

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

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.

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

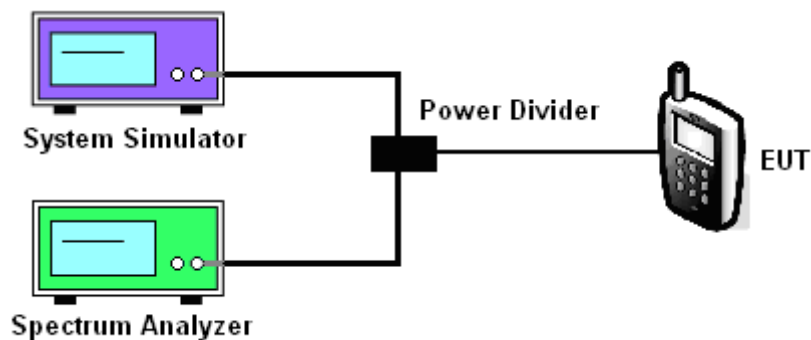
3.6.2 Measuring Instruments

See list of measuring instruments 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 middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.6.4 Test Setup

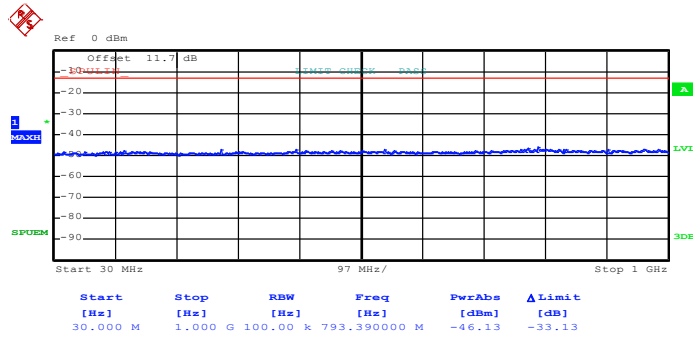




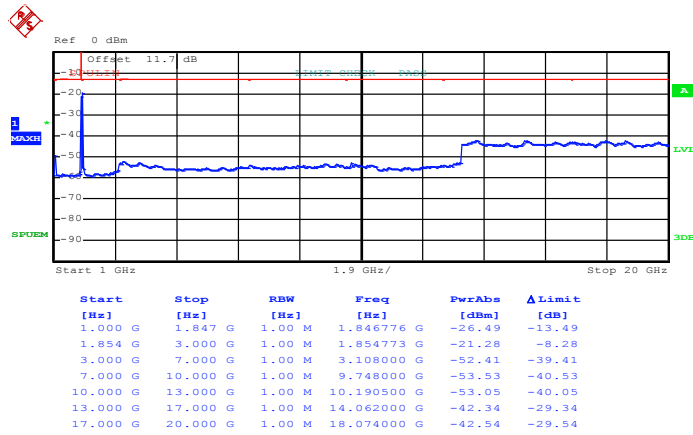
3.6.5 Test Result (Plots) of Conducted Spurious Emission

Band :	LTE Band 2	Channel :	CH18607 (Low)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



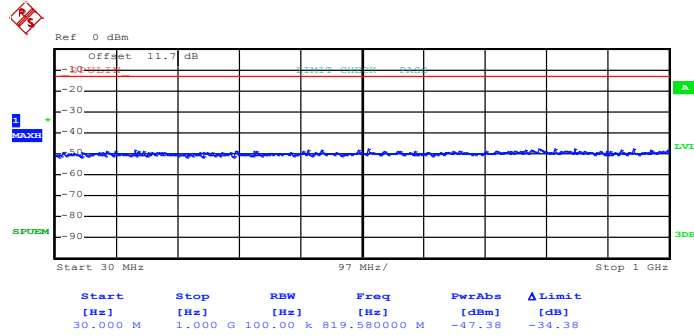
Date: 25.SEP.2012 21:18:57



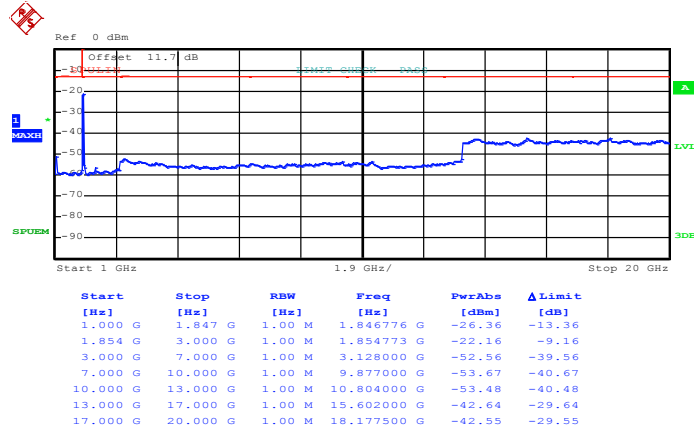
Date: 25.SEP.2012 21:50:14



16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:19:11

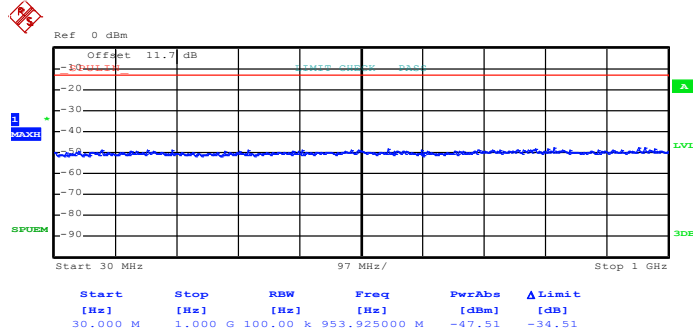


Date: 25.SEP.2012 21:50:34

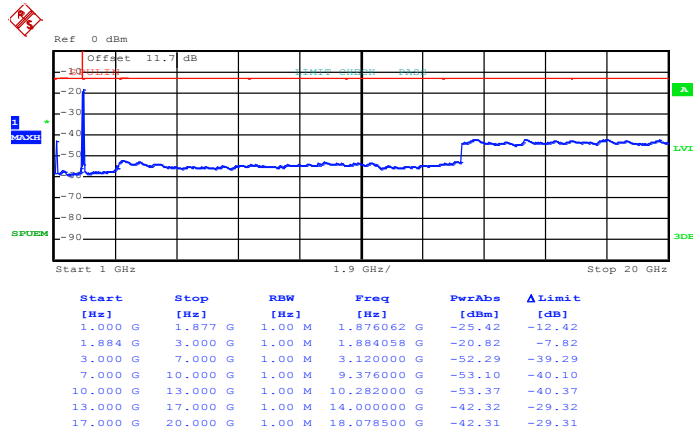


Band :	LTE Band 2	Channel :	CH18900 (Middle)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



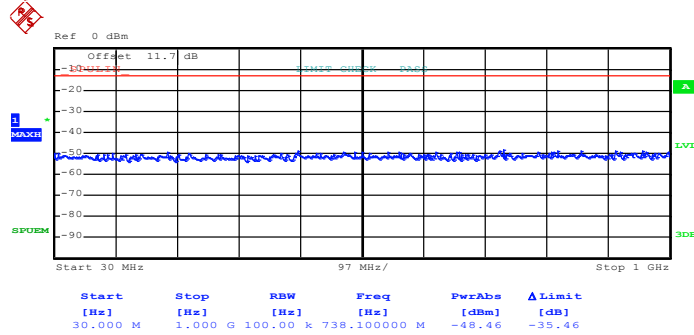
Date: 25.SEP.2012 21:20:09



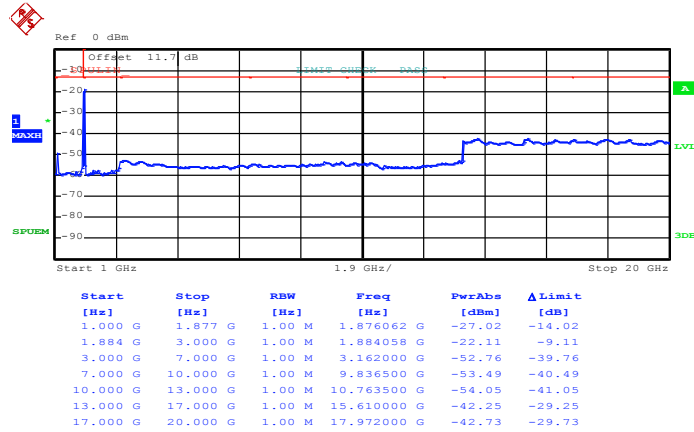
Date: 25.SEP.2012 21:56:15



16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:20:22

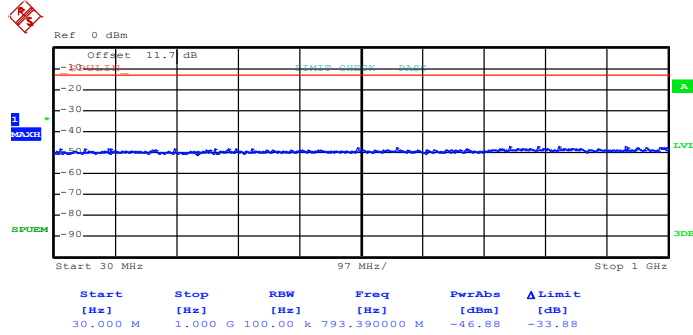


Date: 25.SEP.2012 21:56:41

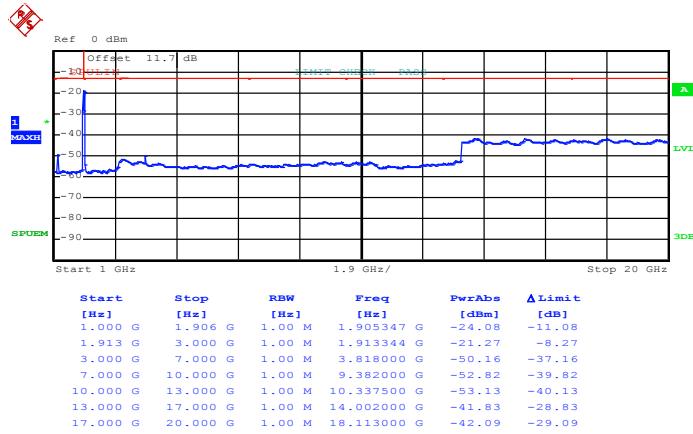


Band :	LTE Band 2	Channel :	CH19193 (High)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



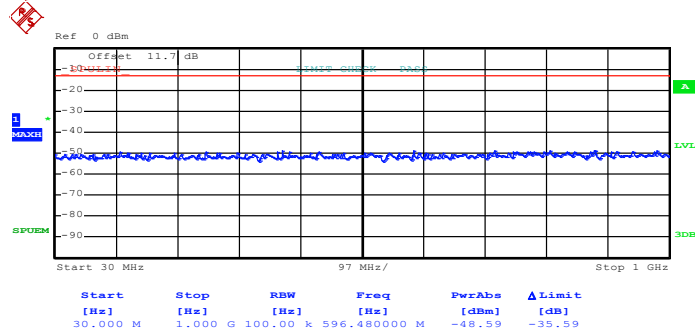
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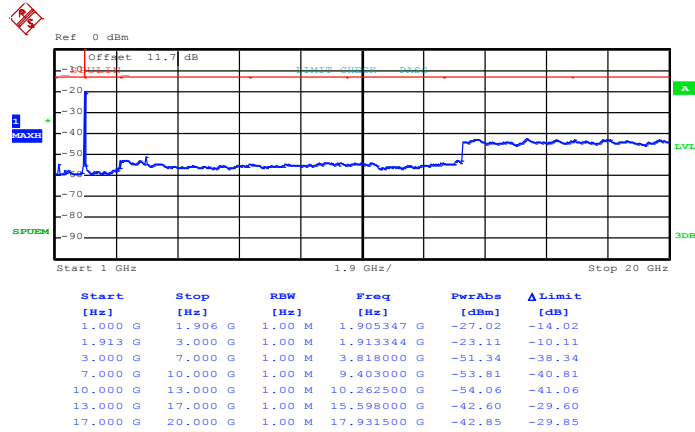
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16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:21:11

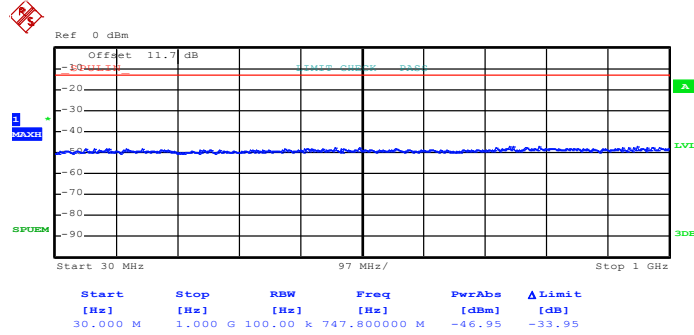


Date: 25.SEP.2012 22:05:50

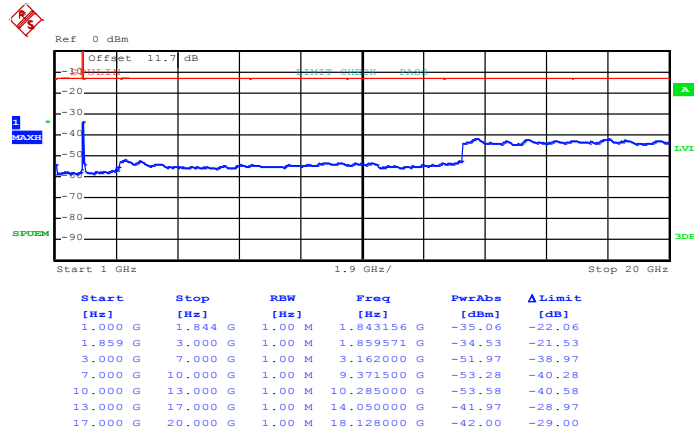


Band :	LTE Band 2	Channel :	CH18615(Low)
Band Width:	3MHz		

QPSK (RB Size 1, RB Offset 0)



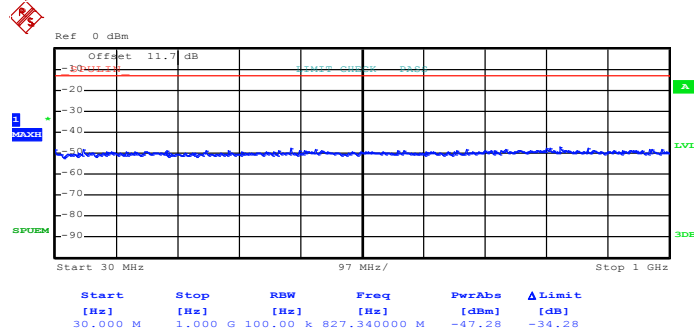
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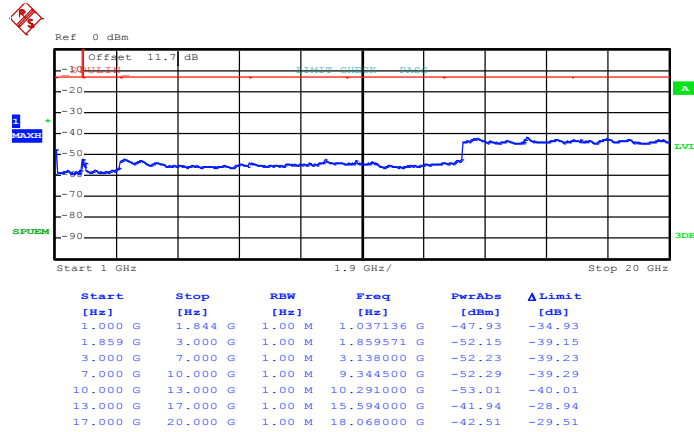
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16QAM (RB Size 1, RB Offset 0)



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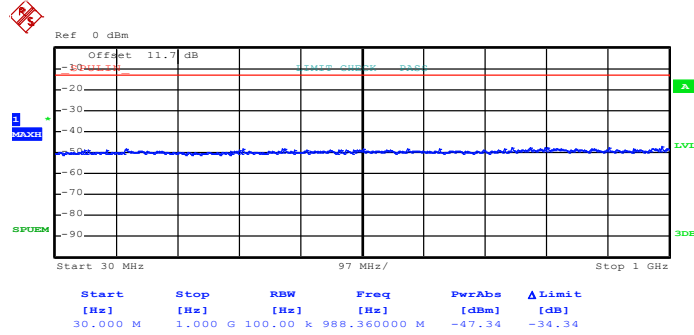


Date: 25.SEP.2012 22:11:43

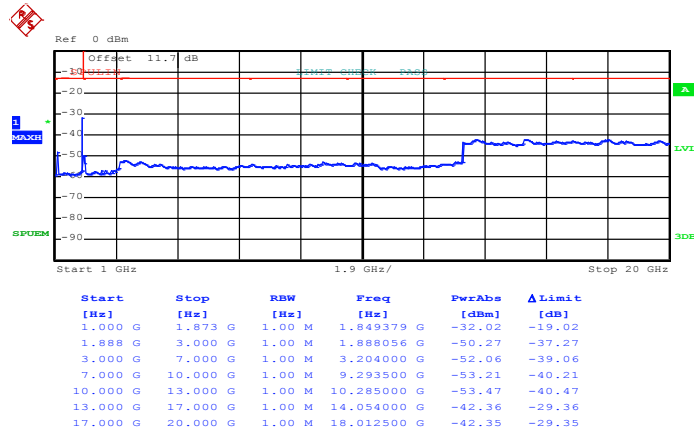


Band :	LTE Band 2	Channel :	CH18900 (Middle)
Band Width:	3MHz		

QPSK (RB Size 1, RB Offset 0)



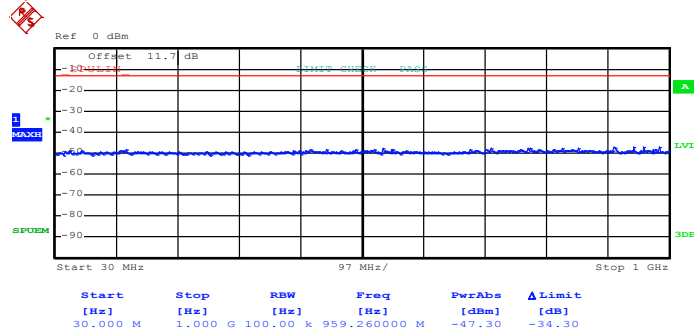
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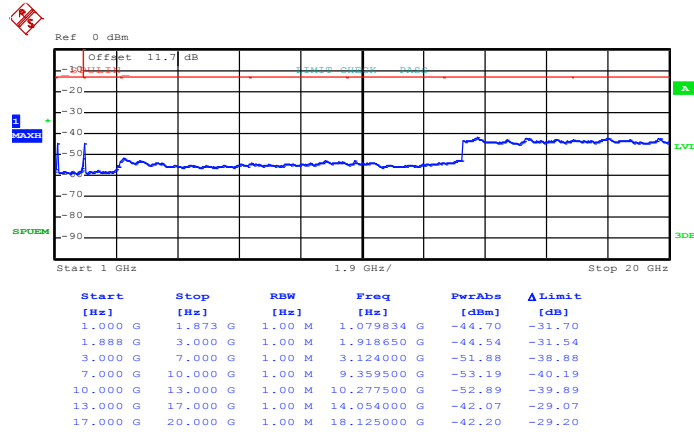
Date: 25.SEP.2012 22:14:19



16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:35:31

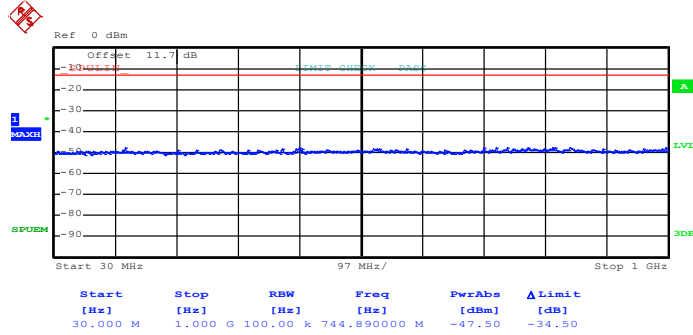


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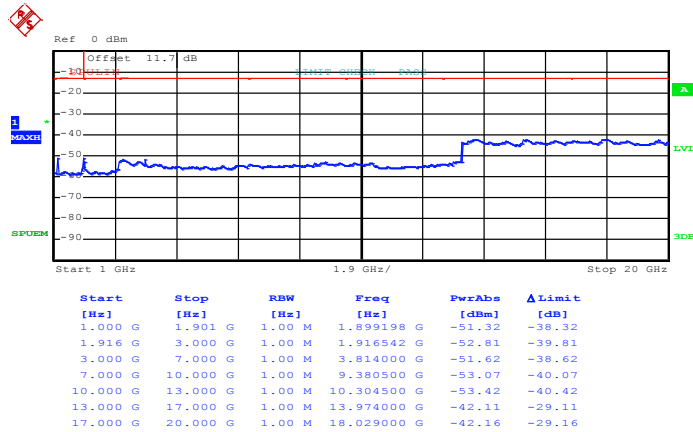


Band :	LTE Band 2	Channel :	CH19185 (High)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



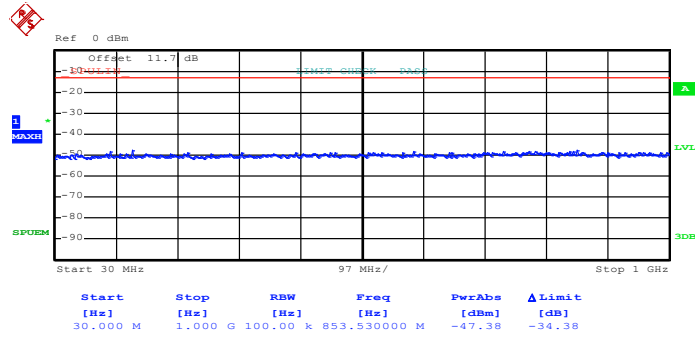
Date: 25.SEP.2012 21:36:33



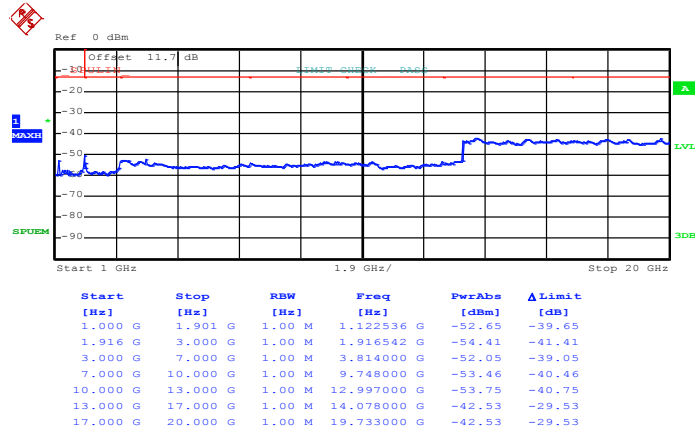
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16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:36:43

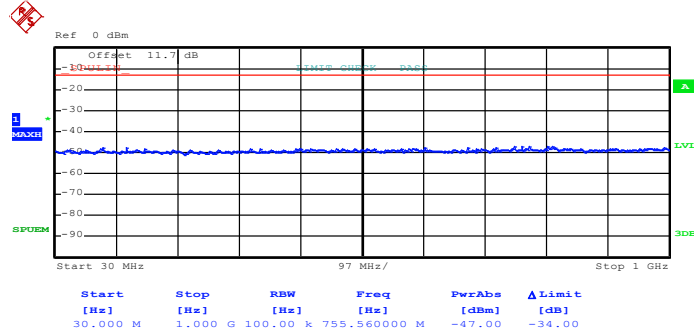


Date: 25.SEP.2012 22:21:38

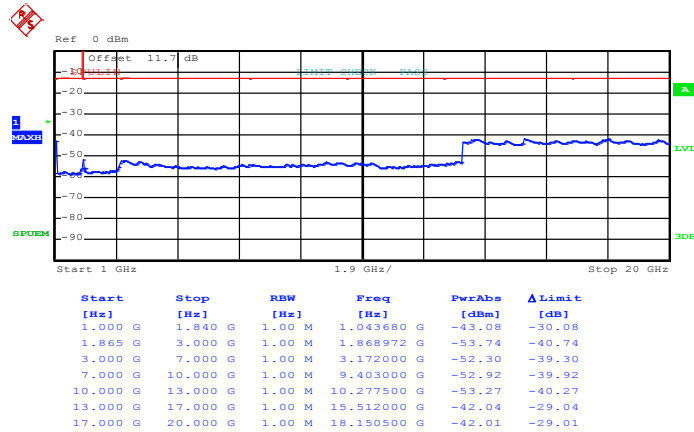


Band :	LTE Band 2	Channel :	CH18625(Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 24)



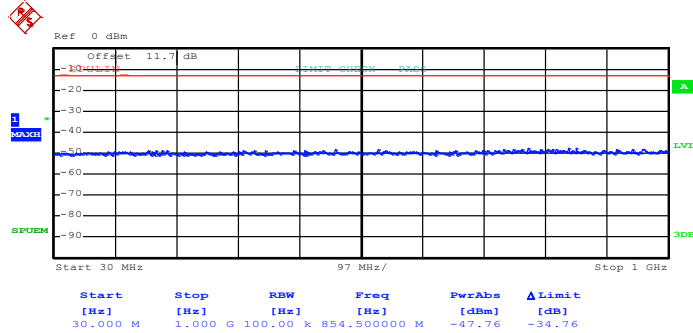
Date: 25.SEP.2012 21:37:52



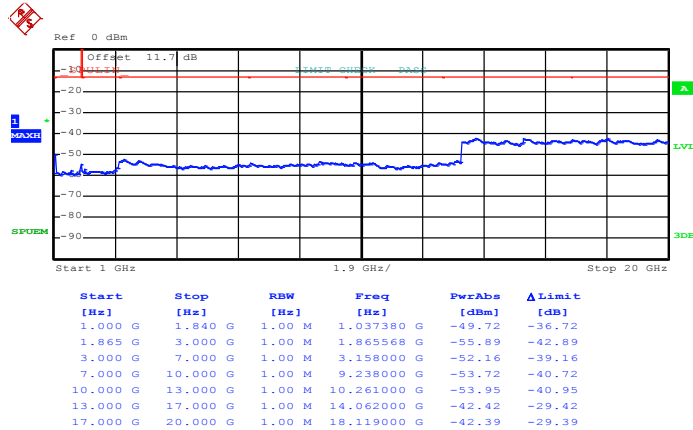
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16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:38:04

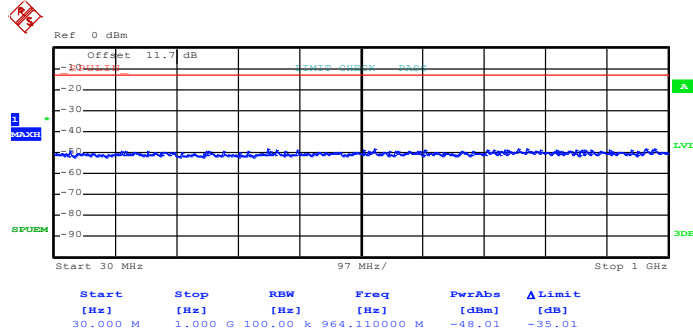


Date: 25.SEP.2012 22:27:11

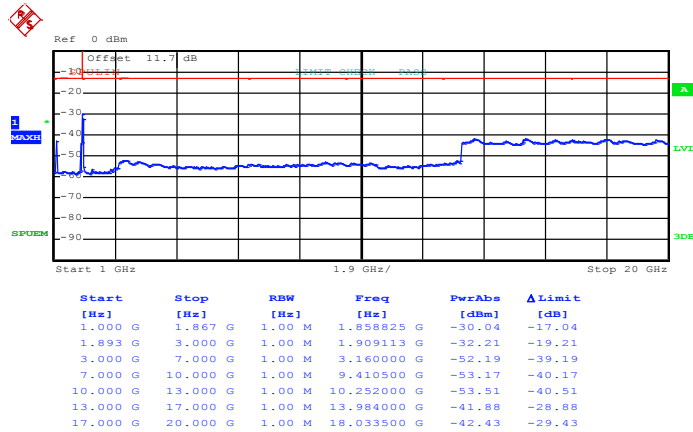


Band :	LTE Band 2	Channel :	CH18900 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



