

FCC RF Test Report

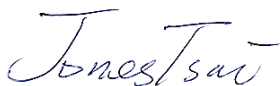
APPLICANT : Sony Mobile Communications AB
EQUIPMENT : Smart phone
BRAND NAME : SONY
MODEL NAME : D2303
TYPE NAME : PM-0722-BV
FCC ID : PY7PM-0722
STANDARD : 47 CFR Part 2, 22(H), 27(M)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Nov. 15, 2014 and testing was completed on Dec. 30, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG3N1532B	Rev. 01	Initial issue of report	Jan. 24, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-Gen(4.8) RSS-132 (5.4) RSS-199 (4.4)	Conducted Output Power	Reporting Only	PASS	-
3.2	§27.50(d)(5)	RSS-132 (5.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power (Band 5)	ERP < 7 Watts	PASS	-
	§27.50(h)(2)	RSS-199 (4.4)	Equivalent Isotropic Radiated Power (Band 7)	EIRP < 2 Watts	PASS	-
3.4	§2.1049 §22.917(a) §27.53 (l)(4)	RSS-GEN(4.6.1) RSS-132 (3.1) RSS-199 (4.2)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §27.53 (l)(4)	RSS-GEN(4.9) RSS-132 (5.5) RSS-199 (4.5)	Conducted Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1051 §22.917(a)	RSS-GEN(4.9) RSS-132 (5.5)	Conducted Spurious Emission (Band 5)	< 43+10log ₁₀ (P[Watts])	PASS	-
	§2.1051 §27.53(l)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Conducted Spurious Emission (Band 7)	< 55+10log ₁₀ (P[Watts])	PASS	-



Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.7	§2.1053 §22.917(a)	RSS-GEN(4.9) RSS-132 (5.5)	Radiated Spurious Emission (Band 5)	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	Under limit 3.12 dB at 7710.00 MHz
	§2.1053 §27.53(l)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Radiated Spurious Emission (Band 7)	$< 55 + 10\log_{10}(P[\text{Watts}])$	PASS	
3.8	§2.1055 §22.355 §27.54	RSS-GEN(4.7) RSS-132(5.3) RSS-199 (4.3)	Frequency Stability Temperature & Voltage	$< 2.5 \text{ ppm}$	PASS	-

1 General Description

1.1 Applicant

Sony Mobile Communications AB
Nya Vattentorget, 22188 Lund, Sweden

1.2 Manufacturer

Compal Communications, INC.
No. 385, Yangguang Street, Neihu, Taipei 11491, Taiwan

1.3 Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is Smart phone supporting, GSM / WCDMA / LTE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, and NFC features, and below is details of information.

Product Feature	
Equipment	Smart phone
Brand Name	SONY
Model Name	D2303
Type Name	PM-0722-BV
FCC ID	PY7PM-0722
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 33, EGPRS Class 33
WCDMA Operating Band(s)	FDD Band I / V / VIII
WCDMA Rel. Version	Rel. 8
LTE Operating Band(s)	FDD Band I / III / V / VII / VIII / XX
Wi-Fi Specification	802.11b/g/n (HT20), 802.11a/n (HT20/HT40)
Bluetooth Version	v3.0 + EDR / v4.0-LE
NFC Specification	ISO14443A / ISO14443B / Felica
Power Supply	Battery / AC Adapter / Car Charger

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2506.5 MHz ~ 2534.5 MHz and 2556 MHz ~ 2567.5 MHz
Rx Frequency	LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2626.5MHz ~ 2654.5 MHz and 2676 MHz ~ 2687.5 MHz
Bandwidth	1.4MHz / 3MHz / 5MHz / 10MHz (LTE Band 5) 5MHz/ 10MHz / 15MHz / 20MHz (LTE Band 7)
Maximum Output Power to Antenna	<LTE Band 5> 1.4MHz: 23.94 dBm / 0.2477 W 3MHz: 23.95 dBm / 0.2483 W 5MHz: 23.89 dBm / 0.2449 W 10MHz: 23.92 dBm / 0.2466 W <LTE Band 7> 5MHz: 23.53 dBm / 0.2254 W 10MHz: 23.80 dBm / 0.2399 W 15MHz: 23.60 dBm / 0.2291 W 20MHz: 23.90 dBm / 0.2455 W
Antenna Type	PIFA with Parasitic Strip Antenna
Type of Modulation	QPSK / 16QAM
EUT Serial Number	IMEI : 004402451655769 S/N : 468186597BB
HW Version	A
SW Version	18.0.C.0.30
EUT Stage	Production Unit

Accessory List	
AC Adapter	Model No. : EP800
	Type No. : CAA-0002016-US B
Battery	Model No. : LIS1502ERPC
	Type No. : LIS1502ERPC
Earphone	Model No. : MH410c
	Type No. : AG-1100
USB Cable	Model No. : AHAB EC450
	Part No. : 1242-6715.4

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Emission Designator

FCC Rule	System	Type of Modulation	BW	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP
Part 22	LTE Band 5	QPSK	1.4 MHz	1M10G7D	-	0.05 W
Part 22	LTE Band 5	16QAM	1.4 MHz	1M10D7W	-	0.04 W
Part 22	LTE Band 5	QPSK	3 MHz	2M72G7D	-	0.08 W
Part 22	LTE Band 5	16QAM	3 MHz	2M72D7W	-	0.05 W
Part 22	LTE Band 5	QPSK	5MHz	4M50G7D	-	0.08 W
Part 22	LTE Band 5	16QAM	5MHz	4M49D7W	-	0.06 W
Part 22	LTE Band 5	QPSK	10MHz	9M14G7D	0.05 ppm	0.06 W
Part 22	LTE Band 5	16QAM	10MHz	9M08D7W	-	0.05 W
Part 27	LTE Band 7	QPSK	5MHz	4M52G7D	-	0.19 W
Part 27	LTE Band 7	16QAM	5MHz	4M52D7W	-	0.15 W
Part 27	LTE Band 7	QPSK	10MHz	9M10G7D	0.08 ppm	0.20 W
Part 27	LTE Band 7	16QAM	10MHz	9M04D7W	-	0.14 W
Part 27	LTE Band 7	QPSK	15MHz	13M50G7D	-	0.17 W
Part 27	LTE Band 7	16QAM	15MHz	13M47D7W	-	0.21 W
Part 27	LTE Band 7	QPSK	20MHz	18M48G7D	-	0.22 W
Part 27	LTE Band 7	16QAM	20MHz	18M52D7W	-	0.14 W

1.7 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH02-HY	03CH07-HY	722060/4086B-1

1.8 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2, 22(H), 27(M)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

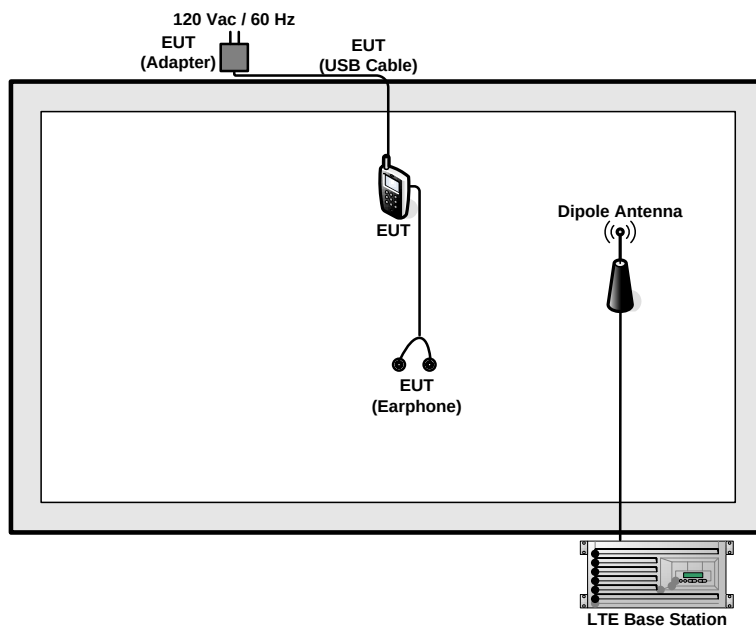
2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission: 30MHz to 10th harmonic.

Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 5	BW 1.4MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 3) Link ■ LTE (RB Size 6) Link
	BW 3MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 8) Link ■ LTE (RB Size 15) Link
	BW 5MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link
	BW 10MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
LTE Band 7	BW 5MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link
	BW 10MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 15MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 36) Link ■ LTE (RB Size 75) Link
	BW 20MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 50) Link ■ LTE (RB Size 100) Link

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m



2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

<LTE Band 5 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20450	20525	20600
Frequency (MHz)				829	836.5	844
10	QPSK	1	0	23.92	23.92	23.77
10	QPSK	1	24	23.81	23.77	23.79
10	QPSK	1	49	23.79	23.86	23.80
10	QPSK	25	0	23.50	23.63	23.64
10	QPSK	25	12	23.41	23.54	23.78
10	QPSK	25	24	23.30	23.52	23.60
10	QPSK	50	0	23.29	23.24	23.30
10	16QAM	1	0	22.68	22.75	22.52
10	16QAM	1	24	22.53	22.48	22.45
10	16QAM	1	49	22.69	22.51	22.82
10	16QAM	25	0	22.50	22.46	22.67
10	16QAM	25	12	22.31	22.44	22.61
10	16QAM	25	24	22.28	22.33	22.62
10	16QAM	50	0	22.24	22.24	22.50
Channel				20425	20525	20625
Frequency (MHz)				826.5	836.5	846.5
5	QPSK	1	0	23.89	23.75	23.55
5	QPSK	1	12	23.76	23.83	23.76
5	QPSK	1	24	23.77	23.85	23.85
5	QPSK	12	0	23.57	23.82	23.71
5	QPSK	12	6	23.53	23.78	23.83
5	QPSK	12	11	23.52	23.70	23.79
5	QPSK	25	0	23.29	23.30	23.50
5	16QAM	1	0	22.97	22.94	22.91
5	16QAM	1	12	22.95	22.98	22.89
5	16QAM	1	24	22.97	22.89	22.97
5	16QAM	12	0	22.78	22.87	22.85
5	16QAM	12	6	22.61	22.84	22.85
5	16QAM	12	11	22.59	22.85	22.78
5	16QAM	25	0	22.53	22.88	22.50



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20415	20525	20635
Frequency (MHz)				825.5	836.5	847.5
3	QPSK	1	0	23.85	23.83	23.87
3	QPSK	1	7	23.91	23.92	23.87
3	QPSK	1	14	23.95	23.90	23.88
3	QPSK	8	0	23.60	23.85	23.76
3	QPSK	8	4	23.54	23.84	23.63
3	QPSK	8	7	23.49	23.87	23.78
3	QPSK	15	0	23.33	23.23	23.30
3	16QAM	1	0	22.97	22.95	22.84
3	16QAM	1	7	22.96	22.88	22.93
3	16QAM	1	14	22.81	22.94	22.97
3	16QAM	8	0	22.56	22.91	22.85
3	16QAM	8	4	22.59	22.92	22.83
3	16QAM	8	7	22.65	22.81	22.99
3	16QAM	15	0	22.31	22.50	22.34
Channel				20407	20525	20643
Frequency (MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	23.94	23.77	23.58
1.4	QPSK	1	2	23.74	23.85	23.67
1.4	QPSK	1	5	23.85	23.83	23.80
1.4	QPSK	3	0	23.66	23.91	23.79
1.4	QPSK	3	1	23.47	23.82	23.90
1.4	QPSK	3	2	23.61	23.65	23.70
1.4	QPSK	6	0	23.43	23.21	23.48
1.4	16QAM	1	0	22.91	22.93	22.86
1.4	16QAM	1	2	22.97	22.98	22.92
1.4	16QAM	1	5	22.98	22.89	22.99
1.4	16QAM	3	0	22.88	22.79	22.91
1.4	16QAM	3	1	22.63	22.89	22.80
1.4	16QAM	3	2	22.68	22.87	22.76
1.4	16QAM	6	0	22.55	22.91	22.45



<LTE Band 7 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20850	21100	21350
Frequency (MHz)				2510	2535	2560
20	QPSK	1	0	23.64	23.46	23.90
20	QPSK	1	49	23.51	23.45	23.42
20	QPSK	1	99	23.46	23.72	23.60
20	QPSK	50	0	22.78	22.50	22.90
20	QPSK	50	24	22.50	22.16	22.39
20	QPSK	50	49	22.35	22.65	22.33
20	QPSK	100	0	22.46	22.39	22.37
20	16QAM	1	0	22.53	22.58	22.57
20	16QAM	1	49	22.64	22.35	22.40
20	16QAM	1	99	22.67	22.61	22.55
20	16QAM	50	0	21.07	21.54	21.50
20	16QAM	50	24	21.38	21.42	21.50
20	16QAM	50	49	21.22	21.57	21.54
20	16QAM	100	0	21.03	21.38	21.37
Channel				20825	21100	21375
Frequency (MHz)				2507.5	2535	2562.5
15	QPSK	1	0	23.43	23.39	23.17
15	QPSK	1	37	23.23	23.30	23.49
15	QPSK	1	74	23.51	23.39	23.60
15	QPSK	36	0	22.57	22.40	22.20
15	QPSK	36	18	22.76	22.34	22.52
15	QPSK	36	37	22.57	22.33	22.52
15	QPSK	75	0	22.49	22.19	22.45
15	16QAM	1	0	22.39	22.55	22.35
15	16QAM	1	37	22.33	22.45	22.58
15	16QAM	1	74	22.40	22.10	22.57
15	16QAM	36	0	21.32	21.40	21.15
15	16QAM	36	18	21.57	21.40	21.58
15	16QAM	36	37	21.49	21.43	21.49
15	16QAM	75	0	21.41	21.13	21.31



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20800	21100	21400
Frequency (MHz)				2505	2535	2565
10	QPSK	1	0	23.50	23.11	23.32
10	QPSK	1	24	23.77	23.28	23.77
10	QPSK	1	49	23.80	23.33	23.55
10	QPSK	25	0	22.42	22.31	22.71
10	QPSK	25	12	22.58	22.26	22.65
10	QPSK	25	24	22.38	22.37	22.36
10	QPSK	50	0	22.31	22.17	22.45
10	16QAM	1	0	22.65	22.15	22.56
10	16QAM	1	24	22.55	22.06	22.41
10	16QAM	1	49	22.24	22.24	22.30
10	16QAM	25	0	21.39	21.34	21.38
10	16QAM	25	12	21.47	21.20	21.26
10	16QAM	25	24	21.39	21.37	21.43
10	16QAM	50	0	21.31	21.07	21.09
Channel				20775	21100	21425
Frequency (MHz)				2502.5	2535	2567.5
5	QPSK	1	0	23.19	23.26	23.50
5	QPSK	1	12	23.20	23.26	23.50
5	QPSK	1	24	23.53	23.38	23.48
5	QPSK	12	0	22.30	21.99	22.24
5	QPSK	12	6	22.39	21.98	22.23
5	QPSK	12	11	22.41	22.39	22.58
5	QPSK	25	0	22.34	22.42	22.62
5	16QAM	1	0	22.06	22.06	22.43
5	16QAM	1	12	22.30	22.07	22.44
5	16QAM	1	24	22.17	22.21	21.98
5	16QAM	12	0	21.23	21.03	21.26
5	16QAM	12	6	21.15	20.92	21.23
5	16QAM	12	11	21.31	21.35	21.60
5	16QAM	25	0	21.24	21.45	21.67

Note: maximum average power for LTE.

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

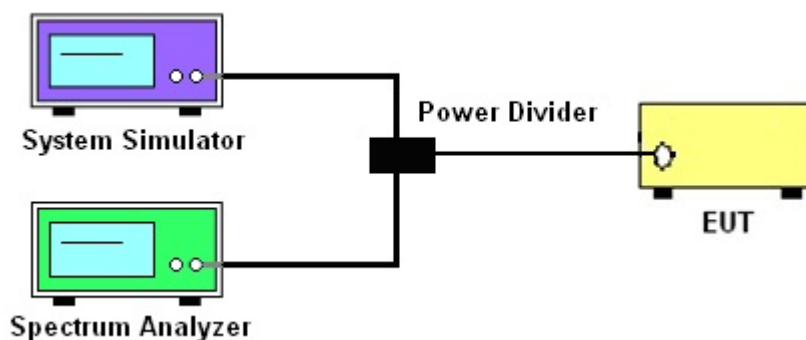
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. For LTE operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
3. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

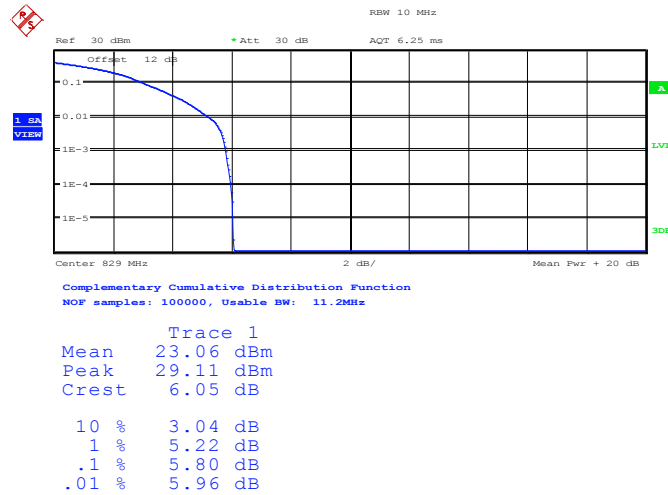
LTE Band 5						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20450	20525	20600
Frequency (MHz)				829	836.5	844
10	16QAM	1	0	5.80	6.76	5.64
10	16QAM	50	0	6.44	6.25	6.35

LTE Band 7						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20850	21100	21350
Frequency (MHz)				2510	2535	2560
20	16QAM	1	0	4.81	5.19	5.38
20	16QAM	100	0	5.96	6.19	5.90

3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 5

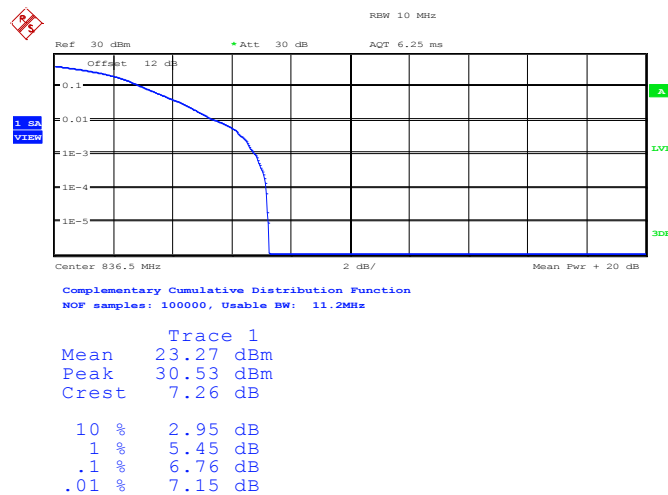
10MHz / 16QAM in Ch. 20450 (1RB Size)



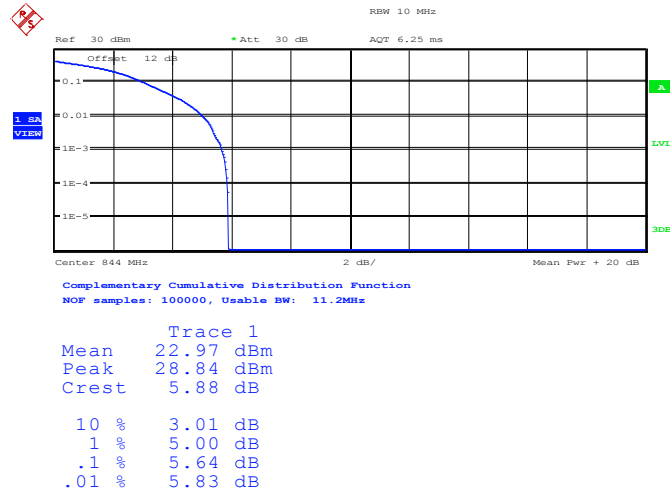
Date: 21.DEC.2013 12:54:09

Peak-to-Average Ratio on LTE Band 5

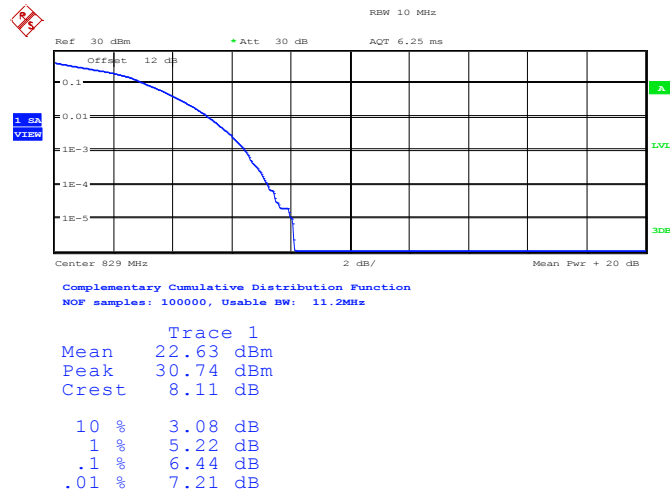
10MHz / 16QAM in Ch. 20525 (1RB Size)



Date: 21.DEC.2013 13:04:56

Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20600 (1RB Size)


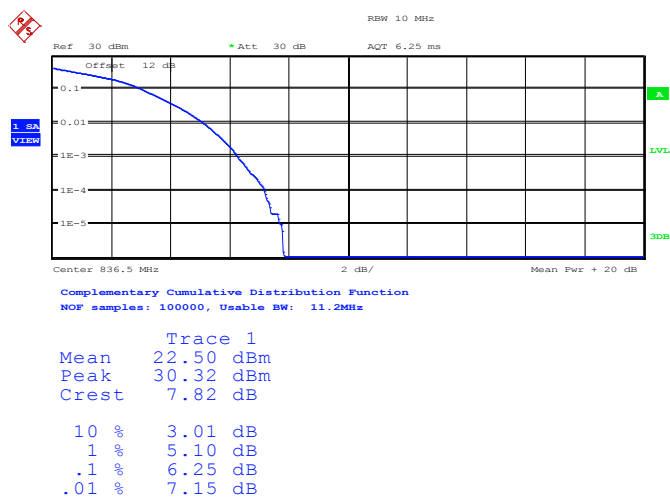
Date: 21.DEC.2013 12:55:47

Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20450 (50RB Size)


Date: 21.DEC.2013 12:54:31

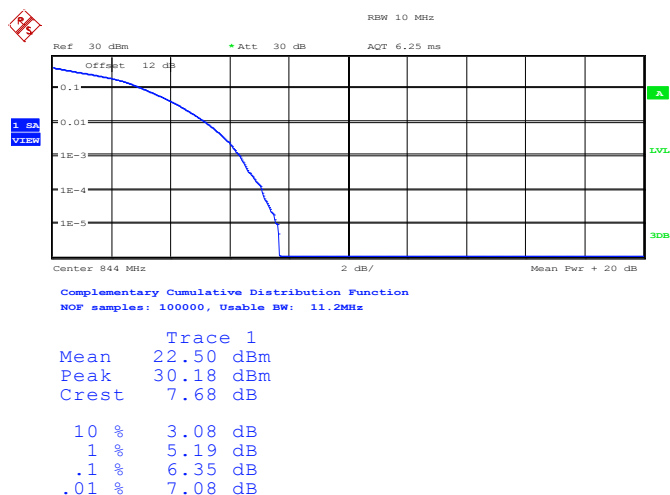


Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20525 (50RB Size)



Date: 21.DEC.2013 13:04:40

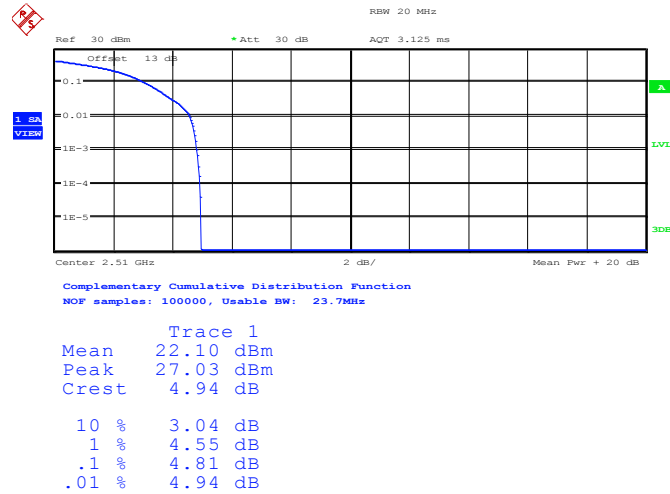
Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20600 (50RB Size)



Date: 21.DEC.2013 12:56:20

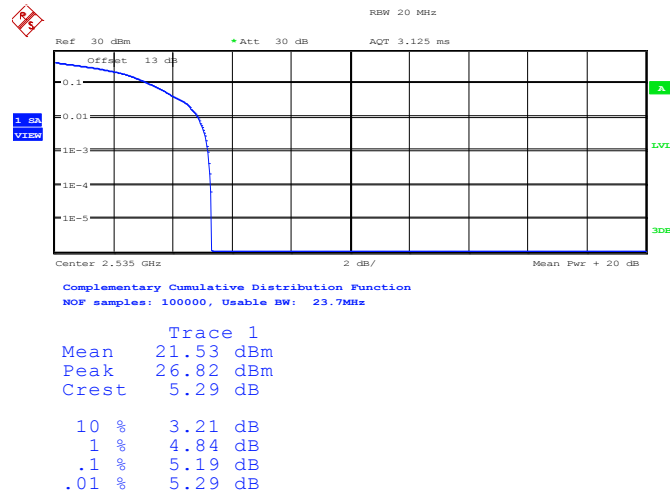
Note: The total loss is 12 dB of the RF cable and attenuator for LTE Band 5,
and has been compensated to the spectrum analyzer offset.

Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 20850 (1RB Size)



Date: 21.DEC.2013 13:06:55

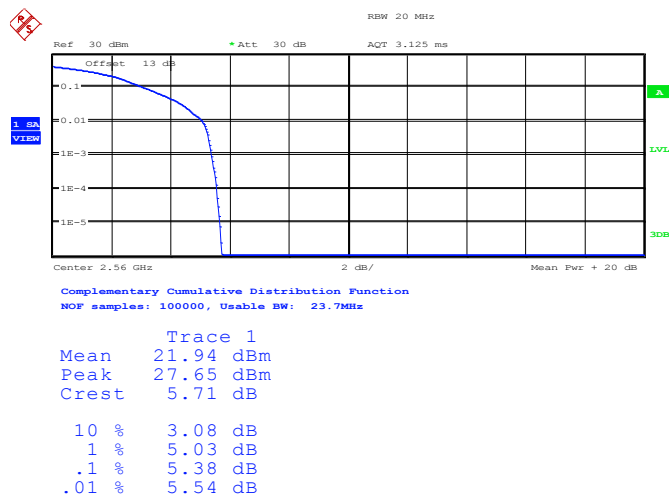
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 21100 (1RB Size)



Date: 21.DEC.2013 13:07:56

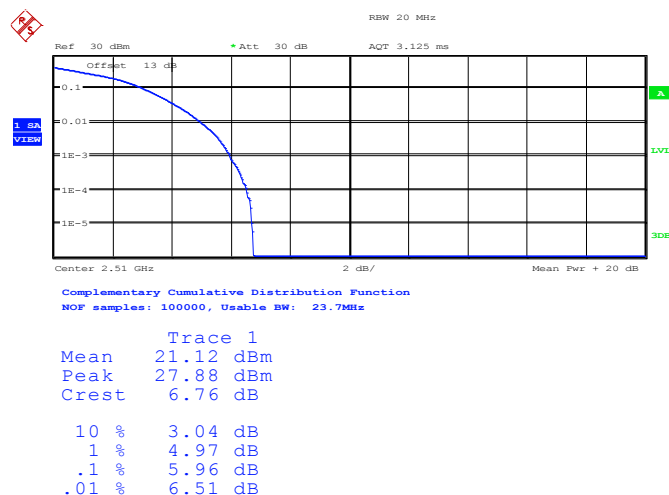


Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 21350 (1RB Size)



Date: 21.DEC.2013 13:08:21

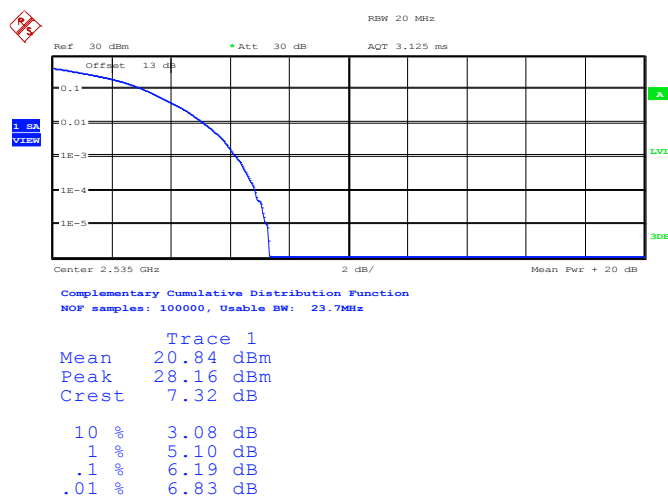
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 20850 (100RB Size)



Date: 21.DEC.2013 13:07:17

Peak-to-Average Ratio on LTE Band 7

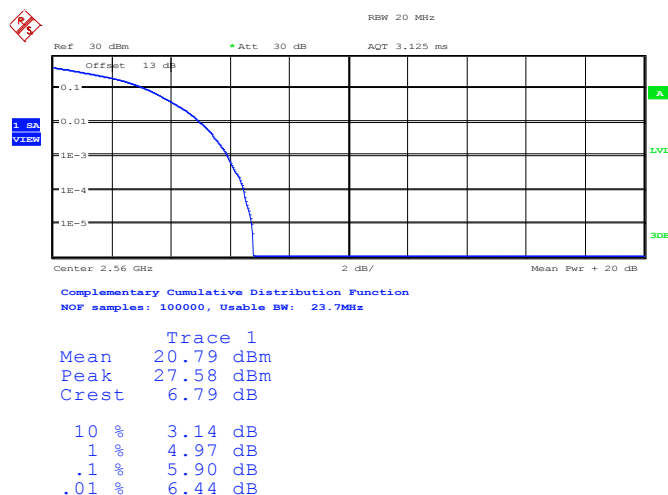
20MHz / 16QAM in Ch. 21100 (100RB Size)



Date: 21.DEC.2013 13:07:37

Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 21350 (100RB Size)



Date: 21.DEC.2013 13:08:44

Note: The total loss is 13 dB of the RF cable and attenuator for LTE Band 7, and has been compensated to the spectrum analyzer offset.



3.3 Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement

3.3.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5.

Equivalent isotropic radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 7.

3.3.2 Measuring Instruments

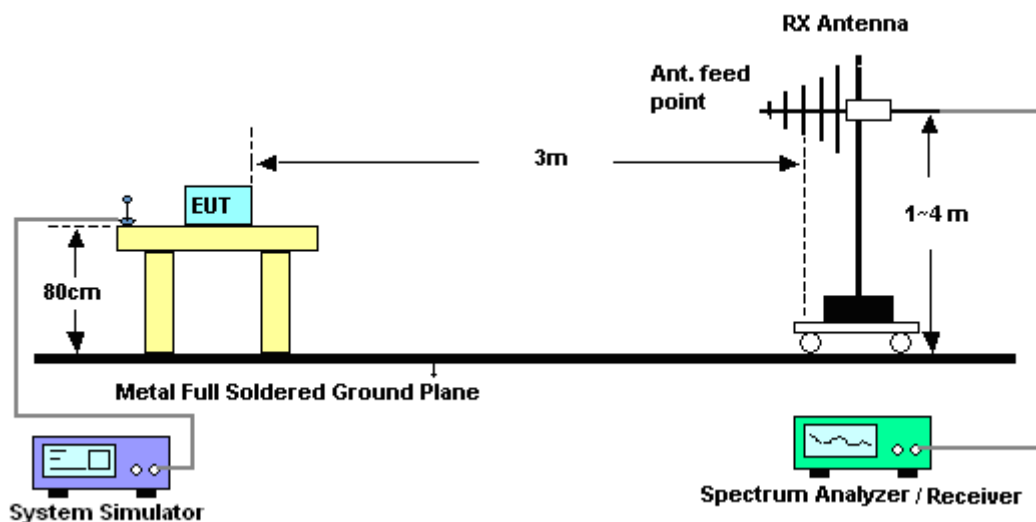
The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

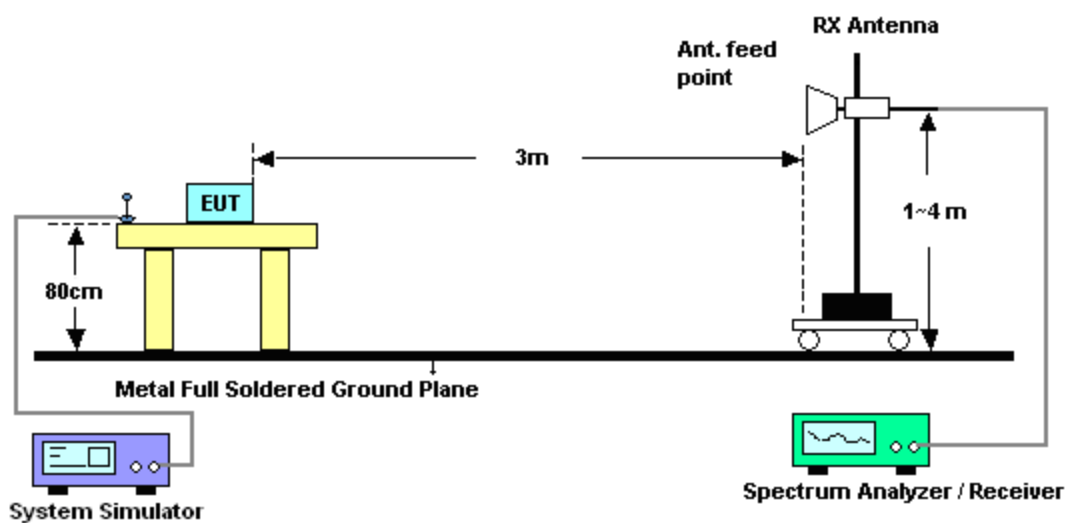
1. The EUT was placed on a non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal bandwidth per section 4.0 of KDB 971168 D01.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.

3.3.4 Test Setup

For Effective Radiated Power



For Equivalent Isotropic Radiated Power



3.3.5 Test Result of ERP/EIRP

LTE Band 5 Radiated Power ERP for BW 1.4MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-14.28	31.54	15.11	0.03
836.5	-13.72	32.04	16.17	0.04
848.3	-13.69	32.59	16.75	0.05
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-19.48	32.93	11.30	0.01
836.5	-19.29	32.82	11.38	0.01
848.3	-18.59	33.62	12.88	0.02

LTE Band 5 Radiated Power ERP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-15.11	31.54	14.28	0.03
836.5	-14.83	32.04	15.06	0.03
848.3	-14.66	32.59	15.78	0.04
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-20.22	32.93	10.56	0.01
836.5	-20.20	32.82	10.47	0.01
848.3	-19.40	33.62	12.07	0.02

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 5 Radiated Power ERP for BW 3MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-11.27	31.54	18.12	0.06
836.5	-11.80	32.04	18.09	0.06
847.5	-11.54	32.59	18.90	0.08
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-19.62	32.93	11.16	0.01
836.5	-19.03	32.82	11.64	0.01
847.5	-18.97	33.62	12.50	0.02

LTE Band 5 Radiated Power ERP for BW 3MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-13.32	31.44	15.97	0.04
836.5	-13.72	32.04	16.17	0.04
847.5	-13.59	32.63	16.89	0.05
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-21.62	32.78	9.01	0.01
836.5	-21.02	32.82	9.65	0.01
847.5	-20.98	33.40	10.27	0.01

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 5 Radiated Power ERP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-11.80	31.44	17.49	0.06
836.5	-11.77	32.04	18.12	0.06
846.5	-11.46	32.63	19.02	0.08
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-20.14	32.78	10.49	0.01
836.5	-19.21	32.82	11.46	0.01
846.5	-18.81	33.40	12.44	0.02

LTE Band 5 Radiated Power ERP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-12.43	31.44	16.86	0.05
836.5	-12.86	32.04	17.03	0.05
846.5	-12.51	32.63	17.97	0.06
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-20.84	32.78	9.79	0.01
836.5	-20.10	32.82	10.57	0.01
846.5	-19.90	33.40	11.35	0.01

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 5 Radiated Power ERP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829.0	-12.42	31.44	16.87	0.05
836.5	-12.54	32.04	17.35	0.05
844.0	-12.65	32.63	17.83	0.06
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829.0	-19.96	32.78	10.67	0.01
836.5	-19.40	32.82	11.27	0.01
844.0	-19.90	33.40	11.35	0.01

LTE Band 5 Radiated Power ERP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829.0	-13.20	31.44	16.09	0.04
836.5	-13.14	32.04	16.75	0.05
844.0	-13.24	32.63	17.24	0.05
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829.0	-20.24	32.78	10.39	0.01
836.5	-20.15	32.82	10.52	0.01
844.0	-20.74	33.40	10.51	0.01

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15

LTE Band 7 Radiated Power EIRP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-21.98	44.76	22.78	0.19
2535.0	-22.71	45.37	22.66	0.18
2567.5	-23.11	45.12	22.01	0.16
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-30.74	45.76	15.02	0.03
2535.0	-29.89	47.04	17.15	0.05
2567.5	-30.35	46.31	15.96	0.04

LTE Band 7 Radiated Power EIRP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-22.95	44.76	21.81	0.15
2535.0	-23.47	45.37	21.90	0.15
2567.5	-24.71	45.12	20.41	0.11
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-30.63	45.76	15.13	0.03
2535.0	-30.79	47.04	16.25	0.04
2567.5	-31.23	46.31	15.08	0.03

LTE Band 7 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-21.88	44.97	23.09	0.20
2535.0	-23.10	45.37	22.27	0.17
2565.0	-23.37	45.11	21.74	0.15
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-30.05	45.97	15.92	0.04
2535.0	-29.14	47.04	17.90	0.06
2565.0	-29.76	46.30	16.54	0.05

LTE Band 7 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-24.39	44.97	20.58	0.11
2535.0	-23.77	45.37	21.60	0.14
2565.0	-24.45	45.11	20.66	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-30.16	45.97	15.81	0.04
2535.0	-30.60	47.04	16.44	0.04
2565.0	-31.22	46.30	15.08	0.03

LTE Band 7 Radiated Power EIRP for BW 15MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-23.06	44.92	21.86	0.15
2535.0	-23.13	45.37	22.24	0.17
2562.5	-23.16	45.10	21.94	0.16
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-32.13	45.92	13.79	0.02
2535.0	-32.30	47.04	14.74	0.03
2562.5	-30.62	46.29	15.67	0.04

LTE Band 7 Radiated Power EIRP for BW 15MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-21.61	44.92	23.31	0.21
2535.0	-23.46	45.37	21.91	0.16
2562.5	-24.19	45.10	20.91	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-30.42	45.92	15.50	0.04
2535.0	-32.70	47.04	14.34	0.03
2562.5	-31.12	46.29	15.17	0.03

LTE Band 7 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-21.58	44.94	23.36	0.22
2535.0	-22.32	45.37	23.05	0.20
2560.0	-23.45	45.10	21.65	0.15
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-29.38	45.94	16.56	0.05
2535.0	-30.44	47.04	16.60	0.05
2560.0	-31.57	46.29	14.72	0.03

LTE Band 7 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-23.90	44.94	21.04	0.13
2535.0	-24.16	45.37	21.21	0.13
2560.0	-23.72	45.10	21.38	0.14
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-31.48	45.94	14.46	0.03
2535.0	-32.41	47.04	14.63	0.03
2560.0	-33.11	46.29	13.18	0.02

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26dB occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal 26 dB.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

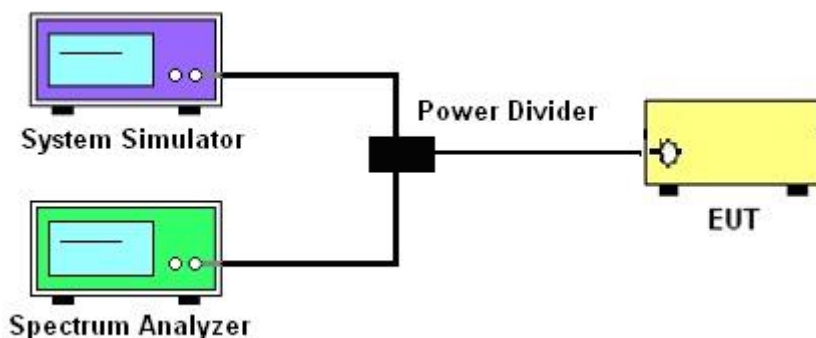
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF powers with full RB sizes were measured.

