

FCC

RF Test Report

Applicant : Shenzhen Tuge Information Limited Inc
Product Type : 4G Wireless Data Terminal
Trade Name : MASTER ROAM
Model Number : T3
Test Specification : FCC 47 CFR PART 27L
ANSI/TIA-603-D 2010
Receive Date : Mar. 18, 2017
Test Period : Mar. 24 ~ Apr. 18, 2017
Issue Date : May 03, 2017

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	May 03, 2017	Initial Issue	Snow Wang

Verification of Compliance

Issued Date: May 03, 2017

Applicant : Shenzhen Tuge Information Limited Inc

Product Type : 4G Wireless Data Terminal

Trade Name : MASTER ROAM

Model Number : T3

FCC ID : 2AIC4-TGT3

EUT Rated Voltage : DC 5V, 1A

Test Voltage : 120 Vac / 60 Hz

Applicable Standard : FCC 47 CFR PART 27L
ANSI/TIA-603-D 2010

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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<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. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By :
(Manager)

Fly Lu
(Fly Lu)

Reviewed By :
(Testing Engineer)

Eric Ou Yang
(Eric Ou Yang)

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1 General Information

1.1. EUT Description

Applicant	Shenzhen Tuge Information Limited Inc Room 406,25 Building ,Nanshan Science Park west industrial area, Shenzhen, Guangdong Province,China			
Manufacturer	Shenzhen Tuge Information Limited Inc Room 406,25 Building ,Nanshan Science Park west industrial area, Shenzhen, Guangdong Province,China			
Product Type	4G Wireless Data Terminal			
Trade Name	MASTER ROAM			
Model Number	T3			
FCC ID	2AIC4-TGT3			
Module use	QUALCOMM, MSM8916			
IMEI No.	869666028463824			
Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
WCDMA(RMC12.2K)/ HSDPA/ HSUPA	IV	1712.4 ~ 1752.6	2112.4 ~ 2152.6	QPSK
Channel Control	Auto			
Antenna information	Type	Max. Gain (dBi)		
	Internal Antennan	WCDMA/ HSDPA/ HSUPA Band IV		-1.1

Frequency Band	Max. RF Output Power (W)	E.R.P. /E.I.R.P. (W)	
WCDMA/ HSDPA/ HSUPA Band IV	0.395	0.230	(E.I.R.P.)

Frequency Band	Occupied Bandwidth (MHz)	Emission Designator
WCDMA/ HSDPA/ HSUPA Band IV	4.1506	4M15F9W

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
WCDMA Band IV Link Mode

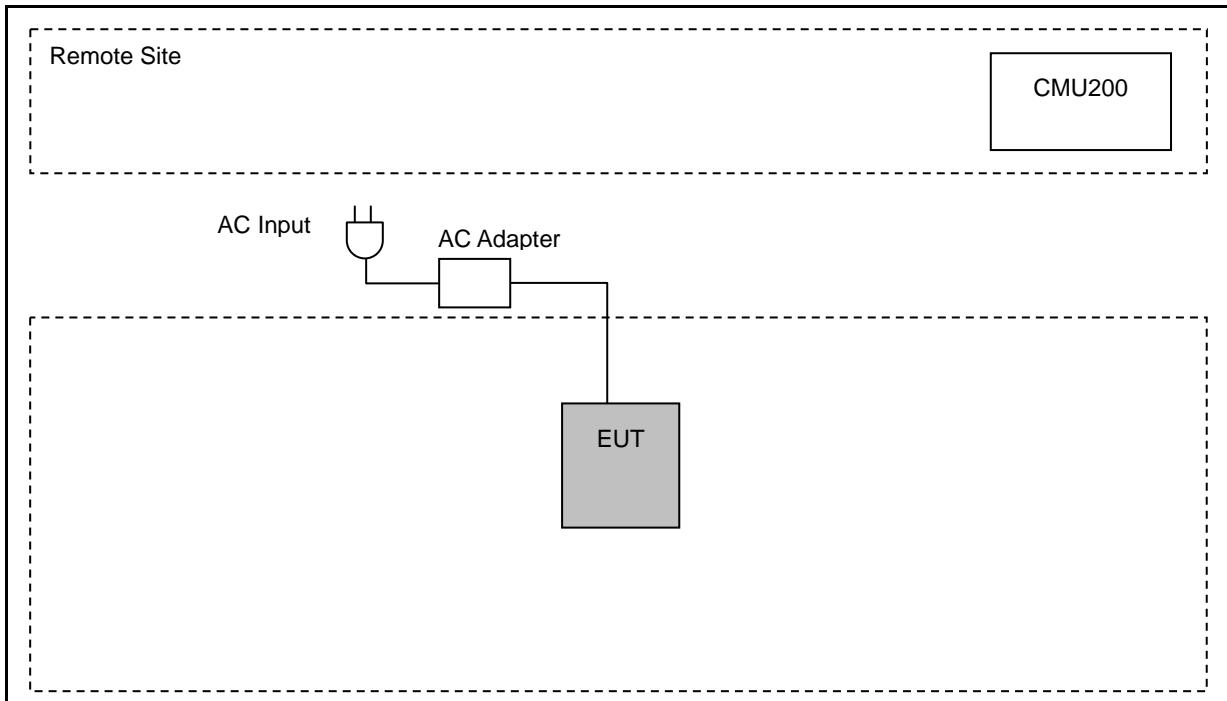
Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

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 Exercise Software

1	Setup the EUT and Base Station (CMU200) as shown on 1.4.
2	Turn on the power of all equipment.

1.4. Configuration of Test System Details



1.5. 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

1.6. Summary of Test Result

FCC Rule	IC Rule	Description	Result
§2.1046	RSS-139 (6.5)	Conducted Output Power	Pass
§27. 50(d)(4)	RSS-139 (6.5) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	Pass
§27.50 KDB 971168 D01 (5.7.1)	RSS-139 (6.5)	Peak to average ratio	Pass
§2.1049 §27.53(g)	RSS-GEN(6.6) RSS-139 (3.1)	Emission Bandwidth & Occupied Bandwidth	Pass
§2.1051 §27.53(h)	RSS-139 (6.6)	Band Edge Measurement	Pass
§2.1051 §27.53(h)	RSS-139 (6.6)	Conducted Spurious Emission	Pass
§2.1053 §27.53(h)	RSS-139 (6.6)	Field Strength of Spurious Radiation	Pass
§2.1055 §27. 54	RSS-GEN(6.11) RSS-139 (6.4)	Frequency Stability for Temperature & Voltage	Pass

2 Test Results

2.1. RF Output Power Test

- **Limit**

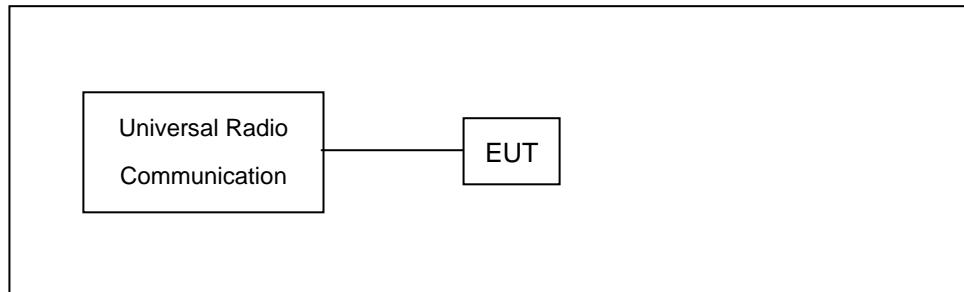
N/A

- **Test Instruments**

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

- **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.

For FCC Part 27.50(d)(2): The EIRP of mobile transmitters are limited to 1 watt for 1710~1755 MHz.

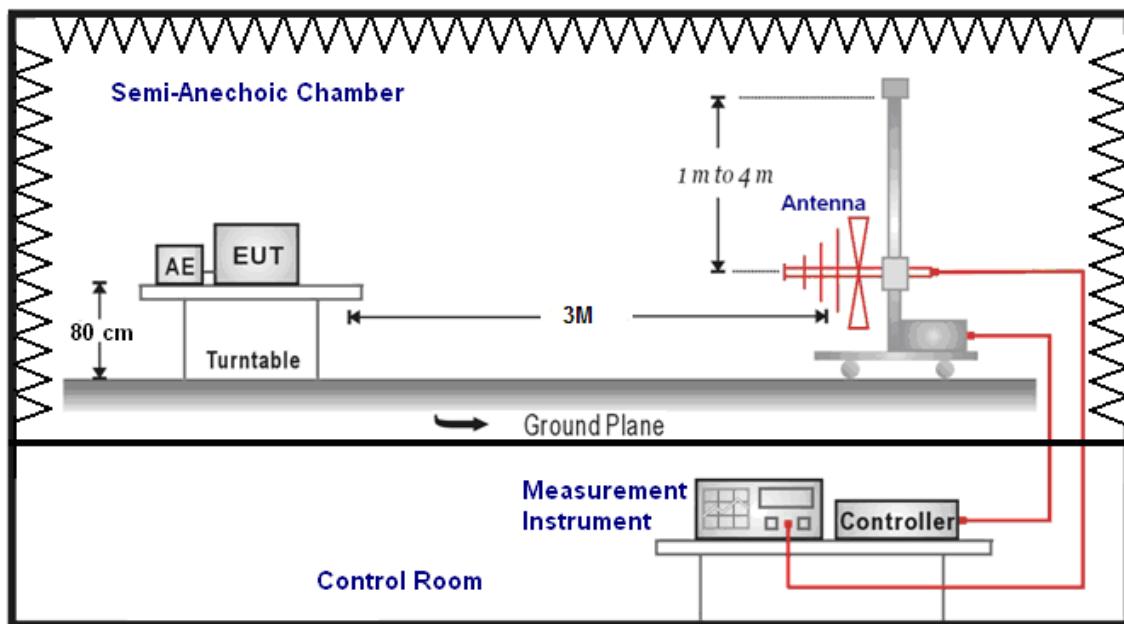
■ Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
RF Pre-selector	Agilent	N9039A	MY46520256	03/30/2016	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	03/30/2016	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/11/2016	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/12/2017	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	416	10/13/2016	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	419	11/03/2016	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/06/2016	1 year
Horn Antenna (18~40GHz)	ETS	3116	00086467	09/05/2016	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/18/2016	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	02/20/2017	1 year
Microwave Cable	EMCI	EMC-104-SM-SM-14000	140202	02/20/2017	1 year
Microwave Cable	EMCI	EMC104-SM-SM-600	140301	02/20/2017	1 year
Signal Generator	Agilent	E8257D	MY44320425	03/02/2017	1 year
Test Site	ATL	TE01	888001	08/29/2016	1 year

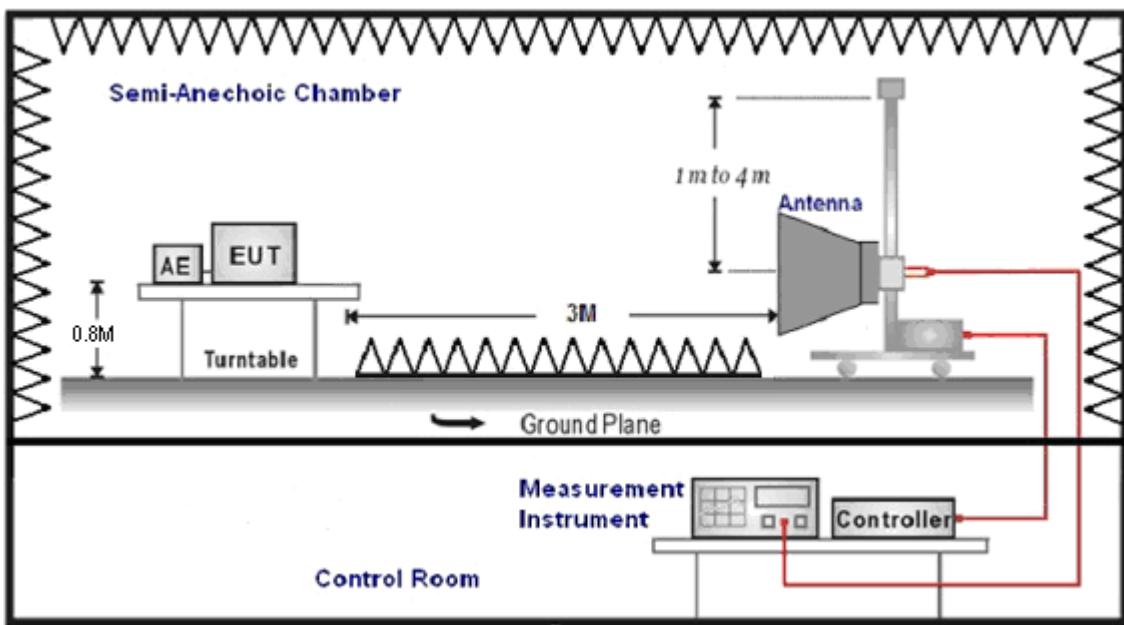
Note: N.C.R. = No Calibration Request.