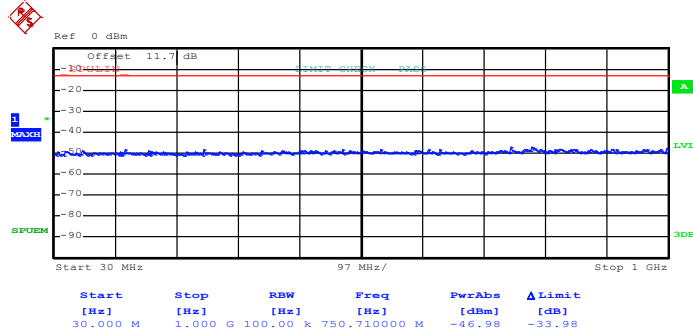
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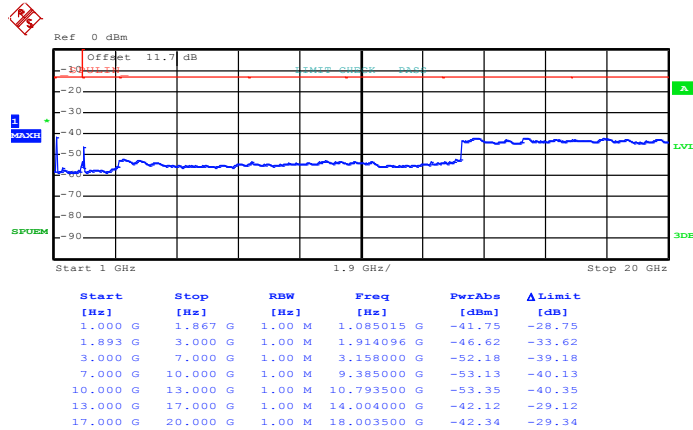
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16QAM (RB Size 1, RB Offset 24)



Date: 25.SEP.2012 21:39:36

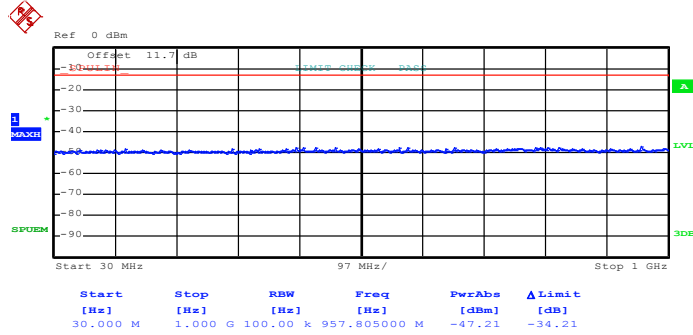


Date: 25.SEP.2012 22:29:53

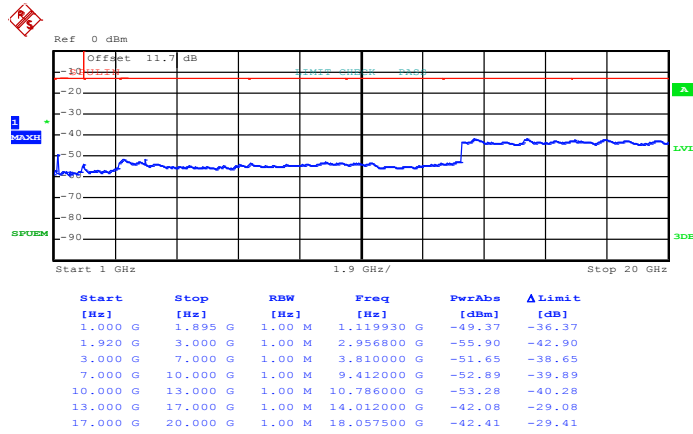


Band :	LTE Band 2	Channel :	CH19175 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



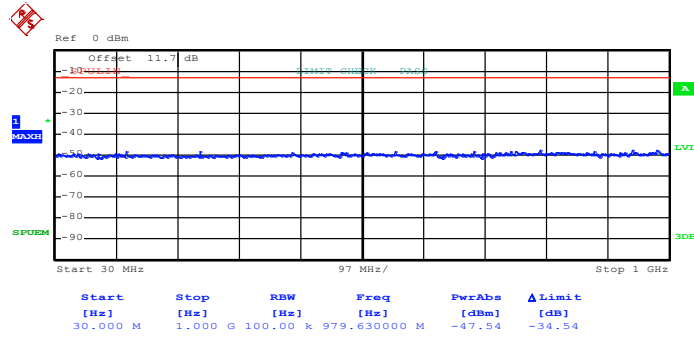
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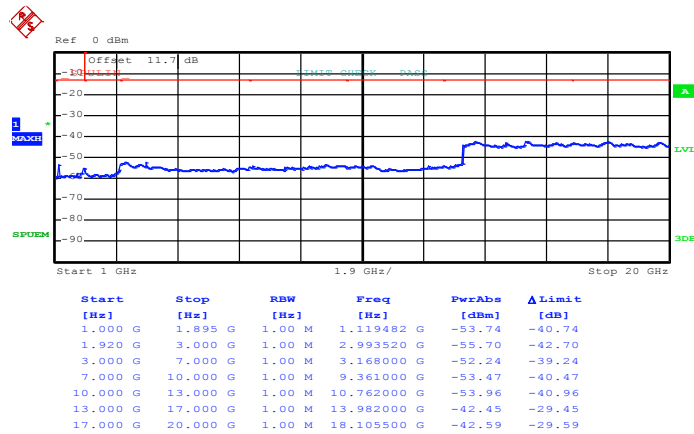
Date: 25.SEP.2012 22:34:22



16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:40:26

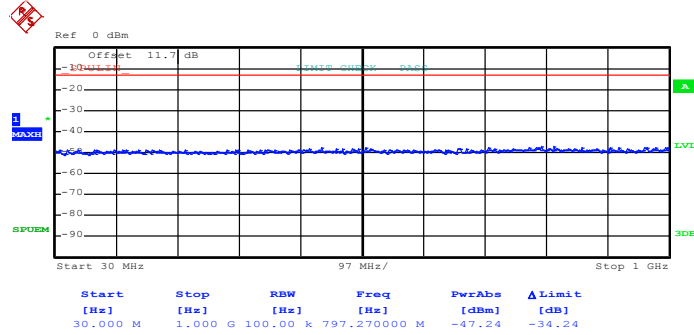


Date: 25.SEP.2012 22:34:43

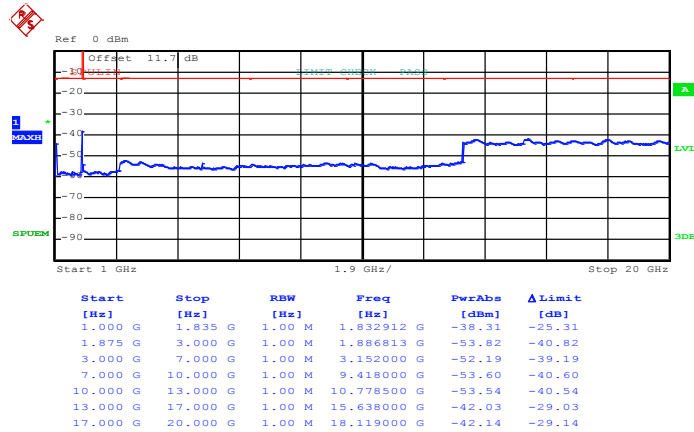


Band :	LTE Band 2	Channel :	CH18650 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



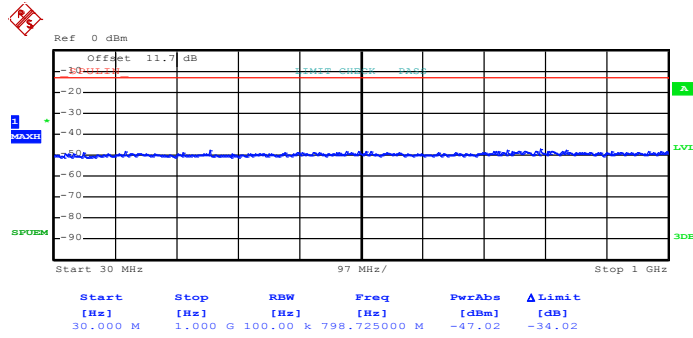
Date: 25.SEP.2012 21:40:53



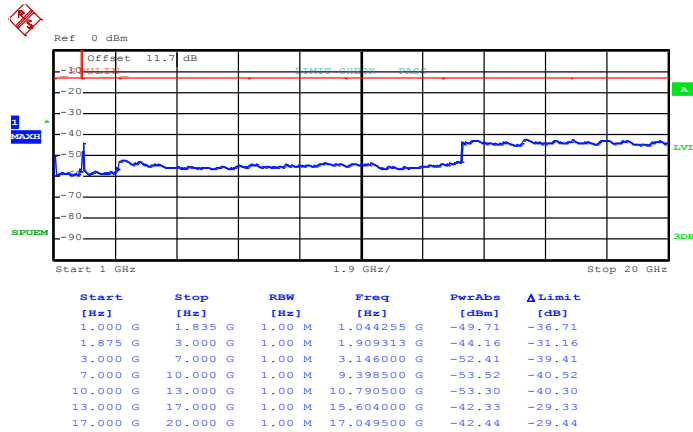
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16QAM (RB Size 1, RB Offset 49)



Date: 25.SEP.2012 21:41:10

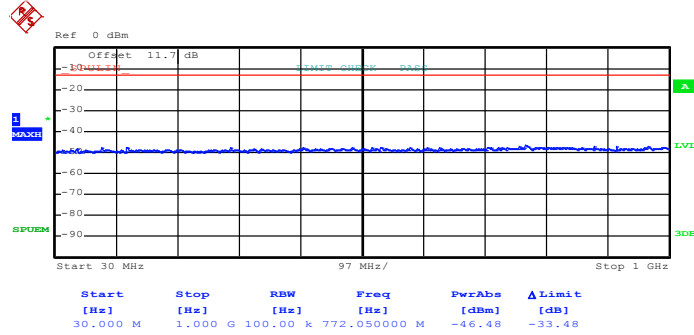


Date: 25.SEP.2012 22:36:39

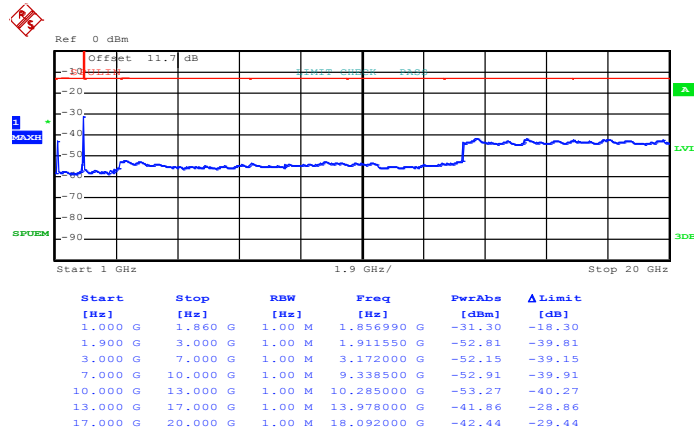


Band :	LTE Band 2	Channel :	CH18900 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



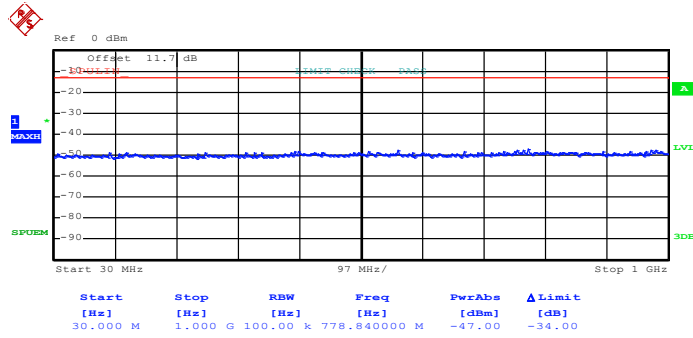
Date: 25.SEP.2012 21:43:15



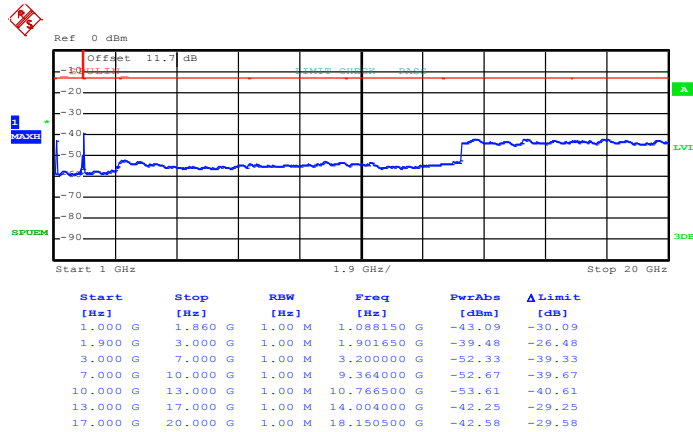
Date: 25.SEP.2012 22:39:02



16QAM (RB Size 1, RB Offset 49)



Date: 25.SEP.2012 21:43:27

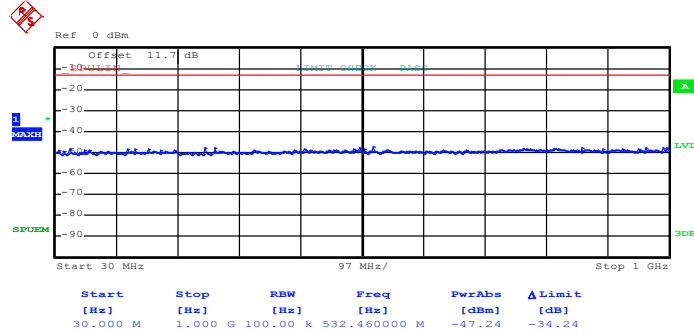


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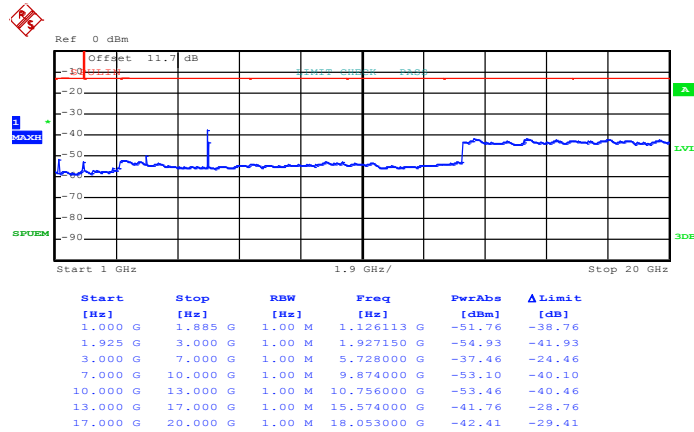


Band :	LTE Band 2	Channel :	CH19150 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 49)



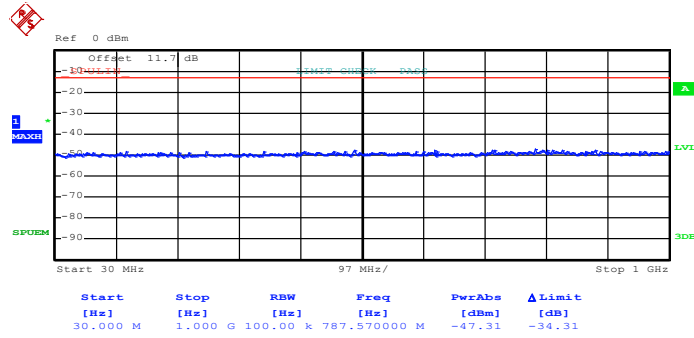
Date: 25.SEP.2012 21:43:51



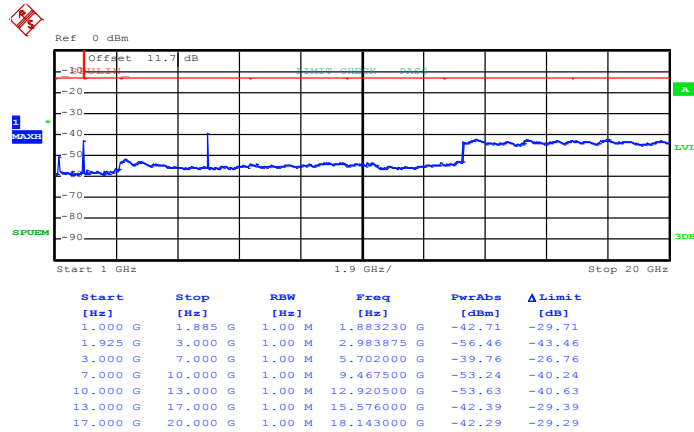
Date: 25.SEP.2012 22:44:04



16QAM (RB Size 1, RB Offset 0)



Date: 25.SEP.2012 21:44:15

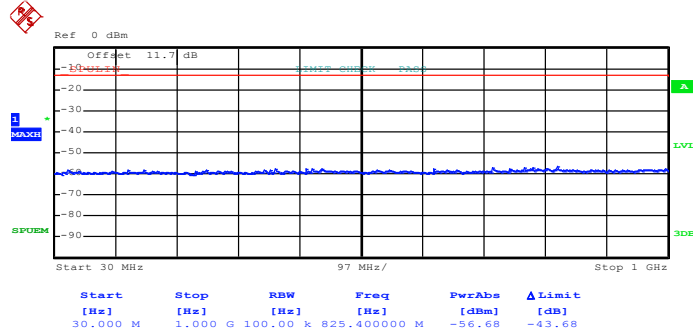


Date: 25.SEP.2012 22:45:48

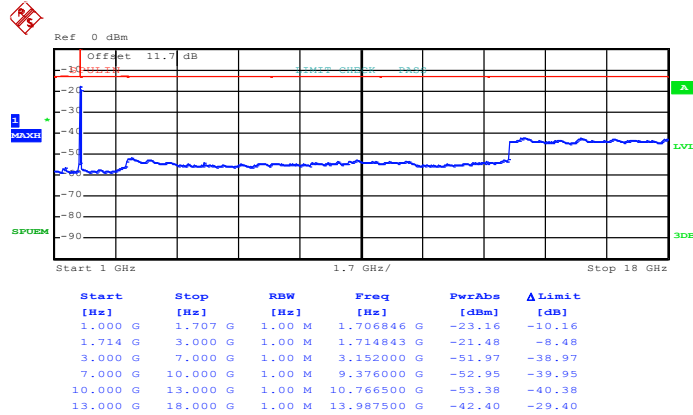


Band :	LTE Band 4	Channel :	CH19957 (Low)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



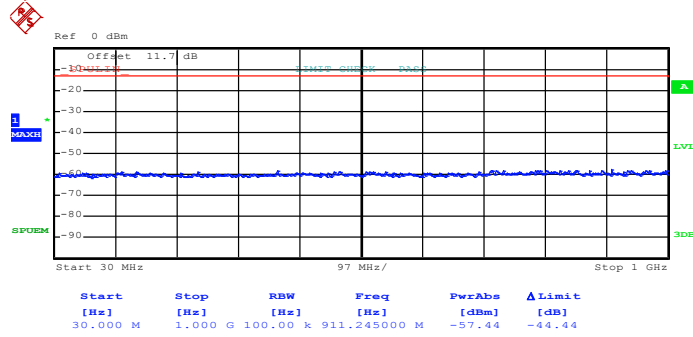
Date: 26.SEP.2012 00:08:36



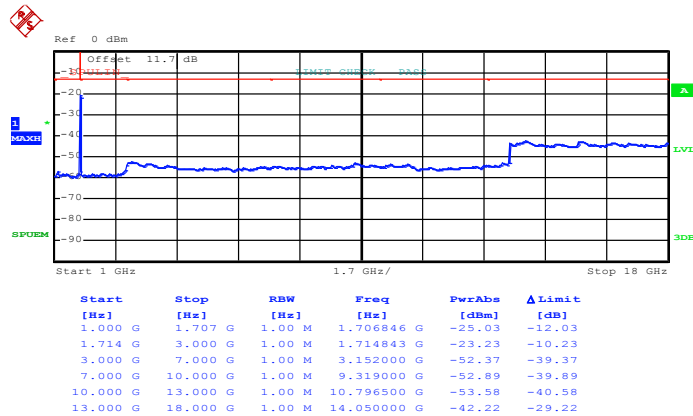
Date: 26.SEP.2012 00:00:07



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:08:48

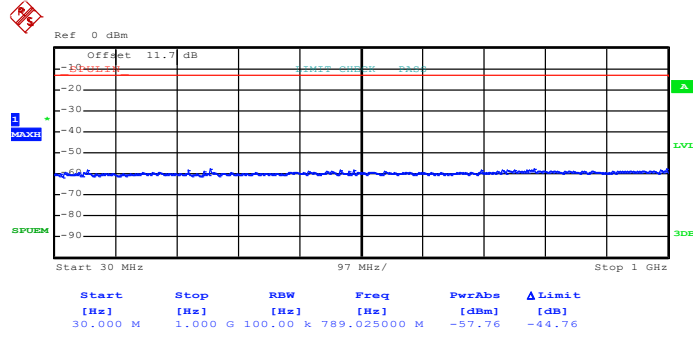


Date: 26.SEP.2012 00:00:43

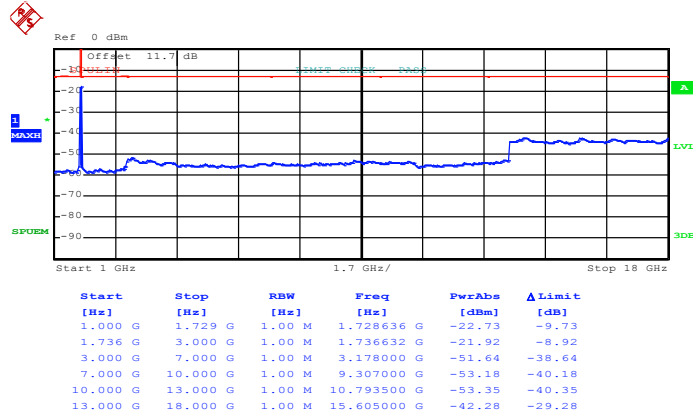


Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



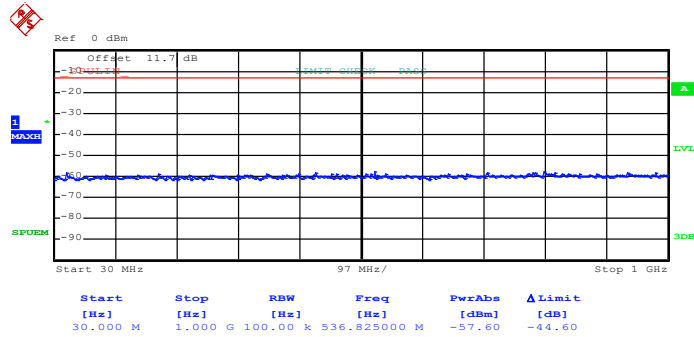
Date: 26.SEP.2012 00:09:08



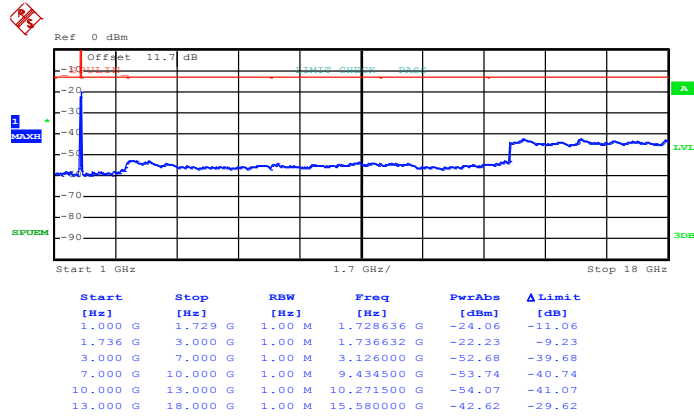
Date: 26.SEP.2012 00:01:38



QPSK (RB Size 1, RB Offset 5)



Date: 26.SEP.2012 00:09:18

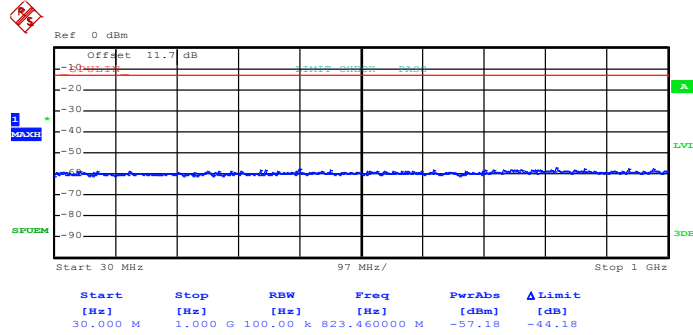


Date: 26.SEP.2012 00:02:01

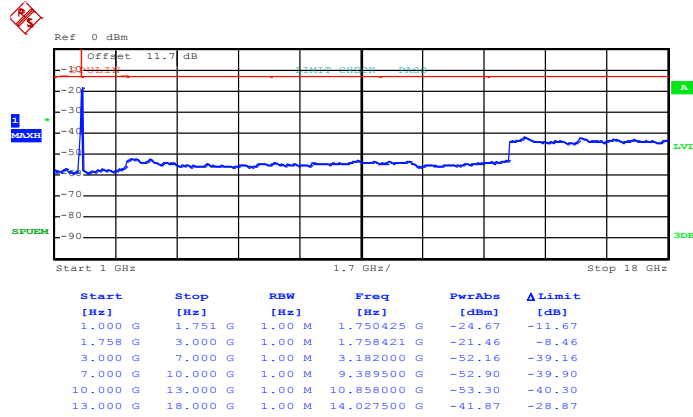


Band :	LTE Band 4	Channel :	CH20393 (High)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



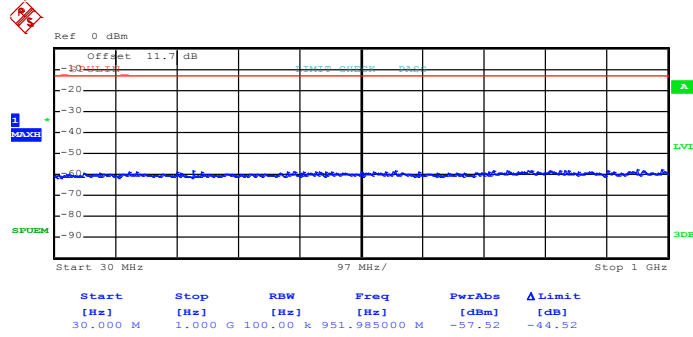
Date: 26.SEP.2012 00:09:37



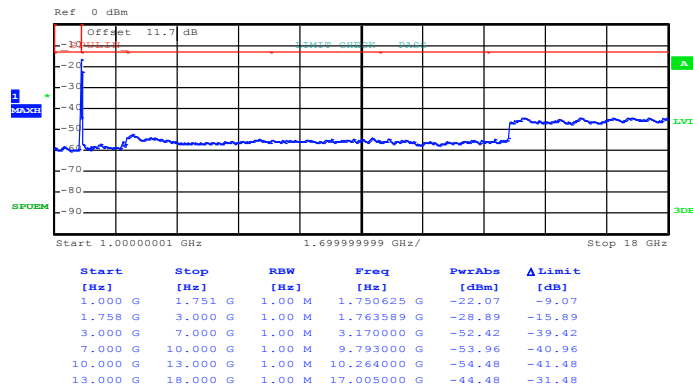
Date: 26.SEP.2012 00:03:00



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:09:49

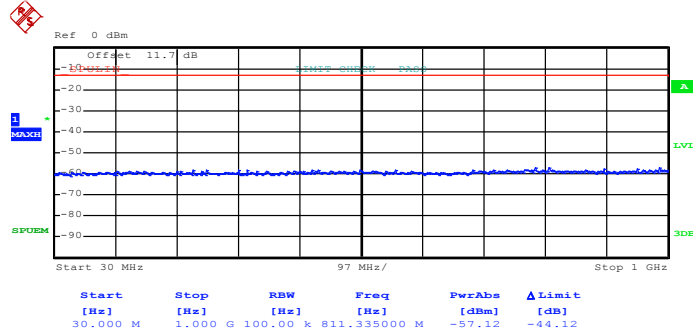


Date: 27.SEP.2012 04:14:55

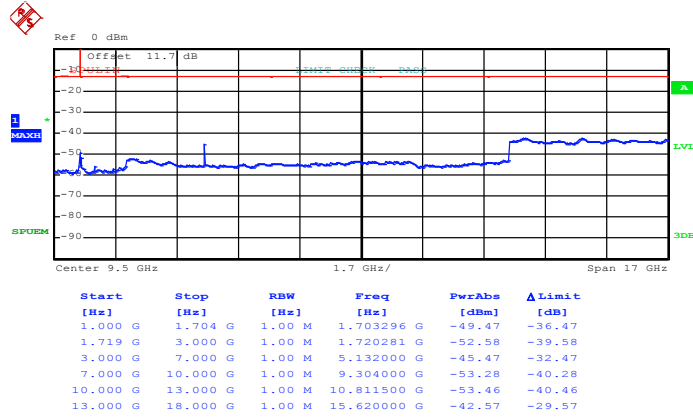


Band :	LTE Band 4	Channel :	CH19965 (Low)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