3.4.4 Test Setup

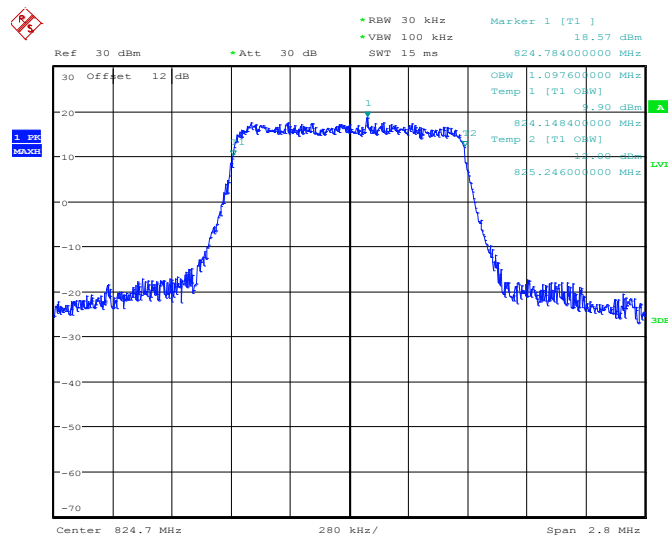




3.4.5 Test Result (Plots) of Occupied Bandwidth

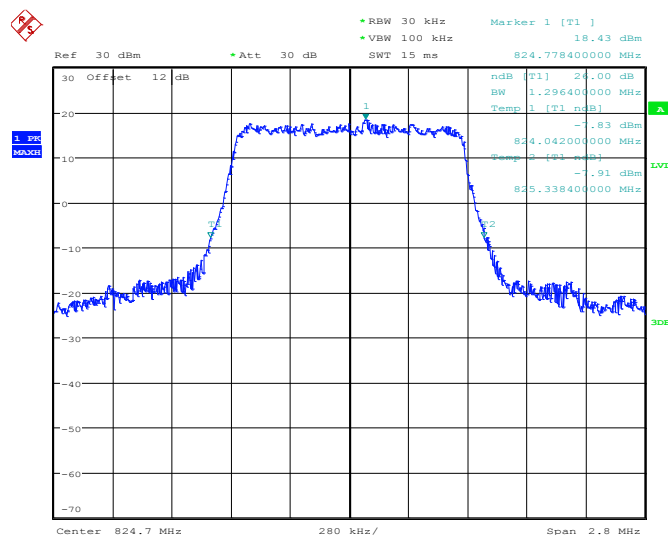
Band :	LTE Band 5	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20407



Date: 19.DEC.2013 14:56:06

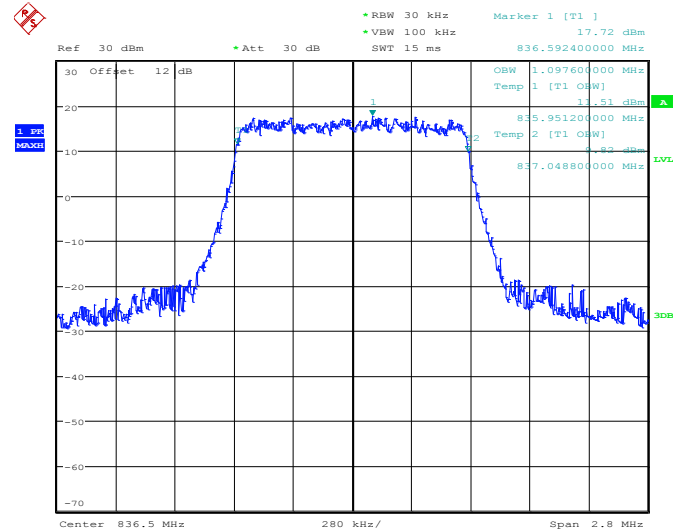
26dB Bandwidth Plot on Channel 20407



Date: 19.DEC.2013 14:56:24

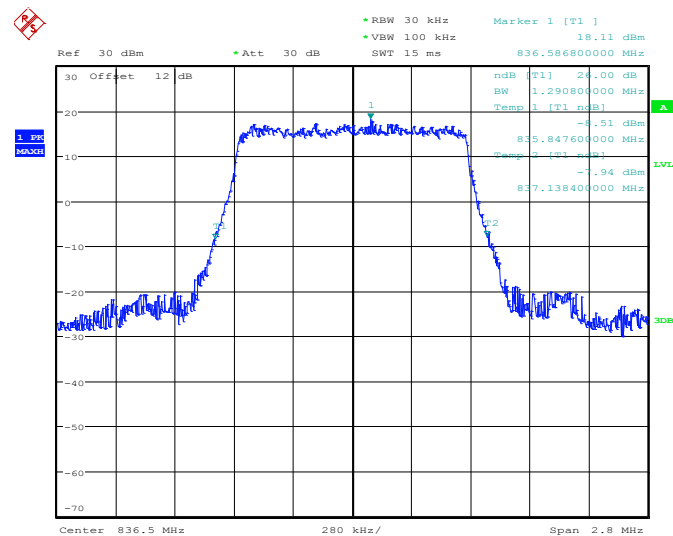


99% Occupied Bandwidth Plot on Channel 20525



Date: 19.DEC.2013 14:56:48

26dB Bandwidth Plot on Channel 20525



Date: 19.DEC.2013 14:57:05



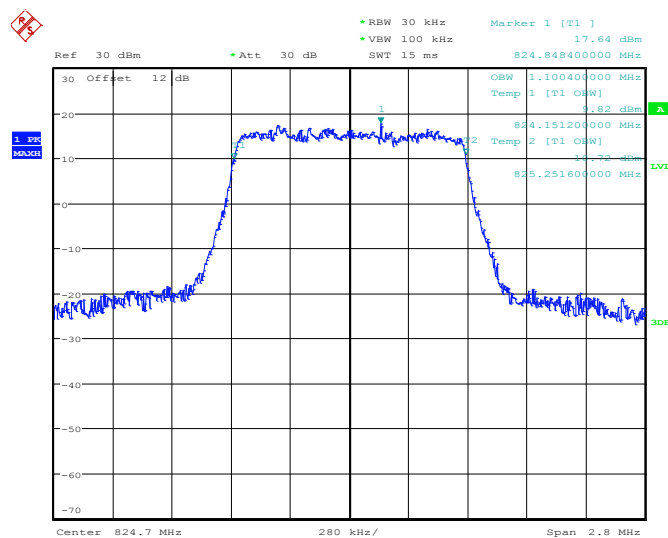
26dB Bandwidth Plot on Channel 20643





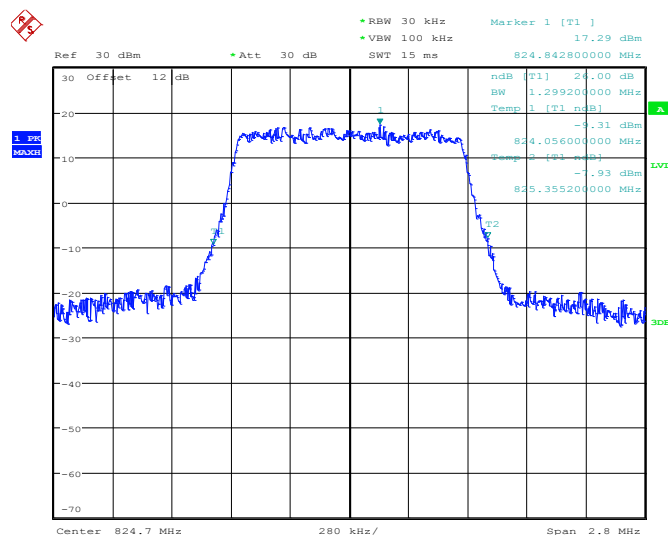
Band :	LTE Band 5	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20407

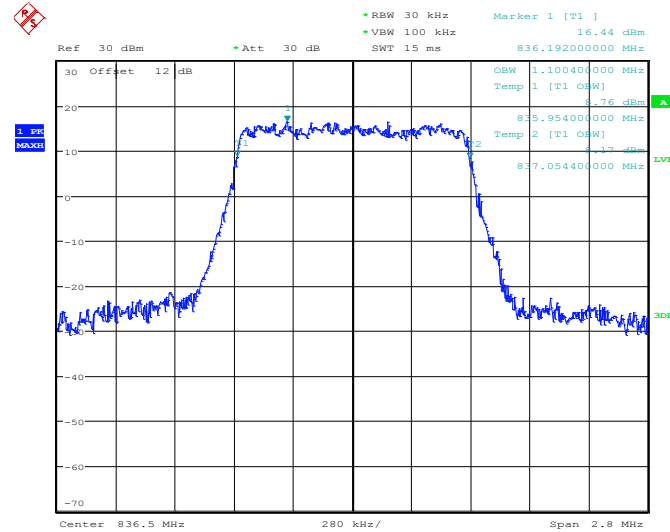


Date: 19.DEC.2013 14:55:39

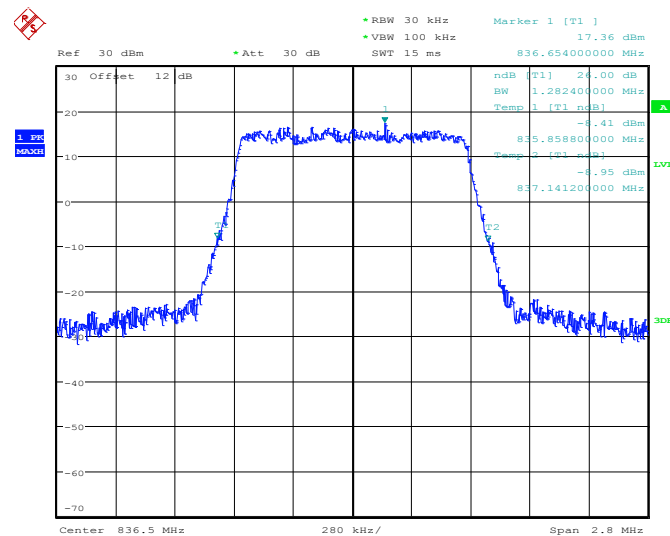
26dB Bandwidth Plot on Channel 20407



Date: 19.DEC.2013 14:55:52

99% Occupied Bandwidth Plot on Channel 20525


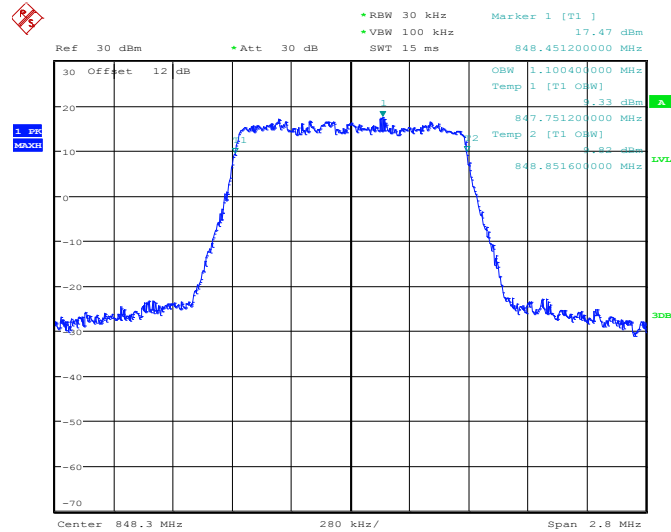
Date: 19.DEC.2013 14:57:21

26dB Bandwidth Plot on Channel 20525


Date: 19.DEC.2013 14:57:35

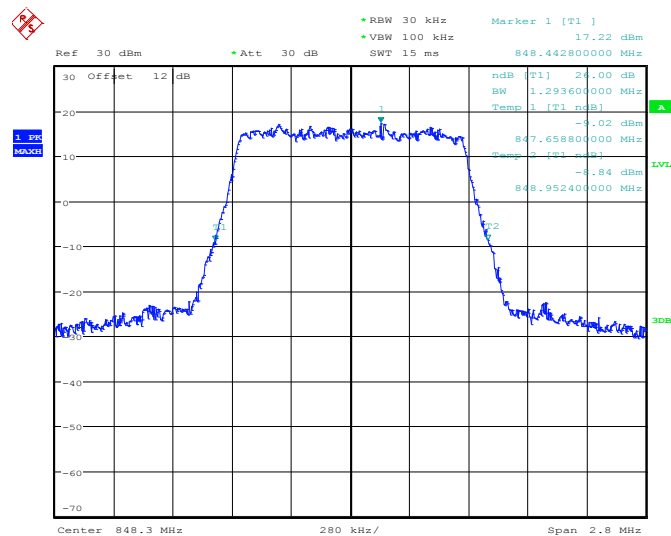


99% Occupied Bandwidth Plot on Channel 20643



Date: 19.DEC.2013 14:57:58

26dB Bandwidth Plot on Channel 20643

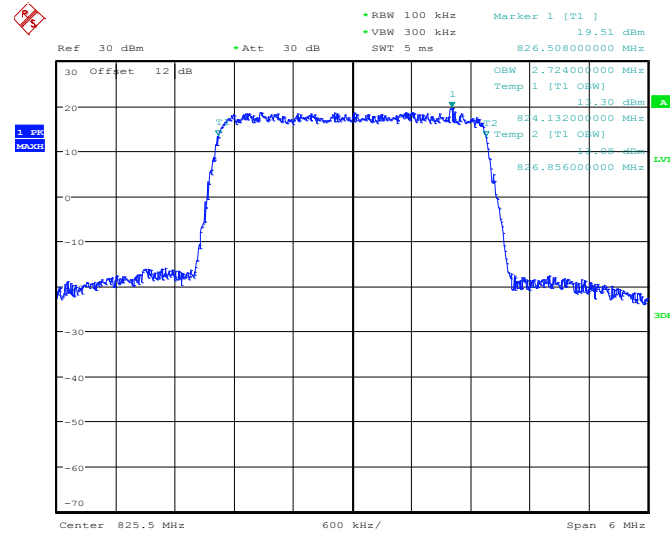


Date: 19.DEC.2013 14:58:19



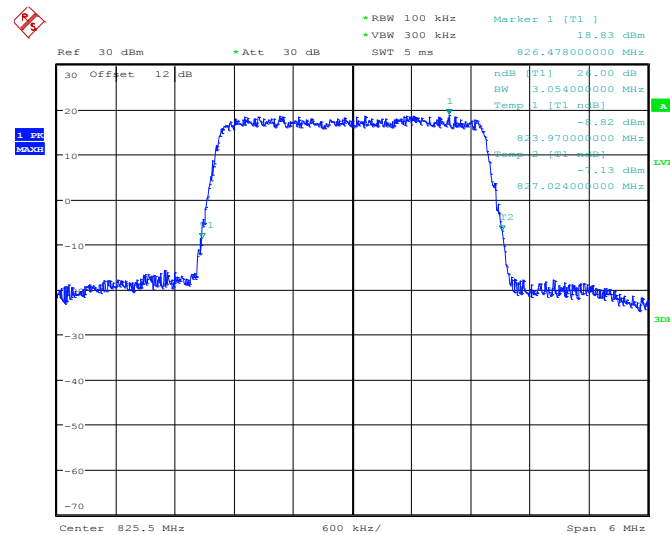
Band :	LTE Band 5	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20415



Date: 19.DEC.2013 14:59:52

26dB Bandwidth Plot on Channel 20415



Date: 19.DEC.2013 15:00:08

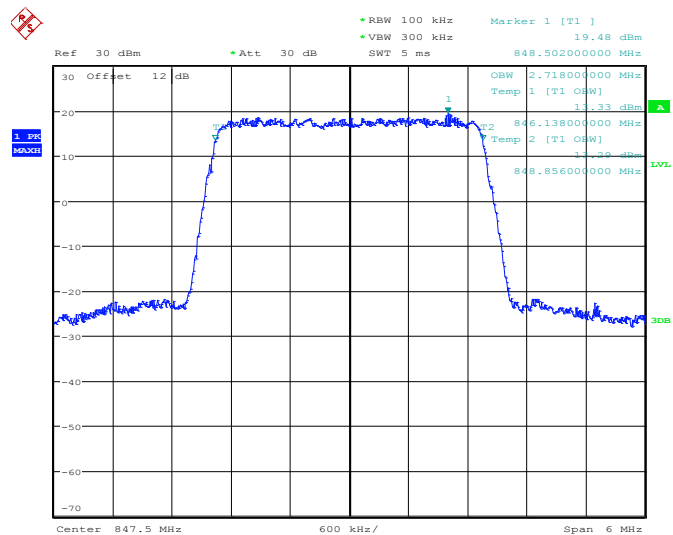


26dB Bandwidth Plot on Channel 20525



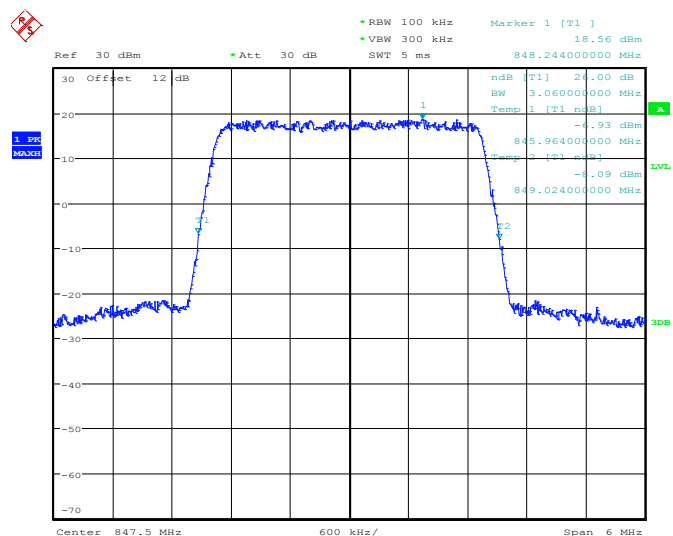


99% Occupied Bandwidth Plot on Channel 20635



Date: 19.DEC.2013 15:02:33

26dB Bandwidth Plot on Channel 20635

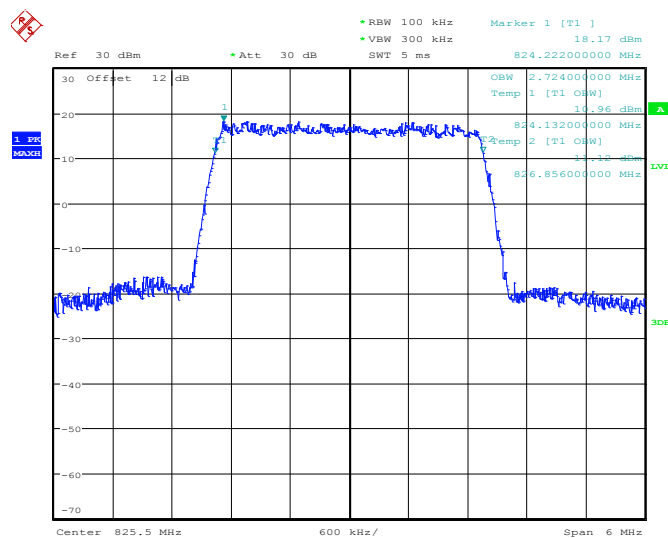


Date: 19.DEC.2013 15:02:55



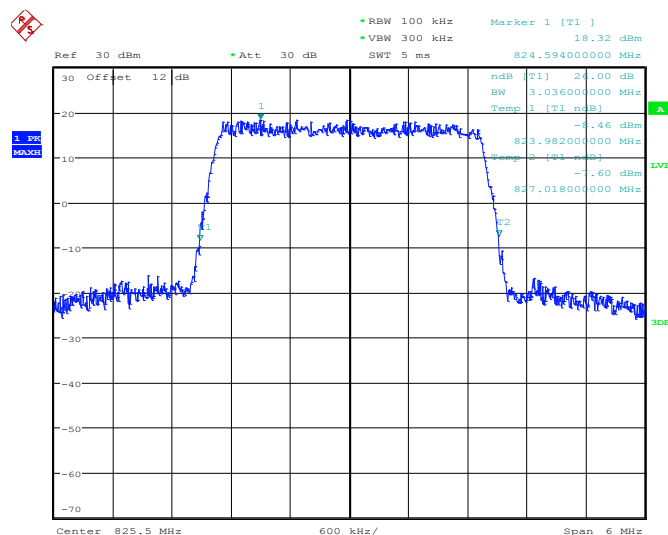
Band :	LTE Band 5	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20415



Date: 19.DEC.2013 15:00:25

26dB Bandwidth Plot on Channel 20415



Date: 19.DEC.2013 15:00:39

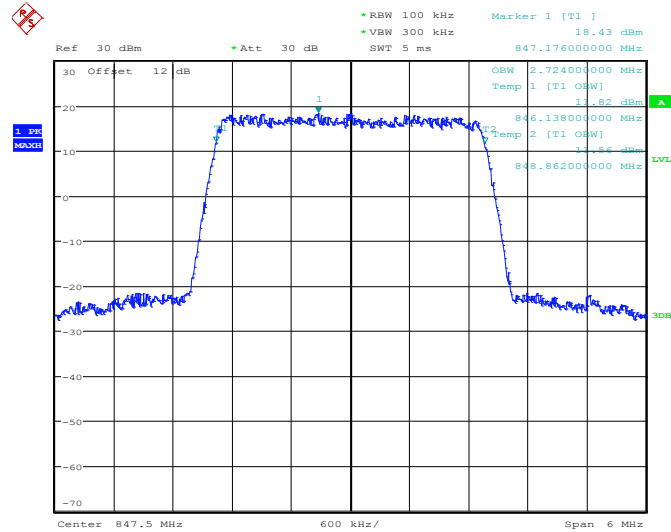


26dB Bandwidth Plot on Channel 20525



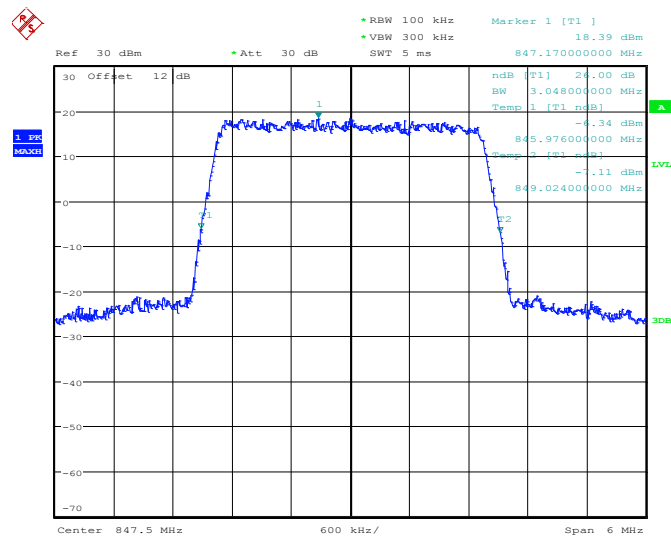


99% Occupied Bandwidth Plot on Channel 20635



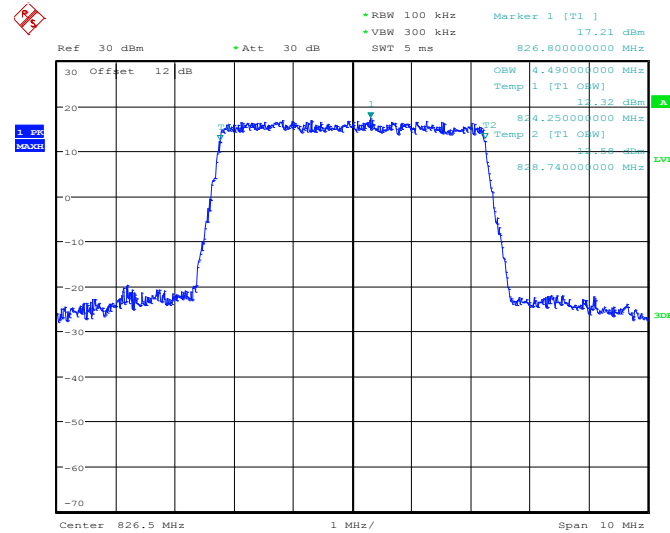
Date: 19.DEC.2013 15:03:24

26dB Bandwidth Plot on Channel 20635

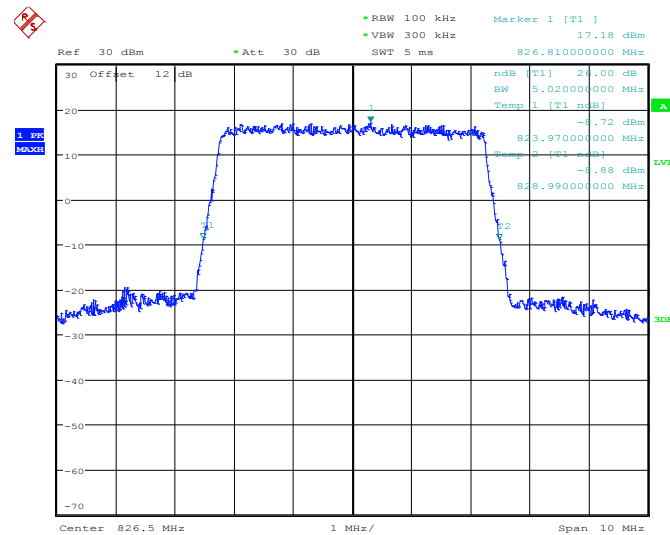


Date: 19.DEC.2013 15:03:46

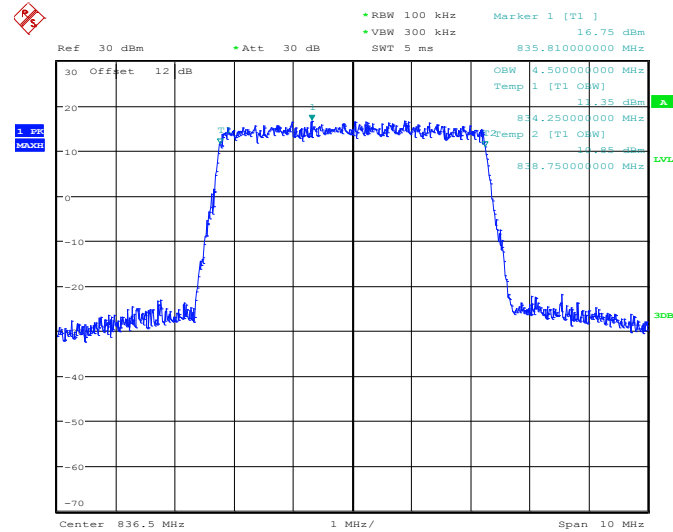
Band :	LTE Band 5	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20425


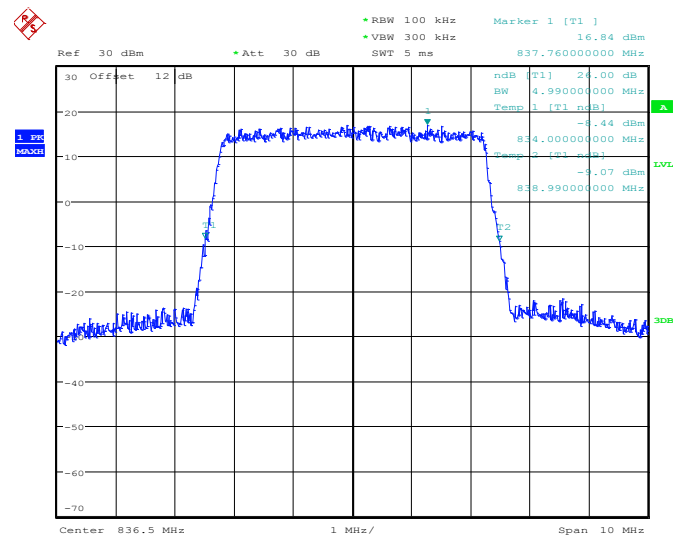
Date: 19.DEC.2013 15:04:50

26dB Bandwidth Plot on Channel 20425


Date: 19.DEC.2013 15:05:13

99% Occupied Bandwidth Plot on Channel 20525


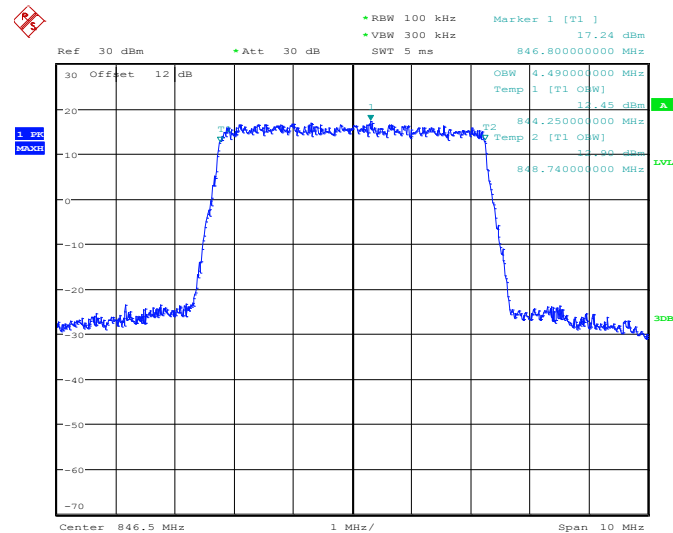
Date: 19.DEC.2013 15:05:35

26dB Bandwidth Plot on Channel 20525


Date: 19.DEC.2013 15:05:57

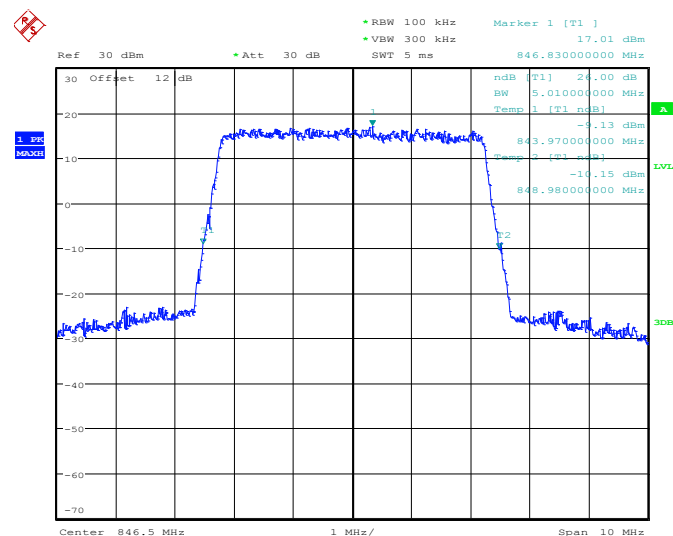


99% Occupied Bandwidth Plot on Channel 20625



Date: 19.DEC.2013 15:07:59

26dB Bandwidth Plot on Channel 20625

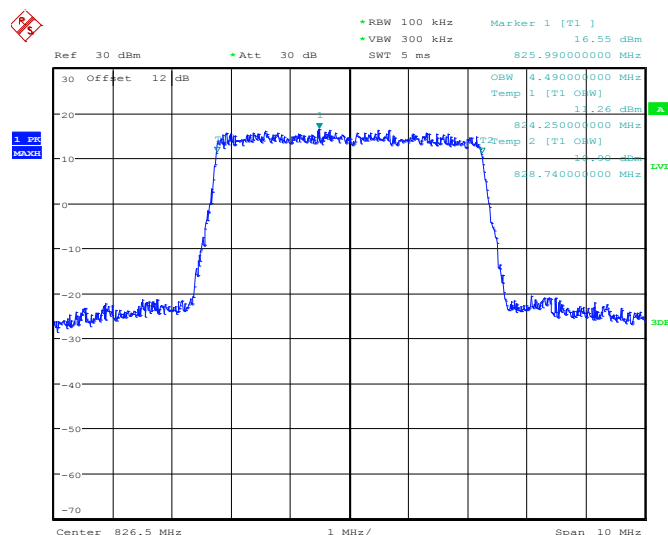


Date: 19.DEC.2013 15:08:21



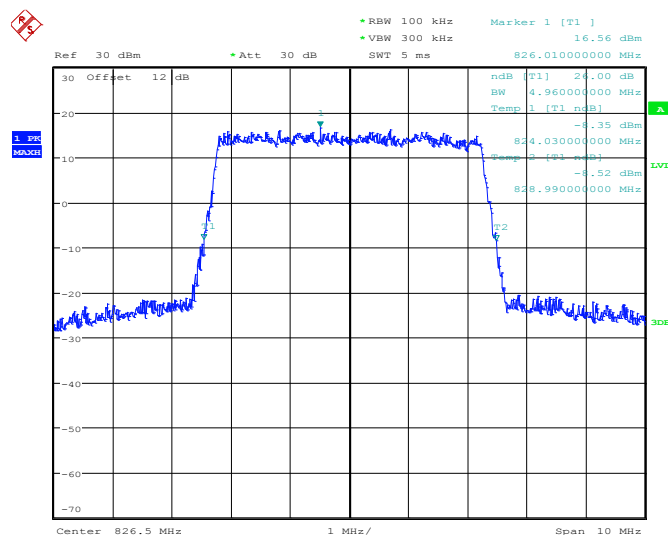
Band :	LTE Band 5	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20425



Date: 19.DEC.2013 15:04:11

26dB Bandwidth Plot on Channel 20425

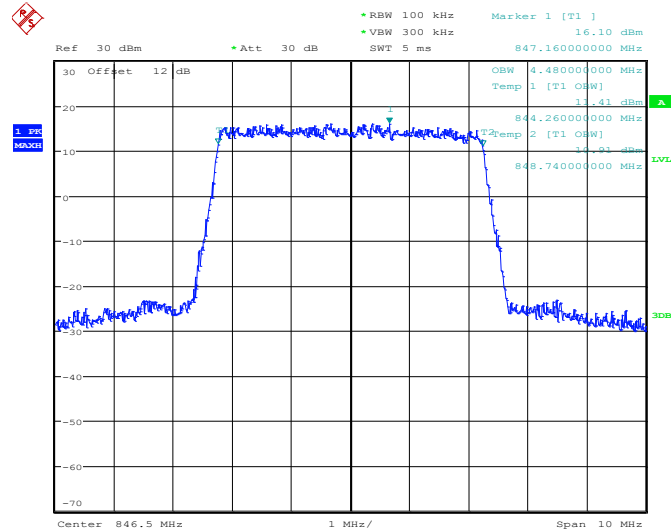


Date: 19.DEC.2013 15:04:26

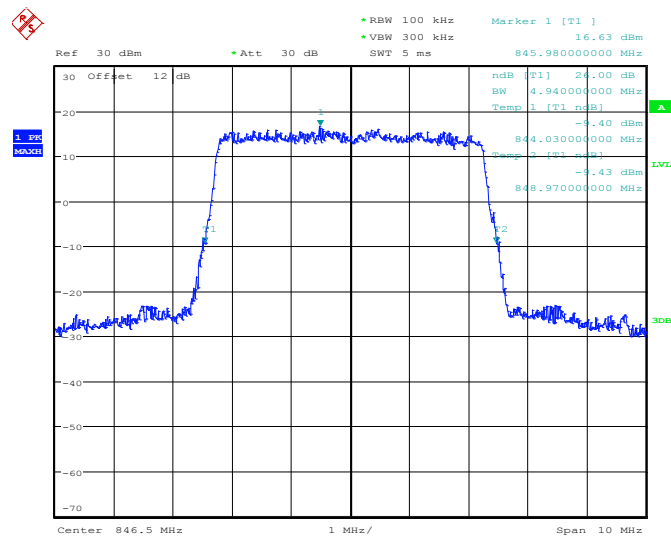


26dB Bandwidth Plot on Channel 20525



99% Occupied Bandwidth Plot on Channel 20625


Date: 19.DEC.2013 15:07:16

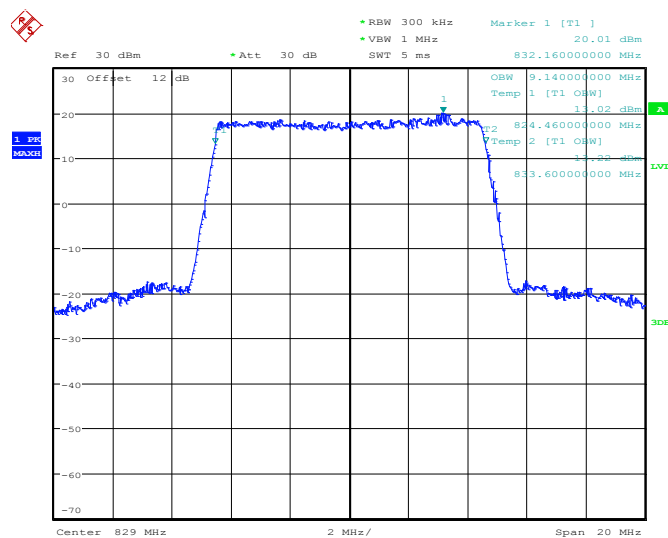
26dB Bandwidth Plot on Channel 20625


Date: 19.DEC.2013 15:07:36



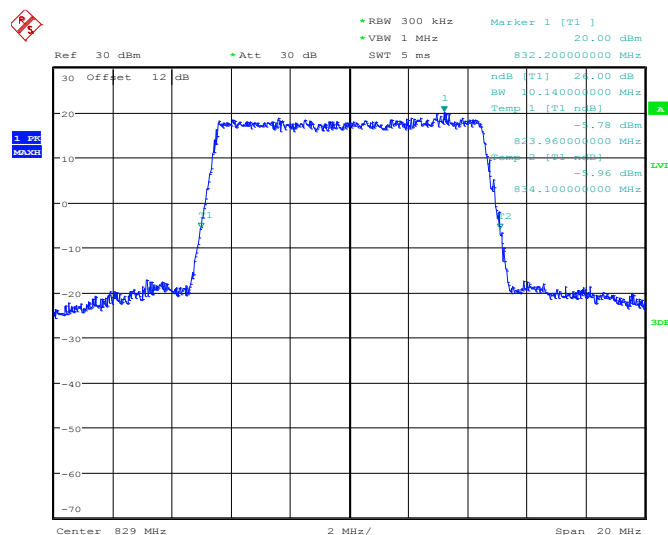
Band :	LTE Band 5	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20450

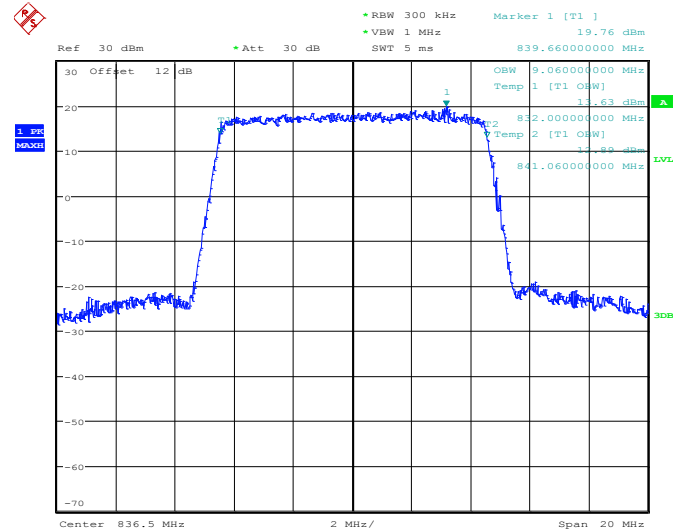


Date: 19.DEC.2013 15:10:41

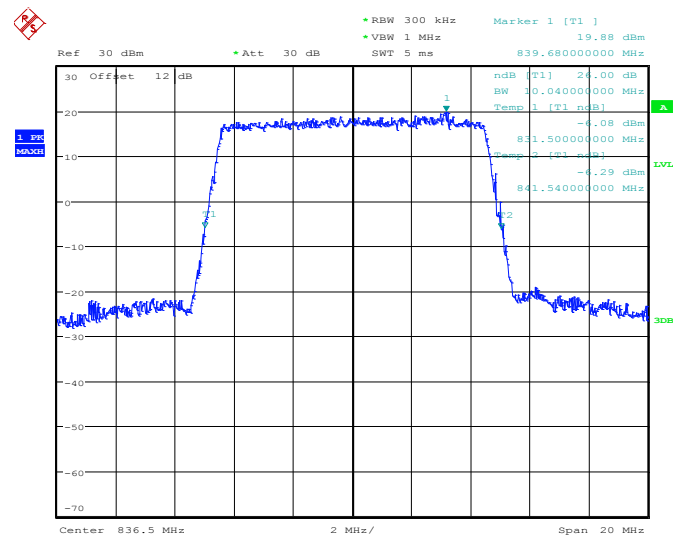
26dB Bandwidth Plot on Channel 20450



Date: 19.DEC.2013 15:09:01

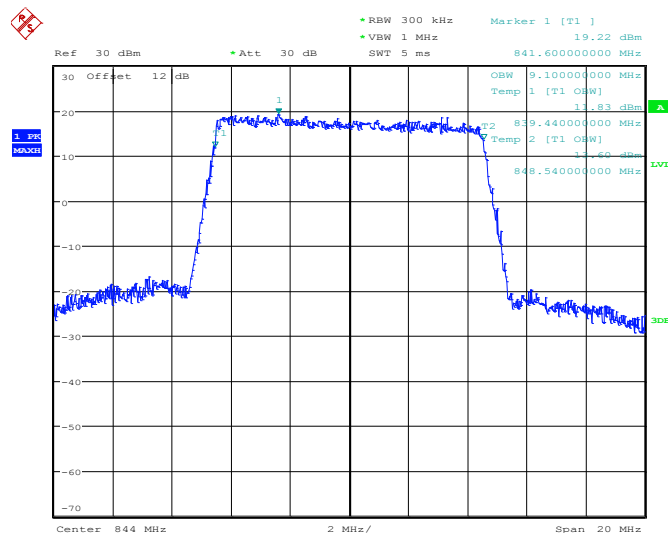
99% Occupied Bandwidth Plot on Channel 20525


Date: 19.DEC.2013 15:12:45

26dB Bandwidth Plot on Channel 20525


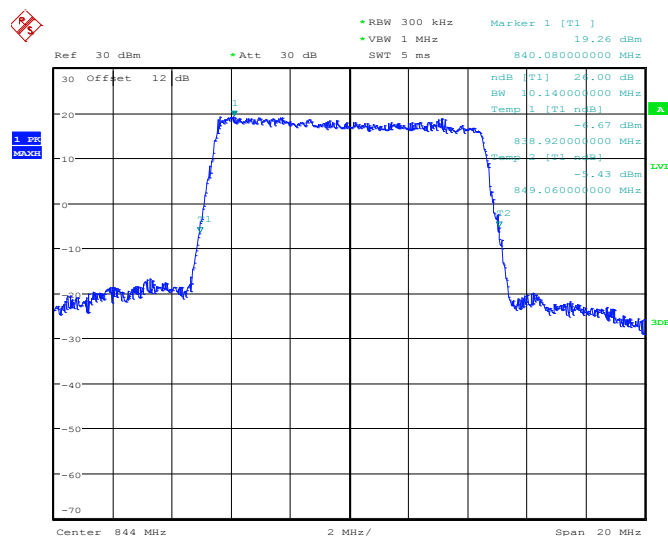
Date: 19.DEC.2013 15:13:02

99% Occupied Bandwidth Plot on Channel 20600



Date: 19.DEC.2013 15:14:31

26dB Bandwidth Plot on Channel 20600

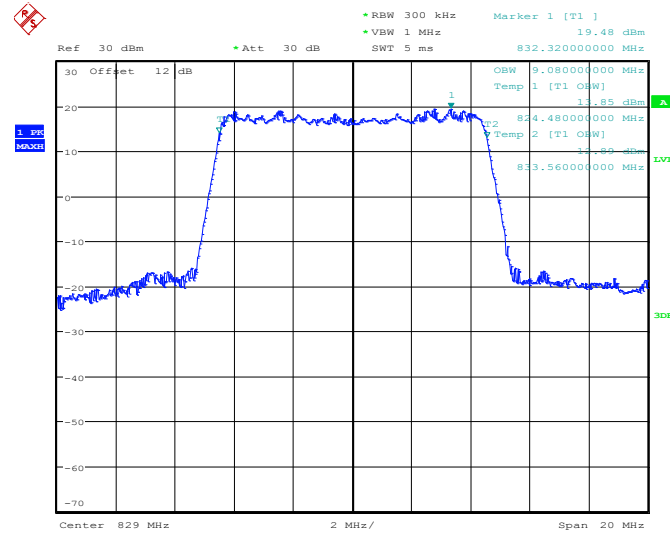


Date: 19.DEC.2013 15:14:52



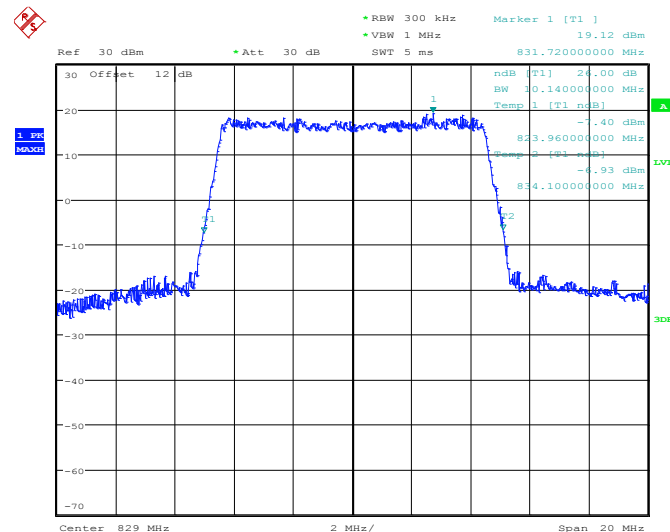
Band :	LTE Band 5	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20450



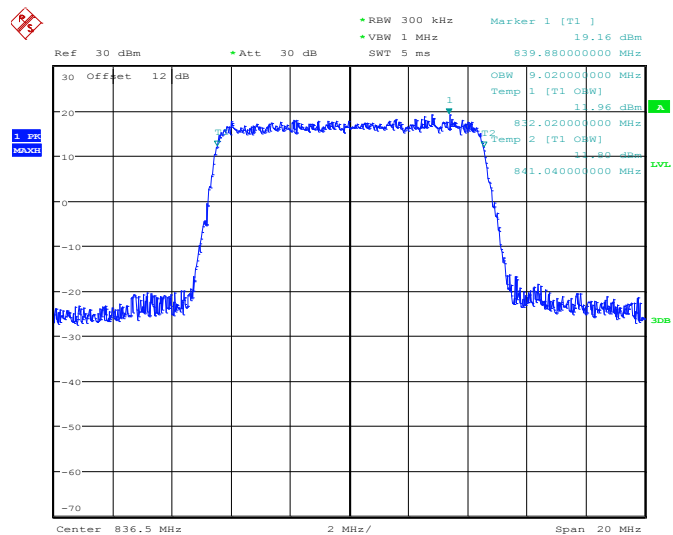
Date: 19.DEC.2013 15:11:33

26dB Bandwidth Plot on Channel 20450



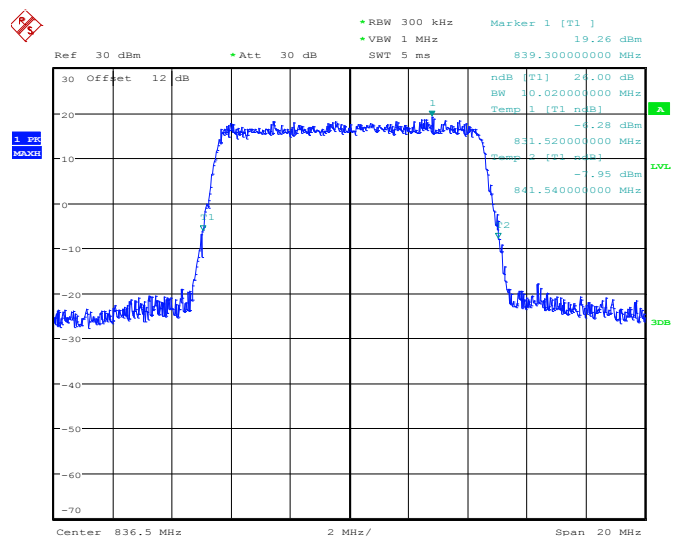
Date: 19.DEC.2013 15:11:48

99% Occupied Bandwidth Plot on Channel 20525



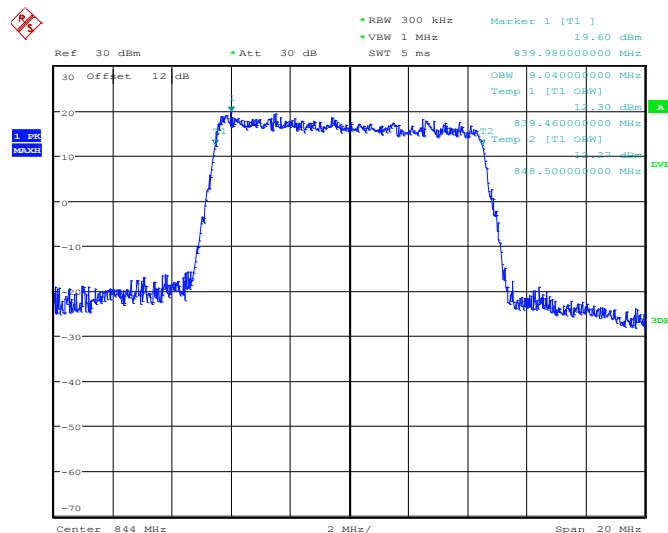
Date: 19.DEC.2013 15:13:24

26dB Bandwidth Plot on Channel 20525



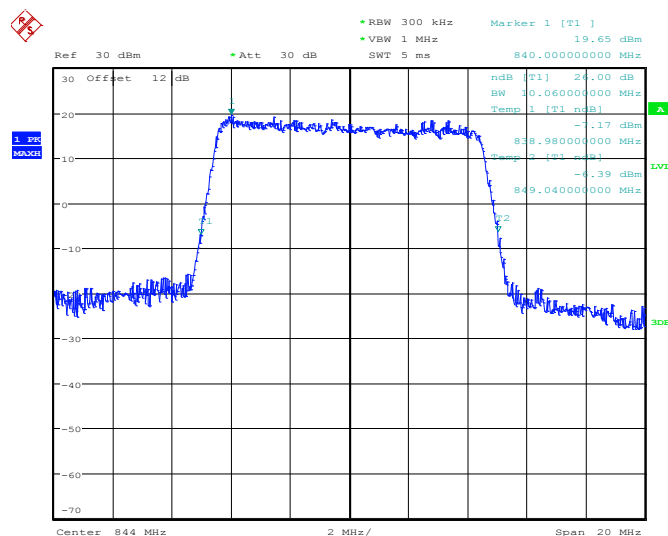
Date: 19.DEC.2013 15:13:37

99% Occupied Bandwidth Plot on Channel 20600



Date: 19.DEC.2013 15:13:58

26dB Bandwidth Plot on Channel 20600



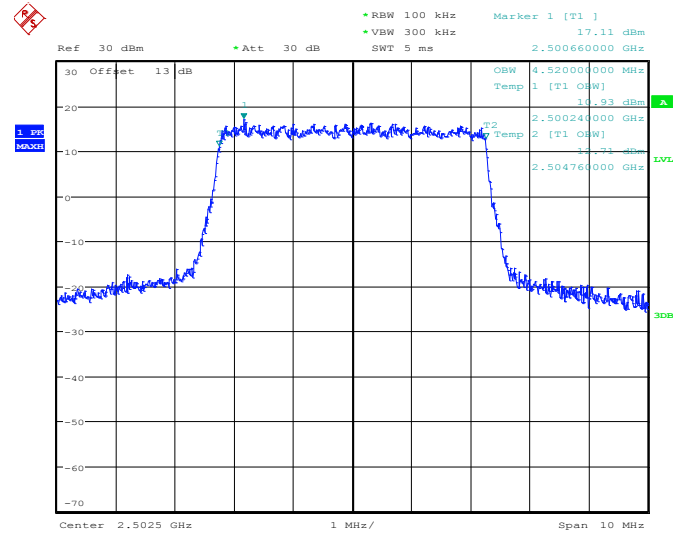
Date: 19.DEC.2013 15:14:15

Note: The total loss is 12 dB of the RF cable and attenuator of LTE Band 5, and has been compensated to the spectrum analyzer offset.