■ Setup

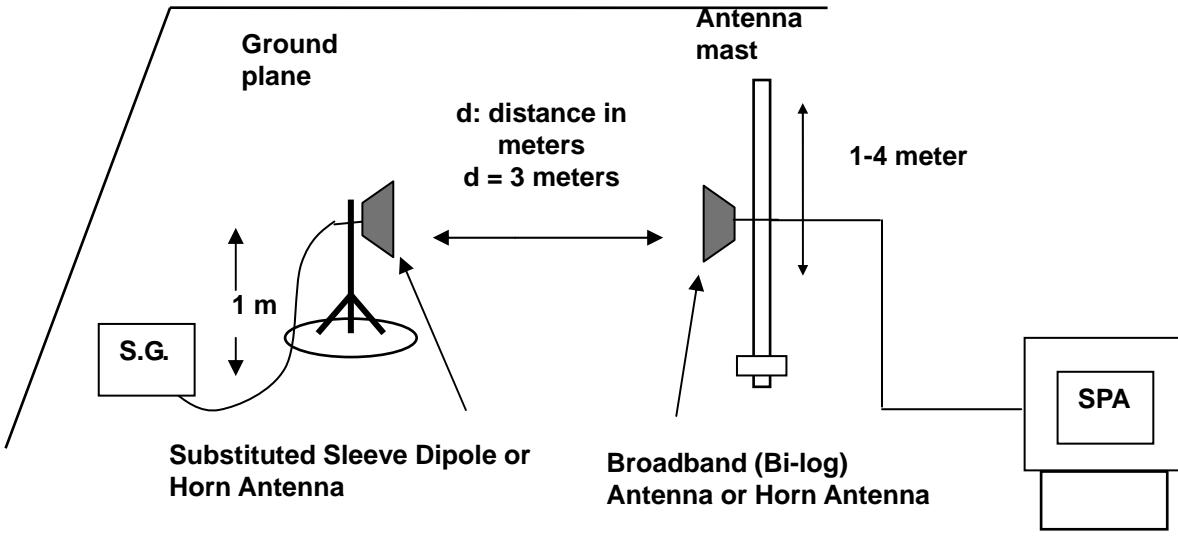
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RWB and VBW is 5MHz for LTE mode.
- 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.
- 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.
- E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- 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

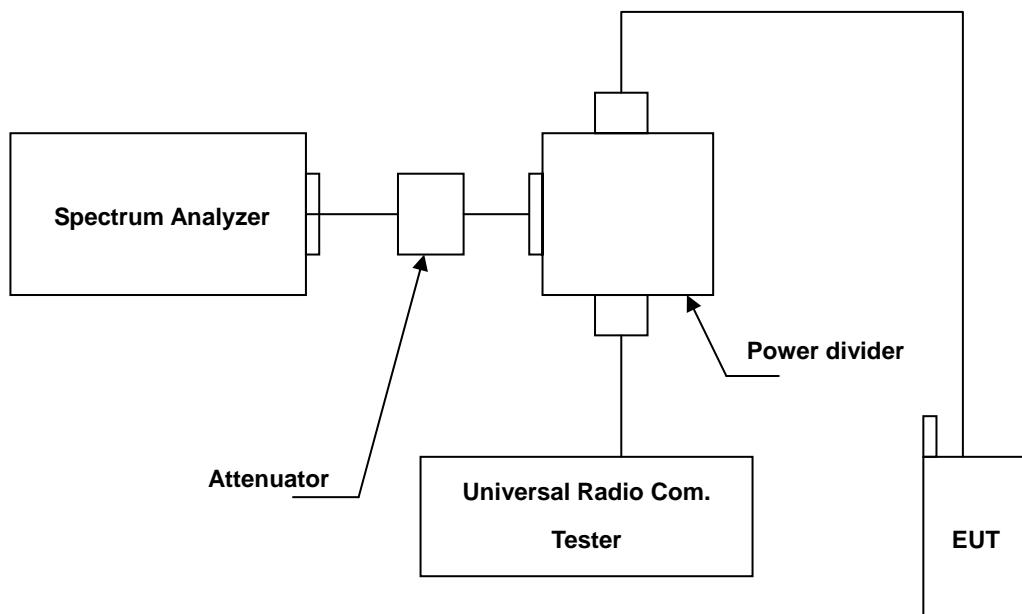
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

■ Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Cycle
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Spectrum Analyzer	Agilent	N9030A	MY53120541	12/22/2016	1 year
Attenuator	Woken	WK0602-10	001	06/06/2016	2 year
Power Divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Setup



■ Test Procedure

The measurement is made according to FCC rules:

- a. Set resolution/measurement bandwidth signal's occupied bandwidth;
- b. Set the number of counts to a value that stabilizes the measured CCDF curve;
- c. 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:

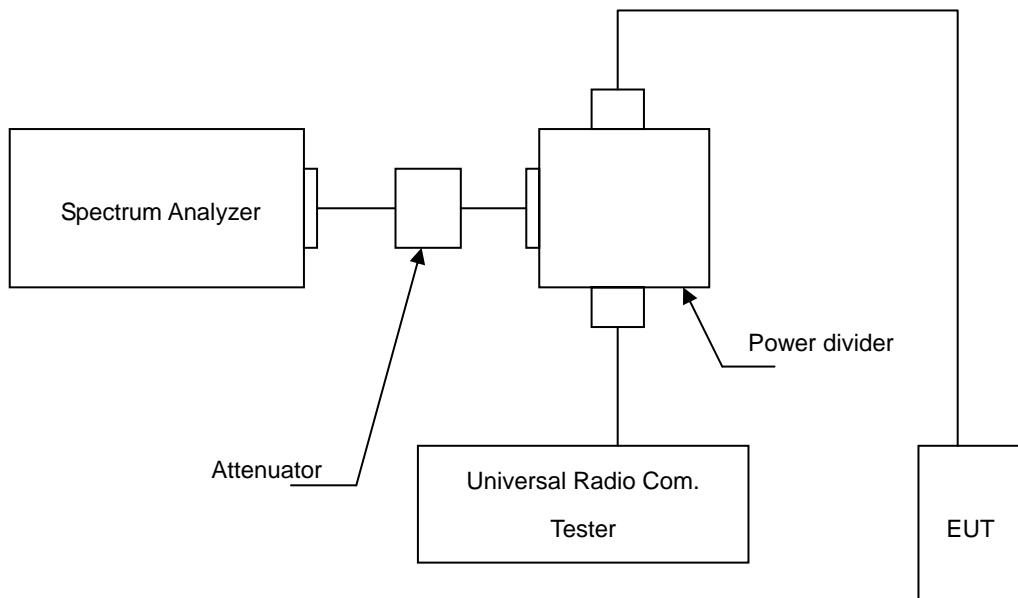
N/A.

■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Spectrum Analyzer	Agilent	N9030A	MY53120541	12/22/2016	1 year
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Attenuator	Woken	WK0602-10	001	06/06/2016	2 year
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Setup



■ Test Procedure

The measurement is made according to FCC rules part 22 and 24:

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 $\pm 10\text{Hz}$

2.5. Band Edge Test

■ Limit

The Band Edge Limit:

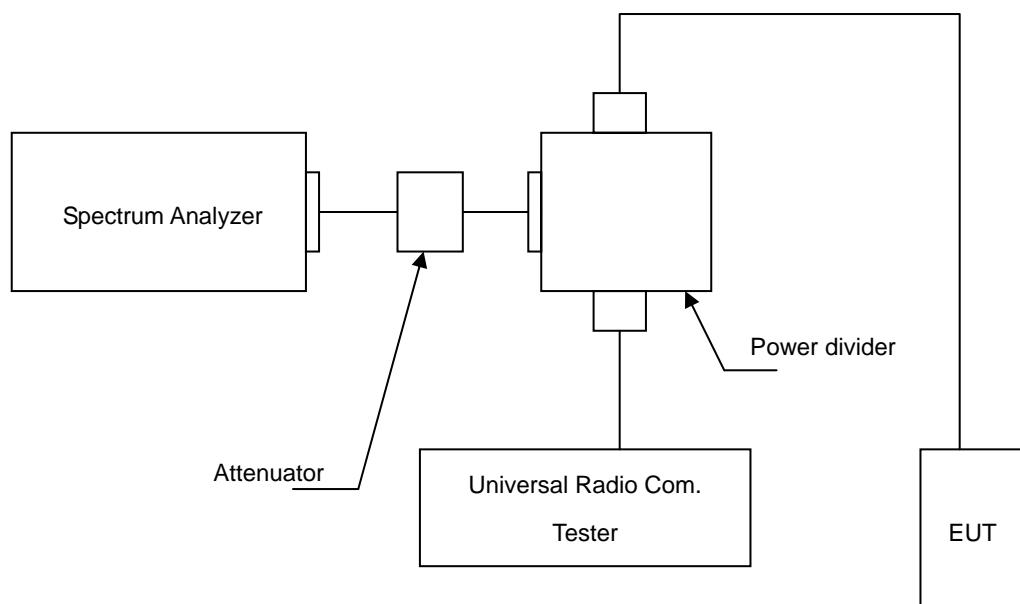
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Spectrum Analyzer	Agilent	N9030A	MY53120541	12/22/2016	1 year
Attenuator	Woken	WK0602-10	001	06/06/2016	2 year
Power Divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Setup



■ Test Procedure

The measurement is made according to FCC rules part 22 and 24 and 27

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. Setting RBW as roughly BW/100.
3. The band edge setting:
 - a. RB=51 kHz; VB=160 kHz for WCDMA Band V and WCDMA Band II and WCDMA Band IV.

■ Uncertainty

The measurement uncertainty is defined as $\pm 10\text{Hz}$

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.

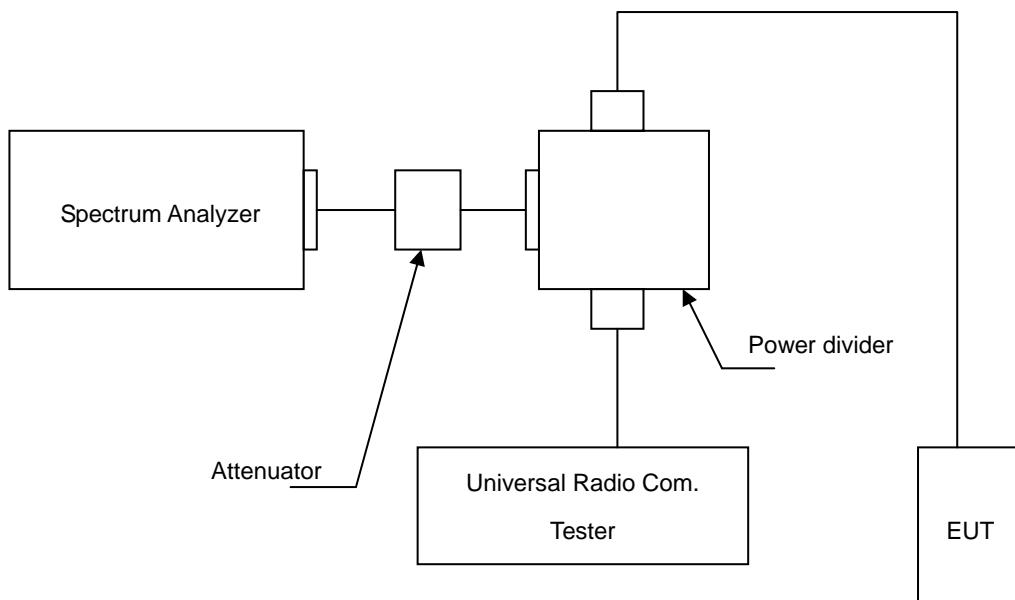
■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Spectrum Analyzer	Agilent	N9030A	MY53120541	12/22/2016	1 year
Attenuator	Woken	WK0602-10	001	06/06/2016	2 year
Power Divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE02	TE02	N.C.R.	-----

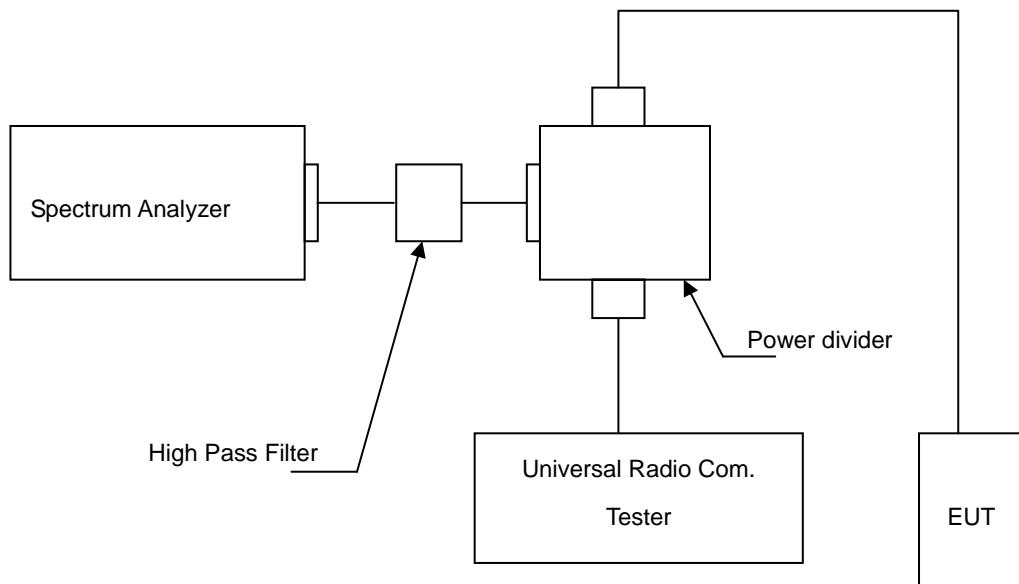
Note: N.C.R. = No Calibration Request.

■ Setup

Below 2.8GHz



Above 2.8GHz



■ 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=1MHz, VB=1MHz.

■ 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.