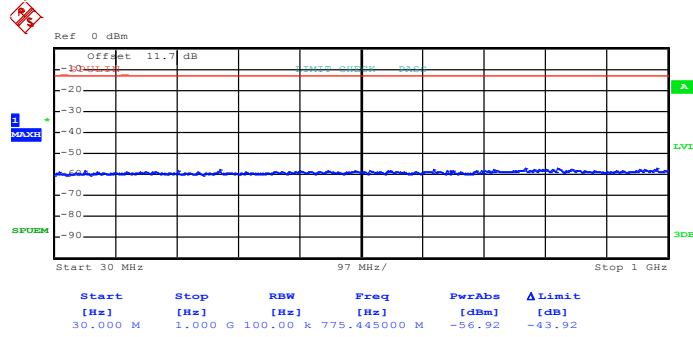
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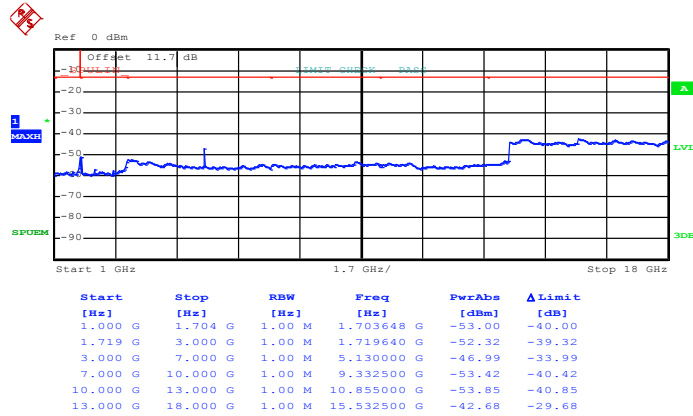
Date: 25.SEP.2012 23:52:06



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:11:07

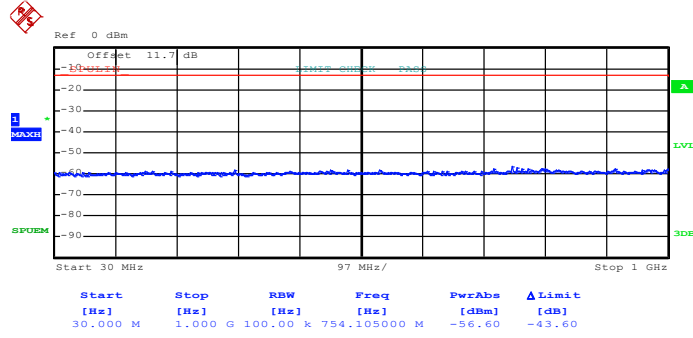


Date: 25.SEP.2012 23:52:37

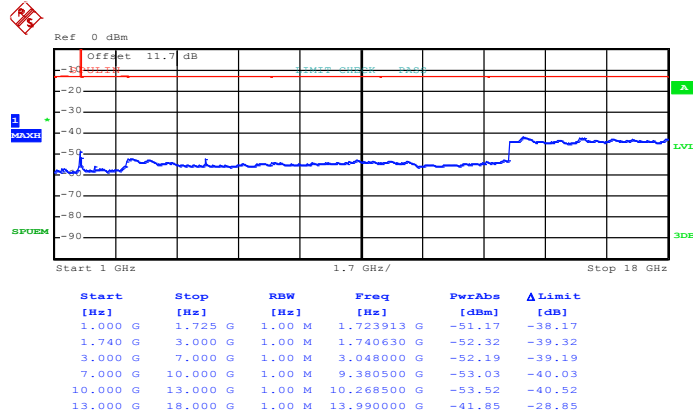


Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



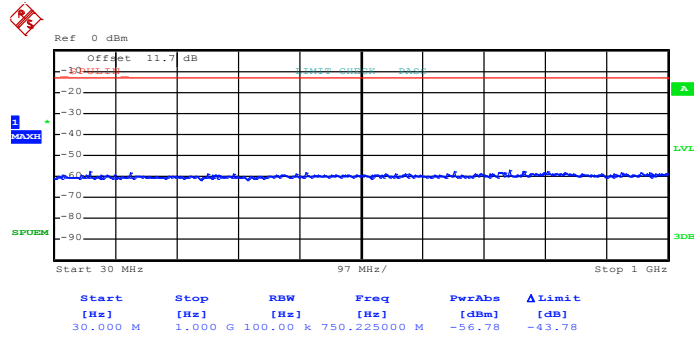
Date: 26.SEP.2012 00:11:35



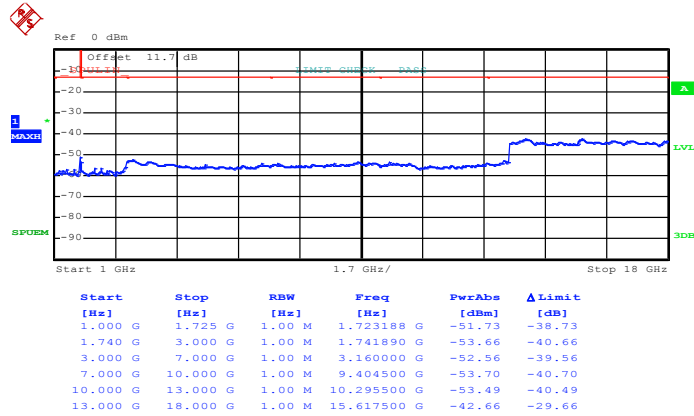
Date: 25.SEP.2012 23:53:43



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:11:52

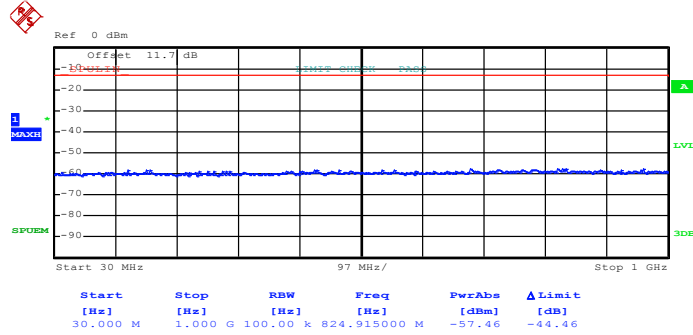


Date: 25.SEP.2012 23:54:03

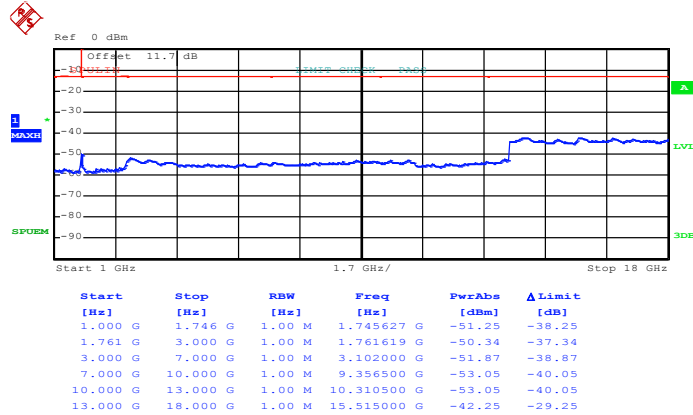


Band :	LTE Band 4	Channel :	CH20385 (High)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



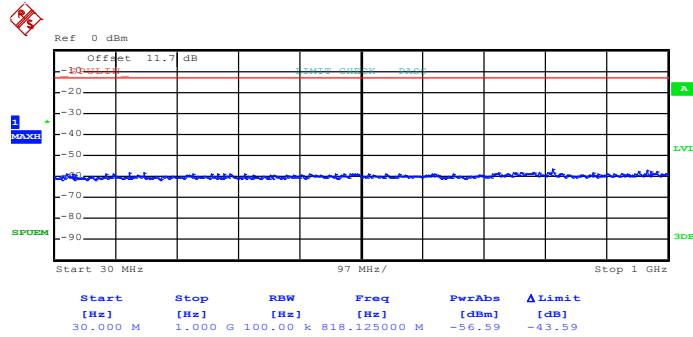
Date: 26.SEP.2012 00:12:33



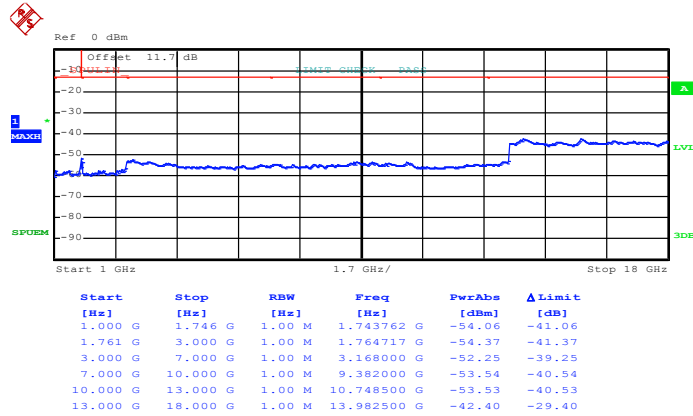
Date: 25.SEP.2012 23:55:59



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:12:51

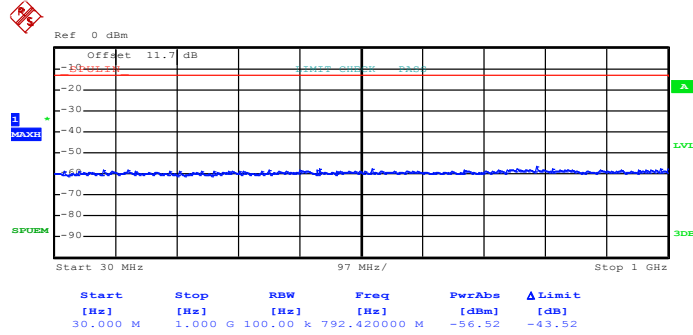


Date: 25.SEP.2012 23:56:47

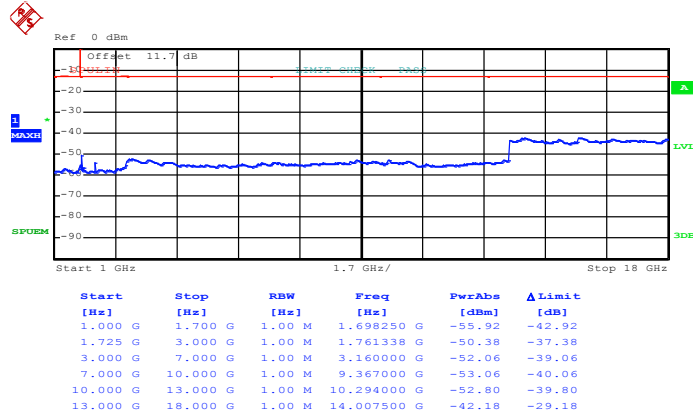


Band :	LTE Band 4	Channel :	CH19975 (Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 24)



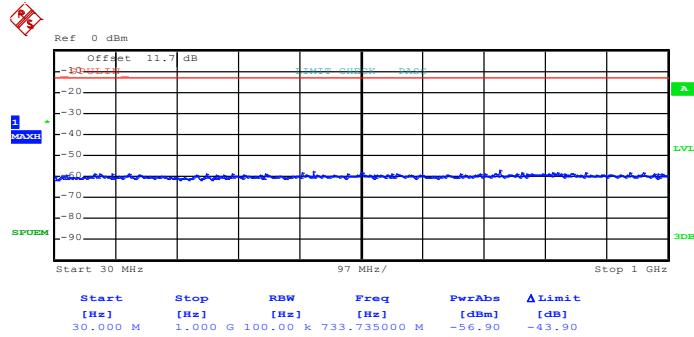
Date: 26.SEP.2012 00:13:27



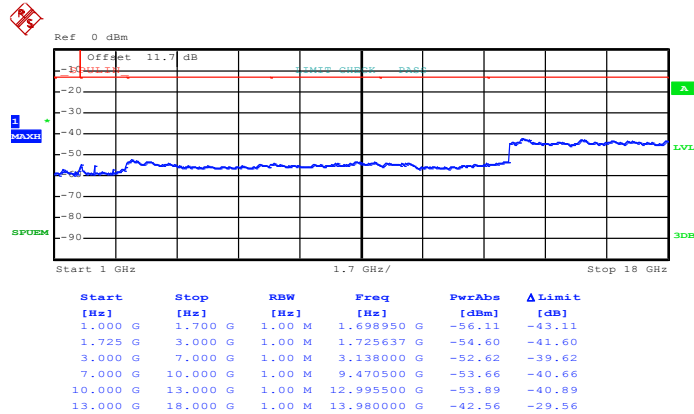
Date: 25.SEP.2012 23:29:54



16QAM (RB Size 1, RB Offset 24)



Date: 26.SEP.2012 00:13:39

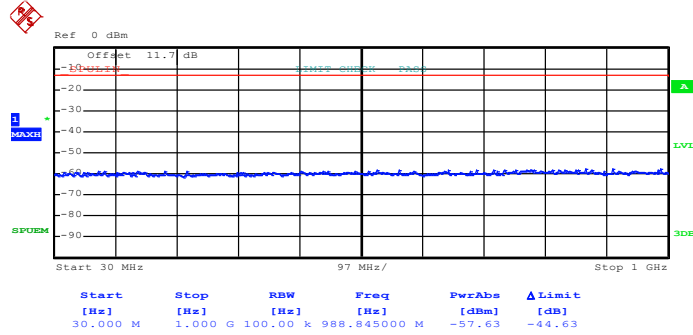


Date: 25.SEP.2012 23:30:38

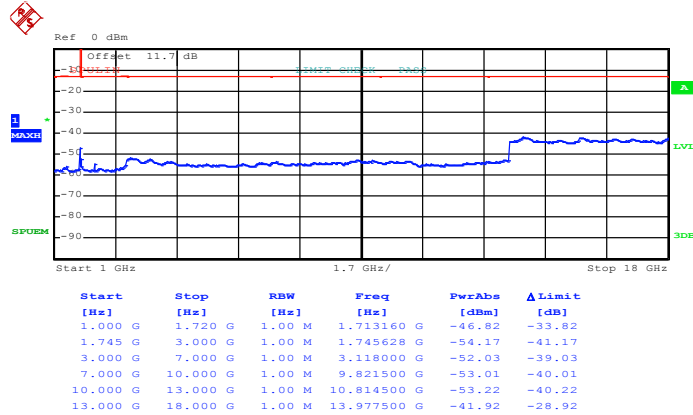


Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



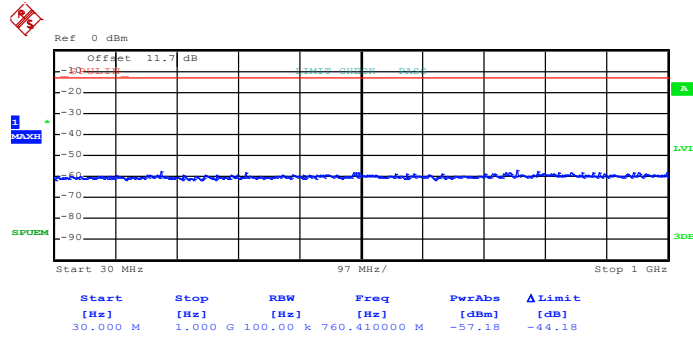
Date: 26.SEP.2012 00:13:52



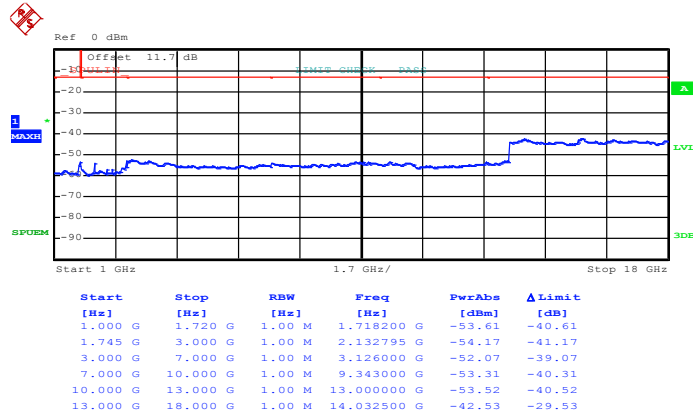
Date: 25.SEP.2012 23:40:39



16QAM (RB Size 1, RB Offset 24)



Date: 26.SEP.2012 00:14:10

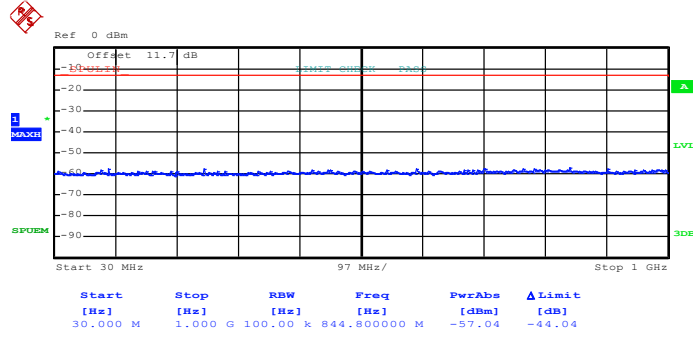


Date: 25.SEP.2012 23:41:12

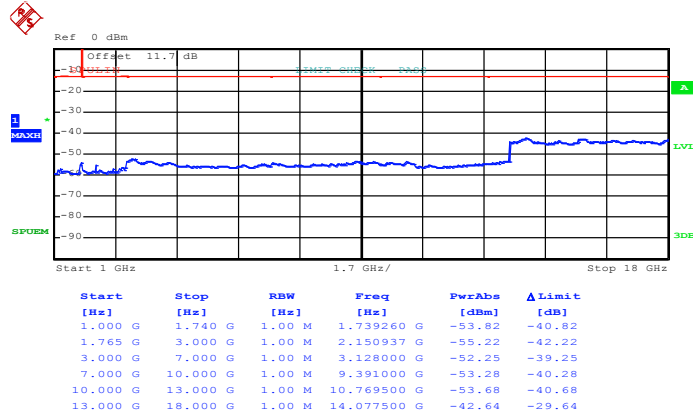


Band :	LTE Band 4	Channel :	CH20375 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 24)



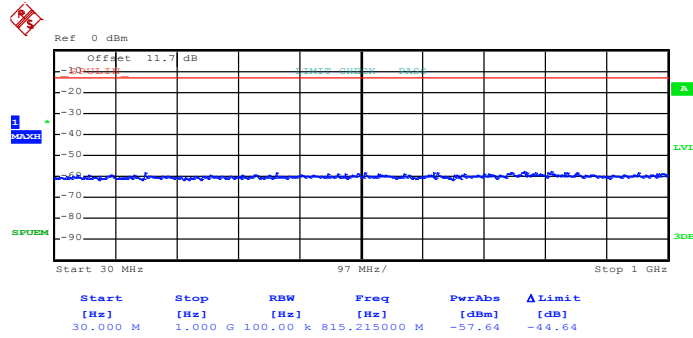
Date: 26.SEP.2012 00:14:41



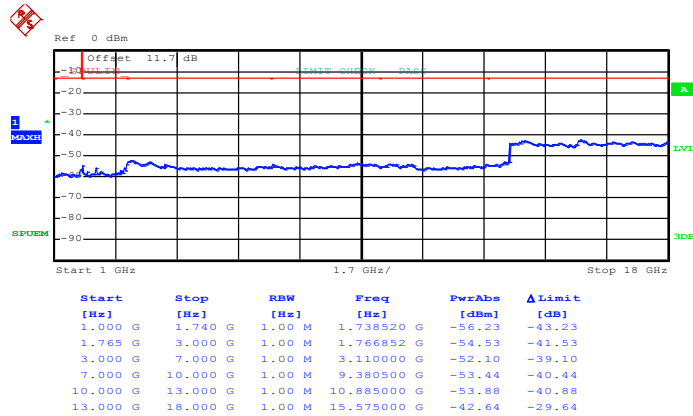
Date: 25.SEP.2012 23:46:03



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:14:54

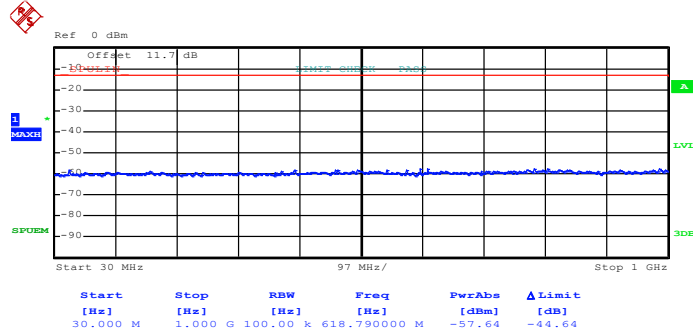


Date: 25.SEP.2012 23:48:21

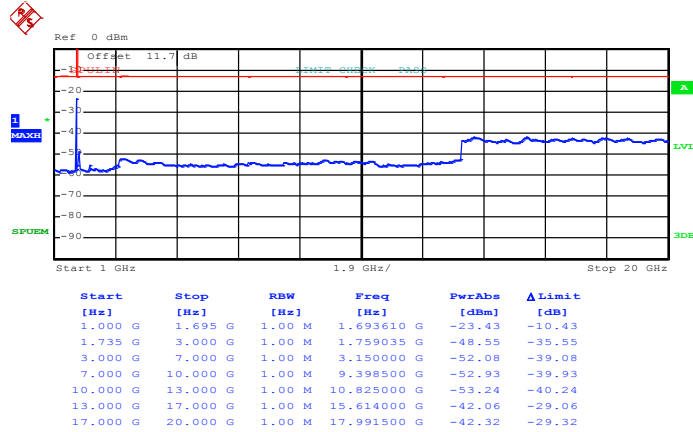


Band :	LTE Band 4	Channel :	CH20000 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



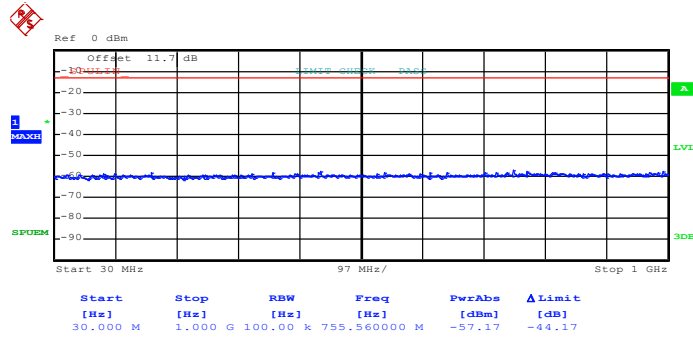
Date: 26.SEP.2012 00:16:06



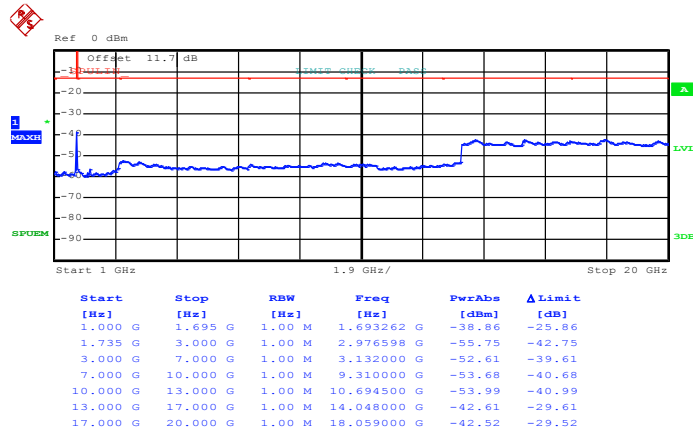
Date: 25.SEP.2012 23:17:43



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:16:21

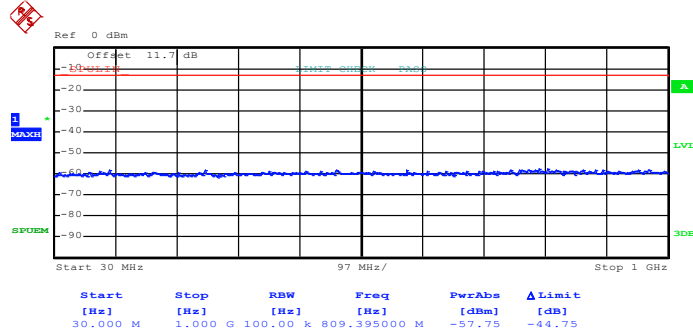


Date: 25.SEP.2012 23:18:06

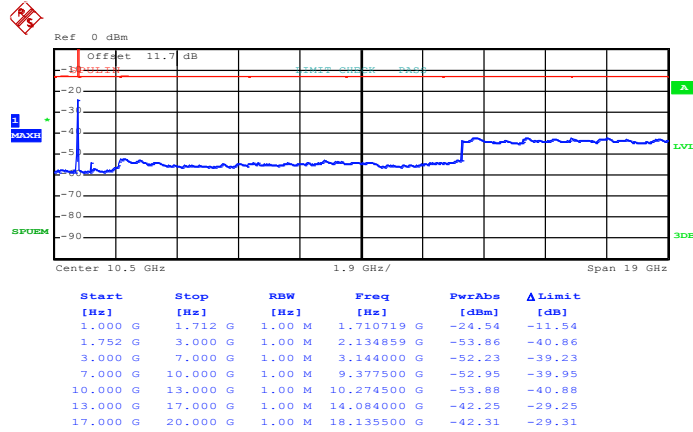


Band :	LTE Band 4	Channel :	CH20175 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



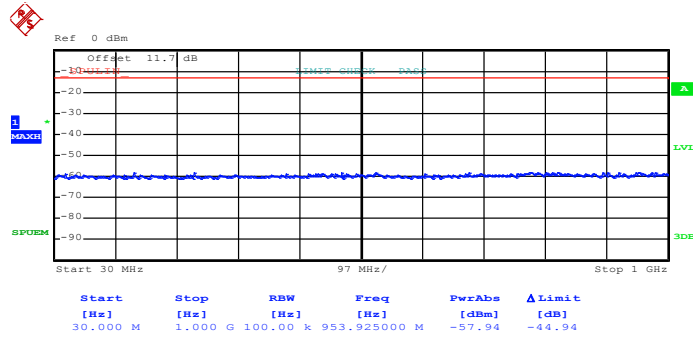
Date: 26.SEP.2012 00:16:47



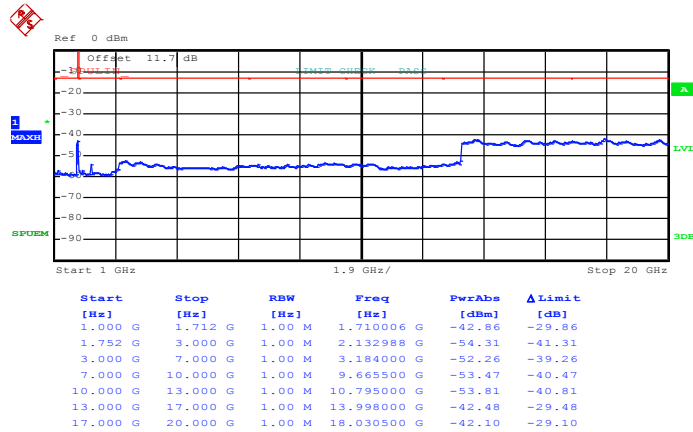
Date: 25.SEP.2012 23:19:40



QPSK (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:17:06

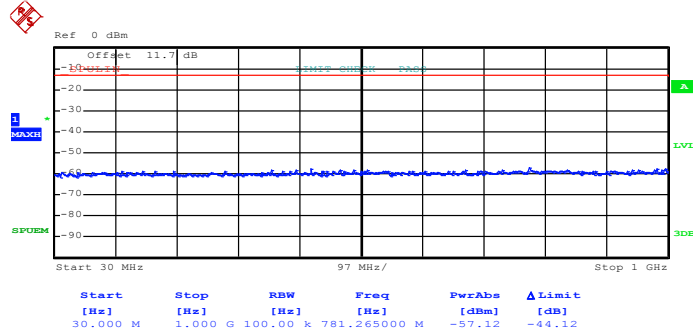


Date: 25.SEP.2012 23:21:52

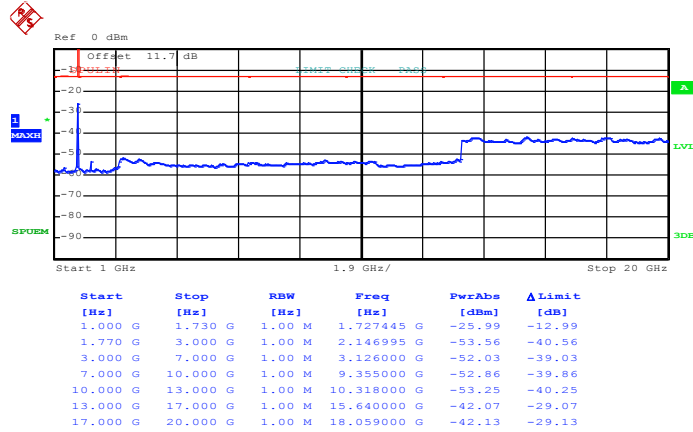


Band :	LTE Band 4	Channel :	CH20350 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