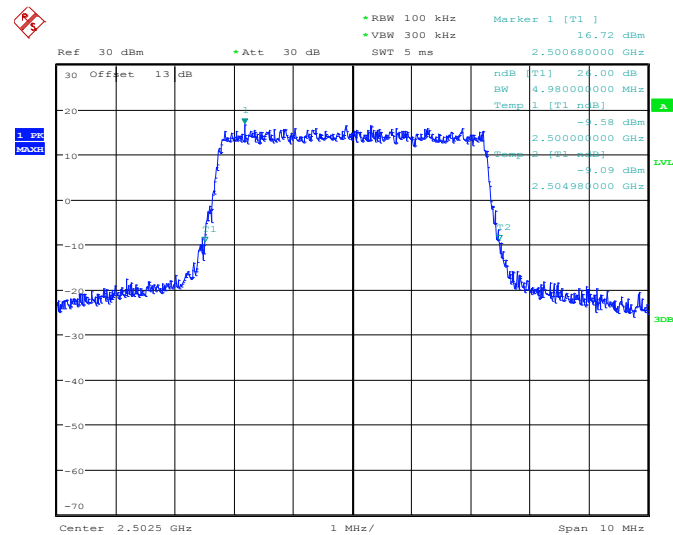
Band :	LTE Band 7	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20775

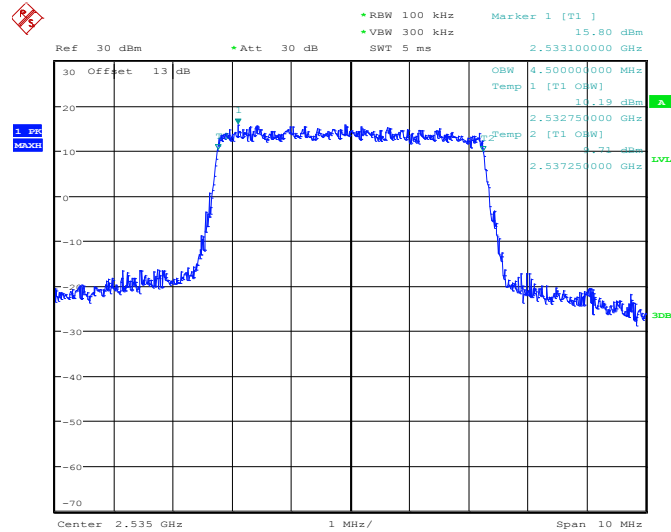


Date: 21.DEC.2013 10:48:36

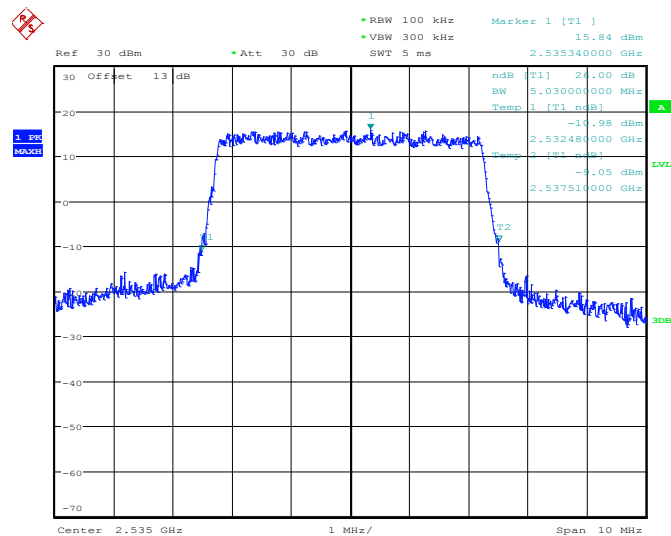
26dB Bandwidth Plot on Channel 20775



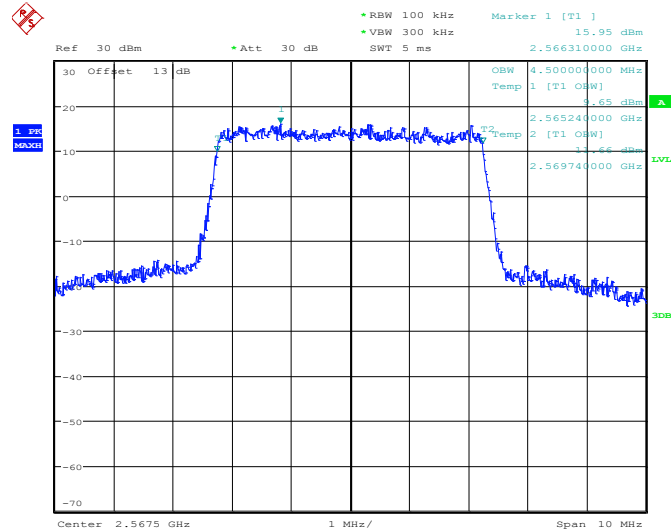
Date: 21.DEC.2013 10:48:54

99% Occupied Bandwidth Plot on Channel 21100


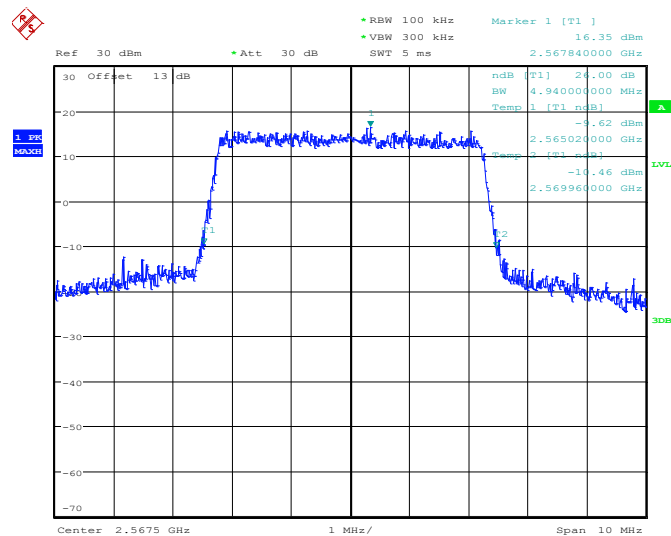
Date: 21.DEC.2013 10:52:44

26dB Bandwidth Plot on Channel 21100


Date: 21.DEC.2013 10:50:28

99% Occupied Bandwidth Plot on Channel 21425


Date: 21.DEC.2013 10:52:03

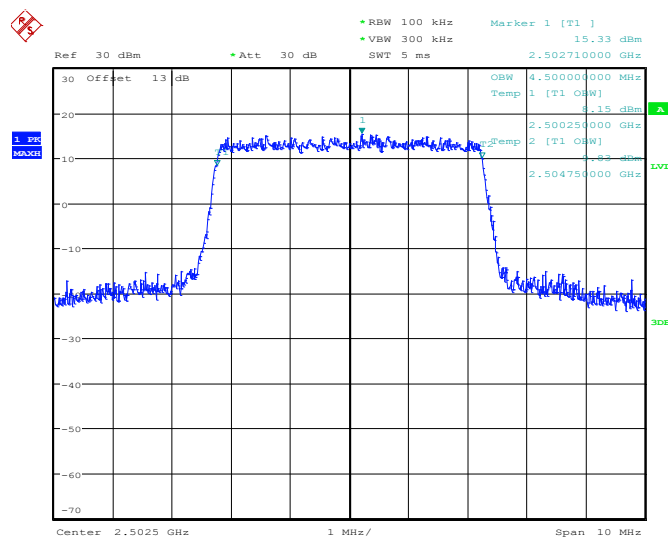
26dB Bandwidth Plot on Channel 21425


Date: 21.DEC.2013 10:52:17



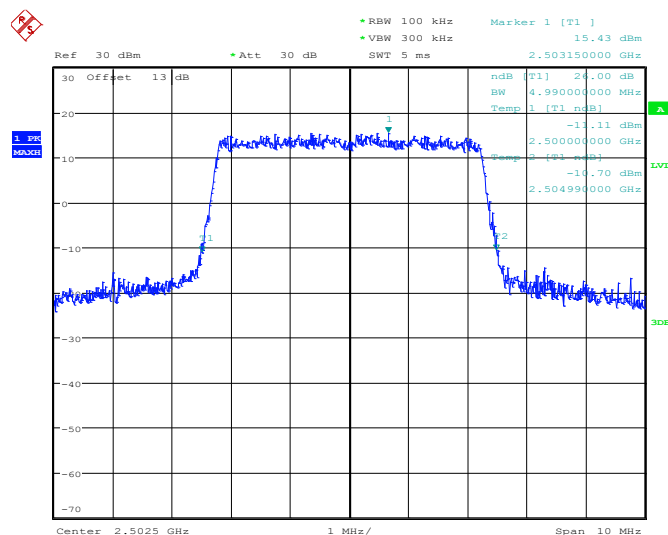
Band :	LTE Band 7	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20775



Date: 21.DEC.2013 10:49:21

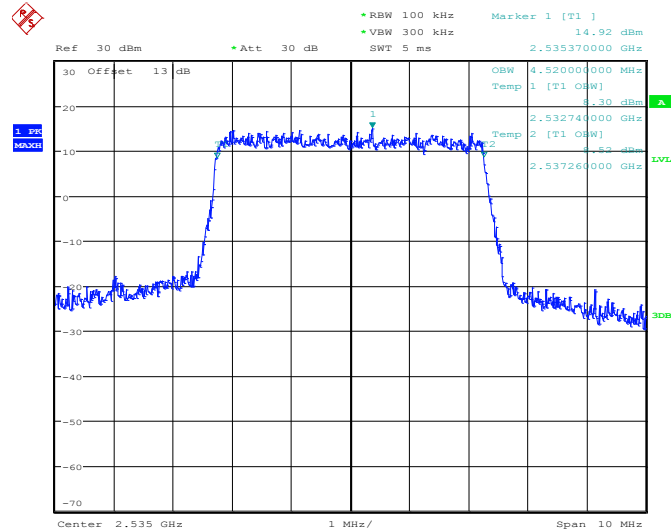
26dB Bandwidth Plot on Channel 20775



Date: 21.DEC.2013 10:49:38

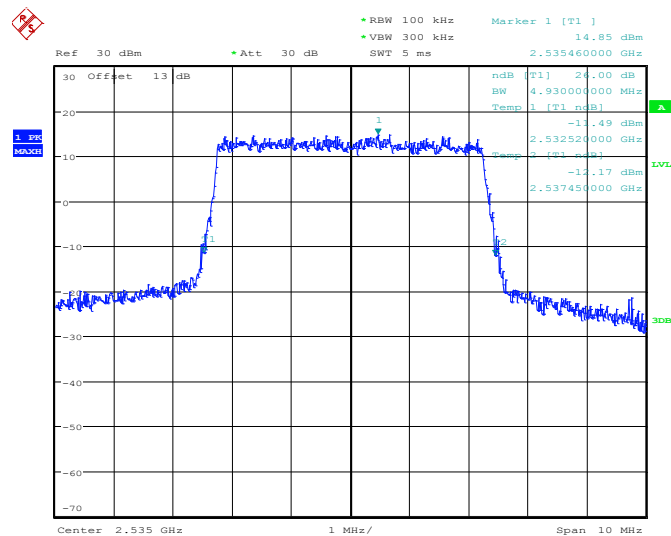


99% Occupied Bandwidth Plot on Channel 21100



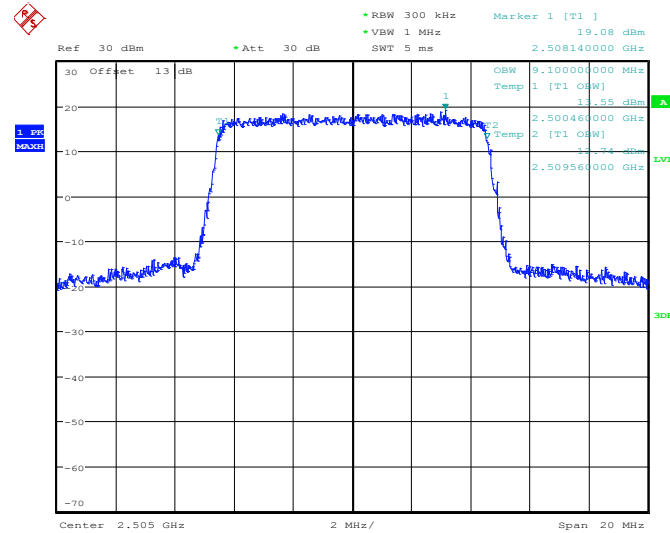
Date: 21.DEC.2013 10:50:42

26dB Bandwidth Plot on Channel 21100

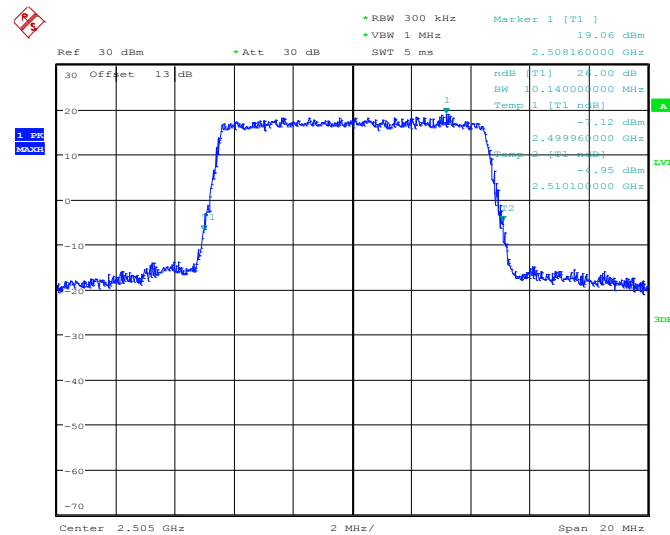


Date: 21.DEC.2013 10:50:56

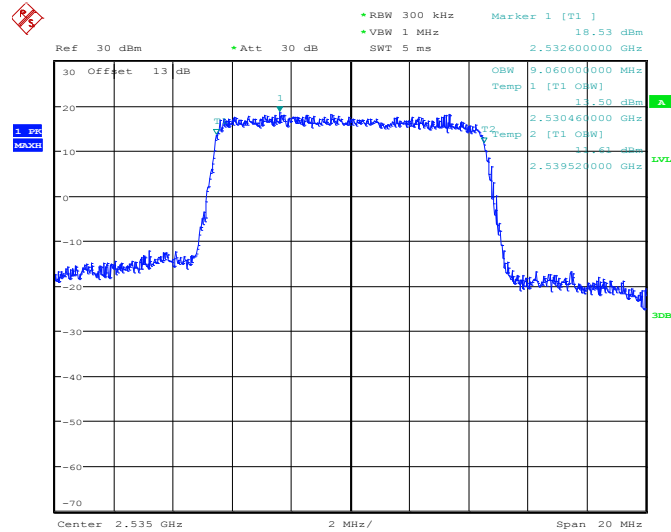
Band :	LTE Band 7	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20800


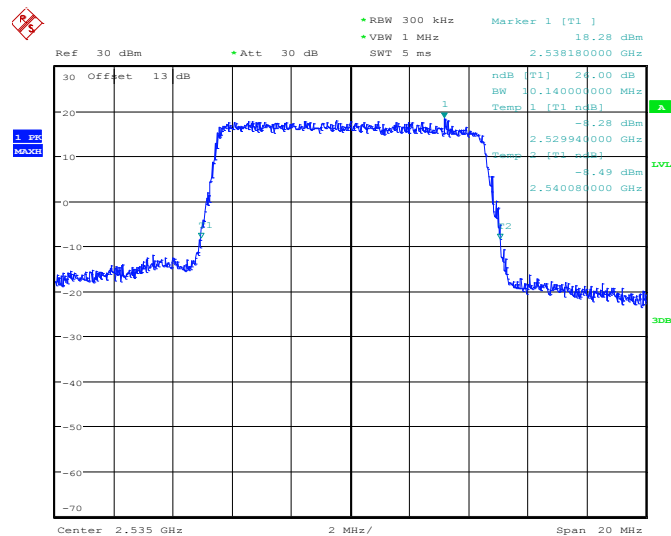
Date: 21.DEC.2013 10:53:06

26dB Bandwidth Plot on Channel 20800


Date: 21.DEC.2013 10:53:22

99% Occupied Bandwidth Plot on Channel 21100


Date: 21.DEC.2013 10:54:39

26dB Bandwidth Plot on Channel 21100


Date: 21.DEC.2013 10:54:51



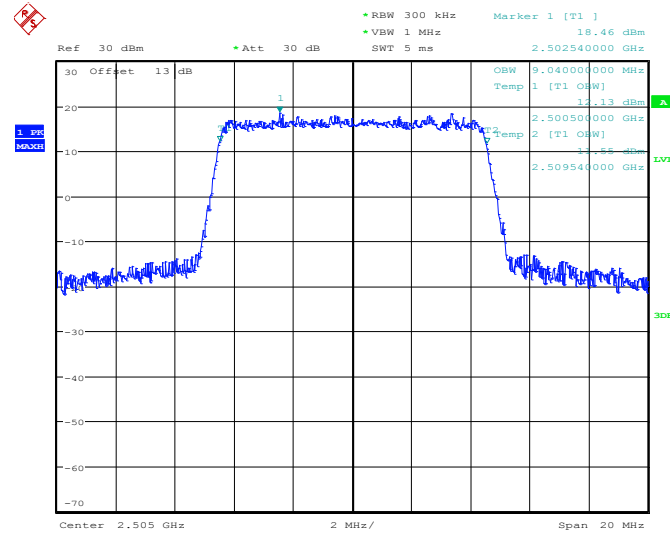
26dB Bandwidth Plot on Channel 21400





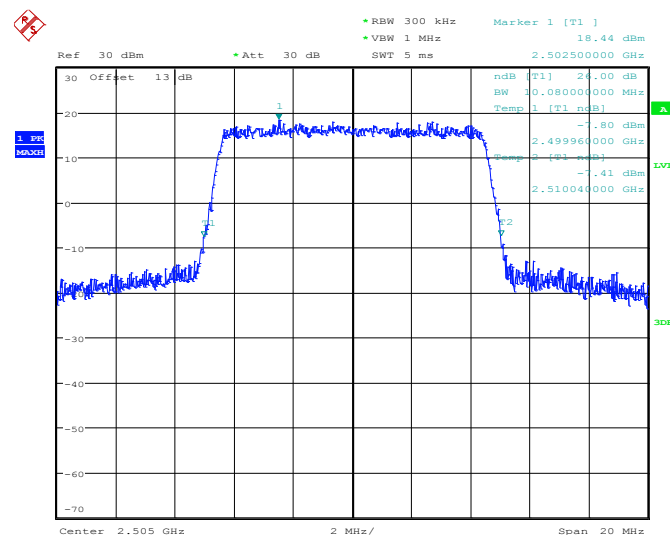
Band :	LTE Band 7	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20800



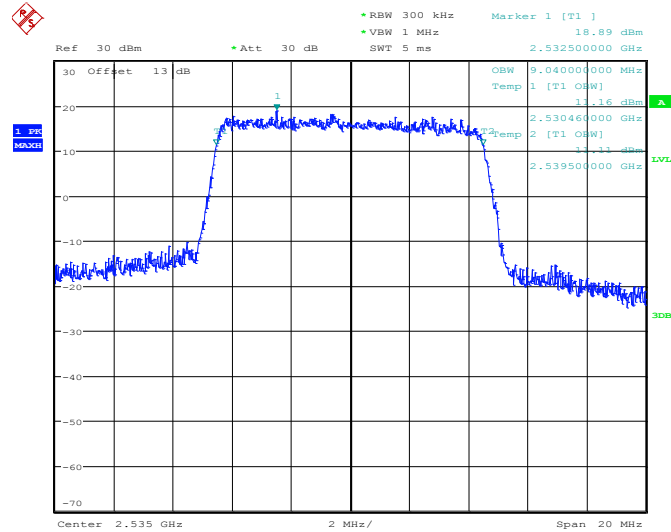
Date: 21.DEC.2013 10:53:41

26dB Bandwidth Plot on Channel 20800



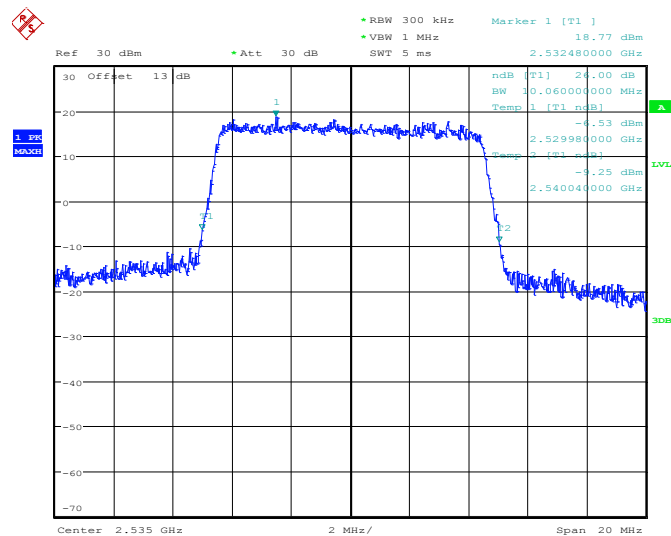
Date: 21.DEC.2013 10:53:53

99% Occupied Bandwidth Plot on Channel 21100



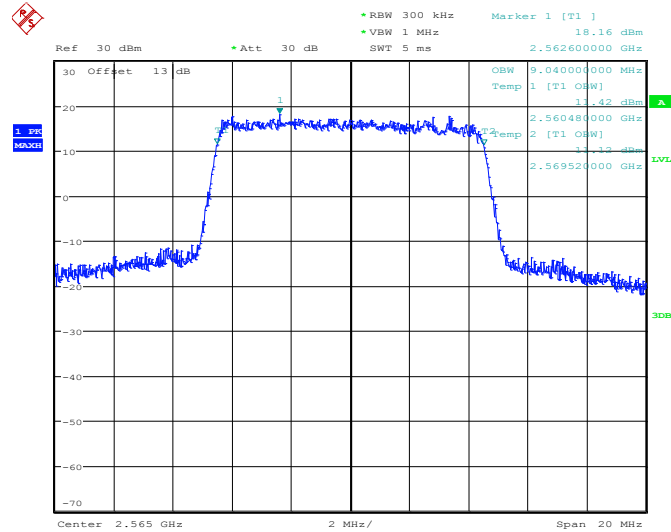
Date: 21.DEC.2013 10:54:08

26dB Bandwidth Plot on Channel 21100



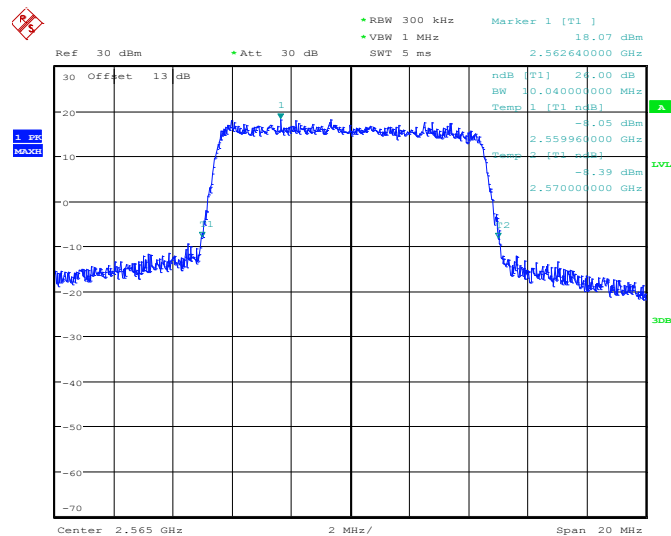
Date: 21.DEC.2013 10:54:24

99% Occupied Bandwidth Plot on Channel 21400



Date: 21.DEC.2013 10:55:36

26dB Bandwidth Plot on Channel 21400

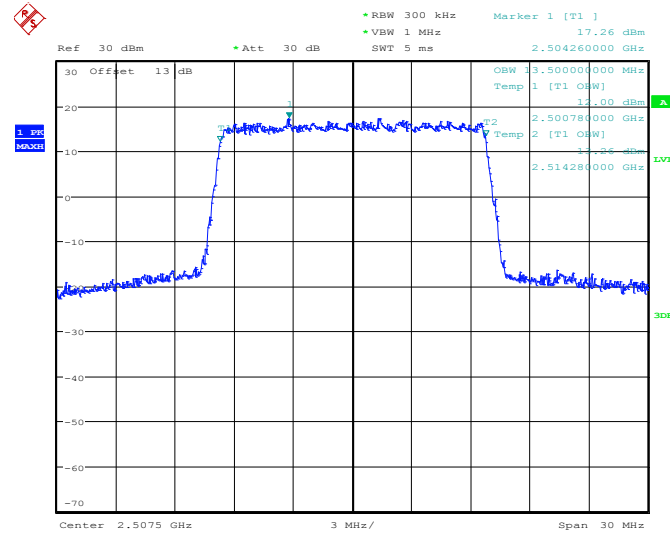


Date: 21.DEC.2013 10:55:49



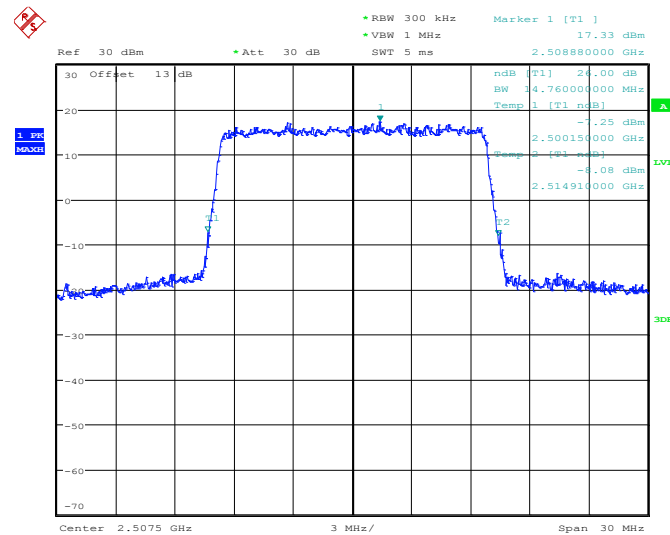
Band :	LTE Band 7	BW / Mod. :	15MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20825

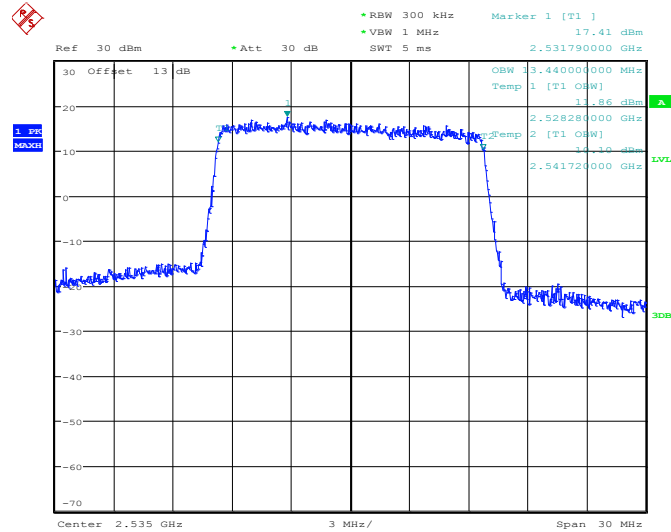


Date: 21.DEC.2013 10:59:15

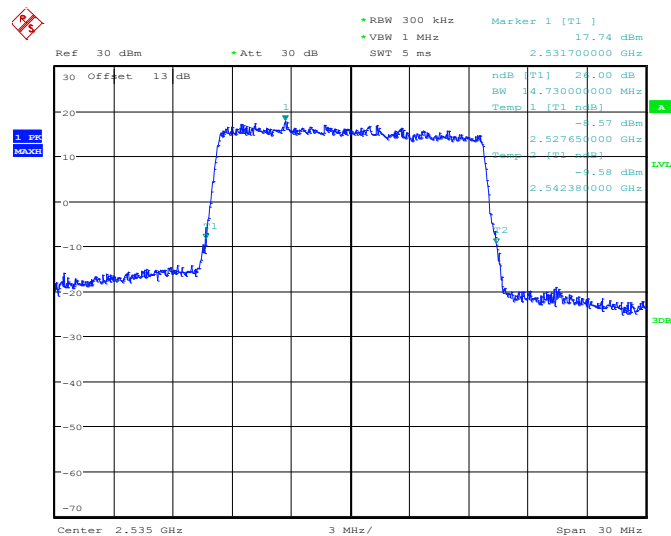
26dB Bandwidth Plot on Channel 20825



Date: 21.DEC.2013 10:59:36

99% Occupied Bandwidth Plot on Channel 21100


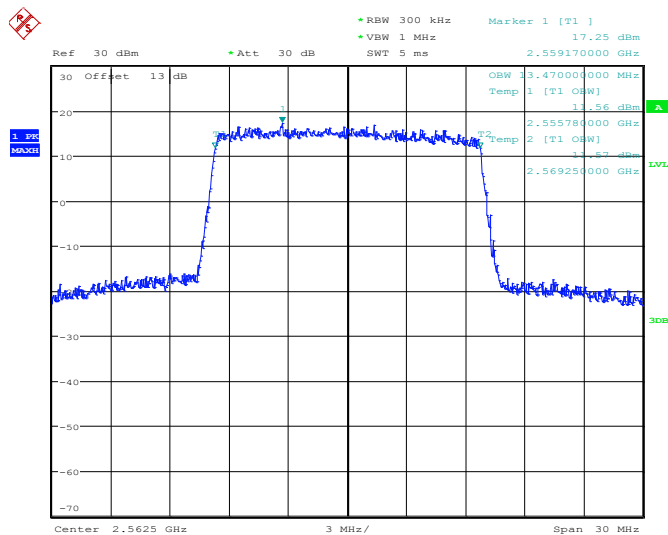
Date: 21.DEC.2013 10:59:50

26dB Bandwidth Plot on Channel 21100


Date: 21.DEC.2013 11:00:17

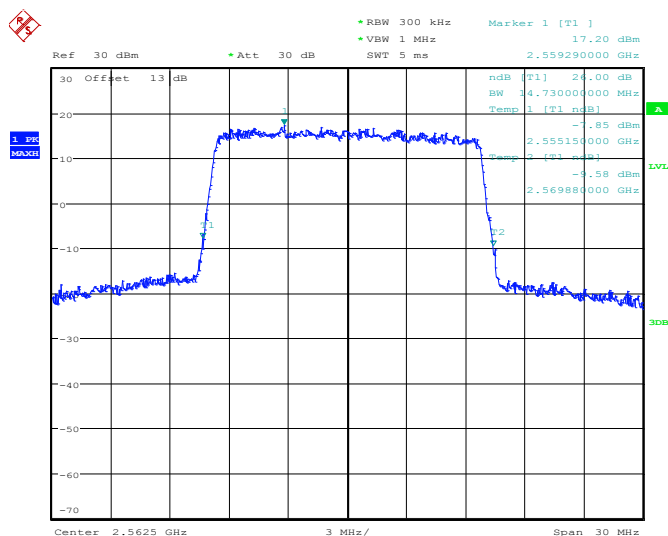


99% Occupied Bandwidth Plot on Channel 21375



Date: 21.DEC.2013 11:01:28

26dB Bandwidth Plot on Channel 21375

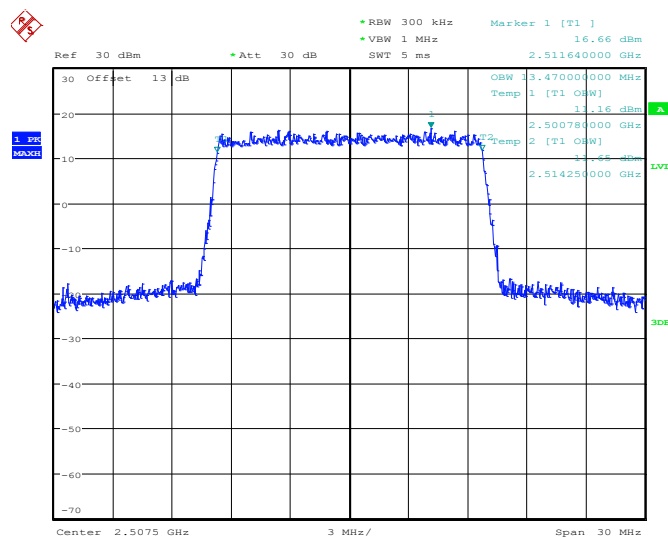


Date: 21.DEC.2013 11:01:49



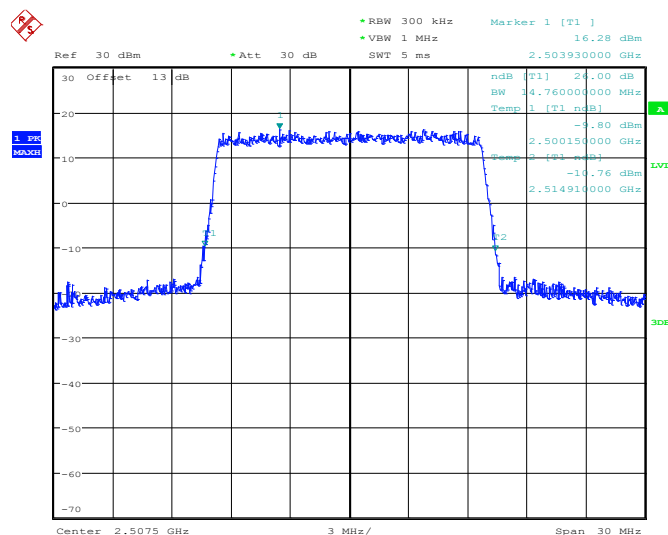
Band :	LTE Band 7	BW / Mod. :	15MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20825



Date: 21.DEC.2013 10:56:16

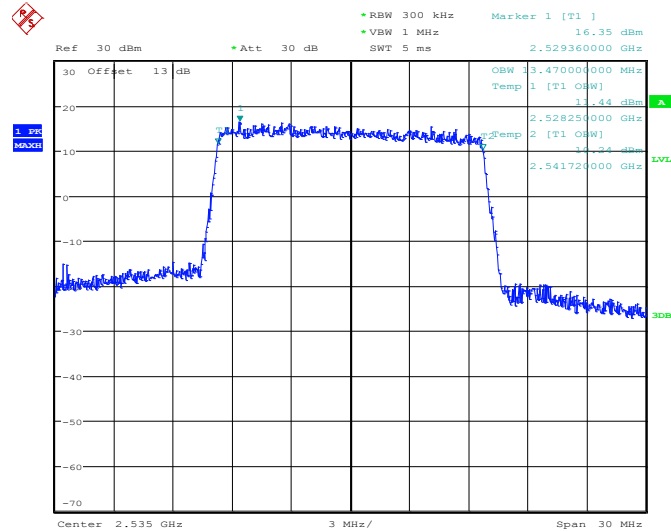
26dB Bandwidth Plot on Channel 20825



Date: 21.DEC.2013 10:58:48

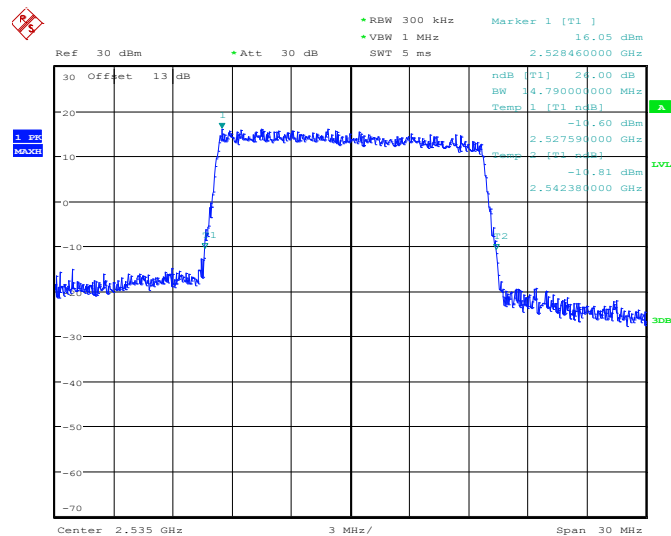


99% Occupied Bandwidth Plot on Channel 21100



Date: 21.DEC.2013 11:00:31

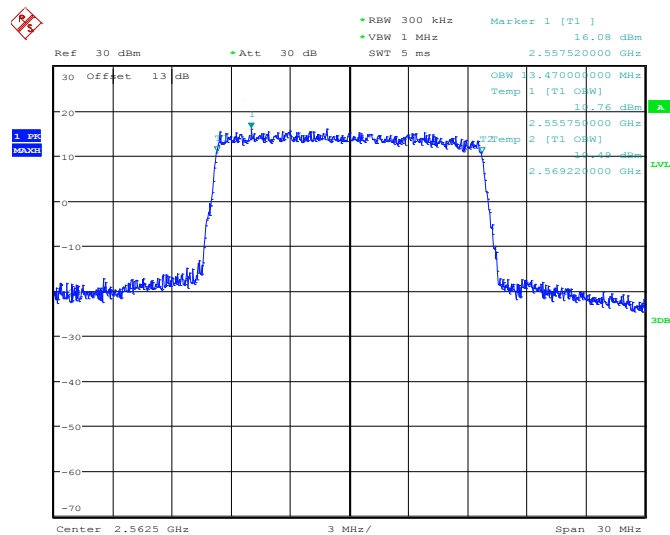
26dB Bandwidth Plot on Channel 21100



Date: 21.DEC.2013 11:00:43

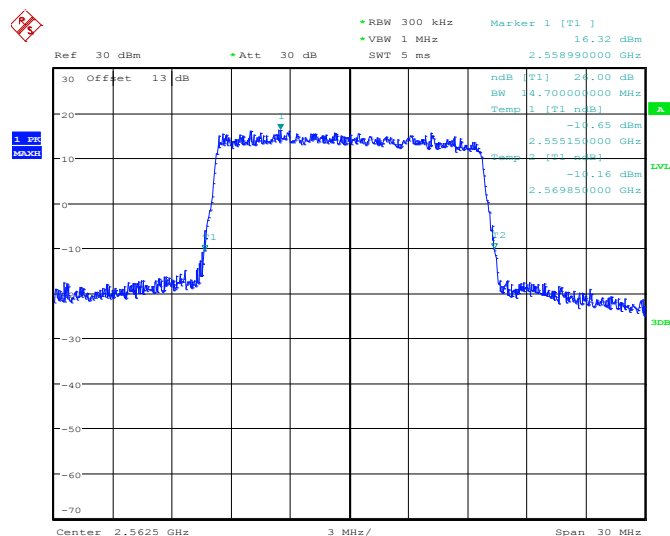


99% Occupied Bandwidth Plot on Channel 21375



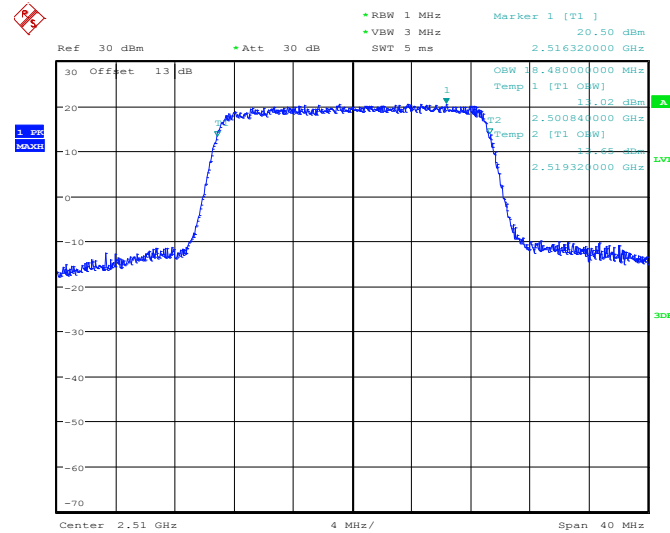
Date: 21.DEC.2013 11:00:59

26dB Bandwidth Plot on Channel 21375

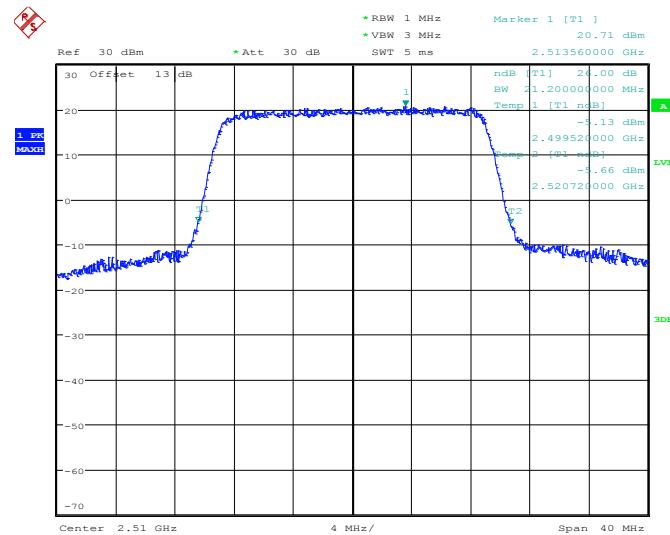


Date: 21.DEC.2013 11:01:13

Band :	LTE Band 7	BW / Mod. :	20MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20850


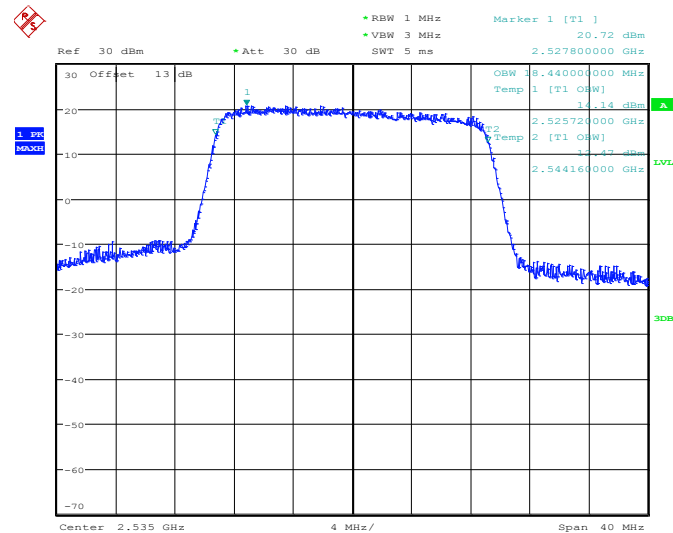
Date: 21.DEC.2013 11:02:37

26dB Bandwidth Plot on Channel 20850


Date: 21.DEC.2013 11:02:54

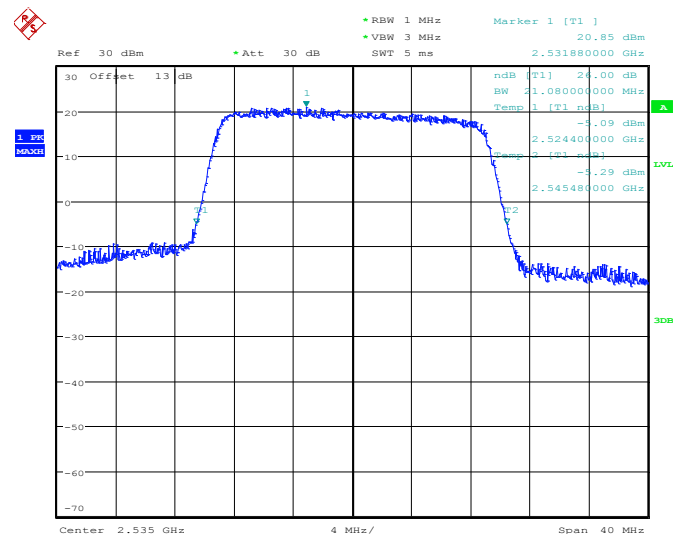


99% Occupied Bandwidth Plot on Channel 21100



Date: 21.DEC.2013 11:03:58

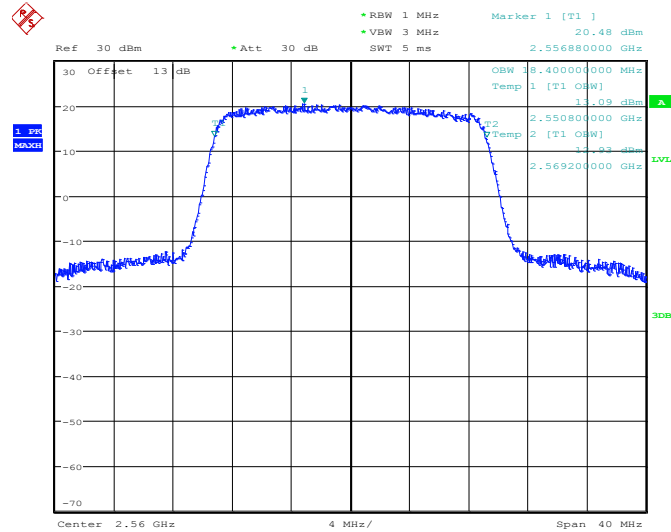
26dB Bandwidth Plot on Channel 21100



Date: 21.DEC.2013 11:04:11

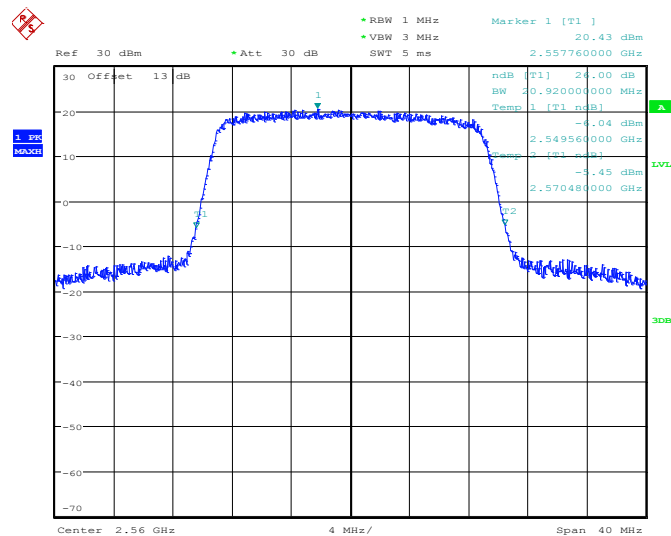


99% Occupied Bandwidth Plot on Channel 21350



Date: 21.DEC.2013 11:04:29

26dB Bandwidth Plot on Channel 21350

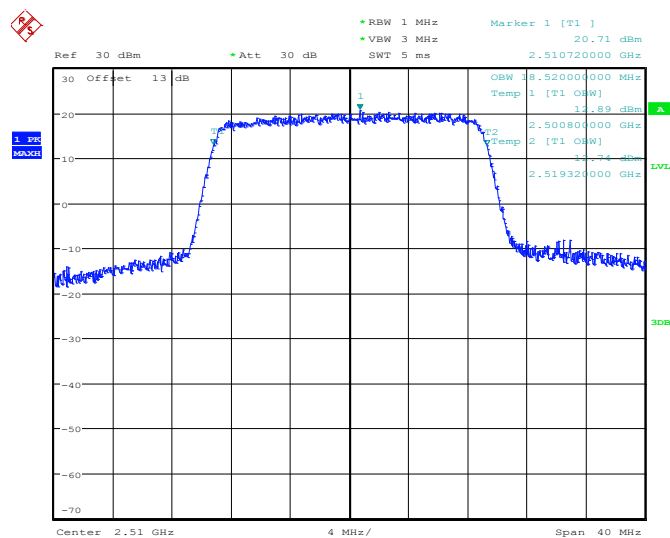


Date: 21.DEC.2013 11:04:42



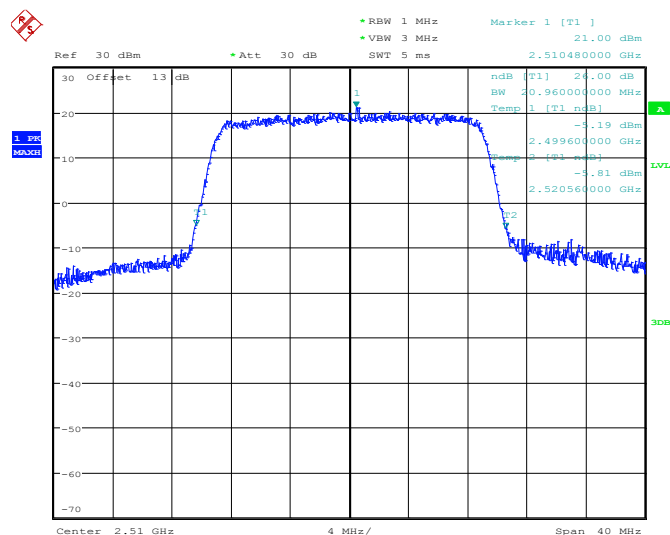
Band :	LTE Band 7	BW / Mod. :	20MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20850



Date: 21.DEC.2013 11:03:07

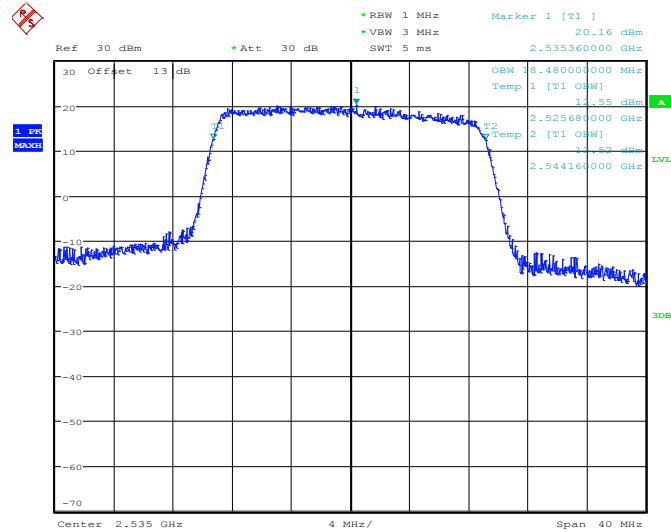
26dB Bandwidth Plot on Channel 20850



Date: 21.DEC.2013 11:03:18

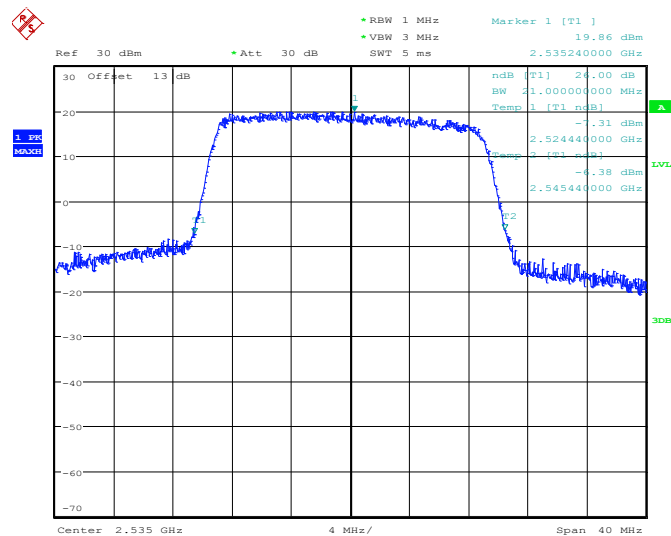


99% Occupied Bandwidth Plot on Channel 21100



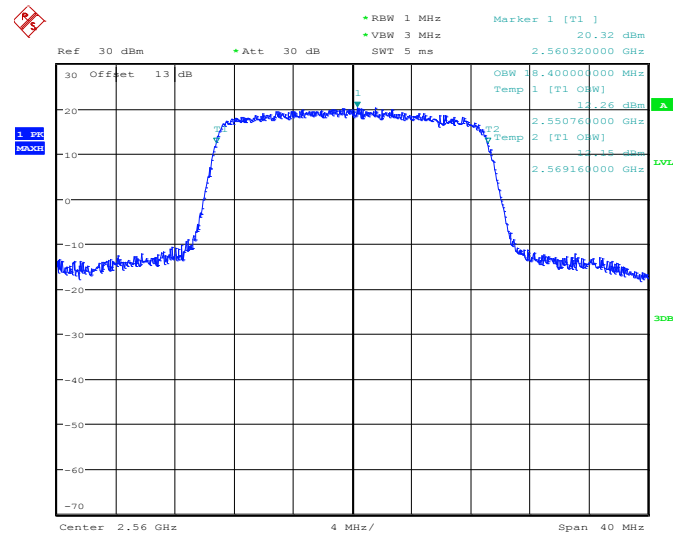
Date: 21.DEC.2013 11:03:33

26dB Bandwidth Plot on Channel 21100



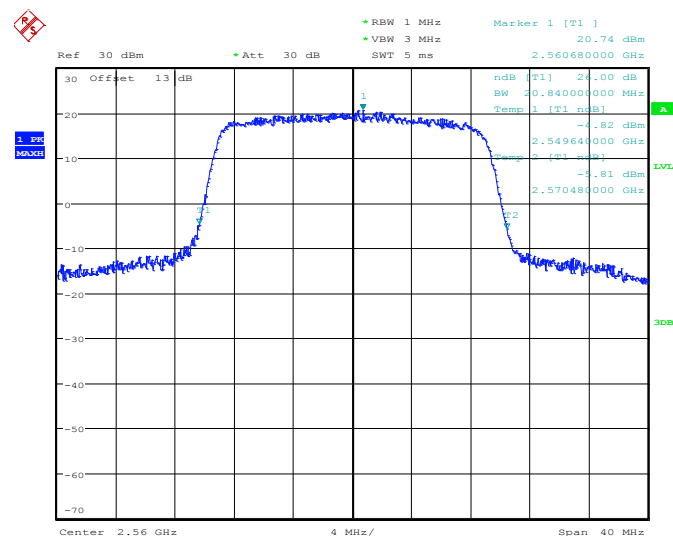
Date: 21.DEC.2013 11:03:45

99% Occupied Bandwidth Plot on Channel 21350



Date: 21.DEC.2013 11:04:59

26dB Bandwidth Plot on Channel 21350



Date: 21.DEC.2013 11:05:16

Note: The total loss is 13 dB of the RF cable and attenuator of LTE Band 7, and has been compensated to the spectrum analyzer offset.