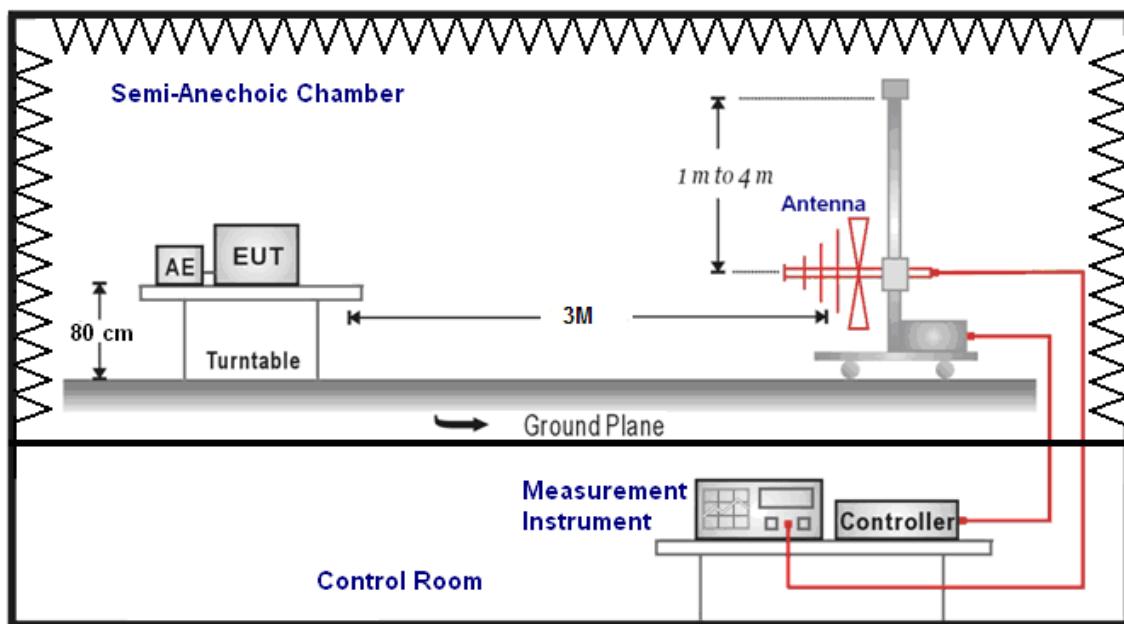
■ Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	03/30/2016	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	03/30/2016	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/11/2016	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/12/2017	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	416	10/13/2016	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	419	11/03/2016	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/06/2016	1 year
Horn Antenna (18~40GHz)	ETS	3116	00086467	09/05/2016	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/18/2016	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	02/20/2017	1 year
Microwave Cable	EMCI	EMC-104-SM-SM-14000	140202	02/20/2017	1 year
Microwave Cable	EMCI	EMC104-SM-SM-600	140301	02/20/2017	1 year
Signal Generator	Agilent	E8257D	MY44320425	03/02/2017	1 year
Test Site	ATL	TE01	888001	08/29/2016	1 year

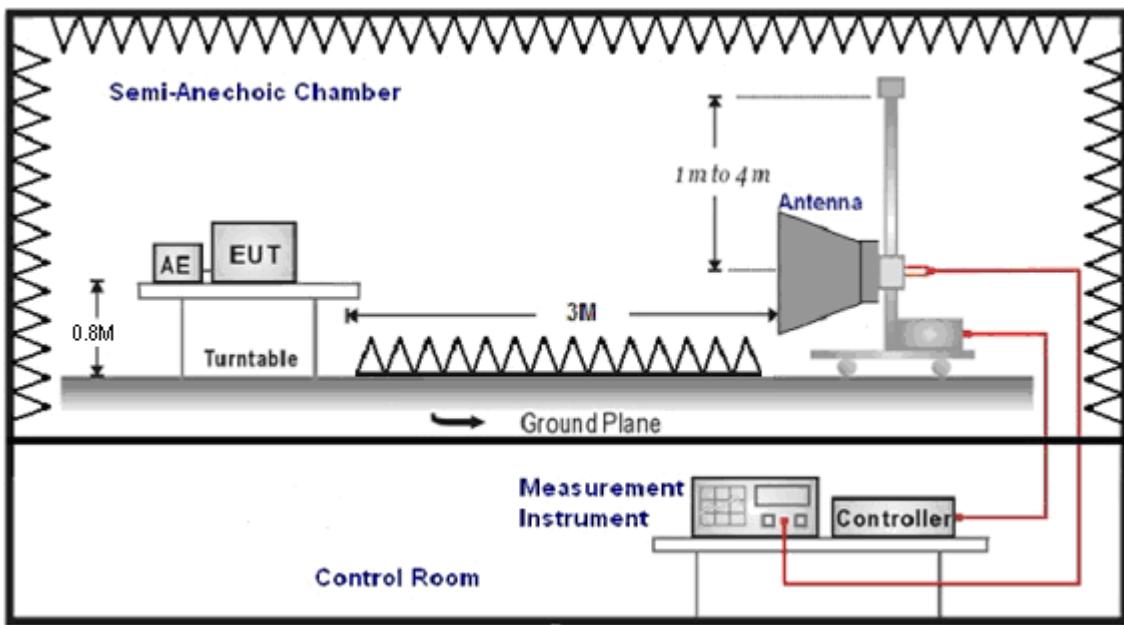
Note: N.C.R. = No Calibration Request.

■ Setup

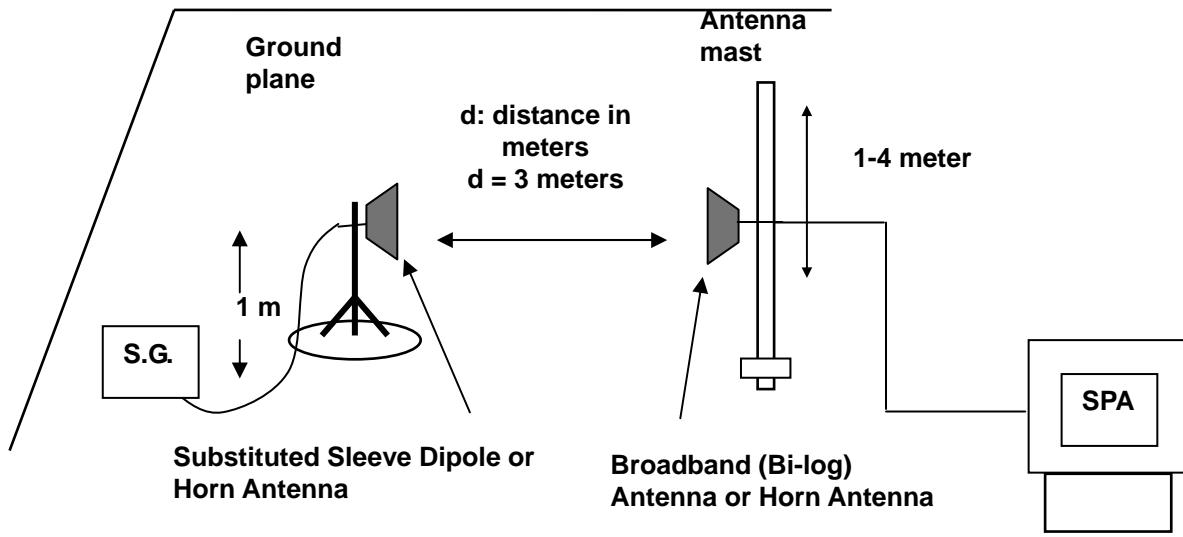
Below 1GHz



Above 1GHz



For Substituted Method Test Set-UP



■ Test Procedure

- The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RWB and VBW is 5MHz for LTE mode.
- 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.
- 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.
- E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- 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

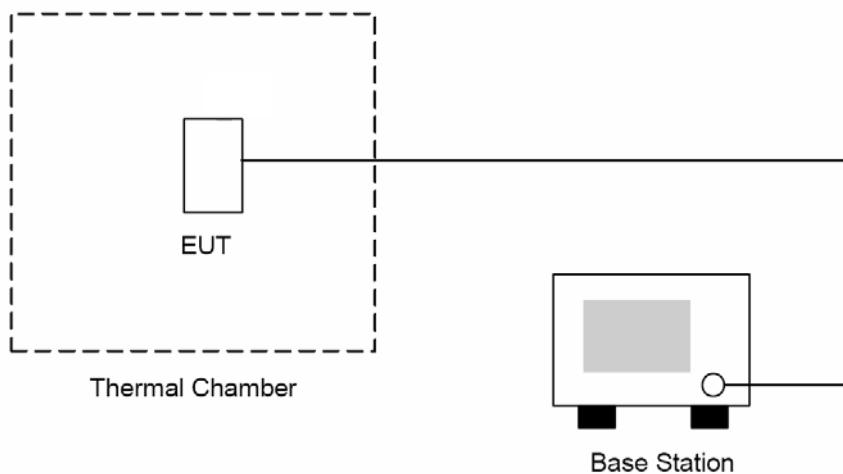
The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$)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

■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Cycle
Universal Radio Communication Tester	R & S	CMU200	112387	03/02/2017	1 year
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/18/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Setup



■ Test Procedure

The measurement is made according to FCC rules:

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°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in 10°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 ± 5 °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 $\pm 10\text{Hz}$.

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) RF Power Output

RF Power setting in Test Software	Test Software Version
N/A, RF power setting was not able to alter during testing.	N/A, no test SW was used during testing.

Bands	Sub-Test	Frequency (MHz)	Average Power		Peak Power	
			(dBm)	(W)	(dBm)	(W)
WCDMA IV (RMC 12.2K)	-----	1712.4	22.49	0.177	25.75	0.376
		1732.6	22.71	0.187	25.97	0.395
		1752.6	22.63	0.183	25.89	0.388
HSDPA IV	1	1712.4	21.72	0.149	24.96	0.313
		1732.6	21.96	0.157	25.20	0.331
		1752.6	21.87	0.154	25.11	0.324
	2	1712.4	21.21	0.132	24.43	0.277
		1732.6	21.43	0.139	24.65	0.292
		1752.6	21.32	0.136	24.54	0.284
	3	1712.4	21.16	0.131	24.41	0.276
		1732.6	21.40	0.138	24.65	0.292
		1752.6	21.29	0.135	24.54	0.284
	4	1712.4	21.59	0.144	24.86	0.306
		1732.6	21.81	0.152	25.08	0.322
		1752.6	21.72	0.149	24.99	0.316
HSUPA IV	1	1712.4	21.16	0.131	24.41	0.276
		1732.6	21.41	0.138	24.66	0.292
		1752.6	21.33	0.136	24.58	0.287
	2	1712.4	19.12	0.082	22.36	0.172
		1732.6	19.38	0.087	22.62	0.183
		1752.6	19.32	0.086	22.56	0.180
	3	1712.4	20.14	0.103	23.36	0.217
		1732.6	20.38	0.109	23.60	0.229
		1752.6	20.31	0.107	23.53	0.225
	4	1712.4	19.08	0.081	22.33	0.171
		1732.6	19.35	0.086	22.60	0.182
		1752.6	19.27	0.085	22.52	0.179
	5	1712.4	21.02	0.126	24.25	0.266
		1732.6	21.25	0.133	24.48	0.281
		1752.6	21.15	0.130	24.38	0.274

Note: The testing result was used peak detector.

Appendix B) Effective Radiated Power / Equivalent Isotropic Radiated Power

Band	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.I.R.P.		Limit (W)
						(dBm)	(W)	
WCDMA IV	QPSK	1712.4	H	11.22	9.00	20.22	0.105	< 1
			V	14.29	9.00	23.29	0.213	< 1
		1732.6	H	11.77	9.09	20.86	0.122	< 1
			V	14.15	9.09	23.24	0.211	< 1
		1752.6	H	11.22	9.16	20.38	0.109	< 1
			V	14.45	9.16	23.61	0.230	< 1

Appendix C) Peak-to-Average Ratio

Test Band	Test Mode	Test Channel	Measured (db)	Limit (db)	Verdict
WCDMA IV	UMTS/TM1	LCH	3.37	13	PASS
		MCH	3.39	13	PASS
		HCH	3.29	13	PASS

Appendix D) Emission Bandwidth & Occupied Bandwidth Test

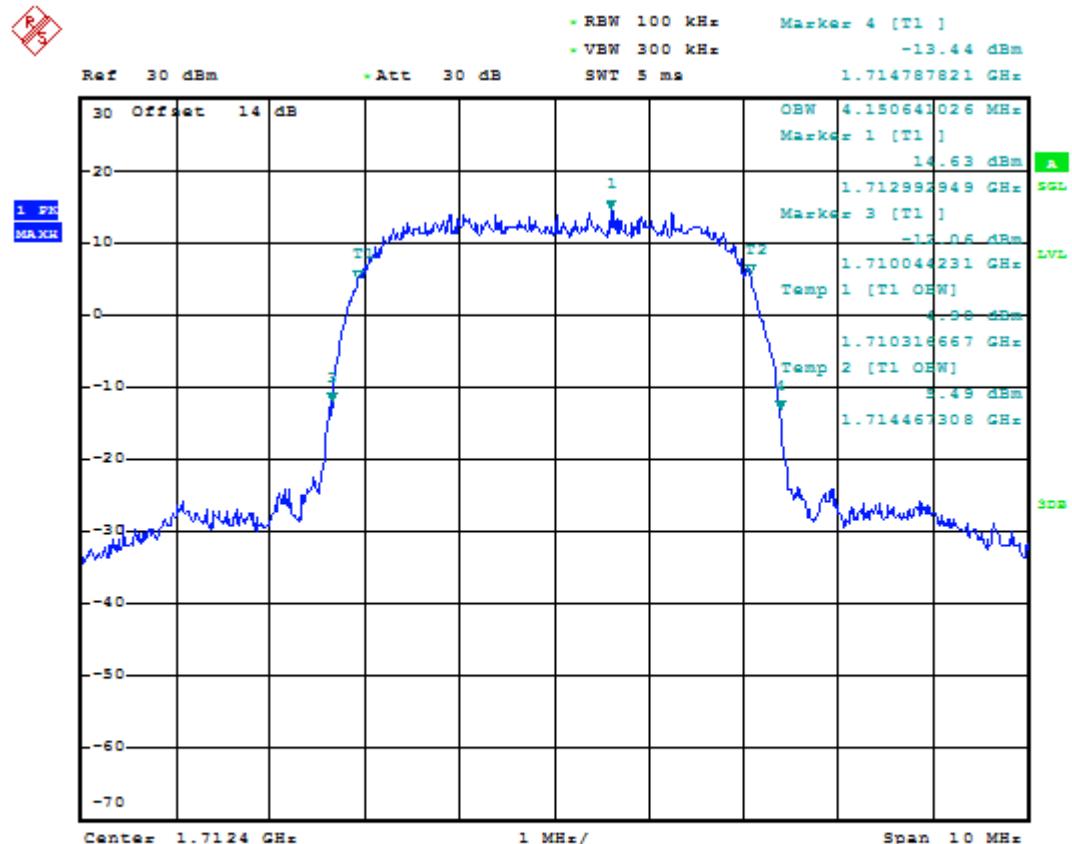
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA IV	UMTS/TM1	LCH	4150.6	4744	PASS
		MCH	4134.6	4728	PASS
		HCH	4134.6	4744	PASS