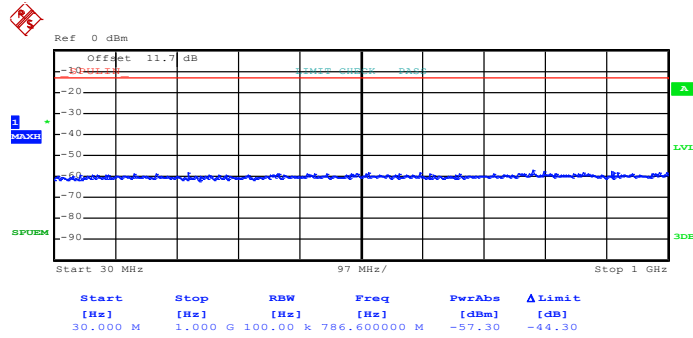
Date: 26.SEP.2012 00:17:54



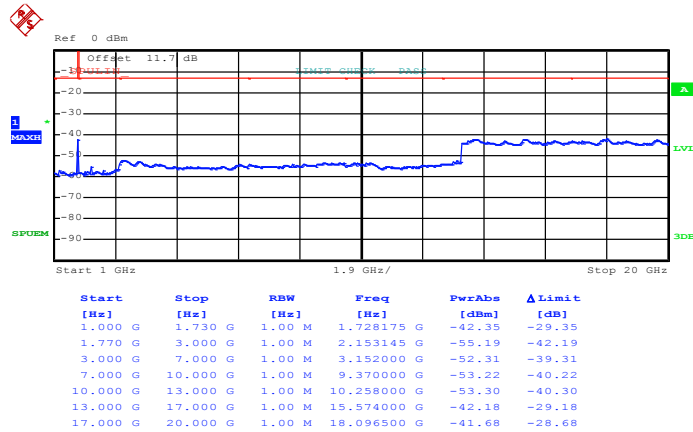
Date: 25.SEP.2012 23:26:56



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 00:18:03

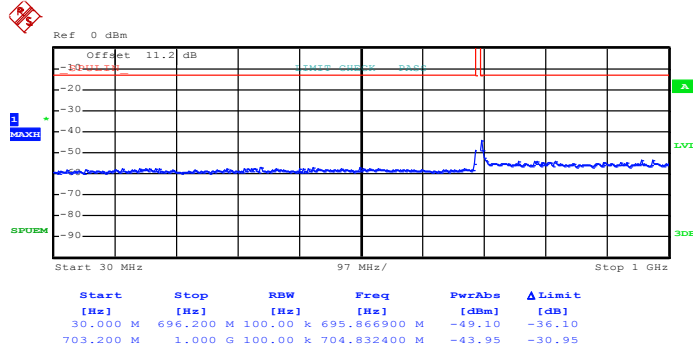


Date: 25.SEP.2012 23:27:31

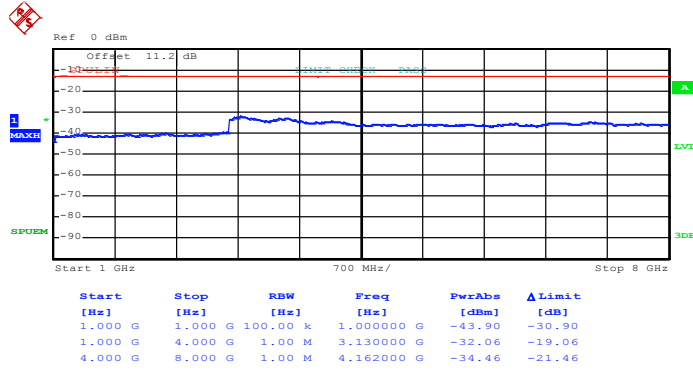


Band :	LTE Band 12	Channel :	CH23017 (Low)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



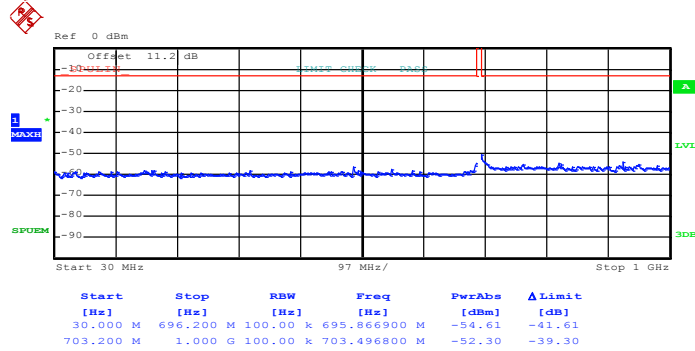
Date: 26.SEP.2012 01:00:03



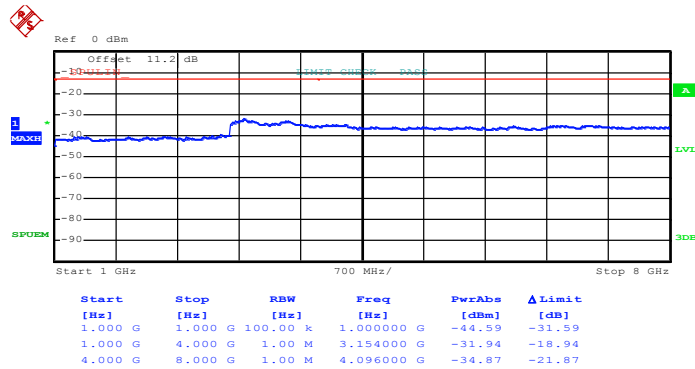
Date: 26.SEP.2012 01:37:17



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:00:41

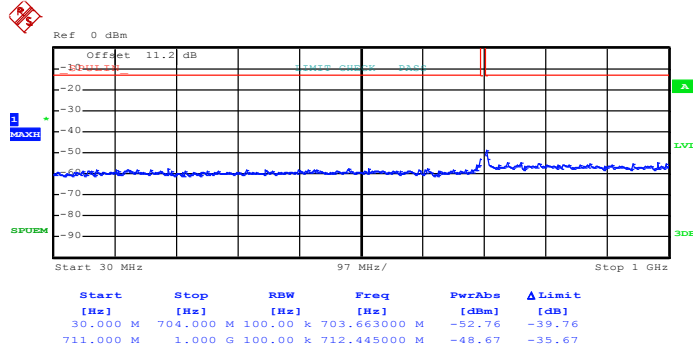


Date: 26.SEP.2012 01:37:28

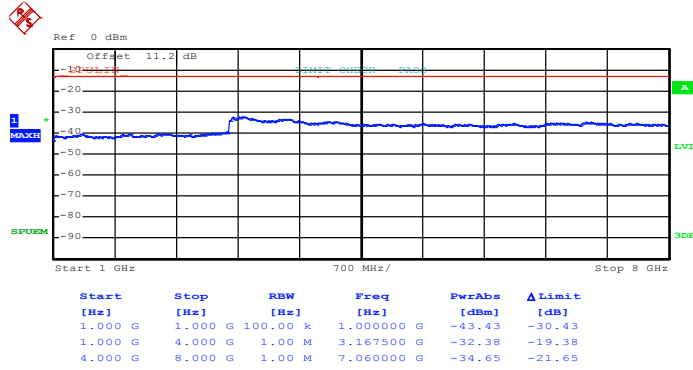


Band :	LTE Band 12	Channel :	CH23095 (Middle)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



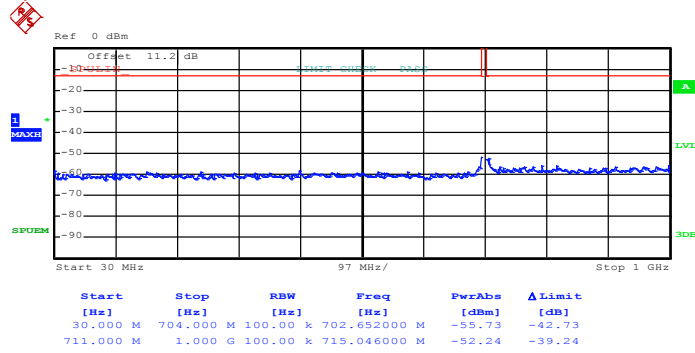
Date: 26.SEP.2012 01:02:05



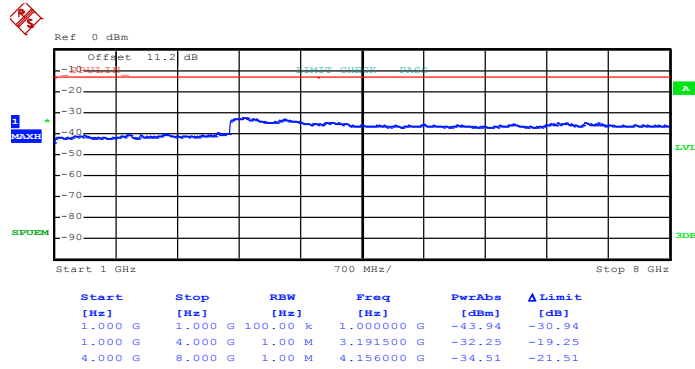
Date: 26.SEP.2012 01:37:44



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:02:27

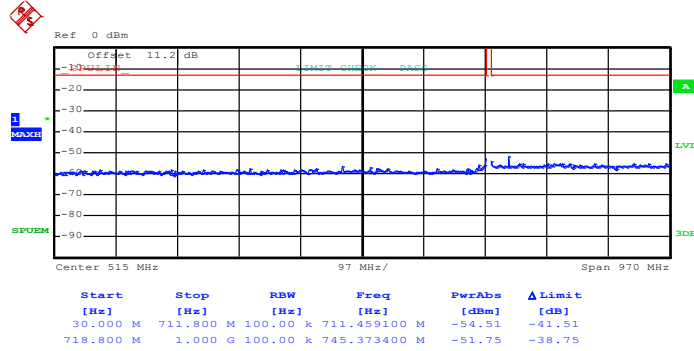


Date: 26.SEP.2012 01:37:57

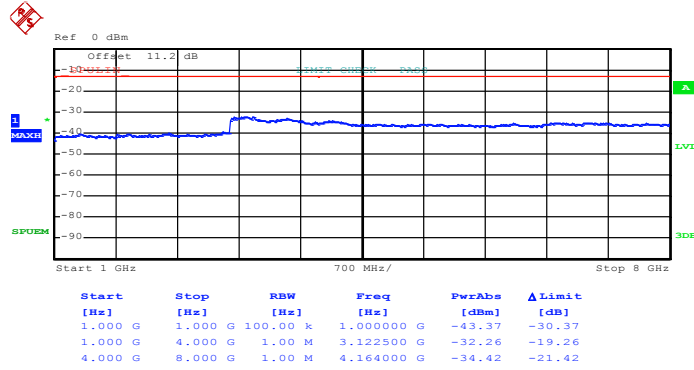


Band :	LTE Band 12	Channel :	CH23173 (High)
Band Width :	1.4MHz		

QPSK (RB Size 1, RB Offset 0)



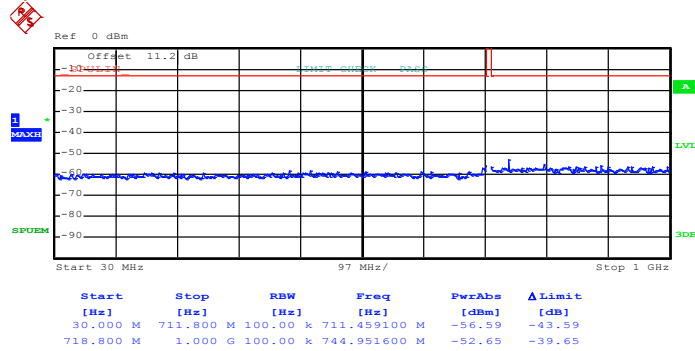
Date: 26.SEP.2012 01:04:39



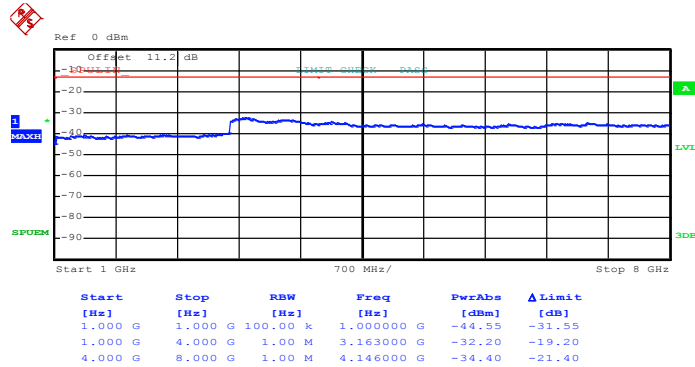
Date: 26.SEP.2012 01:38:16



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:04:57

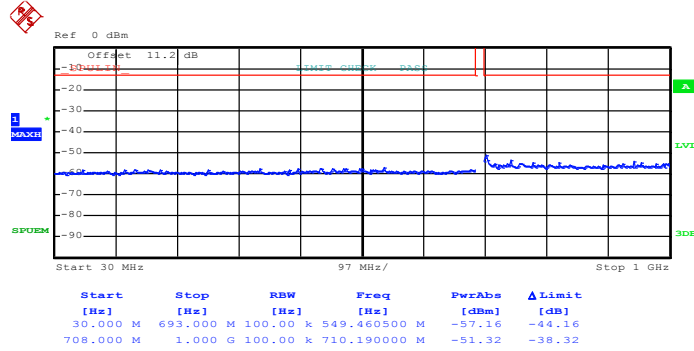


Date: 26.SEP.2012 01:38:32

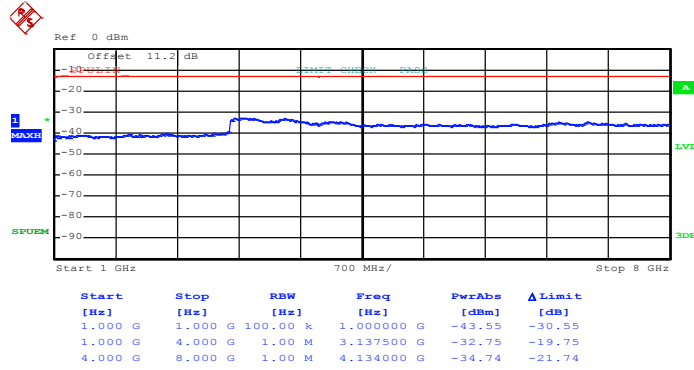


Band :	LTE Band 12	Channel :	CH23025 (Low)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



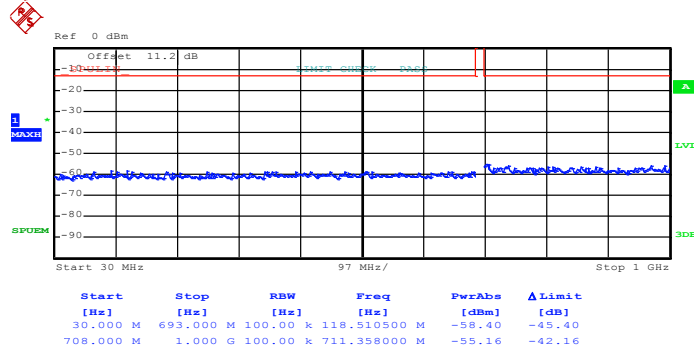
Date: 26.SEP.2012 01:06:31



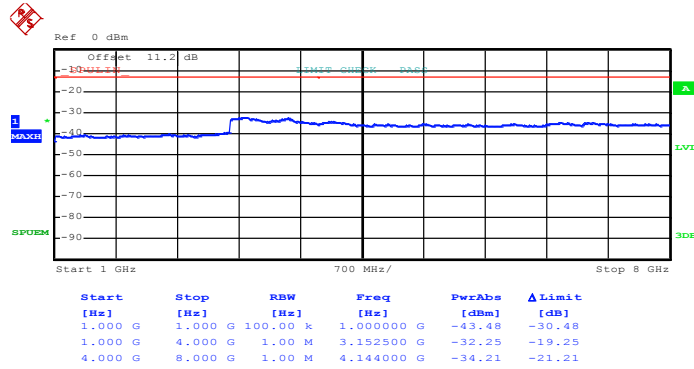
Date: 26.SEP.2012 01:34:46



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:06:43

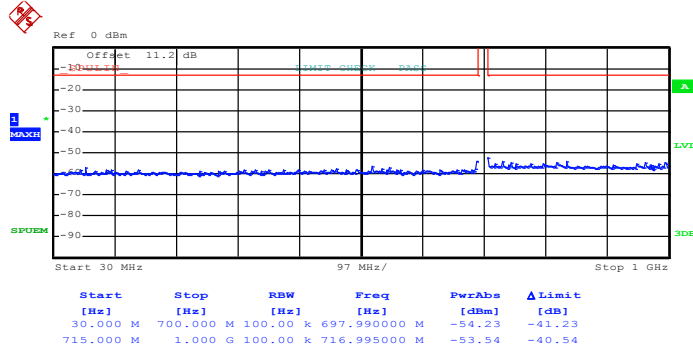


Date: 26.SEP.2012 01:34:33

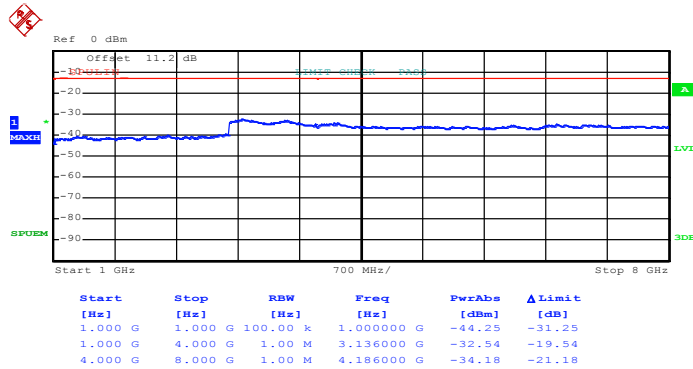


Band :	LTE Band 12	Channel :	CH23095 (Middle)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



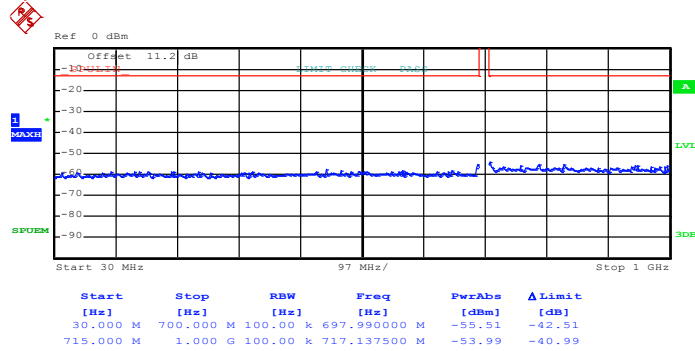
Date: 26.SEP.2012 01:08:37



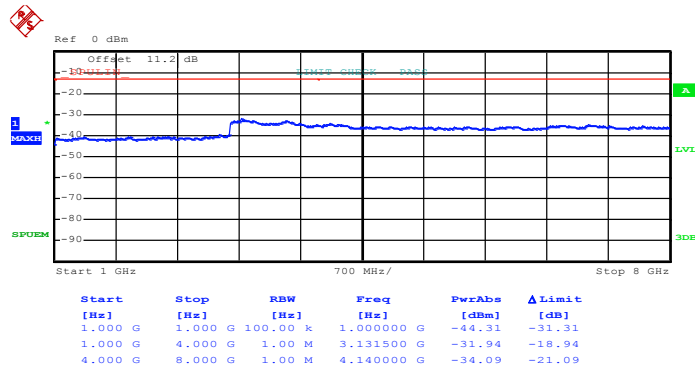
Date: 26.SEP.2012 01:35:01



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:08:54

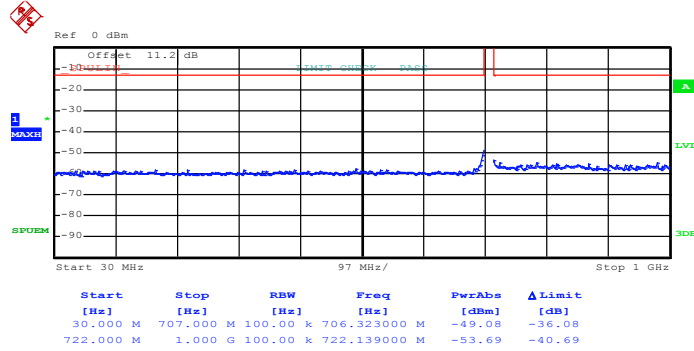


Date: 26.SEP.2012 01:35:12

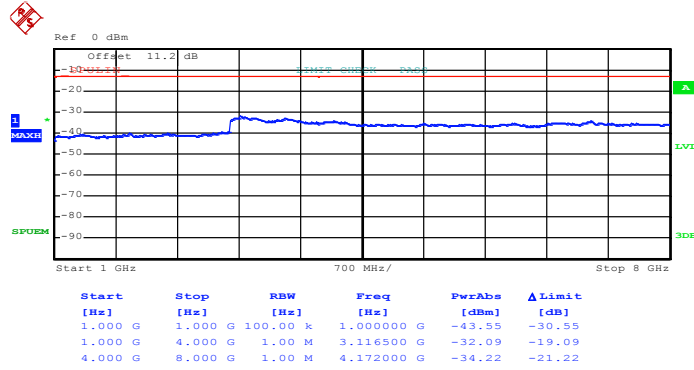


Band :	LTE Band 12	Channel :	CH23165 (High)
Band Width :	3MHz		

QPSK (RB Size 1, RB Offset 0)



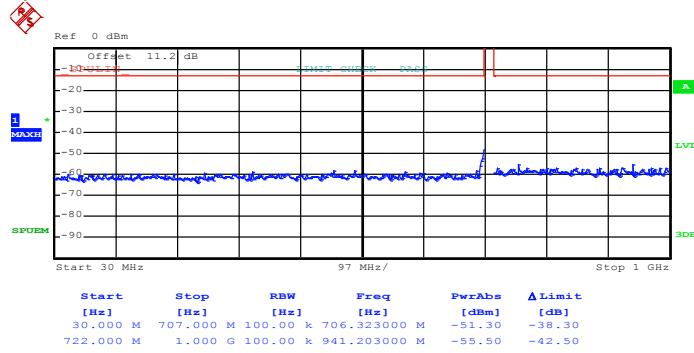
Date: 26.SEP.2012 01:15:43



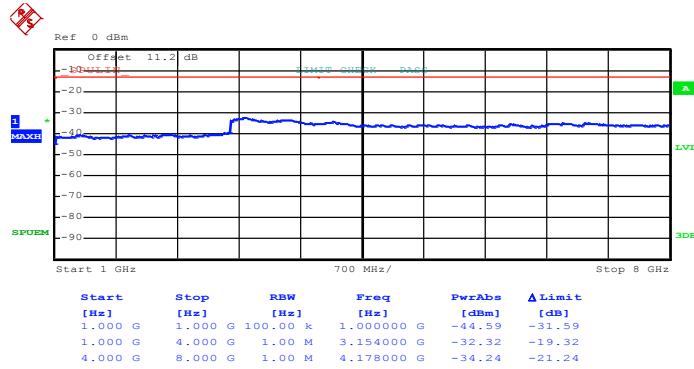
Date: 26.SEP.2012 01:35:36



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:16:01

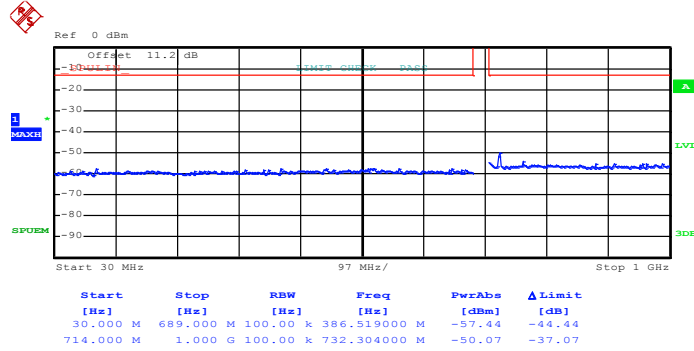


Date: 26.SEP.2012 01:35:54

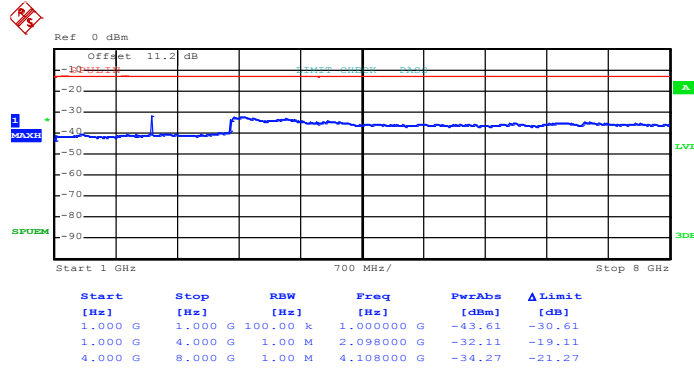


Band :	LTE Band 12	Channel :	CH23035 (Low)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



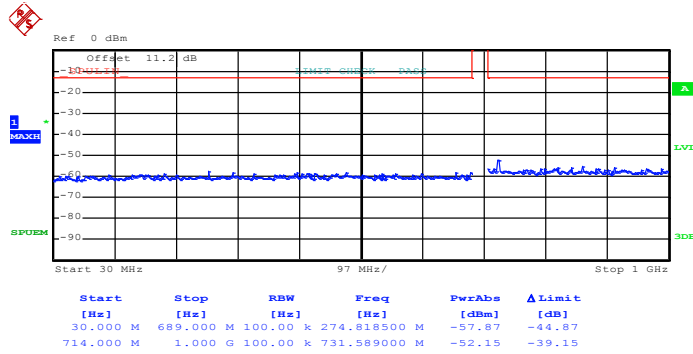
Date: 26.SEP.2012 01:10:35



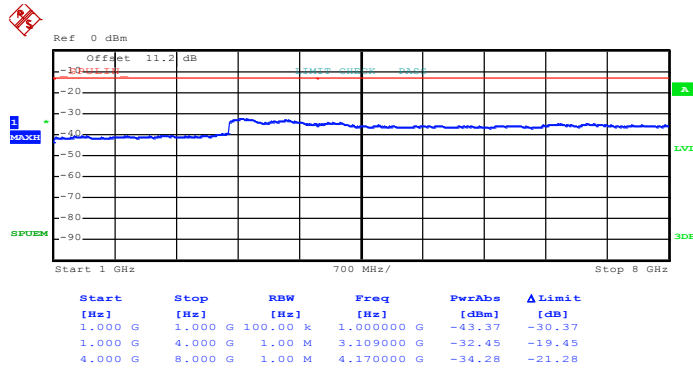
Date: 26.SEP.2012 01:30:08



16QAM (RB Size 1, RB Offset 24)



Date: 26.SEP.2012 01:11:01

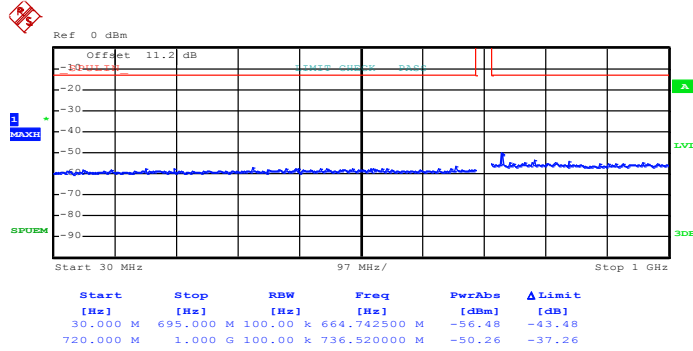


Date: 26.SEP.2012 01:31:08

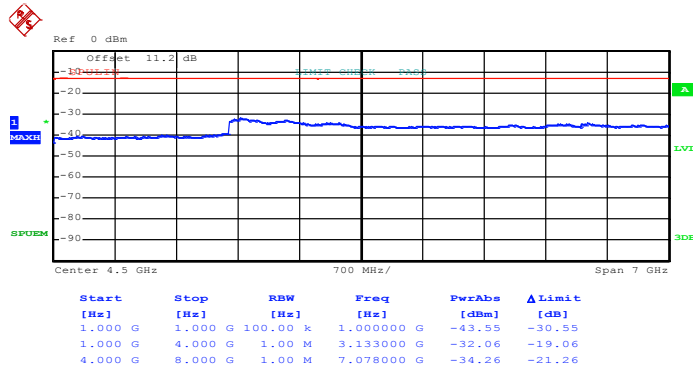


Band :	LTE Band 12	Channel :	CH23095 (Middle)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