3.5 Conducted Band Edge Measurement

3.5.1 Description of Conducted Band Edge Measurement

22.917(a) For Band 5

For operations in the 824 – 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(l) (4) For Band 7

The emissions be operated in the 2496-2690 MHz band, the attenuation factor of transmitter Power (P) shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $55 + 10 \log (P)$ dB at 5.5 MHz from the channel edges.

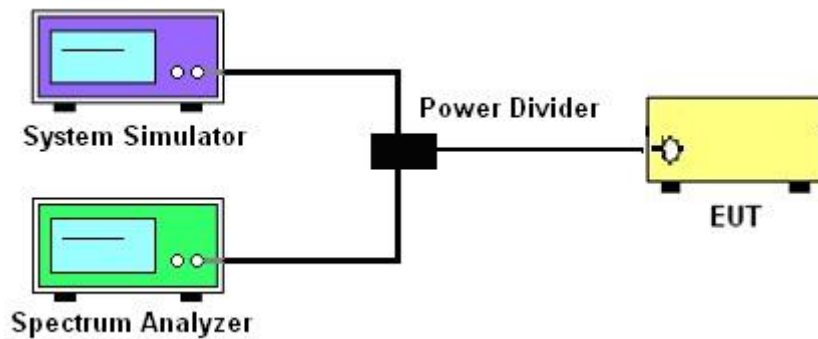
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting $RBW \geq 1\%$ EBW, and measuring bandwidth = 1MHz.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
4. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power $P(\text{Watts})$
 $= P(W) - [43 + 10\log(P)]$ (dB)
 $= [30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
 $= -13\text{dBm}$.

3.5.4 Test Setup

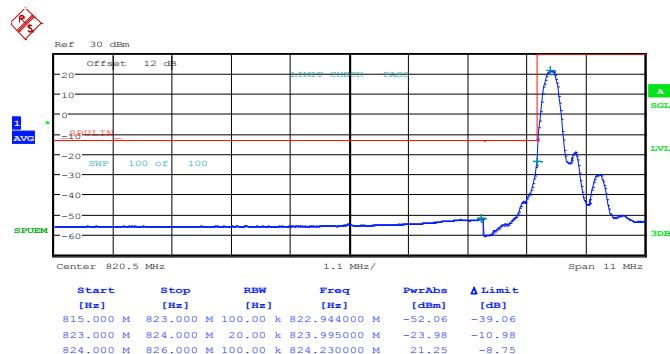




3.5.5 Test Result (Plots) of Conducted Band Edge

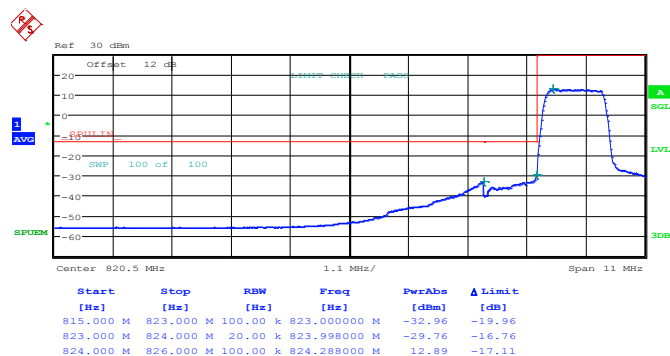
Band :	LTE Band 5	Band Width :	1.4MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:54:22

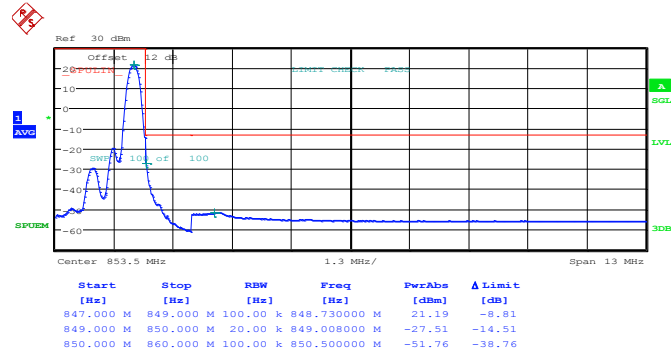
Lower Band Edge Plot for QPSK-RB Size 6, RB Offset 0



Date: 19.DEC.2013 14:53:33

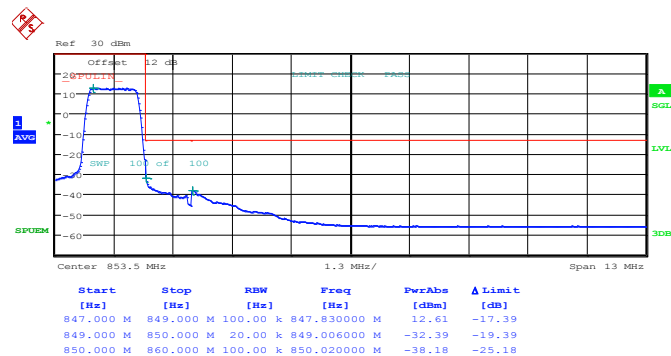


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 5



Date: 19.DEC.2013 14:50:35

Higher Band Edge Plot for QPSK-RB Size 6, RB Offset 0

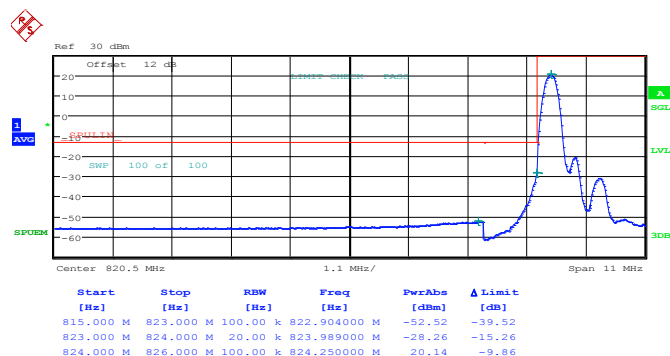


Date: 19.DEC.2013 14:51:24



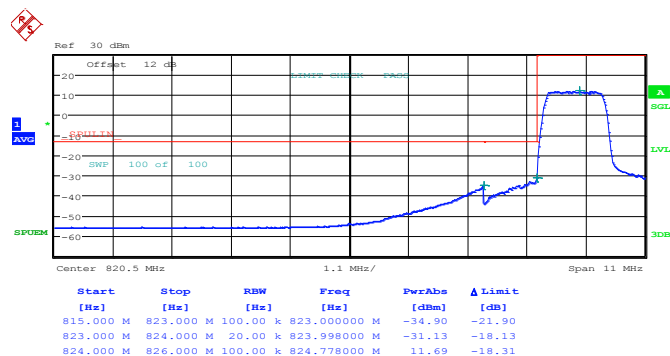
Band :	LTE Band 5	Band Width :	1.4MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:55:01

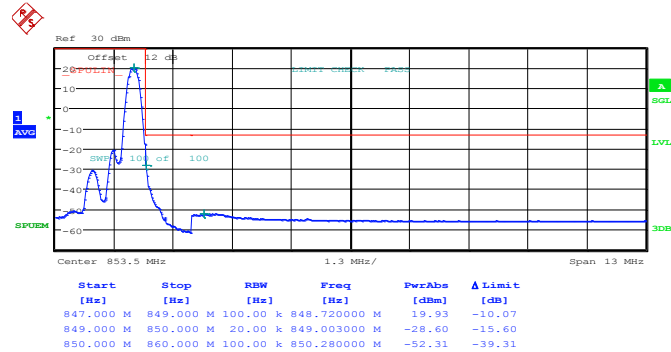
Lower Band Edge Plot for 16QAM -RB Size 6, RB Offset 0



Date: 19.DEC.2013 14:52:52

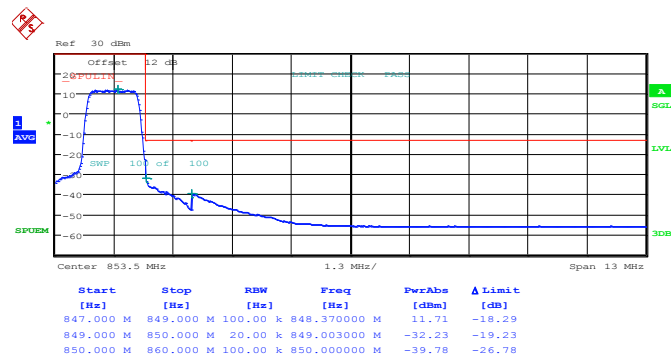


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 5



Date: 19.DEC.2013 14:49:16

Higher Band Edge Plot for 16QAM -RB Size 6, RB Offset 0



Date: 19.DEC.2013 14:52:10



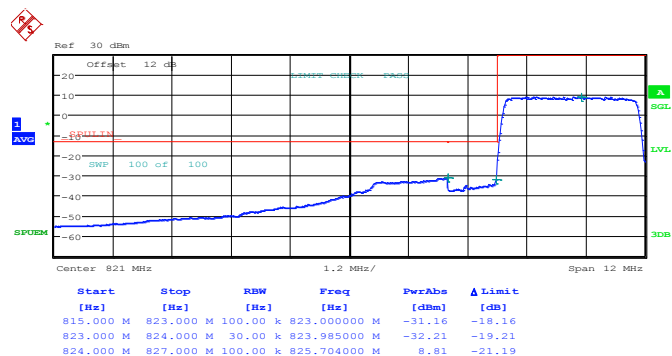
Band :	LTE Band 5	Band Width :	3MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:43:00

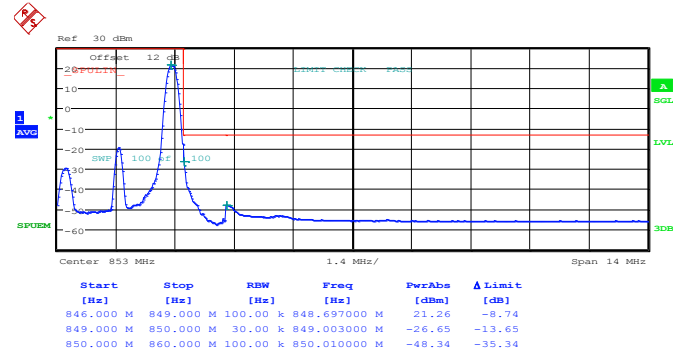
Lower Band Edge Plot for QPSK-RB Size 15, RB Offset 0



Date: 19.DEC.2013 14:43:50

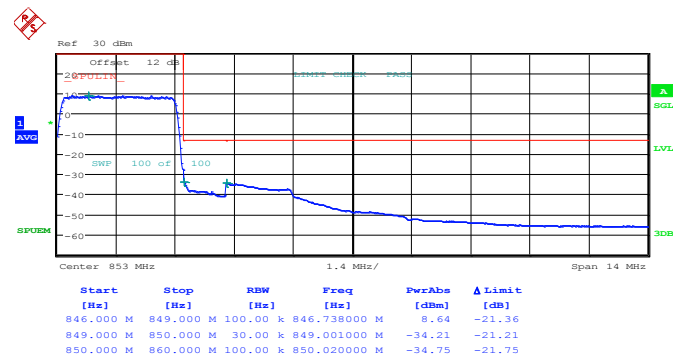


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 14



Date: 19.DEC.2013 14:47:07

Higher Band Edge Plot for QPSK-RB Size 15, RB Offset 0

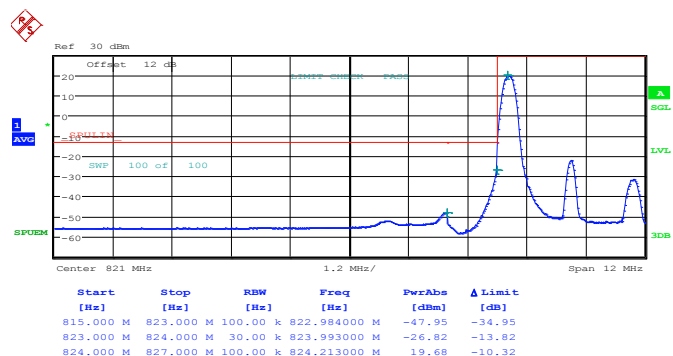


Date: 19.DEC.2013 14:46:13



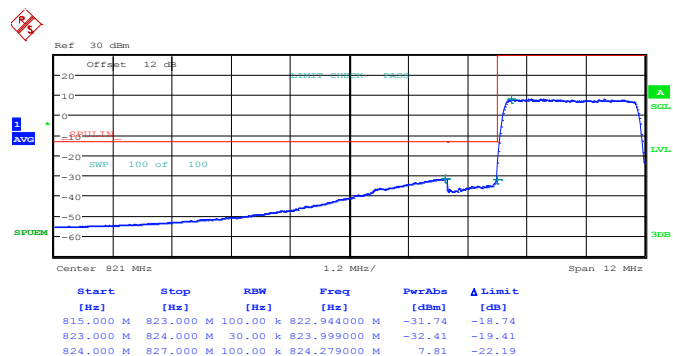
Band :	LTE Band 5	Band Width :	3MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:42:17

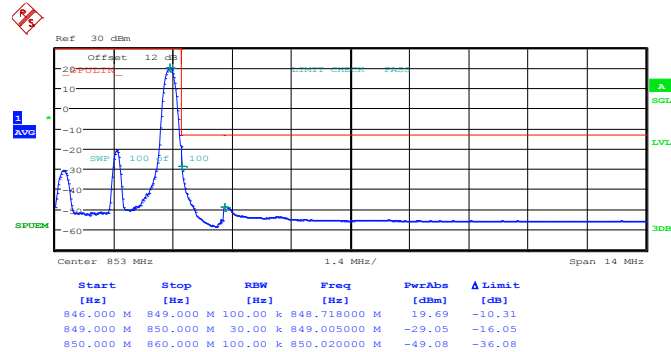
Lower Band Edge Plot for 16QAM -RB Size 15, RB Offset 0



Date: 19.DEC.2013 14:44:32

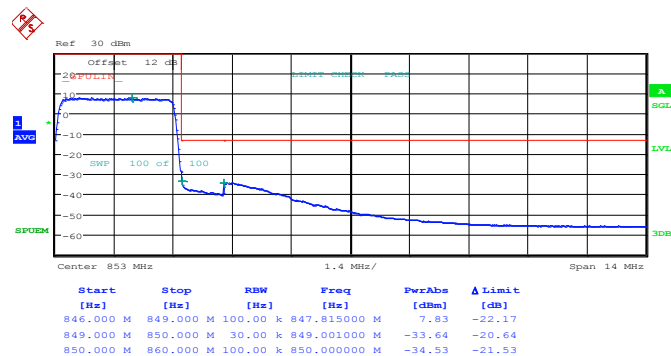


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 14



Date: 19.DEC.2013 14:47:59

Higher Band Edge Plot for 16QAM -RB Size 15, RB Offset 0

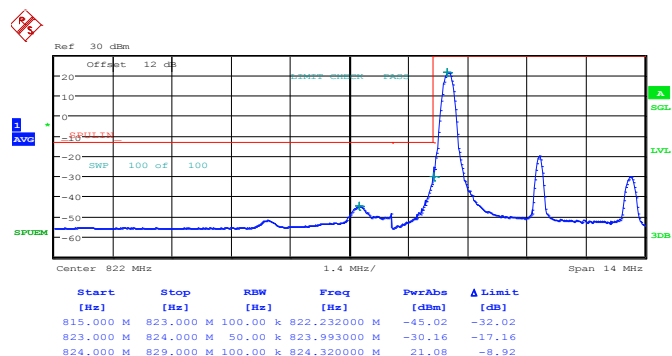


Date: 19.DEC.2013 14:45:27



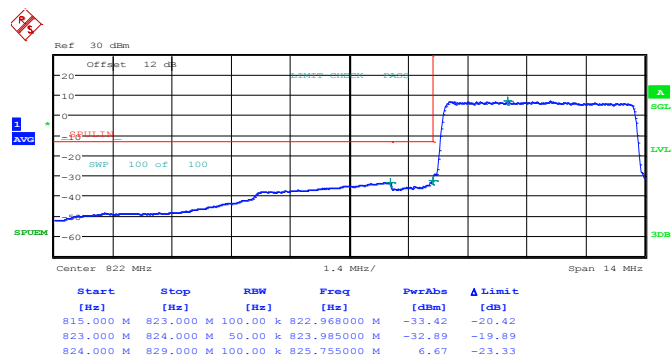
Band :	LTE Band 5	Band Width :	5MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:40:33

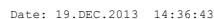
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 19.DEC.2013 14:39:42



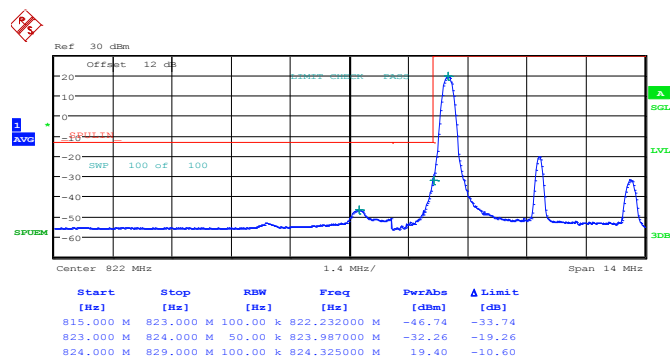
Higher Band Edge Plot for QPSK-RB Size 25, RB Offset 0





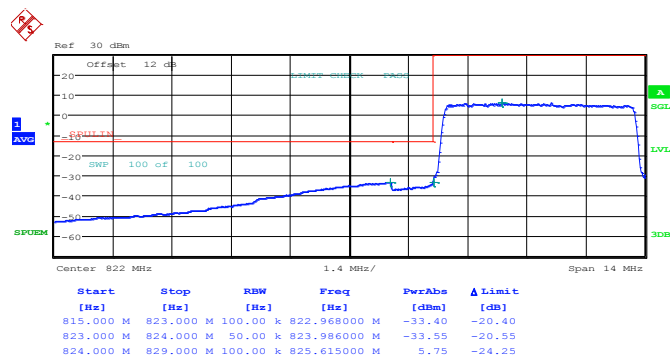
Band :	LTE Band 5	Band Width :	5MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:41:13

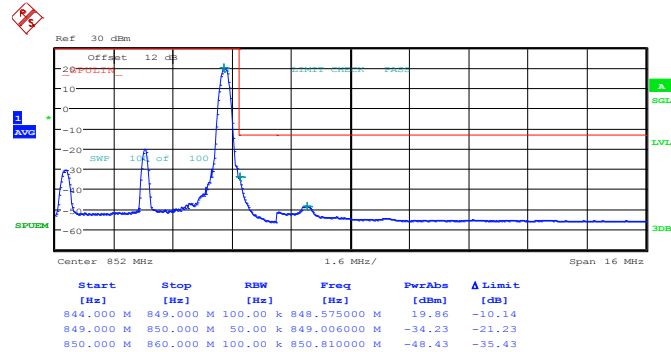
Lower Band Edge Plot for 16QAM -RB Size 25, RB Offset 0



Date: 19.DEC.2013 14:38:55

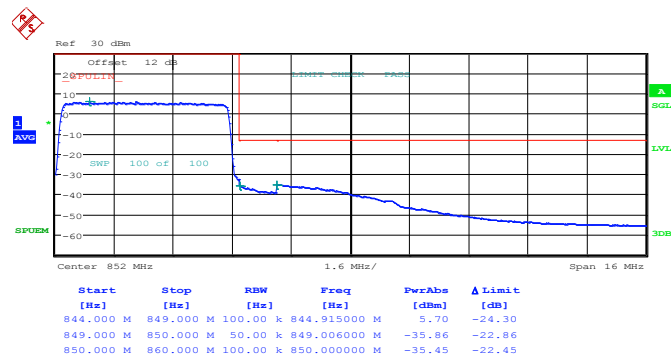


Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 24



Date: 19.DEC.2013 14:34:56

Higher Band Edge Plot for 16QAM -RB Size 25, RB Offset 0

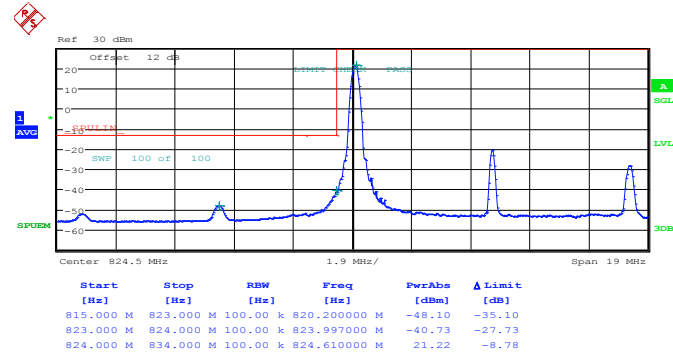


Date: 19.DEC.2013 14:37:30



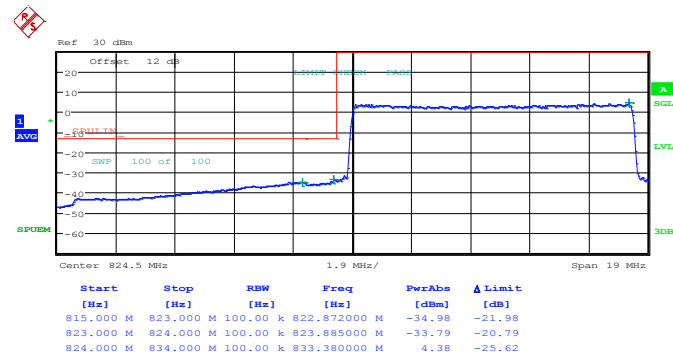
Band :	LTE Band 5	Band Width :	10MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



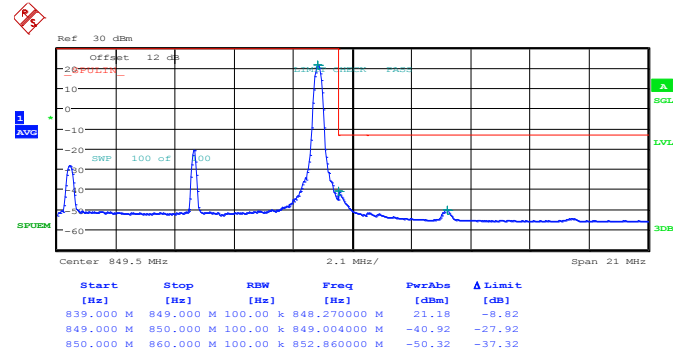
Date: 19.DEC.2013 14:28:29

Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



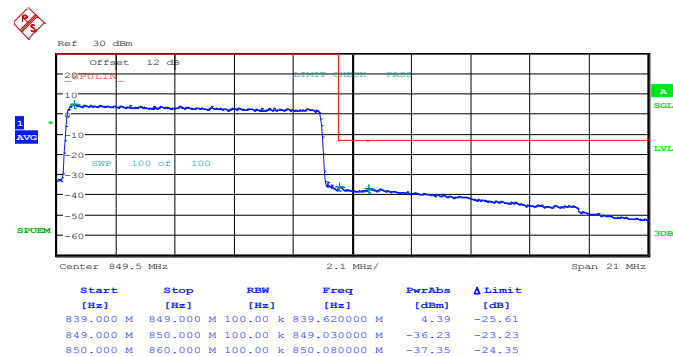
Date: 19.DEC.2013 14:27:42

Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Date: 19.DEC.2013 14:32:36

Higher Band Edge Plot for QPSK-RB Size 50, RB Offset 0

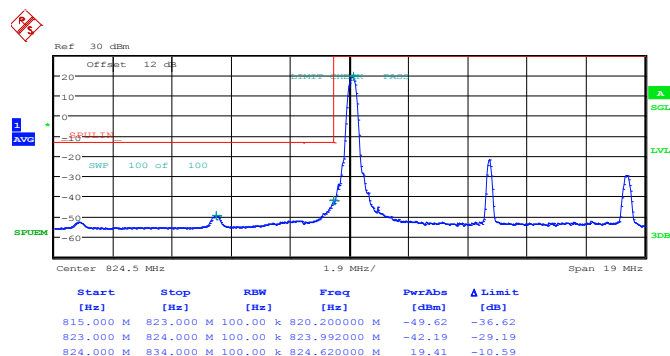


Date: 19.DEC.2013 14:31:42



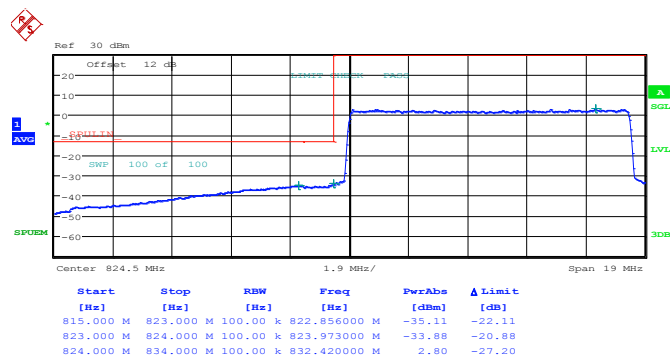
Band :	LTE Band 5	Band Width :	10MHz / 16QAM
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Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



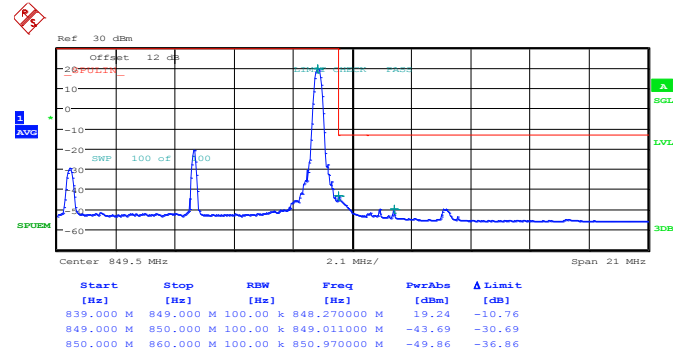
Date: 19.DEC.2013 14:29:15

Lower Band Edge Plot for 16QAM -RB Size 50, RB Offset 0



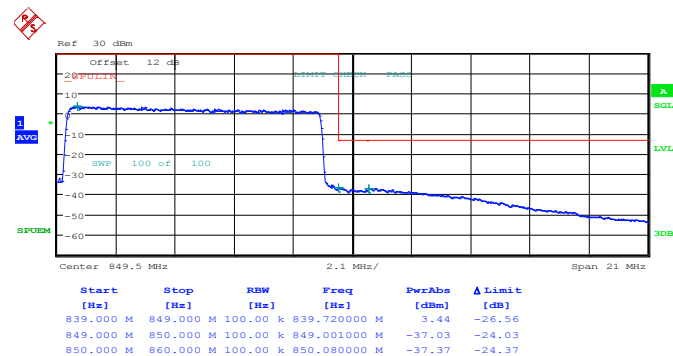
Date: 19.DEC.2013 14:30:02

Higher Band Edge Plot for 16QAM -RB Size 1, RB Offset 49



Date: 19.DEC.2013 14:33:56

Higher Band Edge Plot for 16QAM -RB Size 50, RB Offset 0



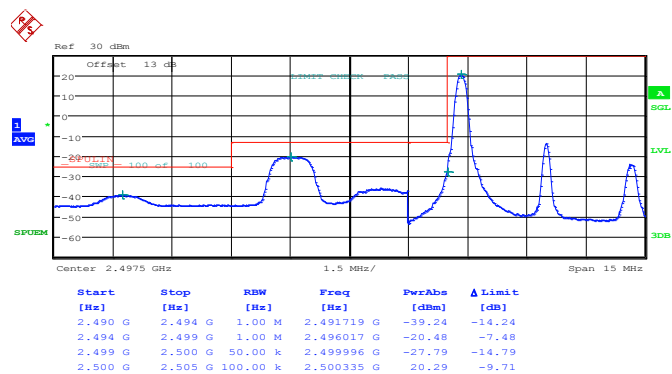
Date: 19.DEC.2013 14:30:52

Note: The total loss is 12 dB of the RF cable and attenuator of LTE Band 5, and has been compensated to the spectrum analyzer offset.



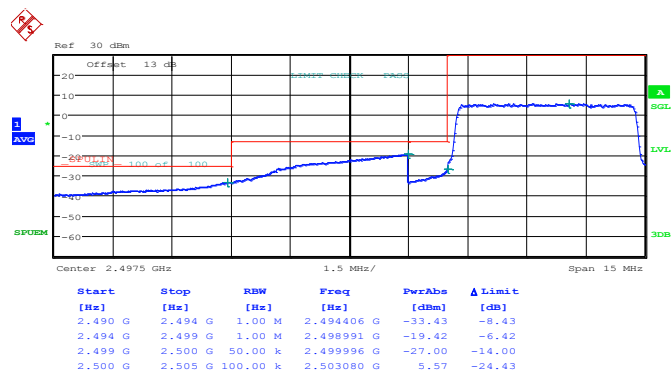
Band :	LTE Band 7	Band Width :	5MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 19.DEC.2013 15:19:24

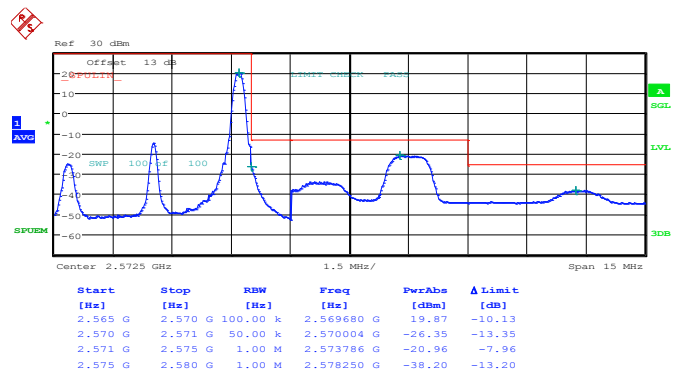
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 19.DEC.2013 15:18:24

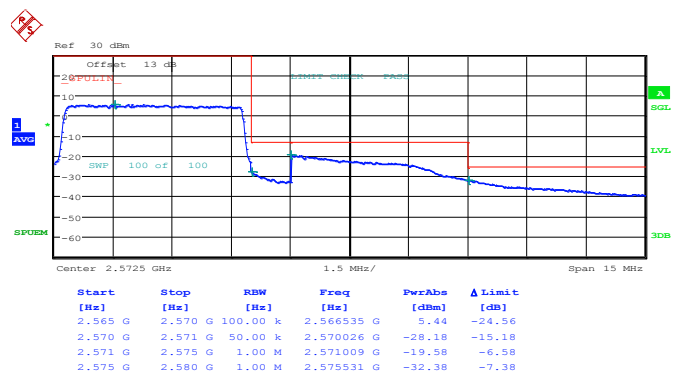


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Date: 19.DEC.2013 15:21:24

Higher Band Edge Plot for QPSK-RB Size 25, RB Offset 0

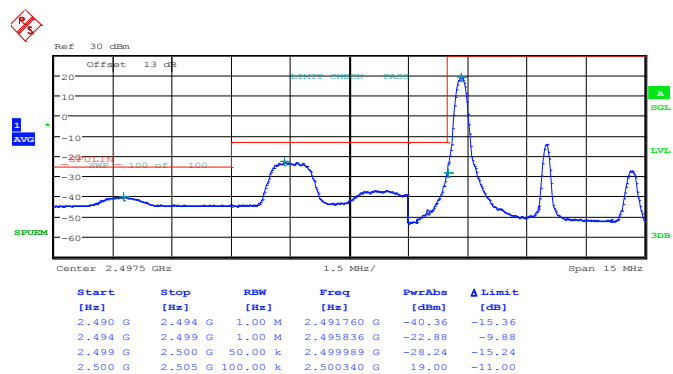


Date: 19.DEC.2013 15:20:56



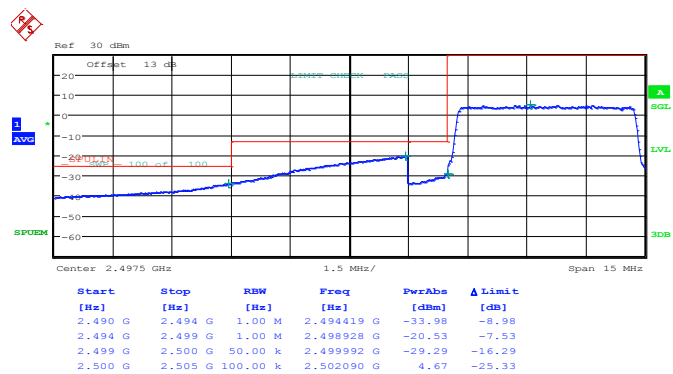
Band :	LTE Band 7	Band Width :	5MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 19.DEC.2013 15:19:52

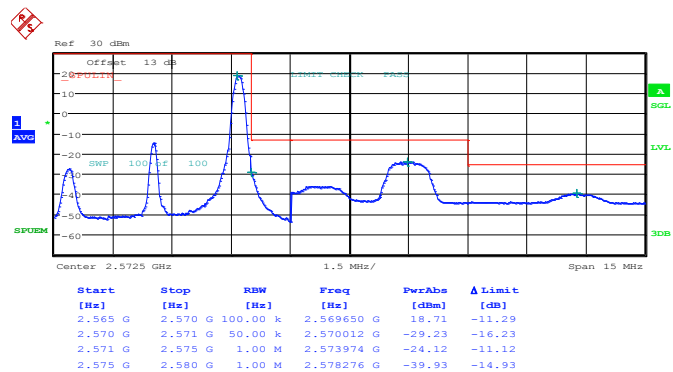
Lower Band Edge Plot for 16QAM-RB Size 25, RB Offset 0



Date: 19.DEC.2013 15:17:50

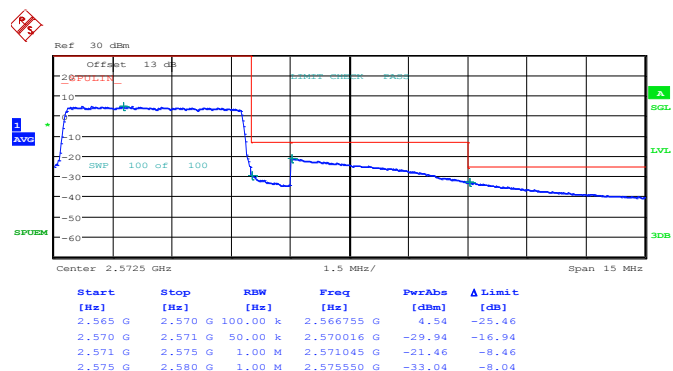


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 24



Date: 19.DEC.2013 15:21:54

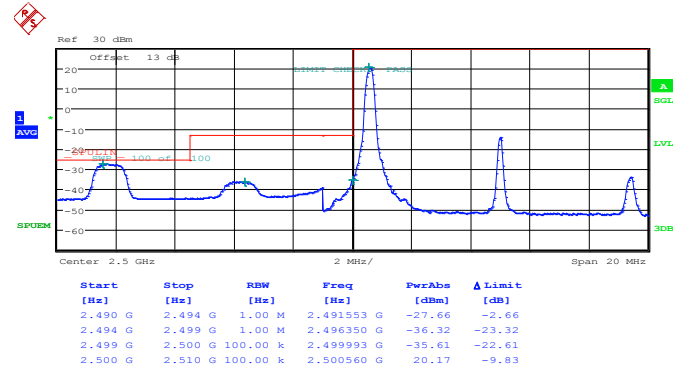
Higher Band Edge Plot for 16QAM-RB Size 25, RB Offset 0



Date: 19.DEC.2013 15:20:28

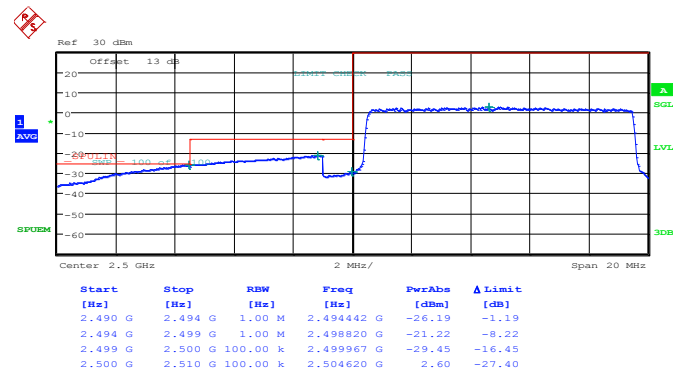
Band :	LTE Band 7	Band Width :	10MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0

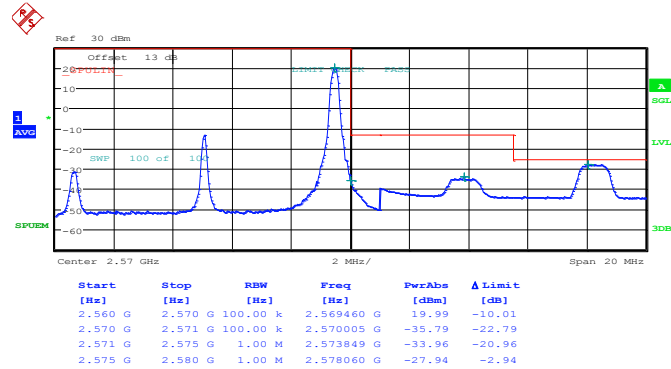


Date: 19.DEC.2013 15:24:18

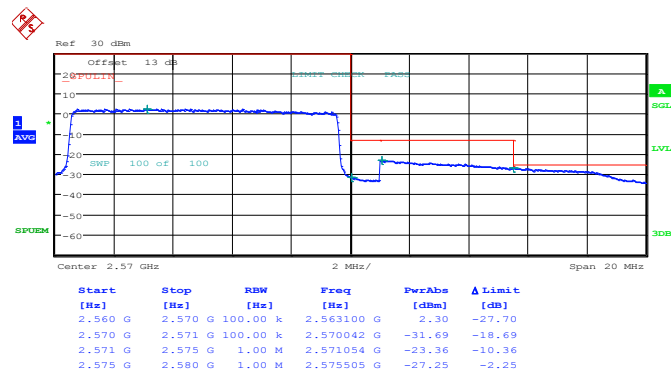
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 19.DEC.2013 13:49:21

Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49


Date: 19.DEC.2013 15:25:06

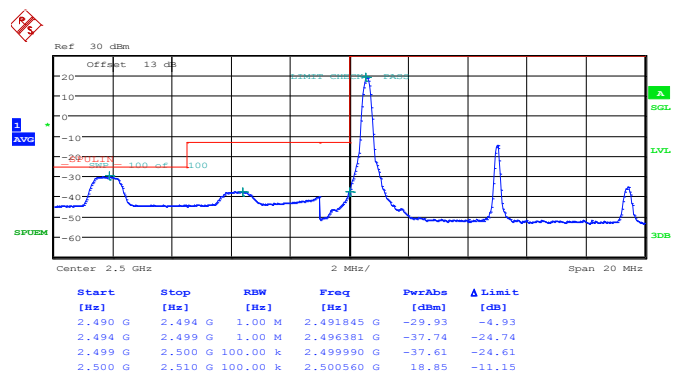
Higher Band Edge Plot for QPSK-RB Size 50, RB Offset 0


Date: 19.DEC.2013 13:52:26



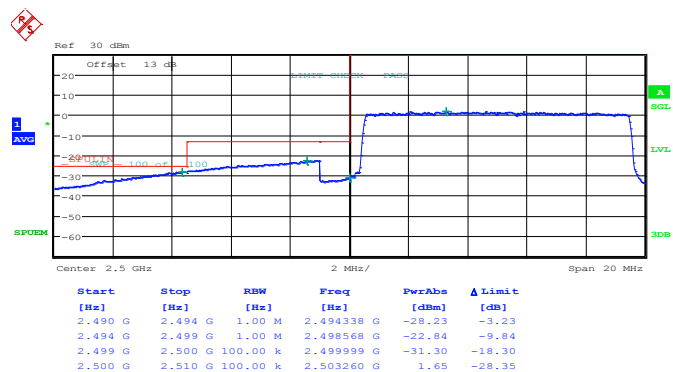
Band :	LTE Band 7	Band Width :	10MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 19.DEC.2013 15:23:40