For WCDMA

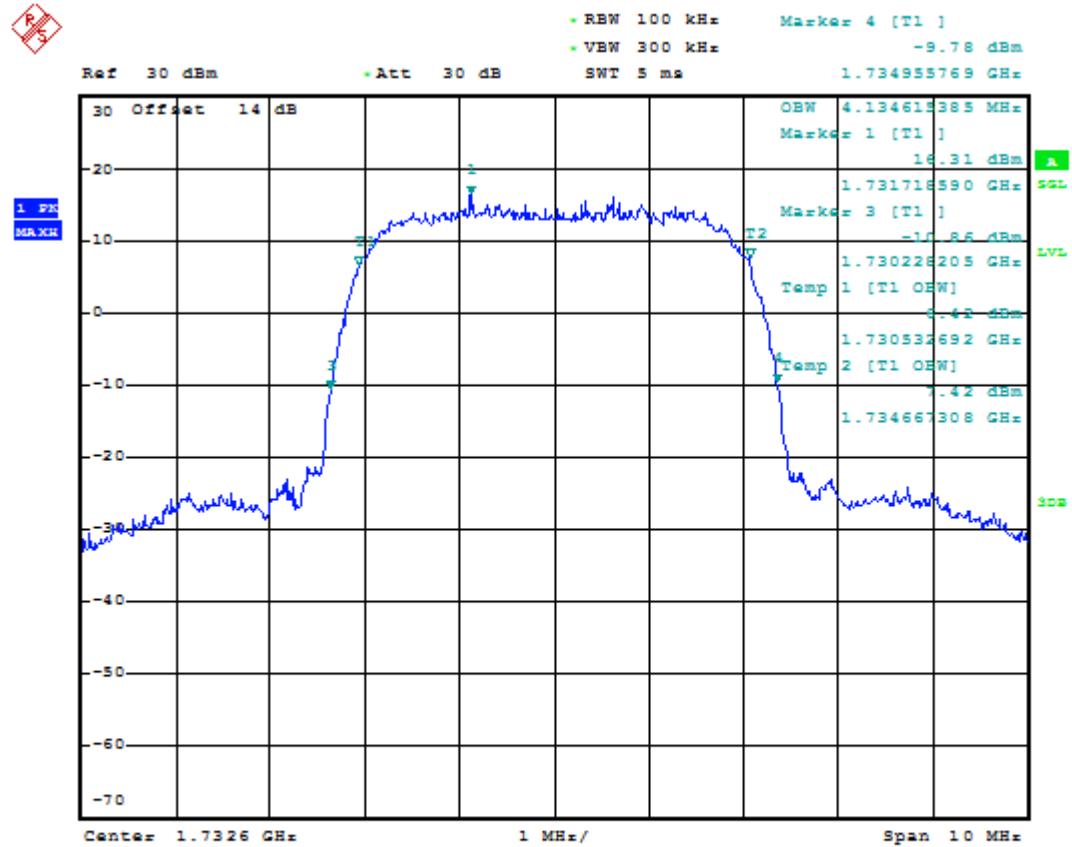
Test Band=WCDMA IV

Test Mode=UMTS/TM1

Test Channel=LCH

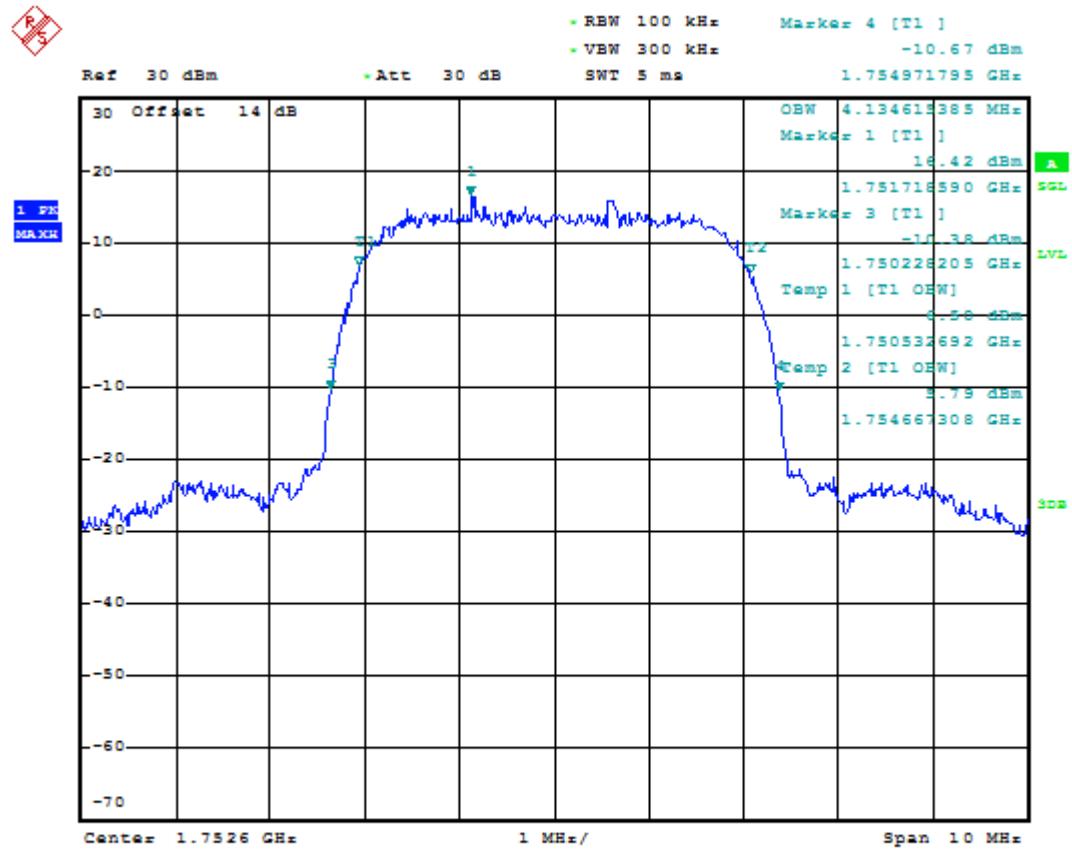


Date: 11.APR.2017 07:21:25

Test Channel=MCH


Date: 11.APR.2017 07:21:48

Test Channel=HCH



Date: 11.APR.2017 07:22:10

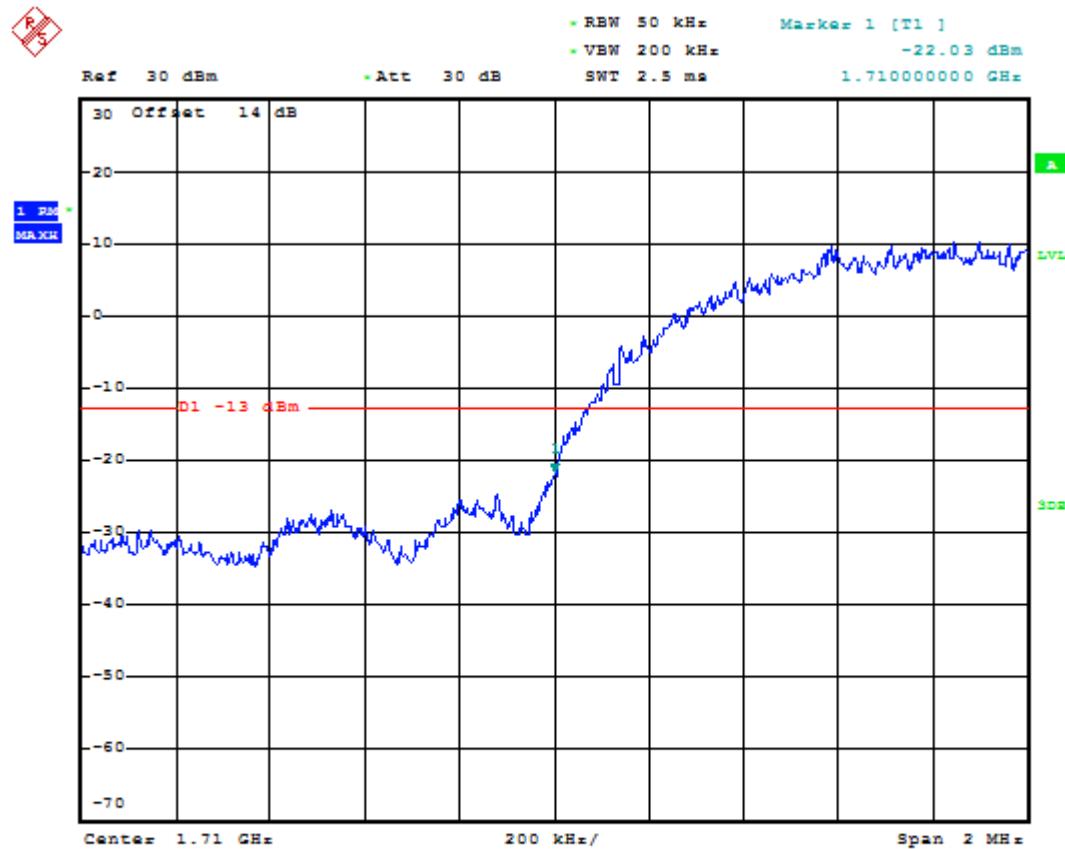
Appendix E) Band Edge

For WCDMA

Test Band=WCDMA IV

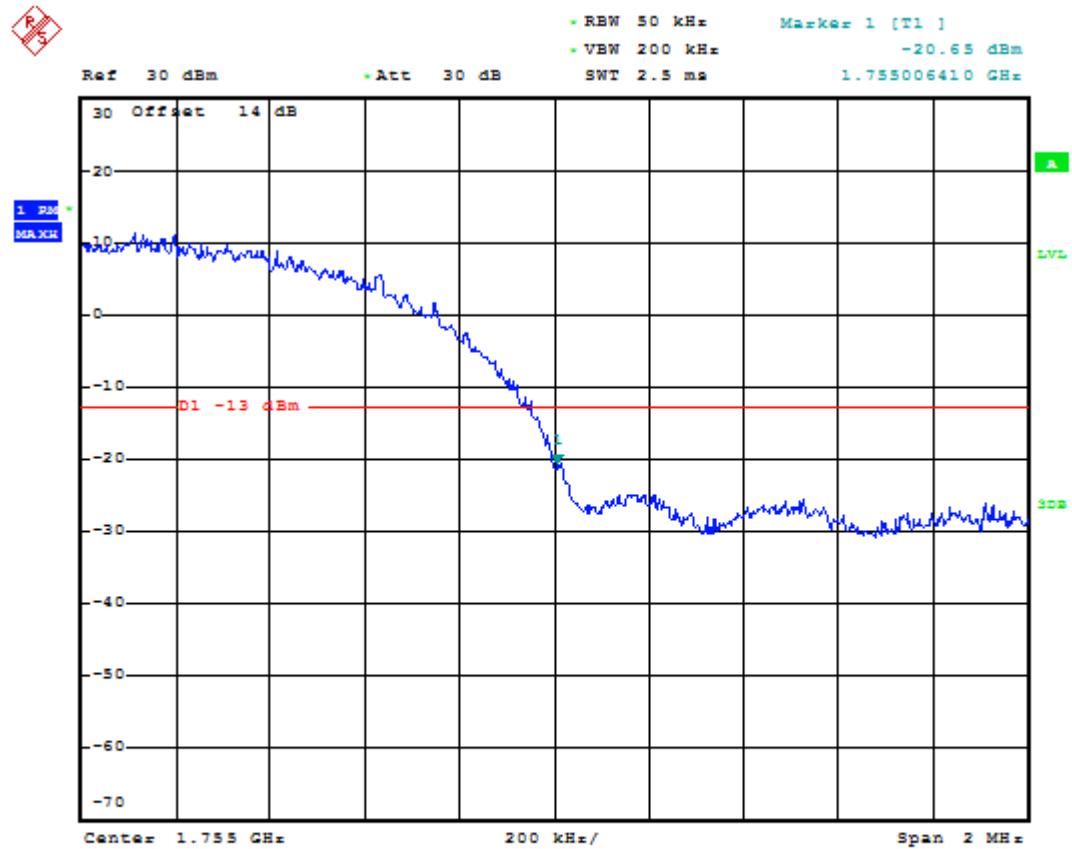
Test Mode=UMTS/TM1

Test Channel=LCH



Date: 11.APR.2017 07:36:58

Test Channel=HCH