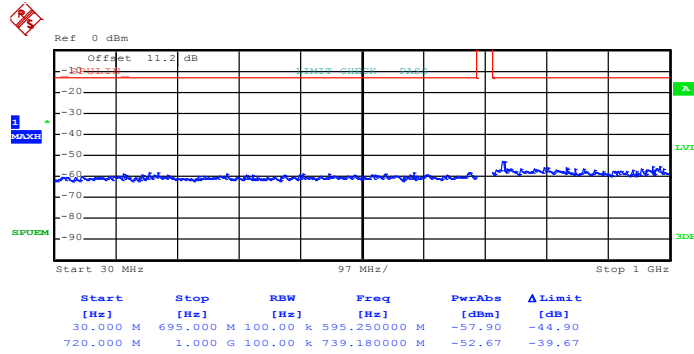
Date: 26.SEP.2012 01:12:58



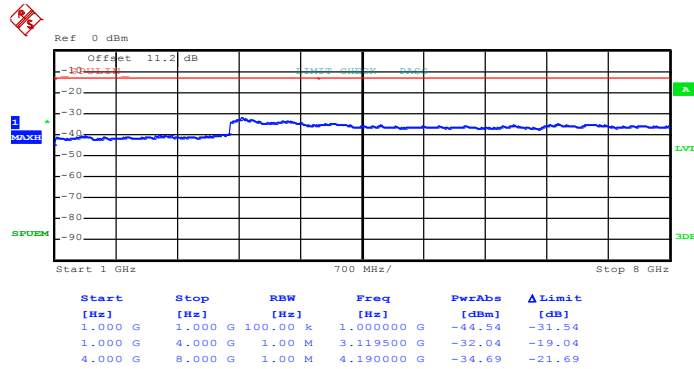
Date: 26.SEP.2012 01:32:04



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:13:17

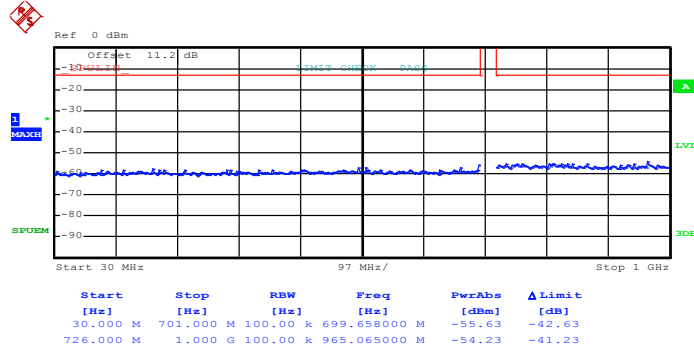


Date: 26.SEP.2012 01:32:17

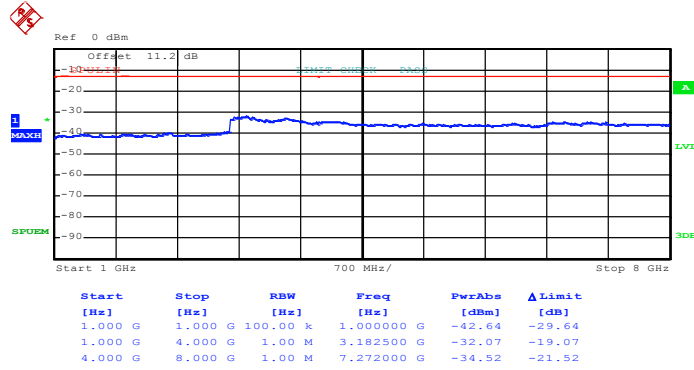


Band :	LTE Band 12	Channel :	CH23155 (High)
Band Width :	5MHz		

QPSK (RB Size 1, RB Offset 0)



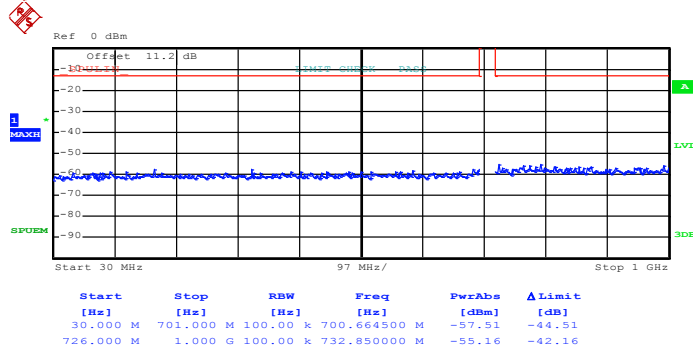
Date: 26.SEP.2012 01:14:36



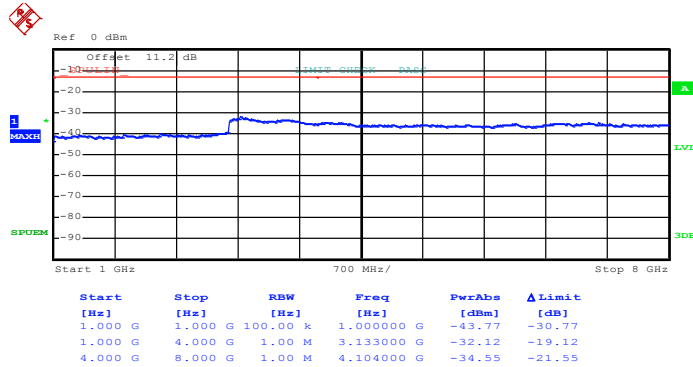
Date: 26.SEP.2012 01:32:49



16QAM (RB Size 1, RB Offset 24)



Date: 26.SEP.2012 01:14:53

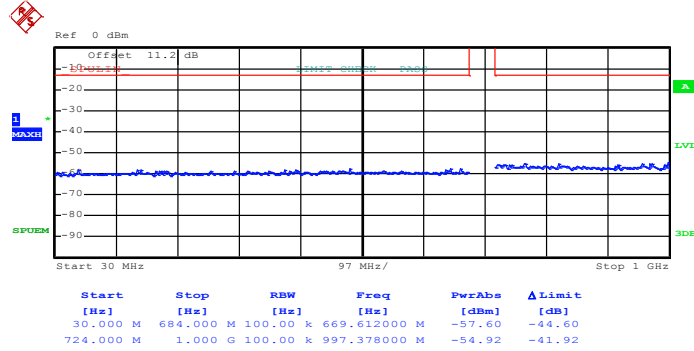


Date: 26.SEP.2012 01:33:07

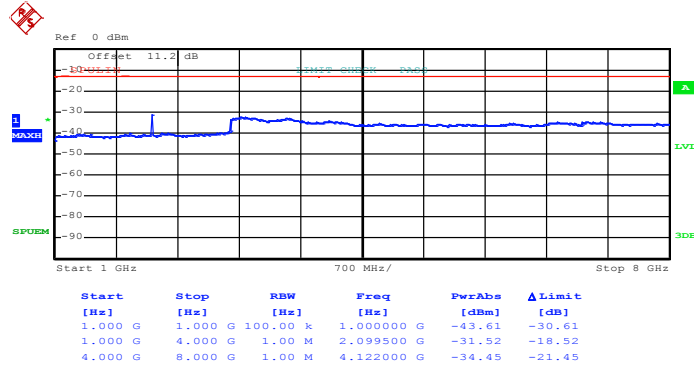


Band :	LTE Band 12	Channel :	CH23060 (Low)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 49)



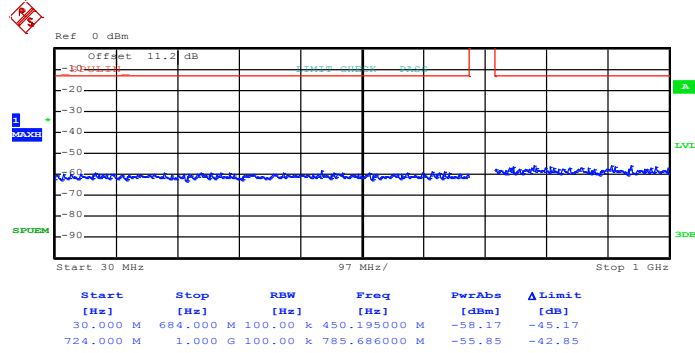
Date: 26.SEP.2012 01:18:27



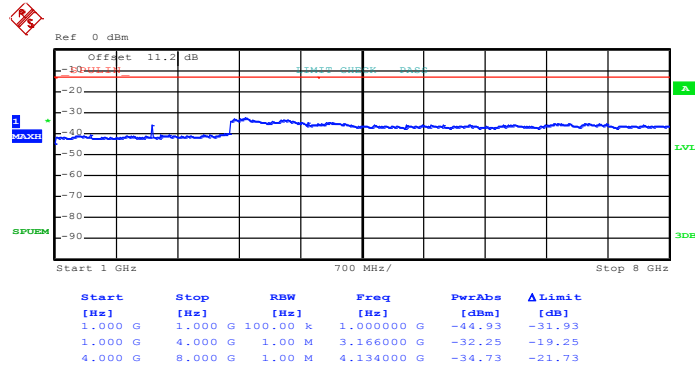
Date: 26.SEP.2012 01:29:15



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:19:05

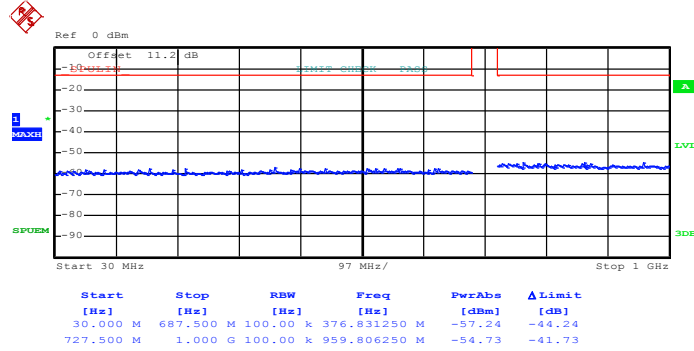


Date: 26.SEP.2012 01:29:31

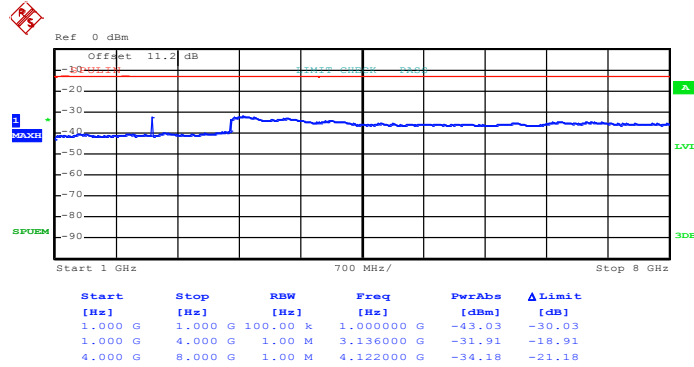


Band :	LTE Band 12	Channel :	CH23095 (Middle)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



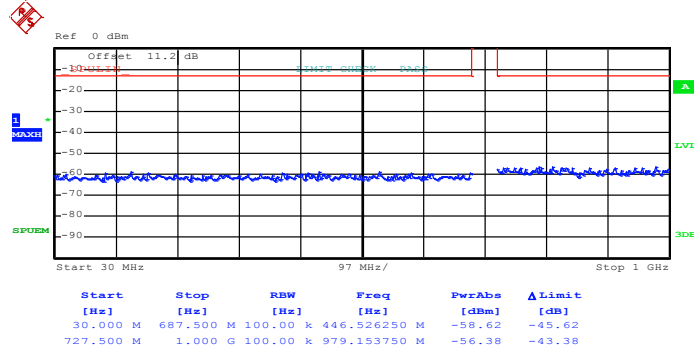
Date: 26.SEP.2012 01:20:17



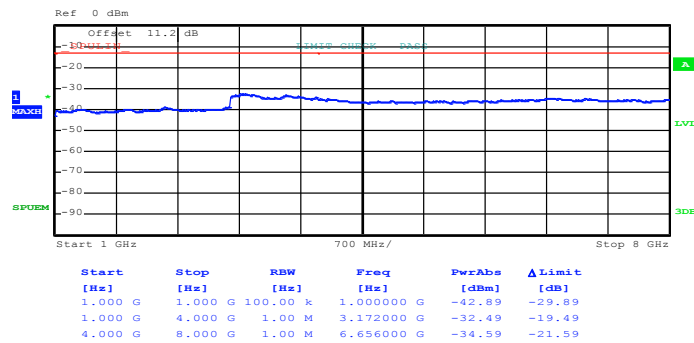
Date: 26.SEP.2012 01:28:12



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:20:31

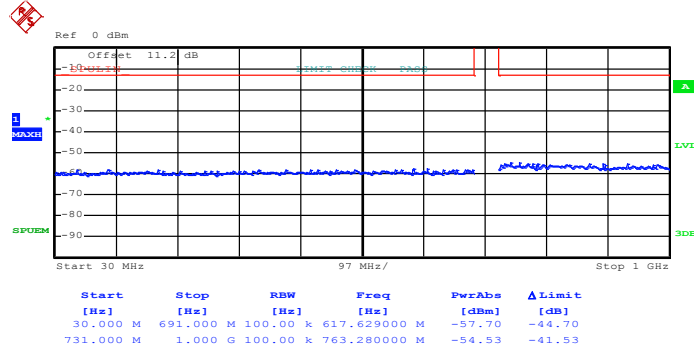


Date: 27.SEP.2012 03:55:09

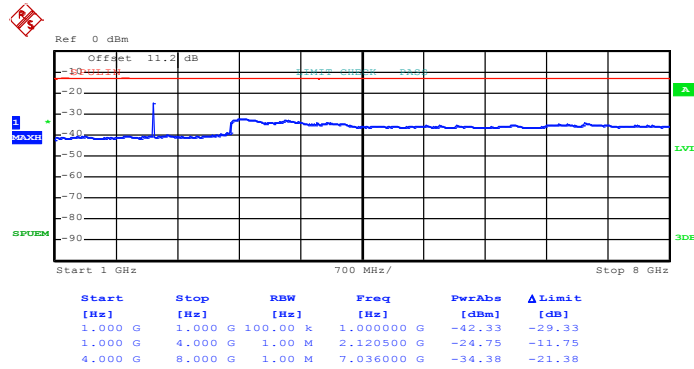


Band :	LTE Band 12	Channel :	CH23130 (High)
Band Width :	10MHz		

QPSK (RB Size 1, RB Offset 0)



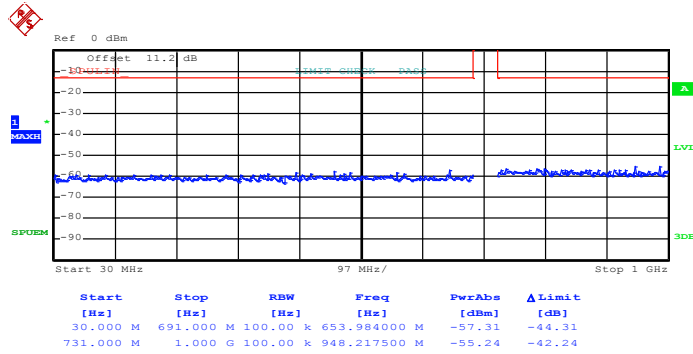
Date: 26.SEP.2012 01:21:20



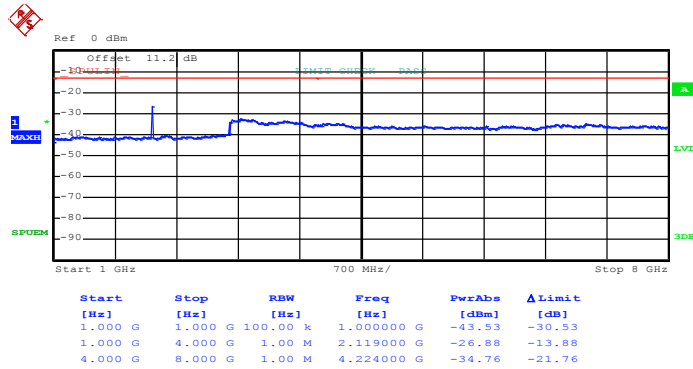
Date: 26.SEP.2012 01:25:33



16QAM (RB Size 1, RB Offset 0)



Date: 26.SEP.2012 01:22:33



Date: 26.SEP.2012 01:26:37



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

3.7.2 Measuring Instruments

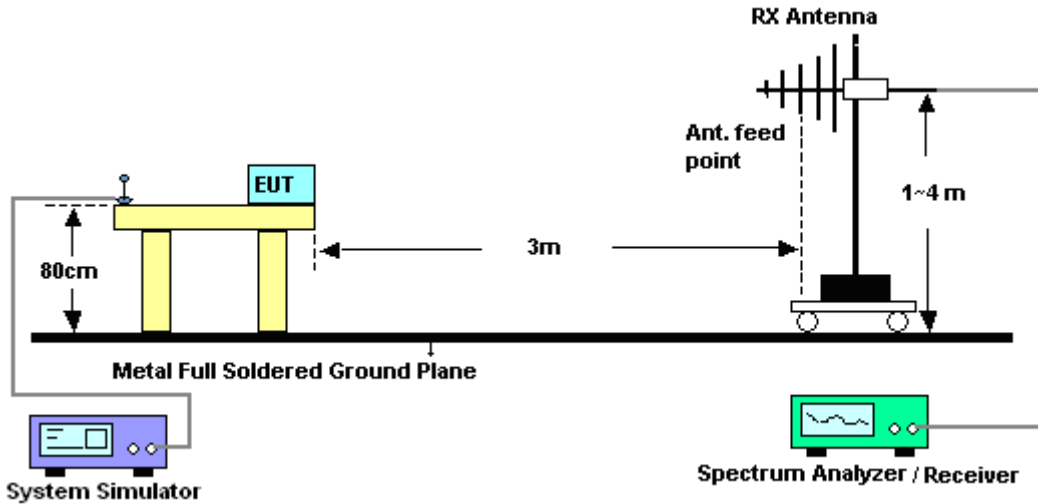
See list of measuring instruments of this test report.

3.7.3 Test Procedures

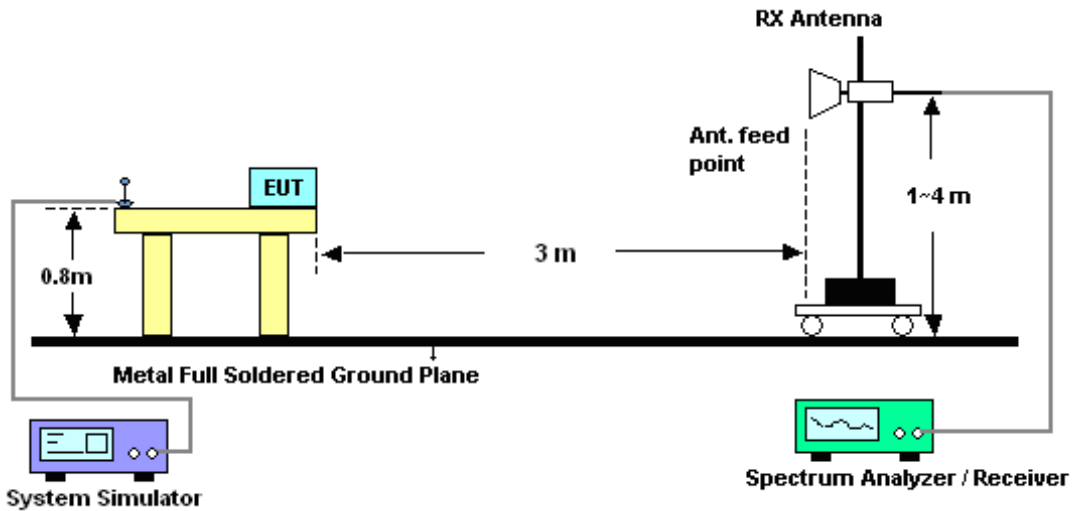
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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, Sweep = 500ms, 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. Emission level (dBm) = output power + substitution Gain.

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



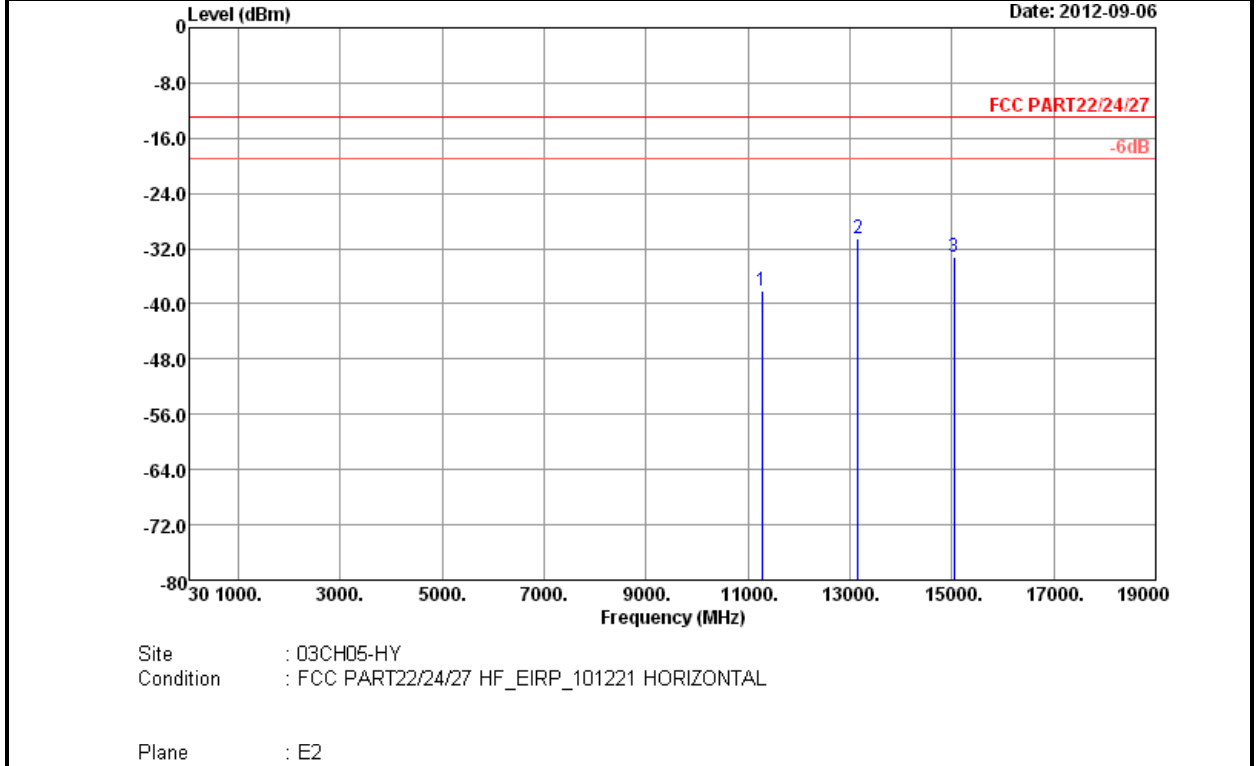
3.7.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.7.6 Test Result of Field Strength of Spurious Radiated

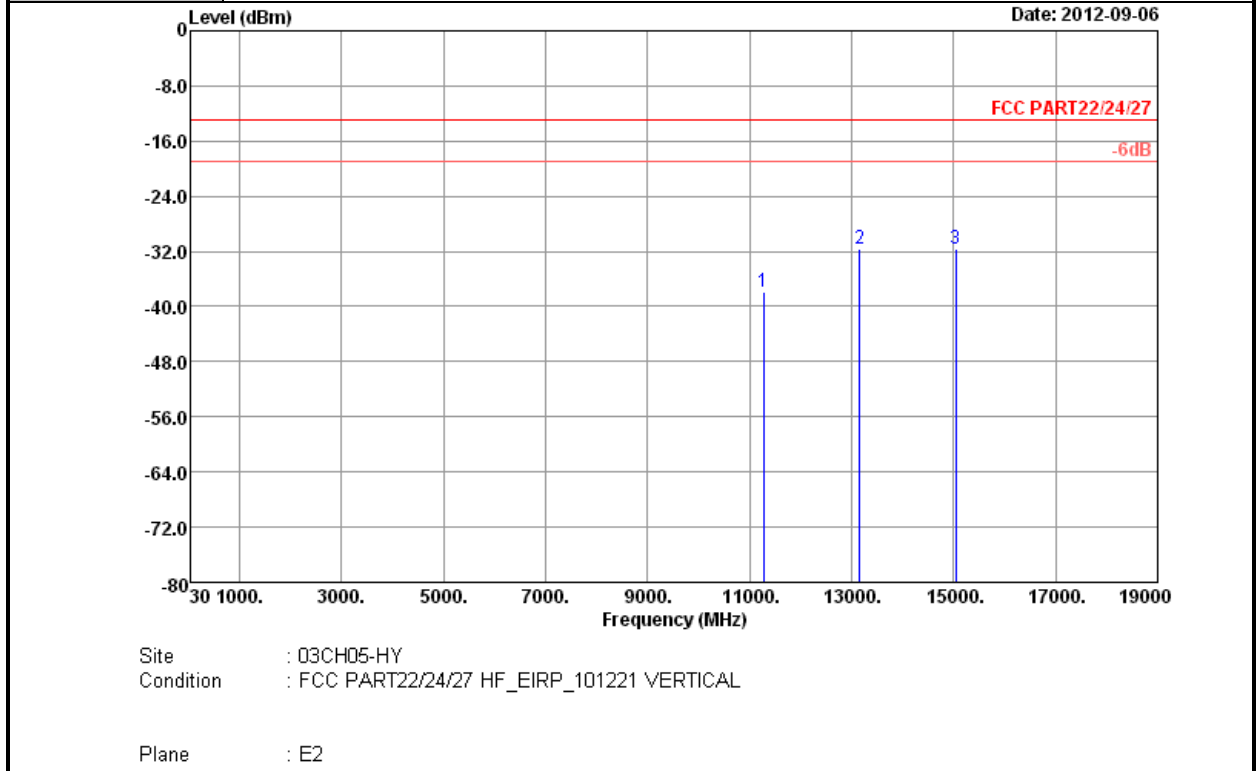
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
11276	-38.18	-13	-25.18	-65.15	-48.9	2.64	13.36	H	Pass
13156	-30.47	-13	-17.47	-61.13	-41.3	2.86	13.69	H	Pass
15036	-33.15	-13	-20.15	-64.32	-43.9	3.35	14.09	H	Pass



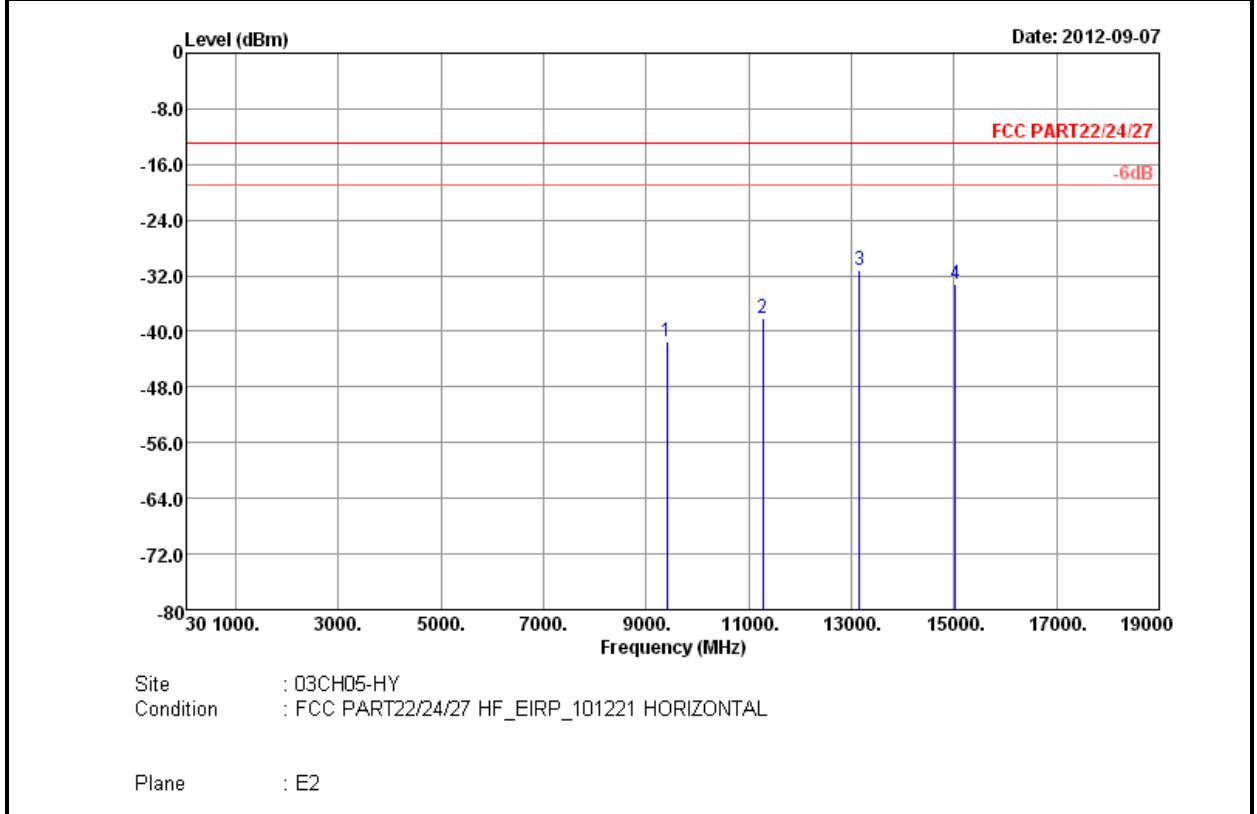
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
11276	-37.78	-13	-24.78	-64.88	-48.5	2.64	13.36	V	Pass
13156	-31.57	-13	-18.57	-62.17	-42.4	2.86	13.69	V	Pass
15036	-31.55	-13	-18.55	-62.84	-42.3	3.35	14.09	V	Pass



