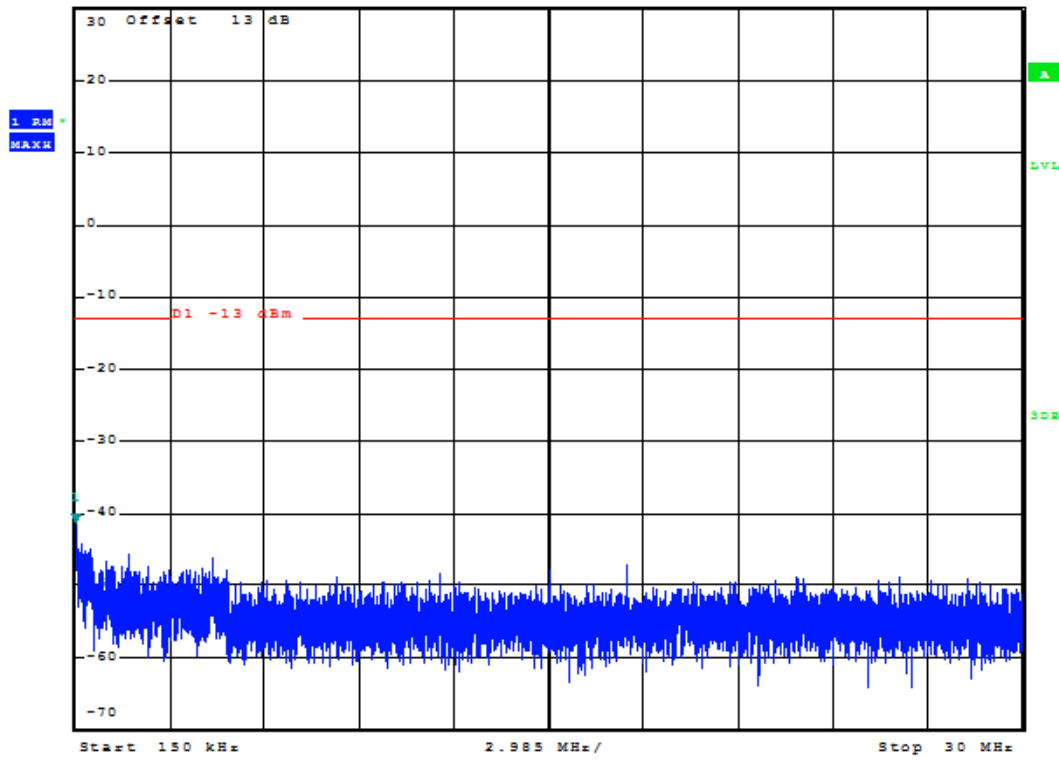
1. RBW
MAXH



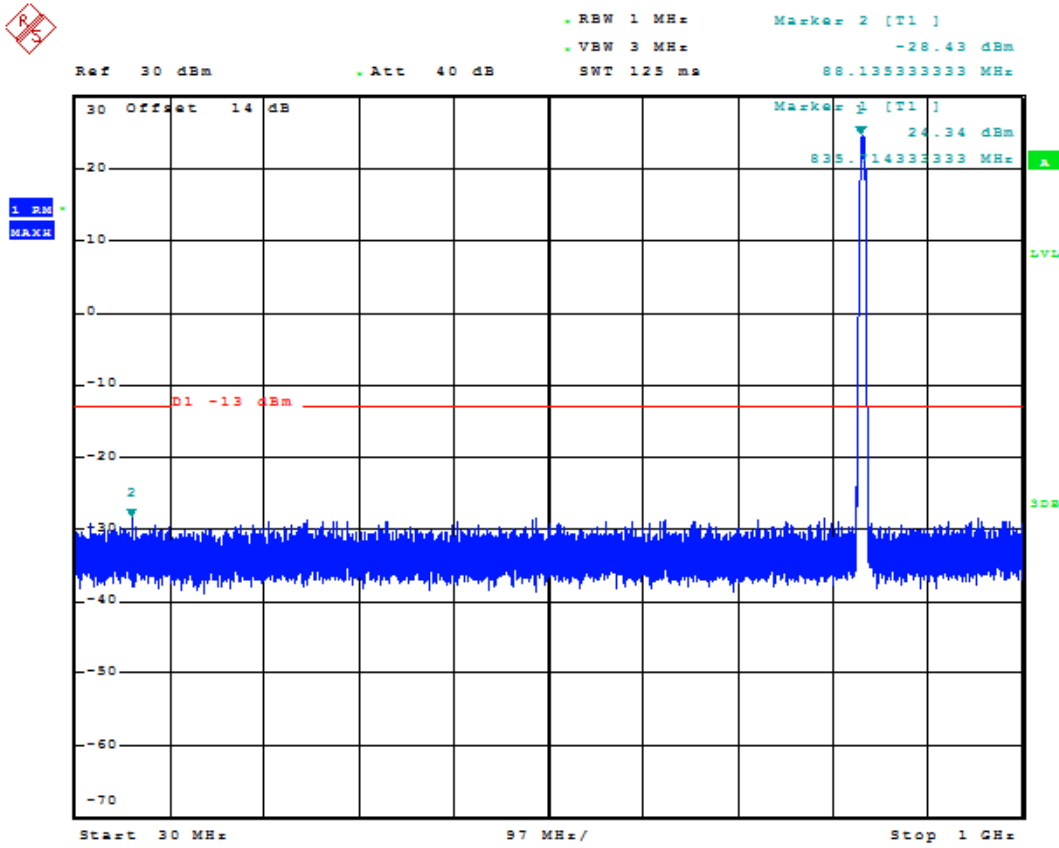
Date: 20.AUG.2018 12:05:33



Ref 30 dBm Att 40 dB RBW 10 kHz Marker 1 [T1] -41.49 dBm
VBW 30 kHz 159.95000000 kHz
SWT 300 ms