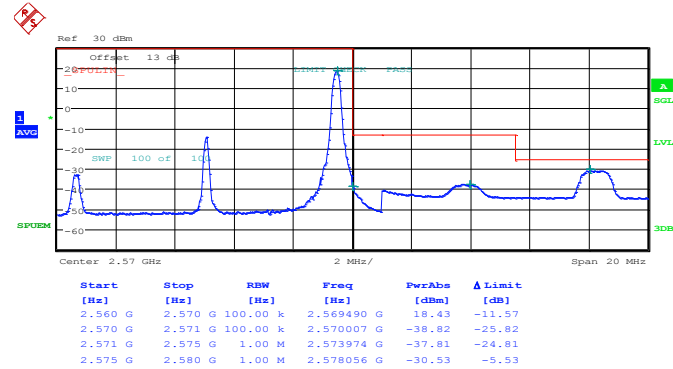
Lower Band Edge Plot for 16QAM-RB Size 50, RB Offset 0



Date: 19.DEC.2013 15:22:41

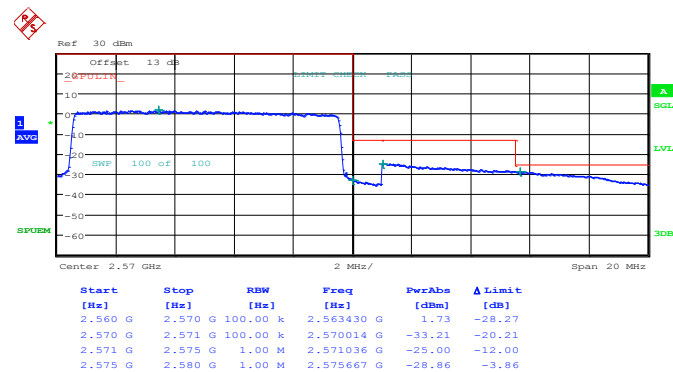


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 49



Date: 19.DEC.2013 15:25:38

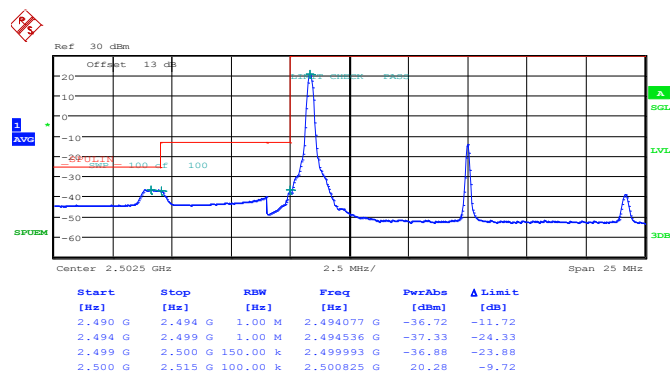
Higher Band Edge Plot for 16QAM-RB Size 50, RB Offset 0



Date: 19.DEC.2013 15:26:11

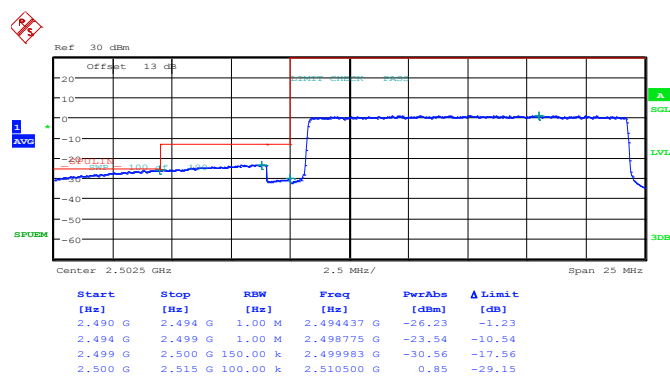
Band :	LTE Band 7	Band Width :	15MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 19.DEC.2013 14:01:16

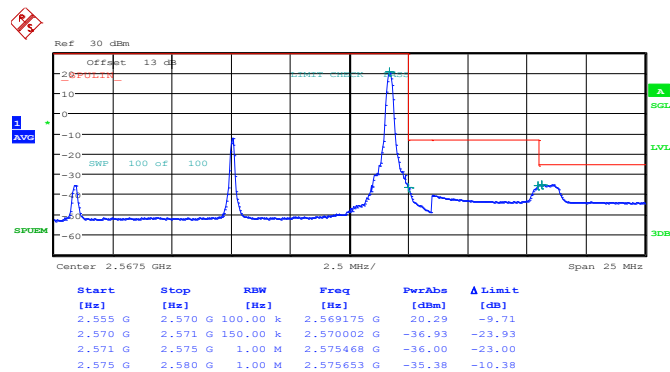
Lower Band Edge Plot for QPSK-RB Size 75, RB Offset 0



Date: 19.DEC.2013 14:00:39

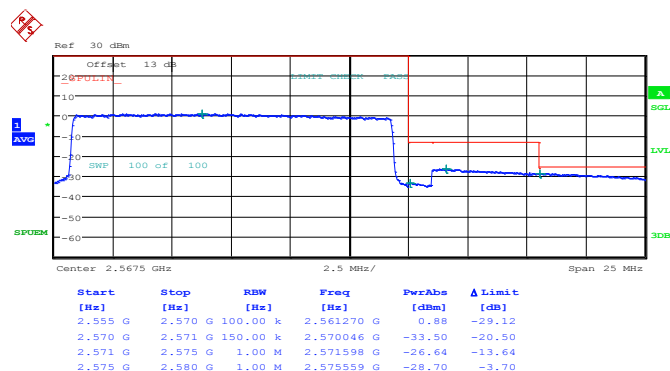


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 74



Date: 19.DEC.2013 13:59:45

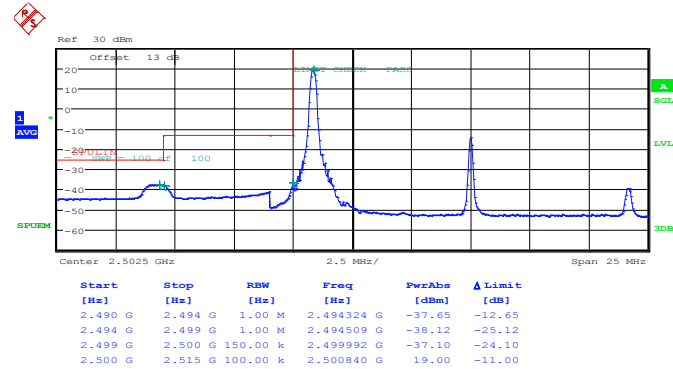
Higher Band Edge Plot for QPSK-RB Size 75, RB Offset 0



Date: 19.DEC.2013 13:55:16

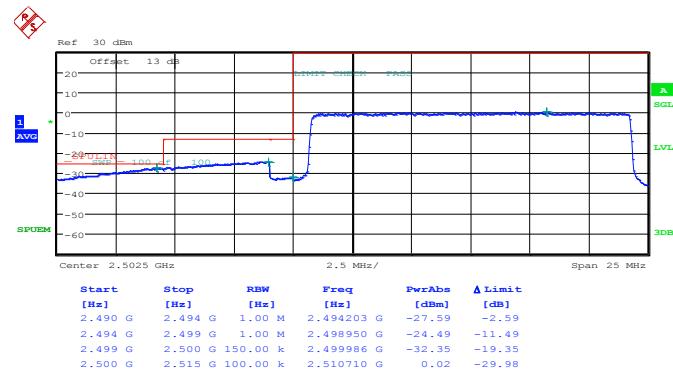
Band :	LTE Band 7	Band Width :	15MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 19.DEC.2013 15:27:44

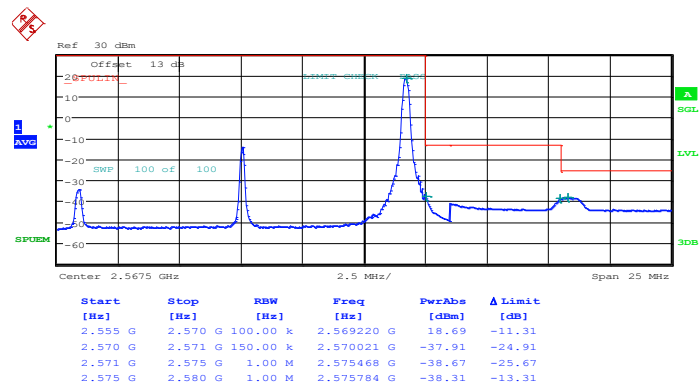
Lower Band Edge Plot for 16QAM-RB Size 75, RB Offset 0



Date: 19.DEC.2013 15:26:59

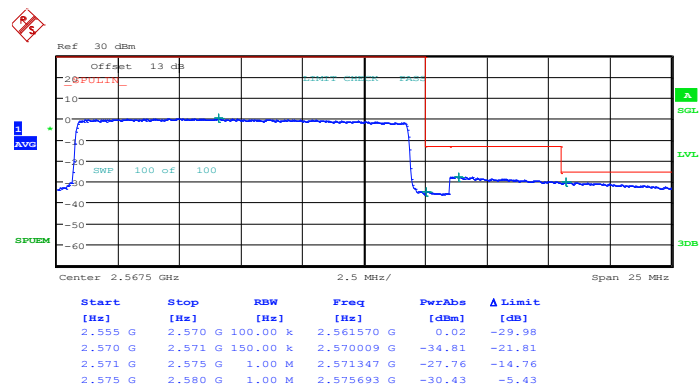


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 74



Date: 19.DEC.2013 15:28:51

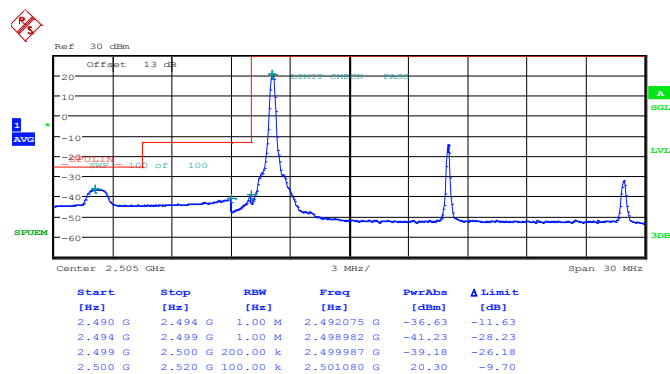
Higher Band Edge Plot for 16QAM-RB Size 75, RB Offset 0



Date: 19.DEC.2013 15:28:20

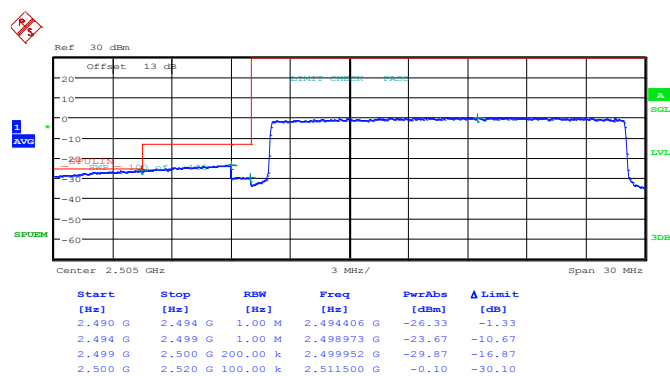
Band :	LTE Band 7	Band Width :	20MHz / QPSK
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Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



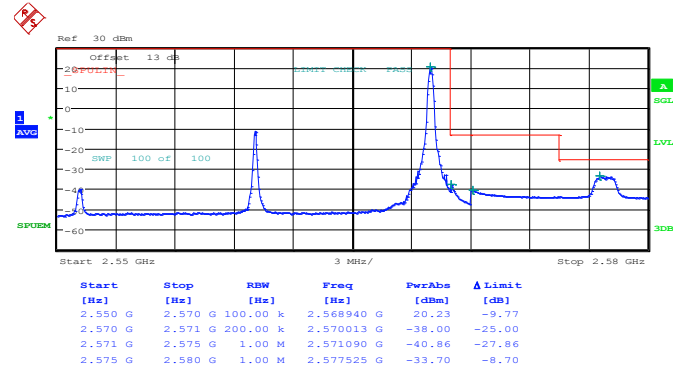
Date: 19.DEC.2013 14:03:05

Lower Band Edge Plot for QPSK-RB Size 100, RB Offset 0



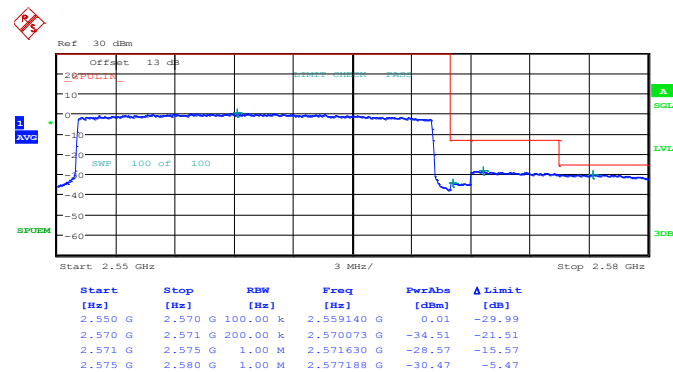
Date: 19.DEC.2013 14:02:27

Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 99



Date: 19.DEC.2013 15:33:16

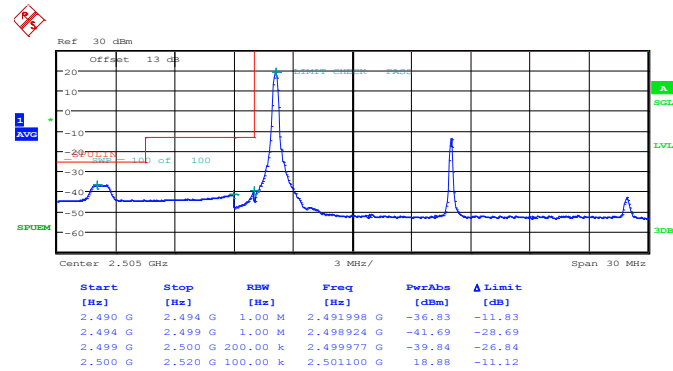
Higher Band Edge Plot for QPSK-RB Size 100, RB Offset 0



Date: 19.DEC.2013 15:31:00

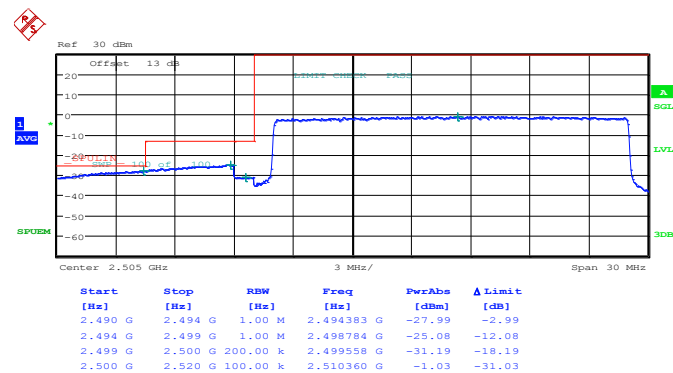
Band :	LTE Band 7	Band Width :	20MHz / 16QAM
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Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0

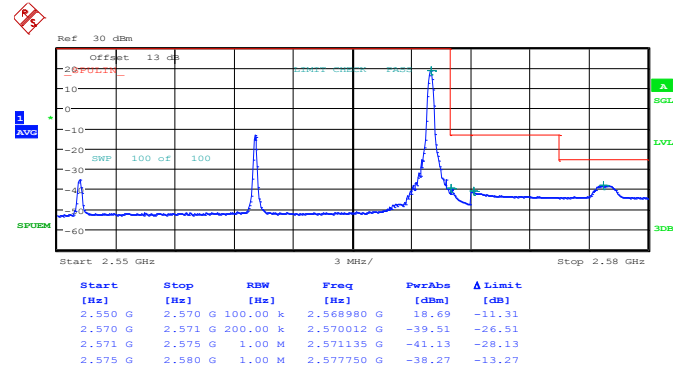


Date: 19.DEC.2013 15:30:06

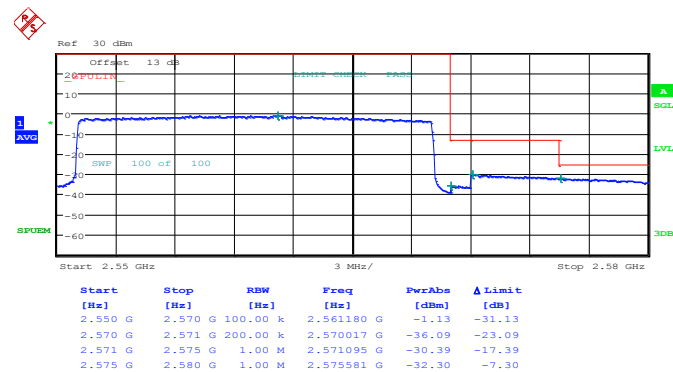
Lower Band Edge Plot for 16QAM-RB Size 100, RB Offset 0



Date: 19.DEC.2013 15:29:33

Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 99


Date: 19.DEC.2013 15:32:35

Higher Band Edge Plot for 16QAM-RB Size 100, RB Offset 0


Date: 19.DEC.2013 15:31:53

Note: The total loss is 13 dB of the RF cable and attenuator of LTE Band 7, and has been compensated to the spectrum analyzer offset.

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

For Band 5

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

For Band 7

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 9 kHz up to a frequency including its 10th harmonic.

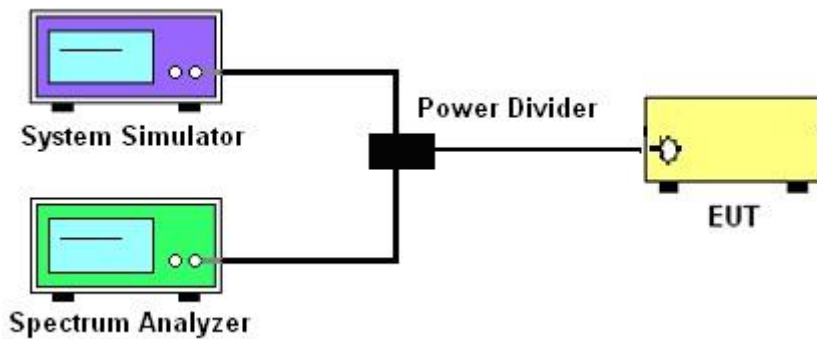
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)]$ (dB)
 $= [30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
 $= -13$ dBm.

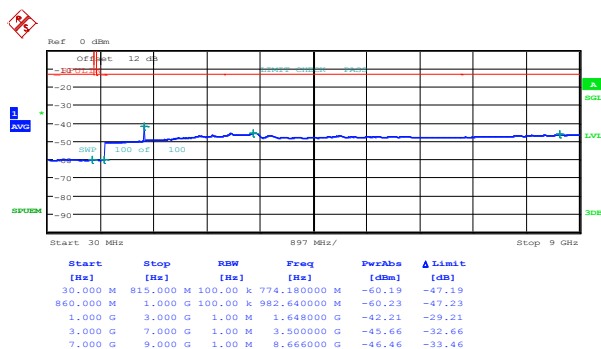
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

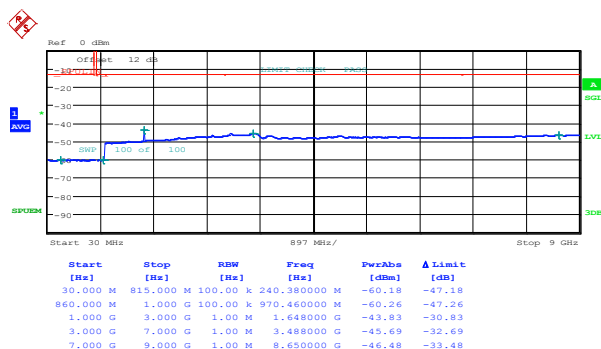
Band :	LTE Band 5	Channel :	CH20407 (Low)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:27:36

16QAM (RB Size 1, RB Offset 0)

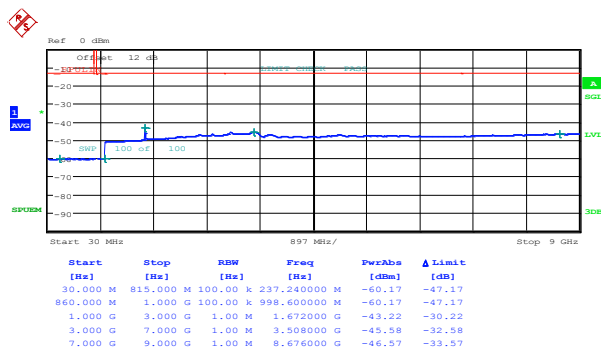


Date: 21.DEC.2013 12:28:27



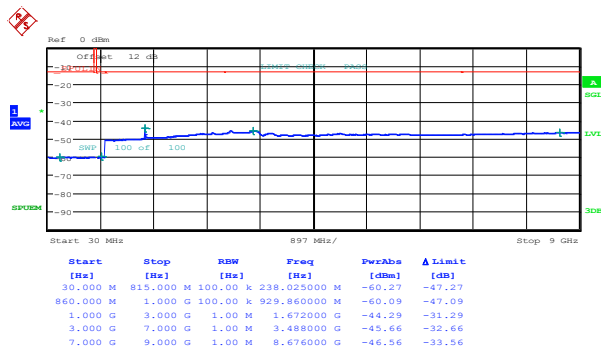
Band :	LTE Band 5	Channel :	CH20525 (Middle)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:30:08

16QAM (RB Size 1, RB Offset 0)

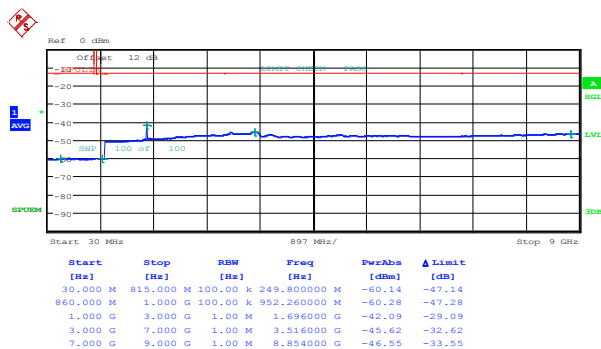


Date: 21.DEC.2013 12:29:18



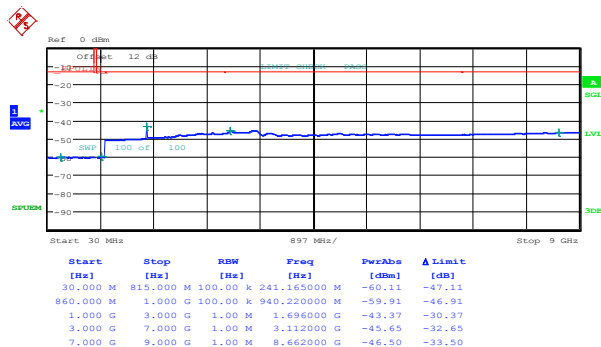
Band :	LTE Band 5	Channel :	CH20643 (High)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:30:59

16QAM (RB Size 1, RB Offset 0)

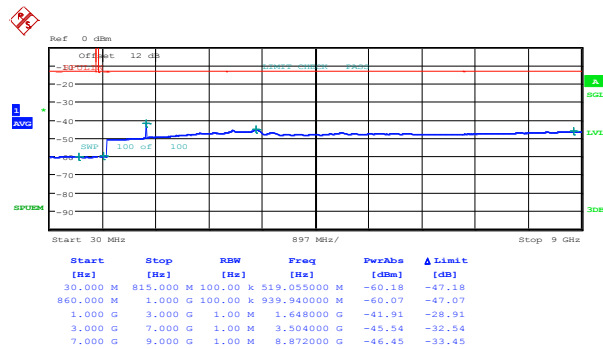


Date: 21.DEC.2013 12:31:53



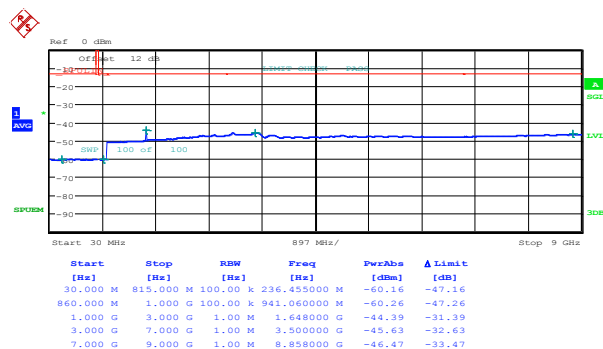
Band :	LTE Band 5	Channel :	CH20415 (Low)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:34:49

16QAM (RB Size 1, RB Offset 0)

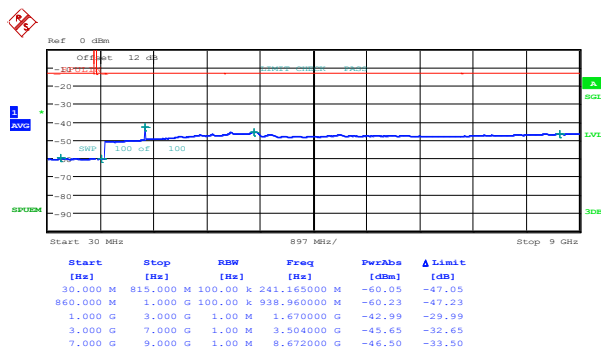


Date: 21.DEC.2013 12:35:46



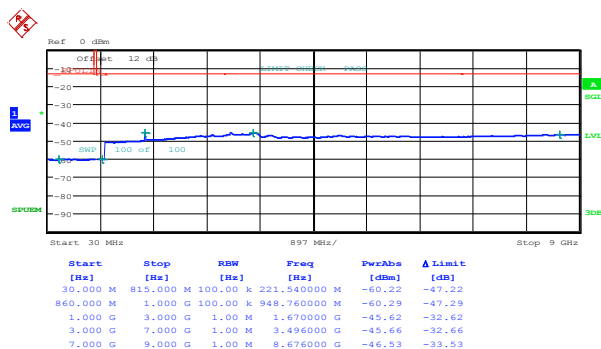
Band :	LTE Band 5	Channel :	CH20525 (Middle)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:36:34

16QAM (RB Size 1, RB Offset 0)

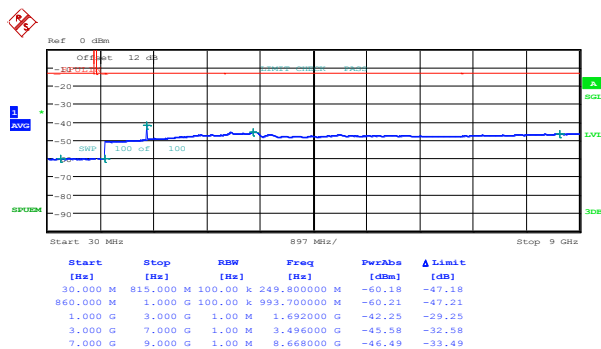


Date: 21.DEC.2013 12:37:54



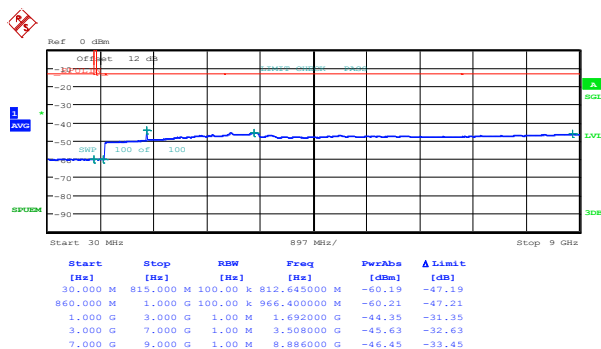
Band :	LTE Band 5	Channel :	CH20635 (High)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:38:43

16QAM (RB Size 1, RB Offset 0)

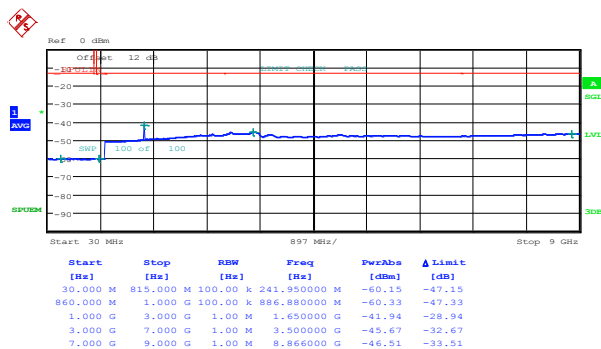


Date: 21.DEC.2013 12:39:32



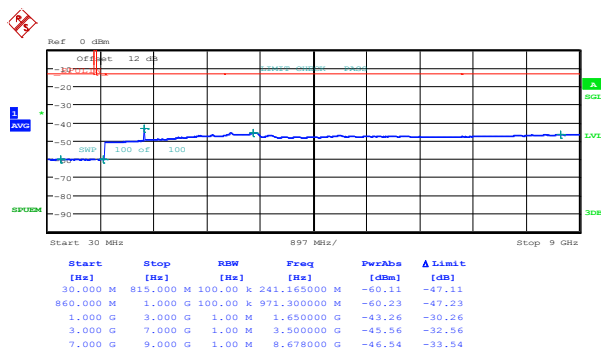
Band :	LTE Band 5	Channel :	CH20425 (Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:40:52

16QAM (RB Size 1, RB Offset 0)

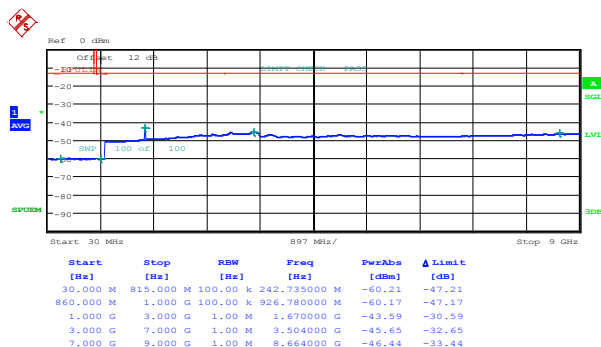


Date: 21.DEC.2013 12:41:42



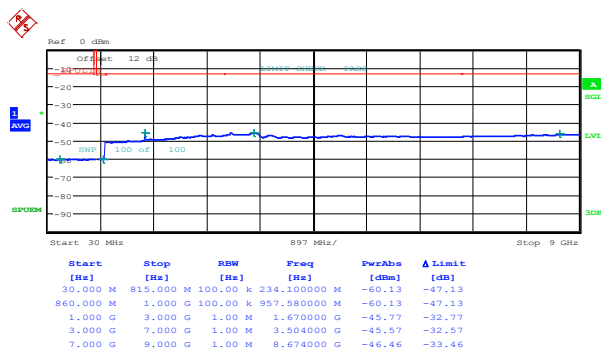
Band :	LTE Band 5	Channel :	CH20525 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:42:37

16QAM (RB Size 1, RB Offset 0)

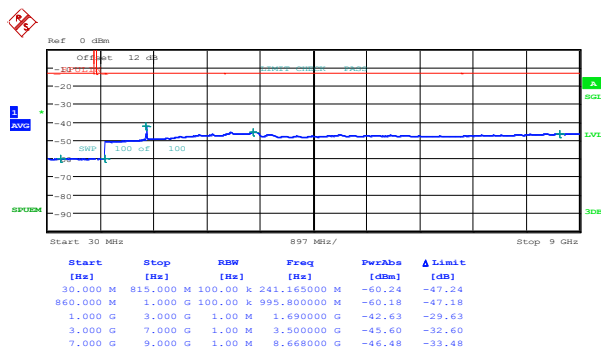


Date: 21.DEC.2013 12:43:26



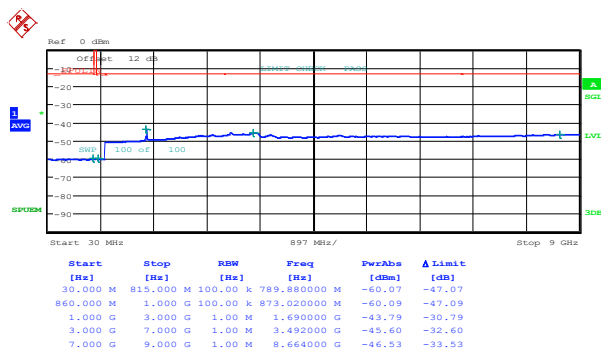
Band :	LTE Band 5	Channel :	CH20625 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:44:26

16QAM (RB Size 1, RB Offset 0)

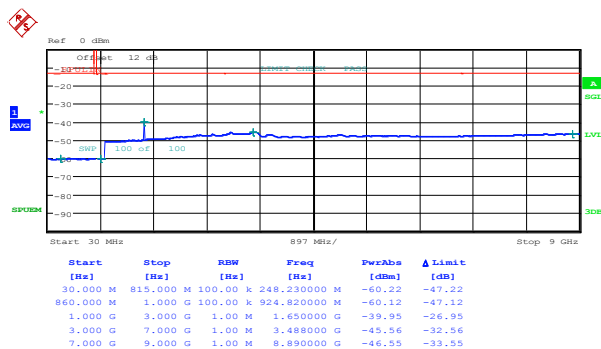


Date: 21.DEC.2013 12:46:23



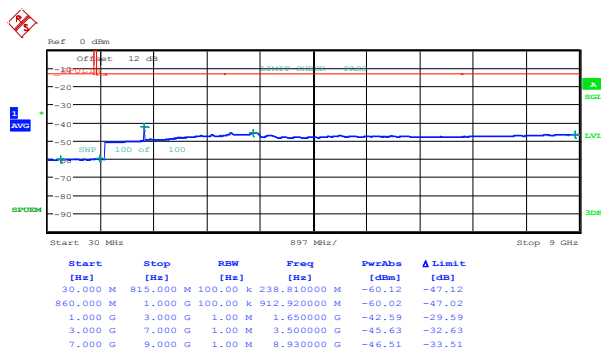
Band :	LTE Band 5	Channel :	CH20450 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:47:45

16QAM (RB Size 1, RB Offset 0)

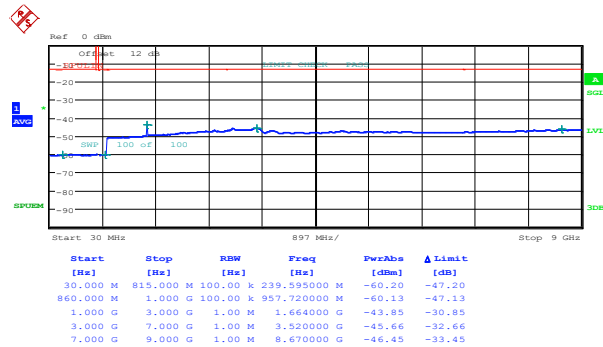


Date: 21.DEC.2013 12:48:35



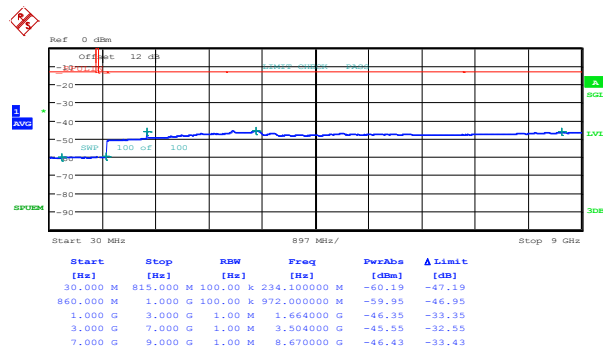
Band :	LTE Band 5	Channel :	CH20525 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:49:25

16QAM (RB Size 1, RB Offset 0)

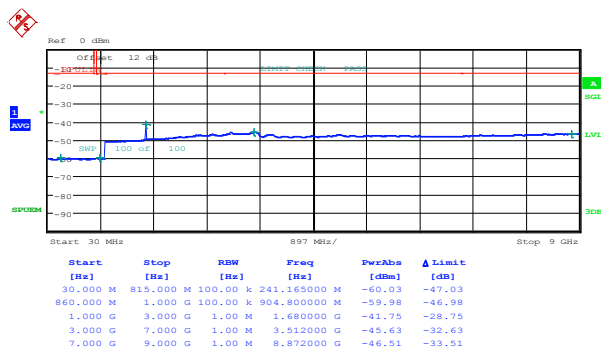


Date: 21.DEC.2013 12:50:35



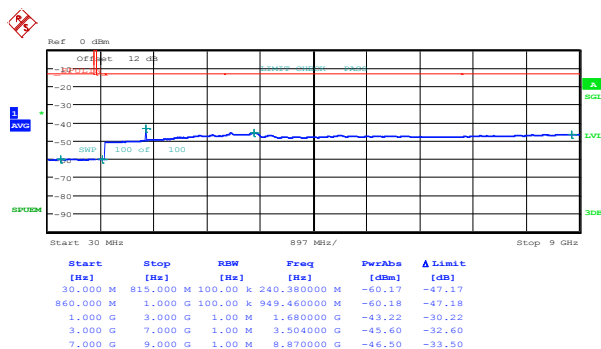
Band :	LTE Band 5	Channel :	CH20600 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 12:51:25

16QAM (RB Size 1, RB Offset 0)



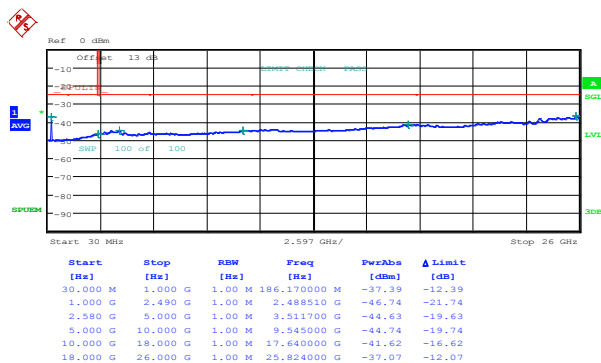
Date: 21.DEC.2013 12:52:14

Note: The total loss is 12 dB of the RF cable and attenuator of LTE Band 5, and has been compensated to the spectrum analyzer offset.



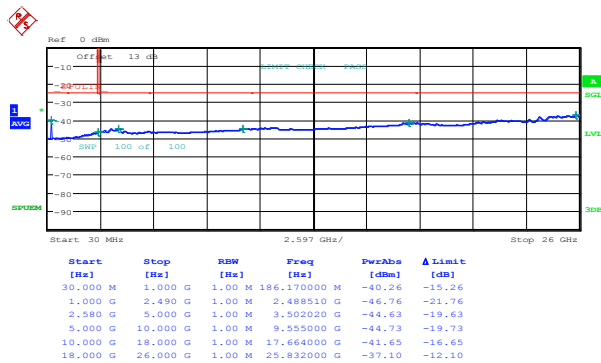
Band :	LTE Band 7	Channel :	CH20775 (Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:30:24

16QAM (RB Size 1, RB Offset 0)

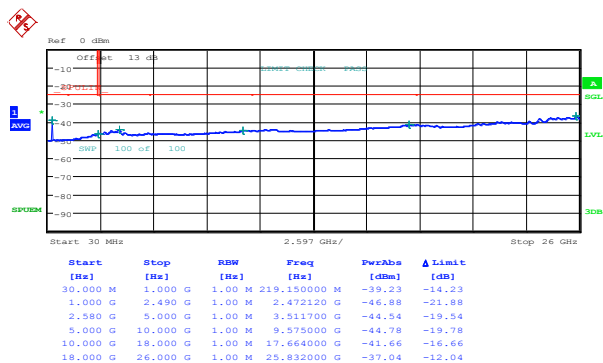


Date: 21.DEC.2013 11:31:49



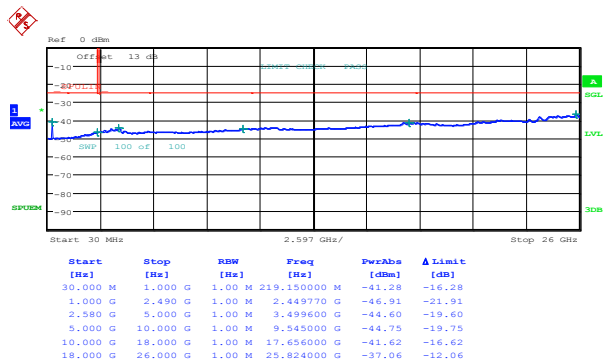
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:34:42

16QAM (RB Size 1, RB Offset 0)

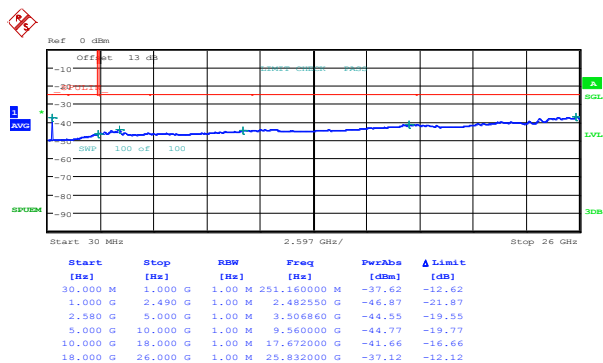


Date: 21.DEC.2013 11:33:02



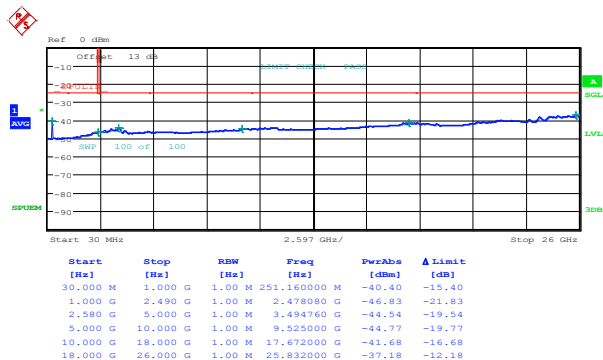
Band :	LTE Band 7	Channel :	CH21425 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:36:04

16QAM (RB Size 1, RB Offset 0)

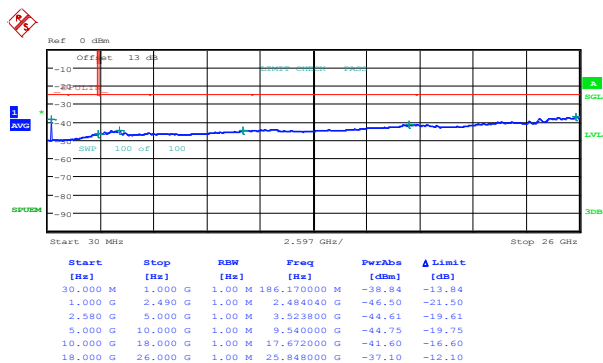


Date: 21.DEC.2013 11:37:09



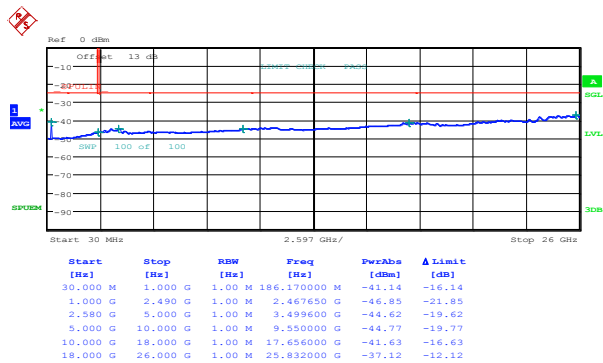
Band :	LTE Band 7	Channel :	CH20800 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:23:59

16QAM (RB Size 1, RB Offset 0)

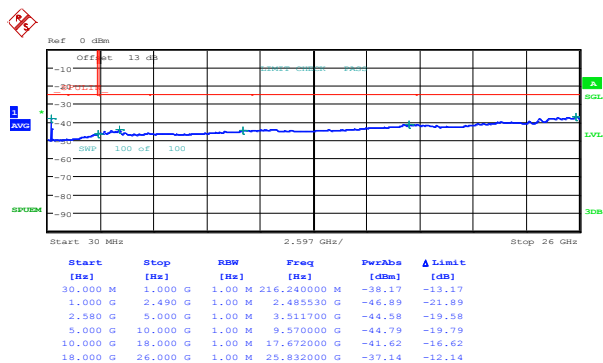


Date: 21.DEC.2013 11:22:27



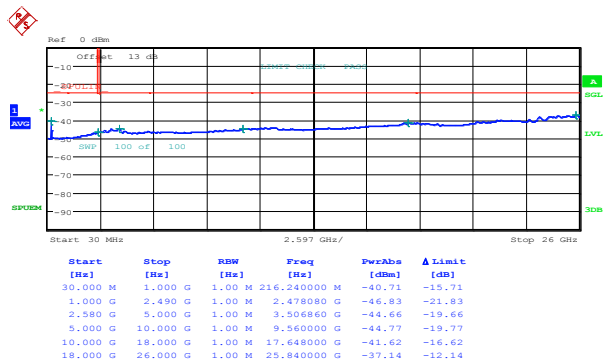
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:28:35

16QAM (RB Size 1, RB Offset 0)

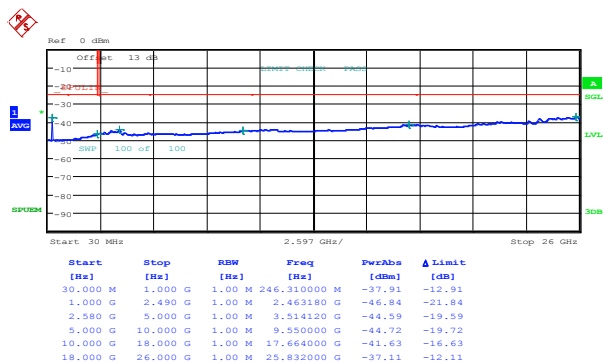


Date: 21.DEC.2013 11:27:33



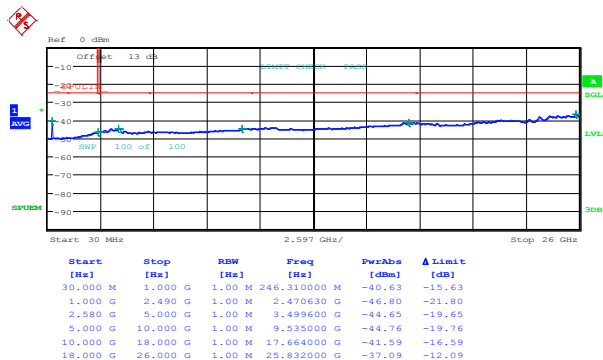
Band :	LTE Band 7	Channel :	CH21400 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:25:08

16QAM (RB Size 1, RB Offset 0)