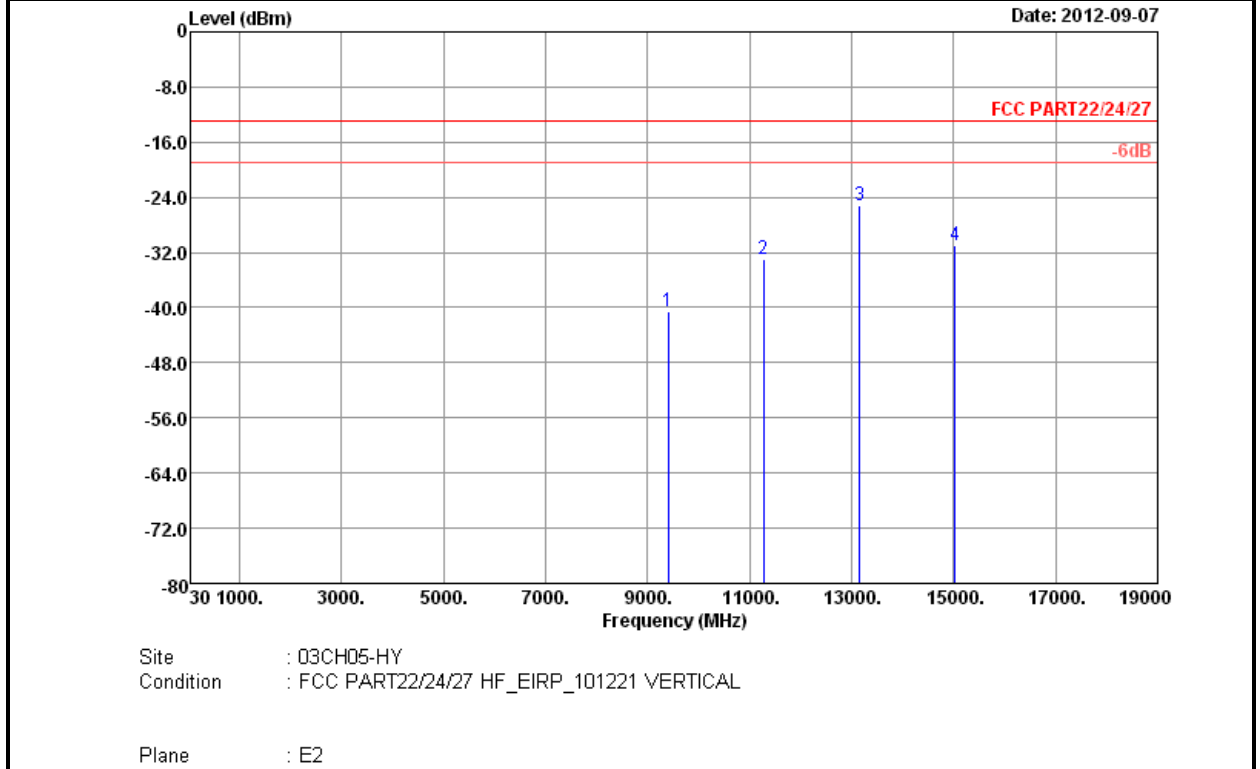
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
9400	-41.49	-13	-28.49	-65.81	-52	2.87	13.38	H	Pass
11272	-38.08	-13	-25.08	-65.22	-48.8	2.64	13.36	H	Pass
13152	-31.17	-13	-18.17	-62.29	-42	2.86	13.69	H	Pass
15030	-33.25	-13	-20.25	-64.82	-44	3.35	14.09	H	Pass



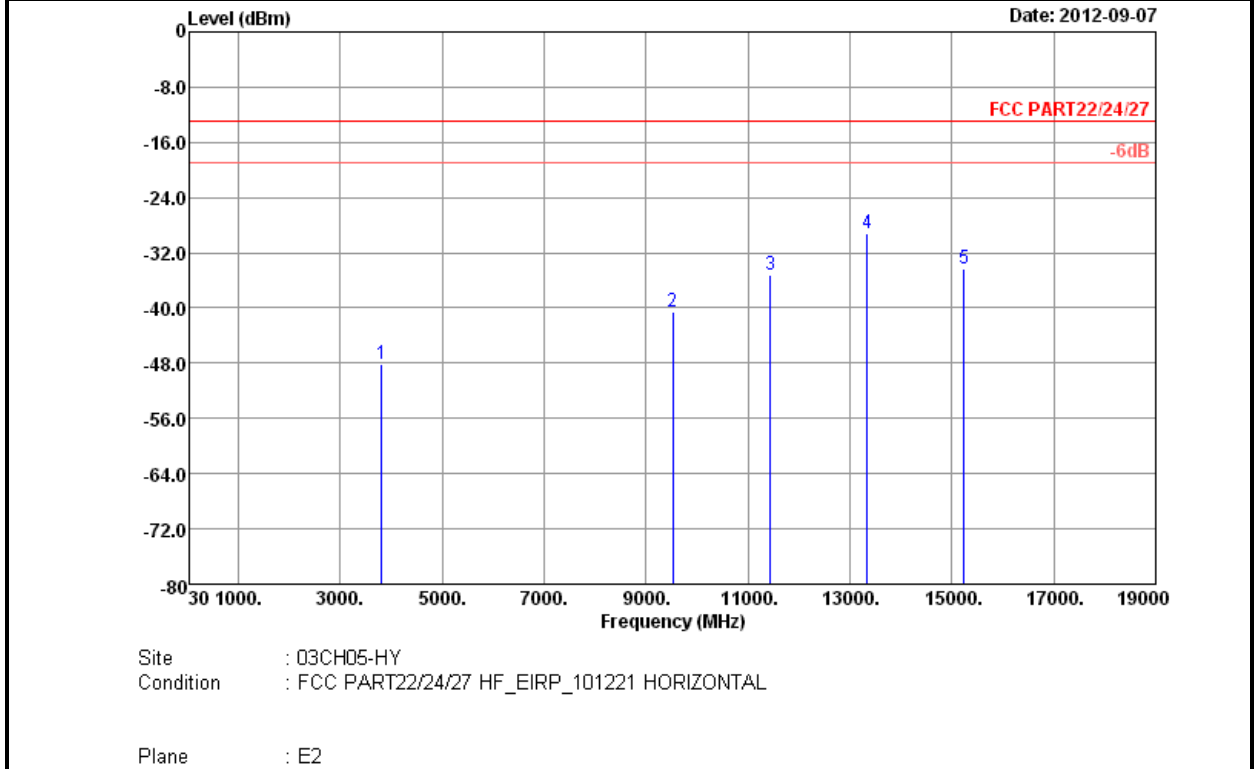
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
9400	-40.49	-13	-27.49	-64.52	-51	2.87	13.38	V	Pass
11272	-33.08	-13	-20.08	-60.1	-43.8	2.64	13.36	V	Pass
13152	-25.17	-13	-12.17	-56.44	-36	2.86	13.69	V	Pass
15030	-31.05	-13	-18.05	-62.15	-41.8	3.35	14.09	V	Pass



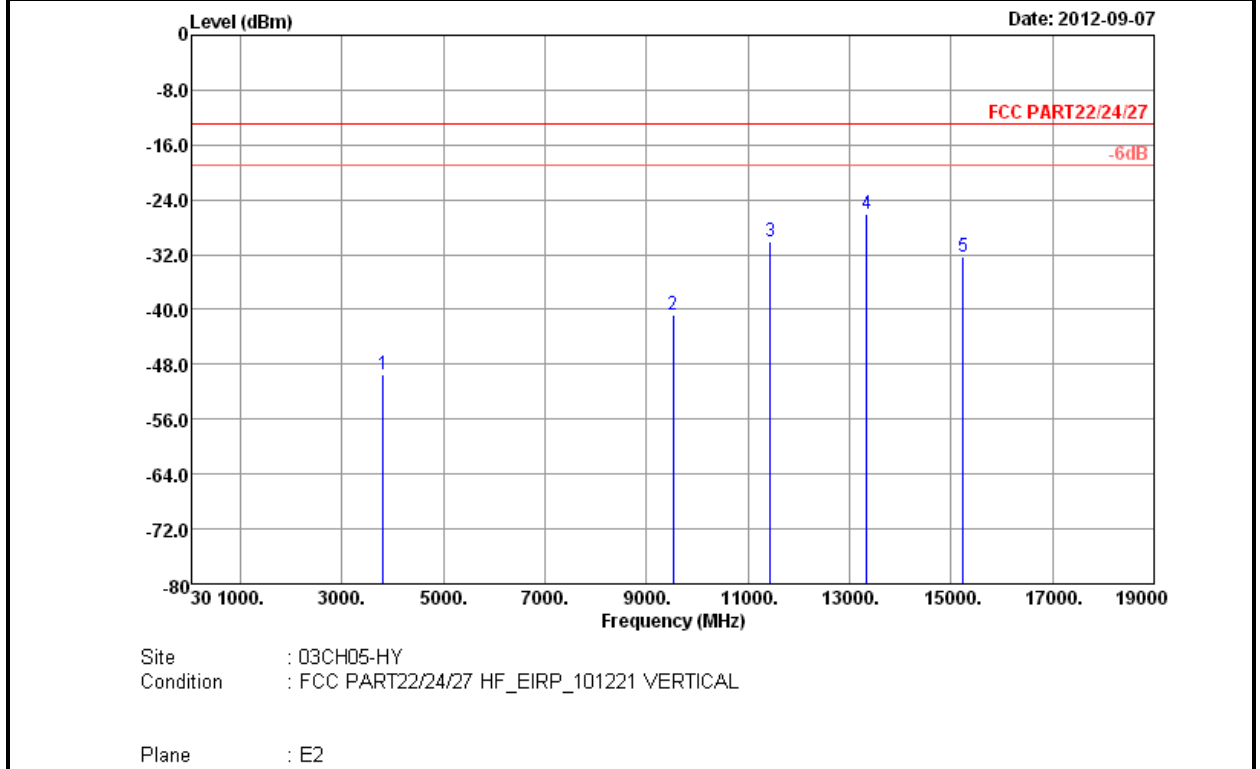
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3808	-48.19	-13	-35.19	-61.97	-54.9	2.00	8.71	H	Pass
9524	-40.49	-13	-27.49	-64.72	-51	2.87	13.38	H	Pass
11432	-35.28	-13	-22.28	-63.15	-46	2.64	13.36	H	Pass
13336	-29.17	-13	-16.17	-60.47	-40	2.86	13.69	H	Pass
15243	-34.25	-13	-21.25	-65.64	-45	3.35	14.09	H	Pass



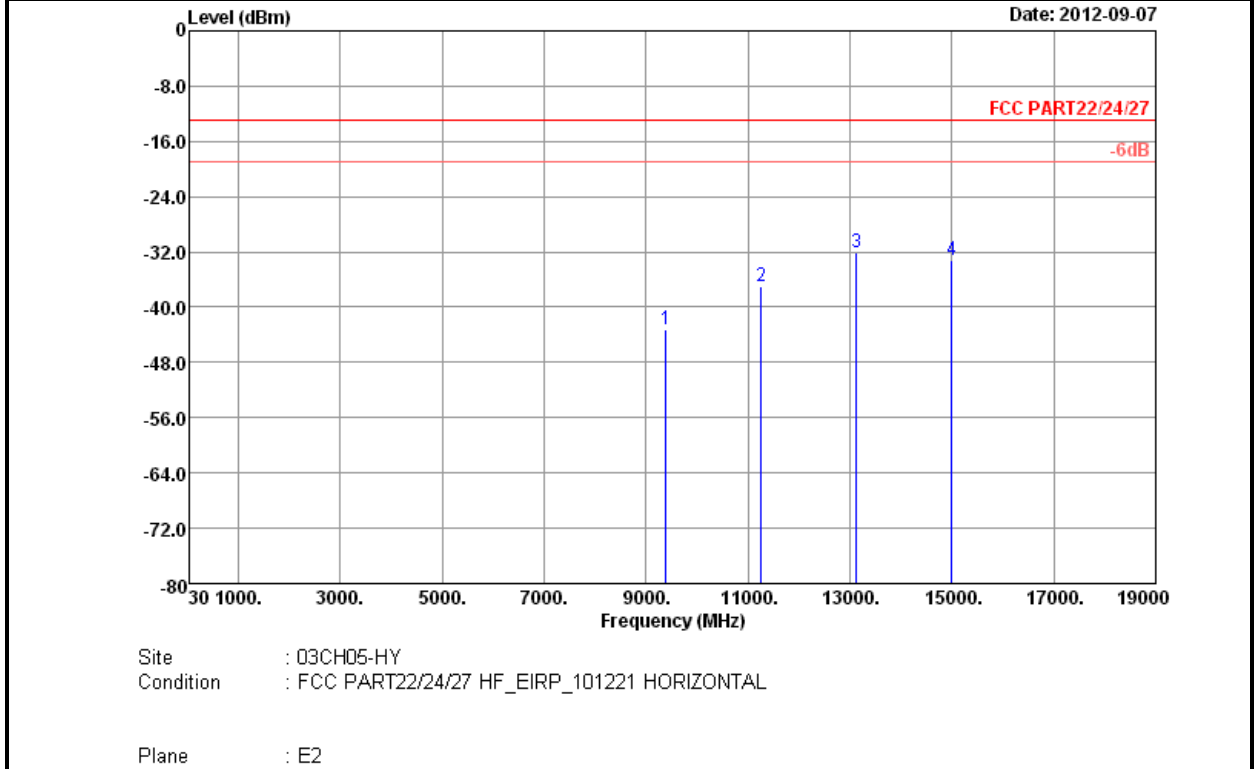
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3808	-49.49	-13	-36.49	-63.49	-56.2	2.00	8.71	V	Pass
9524	-40.79	-13	-27.79	-65.03	-51.3	2.87	13.38	V	Pass
11432	-30.08	-13	-17.08	-57.5	-40.8	2.64	13.36	V	Pass
13336	-26.17	-13	-13.17	-57.49	-37	2.86	13.69	V	Pass
15243	-32.25	-13	-19.25	-63.39	-43	3.35	14.09	V	Pass



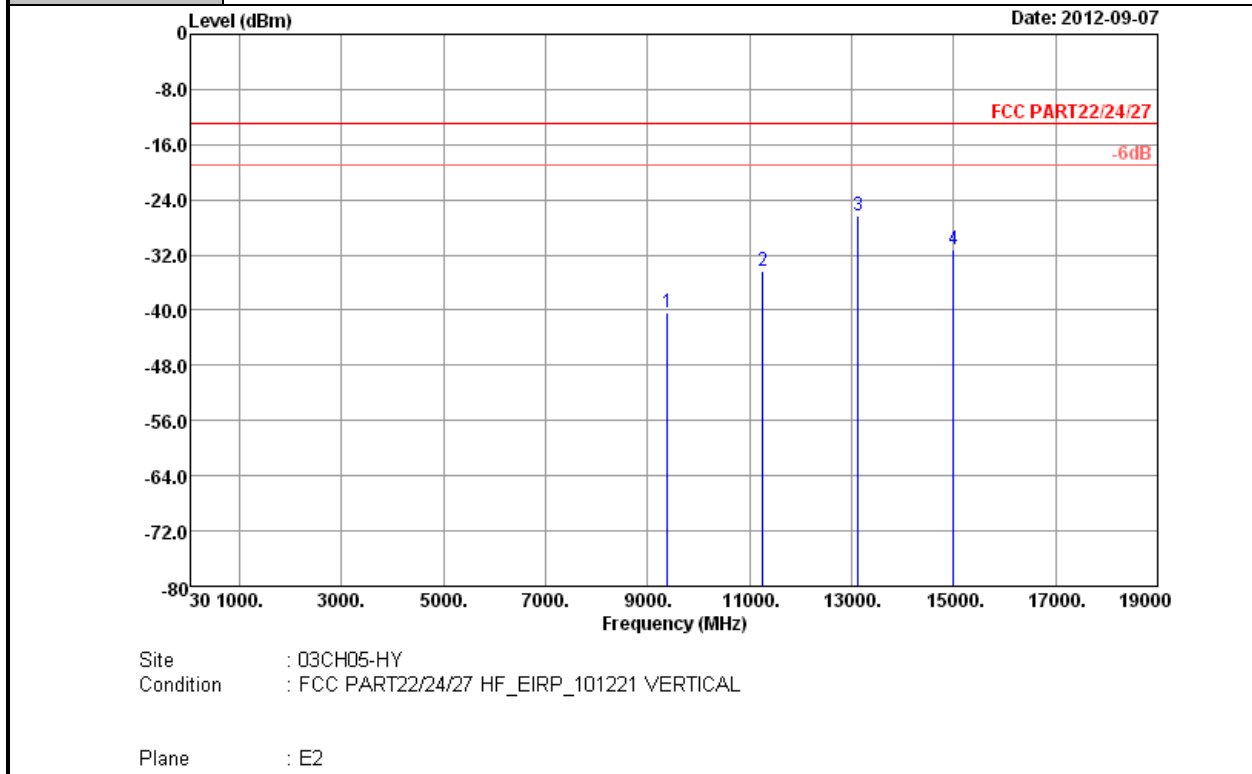
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
9380	-43.19	-13	-30.19	-67.04	-53.7	2.87	13.38	H	Pass
11252	-36.98	-13	-23.98	-63.94	-47.7	2.64	13.36	H	Pass
13128	-32.17	-13	-19.17	-63.18	-43	2.86	13.69	H	Pass
15003	-33.25	-13	-20.25	-64.92	-44	3.35	14.09	H	Pass



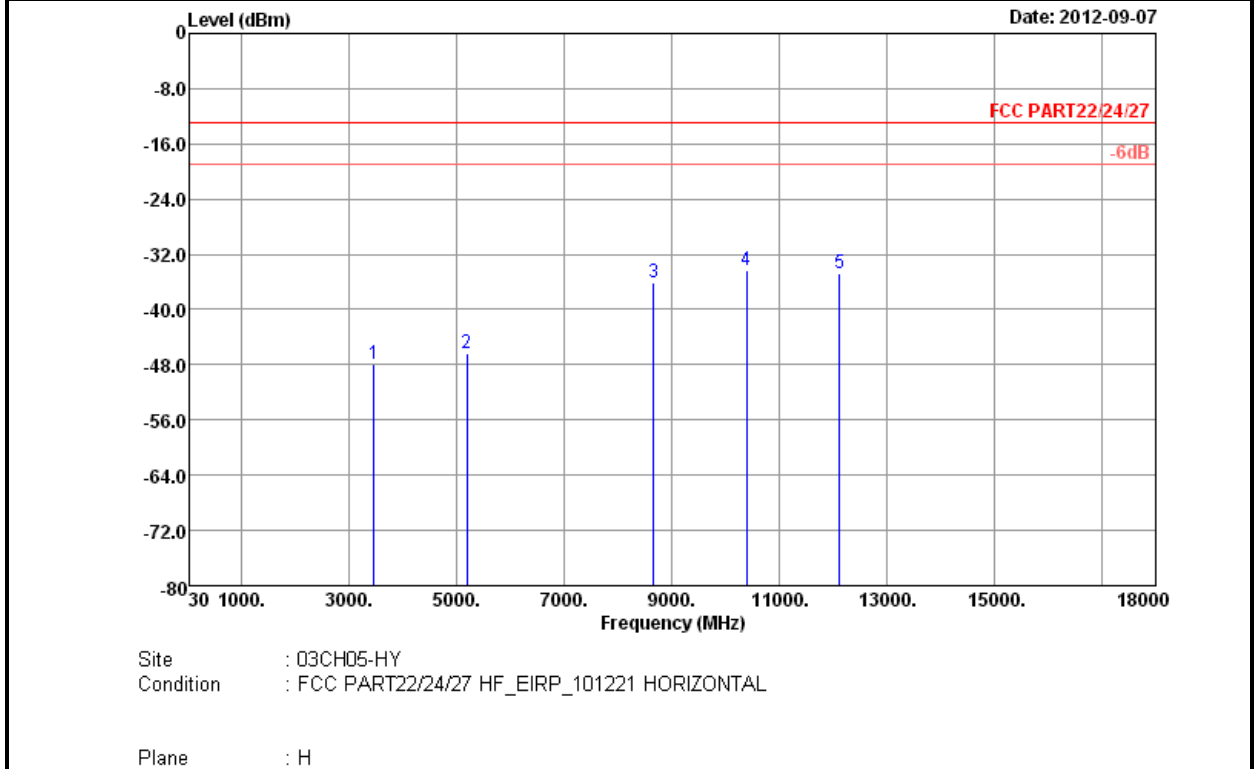
Band :	LTE Band 2	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
9380	-40.39	-13	-27.39	-64.24	-50.9	2.87	13.38	V	Pass
11252	-34.28	-13	-21.28	-61.27	-45	2.64	13.36	V	Pass
13128	-26.37	-13	-13.37	-56.86	-37.2	2.86	13.69	V	Pass
15003	-31.25	-13	-18.25	-62.92	-42	3.35	14.09	V	Pass



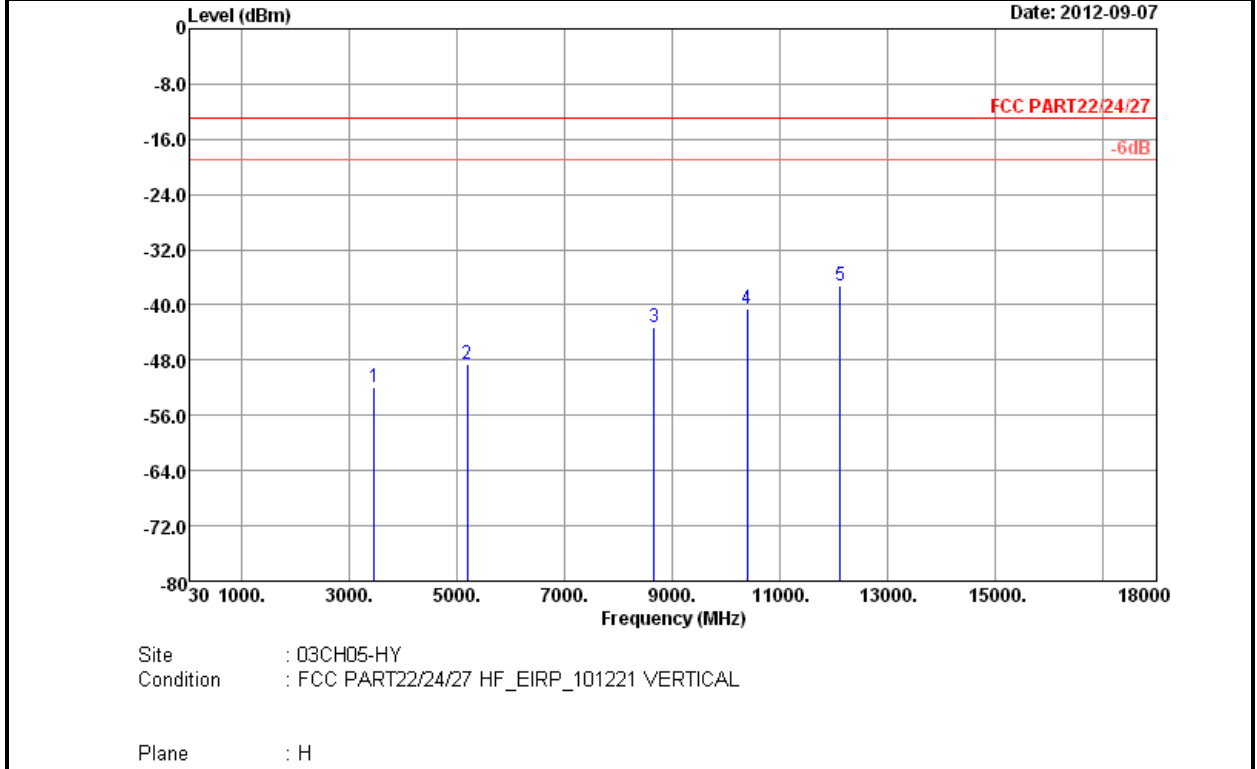
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3464	-48.01	-13	-35.01	-59.94	-54.3	2.01	8.30	H	Pass
5196	-46.43	-13	-33.43	-64.16	-54.9	2.09	10.56	H	Pass
8660	-36.03	-13	-23.03	-59.48	-46.5	2.62	13.10	H	Pass
10392	-34.22	-13	-21.22	-60.16	-44.6	2.87	13.26	H	Pass
12124	-34.71	-13	-21.71	-63.01	-44.7	3.08	13.07	H	Pass



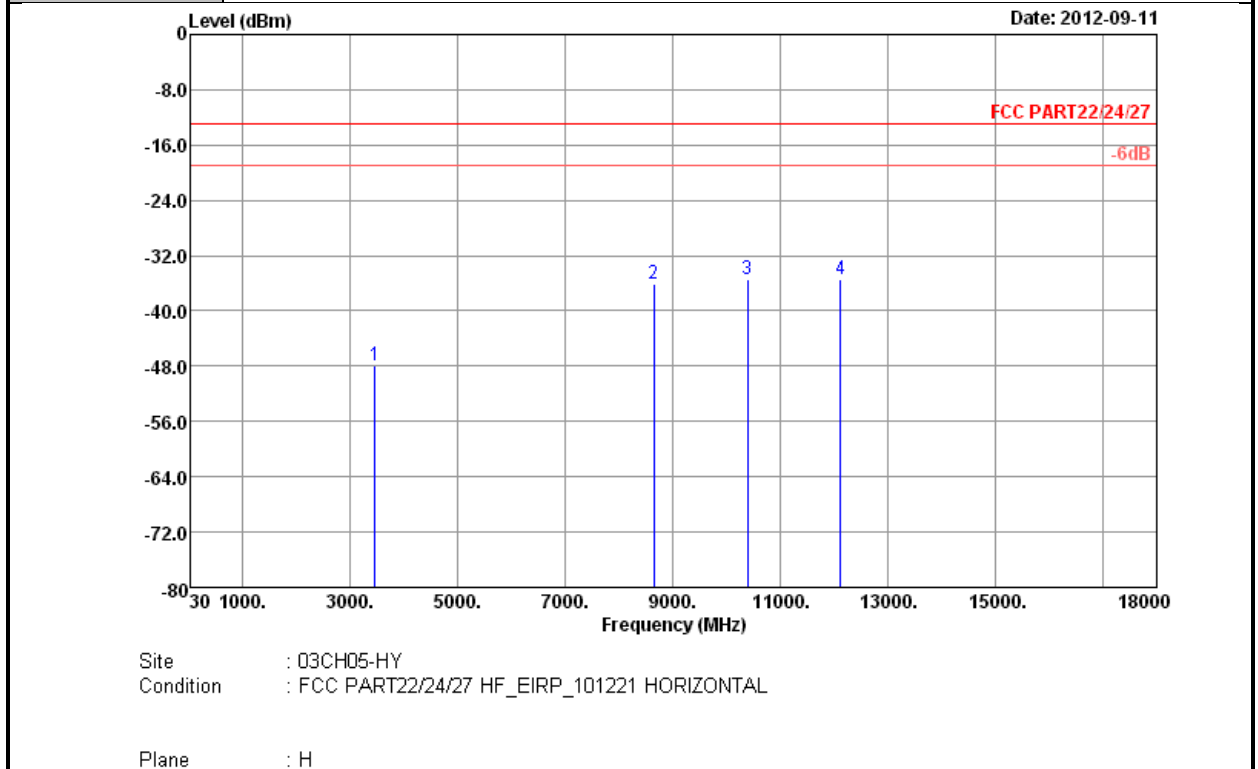
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3464	-52.01	-13	-39.01	-63.94	-58.3	2.01	8.30	V	Pass
5196	-48.53	-13	-35.53	-66.39	-57	2.09	10.56	V	Pass
8660	-43.13	-13	-30.13	-66.56	-53.6	2.62	13.10	V	Pass
10392	-40.62	-13	-27.62	-66.72	-51	2.87	13.26	V	Pass
12124	-37.31	-13	-24.31	-65.7	-47.3	3.08	13.07	V	Pass