Date: 20.AUG.2018 12:05:41

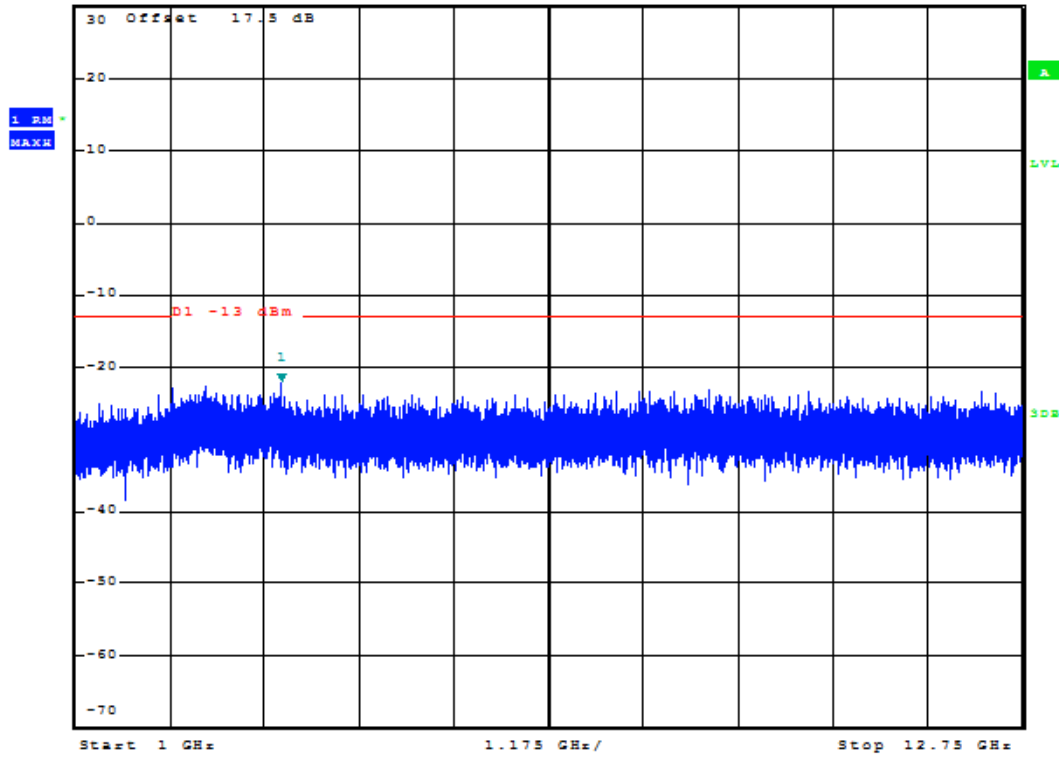


Date: 20.AUG.2018 12:05:51



RBW 1 MHz Marker 1 [T1]
VBW 3 MHz -22.26 dBm
SWT 125 ms 3.556408333 GHz

Ref 30 dBm Att 40 dB



Date: 20.AUG.2018 12:06:00



1.1.1.3 Test Channel=HCH

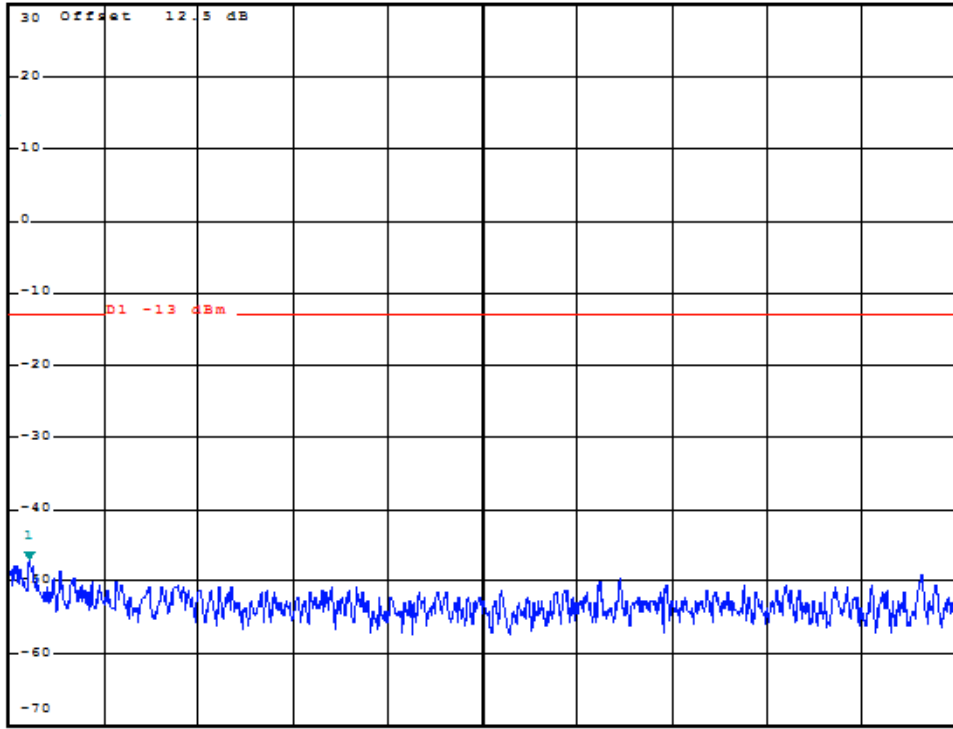


RBW 1 kHz Marker 1 [T1]
VBW 10 kHz -47.30 dBm
SWT 145 ms 11.956300000 kHz

Ref 30 dBm

Att 40 dB

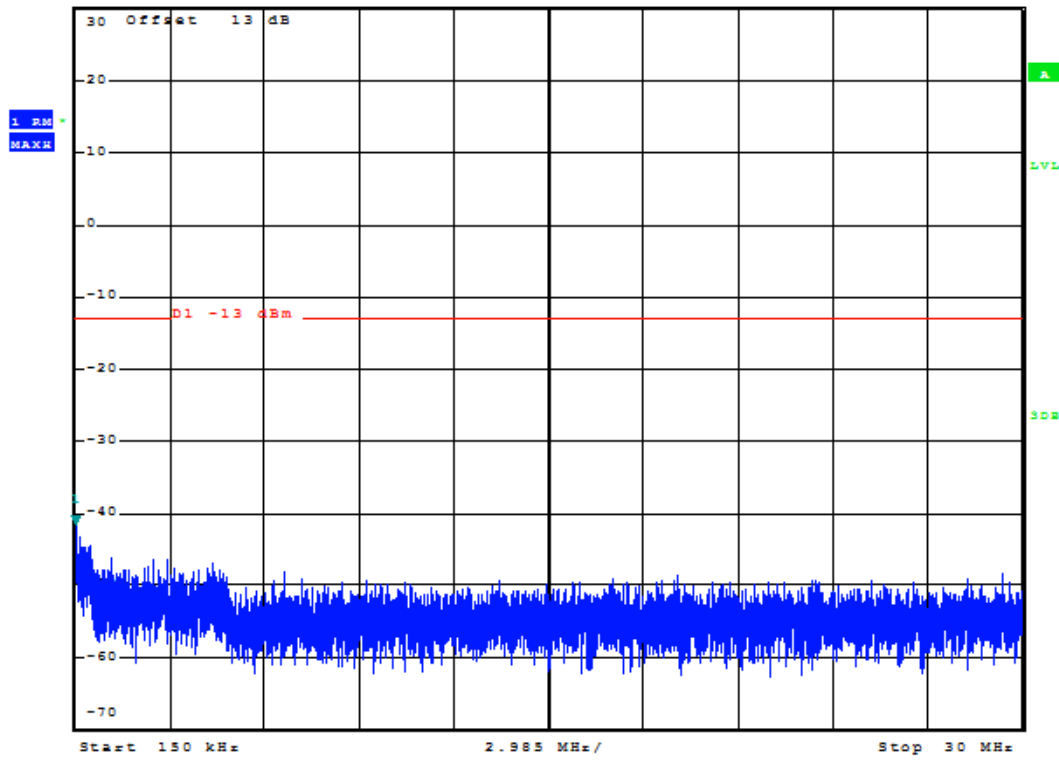
1. RBW
MAXH



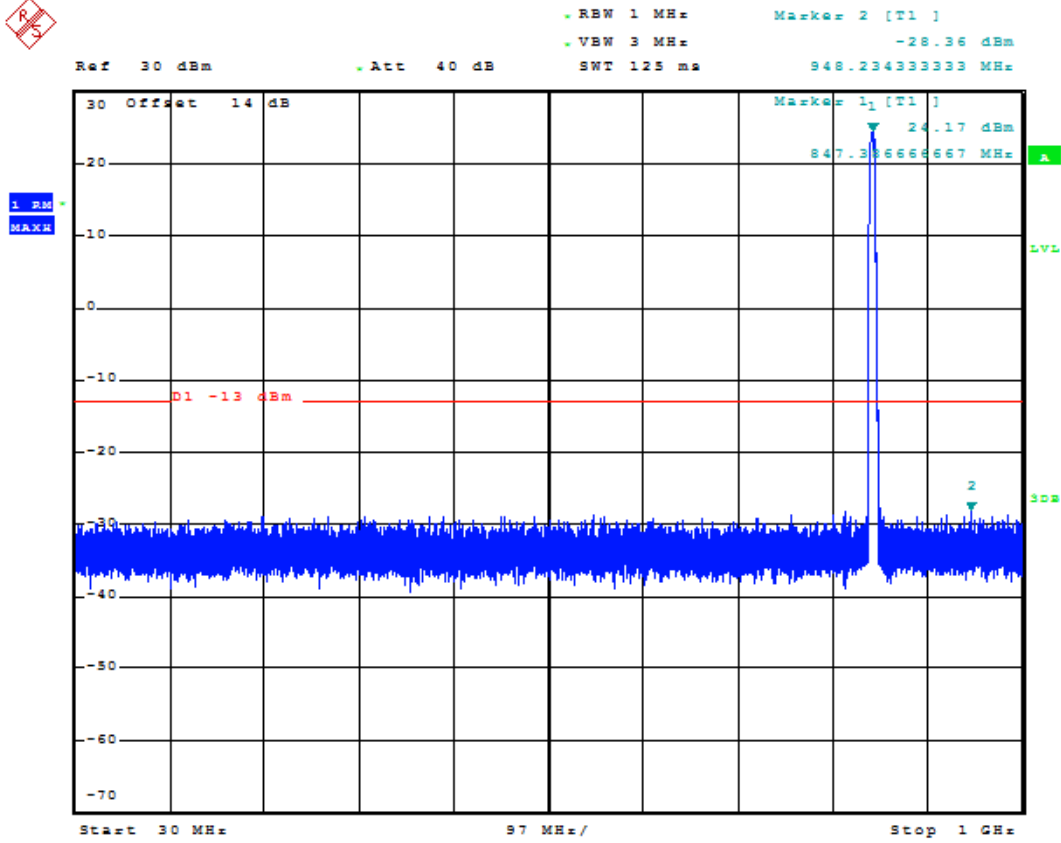
Date: 20.AUG.2018 12:06:12



Ref 30 dBm Att 40 dB RBW 10 kHz Marker 1 [T1] -41.82 dBm
VBW 30 kHz 167.91000000 kHz
SWT 300 ms



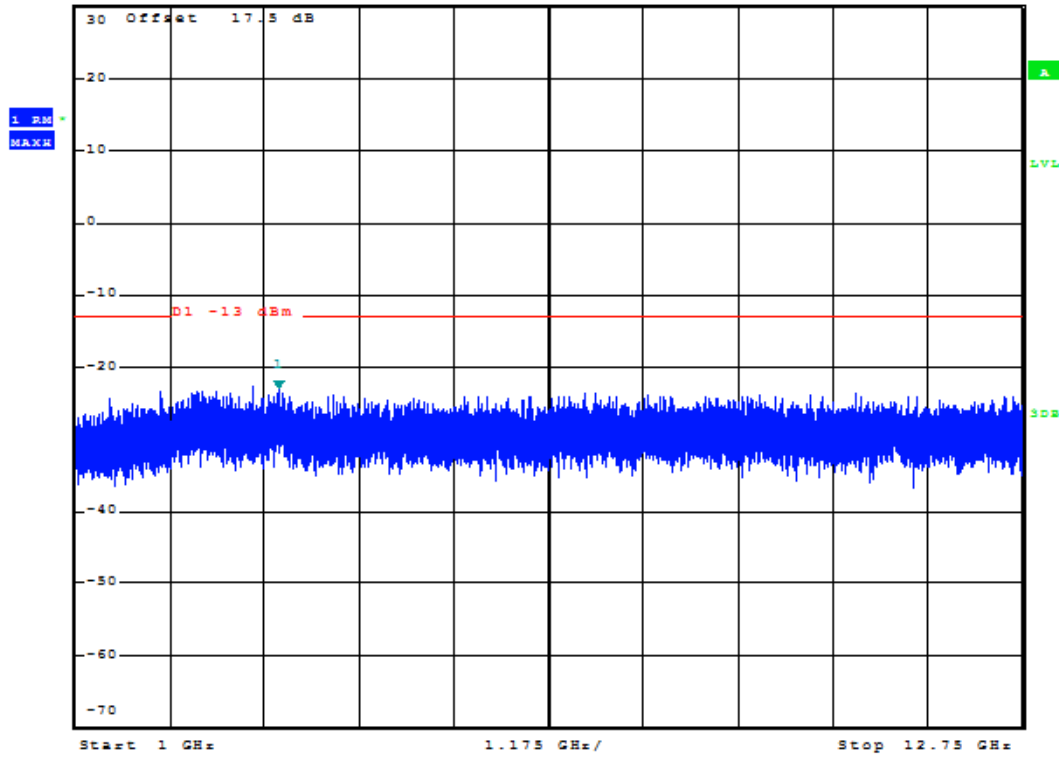
Date: 20.AUG.2018 12:06:21



Date: 20.AUG.2018 12:06:31



Ref 30 dBm Att 40 dB RBW 1 MHz Marker 1 [T1] -23.33 dBm
VBW 3 MHz SWT 125 ms 3.524683333 GHz