Date: 11.APR.2017 07:37:13

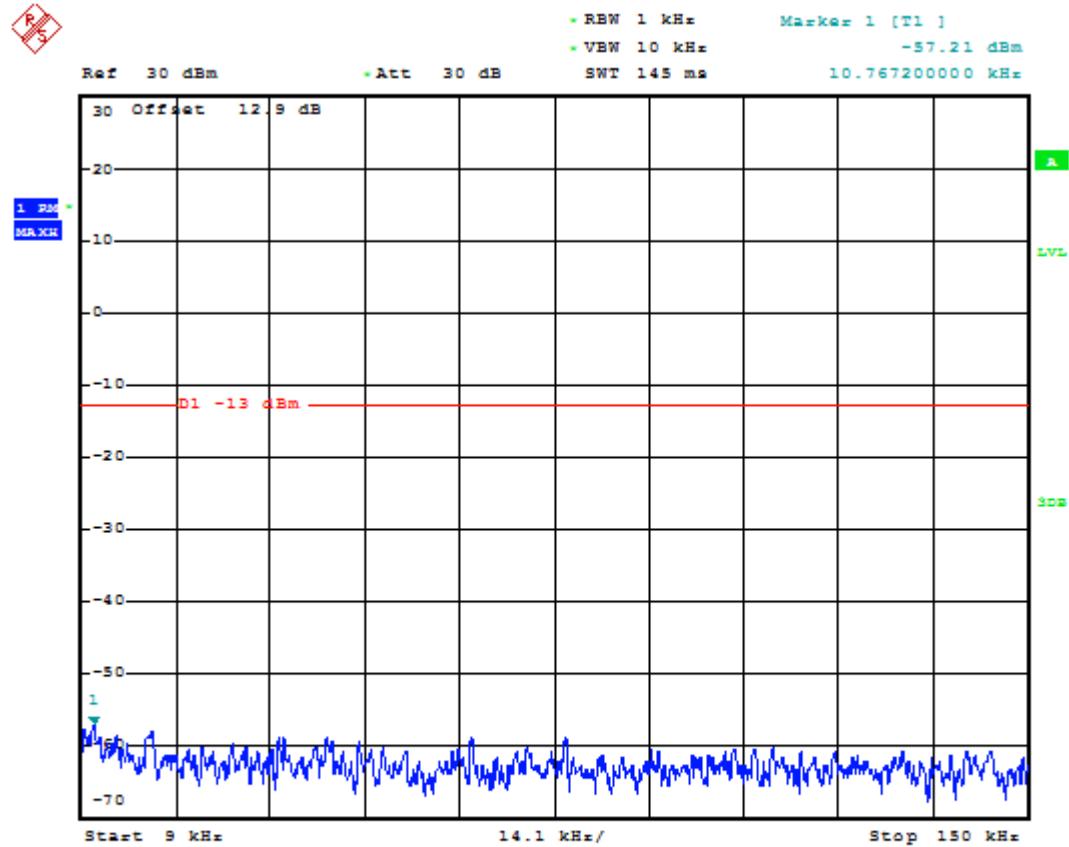
Appendix F) Conducted Spurious Emission

For WCDMA

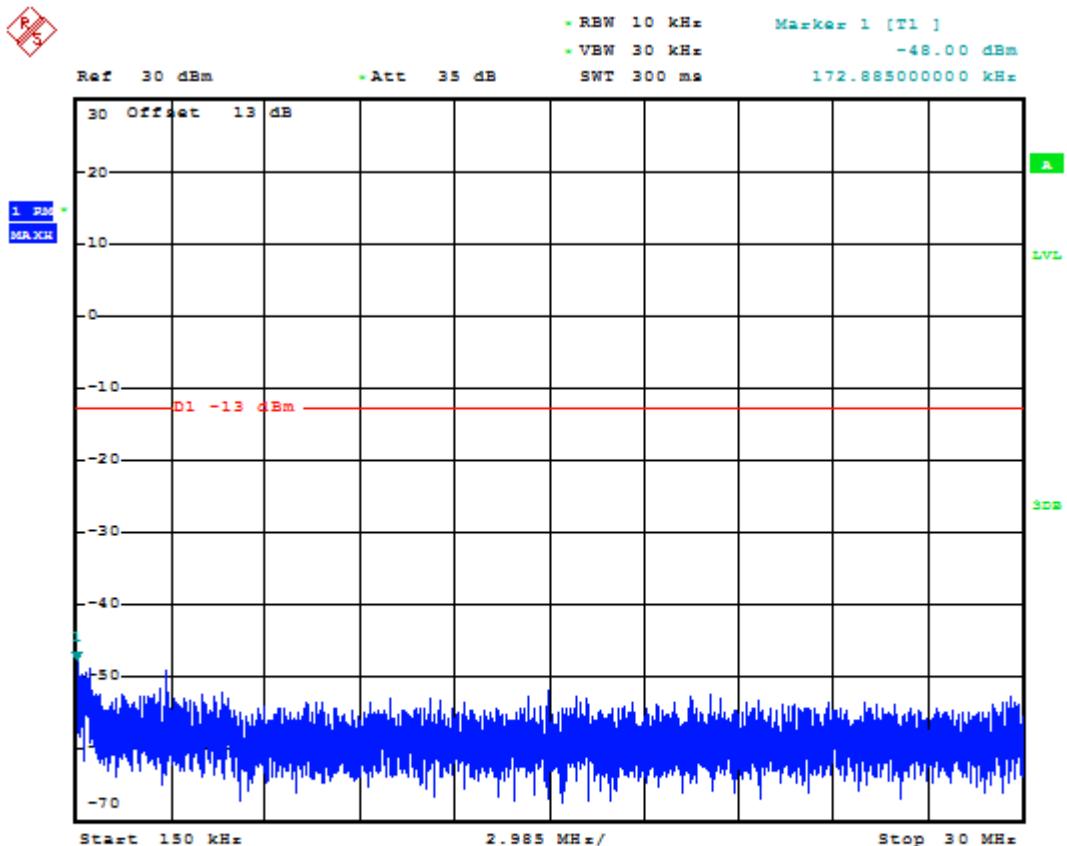
Test Band=WCDMA IV

Test Mode=UMTS/TM1

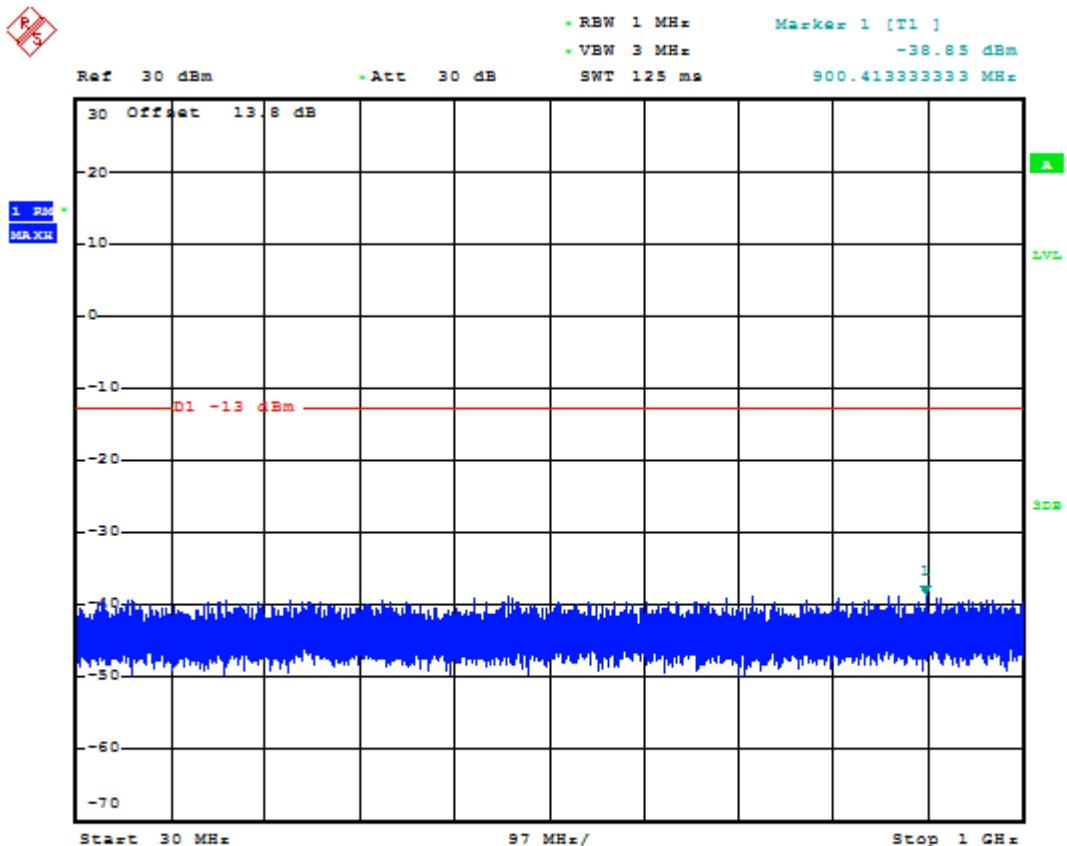
Test Channel=LCH



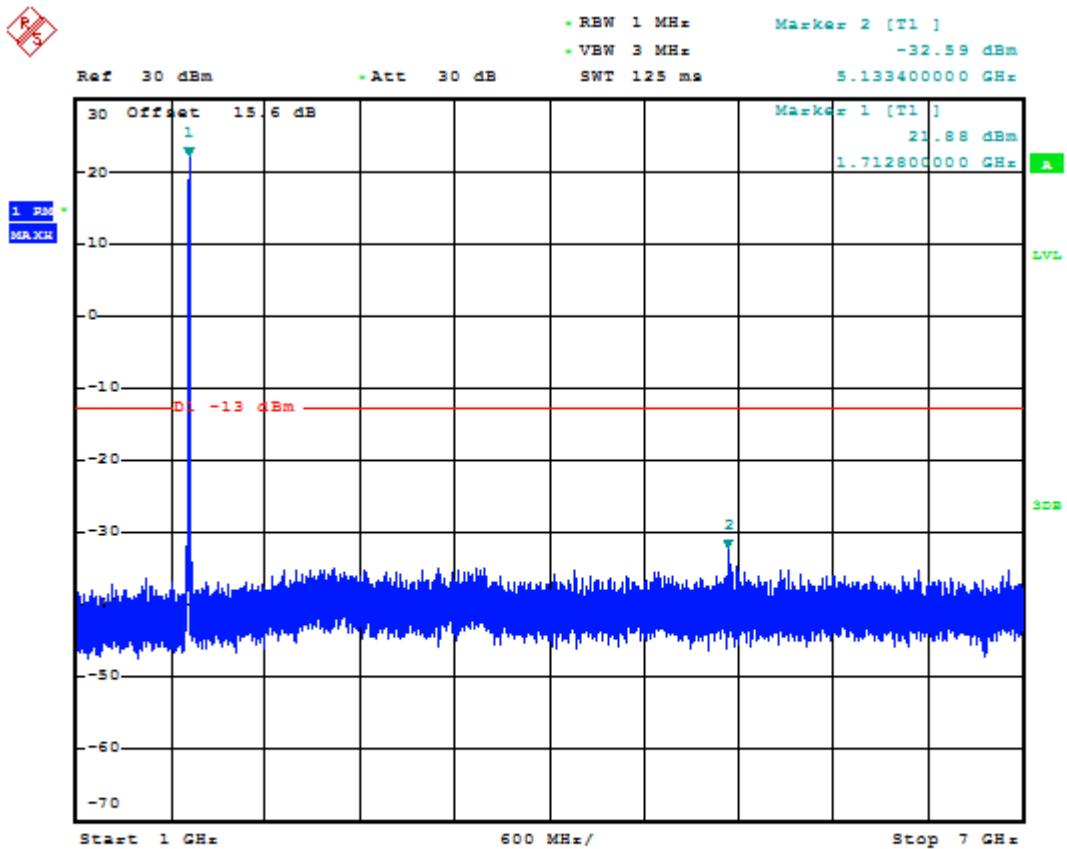
Date: 11.APR.2017 07:07:56



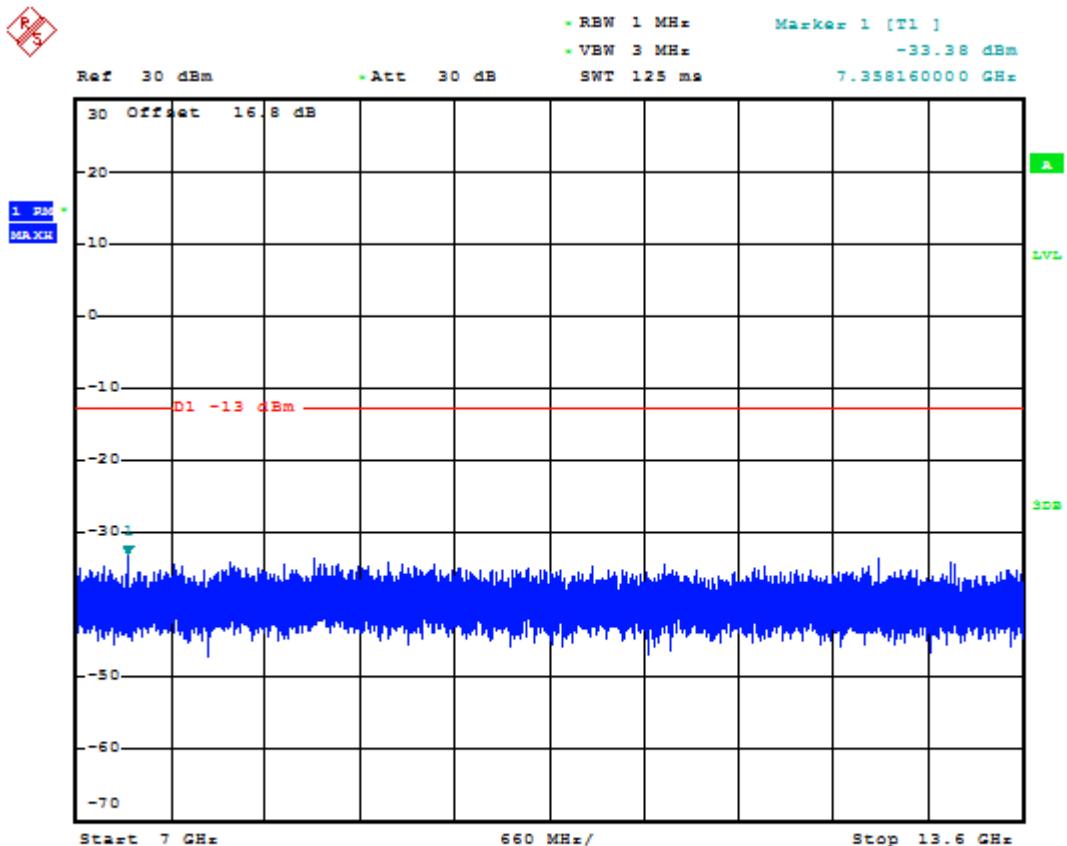
Date: 11.APR.2017 07:08:12



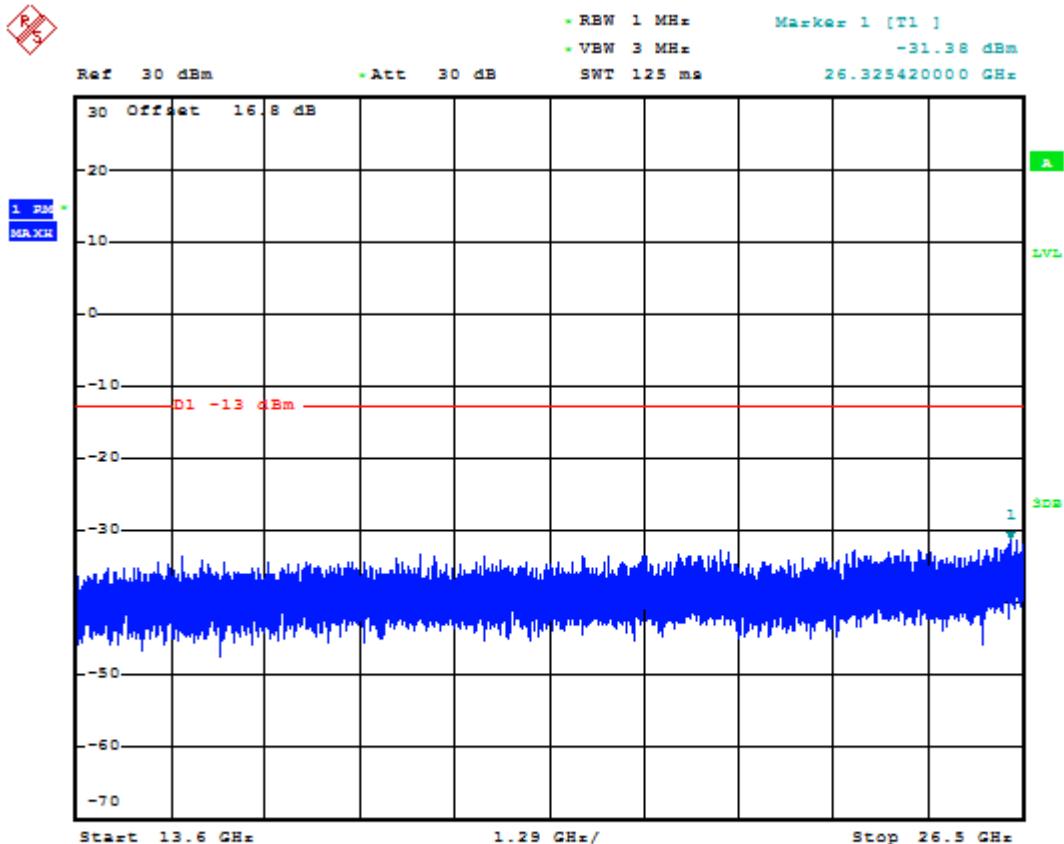
Date: 11.APR.2017 07:08:21



Date: 11.APR.2017 07:08:31