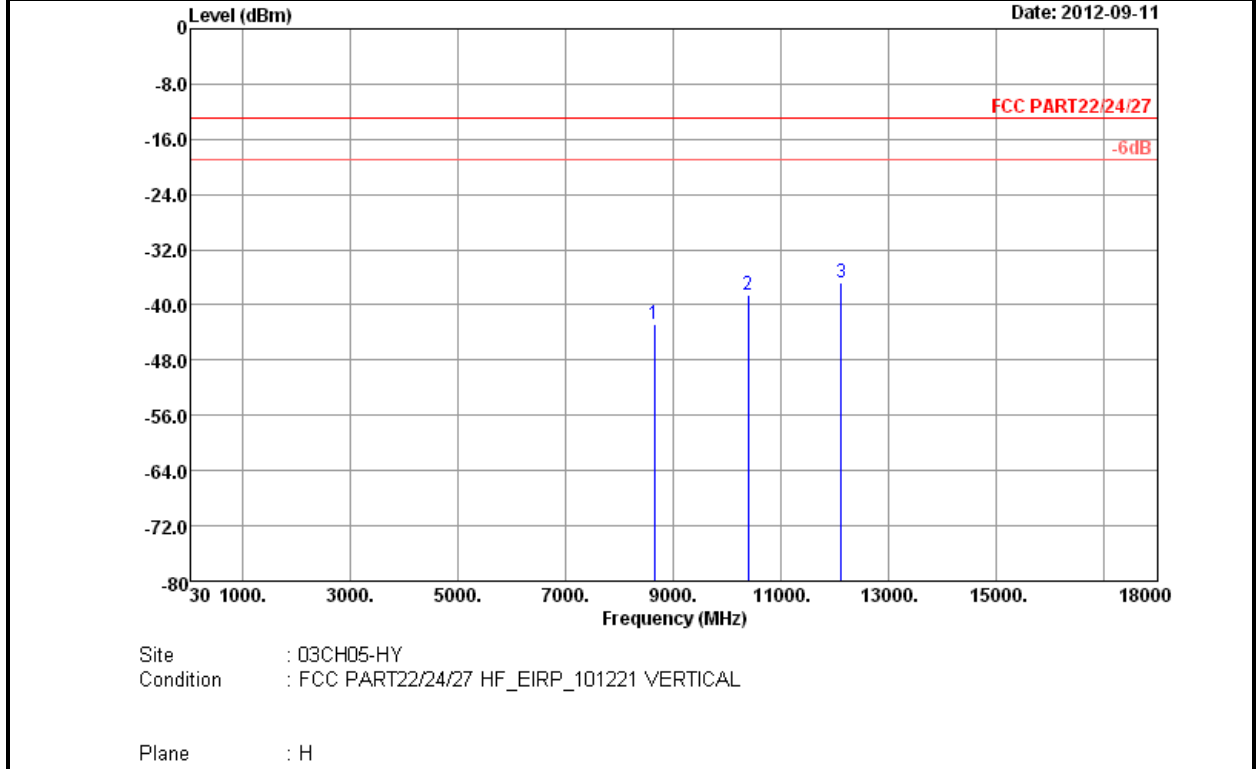
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3460	-47.94	-13	-34.94	-59.36	-54.23	2.01	8.30	H	Pass
8656	-36.14	-13	-23.14	-59.39	-46.61	2.62	13.10	H	Pass
10388	-35.40	-13	-22.40	-61.11	-45.78	2.87	13.26	H	Pass
12120	-35.47	-13	-22.47	-63.74	-45.46	3.08	13.07	H	Pass



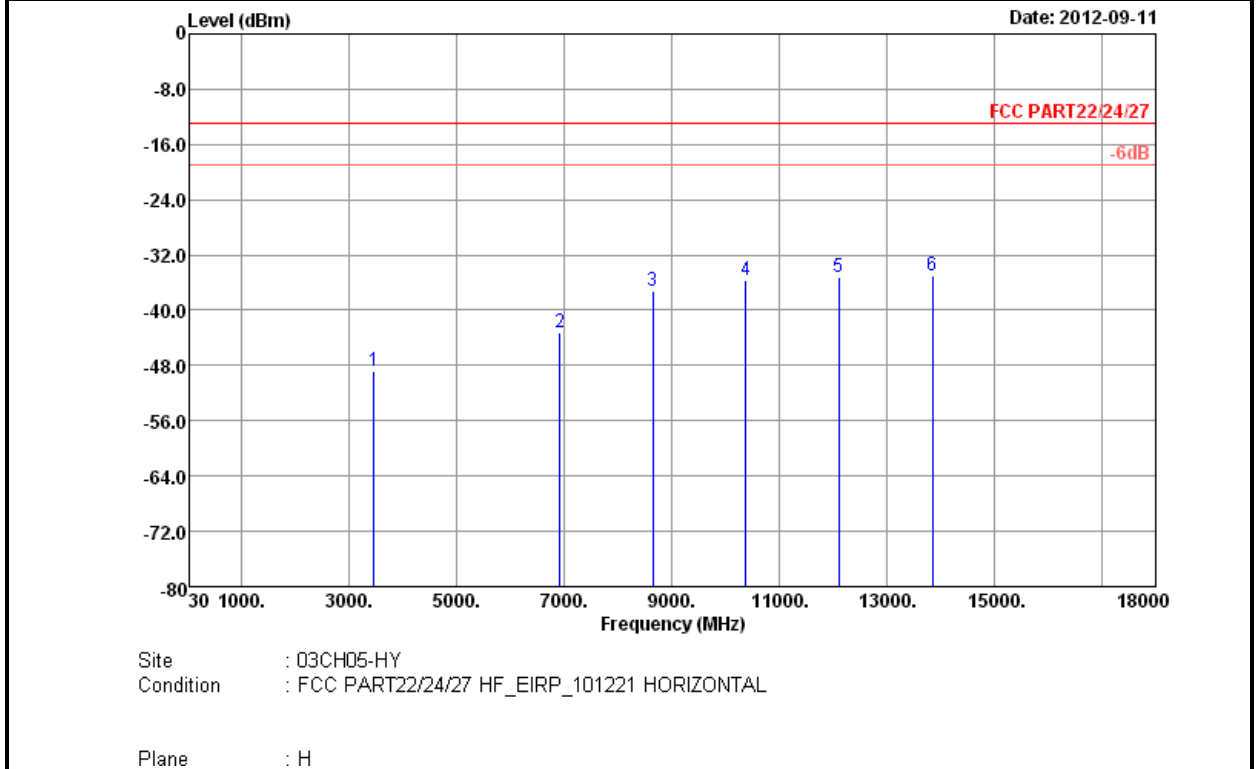
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
8656	-42.81	-13	-29.81	-65.48	-53.28	2.62	13.10	V	Pass
10388	-38.58	-13	-25.58	-64.32	-48.96	2.87	13.26	V	Pass
12120	-36.84	-13	-23.84	-64.78	-46.83	3.08	13.07	V	Pass



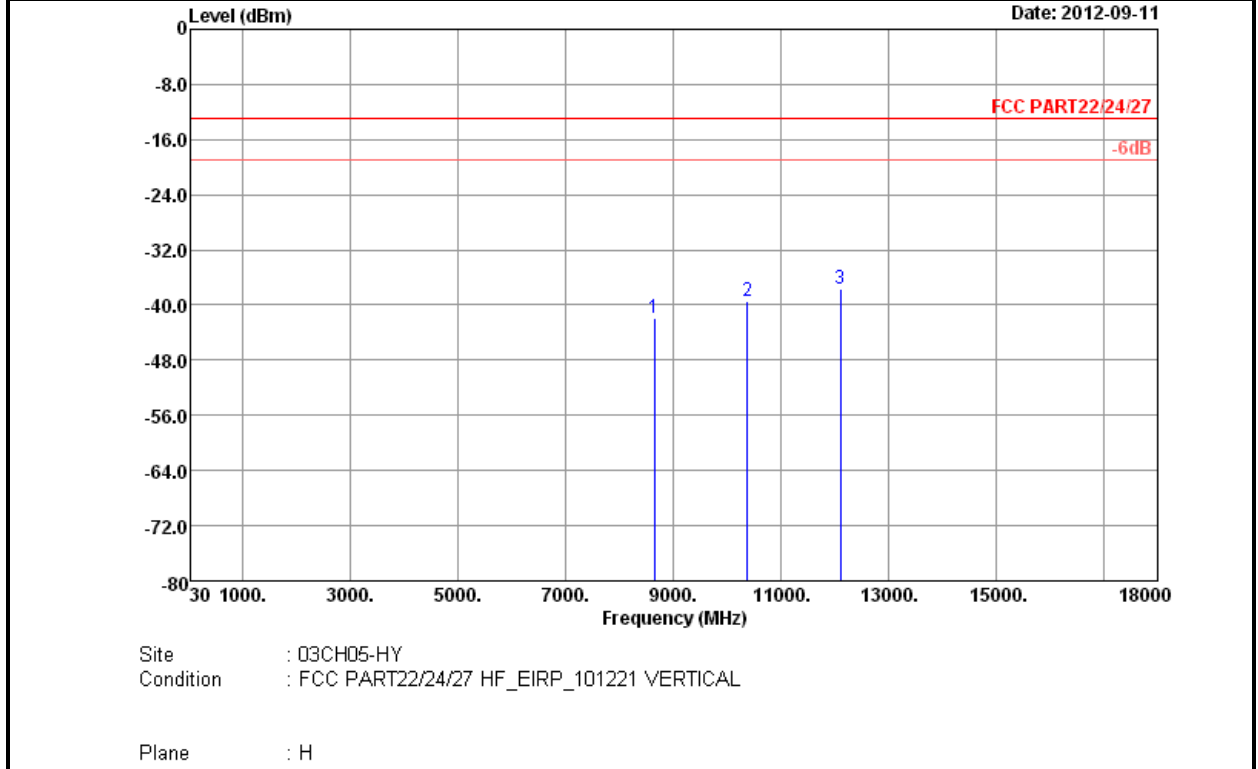
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3460	-48.84	-13	-35.84	-60.05	-55.13	2.01	8.30	H	Pass
6924	-43.26	-13	-30.26	-64.84	-52.38	2.38	11.50	H	Pass
8652	-37.19	-13	-24.19	-60.39	-47.66	2.62	13.10	H	Pass
10384	-35.57	-13	-22.57	-61.2	-45.95	2.87	13.26	H	Pass
12112	-35.20	-13	-22.20	-63.92	-45.19	3.08	13.07	H	Pass
13844	-34.89	-13	-21.89	-66.96	-46.81	2.47	14.39	H	Pass



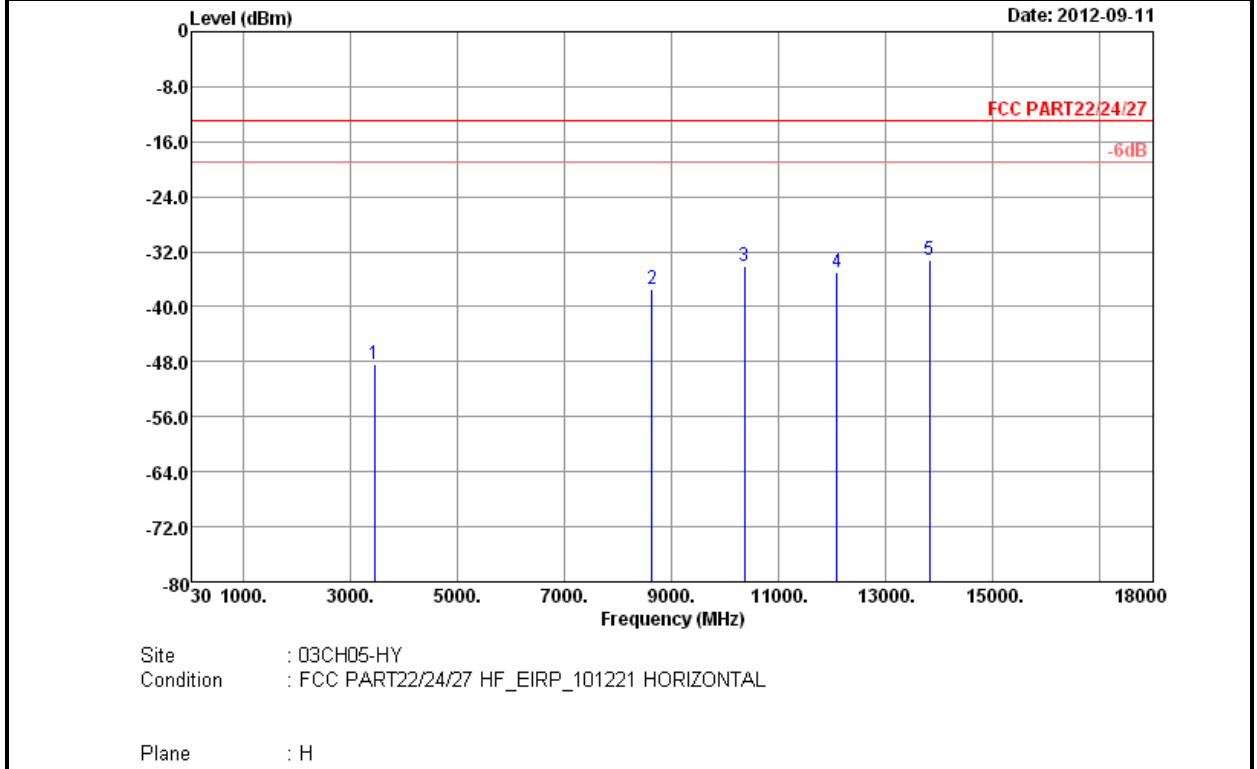
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
8652	-41.98	-13	-28.98	-65.16	-52.45	2.62	13.10	V	Pass
10384	-39.34	-13	-26.34	-65.16	-49.72	2.87	13.26	V	Pass
12112	-37.75	-13	-24.75	-66.04	-47.74	3.08	13.07	V	Pass



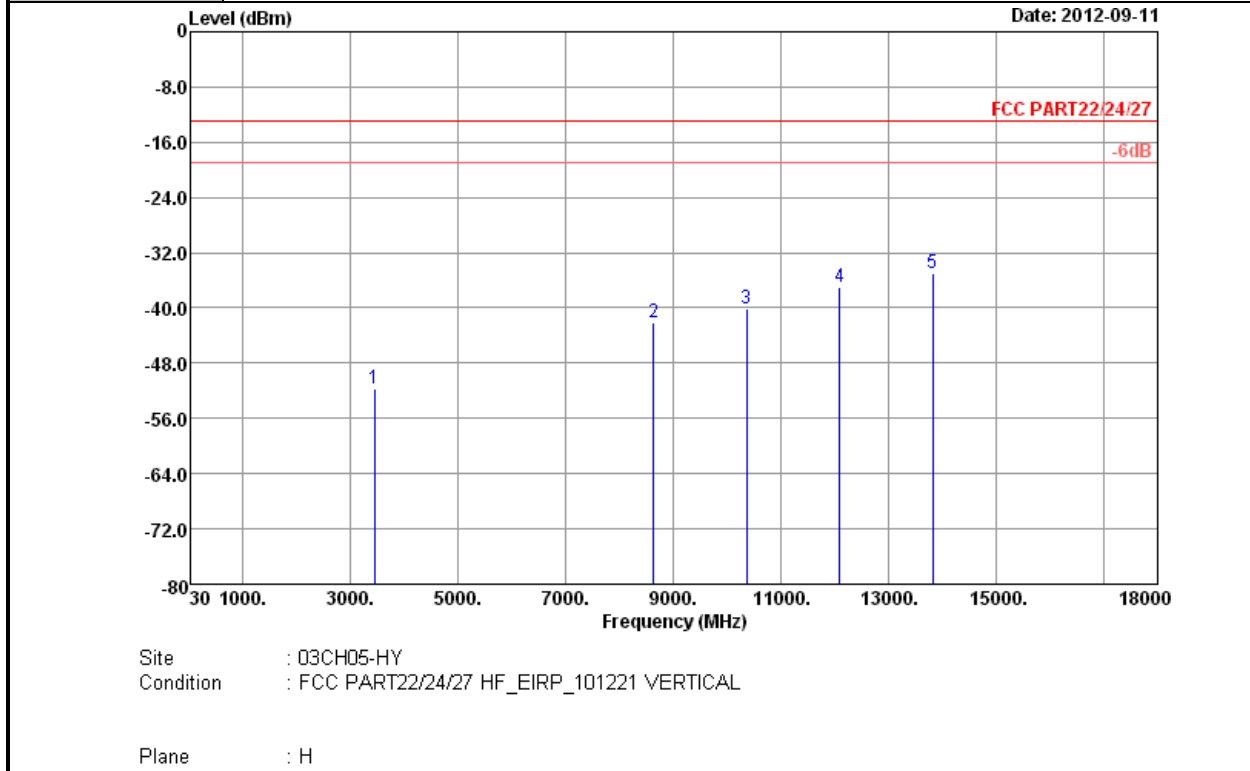
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3456	-48.46	-13	-35.46	-60.02	-54.75	2.01	8.30	H	Pass
8640	-37.53	-13	-24.53	-61.05	-48	2.62	13.10	H	Pass
10372	-34.12	-13	-21.12	-60.1	-44.5	2.87	13.26	H	Pass
12096	-35.01	-13	-22.01	-63.38	-45	3.08	13.07	H	Pass
13828	-33.28	-13	-20.28	-66.03	-45.2	2.47	14.39	H	Pass



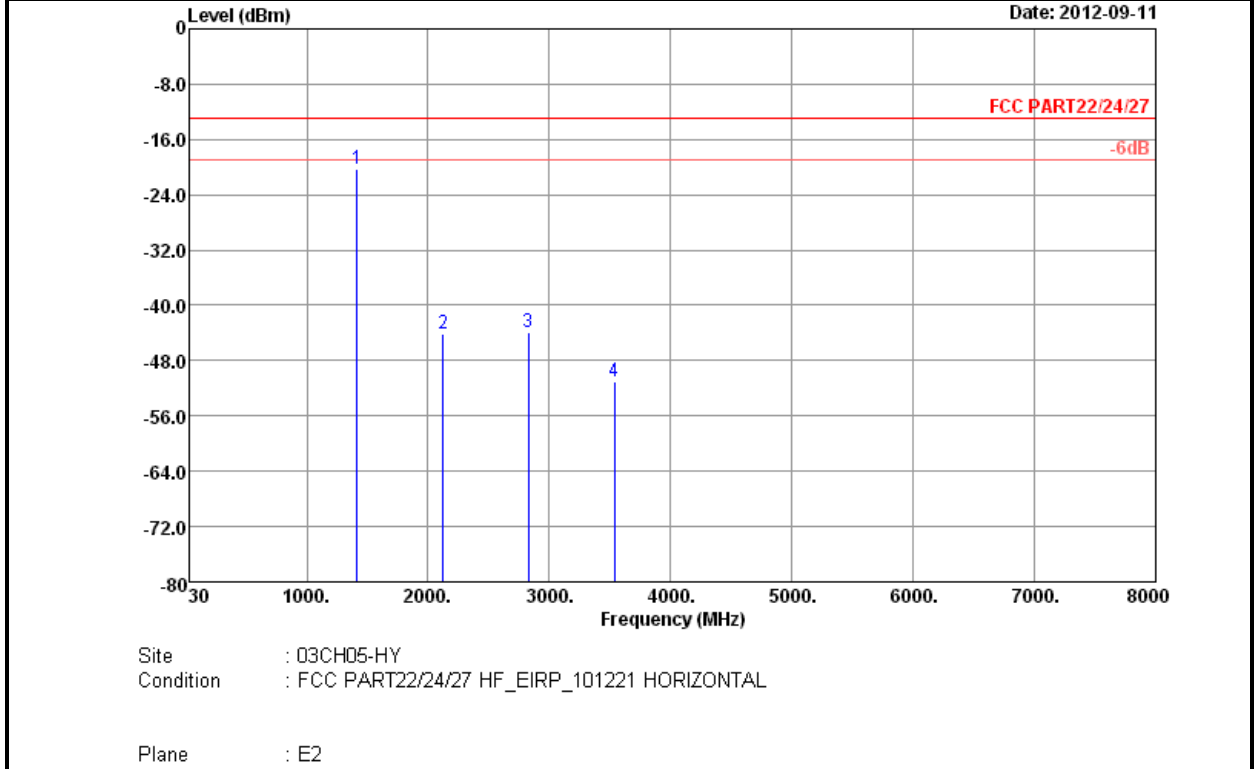
Band :	LTE Band 4	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
3465	-51.61	-13	-38.61	-63.39	-57.9	2.01	8.30	V	Pass
8640	-42.13	-13	-29.13	-65.49	-52.6	2.62	13.10	V	Pass
10372	-40.12	-13	-27.12	-66.04	-50.5	2.87	13.26	V	Pass
12096	-37.01	-13	-24.01	-65.66	-47	3.08	13.07	V	Pass
13828	-35.08	-13	-22.08	-68.03	-47	2.47	14.39	V	Pass



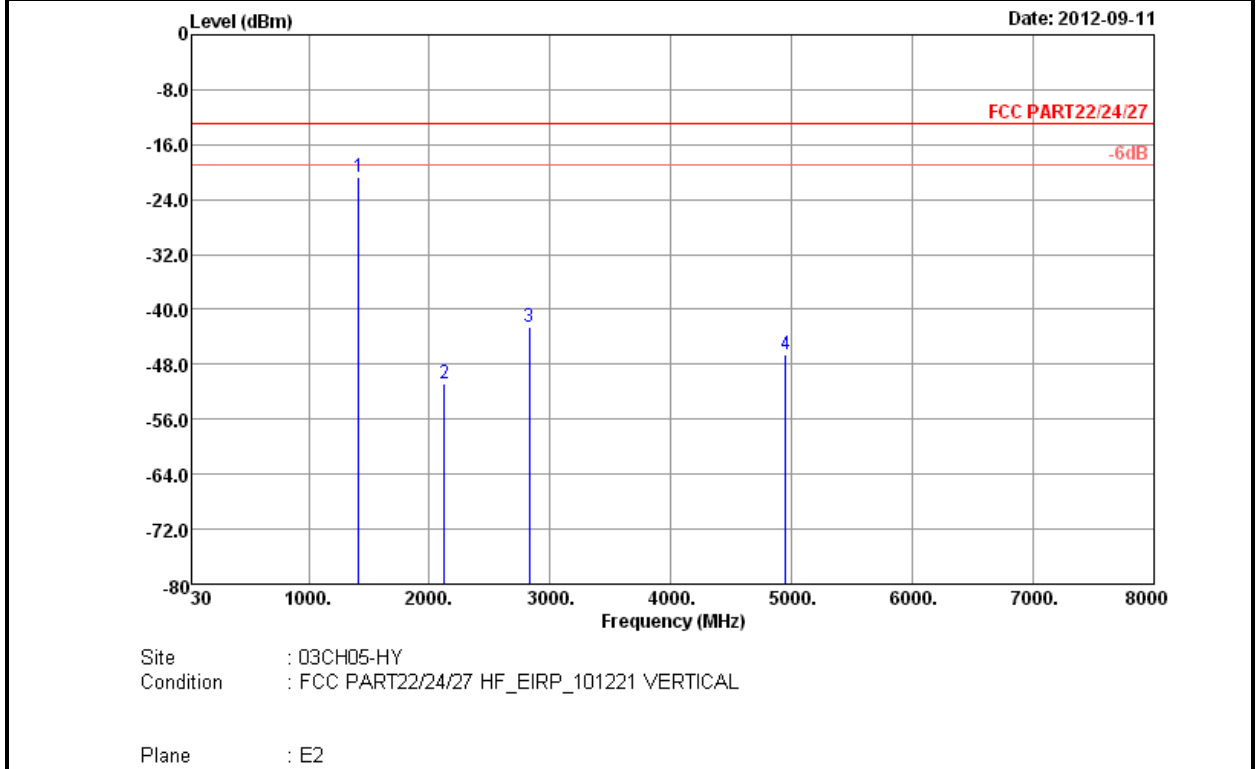
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1414	-20.19	-13	-7.19	-24.43	-21.88	1.25	5.09	H	Pass
2122	-44.03	-13	-31.03	-53	-45.37	1.48	4.97	H	Pass
2830	-43.96	-13	-30.96	-53.5	-46.76	1.68	6.63	H	Pass
3535	-50.96	-13	-37.96	-62.44	-55.23	2.03	8.45	H	Pass



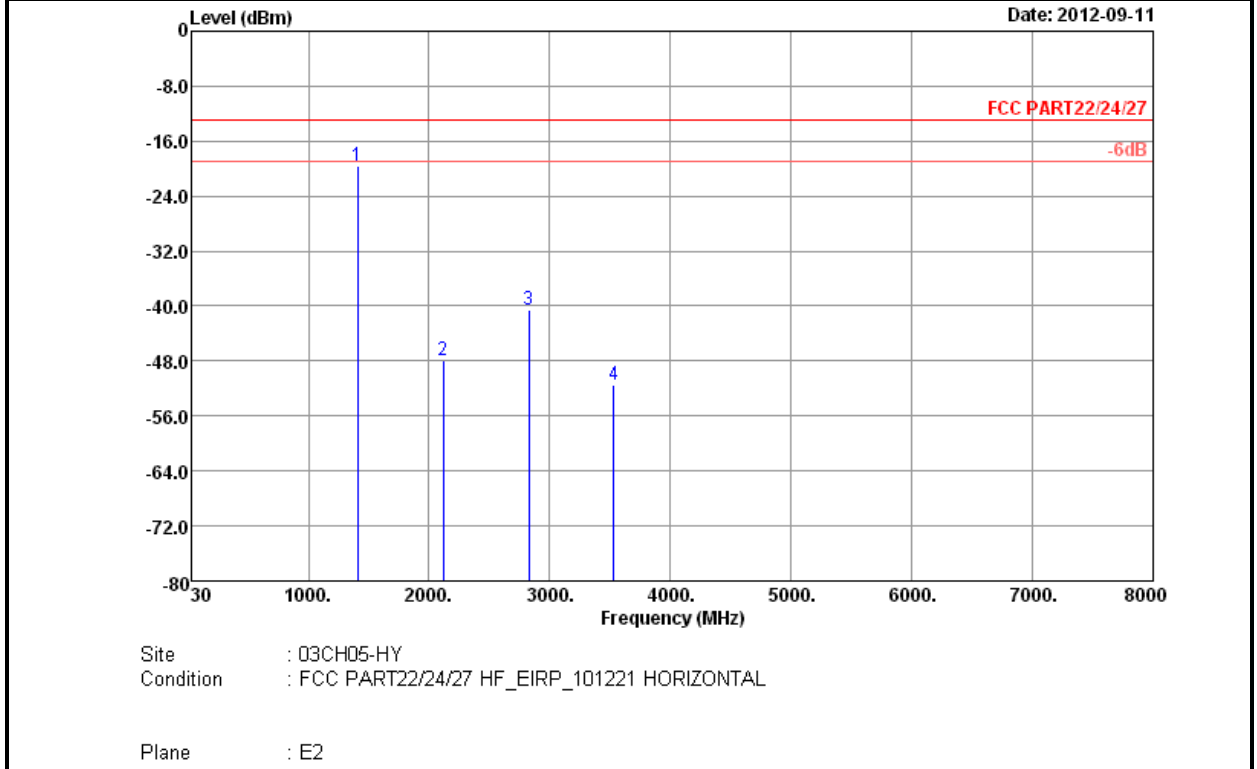
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	1.4MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1414	-20.76	-13	-7.76	-25.27	-22.45	1.25	5.09	V	Pass
2122	-50.84	-13	-37.84	-58.76	-52.18	1.48	4.97	V	Pass
2830	-42.59	-13	-29.59	-52.22	-45.39	1.68	6.63	V	Pass
4948	-46.65	-13	-33.65	-62.96	-52.71	2.09	10.31	V	Pass



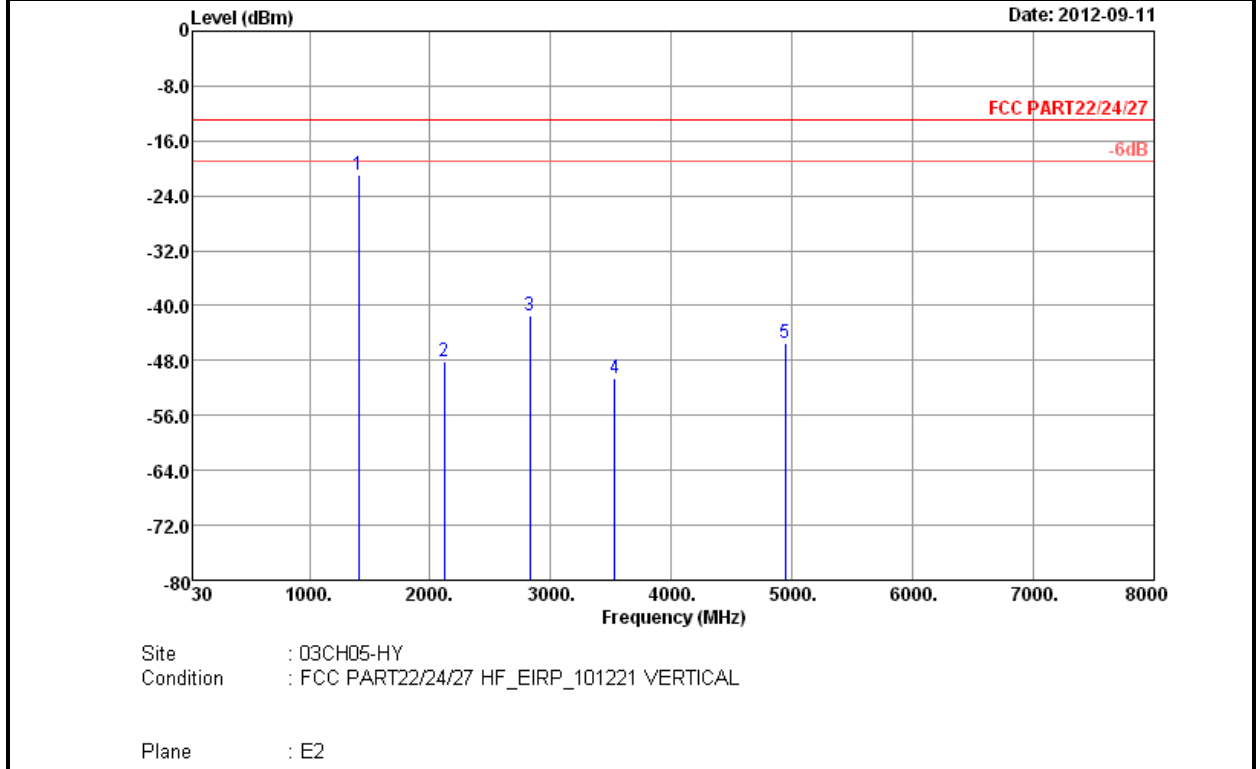
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1411	-19.63	-13	-6.63	-23.46	-21.32	1.25	5.09	H	Pass
2119	-47.88	-13	-34.88	-55.43	-49.22	1.48	4.97	H	Pass
2827	-40.58	-13	-27.58	-50.99	-43.38	1.68	6.63	H	Pass
3532	-51.57	-13	-38.57	-63.12	-55.84	2.03	8.45	H	Pass