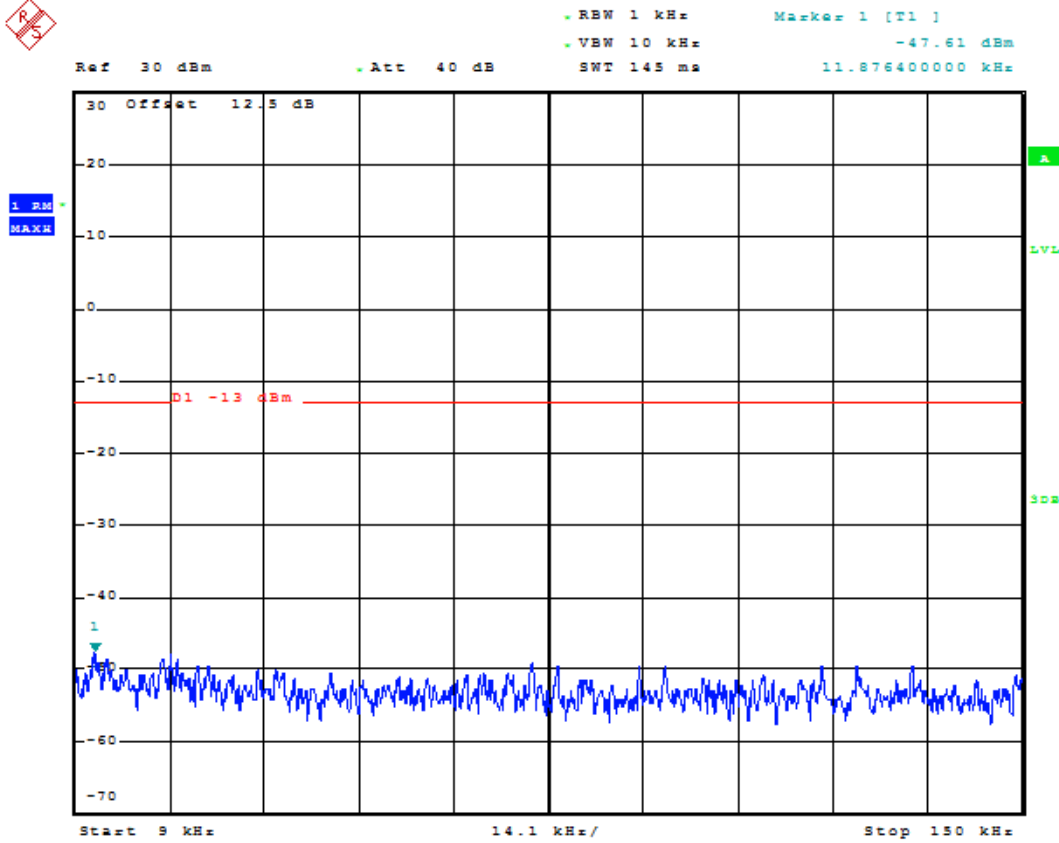
Date: 20.AUG.2018 12:06:40



1.2 Test Band=WCDMA1900

1.2.1 Test Mode=UMTS/TM1

1.2.1.1 Test Channel=LCH



Date: 20.AUG.2018 11:49:57

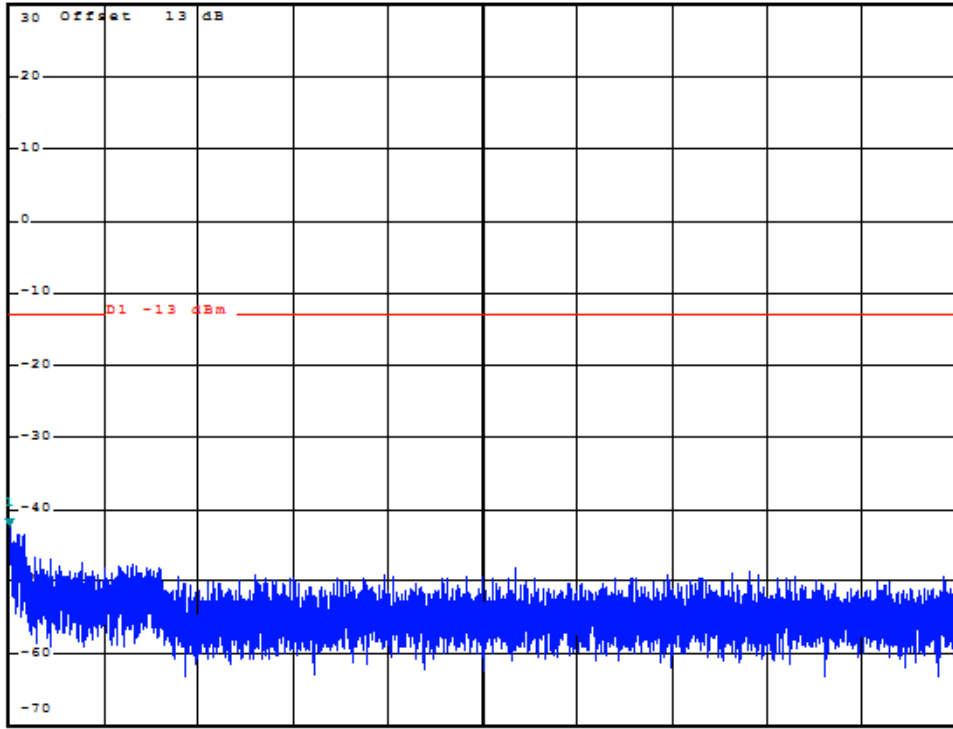


RBW 10 kHz Marker 1 [T1]
VBW 30 kHz -42.51 dBm
SWT 300 ms 160.945000000 kHz

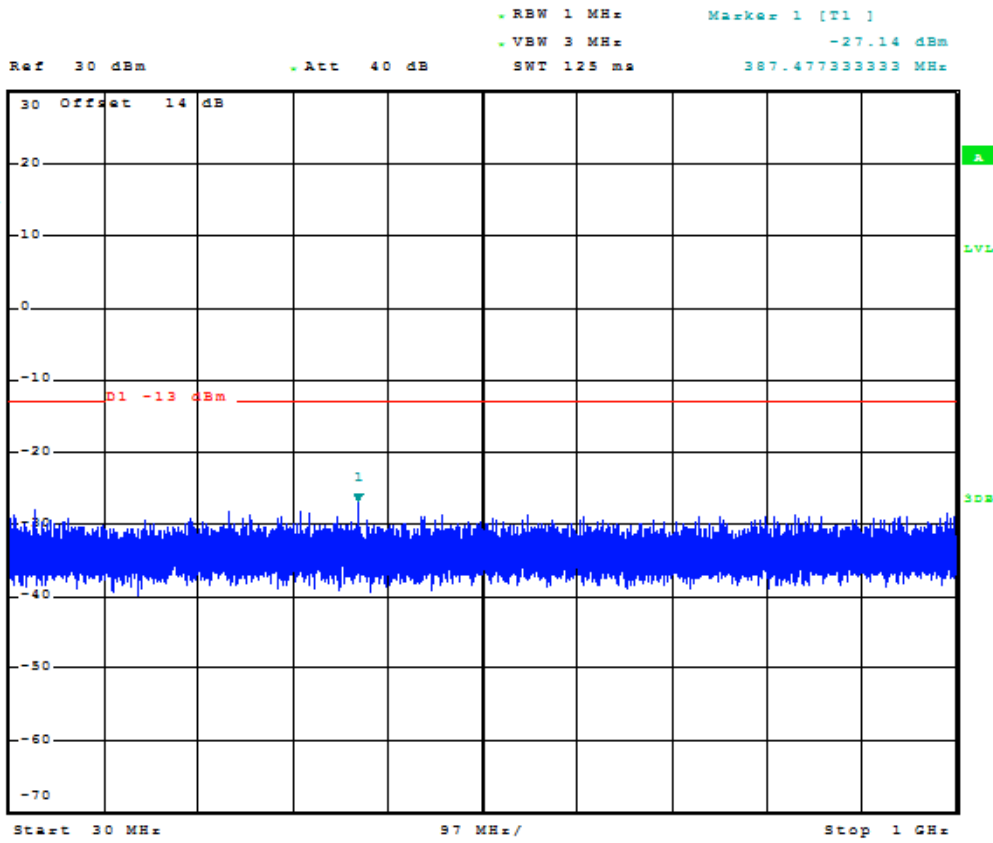
Ref 30 dBm

Att 40 dB

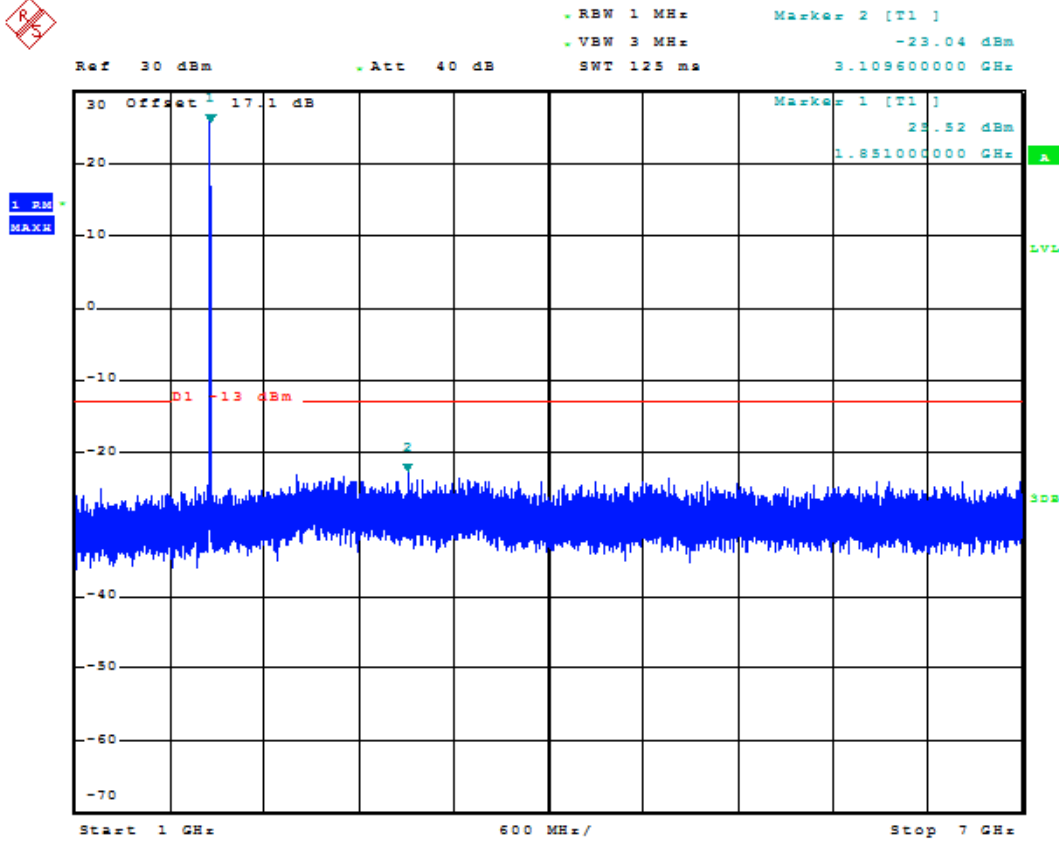