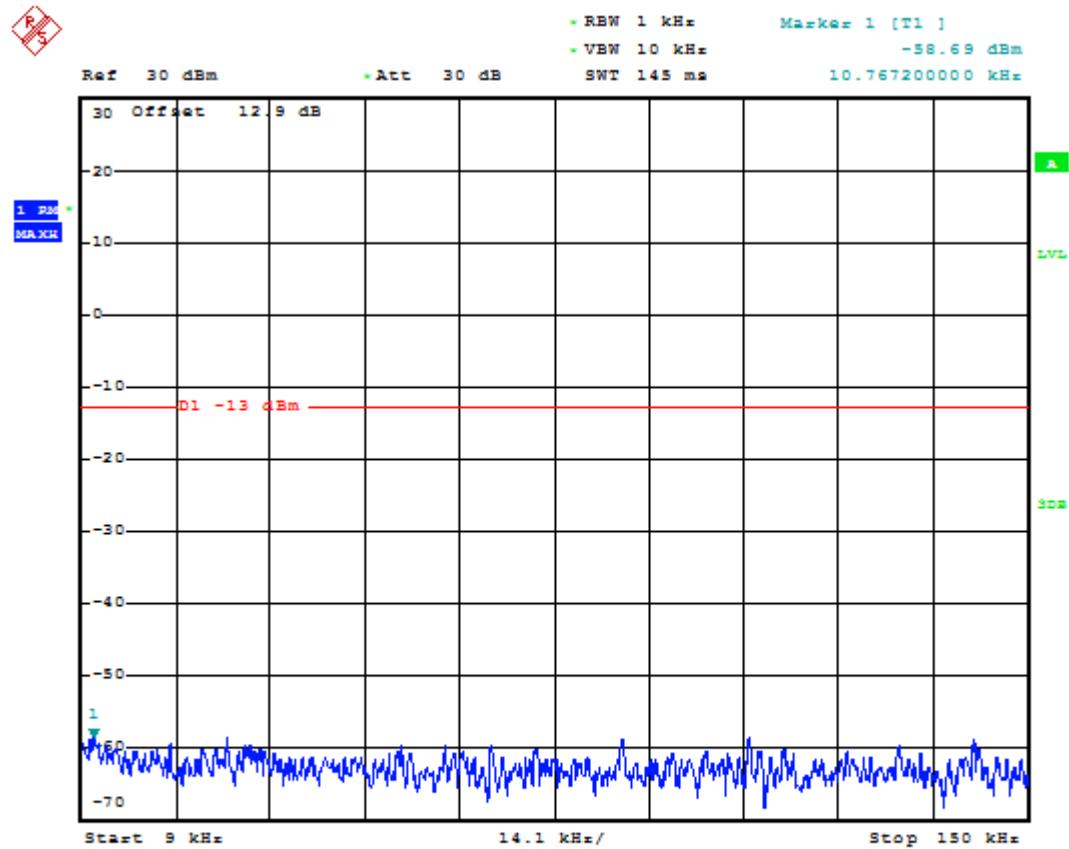


Date: 11.APR.2017 07:08:39

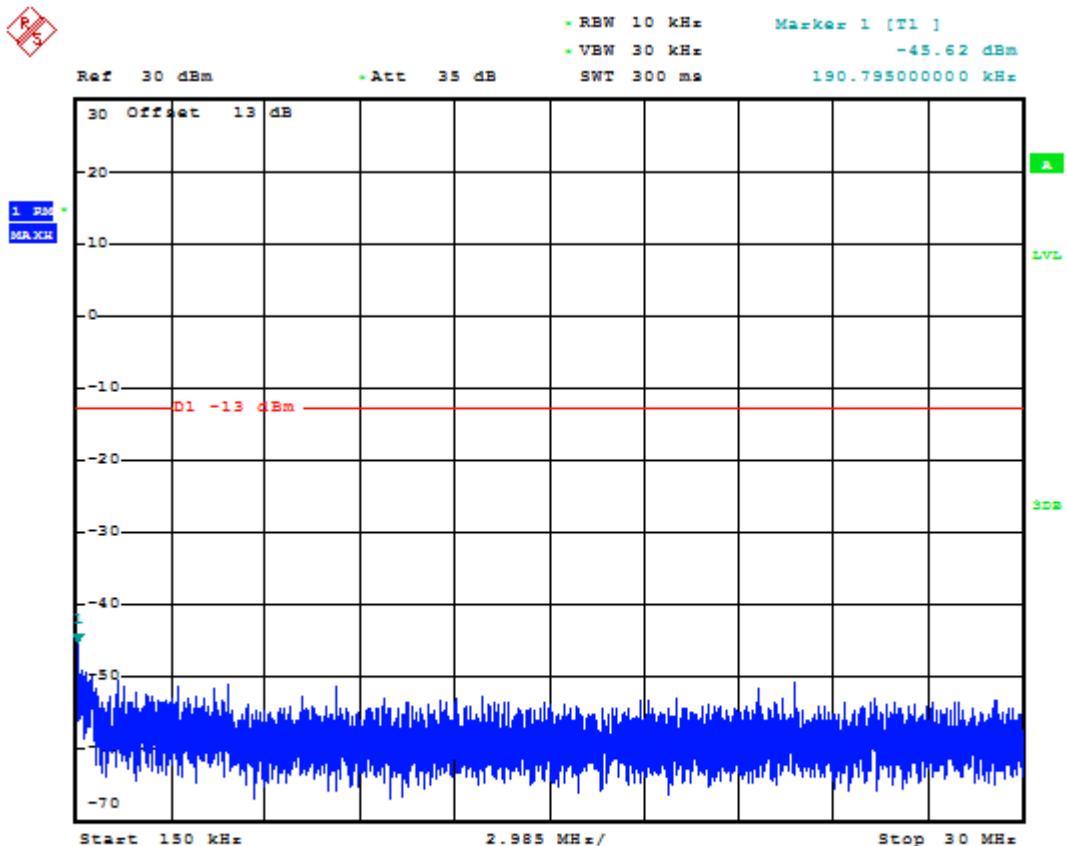


Date: 11.APR.2017 07:08:48

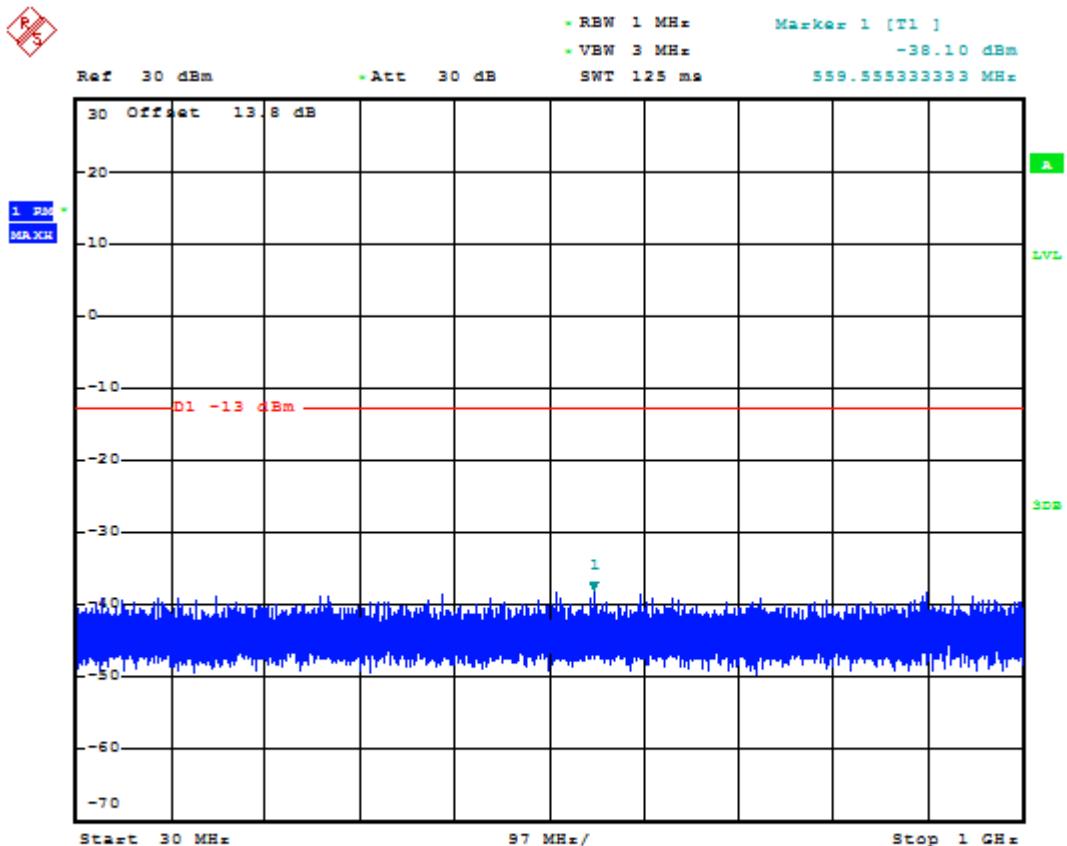
Test Channel=MCH



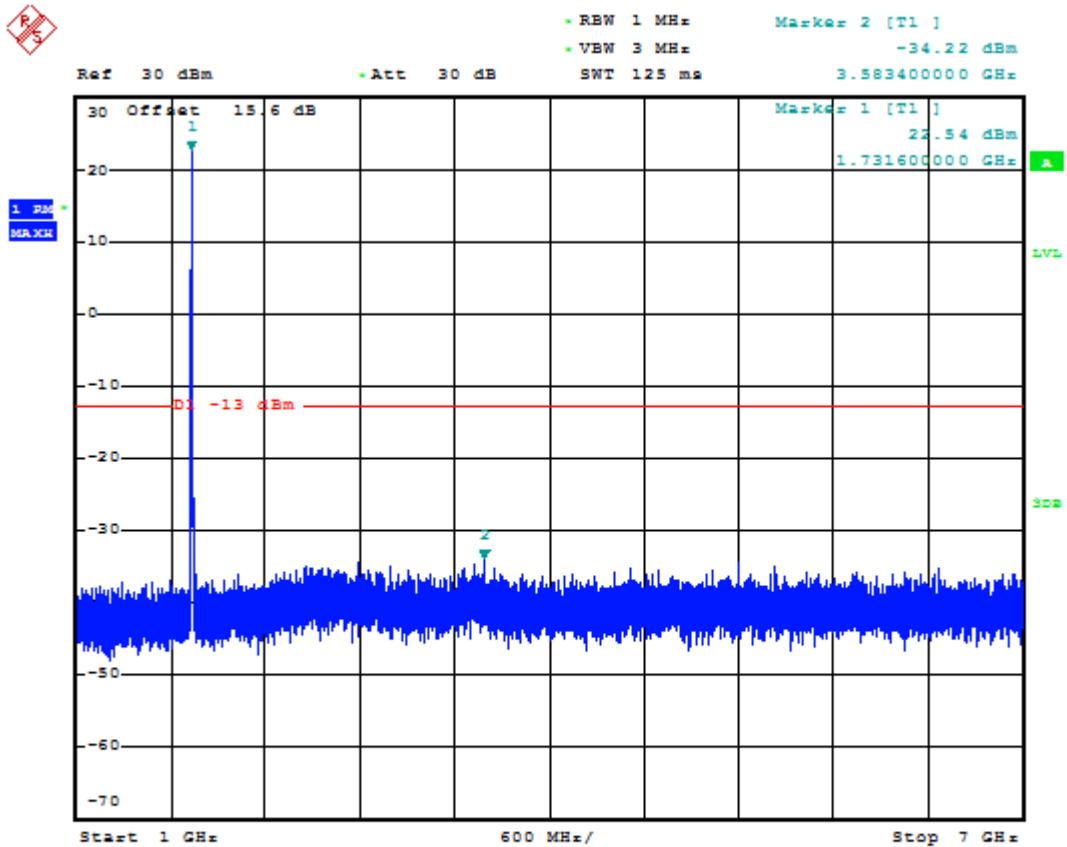
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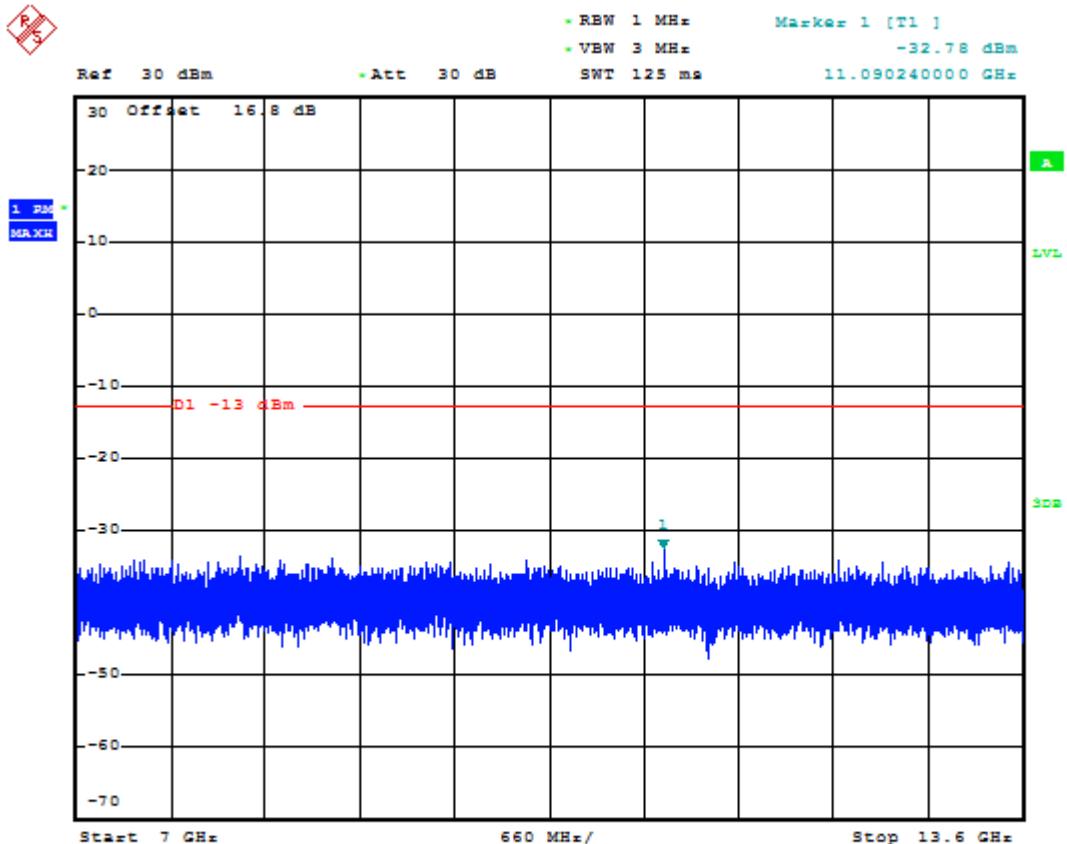
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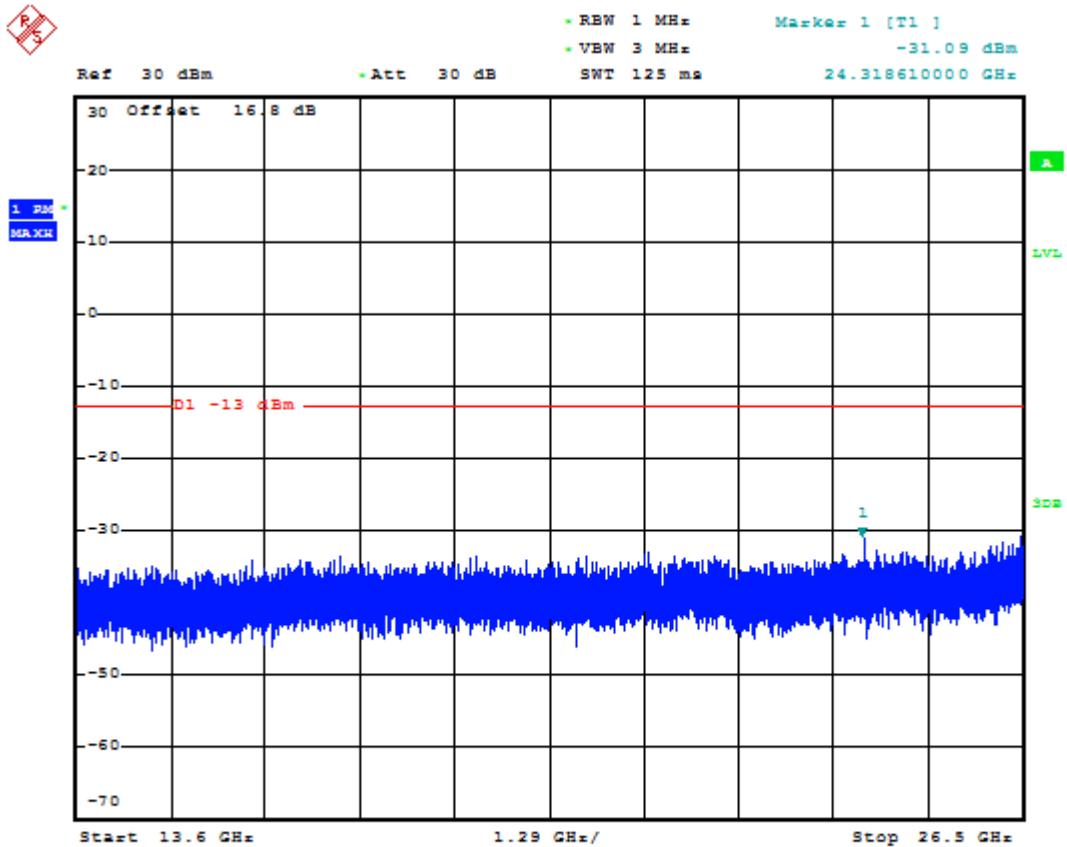
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Date: 11.APR.2017 07:09:34