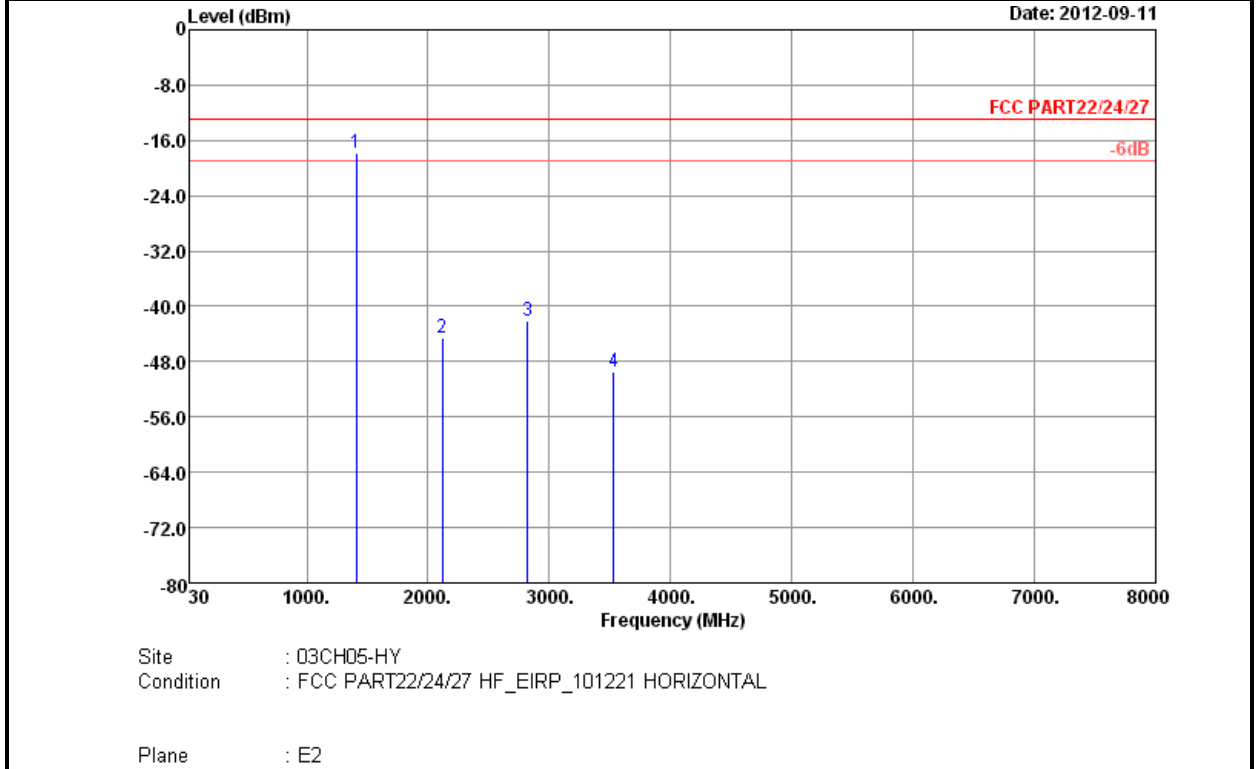
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	3MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1411	-20.87	-13	-7.87	-24.75	-22.56	1.25	5.09	V	Pass
2119	-48.09	-13	-35.09	-56.65	-49.43	1.48	4.97	V	Pass
2827	-41.53	-13	-28.53	-51.6	-44.33	1.68	6.63	V	Pass
3532	-50.64	-13	-37.64	-62.54	-54.91	2.03	8.45	V	Pass
4944	-45.51	-13	-32.51	-61.91	-51.57	2.09	10.31	V	Pass



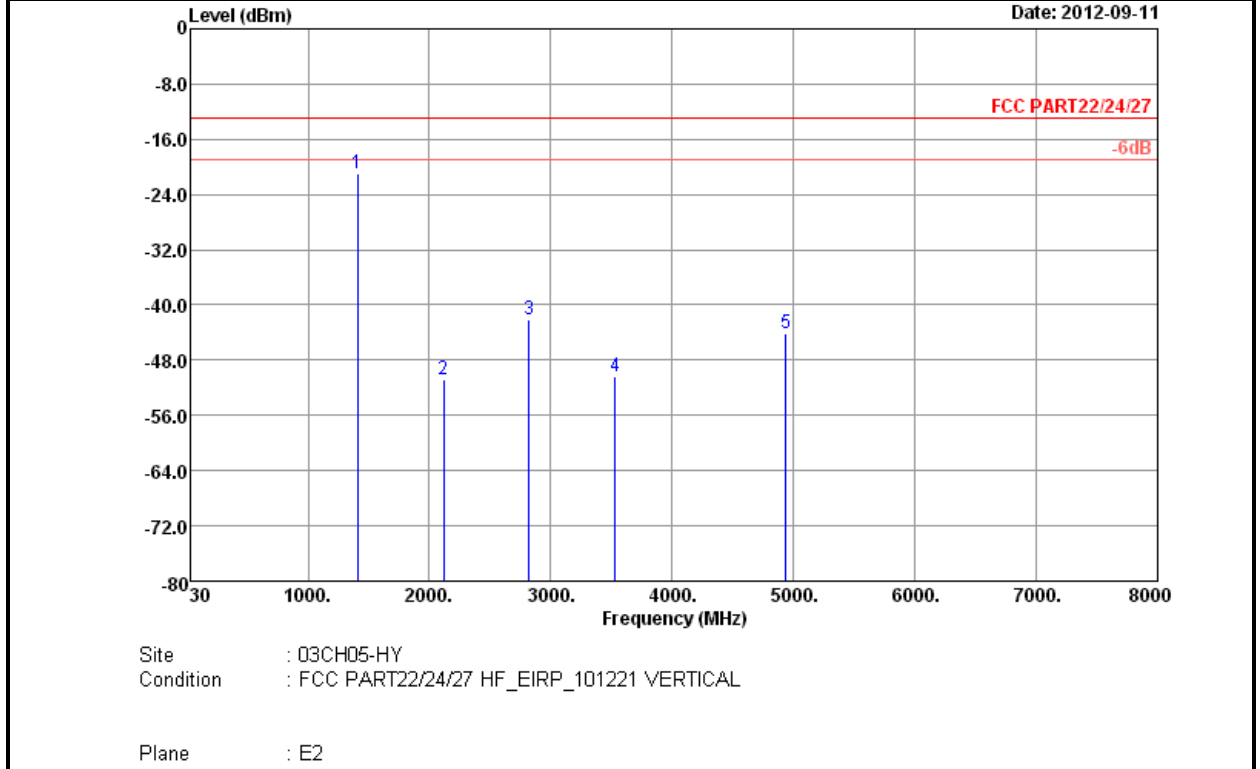
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1411	-17.72	-13	-4.72	-21.8	-19.41	1.25	5.09	H	Pass
2116	-44.49	-13	-31.49	-53.48	-45.83	1.48	4.97	H	Pass
2821	-42.15	-13	-29.15	-51.55	-44.95	1.68	6.63	H	Pass
3529	-49.38	-13	-36.38	-62.44	-53.65	2.03	8.45	H	Pass



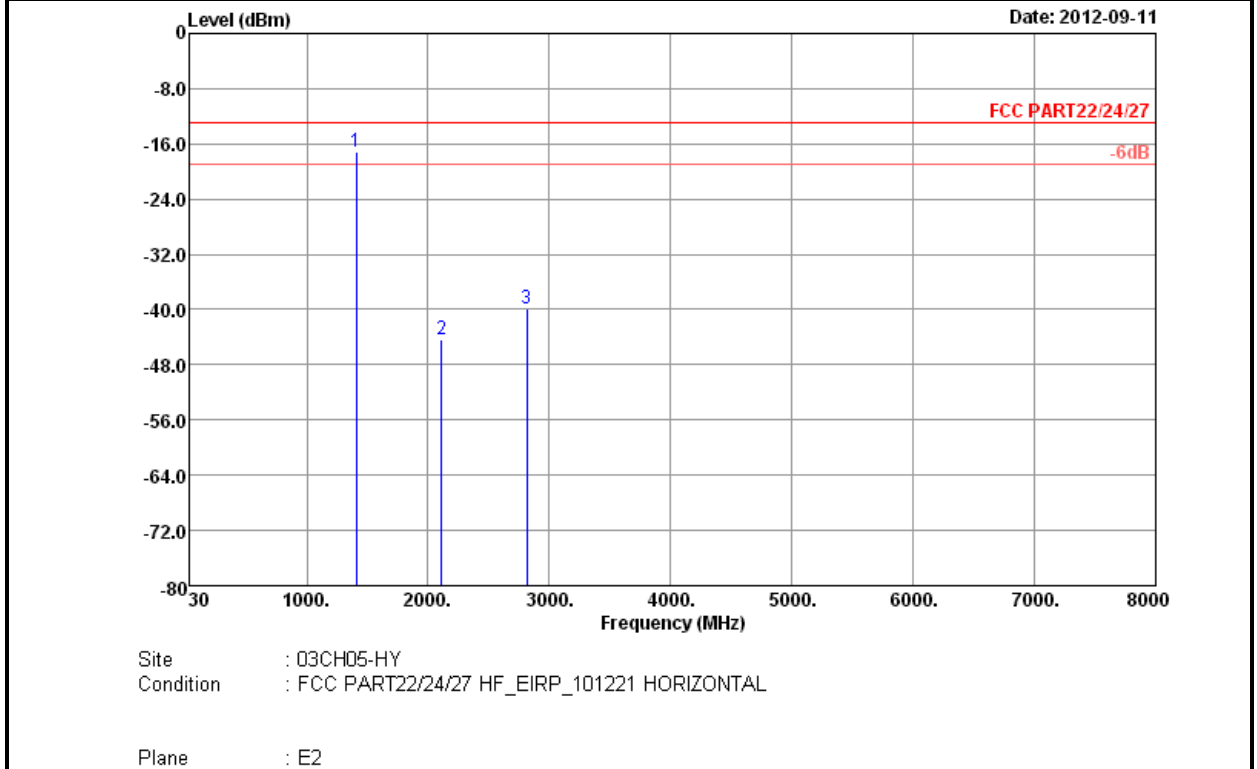
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	5MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1411	-20.89	-13	-7.89	-25.31	-22.58	1.25	5.09	V	Pass
2116	-50.89	-13	-37.89	-58.57	-52.23	1.48	4.97	V	Pass
2821	-42.07	-13	-29.07	-52.22	-44.87	1.68	6.63	V	Pass
3529	-50.34	-13	-37.34	-61.93	-54.61	2.03	8.45	V	Pass
4936	-44.18	-13	-31.18	-61.26	-50.24	2.09	10.31	V	Pass



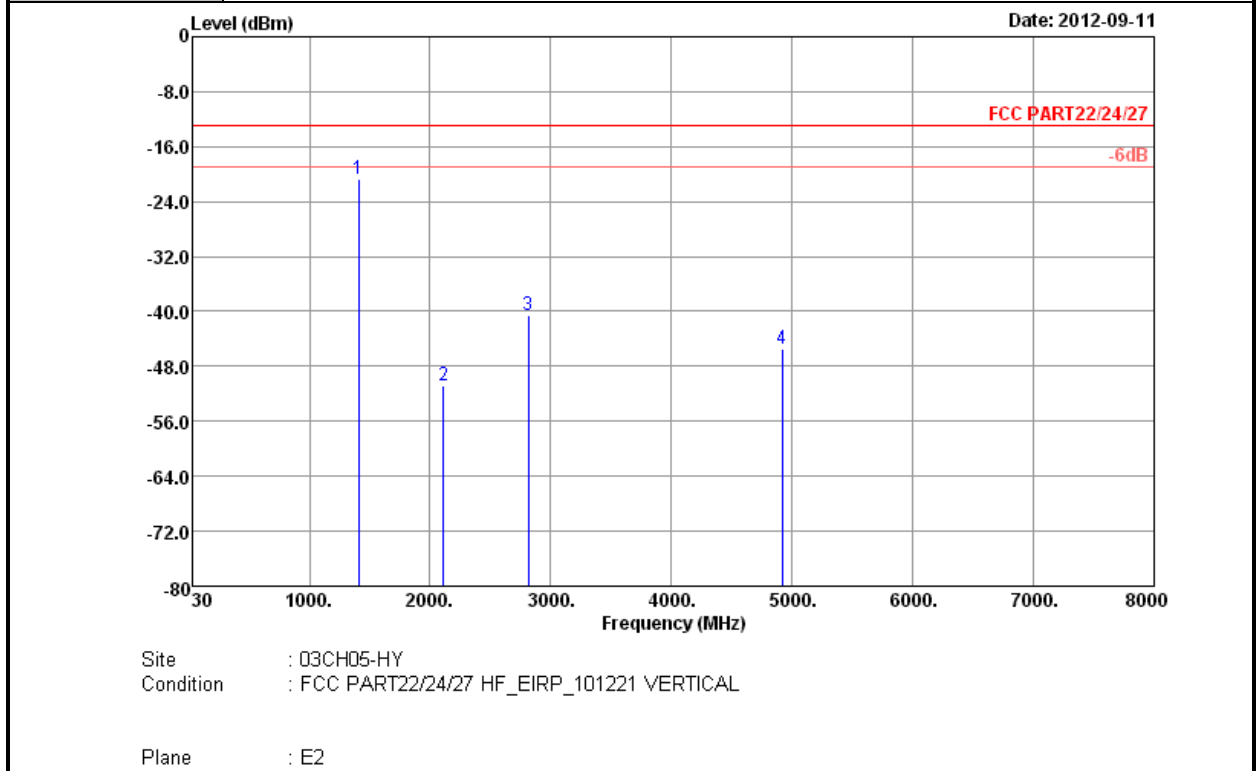
Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1405	-17.05	-13	-4.05	-21.35	-18.74	1.25	5.09	H	Pass
2110	-44.31	-13	-31.31	-52.18	-45.65	1.48	4.97	H	Pass
2812	-39.78	-13	-26.78	-50.05	-42.58	1.68	6.63	H	Pass



Band :	LTE Band 12	Temperature :	22~25°C
Test Mode :	10MHZ QPSK RB Size 1	Relative Humidity :	50~53%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	Spurious emissions within 30-10th harmonic were found more than 20dB below limit line.		



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
1405	-20.67	-13	-7.67	-24.92	-22.36	1.25	5.09	V	Pass
2110	-50.80	-13	-37.80	-58.8	-52.14	1.48	4.97	V	Pass
2812	-40.47	-13	-27.47	-50.68	-43.27	1.68	6.63	V	Pass
4920	-45.38	-13	-32.38	-62.56	-51.44	2.09	10.31	V	Pass

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

See list of measuring instruments of this test report.

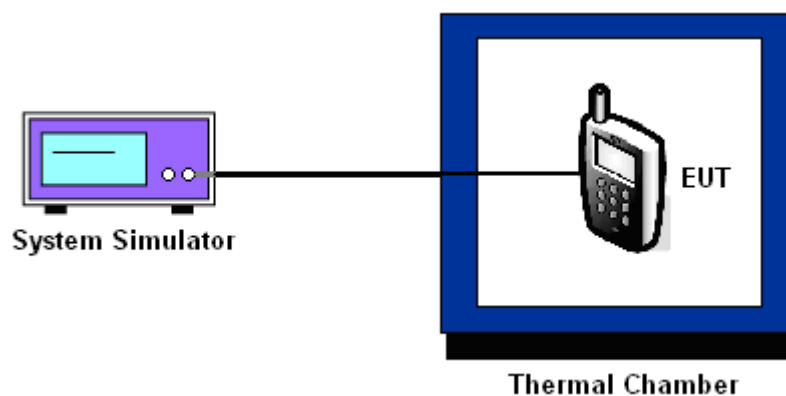
3.8.3 Test Procedures for Temperature Variation

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.
4. If the EUT cannot be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

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 2			Limit (ppm) :	2.5
Temperature (°C)	BW 1.4MHz		BW 3MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	-28.1	-0.040	-25.7	-0.036	
-10	-19.8	-0.028	-22.2	-0.031	
0	-20.6	-0.029	-21.4	-0.030	
10	-16.4	-0.023	-23.2	-0.033	
20	-18.4	-0.026	-24.1	-0.034	
30	-19.8	-0.028	-20.8	-0.029	
40	-21.6	-0.030	-19.7	-0.028	
50	-23.9	-0.034	-23.3	-0.033	
55	-25.2	-0.035	-20.5	-0.029	

Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	-27.7	-0.039	-20.4	-0.029	
-10	-24.1	-0.034	-25.7	-0.036	
0	-25.3	-0.036	-22.3	-0.031	
10	-21.9	-0.031	-21.6	-0.030	
20	-26.4	-0.037	-23.4	-0.033	
30	-23.2	-0.033	-22.1	-0.031	
40	-20.8	-0.029	-20.9	-0.029	
50	-19.3	-0.027	-22.1	-0.031	
55	-22.7	-0.032	-18.5	-0.026	



Band :	LTE Band 4		Limit (ppm) :	2.5	
Temperature (°C)	BW 1.4MHz		BW 3MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	-12.5	-0.018	-13.1	-0.018	
-10	-11.5	-0.016	-13.3	-0.019	
0	-11.3	-0.016	-11.1	-0.016	
10	-9.4	-0.013	-10.2	-0.014	
20	-10.5	-0.015	-8.7	-0.012	
30	-11.3	-0.016	-9.4	-0.013	
40	-0.8	-0.001	-10.5	-0.015	
50	-10.1	-0.014	-11.2	-0.016	
55	-10.3	-0.015	-12.3	-0.017	

Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	-15.0	-0.021	-13.2	-0.019	
-10	-14.2	-0.020	-12.1	-0.017	
0	-14.0	-0.020	-10.8	-0.015	
10	-11.3	-0.016	-9.4	-0.013	
20	-8.4	-0.012	-7.6	-0.011	
30	-9.7	-0.014	-8.9	-0.013	
40	-10.5	-0.015	-10.6	-0.015	
50	-10.1	-0.014	-13.1	-0.018	
55	-10.3	-0.015	-10.4	-0.015	



Band :	LTE Band 12		Limit (ppm) :	2.5	
Temperature (°C)	BW 1.4MHz		BW 3MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	-7.9	-0.011	-8.4	-0.012	
-10	-7.6	-0.011	-6.4	-0.009	
0	-8.1	-0.011	-5.6	-0.008	
10	-6.4	-0.009	-6.2	-0.009	
20	-7.4	-0.010	-7.1	-0.010	
30	-6.1	-0.009	-5.4	-0.008	
40	-5.8	-0.008	-6.3	-0.009	
50	-6.9	-0.010	-4.8	-0.007	
55	-7.7	-0.011	-8.2	-0.012	

Temperature (°C)	BW 5MHz		BW 10MHz		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	6.4	0.009	-10.3	-0.015	
-10	-7.1	-0.010	-7.4	-0.010	
0	6.4	0.009	-6.7	-0.009	
10	-5.4	-0.008	-8.1	-0.011	
20	-4.9	-0.007	-8.4	-0.012	
30	-7.2	-0.010	-7.6	-0.011	
40	-6.3	-0.009	-8.4	-0.012	
50	-5.8	-0.008	-6.7	-0.009	
55	-6.4	-0.009	7.8	0.011	



3.8.7 Test Result of Voltage Variation

Band	Bandwidth	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 2	1.4M	4.2	-18.4	-0.026	2.5	PASS
		Normal	-19.7	-0.028		
		3.6	-20.4	-0.029		
	3M	4.2	-16.8	-0.024		
		Normal	-16.7	-0.024		
		3.6	-18.4	-0.026		
	5M	4.2	-16.5	-0.023		
		Normal	-20.2	-0.028		
		3.6	-16.7	-0.024		
	10M	4.2	-19.2	-0.027		
		Normal	-16.5	-0.023		
		3.6	-18.4	-0.026		
LTE Band 4	1.4M	4.2	-8.4	-0.012	2.5	PASS
		Normal	-7.6	-0.011		
		3.6	-9.1	-0.013		
	3M	4.2	-9.4	-0.013		
		Normal	-8.7	-0.012		
		3.6	-7.5	-0.011		
	5M	4.2	-6.4	-0.009		
		Normal	-5.4	-0.008		
		3.6	-5.9	-0.008		
	10M	4.2	-5.8	-0.008		
		Normal	-6.9	-0.010		
		3.6	-7.2	-0.010		



Band	Bandwidth	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 12	1.4M	4.2	8.2	0.012	2.5	PASS
		Normal	11.5	0.016		
		3.6	9.7	0.014		
	3M	4.2	7.8	0.011		
		Normal	7.1	0.010		
		3.6	-6.2	-0.009		
	5M	4.2	3.4	0.005		
		Normal	2.6	0.004		
		3.6	3.4	0.005		
	10M	4.2	4.3	0.006		
		Normal	3.2	0.005		
		3.6	5.1	0.007		

Remark:

- 1. Normal Voltage = 3.8V.
- 2. The manufacturer declared that the EUT could work properly between voltages 3.6V ~ 4.2V.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	R&S	CMW500	123471	70MHz~3.3GHz	May 29, 2012	Sep. 08, 2012 ~ Sep. 26, 2012	May 28, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Sep. 08, 2012 ~ Sep. 26, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 23, 2012	Sep. 08, 2012 ~ Sep. 26, 2012	Jul. 22, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Sep. 06, 2012 ~ Oct. 23, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 06, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Sep. 06, 2012 ~ Oct. 23, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Sep. 06, 2012 ~ Oct. 23, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
Amplifier	Agilent	310N	186713	9KHz ~ 1GHz	Apr. 11, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Apr. 10, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz ~ 40GHz	Sep. 28, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Sep. 27, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Jul. 02, 2014	Radiation (03CH05-HY)
LTE Base Station	Anritsu	MT8820C	6201074414	N/A	Jan. 05, 2012	Sep. 06, 2012 ~ Oct. 23, 2012	Jan. 04, 2013	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

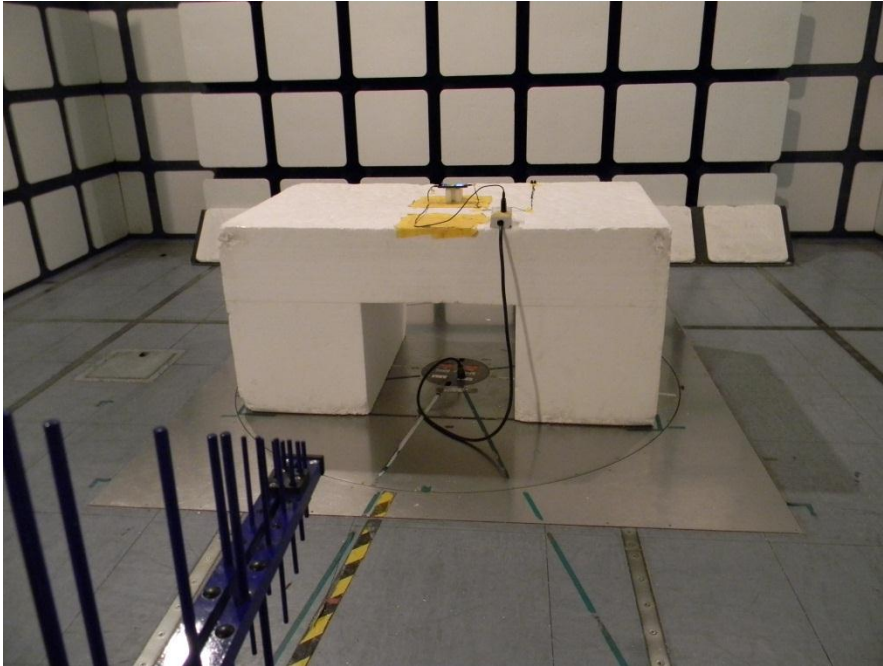
Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				

Appendix A. Setup Photographs

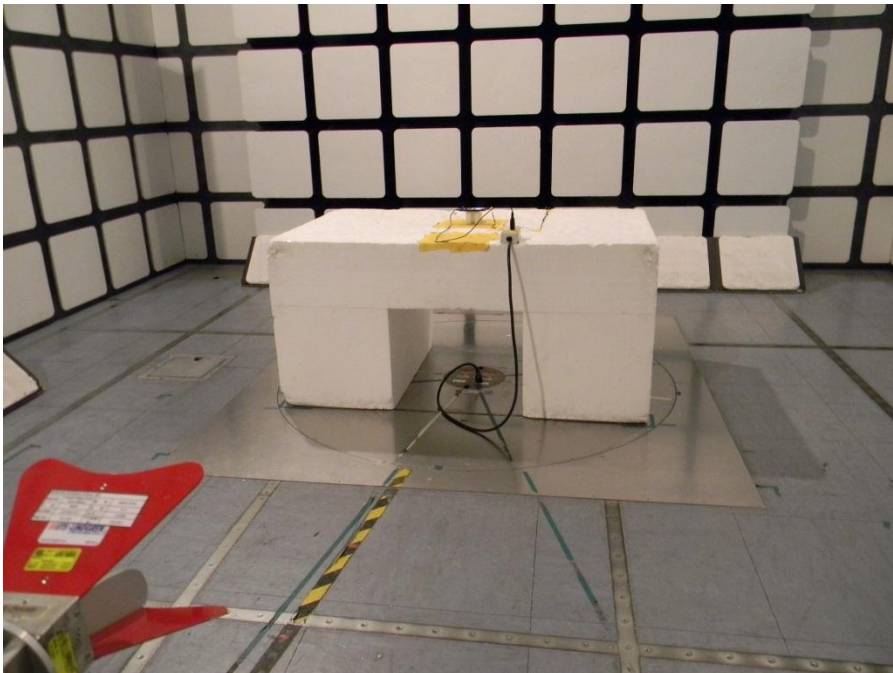
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<E2 Plane>

LF

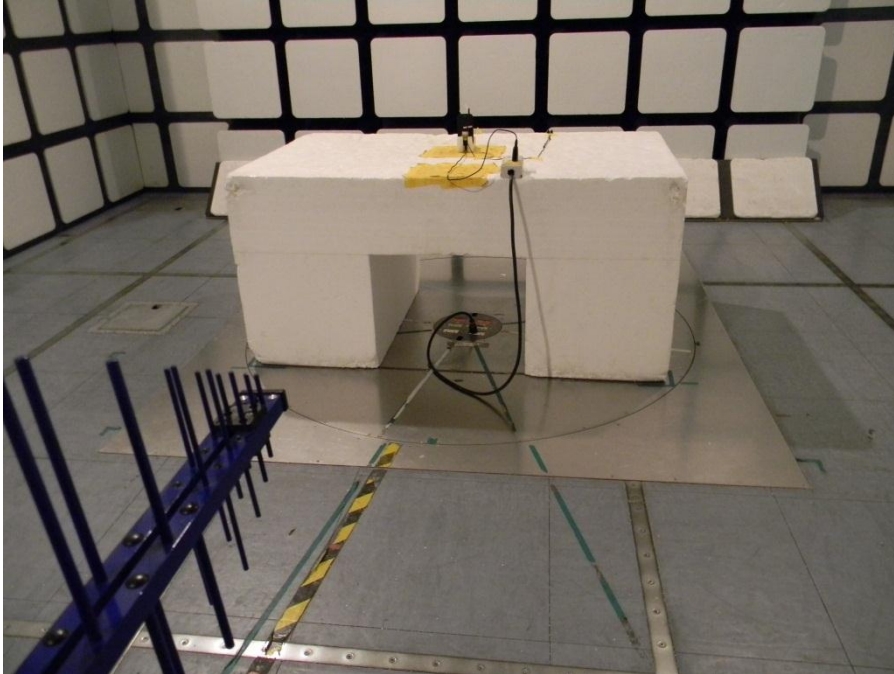


HF



<H Plane>

LF



HF