1.80
MAXH



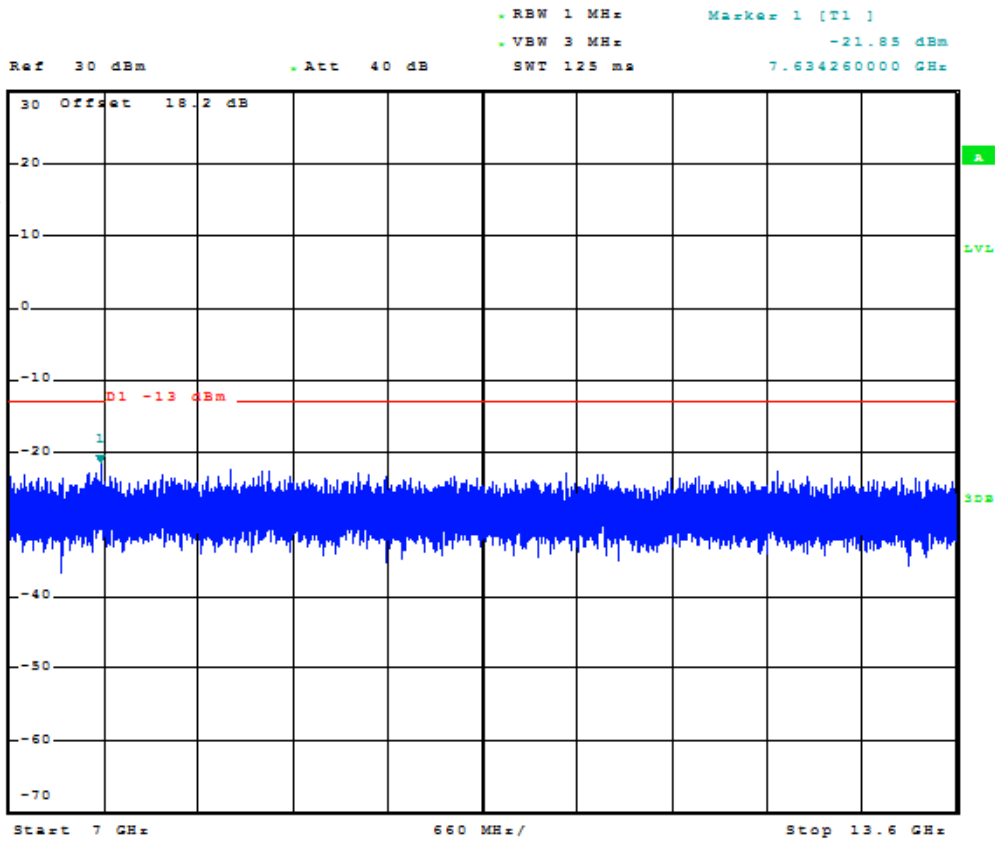
Date: 20.AUG.2018 11:50:24



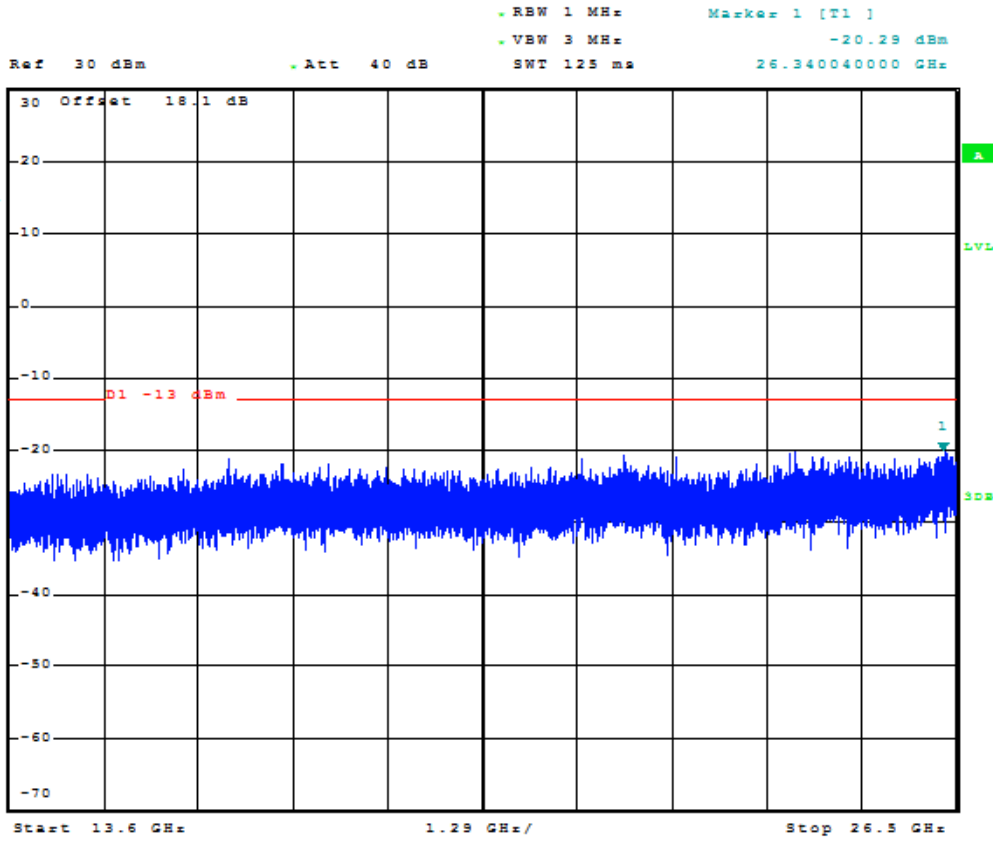
Date: 20.AUG.2018 11:50:32



Date: 20.AUG.2018 11:50:42



Date: 20.AUG.2018 11:50:51



Date: 20.AUG.2018 11:51:00



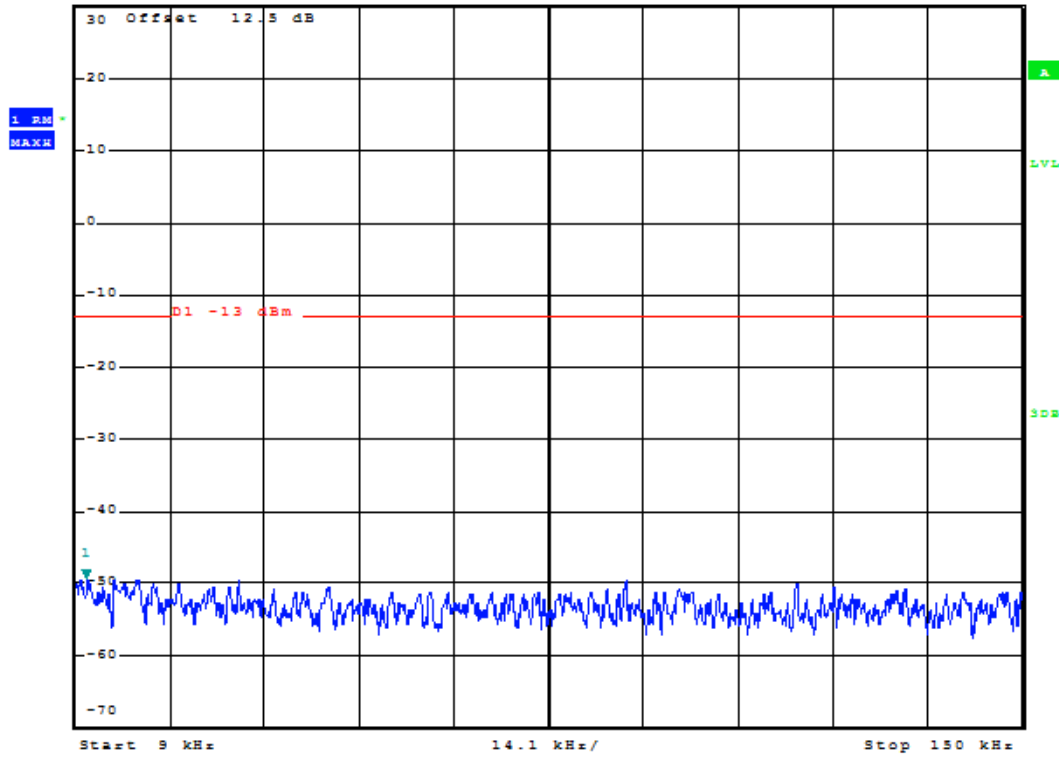
1.2.1.2 Test Channel=MCH



RBW 1 kHz Marker 1 [T1]
VBW 10 kHz -49.47 dBm
SWT 145 ms 10.682600000 kHz

Ref 30 dBm