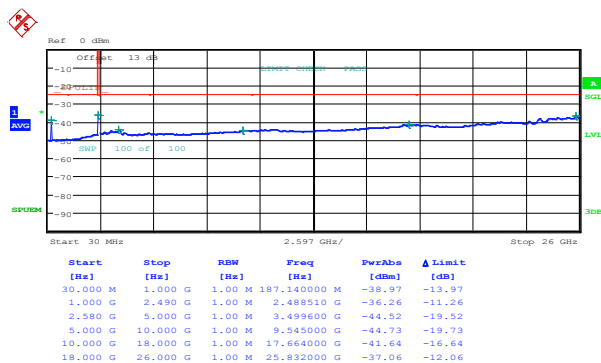


Date: 21.DEC.2013 11:26:22



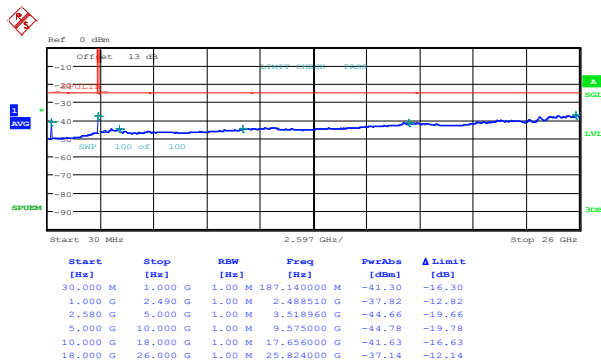
Band :	LTE Band 7	Channel :	CH20825 (Low)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:14:31

16QAM (RB Size 1, RB Offset 0)

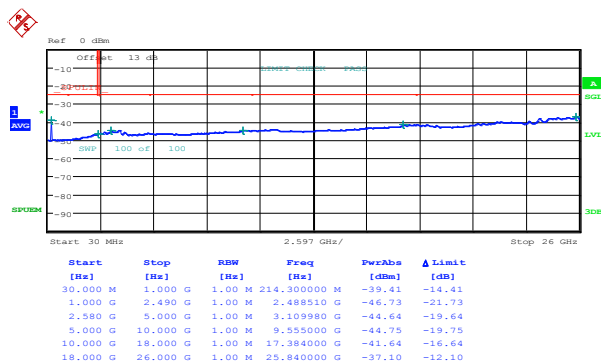


Date: 21.DEC.2013 11:15:37



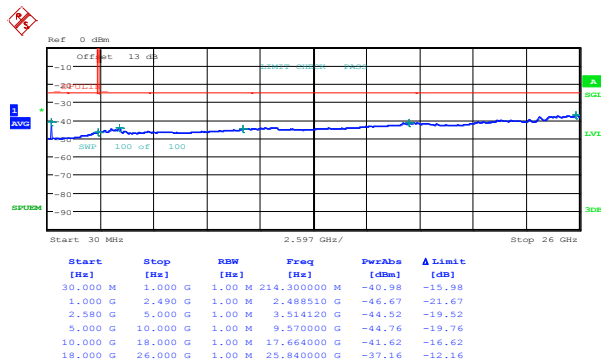
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:17:51

16QAM (RB Size 1, RB Offset 0)

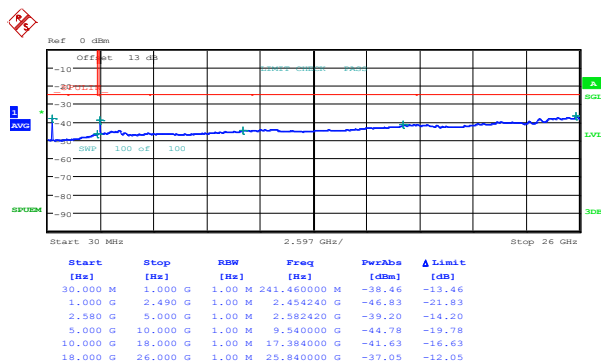


Date: 21.DEC.2013 11:16:47



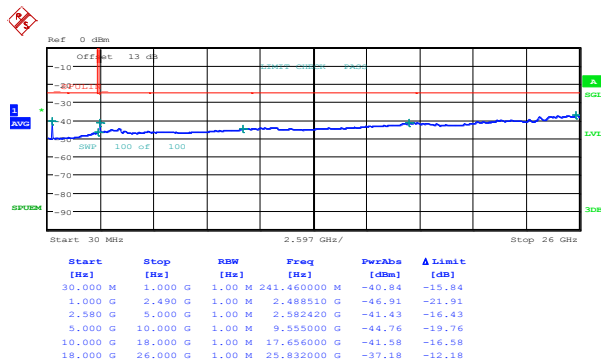
Band :	LTE Band 7	Channel :	CH21375 (High)
Band Width :	15MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:19:30

16QAM (RB Size 1, RB Offset 0)

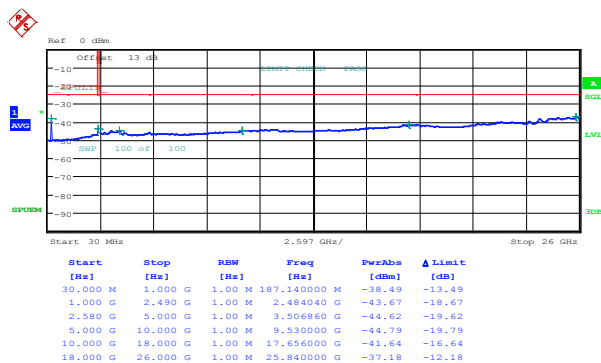


Date: 21.DEC.2013 11:21:05



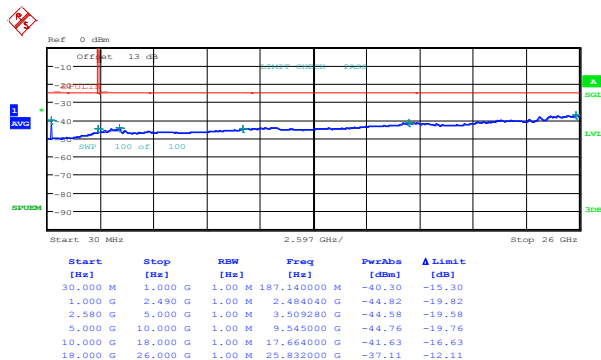
Band :	LTE Band 7	Channel :	CH20850 (Low)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:12:08

16QAM (RB Size 1, RB Offset 0)

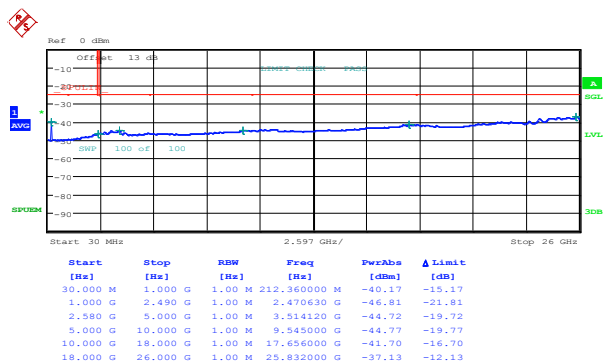


Date: 21.DEC.2013 11:13:11



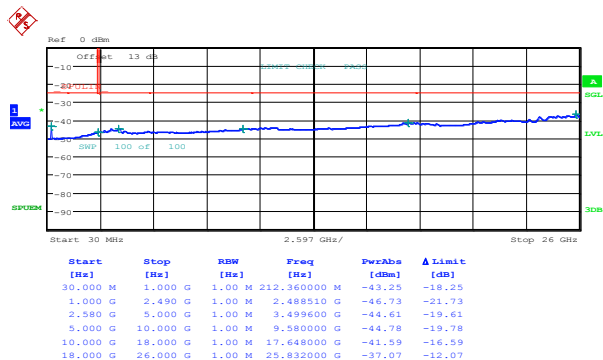
Band :	LTE Band 7	Channel :	CH21100 (Middle)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:10:00

16QAM (RB Size 1, RB Offset 0)

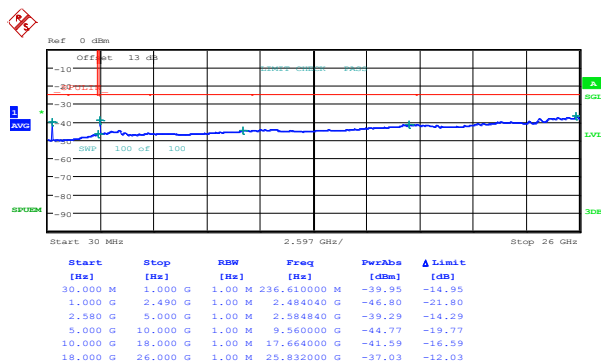


Date: 21.DEC.2013 11:08:56



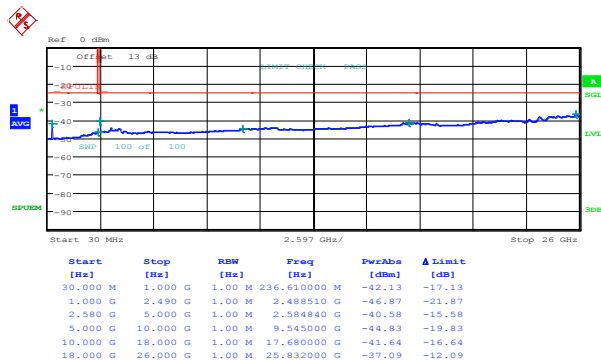
Band :	LTE Band 7	Channel :	CH21350 (High)
Band Width :	20MHz		

QPSK (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:06:34

16QAM (RB Size 1, RB Offset 0)



Date: 21.DEC.2013 11:07:37

Note: The total loss is 13 dB of the RF cable and attenuator of LTE Band 7, and has been compensated to the spectrum analyzer offset.



3.7 Radiated Spurious Emission Measurement

3.7.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004.

For Band 5

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

For Band 7

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

For Band 5

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

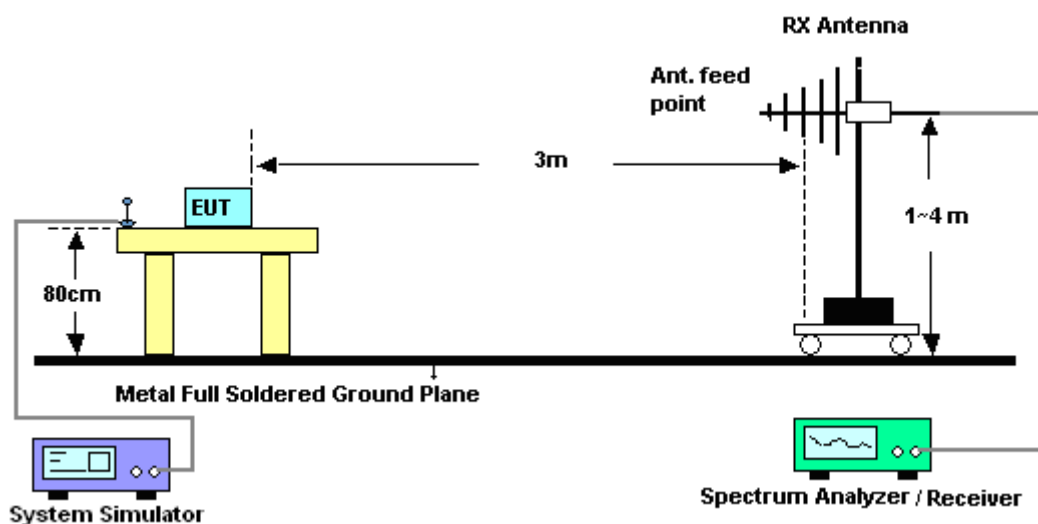
For Band 7

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)

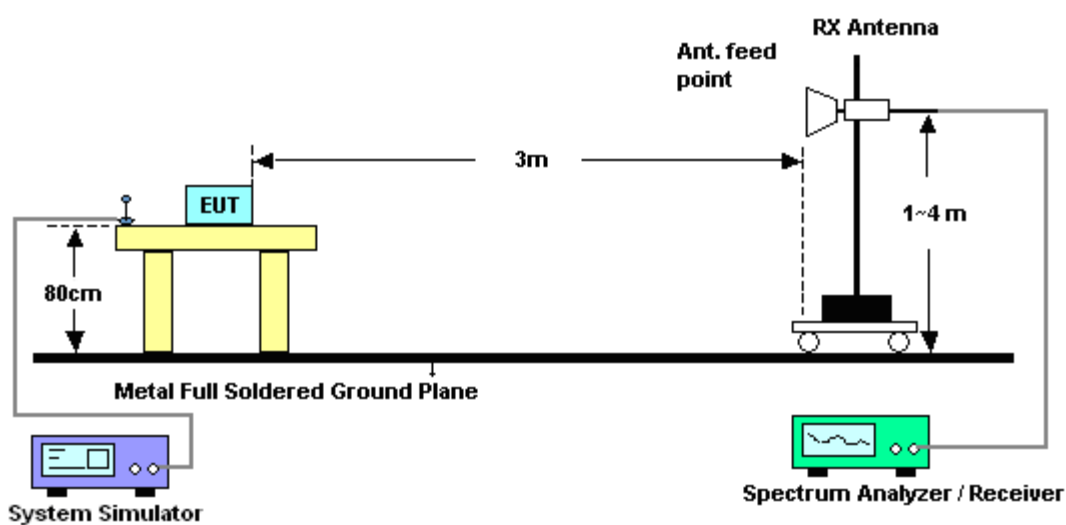
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



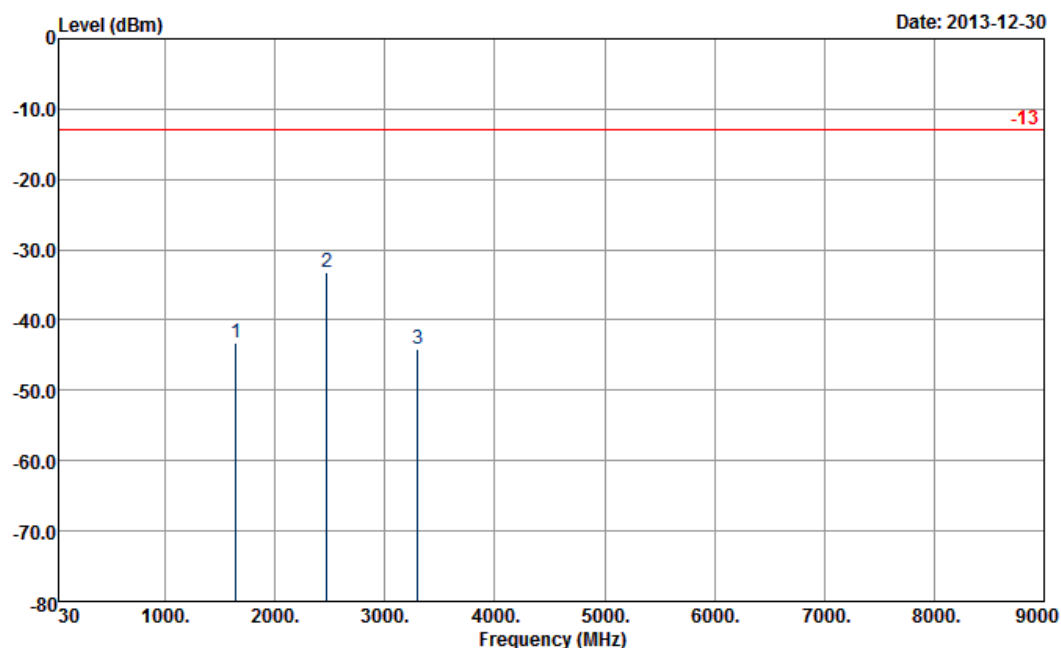
For radiated emissions above 1GHz



3.7.5 Test Result of Field Strength of Spurious Radiated

<Low Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20407		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

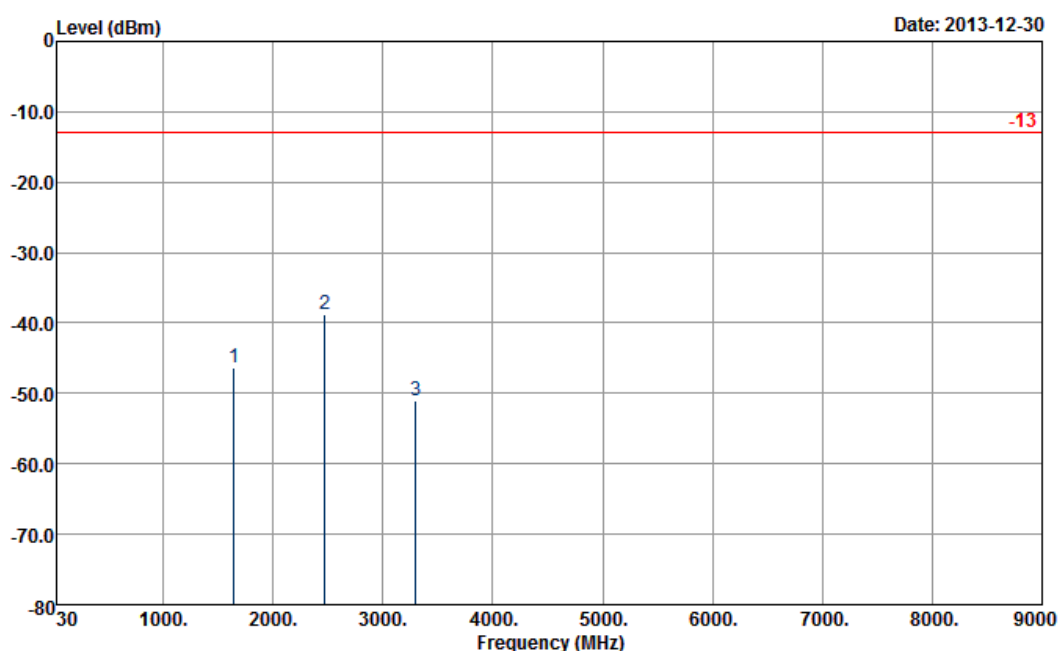


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-43.22	-13	-30.22	-52.49	-47.11	1.61	5.50	H	Pass
2473	-33.31	-13	-20.31	-46.87	-37.46	2.09	6.24	H	Pass
3298	-44.02	-13	-31.02	-58.14	-49.03	3.08	8.09	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20407		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



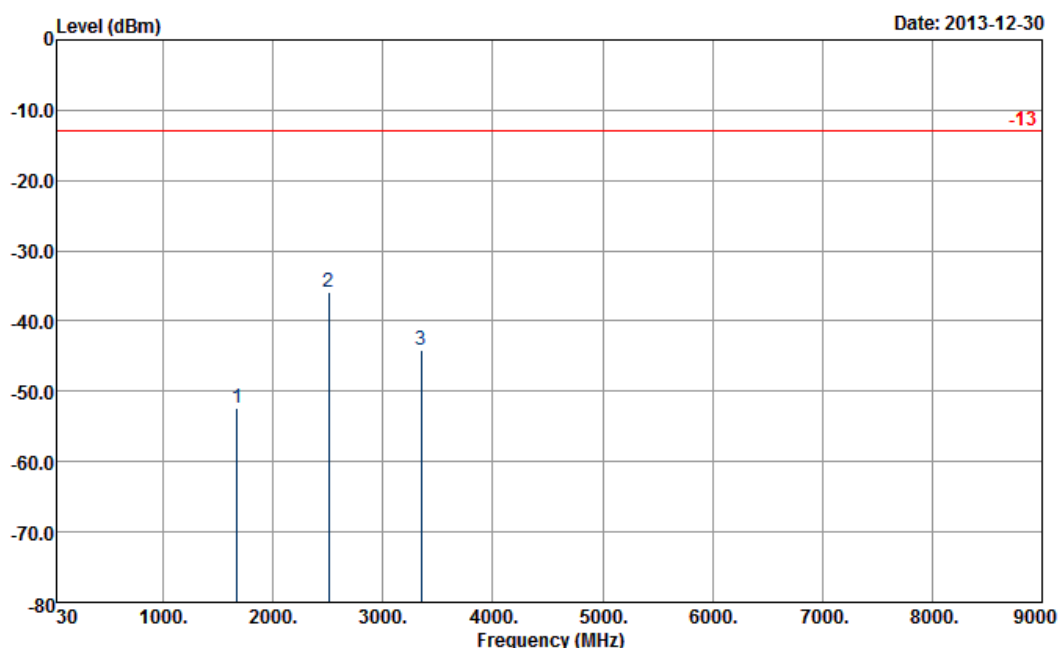
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-46.24	-13	-33.24	-57.37	-50.13	1.61	5.50	V	Pass
2473	-38.71	-13	-25.71	-52.53	-42.86	2.09	6.24	V	Pass
3298	-50.98	-13	-37.98	-65.7	-55.99	3.08	8.09	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

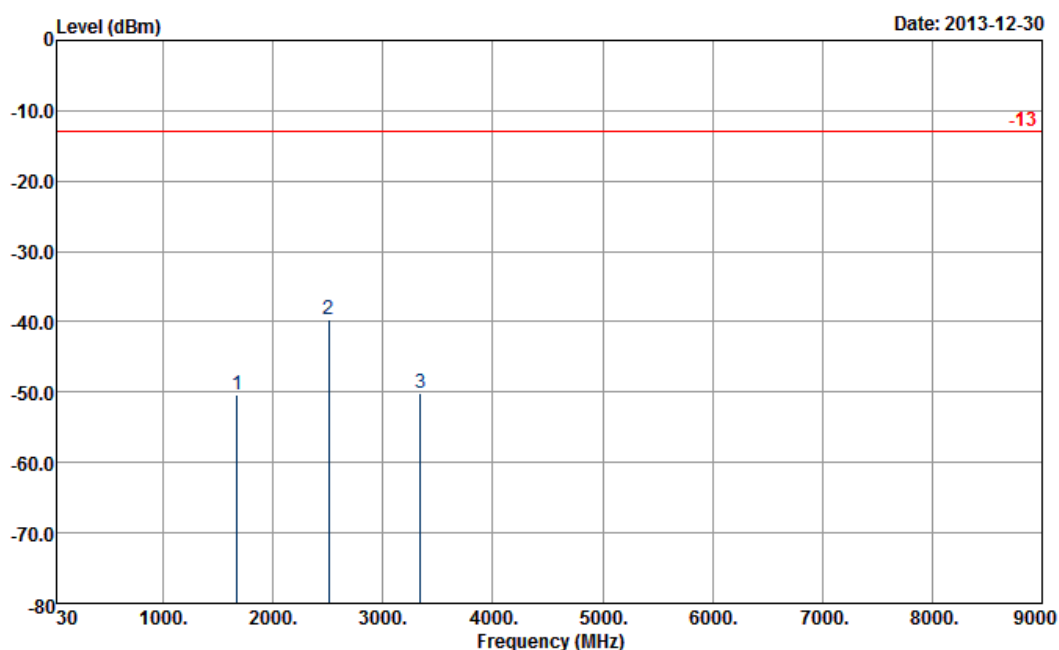


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-52.40	-13	-39.40	-61.09	-56.27	1.62	5.49	H	Pass
2509	-35.94	-13	-22.94	-48.41	-40.06	2.1	6.22	H	Pass
3346	-44.02	-13	-31.02	-59.02	-49.06	3.03	8.07	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



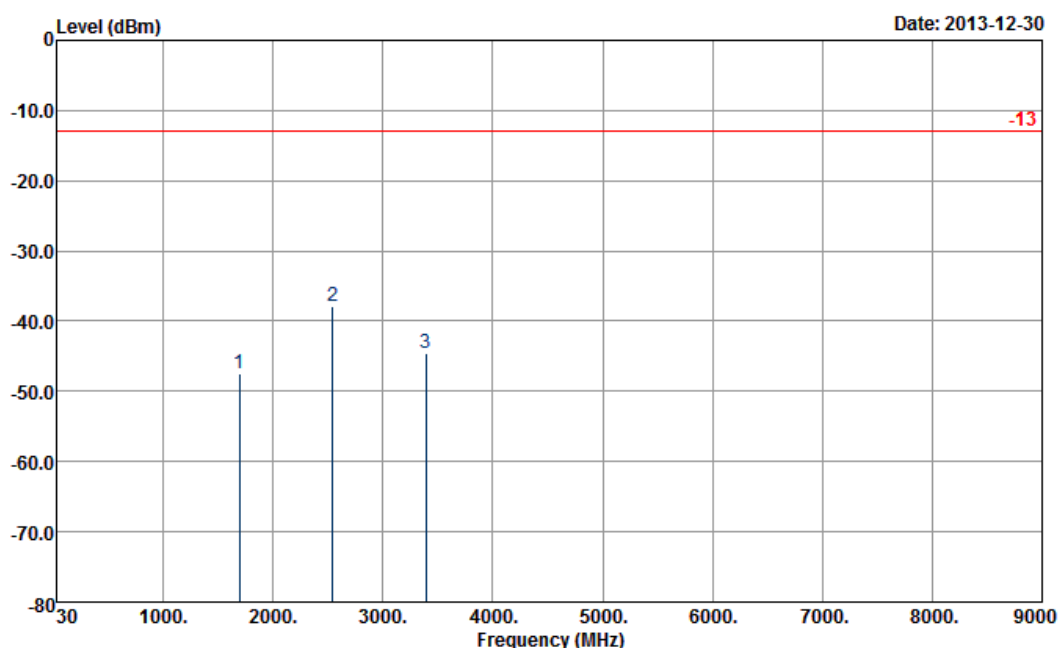
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-50.36	-13	-37.36	-61.99	-54.23	1.62	5.49	V	Pass
2509	-39.56	-13	-26.56	-54.47	-43.68	2.1	6.22	V	Pass
3343	-50.23	-13	-37.23	-66.22	-55.27	3.03	8.07	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20643		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

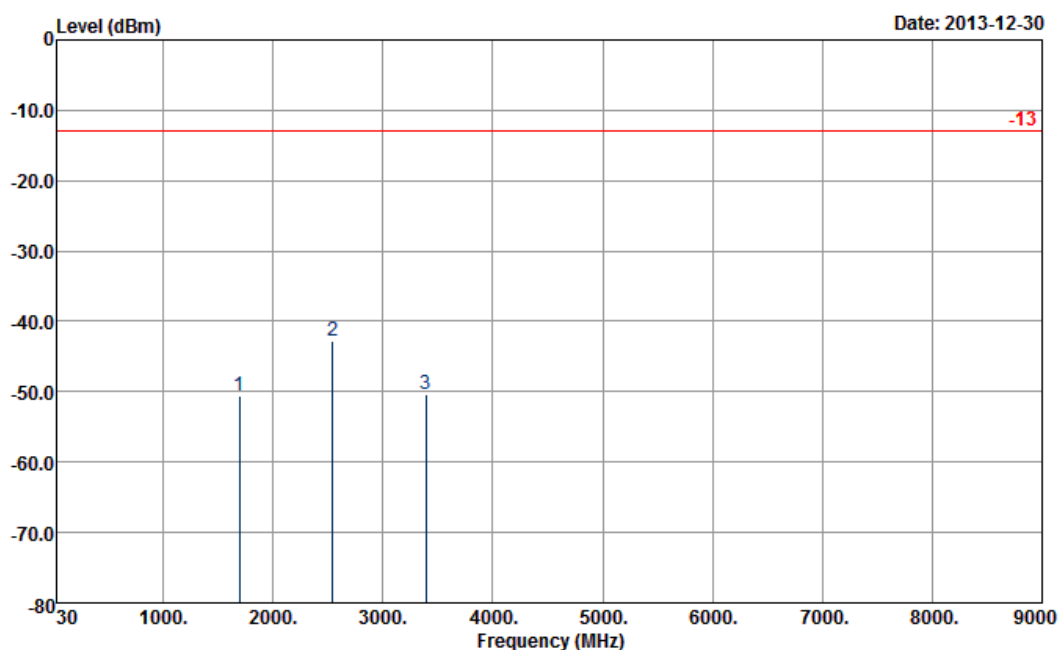


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-47.55	-13	-34.55	-56.02	-51.44	1.58	5.47	H	Pass
2542	-37.83	-13	-24.83	-51.1	-42.11	2.03	6.31	H	Pass
3394	-44.47	-13	-31.47	-58.92	-50.39	2.31	8.23	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	1.4MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20643		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



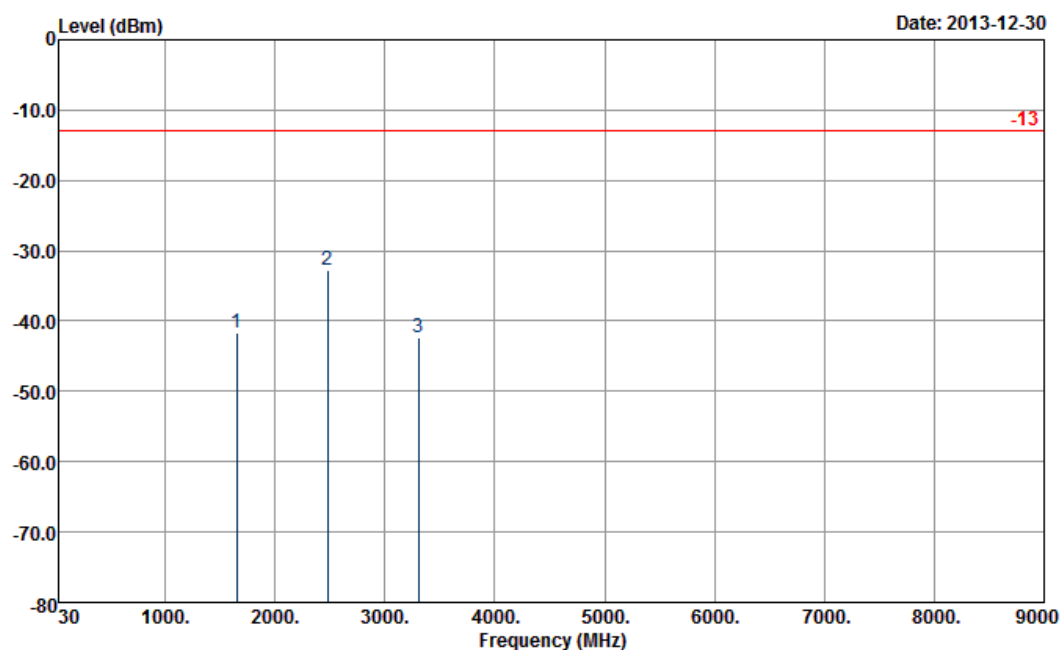
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-50.68	-13	-37.68	-61.74	-54.57	1.58	5.47	V	Pass
2545	-42.78	-13	-29.78	-55.97	-47.06	2.03	6.31	V	Pass
3391	-50.41	-13	-37.41	-65.97	-56.33	2.31	8.23	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20415		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

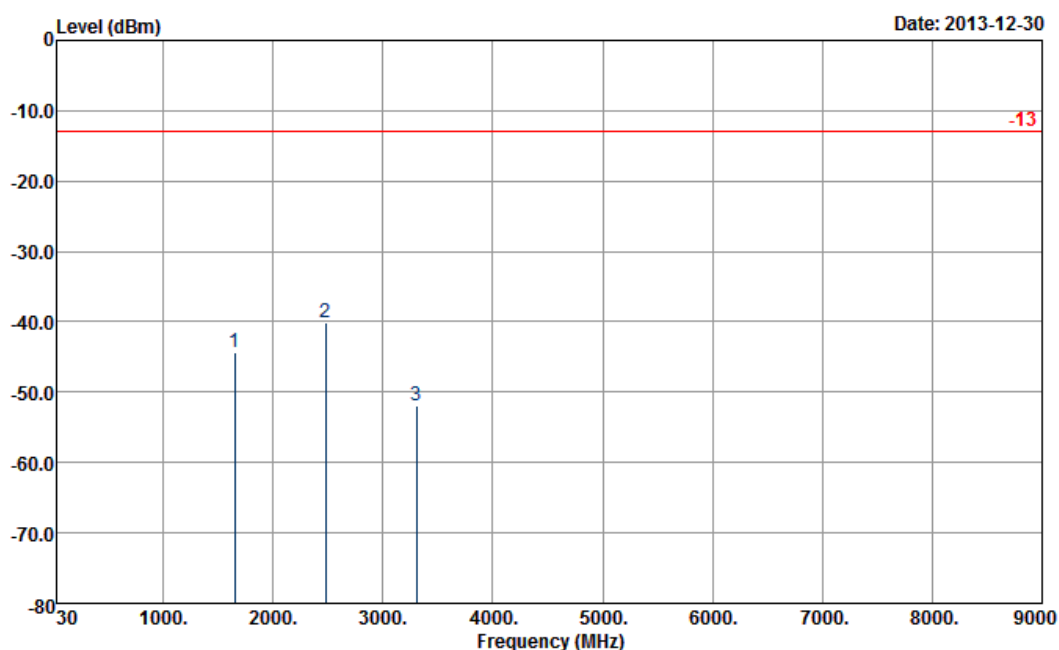


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1654	-41.77	-13	-28.77	-50.73	-45.66	1.6	5.49	H	Pass
2482	-32.85	-13	-19.85	-45.94	-37.03	2.08	6.26	H	Pass
3304	-42.24	-13	-29.24	-56.93	-47.26	3.09	8.11	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20415		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



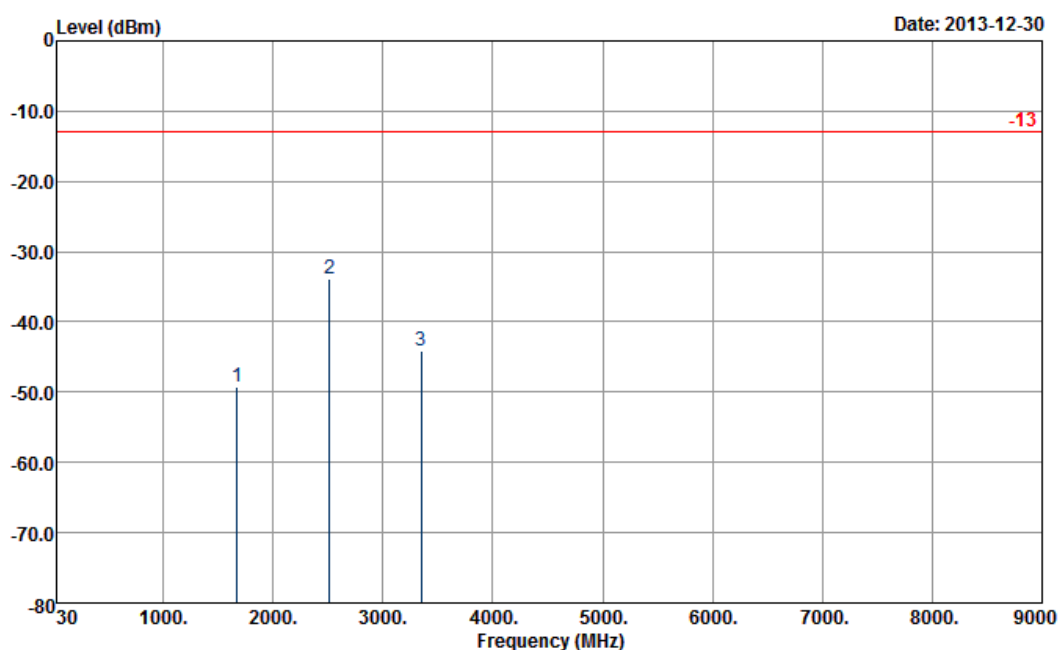
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1654	-44.40	-13	-31.40	-55.7	-48.29	1.6	5.49	V	Pass
2479	-40.15	-13	-27.15	-53.65	-44.33	2.08	6.26	V	Pass
3307	-51.96	-13	-38.96	-66.94	-56.98	3.09	8.11	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

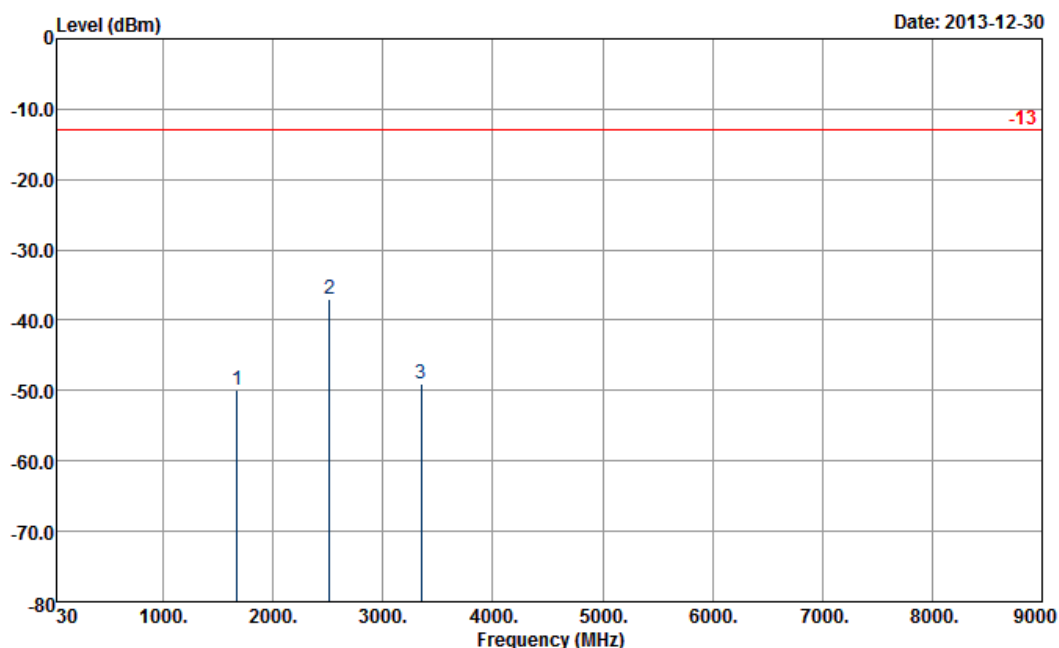


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1675	-49.27	-13	-36.27	-58.15	-53.14	1.62	5.49	H	Pass
2512	-33.90	-13	-20.90	-47.01	-38.02	2.1	6.22	H	Pass
3352	-44.19	-13	-31.19	-58.09	-49.23	3.03	8.07	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



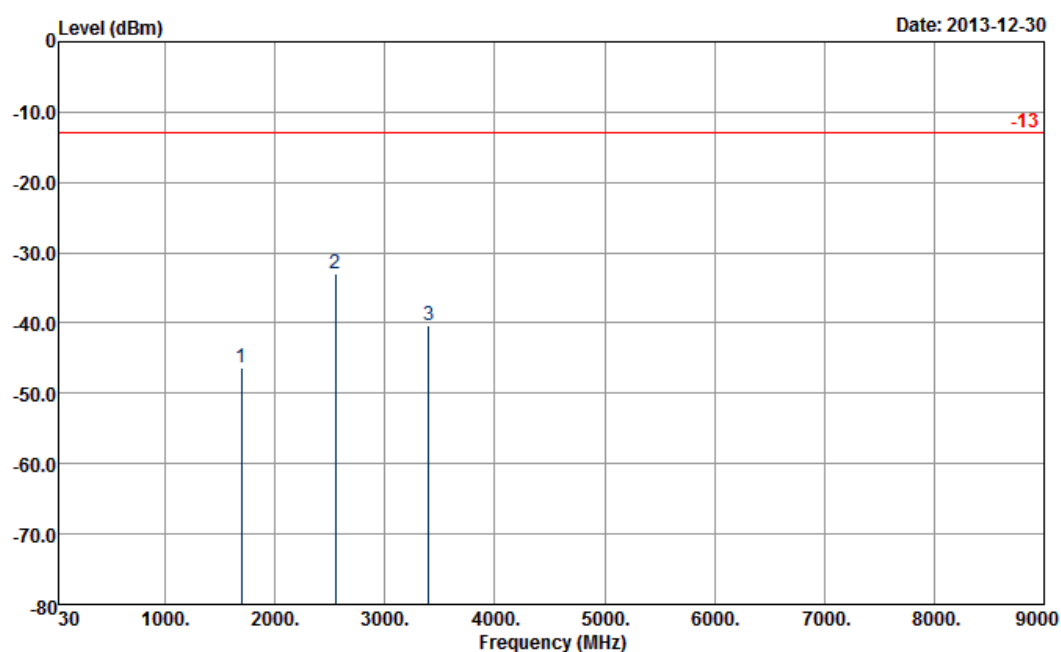
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1675	-49.98	-13	-36.98	-60.75	-53.85	1.62	5.49	V	Pass
2512	-37.10	-13	-24.10	-51.27	-41.22	2.1	6.22	V	Pass
3352	-48.99	-13	-35.99	-63.78	-54.03	3.03	8.07	V	Pass

Other harmonics are lower than background noise

<High Channel>

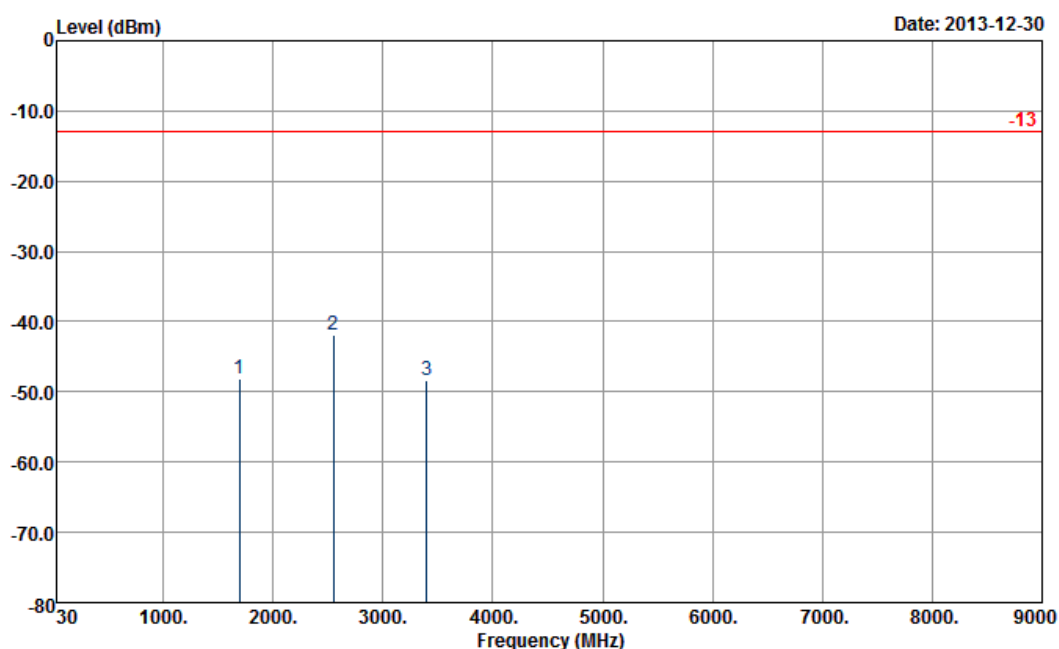
Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20635		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-46.33	-13	-33.33	-55.77	-50.22	1.56	5.45	H	Pass
2548	-32.96	-13	-19.96	-46.29	-37.22	2.02	6.28	H	Pass
3397	-40.37	-13	-27.37	-55.15	-46.27	2.29	8.19	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	3MHz QPSK RB Size 1 Offset 14	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20635		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



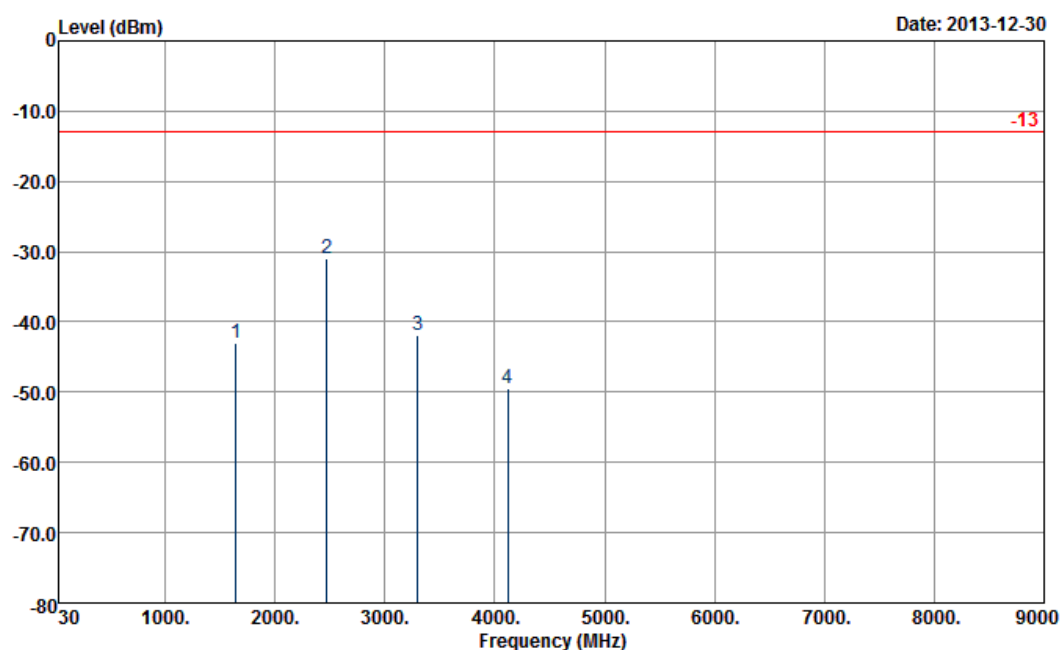
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-48.14	-13	-35.14	-59.98	-52.03	1.56	5.45	V	Pass
2548	-41.96	-13	-28.96	-55.4	-46.22	2.02	6.28	V	Pass
3397	-48.43	-13	-35.43	-63.86	-54.33	2.29	8.19	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20425		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

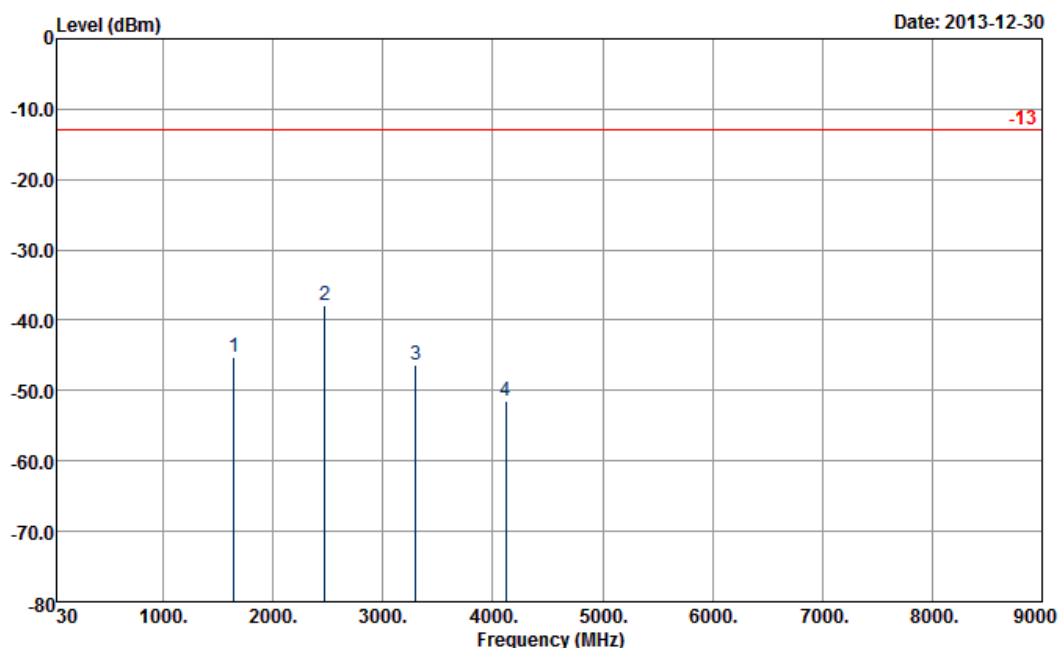


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-43.09	-13	-30.09	-51.89	-46.99	1.61	5.51	H	Pass
2472	-30.97	-13	-17.97	-43.7	-35.13	2.1	6.26	H	Pass
3296	-41.94	-13	-28.94	-55.13	-46.94	3.12	8.12	H	Pass
4120	-49.51	-13	-36.51	-66.05	-56.21	2.63	9.33	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20425		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