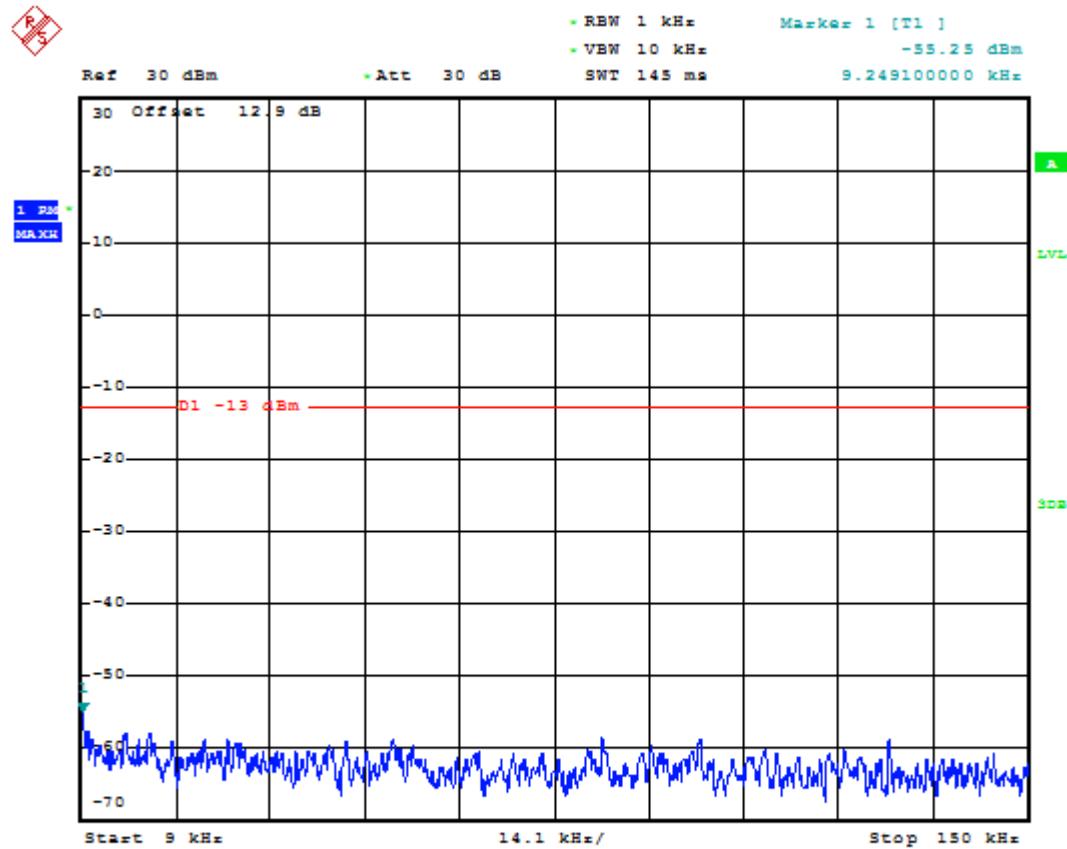


Date: 11.APR.2017 07:09:43

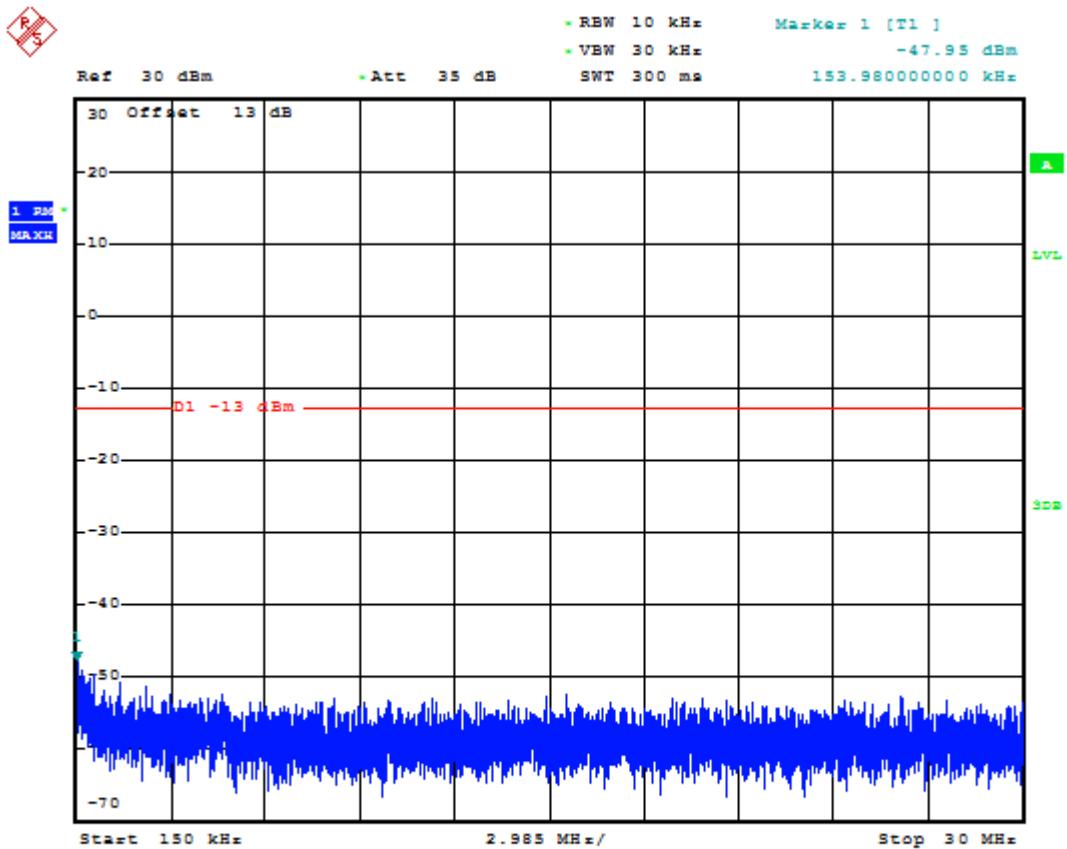


Date: 11.APR.2017 07:09:52

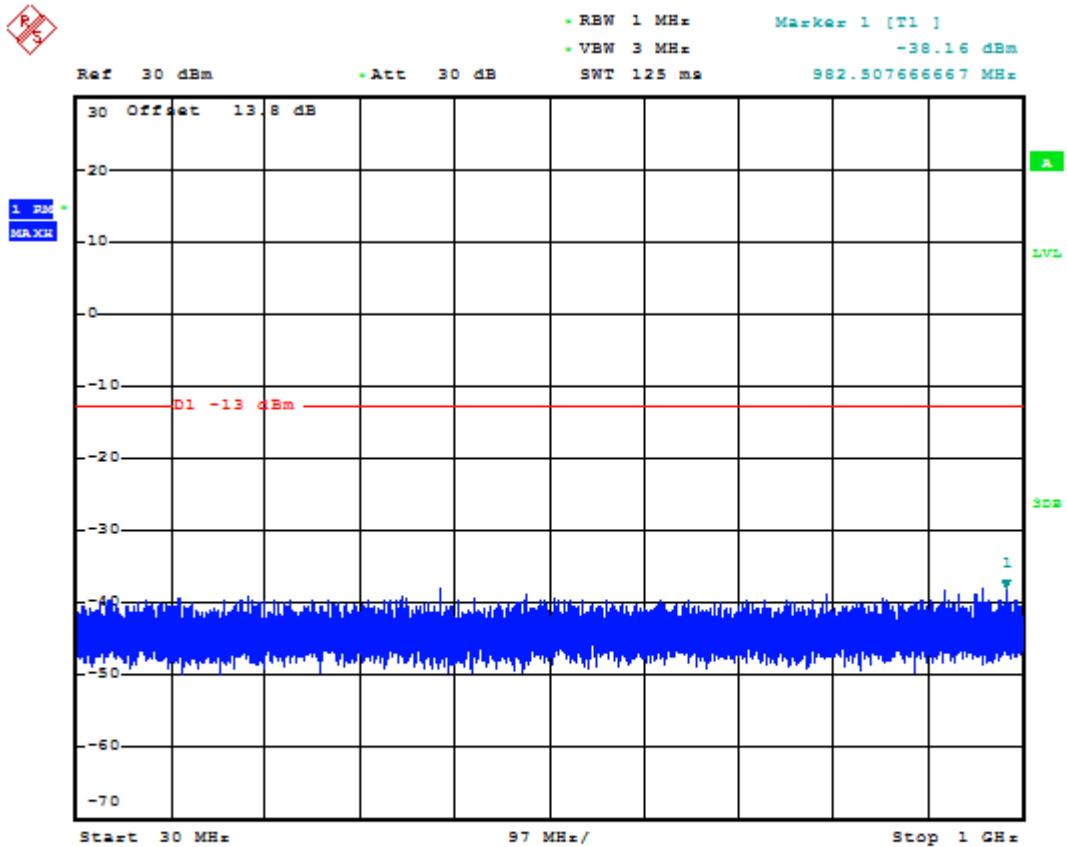
Test Channel=HCH



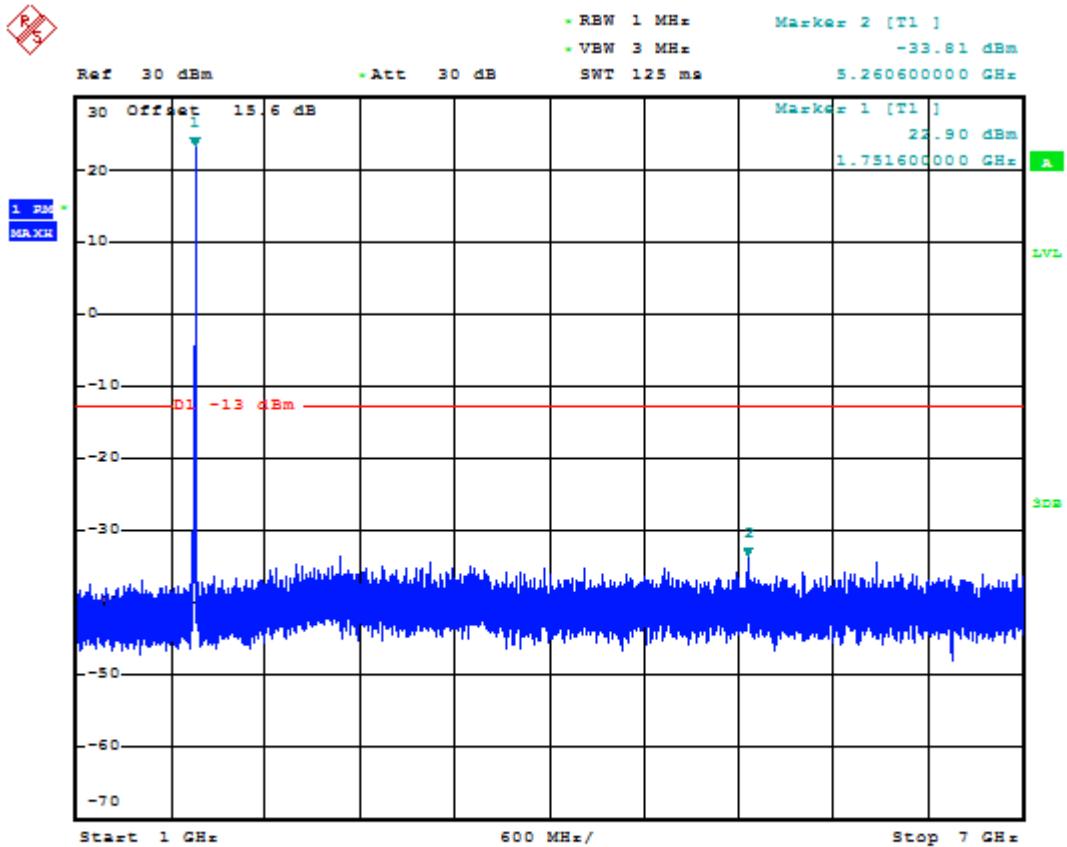
Date: 11.APR.2017 07:10:03



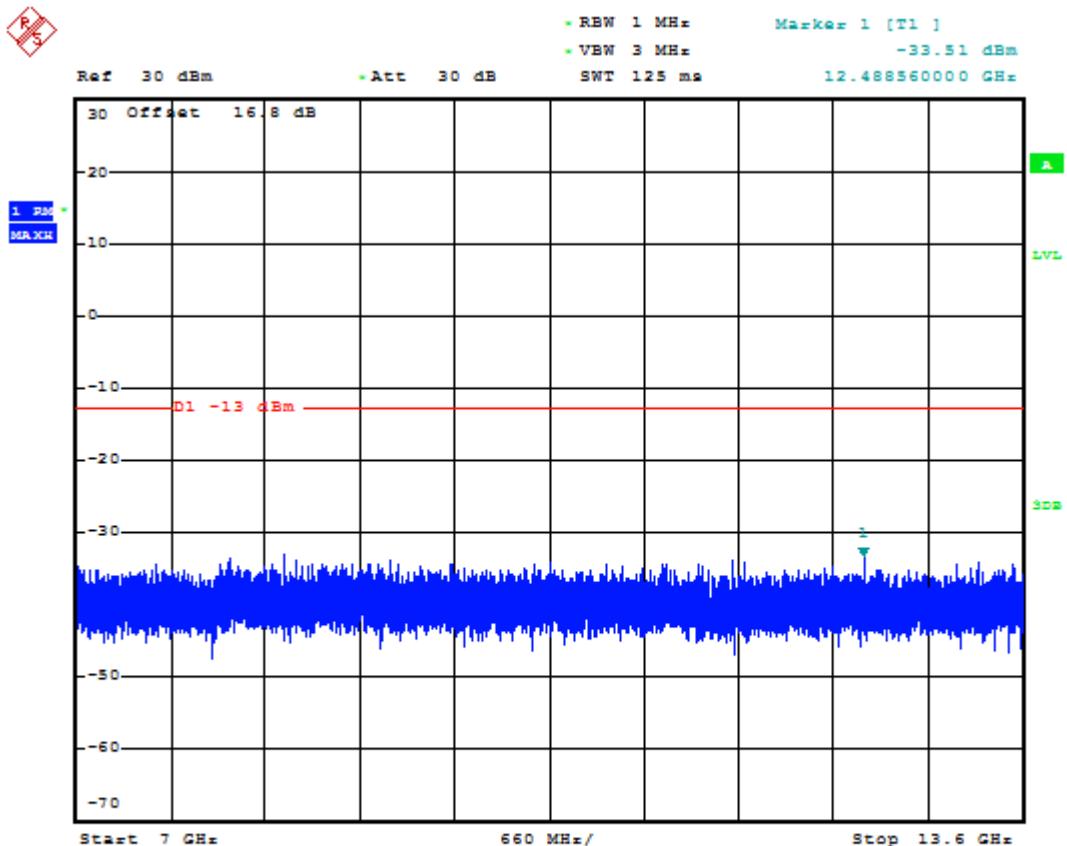
Date: 11.APR.2017 07:10:19



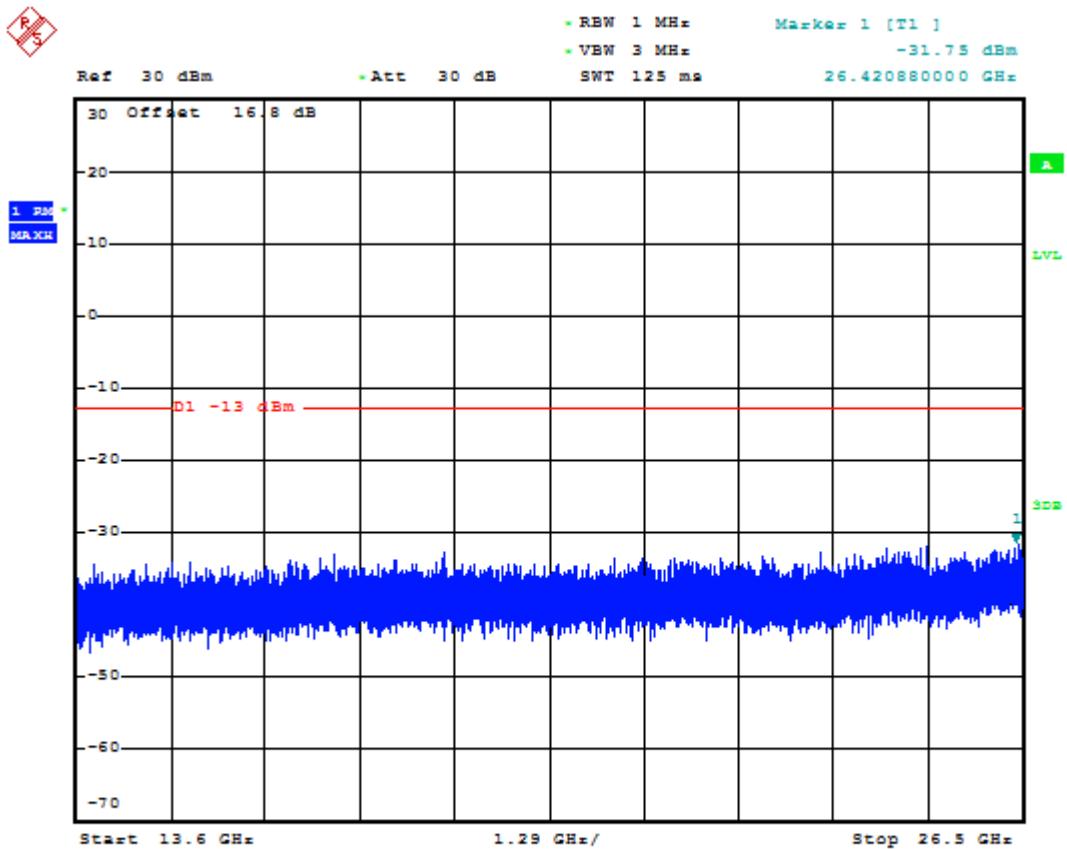
Date: 11.APR.2017 07:10:28



Date: 11.APR.2017 07:10:38



Date: 11.APR.2017 07:10:47



Date: 11.APR.2017 07:10:55

Appendix H) Field Strength of Spurious Radiation

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1712.4MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1312	Date:	03/24/2017
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3424.800	-45.02	1.40	-43.62	-13.00	-30.62	peak

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1712.4MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1312	Date:	03/24/2017
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3424.800	-43.11	1.40	-41.71	-13.00	-28.71	peak

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1732.6MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1413	Date:	03/24/2017
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3465.800	-45.01	1.57	-43.44	-13.00	-30.44	peak

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1732.6MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1413	Date:	03/24/2017
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3465.800	-42.93	1.57	-41.36	-13.00	-28.36	peak

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1752.6MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1513	Date:	03/24/2017