Att 40 dB



Date: 20.AUG.2018 11:51:12

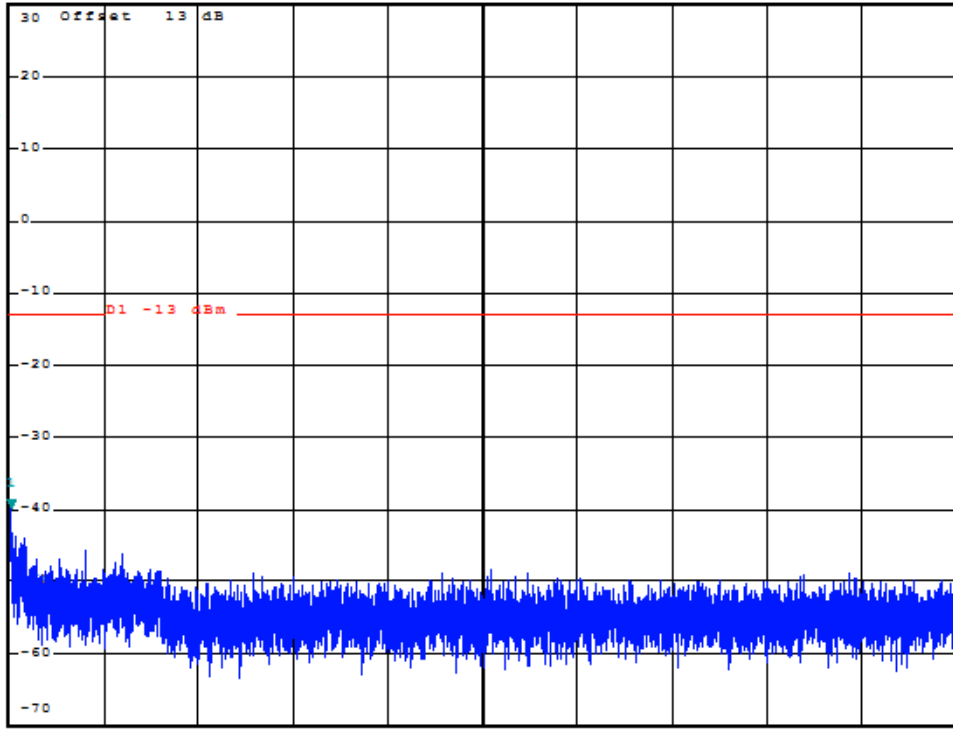


RBW 10 kHz Marker 1 [T1]
VBW 30 kHz -40.16 dBm
SWT 300 ms 177.860000000 kHz

Ref 30 dBm

Att 40 dB

1. RM
MAXH



Date: 20.AUG.2018 11:51:20

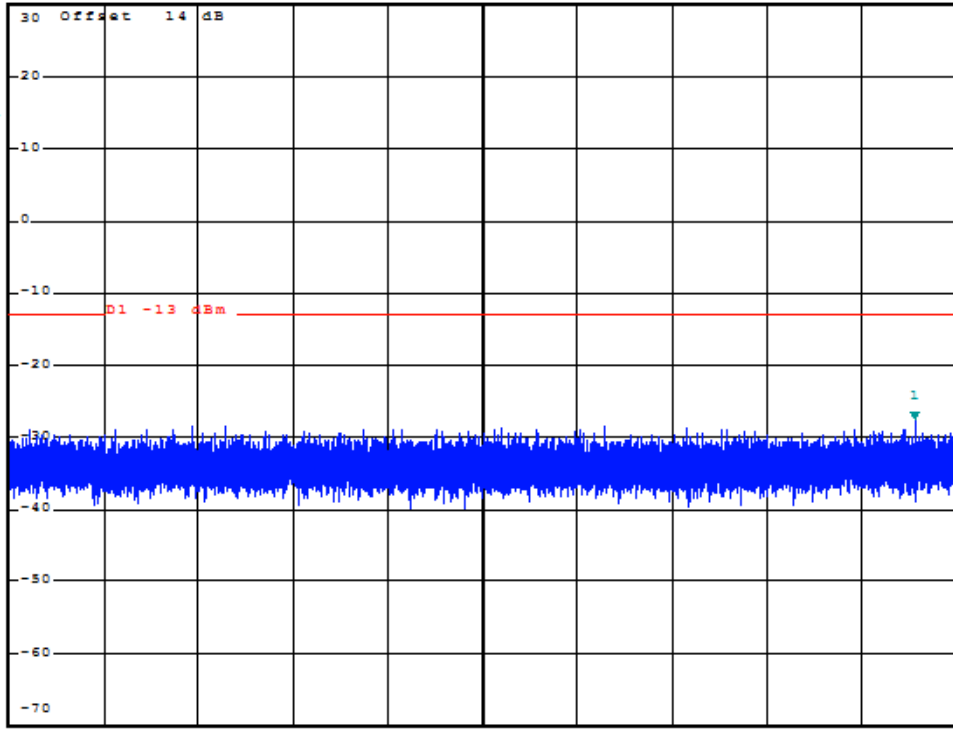


RBW 1 MHz Marker 1 [T1]
VBW 3 MHz -27.78 dBm
SWT 125 ms 958.031333333 MHz

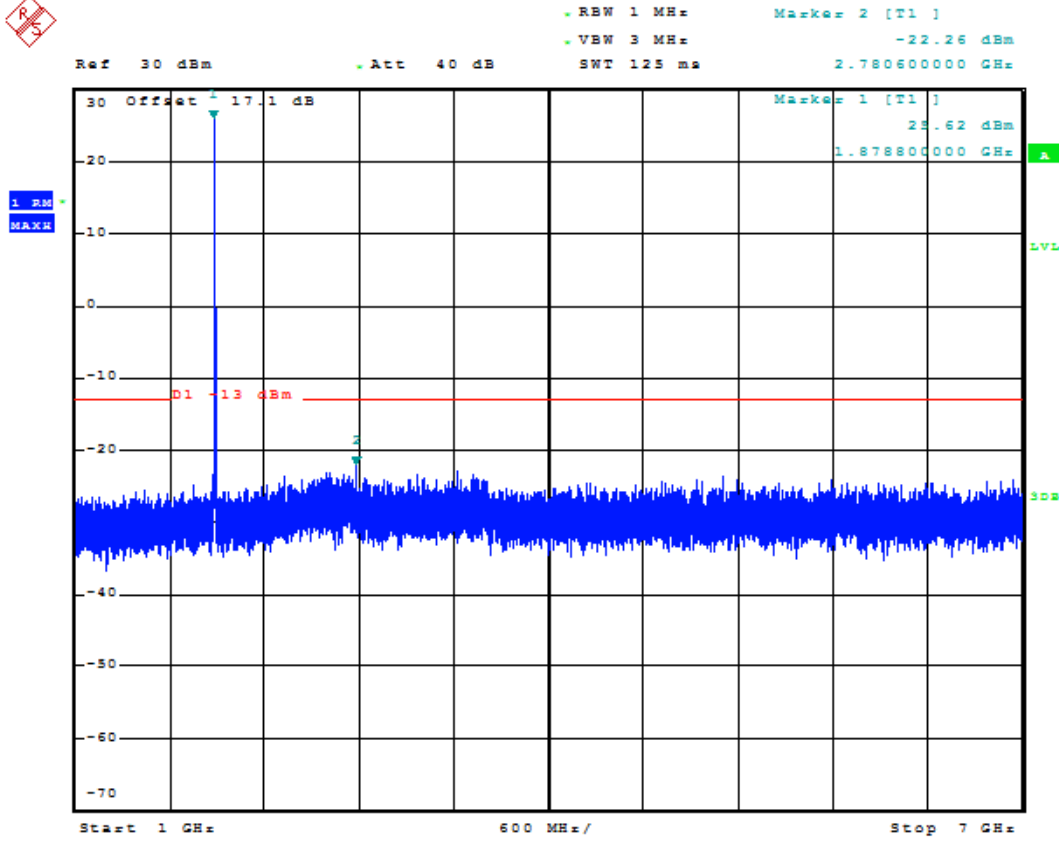
Ref 30 dBm

Att 40 dB