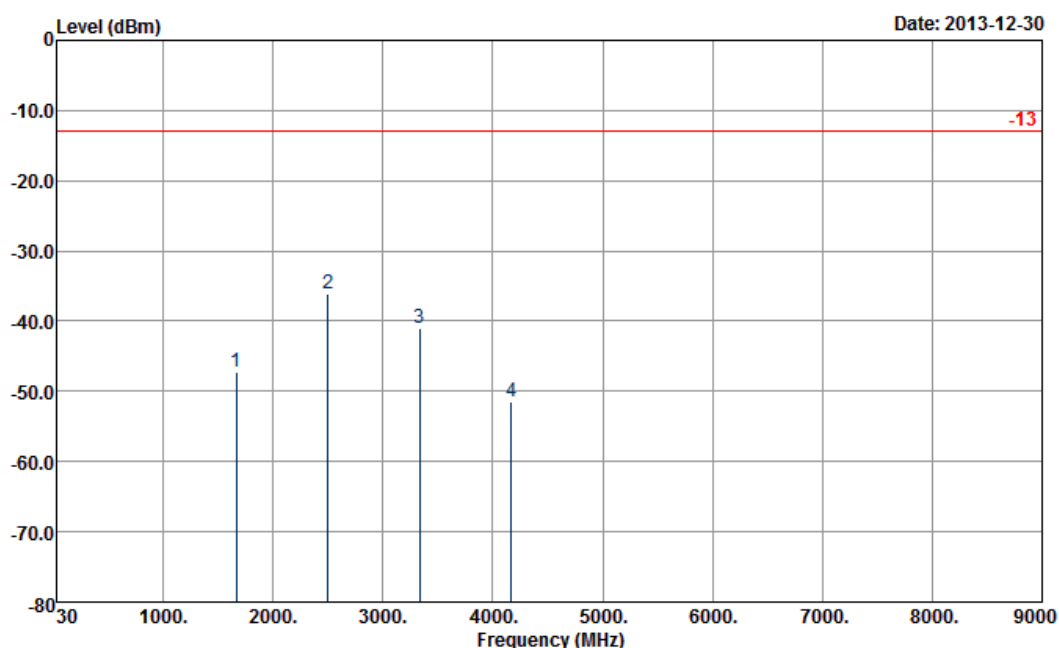
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-45.32	-13	-32.32	-56.22	-49.22	1.61	5.51	V	Pass
2472	-37.95	-13	-24.95	-51.51	-42.11	2.1	6.26	V	Pass
3296	-46.33	-13	-33.33	-62.5	-51.33	3.12	8.12	V	Pass
4120	-51.44	-13	-38.44	-68.86	-58.14	2.63	9.33	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

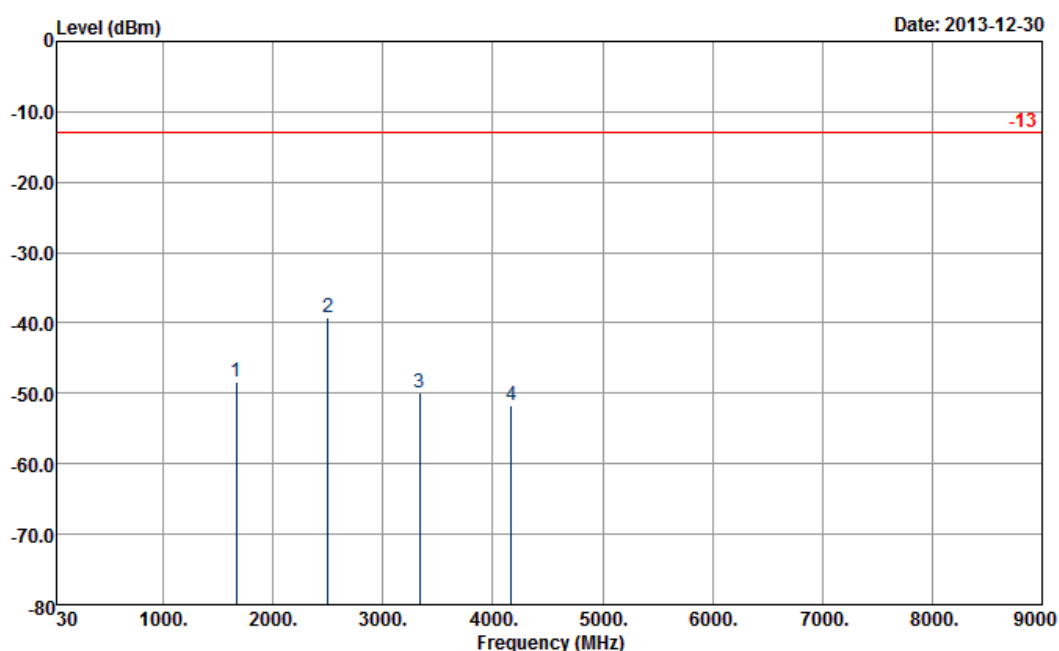


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1664	-47.21	-13	-34.21	-56.23	-51.08	1.62	5.49	H	Pass
2504	-36.12	-13	-23.12	-50.26	-40.24	2.1	6.22	H	Pass
3336	-40.95	-13	-27.95	-54.61	-45.99	3.03	8.07	H	Pass
4168	-51.42	-13	-38.42	-67.63	-58.11	2.52	9.21	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

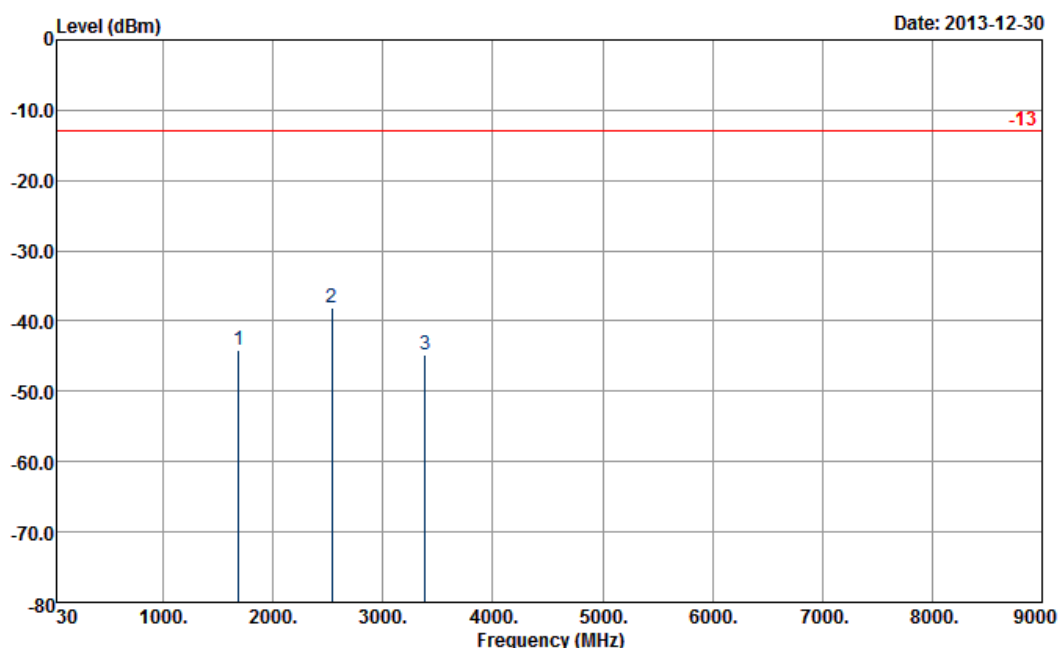


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1664	-48.46	-13	-35.46	-59.47	-52.33	1.62	5.49	V	Pass
2504	-39.17	-13	-26.17	-53.66	-43.29	2.1	6.22	V	Pass
3336	-50.01	-13	-37.01	-66.06	-55.05	3.03	8.07	V	Pass
4168	-51.70	-13	-38.70	-68.98	-58.39	2.52	9.21	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20625		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

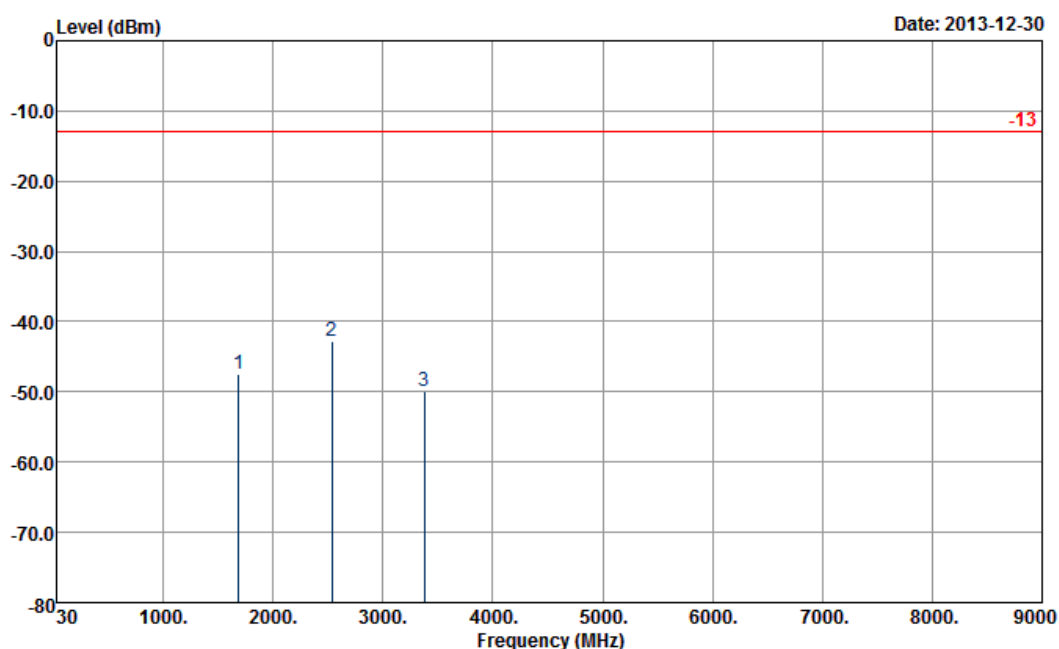


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1688	-44.23	-13	-31.23	-53.12	-48.13	1.54	5.44	H	Pass
2536	-38.07	-13	-25.07	-51.43	-42.33	2.01	6.27	H	Pass
3384	-44.86	-13	-31.86	-58.97	-50.86	2.18	8.18	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20625		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

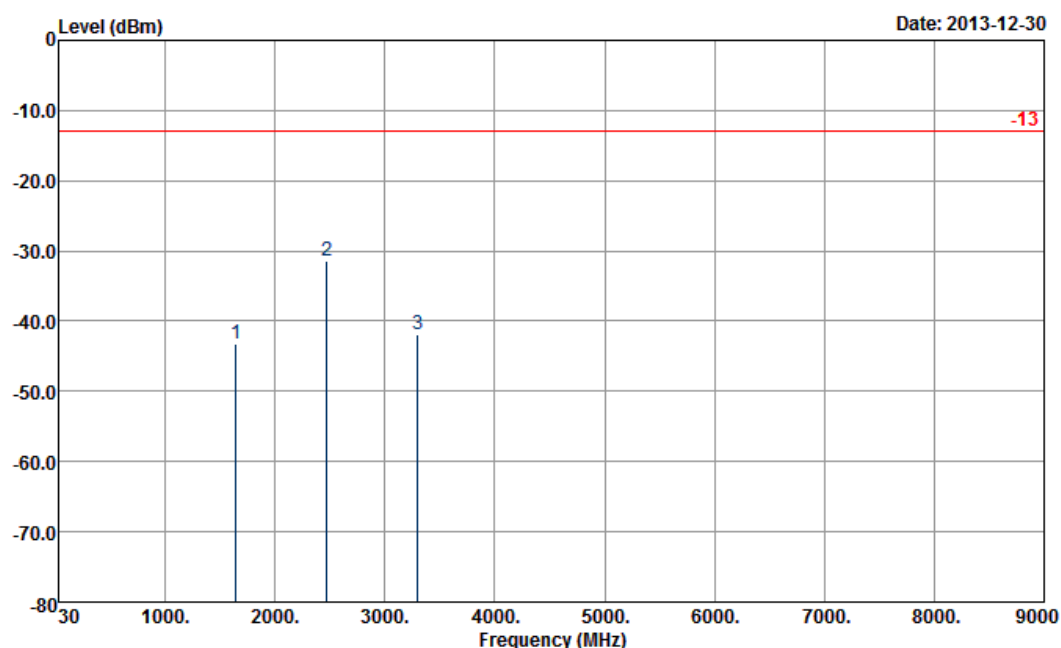


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1688	-47.47	-13	-34.47	-59.04	-51.37	1.54	5.44	V	Pass
2536	-42.80	-13	-29.80	-56.46	-47.06	2.01	6.27	V	Pass
3376	-49.85	-13	-36.85	-65.56	-55.85	2.18	8.18	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20450		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

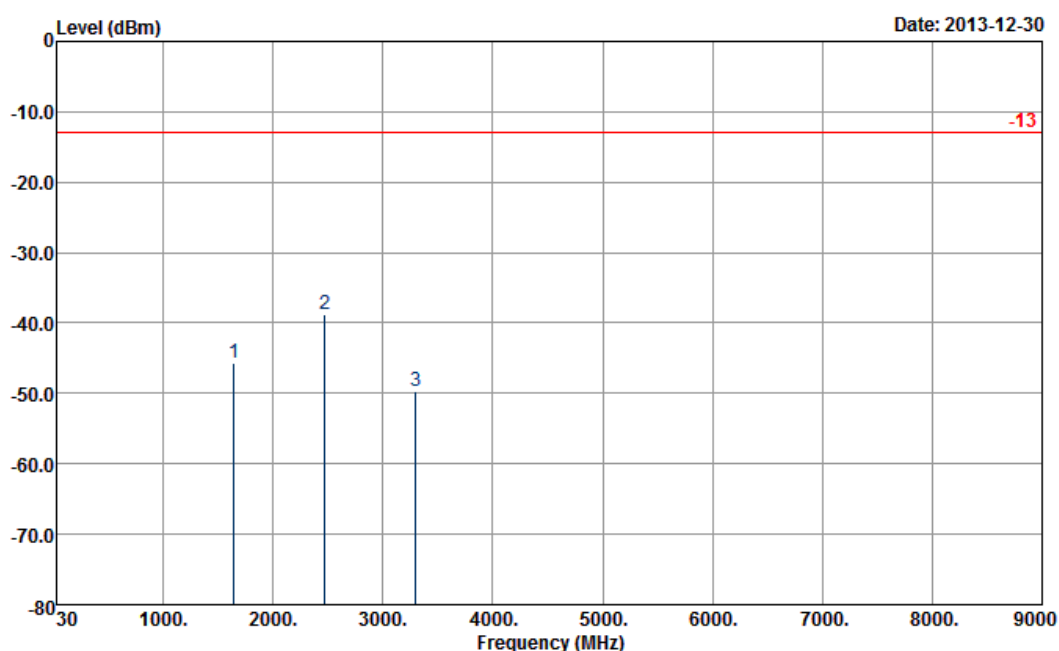


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-43.32	-13	-30.32	-51.96	-47.27	1.63	5.58	H	Pass
2472	-31.42	-13	-18.42	-44.52	-35.52	2.21	6.31	H	Pass
3296	-41.89	-13	-28.89	-55.79	-46.92	3.1	8.13	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20450		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



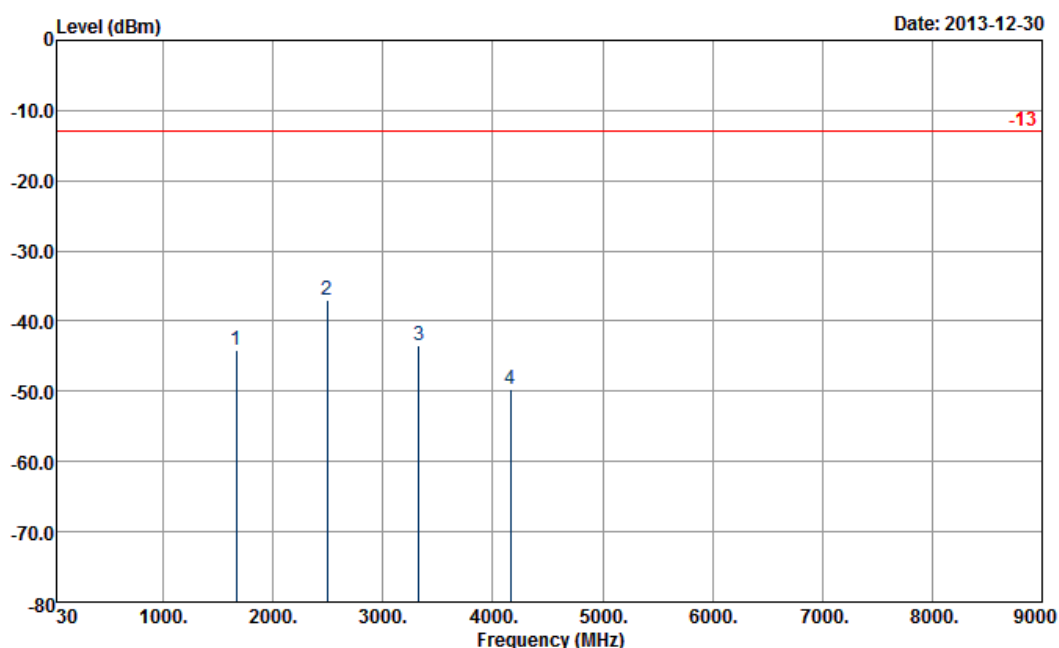
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-45.66	-13	-32.66	-56.88	-49.61	1.63	5.58	V	Pass
2472	-38.72	-13	-25.72	-51.78	-42.82	2.21	6.31	V	Pass
3296	-49.63	-13	-36.63	-65.46	-54.66	3.1	8.13	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

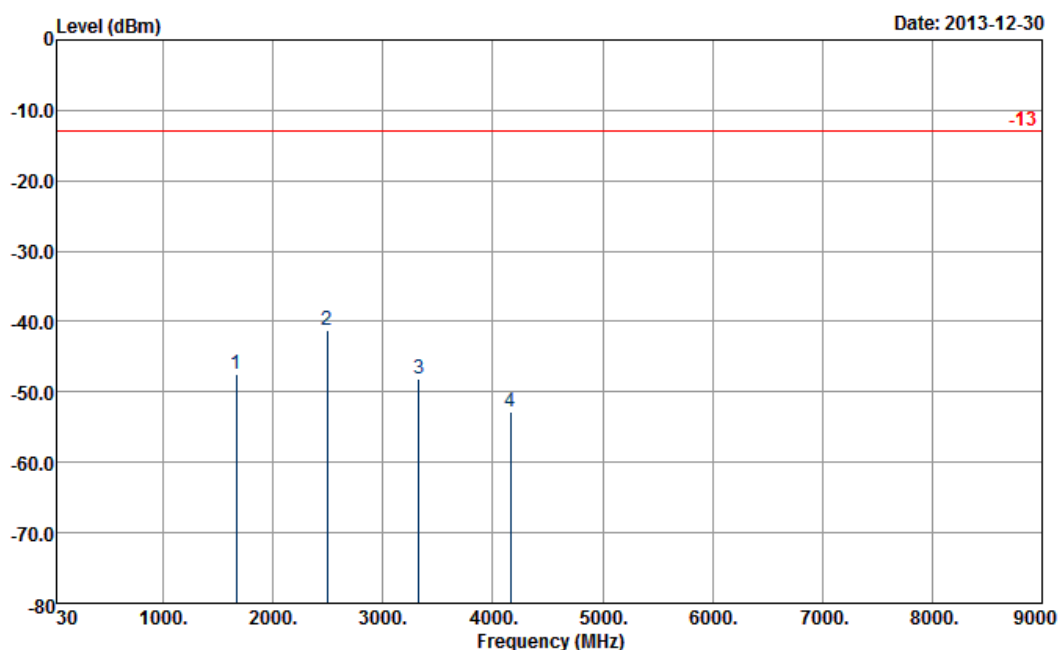


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1664	-44.08	-13	-31.08	-53.61	-47.95	1.62	5.49	H	Pass
2496	-37.09	-13	-24.09	-51.02	-41.21	2.1	6.22	H	Pass
3328	-43.50	-13	-30.50	-57.57	-48.54	3.03	8.07	H	Pass
4160	-49.75	-13	-36.75	-65.96	-56.44	2.52	9.21	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20525		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



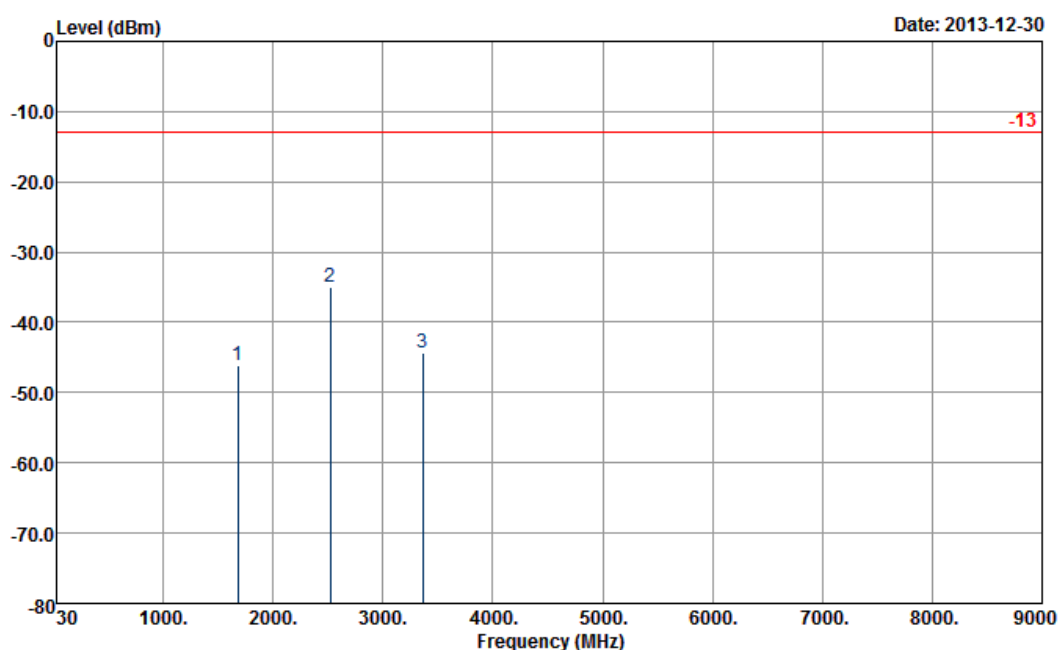
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1664	-47.40	-13	-34.40	-58.7	-51.27	1.62	5.49	V	Pass
2496	-41.21	-13	-28.21	-55.14	-45.33	2.1	6.22	V	Pass
3328	-48.20	-13	-35.20	-63.73	-53.24	3.03	8.07	V	Pass
4160	-52.86	-13	-39.86	-69.14	-59.55	2.52	9.21	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20600		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

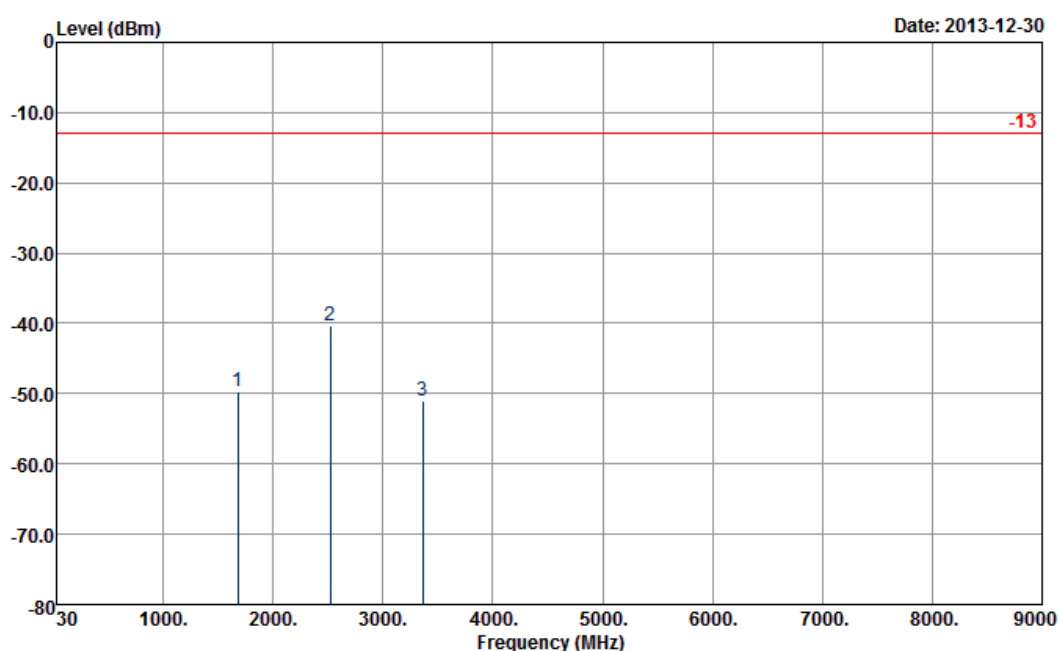


Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1680	-46.19	-13	-33.19	-54.97	-50.09	1.52	5.42	H	Pass
2520	-35.02	-13	-22.02	-48.53	-39.28	1.99	6.25	H	Pass
3360	-44.33	-13	-31.33	-58.73	-50.33	2.14	8.14	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 5	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20600		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



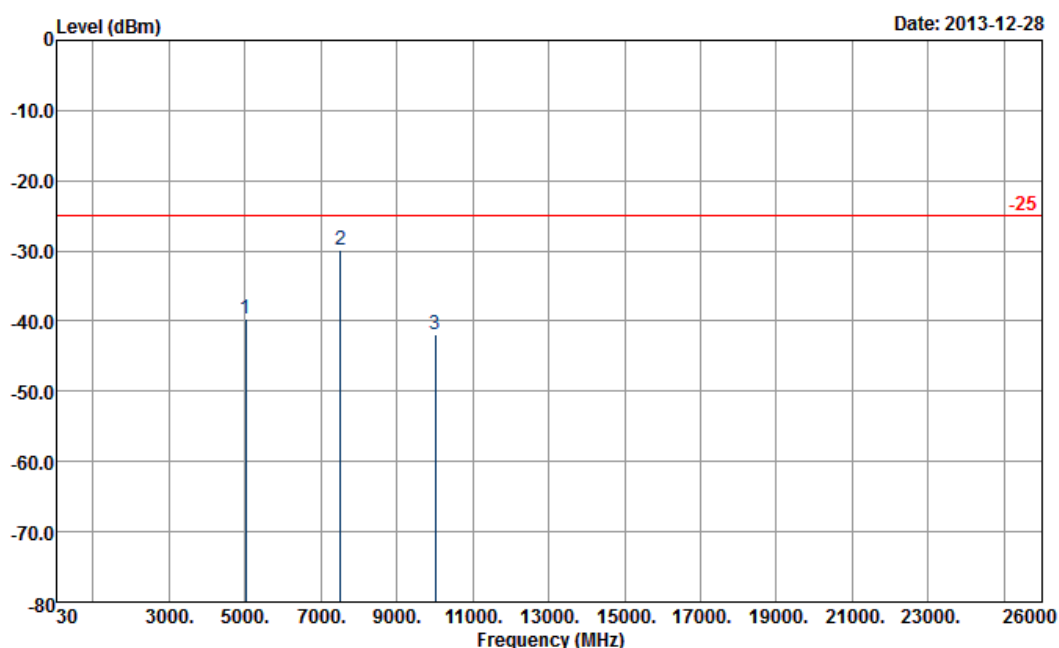
Site : 03CH07-HY
 Condition : -13 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1680	-49.74	-13	-36.74	-60.29	-53.64	1.52	5.42	V	Pass
2520	-40.38	-13	-27.38	-54.72	-44.64	1.99	6.25	V	Pass
3360	-51.09	-13	-38.09	-67.44	-57.09	2.14	8.14	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20775		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

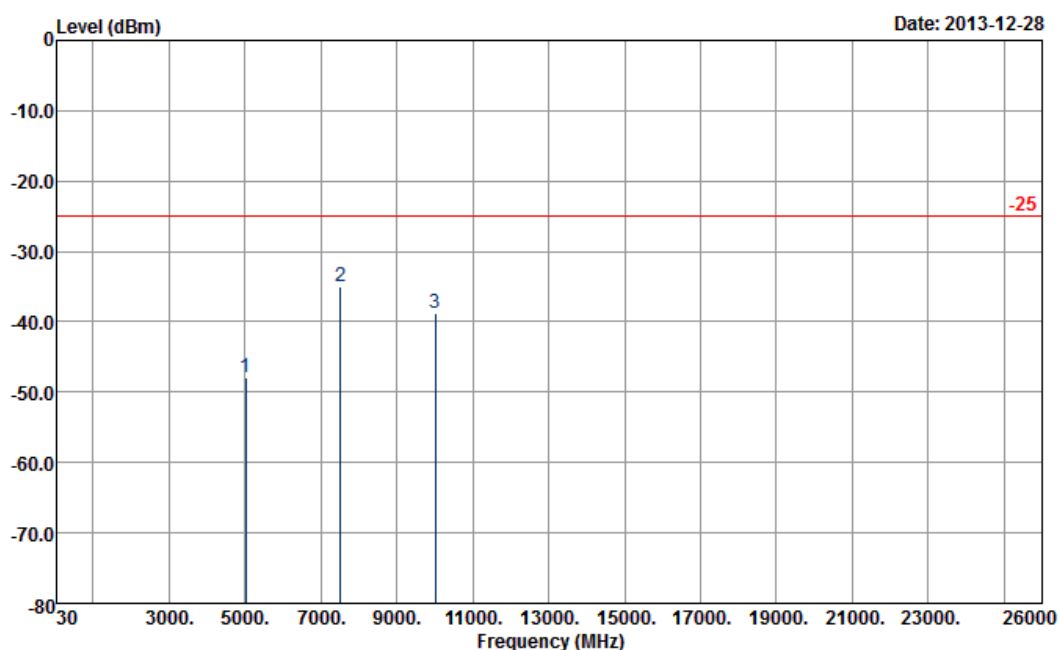
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5010	-39.72	-25	-14.72	-57.37	-43.28	6.78	10.34	H	Pass
7512	-29.92	-25	-4.92	-57.07	-32.96	9.22	12.26	H	Pass
10020	-41.93	-25	-16.93	-69.89	-46.27	8.51	12.85	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20775		

Remark :

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.



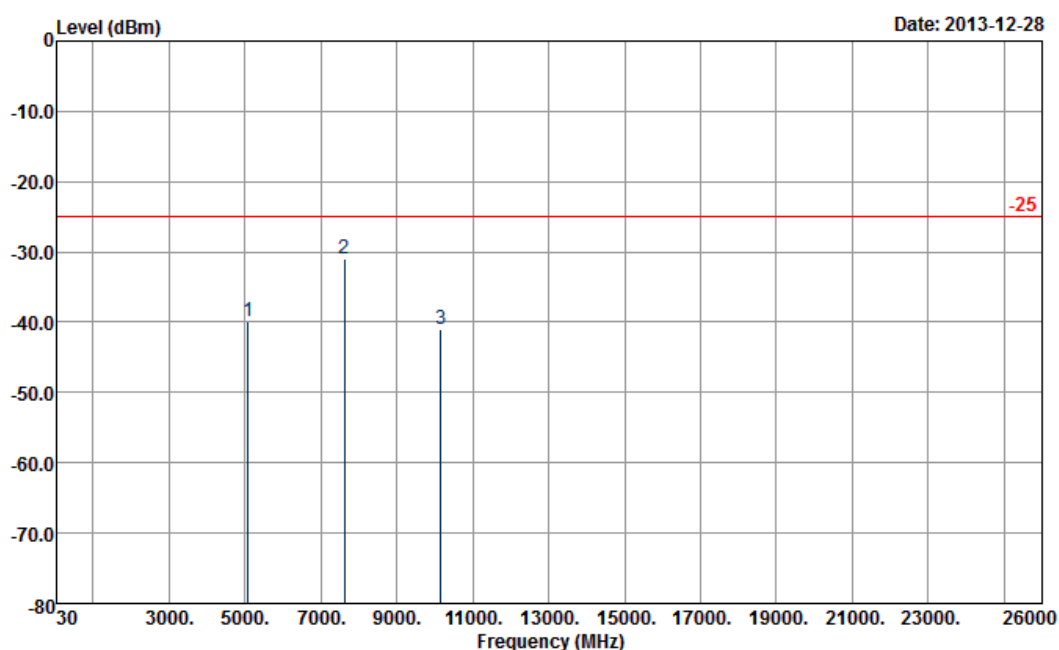
Site : 03CH07-HY
Condition : -25 HF-EIRP(080306) VERTICAL
Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5010	-47.88	-25	-22.88	-65.34	-51.44	6.78	10.34	V	Pass
7512	-34.95	-25	-9.95	-61.31	-37.99	9.22	12.26	V	Pass
10020	-38.77	-25	-13.77	-67.52	-43.11	8.51	12.85	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

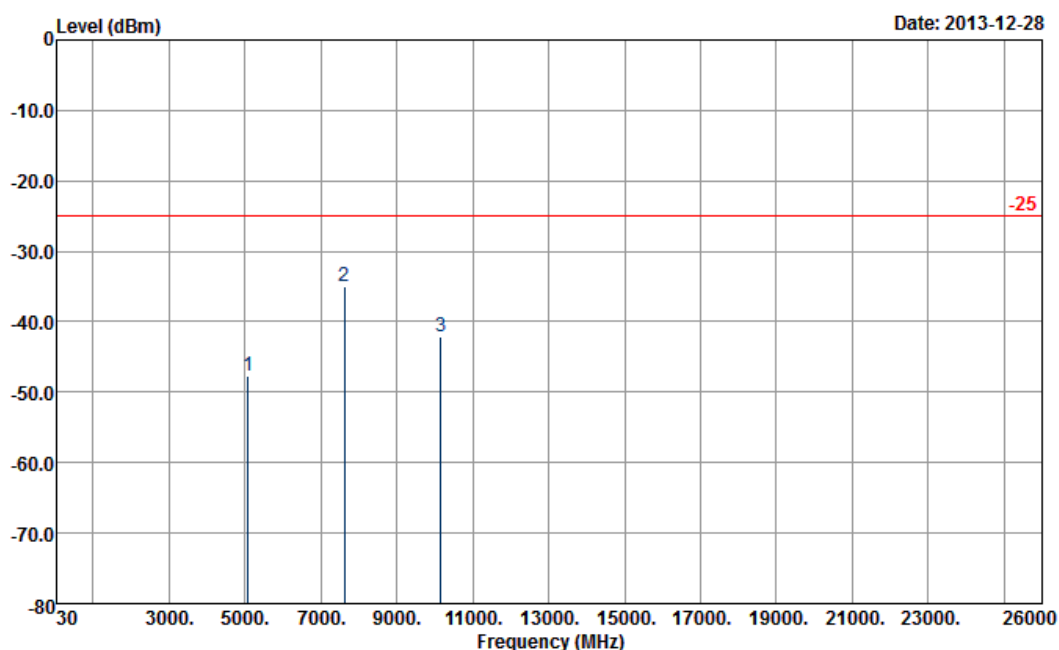


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5076	-39.89	-25	-14.89	-58.01	-43.38	6.86	10.35	H	Pass
7614	-31.05	-25	-6.05	-58.41	-33.94	9.34	12.23	H	Pass
10152	-40.93	-25	-15.93	-69.71	-45.03	8.64	12.74	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



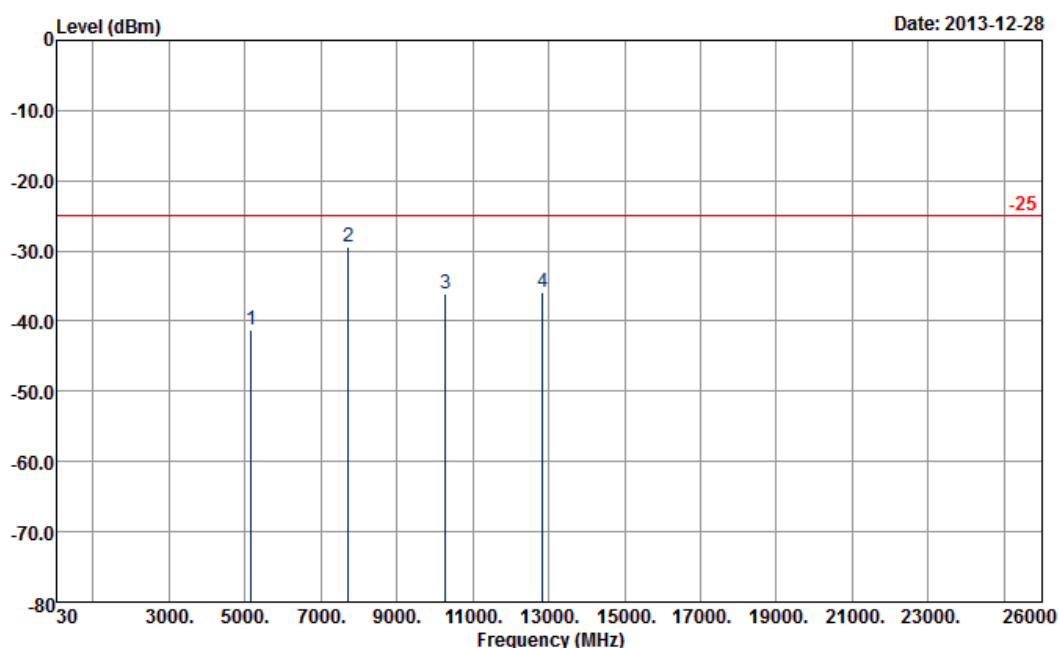
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5076	-47.73	-25	-22.73	-66.11	-51.22	6.86	10.35	V	Pass
7614	-35.02	-25	-10.02	-61.75	-37.91	9.34	12.23	V	Pass
10152	-42.16	-25	-17.16	-70.45	-46.26	8.64	12.74	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21425		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

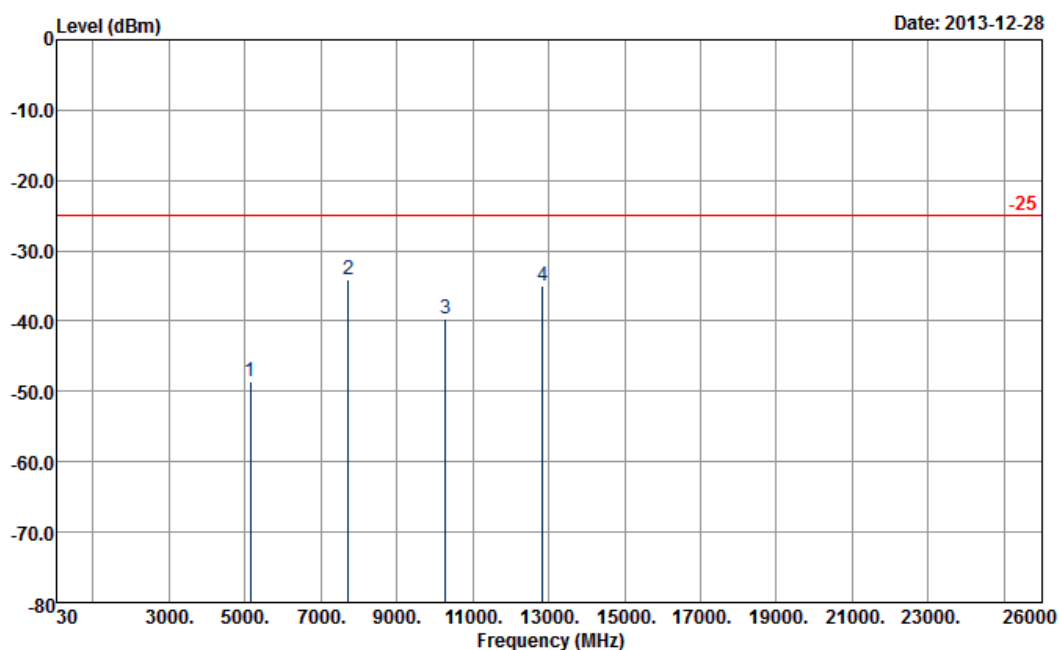
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5136	-41.33	-25	-16.33	-59.87	-44.86	6.9	10.43	H	Pass
7710	-29.31	-25	-4.31	-54.97	-32.24	9.39	12.32	H	Pass
10278	-36.09	-25	-11.09	-65.59	-40.23	8.71	12.85	H	Pass
12846	-35.88	-25	-10.88	-68.91	-40.17	9.02	13.31	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	5MHz QPSK RB Size 1 Offset 24	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21425		

Remark :

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. The harmonic (6th, 7th, 8th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.