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3505.200	-46.50	1.73	-44.77	-13.00	-31.77	peak

Standard:	P22H/24E	Test Distance:	3m
Test item:	Harmonic	Power:	AC 120V/60Hz
Frequency:	1752.6MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3G_BAND 4_CH1513	Date:	03/24/2017
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3505.200	-43.02	1.73	-41.29	-13.00	-28.29	peak

Appendix H) Frequency Stability

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA IV	TM1	LCH	TN	VL	-10.48	-0.01	± 2.5	PASS
			TN	VN	-7.86	0.00	± 2.5	PASS
			TN	VH	-10.21	-0.01	± 2.5	PASS
		MCH	TN	VL	-4.76	0.00	± 2.5	PASS
			TN	VN	-7.86	0.00	± 2.5	PASS
			TN	VH	-2.85	0.00	± 2.5	PASS
		HCH	TN	VL	-6.18	0.00	± 2.5	PASS
			TN	VN	-7.86	0.00	± 2.5	PASS
			TN	VH	-9.89	-0.01	± 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
WCDMA IV	TM1	LCH	VN	-30	N/A	N/A	± 2.5	PASS
			VN	-20	N/A	N/A	± 2.5	PASS
			VN	-10	N/A	N/A	± 2.5	PASS
			VN	0	-6.70	0.00	± 2.5	PASS
			VN	10	-12.15	-0.01	± 2.5	PASS
			VN	20	-6.65	0.00	± 2.5	PASS
			VN	30	-4.58	0.00	± 2.5	PASS
			VN	40	-7.45	0.00	± 2.5	PASS
			VN	50	N/A	N/A	± 2.5	PASS
WCDMA IV	TM1	MCH	VN	-30	N/A	N/A	± 2.5	PASS
			VN	-20	N/A	N/A	± 2.5	PASS
			VN	-10	N/A	N/A	± 2.5	PASS
			VN	0	-0.92	0.00	± 2.5	PASS
			VN	10	-3.04	0.00	± 2.5	PASS
			VN	20	-3.95	0.00	± 2.5	PASS
			VN	30	-4.99	0.00	± 2.5	PASS
			VN	40	-1.02	0.00	± 2.5	PASS
			VN	50	N/A	N/A	± 2.5	PASS
WCDMA IV	TM1	HCH	VN	-30	N/A	N/A	± 2.5	PASS
			VN	-20	N/A	N/A	± 2.5	PASS
			VN	-10	N/A	N/A	± 2.5	PASS
			VN	0	-7.78	0.00	± 2.5	PASS
			VN	10	-4.39	0.00	± 2.5	PASS
			VN	20	-5.81	0.00	± 2.5	PASS
			VN	30	-5.46	0.00	± 2.5	PASS
			VN	40	-8.74	0.00	± 2.5	PASS
			VN	50	N/A	N/A	± 2.5	PASS