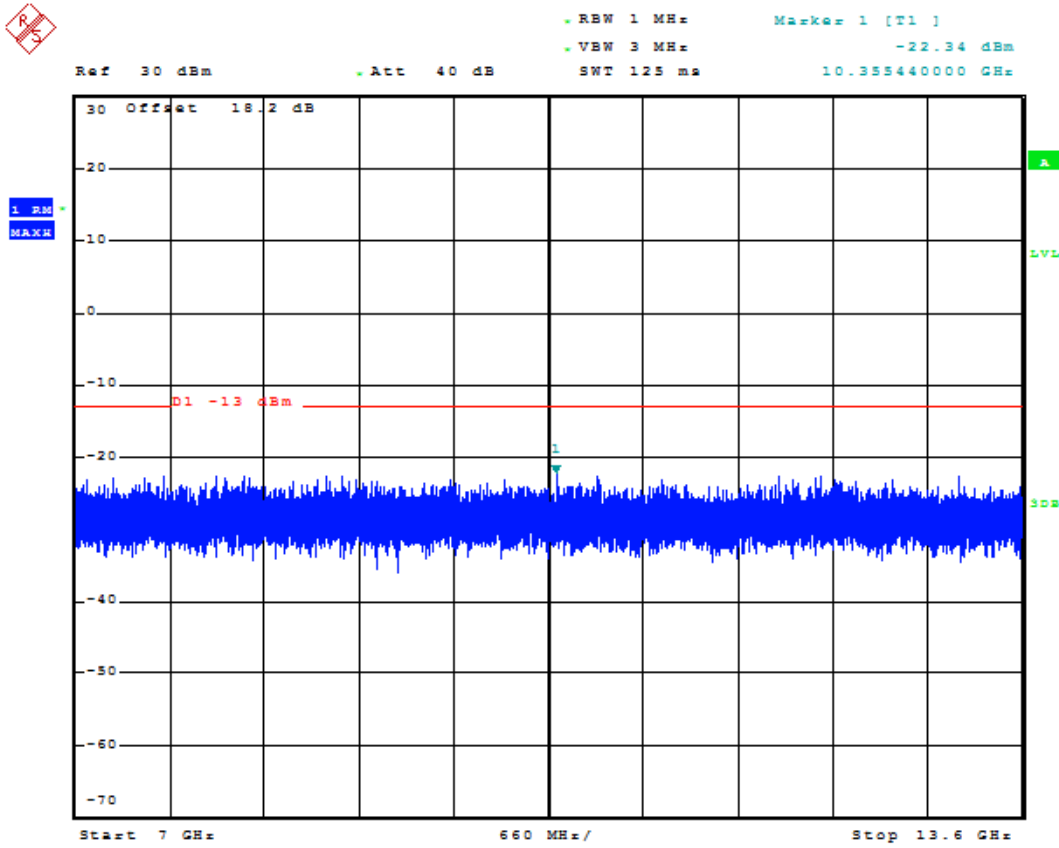
1. RBW
MAXH



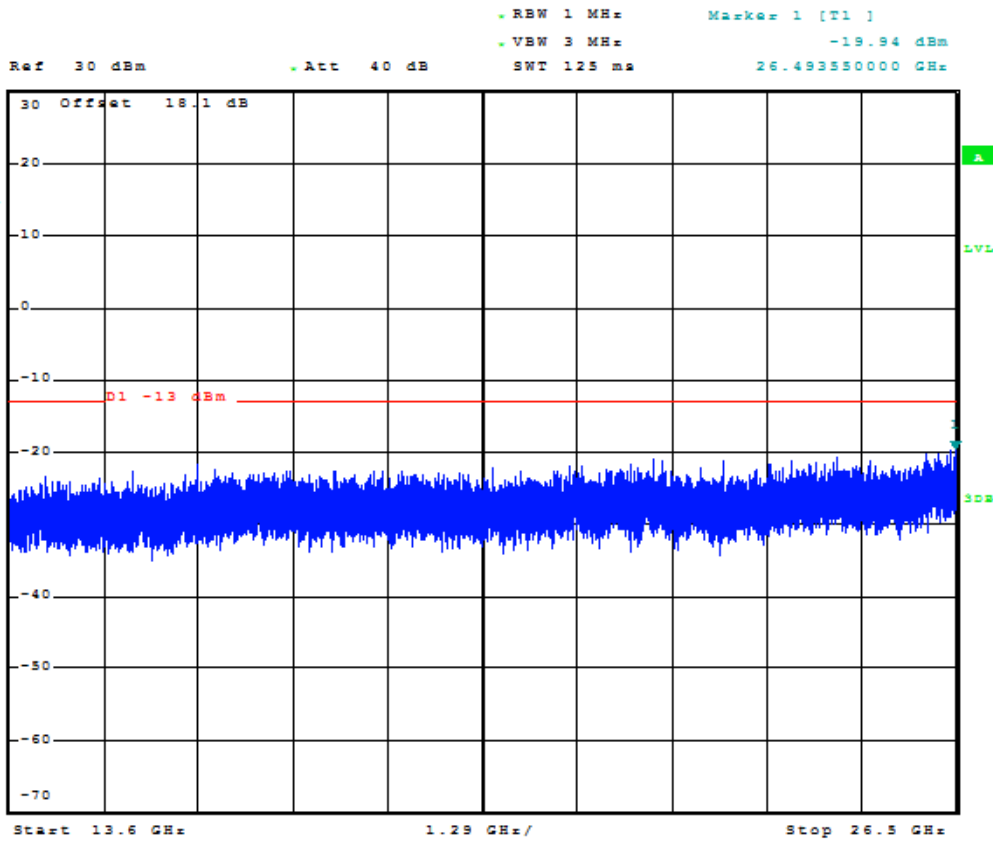
Date: 20.AUG.2018 11:51:29



Date: 20.AUG.2018 11:51:39



Date: 20.AUG.2018 11:51:47



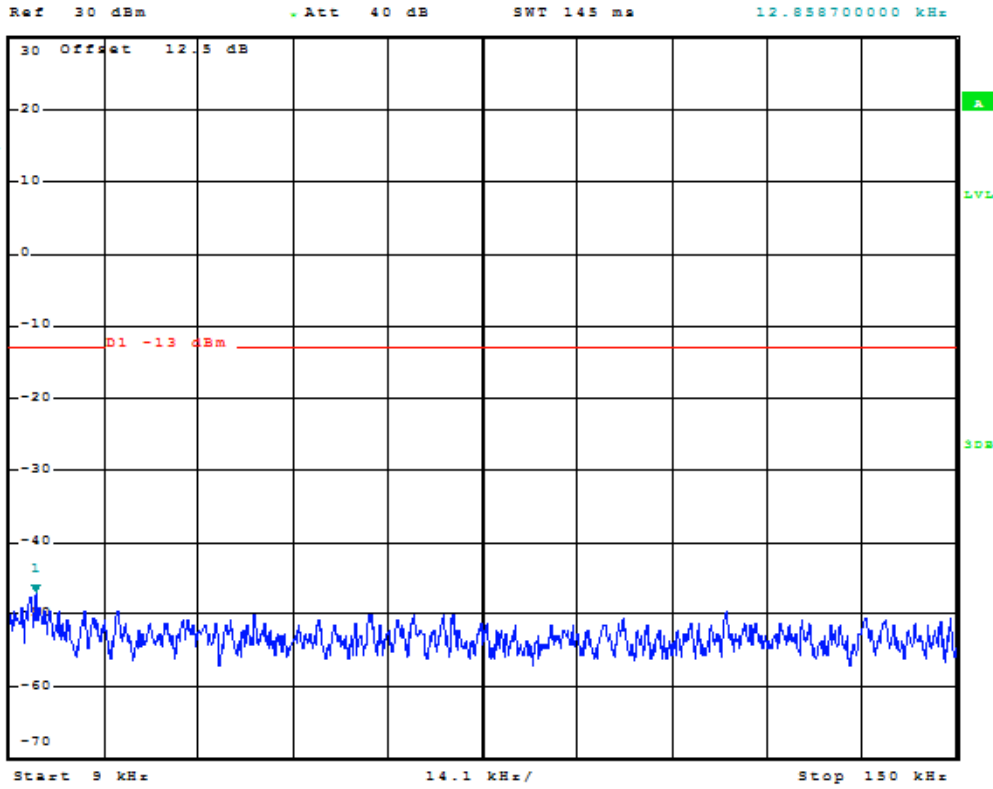
Date: 20.AUG.2018 11:51:56



1.2.1.3 Test Channel=HCH



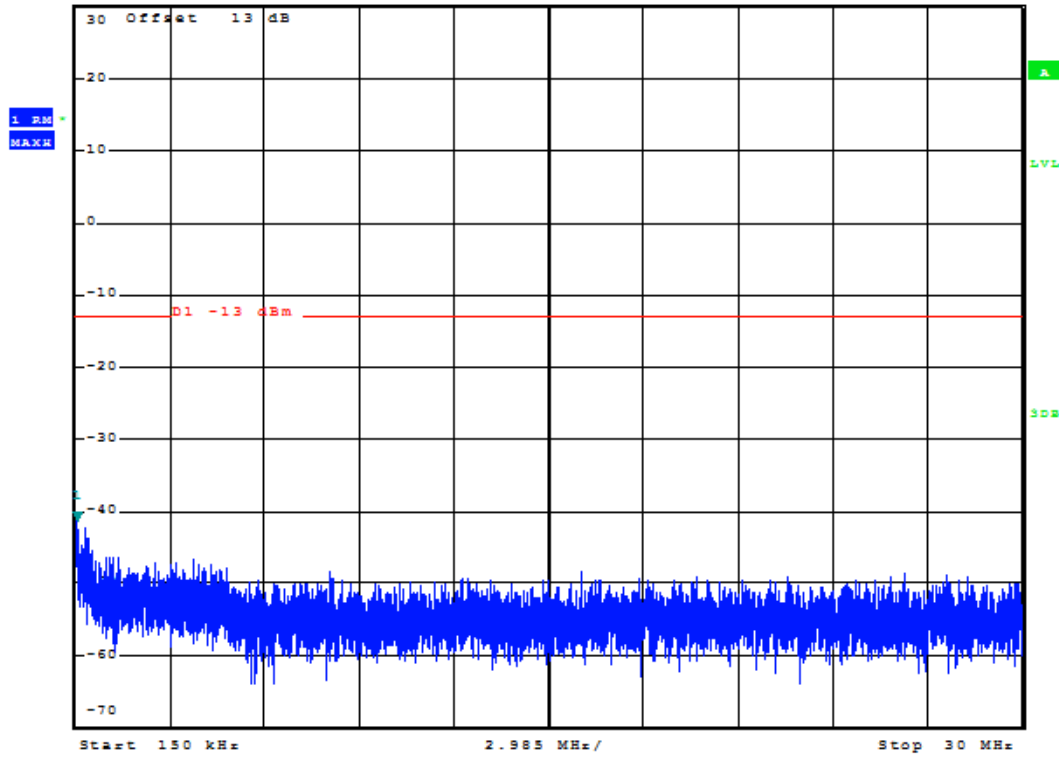
RBW 1 kHz Marker 1 [T1]
VBW 10 kHz -47.30 dBm
SWT 145 ms 12.858700000 kHz