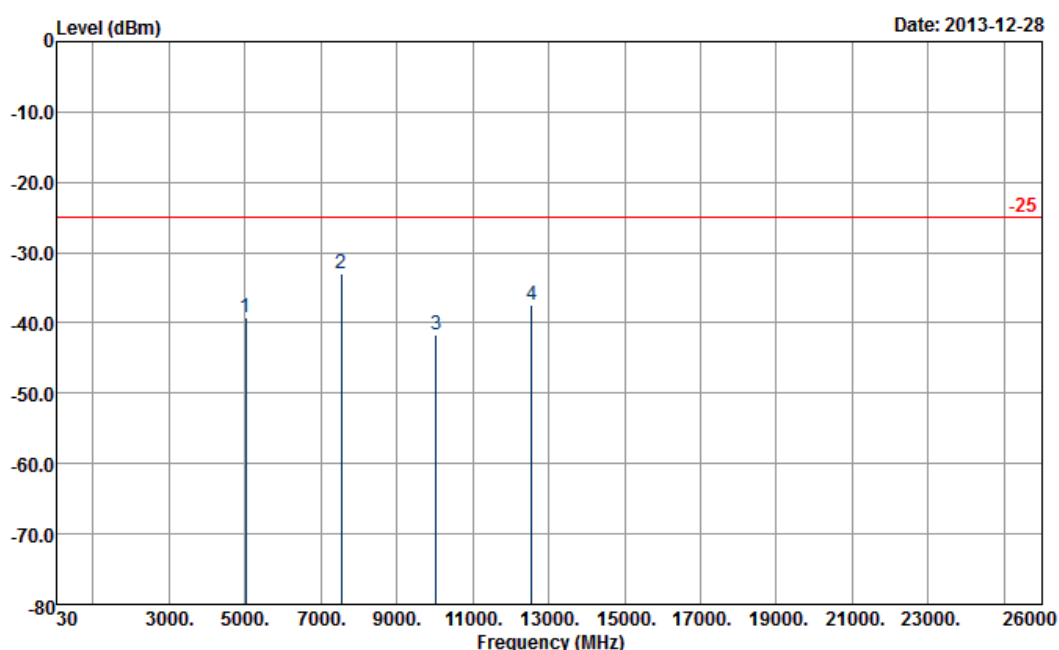
Site : 03CH07-HY
Condition : -25 HF-EIRP(080306) VERTICAL
Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5142	-48.50	-25	-23.50	-66.8	-52.03	6.9	10.43	V	Pass
7710	-34.20	-25	-9.20	-60.15	-37.13	9.39	12.32	V	Pass
10278	-39.74	-25	-14.74	-67.56	-43.88	8.71	12.85	V	Pass
12846	-34.93	-25	-9.93	-66.11	-39.22	9.02	13.31	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20800		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

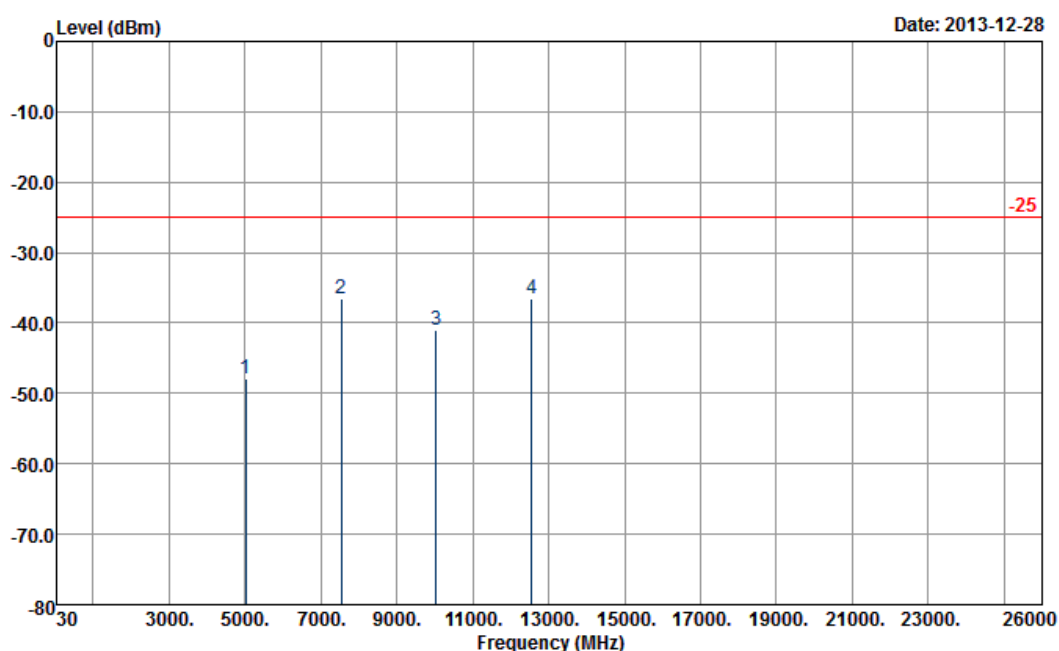


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5016	-39.31	-25	-14.31	-57.01	-42.85	6.81	10.35	H	Pass
7530	-33.08	-25	-8.08	-60.33	-36.06	9.26	12.24	H	Pass
10038	-41.56	-25	-16.56	-70.04	-45.85	8.54	12.83	H	Pass
12546	-37.48	-25	-12.48	-70.25	-41.88	8.87	13.27	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20800		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



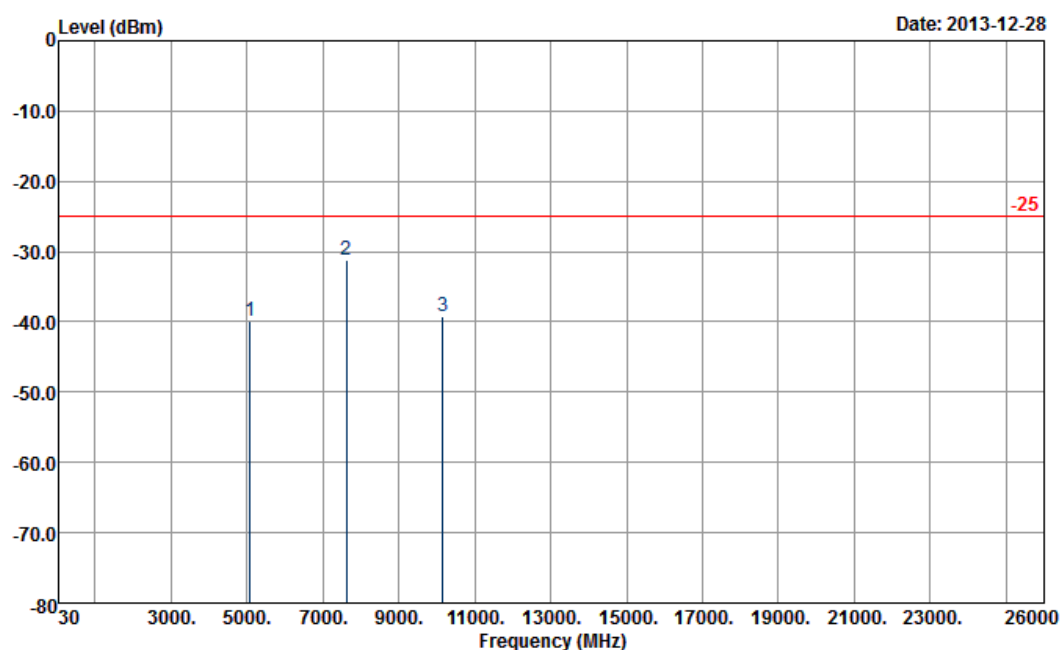
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5016	-47.91	-25	-22.91	-66.11	-51.45	6.81	10.35	V	Pass
7530	-36.57	-25	-11.57	-63.98	-39.55	9.26	12.24	V	Pass
10038	-40.95	-25	-15.95	-67.99	-45.24	8.54	12.83	V	Pass
12546	-36.54	-25	-11.54	-67.61	-40.94	8.87	13.27	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

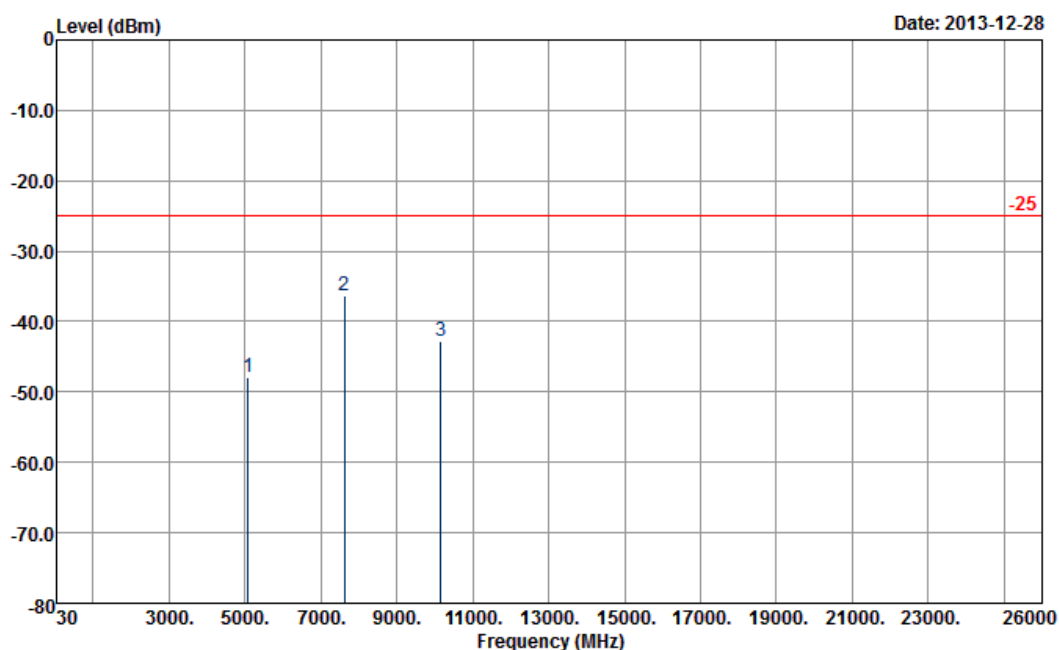


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5076	-39.78	-25	-14.78	-57.63	-43.27	6.86	10.35	H	Pass
7620	-31.16	-25	-6.16	-58.36	-34.05	9.34	12.23	H	Pass
10158	-39.18	-25	-14.18	-68.71	-43.28	8.64	12.74	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



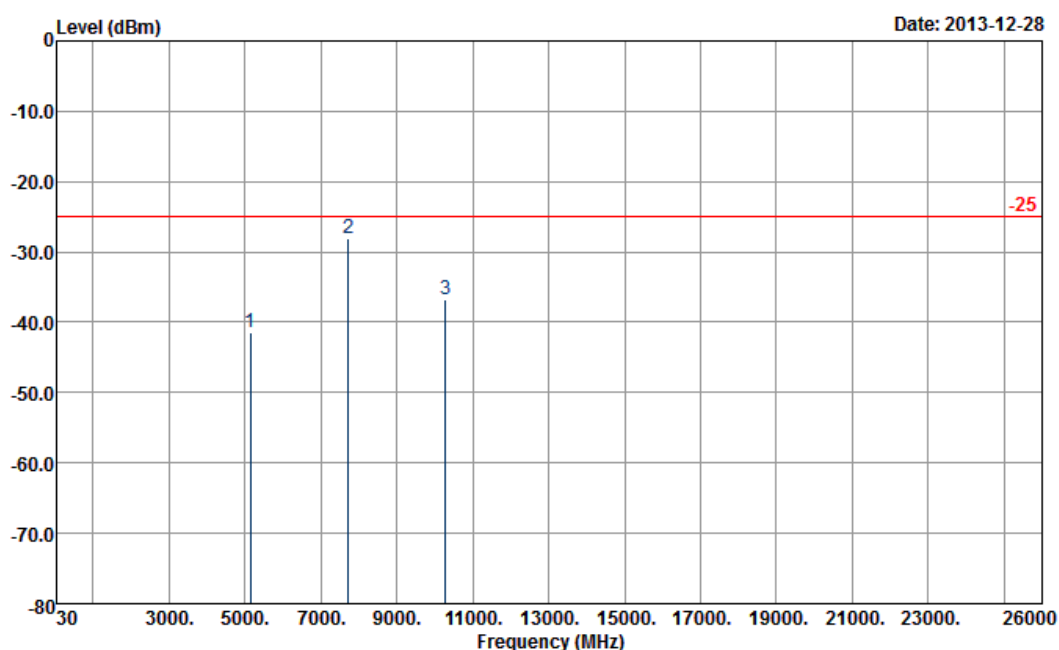
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5076	-47.80	-25	-22.80	-66.18	-51.29	6.86	10.35	V	Pass
7620	-36.37	-25	-11.37	-62.71	-39.26	9.34	12.23	V	Pass
10158	-42.74	-25	-17.74	-70.16	-46.84	8.64	12.74	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21400		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

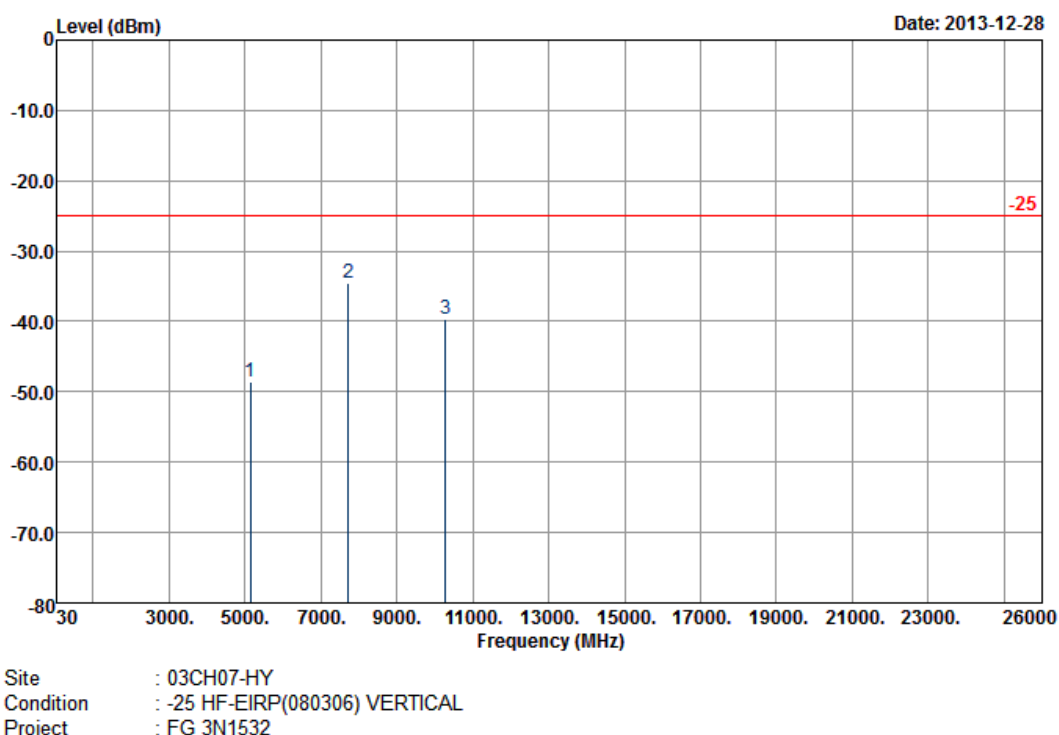


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5136	-41.51	-25	-16.51	-59.52	-45.05	6.88	10.42	H	Pass
7710	-28.12	-25	-3.12	-54.79	-31.06	9.37	12.31	H	Pass
10278	-36.66	-25	-11.66	-66.02	-40.85	8.64	12.83	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	10MHz QPSK RB Size 1 Offset 49	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21400		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

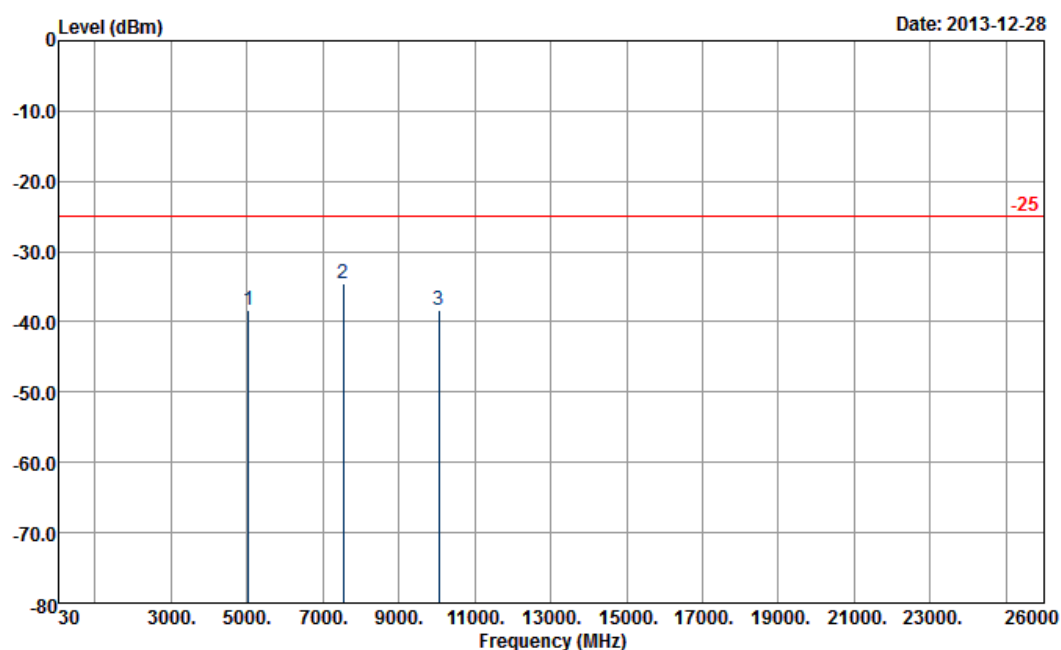


Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5136	-48.53	-25	-23.53	-66.81	-52.07	6.88	10.42	V	Pass
7710	-34.50	-25	-9.50	-60.15	-37.44	9.37	12.31	V	Pass
10278	-39.70	-25	-14.70	-67.4	-43.89	8.64	12.83	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20825		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

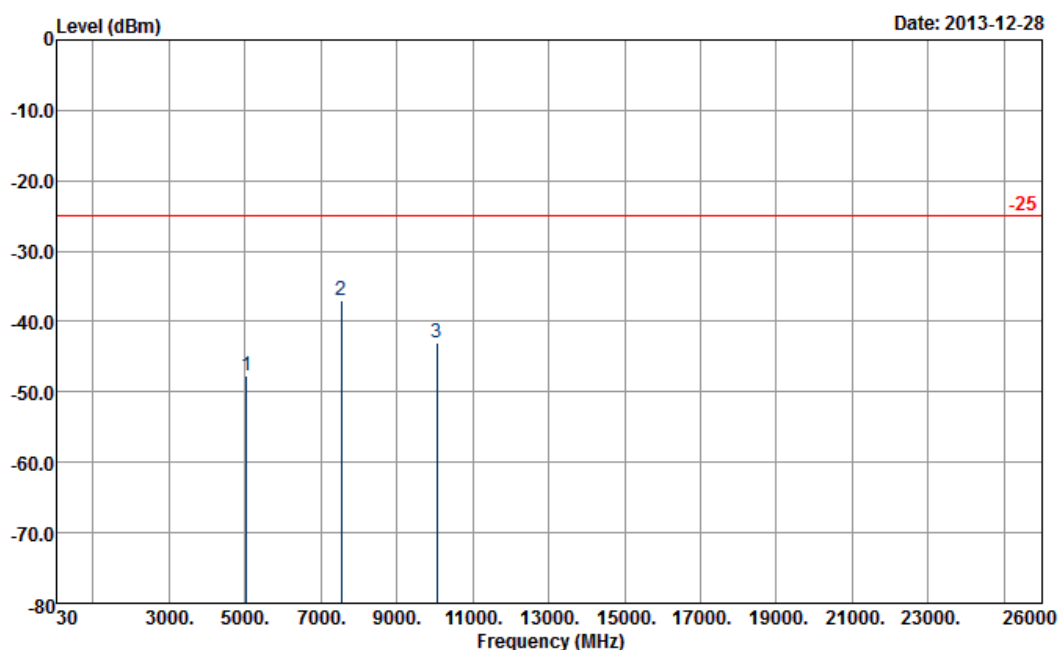
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5028	-38.27	-25	-13.27	-56.13	-41.82	6.82	10.37	H	Pass
7542	-34.56	-25	-9.56	-61.22	-37.55	9.27	12.26	H	Pass
10056	-38.31	-25	-13.31	-66.84	-42.64	8.55	12.88	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20825		

Remark :

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.



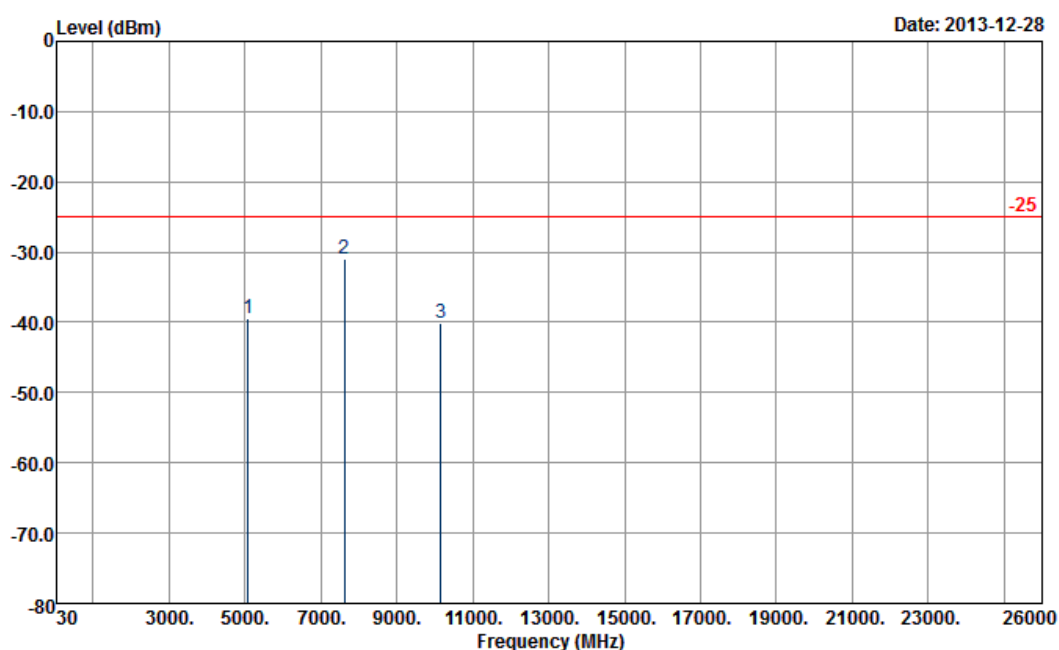
Site : 03CH07-HY
Condition : -25 HF-EIRP(080306) VERTICAL
Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5028	-47.66	-25	-22.66	-65.67	-51.21	6.82	10.37	V	Pass
7542	-37.07	-25	-12.07	-64.14	-40.06	9.27	12.26	V	Pass
10056	-42.90	-25	-17.90	-70.1	-47.23	8.55	12.88	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

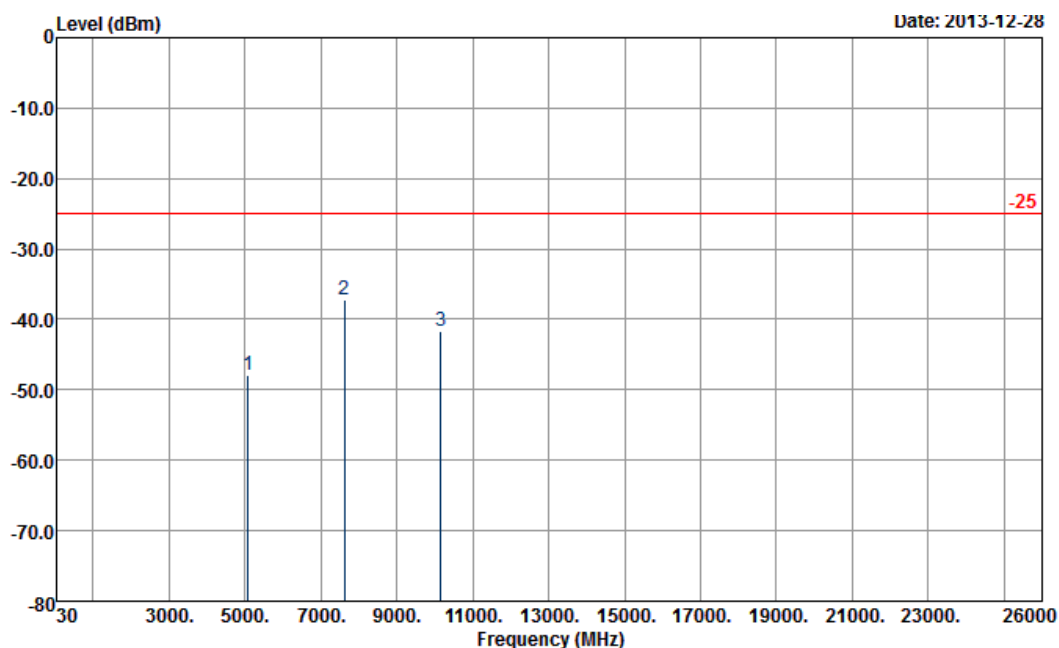


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5082	-39.34	-25	-14.34	-57.64	-42.83	6.86	10.35	H	Pass
7626	-31.05	-25	-6.05	-57.71	-33.94	9.34	12.23	H	Pass
10164	-40.14	-25	-15.14	-69.78	-44.24	8.64	12.74	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



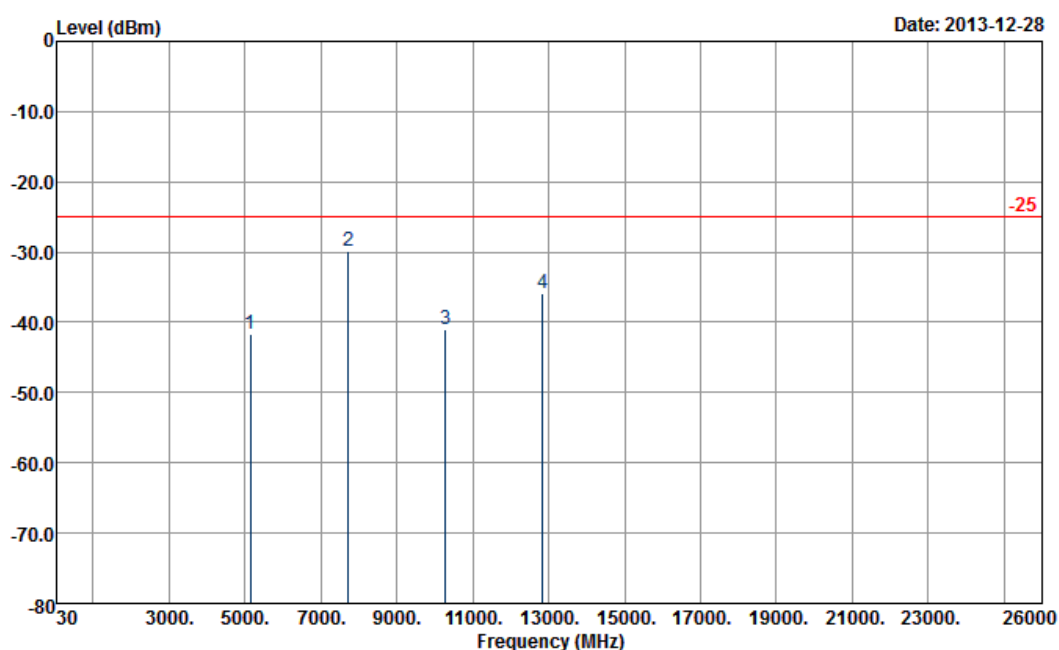
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5082	-47.95	-25	-22.95	-65.56	-51.44	6.86	10.35	V	Pass
7626	-37.17	-25	-12.17	-63.66	-40.06	9.34	12.23	V	Pass
10164	-41.57	-25	-16.57	-69.91	-45.67	8.64	12.74	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21375		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

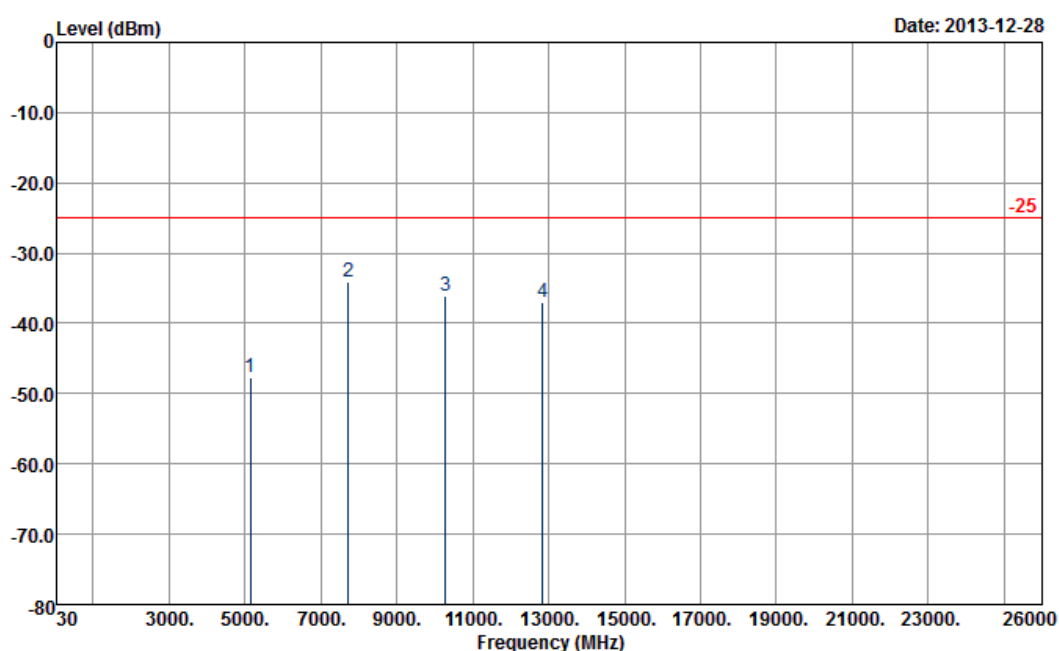


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5136	-41.73	-25	-16.73	-60.15	-45.27	6.87	10.41	H	Pass
7710	-29.83	-25	-4.83	-55.35	-32.78	9.35	12.30	H	Pass
10272	-40.97	-25	-15.97	-69.5	-45.16	8.63	12.82	H	Pass
12846	-35.80	-25	-10.80	-68.97	-40.05	9	13.25	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	15MHz QPSK RB Size 1 Offset 74	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21375		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (6 th , 7 th , 8 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



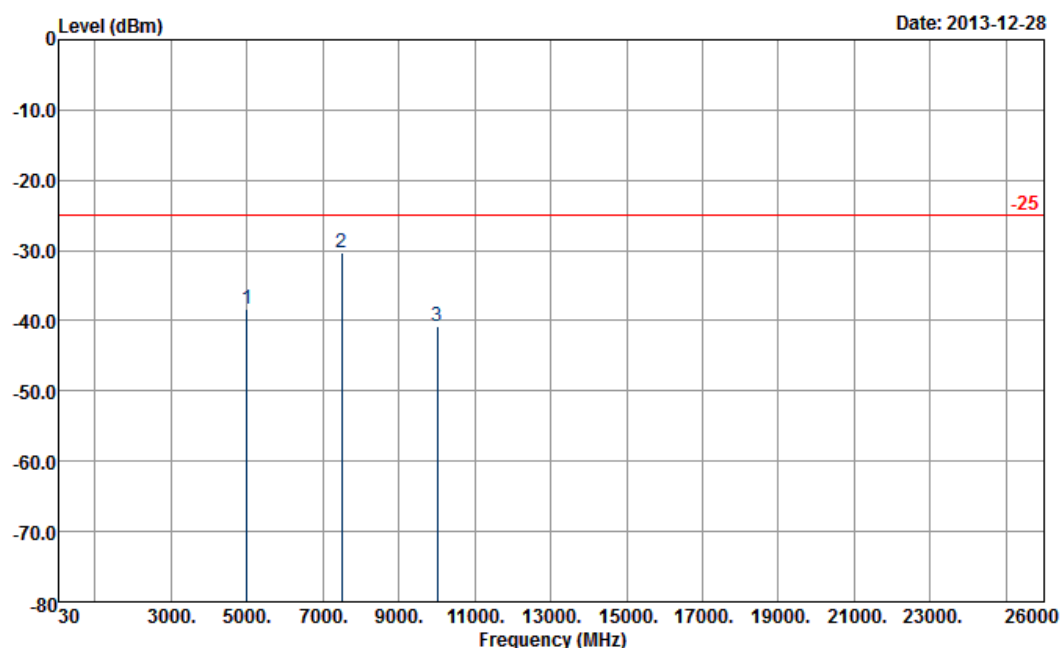
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5136	-47.68	-25	-22.68	-66.96	-51.22	6.87	10.41	V	Pass
7710	-34.19	-25	-9.19	-60.65	-37.14	9.35	12.30	V	Pass
10278	-36.10	-25	-11.10	-64.53	-40.29	8.63	12.82	V	Pass
12846	-36.97	-25	-11.97	-67.2	-41.22	9	13.25	V	Pass

Other harmonics are lower than background noise

<Low Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	20850		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



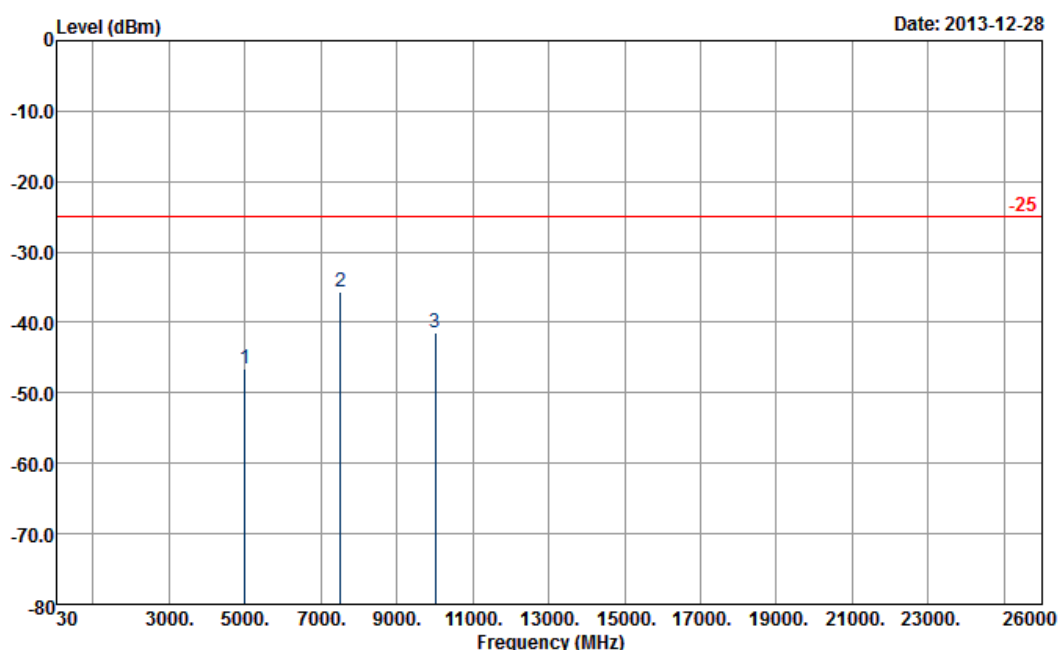
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5004	-38.29	-25	-13.29	-56.11	-41.84	6.83	10.38	H	Pass
7500	-30.24	-25	-5.24	-58.11	-33.21	9.28	12.25	H	Pass
10002	-40.86	-25	-15.86	-69.31	-45.21	8.54	12.89	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	20850		

Remark :

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. The harmonic (5th, 6th, 7th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.



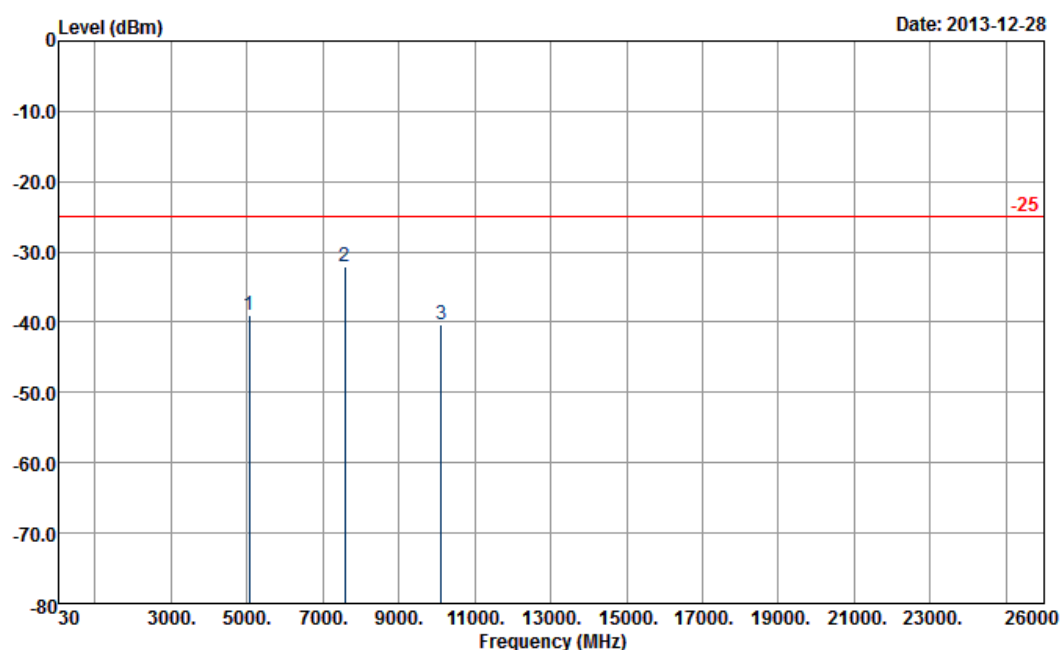
Site : 03CH07-HY
Condition : -25 HF-EIRP(080306) VERTICAL
Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5004	-46.60	-25	-21.60	-64.53	-50.15	6.83	10.38	V	Pass
7506	-35.58	-25	-10.58	-62.49	-38.55	9.28	12.25	V	Pass
10002	-41.50	-25	-16.50	-69.34	-45.85	8.54	12.89	V	Pass

Other harmonics are lower than background noise

<Middle Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

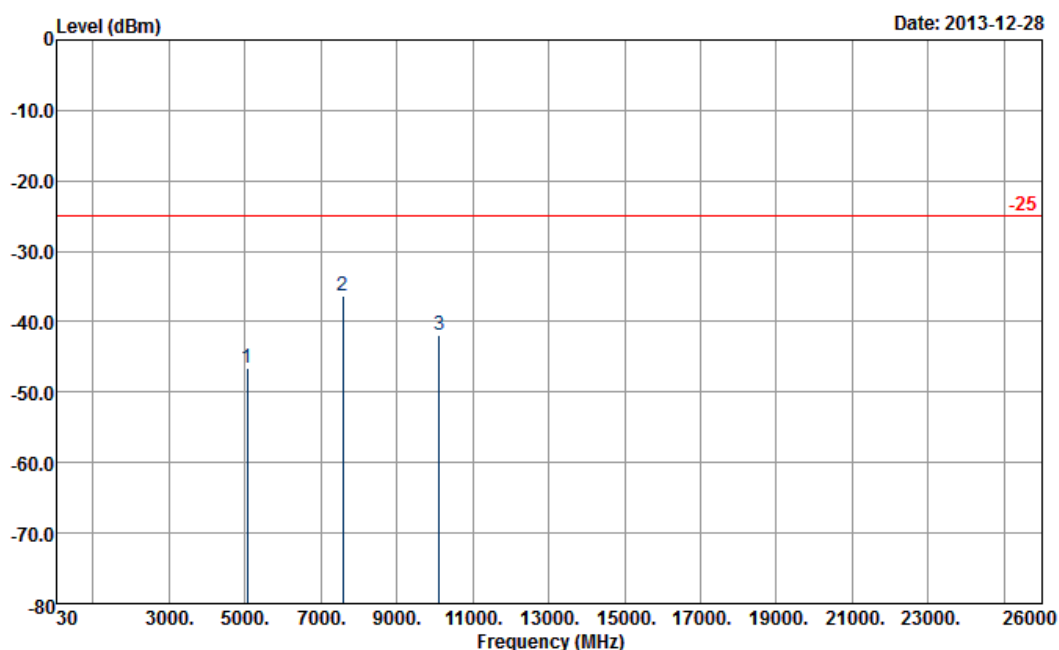


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5052	-38.92	-25	-13.92	-56.98	-42.41	6.86	10.35	H	Pass
7578	-32.14	-25	-7.14	-59.27	-35.03	9.34	12.23	H	Pass
10108	-40.39	-25	-15.39	-68.96	-44.49	8.64	12.74	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21100		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



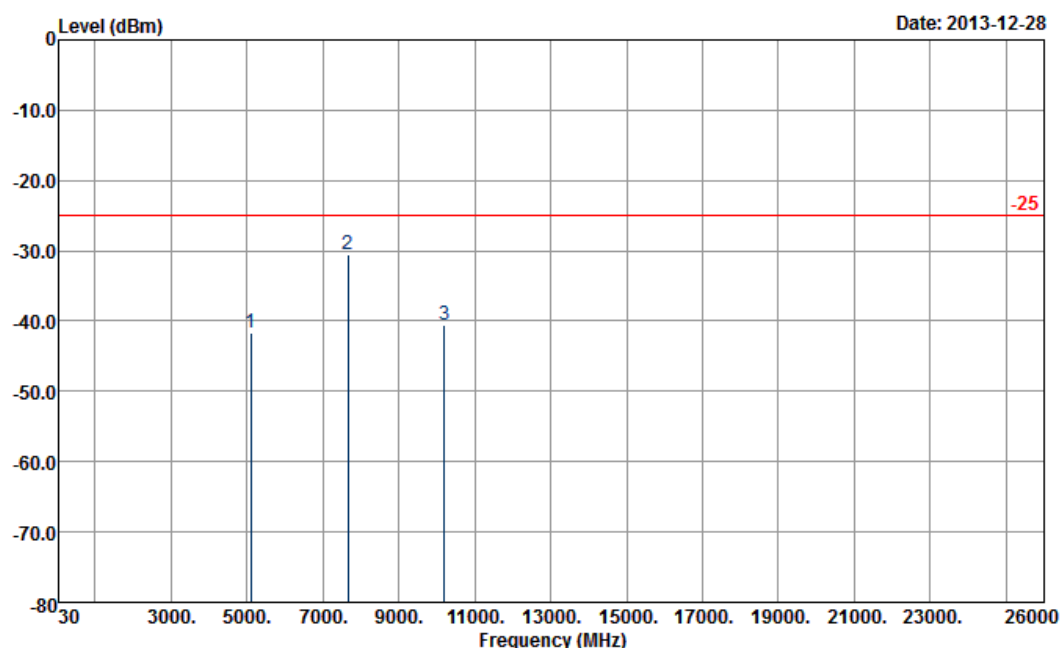
Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5052	-46.59	-25	-21.59	-64.39	-50.08	6.86	10.35	V	Pass
7578	-36.36	-25	-11.36	-63.5	-39.25	9.34	12.23	V	Pass
10108	-41.84	-25	-16.84	-69.04	-45.94	8.64	12.74	V	Pass

Other harmonics are lower than background noise

<High Channel>

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Channel :	21350		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		

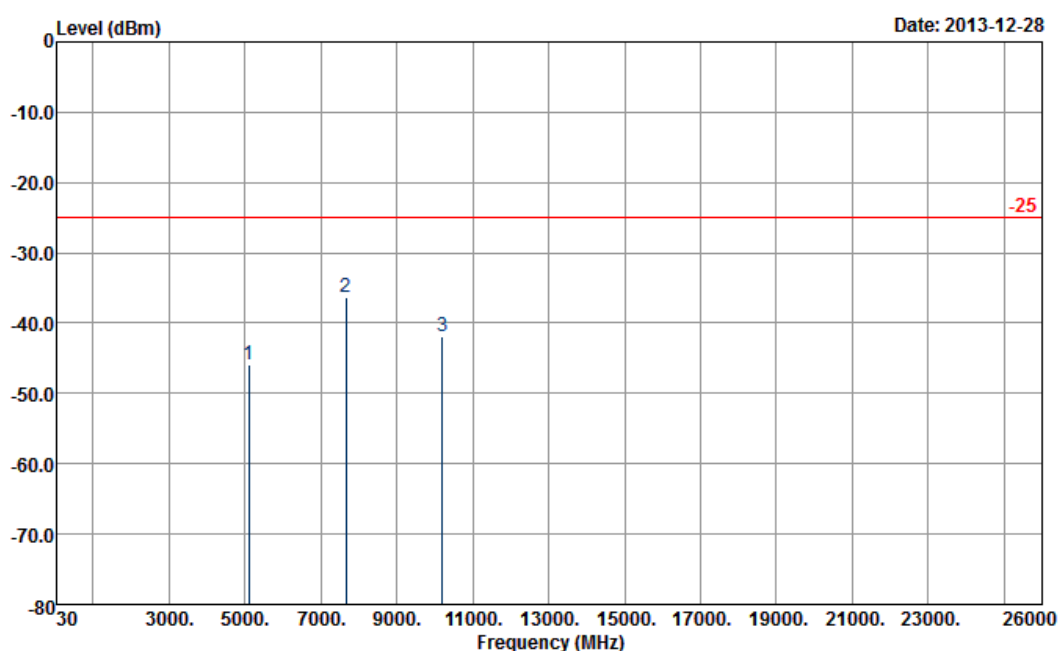


Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) HORIZONTAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5100	-41.74	-25	-16.74	-60.3	-46.28	5.84	10.38	H	Pass
7650	-30.50	-25	-5.50	-56.95	-33.44	9.33	12.27	H	Pass
10206	-40.47	-25	-15.47	-69.33	-44.67	8.6	12.80	H	Pass

Other harmonics are lower than background noise

Band :	LTE Band 7	Temperature :	21~23°C
Test Mode :	20MHz QPSK RB Size 1 Offset 0	Relative Humidity :	47~49%
Test Engineer :	Eric Shih	Polarization :	Vertical
Channel :	21350		
Remark :	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. The harmonic (5 th , 6 th , 7 th ,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise.		



Site : 03CH07-HY
 Condition : -25 HF-EIRP(080306) VERTICAL
 Project : FG 3N1532

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
5100	-46.01	-25	-21.01	-65.29	-50.55	5.84	10.38	V	Pass
7656	-36.31	-25	-11.31	-62.51	-39.25	9.33	12.27	V	Pass
10206	-41.86	-25	-16.86	-69.71	-46.06	8.6	12.80	V	Pass

Other harmonics are lower than background noise

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

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.

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

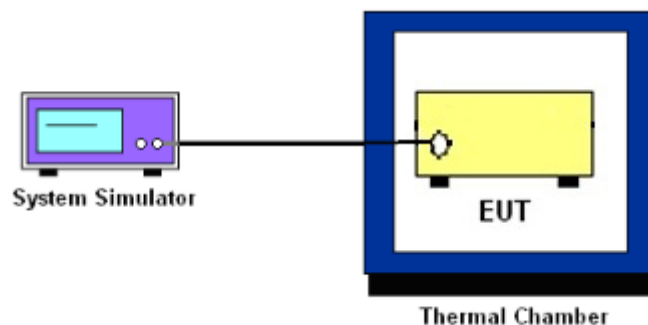
3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the base station.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

Band :	LTE Band 5 (QPSK)	Limit (ppm) :	2.5
Temperature (°C)	BW 10MHz	Result	
	Deviation (ppm)		
50	0.05	PASS	
40	0.04		
30	0.04		
20	0.03		
10	0.03		
0	0.04		
-10	0.04		
-20	0.05		
-30	0.05		

Band :	LTE Band 7 (QPSK)	Limit (ppm) :	2.5
Temperature (°C)	BW 10MHz	Result	
	Deviation (ppm)		
50	0.08	PASS	
40	0.07		
30	0.05		
20	0.06		
10	0.04		
0	0.04		
-10	0.05		
-20	0.07		
-30	0.07		

3.8.7 Test Result of Voltage Variation

Band	Bandwidth	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 5	10M	4.20	0.04	2.5	PASS
		Normal	0.03		
		3.40	0.04		
LTE Band 7	10M	4.20	0.06	2.5	PASS
		Normal	0.06		
		3.40	0.05		

Remark:

1. Normal Voltage = 3.80V.
2. The manufacturer declared that the EUT could work properly between voltage 3.40V ~ 4.20V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201026480	MIMO FDD	Jan. 04, 2013	Dec. 19, 2013~ Dec. 21, 2013	Jan. 03, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Dec. 19, 2013~ Dec. 21, 2013	Jun. 06, 2014	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 19, 2013	Dec. 19, 2013~ Dec. 21, 2013	Jul. 18, 2014	Conducted (TH02-HY)
RF cable	WOKEN	SMA(M)-SMA (M) for SS405 Cable Assembly	S05-130703-32	N/A	Jul. 09, 2013	Dec. 19, 2013~ Dec. 21, 2013	Jul. 08, 2014	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May 07, 2013	Dec. 19, 2013~ Dec. 21, 2013	May 06, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz ~ 30GHz	Nov. 20, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 19, 2014	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Dec. 28, 2013~ Dec. 30, 2013	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Dec. 28, 2013~ Dec. 30, 2013	Aug. 21, 2014	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBEC K	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Dec. 28, 2013~ Dec. 30, 2013	Oct. 02, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	30MHz~1GHz	Feb. 26, 2013	Dec. 28, 2013~ Dec. 30, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Nov. 29, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 28, 2014	Radiation (03CH07-HY)
Filter	Microwave Circuits	H1G013G1	SN477215	1GHz HPF	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Filter	Wainwright Instruments	WHKX1.5G/1 5G-10SS	SN32	1.5GHz HPF	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Filter	Wainwright Instruments	WLKS1200-8 SS	SN3	1.2GHz LPF	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Filter	Microwave Circuits	H3G018G1	SN477220	3GHz HPF	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Notch Filter	Wainwright	WRCT 2500/2700-10 /20-10	SN3	LTE Band 7	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Notch Filter	Wainwright	WRCG 824/849/814/ 859-40 8SS	SN35	LTE Band 5	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
HF RF Cable	HUBER SUHNER	SUCOFLEX 104	38411/6	1GHz ~ 18GHz	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
LF RF Cable	Warison+HUBER SUHNER	WCBA-WC04 NM.NM2	N/A	30MHz ~ 1GHz	Nov. 28, 2013	Dec. 28, 2013~ Dec. 30, 2013	Nov. 27, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Dec. 28, 2013~ Dec. 30, 2013	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/L	N/A	N/A	Dec. 28, 2013~ Dec. 30, 2013	N/A	Radiation (03CH07-HY)
Test Software	Audix	E3	Version 6.2009-08-24	N/A	N/A	Dec. 28, 2013~ Dec. 30, 2013	N/A	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34897197	N/A	May 07, 2013	Dec. 28, 2013~ Dec. 30, 2013	May 06, 2014	Radiation (03CH07-HY)

Note: Test equipment calibration is traceable to the procedure of ISO17025.



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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