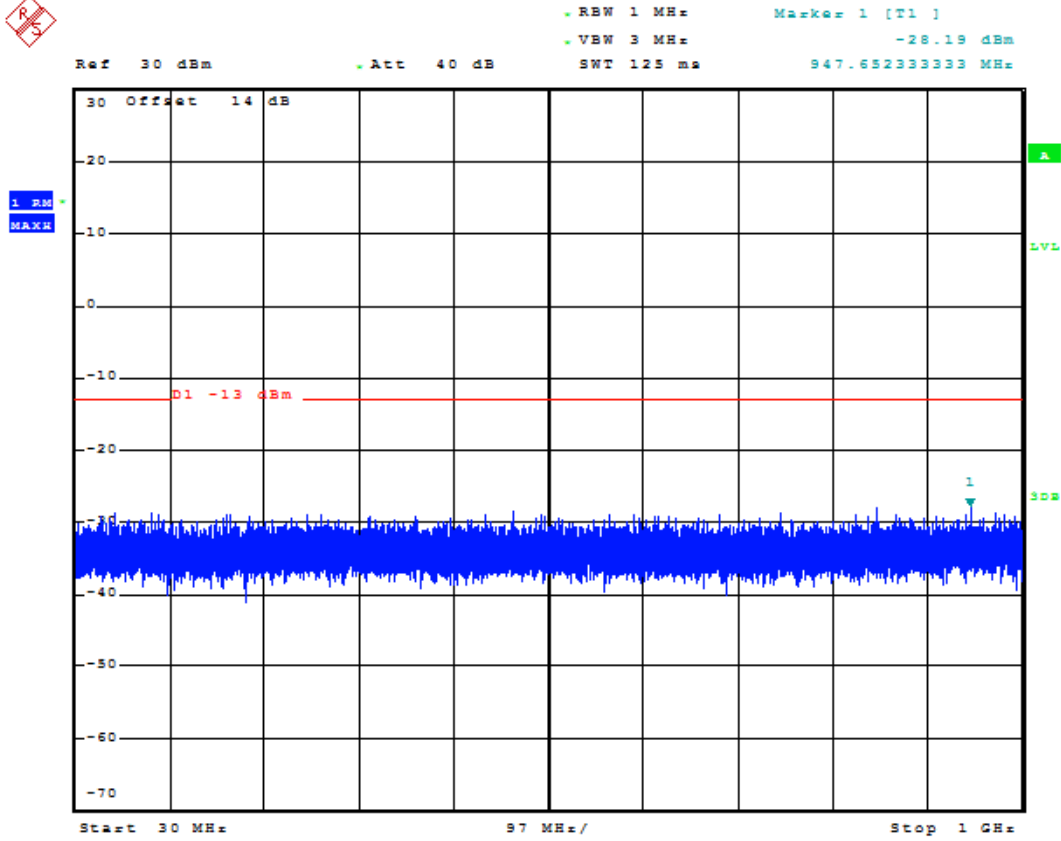
Date: 20.AUG.2018 11:52:08



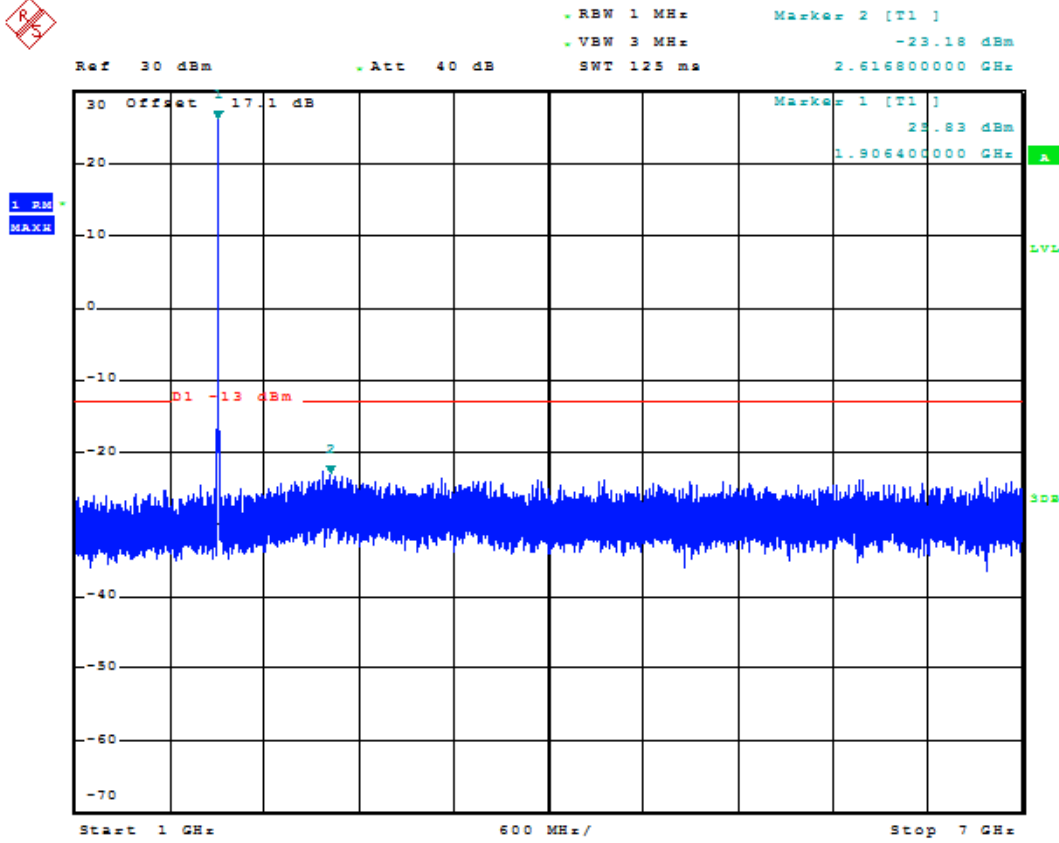
Ref 30 dBm Att 40 dB RBW 10 kHz Marker 1 [T1] -41.57 dBm
VBW 30 kHz 194.775000000 kHz
SWT 300 ms



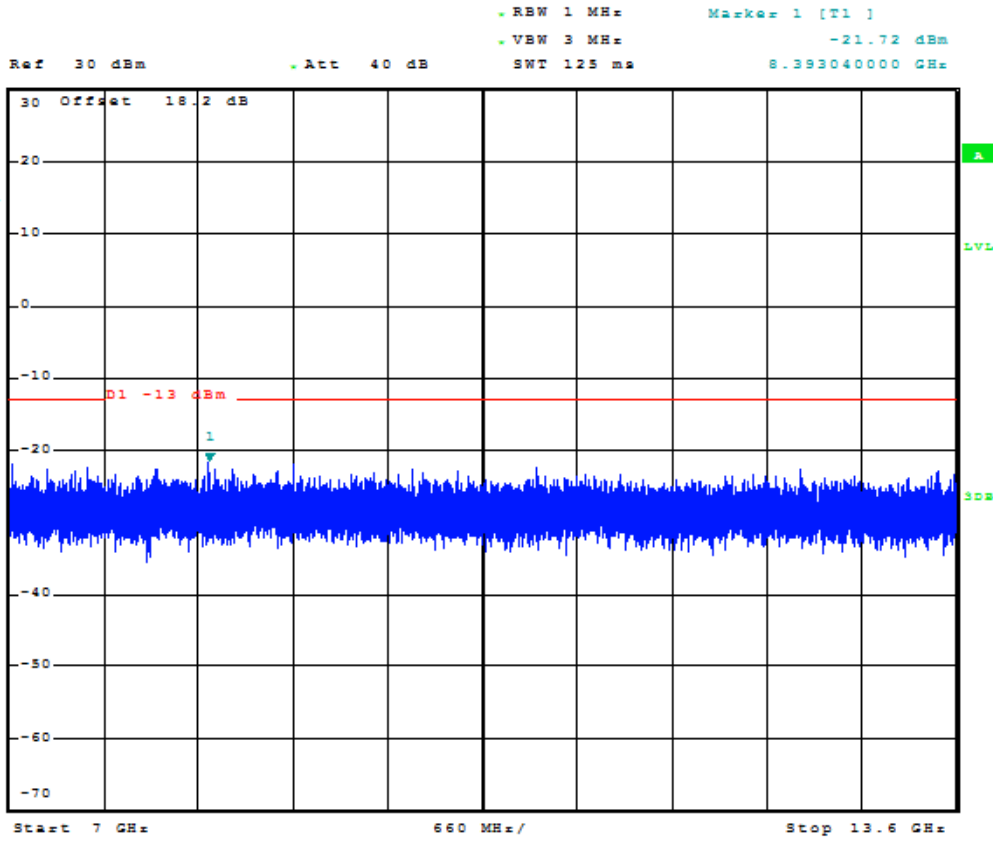
Date: 20.AUG.2018 11:52:17



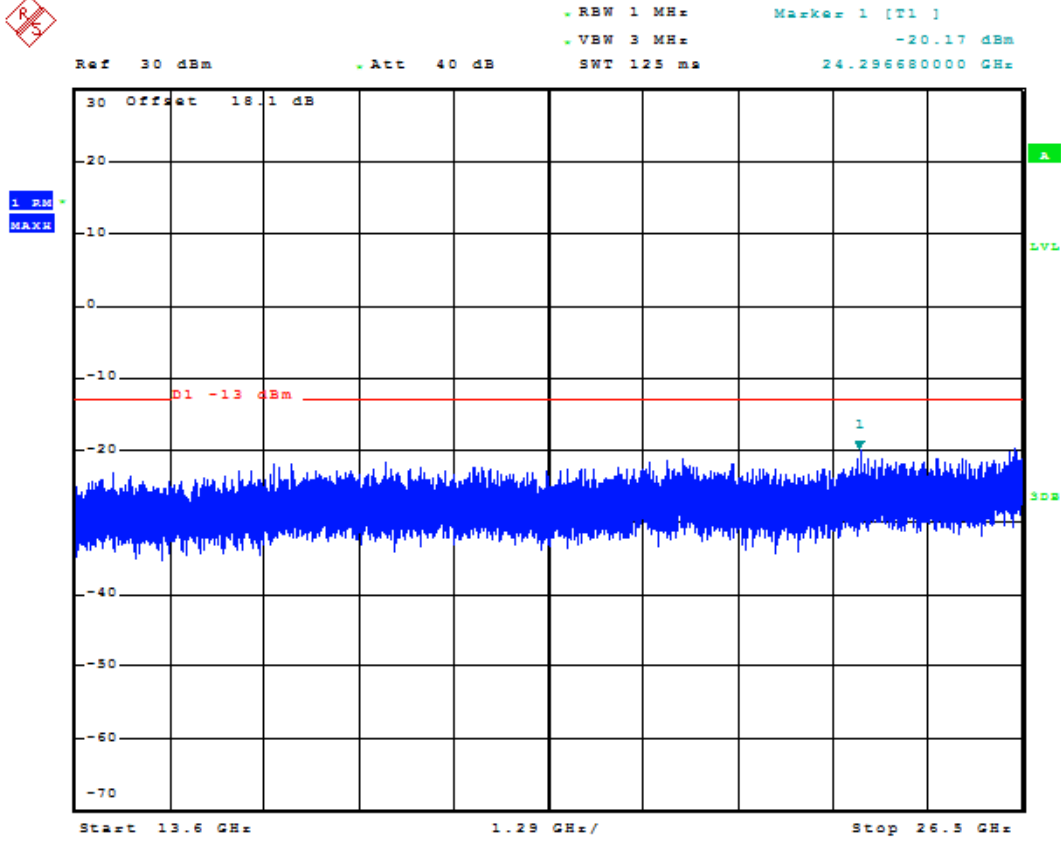
Date: 20.AUG.2018 11:52:25



Date: 20.AUG.2018 11:52:35



Date: 20.AUG.2018 11:52:44



Date: 20.AUG.2018 11:52:53



Appendix G: Field Strength of Spurious Radiation

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Horizontal		
Description:	AC Adapter : AD2083329 (30 MHz~1 GHz)		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	93.0500	-63.91	-6.45	-70.36	-13.00	-57.36	QP
2	245.3400	-67.74	-3.95	-71.69	-13.00	-58.69	QP
3	321.0000	-69.87	-2.09	-71.96	-13.00	-58.96	QP
4	400.5400	-73.89	-1.33	-75.22	-13.00	-62.22	QP
5	478.1400	-74.11	-0.22	-74.33	-13.00	-61.33	QP
6	772.0500	-75.67	4.24	-71.43	-13.00	-58.43	QP

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Vertical		
Description:	AC Adapter : AD2083329 (30 MHz~1 GHz)		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	34.8500	-62.96	-2.13	-65.09	-13.00	-52.09	QP
2	93.0500	-60.93	-6.45	-67.38	-13.00	-54.38	QP
3	200.7200	-70.16	-5.73	-75.89	-13.00	-62.89	QP
4	325.8500	-71.49	-2.03	-73.52	-13.00	-60.52	QP
5	491.7200	-70.99	-0.12	-71.11	-13.00	-58.11	QP
6	763.3200	-77.91	4.14	-73.77	-13.00	-60.77	QP



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Horizontal		
Description:	AC Adapter : 2ACS005B (30 MHz~1 GHz)		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	93.0500	-62.91	-6.45	-69.36	-13.00	-56.36	QP
2	275.4100	-68.49	-3.12	-71.61	-13.00	-58.61	QP
3	338.4600	-74.20	-1.92	-76.12	-13.00	-63.12	QP
4	526.6400	-74.40	0.38	-74.02	-13.00	-61.02	QP
5	772.0500	-75.67	4.24	-71.43	-13.00	-58.43	QP
6	971.8700	-77.02	6.69	-70.33	-13.00	-57.33	QP

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Vertical		
Description:	AC Adapter : 2ACS005B (30 MHz~1 GHz)		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	58.1300	-64.76	-3.25	-68.01	-13.00	-55.01	QP
2	77.5300	-62.14	-6.47	-68.61	-13.00	-55.61	QP
3	351.0700	-71.24	-1.82	-73.06	-13.00	-60.06	QP
4	522.7600	-71.50	0.32	-71.18	-13.00	-58.18	QP
5	713.8500	-73.93	3.43	-70.50	-13.00	-57.50	QP
6	772.0500	-73.32	4.25	-69.07	-13.00	-56.07	QP



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-69.22	14.13	-55.09	-13.00	-42.09	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1852.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9262		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-69.96	14.13	-55.83	-13.00	-42.83	peak



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1880 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9400		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-72.89	14.32	-58.57	-13.00	-45.57	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1880 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9400		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-71.58	14.32	-57.26	-13.00	-44.26	peak



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1907.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9538		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3815.200	-71.64	14.50	-57.14	-13.00	-44.14	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1907.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 2_CH9538		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3815.200	-72.04	14.50	-57.54	-13.00	-44.54	peak



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	826.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4132		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1652.800	-70.57	7.62	-62.95	-13.00	-49.95	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	826.4 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4132		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1652.800	-68.46	7.62	-60.84	-13.00	-47.84	peak



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	836.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4183		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-71.87	7.72	-64.15	-13.00	-51.15	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	836.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4183		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-67.67	7.72	-59.95	-13.00	-46.95	peak



Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	846.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4233		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-69.73	7.80	-61.93	-13.00	-48.93	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	846.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 5_CH4233		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-68.09	7.80	-60.29	-13.00	-47.29	peak



Appendix H: Frequency Stability for Temperature & Voltage

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA850	TM1	LCH	TN	VL	2.56	0.003102	±2.5	PASS
			TN	VN	4.61	0.005576	±2.5	PASS
			TN	VH	3.43	0.004154	±2.5	PASS
		MCH	TN	VL	1.07	0.001277	±2.5	PASS
			TN	VN	4.61	0.001660	±2.5	PASS
			TN	VH	-2.15	-0.002572	±2.5	PASS
		HCH	TN	VL	-1.51	-0.001784	±2.5	PASS
			TN	VN	4.61	0.002379	±2.5	PASS
			TN	VH	-0.18	-0.000216	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA850	TM1	LCH	TN	VL	9.80	0.005288	±2.5	PASS
			TN	VN	11.99	0.006475	±2.5	PASS
			TN	VH	10.64	0.005741	±2.5	PASS
		MCH	TN	VL	7.57	0.004026	±2.5	PASS
			TN	VN	11.99	0.005373	±2.5	PASS
			TN	VH	6.81	0.003620	±2.5	PASS
		HCH	TN	VL	4.35	0.002280	±2.5	PASS
			TN	VN	11.99	0.002640	±2.5	PASS
			TN	VH	4.67	0.002448	±2.5	PASS



Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA850	TM1	LCH	VN	-30	2.38	0.002880	±2.5	PASS
			VN	-20	4.58	0.005539	±2.5	PASS
			VN	-10	3.34	0.004044	±2.5	PASS
			VN	0	1.97	0.002382	±2.5	PASS
			VN	10	3.02	0.003656	±2.5	PASS
			VN	20	6.23	0.007533	±2.5	PASS
			VN	30	6.52	0.007884	±2.5	PASS
			VN	40	5.20	0.006296	±2.5	PASS
			VN	50	2.53	0.003065	±2.5	PASS
WCDMA850	TM1	MCH	VN	-30	3.60	0.004304	±2.5	PASS
			VN	-20	4.76	0.005691	±2.5	PASS
			VN	-10	1.56	0.001860	±2.5	PASS
			VN	0	2.01	0.002408	±2.5	PASS
			VN	10	-0.29	-0.000347	±2.5	PASS
			VN	20	1.14	0.001368	±2.5	PASS
			VN	30	2.99	0.003575	±2.5	PASS
			VN	40	0.60	0.000711	±2.5	PASS
			VN	50	-10.99	-0.013132	±2.5	PASS
WCDMA850	TM1	HCH	VN	-30	-0.60	-0.000703	±2.5	PASS
			VN	-20	-1.48	-0.001748	±2.5	PASS
			VN	-10	0.38	0.000451	±2.5	PASS
			VN	0	0.08	0.000090	±2.5	PASS
			VN	10	0.21	0.000252	±2.5	PASS
			VN	20	1.21	0.001424	±2.5	PASS
			VN	30	-4.00	-0.004722	±2.5	PASS
			VN	40	-2.09	-0.002469	±2.5	PASS
			VN	50	-2.82	-0.003334	±2.5	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA1900	TM1	LCH	VN	-30	15.34	0.008278	±2.5	PASS
			VN	-20	10.03	0.005412	±2.5	PASS
			VN	-10	10.76	0.005807	±2.5	PASS
			VN	0	9.92	0.005354	±2.5	PASS
			VN	10	9.57	0.005165	±2.5	PASS
			VN	20	12.77	0.006895	±2.5	PASS
			VN	30	12.85	0.006936	±2.5	PASS
			VN	40	9.51	0.005132	±2.5	PASS
			VN	50	11.58	0.006252	±2.5	PASS
WCDMA1900	TM1	MCH	VN	-30	7.89	0.004196	±2.5	PASS
			VN	-20	7.28	0.003872	±2.5	PASS
			VN	-10	27.13	0.014431	±2.5	PASS
			VN	0	9.70	0.005162	±2.5	PASS
			VN	10	12.73	0.006769	±2.5	PASS
			VN	20	6.52	0.003466	±2.5	PASS
			VN	30	5.55	0.002954	±2.5	PASS
			VN	40	10.30	0.005479	±2.5	PASS
			VN	50	6.79	0.003612	±2.5	PASS
WCDMA1900	TM1	HCH	VN	-30	6.35	0.003328	±2.5	PASS
			VN	-20	2.88	0.001512	±2.5	PASS
			VN	-10	3.52	0.001848	±2.5	PASS
			VN	0	4.32	0.002264	±2.5	PASS
			VN	10	5.72	0.003000	±2.5	PASS
			VN	20	2.35	0.001232	±2.5	PASS
			VN	30	6.90	0.003616	±2.5	PASS
			VN	40	3.22	0.001688	±2.5	PASS
			VN	50	3.94	0.002064	±2.5	PASS